FCC RF Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT1921-6, XT1921-1
FCC ID	:	IHDT56XC1
STANDARD	:	FCC 47 CFR Part 2, 27
CLASSIFICATION	:	PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Dec. 20, 2017 and completely tested on Jan. 29, 2018. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-E and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG7D2018-03D	Rev. 01	Initial issue of report	Feb. 23, 2018

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
3.5	-	Peak-to-Average Ratio	<13dB	N/A	Reporting only
3.6	§27.50 (a)(3)	EIRP Power Density	EIRP < 250mW/5MHz	PASS	-
3.7	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.8	§2.1051 §27.53 (a)(4)	Conducted Band Edge Measurement	Refer standard	PASS	-
3.9	§2.1051 §27.53 (a)(4)	Conducted Spurious Emission	< $70+10\log_{10}$(P[Watts])	PASS	-
3.10	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Within the band	PASS	-
4.4	§2.1053 §27.53 (a)(4)	Radiated Spurious Emission	< $70+10\log_{10}$(P[Watts])	PASS	Under limit 3.96 dB at 6942.000 MHz

1 General Description

1.1 Applicant

Motorola Mobility LLC
222 W. Merchandise Mart Plaza, Chicago IL 60654, USA

1.2 Manufacturer

Motorola Mobility LLC
222 W. Merchandise Mart Plaza, Chicago IL 60654, USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT1921-6, XT1921-1
FCC ID	IHDT56XC1
IMEI Code	351838090014992 (for Radiation) 351838090015965 (for Conducted)
EUT supports Radios application	CDMA/EV-DO/GSM/EGPRS/WCDMA/HSPA/LTE/FM/GNSS WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 Bluetooth BR/EDR/LE
HW Version	DVT1B
EUT Stage	Identical Prototype

Accessory List	
AC Adapter 1	Brand Name : Motorola
	Model Name : C-P35
AC Adapter 2	Brand Name : Motorola
	Model Name : SSW-2919UMTJ C-P35 SPN5945A
AC Adapter 3	Brand Name : Motorola
	Model Name : C-P56
AC Adapter 4	Brand Name : Motorola
	Model Name : C-P56
Battery	Brand Name : Motorola
	Model Name : GK40
USB Cable	Brand Name : Saibao
	Model Name : SWT-A083A

1.4 Product Specification of Equipment Under Test

Product Feature	
Tx Frequency	LTE Band 30 : 2305 MHz ~ 2315 MHz
Rx Frequency	LTE Band 30 : 2350 MHz ~ 2360 MHz
Bandwidth	5MHz / 10MHz
Maximum Output Power to Antenna	LTE Band 30 : 23.15 dBm
Antenna Gain	LTE Band 30 : 0.578 dBi
Type of Modulation	QPSK / 16QAM

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Emission Designator

LTE Band 30		QPSK			16QAM		
BW (MHz)	**Frequency Range (MHz)**	**Emission Designator (99%OBW)**	**Frequency Tolerance (ppm)**	**Maximum Conducted power(W)**	**Emission Designator (99%OBW)**	**Frequency Tolerance (ppm)**	**Maximum Conducted power(W)**
5	2307.5 ~ 2312.5	4M51G7D	-	0.2343	4M49W7D	-	0.1725
10	2310.0	9M09G7D	0.0063	0.2359	9M03W7D	-	0.1798

1.7 Testing Site

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	TH05-HY

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	03CH11-HY

1.8 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 2, Part 27(D)
- ANSI / TIA -603-E
- FCC KDB 971168 Power Meas License Digital Systems D01 v03
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

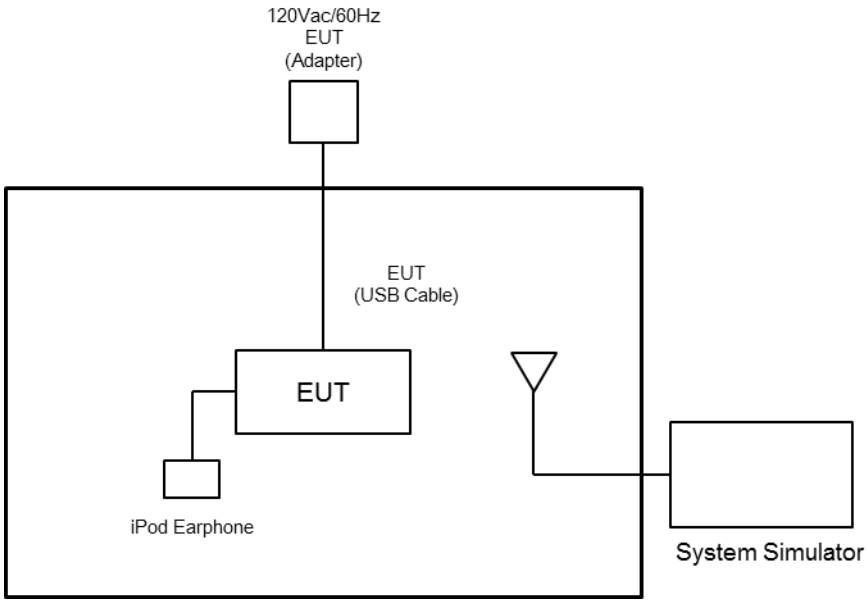
2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03 with maximum output power.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

Conducted Test Cases	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	30	-	-	v	v	-	-	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	30	-	-			-	-								
E.I.R.P PSD	30	-	-		v	-	-	v	v	v			v	v	v
26dB and 99% Bandwidth	30	-	-	v	v	-	-	v	v			v	v	v	v
Conducted Band Edge	30	-	-	v	v	-	-	v	v	v		v	v		v
Conducted Spurious Emission	30	-	-	v	v	-	-	v	v	v			v	v	v
Frequency Stability	30	-	-	v	v	-	-	v				v		v	
Radiated Spurious Emission	30	Worst case											v	v	v
Note	1. The mark "v" means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. All the radiated test cases were performed with Adapter 1.														

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0m	N/A

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Offset = RF cable loss + attenuator factor.
Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :
Offset(dB) = RF cable loss(dB) + attenuator factor(dB).
= 4.2 + 10 = 14.2 (dB)

2.5 Frequency List of Low/Middle/High Channels

LTE Band 30 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
10	Channel	-	27710	-
	Frequency	-	2310	-
5	Channel	27685	27710	27735
	Frequency	2307.5	2310	2312.5

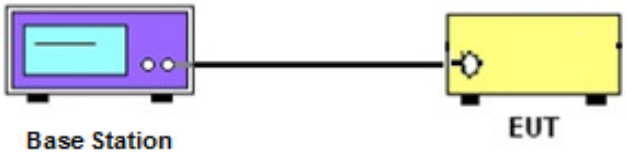
3 Conducted Test Items

3.1 Measuring Instruments

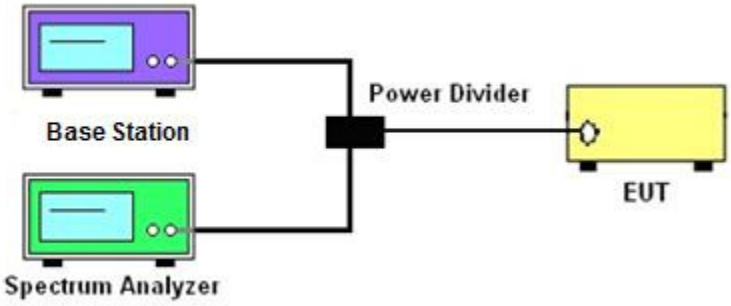
See list of measuring instruments of this test report.

3.2 Test Setup

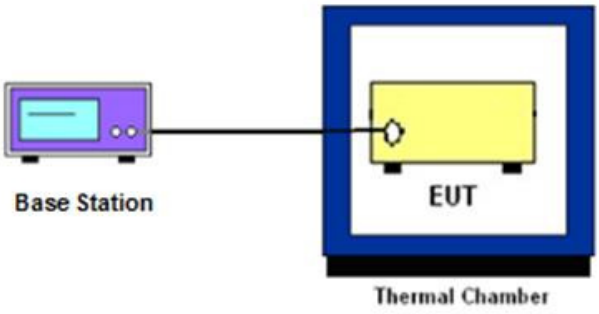
3.2.1 Conducted Output Power



3.2.2 Peak-to-Average Ratio, Occupied / 26dB Bandwidth ,Band-Edge and Conducted Spurious Emission



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power Measurement

3.4.1 Description of the Conducted Output Power Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

3.4.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.5.2 Test Procedures

1. The testing follows FCC KDB 971168 v03 Section 5.7.1.
2. The EUT was connected to spectrum and system simulator via a power divider.
3. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
4. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
5. Record the deviation as Peak to Average Ratio.

3.6 EIRP Power Density

3.6.1 Description of EIRP Power Density

For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, *except that* for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

3.6.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 5.7.1.
2. Set instrument center frequency to OBW center frequency.
3. Set span to at least 1.5 times the OBW.
4. Set the RBW to the specified reference bandwidth (5MHz).
5. Set VBW ≥ 3 × RBW.
6. Detector = RMS (power averaging).
7. Ensure that the number of measurement points in the sweep ≥ 2 × span/RBW.
8. Sweep time = auto couple.
9. Employ trace averaging (RMS) mode over a minimum of 100 traces.
10. Use the peak marker function to determine the maximum amplitude level within the reference bandwidth (PSD).

3.7 Occupied Bandwidth

3.7.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

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

3.7.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 4.1 and 4.2.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
4. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
5. Set the detection mode to peak, and the trace mode to max hold.
6. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace. (this is the reference value)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “–X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.8 Conducted Band Edge Measurement

3.8.1 Description of Conducted Band Edge Measurement

27.53 (a)(4)

For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

(i) By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than 55 + 10 log (P) dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337 MHz;

(ii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300 MHz, 61 + 10 log (P) dB on all frequencies between 2292 and 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz;

(iii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.

3.8.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.

   Example:

   The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

   = P(W)- [43 + 10log(P)] (dB)

   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.

3.9 Conducted Spurious Emission Measurement

3.9.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 70 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 9 kHz up to a frequency including its 10^{th} harmonic.

3.9.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. 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.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
7. Set spectrum analyzer with RMS detector.
8. Taking the record of maximum spurious emission.
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
10. The limit line is derived from 70 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [70 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [70 + 10log(P)] (dB)
    = -40dBm

3.10 Frequency Stability Measurement

3.10.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

3.10.2 Test Procedures for Temperature Variation

11. The testing follows FCC KDB 971168 v02r02 Section 9.0.
12. The EUT was set up in the thermal chamber and connected with the system simulator.
13. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
14. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.10.3 Test Procedures for Voltage Variation

15. The testing follows FCC KDB 971168 v02r02 Section 9.0.
16. The EUT was placed in a temperature chamber at 20±5° C and connected with the system simulator.
17. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
18. The variation in frequency was measured for the worst case.

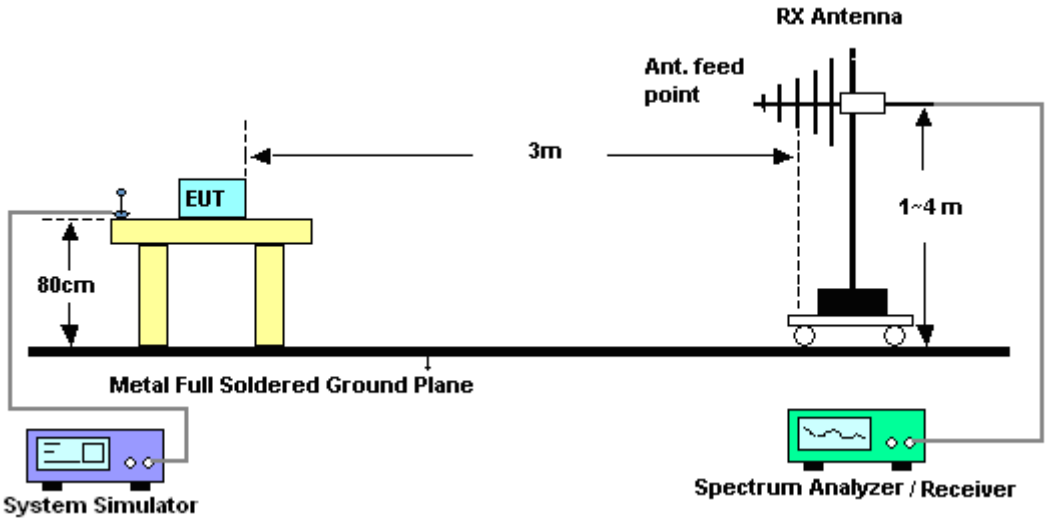
4 Radiated Test Items

4.1 Measuring Instruments

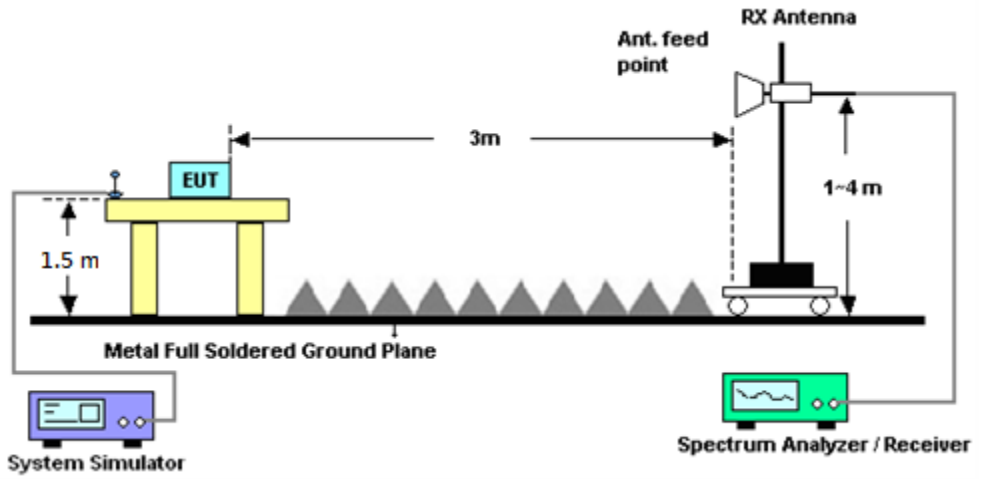
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

4.4 Radiated Spurious Emission Measurement

4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-D-2010. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 70 + 10 log (P) dB.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI / TIA-603-D-2010 Section 2.2.12.
2. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
   EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
   ERP (dBm) = EIRP - 2.15
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
    The limit line is derived from 70 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [70 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [70 + 10log(P)] (dB)
    = -40dBm.

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LTE Base Station	Anritsu	MT8820C	6201432821	GSM/GPRS /WCDMA/LTE	Oct. 13, 2017	Jan. 03, 2018 ~ Jan. 29, 2018	Oct. 12, 2018	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Nov. 07, 2017	Jan. 03, 2018 ~ Jan. 29, 2018	Nov. 06, 2018	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV30	100895	9kHz~30GHz	Apr. 25, 2017	Jan. 03, 2018 ~ Jan. 29, 2018	Apr. 24, 2018	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SH-641	92013720	-30℃~70℃	Aug. 28, 2017	Jan. 03, 2018 ~ Jan. 29, 2018	Aug. 27, 2018	Conducted (TH05-HY)
Programmable Power Supply	GW Instek	PSS-2005	EL890001	1V~20V 0.5A~5A	Oct. 06, 2017	Jan. 03, 2018 ~ Jan. 29, 2018	Oct. 05, 2018	Conducted (TH05-HY)
Coupler	Warison	1-18GHz 20dB 25WSMA Dir	#B	1G~18GHz	Feb. 20, 2017	Jan. 03, 2018 ~ Jan. 29, 2018	Feb. 19, 2018	Conducted (TH05-HY)
Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz,VSWR : 2.5:1 max	Jul. 18, 2017	Jan. 17, 2018 ~ Jan. 22, 2018	Jul. 17, 2018	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D&N-6-06	35414&AT-N0602	30MHz~1GHz	Oct. 14, 2017	Jan. 17, 2018 ~ Jan. 22, 2018	Oct. 13, 2018	Radiation (03CH13-HY)
Amplifier	Sonoma-Instrument	310 N	187282	9KHz~1GHz	Dec. 21, 2016	Jan. 17, 2018 ~ Jan. 22, 2018	Dec. 20, 2018	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1241	1GHz ~ 18GHz	Jun. 15, 2017	Jan. 17, 2018 ~ Jan. 22, 2018	Jun. 14, 2018	Radiation (03CH13-HY)
Preamplifier	MITEQ	AMF-7D-00101 800-30-10P	1590074	1GHz~18GHz	May 22, 2017	Jan. 17, 2018 ~ Jan. 22, 2018	May 21, 2018	Radiation (03CH13-HY)
Spectrum Analyzer	Keysight	N9010A	MY55370526	10Hz~44GHz	Mar. 15, 2017	Jan. 17, 2018 ~ Jan. 22, 2018	Mar. 14, 2018	Radiation (03CH13-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Jan. 17, 2018 ~ Jan. 22, 2018	N/A	Radiation (03CH13-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Jan. 17, 2018 ~ Jan. 22, 2018	N/A	Radiation (03CH13-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz- 40GHz	Nov. 10, 2017	Jan. 17, 2018 ~ Jan. 22, 2018	Nov. 09, 2018	Radiation (03CH13-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170584	18GHz- 40GHz	Nov. 27, 2017	Jan. 17, 2018 ~ Jan. 22, 2018	Nov. 26, 2018	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1522	1G~18GHz	Mar. 17, 2017	Jan. 17, 2018 ~ Jan. 22, 2018	Mar. 16, 2018	Radiation (03CH13-HY)
Signal Generator	Rohde & Schwarz	SMF100A	101107	100kHz~40GHz	May 22, 2017	Jan. 17, 2018 ~ Jan. 22, 2018	May 21, 2018	Radiation (03CH13-HY)
Preamplifier	Keysight	83017A	MY53270264	1GHz ~ 26.5GHz	Dec. 05, 2017	Jan. 17, 2018 ~ Jan. 22, 2018	Dec. 04, 2018	Radiation (03CH13-HY)

6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.07**

Uncertainty of Radiated Emission Measurement (1 GMHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.48**

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.92**

Appendix A. Test Results of Conducted Test

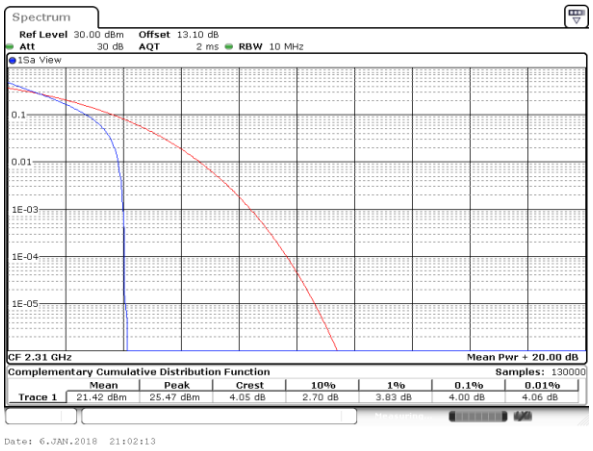
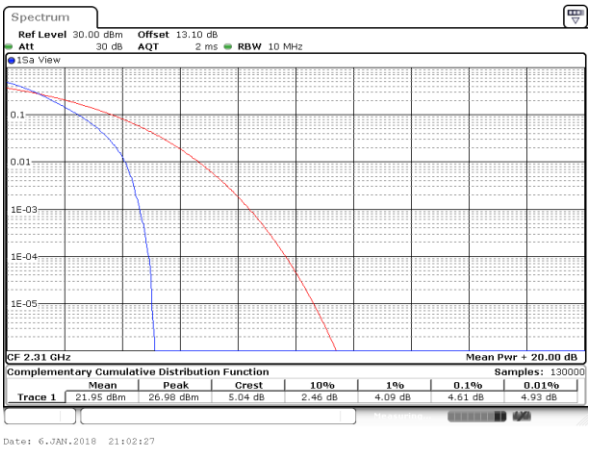
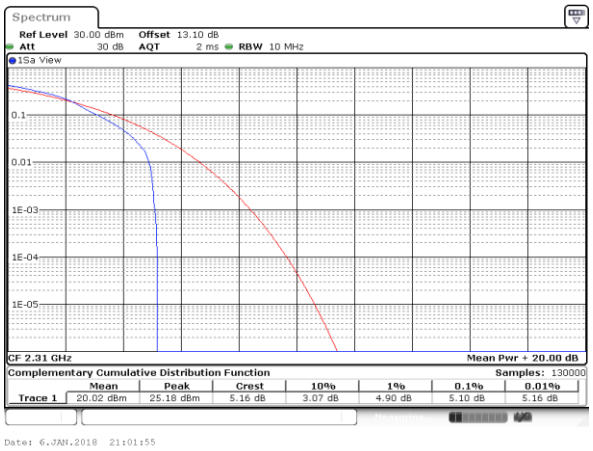
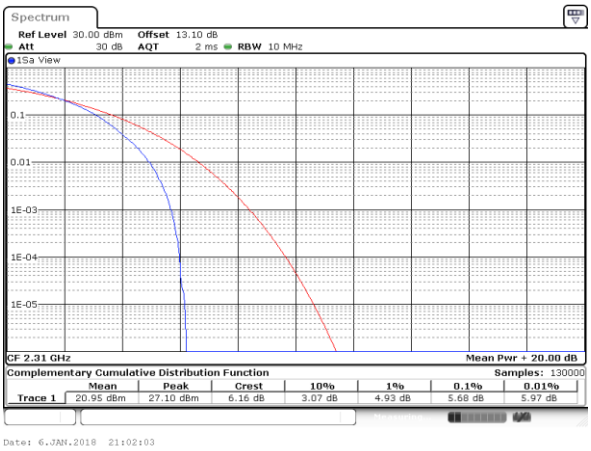
Conducted Output Power(Average power)

LTE Band 30 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	-	23.13	-
10	1	25			**23.15**	
10	1	49			22.94	
10	25	0			22.23	
10	25	12			22.03	
10	25	25			22.04	
10	50	0			22.14	
10	1	0	16-QAM		21.91	
10	1	25			21.97	
10	1	49			21.85	
10	25	0			21.23	
10	25	12			20.97	
10	25	25			21.08	
10	50	0			21.09	
5	1	0	QPSK	22.70	22.93	22.83
5	1	12		23.06	23.05	23.08
5	1	24		22.73	22.89	23.12
5	12	0		22.12	22.19	22.26
5	12	7		22.02	22.12	22.08
5	12	13		21.98	22.01	22.08
5	25	0		22.10	22.15	22.13
5	1	0	16-QAM	21.55	21.56	21.53
5	1	12		21.68	21.79	21.64
5	1	24		21.64	21.68	21.52
5	12	0		21.08	21.16	21.08
5	12	7		21.03	21.00	20.97
5	12	13		20.93	21.07	20.84
5	25	0		20.95	21.11	21.11

A2. LTE Band 30

Peak-to-Average Ratio

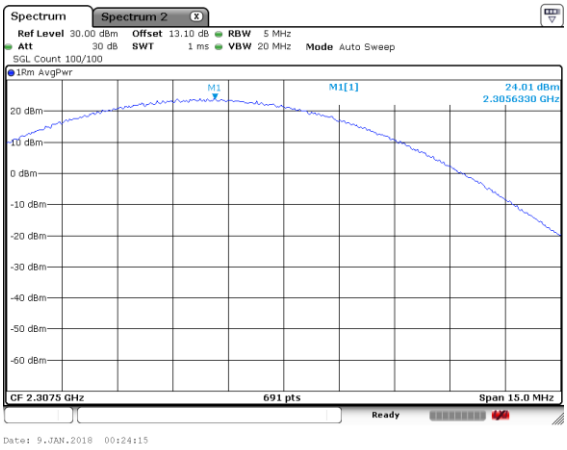
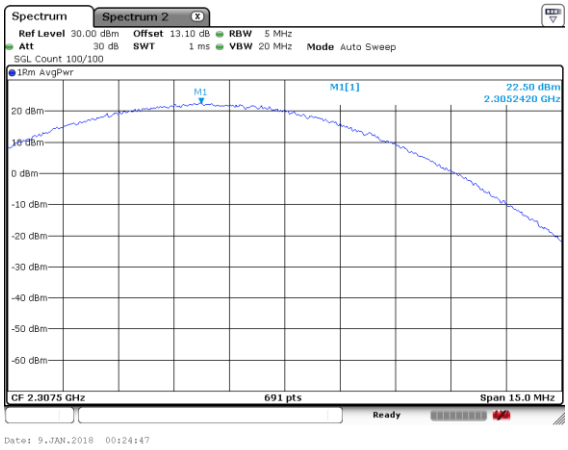
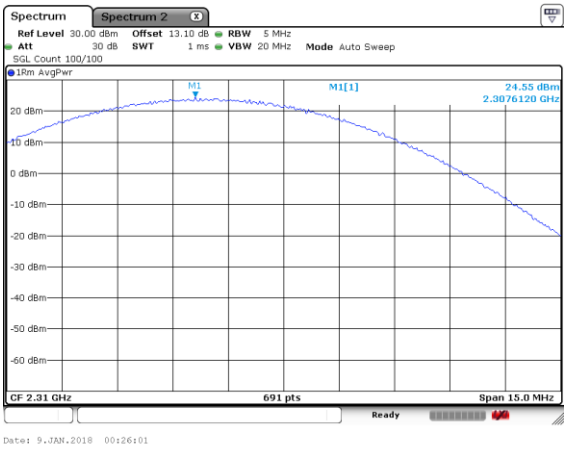
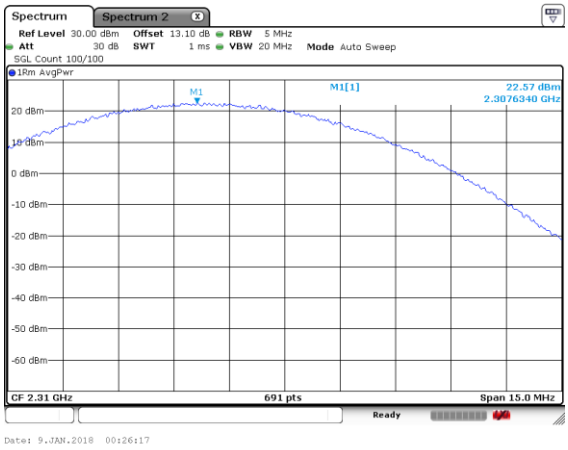
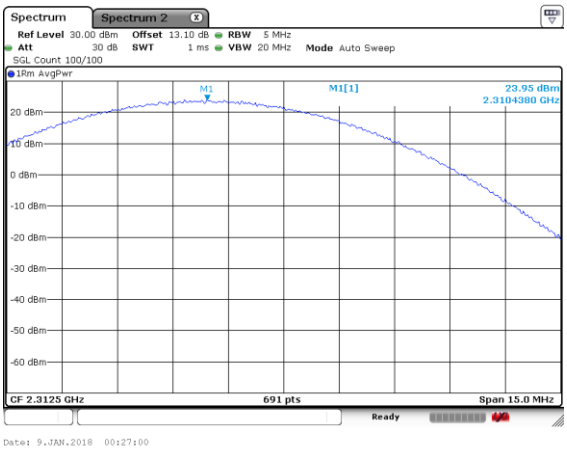
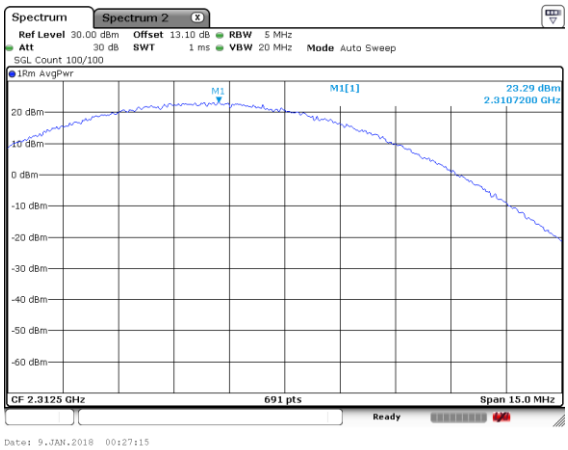
Mode	LTE Band 30 / 10MHz				
Mod.	QPSK		16QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Lowest CH	-	-	-	-	PASS
Middle CH	4	4.61	5.1	5.68	
Highest CH	-	-	-	-	

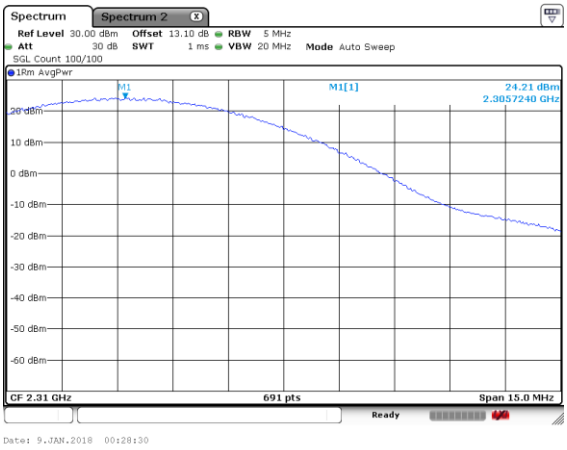
LTE Band 30 / 10MHz / QPSK	
Middle Channel / 1RB	**Middle Channel / Full RB**
	
LTE Band 30 / 10MHz / 16QAM	
Middle Channel / 1RB	**Middle Channel / Full RB**
	

EIRP Power Density

Mode	LTE Band 30 : Conducted Power Density (dBm/5MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	24.01	22.5	-	-	-	-	-	-
Middle CH	-	-	-	-	24.55	22.57	24.21	23.25	-	-	-	-
Highest CH	-	-	-	-	23.95	23.29	-	-	-	-	-	-

Mode	LTE Band 30 : EIRP Power Density (dBm/5MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	20.57	19.06	-	-	-	-	-	-
Middle CH	-	-	-	-	21.11	19.13	20.77	19.81	-	-	-	-
Highest CH	-	-	-	-	20.51	19.85	-	-	-	-	-	-
Antenna Gain	-3.44 dBi											
Limit	250mW / 5MHz = 24dBm / 5MHz											
Result	Pass											

LTE Band 30 / 5MHz	
Lowest Channel / 5MHz / 1RB0 / QPSK	**Lowest Channel / 5MHz / 1RB0 / 16QAM**
	
Middle Channel / 5MHz / 1RB0 / QPSK	**Middle Channel / 5MHz / 1RBmax / 16QAM**
	
Highest Channel / 5MHz / Full RB / QPSK	**Highest Channel / 5MHz / Full RB / 16QAM**
	

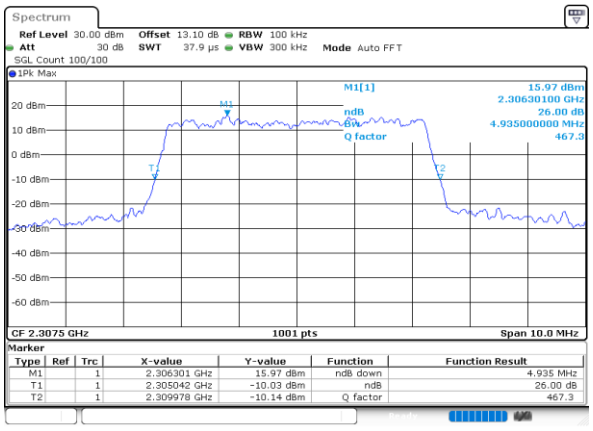
LTE Band 30 / 10MHz	
Lowest Channel / 10MHz / 1RB0 / QPSK	**Lowest Channel / 10MHz / 1RB0 / 16QAM**
	

26dB Bandwidth

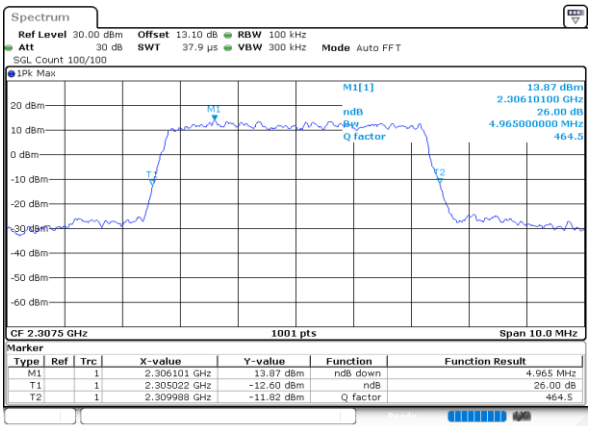
Mode	LTE Band 30 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	4.94	4.97	-	-	-	-	-	-
Middle CH	-	-	-	-	4.95	4.95	9.73	9.75	-	-	-	-
Highest CH	-	-	-	-	4.98	4.92	-	-	-	-	-	-

LTE Band 30

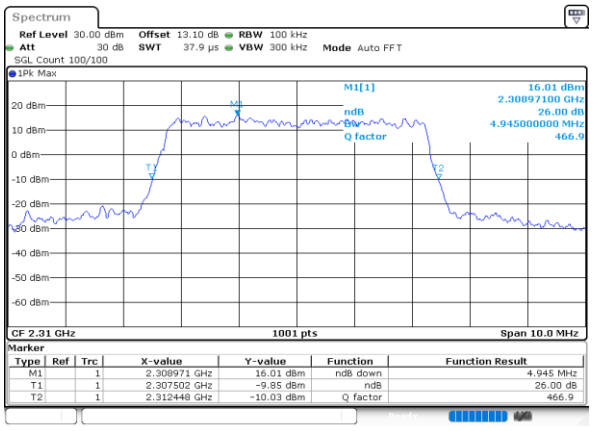
Lowest Channel / 5MHz / QPSK



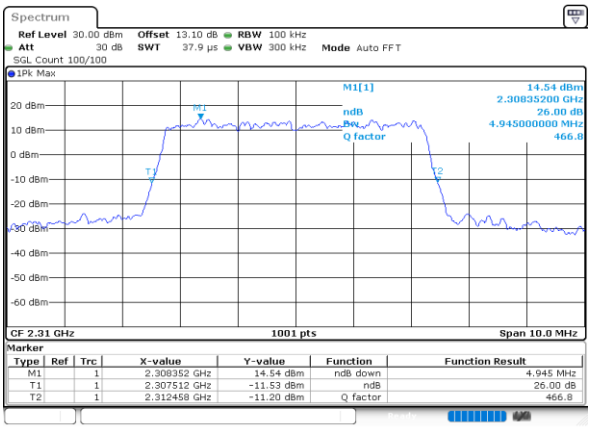
Lowest Channel / 5MHz / 16QAM



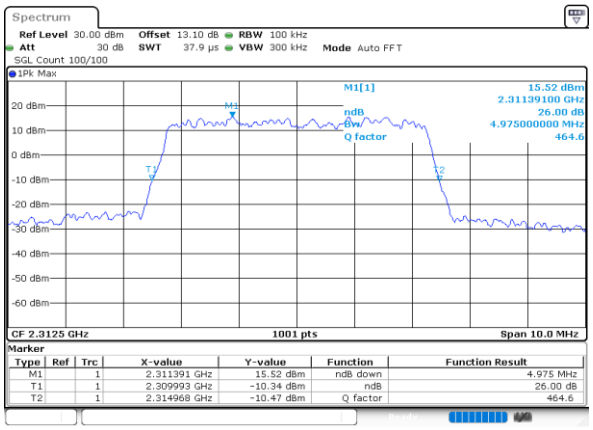
Middle Channel / 5MHz / QPSK



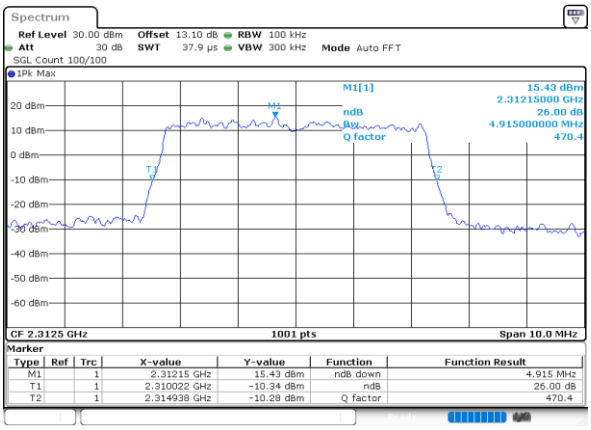
Middle Channel / 5MHz / 16QAM



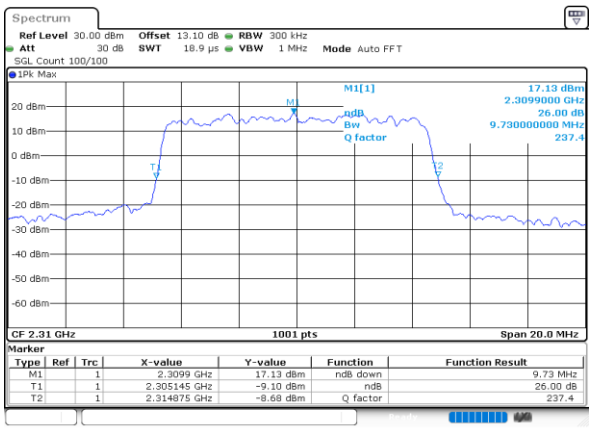
Highest Channel / 5MHz / QPSK

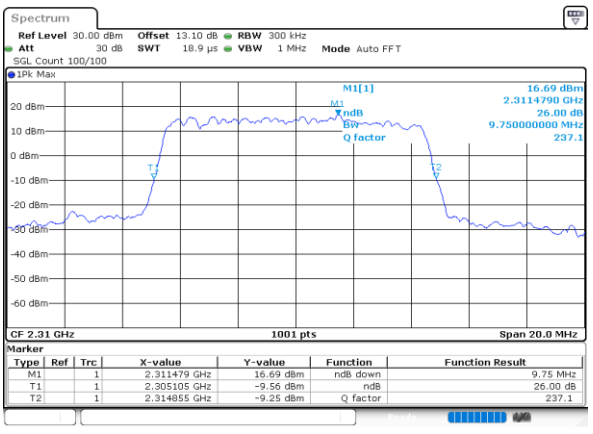


Highest Channel / 5MHz / 16QAM



LTE Band 30	
Middle Channel / 10MHz / QPSK	**Middle Channel / 10MHz / 16QAM**



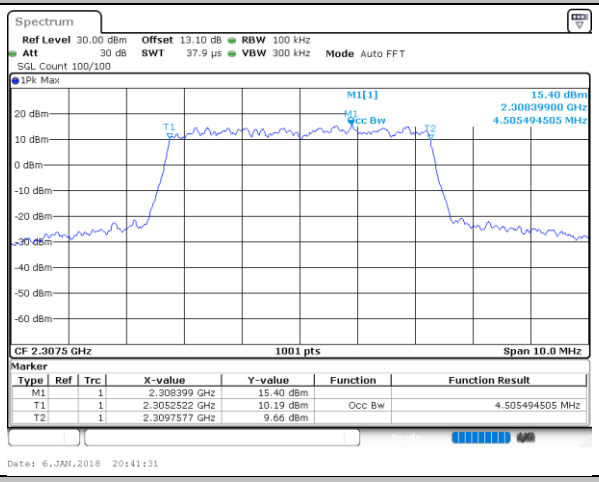


Occupied Bandwidth

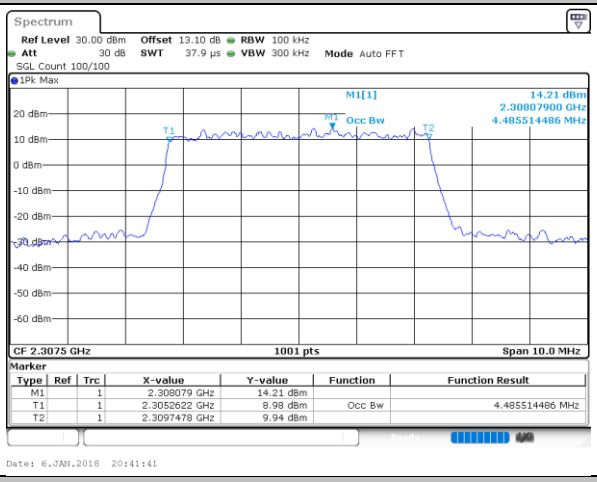
Mode	LTE Band 30 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH	-	-	-	-	4.51	4.49	-	-	-	-	-	-
Middle CH	-	-	-	-	4.49	4.49	9.09	9.03	-	-	-	-
Highest CH	-	-	-	-	4.48	4.47	-	-	-	-	-	-

LTE Band 30

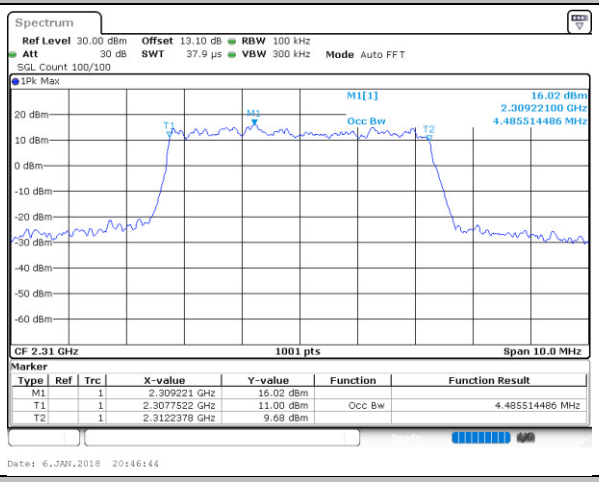
Lowest Channel / 5MHz / QPSK



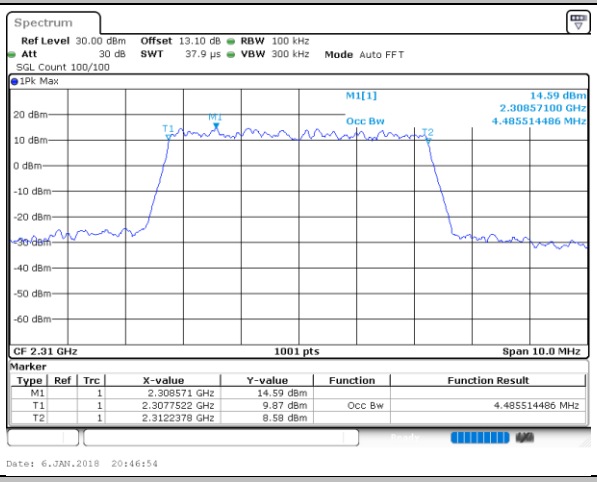
Lowest Channel / 5MHz / 16QAM



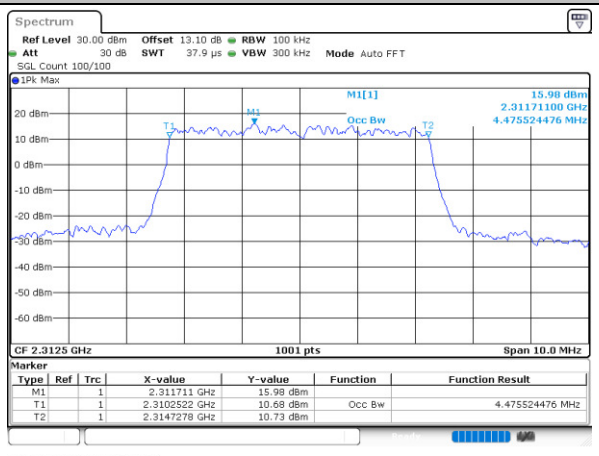
Middle Channel / 5MHz / QPSK



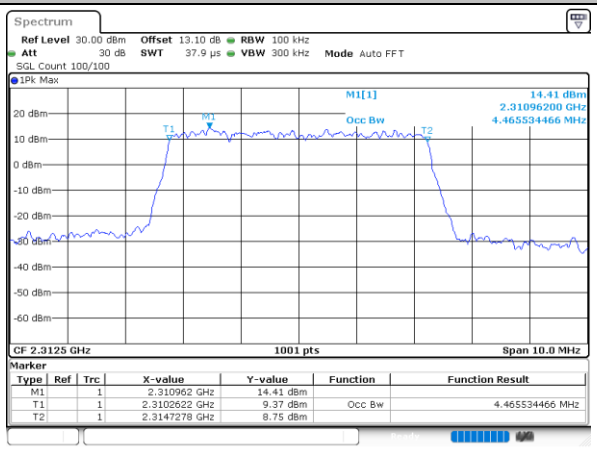
Middle Channel / 5MHz / 16QAM

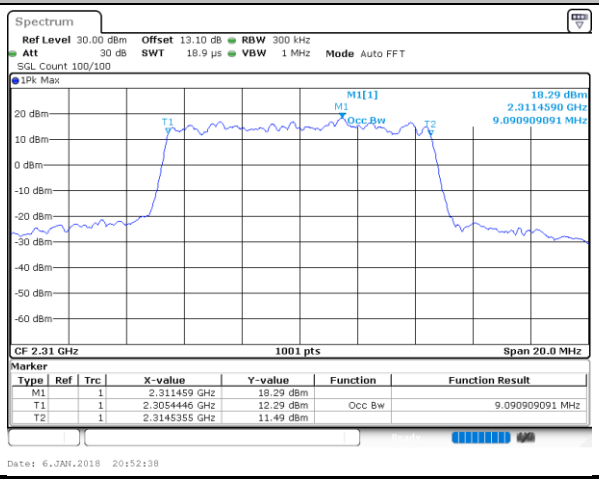
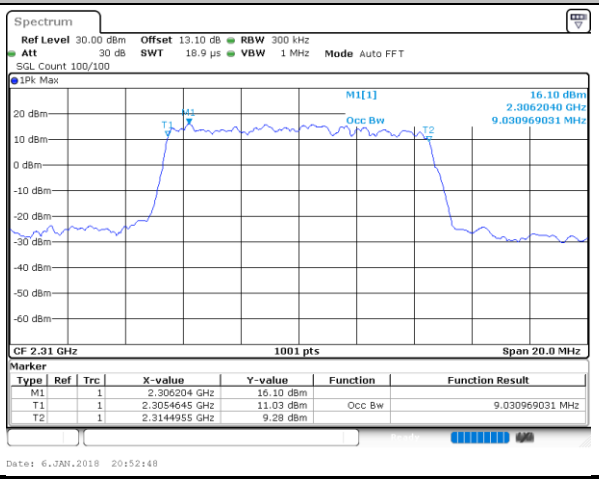


Highest Channel / 5MHz / QPSK



Highest Channel / 5MHz / 16QAM

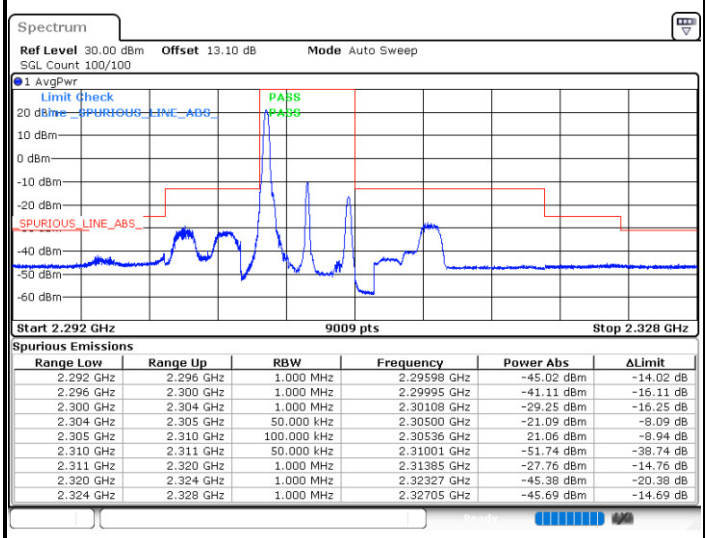


LTE Band 30	
Middle Channel / 10MHz / QPSK	**Middle Channel / 10MHz / 16QAM**
	

Conducted Band Edge

LTE Band 30 / 5MHz / QPSK

Lowest Band Edge / 1 RB

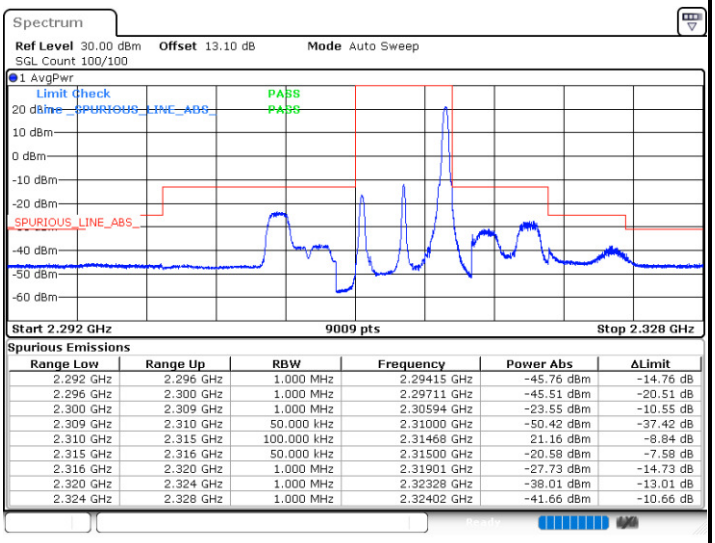


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29598 GHz	-45.02 dBm	-14.02 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29995 GHz	-41.11 dBm	-16.11 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30108 GHz	-29.25 dBm	-16.25 dB
2.304 GHz	2.305 GHz	50.000 kHz	2.30500 GHz	-21.09 dBm	-8.09 dB
2.305 GHz	2.310 GHz	100.000 kHz	2.30536 GHz	21.06 dBm	-8.94 dB
2.310 GHz	2.311 GHz	50.000 kHz	2.31001 GHz	-51.74 dBm	-38.74 dB
2.311 GHz	2.320 GHz	1.000 MHz	2.31385 GHz	-27.76 dBm	-14.76 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32327 GHz	-45.38 dBm	-20.38 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32705 GHz	-45.69 dBm	-14.69 dB

Date: 6.JAN.2018 20:43:09

Highest Band Edge / 1 RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29415 GHz	-45.76 dBm	-14.76 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29711 GHz	-45.51 dBm	-20.51 dB
2.300 GHz	2.309 GHz	1.000 MHz	2.30594 GHz	-23.55 dBm	-10.55 dB
2.309 GHz	2.310 GHz	50.000 kHz	2.31000 GHz	-50.42 dBm	-37.42 dB
2.310 GHz	2.315 GHz	100.000 kHz	2.31468 GHz	21.16 dBm	-8.84 dB
2.315 GHz	2.316 GHz	50.000 kHz	2.31500 GHz	-20.58 dBm	-7.58 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31901 GHz	-27.73 dBm	-14.73 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32328 GHz	-38.01 dBm	-13.01 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32402 GHz	-41.66 dBm	-10.66 dB

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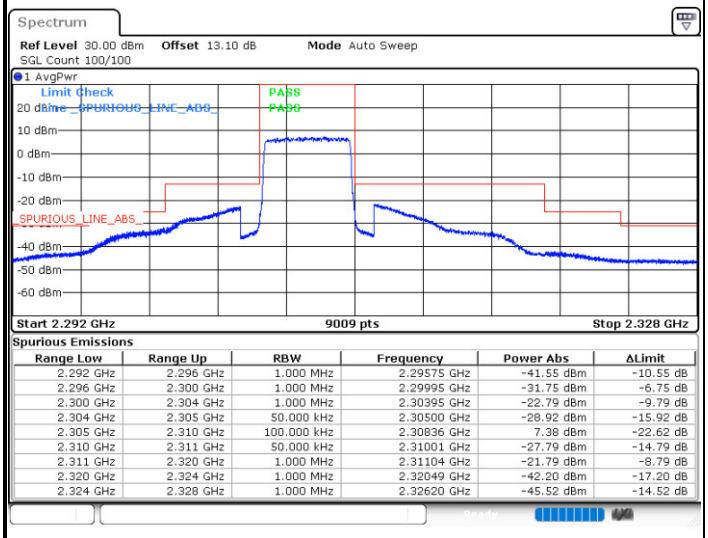
Lowest Band Edge / Full RB

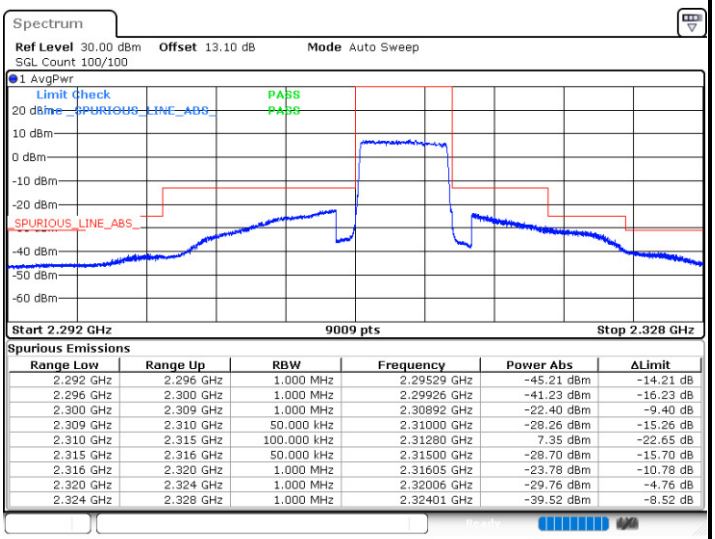


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29575 GHz	-41.55 dBm	-10.55 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29995 GHz	-31.75 dBm	-6.75 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30395 GHz	-22.79 dBm	-9.79 dB
2.304 GHz	2.305 GHz	50.000 kHz	2.30500 GHz	-28.92 dBm	-15.92 dB
2.305 GHz	2.310 GHz	100.000 kHz	2.30836 GHz	7.38 dBm	-22.62 dB
2.310 GHz	2.311 GHz	50.000 kHz	2.31001 GHz	-27.79 dBm	-14.79 dB
2.311 GHz	2.320 GHz	1.000 MHz	2.31104 GHz	-21.79 dBm	-8.79 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32049 GHz	-42.20 dBm	-17.20 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32620 GHz	-45.52 dBm	-14.52 dB

Date: 6.JAN.2018 20:45:26

Highest Band Edge / Full RB



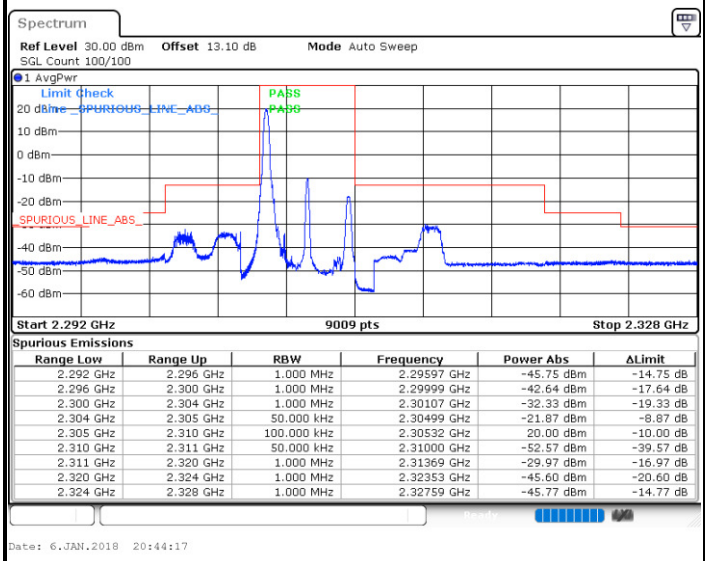
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29529 GHz	-45.21 dBm	-14.21 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29926 GHz	-41.23 dBm	-16.23 dB
2.300 GHz	2.309 GHz	1.000 MHz	2.30892 GHz	-22.40 dBm	-9.40 dB
2.309 GHz	2.310 GHz	50.000 kHz	2.31000 GHz	-28.26 dBm	-15.26 dB
2.310 GHz	2.315 GHz	100.000 kHz	2.31280 GHz	7.35 dBm	-22.65 dB
2.315 GHz	2.316 GHz	50.000 kHz	2.31500 GHz	-28.70 dBm	-15.70 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31605 GHz	-23.78 dBm	-10.78 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32006 GHz	-29.76 dBm	-4.76 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32401 GHz	-39.52 dBm	-8.52 dB

Date: 6.JAN.2018 20:51:19

LTE Band 30 / 5MHz / 16QAM

Lowest Band Edge / 1RB

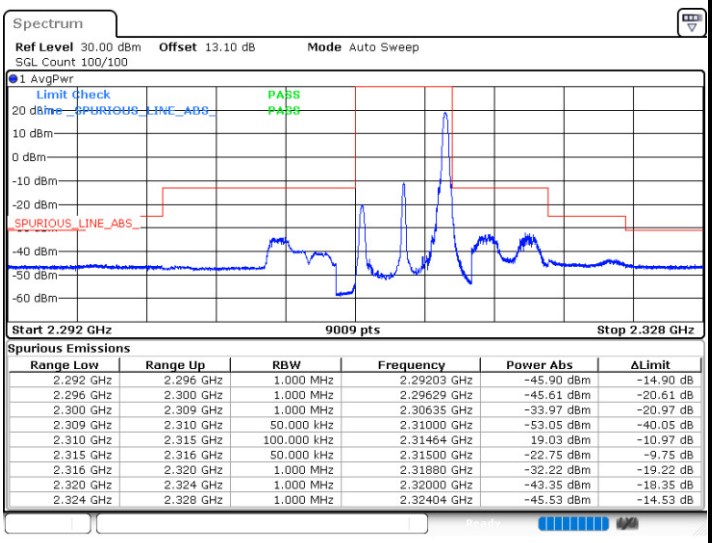


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29597 GHz	-45.75 dBm	-14.75 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29999 GHz	-42.64 dBm	-17.64 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30107 GHz	-32.33 dBm	-19.33 dB
2.304 GHz	2.305 GHz	50.000 kHz	2.30499 GHz	-21.87 dBm	-8.87 dB
2.305 GHz	2.310 GHz	100.000 kHz	2.30532 GHz	20.00 dBm	-10.00 dB
2.310 GHz	2.311 GHz	50.000 kHz	2.31000 GHz	-52.57 dBm	-39.57 dB
2.311 GHz	2.320 GHz	1.000 MHz	2.31369 GHz	-29.97 dBm	-16.97 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32353 GHz	-45.60 dBm	-20.60 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32759 GHz	-45.77 dBm	-14.77 dB

Date: 6.JAN.2018 20:44:17

Highest Band Edge / 1 RB

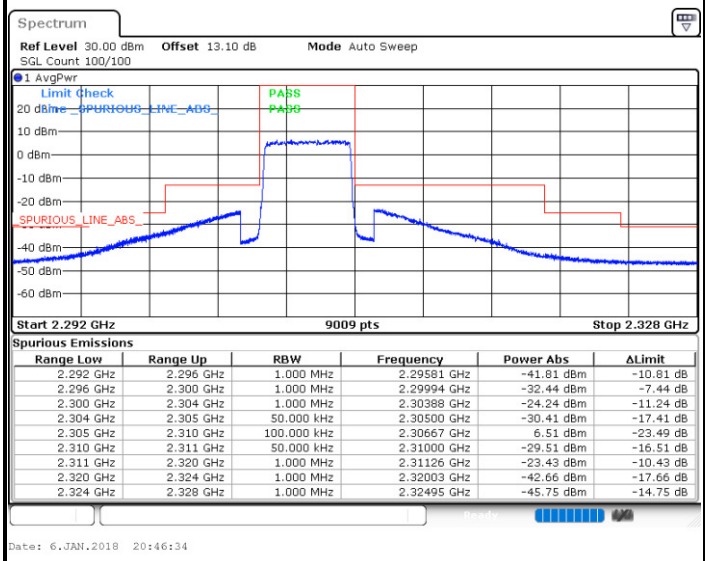


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29203 GHz	-45.90 dBm	-14.90 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29629 GHz	-45.61 dBm	-20.61 dB
2.300 GHz	2.309 GHz	1.000 MHz	2.30635 GHz	-33.97 dBm	-20.97 dB
2.309 GHz	2.310 GHz	50.000 kHz	2.31000 GHz	-53.05 dBm	-40.05 dB
2.310 GHz	2.315 GHz	100.000 kHz	2.31464 GHz	19.03 dBm	-10.97 dB
2.315 GHz	2.316 GHz	50.000 kHz	2.31500 GHz	-22.75 dBm	-9.75 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31880 GHz	-32.22 dBm	-19.22 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32000 GHz	-43.35 dBm	-18.35 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32404 GHz	-45.53 dBm	-14.53 dB

Date: 6.JAN.2018 20:50:10

Lowest Band Edge / Full RB

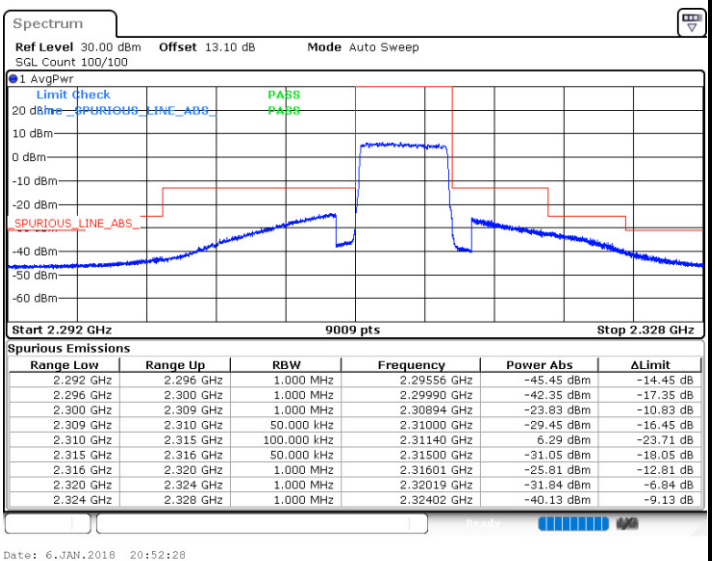


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29581 GHz	-41.81 dBm	-10.81 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29994 GHz	-32.44 dBm	-7.44 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30388 GHz	-24.24 dBm	-11.24 dB
2.304 GHz	2.305 GHz	50.000 kHz	2.30500 GHz	-30.41 dBm	-17.41 dB
2.305 GHz	2.310 GHz	100.000 kHz	2.30667 GHz	6.51 dBm	-23.49 dB
2.310 GHz	2.311 GHz	50.000 kHz	2.31000 GHz	-29.51 dBm	-16.51 dB
2.311 GHz	2.320 GHz	1.000 MHz	2.31126 GHz	-23.43 dBm	-10.43 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32003 GHz	-42.66 dBm	-17.66 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32495 GHz	-45.75 dBm	-14.75 dB

Date: 6.JAN.2018 20:46:34

Highest Band Edge / Full RB



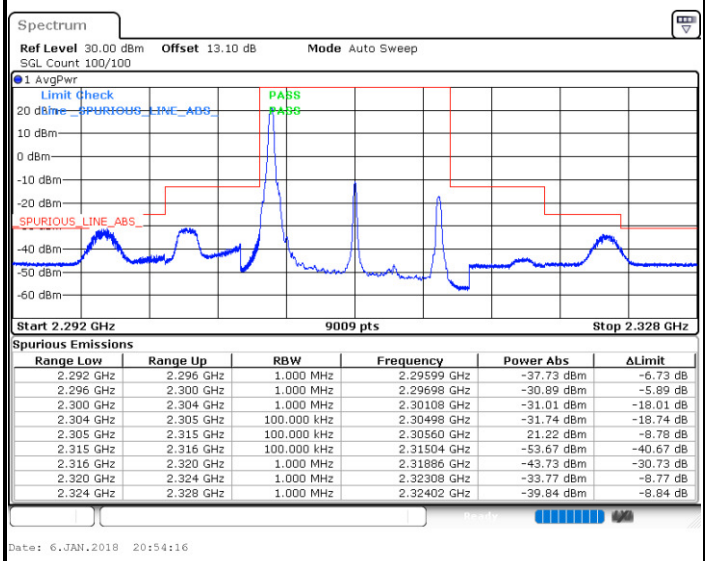
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29556 GHz	-45.45 dBm	-14.45 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29990 GHz	-42.35 dBm	-17.35 dB
2.300 GHz	2.309 GHz	1.000 MHz	2.30894 GHz	-23.83 dBm	-10.83 dB
2.309 GHz	2.310 GHz	50.000 kHz	2.31000 GHz	-29.45 dBm	-16.45 dB
2.310 GHz	2.315 GHz	100.000 kHz	2.31140 GHz	6.29 dBm	-23.71 dB
2.315 GHz	2.316 GHz	50.000 kHz	2.31500 GHz	-31.05 dBm	-18.05 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31601 GHz	-25.81 dBm	-12.81 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32019 GHz	-31.84 dBm	-6.84 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32402 GHz	-40.13 dBm	-9.13 dB

Date: 6.JAN.2018 20:52:28

LTE Band 30 / 10MHz / QPSK

Lowest Band Edge / 1 RB

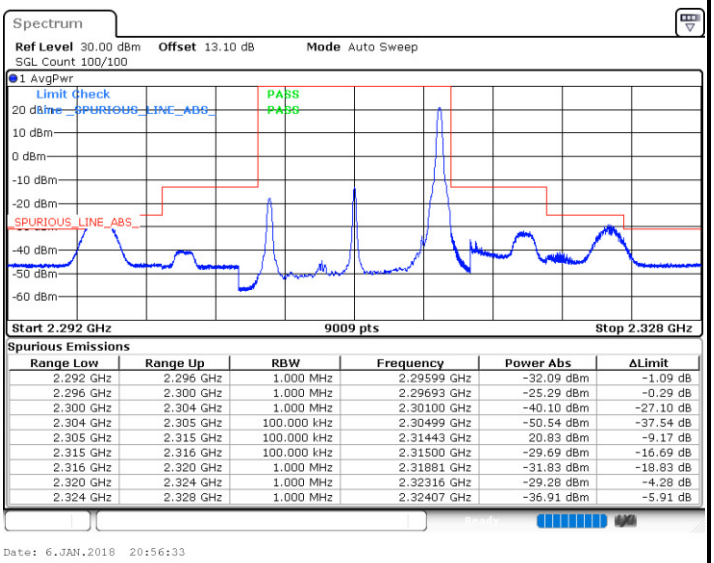


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29599 GHz	-37.73 dBm	-6.73 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29698 GHz	-30.89 dBm	-5.89 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30108 GHz	-31.01 dBm	-18.01 dB
2.304 GHz	2.305 GHz	100.000 kHz	2.30498 GHz	-31.74 dBm	-18.74 dB
2.305 GHz	2.315 GHz	100.000 kHz	2.30560 GHz	21.22 dBm	-8.78 dB
2.315 GHz	2.316 GHz	100.000 kHz	2.31504 GHz	-53.67 dBm	-40.67 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31886 GHz	-43.73 dBm	-30.73 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32308 GHz	-33.77 dBm	-8.77 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32402 GHz	-39.84 dBm	-8.84 dB

Date: 6.JAN.2018 20:54:16

Highest Band Edge / 1 RB

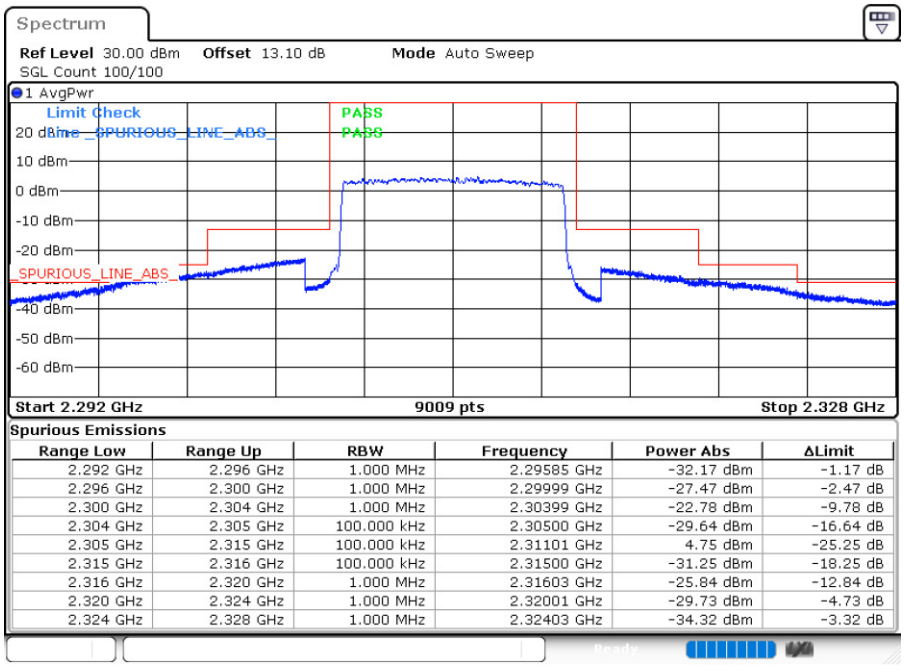


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29599 GHz	-32.09 dBm	-1.09 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29693 GHz	-25.29 dBm	-0.29 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30100 GHz	-40.10 dBm	-27.10 dB
2.304 GHz	2.305 GHz	100.000 kHz	2.30499 GHz	-50.54 dBm	-37.54 dB
2.305 GHz	2.315 GHz	100.000 kHz	2.31443 GHz	20.83 dBm	-9.17 dB
2.315 GHz	2.316 GHz	100.000 kHz	2.31500 GHz	-29.69 dBm	-16.69 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31881 GHz	-31.83 dBm	-18.83 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32316 GHz	-29.28 dBm	-4.28 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32407 GHz	-36.91 dBm	-5.91 dB

Date: 6.JAN.2018 20:56:33

Band Edge / Full RB



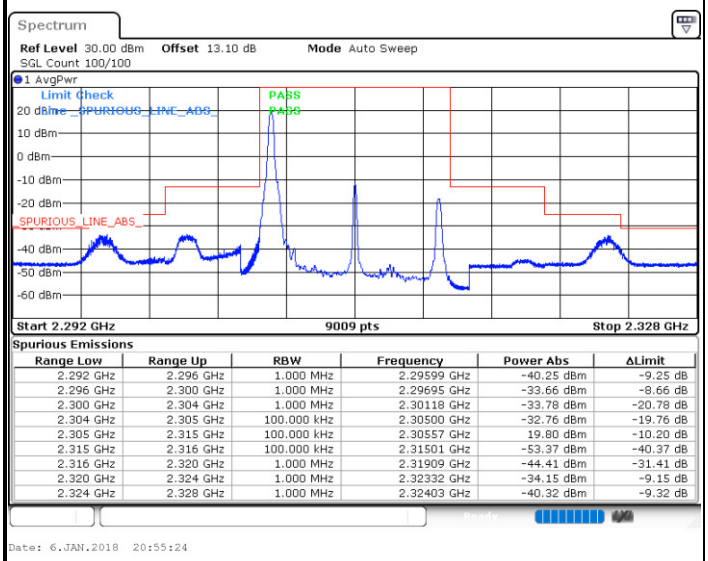
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29585 GHz	-32.17 dBm	-1.17 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29999 GHz	-27.47 dBm	-2.47 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30399 GHz	-22.78 dBm	-9.78 dB
2.304 GHz	2.305 GHz	100.000 kHz	2.30500 GHz	-29.64 dBm	-16.64 dB
2.305 GHz	2.315 GHz	100.000 kHz	2.31101 GHz	4.75 dBm	-25.25 dB
2.315 GHz	2.316 GHz	100.000 kHz	2.31500 GHz	-31.25 dBm	-18.25 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31603 GHz	-25.84 dBm	-12.84 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32001 GHz	-29.73 dBm	-4.73 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32403 GHz	-34.32 dBm	-3.32 dB

Date: 6.JAN.2018 20:58:50

LTE Band 30 / 10MHz / 16QAM

Lowest Band Edge / 1 RB

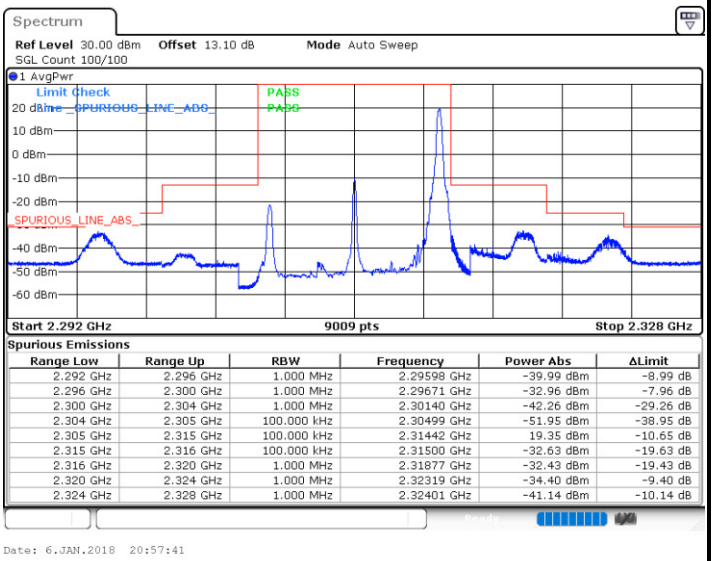


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29599 GHz	-40.25 dBm	-9.25 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29695 GHz	-33.66 dBm	-8.66 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30118 GHz	-33.78 dBm	-20.78 dB
2.304 GHz	2.305 GHz	100.000 kHz	2.30500 GHz	-32.76 dBm	-19.76 dB
2.305 GHz	2.315 GHz	100.000 kHz	2.30557 GHz	19.80 dBm	-10.20 dB
2.315 GHz	2.316 GHz	100.000 kHz	2.31501 GHz	-53.37 dBm	-40.37 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31909 GHz	-44.41 dBm	-31.41 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32332 GHz	-34.15 dBm	-9.15 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32403 GHz	-40.32 dBm	-9.32 dB

Date: 6.JAN.2018 20:55:24

Highest Band Edge / 1 RB

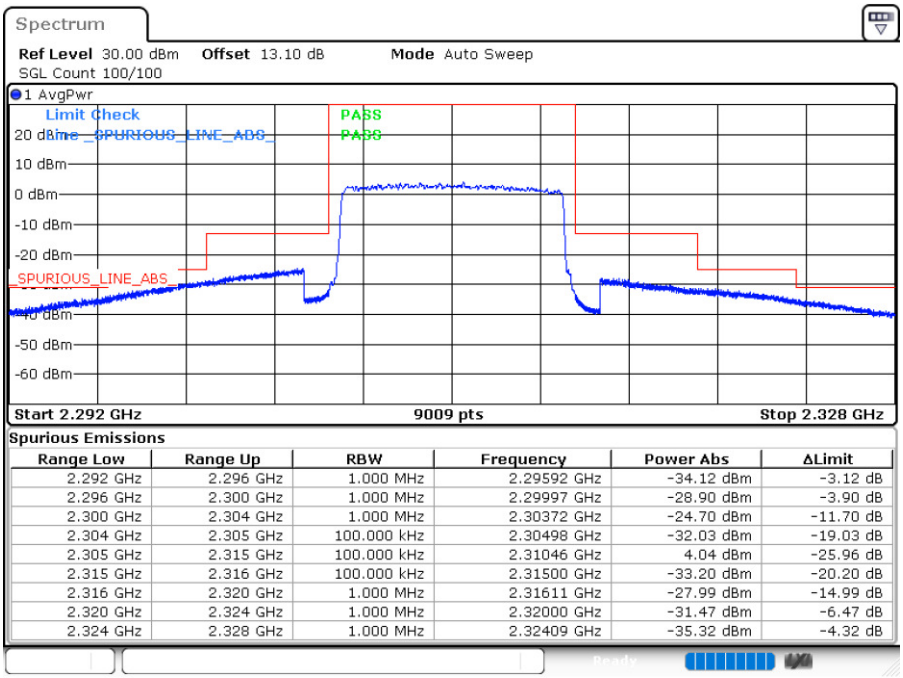


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29598 GHz	-39.99 dBm	-8.99 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29671 GHz	-32.96 dBm	-7.96 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30140 GHz	-42.26 dBm	-29.26 dB
2.304 GHz	2.305 GHz	100.000 kHz	2.30499 GHz	-51.95 dBm	-38.95 dB
2.305 GHz	2.315 GHz	100.000 kHz	2.31442 GHz	19.35 dBm	-10.65 dB
2.315 GHz	2.316 GHz	100.000 kHz	2.31500 GHz	-32.63 dBm	-19.63 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31877 GHz	-32.43 dBm	-19.43 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32319 GHz	-34.40 dBm	-9.40 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32401 GHz	-41.14 dBm	-10.14 dB

Date: 6.JAN.2018 20:57:41

Band Edge / Full RB



Spurious Emissions

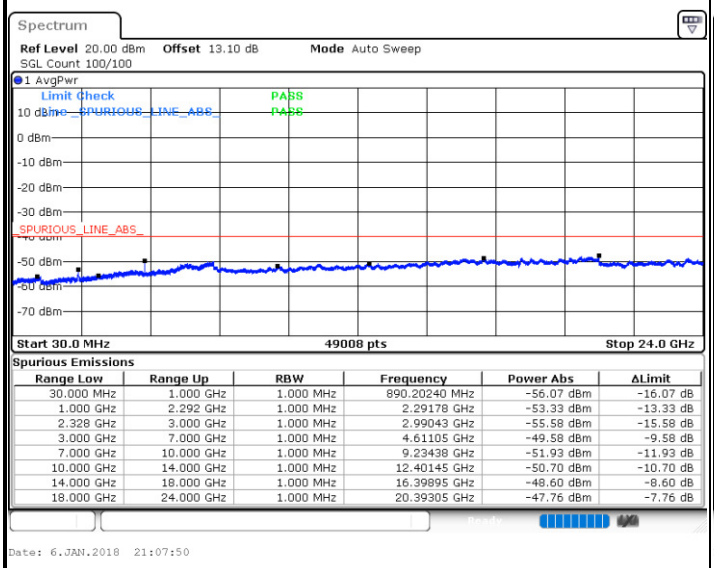
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29592 GHz	-34.12 dBm	-3.12 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29997 GHz	-28.90 dBm	-3.90 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30372 GHz	-24.70 dBm	-11.70 dB
2.304 GHz	2.305 GHz	100.000 kHz	2.30498 GHz	-32.03 dBm	-19.03 dB
2.305 GHz	2.315 GHz	100.000 kHz	2.31046 GHz	4.04 dBm	-25.96 dB
2.315 GHz	2.316 GHz	100.000 kHz	2.31500 GHz	-33.20 dBm	-20.20 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31611 GHz	-27.99 dBm	-14.99 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32000 GHz	-31.47 dBm	-6.47 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32409 GHz	-35.32 dBm	-4.32 dB

Date: 6.JAN.2018 20:59:58

Conducted Spurious Emission

LTE Band 30 / 5MHz

Lowest Channel / QPSK

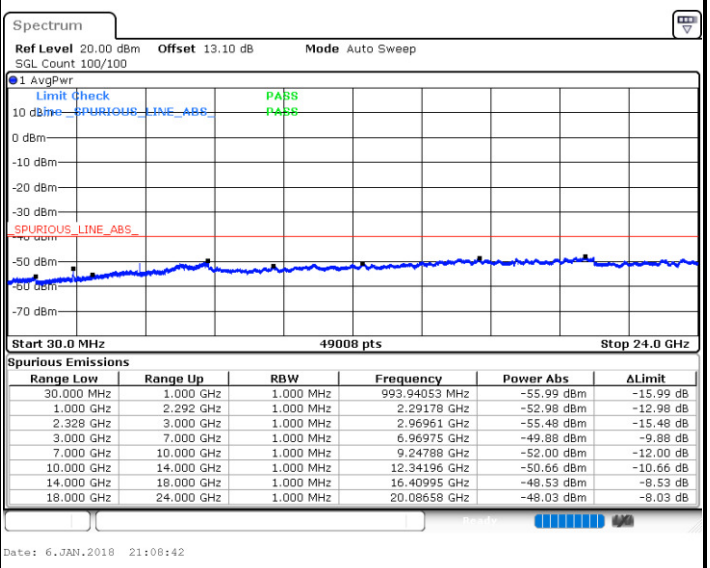


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	890.20240 MHz	-56.07 dBm	-16.07 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.29178 GHz	-53.33 dBm	-13.33 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.99043 GHz	-55.58 dBm	-15.58 dB
3.000 GHz	7.000 GHz	1.000 MHz	4.61105 GHz	-49.58 dBm	-9.58 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.23438 GHz	-51.93 dBm	-11.93 dB
10.000 GHz	14.000 GHz	1.000 MHz	12.40145 GHz	-50.70 dBm	-10.70 dB
14.000 GHz	18.000 GHz	1.000 MHz	16.39895 GHz	-48.60 dBm	-8.60 dB
18.000 GHz	24.000 GHz	1.000 MHz	20.39305 GHz	-47.76 dBm	-7.76 dB

Date: 6.JAN.2018 21:07:50

Lowest Channel / 16QAM

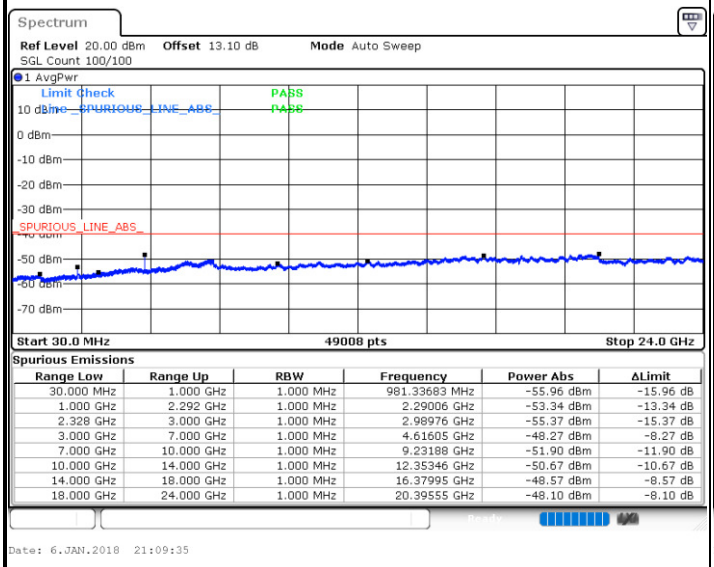


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	993.94053 MHz	-55.99 dBm	-15.99 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.29178 GHz	-52.98 dBm	-12.98 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.96961 GHz	-55.48 dBm	-15.48 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.96975 GHz	-49.88 dBm	-9.88 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.24788 GHz	-52.00 dBm	-12.00 dB
10.000 GHz	14.000 GHz	1.000 MHz	12.34196 GHz	-50.66 dBm	-10.66 dB
14.000 GHz	18.000 GHz	1.000 MHz	16.40995 GHz	-48.53 dBm	-8.53 dB
18.000 GHz	24.000 GHz	1.000 MHz	20.08658 GHz	-48.03 dBm	-8.03 dB

Date: 6.JAN.2018 21:08:42

Middle Channel / QPSK

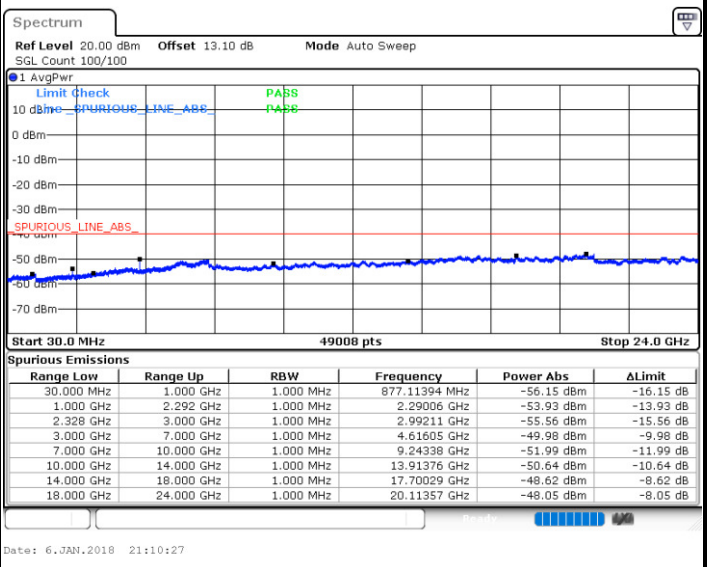


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	981.33683 MHz	-55.96 dBm	-15.96 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.29006 GHz	-53.34 dBm	-13.34 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.98976 GHz	-55.37 dBm	-15.37 dB
3.000 GHz	7.000 GHz	1.000 MHz	4.61605 GHz	-48.27 dBm	-8.27 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.23188 GHz	-51.90 dBm	-11.90 dB
10.000 GHz	14.000 GHz	1.000 MHz	12.35346 GHz	-50.67 dBm	-10.67 dB
14.000 GHz	18.000 GHz	1.000 MHz	16.37995 GHz	-48.57 dBm	-8.57 dB
18.000 GHz	24.000 GHz	1.000 MHz	20.39555 GHz	-48.10 dBm	-8.10 dB

Date: 6.JAN.2018 21:09:35

Middle Channel / 16QAM



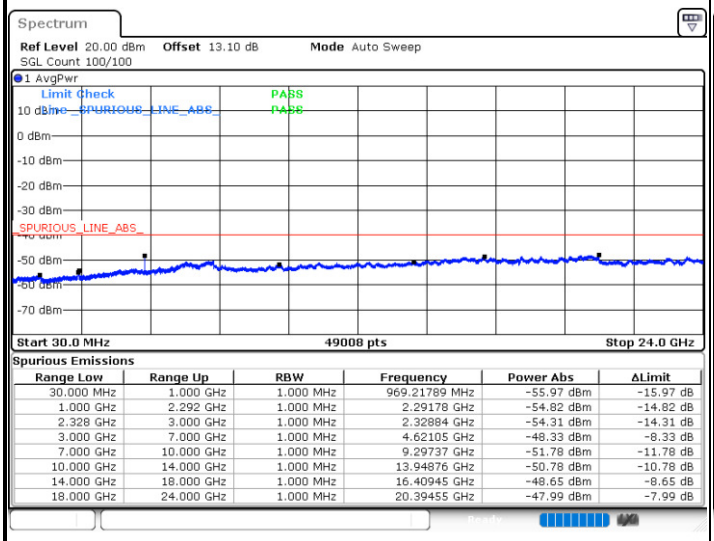
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	877.11394 MHz	-56.15 dBm	-16.15 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.29006 GHz	-53.93 dBm	-13.93 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.99211 GHz	-55.56 dBm	-15.56 dB
3.000 GHz	7.000 GHz	1.000 MHz	4.61605 GHz	-49.98 dBm	-9.98 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.24338 GHz	-51.99 dBm	-11.99 dB
10.000 GHz	14.000 GHz	1.000 MHz	13.91376 GHz	-50.64 dBm	-10.64 dB
14.000 GHz	18.000 GHz	1.000 MHz	17.70029 GHz	-48.62 dBm	-8.62 dB
18.000 GHz	24.000 GHz	1.000 MHz	20.11357 GHz	-48.05 dBm	-8.05 dB

Date: 6.JAN.2018 21:10:27

LTE Band 30 / 5MHz

Highest Channel / QPSK

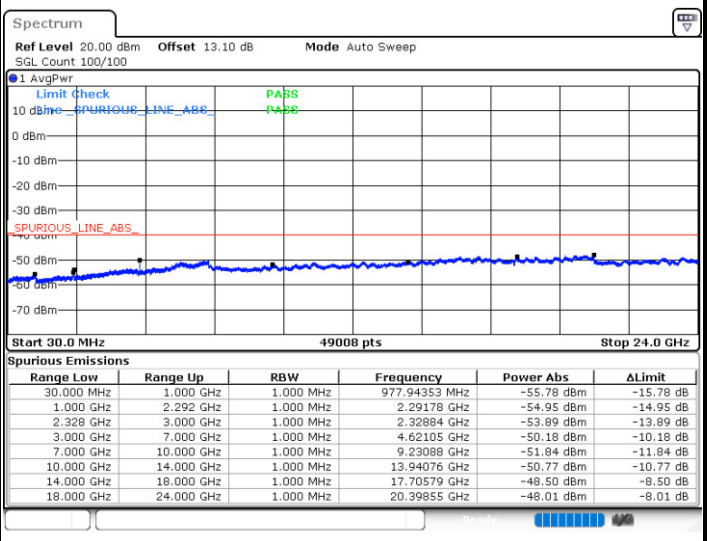


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	969.21789 MHz	-55.97 dBm	-15.97 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.29178 GHz	-54.82 dBm	-14.82 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.32884 GHz	-54.31 dBm	-14.31 dB
3.000 GHz	7.000 GHz	1.000 MHz	4.62105 GHz	-48.33 dBm	-8.33 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.29737 GHz	-51.78 dBm	-11.78 dB
10.000 GHz	14.000 GHz	1.000 MHz	13.94876 GHz	-50.78 dBm	-10.78 dB
14.000 GHz	18.000 GHz	1.000 MHz	16.40945 GHz	-48.65 dBm	-8.65 dB
18.000 GHz	24.000 GHz	1.000 MHz	20.39455 GHz	-47.99 dBm	-7.99 dB

Date: 6.JAN.2018 21:11:20

Highest Channel / 16QAM



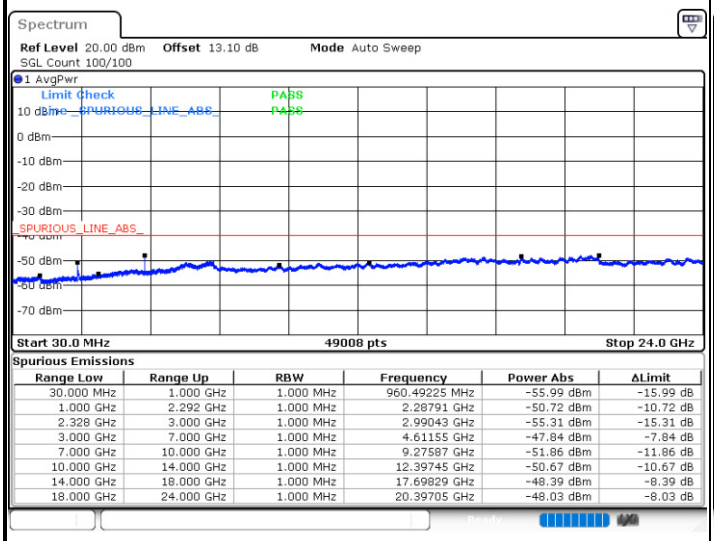
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	977.94353 MHz	-55.78 dBm	-15.78 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.29178 GHz	-54.95 dBm	-14.95 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.32884 GHz	-53.89 dBm	-13.89 dB
3.000 GHz	7.000 GHz	1.000 MHz	4.62105 GHz	-50.18 dBm	-10.18 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.23088 GHz	-51.84 dBm	-11.84 dB
10.000 GHz	14.000 GHz	1.000 MHz	13.94076 GHz	-50.77 dBm	-10.77 dB
14.000 GHz	18.000 GHz	1.000 MHz	17.70579 GHz	-48.50 dBm	-8.50 dB
18.000 GHz	24.000 GHz	1.000 MHz	20.39855 GHz	-48.01 dBm	-8.01 dB

Date: 6.JAN.2018 21:12:12

LTE Band 30 / 10MHz

Middle Channel / QPSK

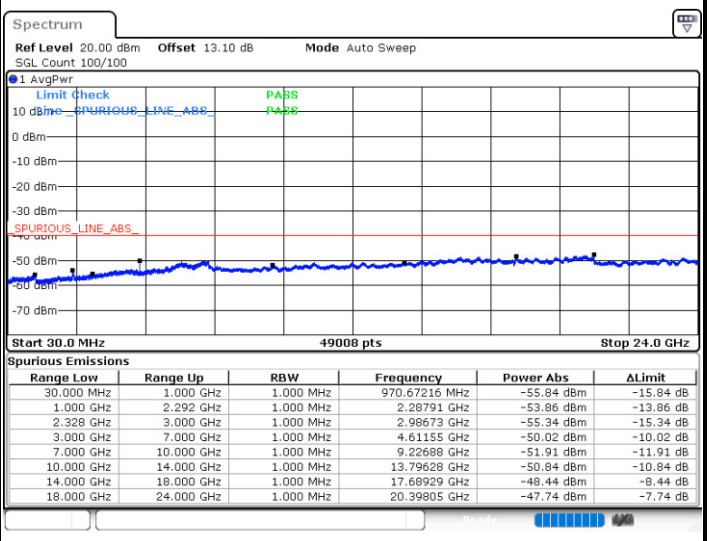


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	960.49225 MHz	-55.99 dBm	-15.99 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.28791 GHz	-50.72 dBm	-10.72 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.99043 GHz	-55.31 dBm	-15.31 dB
3.000 GHz	7.000 GHz	1.000 MHz	4.61155 GHz	-47.84 dBm	-7.84 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.27587 GHz	-51.86 dBm	-11.86 dB
10.000 GHz	14.000 GHz	1.000 MHz	12.39745 GHz	-50.67 dBm	-10.67 dB
14.000 GHz	18.000 GHz	1.000 MHz	17.69829 GHz	-48.39 dBm	-8.39 dB
18.000 GHz	24.000 GHz	1.000 MHz	20.39705 GHz	-48.03 dBm	-8.03 dB

Date: 6.JAN.2018 21:16:48

Middle Channel / 16QAM



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	970.67216 MHz	-55.84 dBm	-15.84 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.28791 GHz	-53.86 dBm	-13.86 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.98673 GHz	-55.34 dBm	-15.34 dB
3.000 GHz	7.000 GHz	1.000 MHz	4.61155 GHz	-50.02 dBm	-10.02 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.22688 GHz	-51.91 dBm	-11.91 dB
10.000 GHz	14.000 GHz	1.000 MHz	13.79628 GHz	-50.84 dBm	-10.84 dB
14.000 GHz	18.000 GHz	1.000 MHz	17.68929 GHz	-48.44 dBm	-8.44 dB
18.000 GHz	24.000 GHz	1.000 MHz	20.39805 GHz	-47.74 dBm	-7.74 dB

Date: 6.JAN.2018 21:17:40

Frequency Stability

Test Conditions		LTE Band 30 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0053	PASS
40	Normal Voltage	0.0004	
30	Normal Voltage	0.0063	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0003	
0	Normal Voltage	0.0051	
-10	Normal Voltage	0.0057	
-20	Normal Voltage	0.0063	
-30	Normal Voltage	0.0003	
20	Maximum Voltage	0.0010	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0058	

Note:

1. Normal Voltage =3.8 V.；Battery End Point (BEP) =3.5 V.；Maximum Voltage =4.4 V.
2. Note: The frequency fundamental emissions stay within the authorized frequency block.

Appendix B. Test Results of EIRP and Radiated Test

EIRP

LTE Band 30 / 5MHz (Average) (GT - LC = 0.578 dB)							
Channel	Mode	RB		Conducted		EIRP	
		Size	Offset	Power (dBm)	Power (Watts)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	1	24	22.73	0.1875	23.31	0.2142
Middle		1	24	22.89	0.1945	23.47	0.2222
Highest		1	24	23.12	0.2051	23.70	0.2343
Lowest	16QAM	1	12	21.68	0.1472	22.26	0.1682
Middle		1	12	21.79	0.1510	22.37	0.1725
Highest		1	12	21.64	0.1459	22.22	0.1666
Limit	EIRP < 0.25W			Result		PASS	

LTE Band 30 / 10MHz (Average) (GT - LC = 0.578 dB)							
Channel	Mode	RB		Conducted		EIRP	
		Size	Offset	Power (dBm)	Power (Watts)	EIRP(dBm)	EIRP(W)
Lowest	QPSK	-	-	-	-	-	-
Middle		1	25	23.15	0.2065	23.73	0.2359
Highest		-	-	-	-	-	-
Lowest	16QAM	-	-	-	-	-	-
Middle		1	25	21.97	0.1574	22.55	0.1798
Highest		-	-	-	-	-	-
Limit	EIRP < 0.25W			Result		PASS	

Radiated Spurious Emission

Part27D LTE Band 30

LTE Band 30 / 5MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	4620	-63.84	-40	-23.84	-60.74	-75.25	0.79	12.20	H
	6930	-52.40	-40	-12.40	-59.6	-62.85	1.01	11.45	H
	9234	-54.28	-40	-14.28	-66.48	-64.85	1.38	11.94	H
	16164	-48.13	-40	-8.13	-71.96	-63.26	1.80	16.94	H
									H
									H
	4620	-60.67	-40	-20.67	-57.57	-72.08	0.79	12.20	V
	6930	-53.57	-40	-13.57	-60.77	-64.02	1.01	11.45	V
	9234	-55.30	-40	-15.30	-67.5	-65.87	1.38	11.94	V
	16164	-50.30	-40	-10.30	-74.13	-65.43	1.80	16.94	V
									V
									V
Middle	4626	-63.05	-40	-23.05	-59.95	-74.48	0.77	12.20	H
	6936	-50.42	-40	-10.42	-57.62	-60.84	1.02	11.44	H
	9252	-52.59	-40	-12.59	-64.86	-63.1	1.39	11.89	H
	16182	-45.17	-40	-5.17	-69.06	-60.27	1.81	16.91	H
									H
									H
	4626	-60.36	-40	-20.36	-57.26	-71.79	0.77	12.20	V
	6936	-51.35	-40	-11.35	-58.55	-61.77	1.02	11.44	V
	9252	-52.63	-40	-12.63	-64.9	-63.14	1.39	11.89	V
	16182	-47.87	-40	-7.87	-71.76	-62.97	1.81	16.91	V
									V
									V

Highest	4632	-54.08	-40	-14.08	-51.07	-65.54	0.74	12.20	H
	6942	-43.96	-40	-3.96	-51.19	-54.35	1.03	11.43	H
	9252	-52.50	-40	-12.50	-64.77	-63.01	1.39	11.89	H
	16200	-45.39	-40	-5.39	-69.34	-60.46	1.81	16.88	H
									H
									H
									H
	4632	-54.69	-40	-14.69	-51.68	-66.15	0.74	12.20	V
	6942	-46.85	-40	-6.85	-54.08	-57.24	1.03	11.43	V
	9252	-53.70	-40	-13.70	-65.97	-64.21	1.39	11.89	V
	16200	-46.60	-40	-6.60	-70.55	-61.67	1.81	16.88	V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 30 / 10MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	4620	-62.75	-40	-22.75	-59.65	-74.16	0.79	12.20	H
	6930	-51.26	-40	-11.26	-58.46	-61.71	1.01	11.45	H
	9234	-54.09	-40	-14.09	-66.29	-64.66	1.38	11.94	H
	16164	-44.48	-40	-4.48	-68.31	-59.61	1.80	16.94	H
									H
									H
									H
	4620	-60.05	-40	-20.05	-56.95	-71.46	0.79	12.20	V
	6930	-52.25	-40	-12.25	-58.45	-62.7	1.01	11.45	V
	9234	-53.27	-40	-13.27	-65.47	-63.84	1.38	11.94	V
	16164	-47.18	-40	-7.18	-71.01	-62.31	1.80	16.94	V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.