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TECHNICAL SPECIFICATION

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LTE Positioning Protocol (LPP)
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Contents

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1 Scope

See TS 37.355 [38].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non specific.
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[1]-[37] Void

[38] 3GPP TS 37.355: "LTE Positioning Protocol (LPP)".

3 to 7 Void

8 LPP Procedures, IE Abstract Syntax Definition etc.

See TS 37.355 [38].

Annex A (informative): Change History

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Cat**	**Subject/Comment**	**New version**
2009-10	RAN2 #67bis	R2-096252				RAN2 agreed TS 36.355 v0.1.0	0.1.0
2009-11	RAN2 #68	R2-097492				RAN2 agreed TS 36.355 v2.0.0	2.0.0
2009-12	RP-46	RP-091208				RAN #46 approval of TS 36.355	9.0.0
2010-03	RP-47	RP-100304	0001	-		Clarification on Position location	9.1.0
	RP-47	RP-100304	0002	-		Clarification on UE Rx-Tx time difference supporting capability	9.1.0
	RP-47	RP-100304	0003	2		Completion of LPP common material	9.1.0
	RP-47	RP-100304	0004	5		Completion of OTDOA in LPP	9.1.0
	RP-47	RP-100304	0006	-		Provision of Frame Drift Information in Network Time	9.1.0
	RP-47	RP-100304	0007	-		Clarification of measurement reference point	9.1.0
	RP-47	RP-100304	0010	-		GNSS-DifferentialCorrectionsSupport	9.1.0
	RP-47	RP-100304	0011	-		BSAlign Indication in GNSS Reference Time	9.1.0
	RP-47	RP-100304	0012	1		Changes to reflect LPP ASN.1 review	9.1.0
	RP-47	RP-100304	0013	1		Introduction of LPP reliability sublayer	9.1.0
	RP-47	RP-100304	0015	-		LPP error procedures and conditions	9.1.0
	RP-47	RP-100304	0016	-		Triggered Location Information Transfer due to Cell Change	9.1.0
2010-06	RP-48	RP-100558	0018	2		Addition of need codes to optional LPP information elements	9.2.0
	RP-48	RP-100558	0019	1		Miscellaneous corrections to LPP stage 3	9.2.0
	RP-48	RP-100558	0020	1		Small corrections to LPP specification	9.2.0
	RP-48	RP-100558	0021	-		Clarifications of OTDOA parameters	9.2.0
	RP-48	RP-100558	0022	1		Signalling support for PRS muting in OTDOA	9.2.0
	-	-	-	-		Two times capital R replaced by lower case r in "MeasuredResultsElement" (undoing not intended change)	9.2.1
2010-09	RP-49	RP-100852	0024	-		Addition of an EPDU to an LPP Error and LPP Abort	9.3.0
	RP-49	RP-100852	0026	-		Division of LPP into Separate ASN.1 Modules with a Global Identifier	9.3.0
	RP-49	RP-100852	0028	-		Proposed Corrections to LPP Reliable Transport	9.3.0
	RP-49	RP-100852	0029	-		Proposed Corrections to the PeriodicalReportingCriteria in LPP	9.3.0
	RP-49	RP-100852	0030	1		Various corrections and clarifications to LPP	9.3.0
	RP-49	RP-100852	0031	-		Support of functional components for LPP reliable transport	9.3.0
	RP-49	RP-100852	0032	1		Introduction of EPDU ID requested by OMA LOC	9.3.0
	RP-49	RP-100852	0035	1		Several corrections in LPP	9.3.0
	RP-49	RP-100852	0036	-		Clarification to Assistance Data Transfer Procedure	9.3.0
2010-12	RP-50	RP-101207	0037	-		Correction of reliable transport terminology in description of LPP-Message	9.4.0
	RP-50	RP-101207	0038	-		One cell with known SFN in OTDOA assistance data	9.4.0
	RP-50	RP-101207	0039	1		UE frequency capability for LPP	9.4.0
	RP-50	RP-101207	0041	-		Correction to LPP reliable transport	9.4.0
	RP-50	RP-101207	0042	-		Correction to LPP Error procedure	9.4.0

	RP-50	RP-101207	0043	-		Addition of missing reference to LPPe	9.4.0
	RP-50	RP-101207	0044	2		Correction to the ODTOA assistance data	9.4.0
	RP-50	RP-101226	0040	-		Update of 'serving cell' terminology in 36.355	10.0.0
2011-03	RP-51	RP-110269	0046	-		Editorial corrections to 36.355	10.1.0
	RP-51	RP-110269	0048	-		Removal of FFS for retransmission timer in LPP	10.1.0
	RP-51	RP-110269	0050	-		Correction to code phase encoding in GNSS acquisition assistance	10.1.0
	RP-51	RP-110269	0052	1		Clarification on SFN provided with OTDOA measurement	10.1.0
	RP-51	RP-110269	0053	1		Introduction of OTDOA inter-freq RSTD measurement indication procedure	10.1.0
	RP-51	RP-110269	0057	-		Small corrections in 36.355	10.1.0
	RP-51	RP-110269	0058	3		Further corrections to the OTDOA assistance data	10.1.0
2011-06	RP-52	RP-110830	0060	-		Clarifications to description of OTDOA positioning fields	10.2.0
2011-09	RP-53	RP-111279	0062	1		Various corrections to LPP	10.3.0
	RP-53	RP-111279	0064	-		Mandatory support of PRS for OTDOA measurements	10.3.0
2011-12	RP-54	RP-111709	0066	-		Clarification of packed encoding rules of LPP	10.4.0
	RP-54	RP-111709	0068	-		Clarification of first bit in BIT STRING definitions	10.4.0
2012-06	RP-56	RP-120808	0071	-		Usage of additionalInformation IE	10.5.0
2012-09	RP-57	RP-121424	0074	2		Corrections to GNSS Acquisition Assistance Data	10.6.0
	RP-57	-	-	-		Upgrade to the Release 11 - no technical change	11.0.0
2012-12	RP-58	RP-121931	0077	-		Correcting the referencing of QoS parameters	11.1.0
	RP-58	RP-121931	0080	-		Correction to missing field description in GNSS-AcquisitionAssistance IE	11.1.0
2013-03	RP-59	RP-130237	0083	1		Extending E-UTRA Frequency Band and EARFCN value range	11.2.0
	RP-59	RP-130230	0086	-		Correction to PRS Muting Configuration	11.2.0
2013-06	RP-60	RP-130803	0088	-		Correction for ASN.1 errors from CR0083r1	11.3.0
	RP-60	RP-130803	0091	-		Correction to integer code phase field description in GNSS Acquisition Assistance	11.3.0
	RP-60	RP-130803	0093	-		Correction to serving cell terminology	11.3.0
	RP-60	RP-130803	0094	-		Encoding of LPP IEs	11.3.0
2013-09	RP-61	RP-131314	0098	-		Correction on svReqList	11.4.0
2013-12	RP-62	RP-131984	0103	-		Correction to missing capability indication for inter-frequency RSTD measurements	11.5.0
	RP-62	RP-131984	0107	1		Correction to Galileo assistance data elements	11.5.0
	RP-62	RP-132000	0104	1		Stage 3 CR of TS 36.355 for introducing BDS in LTE	12.0.0
	RP-62	RP-131984	0108	-		Correction to Galileo assistance data elements	12.0.0
2014-03	RP-63	RP-140342	0112	1		Clarification to gnss-DayNumber	12.1.0
2014-06	RP-64	RP-140871	0119	-		Signaling of OTDOA Neighbour Cell Information and Measurements	12.2.0
2014-12	RP-66	RP-142114	0122	-		Correction to Galileo Assistance Data	12.3.0
	RP-66	RP-142114	0123	-		Addition of an Early Position Fix to LPP	12.3.0
	RP-66	RP-142120	0124	-		BDS update to version 2.0	12.3.0
2015-03	RP-67	RP-150369	0126	2		Correction of GLONASS system time	12.4.0

	RP-67	RP-150376	0125	1		LPP clean-up	12.4.0
2015-12	RP-70	RP-152055	0134	1		Correction to the definition of Need codes	12.5.0
2015-12	RP-70	RP-152068	0137	3		RAT-Independent positioning enhancements	13.0.0
2016-03	RP-71	RP-160463	0138	1		Correction to GLONASS IOD value range	13.1.0
	RP-71	RP-160470	0140	1		r13 Information Element correction	13.1.0
	RP-71	RP-160470	0141	-		WLAN AP Identifier correction	13.1.0
	RP-71	RP-160470	0142	1		LPP clean-up	13.1.0
2016-09	RP-73	RP-161750	0143	4		Correction of ECID positioning for TDD	13.2.0
2016-12	RP-74	RP-162317	0160	1		Clarification of WLAN RSSI value range	13.3.0
2016-12	RP-74	RP-162326	0155	1		CR for 36.355 Further Indoor positioning enhancements	14.0.0
	RP-74	RP-162327	0157	-		Barometric Pressure Uncertainty IEs	14.0.0
	RP-74	RP-162326	0161	1		Introduction of Further Indoor Positioning Enhancements	14.0.0
2017-03	RP-75	RP-170636	0162	3	B	Introduction of positioning for further enhanced MTC	14.1.0
	RP-75	RP-170642	0163	-	C	Addition of periodical and triggered reporting capabilitiy signalling	14.1.0
	RP-75	RP-170642	0165	2	F	Further Indoor positioning enhancements corrections	14.1.0
	RP-75	RP-170637	0166	-	B	Introduction of positioning support for NB-IoT	14.1.0
2017-06	RP-76	RP-171224	0169	3	F	Compact Signal Measurement Information for OTDOA	14.2.0
	RP-76	RP-171223	0171	1	F	Correction to PRS Subframe Offset	14.2.0
	RP-76	RP-171223	0173	1	F	Correction to SFN time stamp in OTDOA Signal Measurement Information	14.2.0
	RP-76	RP-171223	0174	1	F	Correction to OTDOA capabilities	14.2.0
	RP-76	RP-171224	0175	1	F	Correction to NPRS	14.2.0
	RP-76	RP-171225	0176	2	F	LPP clean-up	14.2.0
	RP-76	RP-171224	0177	-	F	Corrections to number of NPRS carriers and ECID measurements for NB-IoT	14.2.0
	RP-76	RP-171224	0178	1	F	Removal of FFS for retransmission timer in LPP	14.2.0
	RP-76	RP-171224	0181	1	F	Signalling optimisation for NB-IoT Enhancements	14.2.0
2017-09	RP-77	RP-171913	0182	2	F	Clarification on definition of PRS Occasion Group	14.3.0
	RP-77	RP-171914	0183	1	F	Additional OTDOA Capabilities	14.3.0
	RP-77	RP-171911	0184	-	F	Clarification to *GNSS-TimeModelList*	14.3.0
	RP-77	RP-171913	0185	1	F	Minor corrections on TS 36.355 for Rel-14 MTC	14.3.0
2017-12	RP-78	RP-172616	0187	2	F	Correction on PRS hopping configuration	14.4.0
2018-03	RP-79	RP-180446	0189	1	F	Segmentation of LPP Messages	14.5.0
2018-04	RP-79					New version to fix ASN.1 formatting	14.5.1
2018-06	RP-80	RP-181235	0202	2	F	Clarification for NRSRQ reporting with E-CID	14.6.0
2018-06	RP-80	RP-181219	0204	2	B	Introduction of IMU support for OTDOA	15.0.0
	RP-80	RP-181219	0205	1	B	Addition of RTK and PPP support	15.0.0
	RP-80	RP-181219	0207	1	B	Addition of broadcast of positioning assistance data	15.0.0
	RP-80	RP-181215	0209	1	B	Addition of NR Support	15.0.0

	RP-80	RP-181252	0210	1	B	Addition of NB-IoT TDD support	15.0.0
2018-09	RP-81	RP-181963	0215	1	A	Support for NPRS enhancements	15.1.0
	RP-81	RP-181945	0218	1	F	Corrections to TDD in 36.355	15.1.0
	RP-81	RP-181961	0221	3	A	Correction to RSRQ range in 36.355	15.1.0
	RP-81	RP-181942	0222	1	F	OTDOA Assistance Data Request for NR	15.1.0
	RP-81	RP-181960	0223	-	F	LPP clean-up	15.1.0
	RP-81	RP-181952	0224	1	F	GAD shapes for high accuracy positioning	15.1.0
	RP-81	RP-181952	0226	1	B	Positioning SIB value tag and expiration time	15.1.0
2018-12	RP-82	RP-182672	0213	3	F	Addition of TDD UL/DL configuration to OTDOA assistance data	15.2.0
	RP-82	RP-182681	0228	2	F	Introduction of TDD UL/DL configuration for NB-IoT in 36.355	15.2.0
	RP-82	RP-182659	0229	3	F	SFN offset for OTDOA	15.2.0
	RP-82	RP-182674	0230	1	F	Alignment of IE/field names between LPP and RRC specifications	15.2.0
	RP-82	RP-182672	0232	1	F	Sensor Assistance Data Elements Correction	15.2.0
2019-03	RP-83	RP-190550	0234	3	F	Stage 2 and stage 3 sensor methods description alignment	15.3.0
2019-06	RP-84	RP-191376	0239	1	F	Minor corrections on NR Support	15.4.0
	RP-84	RP-191384	0240	4	F	Periodic assistance data transfer with cell ID change procedure	15.4.0
2019-09	RP-85	RP-192196	0243	1	F	Distinguishing Location Source when sensor method is used	15.5.0
2019-12	RP-86	RP-192449	0249	-	F	Turning TS 36.355 into a pointer to TS 37.355 (for LTE & NR)	15.6.0
2020-07	RP-88					Upgraded to Release 16 without technical changes	16.0.0
2022-03	RP-95					Upgraded to Release 17 without technical changes	17.0.0
2024-03	RP-103					Upgraded to Release 18 without technical changes	18.0.0
2025-09	RP-109					Upgraded to Release 19 without technical changes	19.0.0

History

Document history		
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