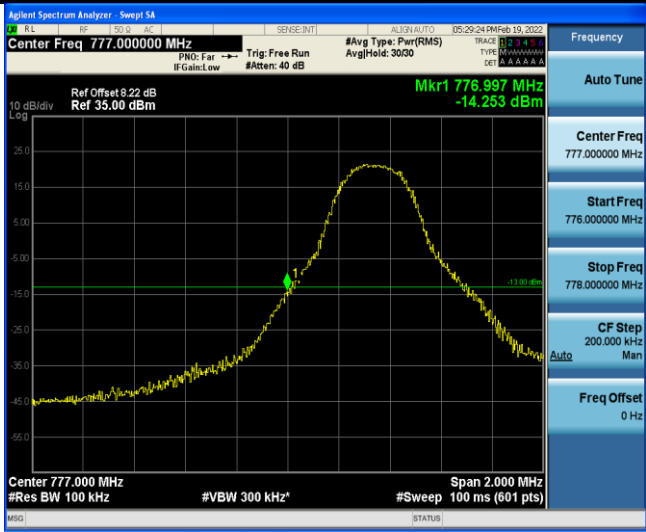
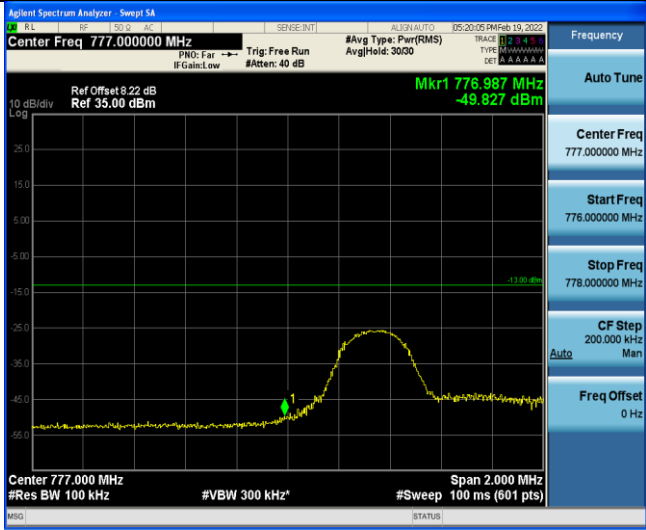
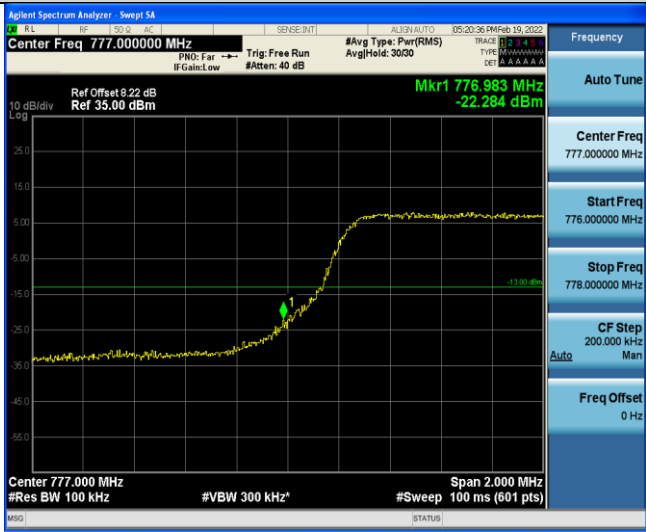




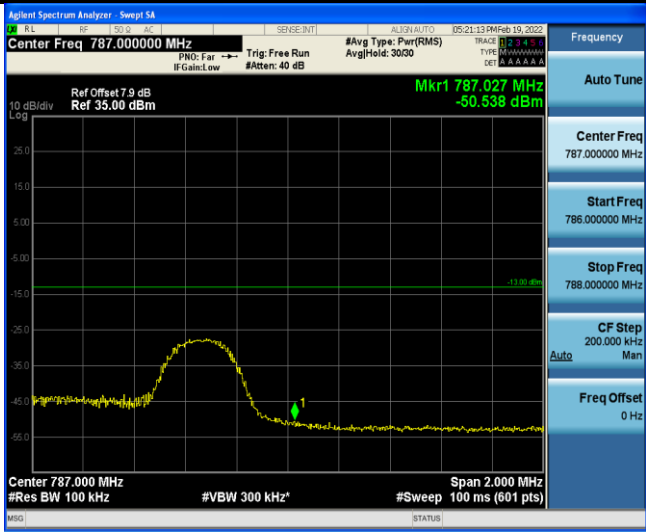
Band13-5MHz-16QAM-23205-1RB#24



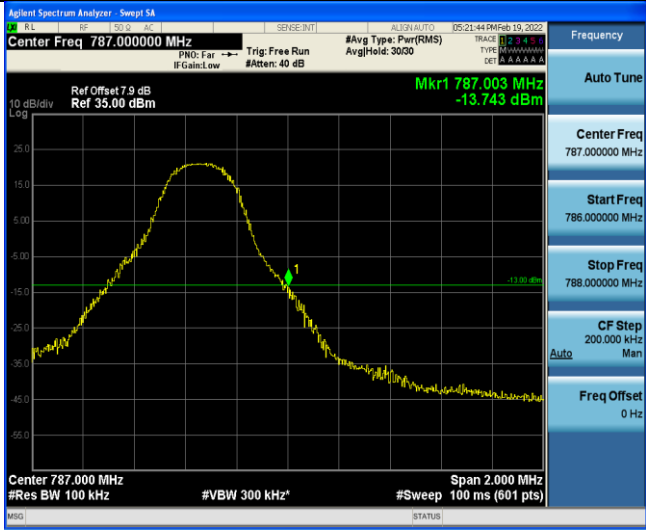
Band13-5MHz-16QAM-23205-25RB#0



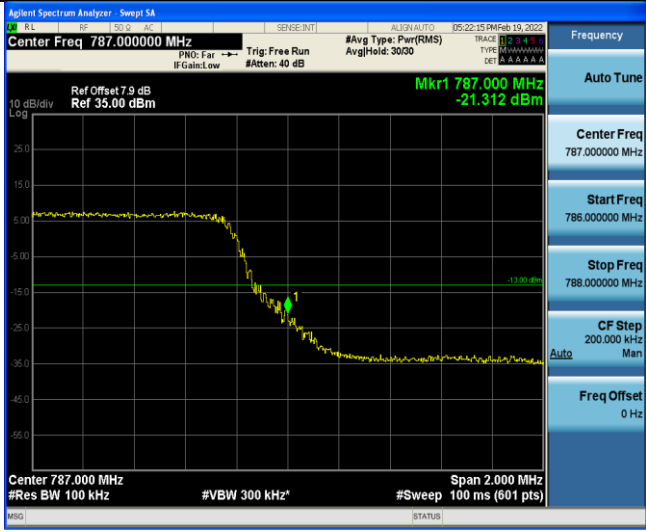
Band13-5MHz-16QAM-23255-1RB#0



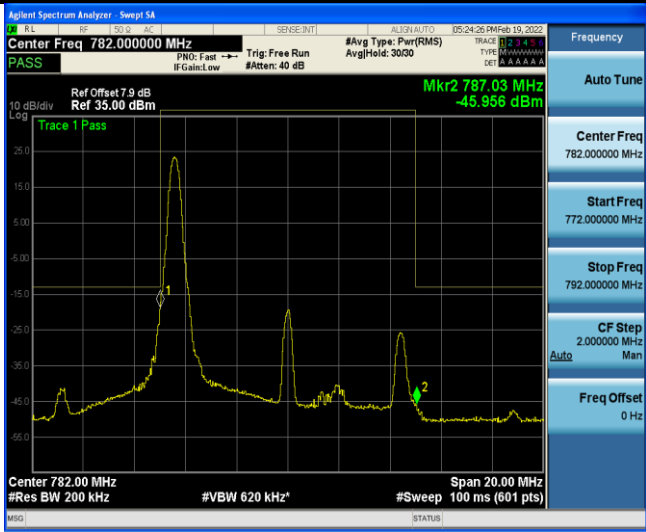
Band13-5MHz-16QAM-23255-1RB#24



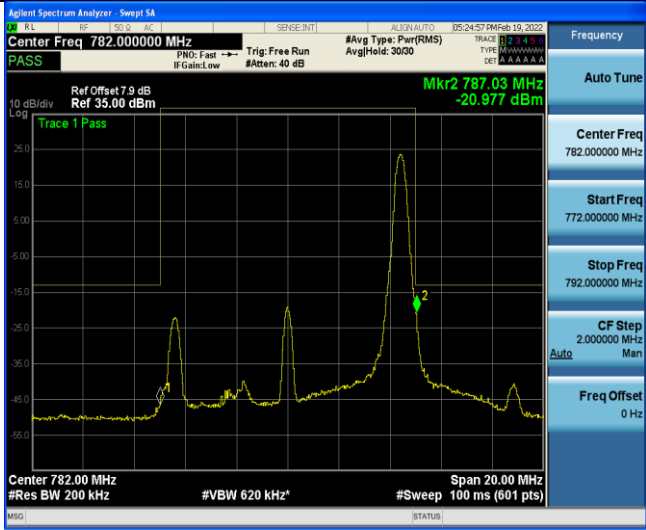
Band13-5MHz-16QAM-23255-25RB#0



Band13-10MHz-QPSK-23230-1RB#0



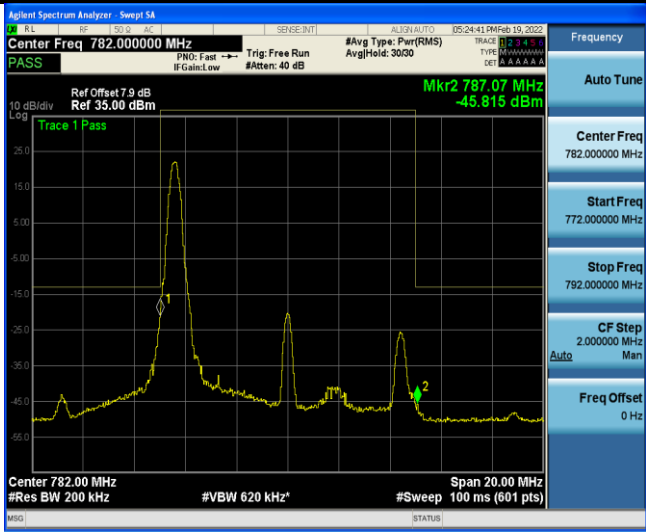
Band13-10MHz-QPSK-23230-1RB#49



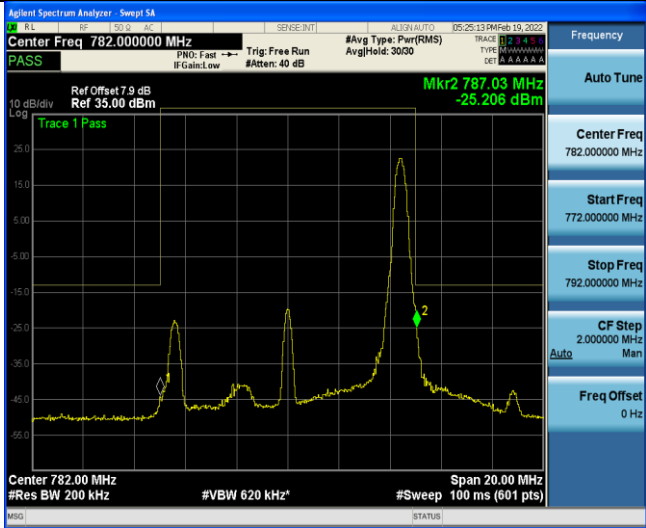
Band13-10MHz-QPSK-23230-50RB#0



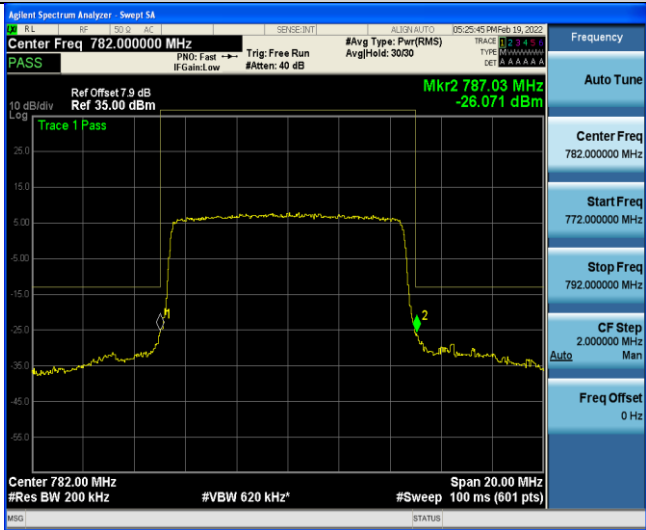
Band13-10MHz-16QAM-23230-1RB#0



Band13-10MHz-16QAM-23230-1RB#49



Band13-10MHz-16QAM-23230-50RB#0



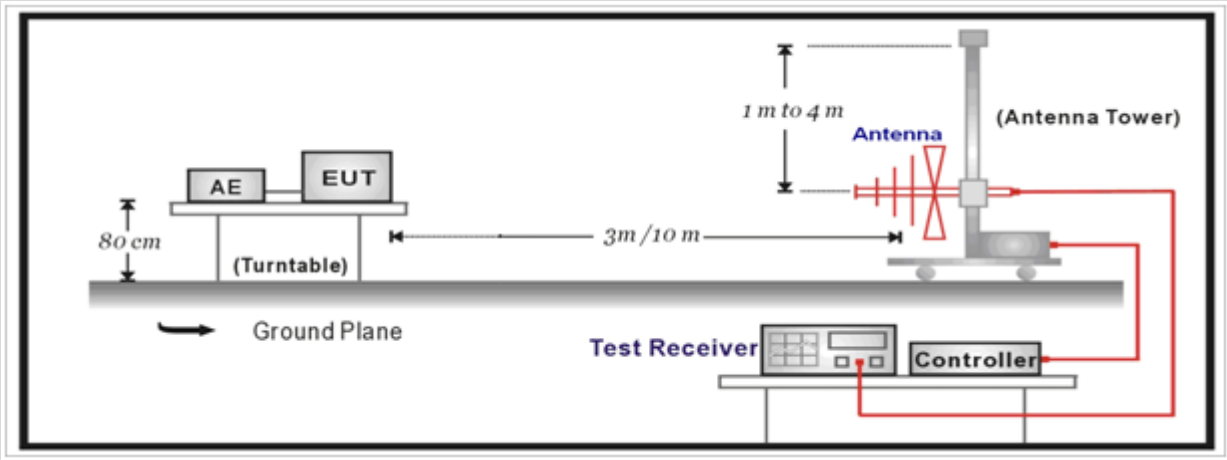
Note: All modes of operation were investigated, only the worst case results were shown in the report.

4.7 Radiated Emissions**VERDICT: PASS****4.7.1 Limit**

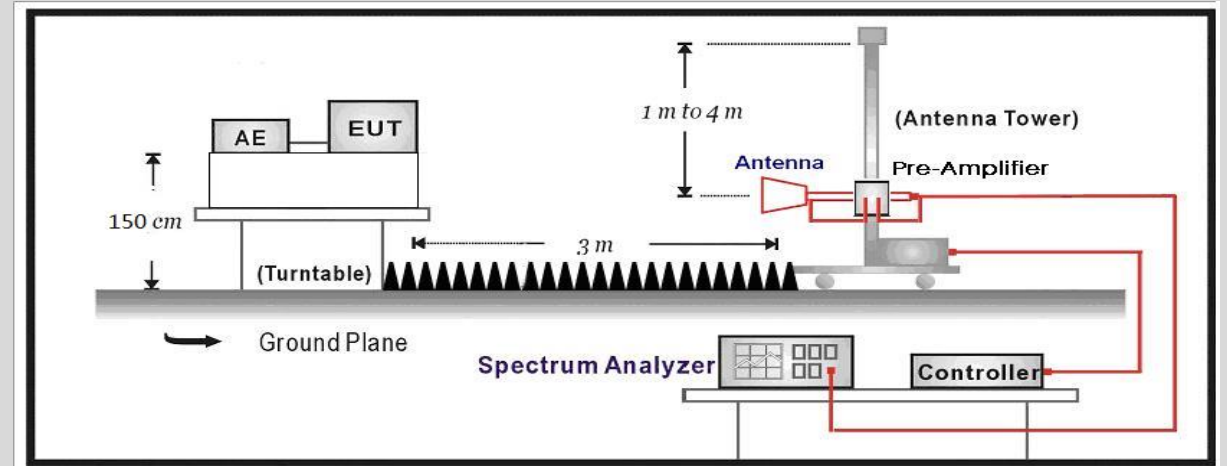
Band	Standard
GSM 850; WCDMA Band V; LTE Band 5	FCC §22.917: The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.
	RSS-132: Section 5.5: The power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts).
GSM 1900; WCDMA Band II; LTE Band 2	FCC §24.238: The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.
	RSS-133 Section 6.5: The emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts).
LTE Band 12/13/17	FCC §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.
	FCC §27.53(c): On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB. On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
	RSS-130 Section 4.7: The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. Equipment operating in the frequency bands 746- 756 MHz and 777-787 MHz shall also comply with the following restrictions: The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least: $65 + 10 \log_{10} p$ (watts), dB, for mobile and portable equipment. The e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.
WCDMA Band IV; LTE Band 4	FCC §27.53(h): The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.
	RSS-139 Section 6.6: The emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} p$ (watts) dB.

4.7.2 Test Setup

30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



4.7.3 Test Procedure

	Reference Rule	Chapter	Description
☒	ANSI C63.26	5.5	Radiated emissions testing

The spectrum was scanned from 9 kHz to the 10th harmonic of the highest frequency generated within the equipment.

Emissions below 18 GHz were measured at a 3 meter test distance.

The EUT was tested in three orthogonal axes and in all possible test configurations and poisoning when measurement antenna is oriented in both horizontal and vertical polarization, the worst case emissions was showed in the report.

Radiated emissions were used the substitution method described in ANSI/TIA-603-E-2016.

Radiated emissions were measured with 100kHz RBW below 1GHz and 1MHz RBW above 1GHz.

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least $X + 10 \log (P)$ dB. P in watts. The specification can be interpreted as an absolute limit when the specified attenuation is actually subtracted from the maximum permissible transmitter power [i.e., $10 \log P - \{X + 10 \log P\}$], resulting in an absolute level of -X dBW [or $(-X + 30)$ dBm].

4.7.4 Test Data

GPRS/ EGPRS:

GSM 850

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1648.3	H	-36.2	-13	-23.2
1648.6	V	-42.9	-13	-29.9
2472.4	H	-41.0	-13	-28.0
2472.3	V	-31.4	-13	-18.4
Middle channel				
1673.6	H	-33.1	-13	-20.1
1673.3	V	-37.6	-13	-24.6
2509.5	H	-44.4	-13	-31.4
2509.9	V	-36.7	-13	-23.7
Highest channel				
1697.5	H	-39.8	-13	-26.8
1698	V	-39.4	-13	-26.4
2546.9	H	-40.3	-13	-27.3
2546.2	V	-37.1	-13	-24.1

GSM 1900

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
3700.7	H	-36.7	-13	-23.7
3700.8	V	-41.7	-13	-28.7
5551.1	H	-42.8	-13	-29.8
5550.4	V	-45.3	-13	-32.3
Middle channel				
3760.3	H	-37.1	-13	-24.1
3760.4	V	-40.1	-13	-27.1
5640.6	H	-42.6	-13	-29.6
5640.1	V	-33.5	-13	-20.5
Highest channel				
3819.8	H	-34.6	-13	-21.6
3819.4	V	-36.4	-13	-23.4
5729.7	H	-39.5	-13	-26.5
5729.5	V	-45.1	-13	-32.1

WCDMA:**WCDMA Band II**

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
3700.3	H	-44.7	-13	-31.7
3700.4	V	-32.1	-13	-19.1
5550.5	H	-38.9	-13	-25.9
5550.0	V	-43.1	-13	-30.1
Middle channel				
3760.2	H	-43.9	-13	-30.9
3759.7	V	-40.2	-13	-27.2
5640.0	H	-31.6	-13	-18.6
5640.2	V	-40.8	-13	-27.8
Highest channel				
3819.6	H	-31.8	-13	-18.8
3820.2	V	-39.6	-13	-26.6
5729.7	H	-45.4	-13	-32.4
5729.8	V	-32.9	-13	-19.9

WCDMA Band IV

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
3420.2	H	-43.5	-13	-30.5
3420.6	V	-34.7	-13	-21.7
5130.8	H	-41.4	-13	-28.4
5130.4	V	-42.4	-13	-29.4
Middle channel				
3465.0	H	-42.5	-13	-29.5
3465.6	V	-41.3	-13	-28.3
5197.6	H	-41.0	-13	-28.0
5198.0	V	-33.7	-13	-20.7
Highest channel				
3510.0	H	-40.1	-13	-27.1
3509.7	V	-36.6	-13	-23.6
5265.0	H	-44.1	-13	-31.1
5265.2	V	-43.2	-13	-30.2

WCDMA Band V

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1647.9	H	-41.6	-13	-28.6
1648.6	V	-45.7	-13	-32.7
2472.5	H	-37.7	-13	-24.7
2472.8	V	-43.7	-13	-30.7
Middle channel				
1672.7	H	-46.0	-13	-33.0
1673.4	V	-33.8	-13	-20.8
2509.5	H	-43.1	-13	-30.1
2509.2	V	-39.4	-13	-26.4
Highest channel				
1698.4	H	-42.0	-13	-29.0
1698.3	V	-44.4	-13	-31.4
2546.6	H	-41.2	-13	-28.2
2546.7	V	-38.6	-13	-25.6

LTE:**LTE Band 2**

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
3701.9	H	-39.2	-13	-26.2
3701.1	V	-44.2	-13	-31.2
5552.2	H	-40.4	-13	-27.4
5552.7	V	-39.3	-13	-26.3
Middle channel				
3759.8	H	-33.1	-13	-20.1
3760.5	V	-43.6	-13	-30.6
5640.6	H	-31.2	-13	-18.2
5640.6	V	-32.9	-13	-19.9
Highest channel				
3819.0	H	-45.6	-13	-32.6
3818.7	V	-43.7	-13	-30.7
5727.9	H	-38.5	-13	-25.5
5728.2	V	-33.8	-13	-20.8

LTE Band 4

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
3421.8	H	-44.0	-13	-31.0
3421.1	V	-39.0	-13	-26.0
5132.6	H	-32.0	-13	-19.0
5132.2	V	-35.9	-13	-22.9
Middle channel				
3465.4	H	-38.8	-13	-25.8
3465.3	V	-36.7	-13	-23.7
5197.5	H	-39.4	-13	-26.4
5197.4	V	-44.4	-13	-31.4
Highest channel				
3509.0	H	-32.7	-13	-19.7
3509.0	V	-36.1	-13	-23.1
5263.4	H	-41.5	-13	-28.5
5262.6	V	-33.2	-13	-20.2

LTE Band 5

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1649.4	H	-43.0	-13	-30.0
1649.4	V	-42.3	-13	-29.3
2474.5	H	-37.6	-13	-24.6
2474.6	V	-32.7	-13	-19.7
Middle channel				
1673.0	H	-45.2	-13	-32.2
1673.0	V	-35.7	-13	-22.7
2509.6	H	-42.8	-13	-29.8
2509.8	V	-38.4	-13	-25.4
Highest channel				
1697.2	H	-41.5	-13	-28.5
1697.0	V	-35.7	-13	-22.7
2545.2	H	-43.2	-13	-30.2
2544.9	V	-36.3	-13	-23.3

LTE Band 7

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
5004.7	H	-41.3	-13	-28.3
5005.4	V	-42.6	-13	-29.6
7508.1	H	-40.5	-13	-27.5
7507.8	V	-37.1	-13	-24.1
Middle channel				
5070.3	H	-45.1	-13	-32.1
5070.3	V	-38.2	-13	-25.2
7604.7	H	-37.8	-13	-24.8
7605.0	V	-38.4	-13	-25.4
Highest channel				
5135.2	H	-37.0	-13	-24.0
5134.9	V	-36.5	-13	-23.5
7702.7	H	-35.3	-13	-22.3
7702.7	V	-41.2	-13	-28.2

LTE Band 12

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1399.2	H	-42.4	-13	-29.4
1400.0	V	-38.6	-13	-25.6
2098.8	H	-33.7	-13	-20.7
2099.1	V	-41.7	-13	-28.7
Middle channel				
1414.8	H	-31.1	-13	-18.1
1414.8	V	-40.2	-13	-27.2
2122.2	H	-33.9	-13	-20.9
2123.1	V	-45.0	-13	-32.0
Highest channel				
1431.0	H	-44.9	-13	-31.9
1430.5	V	-45.2	-13	-32.2
2146.2	H	-34.2	-13	-21.2
2145.8	V	-43.7	-13	-30.7

LTE Band 13

Frequency (MHz)	Ant.Pol. (H/V)	Spurious Emissions Level (dBm)	Limit (dBm)	Margin (dB)
Lowest channel				
1559.5	H	-33.7	-13	-20.7
1558.7	V	-38.0	-13	-25.0
2339.1	H	-43.4	-13	-30.4
2338.3	V	-32.9	-13	-19.9
Middle channel				
1564.4	H	-44.0	-13	-31.0
1564.2	V	-36.1	-13	-23.1
2346.2	H	-31.6	-13	-18.6
2346.0	V	-44.4	-13	-31.4
Highest channel				
1569.5	H	-40.8	-13	-27.8
1568.7	V	-40.9	-13	-27.9
2354.1	H	-37.8	-13	-24.8
2353.3	V	-35.9	-13	-22.9

Note 1: Spurious emissions level = Signal Generator Reading(dBm) – Cable loss(dB) + substitute antenna gain(dBi).

Note 2: For each band, we tested all configurations and only the worst mode is shown in the report.



4.8 Test setup photo and EUT Photo	VERDICT: PASS
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Remark: The test setup photo and EUT Photo please see appendix.

_____ The End _____