FCC RF Test Report

APPLICANT	:	Lenovo (Shanghai) Electronics Technology Co., Ltd.
EQUIPMENT	:	Lenovo Mobile Phone
BRAND NAME	:	Lenovo
MODEL NAME	:	Lenovo PB2-690Y
FCC ID	:	O57PB2690Y
STANDARD	:	FCC 47 CFR Part 2, 27
CLASSIFICATION	:	PCS Licensed Transmitter Held to Ear (PCE)

The product was received on May 11, 2016 and testing was completed on Jun. 20, 2016. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-D-2010 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

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Approved by: Jones Tsai / Manager

Testing Laboratory 2627

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG651101C	Rev. 01	Initial issue of report	Jun. 21, 2016

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
-	-	Peak-to-Average Ratio	<13dB	PASS	-
3.5	§27.50 (a)(3)	EIRP Power Density	EIRP < 250mW/5MHz	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §27.53 (a)(4)	Conducted Band Edge Measurement	Refer standard	PASS	-
3.8	§2.1051 §27.53 (a)(4)	Conducted Spurious Emission	< $70+10\log_{10}$(P[Watts])	PASS	-
3.9	§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 2.04 dB at 6923.250 MHz

1 General Description

1.1 Applicant

Lenovo (Shanghai) Electronics Technology Co., Ltd.
NO.68 BUILDING, 199 FENJU RD, China (Shanghai) Pilot Free Trade Zone, 200131, CHINA

1.2 Manufacturer

Lenovo PC HK Limited
23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Lenovo Mobile Phone
Brand Name	Lenovo
Model Name	Lenovo PB2-690Y
FCC ID	O57PB2690Y
Tx Frequency	LTE Band 30 : 2307.5 MHz ~ 2312.5 MHz
Rx Frequency	LTE Band 30 : 2352.5 MHz ~ 2357.5 MHz
Bandwidth	5MHz / 10MHz
Type of Modulation	QPSK / 16QAM / 64QAM(Downlink only)
Maximum Output Power to Antenna	23.45 dBm
IMEI Code	Conducted: 869980020016013/869980020016021 Radiation: 969972020005856/969972020005864 ERP/EIRP: N/A
HW Version	Lenovo PB2-690Y
SW Version	PB2-690Y-160711
EUT Stage	Identical Prototype

1.4 Component List

Note: There are two types of EUT, the details refer the following table. According to the difference, we evaluate is not affect RF performance, so only choose sample 1 to perform RF test.

Component	Sample 1	Sample 2
4GB LPDDR3	Samsung K3QF4F40BM-FGCF	Hynix H9CKNNNCPTMRPR-NUH
64GB eMMC	Toshiba THGBMGG9T4LBAIR	Samsung KLMCG4JENB-B041

1.5 Modification of EUT

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

1.6 Maximum Frequency Tolerance and Emission Designator

LTE Band 30	QPSK			16QAM		
BW(MHz)	Maximum Conducted Power (W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum Conducted Power (W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)
5	0.2198	4M51G7D	-	0.1641	4M50W7D	-
10	0.2213	9M03G7D	0.0034	0.1702	9M01W7D	-

1.7 Testing Site

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	**Sporton Site No.**		**FCC Registration No.**
	TH01-KS	03CH03-KS	306251

Note: The test site complies with ANSI C63.4 2014 requirement.

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 / EIA-603
- FCC KDB 971168 Power Meas License Digital Systems D01 v02r02

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

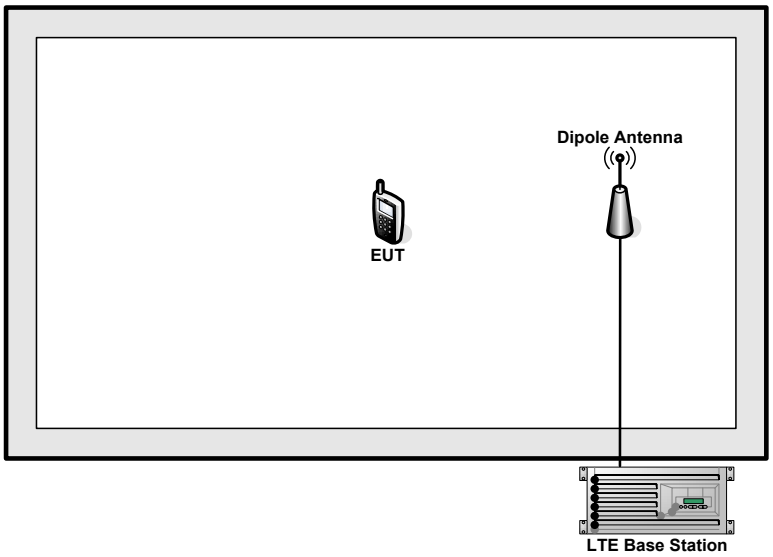
2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r02 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			V	V	V	V	V		V	
Peak-to-Average Ratio	30	-	-		V	-	-	V	V	V		V		V	
E.I.R.P PSD	30	-	-	V		-	-	V	V	V			V	V	V
		-	-		V	-	-	V	V	V				V	
26dB and 99% Bandwidth	30	-	-	V		-	-	V	V			V	V	V	V
		-	-		V	-	-	V	V			V		V	
Conducted Band Edge	30	-	-	V		-	-	V	V	V		V	V		V
		-	-		V	-	-	V	V	V		V		V	
Conducted Spurious Emission	30	-	-	V		-	-	V	V	V			V	V	V
		-	-		V	-	-	V	V	V				V	
Frequency Stability	30	-	-		V	-	-	V				V		V	
Radiated Spurious Emission	30	-	-	V		-	-	V		V			V	V	V
					V			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.														

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.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	GW INSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8m

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 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.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 5.5 dB.

Example :

Offset(dB) = RF cable loss(dB).

= 5.5 (dB)

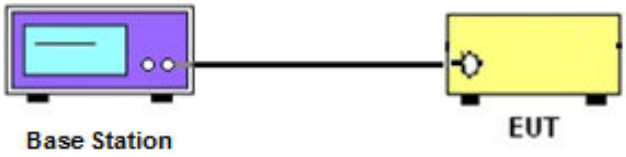
3 Conducted Test Items

3.1 Measuring Instruments

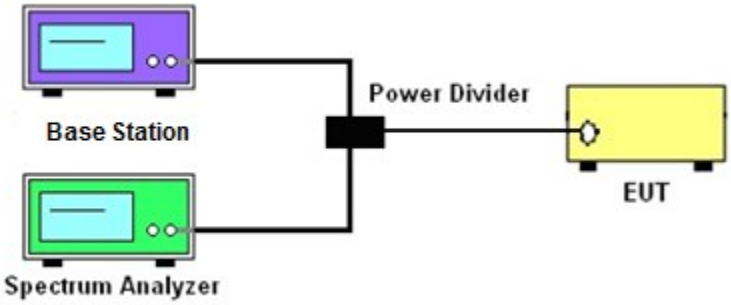
See list of measuring instruments of this test report.

3.2 Test Setup

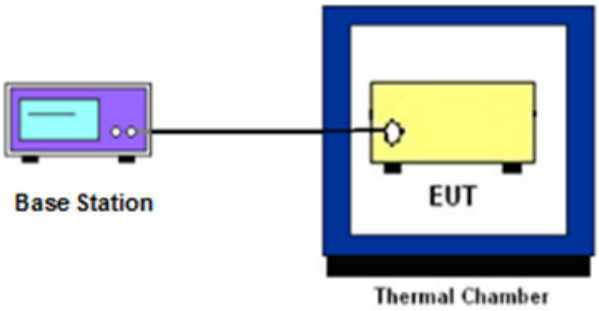
3.2.1 Conducted Output Power



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 base station.
2. Set EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.

3.5 EIRP Power Density

3.5.1 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.

3.5.2 Test Procedures

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

3.6 Occupied Bandwidth

3.6.1 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 26dB 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 26 dB.
The 26 dB emission bandwidth(EBW) 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.

3.6.2 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The 26dB and 99% occupied bandwidth (BW) of the middle channel for the highest RF powers with full RB sizes were measured.

3.7 Conducted Band Edge Measurement

3.7.1 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.

3.7.2 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels were measured with RBW ≥ 1% EBW set in Spectrum Analyzer, while the EUT was transmitting under maximum power.
3. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
4. 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.

3.8 Conducted Spurious Emission Measurement

3.8.1 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 30MHz up to a frequency including its 10th harmonic.

3.8.2 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. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. 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.

3.9 Frequency Stability Measurement

3.9.1 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.

3.9.2 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the base station.
2. 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.
3. 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.

3.9.3 Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at 25±5° C and connected with the base station.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

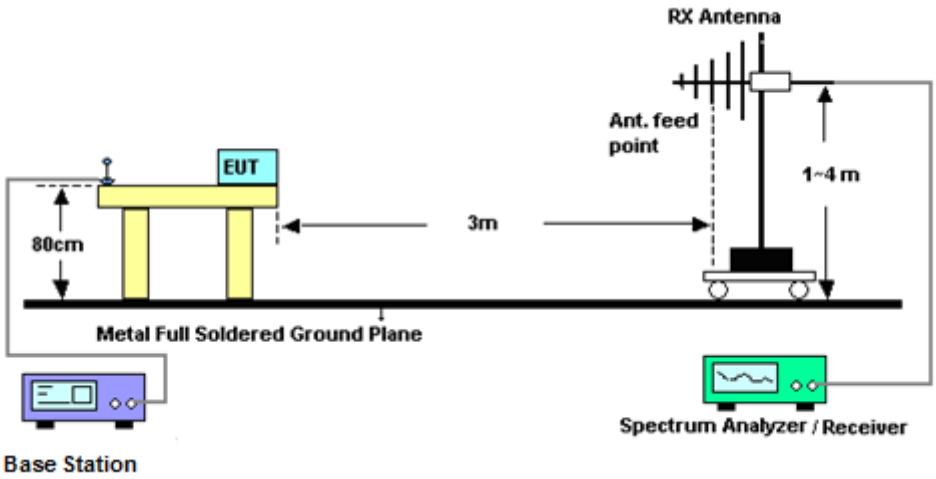
4 Radiated Test Items

4.1 Measuring Instruments

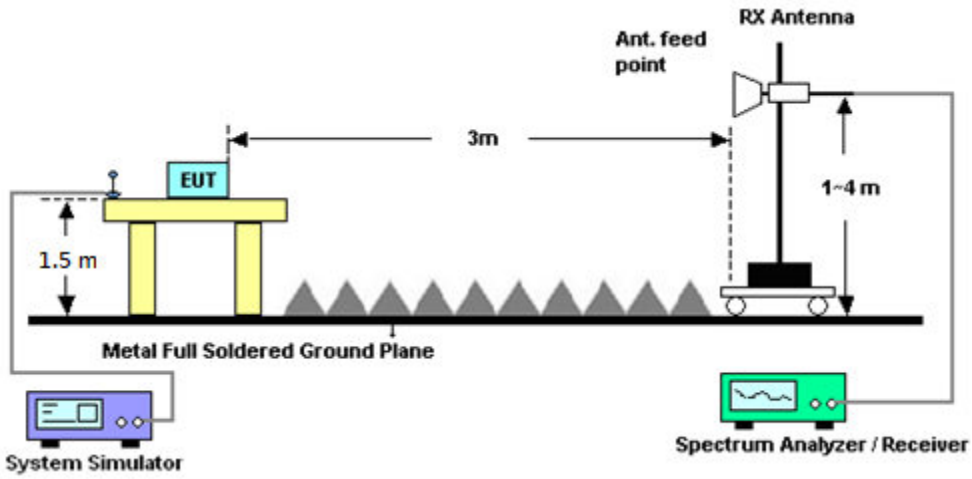
See list of measuring instruments of this test report.

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.

4.4.2 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, Sweep = 500ms, Taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
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.
11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Sep. 10, 2015	Jun. 07, 2016~ Jun. 17, 2016	Sep. 09, 2016	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 24, 2015	Jun. 07, 2016~ Jun. 17, 2016	Oct. 23, 2016	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44GHz	Apr. 22, 2016	Jun. 20, 2016	Apr. 21, 2017	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	35406	25MHz-2GHz	Apr. 16, 2016	Jun. 20, 2016	Apr. 15, 2017	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1356	1GHz~18GHz	Apr. 16, 2016	Jun. 20, 2016	Apr. 15, 2017	Radiation (03CH03-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz ~40GHz	Oct. 24, 2015	Jun. 20, 2016	Oct. 23, 2016	Radiation (03CH03-KS)
Amplifier	Burgeon	BPA-530	102212	0.01MHz-3000MHz	Aug. 10, 2015	Jun. 20, 2016	Aug. 09, 2016	Radiation (03CH03-KS)
Amplifier	MITEQ	TTA1840-35 -HG	1887435	18~40GHz	Aug. 27, 2015	Jun. 20, 2016	Aug. 26, 2016	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Oct. 24, 2015	Jun. 20, 2016	Oct. 23, 2016	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jun. 20, 2016	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jun. 20, 2016	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jun. 20, 2016	NCR	Radiation (03CH03-KS)

NCR: No Calibration Required

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))	4.5dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.5dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.6dB

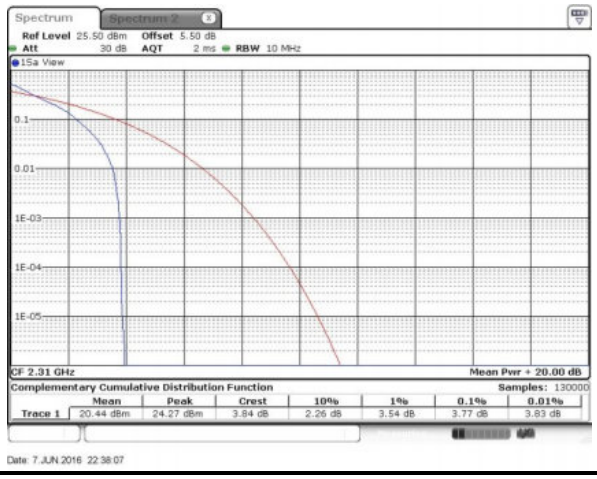
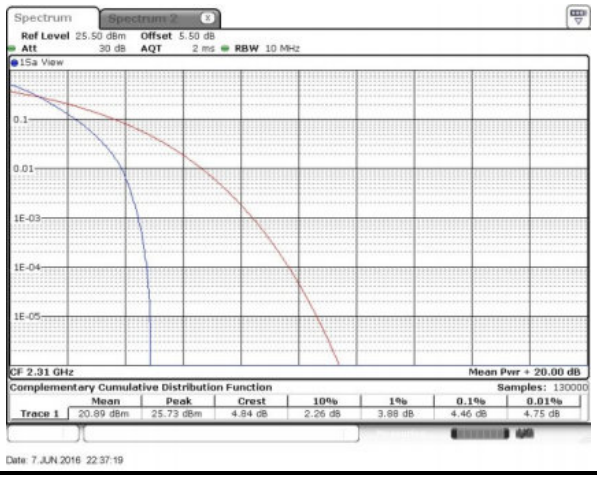
Appendix A. Test Results of Conducted Test

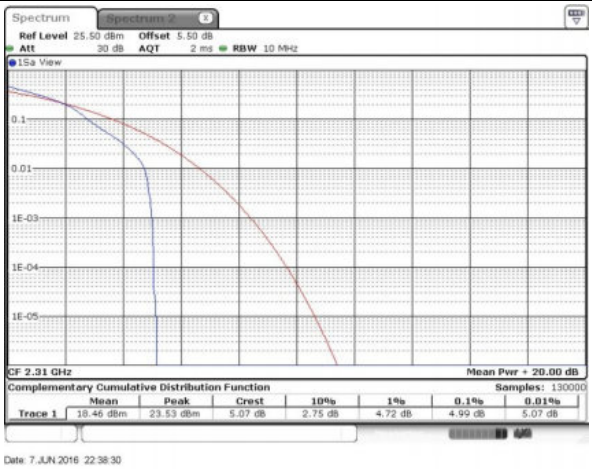
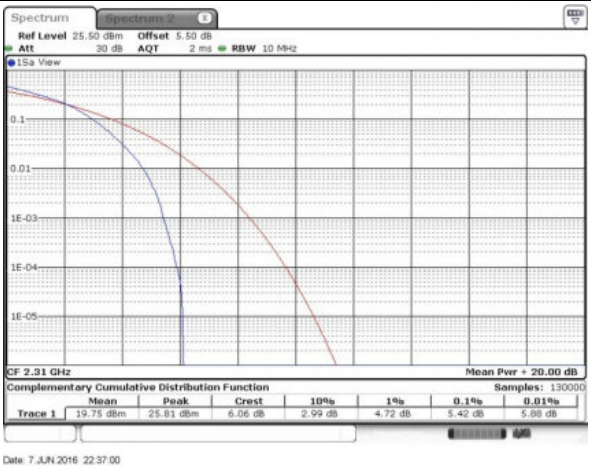
Conducted Output Power(Average power)

LTE Band 30 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	22.98	23.37	23.16
5	1	12		23.40	23.42	23.41
5	1	24		23.15	23.02	23.03
5	12	0		22.35	22.48	22.37
5	12	7		22.42	22.49	22.35
5	12	13		22.32	22.31	22.39
5	25	0		22.37	22.44	22.31
5	1	0	16-QAM	21.56	22.12	21.98
5	1	12		22.09	22.15	21.98
5	1	24		21.99	22.04	22.06
5	12	0		21.12	21.22	21.30
5	12	7		21.30	21.43	21.28
5	12	13		21.19	21.39	21.27
5	25	0		21.18	21.42	21.36
10	1	0	QPSK		23.19	
10	1	25			23.45	
10	1	49			23.00	
10	25	0			22.44	
10	25	12			22.41	
10	25	25			22.30	
10	50	0			22.41	
10	1	0	16-QAM		22.29	
10	1	25			22.31	
10	1	49			22.19	
10	25	0			21.48	
10	25	12			21.30	
10	25	25			21.30	
10	50	0			21.23	

Peak-to-Average Ratio

Mode	LTE Band 30 / 10MHz				
Mod.	QPSK		16QAM		Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Middle CH	3.77	4.46	4.99	5.42	PASS

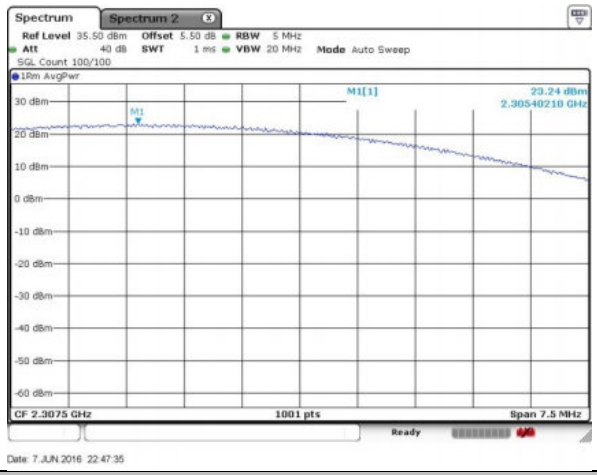
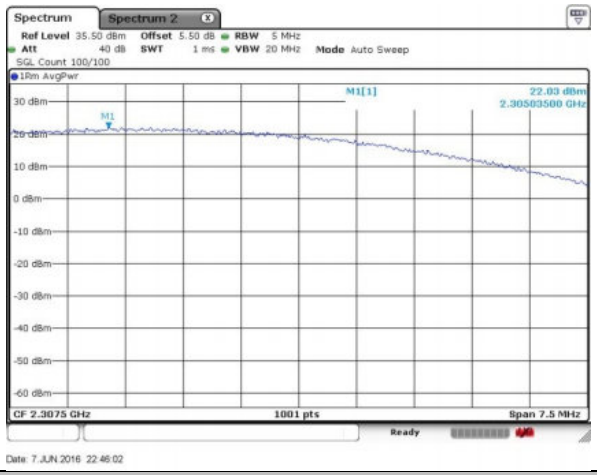
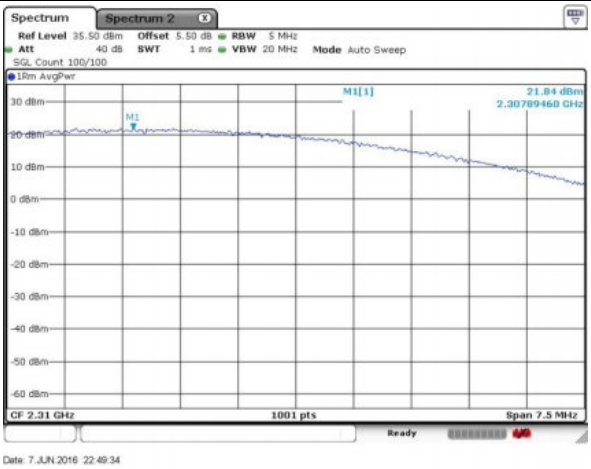
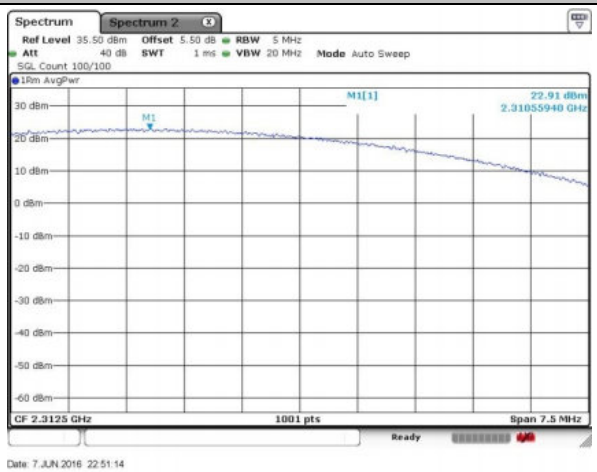
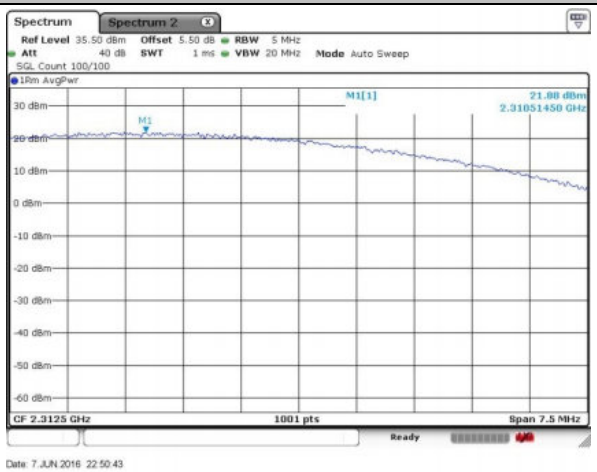
LTE Band 30 / 10MHz / QPSK	
Middle Channel / 1RB	Middle Channel / Full RB
	

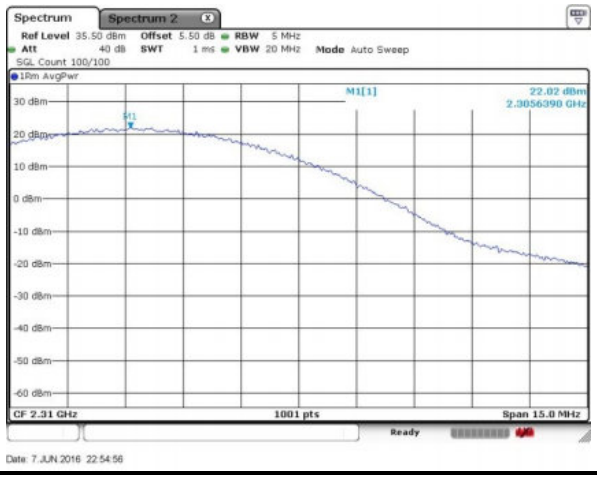
LTE Band 30 / 10MHz / 16QAM	
Middle Channel / 1RB	Middle Channel / Full RB
	

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					23.24	22.03						
Middle CH					23.08	21.84	23.55	22.02				
Highest CH					22.91	21.88						

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					22.74	21.53						
Middle CH					22.58	21.34	23.05	21.52				
Highest CH					22.41	21.38						
Antenna Gain	-0.5 dBi											
Limit	250mW / 5MHz = 24dBm / 5MHz											
Result	Pass											

LTE Band 30 / 5MHz	
Lowest Channel / 5MHz / 1RB12 / QPSK	**Lowest Channel / 5MHz / 1RB12 / 16QAM**
	
Middle Channel / 5MHz / 1RB12 / QPSK	**Middle Channel / 5MHz / 1RB12 / 16QAM**
	
Highest Channel / 5MHz / 1RB12 / QPSK	**Highest Channel / 5MHz / 1RB24 / 16QAM**
	

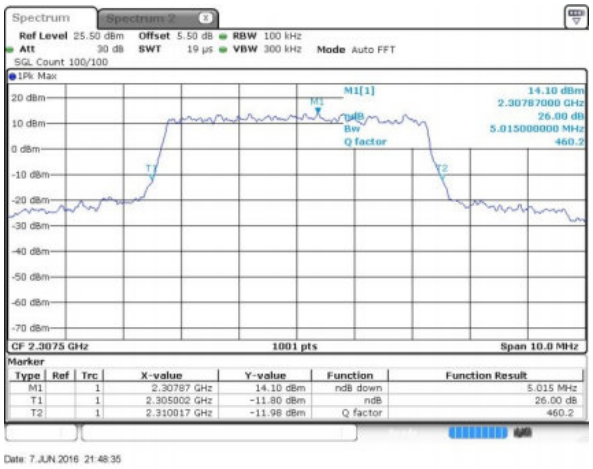
LTE Band 30 / 10MHz	
Lowest Channel / 10MHz / 1RB25 / QPSK	Lowest Channel / 10MHz / 1RB25 / 16QAM
	

26dB Bandwidth

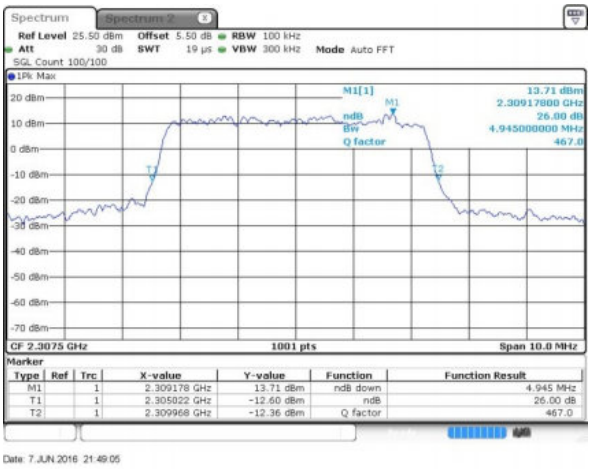
Mode	LTE Band 30 : 26dB BW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH					5.02	4.95						
Middle CH					5.04	4.93	9.93	9.71				
Highest CH					4.98	4.83						

LTE Band 30

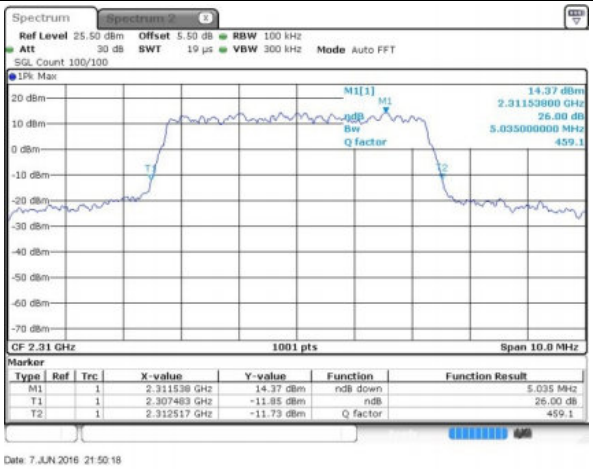
Lowest Channel / 5MHz / QPSK



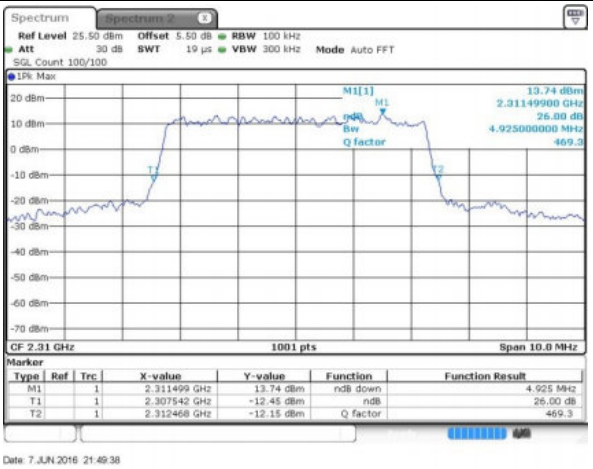
Lowest Channel / 5MHz / 16QAM



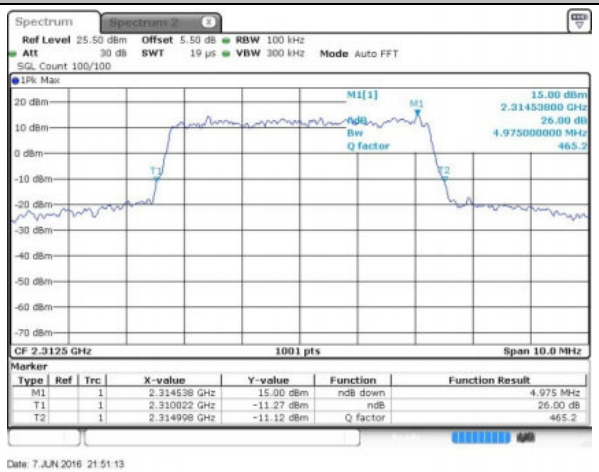
Middle Channel / 5MHz / QPSK



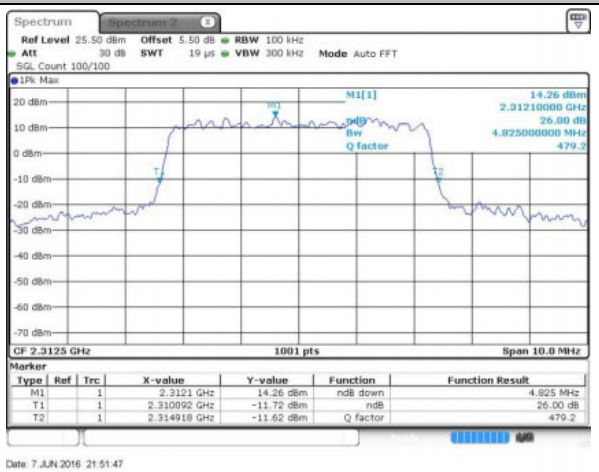
Middle Channel / 5MHz / 16QAM

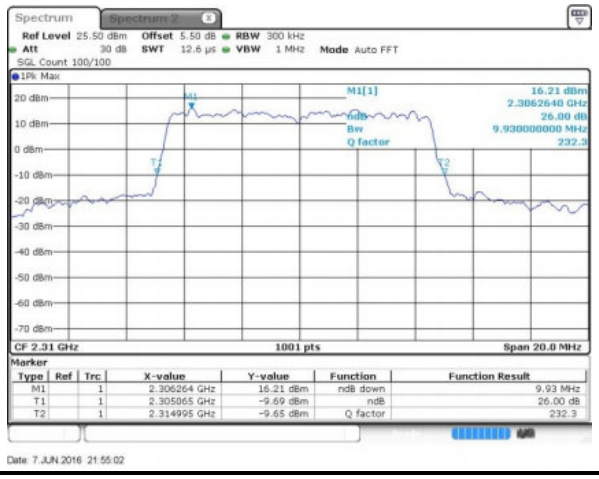
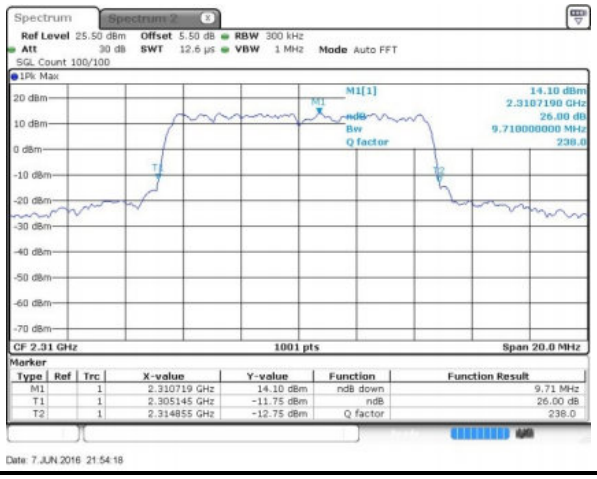


Highest Channel / 5MHz / QPSK



Highest Channel / 5MHz / 16QAM



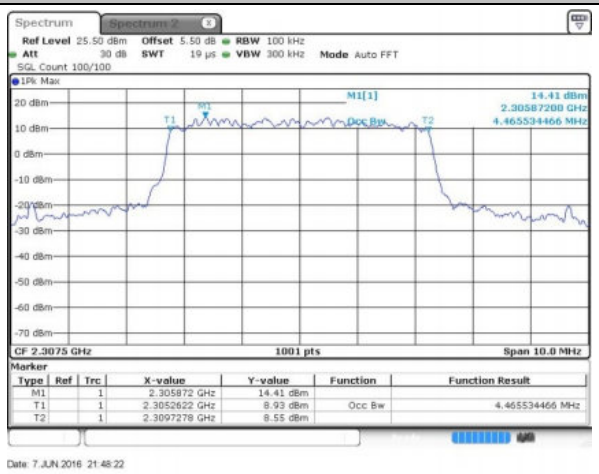
LTE Band 30	
Middle Channel / 10MHz / QPSK	Middle Channel / 10MHz / 16QAM
	

Occupied Bandwidth

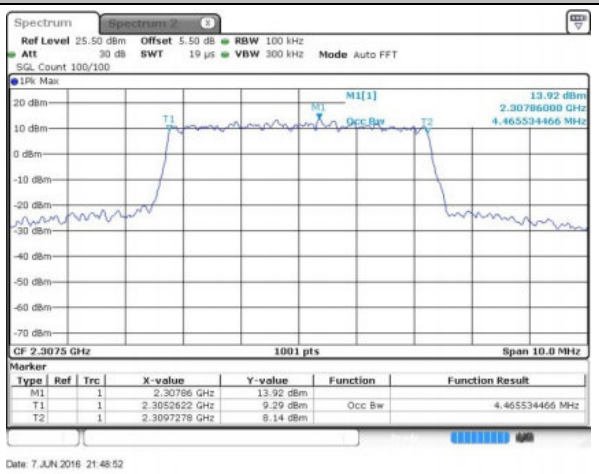
Mode	LTE Band 30 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Lowest CH					4.47	4.47						
Middle CH					4.51	4.49	9.03	9.01				
Highest CH					4.51	4.50						

LTE Band 30

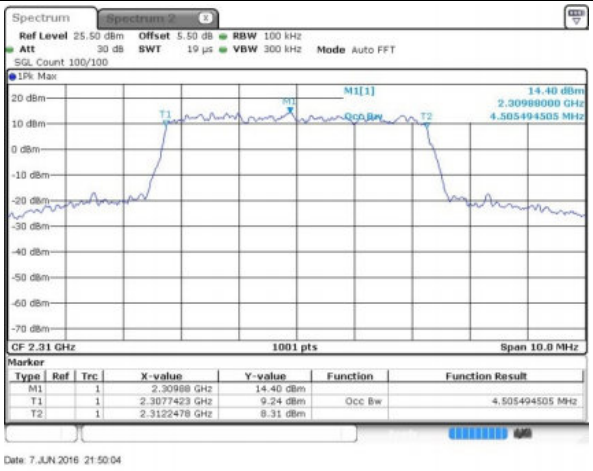
Lowest Channel / 5MHz / QPSK



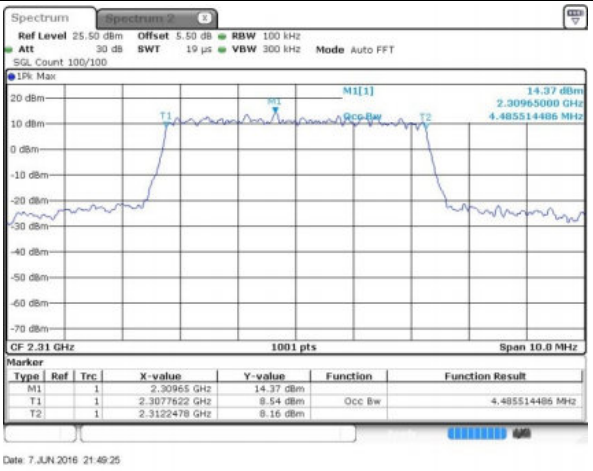
Lowest Channel / 5MHz / 16QAM



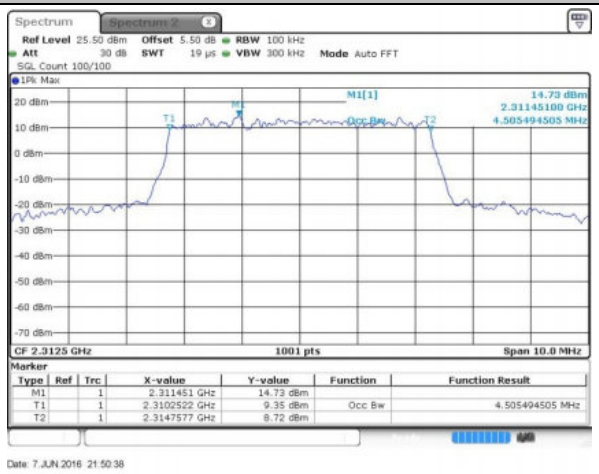
Middle Channel / 5MHz / QPSK



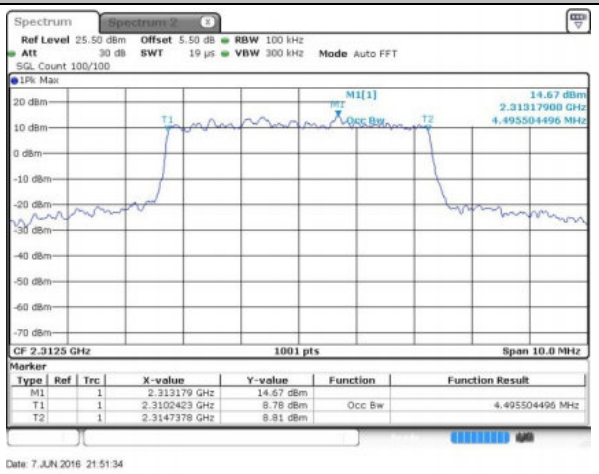
Middle Channel / 5MHz / 16QAM

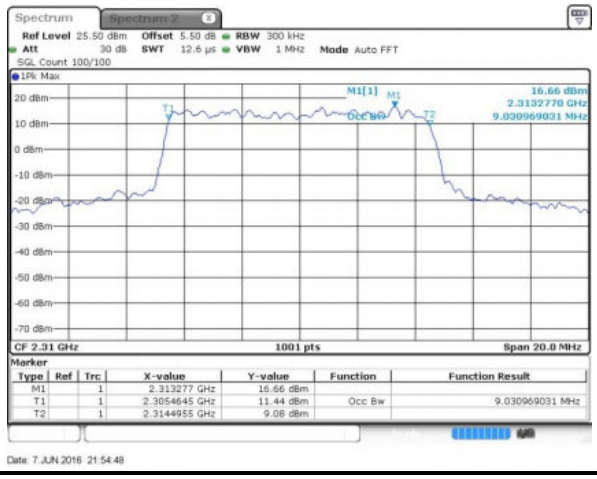
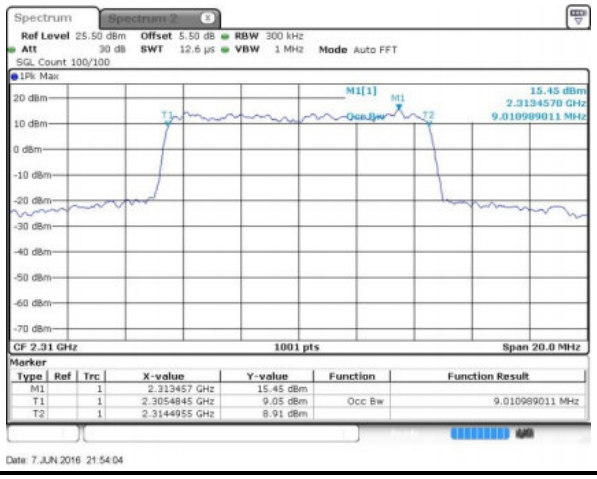


Highest Channel / 5MHz / QPSK



Highest Channel / 5MHz / 16QAM

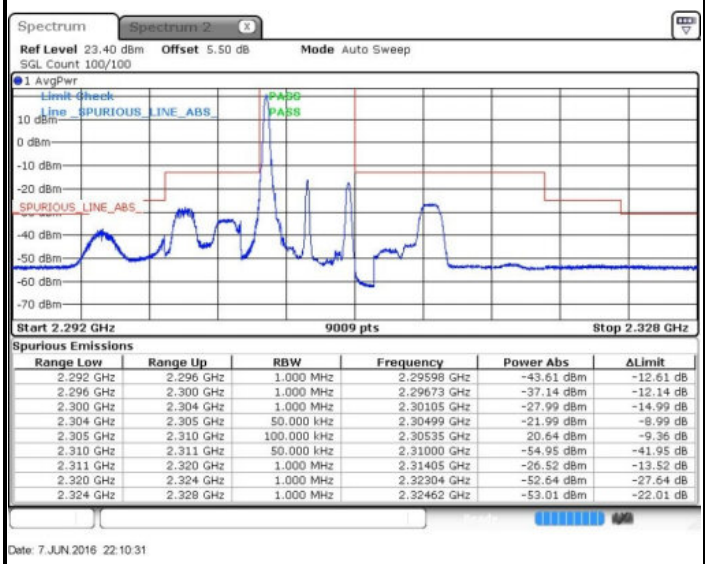


LTE Band 30	
Middle Channel / 10MHz / QPSK	Middle Channel / 10MHz / 16QAM
	

Conducted Band Edge

LTE Band 30 / 5MHz / QPSK

Lowest Band Edge / 1 RB0

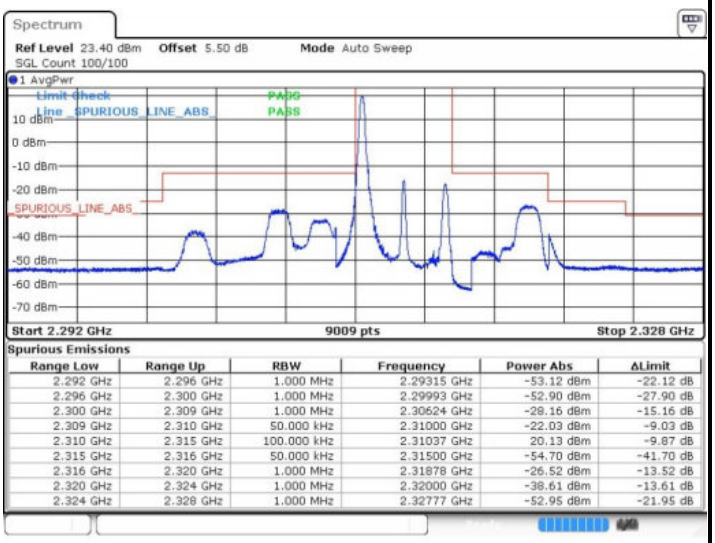


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29598 GHz	-43.61 dBm	-12.61 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29673 GHz	-37.14 dBm	-12.14 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30105 GHz	-27.99 dBm	-14.99 dB
2.304 GHz	2.305 GHz	50.000 kHz	2.30499 GHz	-21.99 dBm	-8.99 dB
2.305 GHz	2.310 GHz	100.000 kHz	2.30535 GHz	20.64 dBm	-9.36 dB
2.310 GHz	2.311 GHz	50.000 kHz	2.31000 GHz	-54.95 dBm	-41.95 dB
2.311 GHz	2.320 GHz	1.000 MHz	2.31405 GHz	-26.52 dBm	-13.52 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32304 GHz	-52.64 dBm	-27.64 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32462 GHz	-53.01 dBm	-22.01 dB

Date: 7.JUN.2016 22:10:31

Highest Band Edge / 1 RB0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29315 GHz	-53.12 dBm	-22.12 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29993 GHz	-52.90 dBm	-27.90 dB
2.300 GHz	2.309 GHz	1.000 MHz	2.30624 GHz	-28.16 dBm	-15.16 dB
2.309 GHz	2.310 GHz	50.000 kHz	2.31000 GHz	-22.03 dBm	-9.03 dB
2.310 GHz	2.315 GHz	100.000 kHz	2.31037 GHz	20.13 dBm	-9.87 dB
2.315 GHz	2.316 GHz	50.000 kHz	2.31500 GHz	-54.70 dBm	-41.70 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31878 GHz	-26.52 dBm	-13.52 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32000 GHz	-38.61 dBm	-13.61 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32777 GHz	-52.95 dBm	-21.95 dB

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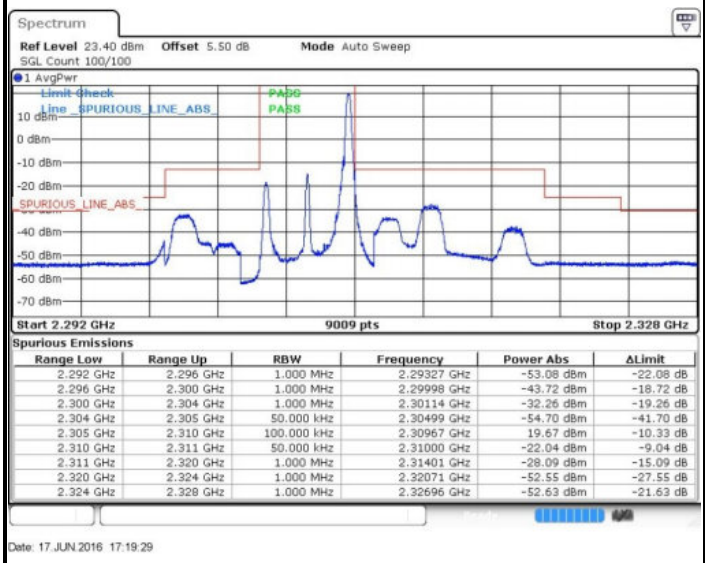
Lowest Band Edge / 1 RB max

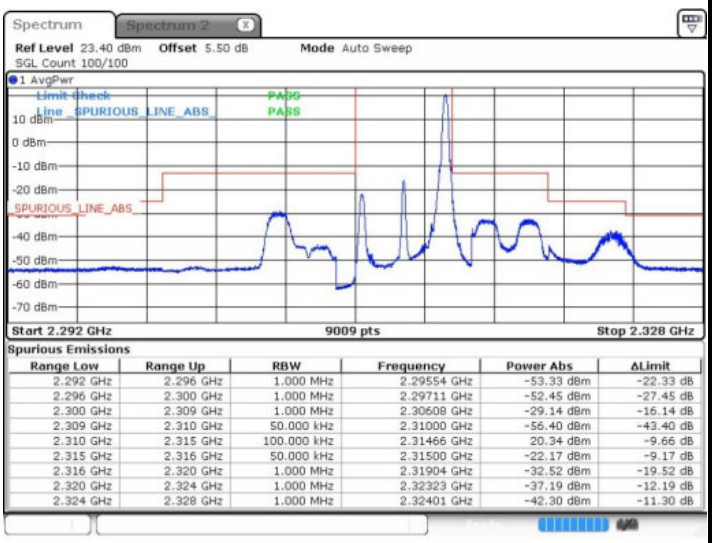


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29327 GHz	-53.08 dBm	-22.08 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29998 GHz	-43.72 dBm	-18.72 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30114 GHz	-32.26 dBm	-19.26 dB
2.304 GHz	2.305 GHz	50.000 kHz	2.30499 GHz	-54.70 dBm	-41.70 dB
2.305 GHz	2.310 GHz	100.000 kHz	2.30967 GHz	19.67 dBm	-10.33 dB
2.310 GHz	2.311 GHz	50.000 kHz	2.31000 GHz	-22.04 dBm	-9.04 dB
2.311 GHz	2.320 GHz	1.000 MHz	2.31401 GHz	-28.09 dBm	-15.09 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32071 GHz	-52.55 dBm	-27.55 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32696 GHz	-52.63 dBm	-21.63 dB

Date: 17.JUN.2016 17:19:29

Highest Band Edge / 1 RB max



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29554 GHz	-53.33 dBm	-22.33 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29711 GHz	-52.45 dBm	-27.45 dB
2.300 GHz	2.309 GHz	1.000 MHz	2.30608 GHz	-29.14 dBm	-16.14 dB
2.309 GHz	2.310 GHz	50.000 kHz	2.31000 GHz	-56.40 dBm	-43.40 dB
2.310 GHz	2.315 GHz	100.000 kHz	2.31466 GHz	20.34 dBm	-9.66 dB
2.315 GHz	2.316 GHz	50.000 kHz	2.31500 GHz	-22.17 dBm	-9.17 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31904 GHz	-32.52 dBm	-19.52 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32323 GHz	-37.19 dBm	-12.19 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32401 GHz	-42.30 dBm	-11.30 dB

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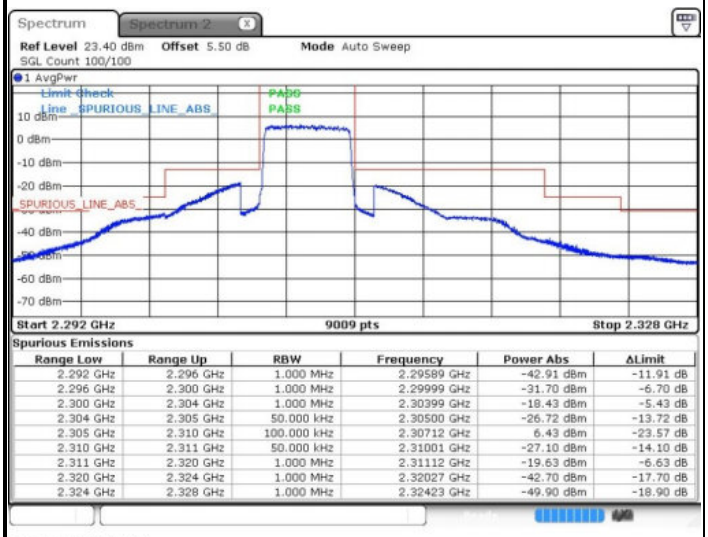
Lowest Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29589 GHz	-42.91 dBm	-11.91 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29999 GHz	-31.70 dBm	-6.70 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30399 GHz	-18.43 dBm	-5.43 dB
2.304 GHz	2.305 GHz	50.000 kHz	2.30500 GHz	-26.72 dBm	-13.72 dB
2.305 GHz	2.310 GHz	100.000 kHz	2.30712 GHz	6.43 dBm	-23.57 dB
2.310 GHz	2.311 GHz	50.000 kHz	2.31001 GHz	-27.10 dBm	-14.10 dB
2.311 GHz	2.320 GHz	1.000 MHz	2.31112 GHz	-19.63 dBm	-6.63 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32027 GHz	-42.70 dBm	-17.70 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32423 GHz	-49.90 dBm	-18.90 dB

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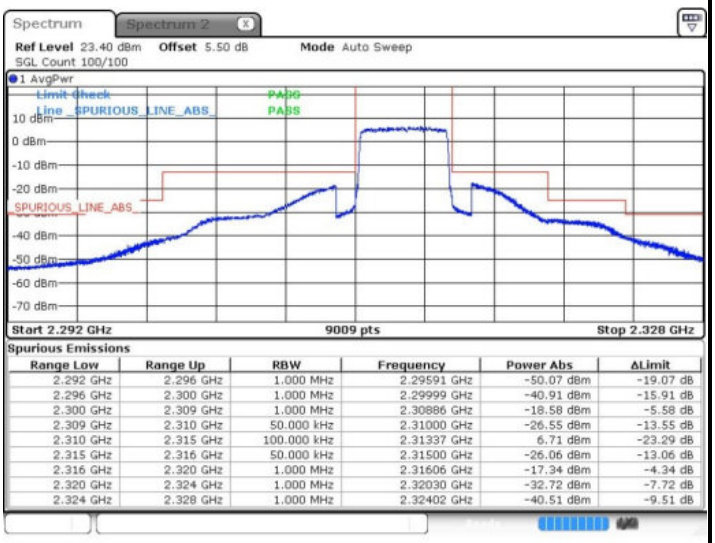
Highest Band Edge / Full RB



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29591 GHz	-50.07 dBm	-19.07 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29999 GHz	-40.91 dBm	-15.91 dB
2.300 GHz	2.309 GHz	1.000 MHz	2.30886 GHz	-18.58 dBm	-5.58 dB
2.309 GHz	2.310 GHz	50.000 kHz	2.31000 GHz	-26.55 dBm	-13.55 dB
2.310 GHz	2.315 GHz	100.000 kHz	2.31337 GHz	6.71 dBm	-23.29 dB
2.315 GHz	2.316 GHz	50.000 kHz	2.31500 GHz	-26.06 dBm	-13.06 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31606 GHz	-17.34 dBm	-4.34 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32030 GHz	-32.72 dBm	-7.72 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32402 GHz	-40.51 dBm	-9.51 dB

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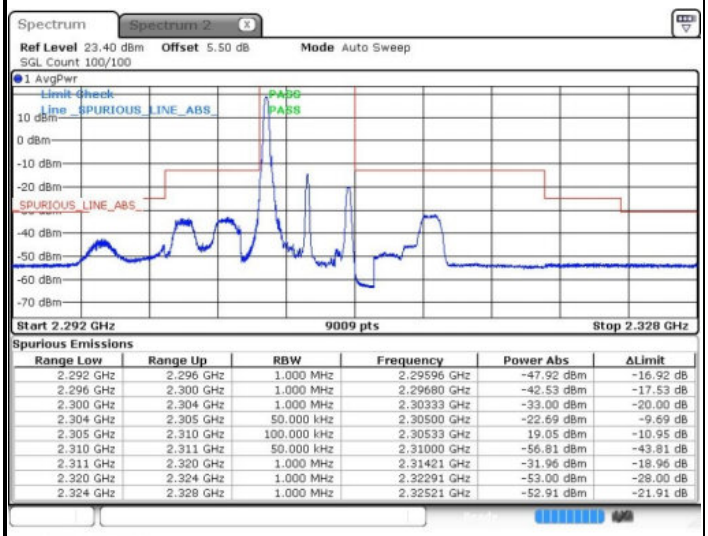
LTE Band 30 / 5MHz / 16QAM

Lowest Band Edge / 1 RB0



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29596 GHz	-47.92 dBm	-16.92 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29680 GHz	-42.53 dBm	-17.53 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30333 GHz	-33.00 dBm	-20.00 dB
2.304 GHz	2.305 GHz	50.000 kHz	2.30500 GHz	-22.69 dBm	-9.69 dB
2.305 GHz	2.310 GHz	100.000 kHz	2.30533 GHz	19.05 dBm	-10.95 dB
2.310 GHz	2.311 GHz	50.000 kHz	2.31000 GHz	-56.81 dBm	-43.81 dB
2.311 GHz	2.320 GHz	1.000 MHz	2.31421 GHz	-31.96 dBm	-18.96 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32291 GHz	-53.00 dBm	-28.00 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32521 GHz	-52.91 dBm	-21.91 dB

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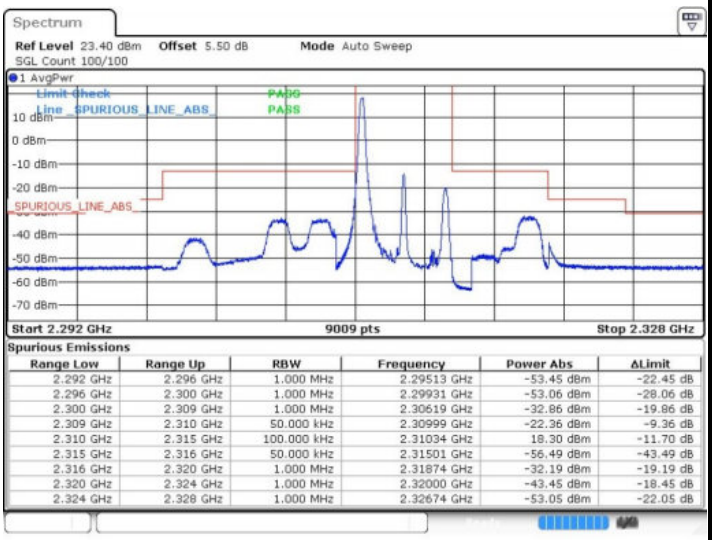
Highest Band Edge / 1 RB0

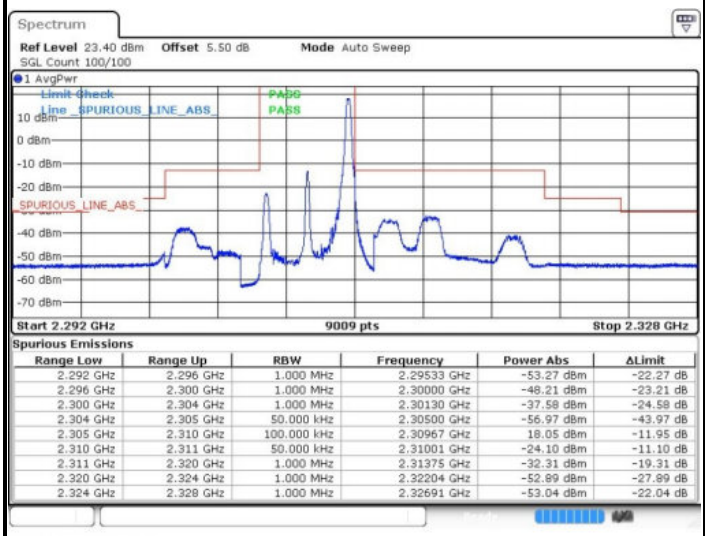


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29513 GHz	-53.45 dBm	-22.45 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29931 GHz	-53.06 dBm	-28.06 dB
2.300 GHz	2.309 GHz	1.000 MHz	2.30619 GHz	-32.86 dBm	-19.86 dB
2.309 GHz	2.310 GHz	50.000 kHz	2.30999 GHz	-22.36 dBm	-9.36 dB
2.310 GHz	2.315 GHz	100.000 kHz	2.31034 GHz	18.30 dBm	-11.70 dB
2.315 GHz	2.316 GHz	50.000 kHz	2.31501 GHz	-56.49 dBm	-43.49 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31874 GHz	-32.19 dBm	-19.19 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32000 GHz	-43.45 dBm	-18.45 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32674 GHz	-53.05 dBm	-22.05 dB

Date: 17.JUN.2016 17:20:48

Lowest Band Edge / 1 RB max

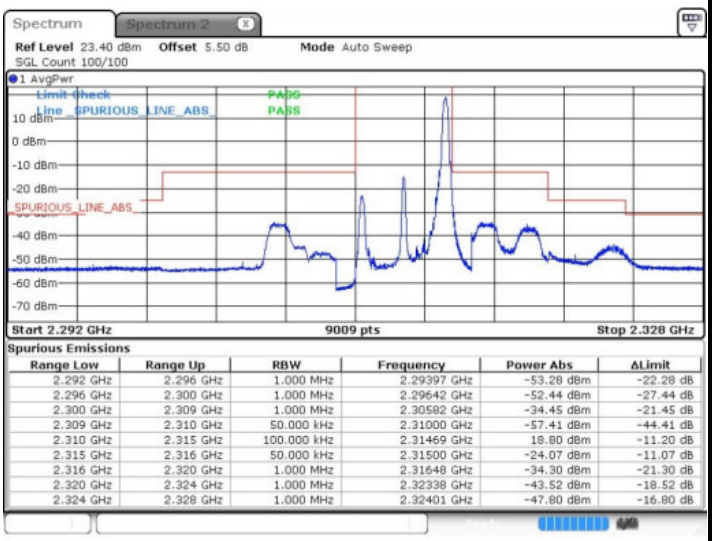


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29533 GHz	-53.27 dBm	-22.27 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.30000 GHz	-48.21 dBm	-23.21 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30130 GHz	-37.58 dBm	-24.58 dB
2.304 GHz	2.305 GHz	50.000 kHz	2.30500 GHz	-56.97 dBm	-43.97 dB
2.305 GHz	2.310 GHz	100.000 kHz	2.30967 GHz	18.05 dBm	-11.95 dB
2.310 GHz	2.311 GHz	50.000 kHz	2.31001 GHz	-24.10 dBm	-11.10 dB
2.311 GHz	2.320 GHz	1.000 MHz	2.31375 GHz	-32.31 dBm	-19.31 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32204 GHz	-52.89 dBm	-27.89 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32691 GHz	-53.04 dBm	-22.04 dB

Date: 17.JUN.2016 17:18:44

Highest Band Edge / 1 RB max

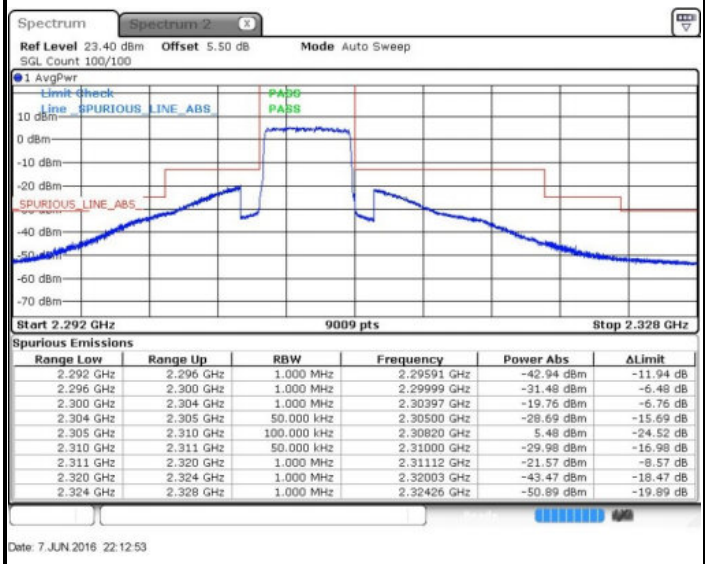


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29397 GHz	-53.28 dBm	-22.28 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29642 GHz	-52.44 dBm	-27.44 dB
2.300 GHz	2.309 GHz	1.000 MHz	2.30582 GHz	-34.45 dBm	-21.45 dB
2.309 GHz	2.310 GHz	50.000 kHz	2.31000 GHz	-57.41 dBm	-44.41 dB
2.310 GHz	2.315 GHz	100.000 kHz	2.31469 GHz	18.80 dBm	-11.20 dB
2.315 GHz	2.316 GHz	50.000 kHz	2.31500 GHz	-24.07 dBm	-11.07 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31648 GHz	-34.30 dBm	-21.30 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32338 GHz	-43.52 dBm	-18.52 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32401 GHz	-47.80 dBm	-16.80 dB

Date: 7.JUN.2016 22:16:53

Lowest Band Edge / Full RB

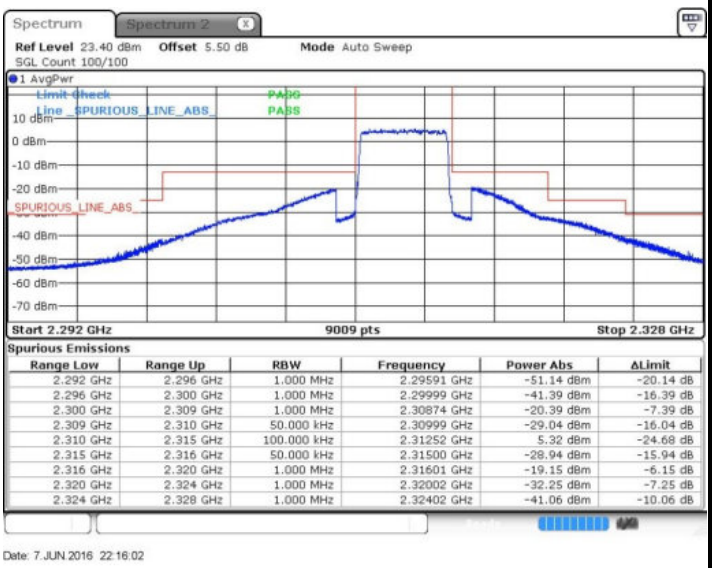


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29591 GHz	-42.94 dBm	-11.94 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29999 GHz	-31.48 dBm	-6.48 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30397 GHz	-19.76 dBm	-6.76 dB
2.304 GHz	2.305 GHz	50.000 kHz	2.30500 GHz	-28.69 dBm	-15.69 dB
2.305 GHz	2.310 GHz	100.000 kHz	2.30820 GHz	5.48 dBm	-24.52 dB
2.310 GHz	2.311 GHz	50.000 kHz	2.31000 GHz	-29.98 dBm	-16.98 dB
2.311 GHz	2.320 GHz	1.000 MHz	2.31112 GHz	-21.57 dBm	-8.57 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32003 GHz	-43.47 dBm	-18.47 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32426 GHz	-50.89 dBm	-19.89 dB

Date: 7.JUN.2016 22:12:53

Highest Band Edge / Full RB



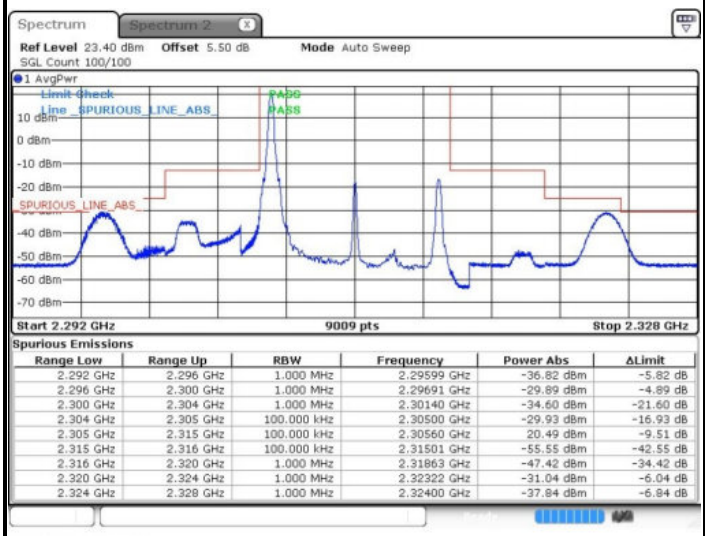
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29591 GHz	-51.14 dBm	-20.14 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29999 GHz	-41.39 dBm	-16.39 dB
2.300 GHz	2.309 GHz	1.000 MHz	2.30874 GHz	-20.39 dBm	-7.39 dB
2.309 GHz	2.310 GHz	50.000 kHz	2.30999 GHz	-29.04 dBm	-16.04 dB
2.310 GHz	2.315 GHz	100.000 kHz	2.31252 GHz	5.32 dBm	-24.68 dB
2.315 GHz	2.316 GHz	50.000 kHz	2.31500 GHz	-28.94 dBm	-15.94 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31601 GHz	-19.15 dBm	-6.15 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32002 GHz	-32.25 dBm	-7.25 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32402 GHz	-41.06 dBm	-10.06 dB

Date: 7.JUN.2016 22:16:02

LTE Band 30 / 10MHz / QPSK

Band Edge / 1 RB0

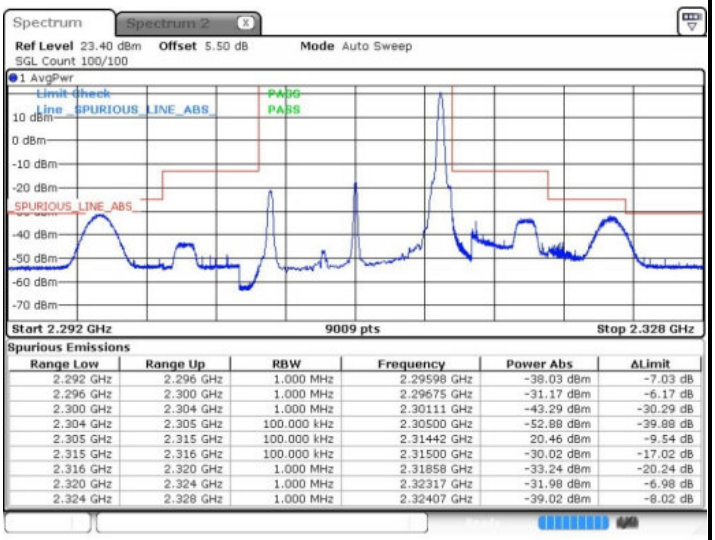


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29599 GHz	-36.82 dBm	-5.82 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29691 GHz	-29.89 dBm	-4.89 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30140 GHz	-34.60 dBm	-21.60 dB
2.304 GHz	2.305 GHz	100.000 kHz	2.30500 GHz	-29.93 dBm	-16.93 dB
2.305 GHz	2.315 GHz	100.000 kHz	2.30560 GHz	20.49 dBm	-9.51 dB
2.315 GHz	2.316 GHz	100.000 kHz	2.31501 GHz	-55.55 dBm	-42.55 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31863 GHz	-47.42 dBm	-34.42 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32322 GHz	-31.04 dBm	-6.04 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32400 GHz	-37.84 dBm	-6.84 dB

Date: 7.JUN.2016 22:21:01

Band Edge / 1 RB max

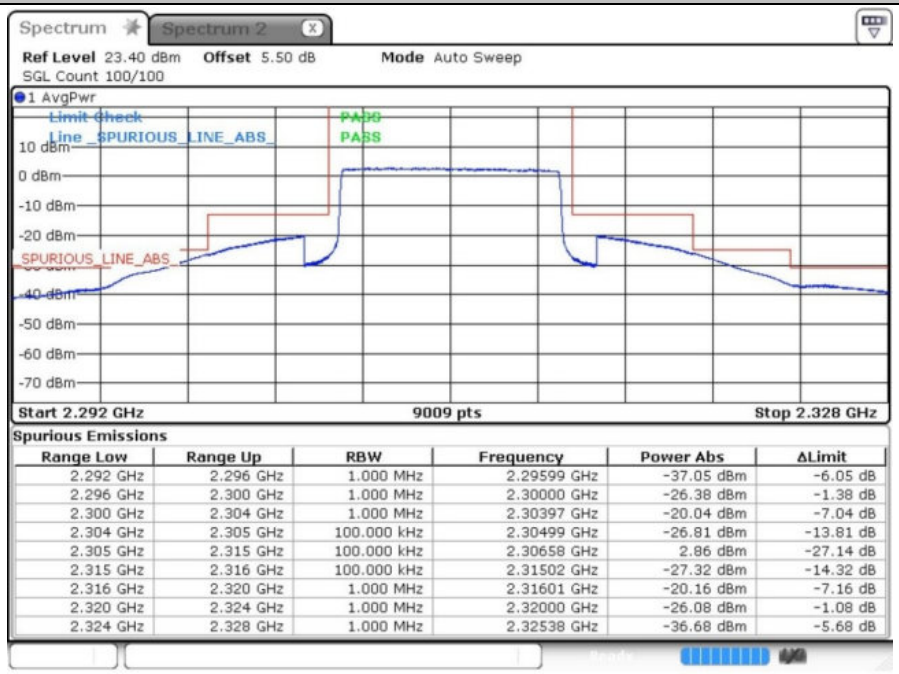


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29598 GHz	-38.03 dBm	-7.03 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29675 GHz	-31.17 dBm	-6.17 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30111 GHz	-43.29 dBm	-30.29 dB
2.304 GHz	2.305 GHz	100.000 kHz	2.30500 GHz	-52.88 dBm	-39.88 dB
2.305 GHz	2.315 GHz	100.000 kHz	2.31442 GHz	20.46 dBm	-9.54 dB
2.315 GHz	2.316 GHz	100.000 kHz	2.31500 GHz	-30.02 dBm	-17.02 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31858 GHz	-33.24 dBm	-20.24 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32317 GHz	-31.98 dBm	-6.98 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32407 GHz	-39.02 dBm	-8.02 dB

Date: 7.JUN.2016 22:18:47

Band Edge / Full RB



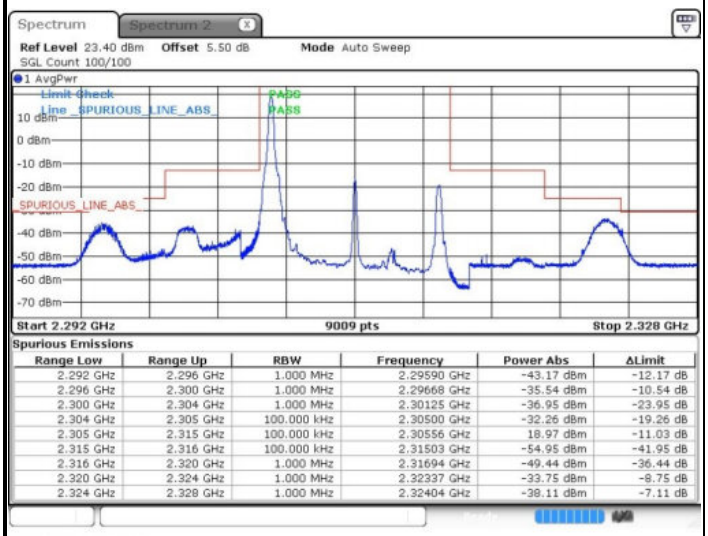
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29599 GHz	-37.05 dBm	-6.05 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.30000 GHz	-26.38 dBm	-1.38 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30397 GHz	-20.04 dBm	-7.04 dB
2.304 GHz	2.305 GHz	100.000 kHz	2.30499 GHz	-26.81 dBm	-13.81 dB
2.305 GHz	2.315 GHz	100.000 kHz	2.30658 GHz	2.86 dBm	-27.14 dB
2.315 GHz	2.316 GHz	100.000 kHz	2.31502 GHz	-27.32 dBm	-14.32 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31601 GHz	-20.16 dBm	-7.16 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32000 GHz	-26.08 dBm	-1.08 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32538 GHz	-36.68 dBm	-5.68 dB

Date: 7.JUN.2016 22:34:07

LTE Band 30 / 10MHz / 16QAM

Band Edge / 1 RB0

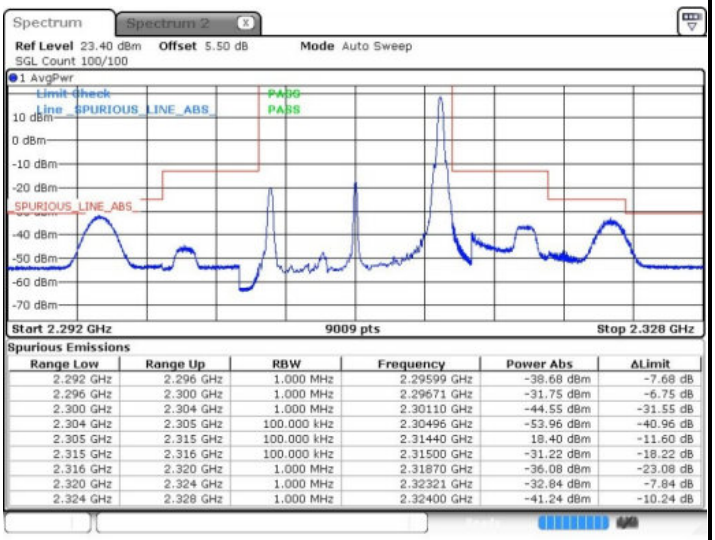


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29590 GHz	-43.17 dBm	-12.17 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29668 GHz	-35.54 dBm	-10.54 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30125 GHz	-36.95 dBm	-23.95 dB
2.304 GHz	2.305 GHz	100.000 kHz	2.30500 GHz	-32.26 dBm	-19.26 dB
2.305 GHz	2.315 GHz	100.000 kHz	2.30556 GHz	18.97 dBm	-11.03 dB
2.315 GHz	2.316 GHz	100.000 kHz	2.31503 GHz	-54.95 dBm	-41.95 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31694 GHz	-49.44 dBm	-36.44 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32337 GHz	-33.75 dBm	-8.75 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32404 GHz	-38.11 dBm	-7.11 dB

Date: 7.JUN.2016 22:20:21

Band Edge / 1 RB max

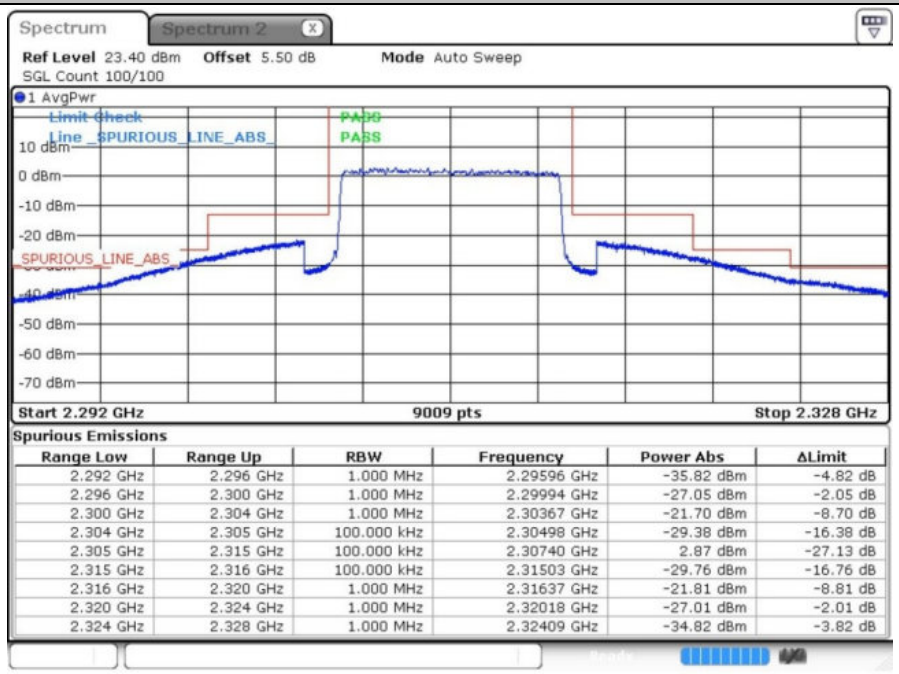


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29599 GHz	-38.68 dBm	-7.68 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29671 GHz	-31.75 dBm	-6.75 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30110 GHz	-44.55 dBm	-31.55 dB
2.304 GHz	2.305 GHz	100.000 kHz	2.30496 GHz	-53.96 dBm	-40.96 dB
2.305 GHz	2.315 GHz	100.000 kHz	2.31440 GHz	18.40 dBm	-11.60 dB
2.315 GHz	2.316 GHz	100.000 kHz	2.31500 GHz	-31.22 dBm	-18.22 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31870 GHz	-36.08 dBm	-23.08 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32321 GHz	-32.84 dBm	-7.84 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32400 GHz	-41.24 dBm	-10.24 dB

Date: 7.JUN.2016 22:19:51

Band Edge / Full RB



Spurious Emissions

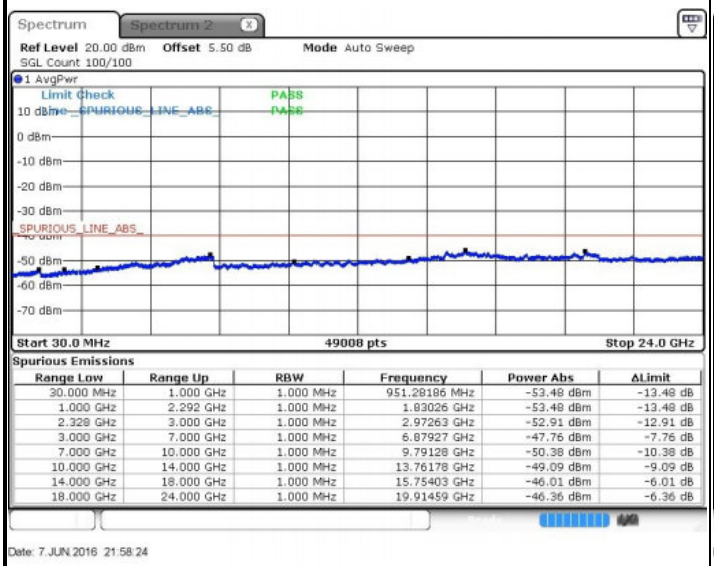
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.292 GHz	2.296 GHz	1.000 MHz	2.29596 GHz	-35.82 dBm	-4.82 dB
2.296 GHz	2.300 GHz	1.000 MHz	2.29994 GHz	-27.05 dBm	-2.05 dB
2.300 GHz	2.304 GHz	1.000 MHz	2.30367 GHz	-21.70 dBm	-8.70 dB
2.304 GHz	2.305 GHz	100.000 kHz	2.30498 GHz	-29.38 dBm	-16.38 dB
2.305 GHz	2.315 GHz	100.000 kHz	2.30740 GHz	2.87 dBm	-27.13 dB
2.315 GHz	2.316 GHz	100.000 kHz	2.31503 GHz	-29.76 dBm	-16.76 dB
2.316 GHz	2.320 GHz	1.000 MHz	2.31637 GHz	-21.81 dBm	-8.81 dB
2.320 GHz	2.324 GHz	1.000 MHz	2.32018 GHz	-27.01 dBm	-2.01 dB
2.324 GHz	2.328 GHz	1.000 MHz	2.32409 GHz	-34.82 dBm	-3.82 dB

Date: 7.JUN.2016 22:35:16

Conducted Spurious Emission

LTE Band 30 / 5MHz

Lowest Channel / QPSK

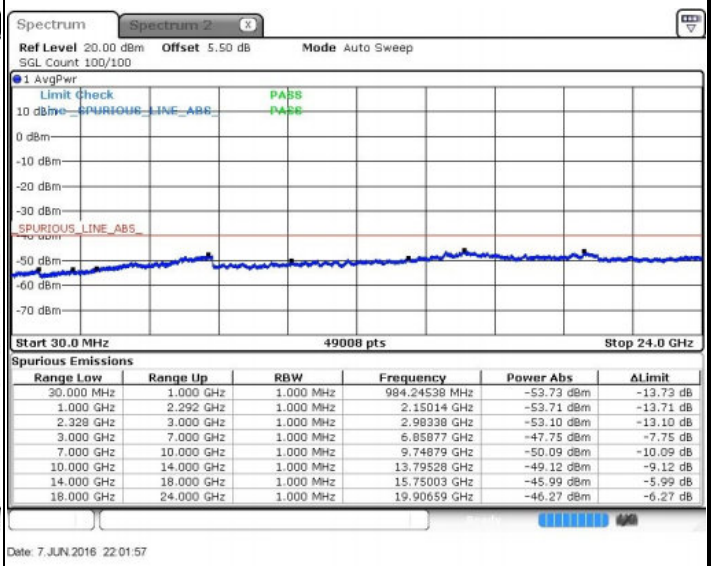


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	951.28186 MHz	-53.48 dBm	-13.48 dB
1.000 GHz	2.292 GHz	1.000 MHz	1.83026 GHz	-53.48 dBm	-13.48 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.97263 GHz	-52.91 dBm	-12.91 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.87927 GHz	-47.76 dBm	-7.76 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.79128 GHz	-50.38 dBm	-10.38 dB
10.000 GHz	14.000 GHz	1.000 MHz	13.76178 GHz	-49.09 dBm	-9.09 dB
14.000 GHz	18.000 GHz	1.000 MHz	15.75403 GHz	-46.01 dBm	-6.01 dB
18.000 GHz	24.000 GHz	1.000 MHz	19.91459 GHz	-46.36 dBm	-6.36 dB

Date: 7.JUN.2016 21:58:24

Lowest Channel / 16QAM

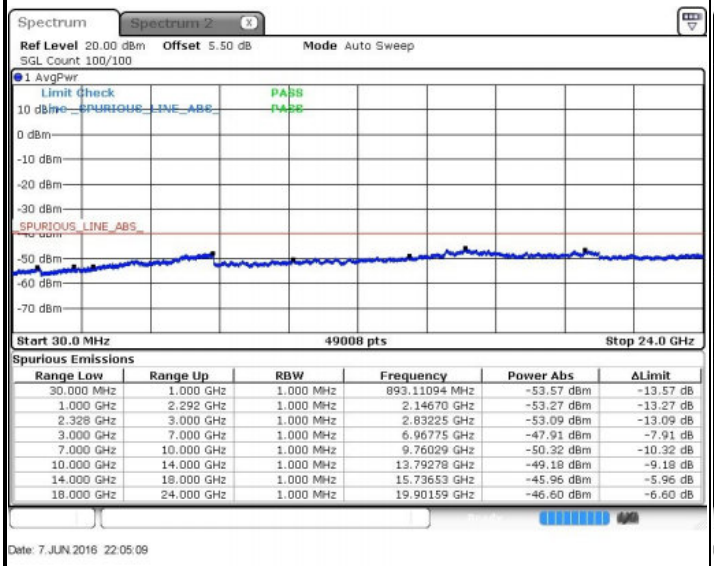


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	984.24538 MHz	-53.73 dBm	-13.73 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.15014 GHz	-53.71 dBm	-13.71 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.98338 GHz	-53.10 dBm	-13.10 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.85877 GHz	-47.75 dBm	-7.75 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.74879 GHz	-50.09 dBm	-10.09 dB
10.000 GHz	14.000 GHz	1.000 MHz	13.79528 GHz	-49.12 dBm	-9.12 dB
14.000 GHz	18.000 GHz	1.000 MHz	15.75003 GHz	-45.99 dBm	-5.99 dB
18.000 GHz	24.000 GHz	1.000 MHz	19.90659 GHz	-46.27 dBm	-6.27 dB

Date: 7.JUN.2016 22:01:57

Middle Channel / QPSK

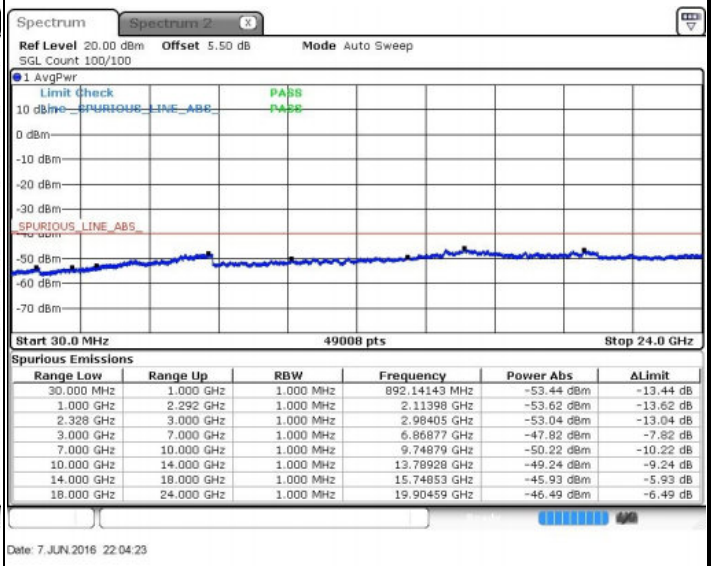


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	893.11094 MHz	-53.57 dBm	-13.57 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.14670 GHz	-53.27 dBm	-13.27 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.83225 GHz	-53.09 dBm	-13.09 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.96775 GHz	-47.91 dBm	-7.91 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.76029 GHz	-50.32 dBm	-10.32 dB
10.000 GHz	14.000 GHz	1.000 MHz	13.79278 GHz	-49.18 dBm	-9.18 dB
14.000 GHz	18.000 GHz	1.000 MHz	15.73653 GHz	-45.96 dBm	-5.96 dB
18.000 GHz	24.000 GHz	1.000 MHz	19.90159 GHz	-46.60 dBm	-6.60 dB

Date: 7.JUN.2016 22:05:09

Middle Channel / 16QAM



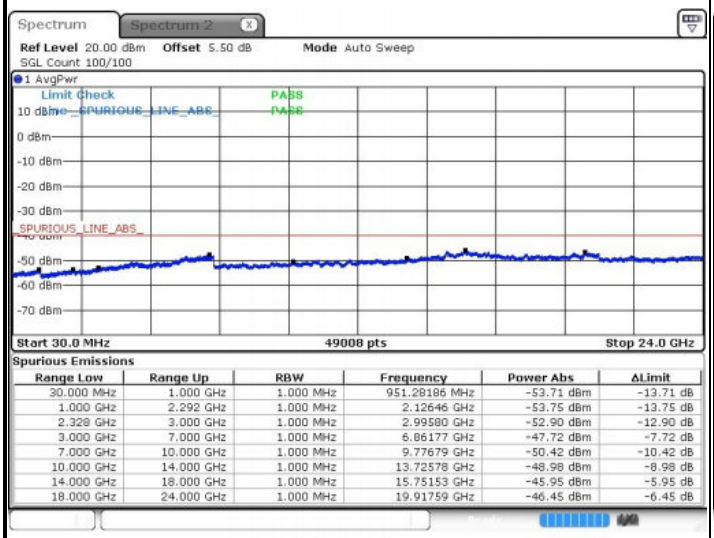
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	892.14143 MHz	-53.44 dBm	-13.44 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.11398 GHz	-53.62 dBm	-13.62 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.98405 GHz	-53.04 dBm	-13.04 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.86877 GHz	-47.82 dBm	-7.82 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.74879 GHz	-50.22 dBm	-10.22 dB
10.000 GHz	14.000 GHz	1.000 MHz	13.78928 GHz	-49.24 dBm	-9.24 dB
14.000 GHz	18.000 GHz	1.000 MHz	15.74853 GHz	-45.93 dBm	-5.93 dB
18.000 GHz	24.000 GHz	1.000 MHz	19.90459 GHz	-46.49 dBm	-6.49 dB

Date: 7.JUN.2016 22:04:23

LTE Band 30 / 5MHz

Highest Channel / QPSK

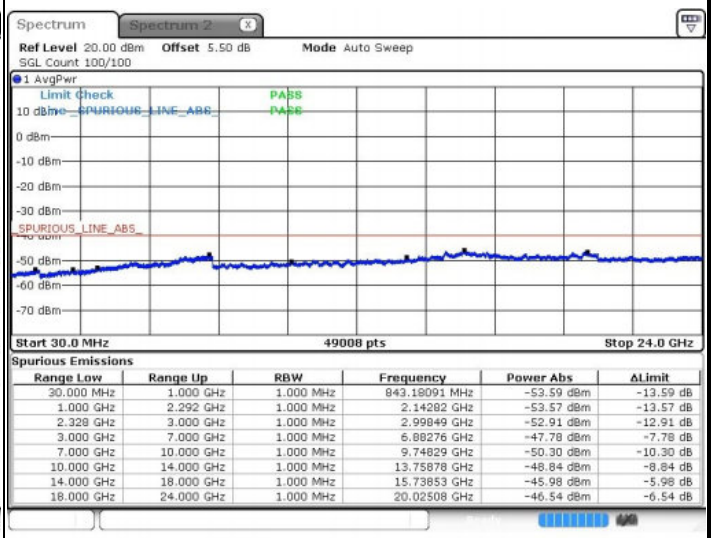


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	951.28186 MHz	-53.71 dBm	-13.71 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.12646 GHz	-53.75 dBm	-13.75 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.99580 GHz	-52.90 dBm	-12.90 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.86177 GHz	-47.72 dBm	-7.72 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.77679 GHz	-50.42 dBm	-10.42 dB
10.000 GHz	14.000 GHz	1.000 MHz	13.72578 GHz	-48.98 dBm	-8.98 dB
14.000 GHz	18.000 GHz	1.000 MHz	15.75153 GHz	-45.95 dBm	-5.95 dB
18.000 GHz	24.000 GHz	1.000 MHz	19.91759 GHz	-46.45 dBm	-6.45 dB

Date: 7.JUN.2016 22:06:06

Highest Channel / 16QAM



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	843.18091 MHz	-53.59 dBm	-13.59 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.14282 GHz	-53.57 dBm	-13.57 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.99849 GHz	-52.91 dBm	-12.91 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.88276 GHz	-47.78 dBm	-7.78 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.74829 GHz	-50.30 dBm	-10.30 dB
10.000 GHz	14.000 GHz	1.000 MHz	13.75878 GHz	-48.84 dBm	-8.84 dB
14.000 GHz	18.000 GHz	1.000 MHz	15.73853 GHz	-45.98 dBm	-5.98 dB
18.000 GHz	24.000 GHz	1.000 MHz	20.02508 GHz	-46.54 dBm	-6.54 dB

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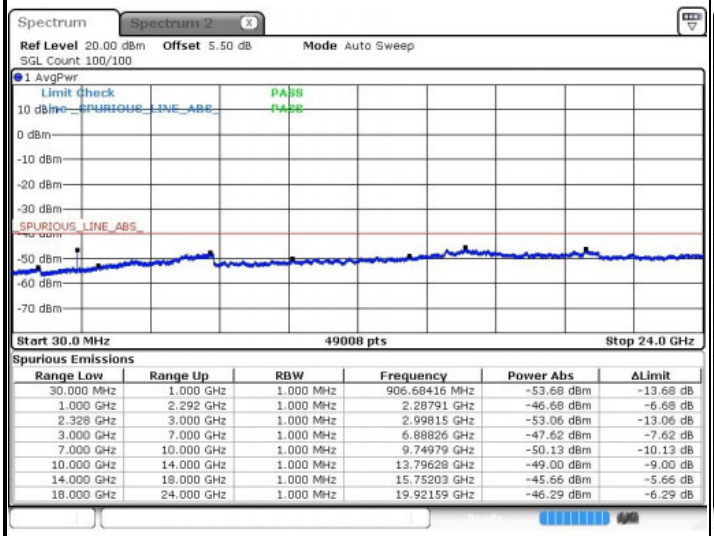
LTE Band 30 / 10MHz

Middle Channel / QPSK



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	906.68416 MHz	-53.68 dBm	-13.68 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.28791 GHz	-46.68 dBm	-6.68 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.99815 GHz	-53.06 dBm	-13.06 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.88826 GHz	-47.62 dBm	-7.62 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.74979 GHz	-50.13 dBm	-10.13 dB
10.000 GHz	14.000 GHz	1.000 MHz	13.79628 GHz	-49.00 dBm	-9.00 dB
14.000 GHz	18.000 GHz	1.000 MHz	15.75203 GHz	-45.66 dBm	-5.66 dB
18.000 GHz	24.000 GHz	1.000 MHz	19.92159 GHz	-46.29 dBm	-6.29 dB

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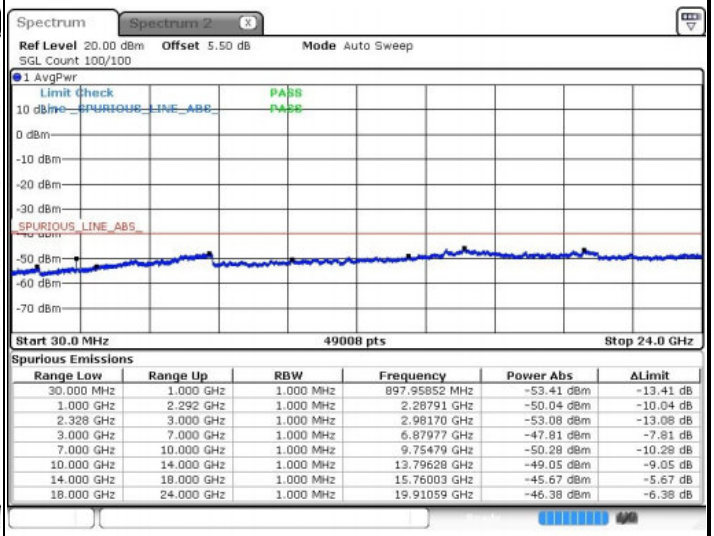
Middle Channel / 16QAM



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	897.95852 MHz	-53.41 dBm	-13.41 dB
1.000 GHz	2.292 GHz	1.000 MHz	2.28791 GHz	-50.04 dBm	-10.04 dB
2.328 GHz	3.000 GHz	1.000 MHz	2.98170 GHz	-53.08 dBm	-13.08 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.87977 GHz	-47.81 dBm	-7.81 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.75479 GHz	-50.28 dBm	-10.28 dB
10.000 GHz	14.000 GHz	1.000 MHz	13.79628 GHz	-49.05 dBm	-9.05 dB
14.000 GHz	18.000 GHz	1.000 MHz	15.76003 GHz	-45.67 dBm	-5.67 dB
18.000 GHz	24.000 GHz	1.000 MHz	19.91059 GHz	-46.38 dBm	-6.38 dB

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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	0.0020	PASS
40	Normal Voltage	0.0009	
30	Normal Voltage	0.0005	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0019	
0	Normal Voltage	0.0034	
-10	Normal Voltage	0.0017	
-20	Normal Voltage	0.0022	
-30	Normal Voltage	0.0018	
20	Maximum Voltage	0.0008	
20	Normal Voltage	0.0002	
20	Battery End Point	0.0004	

Note:

1. Normal Voltage = 3.8V. ；Battery End Point (BEP) = 3.7 V.；Maximum Voltage =4.2 V
2. Note: The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

Appendix B. Test Results of Radiated Test

LTE Band 30 / 5MHz / QPSK / RB Size 1 Offset 0									
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	4610.50	-48.66	-40	-8.66	-64.86	-60.42	0.94	12.70	H
	6915.25	-42.98	-40	-2.98	-64.35	-52.99	1.69	11.70	H
	9221.00	-49.09	-40	-9.09	-73.45	-59.75	1.44	12.10	H
	4610.50	-47.66	-40	-7.66	-63.41	-59.42	0.94	12.70	V
	6915.25	-46.66	-40	-6.66	-67.65	-56.67	1.69	11.70	V
	9221.00	-50.68	-40	-10.68	-73.58	-61.34	1.44	12.10	V
Middle	4615.50	-48.44	-40	-8.44	-64.64	-60.20	0.94	12.70	H
	6923.25	-42.04	-40	-2.04	-63.41	-52.05	1.69	11.70	H
	9231.00	-49.10	-40	-9.10	-73.46	-59.76	1.44	12.10	H
	4615.50	-47.79	-40	-7.79	-63.54	-59.55	0.94	12.70	V
	6923.25	-44.69	-40	-4.69	-65.68	-54.70	1.69	11.70	V
	9231.00	-50.98	-40	-10.98	-73.88	-61.64	1.44	12.10	V
Highest	4620.50	-49.42	-40	-9.42	-65.62	-61.18	0.94	12.70	H
	6930.75	-42.40	-40	-2.40	-63.77	-52.41	1.69	11.70	H
	9241.00	-48.60	-40	-8.60	-72.96	-59.26	1.44	12.10	H
	4620.50	-46.88	-40	-6.88	-62.63	-58.64	0.94	12.70	V
	6930.75	-45.93	-40	-5.93	-66.92	-55.94	1.69	11.70	V
	9241.00	-50.05	-40	-10.05	-72.95	-60.71	1.44	12.10	V

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

LTE Band 30 / 10MHz / QPSK / RB Size 1 Offset 0									
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	4611.18	-51.09	-40	-11.09	-67.29	-62.85	0.94	12.70	H
	6916.77	-42.27	-40	-2.27	-63.64	-52.28	1.69	11.70	H
	9222.36	-52.29	-40	-12.29	-76.65	-62.95	1.44	12.10	H
	4611.18	-49.00	-40	-9.00	-64.75	-60.76	0.94	12.70	V
	6916.77	-46.28	-40	-6.28	-67.27	-56.29	1.69	11.70	V
	9222.36	-48.96	-40	-8.96	-71.86	-59.62	1.44	12.10	V

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