FCC RF Test Report

APPLICANT	: Motorola Mobility LLC
EQUIPMENT	: Mobile Cellular Phone
BRAND NAME	: Motorola
MODEL NAME	: XT1922-6, XT1922-7, XT1922-9
FCC ID	: IHDT56XB1
STANDARD	: FCC 47 CFR Part 2, 90(R)
CLASSIFICATION	: PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Dec. 13, 2017 and completely tested on Feb. 02, 2018. We, Sporton International (Shenzhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI/TIA-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 (Shenzhen) Inc., the test report shall not be reproduced except in full.

TESTING
NVLAP LAB CODE 600156-0

Approved by: Eric Shih / Manager

Sporton International (Shenzhen) Inc.
1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City
Guangdong Province 518055 China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG7D1310D	Rev. 01	Initial issue of report	Feb. 12, 2018

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting only	PASS	-
	§90.542 (a)(7)	Effective Radiated Power	ERP < 3Watt	PASS	-
3.5	§2.1049	Occupied Bandwidth	Reporting only	PASS	-
3.6	§2.1053 §90.543 (e)(2)(3)	Conducted Band Edge Measurement	Refer standard	PASS	-
3.7	§2.1051 §90.210(n)	Emission Mask	Mask B	PASS	
3.8	§2.1053 §90.543 (e)(3)	Conducted Spurious Emission	< $43+10\log_{10}$(P[Watts])	PASS	
3.9	§2.1055 §90.539 (e)	Frequency Stability Temperature & Voltage	< ±1.25 ppm	PASS	
4.4	§2.1053 §90.543 (e)(3) §90.543 (f)	Radiated Spurious Emission	< $43+10\log_{10}$(P[Watts])	PASS	Under limit 30.08 dB at 1577.00 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 Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT1922-6, XT1922-7, XT1922-9
FCC ID	IHDT56XB1
Tx Frequency	LTE Band 14: 790.5 MHz ~ 795.5 MHz
Rx Frequency	LTE Band 14: 760.5 MHz ~ 765.5 MHz
Bandwidth	5MHz / 10MHz
Maximum Output Power to Antenna	LTE Band 14: 23.90dBm
Type of Modulation	QPSK / 16QAM / 64QAM
IMEI Code	Conducted: 351864090027578 Radiation: 351864090024591
HW Version	DVT1B
SW Version	jeter_oem_userdebug_8.0.0_OPP27.34_970_intcfg-test-keys_oem
EUT Stage	Identical Prototype

Remark:

1. For XT1922-6, XT1922-7, XT1922-9, they are the same product except model name different for market segment.
2. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Specification of Accessory

Specification of Accessory				
AC Adapter 1	**Brand Name**	Motorola (Acbel)	**Model Name**	C-P35 SPN5945A
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc,2000mA		
AC Adapter 2	**Brand Name**	Motorola (Salom)	**Model Name**	SSW-2919UMTJ C-P35 SPN5945A
	Power Rating	I/P: 100-240 Vac, 300mA, O/P: 5.2Vdc,2000mA		
Battery	**Brand Name**	Motorola (SCUD)	**Model Name**	BL270
	Power Rating	3.85Vdc,4000mAh	**Type**	Li-ion, ATL426580
USB Cable	**Brand Name**	Motorola (Saibao)	**Model Name**	SLQ-A077A
	Signal Line Type	1.0 meter, shielded cable, without ferrite core		

1.5 Modification of EUT

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

1.6 Maximum ERP Power, Frequency Tolerance, and Emission Designator

LTE Band 14		QPSK			16QAM		
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)
5	790.5~795.5	4M50G7D	-	0.1067	4M49W7D	-	0.0889
10	793	9M05G7D	0.0077	0.1135	9M03W7D	-	0.0912
LTE Band 14		64QAM					
BW (MHz)	Frequency Range (MHz)	Emission Designator (99%OBW)	Frequency Tolerance (ppm)	Maximum ERP(W)			
5	790.5~795.5	4M50G7D	-	0.1127			
10	793	8M99G7D	-	0.1125			

1.7 Testing Site

Sporton International (Shenzhen) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0) and the FCC designation No are CN5018 and CN5019.

Test Site	Sporton International (Shenzhen) Inc.	
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City Guangdong Province 518055 China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595	
Test Site No.	**Sporton Site No.**	**FCC Test Firm Registration No.**
	TH01-SZ	251365

Test Site	Sporton International (Shenzhen) Inc.	
Test Site Location	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan District Shenzhen City Guangdong Province 518055 China TEL: +86-755-3320-2398	
Test Site No.	**Sporton Site No.**	**FCC Test Firm Registration No.**
	03CH03-SZ	577730

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 90(R)
- ANSI/TIA-603-E
- FCC KDB 971168 D01 Power Meas. License Digital Systems 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

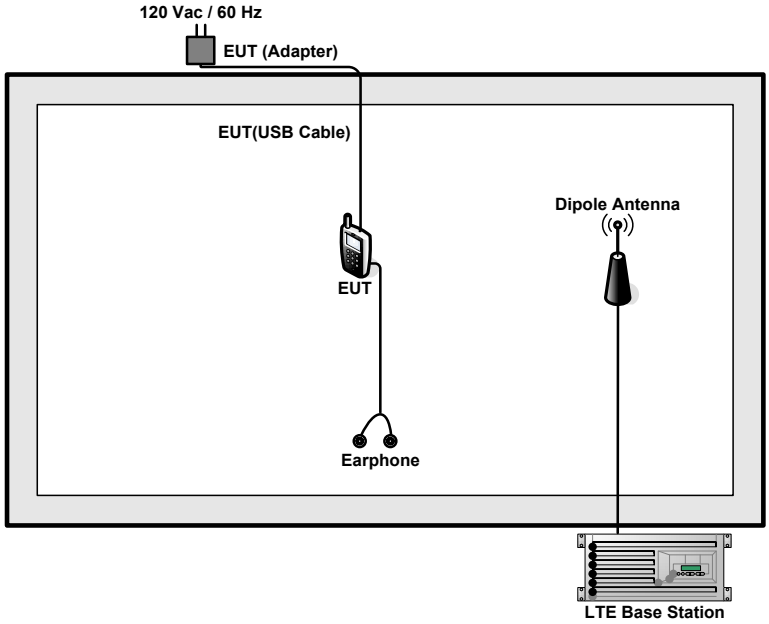
2.1 Test Mode

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	64QAM	1	Half	Full	L	M	H
Max. Output Power	14	-	-	V	-	-	-	V	V	V	V	V	V	V	V	V
	14	-	-		V	-	-	V	V	V	V	V	V		V	
26dB and 99% Bandwidth	14	-	-	V		-	-	V	V	V			V	V	V	V
	14	-	-		V	-	-	V	V	V			V		V	
Conducted Band Edge	14	-	-	V		-	-	V	V	V	V		V	V		V
	14	-	-		V	-	-	V	V	V	V		V		V	
Emission Mask	14	-	-	V		-	-	V	V	V	V		V	V	V	V
	14	-	-		V	-	-	V	V	V	V		V		V	
Conducted Spurious Emission	14	-	-	V		-	-	V	V	V	V			V	V	V
	14	-	-		V	-	-	V	V	V	V				V	
Frequency Stability	14	-	-		V	-	-	V					V		V	
E.R.P	14	-	-	V		-	-	V	V	V	V			V	V	V
	14	-	-		V	-	-	V	V	V	V				V	
Radiated Spurious Emission	14	-	-	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, 1.8 m
3.	Earphone	Ashley ROW	N/A	N/A	Unshielded,1.2m	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.

Example:

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 4.0 dB and 10dB attenuator.

Offset (dB) = RF cable loss (dB) + attenuator factor (dB).

= 4.0 + 10 = 14.0 (dB)

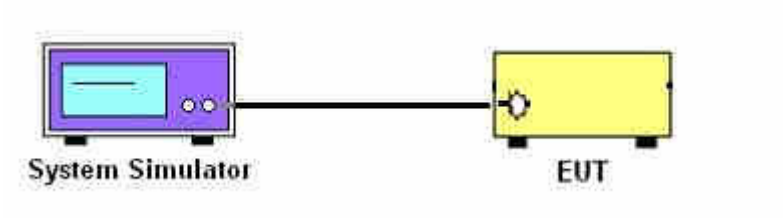
3 Conducted Test Items

3.1 Measuring Instruments

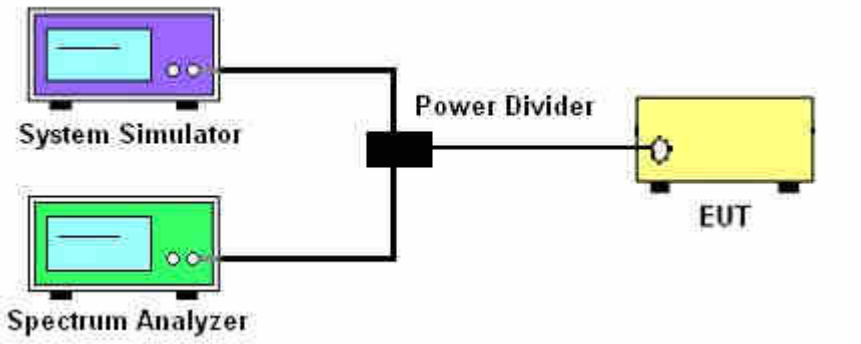
See list of measuring instruments of this test report.

3.2 Test Setup

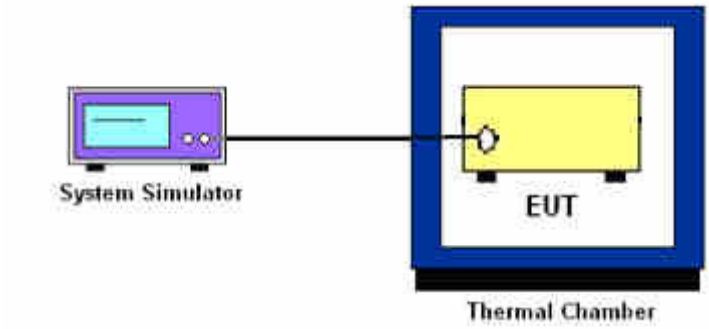
3.2.1 Conducted Output Power



3.2.2 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 and ERP

3.4.1 Description of the Conducted Output Power Measurement and ERP

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.

The ERP of mobile transmitters must not exceed 3 Watts for LTE Band 14.

According to KDB 412172 D01 Power Approach,

EIRP = $P_T + G_T – L_C$, ERP = EIRP -2.15, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

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 Occupied Bandwidth

3.5.1 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.

3.5.2 Test Procedures

1. The testing follows FCC KDB 971168 v03 Section 4.2.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.

3.6 Conducted Band Edge Measurement

3.6.1 Description of Conducted Band Edge Measurement

For operations in the 758-768 MHz and the 788-798 MHz bands

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

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

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

3.6.2 Test Procedures

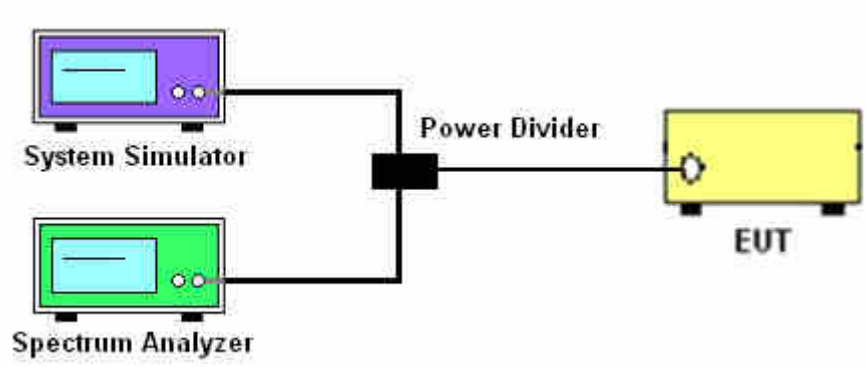
1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. Set spectrum analyzer with RMS detector.
3. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
4. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
   = P(W)- [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.

3.7 Emission Mask

3.7.1 Test Procedures

1. The testing follows FCC KDB 971168 v03 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The power of the modulated signal was measured on a spectrum analyzer using an RMS and 10 second sweep time in order to maximize the level.
4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.7.2 Test Setup



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 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30MHz up to a frequency including its 10^{th} 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, for under 1GHz RBW = 100kHz, VBW = 300kHz and for above 1GHz RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
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. 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 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 ±1.25 ppm 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.

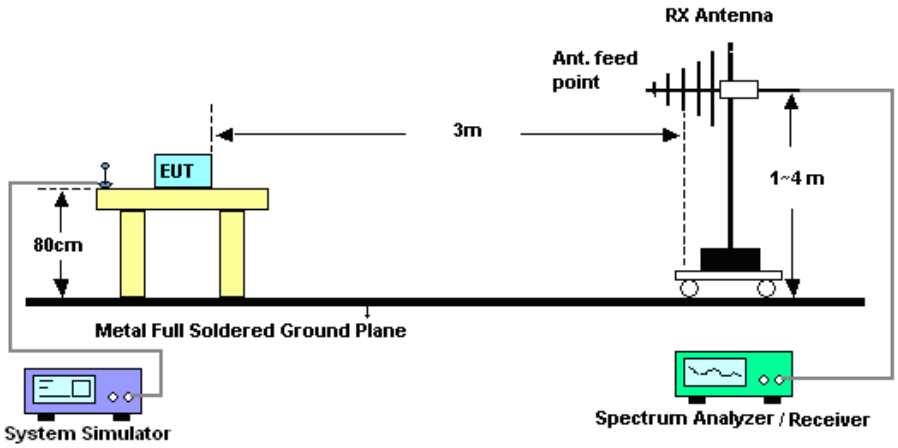
4 Radiated Test Items

4.1 Measuring Instruments

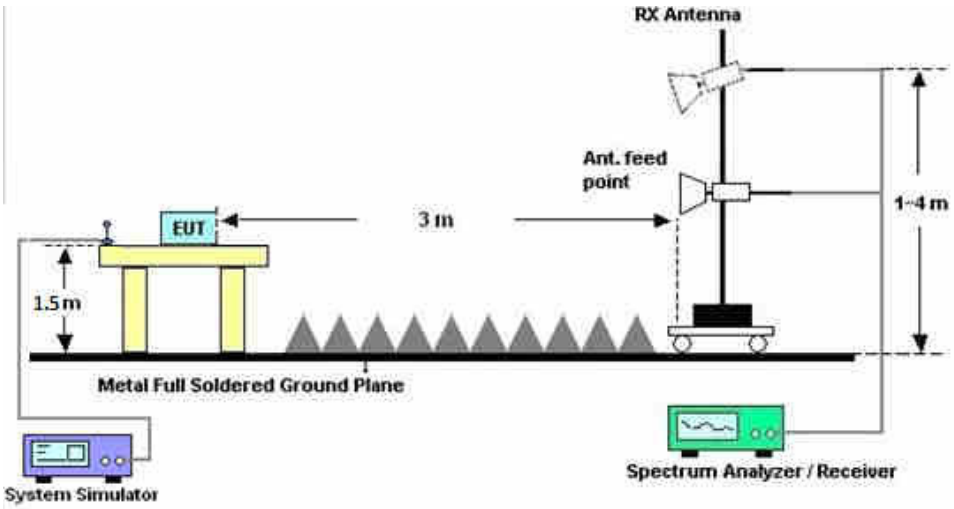
See list of measuring instruments of this test report.

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-603-E. 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 43 + 10 log (P) dB.

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

4.4.2 Test Procedures

1. The testing follows FCC KDB 971168 v03 Section 5.8 and ANSI/TIA-603-E 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, which was 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 one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, Sweep = 500ms, Taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
    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.
12. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
    ERP (dBm) = EIRP – 2.15

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	9kHz~40GHz	Apr. 20, 2017	Jan. 03, 2018~ Feb. 02, 2018	Apr. 19, 2018	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 20, 2017	Jan. 03, 2018~ Feb. 02, 2018	Jul. 19, 2018	Conducted (TH01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 20, 2017	Dec. 30, 2017~ Dec. 31, 2017	Apr. 19, 2018	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 20, 2017	Dec. 30, 2017~ Dec. 31, 2017	Apr. 19, 2018	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	May 14, 2017	Dec. 30, 2017~ Dec. 31, 2017	May 13, 2018	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120 D	9120D-1355	1GHz~18GHz	Jul. 09, 2017	Dec. 30, 2017~ Dec. 31, 2017	Jul. 08, 2018	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Jun. 16, 2017	Dec. 30, 2017~ Dec. 31, 2017	Jun. 15, 2018	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102210	0.01Hz ~3000MHz	Oct. 19, 2017	Dec. 30, 2017~ Dec. 31, 2017	Oct. 18, 2018	Radiation (03CH03-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270156	0.5GHz~26.5Ghz	Apr. 20, 2017	Dec. 30, 2017~ Dec. 31, 2017	Apr. 19, 2018	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 18, 2017	Dec. 30, 2017~ Dec. 31, 2017	Jul. 17, .2018	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Dec. 30, 2017~ Dec. 31, 2017	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Dec. 30, 2017~ Dec. 31, 2017	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Dec. 30, 2017~ Dec. 31, 2017	NCR	Radiation (03CH03-SZ)

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))	**3.0dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.6dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.8dB**

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

LTE Band 14 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	23.45	23.46	23.33
5	1	12		23.46	23.33	23.63
5	1	24		23.36	23.38	23.40
5	12	0		22.56	22.39	22.51
5	12	7		22.52	22.35	22.50
5	12	13		22.44	22.43	22.51
5	25	0		22.45	22.35	22.49
5	1	0	16-QAM	22.62	22.82	22.77
5	1	12		22.84	22.76	22.72
5	1	24		22.69	22.71	22.60
5	12	0		21.59	21.55	21.49
5	12	7		21.57	21.47	21.56
5	12	13		21.48	21.46	21.52
5	25	0		21.55	21.53	21.47
5	1	0	64-QAM	23.81	23.85	23.84
5	1	12		23.84	23.79	23.81
5	1	24		23.80	23.87	23.83
5	12	0		23.77	23.75	23.76
5	12	7		23.82	23.86	23.81
5	12	13		23.86	23.78	23.84
5	25	0		23.79	23.85	23.81

LTE Band 14 Maximum Average Power [dBm]						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
10	1	0	QPSK	-	23.90	-
10	1	25			23.59	
10	1	49			23.66	
10	25	0			22.59	
10	25	12			22.44	
10	25	25			22.47	
10	50	0			22.48	
10	1	0	16-QAM	-	22.95	-
10	1	25			22.81	
10	1	49			22.79	
10	25	0			21.62	
10	25	12			21.48	
10	25	25			21.44	
10	50	0			21.45	
10	1	0	64-QAM	-	23.80	-
10	1	25			23.81	
10	1	49			23.79	
10	25	0			23.86	
10	25	12			23.83	
10	25	25			23.86	
10	50	0			23.81	

ERP

LTE Band 14 (G_T - L_C = -1.20 dB) QPSK						
Bandwidth	5M			10M		
Channel	23305	23330	23355		23330	
	(Low)	(Mid)	(High)		(Mid)	
Frequency (MHz)	790.5	793	795.5		793	
Conducted Power (dBm)	23.46	23.33	23.63		23.90	
Conducted Power (Watts)	0.2218	0.2153	0.2307		0.2455	
ERP(dBm)	20.11	19.98	20.28		20.55	
ERP(Watts)	0.1026	0.0995	0.1067		0.1135	

LTE Band 14 (G_T - L_C = -1.20 dB) 16QAM						
Bandwidth	5M			10M		
Channel	23305	23330	23355		23330	
	(Low)	(Mid)	(High)		(Mid)	
Frequency (MHz)	790.5	793	795.5		793	
Conducted Power (dBm)	22.84	22.76	22.72		22.95	
Conducted Power (Watts)	0.1923	0.1888	0.1871		0.1972	
ERP(dBm)	19.49	19.41	19.37		19.60	
ERP(Watts)	0.0889	0.0873	0.0865		0.0912	

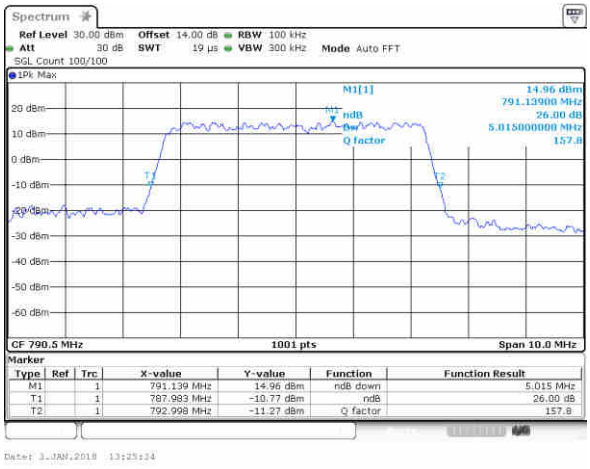
LTE Band 14 (G_T - L_C = -1.20 dB) 64QAM						
Bandwidth	5M				10M	
Channel	23305	23330	23355		23330	
	(Low)	(Mid)	(High)		(Mid)	
Frequency (MHz)	790.5	793	795.5		793	
Conducted Power (dBm)	23.80	23.87	23.83		23.86	
Conducted Power (Watts)	0.2399	0.2438	0.2415		0.2432	
ERP(dBm)	20.45	20.52	20.48		20.51	
ERP(Watts)	0.1109	0.1127	0.1117		0.1125	

26dB Bandwidth

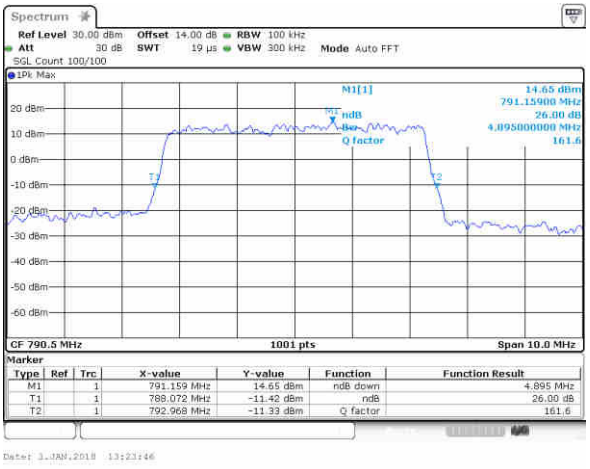
Mode	LTE Band 14 : 26dB BW(MHz)									
BW	5MHz			10MHz						
Mod.	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM				
Lowest CH	5.015	4.895	4.905	-	-	-				
Middle CH	4.925	4.895	4.895	9.95	9.81	9.75				
Highest CH	4.955	4.965	4.845	-	-	-				

LTE Band 14

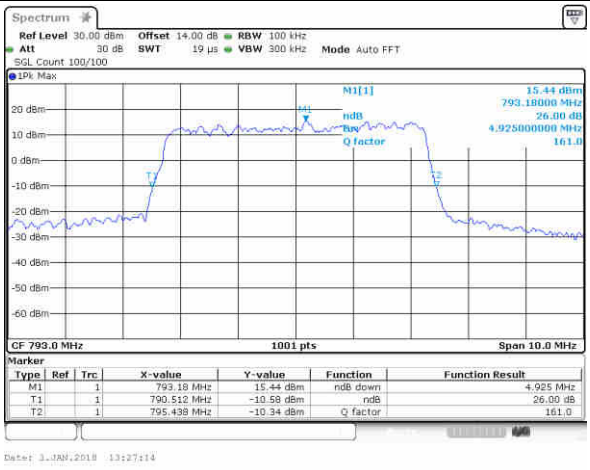
Lowest Channel / 5MHz / QPSK



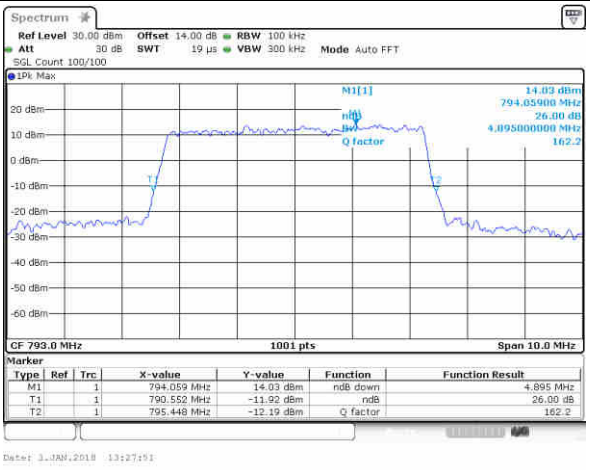
Lowest Channel / 5MHz / 16QAM



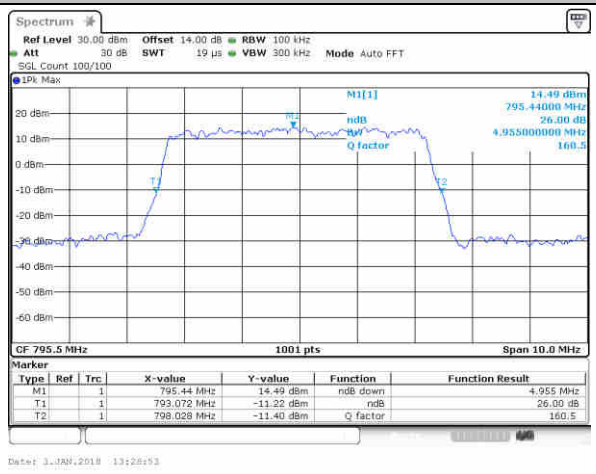
Middle Channel / 5MHz / QPSK



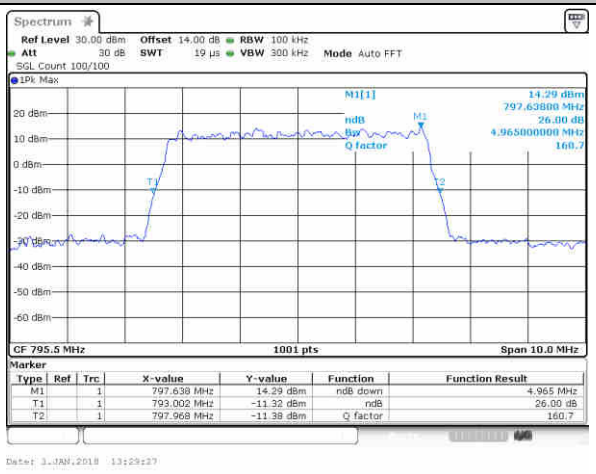
Middle Channel / 5MHz / 16QAM

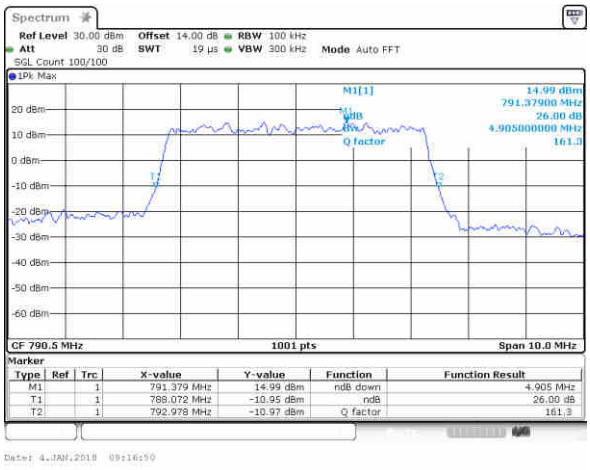
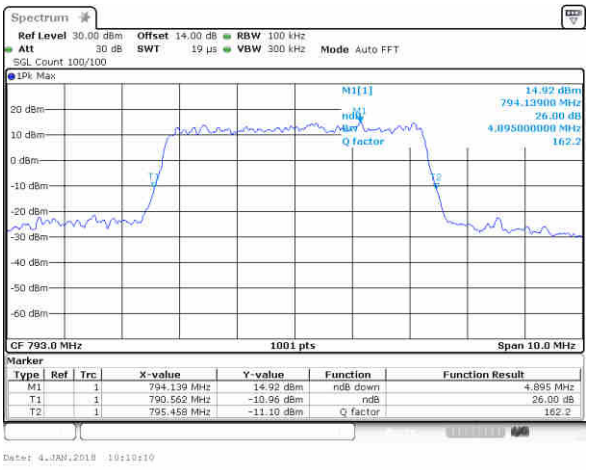
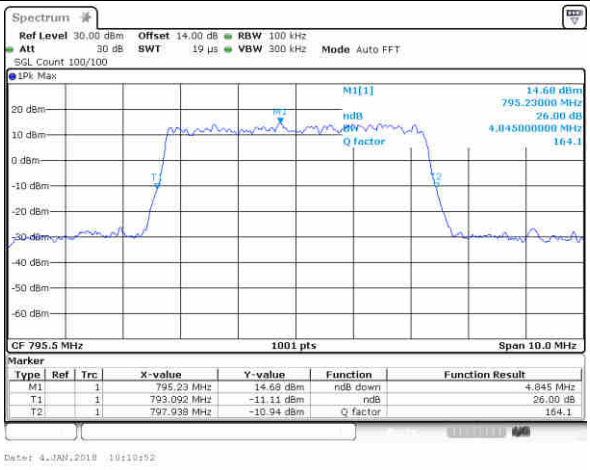


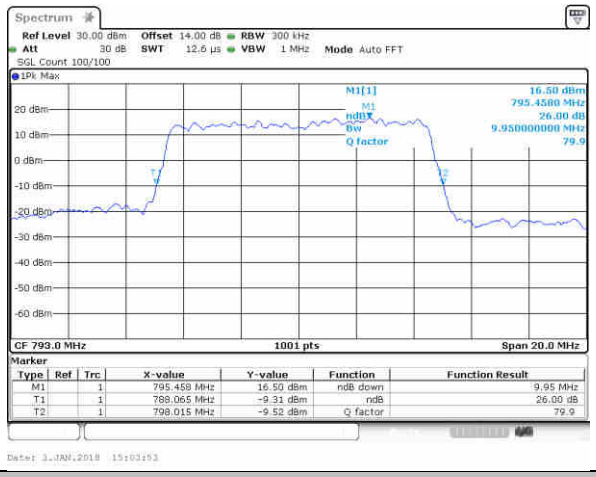
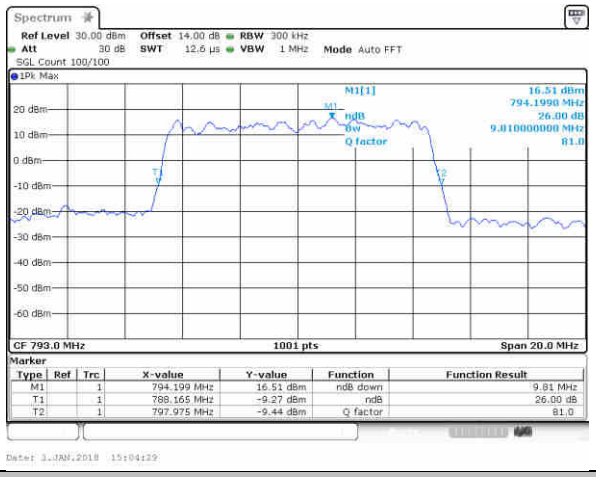
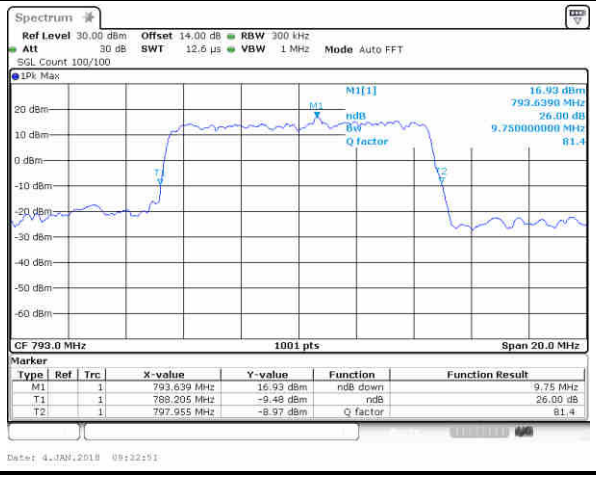
Highest Channel / 5MHz / QPSK



Highest Channel / 5MHz / 16QAM

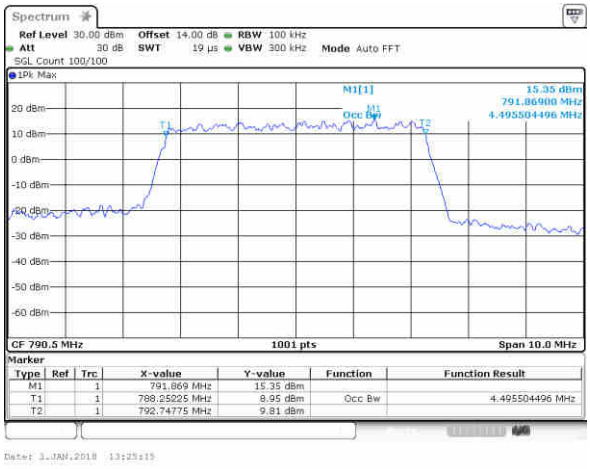
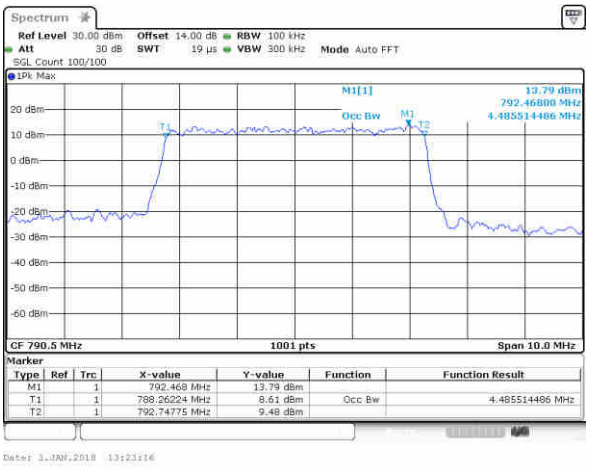
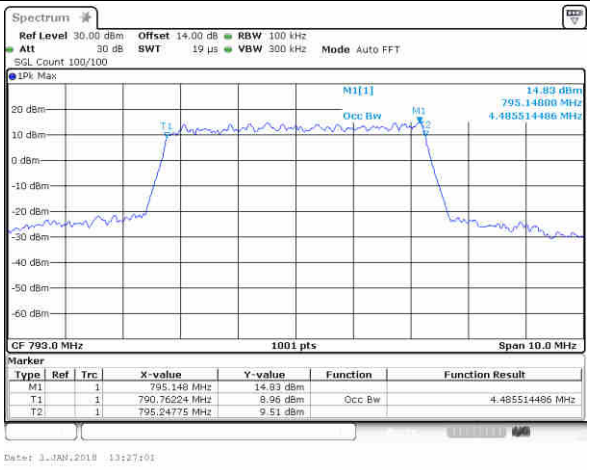
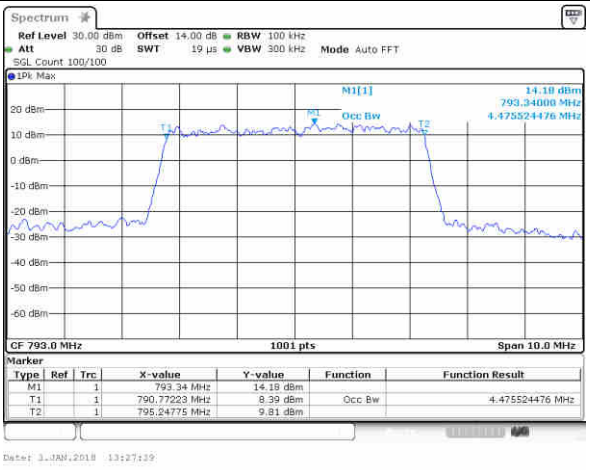
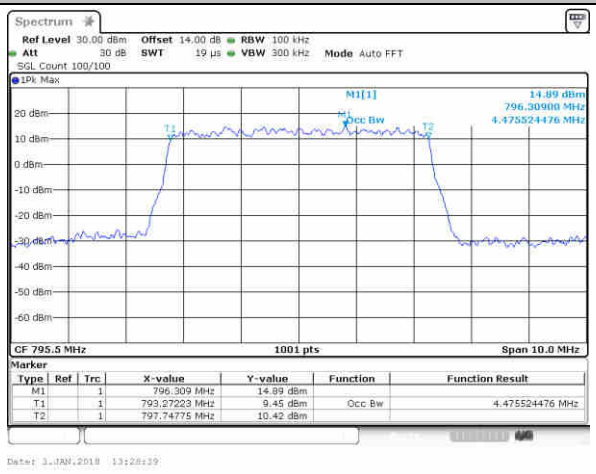
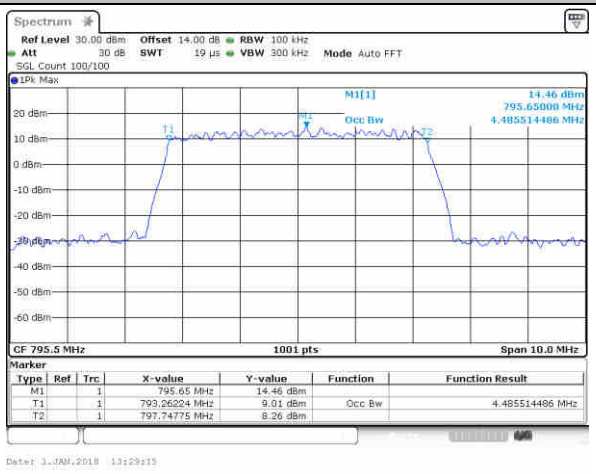


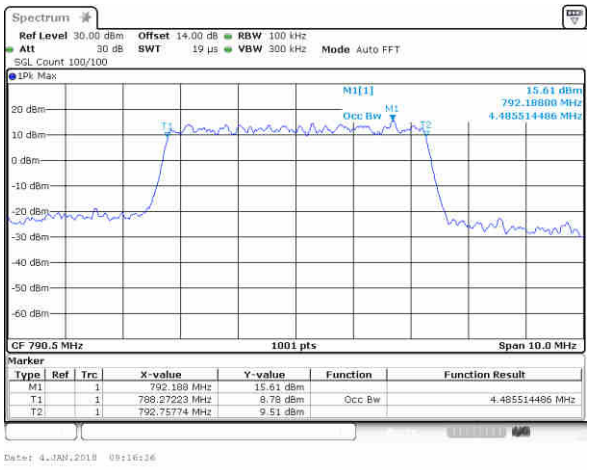
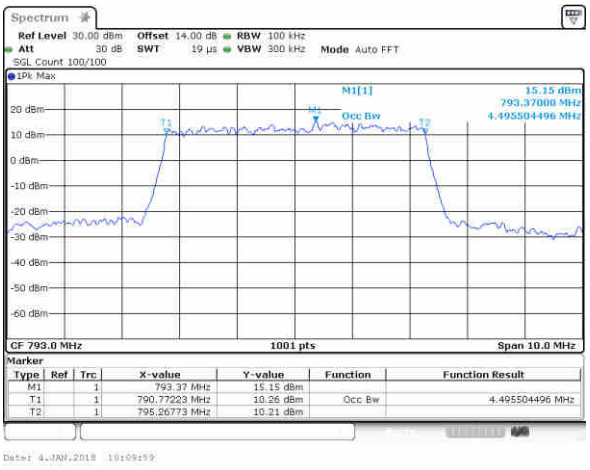
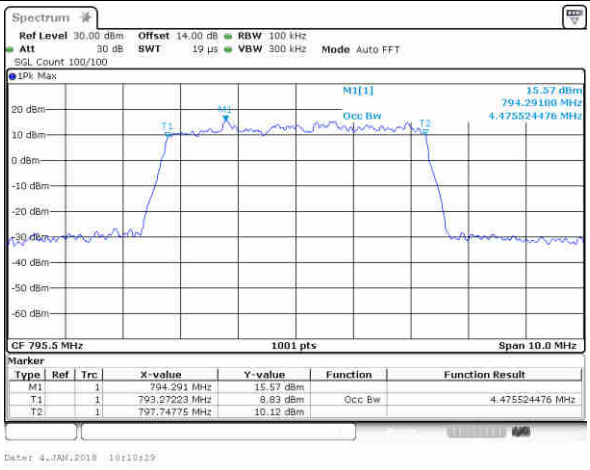
LTE Band 14	
Lowest Channel / 5MHz / 64QAM	**Middle Channel / 5MHz / 64QAM**
	
Highest Channel / 5MHz / 64QAM	
	

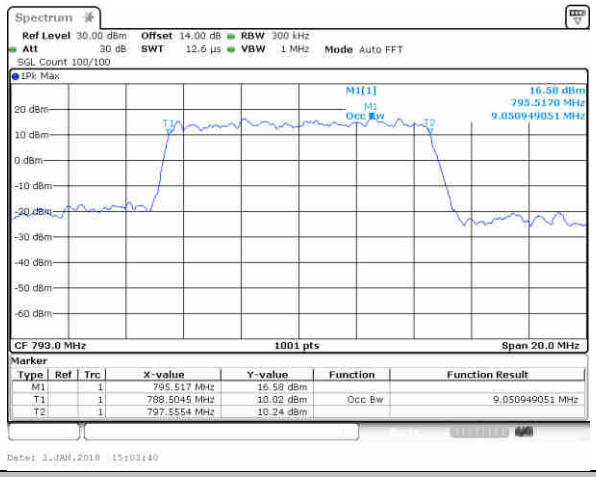
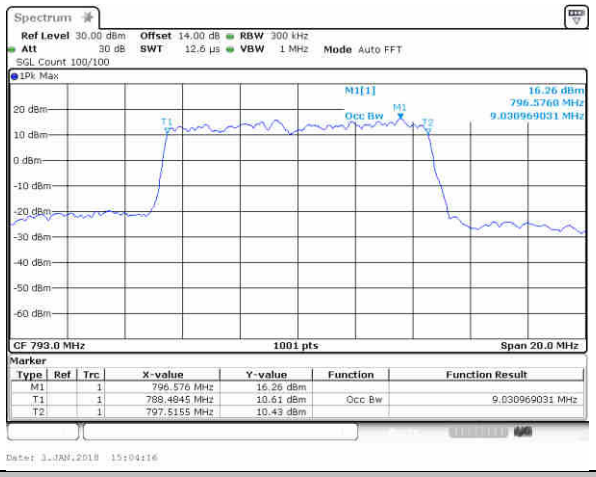
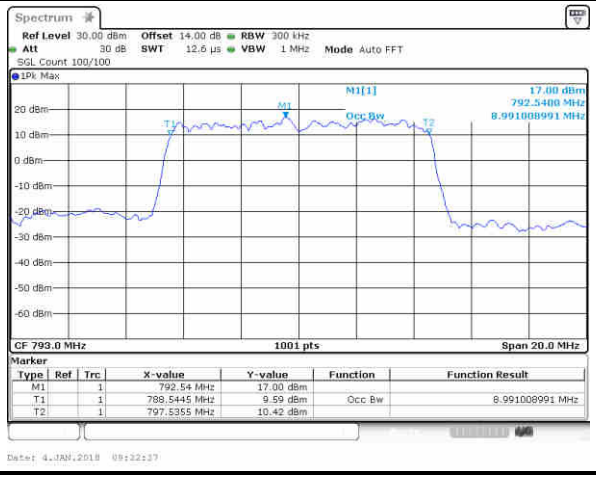
LTE Band 14	
Middle Channel / 10MHz / QPSK	**Middle Channel / 10MHz / 16QAM**
	
Middle Channel / 10MHz / 64QAM	
	

Occupied Bandwidth

Mode	LTE Band 14 : 99%OBW(MHz)									
BW	5MHz			10MHz						
Mod.	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM				
Lowest CH	4.50	4.49	4.49	-	-	-				
Middle CH	4.49	4.48	4.50	9.05	9.03	8.99				
Highest CH	4.48	4.49	4.48	-	-	-				

LTE Band 14	
Lowest Channel / 5MHz / QPSK	**Lowest Channel / 5MHz / 16QAM**
	
Middle Channel / 5MHz / QPSK	**Middle Channel / 5MHz / 16QAM**
	
Highest Channel / 5MHz / QPSK	**Highest Channel / 5MHz / 16QAM**
	

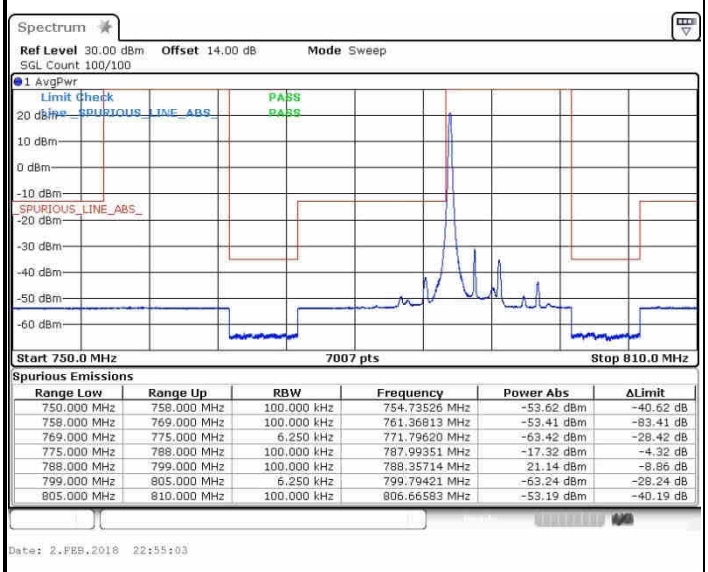
LTE Band 14	
Lowest Channel / 5MHz / 64QAM	**Middle Channel / 5MHz / 64QAM**
	
Highest Channel / 5MHz / 64QAM	
	

LTE Band 14	
Middle Channel / 10MHz / QPSK	**Middle Channel / 10MHz / 16QAM**
	
Middle Channel / 10MHz / 64QAM	
	

Conducted Band Edge

LTE Band 14 / 5MHz / QPSK

Lowest Band Edge / 1 RB

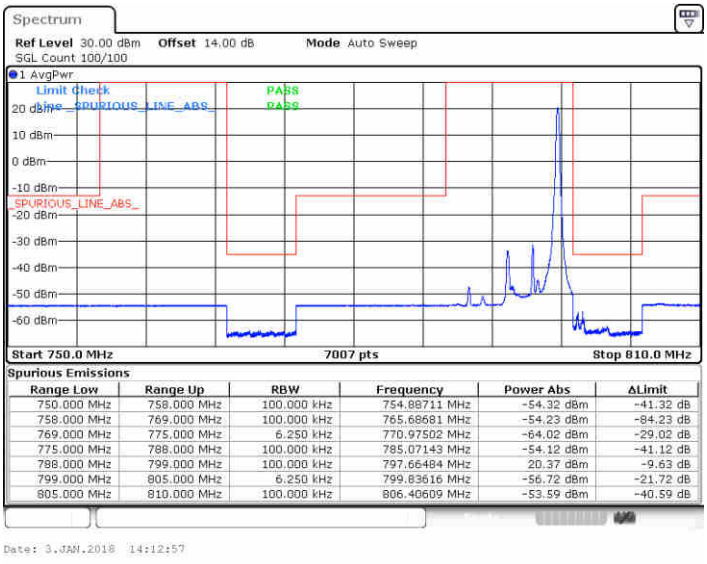


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	758.000 MHz	100.000 kHz	754.73526 MHz	-53.62 dBm	-40.62 dB
758.000 MHz	769.000 MHz	100.000 kHz	761.36813 MHz	-53.41 dBm	-83.41 dB
769.000 MHz	775.000 MHz	6.250 kHz	771.79620 MHz	-63.42 dBm	-28.42 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-17.32 dBm	-4.32 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.35714 MHz	21.14 dBm	-8.86 dB
799.000 MHz	805.000 MHz	6.250 kHz	799.79421 MHz	-63.24 dBm	-28.24 dB
805.000 MHz	810.000 MHz	100.000 kHz	806.66583 MHz	-53.19 dBm	-40.19 dB

Date: 2.FEB.2018 22:55:03

Highest Band Edge / 1 RB

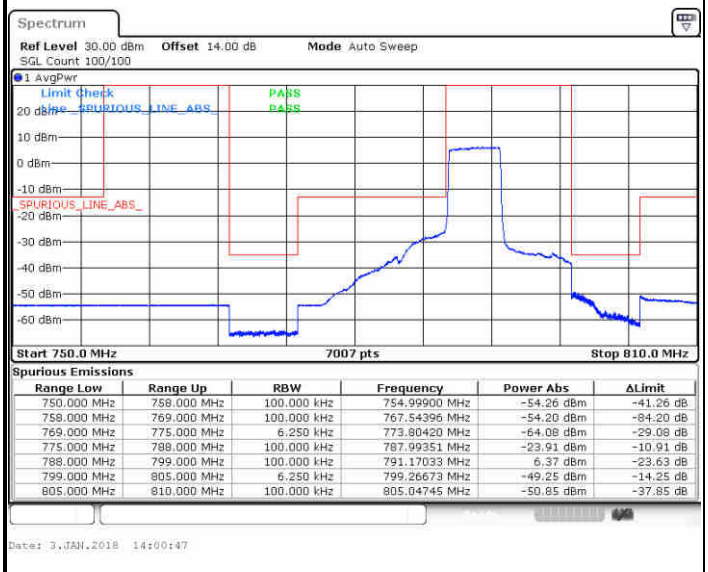


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	758.000 MHz	100.000 kHz	754.88711 MHz	-54.32 dBm	-41.32 dB
758.000 MHz	769.000 MHz	100.000 kHz	765.68681 MHz	-54.23 dBm	-84.23 dB
769.000 MHz	775.000 MHz	6.250 kHz	770.97502 MHz	-64.02 dBm	-29.02 dB
775.000 MHz	788.000 MHz	100.000 kHz	785.07143 MHz	-54.12 dBm	-41.12 dB
788.000 MHz	799.000 MHz	100.000 kHz	797.66484 MHz	20.37 dBm	-9.63 dB
799.000 MHz	805.000 MHz	6.250 kHz	799.83616 MHz	-56.72 dBm	-21.72 dB
805.000 MHz	810.000 MHz	100.000 kHz	806.40609 MHz	-53.59 dBm	-40.59 dB

Date: 3.JAN.2018 14:12:57

Lowest Band Edge / Full RB

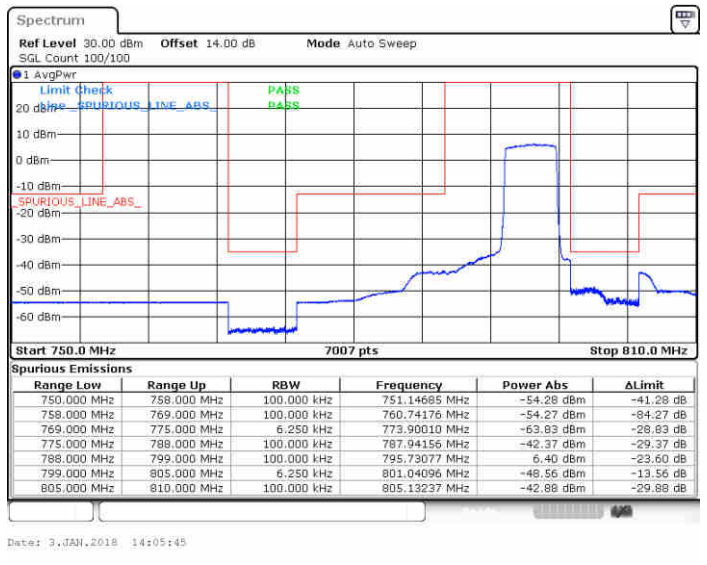


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	758.000 MHz	100.000 kHz	754.99900 MHz	-54.26 dBm	-41.26 dB
758.000 MHz	769.000 MHz	100.000 kHz	767.54396 MHz	-54.20 dBm	-84.20 dB
769.000 MHz	775.000 MHz	6.250 kHz	773.80420 MHz	-64.08 dBm	-29.08 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-23.91 dBm	-10.91 dB
788.000 MHz	799.000 MHz	100.000 kHz	791.17033 MHz	6.37 dBm	-23.63 dB
799.000 MHz	805.000 MHz	6.250 kHz	799.26673 MHz	-49.25 dBm	-14.25 dB
805.000 MHz	810.000 MHz	100.000 kHz	805.04745 MHz	-50.85 dBm	-37.85 dB

Date: 3.JAN.2018 14:00:47

Highest Band Edge / Full RB



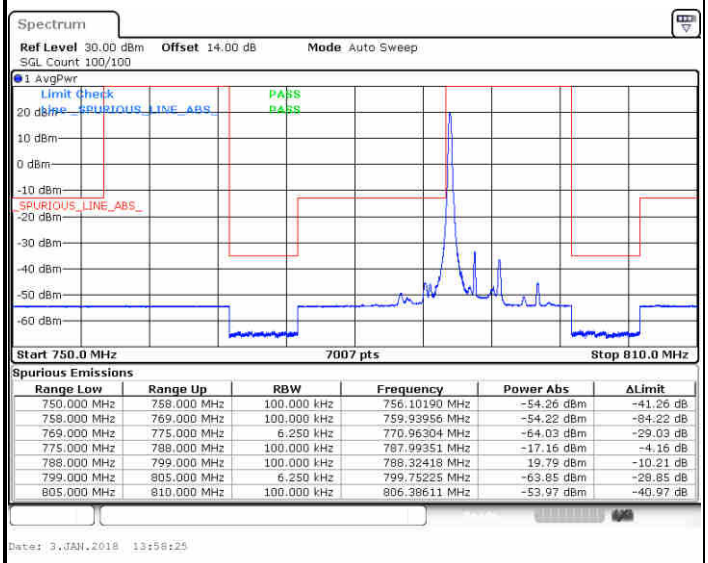
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	758.000 MHz	100.000 kHz	751.14685 MHz	-54.28 dBm	-41.28 dB
758.000 MHz	769.000 MHz	100.000 kHz	760.74176 MHz	-54.27 dBm	-84.27 dB
769.000 MHz	775.000 MHz	6.250 kHz	773.90010 MHz	-63.83 dBm	-28.83 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.94156 MHz	-42.37 dBm	-29.37 dB
788.000 MHz	799.000 MHz	100.000 kHz	795.73077 MHz	6.40 dBm	-23.60 dB
799.000 MHz	805.000 MHz	6.250 kHz	801.04096 MHz	-48.56 dBm	-13.56 dB
805.000 MHz	810.000 MHz	100.000 kHz	805.13237 MHz	-42.88 dBm	-29.88 dB

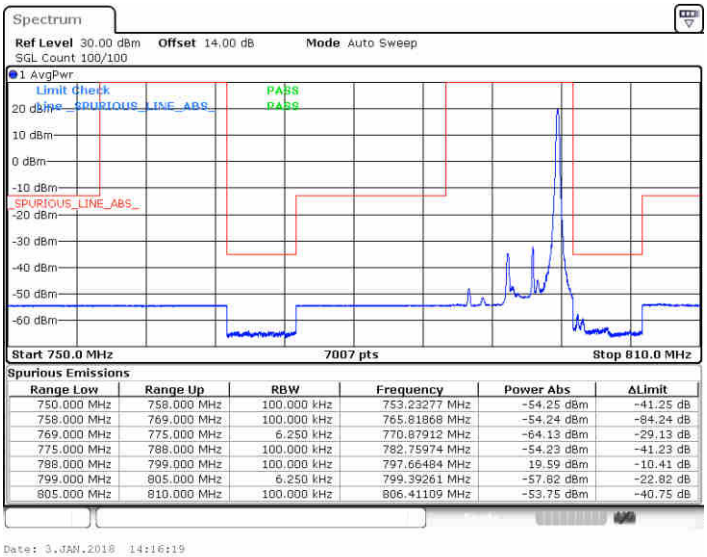
Date: 3.JAN.2018 14:05:45

LTE Band 14 / 5MHz / 16QAM

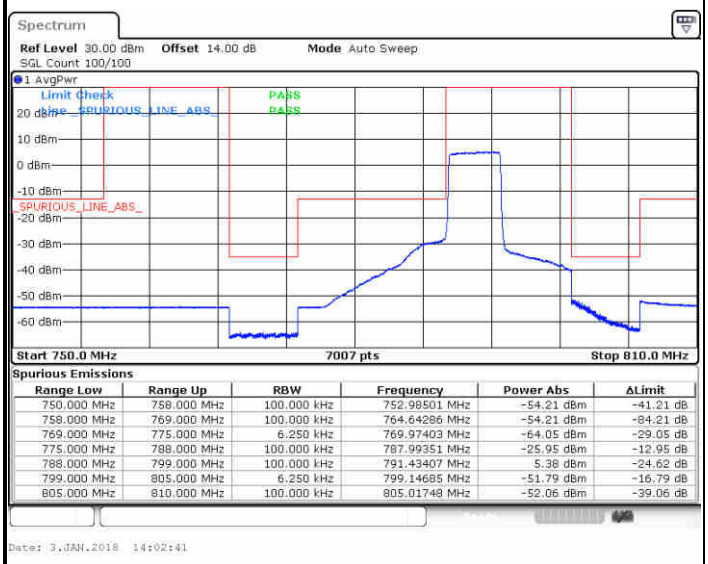
Lowest Band Edge /1 RB



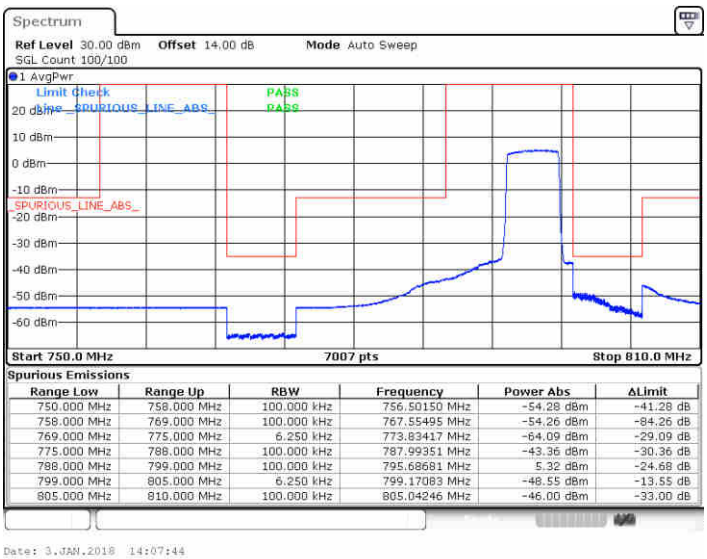
Highest Band Edge / 1 RB



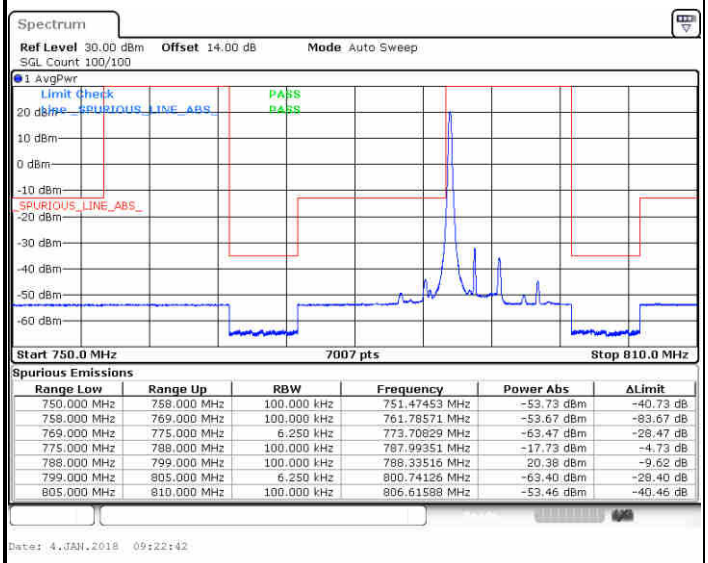
Lowest Band Edge / Full RB

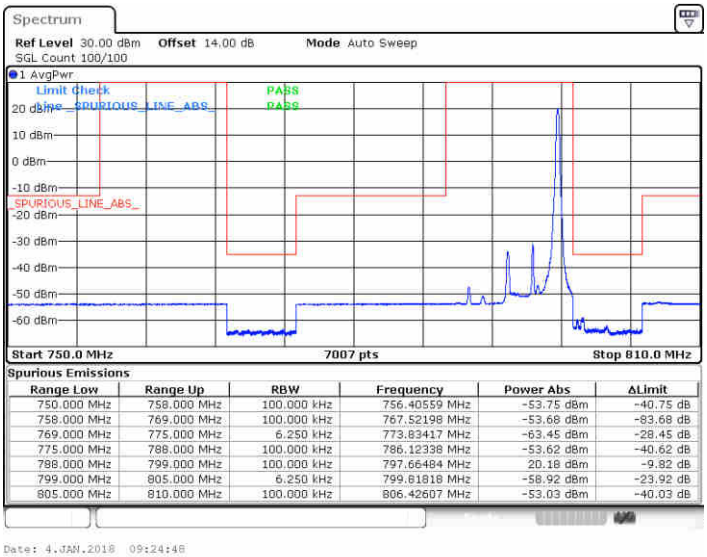


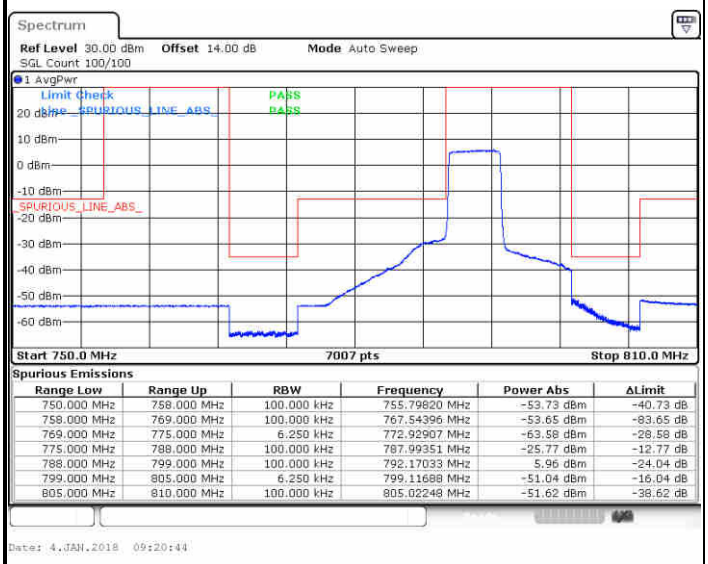
Highest Band Edge / Full RB

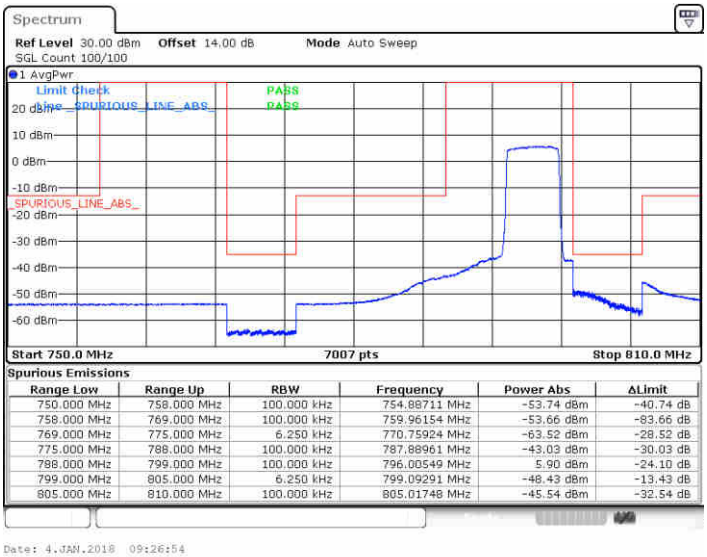


LTE Band 14 / 5MHz / 64QAM	
Lowest Band Edge /1 RB	**Highest Band Edge / 1 RB**
Lowest Band Edge / Full RB	**Highest Band Edge / Full RB**

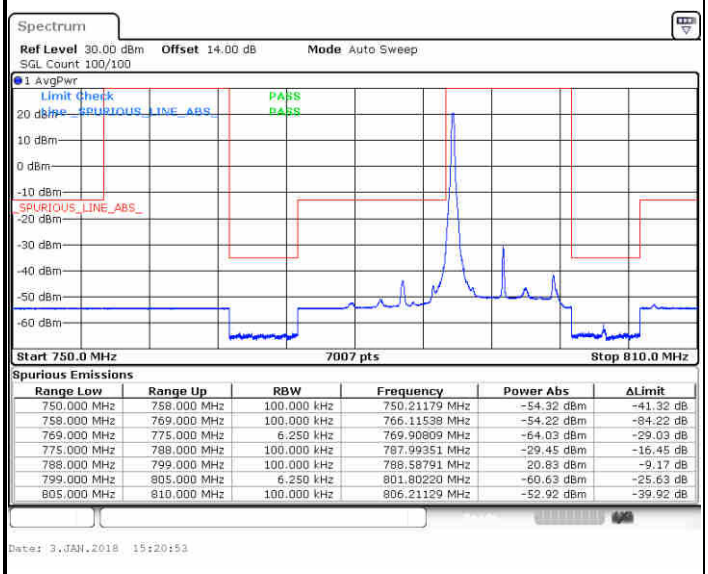


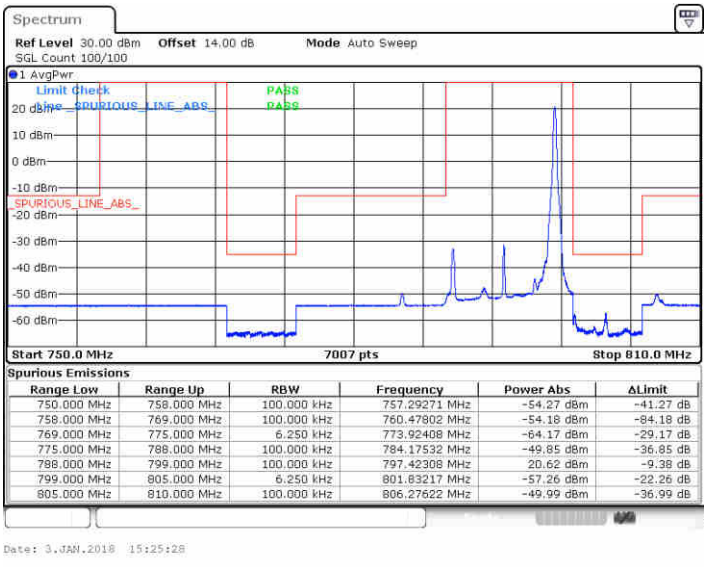




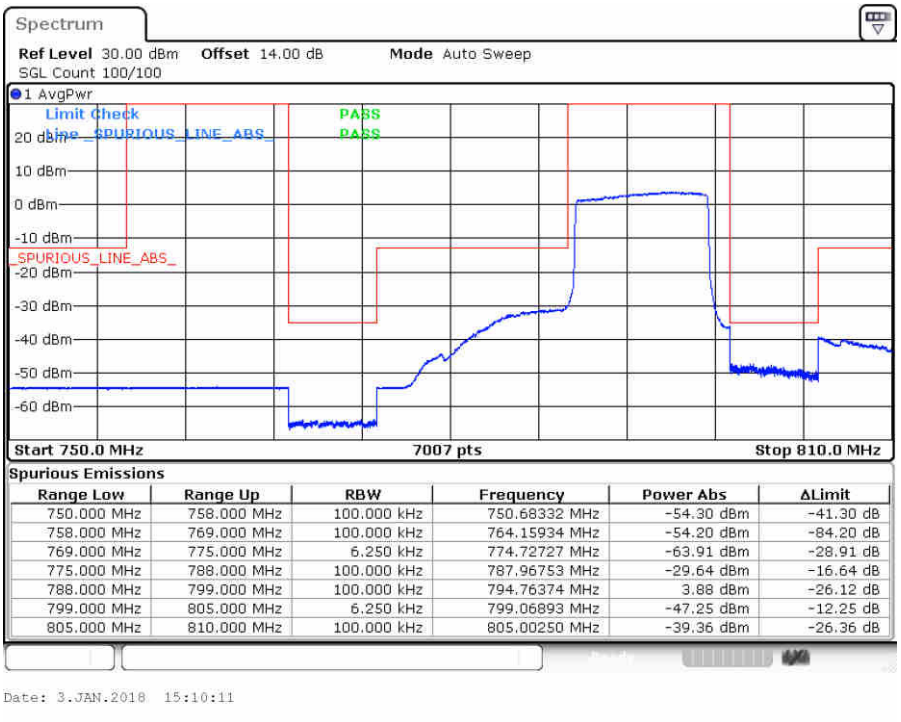


LTE Band 14 / 10MHz / QPSK	
Lowest Band Edge / 1 RB	**Highest Band Edge / 1 RB**

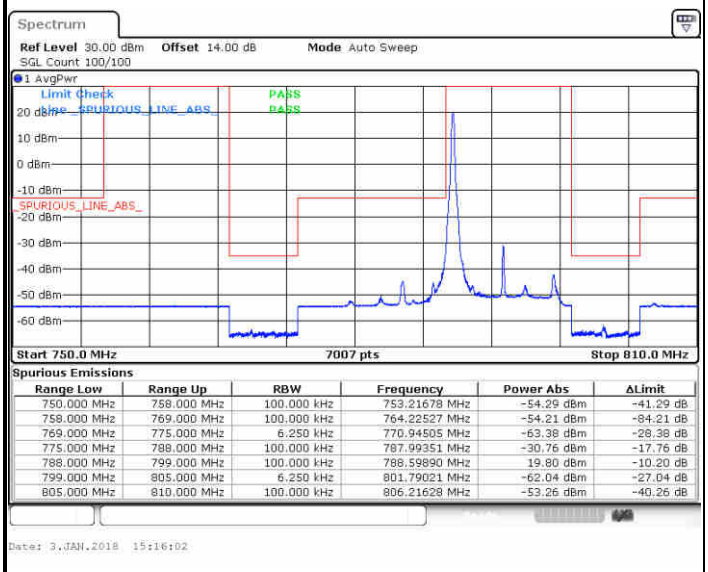


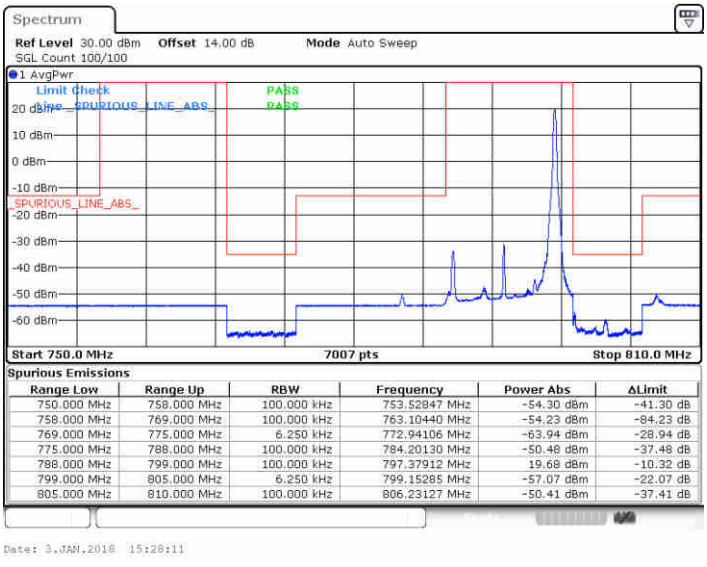


Band Edge / Full RB

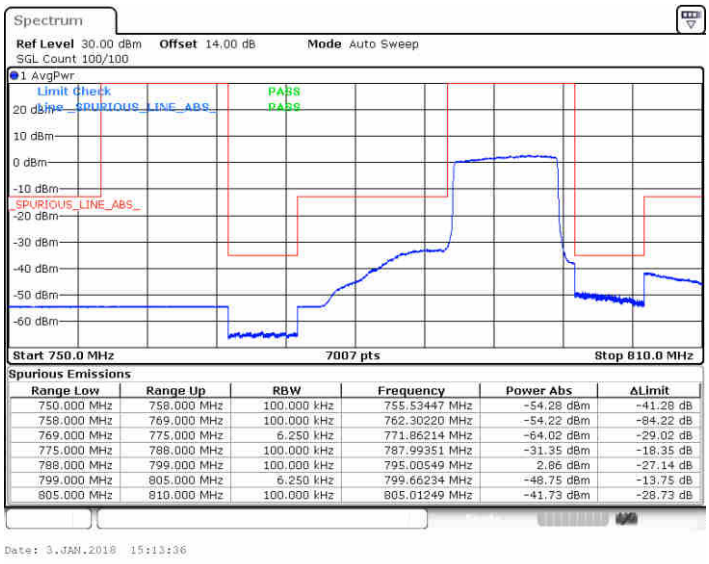


LTE Band 14 / 10MHz / 16QAM	
Lowest Band Edge / 1 RB	**Highest Band Edge / 1 RB**

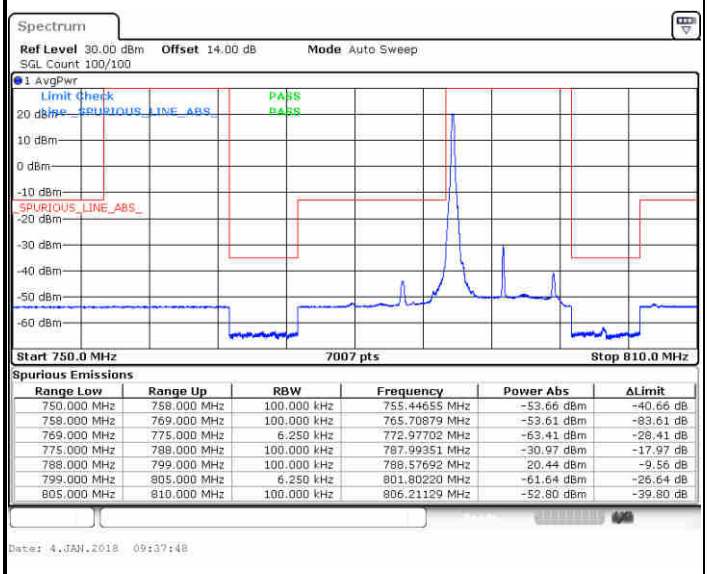




Band Edge / Full RB



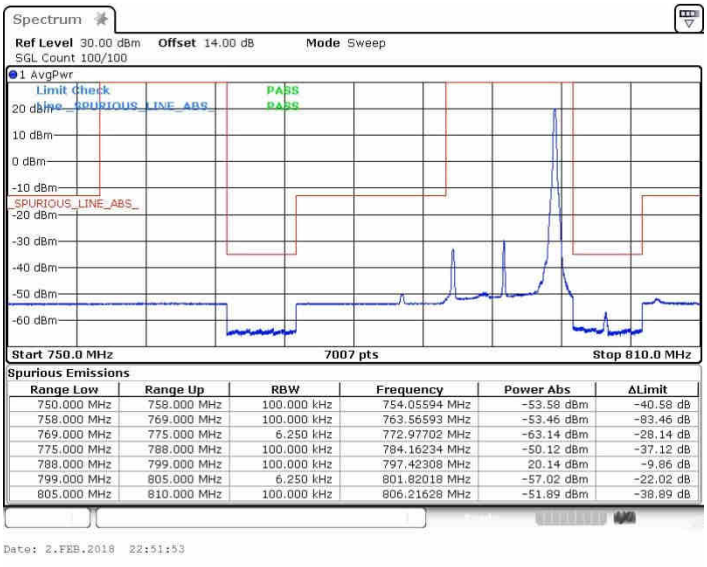
LTE Band 14 / 10MHz / 64QAM	
Lowest Band Edge / 1 RB	**Highest Band Edge / 1 RB**



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	758.000 MHz	100.000 kHz	755.44655 MHz	-53.66 dBm	-40.66 dB
758.000 MHz	769.000 MHz	100.000 kHz	765.70879 MHz	-53.61 dBm	-83.61 dB
769.000 MHz	775.000 MHz	6.250 kHz	772.97702 MHz	-63.41 dBm	-28.41 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-30.97 dBm	-17.97 dB
788.000 MHz	799.000 MHz	100.000 kHz	788.57692 MHz	20.44 dBm	-9.56 dB
799.000 MHz	805.000 MHz	6.250 kHz	801.80220 MHz	-61.64 dBm	-26.64 dB
805.000 MHz	810.000 MHz	100.000 kHz	806.21129 MHz	-52.80 dBm	-39.80 dB

Date: 4.JAN.2018 09:37:48

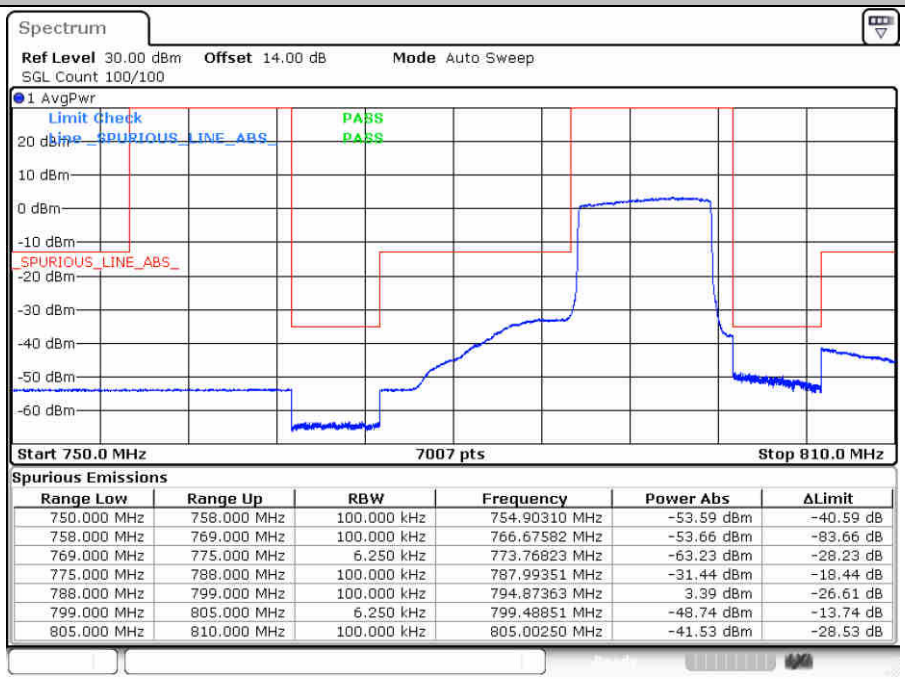


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	758.000 MHz	100.000 kHz	754.05594 MHz	-53.58 dBm	-40.58 dB
758.000 MHz	769.000 MHz	100.000 kHz	763.56593 MHz	-53.46 dBm	-83.46 dB
769.000 MHz	775.000 MHz	6.250 kHz	772.97702 MHz	-63.14 dBm	-28.14 dB
775.000 MHz	788.000 MHz	100.000 kHz	784.16234 MHz	-50.12 dBm	-37.12 dB
788.000 MHz	799.000 MHz	100.000 kHz	797.42308 MHz	20.14 dBm	-9.86 dB
799.000 MHz	805.000 MHz	6.250 kHz	801.82018 MHz	-57.02 dBm	-22.02 dB
805.000 MHz	810.000 MHz	100.000 kHz	806.21628 MHz	-51.89 dBm	-38.89 dB

Date: 2.FEB.2018 22:51:53

Band Edge / Full RB

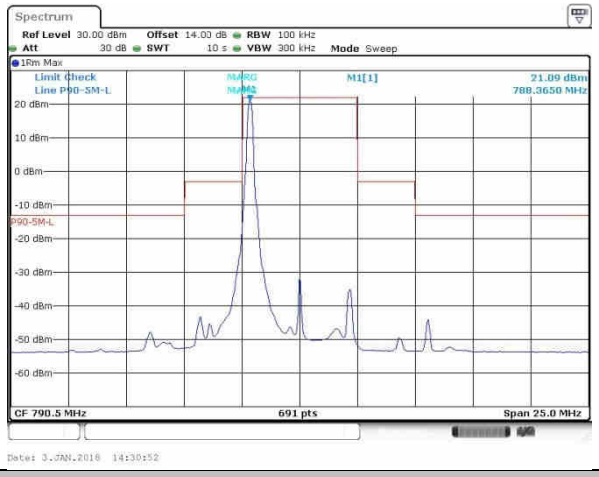
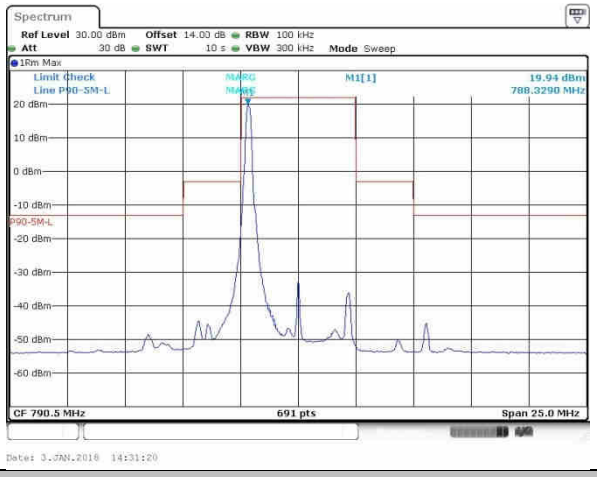
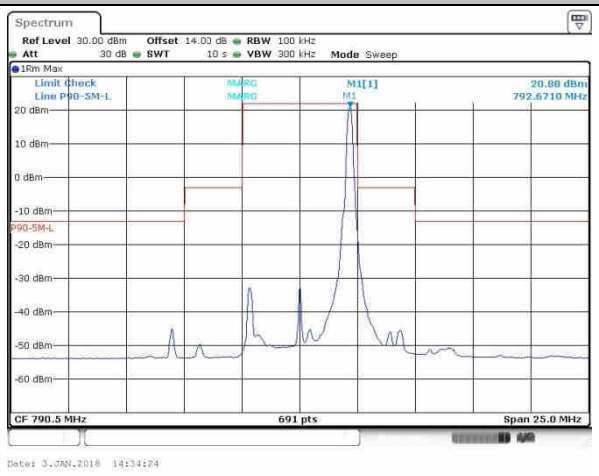
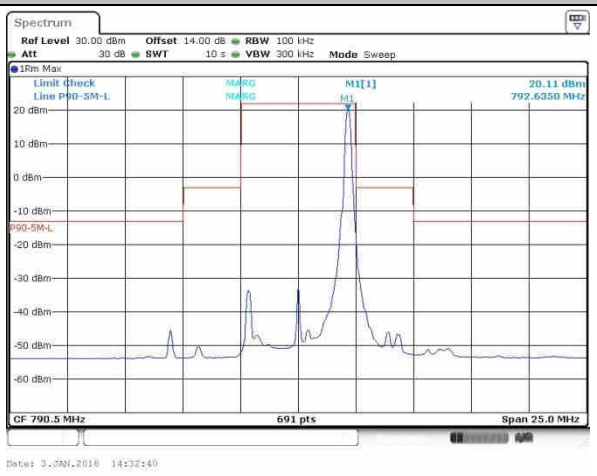
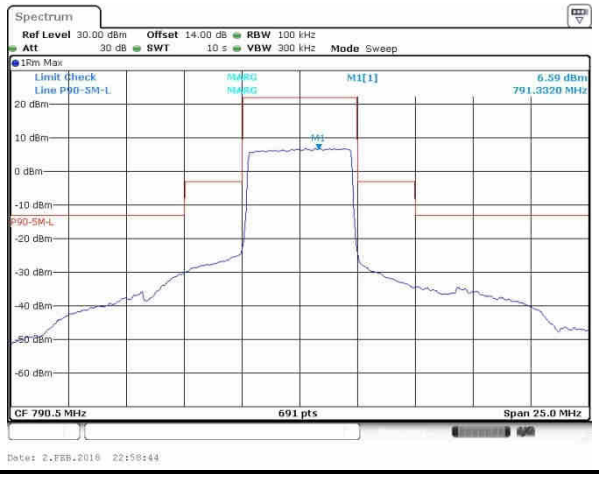
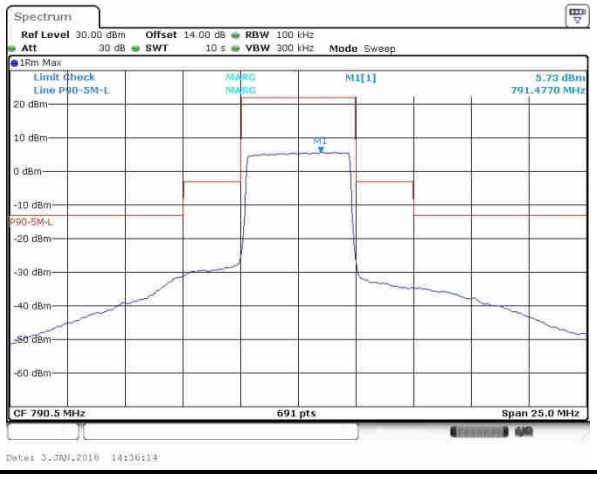


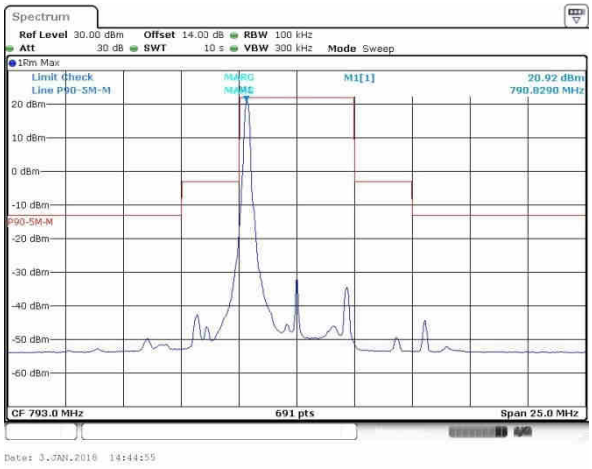
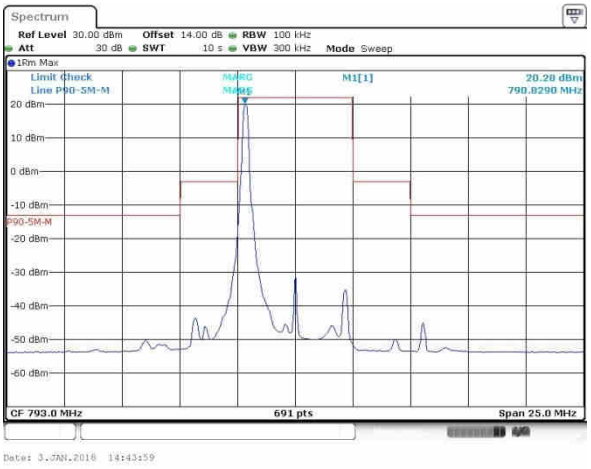
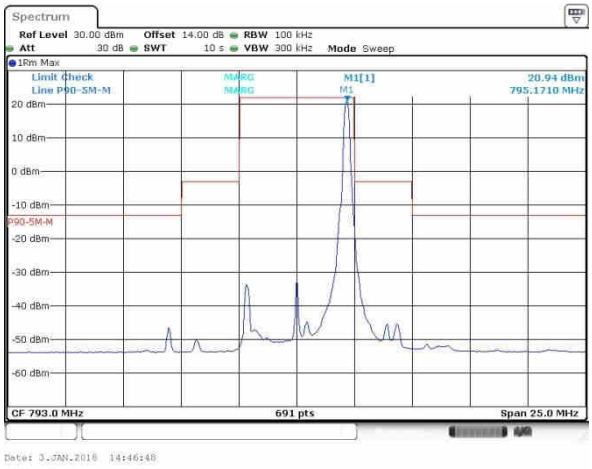
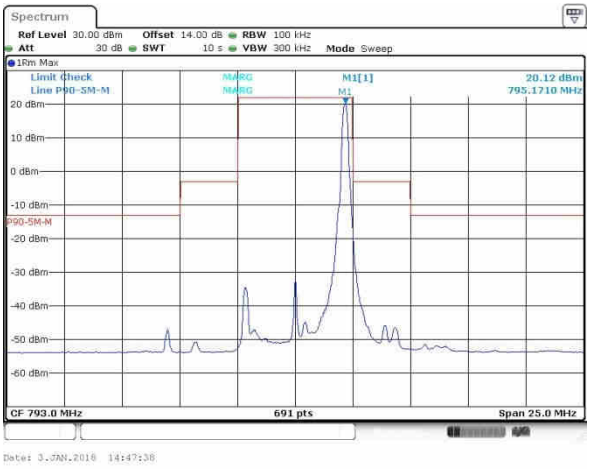
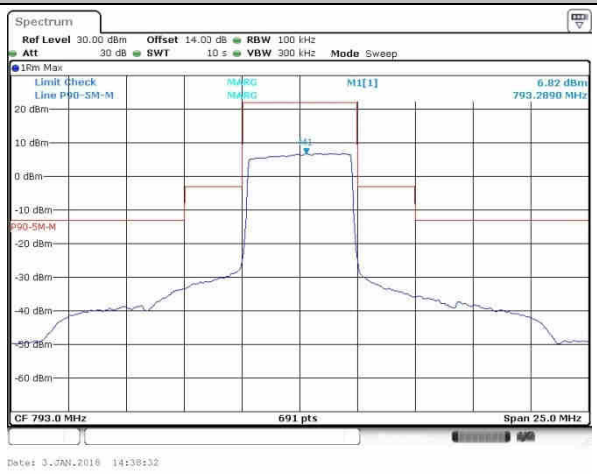
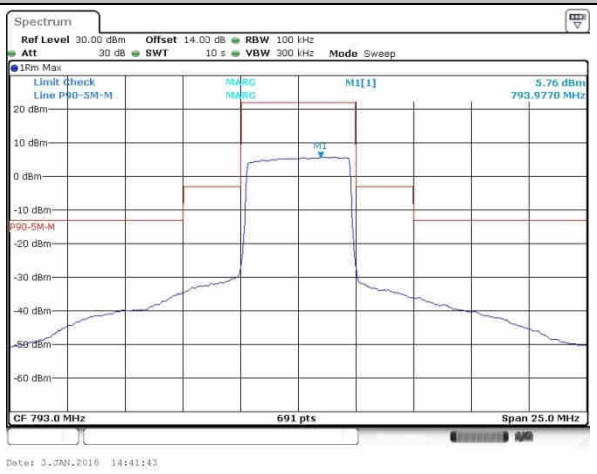
Spurious Emissions

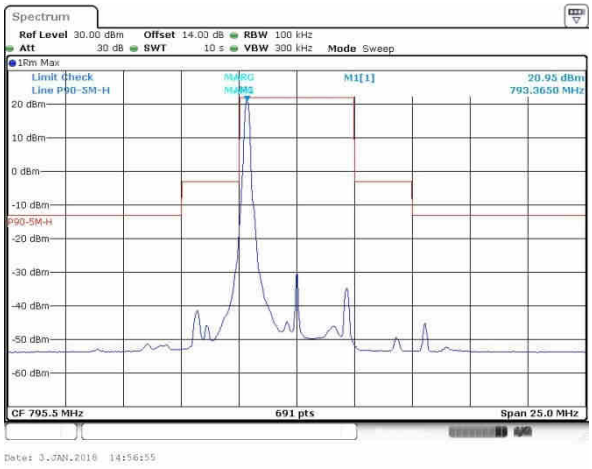
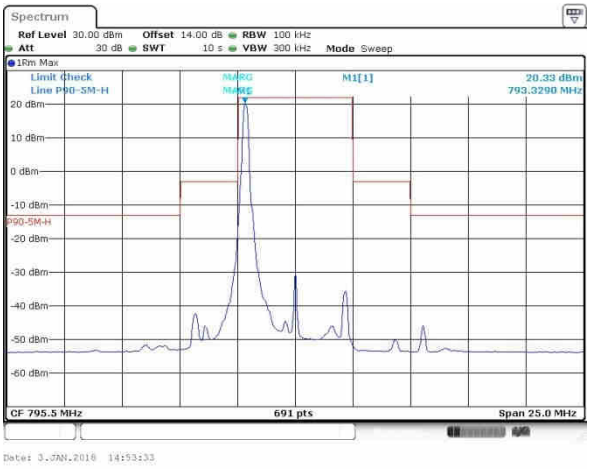
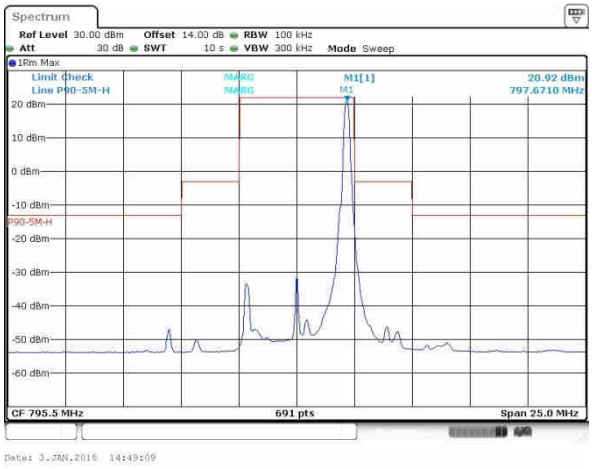
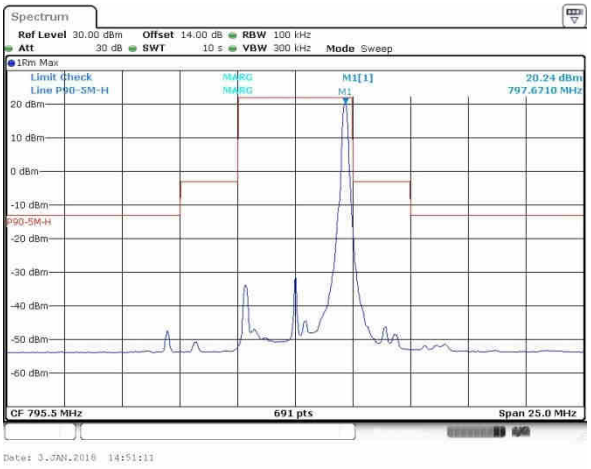
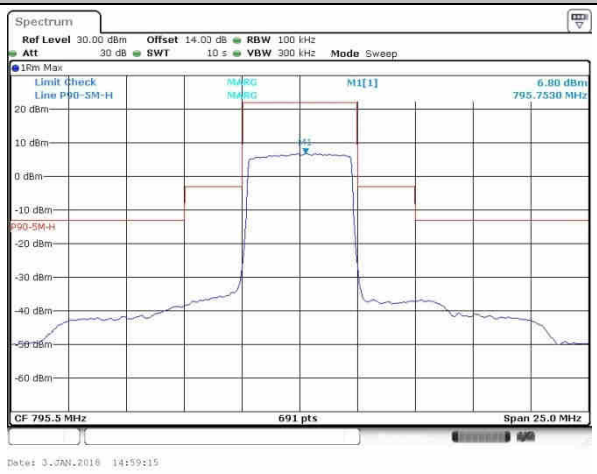
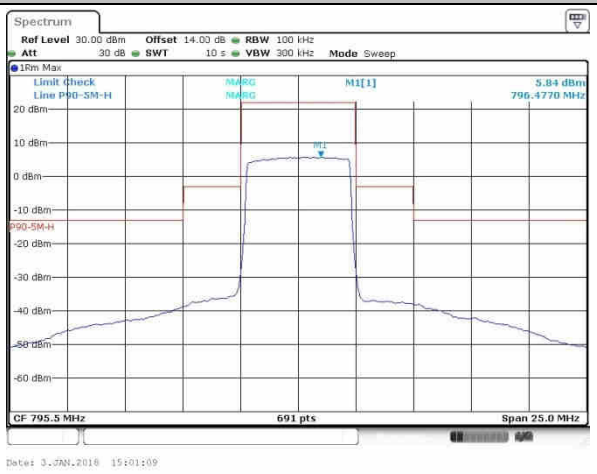
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
750.000 MHz	758.000 MHz	100.000 kHz	754.90310 MHz	-53.59 dBm	-40.59 dB
758.000 MHz	769.000 MHz	100.000 kHz	766.67582 MHz	-53.66 dBm	-83.66 dB
769.000 MHz	775.000 MHz	6.250 kHz	773.76823 MHz	-63.23 dBm	-28.23 dB
775.000 MHz	788.000 MHz	100.000 kHz	787.99351 MHz	-31.44 dBm	-18.44 dB
788.000 MHz	799.000 MHz	100.000 kHz	794.87363 MHz	3.39 dBm	-26.61 dB
799.000 MHz	805.000 MHz	6.250 kHz	799.48851 MHz	-48.74 dBm	-13.74 dB
805.000 MHz	810.000 MHz	100.000 kHz	805.00250 MHz	-41.53 dBm	-28.53 dB

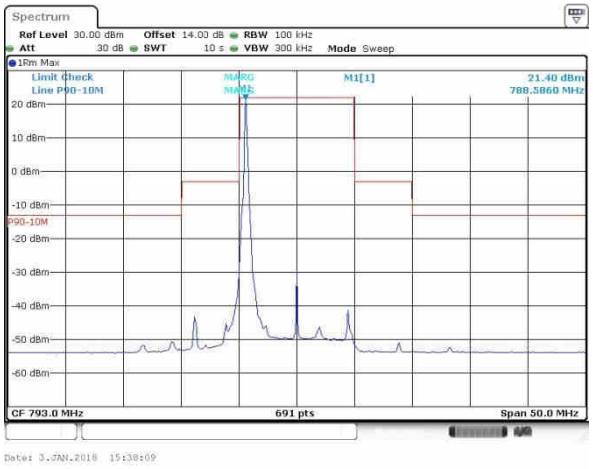
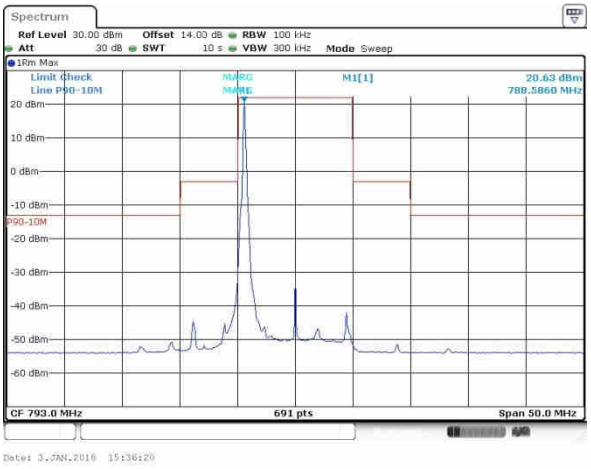
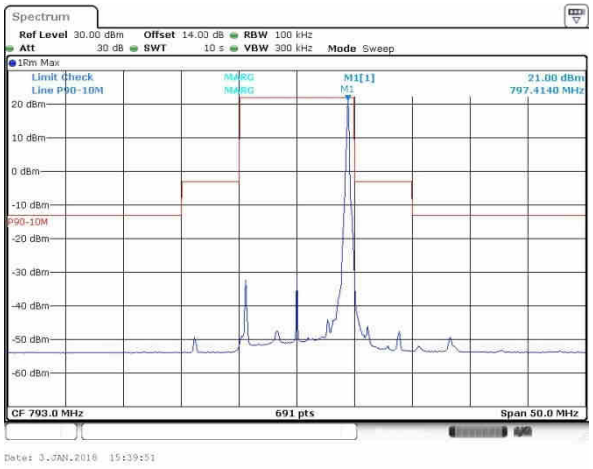
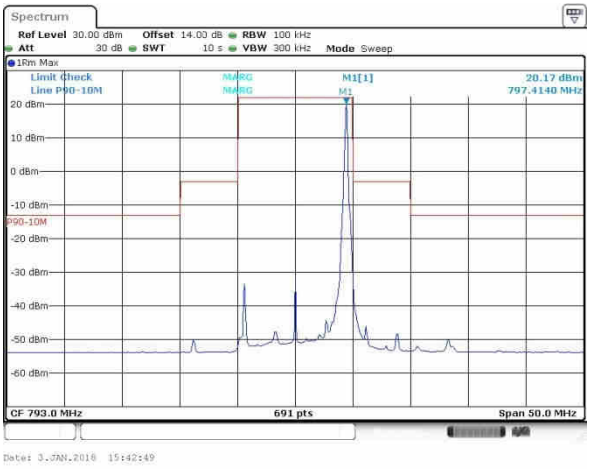
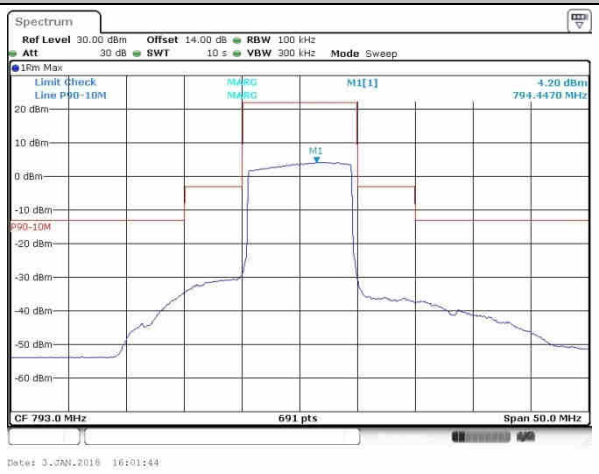
Date: 4.JAN.2018 09:35:25

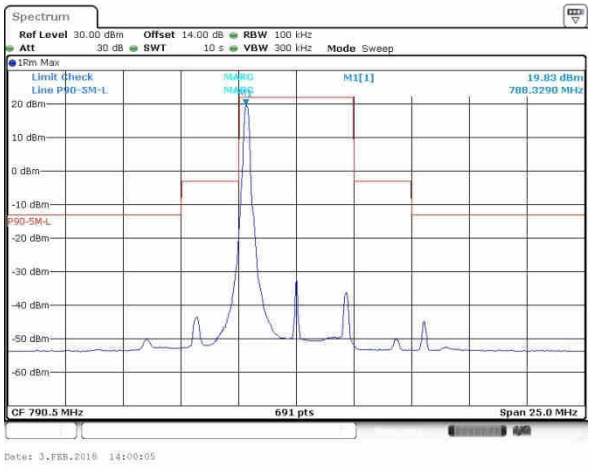
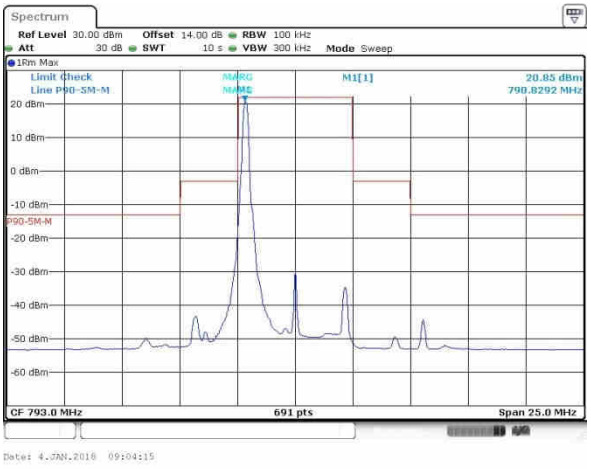
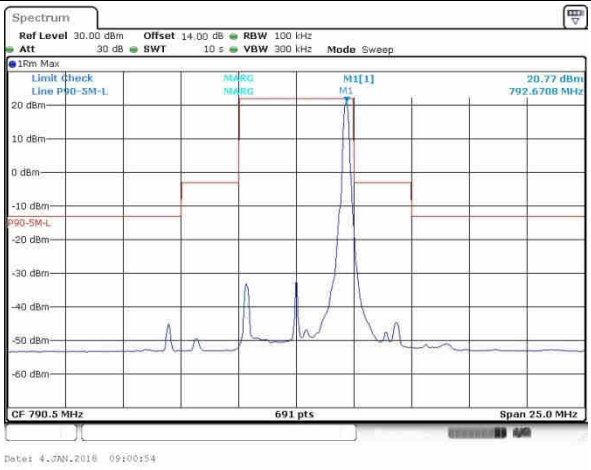
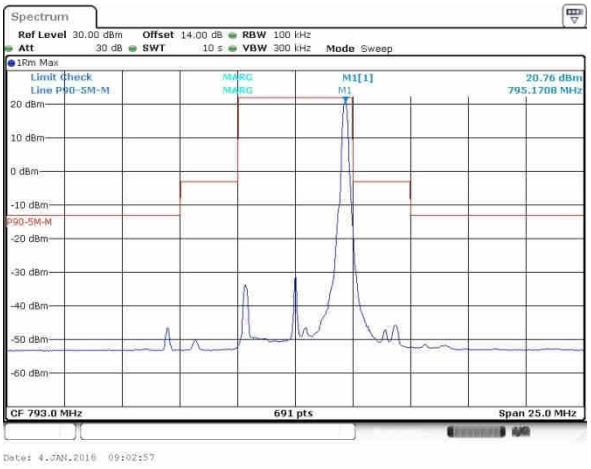
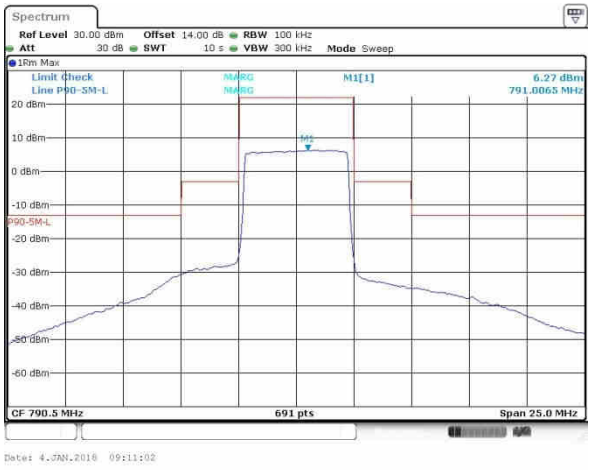
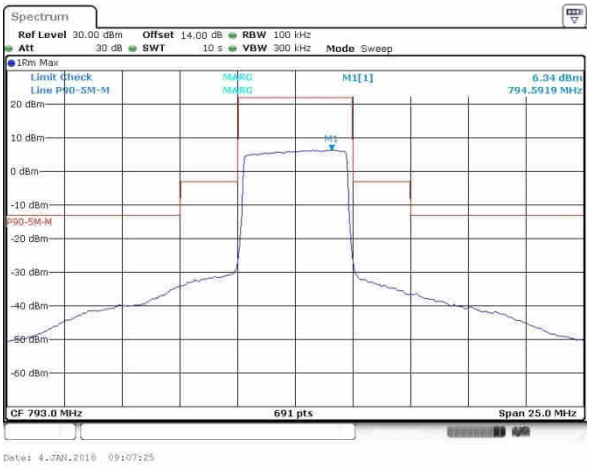
Emission Mask

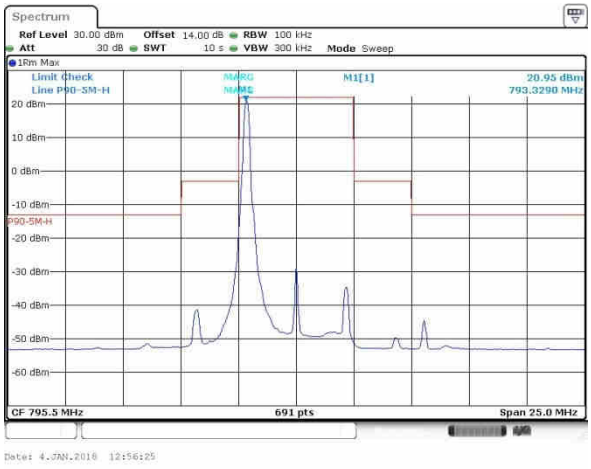
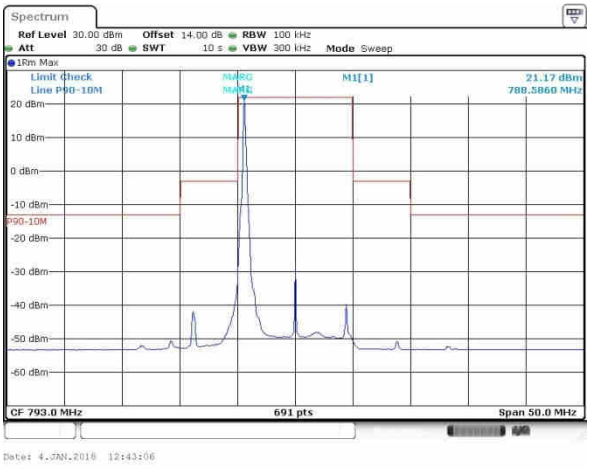
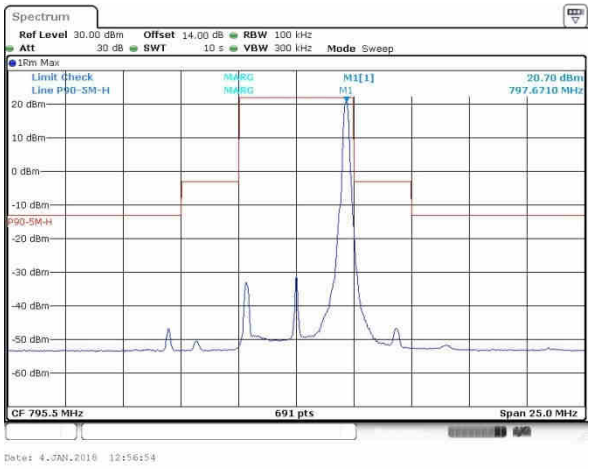
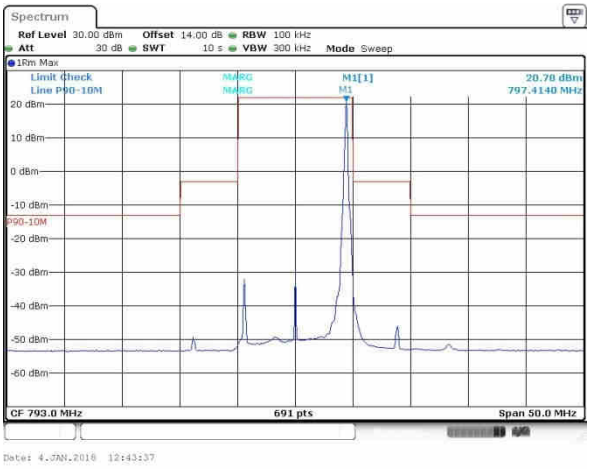
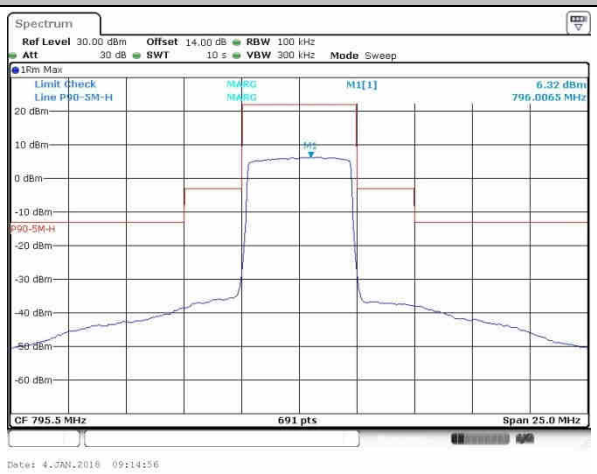
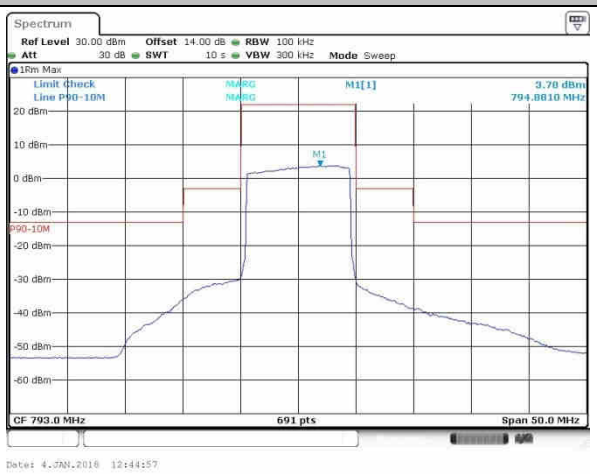
LTE Band 14/ 5MHz/ Lowest Channel	
1RB0/QPSK	1RB0/16QAM
	
1RBmax/QPSK	1RBmax/16QAM
	
Full RB/QPSK	Full RB/16QAM
	

LTE Band 14/ 5MHz/ Middle Channel	
1RB0/QPSK	1RB/16QAM
	
1RBmax/QPSK	1RBmax/16QAM
	
Full RB/QPSK	Full RB/16QAM
	

LTE Band 14/ 5MHz/ Highest Channel	
1RB0/QPSK	1RB0/16QAM
	
1RBmax/QPSK	1RBmax/16QAM
	
Full RB/QPSK	Full RB/16QAM
	

LTE Band 14/ 10MHz/ Middle Channel	
1RB/ QPSK	1RB/16QAM
	
1RBmax/ QPSK	1RBmax/16QAM
	
Full RB/ QPSK	Full RB/16QAM
	

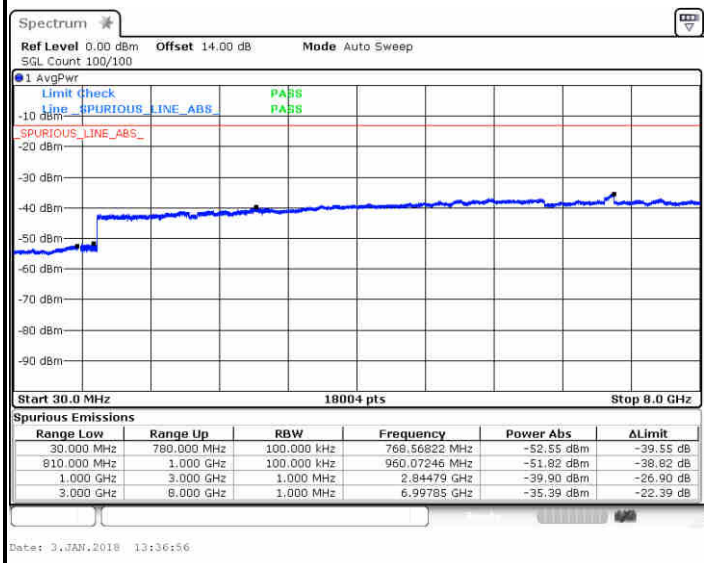
LTE Band 14/ 64QAM	
5M/Lowest Channel / 1RB	5M/Middle Channel / 1RB
	
5M/Lowest Channel / 1RBmax	5M/Middle Channel / 1RBmax
	
5M/Lowest Channel / Full RB	5M/Middle Channel / Full RB
	

LTE Band 14/ 64QAM	
5M/Highest Channel / 1RB	**10M/Middle Channel / 1RB 0**
	
5M/Highest Channel / 1RBmax	**10M/Middle Channel / 1RBmax**
	
5M/Highest Channel / Full RB	**10M/Middle Channel / Full RB**
	

Conducted Emission

LTE Band 14 / 5MHz

Lowest Channel / QPSK

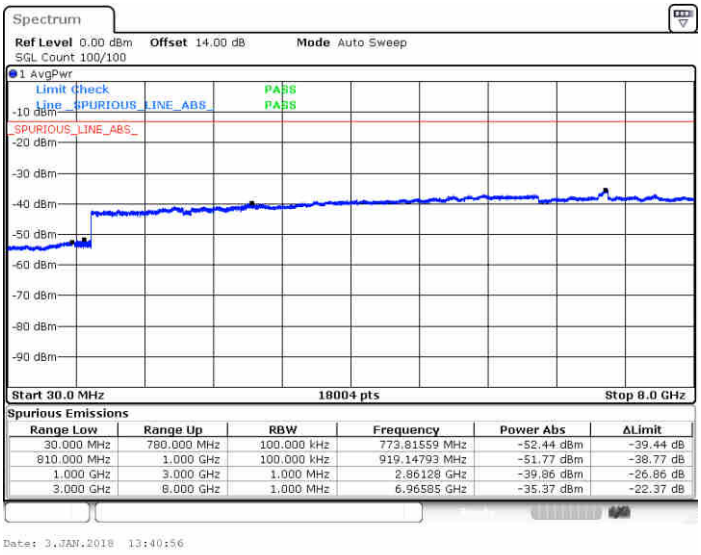


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	780.000 MHz	100.000 kHz	768.56822 MHz	-52.55 dBm	-39.55 dB
810.000 MHz	1.000 GHz	100.000 kHz	960.07246 MHz	-51.82 dBm	-38.82 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.84479 GHz	-39.90 dBm	-26.90 dB
3.000 GHz	8.000 GHz	1.000 MHz	6.99785 GHz	-35.39 dBm	-22.39 dB

Date: 3.JAN.2018 13:36:56

Lowest Channel / 16QAM

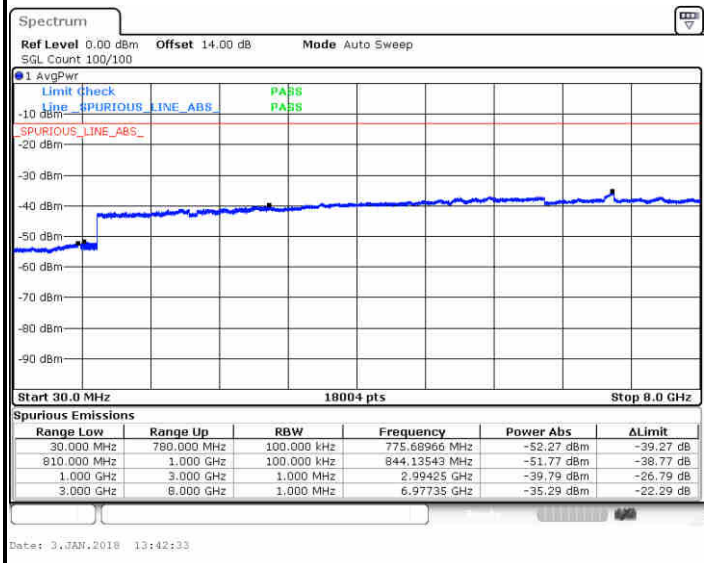


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	780.000 MHz	100.000 kHz	773.81559 MHz	-52.44 dBm	-39.44 dB
810.000 MHz	1.000 GHz	100.000 kHz	919.14793 MHz	-51.77 dBm	-38.77 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.86128 GHz	-39.86 dBm	-26.86 dB
3.000 GHz	8.000 GHz	1.000 MHz	6.96585 GHz	-35.37 dBm	-22.37 dB

Date: 3.JAN.2018 13:40:56

Middle Channel / QPSK

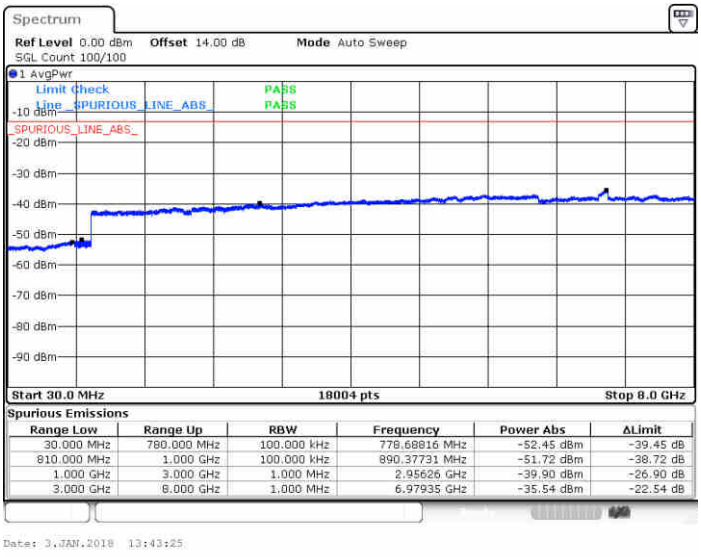


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	780.000 MHz	100.000 kHz	775.68966 MHz	-52.27 dBm	-39.27 dB
810.000 MHz	1.000 GHz	100.000 kHz	844.13543 MHz	-51.77 dBm	-38.77 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.99425 GHz	-39.79 dBm	-26.79 dB
3.000 GHz	8.000 GHz	1.000 MHz	6.97735 GHz	-35.29 dBm	-22.29 dB

Date: 3.JAN.2018 13:42:33

Middle Channel / 16QAM

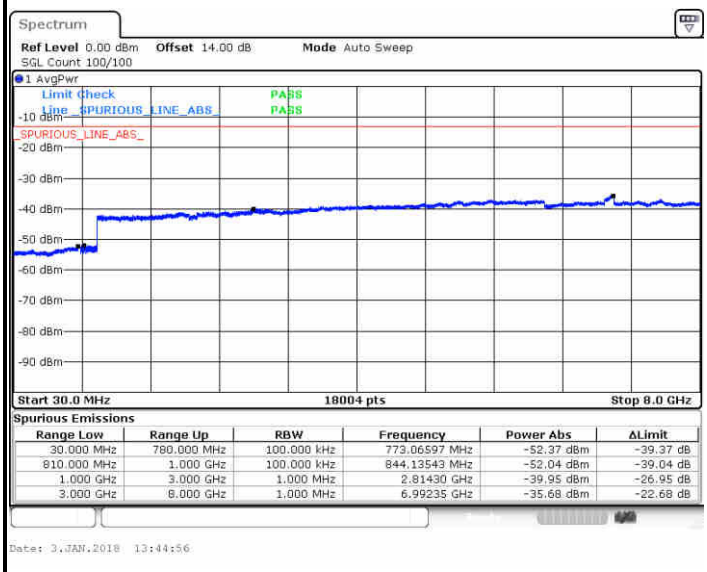


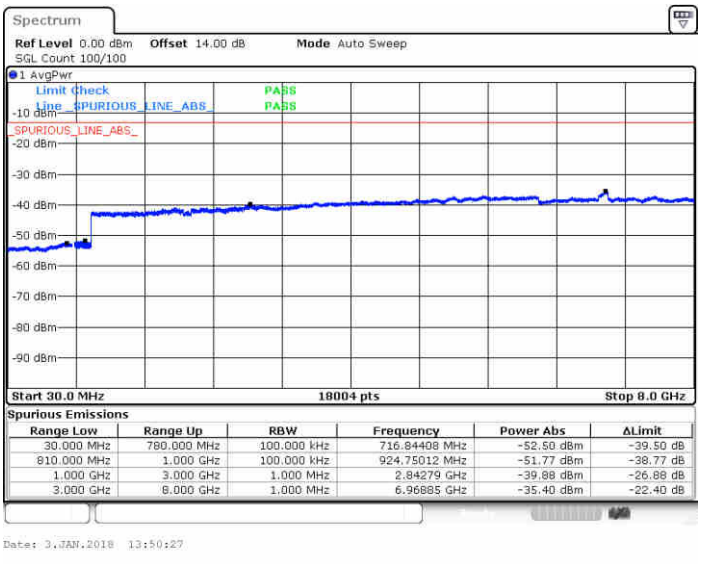
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	780.000 MHz	100.000 kHz	778.68816 MHz	-52.45 dBm	-39.45 dB
810.000 MHz	1.000 GHz	100.000 kHz	890.37731 MHz	-51.72 dBm	-38.72 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.95626 GHz	-39.90 dBm	-26.90 dB
3.000 GHz	8.000 GHz	1.000 MHz	6.97935 GHz	-35.54 dBm	-22.54 dB

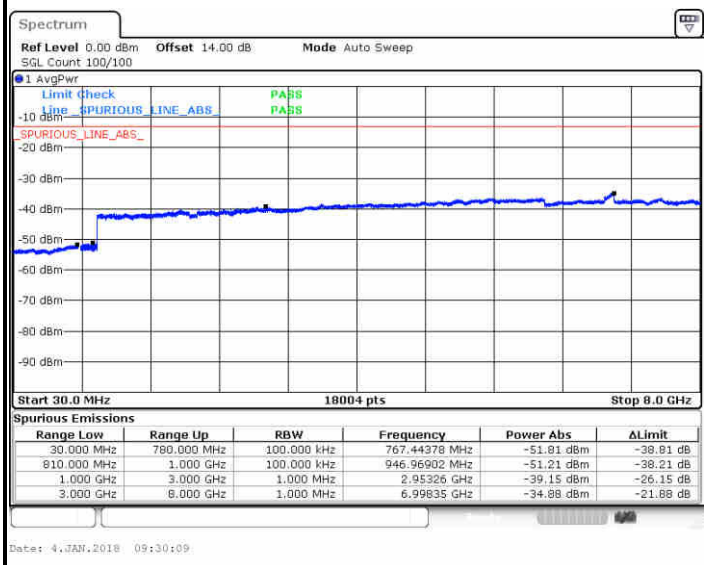
Date: 3.JAN.2018 13:43:25

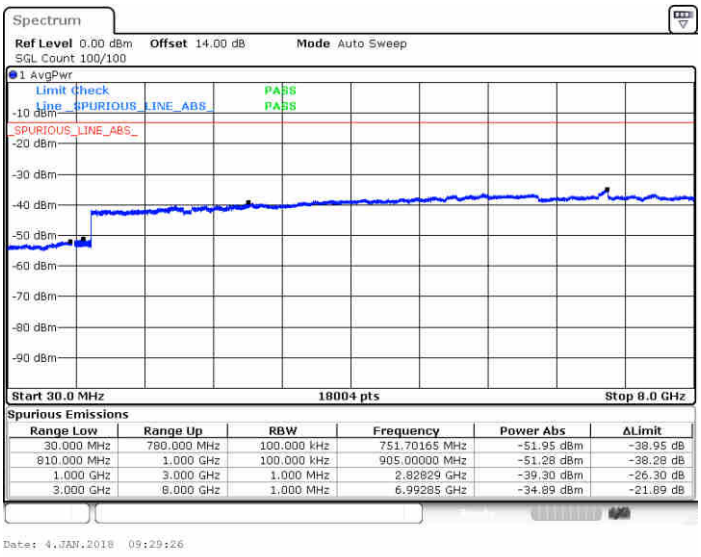
LTE Band 14 / 5MHz	
Highest Channel / QPSK	**Highest Channel / 16QAM**



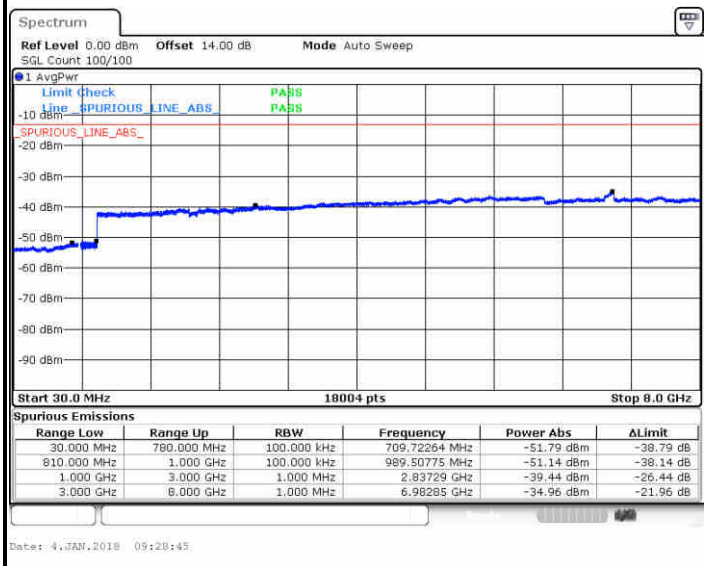


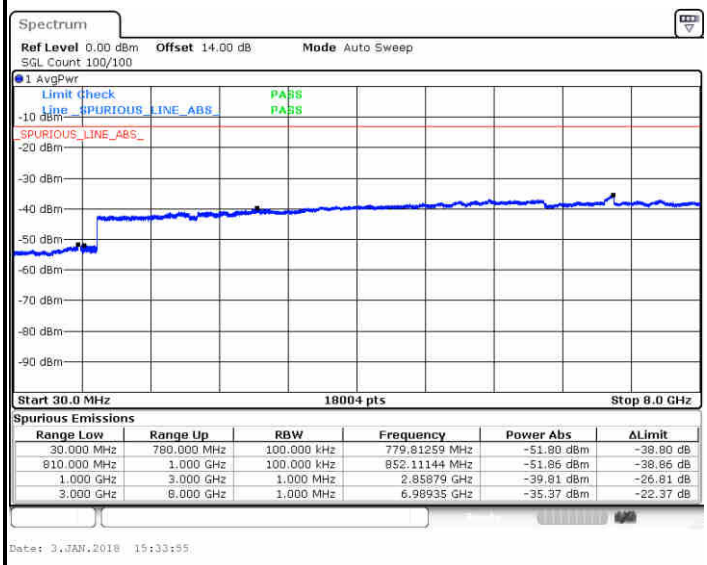
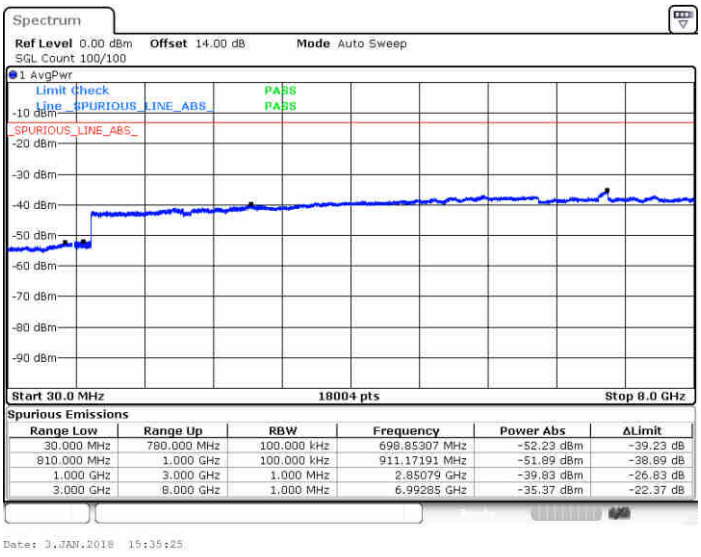
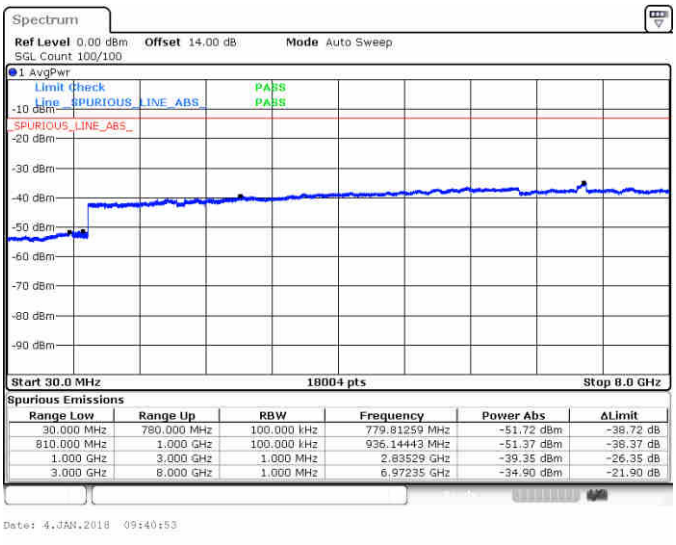
LTE Band 14/ 5MHz	
Lowest Channel / 64QAM	**Middle Channel / 64QAM**





LTE Band 14/ 5MHz	
Highest Channel / 64QAM	



LTE Band 14 / 10MHz	
Middle Channel / QPSK	**Middle Channel / 16QAM**
	
Middle Channel / 64QAM	
	

Frequency Stability

Test Conditions		LTE Band 14(QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	1.25ppm
		Deviation (ppm)	Result
50	Normal Voltage	0.0032	PASS
40	Normal Voltage	0.0025	
30	Normal Voltage	0.0009	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0011	
0	Normal Voltage	0.0035	
-10	Normal Voltage	0.0053	
-20	Normal Voltage	0.0061	
-30	Normal Voltage	0.0077	
20	Maximum Voltage	0.0029	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0018	

Note: Normal Voltage =3.8 V.；Battery End Point (BEP) =3.6 V.；Maximum Voltage =4.4 V.

Appendix B. Test Results of Radiated Test

Field Strength of Spurious Radiated

LTE Band 14 / QPSK / RB Size 1 Offset 0									
Bandwidth	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
5MHz	1581.5	-70.91	-40	-30.91	-72.62	-75.38	2.76	9.38	H
	2372.25	-67.79	-13	-54.79	-73.85	-73.76	2.45	10.57	H
	3163	-69.04	-13	-56.04	-77.04	-74.89	4.58	12.58	H
	1581.5	-71.55	-40	-31.55	-73.39	-76.02	2.76	9.38	V
	2372.25	-68.73	-13	-55.73	-74.68	-74.70	2.45	10.57	V
	3163	-68.90	-13	-55.90	-76.93	-74.75	4.58	12.58	V
10MHz	1577	-70.34	-40	-30.34	-72.05	-74.81	2.76	9.38	H
	2365.5	-66.33	-13	-53.33	-72.39	-72.30	2.45	10.57	H
	3154	-68.98	-13	-55.98	-76.98	-74.83	4.58	12.58	H
	1577	-70.08	-40	-30.08	-71.92	-74.55	2.76	9.38	V
	2365.5	-67.75	-13	-54.75	-73.70	-73.72	2.45	10.57	V
	3154	-68.92	-13	-55.92	-76.95	-74.77	4.58	12.58	V
	Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.								
Test Result				PASS					