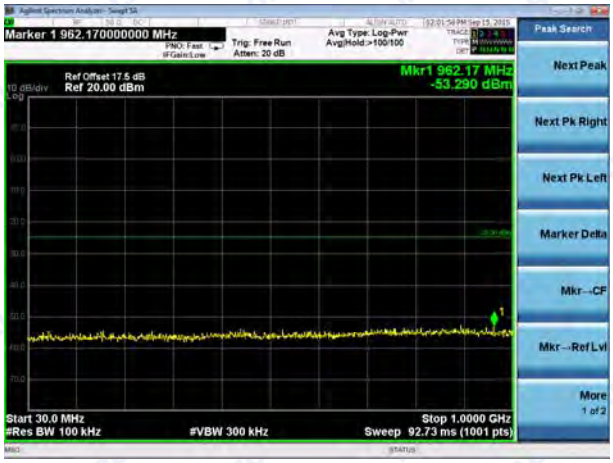
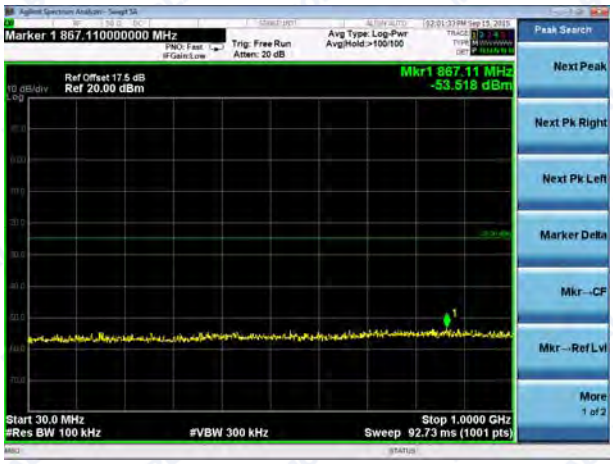
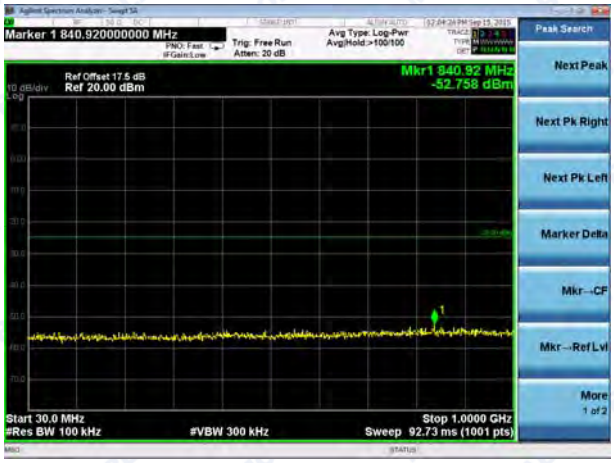
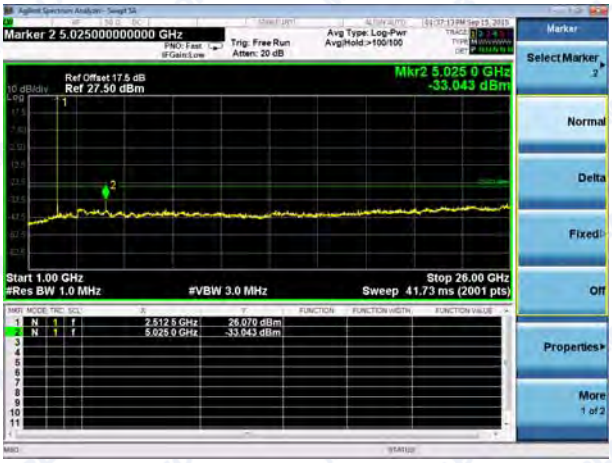
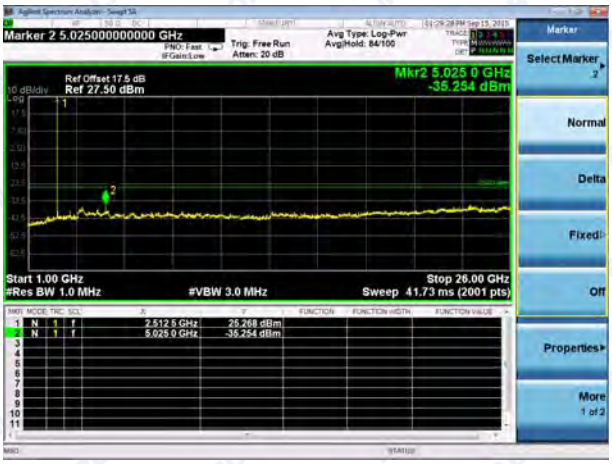
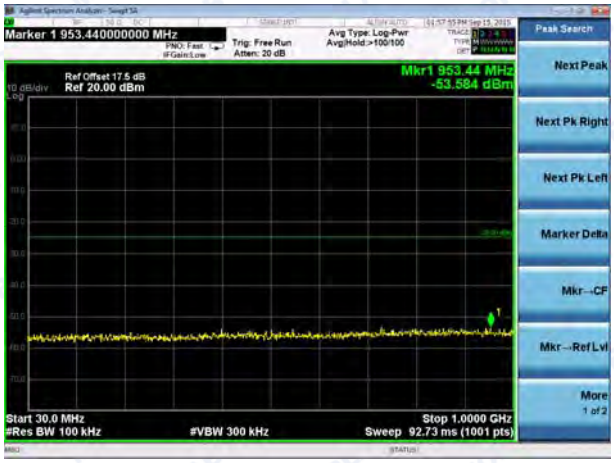
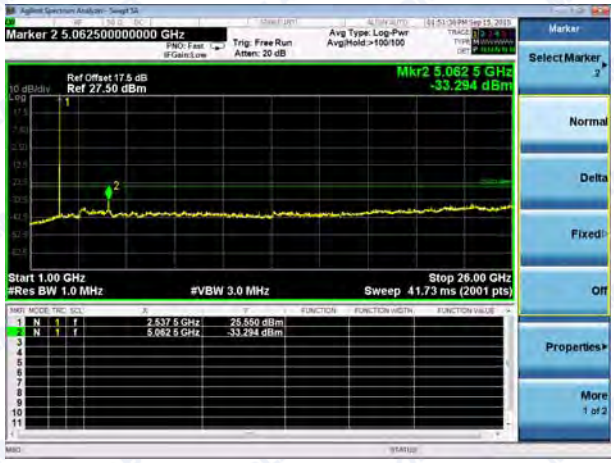
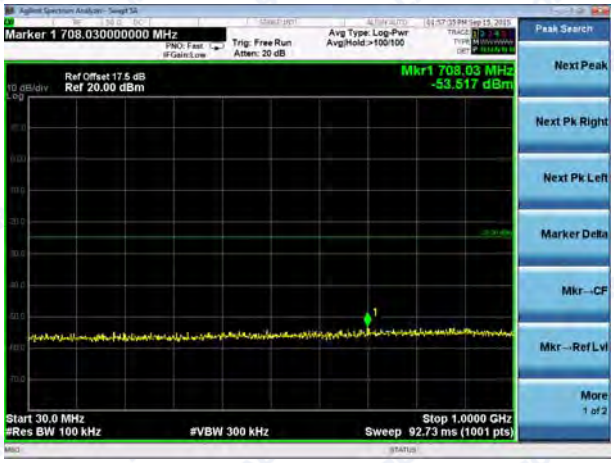
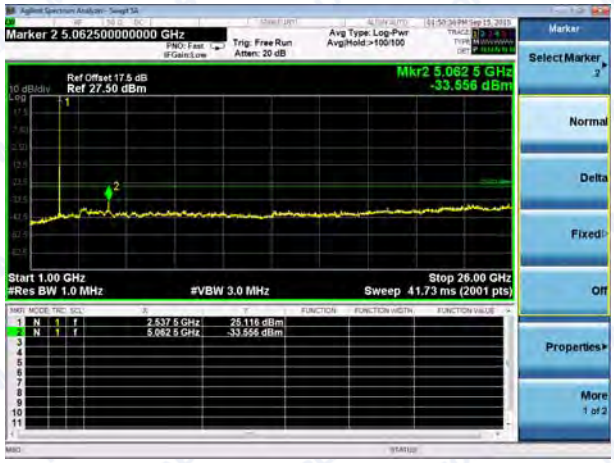
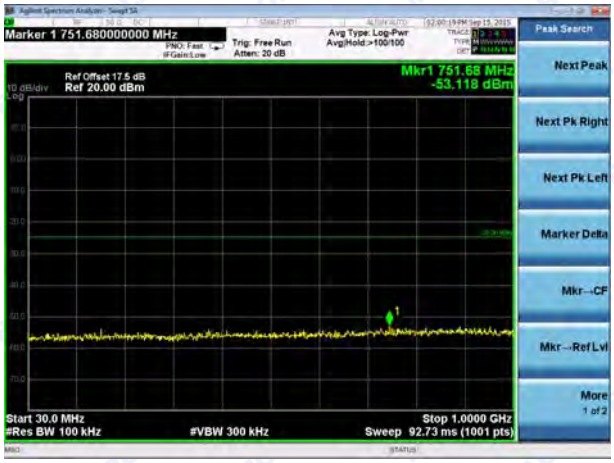
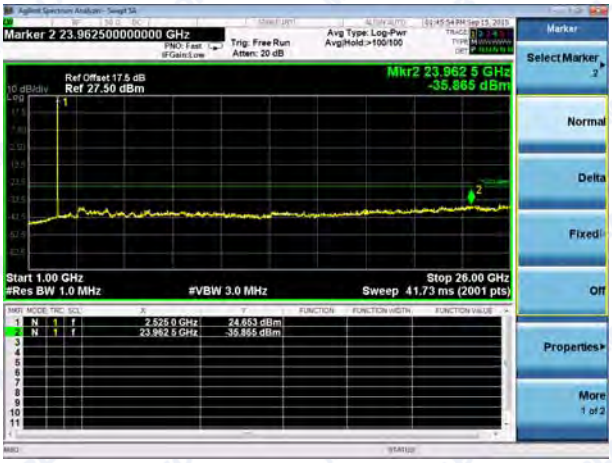
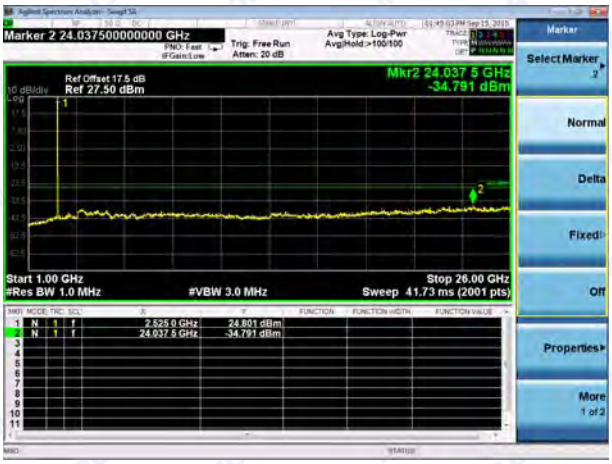
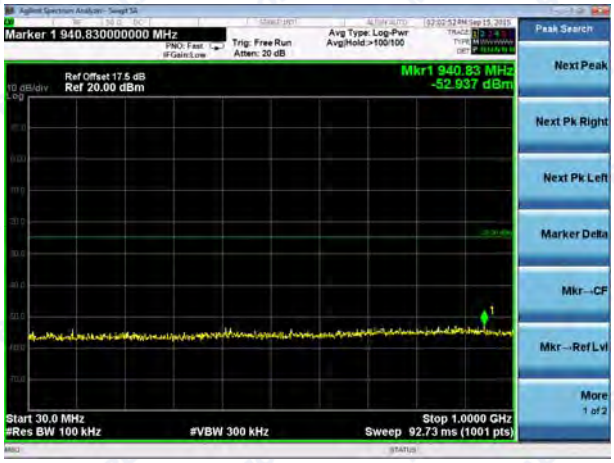
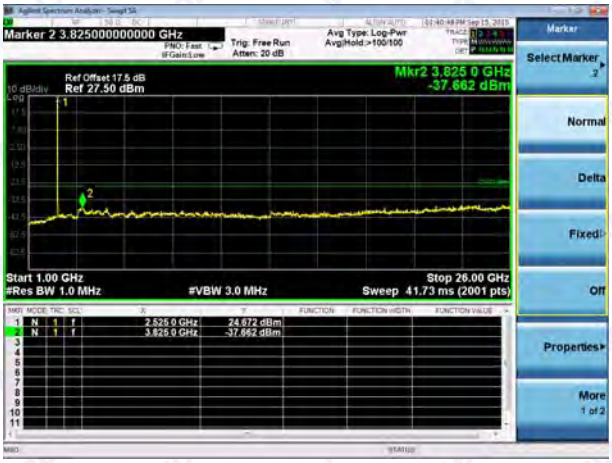
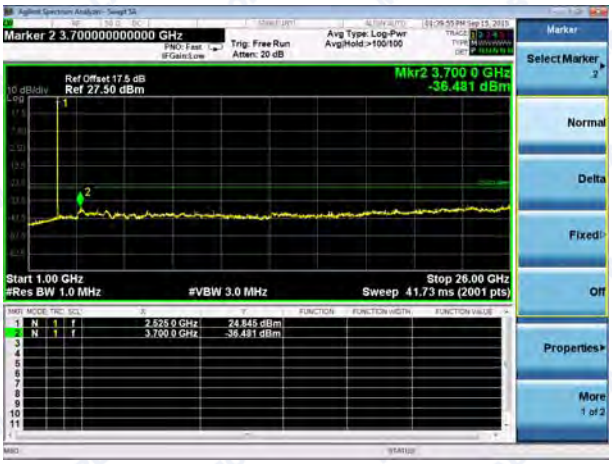
LTE Band 7 15MHz BW Low Channel	
QPSK	
	
16QAM	
	

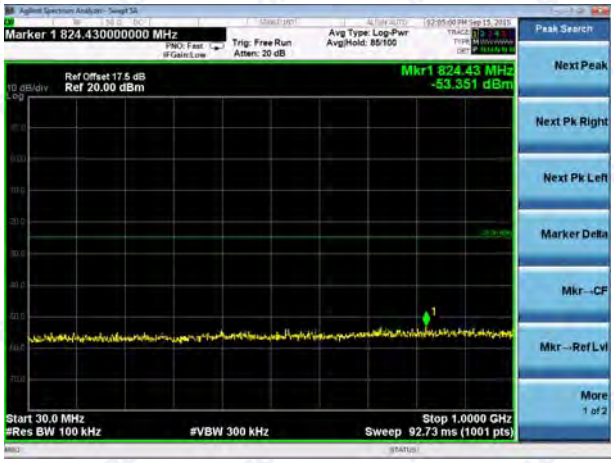
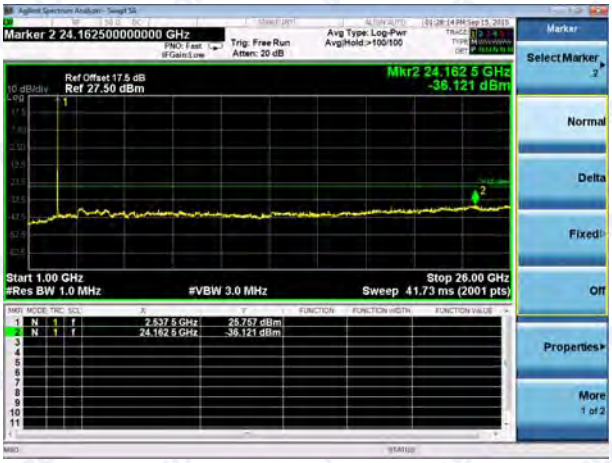
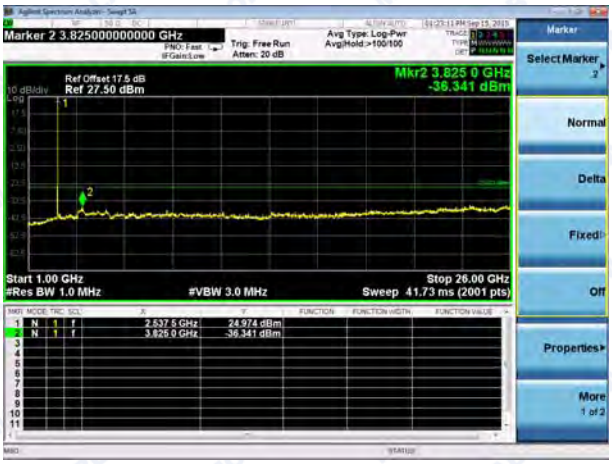
LTE Band 7 20MHz BW Low Channel	
QPSK	
	
16QAM	
	

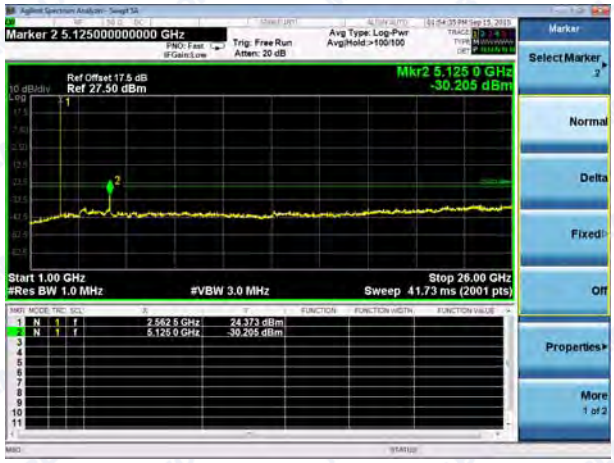
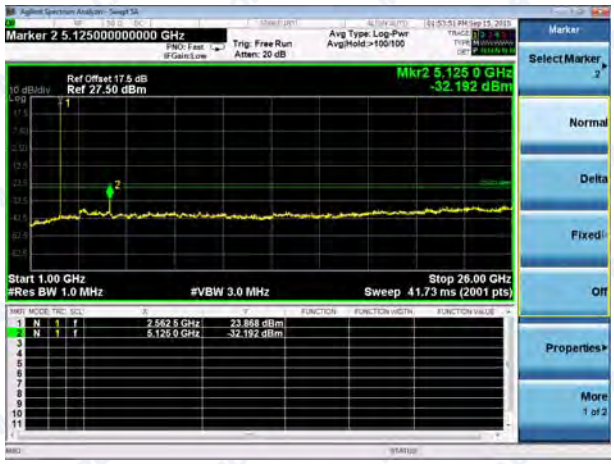
Middle channel:

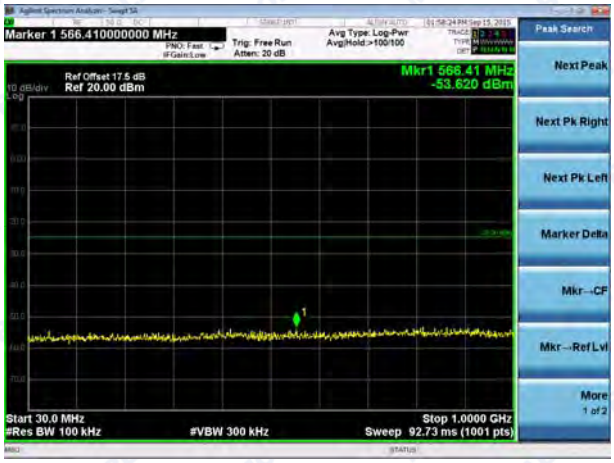
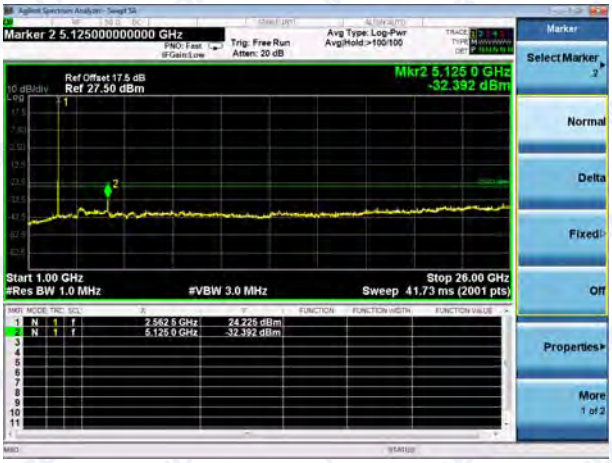
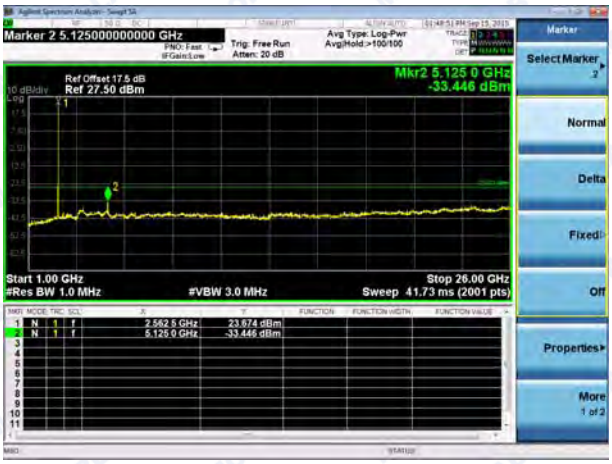
LTE Band 7 5MHz BW Mid Channel	
QPSK	
	
16QAM	
	

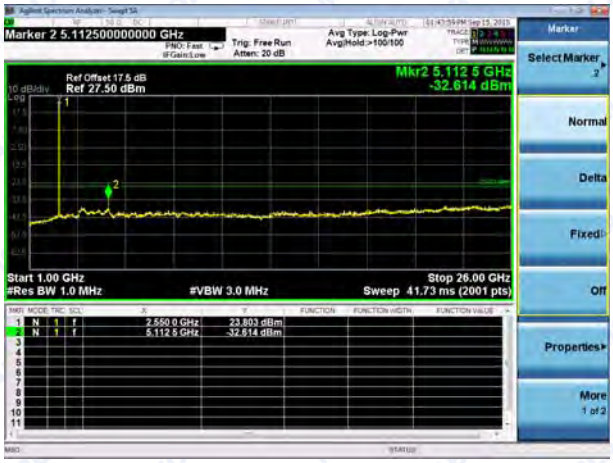
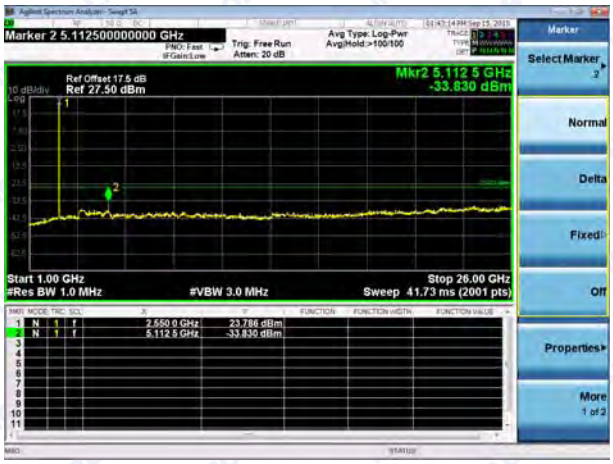
LTE Band 7 10MHz BW Mid Channel	
QPSK	
	
16QAM	
	

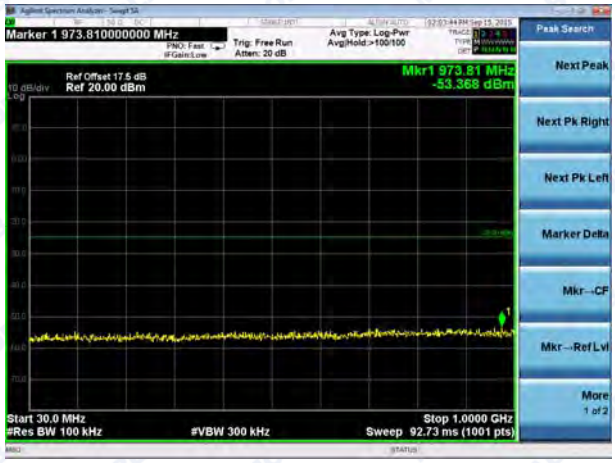
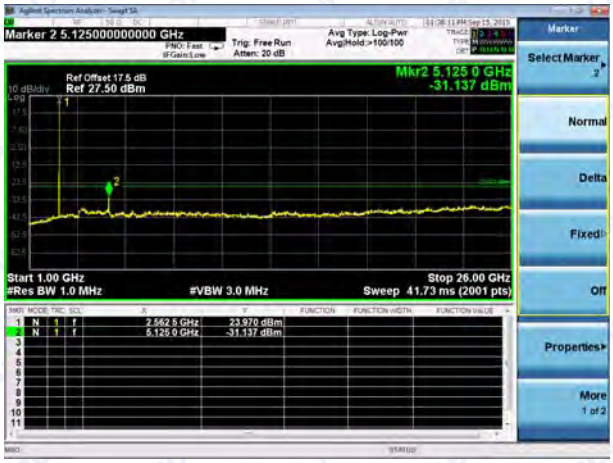
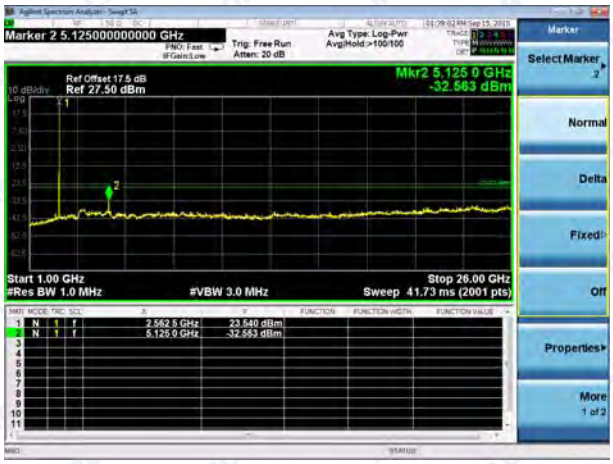
LTE Band 7 15MHz BW Mid Channel	
QPSK	
	
16QAM	
	

LTE Band 7 20MHz BW Mid Channel	
QPSK	
	
16QAM	
	

LTE Band 7 5MHz BW High Channel	
QPSK	
	
16QAM	
	

LTE Band 7 10MHz BW High Channel	
QPSK	
	
16QAM	
	

LTE Band 7 15MHz BW High Channel	
QPSK	
	
16QAM	
	

LTE Band 7 20MHz BW High Channel	
QPSK	
	
16QAM	
	

2.6 Band Edge

2.6.1 Requirement

According to FCC section 27.53(h) & (m) (4), (m) (4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

(h) For operations in the 1710–1755 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10(P) dB.

2.6.2 Test Description

See section 2.1.2 of this report.

2.6.3 Test Result

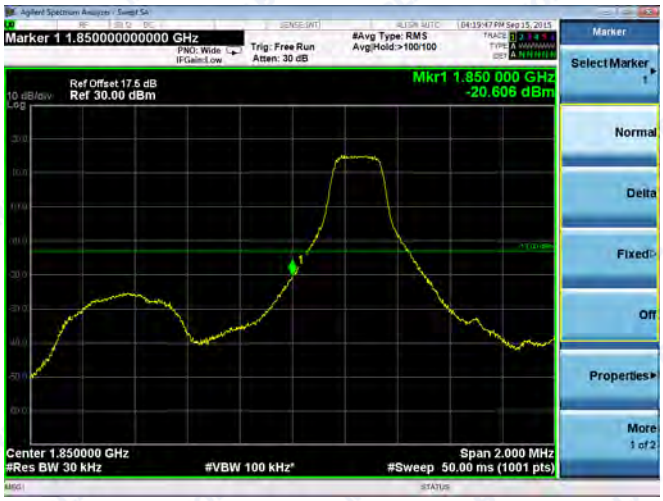
The center frequency of spectrum is the band edge frequency and span is 2MHz, Record the max trace into the test report.

PASS. See the attached plots.

LTE Band 2

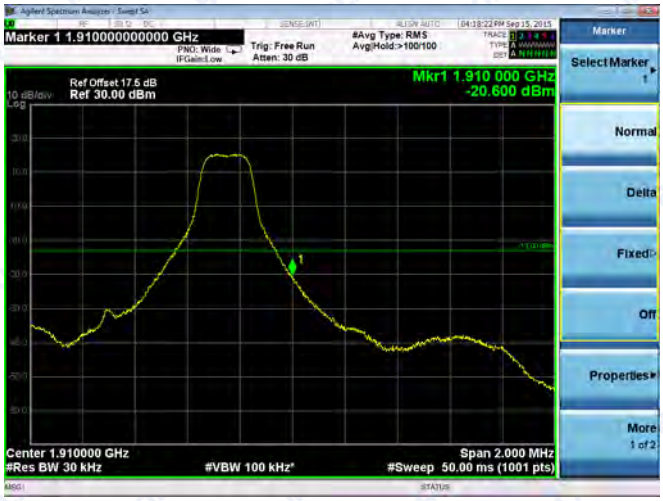
Channel Bandwidth: 1.4MHz

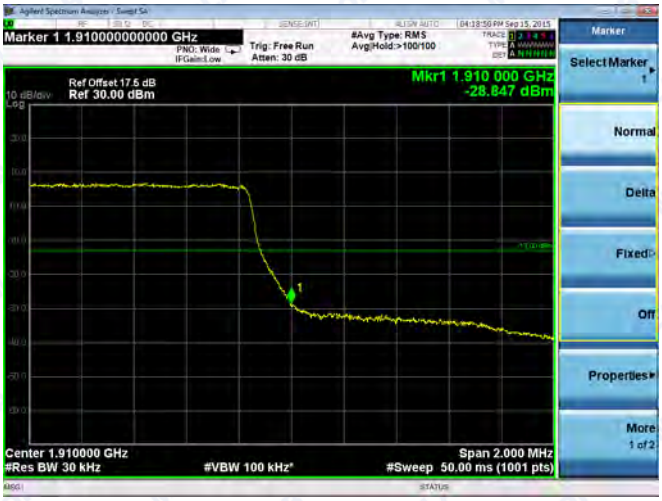
Channel	18607	RB Size 1	RB Offset 0	Channel	18607	RB Size 6	RB Offset 0



Channel Bandwidth: 1.4MHz

Channel	19192	RB Size 1	RB Offset 5	Channel	19192	RB Size 6	RB Offset 0

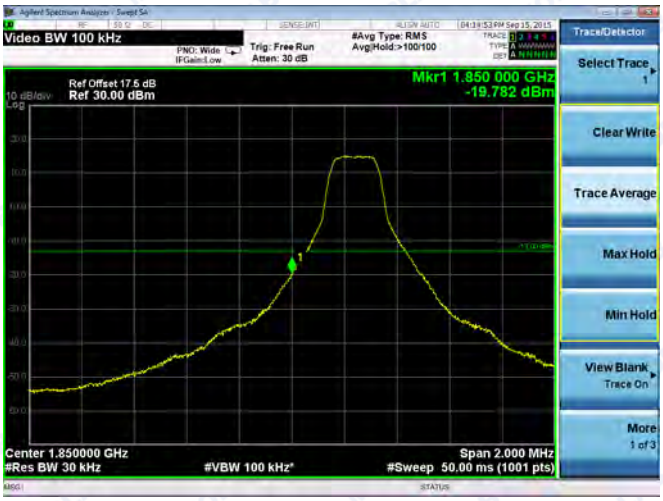


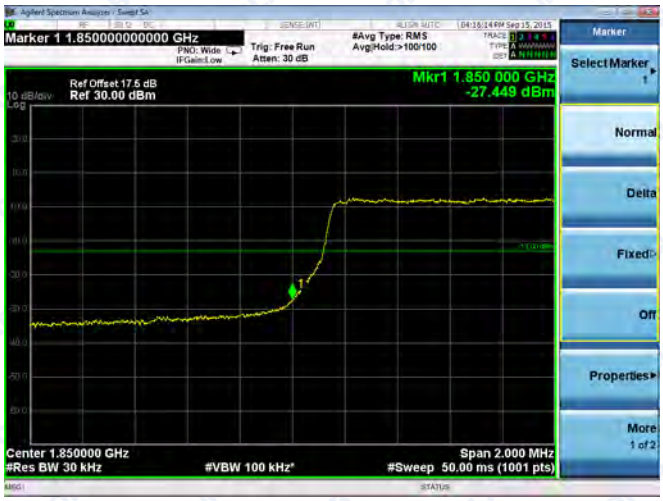


LTE Band 2

Channel Bandwidth: 3MHz

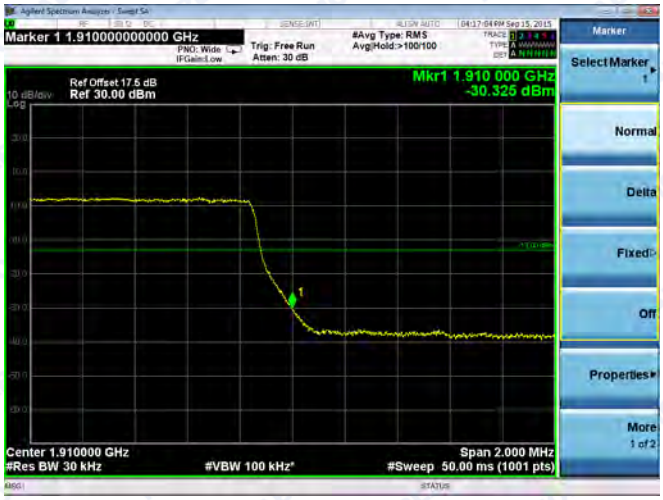
Channel	18165	RB Size 1	RB Offset 0	Channel	18165	RB Size 15	RB Offset 0





Channel Bandwidth: 3MHz

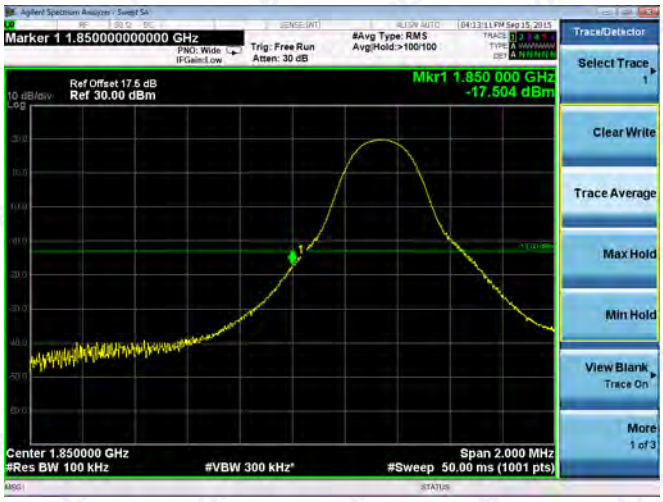
Channel	19184	RB Size 1	RB Offset 14	Channel	19184	RB Size 15	RB Offset 0



LTE Band 2

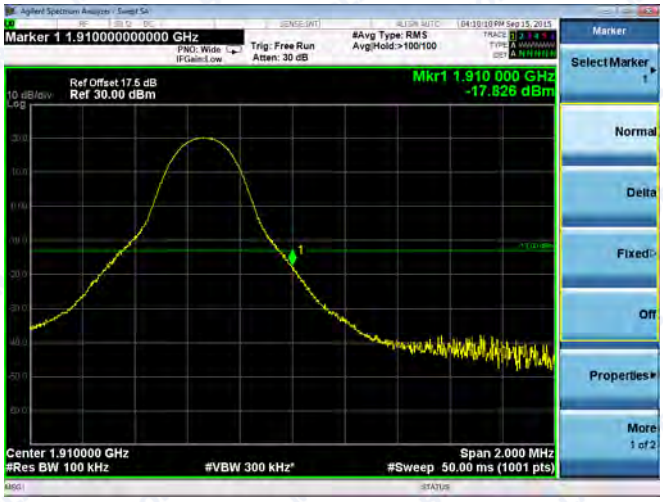
Channel Bandwidth: 5MHz

Channel	18625	RB Size 1	RB Offset 0	Channel	18625	RB Size 25	RB Offset 0



Channel Bandwidth: 5MHz

Channel	19175	RB Size 1	RB Offset 24	Channel	19175	RB Size 25	RB Offset 0



LTE Band 2

Channel Bandwidth: 10MHz

Channel	18650	RB Size 1	RB Offset 0	Channel	18650	RB Size 50	RB Offset 0

Channel Bandwidth: 10MHz

Channel	19150	RB Size 1	RB Offset 49	Channel	19150	RB Size 50	RB Offset 0

LTE Band 2

Channel Bandwidth: 15MHz

Channel	18675	RB Size 1	RB Offset 0	Channel	18675	RB Size 75	RB Offset 0

Channel Bandwidth: 15MHz

Channel	19125	RB Size 1	RB Offset 74	Channel	19125	RB Size 75	RB Offset 0

LTE Band 2

Channel Bandwidth: 20MHz

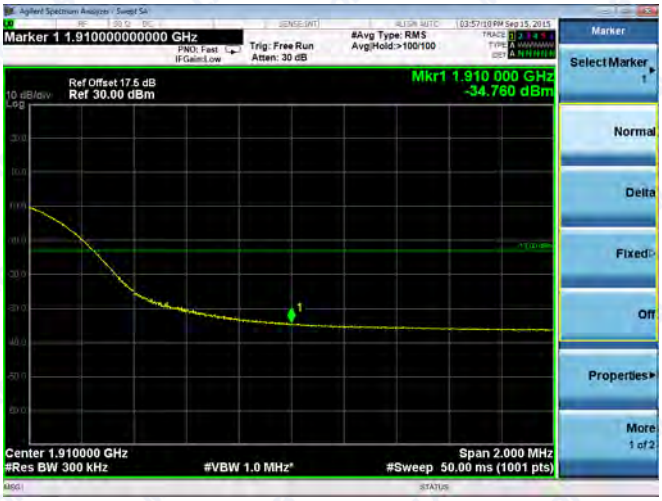
Channel	18700	RB Size 1	RB Offset 0

Channel	18700	RB Size 100	RB Offset 0

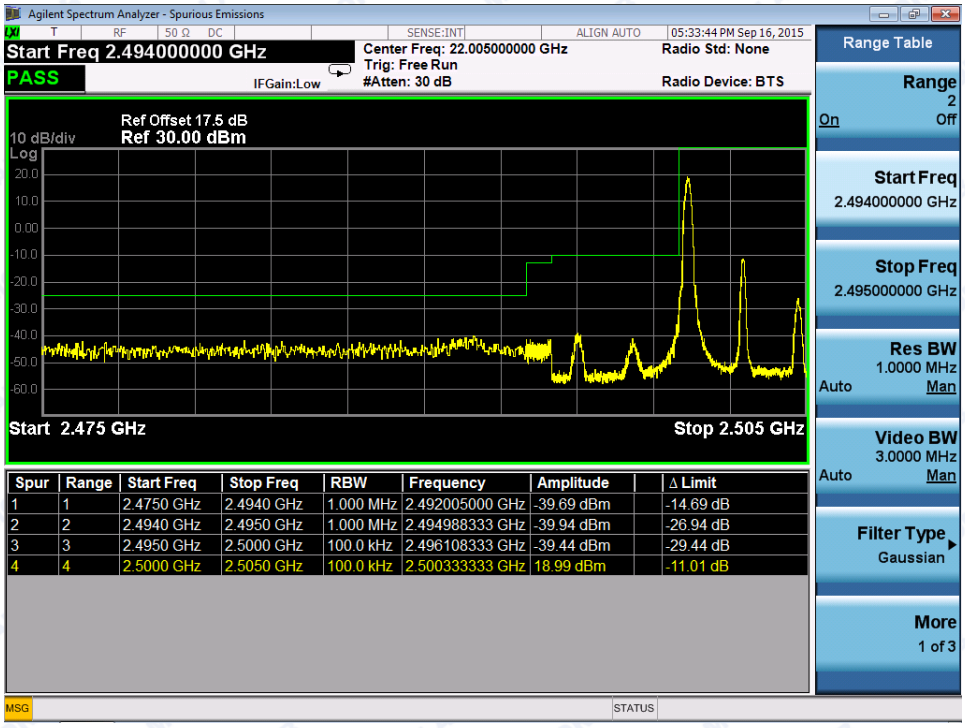
Channel Bandwidth: 20MHz

Channel	19100	RB Size 1	RB Offset 99

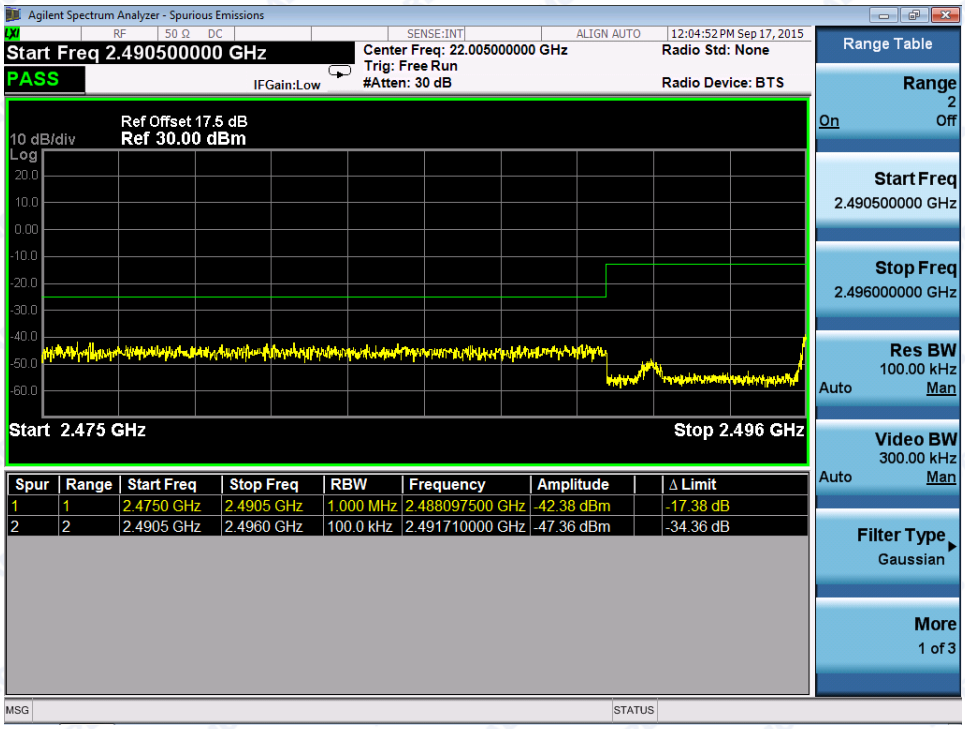
Channel	19100	RB Size 100	RB Offset 0



LTE Band 7			
Channel Bandwidth: 5MHz X=5.124Hz			
Channel	20775	RB Size 1	RB Offset 0

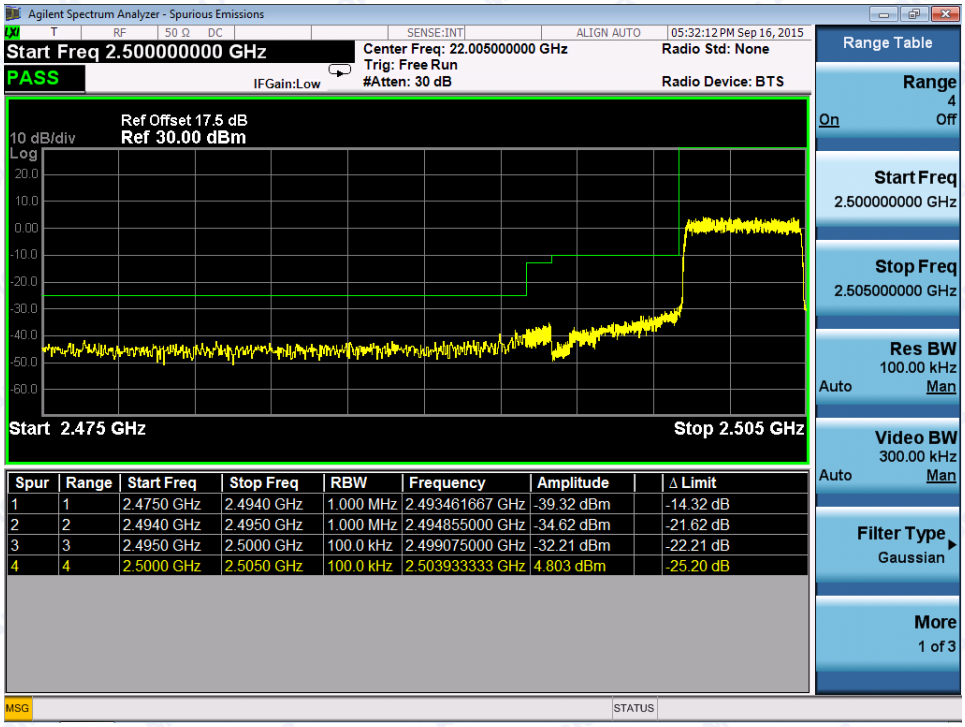


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4940 GHz	1.000 MHz	2.492005000 GHz	-39.69 dBm	-14.69 dB
2	2	2.4940 GHz	2.4950 GHz	1.000 MHz	2.494988333 GHz	-39.94 dBm	-26.94 dB
3	3	2.4950 GHz	2.5000 GHz	100.0 kHz	2.496108333 GHz	-39.44 dBm	-29.44 dB
4	4	2.5000 GHz	2.5050 GHz	100.0 kHz	2.500333333 GHz	18.99 dBm	-11.01 dB

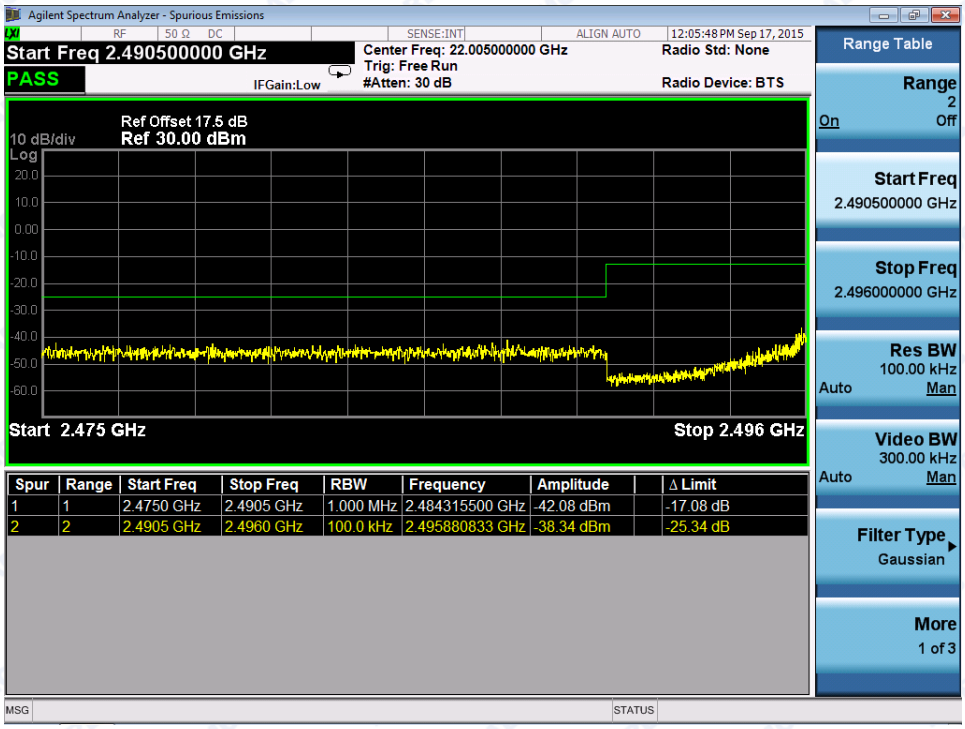


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.488097500 GHz	-42.38 dBm	-17.38 dB
2	2	2.4905 GHz	2.4960 GHz	100.0 kHz	2.491710000 GHz	-47.36 dBm	-34.36 dB

LTE Band 7			
Channel Bandwidth: 5MHz X=5.124MHz			
Channel	20775	RB Size 25	RB Offset 0



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4940 GHz	1.000 MHz	2.493461667 GHz	-39.32 dBm	-14.32 dB
2	2	2.4940 GHz	2.4950 GHz	1.000 MHz	2.494855000 GHz	-34.62 dBm	-21.62 dB
3	3	2.4950 GHz	2.5000 GHz	100.0 kHz	2.499075000 GHz	-32.21 dBm	-22.21 dB
4	4	2.5000 GHz	2.5050 GHz	100.0 kHz	2.503933333 GHz	4.803 dBm	-25.20 dB

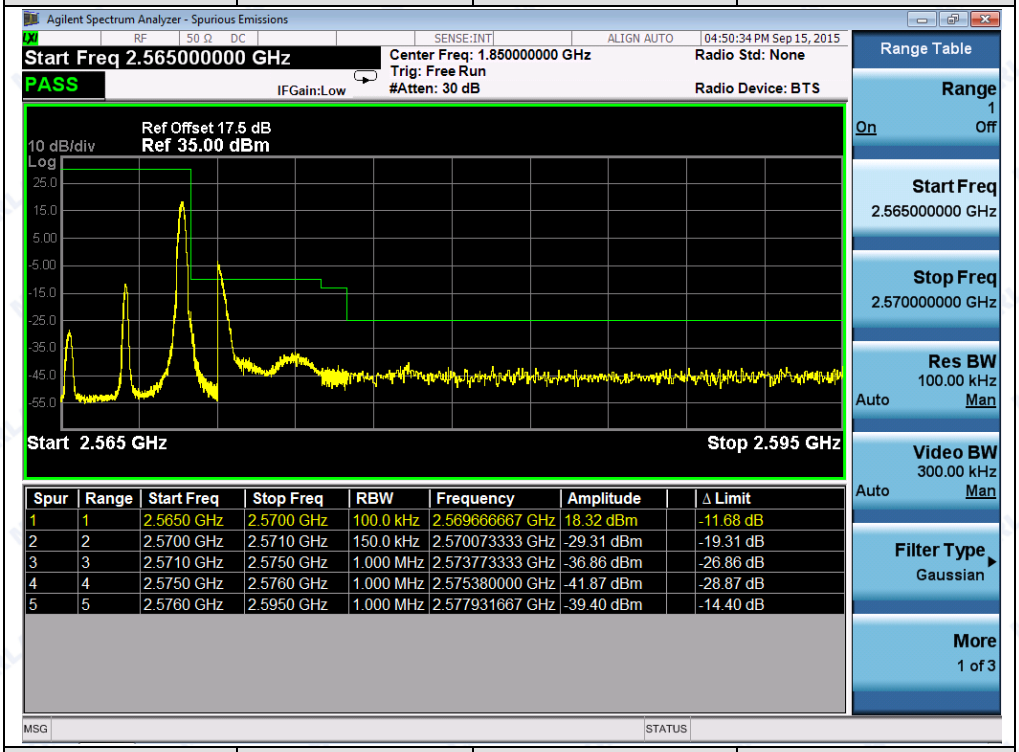


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.484315500 GHz	-42.08 dBm	-17.08 dB
2	2	2.4905 GHz	2.4960 GHz	100.0 kHz	2.495880833 GHz	-38.34 dBm	-25.34 dB

LTE Band 7

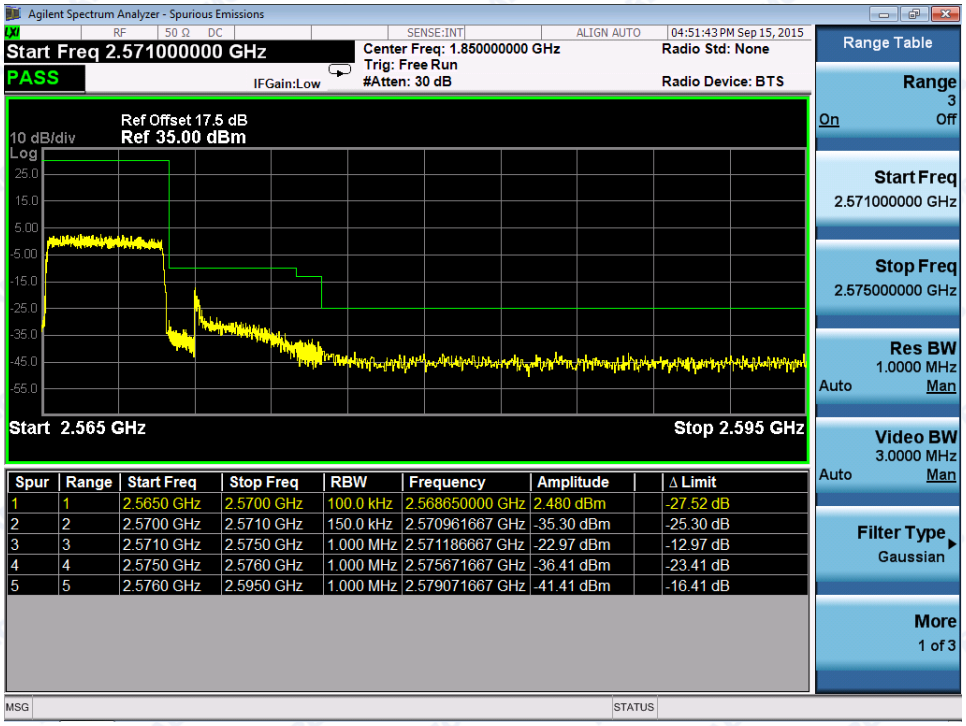
Channel Bandwidth: 5MHz X=5.132MHz

Channel	21425	RB Size 1	RB Offset 24



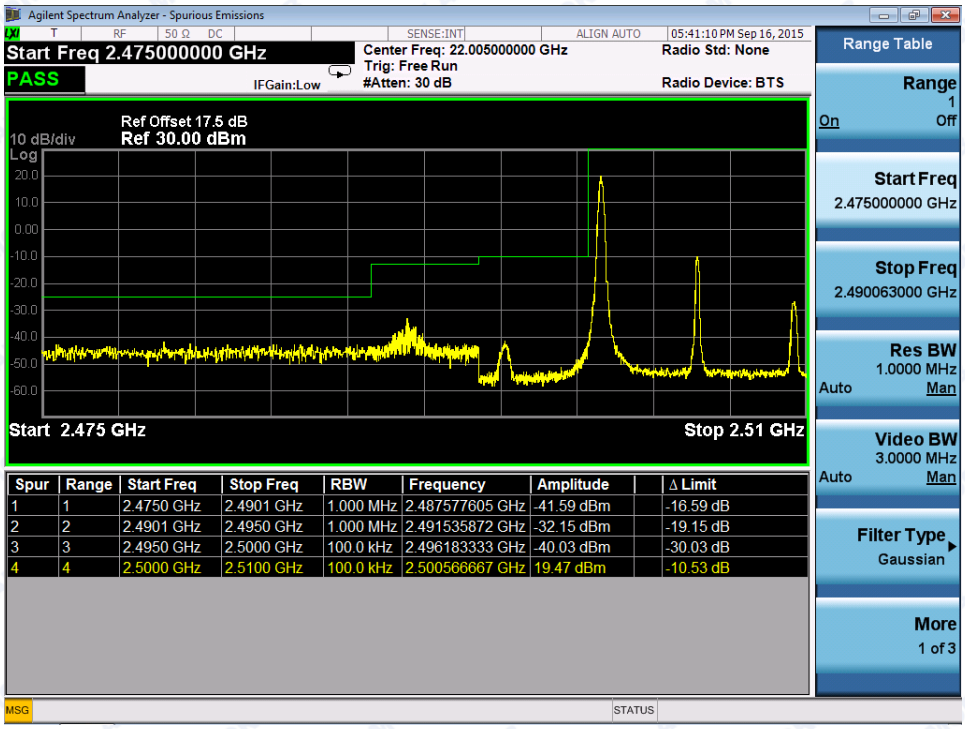
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5650 GHz	2.5700 GHz	100.0 kHz	2.569666667 GHz	18.32 dBm	-11.68 dB
2	2	2.5700 GHz	2.5710 GHz	150.0 kHz	2.570073333 GHz	-29.31 dBm	-19.31 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.573773333 GHz	-36.86 dBm	-26.86 dB
4	4	2.5750 GHz	2.5760 GHz	1.000 MHz	2.575380000 GHz	-41.87 dBm	-28.87 dB
5	5	2.5760 GHz	2.5950 GHz	1.000 MHz	2.577931667 GHz	-39.40 dBm	-14.40 dB

Channel	21425	RB Size 25	RB Offset 0

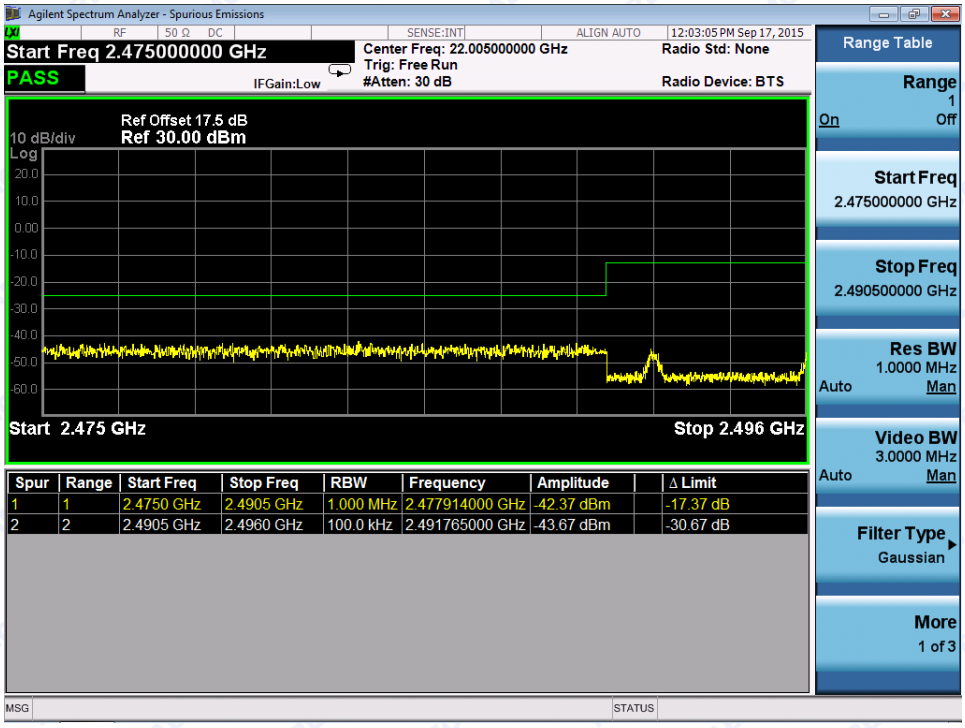


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5650 GHz	2.5700 GHz	100.0 kHz	2.568650000 GHz	2.480 dBm	-27.52 dB
2	2	2.5700 GHz	2.5710 GHz	150.0 kHz	2.570961667 GHz	-35.30 dBm	-25.30 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571186667 GHz	-22.97 dBm	-12.97 dB
4	4	2.5750 GHz	2.5760 GHz	1.000 MHz	2.575671667 GHz	-36.41 dBm	-23.41 dB
5	5	2.5760 GHz	2.5950 GHz	1.000 MHz	2.579071667 GHz	-41.41 dBm	-16.41 dB

LTE Band 7			
Channel Bandwidth: 10MHz X=10.02 MHz			
Channel	20800	RB Size 1	RB Offset 0

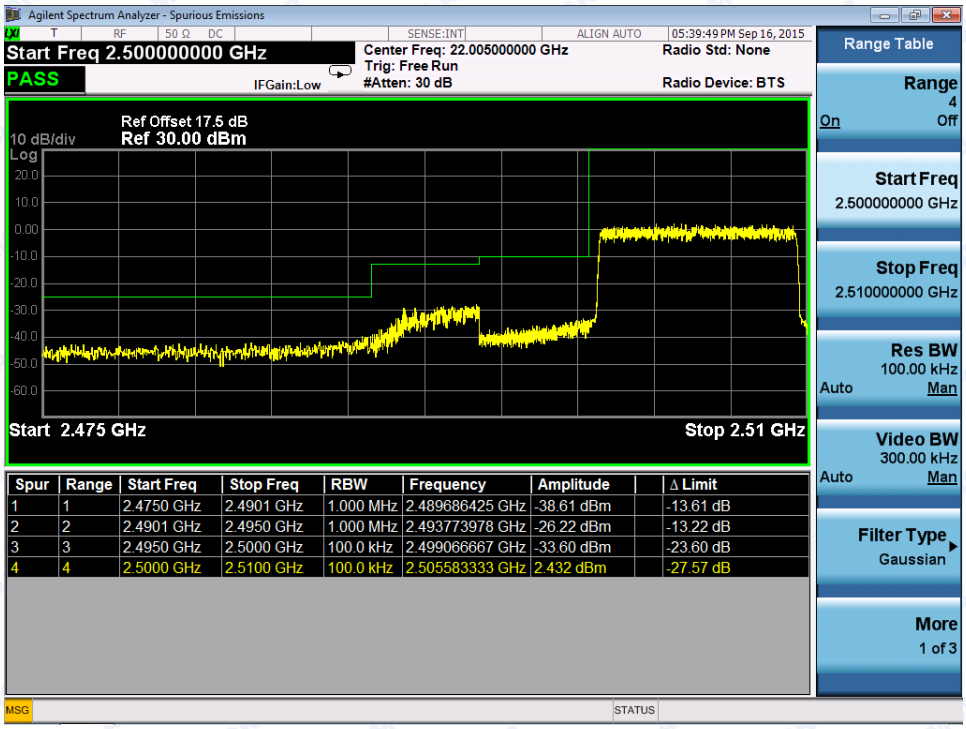


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4901 GHz	1.000 MHz	2.487577605 GHz	-41.59 dBm	-16.59 dB
2	2	2.4901 GHz	2.4950 GHz	1.000 MHz	2.491535872 GHz	-32.15 dBm	-19.15 dB
3	3	2.4950 GHz	2.5000 GHz	100.0 kHz	2.496183333 GHz	-40.03 dBm	-30.03 dB
4	4	2.5000 GHz	2.5100 GHz	100.0 kHz	2.500566667 GHz	19.47 dBm	-10.53 dB

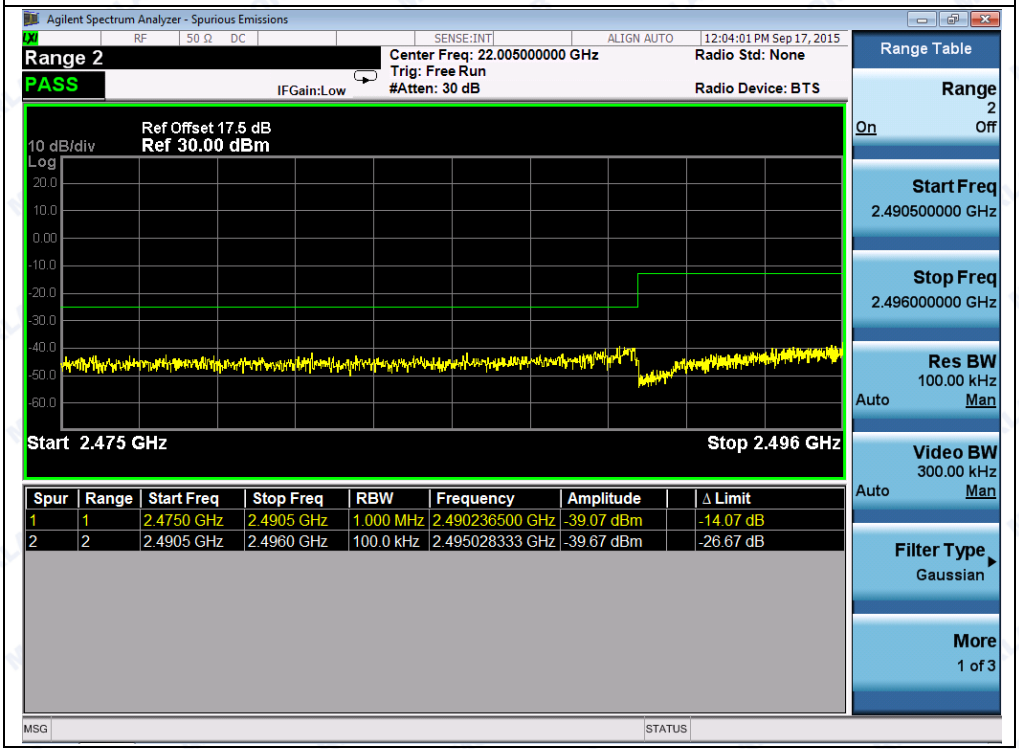


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.477914000 GHz	-42.37 dBm	-17.37 dB
2	2	2.4905 GHz	2.4960 GHz	100.0 kHz	2.491765000 GHz	-43.67 dBm	-30.67 dB

LTE Band 7			
Channel Bandwidth: 10MHz X=10.02 MHz			
Channel	20800	RB Size 50	RB Offset 0

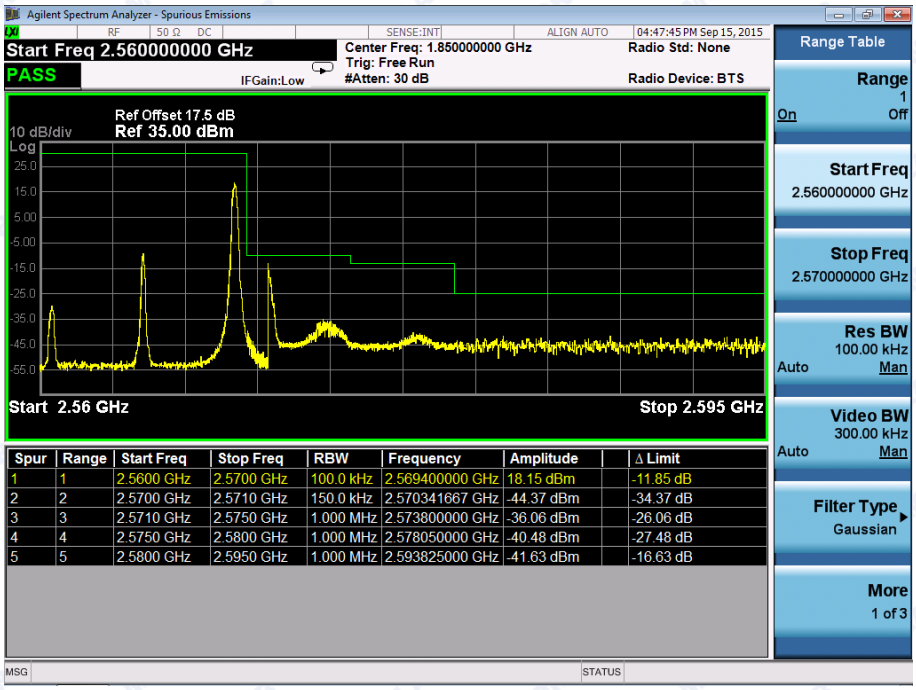


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4901 GHz	1.000 MHz	2.489686425 GHz	-38.61 dBm	-13.61 dB
2	2	2.4901 GHz	2.4950 GHz	1.000 MHz	2.493773978 GHz	-26.22 dBm	-13.22 dB
3	3	2.4950 GHz	2.5000 GHz	100.0 kHz	2.499066667 GHz	-33.60 dBm	-23.60 dB
4	4	2.5000 GHz	2.5100 GHz	100.0 kHz	2.505583333 GHz	2.432 dBm	-27.57 dB



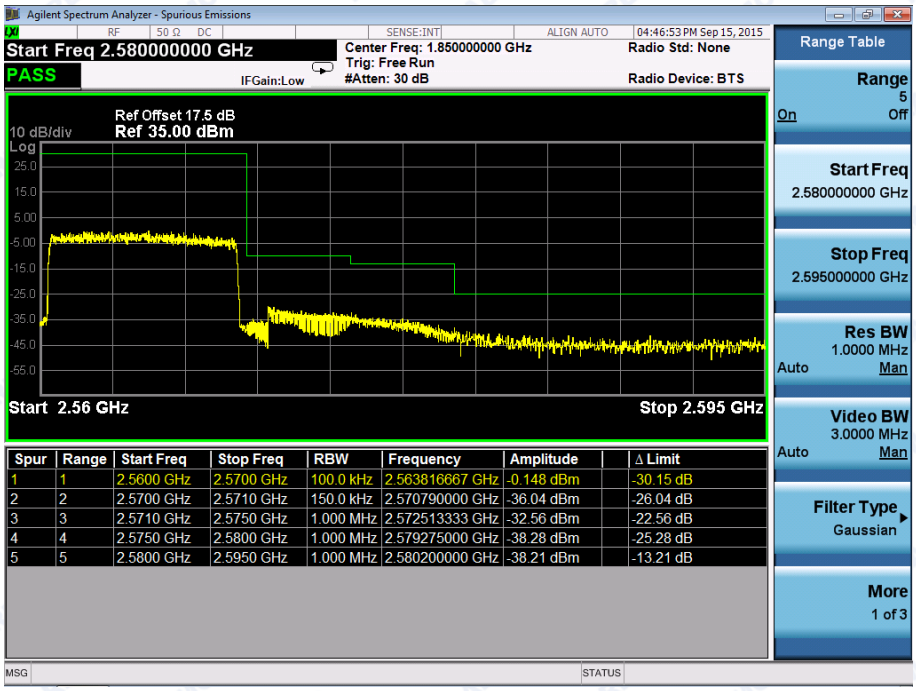
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490236500 GHz	-39.07 dBm	-14.07 dB
2	2	2.4905 GHz	2.4960 GHz	100.0 kHz	2.495028333 GHz	-39.67 dBm	-26.67 dB

LTE Band 7			
Channel Bandwidth: 10MHz X=10.05 MHz			
Channel	21400	RB Size 1	RB Offset 49



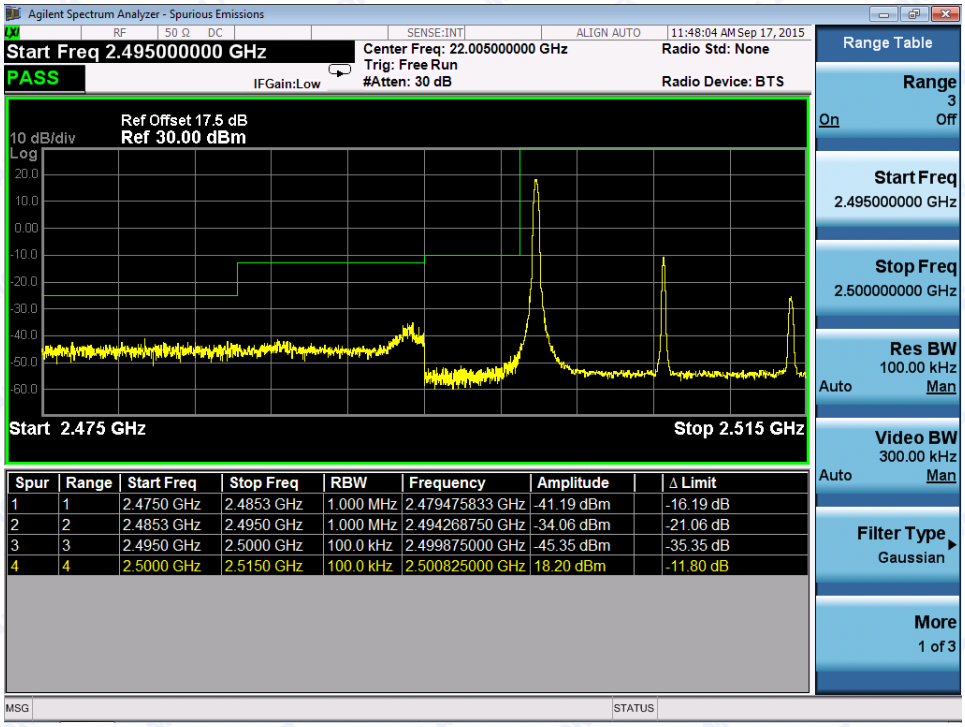
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5600 GHz	2.5700 GHz	100.0 kHz	2.569400000 GHz	18.15 dBm	-11.85 dB
2	2	2.5700 GHz	2.5710 GHz	150.0 kHz	2.570341667 GHz	-44.37 dBm	-34.37 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.573800000 GHz	-36.06 dBm	-26.06 dB
4	4	2.5750 GHz	2.5800 GHz	1.000 MHz	2.578050000 GHz	-40.48 dBm	-27.48 dB
5	5	2.5800 GHz	2.5950 GHz	1.000 MHz	2.593825000 GHz	-41.63 dBm	-16.63 dB

Channel	21400	RB Size 50	RB Offset 0

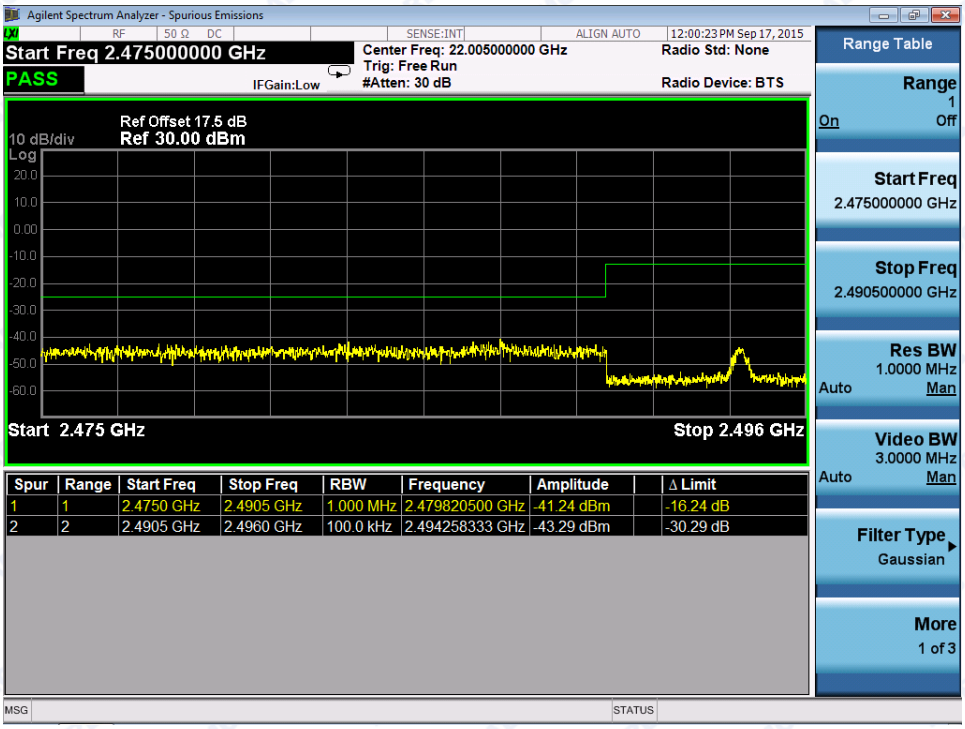


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5600 GHz	2.5700 GHz	100.0 kHz	2.563816667 GHz	-0.148 dBm	-30.15 dB
2	2	2.5700 GHz	2.5710 GHz	150.0 kHz	2.570790000 GHz	-36.04 dBm	-26.04 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.572513333 GHz	-32.56 dBm	-22.56 dB
4	4	2.5750 GHz	2.5800 GHz	1.000 MHz	2.579275000 GHz	-38.28 dBm	-25.28 dB
5	5	2.5800 GHz	2.5950 GHz	1.000 MHz	2.580200000 GHz	-38.21 dBm	-13.21 dB

LTE Band 7			
Channel Bandwidth: 15MHz X=15.03 MHz			
Channel	20825	RB Size 1	RB Offset 0

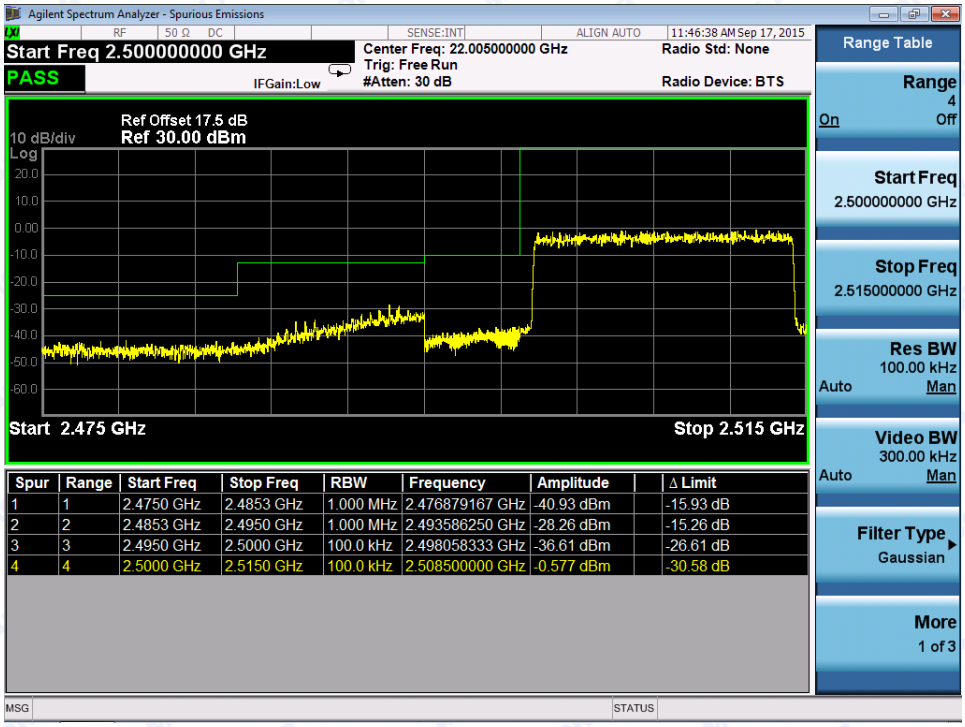


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude		Δ Limit
1	1	2.4750 GHz	2.4853 GHz	1.000 MHz	2.479475833 GHz	-41.19 dBm		-16.19 dB
2	2	2.4853 GHz	2.4950 GHz	1.000 MHz	2.494268750 GHz	-34.06 dBm		-21.06 dB
3	3	2.4950 GHz	2.5000 GHz	100.0 kHz	2.499875000 GHz	-45.35 dBm		-35.35 dB
4	4	2.5000 GHz	2.5150 GHz	100.0 kHz	2.500825000 GHz	18.20 dBm		-11.80 dB

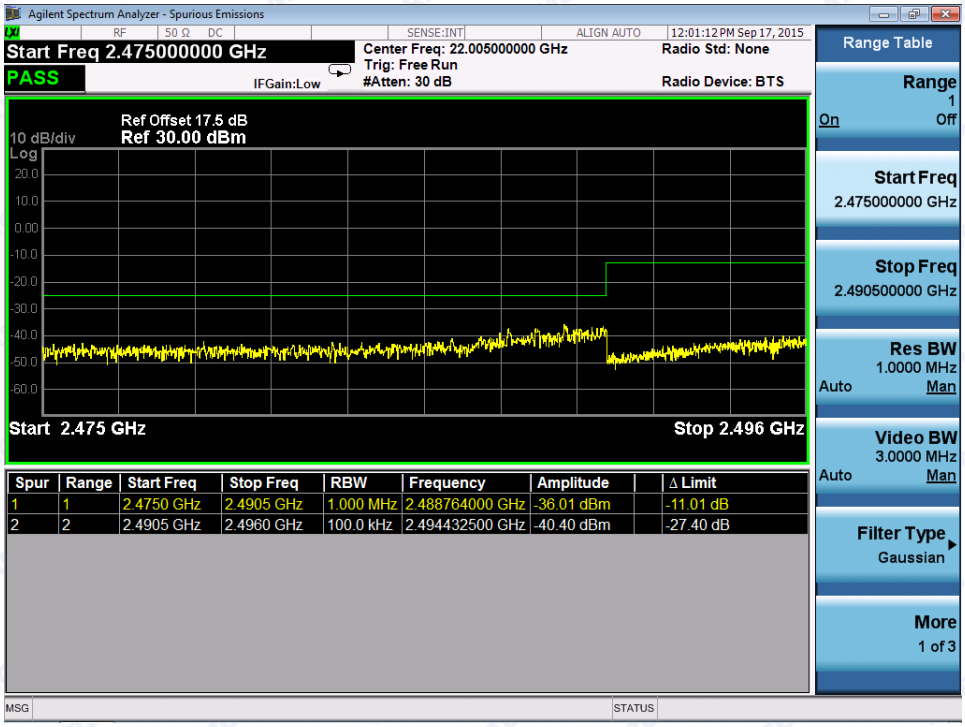


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude		Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.479820500 GHz	-41.24 dBm		-16.24 dB
2	2	2.4905 GHz	2.4960 GHz	100.0 kHz	2.494258333 GHz	-43.29 dBm		-30.29 dB

LTE Band 7			
Channel Bandwidth: 15MHz X=15.03 MHz			
Channel	20825	RB Size 75	RB Offset 0



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4853 GHz	1.000 MHz	2.476879167 GHz	-40.93 dBm	-15.93 dB
2	2	2.4853 GHz	2.4950 GHz	1.000 MHz	2.493586250 GHz	-28.26 dBm	-15.26 dB
3	3	2.4950 GHz	2.5000 GHz	100.0 kHz	2.498058333 GHz	-36.61 dBm	-26.61 dB
4	4	2.5000 GHz	2.5150 GHz	100.0 kHz	2.508500000 GHz	-0.577 dBm	-30.58 dB

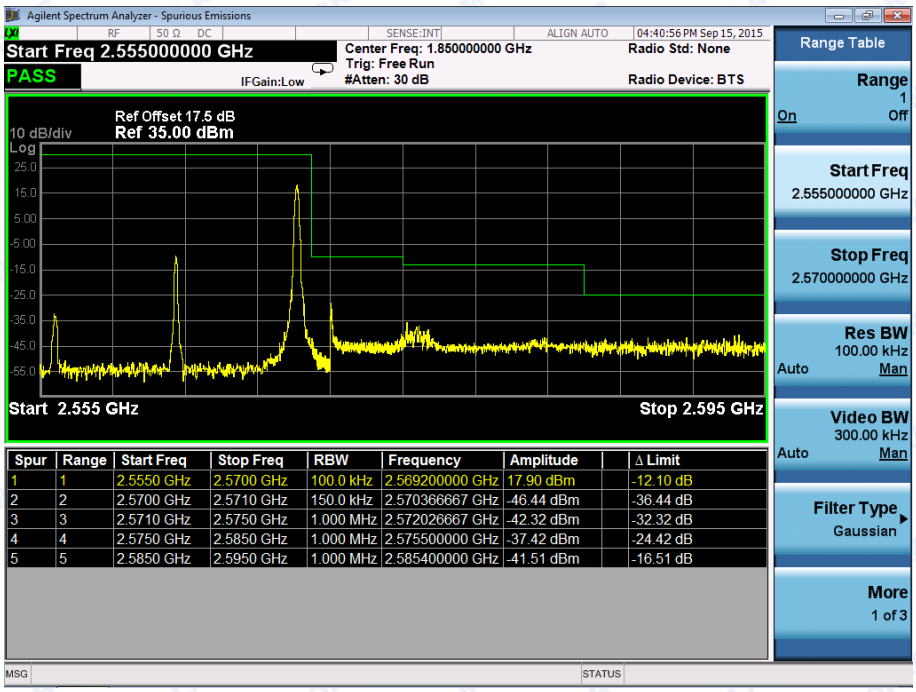


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.488764000 GHz	-36.01 dBm	-11.01 dB
2	2	2.4905 GHz	2.4960 GHz	100.0 kHz	2.494432500 GHz	-40.40 dBm	-27.40 dB

LTE Band 7

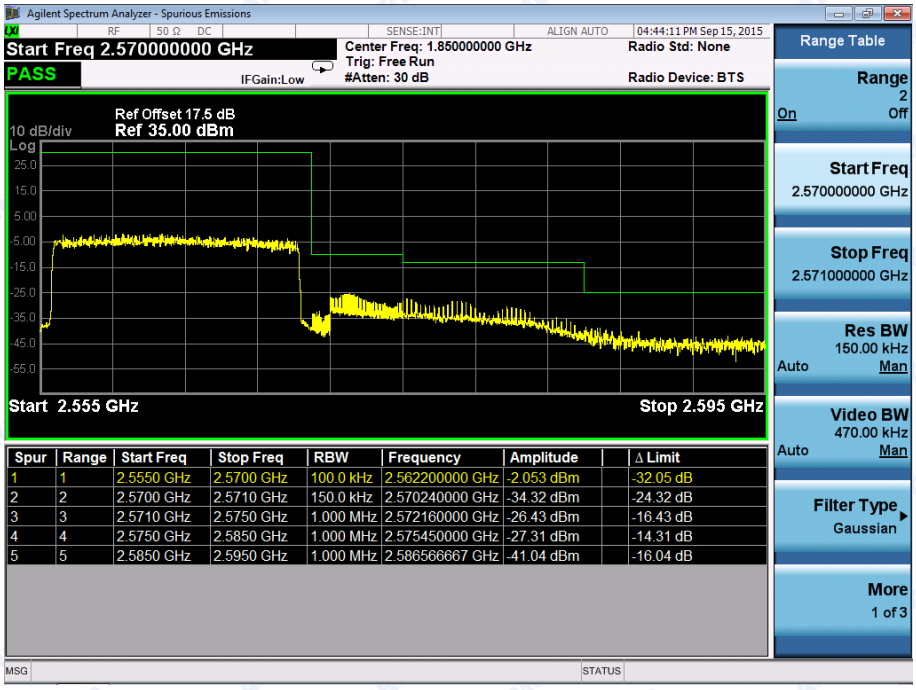
Channel Bandwidth: 15MHz X=15.38 MHz

Channel	21375	RB Size 1	RB Offset 74



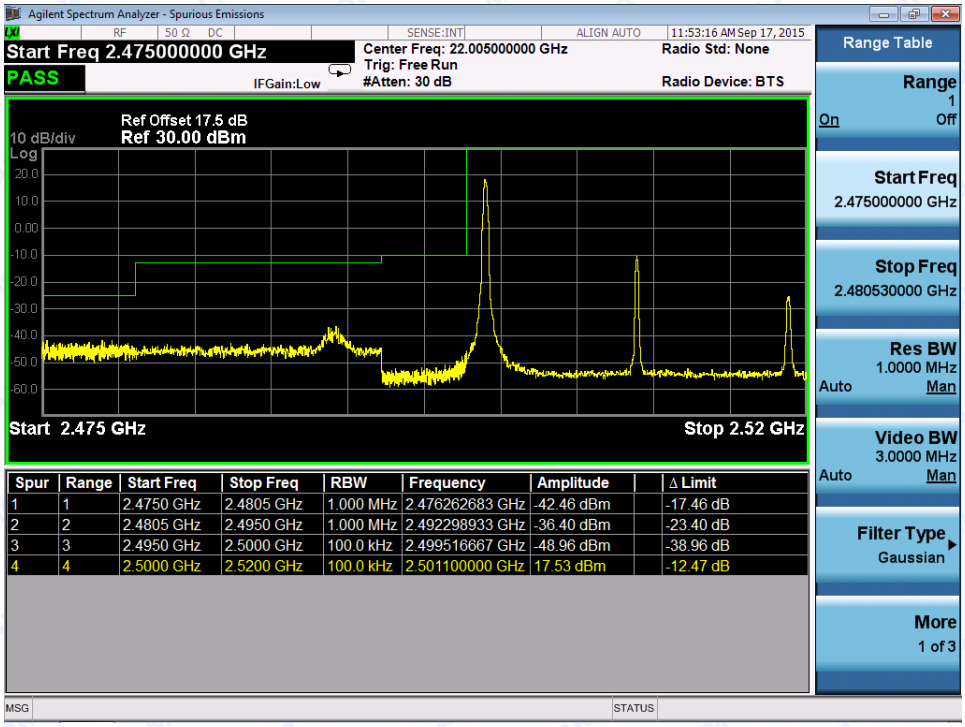
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5550 GHz	2.5700 GHz	100.0 kHz	2.569200000 GHz	17.90 dBm	-12.10 dB
2	2	2.5700 GHz	2.5710 GHz	150.0 kHz	2.570366667 GHz	-46.44 dBm	-36.44 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.572026667 GHz	-42.32 dBm	-32.32 dB
4	4	2.5750 GHz	2.5850 GHz	1.000 MHz	2.575500000 GHz	-37.42 dBm	-24.42 dB
5	5	2.5850 GHz	2.5950 GHz	1.000 MHz	2.585400000 GHz	-41.51 dBm	-16.51 dB

Channel	21375	RB Size 75	RB Offset 0

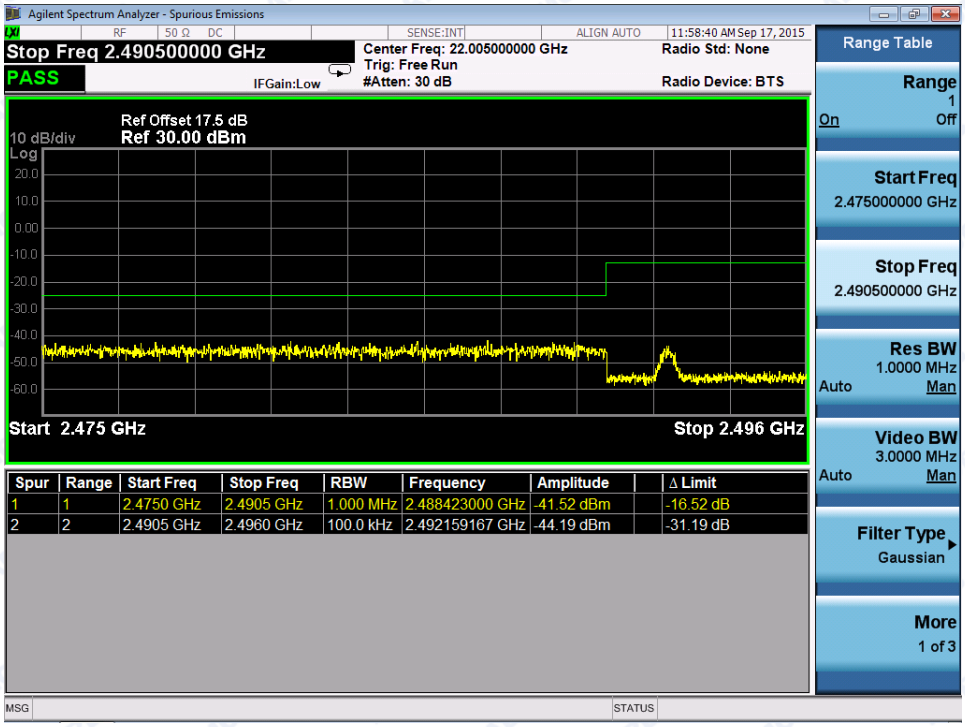


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5550 GHz	2.5700 GHz	100.0 kHz	2.562200000 GHz	-2.053 dBm	-32.05 dB
2	2	2.5700 GHz	2.5710 GHz	150.0 kHz	2.570240000 GHz	-34.32 dBm	-24.32 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.572160000 GHz	-26.43 dBm	-16.43 dB
4	4	2.5750 GHz	2.5850 GHz	1.000 MHz	2.575450000 GHz	-27.31 dBm	-14.31 dB
5	5	2.5850 GHz	2.5950 GHz	1.000 MHz	2.586566667 GHz	-41.04 dBm	-16.04 dB

LTE Band 7			
Channel Bandwidth: 20MHz X=19.83 MHz			
Channel	20850	RB Size 1	RB Offset 0

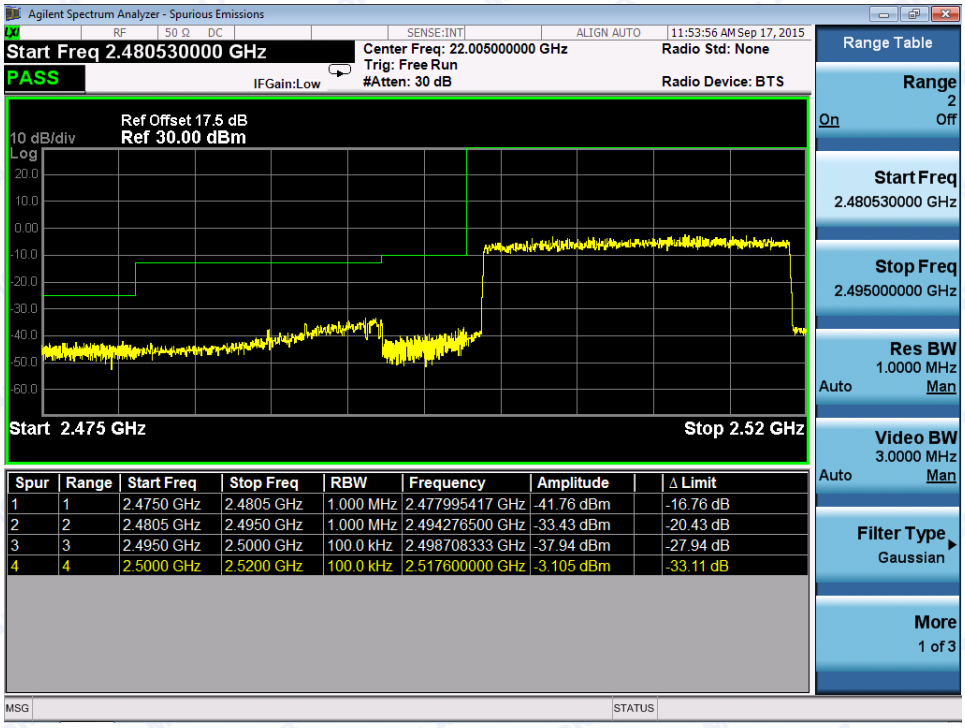


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4805 GHz	1.000 MHz	2.476262683 GHz	-42.46 dBm	-17.46 dB
2	2	2.4805 GHz	2.4950 GHz	1.000 MHz	2.492298933 GHz	-36.40 dBm	-23.40 dB
3	3	2.4950 GHz	2.5000 GHz	100.0 kHz	2.499516667 GHz	-48.96 dBm	-38.96 dB
4	4	2.5000 GHz	2.5200 GHz	100.0 kHz	2.501100000 GHz	17.53 dBm	-12.47 dB

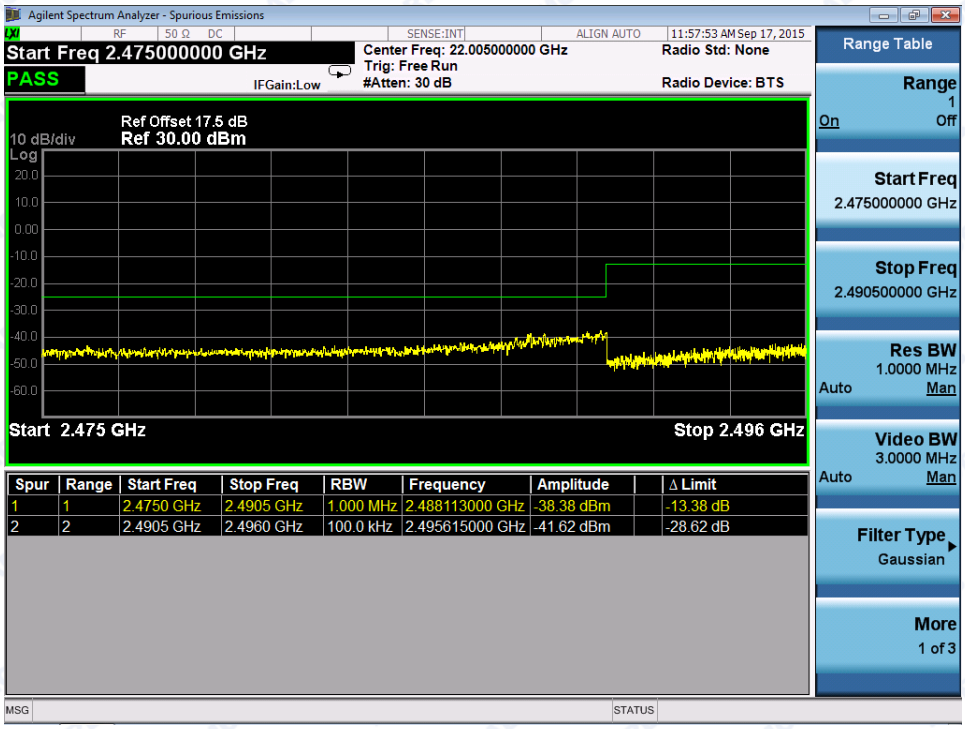


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.488423000 GHz	-41.52 dBm	-16.52 dB
2	2	2.4905 GHz	2.4960 GHz	100.0 kHz	2.492159167 GHz	-44.19 dBm	-31.19 dB

LTE Band 7			
Channel Bandwidth: 20MHz X=19.83 MHz			
Channel	20850	RB Size 100	RB Offset 0

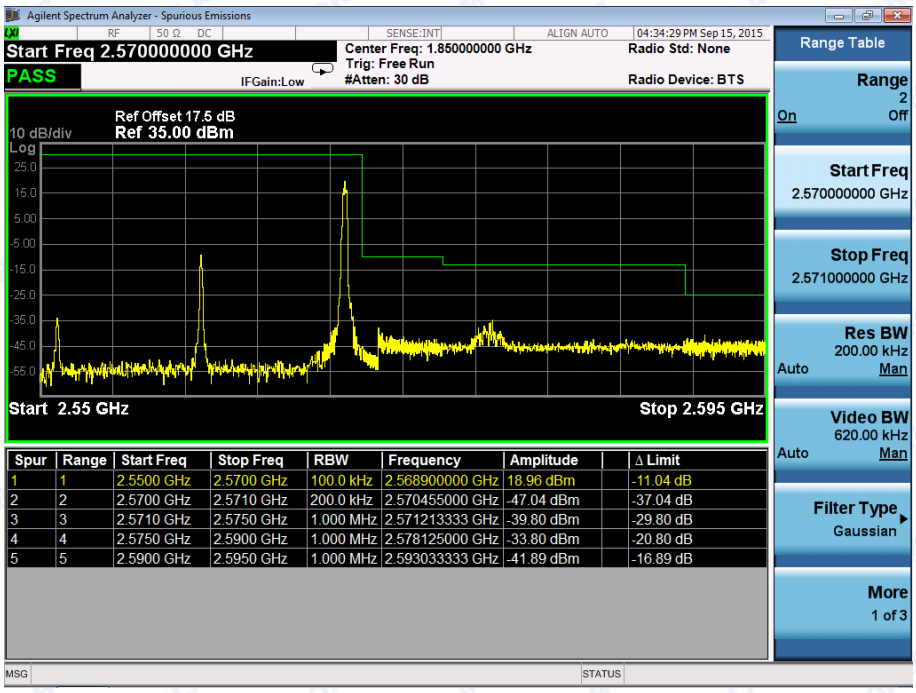


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude		Δ Limit
1	1	2.4750 GHz	2.4805 GHz	1.000 MHz	2.477995417 GHz	-41.76 dBm		-16.76 dB
2	2	2.4805 GHz	2.4950 GHz	1.000 MHz	2.494276500 GHz	-33.43 dBm		-20.43 dB
3	3	2.4950 GHz	2.5000 GHz	100.0 kHz	2.498708333 GHz	-37.94 dBm		-27.94 dB
4	4	2.5000 GHz	2.5200 GHz	100.0 kHz	2.517600000 GHz	-3.105 dBm		-33.11 dB



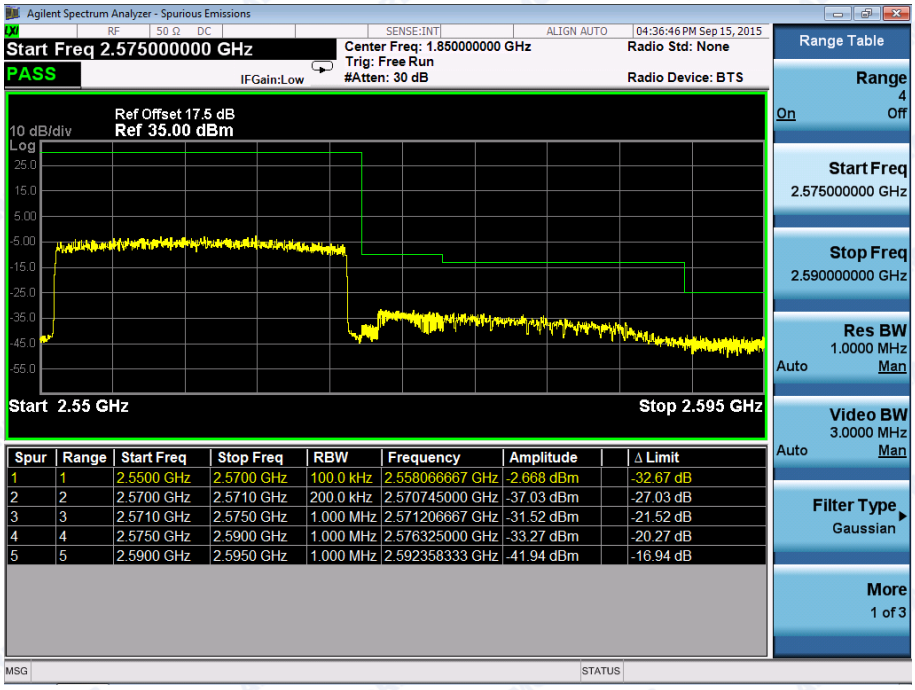
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude		Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.488113000 GHz	-38.38 dBm		-13.38 dB
2	2	2.4905 GHz	2.4960 GHz	100.0 kHz	2.495615000 GHz	-41.62 dBm		-28.62 dB

LTE Band 7			
Channel Bandwidth: 20MHz X=19.89 MHz			
Channel	21350	RB Size 1	RB Offset 99



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5500 GHz	2.5700 GHz	100.0 kHz	2.568900000 GHz	18.96 dBm	-11.04 dB
2	2	2.5700 GHz	2.5710 GHz	200.0 kHz	2.570455000 GHz	-47.04 dBm	-37.04 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571213333 GHz	-39.80 dBm	-29.80 dB
4	4	2.5750 GHz	2.5900 GHz	1.000 MHz	2.578125000 GHz	-33.80 dBm	-20.80 dB
5	5	2.5900 GHz	2.5950 GHz	1.000 MHz	2.593033333 GHz	-41.89 dBm	-16.89 dB

Channel	21350	RB Size 100	RB Offset 0



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5500 GHz	2.5700 GHz	100.0 kHz	2.558066667 GHz	-2.668 dBm	-32.67 dB
2	2	2.5700 GHz	2.5710 GHz	200.0 kHz	2.570745000 GHz	-37.03 dBm	-27.03 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571206667 GHz	-31.52 dBm	-21.52 dB
4	4	2.5750 GHz	2.5900 GHz	1.000 MHz	2.576325000 GHz	-33.27 dBm	-20.27 dB
5	5	2.5900 GHz	2.5950 GHz	1.000 MHz	2.592358333 GHz	-41.94 dBm	-16.94 dB

2.7 Transmitter Radiated Power (EIRP/ERP)

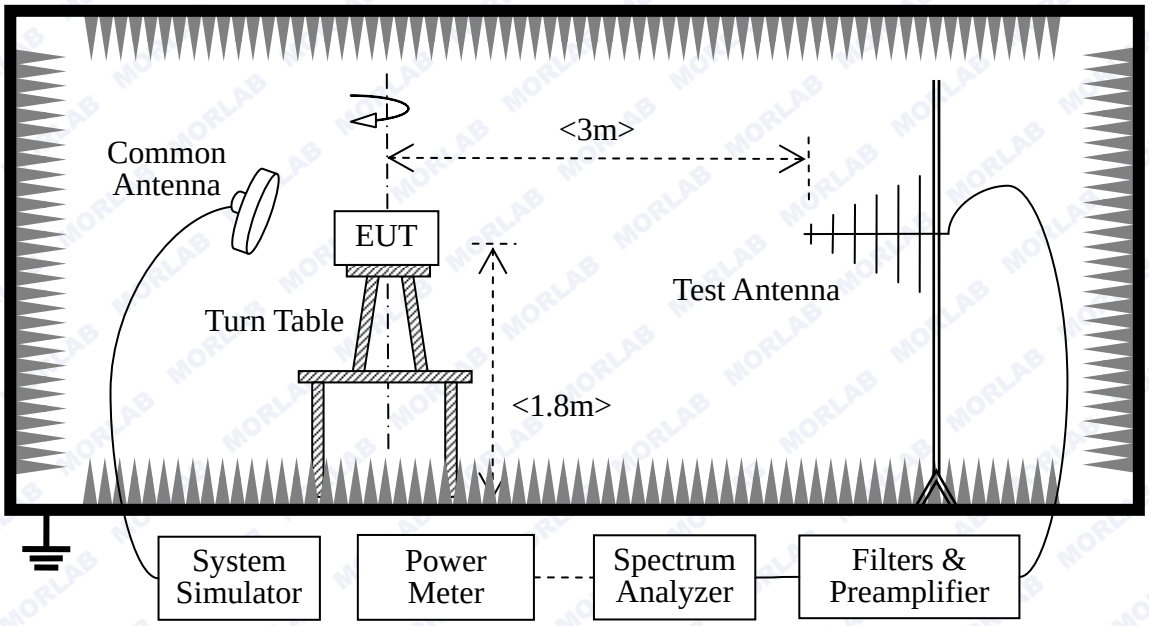
2.7.1 Requirement

According to FCC section 27.50 (d), fixed, mobile and portable (hand-held) stations in the 1710-1755MHz band are limited to 1wat EIRP.

Portable stations (hand-held devices) operating in the 704-716MHz band are limited to 3watts ERP.

2.7.2 Test Description

Test Setup:



The EUT, which is powered by the PC, is located in a 3m Full-Anechoic Chamber; the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading.

A call is established between the EUT and the SS via a Common Antenna. The EUT is commanded by the SS to operate at the maximum and minimum output power, and only the test result of the maximum output power was recorded.

The Test Antenna is a Bi-Log one (used for 30MHz to 1GHz) or a Horn one (used for above 3GHz), and it's located at the same height as the EUT. The Filters consists of Notch Filters and High Pass Filter.

Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Rohde& Schwarz	CMW500	1201.0002k50/ 124534/wk	2015.02.26	2016.02.25
Spectrum Analyzer	Rohde& Schwarz	FSL	10246	2015.02.26	2016.02.25
Spectrum Analyzer	Agilent	E4445A	MY44200685	2015.02.26	2016.02.25
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2015.02.26	2016.02.25
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2015.02.26	2016.02.25
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2015.02.26	2016.02.25

2.7.3 Test Result

The EUT was verified under all configurations (RB size and offset) and the worst case radiated power reported for each modulation/channel bandwidth.

The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested.

The substitution corrections are obtained as described below:

$A_{SUBST} = P_{SUBST_TX} - P_{SUBST_RX} - L_{SUBST_CABLES} + G_{SUBST_TX_ANT}$

$A_{TOT} = L_{CABLES} + A_{SUBST}$

Where A_{SUBST} is the final substitution correction including receive antenna gain.

P_{SUBST_TX} is signal generator level,

P_{SUBST_RX} is receiver level,

L_{SUBST_CABLES} is cable losses including TX cable,

$G_{SUBST_TX_ANT}$ is substitution antenna gain.

A_{TOT} is total correction factor including cable loss and substitution correction

During the test, the data of A_{TOT} was added in the Test Spectrum Analyze, so Spectrum Analyze reading is the final values which contain the data of A_{TOT}.

Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		EIRP
					RB Size	RB Offset	(dBm)
LTE Band 2	20MHz	L 18700	1860	QPSK	1	0	23.41
					100	0	21.63
				16-QAM	1	0	22.44
					100	0	20.79
		M 18900	1880	QPSK	1	0	23.22
					100	0	22.17
				16-QAM	1	0	22.18
					100	0	21.10
		H 19100	1900	QPSK	1	0	23.19
					100	0	22.55
				16-QAM	1	0	22.07
					100	0	21.42
Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		EIRP
					RB Size	RB Offset	(dBm)
LTE Band 2	15MHz	L 18675	1857.5	QPSK	1	0	23.11
					75	0	21.54
				16-QAM	1	0	22.63
					75	0	21.07
		M 18900	1880	QPSK	1	0	23.32
					75	0	22.17
				16-QAM	1	0	22.33
					75	0	20.98
		H 19125	1902.5	QPSK	1	0	23.21
					75	0	22.17
				16-QAM	1	0	22.61
					75	0	21.12
Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		EIRP
					RB Size	RB Offset	(dBm)
LTE Band 2	10MHz	L 18650	1855	QPSK	1	0	23.29
					50	0	22.16
				16-QAM	1	0	22.43
					50	0	20.88
		M 18900	1880	QPSK	1	0	23.27
					50	0	22.62
				16-QAM	1	0	22.71
					50	0	21.01
		H 19150	1905	QPSK	1	0	23.32
					50	0	22.57
				16-QAM	1	0	22.63
					50	0	21.18

Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		EIRP
					RB Size	RB Offset	(dBm)
LTE Band 2	5MHz	L 18625	1852.5	QPSK	1	0	23.55
					25	0	22.31
				16-QAM	1	0	22.44
					25	0	21.19
		M 18900	1880	QPSK	1	0	23.47
					25	0	22.68
				16-QAM	1	0	22.83
					25	0	21.21
		H 19175	1907.5	QPSK	1	0	23.37
					25	0	22.34
				16-QAM	1	0	23.61
					25	0	21.10
Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		EIRP
					RB Size	RB Offset	(dBm)
LTE Band 2	3MHz	L 18615	1851.5	QPSK	1	0	23.35
					15	0	22.17
				16-QAM	1	0	22.52
					15	0	21.01
		M 18900	1880	QPSK	1	0	23.22
					15	0	22.19
				16-QAM	1	0	22.33
					15	0	20.98
		H 19185	1908.5	QPSK	1	0	23.34
					15	0	22.53
				16-QAM	1	0	22.72
					15	0	21.05
Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		EIRP
					RB Size	RB Offset	(dBm)
LTE Band 2	1.4MHz	L 18607	1850.7	QPSK	1	0	23.39
					6	0	22.42
				16-QAM	1	0	22.77
					6	0	20.62
		18900	1880	QPSK	1	0	23.41
					6	0	22.37
				16-QAM	1	0	22.82
					6	0	20.97
		H 19193	1909.3	QPSK	1	0	22.53
					6	0	20.27
				16-QAM	1	0	23.07
					6	0	20.56

Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		EIRP
					RB Size	RB Offset	(dBm)
LTE Band 7	20MHz	L 20850	2510	QPSK	1	0	23.44
					100	0	22.17
				16-QAM	1	0	22.81
					100	0	21.36
		M 21100	2535	QPSK	1	0	23.22
					100	0	22.19
				16-QAM	1	0	22.78
					100	0	21.40
		H 21350	2560	QPSK	1	0	23.21
					100	0	21.73
				16-QAM	1	0	22.44
					100	0	21.10
Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		EIRP
					RB Size	RB Offset	(dBm)
LTE Band 7	15MHz	L 20825	2507.5	QPSK	1	0	23.39
					75	0	22.41
				16-QAM	1	0	22.75
					75	0	21.19
		M 21100	2535	QPSK	1	0	23.41
					75	0	22.22
				16-QAM	1	0	22.65
					75	0	21.22
		H 21375	2562.5	QPSK	1	0	23.33
					75	0	22.11
				16-QAM	1	0	22.67
					75	0	21.20
Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		EIRP
					RB Size	RB Offset	(dBm)
LTE Band 7	10MHz	L 20800	2505	QPSK	1	0	23.37
					50	0	22.18
				16-QAM	1	0	22.40
					50	0	21.11
		M 21100	2535	QPSK	1	0	23.19
					50	0	20.90
				16-QAM	1	0	22.74
					50	0	21.33
		H 21400	2565	QPSK	1	0	23.29
					50	0	22.10
				16-QAM	1	0	22.65
					50	0	20.24

Band	Band Width	Channel	Freq.(MHz)	Modulation	RB Configuration		EIRP (dBm)
					RB Size	RB Offset	
LTE Band 7	5MHz	L 20775	2502.5	QPSK	1	0	23.25
					25	0	22.41
				16-QAM	1	0	22.80
					25	0	21.27
		M 21100	2535	QPSK	1	0	23.21
					25	0	22.30
				16-QAM	1	0	22.74
					25	0	21.32
		H 21425	2567.5	QPSK	1	0	23.17
					25	0	21.62
				16-QAM	1	0	22.60
					25	0	21.17

2.8 Radiated Spurious Emissions

2.8.1 Requirement

According to FCC section 2.1053 and section 27.53(g), 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. This calculated to be -13dBm.

2.8.2 Test Description

See section 2.7.2 of this report.

Note: when doing measurements above 1GHz, the EUT has been within the 3dB cone width of the horn antenna during horizontal antenna.

2.8.3 Test Result

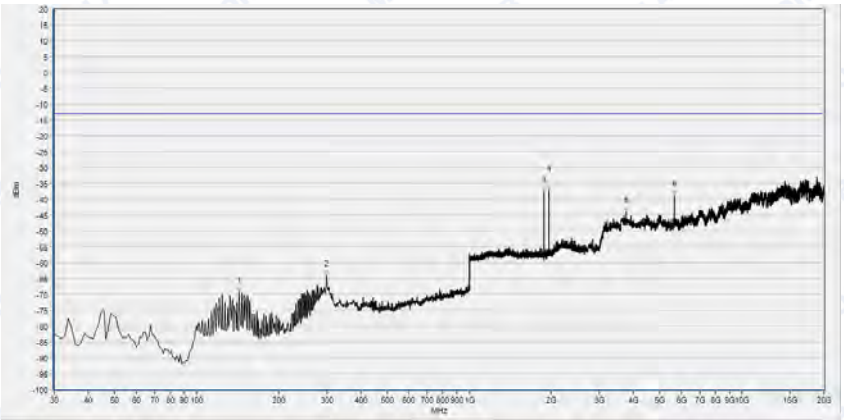
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

Test Plots for the Whole Measurement Frequency Range:

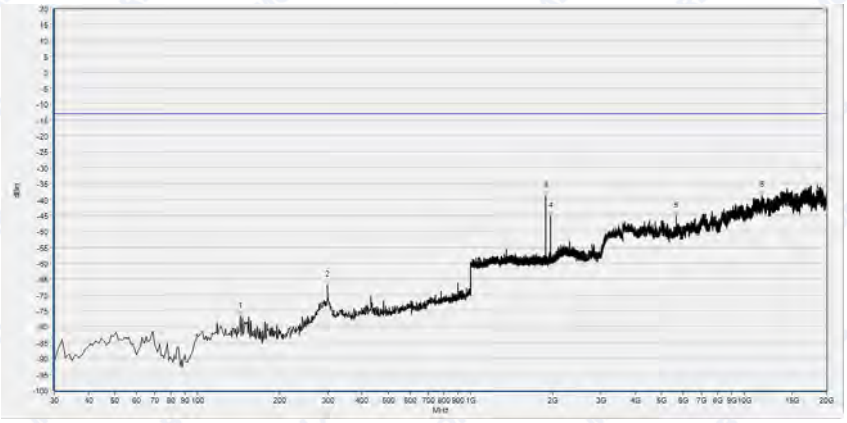
Note1: the power of the EUT transmitting frequency should be ignored.

Note2: All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

LTE Band 2 1.4MHz BW, Mid Channel, QPSK

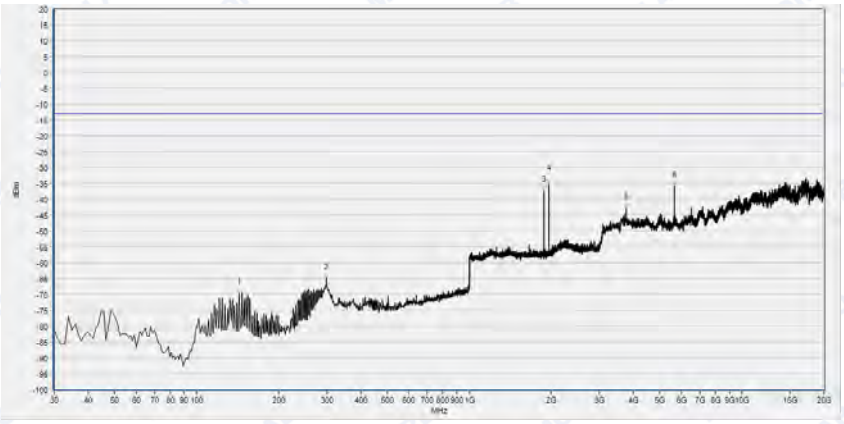


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	143.490	-69.31	-13.00	Horizontal	PASS
2	299.660	-64.16	-13.00	Horizontal	PASS
3	1880.352	-37.57	-13.00	Horizontal	N.A
4	1960.384	-37.10	-13.00	Horizontal	N.A
5	3761.266	-44.13	-13.00	Horizontal	PASS
6	5640.807	-38.75	-13.00	Horizontal	PASS

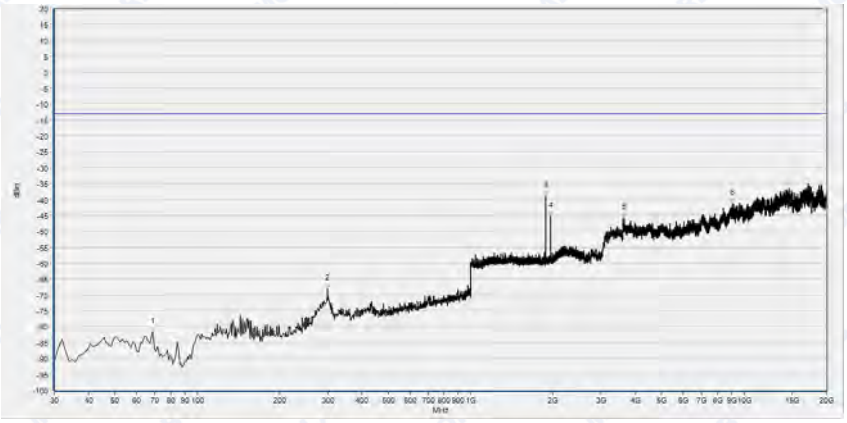


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	143.490	-76.83	-13.00	Vertical	PASS
2	299.660	-66.88	-13.00	Vertical	PASS
3	1880.352	-38.99	-13.00	Vertical	PASS
4	1960.384	-45.23	-13.00	Vertical	PASS
5	5640.807	-45.34	-13.00	Vertical	PASS
6	11602.182	-38.84	-13.00	Vertical	PASS

LTE Band 2 1.4MHz BW, Mid Channel, 16QAM

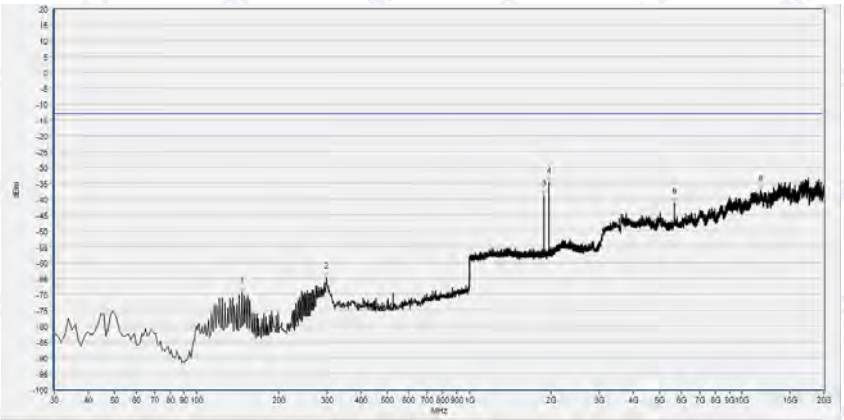


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	143.490	-69.71	-13.00	Horizontal	PASS
2	299.660	-64.94	-13.00	Horizontal	PASS
3	1880.352	-37.42	-13.00	Horizontal	N.A
4	1960.384	-35.16	-13.00	Horizontal	N.A
5	3761.266	-42.87	-13.00	Horizontal	PASS
6	5640.807	-35.96	-13.00	Horizontal	PASS

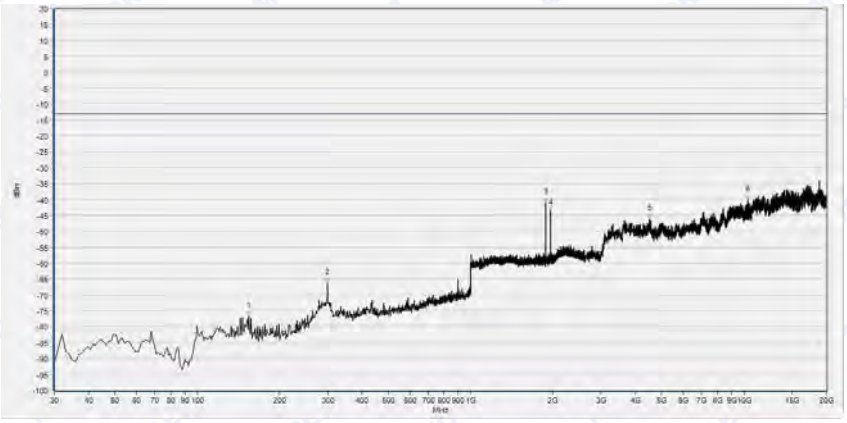


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	68.800	-81.68	-13.00	Vertical	PASS
2	299.660	-68.01	-13.00	Vertical	PASS
3	1880.352	-39.00	-13.00	Vertical	PASS
4	1961.024	-45.24	-13.00	Vertical	PASS
5	3641.026	-45.69	-13.00	Vertical	PASS
6	9036.007	-41.30	-13.00	Vertical	PASS

LTE Band 2 3MHz BW, Mid Channel, QPSK

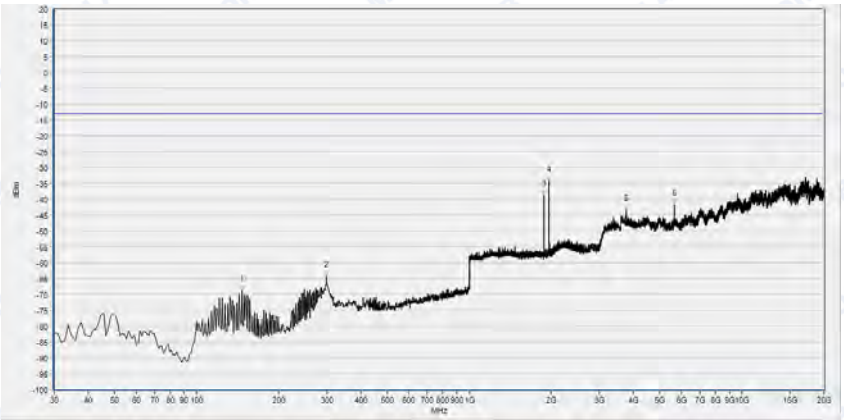


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	146.400	-69.40	-13.00	Horizontal	PASS
2	299.660	-64.67	-13.00	Horizontal	PASS
3	1879.712	-38.74	-13.00	Horizontal	N.A
4	1961.024	-34.86	-13.00	Horizontal	N.A
5	5640.807	-41.18	-13.00	Horizontal	PASS
6	11725.586	-37.06	-13.00	Horizontal	PASS

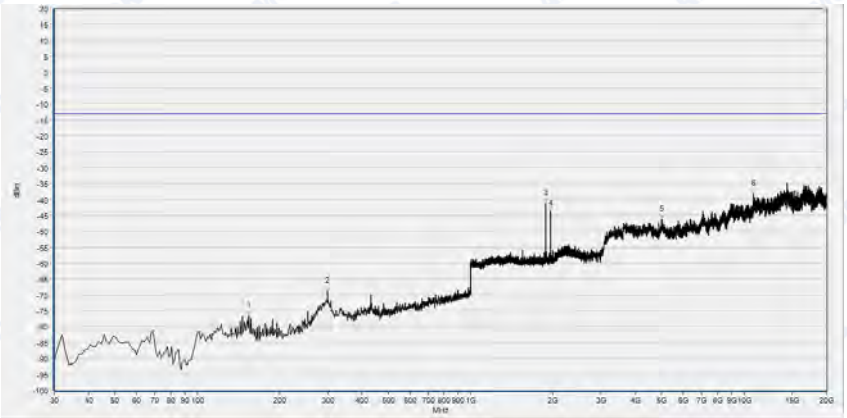


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	154.160	-76.77	-13.00	Vertical	PASS
2	299.660	-66.19	-13.00	Vertical	PASS
3	1880.352	-40.92	-13.00	Vertical	PASS
4	1959.104	-43.52	-13.00	Vertical	PASS
5	4504.855	-46.15	-13.00	Vertical	PASS
6	10295.363	-40.17	-13.00	Vertical	PASS

LTE Band 2 3MHz BW, Mid Channel, 16QAM

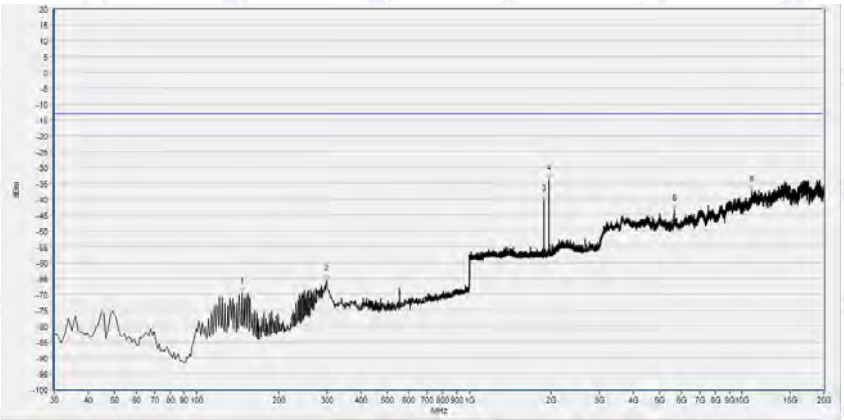


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	146.400	-68.85	-13.00	Horizontal	PASS
2	299.660	-64.31	-13.00	Horizontal	PASS
3	1879.712	-38.91	-13.00	Horizontal	N.A
4	1959.744	-34.24	-13.00	Horizontal	N.A
5	3761.266	-43.42	-13.00	Horizontal	PASS
6	5640.807	-41.70	-13.00	Horizontal	PASS

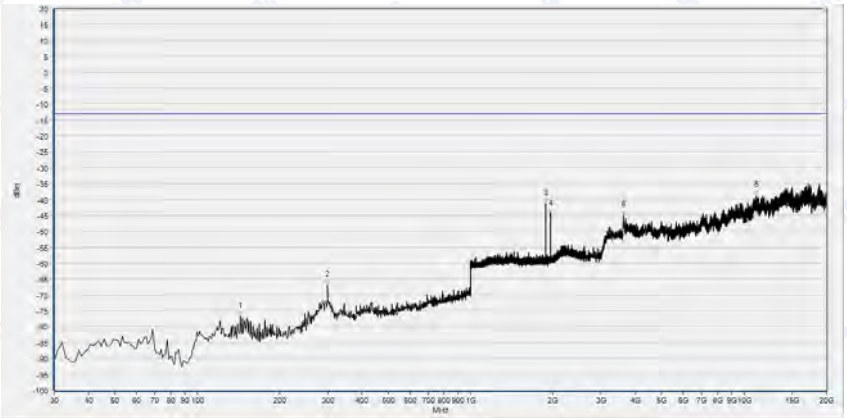


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	154.160	-76.65	-13.00	Vertical	PASS
2	299.660	-68.90	-13.00	Vertical	PASS
3	1879.072	-41.29	-13.00	Vertical	PASS
4	1961.024	-43.38	-13.00	Vertical	PASS
5	4982.651	-46.31	-13.00	Vertical	PASS
6	10826.950	-38.43	-13.00	Vertical	PASS

LTE Band 2 5MHz BW, Mid Channel, QPSK

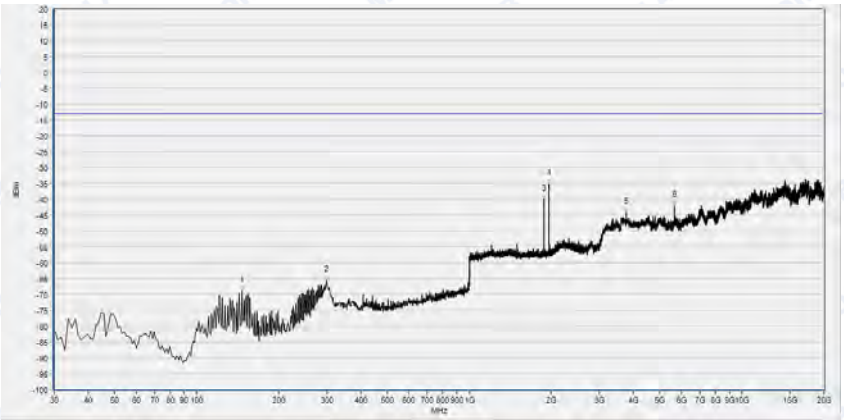


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	146.400	-69.62	-13.00	Horizontal	PASS
2	299.660	-65.52	-13.00	Horizontal	PASS
3	1879.712	-40.16	-13.00	Horizontal	N.A
4	1961.665	-33.85	-13.00	Horizontal	N.A
5	5640.807	-43.31	-13.00	Horizontal	PASS
6	10830.115	-37.27	-13.00	Horizontal	PASS

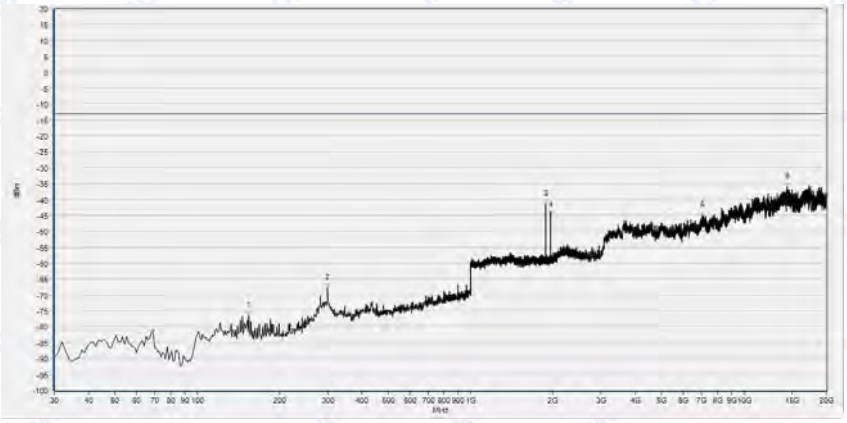


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	143.490	-76.72	-13.00	Vertical	PASS
2	299.660	-66.98	-13.00	Vertical	PASS
3	1879.712	-41.32	-13.00	Vertical	PASS
4	1959.104	-44.47	-13.00	Vertical	PASS
5	3615.712	-45.12	-13.00	Vertical	PASS
6	11080.087	-38.80	-13.00	Vertical	PASS

LTE Band 2 5MHz BW, Mid Channel, 16QAM

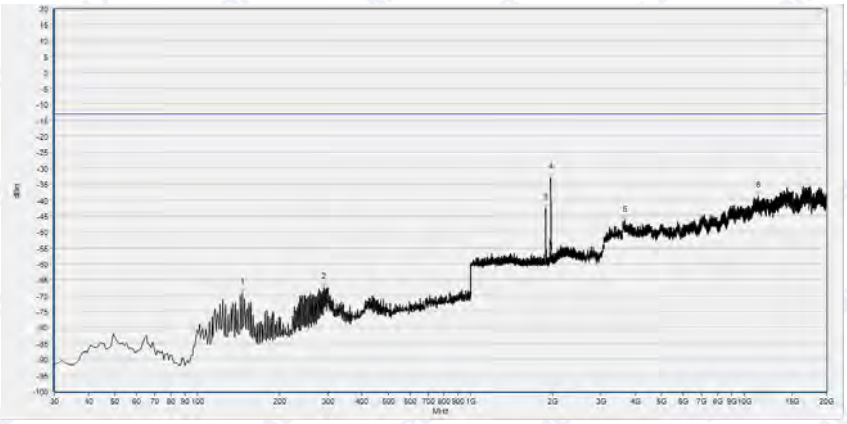


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	146.400	-69.16	-13.00	Horizontal	PASS
2	299.660	-65.72	-13.00	Horizontal	PASS
3	1879.712	-40.13	-13.00	Horizontal	N.A
4	1962.305	-35.16	-13.00	Horizontal	N.A
5	3758.101	-44.27	-13.00	Horizontal	PASS
6	5643.972	-42.24	-13.00	Horizontal	PASS

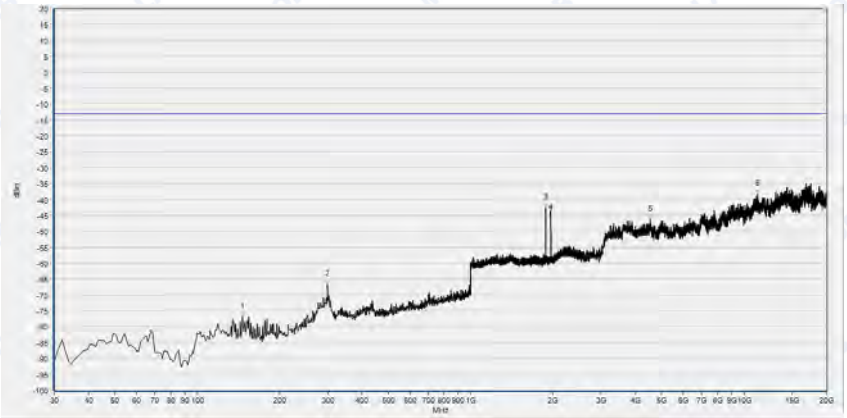


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	154.160	-76.55	-13.00	Vertical	PASS
2	299.660	-67.91	-13.00	Vertical	PASS
3	1879.712	-41.35	-13.00	Vertical	PASS
4	1960.384	-45.06	-13.00	Vertical	PASS
5	7036.225	-44.93	-13.00	Vertical	PASS
6	14355.046	-36.09	-13.00	Vertical	PASS

LTE Band 2 10MHz BW, Mid Channel, QPSK

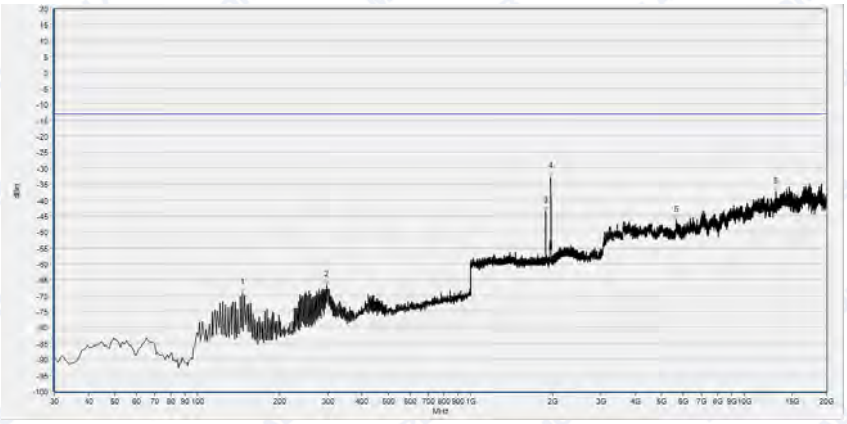


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	146.400	-69.21	-13.00	Horizontal	PASS
2	289.960	-67.40	-13.00	Horizontal	PASS
3	1876.511	-42.63	-13.00	Horizontal	PASS
4	1959.744	-32.96	-13.00	Horizontal	PASS
5	3669.504	-46.41	-13.00	Horizontal	PASS
6	11257.283	-38.69	-13.00	Horizontal	PASS

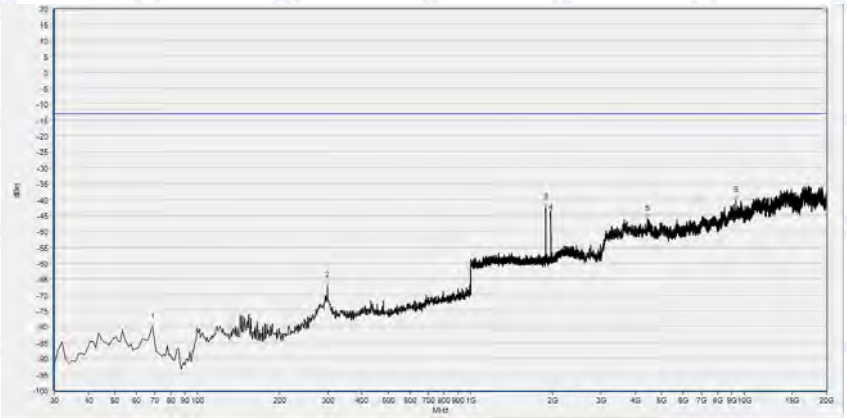


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	146.400	-76.91	-13.00	Vertical	PASS
2	299.660	-66.72	-13.00	Vertical	PASS
3	1877.791	-42.64	-13.00	Vertical	PASS
4	1958.463	-43.32	-13.00	Vertical	PASS
5	4539.662	-46.47	-13.00	Vertical	PASS
6	11219.313	-38.39	-13.00	Vertical	PASS

LTE Band 2 10MHz BW, Mid Channel, 16QAM

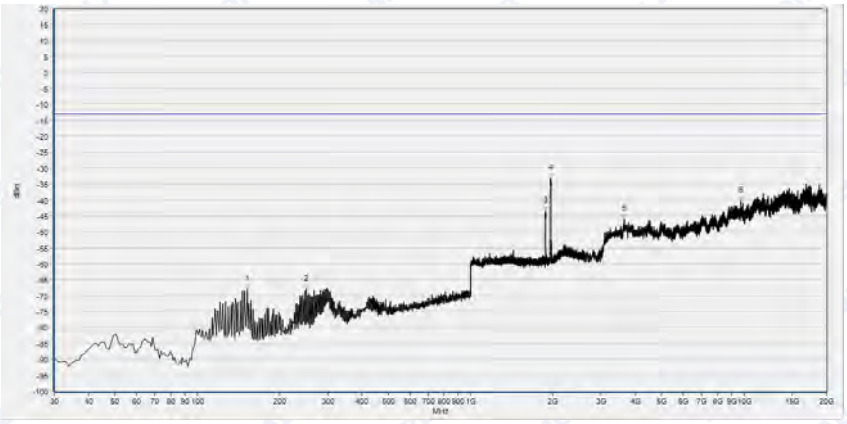


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	146.400	-69.20	-13.00	Horizontal	PASS
2	297.720	-66.69	-13.00	Horizontal	PASS
3	1877.151	-43.43	-13.00	Horizontal	PASS
4	1959.744	-32.77	-13.00	Horizontal	PASS
5	5640.807	-46.44	-13.00	Horizontal	PASS
6	13060.884	-37.54	-13.00	Horizontal	PASS

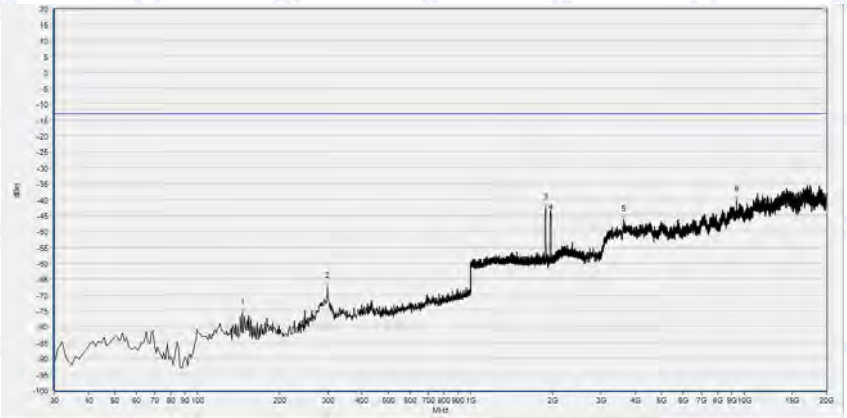


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	68.800	-80.02	-13.00	Vertical	PASS
2	299.660	-67.24	-13.00	Vertical	PASS
3	1879.712	-42.64	-13.00	Vertical	PASS
4	1957.183	-43.83	-13.00	Vertical	PASS
5	4425.750	-46.17	-13.00	Vertical	PASS
6	9317.621	-40.28	-13.00	Vertical	PASS

LTE Band 2 15MHz BW, Mid Channel, QPSK

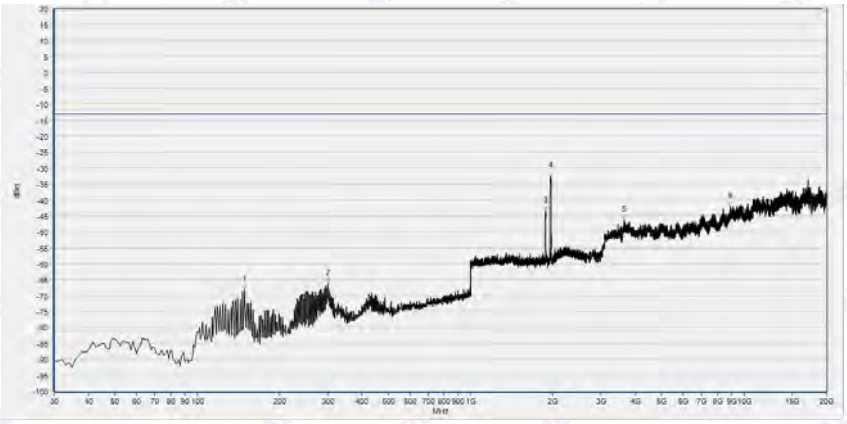


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	152.220	-68.10	-13.00	Horizontal	PASS
2	251.160	-67.95	-13.00	Horizontal	PASS
3	1877.151	-43.44	-13.00	Horizontal	PASS
4	1964.226	-33.20	-13.00	Horizontal	PASS
5	3644.190	-46.09	-13.00	Horizontal	PASS
6	9747.954	-40.43	-13.00	Horizontal	PASS

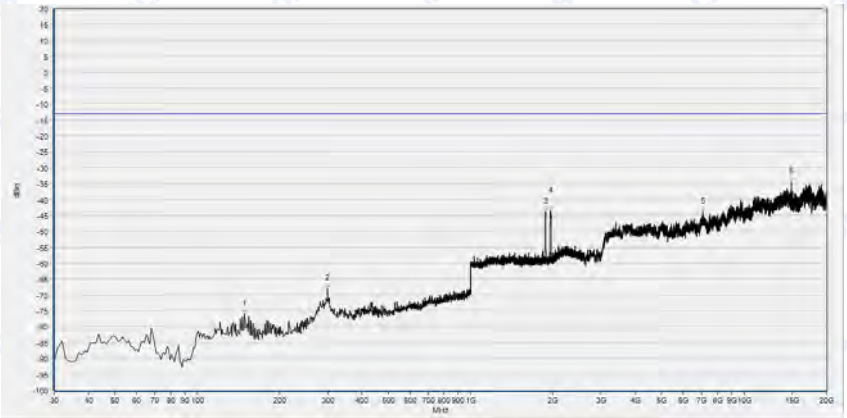


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	146.400	-75.66	-13.00	Vertical	PASS
2	299.660	-67.41	-13.00	Vertical	PASS
3	1878.431	-42.63	-13.00	Vertical	PASS
4	1953.982	-43.26	-13.00	Vertical	PASS
5	3631.533	-46.46	-13.00	Vertical	PASS
6	9371.413	-40.19	-13.00	Vertical	PASS

LTE Band 2 15MHz BW, Mid Channel, 16QAM

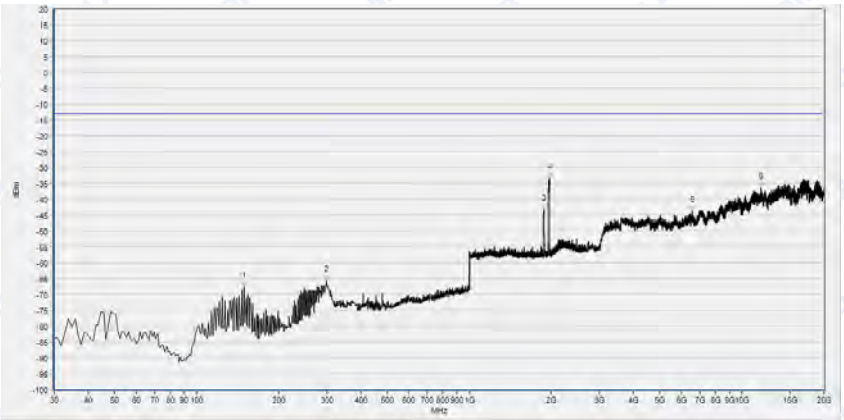


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	149.310	-68.36	-13.00	Horizontal	PASS
2	300.630	-66.27	-13.00	Horizontal	PASS
3	1875.870	-43.45	-13.00	Horizontal	PASS
4	1964.866	-32.54	-13.00	Horizontal	PASS
5	3647.354	-46.35	-13.00	Horizontal	PASS
6	8912.602	-42.14	-13.00	Horizontal	PASS

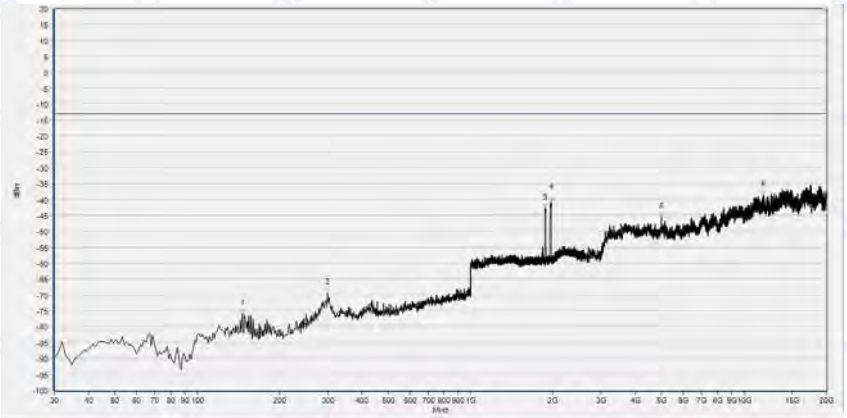


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	149.310	-76.14	-13.00	Vertical	PASS
2	299.660	-67.99	-13.00	Vertical	PASS
3	1875.230	-43.91	-13.00	Vertical	PASS
4	1956.543	-43.39	-13.00	Vertical	PASS
5	7074.195	-43.83	-13.00	Vertical	PASS
6	14848.663	-34.42	-13.00	Vertical	PASS

LTE Band 2 20MHz BW, Mid Channel, QPSK

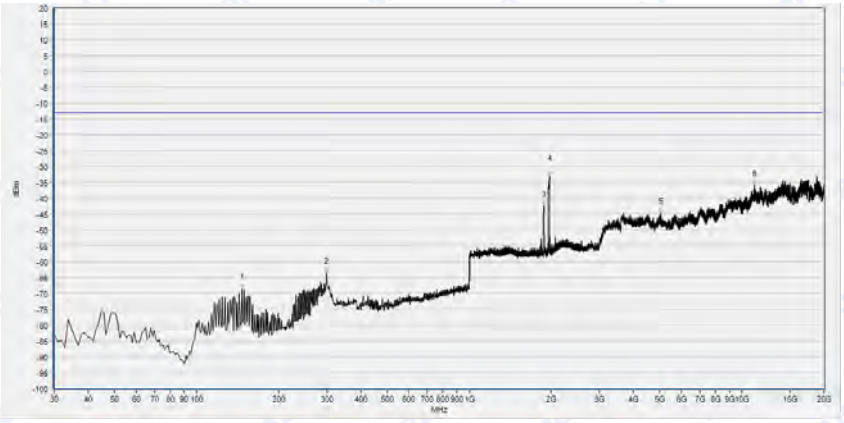


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	149.310	-67.59	-13.00	Horizontal	PASS
2	299.660	-65.74	-13.00	Horizontal	PASS
3	1874.590	-43.33	-13.00	Horizontal	N.A
4	1968.707	-33.37	-13.00	Horizontal	N.A
5	6555.265	-43.89	-13.00	Horizontal	PASS
6	11719.258	-36.47	-13.00	Horizontal	PASS

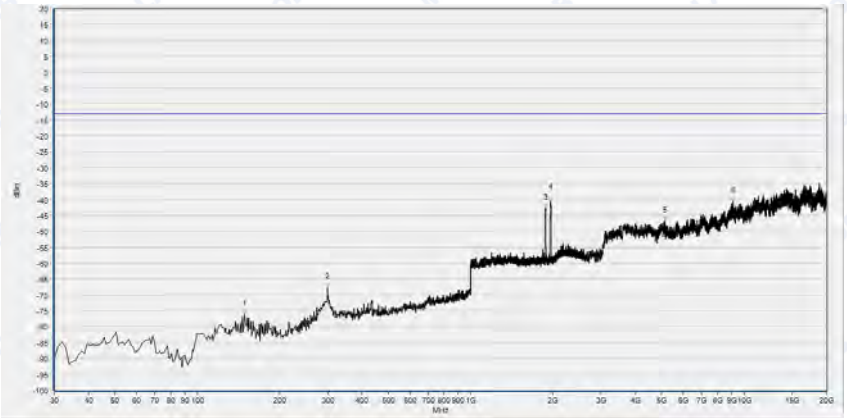


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	146.400	-75.97	-13.00	Vertical	PASS
2	299.660	-69.36	-13.00	Vertical	PASS
3	1873.950	-42.83	-13.00	Vertical	PASS
4	1966.787	-40.88	-13.00	Vertical	PASS
5	4995.308	-45.52	-13.00	Vertical	PASS
6	11735.079	-38.60	-13.00	Vertical	PASS

LTE Band 2 20MHz BW, Mid Channel, 16QAM

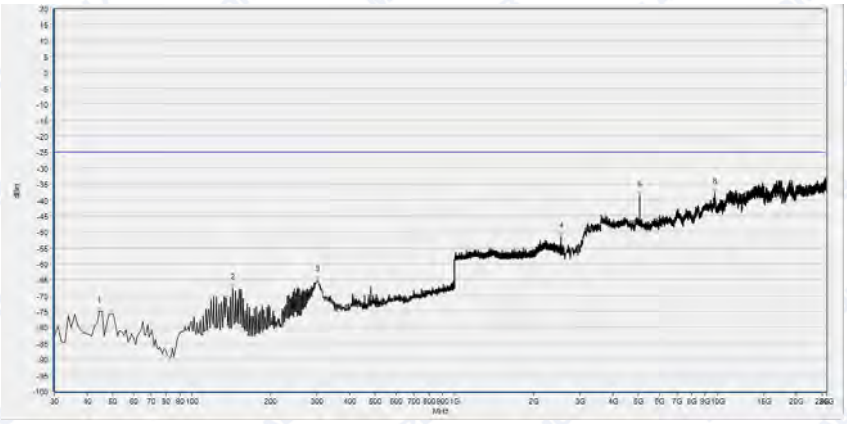


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	146.400	-68.64	-13.00	Horizontal	PASS
2	299.660	-63.46	-13.00	Horizontal	PASS
3	1877.791	-42.36	-13.00	Horizontal	N.A
4	1967.427	-33.18	-13.00	Horizontal	N.A
5	5036.443	-44.83	-13.00	Horizontal	PASS
6	11095.908	-36.00	-13.00	Horizontal	PASS

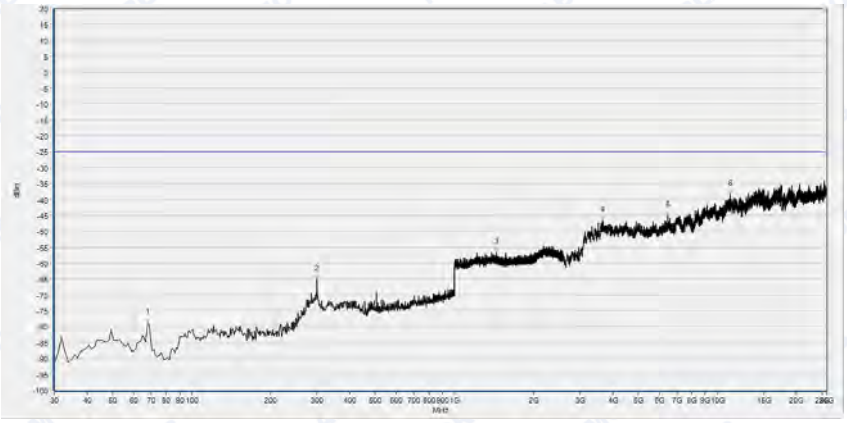


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	149.310	-76.10	-13.00	Vertical	PASS
2	299.660	-67.55	-13.00	Vertical	PASS
3	1875.870	-42.76	-13.00	Vertical	PASS
4	1961.665	-40.66	-13.00	Vertical	PASS
5	5125.041	-46.75	-13.00	Vertical	PASS
6	9137.261	-40.52	-13.00	Vertical	PASS

LTE Band 7 5MHz BW, Mid Channel, QPSK

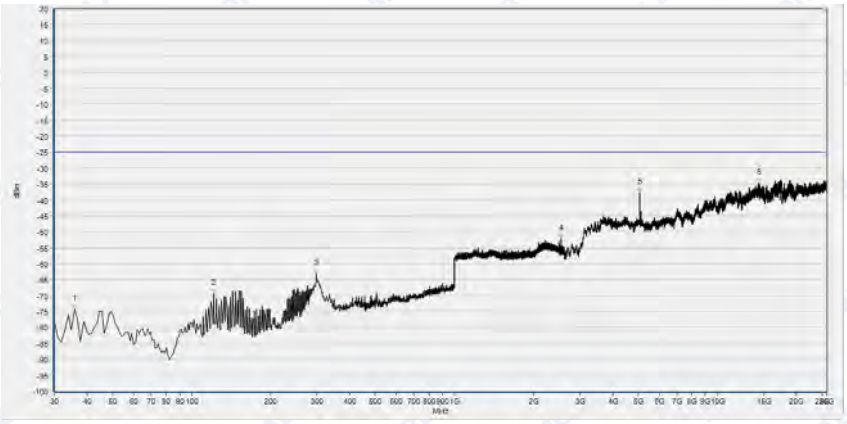


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	44.550	-74.99	-25.00	Horizontal	PASS
2	143.490	-67.71	-25.00	Horizontal	PASS
3	300.630	-65.07	-25.00	Horizontal	PASS
4	2537.255	-51.60	-25.00	Horizontal	N.A
5	5068.085	-38.57	-25.00	Horizontal	PASS
6	9770.213	-37.64	-25.00	Horizontal	PASS

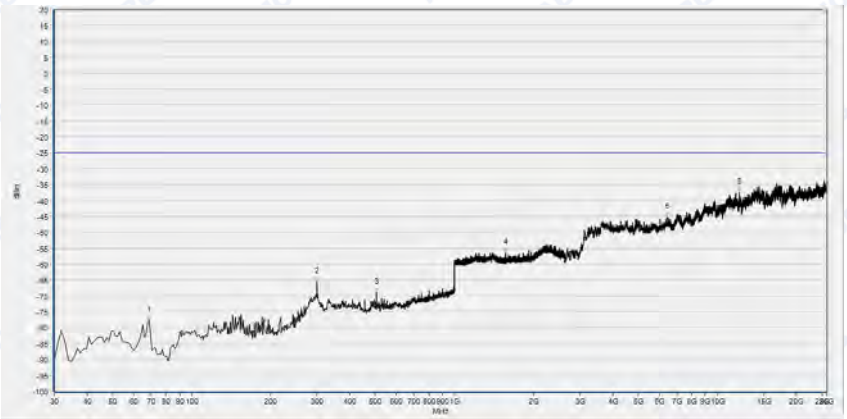


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	67.830	-78.81	-25.00	Vertical	PASS
2	299.660	-65.20	-25.00	Vertical	PASS
3	1441.136	-56.73	-25.00	Vertical	PASS
4	3651.064	-46.59	-25.00	Vertical	PASS
5	6463.830	-45.12	-25.00	Vertical	PASS
6	11174.468	-38.43	-25.00	Vertical	PASS

LTE Band 7 5MHz BW, Mid Channel, 16QAM

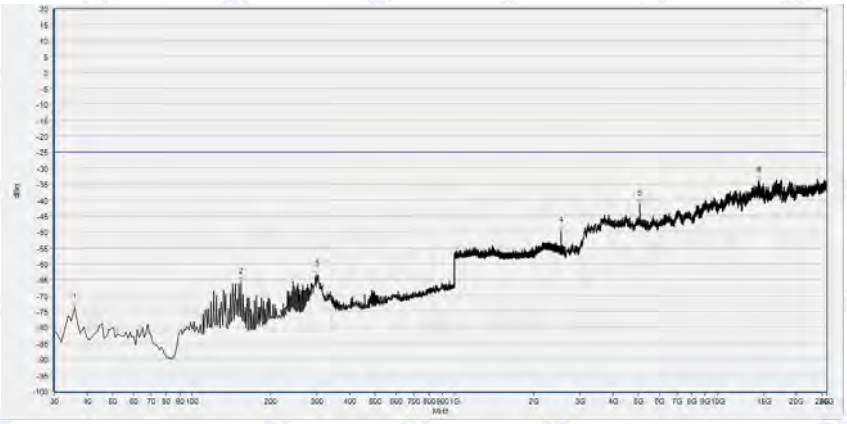


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	35.820	-74.39	-25.00	Horizontal	PASS
2	121.180	-69.48	-25.00	Horizontal	PASS
3	297.720	-63.02	-25.00	Horizontal	PASS
4	2537.255	-52.21	-25.00	Horizontal	N.A
5	5072.340	-37.63	-25.00	Horizontal	PASS
6	14370.213	-34.77	-25.00	Horizontal	PASS

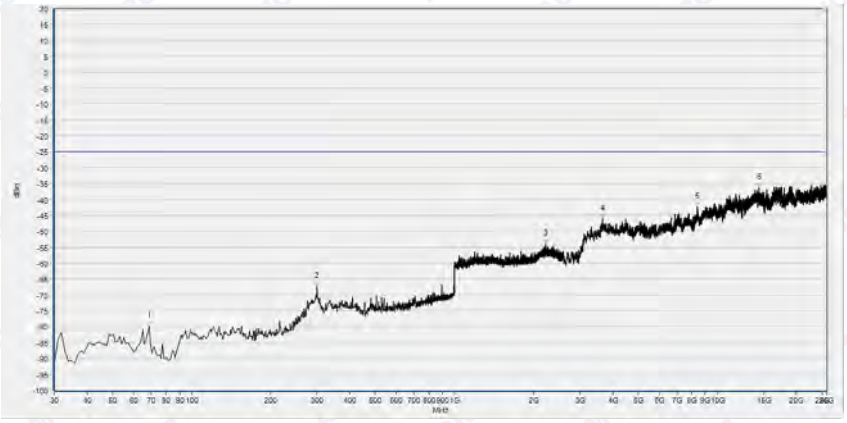


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	68.800	-77.70	-25.00	Vertical	PASS
2	299.660	-65.51	-25.00	Vertical	PASS
3	504.330	-68.89	-25.00	Vertical	PASS
4	1563.425	-56.46	-25.00	Vertical	PASS
5	6438.298	-45.29	-25.00	Vertical	PASS
6	12136.170	-37.54	-25.00	Vertical	PASS

LTE Band 7 10MHz BW, Mid Channel, QPSK

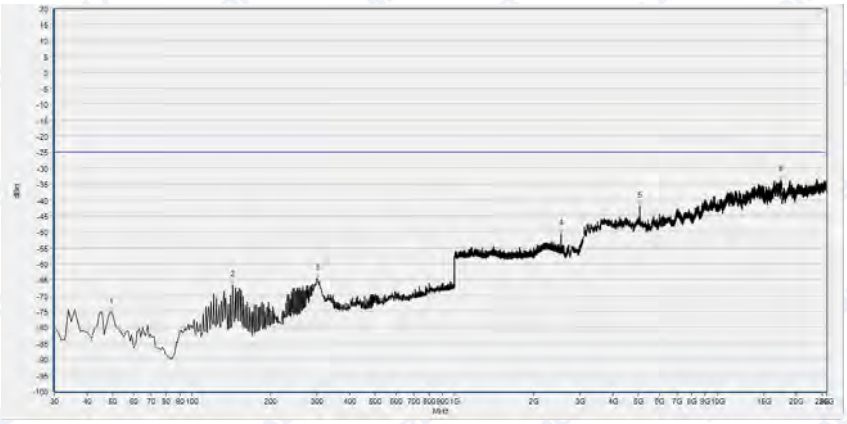


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	35.820	-73.74	-25.00	Horizontal	PASS
2	154.160	-65.87	-25.00	Horizontal	PASS
3	299.660	-63.67	-25.00	Horizontal	PASS
4	2539.816	-49.64	-25.00	Horizontal	N.A
5	5072.340	-41.19	-25.00	Horizontal	PASS
6	14370.213	-34.09	-25.00	Horizontal	PASS

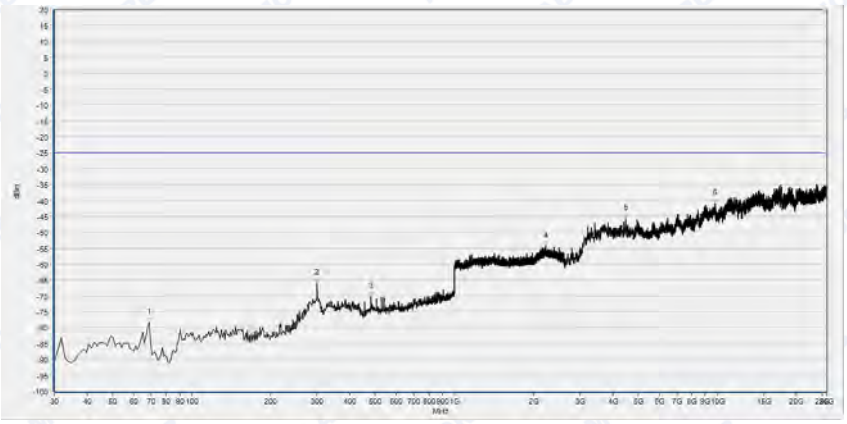


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	68.800	-79.86	-25.00	Vertical	PASS
2	299.660	-67.31	-25.00	Vertical	PASS
3	2225.450	-53.97	-25.00	Vertical	PASS
4	3659.574	-46.21	-25.00	Vertical	PASS
5	8395.745	-42.27	-25.00	Vertical	PASS
6	14442.553	-36.42	-25.00	Vertical	PASS

LTE Band 7 10MHz BW, Mid Channel, 16QAM

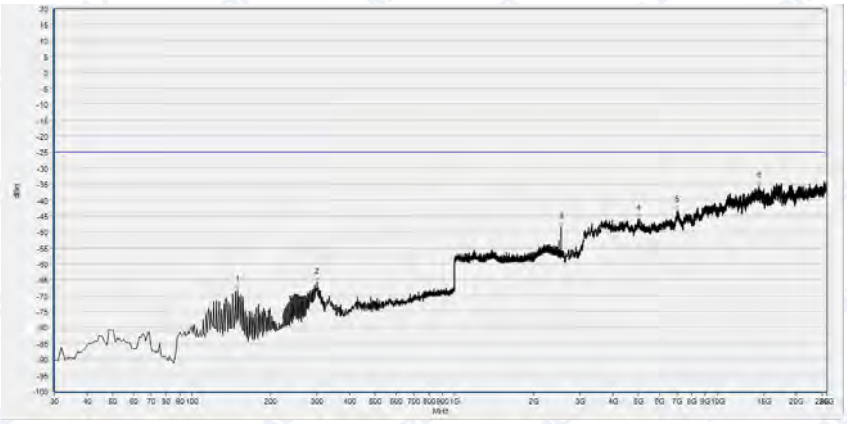


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	49.400	-75.19	-25.00	Horizontal	PASS
2	143.490	-66.79	-25.00	Horizontal	PASS
3	300.630	-64.61	-25.00	Horizontal	PASS
4	2539.176	-50.72	-25.00	Horizontal	N.A
5	5068.085	-41.88	-25.00	Horizontal	PASS
6	17459.574	-33.62	-25.00	Horizontal	PASS

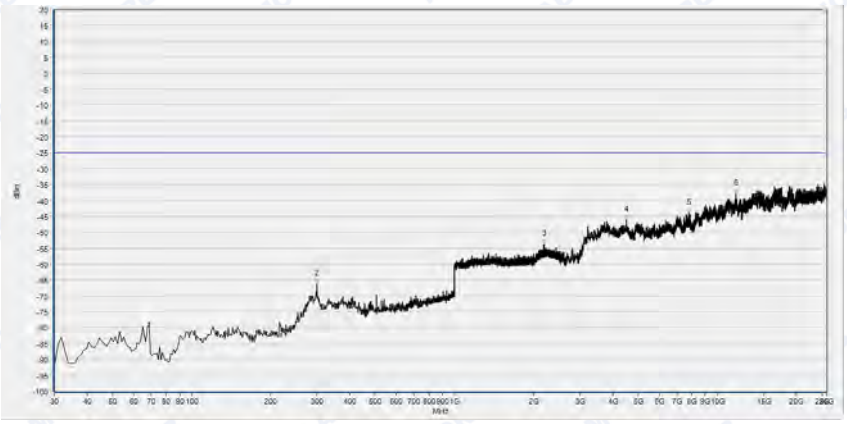


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	68.800	-78.21	-25.00	Vertical	PASS
2	299.660	-66.00	-25.00	Vertical	PASS
3	480.080	-70.19	-25.00	Vertical	PASS
4	2220.968	-54.33	-25.00	Vertical	PASS
5	4476.596	-45.79	-25.00	Vertical	PASS
6	9808.511	-41.06	-25.00	Vertical	PASS

LTE Band 7 15MHz BW, Mid Channel, QPSK

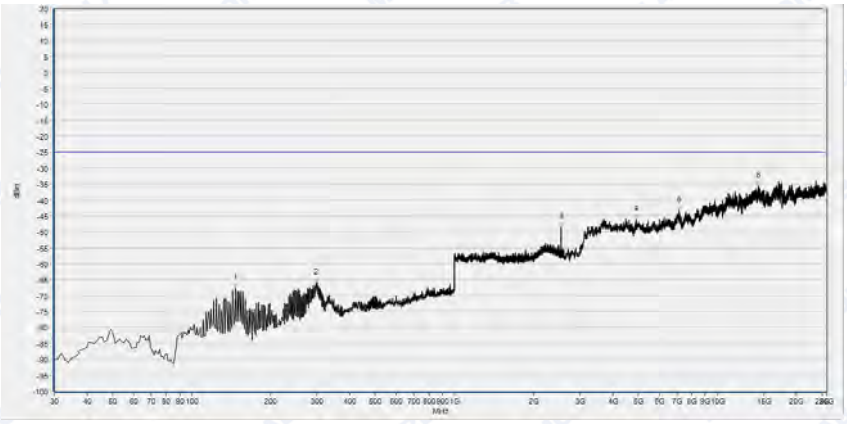


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	149.310	-68.21	-25.00	Horizontal	PASS
2	299.660	-65.76	-25.00	Horizontal	PASS
3	2541.737	-48.62	-25.00	Horizontal	PASS
4	5000.000	-45.88	-25.00	Horizontal	PASS
5	7000.000	-43.21	-25.00	Horizontal	PASS
6	14438.298	-35.53	-25.00	Horizontal	PASS

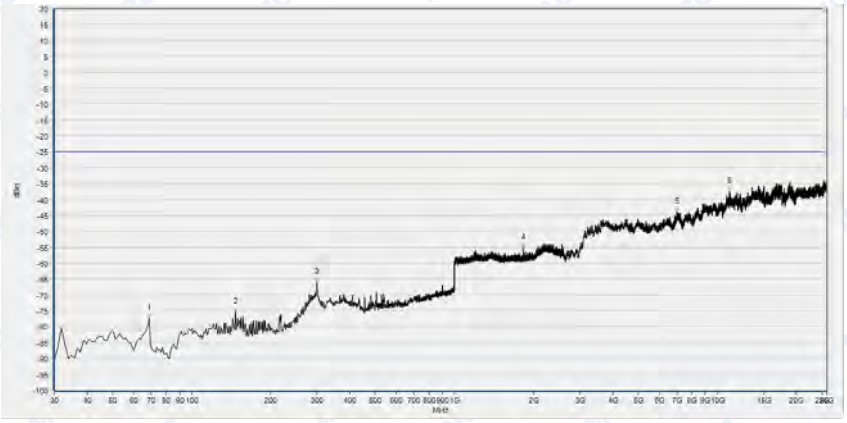


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	68.800	-79.43	-25.00	Vertical	PASS
2	299.660	-66.35	-25.00	Vertical	PASS
3	2192.797	-53.72	-25.00	Vertical	PASS
4	4519.149	-46.24	-25.00	Vertical	PASS
5	7770.213	-44.00	-25.00	Vertical	PASS
6	11736.170	-37.97	-25.00	Vertical	PASS

LTE Band 7 15MHz BW, Mid Channel, 16QAM

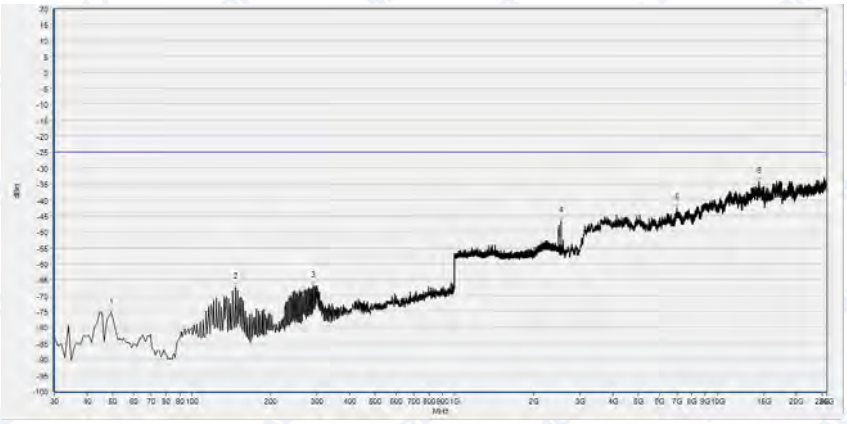


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	146.400	-67.57	-25.00	Horizontal	PASS
2	297.720	-65.93	-25.00	Horizontal	PASS
3	2541.096	-48.67	-25.00	Horizontal	PASS
4	4914.894	-46.14	-25.00	Horizontal	PASS
5	7165.957	-43.22	-25.00	Horizontal	PASS
6	14285.106	-35.68	-25.00	Horizontal	PASS

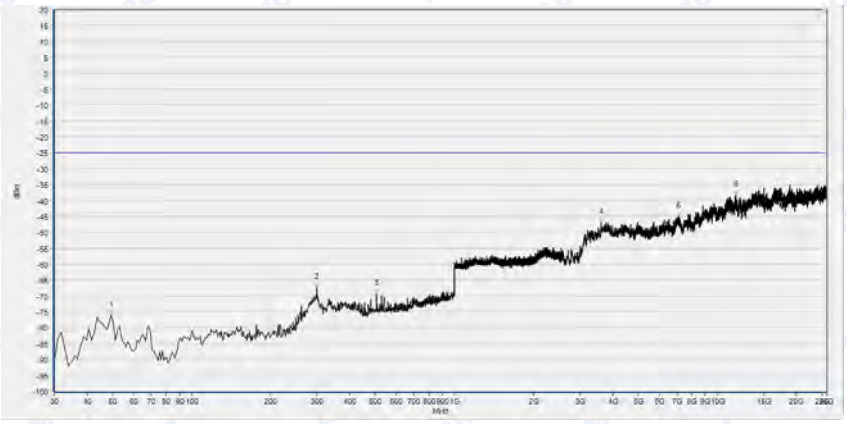


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	68.800	-77.46	-25.00	Vertical	PASS
2	146.400	-75.36	-25.00	Vertical	PASS
3	299.660	-66.14	-25.00	Vertical	PASS
4	1829.772	-55.20	-25.00	Vertical	PASS
5	7012.766	-43.83	-25.00	Vertical	PASS
6	11157.447	-37.41	-25.00	Vertical	PASS

LTE Band 7 20MHz BW, Mid Channel, QPSK

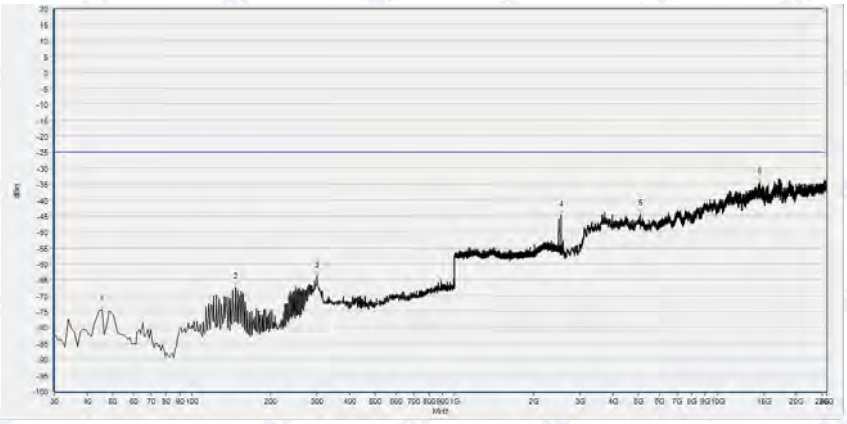


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	49.400	-75.48	-25.00	Horizontal	PASS
2	146.400	-67.39	-25.00	Horizontal	PASS
3	289.960	-66.88	-25.00	Horizontal	PASS
4	2535.657	-46.50	-25.00	Horizontal	N.A
5	7000.000	-42.67	-25.00	Horizontal	PASS
6	14434.043	-34.37	-25.00	Horizontal	PASS

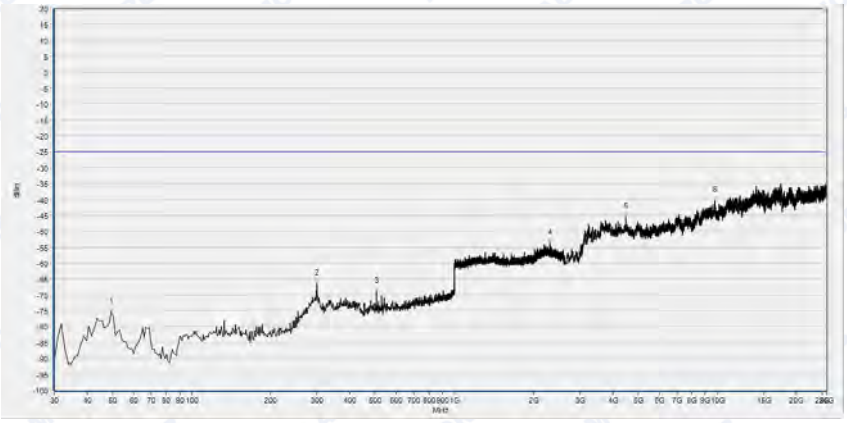


Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	49.400	-76.09	-25.00	Vertical	PASS
2	299.660	-67.47	-25.00	Vertical	PASS
3	504.330	-69.46	-25.00	Vertical	PASS
4	3608.511	-47.14	-25.00	Vertical	PASS
5	7097.872	-45.03	-25.00	Vertical	PASS
6	11753.191	-38.43	-25.00	Vertical	PASS

LTE Band 7 20MHz BW, Mid Channel, 16QAM



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	45.520	-74.60	-25.00	Horizontal	PASS
2	146.400	-67.31	-25.00	Horizontal	PASS
3	299.660	-63.85	-25.00	Horizontal	PASS
4	2535.657	-46.77	-25.00	Horizontal	N.A
5	5080.851	-44.29	-25.00	Horizontal	PASS
6	14472.340	-34.61	-25.00	Horizontal	PASS



Num	Freq(MHz)	PK	limit PK	Antenna	Verdict
1	49.400	-75.35	-25.00	Vertical	PASS
2	299.660	-66.41	-25.00	Vertical	PASS
3	504.330	-68.91	-25.00	Vertical	PASS
4	2300.360	-53.80	-25.00	Vertical	PASS
5	4489.362	-45.44	-25.00	Vertical	PASS
6	9791.489	-40.31	-25.00	Vertical	PASS

***** END OF REPORT *****