4.7 Spurious Emissions at Antenna Terminals

Ambient condition

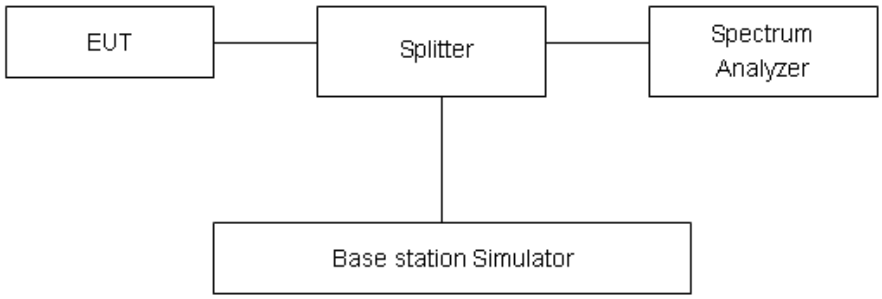
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement iscarried out using a spectrum analyzer. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peakdetector is used. Set RBW 1MHzand VBW3MHz， Sweep is set to ATUO.

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

Test setup



Limits

LTE -4 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..”

LTE -12 Rule Part 27.53 (g) For operations in the 600 MHz band and 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.

LTE -13 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 B4/12 Limit

Limit	-13 dBm

LTE B13 Limit

Limitout of the band 1559-1610 MHz	-13 dBm
Limitin the band 1559-1610 MHz	-40 dBm

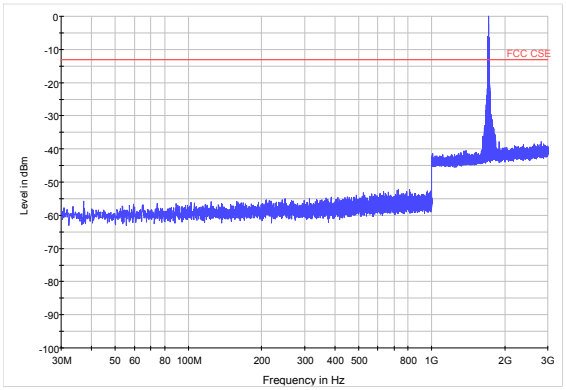
Measurement Uncertainty

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

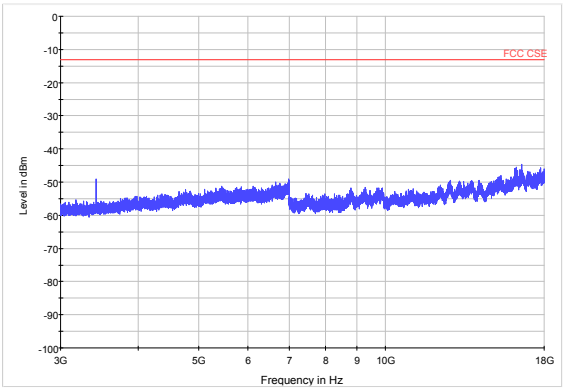
Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-12.75GHz	1.407 dB

Test Result: PASS

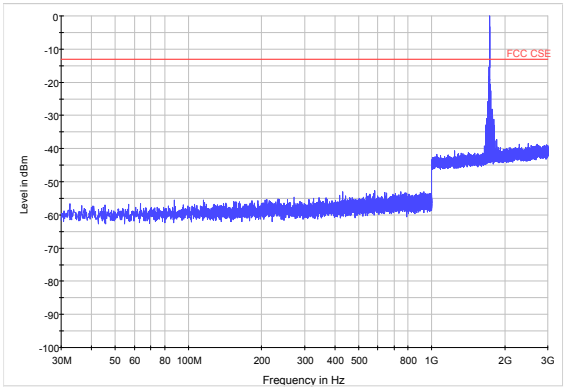
LTE Band 41.4MHz CH-Low30MHz~3GHz



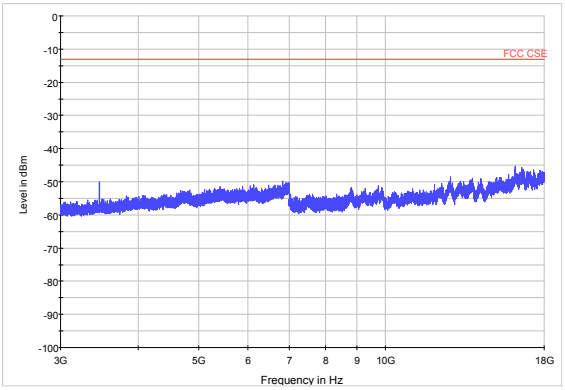
LTE Band 4 1.4MHz CH-Low3GHz~18GHz



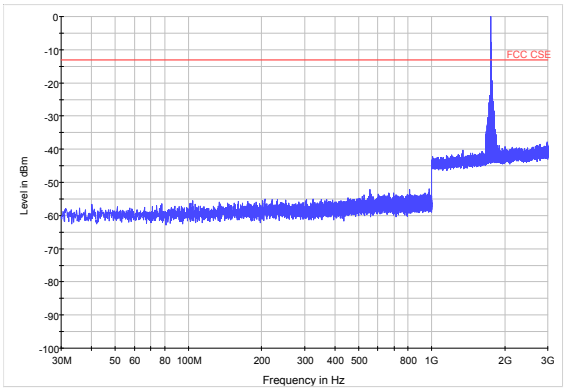
LTE Band 4 1.4MHz CH-Middle30MHz~3GHz



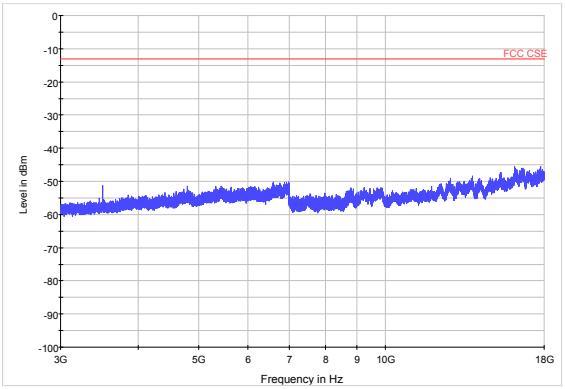
LTE Band 4 1.4MHz CH-Middle3GHz~18GHz



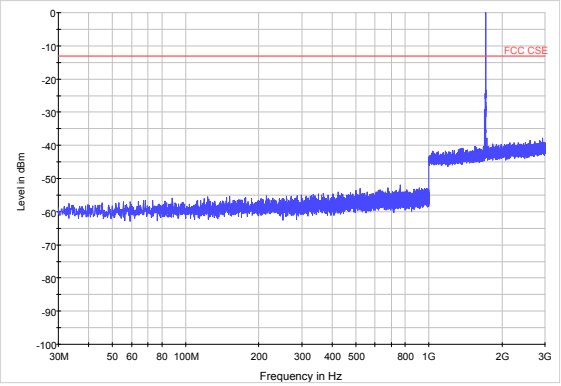
LTE Band 4 1.4MHz CH-High 30MHz~3GHz



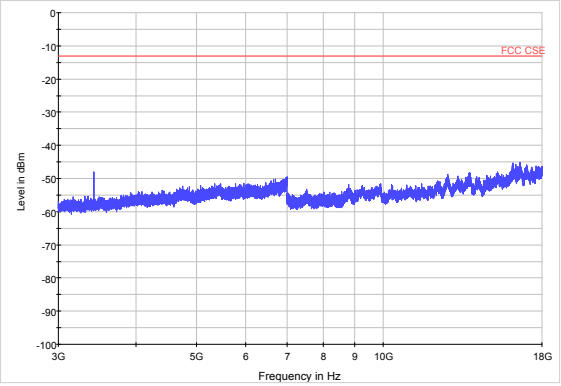
LTE Band 4 1.4MHz CH-High 3GHz~18GHz



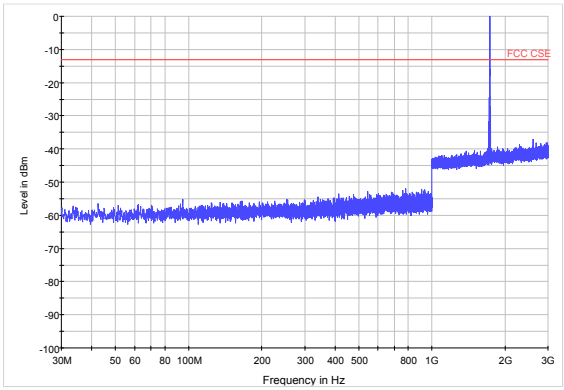
LTE Band 4 3MHzCH-Low 30MHz~3GHz



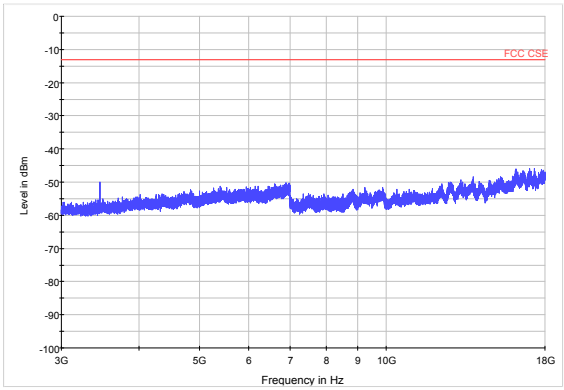
LTE Band 4 3MHzCH-Low 3GHz~18GHz



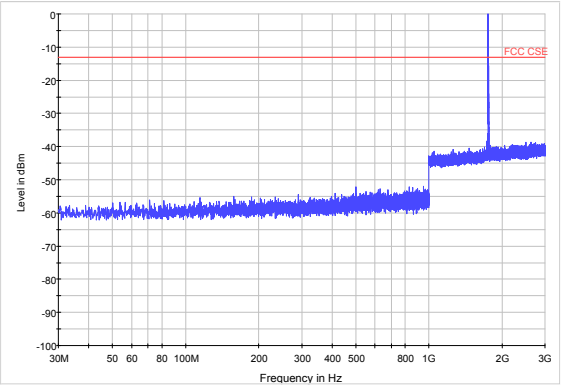
LTE Band 4 3MHzCH-Middle 30MHz~3GHz



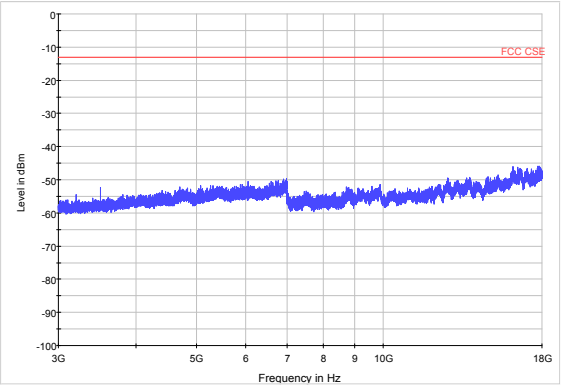
LTE Band 4 3MHzCH-Middle 3GHz~18GHz



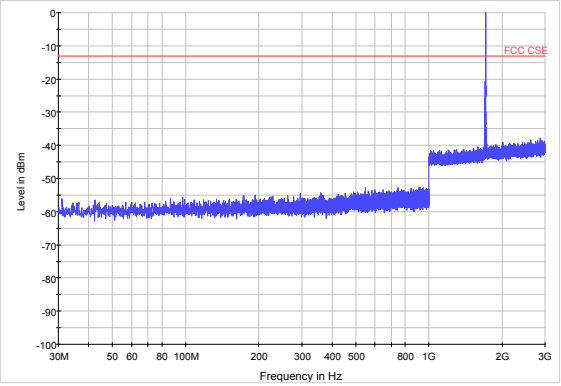
LTE Band 4 3MHzCH-High 30MHz~3GHz



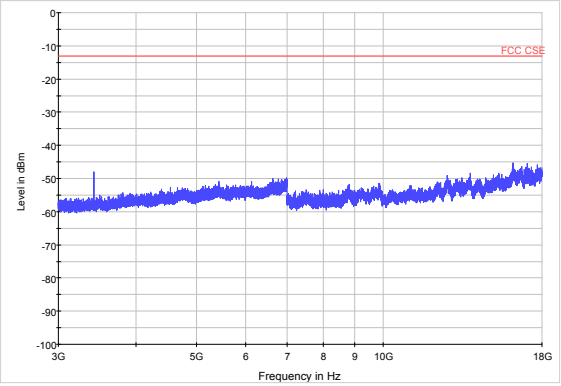
LTE Band 4 3MHzCH-High 3GHz~18GHz



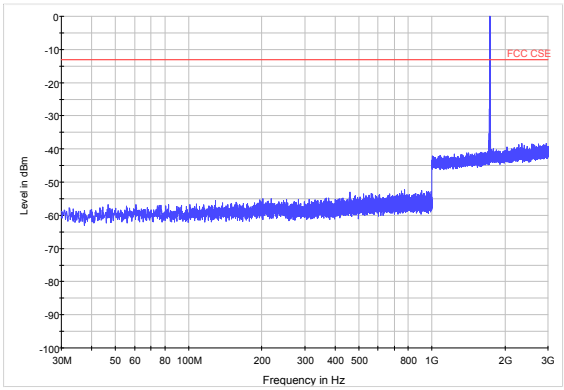
LTE Band 4 5MHz CH-Low 30MHz~3GHz



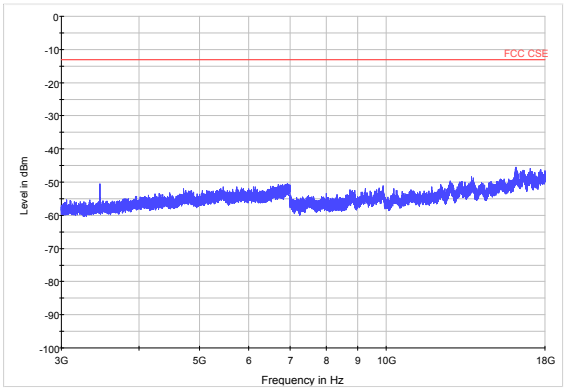
LTE Band 4 5MHz CH-Low 3GHz~18GHz



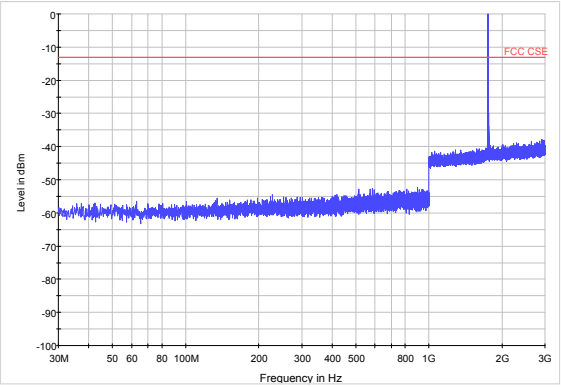
LTE Band 4 5MHz CH-Middle 30MHz~3GHz



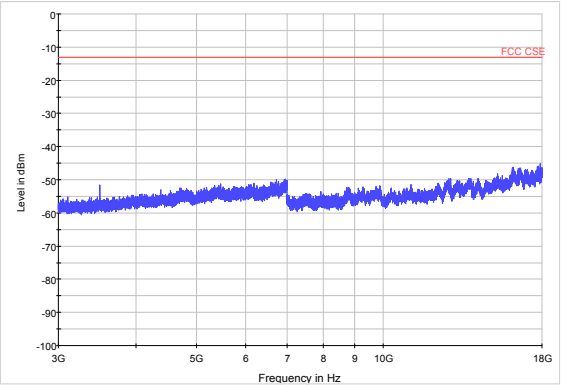
LTE Band 4 5MHz CH-Middle 3GHz~18GHz



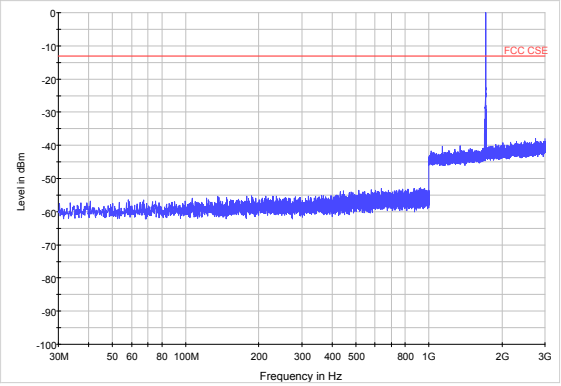
LTE Band 4 5MHz CH-High 30MHz~3GHz



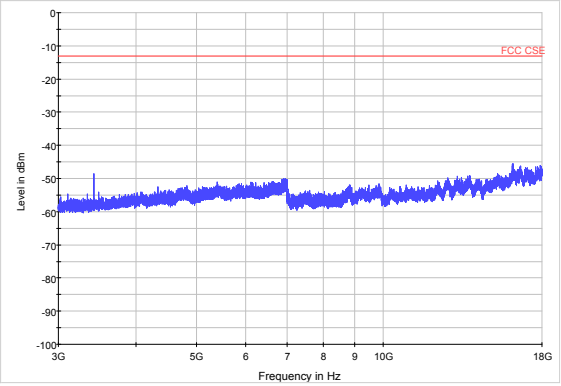
LTE Band 4 5MHz CH-High 3GHz~18GHz



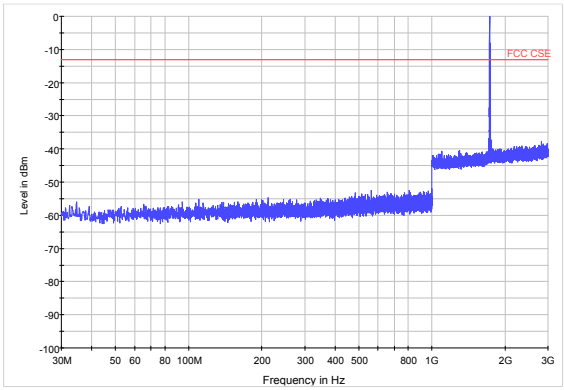
LTE Band 4 10MHz CH-Low 30MHz~3GHz



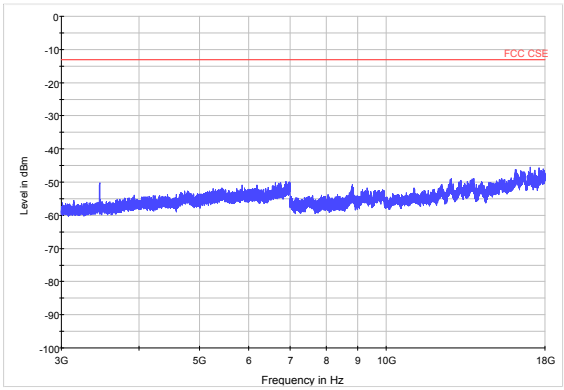
LTE Band 4 10MHz CH-Low 3GHz~18GHz



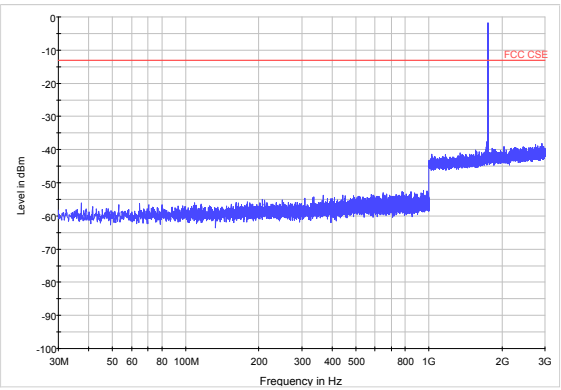
LTE Band 4 10MHz CH-Middle 30MHz~3GHz



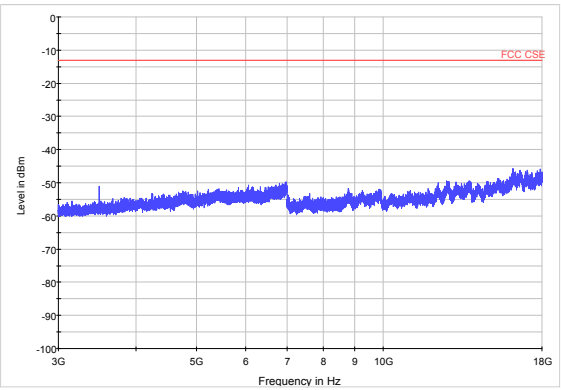
LTE Band 4 10MHz CH-Middle 3GHz~18GHz



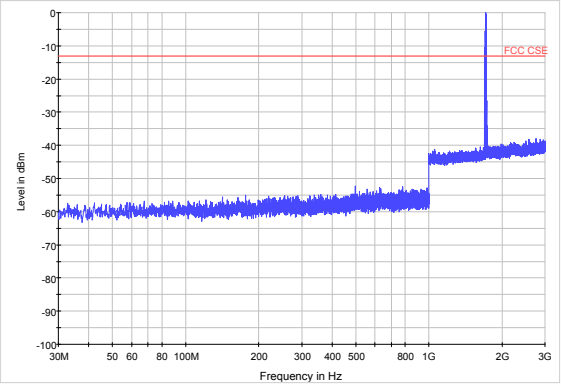
LTE Band 4 10MHz CH-High 30MHz~3GHz



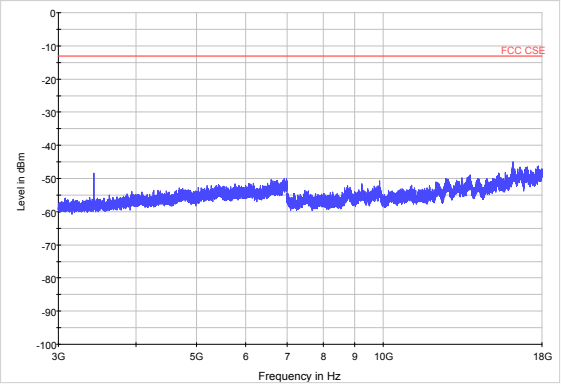
LTE Band 410MHzCH-High 3GHz~18GHz



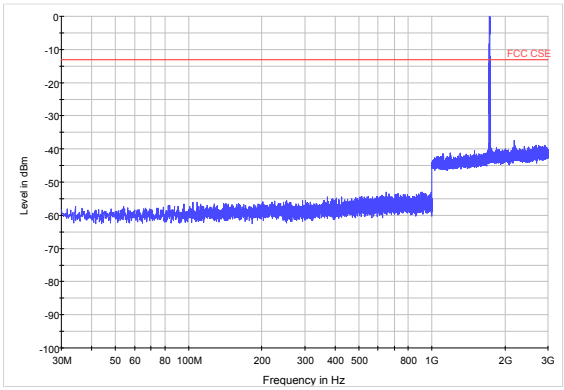
LTE Band 415MHz CH-Low30MHz~3GHz



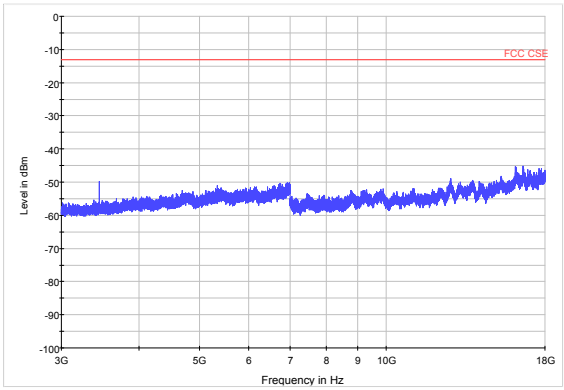
LTE Band 415MHz CH-Low3GHz~18GHz



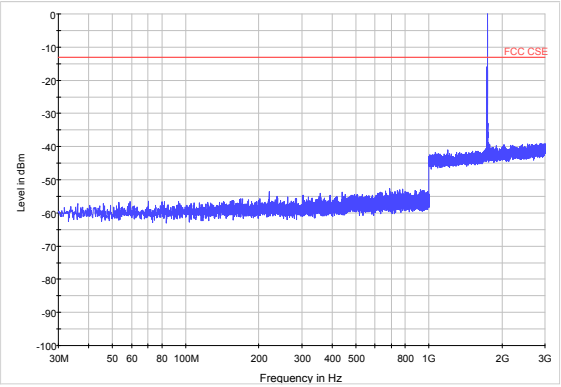
LTE Band 4 15MHz CH-Middle 30MHz~3GHz



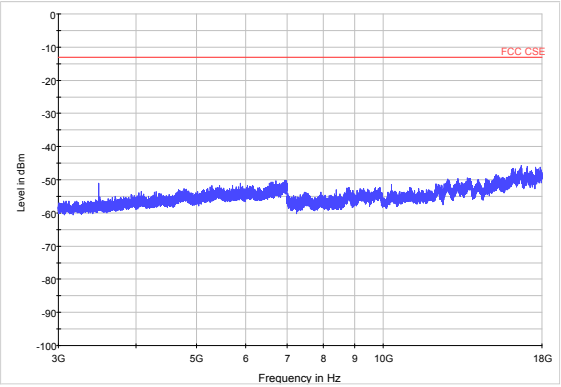
LTE Band 4 15MHz CH-Middle 3GHz~18GHz



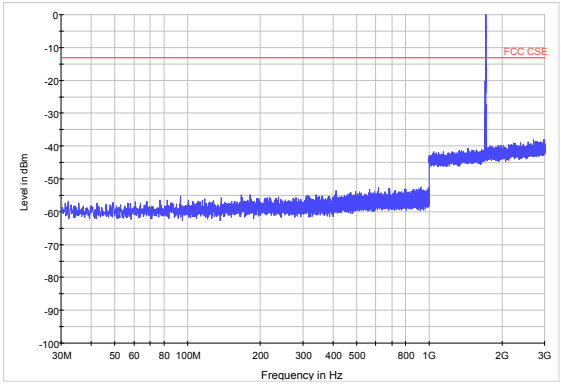
LTE Band 4 15MHz CH-High 30MHz~3GHz



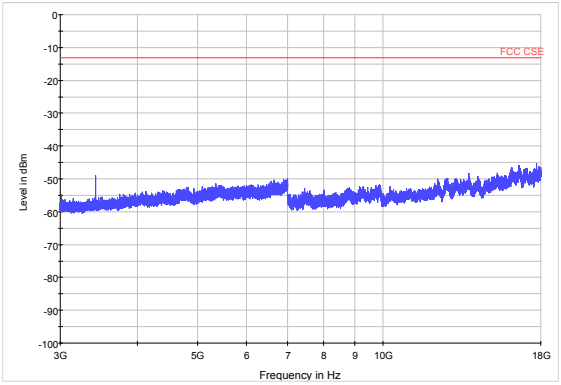
LTE Band 4 15MHz CH-High 3GHz~18GHz



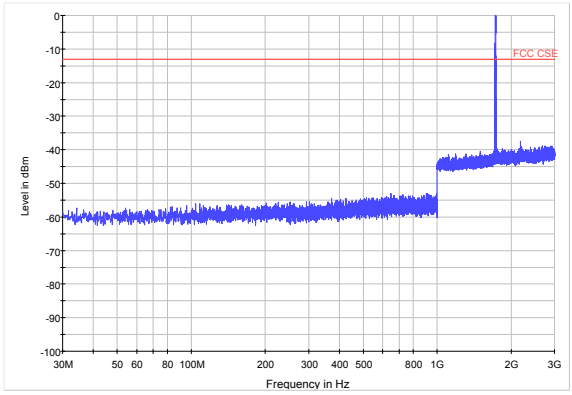
LTE Band 4 20MHz CH-Low30MHz~3GHz



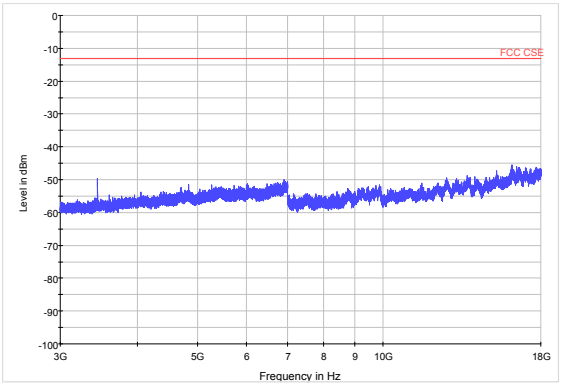
LTE Band 4 20MHz CH-Low3GHz~18GHz



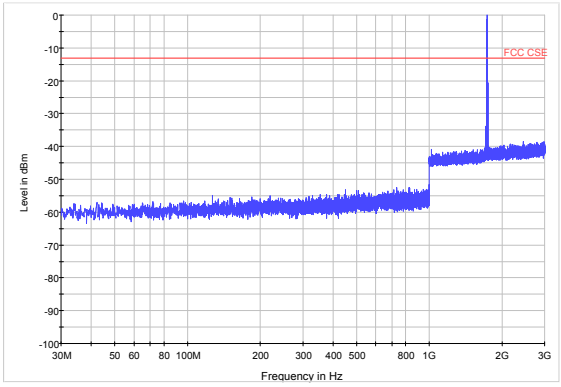
LTE Band 4 20MHz CH-Middle 30MHz~3GHz



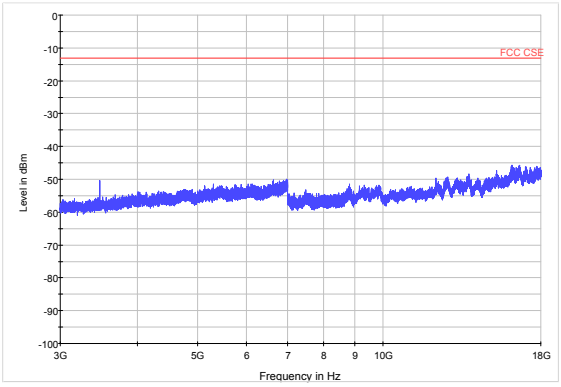
LTE Band 4 20MHz CH-Middle 3GHz~18GHz



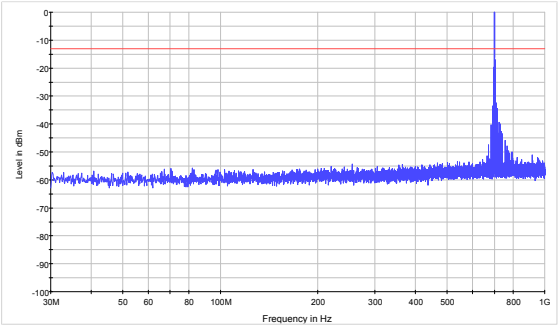
LTE Band 4 20MHz CH-High30MHz~3GHz



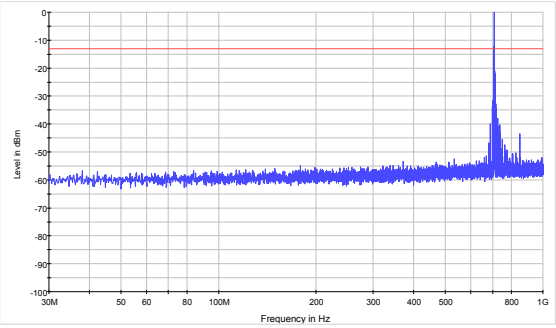
LTE Band 4 20MHz CH-High 3GHz~18GHz



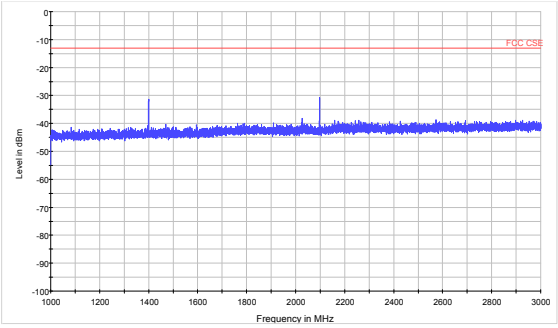
LTE Band 12 1.4MHz CH-Low30MHz~1GHz



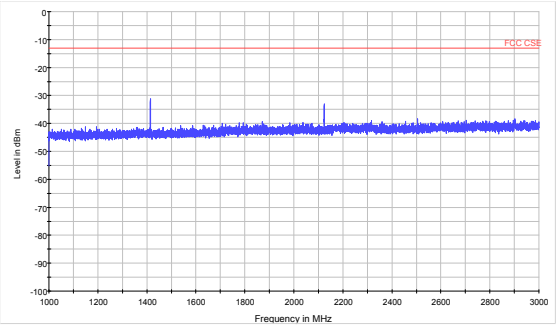
LTE Band 121.4MHzCH-Middle 30MHz~1GHz



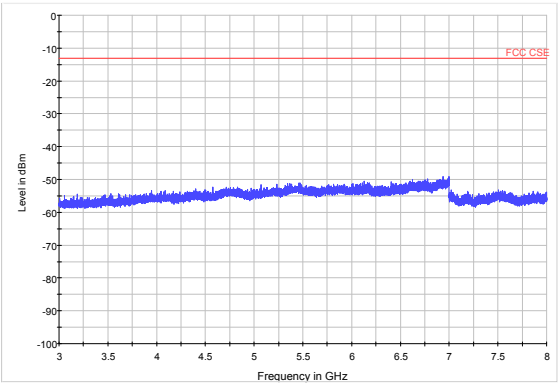
LTE Band 12 1.4MHz CH-Low1GHz~3GHz



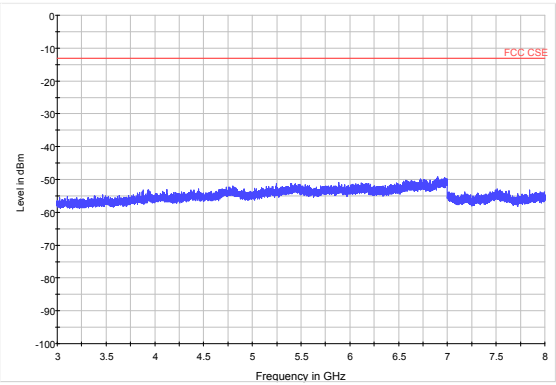
LTE Band 121.4MHzCH-Middle 1GHz~3GHz



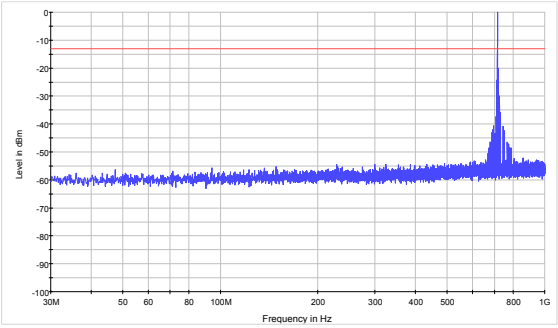
LTE Band 12 1.4MHz CH-Low3GHz~8GHz



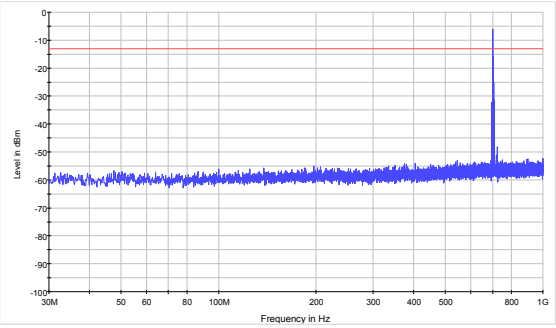
LTE Band 121.4MHzCH-Middle3GHz~8GHz



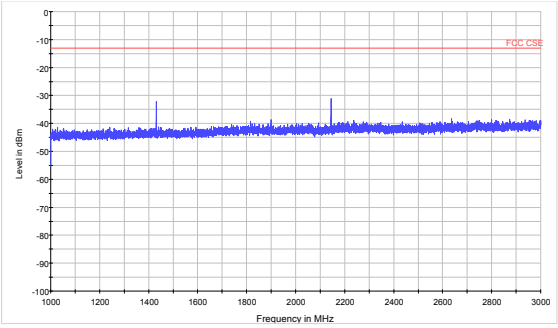
LTE Band 12 1.4MHz CH-High30MHz~1GHz



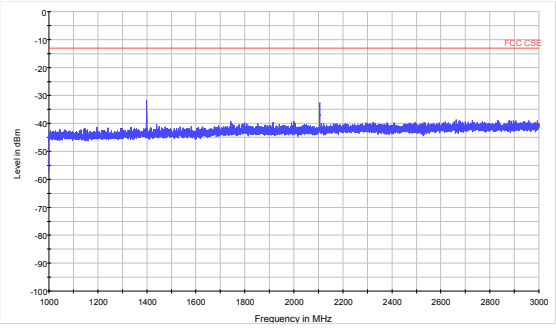
LTE Band 12 3MHz CH-Low30MHz~1GHz



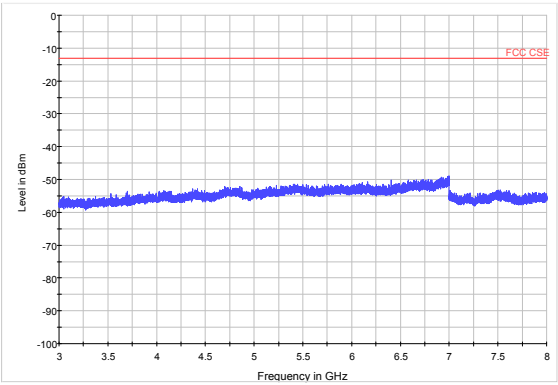
LTE Band 12 1.4MHz CH-High1GHz~3GHz



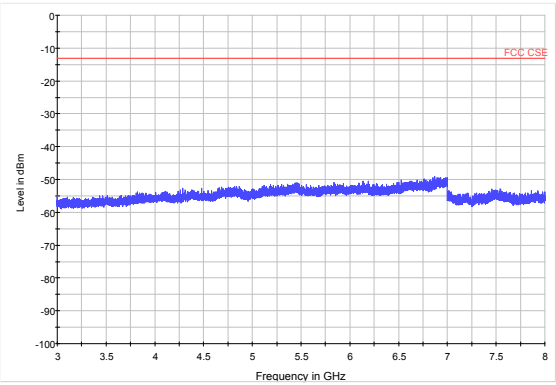
LTE Band 12 3MHz CH-Low1GHz~3GHz



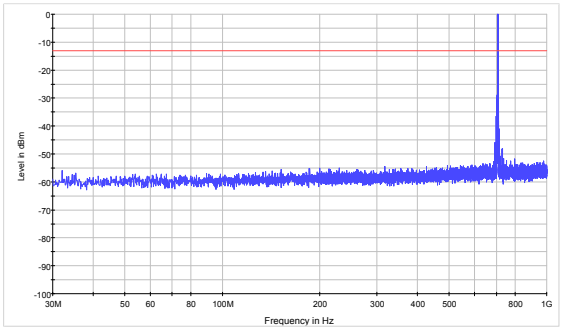
LTE Band 12 1.4MHz CH-High3GHz~8GHz



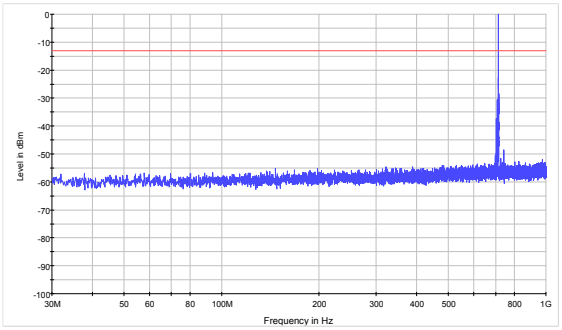
LTE Band 12 3MHz CH-Low3GHz~8GHz



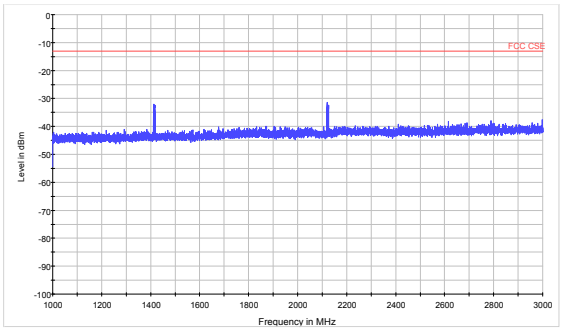
LTE Band 123MHzCH-Middle 30MHz~1GHz



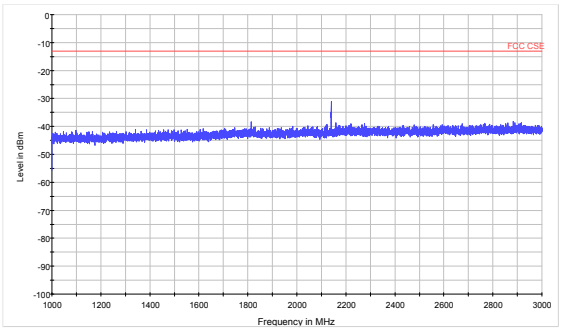
LTE Band 123MHz CH-High30MHz~1GHz



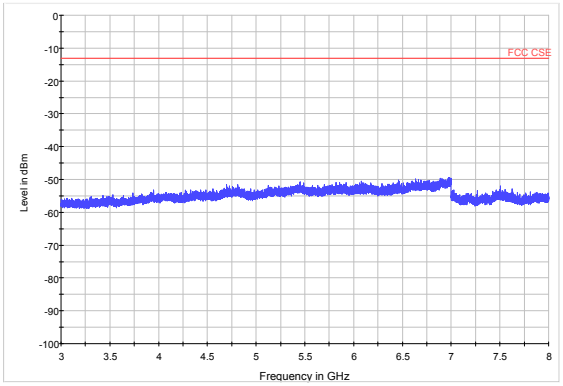
LTE Band 123MHzCH-Middle 1GHz~3GHz



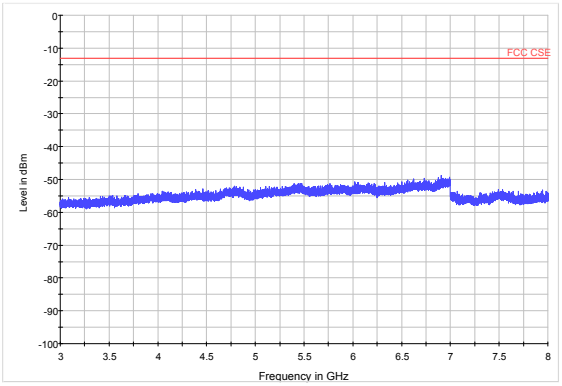
LTE Band 12 3MHz CH-High1GHz~3GHz



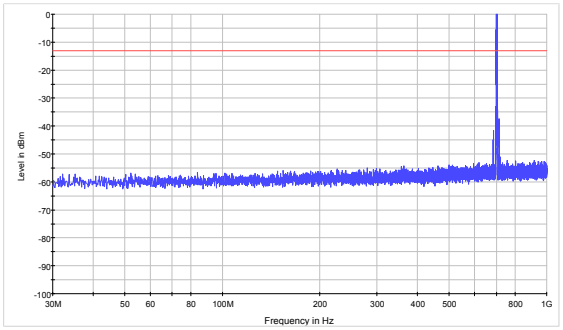
LTE Band 123MHzCH-Middle3GHz~8GHz



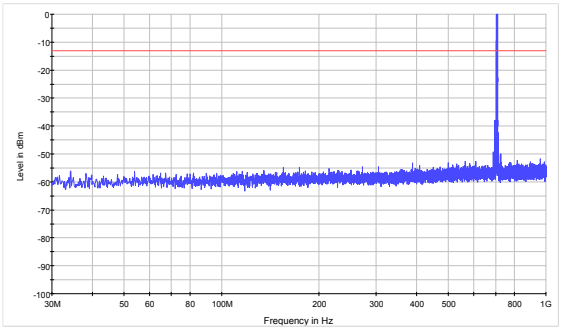
LTE Band 12 3MHz CH-High3GHz~8GHz



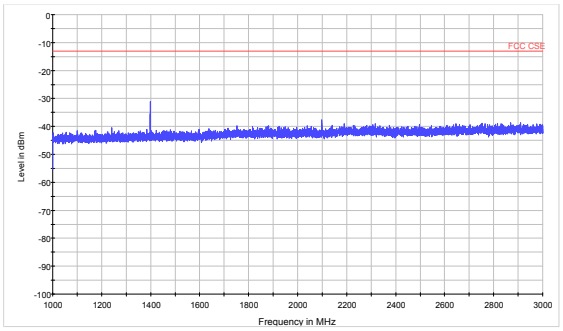
LTE Band 125MHzCH-Low30MHz~1GHz



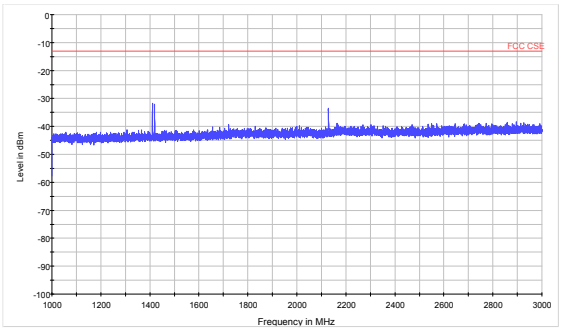
LTE Band 125MHzCH-Middle 30MHz~1GHz



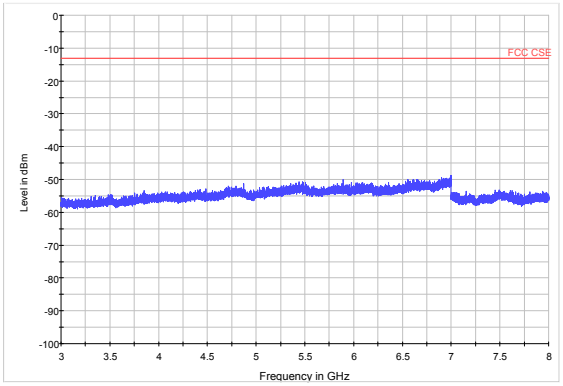
LTE Band 125MHzCH-Low1GHz~3GHz



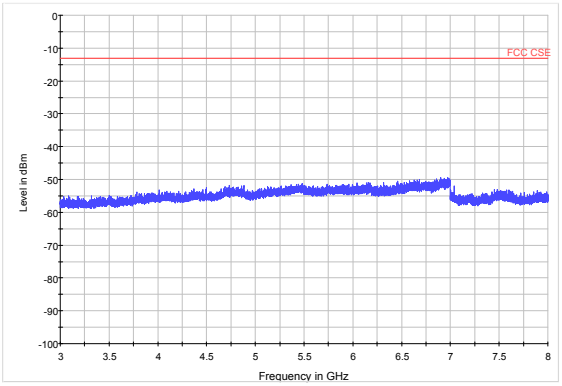
LTE Band 125MHzCH-Middle 1GHz~3GHz



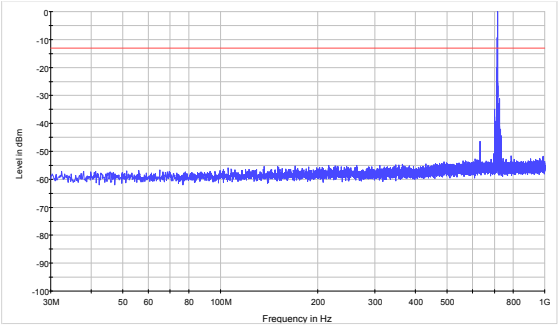
LTE Band 125MHzCH-Low3GHz~8GHz



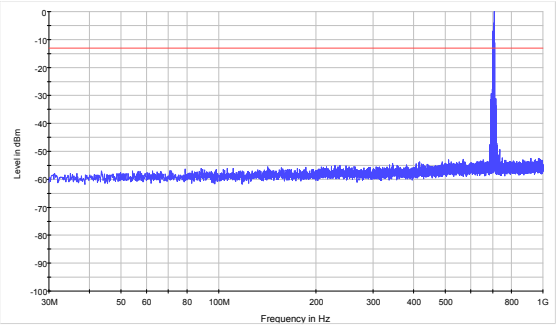
LTE Band 125MHzCH-Middle3GHz~8GHz



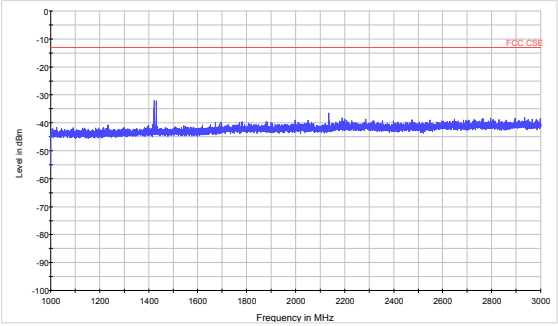
LTE Band 125MHzCH-High30MHz~1GHz



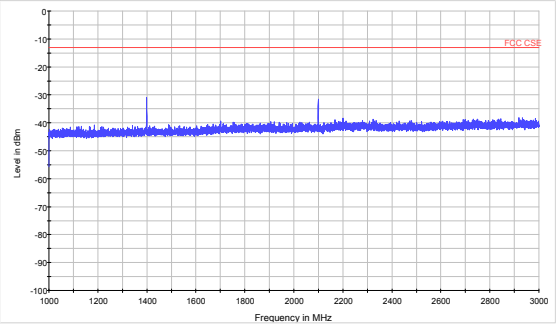
LTE Band 1210MHzCH-Low 30MHz~1GHz



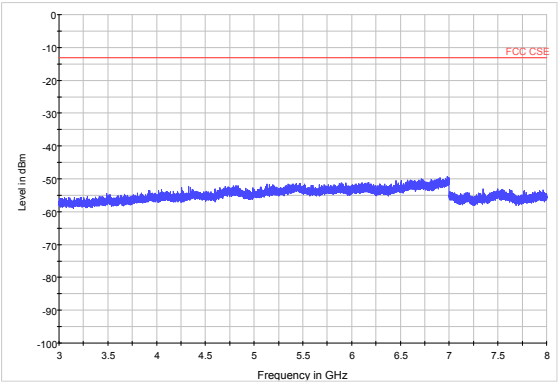
LTE Band 125MHzCH-High 1GHz~3GHz



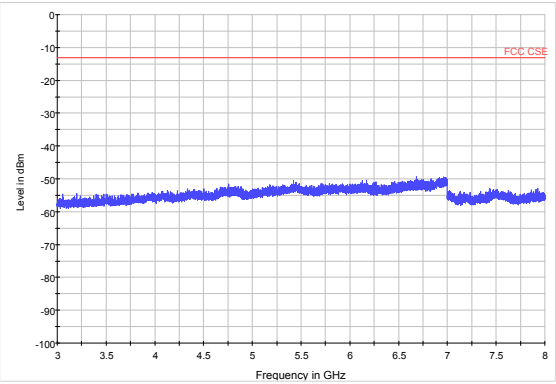
LTE Band 1210MHzCH-Low 1GHz~3GHz



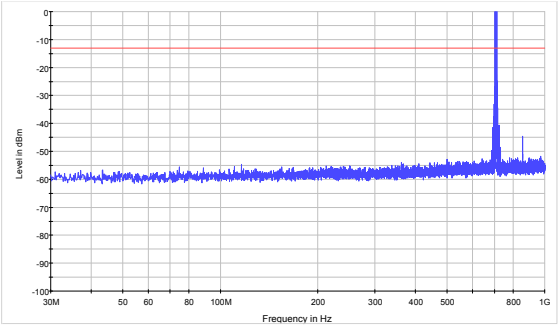
LTE Band 125MHzCH-High3GHz~8GHz



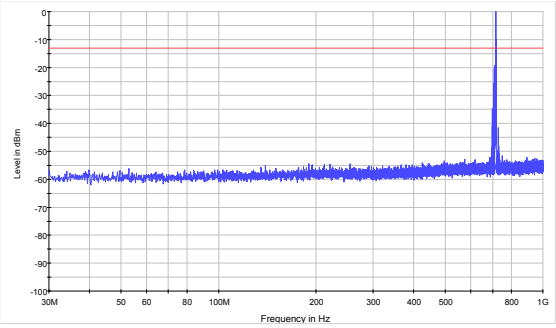
LTE Band 1210MHzCH-Low3GHz~8GHz



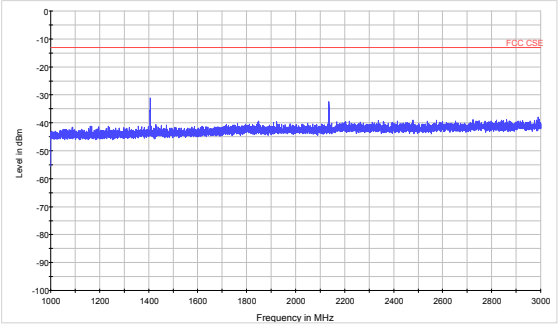
LTE Band 1210MHzCH-Middle 30MHz~1GHz



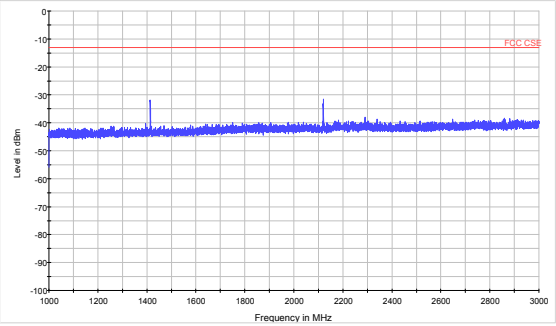
LTE Band 1210MHzCH-High 30MHz~1GHz



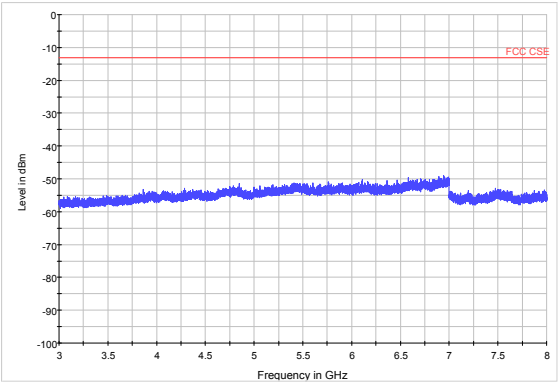
LTE Band 1210MHzCH-Middle 1GHz~3GHz



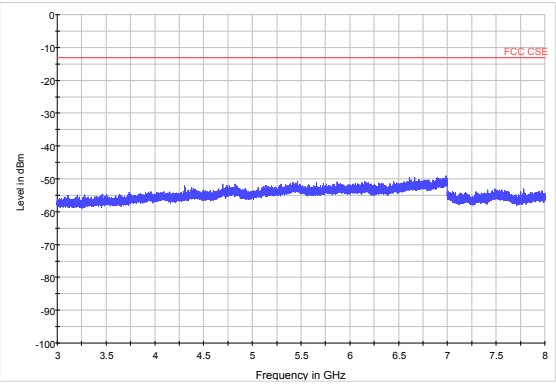
LTE Band 1210MHzCH-High 1GHz~3GHz



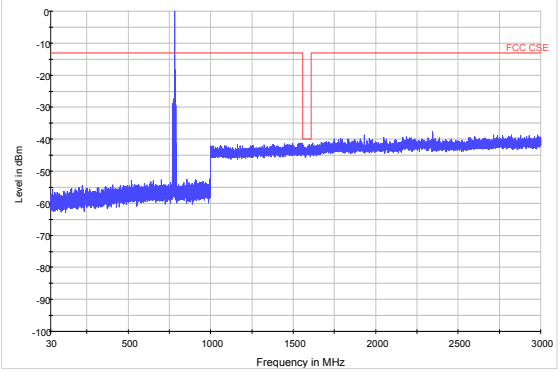
LTE Band 1210MHzCH-Middle3GHz~8GHz



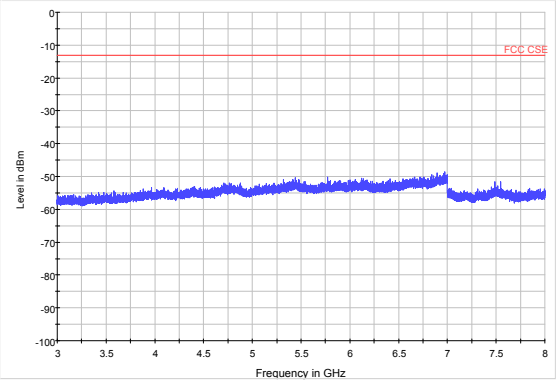
LTE Band 1210MHzCH-High3GHz~8GHz



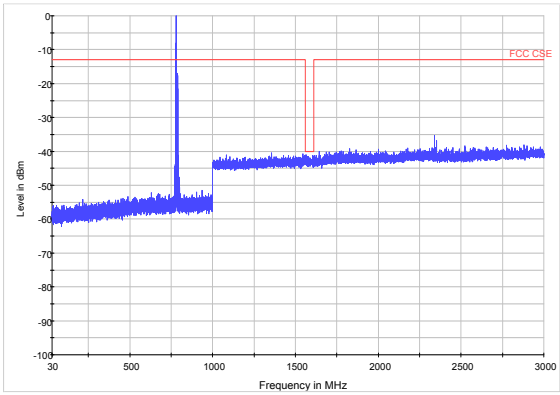
LTE Band 135MHz CH-Low 30MHz~3GHz



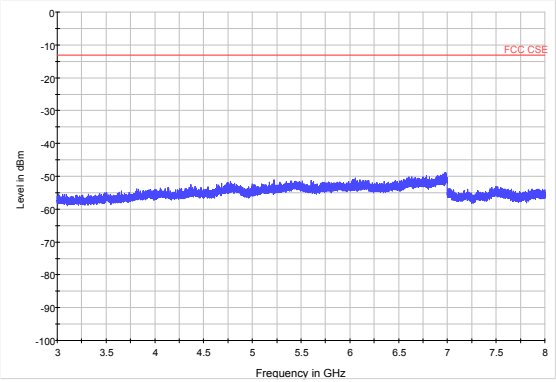
LTE Band 135MHz CH-Low 3GHz~8GHz



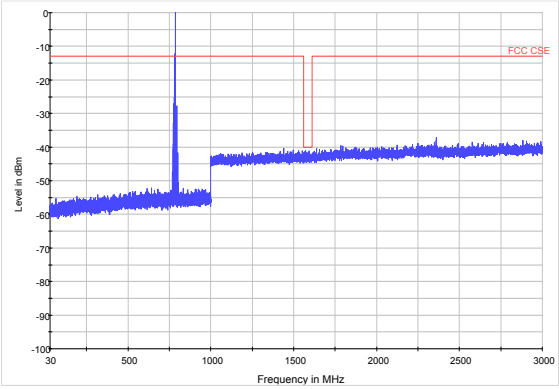
LTE Band 135MHz CH-Middle 30MHz~3GHz



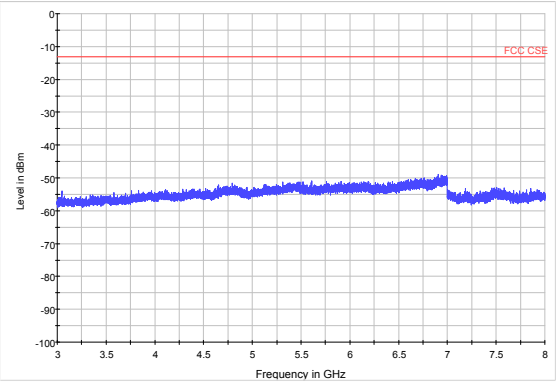
LTE Band 135MHz CH-Middle 3GHz~8GHz



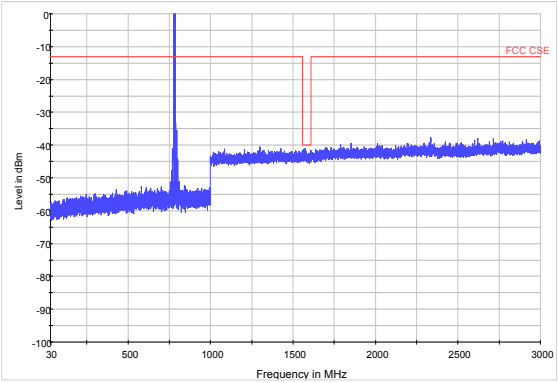
LTE Band 135MHzCH-High 30MHz~3GHz



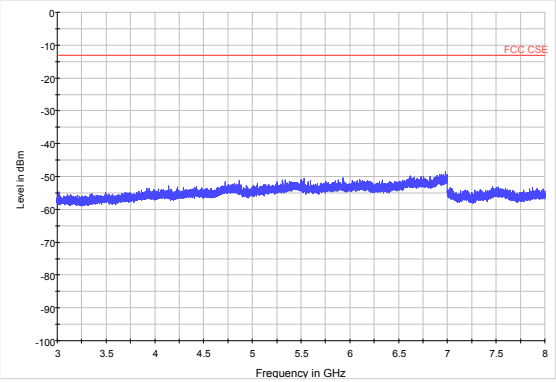
LTE Band 135MHzCH-High3GHz~8GHz



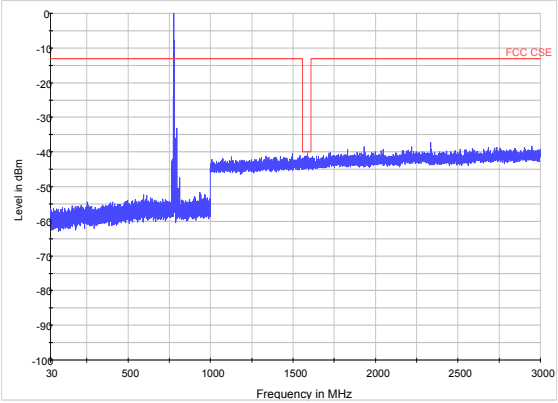
LTE Band 1310MHz CH-Low 30MHz~3GHz



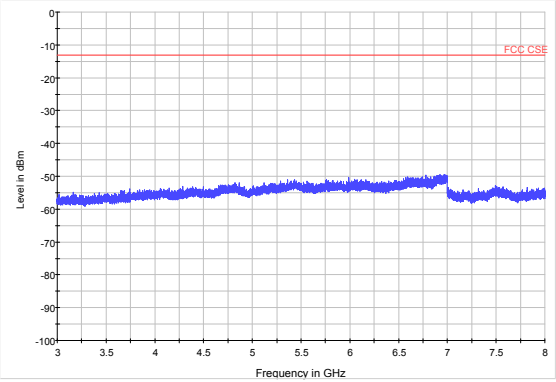
LTE Band 1310MHz CH-Low3GHz~8GHz



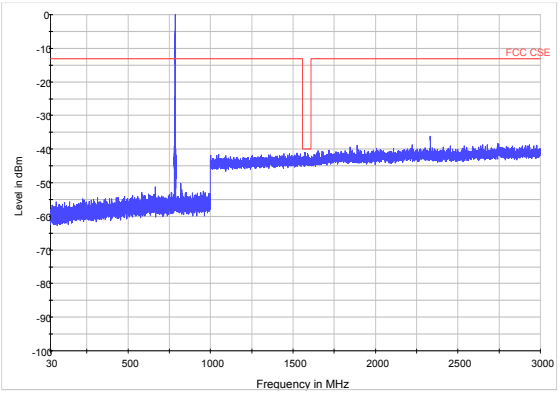
LTE Band 1310MHz CH-Middle 30MHz~3GHz



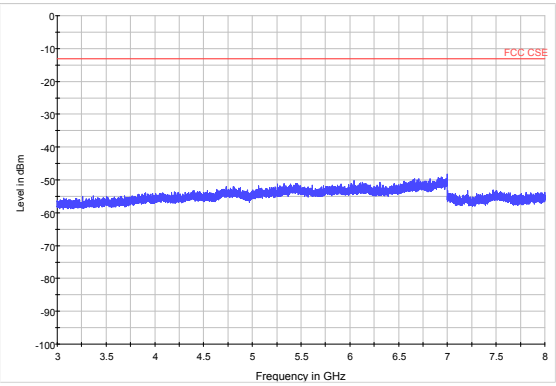
LTE Band 1310MHz CH-Middle 3GHz~8GHz



LTE Band 1310MHzCH-High 30MHz~3GHz



LTE Band 1310MHzCH-High3GHz~8GHz



4.8 Radiates Spurious Emission

Ambient condition

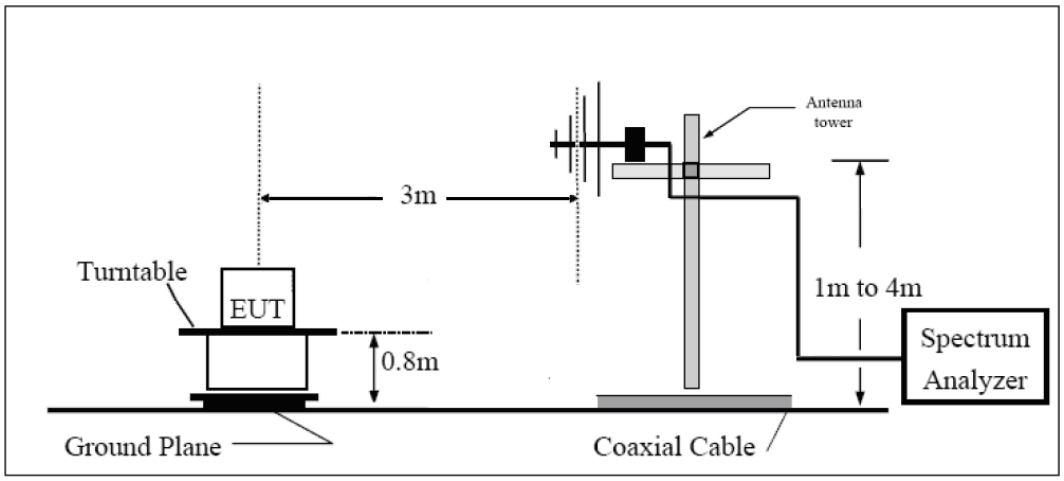
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

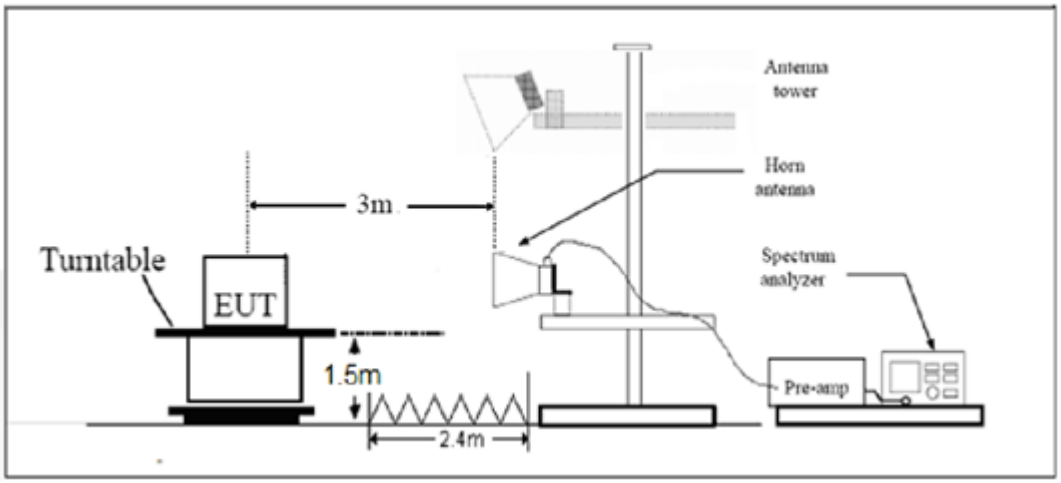
1. The testing follows ANSI C63.26 (2015)Section5.5.2.3.
2. Above 30MHz： The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the 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, 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 (PAg) should be recorded after test.
7. The measurement results are obtained as described below:
Power(EIRP)=PMea- PAg - Pcl + 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

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT lie-down stand-up position (X, Y axis)，lie-down position (Z axis),. Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (Z axis, vertical polarization) and the worst case was recorded.

.

Limits

LTE -4 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..”

LTE -12 Rule Part 27.53 (g) For operations in the 600 MHz band and 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.

LTE -13 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 B4/12 Limit

Limit	-13 dBm

LTE B13 Limit

Limitout of the band 1559-1610 MHz	-13 dBm
Limitin the band 1559-1610 MHz	-40 dBm

Measurement Uncertainty

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

Test Result

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3421.4	-56.35	2.6	10.15	Vertical	-48.8	-13	35.8	45
3	5132.1	-51.85	2.4	11.35	Vertical	-42.9	-13	29.9	0
4	6842.8	-49.65	4.5	10.85	Vertical	-43.3	-13	30.3	135
5	8553.5	-47.15	5.1	11.35	Vertical	-40.9	-13	27.9	225
6	10264.2	-45.55	5.3	11.95	Vertical	-38.9	-13	25.9	135
7	11974.9	-45.85	5.5	13.55	Vertical	-37.8	-13	24.8	45
8	13685.6	-42.85	6.3	13.75	Vertical	-35.4	-13	22.4	90
9	15396.3	-43.35	6.7	13.85	Vertical	-36.2	-13	23.2	225
10	17107.0	-43.05	6.8	14.25	Vertical	-35.6	-13	22.6	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, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-54.85	2.6	10.75	Vertical	-46.7	-13	33.7	135
3	5197.5	-49.65	2.4	11.05	Vertical	-41.0	-13	28.0	45
4	6930.0	-49.45	4.5	11.15	Vertical	-42.8	-13	29.8	90
5	8662.5	-48.55	5.1	11.35	Vertical	-42.3	-13	29.3	225
6	10395.0	-44.35	5.3	11.95	Vertical	-37.7	-13	24.7	45
7	12127.5	-45.95	5.5	13.55	Vertical	-37.9	-13	24.9	90
8	13860.0	-41.75	6.3	13.75	Vertical	-34.3	-13	21.3	135
9	15592.5	-45.65	6.7	13.85	Vertical	-38.5	-13	25.5	135
10	17325.0	-41.95	6.8	14.25	Vertical	-34.5	-13	21.5	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, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3508.6	-53.15	2.6	10.15	Vertical	-45.6	-13	32.6	45
3	5262.9	-56.65	2.4	11.05	Vertical	-48.0	-13	35.0	45
4	7017.2	-49.75	4.5	11.15	Vertical	-43.1	-13	30.1	135
5	8771.5	-47.05	5.1	11.35	Vertical	-40.8	-13	27.8	45
6	10525.8	-45.05	5.3	11.95	Vertical	-38.4	-13	25.4	90
7	12280.1	-45.25	5.5	13.55	Vertical	-37.2	-13	24.2	135
8	14034.4	-42.15	6.3	13.75	Vertical	-34.7	-13	21.7	45
9	15788.7	-44.55	6.7	13.85	Vertical	-37.4	-13	24.4	90
10	17543.0	-42.45	6.8	14.25	Vertical	-35.0	-13	22.0	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 3MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3423.0	-59.35	2.6	10.15	Vertical	-51.8	-13	38.8	180
3	5134.5	-47.45	2.4	11.35	Vertical	-38.5	-13	25.5	225
4	6846.0	-50.65	4.5	10.85	Vertical	-44.3	-13	31.3	135
5	8557.5	-48.45	5.1	11.35	Vertical	-42.2	-13	29.2	225
6	10269.0	-45.35	5.3	11.95	Vertical	-38.7	-13	25.7	90
7	11980.5	-46.15	5.5	13.55	Vertical	-38.1	-13	25.1	90
8	13692.0	-42.65	6.3	13.75	Vertical	-35.2	-13	22.2	45
9	15403.5	-45.35	6.7	13.85	Vertical	-38.2	-13	25.2	180
10	17115.0	-43.05	6.8	14.25	Vertical	-35.6	-13	22.6	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 3MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-54.25	2.6	10.75	Vertical	-46.1	-13	33.1	0
3	5197.5	-48.95	2.4	11.05	Vertical	-40.3	-13	27.3	135
4	6930.0	-48.75	4.5	11.15	Vertical	-42.1	-13	29.1	225
5	8662.5	-46.55	5.1	11.35	Vertical	-40.3	-13	27.3	315
6	10395.0	-45.25	5.3	11.95	Vertical	-38.6	-13	25.6	270
7	12127.5	-44.75	5.5	13.55	Vertical	-36.7	-13	23.7	225
8	13860.0	-41.95	6.3	13.75	Vertical	-34.5	-13	21.5	135
9	15592.5	-44.95	6.7	13.85	Vertical	-37.8	-13	24.8	225
10	17325.0	-41.65	6.8	14.25	Vertical	-34.2	-13	21.2	0

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 3MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3507.0	-54.85	2.6	10.15	Vertical	-47.3	-13	34.3	135
3	5260.5	-47.15	2.4	11.05	Vertical	-38.5	-13	25.5	225
4	7014.0	-50.25	4.5	11.15	Vertical	-43.6	-13	30.6	315
5	8767.5	-45.95	5.1	11.35	Vertical	-39.7	-13	26.7	270
6	10521.0	-44.35	5.3	11.95	Vertical	-37.7	-13	24.7	225
7	12274.5	-46.55	5.5	13.55	Vertical	-38.5	-13	25.5	135
8	14028.0	-42.35	6.3	13.75	Vertical	-34.9	-13	21.9	225
9	15781.5	-44.75	6.7	13.85	Vertical	-37.6	-13	24.6	90
10	17535.0	-42.15	6.8	14.25	Vertical	-34.7	-13	21.7	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 5MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3425.0	-57.85	2.6	10.15	Vertical	-50.3	-13	37.3	45
3	5137.5	-57.75	2.4	11.35	Vertical	-48.8	-13	35.8	180
4	6850.0	-47.95	4.5	10.85	Vertical	-41.6	-13	28.6	225
5	8562.5	-47.05	5.1	11.35	Vertical	-40.8	-13	27.8	135
6	10275.0	-45.15	5.3	11.95	Vertical	-38.5	-13	25.5	225
7	11987.5	-45.65	5.5	13.55	Vertical	-37.6	-13	24.6	90
8	13700.0	-44.75	6.3	13.75	Vertical	-37.3	-13	24.3	90
9	15412.5	-45.25	6.7	13.85	Vertical	-38.1	-13	25.1	45
10	17125.0	-42.75	6.8	14.25	Vertical	-35.3	-13	22.3	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, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-55.05	2.6	10.75	Vertical	-46.9	-13	33.9	45
3	5197.5	-57.45	2.4	11.05	Vertical	-48.8	-13	35.8	0
4	6930.0	-49.45	4.5	11.15	Vertical	-42.8	-13	29.8	135
5	8662.5	-48.65	5.1	11.35	Vertical	-42.4	-13	29.4	225
6	10395.0	-44.75	5.3	11.95	Vertical	-38.1	-13	25.1	315
7	12127.5	-47.25	5.5	13.55	Vertical	-39.2	-13	26.2	270
8	13860.0	-41.65	6.3	13.75	Vertical	-34.2	-13	21.2	225
9	15592.5	-44.35	6.7	13.85	Vertical	-37.2	-13	24.2	135
10	17325.0	-41.35	6.8	14.25	Vertical	-33.9	-13	20.9	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, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3505.0	-53.65	2.6	10.15	Vertical	-46.1	-13	33.1	0
3	5257.5	-56.95	2.4	11.05	Vertical	-48.3	-13	35.3	135
4	7010.0	-49.75	4.5	11.15	Vertical	-43.1	-13	30.1	225
5	8762.5	-46.85	5.1	11.35	Vertical	-40.6	-13	27.6	315
6	10515.0	-44.75	5.3	11.95	Vertical	-38.1	-13	25.1	270
7	12267.5	-46.55	5.5	13.55	Vertical	-38.5	-13	25.5	225
8	14020.0	-41.35	6.3	13.75	Vertical	-33.9	-13	20.9	135
9	15772.5	-44.15	6.7	13.85	Vertical	-37.0	-13	24.0	225
10	17525.0	-43.85	6.8	14.25	Vertical	-36.4	-13	23.4	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.

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

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3430.0	-56.15	2.6	10.15	Vertical	-48.6	-13	35.6	90
3	5145.0	-51.65	2.4	11.35	Vertical	-42.7	-13	29.7	45
4	6860.0	-49.25	4.5	10.85	Vertical	-42.9	-13	29.9	180
5	8575.0	-46.95	5.1	11.35	Vertical	-40.7	-13	27.7	225
6	10290.0	-44.55	5.3	11.95	Vertical	-37.9	-13	24.9	135
7	12005.0	-44.45	5.5	13.55	Vertical	-36.4	-13	23.4	225
8	13720.0	-43.15	6.3	13.75	Vertical	-35.7	-13	22.7	90
9	15435.0	-44.65	6.7	13.85	Vertical	-37.5	-13	24.5	90
10	17150.0	-42.65	6.8	14.25	Vertical	-35.2	-13	22.2	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 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-54.95	2.6	10.75	Vertical	-46.8	-13	33.8	180
3	5197.5	-57.25	2.4	11.05	Vertical	-48.6	-13	35.6	45
4	6930.0	-50.05	4.5	11.15	Vertical	-43.4	-13	30.4	0
5	8662.5	-46.35	5.1	11.35	Vertical	-40.1	-13	27.1	135
6	10395.0	-44.85	5.3	11.95	Vertical	-38.2	-13	25.2	225
7	12127.5	-45.55	5.5	13.55	Vertical	-37.5	-13	24.5	315
8	13860.0	-42.45	6.3	13.75	Vertical	-35.0	-13	22.0	270
9	15592.5	-43.85	6.7	13.85	Vertical	-36.7	-13	23.7	225
10	17325.0	-41.45	6.8	14.25	Vertical	-34.0	-13	21.0	135

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 10MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3500.0	-53.65	2.6	10.15	Vertical	-46.1	-13	33.1	225
3	5250.0	-57.35	2.4	11.05	Vertical	-48.7	-13	35.7	315
4	7000.0	-49.95	4.5	11.15	Vertical	-43.3	-13	30.3	270
5	8750.0	-47.15	5.1	11.35	Vertical	-40.9	-13	27.9	225
6	10500.0	-44.35	5.3	11.95	Vertical	-37.7	-13	24.7	135
7	12250.0	-45.65	5.5	13.55	Vertical	-37.6	-13	24.6	225
8	14000.0	-42.15	6.3	13.75	Vertical	-34.7	-13	21.7	315
9	15750.0	-44.75	6.7	13.85	Vertical	-37.6	-13	24.6	270
10	17500.0	-42.45	6.8	14.25	Vertical	-35.0	-13	22.0	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 15MHz CH Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3435.0	-58.45	2.6	10.15	Vertical	-50.9	-13	37.9	135
3	5152.5	-51.15	2.4	11.35	Vertical	-42.2	-13	29.2	225
4	6870.0	-49.45	4.5	10.85	Vertical	-43.1	-13	30.1	90
5	8587.5	-46.45	5.1	11.35	Vertical	-40.2	-13	27.2	90
6	10305.0	-46.95	5.3	11.95	Vertical	-40.3	-13	27.3	45
7	12022.5	-45.65	5.5	13.55	Vertical	-37.6	-13	24.6	180
8	13740.0	-43.75	6.3	13.75	Vertical	-36.3	-13	23.3	225
9	15457.5	-44.65	6.7	13.85	Vertical	-37.5	-13	24.5	135
10	17175.0	-41.65	6.8	14.25	Vertical	-34.2	-13	21.2	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 15MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-55.85	2.6	10.75	Vertical	-47.7	-13	34.7	90
3	5197.5	-57.45	2.4	11.05	Vertical	-48.8	-13	35.8	90
4	6930.0	-50.45	4.5	11.15	Vertical	-43.8	-13	30.8	45
5	8662.5	-47.85	5.1	11.35	Vertical	-41.6	-13	28.6	180
6	10395.0	-43.95	5.3	11.95	Vertical	-37.3	-13	24.3	270
7	12127.5	-45.75	5.5	13.55	Vertical	-37.7	-13	24.7	225
8	13860.0	-41.75	6.3	13.75	Vertical	-34.3	-13	21.3	135
9	15592.5	-45.65	6.7	13.85	Vertical	-38.5	-13	25.5	225
10	17325.0	-42.05	6.8	14.25	Vertical	-34.6	-13	21.6	315

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 15MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3495.0	-53.55	2.6	10.15	Vertical	-46.0	-13	33.0	270
3	5242.5	-57.65	2.4	11.05	Vertical	-49.0	-13	36.0	225
4	6990.0	-49.85	4.5	11.15	Vertical	-43.2	-13	30.2	135
5	8737.5	-47.05	5.1	11.35	Vertical	-40.8	-13	27.8	225
6	10485.0	-44.25	5.3	11.95	Vertical	-37.6	-13	24.6	90
7	12232.5	-45.25	5.5	13.55	Vertical	-37.2	-13	24.2	45
8	13980.0	-41.05	6.3	13.75	Vertical	-33.6	-13	20.6	180
9	15727.5	-46.15	6.7	13.85	Vertical	-39.0	-13	26.0	45
10	17475.0	-42.65	6.8	14.25	Vertical	-35.2	-13	22.2	0

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 20MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3440.0	-59.05	2.6	10.15	Vertical	-51.5	-13	38.5	135
3	5160.0	-58.15	2.4	11.35	Vertical	-49.2	-13	36.2	225
4	6880.0	-51.25	4.5	10.85	Vertical	-44.9	-13	31.9	315
5	8600.0	-47.05	5.1	11.35	Vertical	-40.8	-13	27.8	270
6	10320.0	-45.95	5.3	11.95	Vertical	-39.3	-13	26.3	225
7	12040.0	-47.75	5.5	13.55	Vertical	-39.7	-13	26.7	135
8	13760.0	-41.95	6.3	13.75	Vertical	-34.5	-13	21.5	225
9	15480.0	-47.05	6.7	13.85	Vertical	-39.9	-13	26.9	135
10	17200.0	-44.75	6.8	14.25	Vertical	-37.3	-13	24.3	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 20MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-58.95	2.6	10.75	Vertical	-50.8	-13	37.8	315
3	5197.5	-52.75	2.4	11.05	Vertical	-44.1	-13	31.1	270
4	6930.0	-50.15	4.5	11.15	Vertical	-43.5	-13	30.5	225
5	8662.5	-46.55	5.1	11.35	Vertical	-40.3	-13	27.3	135
6	10395.0	-45.25	5.3	11.95	Vertical	-38.6	-13	25.6	225
7	12127.5	-44.95	5.5	13.55	Vertical	-36.9	-13	23.9	90
8	13860.0	-42.45	6.3	13.75	Vertical	-35.0	-13	22.0	90
9	15592.5	-44.95	6.7	13.85	Vertical	-37.8	-13	24.8	45
10	17325.0	-42.85	6.8	14.25	Vertical	-35.4	-13	22.4	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 20MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3490.0	-54.35	2.6	10.15	Vertical	-46.8	-13	33.8	225
3	5235.0	-48.85	2.4	11.05	Vertical	-40.2	-13	27.2	135
4	6980.0	-49.55	4.5	11.15	Vertical	-42.9	-13	29.9	225
5	8725.0	-47.05	5.1	11.35	Vertical	-40.8	-13	27.8	90
6	10470.0	-45.35	5.3	11.95	Vertical	-38.7	-13	25.7	90
7	12215.0	-45.65	5.5	13.55	Vertical	-37.6	-13	24.6	45
8	13960.0	-44.45	6.3	13.75	Vertical	-37.0	-13	24.0	180
9	15705.0	-45.25	6.7	13.85	Vertical	-38.1	-13	25.1	45
10	17450.0	-43.65	6.8	14.25	Vertical	-36.2	-13	23.2	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 12 QPSK 1.4MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1399.40	-52.45	2.00	10.15	Vertical	-44.3	-13	31.3	225
3	2099.10	-58.65	2.50	11.35	Vertical	-49.8	-13	36.8	315
4	2798.80	-56.15	4.20	10.85	Vertical	-49.5	-13	36.5	135
5	3498.50	-56.05	5.20	11.35	Vertical	-49.9	-13	36.9	225
6	4198.20	-54.55	5.50	11.95	Vertical	-48.1	-13	35.1	90
7	4897.90	-52.95	5.70	13.55	Vertical	-45.1	-13	32.1	135
8	5597.60	-52.05	6.30	13.75	Vertical	-44.6	-13	31.6	45
9	6297.30	-50.55	6.80	13.85	Vertical	-43.5	-13	30.5	225
10	6997.00	-49.05	6.90	14.25	Vertical	-41.7	-13	28.7	135

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 12 QPSK 1.4MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.00	-57.75	2.00	10.75	Vertical	-49.0	-13	36.0	45
3	2122.50	-59.04	2.51	11.05	Vertical	-50.5	-13	37.5	90
4	2830.00	-56.45	4.20	11.15	Vertical	-49.5	-13	36.5	225
5	3537.50	-56.45	5.20	11.15	Vertical	-50.5	-13	37.5	45
6	4245.00	-54.55	5.50	11.95	Vertical	-48.1	-13	35.1	135
7	4952.50	-52.15	5.70	13.55	Vertical	-44.3	-13	31.3	135
8	5660.00	-52.65	6.30	13.75	Vertical	-45.2	-13	32.2	225
9	6367.50	-50.25	6.80	13.85	Vertical	-43.2	-13	30.2	90
10	7075.00	-49.35	6.90	14.25	Vertical	-42.0	-13	29.0	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 12 QPSK 1.4MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1430.60	-60.65	2.00	10.15	Vertical	-52.5	-13	39.5	225
3	2145.90	-56.14	2.51	11.05	Vertical	-47.6	-13	34.6	45
4	2861.20	-57.25	4.20	11.15	Vertical	-50.3	-13	37.3	90
5	3576.50	-56.05	5.20	11.15	Vertical	-50.1	-13	37.1	135
6	4291.80	-54.85	5.50	11.95	Vertical	-48.4	-13	35.4	135
7	5007.10	-52.15	5.70	13.55	Vertical	-44.3	-13	31.3	90
8	5722.40	-52.35	6.30	13.75	Vertical	-44.9	-13	31.9	135
9	6437.70	-50.55	6.80	13.85	Vertical	-43.5	-13	30.5	90
10	7153.00	-49.45	6.90	14.25	Vertical	-42.1	-13	29.1	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 12 QPSK 3MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1401.00	-55.95	2.00	10.15	Vertical	-47.8	-13	34.8	135
3	2101.50	-58.34	2.51	11.35	Vertical	-49.5	-13	36.5	225
4	2802.00	-56.25	4.20	10.85	Vertical	-49.6	-13	36.6	90
5	3502.50	-56.55	5.20	11.35	Vertical	-50.4	-13	37.4	90
6	4203.00	-54.85	5.50	11.95	Vertical	-48.4	-13	35.4	45
7	4903.50	-52.95	5.70	13.55	Vertical	-45.1	-13	32.1	180
8	5604.00	-52.85	6.30	13.75	Vertical	-45.4	-13	32.4	225
9	6304.50	-50.35	6.80	13.85	Vertical	-43.3	-13	30.3	135
10	7005.00	-49.15	6.90	14.25	Vertical	-41.8	-13	28.8	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 12 QPSK 3MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.00	-57.85	2.00	10.75	Vertical	-49.1	-13	36.1	90
3	2122.50	-58.64	2.51	11.05	Vertical	-50.1	-13	37.1	90
4	2830.00	-57.35	4.20	11.15	Vertical	-50.4	-13	37.4	45
5	3537.50	-56.35	5.20	11.15	Vertical	-50.4	-13	37.4	180
6	4245.00	-55.15	5.50	11.95	Vertical	-48.7	-13	35.7	45
7	4952.50	-52.35	5.70	13.55	Vertical	-44.5	-13	31.5	0
8	5660.00	-52.55	6.30	13.75	Vertical	-45.1	-13	32.1	135
9	6367.50	-50.95	6.80	13.85	Vertical	-43.9	-13	30.9	225
10	7075.00	-48.75	6.90	14.25	Vertical	-41.4	-13	28.4	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.

LTE Band 12 QPSK 3MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1429.00	-59.25	2.00	10.15	Vertical	-51.1	-13	38.1	45
3	2143.50	-57.24	2.51	11.05	Vertical	-48.7	-13	35.7	180
4	2858.00	-57.05	4.20	11.15	Vertical	-50.1	-13	37.1	225
5	3572.50	-55.85	5.20	11.15	Vertical	-49.9	-13	36.9	135
6	4287.00	-54.75	5.50	11.95	Vertical	-48.3	-13	35.3	225
7	5001.50	-52.55	5.70	13.55	Vertical	-44.7	-13	31.7	90
8	5716.00	-51.95	6.30	13.75	Vertical	-44.5	-13	31.5	90
9	6430.50	-50.45	6.80	13.85	Vertical	-43.4	-13	30.4	45
10	7145.00	-49.05	6.90	14.25	Vertical	-41.7	-13	28.7	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 12 QPSK 5MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1403.00	-51.85	2.00	10.15	Vertical	-43.7	-13	30.7	45
3	2104.50	-59.15	2.50	11.35	Vertical	-50.3	-13	37.3	0
4	2806.00	-56.85	4.20	10.85	Vertical	-50.2	-13	37.2	135
5	3507.50	-56.45	5.20	11.35	Vertical	-50.3	-13	37.3	45
6	4209.00	-55.35	5.50	11.95	Vertical	-48.9	-13	35.9	90
7	4910.50	-52.15	5.70	13.55	Vertical	-44.3	-13	31.3	45
8	5612.00	-52.55	6.30	13.75	Vertical	-45.1	-13	32.1	180
9	6313.50	-50.65	6.80	13.85	Vertical	-43.6	-13	30.6	315
10	7015.00	-49.05	6.90	14.25	Vertical	-41.7	-13	28.7	135

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 12 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.00	-57.15	2.00	10.75	Vertical	-48.4	-13	35.4	225
3	2122.50	-58.24	2.51	11.05	Vertical	-49.7	-13	36.7	90
4	2830.00	-56.25	4.20	11.15	Vertical	-49.3	-13	36.3	180
5	3537.50	-55.75	5.20	11.15	Vertical	-49.8	-13	36.8	45
6	4245.00	-55.35	5.50	11.95	Vertical	-48.9	-13	35.9	180
7	4952.50	-52.25	5.70	13.55	Vertical	-44.4	-13	31.4	45
8	5660.00	-52.65	6.30	13.75	Vertical	-45.2	-13	32.2	0
9	6367.50	-50.25	6.80	13.85	Vertical	-43.2	-13	30.2	135
10	7075.00	-49.05	6.90	14.25	Vertical	-41.7	-13	28.7	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 12 QPSK 5MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1427.00	-57.85	2.00	10.15	Vertical	-49.7	-13	36.7	90
3	2140.50	-57.34	2.51	11.05	Vertical	-48.8	-13	35.8	225
4	2854.00	-55.65	4.20	11.15	Vertical	-48.7	-13	35.7	180
5	3567.50	-56.15	5.20	11.15	Vertical	-50.2	-13	37.2	270
6	4281.00	-54.55	5.50	11.95	Vertical	-48.1	-13	35.1	135
7	4994.50	-52.95	5.70	13.55	Vertical	-45.1	-13	32.1	225
8	5708.00	-52.35	6.30	13.75	Vertical	-44.9	-13	31.9	135
9	6421.50	-50.65	6.80	13.85	Vertical	-43.6	-13	30.6	90
10	7135.00	-49.15	6.90	14.25	Vertical	-41.8	-13	28.8	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 12 QPSK 10MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1408.00	-52.25	2.00	10.15	Vertical	-44.1	-13	31.1	180
3	2112.00	-58.94	2.51	11.35	Vertical	-50.1	-13	37.1	45
4	2816.00	-57.05	4.20	10.85	Vertical	-50.4	-13	37.4	0
5	3520.00	-55.75	5.20	11.35	Vertical	-49.6	-13	36.6	135
6	4224.00	-54.35	5.50	11.95	Vertical	-47.9	-13	34.9	225
7	4928.00	-53.95	5.70	13.55	Vertical	-46.1	-13	33.1	90
8	5632.00	-52.55	6.30	13.75	Vertical	-45.1	-13	32.1	45
9	6336.00	-51.55	6.80	13.85	Vertical	-44.5	-13	31.5	180
10	7040.00	-48.55	6.90	14.25	Vertical	-41.2	-13	28.2	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 12 QPSK 10MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.00	-56.35	2.00	10.75	Vertical	-47.6	-13	34.6	135
3	2122.50	-57.84	2.51	11.05	Vertical	-49.3	-13	36.3	225
4	2830.00	-57.65	4.20	11.15	Vertical	-50.7	-13	37.7	90
5	3537.50	-55.25	5.20	11.15	Vertical	-49.3	-13	36.3	90
6	4245.00	-53.35	5.50	11.95	Vertical	-46.9	-13	33.9	45
7	4952.50	-54.25	5.70	13.55	Vertical	-46.4	-13	33.4	180
8	5660.00	-52.95	6.30	13.75	Vertical	-45.5	-13	32.5	45
9	6367.50	-50.55	6.80	13.85	Vertical	-43.5	-13	30.5	0
10	7075.00	-49.15	6.90	14.25	Vertical	-41.8	-13	28.8	135

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 12 QPSK 10MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1422.00	-57.15	2.00	10.15	Vertical	-49.0	-13	36.0	225
3	2133.00	-58.04	2.51	11.05	Vertical	-49.5	-13	36.5	90
4	2844.00	-58.55	4.20	11.15	Vertical	-51.6	-13	38.6	45
5	3555.00	-55.05	5.20	11.15	Vertical	-49.1	-13	36.1	180
6	4266.00	-53.05	5.50	11.95	Vertical	-46.6	-13	33.6	225
7	4977.00	-53.95	5.70	13.55	Vertical	-46.1	-13	33.1	135
8	5688.00	-52.55	6.30	13.75	Vertical	-45.1	-13	32.1	225
9	6399.00	-50.35	6.80	13.85	Vertical	-43.3	-13	30.3	90
10	7110.00	-48.85	6.90	14.25	Vertical	-41.5	-13	28.5	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 13 QPSK 5MHz CH-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1559.0	-61.25	2.00	10.15	Vertical	-53.1	-40	13.1	180
3	2338.5	-52.75	2.50	11.35	Vertical	-43.9	-13	30.9	270
4	3118.0	-57.45	4.20	10.85	Vertical	-50.8	-13	37.8	135
5	3897.5	-55.05	5.20	11.35	Vertical	-48.9	-13	35.9	225
6	4677.0	-53.35	5.50	11.95	Vertical	-46.9	-13	33.9	135
7	5456.5	-52.85	5.70	13.55	Vertical	-45.0	-13	32.0	90
8	6236.0	-52.35	6.30	13.75	Vertical	-44.9	-13	31.9	45
9	7015.5	-50.75	6.80	13.85	Vertical	-43.7	-13	30.7	180
10	7795.0	-48.25	6.90	14.25	Vertical	-40.9	-13	27.9	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 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1564.0	-61.45	2.00	10.75	Vertical	-52.7	-40	12.7	0
3	2346.0	-52.14	2.51	11.05	Vertical	-43.6	-13	30.6	135
4	3128.0	-56.75	4.20	11.15	Vertical	-49.8	-13	36.8	225
5	3910.0	-54.35	5.20	11.15	Vertical	-48.4	-13	35.4	90
6	4692.0	-53.45	5.50	11.95	Vertical	-47.0	-13	34.0	45
7	5474.0	-52.75	5.70	13.55	Vertical	-44.9	-13	31.9	180
8	6256.0	-52.15	6.30	13.75	Vertical	-44.7	-13	31.7	45
9	7038.0	-50.45	6.80	13.85	Vertical	-43.4	-13	30.4	0
10	7820.0	-47.25	6.90	14.25	Vertical	-39.9	-13	26.9	135

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 5MHz CH-High, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1569.0	-62.45	2.00	10.15	Vertical	-54.3	-40	14.3	225
3	2353.5	-52.14	2.51	11.05	Vertical	-43.6	-13	30.6	315
4	3138.0	-56.15	4.20	11.15	Vertical	-49.2	-13	36.2	270
5	3922.5	-53.95	5.20	11.15	Vertical	-48.0	-13	35.0	225
6	4707.0	-53.35	5.50	11.95	Vertical	-46.9	-13	33.9	135
7	5491.5	-52.75	5.70	13.55	Vertical	-44.9	-13	31.9	225
8	6276.0	-51.85	6.30	13.75	Vertical	-44.4	-13	31.4	90
9	7060.5	-50.15	6.80	13.85	Vertical	-43.1	-13	30.1	90
10	7845.0	-47.05	6.90	14.25	Vertical	-39.7	-13	26.7	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-Low, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1564.0	-62.25	2.00	10.15	Vertical	-54.1	-40	14.1	180
3	2346.0	-52.94	2.51	11.35	Vertical	-44.1	-13	31.1	225
4	3128.0	-56.15	4.20	10.85	Vertical	-49.5	-13	36.5	135
5	3910.0	-54.65	5.20	11.35	Vertical	-48.5	-13	35.5	225
6	4692.0	-54.25	5.50	11.95	Vertical	-47.8	-13	34.8	90
7	5474.0	-53.55	5.70	13.55	Vertical	-45.7	-13	32.7	90
8	6256.0	-52.25	6.30	13.75	Vertical	-44.8	-13	31.8	45
9	7038.0	-49.45	6.80	13.85	Vertical	-42.4	-13	29.4	180
10	7820.0	-48.05	6.90	14.25	Vertical	-40.7	-13	27.7	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-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1564.0	-63.05	2.00	10.75	Vertical	-54.3	-40	14.3	0
3	2346.0	-52.64	2.51	11.05	Vertical	-44.1	-13	31.1	135
4	3128.0	-56.25	4.20	11.15	Vertical	-49.3	-13	36.3	225
5	3910.0	-54.75	5.20	11.15	Vertical	-48.8	-13	35.8	315
6	4692.0	-54.05	5.50	11.95	Vertical	-47.6	-13	34.6	270
7	5474.0	-53.25	5.70	13.55	Vertical	-45.4	-13	32.4	90
8	6256.0	-52.25	6.30	13.75	Vertical	-44.8	-13	31.8	45
9	7038.0	-49.75	6.80	13.85	Vertical	-42.7	-13	29.7	180
10	7820.0	-47.75	6.90	14.25	Vertical	-40.4	-13	27.4	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, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1564.0	-62.45	2.00	10.15	Vertical	-54.3	-40	14.3	0
3	2346.0	-52.44	2.51	11.05	Vertical	-43.9	-13	30.9	135
4	3128.0	-56.65	4.20	11.15	Vertical	-49.7	-13	36.7	225
5	3910.0	-54.25	5.20	11.15	Vertical	-48.3	-13	35.3	315
6	4692.0	-53.95	5.50	11.95	Vertical	-47.5	-13	34.5	270
7	5474.0	-53.55	5.70	13.55	Vertical	-45.7	-13	32.7	225
8	6256.0	-52.05	6.30	13.75	Vertical	-44.6	-13	31.6	135
9	7038.0	-49.25	6.80	13.85	Vertical	-42.2	-13	29.2	225
10	7820.0	-48.15	6.90	14.25	Vertical	-40.8	-13	27.8	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.

5 Main Test Instruments

Date of Testing: June 24, 2017~ July 3, 2017

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Time
Base Station Simulator	R&S	CMW500	150415	2017-05-14	2018-05-13
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	2017-05-14	2018-05-13
Universal Radio Communication Tester	Agilent	E5515C	MY48367192	2017-05-14	2018-05-13
Spectrum Analyzer	Agilent	N9010A	MY47191109	2017-05-14	2018-05-13
Signal Analyzer	R&S	FSV30	100815	2016-12-16	2017-12-15
Signal generator	R&S	SMB 100A	102594	2017-05-14	2018-05-13
EMI Test Receiver	R&S	ESCI	100948	2017-05-20	2018-05-19
Trilog Antenna	SCHWARZBECK	VUBL 9163	9163-201	2014-12-06	2017-12-05
Horn Antenna	R&S	HF907	100126	2014-12-06	2017-12-05
Horn Antenna	ETS-Lindgren	3160-09	00102643	2015-01-30	2018-01-29
Climatic Chamber	Re Ce	PT-30B	20101891	2015-07-18	2018-07-17
RF Cable	Agilent	SMA 15cm	0001	2017-02-06	2017-08-05
Preampflier	R&S	SCU18	102327	2017-06-18	2018-06-17

********END OF REPORT ********

Date of Testing: August10, 2020 ~ August12, 2020

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113824	2020-05-18	2021-05-17
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	/	/
Spectrum Analyzer	Key sight	N9010A	MY50210259	2020-05-18	2021-05-17
Signal Analyzer	R&S	FSV30	100815	2019-12-15	2020-12-14
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2017-09-26	2020-09-25
Trilog Antenna	SCHWARZBECK	VUBL 9163	9163-201	2017-11-18	2020-11-17
Horn Antenna	R&S	HF907	102723	2018-08-11	2021-08-10
Horn Antenna	ETS-Lindgren	3160-09	00102643	2018-06-20	2021-06-19
Signal generator	R&S	SMB 100A	102594	2020-05-18	2021-05-17
Climatic Chamber	ESPEC	SU-242	93000506	2017-12-17	2020-12-16
Preampflier	R&S	SCU18	102327	2020-05-18	2021-05-17
MOB COMMS DC SUPPLY	Keysight	66319D	MY43004105	2020-05-18	2021-05-17
RF Cable	Agilent	SMA 15cm	0001	2020-06-12	2020-12-11
Software	R&S	EMC32	9.26.0	/	/