

FCC CFR47 PART 22H, 27 CERTIFICATION TEST REPORT FCC ID: 2ASHJPT7010E

Product: POS Terminal

Trade Mark: N/A

Model No.: PT7010

Family Model: PT7010E, PT7010S, PT7010M, PT7010MS,
PT7010T, PT7010ST, PT7010MT,
PT7010MST, PT7010MAC, PT7010F

Report No.: N26071501507E

Issue Date: Aug. 28, 2026

Prepared for

Tousei Anlinx Co.,Ltd.

Room901,Zhenhua Times Square,21 Heping Road LongHua
district,ShenzhenCity,China 518109

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.

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

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

TEST RESULT CERTIFICATION

Applicant's name: Tousei Anlinx Co.,Ltd.

Address: Room901,Zhenhua Times Square,21 Heping Road LongHua district,ShenzhenCity,China 518109

Manufacturer's Name: Tousei Anlinx Co.,Ltd.

Address: Room901,Zhenhua Times Square,21 Heping Road LongHua district,ShenzhenCity,China 518109

Product name.....: POS Terminal

Model and/or type reference ...: PT7010

Trade Mark.....: N/A

Family Model.....: PT7010E, PT7010S, PT7010M, PT7010MS, PT7010T, PT7010ST, PT7010MT, PT7010MST, PT7010MAC, PT7010F

Test Sample Number..... S2607160105-1#

Date of Test: Jul. 15, 2026 ~ Aug. 28, 2026

Standards.....: FCC CFR 47 Part 22H, 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.

This report shall not be reproduced except in full, without the written approval of NTEK, this document may be altered or revised by NTEK, personal only, and shall be noted in the revision of the document.

Prepared : Donjon Huang
By : Donjon Huang
(Project Engineer)

Reviewed : Aaron Cheng
By : Aaron Cheng
(Supervisor)

Approved : Alex Li
By : Alex Li
(Manager)

TABLE OF CONTENTS

1. GENERAL INFORMATION	5
1.1 PRODUCT DESCRIPTION	5
1.3 TEST METHODOLOGY	6
1.4 TEST FACILITY	6
MEASUREMENT UNCERTAINTY	6
1.5 SPECIAL ACCESSORIES	6
1.6 WORST-CASE CONFIGURATION AND MODE	6
1.7 SUMMARY OF TEST RESULTS	7
2. SYSTEM TEST CONFIGURATION	8
2.1 EUT CONFIGURATION	8
2.2 EUT EXERCISE	8
2.3 CONFIGURATION OF EUT SYSTEM	8
2.4 TEST SETUP	9
3. TEST AND MEASUREMENT EQUIPMENT	10
4. OUTPUT POWER	12
4.1 OUTPUT POWER MEASUREMENT	12
6. BANDEDGE AND EMISSION MASK	15
7.1 MEASUREMENT METHOD	18
8. RADIATED MEASUREMENT	19
8.1. RADIATED POWER (ERP & EIRP)	19
8.2 LTE BAND 5	20
8.3 LTE BAND 41	22
9. SPURIOUS RADIATION EMISSION	24
9.1 LTE BAND 5	27

9.2 LTE BAND 41	29
10. FREQUENCY STABILITY	31
10.1 LTE BAND 5	32
10.2 LTE BAND 41	34
11. PEAK-TO-AVERAGE RATIO	36
11.1 Description of the PAR Measurement	36
11.2 Measuring Instruments	36
11.3 Test Procedures	36
11.4 Test Setup	37

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	POS Terminal
Trade Mark	N/A
Model Name	PT7010
Family Model	PT7010E, PT7010S, PT7010M, PT7010MS, PT7010T, PT7010ST, PT7010MT, PT7010MST, PT7010MAC, PT7010F
Model Difference	All models have the same circuit and RF module, except for model names and appearance colors.
FCC ID:	2ASHJPT7010E
Frequency Bands:	U.S. Bands: ☒ LTE FDD Band 5 TDD Band 41
Frequency Range:	LTE FDD Band 5 Uplink: 824MHz-849MHz, Downlink: 869MHz-894MHz; LTE TDD Band 41 Uplink& Downlink: 2496MHz-2690MHz,
Type of Modulation:	QPSK/16QAM/64QAM(Only Downlink)
Power Class	Class 3
Antenna:	PIFA Antenna
Antenna gain:	B5: 0.99dBi; B41: 2.63dBi;
Adapter	Adapter 1 Model: SG-0503000U Input: 100-240V~50/60Hz 0.6A MAX Output: 5.0V---3.0A 15.0W Adapter 2 Model: FJ-SW20180902500D Input: 100-240V~50/60Hz 1.5A MAX Output: 9.0V---2.5A 22.5W
Battery	DC 3.7V, 7750mAh, 28.67Wh
Power supply	DC 3.7V from battery or DC 5V/9V from Adapter
Extreme Vol. Limits:	DC 3.33V to DC 4.07V (Nominal DC 3.7V) (Note 1)
HW Version	V1.00
SW Version	V1.00
Note1: The High Voltage DC 4.07V and Low Voltage 3.33V 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: 2ASHJPT7010E** filing to comply with the FCC Part 22H&24E&27&90S.

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, Part 90S, 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-1,

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 5/41

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.

1.7 SUMMARY OF TEST RESULTS

FCC Part22, Subpart H, FCC Part27 KDB 971168 D01 Power Meas License Digital Systems v03r01			
FCC Rule	Test Item	Verdict	Remark
2.1046	Conducted Output Power	PASS	
22.913(d) 27.50(d)(5) KDB 971168 D01 Clause 5.7	Peak-to-Average Ratio	PASS	
2.1049 22.917(b) KDB 971168 D01 Clause 4.2	Occupied Bandwidth	PASS	
2.1051 22.917(a) 27.53(g), (h), (m) 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) 27.53(g), (h), (m) KDB 971168 D01 Clause 7	Field Strength of Spurious Radiation	PASS	
2.1055 22.355 27.54 KDB 971168 D01 Clause 9	Frequency Stability for Temperature & Voltage	PASS	

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

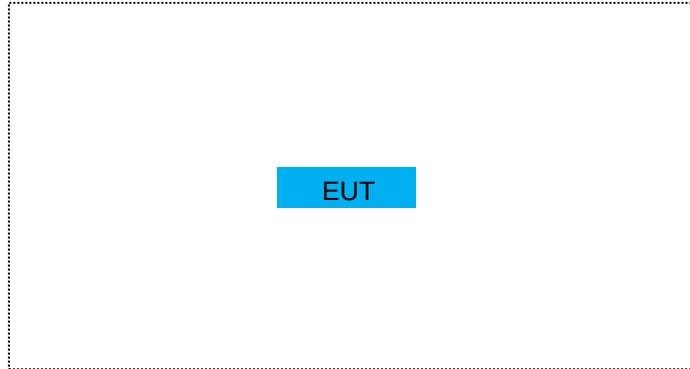
Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Note
1	POS Terminal	PT7010	FCC ID: 2ASHJPT7010E	EUT

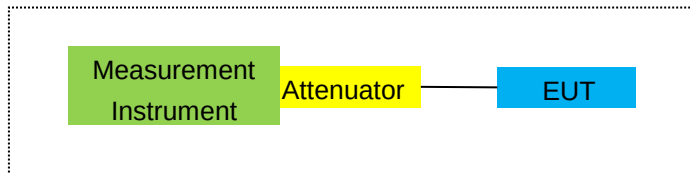
*Note: All the accessories have been used during the test.
the following "EUT" in setup diagram means EUT system.*

2.4 TEST SETUP

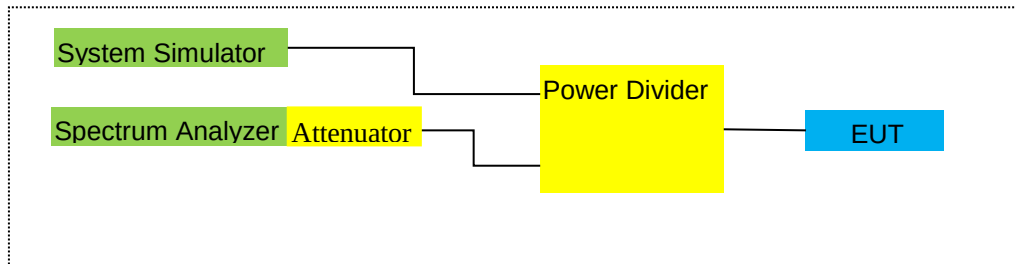
For Radiated Test Cases



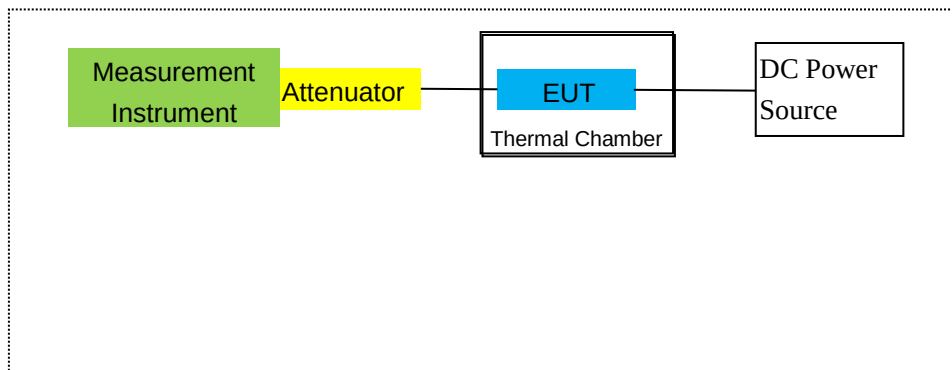
For Conducted Output Power



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	2026.04.08	2027.04.07	1 year
2	Test Receiver	R&S	ESPI3	101417	2025.07.23	2026.07.22	1 year
3	Log-Periodic Antenna	SCHWARZBECK	VULB 9162	584	2026.04.11	2027.04.10	3 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	2026.04.08	2027.04.07	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2026.04.08	2027.04.07	1 year
9	Power Meter	R&S	NRVS	100696	2026.04.08	2027.04.07	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2026.04.08	2027.04.07	1 year
11	Test Cable	N/A	R-01	N/A	2024.06.16	2027.06.15	3 year
12	Test Cable	N/A	R-02	N/A	2024.06.16	2027.06.15	3 year
13	Test Cable	N/A	R-03	N/A	2024.06.16	2027.06.15	3 year
14	Test Receiver	R&S	ESCI	101160	2026.04.08	2027.04.07	1 year
15	LISN	R&S	ENV216	101313	2026.04.08	2027.04.07	1 year
16	LISN	EMCO	3816/2	00042990	2026.04.08	2027.04.07	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2026.04.08	2027.04.07	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2026.04.08	2027.04.07	1 year
19	Test Cable	N/A	C01	N/A	2024.05.06	2027.05.05	3 year
20	Test Cable	N/A	C02	N/A	2024.05.06	2027.05.05	3 year
21	Test Cable	N/A	C03	N/A	2024.05.06	2027.05.05	3 year
22	Attenuator	MCE	24-10-34	BN9258	2026.04.08	2027.04.07	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2026.04.08	2027.04.07	1 year
24	test receiver	R&S	ESCI	a0304218	2026.04.08	2027.04.07	1 year
25	Communication Tester	R&S	CMU200	A0304247	2026.04.08	2027.04.07	1 year

26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2026.04.08	2027.04.07	1 year
27	DC Power Source	N/A	PS-6005D	20170402923	2024.05.06	2027.05.05	3 year
28	MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2026.04.08	2027.04.07	1 year
29	Communication Tester	R&S	CMW500	148500	2026.04.27	2027.04.26	1 year
30	Log-Periodic Antenna	SCHWARZBECK	VULB 9168	1742	2025.11.01	2026.10.31	1 year
31	Horn Antenna	SCHWARZBECK	BBHA 9120D	2816	2024.05.18	2027.05.17	3 year
32	PSG Analog Signal Generator	Agilent	E8257D	MY51110112	2026.04.27	2027.04.26	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	raditeq	RadiMation	2023.1.3	RadiatedTest

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".

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

Band 5/41

RESULTS

PASS

Test data reference attachment.

6. BANDEDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53,

FCC: §22.359

LIMITS

FCC: §22.917, §24.238, §27.53

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

(m)(4) For mobile digital stations, 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 as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. Show citation box.

(c)(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC: §90.691 Emission mask requirements for EA-based systems.

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$

decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

90.543 (e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the 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, in accordance with the following:

(1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations.

(2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.

(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.

(4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

90.543 (f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

—

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 resolution bandwidth to at least 1% of emission bandwidth.

MODES TESTED

Band 5/41

RESULTS

Test data reference attachment.

7. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238, §27.53 and §90.691

LIMITS

1. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.
2. The Band 7/41 emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $55 + 10 \log (P)$ dB.

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 RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

MODES TESTED

Band 5/41

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.

8. RADIATED MEASUREMENT

8.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50 and §90.635

LIMITS:

22.913(a) - 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 and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

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. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

90.635(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

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

Band 5/41

RESULTS

Pass

8.2 LTE BAND 5

Radiated Power (ERP) for Band 5											
Mode	RB/RB SIZE	Frequency	Result							Limit (W)	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP		
1.4MHz Band QPSK	6/0	824.7	19.41	2.01	5.30	2.15	20.55	113.501	Horizontal	7	Pass
		836.5	19.31	2.01	5.30	2.15	20.45	110.917	Horizontal	7	Pass
		848.3	19.29	2.02	5.70	2.15	20.82	120.781	Horizontal	7	Pass
3.0MHz Band QPSK	15/0	825.5	19.64	2.01	5.30	2.15	20.78	119.674	Horizontal	7	Pass
		836.5	19.62	2.01	5.30	2.15	20.76	119.124	Horizontal	7	Pass
		847.5	19.72	2.02	5.70	2.15	21.25	133.352	Horizontal	7	Pass
5.0MHz Band QPSK	25/0	826.5	19.67	2.01	5.30	2.15	20.81	120.504	Horizontal	7	Pass
		836.5	20.13	2.01	5.30	2.15	21.27	133.968	Horizontal	7	Pass
		846.5	18.85	2.02	5.70	2.15	20.38	109.144	Horizontal	7	Pass
10.0MHz Band QPSK	50/0	829	19.81	2.01	5.30	2.15	20.95	124.451	Horizontal	7	Pass
		836.5	19.55	2.01	5.30	2.15	20.69	117.220	Horizontal	7	Pass
		844	19.49	2.02	5.70	2.15	21.02	126.474	Horizontal	7	Pass
1.4MHz Band QPSK	6/0	824.7	17.98	2.01	5.30	2.15	19.12	81.658	Vertical	7	Pass
		836.5	18.02	2.01	5.30	2.15	19.16	82.414	Vertical	7	Pass
		848.3	17.43	2.02	5.70	2.15	18.96	78.705	Vertical	7	Pass
3.0MHz Band QPSK	15/0	825.5	18.45	2.01	5.30	2.15	19.59	90.991	Vertical	7	Pass
		836.5	18.15	2.01	5.30	2.15	19.29	84.918	Vertical	7	Pass
		847.5	18.20	2.02	5.70	2.15	19.73	93.972	Vertical	7	Pass
5.0MHz Band QPSK	25/0	826.5	18.58	2.01	5.30	2.15	19.72	93.756	Vertical	7	Pass
		836.5	18.65	2.01	5.30	2.15	19.79	95.280	Vertical	7	Pass
		846.5	16.95	2.02	5.70	2.15	18.48	70.469	Vertical	7	Pass
10.0MHz Band QPSK	50/0	829	18.07	2.01	5.30	2.15	19.21	83.368	Vertical	7	Pass
		836.5	17.77	2.01	5.30	2.15	18.91	77.804	Vertical	7	Pass
		844	18.39	2.02	5.70	2.15	19.92	98.175	Vertical	7	Pass

Radiated Power (ERP) for Band 5											
Mode	RB/RB SIZE	Frequency	Result							Limit (W)	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dB)	Correction (dB)	Max. ERP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. ERP		
1.4MHz Band 16 QAM	6/0	824.7	19.12	2.01	5.30	2.15	20.26	106.170	Horizontal	7	Pass
		836.5	18.48	2.01	5.30	2.15	19.62	91.622	Horizontal	7	Pass
		848.3	17.90	2.02	5.70	2.15	19.43	87.700	Horizontal	7	Pass
3.0MHz Band 16 QAM	15/0	825.5	18.48	2.01	5.30	2.15	19.62	91.622	Horizontal	7	Pass
		836.5	18.80	2.01	5.30	2.15	19.94	98.628	Horizontal	7	Pass
		847.5	18.19	2.02	5.70	2.15	19.72	93.756	Horizontal	7	Pass
5.0MHz Band 16 QAM	25/0	826.5	19.16	2.01	5.30	2.15	20.30	107.152	Horizontal	7	Pass
		836.5	18.85	2.01	5.30	2.15	19.99	99.770	Horizontal	7	Pass
		846.5	18.21	2.02	5.70	2.15	19.74	94.189	Horizontal	7	Pass
10.0MHz Band 16 QAM	50/0	829	18.75	2.01	5.30	2.15	19.89	97.499	Horizontal	7	Pass
		836.5	18.83	2.01	5.30	2.15	19.97	99.312	Horizontal	7	Pass
		844	17.96	2.02	5.70	2.15	19.49	88.920	Horizontal	7	Pass
1.4MHz Band 16 QAM	6/0	824.7	17.88	2.01	5.30	2.15	19.02	79.799	Vertical	7	Pass
		836.5	17.42	2.01	5.30	2.15	18.56	71.779	Vertical	7	Pass
		848.3	16.45	2.02	5.70	2.15	17.98	62.806	Vertical	7	Pass
3.0MHz Band 16 QAM	15/0	825.5	16.55	2.01	5.30	2.15	17.69	58.749	Vertical	7	Pass
		836.5	17.52	2.01	5.30	2.15	18.66	73.451	Vertical	7	Pass
		847.5	16.27	2.02	5.70	2.15	17.80	60.256	Vertical	7	Pass
5.0MHz Band 16 QAM	25/0	826.5	17.29	2.01	5.30	2.15	18.43	69.663	Vertical	7	Pass
		836.5	17.37	2.01	5.30	2.15	18.51	70.958	Vertical	7	Pass
		846.5	16.92	2.02	5.70	2.15	18.45	69.984	Vertical	7	Pass
10.0MHz Band 16 QAM	50/0	829	17.32	2.01	5.30	2.15	18.46	70.146	Vertical	7	Pass
		836.5	17.44	2.01	5.30	2.15	18.58	72.111	Vertical	7	Pass
		844	16.06	2.02	5.70	2.15	17.59	57.412	Vertical	7	Pass

Note:

SG Level= Signal generator output

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

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

ERP(dBm)=EIRP-2.15

8.3 LTE BAND 41

Radiated Power (EIRP) for Band 41										
Mode	RB/RB SIZE	Frequency	Result						Limit (W)	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dBi)	Max. EIRP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. EIRP		
5.0MHz Band QPSK	25/0	2557.50	18.16	4.54	9.00	22.62	182.810	Horizontal	2	Pass
		2605.00	18.06	4.69	9.00	22.37	172.584	Horizontal	2	Pass
		2652.50	18.09	4.71	9.00	22.38	172.982	Horizontal	2	Pass
10.0MHz Band QPSK	50/0	2560.00	17.90	4.55	9.00	22.35	171.791	Horizontal	2	Pass
		2605.00	17.66	4.69	9.00	21.97	157.398	Horizontal	2	Pass
		2650.00	17.63	4.72	9.00	21.91	155.239	Horizontal	2	Pass
15.0MHz Band QPSK	75/0	2562.50	17.19	4.55	9.00	21.64	145.881	Horizontal	2	Pass
		2605.00	17.84	4.69	9.00	22.15	164.059	Horizontal	2	Pass
		2647.50	17.40	4.72	9.00	21.68	147.231	Horizontal	2	Pass
20.0MHz Band QPSK	100/0	2565.00	17.50	4.57	9.00	21.93	155.955	Horizontal	2	Pass
		2605.00	18.32	4.73	9.00	22.59	181.552	Horizontal	2	Pass
		2645.00	18.14	4.75	9.00	22.39	173.380	Horizontal	2	Pass
5.0MHz Band QPSK	25/0	2557.50	17.08	4.54	9.00	21.54	142.561	Vertical	2	Pass
		2605.00	16.32	4.69	9.00	20.63	115.611	Vertical	2	Pass
		2652.50	16.13	4.71	9.00	20.42	110.154	Vertical	2	Pass
10.0MHz Band QPSK	50/0	2560.00	16.51	4.55	9.00	20.96	124.738	Vertical	2	Pass
		2605.00	16.46	4.69	9.00	20.77	119.399	Vertical	2	Pass
		2650.00	16.32	4.72	9.00	20.60	114.815	Vertical	2	Pass
15.0MHz Band QPSK	75/0	2562.50	15.91	4.55	9.00	20.36	108.643	Vertical	2	Pass
		2605.00	16.67	4.69	9.00	20.98	125.314	Vertical	2	Pass
		2647.50	16.22	4.72	9.00	20.50	112.202	Vertical	2	Pass
20.0MHz Band QPSK	100/0	2565.00	16.21	4.57	9.00	20.64	115.878	Vertical	2	Pass
		2605.00	17.03	4.73	9.00	21.30	134.896	Vertical	2	Pass
		2645.00	16.29	4.75	9.00	20.54	113.240	Vertical	2	Pass

Radiated Power (EIRP) for Band 41										
Mode	RB/RB SIZE	Frequency	Result						Limit (W)	Conclusion
			SG Level (dBm)	Cable Loss (dBm)	Antenna Factor (dBi)	Max. EIRP Average (dBm)	Max. ERP Average (mW)	Polarization Of Max. EIRP		
5.0MHz Band 16 QAM	25/0	2557.50	17.05	4.54	9.00	21.51	141.579	Horizontal	2	Pass
		2605.00	16.67	4.69	9.00	20.98	125.314	Horizontal	2	Pass
		2652.50	17.33	4.71	9.00	21.62	145.211	Horizontal	2	Pass
10.0MHz Band 16 QAM	50/0	2560.00	16.45	4.55	9.00	20.90	123.027	Horizontal	2	Pass
		2605.00	16.35	4.69	9.00	20.66	116.413	Horizontal	2	Pass
		2650.00	16.94	4.72	9.00	21.22	132.434	Horizontal	2	Pass
15.0MHz Band 16 QAM	75/0	2562.50	16.77	4.55	9.00	21.22	132.434	Horizontal	2	Pass
		2605.00	16.53	4.69	9.00	20.84	121.339	Horizontal	2	Pass
		2647.50	16.54	4.72	9.00	20.82	120.781	Horizontal	2	Pass
20.0MHz Band 16 QAM	100/0	2565.00	16.84	4.57	9.00	21.27	133.968	Horizontal	2	Pass
		2605.00	17.34	4.73	9.00	21.61	144.877	Horizontal	2	Pass
		2645.00	16.56	4.75	9.00	20.81	120.504	Horizontal	2	Pass
5.0MHz Band 16 QAM	25/0	2557.50	15.27	4.54	9.00	19.73	93.972	Vertical	2	Pass
		2605.00	15.33	4.69	9.00	19.64	92.045	Vertical	2	Pass
		2652.50	15.99	4.71	9.00	20.28	106.660	Vertical	2	Pass
10.0MHz Band 16 QAM	50/0	2560.00	15.30	4.55	9.00	19.75	94.406	Vertical	2	Pass
		2605.00	14.71	4.69	9.00	19.02	79.799	Vertical	2	Pass
		2650.00	15.76	4.72	9.00	20.04	100.925	Vertical	2	Pass
15.0MHz Band 16 QAM	75/0	2562.50	15.45	4.55	9.00	19.90	97.724	Vertical	2	Pass
		2605.00	14.60	4.69	9.00	18.91	77.804	Vertical	2	Pass
		2647.50	14.83	4.72	9.00	19.11	81.470	Vertical	2	Pass
20.0MHz Band 16 QAM	100/0	2565.00	14.88	4.57	9.00	19.31	85.310	Vertical	2	Pass
		2605.00	15.66	4.73	9.00	19.93	98.401	Vertical	2	Pass
		2645.00	15.03	4.75	9.00	19.28	84.723	Vertical	2	Pass

Note:

SG Level= Signal generator output

Max. EIRP Average (dBm)= Antenna 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: §2.1053, §22.917, §24.238, §27.53 and §90.691

LIMIT

§22.917 (e) and §24.238 and §90.691 (a): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

§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.

90.543 (e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the 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, in accordance with the following:

- (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations.
- (2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
- (3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.
- (4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.
- (5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

90.543 (f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

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 5/41

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)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
1649.4	-79.77	2.78	27.50	-55.05	-13	-42.05	Horizontal
1649.4	-75.32	2.78	27.50	-50.60	-13	-37.60	Vertical
2474.1	-72.35	2.90	27.80	-47.45	-13	-34.45	Vertical
2474.1	-72.46	2.90	27.80	-47.56	-13	-34.56	Horizontal
Test Results For Mid Channel 836.5MHz							
1673	-77.40	2.78	27.48	-52.70	-13	-39.70	Horizontal
1673	-78.15	2.78	27.48	-53.45	-13	-40.45	Vertical
2509.5	-72.92	2.91	27.70	-48.13	-13	-35.13	Vertical
2509.5	-74.11	2.91	27.70	-49.32	-13	-36.32	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-75.33	2.78	27.43	-50.68	-13	-37.68	Horizontal
1696.6	-77.86	2.78	27.43	-53.21	-13	-40.21	Vertical
2544.9	-73.10	2.92	27.74	-48.28	-13	-35.28	Vertical
2544.9	-72.33	2.92	27.74	-47.51	-13	-34.51	Horizontal

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

Test Results for Low Channel 824.7MHz							
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (MHz)
1649.4	-76.77	2.78	27.50	-52.05	-13	-39.05	Horizontal
1649.4	-77.77	2.78	27.50	-53.05	-13	-40.05	Vertical
2474.1	-74.78	2.90	27.80	-49.88	-13	-36.88	Vertical
2474.1	-75.00	2.90	27.80	-50.10	-13	-37.10	Horizontal
Test Results for Mid Channel 836.5MHz							
1673	-75.89	2.78	27.48	-51.19	-13	-38.19	Horizontal
1673	-76.75	2.78	27.48	-52.05	-13	-39.05	Vertical
2509.5	-72.09	2.91	27.70	-47.30	-13	-34.30	Vertical
2509.5	-73.79	2.91	27.70	-49.00	-13	-36.00	Horizontal
Test Results for High Channel 848.3MHz							
1696.6	-77.36	2.78	27.43	-52.71	-13	-39.71	Horizontal
1696.6	-75.25	2.78	27.43	-50.60	-13	-37.60	Vertical
2544.9	-74.44	2.92	27.74	-49.62	-13	-36.62	Vertical
2544.9	-73.99	2.92	27.74	-49.17	-13	-36.17	Horizontal

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

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

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

9.2 LTE BAND 41

QPSK EIRP POWER FOR LTE BAND 41 (5MHZ BANDWIDTH)

Test Results for Low Channel 2598.5MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5125	-56.40	2.63	27.26	-31.77	-25	-6.77	Horizontal
5125	-57.63	2.63	27.26	-33.00	-25	-8.00	Vertical
7687.5	-59.92	2.67	27.58	-35.01	-25	-10.01	Vertical
7687.5	-61.87	2.67	27.58	-36.96	-25	-11.96	Horizontal
Test Results for Mid Channel 2593MHz							
5205	-54.31	2.62	27.28	-29.65	-25	-4.65	Horizontal
5205	-56.50	2.62	27.28	-31.84	-25	-6.84	Vertical
7807.5	-56.76	2.85	27.62	-31.99	-25	-6.99	Vertical
7807.5	-55.10	2.85	27.62	-30.33	-25	-5.33	Horizontal
Test Results for High Channel 2697.5MHz							
5285	-53.82	2.64	27.28	-29.18	-25	-4.18	Horizontal
5285	-54.52	2.64	27.28	-29.88	-25	-4.88	Vertical
7927.5	-59.52	2.85	27.70	-34.67	-25	-9.67	Vertical
7927.5	-55.18	2.85	27.70	-30.33	-25	-5.33	Horizontal

QPSK EIRP POWER FOR LTE BAND 41 (20MHZ BANDWIDTH)

Test Results for Low Channel 2506MHz							
Frequency(MHz)	SG Level(dBm)	Cable Loss(dB)	Antenna Gain(dB)	Absolute Level(dBm)	Limit (dBm)	Margin(dBm)	Polarity
5140	-54.48	2.63	27.30	-29.81	-25	-4.81	Horizontal
5140	-55.37	2.63	27.30	-30.70	-25	-5.70	Vertical
7710	-56.68	2.67	27.62	-31.73	-25	-6.73	Vertical
7710	-58.52	2.67	27.62	-33.57	-25	-8.57	Horizontal
Test Results for Mid Channel 2593MHz							
5205	-57.37	2.62	27.33	-32.66	-25	-7.66	Horizontal
5205	-57.68	2.62	27.33	-32.97	-25	-7.97	Vertical
7807.5	-54.93	2.85	27.67	-30.11	-25	-5.11	Vertical
7807.5	-54.79	2.85	27.67	-29.97	-25	-4.97	Horizontal
Test Results for High Channel 2680MHz							
5270	-55.00	2.64	27.33	-30.31	-25	-5.31	Horizontal
5270	-55.52	2.64	27.33	-30.83	-25	-5.83	Vertical
7905	-60.73	2.85	27.67	-35.91	-25	-10.91	Vertical
7905	-54.86	2.85	27.67	-30.04	-25	-5.04	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, §90.213

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 3.29V, Normal, DC 3.87V and High voltage, DC 4.45V.

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 5/41

RESULTS

See the following pages.

10.1 LTE BAND 5

Band 5 QPSK, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.33	836.5	15	0.017932	2.5
3.7	836.5	15	0.017932	2.5
4.07	836.5	8	0.009564	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	26	0.031082	2.5
Extreme (50C)	836.5	0	0.000000	2.5
Extreme (40C)	836.5	6	0.007173	2.5
Extreme (30C)	836.5	23	0.027496	2.5
Extreme (10C)	836.5	25	0.029886	2.5
Extreme (0C)	836.5	8	0.009564	2.5
Extreme (-10C)	836.5	24	0.028691	2.5
Extreme (-20C)	836.5	17	0.020323	2.5
Extreme (-30C)	836.5	2	0.002391	2.5

Band 5 16QAM, (10MHz BANDWIDTH RB size 50 RB Offset 0)

Frequency error vs. Voltage

Voltage [Vdc]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
3.33	836.5	10	0.011955	2.5
3.7	836.5	10	0.011955	2.5
4.07	836.5	14	0.016736	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	836.5	1	0.001195	2.5
Extreme (50C)	836.5	23	0.027496	2.5
Extreme (40C)	836.5	5	0.005977	2.5
Extreme (30C)	836.5	26	0.031082	2.5
Extreme (10C)	836.5	22	0.026300	2.5
Extreme (0C)	836.5	2	0.002391	2.5
Extreme (-10C)	836.5	3	0.003586	2.5
Extreme (-20C)	836.5	26	0.031082	2.5
Extreme (-30C)	836.5	15	0.017932	2.5

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

10.2 LTE BAND 41

Band 41 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]
3.33	2605	23	0.008829	2.5
3.7	2605	2	0.000768	2.5
4.07	2605	16	0.006142	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2605	10	0.003839	2.5
Extreme (50C)	2605	24	0.009213	2.5
Extreme (40C)	2605	5	0.001919	2.5
Extreme (30C)	2605	2	0.000768	2.5
Extreme (10C)	2605	20	0.007678	2.5
Extreme (0C)	2605	2	0.000768	2.5
Extreme (-10C)	2605	8	0.003071	2.5
Extreme (-20C)	2605	15	0.005758	2.5
Extreme (-30C)	2605	20	0.007678	2.5

Band 41 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]
3.33	2605	8	0.003071	2.5
3.7	2605	24	0.009213	2.5
4.07	2605	23	0.008829	2.5

Frequency error vs. Temperature

Temperature [°C]	Frequency [MHz]	Frequency* Error[Hz]	Frequency Error[ppm]	Limit [ppm]
Normal (25C)	2605	6	0.002303	2.5
Extreme (50C)	2605	17	0.006526	2.5
Extreme (40C)	2605	4	0.001536	2.5
Extreme (30C)	2605	11	0.004223	2.5
Extreme (10C)	2605	5	0.001919	2.5
Extreme (0C)	2605	1	0.000384	2.5
Extreme (-10C)	2605	18	0.006910	2.5
Extreme (-20C)	2605	5	0.001919	2.5
Extreme (-30C)	2605	23	0.008829	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.

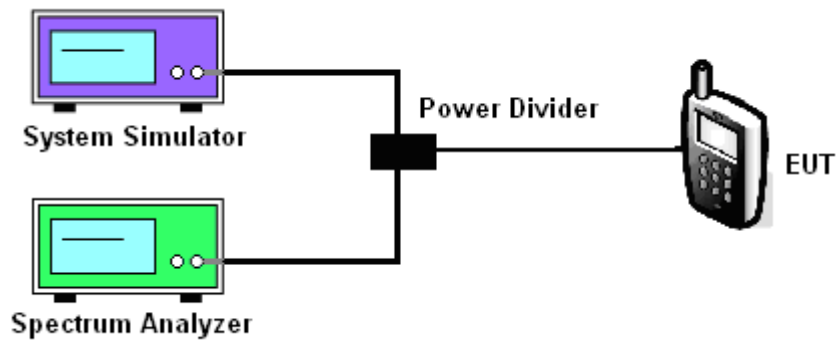
11.2 Measuring Instruments

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 LTE 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 5/41

Test data reference attachment.

----END OF REPORT----