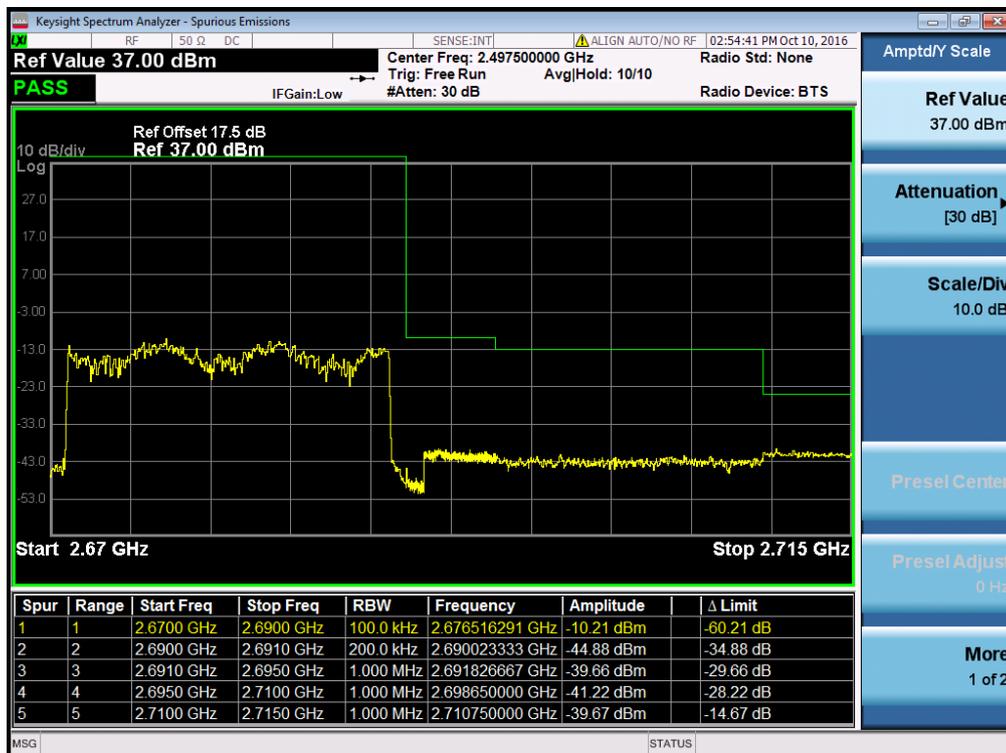


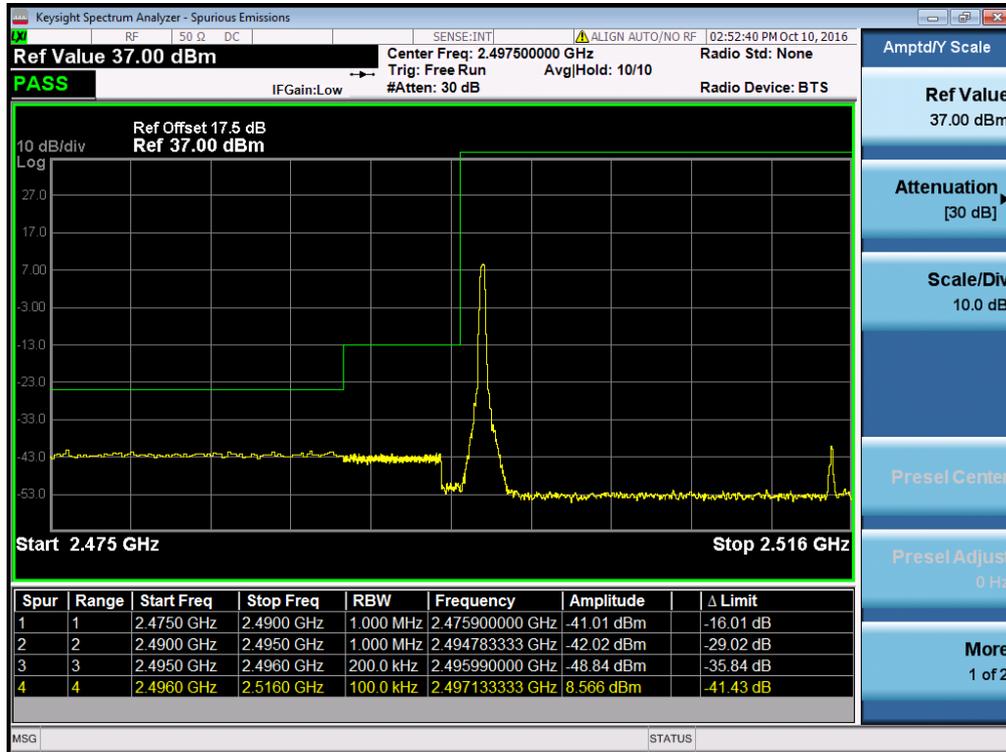
Higher Band Edge Plot for QPSK-RB Size 1, RB Offset 99



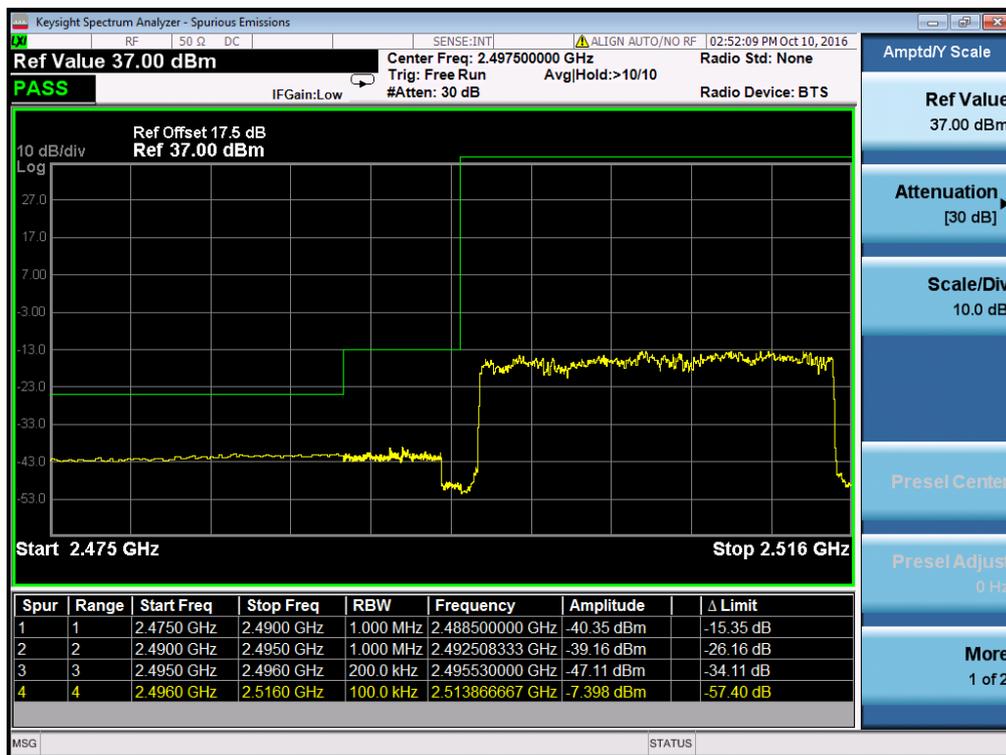
Higher Band Edge Plot for QPSK-RB Size 100, RB Offset 0



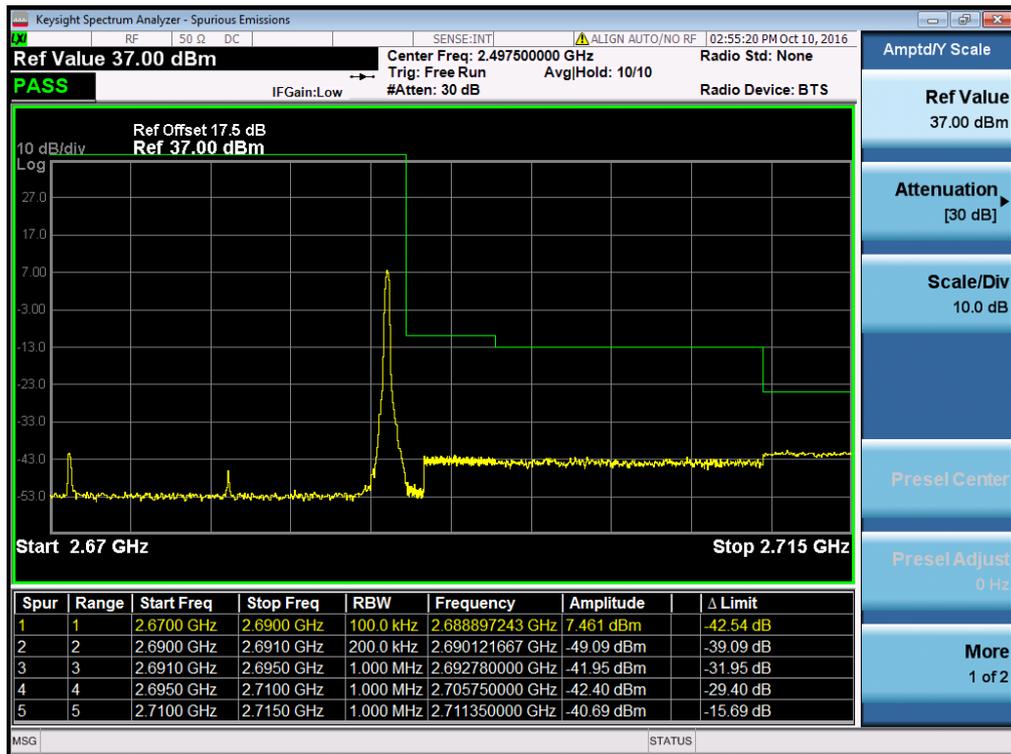
Band	LTE Band 41	Modulation	16QAM
Bandwidth	20MHz		



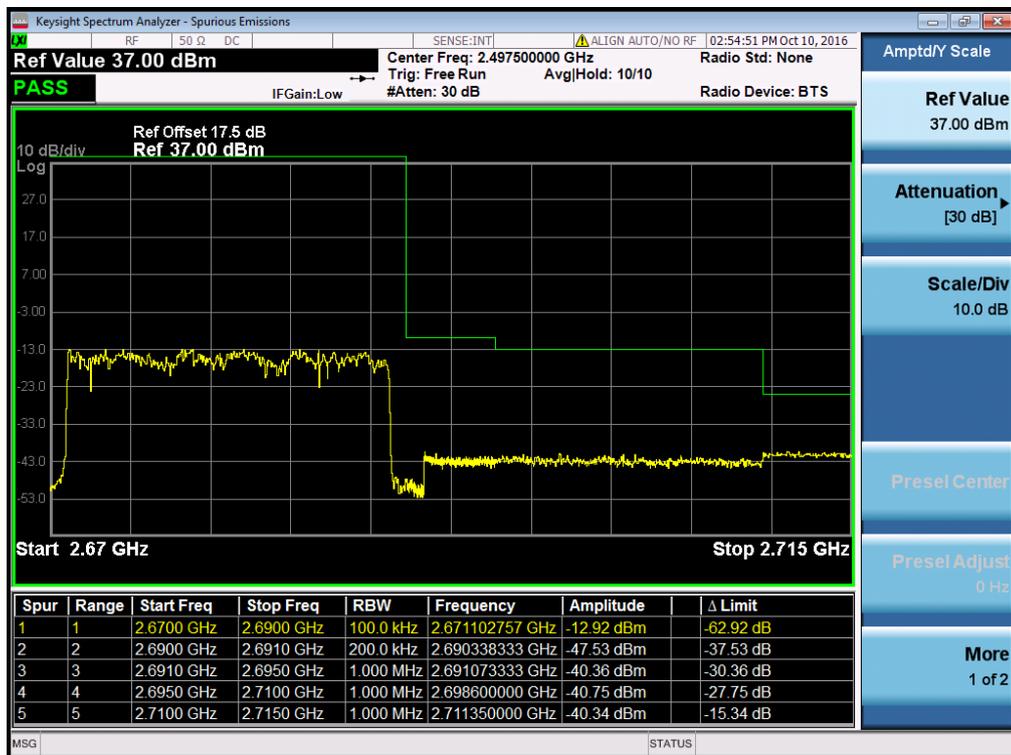
Lower Band Edge Plot for 16QAM-RB Size 1, RB Offset 0



Lower Band Edge Plot for 16QAM-RB Size 100, RB Offset 0



Higher Band Edge Plot for 16QAM-RB Size 1, RB Offset 99



Higher Band Edge Plot for 16QAM-RB Size 100, RB Offset 0

2.7 Transmitter Radiated Power (EIRP/ERP)

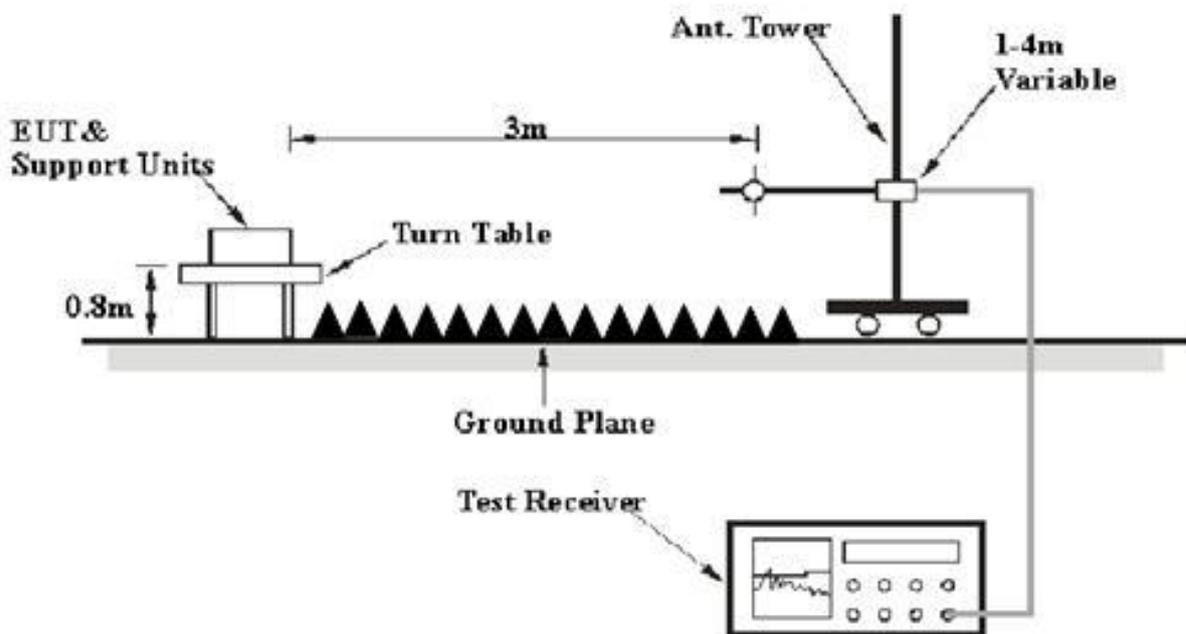
2.7.1 Requirement

Equivalent isotropic radiated power output measurements by substitution method according to ANSI /TIA / EIA-603-C-2004, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r02. Mobile and portable (hand-held) stations operating are limited to average EIRP of 2 watts with LTE band 2 / 7 and 1 watt with LTE band 4.

2.7.2 Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.7.3 Test Setup



2.7.4 Test Procedures

1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
2. The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer which used a channel power option across EUT's signal



bandwidth per section 4.0 of KDB 971168 D01v02r02.

4. The table was rotated 360 degrees to determine the position of the highest radiated power.
5. The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
6. Taking the record of maximum ERP/EIRP.
7. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
8. The conducted power at the terminal of the dipole antenna is measured.
9. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
10. $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$

P_s (dBm): Input power to substitution antenna.

G_s (dBi or dBd): Substitution antenna Gain.

$E_t = R_t + AF$

$E_s = R_s + AF$

AF (dB/m): Receive antenna factor

R_t : The highest received signal in spectrum analyzer for EUT.

R_s : The highest received signal in spectrum analyzer for substitution antenna.



2.7.5 Test Result of ERP/EIRP

1. LTE Band 5 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V	Verdict
			RB Size	RB Offset				
5	1.4	QPSK	3	0	824.7	23.88	H	PASS
5	1.4	QPSK	3	2	836.5	23.85	H	PASS
5	1.4	QPSK	1	2	848.3	23.89	H	PASS
5	1.4	QPSK	3	0	824.7	23.40	V	PASS
5	1.4	QPSK	3	2	836.5	23.34	V	PASS
5	1.4	QPSK	1	2	848.3	23.37	V	PASS
5	1.4	16QAM	3	2	824.7	22.89	H	PASS
5	1.4	16QAM	3	2	836.5	22.91	H	PASS
5	1.4	16QAM	3	2	848.3	22.87	H	PASS
5	1.4	16QAM	3	2	824.7	22.17	V	PASS
5	1.4	16QAM	3	2	836.5	22.21	V	PASS
5	1.4	16QAM	3	2	848.3	22.22	V	PASS
5	3	QPSK	1	0	825.5	23.81	H	PASS
5	3	QPSK	1	0	836.5	23.86	H	PASS
5	3	QPSK	1	7	847.5	23.85	H	PASS
5	3	QPSK	1	0	825.5	23.40	V	PASS
5	3	QPSK	1	0	836.5	23.41	V	PASS
5	3	QPSK	1	7	847.5	23.37	V	PASS
5	3	16QAM	1	14	825.5	22.82	H	PASS
5	3	16QAM	1	14	836.5	22.84	H	PASS
5	3	16QAM	1	14	847.5	22.85	H	PASS
5	3	16QAM	1	14	825.5	22.27	V	PASS
5	3	16QAM	1	14	836.5	22.22	V	PASS
5	3	16QAM	1	14	847.5	22.20	V	PASS
5	5	QPSK	1	12	826.5	23.82	H	PASS
5	5	QPSK	1	24	836.5	23.88	H	PASS
5	5	QPSK	1	24	846.5	23.84	H	PASS
5	5	QPSK	1	12	826.5	23.44	V	PASS
5	5	QPSK	1	24	836.5	23.42	V	PASS
5	5	QPSK	1	24	846.5	23.46	V	PASS
5	5	16QAM	1	24	826.5	22.85	H	PASS
5	5	16QAM	1	0	836.5	22.81	H	PASS
5	5	16QAM	1	0	846.5	22.87	H	PASS
5	5	16QAM	1	24	826.5	22.22	V	PASS
5	5	16QAM	1	0	836.5	22.25	V	PASS
5	5	16QAM	1	0	846.5	22.18	V	PASS



LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V	Verdict
			RB Size	RB Offset				
5	10	QPSK	1	24	829	23.87	H	PASS
5	10	QPSK	1	0	836.5	23.94	H	PASS
5	10	QPSK	1	24	844	23.92	H	PASS
5	10	QPSK	1	24	829	23.47	V	PASS
5	10	QPSK	1	0	836.5	23.52	V	PASS
5	10	QPSK	1	24	844	23.48	V	PASS
5	10	16QAM	1	24	829	22.89	H	PASS
5	10	16QAM	1	0	836.5	22.94	H	PASS
5	10	16QAM	1	24	844	22.88	H	PASS
5	10	16QAM	1	24	829	22.25	V	PASS
5	10	16QAM	1	0	836.5	22.27	V	PASS
5	10	16QAM	1	24	844	22.23	V	PASS



2. LTE Band 17 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	ERP (dBm)	H/V	Verdict
			RB Size	RB Offset				
17	5	QPSK	1	24	706.5	23.75	H	PASS
17	5	QPSK	1	24	710	23.80	H	PASS
17	5	QPSK	1	12	713.5	23.81	H	PASS
17	5	QPSK	1	24	706.5	23.26	V	PASS
17	5	QPSK	1	24	710	23.25	V	PASS
17	5	QPSK	1	12	713.5	23.27	V	PASS
17	5	16QAM	1	24	706.5	22.69	H	PASS
17	5	16QAM	1	24	710	22.75	H	PASS
17	5	16QAM	1	12	713.5	22.65	H	PASS
17	5	16QAM	1	24	706.5	22.17	V	PASS
17	5	16QAM	1	24	710	22.18	V	PASS
17	5	16QAM	1	12	713.5	22.22	V	PASS
17	10	QPSK	1	49	709	23.83	H	PASS
17	10	QPSK	1	49	710	23.81	H	PASS
17	10	QPSK	1	49	711	23.85	H	PASS
17	10	QPSK	1	49	709	23.29	V	PASS
17	10	QPSK	1	49	710	23.34	V	PASS
17	10	QPSK	1	49	711	23.28	V	PASS
17	10	16QAM	1	24	709	22.73	H	PASS
17	10	16QAM	1	49	710	22.76	H	PASS
17	10	16QAM	1	24	711	22.81	H	PASS
17	10	16QAM	1	24	709	22.20	V	PASS
17	10	16QAM	1	49	710	22.26	V	PASS
17	10	16QAM	1	24	711	22.22	V	PASS



3. LTE Band 41 Test Verdict:

LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V	Verdict
			RB Size	RB Offset				
41	5	QPSK	1	0	2498.5	22.78	H	PASS
41	5	QPSK	1	0	2593	22.75	H	PASS
41	5	QPSK	1	0	2687.5	22.80	H	PASS
41	5	QPSK	1	0	2498.5	22.24	V	PASS
41	5	QPSK	1	0	2593	22.29	V	PASS
41	5	QPSK	1	0	2687.5	22.25	V	PASS
41	5	16QAM	1	0	2498.5	21.84	H	PASS
41	5	16QAM	1	0	2593	21.85	H	PASS
41	5	16QAM	1	0	2687.5	21.87	H	PASS
41	5	16QAM	1	0	2498.5	21.25	V	PASS
41	5	16QAM	1	0	2593	21.32	V	PASS
41	5	16QAM	1	0	2687.5	21.29	V	PASS
41	10	QPSK	1	0	2501	22.80	H	PASS
41	10	QPSK	1	0	2593	22.77	H	PASS
41	10	QPSK	1	0	2685	22.82	H	PASS
41	10	QPSK	1	0	2501	22.32	V	PASS
41	10	QPSK	1	0	2593	22.30	V	PASS
41	10	QPSK	1	0	2685	22.28	V	PASS
41	10	16QAM	1	0	2501	21.84	H	PASS
41	10	16QAM	1	0	2593	21.80	H	PASS
41	10	16QAM	1	0	2685	21.89	H	PASS
41	10	16QAM	1	0	2501	21.24	V	PASS
41	10	16QAM	1	0	2593	21.30	V	PASS
41	10	16QAM	1	0	2685	21.35	V	PASS
41	15	QPSK	1	0	2503.5	22.83	H	PASS
41	15	QPSK	1	0	2593	22.85	H	PASS
41	15	QPSK	1	0	2682.5	22.79	H	PASS
41	15	QPSK	1	0	2503.5	22.32	V	PASS
41	15	QPSK	1	0	2593	22.31	V	PASS
41	15	QPSK	1	0	2682.5	22.27	V	PASS
41	15	16QAM	1	0	2503.5	21.89	H	PASS
41	15	16QAM	1	0	2593	21.93	H	PASS
41	15	16QAM	1	0	2682.5	21.87	H	PASS
41	15	16QAM	1	0	2503.5	21.29	V	PASS
41	15	16QAM	1	0	2593	21.32	V	PASS
41	15	16QAM	1	0	2682.5	21.37	V	PASS



LTE Band	BW (MHz)	Modulation	RB Configuration		Freq. (MHz)	EIRP (dBm)	H/V	Verdict
			RB Size	RB Offset				
41	20	QPSK	1	0	2506	22.92	H	PASS
41	20	QPSK	1	0	2593	22.90	H	PASS
41	20	QPSK	1	0	2680	22.89	H	PASS
41	20	QPSK	1	0	2506	22.35	V	PASS
41	20	QPSK	1	0	2593	22.39	V	PASS
41	20	QPSK	1	0	2680	22.32	V	PASS
41	20	16QAM	1	0	2506	21.89	H	PASS
41	20	16QAM	1	0	2593	21.92	H	PASS
41	20	16QAM	1	0	2680	21.97	H	PASS
41	20	16QAM	1	0	2506	21.31	V	PASS
41	20	16QAM	1	0	2593	21.36	V	PASS
41	20	16QAM	1	0	2680	21.34	V	PASS

2.8 Radiated Out of Band Emissions

2.8.1 Requirement

The radiated spurious emission was measured by substitution method according to ANSI / TIA /EIA-603-C-2004. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

For Band 7

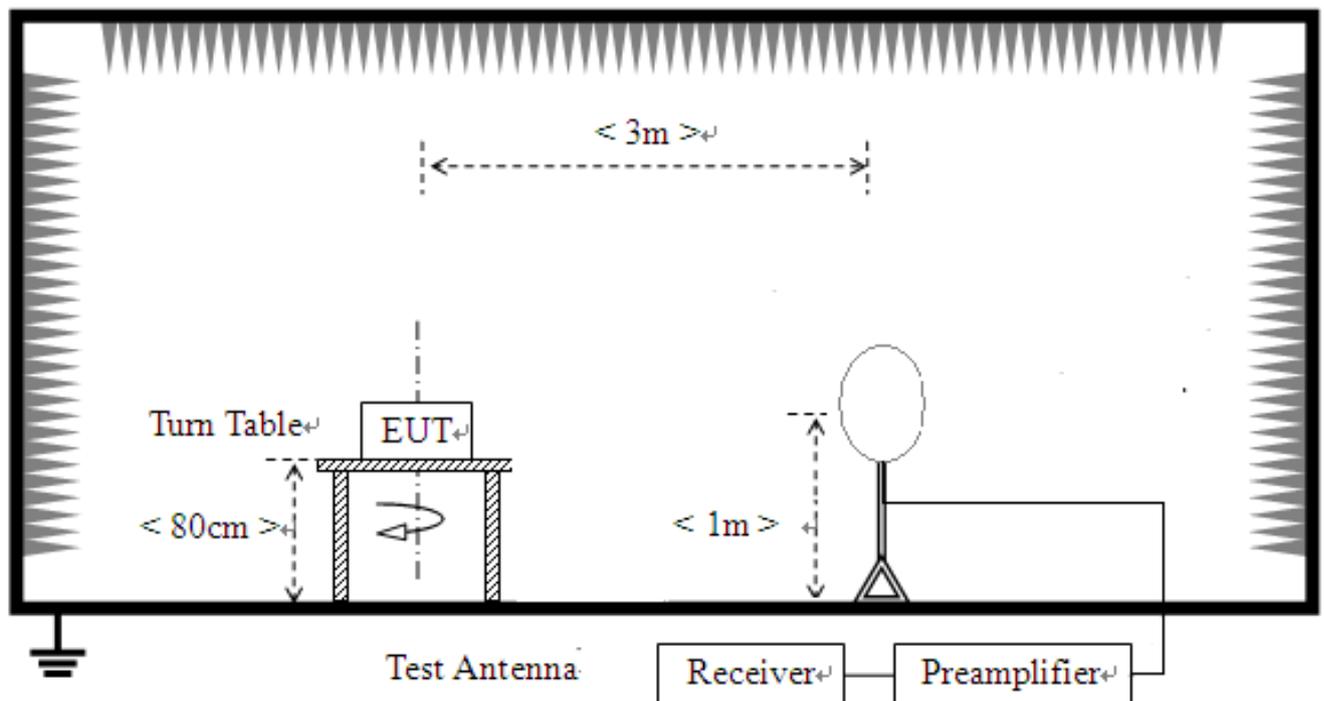
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $55 + 10 \log (P)$ dB.

2.8.2 Measuring Instruments

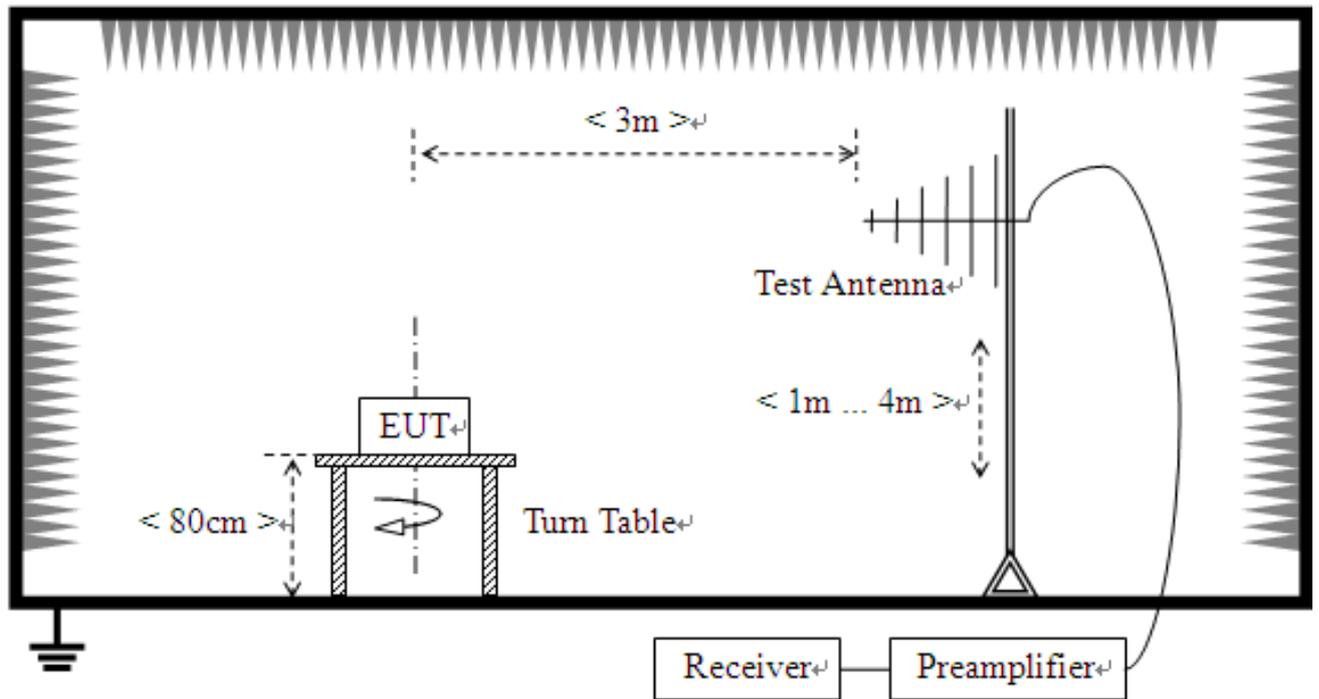
The measuring equipment is listed in the section 3 of this test report.

2.8.3 Test Setup

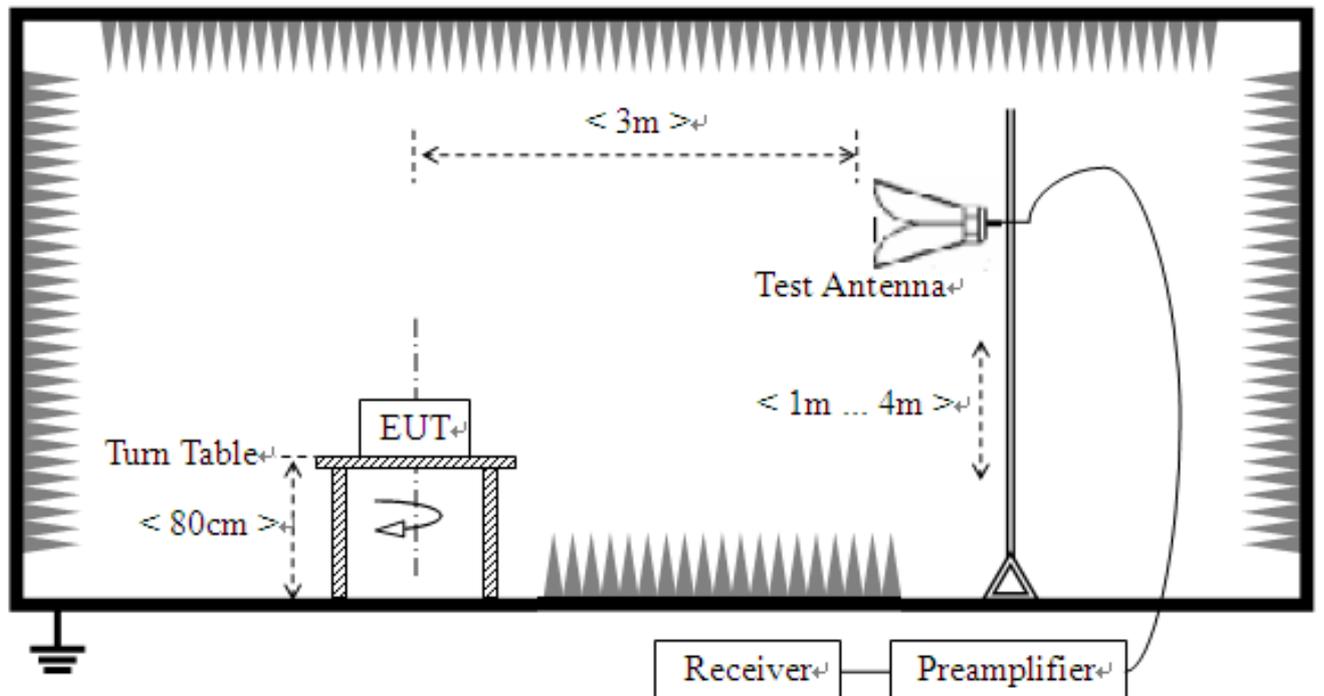
For radiated emissions from 9kHz to 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



2.8.4 Test Procedures

1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

$$\begin{aligned} & \text{The limit line is derived from } 43 + 10\log(P)\text{dB below the transmitter power } P(\text{Watts}) \\ & = P(\text{W}) - [43 + 10\log(P)] \text{ (dB)} \\ & = [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)} \\ & = -13\text{dBm}. \end{aligned}$$

<For Band 7>

$$\begin{aligned} & \text{The limit line is derived from } 55 + 10\log(P)\text{dB below the transmitter power } P(\text{Watts}) \\ & = P(\text{W}) - [55 + 10\log(P)] \text{ (dB)} \\ & = [30 + 10\log(P)] \text{ (dBm)} - [55 + 10\log(P)] \text{ (dB)} \\ & = -25\text{dBm}. \end{aligned}$$

11. All Spurious Emission tests were performed in X, Y, Z axis direction and low, middle, high channel. And only the worst axis test condition was recorded in this test report.
12. The spectrum is measured from 9 KHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. The worst case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.



13. The maximum RB configurations of the Radiated Spurious Emissions as RB Size 1,
RB Offset 0

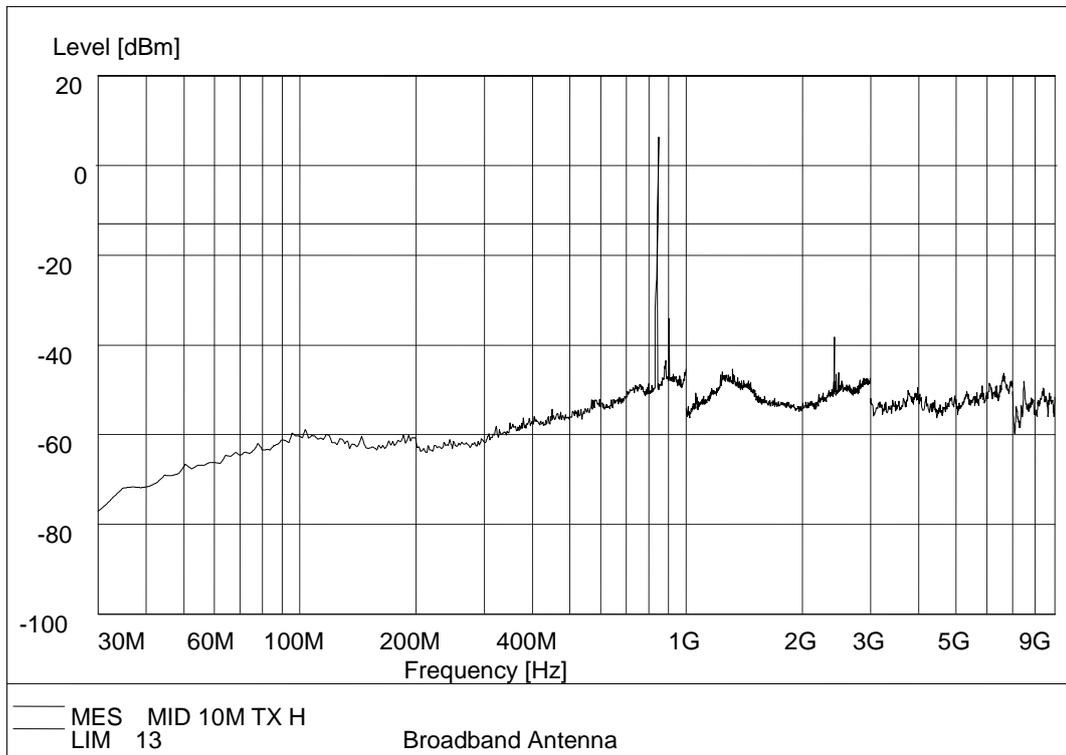


2.8.5 Test Result (Plots) of Radiated Spurious Emission

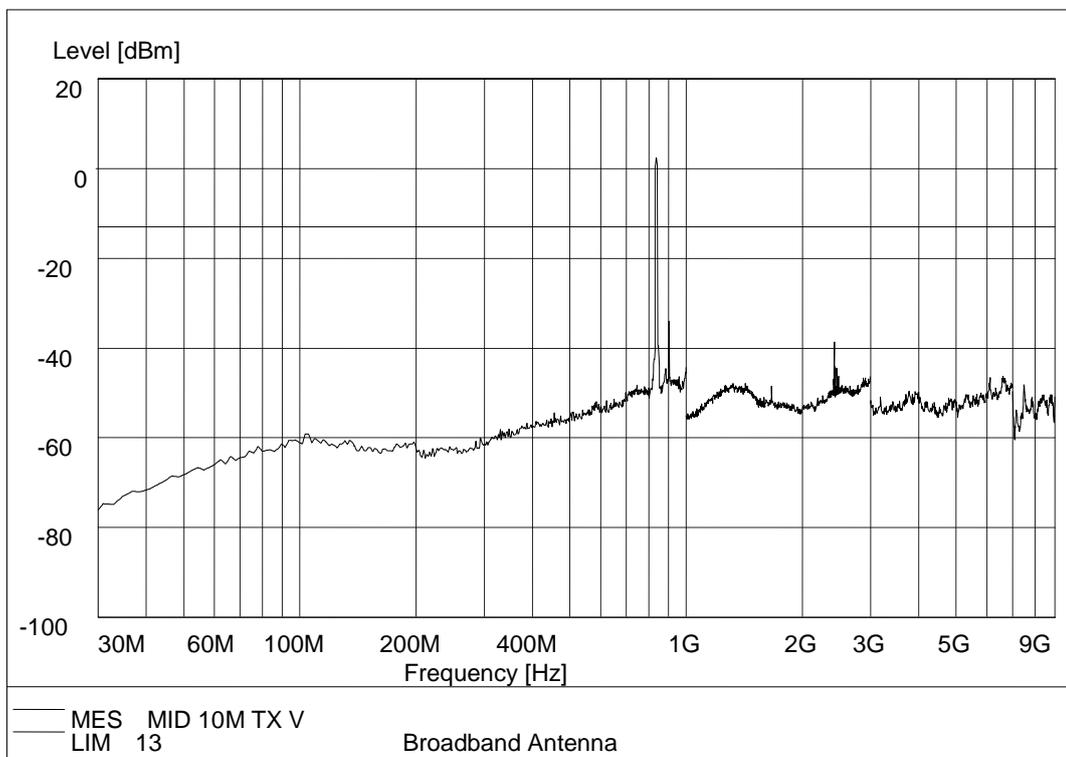
Note1: For 9 KHz to 30MHz: the amplitude of spurious emissions is attenuated by more than 20dB below the permissible value, so we not provide the test result here.

Note2: For band 5 &17, all of the bandwidth were tested and found 10MHz bandwidth is the worst bandwidth, the worst case were recorded in this report.

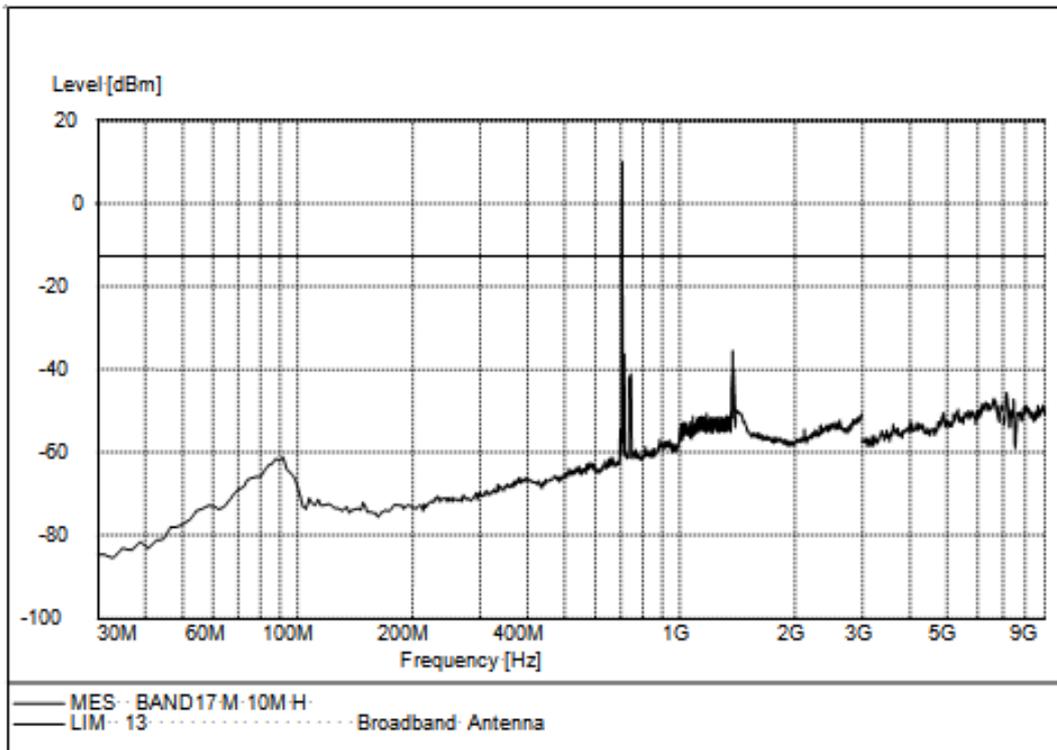
Note3: For band 41, all of the bandwidth were tested and found 10MHz bandwidth is the worst bandwidth, the worst case were recorded in this report.



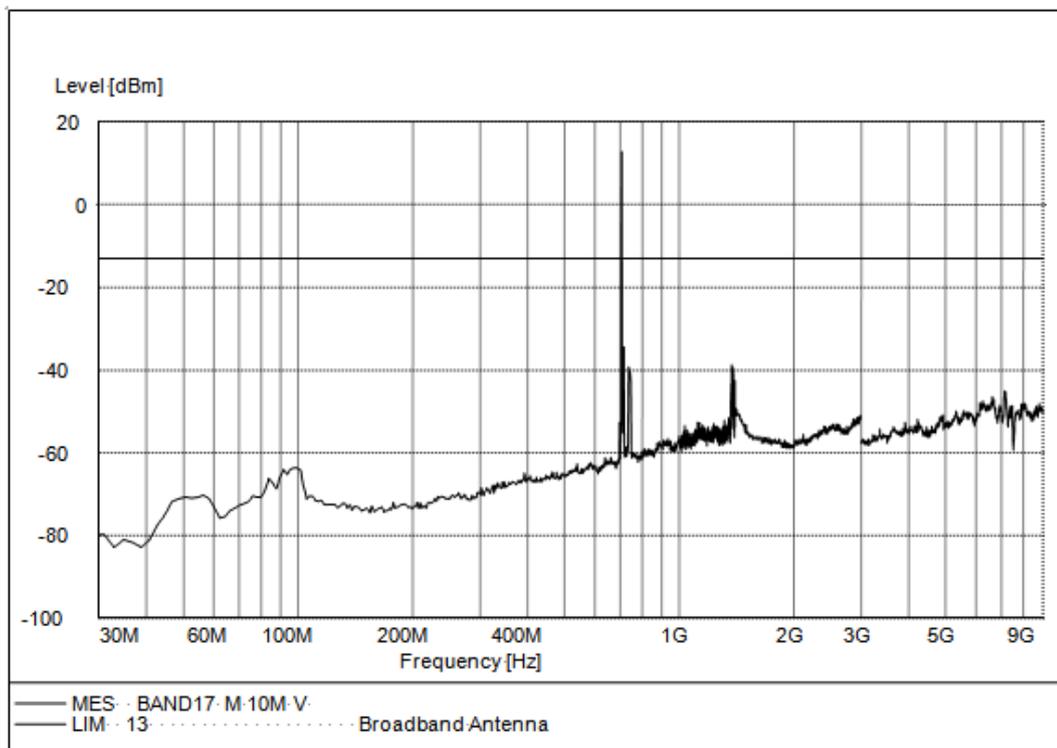
LTE Band 5 QPSK 10MHz BW Test Antenna Horizontal



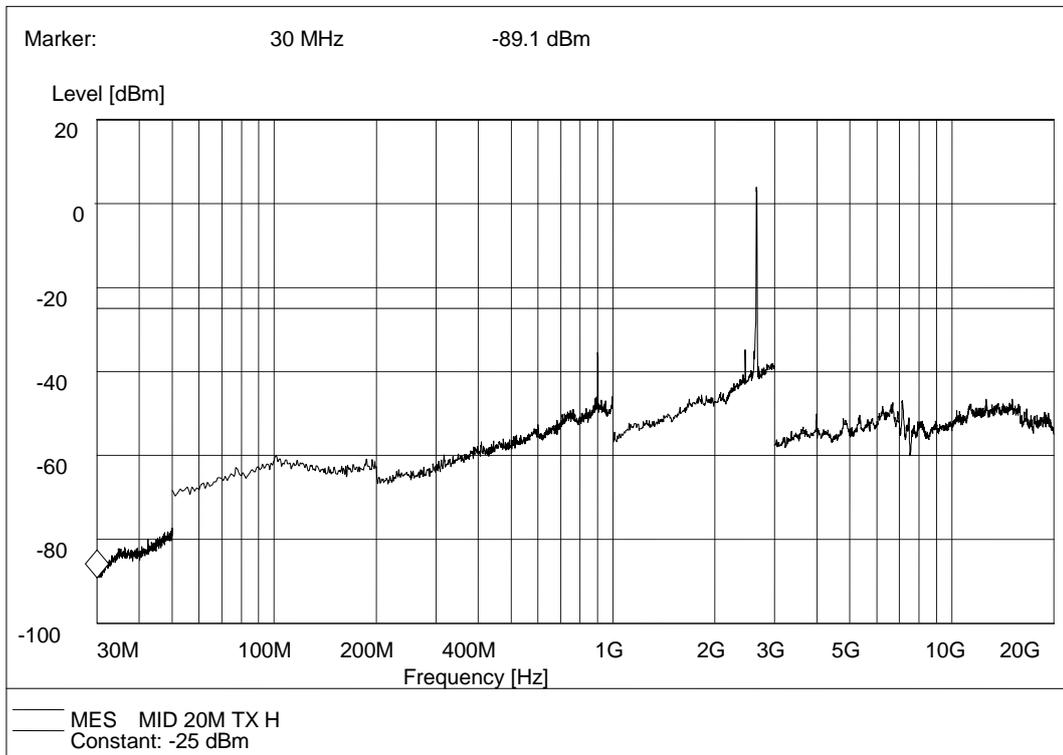
LTE Band 5 QPSK 10MHz BW Test Antenna Vertical



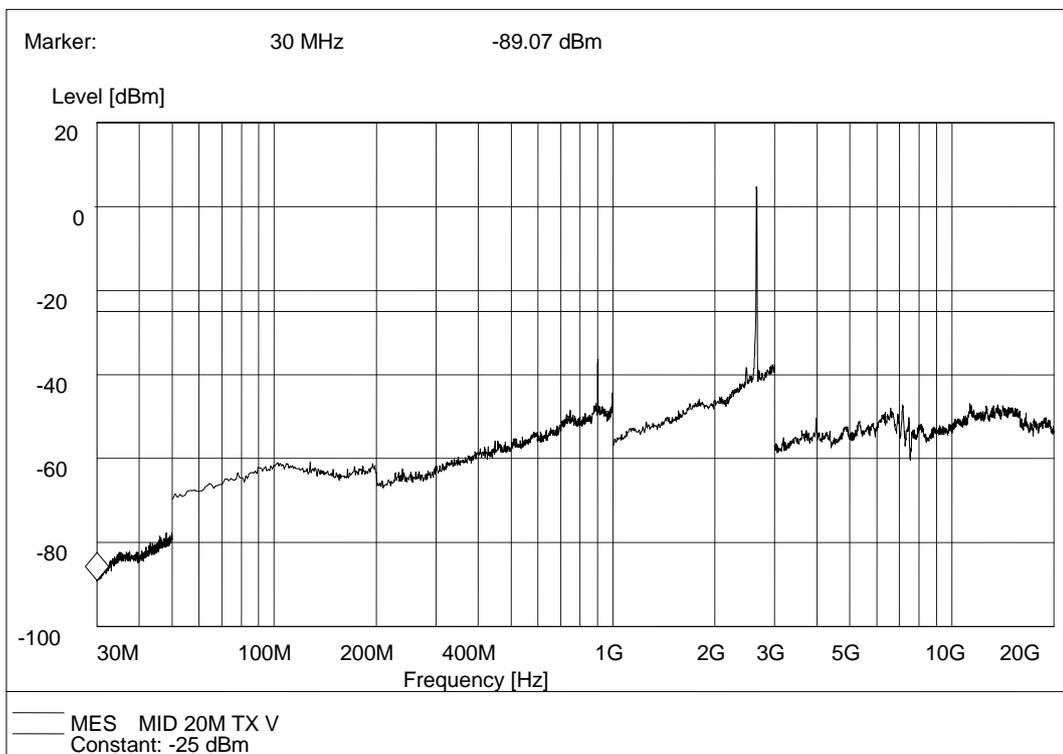
LTE Band 17 QPSK 10MHz BW Test Antenna Horizontal



LTE Band 17 QPSK 10MHz BW Test Antenna Vertical



LTE Band 41 QPSK 10MHz BW Test Antenna Horizontal



LTE Band 41 QPSK 10MHz BW Test Antenna Vertical



3. LIST OF MEASURING EQUIPMENT

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI TEST RECEIVER	Rohde&Schwarz	ESI 26	100009	2015/11/02
2	RF TEST PANEL	Rohde&Schwarz	TS / RSP	335015/ 0017	N/A
3	EMI TEST SOFTWARE	Rohde&Schwarz	ESK1	N/A	N/A
4	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2015/11/08
5	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	539	2015/11/08
6	HORN ANTENNA	ShwarzBeck	9120D	1011	2015/11/08
7	HORN ANTENNA	ShwarzBeck	9120D	1012	2015/11/08
8	Loop Antenna	Rohde&Schwarz	HZ-9	838622\013	2015/11/08
9	HORN ANTENNA	Rohde&Schwarz	HF906	10068	2015/11/02
10	HORN ANTENNA	Rohde&Schwarz	HF906	10039	2015/11/02
11	Pre-amplifier	ShwarzBeck	BBV 9743	9743-0022	2015/11/02
12	Pre-amplifier	ShwarzBeck	BBV 9718	BBV 9718	2015/11/02
13	TURNTABLE	MATURO	TT2.0	N/A	N/A
14	ANTENNA MAST	MATURO	TAM-4.0-P	N/A	N/A
15	EMI TEST SOFTWARE	Audix	E3	N/A	N/A
16	Test cable	Siva Cables Italy	RG 58A/U	W14.02	2015/12/05
17	Climate Chamber	ESPEC	EL-10KA	05107008	2015/11/02
18	Spectrum Analyzer	Kysight	N9030A	ATO-67098	2016/07/19
19	Power Meter	Rohde&Schwarz	NRP2	1020.1809.02	2016.06.02
20	Power Sensor	Rohde&Schwarz	NRP-Z81	823.3618.03	2016.06.02
21	System Simulator	Rohde&Schwarz	CMU200	112012	2015/11/2
22	System Simulator	R&S	CMW500	148888	2016.06.02



4. UNCERTAINTY OF EVALUATION

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2

Measurement	Frequency	Uncertainty
Conducted Emission	9kHz~30MHz	3.39dB
Radiated Emission	30MHz~1000MHz	4.24dB
	1G~18GHz	5.16dB
	18G~40GHz	5.54dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

** END OF REPORT **