

FCC CFR47 PART 22H, 24E, 27 CERTIFICATION TEST REPORT

FCC ID: QRP-SP-031

Product: Mobile Phone

Trade Mark: AZUMI

Model Number: V51s

Family Model: N/A

Report No.: S24103003003005

Prepared for

Azumi S.A

Avenida Aquilino de la Guardia con Calle 47, PH Ocean Plaza,
Piso 16 of. 16-01, Marbella, Ciudad de Panama, Panama

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name..... : Azumi S.A

Address : Avenida Aquilino de la Guardia con Calle 47, PH Ocean Plaza, Piso 16
of. 16-01, Marbella, Ciudad de Panama, Panama

Manufacturer's Name..... : AZUMI HK LTD

Address : FLAT/RM 1202 12/F GOLDEN STAR BUILDING 20 LOCKHART
ROAD WANCHAI, HK

Product name : Mobile Phone

Model and/or type reference : V51s

Family Model: : N/A

Test sample number : S241030030003

Standards..... : FCC CFR 47 Part 22H, Part 24E, Part 27

Test procedure : ANSI C63.26:2015
ANSI/TIA-603-E-2016

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test

Date (s) of performance of tests Oct. 30, 2024 ~ Nov. 18, 2024

Date of Issue Nov. 18, 2024

Test Result **Pass**

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Mobile Phone
Trade Mark	AZUMI
Model Name	V51s
Family Model	N/A
Model Difference	N/A
FCC ID:	QRP-SP-031
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 4, 5, 7 LTE TDD Band 38
Frequency Range:	LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz; LTE TDD Band 38 Uplink& Downlink: 2570MHz-2620MHz
Type of Modulation:	QPSK/16QAM
Antenna:	FPC Antenna
Antenna gain:	B4:0.56dBi; B5:0.61dBi; B7:0.53dBi; B38:0.53dBi;
Power Supply:	DC 3.8V from Battery or DC 5V from Adapter.
Battery	DC 3.8V, 2000mAh, 7.6Wh
Adapter:	INPUT: AC 100-240V~50-60Hz 0.15A OUTPUT: DC 5.0V---500mA
Extreme Vol. Limits:	DC 3.2V to DC 4.2V (Nominal DC 3.8V) (Note 1)
HW Version	AZUMI_V51S_HW_V1.0
SW Version	AZUMI_V51S_TIGO_V001
** Note1: The High Voltage 4.2V and Low Voltage 3.2V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.	

1.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: QRP-SP-031** filing to comply with the FCC Part 22H&24E &27.

1.3 TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI/TIA-603-E-2016, FCC CFR 47 Part 2, Part 22, Part 24, Part 27, ANSI C63.26:2015.

1.4 TEST FACILITY

The test site used to collect the radiated data is located at:

ShenZhen NTEK Testing Technology Co., Ltd.

No. 24 Xinfu East Road, Xiangshan Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, People's Republic of China.

The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.26:2015& ANSI C63.4: 2014.

FCC Registration No.:463705

IC Registration No.:9270A,

CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.5dB

1.5 SPECIAL ACCESSORIES

The battery and the charger, earphone supplied by the applicant were used as accessories and being tested with EUT intended for FCC grant together.

1.6 WORST-CASE CONFIGURATION AND MODE

The worst-case scenario for all measurements is based on the investigation results.

The device has LTE Bands of: Band 4, Band 5, Band 7, Band 38.

The RB Size was selected to measure for peak or average ERP and EIRP, which was based on the conducted power verification baseline data.

For the fundamental investigation of radiated emissions, the EUT is investigated for vertical and horizontal antenna orientations and X Y and Z orientations of the EUT alone. After the investigations the worst case was determined to be at X orientation for all LTE bands.

2. SYSTEM TEST CONFIGURATION

2.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT EXERCISE

The Transmitter was operated in the maximum output power mode through Communication Tester. The TX frequency was fixed which was for the purpose of the measurements.

2.3 CONFIGURATION OF EUT SYSTEM

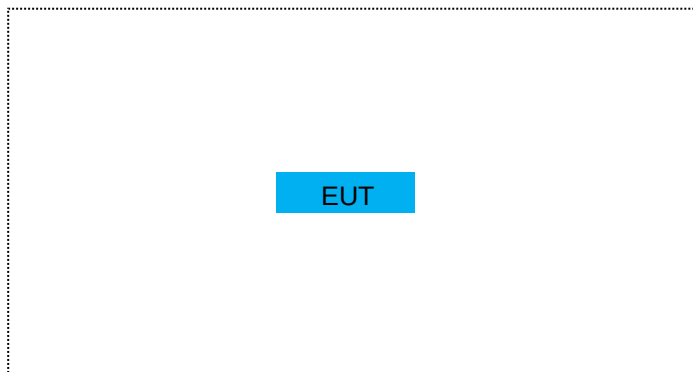
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	V51s	FCC ID: QRP-SP-031	EUT

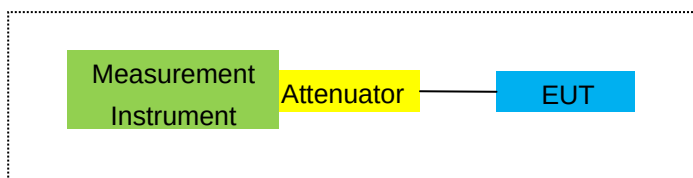
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

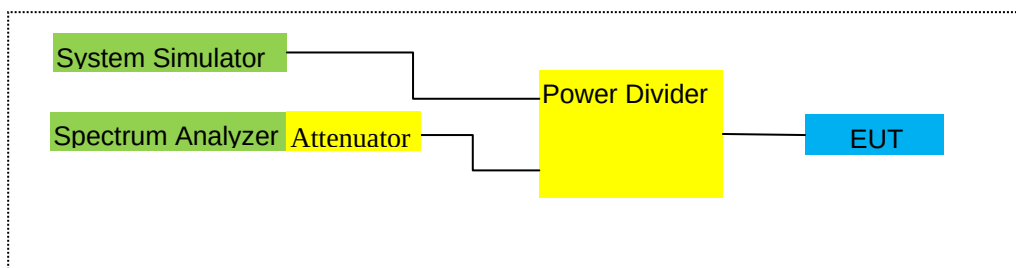
For Radiated Test Cases



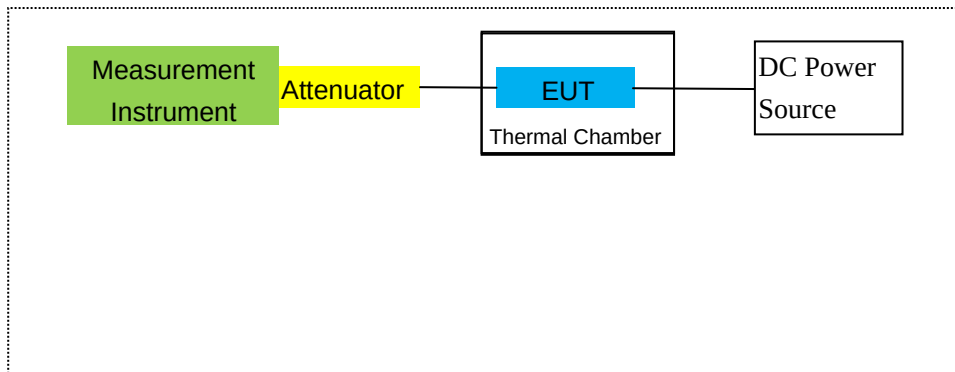
For Conducted Output Power



For Peak-to Average Ratio, Occupied Bandwidth, Conducted Band edge and Conducted Spurious Emission



For Frequency Stability



Note: EUT built-in battery-powered, the battery is fully-charged.

3.TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2024.04.25	2025.04.24	1 year
2	Test Receiver	R&S	ESPI	101318	2024.04.26	2025.04.25	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2024.05.12	2025.05.11	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2024.05.12	2027.05.11	3 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2024.05.12	2027.05.11	3 year
7	Amplifier	EM	EM-30180	060538	2024.04.26	2025.04.25	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2024.03.12	2025.03.11	1 year
9	Power Meter	R&S	NRVS	100696	2024.04.26	2025.04.25	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2024.04.26	2025.04.25	1 year
11	Test Cable	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2024.04.26	2025.04.25	1 year
15	LISN	R&S	ENV216	101313	2024.04.25	2025.04.24	1 year
16	LISN	EMCO	3816/2	00042990	2024.04.25	2025.04.24	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2024.03.12	2025.03.11	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2024.03.12	2025.03.11	1 year
19	Test Cable	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
20	Test Cable	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
21	Test Cable	N/A	C03	N/A	2023.05.06	2026.05.05	3 year
22	Attenuator	MCE	24-10-34	BN9258	2024.03.12	2025.03.11	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2024.03.12	2025.03.11	1 year
24	test receiver	R&S	ESCI	a0304218	2024.03.12	2025.03.11	1 year
25	Communication Tester	R&S	CMU200	A0304247	2024.04.26	2025.04.25	1 year

26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2024.03.12	2025.03.11	1 year
27	DC Power Source	N/A	PS-6005D	20170402923	2023.05.06	2026.05.05	3 year
28	MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2024.04.25	2025.04.24	1 year
29	Communication Tester	R&S	CMW500	148500	2024.04.26	2025.04.25	1 year

Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable& DC Power Source which is scheduled for calibration every 3 years.

Measurement Software

Item	Manufacturer	Software Name	Software Version	Description
1	MWRTest	MTS 8200	2.0	RF Conducted Test
2	Farad	EZ-EMC_RE	AIT-03A	RadiatedTest
3	raditeq	RadiMation	2023.1.3	RadiatedTest
4	Farad	EZ-EMC_CE	AIT-03A	AC Conducted Test

4. OUTPUT POWER

4.1 OUTPUT POWER MEASUREMENT

LTE Measurement Procedure:

All LTE bands conducted power peak and average are obtained from the CMW500 telecommunication test set. The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".3

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10, 15, 20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

Test data reference attachment.

5. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

MODES TESTED

LTE Band 4, 5, 7, 38

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238(a), §27.53(c)(g)(h)(m)

FCC: §2.1046, §22.913, §24.232

LIMITS

The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P[\text{Watts}])$, where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 7 is as following.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(c.5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is $65 + 10\log_{10}(P) = -35\text{dBm}$ in a 6.25kHz bandwidth.

Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth.

TEST PROCEDURE

The transmitter output was connected to a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

Set the spectrum analyzer span to include the block edge frequency

Set a marker to point the corresponding band edge frequency in each test case.

Set display line

Set resolution bandwidth to at least 1% of emission bandwidth.

MODES TESTED

☐ LTE Band 4, 5, 7, 38

RESULTS

Test data reference attachment.

Note: Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

7. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238(a), §27.53(c)(g)(h)(m)

LIMITS

The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P[\text{Watts}])$, where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 7 is as following.

Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(c.5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is $65 + 10\log_{10}(P) = -35\text{dBm}$ in a 6.25kHz bandwidth.

Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth.

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

- ☐ Set display line
- ☐ Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

MODES TESTED

- ☐ LTE Band 4, 5, 7, 38

7.1 MEASUREMENT METHOD

The test set up and general procedure is similar to conducted peak output power test. Only different for setting the measurement configuration of the measuring instrument of Spectrum Analyzer.

Test data reference attachment.

Note: Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913(a)(2), §24.232(c) and §27.50 (h)(2), (b)(10), (c)(10), (d)(4)

LIMITS:

22.913(a) (2)- The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232 (c) Mobile and portable stations are limited to 2 watts EIRP.

27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.

27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

27.50 (h)(2) Mobile and other user stations in the 2500–2570 MHz and 2620–2690 MHz bands. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

TEST PROCEDURE

ANSI/TIA-603-E Clause 2.2.17

KDB 971168 v02r01 RF power output using broadband peak and average power meter method.

KDB 971168 D01 Power Meas License Digital Systems v02r01, “Measurement Guidance for Certification of Licensed Digital Transmitters”

MODES TESTED

☐ LTE Band 4, 5, 7, 38

RESULTS

Pass

8.2 LTE BAND 4

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	1/#Mid	1710.7	-4.87	3.12	27.58	19.59	90.991	Horizontal	Pass
		1732.5	-4.86	3.27	27.61	19.48	88.716	Horizontal	Pass
		1754.3	-4.84	3.29	27.63	19.50	89.125	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.04	3.13	27.61	19.44	87.902	Horizontal	Pass
		1732.5	-4.96	3.27	27.61	19.38	86.696	Horizontal	Pass
		1753.5	-4.88	3.30	27.62	19.44	87.902	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.81	3.13	27.63	19.69	93.111	Horizontal	Pass
		1732.5	-4.71	3.27	27.61	19.63	91.833	Horizontal	Pass
		1752.5	-4.59	3.30	27.60	19.71	93.541	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.75	3.15	27.64	19.74	94.189	Horizontal	Pass
		1732.5	-4.52	3.31	27.61	19.78	95.060	Horizontal	Pass
		1750	-4.54	3.33	27.59	19.72	93.756	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.76	3.15	27.65	19.74	94.189	Horizontal	Pass
		1732.5	-4.60	3.31	27.61	19.70	93.325	Horizontal	Pass
		1747.5	-4.54	3.33	27.57	19.70	93.325	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.70	3.17	27.66	19.79	95.280	Horizontal	Pass
		1732.5	-4.53	3.32	27.61	19.76	94.624	Horizontal	Pass
		1745	-4.47	3.36	27.56	19.73	93.972	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-5.67	3.12	27.58	18.79	75.683	Vertical	Pass
		1732.5	-6.05	3.27	27.61	18.29	67.453	Vertical	Pass
		1754.3	-5.65	3.29	27.63	18.69	73.961	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.57	3.13	27.61	18.91	77.804	Vertical	Pass
		1732.5	-5.10	3.27	27.61	19.24	83.946	Vertical	Pass
		1753.5	-5.94	3.30	27.62	18.38	68.865	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-5.43	3.13	27.63	19.07	80.724	Vertical	Pass
		1732.5	-5.27	3.27	27.61	19.07	80.724	Vertical	Pass
		1752.5	-5.50	3.30	27.60	18.80	75.858	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-6.00	3.15	27.64	18.49	70.632	Vertical	Pass
		1732.5	-5.49	3.31	27.61	18.81	76.033	Vertical	Pass
		1750	-5.67	3.33	27.59	18.59	72.277	Vertical	Pass

15.0MHz Band QPSK	1/#Mid	1717.5	-6.20	3.15	27.65	18.30	67.608	Vertical	Pass
		1732.5	-5.77	3.31	27.61	18.53	71.285	Vertical	Pass
		1747.5	-5.93	3.33	27.57	18.31	67.764	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	1720	-6.16	3.17	27.66	18.33	68.077	Vertical	Pass
		1732.5	-5.11	3.32	27.61	19.18	82.794	Vertical	Pass
		1745	-5.72	3.36	27.56	18.48	70.469	Vertical	Pass

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Factor Gain (dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

Radiated Power (EIRP) for Band 4									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	1/#Mid	1710.7	-5.68	3.12	27.58	18.78	75.509	Horizontal	Pass
		1732.5	-5.53	3.27	27.61	18.81	76.033	Horizontal	Pass
		1754.3	-5.53	3.29	27.63	18.81	76.033	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-5.62	3.13	27.61	18.86	76.913	Horizontal	Pass
		1732.5	-5.75	3.27	27.61	18.59	72.277	Horizontal	Pass
		1753.5	-5.97	3.30	27.62	18.35	68.391	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-5.45	3.13	27.63	19.05	80.353	Horizontal	Pass
		1732.5	-5.41	3.27	27.61	18.93	78.163	Horizontal	Pass
		1752.5	-5.10	3.30	27.60	19.20	83.176	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-5.52	3.15	27.64	18.97	78.886	Horizontal	Pass
		1732.5	-5.71	3.31	27.61	18.59	72.277	Horizontal	Pass
		1750	-5.09	3.33	27.59	19.17	82.604	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-5.32	3.15	27.65	19.18	82.794	Horizontal	Pass
		1732.5	-5.38	3.31	27.61	18.92	77.983	Horizontal	Pass
		1747.5	-5.40	3.33	27.57	18.84	76.560	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	1720	-5.27	3.17	27.66	19.22	83.560	Horizontal	Pass
		1732.5	-5.28	3.32	27.61	19.01	79.616	Horizontal	Pass
		1745	-5.09	3.36	27.56	19.11	81.470	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	1710.7	-6.32	3.12	27.58	18.14	65.163	Vertical	Pass
		1732.5	-6.58	3.27	27.61	17.76	59.704	Vertical	Pass
		1754.3	-6.82	3.29	27.63	17.52	56.494	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	1711.5	-6.51	3.13	27.61	17.97	62.661	Vertical	Pass
		1732.5	-6.41	3.27	27.61	17.93	62.087	Vertical	Pass
		1753.5	-6.45	3.30	27.62	17.87	61.235	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	1712.5	-7.07	3.13	27.63	17.43	55.335	Vertical	Pass
		1732.5	-6.78	3.27	27.61	17.56	57.016	Vertical	Pass
		1752.5	-6.39	3.30	27.60	17.91	61.802	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	1715	-7.20	3.15	27.64	17.29	53.580	Vertical	Pass
		1732.5	-6.54	3.31	27.61	17.76	59.704	Vertical	Pass
		1750	-6.67	3.33	27.59	17.59	57.412	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	1717.5	-7.10	3.15	27.65	17.40	54.954	Vertical	Pass
		1732.5	-7.02	3.31	27.61	17.28	53.456	Vertical	Pass
		1747.5	-6.99	3.33	27.57	17.25	53.088	Vertical	Pass
20.0MHz	1/#Mid	1720	-6.56	3.17	27.66	17.93	62.087	Vertical	Pass

Band 16 QAM		1732.5	-6.74	3.32	27.61	17.55	56.885	Vertical	Pass
		1745	-6.40	3.36	27.56	17.80	60.256	Vertical	Pass

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Factor Gain (dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

8.3 LTE BAND 5

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band QPSK	3/#Mid	824.7	4.43	2.01	19.68	2.15	19.95	98.855	Horizontal	Pass
		836.5	4.31	2.01	19.77	2.15	19.92	98.175	Horizontal	Pass
		848.3	4.11	2.02	19.82	2.15	19.76	94.624	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	4.20	2.01	19.70	2.15	19.74	94.189	Horizontal	Pass
		836.5	4.10	2.01	19.77	2.15	19.71	93.541	Horizontal	Pass
		847.5	3.97	2.02	19.81	2.15	19.61	91.411	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	4.48	2.01	19.71	2.15	20.03	100.693	Horizontal	Pass
		836.5	4.36	2.01	19.77	2.15	19.97	99.312	Horizontal	Pass
		846.5	4.20	2.02	19.79	2.15	19.82	95.940	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	4.50	2.01	19.73	2.15	20.07	101.625	Horizontal	Pass
		836.5	4.45	2.01	19.77	2.15	20.06	101.391	Horizontal	Pass
		844	4.35	2.02	19.78	2.15	19.96	99.083	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	3.02	2.01	19.68	2.15	18.54	71.450	Vertical	Pass
		836.5	3.06	2.01	19.77	2.15	18.67	73.621	Vertical	Pass
		848.3	3.39	2.02	19.82	2.15	19.04	80.168	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	3.70	2.01	19.70	2.15	19.24	83.946	Vertical	Pass
		836.5	3.19	2.01	19.77	2.15	18.80	75.858	Vertical	Pass
		847.5	3.21	2.02	19.81	2.15	18.85	76.736	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	2.94	2.01	19.71	2.15	18.49	70.632	Vertical	Pass
		836.5	3.14	2.01	19.77	2.15	18.75	74.989	Vertical	Pass
		846.5	3.21	2.02	19.79	2.15	18.83	76.384	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	2.80	2.01	19.73	2.15	18.37	68.707	Vertical	Pass
		836.5	3.38	2.01	19.77	2.15	18.99	79.250	Vertical	Pass
		844	3.61	2.02	19.78	2.15	19.22	83.560	Vertical	Pass

Radiated Power (ERP) for Band 5

Radiated Power (ERP) for Band 5										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
1.4MHz Band 16 QAM	3/##Mid	824.7	3.58	2.01	19.68	2.15	19.10	81.283	Horizontal	Pass
		836.5	3.51	2.01	19.77	2.15	19.12	81.658	Horizontal	Pass
		848.3	3.35	2.02	19.82	2.15	19.00	79.433	Horizontal	Pass
3.0MHz Band 16 QAM	1/##Mid	825.5	3.66	2.01	19.70	2.15	19.20	83.176	Horizontal	Pass
		836.5	3.37	2.01	19.77	2.15	18.98	79.068	Horizontal	Pass
		847.5	2.85	2.02	19.81	2.15	18.49	70.632	Horizontal	Pass
5.0MHz Band 16 QAM	1/##Mid	826.5	3.98	2.01	19.71	2.15	19.53	89.743	Horizontal	Pass
		836.5	3.75	2.01	19.77	2.15	19.36	86.298	Horizontal	Pass
		846.5	3.50	2.02	19.79	2.15	19.12	81.658	Horizontal	Pass
10.0MHz Band 16 QAM	1/##Mid	829	3.98	2.01	19.73	2.15	19.55	90.157	Horizontal	Pass
		836.5	3.70	2.01	19.77	2.15	19.31	85.310	Horizontal	Pass
		844	3.24	2.02	19.78	2.15	18.85	76.736	Horizontal	Pass
1.4MHz Band 16 QAM	1/##Mid	824.7	2.72	2.01	19.68	2.15	18.24	66.681	Vertical	Pass
		836.5	3.63	2.01	19.77	2.15	19.24	83.946	Vertical	Pass
		848.3	3.15	2.02	19.82	2.15	18.80	75.858	Vertical	Pass
3.0MHz Band 16 QAM	1/##Mid	825.5	3.03	2.01	19.70	2.15	18.57	71.945	Vertical	Pass
		836.5	1.97	2.01	19.77	2.15	17.58	57.280	Vertical	Pass
		847.5	2.64	2.02	19.81	2.15	18.28	67.298	Vertical	Pass
5.0MHz Band 16 QAM	1/##Mid	826.5	2.68	2.01	19.71	2.15	18.23	66.527	Vertical	Pass
		836.5	2.22	2.01	19.77	2.15	17.83	60.674	Vertical	Pass
		846.5	1.64	2.02	19.79	2.15	17.26	53.211	Vertical	Pass
10.0MHz Band 16 QAM	1/##Mid	829	2.19	2.01	19.73	2.15	17.76	59.704	Vertical	Pass
		836.5	2.06	2.01	19.77	2.15	17.67	58.479	Vertical	Pass
		844	2.46	2.02	19.78	2.15	18.07	64.121	Vertical	Pass

Note:

ERP=EIRP-2.15

SG Level= Signal generator output

Max. EIRP Average (dBm)= Factor Gain (dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

8.4 LTE BAND 7

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	1/#Mid	2502.5	-3.15	4.54	27.75	20.06	101.391	Horizontal	Pass
		2535	-2.98	4.69	27.72	20.05	101.158	Horizontal	Pass
		2567.5	-2.91	4.71	27.71	20.09	102.094	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-3.08	4.55	27.76	20.13	103.039	Horizontal	Pass
		2535	-2.89	4.69	27.72	20.14	103.276	Horizontal	Pass
		2565	-2.81	4.72	27.70	20.17	103.992	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-3.09	4.55	27.77	20.13	103.039	Horizontal	Pass
		2535	-2.95	4.69	27.72	20.08	101.859	Horizontal	Pass
		2562.5	-2.85	4.72	27.69	20.12	102.802	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-3.03	4.57	27.78	20.18	104.232	Horizontal	Pass
		2535	-2.85	4.73	27.72	20.14	103.276	Horizontal	Pass
		2560	-2.81	4.75	27.68	20.12	102.802	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-4.95	4.54	27.75	18.26	66.988	Vertical	Pass
		2535	-4.72	4.69	27.72	18.31	67.764	Vertical	Pass
		2567.5	-4.07	4.71	27.71	18.93	78.163	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-4.35	4.55	27.76	18.86	76.913	Vertical	Pass
		2535	-4.01	4.69	27.72	19.02	79.799	Vertical	Pass
		2565	-4.62	4.72	27.70	18.36	68.549	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-4.25	4.55	27.77	18.97	78.886	Vertical	Pass
		2535	-3.95	4.69	27.72	19.08	80.910	Vertical	Pass
		2562.5	-4.73	4.72	27.69	18.24	66.681	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-4.04	4.57	27.78	19.17	82.604	Vertical	Pass
		2535	-4.50	4.73	27.72	18.49	70.632	Vertical	Pass
		2560	-4.68	4.75	27.68	18.25	66.834	Vertical	Pass

Radiated Power (EIRP) for Band 7									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band 16 QAM	1/#Mid	2502.5	-3.84	4.54	27.75	19.37	86.497	Horizontal	Pass
		2535	-3.53	4.69	27.72	19.50	89.125	Horizontal	Pass
		2567.5	-3.61	4.71	27.71	19.39	86.896	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-3.73	4.55	27.76	19.48	88.716	Horizontal	Pass
		2535	-3.74	4.69	27.72	19.29	84.918	Horizontal	Pass
		2565	-4.01	4.72	27.70	18.97	78.886	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-3.91	4.55	27.77	19.31	85.310	Horizontal	Pass
		2535	-3.88	4.69	27.72	19.15	82.224	Horizontal	Pass
		2562.5	-3.49	4.72	27.69	19.48	88.716	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-3.79	4.57	27.78	19.42	87.498	Horizontal	Pass
		2535	-3.46	4.73	27.72	19.53	89.743	Horizontal	Pass
		2560	-3.56	4.75	27.68	19.37	86.497	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-5.21	4.54	27.75	18.00	63.096	Vertical	Pass
		2535	-5.29	4.69	27.72	17.74	59.429	Vertical	Pass
		2567.5	-3.99	4.71	27.71	19.01	79.616	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-4.10	4.55	27.76	19.11	81.470	Vertical	Pass
		2535	-4.54	4.69	27.72	18.49	70.632	Vertical	Pass
		2565	-4.58	4.72	27.70	18.40	69.183	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-4.48	4.55	27.77	18.74	74.817	Vertical	Pass
		2535	-4.74	4.69	27.72	18.29	67.453	Vertical	Pass
		2562.5	-4.92	4.72	27.69	18.05	63.826	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-5.47	4.57	27.78	17.74	59.429	Vertical	Pass
		2535	-5.22	4.73	27.72	17.77	59.841	Vertical	Pass
		2560	-4.33	4.75	27.68	18.60	72.444	Vertical	Pass

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Factor Gain (dB)+ SG Level (dBm)- Cable Loss(dBm)

Factor Gain(dB)=Antenna Gain(dB) + Amplifier Factor (dB)

8.5 LTE BAND 38

Radiated Power (EIRP) for Band 38									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	25/0	2572.5	-2.12	4.95	27.79	18.26	66.988	Vertical	Pass
		2595	-2.64	4.88	27.71	19.03	79.983	Vertical	Pass
		2617.5	-2.58	4.93	27.95	18.91	77.804	Vertical	Pass
5.0MHz Band 16 QAM	25/0	2572.5	-2.37	4.81	27.73	18.99	79.250	Vertical	Pass
		2595	-2.47	4.95	27.81	18.62	72.778	Vertical	Pass
		2617.5	-2.59	5.03	27.69	18.70	74.131	Vertical	Pass
10.0MHz Band QPSK	50/0	2575	-2.98	5.01	27.86	18.47	70.307	Vertical	Pass
		2595	-2.6	5	27.65	19.15	82.224	Vertical	Pass
		2615	-2.67	4.87	27.89	18.82	76.208	Vertical	Pass
10.0MHz Band 16 QAM	50/0	2575	-2.71	4.77	27.78	19.20	83.176	Vertical	Pass
		2595	-2.38	4.87	27.87	18.79	75.683	Vertical	Pass
		2615	-2.56	4.94	27.77	19.19	82.985	Vertical	Pass
15.0MHz Band QPSK	75/0	2577.5	-2.9	4.89	27.88	18.93	78.163	Vertical	Pass
		2595	-2.32	4.87	27.84	18.91	77.804	Vertical	Pass
		2612.5	-2.52	4.92	27.93	18.31	67.764	Vertical	Pass
15.0MHz Band 16 QAM	75/0	2577.5	-2.53	4.75	27.78	18.92	77.983	Vertical	Pass
		2595	-2.53	4.98	27.82	19.04	80.168	Vertical	Pass
		2612.5	-2.6	4.95	27.83	19.14	82.035	Vertical	Pass
20.0MHz Band QPSK	100/0	2580	-2.53	4.86	27.8	18.41	69.343	Vertical	Pass
		2595	-2.37	4.79	27.83	19.84	96.383	Vertical	Pass
		2610	-2.68	4.89	27.87	18.82	76.208	Vertical	Pass
20.0MHz Band 16 QAM	100/0	2580	-2.87	4.95	27.73	19.17	82.604	Vertical	Pass
		2595	-2.88	4.91	27.71	18.46	70.146	Vertical	Pass
		2610	-2.81	4.96	27.92	19.24	83.946	Vertical	Pass

Radiated Power (EIRP) for Band 38									
Mode	RB/RB SIZE	Frequency	Result						Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Gain (dB)	Max. EIRP Average (dBm)	Max. EIRP Average (mW)	Polarization Of Max. ERP	
5.0MHz Band QPSK	25/0	2572.5	-2.12	4.95	27.79	18.52	71.121	Horizontal	Pass
		2595	-2.64	4.88	27.71	18.90	77.625	Horizontal	Pass
		2617.5	-2.58	4.93	27.95	18.79	75.683	Horizontal	Pass
5.0MHz Band 16 QAM	25/0	2572.5	-2.37	4.81	27.73	18.49	70.632	Horizontal	Pass
		2595	-2.47	4.95	27.81	18.75	74.989	Horizontal	Pass
		2617.5	-2.59	5.03	27.69	18.08	64.269	Horizontal	Pass
10.0MHz Band QPSK	50/0	2575	-2.98	5.01	27.86	18.11	64.714	Horizontal	Pass
		2595	-2.6	5	27.65	19.06	80.538	Horizontal	Pass
		2615	-2.67	4.87	27.89	18.62	72.778	Horizontal	Pass
10.0MHz Band 16 QAM	50/0	2575	-2.71	4.77	27.78	18.64	73.114	Horizontal	Pass
		2595	-2.38	4.87	27.87	18.51	70.958	Horizontal	Pass
		2615	-2.56	4.94	27.77	18.59	72.277	Horizontal	Pass
15.0MHz Band QPSK	75/0	2577.5	-2.9	4.89	27.88	18.55	71.614	Horizontal	Pass
		2595	-2.32	4.87	27.84	18.39	69.024	Horizontal	Pass
		2612.5	-2.52	4.92	27.93	18.71	74.302	Horizontal	Pass
15.0MHz Band 16 QAM	75/0	2577.5	-2.53	4.75	27.78	18.11	64.714	Horizontal	Pass
		2595	-2.53	4.98	27.82	18.72	74.473	Horizontal	Pass
		2612.5	-2.6	4.95	27.83	18.77	75.336	Horizontal	Pass
20.0MHz Band QPSK	100/0	2580	-2.53	4.86	27.8	18.85	76.736	Horizontal	Pass
		2595	-2.37	4.79	27.83	19.67	92.683	Horizontal	Pass
		2610	-2.68	4.89	27.87	18.29	67.453	Horizontal	Pass
20.0MHz Band 16 QAM	100/0	2580	-2.87	4.95	27.73	18.37	68.707	Horizontal	Pass
		2595	-2.88	4.91	27.71	19.77	94.842	Horizontal	Pass
		2610	-2.81	4.96	27.92	18.42	69.502	Horizontal	Pass

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna Factor(dB)+ SG Level (dBm)- Cable Loss(dBm)

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

FCC: §2.1051, §22.917(a), §24.238(a), §27.53(c)(g)(h)(m)

LIMIT

For Band 7, the minimum permissible attenuation level of any spurious emission is $55 + \log_{10}(P)$ [Watts].

The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P)$ [Watts], where P is the transmitter power in Watts.

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth in the 1 MHz band immediately outside and adjacent to the channel edge of the equipment. Beyond the 1 MHz band immediately outside the channel edge of the equipment, a resolution bandwidth of 1 MHz shall be employed. A narrower resolution bandwidth is allowed to be used provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz or 1% of the occupied bandwidth as applicable.

The power of any unwanted emissions measured from the channel edge of the equipment shall be attenuated below the transmitter power, P (dBW), as follows:

- a. for base station and subscriber equipment, other than mobile subscriber equipment, the attenuation shall not be less than $43 + 10 \log_{10}(p)$, dB; and
- b. for mobile subscriber equipment, the attenuation shall not be less than $43 + 10 \log_{10}(p)$, dB at the channel edges and $55 + 10 \log_{10}(p)$ at 5.5 MHz away and beyond the channel edges where p in (a) and (b) is the transmitter power measured in watts.

MODES TESTED

- ☐ LTE Band 4, 5, 7, 38

RESULTS

PASS

9.1 LTE BAND 4

QPSK EIRP POWER FOR LTE BAND 4 (1.4MHZ BANDWIDTH)

Test Results for Low Channel 1710.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3421.4	-44.53	4.02	29.80	-18.75	-13	-5.75	Horizontal
3421.4	-50.46	4.02	29.80	-24.68	-13	-11.68	Vertical
5132.1	-46.89	5.24	35.84	-16.29	-13	-3.29	Vertical
5132.1	-53.44	5.24	35.84	-22.84	-13	-9.84	Horizontal
211.0	-34.44	1.68	16.04	-20.08	-13	-7.08	Vertical
461.2	-35.27	1.78	17.74	-19.31	-13	-6.31	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-45.95	4.03	30.00	-19.98	-13	-6.98	Horizontal
3465.0	-50.27	4.03	30.00	-24.30	-13	-11.30	Vertical
5197.5	-53.03	5.25	35.86	-22.42	-13	-9.42	Vertical
5197.5	-50.74	5.25	35.86	-20.13	-13	-7.13	Horizontal
204.6	-35.94	1.72	17.69	-19.97	-13	-6.97	Vertical
436.2	-34.96	1.62	16.02	-20.55	-13	-7.55	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-51.51	4.05	30.01	-25.55	-13	-12.55	Horizontal
3508.6	-44.60	4.05	30.01	-18.64	-13	-5.64	Vertical
5262.9	-51.32	5.26	35.86	-20.72	-13	-7.72	Vertical
5262.9	-50.44	5.26	35.86	-19.84	-13	-6.84	Horizontal
206.8	-39.30	1.80	16.69	-24.41	-13	-11.41	Vertical
381.3	-44.13	1.75	16.66	-29.23	-13	-16.23	Horizontal

QPSK EIRP POWER FOR LTE BAND 4 (20.0MHZ BANDWIDTH)

Test Results for Low Channel 1720MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
3440.0	-49.02	4.02	29.80	-23.24	-13	-10.24	Horizontal
3440.0	-48.57	4.02	29.80	-22.79	-13	-9.79	Vertical
5160.0	-49.00	5.24	35.84	-18.40	-13	-5.40	Vertical
5160.0	-49.65	5.24	35.84	-19.05	-13	-6.05	Horizontal
178.2	-38.51	1.57	17.26	-22.82	-13	-9.82	Vertical
325.6	-35.95	1.78	16.35	-21.38	-13	-8.38	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-46.53	4.03	30.00	-20.56	-13	-7.56	Horizontal
3465.0	-44.53	4.03	30.00	-18.56	-13	-5.56	Vertical
5197.5	-51.73	5.25	35.86	-21.12	-13	-8.12	Vertical
5197.5	-49.31	5.25	35.86	-18.70	-13	-5.70	Horizontal
201.1	-40.17	1.44	17.95	-23.66	-13	-10.66	Vertical
368.9	-41.83	1.65	16.09	-27.39	-13	-14.39	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-53.92	2.91	27.68	-29.15	-13	-16.15	Horizontal
3490.0	-45.38	2.91	27.68	-20.61	-13	-7.61	Vertical
5235.0	-53.20	5.26	35.86	-22.60	-13	-9.60	Vertical
5235.0	-52.18	5.26	35.86	-21.58	-13	-8.58	Horizontal
206.1	-43.92	1.61	16.85	-28.68	-13	-15.68	Vertical
282.3	-38.49	1.61	15.19	-24.91	-13	-11.91	Horizontal

9.2 LTE BAND 5

QPSK EIRP POWER FOR LTE BAND 5 (1.4MHZ BANDWIDTH)

Test Results for Low Channel 824.7MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1649.4	-49.99	2.78	27.50	-25.27	-13	-12.27	Horizontal
1649.4	-45.28	2.78	27.50	-20.56	-13	-7.56	Vertical
2474.1	-45.74	2.90	27.80	-20.84	-13	-7.84	Vertical
2474.1	-53.38	2.90	27.80	-28.48	-13	-15.48	Horizontal
190.4	-36.92	1.76	17.59	-21.09	-13	-8.09	Vertical
437.9	-37.16	1.63	15.87	-22.92	-13	-9.92	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-48.55	2.80	27.48	-23.87	-13	-10.87	Horizontal
1673.0	-51.61	2.80	27.48	-26.93	-13	-13.93	Vertical
2509.5	-53.74	2.91	27.70	-28.95	-13	-15.95	Vertical
2509.5	-50.00	2.91	27.70	-25.21	-13	-12.21	Horizontal
195.8	-38.80	1.61	15.68	-24.73	-13	-11.73	Vertical
299.8	-44.45	1.59	17.52	-28.53	-13	-15.53	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-46.94	2.82	27.43	-22.33	-13	-9.33	Horizontal
1696.6	-51.11	2.82	27.43	-26.50	-13	-13.50	Vertical
2544.9	-49.98	2.92	27.74	-25.16	-13	-12.16	Vertical
2544.9	-50.89	2.92	27.74	-26.07	-13	-13.07	Horizontal
180.4	-36.99	1.69	16.67	-22.00	-13	-9.00	Vertical
344.4	-37.74	1.70	17.18	-22.26	-13	-9.26	Horizontal

QPSK EIRP POWER FOR LTE BAND 5 (10MHz BANDWIDTH)

Test Results for Low Channel 829MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
1658.0	-44.72	2.78	27.50	-20.00	-13	-7.00	Horizontal
1658.0	-46.58	2.78	27.50	-21.86	-13	-8.86	Vertical
2487.0	-53.02	2.90	27.80	-28.12	-13	-15.12	Vertical
2487.0	-53.17	2.90	27.80	-28.27	-13	-15.27	Horizontal
189.5	-40.50	1.71	15.57	-26.64	-13	-13.64	Vertical
448.3	-35.33	1.34	16.40	-20.27	-13	-7.27	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-52.18	2.80	27.48	-27.50	-13	-14.50	Horizontal
1673.0	-48.68	2.80	27.48	-24.00	-13	-11.00	Vertical
2509.5	-53.52	2.91	27.70	-28.73	-13	-15.73	Vertical
2509.5	-52.84	2.91	27.70	-28.05	-13	-15.05	Horizontal
189.9	-41.03	1.44	17.04	-25.43	-13	-12.43	Vertical
405.6	-43.61	1.76	17.62	-27.75	-13	-14.75	Horizontal
Test Results for High Channel 844MHz							
1688.0	-51.24	2.82	27.43	-26.63	-13	-13.63	Horizontal
1688.0	-46.58	2.82	27.43	-21.97	-13	-8.97	Vertical
2532.0	-52.30	2.92	27.74	-27.48	-13	-14.48	Vertical
2532.0	-49.65	2.92	27.74	-24.83	-13	-11.83	Horizontal
180.9	-44.38	1.74	17.70	-28.42	-13	-15.42	Vertical
383.2	-43.09	1.41	17.46	-27.03	-13	-14.03	Horizontal

9.3 LTE BAND 7

QPSK EIRP POWER FOR LTE BAND 7 (5.0MHZ BANDWIDTH)

Test Results for Low Channel 2502.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5005.0	-60.04	5.23	35.81	-29.46	-25	-4.46	Horizontal
5005.0	-60.36	5.23	35.81	-29.78	-25	-4.78	Vertical
7507.5	-59.79	5.67	36.85	-28.61	-25	-3.61	Vertical
7507.5	-63.55	5.67	36.85	-32.37	-25	-7.37	Horizontal
187.3	-50.78	1.73	17.97	-34.54	-25	-9.54	Vertical
440.3	-49.44	1.38	15.11	-35.71	-25	-10.71	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-60.96	5.23	35.82	-30.37	-25	-5.37	Horizontal
5070.0	-59.47	5.23	35.82	-28.88	-25	-3.88	Vertical
7605.0	-64.13	5.67	36.85	-32.95	-25	-7.95	Vertical
7605.0	-61.36	5.67	36.85	-30.18	-25	-5.18	Horizontal
179.4	-50.45	1.77	16.17	-36.04	-25	-11.04	Vertical
310.5	-51.78	1.63	15.21	-38.20	-25	-13.20	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-64.73	5.24	35.83	-34.14	-25	-9.14	Horizontal
5135.0	-60.40	5.24	35.83	-29.81	-25	-4.81	Vertical
7702.5	-62.09	5.68	36.87	-30.90	-25	-5.90	Vertical
7702.5	-63.16	5.68	36.87	-31.97	-25	-6.97	Horizontal
208.2	-50.77	1.58	17.56	-34.79	-25	-9.79	Vertical
425.2	-53.74	1.45	16.58	-38.61	-25	-13.61	Horizontal

QPSK EIRP POWER FOR LTE BAND 7 (20.0MHZ BANDWIDTH)

Test Results for Low Channel 2510MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Factor(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5020.0	-64.64	5.23	35.82	-34.05	-25	-9.05	Horizontal
5020.0	-63.90	5.23	35.82	-33.31	-25	-8.31	Vertical
7530.0	-62.22	5.67	36.86	-31.03	-25	-6.03	Vertical
7530.0	-63.81	5.67	36.86	-32.62	-25	-7.62	Horizontal
189.8	-48.74	1.63	15.76	-34.61	-25	-9.61	Vertical
457.4	-52.85	1.71	15.44	-39.12	-25	-14.12	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-59.20	5.23	35.82	-28.61	-25	-3.61	Horizontal
5070.0	-60.93	5.23	35.82	-30.34	-25	-5.34	Vertical
7605.0	-61.88	5.67	36.85	-30.70	-25	-5.70	Vertical
7605.0	-61.75	5.67	36.85	-30.57	-25	-5.57	Horizontal
202.3	-47.42	1.79	16.84	-32.36	-25	-7.36	Vertical
461.3	-45.11	1.71	17.64	-29.18	-25	-4.18	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-63.13	5.24	35.83	-32.54	-25	-7.54	Horizontal
5120.0	-60.92	5.24	35.83	-30.33	-25	-5.33	Vertical
7680.0	-63.30	5.70	36.88	-32.12	-25	-7.12	Vertical
7680.0	-61.63	5.70	36.88	-30.45	-25	-5.45	Horizontal
179.1	-44.22	1.79	16.84	-29.16	-25	-4.16	Vertical
283.7	-47.99	1.71	17.64	-32.06	-25	-7.06	Horizontal

9.4 LTE BAND 38

QPSK EIRP POWER FOR LTE BAND 38 (5MHZ BANDWIDTH)

Test Results for Low Channel 2572.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5145	-52.60	4.01	27.5	-29.11	-25	-4.11	Horizontal
5145	-53.47	4.01	27.5	-29.98	-25	-4.98	Vertical
7717.5	-51.40	5.09	27.8	-28.69	-25	-3.69	Vertical
7717.5	-53.98	5.09	27.8	-31.27	-25	-6.27	Horizontal
Test Results For Mid Channel 2595MHz							
5190	-53.50	4.1	27.48	-30.12	-25	-5.12	Horizontal
5190	-51.95	4.1	27.48	-28.57	-25	-3.57	Vertical
7785	-54.87	5.42	27.7	-32.59	-25	-7.59	Vertical
7785	-50.56	5.42	27.7	-28.28	-25	-3.28	Horizontal
Test Results for High Channel 2617.5MHz							
5234	-52.55	4.11	27.43	-29.23	-25	-4.23	Horizontal
5234	-53.22	4.11	27.43	-29.90	-25	-4.90	Vertical
7851	-55.12	5.31	27.74	-32.69	-25	-7.69	Vertical
7851	-53.97	5.31	27.74	-31.54	-25	-6.54	Horizontal

QPSK EIRP POWER FOR LTE BAND 38 (20MHZ BANDWIDTH)

Test Results for Low Channel 2580MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5160	-55.30	3.89	27.5	-31.69	-25	-6.69	Horizontal
5160	-54.60	3.89	27.5	-30.99	-25	-5.99	Vertical
7740	-54.51	5.33	27.8	-32.04	-25	-7.04	Vertical
7740	-52.38	5.33	27.8	-29.91	-25	-4.91	Horizontal
Test Results for Mid Channel 2595MHz							
5190	-53.77	4.1	27.48	-30.39	-25	-5.39	Horizontal
5190	-52.82	4.1	27.48	-29.44	-25	-4.44	Vertical
7785	-51.86	5.42	27.7	-29.58	-25	-4.58	Vertical
7785	-54.57	5.42	27.7	-32.29	-25	-7.29	Horizontal
Test Results for High Channel 2610MHz							
5220	-54.43	4.01	27.43	-31.01	-25	-6.01	Horizontal
5220	-53.69	4.01	27.43	-30.27	-25	-5.27	Vertical
7830	-51.89	5.34	27.74	-29.49	-25	-4.49	Vertical
7830	-53.64	5.34	27.74	-31.24	-25	-6.24	Horizontal

Note: $P_{Mea}(dBm) = Power(dBm) + ARpl(dBm)$

. Over Limit = : $P_{Mea}(dBm) - Limit(dBm)$

. We test both H direction and V direction, recorded worst case direction.

Both QPSK and 16QAM has been tested, the worst case is QPSK mode, the report just reported the worst case.

10. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- ☐ Temp. = -30° to $+50^{\circ}\text{C}$
- ☐ Voltage = low voltage, DC 3.2V, Normal, DC 3.8V and High voltage, DC 4.2V.

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to -30°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until $+50^{\circ}\text{C}$ is reached.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

MODES TESTED

- ☐ LTE Band 4, 5, 7, 38

RESULTS

See the following pages.

10.1 LTE BAND 4

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.2	1732.5	8.8	0.005051	2.5
3.8	1732.5	8.9	0.005145	2.5
4.2	1732.5	8.1	0.004687	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.7	0.005039	2.5
Extreme (50C)	1732.5	8.7	0.005019	2.5
Extreme (40C)	1732.5	7.1	0.004111	2.5
Extreme (30C)	1732.5	6.2	0.003550	2.5
Extreme (10C)	1732.5	7.3	0.004217	2.5
Extreme (0C)	1732.5	9.3	0.005345	2.5
Extreme (-10C)	1732.5	8.9	0.005132	2.5
Extreme (-20C)	1732.5	7.2	0.004155	2.5
Extreme (-30C)	1732.5	7.9	0.004570	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.2	1732.5	9.8	0.005674	2.5
3.8	1732.5	9.0	0.005213	2.5
4.2	1732.5	8.0	0.004617	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	10.1	0.005833	2.5
Extreme (50C)	1732.5	8.9	0.005130	2.5
Extreme (40C)	1732.5	7.8	0.004496	2.5
Extreme (30C)	1732.5	8.8	0.005108	2.5
Extreme (10C)	1732.5	9.2	0.005291	2.5
Extreme (0C)	1732.5	8.1	0.004702	2.5
Extreme (-10C)	1732.5	8.6	0.004982	2.5
Extreme (-20C)	1732.5	9.0	0.005176	2.5
Extreme (-30C)	1732.5	8.0	0.004623	2.5

***Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

10.2 LTE BAND 5

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.2	836.5	5.7	0.006832	2.5
3.8	836.5	6.6	0.007874	2.5
4.2	836.5	5.0	0.005982	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	5.7	0.006789	2.5
Extreme (50C)	836.5	6.2	0.007403	2.5
Extreme (40C)	836.5	6.1	0.007296	2.5
Extreme (30C)	836.5	6.7	0.008018	2.5
Extreme (10C)	836.5	5.5	0.006535	2.5
Extreme (0C)	836.5	5.7	0.006830	2.5
Extreme (-10C)	836.5	5.3	0.006370	2.5
Extreme (-20C)	836.5	6.1	0.007234	2.5
Extreme (-30C)	836.5	6.4	0.007707	2.5

16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.2	836.5	5.8	0.006887	2.5
3.8	836.5	6.9	0.008190	2.5
4.2	836.5	4.8	0.005746	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	6.1	0.007322	2.5
Extreme (50C)	836.5	5.5	0.006622	2.5
Extreme (40C)	836.5	5.9	0.007067	2.5
Extreme (30C)	836.5	6.6	0.007848	2.5
Extreme (10C)	836.5	5.8	0.006914	2.5
Extreme (0C)	836.5	5.0	0.006007	2.5
Extreme (-10C)	836.5	5.8	0.006893	2.5
Extreme (-20C)	836.5	6.6	0.007840	2.5
Extreme (-30C)	836.5	6.7	0.008037	2.5

***Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

10.3 LTE BAND 7

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.2	2535	10.4	0.004098	2.5
3.8	2535	8.5	0.003337	2.5
4.2	2535	8.2	0.003225	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	8.9	0.003512	2.5
Extreme (50C)	2535	8.5	0.003358	2.5
Extreme (40C)	2535	8.4	0.003322	2.5
Extreme (30C)	2535	9.0	0.003568	2.5
Extreme (10C)	2535	8.3	0.003287	2.5
Extreme (0C)	2535	8.5	0.003372	2.5
Extreme (-10C)	2535	9.8	0.003862	2.5
Extreme (-20C)	2535	8.7	0.003427	2.5
Extreme (-30C)	2535	8.1	0.003203	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.2	2535	6.7	0.002634	2.5
3.8	2535	6.4	0.002522	2.5
4.2	2535	5.7	0.002263	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	6.3	0.002478	2.5
Extreme (50C)	2535	6.0	0.002360	2.5
Extreme (40C)	2535	5.4	0.002149	2.5
Extreme (30C)	2535	6.5	0.002554	2.5
Extreme (10C)	2535	5.8	0.002281	2.5
Extreme (0C)	2535	4.7	0.001858	2.5
Extreme (-10C)	2535	5.3	0.002072	2.5
Extreme (-20C)	2535	6.0	0.002371	2.5
Extreme (-30C)	2535	5.2	0.002064	2.5

***Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

10.4 LTE BAND 38

Band 38 QPSK, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.2	2595	8.9	0.003419	2.5
3.8	2595	6.5	0.002502	2.5
4.2	2595	7.1	0.002742	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	7.2	0.002759	2.5
Extreme (50C)	2595	4.3	0.001671	2.5
Extreme (40C)	2595	5.2	0.001987	2.5
Extreme (30C)	2595	4.7	0.001794	2.5
Extreme (10C)	2595	6.9	0.002662	2.5
Extreme (0C)	2595	4.9	0.001906	2.5
Extreme (-10C)	2595	10.0	0.003848	2.5
Extreme (-20C)	2595	10.6	0.004098	2.5
Extreme (-30C)	2595	6.3	0.002419	2.5

Band 38 16QAM, (20MHz BANDWIDTH RB size 100 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.2	2595	8.5	0.003258	2.5
3.8	2595	6.0	0.002322	2.5
4.2	2595	6.7	0.002599	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2595	7.2	0.002757	2.5
Extreme (50C)	2595	4.7	0.001824	2.5
Extreme (40C)	2595	5.6	0.002166	2.5
Extreme (30C)	2595	4.3	0.001666	2.5
Extreme (10C)	2595	6.1	0.002357	2.5
Extreme (0C)	2595	5.3	0.002027	2.5
Extreme (-10C)	2595	9.3	0.003581	2.5
Extreme (-20C)	2595	10.9	0.004202	2.5
Extreme (-30C)	2595	6.5	0.002512	2.5

***Note:** Frequency error measurements were made by using the build-in capability of the Wireless Communication Test Set.

11. Peak-to-Average Ratio

11.1 Description of the PAR Measurement

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

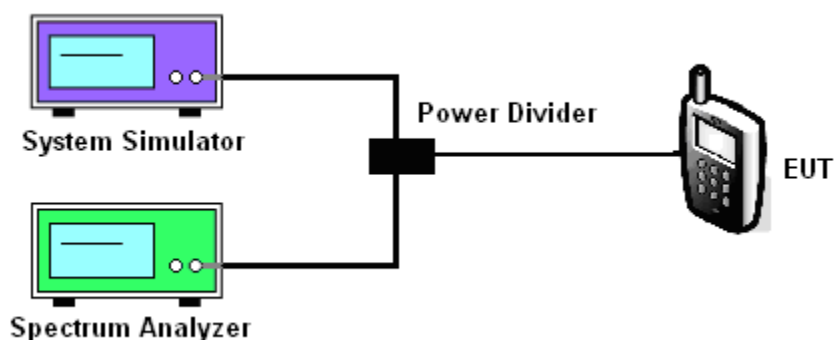
11.2 Measuring Instruments

See list of measuring instruments of this test report.

11.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. For GSM/EGPRS operating modes:
 - a. Set the RBW = 1MHz, VBW = 1MHz, Peak detector in spectrum analyzer.
 - b. Set EUT in maximum power output, and triggered the burst signal.
 - c. Measured respectively the Peak level and Mean level, and the deviation was recorded as Peak to Average Ratio.
4. For UMTS operating modes:
 - a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
 - b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.

11.4 Test Setup



MODES TESTED

- ☐ LTE Band 4, 5, 7, 38
- ☐

Test data reference attachment.

-----END OF REPORT-----