

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

FCC ID: 2BLHB-9001

Product: Car Android Player

Trade Mark: JMANCE

Model Number: 9001

Family Model: 7168, 7003, 9003, 1001, 1200

Report No.: S24081304806006

Prepared for

Shenzhen Jiayitong Electronics Co., Ltd
5th Floor, Building A1, Huafeng Century Science and Technology Park,
Intersection of Baoyuan Road and Hangcheng Avenue, Xixiang Street,
Bao'an District, Shenzhen City, Guangdong Province

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.
1/F, Building E, Fenda Science Park Sanwei, Xixiang, Bao'an District,
Shenzhen, Guangdong, China

Tel. 0755-23200050 Website: <http://www.ntek.org.cn>

TEST RESULT CERTIFICATION

Applicant's name..... : Shenzhen Jiayitong Electronics Co., Ltd
Address : 5th Floor, Building A1, Huafeng Century Science and Technology Park,
Intersection of Baoyuan Road and Hangcheng Avenue, Xixiang Street,
Bao'an District, Shenzhen City, Guangdong Province

Manufacturer's Name..... : Shenzhen Jiayitong Electronics Co., Ltd
Address : 5th Floor, Building A1, Huafeng Century Science and Technology Park,
Intersection of Baoyuan Road and Hangcheng Avenue, Xixiang Street,
Bao'an District, Shenzhen City, Guangdong Province

Product name..... : Car Android Player
Model and/or type reference : 9001
Family Model: 7168, 7003, 9003, 1001, 1200
Test sample number : S240813048006

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 Aug. 13, 2024 ~ Sept. 24, 2024
Date of Issue Sept. 24, 2024
Test Result **Pass**

Prepared By : Kieron Luo
Kieron Luo
(Project Engineer)

Reviewed By : Aaron Cheng
Aaron Cheng
(Supervisor)

Approved By : Alex Li
Alex Li
(Manager)

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1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	Car Android Player
Trade Mark	JMANCE
Model Name	9001
Family Model	7168, 7003, 9003, 1001, 1200
Model Difference	All models are the same circuit and RF module, except for model names.
FCC ID:	2BLHB-9001
Frequency Bands:	U.S. Bands: <input checked="" type="checkbox"/> LTE FDD Band 5, 7
Frequency Range:	LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE-FDD Band 7 Uplink: 2500MHz-2570MHz, Downlink: 2620MHz-2690MHz;
Type of Modulation:	QPSK/16QAM
Antenna:	External antenna
Antenna gain:	Band5:2.77dBi; Band7:-0.26dBi;
Power Supply:	DC 12V from DC Source
Adapter:	N/A
Extreme Vol. Limits:	DC 10.2V to DC 13.8V (Nominal DC 12V) (Note 1)
HW Version	N/A
SW Version	N/A
** Note1: The High Voltage 13.8V and Low Voltage 10.2V 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: 2BLHB-9001** 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.

1/F, Building E, Fenda Science Park Sanwei, Xixiang, Bao'an District, Shenzhen, Guangdong, 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 = 2Uc(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 5, 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.

1.6 SUMMARY OF TEST RESULTS

FCC Part22, Subpart H/ FCC Part24, Subpart E, FCC Part27, Subpart L, KDB 971168 D01 Power Meas License Digital Systems v03			
FCC Rule	Test Item	Verdict	Remark
2.1046	Conducted Output Power	PASS	
22.913(d) 24.232(d) 27.50(d)(5) KDB 971168 D01 Clause 5.7	Peak-to-Average Ratio	PASS	
2.1049 22.917(b) 24.238(b) KDB 971168 D01 Clause 4.2	Occupied Bandwidth	PASS	
2.1051 22.917(a) 24.238(a) 27.53(c), (g), (h) KDB 971168 D01 Clause 6	Band Edge	PASS	
22.913(a)(2) 27.50(b)(10), (c)(10) KDB 971168 D01 Clause 5.6	Effective Radiated Power	PASS	
24.232(c) 27.50(h)(2), (d)(4) KDB 971168 D01 Clause 5.6	Equivalent Isotropic Radiated Power	PASS	
2.1053 22.917(a) 24.238(a) 27.53(c)(g)(h)(m) KDB 971168 D01 Clause 7	Field Strength of Spurious Radiation	PASS	
2.1055 22.355 24.235 27.54 KDB 971168 D01 Clause 9	Frequency Stability for Temperature & Voltage	PASS	

2.1051 22.917(a) 24.238(a) 27.53(c)(g)(h)(m) KDB 971168 D01 Clause 6	Conducted Emission	PASS	
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Remark:

1. "N/A" denotes test is not applicable in this Test Report.
2. All test items were verified and recorded according to the standards and without any deviation during the test.
3. No modifications are made to the EUT during all test items.

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

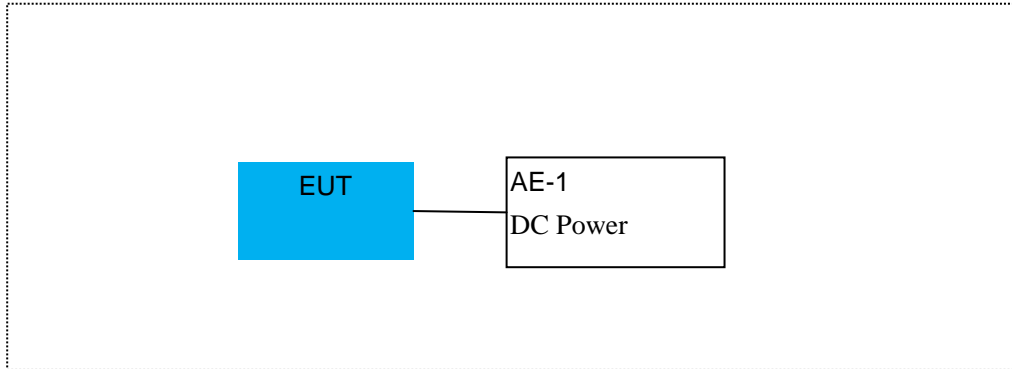
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	Car Android Player	9001	FCC ID: 2BLHB-9001	EUT

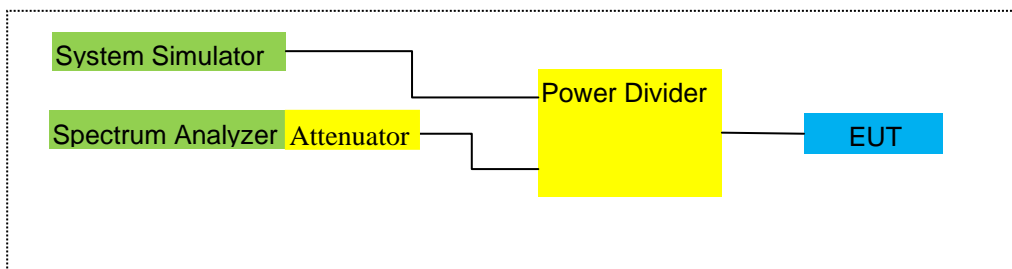
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

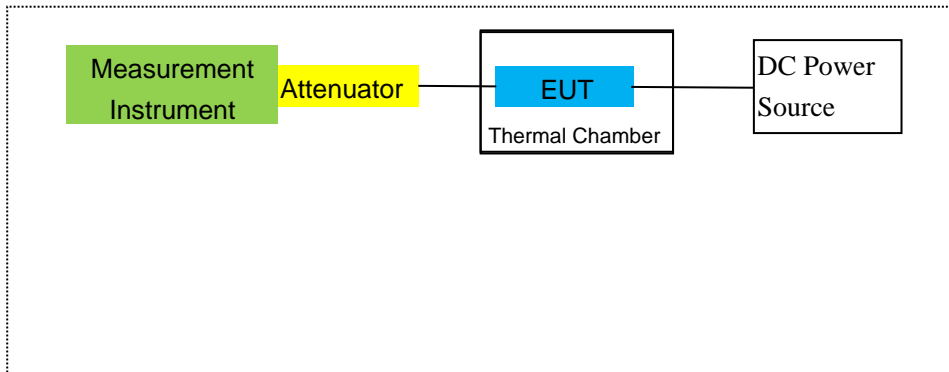
For Radiated Test Cases



For 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	2025.03.11	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2023.05.06	2026.05.05	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	2023.05.06	2026.05.05	3 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.

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
16 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 5

LTE Band 7

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 5/7

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, §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 5/7

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, §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 5

LTE Band 7

RESULTS

Pass

8.2 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	6.64	2.01	19.68	2.15	22.16	164.437	Horizontal	Pass
		836.5	6.42	2.01	19.77	2.15	22.03	159.588	Horizontal	Pass
		848.3	6.31	2.02	19.82	2.15	21.96	157.036	Horizontal	Pass
3.0MHz Band QPSK	1/#Mid	825.5	6.42	2.01	19.70	2.15	21.96	157.036	Horizontal	Pass
		836.5	6.15	2.01	19.77	2.15	21.76	149.968	Horizontal	Pass
		847.5	6.21	2.02	19.81	2.15	21.85	153.109	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	826.5	6.70	2.01	19.71	2.15	22.25	167.880	Horizontal	Pass
		836.5	6.69	2.01	19.77	2.15	22.30	169.824	Horizontal	Pass
		846.5	6.53	2.02	19.79	2.15	22.15	164.059	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	829	6.46	2.01	19.73	2.15	22.03	159.588	Horizontal	Pass
		836.5	6.34	2.01	19.77	2.15	21.95	156.675	Horizontal	Pass
		844	6.70	2.02	19.78	2.15	22.31	170.216	Horizontal	Pass
1.4MHz Band QPSK	1/#Mid	824.7	5.42	2.01	19.68	2.15	20.94	124.165	Vertical	Pass
		836.5	5.86	2.01	19.77	2.15	21.47	140.281	Vertical	Pass
		848.3	5.28	2.02	19.82	2.15	20.93	123.880	Vertical	Pass
3.0MHz Band QPSK	1/#Mid	825.5	4.91	2.01	19.70	2.15	20.45	110.917	Vertical	Pass
		836.5	5.52	2.01	19.77	2.15	21.13	129.718	Vertical	Pass
		847.5	4.73	2.02	19.81	2.15	20.37	108.893	Vertical	Pass
5.0MHz Band QPSK	1/#Mid	826.5	5.35	2.01	19.71	2.15	20.90	123.027	Vertical	Pass
		836.5	5.66	2.01	19.77	2.15	21.27	133.968	Vertical	Pass
		846.5	4.73	2.02	19.79	2.15	20.35	108.393	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	829	4.77	2.01	19.73	2.15	20.34	108.143	Vertical	Pass
		836.5	4.96	2.01	19.77	2.15	20.57	114.025	Vertical	Pass
		844	5.34	2.02	19.78	2.15	20.95	124.451	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	5.94	2.01	19.68	2.15	21.46	139.959	Horizontal	Pass
		836.5	5.72	2.01	19.77	2.15	21.33	135.831	Horizontal	Pass
		848.3	5.47	2.02	19.82	2.15	21.12	129.420	Horizontal	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	5.77	2.01	19.70	2.15	21.31	135.207	Horizontal	Pass
		836.5	5.49	2.01	19.77	2.15	21.10	128.825	Horizontal	Pass
		847.5	5.13	2.02	19.81	2.15	20.77	119.399	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	6.25	2.01	19.71	2.15	21.80	151.356	Horizontal	Pass
		836.5	6.04	2.01	19.77	2.15	21.65	146.218	Horizontal	Pass
		846.5	5.54	2.02	19.79	2.15	21.16	130.617	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	829	6.15	2.01	19.73	2.15	21.72	148.594	Horizontal	Pass
		836.5	6.46	2.01	19.77	2.15	22.07	161.065	Horizontal	Pass
		844	5.52	2.02	19.78	2.15	21.13	129.718	Horizontal	Pass
1.4MHz Band 16 QAM	1/#Mid	824.7	4.33	2.01	19.68	2.15	19.85	96.605	Vertical	Pass
		836.5	4.33	2.01	19.77	2.15	19.94	98.628	Vertical	Pass
		848.3	3.83	2.02	19.82	2.15	19.48	88.716	Vertical	Pass
3.0MHz Band 16 QAM	1/#Mid	825.5	5.15	2.01	19.70	2.15	20.69	117.220	Vertical	Pass
		836.5	3.98	2.01	19.77	2.15	19.59	90.991	Vertical	Pass
		847.5	3.86	2.02	19.81	2.15	19.50	89.125	Vertical	Pass
5.0MHz Band 16 QAM	1/#Mid	826.5	4.79	2.01	19.71	2.15	20.34	108.143	Vertical	Pass
		836.5	5.08	2.01	19.77	2.15	20.69	117.220	Vertical	Pass
		846.5	3.93	2.02	19.79	2.15	19.55	90.157	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	829	5.55	2.01	19.73	2.15	21.12	129.420	Vertical	Pass
		836.5	3.84	2.01	19.77	2.15	19.45	88.105	Vertical	Pass
		844	4.32	2.02	19.78	2.15	19.93	98.401	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)

8.3 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	-2.49	4.54	27.75	20.72	118.032	Horizontal	Pass
		2535	-2.32	4.69	27.72	20.71	117.761	Horizontal	Pass
		2567.5	-2.25	4.71	27.71	20.75	118.850	Horizontal	Pass
10.0MHz Band QPSK	1/#Mid	2505	-2.58	4.55	27.76	20.63	115.611	Horizontal	Pass
		2535	-2.30	4.69	27.72	20.73	118.304	Horizontal	Pass
		2565	-2.24	4.72	27.70	20.74	118.577	Horizontal	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-2.38	4.55	27.77	20.84	121.339	Horizontal	Pass
		2535	-2.41	4.69	27.72	20.62	115.345	Horizontal	Pass
		2562.5	-2.20	4.72	27.69	20.77	119.399	Horizontal	Pass
20.0MHz Band QPSK	1/#Mid	2510	-2.48	4.57	27.78	20.73	118.304	Horizontal	Pass
		2535	-2.24	4.73	27.72	20.75	118.850	Horizontal	Pass
		2560	-1.99	4.75	27.68	20.94	124.165	Horizontal	Pass
5.0MHz Band QPSK	1/#Mid	2502.5	-4.11	4.54	27.75	19.10	81.283	Vertical	Pass
		2535	-3.94	4.69	27.72	19.09	81.096	Vertical	Pass
		2567.5	-4.12	4.71	27.71	18.88	77.268	Vertical	Pass
10.0MHz Band QPSK	1/#Mid	2505	-3.51	4.55	27.76	19.70	93.325	Vertical	Pass
		2535	-3.92	4.69	27.72	19.11	81.470	Vertical	Pass
		2565	-3.93	4.72	27.70	19.05	80.353	Vertical	Pass
15.0MHz Band QPSK	1/#Mid	2507.5	-3.55	4.55	27.77	19.67	92.683	Vertical	Pass
		2535	-3.16	4.69	27.72	19.87	97.051	Vertical	Pass
		2562.5	-3.36	4.72	27.69	19.61	91.411	Vertical	Pass
20.0MHz Band QPSK	1/#Mid	2510	-3.47	4.57	27.78	19.74	94.189	Vertical	Pass
		2535	-3.32	4.73	27.72	19.67	92.683	Vertical	Pass
		2560	-3.76	4.75	27.68	19.17	82.604	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	-3.11	4.54	27.75	20.10	102.329	Horizontal	Pass
		2535	-3.00	4.69	27.72	20.03	100.693	Horizontal	Pass
		2567.5	-2.82	4.71	27.71	20.18	104.232	Horizontal	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-3.06	4.55	27.76	20.15	103.514	Horizontal	Pass
		2535	-3.10	4.69	27.72	19.93	98.401	Horizontal	Pass
		2565	-3.40	4.72	27.70	19.58	90.782	Horizontal	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-3.11	4.55	27.77	20.11	102.565	Horizontal	Pass
		2535	-3.16	4.69	27.72	19.87	97.051	Horizontal	Pass
		2562.5	-2.65	4.72	27.69	20.32	107.647	Horizontal	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-3.24	4.57	27.78	19.97	99.312	Horizontal	Pass
		2535	-2.59	4.73	27.72	20.40	109.648	Horizontal	Pass
		2560	-2.95	4.75	27.68	19.98	99.541	Horizontal	Pass
5.0MHz Band 16 QAM	1/#Mid	2502.5	-4.14	4.54	27.75	19.07	80.724	Vertical	Pass
		2535	-4.47	4.69	27.72	18.56	71.779	Vertical	Pass
		2567.5	-4.19	4.71	27.71	18.81	76.033	Vertical	Pass
10.0MHz Band 16 QAM	1/#Mid	2505	-3.72	4.55	27.76	19.49	88.920	Vertical	Pass
		2535	-3.39	4.69	27.72	19.64	92.045	Vertical	Pass
		2565	-4.70	4.72	27.70	18.28	67.298	Vertical	Pass
15.0MHz Band 16 QAM	1/#Mid	2507.5	-5.29	4.55	27.77	17.93	62.087	Vertical	Pass
		2535	-3.41	4.69	27.72	19.62	91.622	Vertical	Pass
		2562.5	-4.81	4.72	27.69	18.16	65.464	Vertical	Pass
20.0MHz Band 16 QAM	1/#Mid	2510	-3.92	4.57	27.78	19.29	84.918	Vertical	Pass
		2535	-4.14	4.73	27.72	18.85	76.736	Vertical	Pass
		2560	-4.91	4.75	27.68	18.02	63.387	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, §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 $43 + 10 \text{ Log}_{10} (p)$, dB; and
- b. for mobile subscriber equipment, the attenuation shall not be less than $43 + 10 \text{ Log}_{10} (p)$, dB at the channel edges and $55 + 10 \text{ Log}_{10} (p)$ 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 5

LTE Band 7

RESULTS

PASS

9.1 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	-46.50	2.78	27.50	-21.78	-13	-8.78	Horizontal
1649.4	-51.48	2.78	27.50	-26.76	-13	-13.76	Vertical
2474.1	-53.12	2.90	27.80	-28.22	-13	-15.22	Vertical
2474.1	-53.74	2.90	27.80	-28.84	-13	-15.84	Horizontal
184.9	-42.58	1.76	17.59	-26.75	-13	-13.75	Vertical
324.7	-44.69	1.63	15.87	-30.45	-13	-17.45	Horizontal
Test Results For Mid Channel 836.5MHz							
1673.0	-50.12	2.80	27.48	-25.44	-13	-12.44	Horizontal
1673.0	-54.01	2.80	27.48	-29.33	-13	-16.33	Vertical
2509.5	-56.78	2.91	27.70	-31.99	-13	-18.99	Vertical
2509.5	-50.15	2.91	27.70	-25.36	-13	-12.36	Horizontal
190.4	-46.31	1.61	15.68	-32.24	-13	-19.24	Vertical
402.3	-45.74	1.59	17.52	-29.82	-13	-16.82	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-54.34	2.82	27.43	-29.73	-13	-16.73	Horizontal
1696.6	-53.16	2.82	27.43	-28.55	-13	-15.55	Vertical
2544.9	-52.02	2.92	27.74	-27.20	-13	-14.20	Vertical
2544.9	-51.96	2.92	27.74	-27.14	-13	-14.14	Horizontal
200.5	-40.06	1.69	16.67	-25.07	-13	-12.07	Vertical
325.9	-41.33	1.70	17.18	-25.85	-13	-12.85	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	-46.94	2.78	27.50	-22.22	-13	-9.22	Horizontal
1658.0	-56.45	2.78	27.50	-31.73	-13	-18.73	Vertical
2487.0	-53.47	2.90	27.80	-28.57	-13	-15.57	Vertical
2487.0	-52.71	2.90	27.80	-27.81	-13	-14.81	Horizontal
193.6	-39.55	1.71	15.57	-25.69	-13	-12.69	Vertical
374.5	-42.86	1.34	16.40	-27.80	-13	-14.80	Horizontal
Test Results for Mid Channel 836.5MHz							
1673.0	-47.06	2.80	27.48	-22.38	-13	-9.38	Horizontal
1673.0	-50.69	2.80	27.48	-26.01	-13	-13.01	Vertical
2509.5	-51.54	2.91	27.70	-26.75	-13	-13.75	Vertical
2509.5	-56.65	2.91	27.70	-31.86	-13	-18.86	Horizontal
180.7	-37.97	1.44	17.04	-22.37	-13	-9.37	Vertical
463.0	-47.93	1.76	17.62	-32.07	-13	-19.07	Horizontal
Test Results for High Channel 844MHz							
1688.0	-48.42	2.82	27.43	-23.81	-13	-10.81	Horizontal
1688.0	-56.37	2.82	27.43	-31.76	-13	-18.76	Vertical
2532.0	-47.00	2.92	27.74	-22.18	-13	-9.18	Vertical
2532.0	-55.94	2.92	27.74	-31.12	-13	-18.12	Horizontal
189.4	-47.75	1.74	17.70	-31.79	-13	-18.79	Vertical
274.3	-43.57	1.41	17.46	-27.51	-13	-14.51	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	-64.25	5.23	35.81	-33.67	-25	-8.67	Horizontal
5005.0	-62.91	5.23	35.81	-32.33	-25	-7.33	Vertical
7507.5	-64.84	5.67	36.85	-33.66	-25	-8.66	Vertical
7507.5	-65.93	5.67	36.85	-34.75	-25	-9.75	Horizontal
210.2	-47.35	1.73	17.97	-31.11	-25	-6.11	Vertical
460.0	-45.20	1.38	15.11	-31.47	-25	-6.47	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-64.00	5.23	35.82	-33.41	-25	-8.41	Horizontal
5070.0	-67.02	5.23	35.82	-36.43	-25	-11.43	Vertical
7605.0	-62.07	5.67	36.85	-30.89	-25	-5.89	Vertical
7605.0	-62.51	5.67	36.85	-31.33	-25	-6.33	Horizontal
207.8	-53.36	1.77	16.17	-38.95	-25	-13.95	Vertical
414.8	-48.40	1.63	15.21	-34.82	-25	-9.82	Horizontal
Test Results for High Channel 2567.5MHz							
5135.0	-62.29	5.24	35.83	-31.70	-25	-6.70	Horizontal
5135.0	-68.12	5.24	35.83	-37.53	-25	-12.53	Vertical
7702.5	-65.55	5.68	36.87	-34.36	-25	-9.36	Vertical
7702.5	-60.14	5.68	36.87	-28.95	-25	-3.95	Horizontal
182.0	-54.79	1.58	17.56	-38.81	-25	-13.81	Vertical
367.4	-50.95	1.45	16.58	-35.82	-25	-10.82	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	-66.51	5.23	35.82	-35.92	-25	-10.92	Horizontal
5020.0	-62.14	5.23	35.82	-31.55	-25	-6.55	Vertical
7530.0	-66.05	5.67	36.86	-34.86	-25	-9.86	Vertical
7530.0	-65.57	5.67	36.86	-34.38	-25	-9.38	Horizontal
206.5	-51.91	1.63	15.76	-37.78	-25	-12.78	Vertical
252.8	-51.92	1.71	15.44	-38.19	-25	-13.19	Horizontal
Test Results for Mid Channel 2535MHz							
5070.0	-66.98	5.23	35.82	-36.39	-25	-11.39	Horizontal
5070.0	-62.30	5.23	35.82	-31.71	-25	-6.71	Vertical
7605.0	-60.43	5.67	36.85	-29.25	-25	-4.25	Vertical
7605.0	-63.41	5.67	36.85	-32.23	-25	-7.23	Horizontal
198.9	-50.45	1.79	16.84	-35.39	-25	-10.39	Vertical
313.0	-47.27	1.71	17.64	-31.34	-25	-6.34	Horizontal
Test Results for High Channel 2560MHz							
5120.0	-63.62	5.24	35.83	-33.03	-25	-8.03	Horizontal
5120.0	-63.52	5.24	35.83	-32.93	-25	-7.93	Vertical
7680.0	-65.34	5.70	36.88	-34.16	-25	-9.16	Vertical
7680.0	-62.71	5.70	36.88	-31.53	-25	-6.53	Horizontal
195.5	-46.85	1.79	16.84	-31.79	-25	-6.79	Vertical
399.0	-50.68	1.71	17.64	-34.75	-25	-9.75	Horizontal

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 10.2V, Normal, DC 12V and High voltage, DC 13.8V.

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 5
- LTE Band 7

RESULTS

See the following pages.

10.3 LTE BAND 5

QPSK, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
10.2	836.5	6.6	0.007890	2.5
12	836.5	6.5	0.007770	2.5
13.8	836.5	4.7	0.005619	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 QPSK, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	836.5	7.1	0.008488	2.5
Extreme (50C)	836.5	6.4	0.007651	2.5
Extreme (40C)	836.5	7.0	0.008368	2.5
Extreme (30C)	836.5	6.8	0.008129	2.5
Extreme (10C)	836.5	6.5	0.007770	2.5
Extreme (0C)	836.5	6.2	0.007412	2.5
Extreme (-10C)	836.5	6.1	0.007292	2.5
Extreme (-20C)	836.5	6.3	0.007531	2.5
Extreme (-30C)	836.5	6.6	0.007890	2.5

16QAM, (10MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
10.2	836.5	6.6	0.007023	2.5
12	836.5	6.6	0.007839	2.5
13.8	836.5	4.9	0.005628	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 5 16QAM, (CH 20525 RB size 50 RB Offset 0 10MHz BANDWIDTH)				
Normal (25C)	836.5	6.7	0.007685	2.5
Extreme (50C)	836.5	5.8	0.006548	2.5
Extreme (40C)	836.5	6.6	0.007091	2.5
Extreme (30C)	836.5	6.4	0.007513	2.5
Extreme (10C)	836.5	5.2	0.006186	2.5
Extreme (0C)	836.5	5.4	0.006176	2.5
Extreme (-10C)	836.5	6.2	0.006490	2.5
Extreme (-20C)	836.5	6.5	0.007596	2.5
Extreme (-30C)	836.5	6.4	0.007284	2.5

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

10.4 LTE BAND 7

QPSK, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
10.2	2535	10.3	0.004065	2.5
12	2535	10.4	0.004103	2.5
13.8	2535	10.3	0.004065	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 QPSK, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	2535	9.9	0.003899	2.5
Extreme (50C)	2535	9.0	0.003534	2.5
Extreme (40C)	2535	8.4	0.003315	2.5
Extreme (30C)	2535	9.1	0.003578	2.5
Extreme (10C)	2535	7.9	0.003122	2.5
Extreme (0C)	2535	8.3	0.003257	2.5
Extreme (-10C)	2535	9.1	0.003579	2.5
Extreme (-20C)	2535	9.3	0.003655	2.5
Extreme (-30C)	2535	8.6	0.003397	2.5

16QAM, (20MHz BANDWIDTH)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
10.2	2535	6.8	0.002693	2.5
12	2535	6.0	0.002381	2.5
13.8	2535	5.8	0.002297	2.5

Frequency error vs. Temperature

Temperature [° C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
BAND 7 16QAM, (CH 21100 RB size 100 RB Offset 0 20MHz BANDWIDTH)				
Normal (25C)	2535	6.3	0.002472	2.5
Extreme (50C)	2535	6.0	0.002348	2.5
Extreme (40C)	2535	5.8	0.002295	2.5
Extreme (30C)	2535	6.4	0.002511	2.5
Extreme (10C)	2535	6.2	0.002428	2.5
Extreme (0C)	2535	5.5	0.002168	2.5
Extreme (-10C)	2535	5.3	0.002109	2.5
Extreme (-20C)	2535	6.3	0.002489	2.5
Extreme (-30C)	2535	5.8	0.002288	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.

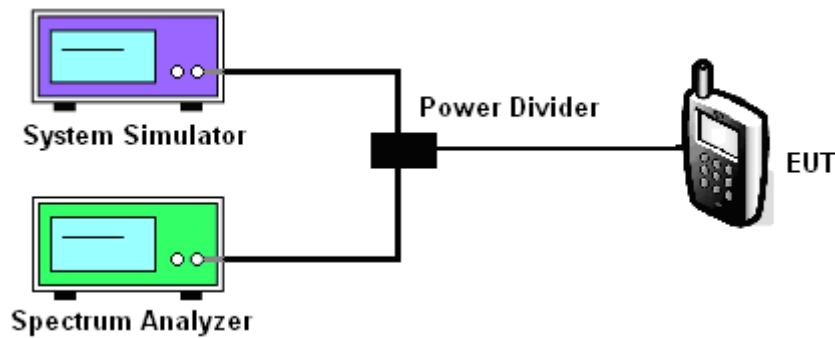
11.2 Measuring Instruments

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 5/7
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Test data reference attachment.

----END OF REPORT----