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FCC IC RF Test Report

Test Report Number	WAP-22021511-LC-FCC-IC-LTE
FCC ID	KMH-14H317-NA1
IC	1422A-14H317NA1
Applicant	Ford Motor Company
Applicant Address	Building 5, 20300 Rotunda Dr., Dearborn, Michigan, United States 48124
Product Name	Vehicle Telematics Control Unit
Model Name	FNV3-B6-NA
Model Number	U5T-14H317-D
Date of Receipt	04/05/2022
Date of Test	05/17/2022 – 06/01/2022
Report Issue Date	06/03/2022
Test Standards	47CFR Part 22 47CFR Part 24 47CFR Part 27 RSS-130 Issue 2: Feb 2019 RSS-132 Issue 3: Jan 2013 RSS-133 Issue 6: Jan 2018 RSS-139 Issue 3: Jul 2015 RSS-199 Issue 3: Dec 2016 RSS-Gen Issue 5: Feb 2021
Test Result	**PASS**

Issued by:

Vista Compliance Laboratories
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Devin Tai (Test Engineer)

David Zhang (Technical Manager)

REVISION HISTORY

Report Number	Version	Description	Issued Date
WAP-22021511-LC-FCC-IC-LTE	01	Initial report	06/03/2022

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1 Test Summary

Test Item	FCC IC Rules	Test Method	Result
Effective (Isotropic) Radiated Power	§ 2.1046, § 22.913 § 24.232, § 27.50 RSS-130(4.6), RSS-132(5.4) RSS-133(6.4), RSS-139(6.5) RSS-199 (4.4)	ANSI C63.26: 2015 KDB 971168 D01 Power Meas License Digital Systems v03r01	Pass
Peak to Average Ratio	§ 2.1046, § 22.913 § 24.232, § 27.50 RSS-130(4.6), RSS-132(5.4) RSS-133(6.4), RSS-139(6.6) RSS-199 (4.4)	ANSI C63.26: 2015 KDB 971168 D01 Power Meas License Digital Systems v03r01	Pass
Occupied bandwidth	§2.1049 RSS-Gen (6.7)	ANSI C63.26: 2015 KDB 971168 D01 Power Meas License Digital Systems v03r01	Pass
Band Edge	§ 2.1051; § 22.917(a) § 24.238, § 27.53 RSS-130(4.7), RSS-132(5.5) RSS-133(6.5), RSS-139(6.6), RSS-199 (4.5)	ANSI C63.26: 2015 KDB 971168 D01 Power Meas License Digital Systems v03r01	Pass
Conducted Spurious Emission	§ 2.1051; § 22.917(a) § 24.238, § 27.53 (h) RSS-130(4.7), RSS-132(5.5) RSS-133(6.5), RSS-139(6.6) RSS-199 (4.5)	ANSI C63.26: 2015 KDB 971168 D01 Power Meas License Digital Systems v03r01	Pass
Field Strength of Radiated Spurious Emissions	§ 2.1051; § 22.917(a) § 24.238, § 27.53 (h) RSS-130(4.7), RSS-132(5.5) RSS-133(6.5), RSS-139(6.6) RSS-199 (4.5)	ANSI C63.26: 2015 KDB 971168 D01 Power Meas License Digital Systems v03r01	Pass
Frequency Stability	§ 2.1055, § 22.355 § 24.235, § 27.54 RSS-130(4.5), RSS-132(5.3) RSS-133(6.3), RSS-139(6.4) RSS-199 (4.3)	ANSI C63.26: 2015 KDB 971168 D01 Power Meas License Digital Systems v03r01	Pass

2 General Information

2.1 Applicant

Applicant	Ford Motor Company
Applicant address	Building 5, 20300 Rotunda Dr., Dearborn, Michigan, United States 48124
Manufacturer	Ford Motor Company
Manufacturer Address	Building 5, 20300 Rotunda Dr., Dearborn, Michigan, United States 48124

2.2 Product information

Product Name	Vehicle Telematics Control Unit
Mode Name	FNV3-B6-NA
Model Number	U5T-14H317-D
Family Model Number	N/A
Serial Number	ANHGG22022104741, ANHGG22027104975 (Conducted), ANHGG22022104737, ANHGG21328102795 (Radiated)
Frequency Band	BT BDR/EDR: 2402-2480MHz BLE: 2402-2480MHz 802.11b/g/n-20MHz: 2412-2462MHz 802.11n-40MHz: 2422-2452MHz 802.11a/n-20MHz: 5500-5580MHz, 5660-5720, 5725-5825MHz 802.11n-40MHz: 5510-5550MHz, 5630-5710, 5755-5795MHz 802.11ac: 5530, 5690MHz, 5775MHz WCDMA Band 2: UL: 1850- 1910MHz; DL: 1930-1990MHz WCDMA Band 4: UL: 1710- 1755MHz. DL: 2110-2155MHz WCDMA Band 5: UL: 824- 849MHz; DL: 869-894MHz LTE Band 2: UL: 1850-1910MHz; DL: 1930-1990MHz LTE Band 4: UL:1710-1755MHz; DL: 2110-2155MHz LTE Band 5: UL:824-849MHz; DL: 869-894MHz LTE Band 7: UL:2500-2570MHz; DL: 2620-2690MHz LTE Band 12: UL:699-716MHz; DL: 729-746MHz LTE Band 13: UL:777-787MHz; DL:746-756MHz LTE Band 17: UL: 704-716MHz; DL: 734-746MHz LTE Band 29: DL: 717-728MHz (UE Receive Only) LTE Band 38: UL: 2570-2620MHz; DL: 2570-2620MHz LTE Band 66: UL:1710-1780MHz; DL: 2110-2200MHz LTE Band 71: UL: 663-698MHz; DL: 617-652MHz 5G NR n2: UL: 1850-1910MHz; DL: 1930-1990MHz 5G NR n5: UL:824-849MHz; DL: 869-894MHz 5G NR n7: UL:2500-2570MHz; DL: 2620-2690MHz 5G NR n41: UL:2496-2690MHz; DL: 2496-2690MHz 5G NR n66: UL:1710-1780MHz; DL: 2110-2200MHz 5G NR n71: UL:663-698MHz; DL: 617-652MHz 5G NR n77-L: UL:3450-3550MHz; DL: 3450-3550MHz 5G NR n77-H: UL:3700-3980MHz; DL: 3700-3980MHz 5G NR n78-L: UL:3450-3550MHz; DL: 3450-3550MHz

<table>
<tr><td></td><td>5G NR n78-H: UL: 3700-3800MHz; DL: 3700-3800MHz</td></tr>
<tr><td>Type of modulation</td><td>BT BDR/EDR: GFSK, π/4DQPSK, 8DPSK
BLE: GFSK
802.11b: DSSS (CCK, DQPSK, DBPSK)
802.11g: OFDM-CCK (BPSK, QPSK, 16QAM, 64QAM)
802.11a/n/ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
WCDMA: QPSK
LTE: QPSK, 16QAM, 64QAM, 256QAM
5G NR: Pi/2-BPSK, QPSK, 16QAM, 64QAM, 256QAM</td></tr>
<tr><td>Equipment Class/ Category</td><td>DSS, DTS, UNII, PCB</td></tr>
<tr><td>Maximum output power</td><td>See test result</td></tr>
<tr><td>Antenna Information</td><td>2 x Internal BT/WLAN PCB trace antenna
Peak Gain:
- 3.7 dBi @2.4GHz WiFi/Bluetooth, 6.4 dBi @5GHz WiFi

Cellular External antennas:
Peak Gain: 6 dBi @ 617 - 960 MHz
8 dBi @ 1710-2200MHz
8.5 dBi @ 2300-2700MHz
9.5 dBi @ 3300-4200MHz
11.0 dBi @ 4400-5000MHz

Antenna connector type: quad mini-Fakra connector

Modem 6 TCU will support 4 vehicle cellular antenna ports. The antenna port mapping is at below table,

<table>
<tr><td>Antenna</td><td>LB</td><td>MB</td><td>HB</td><td>N77/78/79</td><td>N41</td></tr>
<tr><td>Antenna1</td><td>DRX</td><td>TX+PRX</td><td>TX+PRX</td><td>TX+PRX</td><td>TX+PRX</td></tr>
<tr><td>Antenna2</td><td>TX+PRX</td><td>DRX</td><td>DRX</td><td>DRX</td><td>DRX</td></tr>
<tr><td>Antenna3</td><td>-</td><td>MIMO</td><td>MIMO</td><td>MIMO</td><td>MIMO</td></tr>
<tr><td>Antenna4</td><td>-</td><td>MIMO</td><td>MIMO</td><td>MIMO</td><td>MIMO</td></tr>
</table>
Note:
1. Antenna 1 and 3 go to the left-side rooftop external antenna (cellular antennas) and antenna 2 and 4 go to the right-side rooftop external antenna (cellular antennas). The cable length between left left-side and right-side rooftop external antenna are more than 20 cm.
2. Antenna 3 and 4 are for 4G-5G MIMO diversity only, no TX.
3. The antenna gain is declared by the manufacturer. Not all antennas support TX. The declared peak gain may have overestimated the TX gain of the single cellular antenna. For ERP/EIRP, radiated power will be measured in case when the calculated ERP/EIRP with declared antenna gain and measured conducted power is high.
4. LTE Band 17 is a subset of LTE Band 12. Therefore, the test data provided I this report covers LTE Band 12 as well as LTE Bad 17.</td></tr>
<tr><td>Clock Frequencies</td><td>N/A</td></tr>
<tr><td>Port/Connectors</td><td>CAN bus</td></tr>
<tr><td>Input Power</td><td>Vehicle Battery powered: 12VDC</td></tr>
<tr><td>Power Adapter Manu/Model</td><td>N/A</td></tr>
<tr><td>Power Adapter SN</td><td>N/A</td></tr>
</table>

Hardware version	N/A
Software version	N/A
Simultaneous Transmission	BT/BLE, WLAN and cellular radio can transmit simultaneously
Additional Info	3G Band: B2, B4, B5 4G Band: B2, B4, B5, B7, B12, B13, B17, B29, B38, B66, B71 5G SA Band: n78, n77, n71, n66, n41, n7, n5, n2 5G NSA Band: n77, n71, n66, n41, n5, n2 5G SCS spacing: 15 KHz (FDD), 30 KHz (TDD) MRDC Band Combination (NSA):

MRDC Band Combinations

NR CA Config		LTE CA Config	
DL	UL	DL	UL
n71a	n71a	66a-66a	66a
n71a	n71a	2a-66a	66a
n71a	n71a	2a-66a	2a
n66a	n66a	2a-12a-66a	12a
n66a	n66a	2a-5a-66a	5a
n66a	n66a	13a	13a
n66a	n66a	2a-2a-12a	12a
n66a	n66a	2a-2a-5a	5a
n5a	n5a	5a-66a-66a	66a
n5a	n5a	2a-66a-66a	66a
n5a	n5a	2a-66a-66a	2a
n5a	n5a	66a-66a	66a
n5a	n5a	2a-5a-66a	66a
n5a	n5a	2a-5a-66a	2a
n5a	n5a	2a-2a-66a	66a
n5a	n5a	2a-2a-66a	2a
n5a	n5a	2a-2a-5a	2a
n5a	n5a	2a-2a	2a
n2a	n2a	12a-66a-66a	12a
n2a	n2a	5a-66a-66a	5a
n2a	n2a	13a-66a	13a
n2a	n2a	2a-12a-66a	12a
n2a	n2a	2a-5a-66a	5a
n77a	n77a	66a-66a	66a
n77a	n77a	12a-66a	66a
n77a	n77a	12a-66a	12a
n77a	n77a	5a-66a	66a
n77a	n77a	5a-66a	5a
n77a	n77a	2a-66a	66a
n77a	n77a	2a-66a	2a
n77a	n77a	66a	66a
n77a	n77a	2a-29a	2a
n77a	n77a	13a	13a
n77a	n77a	2a-12a	12a
n77a	n77a	2a-12a	2a
n77a	n77a	2a-5a	5a
n77a	n77a	2a-5a	2a
n77a	n77a	2a-2a	2a
n77a	n77a	2a	2a

2.3 Test standard and method

Test standard	47CFR Part 22 47CFR Part 24 47CFR Part 27 RSS-130 Issue 2: Feb 2019 RSS-132 Issue 3: Jan 2013 RSS-133 Issue 6: Jan 2018 RSS-139 Issue 3: Jul 2015 RSS-199 Issue 3: Dec 2016 RSS-Gen Issue 5: Feb 2021
Test method	ANSI C63.26: 2015 KDB 971168 D01 Power Meas License Digital Systems v03r01 KDB 412172 D01 Determining ERP and EIRP v01r01

3 Test Site Information

Lab performing tests	Vista Laboratories, Inc.
Lab Address	1261 Puerta Del Sol, San Clemente, CA 92673 USA
Phone Number	+1 (949) 393-1123
Website	www.vista-compliance.com

Test Condition	Temperature	Humidity	Atmospheric Pressure
RF Testing	23.5°C	61.3%	1002 mbar
Radiated Emission Testing	23.5°C	61.3%	1002 mbar

4 Modification of EUT / Deviations from Standards

N/A

5 Test Configuration and Operation

5.1 EUT Test Configuration

EUT is powered by external DC power supply for testing purpose. EUT's RF antenna port is connected to spectrum analyzer through RF test cable for measurement. The test software is used to set EUT to different transmission mode in terms of radio mode (WLAN, BLE), test channel, data rate, etc. For Cellular radio, it's controlled by communication tester to change to different mode.

5.2 Supporting Equipment

Description	Manufacturer	Model #	Serial #
AC/DC Adapter	MEAN WELL	GST60A12-P1J	EB74Q81066

6 Uncertainty of Measurement

Test item	Measurement Uncertainty (dB)
RF Output Power (Conducted)	±1.2 dB
Power Spectral Density	±0.9 dB
Unwanted Emission (conducted)	±2.6 dB
Occupied Channel Bandwidth	±5 %
Radiated Emission (9KHz-30MHz)	±3.5 dB
Radiated Emission (30MHz-1GHz)	±4.6 dB
Radiated Emission (1-18GHz)	±4.9 dB
Radiated Emission (18-40GHz)	±3.5 dB

7 Test Results

7.1 RF Output Power

7.1.1 Requirement

§ 22.913(a) – ERP limit: 38.45 dBm

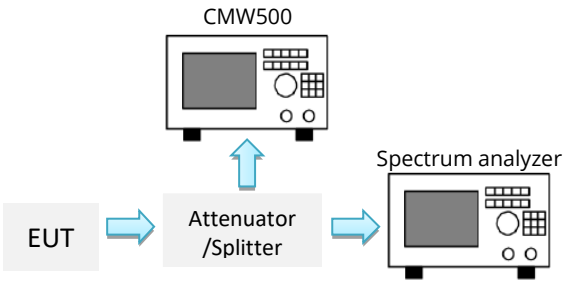
RSS-132(5.4) – EIRP limit: 40.61 dBm

§ 24.232(c) / RSS-133(6.4) – EIRP limit: 33 dBm

§ 27.50(c) / RSS-130(4.6) – EIRP limit: 44.77 dBm

§ 27.50(d) / RSS-139(6.5) – EIRP limit: 30 dBm

7.1.2 Test setup



7.1.3 Test Procedure

For Conducted Power:

- The transmitter output port was connected to base station.
- Set EUT at maximum power through base station.
- Select lowest, middle, and highest channels for each band and different test mode.

For ERP/EIRP:

- According with 971168 D01 Power Meas License Digital Systems v03r01
- The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.
- The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
- The frequency ranges up to tenth harmonic of the fundamental frequency was investigated.
- Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.
- Spurious emissions in dB = 10 log (TX power in Watts/0.001) – the absolute level
- Spurious attenuation limit in dB = 43 + 10 Log10 (power out in Watts).

7.1.4 Test Result

Conducted Output Power (dBm)

LTE Band 2				Conducted Power(dBm) / Frequency (MHz)		
BW	**Modulation**	**RB size**	**RB offset**	**18607/1850.7**	**8900/1880**	**9193/1909.3**
1.4MHz	QPSK	1	0	22.97	22.91	23.63
	QPSK	1	2	23.07	23.16	23.88
	QPSK	1	5	22.90	22.93	23.83
	QPSK	3	0	23.06	23.12	23.78
	QPSK	3	2	-	-	-
	QPSK	3	2	23.13	23.12	23.81
	QPSK	6	0	21.95	22.03	22.64
	16QAM	1	0	22.16	22.13	23.06
	16QAM	1	2	22.21	22.26	22.84
	16QAM	1	5	22.16	22.34	23.09
BW	**Modulation**	**RB size**	**RB offset**	**18615/1851.5**	**18900/1880**	**185/1908.5**
3MHz	QPSK	1	0	22.98	22.93	23.69
	QPSK	1	8	23.01	23.09	23.93
	QPSK	1	14	22.93	22.98	23.54
	QPSK	6	0	22.14	22.16	22.77
	QPSK	6	4	-	-	-
	QPSK	6	9	21.99	22.02	22.65
	QPSK	15	0	21.99	21.98	22.60
	16QAM	1	0	22.44	22.74	22.98
	16QAM	1	8	22.58	22.26	22.81
	16QAM	1	14	22.72	22.29	23.26
BW	**Modulation**	**RB size**	**RB offset**	**18625/1852.5**	**18900/1880**	**19175/1907.5**
5MHz	QPSK	1	0	23.09	23.05	23.78
	QPSK	1	13	23.02	23.02	23.77
	QPSK	1	24	23.14	23.25	23.70
	QPSK	12	0	22.06	22.07	22.71
	QPSK	12	6	-	-	-
	QPSK	12	13	22.10	22.11	22.72
	QPSK	25	0	22.15	22.15	22.82
	16QAM	1	0	22.22	22.22	23.10
	16QAM	1	13	23.11	23.16	23.65
	16QAM	1	24	23.20	23.08	23.67

LTE Band 2				Conducted Power(dBm) / Frequency (MHz)		
BW	**Modulation**	**RB size**	**RB offset**	**18650/1855**	**18900/1880**	**19150/1905**
10MHz	QPSK	1	0	23.22	23.16	23.83
	QPSK	1	25	23.21	23.16	23.88
	QPSK	1	49	23.01	23.01	23.64
	QPSK	25	0	21.98	22.02	22.68
	QPSK	25	13	-	-	-
	QPSK	25	25	22.08	22.08	22.69
	QPSK	50	0	22.03	21.98	22.64
	16QAM	1	0	22.42	22.69	22.87
	16QAM	1	25	22.61	22.28	22.76
	16QAM	1	49	22.62	22.25	23.10

BW	**Modulation**	**RB size**	**RB offset**	**18675/1857.5**	**18900/1880**	**9125/1902.5**
15MHz	QPSK	1	0	23.17	23.10	23.79
	QPSK	1	38	23.13	23.09	23.83
	QPSK	1	74	23.04	23.07	23.70
	QPSK	36	0	22.10	22.09	22.73
	QPSK	36	18	-	-	-
	QPSK	36	39	22.08	22.06	22.68
	QPSK	75	0	22.00	22.00	22.66
	16QAM	1	0	22.92	22.82	22.89
	16QAM	1	38	22.68	22.64	22.82
	16QAM	1	74	22.35	22.67	23.38

BW	**Modulation**	**RB size**	**RB offset**	**18700/1860**	**18900/1880**	**19100/1900**
20MHz	QPSK	1	0	23.24	23.26	23.94
	QPSK	1	50	23.21	23.06	23.74
	QPSK	1	99	23.14	23.23	23.78
	QPSK	50	0	22.14	22.09	22.66
	QPSK	50	25	-	-	-
	QPSK	50	50	22.22	22.27	22.80
	QPSK	100	0	22.14	22.22	22.79
	16QAM	1	0	22.87	22.82	23.15
	16QAM	1	50	22.61	22.67	23.03
	16QAM	1	99	22.57	22.72	23.43

LTE Band 4				Conducted Power(dBm) / Frequency (MHz)		
BW	**Modulation**	**RB size**	**RB offset**	**19957/1711**	**20175/1733**	**20393/1754**
1.4MHz	QPSK	1	0	22.99	22.94	23.70
	QPSK	1	3	22.88	22.96	23.80
	QPSK	1	5	22.98	23.03	23.59
	QPSK	3	0	22.12	22.14	22.75
	QPSK	3	2	-	-	-
	QPSK	3	3	23.12	23.20	23.75
	QPSK	6	0	22.00	21.97	22.53
	16QAM	1	0	22.32	22.16	23.16
	16QAM	1	3	22.21	22.27	23.02
	16QAM	1	5	22.00	22.28	23.02

BW	**Modulation**	**RB size**	**RB offset**	**19965/1712**	**20175/1733**	**20385/1753**
3MHz	QPSK	1	0	23.01	22.96	23.72
	QPSK	1	8	22.86	22.94	23.78
	QPSK	1	14	22.96	23.01	23.57
	QPSK	6	0	22.04	22.06	22.67
	QPSK	6	4	-	-	-
	QPSK	6	9	21.88	22.01	22.61
	QPSK	15	0	22.04	22.11	22.67
	16QAM	1	0	22.35	22.74	22.82
	16QAM	1	8	22.66	22.38	22.86
	16QAM	1	14	22.70	22.27	23.20

BW	**Modulation**	**RB size**	**RB offset**	**19975/1713**	**20175/1733**	**20375/1752**
5MHz	QPSK	1	0	23.15	23.11	23.84
	QPSK	1	13	23.05	23.05	23.80
	QPSK	1	24	23.12	23.23	23.68
	QPSK	12	0	22.22	22.23	22.87
	QPSK	12	6	-	-	-
	QPSK	12	13	22.04	22.07	22.64
	QPSK	25	0	22.10	22.20	22.81
	16QAM	1	0	22.23	22.25	23.12
	16QAM	1	13	23.13	23.26	23.86
	16QAM	1	24	23.23	23.08	23.58

LTE Band 4				Conducted Power(dBm) / Frequency (MHz)		
BW	**Modulation**	**RB size**	**RB offset**	**20000/1715**	**20175/1733**	**20350/1750**
10MHz	QPSK	1	0	23.23	23.14	23.81
	QPSK	1	25	23.07	22.99	23.82
	QPSK	1	49	22.95	23.04	23.58
	QPSK	25	0	22.23	22.20	22.86
	QPSK	25	13	-	-	-
	QPSK	25	25	21.93	21.98	22.58
	QPSK	50	0	22.20	22.06	22.80
	16QAM	1	0	22.57	22.79	23.08
	16QAM	1	25	22.68	22.36	22.71
	16QAM	1	49	22.56	22.18	23.15

BW	**Modulation**	**RB size**	**RB offset**	**20025/1718**	**20175/1733**	**20325/1747**
15MHz	QPSK	1	0	23.25	23.17	23.82
	QPSK	1	38	23.13	23.09	23.75
	QPSK	1	74	23.19	23.28	23.90
	QPSK	36	0	22.16	21.96	22.80
	QPSK	36	18	-	-	-
	QPSK	36	39	22.13	22.19	22.74
	QPSK	75	0	22.13	21.98	22.74
	16QAM	1	0	22.90	22.83	22.99
	16QAM	1	38	22.71	22.69	22.82
	16QAM	1	74	22.31	22.69	23.33

BW	**Modulation**	**RB size**	**RB offset**	**20050/1720**	**20175/1733**	**20300/1745**
20MHz	QPSK	1	0	23.13	23.12	23.90
	QPSK	1	50	23.31	23.05	23.80
	QPSK	1	99	23.17	23.43	23.97
	QPSK	50	0	22.06	22.00	22.65
	QPSK	50	25	-	-	-
	QPSK	50	50	22.21	22.18	22.66
	QPSK	100	0	22.09	22.17	22.77
	16QAM	1	0	22.84	22.91	23.22
	16QAM	1	50	22.69	22.63	23.08
	16QAM	1	99	22.47	22.61	23.35

LTE Band 5				Conducted Power(dBm) / Frequency (MHz)		
BW	**Modulation**	**RB size**	**RB offset**	**20407/824.7**	**20525/836.5**	**20643/848.3**
1.4MHz	QPSK	1	0	23.29	23.18	23.36
	QPSK	1	2	23.26	23.40	23.39
	QPSK	1	5	23.14	23.18	23.46
	QPSK	3	0	23.16	23.28	23.34
	QPSK	3	2	-	-	-
	QPSK	3	3	23.11	23.25	23.31
	QPSK	6	0	22.05	22.12	22.21
	16QAM	1	0	22.13	22.41	22.57
	16QAM	1	2	23.11	23.22	23.34
	16QAM	1	5	23.18	23.11	23.11

BW	**Modulation**	**RB size**	**RB offset**	**20415/825.5**	**20525/836.5**	**20635/847.5**
3MHz	QPSK	1	0	23.30	23.50	23.47
	QPSK	1	8	23.19	23.17	23.34
	QPSK	1	14	23.19	23.13	23.20
	QPSK	6	0	22.14	22.23	22.35
	QPSK	6	4	-	-	-
	QPSK	6	9	22.14	22.25	22.34
	QPSK	15	0	22.25	22.31	22.43
	16QAM	1	0	22.90	22.62	22.87
	16QAM	1	8	22.35	22.80	22.58
	16QAM	1	14	22.24	22.49	22.93

BW	**Modulation**	**RB size**	**RB offset**	**20425/826.5**	**20525/836.5**	**20625/846.5**
5MHz	QPSK	1	0	23.08	23.21	23.36
	QPSK	1	13	23.26	23.35	23.57
	QPSK	1	24	23.17	23.44	23.28
	QPSK	12	0	22.20	22.35	22.46
	QPSK	12	6	-	-	-
	QPSK	12	13	22.32	22.39	22.36
	QPSK	25	0	22.14	22.16	22.42
	16QAM	1	0	22.57	22.45	22.43
	16QAM	1	13	22.62	22.49	22.54
	16QAM	1	24	22.16	22.62	22.20

BW	**Modulation**	**RB size**	**RB offset**	**20450/829**	**20525/836.5**	**20600/844**
10MHz	QPSK	1	0	23.14	23.17	23.41
	QPSK	1	25	23.08	23.32	23.37
	QPSK	1	49	23.17	23.37	23.23
	QPSK	25	0	22.15	22.30	22.32
	QPSK	25	13	-	-	-
	QPSK	25	25	22.20	22.48	22.45
	QPSK	50	0	22.15	22.31	22.43
	16QAM	1	0	22.61	22.87	22.57
	16QAM	1	25	22.76	22.52	22.27
	16QAM	1	49	22.81	22.38	22.65

LTE Band 7				Conducted Power(dBm) / Frequency (MHz)		
BW	**Modulation**	**RB size**	**RB offset**	**20775/2502.5**	**21100/2535**	**21425/2567.5**
5MHz	QPSK	1	0	23.16	23.13	23.06
	QPSK	1	13	22.93	22.85	22.82
	QPSK	1	24	22.65	22.60	22.56
	QPSK	12	0	22.34	22.36	22.29
	QPSK	12	6	21.92	21.87	21.76
	QPSK	12	13	22.46	22.44	22.34
	QPSK	25	0	22.25	22.17	22.06
	16QAM	1	0	22.58	22.52	22.45
	16QAM	1	13	23.35	23.32	23.28
	16QAM	1	24	22.87	22.84	22.77

BW	**Modulation**	**RB size**	**RB offset**	**20800/2505**	**21100/2535**	**21400/2565**
10MHz	QPSK	1	0	23.29	23.34	23.19
	QPSK	1	25	23.39	23.33	23.26
	QPSK	1	49	22.83	22.80	22.76
	QPSK	25	0	23.56	23.53	23.46
	QPSK	25	13	23.00	22.92	22.89
	QPSK	25	25	22.87	22.82	22.78
	QPSK	50	0	21.99	22.01	21.94
	16QAM	1	0	22.64	22.61	22.54
	16QAM	1	25	23.37	23.29	23.26
	16QAM	1	49	22.62	22.57	22.53

BW	**Modulation**	**RB size**	**RB offset**	**20825/2507.5**	**21100/2535**	**21375/2562.5**
15MHz	QPSK	1	0	23.16	23.21	23.06
	QPSK	1	38	23.35	23.29	23.22
	QPSK	1	74	23.49	23.46	23.42
	QPSK	36	0	23.00	22.97	22.90
	QPSK	36	18	23.15	23.07	23.04
	QPSK	36	39	23.52	23.47	23.43
	QPSK	75	0	21.93	21.95	21.88
	16QAM	1	0	23.15	23.12	23.08
	16QAM	1	38	22.97	22.94	22.87
	16QAM	1	74	23.09	23.01	22.98

BW	**Modulation**	**RB size**	**RB offset**	**20850/2510**	**21100/2535**	**21350/2560**
20MHz	QPSK	1	0	23.45	23.40	23.36
	QPSK	1	50	23.51	23.48	23.41
	QPSK	1	99	23.24	23.16	23.13
	QPSK	50	0	23.05	22.99	22.92
	QPSK	50	25	22.70	22.67	22.63
	QPSK	50	50	22.09	21.98	22.06
	QPSK	100	0	21.91	21.78	21.87
	16QAM	1	0	23.27	23.24	23.17
	16QAM	1	50	23.03	22.95	22.92
	16QAM	1	99	23.57	23.52	23.48

LTE Band 12				Conducted Power(dBm) / Frequency (MHz)		
BW	**Modulation**	**RB size**	**RB offset**	**23017/699.7**	**23095/707.5**	**23173/715.3**
1.4MHz	QPSK	1	0	22.85	22.78	22.90
	QPSK	1	3	22.98	22.98	22.81
	QPSK	1	5	22.99	22.99	22.78
	QPSK	3	0	22.82	22.73	22.63
	QPSK	3	2	-	-	-
	QPSK	3	3	22.98	22.87	22.84
	QPSK	6	0	21.95	21.81	21.83
	16QAM	1	0	22.23	22.13	21.95
	16QAM	1	3	22.85	22.74	22.63
	16QAM	1	5	22.33	22.02	21.94

BW	**Modulation**	**RB size**	**RB offset**	**23025/700.5**	**23095/707.5**	**23165/714.5**
3MHz	QPSK	1	0	23.16	23.05	23.00
	QPSK	1	8	23.18	22.95	22.89
	QPSK	1	14	22.85	22.86	22.62
	QPSK	6	0	21.90	21.97	21.86
	QPSK	6	4	-	-	-
	QPSK	6	9	22.04	22.07	22.05
	QPSK	15	0	21.97	21.88	21.72
	16QAM	1	0	22.45	21.94	22.19
	16QAM	1	8	22.06	22.35	22.00
	16QAM	1	14	22.09	22.17	22.34

BW	**Modulation**	**RB size**	**RB offset**	**23035/701.5**	**23095/707.5**	**23155/713.5**
5MHz	QPSK	1	0	22.99	22.91	22.98
	QPSK	1	13	23.12	22.89	22.96
	QPSK	1	24	22.70	22.85	22.64
	QPSK	12	0	22.07	22.00	21.89
	QPSK	12	6	-	-	-
	QPSK	12	13	21.82	21.88	21.76
	QPSK	25	0	21.84	21.88	21.75
	16QAM	1	0	22.14	21.99	22.33
	16QAM	1	13	22.06	21.99	22.39
	16QAM	1	24	21.97	22.26	21.97

BW	**Modulation**	**RB size**	**RB offset**	**23060/704**	**23095/707.5**	**23130/711**
10MHz	QPSK	1	0	23.00	22.97	22.97
	QPSK	1	25	23.09	22.96	22.98
	QPSK	1	49	22.85	22.92	22.80
	QPSK	25	0	21.93	22.06	21.99
	QPSK	25	13	-	-	-
	QPSK	25	25	21.92	22.04	21.81
	QPSK	50	0	21.94	21.82	21.84
	16QAM	1	0	22.65	22.14	22.29
	16QAM	1	25	22.27	22.56	22.13
	16QAM	1	49	22.38	22.28	21.90

LTE Band 13				Conducted Power(dBm) / Frequency (MHz)		
BW	Modulation	RB size	RB offset	23205/779.5	23230/782	23255/784.5
5MHz	QPSK	1	0	23.09	23.01	23.08
	QPSK	1	13	23.19	22.96	23.03
	QPSK	1	24	22.74	22.89	22.68
	QPSK	12	0	21.95	21.88	21.77
	QPSK	12	6	-	-	-
	QPSK	12	13	21.97	22.03	21.91
	QPSK	25	0	21.88	21.92	21.79
	16QAM	1	0	22.04	21.89	22.23
	16QAM	1	13	21.95	21.88	22.28
	16QAM	1	24	21.97	22.26	21.97
BW	Modulation	RB size	RB offset	-	23230/782	-
10MHz	QPSK	1	0	-	22.84	-
	QPSK	1	25	-	22.87	-
	QPSK	1	49	-	22.82	-
	QPSK	25	0	-	22.06	-
	QPSK	25	13	-	-	-
	QPSK	25	25	-	22.06	-
	QPSK	50	0	-	21.89	-
	16QAM	1	0	-	22.07	-
	16QAM	1	25	-	22.52	-
	16QAM	1	49	-	22.22	-

LTE Band 38				Conducted Power(dBm) / Frequency (MHz)		
BW	Modulation	RB size	RB offset	37775/2572.5	38000/2595	38225/2617.5
5MHz	QPSK	1	0	23.04	23.01	22.94
	QPSK	1	13	22.89	22.81	22.78
	QPSK	1	24	22.65	22.60	22.56
	QPSK	12	0	22.41	22.43	22.36
	QPSK	12	6	22.00	21.95	21.84
	QPSK	12	13	22.57	22.55	22.45
	QPSK	25	0	22.30	22.22	22.11
	16QAM	1	0	22.54	22.48	22.41
	16QAM	1	13	23.28	23.25	23.21
	16QAM	1	24	22.82	22.79	22.72
BW	Modulation	RB size	RB offset	37800/2575	38000/2595	38200/2615
10MHz	QPSK	1	0	23.33	23.38	23.23
	QPSK	1	25	23.31	23.25	23.18
	QPSK	1	49	22.87	22.84	22.80
	QPSK	25	0	23.52	23.49	23.42
	QPSK	25	13	23.15	23.07	23.04
	QPSK	25	25	22.85	22.80	22.76
	QPSK	50	0	21.92	21.94	21.87
	16QAM	1	0	22.76	22.73	22.66
	16QAM	1	25	23.39	23.31	23.28
	16QAM	1	49	22.60	22.55	22.51
BW	Modulation	RB size	RB offset	37825/2577.5	38000/2595	38175/2612.5
15MHz	QPSK	1	0	23.28	23.33	23.18
	QPSK	1	38	23.31	23.25	23.18
	QPSK	1	74	23.55	23.52	23.48
	QPSK	36	0	22.98	22.95	22.88
	QPSK	36	18	23.17	23.09	23.06
	QPSK	36	39	23.58	23.53	23.49
	QPSK	75	0	21.88	21.90	21.83
	16QAM	1	0	23.16	23.13	23.09
	16QAM	1	38	22.91	22.88	22.81
	16QAM	1	74	23.10	23.02	22.99
BW	Modulation	RB size	RB offset	37850/2580	38000/2595	38150/2610
20MHz	QPSK	1	0	23.34	23.29	23.25
	QPSK	1	50	23.57	23.54	23.47
	QPSK	1	99	23.23	23.15	23.12
	QPSK	50	0	22.94	22.88	22.81
	QPSK	50	25	22.61	22.58	22.54
	QPSK	50	50	22.03	21.92	22.00
	QPSK	100	0	21.90	21.77	21.86
	16QAM	1	0	23.25	23.22	23.15
	16QAM	1	50	23.00	22.92	22.89
	16QAM	1	99	23.56	23.51	23.47

LTE Band 66				Conducted Power(dBm) / Frequency (MHz)		
BW	Modulation	RB size	RB offset	131979/1710.7	132322/1745	132665/1779.3
1.4MHz	QPSK	1	0	22.95	22.86	23.54
	QPSK	1	3	22.94	23.02	23.78
	QPSK	1	5	22.79	22.90	23.72
	QPSK	3	0	23.11	23.03	23.72
	QPSK	3	2	-	-	-
	QPSK	3	3	23.09	23.17	23.74
	QPSK	6	0	21.96	22.06	22.57
	16QAM	1	0	22.29	22.16	23.06
	16QAM	1	3	22.17	22.15	22.74
	16QAM	1	5	22.22	22.31	23.13

BW	Modulation	RB size	RB offset	131987/1711.5	132322/1745	132657/1778.5
3MHz	QPSK	1	0	23.11	23.17	23.94
	QPSK	1	8	22.95	22.91	23.84
	QPSK	1	14	22.99	23.03	23.52
	QPSK	6	0	22.00	22.12	22.58
	QPSK	6	4	-	-	-
	QPSK	6	9	22.14	22.07	22.80
	QPSK	15	0	22.01	21.96	22.62
	16QAM	1	0	22.41	22.68	23.03
	16QAM	1	8	22.47	22.31	22.80
	16QAM	1	14	22.80	22.37	23.16

BW	Modulation	RB size	RB offset	131997/1712.5	132322/1745	132647/1777.5
5MHz	QPSK	1	0	23.11	23.17	23.91
	QPSK	1	13	22.96	23.11	23.86
	QPSK	1	24	23.04	23.07	23.55
	QPSK	12	0	22.13	22.15	22.84
	QPSK	12	6	-	-	-
	QPSK	12	13	22.11	22.22	22.70
	QPSK	25	0	22.08	22.05	22.74
	16QAM	1	0	22.32	22.27	23.20
	16QAM	1	13	23.23	23.28	23.84
	16QAM	1	24	23.16	23.01	23.69

LTE Band 66				Conducted Power(dBm) / Frequency (MHz)		
BW	Modulation	RB size	RB offset	132022/1715	132322/1745	132622/1775
10MHz	QPSK	1	0	23.07	23.05	23.66
	QPSK	1	25	23.17	23.07	23.79
	QPSK	1	49	23.17	23.15	23.82
	QPSK	25	0	22.12	22.11	22.82
	QPSK	25	13	-	-	-
	QPSK	25	25	22.00	22.01	22.76
	QPSK	50	0	22.14	21.98	22.58
	16QAM	1	0	22.58	22.76	22.99
	16QAM	1	25	22.67	22.44	22.79
	16QAM	1	49	22.56	22.28	23.11

BW	Modulation	RB size	RB offset	132047/1717.5	132322/1745	132597/1772.5
15MHz	QPSK	1	0	23.22	23.12	23.88
	QPSK	1	38	23.06	23.12	23.79
	QPSK	1	74	23.26	23.14	23.76
	QPSK	36	0	22.11	22.12	22.63
	QPSK	36	18	-	-	-
	QPSK	36	39	22.10	22.07	22.55
	QPSK	75	0	21.93	21.98	22.73
	16QAM	1	0	22.95	22.68	22.78
	16QAM	1	38	22.88	22.91	23.05
	16QAM	1	74	22.38	22.58	23.37

BW	Modulation	RB size	RB offset	132072/1720	132322/1745	132572/1770
20MHz	QPSK	1	0	23.14	23.14	23.94
	QPSK	1	50	23.12	23.04	23.72
	QPSK	1	99	23.07	23.18	23.76
	QPSK	50	0	22.08	22.05	22.67
	QPSK	50	25	-	-	-
	QPSK	50	50	22.20	22.32	22.73
	QPSK	100	0	22.14	22.27	22.77
	16QAM	1	0	22.90	22.73	23.01
	16QAM	1	50	22.42	22.48	22.92
	16QAM	1	99	22.65	22.66	23.33

LTE Band 71				Conducted Power(dBm) / Frequency (MHz)		
BW	Modulation	RB size	RB offset	133147/ 665.5	133247 / 675.5	133447 / 695.5
5MHz	QPSK	1	0	23.00	23.06	23.80
	QPSK	1	13	23.02	23.17	23.92
	QPSK	1	24	23.15	23.18	23.66
	QPSK	12	0	22.08	22.10	22.79
	QPSK	12	6	-	-	-
	QPSK	12	13	22.05	22.16	22.64
	QPSK	25	0	22.10	22.07	22.76
	16QAM	1	0	22.30	22.25	23.18
	16QAM	1	13	23.19	23.24	23.80
	16QAM	1	24	23.26	23.11	23.79

LTE Band 71				Conducted Power(dBm) / Frequency (MHz)		
BW	Modulation	RB size	RB offset	133172 / 668	133272 / 678	133422 / 693
10MHz	QPSK	1	0	23.07	23.05	23.66
	QPSK	1	25	23.12	23.02	23.74
	QPSK	1	49	23.05	23.03	23.70
	QPSK	25	0	22.07	22.06	22.77
	QPSK	25	13	-	-	-
	QPSK	25	25	21.92	21.93	22.68
	QPSK	50	0	22.14	21.98	22.58
	16QAM	1	0	22.55	22.73	22.96
	16QAM	1	25	22.71	22.48	22.83
	16QAM	1	49	22.64	22.36	23.19

BW	Modulation	RB size	RB offset	133197 / 670.5	133297 / 680.5	133397 / 690.5
15MHz	QPSK	1	0	23.15	23.05	23.81
	QPSK	1	38	23.05	23.11	23.78
	QPSK	1	74	23.23	23.11	23.73
	QPSK	36	0	22.21	22.22	22.73
	QPSK	36	18	-	-	-
	QPSK	36	39	22.28	22.25	22.73
	QPSK	75	0	21.93	21.98	22.73
	16QAM	1	0	22.90	22.63	22.73
	16QAM	1	38	22.87	22.90	23.04
	16QAM	1	74	22.50	22.70	23.49

BW	Modulation	RB size	RB offset	133222 / 673	133322 / 680.5	133372 / 688
20MHz	QPSK	1	0	23.17	23.17	23.97
	QPSK	1	50	23.09	23.01	23.69
	QPSK	1	99	23.18	23.29	23.87
	QPSK	50	0	22.10	22.07	22.69
	QPSK	50	25	-	-	-
	QPSK	50	50	22.09	22.21	22.62
	QPSK	100	0	22.05	22.18	22.68
	16QAM	1	0	22.93	22.76	23.04
	16QAM	1	50	22.43	22.49	22.93
	16QAM	1	99	22.54	22.55	23.22

Radiated power

LTE Band 2		EIRP(dBm) / Frequency (MHz)		
BW	Modulation			
1.4MHz	-	18607/1850.7	8900/1880	9193/1909.3
	QPSK	31.13	31.16	31.88
	16QAM	30.21	30.34	31.09
3MHz	-	18615/1851.5	18900/1880	185/1908.5
	QPSK	31.01	31.09	31.93
	16QAM	30.72	30.74	31.26
5MHz	-	18625/1852.5	18900/1880	19175/1907.5
	QPSK	31.14	31.25	31.78
	16QAM	31.2	31.16	31.67
10MHz	-	18650/1855	18900/1880	19150/1905
	QPSK	31.22	31.16	31.88
	16QAM	30.62	30.69	31.1
15MHz	-	18675/1857.5	18900/1880	9125/1902.5
	QPSK	31.17	31.1	31.83
	16QAM	30.92	30.82	31.38
20MHz	-	18700/1860	18900/1880	19100/1900
	QPSK	31.24	31.26	31.94
	16QAM	30.87	30.82	31.43
EIRP Limit (dBm)		**33**		
Result		**Pass**	**Pass**	**Pass**

LTE Band 4		EIRP(dBm) / Frequency (MHz)		
BW	Modulation			
1.4MHz	-	19957/1711	20175/1733	20393/1754
	QPSK	26.98	27.06	27.65
	16QAM	26.19	26.15	27.02
3MHz	-	19965/1712	20175/1733	20385/1753
	QPSK	26.87	26.87	27.63
	16QAM	26.57	26.61	27.06
5MHz	-	19975/1713	20175/1733	20375/1752
	QPSK	27.01	27.09	27.69
	16QAM	27.09	27.12	27.71
10MHz	-	20000/1715	20175/1733	20350/1750
	QPSK	27.09	27.00	27.67
	16QAM	26.55	26.66	27.01
15MHz	-	20025/1718	20175/1733	20325/1747
	QPSK	27.11	27.14	27.75
	16QAM	26.76	26.70	27.19
20MHz	-	20050/1720	20175/1733	20300/1745
	QPSK	27.17	27.29	27.82
	16QAM	26.71	26.77	27.21
EIRP Limit (dBm)		**30**		
Result		**Pass**	**Pass**	**Pass**

LTE Band 5		**EIRP(dBm) / Frequency (MHz)**		
BW	Modulation			
1.4MHz	-	20407/824.7	20525/836.5	20643/848.3
	QPSK	29.29	29.4	29.46
	16QAM	29.18	29.22	29.34
3MHz	-	20415/825.5	20525/836.5	20635/847.5
	QPSK	29.3	29.5	29.47
	16QAM	22.9	22.8	22.93
5MHz	-	20425/826.5	20525/836.5	20625/846.5
	QPSK	23.26	23.44	23.57
	16QAM	22.62	22.62	22.54
10MHz	-	20450/829	20525/836.5	20600/844
	QPSK	29.17	29.37	29.41
	16QAM	28.81	28.87	28.65
ERP / EIRP Limit (dBm)		**38.45 / 40.61**		
Result		**Pass**	**Pass**	**Pass**

LTE Band 7		**EIRP (dBm) / Frequency (MHz)**		
BW	Modulation			
5MHz	-	20775/2502.5	21100/2535	21425/2567.5
	QPSK	31.66	31.63	31.56
	16QAM	31.85	31.82	31.78
10MHz	-	20800/2505	21100/2535	21400/2565
	QPSK	32.06	32.03	31.96
	16QAM	31.87	31.79	31.76
15MHz	-	20825/2507.5	21100/2535	21375/2562.5
	QPSK	32.02	31.97	31.93
	16QAM	31.65	31.62	31.58
20MHz	-	20850/2510	21100/2535	21350/2560
	QPSK	32.01	31.98	31.91
	16QAM	32.07	32.02	31.98
EIRP Limit (dBm)		**33**		
Result		**Pass**	**Pass**	**Pass**

LTE Band 12		**ERP (dBm) / Frequency (MHz)**		
BW	Modulation			
1.4MHz	-	23017/699.7	23095/707.5	23173/715.3
	QPSK	26.84	26.84	26.75
	16QAM	26.70	26.59	26.48
3MHz	-	23025/700.5	23095/707.5	23165/714.5
	QPSK	27.03	26.90	26.85
	16QAM	26.30	26.20	26.19
5MHz	-	23035/701.5	23095/707.5	23155/713.5
	QPSK	26.97	26.76	26.83
	16QAM	25.99	26.11	26.24
10MHz	-	23060/704	23095/707.5	23130/711
	QPSK	26.94	26.82	26.83
	16QAM	26.50	26.41	26.14
ERP Limit (dBm)		**44.77**		
Result		**Pass**	**Pass**	**Pass**

LTE Band 13		**ERP (dBm) / Frequency (MHz)**		
BW	Modulation			
5MHz	-	23205/779.5	23230/782	23255/784.5
	QPSK	27.04	26.86	26.93
	16QAM	25.89	26.11	26.13
10MHz	-	-	23230/782	-
	QPSK	-	26.72	-
	16QAM	-	26.37	-
ERP Limit (dBm)		**44.77**		
Result		**Pass**	**Pass**	**Pass**

LTE Band 38		**EIRP (dBm) / Frequency (MHz)**		
BW	Modulation	131997/1712.5	132322/1745	132647/1777.5
5MHz	-	37775/2572.5	38000/2595	38225/2617.5
	QPSK	31.54	31.51	31.44
	16QAM	31.78	31.75	31.71
10MHz	-	37800/2575	38000/2595	38200/2615
	QPSK	32.02	31.99	31.92
	16QAM	31.89	31.81	31.78
15MHz	-	37825/2577.5	38000/2595	38175/2612.5
	QPSK	32.08	32.03	31.99
	16QAM	31.66	31.63	31.59
20MHz	-	37850/2580	38000/2595	38150/2610
	QPSK	32.07	32.04	31.97
	16QAM	32.06	32.01	31.97
EIRP Limit (dBm)		**33**		
Result		**Pass**	**Pass**	**Pass**

LTE Band 66		**EIRP (dBm) / Frequency (MHz)**		
BW	Modulation			
1.4MHz	-	131979/1710.7	132322/1745	132665/1779.3
	QPSK	26.97	27.03	27.63
	16QAM	26.16	26.18	26.99
3MHz	-	131987/1711.5	132322/1745	132657/1778.5
	QPSK	26.97	27.03	27.79
	16QAM	26.67	26.55	27.02
5MHz	-	131997/1712.5	132322/1745	132647/1777.5
	QPSK	26.97	27.03	27.76
	16QAM	27.09	27.14	27.69
10MHz	-	132022/1715	132322/1745	132622/1775
	QPSK	27.03	27.01	27.67
	16QAM	26.54	26.63	26.97
15MHz	-	132047/1717.5	132322/1745	132597/1772.5
	QPSK	27.12	27.00	27.73
	16QAM	26.81	26.77	27.23
20MHz	-	132072/1720	132322/1745	132572/1770
	QPSK	27.00	27.04	27.79
	16QAM	26.76	26.60	27.19
EIRP Limit (dBm)		**30**		
Result		**Pass**	**Pass**	**Pass**

LTE Band 71		**ERP (dBm) / Frequency (MHz)**		
BW	Modulation			
5MHz	-	133147/ 665.5	133247 / 675.5	133447 / 695.5
	QPSK	27.00	27.03	27.77
	16QAM	27.11	27.09	27.65
10MHz	-	133172 / 668	133272 / 678	133422 / 693
	QPSK	26.97	26.90	27.59
	16QAM	26.56	26.58	27.04
15MHz	-	133197 / 670.5	133297 / 680.5	133397 / 690.5
	QPSK	27.08	26.96	27.66
	16QAM	26.75	26.75	27.34
20MHz	-	133222 / 673	133322 / 680.5	133372 / 688
	QPSK	27.03	27.14	27.82
	16QAM	26.78	26.61	27.07
ERP Limit (dBm)		**34.8**		
Result		**Pass**	**Pass**	**Pass**

7.2 Peak to Average Ratio

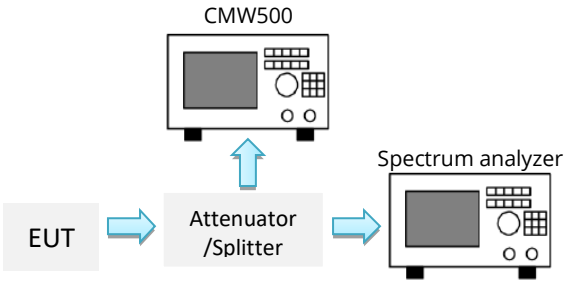
7.2.1 Requirement

§ 2.1046, § 22.913, § 24.232, § 27.50 (d)

RSS-132(5.4), RSS-133(6.4), RSS-139(6.5)

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

7.2.2 Test Setup



7.2.3 Test Procedure

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.7.1

- The signal analysers CCDF measurement profile Is enabled
- Frequency carrier center frequency
- Measurement BW> Emission bandwidth of signal
- The signal analyzer was set to collect one million samples to generate the CCDF curve
- The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle) the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst trigger that is synced with an incoming pulse and the measurement interval set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power.
- Record the maximum PAPR level associated with a probability of 0. 1%.

7.2.4 Test Result

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)	Result
Band 2	QPSK	1.4	18607	1850.7	5.43	13	Pass
			18900	1880	5.47	13	Pass
			19193	1909.3	5.45	13	Pass
		3	18615	1851.5	5.28	13	Pass
			18900	1880	5.33	13	Pass
			19185	1908.5	5.27	13	Pass
		5	18625	1852.5	5.31	13	Pass
			18900	1880	5.36	13	Pass
			19175	1907.5	5.34	13	Pass
		10	18650	1855	5.28	13	Pass
			18900	1880	5.30	13	Pass
			19150	1905	5.26	13	Pass
		15	18675	1857.5	5.67	13	Pass
			18900	1880	5.55	13	Pass
			19125	1902.5	5.53	13	Pass
		20	18700	1860	5.37	13	Pass
			18900	1880	5.27	13	Pass
			19100	1900	5.43	13	Pass
	16-QAM	1.4	18607	1850.7	6.24	13	Pass
			18900	1880	6.13	13	Pass
			19193	1909.3	6.16	13	Pass
		3	18615	1851.5	6.09	13	Pass
			18900	1880	6.09	13	Pass
			19185	1908.5	6.07	13	Pass
		5	18625	1852.5	6.06	13	Pass
			18900	1880	6.10	13	Pass
			19175	1907.5	6.04	13	Pass
		10	18650	1855	6.07	13	Pass
			18900	1880	6.02	13	Pass
			19150	1905	6.06	13	Pass
		15	18675	1857.5	6.21	13	Pass
			18900	1880	6.16	13	Pass
			19125	1902.5	6.22	13	Pass
		20	18700	1860	6.11	13	Pass
			18900	1880	6.04	13	Pass
			19100	1900	6.18	13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)	Result
Band 4	QPSK	1.4	19957	1710.7	5.24	13	Pass
			20175	1732.5	5.40	13	Pass
			20393	1754.3	5.25	13	Pass
		3	19965	1711.5	5.12	13	Pass
			20175	1732.5	5.28	13	Pass
			20385	1753.5	5.20	13	Pass
		5	19975	1712.5	5.12	13	Pass
			20175	1732.5	5.29	13	Pass
			20375	1752.5	5.24	13	Pass
		10	20000	1715	5.20	13	Pass
			20175	1732.5	5.22	13	Pass
			20350	1750	5.18	13	Pass
		15	20025	1717.5	5.61	13	Pass
			20175	1732.5	5.48	13	Pass
			20325	1747.5	5.59	13	Pass
		20	20050	1720	5.39	13	Pass
			20175	1732.5	5.19	13	Pass
			20300	1745	5.44	13	Pass
	16-QAM	1.4	19957	1710.7	6.12	13	Pass
			20175	1732.5	6.03	13	Pass
			20393	1754.3	6.04	13	Pass
		3	19965	1711.5	6.03	13	Pass
			20175	1732.5	6.03	13	Pass
			20385	1753.5	5.98	13	Pass
		5	19975	1712.5	5.98	13	Pass
			20175	1732.5	6.03	13	Pass
			20375	1752.5	5.94	13	Pass
		10	20000	1715	6.04	13	Pass
			20175	1732.5	6.02	13	Pass
			20350	1750	5.94	13	Pass
		15	20025	1717.5	6.25	13	Pass
			20175	1732.5	6.11	13	Pass
			20325	1747.5	6.10	13	Pass
		20	20050	1720	6.11	13	Pass
			20175	1732.5	5.99	13	Pass
			20300	1745	6.13	13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)	Result
Band 5	QPSK	1.4	20407	824.7	5.01	13	Pass
			20525	836.5	5.14	13	Pass
			20643	848.3	5.09	13	Pass
		3	20415	825.5	5.04	13	Pass
			20525	836.5	5.10	13	Pass
			20635	847.5	5.00	13	Pass
		5	20425	826.5	5.13	13	Pass
			20525	836.5	5.16	13	Pass
			20625	846.5	5.04	13	Pass
		10	20450	829	5.09	13	Pass
			20525	836.5	5.07	13	Pass
			20600	844	5.10	13	Pass
	16-QAM	1.4	20407	824.7	5.81	13	Pass
			20525	836.5	5.93	13	Pass
			20643	848.3	5.86	13	Pass
		3	20415	825.5	5.88	13	Pass
			20525	836.5	5.92	13	Pass
			20635	847.5	5.81	13	Pass
		5	20425	826.5	5.88	13	Pass
			20525	836.5	5.90	13	Pass
			20625	846.5	5.80	13	Pass
		10	20450	829	5.89	13	Pass
			20525	836.5	5.89	13	Pass
			20600	844	5.88	13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)	Result
Band 7	QPSK	5	20775	2502.5	5.37	13	Pass
			21100	2535	5.31	13	Pass
			21425	2567.5	5.34	13	Pass
		10	20800	2505	5.23	13	Pass
			21100	2535	5.22	13	Pass
			21400	2565	5.22	13	Pass
		15	20825	2507.5	5.44	13	Pass
			21100	2535	5.48	13	Pass
			21375	2562.5	5.51	13	Pass
		20	20850	2510	5.15	13	Pass
			21100	2535	5.20	13	Pass
			21350	2560	5.21	13	Pass
	16-QAM	5	20775	2502.5	6.09	13	Pass
			21100	2535	6.10	13	Pass
			21425	2567.5	6.03	13	Pass
		10	20800	2505	6.05	13	Pass
			21100	2535	5.99	13	Pass
			21400	2565	6.01	13	Pass
		15	20825	2507.5	6.10	13	Pass
			21100	2535	6.14	13	Pass
			21375	2562.5	6.12	13	Pass
		20	20850	2510	5.94	13	Pass
			21100	2535	6.00	13	Pass
			21350	2560	6.02	13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)	Result
Band 12	QPSK	1.4	23017	699.7	4.83	13	Pass
			23095	707.5	5.26	13	Pass
			23173	715.3	4.75	13	Pass
		3	23025	700.5	4.90	13	Pass
			23095	707.5	5.01	13	Pass
			23165	714.5	4.86	13	Pass
		5	23035	701.5	4.99	13	Pass
			23095	707.5	4.86	13	Pass
			23155	713.5	5.01	13	Pass
		10	23060	704	5.43	13	Pass
			23095	707.5	4.75	13	Pass
			23130	711	5.15	13	Pass
	16-QAM	1.4	23017	699.7	5.64	13	Pass
			23095	707.5	5.94	13	Pass
			23173	715.3	5.54	13	Pass
		3	23025	700.5	5.74	13	Pass
			23095	707.5	5.84	13	Pass
			23165	714.5	5.63	13	Pass
		5	23035	701.5	5.70	13	Pass
			23095	707.5	5.75	13	Pass
			23155	713.5	5.67	13	Pass
		10	23060	704	6.15	13	Pass
			23095	707.5	5.73	13	Pass
			23130	711	6.07	13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)	Result
Band 13	QPSK	5	23205	779.5	5.13	13	Pass
			23230	782	5.40	13	Pass
			23255	784.5	5.42	13	Pass
		10	23230	782	5.19	13	Pass
	16-QAM	5	23205	779.5	6.13	13	Pass
			23230	782	6.12	13	Pass
			23255	784.5	6.18	13	Pass
		10	23230	782	6.15	13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)	Result
Band 38	QPSK	5	37775	2572.5	9.11	13	Pass
			38000	2595	8.94	13	Pass
			38225	2617.5	9.01	13	Pass
		10	37800	2575	8.17	13	Pass
			38000	2595	8.08	13	Pass
			38200	2615	8.27	13	Pass
		15	37825	2577.5	9.55	13	Pass
			38000	2595	10.24	13	Pass
			38175	2612.5	10.15	13	Pass
		20	37850	2580	8.59	13	Pass
			38000	2595	8.29	13	Pass
			38150	2610	9.01	13	Pass
	16-QAM	5	37775	2572.5	9.88	13	Pass
			38000	2595	9.39	13	Pass
			38225	2617.5	9.74	13	Pass
		10	37800	2575	9.48	13	Pass
			38000	2595	9.96	13	Pass
			38200	2615	9.52	13	Pass
		15	37825	2577.5	9.99	13	Pass
			38000	2595	9.61	13	Pass
			38175	2612.5	9.21	13	Pass
		20	37850	2580	9.55	13	Pass
			38000	2595	9.75	13	Pass
			38150	2610	9.68	13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)	Result
Band 66	QPSK	1.4	131979	1710.7	5.41	13	Pass
			132322	1745	5.24	13	Pass
			132665	1779.3	5.45	13	Pass
		3	131987	1711.5	4.82	13	Pass
			132322	1745	5.26	13	Pass
			132657	1778.5	5.21	13	Pass
		5	131997	1712.5	5.19	13	Pass
			132322	1745	5.35	13	Pass
			132647	1777.5	5.31	13	Pass
		10	132022	1715	4.95	13	Pass
			132322	1745	5.30	13	Pass
			132622	1775	5.40	13	Pass
		15	132047	1717.5	4.94	13	Pass
			132322	1745	5.31	13	Pass
			132597	1772.5	5.63	13	Pass
		20	132072	1720	4.95	13	Pass
			132322	1745	5.24	13	Pass
			132572	1770	5.48	13	Pass
	16-QAM	1.4	131979	1710.7	6.09	13	Pass
			132322	1745	6.28	13	Pass
			132665	1779.3	5.94	13	Pass
		3	131987	1711.5	6.10	13	Pass
			132322	1745	6.10	13	Pass
			132657	1778.5	5.95	13	Pass
		5	131997	1712.5	5.97	13	Pass
			132322	1745	5.93	13	Pass
			132647	1777.5	5.93	13	Pass
		10	132022	1715	5.98	13	Pass
			132322	1745	5.94	13	Pass
			132622	1775	6.03	13	Pass
		15	132047	1717.5	5.97	13	Pass
			132322	1745	5.95	13	Pass
			132597	1772.5	6.12	13	Pass
		20	132072	1720	5.92	13	Pass
			132322	1745	5.97	13	Pass
			132572	1770	6.09	13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	PAR (dB)	Limit (dB)	Result
Band 71	QPSK	5	133147	665.5	5.37	13	Pass
			133247	675.5	5.80	13	Pass
			133447	695.5	5.26	13	Pass
		10	133172	668	5.10	13	Pass
			133272	678	5.46	13	Pass
			133422	693	5.41	13	Pass
		15	133197	670.5	5.42	13	Pass
			133297	680.5	5.14	13	Pass
			133397	690.5	5.16	13	Pass
		20	133222	673	5.33	13	Pass
			133322	680.5	5.30	13	Pass
			133372	688	5.26	13	Pass
	16-QAM	5	133147	665.5	5.80	13	Pass
			133247	675.5	6.64	13	Pass
			133447	695.5	6.18	13	Pass
		10	133172	668	6.07	13	Pass
			133272	678	6.34	13	Pass
			133422	693	6.29	13	Pass
		15	133197	670.5	6.26	13	Pass
			133297	680.5	5.69	13	Pass
			133397	690.5	5.68	13	Pass
		20	133222	673	5.81	13	Pass
			133322	680.5	5.82	13	Pass
			133372	688	5.80	13	Pass

7.2.5 Test Plots

Please see appendix-A test plots.

7.3 Occupied Bandwidth

7.3.1 Requirement

§2.1049, RSS-Gen (6.7)

- 99% Occupied Bandwidth(kHz)

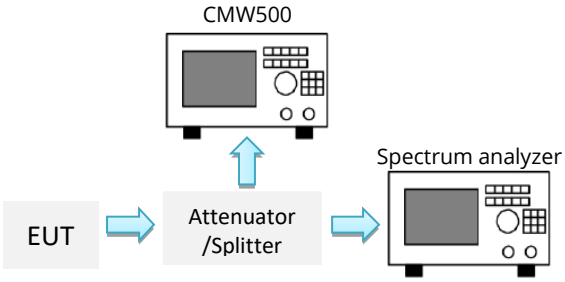
The occupied bandwidth that is the frequency bandwidth such that below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be Measured.

- 26 dB Bandwidth(kHz)

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

All modes of operation were investigated and the worst-case configuration results are reported in this section

7.3.2 Test Setup



7.3.3 Test Procedure

- The EUT was connected to Spectrum Analyzer and Base Station via power divider.
- Set RBW = 1% to 5% of the actual occupied BW.
- Set the video bandwidth (VBW) ≥ 3 x RBW.
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Span = large enough to capture all products of the modulation process
- Allow the trace to stabilize.
- Use automatic bandwidth measurement capability on instrument to obtain 99% and -26dB BW.

7.3.4 Test Result

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth (MHz)
Band 2	QPSK	1.4	18607	1850.7	1.095	1.239
			18900	1880	1.572	1.249
			19193	1909.3	1.105	1.236
		3	18615	1851.5	2.752	3.100
			18900	1880	2.739	3.079
			19185	1908.5	2.741	3.075
		5	18625	1852.5	4.513	5.009
			18900	1880	4.521	4.956
			19175	1907.5	4.513	4.967
		10	18650	1855	8.952	9.580
			18900	1880	8.962	9.787
			19150	1905	8.956	9.698
		15	18675	1857.5	13.478	14.75
			18900	1880	13.553	14.76
			19125	1902.5	13.549	14.84
		20	18700	1860	17.959	19.44
			18900	1880	17.960	19.18
			19100	1900	17.973	19.55
	16-QAM	1.4	18607	1850.7	1.093	1.235
			18900	1880	1.097	1.252
			19193	1909.3	1.096	1.242
		3	18615	1851.5	2.737	3.076
			18900	1880	2.761	3.087
			19185	1908.5	2.732	3.074
		5	18625	1852.5	4.510	4.996
			18900	1880	4.515	4.942
			19175	1907.5	4.539	5.018
		10	18650	1855	8.957	9.609
			18900	1880	8.956	9.694
			19150	1905	8.961	9.071
		15	18675	1857.5	13.524	14.69
			18900	1880	13.522	14.69
			19125	1902.5	13.546	14.98
		20	18700	1860	18.000	19.39
			18900	1880	17.977	19.31
			19100	1900	17.996	19.39

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth (MHz)
Band 4	QPSK	1.4	19957	1710.7	1.098	1.244
			20175	1732.5	1.095	1.243
			20393	1754.3	1.107	1.237
		3	19965	1711.5	2.748	3.067
			20175	1732.5	2.735	3.102
			20385	1753.5	2.740	3.087
		5	19975	1712.5	4.519	4.964
			20175	1732.5	4.531	5.002
			20375	1752.5	4.511	4.930
		10	20000	1715	8.952	9.733
			20175	1732.5	8.949	9.732
			20350	1750	8.956	9.660
		15	20025	1717.5	13.522	14.81
			20175	1732.5	13.539	14.71
			20325	1747.5	13.519	14.70
		20	20050	1720	17.976	19.51
			20175	1732.5	17.966	19.38
			20300	1745	18.052	19.71
	16-QAM	1.4	19957	1710.7	1.097	1.252
			20175	1732.5	1.092	1.230
			20393	1754.3	1.092	1.243
		3	19965	1711.5	2.737	3.086
			20175	1732.5	2.761	3.098
			20385	1753.5	2.741	3.091
		5	19975	1712.5	4.521	4.97
			20175	1732.5	4.513	4.994
			20375	1752.5	4.530	5.002
		10	20000	1715	8.966	9.632
			20175	1732.5	8.949	9.640
			20350	1750	8.962	9.727
		15	20025	1717.5	13.586	14.85
			20175	1732.5	13.517	14.71
			20325	1747.5	13.549	14.71
		20	20050	1720	18.015	19.79
			20175	1732.5	17.935	19.87
			20300	1745	18.037	19.60

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth (kHz)
Band 5	QPSK	1.4	20407	824.7	1.096	1.248
			20525	836.5	1.094	1.243
			20643	848.3	1.105	1.235
		3	20415	825.5	2.745	3.075
			20525	836.5	2.743	3.095
			20635	847.5	2.738	3.068
		5	20425	826.5	4.511	4.972
			20525	836.5	4.524	4.983
			20625	846.5	4.497	4.980
		10	20450	829	8.943	9.706
			20525	836.5	8.922	9.603
			20600	844	8.936	9.653
	16-QAM	1.4	20407	824.7	1.096	1.251
			20525	836.5	1.092	1.233
			20643	848.3	1.096	1.242
		3	20415	825.5	2.751	3.082
			20525	836.5	2.744	3.095
			20635	847.5	2.739	3.078
		5	20425	826.5	4.532	5.008
			20525	836.5	4.504	4.980
			20625	846.5	4.532	5.008
		10	20450	829	8.942	9.673
			20525	836.5	8.944	9.634
			20600	844	8.945	9.636

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth (kHz)
Band 7	QPSK	5	20775	2502.5	4.532	4.934
			21100	2535	4.508	4.953
			21425	2567.5	4.501	4.962
		10	20800	2505	8.931	9.565
			21100	2535	8.939	9.602
			21400	2565	8.933	9.644
		15	20825	2507.5	13.483	14.71
			21100	2535	13.453	14.70
			21375	2562.5	13.481	14.67
		20	20850	2510	17.853	19.15
			21100	2535	17.927	19.55
			21350	2560	17.894	19.24
	16-QAM	5	20775	2502.5	4.530	4.991
			21100	2535	4.506	4.965
			21425	2567.5	4.512	5.006
		10	20800	2505	8.941	9.633
			21100	2535	8.944	9.621
			21400	2565	8.949	9.522
		15	20825	2507.5	13.483	14.71
			21100	2535	13.473	14.79
			21375	2562.5	13.495	14.73
		20	20850	2510	17.873	19.21
			21100	2535	17.943	19.25
			21350	2560	17.923	19.37

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth (kHz)
Band 12	QPSK	1.4	23017	699.7	1.095	1.242
			23095	707.5	1.918	1.247
			23173	715.3	1.108	1.237
		3	23025	700.5	2.759	3.075
			23095	707.5	2.732	3.078
			23165	714.5	2.754	3.090
		5	23035	701.5	4.524	5.021
			23095	707.5	4.488	4.900
			23155	713.5	4.541	4.967
		10	23060	704	8.973	9.597
			23095	707.5	8.847	9.480
			23130	711	8.924	9.505
	16-QAM	1.4	23017	699.7	1.090	1.229
			23095	707.5	1.097	1.253
			23173	715.3	1.097	1.253
		3	23025	700.5	2.742	3.068
			23095	707.5	2.739	3.023
			23165	714.5	2.749	3.106
		5	23035	701.5	4.551	5.006
			23095	707.5	4.468	4.924
			23155	713.5	4.556	5.038
		10	23060	704	8.979	9.524
			23095	707.5	8.852	9.457
			23130	711	8.920	9.575

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth (kHz)
Band 13	QPSK	5	23205	779.5	4.498	4.962
			23230	782	4.520	4.971
			23255	784.5	4.508	4.961
		10	23230	782	8.927	9.600
	16-QAM	5	23205	779.5	4.507	4.988
			23230	782	4.525	4.975
			23255	784.5	4.511	4.919
		10	23230	782	8.928	9.580

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth (kHz)
Band 38	QPSK	5	37775	2572.5	4.523	4.976
			38000	2595	4.503	4.975
			38225	2617.5	4.513	4.939
		10	37800	2575	8.943	9.687
			38000	2595	8.951	9.662
			38200	2615	8.950	9.639
		15	37825	2577.5	13.445	14.65
			38000	2595	13.483	14.69
			38175	2612.5	13.423	14.56
		20	37850	2580	17.874	19.18
			38000	2595	17.927	19.13
			38150	2610	17.886	19.31
	16-QAM	5	37775	2572.5	4.520	5.002
			38000	2595	4.517	4.981
			38225	2617.5	4.535	5.073
		10	37800	2575	8.974	9.616
			38000	2595	8.992	9.613
			38200	2615	8.972	13.70
		15	37825	2577.5	13.603	28.89
			38000	2595	13.589	28.48
			38175	2612.5	13.596	29.06
		20	37850	2580	18.040	39.65
			38000	2595	19.094	39.92
			38150	2610	18.063	39.96

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth (MHz)	-26dBc Bandwidth (MHz)
Band 66	QPSK	1.4	131979	1710.7	1.078	1.210
			132322	1745	1.081	1.217
			132665	1779.3	1.080	1.204
		3	131987	1711.5	2.675	2.918
			132322	1745	2.679	2.919
			132657	1778.5	2.681	2.924
		5	131997	1712.5	4.502	5.013
			132322	1745	4.504	4.962
			132647	1777.5	4.496	4.968
		10	132022	1715	8.953	9.590
			132322	1745	8.946	9.594
			132622	1775	8.969	9.592
		15	132047	1717.5	13.459	14.62
			132322	1745	13.467	14.65
			132597	1772.5	13.481	14.79
		20	132072	1720	17.861	19.22
			132322	1745	17.909	19.31
			132572	1770	17.917	19.24
	16-QAM	1.4	131979	1710.7	1.080	1.214
			132322	1745	1.077	1.211
			132665	1779.3	1.081	1.204
		3	131987	1711.5	2.684	2.943
			132322	1745	2.680	2.927
			132657	1778.5	2.684	2.940
		5	131997	1712.5	4.504	4.952
			132322	1745	4.501	4.916
			132647	1777.5	4.492	4.934
		10	132022	1715	8.912	9.593
			132322	1745	8.916	9.592
			132622	1775	8.925	9.614
		15	132047	1717.5	13.469	14.55
			132322	1745	13.457	14.75
			132597	1772.5	13.507	14.82
		20	132072	1720	17.867	19.28
			132322	1745	17.929	19.29
			132572	1770	17.918	19.47

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth (kHz)
Band 71	QPSK	5	133147	665.5	4.495	5.009
			133247	675.5	4.510	4.990
			133447	695.5	4.502	4.965
		10	133172	668	8.905	9.607
			133272	678	8.934	9.543
			133422	693	8.959	9.600
		15	133197	670.5	13.417	14.64
			133297	680.5	13.369	14.58
			133397	690.5	13.507	14.75
		20	133222	673	17.898	19.38
			133322	680.5	17.847	19.14
			133372	688	17.907	19.29
	16-QAM	5	133147	665.5	4.498	4.931
			133247	675.5	4,510	4.932
			133447	695.5	4.500	4.936
		10	133172	668	8.884	9.452
			133272	678	8.912	9.484
			133422	693	8.920	9.559
		15	133197	670.5	13.443	14.54
			133297	680.5	13.429	14.62
			133397	690.5	13.505	14.73
		20	133222	673	17.897	19.32
			133322	680.5	17.834	19.11
			133372	688	17.895	19.37

7.3.5 Test Plots

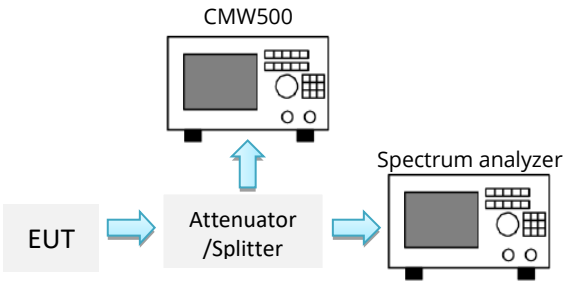
Please see appendix-B test plots.

7.4 Band Edge

7.4.1 Requirement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power(P)by a factor of at least 43+10 log(P)dB.

7.4.2 Test Setup



7.4.3 Test Procedure

- The EUT was connected to Spectrum Analyzer and Base Station via power divider.
- Set RBW as roughly BW/100.
- Detector = average
- Sweep = auto couple.
- Allow the trace to stabilize.
- Set Marker to edge frequency
- The Band Edges of low and high channels for the highest RF powers were measured

7.4.4 Test Result

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Band Edge measured (dBm)	Limit (dBm)	Result
Band 2	QPSK	1.4	18607	1850.7	-31.170	-13	Pass
			19193	1909.3	-33.131	-13	Pass
		3	18615	1851.5	-17.584	-13	Pass
			19185	1908.5	-20.588	-13	Pass
		5	18625	1852.5	-19.412	-13	Pass
			19175	1907.5	-18.219	-13	Pass
		10	18650	1855	-20.179	-13	Pass
			19150	1905	-18.880	-13	Pass
		15	18675	1857.5	-24.042	-13	Pass
			19125	1902.5	-20.808	-13	Pass
		20	18700	1860	-24.490	-13	Pass
			19100	1900	-19.038	-13	Pass
	16-QAM	1.4	18607	1850.7	-31.025	-13	Pass
			19193	1909.3	-35.351	-13	Pass
		3	18615	1851.5	-16.401	-13	Pass
			19185	1908.5	-21.938	-13	Pass
		5	18625	1852.5	-20.154	-13	Pass
			19175	1907.5	-16.374	-13	Pass
		10	18650	1855	-22.311	-13	Pass
			19150	1905	-23.900	-13	Pass
		15	18675	1857.5	-24.332	-13	Pass
			19125	1902.5	-21.771	-13	Pass
		20	18700	1860	-23.981	-13	Pass
			19100	1900	-20.820	-13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Band Edge measured (dBm)	Limit (dBm)	Result
Band 4	QPSK	1.4	19957	1710.7	-33.949	-13	Pass
			20393	1754.3	-30.072	-13	Pass
		3	19965	1711.5	-16.291	-13	Pass
			20385	1753.5	-18.219	-13	Pass
		5	19975	1712.5	-17.167	-13	Pass
			20375	1752.5	-17.142	-13	Pass
		10	20000	1715	-19.446	-13	Pass
			20350	1750	-17.713	-13	Pass
		15	20025	1717.5	-21.158	-13	Pass
			20325	1747.5	-19.857	-13	Pass
		20	20050	1720	-21.625	-13	Pass
			20300	1745	-18.478	-13	Pass
	16-QAM	1.4	19957	1710.7	-36.092	-13	Pass
			20393	1754.3	-29.491	-13	Pass
		3	19965	1711.5	-16.868	-13	Pass
			20385	1753.5	-18.477	-13	Pass
		5	19975	1712.5	-19.755	-13	Pass
			20375	1752.5	-18.573	-13	Pass
		10	20000	1715	-18.977	-13	Pass
			20350	1750	-19.743	-13	Pass
		15	20025	1717.5	-22.376	-13	Pass
			20325	1747.5	-19.054	-13	Pass
		20	20050	1720	-23.611	-13	Pass
			20300	1745	-18.031	-13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Band Edge measured (dBm)	Limit (dBm)	Result
Band 5	QPSK	1.4	20407	824.7	-35.911	-13	Pass
			20643	848.3	-35.981	-13	Pass
		3	20415	825.5	-17.651	-13	Pass
			20635	847.5	-21.116	-13	Pass
		5	20425	826.5	-21.914	-13	Pass
			20625	846.5	-20.568	-13	Pass
		10	20450	829	-24.905	-13	Pass
			20600	844	-23.601	-13	Pass
	16-QAM	1.4	20407	824.7	-38.836	-13	Pass
			20643	848.3	-34.188	-13	Pass
		3	20415	825.5	-19.743	-13	Pass
			20635	847.5	-20.005	-13	Pass
		5	20425	826.5	-22.118	-13	Pass
			20625	846.5	-20.962	-13	Pass
		10	20450	829	-27.528	-13	Pass
			20600	844	-24.135	-13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Band Edge measured (dBm)	Limit (dBm)	Result
Band 7	QPSK	5	20775	2502.5	-20.048	-13	Pass
			21425	2567.5	-19.366	-13	Pass
		10	20800	2505	-16.259	-13	Pass
			21400	2565	-23.197	-13	Pass
		15	20825	2507.5	-22.581	-13	Pass
			21375	2562.5	-22.379	-13	Pass
		20	20850	2510	-22.913	-13	Pass
			21350	2560	-19.884	-13	Pass
	16-QAM	5	20775	2502.5	-21.226	-13	Pass
			21425	2567.5	-19.431	-13	Pass
		10	20800	2505	-21.897	-13	Pass
			21400	2565	-21.661	-13	Pass
		15	20825	2507.5	-22.961	-13	Pass
			21375	2562.5	-22.980	-13	Pass
		20	20850	2510	-23.929	-13	Pass
			21350	2560	-22.998	-13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Band Edge measured (dBm)	Limit (dBm)	Result
Band 12	QPSK	1.4	23017	699.7	-29.823	-13	Pass
			23173	715.3	-26.698	-13	Pass
		3	23025	700.5	-16.210	-13	Pass
			23165	714.5	-17.607	-13	Pass
		5	23035	701.5	-19.066	-13	Pass
			23155	713.5	-16.639	-13	Pass
		10	23060	704	-21.437	-13	Pass
			23130	711	-22.912	-13	Pass
	16-QAM	1.4	23017	699.7	-31.652	-13	Pass
			23173	715.3	-26.226	-13	Pass
		3	23025	700.5	-17.903	-13	Pass
			23165	714.5	-19.066	-13	Pass
		5	23035	701.5	-19.034	-13	Pass
			23155	713.5	-18.063	-13	Pass
		10	23060	704	-26.528	-13	Pass
			23130	711	-27.311	-13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Band Edge measured (dBm)	Limit (dBm)	Result
Band 13	QPSK	5	23205	779.5	-14.725	-13	Pass
			23255	784.5	-16.731	-13	Pass
		10	23230	782	-18.789	-13	Pass
			23230	782	-26.606	-13	Pass
	16-QAM	5	23205	779.5	-17.358	-13	Pass
			23255	784.5	-17.555	-13	Pass
		10	23230	782	-22.489	-13	Pass
			23230	782	-25.726	-13	Pass

Band	Modulation	Bandwidth	Channel	Frequency (MHz)	Band Edge measured (dBm)	Limit (dBm)	Result
Band 38	QPSK	5	37775	2572.5	-18.632	-13	Pass
			38225	2617.5	-18.787	-13	Pass
		10	37800	2575	-21.504	-13	Pass
			38200	2615	-21.808	-13	Pass
		15	37825	2577.5	-23.950	-13	Pass
			38175	2612.5	-24.889	-13	Pass
		20	37850	2580	-22.458	-13	Pass
			38150	2610	-24.559	-13	Pass
	16-QAM	5	37775	2572.5	-20.859	-13	Pass
			38225	2617.5	-21.673	-13	Pass
		10	37800	2575	-22.826	-13	Pass
			38200	2615	-23.954	-13	Pass
		15	37825	2577.5	-25.974	-13	Pass
			38175	2612.5	-24.741	-13	Pass
		20	37850	2580	-25.615	-13	Pass
			38150	2610	-27.194	-13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Band Edge measured (dBm)	Limit (dBm)	Result
Band 66	QPSK	1.4	131979	1710.7	-24.081	-13	Pass
			132665	1779.3	-27.199	-13	Pass
		3	131987	1711.5	-17.154	-13	Pass
			132657	1778.5	-18.204	-13	Pass
		5	131997	1712.5	-17.322	-13	Pass
			132647	1777.5	-18.370	-13	Pass
		10	132022	1715	-20.222	-13	Pass
			132622	1775	-20.934	-13	Pass
		15	132047	1717.5	-21.457	-13	Pass
			132597	1772.5	-20.893	-13	Pass
		20	132072	1720	-22.422	-13	Pass
			132572	1770	-19.928	-13	Pass
	16-QAM	1.4	131979	1710.7	-31.589	-13	Pass
			132665	1779.3	-27.052	-13	Pass
		3	131987	1711.5	-15.740	-13	Pass
			132657	1778.5	-19.643	-13	Pass
		5	131997	1712.5	-17.713	-13	Pass
			132647	1777.5	-18.910	-13	Pass
		10	132022	1715	-22.371	-13	Pass
			132622	1775	-20.874	-13	Pass
		15	132047	1717.5	-18.644	-13	Pass
			132597	1772.5	-20.878	-13	Pass
		20	132072	1720	-23.441	-13	Pass
			132572	1770	-22.607	-13	Pass

Band	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	Band Edge measured (dBm)	Limit (dBm)	Result
Band 71	QPSK	5	133147	665.5	-21.623	-13	Pass
			133447	695.5	-19.912	-13	Pass
		10	133172	668	-22.623	-13	Pass
			133422	693	-18.733	-13	Pass
		15	133197	670.5	-18.433	-13	Pass
			133397	690.5	-21.025	-13	Pass
		20	133222	673	-22.865	-13	Pass
			133372	688	-22.208	-13	Pass
	16-QAM	5	133147	665.5	-20.905	-13	Pass
			133447	695.5	-16.016	-13	Pass
		10	133172	668	-23.480	-13	Pass
			133422	693	-20.573	-13	Pass
		15	133197	670.5	-23.178	-13	Pass
			133397	690.5	-17.492	-13	Pass
		20	133222	673	-27.165	-13	Pass
			133372	688	-18.672	-13	Pass

7.4.5 Test Plots

Please see appendix-C test plots.

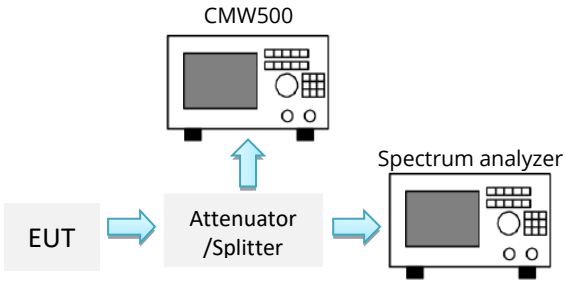
7.5 Conducted spurious emission

7.5.1 Requirement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power(P)by a factor of at least 43+10 log(P)dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHZ up to a frequency including its 10 harmonics.

7.5.2 Test Setup



7.5.3 Test Procedure

- The EUT was connected to Spectrum Analyzer and Base Station via power divider.
- Set RBW = 100KHz and VBW=300KHz for below 1GHz; set RBW=1MHz and VBW=3MHz for above 1GHz.
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- Use marker peak to search for spurious emission

7.5.4 Test Result

Please see appendix-D test plots.

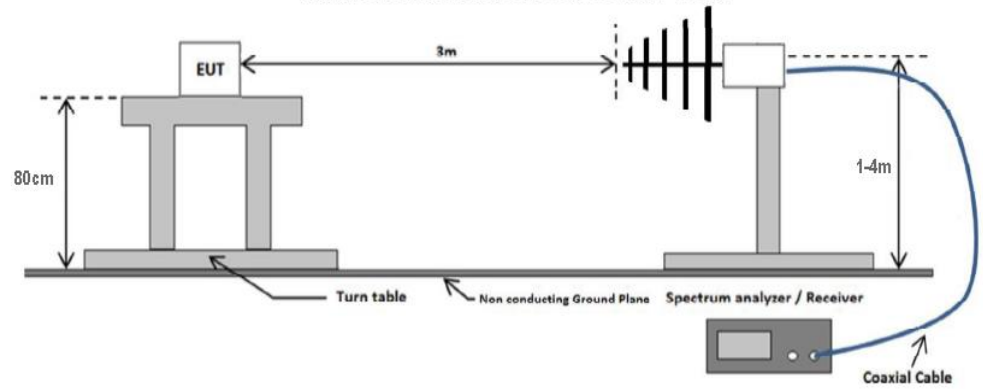
7.6 Field Strength of Radiated Spurious Emissions

7.6.1 Requirement

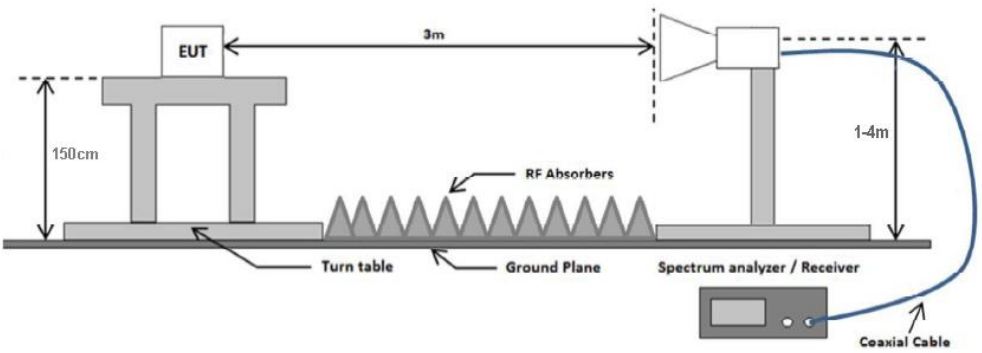
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power(P)by a factor of at least 43+10 log(P)dB. The emission limit is equal to-13dBm.

7.6.2 Test Setup

Radiated emissions test setup 30 MHz - 1 GHz



Radiated emissions test setup above 1 GHz



7.6.3 Test Procedure

ANSI C63.26: 2015 section 5.5

KDB 971168 D01 Power Meas License Digital Systems v03r01 section 7

Boresight antenna mast was used during the scanning to point to EUT to maximize the emission. The process will be repeated in 3 EUT orientations.

1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. The test was carried out at the selected frequency points obtained from the EUT characterization. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:
   a. Vertical or horizontal polarization (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
   b. The EUT was then rotated to the direction that gave the maximum emission.
   c. Finally, the antenna height was adjusted to the height that gave the maximum emission.
3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 300 Hz for frequency below 150KHz.
4. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 10 kHz for frequency between 150KHz – 30MHz.
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-Peak detection at frequency between 30MHz - 1GHz.
6. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz with Peak detection for Peak and average measurement at frequency above 1GHz.
7. Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter.
8. Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized, and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained.
9. Steps 2 - 8 were repeated for the next frequency point, until all selected frequency points were measured

7.6.4 Test Result

LTE Band 2_1.4M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7402.15	-80.5	23.7	-5.5	-62.3	RMS Max	V	276	0	-13	-49.3	Pass
2	3710.705	-88.5	19.7	4.1	-64.7	RMS Max	V	347	169	-13	-51.7	Pass
3	5550.58	-77.7	21.6	-10.1	-66.2	RMS Max	H	289	343	-13	-53.2	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7519.16	-80.5	23.7	-5.7	-62.5	RMS Max	V	376	324	-13	-49.5	Pass
2	3760.758	-88.8	19.8	5.1	-63.9	RMS Max	H	360	0	-13	-50.9	Pass
3	5638.058	-76.9	21.8	-10.4	-65.5	RMS Max	V	201	166	-13	-52.5	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7638.328	-81.3	24.1	-5.8	-63	RMS Max	V	294	0	-13	-50	Pass
2	3818.498	-88.8	19.9	5.5	-63.4	RMS Max	H	123	180	-13	-50.4	Pass
3	5729.17	-76.9	21.8	-10.5	-65.6	RMS Max	H	360	211	-13	-52.6	Pass

LTE Band 2_3M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7408.426	-80.4	23.7	-5.5	-62.2	RMS Max	V	101	29	-13	-49.2	Pass
2	3703.094	-89	19.7	3.9	-65.4	RMS Max	V	228	191	-13	-52.4	Pass
3	5553.46	-77.9	21.7	-10.1	-66.4	RMS Max	H	375	202	-13	-53.4	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7520.616	-80.9	23.7	-5.7	-62.9	RMS Max	H	310	95	-13	-49.9	Pass
2	3758.551	-88.7	19.8	5.1	-63.8	RMS Max	V	386	147	-13	-50.8	Pass
3	5640.532	-77.3	21.8	-10.4	-66	RMS Max	V	272	94	-13	-53	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7634.178	-82.1	24.1	-5.8	-63.8	RMS Max	V	349	167	-13	-50.8	Pass
2	3819.249	-89.1	19.9	5.5	-63.7	RMS Max	V	242	280	-13	-50.7	Pass
3	5724.13	-76.7	21.8	-10.5	-65.4	RMS Max	H	224	252	-13	-52.4	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 2_5M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7411.063	-80.6	23.7	-5.5	-62.4	RMS Max	V	246	69	-13	-49.4	Pass
2	3706.935	-88.7	19.7	4	-65	RMS Max	V	238	336	-13	-52	Pass
3	5556.79	-77.9	21.7	-10.2	-66.4	RMS Max	H	308	269	-13	-53.4	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7258.978	-71	23.5	-5.5	-52.9	RMS Max	V	384	110	-13	-39.9	Pass
2	3759.692	-88.7	19.8	5.1	-63.8	RMS Max	V	239	0	-13	-50.8	Pass
3	5640.417	-76.9	21.8	-10.4	-65.5	RMS Max	H	117	166	-13	-52.5	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7631.231	-81.9	24.1	-5.8	-63.5	RMS Max	H	371	349	-13	-50.5	Pass
2	3813.684	-88.9	19.9	5.5	-63.5	RMS Max	H	352	150	-13	-50.5	Pass
3	5722.552	-77	21.8	-10.5	-65.7	RMS Max	V	364	258	-13	-52.7	Pass

LTE Band 2_10M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7273.82	-65.8	23.6	-5.5	-47.7	RMS Max	V	163	1	-13	-34.7	Pass
2	3709.408	-88.1	19.7	4	-64.4	RMS Max	H	103	0	-13	-51.4	Pass
3	5566.77	-77.6	21.7	-10.2	-66.1	RMS Max	V	216	130	-13	-53.1	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3760.602	-88.8	19.8	5.1	-63.8	RMS Max	V	124	344	-13	-50.8	Pass
2	5642.179	-76.8	21.8	-10.4	-65.5	RMS Max	H	108	191	-13	-52.5	Pass
3	7259.077	-70.6	23.5	-5.5	-52.6	RMS Max	V	241	2	-13	-39.6	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7258.989	-68.3	23.5	-5.5	-50.3	RMS Max	V	237	8	-13	-37.3	Pass
2	3808.253	-89.3	19.9	5.5	-63.9	RMS Max	V	349	190	-13	-50.9	Pass
3	5717.393	-76.7	21.8	-10.5	-65.4	RMS Max	H	344	25	-13	-52.4	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 2_20M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7440.215	-80.8	23.7	-5.6	-62.7	RMS Max	H	343	224	-13	-49.7	Pass
2	3720.915	-88.2	19.7	4.3	-64.2	RMS Max	V	351	63	-13	-51.2	Pass
3	5579.815	-77	21.7	-10.2	-65.4	RMS Max	H	313	256	-13	-52.4	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7520.29	-81	23.7	-5.7	-63	RMS Max	V	400	90	-13	-50	Pass
2	3758.208	-88.8	19.8	5.1	-63.9	RMS Max	V	120	1	-13	-50.9	Pass
3	5639.58	-76.9	21.8	-10.4	-65.5	RMS Max	H	389	200	-13	-52.5	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	7601.015	-81.4	24.1	-5.8	-63.2	RMS Max	V	201	43	-13	-50.2	Pass
2	3800.945	-89.2	19.9	5.4	-63.9	RMS Max	V	372	50	-13	-50.9	Pass
3	5699.91	-77.1	21.7	-10.5	-65.8	RMS Max	H	288	158	-13	-52.8	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 4_1.4M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3421.678	-71.05	19.2	-3.19	-55.04	RMS Max	V	116	325	-13	-42.04	Pass
2	5132.692	-69.6	21.24	-8.03	-56.4	RMS Max	V	107	63	-13	-43.4	Pass
3	6843.536	-71.1	23.16	-6.77	-54.71	RMS Max	V	257	161	-13	-41.71	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3465.525	-74.3	19.42	-1.86	-56.75	RMS Max	V	296	256	-13	-43.75	Pass
2	5197.298	-69.97	21.15	-8.43	-57.25	RMS Max	H	175	142	-13	-44.25	Pass
3	6930.271	-72.43	23.36	-6.48	-55.55	RMS Max	V	162	324	-13	-42.55	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3508.113	-74.52	19.56	-0.62	-55.57	RMS Max	H	256	24	-13	-42.57	Pass
2	5262.342	-69.9	21.2	-8.8	-57.41	RMS Max	V	200	156	-13	-44.4	Pass
3	7017.827	-72.19	23.35	-6.22	-55.05	RMS Max	V	275	287	-13	-42.05	Pass

LTE Band 4_3M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3423.545	-71.21	19.21	-3.13	-55.14	RMS Max	V	165	330	-13	-42.14	Pass
2	5134.644	-69.58	21.23	-8.05	-56.39	RMS Max	H	224	146	-13	-43.39	Pass
3	6846.66	-71.13	23.17	-6.77	-54.73	RMS Max	V	117	233	-13	-41.73	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3465.267	-74.29	19.42	-1.87	-56.75	RMS Max	V	190	12	-13	-43.75	Pass
2	5197.418	-69.97	21.15	-8.43	-57.25	RMS Max	V	176	151	-13	-44.25	Pass
3	6930.89	-72.42	23.36	-6.48	-55.54	RMS Max	H	300	232	-13	-42.54	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3507.801	-74.47	19.56	-0.62	-55.53	RMS Max	H	213	283	-13	-42.53	Pass
2	5260.351	-69.96	21.22	-8.77	-57.51	RMS Max	V	265	304	-13	-44.51	Pass
3	7014.116	-72.29	23.35	-6.23	-55.17	RMS Max	V	210	199	-13	-42.17	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 4_5M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3425.016	-71.48	19.21	-3.09	-55.36	RMS Max	V	191	71	-13	-42.36	Pass
2	5137.579	-69.6	21.2	-8.1	-56.43	RMS Max	V	252	275	-13	-43.4	Pass
3	6850.983	-71.19	23.19	-6.76	-54.76	RMS Max	H	259	220	-13	-41.76	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3465.485	-74.3	19.42	-1.87	-56.75	RMS Max	V	210	258	-13	-43.75	Pass
2	5197.144	-69.96	21.15	-8.43	-57.24	RMS Max	V	174	261	-13	-44.24	Pass
3	6930.248	-72.43	23.36	-6.48	-55.55	RMS Max	V	160	336	-13	-42.55	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3505.482	-74.65	19.57	-0.68	-55.76	RMS Max	V	173	320	-13	-42.76	Pass
2	5257.882	-69.87	21.22	-8.77	-57.42	RMS Max	V	269	320	-13	-44.42	Pass
3	7010.338	-72.24	23.35	-6.25	-55.15	RMS Max	H	243	54	-13	-42.15	Pass

LTE Band 4_10M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3430.16	-72.45	19.24	-2.93	-56.15	RMS Max	V	281	41	-13	-43.15	Pass
2	5145.604	-69.74	21.22	-8.13	-56.65	RMS Max	V	174	265	-13	-43.65	Pass
3	6860.195	-71.58	23.22	-6.73	-55.08	RMS Max	V	246	235	-13	-42.08	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3465.05	-74.28	19.41	-1.88	-56.74	RMS Max	V	125	52	-13	-43.74	Pass
2	5197.143	-69.96	21.15	-8.43	-57.24	RMS Max	V	235	249	-13	-44.24	Pass
3	6929.515	-72.44	23.36	-6.49	-55.56	RMS Max	H	118	255	-13	-42.56	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3500.399	-75.2	19.59	-0.81	-56.43	RMS Max	V	164	94	-13	-43.43	Pass
2	5250.501	-69.62	21.21	-8.75	-57.16	RMS Max	H	299	110	-13	-44.16	Pass
3	7000.34	-72	23.3	-6.3	-55	RMS Max	V	162	241	-13	-42	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 4_20M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3440.704	-72.68	19.29	-2.62	-56	RMS Max	H	166	12	-13	-43	Pass
2	5160.849	-70.05	21.2	-8.23	-57.08	RMS Max	V	275	177	-13	-44.08	Pass
3	6880.51	-71.8	23.3	-6.7	-55.16	RMS Max	V	200	4	-13	-42.2	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3465.354	-74.3	19.42	-1.87	-56.75	RMS Max	H	119	338	-13	-43.75	Pass
2	5197.091	-69.96	21.15	-8.43	-57.24	RMS Max	V	229	178	-13	-44.24	Pass
3	6929.195	-72.44	23.36	-6.49	-55.56	RMS Max	V	151	360	-13	-42.56	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3490.969	-75.3	19.54	-1.1	-56.85	RMS Max	V	283	78	-13	-43.85	Pass
2	5235.665	-69.66	21.19	-8.66	-57.13	RMS Max	H	260	184	-13	-44.13	Pass
3	6979.77	-71.3	23.34	-6.35	-54.31	RMS Max	V	293	357	-13	-41.31	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 5_1.4M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1649.504	-64.32	15.64	-6.81	-55.49	RMS Max	V	235	283	-13	-42.49	Pass
2	2474.215	-63.94	16.37	-4.47	-52.04	RMS Max	H	233	124	-13	-39.04	Pass
3	3298.595	-69.64	19.21	-7.05	-57.48	RMS Max	V	136	144	-13	-44.48	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1673.569	-64.47	15.72	-6.67	-55.42	RMS Max	V	275	236	-13	-42.42	Pass
2	2509.204	-63.3	16.31	-4.42	-51.41	RMS Max	V	153	163	-13	-38.41	Pass
3	3346.01	-71.29	19.16	-5.5	-57.63	RMS Max	H	273	238	-13	-44.63	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1696.383	-65.07	15.79	-6.55	-55.83	RMS Max	V	180	198	-13	-42.83	Pass
2	2544.594	-64.08	16.32	-4.12	-51.88	RMS Max	V	277	207	-13	-38.88	Pass
3	3393.461	-73.75	19	-4.05	-58.8	RMS Max	H	247	181	-13	-45.8	Pass

LTE Band 5_3M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1650.923	-64.46	15.65	-6.8	-55.61	RMS Max	V	297	103	-13	-42.61	Pass
2	2476.252	-63.98	16.36	-4.47	-52.09	RMS Max	V	120	47	-13	-39.09	Pass
3	3302.424	-69.63	19.21	-6.9	-57.32	RMS Max	H	241	293	-13	-44.32	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1673.657	-64.47	15.72	-6.67	-55.42	RMS Max	V	152	4	-13	-42.42	Pass
2	2509.792	-63.26	16.31	-4.41	-51.36	RMS Max	H	289	239	-13	-38.36	Pass
3	3346.961	-71.24	19.16	-5.49	-57.57	RMS Max	V	132	293	-13	-44.57	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1695.542	-65.05	15.79	-6.55	-55.81	RMS Max	V	260	212	-13	-42.81	Pass
2	2542.291	-63.94	16.32	-4.14	-51.76	RMS Max	V	105	0	-13	-38.76	Pass
3	3390.21	-73.76	19.1	-4.14	-58.8	RMS Max	V	142	302	-13	-45.8	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 5_5M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1653.356	-64.69	15.66	-6.79	-55.82	RMS Max	H	149	235	-13	-42.82	Pass
2	2479.721	-63.81	16.35	-4.48	-51.94	RMS Max	V	135	37	-13	-38.94	Pass
3	3306.422	-69.64	19.21	-5.47	-55.9	RMS Max	V	228	141	-13	-42.9	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1673.437	-64.47	15.72	-6.67	-55.42	RMS Max	V	190	81	-13	-42.42	Pass
2	2509.096	-63.3	16.31	-4.42	-51.41	RMS Max	H	203	329	-13	-38.41	Pass
3	3346.397	-71.26	19.16	-5.47	-57.57	RMS Max	V	236	310	-13	-44.57	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1693.5	-65	15.78	-6.56	-55.78	RMS Max	V	140	120	-13	-42.78	Pass
2	2539.872	-63.72	16.32	-4.16	-51.56	RMS Max	H	124	190	-13	-38.56	Pass
3	3386.715	-73.51	19.1	-4.26	-58.67	RMS Max	V	191	334	-13	-45.67	Pass

LTE Band 5_10M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1658.107	-65.14	15.67	-6.76	-56.23	RMS Max	V	198	66	-13	-43.23	Pass
2	2487.056	-63.31	16.34	-4.48	-51.45	RMS Max	V	205	116	-13	-38.45	Pass
3	3316.125	-69.88	19.2	-6.46	-57.14	RMS Max	H	138	35	-13	-44.14	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1673.06	-64.49	15.72	-6.68	-55.45	RMS Max	V	129	96	-13	-42.45	Pass
2	2509.345	-63.29	16.31	-4.42	-51.4	RMS Max	H	183	104	-13	-38.4	Pass
3	3346.563	-71.26	19.16	-5.49	-57.59	RMS Max	V	199	174	-13	-44.59	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1688.16	-64.74	15.76	-6.59	-55.57	RMS Max	V	251	196	-13	-42.57	Pass
2	2532.327	-62.5	16.32	-4.22	-50.4	RMS Max	V	294	124	-13	-37.4	Pass
3	3376.108	-72.78	19.12	-4.57	-58.23	RMS Max	V	158	145	-13	-45.23	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 7_5M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5005.766	-70.13	20.92	-7.06	-56.27	RMS Max	V	162	208	-13	-43.27	Pass
2	7507.019	-72.82	23.68	-5.73	-54.87	RMS Max	H	169	59	-13	-41.87	Pass
3	10010.794	-75.1	24.1	-5.5	-56.52	RMS Max	V	252	113	-13	-43.5	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5070.215	-70.54	21.17	-7.49	-56.87	RMS Max	V	292	21	-13	-43.87	Pass
2	7605.997	-72.74	24.07	-5.81	-54.48	RMS Max	V	152	103	-13	-41.48	Pass
3	10139.992	-74.42	24.08	-5.34	-55.68	RMS Max	H	228	178	-13	-42.68	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5135.323	-69.58	21.23	-8.05	-56.4	RMS Max	V	245	308	-13	-43.4	Pass
2	7702.994	-72.58	24.18	-5.69	-54.09	RMS Max	V	263	334	-13	-41.09	Pass
3	10269.966	-74.79	24.08	-5.13	-55.84	RMS Max	V	257	238	-13	-42.84	Pass

LTE Band 7_10M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5010.732	-70.12	20.94	-7.09	-56.27	RMS Max	H	108	345	-13	-43.27	Pass
2	7514.866	-72.3	23.71	-5.74	-54.33	RMS Max	V	254	348	-13	-41.33	Pass
3	10019.792	-75.54	24.08	-5.46	-56.92	RMS Max	V	272	309	-13	-43.92	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5070.675	-70.52	21.17	-7.5	-56.85	RMS Max	V	270	146	-13	-43.85	Pass
2	7605.079	-72.72	24.07	-5.81	-54.46	RMS Max	V	181	143	-13	-41.46	Pass
3	10140.747	-74.44	24.08	-5.34	-55.7	RMS Max	H	104	75	-13	-42.7	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5130.064	-69.84	21.24	-8.01	-56.61	RMS Max	V	230	316	-13	-43.61	Pass
2	7697.229	-72.71	24.18	-5.7	-54.23	RMS Max	V	115	177	-13	-41.23	Pass
3	10260.195	-74.88	24.08	-5.13	-55.93	RMS Max	V	287	171	-13	-42.93	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 7_20M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5020.68	-70.01	20.98	-7.14	-56.18	RMS Max	V	280	242	-13	-43.18	Pass
2	7530.134	-72.83	23.77	-5.76	-54.81	RMS Max	H	226	110	-13	-41.81	Pass
3	10040.281	-73.24	24.08	-5.42	-54.58	RMS Max	V	110	310	-13	-41.58	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5070.348	-70.54	21.17	-7.49	-56.87	RMS Max	V	157	278	-13	-43.87	Pass
2	7605.307	-72.72	24.07	-5.81	-54.46	RMS Max	H	124	311	-13	-41.46	Pass
3	10140.664	-74.44	24.08	-5.34	-55.7	RMS Max	H	209	49	-13	-42.7	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5120.846	-70.52	21.25	-7.94	-57.2	RMS Max	V	209	342	-13	-44.2	Pass
2	7680.722	-72.36	24.16	-5.71	-53.91	RMS Max	V	285	233	-13	-40.91	Pass
3	10240.543	-74.53	24.08	-5.15	-55.6	RMS Max	V	221	53	-13	-42.6	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 12_1.4M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1399.32	-64.93	15.32	-6.66	-56.27	RMS Max	V	274	186	-13	-43.27	Pass
2	2099.697	-63.37	16.1	-4.64	-51.91	RMS Max	H	104	178	-13	-38.91	Pass
3	2798.556	-72.12	16.9	-2.78	-58	RMS Max	V	232	20	-13	-45	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1415.004	-65.8	15.33	-6.79	-57.26	RMS Max	H	251	140	-13	-44.26	Pass
2	2122.302	-63.92	16.14	-4.5	-52.28	RMS Max	V	154	206	-13	-39.28	Pass
3	2830.663	-71.11	16.97	-2.68	-56.82	RMS Max	V	300	38	-13	-43.82	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1430.411	-65.39	15.34	-6.92	-56.97	RMS Max	H	219	352	-13	-43.97	Pass
2	2145.438	-63.94	16.17	-4.35	-52.12	RMS Max	H	293	305	-13	-39.12	Pass
3	2861.555	-70.81	17.03	-2.58	-56.36	RMS Max	V	163	268	-13	-43.36	Pass

LTE Band 12_3M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1401.263	-64.82	15.32	-6.68	-56.18	RMS Max	V	283	264	-13	-43.18	Pass
2	2101.051	-63.21	16.11	-4.63	-51.73	RMS Max	H	273	27	-13	-38.73	Pass
3	2802.305	-72.19	16.91	-2.76	-58.04	RMS Max	V	217	18	-13	-45.04	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1415.042	-65.8	15.33	-6.79	-57.26	RMS Max	H	119	328	-13	-44.26	Pass
2	2122.636	-63.87	16.14	-4.5	-52.23	RMS Max	V	123	146	-13	-39.23	Pass
3	2830.331	-71.11	16.97	-2.68	-56.82	RMS Max	V	214	342	-13	-43.82	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1429.277	-65.43	15.34	-6.91	-57	RMS Max	V	300	114	-13	-44	Pass
2	2143.748	-63.84	16.17	-4.36	-52.03	RMS Max	V	110	321	-13	-39.03	Pass
3	2858.496	-70.13	17.03	-2.59	-55.69	RMS Max	V	120	151	-13	-42.69	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 12_10M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1408.201	-65.15	15.33	-6.74	-56.56	RMS Max	V	281	278	-13	-43.56	Pass
2	2112.214	-64.1	16.12	-4.56	-52.54	RMS Max	H	128	302	-13	-39.54	Pass
3	2816.439	-71.02	16.94	-2.72	-56.8	RMS Max	V	216	168	-13	-43.8	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1415.032	-65.8	15.33	-6.79	-57.26	RMS Max	V	222	164	-13	-44.26	Pass
2	2122.573	-63.88	16.14	-4.5	-52.24	RMS Max	V	121	290	-13	-39.24	Pass
3	2830.645	-71.11	16.97	-2.68	-56.82	RMS Max	H	263	189	-13	-43.82	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1422.259	-65.64	15.34	-6.86	-57.16	RMS Max	V	197	255	-13	-44.16	Pass
2	2133.341	-63.32	16.16	-4.43	-51.59	RMS Max	V	218	116	-13	-38.59	Pass
3	2844.179	-70.84	17	-2.64	-56.48	RMS Max	V	204	201	-13	-43.48	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 13_5M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1559.08	-64.71	15.45	-7.1	-56.36	RMS Max	H	225	311	-13	-43.36	Pass
2	2338.071	-63.24	16.62	-3.95	-50.57	RMS Max	V	227	86	-13	-37.57	Pass
3	3118.089	-71.77	18.84	-2.21	-55.14	RMS Max	V	122	96	-13	-42.14	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1564.046	-64.85	15.45	-7.07	-56.47	RMS Max	V	287	339	-13	-43.47	Pass
2	2346.231	-63.31	16.61	-3.99	-50.69	RMS Max	H	233	356	-13	-37.69	Pass
3	3128.072	-70.69	18.83	-1.71	-53.57	RMS Max	V	235	328	-13	-40.57	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1569.349	-64.53	15.46	-7.04	-56.11	RMS Max	V	271	114	-13	-43.11	Pass
2	2353.121	-63.35	16.6	-4.02	-50.77	RMS Max	H	137	34	-13	-37.77	Pass
3	3138.139	-71.35	18.85	-2.75	-55.25	RMS Max	V	261	289	-13	-42.25	Pass

LTE Band 13_10M BW												
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1564.333	-64.83	15.45	-7.07	-56.45	RMS Max	V	190	227	-13	-43.45	Pass
2	2346.158	-63.31	16.61	-3.99	-50.69	RMS Max	V	145	51	-13	-37.69	Pass
3	3128.268	-70.71	16.98	-1.52	-55.25	RMS Max	H	162	90	-13	-42.25	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 38_5M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5145.272	-69.72	21.22	-8.13	-56.63	RMS Max	V	242	26	-13	-43.63	Pass
2	7717.063	-72.14	24.19	-5.68	-53.62	RMS Max	H	123	62	-13	-40.62	Pass
3	10290.356	-73.7	24.08	-5.12	-54.74	RMS Max	V	285	39	-13	-41.74	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5190.276	-70.01	21.16	-8.39	-57.24	RMS Max	V	218	124	-13	-44.24	Pass
2	7785.938	-72.53	24.24	-5.65	-53.94	RMS Max	V	166	325	-13	-40.94	Pass
3	10380.208	-76.3	24.08	-5.12	-57.34	RMS Max	H	259	247	-13	-44.34	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5235.933	-69.67	21.19	-8.67	-57.14	RMS Max	V	279	254	-13	-44.14	Pass
2	7852.728	-73.76	24.24	-5.6	-55.12	RMS Max	V	119	165	-13	-42.12	Pass
3	10470.533	-75.35	24.08	-5.16	-56.43	RMS Max	H	119	223	-13	-43.43	Pass

LTE Band 38_10M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5150.096	-69.93	21.21	-8.17	-56.89	RMS Max	V	265	240	-13	-43.89	Pass
2	7725.677	-71.49	24.2	-5.67	-52.96	RMS Max	H	205	54	-13	-39.96	Pass
3	10300.015	-75	24.1	-5.1	-56.04	RMS Max	V	134	359	-13	-43	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5190.688	-70.01	21.16	-8.39	-57.24	RMS Max	V	182	19	-13	-44.24	Pass
2	7785.655	-72.53	24.24	-5.65	-53.94	RMS Max	H	243	333	-13	-40.94	Pass
3	10380.791	-76.35	24.08	-5.12	-57.39	RMS Max	V	113	248	-13	-44.39	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5230.647	-69.39	21.19	-8.63	-56.84	RMS Max	V	202	174	-13	-43.84	Pass
2	7845.1	-73.41	24.24	-5.61	-54.78	RMS Max	V	169	229	-13	-41.78	Pass
3	10460.88	-75.36	24.08	-5.15	-56.43	RMS Max	V	286	205	-13	-43.43	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 38_20M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5160.406	-70.06	21.2	-8.23	-57.09	RMS Max	V	162	283	-13	-44.09	Pass
2	7740.259	-72.83	24.21	-5.65	-54.28	RMS Max	V	197	180	-13	-41.28	Pass
3	10320.515	-74.9	24.1	-5.1	-55.89	RMS Max	V	119	115	-13	-42.9	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5190.379	-70.01	21.16	-8.39	-57.24	RMS Max	H	237	136	-13	-44.24	Pass
2	7785.552	-72.53	24.24	-5.65	-53.94	RMS Max	H	252	240	-13	-40.94	Pass
3	10380.825	-76.35	24.08	-5.12	-57.39	RMS Max	V	142	168	-13	-44.39	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	5220.216	-69.1	21.17	-8.57	-56.5	RMS Max	V	161	100	-13	-43.5	Pass
2	7830.539	-73.44	24.24	-5.62	-54.82	RMS Max	V	206	348	-13	-41.82	Pass
3	10441.447	-74.99	24.08	-5.14	-56.05	RMS Max	V	239	285	-13	-43.05	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 66_1.4M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3421.429	-71.06	19.2	-3.2	-55.06	RMS Max	V	221	222	-13	-42.06	Pass
2	5132.438	-69.63	21.24	-8.03	-56.42	RMS Max	H	123	73	-13	-43.42	Pass
3	6842.767	-71.1	23.16	-6.77	-54.71	RMS Max	V	175	171	-13	-41.71	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3490.162	-75.26	19.54	-1.12	-56.84	RMS Max	V	279	124	-13	-43.84	Pass
2	5235.25	-69.63	21.19	-8.66	-57.1	RMS Max	H	241	50	-13	-44.1	Pass
3	6980.358	-71.21	23.34	-6.35	-54.22	RMS Max	V	261	181	-13	-41.22	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3558.546	-77.41	19.41	0.65	-57.35	RMS Max	V	206	358	-13	-44.35	Pass
2	5337.632	-68.97	21.32	-8.99	-56.64	RMS Max	H	292	310	-13	-43.64	Pass
3	7117.609	-72.14	23.44	-5.85	-54.55	RMS Max	V	216	308	-13	-41.55	Pass

LTE Band 66_3M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3423.058	-71.11	19.2	-3.15	-55.06	RMS Max	V	151	233	-13	-42.06	Pass
2	5134.288	-69.58	21.23	-8.04	-56.39	RMS Max	H	170	230	-13	-43.39	Pass
3	6846.772	-71.13	23.17	-6.77	-54.73	RMS Max	V	108	298	-13	-41.73	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3490.046	-75.26	19.54	-1.12	-56.84	RMS Max	V	286	264	-13	-43.84	Pass
2	5235.076	-69.62	21.19	-8.66	-57.09	RMS Max	V	216	69	-13	-44.09	Pass
3	6980.647	-71.16	23.34	-6.35	-54.17	RMS Max	V	166	142	-13	-41.17	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3557.753	-77.39	19.41	0.63	-57.35	RMS Max	V	130	33	-13	-44.35	Pass
2	5335.726	-69.02	21.31	-8.98	-56.69	RMS Max	H	265	97	-13	-43.69	Pass
3	7114.458	-72.06	23.45	-5.86	-54.48	RMS Max	V	284	28	-13	-41.48	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 66_10M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3430.665	-72.55	19.24	-2.92	-56.23	RMS Max	V	194	37	-13	-43.23	Pass
2	5145.757	-69.74	21.22	-8.14	-56.66	RMS Max	V	235	81	-13	-43.66	Pass
3	6860.319	-71.58	23.23	-6.73	-55.08	RMS Max	V	267	183	-13	-42.08	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3490.323	-75.27	19.54	-1.12	-56.84	RMS Max	H	250	50	-13	-43.84	Pass
2	5235.05	-69.62	21.19	-8.66	-57.09	RMS Max	V	299	147	-13	-44.09	Pass
3	6980.786	-71.14	23.34	-6.35	-54.15	RMS Max	V	143	90	-13	-41.15	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3550.239	-77.24	19.44	0.46	-57.34	RMS Max	H	268	340	-13	-44.34	Pass
2	5325.445	-69.34	21.3	-8.95	-56.99	RMS Max	V	188	16	-13	-43.99	Pass
3	7100.689	-72.41	23.45	-5.91	-54.87	RMS Max	V	271	146	-13	-41.87	Pass

LTE Band 66_20M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3440.994	-72.67	19.29	-2.61	-55.98	RMS Max	V	226	259	-13	-42.98	Pass
2	5160.099	-70.07	21.2	-8.23	-57.09	RMS Max	H	184	295	-13	-44.09	Pass
3	6880.944	-71.8	23.3	-6.7	-55.16	RMS Max	V	126	164	-13	-42.2	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3490.82	-75.28	19.54	-1.1	-56.84	RMS Max	V	149	354	-13	-43.84	Pass
2	5235.37	-69.64	21.19	-8.66	-57.11	RMS Max	V	216	351	-13	-44.11	Pass
3	6980.531	-71.18	23.34	-6.35	-54.19	RMS Max	H	229	174	-13	-41.19	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	3540.711	-76.38	19.47	0.22	-56.69	RMS Max	V	300	242	-13	-43.69	Pass
2	5310.458	-69.51	21.28	-8.9	-57.12	RMS Max	V	286	210	-13	-44.12	Pass
3	7080.883	-72.46	23.43	-5.97	-55	RMS Max	V	177	192	-13	-42	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 71_5M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1331.42	-65.14	15.26	-6.38	-56.26	RMS Max	V	289	73	-13	-43.26	Pass
2	1996.893	-64.33	15.83	-4.63	-53.13	RMS Max	H	258	253	-13	-40.13	Pass
3	2662.173	-70.21	16.54	-3.53	-57.2	RMS Max	V	146	49	-13	-44.2	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1351.472	-64.68	15.28	-6.58	-55.98	RMS Max	V	213	203	-13	-42.98	Pass
2	2026.165	-63.48	15.9	-4.67	-52.25	RMS Max	V	223	151	-13	-39.25	Pass
3	2702.685	-69.01	16.67	-3.44	-55.78	RMS Max	V	195	288	-13	-42.78	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1391.228	-65.23	15.31	-6.65	-56.57	RMS Max	H	108	168	-13	-43.57	Pass
2	2086.737	-64.61	16.07	-4.66	-53.2	RMS Max	V	298	196	-13	-40.2	Pass
3	2782.441	-70.46	16.87	-2.89	-56.48	RMS Max	V	107	30	-13	-43.48	Pass

LTE Band 71_10M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1336.823	-64.91	15.27	-6.43	-56.07	RMS Max	V	272	237	-13	-43.07	Pass
2	2004.024	-64.15	15.84	-4.63	-52.94	RMS Max	V	204	157	-13	-39.94	Pass
3	2672.762	-69.14	16.58	-3.51	-56.07	RMS Max	V	214	87	-13	-43.07	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1356.332	-65.06	15.28	-6.59	-56.37	RMS Max	V	251	360	-13	-43.37	Pass
2	2034.377	-63.69	15.92	-4.69	-52.46	RMS Max	V	150	214	-13	-39.46	Pass
3	2712.522	-70.48	16.7	-3.38	-57.16	RMS Max	V	143	111	-13	-44.16	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1386.088	-65.2	15.31	-6.64	-56.53	RMS Max	H	113	298	-13	-43.53	Pass
2	2079.149	-64.77	16.05	-4.67	-53.39	RMS Max	V	209	7	-13	-40.39	Pass
3	2771.664	-70.36	16.84	-2.97	-56.49	RMS Max	V	285	108	-13	-43.49	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

LTE Band 71_20M BW												
Low Channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1346.068	-64.69	15.27	-6.53	-55.95	RMS Max	H	300	310	-13	-42.95	Pass
2	2019.062	-63.88	15.88	-4.66	-52.66	RMS Max	V	100	240	-13	-39.66	Pass
3	2692.022	-69.08	16.64	-3.48	-55.92	RMS Max	V	184	307	-13	-42.92	Pass
Mid channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1361.316	-65.42	15.29	-6.6	-56.73	RMS Max	V	268	186	-13	-43.73	Pass
2	2041.271	-64.55	15.94	-4.7	-53.31	RMS Max	V	128	280	-13	-40.31	Pass
3	2722.33	-69.63	16.72	-3.31	-56.22	RMS Max	V	238	210	-13	-43.22	Pass
High channel												
No.	Frequency MHz	Raw dBm	Cable Loss	AF dB/m	Level dBm	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBm	Margin dB	Result
1	1376.559	-65.17	15.3	-6.62	-56.49	RMS Max	H	196	173	-13	-43.49	Pass
2	2064.152	-67.9	16.01	-4.69	-56.58	RMS Max	V	231	207	-13	-43.58	Pass
3	2752.181	-70.36	16.79	-3.12	-56.69	RMS Max	V	182	36	-13	-43.69	Pass

Remarks:

1. Level (dBm) = Raw (dBm) + Cable loss(dB) + AF (dB).
2. AF (dB/m) = Antenna Factor (dB) – Preamplifier Gain (dB)
3. Margin = Level (dBm) - Limit value(dBm)

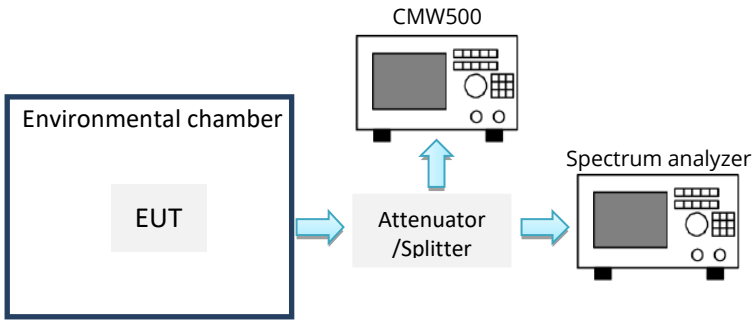
7.7 Frequency Stability

7.7.1 Requirement

§2.1055, §22.355 & §24.235, § 27.5(h); § 27.54
RSS-132(5.3), RSS-133(6.3), RSS-139(6.4)

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The carrier frequency shall not depart from the reference frequency in excess of ±2.5ppm (±0.00025%) for mobile stations.

7.7.2 Test Setup



7.7.3 Test Procedure

- The testing follows ANSI C63.26 section 5.6.4.
- A communication link was established between EUT and base station.
- The EUT was set up in the thermal chamber and connected with the communication tester.
- With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
- With power OFF, the temperature was raised in 10°C steps up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
- The frequency error was monitored and measured by base station under variation of ambient temperature and variation of primary supply voltage.

7.7.4 Test Result

LTE Band 2 – 1880 MHz					
Voltage (Vdc)	**Temperature (℃)**	**Frequency error (Hz)**	**Frequency error (ppm)**	**Limit (ppm)**	**Result**
12.0	-30	35	0.018617	2.50	PASS
	-20	25	0.013298		
	-10	13	0.006915		
	0	15	0.007979		
	10	34	0.018085		
	20	19	0.010106		
	30	32	0.017021		
	40	38	0.020213		
	50	13	0.006915		
10.2	20	25	0.013298		
13.8	20	27	0.014362		

LTE Band 4 – 1732.5 MHz					
Voltage (Vdc)	**Temperature (℃)**	**Frequency error (Hz)**	**Frequency error (ppm)**	**Limit (ppm)**	**Result**
12.0	-30	18	0.01039	2.50	PASS
	-20	18	0.01039		
	-10	16	0.009235		
	0	14	0.008081		
	10	35	0.020202		
	20	19	0.010967		
	30	16	0.009235		
	40	37	0.021356		
	50	28	0.016162		
10.2	20	17	0.009812		
13.8	20	18	0.01039		

LTE Band 5 – 836.5 MHz					
Voltage (Vdc)	**Temperature (°C)**	**Frequency error (Hz)**	**Frequency error (ppm)**	**Limit (ppm)**	**Result**
12.0	-30	38	0.045427	2.50	PASS
	-20	18	0.021518		
	-10	13	0.015541		
	0	42	0.050209		
	10	24	0.028691		
	20	47	0.056186		
	30	24	0.028691		
	40	32	0.038255		
	50	27	0.032277		
10.2	20	31	0.037059		
13.8	20	43	0.051405		

LTE Band 7 – 2535 MHz					
Voltage (Vdc)	**Temperature (°C)**	**Frequency error (Hz)**	**Frequency error (ppm)**	**Limit (ppm)**	**Result**
12.0	-30	41	0.016174	2.50	PASS
	-20	40	0.015779		
	-10	26	0.010256		
	0	46	0.018146		
	10	34	0.013412		
	20	42	0.016568		
	30	29	0.01144		
	40	27	0.010651		
	50	40	0.015779		
10.2	20	40	0.015779		
13.8	20	29	0.01144		

LTE Band 12 – 707.5 MHz					
Voltage (Vdc)	**Temperature (°C)**	**Frequency error (Hz)**	**Frequency error (ppm)**	**Limit (ppm)**	**Result**
12.0	-30	26	0.036749	2.50	PASS
	-20	20	0.028269		
	-10	36	0.050883		
	0	36	0.050883		
	10	16	0.022615		
	20	36	0.050883		
	30	13	0.018375		
	40	13	0.018375		
	50	21	0.029682		
10.2	20	32	0.04523		
13.8	20	25	0.035336		

LTE Band 13 – 782 MHz					
Voltage (Vdc)	**Temperature (°C)**	**Frequency error (Hz)**	**Frequency error (ppm)**	**Limit (ppm)**	**Result**
12.0	-30	18	0.023018	2.50	PASS
	-20	24	0.030691		
	-10	26	0.033248		
	0	20	0.025575		
	10	15	0.019182		
	20	34	0.043478		
	30	30	0.038363		
	40	14	0.017903		
	50	25	0.031969		
10.2	20	30	0.038363		
13.8	20	33	0.042199		

LTE Band 38 – 2595 MHz					
Voltage (Vdc)	**Temperature (°C)**	**Frequency error (Hz)**	**Frequency error (ppm)**	**Limit (ppm)**	**Result**
12.0	-30	35	0.013487	2.50	PASS
	-20	17	0.006551		
	-10	34	0.013102		
	0	17	0.006551		
	10	12	0.004624		
	20	34	0.013102		
	30	17	0.006551		
	40	22	0.008478		
	50	20	0.007707		
10.2	20	13	0.00501		
13.8	20	38	0.014644		

LTE Band 66 – 1745 MHz					
Voltage (Vdc)	**Temperature (°C)**	**Frequency error (Hz)**	**Frequency error (ppm)**	**Limit (ppm)**	**Result**
12.0	-30	23	0.013181	2.50	PASS
	-20	27	0.015473		
	-10	30	0.017192		
	0	34	0.019484		
	10	21	0.012034		
	20	25	0.014327		
	30	36	0.02063		
	40	35	0.020057		
	50	31	0.017765		
10.2	20	36	0.02063		
13.8	20	23	0.013181		

LTE Band 71 – 675 MHz					
Voltage (Vdc)	**Temperature (℃)**	**Frequency error (Hz)**	**Frequency error (ppm)**	**Limit (ppm)**	**Result**
12.0	-30	35	0.051852	2.50	PASS
	-20	17	0.025185		
	-10	21	0.031111		
	0	17	0.025185		
	10	19	0.028148		
	20	38	0.056296		
	30	13	0.019259		
	40	31	0.045926		
	50	12	0.017778		
10.2	20	20	0.02963		
13.8	20	23	0.034074		

8 EUT and Test Setup Photos

See FCC exhibits

9 Test Instrument List

Equipment	Manufacturer	Model	Instrument Number	Cal. Date	Cal. Due
Semi-Anechoic Chamber	ETS-Lindgren	10M	VL001	10/18/2021	10/18/2022
Shielding Control Room	ETS-Lindgren	Series 81	VL006	N/A	N/A
Spectrum Analyzer	Keysight	N9020A	MY50110074	06/17/2021	06/17/2022
EMC Test Receiver	R&S	ESL6	100230	06/14/2021	06/14/2022
Bi-Log Antenna	ETS-Lindgren	3142E	217921	11/15/2021	11/15/2022
Horn Antenna (1-18GHz)	Electro-Metrics	EM-6961	6292	05/14/2022	05/14/2023
Horn Antenna (18-40GHz)	Com-Power	AH-840	101109	06/24/2021	06/24/2022
Preamplifier	RF Bay, Inc.	LPA-10-20	11180621	07/16/2021	07/16/2022
True RMS Multi-meter	UNI-T	UT181A	C173014829	05/05/2022	05/05/2023
Temp / Humidity / Pressure Meter	PCE Instruments	PCE-THB 40	R062028	05/05/2022	05/05/2023
RF Attenuator	Pasternack	PE7005-3	VL061	07/16/2021	07/16/2022
Preamplifier 100KHz - 40GHz	Aeroflex	33711-392-77150-11	064	07/16/2021	07/16/2022
EM Center Control	ETS-Lindgren	7006-001	160136	N/A	N/A
Turn Table	ETS-Lindgren	2181-3.03	VL002	N/A	N/A
Boresight Antenna Tower	ETS-Lindgren	2171B	VL003	N/A	N/A
Loop Antenna (9k-30MHz)	Com-Power	AL-130	121012	05/16/2022	05/16/2023
RE test cable (below 6GHz)	Vista	RE-6GHz-01	RE-6GHz-01	07/16/2021	07/16/2022
RE test cable (1-18GHz)	PhaseTrack	II-240	RE-18GHz-01	07/16/2021	07/16/2022
RE test cable (>18GHz)	Sucoflex	104	344903/4	07/16/2021	07/16/2022
Pulse limiter	Com-Power	LIT-930A	531727	07/16/2021	07/16/2022
CE test cable #1	FIRST RF	FRF-C-1002-001	CE-6GHz-01	07/16/2021	07/16/2022
CE test cable#2	FIRST RF	FRF-C-1002-001	CE-6GHz-02	07/16/2021	07/16/2022
Vector Signal Generator	Keysight	N5182A	US47080548	06/17/2021	06/17/2022
USB RF Power Sensor	ETS-Lindgren	7002-006	SN 00151268	05/15/2022	05/15/2023
RF Power Amplifier (80-1000MHz)	Ophir	5226FE	1013/1815	N/A	N/A
RF Power Amplifier (700-6000MHz)	Ophir	5293FE	1063/1815	N/A	N/A
Horn Antenna (1-18GHz)	FT-RF	HA-07M18G-NF	180010HA	N/A	N/A
Wideband Communication	R&S	CMW500	147508	05/10/2022	05/10/2023
Radio Communication Tester	Anritsu	MT8000a	6262261939	02/23/2022	02/23/2023
Temperature/Humidity Chamber	Thermotron	SM-8-8200	40991	09/08/2021	09/08/2022

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