

2.6 Band Edge

2.6.1 Requirement

According to FCC section 27.53(g) (h), (g) For operations in the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

(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 $43 + 10 \log_{10}(P)$ dB.

2.6.2 Test Description

See section 2.1.2 of this report.

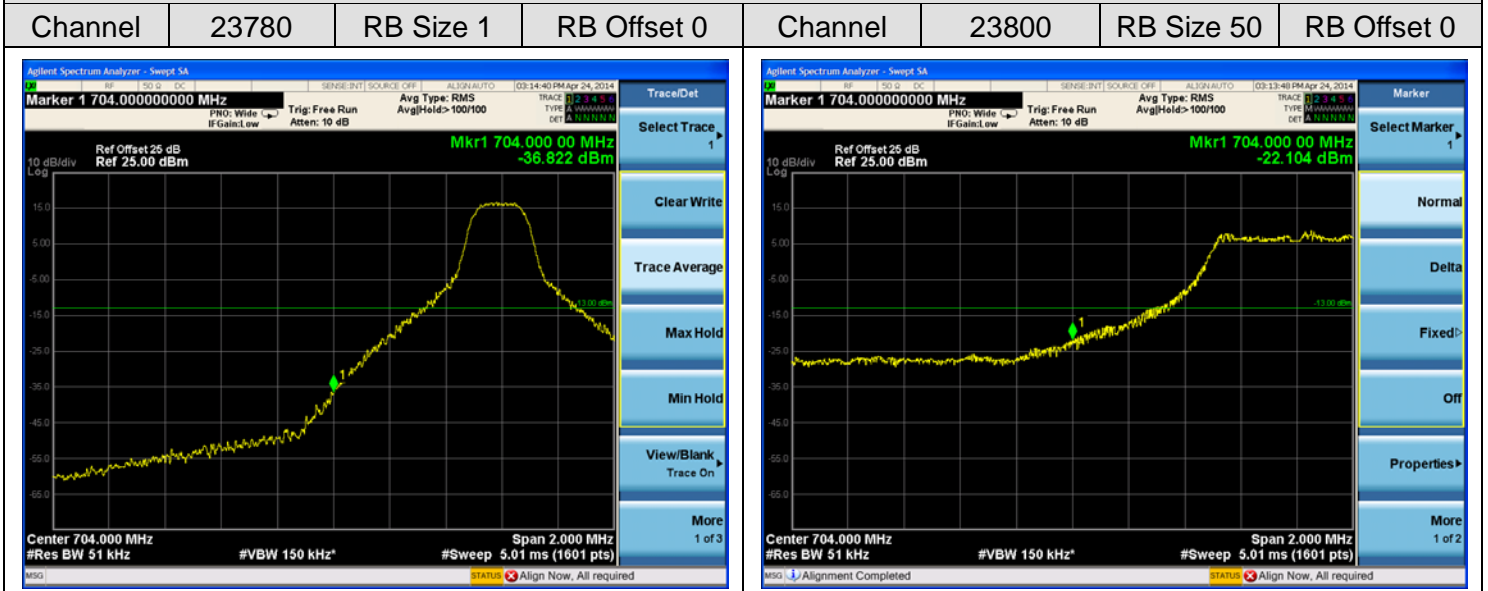
2.6.3 Test Result

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

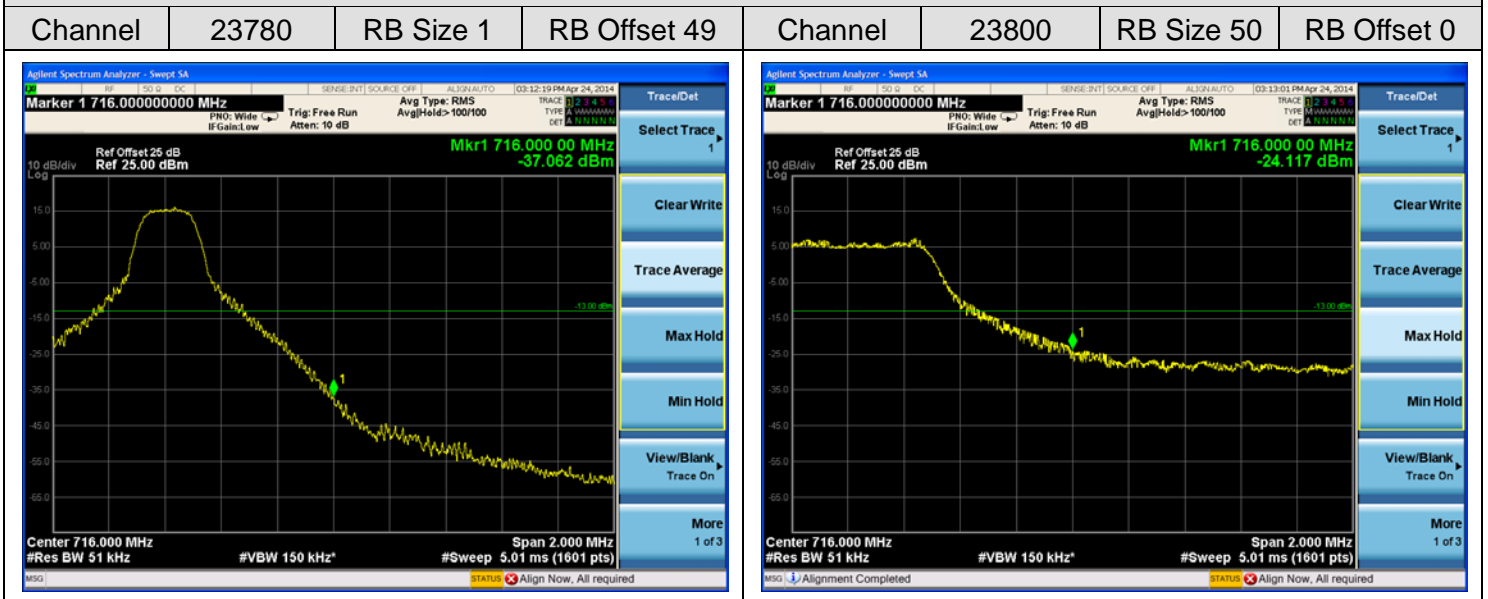
PASS. See the attached plots.



Channel Bandwidth: 10MHz



Channel Bandwidth: 10MHz

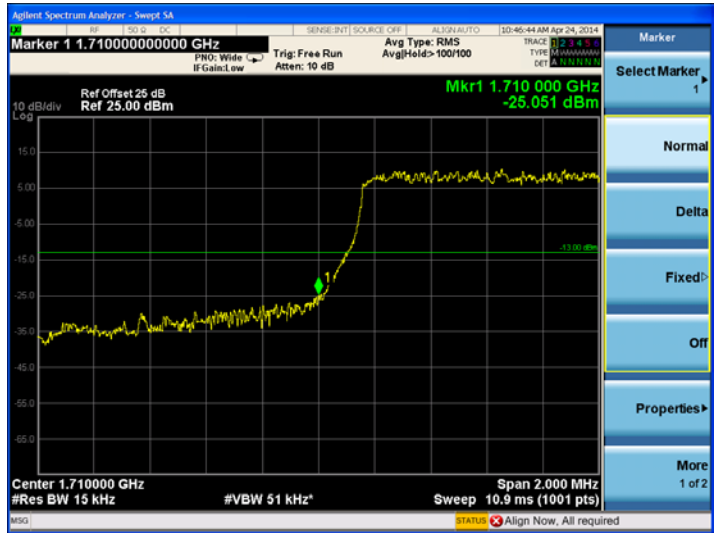




LTE Band 4:

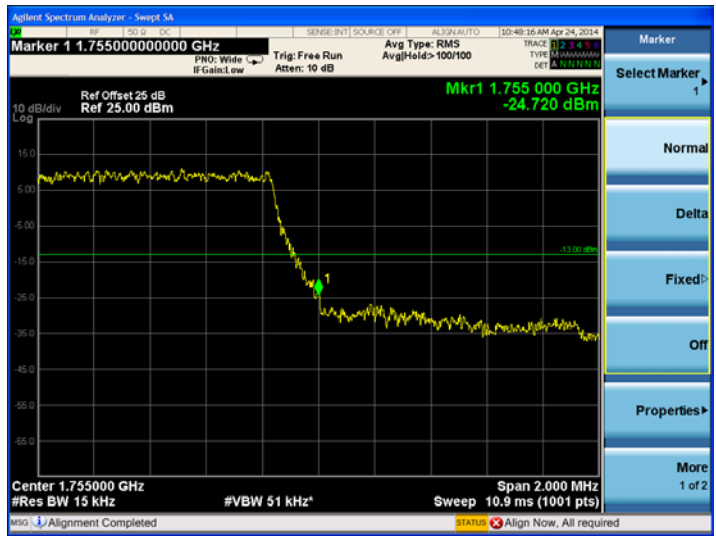
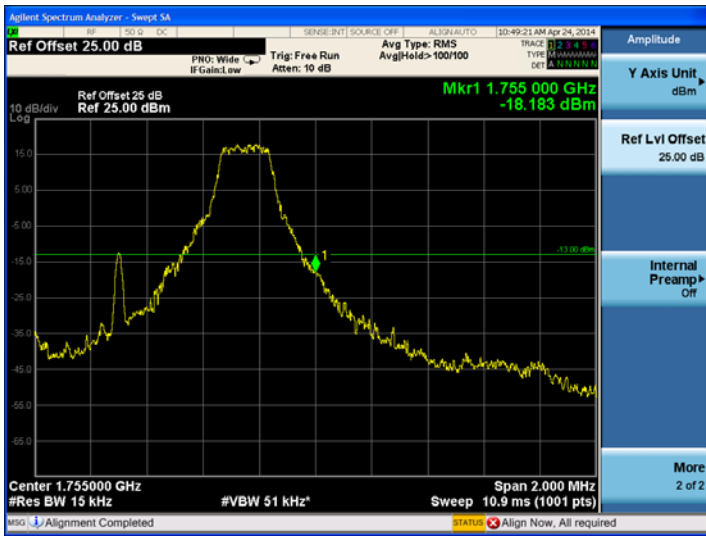
Channel Bandwidth: 1.4MHz

Channel	19957	RB Size 1	RB Offset 0	Channel	20393	RB Size 6	RB Offset 0
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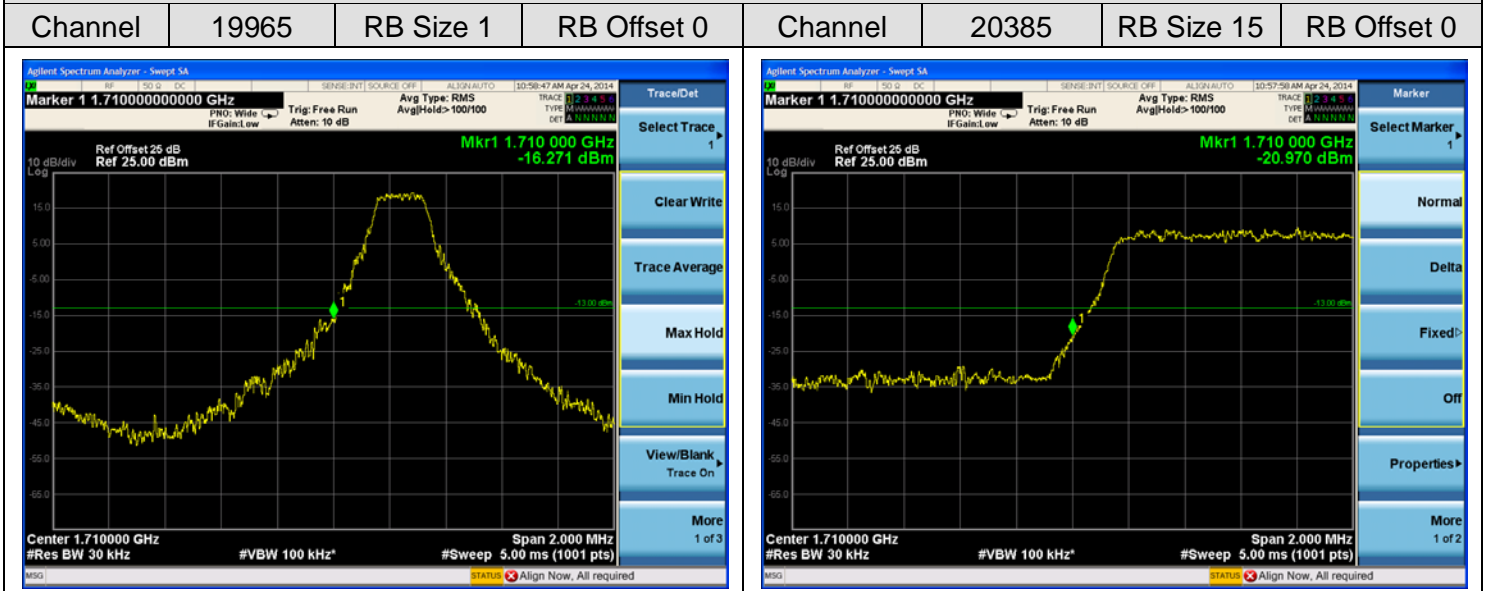
Channel Bandwidth: 1.4MHz

Channel	19957	RB Size 1	RB Offset 5	Channel	20393	RB Size 6	RB Offset 0
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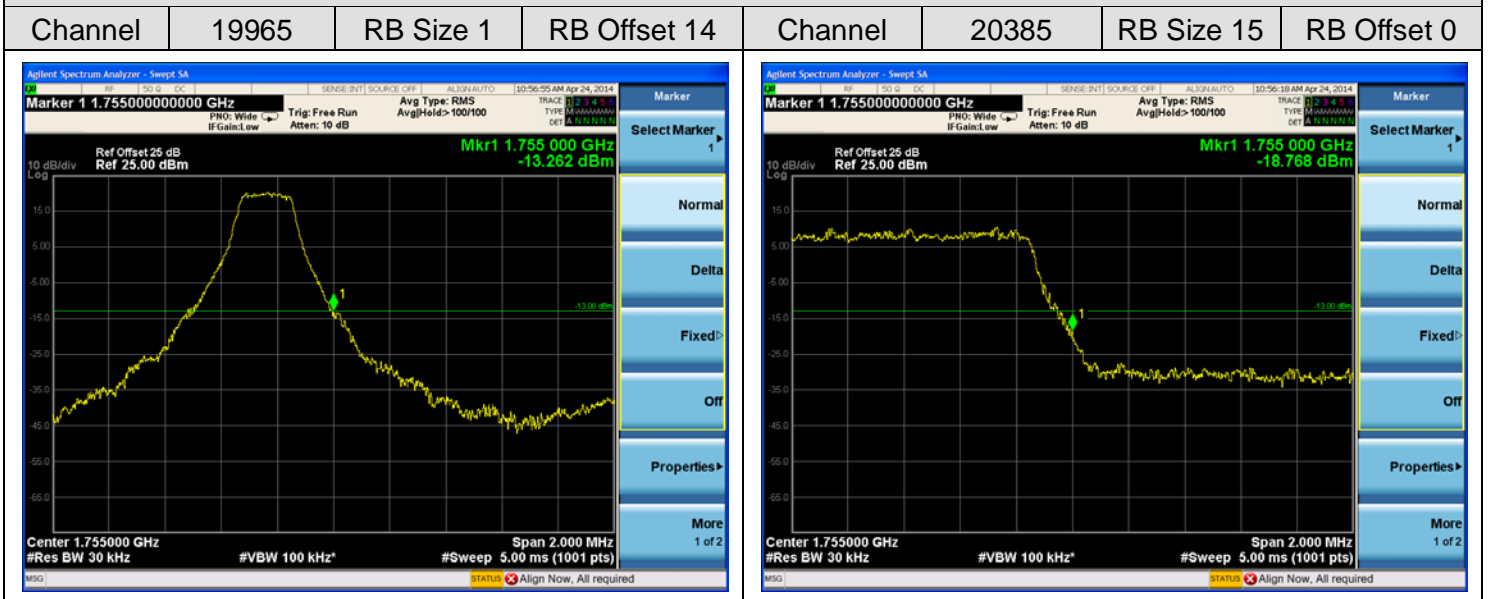




Channel Bandwidth: 3MHz

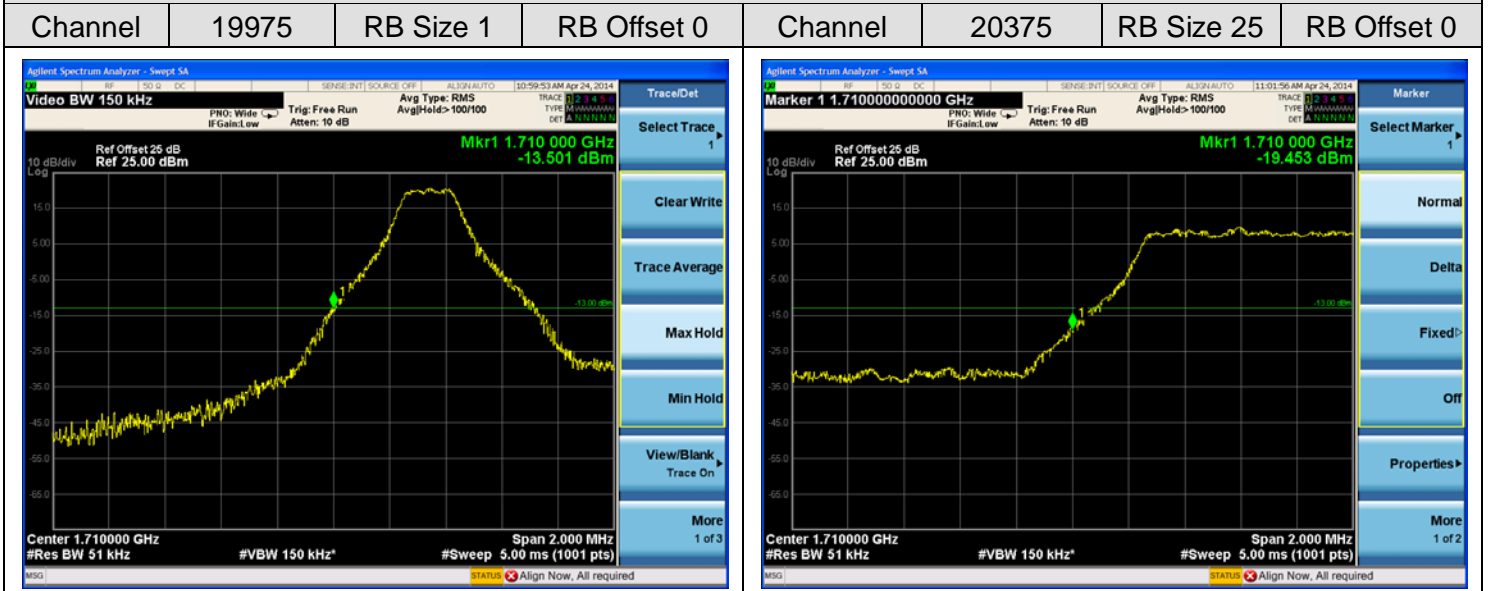


Channel Bandwidth: 3MHz

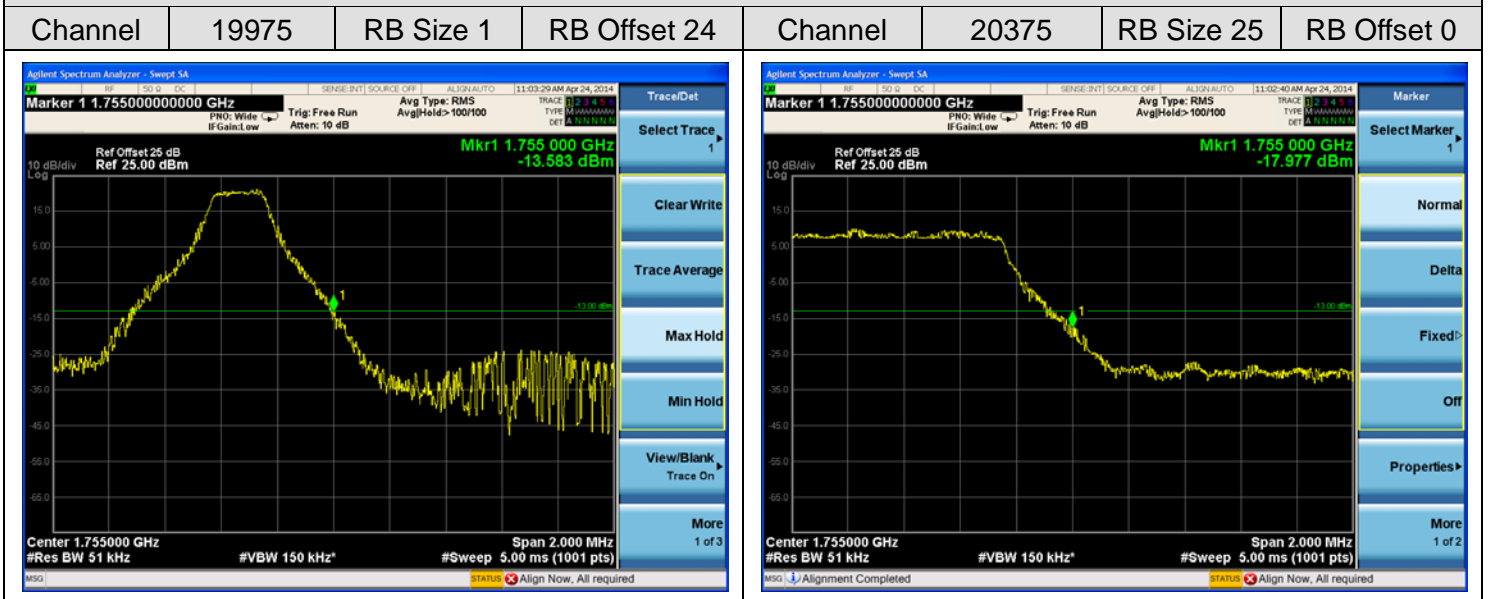




Channel Bandwidth: 5MHz



Channel Bandwidth: 5MHz

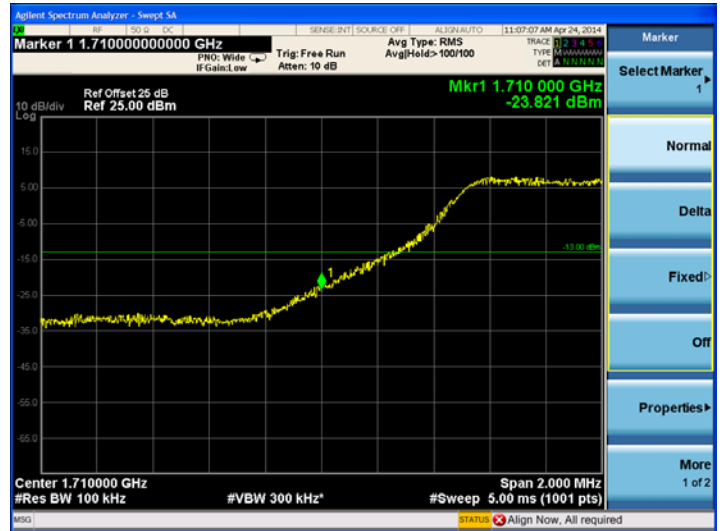
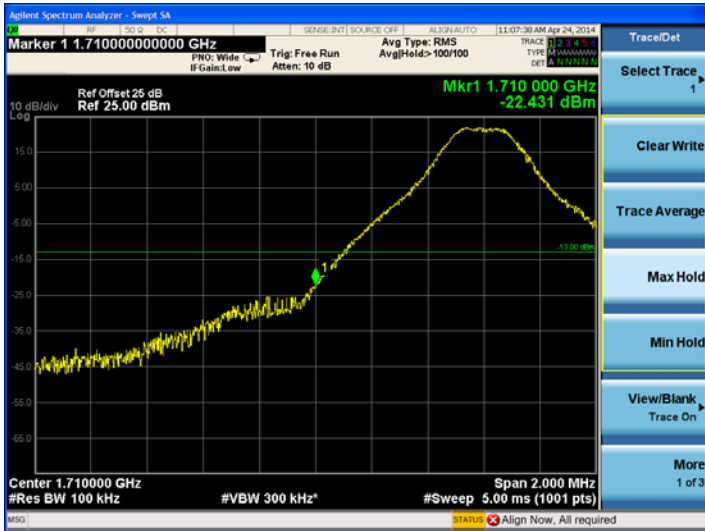




Channel Bandwidth: 10MHz

Channel 2000 RB Size 1 RB Offset 0

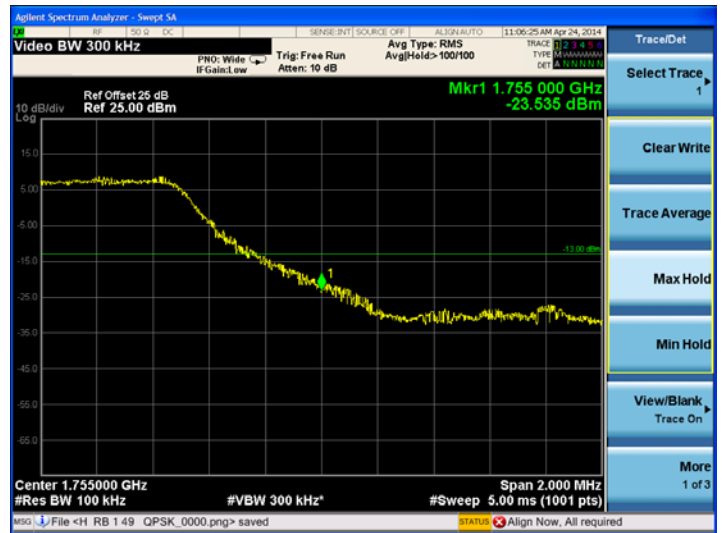
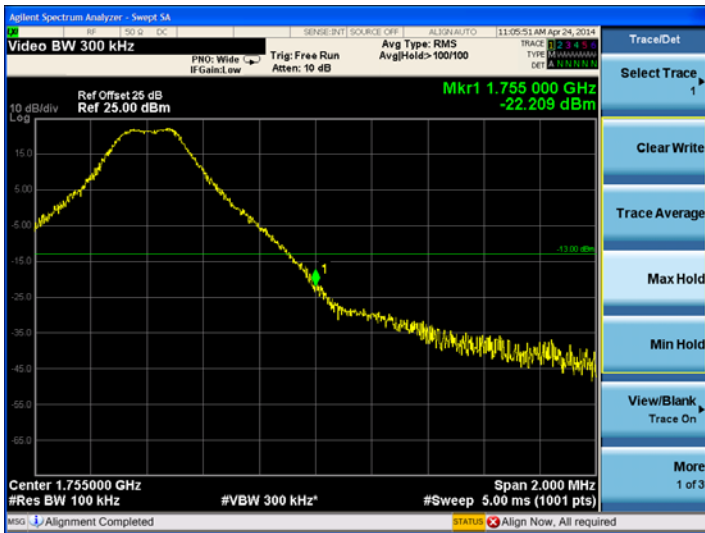
Channel 20350 RB Size 50 RB Offset 0



Channel Bandwidth: 10MHz

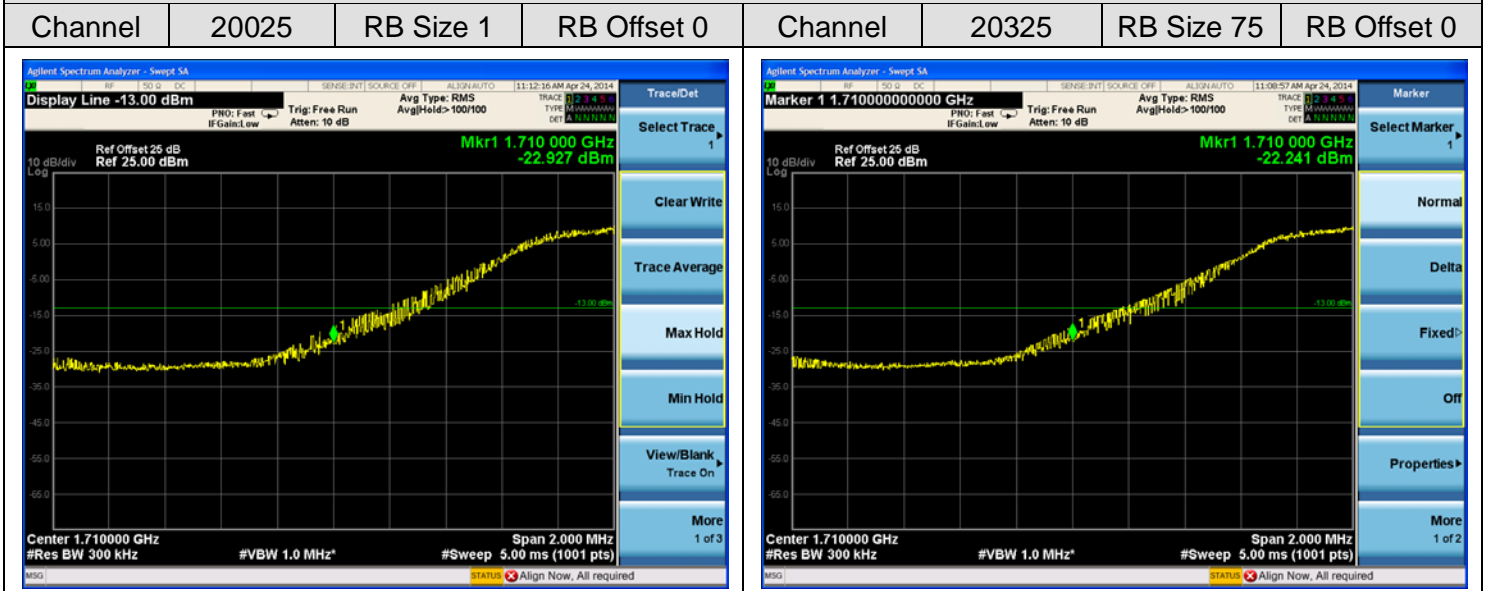
Channel 2000 RB Size 1 RB Offset 49

Channel 20350 RB Size 50 RB Offset 0

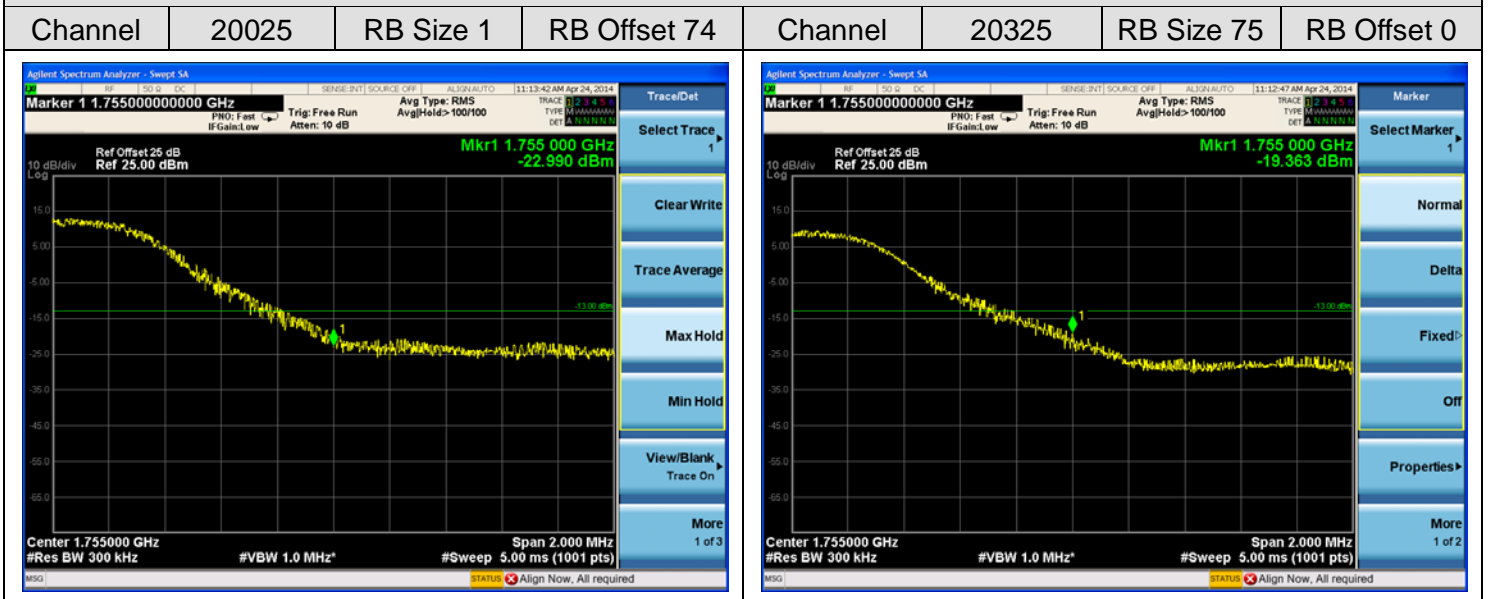




Channel Bandwidth: 15MHz



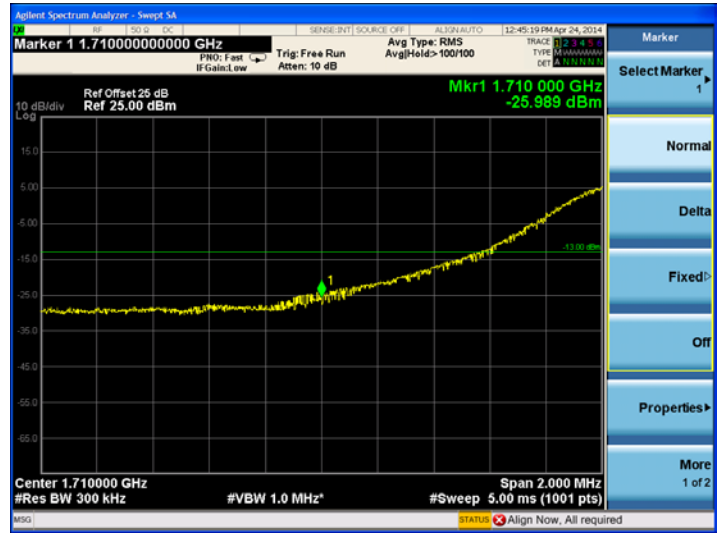
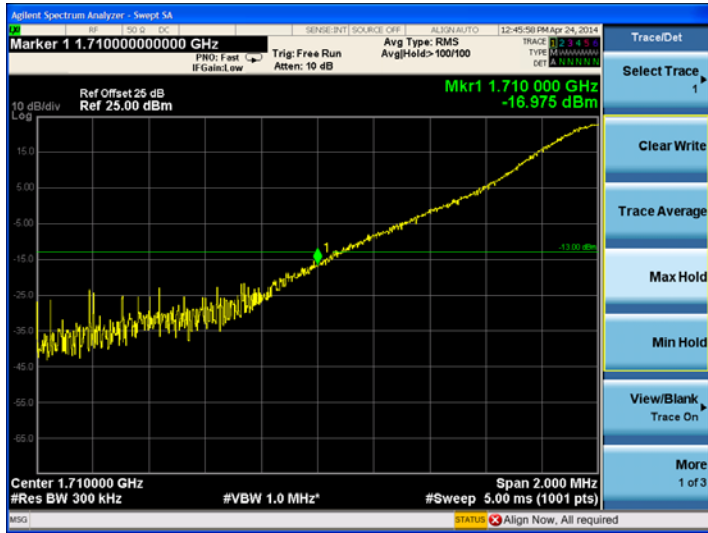
Channel Bandwidth: 15MHz





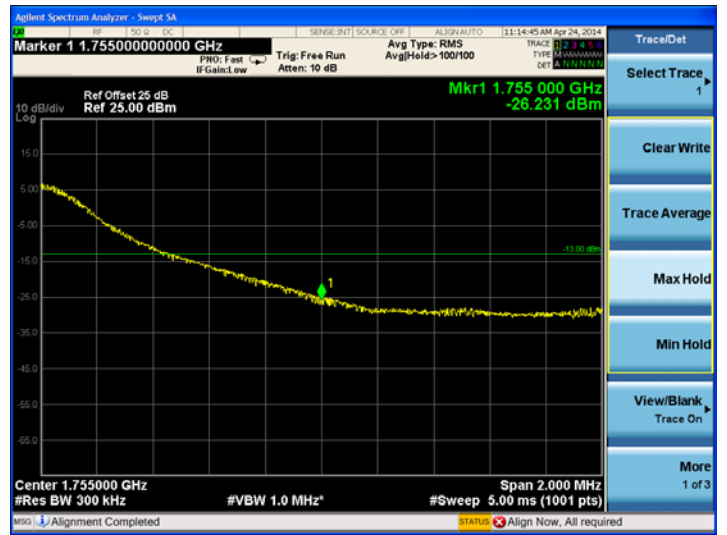
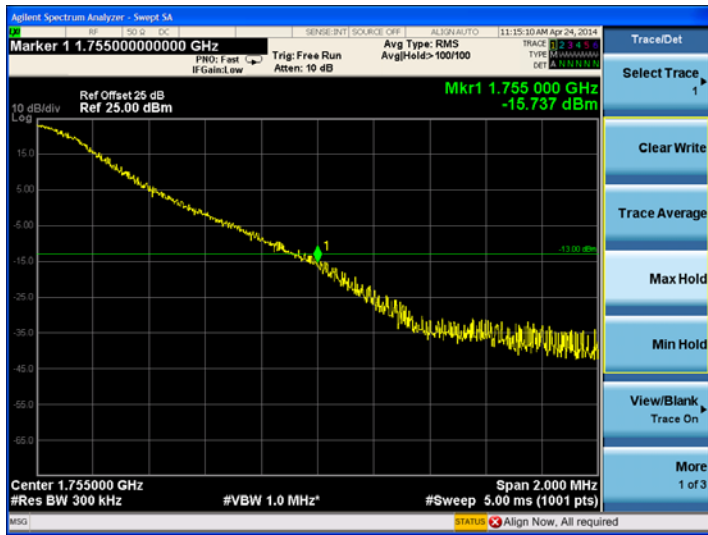
Channel Bandwidth: 20MHz

Channel	20050	RB Size 1	RB Offset 0	Channel	20300	RB Size 100	RB Offset 0
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Channel Bandwidth: 20MHz

Channel	20050	RB Size 1	RB Offset 99	Channel	20300	RB Size 100	RB Offset 0
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2.7 Transmitter Radiated Power (EIRP/ERP)

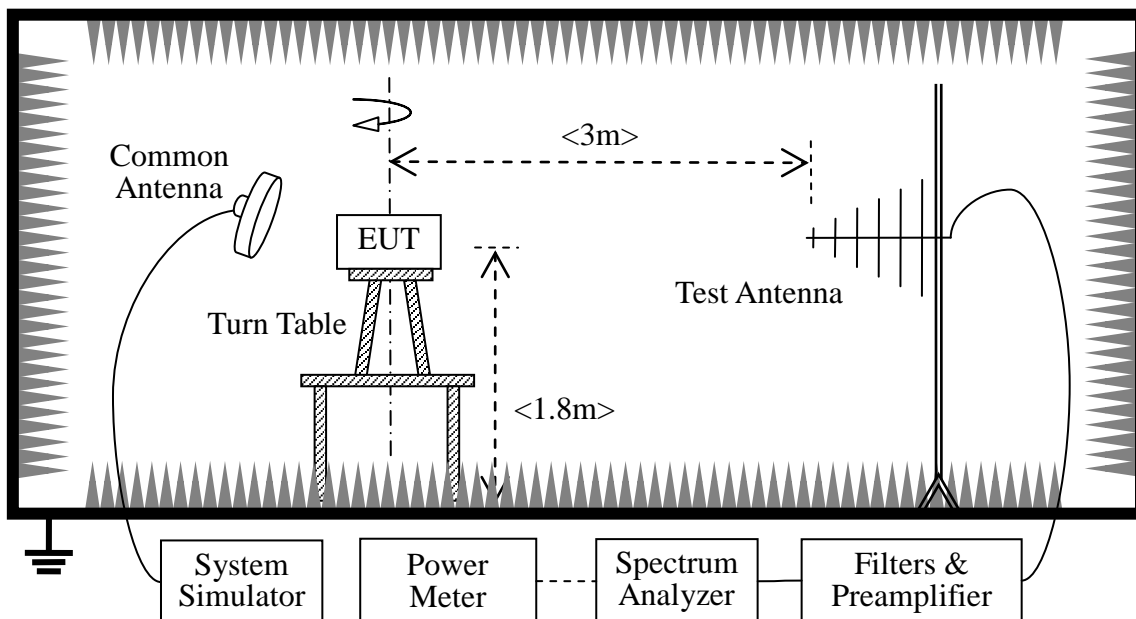
2.7.1 Requirement

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

1. 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.

2. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	Rohde&	CMW500	1201.0002k50/	2014.02.26	2015.02.25



Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
	Schwarz		124534/wk		
Spectrum Analyzer	Rohde& Schwarz	FSL	10246	2014.02.26	2015.02.25
Spectrum Analyzer	Agilent	E4445A	MY44200685	2014.02.26	2015.02.25
Full-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2014.02.26	2015.02.25
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2014.02.26	2015.02.25
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2014.02.26	2015.02.25

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:

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

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

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

$P_{\text{SUBST_TX}}$ is signal generator level,

$P_{\text{SUBST_RX}}$ is receiver level,

$L_{\text{SUBST_CABLES}}$ is cable losses including TX cable,

$G_{\text{SUBST_TX_ANT}}$ 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	Frequency (MHz)	Modulation	RB Configuration		ERP (dBm)
					RB Size	RB Offset	
LTE Band 4	20MHz	L 20050	1720	QPSK	1	0	24.55
					1	49	24.13
					1	99	25.72
					50	0	23.89
					50	25	23.78
					50	49	24.32
				100	0	24.09	
				16-QAM	1	0	23.87
					1	49	23.78
					1	99	24.68
					50	0	24.52
					50	25	24.14
		50	49		24.12		
		M 20175	QPSK	100	0	23.46	
				1	0	25.81	
				1	49	25.92	
				1	99	25.94	
				50	0	25.04	
				50	25	25.12	
			16-QAM	50	49	25.76	
				100	0	23.49	
				1	0	25.34	
				1	49	24.42	
				1	99	25.69	
				50	0	25.41	
		H 20300	QPSK	50	25	25.17	
				50	49	25.56	
				100	0	26.41	
				1	0	25.53	
				1	49	25.34	
1	99			25.08			
16-QAM	50		0	25.61			
	50		25	25.12			
	50		49	25.34			
	100		0	25.41			
	1		0	25.98			
	1		49	25.12			



Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		ERP (dBm)
					RB Size	RB Offset	
	15MHz				1	99	25.83
					50	0	25.32
					50	25	25.12
					50	49	25.44
					100	0	24.67
		L 20025	1717.5	QPSK	1	0	25.84
					1	37	25.12
					1	74	25.35
					36	0	25.14
					36	18	25.26
					36	35	25.34
					75	0	24.62
		16-QAM	1	0	25.26		
			1	37	25.23		
			1	74	25.67		
	36		0	25.54			
	36		18	24.98			
	36		35	24.12			
	75		0	24.51			
	M 20175	1732.5	QPSK	1	0	25.78	
				1	37	25.21	
				1	74	25.64	
				36	0	25.89	
				36	18	25.76	
				36	35	26.23	
				75	0	25.62	
			16-QAM	1	0	25.94	
				1	37	25.78	
				1	74	25.31	
				36	0	25.98	
				36	18	25.65	
				36	35	25.34	
H 20325	1747.5	QPSK	1	0	25.41		
			1	37	25.76		
			1	74	25.81		
			36	0	25.34		



Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		ERP (dBm)	
					RB Size	RB Offset		
					36	18	25.13	
					36	35	25.87	
					75	0	25.38	
				16-QAM	1	0	25.84	
					1	37	25.43	
					1	74	26.19	
					36	0	25.46	
					36	18	25.32	
					36	35	25.34	
					75	0	25.82	
					QPSK	1	0	25.03
						1	24	25.08
	1	49	25.51					
	25	0	25.03					
	25	12	25.12					
	25	24	25.65					
	16-QAM	50	0	24.85				
		1	0	25.64				
		1	24	25.01				
		1	49	25.81				
		25	0	25.34				
		25	12	25.54				
		25	24	24.87				
	M 20175	QPSK	1732.5	1	0	25.06		
				1	24	25.05		
				1	49	25.66		
				25	0	25.54		
25				12	25.34			
25				24	25.64			
16-QAM		50	0	24.32				
		1	0	25.05				
		1	24	25.03				
		1	49	25.44				
		25	0	24.43				
		25	12	24.64				
25	24	25.75						



Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		ERP (dBm)
					RB Size	RB Offset	
		H 20350	1750	QPSK	50	0	24.03
					1	0	24.84
					1	24	24.67
					1	49	25.96
					25	0	25.34
					25	12	25.78
					25	24	25.54
		50	0	24.05			
		16-QAM	1	0	24.88		
			1	24	25.65		
			1	49	25.21		
			25	0	25.34		
			25	12	24.85		
			25	24	25.43		
	50		0	24.69			
		L 19975	1712.5	QPSK	1	0	26.63
					1	12	24.53
					1	24	24.54
					12	0	24.87
					12	6	25.64
					12	11	25.42
					25	0	25.51
		16-QAM	1	0	25.33		
			1	12	26.64		
			1	24	26.04		
			12	0	25.74		
			12	6	25.53		
			12	11	25.24		
			25	0	24.33		
	M 20175	1732.5	QPSK	1	0	25.65	
1				12	25.23		
1				24	25.44		
12				0	25.43		
12				6	25.68		
12				11	25.43		
25				0	25.25		
16-QAM	1	0	25.38				



Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		ERP (dBm)	
					RB Size	RB Offset		
	3MHz	H 20375	1752.5	QPSK	1	12	25.18	
					1	24	25.94	
					12	0	25.89	
					12	6	24.43	
					12	11	25.43	
					25	0	24.88	
				16-QAM	1	0	25.09	
					1	12	25.37	
					1	24	25.27	
					12	0	24.87	
					12	6	24.67	
					12	11	25.23	
		L 19965	1711.5	QPSK	1	0	25.61	
					1	12	25.74	
					1	24	25.83	
					12	0	25.34	
					12	6	25.36	
					12	11	25.57	
				16-QAM	25	0	24.46	
					1	0	25.69	
					1	7	25.34	
					1	14	25.84	
					8	0	25.65	
					8	4	25.85	
		M 20175	1732.5	QPSK	8	7	25.45	
					15	0	25.35	
					16-QAM	1	0	25.39
						1	7	25.65
						1	14	25.95
						8	0	25.54
8	4			25.45				
8	7			25.56				
QPSK	15			0	24.63			
	1			0	25.81			
	1			7	25.05			
								25.34



Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		ERP (dBm)				
					RB Size	RB Offset					
					8	0	25.54				
					8	4	25.76				
					8	7	25.54				
					15	0	24.88				
				16-QAM	1	0	25.06				
					1	7	25.43				
					1	14	25.21				
					8	0	25.23				
					8	4	25.76				
					8	7	25.65				
					15	0	24.35				
				QPSK	1	0	24.66				
					1	7	25.78				
					1	14	25.64				
	8	0	25.43								
	8	4	25.56								
	8	7	25.74								
	15	0	25.09								
	16-QAM	1	0	25.81							
		1	7	25.65							
		1	14	24.45							
		8	0	25.89							
		8	4	25.21							
		8	7	25.78							
		15	0	24.66							
	1.4MHz	H 20385	1753.5		QPSK	1	0	25.26			
						1	2	25.58			
						1	5	25.51			
3						0	25.92				
3						1	25.62				
3						2	25.34				
6						0	24.39				
L 19957		1710.7		QPSK	1	0	25.22				
					1	2	24.34				
					1	5	25.13				
					3	0	25.74				
					3	1	25.83				



Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		ERP (dBm)		
					RB Size	RB Offset			
					3	2	25.76		
					6	0	24.55		
		M 20175	1732.5		QPSK	1	0	26.88	
						1	2	27.98	
						1	5	25.22	
						3	0	24.34	
						3	1	25.13	
						3	2	25.74	
						6	0	25.22	
						16-QAM	1	0	24.34
							1	2	25.13
							1	5	25.74
							3	0	25.83
							3	2	25.22
							3	5	24.34
							6	0	25.51
		H 20393	1754.5		QPSK	1	0	25.65	
						1	2	24.45	
						1	5	25.89	
						3	0	25.21	
						3	1	25.78	
						3	2	24.66	
						6	0	25.26	
					16-QAM	1	0	25.65	
						1	2	24.45	
						1	5	25.93	
						3	0	25.38	
						3	1	25.73	
3	2					25.98			
6	0					24.85			

Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		ERP (dBm)
					RB Size	RB Offset	
LTE Band 17	10MHz	L 23780	709	QPSK	1	0	24.41
					1	24	24.65
					1	49	25.16



Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		ERP (dBm)
					RB Size	RB Offset	
		M 23790	710		25	0	25.51
					25	12	25.65
					25	24	24.45
					50	0	25.89
				16-QAM	1	0	25.21
					1	24	25.78
					1	49	24.66
					25	0	24.76
					25	12	24.55
					25	24	26.88
				QPSK	50	0	27.98
					1	0	25.22
					1	24	24.34
					1	49	25.13
		25	0		25.74		
		25	12		25.22		
		16-QAM	25	24	24.55		
			50	0	24.88		
			1	0	25.98		
			1	24	25.34		
			1	49	24.34		
			25	0	24.13		
			25	12	24.55		
		QPSK	25	24	26.38		
			50	0	23.33		
			1	0	24.84		
			1	24	25.29		
			1	49	25.16		
25	0		25.84				
25	12		25.55				
16-QAM	25	24	25.21				
	50	0	25.78				
	1	0	24.66				
	1	24	25.26				
	1	49	25.58				
	25	0	25.51				
25	12	25.92					



Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		ERP (dBm)
					RB Size	RB Offset	
	5MHz	L 23755	706.5	QPSK	25	24	25.54
					50	0	25.76
					1	0	25.54
					1	12	24.88
					1	24	25.06
				12	0	25.43	
				12	6	25.21	
				12	11	25.23	
				25	0	25.76	
				16-QAM	1	0	25.65
		1	12		24.35		
		1	24		24.87		
		12	0		24.67		
		12	6		25.23		
		12	11		25.07		
		25	0		25.61		
		M 23790	QPSK	1	0	25.74	
				1	12	25.83	
				1	24	25.34	
				12	0	25.36	
				12	6	25.57	
			12	11	24.46		
			25	0	25.69		
			16-QAM	1	0	25.34	
				1	12	25.84	
				1	24	25.43	
		12		0	24.69		
		12		6	26.63		
		12	11	24.53			
		25	0	24.54			
H 23825	QPSK	1	0	24.87			
		1	12	25.64			
		1	24	25.42			
		12	0	25.51			
		12	6	25.33			
		12	11	26.64			
		25	0	26.04			



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Band	Band Width	Channel	Frequency (MHz)	Modulation	RB Configuration		ERP (dBm)
					RB Size	RB Offset	
				16-QAM	1	0	24.43
					1	12	24.69
					1	24	26.63
					12	0	24.53
					12	6	24.54
					12	11	24.87
					25	0	24.64

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

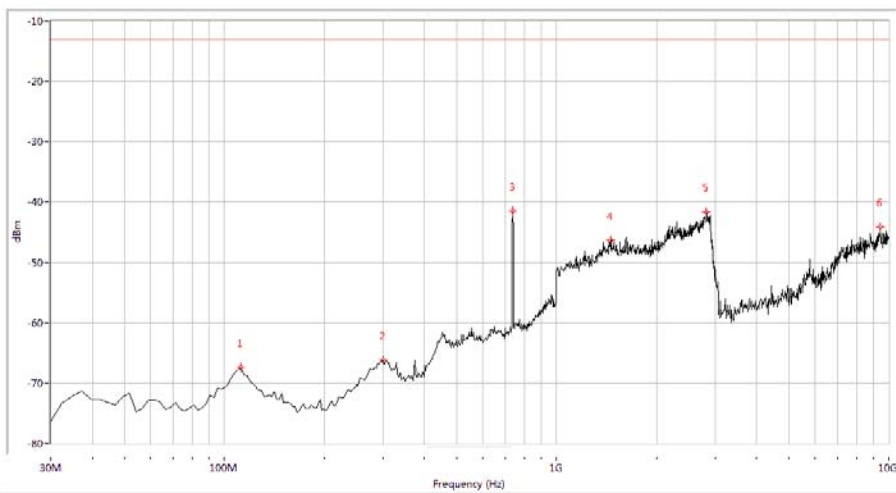
The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified.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

Test Plots for the Whole Measurement Frequency Range:

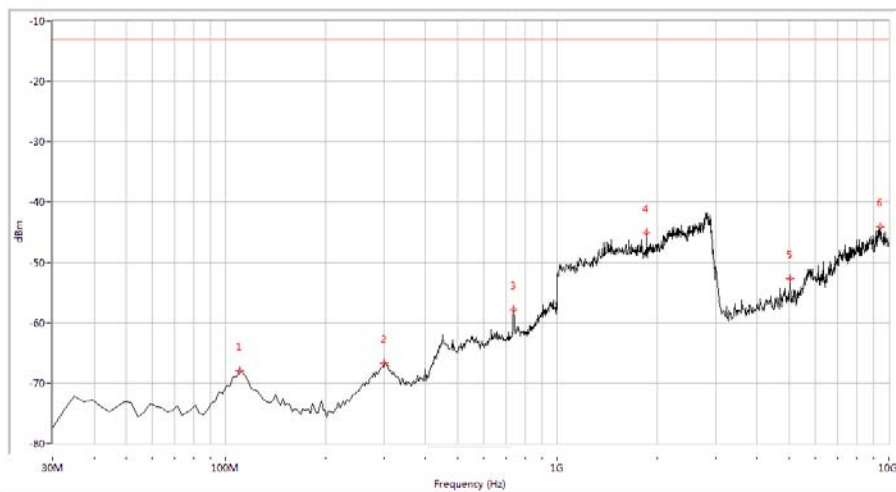
Note1: the power of the EUT transmitting frequency should be ignored.

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 17 5MHz BW, Mid Channel, QPSK

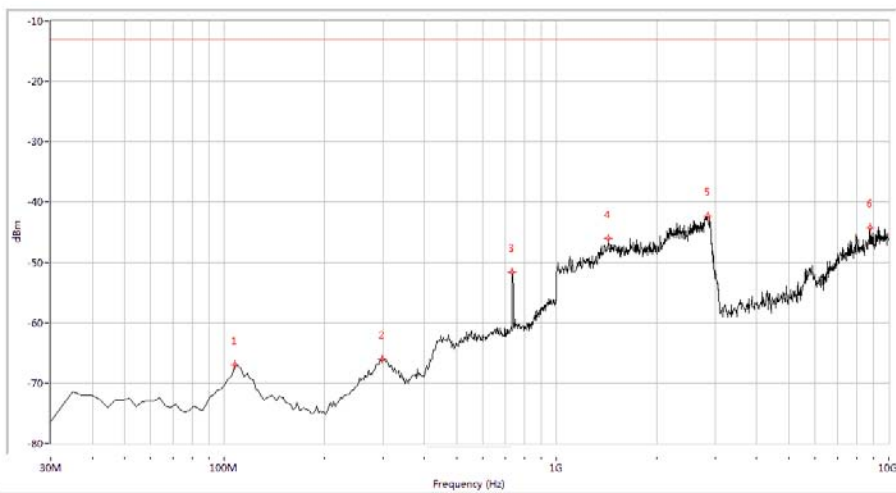


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
112.244	-67.35	-13.0	54.3	32.3	Horizontal	<u>PASS</u>
300.923	-66.14	-13.0	53.1	290.8	Horizontal	<u>PASS</u>
738.753	-41.47	-13.0	28.5	191.1	Horizontal	<u>PASS</u>
1453.865	-46.28	-13.0	33.3	234.4	Horizontal	<u>PASS</u>
2815.461	-41.65	-13.0	28.6	262.7	Horizontal	<u>PASS</u>
9441.397	-44.09	-13.0	31.1	263.2	Horizontal	<u>PASS</u>

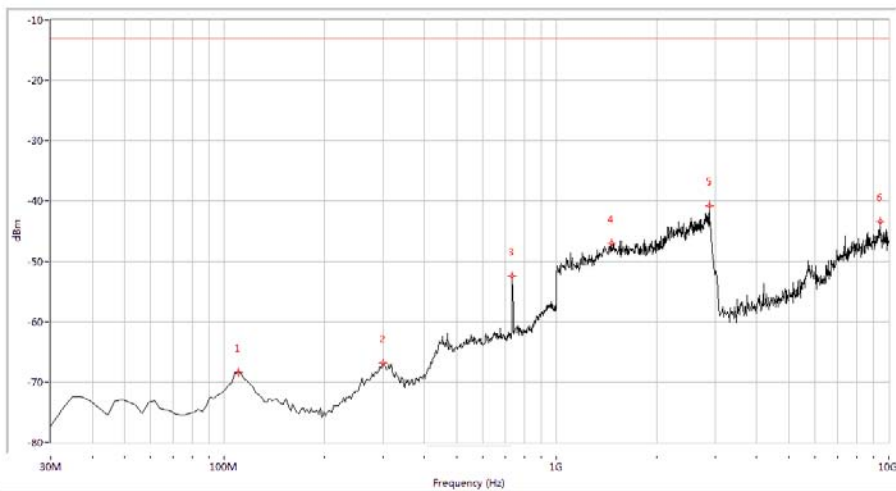


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.97	-13.0	55.0	158.5	Vertical	<u>PASS</u>
300.923	-66.72	-13.0	53.7	15.3	Vertical	<u>PASS</u>
738.753	-57.89	-13.0	44.9	31.0	Vertical	<u>PASS</u>
1857.855	-45.01	-13.0	32.0	49.3	Vertical	<u>PASS</u>
5042.394	-52.70	-13.0	39.7	116.3	Vertical	<u>PASS</u>
9458.853	-44.09	-13.0	31.1	359.5	Vertical	<u>PASS</u>

LTE Band 17 5MHz BW, Mid Channel, 16QAM

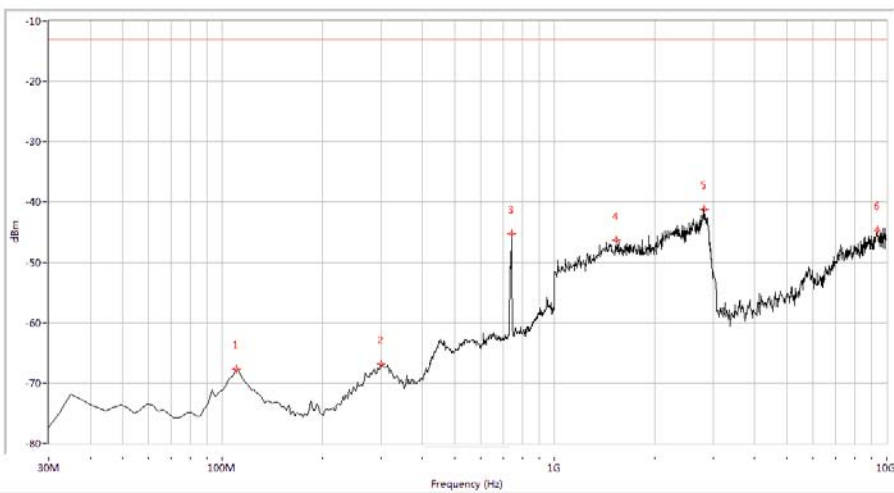


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
107.406	-66.96	-13.0	54.0	287.9	Horizontal	<u>PASS</u>
298.504	-66.00	-13.0	53.0	272.7	Horizontal	<u>PASS</u>
736.334	-51.53	-13.0	38.5	53.3	Horizontal	<u>PASS</u>
1433.915	-46.04	-13.0	33.0	168.0	Horizontal	<u>PASS</u>
2850.374	-42.31	-13.0	29.3	46.8	Horizontal	<u>PASS</u>
8778.055	-44.29	-13.0	31.3	1.6	Horizontal	<u>PASS</u>

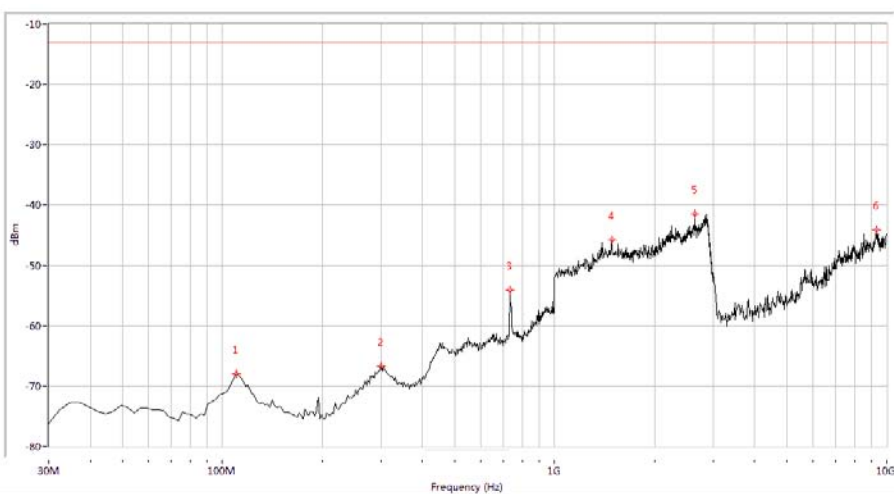


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-68.32	-13.0	55.3	133.0	Vertical	<u>PASS</u>
300.923	-66.90	-13.0	53.9	285.1	Vertical	<u>PASS</u>
736.334	-52.42	-13.0	39.4	86.9	Vertical	<u>PASS</u>
1468.828	-46.95	-13.0	33.9	225.2	Vertical	<u>PASS</u>
2880.299	-40.73	-13.0	27.7	52.5	Vertical	<u>PASS</u>
9423.940	-43.38	-13.0	30.4	320.9	Vertical	<u>PASS</u>

LTE Band 17 10MHz BW, Mid Channel, QPSK

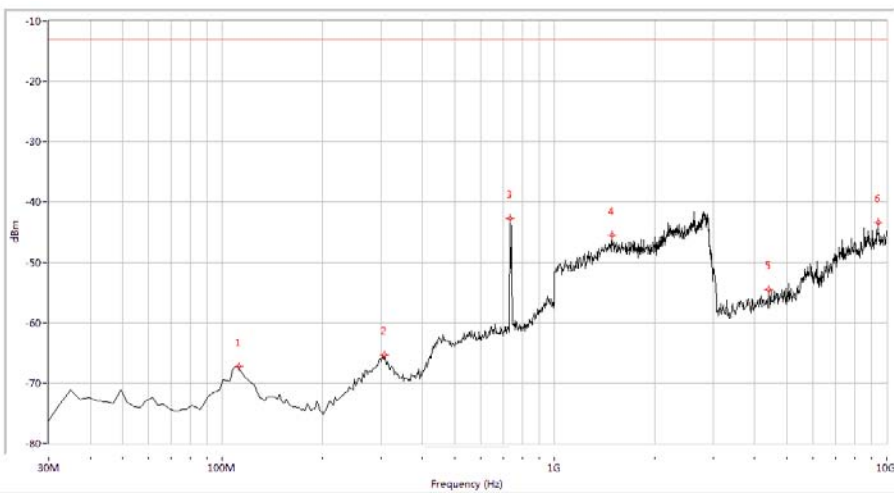


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.70	-13.0	54.7	34.1	Horizontal	<u>PASS</u>
300.923	-66.83	-13.0	53.8	62.0	Horizontal	<u>PASS</u>
741.172	-45.26	-13.0	32.3	269.9	Horizontal	<u>PASS</u>
1533.666	-46.37	-13.0	33.4	354.3	Horizontal	<u>PASS</u>
2820.449	-41.22	-13.0	28.2	73.4	Horizontal	<u>PASS</u>
9406.484	-44.65	-13.0	31.6	61.2	Horizontal	<u>PASS</u>

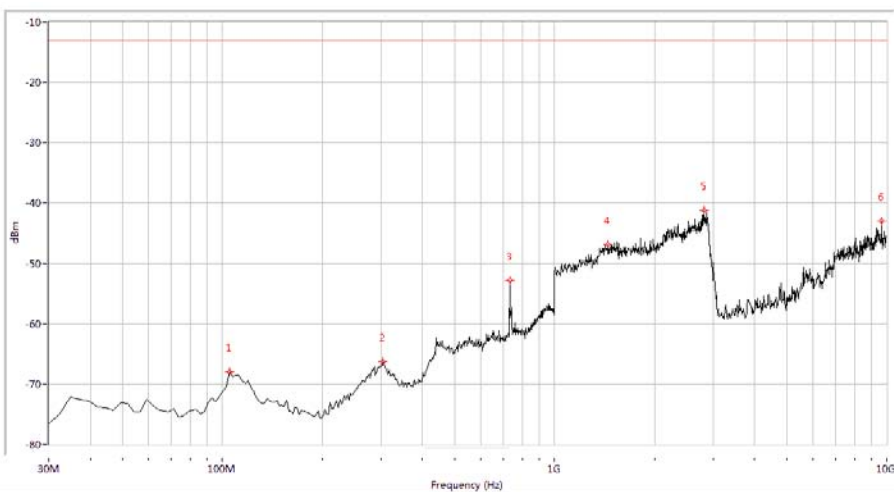


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.97	-13.0	55.0	336.2	Vertical	<u>PASS</u>
300.923	-66.67	-13.0	53.7	155.5	Vertical	<u>PASS</u>
733.915	-54.08	-13.0	41.1	288.6	Vertical	<u>PASS</u>
1488.778	-45.78	-13.0	32.8	155.3	Vertical	<u>PASS</u>
2640.898	-41.43	-13.0	28.4	96.8	Vertical	<u>PASS</u>
9354.115	-44.06	-13.0	31.1	147.4	Vertical	<u>PASS</u>

LTE Band 17 10MHz BW, Mid Channel, 16QAM

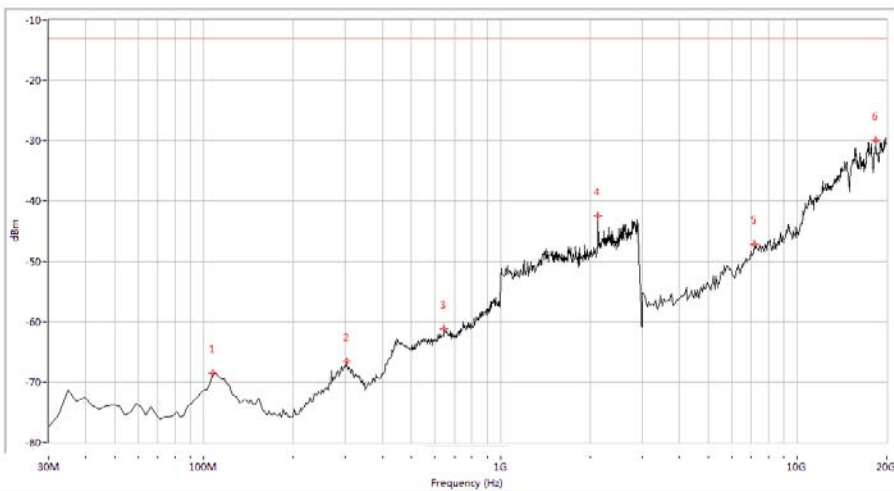


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
112.244	-67.29	-13.0	54.3	312.4	Horizontal	<u>PASS</u>
308.180	-65.25	-13.0	52.2	120.9	Horizontal	<u>PASS</u>
733.915	-42.75	-13.0	29.7	360.0	Horizontal	<u>PASS</u>
1488.778	-45.49	-13.0	32.5	277.4	Horizontal	<u>PASS</u>
4413.965	-54.50	-13.0	41.5	77.3	Horizontal	<u>PASS</u>
9441.397	-43.40	-13.0	30.4	276.0	Horizontal	<u>PASS</u>

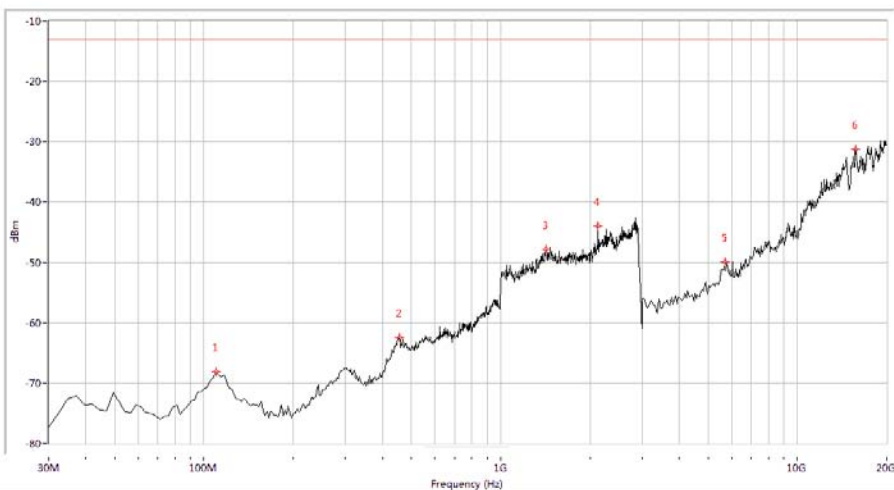


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
104.988	-67.94	-13.0	54.9	57.2	Vertical	<u>PASS</u>
303.342	-66.22	-13.0	53.2	31.5	Vertical	<u>PASS</u>
733.915	-52.84	-13.0	39.8	355.0	Vertical	<u>PASS</u>
1448.878	-46.94	-13.0	33.9	61.8	Vertical	<u>PASS</u>
2815.461	-41.20	-13.0	28.2	-0.0	Vertical	<u>PASS</u>
9668.329	-43.01	-13.0	30.0	272.8	Vertical	<u>PASS</u>

LTE Band 4 1.4MHz BW, Mid Channel, QPSK

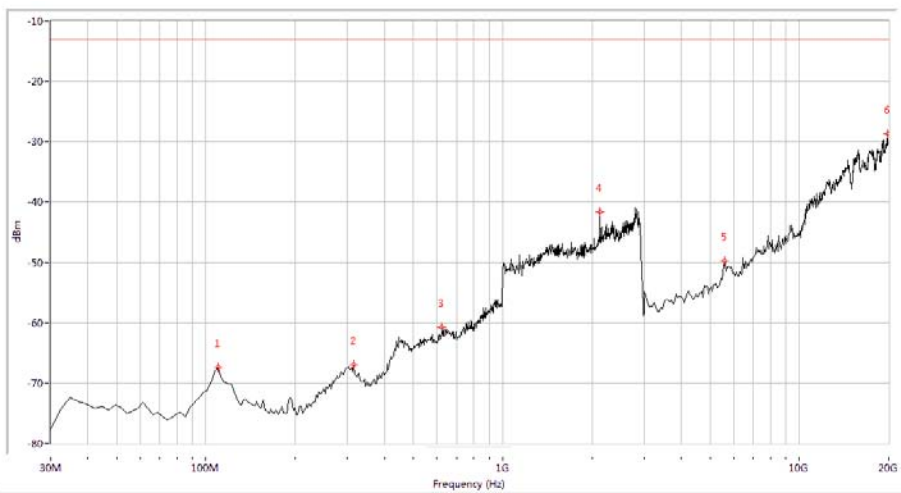


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
107.406	-68.56	-13.0	55.6	63.8	Horizontal	<u>PASS</u>
303.342	-66.54	-13.0	53.5	46.7	Horizontal	<u>PASS</u>
644.414	-61.11	-13.0	48.1	360.0	Horizontal	<u>PASS</u>
2132.170	-42.40	-13.0	29.4	232.9	Horizontal	<u>PASS</u>
7154.613	-47.09	-13.0	34.1	93.5	Horizontal	<u>PASS</u>
18389.027	-29.98	-13.0	17.0	-0.0	Horizontal	<u>PASS</u>

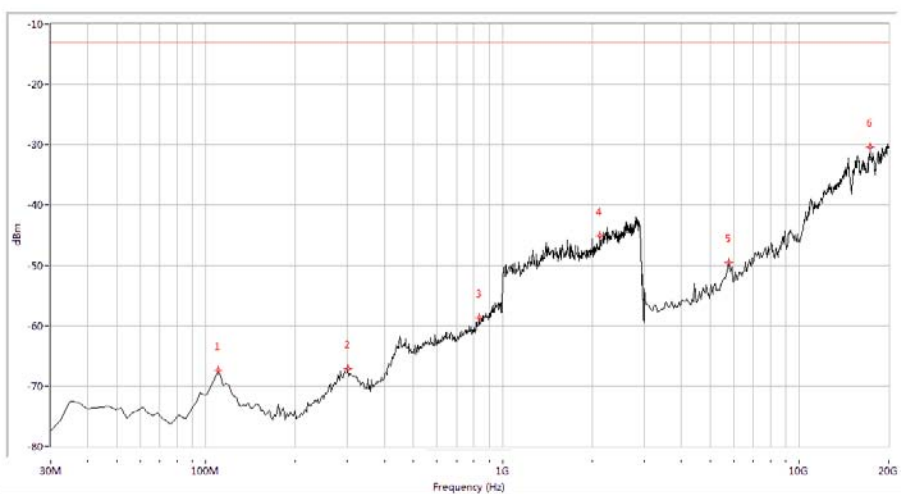


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-68.07	-13.0	55.1	132.2	Vertical	<u>PASS</u>
455.736	-62.38	-13.0	49.4	267.6	Vertical	<u>PASS</u>
1418.953	-47.85	-13.0	34.8	51.8	Vertical	<u>PASS</u>
2132.170	-43.90	-13.0	30.9	306.2	Vertical	<u>PASS</u>
5713.217	-49.88	-13.0	36.9	98.4	Vertical	<u>PASS</u>
15760.599	-31.20	-13.0	18.2	275.9	Vertical	<u>PASS</u>

LTE Band 4 1.4MHz BW, Mid Channel, 16QAM

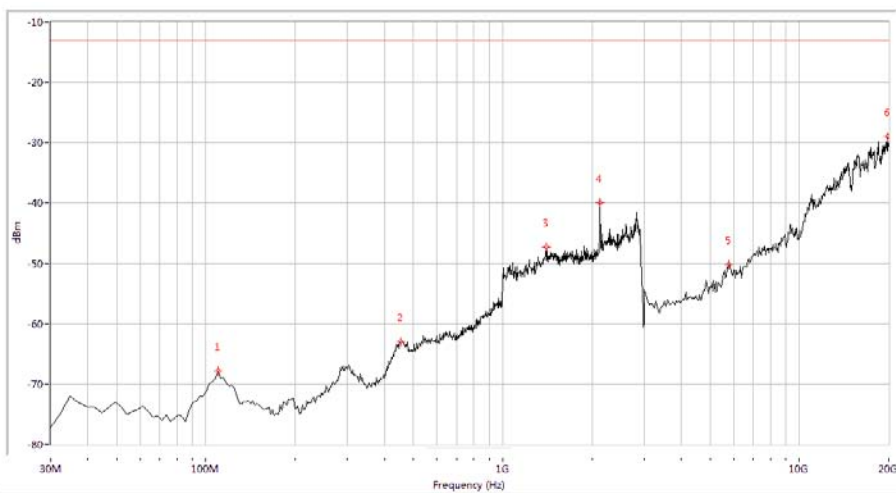


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.41	-13.0	54.4	31.3	Horizontal	<u>PASS</u>
315.436	-66.95	-13.0	54.0	3.4	Horizontal	<u>PASS</u>
625.062	-60.70	-13.0	47.7	360.0	Horizontal	<u>PASS</u>
2132.170	-41.58	-13.0	28.6	266.6	Horizontal	<u>PASS</u>
5586.035	-49.85	-13.0	36.8	360.0	Horizontal	<u>PASS</u>
19830.424	-28.78	-13.0	15.8	39.1	Horizontal	<u>PASS</u>

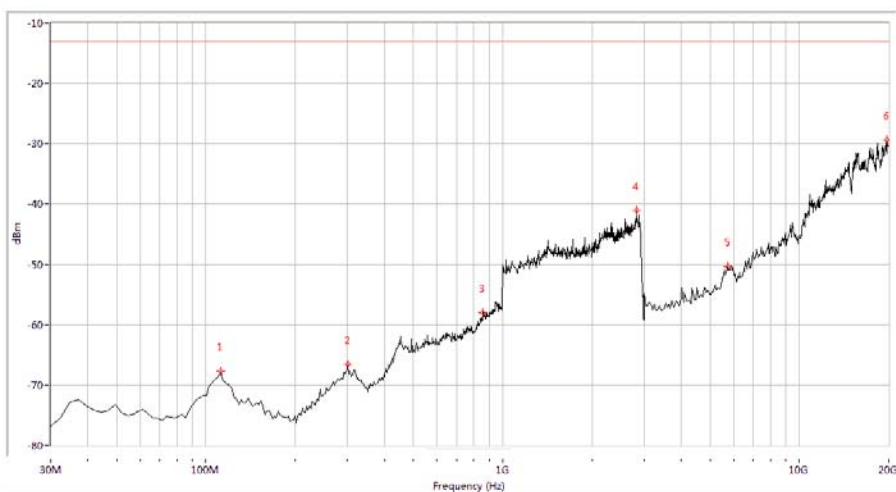


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.45	-13.0	54.5	196.1	Vertical	<u>PASS</u>
300.923	-67.08	-13.0	54.1	18.3	Vertical	<u>PASS</u>
833.092	-58.70	-13.0	45.7	108.5	Vertical	<u>PASS</u>
2132.170	-45.11	-13.0	32.1	112.2	Vertical	<u>PASS</u>
5798.005	-49.55	-13.0	36.6	360.0	Vertical	<u>PASS</u>
17286.783	-30.44	-13.0	17.4	360.0	Vertical	<u>PASS</u>

LTE Band 4 3MHz BW, Mid Channel, QPSK

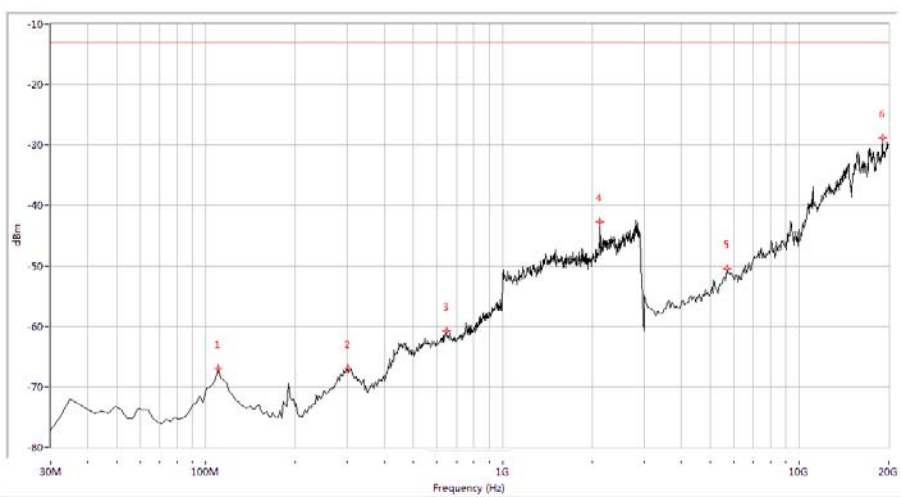


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.80	-13.0	54.8	86.4	Horizontal	<u>PASS</u>
453.317	-62.91	-13.0	49.9	129.5	Horizontal	<u>PASS</u>
1399.002	-47.25	-13.0	34.2	181.8	Horizontal	<u>PASS</u>
2132.170	-39.95	-13.0	27.0	0.1	Horizontal	<u>PASS</u>
5798.005	-50.21	-13.0	37.2	125.4	Horizontal	<u>PASS</u>
19872.818	-29.05	-13.0	16.1	-0.0	Horizontal	<u>PASS</u>

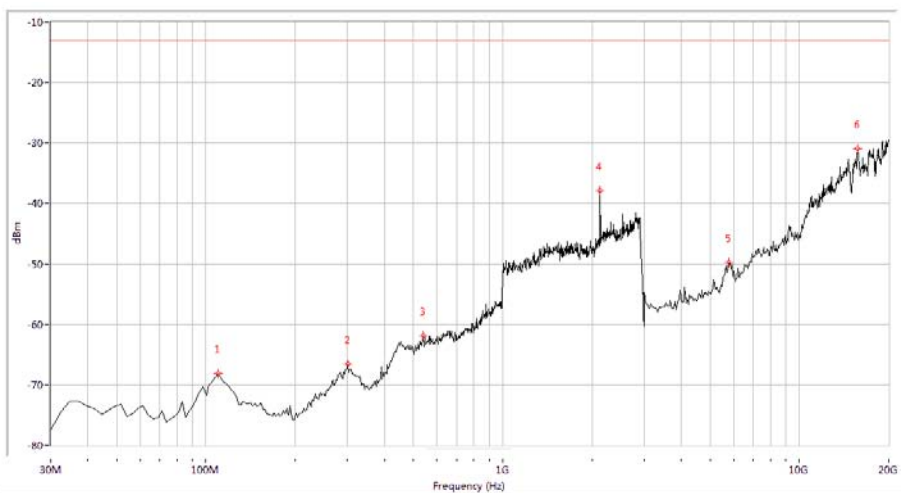


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
112.244	-67.70	-13.0	54.7	186.7	Vertical	<u>PASS</u>
300.923	-66.51	-13.0	53.5	80.7	Vertical	<u>PASS</u>
854.863	-58.02	-13.0	45.0	259.2	Vertical	<u>PASS</u>
2825.436	-41.08	-13.0	28.1	266.2	Vertical	<u>PASS</u>
5755.611	-50.31	-13.0	37.3	-0.0	Vertical	<u>PASS</u>
19788.030	-29.35	-13.0	16.4	268.6	Vertical	<u>PASS</u>

LTE Band 4 3MHz BW, Mid Channel, 16QAM

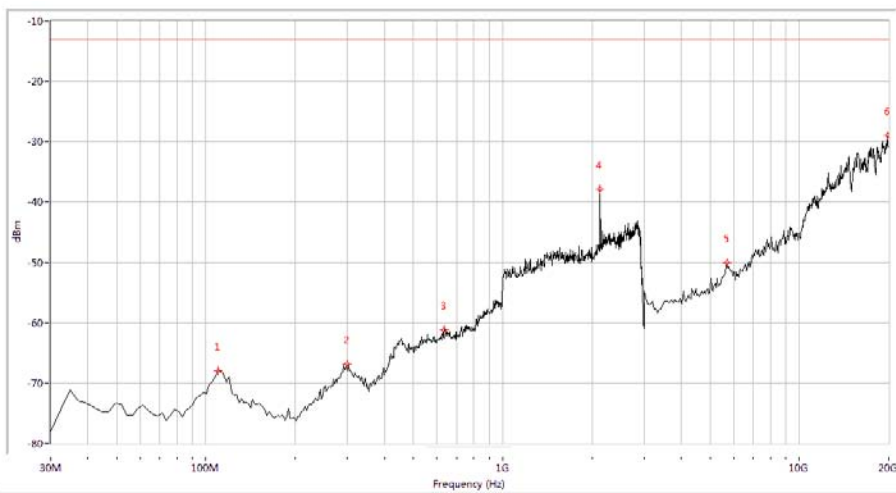


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.01	-13.0	54.0	360.0	Horizontal	<u>PASS</u>
300.923	-66.99	-13.0	54.0	201.1	Horizontal	<u>PASS</u>
646.833	-60.70	-13.0	47.7	-0.0	Horizontal	<u>PASS</u>
2132.170	-42.69	-13.0	29.7	171.2	Horizontal	<u>PASS</u>
5713.217	-50.48	-13.0	37.5	277.7	Horizontal	<u>PASS</u>
19067.332	-28.83	-13.0	15.8	-0.0	Horizontal	<u>PASS</u>

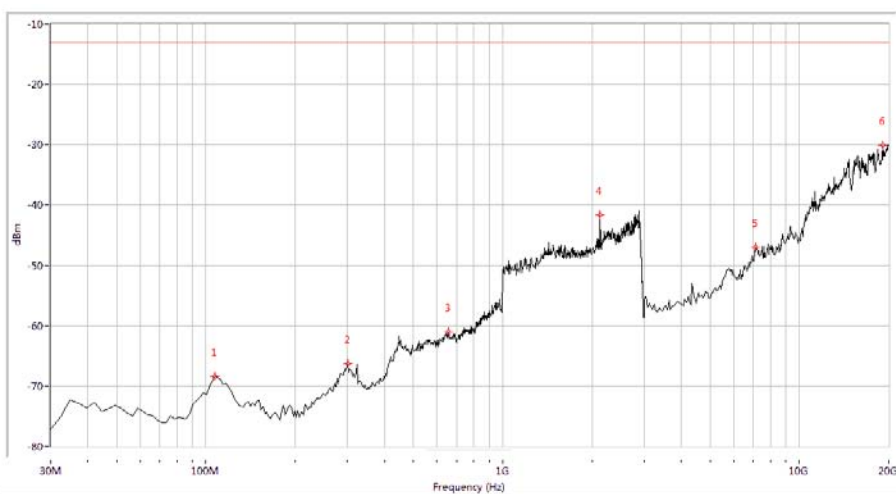


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-68.04	-13.0	55.0	57.1	Vertical	<u>PASS</u>
300.923	-66.59	-13.0	53.6	307.1	Vertical	<u>PASS</u>
540.399	-61.90	-13.0	48.9	97.1	Vertical	<u>PASS</u>
2132.170	-37.90	-13.0	24.9	59.2	Vertical	<u>PASS</u>
5798.005	-49.80	-13.0	36.8	133.3	Vertical	<u>PASS</u>
15760.599	-30.94	-13.0	17.9	43.3	Vertical	<u>PASS</u>

LTE Band 4 5MHz BW, Mid Channel, QPSK

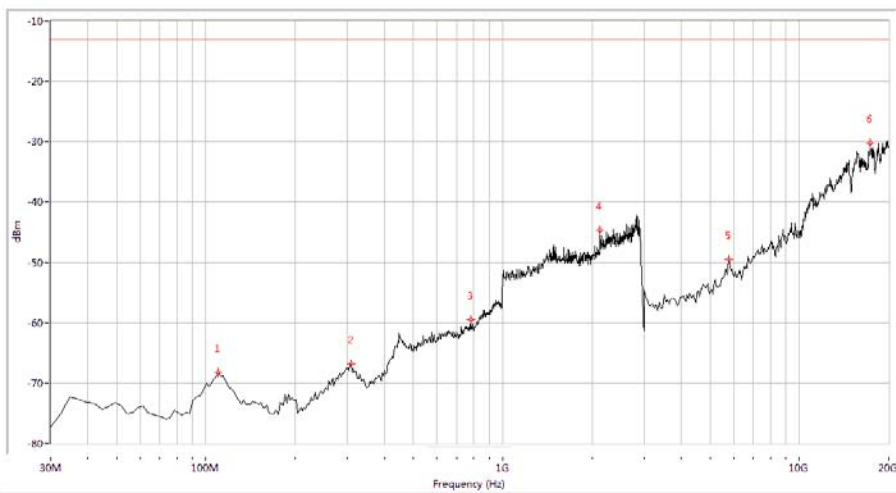


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.96	-13.0	55.0	56.2	Horizontal	<u>PASS</u>
298.504	-66.90	-13.0	53.9	199.4	Horizontal	<u>PASS</u>
637.157	-61.10	-13.0	48.1	335.7	Horizontal	<u>PASS</u>
2132.170	-37.89	-13.0	24.9	263.5	Horizontal	<u>PASS</u>
5713.217	-50.13	-13.0	37.1	166.6	Horizontal	<u>PASS</u>
19830.424	-29.06	-13.0	16.1	74.8	Horizontal	<u>PASS</u>

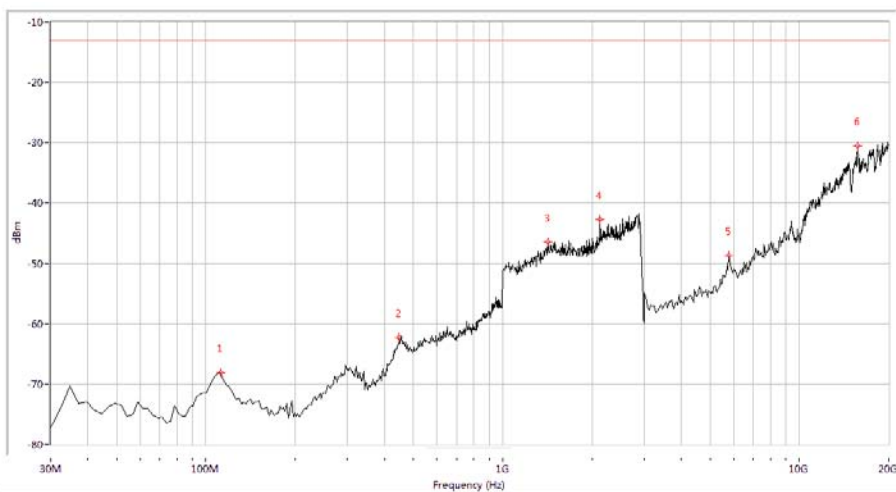


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
107.406	-68.30	-13.0	55.3	312.6	Vertical	<u>PASS</u>
300.923	-66.24	-13.0	53.2	21.3	Vertical	<u>PASS</u>
656.509	-61.05	-13.0	48.1	229.9	Vertical	<u>PASS</u>
2132.170	-41.64	-13.0	28.6	87.5	Vertical	<u>PASS</u>
7112.219	-46.99	-13.0	34.0	19.6	Vertical	<u>PASS</u>
19109.726	-30.13	-13.0	17.1	-0.0	Vertical	<u>PASS</u>

LTE Band 4 5MHz BW, Mid Channel, 16QAM

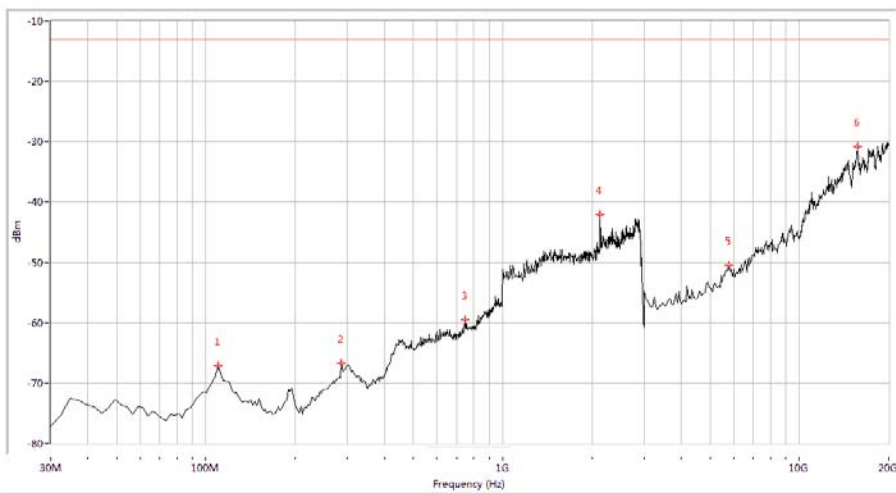


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-68.28	-13.0	55.3	174.4	Horizontal	<u>PASS</u>
308.180	-66.83	-13.0	53.8	94.1	Horizontal	<u>PASS</u>
779.875	-59.52	-13.0	46.5	275.9	Horizontal	<u>PASS</u>
2132.170	-44.66	-13.0	31.7	354.1	Horizontal	<u>PASS</u>
5798.005	-49.49	-13.0	36.5	33.2	Horizontal	<u>PASS</u>
17371.571	-30.18	-13.0	17.2	81.1	Horizontal	<u>PASS</u>

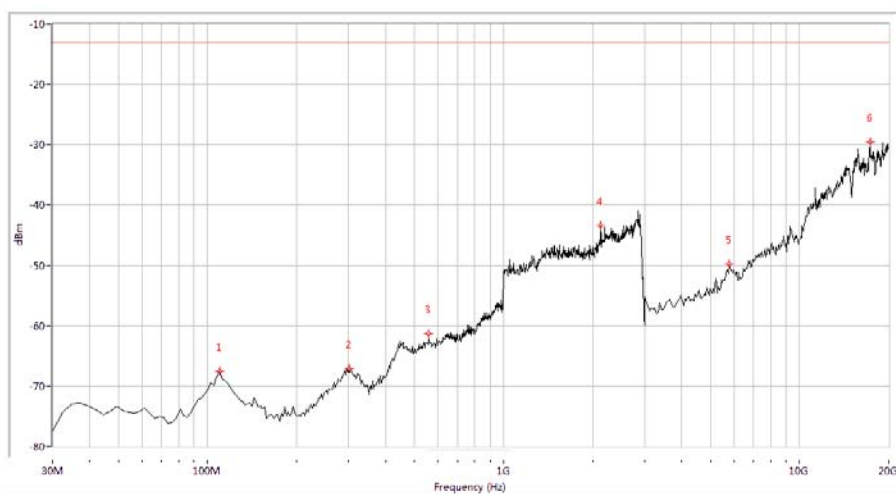


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
112.244	-68.04	-13.0	55.0	346.6	Vertical	<u>PASS</u>
448.479	-62.25	-13.0	49.2	262.6	Vertical	<u>PASS</u>
1418.953	-46.48	-13.0	33.5	343.2	Vertical	<u>PASS</u>
2132.170	-42.68	-13.0	29.7	360.0	Vertical	<u>PASS</u>
5798.005	-48.69	-13.0	35.7	131.4	Vertical	<u>PASS</u>
15718.204	-30.47	-13.0	17.5	131.4	Vertical	<u>PASS</u>

LTE Band 4 10MHz BW, Mid Channel, QPSK

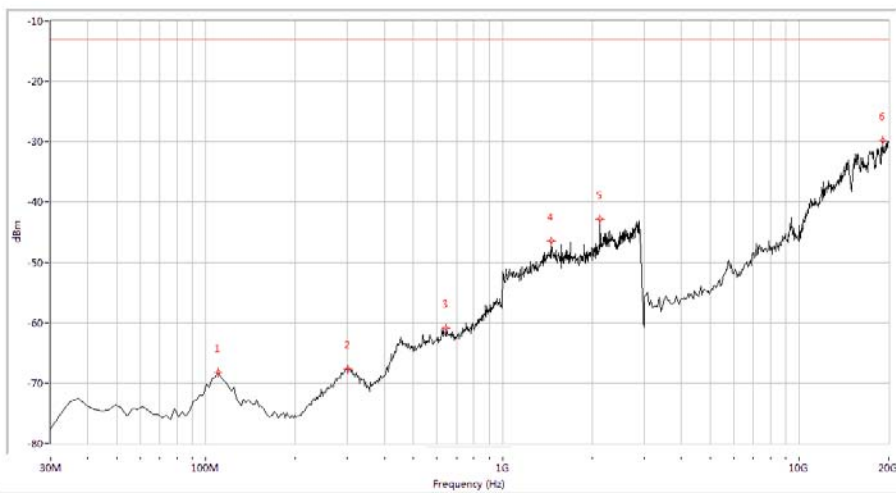


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.07	-13.0	54.1	105.7	Horizontal	<u>PASS</u>
286.409	-66.75	-13.0	53.8	350.1	Horizontal	<u>PASS</u>
746.010	-59.54	-13.0	46.5	330.9	Horizontal	<u>PASS</u>
2132.170	-42.04	-13.0	29.0	47.1	Horizontal	<u>PASS</u>
5798.005	-50.48	-13.0	37.5	330.3	Horizontal	<u>PASS</u>
15718.204	-30.78	-13.0	17.8	91.9	Horizontal	<u>PASS</u>

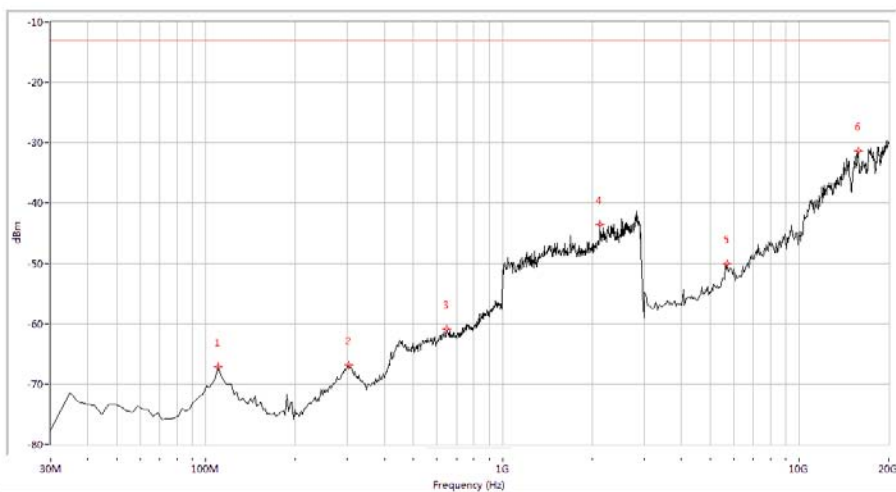


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.54	-13.0	54.5	197.1	Vertical	<u>PASS</u>
300.923	-67.13	-13.0	54.1	208.3	Vertical	<u>PASS</u>
559.751	-61.32	-13.0	48.3	230.8	Vertical	<u>PASS</u>
2132.170	-43.43	-13.0	30.4	316.0	Vertical	<u>PASS</u>
5798.005	-49.83	-13.0	36.8	32.1	Vertical	<u>PASS</u>
17286.783	-29.58	-13.0	16.6	135.8	Vertical	<u>PASS</u>

LTE Band 4 10MHz BW, Mid Channel, 16QAM

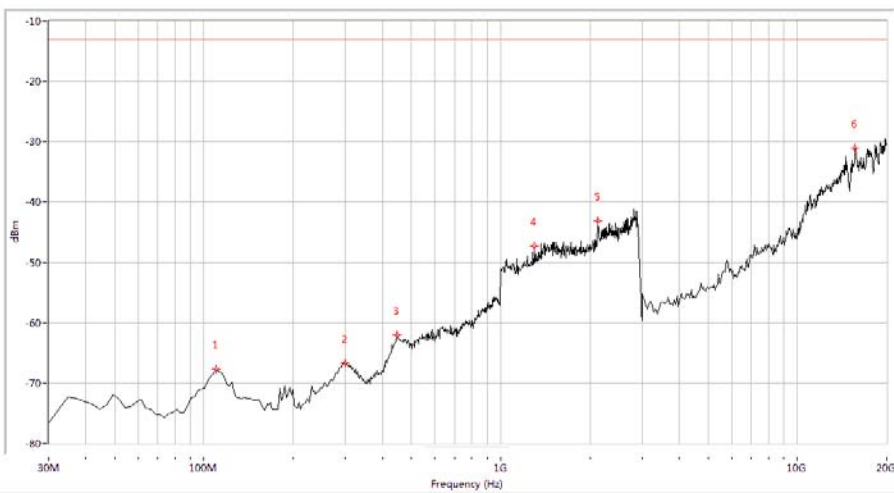


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-68.23	-13.0	55.2	57.2	Horizontal	<u>PASS</u>
300.923	-67.71	-13.0	54.7	190.4	Horizontal	<u>PASS</u>
644.414	-60.82	-13.0	47.8	0.4	Horizontal	<u>PASS</u>
1463.840	-46.44	-13.0	33.4	110.5	Horizontal	<u>PASS</u>
2132.170	-42.90	-13.0	29.9	99.2	Horizontal	<u>PASS</u>
19109.726	-29.89	-13.0	16.9	333.9	Horizontal	<u>PASS</u>

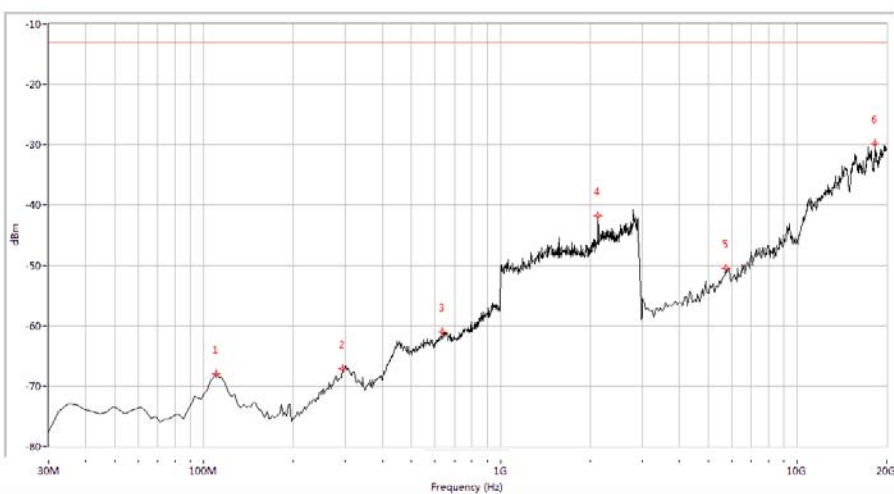


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.18	-13.0	54.2	-0.0	Vertical	<u>PASS</u>
303.342	-66.79	-13.0	53.8	262.8	Vertical	<u>PASS</u>
646.833	-60.81	-13.0	47.8	108.6	Vertical	<u>PASS</u>
2132.170	-43.49	-13.0	30.5	184.9	Vertical	<u>PASS</u>
5713.217	-50.11	-13.0	37.1	83.1	Vertical	<u>PASS</u>
15802.993	-31.34	-13.0	18.3	-0.0	Vertical	<u>PASS</u>

LTE Band 4 15MHz BW, Mid Channel, QPSK

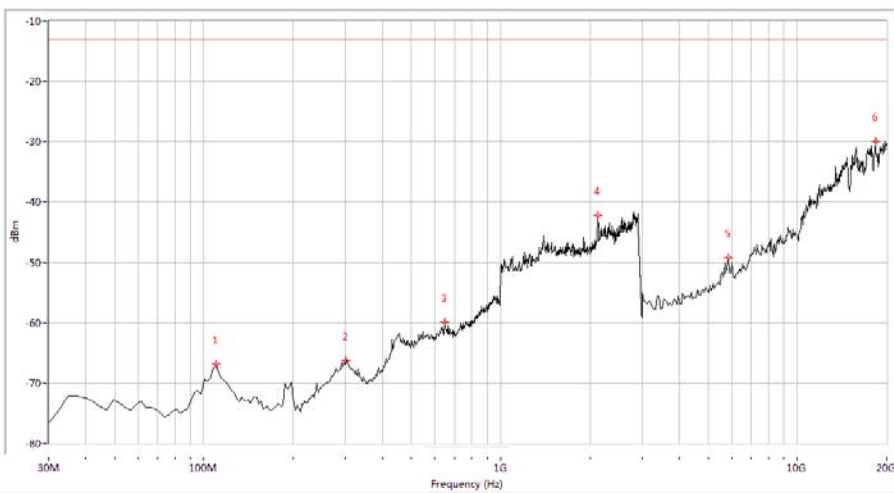


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.65	-13.0	54.7	210.7	Horizontal	<u>PASS</u>
298.504	-66.69	-13.0	53.7	-0.0	Horizontal	<u>PASS</u>
446.060	-61.99	-13.0	49.0	253.4	Horizontal	<u>PASS</u>
1299.252	-47.29	-13.0	34.3	350.1	Horizontal	<u>PASS</u>
2132.170	-43.20	-13.0	30.2	142.3	Horizontal	<u>PASS</u>
15675.810	-31.09	-13.0	18.1	142.3	Horizontal	<u>PASS</u>

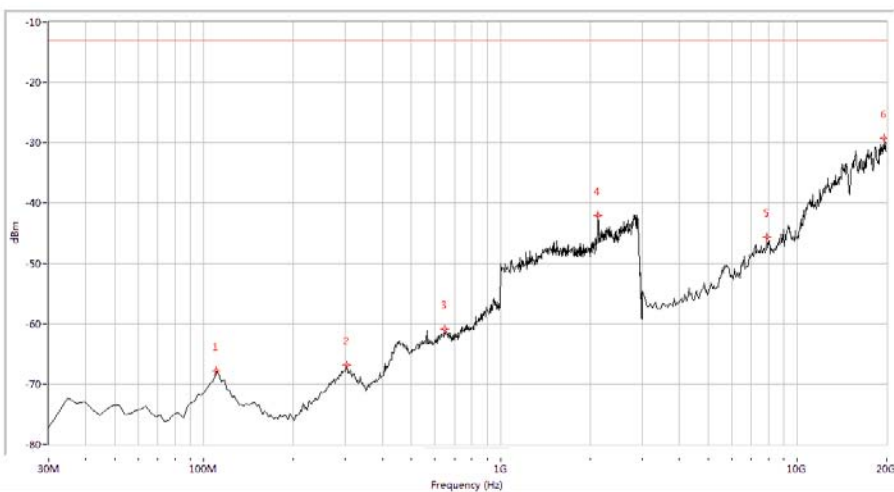


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.93	-13.0	54.9	152.2	Vertical	<u>PASS</u>
293.666	-67.10	-13.0	54.1	274.5	Vertical	<u>PASS</u>
637.157	-61.02	-13.0	48.0	97.6	Vertical	<u>PASS</u>
2132.170	-41.73	-13.0	28.7	21.0	Vertical	<u>PASS</u>
5755.611	-50.53	-13.0	37.5	130.3	Vertical	<u>PASS</u>
18304.239	-29.84	-13.0	16.8	360.0	Vertical	<u>PASS</u>

LTE Band 4 15MHz BW, Mid Channel, 16QAM

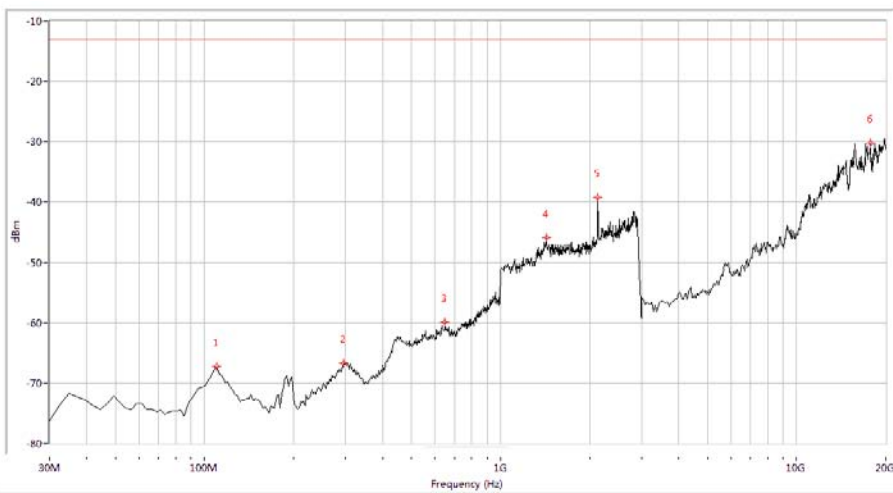


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-66.83	-13.0	53.8	158.7	Horizontal	<u>PASS</u>
300.923	-66.29	-13.0	53.3	47.2	Horizontal	<u>PASS</u>
649.252	-59.87	-13.0	46.9	0.4	Horizontal	<u>PASS</u>
2122.195	-42.20	-13.0	29.2	250.6	Horizontal	<u>PASS</u>
5840.399	-49.17	-13.0	36.2	260.6	Horizontal	<u>PASS</u>
18389.027	-30.00	-13.0	17.0	105.6	Horizontal	<u>PASS</u>

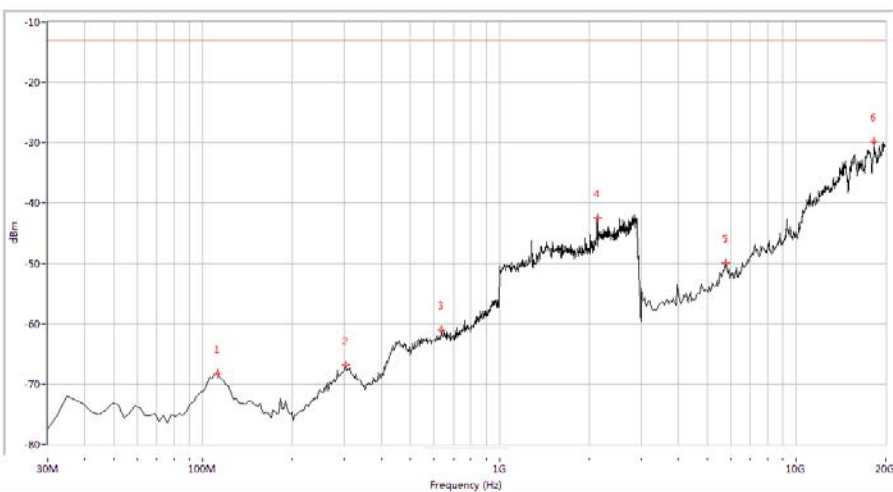


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.80	-13.0	54.8	82.4	Vertical	<u>PASS</u>
303.342	-66.85	-13.0	53.8	173.9	Vertical	<u>PASS</u>
649.252	-60.86	-13.0	47.9	232.0	Vertical	<u>PASS</u>
2132.170	-41.97	-13.0	29.0	333.2	Vertical	<u>PASS</u>
7917.706	-45.62	-13.0	32.6	16.2	Vertical	<u>PASS</u>
19576.060	-29.31	-13.0	16.3	172.9	Vertical	<u>PASS</u>

LTE Band 4 20MHz BW, Mid Channel, QPSK

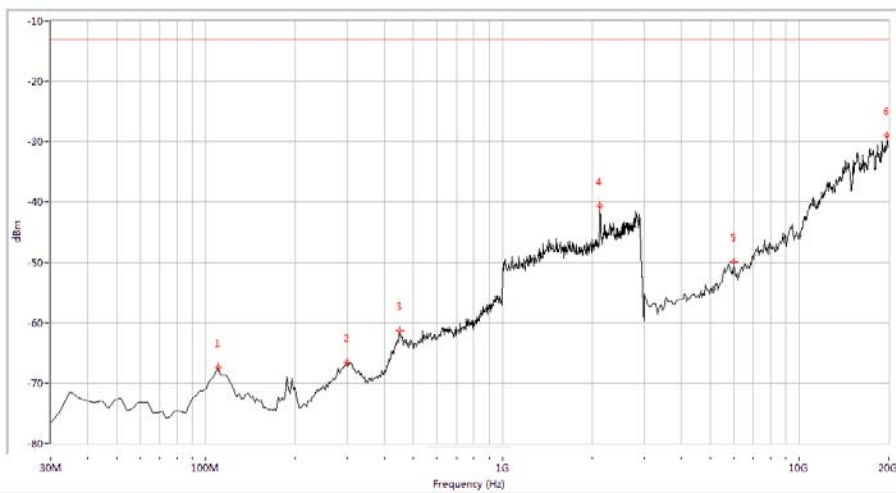


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.25	-13.0	54.3	78.0	Horizontal	<u>PASS</u>
296.085	-66.68	-13.0	53.7	245.0	Horizontal	<u>PASS</u>
649.252	-59.94	-13.0	46.9	0.3	Horizontal	<u>PASS</u>
1428.928	-45.84	-13.0	32.8	-0.0	Horizontal	<u>PASS</u>
2132.170	-39.31	-13.0	26.3	276.6	Horizontal	<u>PASS</u>
17795.511	-30.22	-13.0	17.2	130.0	Horizontal	<u>PASS</u>

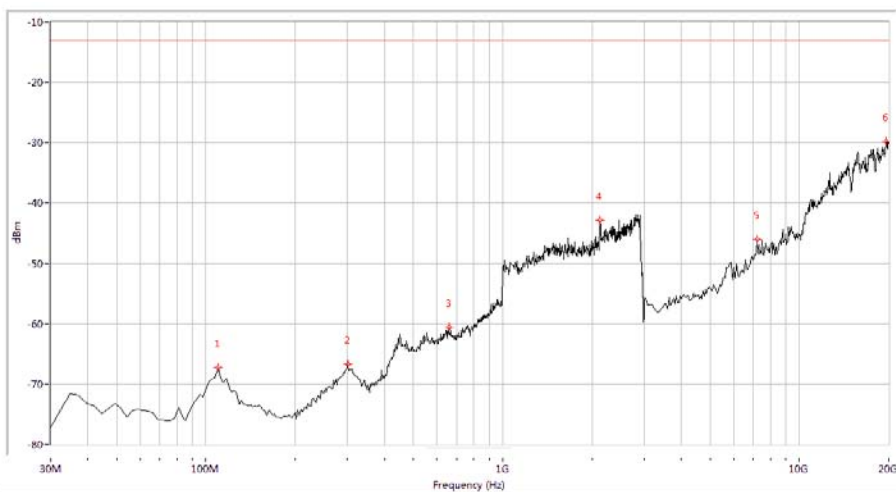


Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
112.244	-68.16	-13.0	55.2	269.2	Vertical	<u>PASS</u>
303.342	-66.86	-13.0	53.9	248.0	Vertical	<u>PASS</u>
637.157	-60.96	-13.0	48.0	131.7	Vertical	<u>PASS</u>
2137.157	-42.44	-13.0	29.4	4.9	Vertical	<u>PASS</u>
5798.005	-49.98	-13.0	37.0	196.2	Vertical	<u>PASS</u>
18304.239	-29.89	-13.0	16.9	116.2	Vertical	<u>PASS</u>

LTE Band 4 20MHz BW, Mid Channel, 16QAM



Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.33	-13.0	54.3	60.3	Horizontal	<u>PASS</u>
298.504	-66.59	-13.0	53.6	27.9	Horizontal	<u>PASS</u>
450.898	-61.34	-13.0	48.3	-0.0	Horizontal	<u>PASS</u>
2132.170	-40.57	-13.0	27.6	145.7	Horizontal	<u>PASS</u>
6009.975	-49.95	-13.0	37.0	9.1	Horizontal	<u>PASS</u>
19788.030	-29.02	-13.0	16.0	360.0	Horizontal	<u>PASS</u>



Fre. (MHz)	Peak	Limit(PK)	Margin	Degree	Antenna	Verdict
109.825	-67.23	-13.0	54.2	1.9	Vertical	<u>PASS</u>
300.923	-66.71	-13.0	53.7	47.6	Vertical	<u>PASS</u>
658.928	-60.64	-13.0	47.6	108.8	Vertical	<u>PASS</u>
2132.170	-42.82	-13.0	29.8	291.8	Vertical	<u>PASS</u>
7197.007	-46.02	-13.0	33.0	301.2	Vertical	<u>PASS</u>
19660.848	-29.84	-13.0	16.8	244.7	Vertical	<u>PASS</u>

** END OF REPORT **