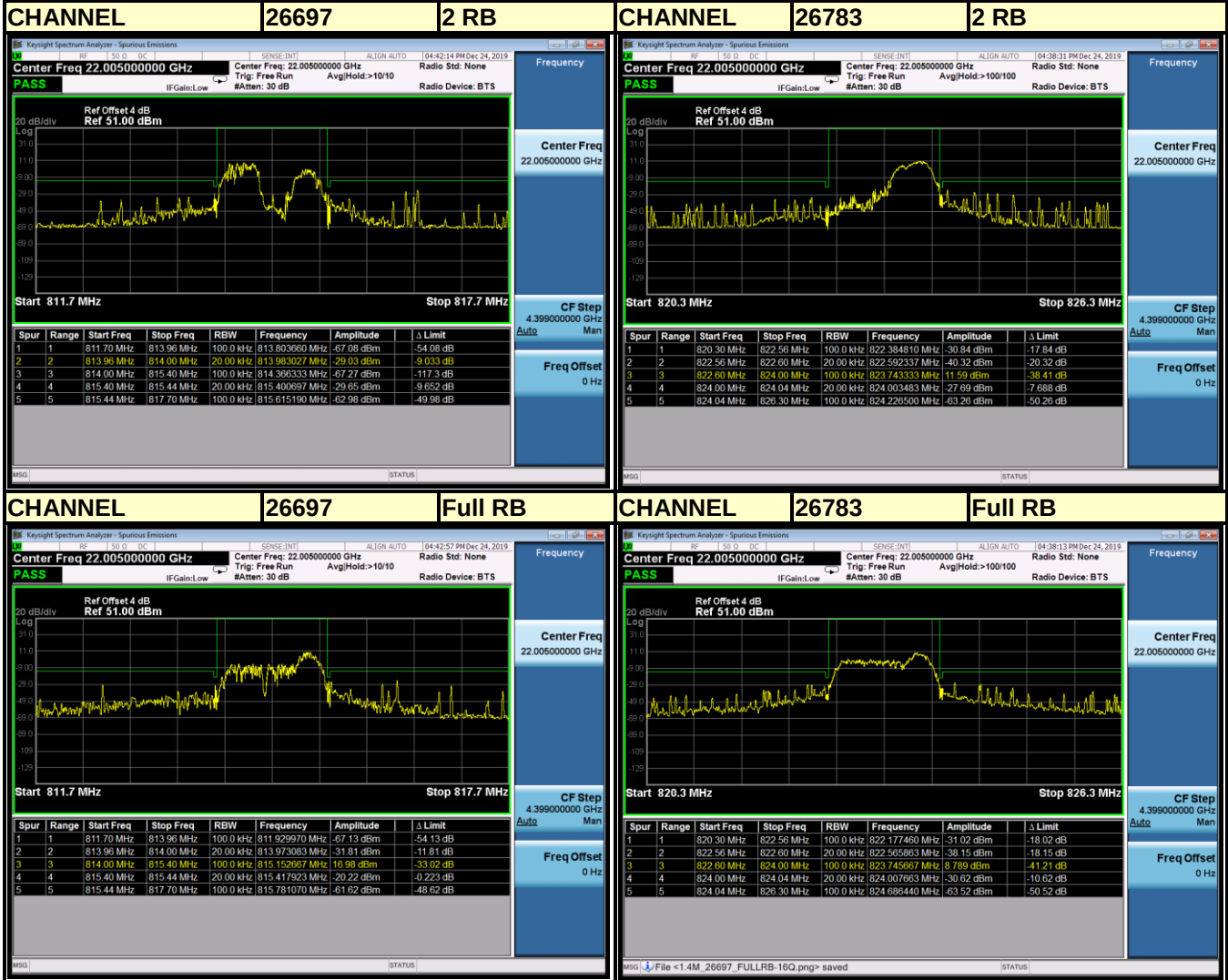




BUREAU
VERITAS

Test Report No.: RF191122W002-5

Channel Bandwidth: 1.4MHz 16QAM

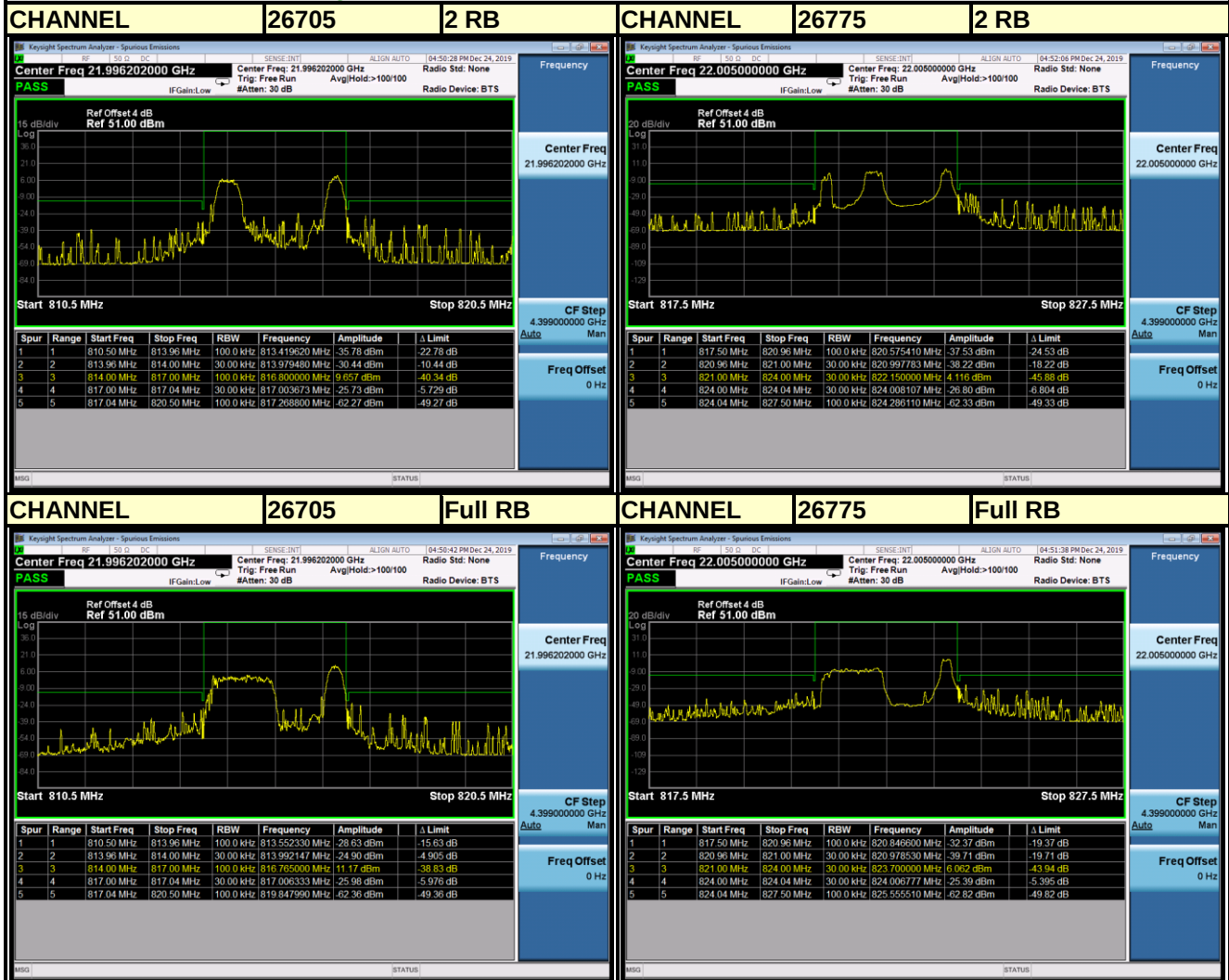




BUREAU
VERITAS

Test Report No.: RF191122W002-5

Channel Bandwidth: 3MHz QPSK

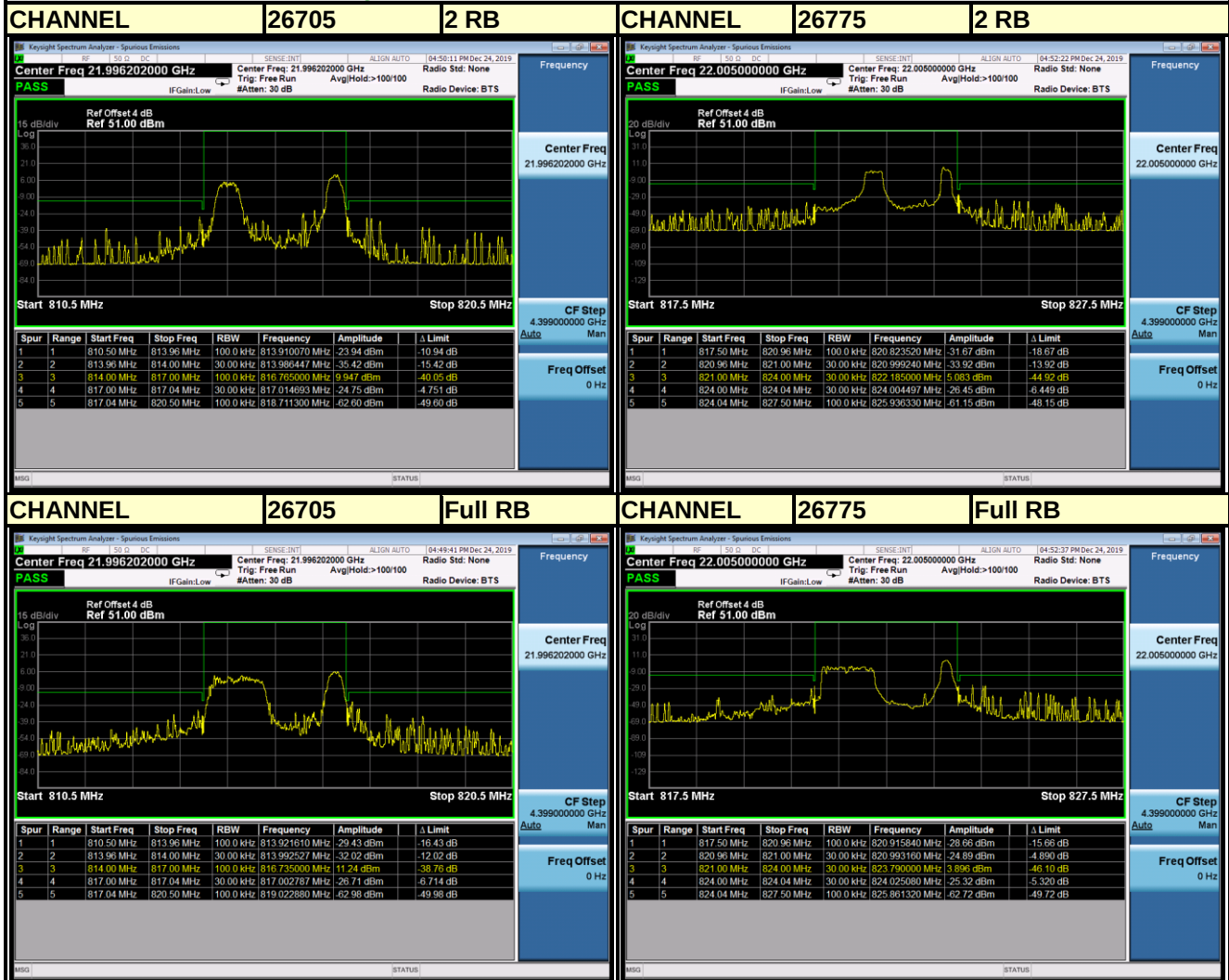




BUREAU
VERITAS

Test Report No.: RF191122W002-5

Channel Bandwidth: 3MHz 16QAM

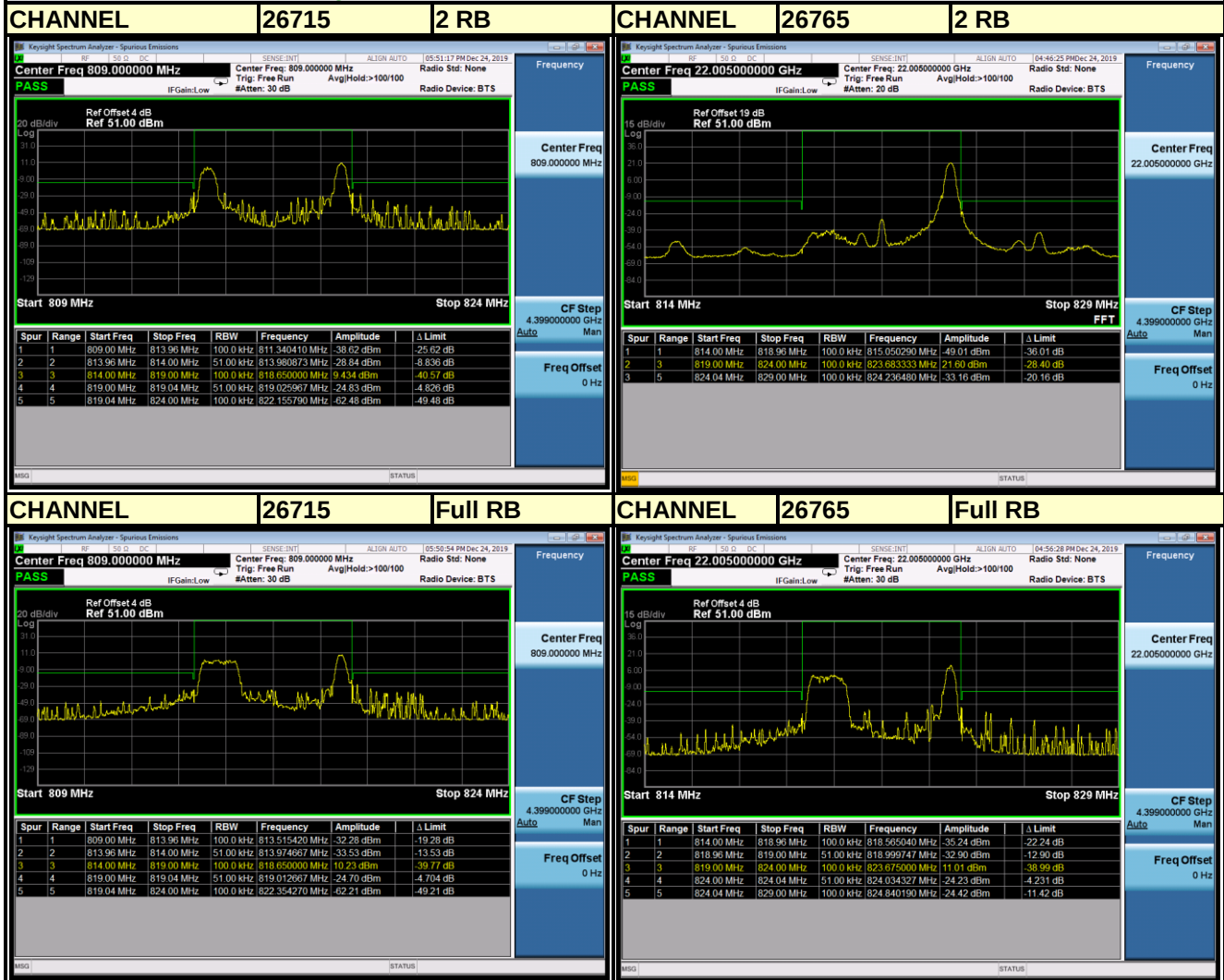




BUREAU
VERITAS

Test Report No.: RF191122W002-5

Channel Bandwidth: 5MHz QPSK

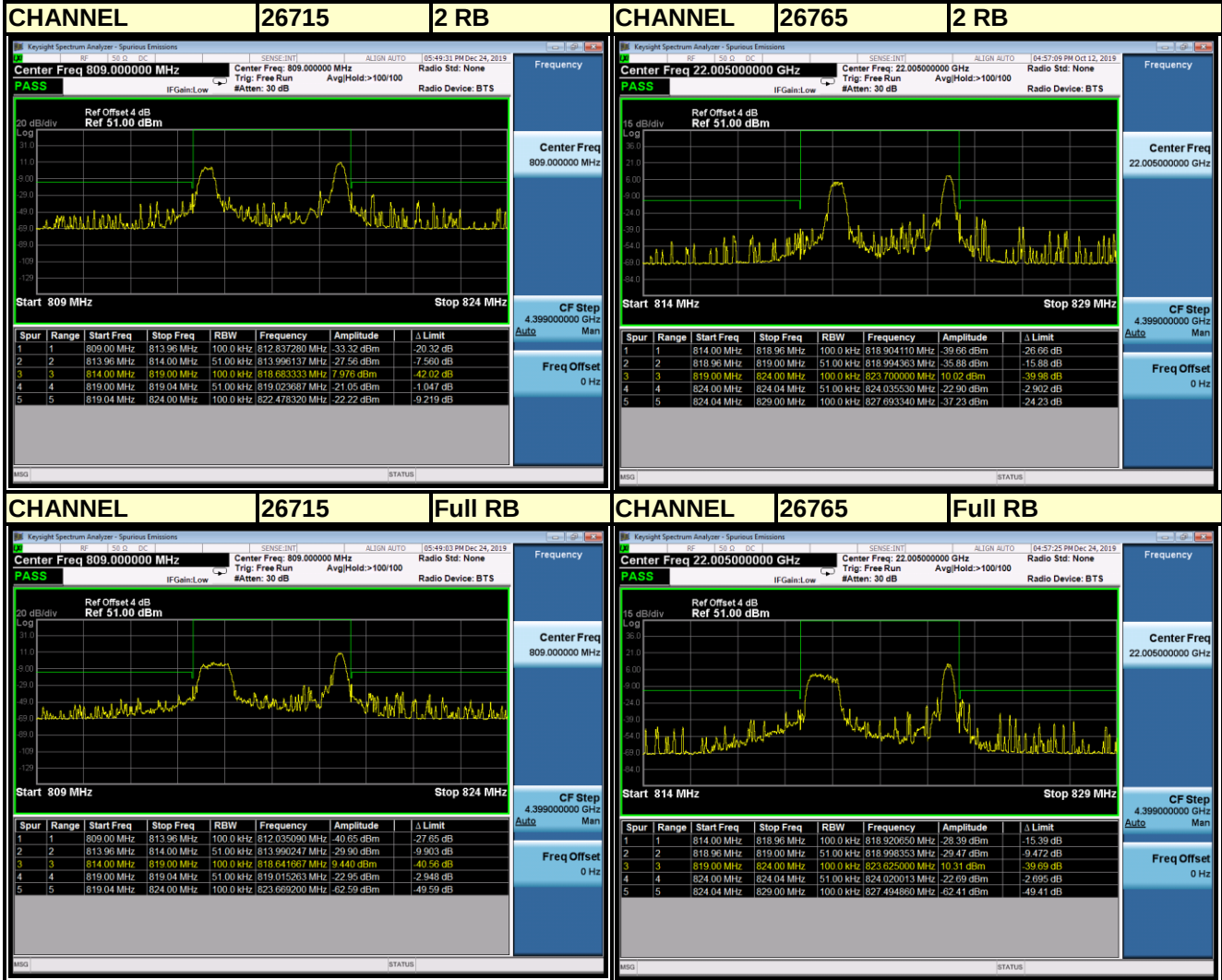




BUREAU
VERITAS

Test Report No.: RF191122W002-5

Channel Bandwidth: 5MHz 16QAM

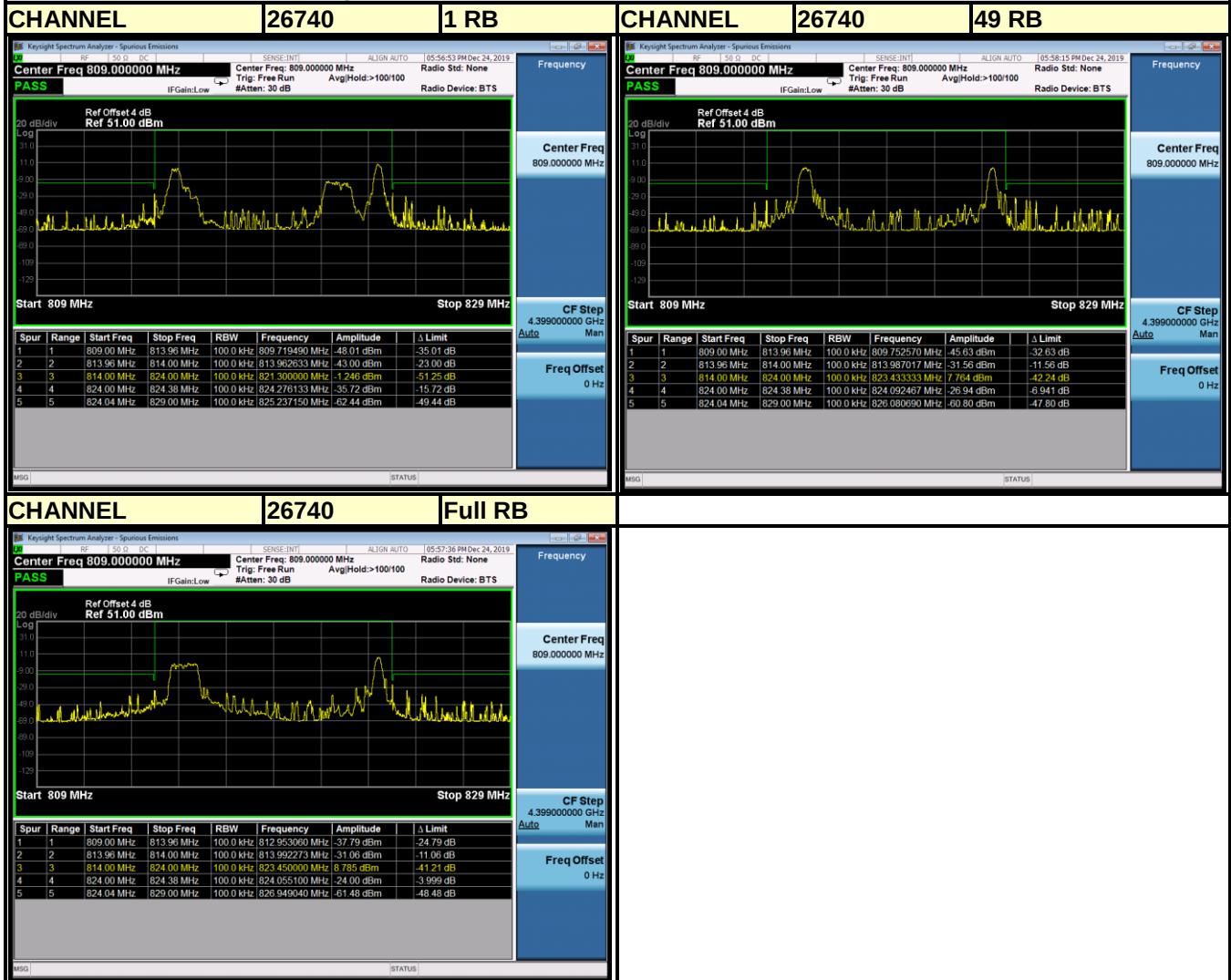




BUREAU
VERITAS

Test Report No.: RF191122W002-5

Channel Bandwidth: 10MHz QPSK

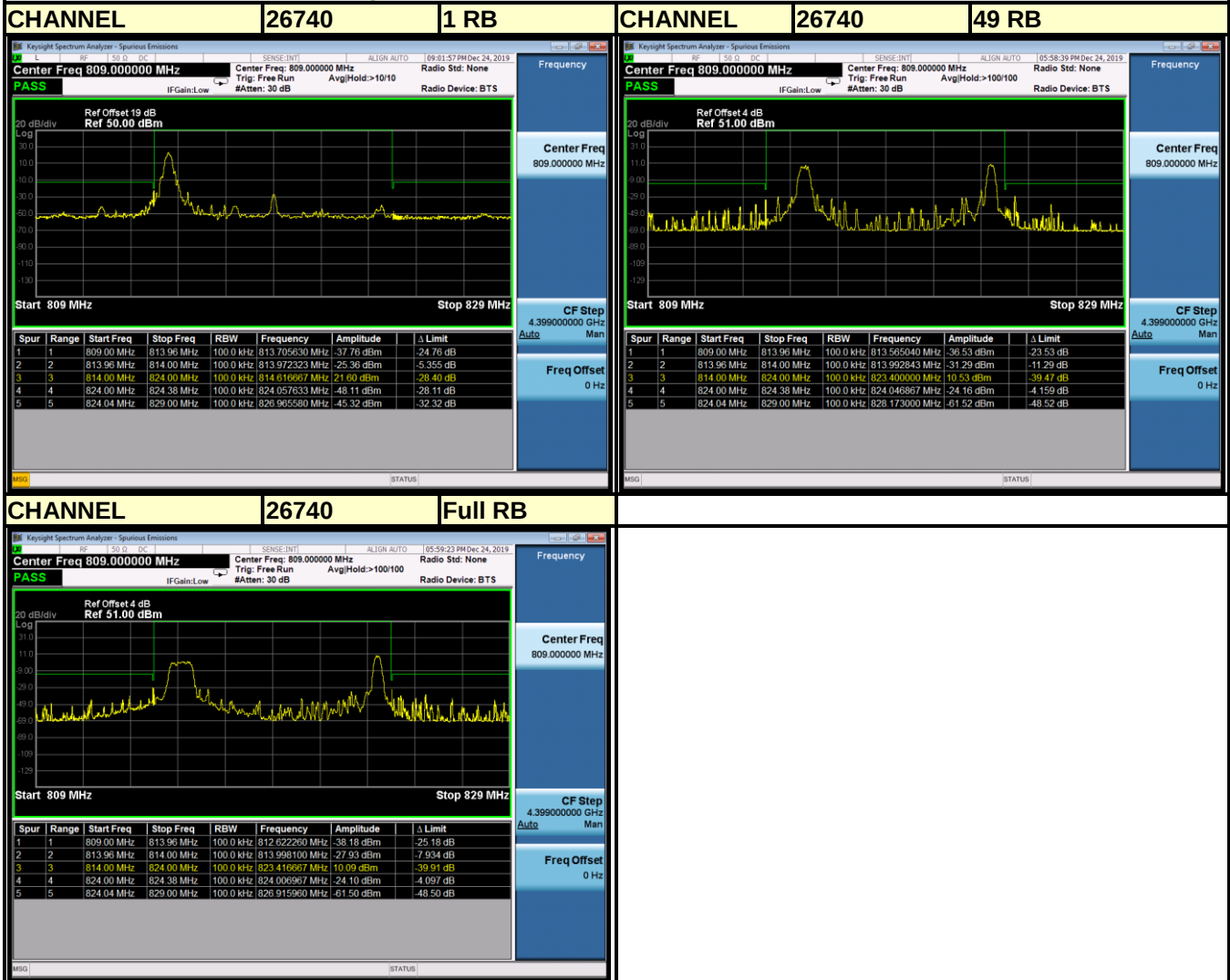




BUREAU
VERITAS

Test Report No.: RF191122W002-5

Channel Bandwidth: 10MHz 16QAM



3.6 CONDUCTED SPURIOUS EMISSIONS

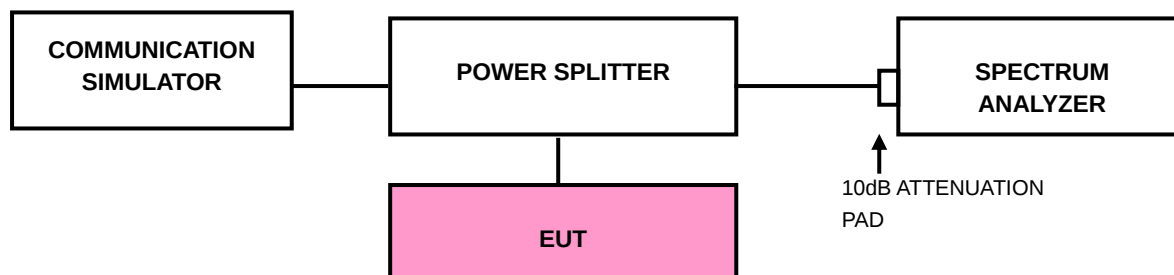
3.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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

3.6.2 TEST PROCEDURE

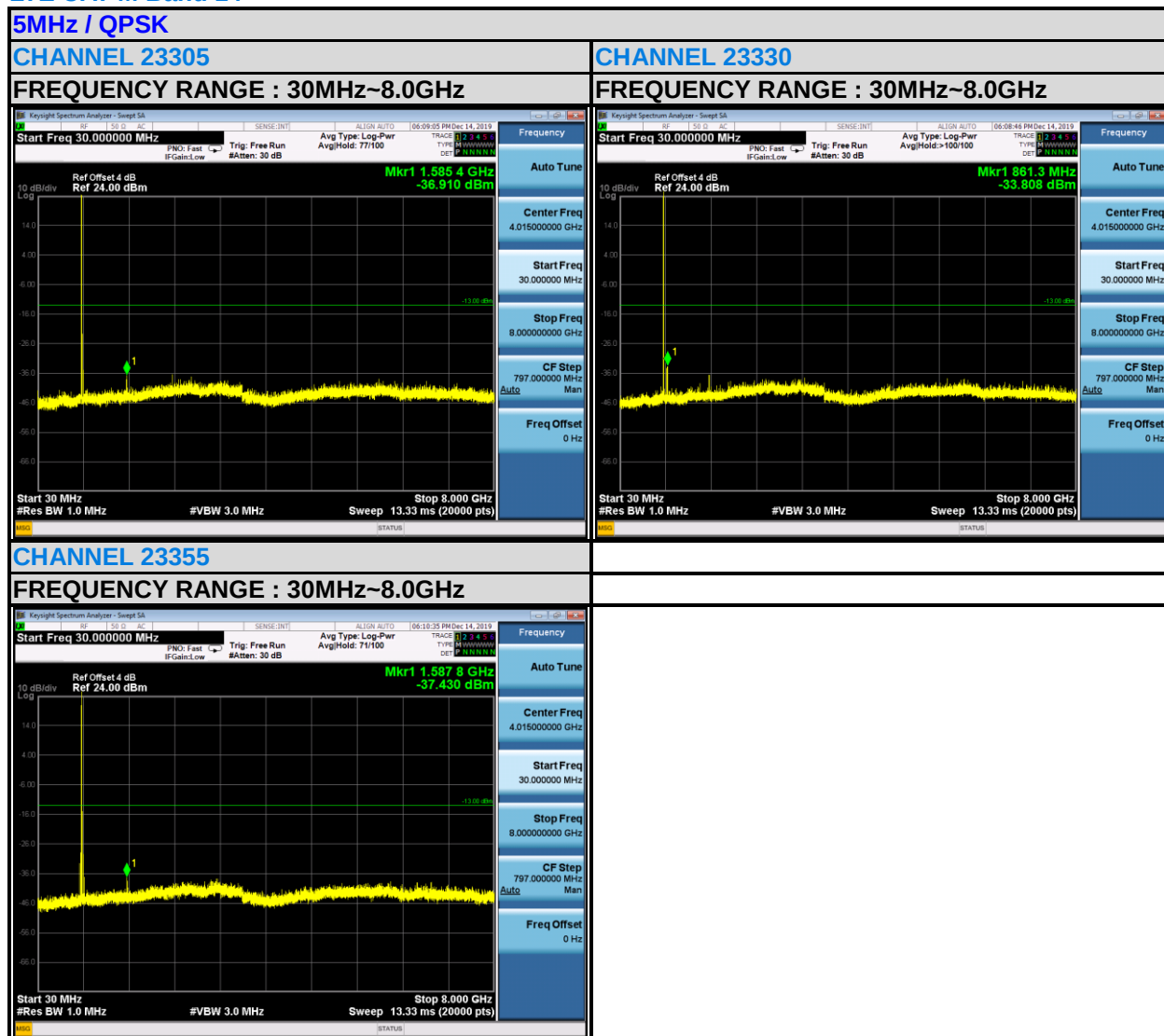
- The EUT makes a phone call to the communication simulator. All measurements were done at middle operational frequency range.
- Measuring frequency range is from 30 MHz to 9GHz. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

3.6.3 TEST SETUP



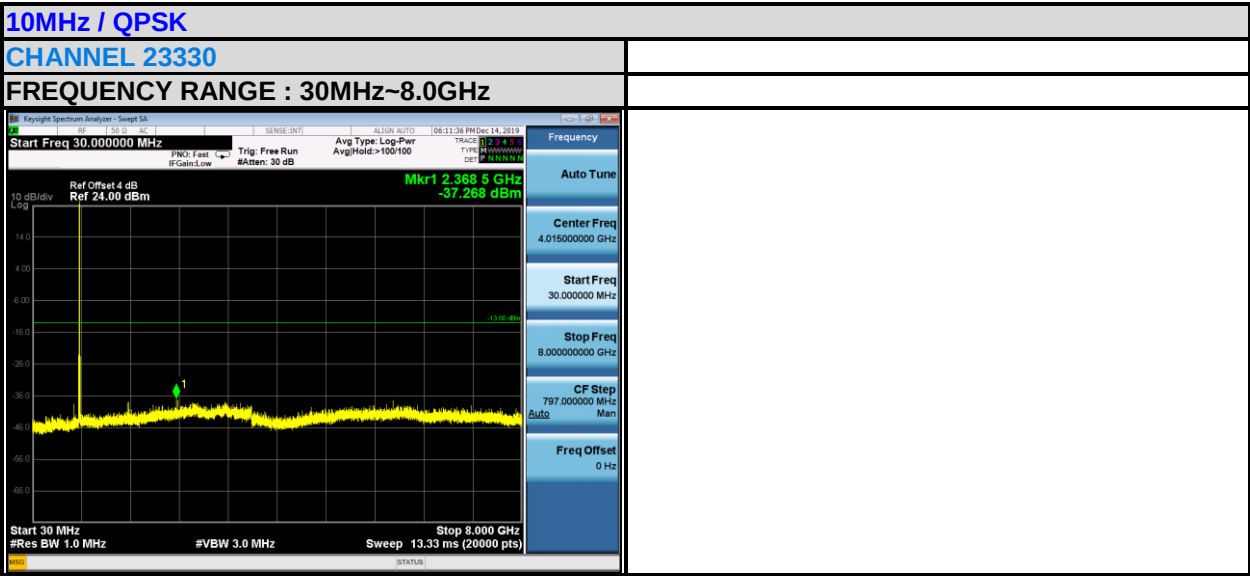
3.6.4 TEST RESULTS

LTE CAT-M Band 14





Test Report No.: RF191122W002-5

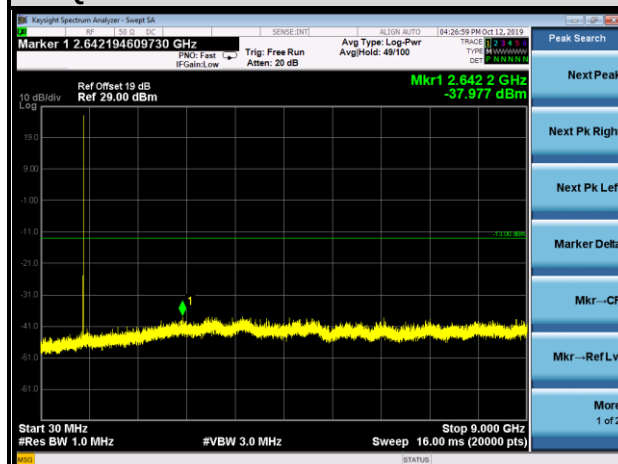


LTE CAT-M BAND 26

1.4MHz / QPSK

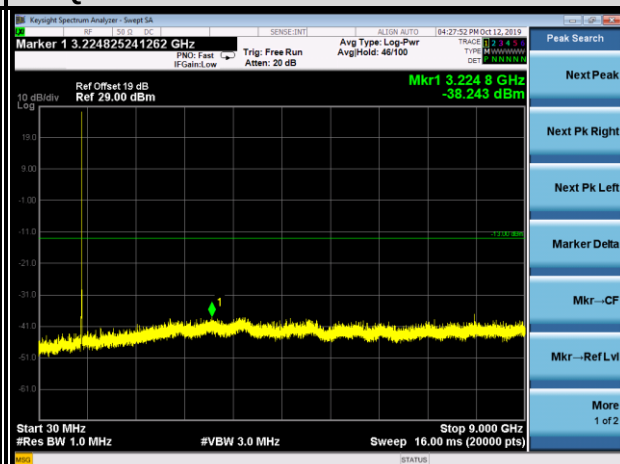
CHANNEL 26697

FREQUENCY RANGE : 30MHz~9.0GHz



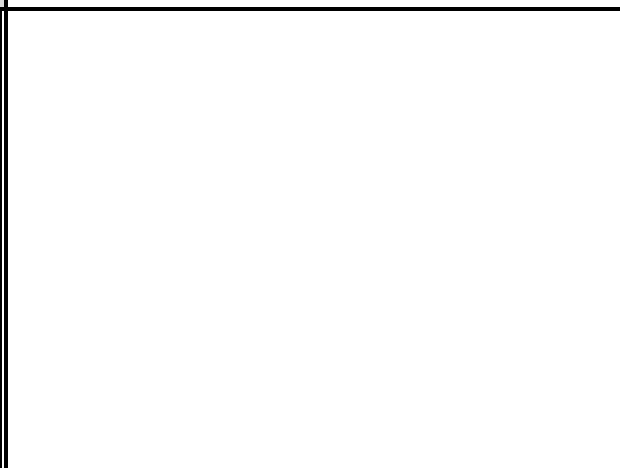
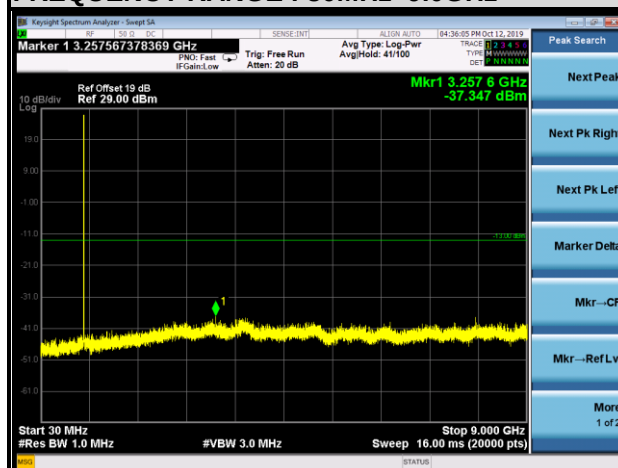
CHANNEL 26740

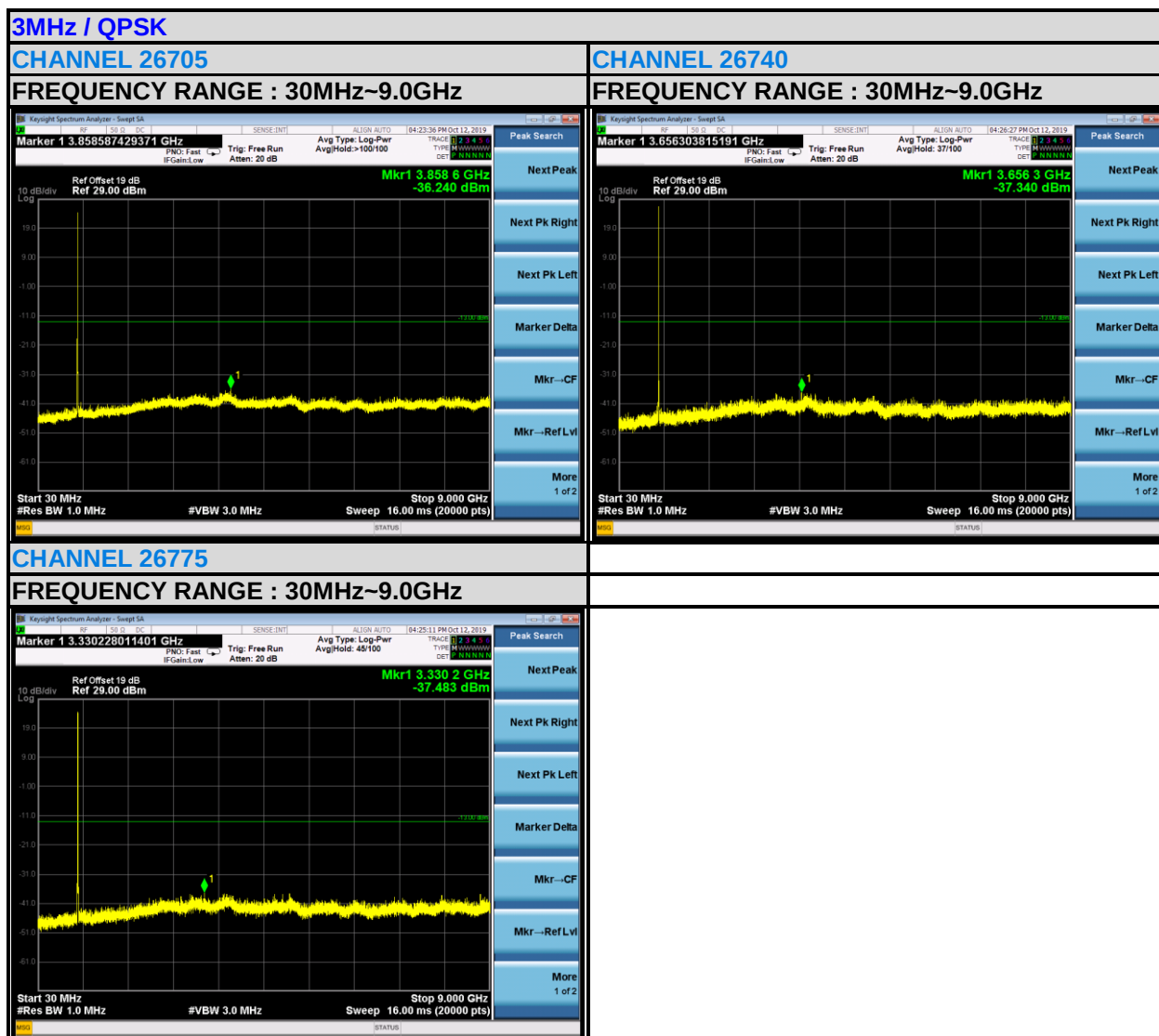
FREQUENCY RANGE : 30MHz~9.0GHz



CHANNEL 26783

FREQUENCY RANGE : 30MHz~9.0GHz



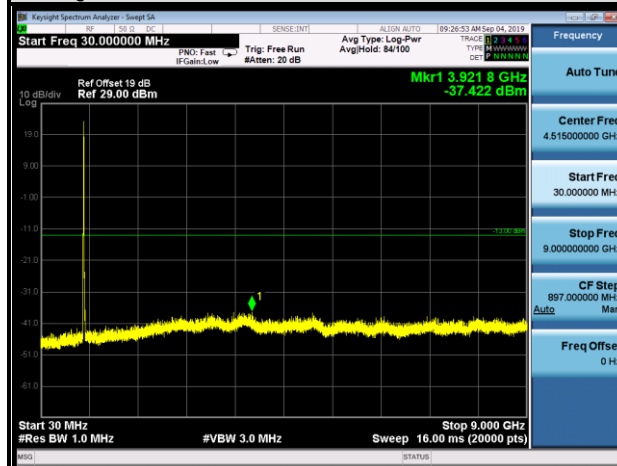




10MHz / QPSK

CHANNEL 26740

FREQUENCY RANGE : 30MHz~9.0GHz



3.7 RADIATED EMISSION MEASUREMENT

3.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT

(1) The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm

(2) For operations in the 763–775 MHz and 793–805 MHz bands, all emissions including harmonics in the band 1559–1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

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. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $\text{E.R.P power} = \text{E.I.P.R power} - 2.15\text{dBi}.$

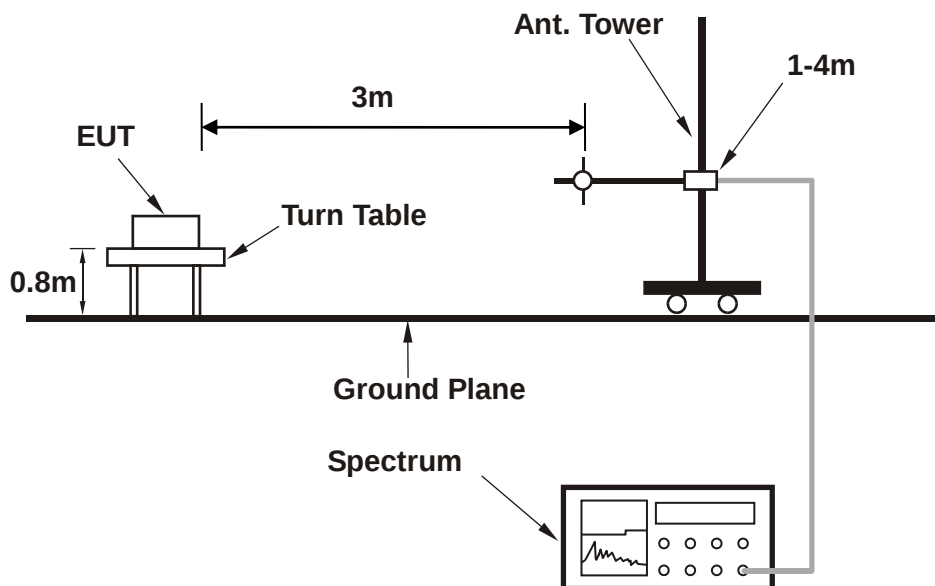
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.7.3 DEVIATION FROM TEST STANDARD

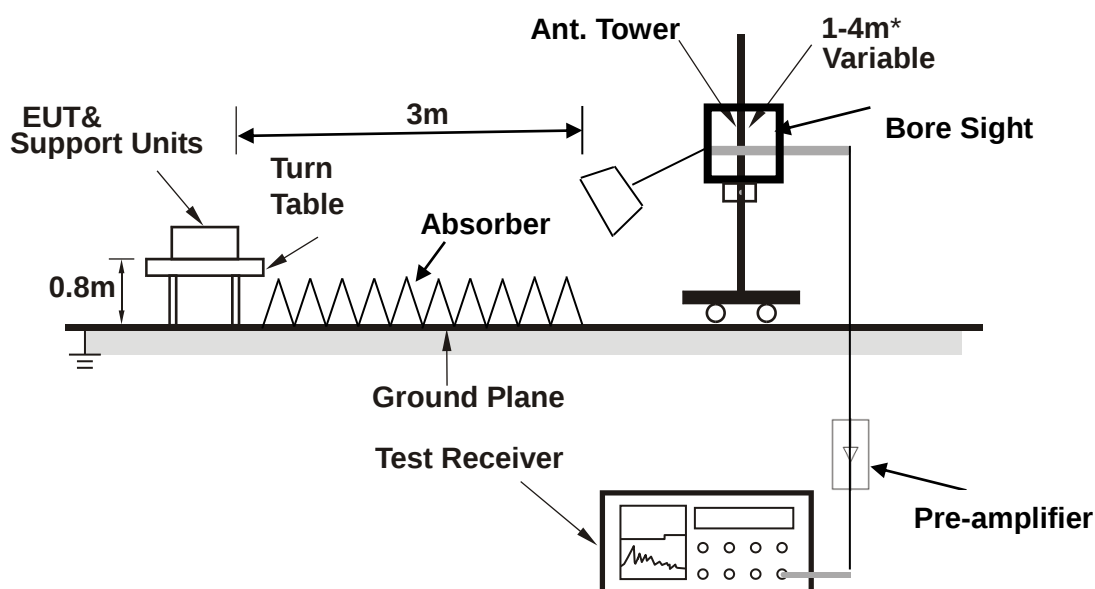
No deviation

3.7.4 TEST SETUP

< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

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

3.7.5 TEST RESULTS

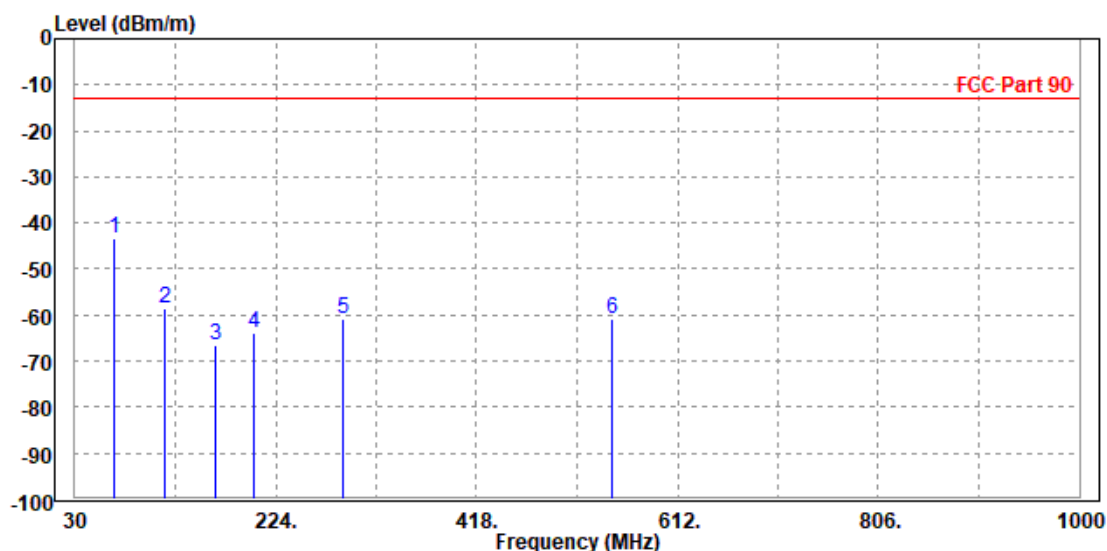
BELOW 1GHz WORST-CASE DATA

30 MHz – 1GHz data:
LTE CAT-M BAND 26

CHANNEL BANDWIDTH: 1.4MHz / QPSK

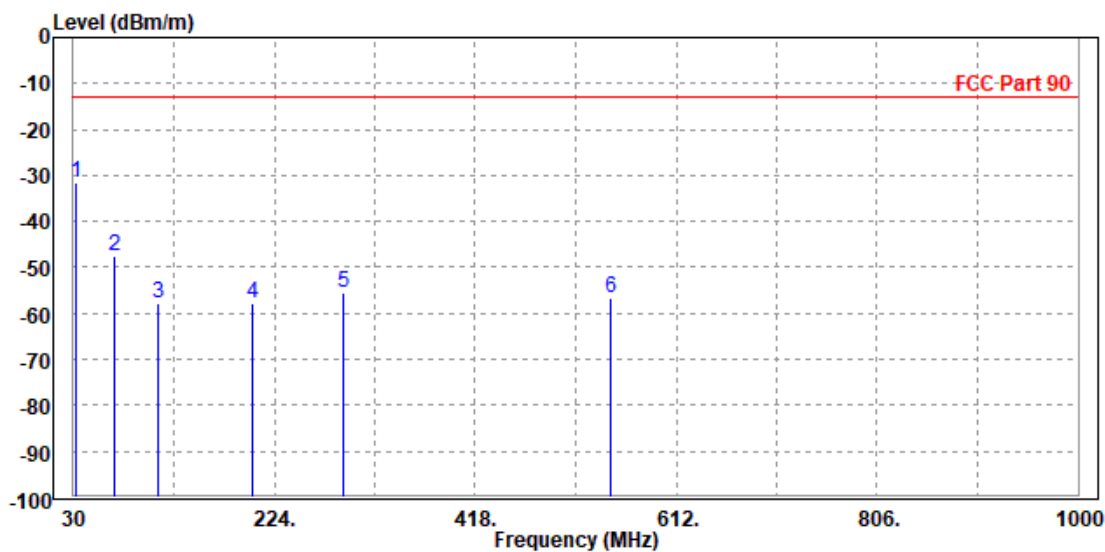
MODE	TX channel 26740	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	67.260	-43.17	-32.23	-13.00	-30.17	-10.94	Peak	Horizontal
2	117.532	-58.48	-43.66	-13.00	-45.48	-14.82	Peak	Horizontal
3	165.325	-66.61	-48.33	-13.00	-53.61	-18.28	Peak	Horizontal
4	203.114	-64.03	-46.86	-13.00	-51.03	-17.17	Peak	Horizontal
5	288.663	-60.70	-46.33	-13.00	-47.70	-14.37	Peak	Horizontal
6	549.320	-60.88	-51.33	-13.00	-47.88	-9.55	Peak	Horizontal



MODE	TX channel 26740	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
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	33.251	-31.56	-32.57	-13.00	-18.56	1.01	Peak	Vertical
2	69.321	-47.50	-32.14	-13.00	-34.50	-15.36	Peak	Vertical
3	112.235	-57.65	-45.36	-13.00	-44.65	-12.29	Peak	Vertical
4	203.251	-57.96	-47.27	-13.00	-44.96	-10.69	Peak	Vertical
5	290.332	-55.55	-44.21	-13.00	-42.55	-11.34	Peak	Vertical
6	549.320	-56.63	-49.34	-13.00	-43.63	-7.29	Peak	Vertical



ABOVE 1GHz

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

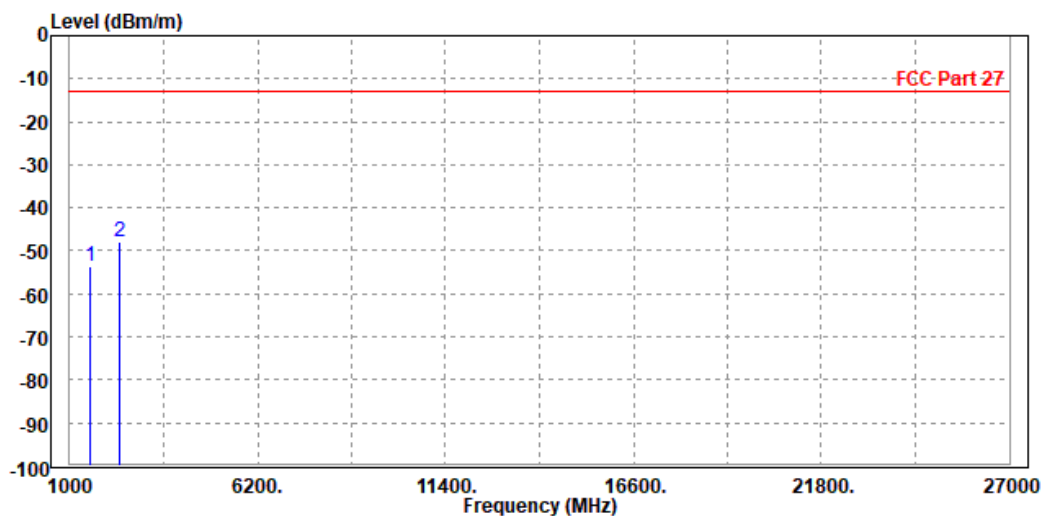
LTE CAT-M Band 14

CHANNEL BANDWIDTH: 5MHz / QPSK

CH 23305

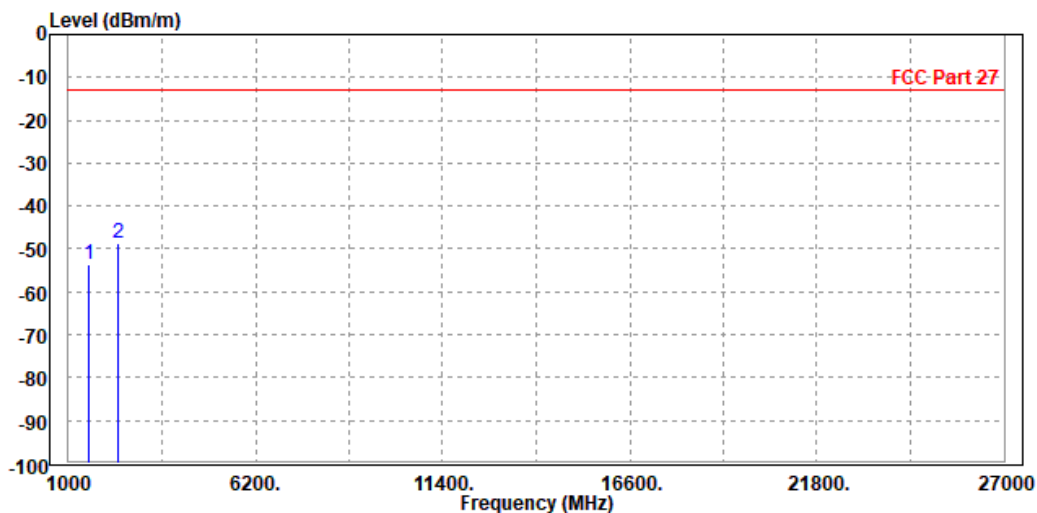
MODE	TX channel 23305	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1572.000	-53.51	-55.83	-13.00	-40.51	2.32	Peak	Horizontal
2 PP	2371.500	-47.79	-55.71	-13.00	-34.79	7.92	Peak	Horizontal



MODE	TX channel 23305	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

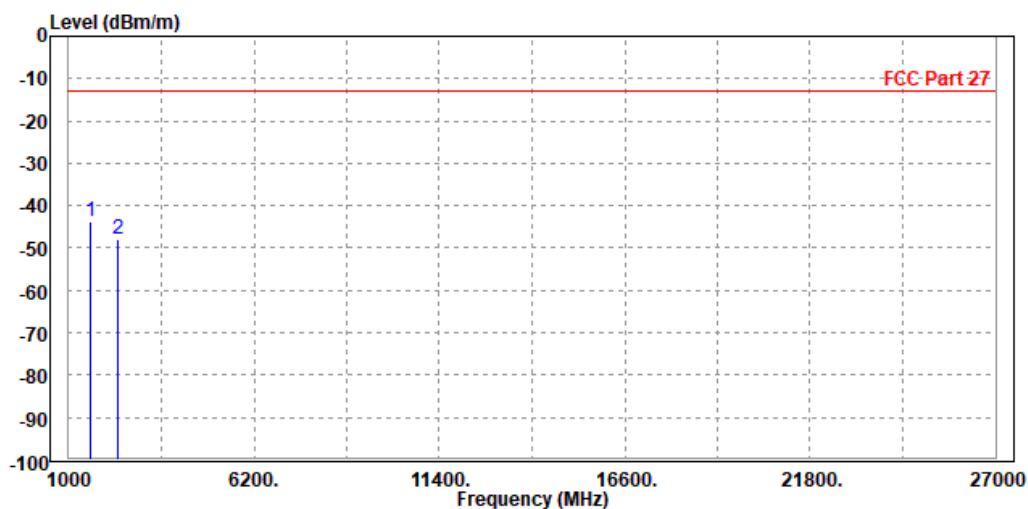
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1572.000	-53.59	-56.29	-13.00	-40.59	2.70	Peak	Vertical
2 PP	2371.500	-48.59	-55.53	-13.00	-35.59	6.94	Peak	Vertical



CH 23330

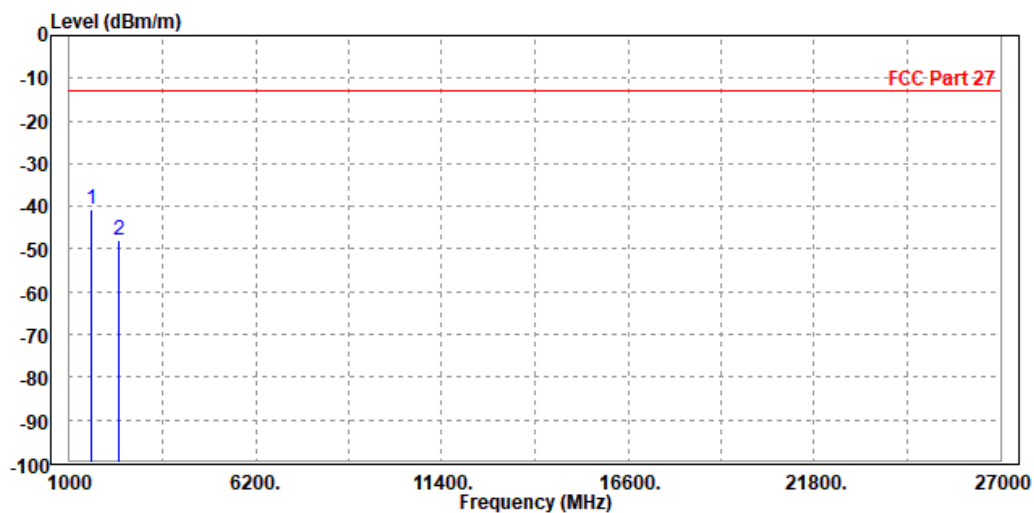
MODE	TX channel 23330	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1598.000	-43.79	-46.43	-13.00	-30.79	2.64	Peak	Horizontal
2		2379.000	-47.94	-55.87	-13.00	-34.94	7.93	Peak	Horizontal



MODE	TX channel 23330	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

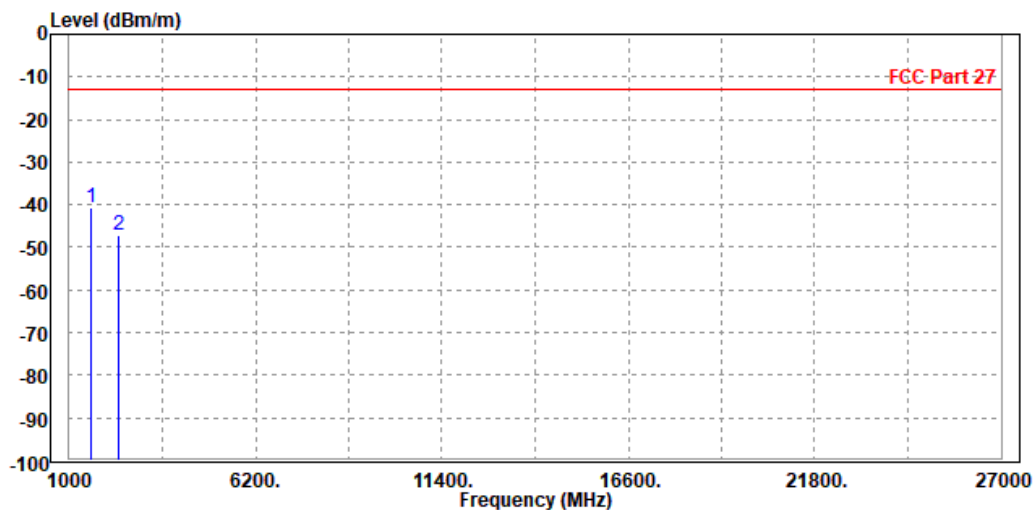
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1598.000	-40.84	-43.77	-13.00	-27.84	2.93	Peak	Vertical
2	2379.000	-48.05	-54.99	-13.00	-35.05	6.94	Peak	Vertical



CH 23355

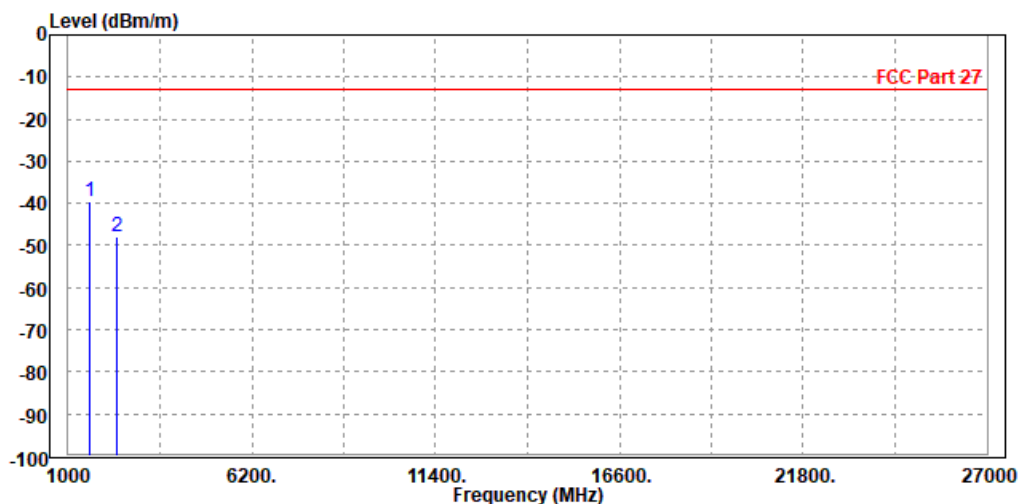
MODE	TX channel 23355	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1598.000	-40.66	-43.30	-13.00	-27.66	2.64	Peak	Horizontal
2		2386.500	-47.21	-55.15	-13.00	-34.21	7.94	Peak	Horizontal



MODE	TX channel 23355	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

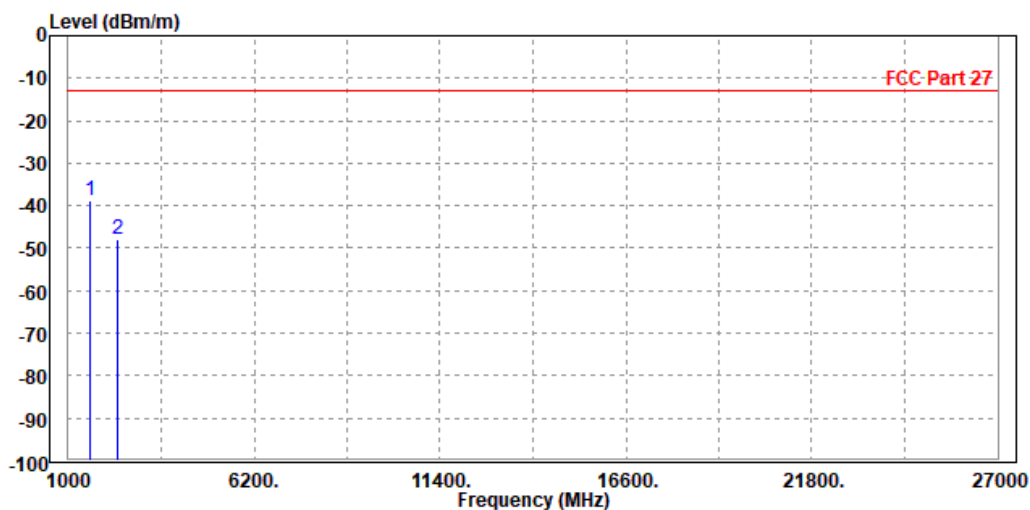
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1598.000	-39.71	-42.64	-13.00	-26.71	2.93	Peak	Vertical
2		2386.500	-47.72	-54.67	-13.00	-34.72	6.95	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

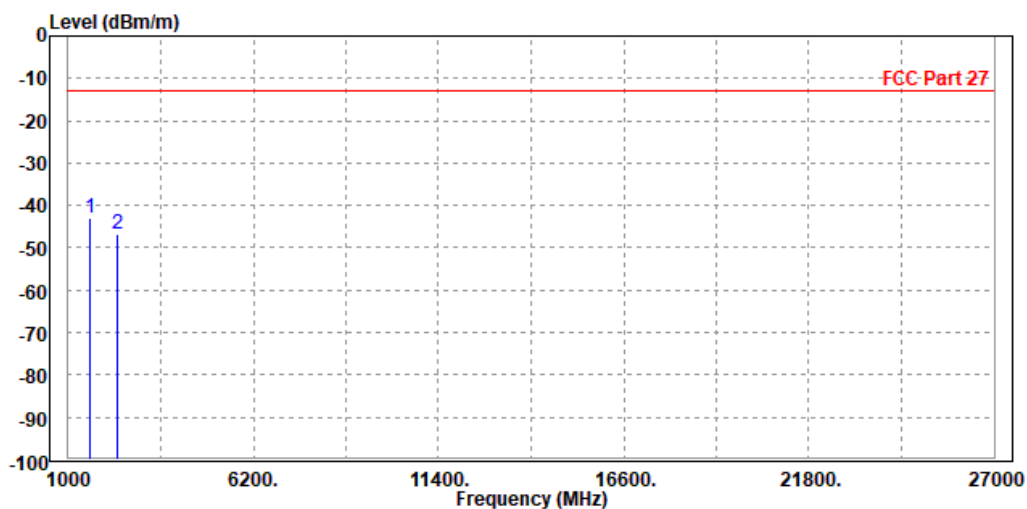
MODE	TX channel 23330	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1598.000	-38.89	-41.53	-13.00	-25.89	2.64	Peak	Horizontal
2	2379.000	-47.78	-55.71	-13.00	-34.78	7.93	Peak	Horizontal



MODE	TX channel 23330	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
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	1598.000	-42.86	-45.79	-13.00	-29.86	2.93	Peak	Vertical
2	2379.000	-46.94	-53.88	-13.00	-33.94	6.94	Peak	Vertical





Test Report No.: RF191122W002-5

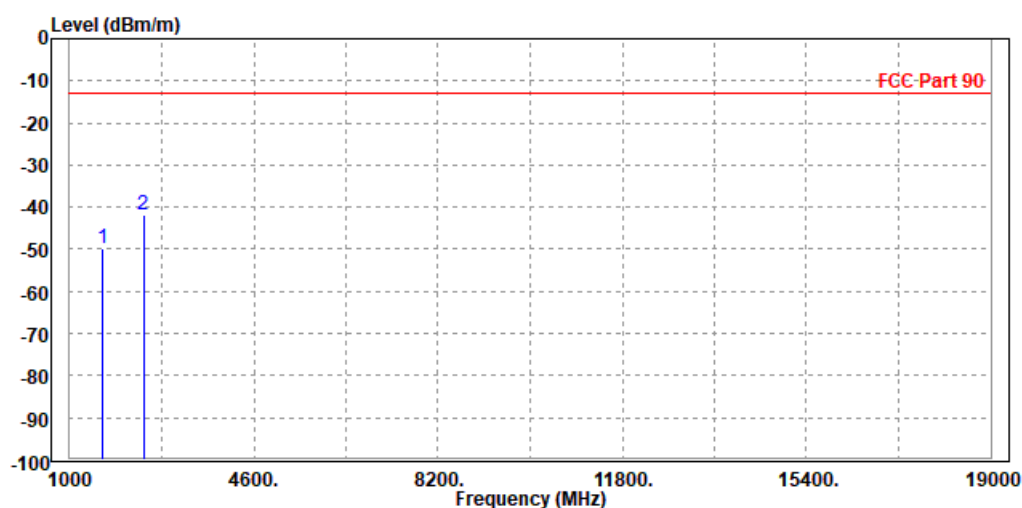
LTE CAT-M BAND 26

CHANNEL BANDWIDTH: 1.4MHz / QPSK

CH 26697

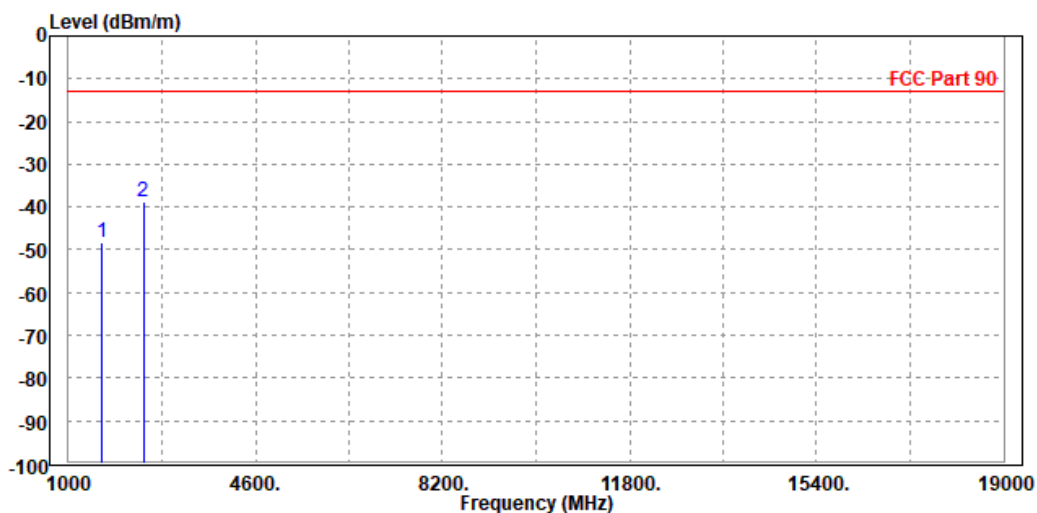
MODE	TX channel 26697	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1629.400	-49.82	-52.84	-13.00	-36.82	3.02	Peak	Horizontal
2 PP	2441.100	-41.90	-49.89	-13.00	-28.90	7.99	Peak	Horizontal



MODE	TX channel 26697	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

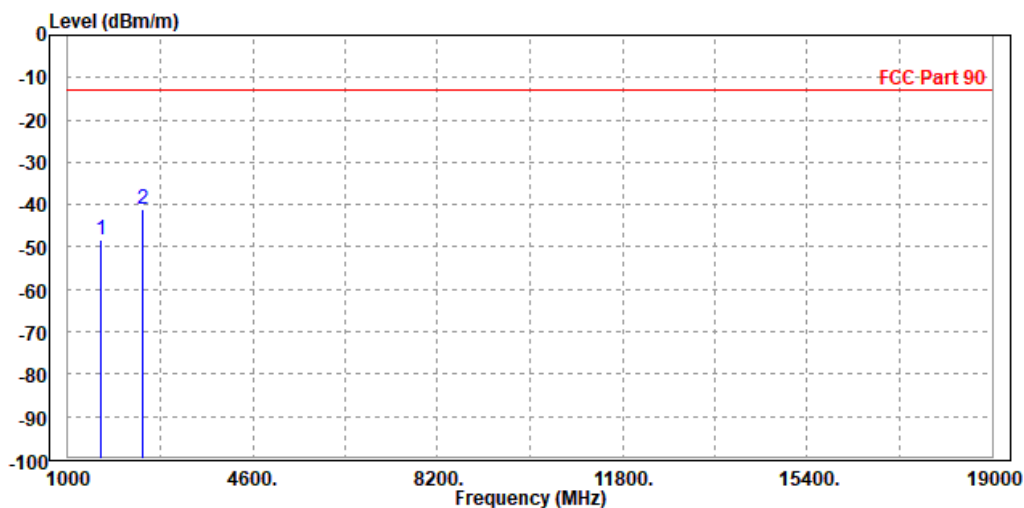
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1629.400	-48.42	-51.63	-13.00	-35.42	3.21	Peak	Vertical
2 PP	2441.100	-38.89	-45.90	-13.00	-25.89	7.01	Peak	Vertical



CH 26740

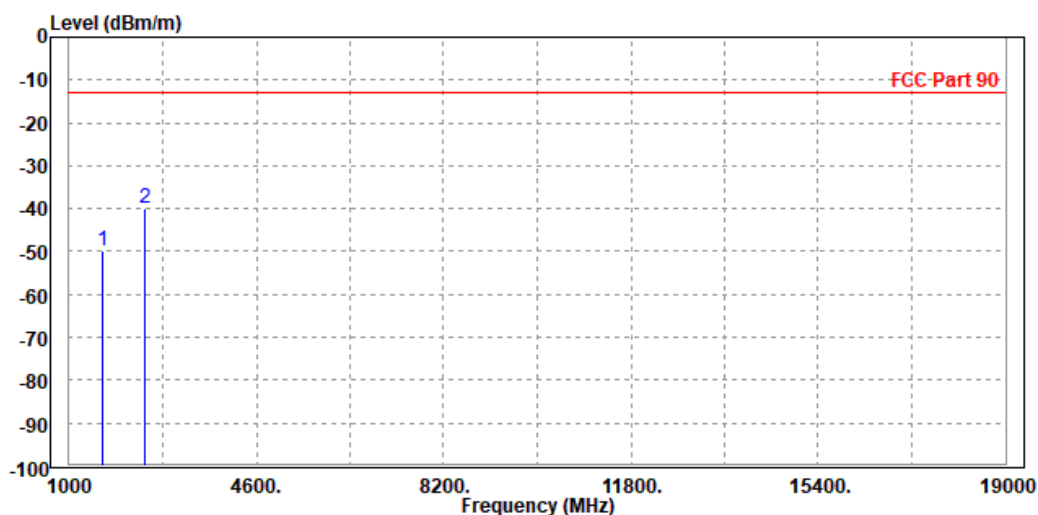
MODE	TX channel 26740	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1630.000	-48.22	-51.25	-13.00	-35.22	3.03	Peak	Horizontal
2 PP	2457.000	-40.92	-48.93	-13.00	-27.92	8.01	Peak	Horizontal



MODE	TX channel 26740	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

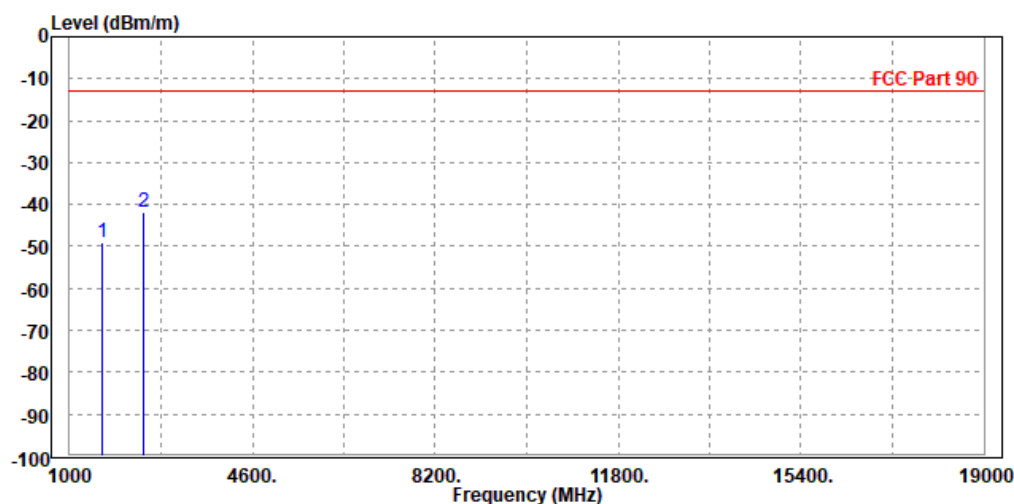
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1630.000	-49.70	-52.92	-13.00	-36.70	3.22	Peak	Vertical
2 PP	2457.000	-39.76	-46.78	-13.00	-26.76	7.02	Peak	Vertical



CH 26783

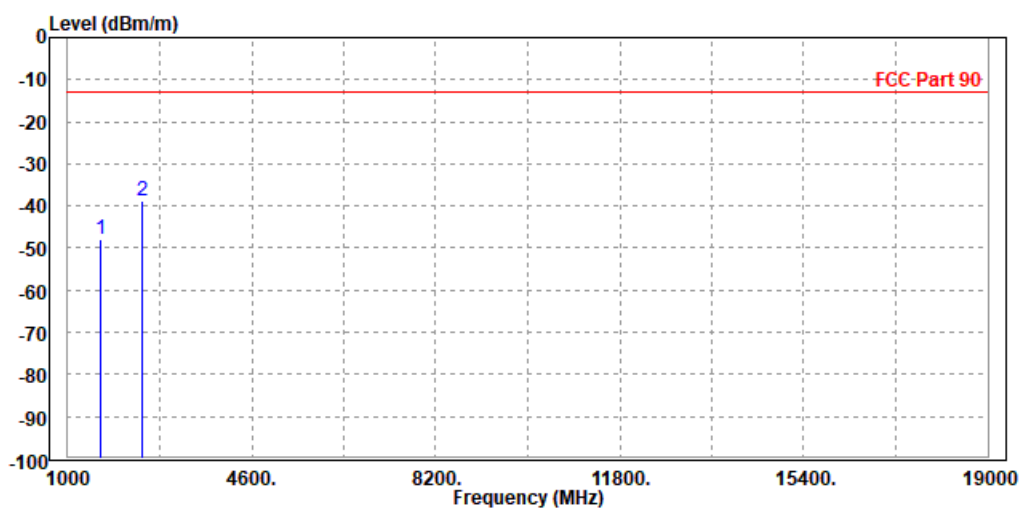
MODE	TX channel 26783	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1646.600	-49.10	-52.33	-13.00	-36.10	3.23	Peak	Horizontal
2 PP	2469.900	-41.64	-49.66	-13.00	-28.64	8.02	Peak	Horizontal



MODE	TX channel 26783	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

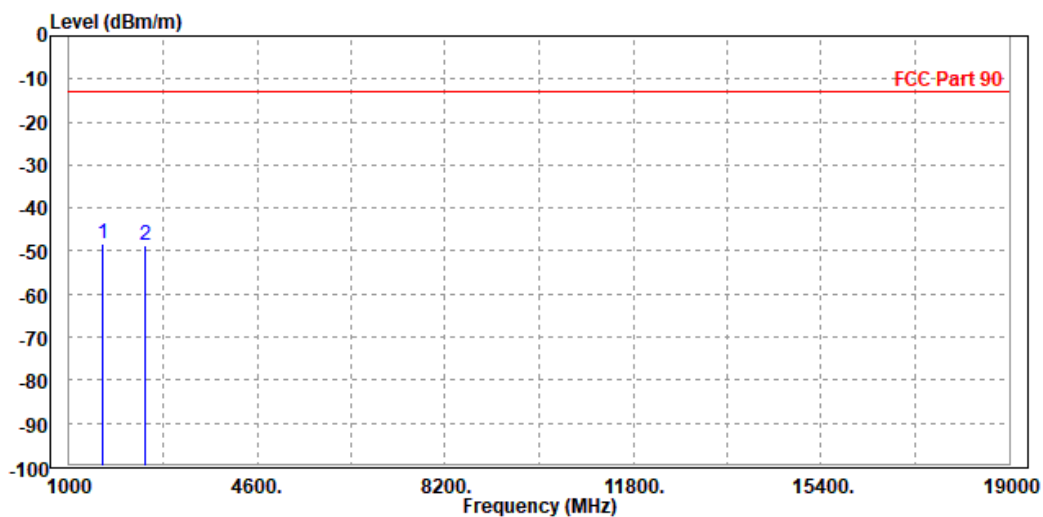
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1646.600	-47.97	-51.34	-13.00	-34.97	3.37	Peak	Vertical
2 PP	2469.900	-38.82	-45.86	-13.00	-25.82	7.04	Peak	Vertical



CHANNEL BANDWIDTH: 3MHz / QPSK

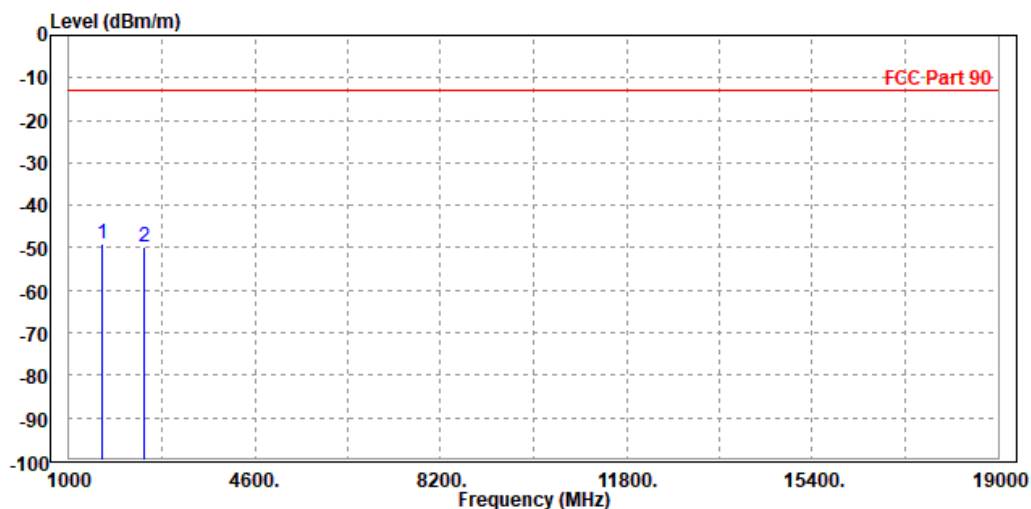
MODE	TX channel 26740	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1630.000	-48.12	-51.15	-13.00	-35.12	3.03	Peak	Horizontal
2		2457.000	-48.50	-56.51	-13.00	-35.50	8.01	Peak	Horizontal



MODE	TX channel 26740	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

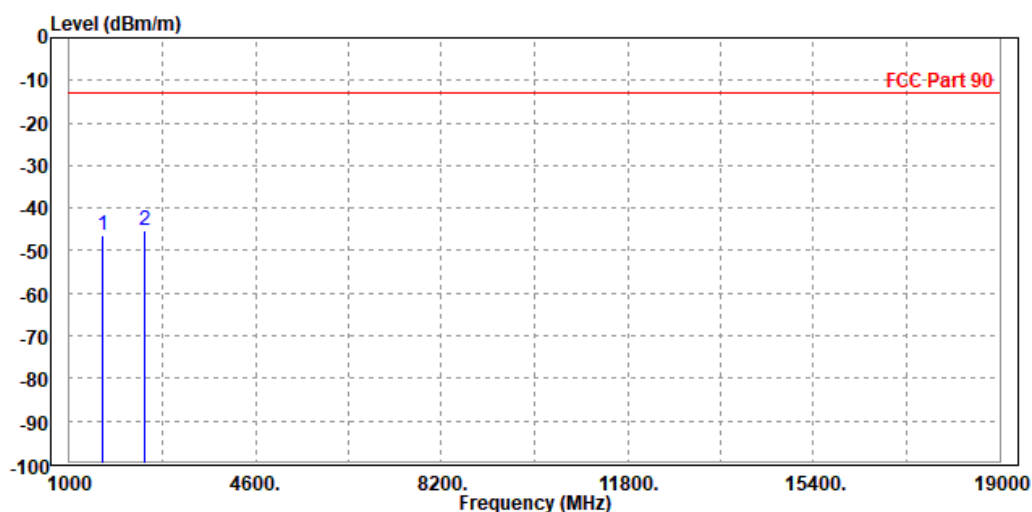
		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP	1630.000	-48.86	-52.08	-13.00	-35.86	3.22	Peak	Vertical
2		2457.000	-49.71	-56.73	-13.00	-36.71	7.02	Peak	Vertical



CHANNEL BANDWIDTH: 5MHz / QPSK

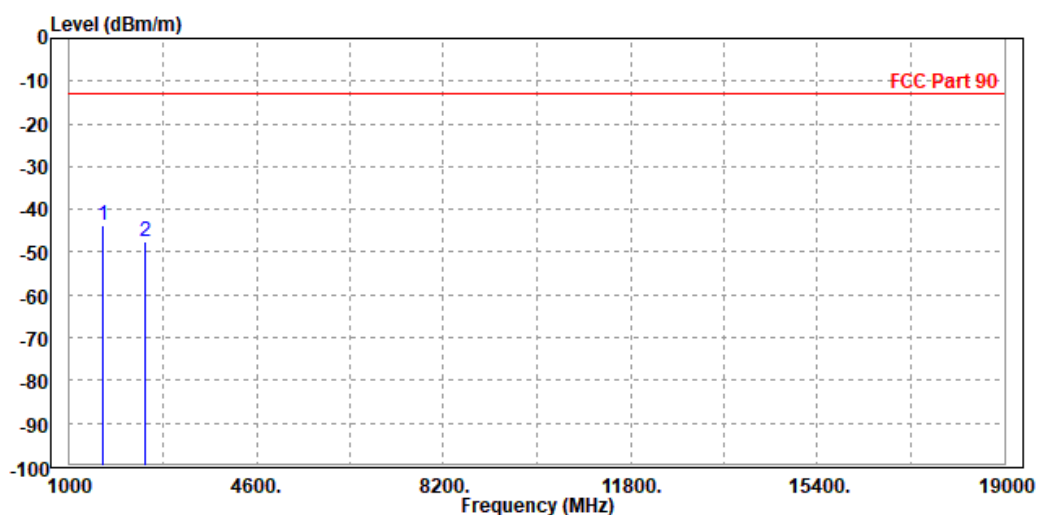
MODE	TX channel 26740	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1630.000	-46.45	-49.48	-13.00	-33.45	3.03	Peak	Horizontal
2 PP	2457.000	-45.26	-53.27	-13.00	-32.26	8.01	Peak	Horizontal



MODE	TX channel 26740	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

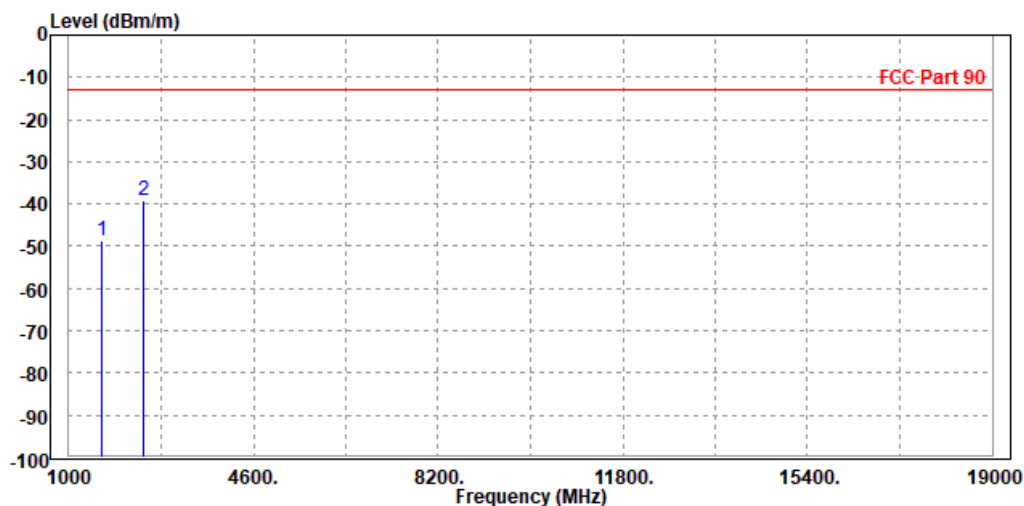
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1630.000	-43.86	-47.08	-13.00	-30.86	3.22	Peak	Vertical
2	2457.000	-47.46	-54.48	-13.00	-34.46	7.02	Peak	Vertical



CHANNEL BANDWIDTH: 10MHz / QPSK

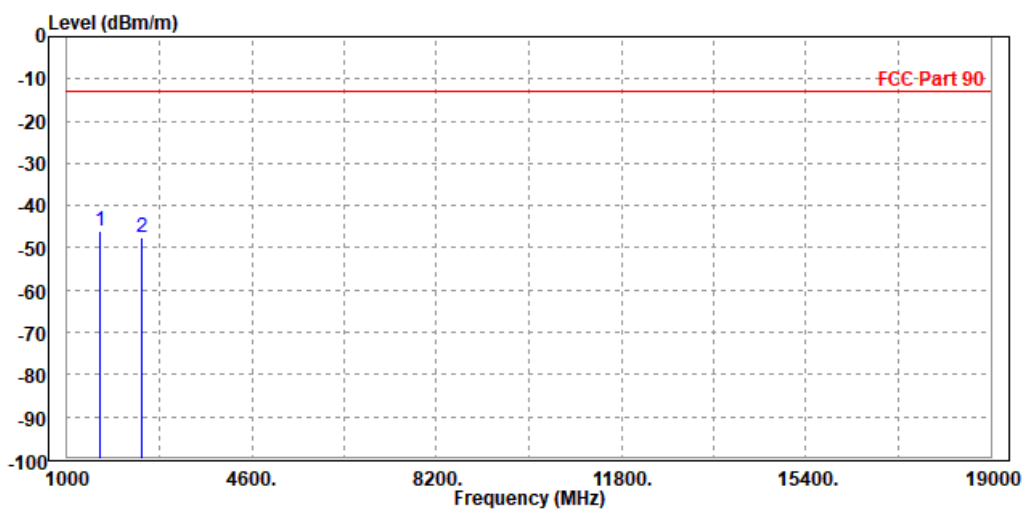
MODE	TX channel 26740	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	1630.000	-48.78	-51.81	-13.00	-35.78	3.03	Peak	Horizontal
2 PP	2457.000	-39.29	-47.30	-13.00	-26.29	8.01	Peak	Horizontal



MODE	TX channel 26740	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Tony Xiong		
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	1630.000	-46.07	-49.29	-13.00	-33.07	3.22	Peak	Vertical
2	2457.000	-47.68	-54.70	-13.00	-34.68	7.02	Peak	Vertical





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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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Email: customerservice.dg@cn.bureauveritas.com

Web Site: www.adt.com.tw

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



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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---