

3GPP2 C.R0022-B

Version 1.0

Date: 17 April 2009



**3RD GENERATION
PARTNERSHIP
PROJECT 2
"3GPP2"**

Position Determination Service for cdma2000 Spread Spectrum Systems Software Distribution

COPYRIGHT

3GPP2 and its Organizational Partners claim copyright in this document and individual Organizational Partners may copyright and issue documents or standards publications in individual Organizational Partner's name based on this document. Requests for reproduction of this document should be directed to the 3GPP2 Secretariat at secretariat@3gpp2.org. Requests to reproduce individual Organizational Partner's documents should be directed to that Organizational Partner. See www.3gpp2.org for more information.

C.R0022-B v1.0

No Text

1

2

CONTENTS

3

CONTENTS I

4

FOREWORDII

5

REFERENCES I

6

1 ABSTRACT SYNTAX OF POSITION DETERMINATION SERVICE FOR CDMA2000®

7

SPREAD SPECTRUM SYSTEMS 1-1

8

1.1 GENERAL DESCRIPTION..... 1-1

9

1.2 USAGE OF PRIVATE REQUEST/RESPONSE ELEMENTS FOR NON-STANDARD USE..... 1-1

10

2 MESSAGE AND INFORMATION ELEMENT ABSTRACT SYNTAX (WITH ASN.1) 2-1

11

2.1 GENERAL MESSAGE STRUCTURE..... 2-1

12

2.2 INFORMATION ELEMENT DEFINITIONS 2-2

13

2.3 RESPONSE ELEMENT STRUCTURES 2-10

14

2.4 REQUEST AND RESPONSE ELEMENTS 2-26

15

2.5 COMMON INFORMATION ELEMENTS..... 2-59

16

1 No Text

2

1

FOREWORD

2 This foreward is informative. This document contains the Abstract Syntax notation for [1].

REFERENCES

The following standard contains provisions, which, through reference in this text, constitute provisions of this Software Distribution. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Software Distribution are encouraged to investigate the possibility of applying the most recent editions of this Software Distribution and the standard indicated below. ANSI and TIA maintain registers of currently valid national standards published by them.

— *Normative References:*

1. 3GPP2 C.S0022-B Ver 1.0, *Position Determination Service for cdma2000 Spread Spectrum Systems*.
2. ITU-T Recommendation X.680, *Information Technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation*, July 2002.
3. ITU-T Recommendation X.691, *Information technology - ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)*, July 2002.

- 1 No text.
- 2

1 **1 ABSTRACT SYNTAX OF POSITION DETERMINATION SERVICE FOR cdma2000^{®1} SPREAD** 2 **SPECTRUM SYSTEMS**

3 **1.1 General Description**

4 This document contains the Abstract Syntax representation of the PDM as specified in [1].

5 **1.2 Usage of Private Request/Response Elements for Non-Standard Use**

6 The private request/response element mechanism for non-standard use may be used in order to carry extensions
7 which are defined outside this specification. Private request/response element extensions can be defined by, for
8 example, network operators, manufacturers, and regional standardisation bodies.

- 9 • For special operator- (and/or vendor) specific features considered not to be part of the basic
10 functionality, i.e. the functionality required for a complete specification in order to guarantee multi-
11 vendor inter-operability.
- 12 • By vendors for research purposes, e.g. to implement and evaluate new algorithms/features before such
13 features are proposed for standardisation.

14 The private request/response element message mechanism should not be used for basic functionality. Such
15 functionality should be standardised.

16 The following private request/response elements are defined:

- 17 • ReqMS-reqPrivateExtension: For mobile station request elements.
- 18 • ProvideMS-respPrivateExtension: For mobile station response elements.
- 19 • ReqBS-reqPrivateExtension: For base station request elements.
- 20 • ProvideBS-respPrivateExtension: For base station response elements.

21

¹ cdma2000[®] is a trademark for the technical nomenclature for certain specifications and standards of the Organization Partners (OPs) of 3GPP2. Geographically (and as of the date of publications), cdma2000[®] is a registered trademark of the Telecommunications Industry Association (TIA-USA) in the United States.

- 1 No Text
- 2

1 2 MESSAGE AND INFORMATION ELEMENT ABSTRACT SYNTAX (WITH ASN.1)

2

3 2.1 General Message Structure

4

5 PDDM DEFINITIONS AUTOMATIC TAGS ::=

6

7 BEGIN

8

9 IMPORTS

10 MS-RequestElementsV1,

11 MS-RequestElementsV2,

12 MS-RequestElementsV3,

13 MS-ResponseElementsV1,

14 MS-ResponseElementsV2,

15 MS-ResponseElementsV3,

16 BS-RequestElementsV1,

17 BS-RequestElementsV2,

18 BS-RequestElementsV3,

19 BS-ResponseElementsV1,

20 BS-ResponseElementsV2,

21 BS-ResponseElementsV3

22

23 FROM

24 InformationElements

25 ;

26

27 PDU ::= SEQUENCE {

28 component PDDM-Component,

29 ...

30 }

31

32 PDDM-Component ::= CHOICE {

33 reverseLinkMessage ReverseLinkMessage,

34 forwardLinkMessage ForwardLinkMessage,

35 ...

36 }

37

38 ReverseLinkMessage ::= SEQUENCE {

39 msRequestElementsV1 MS-RequestElementsV1 OPTIONAL,

40 msRequestElementsV2 MS-RequestElementsV2 OPTIONAL,

41 msRequestElementsV3 MS-RequestElementsV3 OPTIONAL,

42 msResponseElementsV1 MS-ResponseElementsV1 OPTIONAL,

43 msResponseElementsV2 MS-ResponseElementsV2 OPTIONAL,

44 msResponseElementsV3 MS-ResponseElementsV3 OPTIONAL,

45 ...

46 }

47

48 ForwardLinkMessage ::= SEQUENCE {

49 bsRequestElementsV1 BS-RequestElementsV1 OPTIONAL,

50 bsRequestElementsV2 BS-RequestElementsV2 OPTIONAL,

51 bsRequestElementsV3 BS-RequestElementsV3 OPTIONAL,

```

1      bsResponseElementsV1      BS-ResponseElementsV1      OPTIONAL,
2      bsResponseElementsV2      BS-ResponseElementsV2      OPTIONAL,
3      bsResponseElementsV3      BS-ResponseElementsV3      OPTIONAL,
4      ...
5  }
6
7  END
8

```

2.2 Information Element Definitions

```

9
10
11 InformationElements DEFINITIONS AUTOMATIC TAGS ::=
12
13 BEGIN
14
15 IMPORTS
16
17     ProvideMSLocationResponseResp,
18     ProvideMSInformationResp,
19     ProvideAutoMeasWeightingFactorsResp,
20     ProvidePseudorangeMeasurementResp,
21     ProvidePilotPhaseMeasurementResp,
22     ProvideTimeOffsetMeasurementResp,
23     ProvideExtMSLocationResponseResp,
24     ProvideExtMSInformationResp,
25     ProvideAutoMeasWeightingFactorsv1Resp,
26     ProvideGeneralLocationMeasurementResp,
27     ProvideGPSCoarseLocationResponseResp,
28     ProvideMessagingDelayMeasurementResp,
29     ProvideBearingMeasurementResp,
30     ProvideServingSystemInformationResp,
31     ProvideAdvancedMSInformationResp,
32     ProvideUMBPilotTimeOffsetMeasurementResp,
33     ProvideHRPDPilotPhaseMeasurementResp,
34     ProvideGNSSPseudorangeMeasurementResp,
35     ProvideAdvLocationResponseResp,
36     ProvideAdvSystemParametersInformationResp,
37     ProvideBSLocationResponseResp,
38     ProvideBSCapabilitiesResp,
39     ProvideBaseStationAlmanacResp,
40     ProvideGPSAcquisitionAssistanceResp,
41     ProvideGPS SensitivityAssistanceResp,
42     ProvideGPSLocAssist-SphericalCoordResp,
43     ProvideGPSLocAssist-CartesianCoordResp,
44     ProvideGPSAlmanacResp,
45     ProvideGPSEphemerisResp,
46     ProvideGPSNavigationMessageBitsResp,
47     ProvideGPSAlmanacCorrectionResp,
48     ProvideGPSSatelliteHealthInfoResp,
49     ProvideExtBSLocationResponseResp,
50     ProvideExtBSCapabilitiesResp,
51     ProvideEnhancedBaseStationAlmanacResp,
52     ProvideGeneralAcquisitionAssistanceResp,

```

1 ProvideExtGPSSensitivityAssistanceResp,
 2 ProvideGPSAlmanacv1Resp,
 3 ProvideExtGPSEphemerisResp,
 4 ProvideExtGPSNavigationMessageBitsResp,
 5 ProvideExtGPSAlmanacCorrectionsResp,
 6 ProvideExtGPSSatelliteHealthInfoResp,
 7 ProvideGPSCoarseLocationAssistanceResp,
 8 ProvideGPSCoarseAcquisitionAssistResp,
 9 ProvideDGPSAssistanceResp,
 10 ProvideGPSRealTimeIntegrityInfoResp,
 11 ProvideAdvancedBSCapabilitiesResp,
 12 ProvideAdvancedUMBBaseStationAlmanacResp,
 13 ProvideAdvancedHRPDBaseStationAlmanacResp,
 14 ProvideAdvancedlXBaseStationAlmanacResp,
 15 ProvideGNSSAcquisitionAssistanceResp,
 16 ProvideGNSSSensitivityAssistanceResp,
 17 ProvideModernizedGPSEphAndClockCorrResp,
 18 ProvideQZSSEphemerisAndClockCorrResp,
 19 ProvideGLONASSEphemerisAndClockCorrResp,
 20 ProvideGalileoEphemerisAndClockCorrResp,
 21 ProvideGEONavMessageParametersResp,
 22 ProvideModernizedGPSAlmanacResp,
 23 ProvideQZSSAlmanacResp,
 24 ProvideGLONASSAlmanacResp,
 25 ProvideGalileoAlmanacResp,
 26 ProvideGEOAlmanacMessageParametersResp,
 27 ProvideGPSIonosphericModelResp,
 28 ProvideGalileoIonosphericModelResp,
 29 ProvideQZSSIonosphericModelResp,
 30 ProvideGNSS-GNSSTimeOffsetResp,
 31 ProvideGPSUTCModelResp,
 32 ProvideAdvancedGNSSSatHealthInfoResp,
 33 ProvideAdvancedLocationResponseResp,
 34 ProvideDGNSSAssistanceResp

35

36 FROM

37 ResponseMessages

38

39 ReqBSLocationResponse,
 40 ReqBSCapabilities,
 41 ReqBaseStationAlmanac,
 42 ReqGPSAcquisitionAssistance,
 43 ReqGPSSensitivityAssistance,
 44 ReqGPSLocationAssistance,
 45 ReqGPSAlmanac,
 46 ReqGPSEphemeris,
 47 ReqGPSNavigationMessageBits,
 48 ReqGPSAlmanacCorrection,
 49 ReqGPSSatelliteHealthInfo,
 50 ReqExtendedBSLocationResponse,
 51 ReqExtendedBSCapabilities,
 52 ReqEnhancedBaseStationAlmanac,
 53 ReqGeneralAcquisitionAssistance,
 54 ReqExtendedGPSSensitivityAssist,

C.R0022-B v1.0

1 ReqGPSAlmanacv1,
2 ReqExtendedGPSEphemeris,
3 ReqExtendedGPSNavMessageBits,
4 ReqExtendedGPSAlmanacCorrection,
5 ReqExtGPSSatelliteHealthInfo,
6 ReqGPSCoarseLocationAssistance,
7 ReqGPSCoarseAcquisitionAssistance,
8 ReqDGPSAssistance,
9 ReqGPSRealTimeIntegrityInfo,
10 ReqAdvancedBSCapabilities,
11 ReqAdvancedUMBBaseStationAlmanac,
12 ReqAdvancedHRPDBaseStationAlmanac,
13 ReqAdvancedLXBaseStationAlmanac,
14 ReqGNSSAcquisitionAssistance,
15 ReqGNSSSensitivityAssistance,
16 ReqModernizedGPSEphAndClockCorr,
17 ReqQZSSEphemerisAndClockCorr,
18 ReqGLONASSEphemerisAndClockCorr,
19 ReqGalileoEphemerisAndClockCorr,
20 ReqGEONavMessageParameters,
21 ReqModernizedGPSAlmanac,
22 ReqQZSSAlmanac,
23 ReqGLONASSAlmanac,
24 ReqGalileoAlmanac,
25 ReqGEOAlmanacMessageParameters,
26 ReqGPSIonosphericModel,
27 ReqGalileoIonosphericModel,
28 ReqQZSSIonosphericModel,
29 ReqGNSS-GNSSTimeOffset,
30 ReqGPSUTCModel,
31 ReqAdvancedGNSSSatHealthInfo,
32 ReqAdvancedBSLocationResponse,
33 ReqDGNSSAssistance,
34 ReqMS-reqPrivateExtension,
35 ReqMSLocationResponse,
36 ReqMSInformation,
37 ReqAutonomousMeasWeightingFactor,
38 ReqPseudorangeMeasurements,
39 ReqPilotPhaseMeasurement,
40 ReqTimeOffsetMeasurement,
41 ReqCancellation,
42 ReqExtendedMSLocationResponse,
43 ReqExtendedMSInformation,
44 ReqAutonomousMeasWeightingFactv1,
45 ReqGeneralLocationMeasurement,
46 ReqExtendedCancellation,
47 ReqGPSCoarseLocationResponse,
48 ReqMessagingDelayMeasurement,
49 ReqBearingMeasurement,
50 ReqServingSystemInformation,
51 ReqAdvancedMSInformation,
52 ReqUMBPIlotTimeOffsetMeasurement,
53 ReqHRPDPilotPhaseMeasurement,
54 ReqGNSSPseudorangeMeasurement,

1 ReqAdvancedCancellation,
2 ReqAdvancedMSLocationResponse,
3 ReqAdvSystemParametersInformation,
4 ReqBS-reqPrivateExtension,
5 RejectMS,
6 ProvideMSLocationResponse,
7 ProvideMSInformation,
8 ProvideAutoMeasWeightingFactors,
9 ProvidePseudorangeMeasurement,
10 ProvidePilotPhaseMeasurement,
11 ProvideTimeOffsetMeasurement,
12 ProvideCancellationAck,
13 ExtendedRejectMS,
14 ProvideExtMSLocationResponse,
15 ProvideExtMSInformation,
16 ProvideAutoMeasWeightingFactorsv1,
17 ProvideGeneralLocationMeasurement,
18 ProvideExtCancellationAck,
19 ProvideGPSCoarseLocationResponse,
20 ProvideMessagingDelayMeasurement,
21 ProvideBearingMeasurement,
22 ProvideServingSystemInformation,
23 ProvideAdvancedMSInformation,
24 ProvideUMBPIlotTimeOffsetMeasurement,
25 ProvideHRPDPilotPhaseMeasurement,
26 ProvideGNSSPseudorangeMeasurement,
27 ProvideAdvCancellationAck,
28 AdvancedRejectMS,
29 ProvideAdvLocationResponse,
30 ProvideAdvSystemParametersInformation,
31 ProvideMS-respPrivateExtension,
32 RejectBS,
33 ProvideBSLocationResponse,
34 ProvideBSCapabilities,
35 ProvideBaseStationAlmanac,
36 ProvideGPSAcquisitionAssistance,
37 ProvideGPSensitivityAssistance,
38 ProvideGPSLocAssist-SphericalCoord,
39 ProvideGPSLocAssist-CartesianCoord,
40 ProvideGPSAlmanac,
41 ProvideGPSEphemeris,
42 ProvideGPSNavigationMessageBits,
43 ProvideGPSAlmanacCorrection,
44 ProvideGPSSatelliteHealthInfo,
45 ExtendedRejectBS,
46 ProvideExtBSLocationResponse,
47 ProvideExtBSCapabilities,
48 ProvideEnhancedBaseStationAlmanac,
49 ProvideGeneralAcquisitionAssistance,
50 ProvideExtGPSensitivityAssistance,
51 ProvideGPSAlmanacv1,
52 ProvideExtGPSEphemeris,
53 ProvideExtGPSNavigationMessageBits,
54 ProvideExtGPSAlmanacCorrections,

```

1   ProvideExtGPSSatelliteHealthInfo,
2   ProvideGPSCoarseLocationAssistance,
3   ProvideGPSCoarseAcquisitionAssist,
4   ProvideDGPSAssistance,
5   ProvideGPSRealTimeIntegrityInfo,
6   ProvideAdvancedBSCapabilities,
7   ProvideAdvancedUMBBaseStationAlmanac,
8   ProvideAdvancedHRPDBaseStationAlmanac,
9   ProvideAdvancedlXBaseStationAlmanac,
10  ProvideGNSSAcquisitionAssistance,
11  ProvideGNSSSensitivityAssistance,
12  ProvideModernizedGPSEphAndClockCorr,
13  ProvideQZSSEphemerisAndClockCorr,
14  ProvideGLONASSEphemerisAndClockCorr,
15  ProvideGalileoEphemerisAndClockCorr,
16  ProvideGEONavMessageParameters,
17  ProvideModernizedGPSAlmanac,
18  ProvideQZSSAlmanac,
19  ProvideGLONASSAlmanac,
20  ProvideGalileoAlmanac,
21  ProvideGEOAlmanacMessageParameters,
22  ProvideGPSIonosphericModel,
23  ProvideGalileoIonosphericModel,
24  ProvideQZSSIonosphericModel,
25  ProvideGNSS-GNSSTimeOffset,
26  ProvideGPSUTCModel,
27  ProvideAdvancedGNSSSatHealthInfo,
28  AdvancedRejectBS,
29  ProvideDGNSSAssistance,
30  ProvideBS-respPrivateExtension

```

31
32 FROM

```

33   ReqRespElements
34   ;

```

35
36 MS-RequestElementsV1 ::= SEQUENCE {

```

37   reqBSLocationResponse           ReqBSLocationResponse           OPTIONAL,
38   reqBSCapabilities               ReqBSCapabilities               OPTIONAL,
39   reqBaseStationAlmanac           ReqBaseStationAlmanac           OPTIONAL,
40   reqGPSAcquisitionAssistance     ReqGPSAcquisitionAssistance     OPTIONAL,
41   reqGPSSensitivityAssistance     ReqGPSSensitivityAssistance     OPTIONAL,
42   reqGPSLocationAssistance        ReqGPSLocationAssistance        OPTIONAL,
43   reqGPSAlmanac                   ReqGPSAlmanac                   OPTIONAL,
44   reqGPSEphemeris                 ReqGPSEphemeris                 OPTIONAL,
45   reqGPSNavigationMessageBits     ReqGPSNavigationMessageBits     OPTIONAL,
46   reqGPSAlmanacCorrection          ReqGPSAlmanacCorrection          OPTIONAL,
47   reqGPSSatelliteHealthInfo       ReqGPSSatelliteHealthInfo       OPTIONAL,
48   ...
49 }

```

50
51 MS-RequestElementsV2 ::= SEQUENCE {

```

52   reqExtendedBSLocationResponse   ReqExtendedBSLocationResponse   OPTIONAL,
53   reqExtendedBSCapabilities        ReqExtendedBSCapabilities        OPTIONAL,
54   reqEnhancedBaseStationAlmanac    ReqEnhancedBaseStationAlmanac    OPTIONAL,

```

1	reqGeneralAcquisitionAssistance	ReqGeneralAcquisitionAssistance	OPTIONAL,
2	reqExtendedGPSSensitivityAssist	ReqExtendedGPSSensitivityAssist	OPTIONAL,
3	reqGPSAlmanacv1	ReqGPSAlmanacv1	OPTIONAL,
4	reqExtendedGPSEphemeris	ReqExtendedGPSEphemeris	OPTIONAL,
5	reqExtendedGPSNavMessageBits	ReqExtendedGPSNavMessageBits	OPTIONAL,
6	reqExtendedGPSAlmanacCorrection	ReqExtendedGPSAlmanacCorrection	OPTIONAL,
7	reqExtGPSSatelliteHealthInfo	ReqExtGPSSatelliteHealthInfo	OPTIONAL,
8	reqGPSCoarseLocationAssistance	ReqGPSCoarseLocationAssistance	OPTIONAL,
9	reqGPSCoarseAcquisitionAssistance	ReqGPSCoarseAcquisitionAssistance	OPTIONAL,
10	reqDGPSAssistance	ReqDGPSAssistance	OPTIONAL,
11	reqGPSRealTimeIntegrityInfo	ReqGPSRealTimeIntegrityInfo	OPTIONAL,
12	...		
13	}		
14			
15	MS-RequestElementsV3 ::= SEQUENCE {		
16	reqAdvancedBSCapabilities	ReqAdvancedBSCapabilities	OPTIONAL,
17	reqAdvancedUMBBBaseStationAlmanac	ReqAdvancedUMBBBaseStationAlmanac	OPTIONAL,
18	reqAdvancedHRPDBBaseStationAlmanac	ReqAdvancedHRPDBBaseStationAlmanac	OPTIONAL,
19	reqAdvanced1XBaseStationAlmanac	ReqAdvanced1XBaseStationAlmanac	OPTIONAL,
20	reqGNSSAcquisitionAssistance	ReqGNSSAcquisitionAssistance	OPTIONAL,
21	reqGNSSSensitivityAssistance	ReqGNSSSensitivityAssistance	OPTIONAL,
22	reqModernizedGPSEphAndClockCorr	ReqModernizedGPSEphAndClockCorr	OPTIONAL,
23	reqQZSSEphemerisAndClockCorr	ReqQZSSEphemerisAndClockCorr	OPTIONAL,
24	reqGLONASSEphemerisAndClockCorr	ReqGLONASSEphemerisAndClockCorr	OPTIONAL,
25	reqGalileoEphemerisAndClockCorr	ReqGalileoEphemerisAndClockCorr	OPTIONAL,
26	reqGEONavMessageParameters	ReqGEONavMessageParameters	OPTIONAL,
27	reqModernizedGPSAlmanac	ReqModernizedGPSAlmanac	OPTIONAL,
28	reqQZSSAlmanac	ReqQZSSAlmanac	OPTIONAL,
29	reqGLONASSAlmanac	ReqGLONASSAlmanac	OPTIONAL,
30	reqGalileoAlmanac	ReqGalileoAlmanac	OPTIONAL,
31	reqGEOAlmanacMessageParameters	ReqGEOAlmanacMessageParameters	OPTIONAL,
32	reqGPSIonosphericModel	ReqGPSIonosphericModel	OPTIONAL,
33	reqGalileoIonosphericModel	ReqGalileoIonosphericModel	OPTIONAL,
34	reqQZSSIonosphericModel	ReqQZSSIonosphericModel	OPTIONAL,
35	reqGNSS-GNSSTimeOffset	ReqGNSS-GNSSTimeOffset	OPTIONAL,
36	reqGPSUTCModel	ReqGPSUTCModel	OPTIONAL,
37	reqAdvancedGNSSSatHealthInfo	ReqAdvancedGNSSSatHealthInfo	OPTIONAL,
38	reqAdvancedBSLocationResponse	ReqAdvancedBSLocationResponse	OPTIONAL,
39	reqDGNSSAssistance	ReqDGNSSAssistance	OPTIONAL,
40	reqMS-reqPrivateExtension	ReqMS-reqPrivateExtension	OPTIONAL,
41	...		
42	}		
43			
44	MS-ResponseElementsV1 ::= SEQUENCE {		
45	provideMSLocationResponse	ProvideMSLocationResponseResp	OPTIONAL,
46	provideMSInformation	ProvideMSInformationResp	OPTIONAL,
47	provideAutoMeasWeightingFactors	ProvideAutoMeasWeightingFactorsResp	OPTIONAL,
48	providePseudorangeMeasurement	ProvidePseudorangeMeasurementResp	OPTIONAL,
49	providePilotPhaseMeasurement	ProvidePilotPhaseMeasurementResp	OPTIONAL,
50	provideTimeOffsetMeasurement	ProvideTimeOffsetMeasurementResp	OPTIONAL,
51	provideCancellationAck	ProvideCancellationAck	OPTIONAL,
52	...		
53	}		
54			

C.R0022-B v1.0

```

1  MS-ResponseElementsV2 ::= SEQUENCE {
2      provideExtMSLocationResponse      ProvideExtMSLocationResponseResp      OPTIONAL,
3      provideExtMSInformation            ProvideExtMSInformationResp            OPTIONAL,
4      provideAutoMeasWeightingFactorsv1 ProvideAutoMeasWeightingFactorsv1Resp  OPTIONAL,
5      provideGeneralLocationMeasurement ProvideGeneralLocationMeasurementResp  OPTIONAL,
6      provideExtCancellationAck          ProvideExtCancellationAck              OPTIONAL,
7      provideGPSCoarseLocationResponse ProvideGPSCoarseLocationResponseResp   OPTIONAL,
8      provideMessagingDelayMeasurement ProvideMessagingDelayMeasurementResp   OPTIONAL,
9      provideBearingMeasurement          ProvideBearingMeasurementResp          OPTIONAL,
10     provideServingSystemInformation     ProvideServingSystemInformationResp    OPTIONAL,
11     ...
12 }
13
14 MS-ResponseElementsV3 ::= SEQUENCE {
15     provideAdvancedMSInformation        ProvideAdvancedMSInformationResp       OPTIONAL,
16     provideUMBPIlotTimeOffsetMeasurement ProvideUMBPIlotTimeOffsetMeasurementResp OPTIONAL,
17     provideHRPDPilotPhaseMeasurement   ProvideHRPDPilotPhaseMeasurementResp  OPTIONAL,
18     provideGNSSPseudorangeMeasurement ProvideGNSSPseudorangeMeasurementResp  OPTIONAL,
19     provideAdvCancellationAck           ProvideAdvCancellationAck              OPTIONAL,
20     provideAdvLocationResponse          ProvideAdvLocationResponseResp         OPTIONAL,
21     provideAdvSystemParametersInformation ProvideAdvSystemParametersInformationResp
22                                         OPTIONAL,
23     provideMS-respPrivateExtension      ProvideMS-respPrivateExtension         OPTIONAL,
24     ...
25 }
26
27 BS-RequestElementsV1 ::= SEQUENCE {
28     reqMSLocationResponse               ReqMSLocationResponse                 OPTIONAL,
29     reqMSInformation                    ReqMSInformation                     OPTIONAL,
30     reqAutonomousMeasWeightingFactor    ReqAutonomousMeasWeightingFactor      OPTIONAL,
31     reqPseudorangeMeasurements          ReqPseudorangeMeasurements            OPTIONAL,
32     reqPilotPhaseMeasurement            ReqPilotPhaseMeasurement              OPTIONAL,
33     reqTimeOffsetMeasurement            ReqTimeOffsetMeasurement              OPTIONAL,
34     reqCancellation                     ReqCancellation                       OPTIONAL,
35     ...
36 }
37
38 BS-RequestElementsV2 ::= SEQUENCE {
39     reqExtendedMSLocationResponse       ReqExtendedMSLocationResponse         OPTIONAL,
40     reqExtendedMSInformation            ReqExtendedMSInformation              OPTIONAL,
41     reqAutonomousMeasWeightingFactv1    ReqAutonomousMeasWeightingFactv1     OPTIONAL,
42     reqGeneralLocationMeasurement       ReqGeneralLocationMeasurement         OPTIONAL,
43     reqExtendedCancellation              ReqExtendedCancellation               OPTIONAL,
44     reqGPSCoarseLocationResponse        ReqGPSCoarseLocationResponse         OPTIONAL,
45     reqMessagingDelayMeasurement        ReqMessagingDelayMeasurement          OPTIONAL,
46     reqBearingMeasurement                ReqBearingMeasurement                OPTIONAL,
47     reqServingSystemInformation         ReqServingSystemInformation           OPTIONAL,
48     ...
49 }
50
51 BS-RequestElementsV3 ::= SEQUENCE {
52     reqAdvancedMSInformation            ReqAdvancedMSInformation              OPTIONAL,
53     reqUMBPIlotTimeOffsetMeasurement    ReqUMBPIlotTimeOffsetMeasurement     OPTIONAL,
54     reqHRPDPilotPhaseMeasurement        ReqHRPDPilotPhaseMeasurement         OPTIONAL,

```

1	reqGNSSPseudorangeMeasurement	ReqGNSSPseudorangeMeasurement	OPTIONAL,
2	reqAdvancedCancellation	ReqAdvancedCancellation	OPTIONAL,
3	reqAdvancedMSLocationResponse	ReqAdvancedMSLocationResponse	OPTIONAL,
4	reqAdvSystemParametersInformation	ReqAdvSystemParametersInformation	OPTIONAL,
5	reqBS-reqPrivateExtension	ReqBS-reqPrivateExtension	OPTIONAL,
6	...		
7	}		
8			
9	BS-ResponseElementsV1 ::= SEQUENCE {		
10	provideBSLocationResponse	ProvideBSLocationResponseResp	OPTIONAL,
11	provideBSCapabilities	ProvideBSCapabilitiesResp	OPTIONAL,
12	provideBaseStationAlmanac	ProvideBaseStationAlmanacResp	OPTIONAL,
13	provideGPSAcquisitionAssistance	ProvideGPSAcquisitionAssistanceResp	OPTIONAL,
14	provideGPS SensitivityAssistance	ProvideGPS SensitivityAssistanceResp	OPTIONAL,
15	provideGPSLocAssist-SphericalCoord	ProvideGPSLocAssist-SphericalCoordResp	OPTIONAL,
16	provideGPSLocAssist-CartesianCoord	ProvideGPSLocAssist-CartesianCoordResp	OPTIONAL,
17	provideGPSAlmanac	ProvideGPSAlmanacResp	OPTIONAL,
18	provideGPSEphemeris	ProvideGPSEphemerisResp	OPTIONAL,
19	provideGPSNavigationMessageBits	ProvideGPSNavigationMessageBitsResp	OPTIONAL,
20	provideGPSAlmanacCorrection	ProvideGPSAlmanacCorrectionResp	OPTIONAL,
21	provideGPSSatelliteHealthInfo	ProvideGPSSatelliteHealthInfoResp	OPTIONAL,
22	...		
23	}		
24			
25	BS-ResponseElementsV2 ::= SEQUENCE {		
26	provideExtBSLocationResponse	ProvideExtBSLocationResponseResp	OPTIONAL,
27	provideExtBSCapabilities	ProvideExtBSCapabilitiesResp	OPTIONAL,
28	provideEnhancedBaseStationAlmanac	ProvideEnhancedBaseStationAlmanacResp	OPTIONAL,
29	provideGeneralAcquisitionAssistance	ProvideGeneralAcquisitionAssistanceResp	OPTIONAL,
30	provideExtGPS SensitivityAssistance	ProvideExtGPS SensitivityAssistanceResp	OPTIONAL,
31	provideGPSAlmanacv1	ProvideGPSAlmanacv1Resp	OPTIONAL,
32	provideExtGPSEphemeris	ProvideExtGPSEphemerisResp	OPTIONAL,
33	provideExtGPSNavigationMessageBits	ProvideExtGPSNavigationMessageBitsResp	OPTIONAL,
34	provideExtGPSAlmanacCorrections	ProvideExtGPSAlmanacCorrectionsResp	OPTIONAL,
35	provideExtGPSSatelliteHealthInfo	ProvideExtGPSSatelliteHealthInfoResp	OPTIONAL,
36	provideGPS CoarseLocationAssistance	ProvideGPS CoarseLocationAssistanceResp	OPTIONAL,
37	provideGPS CoarseAcquisitionAssist	ProvideGPS CoarseAcquisitionAssistResp	OPTIONAL,
38	provideDGPSAssistance	ProvideDGPSAssistanceResp	OPTIONAL,
39	provideGPSRealTimeIntegrityInfo	ProvideGPSRealTimeIntegrityInfoResp	OPTIONAL,
40	...		
41	}		
42			
43	BS-ResponseElementsV3 ::= SEQUENCE {		
44	provideAdvancedBSCapabilities	ProvideAdvancedBSCapabilitiesResp	OPTIONAL,
45	provideAdvancedUMBBBaseStationAlmanac	ProvideAdvancedUMBBBaseStationAlmanacResp	OPTIONAL,
46	provideAdvancedHRPDBaseStationAlmanac	ProvideAdvancedHRPDBaseStationAlmanacResp	OPTIONAL,
47	...		
48	provideAdvancedlXBaseStationAlmanac	ProvideAdvancedlXBaseStationAlmanacResp	OPTIONAL,
49	provideGNSSAcquisitionAssistance	ProvideGNSSAcquisitionAssistanceResp	OPTIONAL,
50	provideGNSS SensitivityAssistance	ProvideGNSS SensitivityAssistanceResp	OPTIONAL,
51	provideModernizedGPSEphAndClockCorr	ProvideModernizedGPSEphAndClockCorrResp	OPTIONAL,
52	provideQZSSEphemerisAndClockCorr	ProvideQZSSEphemerisAndClockCorrResp	OPTIONAL,
53	provideGLONASSEphemerisAndClockCorr	ProvideGLONASSEphemerisAndClockCorrResp	OPTIONAL,
54	provideGalileoEphemerisAndClockCorr	ProvideGalileoEphemerisAndClockCorrResp	OPTIONAL,

```

1     provideGEONavMessageParameters           ProvideGEONavMessageParametersResp     OPTIONAL,
2     provideModernizedGPSAlmanac              ProvideModernizedGPSAlmanacResp         OPTIONAL,
3     provideQZSSAlmanac                      ProvideQZSSAlmanacResp                 OPTIONAL,
4     provideGLONASSAlmanac                   ProvideGLONASSAlmanacResp              OPTIONAL,
5     provideGalileoAlmanac                   ProvideGalileoAlmanacResp              OPTIONAL,
6     provideGEOAlmanacMessageParameters      ProvideGEOAlmanacMessageParametersResp OPTIONAL,
7     provideGPSIonosphericModel              ProvideGPSIonosphericModelResp         OPTIONAL,
8     provideGalileoIonosphericModel          ProvideGalileoIonosphericModelResp     OPTIONAL,
9     provideQZSSIonosphericModel            ProvideQZSSIonosphericModelResp       OPTIONAL,
10    provideGNSS-GNSSTimeOffset              ProvideGNSS-GNSSTimeOffsetResp        OPTIONAL,
11    provideGPSUTCModel                       ProvideGPSUTCModelResp                 OPTIONAL,
12    provideAdvancedGNSSSatHealthInfo        ProvideAdvancedGNSSSatHealthInfoResp  OPTIONAL,
13    provideAdvancedLocationResponse         ProvideAdvancedLocationResponseResp   OPTIONAL,
14    provideDGNSSAssistance                   ProvideDGNSSAssistanceResp            OPTIONAL,
15    provideBS-respPrivateExtension          ProvideBS-respPrivateExtension         OPTIONAL,
16    ...
17 }
18
19 END
20

```

2.3 Response Element Structures

```

21
22
23
24 ResponseMessages DEFINITIONS AUTOMATIC TAGS ::=
25
26 BEGIN
27
28 IMPORTS
29
30     ReqBSLocationResponse,
31     ReqBSCapabilities,
32     ReqBaseStationAlmanac,
33     ReqGPSAcquisitionAssistance,
34     ReqGPSSensitivityAssistance,
35     ReqGPSLocationAssistance,
36     ReqGPSAlmanac,
37     ReqGPSEphemeris,
38     ReqGPSNavigationMessageBits,
39     ReqGPSAlmanacCorrection,
40     ReqGPSSatelliteHealthInfo,
41     ReqExtendedBSLocationResponse,
42     ReqExtendedBSCapabilities,
43     ReqEnhancedBaseStationAlmanac,
44     ReqGeneralAcquisitionAssistance,
45     ReqExtendedGPSSensitivityAssist,
46     ReqGPSAlmanacv1,
47     ReqExtendedGPSEphemeris,
48     ReqExtendedGPSNavMessageBits,
49     ReqExtendedGPSAlmanacCorrection,
50     ReqExtGPSSatelliteHealthInfo,
51     ReqGPSCoarseLocationAssistance,
52     ReqGPSCoarseAcquisitionAssistance,

```

1 ReqDGPSAssistance,
2 ReqGPSRealTimeIntegrityInfo,
3 ReqAdvancedBSCapabilities,
4 ReqAdvancedUMBBaseStationAlmanac,
5 ReqAdvancedHRPDBaseStationAlmanac,
6 ReqAdvancedLXBaseStationAlmanac,
7 ReqGNSSAcquisitionAssistance,
8 ReqGNSSSensitivityAssistance,
9 ReqModernizedGPSEphAndClockCorr,
10 ReqQZSSEphemerisAndClockCorr,
11 ReqGLONASSEphemerisAndClockCorr,
12 ReqGalileoEphemerisAndClockCorr,
13 ReqGEONavMessageParameters,
14 ReqModernizedGPSAlmanac,
15 ReqQZSSAlmanac,
16 ReqGLONASSAlmanac,
17 ReqGalileoAlmanac,
18 ReqGEOAlmanacMessageParameters,
19 ReqGPSIonosphericModel,
20 ReqGalileoIonosphericModel,
21 ReqQZSSIonosphericModel,
22 ReqGNSS-GNSSTimeOffset,
23 ReqGPSUTCModel,
24 ReqAdvancedGNSSSatHealthInfo,
25 ReqAdvancedBSLocationResponse,
26 ReqDGNSSAssistance,
27 ReqMS-reqPrivateExtension,
28 ReqMSLocationResponse,
29 ReqMSInformation,
30 ReqAutonomousMeasWeightingFactor,
31 ReqPseudorangeMeasurements,
32 ReqPilotPhaseMeasurement,
33 ReqTimeOffsetMeasurement,
34 ReqCancellation,
35 ReqExtendedMSLocationResponse,
36 ReqExtendedMSInformation,
37 ReqAutonomousMeasWeightingFactv1,
38 ReqGeneralLocationMeasurement,
39 ReqExtendedCancellation,
40 ReqGPSCoarseLocationResponse,
41 ReqMessagingDelayMeasurement,
42 ReqBearingMeasurement,
43 ReqServingSystemInformation,
44 ReqAdvancedMSInformation,
45 ReqUMBPIlotTimeOffsetMeasurement,
46 ReqHRPDPilotPhaseMeasurement,
47 ReqGNSSPseudorangeMeasurement,
48 ReqAdvancedCancellation,
49 ReqAdvancedMSLocationResponse,
50 ReqAdvSystemParametersInformation,
51 ReqBS-reqPrivateExtension,
52 RejectMS,
53 ProvideMSLocationResponse,
54 ProvideMSInformation,

1 ProvideAutoMeasWeightingFactors,
2 ProvidePseudorangeMeasurement,
3 ProvidePilotPhaseMeasurement,
4 ProvideTimeOffsetMeasurement,
5 ProvideCancellationAck,
6 ExtendedRejectMS,
7 ProvideExtMSLocationResponse,
8 ProvideExtMSInformation,
9 ProvideAutoMeasWeightingFactorsv1,
10 ProvideGeneralLocationMeasurement,
11 ProvideExtCancellationAck,
12 ProvideGPSCoarseLocationResponse,
13 ProvideMessagingDelayMeasurement,
14 ProvideBearingMeasurement,
15 ProvideServingSystemInformation,
16 ProvideAdvancedMSInformation,
17 ProvideUMBPIlotTimeOffsetMeasurement,
18 ProvideHRPDPilotPhaseMeasurement,
19 ProvideGNSSPseudorangeMeasurement,
20 ProvideAdvCancellationAck,
21 AdvancedRejectMS,
22 ProvideAdvLocationResponse,
23 ProvideAdvSystemParametersInformation,
24 ProvideMS-respPrivateExtension,
25 RejectBS,
26 ProvideBSLocationResponse,
27 ProvideBSCapabilities,
28 ProvideBaseStationAlmanac,
29 ProvideGPSAcquisitionAssistance,
30 ProvideGPSensitivityAssistance,
31 ProvideGPSLocAssist-SphericalCoord,
32 ProvideGPSLocAssist-CartesianCoord,
33 ProvideGPSAlmanac,
34 ProvideGPSEphemeris,
35 ProvideGPSNavigationMessageBits,
36 ProvideGPSAlmanacCorrection,
37 ProvideGPSSatelliteHealthInfo,
38 ExtendedRejectBS,
39 ProvideExtBSLocationResponse,
40 ProvideExtBSCapabilities,
41 ProvideEnhancedBaseStationAlmanac,
42 ProvideGeneralAcquisitionAssistance,
43 ProvideExtGPSensitivityAssistance,
44 ProvideGPSAlmanacv1,
45 ProvideExtGPSEphemeris,
46 ProvideExtGPSNavigationMessageBits,
47 ProvideExtGPSAlmanacCorrections,
48 ProvideExtGPSSatelliteHealthInfo,
49 ProvideGPSCoarseLocationAssistance,
50 ProvideGPSCoarseAcquisitionAssist,
51 ProvideDGPSAssistance,
52 ProvideGPSRealTimeIntegrityInfo,
53 ProvideAdvancedBSCapabilities,
54 ProvideAdvancedUMBBaseStationAlmanac,

```

1   ProvideAdvancedHRPDBaseStationAlmanac,
2   ProvideAdvancedlXBaseStationAlmanac,
3   ProvideGNSSAcquisitionAssistance,
4   ProvideGNSSSensitivityAssistance,
5   ProvideModernizedGPSEphAndClockCorr,
6   ProvideQZSSEphemerisAndClockCorr,
7   ProvideGLONASSEphemerisAndClockCorr,
8   ProvideGalileoEphemerisAndClockCorr,
9   ProvideGEONavMessageParameters,
10  ProvideModernizedGPSAlmanac,
11  ProvideQZSSAlmanac,
12  ProvideGLONASSAlmanac,
13  ProvideGalileoAlmanac,
14  ProvideGEOAlmanacMessageParameters,
15  ProvideGPSIonosphericModel,
16  ProvideGalileoIonosphericModel,
17  ProvideQZSSIonosphericModel,
18  ProvideGNSS-GNSSTimeOffset,
19  ProvideGPSUTCModel,
20  ProvideAdvancedGNSSSatHealthInfo,
21  AdvancedRejectBS,
22  ProvideDGNSSAssistance,
23  ProvideBS-respPrivateExtension
24
25  FROM
26    ReqRespElements
27    ;
28
29  -- The following are the structures for responses including the unsolicited response
30  indicator and reject elements
31
32  -- V1 mobile responses
33
34  ProvideMSLocationResponseResp ::= SEQUENCE {
35    unsolicitedResponseIndicator    BOOLEAN,
36    response                        CHOICE {
37      reject                        RejectMS,
38      provideMSLocationResponse    ProvideMSLocationResponse,
39      ...
40    },
41    ...
42  }
43
44  ProvideMSInformationResp ::= SEQUENCE {
45    unsolicitedResponseIndicator    BOOLEAN,
46    response                        ProvideMSInformation,
47    ...
48  }
49
50  ProvideAutoMeasWeightingFactorsResp ::= SEQUENCE {
51    unsolicitedResponseIndicator    BOOLEAN,
52    response                        CHOICE {
53      reject                        RejectMS,
54      provideAutoMeasWeightingFactors ProvideAutoMeasWeightingFactors,

```

```

1      ...
2    },
3    ...
4  }
5
6  ProvidePseudorangeMeasurementResp ::= SEQUENCE {
7    unsolicitedResponseIndicator    BOOLEAN,
8    response                        CHOICE {
9      reject                        RejectMS,
10     providePseudorangeMeasurement ProvidePseudorangeMeasurement,
11     ...
12   },
13   ...
14 }
15
16 ProvidePilotPhaseMeasurementResp ::= SEQUENCE {
17   unsolicitedResponseIndicator    BOOLEAN,
18   response                        CHOICE {
19     reject                        RejectMS,
20     providePilotPhaseMeasurement ProvidePilotPhaseMeasurement,
21     ...
22   },
23   ...
24 }
25
26 ProvideTimeOffsetMeasurementResp ::= SEQUENCE {
27   unsolicitedResponseIndicator    BOOLEAN,
28   response                        CHOICE {
29     reject                        RejectMS,
30     provideTimeOffsetMeasurement ProvideTimeOffsetMeasurement,
31     ...
32   },
33   ...
34 }
35
36 -- V2 mobile responses
37
38 ProvideExtMSLocationResponseResp ::= SEQUENCE {
39   unsolicitedResponseIndicator    BOOLEAN,
40   response                        CHOICE {
41     reject                        ExtendedRejectMS,
42     provideExtMSLocationResponse ProvideExtMSLocationResponse,
43     ...
44   },
45   ...
46 }
47
48 ProvideExtMSInformationResp ::= SEQUENCE {
49   unsolicitedResponseIndicator    BOOLEAN,
50   provideExtMSInformation         ProvideExtMSInformation,
51   ...
52 }
53
54 ProvideAutoMeasWeightingFactorsv1Resp ::= SEQUENCE {

```

```

1      unsolicitedResponseIndicator          BOOLEAN,
2      response                            CHOICE {
3          reject                          ExtendedRejectMS,
4          provideAutoMeasWeightingFactorsv1 ProvideAutoMeasWeightingFactorsv1,
5          ...
6      },
7      ...
8  }
9
10 ProvideGeneralLocationMeasurementResp ::= SEQUENCE {
11     unsolicitedResponseIndicator          BOOLEAN,
12     response                            CHOICE {
13         reject                          ExtendedRejectMS,
14         provideGeneralLocationMeasurement ProvideGeneralLocationMeasurement,
15         ...
16     },
17     ...
18 }
19
20 ProvideGPSCoarseLocationResponseResp ::= SEQUENCE {
21     unsolicitedResponseIndicator          BOOLEAN,
22     response                            CHOICE {
23         reject                          ExtendedRejectMS,
24         provideGPSCoarseLocationResponse ProvideGPSCoarseLocationResponse,
25         ...
26     },
27     ...
28 }
29
30 ProvideMessagingDelayMeasurementResp ::= SEQUENCE {
31     unsolicitedResponseIndicator          BOOLEAN,
32     response                            CHOICE {
33         reject                          ExtendedRejectMS,
34         provideMessagingDelayMeasurement ProvideMessagingDelayMeasurement,
35         ...
36     },
37     ...
38 }
39
40 ProvideBearingMeasurementResp ::= SEQUENCE {
41     unsolicitedResponseIndicator          BOOLEAN,
42     response                            CHOICE {
43         reject                          ExtendedRejectMS,
44         provideBearingMeasurement       ProvideBearingMeasurement,
45         ...
46     },
47     ...
48 }
49
50 ProvideServingSystemInformationResp ::= SEQUENCE {
51     unsolicitedResponseIndicator          BOOLEAN,
52     response                            CHOICE {
53         reject                          ExtendedRejectMS,
54         provideServingSystemInformation ProvideServingSystemInformation,

```

C.R0022-B v1.0

```

1      ...
2    },
3    ...
4  }
5
6  -- V3 mobile responses
7
8  ProvideAdvancedMSInformationResp ::= SEQUENCE {
9    unsolicitedResponseIndicator      BOOLEAN,
10   provideAdvancedMSInformation      ProvideAdvancedMSInformation,
11   ...
12 }
13
14 ProvideUMBPIlotTimeOffsetMeasurementResp ::= SEQUENCE {
15   unsolicitedResponseIndicator      BOOLEAN,
16   response                          CHOICE {
17     reject                          AdvancedRejectMS,
18     provideUMBPIlotTimeOffsetMeasurement ProvideUMBPIlotTimeOffsetMeasurement,
19     ...
20   },
21   ...
22 }
23
24 ProvideHRPDPilotPhaseMeasurementResp ::= SEQUENCE {
25   unsolicitedResponseIndicator      BOOLEAN,
26   response                          CHOICE {
27     reject                          AdvancedRejectMS,
28     provideHRPDPilotPhaseMeasurement ProvideHRPDPilotPhaseMeasurement,
29     ...
30   },
31   ...
32 }
33
34 ProvideGNSSPseudorangeMeasurementResp ::= SEQUENCE {
35   unsolicitedResponseIndicator      BOOLEAN,
36   response                          CHOICE {
37     reject                          AdvancedRejectMS,
38     provideGNSSPseudorangeMeasurement ProvideGNSSPseudorangeMeasurement,
39     ...
40   },
41   ...
42 }
43
44 ProvideAdvLocationResponseResp ::= SEQUENCE {
45   unsolicitedResponseIndicator      BOOLEAN,
46   response                          CHOICE {
47     reject                          AdvancedRejectMS,
48     provideAdvLocationResponse      ProvideAdvLocationResponse,
49     ...
50   },
51   ...
52 }
53
54 ProvideAdvSystemParametersInformationResp ::= SEQUENCE {

```

```

1      unsolicitedResponseIndicator          BOOLEAN,
2      response                             CHOICE {
3          reject                            AdvancedRejectMS,
4          provideAdvSystemParametersInformation  ProvideAdvSystemParametersInformation,
5          ...
6      },
7      ...
8  }
9
10 -- V1 base station responses
11
12 ProvideBSLocationResponseResp ::= SEQUENCE {
13     unsolicitedResponseIndicator          BOOLEAN,
14     response                             CHOICE {
15         reject                            RejectBS,
16         provideBSLocationResponse        ProvideBSLocationResponse,
17         ...
18     },
19     ...
20 }
21
22 ProvideBSCapabilitiesResp ::= SEQUENCE {
23     unsolicitedResponseIndicator          BOOLEAN,
24     provideBSCapabilities                ProvideBSCapabilities,
25     ...
26 }
27
28 ProvideBaseStationAlmanacResp ::= SEQUENCE {
29     unsolicitedResponseIndicator          BOOLEAN,
30     response                             CHOICE {
31         reject                            RejectBS,
32         provideBaseStationAlmanac        ProvideBaseStationAlmanac,
33         ...
34     },
35     ...
36 }
37
38 ProvideGPSAcquisitionAssistanceResp ::= SEQUENCE {
39     unsolicitedResponseIndicator          BOOLEAN,
40     response                             CHOICE {
41         reject                            RejectBS,
42         provideGPSAcquisitionAssistance  ProvideGPSAcquisitionAssistance,
43         ...
44     },
45     ...
46 }
47
48 ProvideGPSSensitivityAssistanceResp ::= SEQUENCE {
49     unsolicitedResponseIndicator          BOOLEAN,
50     response                             CHOICE {
51         reject                            RejectBS,
52         provideGPSSensitivityAssistance  ProvideGPSSensitivityAssistance,
53         ...
54     },

```

```

1     ...
2   }
3
4   ProvideGPSLocAssist-SphericalCoordResp ::= SEQUENCE {
5     unsolicitedResponseIndicator    BOOLEAN,
6     response                        CHOICE {
7       reject                        RejectBS,
8       provideGPSLocAssist-SphericalCoord ProvideGPSLocAssist-SphericalCoord,
9       ...
10    },
11    ...
12  }
13
14  ProvideGPSLocAssist-CartesianCoordResp ::= SEQUENCE {
15    unsolicitedResponseIndicator    BOOLEAN,
16    response                        CHOICE {
17      reject                        RejectBS,
18      provideGPSLocAssist-CartesianCoord ProvideGPSLocAssist-CartesianCoord,
19      ...
20    },
21    ...
22  }
23
24  ProvideGPSAlmanacResp ::= SEQUENCE {
25    unsolicitedResponseIndicator    BOOLEAN,
26    response                        CHOICE {
27      reject                        RejectBS,
28      provideGPSAlmanac            ProvideGPSAlmanac,
29      ...
30    },
31    ...
32  }
33
34  ProvideGPSEphemerisResp ::= SEQUENCE {
35    unsolicitedResponseIndicator    BOOLEAN,
36    response                        CHOICE {
37      reject                        RejectBS,
38      provideGPSEphemeris          ProvideGPSEphemeris,
39      ...
40    },
41    ...
42  }
43
44  ProvideGPSNavigationMessageBitsResp ::= SEQUENCE {
45    unsolicitedResponseIndicator    BOOLEAN,
46    response                        CHOICE {
47      reject                        RejectBS,
48      provideGPSNavigationMessageBits ProvideGPSNavigationMessageBits,
49      ...
50    },
51    ...
52  }
53
54  ProvideGPSAlmanacCorrectionResp ::= SEQUENCE {

```

```

1      unsolicitedResponseIndicator      BOOLEAN,
2      response                          CHOICE {
3          reject                        RejectBS,
4          provideGPSAlmanacCorrection   ProvideGPSAlmanacCorrection,
5          ...
6      },
7      ...
8  }
9
10 ProvideGPSSatelliteHealthInfoResp ::= SEQUENCE {
11     unsolicitedResponseIndicator      BOOLEAN,
12     response                          CHOICE {
13         reject                        RejectBS,
14         provideGPSSatelliteHealthInfo ProvideGPSSatelliteHealthInfo,
15         ...
16     },
17     ...
18 }
19
20 -- V2 base station responses
21
22 ProvideExtBSLocationResponseResp ::= SEQUENCE {
23     unsolicitedResponseIndicator      BOOLEAN,
24     response                          CHOICE {
25         reject                        ExtendedRejectBS,
26         provideExtBSLocationResponse ProvideExtBSLocationResponse,
27         ...
28     },
29     ...
30 }
31
32 ProvideExtBSCapabilitiesResp ::= SEQUENCE {
33     unsolicitedResponseIndicator      BOOLEAN,
34     provideExtBSCapabilities         ProvideExtBSCapabilities,
35     ...
36 }
37
38 ProvideEnhancedBaseStationAlmanacResp ::= SEQUENCE {
39     unsolicitedResponseIndicator      BOOLEAN,
40     response                          CHOICE {
41         reject                        ExtendedRejectBS,
42         provideEnhancedBaseStationAlmanac ProvideEnhancedBaseStationAlmanac,
43         ...
44     },
45     ...
46 }
47
48 ProvideGeneralAcquisitionAssistanceResp ::= SEQUENCE {
49     unsolicitedResponseIndicator      BOOLEAN,
50     response                          CHOICE {
51         reject                        ExtendedRejectBS,
52         provideGeneralAcquisitionAssistance ProvideGeneralAcquisitionAssistance,
53         ...
54     },

```

C.R0022-B v1.0

```

1     ...
2   }
3
4   ProvideExtGPSSensitivityAssistanceResp ::= SEQUENCE {
5     unsolicitedResponseIndicator    BOOLEAN,
6     response                        CHOICE {
7       reject                        ExtendedRejectBS,
8       provideExtGPSSensitivityAssistance ProvideExtGPSSensitivityAssistance,
9       ...
10    },
11    ...
12  }
13
14  ProvideGPSAlmanacv1Resp ::= SEQUENCE {
15    unsolicitedResponseIndicator    BOOLEAN,
16    response                        CHOICE {
17      reject                        ExtendedRejectBS,
18      provideGPSAlmanacv1          ProvideGPSAlmanacv1,
19      ...
20    },
21    ...
22  }
23
24  ProvideExtGPSEphemerisResp ::= SEQUENCE {
25    unsolicitedResponseIndicator    BOOLEAN,
26    response                        CHOICE {
27      reject                        ExtendedRejectBS,
28      provideExtGPSEphemeris       ProvideExtGPSEphemeris,
29      ...
30    },
31    ...
32  }
33
34  ProvideExtGPSNavigationMessageBitsResp ::= SEQUENCE {
35    unsolicitedResponseIndicator    BOOLEAN,
36    response                        CHOICE {
37      reject                        ExtendedRejectBS,
38      provideExtGPSNavigationMessageBits ProvideExtGPSNavigationMessageBits,
39      ...
40    },
41    ...
42  }
43
44  ProvideExtGPSAlmanacCorrectionsResp ::= SEQUENCE {
45    unsolicitedResponseIndicator    BOOLEAN,
46    response                        CHOICE {
47      reject                        ExtendedRejectBS,
48      provideExtGPSAlmanacCorrections ProvideExtGPSAlmanacCorrections,
49      ...
50    },
51    ...
52  }
53
54  ProvideExtGPSSatelliteHealthInfoResp ::= SEQUENCE {

```

```

1      unsolicitedResponseIndicator          BOOLEAN,
2      response                            CHOICE {
3          reject                          ExtendedRejectBS,
4          provideExtGPSSatelliteHealthInfo ProvideExtGPSSatelliteHealthInfo,
5          ...
6      },
7      ...
8  }
9
10 ProvideGPSCoarseLocationAssistanceResp ::= SEQUENCE {
11     unsolicitedResponseIndicator          BOOLEAN,
12     response                            CHOICE {
13         reject                          ExtendedRejectBS,
14         provideGPSCoarseLocationAssistance ProvideGPSCoarseLocationAssistance
15     },
16     ...
17 }
18
19
20 ProvideGPSCoarseAcquisitionAssistResp ::= SEQUENCE {
21     unsolicitedResponseIndicator          BOOLEAN,
22     response                            CHOICE {
23         reject                          ExtendedRejectBS,
24         provideGPSCoarseAcquisitionAssist ProvideGPSCoarseAcquisitionAssist,
25     },
26     ...
27 }
28
29
30 ProvideDGPSAssistanceResp ::= SEQUENCE {
31     unsolicitedResponseIndicator          BOOLEAN,
32     response                            CHOICE {
33         reject                          ExtendedRejectBS,
34         provideDGPSAssistance           ProvideDGPSAssistance,
35     },
36     ...
37 }
38
39
40 ProvideGPSRealTimeIntegrityInfoResp ::= SEQUENCE {
41     unsolicitedResponseIndicator          BOOLEAN,
42     response                            CHOICE {
43         reject                          ExtendedRejectBS,
44         provideGPSRealTimeIntegrityInfo ProvideGPSRealTimeIntegrityInfo,
45     },
46     ...
47 }
48
49
50 -- V3 base station responses
51
52 ProvideAdvancedBSCapabilitiesResp ::= SEQUENCE {
53     unsolicitedResponseIndicator          BOOLEAN,
54     provideAdvancedBSCapabilities         ProvideAdvancedBSCapabilities,

```

```

1     ...
2   }
3
4   ProvideAdvancedUMBBaseStationAlmanacResp ::= SEQUENCE {
5     unsolicitedResponseIndicator    BOOLEAN,
6     response                        CHOICE {
7       reject                        AdvancedRejectBS,
8       provideAdvancedUMBBaseStationAlmanac ProvideAdvancedUMBBaseStationAlmanac,
9       ...
10    },
11    ...
12  }
13
14  ProvideAdvancedHRPDBaseStationAlmanacResp ::= SEQUENCE {
15    unsolicitedResponseIndicator    BOOLEAN,
16    response                        CHOICE {
17      reject                        AdvancedRejectBS,
18      provideAdvancedHRPDBaseStationAlmanac ProvideAdvancedHRPDBaseStationAlmanac,
19      ...
20    },
21    ...
22  }
23
24  ProvideAdvanced1XBaseStationAlmanacResp ::= SEQUENCE {
25    unsolicitedResponseIndicator    BOOLEAN,
26    response                        CHOICE {
27      reject                        AdvancedRejectBS,
28      provideAdvanced1XBaseStationAlmanac ProvideAdvanced1XBaseStationAlmanac,
29      ...
30    },
31    ...
32  }
33
34  ProvideGNSSAcquisitionAssistanceResp ::= SEQUENCE {
35    unsolicitedResponseIndicator    BOOLEAN,
36    response                        CHOICE {
37      reject                        AdvancedRejectBS,
38      provideGNSSAcquisitionAssistance ProvideGNSSAcquisitionAssistance,
39      ...
40    },
41    ...
42  }
43
44  ProvideGNSSSensitivityAssistanceResp ::= SEQUENCE {
45    unsolicitedResponseIndicator    BOOLEAN,
46    response                        CHOICE {
47      reject                        AdvancedRejectBS,
48      provideGNSSSensitivityAssistance ProvideGNSSSensitivityAssistance,
49      ...
50    },
51    ...
52  }
53
54  ProvideModernizedGPSEphAndClockCorrResp ::= SEQUENCE {

```

```

1      unsolicitedResponseIndicator          BOOLEAN,
2      response                             CHOICE {
3          reject                            AdvancedRejectBS,
4          provideModernizedGPSEphAndClockCorr  ProvideModernizedGPSEphAndClockCorr,
5          ...
6      },
7      ...
8  }
9
10 ProvideQZSSEphemerisAndClockCorrResp ::= SEQUENCE {
11     unsolicitedResponseIndicator          BOOLEAN,
12     response                             CHOICE {
13         reject                            AdvancedRejectBS,
14         provideQZSSEphemerisAndClockCorr  ProvideQZSSEphemerisAndClockCorr,
15         ...
16     },
17     ...
18 }
19
20 ProvideGLONASSEphemerisAndClockCorrResp ::= SEQUENCE {
21     unsolicitedResponseIndicator          BOOLEAN,
22     response                             CHOICE {
23         reject                            AdvancedRejectBS,
24         provideGLONASSEphemerisAndClockCorr  ProvideGLONASSEphemerisAndClockCorr,
25         ...
26     },
27     ...
28 }
29
30 ProvideGalileoEphemerisAndClockCorrResp ::= SEQUENCE {
31     unsolicitedResponseIndicator          BOOLEAN,
32     response                             CHOICE {
33         reject                            AdvancedRejectBS,
34         provideGalileoEphemerisAndClockCorr  ProvideGalileoEphemerisAndClockCorr,
35         ...
36     },
37     ...
38 }
39
40 ProvideGEONavMessageParametersResp ::= SEQUENCE {
41     unsolicitedResponseIndicator          BOOLEAN,
42     response                             CHOICE {
43         reject                            AdvancedRejectBS,
44         provideGEONavMessageParameters      ProvideGEONavMessageParameters,
45         ...
46     },
47     ...
48 }
49
50 ProvideModernizedGPSAlmanacResp ::= SEQUENCE {
51     unsolicitedResponseIndicator          BOOLEAN,
52     response                             CHOICE {
53         reject                            AdvancedRejectBS,
54         provideModernizedGPSAlmanac         ProvideModernizedGPSAlmanac,

```

```

1      ...
2    },
3    ...
4  }
5
6  ProvideQZSSAlmanacResp ::= SEQUENCE {
7    unsolicitedResponseIndicator    BOOLEAN,
8    response                        CHOICE {
9      reject                        AdvancedRejectBS,
10     provideQZSSAlmanac            ProvideQZSSAlmanac,
11     ...
12   },
13   ...
14 }
15
16 ProvideGLONASSAlmanacResp ::= SEQUENCE {
17   unsolicitedResponseIndicator    BOOLEAN,
18   response                        CHOICE {
19     reject                        AdvancedRejectBS,
20     provideGLONASSAlmanac        ProvideGLONASSAlmanac,
21     ...
22   },
23   ...
24 }
25
26 ProvideGalileoAlmanacResp ::= SEQUENCE {
27   unsolicitedResponseIndicator    BOOLEAN,
28   response                        CHOICE {
29     reject                        AdvancedRejectBS,
30     provideGalileoAlmanac        ProvideGalileoAlmanac,
31     ...
32   },
33   ...
34 }
35
36 ProvideGEOAlmanacMessageParametersResp ::= SEQUENCE {
37   unsolicitedResponseIndicator    BOOLEAN,
38   response                        CHOICE {
39     reject                        AdvancedRejectBS,
40     provideGEOAlmanacMessageParameters ProvideGEOAlmanacMessageParameters,
41     ...
42   },
43   ...
44 }
45
46 ProvideGPSIonosphericModelResp ::= SEQUENCE {
47   unsolicitedResponseIndicator    BOOLEAN,
48   response                        CHOICE {
49     reject                        AdvancedRejectBS,
50     provideGPSIonosphericModel    ProvideGPSIonosphericModel,
51     ...
52   },
53   ...
54 }

```

```

1
2 ProvideGalileoIonosphericModelResp ::= SEQUENCE {
3     unsolicitedResponseIndicator    BOOLEAN,
4     response                        CHOICE {
5         reject                      AdvancedRejectBS,
6         provideGalileoIonosphericModel ProvideGalileoIonosphericModel,
7         ...
8     },
9     ...
10 }
11
12 ProvideQZSSIonosphericModelResp ::= SEQUENCE {
13     unsolicitedResponseIndicator    BOOLEAN,
14     response                        CHOICE {
15         reject                      AdvancedRejectBS,
16         provideQZSSIonosphericModel ProvideQZSSIonosphericModel,
17         ...
18     },
19     ...
20 }
21
22 ProvideGNSS-GNSSTimeOffsetResp ::= SEQUENCE {
23     unsolicitedResponseIndicator    BOOLEAN,
24     response                        CHOICE {
25         reject                      AdvancedRejectBS,
26         provideGNSS-GNSSTimeOffset ProvideGNSS-GNSSTimeOffset,
27         ...
28     },
29     ...
30 }
31
32 ProvideGPSUTCModelResp ::= SEQUENCE {
33     unsolicitedResponseIndicator    BOOLEAN,
34     response                        CHOICE {
35         reject                      AdvancedRejectBS,
36         provideGPSUTCModel          ProvideGPSUTCModel,
37         ...
38     },
39     ...
40 }
41
42 ProvideAdvancedGNSSSatHealthInfoResp ::= SEQUENCE {
43     unsolicitedResponseIndicator    BOOLEAN,
44     response                        CHOICE {
45         reject                      AdvancedRejectBS,
46         provideAdvancedGNSSSatHealthInfo ProvideAdvancedGNSSSatHealthInfo,
47         ...
48     },
49     ...
50 }
51
52 ProvideAdvancedLocationResponseResp ::= SEQUENCE {
53     unsolicitedResponseIndicator    BOOLEAN,
54     response                        CHOICE {

```

```

1         reject                               AdvancedRejectBS,
2         provideAdvancedLocationResponse      ProvideAdvLocationResponse,
3         ...
4     },
5     ...
6 }
7
8 ProvideDGNSSAssistanceResp ::= SEQUENCE {
9     unsolicitedResponseIndicator            BOOLEAN,
10    response                                CHOICE {
11        reject                               AdvancedRejectBS,
12        provideDGNSSAssistance              ProvideDGNSSAssistance,
13        ...
14    },
15    ...
16 }
17
18 END
19
20

```

2.4 Request and Response Elements

```

21
22
23
24
25 ReqRespElements DEFINITIONS AUTOMATIC TAGS ::=
26
27 BEGIN
28
29 IMPORTS
30
31     AccumDeltaRange,
32     AcqCapability,
33     ActionTime,
34     ActionTimeExt,
35     ActiveSetInfoReq,
36     ActiveSetPilotPNSeqOffset,
37     AddDoppReq,
38     AdditionalDoppler,
39     AddNon-ImmedInfoReq,
40     AddPilotMeas-01,
41     AddPilotMeas-02,
42     AddPilotMeas-03,
43     AddPilotRMSError,
44     AddPilotTimeOffsetInfo,
45     AddNonImmediateInfo,
46     AFLTCapabilityInd,
47     AlmanacCorrections,
48     AlmanacCorrectionsExt,
49     AlmanacDataRecord-GEO,
50     AlmanacDataRecord-GLONASS,
51     AlmanacFormat,
52     AlmanacInformation-01,

```

1 AlmanacInformation-02,
2 Alpha-beta-req,
3 AltitudeAidInfo,
4 AngleFromTrueNorth,
5 AngleMagnitudeHorLocUncert,
6 AngleStandardHorLocUncert,
7 AngleMagnitudeHorVelUncert,
8 AngleStandardHorVelUncert,
9 AntennaAngInfoReq,
10 AntennaAngleInformation-01,
11 AntennaAngleInformation-02,
12 AntennaHeight,
13 AntennaLocation,
14 AntennaRangeInfoReq,
15 AntennaRangeInformation,
16 AntennaRecord,
17 AvailInfoStatus,
18 Az-ElInformation,
19 Az-ElInformationGNSSAcqAssist,
20 AzElReq,
21 AzimuthAndElevation,
22 BandClass,
23 BandClassUMB,
24 BandClassCapInfoReq,
25 BaseStationID,
26 BaseStationID-1X,
27 BaseStationID-HRPD,
28 BearingMeasCap,
29 BearingVertical,
30 BSInfoRequested,
31 BSInformationRecord,
32 BSLatitude,
33 BSLocInfo,
34 BSLocInfoAge,
35 BSLocInfoReq,
36 BSLocInfoSource,
37 BSLocStandardRevNumber,
38 BSLongitude,
39 CancelType,
40 CancelTypeAdv,
41 CancelTypeExt,
42 CarrierPhaseMeasInfo,
43 CarrierPhaseQualInd,
44 CDMASigProtocol,
45 CDMAReferenceTime,
46 CDMASystemTime,
47 CDMATransTimeOffset,
48 CircularUncertainty-01,
49 ChannelNumber,
50 CircularUncertainty-02,
51 CircularUncertainty-03,
52 ClockBiasHalfMcs,
53 ClockBiasInfo,
54 ClockBiasInfoAdv,

C.R0022-B v1.0

1 ClockBiasNs,
2 ClockCorrectionParameterRecord-01,
3 ClockCorrectionParameterRecord-02,
4 ClockCorrectionReq,
5 ClockDriftInformation,
6 ClockDriftLoc,
7 ClockDriftLocExt,
8 ClockInfo,
9 ClockInfoAcqAssist,
10 ClockInfoGNSSAcqAssist,
11 CNAV-CNAV-2-EphemerisDataRecord,
12 CodePeriods,
13 CodePeriodsElapsed,
14 CodePhaseGNSSPseudorange,
15 CodePhaseOrigin,
16 CodePhaseParameter,
17 CodePHparReq,
18 ColorCode,
19 CorrectionForClock,
20 CorrectionForClockExt,
21 CorrectionForXYZ,
22 CorrectionForXYZExt,
23 CorrectionRecord,
24 DataRecord,
25 DataRecordBSAlmanac,
26 DelayInformation,
27 DeltaHeight,
28 DeltaLatitude,
29 DeltaLongitude,
30 DGPSFlag,
31 DigitalModeInd,
32 DoppReq,
33 DoppSearchWinReq,
34 EllipticalUncertainty-01,
35 EllipticalUncertainty-02,
36 EllipticalUncertainty-03,
37 EphemerisAgeTolerance,
38 EphemerisInformation,
39 EphemerisParameterRecord-01,
40 EphemerisParameterRecord-02,
41 EphemerisParameterRecord-03,
42 ErrorAlongAngleHorLocUncert,
43 ErrorAlongAngleHorVelUncert,
44 ErrorPerpToAngleHorLocUncert,
45 ErrorPerpToAngleHorVelUncert,
46 ExtendedBSAlmanacReq,
47 ExtPilotIdInfoReq,
48 FalseAlarmProb-PilotPhase,
49 FalseAlarmProb-Pseudorange,
50 FirstOrderDoppReq,
51 FixType,
52 FixTypeAdv,
53 FixTypeData,
54 FixTypeExt,

1 FixTypeRequested,
2 FrameRecord,
3 FrequencyAssignment,
4 FrequencyAssignmentUMB,
5 FrequencyInfo,
6 FrequencyRecord,
7 FrequencyRecordAdv,
8 FrequencyRecordResp,
9 FrequencyRecordUMB,
10 GlobalInfo-01,
11 GlobalInfo-02,
12 GlobalInfo-03,
13 GlobalInfo-04,
14 GNSS-SA-DataRecord,
15 GNSS-SignalDataRecord,
16 GNSS-SignalRecord,
17 GNSS-SV-HealthDataRecord,
18 GNSSAcqCapability,
19 GNSSFieldsReq,
20 GNSSHealthInfoRequest,
21 GNSSIdBitMask,
22 GNSSIdentifier,
23 GNSSInfoRequest,
24 GNSSInformationRecord,
25 GNSSMeasRequest,
26 GNSSSensitivityInfoRequest,
27 GNSSSatelliteID,
28 GNSSSigIdentifier,
29 GPS-SatelliteInfoRecord,
30 GPSAcqCapability,
31 GPSCapabilityInd,
32 GPSRecCapability,
33 GPSRecCapInfoReq,
34 GPSSatInfoRequested,
35 GPSToTotalWeightRatio,
36 GPSWeekNumber,
37 HDPPeriods,
38 HDPUsed,
39 Height,
40 HeightInfo,
41 HeightInfoAdv,
42 HeightInfoExt,
43 HeightInfoRequested,
44 HorizBearing,
45 HorizBearingUncert,
46 HorizLocUncert,
47 HorizLocUncertCirc,
48 HorizLocUncertConfLevelCirc,
49 HorizLocUncertConfLevel,
50 HorizLocUncertEllipReq,
51 HorizLocUncert-Int,
52 HorizVelMagnitude,
53 HorizVelMagnitudeExt,
54 HorVelocityReq,

C.R0022-B v1.0

1 HorizVelUncert,
2 HorizVelUncertConfCirc,
3 HorizVelUncertConfEllip,
4 HorVelInfo,
5 HorVelUncertEllipReq,
6 ImprovedLocMeasSupported,
7 Integrity-Type-0,
8 Integrity-Type-1,
9 InterSignalCorrectionCNAV,
10 InterSignalCorrectionCNAV-2,
11 InvWeightFactor,
12 IonosphericCorrectionParameter,
13 IssueOfData,
14 L1CHealth,
15 L2C-Mode,
16 Latitude,
17 LocationAge,
18 LocationInformationAcquisitionAssistance,
19 LocationInformationBSAlmanac,
20 LocationUncert,
21 LocRefInfoRequested,
22 LocUncert,
23 Longitude,
24 MaximalNumOfPilots,
25 MaximalNumOfPilotsAdv,
26 MaximalRadius,
27 MaxResponseTime,
28 MaxResponseTimeAdv,
29 MeasurementParameters,
30 MidiAlmanacDataRecord-GPS,
31 MidiAlmanacDataRecord-QZSS,
32 MidiAlmanacInformation-GPS,
33 MidiAlmanacInformation-QZSS,
34 MobileCountryCode,
35 MobileNetworkCode,
36 ModeInd-00,
37 ModeIndAlmanac-00,
38 ModeIndChoice,
39 ModeIndicator,
40 MSBandClassCap,
41 MSCapabilities,
42 MSCapReq,
43 MSCIdentification,
44 MsgSeqNo,
45 MSLocationRevNumber,
46 MSLocStandardRevNumber,
47 MSStatusInfo,
48 MSStatusReq,
49 MSSystemTimeOffset,
50 MSSystemTimeOffsetUMB,
51 MTransTimeOffset,
52 MultipathInd,
53 NAV-AlmanacDataRecord,
54 NAV-AlmanacInformation,

1 NavDataInformation-GPS,
2 NavDataInformation-QZSS,
3 NavDataRecord-Galileo,
4 NavDataRecord-GEO,
5 NavDataRecord-GLONASS,
6 NAVephemerisDataRecord,
7 NavMessageBitDataRecord,
8 NavMessageBitDataRecordExt,
9 NavMessageBits,
10 NavMsgFormat,
11 NavMsgType,
12 NeighborListInfoReq,
13 NeighborPilotPNSeqOffset,
14 NetworkID,
15 NoOfFixes,
16 NoRequestElement,
17 NumReqTranTimeOffsetMeas,
18 OffsetInfo,
19 OffsetMeasPeriodStartRefTime,
20 OffsetMeasRecord,
21 OffsetRefTimeIncr,
22 OffsetReq,
23 OffsetVariation,
24 OneX-HRPD-BSIdentifier,
25 PartNumber04,
26 PartNumber08,
27 PartNumber16,
28 PartNumber32,
29 PartNumber64,
30 Pilot-TX-Type-00-Almanac,
31 Pilot-TX-Type-00-AcquisitionAssistance,
32 Pilot-TX-Type-01-AcquisitionAssistance,
33 Pilot-TX-Type-01-Almanac,
34 PilotAcqThreshold,
35 PilotDetectionSens,
36 PilotDetSensReq,
37 PilotID,
38 PilotIDAge,
39 PilotIdInfoReq,
40 PilotIDInfoExt,
41 PilotIDInformation,
42 PilotIDUMB,
43 PilotInfo,
44 PilotPhase,
45 PilotPhaseCap,
46 PilotPhaseFalseAlarmRange,
47 PilotPhaseInfo-01,
48 PilotPhaseInfo-02,
49 PilotPhaseInfo-03,
50 PilotPhaseInfo-HRPD,
51 PilotPhaseInfo-HRPD-02,
52 PilotPhaseMeas,
53 PilotPhaseMeasErrorInd,
54 PilotPhaseMeasReq,

C.R0022-B v1.0

1 PilotPhasePsDopMeasReq,
2 PilotPhasePseudodoppler,
3 PilotPhaseResDesired,
4 PilotPN,
5 PilotPNSeqOffset,
6 PilotRecord-02,
7 PilotRecord-03,
8 PilotRecord1X,
9 PilotRecordHRPD,
10 PilotRecordUMB,
11 PilotRecord-01,
12 PilotStrength,
13 PilotTimeOffset,
14 PilotTimeOffsetInformation,
15 PitchRollCorrection,
16 PNSequenceOffset,
17 PositionCalcCapability,
18 PositionCalcCapabilityExt,
19 PositionCalcCapabilityAdv,
20 PositionDetEmergencyOnly,
21 PreferredRespQual,
22 PrefRespTime,
23 PRN-NumberSpecificFields,
24 PRNNumber,
25 PRNNumberShort,
26 Pseudodoppler,
27 PseudodopplerRMSError,
28 PseudorangeFalseAlarmRange,
29 PseudorangeFreq,
30 PseudorangeInformation,
31 PseudorangeInformationAdv,
32 PseudorangeInformationExt,
33 PseudorangeMeas,
34 PseudorangeMeasErrorIndAdv,
35 PseudorangeMeasErrorIndExt,
36 PseudorangePredErrorThresh,
37 PseudorangeRMSError,
38 PseudorangeRMSErrorAdv,
39 PseudorangeRMSErrorExt,
40 QualOfServiceReqType,
41 ReceiveTime,
42 ReceiveToTransmitTimeDelay,
43 RecToTransDelayInfoReq,
44 ReducedAlmanacDataRecord-GPS,
45 ReducedAlamancDataRecord-QZSS,
46 ReducedAlmanacInformation-GPS,
47 ReducedAlmanacInformation-QZSS,
48 RefAltitudeCorrection,
49 ReferenceLocation,
50 ReferenceTime,
51 ReferenceTimeAdv,
52 RefLatitudeCorrection,
53 RefLongitudeCorrection,
54 RefTimeAlmanacCorr,

1 RefTimeCorrection,
2 RefTimeDifference,
3 RefTimeSubAlmanac,
4 ReferenceTimeUncertainty,
5 RejectReasonBS,
6 RejectReasonBSAdv,
7 RejectReasonBSExt,
8 RejectReasonMS,
9 RejectReasonMSAdv,
10 RejectReasonMSExt,
11 RejectRequestTypeBS,
12 RejectRequestTypeBSAdv,
13 RejectRequestTypeBSExt,
14 RejectRequestTypeMS,
15 RejectRequestTypeMSAdv,
16 RejectRequestTypeMSExt,
17 RepeaterDetectionCap,
18 RepeaterDetectionStatus,
19 RepeaterInfoReq,
20 RepeaterMeasReq,
21 RepeaterSignalIDNumber,
22 RepeaterType-01,
23 RepeaterType-02,
24 ReqCoordinateType,
25 ReqDataRecordSize,
26 ReqDataRecordSizeGNSSsens,
27 ReqGNSSSigDataRecord,
28 ReqGNSSSignalDataRecord,
29 ReqHorLocUncertCirc,
30 ReqHorLocUncertConfLevel,
31 ReqRefBitNumber,
32 ResponseTime,
33 RetryTime,
34 RollAngle,
35 RMSError,
36 RMSError-02,
37 RollAngleInfo,
38 RollUncertainty,
39 SatBitMask,
40 SatBitMaskGalileo,
41 SatBitMaskGLONASS,
42 SatBitMaskGNSSsensAssist,
43 SatBitMaskInfo,
44 SatBitMaskModernizedGPS,
45 SatBitMaskQZSS,
46 SatBitMaskRecord,
47 SatCodePhaseFractionalChip,
48 SatCodePhaseWholeChip,
49 SatelliteCN-0,
50 SatelliteID,
51 SatelliteInformation-Cartesian,
52 SatelliteInformation-Spherical,
53 SatelliteInformationRecord,
54 SatelliteList,

C.R0022-B v1.0

1 SatelliteListRecord,
2 SatellitePRNNumber,
3 SatellitePseudodoppler,
4 SatellitePseudodopplerGNSS,
5 SatelliteRecord-01,
6 SatelliteRecord-02,
7 SatelliteRecord-03,
8 SatelliteRecord-04,
9 SatelliteRecord-05,
10 SatelliteRecord-06,
11 SatelliteRecord-07,
12 SatelliteRecord-08,
13 SatMeasRecord,
14 SatModeInfoReq,
15 SatPRNSignalNumber,
16 SatPseudodopplerRMSError,
17 SatPseudodopplerRMSErrorGNSS,
18 SBASId,
19 SBAS-ID,
20 SecondDerivDoppReq,
21 SectorAddressIdentifier,
22 SectorIDHRPD,
23 SectorIDUMB,
24 ShortRepPeriodEnable,
25 SignalHealthCNAV,
26 StdDevAlongAnglePosUncert,
27 StdDevClockBiasError,
28 StdDevCoarseLoc,
29 StdDevErrAlongAngleHorPosUncert,
30 StdDevErrAlongAngleHorVelUncert,
31 StdDevErrPerpToAngleHorPosUncert,
32 StdDevErrPerpToAngleHorVelUncert,
33 StdDevHorLocError,
34 StdDevPerpToAnglePosUncert,
35 StdDevVertErrorPosUncert,
36 Subframe4-5-req,
37 SupportedGNSS-BS,
38 SupportedGNSS-MS,
39 SupportedWirelessSystems,
40 SVIDInformation,
41 SVInformation,
42 SystemID,
43 SystemInformation,
44 TerrainHeightInformation,
45 TerrainHgtInfoReq,
46 TimeBetweenFixes,
47 TimeCorrectionInfoReq,
48 TimeCorrectionInfoAcquisitionAssistance,
49 TimeCorrectionInfoBSAlmanac,
50 TimeCorrectionRecord,
51 TimeOfReference,
52 TimeOfSensAssistance,
53 TimeOfSensAssistanceResp,
54 TimeReference,

1 TimeReferenceSource,
2 TimeReferenceSource-01,
3 TimeReferenceSource-02,
4 TimeReferenceUMB,
5 TimeRefPNSequenceOffset,
6 Toa,
7 TotalParts04,
8 TotalParts08,
9 TotalParts16,
10 TotalParts32,
11 TotalParts64,
12 TotalReceivedPower,
13 TotalReceivedPowerUMB,
14 TransmitPower,
15 TrueNorth,
16 UMB-BSIdentifier,
17 VelocityHeading,
18 VelocityInfoReq,
19 VelocityInformation,
20 VelocityInformationExt,
21 VelocityUncertainty,
22 VerticalBearing,
23 VerticalLocUncertaintyAdv,
24 VerticalLocUncertaintyExt,
25 VerticalUncertainty,
26 VerticalVelocity,
27 VerticalVelocityInfoAdv,
28 VerticalVelocityInfoExt,
29 VertVelUncertaintyAdv,
30 VertVelUncertaintyExtBS,
31 VertVelUncertaintyExtMS,
32 VertVelUncertConfAdv,
33 VertVelUncertConfExtBS,
34 VertVelUncertConfExtMS,
35 VertLocUncertConfLevel,
36 VerVelocityReq,
37 WeightingFactors,
38 WirelessAcqCapability,
39 WirelessIdentifier-Int,
40 WirelessIdentifier-String,
41 nSat,
42 numActiveSetP,
43 numAddPilotsP,
44 numAntRanges,
45 numBadSV,
46 numClk,
47 numDly,
48 numDrP,
49 numFaultySV,
50 numFreq,
51 numFreqP,
52 numFreqP-16,
53 numFrP,
54 numGNSS,

C.R0022-B v1.0

```

1      numGNSS-1,
2      numNghbrPN,
3      numOfFreq,
4      numOfFsP,
5      numOfPilotsF,
6      numOfPilotsP,
7      numPilots,
8      numPilotsP-512,
9      numPilotTxF,
10     numPilotTxF-512,
11     numPRP,
12     numPSRangesP,
13     numReqFreq,
14     numSat,
15     numSatGNSS,
16     numSig,
17     numSV,
18     numSVGEO,
19     numSVGLONASS,
20     numSVQZSS,
21     numSVMasks,
22     numSVP-16,
23     numSVP-32,
24     numSVP-64,
25     numSV-64,
26     numSV-DR,
27     numWireless
28
29 FROM
30
31     CommonDataTypes
32     ;
33
34 -- The following are MS Requests
35
36 ReqBSLocationResponse ::= SEQUENCE {
37     heightInfoRequested           HeightInfoRequested,
38     clockCorrectionReq           ClockCorrectionReq,
39     velocityInfoReq             VelocityInfoReq,
40     ...
41 }
42
43 ReqBSCapabilities ::= SEQUENCE {
44     ...
45 }
46
47 ReqBaseStationAlmanac ::= SEQUENCE {
48     extendedBSAlmanacReq       ExtendedBSAlmanacReq,
49     ...
50 }
51
52 ReqGPSAcquisitionAssistance ::= SEQUENCE {
53     doppReq                     DoppReq,
54     addDoppReq                 AddDoppReq,

```

```

1      codePHparReq          CodePHparReq,
2      azElReq              AzElReq,
3      ...
4  }
5
6  ReqGPSSensitivityAssistance ::= SEQUENCE {
7      ...
8  }
9
10 ReqGPSLocationAssistance ::= SEQUENCE {
11     reqCoordinateType      ReqCoordinateType,
12     ...
13 }
14
15 ReqGPSAlmanac ::= SEQUENCE {
16     ...
17 }
18
19 ReqGPSEphemeris ::= SEQUENCE {
20     alpha-beta-req         Alpha-beta-req,
21     ...
22 }
23
24 ReqGPSNavigationMessageBits ::= SEQUENCE {
25     subframe4-5-req       Subframe4-5-req,
26     ...
27 }
28
29 ReqGPSAlmanacCorrection ::= SEQUENCE {
30     toa                    Toa,
31     gpsWeekNumber          GPSWeekNumber,
32     ...
33 }
34
35 ReqGPSSatelliteHealthInfo ::= SEQUENCE {
36     ...
37 }
38
39 ReqExtendedBSLocationResponse ::= SEQUENCE {
40     fixTypeRequested        FixTypeRequested,
41     horizLocUncertEllipReq  HorizLocUncertEllipReq,
42     heightInfoRequested     HeightInfoRequested,
43     clockCorrectionReq      ClockCorrectionReq,
44     velocityInfoReq         VelocityInfoReq,
45     horVelUncertEllipReq    HorVelUncertEllipReq,
46     ...
47 }
48
49 ReqExtendedBSCapabilities ::= SEQUENCE {
50     ...
51 }
52
53 ReqEnhancedBaseStationAlmanac ::= SEQUENCE {
54     pilotIdInfoReq         PilotIdInfoReq,

```

C.R0022-B v1.0

```

1     repeaterInfoReq           RepeaterInfoReq,
2     antennaAngInfoReq        AntennaAngInfoReq,
3     antennaRangeInfoReq      AntennaRangeInfoReq,
4     maximalRadius             MaximalRadius             OPTIONAL,
5     maximalNumOfPilots        MaximalNumOfPilots         OPTIONAL,
6     frequencyRecord           SEQUENCE SIZE (1..numOfFreq) OF FrequencyRecord OPTIONAL,
7     ...
8 }
9
10 ReqGeneralAcquisitionAssistance ::= SEQUENCE {
11     locRefInfoRequested       LocRefInfoRequested,
12     clockCorrectionReq        ClockCorrectionReq,
13     gpsSatInfoRequested       GPSSatInfoRequested,
14     bsInfoRequested           BSInfoRequested           OPTIONAL,
15     ...
16 }
17
18 ReqExtendedGPSSensitivityAssist ::= SEQUENCE {
19     satBitMaskRecord          SEQUENCE SIZE (1..numSVMasks) OF SatBitMaskRecord,
20     reqRefBitNumber           ReqRefBitNumber           OPTIONAL,
21     reqDataRecordSize         ReqDataRecordSize         OPTIONAL,
22     ...
23 }
24
25 ReqGPSAlmanacv1 ::= SEQUENCE {
26     ...
27 }
28
29 ReqExtendedGPSEphemeris ::= SEQUENCE {
30     alpha-beta-req           Alpha-beta-req,
31     satBitMask               SatBitMask               OPTIONAL,
32     ...
33 }
34
35 ReqExtendedGPSNavMessageBits ::= SEQUENCE {
36     subframe4-5-req          Subframe4-5-req,
37     ...
38 }
39
40 ReqExtendedGPSAlmanacCorrection ::= SEQUENCE {
41     toa                      Toa,
42     gpsWeekNumber            GPSWeekNumber,
43     ...
44 }
45
46 ReqExtGPSSatelliteHealthInfo ::= SEQUENCE {
47     ...
48 }
49
50 ReqGPSCoarseLocationAssistance ::= SEQUENCE {
51     ...
52 }
53
54 ReqDGPSAssistance ::= SEQUENCE {

```

```

1     ephemerisAgeTolerance      EphemerisAgeTolerance      OPTIONAL,
2     alpha-beta-req            Alpha-beta-req              OPTIONAL,
3     dataRecord                 SEQUENCE SIZE (1..numSV) OF DataRecord,
4     ...
5 }
6
7 ReqGPSRealTimeIntegrityInfo ::= SEQUENCE {
8     ...
9 }
10
11 ReqAdvancedBSCapabilities ::= SEQUENCE {
12     ...
13 }
14
15 ReqAdvancedUMBBaseStationAlmanac ::= SEQUENCE {
16     antennaAngInfoReq          AntennaAngInfoReq,
17     timeCorrectionInfoReq      TimeCorrectionInfoReq,
18     terrainHgtInfoReq          TerrainHgtInfoReq,
19     antennaRangeInfoReq        AntennaRangeInfoReq,
20     maximalRadius               MaximalRadius                OPTIONAL,
21     maximalNumOfPilotsAdv       MaximalNumOfPilotsAdv        OPTIONAL,
22     ...
23 }
24
25 ReqAdvancedHRPDBaseStationAlmanac ::= SEQUENCE {
26     antennaAngInfoReq          AntennaAngInfoReq,
27     timeCorrectionInfoReq      TimeCorrectionInfoReq,
28     terrainHgtInfoReq          TerrainHgtInfoReq,
29     antennaRangeInfoReq        AntennaRangeInfoReq,
30     maximalRadius               MaximalRadius                OPTIONAL,
31     maximalNumOfPilotsAdv       MaximalNumOfPilotsAdv        OPTIONAL,
32     ...
33 }
34
35 ReqAdvancedLXBaseStationAlmanac ::= SEQUENCE {
36     antennaAngInfoReq          AntennaAngInfoReq,
37     timeCorrectionInfoReq      TimeCorrectionInfoReq,
38     terrainHgtInfoReq          TerrainHgtInfoReq,
39     antennaRangeInfoReq        AntennaRangeInfoReq,
40     maximalRadius               MaximalRadius                OPTIONAL,
41     maximalNumOfPilotsAdv       MaximalNumOfPilotsAdv        OPTIONAL,
42     ...
43 }
44
45 ReqGNSSAcquisitionAssistance ::= SEQUENCE {
46     gnssInfoRequest            SEQUENCE SIZE (1..numGNSS) OF GNSSInfoRequest,
47     clockCorrectionReq         ClockCorrectionReq,
48     ...
49 }
50
51
52 ReqGNSSSensitivityAssistance ::= SEQUENCE {
53     timeOfSensAssistance        TimeOfSensAssistance,
54     timeReferenceSource         TimeReferenceSource          OPTIONAL,

```

C.R0022-B v1.0

```

1      gnssInfoRequest          SEQUENCE SIZE (1..numGNSS) OF GNSSSensitivityInfoRequest,
2      ...
3  }
4
5  ReqModernizedGPSEphAndClockCorr ::= SEQUENCE {
6      satBitMask                SatBitMaskModernizedGPS          OPTIONAL,
7      navMsgType                NavMsgType                      OPTIONAL,
8      ...
9  }
10
11 ReqQZSSEphemerisAndClockCorr ::= SEQUENCE {
12     satBitMask                SatBitMaskQZSS                  OPTIONAL,
13     navMsgType                NavMsgType                      OPTIONAL,
14     ...
15 }
16
17 ReqGLONASSEphemerisAndClockCorr ::= SEQUENCE {
18     satBitMask                SatBitMaskGLONASS              OPTIONAL,
19     ...
20 }
21
22 ReqGalileoEphemerisAndClockCorr ::= SEQUENCE {
23     satBitMask                SatBitMaskGalileo              OPTIONAL,
24     ...
25 }
26
27 ReqGEONavMessageParameters ::= SEQUENCE {
28     sbasId                    SBASId                          OPTIONAL,
29     satPRNNumber              SEQUENCE SIZE (1..numSVGEO) OF SatPRNSignalNumber OPTIONAL,
30     ...
31 }
32
33 ReqModernizedGPSAlmanac ::= SEQUENCE {
34     almanacFormat              AlmanacFormat                  OPTIONAL,
35     ...
36 }
37
38 ReqQZSSAlmanac ::= SEQUENCE {
39     almanacFormat              AlmanacFormat                  OPTIONAL,
40     ...
41 }
42
43 ReqGLONASSAlmanac ::= SEQUENCE {
44     addNon-ImmedInfoReq        AddNon-ImmedInfoReq,
45     ...
46 }
47
48 ReqGalileoAlmanac ::= SEQUENCE {
49     ...
50 }
51
52 ReqGEOAlmanacMessageParameters ::= SEQUENCE {
53     sbasId                    SBASId                          OPTIONAL,
54     ...

```

```

1  }
2
3  ReqGPSIonosphericModel ::= SEQUENCE {
4      ...
5  }
6
7  ReqGalileoIonosphericModel ::= SEQUENCE {
8      ...
9  }
10
11 ReqQZSSIonosphericModel ::= SEQUENCE {
12     ...
13 }
14
15 ReqGNSS-GNSSTimeOffset ::= SEQUENCE (SIZE (1..numGNSS)) OF SEQUENCE {
16     gnssIdentifier-1          INTEGER(1..16),
17     sbasIdentifier-1          SBAS-ID                      OPTIONAL,
18     gnssIdentifier-2          GNSSIdBitMask,
19     sbasIdentifier-2          SBAS-ID                      OPTIONAL,
20     integerSecondRequest     BOOLEAN,
21     ...
22 }
23
24 ReqGPSUTCModel ::= SEQUENCE {
25     ...
26 }
27
28 ReqAdvancedGNSSSatHealthInfo ::= SEQUENCE {
29     gnssHealthInfoRequest    SEQUENCE SIZE (1..numGNSS) OF GNSSHealthInfoRequest,
30     ...
31 }
32
33 ReqAdvancedBSLocationResponse ::= SEQUENCE {
34     heightInfoRequested      HeightInfoRequested,
35     clockCorrectionReq       ClockCorrectionReq,
36     horVelocityReq           HorVelocityReq,
37     verVelocityReq           VerVelocityReq,
38     ...
39 }
40
41 ReqDGNSSAssistance ::= SEQUENCE (SIZE (1..numGNSS)) OF SEQUENCE {
42     gnssIdentifier            GNSSIdentifier,
43     dgnssSignalDataRecord    SEQUENCE (SIZE (1..numSig)) OF SEQUENCE {
44         gnssSigIdentifier     GNSSSigIdentifier          OPTIONAL,
45         gnssSignalDataRecord  SEQUENCE (SIZE(1..numSV)) OF SEQUENCE {
46             gnssSatID         INTEGER (0..63),
47             iod                BIT STRING (SIZE(11)),
48             ...
49             } OPTIONAL,
50         ...
51         } OPTIONAL,
52     ...
53 }
54

```

C.R0022-B v1.0

```

1  -- Unsupported private extensions shall be discarded if received.
2  ReqMS-reqPrivateExtension ::= SEQUENCE {
3      ...}
4
5  -- The following are BS Requests
6
7  ReqMSLocationResponse ::= SEQUENCE {
8      preferredRespQual      PreferredRespQual,
9      noOfFixes              NoOfFixes,
10     timeBetweenFixes       TimeBetweenFixes,
11     heightInfoRequested    HeightInfoRequested,
12     clockCorrectionReq     ClockCorrectionReq,
13     velocityInfoReq        VelocityInfoReq,
14     ...
15 }
16
17 ReqMSInformation ::= SEQUENCE {
18     ...
19 }
20
21 ReqAutonomousMeasWeightingFactor ::= SEQUENCE {
22     ...
23 }
24
25 ReqPseudorangeMeasurements ::= SEQUENCE {
26     preferredRespQual      PreferredRespQual,
27     noOfFixes              NoOfFixes,
28     timeBetweenFixes       TimeBetweenFixes,
29     offsetReq              OffsetReq,
30     ...
31 }
32
33 ReqPilotPhaseMeasurement ::= SEQUENCE {
34     preferredRespQual      PreferredRespQual,
35     noOfFixes              NoOfFixes,
36     timeBetweenFixes       TimeBetweenFixes,
37     offsetReq              OffsetReq,
38     pilotPhaseResDesired   PilotPhaseResDesired,
39     ...
40 }
41
42 ReqTimeOffsetMeasurement ::= SEQUENCE {
43     actionTime              ActionTime          OPTIONAL,
44     ...
45 }
46
47 ReqCancellation ::= SEQUENCE {
48     cancelType              CancelType,
49     ...
50 }
51
52 ReqExtendedMSLocationResponse ::= SEQUENCE {
53     noOfFixes              NoOfFixes,
54     timeBetweenFixes       TimeBetweenFixes,

```

```

1      maxResponsetime           MaxResponseTime,
2      fixTypeRequested          FixTypeRequested,
3      qualOfServiceReqType     QualOfServiceReqType,
4      horizLocUncertEllipReq   HorizLocUncertEllipReq,
5      heightInfoRequested      HeightInfoRequested,
6      clockCorrectionReq       ClockCorrectionReq,
7      velocityInfoReq          VelocityInfoReq,
8      horVelUncertEllipReq     HorVelUncertEllipReq,
9      ...
10     }
11
12     ReqExtendedMSInformation ::= SEQUENCE {
13         msCapReq                MSCapReq,
14         gpsRecCapInfoReq        GPSRecCapInfoReq,
15         bandClassCapInfoReq     BandClassCapInfoReq,
16         pilotDetSensReq         PilotDetSensReq,
17         msStatusReq            MSStatusReq,
18         ...
19     }
20
21     ReqAutonomousMeasWeightingFactv1 ::= SEQUENCE {
22         ...
23     }
24
25     ReqGeneralLocationMeasurement ::= SEQUENCE {
26         noOfFixes                NoOfFixes,
27         timeBetweenFixes         TimeBetweenFixes,
28         maxResponsetime          MaxResponseTime,
29         prefRespTime             PrefRespTime,
30         pilotIdInfoReq           PilotIdInfoReq,
31         pseudorangeMeas         PseudorangeMeas,
32         pilotPhaseMeas          PilotPhaseMeas,
33         msTransTimeOffset        MTransTimeOffset,
34         ...
35     }
36
37     ReqExtendedCancellation ::= SEQUENCE {
38         cancelType                CancelTypeExt,
39         ...
40     }
41
42     ReqGPSCoarseLocationResponse ::= SEQUENCE {
43         noOfFixes                NoOfFixes,
44         timeBetweenFixes         TimeBetweenFixes,
45         maxResponsetime          MaxResponseTime,
46         ...
47     }
48
49     ReqMessagingDelayMeasurement ::= SEQUENCE {
50         msgSeqNo                 MsgSeqNo,
51         recToTransDelayInfoReq   RecToTransDelayInfoReq,
52         ...
53     }
54

```

C.R0022-B v1.0

```

1  ReqBearingMeasurement ::= SEQUENCE {
2      ...
3  }
4
5  ReqServingSystemInformation ::= SEQUENCE {
6      pilotIdInfoReq          PilotIdInfoReq,
7      extPilotIdInfoReq      ExtPilotIdInfoReq          OPTIONAL,
8      activeSetInfoReq       ActiveSetInfoReq,
9      neighborListInfoReq    NeighborListInfoReq,
10     bsLocInfoReq           BSLocInfoReq,
11     ...
12 }
13
14 ReqAdvancedMSInformation ::= SEQUENCE {
15     ...
16 }
17
18 ReqUMBPilotTimeOffsetMeasurement ::= SEQUENCE {
19     preferredRespQual       PreferredRespQual,
20     noOfFixes               NoOfFixes,
21     timeBetweenFixes        TimeBetweenFixes,
22     offsetReq               OffsetReq,
23     ...
24 }
25
26 ReqHRPDPilotPhaseMeasurement ::= SEQUENCE {
27     preferredRespQual       PreferredRespQual,
28     noOfFixes               NoOfFixes,
29     timeBetweenFixes        TimeBetweenFixes,
30     offsetReq               OffsetReq,
31     ...
32 }
33
34 ReqGNSSPseudorangeMeasurement ::= SEQUENCE {
35     preferredRespQual       PreferredRespQual,
36     noOfFixes               NoOfFixes,
37     timeBetweenFixes        TimeBetweenFixes,
38     gnssMeasReq             SEQUENCE SIZE (1..numGNSS) OF GNSSMeasRequest  OPTIONAL,
39     ...
40 }
41
42 ReqAdvancedCancellation ::= SEQUENCE {
43     cancelType               CancelTypeAdv,
44     ...
45 }
46
47 ReqAdvancedMSLocationResponse ::= SEQUENCE {
48     noOfFixes               NoOfFixes,
49     timeBetweenFixes        TimeBetweenFixes,
50     maxResponseTime         MaxResponseTimeAdv,
51     heightInfoRequested     HeightInfoRequested,
52     clockCorrectionReq       ClockCorrectionReq,
53     horVelocityReq           HorVelocityReq,
54     verVelocityReq           VerVelocityReq,

```

```

1     ...
2   }
3
4   ReqAdvSystemParametersInformation ::= SEQUENCE {
5     ...
6   }
7
8   -- Unsupported private extensions shall be discarded if received.
9   ReqBS-reqPrivateExtension ::= SEQUENCE {
10    ...}
11
12
13  -- The following are MS Responses
14
15  RejectMS ::= SEQUENCE {
16    rejectRequestType      RejectRequestTypeMS,
17    rejectReason           RejectReasonMS,
18    ...
19  }
20
21  ProvideMSLocationResponse ::= SEQUENCE {
22    cdmaSystemTime         CDMASystemTime,
23    latitude                Latitude,
24    longitude              Longitude,
25    angleFromTrueNorth     AngleFromTrueNorth,
26    stdDevAlongAnglePosUncert StdDevAlongAnglePosUncert,
27    stdDevPerpToAnglePosUncert StdDevPerpToAnglePosUncert,
28    fixType                FixType,
29    velocityInformation     VelocityInformation           OPTIONAL,
30    clockInfo              ClockInfo                     OPTIONAL,
31    heightInfo             HeightInfo                    OPTIONAL,
32    ...
33  }
34
35  ProvideMSInformation ::= SEQUENCE {
36    msLocStandardRevNumber MSLocStandardRevNumber,
37    digitalModeInd         DigitalModeInd,
38    pilotPhaseCap         PilotPhaseCap,
39    gpsAcqCapability       GPSAcqCapability,
40    positionCalcCapability PositionCalcCapability,
41    ...
42  }
43
44  ProvideAutoMeasWeightingFactors ::= SEQUENCE {
45    cdmaSystemTime         CDMASystemTime,
46    dgpsFlag               DGPSFlag,
47    gpsToTotalWeightRatio GPSToTotalWeightRatio,
48    weightingFactors       SEQUENCE SIZE (1..numSV) OF WeightingFactors,
49    ...
50  }
51
52  ProvidePseudorangeMeasurement ::= SEQUENCE {
53    partNumber             PartNumber08,
54    totalNumOfParts       TotalParts08,

```

C.R0022-B v1.0

```

1      referenceTime          ReferenceTime,
2      timeReferenceSource    TimeReferenceSource-01,
3      timeOffset             SEQUENCE {
4          timeRefPNSequenceOffset TimeRefPNSequenceOffset,
5          msSystemTimeOffset      MSSystemTimeOffset,
6          ...
7      } OPTIONAL,
8      pseudorangeInfo        SEQUENCE SIZE (1..numPSRangesP) OF PseudorangeInformation,
9      ...
10     }
11
12     ProvidePilotPhaseMeasurement ::= SEQUENCE {
13         referenceTime          ReferenceTime,
14         msSystemTimeOffset      MSSystemTimeOffset                               OPTIONAL,
15         timeRefPNSequenceOffset TimeRefPNSequenceOffset,
16         pilotStrength           PilotStrength,
17         bandClass               BandClass,
18         frequencyAssignment     FrequencyAssignment,
19         baseStationID           BaseStationID,
20         systemID                SystemID,
21         networkID               NetworkID,
22         totalReceivedPower      TotalReceivedPower,
23         partNumber              PartNumber08,
24         totalNumOfParts         TotalParts08,
25         pilotPhaseInfo          SEQUENCE SIZE (1..numOfPilotsP) OF PilotPhaseInfo-01 OPTIONAL,
26         addPilotPhaseInfo       PilotPhaseInfo-03                               OPTIONAL,
27         ...
28     }
29
30     ProvideTimeOffsetMeasurement ::= SEQUENCE {
31         referenceTime          ReferenceTime,
32         timeRefPNSequenceOffset TimeRefPNSequenceOffset,
33         msSystemTimeOffset      MSSystemTimeOffset,
34         ...
35     }
36
37     ProvideCancellationAck ::= SEQUENCE {
38         cancelType             CancelType,
39         noRequestElement        NoRequestElement,
40         ...
41     }
42
43     ExtendedRejectMS ::= SEQUENCE {
44         rejectRequestType       RejectRequestTypeMSExt,
45         rejectReason            RejectReasonMSExt,
46         retryTime               RetryTime                                         OPTIONAL,
47         ...
48     }
49
50     ProvideExtMSLocationResponse ::= SEQUENCE {
51         timeReference           TimeReference                                     OPTIONAL,
52         fixType                 FixTypeExt                                       OPTIONAL,
53         latitude                 Latitude,
54         longitude                Longitude,

```

```

1      locationUncert          LocationUncert,
2      heightInfo             HeightInfoExt          OPTIONAL,
3      velocityInformation     VelocityInformationExt  OPTIONAL,
4      verticalVelocityInfo    VerticalVelocityInfoExt  OPTIONAL,
5      clockBiasInfo           ClockBiasInfo          OPTIONAL,
6      improvedLocMeasSupported ImprovedLocMeasSupported,
7      ...
8  }
9
10 ProvideExtMSInformation ::= SEQUENCE {
11     msLocStandardRevNumber   MSLocStandardRevNumber,
12     msCapabilities           MSCapabilities          OPTIONAL,
13     gpsRecCapability         GPSRecCapability      OPTIONAL,
14     msBandClassCap          MSBandClassCap        OPTIONAL,
15     positionDetEmergencyOnly PositionDetEmergencyOnly,
16     pilotDetectionSens       PilotDetectionSens     OPTIONAL,
17     msStatusInfo            MSStatusInfo          OPTIONAL,
18     ...
19 }
20
21 ProvideAutoMeasWeightingFactorsv1 ::= SEQUENCE {
22     cdmaSystemTime           CDMASystemTime,
23     dgpsFlag                 DGPSFlag,
24     gpsToTotalWeightRatio    GPSToTotalWeightRatio,
25     weightingFactors         SEQUENCE SIZE (1..numSV) OF WeightingFactors,
26     ...
27 }
28
29 ProvideGeneralLocationMeasurement ::= SEQUENCE {
30     partNumber               PartNumber16,
31     totalNumOfParts          TotalParts16,
32     globalInfo               GlobalInfo-01          OPTIONAL,
33     pseudorangeInfo          SEQUENCE SIZE (1..numPRP) OF
34                               PseudorangeInformationExt  OPTIONAL,
35     pilotPhaseInfo           SEQUENCE SIZE (1..numFreqP) OF
36                               PilotPhaseInfo-02          OPTIONAL,
37     offsetInfo               OffsetInfo          OPTIONAL,
38     ...
39 }
40
41 ProvideExtCancellationAck ::= SEQUENCE {
42     cancelType               CancelTypeExt,
43     noRequestElement         NoRequestElement,
44     ...
45 }
46
47 ProvideGPSCoarseLocationResponse ::= SEQUENCE {
48     timeOfReference          TimeOfReference,
49     refLatitudeCorrection     RefLatitudeCorrection,
50     refLongitudeCorrection    RefLongitudeCorrection,
51     refAltitudeCorrection     RefAltitudeCorrection,
52     satelliteList            SatelliteList,
53     pseudorangePredErrorThresh PseudorangePredErrorThresh,
54     satelliteListRecord      SEQUENCE SIZE (1..numSat) OF SatelliteListRecord,

```

C.R0022-B v1.0

```

1     ...
2   }
3
4   ProvideMessagingDelayMeasurement ::= SEQUENCE {
5     msgSeqNo           MsgSeqNo,
6     receiveTime        ReceiveTime,
7     receiveToTransmitTimeDelay  ReceiveToTransmitTimeDelay      OPTIONAL,
8     ...
9   }
10
11  ProvideBearingMeasurement ::= SEQUENCE {
12    horizBearing        HorizBearing,
13    trueNorth           TrueNorth,
14    horizBearingUncert  HorizBearingUncert,
15    verticalBearing     VerticalBearing      OPTIONAL,
16    rollAngleInfo       RollAngleInfo       OPTIONAL,
17    pitchRollCorrection PitchRollCorrection,
18    ...
19  }
20
21  ProvideServingSystemInformation ::= SEQUENCE {
22    partNumber          PartNumber04,
23    totalNumOfParts     TotalParts04,
24    pilotIdInfo         PilotIDInformation   OPTIONAL,
25    activeSetInfo       SEQUENCE SIZE (1..numActiveSetP) OF
26                        ActiveSetPilotPNSeqOffset   OPTIONAL,
27    neighborListInfo    SEQUENCE SIZE (1..numNghbrPN) OF
28                        NeighborPilotPNSeqOffset     OPTIONAL,
29    bsLocInfo           BSLocInfo           OPTIONAL,
30    ...
31  }
32
33  ProvideAdvancedMSInformation ::= SEQUENCE {
34    msLocationRevNumber MSLocationRevNumber,
35    supportedGNSS        SEQUENCE SIZE (1..numGNSS) OF
36                        SupportedGNSS-MS            OPTIONAL,
37    supportedWirelessSystems SEQUENCE SIZE (1..numWireless) OF
38                        SupportedWirelessSystems     OPTIONAL,
39    positionCalcCapability PositionCalcCapabilityAdv,
40    ...
41  }
42
43  ProvideUMBPilotTimeOffsetMeasurement ::= SEQUENCE {
44    timeReference        TimeReferenceUMB,
45    msSystemTimeOffset  MSSystemTimeOffsetUMB   OPTIONAL,
46    timeReferencePilotID PilotID,
47    pilotStrength        PilotStrength,
48    bandClass           BandClassUMB,
49    frequencyAssignment FrequencyAssignmentUMB,
50    sectorID            SectorIDUMB,
51    mobileCountryCode   MobileCountryCode,
52    mobileNetworkCode   MobileNetworkCode,
53    totalReceivedPower  TotalReceivedPowerUMB,
54    partNumber          PartNumber08,

```

```

1      totalNumOfParts          TotalParts08,
2      pilotTimeOffsetInformation SEQUENCE SIZE (1..numFreqP) OF
3                                  PilotTimeOffsetInformation          OPTIONAL,
4      addPilotTimeOffsetInfo   AddPilotTimeOffsetInfo          OPTIONAL,
5      ...
6  }
7
8  ProvideHRPDPilotPhaseMeasurement ::= SEQUENCE {
9      referenceTime             ReferenceTime,
10     msSystemTimeOffset        MSSystemTimeOffset          OPTIONAL,
11     timeRefPNSequenceOffset   TimeRefPNSequenceOffset,
12     pilotStrength             PilotStrength,
13     bandClass                 BandClass,
14     frequencyAssignment        FrequencyAssignment,
15     sectorID                  SectorIDHRPD,
16     totalReceivedPower        TotalReceivedPower,
17     hdpUsed                   HDPUsed,
18     partNumber                PartNumber16,
19     totalNumOfParts           TotalParts16,
20     pilotPhaseInfo            SEQUENCE SIZE (1..numOfPilotsP) OF
21                                 PilotPhaseInfo-HRPD          OPTIONAL,
22     addPilotPhaseInfo         PilotPhaseInfo-HRPD-02          OPTIONAL,
23     ...
24 }
25
26 ProvideGNSSPseudorangeMeasurement ::= SEQUENCE {
27     partNumber                PartNumber16,
28     totalNumOfParts           TotalParts16,
29     globalInfo                GlobalInfo-02          OPTIONAL,
30     pseudorangeInfo           SEQUENCE SIZE (1..numGNSS) OF PseudorangeInformationAdv,
31     ...
32 }
33
34 ProvideAdvCancellationAck ::= SEQUENCE {
35     cancelType                CancelTypeAdv,
36     noRequestElement          NoRequestElement,
37     ...
38 }
39
40 AdvancedRejectMS ::= SEQUENCE {
41     rejectRequestType         RejectRequestTypeMSAdv,
42     rejectReason              RejectReasonMSAdv,
43     ...
44 }
45
46 -- ProvideAdvLocationResponse is identical for the mobile and the base station.
47
48 ProvideAdvLocationResponse ::= SEQUENCE {
49     referenceTime             ReferenceTimeAdv,
50     timeReferenceSource        TimeReferenceSource          OPTIONAL,
51     fixTypeData               FixTypeData          OPTIONAL,
52     latitude                  Latitude,
53     longitude                 Longitude,
54     angleMagnitudeHorLocUncert AngleMagnitudeHorLocUncert,

```

C.R0022-B v1.0

```

1      errorAlongAngleHorLocUncert      ErrorAlongAngleHorLocUncert,
2      errorPerpToAngleHorLocUncert     ErrorPerpToAngleHorLocUncert,
3      horizLocUncertConfLevel          HorizLocUncertConfLevel          OPTIONAL,
4      heightInfo                       HeightInfoExt                   OPTIONAL,
5      horizVelInfo                      HorVelInfo                      OPTIONAL,
6      verticalVelocityInfo              VerticalVelocityInfoAdv         OPTIONAL,
7      clockBiasInfo                    ClockBiasInfoAdv               OPTIONAL,
8      ...
9  }
10
11 ProvideAdvSystemParametersInformation ::= SEQUENCE {
12     cdmaReferenceTime                  CDMAReferenceTime,
13     stillActiveIndicator                BOOLEAN,
14     bandClass                           BandClass,
15     frequencyAssignment                 FrequencyAssignment,
16     pilotPN                             PilotPN,
17     systemIdentification                SystemID,
18     networkIdentification               NetworkID,
19     baseStationIdentification           BaseStationID,
20     baseStationLatitude                 BSLatitude,
21     baseStationLongitude                BSLongitude,
22     ...
23 }
24
25
26 -- Unsupported private extensions shall be discarded if received.
27 ProvideMS-respPrivateExtension ::= SEQUENCE {
28     ...}
29
30 -- The following are BS Responses
31
32 RejectBS ::= SEQUENCE {
33     rejectRequestType                   RejectRequestTypeBS,
34     rejectReason                         RejectReasonBS,
35     ...
36 }
37
38 ProvideBSLocationResponse ::= SEQUENCE {
39     validCDMASystemTime                 CDMASystemTime,
40     latitude                             Latitude,
41     longitude                            Longitude,
42     angleFromTrueNorth                  AngleFromTrueNorth,
43     stdDevAlongAnglePosUncert           StdDevAlongAnglePosUncert,
44     stdDevPerpToAnglePosUncert           StdDevPerpToAnglePosUncert,
45     fixType                              FixType,
46     velocityInformation                  VelocityInformation             OPTIONAL,
47     clockInfo                            ClockInfo                       OPTIONAL,
48     heightInfo                           HeightInfo,
49     ...
50 }
51
52 ProvideBSCapabilities ::= SEQUENCE {
53     bsLocStandardRevNumber              BSLocStandardRevNumber,
54     gpsCapabilityInd                     GPSCapabilityInd,

```

```

1      afltCapabilityInd          AFLTCapabilityInd,
2      autonomousPosDetCapability BIT STRING (SIZE (8)),
3      ...
4  }
5
6  ProvideBaseStationAlmanac ::= SEQUENCE {
7      pilotPNSeqOffsetOfRefereceBS INTEGER (0..511),
8      refTimeCorrection             RefTimeCorrection,
9      refLatitude                   INTEGER (-4194304..4194303),
10     refLongitude                   INTEGER (-8388608..8388607),
11     refHeight                       INTEGER (0..1023),
12     partNumber                       PartNumber08,
13     totalNumOfParts                 TotalParts08,
14     dataRecord                       SEQUENCE SIZE (1..numPilotsP-512) OF DataRecordBSAlmanac,
15     location                         AntennaLocation                               OPTIONAL,
16     ...
17 }
18
19 ProvideGPSAcquisitionAssistance ::= SEQUENCE {
20     applicableCDMASystemTime        INTEGER (0..255),
21     referencePN                      BIT STRING (SIZE (10))                      OPTIONAL,
22     satelliteRecord                  SEQUENCE SIZE (1..numSV) OF SatelliteRecord-01,
23     ...
24 }
25
26 ProvideGPSensitivityAssistance ::= SEQUENCE {
27     referenceBitNumber               INTEGER (0..1499),
28     partNumber                       PartNumber08,
29     totalNumOfParts                 TotalParts08,
30     navigationMessageBitDataRecord SEQUENCE SIZE (1..numDrP) OF NavMessageBitDataRecord,
31     ...
32 }
33
34 ProvideGPSLocAssist-SphericalCoord ::= SEQUENCE {
35     refLatitude                       INTEGER (-54288..524287),
36     refLongitude                       INTEGER (-524288..524287),
37     refHeight                          INTEGER (-10..117),
38     delayInformation                   SEQUENCE SIZE (1..numDly) OF DelayInformation    OPTIONAL,
39     satelliteInformation                SEQUENCE SIZE (1..numSV) OF SatelliteInformation-Spherical,
40     ...
41 }
42
43 ProvideGPSLocAssist-CartesianCoord ::= SEQUENCE {
44     delayInformation                   SEQUENCE SIZE (1..numDly) OF DelayInformation    OPTIONAL,
45     satelliteInformation                SEQUENCE SIZE (1..numSV) OF SatelliteInformation-Cartesian,
46     ...
47 }
48
49 ProvideGPSAlmanac ::= SEQUENCE {
50     gpsWeekNumberAlmanac              GPSWeekNumber,
51     referenceTimeOfAlmanac            INTEGER (0..255),
52     partNumber                         PartNumber32,
53     totalNumOfParts                   TotalParts32,
54     almanacInformation                 SEQUENCE SIZE (1..numSVP-64) OF AlmanacInformation-01,

```

C.R0022-B v1.0

```

1     ...
2   }
3
4   ProvideGPSEphemeris ::= SEQUENCE {
5     partNumber          PartNumber32,
6     totalNumOfParts     TotalParts32,
7     ionosphericCorrectionParameter IonosphericCorrectionParameter OPTIONAL,
8     ephemerisInformation SEQUENCE SIZE (1..numSVP-16) OF EphemerisInformation,
9     ...
10  }
11
12  ProvideGPSNavigationMessageBits ::= SEQUENCE {
13    partNumber          PartNumber32,
14    totalNumOfParts     TotalParts32,
15    gpsSubframes-4-and-5 BIT STRING (SIZE (15000)) OPTIONAL,
16    navMessageBits      SEQUENCE SIZE (1..numSVP-64) OF NavMessageBits,
17    ...
18  }
19
20  ProvideGPSAlmanacCorrection ::= SEQUENCE {
21    timeOfValidity      INTEGER (0..255),
22    timeOfAlmanac       INTEGER (0..255),
23    gpsWeekNumber       GPSWeekNumber,
24    partNumber          PartNumber32,
25    totalNumOfParts     TotalParts32,
26    almanacCorrections SEQUENCE SIZE (1..numSVP-16) OF AlmanacCorrections,
27    ...
28  }
29
30  ProvideGPSSatelliteHealthInfo ::= SEQUENCE {
31    badGPSSatellitesPresent BOOLEAN,
32    satelliteRecord      SEQUENCE SIZE (1..numBadSV) OF SatelliteRecord-03 OPTIONAL,
33    ...
34  }
35
36  ExtendedRejectBS ::= SEQUENCE {
37    rejectRequestType    RejectRequestTypeBSExt,
38    rejectReason         RejectReasonBSExt,
39    retryTime            RetryTime OPTIONAL,
40    ...
41  }
42
43  ProvideExtBSLocationResponse ::= SEQUENCE {
44    timeReference        TimeReference OPTIONAL,
45    fixType              FixTypeExt OPTIONAL,
46    latitude             Latitude,
47    longitude            Longitude,
48    locationUncert      LocationUncert,
49    heightInfo           HeightInfoExt OPTIONAL,
50    velocityInformation  VelocityInformationExt OPTIONAL,
51    verticalVelocityInfo VerticalVelocityInfoExt OPTIONAL,
52    clockBiasInfo        ClockBiasInfo OPTIONAL,
53    improvedLocMeasSup   ImprovedLocMeasSupported,
54    ...

```

```

1  }
2
3  ProvideExtBSCapabilities ::= SEQUENCE {
4      bsLocStandardRevNumber      BSLocStandardRevNumber,
5      gpsCapabilityInd             GPSCapabilityInd,
6      afltcCapabilityInd           AFLTCapabilityInd,
7      ephemerisLifeExtensionCapability  BIT STRING (SIZE (1)),
8      autonomousPosDetCapability   BIT STRING (SIZE (7)),
9      ...
10 }
11
12 ProvideEnhancedBaseStationAlmanac ::= SEQUENCE {
13     partNumber                    PartNumber16,
14     totalNumOfParts               TotalParts16,
15     refLatitude                   INTEGER (-4194304..4194303),
16     refLongitude                  INTEGER (-8388608..8388607),
17     frequencyRecord              SEQUENCE SIZE (1..numFreqP-16) OF FrequencyRecordResp  OPTIONAL,
18     ...
19 }
20
21 ProvideGeneralAcquisitionAssistance ::= SEQUENCE {
22     partNumber                    PartNumber16,
23     totalNumOfParts               TotalParts16,
24     globalInfo                    GlobalInfo-03                                OPTIONAL,
25     gpsSatelliteInfoRecord        SEQUENCE SIZE (1..numSVP-16) OF
26                                     GPS-SatelliteInfoRecord                    OPTIONAL,
27     bsInformationRecord           SEQUENCE SIZE (1..numFreqP-16) OF
28                                     BSInformationRecord                        OPTIONAL,
29     ...
30 }
31
32 ProvideExtGPSSensitivityAssistance ::= SEQUENCE {
33     partNumber                    PartNumber32,
34     totalNumOfParts               TotalParts32,
35     referenceBitNumber            INTEGER (0..1499),
36     navigationMessageBitDataRecord SEQUENCE SIZE (1..numDrP) OF NavMessageBitDataRecordExt,
37     ...
38 }
39
40 ProvideGPSAlmanacv1 ::= SEQUENCE {
41     gpsWeekNumberAlmanac          GPSWeekNumber,
42     referenceTimeOfAlmanac        INTEGER (0..255),
43     partNumber                    PartNumber32,
44     totalNumOfParts               TotalParts32,
45     almanacInformation            SEQUENCE SIZE (1..numSVP-64) OF AlmanacInformation-01,
46     ...
47 }
48
49 ProvideExtGPSEphemeris ::= SEQUENCE {
50     partNumber                    PartNumber32,
51     totalNumOfParts               TotalParts32,
52     ionosphericCorrectionParameter IonosphericCorrectionParameter            OPTIONAL,
53     ephemerisInformation          SEQUENCE SIZE (1..numSVP-16) OF EphemerisInformation,
54     ...

```

C.R0022-B v1.0

```

1  }
2
3  ProvideExtGPSNavigationMessageBits ::= SEQUENCE {
4      partNumber          PartNumber64,
5      totalNumOfParts     TotalParts64,
6      satelliteRecord     SEQUENCE SIZE (1..numSVP-32) OF SatelliteRecord-05    OPTIONAL,
7      frameRecord        SEQUENCE SIZE (1..numFrP) OF FrameRecord                OPTIONAL,
8      ...
9  }
10
11 ProvideExtGPSAlmanacCorrections ::= SEQUENCE {
12     partNumber          PartNumber04,
13     totalNumOfParts     TotalParts04,
14     referenceTime       RefTimeAlmanacCorr,
15     gpsWeekNumber       GPSWeekNumber,
16     timeOfAlmanac       INTEGER (0..255),
17     almanacCorrections  SEQUENCE SIZE (1..numSVP-16) OF AlmanacCorrectionsExt,
18     ...
19 }
20
21 ProvideExtGPSSatelliteHealthInfo ::= SEQUENCE {
22     badGPSSatellitesPresent  BOOLEAN,
23     satelliteRecord          SEQUENCE SIZE (1..numBadSV) OF SatelliteRecord-06    OPTIONAL,
24     ...
25 }
26
27 ProvideGPSCoarseLocationAssistance ::= SEQUENCE {
28     refLatitude          INTEGER (-16384..16383),
29     refLongitude         INTEGER (-32768..32767),
30     ...
31 }
32
33 ProvideGPSCoarseAcquisitionAssist ::= SEQUENCE {
34     visibleSatelliteList  BIT STRING (SIZE (32)),
35     ...
36 }
37
38 ProvideDGPSAssistance ::= SEQUENCE {
39     gpsTOW                INTEGER (0..604799),
40     statusHealth          BIT STRING (SIZE (3)),
41     correctionRecord      SEQUENCE SIZE (1..nSat) OF CorrectionRecord            OPTIONAL,
42     ...
43 }
44
45 ProvideGPSRealTimeIntegrityInfo ::= SEQUENCE {
46     integrity-Type       CHOICE {
47         integrity-Type-1    Integrity-Type-1,
48         integrity-Type-0    Integrity-Type-0,
49         ...
50     },
51     ...
52 }
53
54 ProvideAdvancedBSCapabilities ::= SEQUENCE {

```

```

1      bsLocationRevNumber          INTEGER (0..63),
2      supportedGNSS                SEQUENCE SIZE (1..numGNSS) OF SupportedGNSS-BS,
3      afltCapabilityIndicator      BIT STRING (SIZE (16)),
4      ...
5  }
6
7  ProvideAdvancedUMBBaseStationAlmanac ::= SEQUENCE {
8      partNumber                   PartNumber16,
9      totalNumOfParts              TotalParts16,
10     refLatitude                   INTEGER (-4194304..4194303),
11     refLongitude                  INTEGER (-8388608..8388607),
12     refHeight                     INTEGER (0..1023),
13     antennaRangeRefPower          INTEGER (1..16),
14     frequencyRecord               SEQUENCE SIZE (1..numFreq) OF FrequencyRecordUMB,
15     pilotRecord                   SEQUENCE SIZE (1..numPilots) OF PilotRecordUMB,
16     ...
17 }
18
19 ProvideAdvancedHRPDBaseStationAlmanac ::= SEQUENCE {
20     partNumber                     PartNumber16,
21     totalNumOfParts                TotalParts16,
22     refLatitude                     INTEGER (-4194304..4194303),
23     refLongitude                    INTEGER (-8388608..8388607),
24     refHeight                       INTEGER (0..1023),
25     antennaRangeRefPower            INTEGER (1..16),
26     frequencyRecord                SEQUENCE SIZE (1..numFreq) OF FrequencyRecordAdv,
27     pilotRecord                     SEQUENCE SIZE (1..numPilots) OF PilotRecordHRPD,
28     ...
29 }
30
31 ProvideAdvanced1XBaseStationAlmanac ::= SEQUENCE {
32     partNumber                       PartNumber16,
33     totalNumOfParts                  TotalParts16,
34     refLatitude                       INTEGER (-4194304..4194303),
35     refLongitude                       INTEGER (-8388608..8388607),
36     refHeight                         INTEGER (0..1023),
37     antennaRangeRefPower              INTEGER (1..16),
38     frequencyRecord                   SEQUENCE SIZE (1..numFreq) OF FrequencyRecordAdv,
39     pilotRecord                       SEQUENCE SIZE (1..numPilots) OF PilotRecord1X,
40     ...
41 }
42
43 ProvideGNSSAcquisitionAssistance ::= SEQUENCE {
44     partNumber                         PartNumber16,
45     totalNumOfParts                    TotalParts16,
46     globalInfo                          GlobalInfo-04,
47     gnssInformationRecord               SEQUENCE SIZE (1..numGNSS) OF GNSSInformationRecord,
48     ...
49 }
50
51 ProvideGNSSSensitivityAssistance ::= SEQUENCE {
52     partNumber                          PartNumber64,
53     totalNumOfParts                      TotalParts64,
54     timeOfSensAssist                    TimeOfSensAssistanceResp,

```

C.R0022-B v1.0

```

1      timeReferenceSource          TimeReferenceSource          OPTIONAL,
2      gnssSADataRecord             SEQUENCE SIZE (1..numGNSS) OF GNSS-SA-DataRecord,
3      ...
4  }
5
6  ProvideModernizedGPSEphAndClockCorr ::= SEQUENCE {
7      partNumber                    PartNumber64,
8      totalNumOfParts               TotalParts64,
9      navigationDataInformation     SEQUENCE SIZE (1..numSV-64) OF NavDataInformation-GPS,
10     ...
11 }
12
13 ProvideQZSSEphemerisAndClockCorr ::= SEQUENCE {
14     partNumber                      PartNumber16,
15     totalNumOfParts                 TotalParts16,
16     navigationDataInformation       SEQUENCE SIZE (1..numSVQZSS) OF NavDataInformation-QZSS,
17     ...
18 }
19
20 ProvideGLONASSEphemerisAndClockCorr ::= SEQUENCE {
21     partNumber                      PartNumber32,
22     totalNumOfParts                 TotalParts32,
23     navigationDataRecord            SEQUENCE SIZE (1..numSVGLONASS) OF NavDataRecord-GLONASS,
24     ...
25 }
26
27 ProvideGalileoEphemerisAndClockCorr ::= SEQUENCE {
28     partNumber                      PartNumber64,
29     totalNumOfParts                 TotalParts64,
30     navigationDataRecord            SEQUENCE SIZE (1..numSV-64) OF NavDataRecord-Galileo,
31     ...
32 }
33
34 ProvideGEONavMessageParameters ::= SEQUENCE {
35     partNumber                      PartNumber08,
36     totalNumOfParts                 TotalParts08,
37     navigationDataRecord            SEQUENCE SIZE (1..numSVGEO) OF NavDataRecord-GEO,
38     ...
39 }
40
41 ProvideModernizedGPSAlmanac ::= SEQUENCE {
42     partNumber                      PartNumber64,
43     totalNumOfParts                 TotalParts64,
44     reducedAlmanacInformation        ReducedAlmanacInformation-GPS          OPTIONAL,
45     midiAlmanacInformation           MidiAlmanacInformation-GPS          OPTIONAL,
46     ...
47 }
48
49 ProvideQZSSAlmanac ::= SEQUENCE {
50     partNumber                      PartNumber16,
51     totalNumOfParts                 TotalParts16,
52     navAlmanacInformation            NAV-AlmanacInformation          OPTIONAL,
53     reducedAlmanacInformation        ReducedAlmanacInformation-QZSS    OPTIONAL,
54     midiAlmanacInformation           MidiAlmanacInformation-QZSS      OPTIONAL,

```

```

1     ...
2   }
3
4   ProvideGLONASSAlmanac ::= SEQUENCE {
5     partNumber          PartNumber32,
6     totalNumOfParts    TotalParts32,
7     almanacDataRecord  SEQUENCE SIZE (1..numSVGLONASS) OF
8                         AlmanacDataRecord-GLONASS,
9     addNonImmediateInfo AddNonImmediateInfo                      OPTIONAL,
10    ...
11  }
12
13  ProvideGalileoAlmanac ::= SEQUENCE {
14    partNumber          PartNumber64,
15    totalNumOfParts    TotalParts64,
16    weekNumber         INTEGER (0..255),
17    t-oa               INTEGER (0..147),
18    iod-a              INTEGER (0..3),
19    almanacInformation SEQUENCE SIZE (1..numSV-64) OF AlmanacInformation-02,
20    ...
21  }
22
23  ProvideGEOAlmanacMessageParameters ::= SEQUENCE {
24    partNumber          PartNumber08,
25    totalNumOfParts    TotalParts08,
26    almanacDataRecord  SEQUENCE SIZE (1..numSVGEO) OF AlmanacDataRecord-GEO,
27    ...
28  }
29
30  ProvideGPSIonosphericModel ::= SEQUENCE {
31    alpha-0            INTEGER (0..255),
32    alpha-1            INTEGER (0..255),
33    alpha-2            INTEGER (0..255),
34    alpha-3            INTEGER (0..255),
35    beta-0             INTEGER (0..255),
36    beta-1             INTEGER (0..255),
37    beta-2             INTEGER (0..255),
38    beta-3             INTEGER (0..255),
39    ...
40  }
41
42  ProvideGalileoIonosphericModel ::= SEQUENCE {
43    a-i0               INTEGER (0..4095),
44    a-i1               INTEGER (0..4095),
45    a-i2               INTEGER (0..4095),
46    stormFlag-1        BOOLEAN                      OPTIONAL,
47    stormFlag-2        BOOLEAN                      OPTIONAL,
48    stormFlag-3        BOOLEAN                      OPTIONAL,
49    stormFlag-4        BOOLEAN                      OPTIONAL,
50    stormFlag-5        BOOLEAN                      OPTIONAL,
51    ...
52  }
53
54  ProvideQZSSIonosphericModel ::= SEQUENCE {

```

C.R0022-B v1.0

```

1      alpha-0                INTEGER (0..255),
2      alpha-1                INTEGER (0..255),
3      alpha-2                INTEGER (0..255),
4      alpha-3                INTEGER (0..255),
5      beta-0                 INTEGER (0..255),
6      beta-1                 INTEGER (0..255),
7      beta-2                 INTEGER (0..255),
8      beta-3                 INTEGER (0..255),
9      ...
10     }
11
12     ProvideGNSS-GNSSTimeOffset ::= SEQUENCE {
13         partNumber           PartNumber16,
14         totalNumOfParts     TotalParts16,
15         gnssTimeOffsetData  SEQUENCE (SIZE (1..numGNSS)) OF SEQUENCE {
16             gnssIdentifier-1  INTEGER (1..16),
17             gnss-gnssTimeOffset SEQUENCE SIZE (1..numGNSS-1) OF SEQUENCE {
18                 gnssIdentifier-2  INTEGER (1..16),
19                 a0-ggto            INTEGER (-67108864..67108863),
20                 a1-ggto            INTEGER (-8388608..8388607)           OPTIONAL,
21                 a2-ggto            INTEGER (-131072..131071)           OPTIONAL,
22                 tot                INTEGER (0..37799),
23                 wNtot              INTEGER (0..8191)                   OPTIONAL,
24                 deltaT              INTEGER (-128..127)                 OPTIONAL,
25                 ...
26             },
27         ...
28     },
29     ...
30 }
31
32 ProvideGPSUTCModel ::= SEQUENCE {
33     a-0-n                INTEGER (-32768..32767),
34     a-1-n                INTEGER (-4096..4095),
35     a-2-n                INTEGER (-64..63),
36     delta-t-LS           INTEGER (-128..127),
37     t-ot                 INTEGER (0..65535),
38     wn-ot                INTEGER (0..8191),
39     wn-LSF               INTEGER (0..255),
40     dn                   INTEGER (0..15),
41     delta-t-LSF          INTEGER (-128..127),
42     ...
43 }
44
45 ProvideAdvancedGNSSSatHealthInfo ::= SEQUENCE {
46     svHealth             CHOICE {
47         allSVsHealthy     NULL,
48         gnssSVHealthDataRecord SEQUENCE SIZE (1..numGNSS) OF
49             GNSS-SV-HealthDataRecord,
50         ...
51     },
52     ...
53 }
54

```

```

1  AdvancedRejectBS ::= SEQUENCE {
2      rejectRequestType      RejectRequestTypeBSAdv,
3      rejectReason           RejectReasonBSAdv,
4      ...
5  }
6
7  ProvideDGNSSAssistance ::= SEQUENCE (SIZE(1..numGNSS)) OF SEQUENCE {
8      gnssIdentifier          GNSSIdentifier,
9      dgnssRefTime           INTEGER (0..604799),
10     timeReferenceSource     TimeReferenceSource OPTIONAL,
11     dgnssSignalData         SEQUENCE (SIZE (1..numSig)) OF SEQUENCE {
12         gnssSigIdentifier    GNSSSigIdentifier OPTIONAL,
13         statusHealth         INTEGER (0..7),
14         dgnssSatList         SEQUENCE (SIZE (1..numSV)) OF SEQUENCE {
15             gnssSatID        INTEGER (0..63),
16             iod               BIT STRING (SIZE(11)),
17             udre              INTEGER (0..3),
18             udreGr            INTEGER (0..7) OPTIONAL,
19             tofValUdreGr      INTEGER (0..7) OPTIONAL,
20             prc                INTEGER (-2047..2047),
21             prrc              INTEGER (-127..127),
22             ...
23         },
24         ...
25     },
26     ...
27 }
28
29 -- Unsupported private extensions shall be discarded if received.
30 ProvideBS-respPrivateExtension ::= SEQUENCE {
31     ...}
32
33 END
34

```

2.5 Common Information Elements

```

35
36
37 CommonDataTypes DEFINITIONS AUTOMATIC TAGS ::=
38
39 BEGIN
40
41 -- Common Data Types
42
43 AccumDeltaRange          ::= INTEGER (0..33554431)
44
45 AcqCapability             ::= BIT STRING (SIZE (14))
46
47 ActionTime               ::= INTEGER (0..63)
48
49 ActionTimeExt            ::= INTEGER (0..1023)
50
51 ActiveSetInfoReq         ::= BOOLEAN
52
53 ActiveSetPilotPNSeqOffset ::= INTEGER (0..511)

```

C.R0022-B v1.0

```

1
2 AddDoppReq                ::= BOOLEAN
3
4 AdditionalDoppler         ::= SEQUENCE {
5     firstOrderDoppler     INTEGER (-64..63),
6     dopplerSearchWindow   BIT STRING (SIZE (3)),
7     ...
8 }
9
10 AddNon-ImmedInfoReq      ::= BOOLEAN
11
12 AddPilotMeas-01          ::= SEQUENCE {
13     addPilotMeasPhase     PilotPhase,
14     pilotStrength         PilotStrength,
15     addPilotRMSError      AddPilotRMSError,
16     ...
17 }
18
19 AddPilotMeas-02          ::= SEQUENCE {
20     addPilotID            PilotID,
21     addPilotTimeOffset    PilotTimeOffset,
22     addPilotStrength      PilotStrength,
23     rmsError              RMSError,
24     ...
25 }
26
27 AddPilotMeas-03          ::= SEQUENCE {
28     addPilotMeasPhase     PilotPhase,
29     colorCode              ColorCode                OPTIONAL,
30     hdpPeriods            HDPPeriods                OPTIONAL,
31     pilotStrength         PilotStrength,
32     addPilotRMSError      AddPilotRMSError,
33     ...
34 }
35
36 AddPilotRMSError         ::= BIT STRING (SIZE (6))
37
38 AddPilotTimeOffsetInfo   ::= SEQUENCE {
39     addBandClass          BandClassUMB,
40     addFreqAssign         FrequencyAssignmentUMB,
41     powerOnAdditionalFrequency TotalReceivedPowerUMB,
42     addPilotMeas          SEQUENCE SIZE (1..numAddPilotsP) OF
43                             AddPilotMeas-02                OPTIONAL,
44     ...
45 }
46
47 AddNonImmediateInfo      ::= SEQUENCE {
48     tau-c                 BIT STRING (SIZE (32)),
49     n-4                   BIT STRING (SIZE (5))                OPTIONAL,
50     tau-gps               BIT STRING (SIZE (22))                OPTIONAL,
51     b-1                   BIT STRING (SIZE (11))                OPTIONAL,
52     b-2                   BIT STRING (SIZE (10))                OPTIONAL,
53     kp                    BIT STRING (SIZE (2))                OPTIONAL,
54     ...

```

```

1  }
2
3  AFLTCapabilityInd          ::= BIT STRING (SIZE (1))
4
5  AlmanacCorrections        ::= SEQUENCE {
6      satellitePRNNumber     INTEGER (0..32),
7      correctionForXYZ       CorrectionForXYZ           OPTIONAL,
8      correctionForClock     CorrectionForClock        OPTIONAL,
9      ...
10 }
11
12 AlmanacCorrectionsExt     ::= SEQUENCE {
13     satellitePRNNumber     INTEGER (0..31),
14     correctionForXYZ       CorrectionForXYZExt        OPTIONAL,
15     correctionForClock     CorrectionForClockExt     OPTIONAL,
16     ...
17 }
18
19 AlmanacDataRecord-GEO     ::= SEQUENCE {
20     satellitePRNNumber     INTEGER (120..158),
21     sbasID                 INTEGER (0..7)             OPTIONAL,
22     dataID                 BIT STRING (SIZE (2)),
23     health                 BIT STRING (SIZE (8)),
24     x-G                    BIT STRING (SIZE (15)),
25     y-G                    BIT STRING (SIZE (15)),
26     z-G                    BIT STRING (SIZE (9)),
27     x-G-Rate-of-Change     BIT STRING (SIZE (3)),
28     y-G-Rate-of-Change     BIT STRING (SIZE (3)),
29     z-G-Rate-of-Change     BIT STRING (SIZE (4)),
30     t-0                    BIT STRING (SIZE (11)),
31     ...
32 }
33
34 AlmanacDataRecord-GLONASS ::= SEQUENCE {
35     referenceDay           BIT STRING (SIZE (11)),
36     slotNumber             BIT STRING (SIZE (5)),
37     h-n-A                 BIT STRING (SIZE (5)),
38     lambda-n-A            BIT STRING (SIZE (21)),
39     t-lambda-n-A          BIT STRING (SIZE (21)),
40     delta-i-n-A           BIT STRING (SIZE (18)),
41     delta-TnA             BIT STRING (SIZE (22)),
42     delta-T-dot-n-A       BIT STRING (SIZE (7)),
43     epsilon-n-A           BIT STRING (SIZE (15)),
44     omega-n-A             BIT STRING (SIZE (16)),
45     tau-n-A               BIT STRING (SIZE (10)),
46     c-n-A                 BIT STRING (SIZE (1)),
47     m-n-A                 BIT STRING (SIZE (2)),
48     ...
49 }
50
51 AlmanacFormat              ::= BIT STRING (SIZE (4))
52
53 AlmanacInformation-01     ::= SEQUENCE {
54     satellitePRNNumber     INTEGER (0..63),

```

C.R0022-B v1.0

```

1      delta-i          BIT STRING (SIZE (16)),
2      m-0              BIT STRING (SIZE (24)),
3      eccentricity     BIT STRING (SIZE (16)),
4      a-Sqrt           BIT STRING (SIZE (24)),
5      omega-0          BIT STRING (SIZE (24)),
6      omega            BIT STRING (SIZE (24)),
7      omegaDot         BIT STRING (SIZE (16)),
8      afl              BIT STRING (SIZE (11)),
9      af0              BIT STRING (SIZE (11)),
10     ...
11   }
12
13   AlmanacInformation-02 ::= SEQUENCE {
14     svID               INTEGER(1..64),
15     eccentricity      BIT STRING (SIZE (11)),
16     delta-i           BIT STRING (SIZE (11)),
17     omegaDot          BIT STRING (SIZE (11)),
18     svHealthKP        BIT STRING (SIZE (4)),
19     delta-A-Sqrt      BIT STRING (SIZE (17)),
20     omega-0           BIT STRING (SIZE (16)),
21     m-0               BIT STRING (SIZE (16)),
22     omega             BIT STRING (SIZE (16)),
23     af0               BIT STRING (SIZE (14)),
24     afl               BIT STRING (SIZE (11)),
25     ...
26   }
27
28   Alpha-beta-req      ::= BOOLEAN
29
30   AltitudeAidInfo     ::= SEQUENCE {
31     averageTerrainHeight INTEGER (-50..973),
32     stdDevTerrainHeight  BIT STRING (SIZE (5)),
33     ...
34   }
35
36   AngleFromTrueNorth  ::= INTEGER (0..15)
37
38   AngleMagnitudeHorLocUncert ::= INTEGER (0..15)
39
40   AngleStandardHorLocUncert ::= INTEGER (0..15)
41
42   AngleMagnitudeHorVelUncert ::= INTEGER (0..15)
43
44   AngleStandardHorVelUncert ::= INTEGER (0..15)
45
46   AntennaAngInfoReq   ::= BOOLEAN
47
48   AntennaAngleInformation-01 ::= SEQUENCE {
49     antennaOpeningAngle  INTEGER (0..7),
50     antennaAzimuth       INTEGER (0..63)           OPTIONAL,
51     ...
52   }
53
54   AntennaAngleInformation-02 ::= SEQUENCE {

```

```

1      antennaOpeningAngle      INTEGER (0..63),
2      antennaAzimuth           INTEGER (0..63)                OPTIONAL,
3      antennaRecord             SEQUENCE SIZE (1..numAntRanges) OF AntennaRecord  OPTIONAL,
4      ...
5  }
6
7  AntennaHeight                ::= INTEGER (0..1023)
8
9  AntennaLocation              ::= SEQUENCE {
10     deltaLatitude             DeltaLatitude,
11     deltaLongitude            DeltaLongitude,
12     antennaHeight             AntennaHeight,
13     ...
14 }
15
16 AntennaRangeInfoReq          ::= BOOLEAN
17
18 AntennaRangeInformation       ::= SEQUENCE {
19     antennaRange               INTEGER (0..15),
20     ...
21 }
22
23 AntennaRecord                ::= SEQUENCE {
24     referenceReceivedPilotPower  INTEGER (0..127),
25     antennaRange                INTEGER (0..16383),
26     ...
27 }
28
29 AvailInfoStatus              ::= BIT STRING (SIZE (9))
30
31 Az-ElInformation             ::= SEQUENCE {
32     azimuthOfGPSSatellite       INTEGER (0..63),
33     elevationAngleOfGPSSatellite  INTEGER (0..7),
34     ...
35 }
36
37 Az-ElInformationGNSSAcqAssist ::= SEQUENCE {
38     azimuthOfSatellite          INTEGER (0..511),
39     elevationAngleOfSatellite    INTEGER (0..127),
40     ...
41 }
42
43 AzElReq                      ::= BOOLEAN
44
45 AzimuthAndElevation          ::= SEQUENCE {
46     azimuthOfGPSSatellite       INTEGER (0..31),
47     elevationAngleOfGPSSatellite  INTEGER (0..7),
48     ...
49 }
50
51 BandClass                    ::= BIT STRING (SIZE (5))
52
53 BandClassUMB                  ::= BIT STRING (SIZE (8))
54

```

C.R0022-B v1.0

```

1  BandClassCapInfoReq      ::= BOOLEAN
2
3  BaseStationID            ::= BIT STRING (SIZE (16))
4
5  BaseStationID-1X        ::= BIT STRING (SIZE (128))
6
7  BaseStationID-HRPD      ::= BIT STRING (SIZE (128))
8
9  BearingMeasCap          ::= BOOLEAN
10
11 BearingVertical          ::= INTEGER (0..63)
12
13 BSInfoRequested          ::= SEQUENCE {
14     repeaterInfoReq      RepeaterInfoReq,
15     pilotAcqThreshold    PilotAcqThreshold          OPTIONAL,
16     ...
17 }
18
19 BSInformationRecord      ::= SEQUENCE {
20     bandClass            BandClass,
21     frequencyAssignment  FrequencyAssignment,
22     modeIndicator        ModeIndicator,
23     pilotRecord          SEQUENCE SIZE (1..numPilotTxF) OF PilotRecord-03  OPTIONAL,
24     ...
25 }
26
27 BSLatitude               ::= INTEGER (-2097152..2097151)
28
29 BSLocInfo                ::= SEQUENCE {
30     bsLatitude           BSLatitude,
31     bsLongitude          BSLongitude,
32     bsLocInfoSource      BSLocInfoSource,
33     stdDevCoarseLoc      StdDevCoarseLoc          OPTIONAL,
34     bsLocInfoAge         BSLocInfoAge             OPTIONAL,
35     ...
36 }
37
38 BSLocInfoAge             ::= BIT STRING (SIZE (4))
39
40 BSLocInfoReq             ::= BOOLEAN
41
42 BSLocInfoSource          ::= BIT STRING (SIZE (3))
43
44 BSLocStandardRevNumber   ::= BIT STRING (SIZE (6))
45
46 BSLongitude              ::= INTEGER (-4194304..4194303)
47
48 CancelType               ::= ENUMERATED {
49     reqMSLocationResponse,
50     reqMSInformation,
51     reqAutonomousMeasWeightingFactor,
52     reqPseudorangeMeasurements,
53     reqPilotPhaseMeasurement,
54     reqTimeOffsetMeasurement,

```

```

1     ...
2   }
3
4   CancelTypeAdv          ::= ENUMERATED {
5     reqAdvancedMSLocationResponse,
6     reqAdvancedMSInformation,
7     reqUMBPilotTimeOffsetMeasurement,
8     reqHRPDPilotPhaseMeasurement,
9     reqGNSSPseudorangeMeasurement,
10    reqAdvSystemParametersInformation,
11    ...
12  }
13
14
15  CancelTypeExt          ::= ENUMERATED {
16    reqExtendedMSLocationResponse,
17    reqExtendedMSInformation,
18    reqAutonomousMeasWeightingFactv1,
19    reqGeneralLocationMeasurement,
20    reqGPSCoarseLocationResponse,
21    reqMessagingDelayMeasurement,
22    reqBearingMeasurement,
23    reqServingSystemInformation,
24    ...
25  }
26
27
28  CarrierPhaseMeasInfo   ::= SEQUENCE {
29    accumDeltaRange       AccumDeltaRange,
30    carrierPhaseQualInd   CarrierPhaseQualInd,
31    ...
32  }
33
34  CarrierPhaseQualInd    ::= BIT STRING (SIZE (2))
35
36  CDMA SigProtocol        ::= BIT STRING (SIZE (8))
37
38  CDMA ReferenceTime      ::= INTEGER (0..16383)
39
40  CDMA SystemTime         ::= INTEGER (0..16383)
41
42  CDMA TransTimeOffset    ::= INTEGER (-8192..8191)
43
44  CircularUncertainty-01 ::= SEQUENCE {
45    horizVelUncert        HorizVelUncert,
46    horizVelUncertConf    HorizVelUncertConfCirc,
47    ...
48  }
49
50  ChannelNumber           ::= INTEGER (-7..13)
51
52  CircularUncertainty-02 ::= SEQUENCE {
53    horizLocUncert        HorizLocUncert,
54    horizLocUncertConfLevel HorizLocUncertConfLevelCirc,

```

C.R0022-B v1.0

```

1     ...
2   }
3
4   CircularUncertainty-03 ::= SEQUENCE {
5     stdDevCircularHorizPositionError  BIT STRING (SIZE (5)),
6     stdDevVertErrorPosUncert          BIT STRING (SIZE (3))          OPTIONAL,
7     ...
8   }
9
10  ClockBiasHalfMcs          ::= INTEGER (-31..480)
11
12  ClockBiasInfo             ::= SEQUENCE {
13    clockBias                 ClockBiasNs,
14    clockDrift                 ClockDriftLocExt          OPTIONAL,
15    ...
16  }
17
18  ClockBiasInfoAdv          ::= SEQUENCE {
19    referenceSourceForClock     INTEGER (0..7),
20    clockBias                   ClockBiasNs,
21    clockDrift                 ClockDriftLocExt          OPTIONAL,
22    ...
23  }
24
25  ClockBiasNs               ::= INTEGER (-13000..249143)
26
27  ClockCorrectionParameterRecord-01 ::= SEQUENCE {
28    t-op                        BIT STRING (SIZE (11))          OPTIONAL,
29    ura-oc-Index                BIT STRING (SIZE (5)),
30    ura-oc1-Index               BIT STRING (SIZE (3)),
31    ura-oc2-Index               BIT STRING (SIZE (3)),
32    t-oc                        BIT STRING (SIZE (11))          OPTIONAL,
33    af2-n                       BIT STRING (SIZE (10)),
34    af1-n                       BIT STRING (SIZE (20)),
35    af0-n                       BIT STRING (SIZE (26)),
36    t-GD                        BIT STRING (SIZE (13))          OPTIONAL,
37    interSignalCorrectionCNAV    InterSignalCorrectionCNAV    OPTIONAL,
38    interSignalCorrectionCNAV-2  InterSignalCorrectionCNAV-2  OPTIONAL,
39    ...
40  }
41
42  ClockCorrectionParameterRecord-02 ::= SEQUENCE {
43    t-oc                        BIT STRING (SIZE (14)),
44    af2                         BIT STRING (SIZE (12)),
45    af1                         BIT STRING (SIZE (18)),
46    af0                         BIT STRING (SIZE (28)),
47    t-GD                        BIT STRING (SIZE (10)),
48    modelID                     BIT STRING (SIZE (1)),
49    ...
50  }
51
52  ClockCorrectionReq         ::= BOOLEAN
53
54  ClockDriftInformation      ::= SEQUENCE {

```

```

1      clockDrift          INTEGER (-128..127),
2      stdDevClockDriftError BIT STRING (SIZE (3)),
3      ...
4  }
5
6  ClockDriftLoc          ::= INTEGER (-32768..32767)
7
8  ClockDriftLocExt      ::= INTEGER (-65536..65535)
9
10 ClockInfo              ::= SEQUENCE {
11     clockBias           ClockBiasNs,
12     clockDrift          ClockDriftLoc,
13     ...
14 }
15
16 ClockInfoAcqAssist    ::= SEQUENCE {
17     msgSeqNo            MsgSeqNo,
18     clockBias           ClockBiasHalfMcs,
19     stdDevClockBiasError StdDevClockBiasError,
20     clockDriftInformation ClockDriftInformation          OPTIONAL,
21     ...
22 }
23
24 ClockInfoGNSSAcqAssist ::= SEQUENCE {
25     clockBias           ClockBiasHalfMcs,
26     stdDevClockBiasError StdDevClockBiasError,
27     referenceBSIdentifier CHOICE {
28         oneX-HRPD      OneX-HRPD-BSIdentifier,
29         umb             UMB-BSIdentifier,
30         ...
31     },
32     ...
33 }
34
35 CNAV-CNAV-2-EphemerisDataRecord ::= SEQUENCE {
36     ephemerisParameterRecord EphemerisParameterRecord-02,
37     clockCorrectionParameterRecord ClockCorrectionParameterRecord-01,
38     ...
39 }
40
41 CodePeriods           ::= INTEGER (0..19)
42
43 CodePeriodsElapsed   ::= INTEGER (0..31)
44
45 CodePhaseGNSSPseudorange ::= INTEGER (-134217728..134217727)
46
47 CodePhaseOrigin      ::= INTEGER (0..127)
48
49 CodePhaseParameter   ::= SEQUENCE {
50     gpsCodePhase       INTEGER (0..1022),
51     codePeriods        CodePeriods,
52     gpsBitNumber       INTEGER (0..3),
53     codePhaseWindow    BIT STRING (SIZE (5)),
54     ...

```

C.R0022-B v1.0

```

1  }
2
3  CodePHparReq          ::= BOOLEAN
4
5  ColorCode             ::= BIT STRING (SIZE (3))
6
7  CorrectionForClock    ::= SEQUENCE {
8      correctionForClock    INTEGER (-65536..65535),
9      firstOrderClockCorrection  INTEGER (-128..127),
10     ...
11 }
12
13 CorrectionForClockExt ::= SEQUENCE {
14     correctionForClock    INTEGER (-65536..65535),
15     firstOrderClockCorrection  INTEGER (-4096..4095),
16     secondOrderClockCorrection  INTEGER (-512..511),
17     ...
18 }
19
20 CorrectionForXYZ      ::= SEQUENCE {
21     correctionForXCoordinate  INTEGER (-16384..16383),
22     correctionForYCoordinate  INTEGER (-16384..16383),
23     correctionForZCoordinate  INTEGER (-16384..16383),
24     firstOrderXCoordCorrection  INTEGER (-64..63),
25     firstOrderYCoordCorrection  INTEGER (-64..63),
26     firstOrderZCoordCorrection  INTEGER (-64..63),
27     ...
28 }
29
30 CorrectionForXYZExt   ::= SEQUENCE {
31     correctionForXCoordinate  INTEGER (-16384..16383),
32     correctionForYCoordinate  INTEGER (-16384..16383),
33     correctionForZCoordinate  INTEGER (-16384..16383),
34     firstOrderXCoordCorrection  INTEGER (-64..63),
35     firstOrderYCoordCorrection  INTEGER (-64..63),
36     firstOrderZCoordCorrection  INTEGER (-64..63),
37     secondOrderXCoordCorr    INTEGER (-128..127),
38     secondOrderYCoordCorr    INTEGER (-128..127),
39     secondOrderZCoordCorr    INTEGER (-128..127),
40     ...
41 }
42
43 CorrectionRecord      ::= SEQUENCE {
44     satelliteIDCode          INTEGER (0..63),
45     issueOfDate              BIT STRING (SIZE (8)),
46     userDifferentialRangeError  BIT STRING (SIZE (2)),
47     pseudorangeCorrection      BIT STRING (SIZE (12)),
48     pseudorangeRateCorrection  BIT STRING (SIZE (8)),
49     ...
50 }
51
52 DataRecord            ::= SEQUENCE {
53     satelliteID              SatelliteID,
54     issueOfData              IssueOfData,

```

```

1     ...
2   }
3
4   DataRecordBSAlmanac      ::= SEQUENCE {
5     pilotPNSeqOffset      INTEGER (0..511),
6     baseStationID        BaseStationID,
7     refTimeCorrection     RefTimeCorrection,
8     ...
9   }
10
11  DelayInformation          ::= SEQUENCE {
12    pilotPNSeqOffset      INTEGER (0..511),
13    oneWayDelay           INTEGER (0..2027),
14    ...
15  }
16
17  DeltaHeight              ::= INTEGER (-1024..1024)
18
19  DeltaLatitude            ::= INTEGER (-32768..32767)
20
21  DeltaLongitude           ::= INTEGER (-32768..32767)
22
23  DGPSFlag                ::= BOOLEAN
24
25  DigitalModeInd           ::= BIT STRING (SIZE (4))
26
27  DoppReq                  ::= BOOLEAN
28
29  DoppSearchWinReq        ::= BOOLEAN
30
31  EllipticalUncertainty-01 ::= SEQUENCE {
32    angleStandardHorVelUncert      AngleStandardHorVelUncert,
33    stdDevErrorAlongAngleHorVelUncert  StdDevErrAlongAngleHorVelUncert,
34    stdDevErrorPerpToAngleHorVelUncert  StdDevErrPerpToAngleHorVelUncert,
35    ...
36  }
37
38  EllipticalUncertainty-02 ::= SEQUENCE {
39    angleStandardHorLocUncert      AngleStandardHorLocUncert,
40    stdDevErrorAlongAngleHorPosUncert  StdDevErrAlongAngleHorPosUncert,
41    stdDevErrorPerpToAngleHorPosUncert  StdDevErrPerpToAngleHorPosUncert,
42    ...
43  }
44
45  EllipticalUncertainty-03 ::= SEQUENCE {
46    angleHorPosUncert              INTEGER (0..84),
47    stdDevErrorAlongAngleHorPosUncert  StdDevErrAlongAngleHorPosUncert,
48    stdDevErrorPerpToAngleHorPosUncert  StdDevErrPerpToAngleHorPosUncert,
49    stdDevVertErrorPosUncert          BIT STRING (SIZE (3))
50    ...
51  }
52
53  EphemerisAgeTolerance      ::= BIT STRING (SIZE (4))
54

```

OPTIONAL,

C.R0022-B v1.0

```

1  EphemerisInformation ::= SEQUENCE {
2      satellitePRNNumber    INTEGER (0..63),
3      iode                  BIT STRING (SIZE (8)),
4      c-rs                  BIT STRING (SIZE (16)),
5      delta-n               BIT STRING (SIZE (16)),
6      m-0                   BIT STRING (SIZE (32)),
7      c-uc                  BIT STRING (SIZE (16)),
8      eccentricity         BIT STRING (SIZE (32)),
9      c-us                  BIT STRING (SIZE (16)),
10     a-Sqrt                BIT STRING (SIZE (32)),
11     t-oe                  BIT STRING (SIZE (16)),
12     c-ic                  BIT STRING (SIZE (16)),
13     omega-0              BIT STRING (SIZE (32)),
14     c-is                  BIT STRING (SIZE (16)),
15     i-0                   BIT STRING (SIZE (32)),
16     c-rc                  BIT STRING (SIZE (16)),
17     omega                 BIT STRING (SIZE (32)),
18     omegaDot              BIT STRING (SIZE (24)),
19     i-dot                 BIT STRING (SIZE (14)),
20     t-oc                  BIT STRING (SIZE (16)),
21     af2                   BIT STRING (SIZE (8)),
22     af1                   BIT STRING (SIZE (16)),
23     af0                   BIT STRING (SIZE (22)),
24     ...
25 }
26
27 EphemerisParameterRecord-01 ::= SEQUENCE {
28     signalHealthCNAV      SignalHealthCNAV                OPTIONAL,
29     signalHealthCNAV-2    L1Health                       OPTIONAL,
30     t-op                  BIT STRING (SIZE (11)),
31     ura-oe-Index         BIT STRING (SIZE (5)),
32     t-oe                  BIT STRING (SIZE (11)),
33     delta-A              BIT STRING (SIZE (26)),
34     a-dot                 BIT STRING (SIZE (25)),
35     delta-n0              BIT STRING (SIZE (17)),
36     delta-n0-dot         BIT STRING (SIZE (23)),
37     m-0-n                 BIT STRING (SIZE (33)),
38     eccentricity-n       BIT STRING (SIZE (33)),
39     omega-n               BIT STRING (SIZE (33)),
40     omega-0-n             BIT STRING (SIZE (33)),
41     deltaOmegaDot        BIT STRING (SIZE (17)),
42     i-0-n                 BIT STRING (SIZE (33)),
43     i-0-n-dot            BIT STRING (SIZE (15)),
44     c-is-n                BIT STRING (SIZE (16)),
45     c-ic-n                BIT STRING (SIZE (16)),
46     c-rs-n                BIT STRING (SIZE (24)),
47     c-rc-n                BIT STRING (SIZE (24)),
48     c-us-n                BIT STRING (SIZE (21)),
49     c-uc-n                BIT STRING (SIZE (21)),
50     ...
51 }
52
53 EphemerisParameterRecord-02 ::= SEQUENCE {
54     signalHealthCNAV      SignalHealthCNAV                OPTIONAL,

```

```

1      signalHealthCNAV-2      L1CHealth      OPTIONAL,
2      t-op                    BIT STRING (SIZE (11)),
3      ura-oe-Index            BIT STRING (SIZE (5)),
4      t-oe                    BIT STRING (SIZE (11)),
5      delta-A                 BIT STRING (SIZE (26)),
6      a-dot                   BIT STRING (SIZE (25)),
7      delta-n0                BIT STRING (SIZE (17)),
8      delta-n0-dot            BIT STRING (SIZE (23)),
9      m-0-n                   BIT STRING (SIZE (33)),
10     eccentricity-n          BIT STRING (SIZE (33)),
11     omega-n                  BIT STRING (SIZE (33)),
12     omega-0-n                BIT STRING (SIZE (33)),
13     deltaOmegaDot            BIT STRING (SIZE (17)),
14     i-0-n                    BIT STRING (SIZE (33)),
15     i-0-n-dot                BIT STRING (SIZE (15)),
16     c-is-n                   BIT STRING (SIZE (16)),
17     c-ic-n                   BIT STRING (SIZE (16)),
18     c-rs-n                   BIT STRING (SIZE (24)),
19     c-rc-n                   BIT STRING (SIZE (24)),
20     c-us-n                   BIT STRING (SIZE (21)),
21     c-uc-n                   BIT STRING (SIZE (21)),
22     ...
23 }
24
25 EphemerisParameterRecord-03 ::= SEQUENCE {
26     svHealth                 BIT STRING (SIZE (5)),
27     iod                       BIT STRING (SIZE (10)),
28     t-oe                     BIT STRING (SIZE (14)),
29     omega                     BIT STRING (SIZE (32)),
30     delta-n                   BIT STRING (SIZE (16)),
31     m-0                       BIT STRING (SIZE (32)),
32     omegaDot                  BIT STRING (SIZE (24)),
33     eccentricity              BIT STRING (SIZE (32)),
34     i-dot                     BIT STRING (SIZE (14)),
35     a-Sqrt                    BIT STRING (SIZE (32)),
36     i-0                       BIT STRING (SIZE (32)),
37     omega-0                   BIT STRING (SIZE (32)),
38     c-rs                       BIT STRING (SIZE (16)),
39     c-is                       BIT STRING (SIZE (16)),
40     c-us                       BIT STRING (SIZE (16)),
41     c-rc                       BIT STRING (SIZE (16)),
42     c-ic                       BIT STRING (SIZE (16)),
43     c-uc                       BIT STRING (SIZE (16)),
44     ...
45 }
46
47 ErrorAlongAngleHorLocUncert ::= BIT STRING (SIZE (6))
48
49 ErrorAlongAngleHorVelUncert ::= BIT STRING (SIZE (4))
50
51 ErrorPerpToAngleHorLocUncert ::= BIT STRING (SIZE (6))
52
53 ErrorPerpToAngleHorVelUncert ::= BIT STRING (SIZE (4))
54

```

C.R0022-B v1.0

```

1  ExtendedBSAlmanacReq      ::= BOOLEAN
2
3  ExtPilotIdInfoReq        ::= BOOLEAN
4
5  FalseAlarmProb-PilotPhase ::= BIT STRING (SIZE (2))
6
7  FalseAlarmProb-Pseudorange ::= INTEGER (0..3)
8
9  FirstOrderDoppReq        ::= BOOLEAN
10
11 FixType                   ::= BIT STRING (SIZE (1))
12
13 FixTypeAdv                ::= INTEGER (0..15)
14
15 FixTypeData               ::= SEQUENCE {
16     fixType                FixTypeAdv,
17     gnssIdentifier          GNSSIdBitMask,
18     wirelessIdentifier      WirelessIdentifier-String,
19     ...
20 }
21
22 FixTypeExt                ::= BIT STRING (SIZE (4))
23
24 FixTypeRequested          ::= BOOLEAN
25
26 FrameRecord               ::= SEQUENCE {
27     frameNumber             INTEGER (1..25),
28     subframes-4-and-5      BIT STRING (SIZE (600)),
29     ...
30 }
31
32 FrequencyAssignment        ::= BIT STRING (SIZE (11))
33
34 FrequencyAssignmentUMB     ::= BIT STRING (SIZE (16))
35
36 FrequencyInfo              ::= SEQUENCE {
37     bandClass               BandClass,
38     frequencyAssignment     FrequencyAssignment,
39     modeIndicator           ModeIndicator,
40     repMeasOnFreqReq        BOOLEAN                OPTIONAL,
41     ...
42 }
43
44 FrequencyRecord            ::= SEQUENCE {
45     bandClass               BandClass,
46     frequencyAssignment     FrequencyAssignment,
47     modeIndicator           ModeIndicator,
48     pilotRecord             SEQUENCE SIZE(1..numOfPilotsF) OF PilotPNSeqOffset OPTIONAL,
49     ...
50 }
51
52 FrequencyRecordAdv         ::= SEQUENCE {
53     bandClass               BandClass,
54     frequencyAssignment     FrequencyAssignment,

```

```

1     ...
2   }
3
4   FrequencyRecordResp ::= SEQUENCE {
5     bandClass           BandClass,
6     frequencyAssignment FrequencyAssignment,
7     modeIndicator       ModeIndicator,
8     pilotInfo           PilotInfo           OPTIONAL,
9     locationInformation LocationInformationBSAlmanac OPTIONAL,
10    altitudeAidInfo     AltitudeAidInfo     OPTIONAL,
11    timeCorrectionInformation TimeCorrectionInfoBSAlmanac OPTIONAL,
12    antennaAngleInformation AntennaAngleInformation-02 OPTIONAL,
13    ...
14  }
15
16  FrequencyRecordUMB ::= SEQUENCE {
17    bandClass           BandClassUMB,
18    frequencyAssignment FrequencyAssignmentUMB,
19    ...
20  }
21
22  GlobalInfo-01 ::= SEQUENCE {
23    msgSeqNo           MsgSeqNo,
24    referenceTime      ReferenceTime,
25    timeReferenceSource TimeReferenceSource-02,
26    pilotIdInfo        ModeIndChoice        OPTIONAL,
27    ...
28  }
29
30  GlobalInfo-02 ::= SEQUENCE {
31    referenceTime      ReferenceTime,
32    timeReferenceSource TimeReferenceSource,
33    referenceTimeUncertainty ReferenceTimeUncertainty OPTIONAL,
34    codePhaseOrigin   CodePhaseOrigin,
35    ...
36  }
37
38  GlobalInfo-03 ::= SEQUENCE {
39    referenceTime      ReferenceTime,
40    referenceLocation  ReferenceLocation        OPTIONAL,
41    referenceLocationUncertainty CHOICE {
42      circularUncertainty CircularUncertainty-03,
43      ellipticalUncertainty EllipticalUncertainty-03,
44      ...
45    },
46    clockInfo          ClockInfoAcqAssist    OPTIONAL,
47    ...
48  }
49
50  GlobalInfo-04 ::= SEQUENCE {
51    referenceTime      ReferenceTimeAdv,
52    timeReferenceSource TimeReferenceSource,
53    referenceTimeUncertainty ReferenceTimeUncertainty,
54    clockInfo          ClockInfoGNSSAcqAssist OPTIONAL,

```

C.R0022-B v1.0

```

1      codePhaseOrigin          CodePhaseOrigin,
2      ...
3  }
4
5  GNSS-SA-DataRecord          ::= SEQUENCE {
6      gnssIdentifier           GNSSIdentifier,
7      requestGNSSSignalDataRecord  SEQUENCE SIZE (1..numSig) OF
8                                  ReqGNSSSignalDataRecord          OPTIONAL,
9      ...
10 }
11
12 GNSS-SignalDataRecord       ::= SEQUENCE {
13     gnssSignalIdentifier      BIT STRING (SIZE (8)),
14     svHealth-GNSS-SignalID    CHOICE {
15         allSVsHealthyExistent    NULL,
16         someSVsUnhealthyNonexistent  SEQUENCE {
17             badSatelliteBitMask    BIT STRING (SIZE (64))          OPTIONAL,
18             nonExistSatelliteBitMask  BIT STRING (SIZE (64))          OPTIONAL,
19             ...
20             },
21             ...
22         },
23     ...
24 }
25
26 GNSS-SignalRecord           ::= SEQUENCE {
27     gnssSignalIdentifier      INTEGER(1..8)                          OPTIONAL,
28     satelliteInformationRecord  SEQUENCE SIZE (1..numSatGNSS) OF SatelliteInformationRecord,
29     ...
30 }
31
32 GNSS-SV-HealthDataRecord     ::= SEQUENCE {
33     gnssIdentifier           GNSSIdentifier,
34     svHealth-GNSS-ID        CHOICE {
35         allSVsHealthy        NULL,
36         gnssSignalDataRecord  SEQUENCE SIZE (1..numSig) OF GNSS-SignalDataRecord,
37         ...
38         },
39     ...
40 }
41
42 GNSSAcqCapability           ::= BIT STRING (SIZE (12))
43
44 GNSSFieldsReq               ::= BOOLEAN
45
46 GNSSHealthInfoRequest       ::= SEQUENCE {
47     gnssIdentifier           GNSSIdentifier,
48     gnssSignalIdentifier      BIT STRING (SIZE (8))                  OPTIONAL,
49     ...
50 }
51
52 GNSSIdBitMask                ::= BIT STRING (SIZE (16))
53
54 GNSSIdentifier               ::= INTEGER (1..16)

```

```

1
2  GNSSInfoRequest      ::= SEQUENCE {
3     gnssIdentifier      GNSSIdentifier,
4     gnssSignalIdentifier BIT STRING (SIZE (8))          OPTIONAL,
5     firstOrderDoppReq   FirstOrderDoppReq,
6     doppSearchWinReq    DoppSearchWinReq,
7     azElReq             AzElReq,
8     gnssFieldsReq       GNSSFieldsReq,
9     ...
10    }
11
12  GNSSInformationRecord ::= SEQUENCE {
13     gnssIdentifier      GNSSIdentifier,
14     gnssSignalRecord    SEQUENCE SIZE (1..numSig) OF GNSS-SignalRecord,
15     ...
16    }
17
18  GNSSMeasRequest      ::= SEQUENCE {
19     gnssIdentifier      GNSSIdentifier,
20     gnssSignalIdentifier BIT STRING (SIZE (8)),
21     ...
22    }
23
24  GNSSSensitivityInfoRequest ::= SEQUENCE {
25     gnssIdentifier      GNSSIdentifier,
26     reqGNSSSigDataRecord SEQUENCE SIZE (1..numSig) OF ReqGNSSSigDataRecord OPTIONAL,
27     ...
28    }
29
30  GNSSSigIdentifier    ::= INTEGER (0..8)
31
32  GNSSSatelliteID      ::= INTEGER (0..63)
33
34  GPS-SatelliteInfoRecord ::= SEQUENCE {
35     prnNumber           PRNNumber,
36     gpsCodePhase        INTEGER (0..1022),
37     gpsIntegerCodePhase INTEGER (0..19),
38     gpsBitNumber        INTEGER (0..3),
39     codePhaseWindow     INTEGER (0..31)          OPTIONAL,
40     zeroOrderDoppler    INTEGER (-2048..2047),
41     firstOrderDoppler   INTEGER (-1024..1023),
42     secondOrderDoppler  INTEGER (-256..255)      OPTIONAL,
43     dopplerSearchWindow INTEGER (0..4),
44     prnNumberSpecificFields PRN-NumberSpecificFields OPTIONAL,
45     az-ElInformation    Az-ElInformation        OPTIONAL,
46     gpsSatelliteHealthIndicator BOOLEAN,
47     ...
48    }
49
50  GPSAcqCapability      ::= BIT STRING (SIZE (12))
51
52  GPSCapabilityInd      ::= BIT STRING (SIZE (1))
53
54  GPSRecCapability      ::= BIT STRING (SIZE (32))

```

C.R0022-B v1.0

```

1
2 GPSRecCapInfoReq          ::= BOOLEAN
3
4 GPSSatInfoRequested      ::= SEQUENCE {
5     satModeInfoReq        SatModeInfoReq,
6     secondDerivDoppReq    SecondDerivDoppReq,
7     azElReq               AzElReq,
8     ...
9     }
10
11 GPSToTotalWeightRatio    ::= INTEGER (0..15)
12
13 GPSWeekNumber            ::= INTEGER (0..255)
14
15 HDPPeriods               ::= INTEGER (-4..3)
16
17 HDPUsed                  ::= BOOLEAN
18
19 Height                   ::= INTEGER (-500..15883)
20
21 HeightInfo               ::= SEQUENCE {
22     height                 Height,
23     stdDevVertErrorPosUncert StdDevVertErrorPosUncert,
24     ...
25     }
26
27 HeightInfoAdv            ::= SEQUENCE {
28     height                 Height,
29     verticalLocUncertainty VerticalLocUncertaintyExt,
30     vertLocUncertConfLevel VertLocUncertConfLevel           OPTIONAL,
31     ...
32     }
33
34 HeightInfoExt            ::= SEQUENCE {
35     height                 Height,
36     verticalLocUncertainty VerticalLocUncertaintyExt,
37     vertLocUncertConfLevel VertLocUncertConfLevel           OPTIONAL,
38     ...
39     }
40
41 HeightInfoRequested      ::= BOOLEAN
42
43 HorizBearing              ::= INTEGER (0..255)
44
45 HorizBearingUncert       ::= BIT STRING (SIZE (3))
46
47 HorizLocUncert           ::= BIT STRING (SIZE (5))
48
49 HorizLocUncertCirc       ::= BIT STRING (SIZE (3))
50
51 HorizLocUncertConfLevelCirc ::= BIT STRING (SIZE (2))
52
53 HorizLocUncertConfLevel  ::= BIT STRING (SIZE (2))
54

```

```

1 HorizLocUncertEllipReq ::= BOOLEAN
2
3 HorizLocUncert-Int ::= INTEGER (0..15)
4
5 HorizVelMagnitude ::= INTEGER (0..511)
6
7 HorizVelMagnitudeExt ::= INTEGER (0..2047)
8
9 HorVelocityReq ::= BOOLEAN
10
11 HorizVelUncert ::= BIT STRING (SIZE (4))
12
13 HorizVelUncertConfCirc ::= BIT STRING (SIZE (2))
14
15 HorizVelUncertConfEllip ::= BIT STRING (SIZE (2))
16
17 HorVelInfo ::= SEQUENCE {
18     horizVelMagnitude HorizVelMagnitudeExt,
19     velocityHeading VelocityHeading,
20     angleMagnitudeHorVelUncert AngleMagnitudeHorVelUncert,
21     errorAlongAngleHorVelUncert ErrorAlongAngleHorVelUncert,
22     errorPerpToAngleHorVelUncert ErrorPerpToAngleHorVelUncert,
23     horizVelUncertConf HorizVelUncertConfEllip OPTIONAL,
24     ...
25 }
26
27 HorVelUncertEllipReq ::= BOOLEAN
28
29 ImprovedLocMeasSupported ::= BOOLEAN
30
31 Integrity-Type-0 ::= SEQUENCE {
32     adjustedSatelliteStatus BIT STRING (SIZE (2)),
33     satelliteRecord SEQUENCE SIZE (1..nSat) OF SatelliteRecord-07,
34     ...
35 }
36
37 Integrity-Type-1 ::= SEQUENCE {
38     faultyGPSSatellitesPresent BOOLEAN,
39     satelliteRecord SEQUENCE SIZE (1..numFaultySV) OF
40         SatelliteRecord-08 OPTIONAL,
41     ...
42 }
43
44 InterSignalCorrectionCNAV ::= SEQUENCE {
45     isc-L1C-A BIT STRING (SIZE (13)) OPTIONAL,
46     isc-L2C BIT STRING (SIZE (13)) OPTIONAL,
47     isc-L5I5 BIT STRING (SIZE (13)) OPTIONAL,
48     isc-L5Q5 BIT STRING (SIZE (13)) OPTIONAL,
49     ...
50 }
51
52 InterSignalCorrectionCNAV-2 ::= SEQUENCE {
53     isc-L1CP BIT STRING (SIZE (13)) OPTIONAL,
54     isc-L1CD BIT STRING (SIZE (13)) OPTIONAL,

```

C.R0022-B v1.0

```

1     ...
2   }
3
4   InvWeightFactor           ::= BIT STRING (SIZE (6))
5
6   IonosphericCorrectionParameter ::= SEQUENCE {
7     alpha-0                 BIT STRING (SIZE (8)),
8     alpha-1                 BIT STRING (SIZE (8)),
9     alpha-2                 BIT STRING (SIZE (8)),
10    alpha-3                 BIT STRING (SIZE (8)),
11    beta-0                  BIT STRING (SIZE (8)),
12    beta-1                  BIT STRING (SIZE (8)),
13    beta-2                  BIT STRING (SIZE (8)),
14    beta-3                  BIT STRING (SIZE (8)),
15    ...
16  }
17
18  IssueOfData                ::= BIT STRING (SIZE (8))
19
20  L1CHealth                  ::= BOOLEAN
21
22  L2C-Mode                   ::= BIT STRING (SIZE (2))
23
24  Latitude                   ::= INTEGER (-16777216..16777215)
25
26  LocationAge                ::= BIT STRING (SIZE (4))
27
28  LocationInformationAcquisitionAssistance ::= SEQUENCE {
29    distanceToPilotSignalTransmitter  INTEGER (0..511),
30    azimuthOfPilotSignalTrans         INTEGER (0..63),
31    ...
32  }
33
34  LocationInformationBSAlmanac ::= SEQUENCE {
35    deltaLatitude      DeltaLatitude,
36    deltaLongitude     DeltaLongitude,
37    stdDevHorLocError  StdDevHorLocError,
38    antennaHeight      AntennaHeight
39    ...
40  }
41
42  LocationUncert             ::= CHOICE {
43    circularUncertainty     CircularUncertainty-02,
44    ellipticalUncertainty   EllipticalUncertainty-02,
45    ...
46  }
47
48  LocRefInfoRequested       ::= BOOLEAN
49
50  LocUncert                 ::= SEQUENCE {
51    reqHorLocUncertCirc     ReqHorLocUncertCirc,
52    reqHorLocUncertConfLevel ReqHorLocUncertConfLevel,
53    ...
54  }

```

OPTIONAL,

```

1
2 Longitude                ::= INTEGER (-33554432..33554431)
3
4 MaximalNumOfPilots       ::= INTEGER (0..511)
5
6 MaximalNumOfPilotsAdv    ::= INTEGER (0..4095)
7
8 MaximalRadius            ::= INTEGER (0..511)
9
10 MaxResponseTime         ::= BIT STRING (SIZE (3))
11
12 MaxResponseTimeAdv      ::= INTEGER (0..7)
13
14 MeasurementParameters   ::= SEQUENCE {
15     gnssSatelliteID      GNSSSatelliteID,
16     channelNumber        ChannelNumber                OPTIONAL,
17     codePhase            CodePhaseGNSSPseudorange,
18     pseudorangeMeasErrorInd PseudorangeMeasErrorIndAdv          OPTIONAL,
19     pseudorangeRMSError  PseudorangeRMSErrorAdv,
20     satellitePseudodoppler SatellitePseudodopplerGNSS,
21     satPseudodopplerRMSError SatPseudodopplerRMSErrorGNSS        OPTIONAL,
22     satelliteCN-0        SatelliteCN-0,
23     falseAlarmProb-Pseudorange FalseAlarmProb-Pseudorange    OPTIONAL,
24     pseudorangeFalseAlarmRange PseudorangeFalseAlarmRange    OPTIONAL,
25     carrierPhaseMeasInfo CarrierPhaseMeasInfo                OPTIONAL,
26     ...
27 }
28
29 MidiAlmanacDataRecord-GPS ::= SEQUENCE {
30     satellitePRNNumber    INTEGER (1..64),
31     eccentricity          BIT STRING (SIZE (11)),
32     delta-i               BIT STRING (SIZE (11)),
33     omegaDot              BIT STRING (SIZE (11)),
34     a-Sqrt                BIT STRING (SIZE (17)),
35     omega-0               BIT STRING (SIZE (16)),
36     omega                 BIT STRING (SIZE (16)),
37     m-0                   BIT STRING (SIZE (16)),
38     af0                   BIT STRING (SIZE (11)),
39     af1                   BIT STRING (SIZE (10)),
40     healthL1              BOOLEAN,
41     healthL2              BOOLEAN,
42     healthL5              BOOLEAN,
43     ...
44 }
45
46 MidiAlmanacDataRecord-QZSS ::= SEQUENCE {
47     satellitePRNNumber    INTEGER (193..197),
48     eccentricity          BIT STRING (SIZE (11)),
49     delta-i               BIT STRING (SIZE (11)),
50     omegaDot              BIT STRING (SIZE (11)),
51     a-Sqrt                BIT STRING (SIZE (17)),
52     omega-0               BIT STRING (SIZE (16)),
53     omega                 BIT STRING (SIZE (16)),
54     m-0                   BIT STRING (SIZE (16)),

```

C.R0022-B v1.0

```

1      af0          BIT STRING (SIZE (11)),
2      af1          BIT STRING (SIZE (10)),
3      healthL1    BOOLEAN,
4      healthL2    BOOLEAN,
5      healthL5    BOOLEAN,
6      ...
7  }
8
9  MidiAlmanacInformation-GPS ::= SEQUENCE {
10     wn-a-n       BIT STRING (SIZE (13)),
11     t-oa         BIT STRING (SIZE (8)),
12     midiAlmanacDataRecord SEQUENCE SIZE (1..numSV-64) OF MidiAlmanacDataRecord-GPS,
13     ...
14 }
15
16 MidiAlmanacInformation-QZSS ::= SEQUENCE {
17     wn-a-n       BIT STRING (SIZE (13)),
18     t-oa         BIT STRING (SIZE (8)),
19     midiAlmanacDataRecord SEQUENCE SIZE (1..numSVQZSS) OF MidiAlmanacDataRecord-QZSS,
20     ...
21 }
22
23 MobileCountryCode ::= BIT STRING (SIZE (12))
24
25 MobileNetworkCode ::= BIT STRING (SIZE (12))
26
27 ModeInd-00 ::= SEQUENCE {
28     systemID      SystemID,
29     networkId     NetworkID,
30     baseStationID BaseStationID,
31     mscIdentification MSCIdentification OPTIONAL,
32     ...
33 }
34
35 ModeIndAlmanac-00 ::= SEQUENCE {
36     systemInformation SystemInformation OPTIONAL,
37     ...
38 }
39
40 ModeIndChoice ::= CHOICE {
41     modeInd-00      ModeInd-00,
42     modeInd-01      SectorAddressIdentifier,
43     ...
44 }
45
46 ModeIndicator ::= BIT STRING (SIZE (2))
47
48 MSBandClassCap ::= BIT STRING (SIZE (128))
49
50 MSCcapabilities ::= SEQUENCE {
51     acqCapability    AcqCapability,
52     positionCalcCapability PositionCalcCapabilityExt,
53     repeaterDetectionCap RepeaterDetectionCap OPTIONAL,
54     bearingMeasCap   BearingMeasCap,

```

```

1     ...
2   }
3
4   MSCapReq                ::= BOOLEAN
5
6   MSCIdentification       ::= BIT STRING (SIZE (24))
7
8   MsgSeqNo                ::= INTEGER (0..7)
9
10  MSLocationRevNumber     ::= INTEGER (0..63)
11
12  MSLocStandardRevNumber  ::= BIT STRING (SIZE (6))
13
14  MSStatusInfo            ::= SEQUENCE {
15    cdmaSigProtocol        CDMA SigProtocol,
16    availInfoStatus        AvailInfoStatus,
17    horizLocUncert         HorizLocUncertCirc      OPTIONAL,
18    locationAge            LocationAge            OPTIONAL,
19    ...
20  }
21
22  MSStatusReq             ::= BOOLEAN
23
24  MSSystemTimeOffset      ::= INTEGER (-8192..8191)
25
26  MSSystemTimeOffsetUMB   ::= INTEGER (-16384..16383)
27
28  MTransTimeOffset        ::= SEQUENCE {
29    offsetReq               OffsetReq,
30    shortRepPeriodEnable    ShortRepPeriodEnable,
31    numReqTranTimeOffsetMeas NumReqTranTimeOffsetMeas,
32    offsetRefTimeIncr        OffsetRefTimeIncr,
33    actionTime              ActionTimeExt,
34    ...
35  }
36
37  MultipathInd            ::= BIT STRING (SIZE (3))
38
39  NAV-AlmanacDataRecord   ::= SEQUENCE {
40    satellitePRNNumber      INTEGER (193..197),
41    eccentricity            BIT STRING (SIZE (16)),
42    delta-i                 BIT STRING (SIZE (16)),
43    omegaDot                BIT STRING (SIZE (16)),
44    svHealth                BIT STRING (SIZE (8)),
45    a-Sqrt                  BIT STRING (SIZE (24)),
46    omega-0                 BIT STRING (SIZE (24)),
47    omega                   BIT STRING (SIZE (24)),
48    m-0                     BIT STRING (SIZE (24)),
49    af0                     BIT STRING (SIZE (11)),
50    af1                     BIT STRING (SIZE (11)),
51    ...
52  }
53
54  NAV-AlmanacInformation  ::= SEQUENCE {

```

C.R0022-B v1.0

```

1      wn-a-n          BIT STRING (SIZE (8)),
2      t-oa           BIT STRING (SIZE (8)),
3      navAlmanacDataRecord SEQUENCE SIZE (1..numSVQZSS) OF NAV-AlmanacDataRecord,
4      ...
5  }
6
7  NavDataInformation-GPS ::= SEQUENCE {
8      satellitePRNNumber      INTEGER (1..64),
9      ephemerisParameterRecord EphemerisParameterRecord-01,
10     clockCorrectionParameterRecord ClockCorrectionParameterRecord-01,
11     ...
12 }
13
14 NavDataInformation-QZSS ::= SEQUENCE {
15     satellitePRNNumber      INTEGER (193..197),
16     navEphemerisDataRecord  NAVephemerisDataRecord          OPTIONAL,
17     cnav-CNAV-2-EphemerisDataRecord CNAV-CNAV-2-EphemerisDataRecord OPTIONAL,
18     ...
19 }
20
21 NavDataRecord-Galileo ::= SEQUENCE {
22     satelliteNumber          INTEGER (1..64),
23     ephemerisParameterRecord EphemerisParameterRecord-03,
24     clockCorrectionParameterRecord SEQUENCE SIZE (1..numClk) OF
25                                     ClockCorrectionParameterRecord-02,
26     ...
27 }
28
29 NavDataRecord-GEO ::= SEQUENCE {
30     satellitePRNNumber      INTEGER (120..158),
31     iod                     BIT STRING (SIZE (8)),
32     t-0                     BIT STRING (SIZE (13)),
33     ura                     BIT STRING (SIZE (4)),
34     x-G                     BIT STRING (SIZE (30)),
35     y-G                     BIT STRING (SIZE (30)),
36     z-G                     BIT STRING (SIZE (25)),
37     x-G-Rate-of-Change      BIT STRING (SIZE (17)),
38     y-G-Rate-of-Change      BIT STRING (SIZE (17)),
39     z-G-Rate-of-Change      BIT STRING (SIZE (18)),
40     x-G-Acceleration        BIT STRING (SIZE (10)),
41     y-G-Acceleration        BIT STRING (SIZE (10)),
42     z-G-Acceleration        BIT STRING (SIZE (10)),
43     a-Gfo                   BIT STRING (SIZE (12)),
44     a-Gfl                   BIT STRING (SIZE (8)),
45     ...
46 }
47
48 NavDataRecord-GLONASS ::= SEQUENCE {
49     satelliteNumber          INTEGER (1..24),
50     h-n                     INTEGER (-7..13),
51     t-b                     BIT STRING (SIZE (7)),
52     typeOfSatellite         BIT STRING (SIZE (2)),
53     gamma-n-t-b            BIT STRING (SIZE (11)),
54     tau-n-t-b              BIT STRING (SIZE (22)),

```

```

1      x-n-t-b          BIT STRING (SIZE (27)),
2      y-n-t-b          BIT STRING (SIZE (27)),
3      z-n-t-b          BIT STRING (SIZE (27)),
4      xDot-n-t-b      BIT STRING (SIZE (24)),
5      yDot-n-t-b      BIT STRING (SIZE (24)),
6      zDot-n-t-b      BIT STRING (SIZE (24)),
7      xDotDot-n-t-b   BIT STRING (SIZE (5)),
8      yDotDot-n-t-b   BIT STRING (SIZE (5)),
9      zDotDot-n-t-b   BIT STRING (SIZE (5)),
10     b-n              BIT STRING (SIZE (3)),
11     p                BIT STRING (SIZE (2))                OPTIONAL,
12     f-T              BIT STRING (SIZE (4))                OPTIONAL,
13     delta-tau-n     BIT STRING (SIZE (5))                OPTIONAL,
14     ageOfData        BIT STRING (SIZE (5)),
15     p1                BIT STRING (SIZE (2)),
16     p2                BIT STRING (SIZE (1)),
17     ...
18 }
19
20     NAVephemerisDataRecord ::= SEQUENCE {
21         ura-Index      BIT STRING (SIZE (4)),
22         svHealth       BIT STRING (SIZE (6)),
23         iodc           BIT STRING (SIZE (10)),
24         t-oc           BIT STRING (SIZE (16)),
25         af2            BIT STRING (SIZE (8)),
26         af1            BIT STRING (SIZE (16)),
27         af0            BIT STRING (SIZE (22)),
28         t-GD           BIT STRING (SIZE (8)),
29         fitIntervalFlag BIT STRING (SIZE (1)),
30         t-oe           BIT STRING (SIZE (16))                OPTIONAL,
31         omega          BIT STRING (SIZE (32)),
32         delta-n        BIT STRING (SIZE (16)),
33         m-0            BIT STRING (SIZE (32)),
34         omegaDot       BIT STRING (SIZE (24)),
35         eccentricity   BIT STRING (SIZE (32)),
36         i-dot          BIT STRING (SIZE (32)),
37         a-Sqrt         BIT STRING (SIZE (32)),
38         i-0            BIT STRING (SIZE (32)),
39         omega-0        BIT STRING (SIZE (32)),
40         c-rs           BIT STRING (SIZE (16)),
41         c-is           BIT STRING (SIZE (16)),
42         c-us           BIT STRING (SIZE (16)),
43         c-rc           BIT STRING (SIZE (16)),
44         c-ic           BIT STRING (SIZE (16)),
45         c-uc           BIT STRING (SIZE (16)),
46         ...
47     }
48
49     NavMessageBitDataRecord ::= SEQUENCE {
50         navigationMessageBits INTEGER (1..1021),
51         satelliteRecord    SEQUENCE SIZE (1..numSV-DR) OF SatelliteRecord-02,
52         ...
53     }
54

```

C.R0022-B v1.0

```

1  NavMessageBitDataRecordExt ::= SEQUENCE {
2      navigationMessageFormat BIT STRING (SIZE (4)) OPTIONAL,
3      navigationMessageBits  INTEGER (1..1021) OPTIONAL,
4      satelliteRecord         SEQUENCE SIZE (1..numSV-DR) OF SatelliteRecord-04,
5      ...
6  }
7
8  NavMessageBits ::= SEQUENCE {
9      satellitePRNNumber      INTEGER (0..63),
10     subframes-1-2-3        BIT STRING (SIZE (900)),
11     ...
12 }
13
14 NavMsgFormat ::= BIT STRING (SIZE (4))
15
16 NavMsgType ::= BIT STRING (SIZE (4))
17
18 NeighborListInfoReq ::= BOOLEAN
19
20 NeighborPilotPNSeqOffset ::= INTEGER (1..511)
21
22 NetworkID ::= BIT STRING (SIZE (16))
23
24 NoOfFixes ::= INTEGER (1..256)
25
26 NoRequestElement ::= BOOLEAN
27
28 NumReqTranTimeOffsetMeas ::= INTEGER (0..63)
29
30 OffsetInfo ::= SEQUENCE {
31     offsetMeasPeriodStartRefTime OffsetMeasPeriodStartRefTime,
32     offsetRefTimeIncrement       OffsetMeasPeriodStartRefTime,
33     offsetMeasRecord             SEQUENCE SIZE (1..numOffsP) OF OffsetMeasRecord,
34     ...
35 }
36
37 OffsetMeasPeriodStartRefTime ::= INTEGER (0..1023)
38
39 OffsetMeasRecord ::= SEQUENCE {
40     cdmaTransTimeOffset          CDMATransTimeOffset,
41     offsetVariation              OffsetVariation OPTIONAL,
42     transmitPower                TransmitPower OPTIONAL,
43     ...
44 }
45
46 OffsetRefTimeIncr ::= BIT STRING (SIZE (3))
47
48 OffsetReq ::= BOOLEAN
49
50 OffsetVariation ::= BIT STRING (SIZE (3))
51
52 OneX-HRPD-BSIdentifier ::= SEQUENCE {
53     pilotPNSequenceOffset       INTEGER (0..511),
54     ...

```

```

1  }
2
3  PartNumber04          ::= INTEGER (1..4)
4
5  PartNumber08          ::= INTEGER (1..8)
6
7  PartNumber16          ::= INTEGER (1..16)
8
9  PartNumber32          ::= INTEGER (1..32)
10
11 PartNumber64          ::= INTEGER (1..64)
12
13 Pilot-TX-Type-00-Almanac ::= SEQUENCE {
14     pilotPNSequenceOffset    INTEGER (0..511),
15     modeIndAlmanac           CHOICE {
16         modeIndAlmanac-00    ModeIndAlmanac-00,
17         modeInd-01           SectorAddressIdentifier
18         ...
19     },
20     unlistedRepeatersIndicator BIT STRING (SIZE (4)),
21     ...
22 }
23
24 Pilot-TX-Type-00-AcquisitionAssistance ::= SEQUENCE {
25     pilotPNSequenceOffset    INTEGER (0..511),
26     unlistedRepeatersIndicator BIT STRING (SIZE (4)),
27     ...
28 }
29
30 Pilot-TX-Type-01-AcquisitionAssistance ::= SEQUENCE {
31     repeaterType              BIT STRING (SIZE (3)),
32     repeaterSignalIDNumber    RepeaterSignalIDNumber OPTIONAL,
33     ...
34 }
35
36 Pilot-TX-Type-01-Almanac ::= SEQUENCE {
37     repeaterType              RepeaterType-02,
38     repeaterSignalIDNumber    RepeaterSignalIDNumber OPTIONAL,
39     ...
40 }
41
42 PilotAcqThreshold          ::= ENUMERATED { val-42(0), val-38(1), val-34(2), val-30(3),
43                                         val-26(4), val-22(5), val-18(6), val-14(7), ... }
44
45 PilotDetectionSens         ::= ENUMERATED { val-42(0), val-38(1), val-34(2), val-30(3),
46                                         val-26(4), val-22(5), val-18(6), val-14(7), ... }
47
48 PilotDetSensReq           ::= BOOLEAN
49
50 PilotID                    ::= BIT STRING (SIZE (16))
51
52 PilotIDAge                 ::= BIT STRING (SIZE (4))
53
54 PilotIdInfoReq             ::= BOOLEAN

```

C.R0022-B v1.0

```

1
2 PilotIDInfoExt ::= SEQUENCE {
3     pnSequenceOffset      PNSequenceOffset,
4     baseStationBandClass  BandClass,
5     frequencyAssignment   FrequencyAssignment,
6     extPilotIDAge         PilotIDAge,
7     ...
8 }
9
10 PilotIDInformation ::= SEQUENCE {
11     modeIndChoice         ModeIndChoice,
12     pilotIDAge            PilotIDAge,
13     extPilotIDInfo       PilotIDInfoExt OPTIONAL,
14     ...
15 }
16
17 PilotIDUMB ::= BIT STRING (SIZE (128))
18
19 PilotInfo ::= SEQUENCE {
20     pilotRecord           SEQUENCE SIZE (1..numPilotTxF-512) OF PilotRecord-02 OPTIONAL,
21     ...
22 }
23
24 PilotPhase ::= INTEGER (0..524287)
25
26 PilotPhaseCap ::= BIT STRING (SIZE (6))
27
28 PilotPhaseFalseAlarmRange ::= BIT STRING (SIZE (2))
29
30 PilotPhaseInfo-01 ::= SEQUENCE {
31     pilotMeasPhase        PilotPhase,
32     pilotStrength         PilotStrength,
33     rmsError              RMSError,
34     ...
35 }
36
37 PilotPhaseInfo-02 ::= SEQUENCE {
38     bandClass             BandClass,
39     frequencyAssignment   FrequencyAssignment,
40     modeIndicator         ModeIndicator,
41     totalReceivedPower    TotalReceivedPower,
42     refTimeDifference      RefTimeDifference OPTIONAL,
43     pilotRecord           SEQUENCE SIZE (1..numPilotTxF) OF PilotRecord-01 OPTIONAL,
44     ...
45 }
46
47 PilotPhaseInfo-03 ::= SEQUENCE {
48     addBandClass          BandClass,
49     addFreqAssign         FrequencyAssignment,
50     powerOnAdditionalFrequency TotalReceivedPower,
51     addPilotMeas         SEQUENCE SIZE (1..numAddPilotsP) OF
52                             AddPilotMeas-01 OPTIONAL,
53     ...
54 }

```

```

1
2 PilotPhaseInfo-HRPD ::= SEQUENCE {
3     pilotMeasPhase      PilotPhase,
4     colorCode           ColorCode           OPTIONAL,
5     hdpPeriods          HDPPeriods         OPTIONAL,
6     pilotStrength       PilotStrength,
7     rmsError            RMSError,
8     ...
9 }
10
11 PilotPhaseInfo-HRPD-02 ::= SEQUENCE {
12     addBandClass        BandClass,
13     addFreqAssign       FrequencyAssignment,
14     powerOnAdditionalFrequency TotalReceivedPower,
15     addPilotMeas        SEQUENCE SIZE (1..numAddPilotsP) OF AddPilotMeas-03,
16     ...
17 }
18
19 PilotPhaseMeas ::= SEQUENCE {
20     pilotPhaseMeasReq   PilotPhaseMeasReq,
21     pilotPhasePsDopMeasReq PilotPhasePsDopMeasReq,
22     repeaterMeasReq     RepeaterMeasReq,
23     reqFreqList         SEQUENCE SIZE (1..numReqFreq) OF FrequencyInfo OPTIONAL,
24     ...
25 }
26
27 PilotPhaseMeasErrorInd ::= BIT STRING (SIZE (6))
28
29 PilotPhaseMeasReq ::= BOOLEAN
30
31 PilotPhasePsDopMeasReq ::= BOOLEAN
32
33 PilotPhasePseudodoppler ::= INTEGER (-128..127)
34
35 PilotPhaseResDesired ::= BOOLEAN
36
37 PilotPN ::= INTEGER (0..511)
38
39 PilotPNSeqOffset ::= INTEGER (0..511)
40
41 PilotRecord-02 ::= SEQUENCE {
42     pilotSignalTransmitterType CHOICE {
43         pilot-TX-Type-00      Pilot-TX-Type-00-Almanac,
44         pilot-TX-Type-01      Pilot-TX-Type-01-Almanac,
45         ...
46     },
47     ...
48 }
49
50 PilotRecord-03 ::= SEQUENCE {
51     pilot-TX-Type-specificFields CHOICE {
52         pilot-TX-Type-00      Pilot-TX-Type-00-AcquisitionAssistance,
53         pilot-TX-Type-01      Pilot-TX-Type-01-AcquisitionAssistance,
54         ...

```

C.R0022-B v1.0

```

1         },
2     locationInformation      LocationInformationAcquisitionAssistance    OPTIONAL,
3     timeCorrectionInformation TimeCorrectionInfoAcquisitionAssistance  OPTIONAL,
4     ...
5 }
6
7 PilotRecord1X               ::= SEQUENCE {
8     pilotPNSeqOffset        INTEGER (0..511),
9     frequencyMask           BIT STRING (SIZE (16))                    OPTIONAL,
10    timeCorrectionRecord     SEQUENCE SIZE (1..numFreq) OF TimeCorrectionRecord OPTIONAL,
11    systemID                 SystemID                                OPTIONAL,
12    networkID               NetworkID                              OPTIONAL,
13    baseStationID           BaseStationID-1X,
14    deltaLatitude           DeltaLatitude                          OPTIONAL,
15    deltaLongitude          DeltaLongitude                          OPTIONAL,
16    deltaHeight             DeltaHeight                            OPTIONAL,
17    horizLocUncert          HorizLocUncert-Int                       OPTIONAL,
18    antennaAngleInformation AntennaAngleInformation-01             OPTIONAL,
19    terrainHeightInformation TerrainHeightInformation              OPTIONAL,
20    antennaRangeInformation AntennaRangeInformation                OPTIONAL,
21    ...
22 }
23
24 PilotRecordHRPD            ::= SEQUENCE {
25     pilotPNSeqOffset        INTEGER (0..511),
26     frequencyMask           BIT STRING (SIZE (16))                    OPTIONAL,
27     timeCorrectionRecord     SEQUENCE SIZE (1..numFreq) OF TimeCorrectionRecord OPTIONAL,
28     baseStationID           BaseStationID-HRPD,
29     deltaLatitude           DeltaLatitude                          OPTIONAL,
30     deltaLongitude          DeltaLongitude                          OPTIONAL,
31     deltaHeight             DeltaHeight                            OPTIONAL,
32     horizLocUncert          HorizLocUncert-Int                       OPTIONAL,
33     antennaAngleInformation AntennaAngleInformation-01             OPTIONAL,
34     terrainHeightInformation TerrainHeightInformation              OPTIONAL,
35     antennaRangeInformation AntennaRangeInformation                OPTIONAL,
36     ...
37 }
38
39 PilotRecordUMB             ::= SEQUENCE {
40     pilotID                 BIT STRING (SIZE (128)),
41     frequencyMask           BIT STRING (SIZE (16))                    OPTIONAL,
42     timeCorrectionRecord     SEQUENCE SIZE (1..numFreq) OF TimeCorrectionRecord OPTIONAL,
43     mobileCountryCode       MobileCountryCode                      OPTIONAL,
44     mobileNetworkCode       MobileNetworkCode                      OPTIONAL,
45     sectorID                SectorIDUMB,
46     deltaLatitude           DeltaLatitude                          OPTIONAL,
47     deltaLongitude          DeltaLongitude                          OPTIONAL,
48     deltaHeight             DeltaHeight                            OPTIONAL,
49     horizLocUncert          HorizLocUncert-Int                       OPTIONAL,
50     antennaAngleInformation AntennaAngleInformation-01             OPTIONAL,
51     terrainHeightInformation TerrainHeightInformation              OPTIONAL,
52     antennaRangeInformation AntennaRangeInformation                OPTIONAL,
53     ...
54 }

```

```

1
2 PilotRecord-01 ::= SEQUENCE {
3   pilotPhase PilotPhase,
4   repeaterDetectionStatus RepeaterDetectionStatus OPTIONAL,
5   repeaterType RepeaterType-01 OPTIONAL,
6   repeaterSignalIDNumber RepeaterSignalIDNumber OPTIONAL,
7   pilotPhaseMeasErrorInd PilotPhaseMeasErrorInd,
8   rmsError RMSError-02,
9   pilotPhasePseudodoppler PilotPhasePseudodoppler OPTIONAL,
10  pseudodopplerRMSError PseudodopplerRMSError OPTIONAL,
11  pilotStrength PilotStrength,
12  falseAlarmProb-PilotPhase FalseAlarmProb-PilotPhase,
13  pilotPhaseFalseAlarmRange PilotPhaseFalseAlarmRange,
14  ...
15 }
16
17 PilotStrength ::= INTEGER (0..63)
18
19 PilotTimeOffset ::= BIT STRING (SIZE (25))
20
21 PilotTimeOffsetInformation ::= SEQUENCE {
22   pilotID PilotID,
23   pilotTimeOffset PilotTimeOffset,
24   pilotStrength PilotStrength,
25   rmsError RMSError,
26   ...
27 }
28
29 PitchRollCorrection ::= BOOLEAN
30
31 PNSequenceOffset ::= INTEGER (0..511)
32
33 PositionCalcCapability ::= BIT STRING (SIZE (12))
34
35 PositionCalcCapabilityExt ::= BIT STRING (SIZE (12))
36
37 PositionCalcCapabilityAdv ::= BIT STRING (SIZE (12))
38
39 PositionDetEmergencyOnly ::= BOOLEAN
40
41 PreferredRespQual ::= BIT STRING (SIZE (3))
42
43 PrefRespTime ::= BIT STRING (SIZE (3))
44
45 PRN-NumberSpecificFields ::= SEQUENCE {
46   gpsFrequency BIT STRING (SIZE (4)),
47   modeL2C BIT STRING (SIZE (2)) OPTIONAL,
48   ...
49 }
50
51 PRNNumber ::= INTEGER (0..255)
52
53 PRNNumberShort ::= INTEGER (0..63)
54

```

C.R0022-B v1.0

```

1 Pseudodoppler ::= INTEGER (-32768..32767)
2
3 PseudodopplerRMSError ::= BIT STRING (SIZE (3))
4
5 PseudorangeFalseAlarmRange ::= INTEGER (0..3)
6
7 PseudorangeFreq ::= INTEGER (0..7)
8
9 PseudorangeInformation ::= SEQUENCE {
10     satellitePRNNumber SatellitePRNNumber,
11     satelliteCN-0 SatelliteCN-0,
12     pseudodoppler Pseudodoppler,
13     satCodePhaseWholeChip SatCodePhaseWholeChip,
14     satCodePhaseFractionalChip SatCodePhaseFractionalChip,
15     multipathInd MultipathInd,
16     pseudorangeRMSError PseudorangeRMSError,
17     ...
18 }
19
20 PseudorangeInformationAdv ::= SEQUENCE {
21     gnssIdentifier GNSSIdentifier,
22     satelliteMeasurementRecord SEQUENCE SIZE (1..numSig) OF SatMeasRecord,
23     ...
24 }
25
26 PseudorangeInformationExt ::= SEQUENCE {
27     prnNumber PRNNumber,
28     pseudorangeFreq PseudorangeFreq OPTIONAL,
29     refTimeDifference RefTimeDifference OPTIONAL,
30     satCodePhaseWholeChip SatCodePhaseWholeChip,
31     satCodePhaseFractionalChip SatCodePhaseFractionalChip,
32     codePeriodsElapsed CodePeriodsElapsed OPTIONAL,
33     pseudorangeMeasErrorInd PseudorangeMeasErrorIndExt,
34     pseudorangeRMSError PseudorangeRMSErrorExt,
35     satellitePseudodoppler SatellitePseudodoppler,
36     satPseudodopplerRMSError SatPseudodopplerRMSError,
37     satelliteCN-0 SatelliteCN-0,
38     falseAlarmProb-Pseudorange FalseAlarmProb-Pseudorange,
39     pseudorangeFalseAlarmRange PseudorangeFalseAlarmRange,
40     ...
41 }
42
43 PseudorangeMeas ::= SEQUENCE {
44     pseudorangeMeasReq BOOLEAN,
45     satIntCodePeriodsReq BOOLEAN,
46     ...
47 }
48
49 PseudorangeMeasErrorIndAdv ::= BIT STRING (SIZE (7))
50
51 PseudorangeMeasErrorIndExt ::= BIT STRING (SIZE (7))
52
53 PseudorangePredErrorThresh ::= INTEGER (0..15)
54

```

```

1  PseudorangeRMSError      ::= BIT STRING (SIZE (6))
2
3  PseudorangeRMSErrorAdv   ::= BIT STRING (SIZE (6))
4
5  PseudorangeRMSErrorExt   ::= BIT STRING (SIZE (6))
6
7  QualOfServiceReqType     ::= CHOICE {
8      responseTime          ResponseTime,
9      locUncert              LocUncert,
10     ...
11     }
12
13  ReceiveTime               ::= INTEGER (0..511)
14
15  ReceiveToTransmitTimeDelay ::= BIT STRING (SIZE (3))
16
17  RecToTransDelayInfoReq    ::= BOOLEAN
18
19  ReducedAlmanacDataRecord-GPS ::= SEQUENCE {
20      satellitePRNNumber     INTEGER (1..64),
21      delta-A                BIT STRING (SIZE (8)),
22      omega-0                BIT STRING (SIZE (7)),
23      phi-0                  BIT STRING (SIZE (7)),
24      healthL1               BOOLEAN,
25      healthL2               BOOLEAN,
26      healthL5               BOOLEAN,
27      ...
28     }
29  ReducedAlmanacDataRecord-QZSS ::= SEQUENCE {
30      satellitePRNNumber     INTEGER (193..197),
31      delta-A                BIT STRING (SIZE (8)),
32      omega-0                BIT STRING (SIZE (7)),
33      phi-0                  BIT STRING (SIZE (7)),
34      healthL1               BOOLEAN,
35      healthL2               BOOLEAN,
36      healthL5               BOOLEAN,
37      ...
38     }
39
40  ReducedAlmanacInformation-GPS ::= SEQUENCE {
41      wn-a-n                 BIT STRING (SIZE (13)),
42      t-oa                   BIT STRING (SIZE (8)),
43      reducedAlmanacDataRecord SEQUENCE SIZE (1..numSV-64) OF ReducedAlmanacDataRecord-GPS,
44      ...
45     }
46
47  ReducedAlmanacInformation-QZSS ::= SEQUENCE {
48      wn-a-n                 BIT STRING (SIZE (13)),
49      t-oa                   BIT STRING (SIZE (8)),
50      reducedAlmanacDataRecord SEQUENCE SIZE (1..numSVQZSS) OF ReducedAlmanacDataRecord-QZSS,
51      ...
52     }
53
54  RefAltitudeCorrection     ::= INTEGER (-2097152..2097151)

```

C.R0022-B v1.0

```

1
2 ReferenceLocation ::= SEQUENCE {
3     refLatitude    INTEGER (-324000..324000),
4     refLongitude   INTEGER (-648000..648000),
5     ...
6 }
7
8 ReferenceTime     ::= INTEGER (0..14399999)
9
10 ReferenceTimeAdv ::= INTEGER (0..604799999)
11
12 RefLatitudeCorrection ::= INTEGER (-524288..524287)
13
14 RefLongitudeCorrection ::= INTEGER (-524288..524287)
15
16 RefTimeAlmanacCorr ::= INTEGER (0..4095)
17
18 RefTimeCorrection  ::= INTEGER (-256..255)
19
20 RefTimeDifference  ::= INTEGER (-32768..32767)
21
22 RefTimeSubAlmanac ::= INTEGER (0..147)
23
24 ReferenceTimeUncertainty ::= INTEGER (0..127)
25
26 RejectReasonBS    ::= BIT STRING (SIZE (3))
27
28 RejectReasonBSAdv ::= INTEGER (0..7)
29
30 RejectReasonBSExt ::= BIT STRING (SIZE (3))
31
32 RejectReasonMS    ::= BIT STRING (SIZE (3))
33
34 RejectReasonMSAdv ::= INTEGER (0..7)
35
36 RejectReasonMSExt ::= BIT STRING (SIZE (3))
37
38 RejectRequestTypeBS ::= ENUMERATED {
39     reqBSLocationResponse,
40     reqBaseStationAlmanac,
41     reqGPSAcquisitionAssistance,
42     reqGPSSensitivityAssistance,
43     reqGPSLocationAssistance,
44     reqGPSAlmanac,
45     reqGPSEphemeris,
46     reqGPSNavigationMessageBits,
47     reqGPSAlmanacCorrection,
48     reqGPSSatelliteHealthInfo,
49     ...
50 }
51
52 RejectRequestTypeBSAdv ::= ENUMERATED {
53     reqAdvancedUMBBBaseStationAlmanac,
54     reqAdvancedHRPDBaseStationAlmanac,

```

```

1     reqAdvanced1XBaseStationAlmanac,
2     reqGNSSAcquisitionAssistance,
3     reqGNSSSensitivityAssistance,
4     reqModernizedGPSEphAndClockCorr,
5     reqQZSSEphemerisAndClockCorr,
6     reqGLONASSEphemerisAndClockCorr,
7     reqGalileoEphemerisAndClockCorr,
8     reqGEONavMessageParameters,
9     reqModernizedGPSAlmanac,
10    reqQZSSAlmanac,
11    reqGLONASSAlmanac,
12    reqGalileoAlmanac,
13    reqGEOAlmanacMessageParameters,
14    reqGPSIonosphericModel,
15    reqGalileoIonosphericModel,
16    reqQZSSIonosphericModel,
17    reqGNSS-GNSSTimeOffset,
18    reqGPSUTCModel,
19    reqAdvancedGNSSSatHealthInfo,
20    reqAdvancedBSLocationResponse,
21    reqDGNSSAssistance,
22    ...
23    }
24
25
26    RejectRequestTypeBSExt ::= ENUMERATED {
27        reqExtendedBSLocationResponse,
28        reqEnhancedBaseStationAlmanac,
29        reqGeneralAcquisitionAssistance,
30        reqExtendedGPSSensitivityAssist,
31        reqGPSAlmanacv1,
32        reqExtendedGPSEphemeris,
33        reqExtendedGPSNavMessageBits,
34        reqExtendedGPSAlmanacCorrection,
35        reqExtGPSSatelliteHealthInfo,
36        reqGPSCoarseLocationAssistance,
37        reqGPSCoarseAcquisitionAssistance,
38        reqDGPSAssistance,
39        reqGPSRealTimeIntegrityInfo,
40        ...
41    }
42
43
44    RejectRequestTypeMS ::= ENUMERATED {
45        reqMSLocationResponse,
46        reqAutonomousMeasWeightingFactor,
47        reqPseudorangeMeasurements,
48        reqPilotPhaseMeasurement,
49        reqTimeOffsetMeasurement,
50        ...
51    }
52
53
54    RejectRequestTypeMSAdv ::= ENUMERATED {

```

C.R0022-B v1.0

```

1     reqAdvancedMSLocationResponse,
2     reqUMBPilotTimeOffsetMeasurement,
3     reqHRPDPilotPhaseMeasurement,
4     reqGNSSPseudorangeMeasurement,
5     reqAdvSystemParametersInformation,
6     ...
7     }
8
9
10    RejectRequestTypeMSExt      ::= ENUMERATED {
11        reqExtendedMSLocationResponse,
12        reqAutonomousMeasWeightingFactv1,
13        reqGeneralLocationMeasurement,
14        reqGPSCoarseLocationResponse,
15        reqMessagingDelayMeasurement,
16        reqBearingMeasurement,
17        reqServingSystemInformation,
18        ...
19    }
20
21
22    RepeaterDetectionCap        ::= BOOLEAN
23
24    RepeaterDetectionStatus     ::= BIT STRING (SIZE (3))
25
26    RepeaterInfoReq            ::= BOOLEAN
27
28    RepeaterMeasReq            ::= BOOLEAN
29
30    RepeaterSignalIDNumber     ::= BIT STRING (SIZE (64))
31
32    RepeaterType-01            ::= BIT STRING (SIZE (3))
33
34    RepeaterType-02            ::= BIT STRING (SIZE (3))
35
36    ReqCoordinateType          ::= BOOLEAN
37
38    ReqDataRecordSize          ::= INTEGER (0..255)
39
40    ReqDataRecordSizeGNSSsens ::= INTEGER (1..2048)
41
42    ReqGNSSSigDataRecord      ::= SEQUENCE {
43        gnssSignalIdentifier    BIT STRING (SIZE (8))           OPTIONAL,
44        svInformation           SVInformation                   OPTIONAL,
45        reqDataRecordSize      ReqDataRecordSizeGNSSsens     OPTIONAL,
46        reqNavBitsEncodingIndicator  BOOLEAN,
47        ...
48    }
49
50    ReqGNSSSignalDataRecord   ::= SEQUENCE {
51        gnssSignalIdentifier    INTEGER (1..8)                 OPTIONAL,
52        navBitsEncodingIndicator  BOOLEAN,
53        navMessageBits          BIT STRING (SIZE (4..8192)),
54        svIDInformation         SEQUENCE SIZE (1..numSV) OF SVIDInformation,

```

```

1     ...
2   }
3
4   ReqHorLocUncertCirc      ::= BIT STRING (SIZE (4))
5
6   ReqHorLocUncertConfLevel ::= BIT STRING (SIZE (2))
7
8   ReqRefBitNumber         ::= INTEGER (0..1499)
9
10  ResponseTime            ::= SEQUENCE {
11    prefRespTime          PrefRespTime,
12    ...
13  }
14
15  RetryTime               ::= BIT STRING (SIZE (3))
16
17  RollAngle               ::= INTEGER (0..255)
18
19  RMSError                ::= BIT STRING (SIZE (6))
20
21  RMSError-02            ::= BIT STRING (SIZE (6))
22
23  RollAngleInfo           ::= SEQUENCE {
24    rollAngle              RollAngle,
25    rollUncertainty        RollUncertainty,
26    ...
27  }
28
29  RollUncertainty         ::= BIT STRING (SIZE (3))
30
31  SatBitMask              ::= BIT STRING (SIZE (32))
32
33  SatBitMaskGalileo       ::= BIT STRING (SIZE (50))
34
35  SatBitMaskGLONASS       ::= BIT STRING (SIZE (24))
36
37  SatBitMaskGNSSSensAssist ::= BIT STRING (SIZE (64))
38
39  SatBitMaskInfo          ::= CHOICE {
40    satBitMaskAllOnes      NULL,
41    satBitMask              SatBitMask,
42    ...
43  }
44
45  SatBitMaskModernizedGPS  ::= BIT STRING (SIZE (63))
46
47  SatBitMaskQZSS          ::= BIT STRING (SIZE (5))
48
49  SatBitMaskRecord        ::= SEQUENCE {
50    navMsgFormat            NavMsgFormat,
51    satBitMaskInfo          SatBitMaskInfo          OPTIONAL,
52    ...
53  }
54

```

C.R0022-B v1.0

```

1  SatCodePhaseFractionalChip ::= INTEGER (0..1023)
2
3  SatCodePhaseWholeChip ::= INTEGER (0..1023)
4
5  SatelliteCN-0 ::= INTEGER (0..63)
6
7  SatelliteID ::= INTEGER (1..32)
8
9  SatelliteInformation-Cartesian ::= SEQUENCE {
10     lsbDoppler BIT STRING (SIZE (4)),
11     xCoordinate-ECEF-Format INTEGER (-67108864..67108863),
12     yCoordinate-ECEF-Format INTEGER (-67108864..67108863),
13     zCoordinate-ECEF-Format INTEGER (-67108864..67108863),
14     ...
15 }
16
17 SatelliteInformation-Spherical ::= SEQUENCE {
18     lsbDoppler BIT STRING (SIZE (4)),
19     fractionalChipCodePhase INTEGER (0..1023),
20     lsbAzimuth BIT STRING (SIZE (11)),
21     lsbElevationAngle BIT STRING (SIZE (11)),
22     ...
23 }
24
25 SatelliteInformationRecord ::= SEQUENCE {
26     gnssSatelliteID GNSSSatelliteID,
27     codePhase INTEGER (-65536..65535),
28     codePhaseWindow INTEGER (0..31),
29     zeroOrderDoppler INTEGER (-2048..2047),
30     firstOrderDoppler INTEGER (-1024..1023) OPTIONAL,
31     dopplerSearchWindow INTEGER (0..4) OPTIONAL,
32     az-ElInformation Az-ElInformationGNSSAcqAssist OPTIONAL,
33     satelliteHealthIndicator BIT STRING (SIZE (8)) OPTIONAL,
34     gnssSignalsAvailable BIT STRING (SIZE (8)) OPTIONAL,
35     gnssSpecificFields CHOICE {
36         gnss-Identifier-1 L2C-Mode,
37         gnss-Identifier-4 ChannelNumber,
38         ...
39     } OPTIONAL,
40     ...
41 }
42
43 SatelliteList ::= BIT STRING (SIZE (32))
44
45 SatelliteListRecord ::= SEQUENCE {
46     invWeightFactor InvWeightFactor,
47     gpsWeekNumberSubAlmanac GPSWeekNumber,
48     referenceTime RefTimeSubAlmanac,
49     ...
50 }
51
52 SatellitePRNNumber ::= INTEGER (0..63)
53
54 SatellitePseudodoppler ::= INTEGER (-32768..32767)

```

```

1
2 SatellitePseudodopplerGNSS ::= INTEGER (-32768..32767)
3
4 SatelliteRecord-01 ::= SEQUENCE {
5     prnNumber          PRNNumberShort,
6     zeroOrderDoppler   INTEGER (-2048..2047)    OPTIONAL,
7     additionalDoppler   AdditionalDoppler      OPTIONAL,
8     codePhaseParameter CodePhaseParameter     OPTIONAL,
9     azimuthAndElevation AzimuthAndElevation   OPTIONAL,
10    ...
11 }
12
13 SatelliteRecord-02 ::= SEQUENCE {
14     prnNumber          PRNNumber
15     ...
16 }
17
18 SatelliteRecord-03 ::= SEQUENCE {
19     satellitePRNNumber INTEGER (0..63),
20     ...
21 }
22
23 SatelliteRecord-04 ::= SEQUENCE {
24     prnNumber          INTEGER (0..63),
25     ...
26 }
27
28 SatelliteRecord-05 ::= SEQUENCE {
29     satellitePRNNumber INTEGER (0..255),
30     subframes-1-2-3    BIT STRING (SIZE (900)),
31     ...
32 }
33
34 SatelliteRecord-06 ::= SEQUENCE {
35     satellitePRNNumber INTEGER (0..255),
36     ...
37 }
38
39 SatelliteRecord-07 ::= SEQUENCE {
40     satelliteIDCode     INTEGER (0..63),
41     adjustedPseudorangeCorrection BIT STRING (SIZE (2)),
42     ...
43 }
44
45 SatelliteRecord-08 ::= SEQUENCE {
46     prnNumber          INTEGER (0..63),
47     ...
48 }
49
50 SatMeasRecord ::= SEQUENCE {
51     gnssSignalIdentifier INTEGER (1..8),
52     measurementParameters SEQUENCE SIZE (1..numSatGNSS) OF MeasurementParameters,
53     ...
54 }

```

C.R0022-B v1.0

```

1
2 SatModeInfoReq          ::= BOOLEAN
3
4 SatPRNSignalNumber     ::= INTEGER (120..158)
5
6 SatPseudodopplerRMSError ::= BIT STRING (SIZE (6))
7
8 SatPseudodopplerRMSErrorGNSS ::= BIT STRING (SIZE (6))
9
10 SBASId                  ::= BIT STRING (SIZE (8))
11
12 SBAS-ID                 ::= ENUMERATED {
13     waas(0),
14     egnos(1),
15     msas(2),
16     gagan(3),
17     ...
18 }
19
20 SecondDerivDoppReq     ::= BOOLEAN
21
22 SectorAddressIdentifier ::= BIT STRING (SIZE (128))
23
24 SectorIDHRPD           ::= BIT STRING (SIZE (128))
25
26 SectorIDUMB            ::= BIT STRING (SIZE (128))
27
28 ShortRepPeriodEnable  ::= BOOLEAN
29
30 SignalHealthCNAV       ::= SEQUENCE {
31     healthL1            BOOLEAN,
32     healthL2            BOOLEAN,
33     healthL5            BOOLEAN,
34     ...
35 }
36
37 StdDevAlongAnglePosUncert ::= BIT STRING (SIZE (5))
38
39 StdDevClockBiasError    ::= BIT STRING (SIZE (5))
40
41 StdDevCoarseLoc        ::= BIT STRING (SIZE (5))
42
43 StdDevErrAlongAngleHorPosUncert ::= BIT STRING (SIZE (5))
44
45 StdDevErrAlongAngleHorVelUncert ::= BIT STRING (SIZE (4))
46
47 StdDevErrPerpToAngleHorPosUncert ::= BIT STRING (SIZE (5))
48
49 StdDevErrPerpToAngleHorVelUncert ::= BIT STRING (SIZE (4))
50
51 StdDevHorLocError       ::= BIT STRING (SIZE (4))
52
53 StdDevPerpToAnglePosUncert ::= BIT STRING (SIZE (5))
54

```

```

1  StdDevVertErrorPosUncert      ::= BIT STRING (SIZE (5))
2
3  Subframe4-5-req              ::= BOOLEAN
4
5  SupportedGNSS-BS             ::= SEQUENCE {
6      gnssIdentifier            GNSSIdentifier,
7      gnssSignalIdentifier      BIT STRING (SIZE (8))          OPTIONAL,
8      sbasIdentifier            SBASId,
9      ...
10 }
11
12 SupportedGNSS-MS             ::= SEQUENCE {
13     gnssIdentifier            GNSSIdentifier,
14     gnssSignalIdentifier      BIT STRING (SIZE (8))          OPTIONAL,
15     sbasIdentifier            SBASId                          OPTIONAL,
16     gnssAcqCapability         GNSSAcqCapability              OPTIONAL,
17     ...
18 }
19
20 SupportedWirelessSystems     ::= SEQUENCE {
21     wirelessIdentifier        WirelessIdentifier-Int,
22     wirelessAcqCapability     WirelessAcqCapability,
23     ...
24 }
25
26 SVIDInformation              ::= SEQUENCE {
27     gnssSatelliteID          GNSSSatelliteID,
28     ...
29 }
30
31 SVInformation                ::= CHOICE {
32     sensAssistAllSatellites    NULL,
33     sensAssistSpecSatellites   SatBitMaskGNSSSensAssist,
34     ...
35 }
36
37 SystemID                     ::= BIT STRING (SIZE (15))
38
39 SystemInformation            ::= SEQUENCE {
40     systemID                  SystemID,
41     networkID                 NetworkID,
42     baseStationID             BaseStationID,
43     ...
44 }
45
46 TerrainHeightInformation     ::= SEQUENCE {
47     terrainHeightOffset        INTEGER (-32..32),
48     terrainHeightUncertainty   INTEGER (0..15)                OPTIONAL,
49     ...
50 }
51
52 TerrainHgtInfoReq            ::= BOOLEAN
53
54 TimeBetweenFixes             ::= INTEGER (0..255)

```

C.R0022-B v1.0

```

1
2 TimeCorrectionInfoReq ::= BOOLEAN
3
4 TimeCorrectionInfoAcquisitionAssistance ::= SEQUENCE {
5     timeCorrection          INTEGER (-32..95),
6     stdDevTimeCorrectionError  BIT STRING (SIZE (3)),
7     ...
8 }
9
10 TimeCorrectionInfoBSAlmanac ::= SEQUENCE {
11     timeCorrection          INTEGER (-256..767),
12     stdDevTimeCorrectionError  BIT STRING (SIZE (4)),
13     ...
14 }
15
16 TimeCorrectionRecord ::= SEQUENCE {
17     timeCorrectionMask      BIT STRING (SIZE (16)),
18     timeCorrection          INTEGER (-256..255)           OPTIONAL,
19     timeCorrectionUncertainty  BIT STRING (SIZE (4))       OPTIONAL,
20     ...
21 }
22
23 TimeOfReference           ::= INTEGER (0..1048575)
24
25 TimeOfSensAssistance      ::= INTEGER (0..86399)
26
27 TimeOfSensAssistanceResp  ::= INTEGER (0..2999)
28
29 TimeReference             ::= INTEGER (0..4194303)
30
31 TimeReferenceSource       ::= INTEGER (0..15)
32
33 TimeReferenceSource-01    ::= BIT STRING (SIZE (2))
34
35 TimeReferenceSource-02    ::= INTEGER (0..3)
36
37 TimeReferenceUMB          ::= INTEGER (0..14399999)
38
39 TimeRefPNSequenceOffset   ::= INTEGER (0..511)
40
41 Toa                       ::= INTEGER (0..255)
42
43 TotalParts04              ::= INTEGER (1..4)
44
45 TotalParts08              ::= INTEGER (1..8)
46
47 TotalParts16              ::= INTEGER (1..16)
48
49 TotalParts32              ::= INTEGER (1..32)
50
51 TotalParts64              ::= INTEGER (1..64)
52
53 TotalReceivedPower        ::= INTEGER (0..31)
54

```

```

1  TotalReceivedPowerUMB      ::= INTEGER (0..255)
2
3  TransmitPower              ::= INTEGER (0..31)
4
5  TrueNorth                   ::= BIT STRING (SIZE (1))
6
7  UMB-BSIdentifier           ::= SEQUENCE {
8      pilotID                 BIT STRING (SIZE (16)),
9      ...
10 }
11
12 VelocityHeading             ::= INTEGER (0..1023)
13
14 VelocityInfoReq             ::= BOOLEAN
15
16 VelocityInformation         ::= SEQUENCE {
17     horizVelMagnitude        HorizVelMagnitude,
18     velocityHeading          VelocityHeading,
19     verticalVelocity         VerticalVelocity      OPTIONAL,
20     ...
21 }
22
23 VelocityInformationExt      ::= SEQUENCE {
24     horizVelMagnitudeExt     HorizVelMagnitudeExt,
25     velocityHeading          VelocityHeading,
26     velocityUncertainty      VelocityUncertainty,
27     ...
28 }
29
30 VelocityUncertainty         ::= CHOICE {
31     circularUncertainty      CircularUncertainty-01,
32     ellipticalUncertainty    EllipticalUncertainty-01,
33     ...
34 }
35
36 VerticalBearing             ::= SEQUENCE {
37     bearingVertical          BearingVertical,
38     verticalUncertainty      VerticalUncertainty,
39     ...
40 }
41
42 VerticalLocUncertaintyAdv   ::= BIT STRING (SIZE (5))
43
44 VerticalLocUncertaintyExt   ::= BIT STRING (SIZE (5))
45
46 VerticalUncertainty         ::= BIT STRING (SIZE (3))
47
48 VerticalVelocity            ::= INTEGER (-128..127)
49
50 VerticalVelocityInfoAdv     ::= SEQUENCE {
51     verticalVelocity         VerticalVelocity,
52     vertVelUncertainty       VertVelUncertaintyAdv,
53     vertVelUncertConfidence  VertVelUncertConfAdv      OPTIONAL,
54     ...

```

C.R0022-B v1.0

```

1  }
2
3  VerticalVelocityInfoExt ::= SEQUENCE {
4      verticalVelocity      VerticalVelocity,
5      vertVelUncertainty    VertVelUncertaintyExtMS,
6      vertVelUncertConfidence VertVelUncertConfExtMS,
7      ...
8  }
9
10 VerticalVelocityInfoExt ::= BIT STRING (SIZE (4))
11
12 VerticalVelocityInfoExt ::= BIT STRING (SIZE (4))
13
14 VerticalVelocityInfoExt ::= BIT STRING (SIZE (4))
15
16 VerticalVelocityInfoExt ::= BIT STRING (SIZE (2))
17
18 VerticalVelocityInfoExt ::= BIT STRING (SIZE (2))
19
20 VerticalVelocityInfoExt ::= BIT STRING (SIZE (2))
21
22 VerticalVelocityInfoExt ::= BIT STRING (SIZE (2))
23
24 VerticalVelocityInfoExt ::= BOOLEAN
25
26 VerticalVelocityInfoExt ::= SEQUENCE {
27     satellitePRNNumber    SatellitePRNNumber,
28     invWeightFactor       InvWeightFactor,
29     ...
30 }
31
32 VerticalVelocityInfoExt ::= BOOLEAN
33
34 VerticalVelocityInfoExt ::= INTEGER (1..8)
35
36 VerticalVelocityInfoExt ::= BIT STRING (SIZE (8))
37
38 -- Defintion of range constants
39
40 nSat                INTEGER ::= 16
41 numActiveSetP      INTEGER ::= 8      -- in ProvideServingSystemInformation
42 numAddPilotsP      INTEGER ::= 64     -- in PilotPhaseInfo-03 and
43                                     -- in AddPilotTimeOffsetInfo
44                                     -- in PilotPhaseInfo-HRPD-02
45 numAntRanges       INTEGER ::= 8
46 numBadSV           INTEGER ::= 16
47 numClk             INTEGER ::= 2
48 numDly            INTEGER ::= 8
49 numDrP            INTEGER ::= 16
50 numFaultySV       INTEGER ::= 16
51 numFreq           INTEGER ::= 16     -- in ProvideAdvancedUMBBaseStationAlmanac and
52                                     -- in ProvideAdvancedHRPDBaseStationAlmanac and
53                                     -- in ProvideAdvanced1XBaseStationAlmanac
54 numFreqP          INTEGER ::= 8      -- in ProvideGeneralLocationMeasurement and

```

```

1                                     -- in ProvideUMBPIlotTimeOffsetMeasurement
2 numFreqP-16                         INTEGER ::= 16
3 numFrP                               INTEGER ::= 32
4 numGNSS                              INTEGER ::= 16   -- in ReqGNSSAcquisitionAssistance and
5                                     -- in ReqGNSSSensitivityAssistance and
6                                     -- in ReqGNSSPseudorangeMeasurement and
7                                     -- in ProvideAdvancedMSInformation and
8                                     -- in ProvideGNSSPseudorangeMeasurement
9 numGNSS-1                            INTEGER ::= 15
10 numNghbrPN                           INTEGER ::= 64   -- in ProvideServingSystemInformation
11 numOfFreq                             INTEGER ::= 16   -- in ReqEnhancedBaseStationAlmanac
12 numOfsP                               INTEGER ::= 64   -- in OffsetInfo
13 numOfPilotsF                          INTEGER ::= 64   -- in FrequencyRecord
14 numOfPilotsP                          INTEGER ::= 64   -- in ProvidePilotPhaseMeasurement
15                                     -- in ProvideHRPDPilotPhaseMeasurement
16 numPilots                             INTEGER ::= 4096 -- in ProvideAdvancedUMBBaseStationAlmanac and
17                                     -- in ProvideAdvancedHRPDBaseStationAlmanac and
18                                     -- in ProvideAdvanced1XBaseStationAlmanac
19 numPilotsP-512                       INTEGER ::= 512 -- in ProvideBaseStationAlmanac
20 numPilotTxF                           INTEGER ::= 64   -- in PilotPhaseInfo-02
21 numPilotTxF-512                      INTEGER ::= 512
22 numPRP                                INTEGER ::= 32   -- in ProvideGeneralLocationMeasurement
23 numPSRRangesP                         INTEGER ::= 64   -- in ProvidePseudorangeMeasurement
24                                     -- in ProvideHRPDPilotPhaseMeasurement
25 numReqFreq                             INTEGER ::= 8   -- in PilotPhaseMeas
26 numSat                                INTEGER ::= 32   -- in ProvideGPSCoarseLocationResponse and
27 numSatGNSS                             INTEGER ::= 16  -- in SatMeasRecord
28 numSig                                 INTEGER ::= 8   -- in GNSSSensitivityInfoRequest
29 numSV                                  INTEGER ::= 16  -- in ReqDGPSAssistance and
30                                     -- in ProvideAutoMeasWeightingFactors and
31                                     -- in ProvideAutoMeasWeightingFactorsv1
32 numSVGEO                               INTEGER ::= 39   -- in ReqGEONavMessageParameters
33 numSVGLONASS                           INTEGER ::= 24
34 numSVQZSS                              INTEGER ::= 5
35 numSVMasks                             INTEGER ::= 8   -- in ReqExtendedGPSSensitivityAssist
36 numSVP-16                              INTEGER ::= 16
37 numSVP-32                              INTEGER ::= 32
38 numSVP-64                              INTEGER ::= 64
39 numSV-64                                INTEGER ::= 64
40 numSV-DR                               INTEGER ::= 16
41 numWireless                            INTEGER ::= 8   -- in ProvideAdvancedMSInformation
42
43 END
44

```