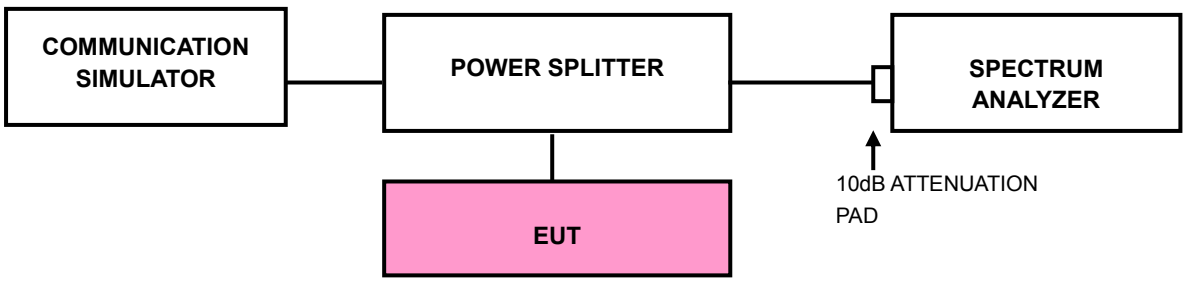
3.5 BAND EDGE MEASUREMENT

3.5.1 LIMITS OF BAND EDGE MEASUREMENT

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.

3.5.2 TEST SETUP



3.5.3 TEST PROCEDURES

a. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).

b. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

c. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 20kHz and VBW of the spectrum is 100 kHz. (LTE bandwidth 1.4MHz)

d. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 30kHz and VBW of the spectrum is 100kHz. (LTE bandwidth 3MHz)

e. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 50kHz and VBW of the spectrum is 200kHz. (LTE bandwidth 5MHz)

f. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz. (LTE bandwidth 10MHz)

g. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz. (LTE bandwidth 15MHz)

h. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz. (LTE bandwidth 20MHz)

i. Record the max trace plot into the test report.

3.5.4 TEST RESULTS

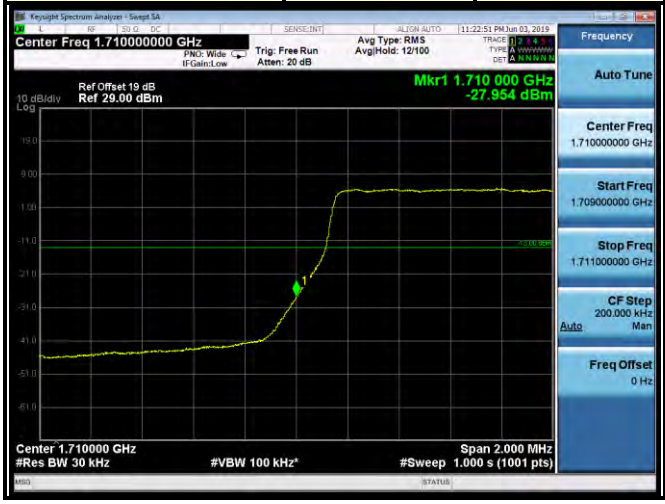
LTE BAND 4

Channel Bandwidth: 1.4MHz QPSK					
CHANNEL	19957	1 RB	CHANNEL	20393	1 RB
					
CHANNEL	19957	Full RB	CHANNEL	20393	Full RB
					

Channel Bandwidth: 1.4MHz 16QAM					
CHANNEL	19957	1 RB	CHANNEL	20393	1 RB

CHANNEL	19957	Full RB	CHANNEL	20393	Full RB

LTE BAND 4

Channel Bandwidth: 3MHz QPSK					
CHANNEL	19965	1 RB	CHANNEL	20385	1 RB
					
CHANNEL	19965	Full RB	CHANNEL	20385	Full RB
					

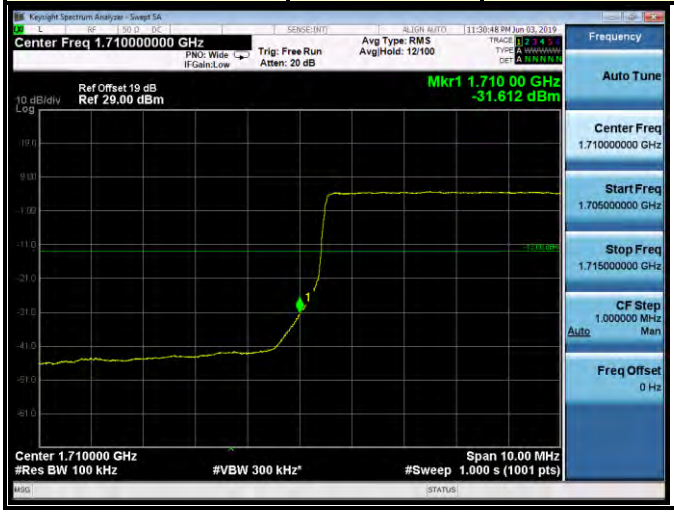
Channel Bandwidth: 3MHz 16QAM					
CHANNEL	19965	1 RB	CHANNEL	20385	1 RB
					
CHANNEL	19965	Full RB	CHANNEL	20385	Full RB
					

LTE BAND 4

Channel Bandwidth: 5MHz QPSK					
CHANNEL	19975	1 RB	CHANNEL	20375	1 RB
					
CHANNEL	19975	Full RB	CHANNEL	20375	Full RB
					

Channel Bandwidth: 5MHz 16QAM					
CHANNEL	19975	1 RB	CHANNEL	20375	1 RB
					
CHANNEL	19975	Full RB	CHANNEL	20375	Full RB
					

LTE BAND 4

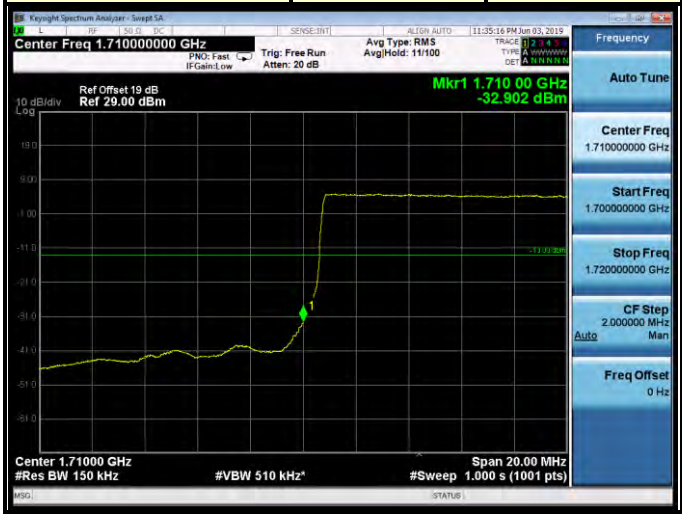
Channel Bandwidth: 10MHz QPSK					
CHANNEL	20000	1 RB	CHANNEL	20350	1 RB
					
CHANNEL	20000	Full RB	CHANNEL	20350	Full RB
					

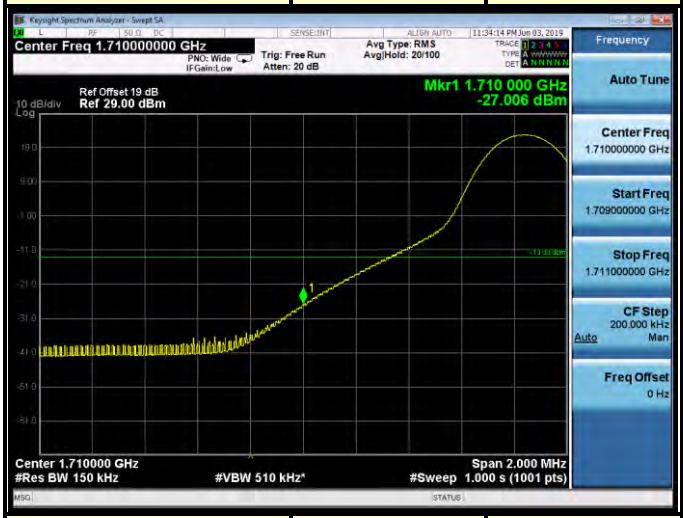
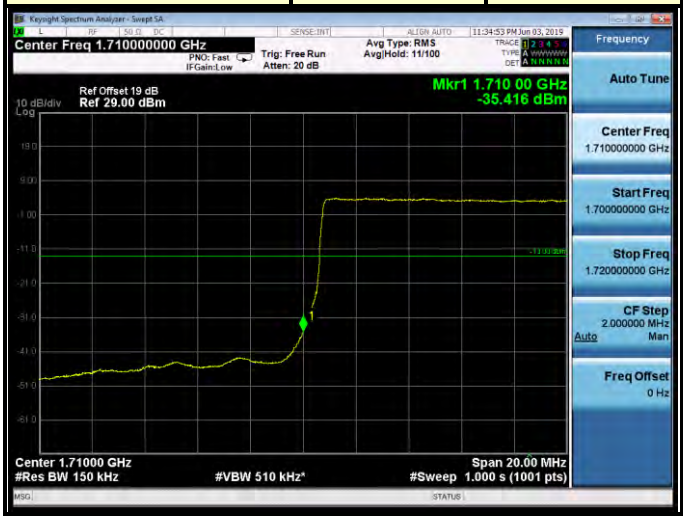
Channel Bandwidth: 10MHz 16QAM

CHANNEL	20000	1 RB	CHANNEL	20350	1 RB

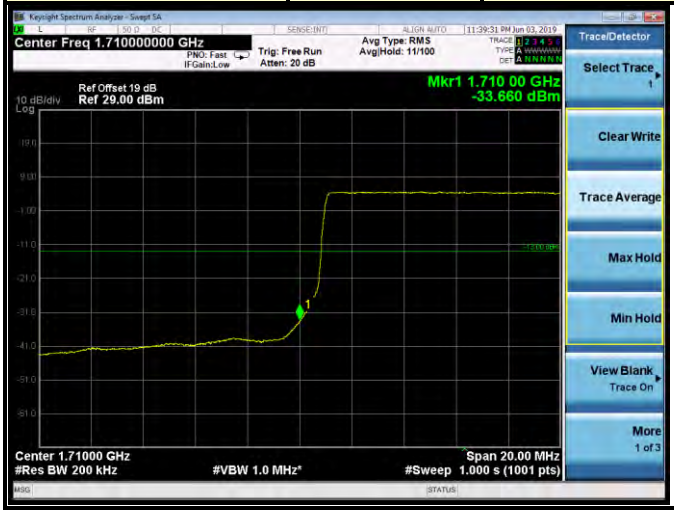
CHANNEL	20000	Full RB	CHANNEL	20350	Full RB

LTE BAND 4

Channel Bandwidth: 15MHz QPSK					
CHANNEL	20025	1 RB	CHANNEL	20325	1 RB
					
CHANNEL	20025	Full RB	CHANNEL	20325	Full RB
					

Channel Bandwidth: 15MHz 16QAM					
CHANNEL	20025	1 RB	CHANNEL	20325	1 RB
					
CHANNEL	20025	Full RB	CHANNEL	20325	Full RB
					

LTE BAND 4

Channel Bandwidth: 20MHz QPSK					
CHANNEL	20050	1 RB	CHANNEL	20300	1 RB
					
CHANNEL	20050	Full RB	CHANNEL	20300	Full RB
					

Channel Bandwidth: 20MHz 16QAM					
CHANNEL	20050	1 RB	CHANNEL	20300	1 RB
					
CHANNEL	20050	Full RB	CHANNEL	20300	Full RB
					

LTE BAND 12

Channel Bandwidth: 1.4MHz QPSK					
CHANNEL	23017	1 RB	CHANNEL	23173	1 RB
					
CHANNEL	23017	Full RB	CHANNEL	23173	Full RB
					

Channel Bandwidth: 1.4MHz 16QAM					
CHANNEL	23017	1 RB	CHANNEL	23173	1 RB
					
CHANNEL	23017	Full RB	CHANNEL	23173	Full RB
					

LTE BAND 12

Channel Bandwidth: 3MHz QPSK					
CHANNEL	23025	1 RB	CHANNEL	23165	1 RB
					
CHANNEL	23025	Full RB	CHANNEL	23165	Full RB
					

Channel Bandwidth: 3MHz 16QAM					
CHANNEL	23025	1 RB	CHANNEL	23165	1 RB

CHANNEL	23025	Full RB	CHANNEL	23165	Full RB

LTE BAND 12

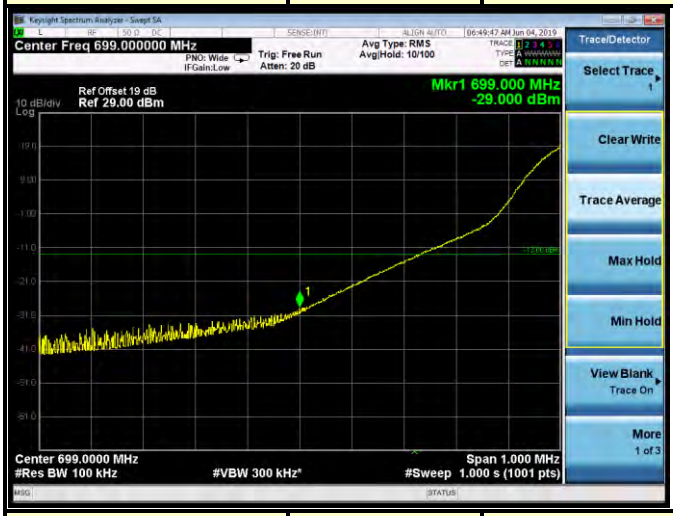
Channel Bandwidth: 5MHz QPSK					
CHANNEL	23035	1 RB	CHANNEL	23155	1 RB
					
CHANNEL	23035	Full RB	CHANNEL	23155	Full RB
					

Channel Bandwidth: 5MHz 16QAM					
CHANNEL	23035	1 RB	CHANNEL	23155	1 RB
					
CHANNEL	23035	Full RB	CHANNEL	23155	Full RB
					

LTE BAND 12

Channel Bandwidth: 10MHz QPSK

CHANNEL	23060	1 RB	CHANNEL	23130	1 RB



CHANNEL	23060	Full RB	CHANNEL	23130	Full RB

Channel Bandwidth: 10MHz 16QAM					
CHANNEL	23060	1 RB	CHANNEL	23130	1 RB
					
CHANNEL	23060	Full RB	CHANNEL	23130	Full RB
					

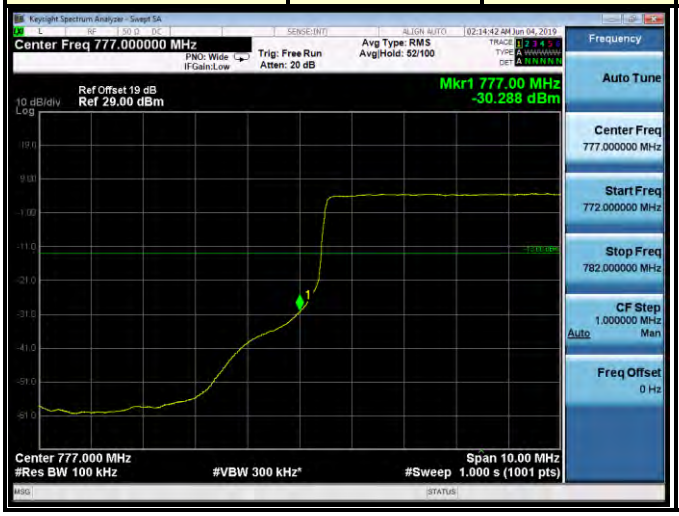
LTE BAND 13

Channel Bandwidth: 5MHz QPSK					
CHANNEL	23205	1 RB	CHANNEL	23255	1 RB

CHANNEL	23205	Full RB	CHANNEL	23255	Full RB

Channel Bandwidth: 5MHz 16QAM					
CHANNEL	23205	1 RB	CHANNEL	23255	1 RB
					
CHANNEL	23205	Full RB	CHANNEL	23255	Full RB
					

LTE BAND 13

Channel Bandwidth: 10MHz QPSK					
CHANNEL	23230	1 RB	CHANNEL	23230	1 RB
					
CHANNEL	23230	Full RB	CHANNEL	23230	Full RB
					

Channel Bandwidth: 10MHz 16QAM					
CHANNEL	23230	1 RB	CHANNEL	23230	1 RB
					
CHANNEL	23230	Full RB	CHANNEL	23230	Full RB
					

3.6 CONDUCTED SPURIOUS EMISSIONS

3.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

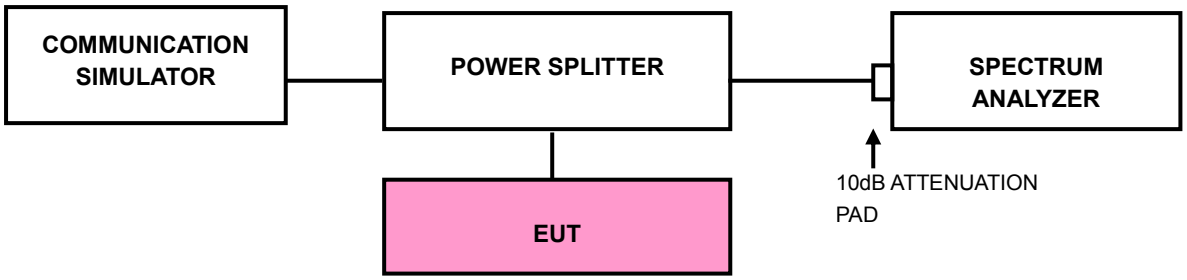
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log10(P) dB. The limit of emission equal to –13dBm

3.6.2 TEST PROCEDURE

a. The EUT makes a phone call to the communication simulator. All measurements were done at middle operational frequency range.

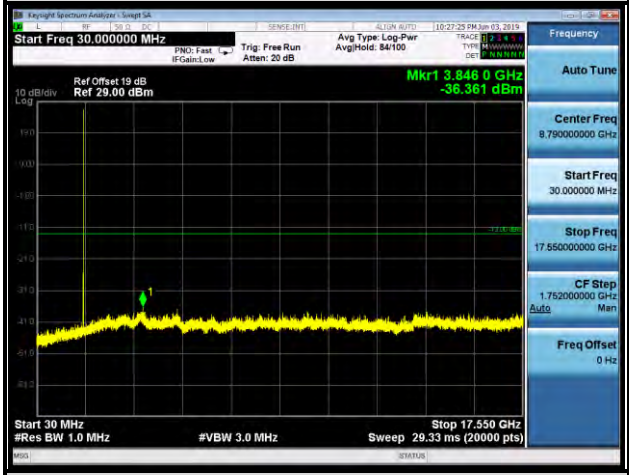
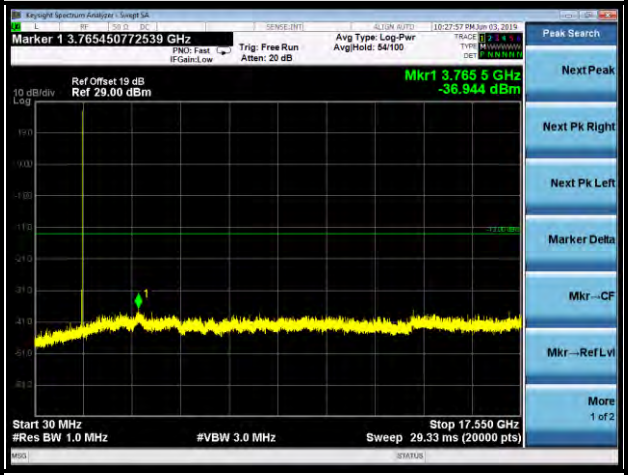
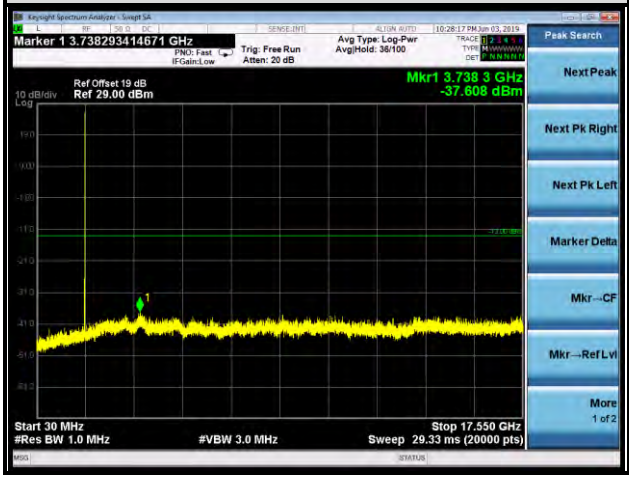
b. Measuring frequency range is from 30 MHz to 19.1GHz for LTE Band 4 and 30 MHz to 9GHz for LTE Band 12 & LTE Band 13. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

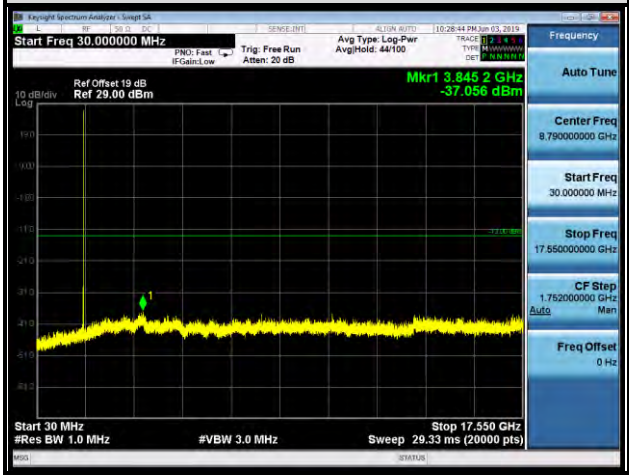
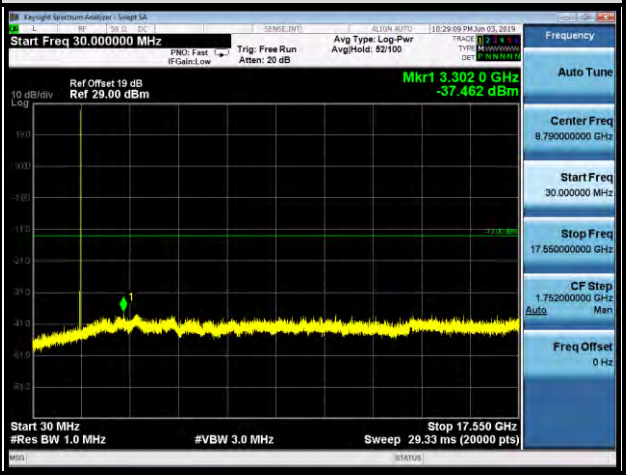
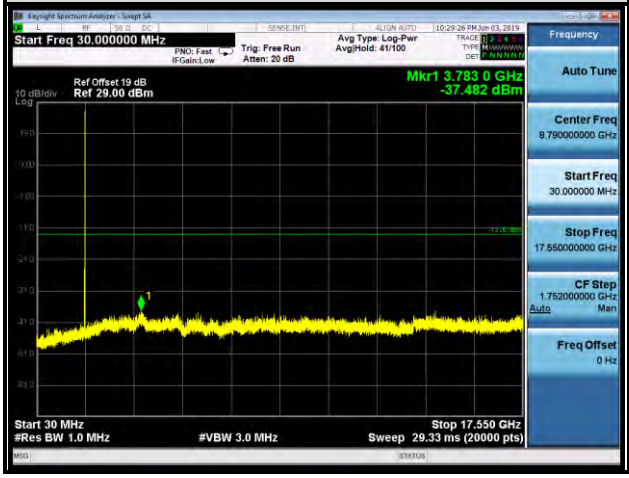
3.6.3 TEST SETUP

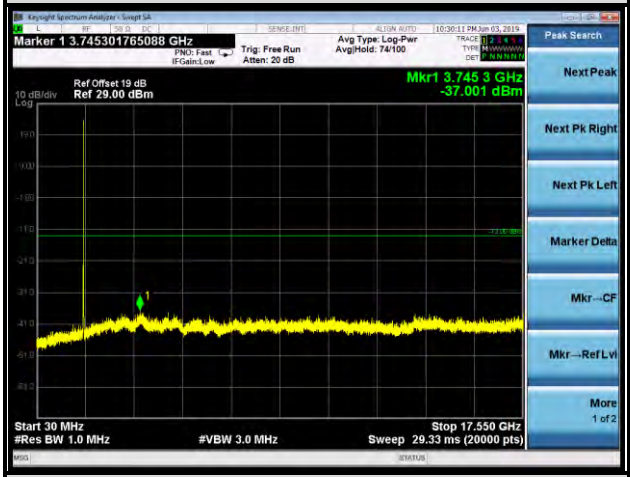
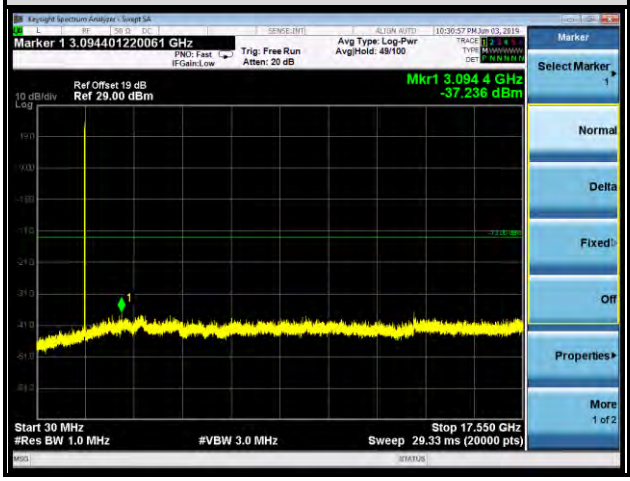


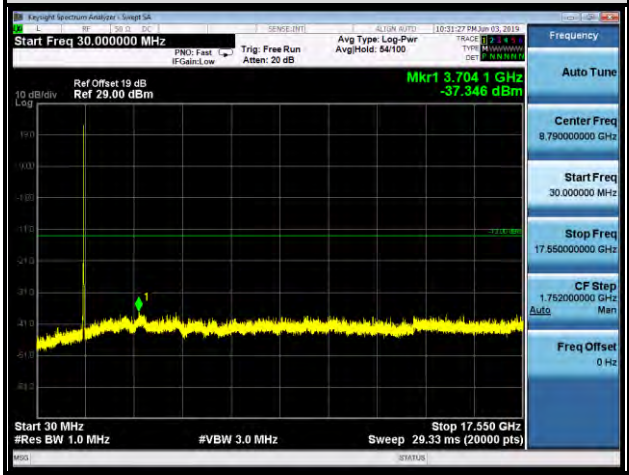
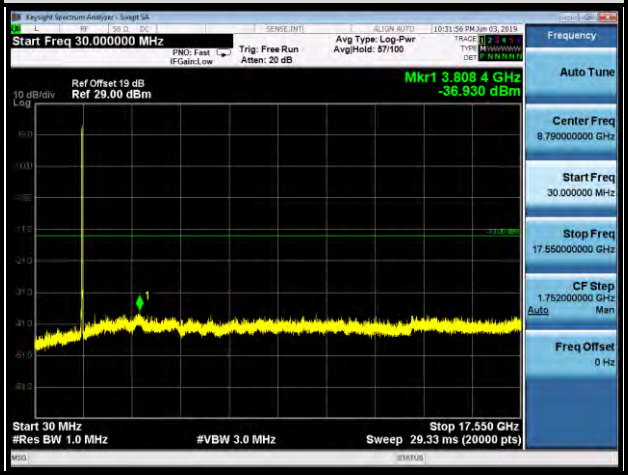
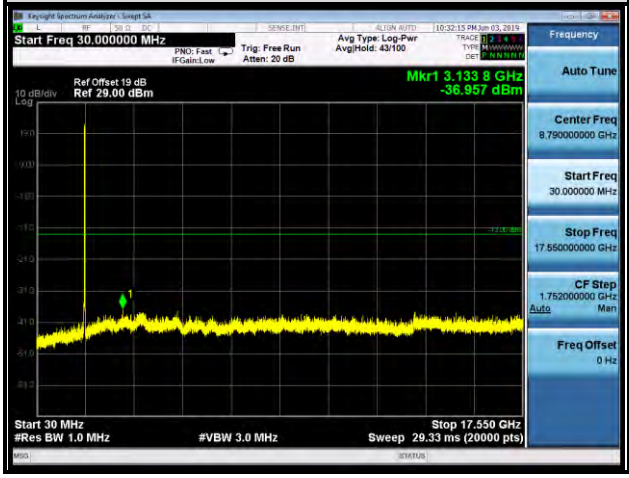
3.6.4 TEST RESULTS

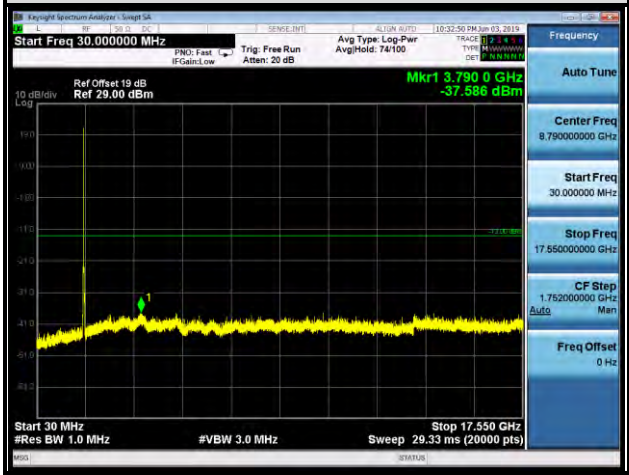
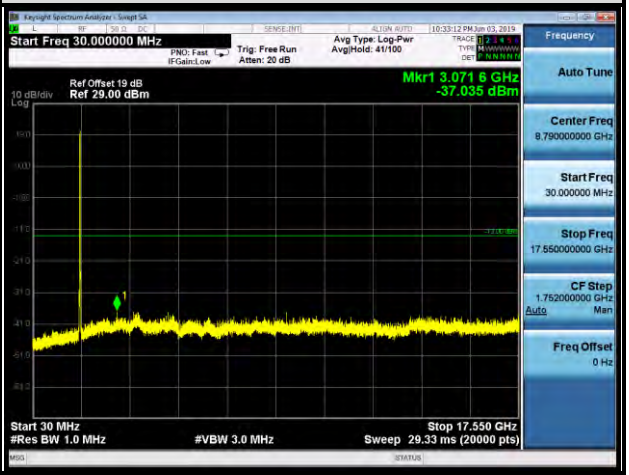
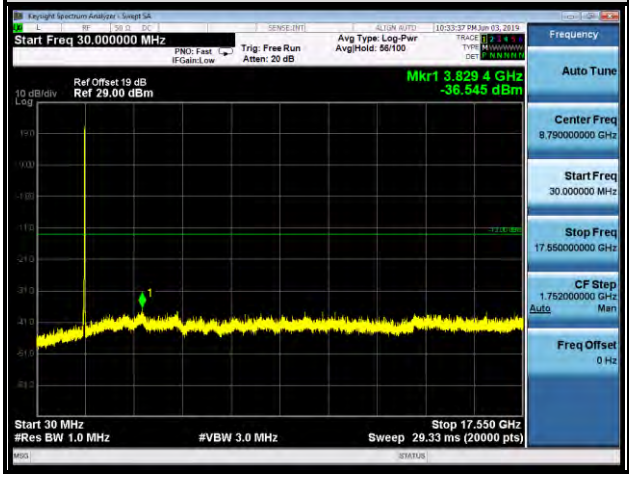
LTE BAND 4

1.4MHz / QPSK	
CHANNEL 19957	CHANNEL 20175
FREQUENCY RANGE : 30MHz~17.55GHz	FREQUENCY RANGE : 30MHz~17.55GHz
	
CHANNEL 20393	
FREQUENCY RANGE : 30MHz~17.55GHz	
	

3MHz / QPSK	
CHANNEL 19965	CHANNEL 20175
FREQUENCY RANGE : 30MHz~17.55GHz	FREQUENCY RANGE : 30MHz~17.55GHz
	
CHANNEL 20385	
FREQUENCY RANGE : 30MHz~17.55GHz	
	

5MHz / QPSK	
CHANNEL 19975	CHANNEL 20175
FREQUENCY RANGE : 30MHz~17.55GHz	FREQUENCY RANGE : 30MHz~17.55GHz
	
CHANNEL 20375	
FREQUENCY RANGE : 30MHz~17.55GHz	
	

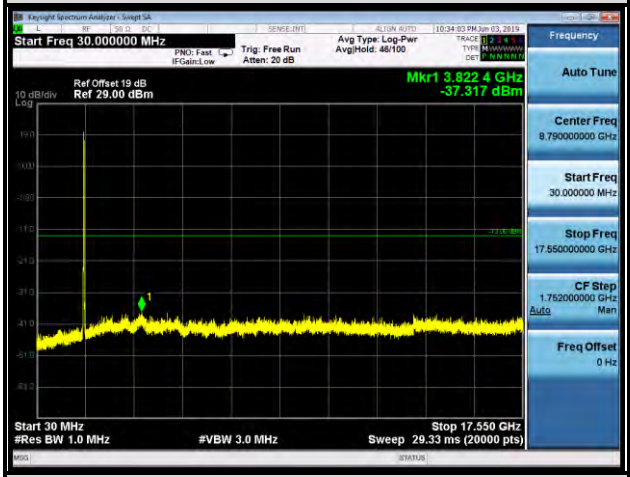
10MHz / QPSK	
CHANNEL 20000	CHANNEL 20175
FREQUENCY RANGE : 30MHz~17.55GHz	FREQUENCY RANGE : 30MHz~17.55GHz
	
CHANNEL 20350	
FREQUENCY RANGE : 30MHz~17.55GHz	
	

15MHz / QPSK	
CHANNEL 20025	CHANNEL 20175
FREQUENCY RANGE : 30MHz~17.55GHz	FREQUENCY RANGE : 30MHz~17.55GHz
	
CHANNEL 20325	
FREQUENCY RANGE : 30MHz~17.55GHz	
	

20MHz / QPSK

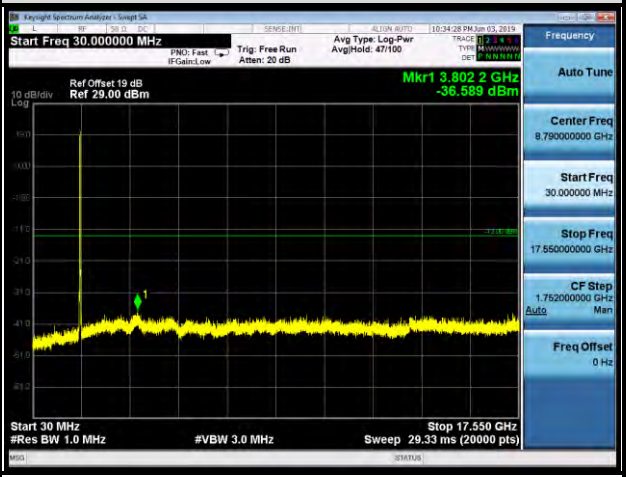
CHANNEL 20050

FREQUENCY RANGE : 30MHz~17.55GHz



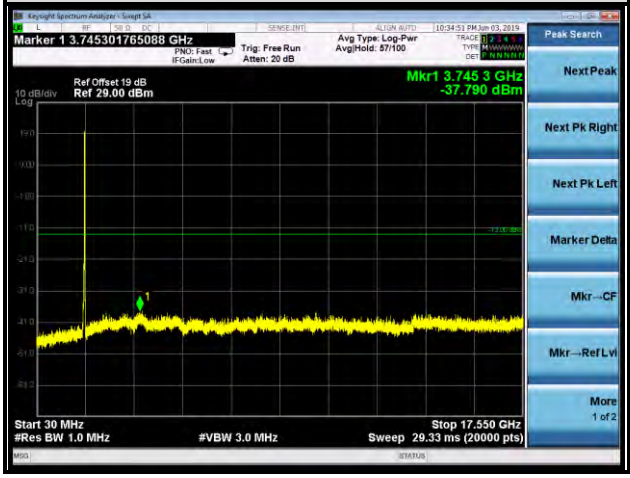
CHANNEL 20175

FREQUENCY RANGE : 30MHz~17.55GHz



CHANNEL 20300

FREQUENCY RANGE : 30MHz~17.55GHz

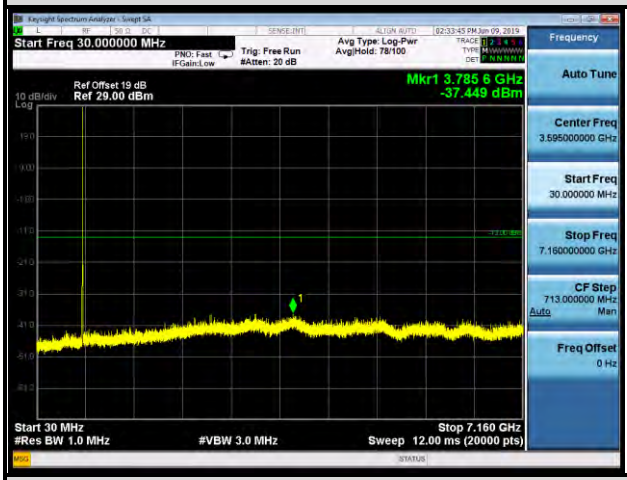


LTE BAND 12

1.4MHz / QPSK

CHANNEL 23017

FREQUENCY RANGE : 30MHz~7.16GHz

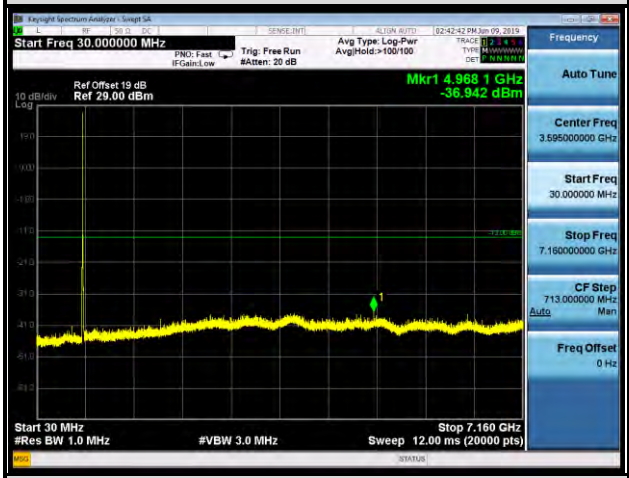


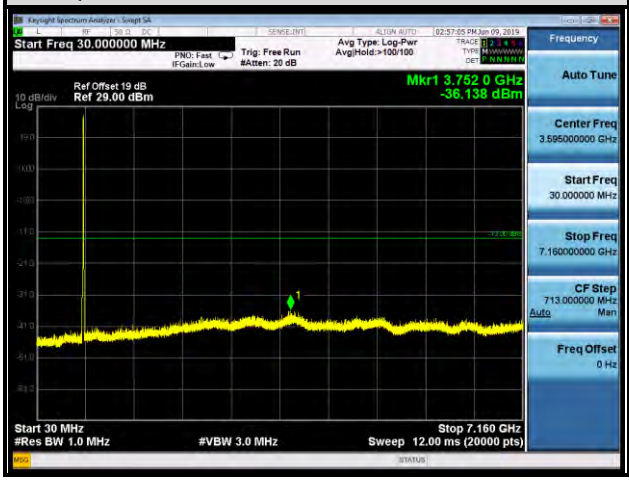
CHANNEL 23095

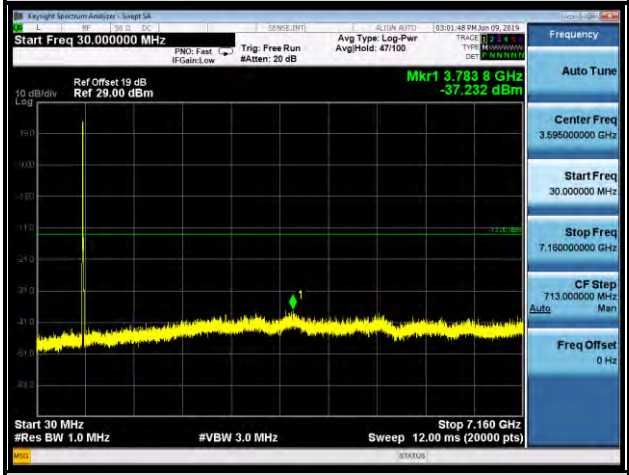
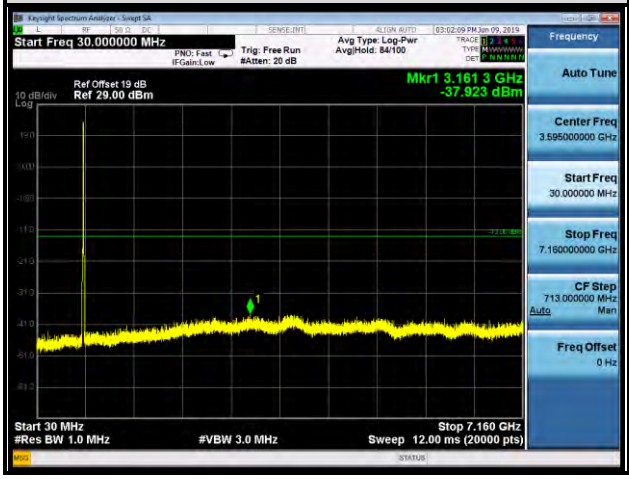
FREQUENCY RANGE : 30MHz~7.16GHz

CHANNEL 23173

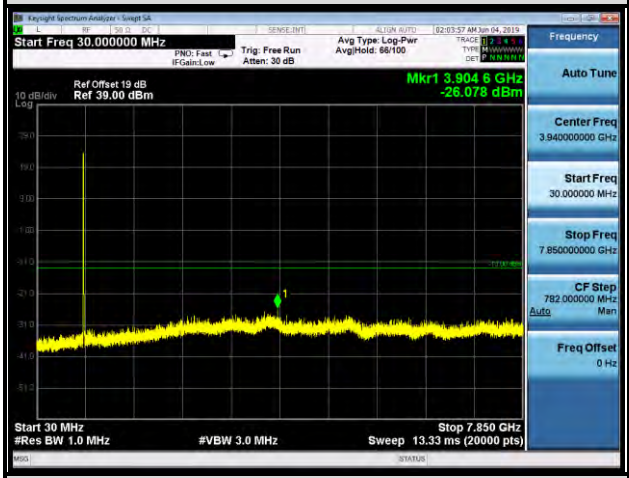
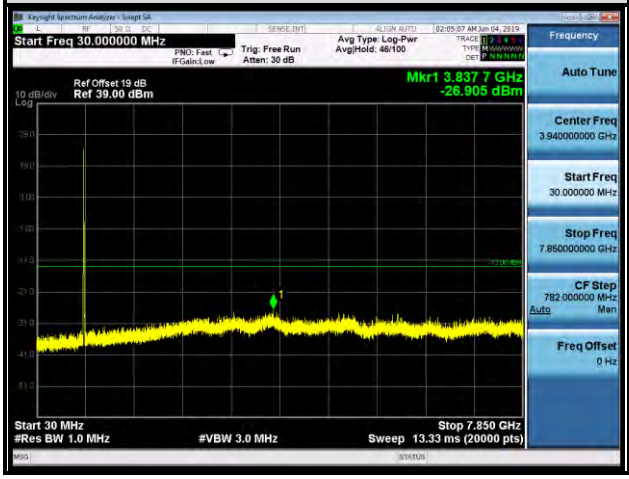
FREQUENCY RANGE : 30MHz~7.16GHz

3MHz / QPSK	
CHANNEL 23025	CHANNEL 23095
FREQUENCY RANGE : 30MHz~7.16GHz	FREQUENCY RANGE : 30MHz~7.16GHz
	
CHANNEL 23165	
FREQUENCY RANGE : 30MHz~7.16GHz	
	

5MHz / QPSK	
CHANNEL 23035	CHANNEL 23095
FREQUENCY RANGE : 30MHz~7.16GHz	FREQUENCY RANGE : 30MHz~7.16GHz
	
CHANNEL 23155	
FREQUENCY RANGE : 30MHz~7.16GHz	
	

10MHz / QPSK	
CHANNEL 23060	CHANNEL 23095
FREQUENCY RANGE : 30MHz~7.16GHz	FREQUENCY RANGE : 30MHz~7.16GHz
	
CHANNEL 23130	
FREQUENCY RANGE : 30MHz~7.16GHz	
	

LTE Band 13

5MHz / QPSK	
CHANNEL 23205	CHANNEL 23230
FREQUENCY RANGE : 30MHz~7.85GHz	FREQUENCY RANGE : 30MHz~7.85GHz
	
CHANNEL 23255	
FREQUENCY RANGE : 30MHz~7.85GHz	
	

10MHz / QPSK	
CHANNEL 23230	
FREQUENCY RANGE : 30MHz~7.85GHz	
	

LTE BAND 13

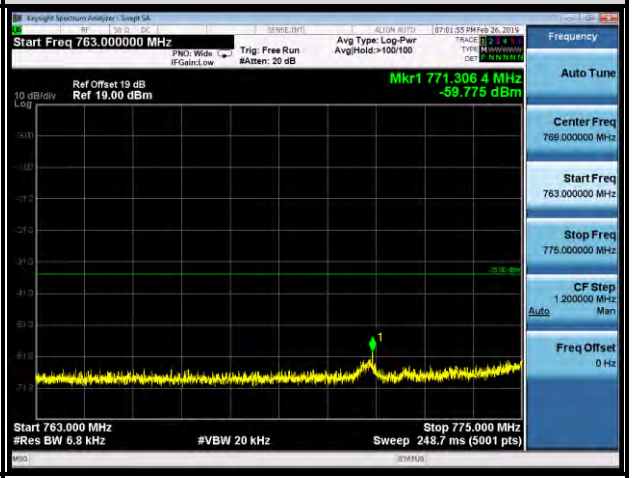
5MHz / QPSK

CHANNEL 23205

FREQUENCY RANGE : 763MHz~775MHz

CHANNEL 23230

FREQUENCY RANGE : 763MHz~775MHz



CHANNEL 23255

FREQUENCY RANGE : 763MHz~775MHz

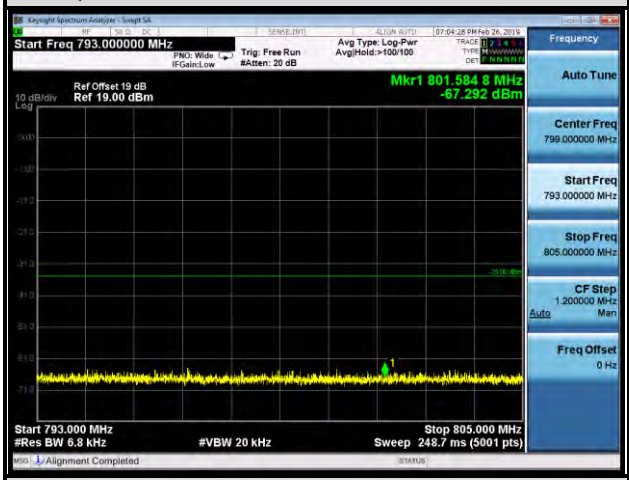
10MHz / QPSK	
CHANNEL 23230	
FREQUENCY RANGE : 763MHz~775MHz	
	

LTE BAND 13

5MHz / QPSK

CHANNEL 23205

FREQUENCY RANGE : 793MHz~805MHz

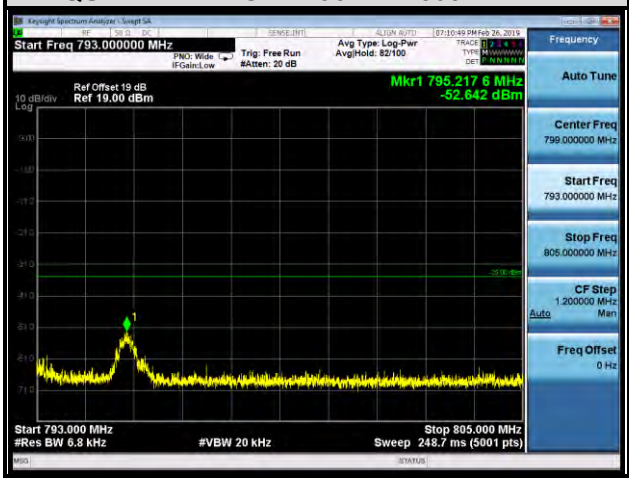


CHANNEL 23230

FREQUENCY RANGE : 793MHz~805MHz

CHANNEL 23255

FREQUENCY RANGE : 793MHz~805MHz

10MHz / QPSK	
CHANNEL 23230	
FREQUENCY RANGE : 793MHz~805MHz	
	

3.7 RADIATED EMISSION MEASUREMENT

3.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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. The limit of emission equal to –13dBm

3.7.2 TEST PROCEDURES

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.

b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G

c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.

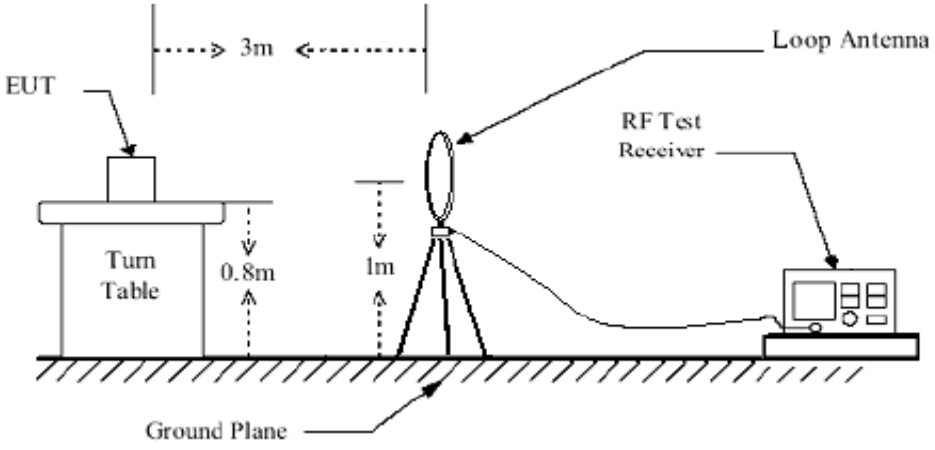
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.7.3 DEVIATION FROM TEST STANDARD

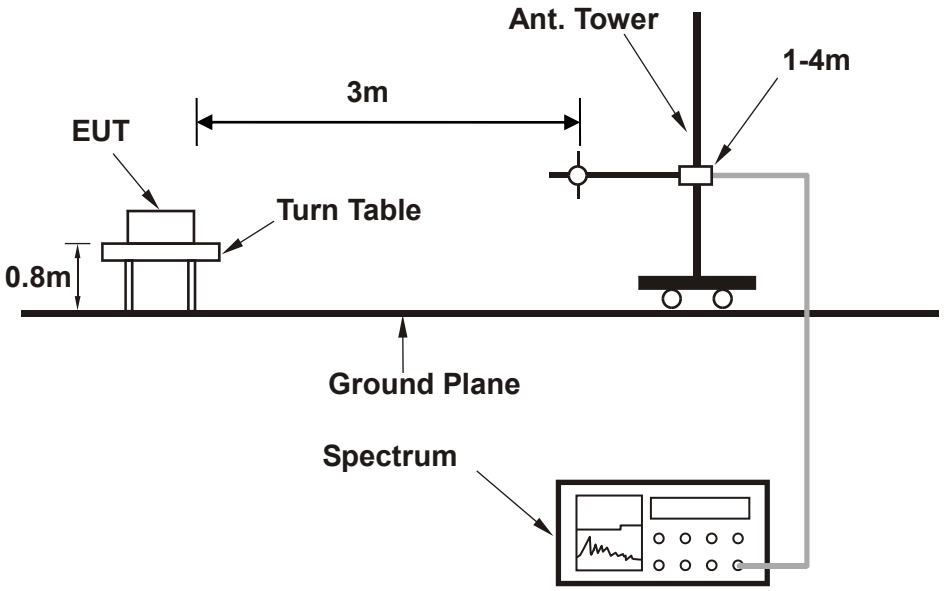
No deviation

3.7.4 TEST SETUP

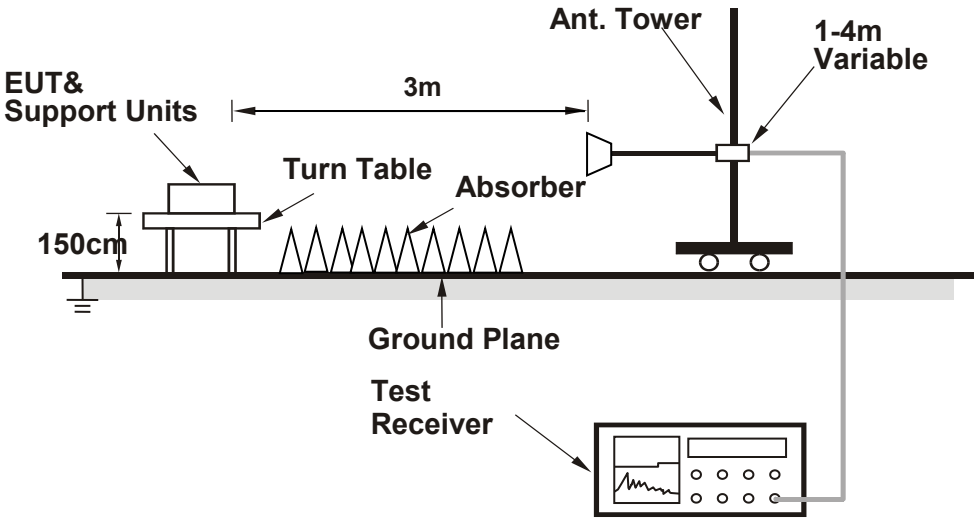
<Below 30MHz>



< Frequency Range 30MHz~1GHz >



< Frequency Range above 1GHz >



For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.7.5 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

9 KHz – 30 MHz data: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

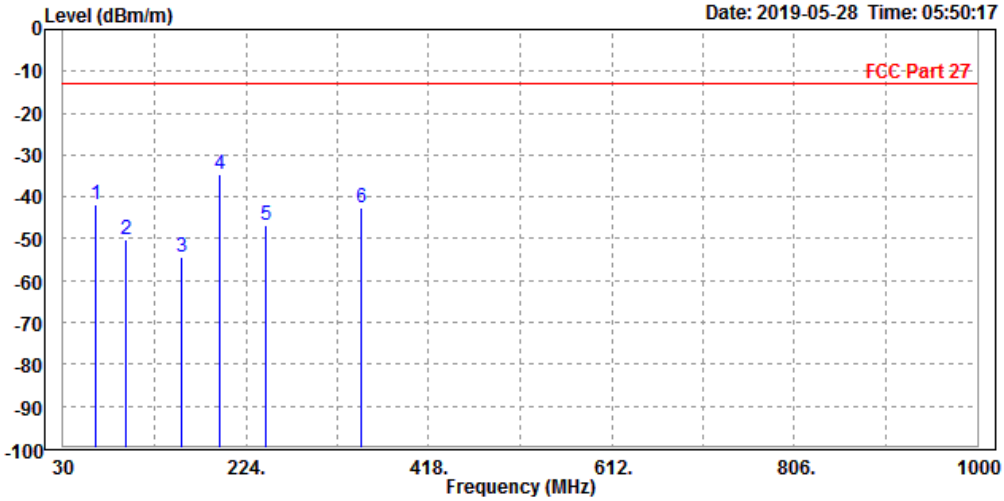
30 MHz – 1GHz data:

LTE BAND 4

CHANNEL BANDWIDTH: 3MHz / QPSK

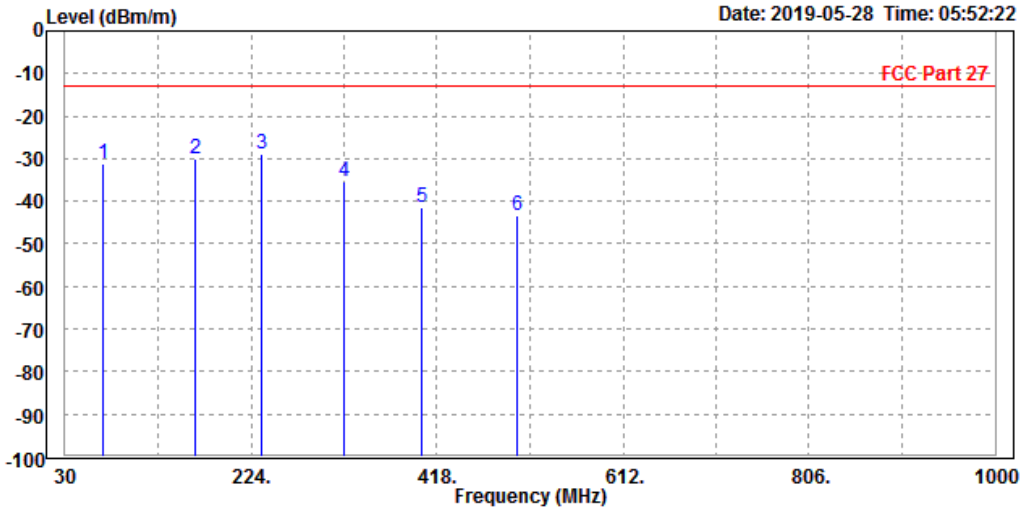
MODE	TX channel 20175	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1		65.320	-41.89	-49.11	-13.00	-28.89	7.22	Peak	Horizontal
2		96.680	-50.15	-59.45	-13.00	-37.15	9.30	Peak	Horizontal
3		155.350	-54.51	-64.64	-13.00	-41.51	10.13	Peak	Horizontal
4	PP	195.420	-34.55	-45.24	-13.00	-21.55	10.69	Peak	Horizontal
5		245.310	-46.69	-59.48	-13.00	-33.69	12.79	Peak	Horizontal
6		345.680	-42.71	-58.23	-13.00	-29.71	15.52	Peak	Horizontal



MODE	TX channel 20175	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	69.580	-31.04	-38.61	-13.00	-18.04	7.57	Peak	Vertical
2	165.780	-29.85	-40.25	-13.00	-16.85	10.40	Peak	Vertical
3 PP	235.640	-28.75	-41.26	-13.00	-15.75	12.51	Peak	Vertical
4	321.440	-35.37	-50.23	-13.00	-22.37	14.86	Peak	Vertical
5	401.250	-41.33	-58.65	-13.00	-28.33	17.32	Peak	Vertical
6	501.220	-43.49	-62.21	-13.00	-30.49	18.72	Peak	Vertical



ABOVE 1GHz

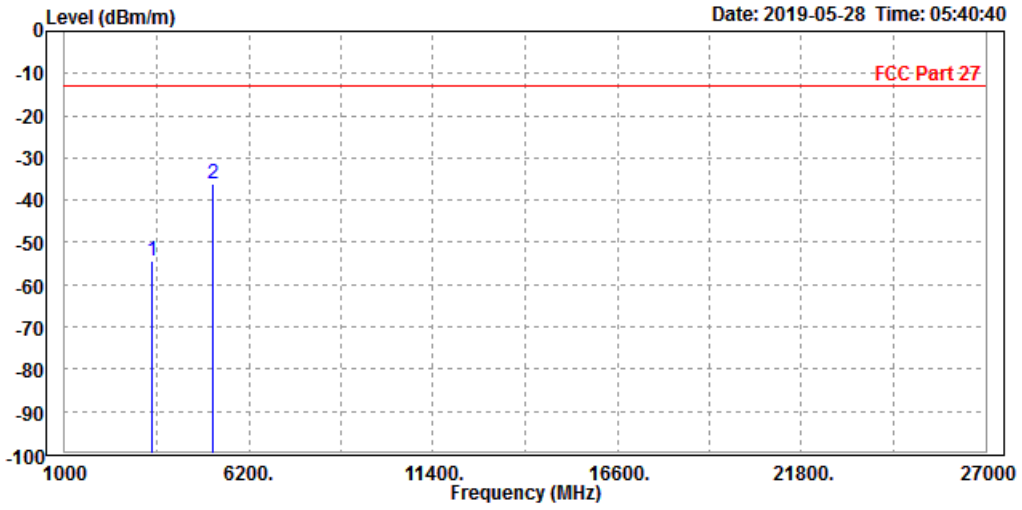
Note: For higher frequency, the emission is too low to be detected.

LTE BAND 4

CHANNEL BANDWIDTH: 1.4MHz / QPSK

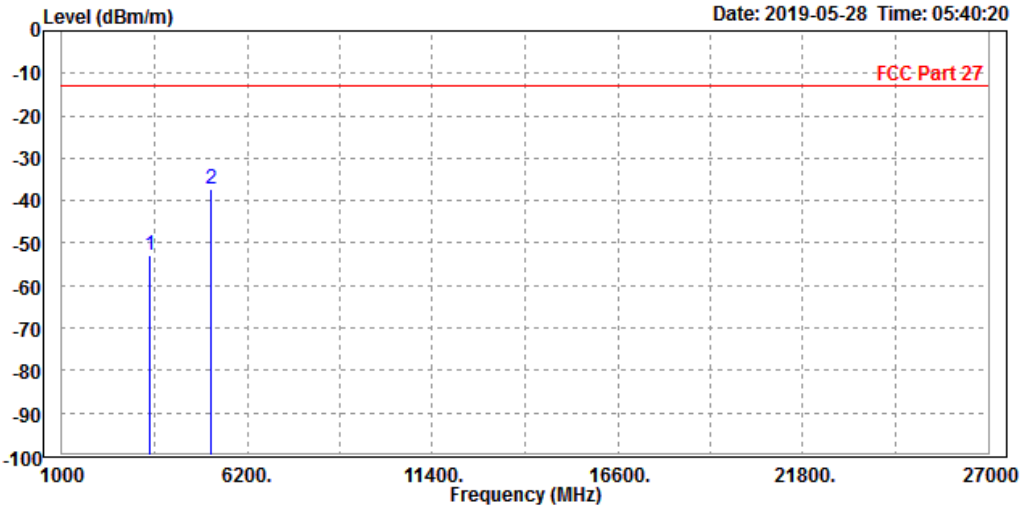
MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-54.27	-56.32	-13.00	-41.27	2.05	Peak	Horizontal
2 PP	5197.000	-36.14	-44.75	-13.00	-23.14	8.61	Peak	Horizontal



MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-52.73	-55.26	-13.00	-39.73	2.53	Peak	Vertical
2 PP	5197.000	-37.15	-45.13	-13.00	-24.15	7.98	Peak	Vertical

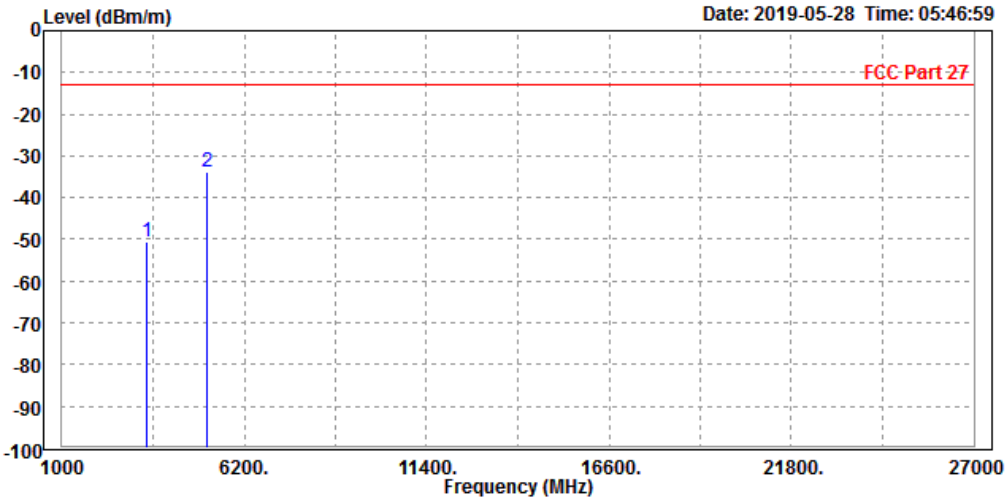


CHANNEL BANDWIDTH: 3MHz / QPSK

CH19965

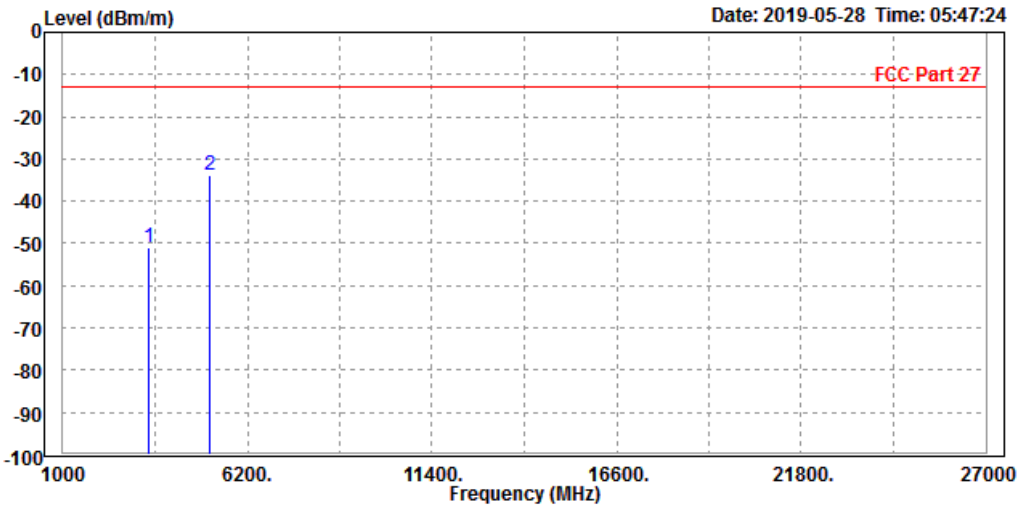
MODE	TX channel 19965	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3418.000	-50.49	-52.34	-13.00	-37.49	1.85	Peak	Horizontal
2 PP	5132.000	-33.70	-42.23	-13.00	-20.70	8.53	Peak	Horizontal



MODE	TX channel 19965	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

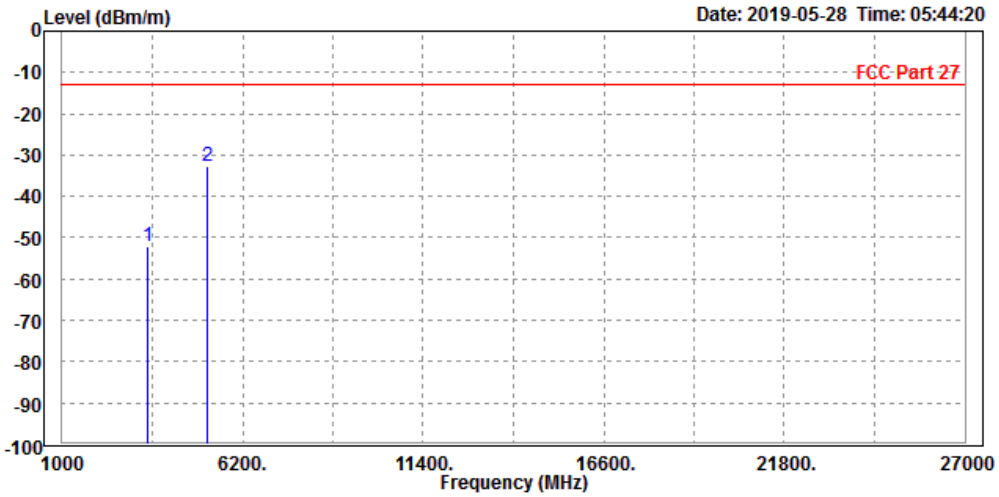
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3418.000	-50.99	-53.46	-13.00	-37.99	2.47	Peak	Vertical
2 PP	5132.000	-34.02	-42.01	-13.00	-21.02	7.99	Peak	Vertical



CH 20175

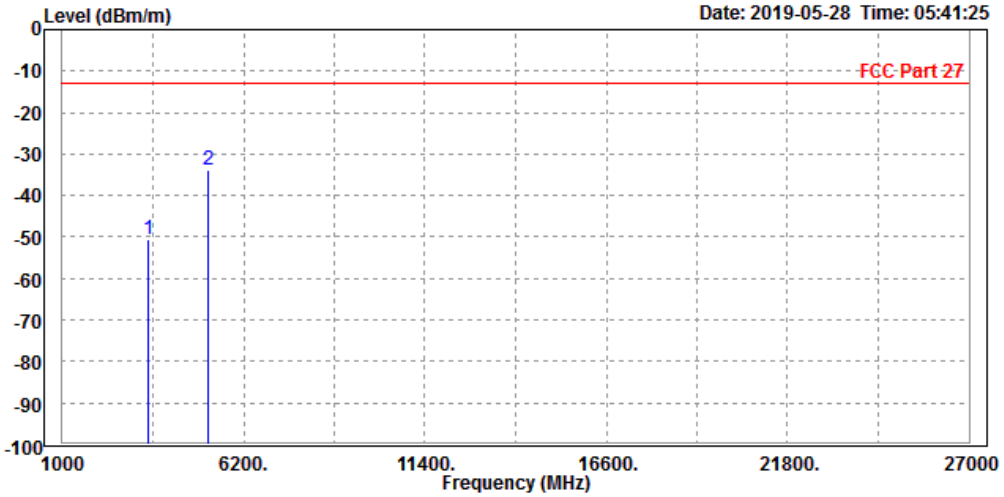
MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-52.17	-54.22	-13.00	-39.17	2.05	Peak	Horizontal
2 PP	5197.000	-32.70	-41.31	-13.00	-19.70	8.61	Peak	Horizontal



MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

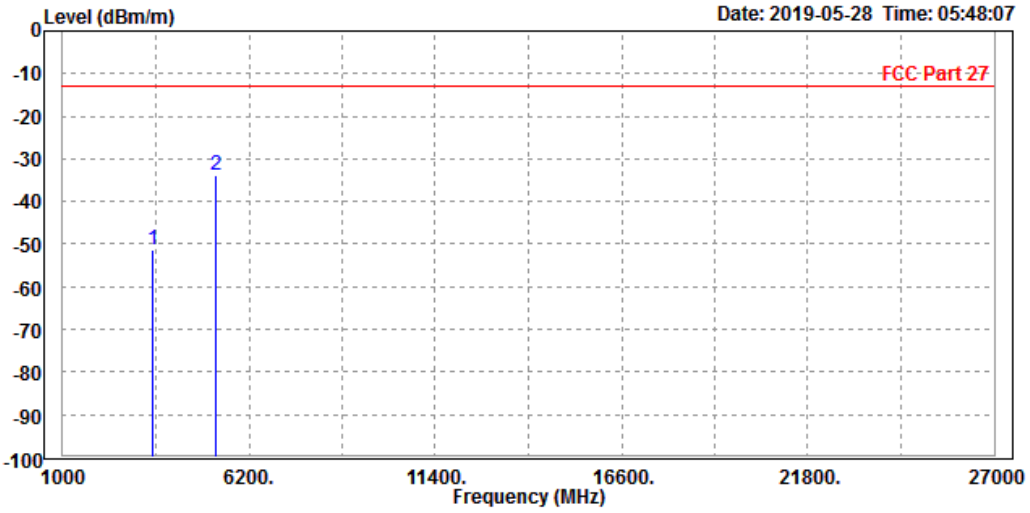
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-50.63	-53.16	-13.00	-37.63	2.53	Peak	Vertical
2 PP	5197.000	-33.80	-41.78	-13.00	-20.80	7.98	Peak	Vertical



CH20385

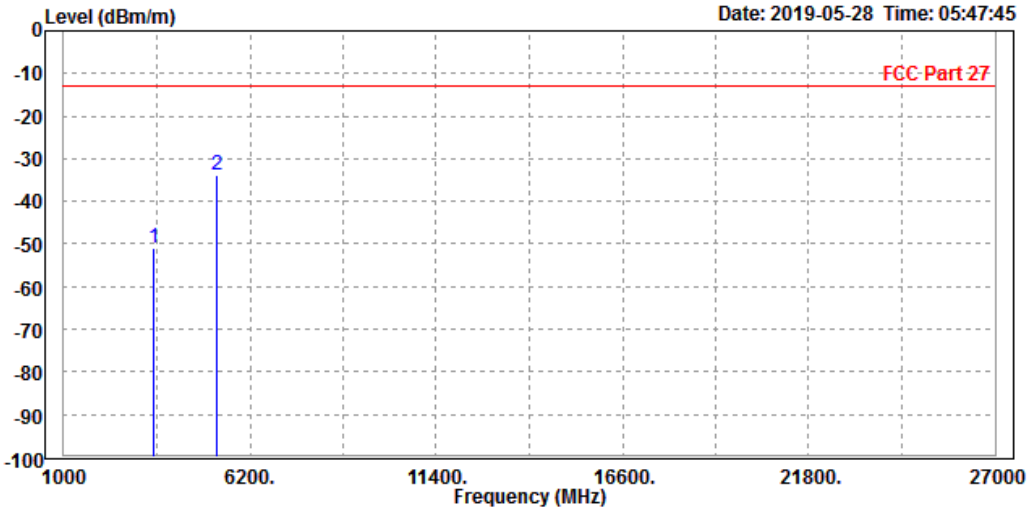
MODE	TX channel 20835	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3502.000	-51.31	-53.48	-13.00	-38.31	2.17	Peak	Horizontal
2 PP	5266.000	-33.88	-42.57	-13.00	-20.88	8.69	Peak	Horizontal



MODE	TX channel 20835	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

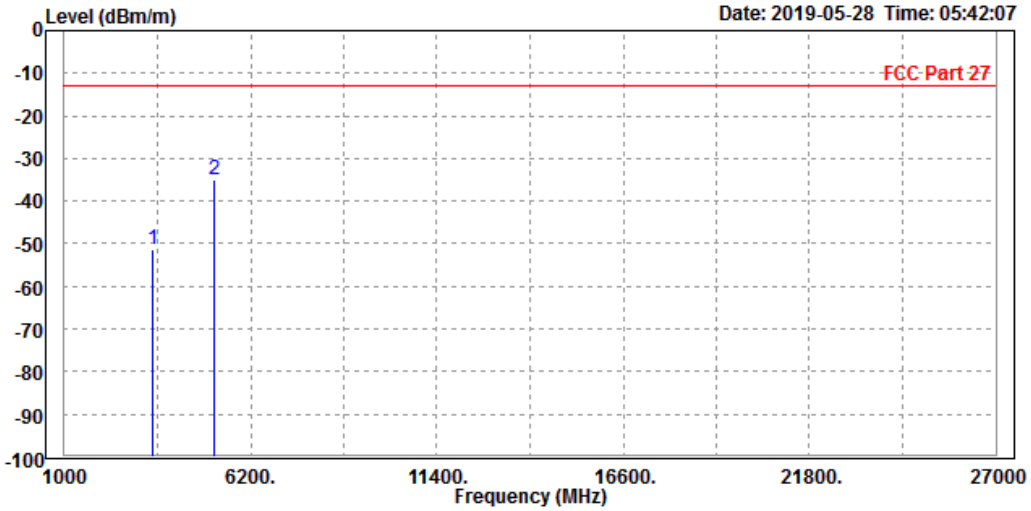
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3502.000	-51.04	-53.62	-13.00	-38.04	2.58	Peak	Vertical
2 PP	5266.000	-33.91	-41.89	-13.00	-20.91	7.98	Peak	Vertical



CHANNEL BANDWIDTH: 5MHz / QPSK

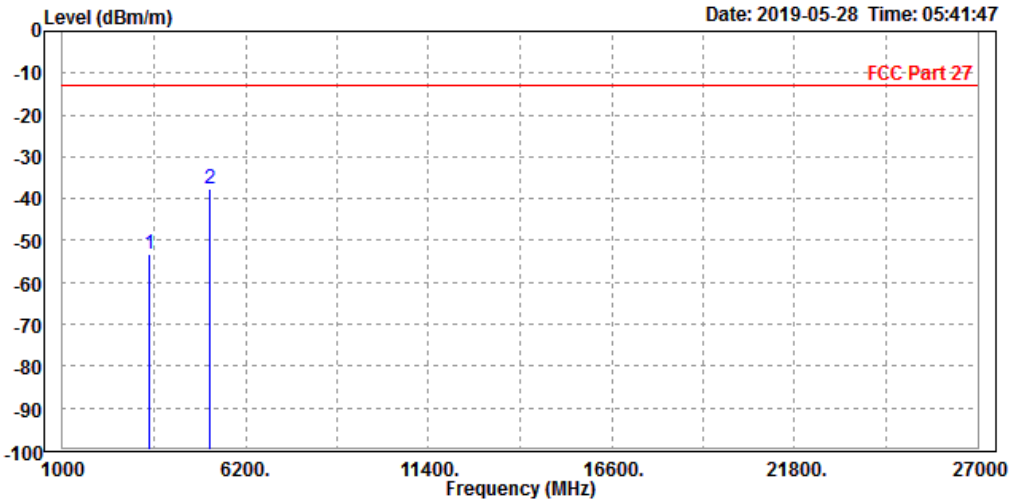
MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-51.23	-53.28	-13.00	-38.23	2.05	Peak	Horizontal
2 PP	5197.000	-34.84	-43.45	-13.00	-21.84	8.61	Peak	Horizontal



MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

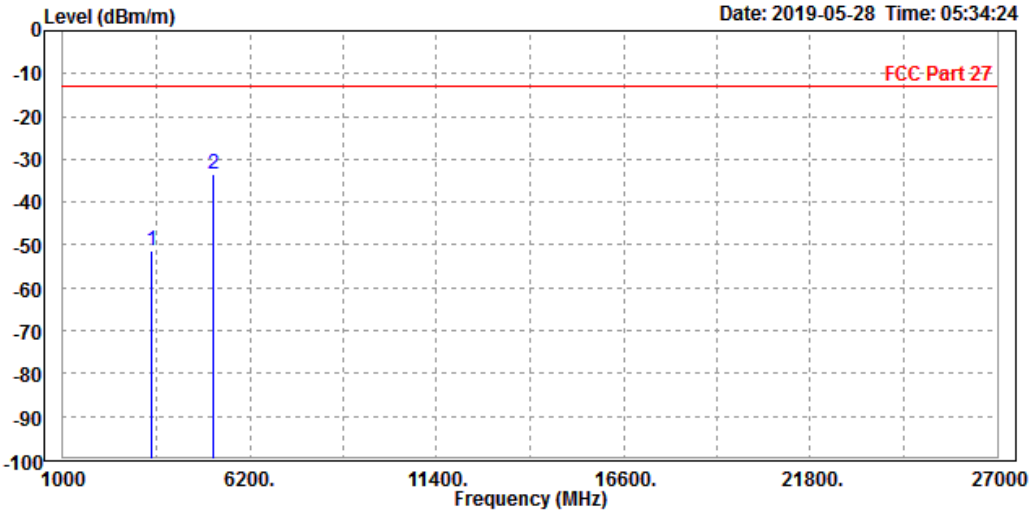
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-53.33	-55.86	-13.00	-40.33	2.53	Peak	Vertical
2 PP	5197.000	-37.69	-45.67	-13.00	-24.69	7.98	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

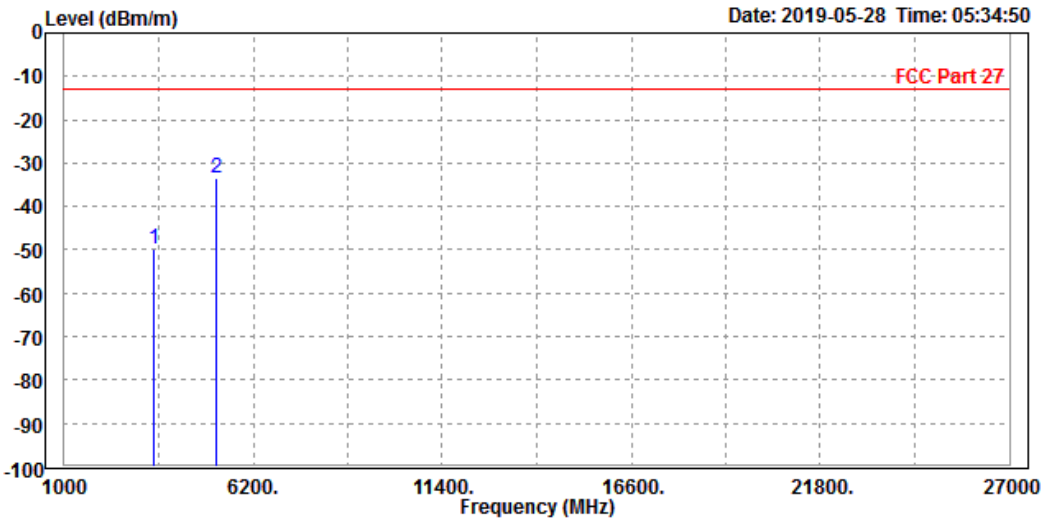
MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-51.16	-53.21	-13.00	-38.16	2.05	Peak	Horizontal
2 PP	5197.000	-33.54	-42.15	-13.00	-20.54	8.61	Peak	Horizontal



MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

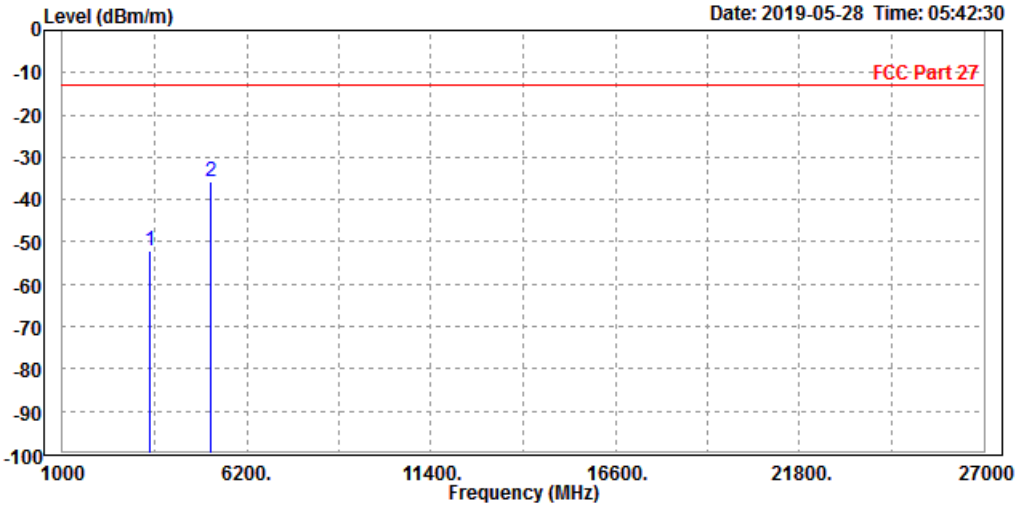
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-49.83	-52.36	-13.00	-36.83	2.53	Peak	Vertical
2 PP	5197.000	-33.47	-41.45	-13.00	-20.47	7.98	Peak	Vertical



CHANNEL BANDWIDTH: 15MHz / QPSK

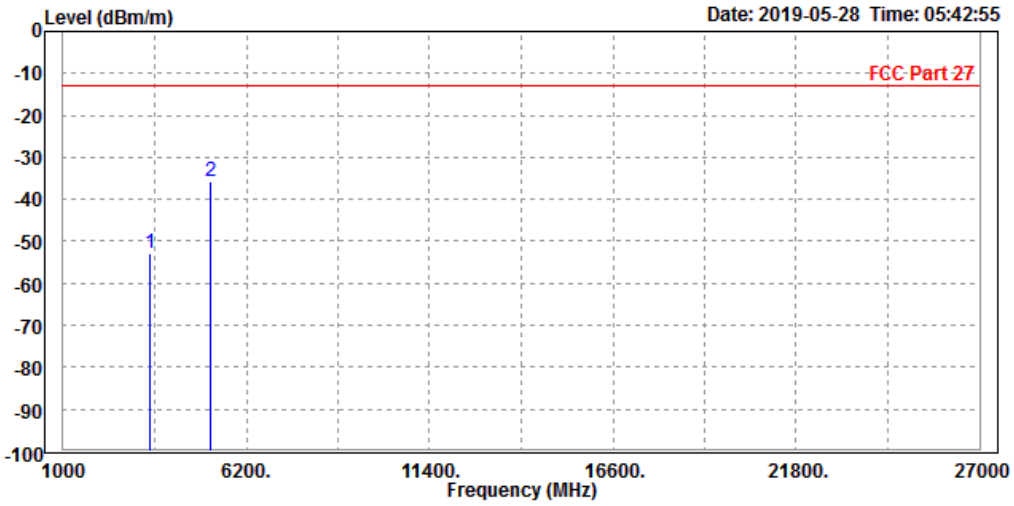
MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-52.16	-54.21	-13.00	-39.16	2.05	Peak	Horizontal
2 PP	5197.000	-35.90	-44.51	-13.00	-22.90	8.61	Peak	Horizontal



MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

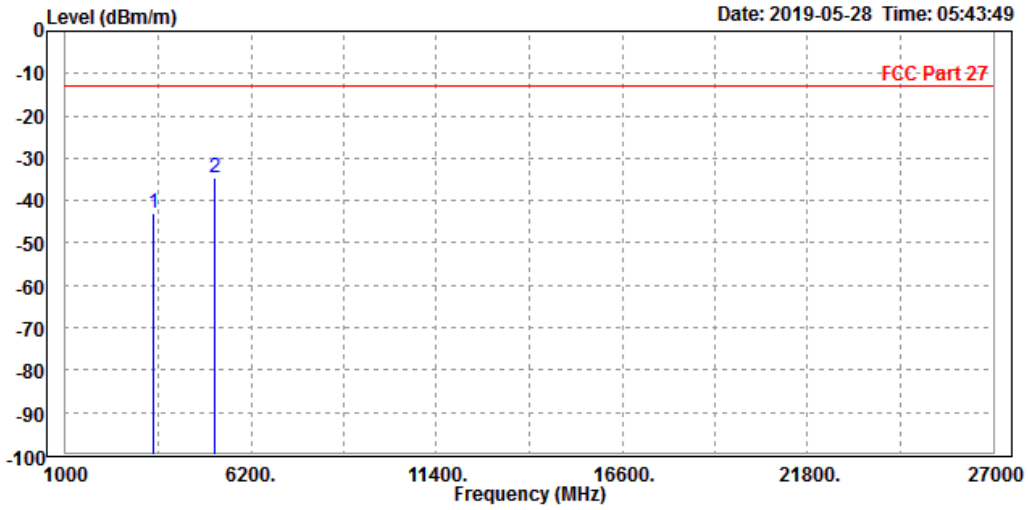
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-52.71	-55.24	-13.00	-39.71	2.53	Peak	Vertical
2 PP	5197.000	-35.83	-43.81	-13.00	-22.83	7.98	Peak	Vertical



CHANNEL BANDWIDTH: 20MHz / QPSK

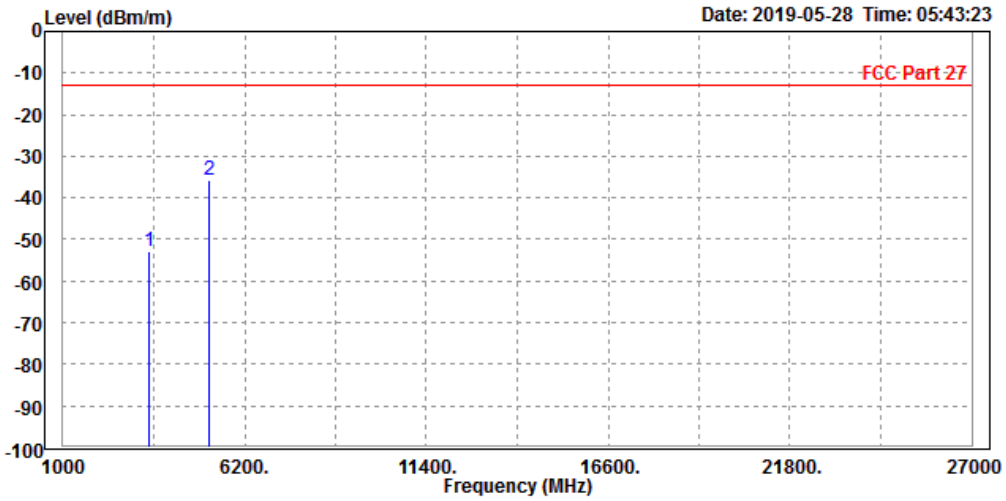
MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-43.08	-45.13	-13.00	-30.08	2.05	Peak	Horizontal
2 PP	5197.000	-34.66	-43.27	-13.00	-21.66	8.61	Peak	Horizontal



MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	3470.000	-52.89	-55.42	-13.00	-39.89	2.53	Peak	Vertical
2 PP	5197.000	-35.70	-43.68	-13.00	-22.70	7.98	Peak	Vertical

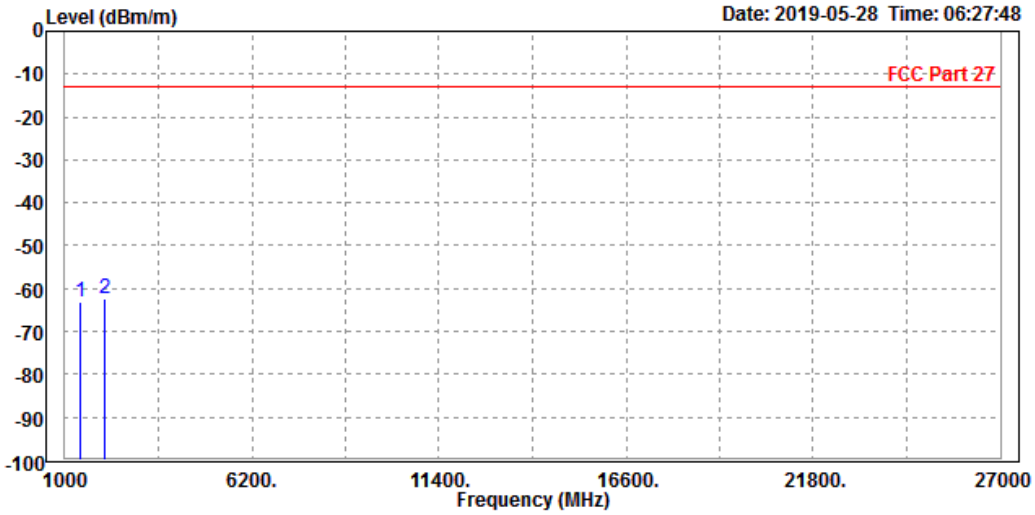


LTE BAND 12

CHANNEL BANDWIDTH: 1.4MHz / QPSK

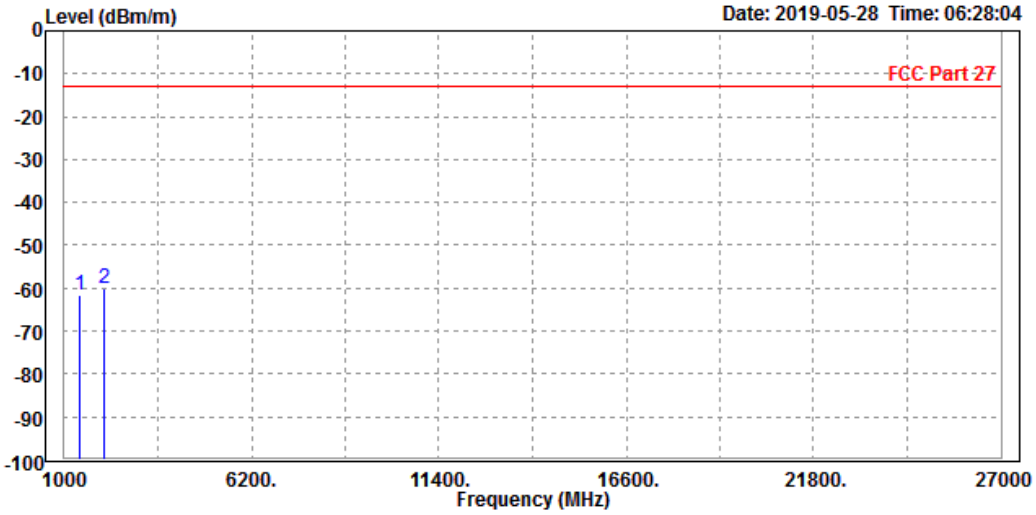
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-63.04	-56.32	-13.00	-50.04	-6.72	Peak	Horizontal
2 PP	2122.500	-62.51	-60.58	-13.00	-49.51	-1.93	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-61.78	-56.34	-13.00	-48.78	-5.44	Peak	Vertical
2 PP	2122.500	-60.10	-59.86	-13.00	-47.10	-0.24	Peak	Vertical

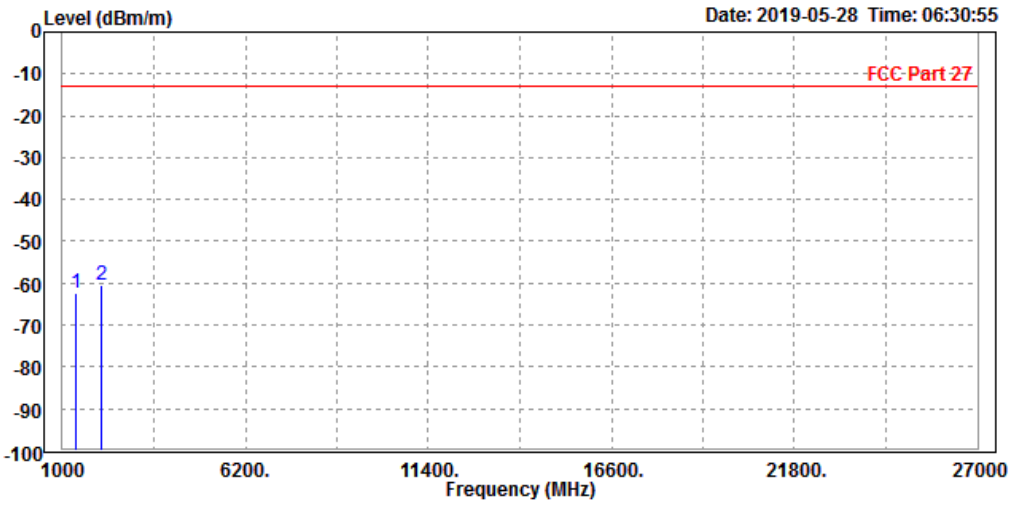


CHANNEL BANDWIDTH: 3MHz / QPSK

CH 23025

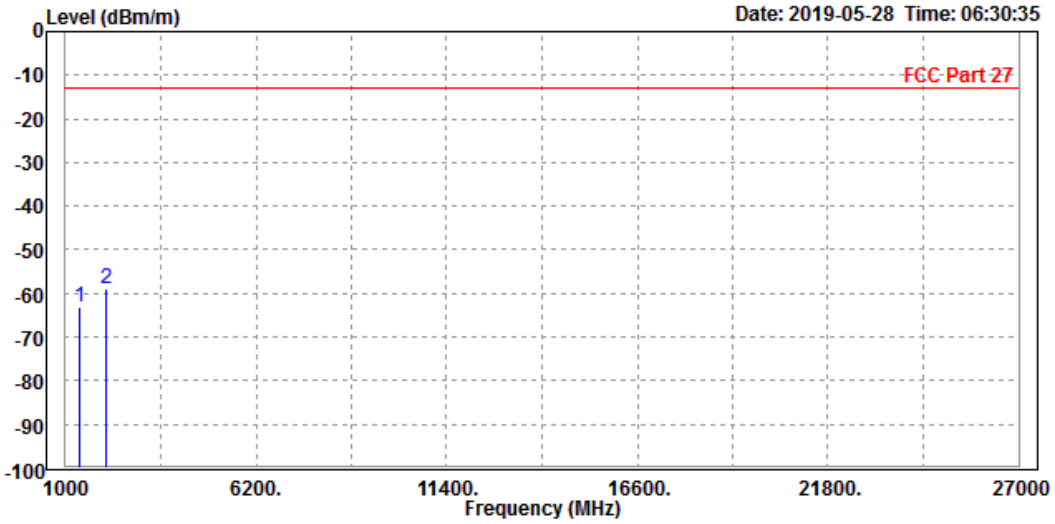
MODE	TX channel 23025	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1390.000	-62.30	-55.42	-13.00	-49.30	-6.88	Peak	Horizontal
2 PP	2101.500	-60.59	-58.64	-13.00	-47.59	-1.95	Peak	Horizontal



MODE	TX channel 23025	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

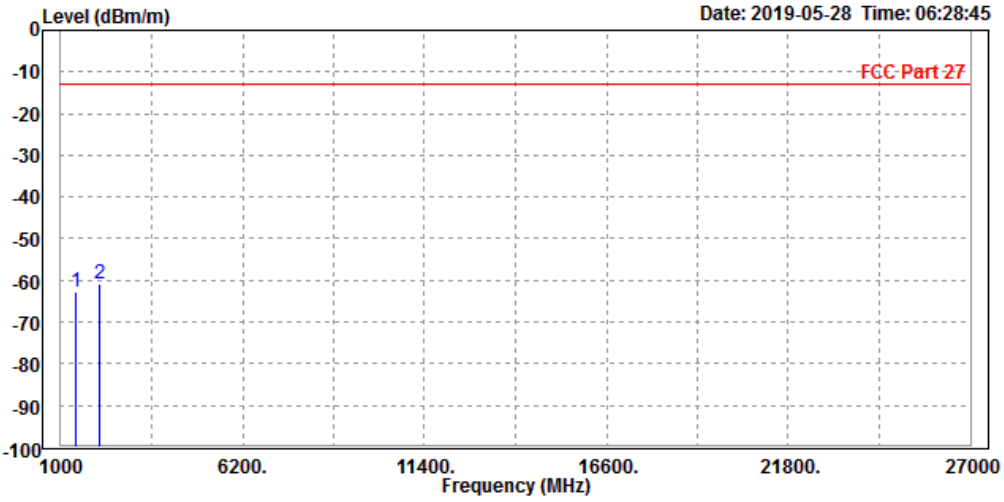
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1390.000	-63.01	-57.41	-13.00	-50.01	-5.60	Peak	Vertical
2 PP	2101.500	-58.94	-58.69	-13.00	-45.94	-0.25	Peak	Vertical



CH 23095

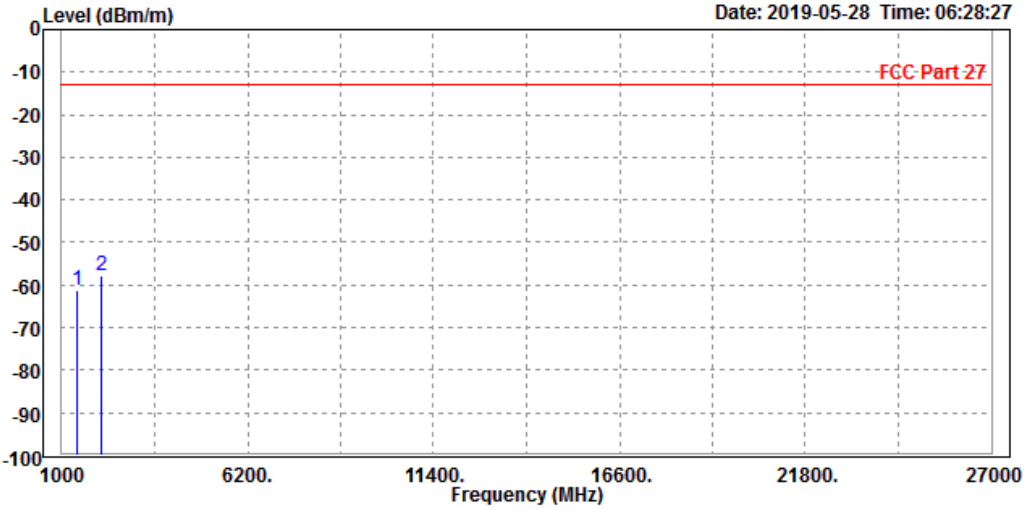
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-62.67	-55.95	-13.00	-49.67	-6.72	Peak	Horizontal
2 PP	2122.500	-60.79	-58.86	-13.00	-47.79	-1.93	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

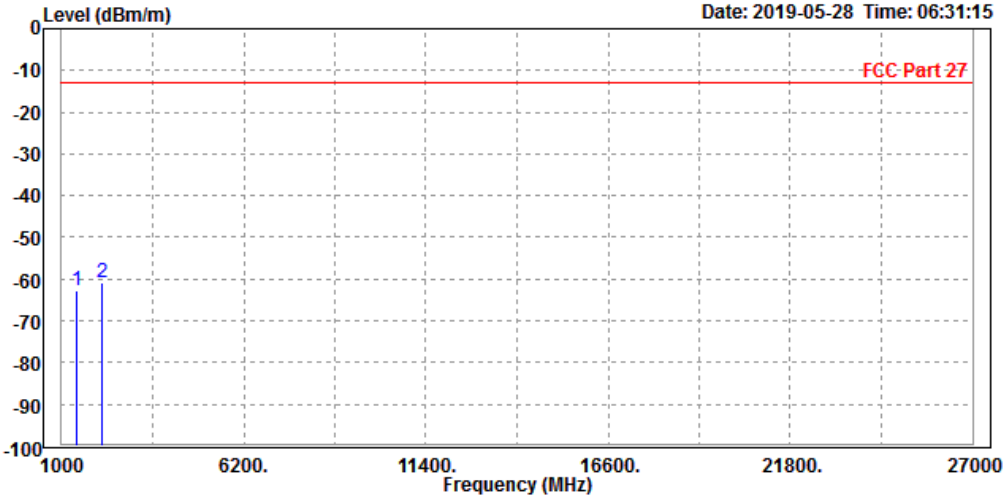
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-61.08	-55.64	-13.00	-48.08	-5.44	Peak	Vertical
2 PP	2122.500	-57.90	-57.66	-13.00	-44.90	-0.24	Peak	Vertical



CH 23165

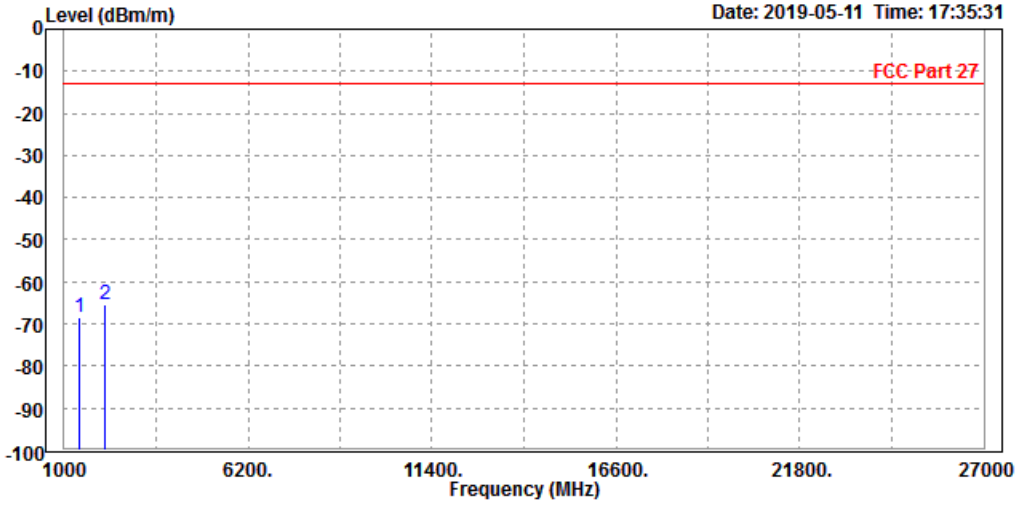
MODE	TX channel 23165	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-62.61	-55.89	-13.00	-49.61	-6.72	Peak	Horizontal
2 PP	2143.500	-60.86	-58.94	-13.00	-47.86	-1.92	Peak	Horizontal



MODE	TX channel 23165	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

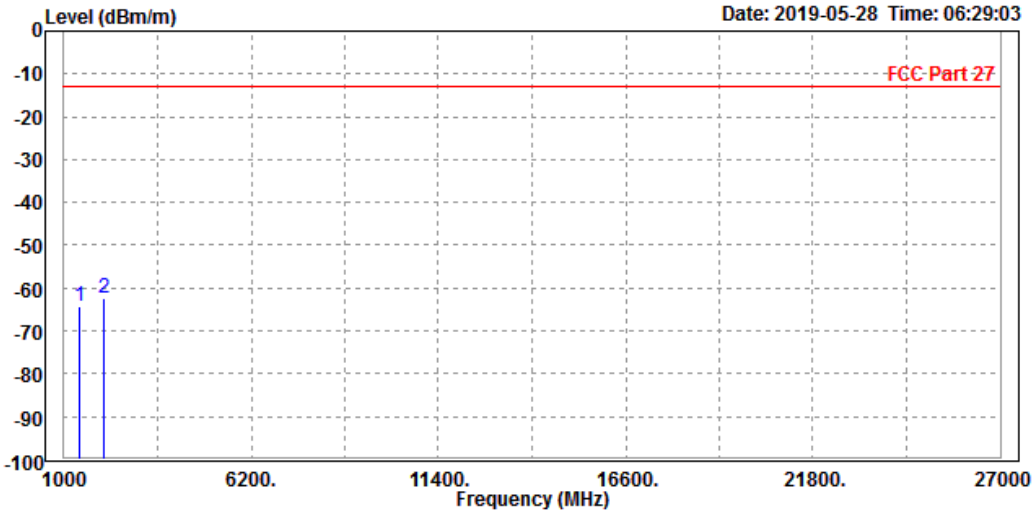
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-68.56	-63.12	-13.00	-55.56	-5.44	Peak	Vertical
2 PP	2143.500	-65.31	-65.07	-13.00	-52.31	-0.24	Peak	Vertical



CHANNEL BANDWIDTH: 5MHz / QPSK

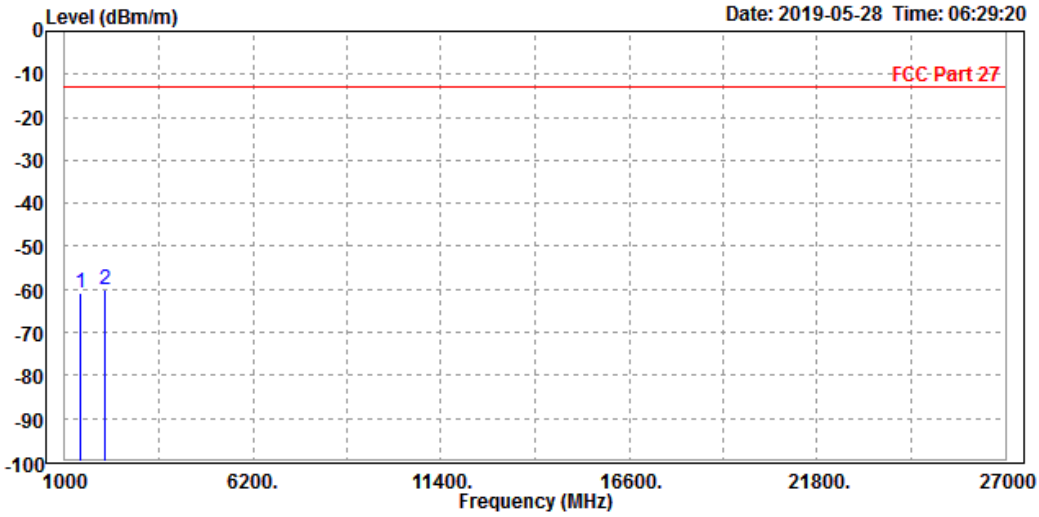
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-64.14	-57.42	-13.00	-51.14	-6.72	Peak	Horizontal
2 PP	2122.500	-62.24	-60.31	-13.00	-49.24	-1.93	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

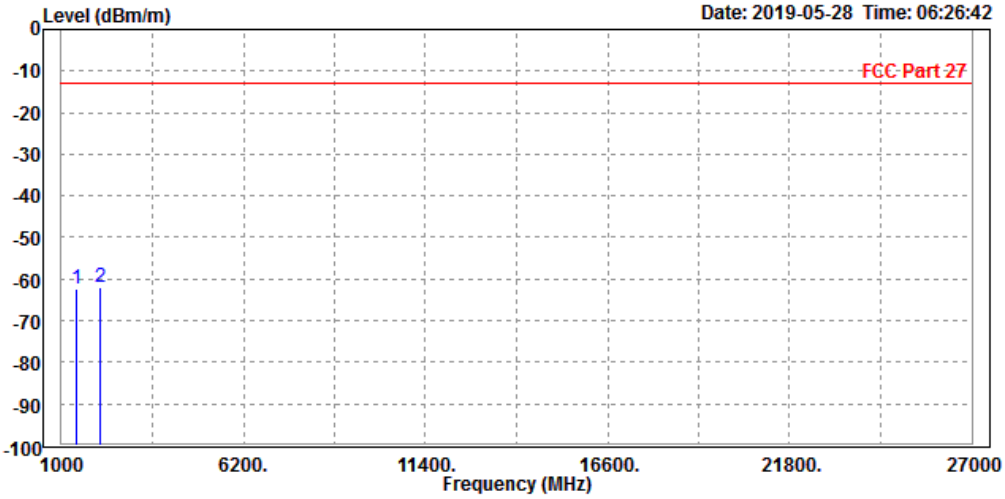
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-60.93	-55.49	-13.00	-47.93	-5.44	Peak	Vertical
2 PP	2122.500	-59.92	-59.68	-13.00	-46.92	-0.24	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

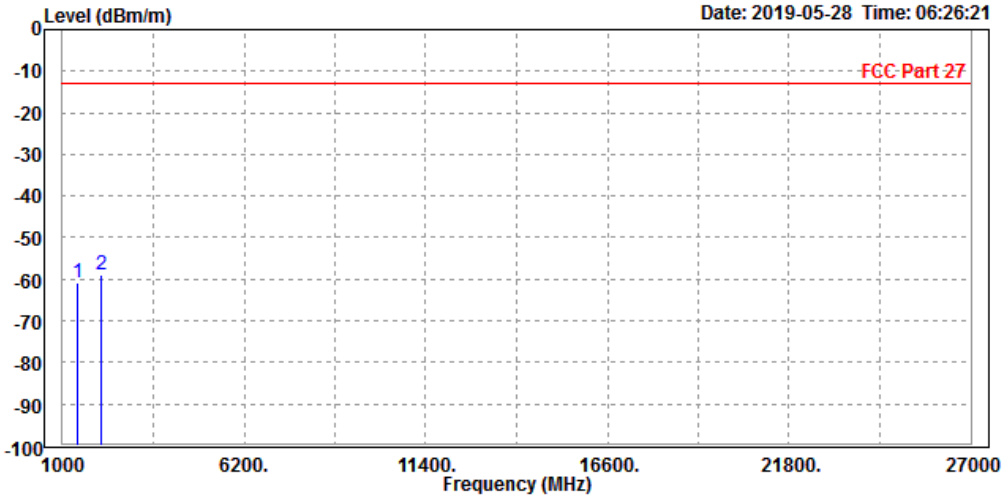
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-62.50	-55.78	-13.00	-49.50	-6.72	Peak	Horizontal
2 PP	2122.500	-61.79	-59.86	-13.00	-48.79	-1.93	Peak	Horizontal



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1416.000	-60.92	-55.48	-13.00	-47.92	-5.44	Peak	Vertical
2 PP	2122.500	-58.89	-58.65	-13.00	-45.89	-0.24	Peak	Vertical



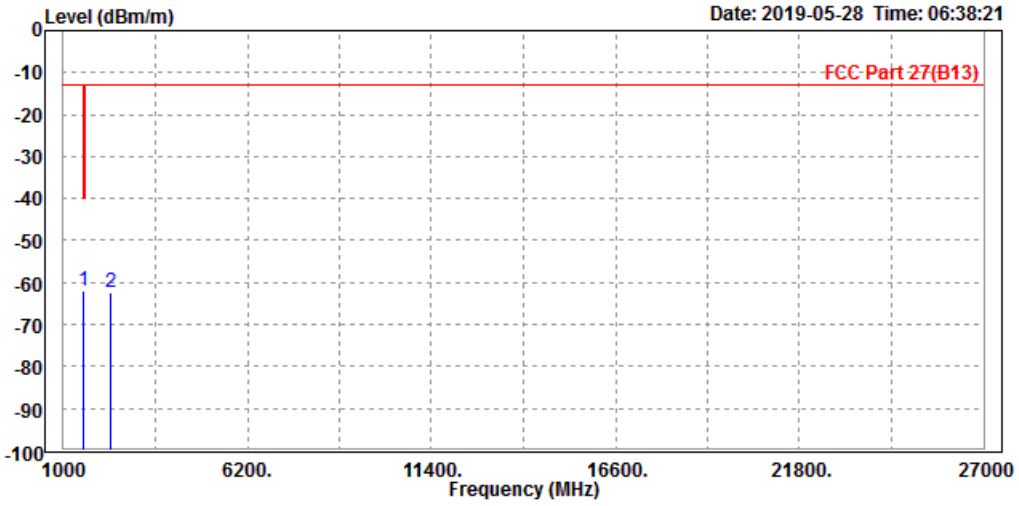
LTE BAND 13

CHANNEL BANDWIDTH: 5MHz / QPSK

CH 23205

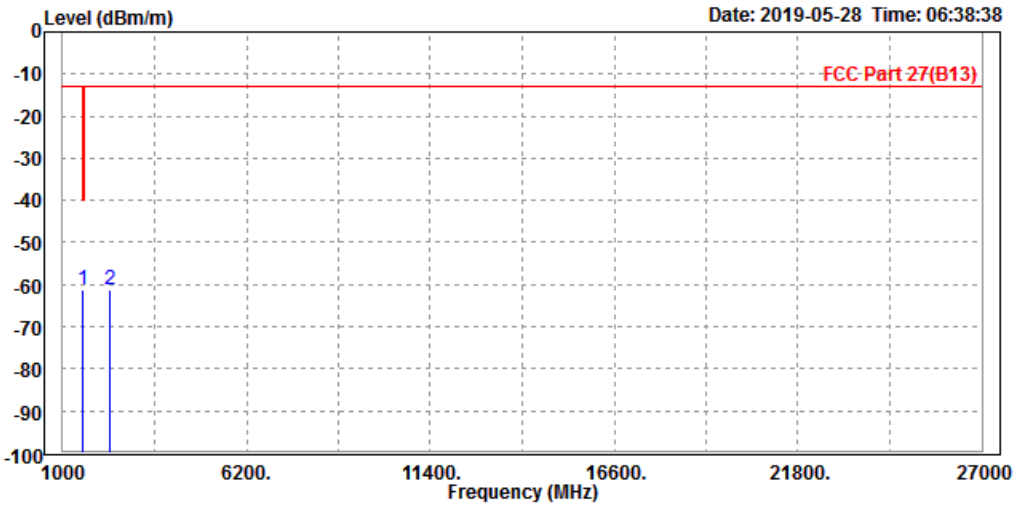
MODE	TX channel 23205	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1572.000	-61.98	-56.38	-40.00	-21.98	-5.60	Peak	Horizontal
2	2338.500	-62.35	-60.59	-13.00	-49.35	-1.76	Peak	Horizontal



MODE	TX channel 23205	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

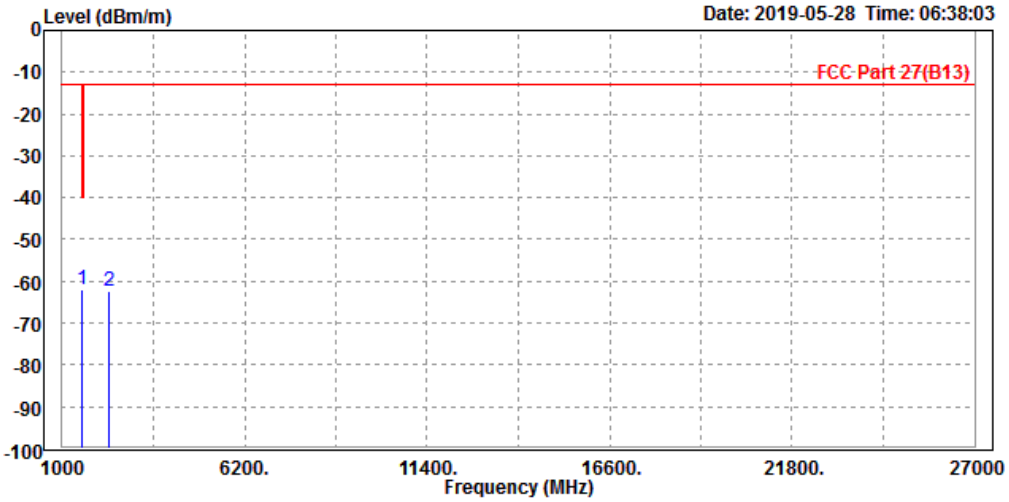
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1572.000	-61.13	-56.87	-40.00	-21.13	-4.26	Peak	Vertical
2	2338.500	-61.09	-60.89	-13.00	-48.09	-0.20	Peak	Vertical



CH 23230

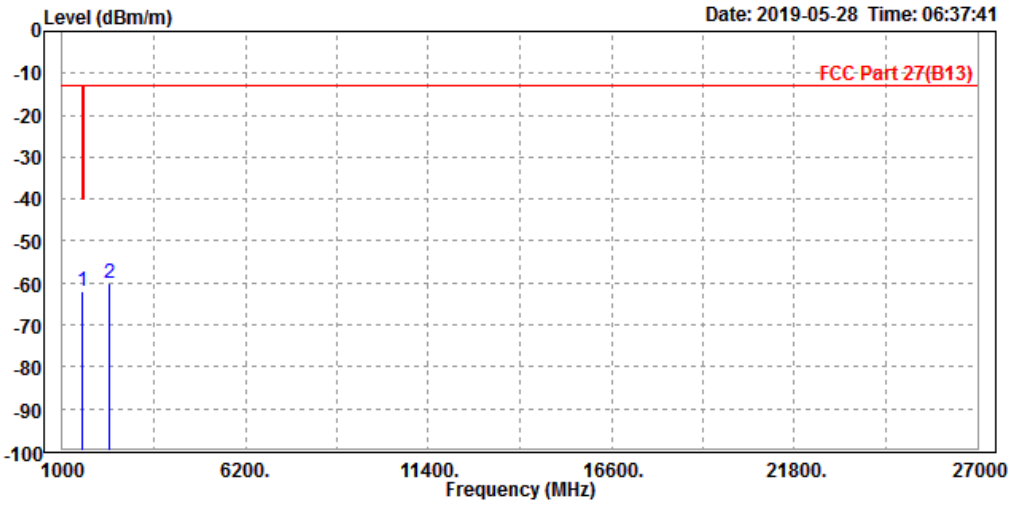
MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1572.000	-62.01	-56.41	-40.00	-22.01	-5.60	Peak	Horizontal
2	2346.000	-62.34	-60.58	-13.00	-49.34	-1.76	Peak	Horizontal



MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

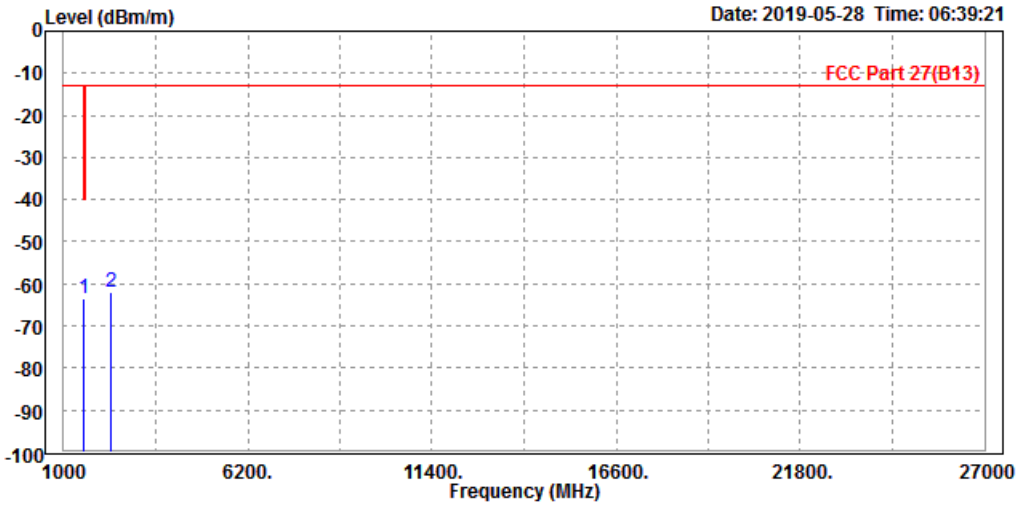
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1572.000	-61.88	-57.62	-40.00	-21.88	-4.26	Peak	Vertical
2	2346.000	-60.22	-60.02	-13.00	-47.22	-0.20	Peak	Vertical



CH 23255

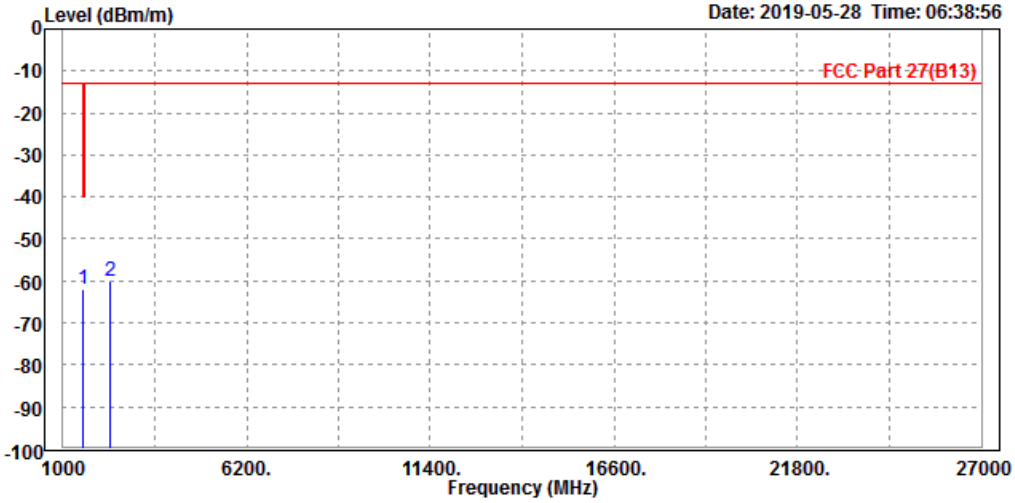
MODE	TX channel 23255	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1572.000	-63.44	-57.84	-40.00	-23.44	-5.60	Peak	Horizontal
2	2353.500	-62.10	-60.35	-13.00	-49.10	-1.75	Peak	Horizontal



MODE	TX channel 23255	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

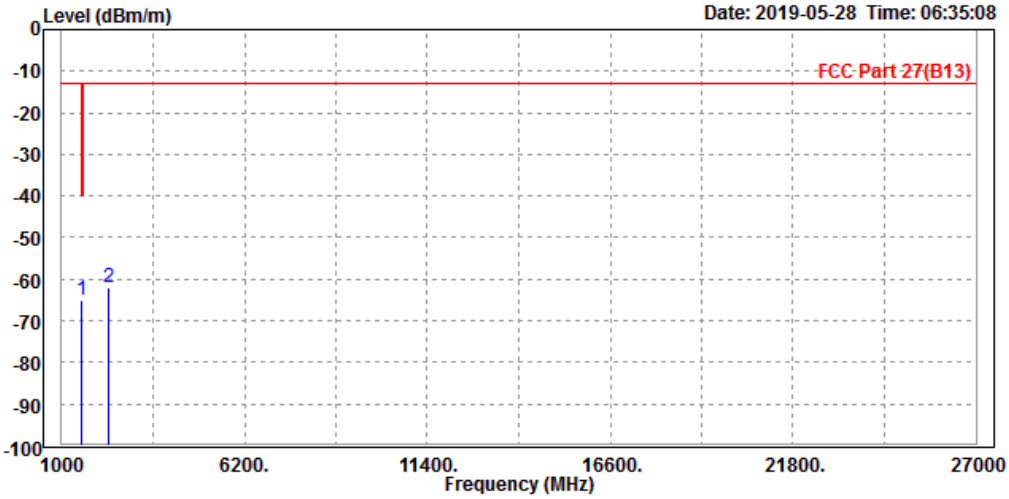
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1572.000	-62.11	-57.85	-40.00	-22.11	-4.26	Peak	Vertical
2	2353.500	-60.06	-59.86	-13.00	-47.06	-0.20	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

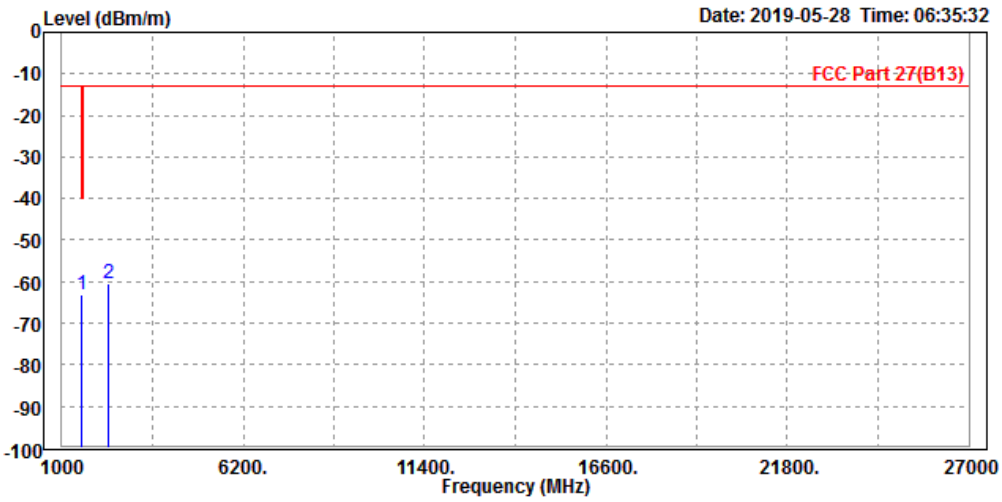
MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1572.000	-64.92	-59.32	-40.00	-24.92	-5.60	Peak	Horizontal
2	2346.000	-62.11	-60.35	-13.00	-49.11	-1.76	Peak	Horizontal



MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Star Le		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1572.000	-62.95	-58.69	-40.00	-22.95	-4.26	Peak	Vertical
2	2346.000	-60.45	-60.25	-13.00	-47.45	-0.20	Peak	Vertical



4 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.

5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

---END---