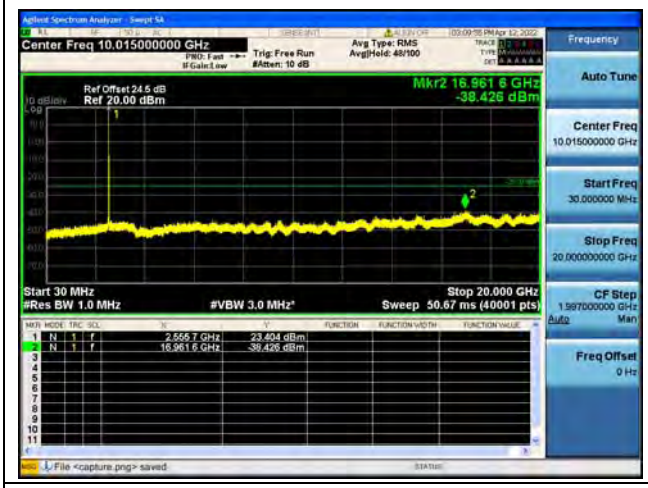
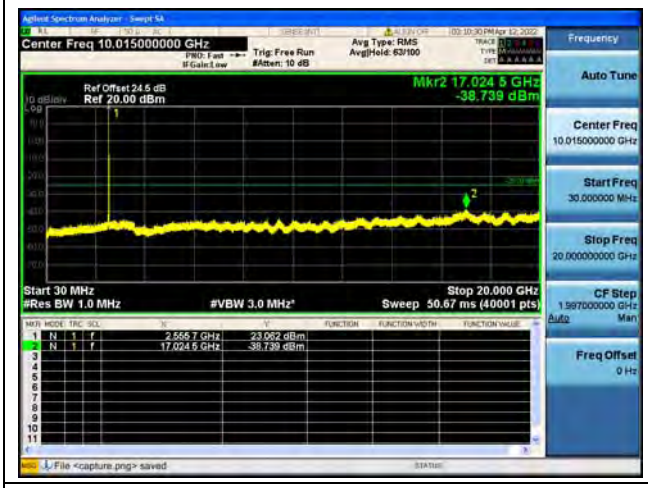
Band7-30M-20G / 15MHz / High CH / QPSK



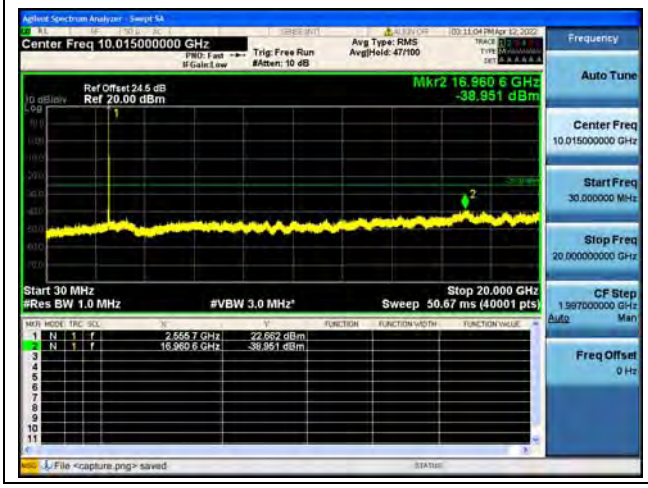
Band7-20G-26G / 15MHz / High CH / QPSK

Band7-30M-20G / 15MHz / High CH / 16QAM



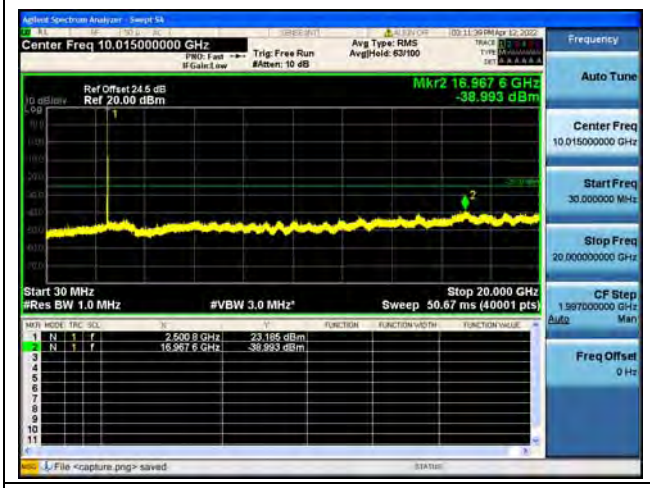
Band7-20G-26G / 15MHz / High CH / 16QAM

Band7-30M-20G / 15MHz / High CH / 64QAM



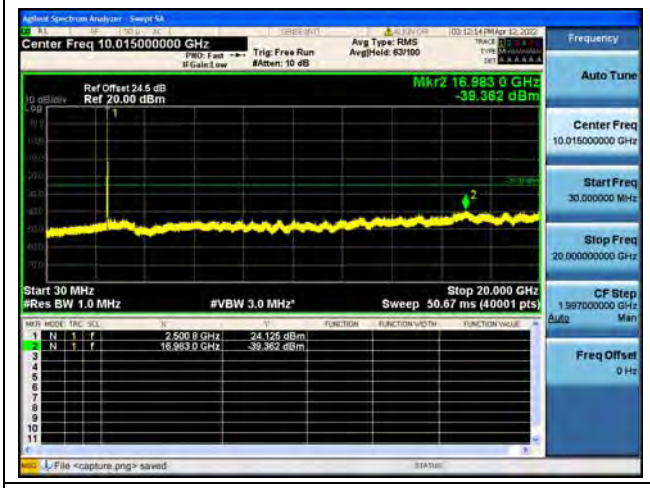
Band7-20G-26G / 15MHz / High CH / 64QAM

Band7-30M-20G / 20MHz / Low CH / QPSK



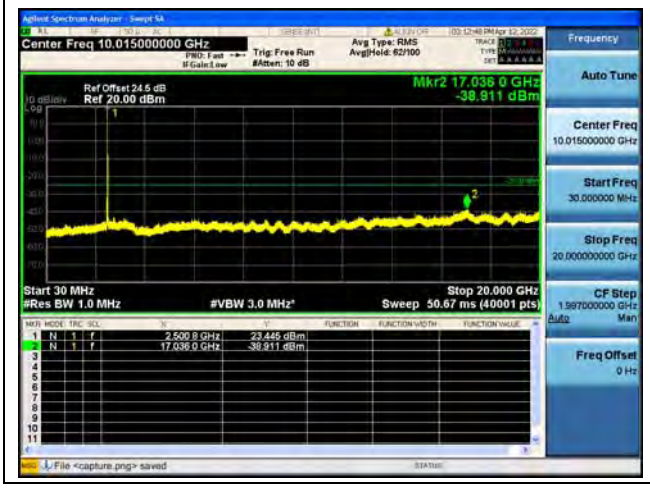
Band7-20G-26G / 20MHz / Low CH / QPSK

Band7-30M-20G / 20MHz / Low CH / 16QAM



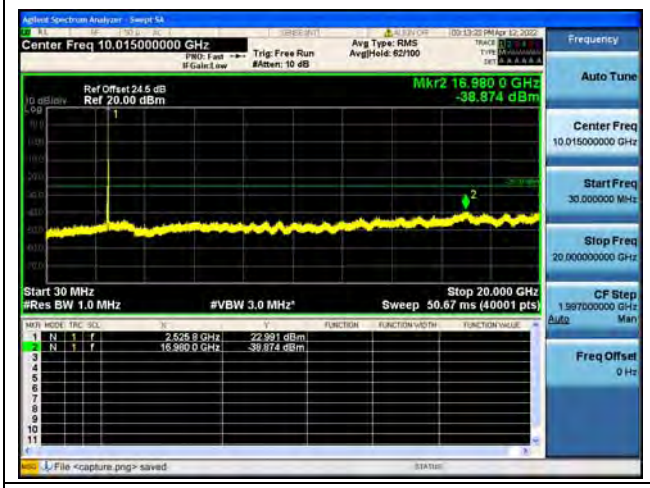
Band7-20G-26G / 20MHz / Low CH / 16QAM

Band7-30M-20G / 20MHz / Low CH / 64QAM



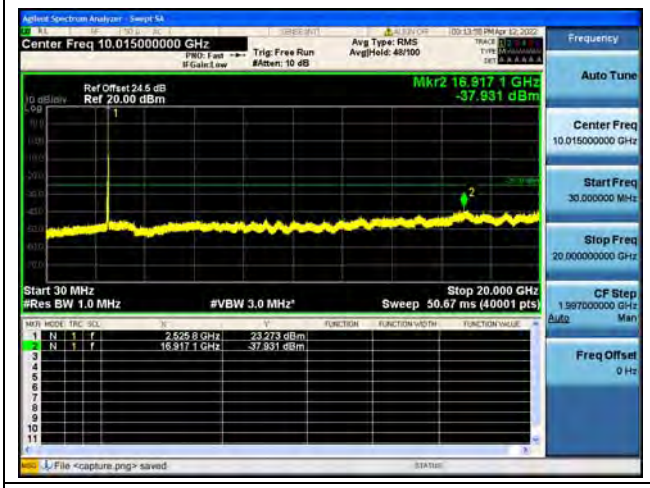
Band7-20G-26G / 20MHz / Low CH / 64QAM

Band7-30M-20G / 20MHz / Mid CH / QPSK



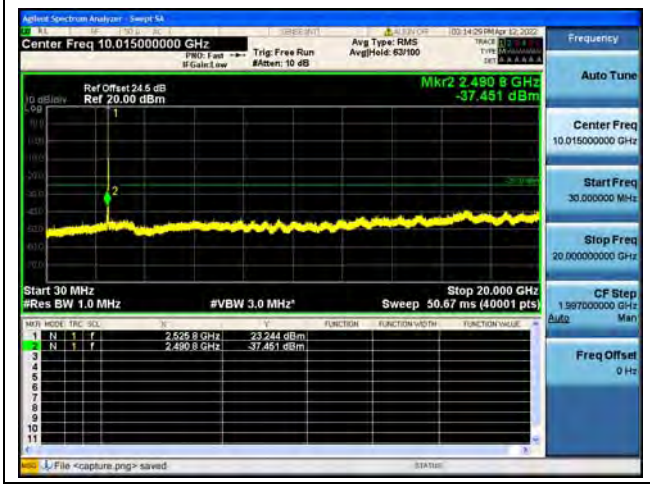
Band7-20G-26G / 20MHz / Mid CH / QPSK

Band7-30M-20G / 20MHz / Mid CH / 16QAM



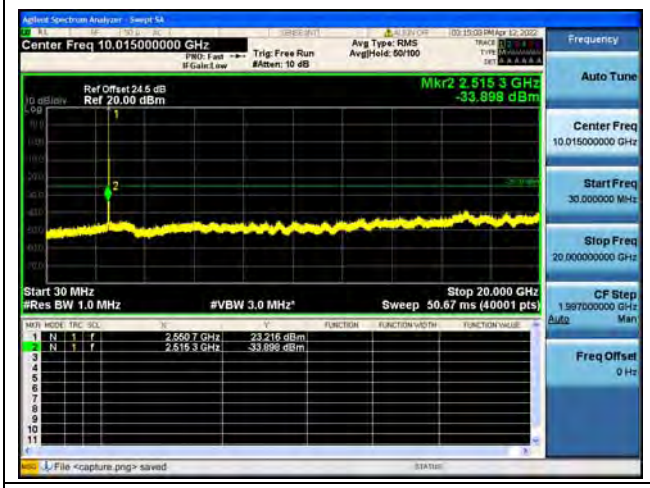
Band7-20G-26G / 20MHz / Mid CH / 16QAM

Band7-30M-20G / 20MHz / Mid CH / 64QAM



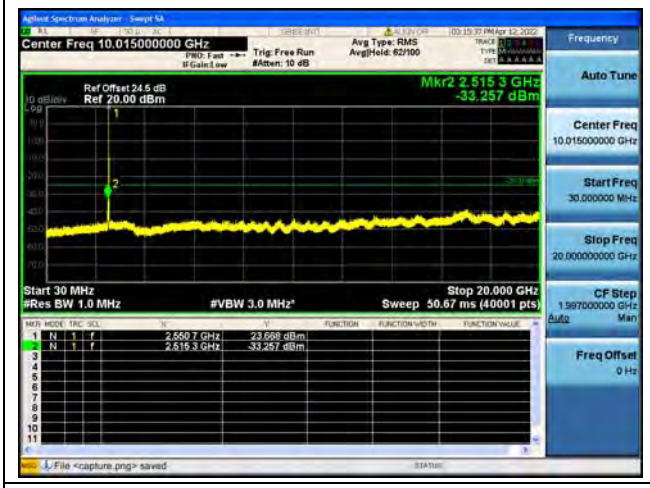
Band7-20G-26G / 20MHz / Mid CH / 64QAM

Band7-30M-20G / 20MHz / High CH / QPSK



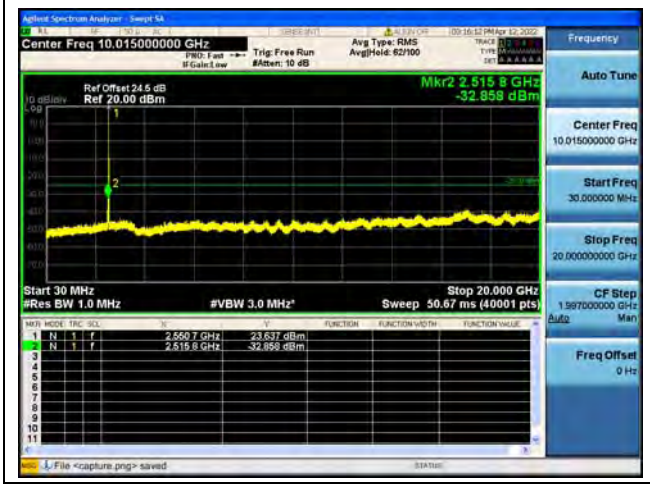
Band7-20G-26G / 20MHz / High CH / QPSK

Band7-30M-20G / 20MHz / High CH / 16QAM



Band7-20G-26G / 20MHz / High CH / 16QAM

Band7-30M-20G / 20MHz / High CH / 64QAM



Band7-20G-26G / 20MHz / High CH / 64QAM

Band66 / 1.4MHz / Low CH / QPSK

Band66 / 1.4MHz / Low CH / 16QAM

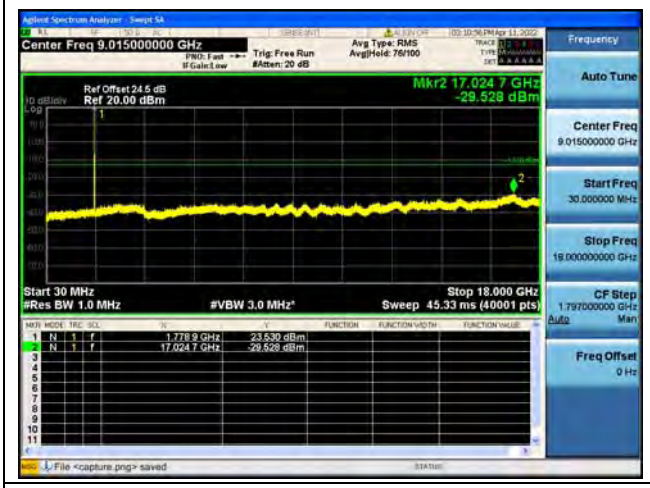
Band66 / 1.4MHz / Low CH / 64QAM

Band66 / 1.4MHz / Mid CH / QPSK

Band66 / 1.4MHz / Mid CH / 16QAM

Band66 / 1.4MHz / Mid CH / 64QAM

Band66 / 1.4MHz / High CH / QPSK



Band66 / 1.4MHz / High CH / 16QAM

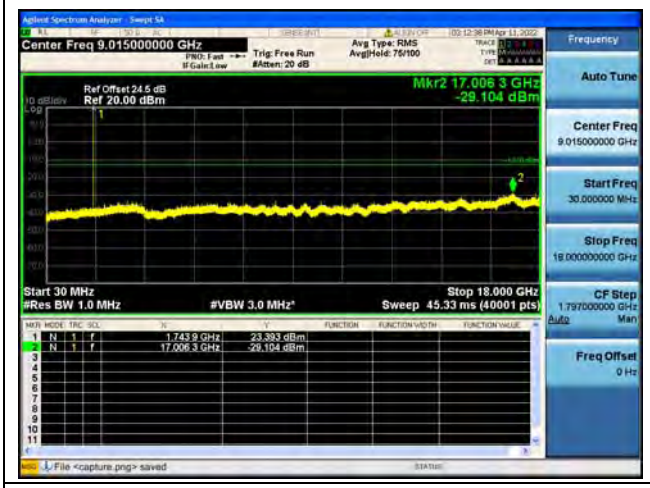
Band66 / 1.4MHz / High CH / 64QAM

Band66 / 3MHz / Low CH / QPSK

Band66 / 3MHz / Low CH / 16QAM

Band66 / 3MHz / Low CH / 64QAM

Band66 / 3MHz / Mid CH / QPSK



Band66 / 3MHz / Mid CH / 16QAM

Band66 / 3MHz / Mid CH / 64QAM

Band66 / 3MHz / High CH / QPSK

Band66 / 3MHz / High CH / 16QAM

Band66 / 3MHz / High CH / 64QAM

Band66 / 5MHz / Low CH / QPSK

Band66 / 5MHz / Low CH / 16QAM

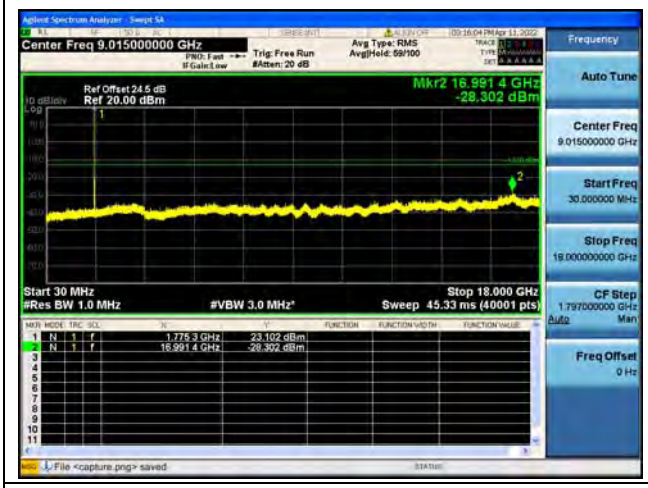
Band66 / 5MHz / Low CH / 64QAM

Band66 / 5MHz / Mid CH / QPSK

Band66 / 5MHz / Mid CH / 16QAM

Band66 / 5MHz / Mid CH / 64QAM

Band66 / 5MHz / High CH / QPSK

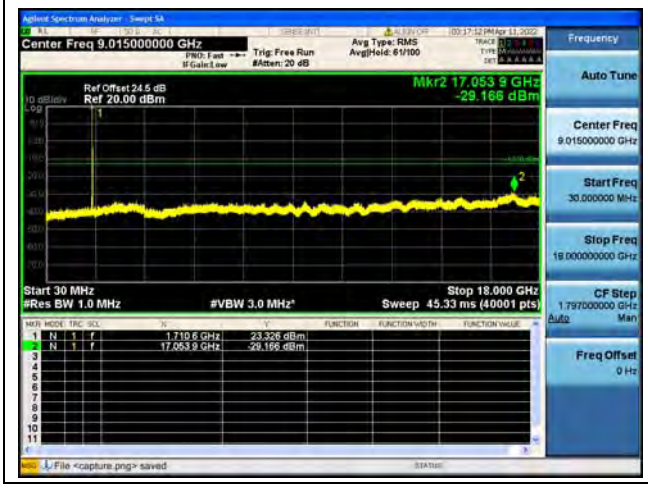


Band66 / 5MHz / High CH / 16QAM

Band66 / 5MHz / High CH / 64QAM

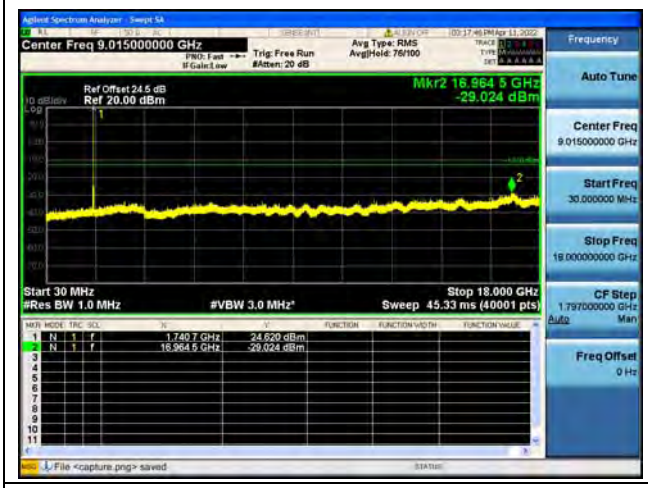
Band66 / 10MHz / Low CH / QPSK

Band66 / 10MHz / Low CH / 16QAM



Band66 / 10MHz / Low CH / 64QAM

Band66 / 10MHz / Mid CH / QPSK



Band66 / 10MHz / Mid CH / 16QAM

Band66 / 10MHz / Mid CH / 64QAM

Band66 / 10MHz / High CH / QPSK

Band66 / 10MHz / High CH / 16QAM

Band66 / 10MHz / High CH / 64QAM

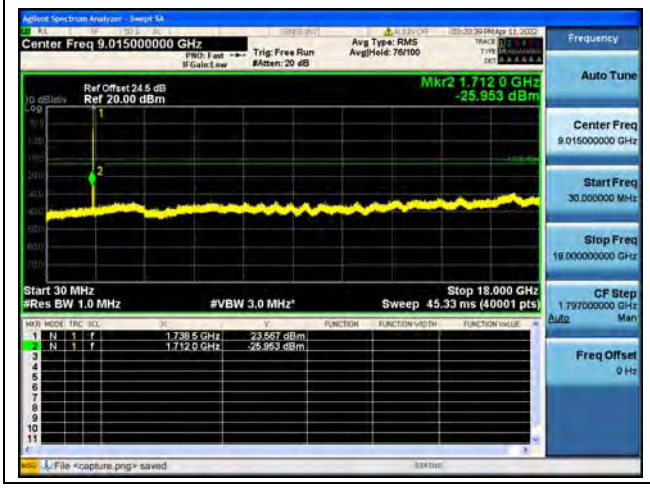
Band66 / 15MHz / Low CH / QPSK

Band66 / 15MHz / Low CH / 16QAM

Band66 / 15MHz / Low CH / 64QAM

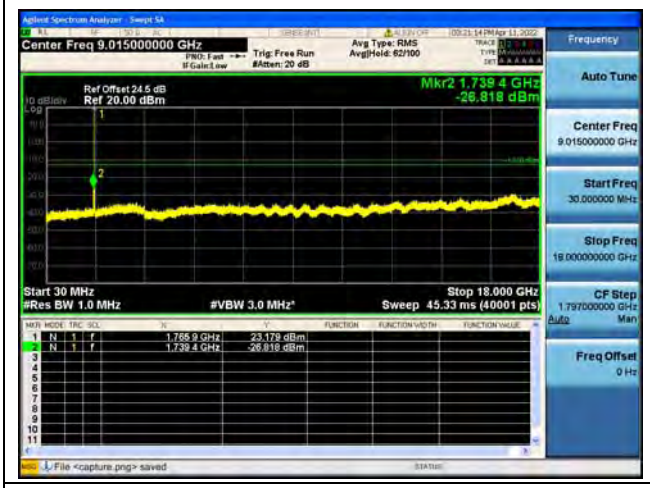
Band66 / 15MHz / Mid CH / QPSK

Band66 / 15MHz / Mid CH / 16QAM



Band66 / 15MHz / Mid CH / 64QAM

Band66 / 15MHz / High CH / QPSK

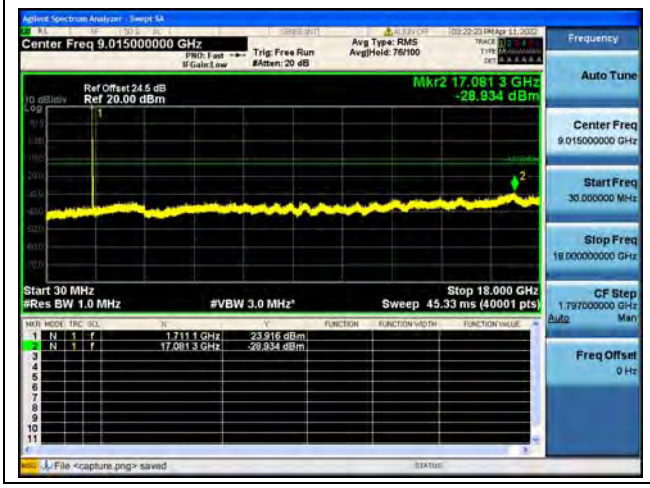


Band66 / 15MHz / High CH / 16QAM

Band66 / 15MHz / High CH / 64QAM

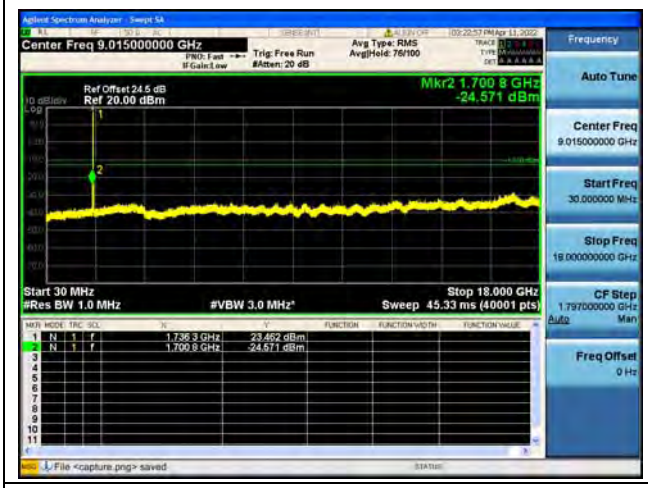
Band66 / 20MHz / Low CH / QPSK

Band66 / 20MHz / Low CH / 16QAM



Band66 / 20MHz / Low CH / 64QAM

Band66 / 20MHz / Mid CH / QPSK



Band66 / 20MHz / Mid CH / 16QAM

Band66 / 20MHz / Mid CH / 64QAM

Band66 / 20MHz / High CH / QPSK

Band66 / 20MHz / High CH / 16QAM

Band66 / 20MHz / High CH / 64QAM

2.6. Band Edge

2.6.1. Requirement

Band 2

According to FCC section 24.238(a), for operations in the 1850–1910MHz bands, 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 in a 1MHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Band 4, 66

According to FCC section 27.53(h), for operations in the 1710–1755MHz bands, 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 a 1MHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Band 5

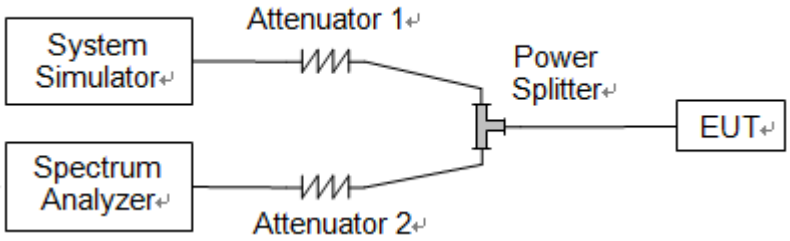
According to FCC section 22.917(a), for operations in the 824–849MHz bands, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB in a 100kHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Band 7

According to FCC section 27.53(m) (4), for mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS

or EBS licensees.

2.6.2. Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

2.6.3. Test Procedure

KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.

2.6.4. Test Result

Band2 / 1.4MHz / Low CH / QPSK / 1 RB	Band2 / 1.4MHz / Low CH / QPSK / FULL RB
Band2 / 1.4MHz / High CH / QPSK / 1 RB	**Band2 / 1.4MHz / High CH / QPSK / FULL RB**

Band2 / 3MHz / Low CH / QPSK / 1 RB

Band2 / 3MHz / Low CH / QPSK / FULL RB

Band2 / 3MHz / High CH / QPSK / 1 RB

Band2 / 3MHz / High CH / QPSK / FULL RB

Band2 / 5MHz / Low CH / QPSK / 1 RB

Band2 / 5MHz / Low CH / QPSK / FULL RB

Band2 / 5MHz / High CH / QPSK / 1 RB

Band2 / 5MHz / High CH / QPSK / FULL RB

Band2 / 10MHz / Low CH / QPSK / 1 RB

Band2 / 10MHz / Low CH / QPSK / FULL RB

Band2 / 10MHz / High CH / QPSK / 1 RB

Band2 / 10MHz / High CH / QPSK / FULL RB

Band2 / 15MHz / Low CH / QPSK / 1 RB

Band2 / 15MHz / Low CH / QPSK / FULL RB

Band2 / 15MHz / High CH / QPSK / 1 RB

Band2 / 15MHz / High CH / QPSK / FULL RB

Band2 / 20MHz / Low CH / QPSK / 1 RB

Band2 / 20MHz / Low CH / QPSK / FULL RB

Band2 / 20MHz / High CH / QPSK / 1 RB

Band2 / 20MHz / High CH / QPSK / FULL RB

Band4 / 1.4MHz / Low CH / QPSK / 1 RB

Band4 / 1.4MHz / Low CH / QPSK / FULL RB

Band4 / 1.4MHz / High CH / QPSK / 1 RB

Band4 / 1.4MHz / High CH / QPSK / FULL RB

Band4 / 3MHz / Low CH / QPSK / 1 RB

Band4 / 3MHz / Low CH / QPSK / FULL RB

Band4 / 3MHz / High CH / QPSK / 1 RB

Band4 / 3MHz / High CH / QPSK / FULL RB

Band4 / 5MHz / Low CH / QPSK / 1 RB

Band4 / 5MHz / Low CH / QPSK / FULL RB

Band4 / 5MHz / High CH / QPSK / 1 RB

Band4 / 5MHz / High CH / QPSK / FULL RB

Band4 / 10MHz / Low CH / QPSK / 1 RB

Band4 / 10MHz / Low CH / QPSK / FULL RB

Band4 / 10MHz / High CH / QPSK / 1 RB

Band4 / 10MHz / High CH / QPSK / FULL RB

Band4 / 15MHz / Low CH / QPSK / 1 RB

Band4 / 15MHz / Low CH / QPSK / FULL RB

Band4 / 15MHz / High CH / QPSK / 1 RB

Band4 / 15MHz / High CH / QPSK / FULL RB

Band4 / 20MHz / Low CH / QPSK / 1 RB

Band4 / 20MHz / Low CH / QPSK / FULL RB

Band4 / 20MHz / High CH / QPSK / 1 RB

Band4 / 20MHz / High CH / QPSK / FULL RB

Band5 / 1.4MHz / Low CH / QPSK / 1 RB

Band5 / 1.4MHz / Low CH / QPSK / FULL RB

Band5 / 1.4MHz / High CH / QPSK / 1 RB

Band5 / 1.4MHz / High CH / QPSK / FULL RB

Band5 / 3MHz / Low CH / QPSK / 1 RB

Band5 / 3MHz / Low CH / QPSK / FULL RB

Band5 / 3MHz / High CH / QPSK / 1 RB

Band5 / 3MHz / High CH / QPSK / FULL RB

Band5 / 5MHz / Low CH / QPSK / 1 RB

Band5 / 5MHz / Low CH / QPSK / FULL RB

Band5 / 5MHz / High CH / QPSK / 1 RB

Band5 / 5MHz / High CH / QPSK / FULL RB

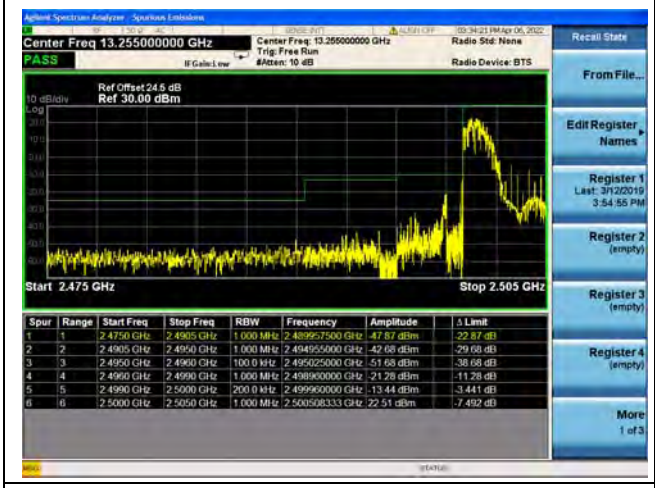
Band5 / 10MHz / Low CH / QPSK / 1 RB

Band5 / 10MHz / Low CH / QPSK / FULL RB

Band5 / 10MHz / High CH / QPSK / 1 RB

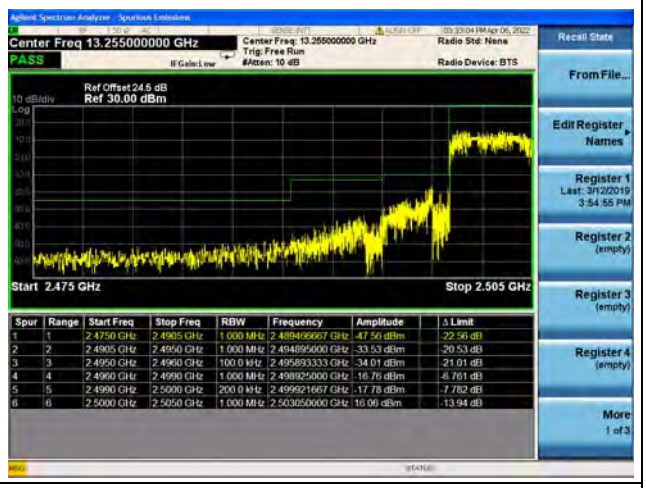
Band5 / 10MHz / High CH / QPSK / FULL RB

Band7 / 5MHz / Low CH / QPSK / 1 RB



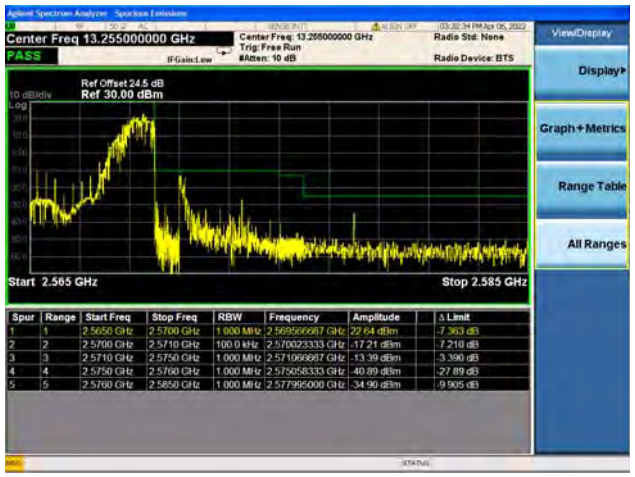
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.489957500 GHz	-47.87 dBm	-22.87 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494955000 GHz	-42.68 dBm	-29.68 dB
3	3	2.4950 GHz	2.4960 GHz	100.0 kHz	2.495025000 GHz	-51.68 dBm	-38.68 dB
4	4	2.4960 GHz	2.4990 GHz	1.000 MHz	2.498960000 GHz	-21.28 dBm	-11.28 dB
5	5	2.4990 GHz	2.5000 GHz	200.0 kHz	2.499960000 GHz	-13.44 dBm	-3.441 dB
6	6	2.5000 GHz	2.5050 GHz	1.000 MHz	2.500508333 GHz	22.51 dBm	-7.492 dB

Band7 / 5MHz / Low CH / QPSK / FULL RB



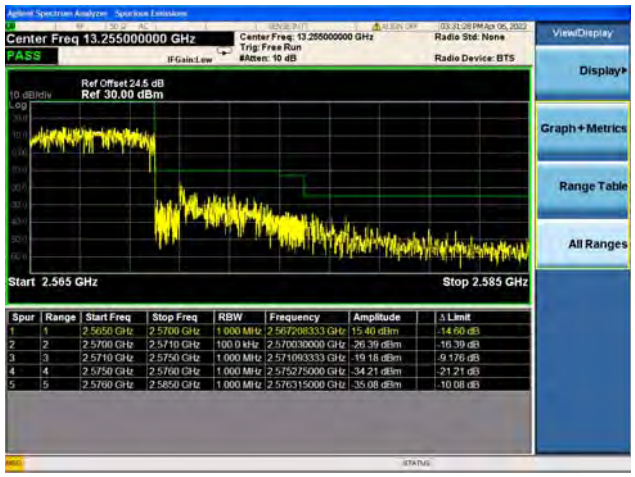
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.489496667 GHz	-47.56 dBm	-22.56 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494895000 GHz	-33.53 dBm	-20.53 dB
3	3	2.4950 GHz	2.4960 GHz	100.0 kHz	2.495893333 GHz	-34.01 dBm	-21.01 dB
4	4	2.4960 GHz	2.4990 GHz	1.000 MHz	2.498925000 GHz	-16.76 dBm	-6.761 dB
5	5	2.4990 GHz	2.5000 GHz	200.0 kHz	2.499921667 GHz	-17.78 dBm	-7.782 dB
6	6	2.5000 GHz	2.5050 GHz	1.000 MHz	2.503050000 GHz	-16.06 dBm	-13.94 dB

Band7 / 5MHz / High CH / QPSK / 1 RB



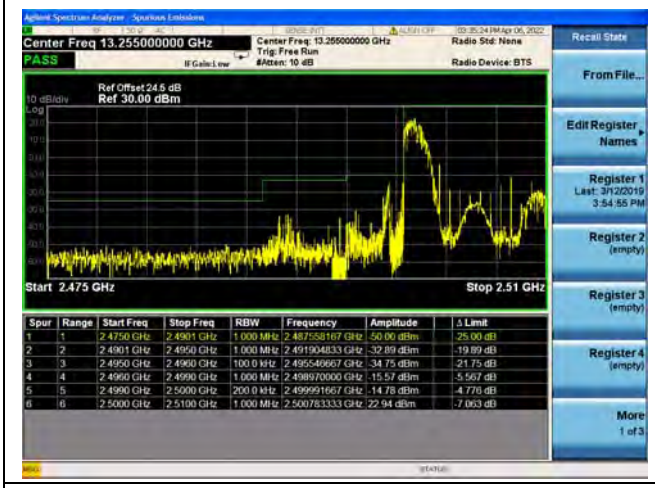
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5650 GHz	2.5700 GHz	1.000 MHz	2.569566667 GHz	22.64 dBm	-7.363 dB
2	2	2.5700 GHz	2.5710 GHz	100.0 kHz	2.570023333 GHz	-17.21 dBm	-7.210 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571066667 GHz	-13.39 dBm	-3.390 dB
4	4	2.5750 GHz	2.5760 GHz	1.000 MHz	2.575058333 GHz	-40.89 dBm	-27.89 dB
5	5	2.5760 GHz	2.5850 GHz	1.000 MHz	2.577995000 GHz	-34.90 dBm	-9.905 dB

Band7 / 5MHz / High CH / QPSK / FULL RB



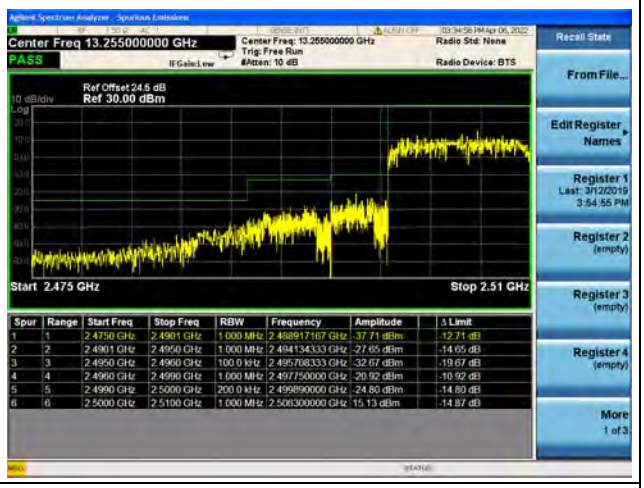
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5650 GHz	2.5700 GHz	1.000 MHz	2.567208333 GHz	15.40 dBm	-14.60 dB
2	2	2.5700 GHz	2.5710 GHz	100.0 kHz	2.570030000 GHz	-26.39 dBm	-16.39 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571093333 GHz	-19.18 dBm	-9.176 dB
4	4	2.5750 GHz	2.5760 GHz	1.000 MHz	2.575275000 GHz	-34.21 dBm	-21.21 dB
5	5	2.5760 GHz	2.5850 GHz	1.000 MHz	2.576315000 GHz	-35.08 dBm	-10.08 dB

Band7 / 10MHz / Low CH / QPSK / 1 RB



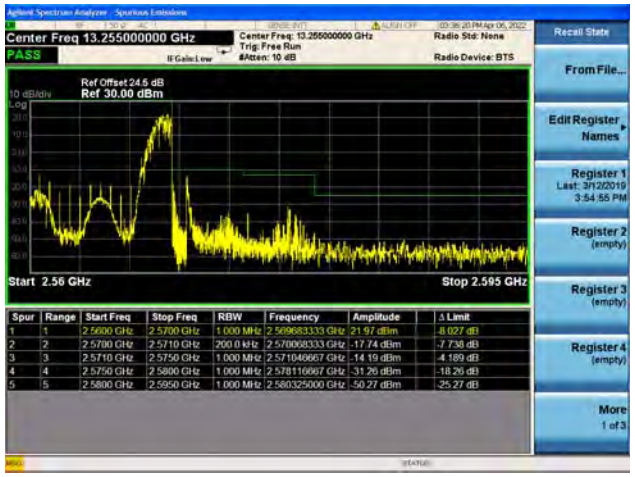
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4901 GHz	1.000 MHz	2.487558167 GHz	-50.00 dBm	-25.00 dB
2	2	2.4901 GHz	2.4950 GHz	1.000 MHz	2.491904833 GHz	-32.89 dBm	-19.89 dB
3	3	2.4950 GHz	2.4960 GHz	100.0 kHz	2.495546667 GHz	-34.75 dBm	-21.75 dB
4	4	2.4960 GHz	2.4990 GHz	1.000 MHz	2.498970000 GHz	-15.57 dBm	-5.567 dB
5	5	2.4990 GHz	2.5000 GHz	200.0 kHz	2.499991667 GHz	-14.78 dBm	-4.776 dB
6	6	2.5000 GHz	2.5100 GHz	1.000 MHz	2.500783333 GHz	22.94 dBm	-7.063 dB

Band7 / 10MHz / Low CH / QPSK / FULL RB



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4901 GHz	1.000 MHz	2.488917167 GHz	-37.71 dBm	-12.71 dB
2	2	2.4901 GHz	2.4950 GHz	1.000 MHz	2.494134333 GHz	-27.65 dBm	-14.65 dB
3	3	2.4950 GHz	2.4960 GHz	100.0 kHz	2.495708333 GHz	-32.67 dBm	-19.67 dB
4	4	2.4960 GHz	2.4990 GHz	1.000 MHz	2.497750000 GHz	-20.92 dBm	-10.92 dB
5	5	2.4990 GHz	2.5000 GHz	200.0 kHz	2.499890000 GHz	-24.80 dBm	-14.80 dB
6	6	2.5000 GHz	2.5100 GHz	1.000 MHz	2.506300000 GHz	15.13 dBm	-14.87 dB

Band7 / 10MHz / High CH / QPSK / 1 RB



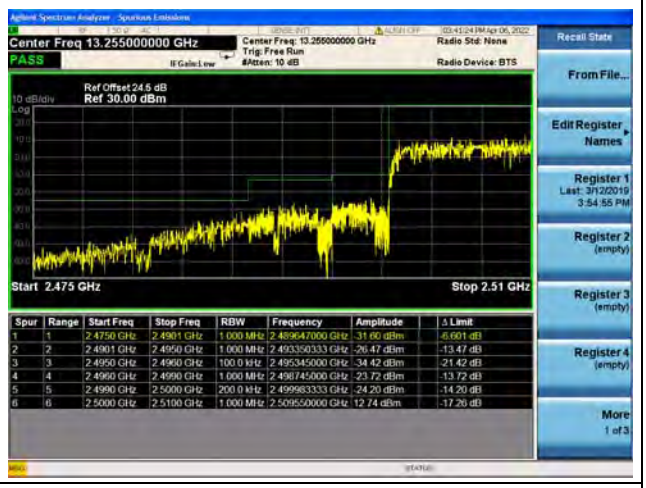
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5600 GHz	2.5700 GHz	1.000 MHz	2.569683333 GHz	21.97 dBm	-8.027 dB
2	2	2.5700 GHz	2.5710 GHz	200.0 kHz	2.570068333 GHz	-17.74 dBm	-7.738 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571046667 GHz	-14.19 dBm	-4.189 dB
4	4	2.5750 GHz	2.5800 GHz	1.000 MHz	2.578116667 GHz	-31.26 dBm	-18.26 dB
5	5	2.5800 GHz	2.5950 GHz	1.000 MHz	2.580325000 GHz	-50.27 dBm	-25.27 dB

Band7 / 10MHz / High CH / QPSK / FULL RB

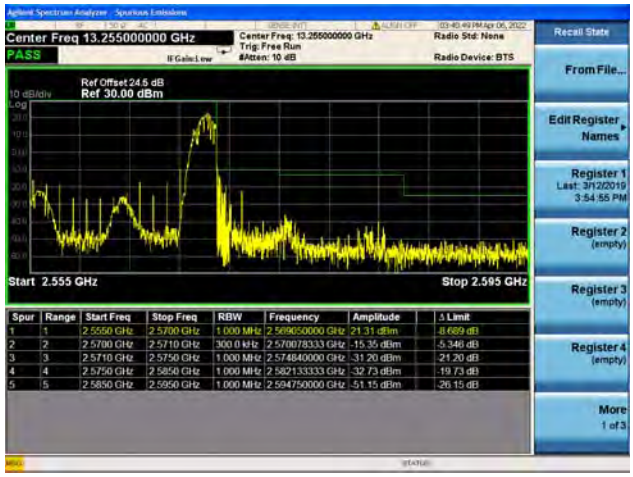
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5600 GHz	2.5700 GHz	1.000 MHz	2.561666667 GHz	12.74 dBm	-17.26 dB
2	2	2.5700 GHz	2.5710 GHz	200.0 kHz	2.570055000 GHz	-25.11 dBm	-15.11 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.573133333 GHz	-23.91 dBm	-13.91 dB
4	4	2.5750 GHz	2.5800 GHz	1.000 MHz	2.575233333 GHz	-29.76 dBm	-16.76 dB
5	5	2.5800 GHz	2.5950 GHz	1.000 MHz	2.581000000 GHz	-38.43 dBm	-13.43 dB

Band7 / 15MHz / Low CH / QPSK / 1 RB

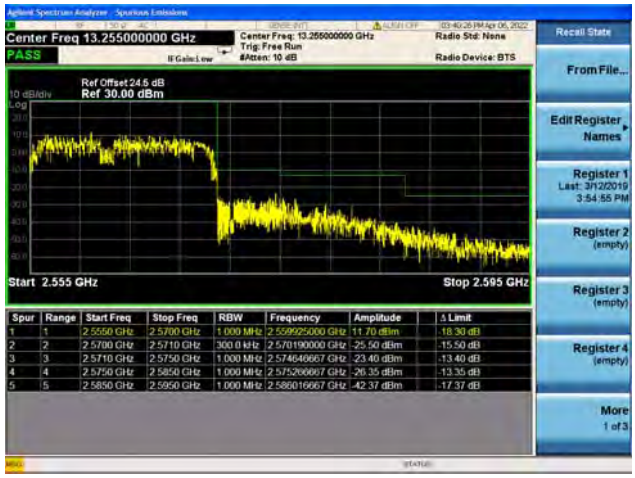
Band7 / 15MHz / Low CH / QPSK / FULL RB



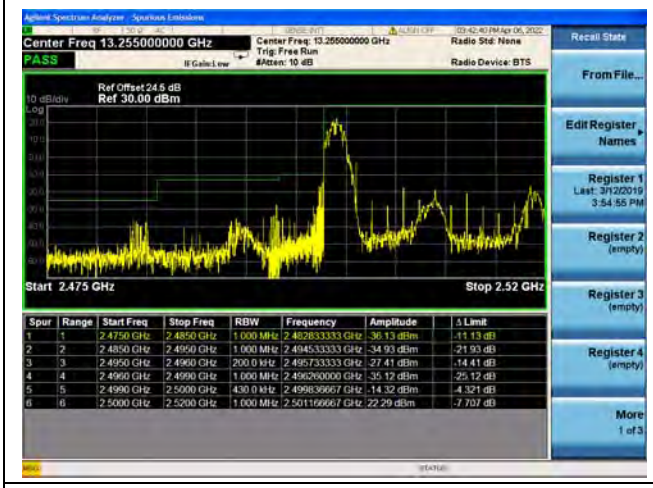
Band7 / 15MHz / High CH / QPSK / 1 RB



Band7 / 15MHz / High CH / QPSK / FULL RB

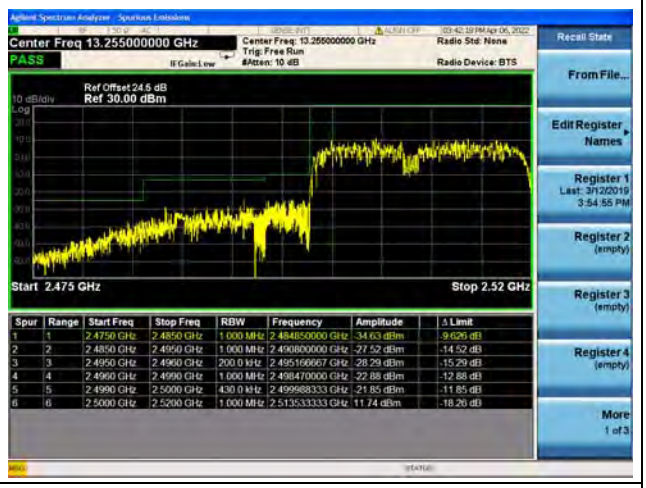


Band7 / 20MHz / Low CH / QPSK / 1 RB



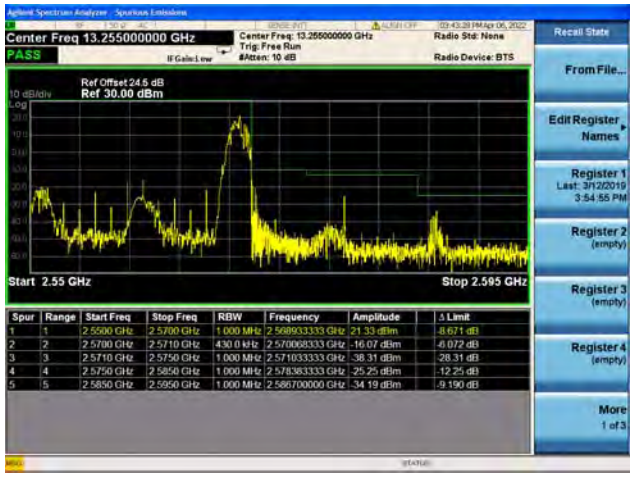
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4850 GHz	1.000 MHz	2.482833333 GHz	-36.13 dBm	-11.13 dB
2	2	2.4850 GHz	2.4950 GHz	1.000 MHz	2.494533333 GHz	-34.93 dBm	-21.93 dB
3	3	2.4950 GHz	2.4960 GHz	200.0 kHz	2.495733333 GHz	-27.41 dBm	-14.41 dB
4	4	2.4960 GHz	2.4990 GHz	1.000 MHz	2.496260000 GHz	-35.12 dBm	-25.12 dB
5	5	2.4990 GHz	2.5000 GHz	430.0 kHz	2.499836667 GHz	-14.32 dBm	-4.321 dB
6	6	2.5000 GHz	2.5200 GHz	1.000 MHz	2.501166667 GHz	-22.29 dBm	-7.707 dB

Band7 / 20MHz / Low CH / QPSK / FULL RB



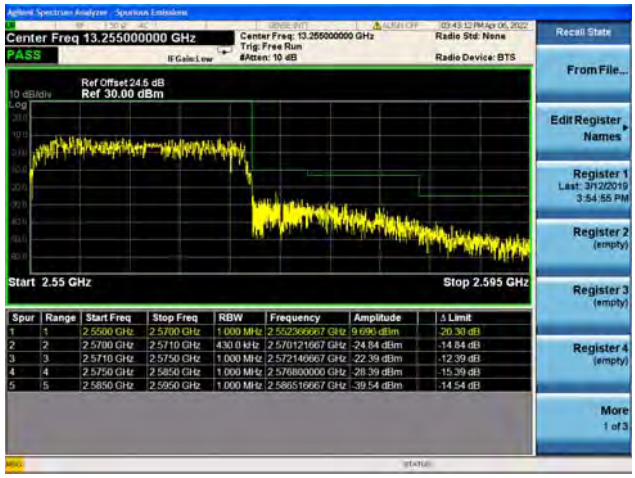
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4850 GHz	1.000 MHz	2.484850000 GHz	-34.63 dBm	-9.626 dB
2	2	2.4850 GHz	2.4950 GHz	1.000 MHz	2.490800000 GHz	-27.52 dBm	-14.52 dB
3	3	2.4950 GHz	2.4960 GHz	200.0 kHz	2.495166667 GHz	-28.29 dBm	-15.29 dB
4	4	2.4960 GHz	2.4990 GHz	1.000 MHz	2.498470000 GHz	-22.88 dBm	-12.88 dB
5	5	2.4990 GHz	2.5000 GHz	430.0 kHz	2.499988333 GHz	-21.85 dBm	-11.85 dB
6	6	2.5000 GHz	2.5200 GHz	1.000 MHz	2.513533333 GHz	-11.74 dBm	-18.26 dB

Band7 / 20MHz / High CH / QPSK / 1 RB



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5500 GHz	2.5700 GHz	1.000 MHz	2.568933333 GHz	21.33 dBm	-8.671 dB
2	2	2.5700 GHz	2.5710 GHz	430.0 kHz	2.570068333 GHz	-16.07 dBm	-6.072 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571033333 GHz	-38.31 dBm	-28.31 dB
4	4	2.5750 GHz	2.5850 GHz	1.000 MHz	2.578383333 GHz	-25.25 dBm	-12.25 dB
5	5	2.5850 GHz	2.5950 GHz	1.000 MHz	2.586700000 GHz	-34.19 dBm	-9.190 dB

Band7 / 20MHz / High CH / QPSK / FULL RB



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5500 GHz	2.5700 GHz	1.000 MHz	2.552366667 GHz	9.696 dBm	-20.30 dB
2	2	2.5700 GHz	2.5710 GHz	430.0 kHz	2.570121667 GHz	-24.84 dBm	-14.84 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.572146667 GHz	-22.39 dBm	-12.39 dB
4	4	2.5750 GHz	2.5850 GHz	1.000 MHz	2.576800000 GHz	-28.39 dBm	-15.39 dB
5	5	2.5850 GHz	2.5950 GHz	1.000 MHz	2.586516667 GHz	-39.54 dBm	-14.54 dB

Band66 / 1.4MHz / Low CH / QPSK / 1 RB

Band66 / 1.4MHz / Low CH / QPSK / FULL RB

Band66 / 1.4MHz / High CH / QPSK / 1 RB

Band66 / 1.4MHz / High CH / QPSK / FULL RB

Band66 / 3MHz / Low CH / QPSK / 1 RB

Band66 / 3MHz / Low CH / QPSK / FULL RB

Band66 / 3MHz / High CH / QPSK / 1 RB

Band66 / 3MHz / High CH / QPSK / FULL RB

Band66 / 5MHz / Low CH / QPSK / 1 RB

Band66 / 5MHz / Low CH / QPSK / FULL RB

Band66 / 5MHz / High CH / QPSK / 1 RB

Band66 / 5MHz / High CH / QPSK / FULL RB

Band66 / 10MHz / Low CH / QPSK / 1 RB

Band66 / 10MHz / Low CH / QPSK / FULL RB

Band66 / 10MHz / High CH / QPSK / 1 RB

Band66 / 10MHz / High CH / QPSK / FULL RB

Band66 / 15MHz / Low CH / QPSK / 1 RB

Band66 / 15MHz / Low CH / QPSK / FULL RB

Band66 / 15MHz / High CH / QPSK / 1 RB

Band66 / 15MHz / High CH / QPSK / FULL RB

Band66 / 20MHz / Low CH / QPSK / 1 RB

Band66 / 20MHz / Low CH / QPSK / FULL RB

Band66 / 20MHz / High CH / QPSK / 1 RB

Band66 / 20MHz / High CH / QPSK / FULL RB

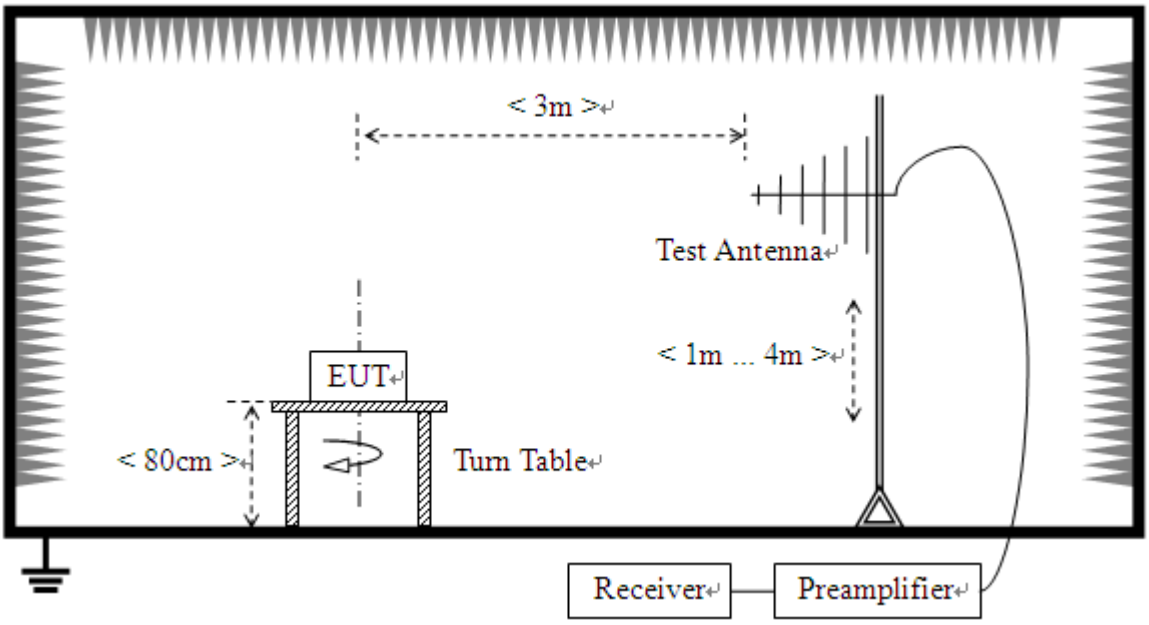
2.7. Radiated Spurious Emissions

2.7.1. Requirement

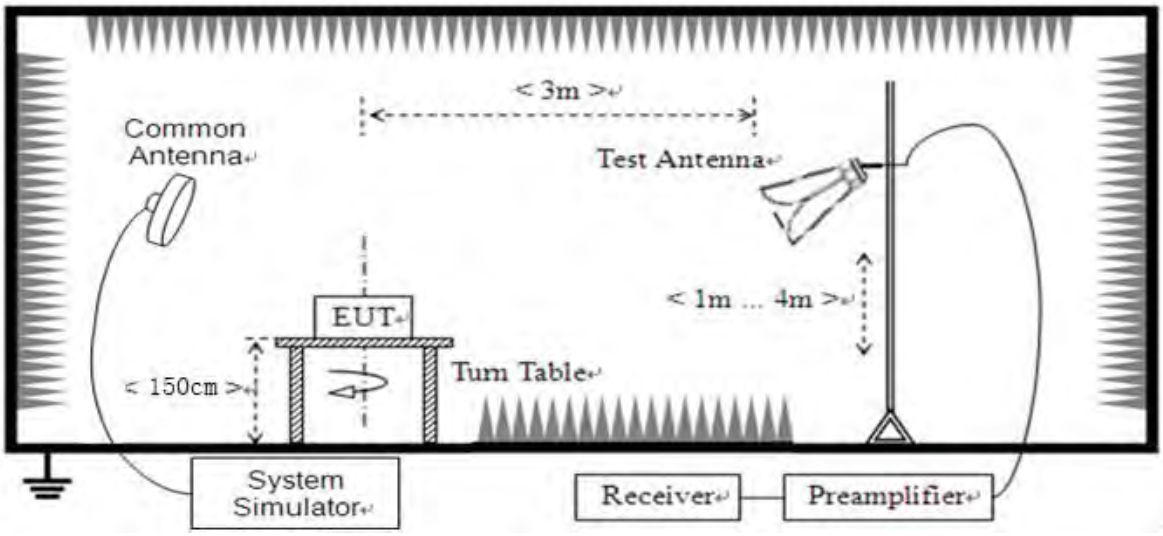
According to FCC section 2.1051, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10*log(P)dB. This calculated to be -13dBm.

Additional requirement for LTE Band 7
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 55 + 10 log(P) dB. This calculated to be -25dBm.

2.7.2. Test Description



(For the test frequency from 30MHz to1GHz)



(For the test frequency above 1GHz)

The EUT is located in a 3m Full-Anechoic Chamber, the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading.
A call is established between the EUT and the SS via a Common Antenna. The EUT is commanded by the SS to operate at the maximum and minimum output power, and only the test result of the maximum output power was recorded.
In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground and the Turn Table is actuated to turn from 0° to 360°to determine the maximum value of the radiated power. The emission levels at both horizontal and vertical polarizations should be tested. The Filters consists of Notch Filters and High Pass Filter.

Note: When doing measurements above 1GHz, the EUT has been within the 3dB cone width of the horn antenna during horizontal antenna.

2.7.3. Test Procedure

KDB 971168 D01v03 Section 5.8 and ANSI/TIA-603-E-2016.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements.

2.7.4. Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. The lowest, middle and highest channels are tested to verify the out of band emissions.

The substitution corrections are obtained as described below:

$A_{SUBST} = P_{SUBST_TX} - P_{SUBST_RX} - L_{SUBST_CABLES} + G_{SUBST_TX_ANT}$

$A_{TOT} = L_{CABLES} + A_{SUBST}$

Where A_{SUBST} is the final substitution correction including receive antenna gain.

P_{SUBST_TX} is signal generator level,

P_{SUBST_RX} is receiver level,

L_{SUBST_CABLES} is cable losses including TX cable,

$G_{SUBST_TX_ANT}$ is substitution antenna gain.

A_{TOT} is total correction factor including cable loss and substitution correction

During the test, the data of A_{TOT} was added in the test spectrum analyze, so spectrum analyze reading is the final values which contain the data of A_{TOT}.

Note1: The power of the EUT transmitting frequency should be ignored.

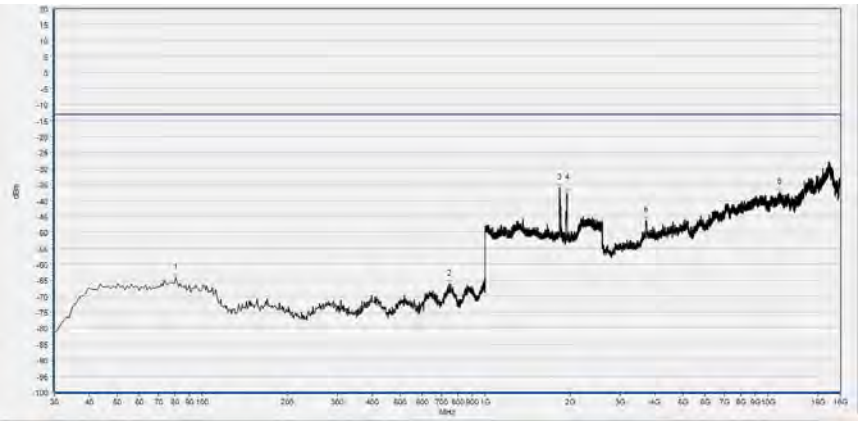
Note2: All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note3: All bandwidth and modulation were considered and evaluated respectively by performing full test for each band, only the worst cases (Max Bandwidth and QPSK mode) were recorded in this test report.

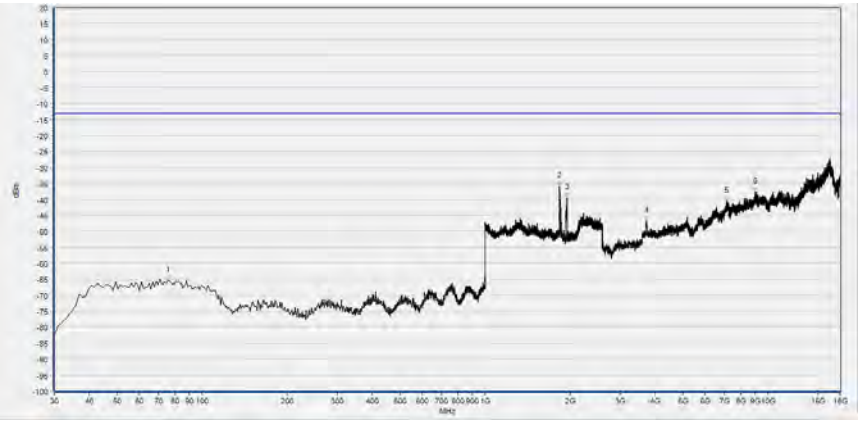
Note4: N/A means the frequency is the basic frequency or the base station frequency, they are no need to verdict.

Note 5: The amplitude of emissions(18GHz to 10th harmonics) which are attenuated more than 20 dB below the limit are not be reported.

LTE Band 2, 20MHz BW, Low Channel, QPSK

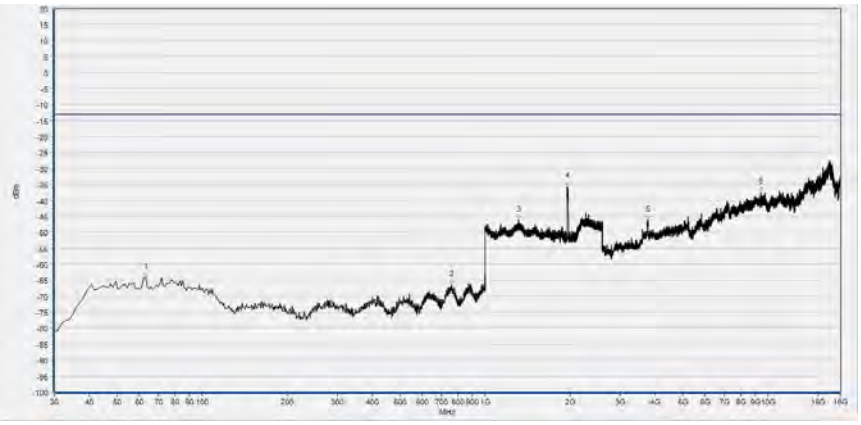


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	80.440	-64.35	-13.00	Horizontal	PASS
2	748.770	-66.29	-13.00	Horizontal	PASS
3	1836.174	-36.01	-13.00	Horizontal	N/A
4	1947.579	-37.65	-13.00	Horizontal	N/A
5	3706.201	-46.43	-13.00	Horizontal	PASS
6	10979.123	-37.43	-13.00	Horizontal	PASS

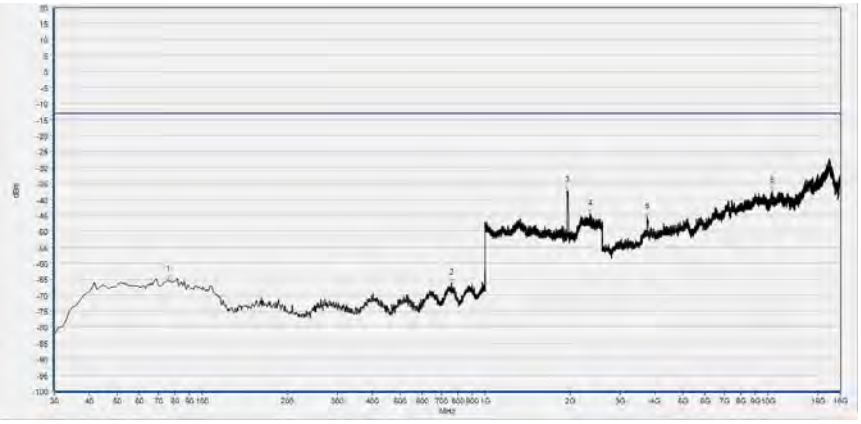


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	75.590	-65.43	-13.00	Vertical	PASS
2	1835.534	-35.86	-13.00	Vertical	N/A
3	1947.579	-39.46	-13.00	Vertical	N/A
4	3725.805	-46.84	-13.00	Vertical	PASS
5	7156.428	-40.60	-13.00	Vertical	PASS
6	9035.570	-37.65	-13.00	Vertical	PASS

LTE Band 2, 20MHz BW, Mid Channel, QPSK

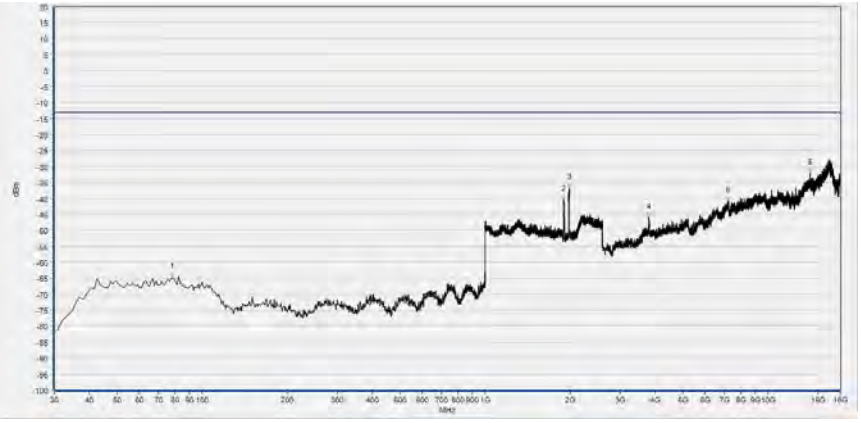


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	62.980	-64.03	-13.00	Horizontal	PASS
2	760.410	-66.59	-13.00	Horizontal	PASS
3	1311.805	-46.05	-13.00	Horizontal	PASS
4	1953.982	-35.70	-13.00	Horizontal	N/A
5	3765.012	-46.14	-13.00	Horizontal	PASS
6	9433.242	-37.41	-13.00	Horizontal	PASS

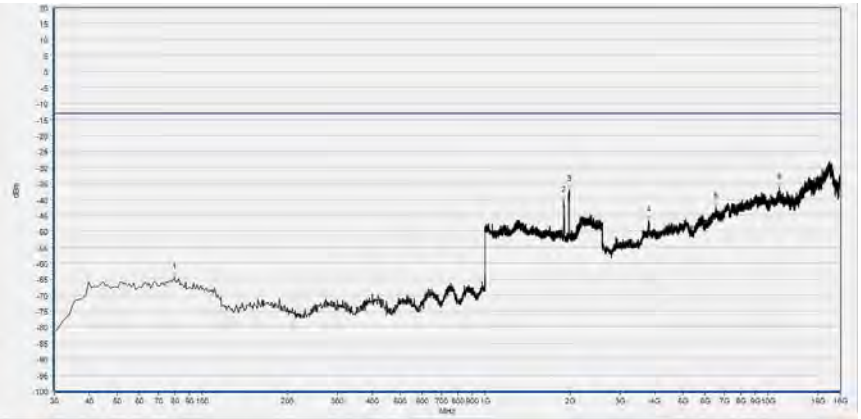


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	75.590	-65.05	-13.00	Vertical	PASS
2	762.350	-66.18	-13.00	Vertical	PASS
3	1953.341	-37.20	-13.00	Vertical	N/A
4	2349.660	-44.63	-13.00	Vertical	PASS
5	3748.209	-45.53	-13.00	Vertical	PASS
6	10360.211	-37.39	-13.00	Vertical	PASS

LTE Band 2, 20MHz BW, High Channel, QPSK

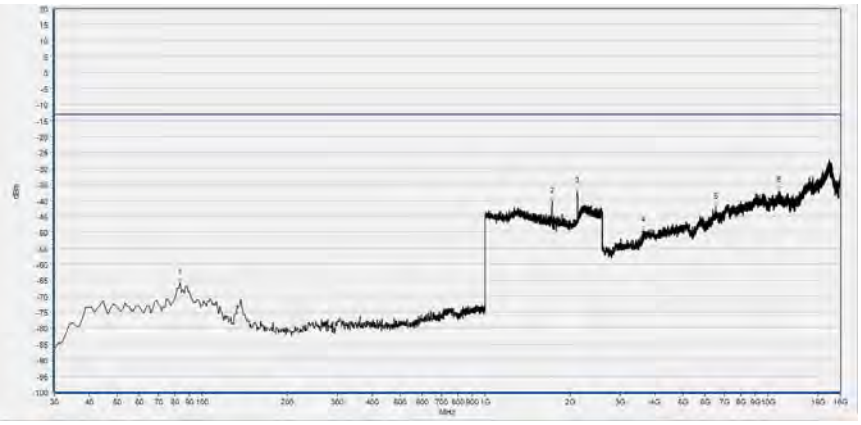


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	78.500	-64.64	-13.00	Horizontal	PASS
2	1901.481	-40.29	-13.00	Horizontal	N/A
3	1987.915	-36.84	-13.00	Horizontal	N/A
4	3798.618	-45.81	-13.00	Horizontal	PASS
5	7226.441	-40.88	-13.00	Horizontal	PASS
6	14073.686	-32.07	-13.00	Horizontal	PASS

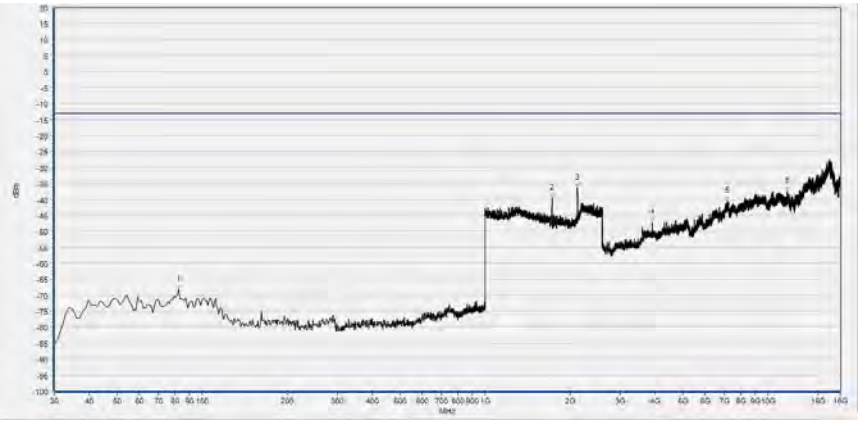


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	79.470	-64.49	-13.00	Vertical	PASS
2	1898.920	-40.41	-13.00	Vertical	N/A
3	1981.513	-36.97	-13.00	Vertical	N/A
4	3790.216	-46.50	-13.00	Vertical	PASS
5	6557.119	-42.43	-13.00	Vertical	PASS
6	10993.126	-36.39	-13.00	Vertical	PASS

LTE Band 4, 20MHz BW, Low Channel, QPSK

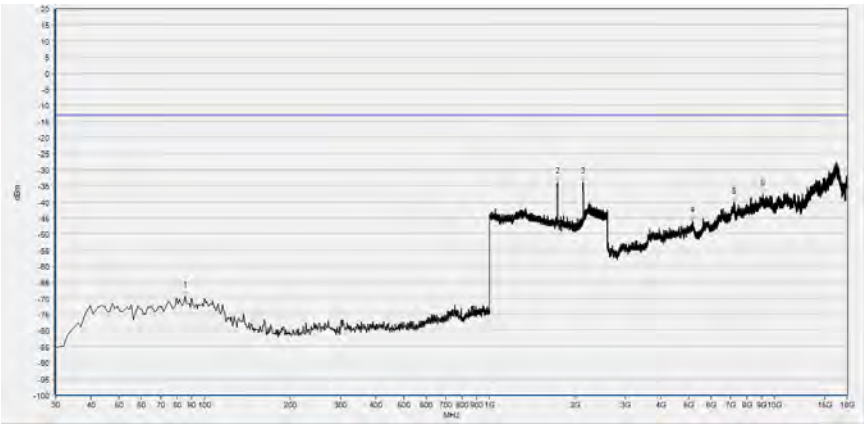


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	83.403	-65.88	-13.00	Horizontal	PASS
2	1723.562	-40.25	-13.00	Horizontal	N/A
3	2123.762	-37.25	-13.00	Horizontal	N/A
4	3614.002	-49.44	-13.00	Horizontal	PASS
5	6555.893	-42.21	-13.00	Horizontal	PASS
6	10937.923	-37.04	-13.00	Horizontal	PASS

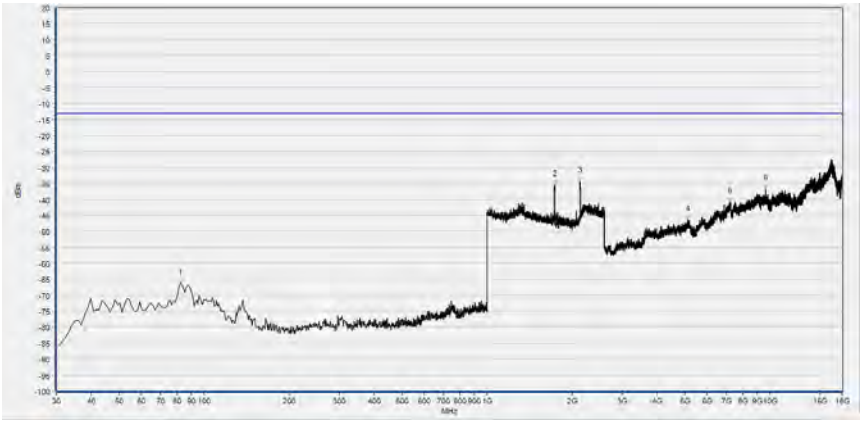


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	82.432	-68.21	-13.00	Vertical	PASS
2	1723.562	-39.61	-13.00	Vertical	N/A
3	2116.558	-36.61	-13.00	Vertical	N/A
4	3906.651	-47.30	-13.00	Vertical	PASS
5	7189.965	-40.67	-13.00	Vertical	PASS
6	11731.155	-37.35	-13.00	Vertical	PASS

LTE Band 4, 20MHz BW, Mid Channel, QPSK

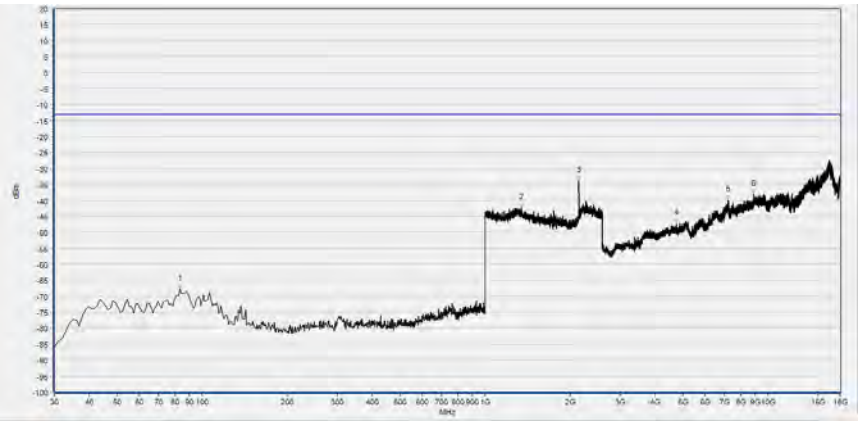


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	85.345	-69.45	-13.00	Horizontal	PASS
2	1733.167	-33.78	-13.00	Horizontal	N/A
3	2132.566	-33.85	-13.00	Horizontal	N/A
4	5159.393	-46.00	-13.00	Horizontal	PASS
5	7231.039	-40.14	-13.00	Horizontal	PASS
6	9130.688	-37.65	-13.00	Horizontal	PASS

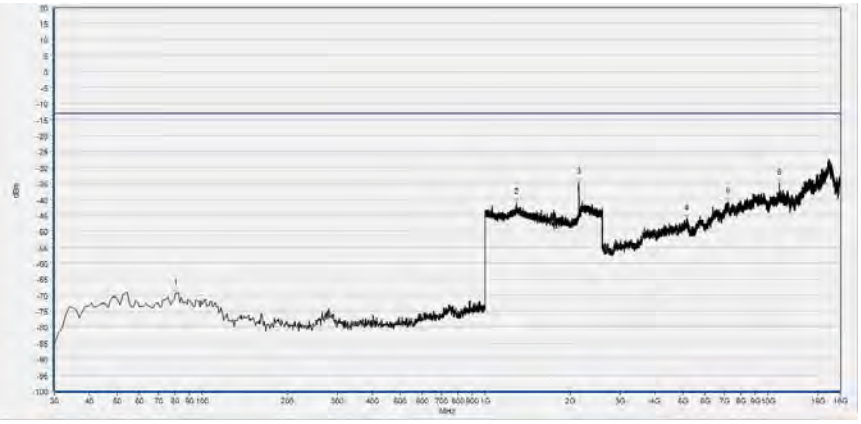


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	82.432	-66.53	-13.00	Vertical	PASS
2	1735.568	-35.46	-13.00	Vertical	N/A
3	2130.965	-34.39	-13.00	Vertical	N/A
4	5118.320	-46.36	-13.00	Vertical	PASS
5	7231.039	-40.83	-13.00	Vertical	PASS
6	9644.107	-36.79	-13.00	Vertical	PASS

LTE Band 4, 20MHz BW, High Channel, QPSK

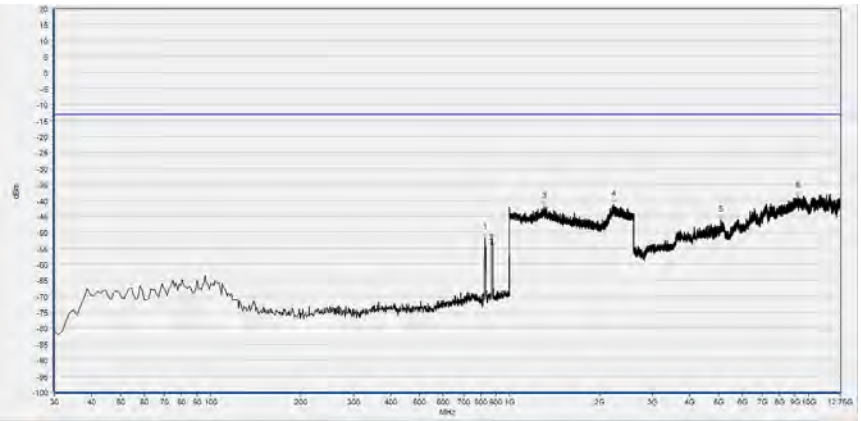


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	83.403	-67.92	-13.00	Horizontal	PASS
2	1343.372	-42.29	-13.00	Horizontal	PASS
3	2144.572	-33.76	-13.00	Horizontal	N/A
4	4748.658	-47.19	-13.00	Horizontal	PASS
5	7225.904	-39.78	-13.00	Horizontal	PASS
6	8904.784	-38.10	-13.00	Horizontal	PASS

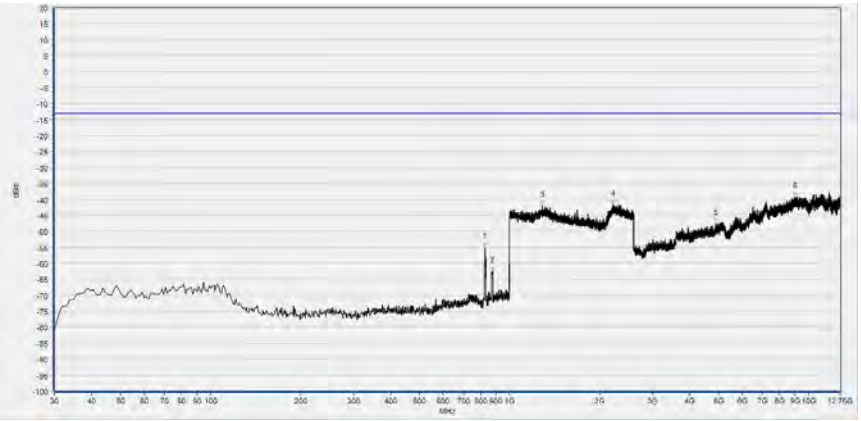


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	80.490	-69.43	-13.00	Vertical	PASS
2	1291.346	-41.04	-13.00	Vertical	PASS
3	2144.572	-34.77	-13.00	Vertical	N/A
4	5164.527	-46.25	-13.00	Vertical	PASS
5	7236.173	-40.86	-13.00	Vertical	PASS
6	10971.295	-35.07	-13.00	Vertical	PASS

LTE Band 5, 10MHz BW, Low Channel, QPSK

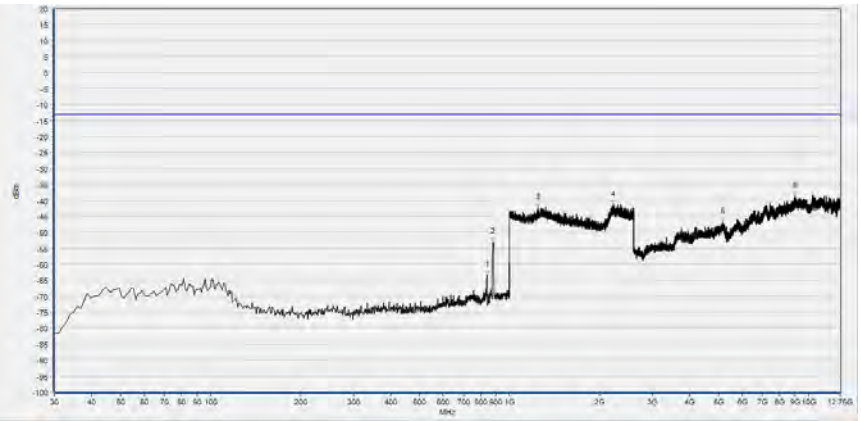


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	828.310	-51.71	-13.00	Horizontal	N/A
2	870.990	-52.73	-13.00	Horizontal	N/A
3	1306.683	-41.91	-13.00	Horizontal	PASS
4	2222.889	-41.34	-13.00	Horizontal	PASS
5	5095.508	-46.11	-13.00	Horizontal	PASS
6	9193.162	-38.81	-13.00	Horizontal	PASS

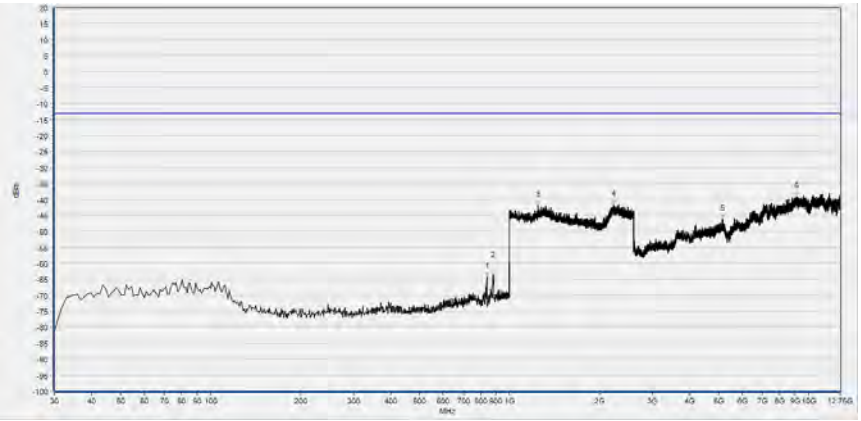


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	828.310	-55.17	-13.00	Vertical	N/A
2	873.900	-62.41	-13.00	Vertical	N/A
3	1286.194	-41.92	-13.00	Vertical	PASS
4	2211.365	-41.65	-13.00	Vertical	PASS
5	4885.088	-47.48	-13.00	Vertical	PASS
6	8991.971	-39.32	-13.00	Vertical	PASS

LTE Band 5, 10MHz BW, Mid Channel, QPSK

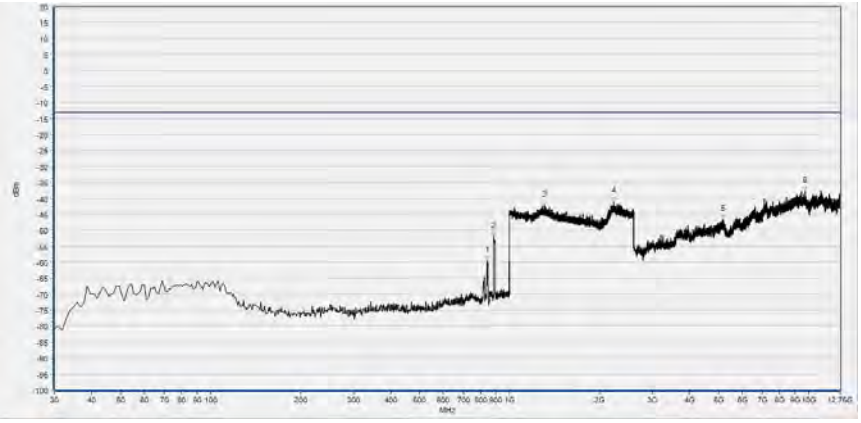


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	839.950	-63.30	-13.00	Horizontal	N/A
2	880.690	-53.03	-13.00	Horizontal	N/A
3	1242.657	-42.26	-13.00	Horizontal	PASS
4	2221.609	-41.54	-13.00	Horizontal	PASS
5	5167.494	-46.84	-13.00	Horizontal	PASS
6	9001.200	-38.85	-13.00	Horizontal	PASS

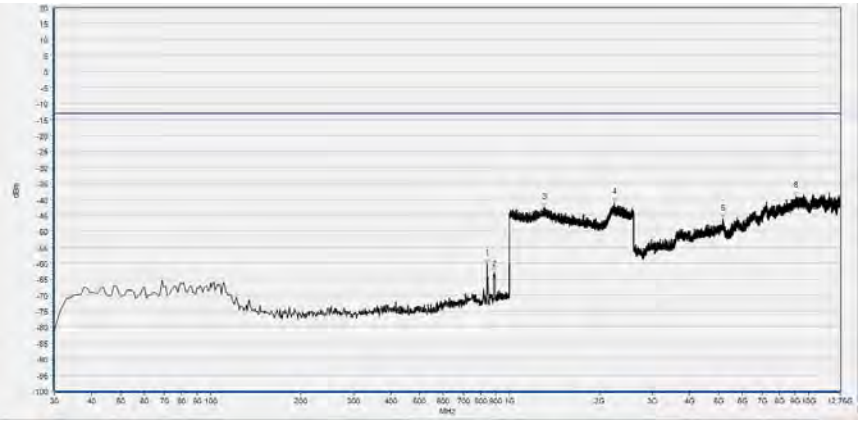


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	839.950	-64.21	-13.00	Vertical	N/A
2	880.690	-63.73	-13.00	Vertical	N/A
3	1245.218	-41.84	-13.00	Vertical	PASS
4	2231.212	-41.57	-13.00	Vertical	PASS
5	5139.807	-46.20	-13.00	Vertical	PASS
6	9091.644	-39.33	-13.00	Vertical	PASS

LTE Band 5, 10MHz BW, High Channel, QPSK

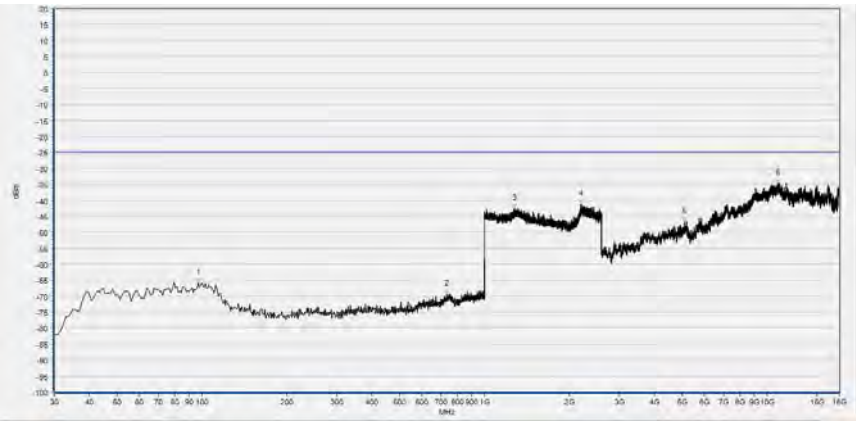


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	839.950	-59.45	-13.00	Horizontal	N/A
2	885.540	-52.02	-13.00	Horizontal	N/A
3	1306.042	-42.08	-13.00	Horizontal	PASS
4	2224.810	-41.11	-13.00	Horizontal	PASS
5	5158.265	-46.58	-13.00	Horizontal	PASS
6	9741.362	-37.57	-13.00	Horizontal	PASS

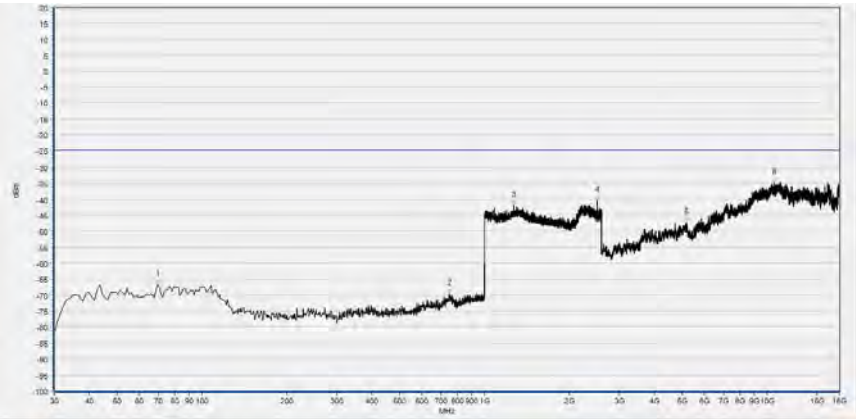


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	839.950	-60.25	-13.00	Vertical	N/A
2	889.420	-62.90	-13.00	Vertical	N/A
3	1307.963	-42.55	-13.00	Vertical	PASS
4	2237.615	-41.04	-13.00	Vertical	PASS
5	5178.569	-46.18	-13.00	Vertical	PASS
6	9065.803	-39.03	-13.00	Vertical	PASS

LTE Band 7, 20MHz BW, Low Channel, QPSK

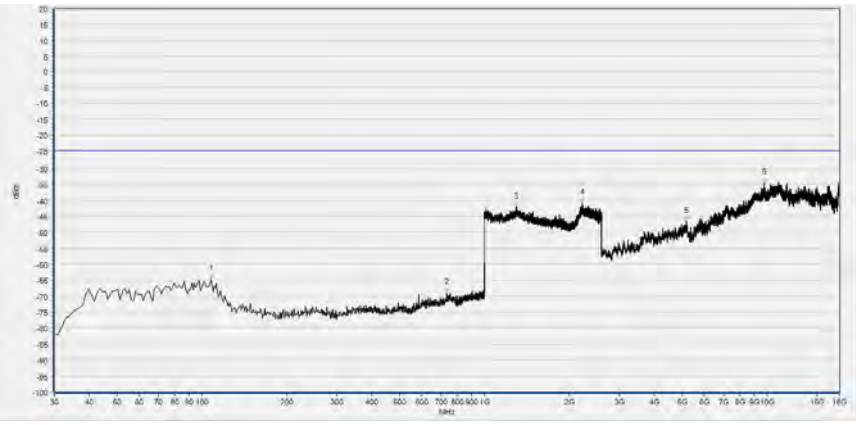


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	96.930	-65.77	-25.00	Horizontal	PASS
2	735.190	-69.28	-25.00	Horizontal	PASS
3	1280.432	-42.61	-25.00	Horizontal	PASS
4	2193.437	-41.18	-25.00	Horizontal	PASS
5	5089.653	-46.79	-25.00	Horizontal	PASS
6	10909.111	-34.77	-25.00	Horizontal	PASS

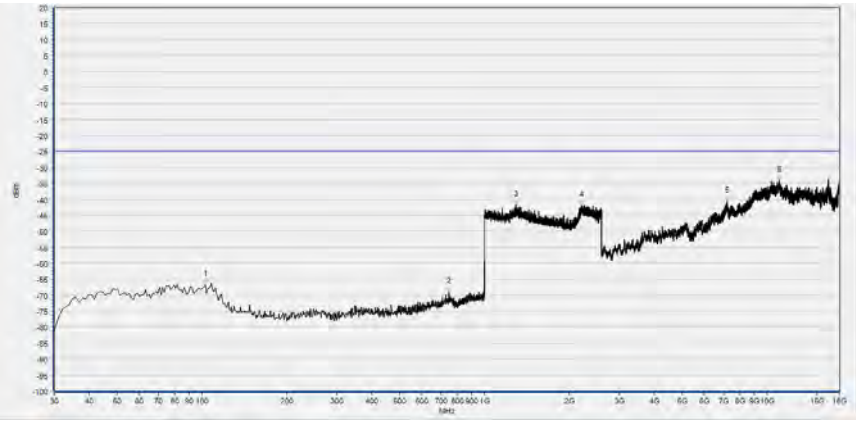


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	69.770	-66.70	-25.00	Vertical	PASS
2	750.710	-69.66	-25.00	Vertical	PASS
3	1270.828	-42.00	-25.00	Vertical	PASS
4	2505.882	-40.33	-25.00	Vertical	PASS
5	5184.870	-47.34	-25.00	Vertical	PASS
6	10587.052	-34.85	-25.00	Vertical	PASS

LTE Band 7, 20MHz BW, Mid Channel, QPSK

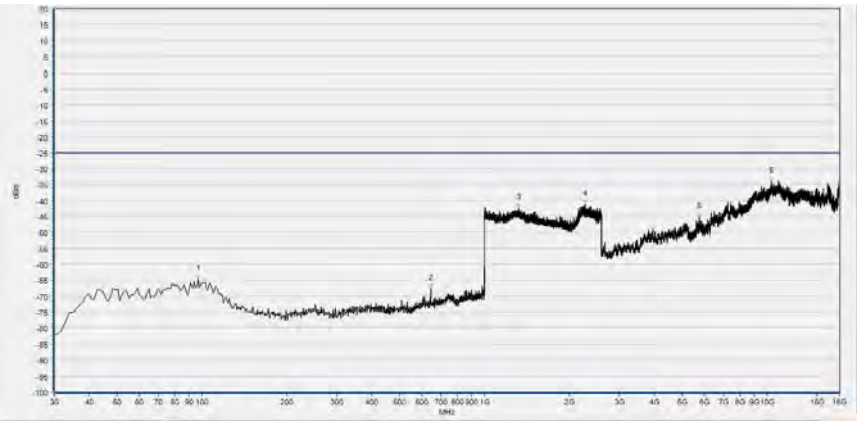


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	107.600	-64.63	-25.00	Horizontal	PASS
2	736.160	-69.01	-25.00	Horizontal	PASS
3	1295.158	-42.11	-25.00	Horizontal	PASS
4	2213.926	-40.81	-25.00	Horizontal	PASS
5	5193.272	-46.67	-25.00	Horizontal	PASS
6	9763.702	-34.48	-25.00	Horizontal	PASS

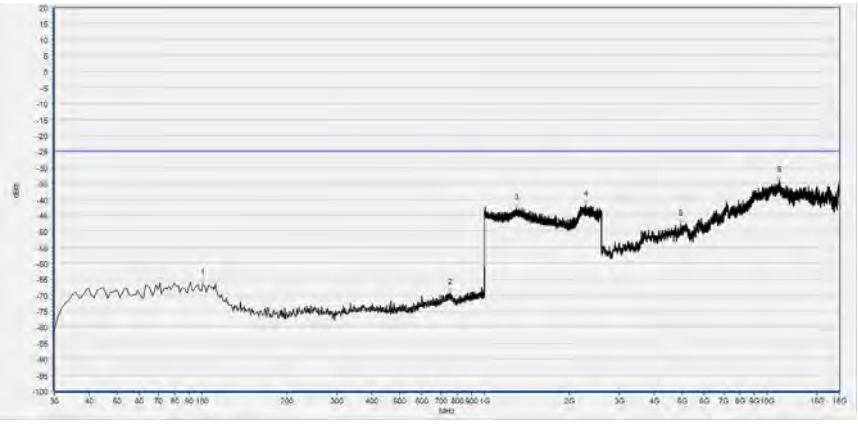


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	102.750	-66.75	-25.00	Vertical	PASS
2	749.740	-68.84	-25.00	Vertical	PASS
3	1288.115	-41.70	-25.00	Vertical	PASS
4	2210.724	-41.82	-25.00	Vertical	PASS
5	7243.244	-40.49	-25.00	Vertical	PASS
6	11015.530	-34.15	-25.00	Vertical	PASS

LTE Band 7, 20MHz BW, High Channel, QPSK

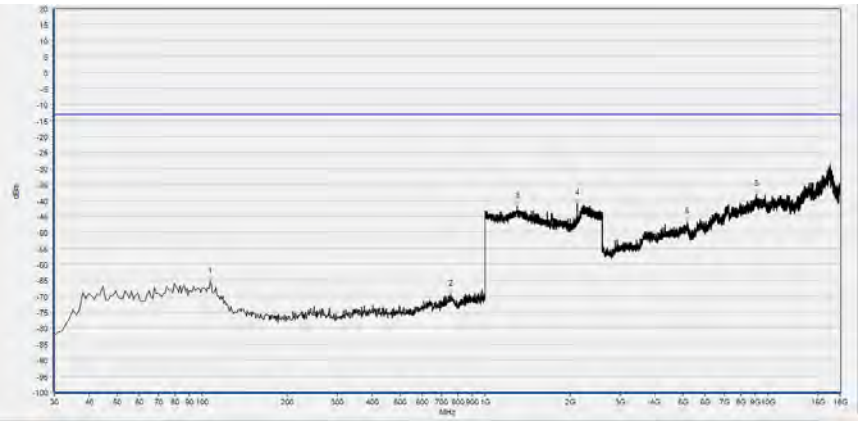


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	96.930	-64.62	-25.00	Horizontal	PASS
2	644.980	-67.59	-25.00	Horizontal	PASS
3	1323.970	-42.43	-25.00	Horizontal	PASS
4	2269.628	-41.15	-25.00	Horizontal	PASS
5	5756.174	-45.18	-25.00	Horizontal	PASS
6	10335.006	-34.01	-25.00	Horizontal	PASS

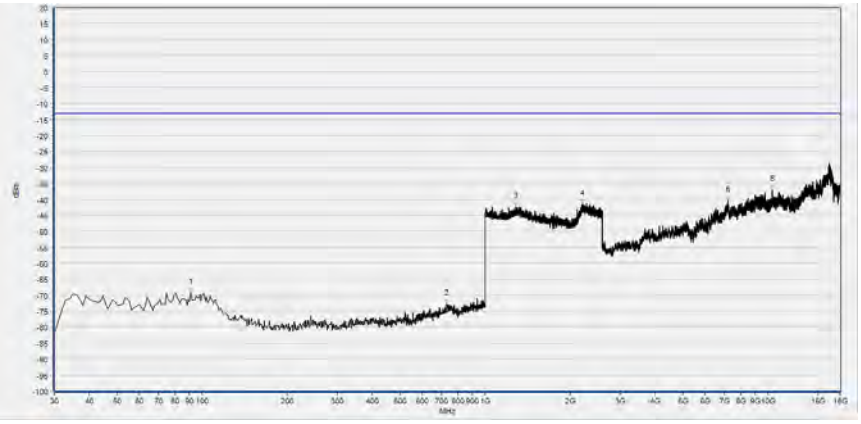


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	100.810	-66.55	-25.00	Vertical	PASS
2	754.590	-69.26	-25.00	Vertical	PASS
3	1295.798	-42.70	-25.00	Vertical	PASS
4	2287.555	-41.70	-25.00	Vertical	PASS
5	4946.827	-47.63	-25.00	Vertical	PASS
6	11063.139	-34.12	-25.00	Vertical	PASS

LTE Band 66, 20MHz BW, Low Channel, QPSK

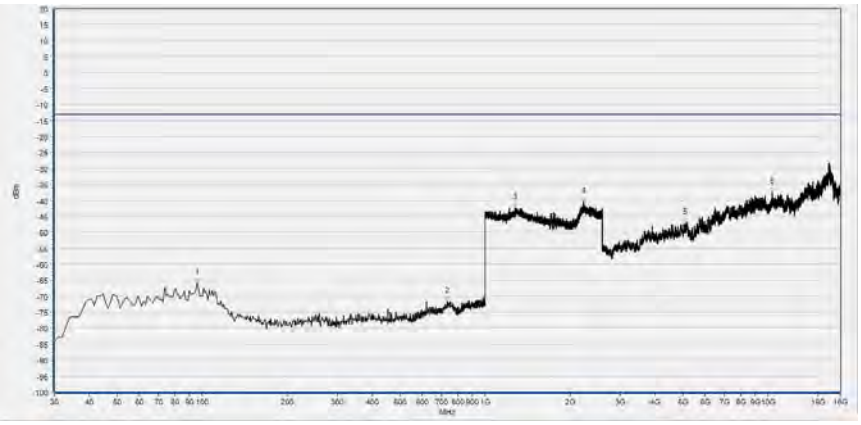


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	106.707	-65.35	-13.00	Horizontal	PASS
2	757.257	-69.44	-13.00	Horizontal	PASS
3	1300.150	-41.91	-13.00	Horizontal	PASS
4	2116.558	-41.10	-13.00	Horizontal	PASS
5	5187.631	-46.79	-13.00	Horizontal	PASS
6	9130.688	-38.17	-13.00	Horizontal	PASS

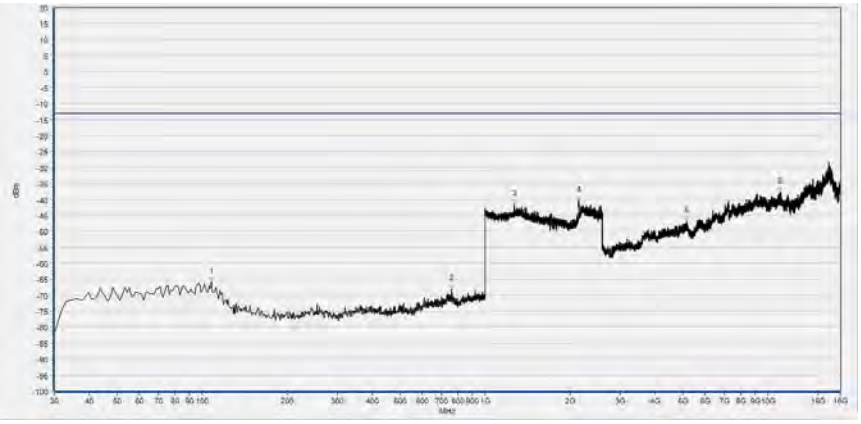


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	91.171	-69.07	-13.00	Vertical	PASS
2	732.012	-72.83	-13.00	Vertical	PASS
3	1283.342	-42.27	-13.00	Vertical	PASS
4	2200.600	-41.43	-13.00	Vertical	PASS
5	7241.307	-40.44	-13.00	Vertical	PASS
6	10355.193	-37.03	-13.00	Vertical	PASS

LTE Band 66, 20MHz BW, Mid Channel, QPSK

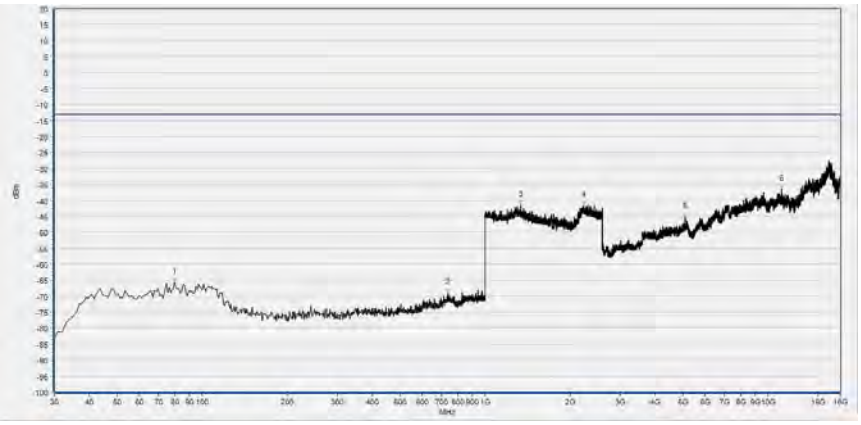


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	96.026	-65.84	-13.00	Horizontal	PASS
2	735.896	-71.61	-13.00	Horizontal	PASS
3	1277.739	-42.40	-13.00	Horizontal	PASS
4	2231.816	-40.36	-13.00	Horizontal	PASS
5	5100.350	-46.96	-13.00	Horizontal	PASS
6	10352.625	-37.35	-13.00	Horizontal	PASS

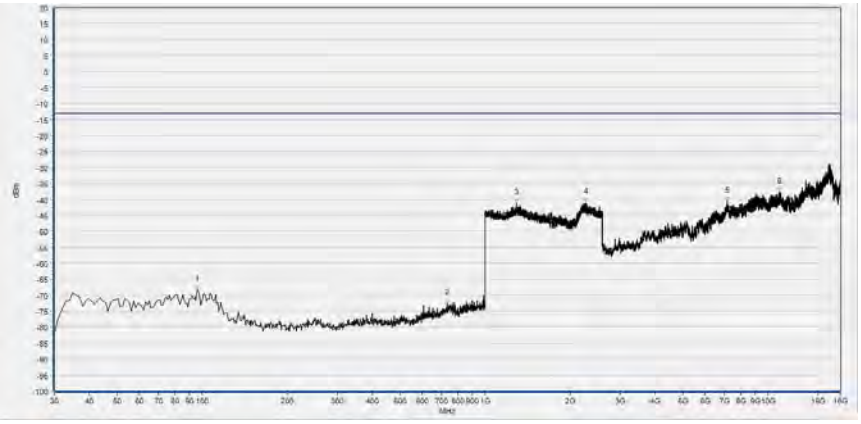


No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	107.678	-65.85	-13.00	Vertical	PASS
2	763.083	-68.08	-13.00	Vertical	PASS
3	1265.733	-41.42	-13.00	Vertical	PASS
4	2143.772	-40.32	-13.00	Vertical	PASS
5	5141.424	-46.76	-13.00	Vertical	PASS
6	11022.637	-37.63	-13.00	Vertical	PASS

LTE Band 66, 20MHz BW, High Channel, QPSK



No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	79.520	-65.53	-13.00	Horizontal	PASS
2	737.838	-68.85	-13.00	Horizontal	PASS
3	1336.968	-41.42	-13.00	Horizontal	PASS
4	2235.018	-41.77	-13.00	Horizontal	PASS
5	5100.350	-45.29	-13.00	Horizontal	PASS
6	11181.797	-36.63	-13.00	Horizontal	PASS



No.	Fre.(MHz)	Level (dBm)	Limit (dBm)	Antenna	Verdict
1	96.026	-68.26	-13.00	Vertical	PASS
2	735.896	-72.52	-13.00	Vertical	PASS
3	1292.146	-41.20	-13.00	Vertical	PASS
4	2267.034	-40.91	-13.00	Vertical	PASS
5	7161.727	-40.60	-13.00	Vertical	PASS
6	10986.698	-37.73	-13.00	Vertical	PASS

Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test items	Uncertainty
Output Power	±2.22 dB
Bandwidth	±5%
Conducted Spurious Emission	±2.77 dB
Band Edge	±2.77 dB
Equivalent Isotropic Radiated Power	±2.22 dB
Radiated Spurious Emissions	±6 dB

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

Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.

4. Test Equipments Utilized

4.1 Conducted Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
EXA Signal Analyzer	MY51511149	N9020A	Agilent	2021.07.26	2022.07.25
EXA Signal Analyzer	MY54170556	N9030A	Agilent	2021.10.20	2022.10.19
System Simulator	6200995016	MT8820C	Anritsu	2021.10.21	2022.10.20
System Simulator	6261830572	MT8821C	Anritsu	2022.02.14	2023.02.13
Temperature Chamber	20171112102	HZ-2019	Dongguan Lixian Instrument Technology Co., Ltd	2021.10.20	2022.10.19

4.2 List of Software Used

Description	Manufacturer	Software Version
Morlab FCC Test System	MORLAB	V3.0
TS+ -[JS36-RSE]	Tonscend	V2.0.1.3

4.3 Radiated Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
System Simulator	152038	CMW500	R&S	2021.10.21	2022.10.20
System Simulator	6200995016	MT8820C	Anritsu	2021.10.21	2022.10.20
Receiver	MY54130016	N9038A	Agilent	2021.07.16	2022.07.15
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2019.05.24	2022.05.23
Test Antenna - Horn	9170C-531	BBHA9170	Schwarzbeck	2019.07.26	2022.07.25
Test Antenna - Horn	01774	BBHA 9120D	Schwarzbeck	2019.07.26	2022.07.25
Coaxial cable (N male) (9KHz-30MHz)	CB04	EMC04	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-26GHz)	CB02	EMC02	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-26GHz)	CB03	EMC03	Morlab	N/A	N/A
Coaxial cable (N male) (30MHz-40GHz)	CB05	EMC05	Morlab	N/A	N/A
1-18GHz pre-Amplifier	61171/61172	S020180L3203	Tonscend	2021.07.16	2022.07.15
18-26.5GHz pre-Amplifier	46732	S10M100L3802	Tonscend	2021.07.16	2022.07.15
26-40GHz pre-Amplifier	56774	S40M400L4002	Tonscend	2021.07.16	2022.07.15
Notch Filter	N/A	WRCGV -LTE B2	Wainwright	2021.07.16	2022.07.15
Notch Filter	N/A	WRCGV -LTE B4	Wainwright	2021.07.16	2022.07.15
Notch Filter	N/A	WRCGV -LTE B5	Wainwright	2021.07.16	2022.07.15
Notch Filter	N/A	WRCGV -LTE B7	Wainwright	2021.07.16	2022.07.15

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Notch Filter	N/A	WRCGV -LTE B66	Wainwright	2021.07.16	2022.07.15
Anechoic Chamber	N/A	9m*6m*6m	CRT	2019.07.13	2022.07.12

END OF REPORT