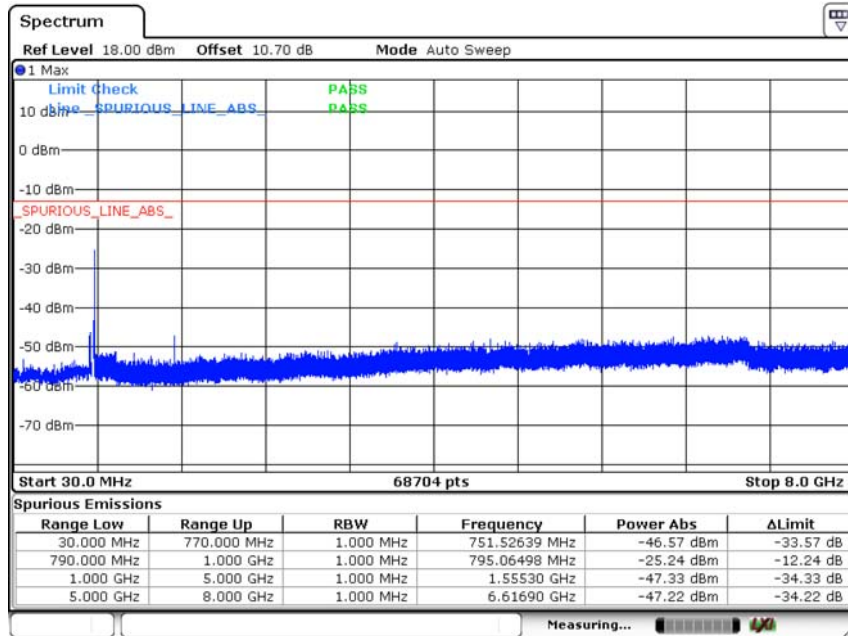


Test Model	Conducted Emissions	
	LTE Band 13	
	Middle Channel /10MHz	QPSK/Full RB



## 8.6 PEAK TO AVERAGE RATIO

### 8.6.1 Applicable Standard

According to FCC 27.50(a)(1) (b)

### 8.6.2 Conformance Limit

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

### 8.6.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

### 8.6.4 Test Procedure

The EUT was connected to Spectrum Analyzer and Base Station via power divider.

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

Set the number of counts to a value that stabilizes the measured CCDF curve.

Set the measurement interval to 1 ms.

Record the maximum PAPR level associated with a probability of 0.1%.

a) Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;

b) Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;

c) Set the number of counts to a value that stabilizes the measured CCDF curve;

d) Set the measurement interval as follows:

1) for continuous transmissions, set to 1 ms,

2) for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.

e) Record the maximum PAPR level associated with a probability of 0.1%.

### 8.6.5 Test Results

Temperature: 24 °C

Test Date: March 2, 2015

Humidity: 53 %

Test By: KING KONG

Mode	Band Width (MHz)	Modulation	Uplink Channel Number	RB Size	RB Offset	P. A .R (dB)	Limit (dB)	Verdict
LTE Band 4	3MHz	QPSK	19965	1	0	5.25	13	PASS
			20175	1	0	4.35	13	PASS
			20385	1	0	5.39	13	PASS
		16-QAM	19965	1	0	5.45	13	PASS
			20175	1	0	4.55	13	PASS
			20385	1	0	5.62	13	PASS

Temperature: 24°C  
Humidity: 53 %

Test Date: March 2, 2015  
Test By: KING KONG

Mode	Band Width (MHz)	Modulation	Uplink Channel Number	RB Size	RB Offset	P. A .R (dB)	Limit (dB)	Verdict
LTE Band 4	5MHz	QPSK	19975	1	0	5.36	13	PASS
			20175	1	0	4.49	13	PASS
			20375	1	0	5.48	13	PASS
		16-QAM	19975	1	0	5.59	13	PASS
			20175	1	0	4.67	13	PASS
			20375	1	0	5.88	13	PASS

Temperature: 24°C  
Humidity: 53 %

Test Date: March 2, 2015  
Test By: KING KONG

Mode	Band Width (MHz)	Modulation	Uplink Channel Number	RB Size	RB Offset	P. A .R (dB)	Limit (dB)	Verdict
LTE Band 4	20MHz	QPSK	20050	1	0	4.14	13	PASS
			20175	1	0	3.71	13	PASS
			20300	1	0	3.97	13	PASS
		16-QAM	20050	1	0	5.54	13	PASS
			20175	1	0	5.19	13	PASS
			20300	1	0	5.45	13	PASS

Temperature: 24°C  
Humidity: 53 %

Test Date: March 2, 2015  
Test By: KING KONG

Mode	Band Width (MHz)	Modulation	Uplink Channel Number	RB Size	RB Offset	P. A .R (dB)	Limit (dB)	Verdict
LTE Band 13	5MHz	QPSK	23205	1	0	5.39	13	PASS
			23230	1	0	5.39	13	PASS
			23255	1	0	5.33	13	PASS
		16-QAM	23205	1	0	5.74	13	PASS
			23230	1	0	6.03	13	PASS
			23255	1	0	5.83	13	PASS

Temperature: 24°C  
Humidity: 53 %

Test Date: March 2, 2015  
Test By: KING KONG

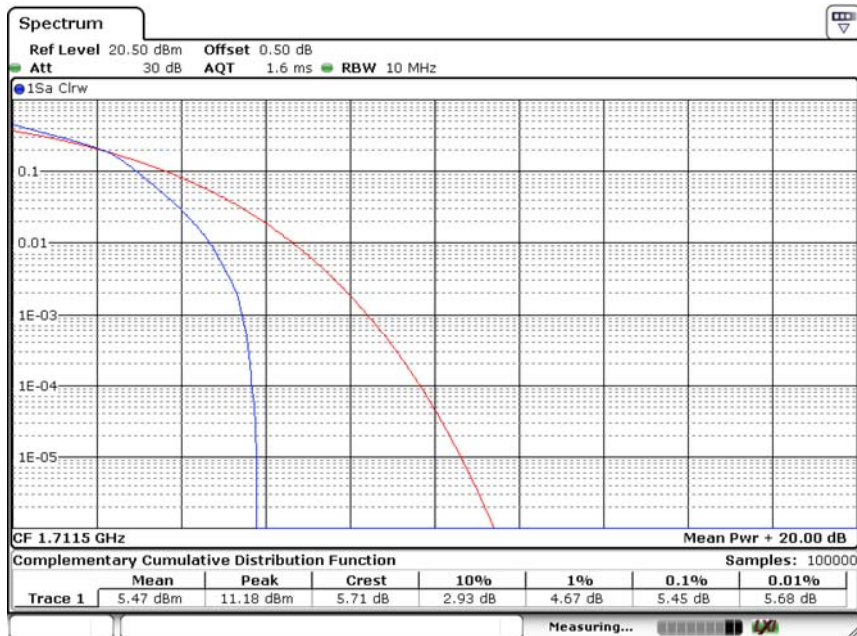
Mode	Band Width (MHz)	Modulation	Uplink Channel Number	RB Size	RB Offset	P. A .R (dB)	Limit (dB)	Verdict
LTE Band 13	10MHz	QPSK	23230	1	0	5.77	13	PASS
		16-QAM	23230	1	0	5.88	13	PASS

All the modulation modes were tested, the data of the worst mode are described in the following table

Test Model	LTE Band 4	
	3MHz Bandwidth/ QPSK	
	1RB /0 offset	Low Channel



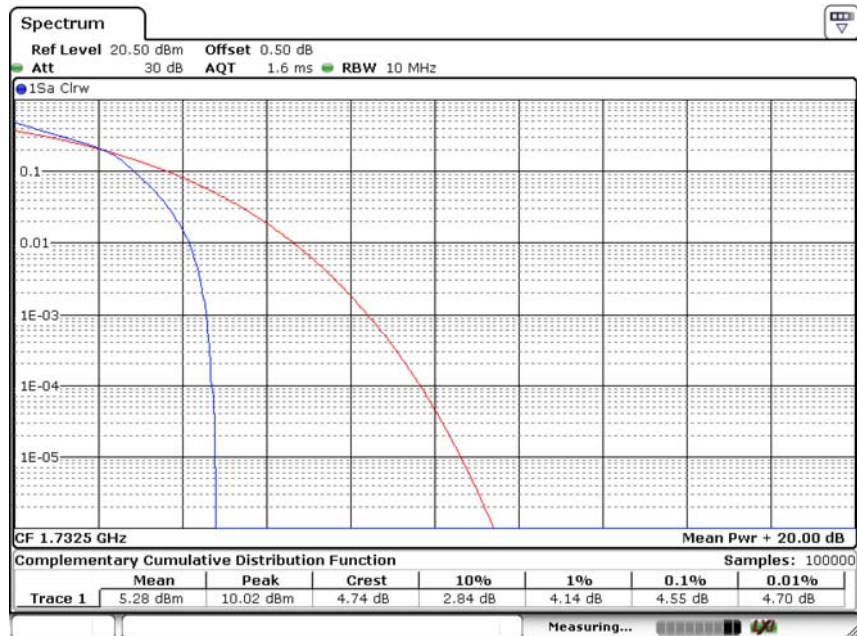
Test Model	LTE Band 4	
	3MHz Bandwidth/ 16-QAM	
	1RB /0 offset	Low Channel



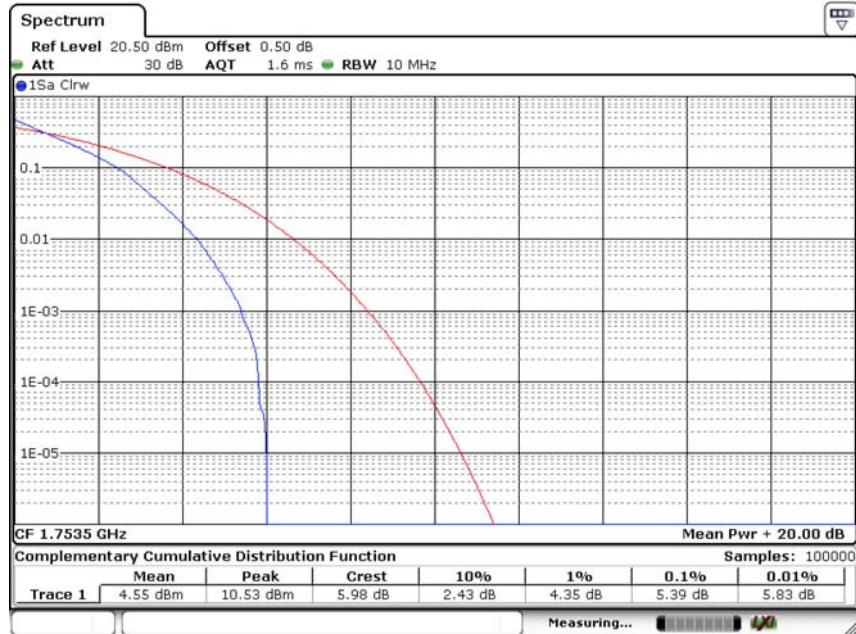
Test Model	LTE Band 4	
	3MHz Bandwidth/ QPSK	
	1RB /0 offset	Middle Channel



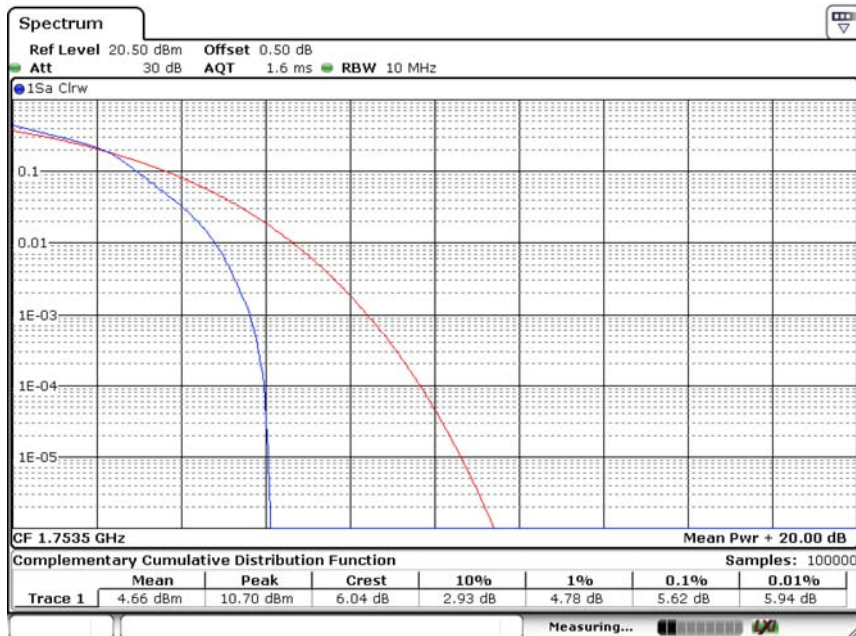
Test Model	LTE Band 4	
	3MHz Bandwidth/ 16-QAM	
	1RB /0 offset	Middle Channel



Test Model	LTE Band 4	
	3MHz Bandwidth/ QPSK	
	1RB /0 offset	High Channel



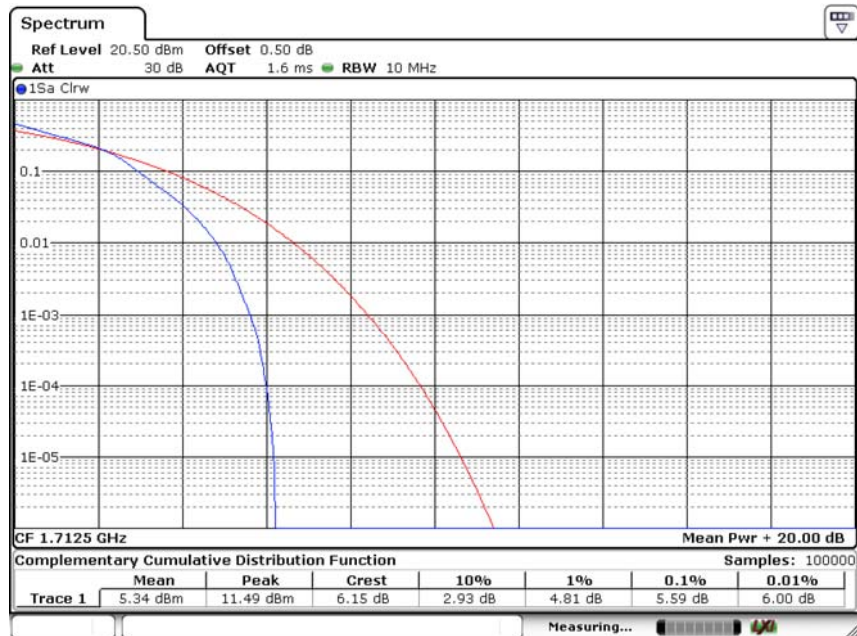
Test Model	LTE Band 4	
	3MHz Bandwidth/ 16-QAM	
	1RB /0 offset	High Channel



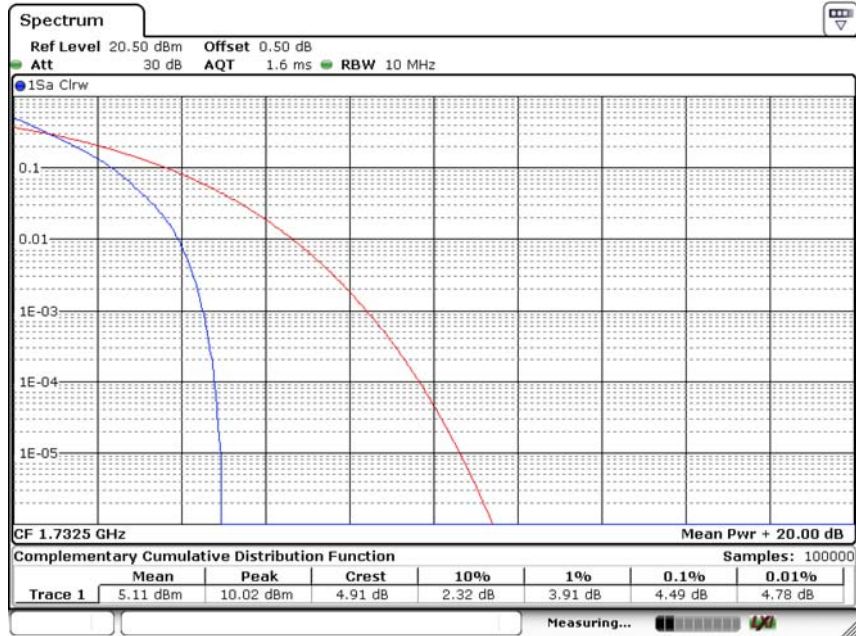
Test Model	LTE Band 4	
	5MHz Bandwidth/ QPSK	
	1RB /0 offset	Low Channel



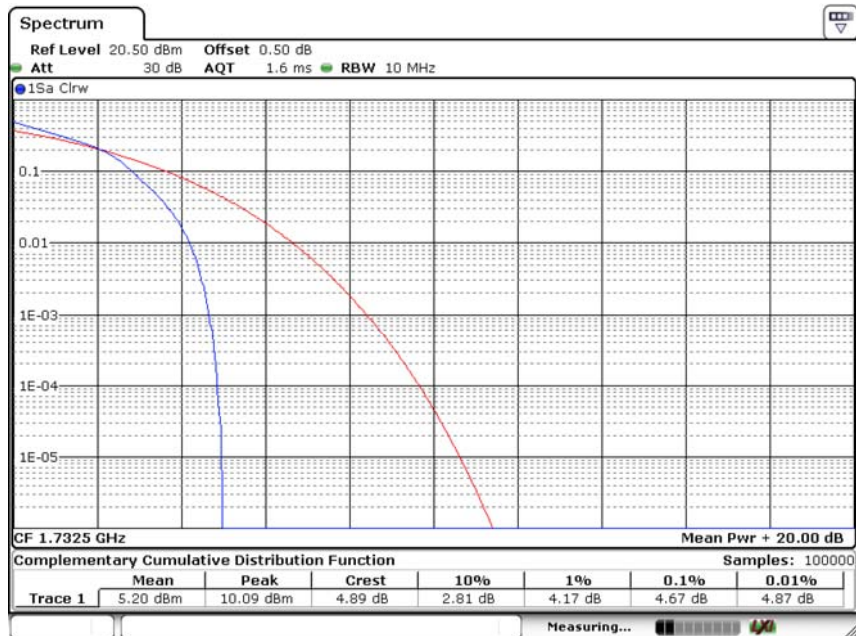
Test Model	LTE Band 4	
	5MHz Bandwidth/ 16-QAM	
	1RB /0 offset	Low Channel



Test Model	LTE Band 4	
	5MHz Bandwidth/ QPSK	
	1RB /0 offset	Middle Channel

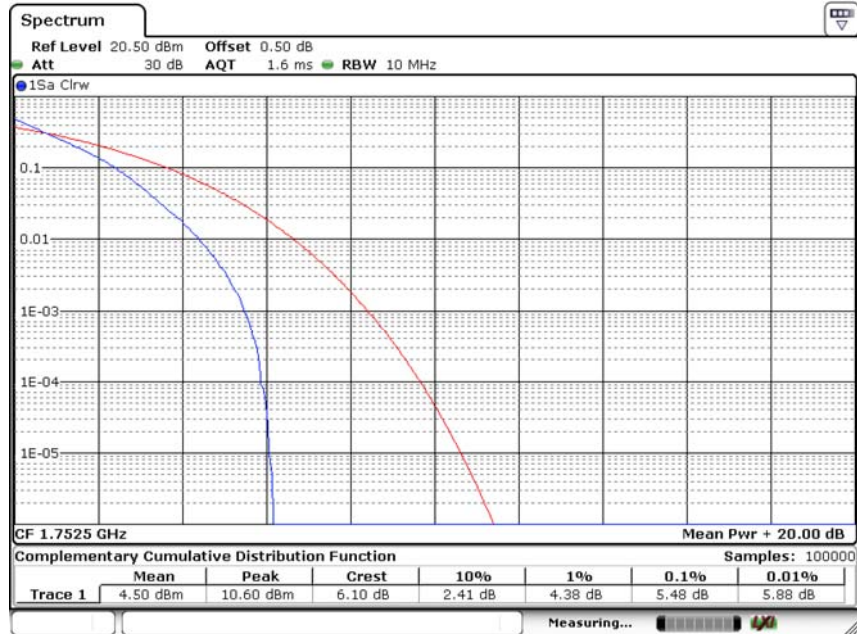


Test Model	LTE Band 4	
	5MHz Bandwidth/ 16-QAM	
	1RB /0 offset	Middle Channel

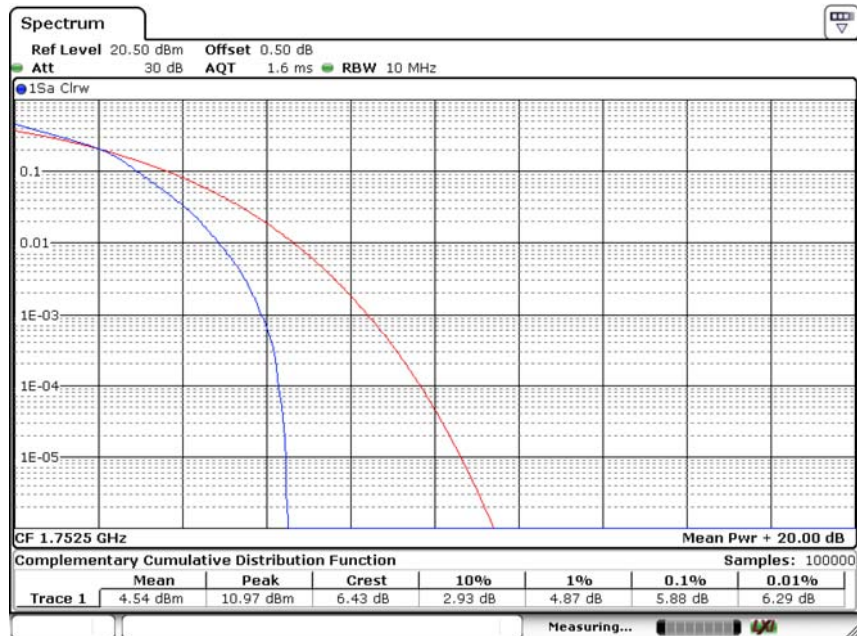




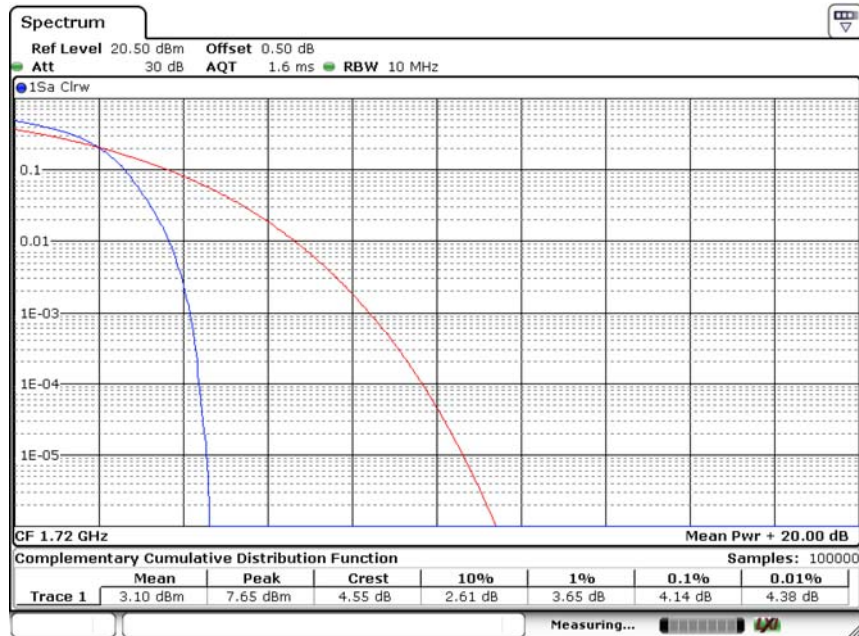
Test Model	LTE Band 4	
	5MHz Bandwidth/ QPSK	
	1RB /0 offset	High Channel



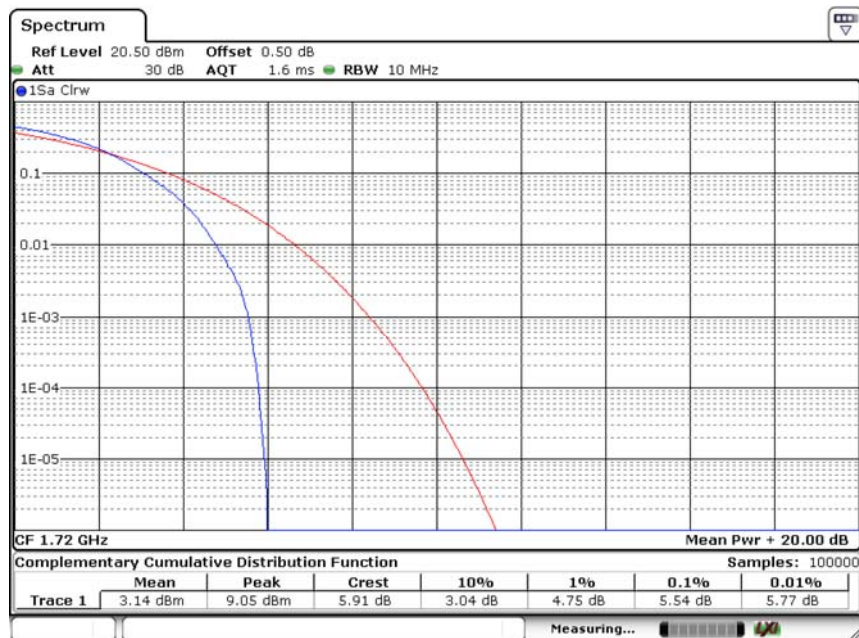
Test Model	LTE Band 4	
	5MHz Bandwidth/ 16-QAM	
	1RB /0 offset	High Channel



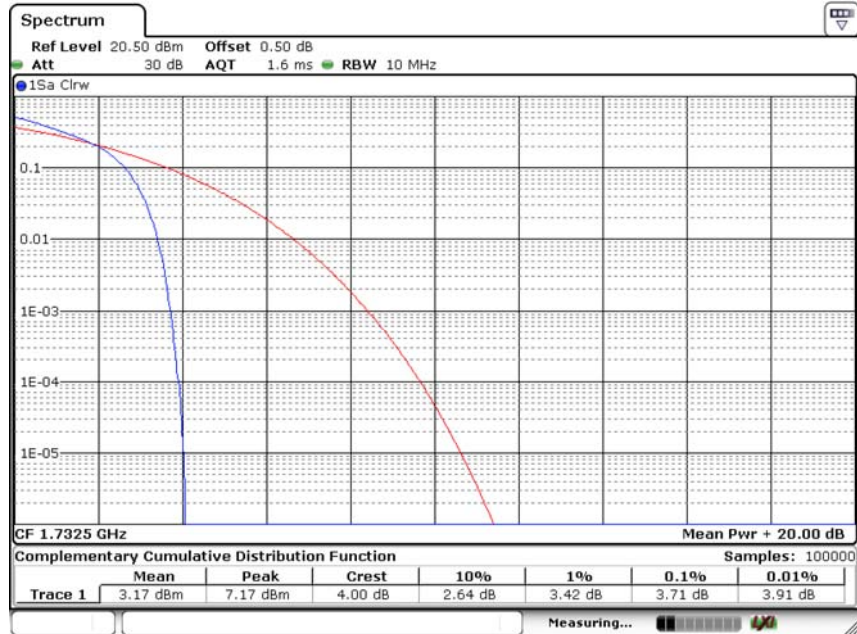
Test Model	LTE Band 4	
	20MHz Bandwidth/ QPSK	
	1RB /0 offset	Low Channel



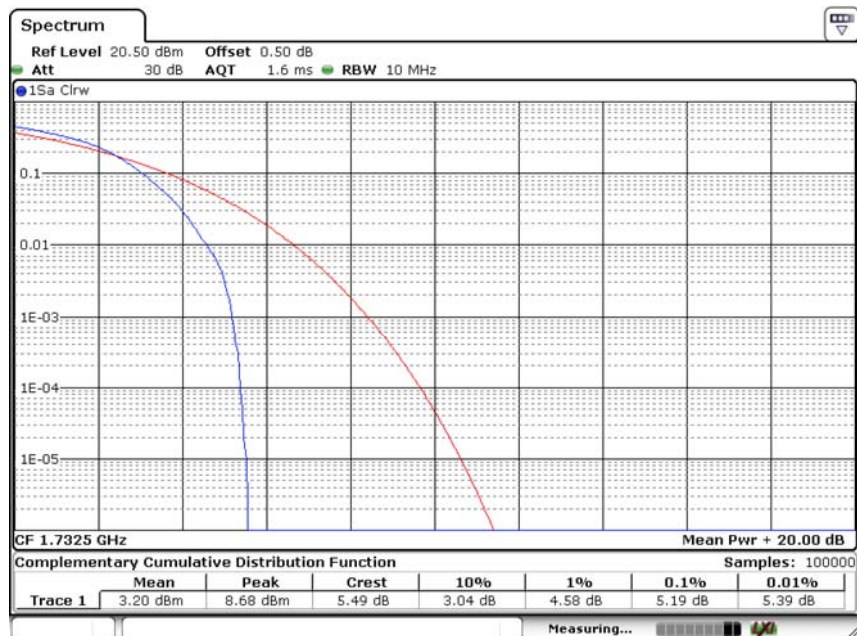
Test Model	LTE Band 4	
	20MHz Bandwidth/ 16-QAM	
	1RB /0 offset	Low Channel



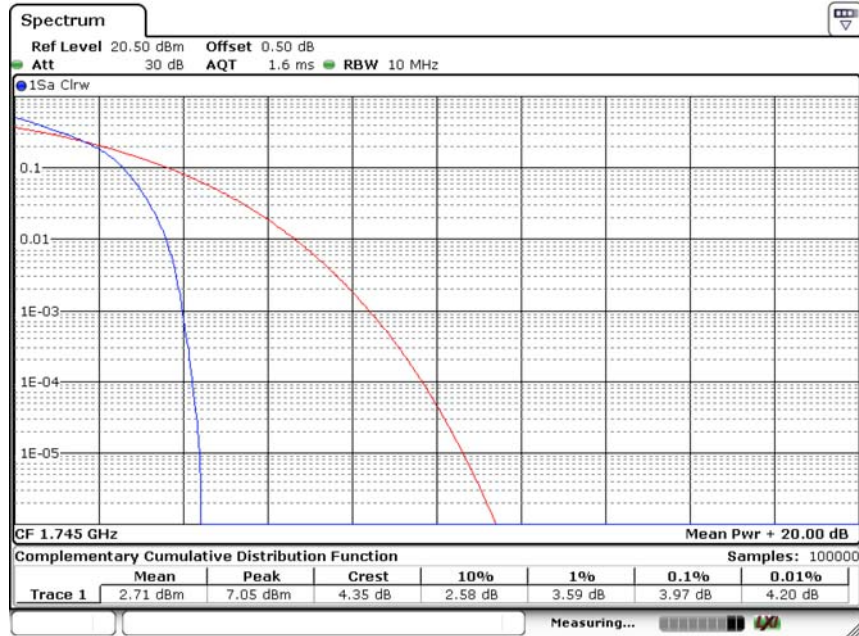
Test Model	LTE Band 4	
	20MHz Bandwidth/ QPSK	
	1RB /0 offset	Middle Channel



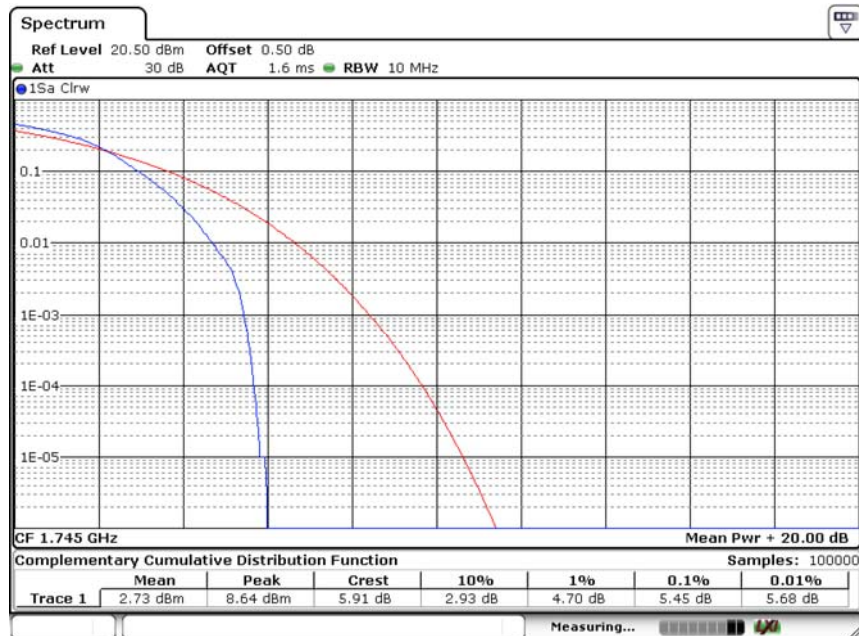
Test Model	LTE Band 4	
	20MHz Bandwidth/ 16-QAM	
	1RB /0 offset	Middle Channel



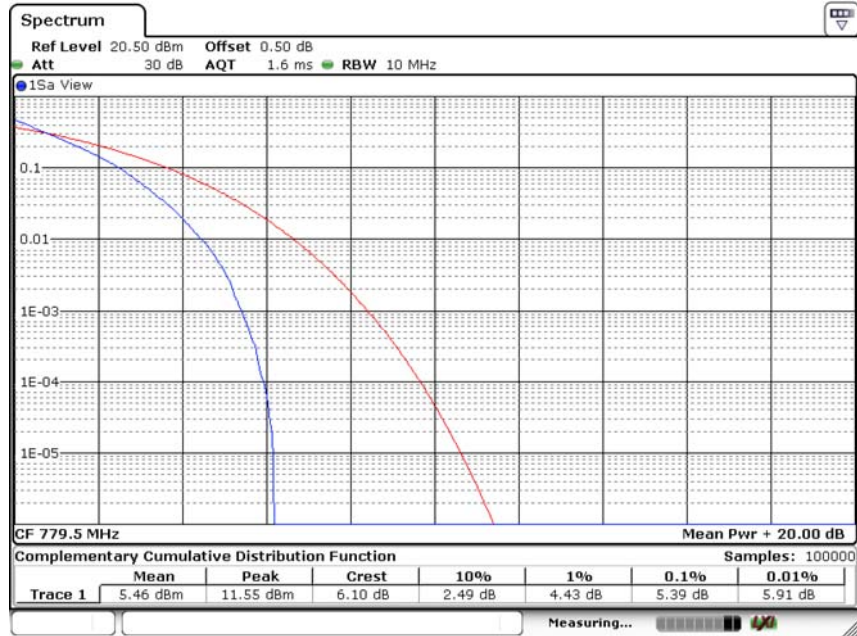
Test Model	LTE Band 4	
	20MHz Bandwidth/ QPSK	
	1RB /0 offset	High Channel



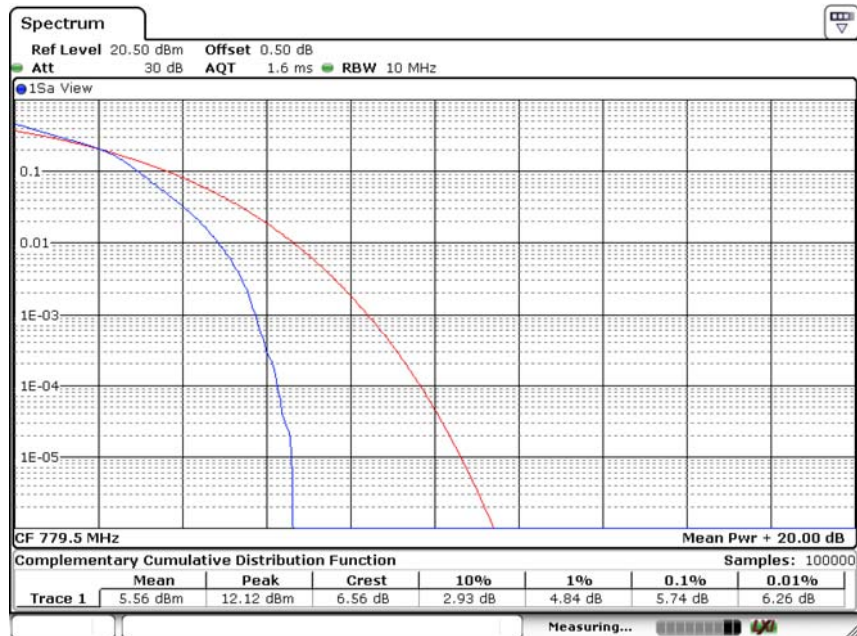
Test Model	LTE Band 4	
	20MHz Bandwidth/ 16-QAM	
	1RB /0 offset	High Channel



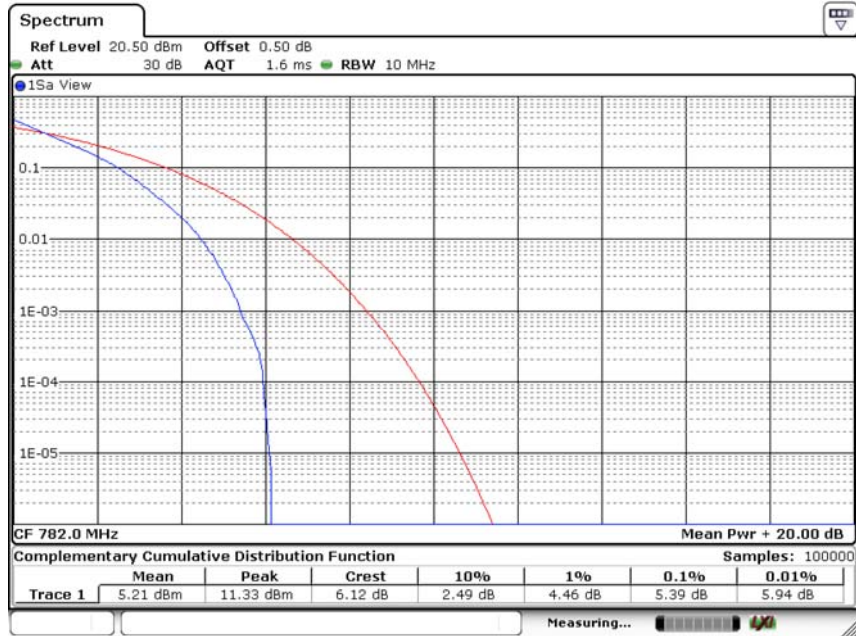
Test Model	LTE Band 13	
	5MHz Bandwidth/ QPSK	
	1RB /0 offset	Low Channel



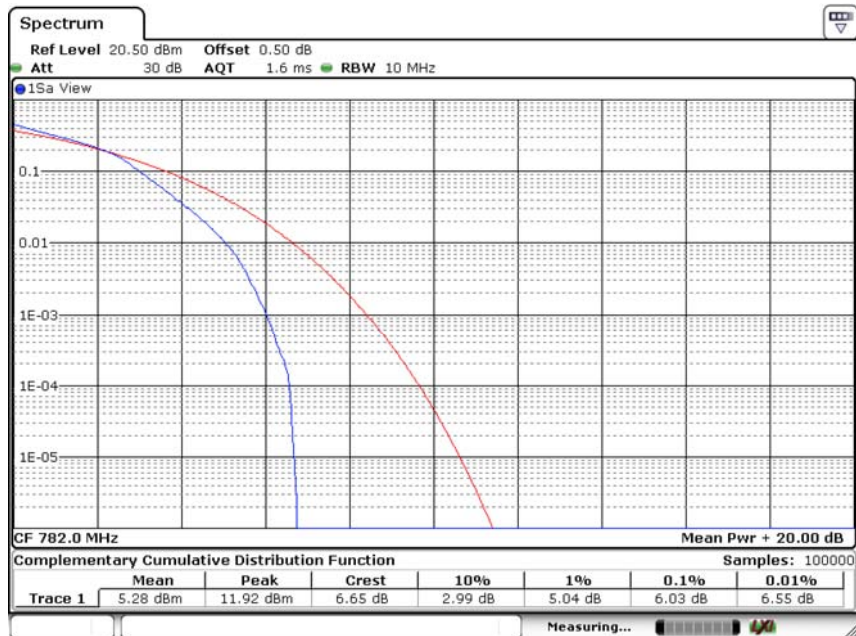
Test Model	LTE Band 13	
	5MHz Bandwidth/ 16-QAM	
	1RB /0 offset	Low Channel



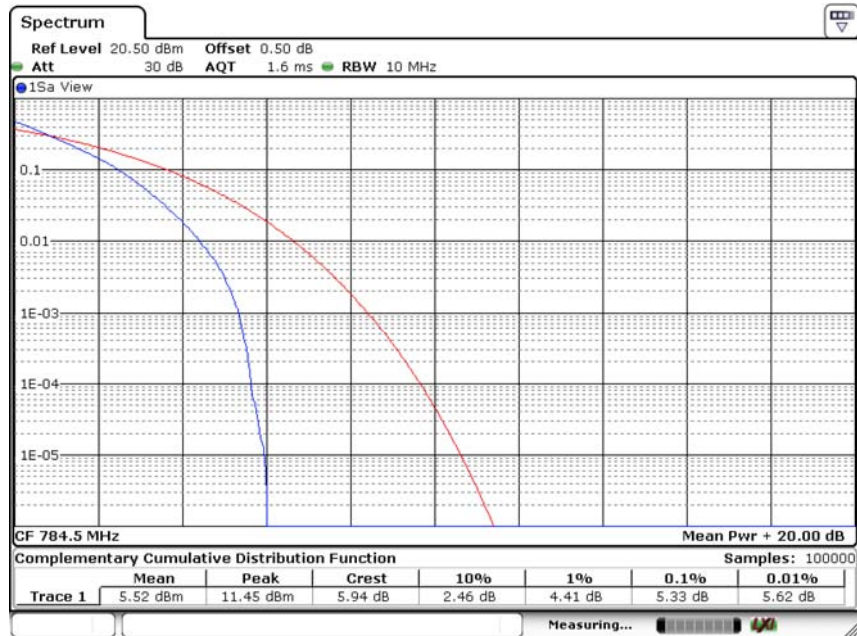
Test Model	LTE Band 13	
	5MHz Bandwidth/ QPSK	
	1RB /0 offset	Middle Channel



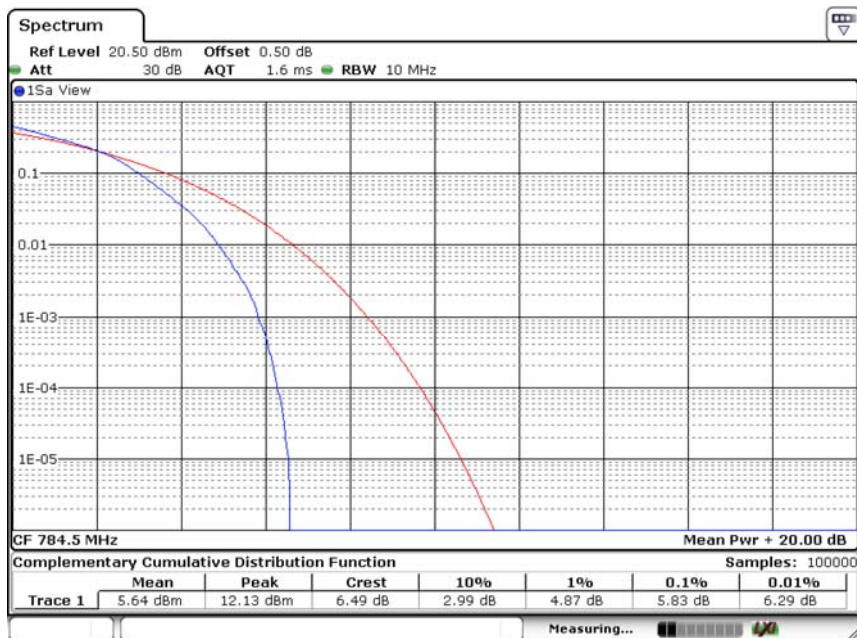
Test Model	LTE Band 13	
	5MHz Bandwidth/ 16-QAM	
	1RB /0 offset	Middle Channel



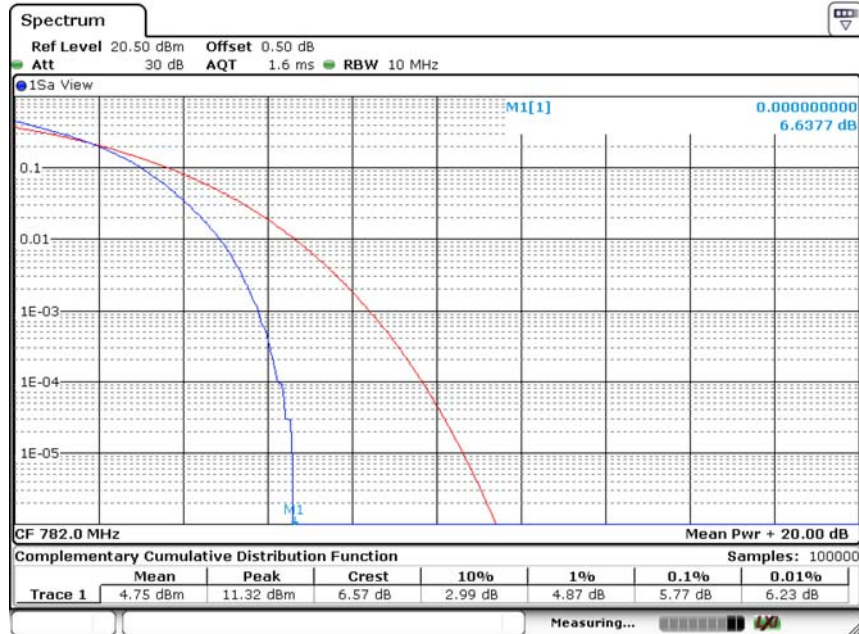
Test Model	LTE Band 13	
	5MHz Bandwidth/ QPSK	
	1RB /0 offset	High Channel



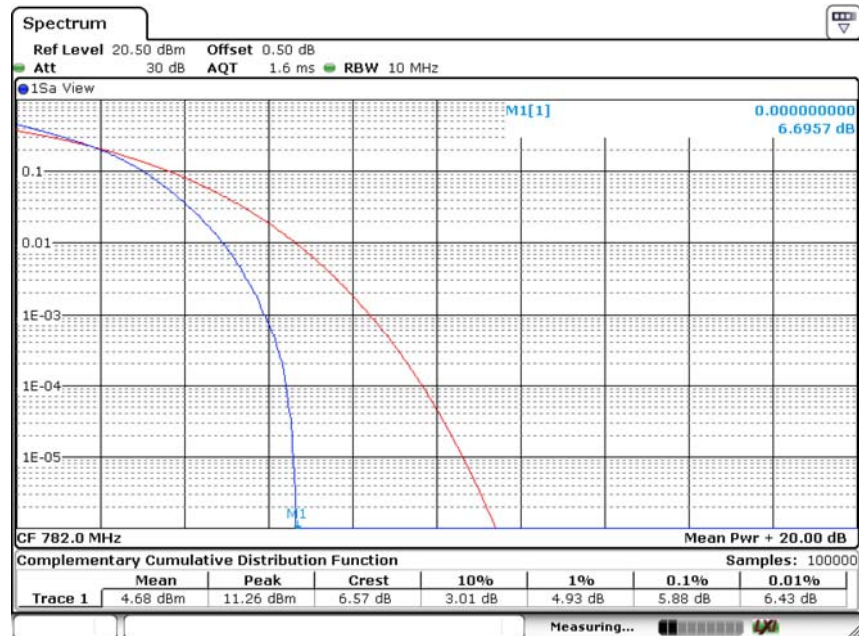
Test Model	LTE Band 13	
	5MHz Bandwidth/ 16-QAM	
	1RB /0 offset	High Channel



Test Model	LTE Band 13	
	10MHz Bandwidth/ QPSK	
	1RB /0 offset	Middle Channel



Test Model	LTE Band 13	
	10MHz Bandwidth/ 16-QAM	
	1RB /0 offset	Middle Channel





## 8.7 CONDUCTED EMISSION TEST

### 8.7.1 Applicable Standard

According to FCC Part 15.207(a)

### 8.7.2 Conformance Limit

Conducted Emission Limit		
Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies  
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 8.7.3 Test Configuration

Test according to clause 7.3 conducted emission test setup

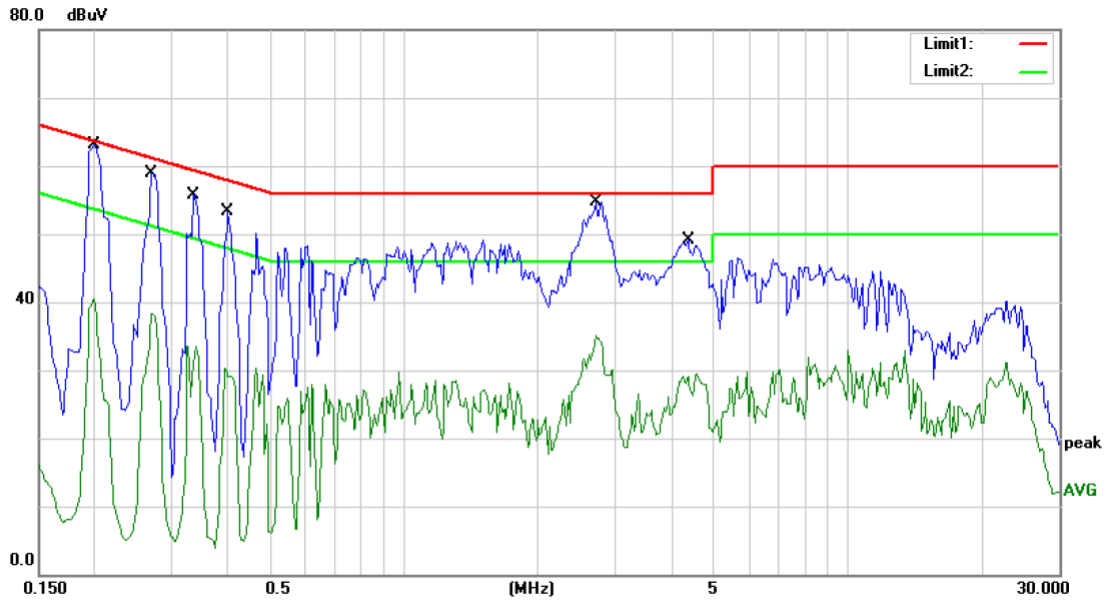
### 8.7.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.  
Maximum procedure was performed on the highest emissions to ensure EUT compliance.  
Repeat above procedures until all frequency measured were complete.

### 8.7.5 Test Results

PASS.

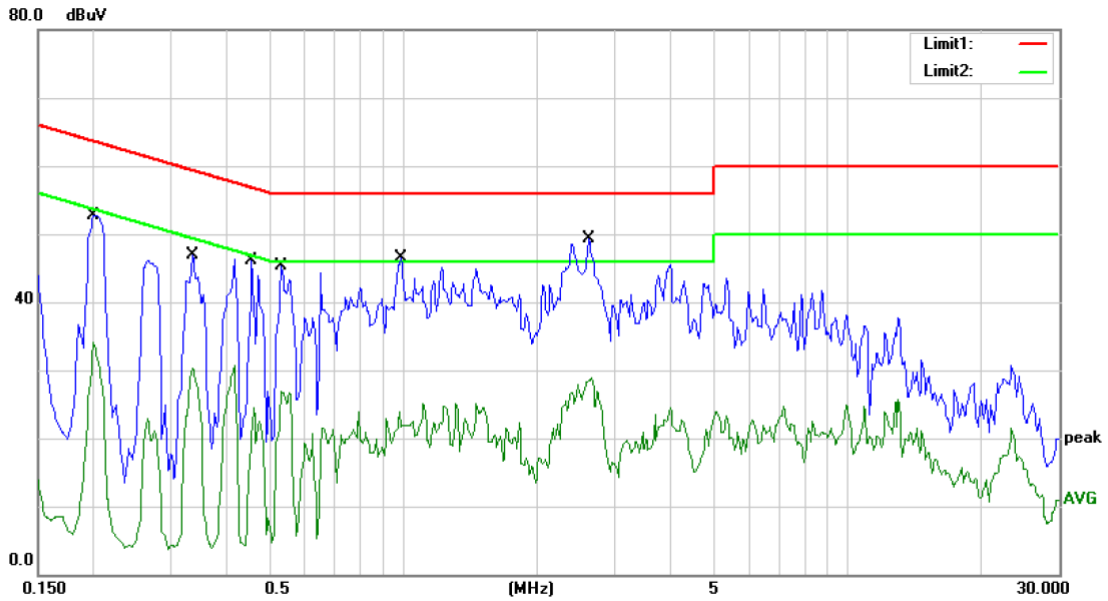
Adapter 1:



Site Conduction #1 Phase: **L1** Temperature: 24  
 Limit: (CE)FCC PART 15 class B\_QP Power: AC 120V/60Hz Humidity: 53 %  
 Mode: ON  
 Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
		MHz	Level	Factor	ment				
			dBuV	dB	dBuV	dBuV	dB		
1		0.2000	55.00	0.00	55.00	63.61	-8.61	QP	
2		0.2000	40.56	0.00	40.56	53.61	-13.05	AVG	
3		0.2700	50.00	0.00	50.00	61.12	-11.12	QP	
4		0.2700	38.29	0.00	38.29	51.12	-12.83	AVG	
5		0.3350	46.00	0.00	46.00	59.33	-13.33	QP	
6		0.3350	33.59	0.00	33.59	49.33	-15.74	AVG	
7		0.4000	53.25	0.00	53.25	57.85	-4.60	QP	
8		0.4000	30.26	0.00	30.26	47.85	-17.59	AVG	
9	*	2.7200	52.73	0.00	52.73	56.00	-3.27	QP	
10		2.7200	35.10	0.00	35.10	46.00	-10.90	AVG	
11		4.3650	49.06	0.00	49.06	56.00	-6.94	QP	
12		4.3650	29.44	0.00	29.44	46.00	-16.56	AVG	

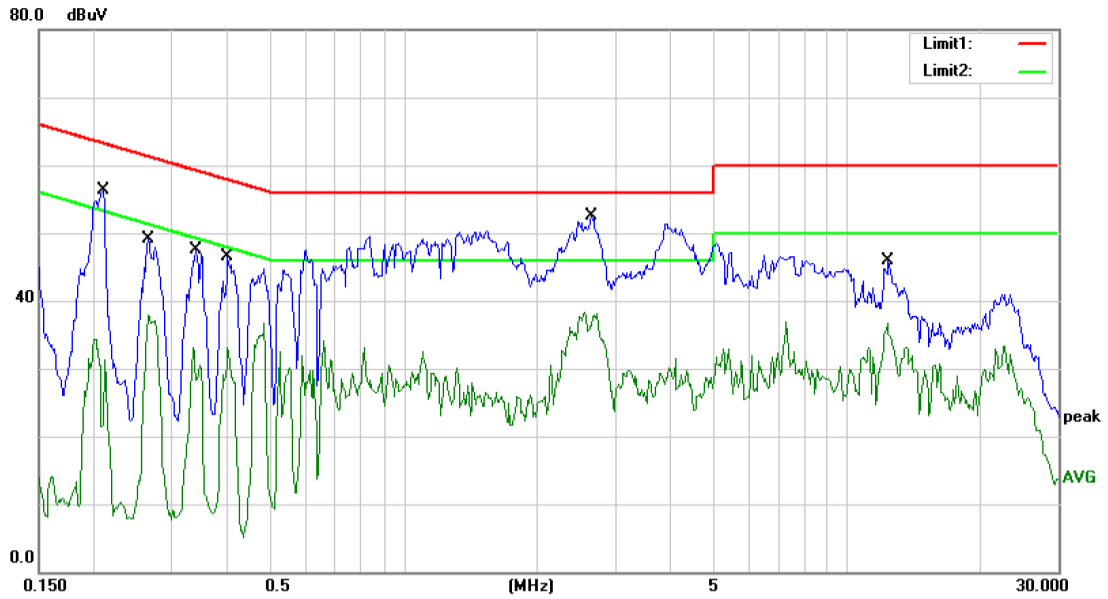
\*:Maximum data    x:Over limit    !:over margin    Comment: Factor build in receiver.    Operator: XY



Site Conduction #1 Phase: **N** Temperature: 24  
 Limit: (CE)FCC PART 15 class B\_QP Power: AC 120V/60Hz Humidity: 53 %  
 Mode: ON  
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2000	52.78	0.00	52.78	63.61	-10.83	QP	
2		0.2000	34.13	0.00	34.13	53.61	-19.48	AVG	
3		0.3350	46.85	0.00	46.85	59.33	-12.48	QP	
4		0.3350	30.35	0.00	30.35	49.33	-18.98	AVG	
5		0.4550	46.09	0.00	46.09	56.78	-10.69	QP	
6		0.4550	30.75	0.00	30.75	46.78	-16.03	AVG	
7		0.5300	45.38	0.00	45.38	56.00	-10.62	QP	
8		0.5300	26.91	0.00	26.91	46.00	-19.09	AVG	
9		0.9850	46.46	0.00	46.46	56.00	-9.54	QP	
10		0.9850	25.08	0.00	25.08	46.00	-20.92	AVG	
11	*	2.6100	49.23	0.00	49.23	56.00	-6.77	QP	
12		2.6100	28.80	0.00	28.80	46.00	-17.20	AVG	

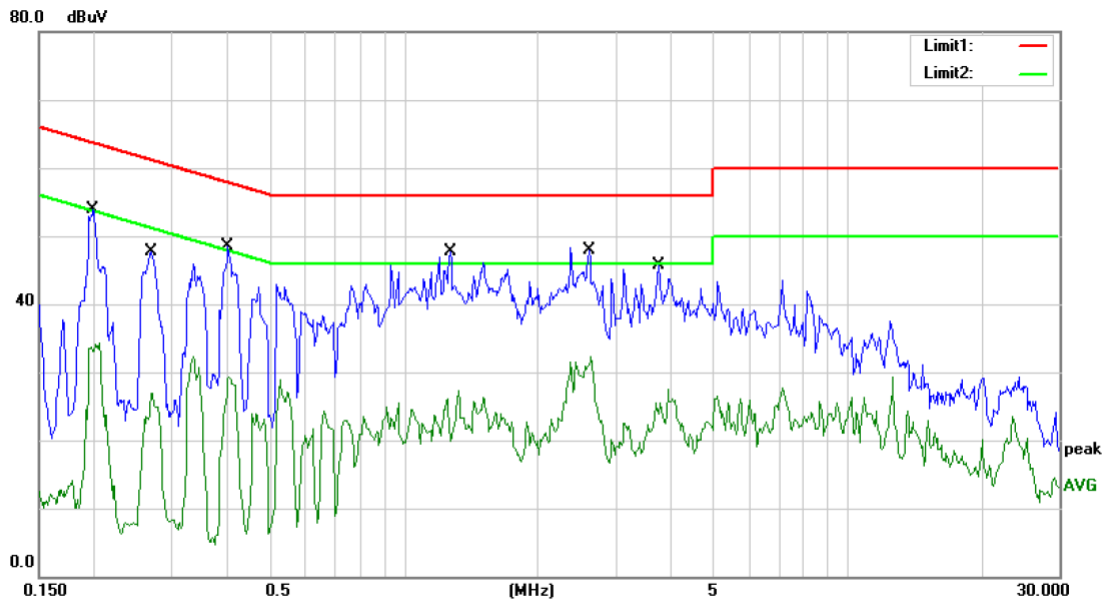
\*:Maximum data    x:Over limit    !:over margin    Comment: Factor build in receiver.    Operator: XY



Site Conduction #1 Phase: **L1** Temperature: 24  
 Limit: (CE)FCC PART 15 class B\_QP Power: AC 240V/50Hz Humidity: 53 %  
 Mode: ON  
 Note: Adapter 1

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.2100	56.25	0.00	56.25	63.21	-6.96	QP	
2		0.2100	34.39	0.00	34.39	53.21	-18.82	AVG	
3		0.2650	49.13	0.00	49.13	61.27	-12.14	QP	
4		0.2650	37.93	0.00	37.93	51.27	-13.34	AVG	
5		0.3400	47.56	0.00	47.56	59.20	-11.64	QP	
6		0.3400	33.06	0.00	33.06	49.20	-16.14	AVG	
7		0.4000	46.47	0.00	46.47	57.85	-11.38	QP	
8		0.4000	33.01	0.00	33.01	47.85	-14.84	AVG	
9	*	2.6500	52.55	0.00	52.55	56.00	-3.45	QP	
10		2.6500	38.32	0.00	38.32	46.00	-7.68	AVG	
11		12.4000	45.90	0.00	45.90	60.00	-14.10	QP	
12		12.4000	36.73	0.00	36.73	50.00	-13.27	AVG	

\*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: XY



Site Conduction #1  
 Limit: (CE)FCC PART 15 class B\_QP  
 Mode: ON  
 Note: Adapter 1

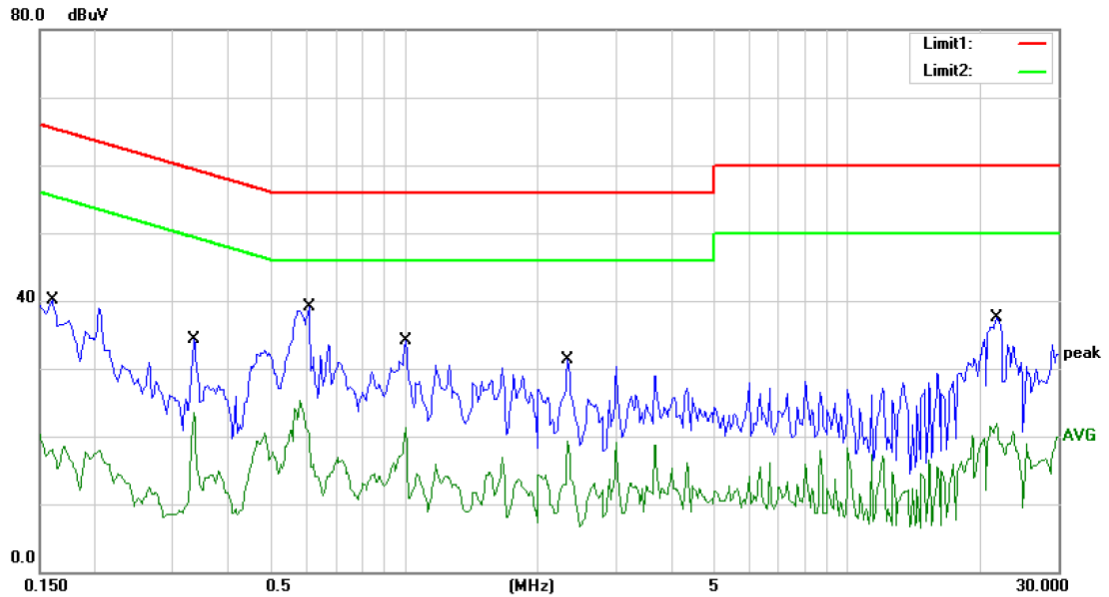
Phase: **N**  
 Power: AC 240V/50Hz

Temperature: 24  
 Humidity: 53 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1985	53.94	0.00	53.94	63.67	-9.73	QP	
2		0.1985	34.31	0.00	34.31	53.67	-19.36	AVG	
3		0.2700	47.62	0.00	47.62	61.12	-13.50	QP	
4		0.2700	26.99	0.00	26.99	51.12	-24.13	AVG	
5		0.4000	48.47	0.00	48.47	57.85	-9.38	QP	
6		0.4000	29.40	0.00	29.40	47.85	-18.45	AVG	
7		1.2700	47.65	0.00	47.65	56.00	-8.35	QP	
8		1.2700	27.30	0.00	27.30	46.00	-18.70	AVG	
9	*	2.6150	47.94	0.00	47.94	56.00	-8.06	QP	
10		2.6150	32.39	0.00	32.39	46.00	-13.61	AVG	
11		3.7400	45.69	0.00	45.69	56.00	-10.31	QP	
12		3.7400	27.47	0.00	27.47	46.00	-18.53	AVG	

\*:Maximum data    x:Over limit    !:over margin    Comment: Factor build in receiver.    Operator: XY

Adapter 2:



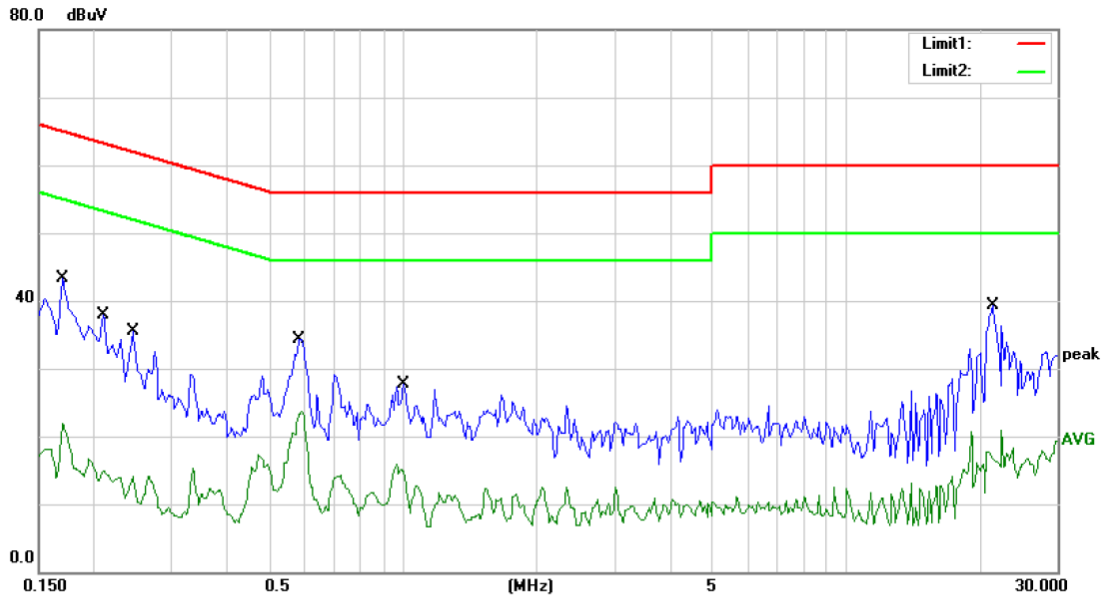
Site Conduction #2  
 Limit: (CE)FCC PART 15 class B\_QP  
 Mode: ON  
 Note:

Phase: **L1**  
 Power: AC 120V/60Hz

Temperature: 26  
 Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1600	40.10	0.00	40.10	65.46	-25.36	QP	
2		0.1600	20.22	0.00	20.22	55.46	-35.24	AVG	
3		0.3350	34.33	0.00	34.33	59.33	-25.00	QP	
4		0.3350	23.46	0.00	23.46	49.33	-25.87	AVG	
5	*	0.6100	39.03	0.00	39.03	56.00	-16.97	QP	
6		0.6100	25.27	0.00	25.27	46.00	-20.73	AVG	
7		1.0050	34.07	0.00	34.07	56.00	-21.93	QP	
8		1.0050	21.24	0.00	21.24	46.00	-24.76	AVG	
9		2.3400	31.35	0.00	31.35	56.00	-24.65	QP	
10		2.3400	19.39	0.00	19.39	46.00	-26.61	AVG	
11		21.7250	37.43	0.00	37.43	60.00	-22.57	QP	
12		21.7250	21.93	0.00	21.93	50.00	-28.07	AVG	

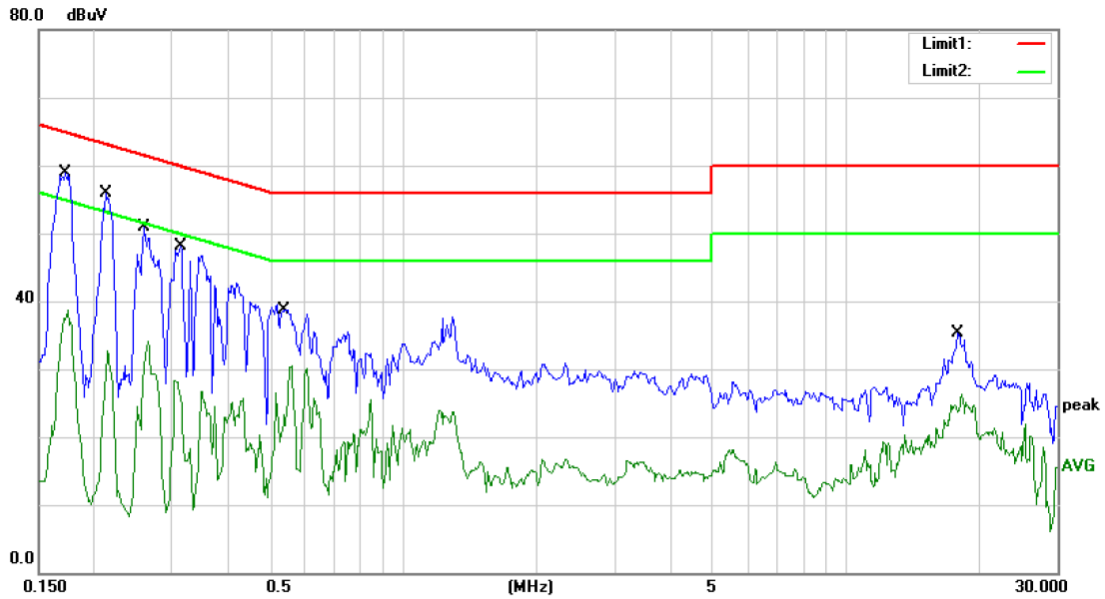
\*:Maximum data    x:Over limit    !:over margin    Comment: Factor build in receiver.    Operator: KK



Site Conduction #2 Phase: **N** Temperature: 26  
 Limit: (CE)FCC PART 15 class B\_QP Power: AC 120V/60Hz Humidity: 55 %  
 Mode: ON  
 Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1700	43.23	0.00	43.23	64.96	-21.73	QP	
2		0.1700	21.85	0.00	21.85	54.96	-33.11	AVG	
3		0.2100	37.95	0.00	37.95	63.21	-25.26	QP	
4		0.2100	14.94	0.00	14.94	53.21	-38.27	AVG	
5		0.2450	35.48	0.00	35.48	61.92	-26.44	QP	
6		0.2450	14.03	0.00	14.03	51.92	-37.89	AVG	
7		0.5800	34.33	0.00	34.33	56.00	-21.67	QP	
8		0.5800	23.68	0.00	23.68	46.00	-22.32	AVG	
9		1.0000	27.68	0.00	27.68	56.00	-28.32	QP	
10		1.0000	15.80	0.00	15.80	46.00	-30.20	AVG	
11	*	21.4000	39.39	0.00	39.39	60.00	-20.61	QP	
12		21.4000	20.83	0.00	20.83	50.00	-29.17	AVG	

\*:Maximum data    x:Over limit    !:over margin    Comment: Factor build in receiver.    Operator: KK

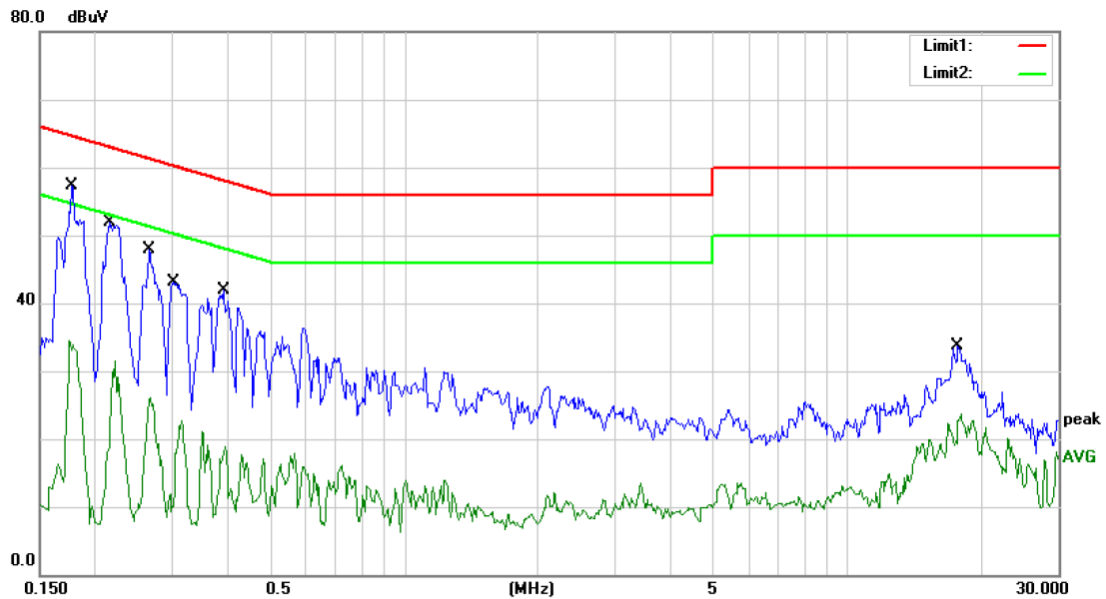


Site Conduction #1 Phase: **L1** Temperature: 24  
 Limit: (CE)FCC PART 15 class B\_QP Power: AC 240V/50Hz Humidity: 53 %  
 Mode: ON  
 Note: Adapter 2

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1	*	0.1720	58.80	0.00	58.80	64.86	-6.06	QP	
2		0.1720	38.69	0.00	38.69	54.86	-16.17	AVG	
3		0.2127	55.83	0.00	55.83	63.10	-7.27	QP	
4		0.2127	32.70	0.00	32.70	53.10	-20.40	AVG	
5		0.2600	50.85	0.00	50.85	61.43	-10.58	QP	
6		0.2600	34.08	0.00	34.08	51.43	-17.35	AVG	
7		0.3133	48.14	0.00	48.14	59.88	-11.74	QP	
8		0.3133	28.23	0.00	28.23	49.88	-21.65	AVG	
9		0.5400	38.74	0.00	38.74	56.00	-17.26	QP	
10		0.5400	30.51	0.00	30.51	46.00	-15.49	AVG	
11		17.9250	35.29	0.00	35.29	60.00	-24.71	QP	
12		17.9250	26.21	0.00	26.21	50.00	-23.79	AVG	

\*:Maximum data    x:Over limit    !:over margin    Comment: Factor build in receiver.    Operator: XY





Site Conduction #1 Phase: **N** Temperature: 24  
 Limit: (CE)FCC PART 15 class B\_QP Power: AC 240V/50Hz Humidity: 53 %  
 Mode: ON  
 Note: Adapter 2

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1	*	0.1768	57.28	0.00	57.28	64.63	-7.35	QP	
2		0.1768	34.46	0.00	34.46	54.63	-20.17	AVG	
3		0.2162	51.85	0.00	51.85	62.96	-11.11	QP	
4		0.2162	31.45	0.00	31.45	52.96	-21.51	AVG	
5		0.2650	47.97	0.00	47.97	61.27	-13.30	QP	
6		0.2650	26.13	0.00	26.13	51.27	-25.14	AVG	
7		0.3003	43.17	0.00	43.17	60.23	-17.06	QP	
8		0.3003	22.77	0.00	22.77	50.23	-27.46	AVG	
9		0.3900	41.81	0.00	41.81	58.06	-16.25	QP	
10		0.3900	21.12	0.00	21.12	48.06	-26.94	AVG	
11		17.8250	33.64	0.00	33.64	60.00	-26.36	QP	
12		17.8250	23.64	0.00	23.64	50.00	-26.36	AVG	

\*:Maximum data    x:Over limit    !:over margin    Comment: Factor build in receiver.    Operator: XY

**8.8 ANTENNA APPLICATION**

8.8.1 Antenna Requirement

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

A licensee that owns its antenna structure(s) must not allow such antenna structure(s) to become a hazard to air navigation. In general, antenna structure owners are responsible for registering antenna structures with the FCC if required by part 17 of this chapter, and for installing and maintaining any required marking and lighting. However, in the event of default of this responsibility by an antenna structure owner, the FCC permittee or licensee authorized to use an affected antenna structure will be held responsible by the FCC for ensuring that the antenna structure continues to meet the requirements of part 17 of this chapter. See §17.6 of this chapter.

(a) Marking and lighting. Antenna structures must be marked, lighted and maintained in accordance with part 17 of this chapter and all applicable rules and requirements of the Federal Aviation Administration. For any construction or alteration that would exceed the requirements of section 17.7 of this chapter, licensees must notify the appropriate Regional Office of the Federal Aviation Administration (FAA Form 7460-1) and file a request for antenna height clearance and obstruction marking and lighting specifications (FCC Form 854) with the FCC, WTB, 1270 Fairfield Road, Gettysburg, PA 17325.

(b) Maintenance contracts. Antenna structure owners (or licensees and permittees, in the event of default by an antenna structure owner) may enter into contracts with other entities to monitor and carry out necessary maintenance of antenna structures. Antenna structure owners (or licensees and permittees, in the event of default by an antenna structure owner) that make such contractual arrangements continue to be responsible for the maintenance of antenna structures in regard to air navigation safety

8.8.2 Result

The EUT has 2 antennas:

Main Antenna	LTE band 4/Antenna Gain:2dBi
	LTE band 13/Antenna Gain:0.5dBi
Auxiliary Antenna	LTE band 4/Antenna Gain:0.5dBi
	LTE band 13/Antenna Gain:-2.5dBi

The antenna can't be replaced by the user, which in accordance to section 15.203, please refer to the internal photos..

END OF REPORT