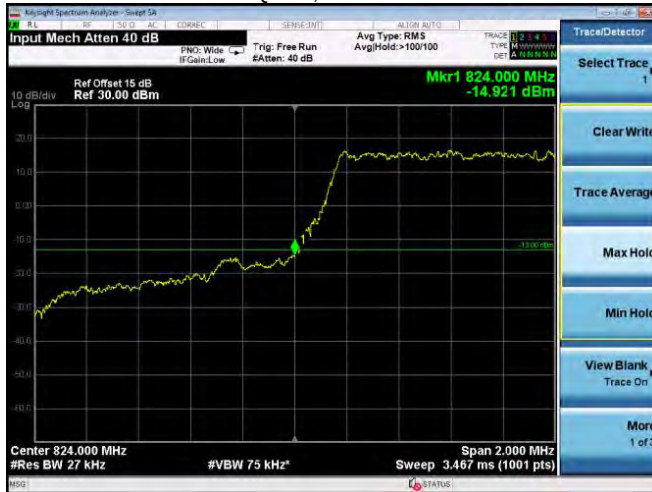


LTE FDD Band 5– 1.4 MHz Channel Bandwidth

Modulation: QPSK, 1RB#0 Low Channel



Modulation: 16QAM, 1RB#0 Low Channel



Modulation: QPSK, 1RB#0 High Channel



Modulation: 16QAM, 1RB#0 High Channel



LTE FDD Band 5– 3 MHz Channel Bandwidth

Modulation: QPSK, 1RB#0 Low Channel



Modulation:16QAM, 1RB#0 Low Channel



Modulation: QPSK, 1RB#0 High Channel

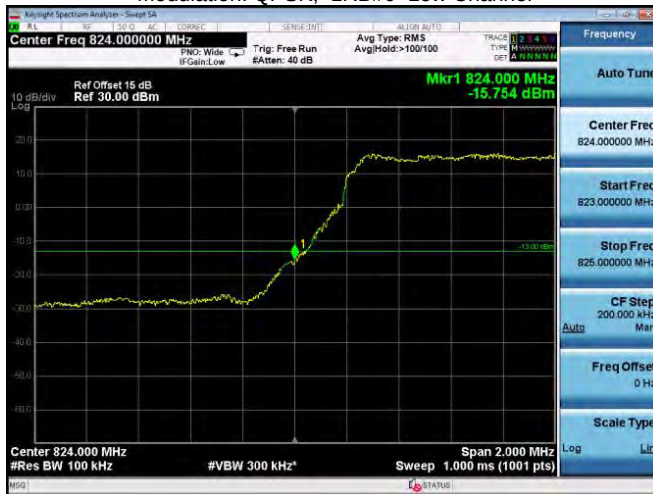


Modulation:16QAM, 1RB#0 High Channel



LTE FDD Band 5– 5 MHz Channel Bandwidth

Modulation: QPSK, 1RB#0 Low Channel



Modulation: 16QAM, 1RB#0 Low Channel



Modulation: QPSK, 1RB#0 High Channel



Modulation: 16QAM, 1RB#0 High Channel



LTE FDD Band 5– 10 MHz Channel Bandwidth

Modulation: QPSK, 1RB#0 Low Channel



Modulation:16QAM, 1RB#0 Low Channel



Modulation: QPSK, 1RB#0 High Channel



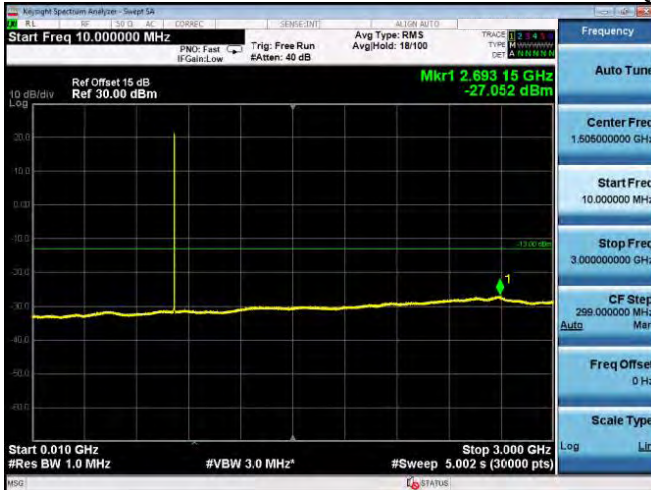
Modulation:16QAM, 1RB#0 High Channel



Spurious Emission Antenna Port

LTE FDD Band 5– 1.4 MHz Channel Bandwidth

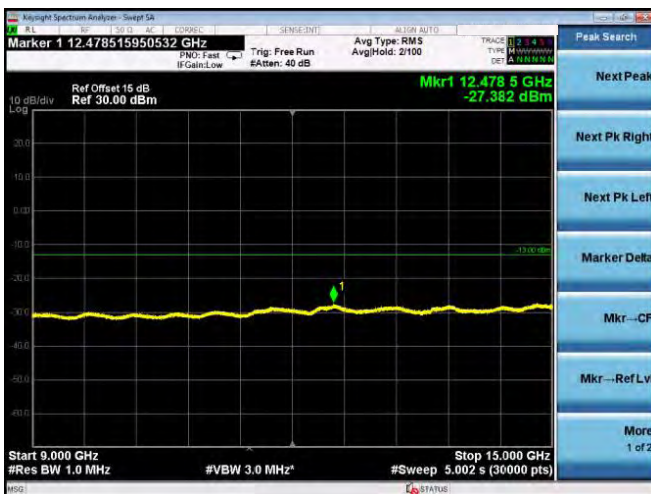
Modulation: QPSK, Low Channel



10MHz~3GHz



3GHz ~9GHz



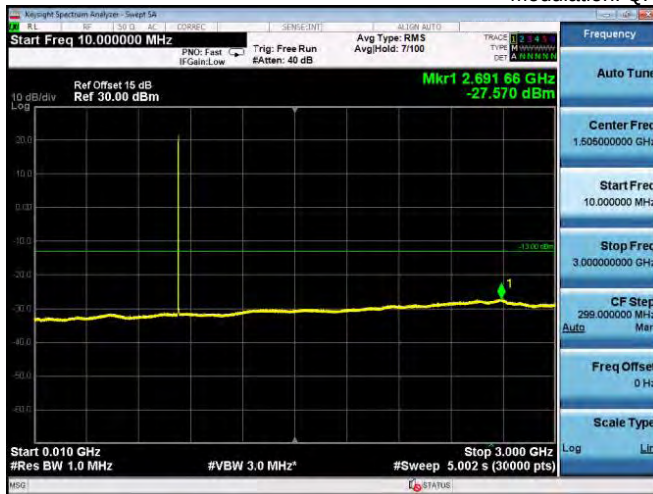
9 GHz ~15 GHz



15 GHz ~20GHz

LTE FDD Band 5– 1.4 MHz Channel Bandwidth

Modulation: QPSK, Middle Channel



10MHz~3GHz



3GHz ~9GHz



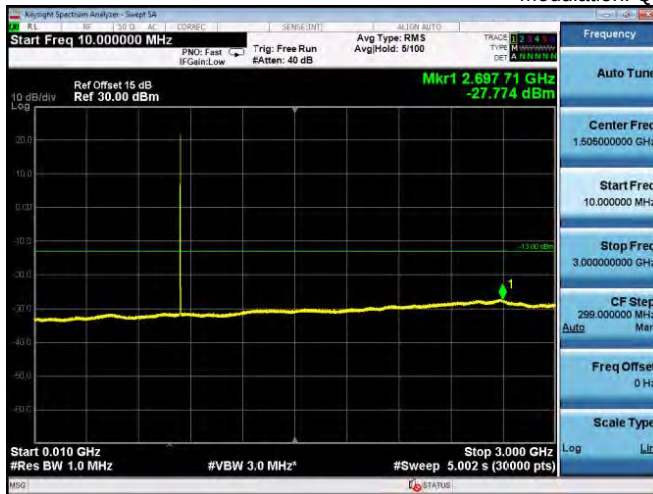
9 GHz ~15 GHz



15 GHz ~20GHz

LTE FDD Band 5– 1.4 MHz Channel Bandwidth

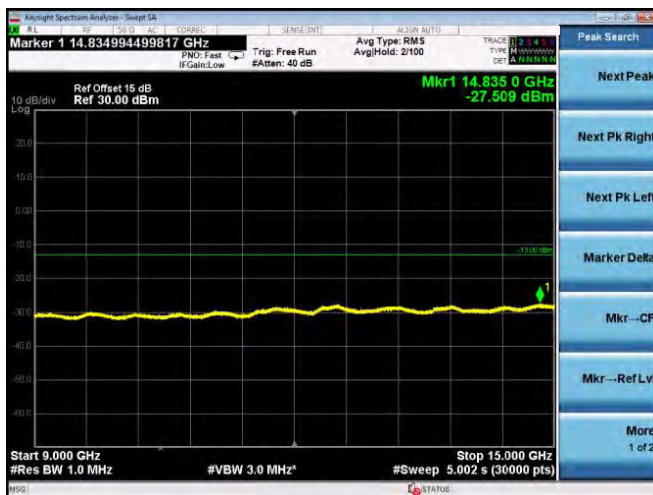
Modulation: QPSK, High Channel



10MHz~3GHz



3GHz~9GHz



9 GHz~15 GHz



15 GHz~20GHz

LTE FDD Band 5– 3 MHz Channel Bandwidth

Modulation: QPSK, Low Channel



10MHz~3GHz



3GHz ~9GHz



9 GHz ~15 GHz



15 GHz ~20GHz

LTE FDD Band 5– 3 MHz Channel Bandwidth

Modulation: QPSK, Middle Channel



10MHz~3GHz



3GHz~9GHz



9 GHz~15 GHz



15 GHz~20GHz

LTE FDD Band 5– 3 MHz Channel Bandwidth

Modulation: QPSK, High Channel



10MHz~3GHz



3GHz ~9GHz



9 GHz ~15 GHz



15 GHz ~20GHz

LTE FDD Band 5– 5 MHz Channel Bandwidth

Modulation: QPSK, Low Channel



10MHz~3GHz



3GHz ~9GHz



9 GHz ~15 GHz



15 GHz ~20GHz

LTE FDD Band 5– 5 MHz Channel Bandwidth

Modulation: QPSK, Middle Channel



10MHz~3GHz



3GHz ~9GHz



9 GHz ~15 GHz



15 GHz ~20GHz

LTE FDD Band 5– 5 MHz Channel Bandwidth

Modulation: QPSK, High Channel



10MHz~3GHz



3GHz ~9GHz



9 GHz ~15 GHz



15 GHz ~20GHz

LTE FDD Band 5– 10MHz Channel Bandwidth

Modulation: QPSK, Low Channel



10MHz~3GHz



3GHz ~9GHz



9 GHz ~15 GHz



15 GHz ~20GHz

LTE FDD Band 5– 10MHz Channel Bandwidth

Modulation: QPSK, Middle Channel



10MHz~3GHz



3GHz ~9GHz



9 GHz ~15 GHz



15 GHz ~20GHz

LTE FDD Band 5– 10 MHz Channel Bandwidth

Modulation: QPSK, High Channel



10MHz~3GHz



3GHz ~9GHz

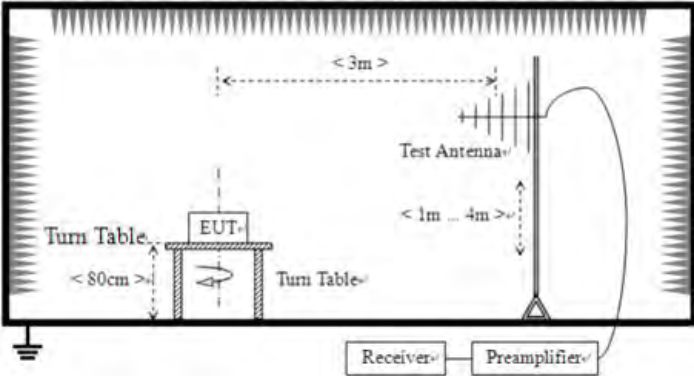
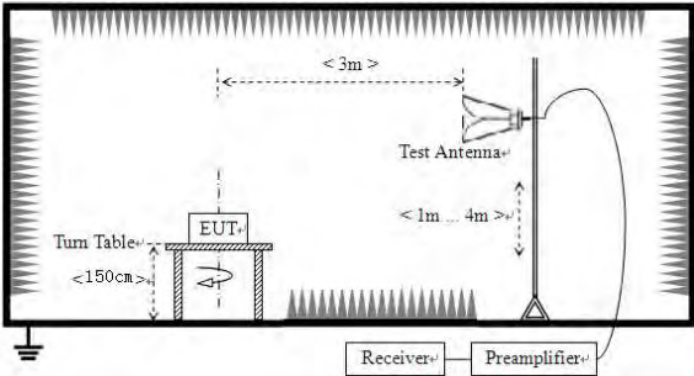
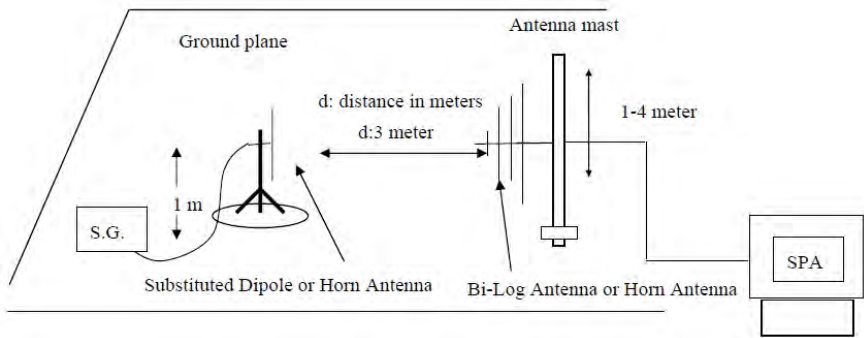


9 GHz ~15 GHz



15 GHz ~20GHz

7.8 ERP, EIRP Measurement

Test Requirement:	FCC part 22.913(a)
Test Method:	FCC part 2.1046 and ANSI C63.26:2015
Limit:	LTE Band 5: 2W
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 
Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the measurement, the EUT was communication with the

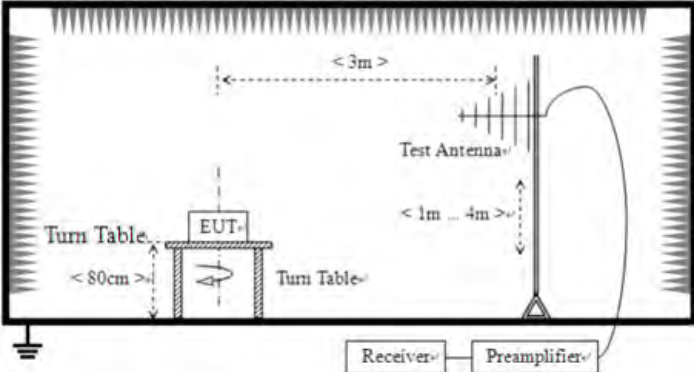
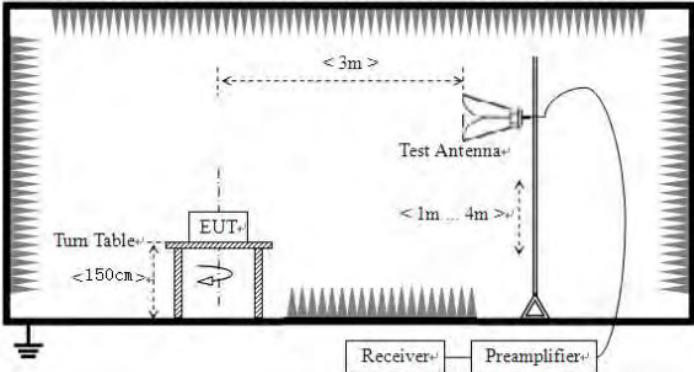
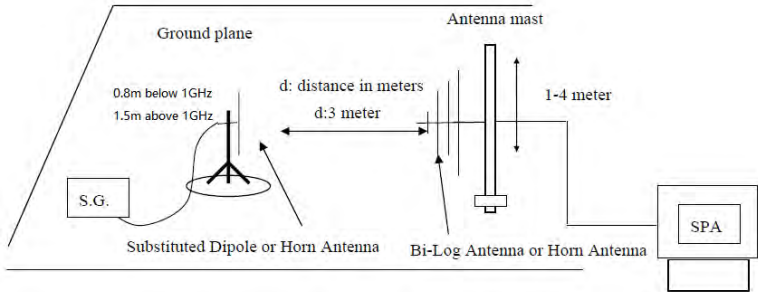
	station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated. 3. ERP in frequency band 777–787MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows: $\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$ 4. EIRP in frequency band 1710–1755MHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows: $\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data:

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Part 22	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE Band 5 Low Channel – 1.4MHz – QPSK										
824.70	76.57	83	1.9	H	2.57	0.43	10.60	12.74	33	-20.26
824.70	81.12	318	2.2	V	5.84	0.43	10.60	16.01	33	-16.99
LTE Band 5 Middle Channel – 1.4MHz – QPSK										
836.50	78.34	14	1.6	H	4.34	0.43	10.60	14.51	33	-18.49
836.50	81.77	333	1.6	V	6.49	0.43	10.60	16.66	33	-16.34
LTE Band 5 High Channel – 1.4MHz – QPSK										
848.30	79.06	67	1.8	H	4.95	0.43	10.60	15.12	33	-17.88
848.30	81.75	114	1.7	V	6.56	0.43	10.60	16.73	33	-16.27
LTE Band 5 Low Channel – 1.4MHz – 16QAM										
824.70	77.45	214	1.5	H	3.45	0.43	10.60	13.62	33	-19.38
824.70	81.07	176	1.1	V	5.79	0.43	10.60	15.96	33	-17.04
LTE Band 5 Middle Channel – 1.4MHz – 16QAM										
836.50	77.97	151	1.7	H	3.97	0.43	10.60	14.14	33	-18.86
836.50	81.93	322	1.6	V	6.65	0.43	10.60	16.82	33	-16.18
LTE Band 5 High Channel – 1.4MHz – 16QAM										
848.30	76.43	199	1.3	H	2.32	0.43	10.60	12.49	33	-20.51
848.30	81.17	288	1.4	V	5.98	0.43	10.60	16.15	33	-16.85
LTE Band 5 Low Channel – 3MHz – QPSK										
825.50	79.64	49	1.4	H	5.64	0.43	10.60	15.81	33	-17.19
825.50	81.86	298	1.9	V	6.58	0.43	10.60	16.75	33	-16.25
LTE Band 5 Middle Channel – 3MHz – QPSK										
836.50	76.24	53	2.3	H	2.24	0.43	10.60	12.41	33	-20.59
836.50	81.01	322	2.0	V	5.73	0.43	10.60	15.90	33	-17.10
LTE Band 5 High Channel – 3MHz – QPSK										
847.50	77.91	94	2.4	H	3.80	0.43	10.60	13.97	33	-19.03
847.50	81.47	100	1.9	V	6.28	0.43	10.60	16.45	33	-16.55
LTE Band 5 Low Channel – 3MHz – 16QAM										
825.50	79.87	178	2.1	H	5.87	0.43	10.60	16.04	33	-16.96
825.50	81.68	262	1.1	V	6.40	0.43	10.60	16.57	33	-16.43
LTE Band 5 Middle Channel – 3MHz – 16QAM										
836.50	76.59	70	1.4	H	2.59	0.43	10.60	12.76	33	-20.24
836.50	81.59	178	1.5	V	6.31	0.43	10.60	16.48	33	-16.52
LTE Band 5 High Channel – 3MHz – 16QAM										
847.50	78.29	177	2.2	H	4.18	0.43	10.60	14.35	33	-18.65
847.50	81.26	222	1.9	V	6.07	0.43	10.60	16.24	33	-16.76
LTE Band 5 Low Channel – 5MHz – QPSK										
826.50	76.68	304	1.5	H	2.68	0.43	10.60	12.85	33	-20.15
826.50	81.90	137	2.0	V	6.62	0.43	10.60	16.79	33	-16.21

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Part 22	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE Band 5 Middle Channel –5MHz – QPSK										
836.50	78.87	94	2.3	H	4.87	0.43	10.60	15.04	33	-17.96
836.50	81.72	163	1.0	V	6.44	0.43	10.60	16.61	33	-16.39
LTE Band 5 High Channel –5MHz – QPSK										
846.50	79.16	172	1.2	H	5.05	0.43	10.60	15.22	33	-17.78
846.50	81.53	175	1.3	V	6.34	0.43	10.60	16.51	33	-16.49
LTE Band 5 Low Channel –5MHz– 16QAM										
826.50	78.88	37	2.3	H	4.88	0.43	10.60	15.05	33	-17.95
826.50	81.61	81	1.2	V	6.33	0.43	10.60	16.50	33	-16.50
LTE Band 5 Middle Channel –5MHz – 16QAM										
836.50	78.43	245	1.9	H	4.43	0.43	10.60	14.60	33	-18.40
836.50	81.59	192	1.4	V	6.31	0.43	10.60	16.48	33	-16.52
LTE Band 5 High Channel –5MHz– 16QAM										
846.50	78.89	127	1.3	H	4.78	0.43	10.60	14.95	33	-18.05
846.50	81.76	103	2.3	V	6.57	0.43	10.60	16.74	33	-16.26
LTE Band 5 Low Channel –10MHz – QPSK										
829.00	78.47	248	2.1	H	4.47	0.43	10.60	14.64	33	-18.36
829.00	81.76	357	1.7	V	6.48	0.43	10.60	16.65	33	-16.35
LTE Band 5 Middle Channel –10MHz – QPSK										
836.50	77.51	130	1.4	H	3.51	0.43	10.60	13.68	33	-19.32
836.50	81.95	175	1.1	V	6.67	0.43	10.60	16.84	33	-16.16
LTE Band 5 High Channel –10MHz – QPSK										
844.00	77.81	229	2.1	H	3.70	0.43	10.60	13.87	33	-19.13
844.00	81.17	345	1.7	V	5.98	0.43	10.60	16.15	33	-16.85
LTE Band 5 Low Channel –10MHz – 16QAM										
829.00	78.89	105	1.1	H	4.89	0.43	10.60	15.06	33	-17.94
829.00	81.90	216	2.1	V	6.62	0.43	10.60	16.79	33	-16.21
LTE Band 5 Middle Channel –10MHz – 16QAM										
836.50	79.76	197	2.4	H	5.76	0.43	10.60	15.93	33	-17.07
836.50	81.71	310	1.9	V	6.43	0.43	10.60	16.60	33	-16.40
LTE Band 5 High Channel –10MHz– 16QAM										
844.00	78.04	8	1.7	H	3.93	0.43	10.60	14.10	33	-18.90
844.00	81.88	158	1.6	V	6.69	0.43	10.60	16.86	33	-16.14

7.9 Field strength of spurious radiation measurement

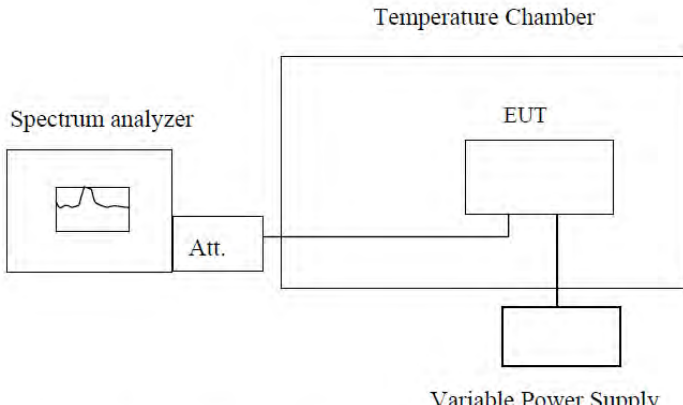
Test Requirement:	Part 22.917
Test Method:	FCC part 2.1053 and ANSI C63.26:2015
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data:

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 5 Low Channel										
199.38	40.66	300	1.7	H	-69.85	0.15	1.12	-68.88	-25.00	-43.88
199.38	30.80	124	1.9	V	-76.79	0.15	1.12	-75.82	-25.00	-50.82
1649.40	65.95	176	1.5	H	-43.29	2.79	12.70	-33.38	-25.00	-8.38
1649.40	59.98	191	1.2	V	-48.79	2.79	12.70	-38.88	-25.00	-13.88
2474.10	53.58	33	1.3	H	-52.96	3.12	11.50	-44.58	-25.00	-19.58
2474.10	44.73	272	1.7	V	-60.70	3.12	11.50	-52.32	-25.00	-27.32
LTE BAND 5 Middle Channel										
199.38	41.42	102	1.2	H	-69.09	0.15	1.12	-68.12	-25.00	-43.12
199.38	31.18	34	2.0	V	-76.41	0.15	1.12	-75.44	-25.00	-50.44
1673.00	59.85	64	1.3	H	-49.39	2.37	12.50	-39.26	-25.00	-14.26
1673.00	53.68	351	1.4	V	-55.09	2.37	12.50	-44.96	-25.00	-19.96
2509.50	47.29	337	2.2	H	-59.25	3.12	11.50	-50.87	-25.00	-25.87
2509.50	37.81	301	1.6	V	-67.62	3.12	11.50	-59.24	-25.00	-34.24
LTE BAND 5 High Channel										
199.38	42.08	172	1.8	H	-68.43	0.15	1.12	-67.46	-25.00	-42.46
199.38	30.62	120	1.7	V	-76.97	0.15	1.12	-76.00	-25.00	-51.00
1696.60	52.06	131	1.7	H	-57.35	2.37	12.50	-47.22	-25.00	-22.22
1696.60	47.65	120	1.2	V	-61.12	2.37	12.50	-50.99	-25.00	-25.99
2544.90	39.87	17	1.2	H	-65.36	3.12	11.50	-56.98	-25.00	-31.98
2544.90	31.09	277	1.1	V	-73.80	3.12	11.50	-65.42	-25.00	-40.42

Note: 1) Absolute Level = SG Level - Cable loss + Antenna Gain
2) Margin = Absolute Level - Limit

7.10 Frequency stability

Test Requirement:	FCC Part2.1055(a)(1)(b), FCC Part2.1055(d)(1)(2)
Test Method:	FCC Part2.1055(a)(1)(b), FCC Part2.1055(d)(1)(2)
Limit:	2.5ppm
Test setup:	 Note : Measurement setup for testing on Antenna connector
Test procedure:	1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to –20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached. 7. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 8. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 9. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data:

LTE Band 5

Middle Channel 836.5MHz QPSK 1.4MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	12.0	-6	-0.0072	2.5
40		-10	-0.0120	2.5
30		-12	-0.0143	2.5
20		-4	-0.0048	2.5
10		-12	-0.0143	2.5
0		-11	-0.0132	2.5
-10		0	0.0000	2.5
-20		-8	-0.0096	2.5
-30		-6	-0.0072	2.5
20	10.8	-6	-0.0072	2.5
20	13.2	4	0.0048	2.5

Middle Channel 836.5MHz 16QAM 1.4MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	12.0	6	0.0072	2.5
40		4	0.0048	2.5
30		-6	-0.0072	2.5
20		3	0.0036	2.5
10		11	0.0132	2.5
0		-3	-0.0036	2.5
-10		-5	-0.0060	2.5
-20		4	0.0048	2.5
-30		8	0.0096	2.5
20	10.8	-1	-0.0012	2.5
20	13.2	-5	-0.0060	2.5

Middle Channel 836.5MHz QPSK 3MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	12.0	1	0.0012	2.5
40		7	0.0084	2.5
30		10	0.0120	2.5
20		1	0.0012	2.5
10		7	0.0084	2.5
0		7	0.0084	2.5
-10		5	0.0060	2.5
-20		-8	-0.0096	2.5
-30		-4	-0.0048	2.5
20	10.8	7	0.0084	2.5
20	13.2	-4	-0.0048	2.5

Middle Channel 836.5MHz 16QAM 3MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	12.0	4	0.0048	2.5
40		0	0.0000	2.5
30		-5	-0.0060	2.5
20		3	0.0036	2.5
10		11	0.0132	2.5
0		-5	-0.0060	2.5
-10		4	0.0048	2.5
-20		-4	-0.0048	2.5
-30		11	0.0132	2.5
20	10.8	-5	-0.0060	2.5
20	13.2	9	0.0108	2.5

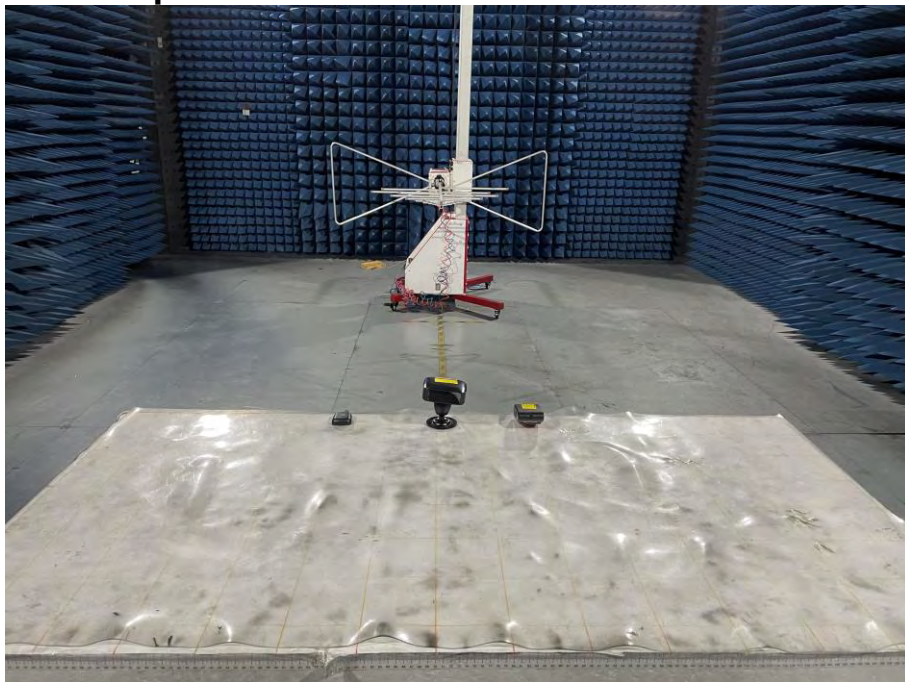
Middle Channel 836.5MHz QPSK 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	12.0	4	0.0048	2.5
40		4	0.0048	2.5
30		0	0.0000	2.5
20		3	0.0036	2.5
10		4	0.0048	2.5
0		6	0.0072	2.5
-10		7	0.0084	2.5
-20		1	0.0012	2.5
-30		6	0.0072	2.5
20	10.8	-5	-0.0060	2.5
20	13.2	9	0.0108	2.5

Middle Channel 836.5MHz 16QAM 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	12.0	3	0.0036	2.5
40		8	0.0096	2.5
30		5	0.0060	2.5
20		6	0.0072	2.5
10		-1	-0.0012	2.5
0		13	0.0155	2.5
-10		6	0.0072	2.5
-20		-1	-0.0012	2.5
-30		12	0.0143	2.5
20	10.8	5	0.0060	2.5
20	13.2	14	0.0167	2.5

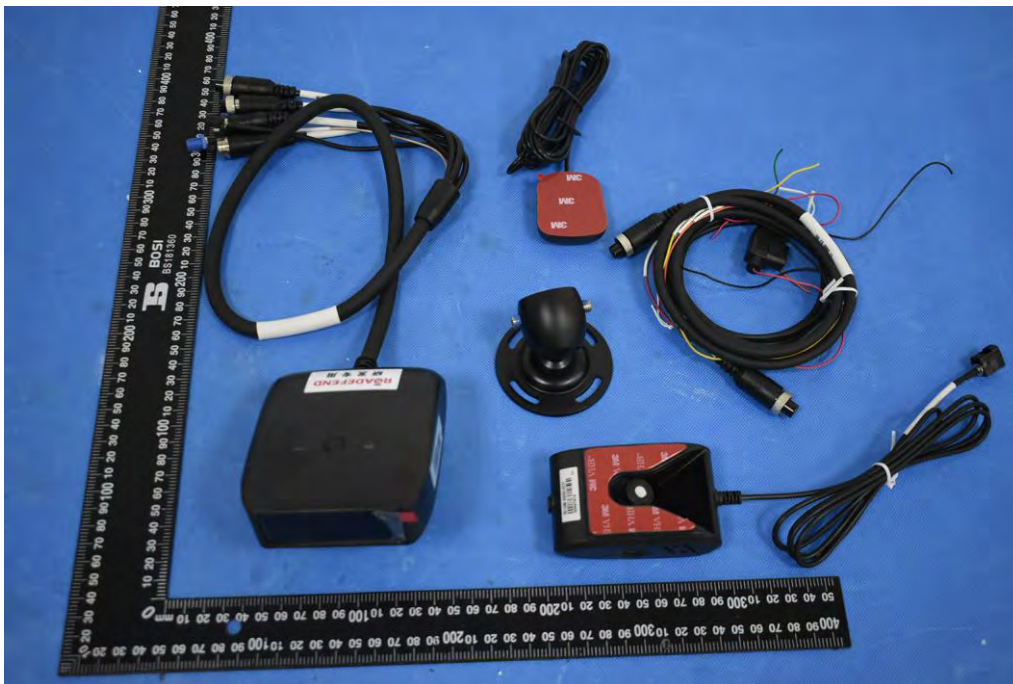
Middle Channel 836.5MHz QPSK 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	12.0	10	0.0120	2.5
40		-6	-0.0072	2.5
30		11	0.0132	2.5
20		3	0.0036	2.5
10		6	0.0072	2.5
0		-2	-0.0024	2.5
-10		12	0.0143	2.5
-20		9	0.0108	2.5
-30		4	0.0048	2.5
20	10.8	-5	-0.0060	2.5
20	13.2	10	0.0120	2.5

Middle Channel 836.5MHz 16QAM 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	12.0	6	0.0072	2.5
40		-5	-0.0060	2.5
30		-7	-0.0084	2.5
20		-2	-0.0024	2.5
10		0	0.0000	2.5
0		-1	-0.0012	2.5
-10		-3	-0.0036	2.5
-20		0	0.0000	2.5
-30		0	0.0000	2.5
20	10.8	-10	-0.0120	2.5
20	13.2	-1	-0.0012	2.5

8 Test Setup Photo



9 EUT Constructional Details



-----End-----