

FCC Radio Test Report

FCC ID: 2AQTC-T60

Original Grant

Report No. : TB-FCC160443
Applicant : JIANGXI JOYHONG TECHNOLOGY CO.,LTD
Equipment Under Test (EUT)
EUT Name : AI Translator
Model No. : T60
Serial Model No. : T6, T30, T5, T9, TXX(X stand for 0~9)
Brand Name : ----
Receipt Date : 2018-06-13
Test Date : 2018-06-14 to 2018-07-19
Issue Date : 2018-08-08
Standards : 47 CFR Part 2, 24(E), 27
Test Method : ANSI C63.26 2015
Conclusions : **PASS**

In the configuration tested, the EUT complied with the standards specified above,

Test/Witness Engineer

:

Jason Xu

Jason Xu

Engineer Supervisor

:

IVAN SU

Ivan Su

Engineer Manager

:

Ray Lai

Ray Lai



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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Revision History

Report No.	Version	Description	Issued Date
TB-FCC160443	Rev.01	Initial issue of report	2018-08-08

1. General Information about EUT

1.1 Client Information

Applicant	:	JIANGXI JOYHONG TECHNOLOGY CO.,LTD
Address	:	Skyline Photoelectric Industrial Park, Economic and Technological Development Industrial, Ji'an City, Jiangxi, China
Manufacturer	:	JIANGXI JOYHONG TECHNOLOGY CO.,LTD
Address	:	Skyline Photoelectric Industrial Park, Economic and Technological Development Industrial, Ji'an City, Jiangxi, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	AI Translator	
Models No.	:	T60, T6, T30, T5, T9, TXX(X stand for 0~9)	
Model Difference	:	All these models are identical in the same PCB layout and electrical circuit, the only difference is model name and appearance.	
Product Description	:	Frequency Bands: LTE Band 7:TX: 2500MHz-2570MHz, RX: 2620MHz-2690MHz	
		Antenna Type:	PIFA Antenna
		Antenna Gain:	0.8dBi
		Modulation Type:	QPSK, 16QAM
		Bandwidth:	LTE Band 7 : 5MHz/10MHz/15MHz/20MHz
Power Rating	:	DC 3.7V by rechargeable Li-ion Battery(1150mAh). USB DC 5V from AC/DC Adapter(HJ-0501000B3-US): Input: AC 100-240V, 50/60Hz, 0.2A. Output: DC 5V, 1000mA.	
Software Version	:	P18C_37_TL_YIYU_20180420_V1.1	
Hardware Version	:	P18C-1.1	
Connecting I/O Port(S)	:	Please refer to the User's Manual	

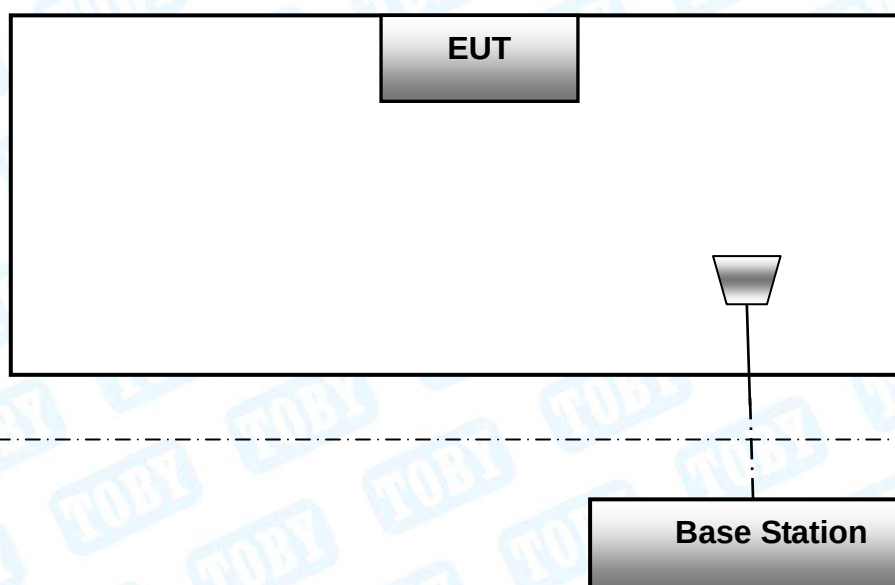
Note:

- (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

(2) Channel List

LTE Band 7(5MHz)		LTE Band 7(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20775	2502.50	20800	2502.00
20776	2502.60	20801	2502.10
.....			
21099	2534.90	21099	2534.90
21100	2535.00	21100	2535.00
21101	2535.10	21101	2535.10
.....			
21424	2567.40	21399	2564.90
21425	2567.50	21400	2565.00
LTE Band 7(15MHz)		LTE Band 7(20MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20825	2507.50	20850	2510.00
20826	2507.60	20851	2510.10
.....			
21099	2534.90	21099	2534.90
21100	2535.00	21100	2535.00
21101	2535.10	21101	2535.10
.....			
21374	2562.40	21349	2559.90
21375	2562.50	21350	2560.00

1.3 Block Diagram Showing the Configuration of System Tested



The above block diagram of setup is the normal mode. And more detail please refer to the test setup of each test item of bellow.

1.4 Description of Support Units

The EUT has been tested as an independent unit.

1.5 Description of Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 v03r01 and ANSI C63.26 2015 Power Meas. License Digital Systems with maximum output power. Radiated measurements are performed by rotating the EUT in three different ortho-gonal test planes to find the maximum emission.

Remark:

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

ITEMS	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
RF Output Power	7	--	--	V	V	V	V	V	V	V	V	V	V	V	V
Peak-to-Average Ratio	7	--	--	--	--	--	V	V	V			V	V	V	V
99% & -26 dB Occupied Bandwidth	7	--	--	V	V	V	V	V	V	V			V	V	V
Spurious Emissions at Antenna Terminal	7	--	--	V	V	V	V	V	V	V		V	V	V	V
Field Strength of Spurious Radiation	7	--	--	V	V	V	V	V	V	V				V	
Out of band emission, Band Edge	7	--	--	V	V	V	V	V	V	V		V	V	V	V
Frequency stability	7	--	--	V	V	V	V	V	V	V				V	

Note:

- (1) During the testing procedure, the EUT is in link mode with base station emulator at maximum power level in each test mode.
- (2) The EUT is considered a portable unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on Z-plane as the normal use. Therefore only the test data of this Z-plane was used for radiated emission measurement test.

1.6 Measurement Uncertainty

Test Item	Parameters	Expanded Uncertainty (U_{Lab})
RF Power, conducted	/	± 0.82 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	± 4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	± 4.40 dB
Radiated Emission	Level Accuracy: Above 1000MHz	± 4.20 dB

1.7 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.

IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.

2. Test Summary

Test Item	Section in CFR 47	Result
RF Output Power	Part 2.1046 Part 27.50 (b)(10) Part 27.50 (d)(4) Part 27.50 (h)(2)	PASS
Peak-to-Average Ratio	Part 27.50(d)(5)	PASS
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 27.53(h) Part 27.53(m)	PASS
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 27.53 (h) Part 27.53(m)	PASS
Field Strength of Spurious Radiation	Part 2.1053 Part 27.53 (h) Part 27.53(m)	PASS
Out of band emission, Band Edge	Part 27.53 (h) Part 27.53(m)	PASS
Frequency stability vs. temperature	Part 27.54 Part 2.1055(a)(1)(b)	PASS
Frequency stability vs. voltage	Part 27.54 Part 2.1055(d)(2)	PASS
Pass: The EUT complies with the essential requirements in the standard.		

3. Test Equipment

Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 20, 2017	Jul. 19, 2018
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 20, 2017	Jul. 19, 2018
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.16, 2018	Mar. 15, 2019
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar.16, 2018	Mar. 15, 2019
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.16, 2018	Mar. 15, 2019
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar.16, 2018	Mar. 15, 2019
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 03, 2018	Jul. 02, 2019
Pre-amplifier	Sonoma	310N	185903	Mar.17, 2018	Mar. 16, 2019
Pre-amplifier	HP	8449B	3008A00849	Mar.17, 2018	Mar. 16, 2019
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.17, 2018	Mar. 16, 2019
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna Conducted Emission					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 20, 2017	Jul. 19, 2018
Spectrum Analyzer	Rohde & Schwarz	ESCI	100010/007	Jul. 20, 2017	Jul. 19, 2018
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Oct. 26, 2017	Oct. 25, 2018
Vector Signal Generator	Agilent	N5182A	MY50141294	Oct. 26, 2017	Oct. 25, 2018
Analog Signal Generator	Agilent	N5181A	MY50141953	Oct. 26, 2017	Oct. 25, 2018
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Oct. 26, 2017	Oct. 25, 2018
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Oct. 26, 2017	Oct. 25, 2018
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Oct. 26, 2017	Oct. 25, 2018
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Oct. 26, 2017	Oct. 25, 2018
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	144382	Oct. 26, 2017	Oct. 25, 2018
Universal Radio Communication Tester	Rohde&Schwarz	CMU200	103903	Jul. 20, 2017	Jul. 19, 2018

4. Conducted RF Output Power

4.1 Test Standard and Limit

4.1.1 Test Standard

FCC part 2.1046

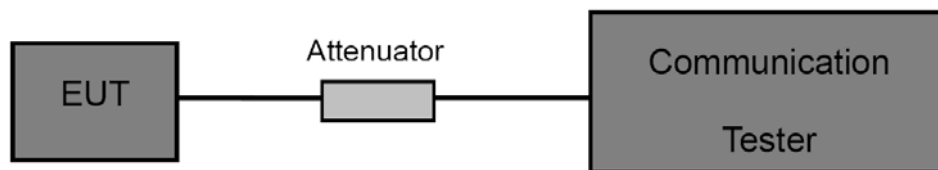
FCC Part 27.50(b)&(d),

FCC Part 27.50 (h)

4.1.2 Test Limit

RF Output Power
LTE Band 7
2W(33dBm) EIRP

4.2 Test Setup



4.3 Test Procedure

- (1) The EUT is coupled to the Base Station with the suitable Attenuator, the path loss is calibrated to correct the reading.
- (2) A call is set up by the Base Station to the generic call set up procedure.
- (3) Set EUT at maximum power level through base station by power level command.
- (4) Then read record the power value from the Base Station in dBm.

4.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

4.5 Test Data

Please refer to the Attachment A.

5. Peak-Average Ratio

5.1 Test Standard and Limit

5.1.1 Test Standard

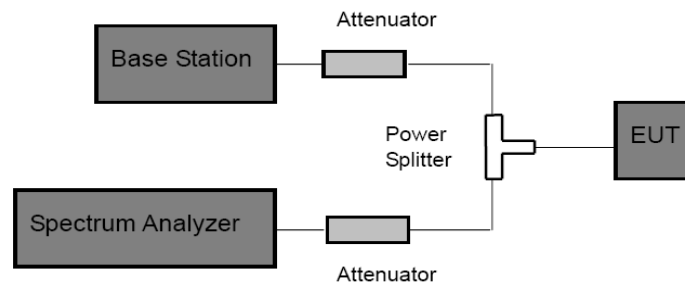
FCC Part 27.50(d), FCC Part 27.50 (h)

5.1.2 Test Limit

Peak-to-Average Ratio

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

5.2 Test Setup



5.3 Test Procedure

According with KDB 971168

- (1) The signal analyzer's CCDF measurement profile is enabled.
- (2) Frequency = carrier center frequency.
- (3) Measurement BW > Emission bandwidth of signal.
- (4) The signal analyzer was set to collect one million samples to generate the CCDF curve.
- (5) Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level.
- (6) The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which of the transmitter is operating at maximum power.

5.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

5.5 Test Data

Please refer to the Attachment B.

6. Occupied Bandwidth

6.1 Test Standard and Limit

6.1.1 Test Standard

FCC Part 2: 2.1049

FCC Part 27.53(h)

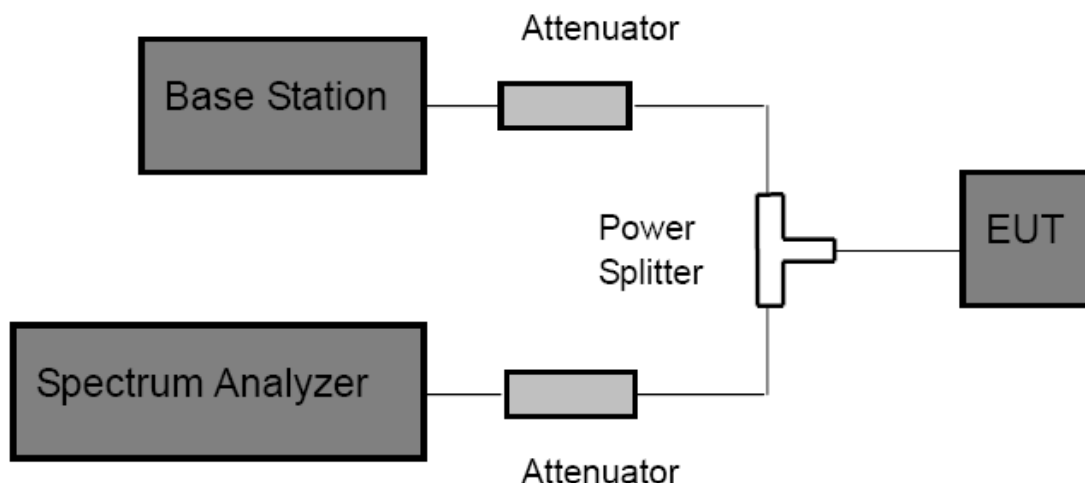
FCC Part 27.53(m)

6.1.2 Test Requirement

According to FCC section 2.1049, the occupied bandwidth is the frequency bandwidth such that below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as 99% power and -26dBC occupied bandwidths.

6.2 Test Setup



6.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and Base station via power splitter as show in the block diagram above.
- (2) The resolution bandwidth of the Spectrum Analyzer is set to at least 1% of the occupied bandwidth. VBW= 3 times RBW.
- (3) The low, middle and the high channels are selected to perform tests respectively.
- (4) Set the frequency range of the Spectrum Analyzer suitably to capture the waveform; search peak; make a line whose value is 26dB lower than the peak; mark two points which the line intersected the waveform at; finally record the delta of the two points as the occupied bandwidth and the plot.
- (5) Set the Spectrum Analyzer Occupied bandwidth function to measure the 99% occupied bandwidth.

6.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

6.5 Test Data

Please refer to the Attachment C.

7. Out of Band Emission at Antenna Terminals

7.1 Test Standard and Limit

7.1.1 Test Standard

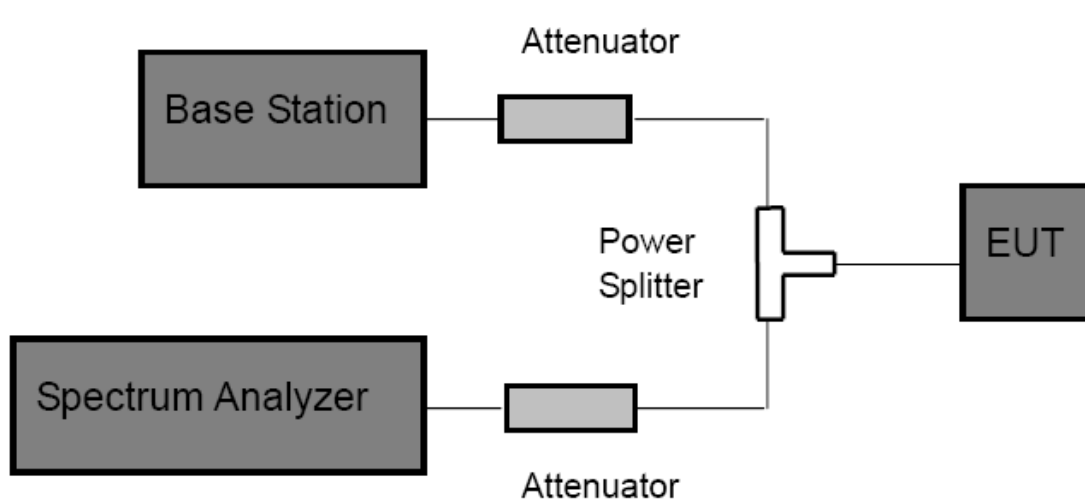
FCC Part 2: 2.1051, 2.1057

FCC Part 27.53 (h), FCC Part 27.53(m)

7.1.2 Test Limit

Band 7: For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power(P) by a factor of at least $43 + 10 \log (P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

7.2 Test Setup



7.3 Test Procedure

- 1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.
- 2 The resolution bandwidth of the spectrum analyzer was set at 100 kHz when below 1GHz, 1MHz when above 1 GHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.
- 3 For the out of band: Set the RBW=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic.
- 4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter.

7.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

7.5 Test Data

Please refer to the Attachment D.

8. Band Edge Test

8.1 Test Standard and Limit

8.1.1 Test Standard

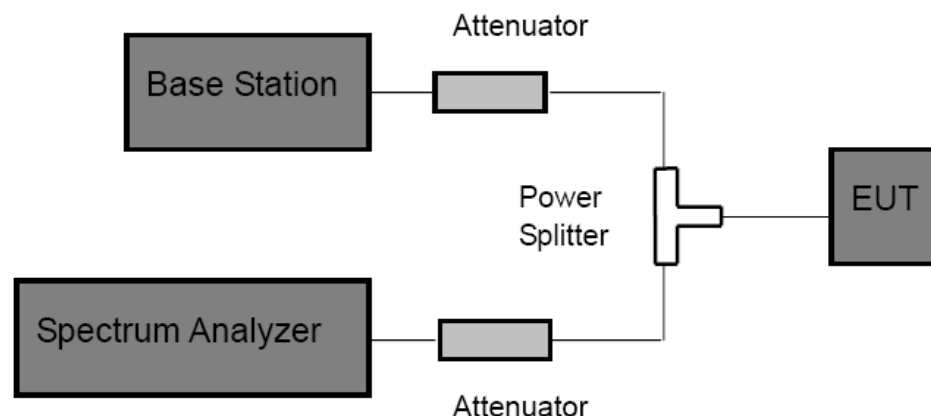
FCC Part 2: 2.1051, 2.1057

FCC Part 27.53 (h), FCC Part 27.53(m)

8.1.2 Test Limit

Band 7: For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power(P) by a factor of at least $43 + 10 \log (P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

8.2 Test Setup



8.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and Base station via power splitter as show in the block diagram above.
- (2) Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter.

8.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

8.5 Test Data

Please refer to the Attachment E.

9. Radiated Output Power

9.1 Test Standard and Limit

9.1.1 Test Standard

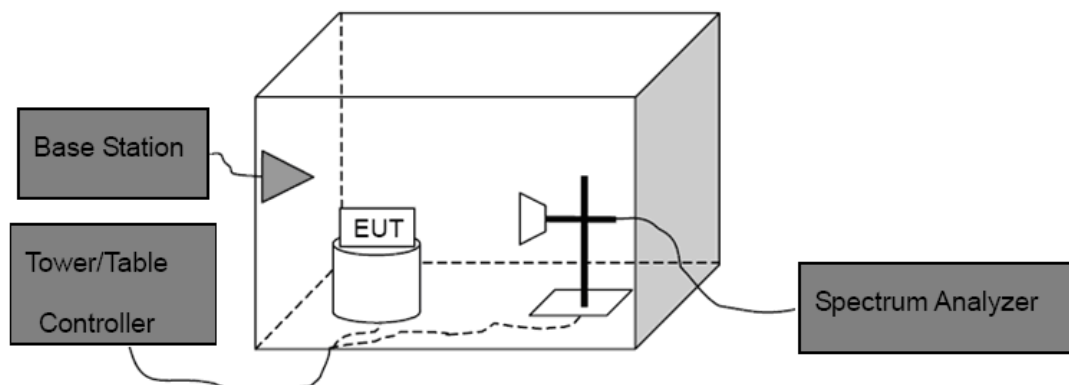
FCC Part 2.1046

FCC part 27.50(c), FCC part 27.50(d)

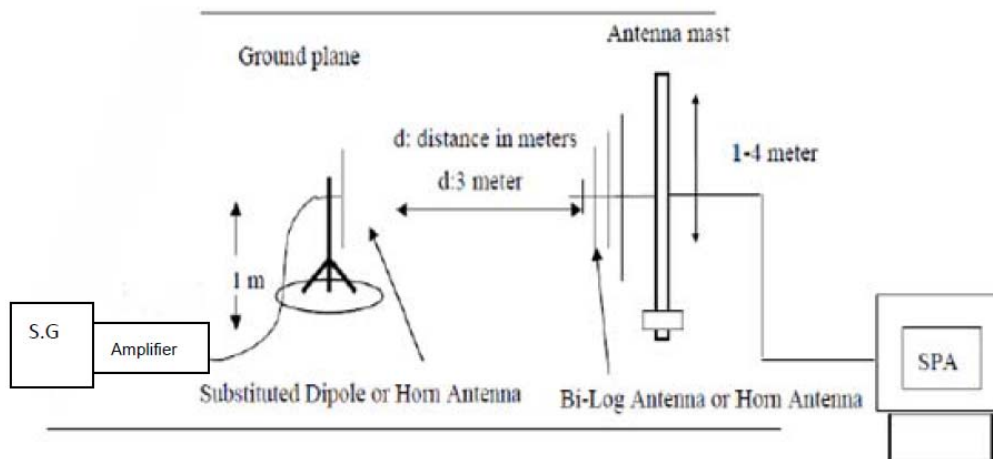
9.1.2 Test Limit

E.I.R.P
LTE Band 7
2W(33 dBm) EIRP

9.2 Test Setup



Above 1G



Substituted Method

9.3 Test Procedure

- (1) The EUT was placed on an non-conductive rotating platform with 0.8 meter height in an anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RBW=3 MHz, VBW=3 MHz and peak detector settings.
- (2) During the measurement, the EUT was enforced in maximum power and linked with the Base Station. The highest was recorded from analyzer power level (LVT) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
- (3) Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to C63.26. The EUT was replaced by dipole antenna (for frequency below 1 GHz) or Horn antenna (for frequency above 1 GHz) at same location with same polarize of receiver antenna and then a known power of each measure frequency from S.G. was applied into the dipole antenna or Horn antenna through a TX cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna.

Note: In test, the S.G Connect the Pre-amplifier(Sonoma 310N Pre-amplifier for frequency below 1 GHz, HP 8449B Pre-amplifier for frequency above 1 GHz)

Then the EUT's EIRP and ERP was calculated with the correction factor:

$ERP = S.G.Level + Antenna\ Gain\ Cord.(dBd) - Cable\ Loss(dB)$

$EIRP = S.G.Level + Antenna\ Gain\ Cord.(dBi) - Cable\ Loss(dB)$

9.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

9.5 Test Data

Please refer to the Attachment F.
Measurement Data (worst case)

10. Radiated Out Band of Emissions

10.1 Test Standard and Limit

10.1.1 Test Standard

FCC Part 2: 2.1053, 2.1057

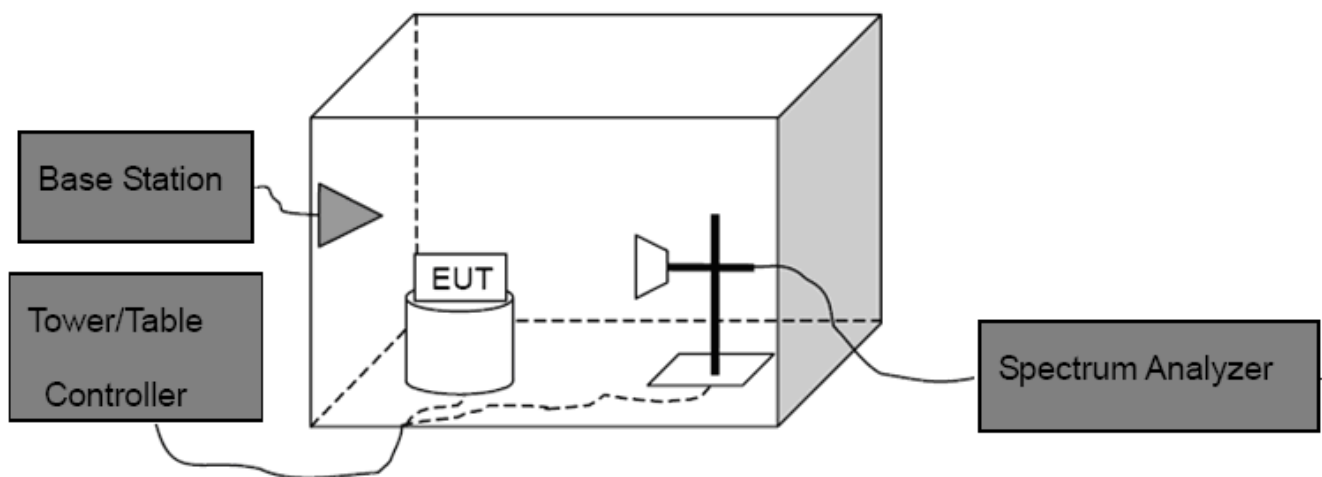
FCC Part 22H: 22.917

FCC Part 24E: 24.238

10.1.2 Test Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power(P) by a factor of at least $43+10\log(P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

10.2 Test Setup



10.3 Test Procedure

- (1) The test system setup as show in the block diagram above.
- (2) The EUT was placed on an non-conductive rotating platform in an anechoic chamber. The radiated spurious emissions from 30MHz to 10^{th} harmonious of fundamental frequency were measured at 3 m with a test antenna and a spectrum analyzer with RBW=1 MHz, VBW=1 MHz, peak detector settings.
- (3) During the measurement, the EUT was enforced in maximum power and linked with a base station. All the spurious emissions at 3m were measured by rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
- (4) When found the maximum level of emissions from the EUT. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB=10 log(TX power in Watts/0.001)-the absolute level
Spurious attenuation limit in dB=43+10 log(power out in Watts)

10.4 EUT Operating Condition

The EUT was continuously connected with the Base station and transmitting in the max power during the test.

10.5 Test Data

Please refer to the Attachment G.
Measurement Data (worst case)

11. Frequency Stability

11.1 Test Standard and Limit

11.1.1 Test Standard

FCC Part 2.1055(a)(1)(b)

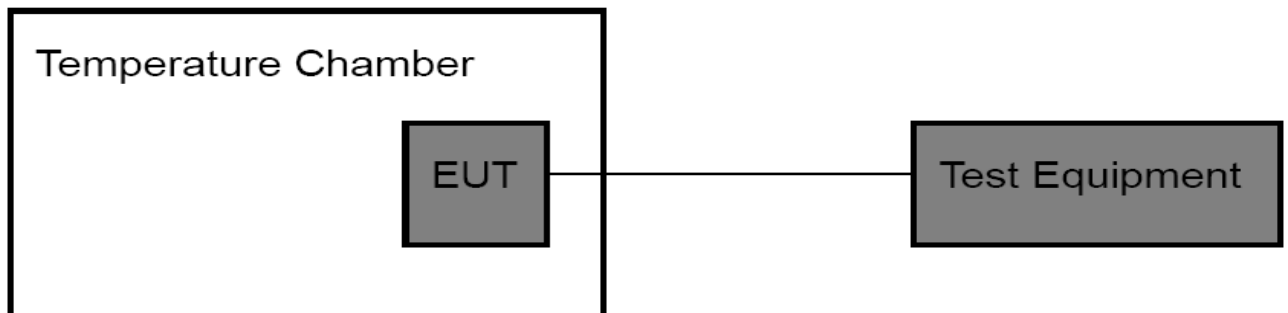
FCC Part 24.235, Part 27.54, FCC Part 2.1055(a)(1)(b)

11.1.2 Limit

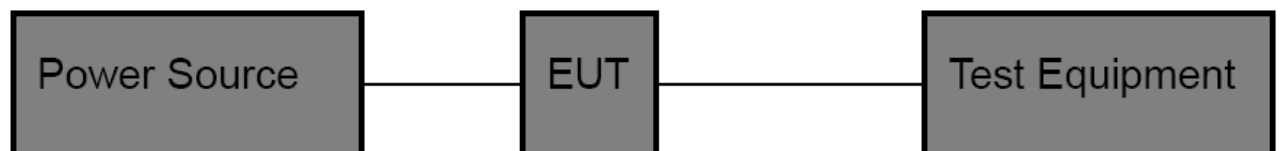
Limit
$\pm 2.5\text{ppm}$

11.2 Test Setup

For Temperature Test:



For Voltage Test:



11.3 Test Procedure

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 for three hours. 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 set up to 50°C and the EUT was stabilized for three hours. Power was applied and the maximum change in frequency was recorded within one minute.
- (4) If the EUT cannot be turned on at -30°C , the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

Test Procedures for Voltage Variation:

- (1) The EUT was placed in a temperature chamber at $25 \pm 5^{\circ}\text{C}$ and connected with the base station.
- (2) Reduce the input voltage to specify extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.
- (3) The variation in frequency was measured for the worst case.

11.4 EUT Operating Condition

The Equipment Under Test was set to Communication with the Base Station.

11.5 Test Data

Please refer to the Attachment H.

ATTACHMENT A--CONDUCTED RF OUTPUT POWER

FDD-LTE Band 7						
Channel Bandwidth: 5 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	24.50	24.20	23.74	PASS
	1	12	24.40	23.92	23.24	PASS
	1	24	24.60	24.03	23.32	PASS
	12	0	23.46	23.17	22.95	PASS
	12	6	23.43	23.14	22.92	PASS
	12	11	23.42	23.12	22.90	PASS
	25	0	23.39	23.07	22.84	PASS
16QAM	1	0	23.50	23.45	22.85	PASS
	1	12	23.30	23.25	22.39	PASS
	1	24	23.38	23.37	22.57	PASS
	12	0	22.46	21.99	21.86	PASS
	12	6	22.46	21.96	21.83	PASS
	12	11	22.46	21.94	21.79	PASS
	25	0	22.36	22.02	21.72	PASS
Channel Bandwidth: 10 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	24.13	23.75	23.75	PASS
	1	24	24.28	23.72	23.39	PASS
	1	49	24.22	23.58	23.09	PASS
	25	0	23.39	23.13	22.92	PASS
	25	12	23.40	23.11	22.90	PASS
	25	24	23.38	23.08	22.82	PASS
	50	0	23.39	23.07	22.85	PASS
16QAM	1	0	22.91	22.75	22.51	PASS
	1	24	23.25	22.87	22.38	PASS
	1	49	23.18	22.75	22.06	PASS
	25	0	22.38	22.07	21.89	PASS
	25	12	22.24	22.02	21.86	PASS
	25	24	22.38	22.05	21.82	PASS
	50	0	22.40	22.01	21.76	PASS

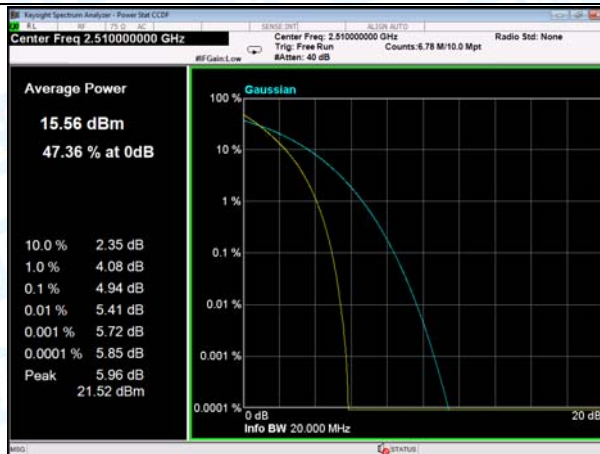
FDD-LTE Band 7						
Channel Bandwidth: 15 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.99	23.55	23.67	PASS
	1	37	24.13	23.50	23.30	PASS
	1	74	23.79	23.51	23.93	PASS
	36	0	23.48	22.97	22.86	PASS
	36	16	23.53	22.99	22.77	PASS
	36	35	23.35	23.01	22.57	PASS
	75	0	23.38	22.90	22.70	PASS
16QAM	1	0	22.85	22.57	22.31	PASS
	1	37	23.15	22.67	22.18	PASS
	1	74	22.80	22.68	21.88	PASS
	36	0	22.49	21.94	21.86	PASS
	36	16	22.51	22.08	21.85	PASS
	36	35	22.39	22.05	21.75	PASS
	75	0	22.37	22.02	21.73	PASS
Channel Bandwidth: 20 MHz						
Modulation	RB Size	RB Offset	Conducted Power (dBm)			Result
			Low CH	Middle CH	High CH	
QPSK	1	0	23.85	23.42	23.45	PASS
	1	49	23.90	23.35	23.16	PASS
	1	99	23.33	23.30	22.60	PASS
	50	0	23.39	22.76	22.67	PASS
	50	24	23.32	22.82	22.65	PASS
	50	49	22.98	22.82	22.47	PASS
	100	0	23.19	22.71	22.57	PASS
16QAM	1	0	22.71	22.66	22.84	PASS
	1	49	22.83	22.72	22.66	PASS
	1	99	22.33	22.69	22.21	PASS
	50	0	22.36	21.69	21.58	PASS
	50	24	22.25	21.86	21.61	PASS
	50	49	21.97	21.83	21.55	PASS
	100	0	22.16	21.82	21.69	PASS

ATTACHMENT B--PEAK-AVERAGE RATIO

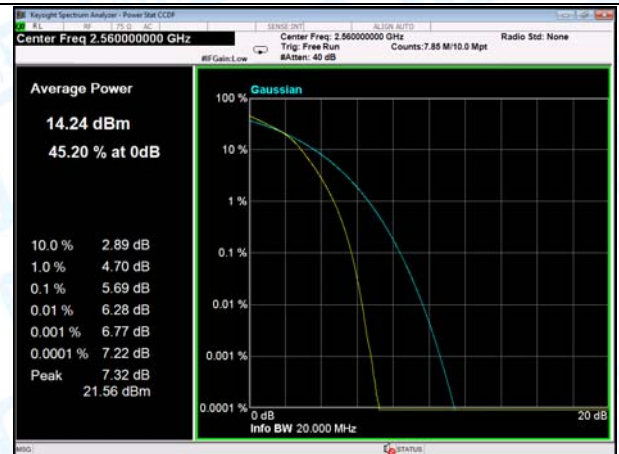
Test Mode	Modulation	RB Size	RB Offset	PAPR with 0.1% probability (dB)	Limit (dB)	Result
LTE BAND 7 20MHz (Low Channel)	QPSK	100	0	5.41	≤ 13	PASS
	16QAM	100	0	6.28	≤ 13	PASS
LTE BAND 7 20MHz (Middle Channel)	QPSK	100	0	6.03	≤ 13	PASS
	16QAM	100	0	6.79	≤ 13	PASS
LTE BAND 7 20MHz (High Channel)	QPSK	100	0	5.55	≤ 13	PASS
	16QAM	100	0	6.28	≤ 13	PASS

Note: Only show the worst case data

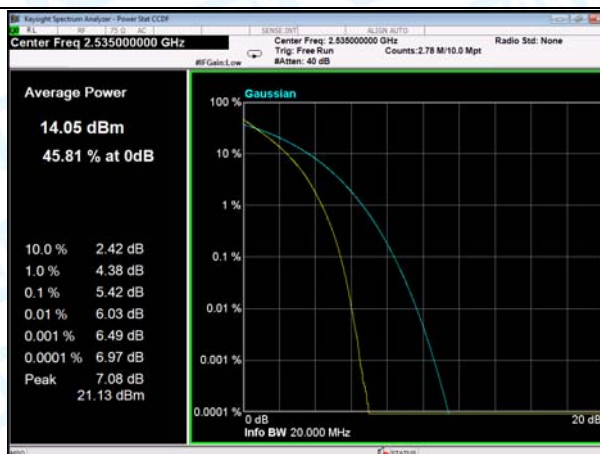
LTE Band 7 20MHz (Low Channel)-QPSK



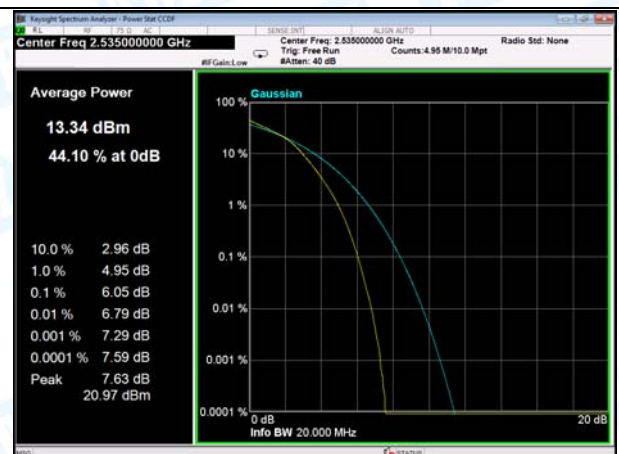
LTE Band 7 20MHz (Low Channel)-16QAM



LTE Band 7 20MHz (Middle Channel)-QPSK



LTE Band 7 20MHz (Middle Channel)-16QAM

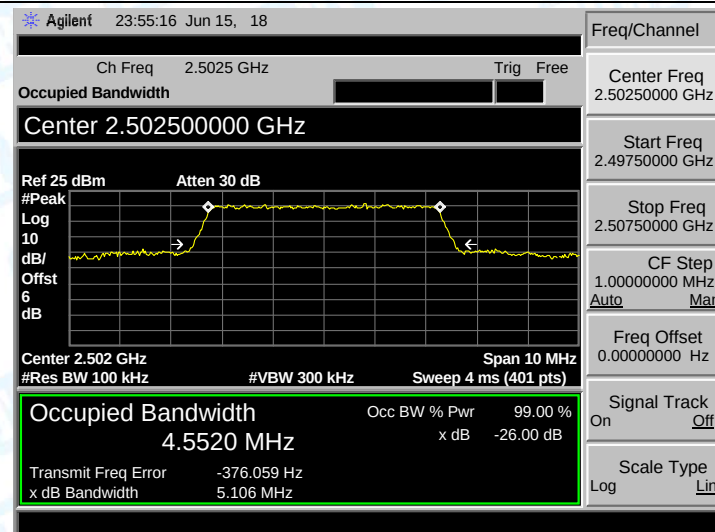


ATTACHMENT C--OCCUPY BANDWIDTH

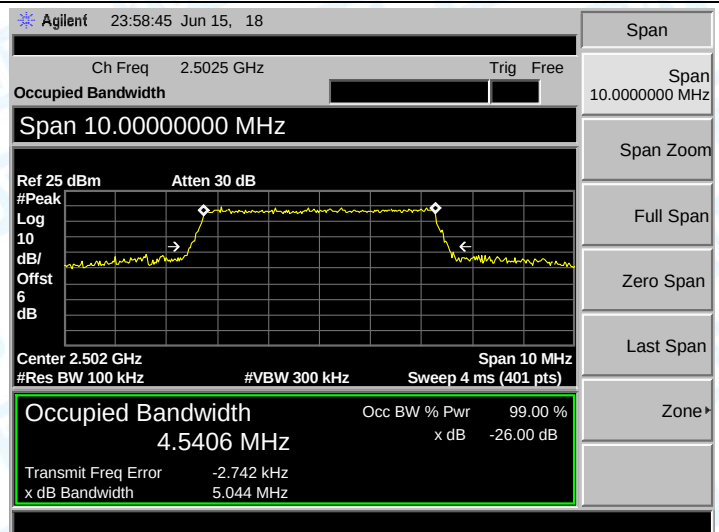
LTE Band 7					
Mode	Channel	Frequency (MHz)	Modulation	99% OBW (MHz)	-26dB Bandwidth (MHz)
5MHz	20775	2502.50	16QAM	4.5406	5.044
			QPSK	4.5520	5.105
	21100	2535.00	16QAM	4.5566	5.101
			QPSK	4.5531	5.099
	21425	2567.50	16QAM	4.5407	5.077
			QPSK	4.5278	5.138
10MHz	20800	2505.00	16QAM	9.0659	10.230
			QPSK	9.1111	10.354
	21100	2535.00	16QAM	9.0562	10.034
			QPSK	9.0993	10.255
	21400	2565.00	16QAM	9.0645	10.173
			QPSK	9.0686	10.189
15MHz	20825	2507.50	16QAM	13.4811	14.855
			QPSK	13.5019	15.081
	21100	2535.00	16QAM	13.4520	14.664
			QPSK	13.5374	15.036
	21375	2562.50	16QAM	13.4998	14.954
			QPSK	13.4628	14.725
20MHz	20850	2510.00	16QAM	18.457	20.900
			QPSK	18.518	20.660
	21100	2535.00	16QAM	18.589	20.650
			QPSK	18.537	20.770
	21350	2560.00	16QAM	18.387	20.460
			QPSK	18.384	20.460

Occupancy Bandwidth Test Plot

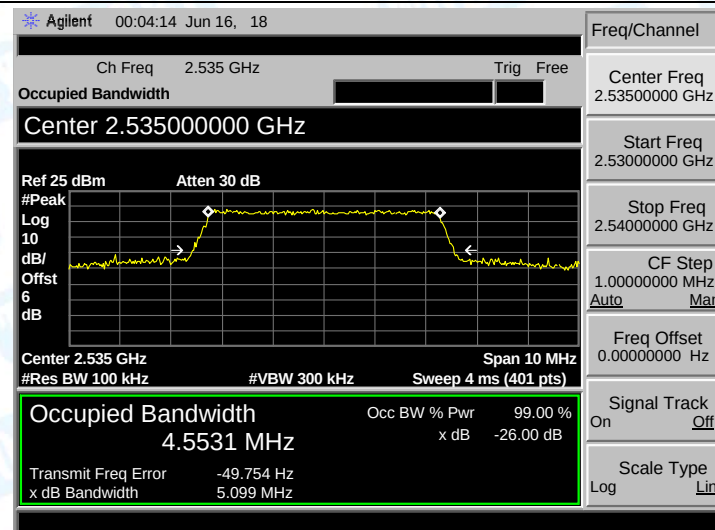
LTE BAND 7 (5MHz QPSK-Low CH)



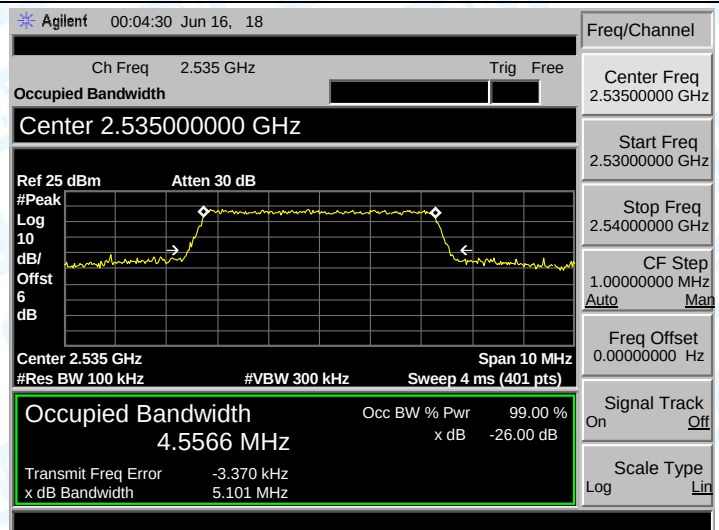
LTE BAND 7 (5MHz 16QAM-Low CH)



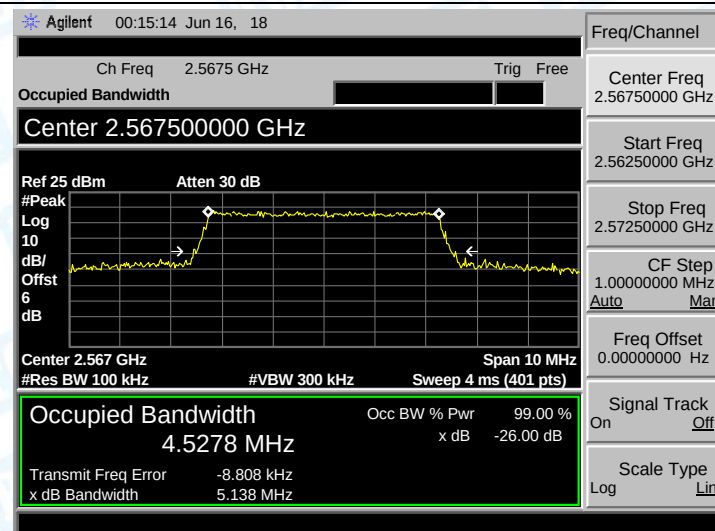
LTE BAND 7 (5MHz QPSK-Middle CH)



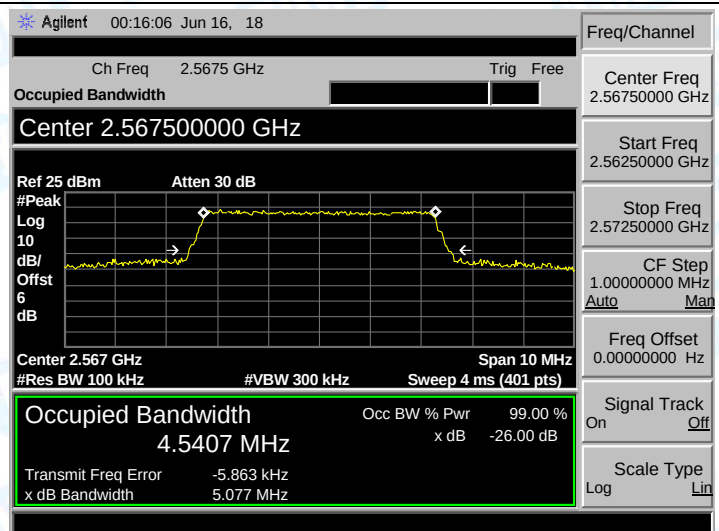
LTE BAND 7 (5MHz 16QAM- Middle CH)



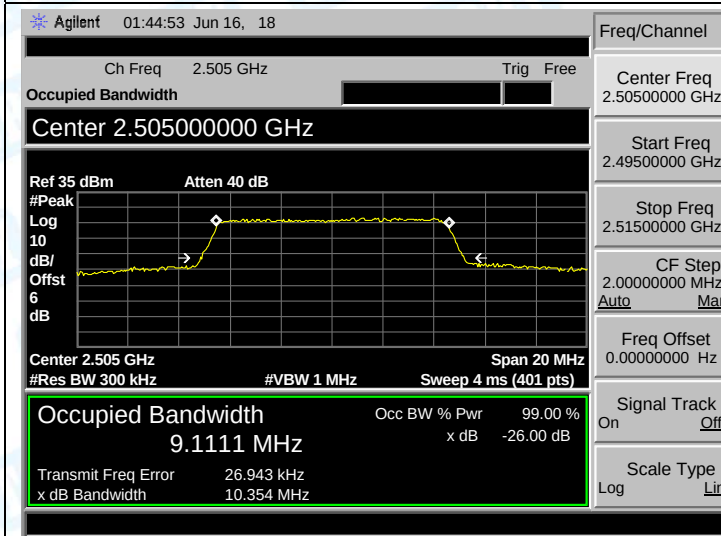
LTE BAND 7 (5MHz QPSK-High CH)



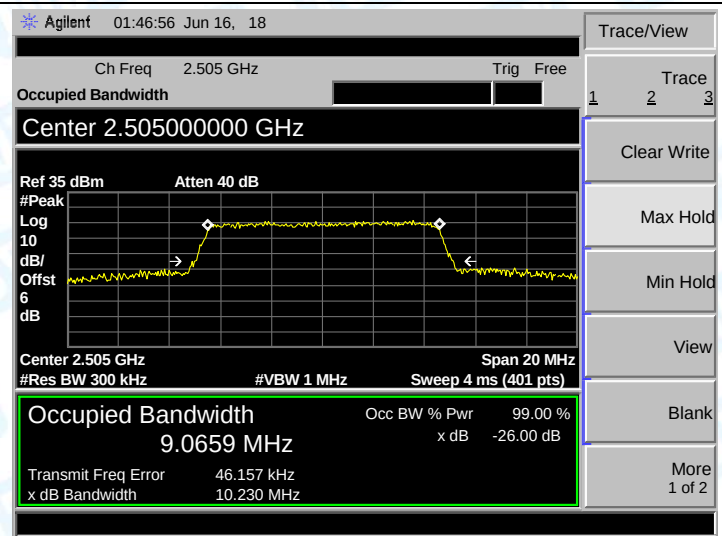
LTE BAND 7 (5MHz 16QAM-High CH)



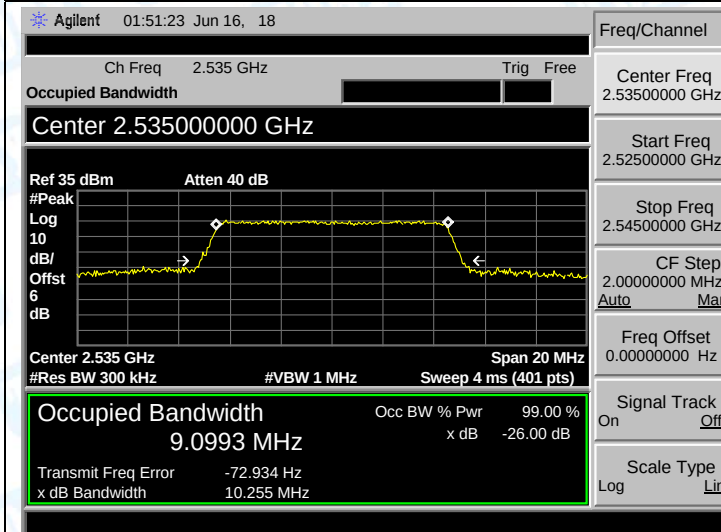
LTE BAND 7 (10MHz QPSK-Low CH)



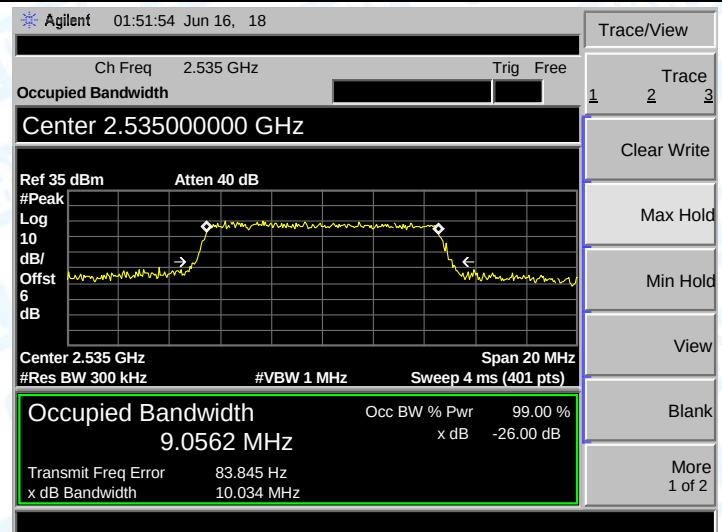
LTE BAND 7 (10MHz 16QAM-Low CH)



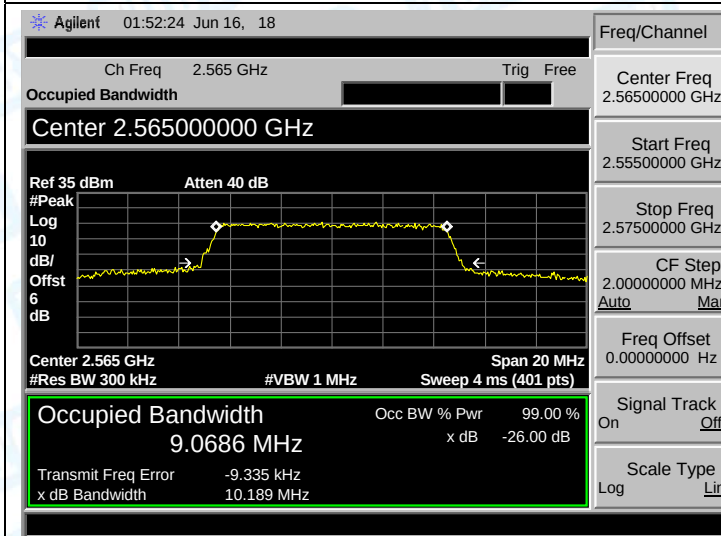
LTE BAND 7 (10MHz QPSK-Middle CH)



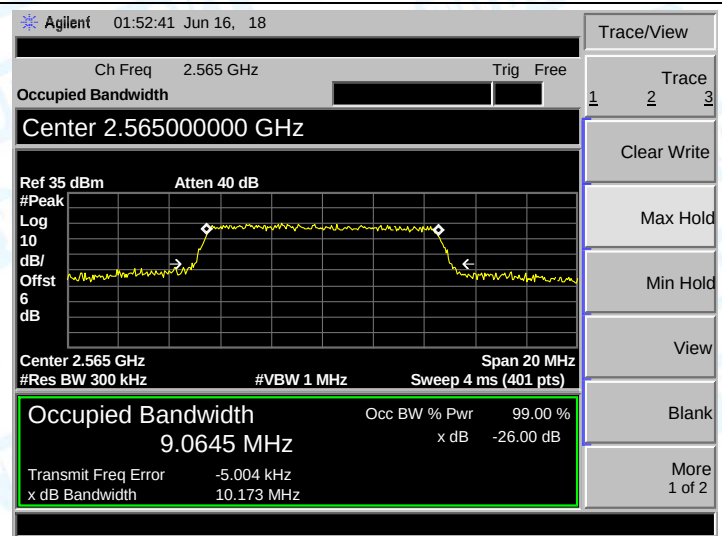
LTE BAND 7 (10MHz 16QAM- Middle CH)



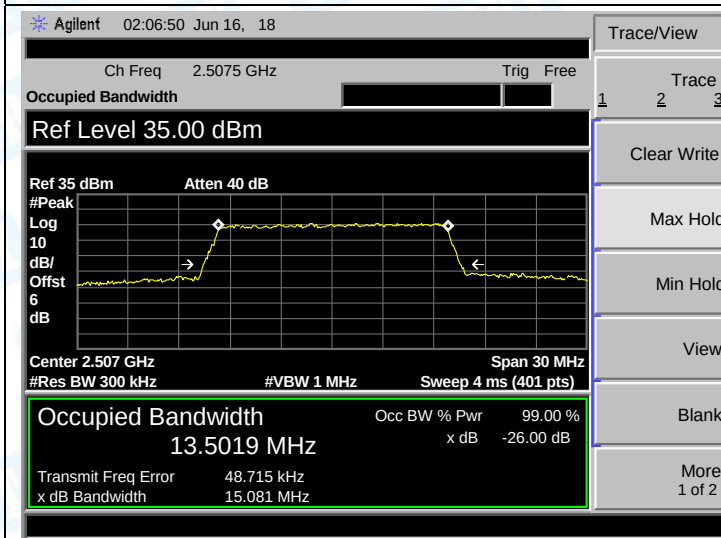
LTE BAND 7 (10MHz QPSK-High CH)



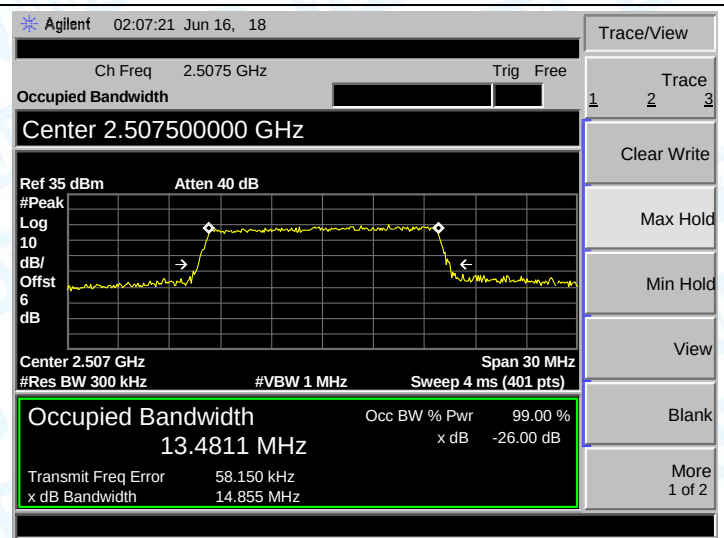
LTE BAND 7 (10MHz 16QAM-High CH)



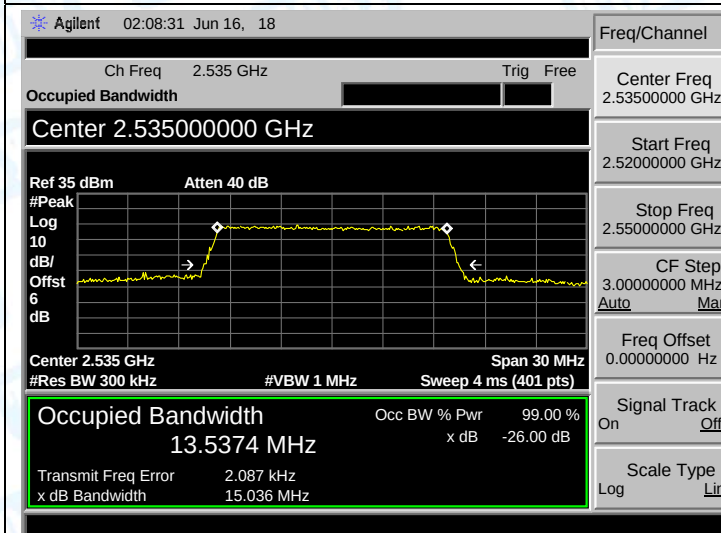
LTE BAND 7 (15MHz QPSK-Low CH)



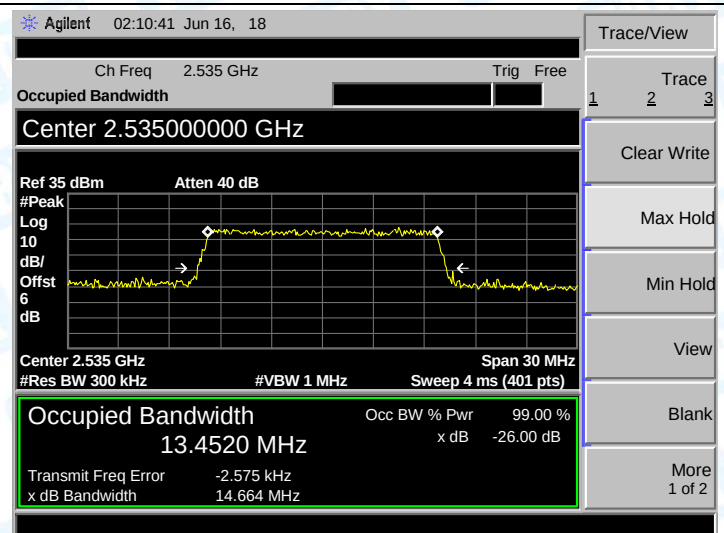
LTE BAND 7 (15MHz 16QAM-Low CH)



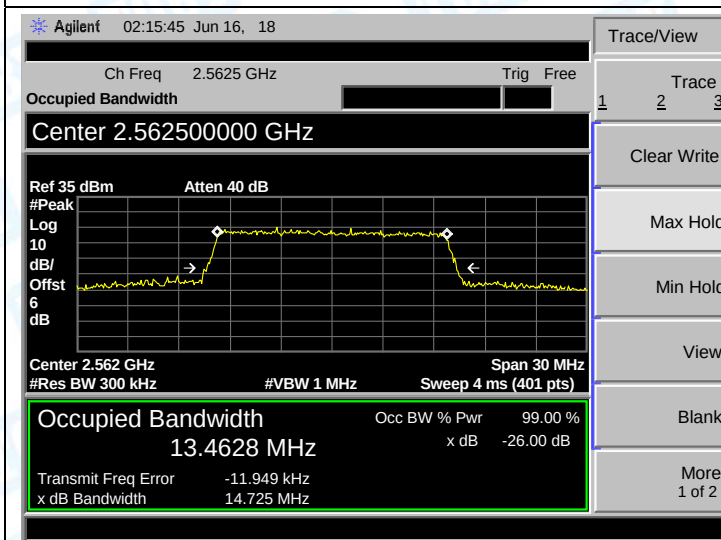
LTE BAND 7 (15MHz QPSK-Middle CH)



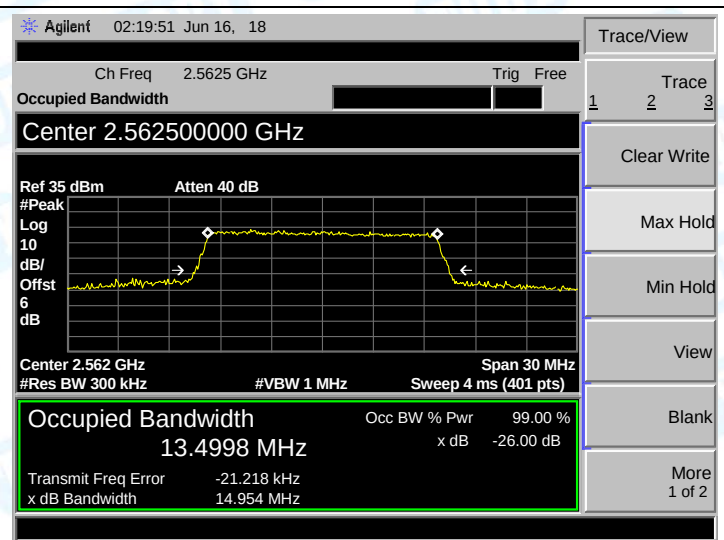
LTE BAND 7 (15MHz 16QAM- Middle CH)



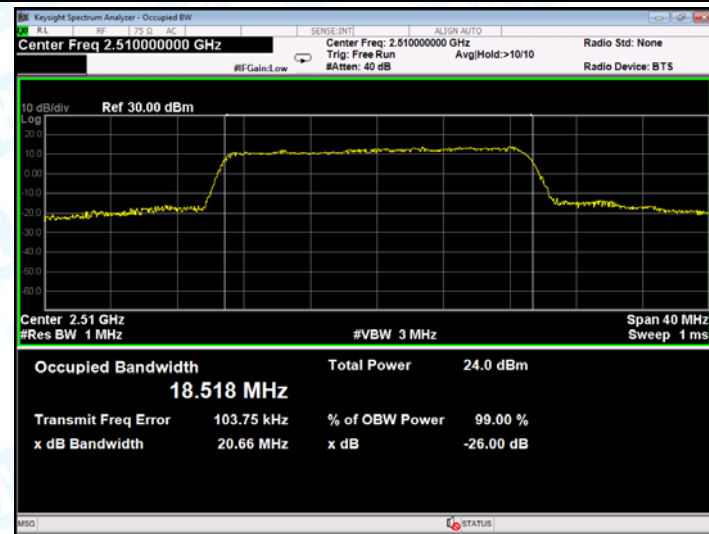
LTE BAND 7 (15MHz QPSK-High CH)



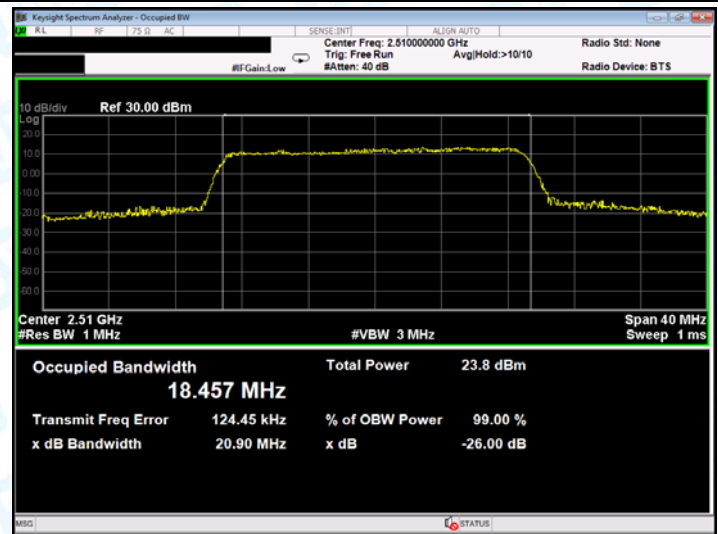
LTE BAND 7 (15MHz 16QAM-High CH)



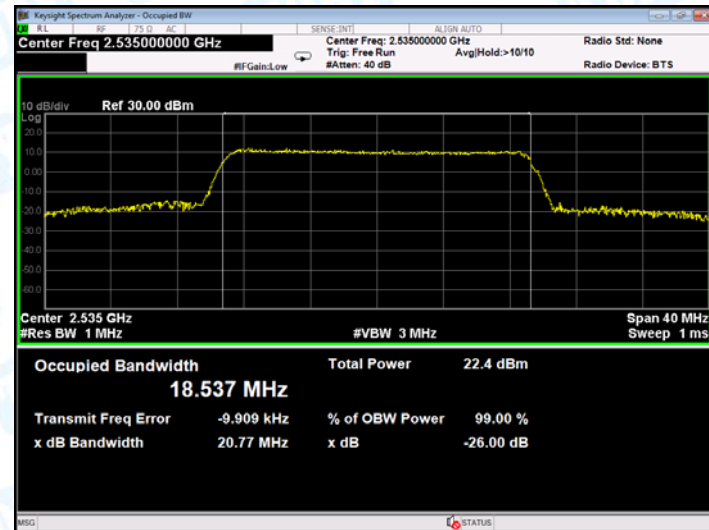
LTE BAND 7 (20MHz QPSK-Low CH)



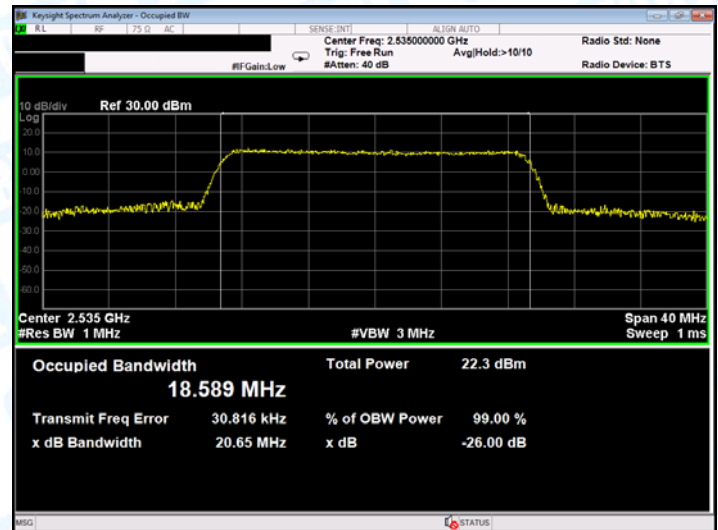
LTE BAND 7 (20MHz 16QAM-Low CH)



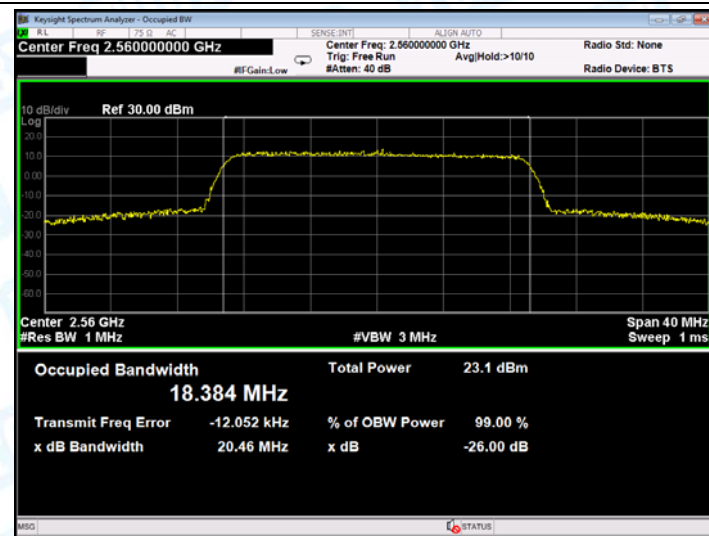
LTE BAND 7 (20MHz QPSK-Middle CH)



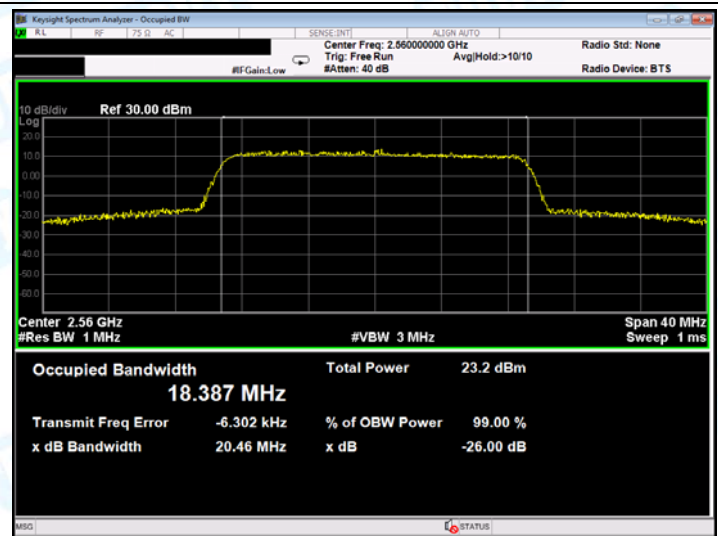
LTE BAND 7 (20MHz 16QAM- Middle CH)



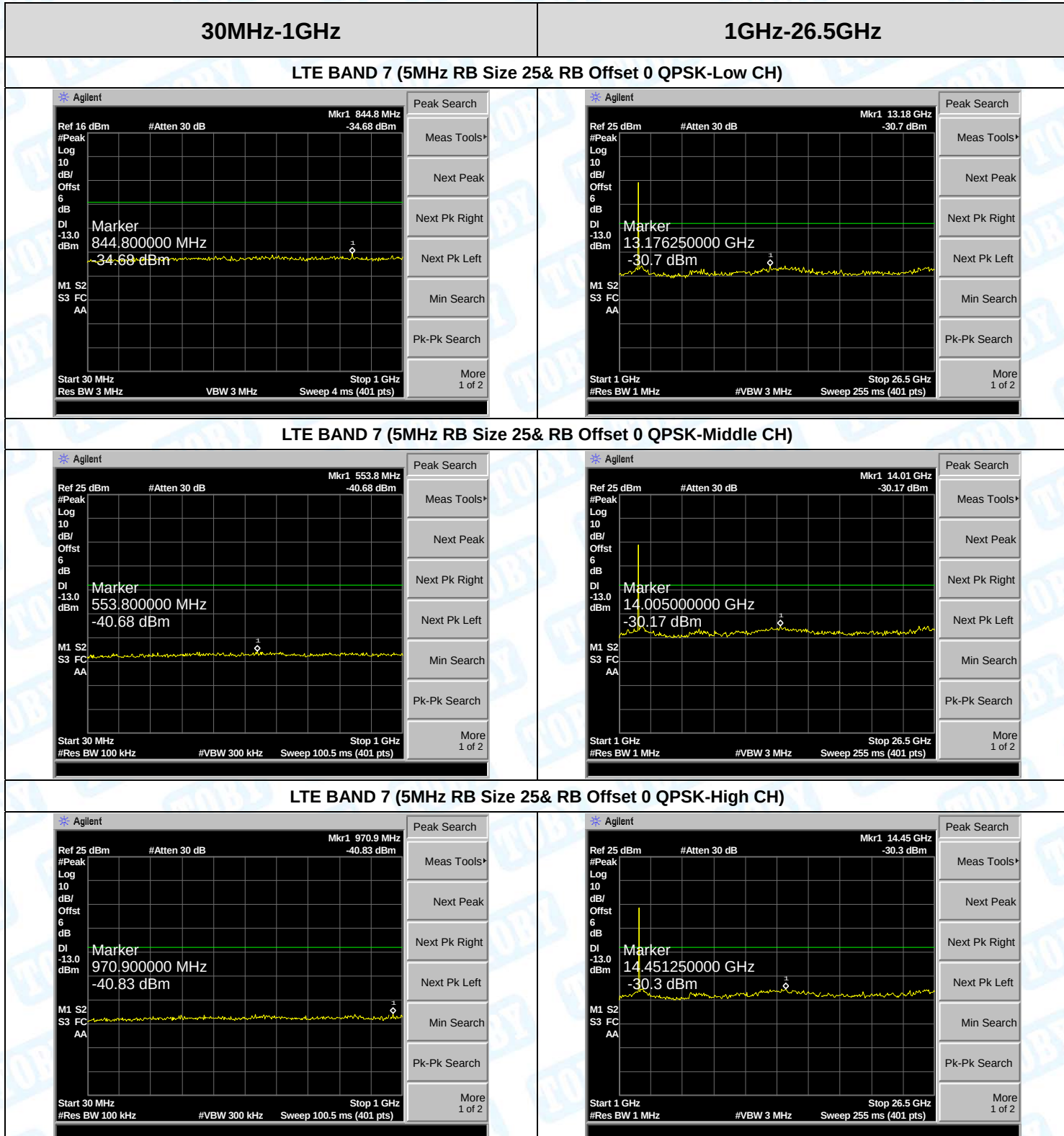
LTE BAND 7 (20MHz QPSK-High CH)



LTE BAND 7 (20MHz 16QAM-High CH)



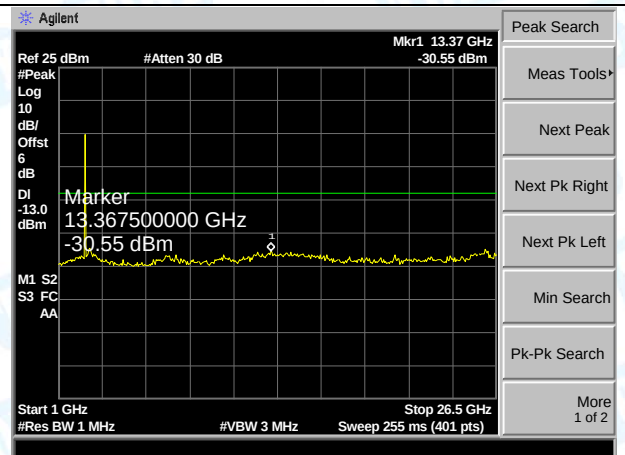
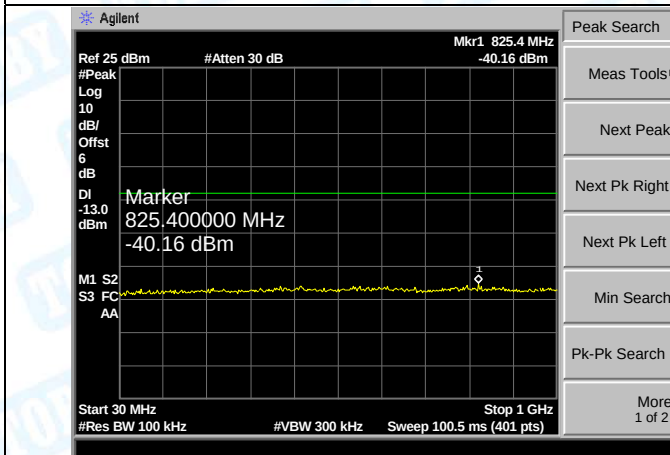
ATTACHMENT D--OUT OF BAND EMISSION AT ANTENNA TERMINALS



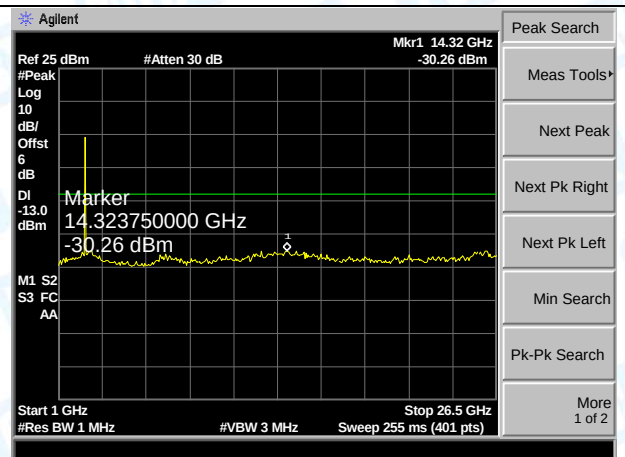
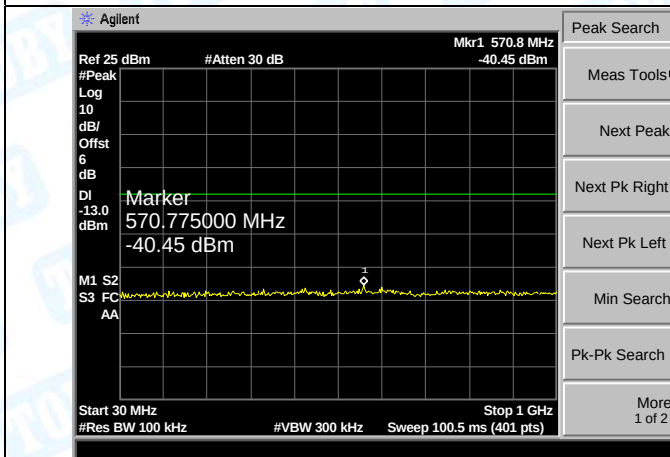
30MHz-1GHz

1GHz-26.5GHz

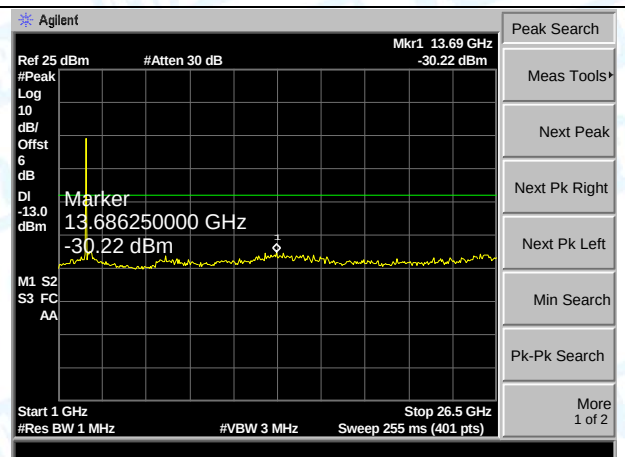
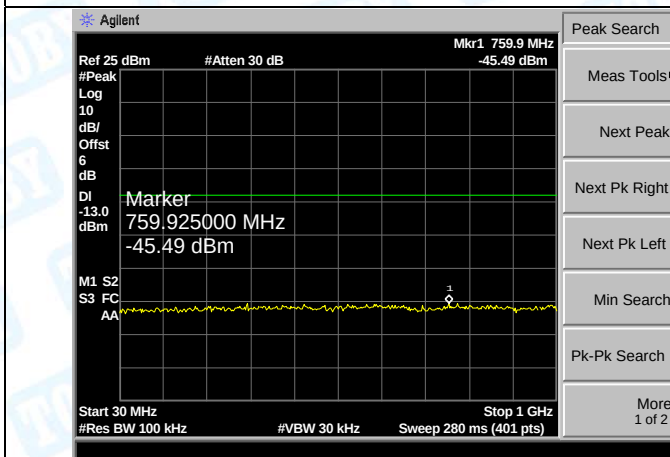
LTE BAND 7 (5MHz RB Size 25& RB Offset 0 16QAM-Low CH)



LTE BAND 7 (5MHz RB Size 25& RB Offset 0 16QAM-Middle CH)



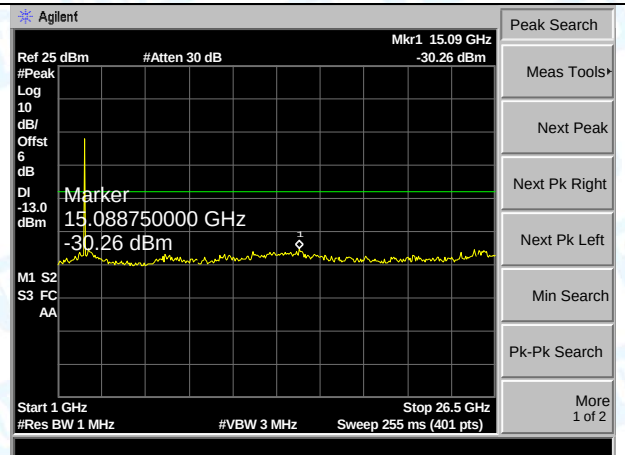
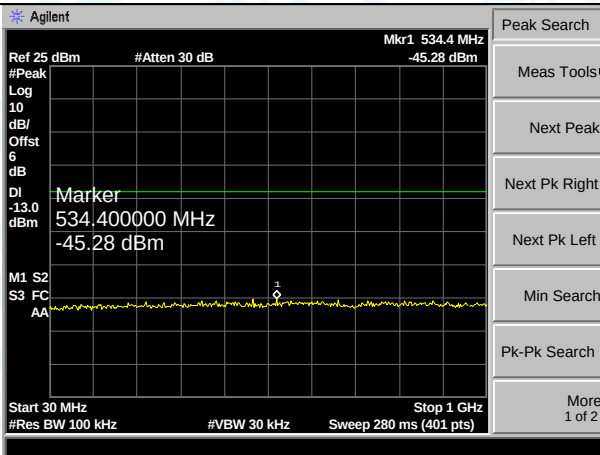
LTE BAND 7 (5MHz RB Size 25& RB Offset 0 16QAM-High CH)



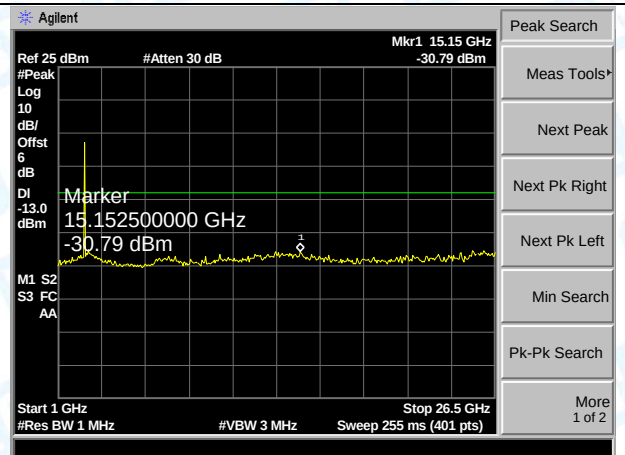
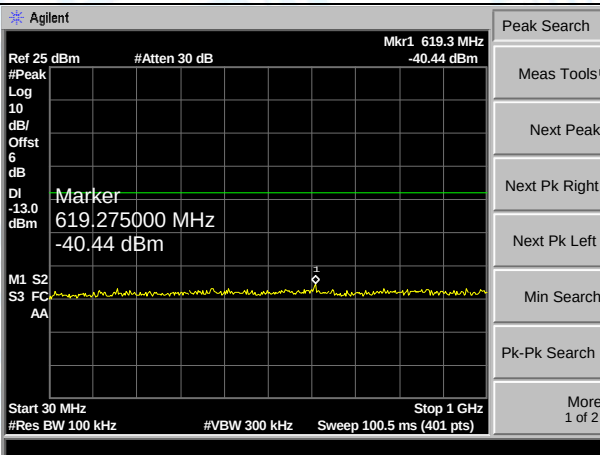
30MHz-1GHz

1GHz-26.5GHz

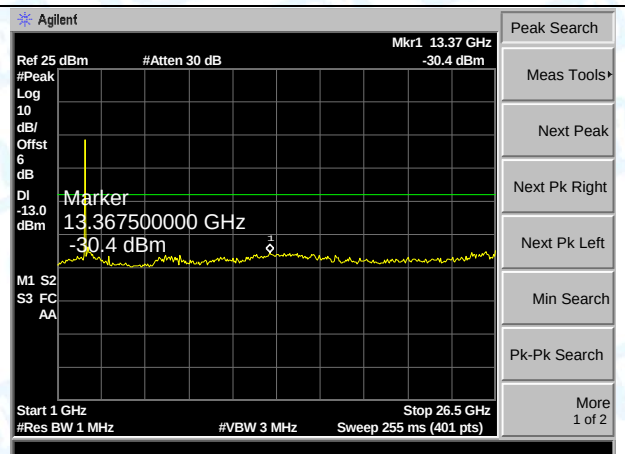
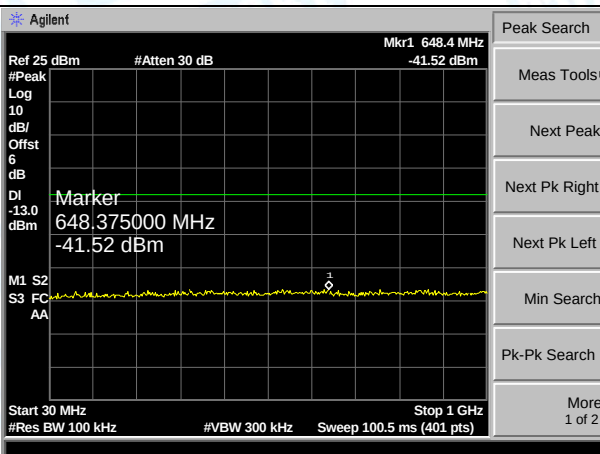
LTE BAND 7 (10MHz RB Size 50& RB Offset 0 QPSK-Low CH)



LTE BAND 7 (10MHz RB Size 50& RB Offset 0 QPSK-Middle CH)



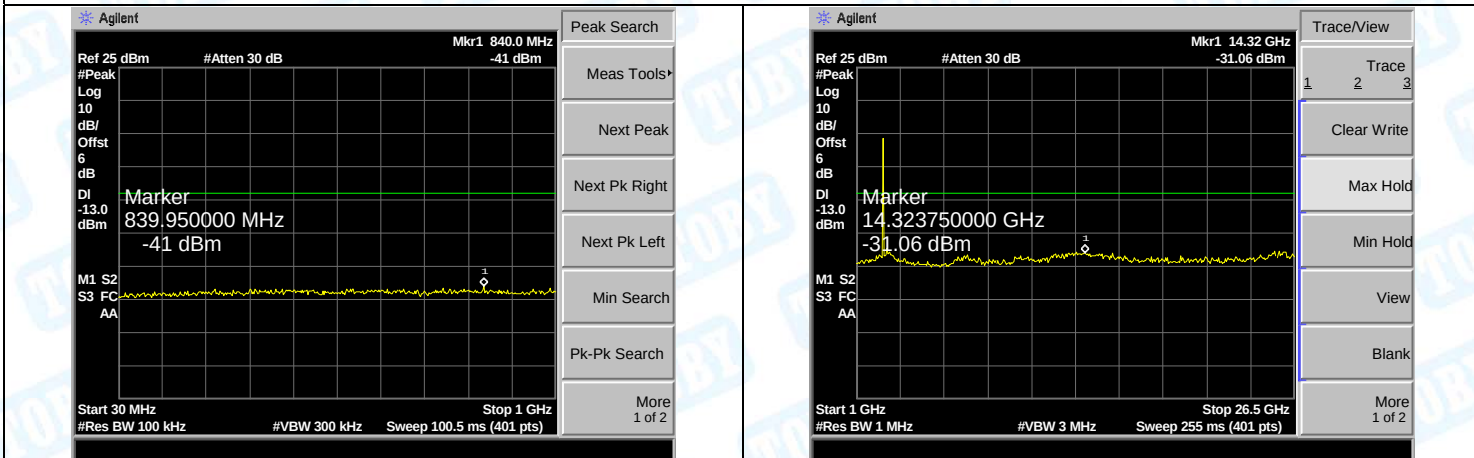
LTE BAND 7 (10MHz RB Size 50& RB Offset 0 QPSK-High CH)



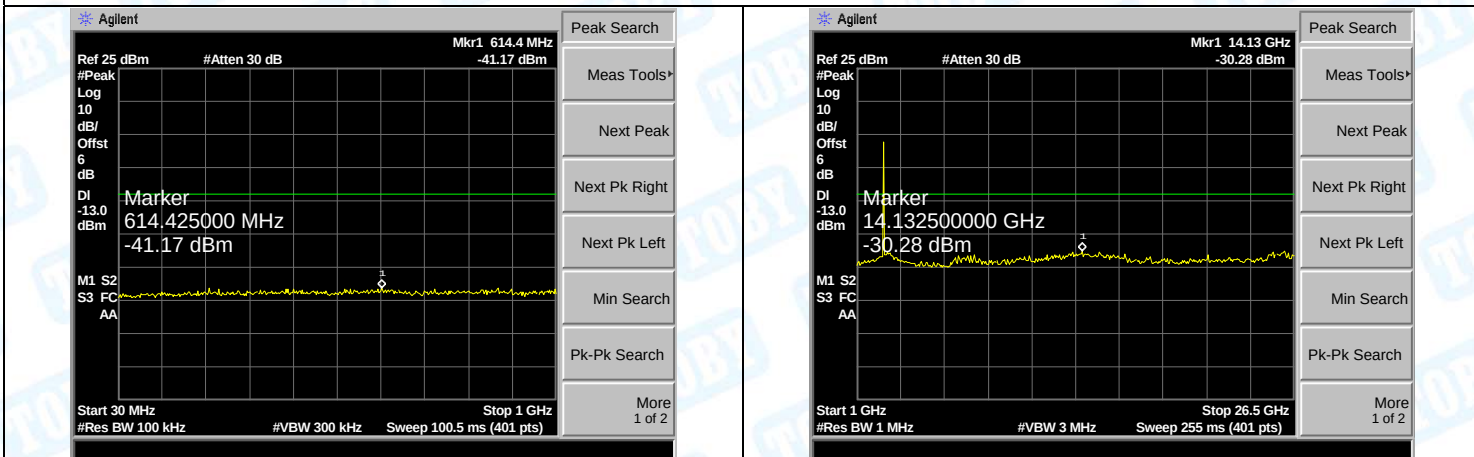
30MHz-1GHz

1GHz-26.5GHz

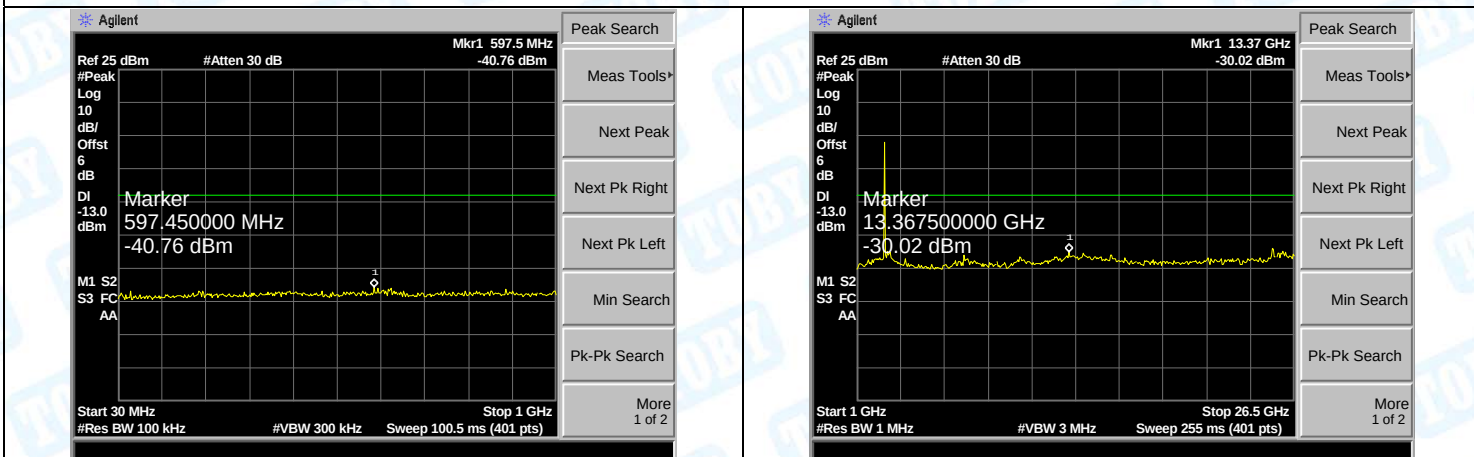
LTE BAND 7 (10MHz RB Size 50& RB Offset 0 16QAM-Low CH)



LTE BAND 7 (10MHz RB Size 50& RB Offset 0 16QAM-Middle CH)



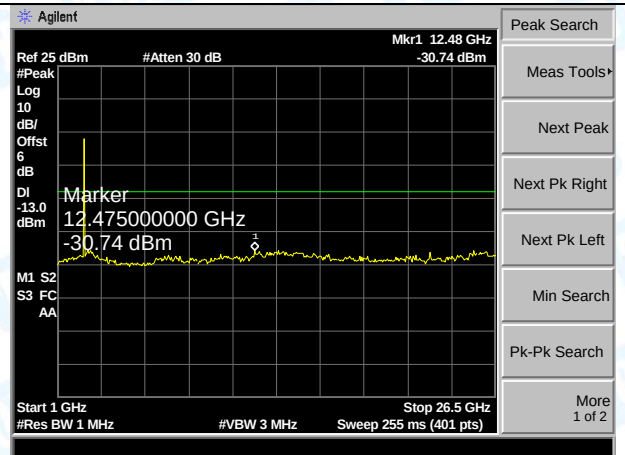
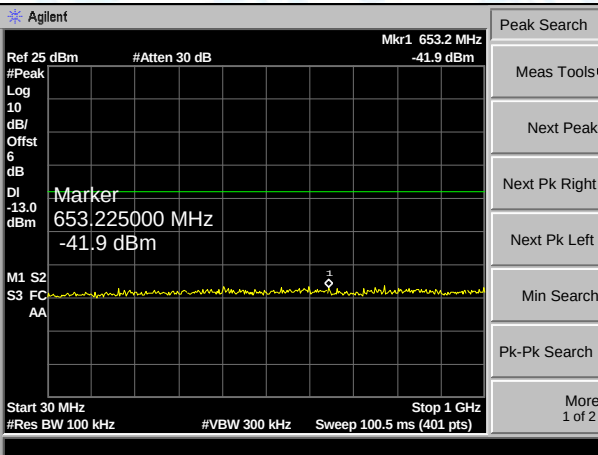
LTE BAND 7 (10MHz RB Size 50& RB Offset 0 16QAM-High CH)



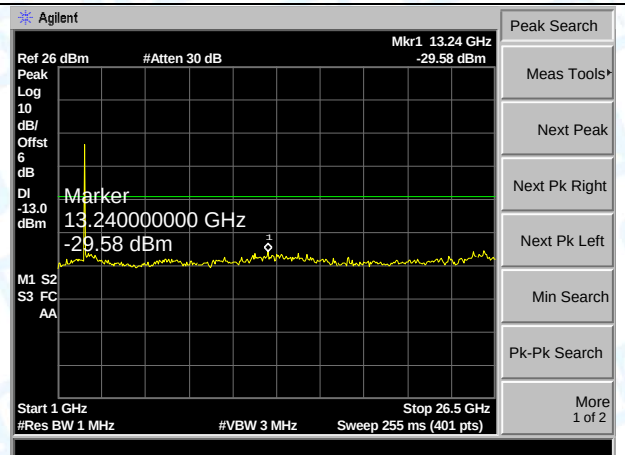
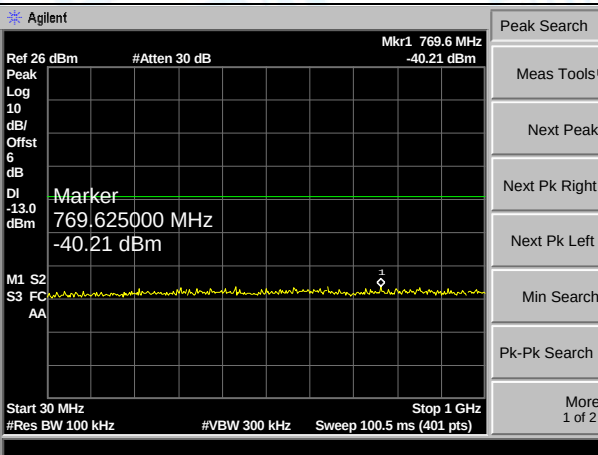
30MHz-1GHz

1GHz-26.5GHz

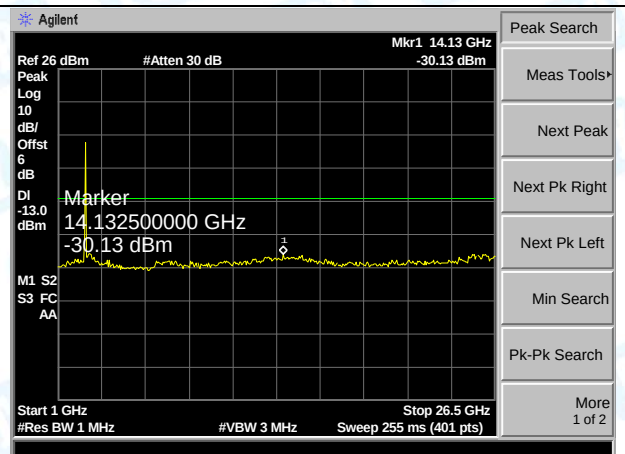
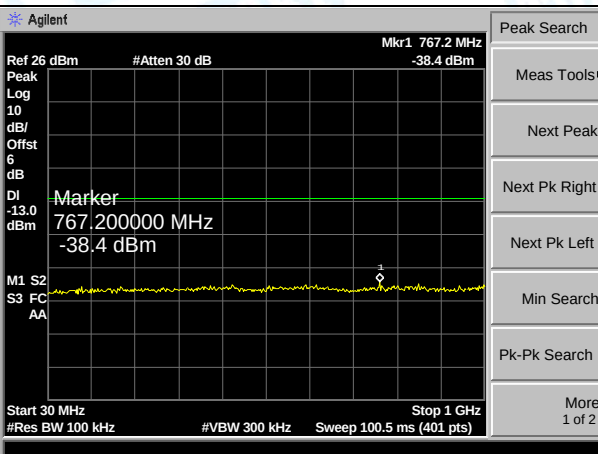
LTE BAND 7 (15MHz RB Size 75& RB Offset 0 QPSK-Low CH)



LTE BAND 7 (15MHz RB Size 75& RB Offset 0 QPSK-Middle CH)



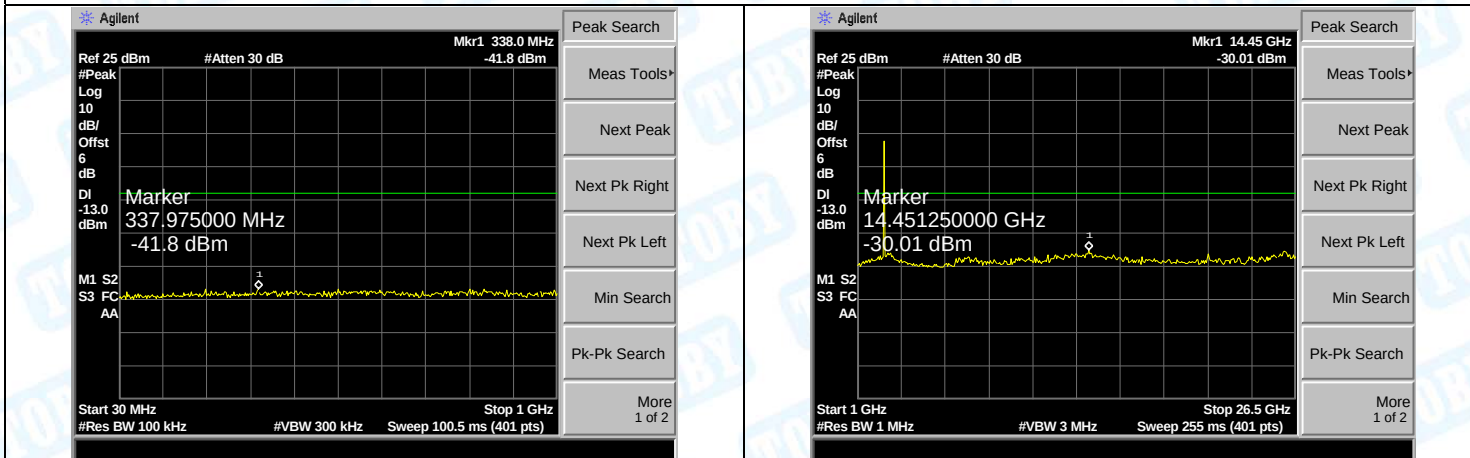
LTE BAND 7 (15MHz RB Size 75& RB Offset 0 QPSK-High CH)



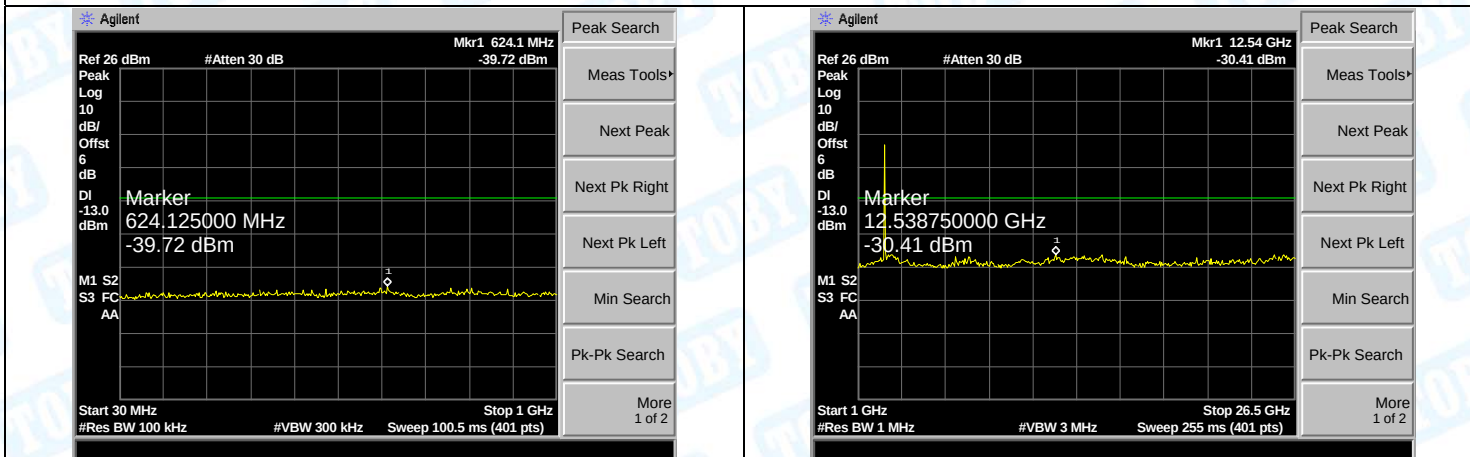
30MHz-1GHz

1GHz-26.5GHz

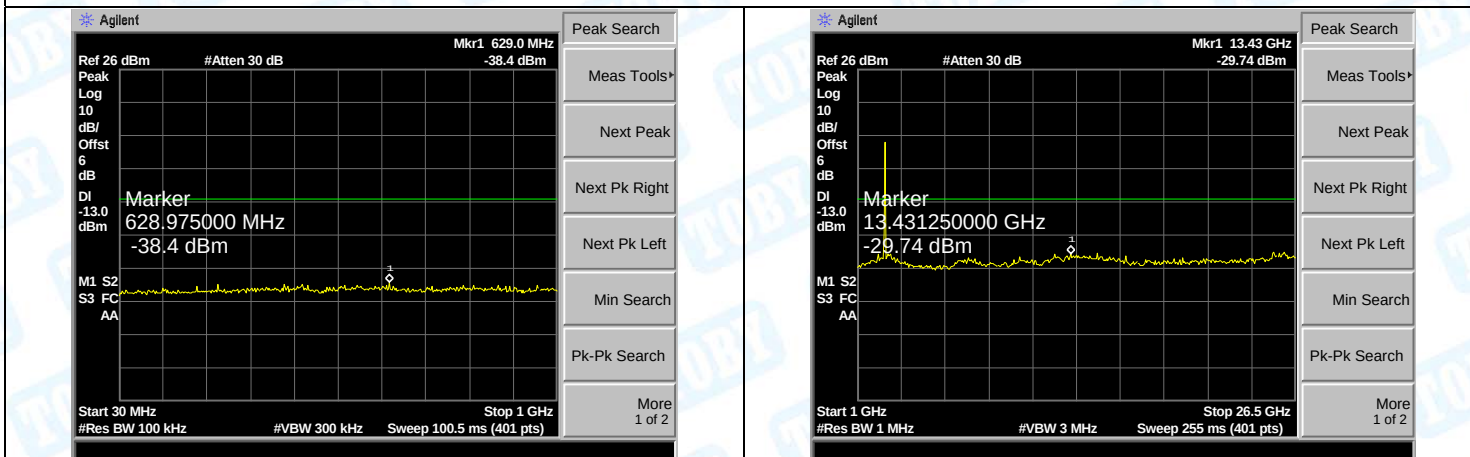
LTE BAND 7 (15MHz RB Size 75& RB Offset 0 16QAM-Low CH)



LTE BAND 7 (15MHz RB Size 75& RB Offset 0 16QAM-Middle CH)



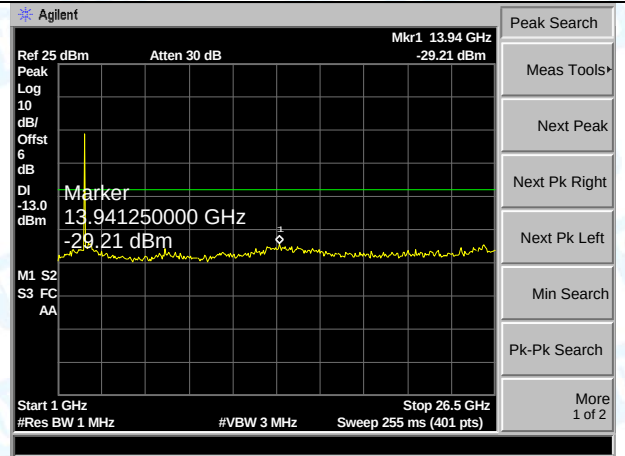
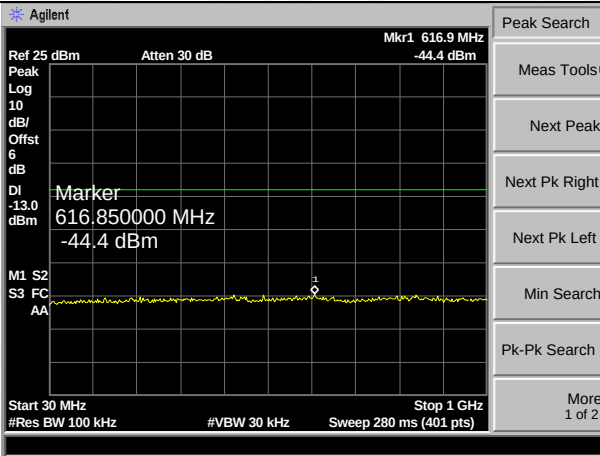
LTE BAND 7 (15MHz RB Size 75& RB Offset 0 16QAM-High CH)



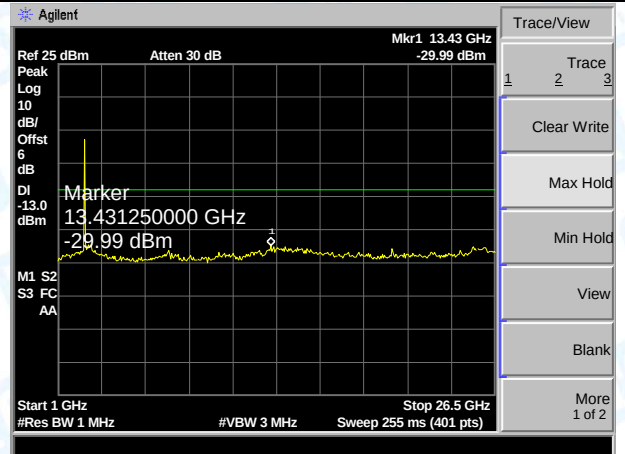
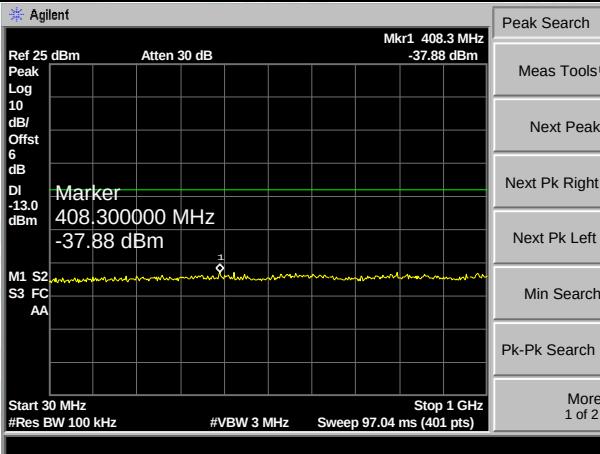
30MHz-1GHz

1GHz-26.5GHz

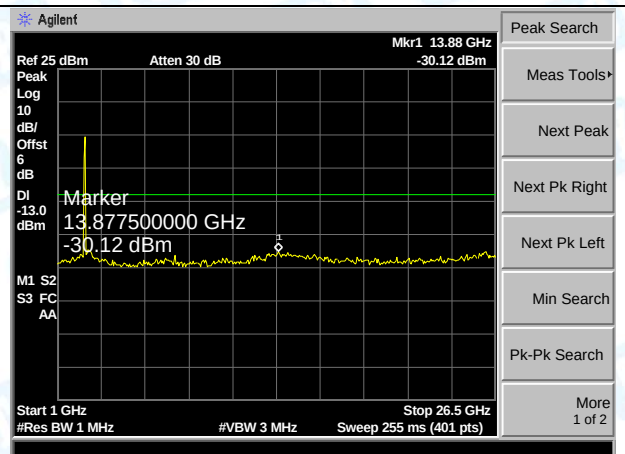
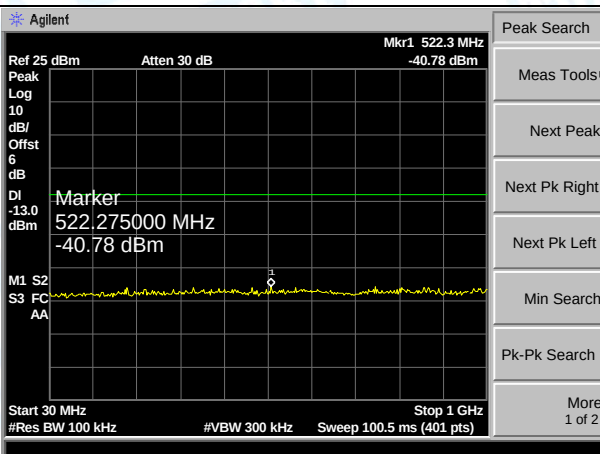
LTE BAND 7 (20MHz RB Size 100& RB Offset 0 QPSK-Low CH)



LTE BAND 7 (20MHz RB Size 100& RB Offset 0 QPSK-Middle CH)



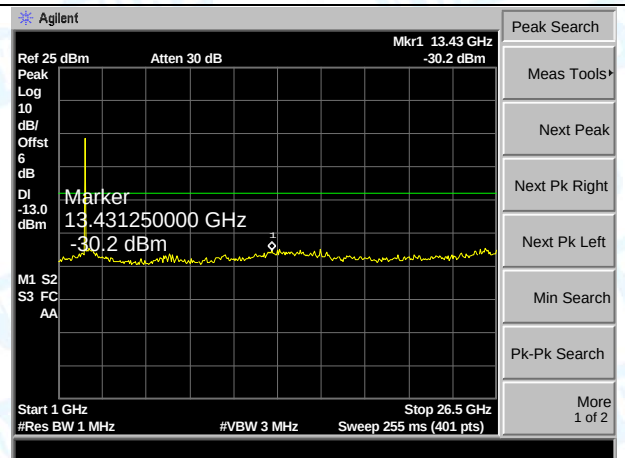
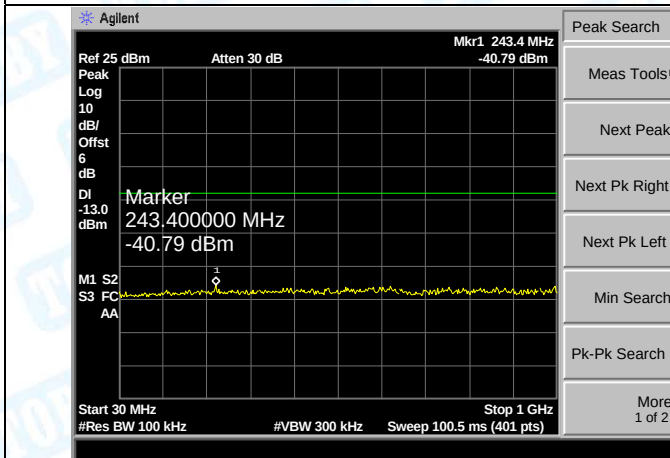
LTE BAND 7 (20MHz RB Size 100& RB Offset 0 QPSK-High CH)



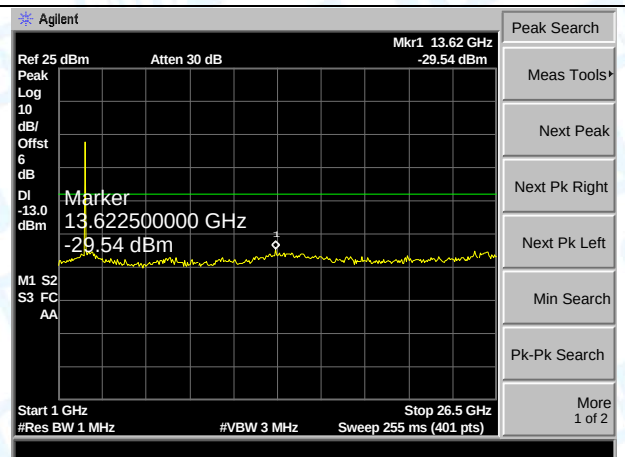
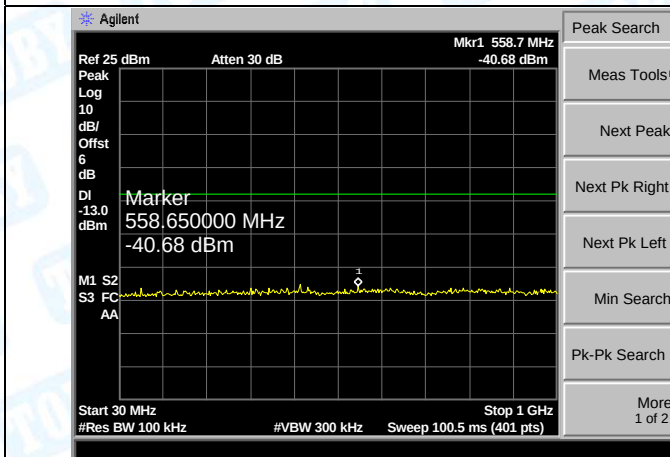
30MHz-1GHz

1GHz-26.5GHz

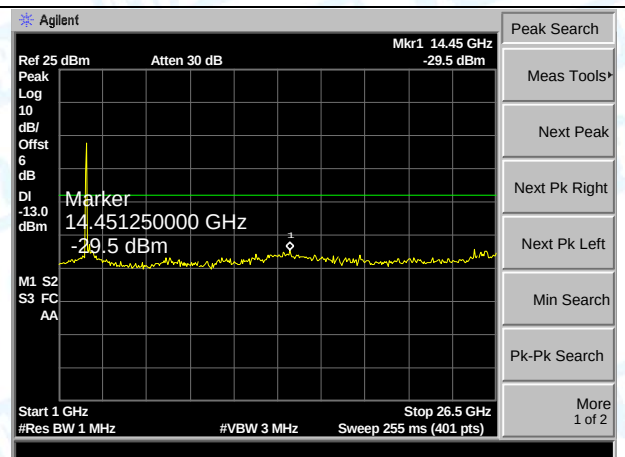
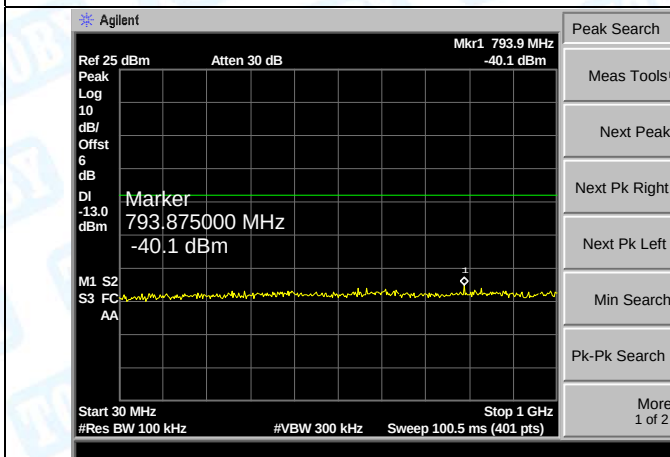
LTE BAND 7 (20MHz RB Size 100& RB Offset 0 16QAM-Low CH)



LTE BAND 7 (20MHz RB Size 100& RB Offset 0 16QAM-Middle CH)



LTE BAND 7 (20MHz RB Size 100& RB Offset 0 16QAM-High CH)

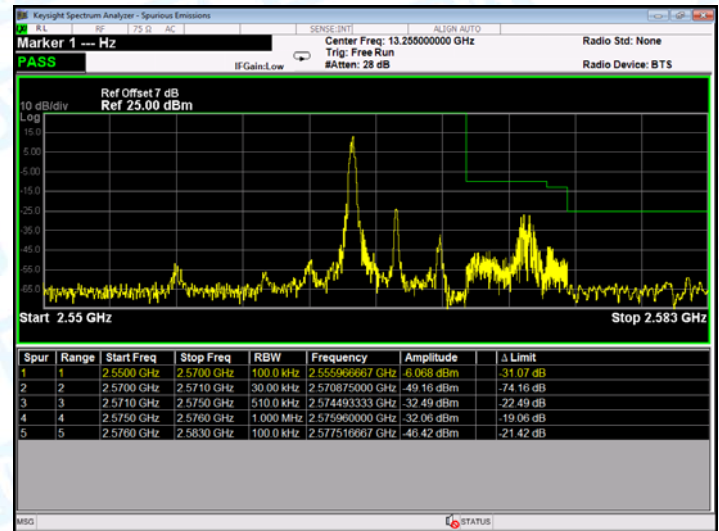
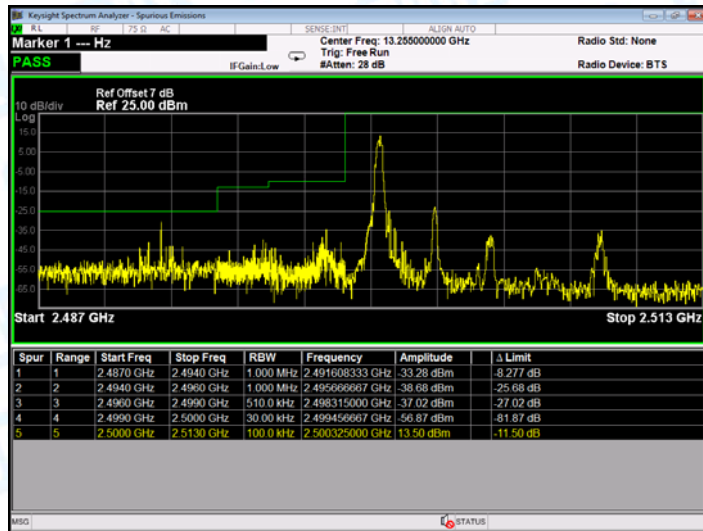


ATTACHMENT E--BAND EDGE TEST

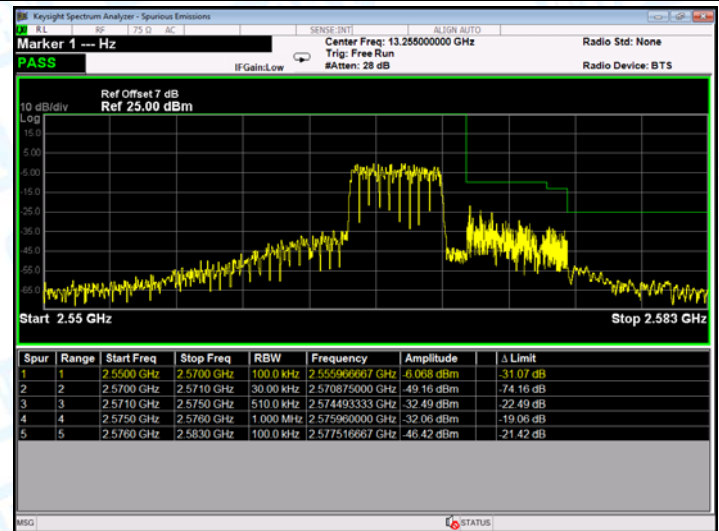
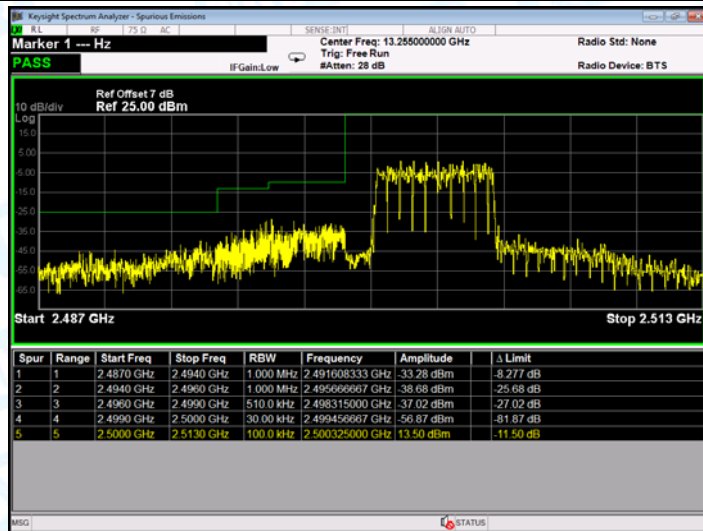
Low Channel

High Channel

LTE BAND 7 (5MHz RB Size 1& RB Offset 0 QPSK)



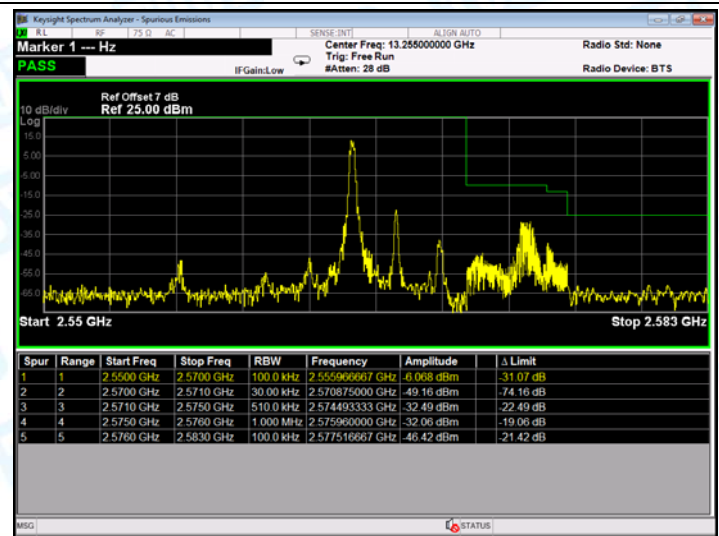
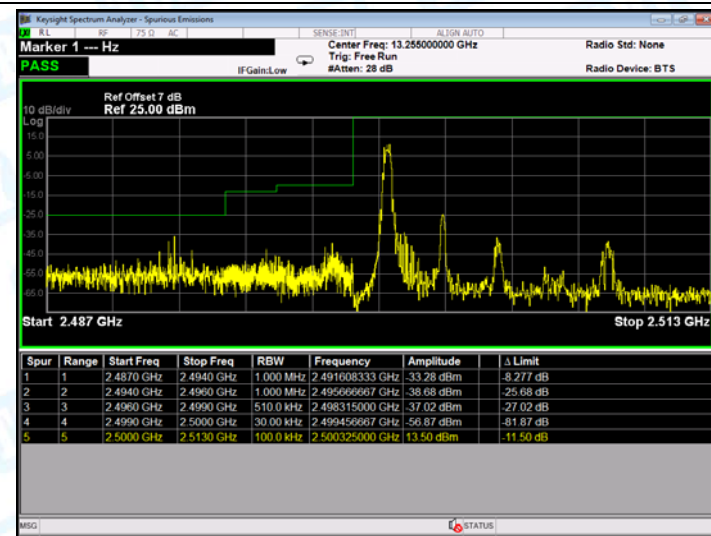
LTE BAND 7 (5MHz RB Size 25& RB Offset 0 QPSK)



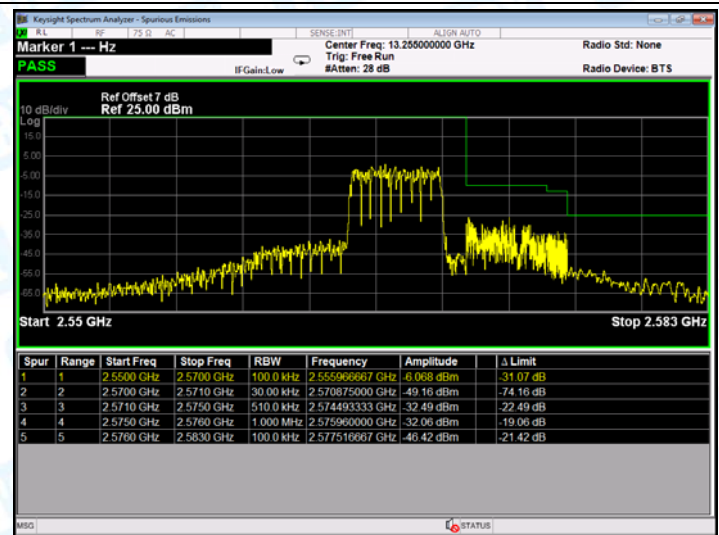
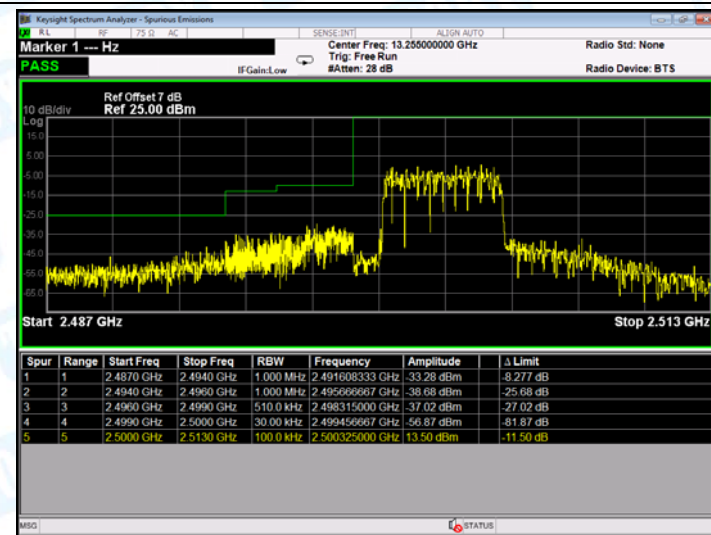
Low Channel

High Channel

LTE BAND 7 (5MHz RB Size 1& RB Offset 0 16QAM)



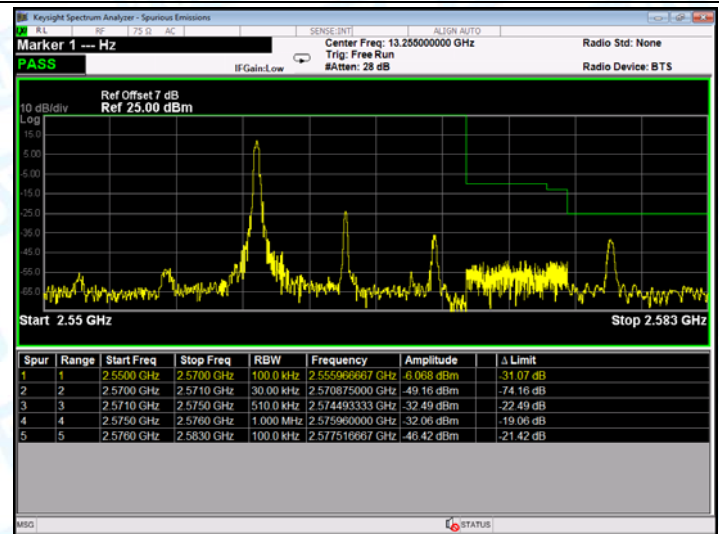
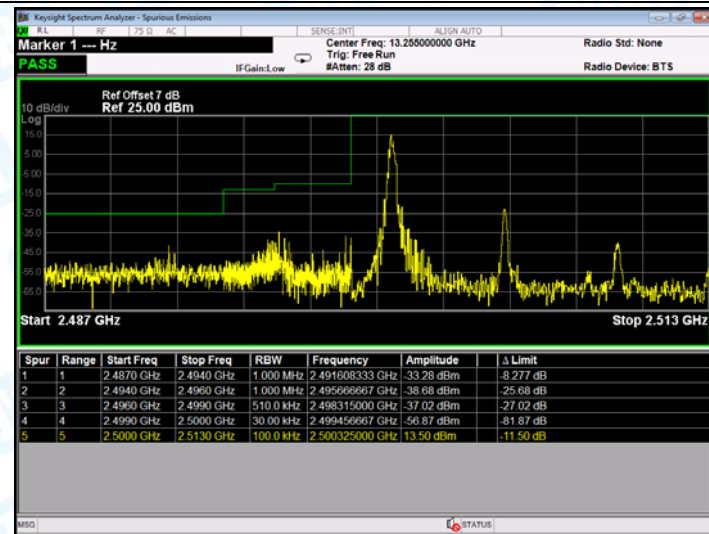
LTE BAND 7 (5MHz RB Size 25& RB Offset 0 16QAM)



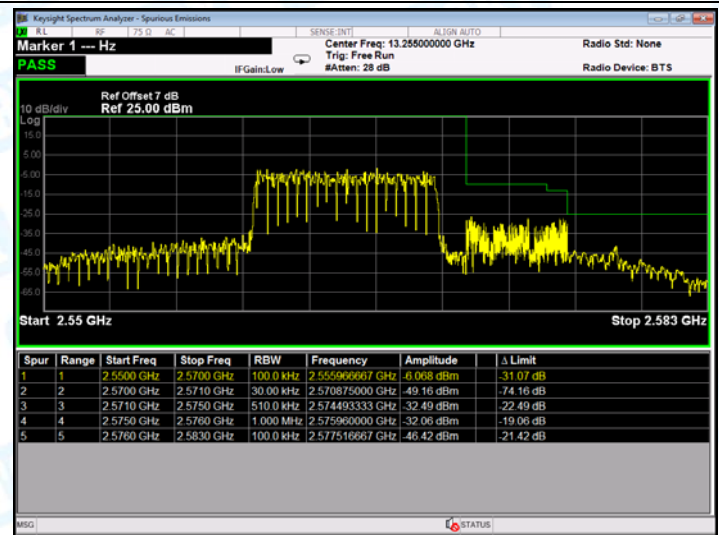
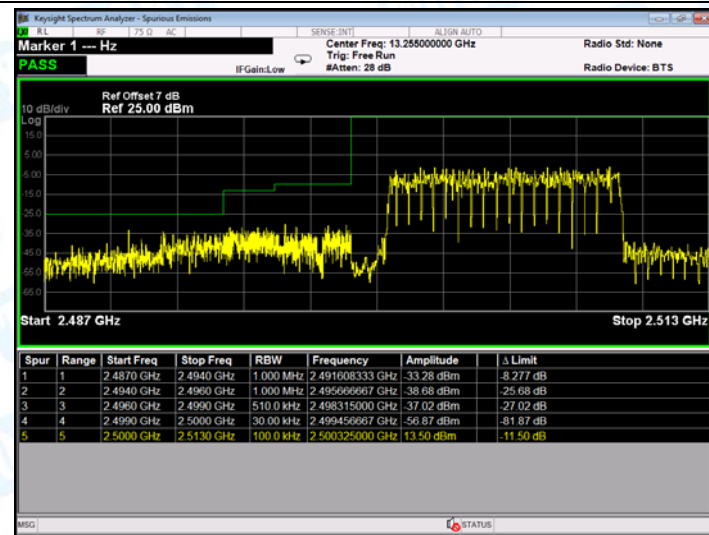
Low Channel

High Channel

LTE BAND 7 (10MHz RB Size 1& RB Offset 0 QPSK)



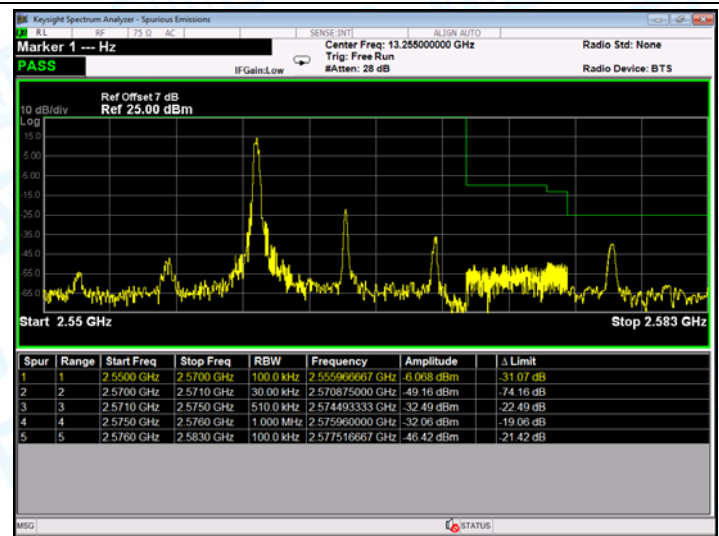
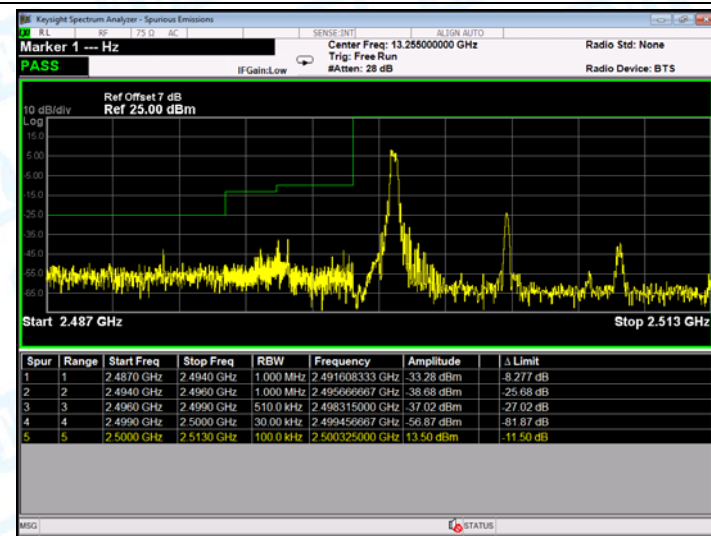
LTE BAND 7 (10MHz RB Size 50& RB Offset 0 QPSK)



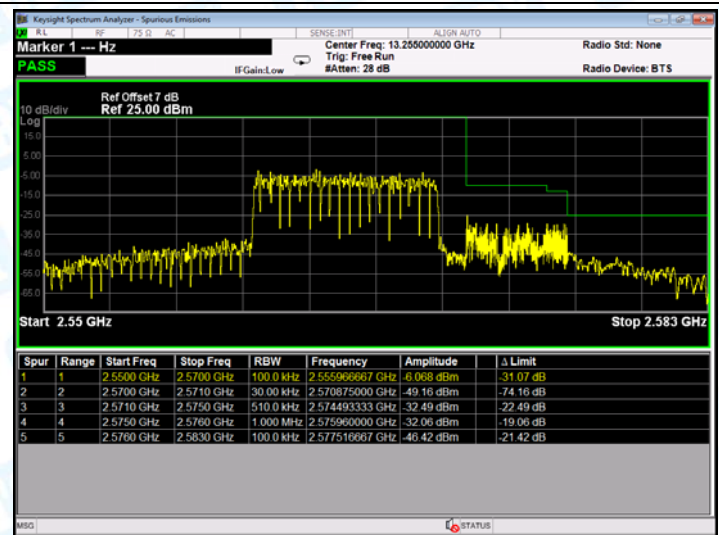
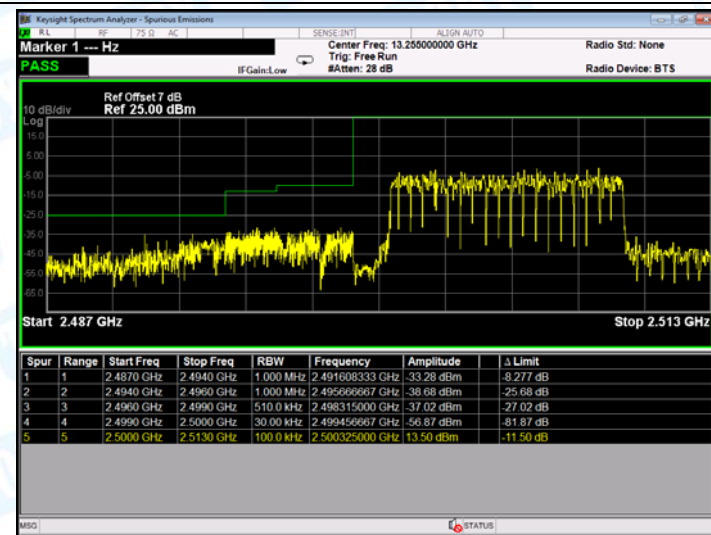
Low Channel

High Channel

LTE BAND 7 (10MHz RB Size 1& RB Offset 0 16QAM)



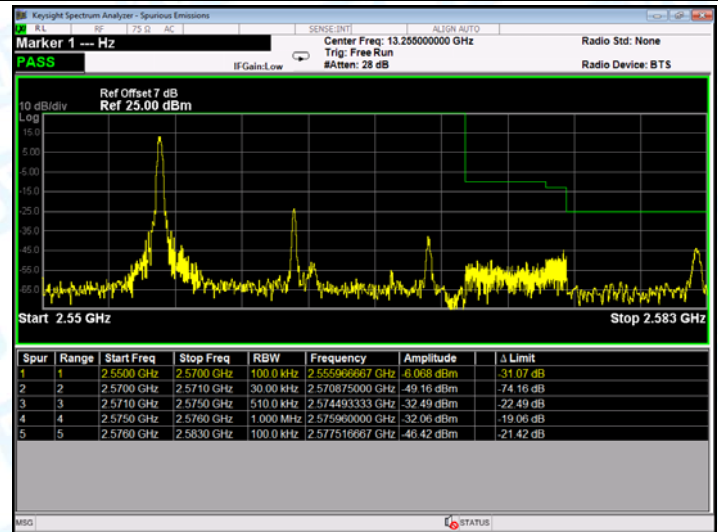
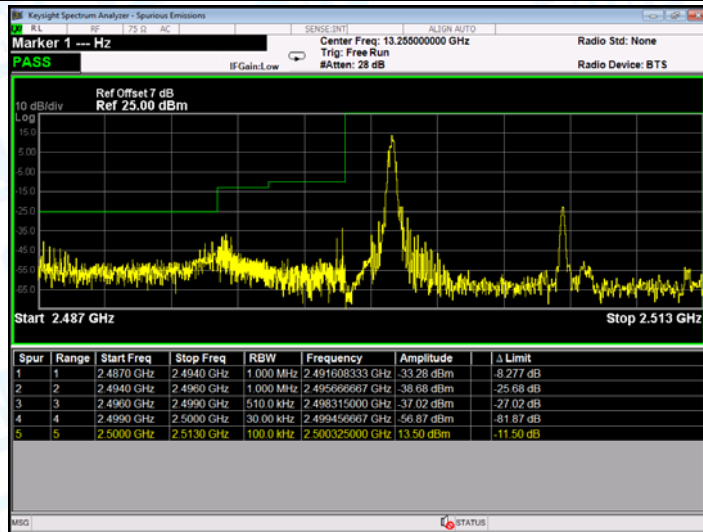
LTE BAND 7 (10MHz RB Size 50& RB Offset 0 16QAM)



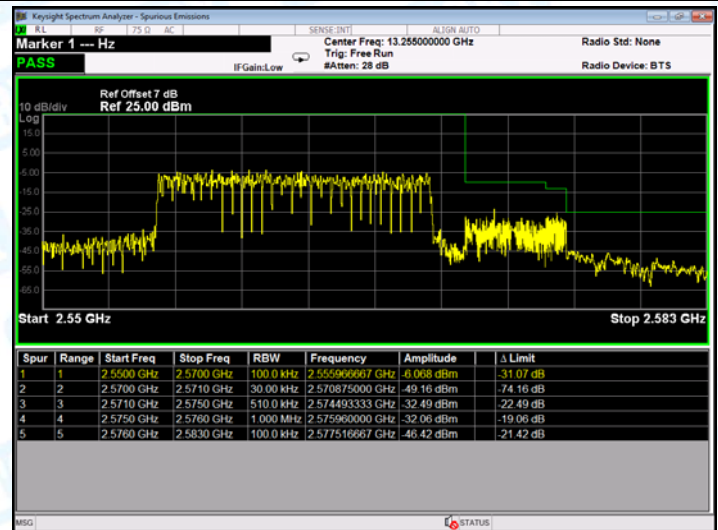
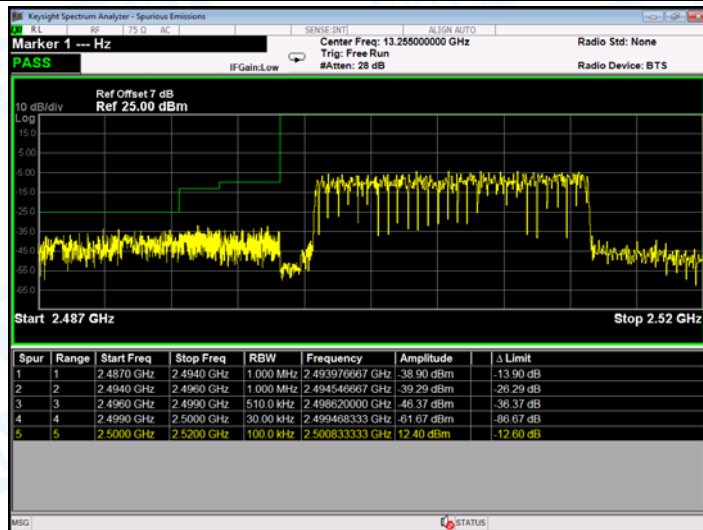
Low Channel

High Channel

LTE BAND 7 (15MHz RB Size 1& RB Offset 0 QPSK)



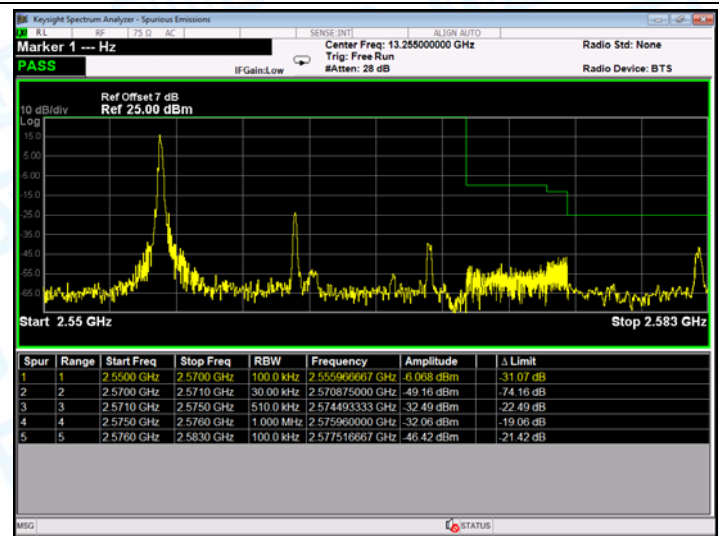
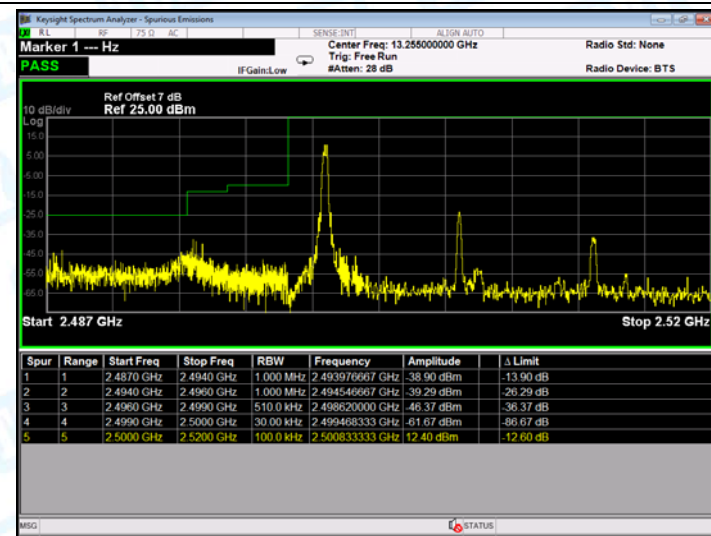
LTE BAND 7 (15MHz RB Size 75& RB Offset 0 QPSK)



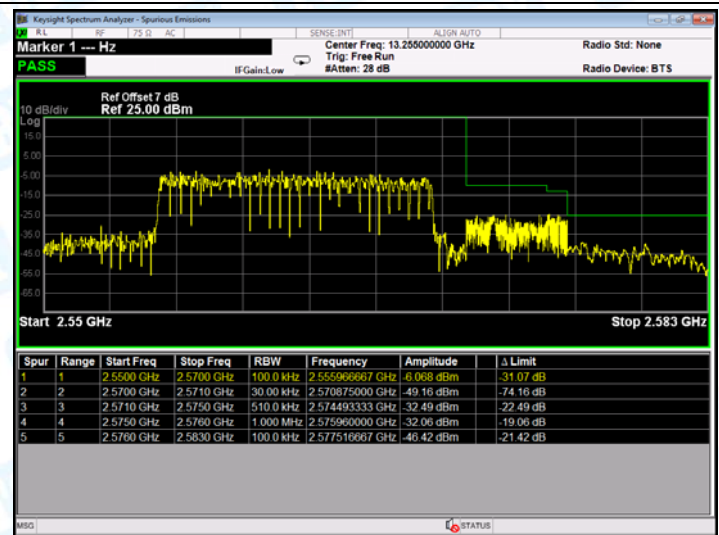
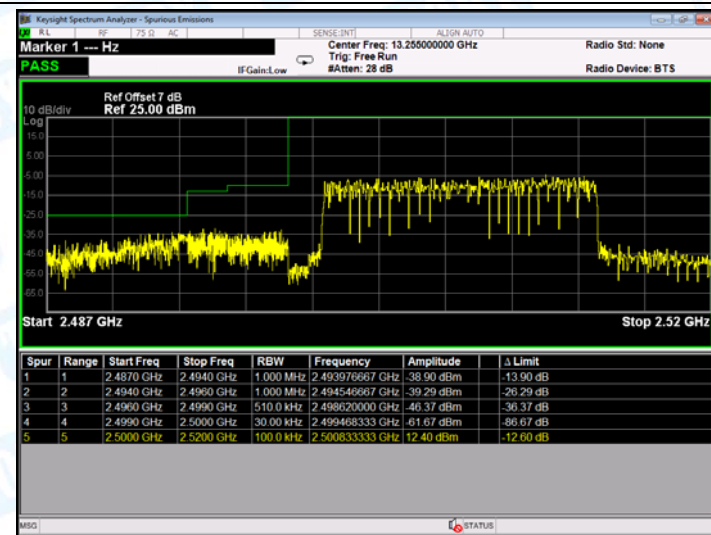
Low Channel

High Channel

LTE BAND 7 (15MHz RB Size 1& RB Offset 0 16QAM)



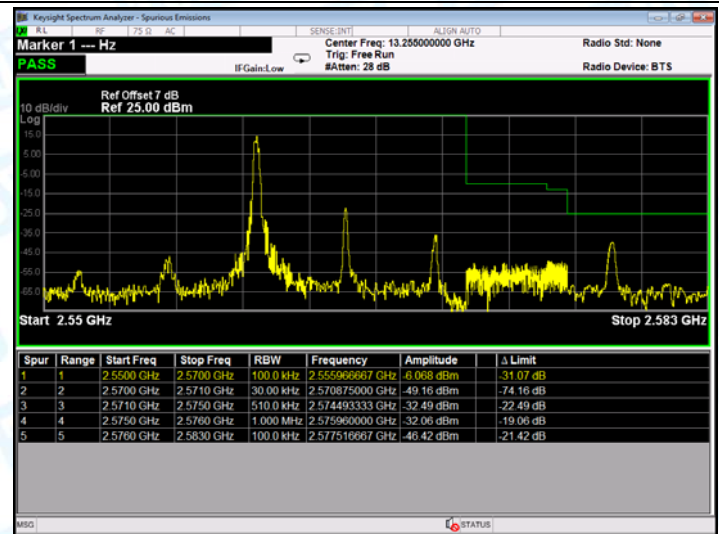
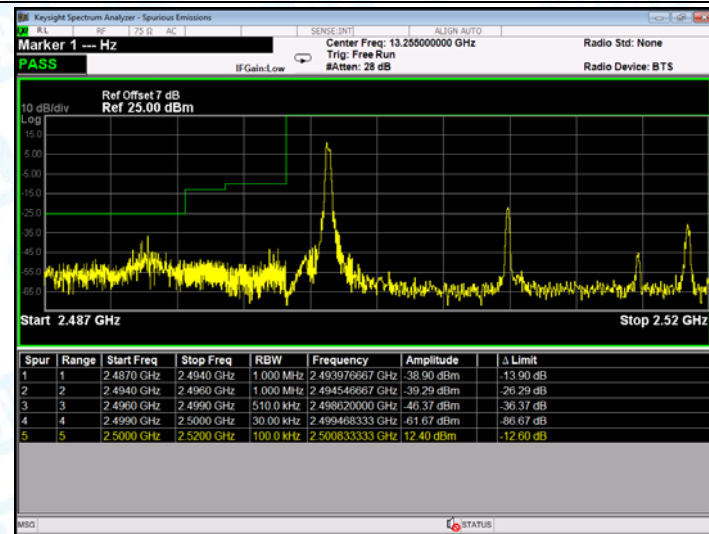
LTE BAND 7 (15MHz RB Size 75& RB Offset 0 16QAM)



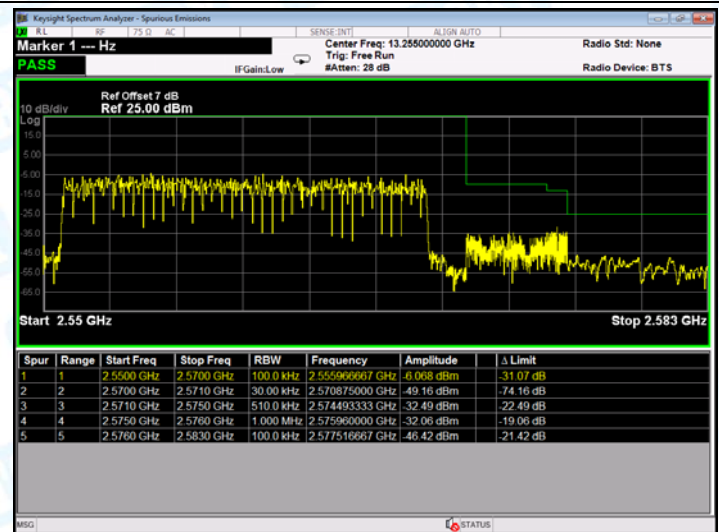
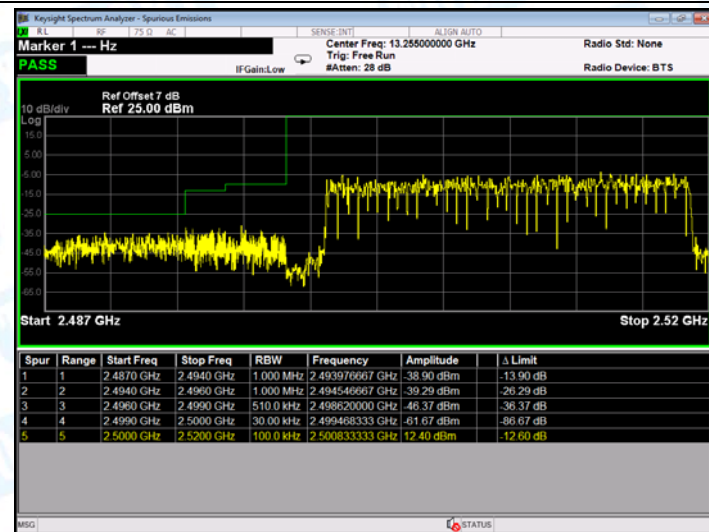
Low Channel

High Channel

LTE BAND 7 (20MHz RB Size 1& RB Offset 0 QPSK)



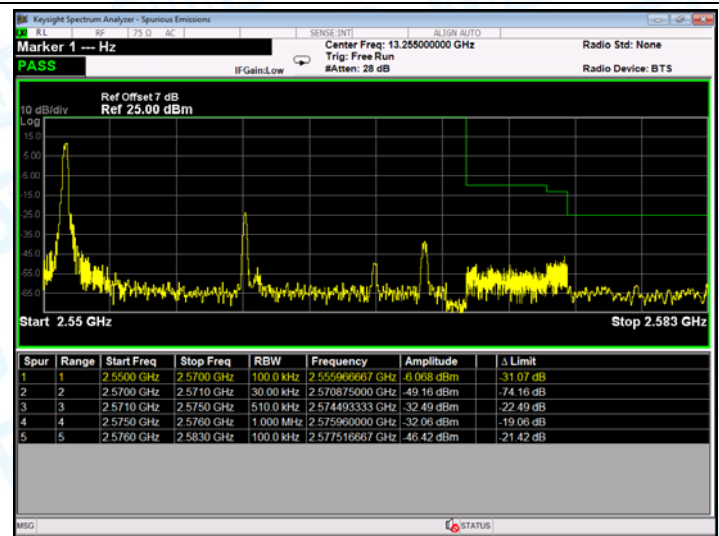
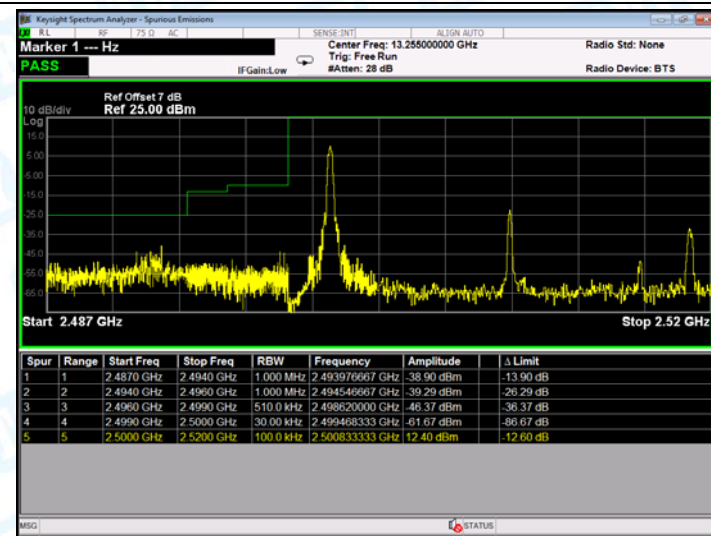
LTE BAND 7 (20MHz RB Size 100& RB Offset 0 QPSK)



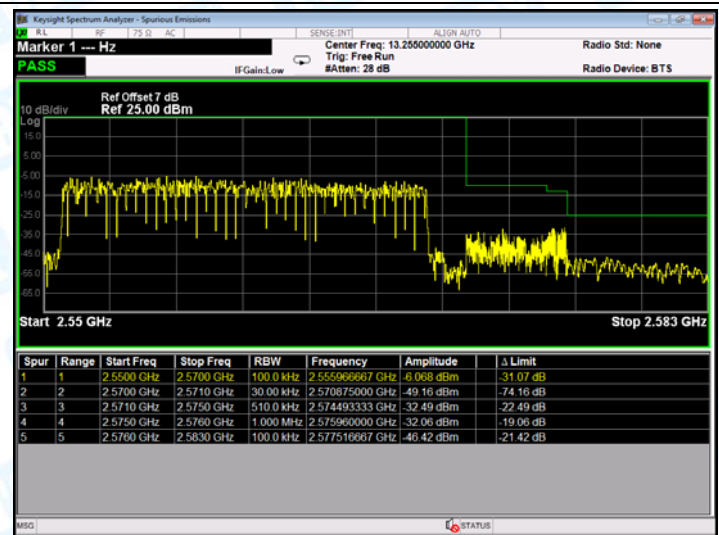
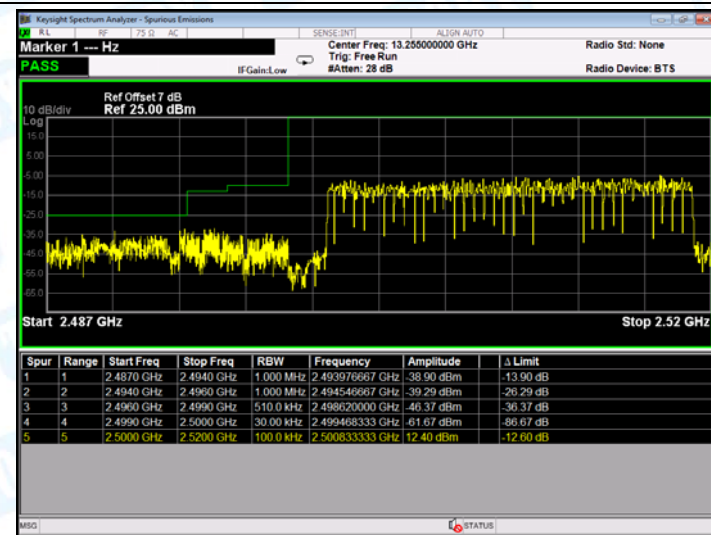
Low Channel

High Channel

LTE BAND 7 (20MHz RB Size 1& RB Offset 0 16QAM)



LTE BAND 7 (20MHz RB Size 100& RB Offset 0 16QAM)



ATTACHMENT F--RADIATED OUTPUT POWER

Radiated Power (EIRP) for LTE Band 7 / 5M									
Modulation	RB		Channel	Antenna (H&V)	SG Level (dBm)	Antenna Factor (dBd)	Cable Loss (dB)	EIRP Power (dBm)	EIRP Power (W)
	Size	offset							
QPSK	1	0	Lowest	H	19.09	5.01	2.76	21.34	0.136
				V	17.39	5.01	2.76	19.64	0.092
	1	0	Middle	H	18.10	4.82	2.76	20.16	0.104
				V	16.68	4.82	2.76	18.74	0.075
	1	0	Highest	H	19.64	4.45	2.76	21.33	0.136
				V	17.32	4.45	2.76	19.01	0.080
16QAM	1	0	Lowest	H	18.72	5.01	2.76	20.97	0.125
				V	17.32	5.01	2.76	19.57	0.091
	1	0	Middle	H	18.06	4.82	2.76	20.12	0.103
				V	17.07	4.82	2.76	19.13	0.082
	1	0	Highest	H	19.43	4.45	2.76	21.12	0.129
				V	17.32	4.45	2.76	19.01	0.080
Limit								33	2

Radiated Power (EIRP) for LTE Band 7 / 10M									
Modulation	RB		Channel	Antenna (H&V)	SG Level (dBm)	Antenna Factor (dBd)	Cable Loss (dB)	EIRP Power (dBm)	EIRP Power (W)
	Size	offset							
QPSK	1	0	Lowest	H	19.31	5.01	2.76	21.56	0.143
				V	16.96	5.01	2.76	19.21	0.083
	1	0	Middle	H	18.26	4.82	2.76	20.32	0.108
				V	16.83	4.82	2.76	18.89	0.077
	1	0	Highest	H	19.67	4.45	2.76	21.36	0.137
				V	17.52	4.45	2.76	19.21	0.083
16QAM	1	0	Lowest	H	18.38	5.01	2.76	20.63	0.116
				V	16.98	5.01	2.76	19.23	0.084
	1	0	Middle	H	18.37	4.82	2.76	20.43	0.110
				V	17.10	4.82	2.76	19.16	0.082
	1	0	Highest	H	19.66	4.45	2.76	21.35	0.136
				V	17.65	4.45	2.76	19.34	0.086
Limit								33	2

Radiated Power (EIRP) for LTE Band 7 / 15M									
Modulation	RB		Channel	Antenna (H&V)	SG Level (dBm)	Antenna Factor (dBd)	Cable Loss (dB)	EIRP Power (dBm)	EIRP Power (W)
	Size	offset							
QPSK	1	0	Lowest	H	19.71	5.01	2.76	21.96	0.157
				V	16.91	5.01	2.76	19.16	0.082
	1	0	Middle	H	18.78	4.82	2.76	20.84	0.121
				V	16.03	4.82	2.76	18.09	0.064
	1	0	Highest	H	19.32	4.45	2.76	21.01	0.126
				V	17.43	4.45	2.76	19.12	0.082
16QAM	1	0	Lowest	H	18.00	5.01	2.76	20.25	0.106
				V	16.81	5.01	2.76	19.06	0.081
	1	0	Middle	H	18.46	4.82	2.76	20.52	0.113
				V	17.00	4.82	2.76	19.06	0.081
	1	0	Highest	H	19.52	4.45	2.76	21.21	0.132
				V	17.42	4.45	2.76	19.11	0.081
Limit								33	2

Radiated Power (EIRP) for LTE Band 7 / 20M									
Modulation	RB		Channel	Antenna (H&V)	SG Level (dBm)	Antenna Factor (dBd)	Cable Loss (dB)	EIRP Power (dBm)	EIRP Power (W)
	Size	offset							
QPSK	1	0	Lowest	H	18.44	5.01	2.76	20.69	0.117
				V	16.40	5.01	2.76	18.65	0.073
	1	0	Middle	H	18.68	4.82	2.76	20.74	0.119
				V	16.63	4.82	2.76	18.69	0.074
	1	0	Highest	H	18.87	4.45	2.76	20.56	0.114
				V	16.56	4.45	2.76	18.25	0.067
16QAM	1	0	Lowest	H	18.20	5.01	2.76	20.45	0.111
				V	16.07	5.01	2.76	18.32	0.068
	1	0	Middle	H	18.42	4.82	2.76	20.48	0.112
				V	16.93	4.82	2.76	18.99	0.079
	1	0	Highest	H	19.18	4.45	2.76	20.87	0.122
				V	16.97	4.45	2.76	18.66	0.073
Limit								33	2

ATTACHMENT G--RADIATED OUT BAND OF EMISSIONS

Measurement Data (worst case)

Test mode:	LTE BAND 7 5MHz(RB size 1 & RB offset 0) for QPSK						
Channel:	Middle			Date of Test:	2018-07-11		
Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
	Polarization (H&V)	Read Level (dBm)	Antenna Correct Factor (dBi)	Cable Loss (dB)	Emission Level (dBm)		
5069.89	Horizontal	-42.24	14.70	7.86	-19.68	-13.00	Pass
7605.29	H	-44.57	13.67	8.16	-22.74		
10141.03	H	-51.48	14.27	10.65	-26.56		
5069.89	Vertical	-42.92	14.70	7.86	-20.36	-13.00	Pass
7605.29	V	-45.37	13.67	8.16	-23.54		
10141.03	V	-51.81	14.27	10.65	-26.89		
Remark: 1, The testing has been conformed to 10*2535MHz=25350MHz. 2, All other emissions more than 30 dB below the limit. 3, Emission Level= Read Level+ Antenna Correct Factor +Cable Loss							

Test mode: LTE BAND 7 10MHz(RB size 1 & RB offset 0) for QPSK							
Channel: Middle		Date of Test: 2018-07-11					
Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
	Polarization (H&V)	Read Level (dBm)	Antenna Correct Factor (dBi)	Cable Loss (dB)	Emission Level (dBm)		
5069.56	Horizontal	-43.68	14.70	7.86	-21.12	-13.00	Pass
7605.49	H	-46.38	13.67	8.16	-24.55		
10141.13	H	-52.05	14.27	10.65	-27.13		
5069.56	Vertical	-43.07	14.70	7.86	-20.51	-13.00	Pass
7605.49	V	-45.30	13.67	8.16	-23.47		
10141.13	V	-51.50	14.27	10.65	-26.58		
Remark: 1, The testing has been conformed to 10*2535MHz=25350MHz. 2, All other emissions more than 30 dB below the limit. 3, Emission Level= Read Level+ Antenna Correct Factor +Cable Loss							

Test mode:	LTE BAND 7 15MHz(RB size 1 & RB offset 0) for QPSK						
Channel:	Middle			Date of Test:	2018-07-11		
Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
	Polarization (H&V)	Read Level (dBm)	Antenna Correct Factor (dBi)	Cable Loss (dB)	Emission Level (dBm)		
5069.76	Horizontal	-43.00	14.70	7.86	-20.44	-13.00	Pass
7605.34	H	-44.48	13.67	8.16	-22.65		
10141.12	H	-52.44	14.27	10.65	-27.52		
5069.76	Vertical	-43.88	14.70	7.86	-21.32	-13.00	Pass
7605.34	V	-45.24	13.67	8.16	-23.41		
10141.12	V	-52.36	14.27	10.65	-27.44		
Remark: 1, The testing has been conformed to 10*2535MHz=25350MHz. 2, All other emissions more than 30 dB below the limit. 3, Emission Level= Read Level+ Antenna Correct Factor +Cable Loss							

Test mode:	LTE BAND 7 20MHz(RB size 1 & RB offset 0) for QPSK						
Channel:	Middle			Date of Test:	2018-07-11		
Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
	Polarization (H&V)	Read Level (dBm)	Antenna Correct Factor (dBi)	Cable Loss (dB)	Emission Level (dBm)		
5069.69	Horizontal	-43.98	14.70	7.86	-21.42	-13.00	Pass
7605.23	H	-46.35	13.67	8.16	-24.52		
10141.02	H	-51.77	14.27	10.65	-26.85		
5069.69	Vertical	-46.24	14.70	7.86	-23.68	-13.00	Pass
7605.23	V	-47.58	13.67	8.16	-25.75		
10141.02	V	-53.45	14.27	10.65	-28.53		
Remark: 1, The testing has been conformed to 10*2535MHz=25350MHz. 2, All other emissions more than 30 dB below the limit. 3, Emission Level= Read Level+ Antenna Correct Factor +Cable Loss							

ATTACHMENT H--FREQUENCY STABILITY

Temperature Variation					
Reference Frequency: LTE Band 7 QPSK(5MHz) Middle channel=21100 Frequency=2535.0MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	26	0.0103	±2.5	Pass
	-20	34	0.0134		
	-10	28	0.0110		
	0	21	0.0083		
	10	30	0.0118		
	20	24	0.0095		
	30	26	0.0103		
	40	28	0.0110		
	50	25	0.0099		
Reference Frequency: LTE Band 7 QPSK(10MHz) Middle channel=21100 Frequency=2535.0MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	21	0.0083	±2.5	Pass
	-20	25	0.0099		
	-10	27	0.0107		
	0	27	0.0107		
	10	14	0.0055		
	20	32	0.0126		
	30	26	0.0103		
	40	16	0.0063		
	50	35	0.0138		
Reference Frequency: LTE Band 7 QPSK(15MHz) Middle channel=21100 Frequency=2535.0MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	18	0.0071	±2.5	Pass
	-20	13	0.0051		
	-10	33	0.0130		
	0	14	0.0055		
	10	34	0.0134		
	20	33	0.0130		
	30	28	0.0110		
	40	32	0.0126		
	50	12	0.0047		
Reference Frequency: LTE Band 7 QPSK(20MHz) Middle channel=21100 Frequency=2535.0MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	20	0.0079	±2.5	Pass
	-20	35	0.0138		
	-10	16	0.0063		
	0	18	0.0071		
	10	13	0.0051		
	20	12	0.0047		
	30	27	0.0107		
	40	28	0.0110		
	50	32	0.0126		

Temperature Variation					
Reference Frequency: LTE Band 7 16QAM (5MHz) Middle channel=21100 Frequency=2535.0MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	27	0.0107	±2.5	Pass
	-20	28	0.0110		
	-10	24	0.0095		
	0	33	0.0130		
	10	33	0.0130		
	20	31	0.0122		
	30	28	0.0110		
	40	16	0.0063		
	50	17	0.0067		
Reference Frequency: LTE Band 7 16QAM(10MHz) Middle channel=21100 Frequency=2535.0MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	32	0.0126	±2.5	Pass
	-20	29	0.0114		
	-10	24	0.0095		
	0	25	0.0099		
	10	34	0.0134		
	20	29	0.0114		
	30	28	0.0110		
	40	24	0.0095		
	50	19	0.0075		
Reference Frequency: LTE Band 7 16QAM(15MHz) Middle channel=21100 Frequency=2535.0MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	28	0.0110	±2.5	Pass
	-20	20	0.0079		
	-10	31	0.0122		
	0	29	0.0114		
	10	24	0.0095		
	20	30	0.0118		
	30	41	0.0162		
	40	26	0.0103		
	50	34	0.0134		
Reference Frequency: LTE Band 7 16QAM(20MHz) Middle channel=21100 Frequency=2535.0MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	32	0.0126	±2.5	Pass
	-20	36	0.0142		
	-10	26	0.0103		
	0	29	0.0114		
	10	28	0.0110		
	20	42	0.0166		
	30	29	0.0114		
	40	27	0.0107		
	50	34	0.0134		

Voltage Variation					
Reference Frequency: LTE Band 7 QPSK (5MHz) Middle channel=21100 Frequency=2535.0MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.15	45	0.0178	±2.5	Pass
	3.70	56	0.0221		
	4.20	54	0.0213		
Reference Frequency: LTE Band 7 QPSK (10MHz) Middle channel=21100 Frequency=2535.0MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.15	48	0.0189	±2.5	Pass
	3.70	62	0.0245		
	4.20	56	0.0221		
Reference Frequency: LTE Band 7 QPSK (15MHz) Middle channel=21100 Frequency=2535.0MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.15	63	0.0249	±2.5	Pass
	3.70	74	0.0292		
	4.20	66	0.0260		
Reference Frequency: LTE Band 7 QPSK (20MHz) Middle channel=21100 Frequency=2535.0MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.15	65	0.0256	±2.5	Pass
	3.70	55	0.0217		
	4.20	72	0.0284		

Voltage Variation					
Reference Frequency: LTE Band 7 16QAM (5MHz) Middle channel=21100 Frequency=2535.0MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.15	49	0.0193	±2.5	Pass
	3.70	63	0.0249		
	4.20	71	0.0280		
Reference Frequency: LTE Band 7 16QAM (10MHz) Middle channel=21100 Frequency=2535.0MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.15	74	0.0292	±2.5	Pass
	3.70	57	0.0225		
	4.20	64	0.0252		
Reference Frequency: LTE Band 7 16QAM (15MHz) Middle channel=21100 Frequency=2535.0MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.15	56	0.0221	±2.5	Pass
	3.70	58	0.0229		
	4.20	62	0.0245		
Reference Frequency: LTE Band 7 16QAM (20MHz) Middle channel=21100 Frequency=2535.0MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.15	59	0.0233	±2.5	Pass
	3.70	63	0.0249		
	4.20	77	0.0304		

-----End of Report-----