

FCC CFR47 PART 27 CERTIFICATION TEST REPORT FCC ID: 2BLU9-QT9AVHEQ

Product: Tablet PC

Trade Mark: Compaq

Model Number: M87QF68B-T606

Family Model: QT9AVHE464Q, QT9AVHE464QS,
QT9AVHE464QG

Report No.: N25081905807E

Prepared for

M&M Electronics, S.A.

Cocosolito, Colon Free Zone, Main Entrance Warehouse10D and 11D,
Panama. Zip Code: 03050.

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name..... : M&M Electronics, S.A.
Address : Cocosolito, Colon Free Zone, Main Entrance Warehouse10D and 11D, PanamA. Zip Code: 03050.
Manufacturer's Name..... : Hena Digital Technology (Shenzhen) Co., Ltd.
Address : 13F, Block B, Tairan Building Tairan 8th Road, Futian District, Shenzhen, China
Product name : Tablet PC
Model and/or type reference : M87QF68B-T606
Family Model..... : QT9AVHE464Q, QT9AVHE464QS, QT9AVHE464QG
Test sample number : S2508200080-1#
Standards..... : FCC CFR 47 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 Aug. 20, 2025 ~Sept. 30, 2025

Date of Issue Sept. 30, 2025

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:	Tablet PC
Trade Mark	Compaq
Model Name	M87QF68B-T606
Family Model	QT9AVHE464Q, QT9AVHE464QS, QT9AVHE464QG
Model Difference	All model are the same circuit and RF module, except for the names.
FCC ID:	2BLU9-QT9AVHEQ
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 4, 7
Frequency Range:	LTE FDD Band 4 Uplink: 1710MHz-1755MHz, Downlink: 2110MHz-2155MHz; LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz;
Type of Modulation:	QPSK/16QAM
Antenna:	FPC Antenna
Antenna gain:	B4:-0.75dBi; B7:-1.09dBi
Power Supply:	DC 3.8V from Battery or DC 5V from Adapter.
Battery	DC 3.8V, 4500mAh, 17.1Wh
Adapter:	Model: TEKA-UCA20US Input: 100-240V~50/60Hz 0.35A MAX Output: 5.0V $\overline{\text{---}}$ 2.0A
Extreme Vol. Limits:	DC 3.23V to DC 4.37V (Nominal DC 3.8V) (Note 1)
HW Version	T30-T616-V2.0-240513-QU
SW Version	Android 15
** Note1: The High Voltage 4.37V and Low Voltage 3.23V 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: 2BLU9-QT9AVHEQ** filing to comply with the FCC Part 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 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 expanded 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 7.

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

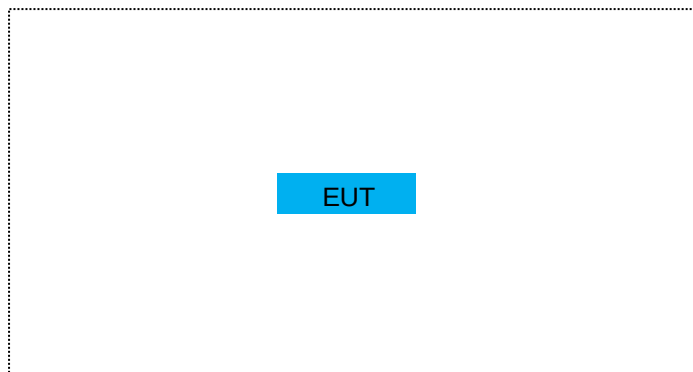
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Tablet PC	M87QF68B-T606	FCC ID: 2BLU9-QT9AVHEQ	EUT

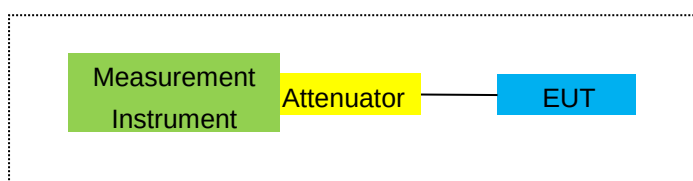
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

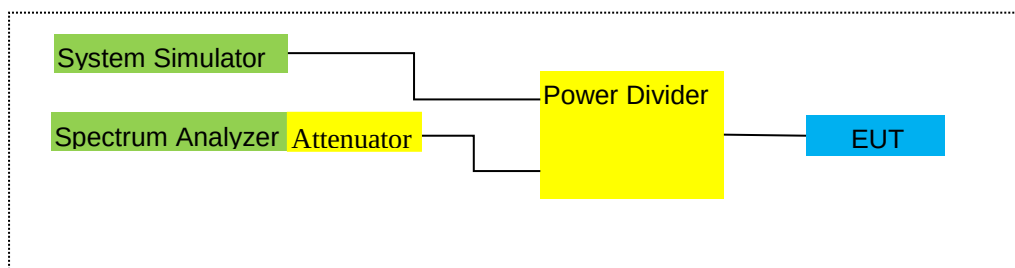
For Radiated Test Cases



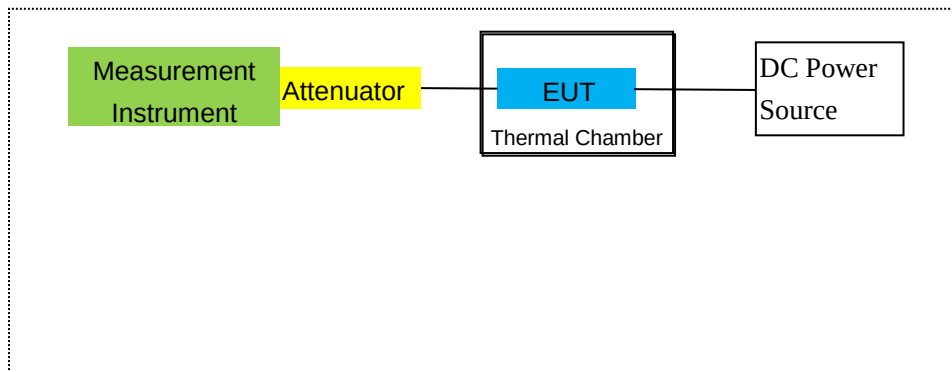
For Conducted Output Power



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	2025.04.17	2026.04.16	1 year
2	Test Receiver	R&S	ESPI	101318	2025.04.17	2026.04.16	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2025.04.17	2026.04.16	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
5	Broadband Horn Antenna	SCHWARZBECK	BBHA 9120 D	2816	2024.5.18	2027.05.17	3 year
6	Broadband Horn Antenna	SCHWARZBECK	BBHA 9120 D	2817	2024.5.18	2027.05.17	3 year
7	Amplifier	EM	EM-30180	060538	2025.04.17	2026.04.16	1 year
8	Active Loop Antenna	SCHWARZBECK	FMZB 1519 B	055	2024.05.17	2027.05.16	3 year
9	Power Meter	R&S	NRVS	100696	2025.04.17	2026.04.16	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2025.04.17	2026.04.16	1 year
11	Test Cable	N/A	R-01	N/A	2023.06.17	2026.06.16	3 year
12	Test Cable	N/A	R-02	N/A	2023.06.17	2026.06.16	3 year
13	Test Cable	N/A	R-03	N/A	2023.06.17	2026.06.16	3 year
14	Test Receiver	R&S	ESCI	101160	2025.04.17	2026.04.16	1 year
15	LISN	R&S	ENV216	101313	2025.04.17	2026.04.16	1 year
16	LISN	EMCO	3816/2	00042990	2025.04.17	2026.04.16	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
18	Field strength probe	narda	EP601	711WX81278	2025.04.17	2026.04.16	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	Spectrum Analyzer	Agilent	E4440A	MY41000130	2025.04.17	2026.04.16	1 year
23	EMI Test Receiver	R&S	ESCI	101160	2025.04.17	2026.04.16	1 year
24	Universal Radio Communication Tester	R&S	CMU200	105747	2025.04.17	2026.04.16	1 year

25	High and Low Temperature Box	WEISS	WT 20/40 EMC Simpac	58226119460030	2024.05.30	2027.05.29	3 year
26	DC Power Source	N/A	PS-6005D	20170402923	2024.04.25	2027.04.24	3 year
27	MXG Vector Signal Generator	Agilent	N5183B	MY57280984	2025.04.17	2026.04.16	1 year
28	Log-Periodic Antenna	SCHWARZBECK	VULB 9162	584	2025.04.17	2026.04.16	1 year
29	Log-Periodic Antenna	SCHWARZBECK	VULB 9162	586	2025.04.17	2026.04.16	1 year
30	Communication Tester	R&S	CMW500	148500	2025.05.06	2026.05.05	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	MWRFTtest	MTS 8200	2.0	RF Conducted Test
2	Farad	EZ-EMC_RE	AIT-03A	RadiatedTest
3	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

LTE Band 7

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §22.917(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 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 4/7

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, §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 4/7

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 and §27.50 (h)(2), (b)(10), (c)(10), (d)(4)

LIMITS:

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 4/7

RESULTS

Pass

8.2 LTE BAND 4

Radiated Power (EIRP) for Band 4										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Max. EIRP	Max. EIRP		Polarization	
			(dBm)	(dBm)	(dB)	Average	Average	Limit	Of Max. ERP	
						(dBm)	(mW)	(W)		
1.4MHz Band QPSK	1/#Mid	1710.7	-4.94	3.12	27.58	19.52	89.536	1	Horizontal	Pass
		1732.5	-4.93	3.27	27.61	19.41	87.297	1	Horizontal	Pass
		1754.3	-4.91	3.29	27.63	19.43	87.700	1	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.11	3.13	27.61	19.37	86.497	1	Horizontal	Pass
		1732.5	-5.03	3.27	27.61	19.31	85.310	1	Horizontal	Pass
		1753.5	-4.95	3.30	27.62	19.37	86.497	1	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-4.88	3.13	27.63	19.62	91.622	1	Horizontal	Pass
		1732.5	-4.78	3.27	27.61	19.56	90.365	1	Horizontal	Pass
		1752.5	-4.66	3.30	27.60	19.64	92.045	1	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	1715	-4.82	3.15	27.64	19.67	92.683	1	Horizontal	Pass
		1732.5	-4.59	3.31	27.61	19.71	93.541	1	Horizontal	Pass
		1750	-4.61	3.33	27.59	19.65	92.257	1	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	1717.5	-4.83	3.15	27.65	19.67	92.683	1	Horizontal	Pass
		1732.5	-4.67	3.31	27.61	19.63	91.833	1	Horizontal	Pass
		1747.5	-4.61	3.33	27.57	19.63	91.833	1	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	1720	-4.77	3.17	27.66	19.72	93.756	1	Horizontal	Pass
		1732.5	-4.60	3.32	27.61	19.69	93.111	1	Horizontal	Pass
		1745	-4.54	3.36	27.56	19.66	92.470	1	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	1710.7	-5.74	3.12	27.58	18.72	74.473	1	Vertical	Pass
		1732.5	-6.12	3.27	27.61	18.22	66.374	1	Vertical	Pass
		1754.3	-5.72	3.29	27.63	18.62	72.778	1	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	1711.5	-5.64	3.13	27.61	18.84	76.560	1	Vertical	Pass
		1732.5	-5.17	3.27	27.61	19.17	82.604	1	Vertical	Pass
		1753.5	-6.01	3.30	27.62	18.31	67.764	1	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	1712.5	-5.50	3.13	27.63	19.00	79.433	1	Vertical	Pass
		1732.5	-5.34	3.27	27.61	19.00	79.433	1	Vertical	Pass
		1752.5	-5.57	3.30	27.60	18.73	74.645	1	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	1715	-6.07	3.15	27.64	18.42	69.502	1	Vertical	Pass
		1732.5	-5.56	3.31	27.61	18.74	74.817	1	Vertical	Pass
		1750	-5.74	3.33	27.59	18.52	71.121	1	Vertical	Pass

15.0MHz		1717.5	-6.27	3.15	27.65	18.23	66.527	1	Vertical	Pass
Band	1/#Mid	1732.5	-5.84	3.31	27.61	18.46	70.146	1	Vertical	Pass
QPSK		1747.5	-6.00	3.33	27.57	18.24	66.681	1	Vertical	Pass
20.0MHz		1720	-6.23	3.17	27.66	18.26	66.988	1	Vertical	Pass
Band	1/#Mid	1732.5	-5.18	3.32	27.61	19.11	81.470	1	Vertical	Pass
QPSK		1745	-5.79	3.36	27.56	18.41	69.343	1	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	Cable Loss	Antenna Factor	Max. EIRP	Max. EIRP		Polarization	
			(dBm)	(dBm)	(dB)	Average	Average	Limit	Of Max. ERP	
						(dBm)	(mW)	(W)		
1.4MHz	1/#Mid	1710.7	-5.75	3.12	27.58	18.71	74.302	1	Horizontal	Pass
Band 16		1732.5	-5.60	3.27	27.61	18.74	74.817	1	Horizontal	Pass
QAM		1754.3	-5.60	3.29	27.63	18.74	74.817	1	Horizontal	Pass
3.0MHz	1/#Mid	1711.5	-5.69	3.13	27.61	18.79	75.683	1	Horizontal	Pass
Band 16		1732.5	-5.82	3.27	27.61	18.52	71.121	1	Horizontal	Pass
QAM		1753.5	-6.04	3.30	27.62	18.28	67.298	1	Horizontal	Pass
5.0MHz	1/#Mid	1712.5	-5.52	3.13	27.63	18.98	79.068	1	Horizontal	Pass
Band 16		1732.5	-5.48	3.27	27.61	18.86	76.913	1	Horizontal	Pass
QAM		1752.5	-5.17	3.30	27.60	19.13	81.846	1	Horizontal	Pass
10.0MHz	1/#Mid	1715	-5.59	3.15	27.64	18.90	77.625	1	Horizontal	Pass
Band 16		1732.5	-5.78	3.31	27.61	18.52	71.121	1	Horizontal	Pass
QAM		1750	-5.16	3.33	27.59	19.10	81.283	1	Horizontal	Pass
15.0MHz	1/#Mid	1717.5	-5.39	3.15	27.65	19.11	81.470	1	Horizontal	Pass
Band 16		1732.5	-5.45	3.31	27.61	18.85	76.736	1	Horizontal	Pass
QAM		1747.5	-5.47	3.33	27.57	18.77	75.336	1	Horizontal	Pass
20.0MHz	1/#Mid	1720	-5.34	3.17	27.66	19.15	82.224	1	Horizontal	Pass
Band 16		1732.5	-5.35	3.32	27.61	18.94	78.343	1	Horizontal	Pass
QAM		1745	-5.16	3.36	27.56	19.04	80.168	1	Horizontal	Pass
1.4MHz	1/#Mid	1710.7	-6.39	3.12	27.58	18.07	64.121	1	Vertical	Pass
Band 16		1732.5	-6.65	3.27	27.61	17.69	58.749	1	Vertical	Pass
QAM		1754.3	-6.89	3.29	27.63	17.45	55.590	1	Vertical	Pass
3.0MHz	1/#Mid	1711.5	-6.58	3.13	27.61	17.90	61.660	1	Vertical	Pass
Band 16		1732.5	-6.48	3.27	27.61	17.86	61.094	1	Vertical	Pass
QAM		1753.5	-6.52	3.30	27.62	17.80	60.256	1	Vertical	Pass
5.0MHz	1/#Mid	1712.5	-7.14	3.13	27.63	17.36	54.450	1	Vertical	Pass
Band 16		1732.5	-6.85	3.27	27.61	17.49	56.105	1	Vertical	Pass
QAM		1752.5	-6.46	3.30	27.60	17.84	60.814	1	Vertical	Pass
10.0MHz	1/#Mid	1715	-7.27	3.15	27.64	17.22	52.723	1	Vertical	Pass
Band 16		1732.5	-6.61	3.31	27.61	17.69	58.749	1	Vertical	Pass
QAM		1750	-6.74	3.33	27.59	17.52	56.494	1	Vertical	Pass
15.0MHz	1/#Mid	1717.5	-7.17	3.15	27.65	17.33	54.075	1	Vertical	Pass
Band 16		1732.5	-7.09	3.31	27.61	17.21	52.602	1	Vertical	Pass
QAM		1747.5	-7.06	3.33	27.57	17.18	52.240	1	Vertical	Pass

20.0MHz	1/#Mid	1720	-6.63	3.17	27.66	17.86	61.094	1	Vertical	Pass
Band 16		1732.5	-6.81	3.32	27.61	17.48	55.976	1	Vertical	Pass
QAM		1745	-6.47	3.36	27.56	17.73	59.293	1	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 7

Radiated Power (ERP) for Band 7										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Max. ERP	Max. ERP		Polarization	
			(dBm)	(dBm)	(dB)	Average	Average	Limit	Of Max. ERP	
						(dBm)	(mW)	(W)		
5.0MHz Band QPSK	1/#Mid	2502.5	-3.22	4.54	27.75	19.99	99.770	2	Horizontal	Pass
		2535	-3.05	4.69	27.72	19.98	99.541	2	Horizontal	Pass
		2567.5	-2.98	4.71	27.71	20.02	100.462	2	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-3.15	4.55	27.76	20.06	101.391	2	Horizontal	Pass
		2535	-2.96	4.69	27.72	20.07	101.625	2	Horizontal	Pass
		2565	-2.88	4.72	27.70	20.10	102.329	2	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-3.16	4.55	27.77	20.06	101.391	2	Horizontal	Pass
		2535	-3.02	4.69	27.72	20.01	100.231	2	Horizontal	Pass
		2562.5	-2.92	4.72	27.69	20.05	101.158	2	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-3.10	4.57	27.78	20.11	102.565	2	Horizontal	Pass
		2535	-2.92	4.73	27.72	20.07	101.625	2	Horizontal	Pass
		2560	-2.88	4.75	27.68	20.05	101.158	2	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-5.02	4.54	27.75	18.19	65.917	2	Vertical	Pass
		2535	-4.79	4.69	27.72	18.24	66.681	2	Vertical	Pass
		2567.5	-4.14	4.71	27.71	18.86	76.913	2	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-4.42	4.55	27.76	18.79	75.683	2	Vertical	Pass
		2535	-4.08	4.69	27.72	18.95	78.524	2	Vertical	Pass
		2565	-4.69	4.72	27.70	18.29	67.453	2	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-4.32	4.55	27.77	18.90	77.625	2	Vertical	Pass
		2535	-4.02	4.69	27.72	19.01	79.616	2	Vertical	Pass
		2562.5	-4.80	4.72	27.69	18.17	65.615	2	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-4.11	4.57	27.78	19.10	81.283	2	Vertical	Pass
		2535	-4.57	4.73	27.72	18.42	69.502	2	Vertical	Pass
		2560	-4.75	4.75	27.68	18.18	65.766	2	Vertical	Pass

Radiated Power (ERP) for Band 7										
Mode	RB/RB SIZE	Frequency	Result							Conclusion
			SG Level	Cable Loss	Antenna Factor	Max. ERP	Max. ERP		Polarization	
			(dBm)	(dBm)	(dB)	Average	Average	Limit	Of Max. ERP	
						(dBm)	(mW)	(W)		
5.0MHz	1/#Mid	2502.5	-3.91	4.54	27.75	19.30	85.114	2	Horizontal	Pass
Band 16		2535	-3.60	4.69	27.72	19.43	87.700	2	Horizontal	Pass
QAM		2567.5	-3.68	4.71	27.71	19.32	85.507	2	Horizontal	Pass
10.0MHz	1/#Mid	2505	-3.80	4.55	27.76	19.41	87.297	2	Horizontal	Pass
Band 16		2535	-3.81	4.69	27.72	19.22	83.560	2	Horizontal	Pass
QAM		2565	-4.08	4.72	27.70	18.90	77.625	2	Horizontal	Pass
15.0MHz	1/#Mid	2507.5	-3.98	4.55	27.77	19.24	83.946	2	Horizontal	Pass
Band 16		2535	-3.95	4.69	27.72	19.08	80.910	2	Horizontal	Pass
QAM		2562.5	-3.56	4.72	27.69	19.41	87.297	2	Horizontal	Pass
20.0MHz	1/#Mid	2510	-3.86	4.57	27.78	19.35	86.099	2	Horizontal	Pass
Band 16		2535	-3.53	4.73	27.72	19.46	88.308	2	Horizontal	Pass
QAM		2560	-3.63	4.75	27.68	19.30	85.114	2	Horizontal	Pass
5.0MHz	1/#Mid	2502.5	-5.28	4.54	27.75	17.93	62.087	2	Vertical	Pass
Band 16		2535	-5.36	4.69	27.72	17.67	58.479	2	Vertical	Pass
QAM		2567.5	-4.06	4.71	27.71	18.94	78.343	2	Vertical	Pass
10.0MHz	1/#Mid	2505	-4.17	4.55	27.76	19.04	80.168	2	Vertical	Pass
Band 16		2535	-4.61	4.69	27.72	18.42	69.502	2	Vertical	Pass
QAM		2565	-4.65	4.72	27.70	18.33	68.077	2	Vertical	Pass
15.0MHz	1/#Mid	2507.5	-4.55	4.55	27.77	18.67	73.621	2	Vertical	Pass
Band 16		2535	-4.81	4.69	27.72	18.22	66.374	2	Vertical	Pass
QAM		2562.5	-4.99	4.72	27.69	17.98	62.806	2	Vertical	Pass
20.0MHz	1/#Mid	2510	-5.54	4.57	27.78	17.67	58.479	2	Vertical	Pass
Band 16		2535	-5.29	4.73	27.72	17.70	58.884	2	Vertical	Pass
QAM		2560	-4.40	4.75	27.68	18.53	71.285	2	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)

9. SPURIOUS RADIATION EMISSION

RULE PART(S)

FCC: §2.1051, §27.53(c)(g)(h)(m)

LIMIT

- §27.53 (g) For operations in the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB.
- §27.53 (h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

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 4/7

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	-51.04	4.02	29.80	-25.26	-13	-12.26	Horizontal
3421.4	-45.65	4.02	29.80	-19.87	-13	-6.87	Vertical
5132.1	-45.85	5.24	35.84	-15.25	-13	-2.25	Vertical
5132.1	-51.17	5.24	35.84	-20.57	-13	-7.57	Horizontal
204.4	-43.53	1.68	16.04	-29.17	-13	-16.17	Vertical
264.8	-40.12	1.78	17.74	-24.16	-13	-11.16	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-47.49	4.03	30.00	-21.52	-13	-8.52	Horizontal
3465.0	-46.84	4.03	30.00	-20.87	-13	-7.87	Vertical
5197.5	-46.91	5.25	35.86	-16.30	-13	-3.30	Vertical
5197.5	-51.91	5.25	35.86	-21.30	-13	-8.30	Horizontal
209.0	-39.15	1.72	17.69	-23.18	-13	-10.18	Vertical
398.2	-40.79	1.62	16.02	-26.38	-13	-13.38	Horizontal
Test Results for High Channel 1754.3MHz							
3508.6	-47.54	4.05	30.01	-21.58	-13	-8.58	Horizontal
3508.6	-51.45	4.05	30.01	-25.49	-13	-12.49	Vertical
5262.9	-45.92	5.26	35.86	-15.32	-13	-2.32	Vertical
5262.9	-49.89	5.26	35.86	-19.29	-13	-6.29	Horizontal
175.9	-41.67	1.80	16.69	-26.78	-13	-13.78	Vertical
248.1	-41.98	1.75	16.66	-27.08	-13	-14.08	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	-47.33	4.02	29.80	-21.55	-13	-8.55	Horizontal
3440.0	-46.18	4.02	29.80	-20.40	-13	-7.40	Vertical
5160.0	-46.46	5.24	35.84	-15.86	-13	-2.86	Vertical
5160.0	-51.68	5.24	35.84	-21.08	-13	-8.08	Horizontal
179.6	-39.75	1.57	17.26	-24.06	-13	-11.06	Vertical
356.1	-42.10	1.78	16.35	-27.53	-13	-14.53	Horizontal
Test Results for Mid Channel 1732.5MHz							
3465.0	-45.08	4.03	30.00	-19.11	-13	-6.11	Horizontal
3465.0	-48.78	4.03	30.00	-22.81	-13	-9.81	Vertical
5197.5	-52.60	5.25	35.86	-21.99	-13	-8.99	Vertical
5197.5	-49.80	5.25	35.86	-19.19	-13	-6.19	Horizontal
183.6	-38.23	1.44	17.95	-21.72	-13	-8.72	Vertical
289.2	-43.51	1.65	16.09	-29.07	-13	-16.07	Horizontal
Test Results for High Channel 1745MHz							
3490.0	-51.66	2.91	27.68	-26.89	-13	-13.89	Horizontal
3490.0	-52.93	2.91	27.68	-28.16	-13	-15.16	Vertical
5235.0	-47.92	5.26	35.86	-17.32	-13	-4.32	Vertical
5235.0	-50.13	5.26	35.86	-19.53	-13	-6.53	Horizontal
177.4	-39.04	1.61	16.85	-23.80	-13	-10.80	Vertical
384.0	-37.99	1.61	15.19	-24.41	-13	-11.41	Horizontal

9.2 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	-61.34	5.23	35.81	-30.76	-25	-5.76	Horizontal
5005.0	-60.62	5.23	35.81	-30.04	-25	-5.04	Vertical
7507.5	-64.77	5.67	36.85	-33.59	-25	-8.59	Vertical
7507.5	-59.06	5.67	36.85	-27.88	-25	-2.88	Horizontal
211.7	-47.65	1.73	17.97	-31.41	-25	-6.41	Vertical
267.6	-52.85	1.38	15.11	-39.12	-25	-14.12	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-62.84	5.23	35.82	-32.25	-25	-7.25	Horizontal
5070.0	-64.72	5.23	35.82	-34.13	-25	-9.13	Vertical
7605.0	-59.45	5.67	36.85	-28.27	-25	-3.27	Vertical
7605.0	-63.89	5.67	36.85	-32.71	-25	-7.71	Horizontal
194.2	-44.55	1.77	16.17	-30.14	-25	-5.14	Vertical
403.6	-47.97	1.63	15.21	-34.39	-25	-9.39	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-64.44	5.24	35.83	-33.85	-25	-8.85	Horizontal
5135.0	-64.54	5.24	35.83	-33.95	-25	-8.95	Vertical
7702.5	-62.25	5.68	36.87	-31.06	-25	-6.06	Vertical
7702.5	-63.64	5.68	36.87	-32.45	-25	-7.45	Horizontal
183.3	-46.73	1.58	17.56	-30.75	-25	-5.75	Vertical
450.0	-50.05	1.45	16.58	-34.92	-25	-9.92	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	-61.36	5.23	35.82	-30.77	-25	-5.77	Horizontal
5020.0	-60.27	5.23	35.82	-29.68	-25	-4.68	Vertical
7530.0	-59.37	5.67	36.86	-28.18	-25	-3.18	Vertical
7530.0	-61.41	5.67	36.86	-30.22	-25	-5.22	Horizontal
207.3	-52.32	1.63	15.76	-38.19	-25	-13.19	Vertical
406.4	-47.76	1.71	15.44	-34.03	-25	-9.03	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-61.12	5.23	35.82	-30.53	-25	-5.53	Horizontal
5070.0	-60.70	5.23	35.82	-30.11	-25	-5.11	Vertical
7605.0	-63.72	5.67	36.85	-32.54	-25	-7.54	Vertical
7605.0	-60.41	5.67	36.85	-29.23	-25	-4.23	Horizontal
190.4	-48.74	1.79	16.84	-33.68	-25	-8.68	Vertical
429.7	-52.35	1.71	17.64	-36.42	-25	-11.42	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-62.03	5.24	35.83	-31.44	-25	-6.44	Horizontal
5120.0	-59.43	5.24	35.83	-28.84	-25	-3.84	Vertical
7680.0	-60.66	5.70	36.88	-29.48	-25	-4.48	Vertical
7680.0	-61.42	5.70	36.88	-30.24	-25	-5.24	Horizontal
206.9	-45.55	1.79	16.84	-30.49	-25	-5.49	Vertical
467.6	-48.47	1.71	17.64	-32.54	-25	-7.54	Horizontal

10. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §27.54

LIMITS

§27.54 - The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

Temp. = -30° to +50°C

Voltage = low voltage, DC 3.23V, Normal, DC 3.8V and High voltage, DC 4.37V.

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°C is reached.

Frequency Stability vs Voltage:

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

MODES TESTED

LTE Band 4/7

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]
3.23	1732.5	8.8	0.005105	2.5
3.80	1732.5	8.6	0.004975	2.5
4.37	1732.5	8.7	0.005050	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	8.4	0.004877	2.5
Extreme (50C)	1732.5	8.7	0.004995	2.5
Extreme (40C)	1732.5	7.1	0.004084	2.5
Extreme (30C)	1732.5	6.2	0.003580	2.5
Extreme (10C)	1732.5	6.7	0.003869	2.5
Extreme (0C)	1732.5	9.1	0.005280	2.5
Extreme (-10C)	1732.5	8.3	0.004809	2.5
Extreme (-20C)	1732.5	6.7	0.003894	2.5
Extreme (-30C)	1732.5	8.4	0.004866	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	1732.5	9.8	0.005675	2.5
3.80	1732.5	9.2	0.005317	2.5
4.37	1732.5	8.5	0.004888	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	1732.5	9.7	0.005604	2.5
Extreme (50C)	1732.5	8.6	0.004972	2.5
Extreme (40C)	1732.5	8.3	0.004772	2.5
Extreme (30C)	1732.5	9.4	0.005441	2.5
Extreme (10C)	1732.5	9.0	0.005173	2.5
Extreme (0C)	1732.5	7.6	0.004399	2.5
Extreme (-10C)	1732.5	9.0	0.005169	2.5
Extreme (-20C)	1732.5	9.0	0.005215	2.5
Extreme (-30C)	1732.5	8.3	0.004794	2.5

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

10.2 LTE BAND 7

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	2535	9.5	0.003749	2.5
3.80	2535	9.4	0.003706	2.5
4.37	2535	8.0	0.003174	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	9.9	0.003887	2.5
Extreme (50C)	2535	8.8	0.003479	2.5
Extreme (40C)	2535	8.9	0.003503	2.5
Extreme (30C)	2535	9.1	0.003582	2.5
Extreme (10C)	2535	8.3	0.003273	2.5
Extreme (0C)	2535	8.5	0.003341	2.5
Extreme (-10C)	2535	9.9	0.003896	2.5
Extreme (-20C)	2535	8.9	0.003492	2.5
Extreme (-30C)	2535	8.3	0.003268	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.23	2535	7.0	0.002760	2.5
3.80	2535	6.2	0.002452	2.5
4.37	2535	5.8	0.002286	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2535	6.4	0.002526	2.5
Extreme (50C)	2535	5.6	0.002190	2.5
Extreme (40C)	2535	5.4	0.002149	2.5
Extreme (30C)	2535	6.7	0.002637	2.5
Extreme (10C)	2535	5.4	0.002122	2.5
Extreme (0C)	2535	4.9	0.001943	2.5
Extreme (-10C)	2535	5.2	0.002070	2.5
Extreme (-20C)	2535	5.9	0.002310	2.5
Extreme (-30C)	2535	6.0	0.002371	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.

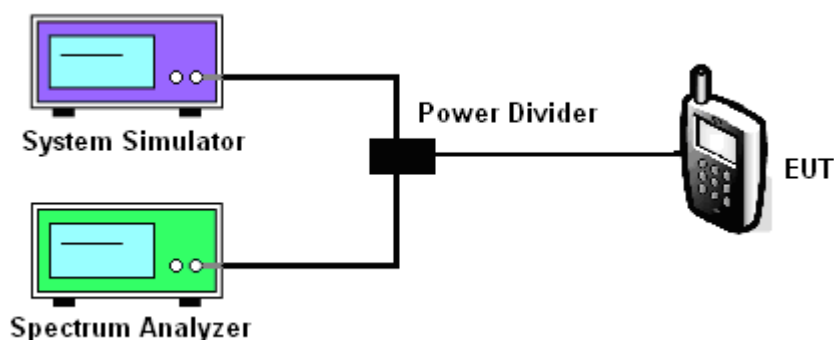
11.2 Measuring Instruments

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 4/7

Test data reference attachment.

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