

Bandwidth	Toot etetus	LTE Band 13 Channel 23	3230 Test Results (ppm)
Bandwidth	Test status	QPSK	16QAM
	-40°C/Normal Voltage	-0.00294	-0.00465
	-30°C/Normal Voltage	-0.00426	-0.00515
	-20°C/Normal Voltage	-0.00417	-0.00945
	-10°C/Normal Voltage	-0.00208	-0.00425
	0°C/Normal Voltage	-0.00343	-0.00081
	10°C/Normal Voltage	-0.00238	-0.00422
	20°C/Normal Voltage	-0.00879	-0.00308
5MHz	30°C/Normal Voltage	-0.00501	-0.00387
SIVITZ	40°C/Normal Voltage	-0.00451	-0.00554
	50°C/Normal Voltage	-0.00450	-0.00574
	60°C/Normal Voltage	-0.00597	-0.00376
	70°C/Normal Voltage	-0.00376	-0.00508
	80°C/Normal Voltage	-0.00224	-0.00203
	85°C/Normal Voltage	-0.00545	-0.00157
	20°C/Min Voltage	-0.00230	-0.00550
	20°C/Max Voltage	-0.00137	-0.00038
	-40°C/Normal Voltage	-0.00396	-0.00352
	-30°C/Normal Voltage	-0.00480	-0.00419
	-20°C/Normal Voltage	-0.00252	-0.00258
	-10°C/Normal Voltage	-0.00423	-0.01091
	0°C/Normal Voltage	-0.00566	-0.00831
	10°C/Normal Voltage	-0.00035	-0.00719
	20°C/Normal Voltage	-0.00271	-0.01170
10MHz	30°C/Normal Voltage	-0.00284	-0.01451
10101112	40°C/Normal Voltage	-0.00136	-0.01192
	50°C/Normal Voltage	-0.00059	-0.00918
	60°C/Normal Voltage	-0.00597	-0.00376
	70°C/Normal Voltage	-0.00376	-0.00508
	80°C/Normal Voltage	-0.00224	-0.00203
	85°C/Normal Voltage	-0.00545	-0.00157
	20°C/Min Voltage	-0.00269	-0.00078
	20°C/Max Voltage	-0.00527	-0.00662



4.7 Spurious Emissions at Antenna Terminals

Ambient condition

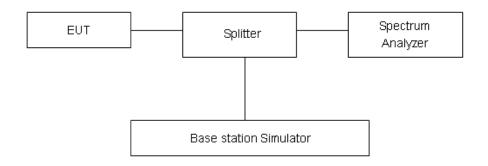
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used.RBW and VBW are set to 100 kHz for the carrier frequency, or RBW and VBW are set to 1MHz (other frequency), Sweep is set to ATUO.

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT.

Test setup



Limits

Rule Part 27.53(h) specifies that "for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.."

Rule Part 27.53(f)For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

LTE -4/13 Limit	-13 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor k = 1.96.



Report No:RXA1705-0129RF01R2

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-18GHz	1.407 dB

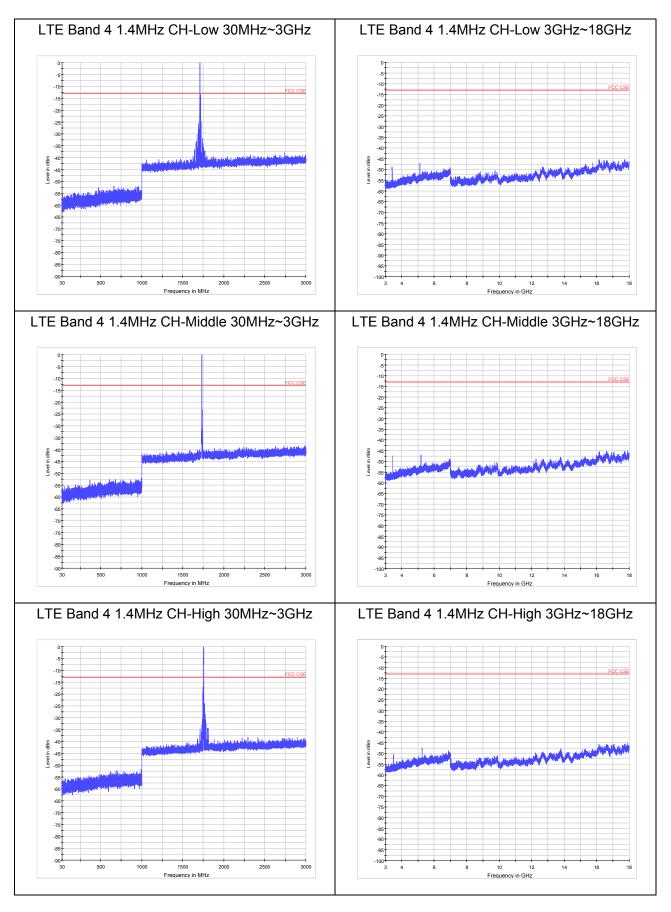


Test Result: PASS

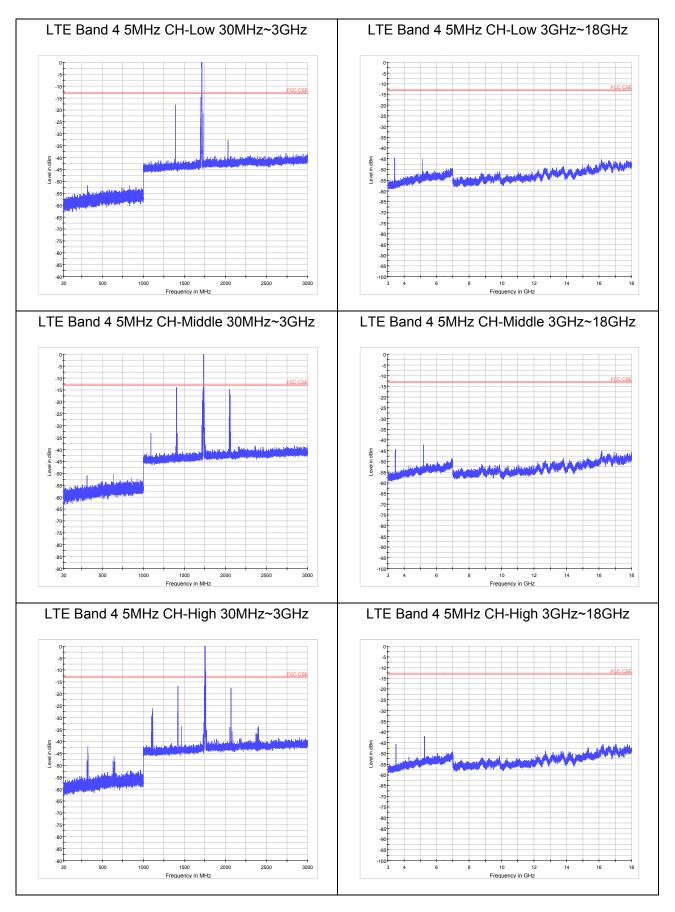
If disturbances were found more than 20dB below limit line, the mark is not required for the EUT. The signal beyond the limit is carrier in the following plots.

Test Data File Name	Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
CSE_LTE B4_3M_CHLOW_RB6_0.03-3GHz	2034.0	-21.08	-13.00	8.08
CSE_LTE B4_3M_CHMID_RB6_0.03-3GHz	1405.5	-13.76	-13.00	0.76
CSE_LTE B4_3M_CHHIGH_RB6_0.03-3GHz	1437.3	-16.27	-13.00	3.27
CSE_LTE B4_5M_CHLOW_RB6_0.03-3GHz	1389.3	-17.79	-13.00	4.79
CSE_LTE B4_5M_CHMID_RB6_0.03-3GHz	1402.8	-13.85	-13.00	0.85
CSE_LTE B4_5M_CHHIGH_RB6_0.03-3GHz	1420.5	-16.67	-13.00	3.67
CSE_LTE B4_10M_CHLOW_RB6_0.03-3GHz	1399.3	-23.37	-13.00	10.37
CSE_LTE B4_10M_CHMID_RB6_0.03-3GHz	1425.0	-16.86	-13.00	3.86
CSE_LTE B4_10M_CHHIGH_RB6_0.03-3GHz	1424.0	-18.75	-13.00	5.75
CSE_LTE B4_15M_CHLOW_RB6_0.03-3GHz	2027.3	-16.21	-13.00	3.21
CSE_LTE B4_15M_CHMID_RB6_0.03-3GHz	1430.8	-14.53	-13.00	1.53
CSE_LTE B4_15M_CHHIGH_RB6_0.03-3GHz	1448.5	-18.17	-13.00	5.17
CSE_LTE B4_20M_CHLOW_RB6_0.03-3GHz	1402.0	-20.18	-13.00	7.18
CSE_LTE B4_20M_CHMID_RB6_0.03-3GHz	2059.0	-14.52	-13.00	1.52
CSE_LTE B4_20M_CHHIGH_RB6_0.03-3GHz	2051.0	-18.74	-13.00	5.74
CSE_LTE B13_5M_CHLOW_RB6_1-3GHz	1563.3	-32.70	-13.00	19.70
CSE_LTE B13_5M_CHMID_RB6_1-3GHz	1568.0	-33.91	-13.00	20.91
CSE_LTE B13_10M_CHLOW_RB6_1-3GHz	1572.8	-33.12	-13.00	20.12
CSE_LTE B13_10M_CHMID_RB6_1-3GHz_	1573.0	-32.82	-13.00	19.82





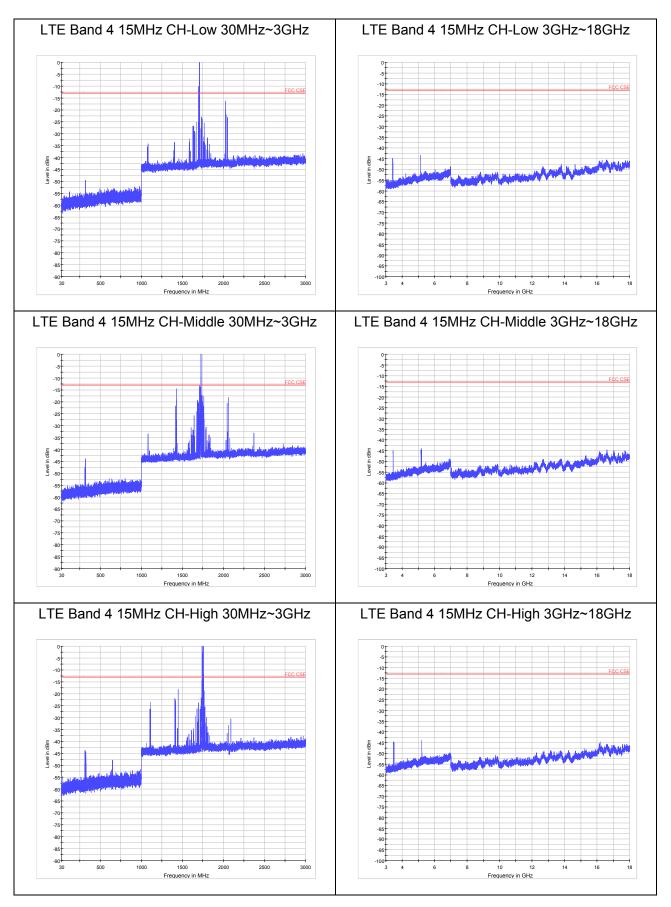




Frequency in MHz

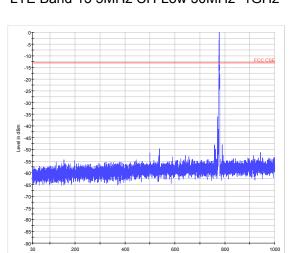
Frequency in GHz

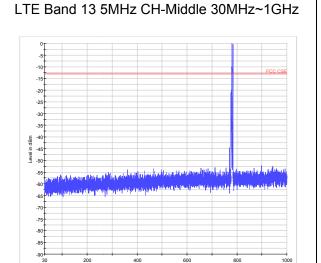




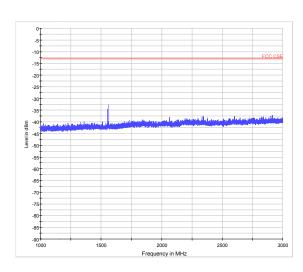
Frequency in MHz



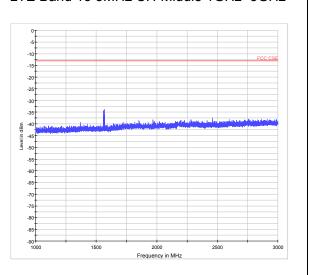




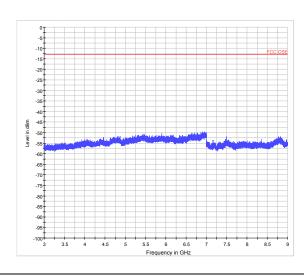
LTE Band 13 5MHz CH-Low 1GHz~3GHz



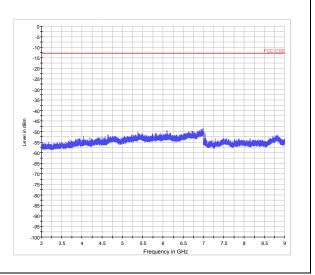
LTE Band 13 5MHz CH-Middle 1GHz~3GHz



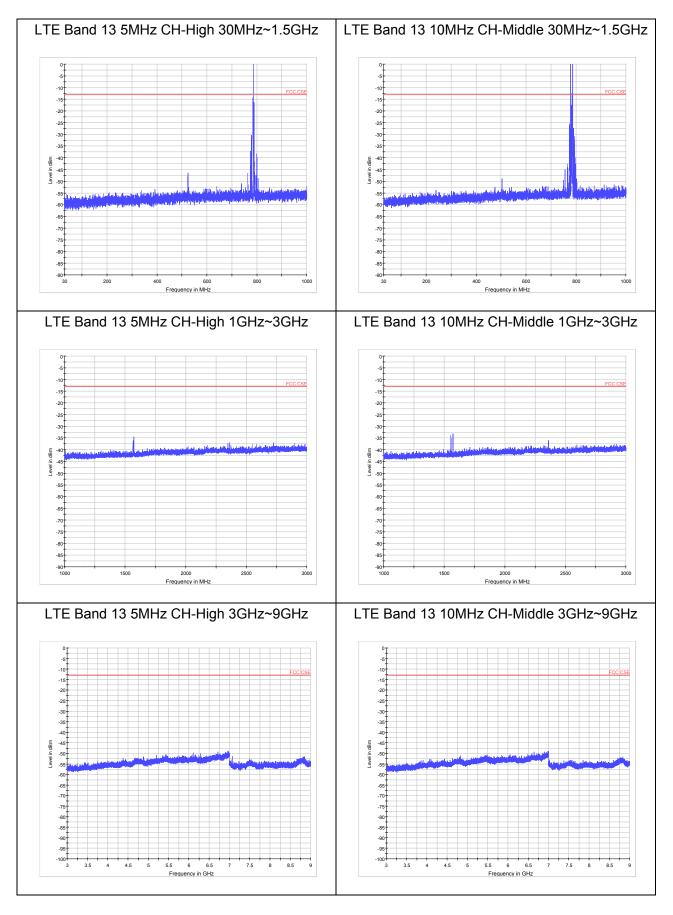
LTE Band 13 5MHz CH-Low 3GHz~9GHz



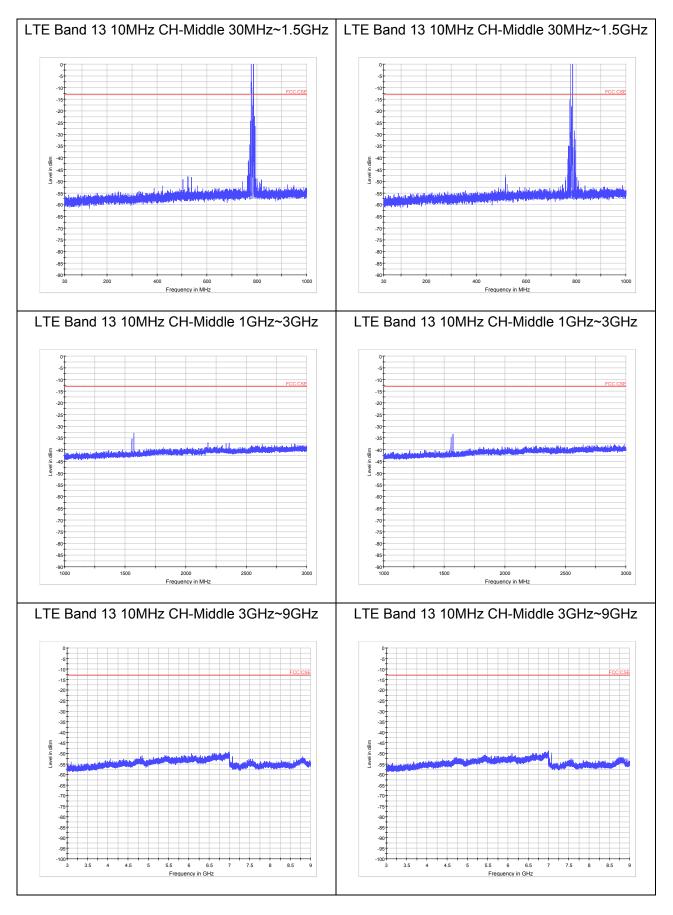
LTE Band 13 5MHz CH-Middle 3GHz~9GHz













4.8 Radiates Spurious Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

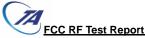
- 1. The testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI / TIA-603-D-2010 Section 2.2.12.
- 2. Above 30MHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).
- 3. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
- 4. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz for above 1GHz and RBW=100kHz, VBW=300kHz for 30MHz to 1GHz,, And the maximum value of the receiver should be recorded as (Pr).
- 5. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
- 6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAq) should be recorded after test.
- 7. The measurement results are obtained as described below:

Power(EIRP)=PMea- PAg - PcI + Ga

The measurement results are amend as described below:

Power(EIRP)=PMea- Pcl + Ga

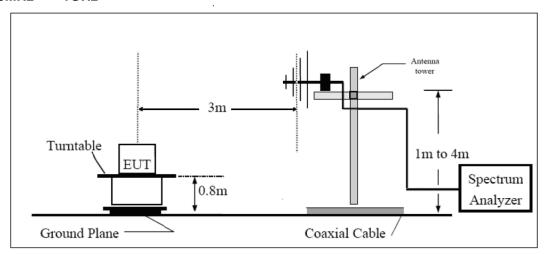
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi)



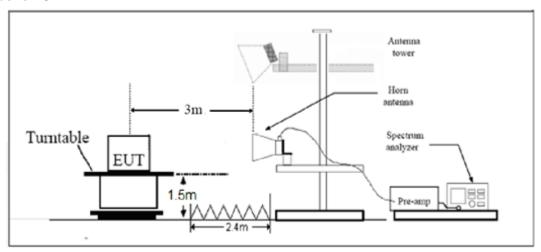
and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

Test setup

30MHz~~~ 1GHz



Above 1GHz



Note: Area side: 2.4mX3.6m

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

Limits

Rule Part 27.53(h) specifies that "the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10(P) dB." Rule Part 27.53(f)For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

LTE -4/13 Limit	-13 dBm
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Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = \pm 1.96$, $U = \pm 3.55$ dB.



Test Result

LTE Band 4 QPSK 1.4MHz CH-Low, 1 RB

Harmonic	CH19957 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3421.4	-45.80	2.6	10.15	Vertical	-40.4	-13.0	27.40	45
3	5132.1	-44.40	2.4	11.35	Vertical	-37.6	-13.0	24.60	0
4	6842.8	-45.70	4.5	10.85	Vertical	-41.5	-13.0	28.50	135
5	8553.5	-48.60	5.1	11.35	Vertical	-44.5	-13.0	31.50	225
6	10264.2	-47.10	5.3	11.95	Vertical	-42.6	-13.0	29.60	135
7	11974.9	-45.10	5.5	13.55	Vertical	-39.2	-13.0	26.20	45
8	13685.6	-45.40	6.3	13.75	Vertical	-40.1	-13.0	27.10	90
9	15396.3	-43.20	6.7	13.85	Vertical	-38.2	-13.0	25.20	225
10	17107.0	-46.80	6.8	14.25	Vertical	-41.5	-13.0	28.50	45

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK 1.4MHz CH-Middle, 1 RB

Harmonic	CH-Middle Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-45.80	2.6	10.75	Vertical	-39.8	-13.0	26.80	135
3	5197.5	-40.70	2.4	11.05	Vertical	-34.2	-13.0	21.20	45
4	6930.0	-43.80	4.5	11.15	Vertical	-39.3	-13.0	26.30	90
5	8662.5	-51.70	5.1	11.35	Vertical	-47.6	-13.0	34.60	225
6	10395.0	-49.50	5.3	11.95	Vertical	-45.0	-13.0	32.00	45
7	12127.5	-54.70	5.5	13.55	Vertical	-48.8	-13.0	35.80	90
8	13860.0	-48.60	6.3	13.75	Vertical	-43.3	-13.0	30.30	135
9	15592.5	-45.20	6.7	13.85	Vertical	-40.2	-13.0	27.20	135
10	17325.0	-46.60	6.8	14.25	Vertical	-41.3	-13.0	28.30	90

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.



LTE Band 4 QPSK 1.4MHz CH-High, 1 RB

Harmonic	CH20393 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3508.6	-46.50	2.6	10.15	Vertical	-41.1	-13.0	28.10	45
3	5262.9	-41.70	2.4	11.05	Vertical	-35.2	-13.0	22.20	45
4	7017.2	-45.70	4.5	11.15	Vertical	-41.2	-13.0	28.20	135
5	8771.5	-50.00	5.1	11.35	Vertical	-45.9	-13.0	32.90	45
6	10525.8	-49.70	5.3	11.95	Vertical	-45.2	-13.0	32.20	90
7	12280.1	-48.50	5.5	13.55	Vertical	-42.6	-13.0	29.60	135
8	14034.4	-48.90	6.3	13.75	Vertical	-43.6	-13.0	30.60	45
9	15788.7	-44.70	6.7	13.85	Vertical	-39.7	-13.0	26.70	90
10	17543.0	-46.00	6.8	14.25	Vertical	-40.7	-13.0	27.70	225

LTE Band 4 QPSK 3MHz CH-Low, 1 RB

Harmonic	CH19965 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3420.0	-45.90	2.6	10.15	Vertical	-40.5	-13.0	27.50	180
3	5131.1	-38.50	2.4	11.35	Vertical	-31.7	-13.0	18.70	225
4	6846.0	-43.70	4.5	10.85	Vertical	-39.5	-13.0	26.50	135
5	8557.5	-46.00	5.1	11.35	Vertical	-41.9	-13.0	28.90	225
6	10269.0	-44.40	5.3	11.95	Vertical	-39.9	-13.0	26.90	90
7	11980.5	-42.60	5.5	13.55	Vertical	-36.7	-13.0	23.70	90
8	13692.0	-41.20	6.3	13.75	Vertical	-35.9	-13.0	22.90	45
9	15403.5	-42.10	6.7	13.85	Vertical	-37.1	-13.0	24.10	180
10	17115.0	-40.20	6.8	14.25	Vertical	-34.9	-13.0	21.90	45

^{2.} The worst emission was found in the antenna is vertical position.

^{2.} The worst emission was found in the antenna is vertical position.



LTE Band 4 QPSK 3MHz CH-Middle, 1 RB

Harmonic	CH-Middle Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3462.4	-45.80	2.6	10.75	Vertical	-39.8	-13.0	26.80	0
3	5193.8	-38.10	2.4	11.05	Vertical	-31.6	-13.0	18.60	135
4	6930.0	-42.60	4.5	11.15	Vertical	-38.1	-13.0	25.10	225
5	8662.5	-45.70	5.1	11.35	Vertical	-41.6	-13.0	28.60	315
6	10395.0	-43.90	5.3	11.95	Vertical	-39.4	-13.0	26.40	270
7	12127.5	-43.60	5.5	13.55	Vertical	-37.7	-13.0	24.70	225
8	13860.0	-41.20	6.3	13.75	Vertical	-35.9	-13.0	22.90	135
9	15592.5	-42.80	6.7	13.85	Vertical	-37.8	-13.0	24.80	225
10	17325.0	-39.70	6.8	14.25	Vertical	-34.4	-13.0	21.40	0

LTE Band 4 QPSK 3MHz CH-High, 1 RB

Harmonic	CH20385 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3505.1	-45.40	2.6	10.15	Vertical	-40.0	-13.0	27.00	135
3	5256.8	-40.90	2.4	11.05	Vertical	-34.4	-13.0	21.40	225
4	7014.0	-43.30	4.5	11.15	Vertical	-38.8	-13.0	25.80	315
5	8767.5	-46.40	5.1	11.35	Vertical	-42.3	-13.0	29.30	270
6	10521.0	-42.30	5.3	11.95	Vertical	-37.8	-13.0	24.80	225
7	12274.5	-43.80	5.5	13.55	Vertical	-37.9	-13.0	24.90	135
8	14028.0	-40.60	6.3	13.75	Vertical	-35.3	-13.0	22.30	225
9	15781.5	-43.10	6.7	13.85	Vertical	-38.1	-13.0	25.10	90
10	17535.0	-41.30	6.8	14.25	Vertical	-36.0	-13.0	23.00	90

^{2.} The worst emission was found in the antenna is vertical position.

^{2.} The worst emission was found in the antenna is vertical position.



LTE Band 4 QPSK 5MHz CH-Low, 1 RB

Harmonic	CH19975 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3420.4	-46.10	2.6	10.15	Vertical	-40.7	-13.0	27.7	45
3	5131.1	-39.60	2.4	11.35	Vertical	-32.8	-13.0	19.8	180
4	6850.0	-43.60	4.5	10.85	Vertical	-39.4	-13.0	26.4	225
5	8562.5	-45.20	5.1	11.35	Vertical	-41.1	-13.0	28.1	135
6	10275.0	-45.10	5.3	11.95	Vertical	-40.6	-13.0	27.6	225
7	11987.5	-43.10	5.5	13.55	Vertical	-37.2	-13.0	24.2	90
8	13700.0	-40.70	6.3	13.75	Vertical	-35.4	-13.0	22.4	90
9	15412.5	-43.30	6.7	13.85	Vertical	-38.3	-13.0	25.3	45
10	17125.0	-40.20	6.8	14.25	Vertical	-34.9	-13.0	21.9	180

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 4 QPSK 5MHz CH-Middle, 1 RB

Harmonic	CH-Middle Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-46.60	2.6	10.75	Vertical	-40.6	-13.0	27.6	45
3	5190.8	-38.30	2.4	11.05	Vertical	-31.8	-13.0	18.8	0
4	6930.0	-42.90	4.5	11.15	Vertical	-38.4	-13.0	25.4	135
5	8662.5	-44.70	5.1	11.35	Vertical	-40.6	-13.0	27.6	225
6	10395.0	-44.70	5.3	11.95	Vertical	-40.2	-13.0	27.2	315
7	12127.5	-42.90	5.5	13.55	Vertical	-37.0	-13.0	24.0	270
8	13860.0	-40.50	6.3	13.75	Vertical	-35.2	-13.0	22.2	225
9	15592.5	-44.10	6.7	13.85	Vertical	-39.1	-13.0	26.1	135
10	17325.0	-38.70	6.8	14.25	Vertical	-33.4	-13.0	20.4	225

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.



LTE Band 4 QPSK 5MHz CH-High, 1 RB

Harmonic	CH20375 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3501.0	-43.50	2.6	10.15	Vertical	-38.1	-13.0	25.1	0
3	5251.1	-38.80	2.4	11.05	Vertical	-32.3	-13.0	19.3	135
4	7010.0	-42.10	4.5	11.15	Vertical	-37.6	-13.0	24.6	225
5	8762.5	-44.00	5.1	11.35	Vertical	-39.9	-13.0	26.9	315
6	10515.0	-43.40	5.3	11.95	Vertical	-38.9	-13.0	25.9	270
7	12267.5	-45.20	5.5	13.55	Vertical	-39.3	-13.0	26.3	225
8	14020.0	-40.10	6.3	13.75	Vertical	-34.8	-13.0	21.8	135
9	15772.5	-41.80	6.7	13.85	Vertical	-36.8	-13.0	23.8	225
10	17525.0	-40.40	6.8	14.25	Vertical	-35.1	-13.0	22.1	90

LTE Band 4 QPSK 10MHz CH-Low, 1 RB

Harmonic	CH20000 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3421.1	-45.40	2.6	10.15	Vertical	-40.0	-13.0	27.00	90
3	5131.9	-39.20	2.4	11.35	Vertical	-32.4	-13.0	19.40	45
4	6860.0	-43.10	4.5	10.85	Vertical	-38.9	-13.0	25.90	180
5	8575.0	-46.00	5.1	11.35	Vertical	-41.9	-13.0	28.90	225
6	10290.0	-44.70	5.3	11.95	Vertical	-40.2	-13.0	27.20	135
7	12005.0	-45.30	5.5	13.55	Vertical	-39.4	-13.0	26.40	225
8	13720.0	-41.10	6.3	13.75	Vertical	-35.8	-13.0	22.80	90
9	15435.0	-42.30	6.7	13.85	Vertical	-37.3	-13.0	24.30	90
10	17150.0	-40.90	6.8	14.25	Vertical	-35.6	-13.0	22.60	45

^{2.} The worst emission was found in the antenna is vertical position.

^{2.} The worst emission was found in the antenna is vertical position.



LTE Band 4 QPSK 10MHz CH-Middle, 1 RB

Harmonic	CH-Middle Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-47.20	2.6	10.75	Vertical	-41.2	-13.0	28.2	180
3	5184.4	-38.30	2.4	11.05	Vertical	-31.8	-13.0	18.8	45
4	6930.0	-43.40	4.5	11.15	Vertical	-38.9	-13.0	25.9	0
5	8662.5	-44.30	5.1	11.35	Vertical	-40.2	-13.0	27.2	135
6	10395.0	-43.50	5.3	11.95	Vertical	-39.0	-13.0	26.0	225
7	12127.5	-45.10	5.5	13.55	Vertical	-39.2	-13.0	26.2	315
8	13860.0	-40.80	6.3	13.75	Vertical	-35.5	-13.0	22.5	270
9	15592.5	-43.30	6.7	13.85	Vertical	-38.3	-13.0	25.3	225
10	17325.0	-40.80	6.8	14.25	Vertical	-35.5	-13.0	22.5	135

LTE Band 4 QPSK 10MHz CH-High, 1 RB

Harmonic	CH20350 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3491.3	-44.00	2.6	10.15	Vertical	-38.6	-13.0	25.6	225
3	5236.5	-39.70	2.4	11.05	Vertical	-33.2	-13.0	20.2	315
4	7000.0	-45.40	4.5	11.15	Vertical	-40.9	-13.0	27.9	270
5	8750.0	-44.50	5.1	11.35	Vertical	-40.4	-13.0	27.4	225
6	10500.0	-44.30	5.3	11.95	Vertical	-39.8	-13.0	26.8	135
7	12250.0	-45.50	5.5	13.55	Vertical	-39.6	-13.0	26.6	225
8	14000.0	-40.80	6.3	13.75	Vertical	-35.5	-13.0	22.5	315
9	15750.0	-43.10	6.7	13.85	Vertical	-38.1	-13.0	25.1	270
10	17500.0	-41.00	6.8	14.25	Vertical	-35.7	-13.0	22.7	225

^{2.} The worst emission was found in the antenna is vertical position.

^{2.} The worst emission was found in the antenna is vertical position.



LTE Band 4 QPSK 15MHz CH20025, 1 RB

Harmonic	CH20025 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3421.9	-46.20	2.6	10.15	Vertical	-40.8	-13.0	27.8	135
3	5132.6	-39.10	2.4	11.35	Vertical	-32.3	-13.0	19.3	225
4	6870.0	-40.20	4.5	10.85	Vertical	-36.0	-13.0	23.0	90
5	8587.5	-44.90	5.1	11.35	Vertical	-40.8	-13.0	27.8	90
6	10305.0	-46.00	5.3	11.95	Vertical	-41.5	-13.0	28.5	45
7	12022.5	-45.00	5.5	13.55	Vertical	-39.1	-13.0	26.1	180
8	13740.0	-41.90	6.3	13.75	Vertical	-36.6	-13.0	23.6	225
9	15457.5	-42.90	6.7	13.85	Vertical	-37.9	-13.0	24.9	135
10	17175.0	-40.90	6.8	14.25	Vertical	-35.6	-13.0	22.6	225

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.

LTE Band 4 QPSK 15MHz CH-Middle, 1 RB

Harmonic	CH-Middle Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-46.30	2.6	10.75	Vertical	-40.3	-13.0	27.3	90
3	5177.6	-38.30	2.4	11.05	Vertical	-31.8	-13.0	18.8	90
4	6930.0	-43.70	4.5	11.15	Vertical	-39.2	-13.0	26.2	45
5	8662.5	-46.20	5.1	11.35	Vertical	-42.1	-13.0	29.1	180
6	10395.0	-43.20	5.3	11.95	Vertical	-38.7	-13.0	25.7	270
7	12127.5	-44.50	5.5	13.55	Vertical	-38.6	-13.0	25.6	225
8	13860.0	-41.10	6.3	13.75	Vertical	-35.8	-13.0	22.8	135
9	15592.5	-42.70	6.7	13.85	Vertical	-37.7	-13.0	24.7	225
10	17325.0	-41.00	6.8	14.25	Vertical	-35.7	-13.0	22.7	315

^{2.} The worst emission was found in the antenna is vertical position.

^{2.} The worst emission was found in the antenna is vertical position.



LTE Band 4 QPSK 15MHz CH-High, 1 RB

Harmonic	CH20325 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3481.5	-43.40	2.6	10.15	Vertical	-38.0	-13.0	25.0	270
3	5222.6	-37.30	2.4	11.05	Vertical	-30.8	-13.0	17.8	225
4	6990.0	-43.00	4.5	11.15	Vertical	-38.5	-13.0	25.5	135
5	8737.5	-46.20	5.1	11.35	Vertical	-42.1	-13.0	29.1	225
6	10485.0	-43.50	5.3	11.95	Vertical	-39.0	-13.0	26.0	90
7	12232.5	-45.10	5.5	13.55	Vertical	-39.2	-13.0	26.2	45
8	13980.0	-40.80	6.3	13.75	Vertical	-35.5	-13.0	22.5	180
9	15727.5	-43.30	6.7	13.85	Vertical	-38.3	-13.0	25.3	45
10	17475.0	-40.80	6.8	14.25	Vertical	-35.5	-13.0	22.5	0

LTE Band 4 QPSK 20MHz CH-Low, 1 RB

Harmonic	CH20050 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3422.3	-45.00	2.6	10.15	Vertical	-39.6	-13.0	26.6	135
3	5133.4	-38.70	2.4	11.35	Vertical	-31.9	-13.0	18.9	225
4	6880.0	-44.50	4.5	10.85	Vertical	-40.3	-13.0	27.3	315
5	8600.0	-45.20	5.1	11.35	Vertical	-41.1	-13.0	28.1	270
6	10320.0	-42.50	5.3	11.95	Vertical	-38.0	-13.0	25.0	225
7	12040.0	-44.50	5.5	13.55	Vertical	-38.6	-13.0	25.6	135
8	13760.0	-40.90	6.3	13.75	Vertical	-35.6	-13.0	22.6	225
9	15480.0	-43.00	6.7	13.85	Vertical	-38.0	-13.0	25.0	135
10	17200.0	-41.70	6.8	14.25	Vertical	-36.4	-13.0	23.4	225

^{2.} The worst emission was found in the antenna is vertical position.

^{2.} The worst emission was found in the antenna is vertical position.



LTE Band 4 QPSK 20MHz CH-Middle, 1 RB

Harmonic	CH-Middle Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-46.90	2.6	10.75	Vertical	-40.9	-13.0	27.9	315
3	5170.5	-38.10	2.4	11.05	Vertical	-31.6	-13.0	18.6	270
4	6930.0	-43.40	4.5	11.15	Vertical	-38.9	-13.0	25.9	225
5	8662.5	-45.60	5.1	11.35	Vertical	-41.5	-13.0	28.5	135
6	10395.0	-44.80	5.3	11.95	Vertical	-40.3	-13.0	27.3	225
7	12127.5	-42.80	5.5	13.55	Vertical	-36.9	-13.0	23.9	90
8	13860.0	-40.30	6.3	13.75	Vertical	-35.0	-13.0	22.0	90
9	15592.5	-42.10	6.7	13.85	Vertical	-37.1	-13.0	24.1	45
10	17325.0	-40.30	6.8	14.25	Vertical	-35.0	-13.0	22.0	180

LTE Band 4 QPSK 20MHz CH-High, 1 RB

Harmonic	CH20300 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3472.1	-47.00	2.6	10.15	Vertical	-41.6	-13.0	28.6	225
3	5208.4	-40.40	2.4	11.05	Vertical	-33.9	-13.0	20.9	135
4	6980.0	-43.60	4.5	11.15	Vertical	-39.1	-13.0	26.1	225
5	8725.0	-45.60	5.1	11.35	Vertical	-41.5	-13.0	28.5	90
6	10470.0	-44.80	5.3	11.95	Vertical	-40.3	-13.0	27.3	90
7	12215.0	-42.80	5.5	13.55	Vertical	-36.9	-13.0	23.9	45
8	13960.0	-40.30	6.3	13.75	Vertical	-35.0	-13.0	22.0	180
9	15705.0	-42.10	6.7	13.85	Vertical	-37.1	-13.0	24.1	45
10	17450.0	-40.30	6.8	14.25	Vertical	-35.0	-13.0	22.0	0

^{2.} The worst emission was found in the antenna is vertical position.

^{2.} The worst emission was found in the antenna is vertical position.



LTE Band 13 QPSK 5MHz CH-Low, 1 RB

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1559.0	-52.50	2.00	10.15	Vertical	-46.5	-13.0	33.50	180
3	2338.5	-46.30	2.50	11.35	Vertical	-39.6	-13.0	26.60	270
4	3118.0	-54.90	4.20	10.85	Vertical	-50.4	-13.0	37.40	135
5	3897.5	-52.50	5.20	11.35	Vertical	-48.5	-13.0	35.50	225
6	4677.0	-48.90	5.50	11.95	Vertical	-44.6	-13.0	31.60	135
7	5456.5	-51.10	5.70	13.55	Vertical	-45.4	-13.0	32.40	90
8	6236.0	-48.50	6.30	13.75	Vertical	-43.2	-13.0	30.20	45
9	7015.5	-47.10	6.80	13.85	Vertical	-42.2	-13.0	29.20	180
10	7795.0	-47.10	6.90	14.25	Vertical	-41.9	-13.0	28.90	45

LTE Band 13 QPSK 5MHz CH-Middle, 1 RB

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1564.0	-52.20	2.00	10.75	Vertical	-45.6	-13.0	32.60	0
3	2346.0	-47.59	2.51	11.05	Vertical	-41.2	-13.0	28.20	135
4	3128.0	-56.20	4.20	11.15	Vertical	-51.4	-13.0	38.40	225
5	3910.0	-54.30	5.20	11.15	Vertical	-50.5	-13.0	37.50	90
6	4692.0	-52.70	5.50	11.95	Vertical	-48.4	-13.0	35.40	45
7	5474.0	-53.60	5.70	13.55	Vertical	-47.9	-13.0	34.90	180
8	6256.0	-51.10	6.30	13.75	Vertical	-45.8	-13.0	32.80	45
9	7038.0	-47.60	6.80	13.85	Vertical	-42.7	-13.0	29.70	0
10	7820.0	-47.50	6.90	14.25	Vertical	-42.3	-13.0	29.30	135

^{2.} The worst emission was found in the antenna is vertical position.

^{2.} The worst emission was found in the antenna is vertical position.



LTE Band 13 QPSK 5MHz CH-High, 1 RB

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1569.0	-52.90	2.00	10.15	Vertical	-46.9	-13.0	33.9	225
3	2353.5	-47.79	2.51	11.05	Vertical	-41.4	-13.0	28.4	315
4	3138.0	-56.50	4.20	11.15	Vertical	-51.7	-13.0	38.7	270
5	3922.5	-53.80	5.20	11.15	Vertical	-50.0	-13.0	37.0	225
6	4707.0	-53.20	5.50	11.95	Vertical	-48.9	-13.0	35.9	135
7	5491.5	-53.80	5.70	13.55	Vertical	-48.1	-13.0	35.1	225
8	6276.0	-51.40	6.30	13.75	Vertical	-46.1	-13.0	33.1	90
9	7060.5	-47.80	6.80	13.85	Vertical	-42.9	-13.0	29.9	90
10	7845.0	-47.60	6.90	14.25	Vertical	-42.4	-13.0	29.4	45

LTE Band 13 QPSK 10MHz CH-Low, 1 RB

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1564.0	-52.85	2.00	10.15	Vertical	-44.7	-13.0	31.7	180
3	2346.0	-50.94	2.51	11.35	Vertical	-42.1	-13.0	29.1	225
4	3128.0	-57.95	4.20	10.85	Vertical	-51.3	-13.0	38.3	135
5	3910.0	-56.95	5.20	11.35	Vertical	-50.8	-13.0	37.8	225
6	4692.0	-54.95	5.50	11.95	Vertical	-48.5	-13.0	35.5	90
7	5474.0	-55.95	5.70	13.55	Vertical	-48.1	-13.0	35.1	90
8	6256.0	-53.75	6.30	13.75	Vertical	-46.3	-13.0	33.3	45
9	7038.0	-49.75	6.80	13.85	Vertical	-42.7	-13.0	29.7	180
10	7820.0	-49.95	6.90	14.25	Vertical	-42.6	-13.0	29.6	45

^{2.} The worst emission was found in the antenna is vertical position.

^{2.} The worst emission was found in the antenna is vertical position.



LTE Band 13 QPSK 10MHz CH-Middle, 1 RB

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1564.0	-50.90	2.00	10.75	Vertical	-44.3	-13.0	31.3	0
3	2346.0	-57.49	2.51	11.05	Vertical	-51.1	-13.0	38.1	135
4	3128.0	-56.00	4.20	11.15	Vertical	-51.2	-13.0	38.2	225
5	3910.0	-54.10	5.20	11.15	Vertical	-50.3	-13.0	37.3	315
6	4692.0	-53.40	5.50	11.95	Vertical	-49.1	-13.0	36.1	270
7	5474.0	-54.00	5.70	13.55	Vertical	-48.3	-13.0	35.3	90
8	6256.0	-51.50	6.30	13.75	Vertical	-46.2	-13.0	33.2	45
9	7038.0	-47.70	6.80	13.85	Vertical	-42.8	-13.0	29.8	180
10	7820.0	-47.70	6.90	14.25	Vertical	-42.5	-13.0	29.5	45

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.

LTE Band 13 QPSK 10MHz CH-High, 1 RB

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1564.0	-53.85	2.00	10.15	Vertical	-45.7	-13.0	32.7	0
3	2346.0	-50.44	2.51	11.05	Vertical	-41.9	-13.0	28.9	135
4	3128.0	-58.15	4.20	11.15	Vertical	-51.2	-13.0	38.2	225
5	3910.0	-55.95	5.20	11.15	Vertical	-50.0	-13.0	37.0	315
6	4692.0	-55.05	5.50	11.95	Vertical	-48.6	-13.0	35.6	270
7	5474.0	-56.05	5.70	13.55	Vertical	-48.2	-13.0	35.2	225
8	6256.0	-53.45	6.30	13.75	Vertical	-46.0	-13.0	33.0	135
9	7038.0	-49.15	6.80	13.85	Vertical	-42.1	-13.0	29.1	225
10	7820.0	-49.75	6.90	14.25	Vertical	-42.4	-13.0	29.4	90

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is vertical position.



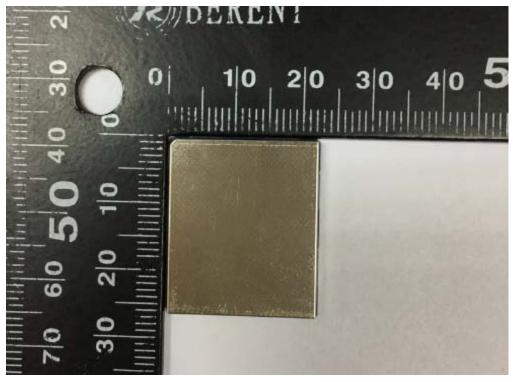
Main Test Instruments 5

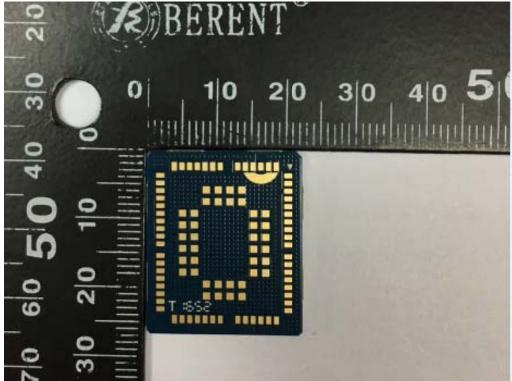
Name	Туре	Manufacturer	Serial Number	Calibration Date	Expiration Time
Base Station Simulator	CMW500	R&S	113645	2017-05-14	2018-05-13
Power Splitter	SHX-GF2-2-13	Hua Xiang	10120101	2017-05-14	2018-05-13
Universal Radio Communication Tester	E5515C	Agilent	MY48367192	2017-05-14	2018-05-13
Spectrum Analyzer	N9010A	Agilent	MY47191109	2017-05-14	2018-05-13
Signal Analyzer	FSV30	R&S	100815	2016-12-16	2017-12-15
Signal generator	SMB 100A	R&S	102594	2017-05-14	2018-05-13
EMI Test Receiver	ESCI3	R&S	100948	2016-12-16	2017-12-15
Trilog Antenna	VUBL 9163	SCHWARZBE CK	9163-201	2014-12-06	2017-12-05
Horn Antenna	HF907	R&S	100126	2014-12-06	2017-12-05
Horn Antenna	3160-09	ETS-Lindgren	00102643	2015-01-30	2018-01-29
Climatic Chamber	PT-30B	Re Ce	20101891	2016-07-17	2017-07-16
RF Cable	SMA 15cm	Agilent	0001	2017-02-06	2017-08-05



ANNEX A: EUT Appearance and Test Setup

A.1 EUT Appearance





a: EUT



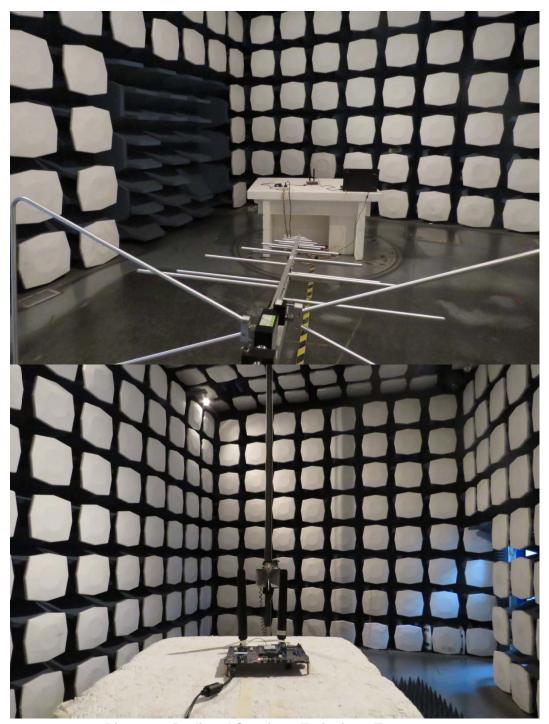


b: Evaluation Board

Picture 1 EUT and Accessory



A.2 Test Setup



Picture 2: Radiated Spurious Emissions Test setup