



4.4.4 TEST RESULTS

LTE BAND 7

CHANNEL BANDWIDTH: 5MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20775	2502.5	5.40	6.21
21100	2535	5.49	6.25
21425	2567.5	5.47	6.24



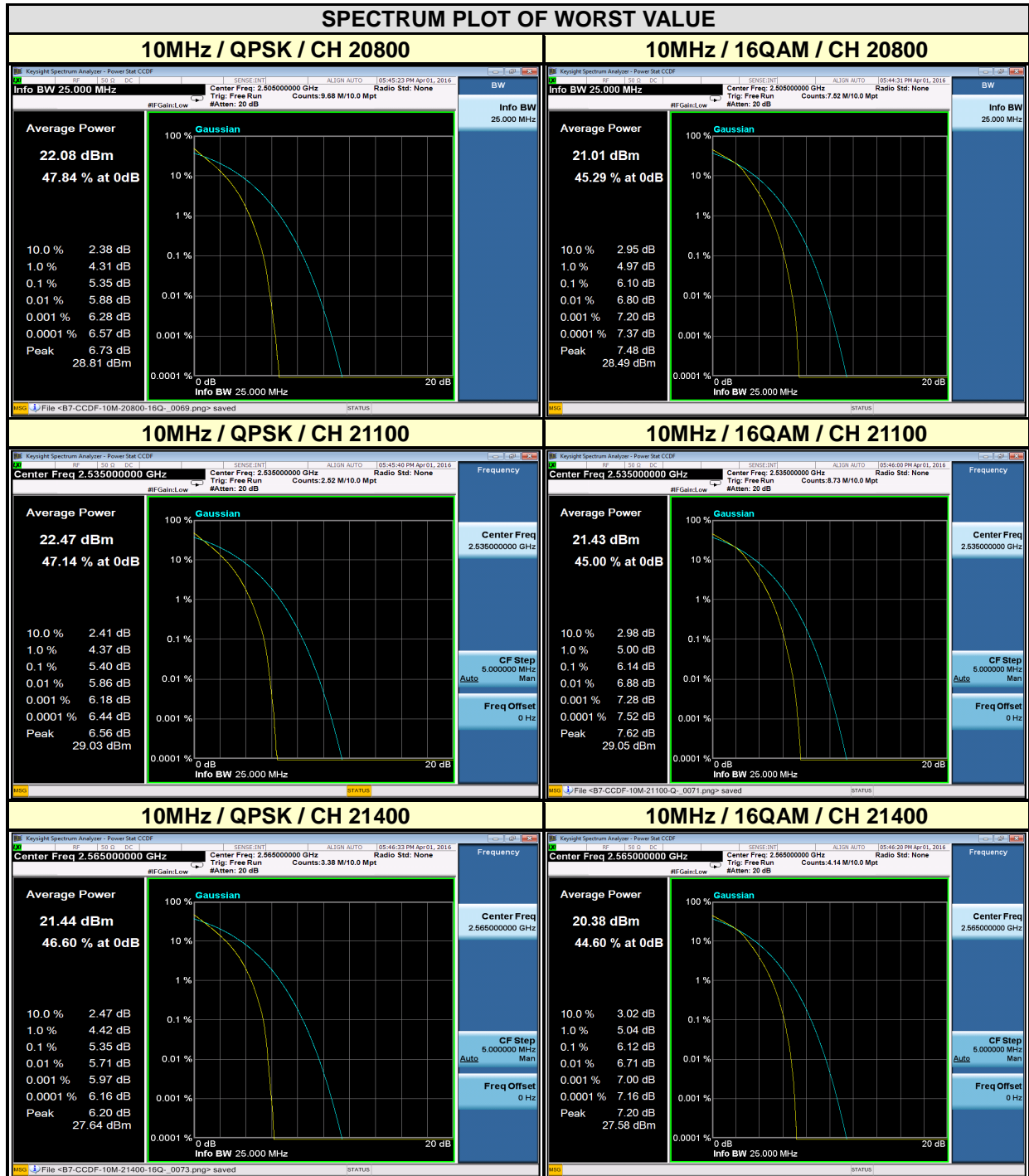
Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

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Guangdong 523942, China

Tel: +86 769 8593 5656
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Email: customerservice.dg@cn.bureauveritas.com

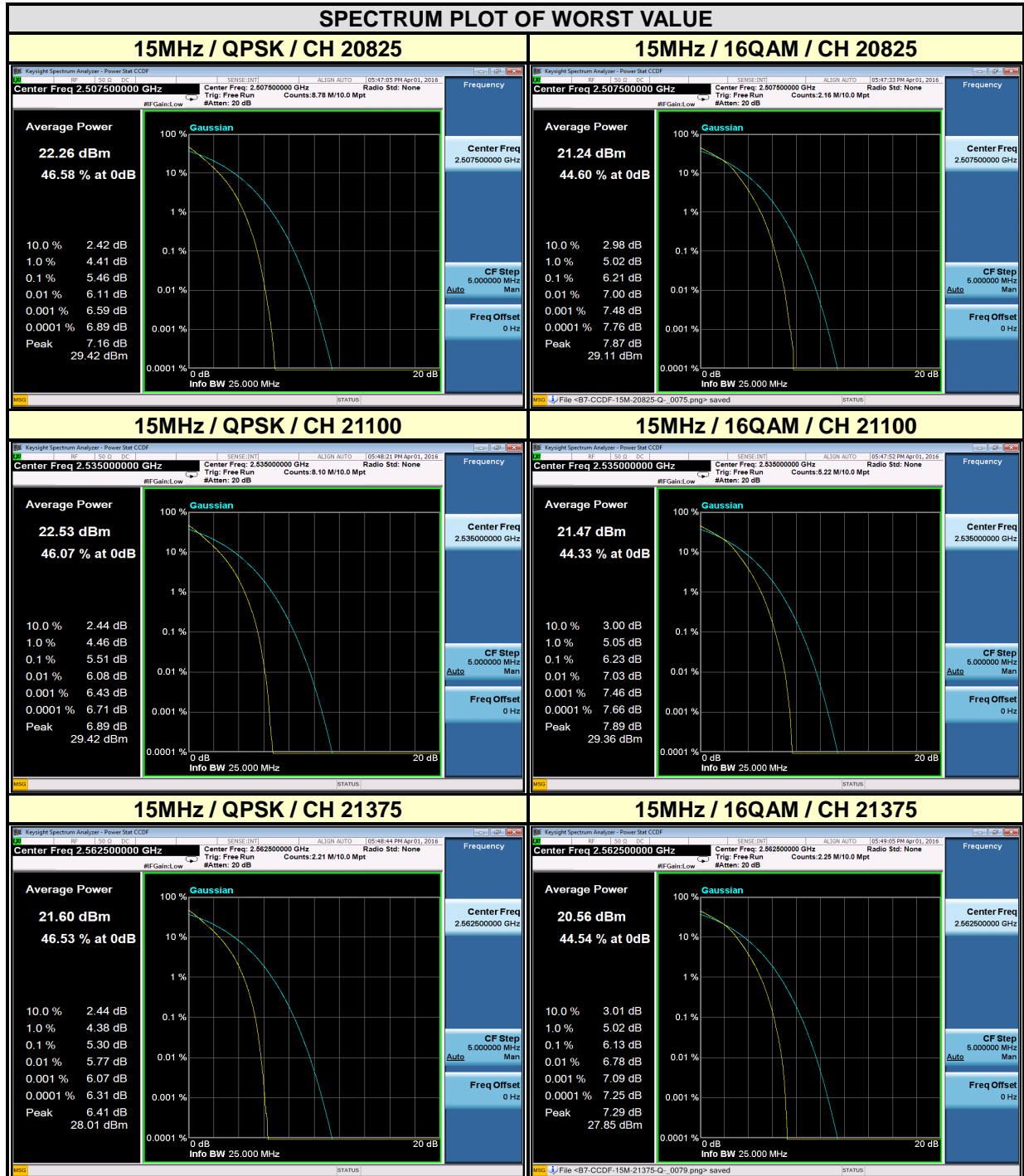


CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20800	2505	5.35	6.10
21100	2535	5.40	6.14
21400	2565	5.35	6.12



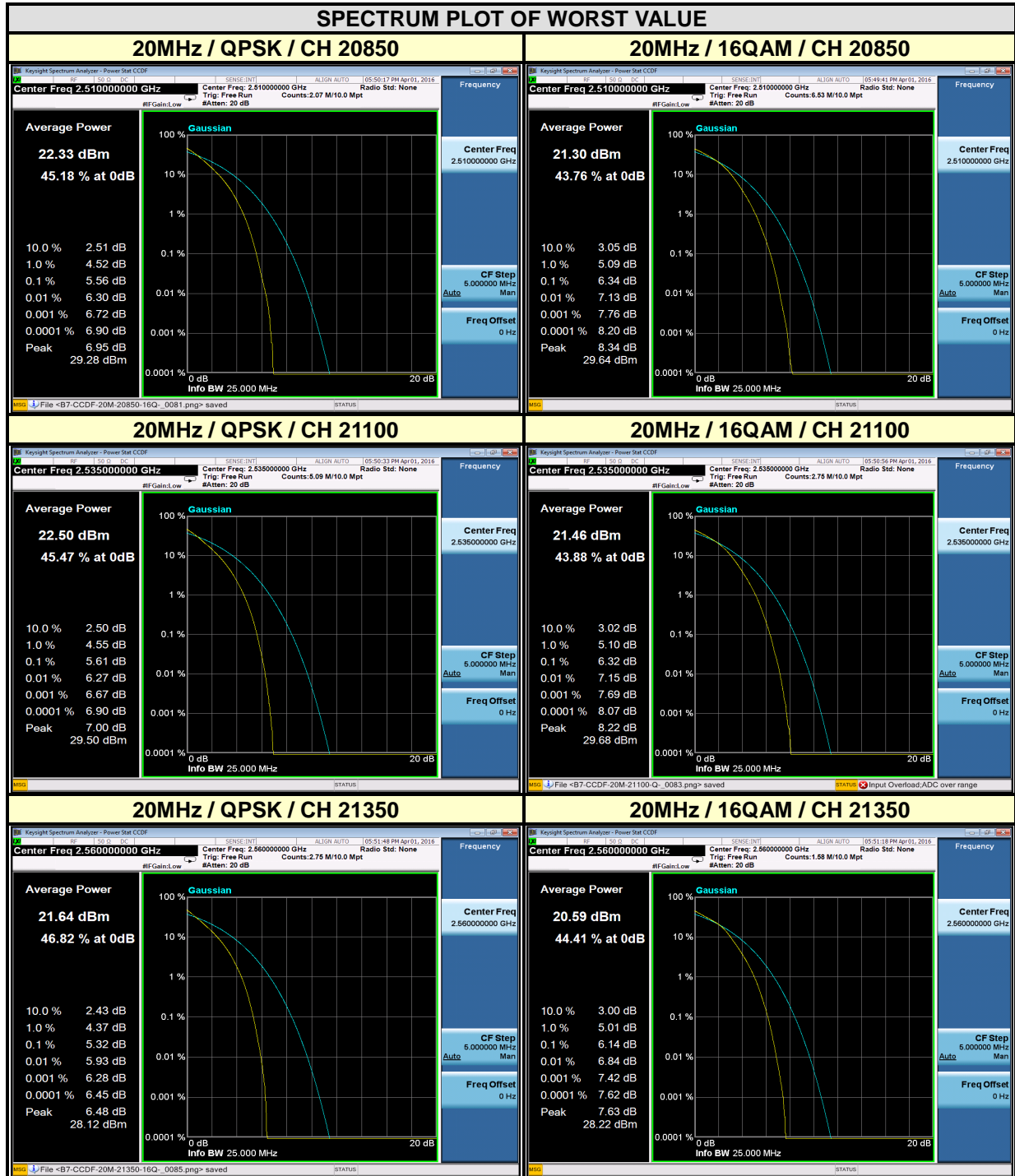


CHANNEL BANDWIDTH: 15MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20825	2507.5	5.46	6.21
21100	2535	5.51	6.23
21375	2562.5	5.30	6.13





CHANNEL BANDWIDTH: 20MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
20850	2510	5.56	6.34
21100	2535	5.61	6.32
21350	2560	5.32	6.14



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LTE BAND 41

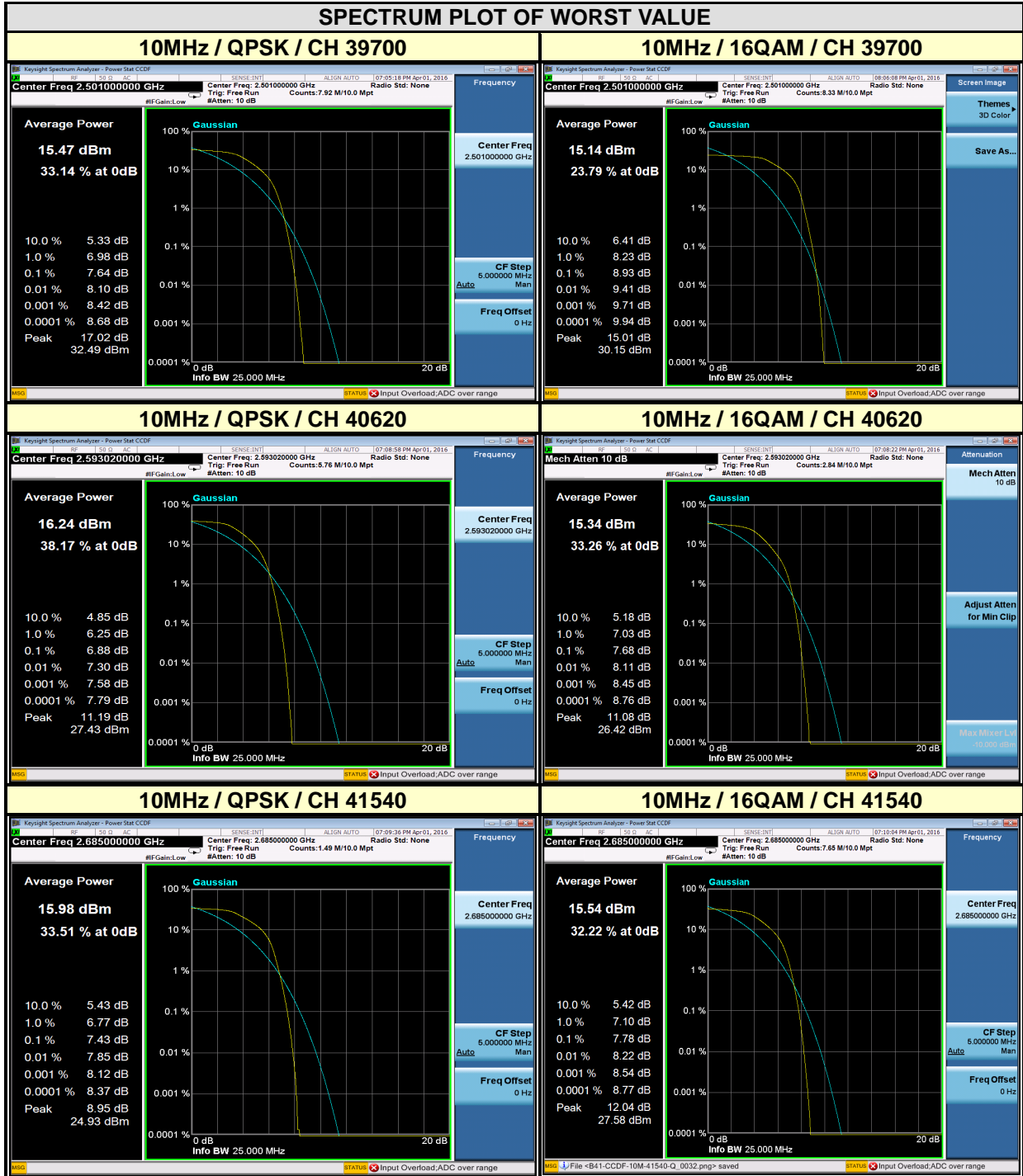
CHANNEL BANDWIDTH: 5MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
39675	2498.5	6.53	7.05
40620	2593	6.76	7.38
41565	2687.5	6.55	7.62

SPECTRUM PLOT OF WORST VALUE



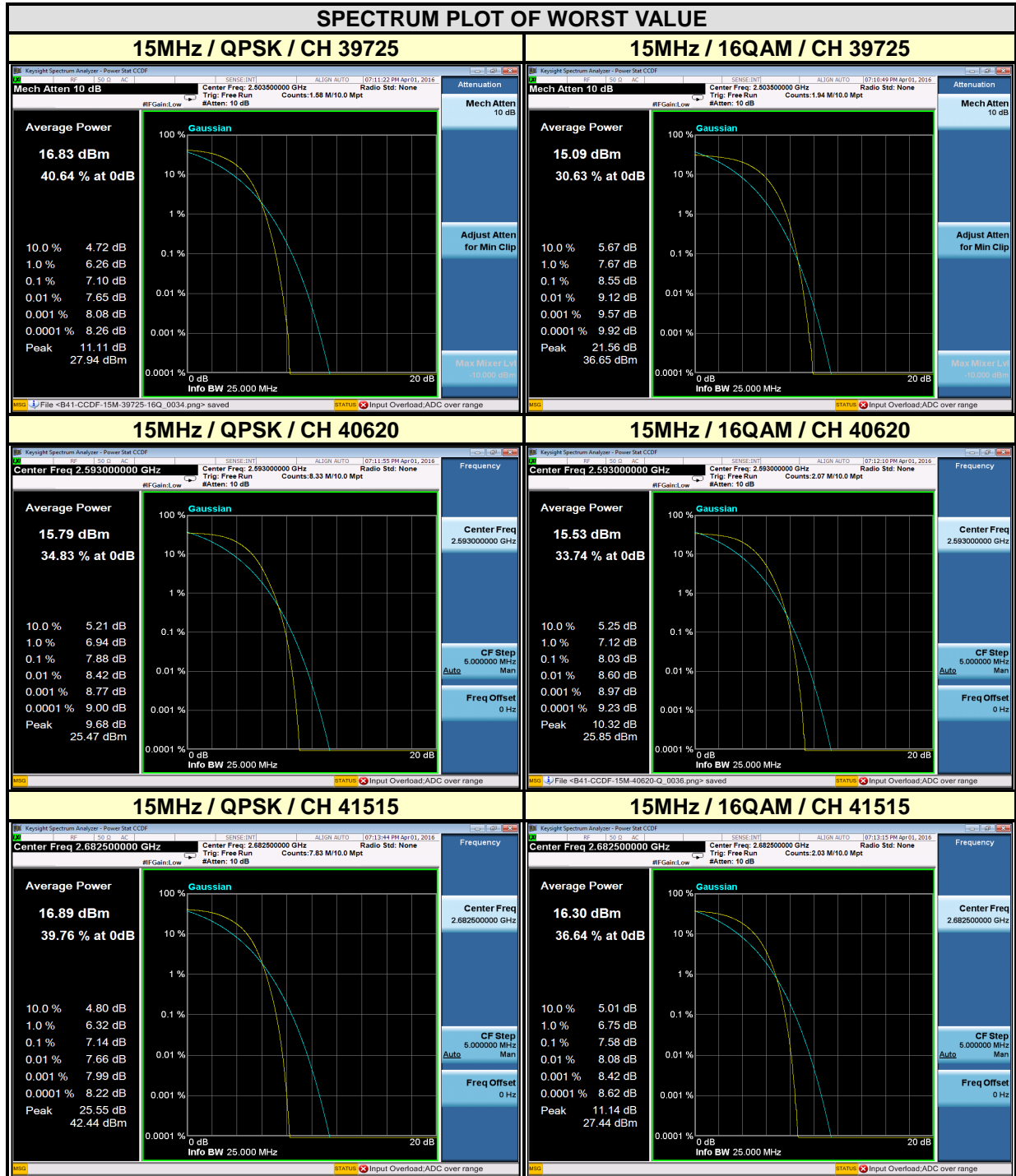


CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
39700	2501	7.64	8.93
40620	2593	6.88	7.68
41540	2685	7.43	7.78





CHANNEL BANDWIDTH: 15MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
39725	2503.5	7.10	8.55
40620	2593	7.88	8.03
41515	2682.5	7.14	7.58





CHANNEL BANDWIDTH: 20MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
39750	2506	7.22	8.16
40620	2593	8.15	8.64
41490	2680	8.47	8.55



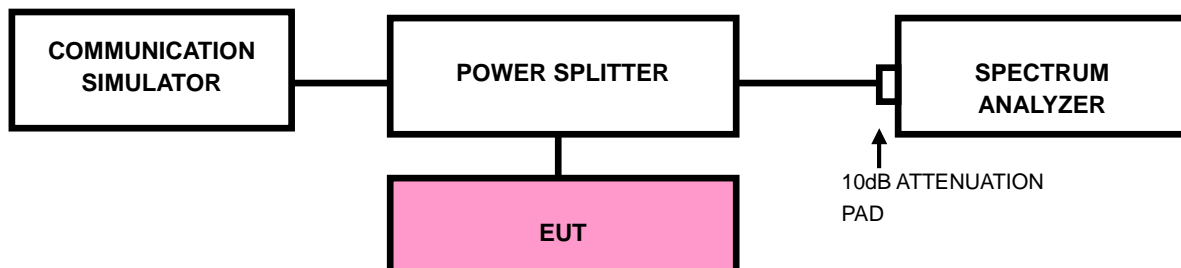


4.5 BAND EDGE MEASUREMENT

4.5.1 LIMITS OF BAND EDGE MEASUREMENT

According to FCC 27.53(m)(4) specified that 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. For mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed.

4.5.2 TEST SETUP



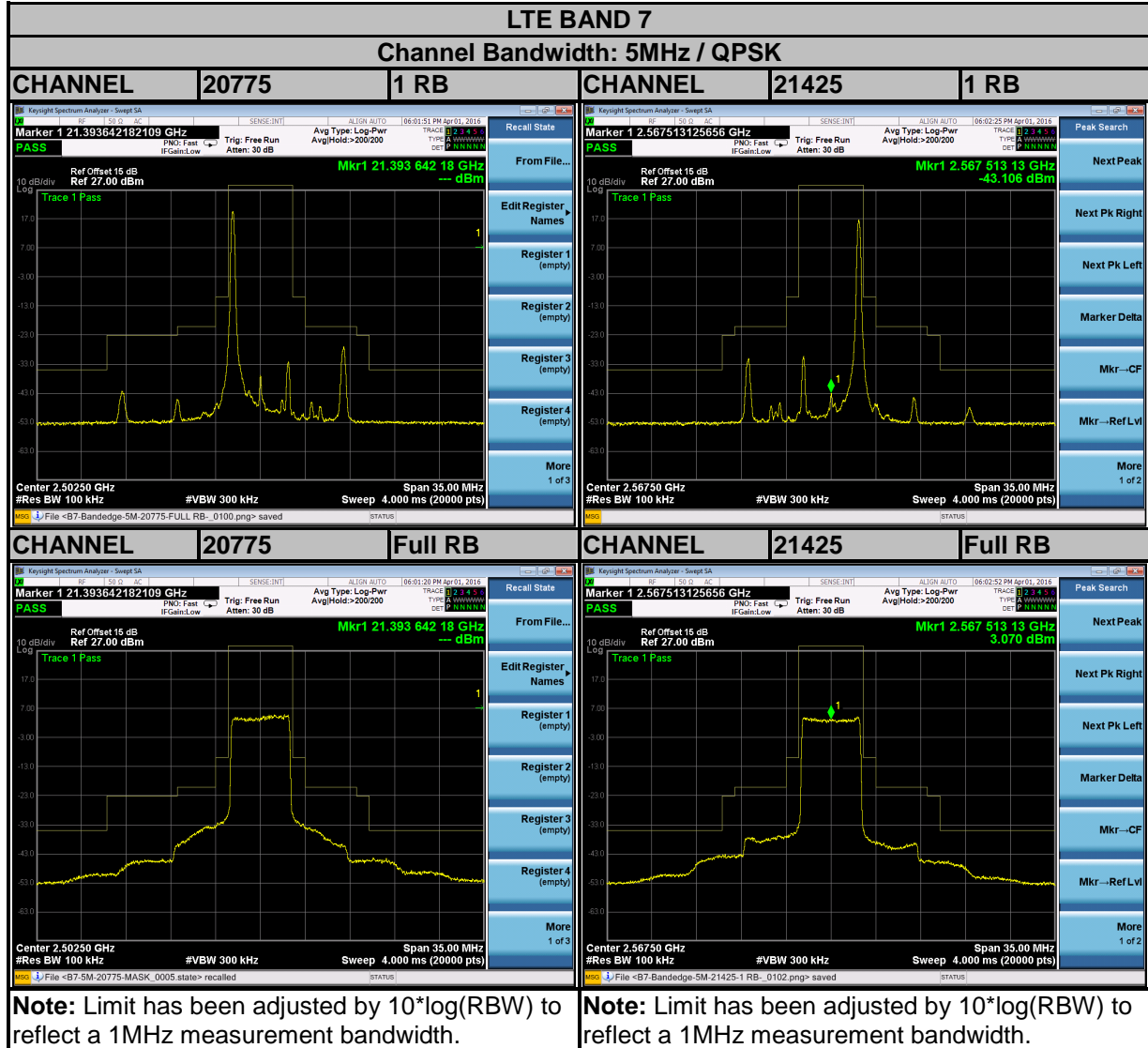


4.5.3 TEST PROCEDURES

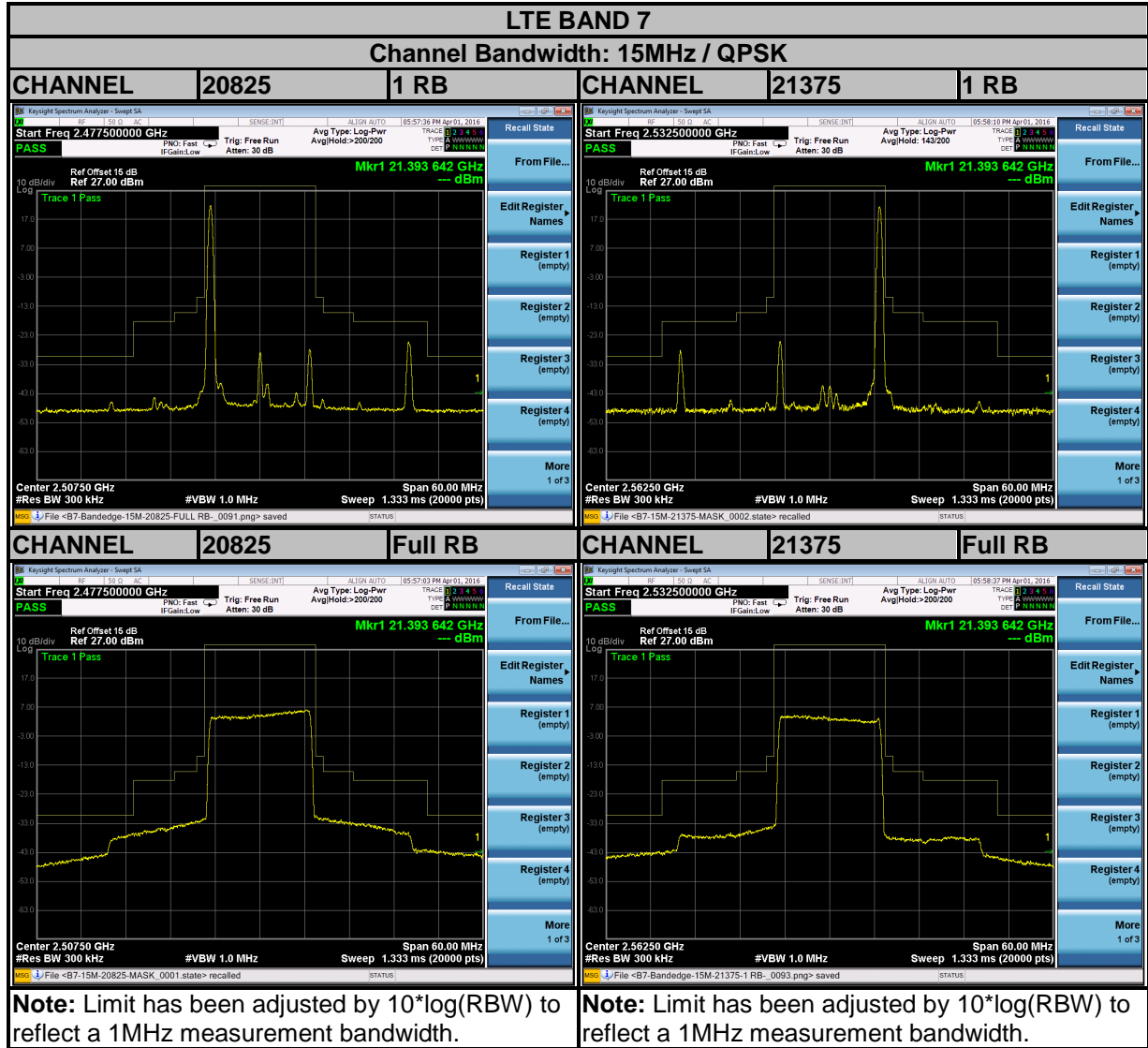
- a. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
- b. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- c. The center frequency of spectrum is the band edge frequency and span is 35MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (FOR LTE Band 7& Band 41 CHANNEL bandwidth 5MHz).
- d. The center frequency of spectrum is the band edge frequency and span is 50MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz (FOR LTE Band 7& Band 41 CHANNEL bandwidth 10MHz).
- e. The center frequency of spectrum is the band edge frequency and span is 60MHz. RBW of the spectrum is 300kHz and VBW of the spectrum is 1MHz (FOR LTE Band 7& Band 41 CHANNEL bandwidth 15MHz).
- f. The center frequency of spectrum is the band edge frequency and span is 80MHz. RBW of the spectrum is 500kHz and VBW of the spectrum is 2MHz (FOR LTE Band 7 CHANNEL bandwidth 20MHz).
- g. The center frequency of spectrum is the band edge frequency and span is 80MHz. RBW of the spectrum is 400kHz and VBW of the spectrum is 1MHz (FOR LTE Band 41 CHANNEL bandwidth 20MHz).
- h. Record the max trace plot into the test report.

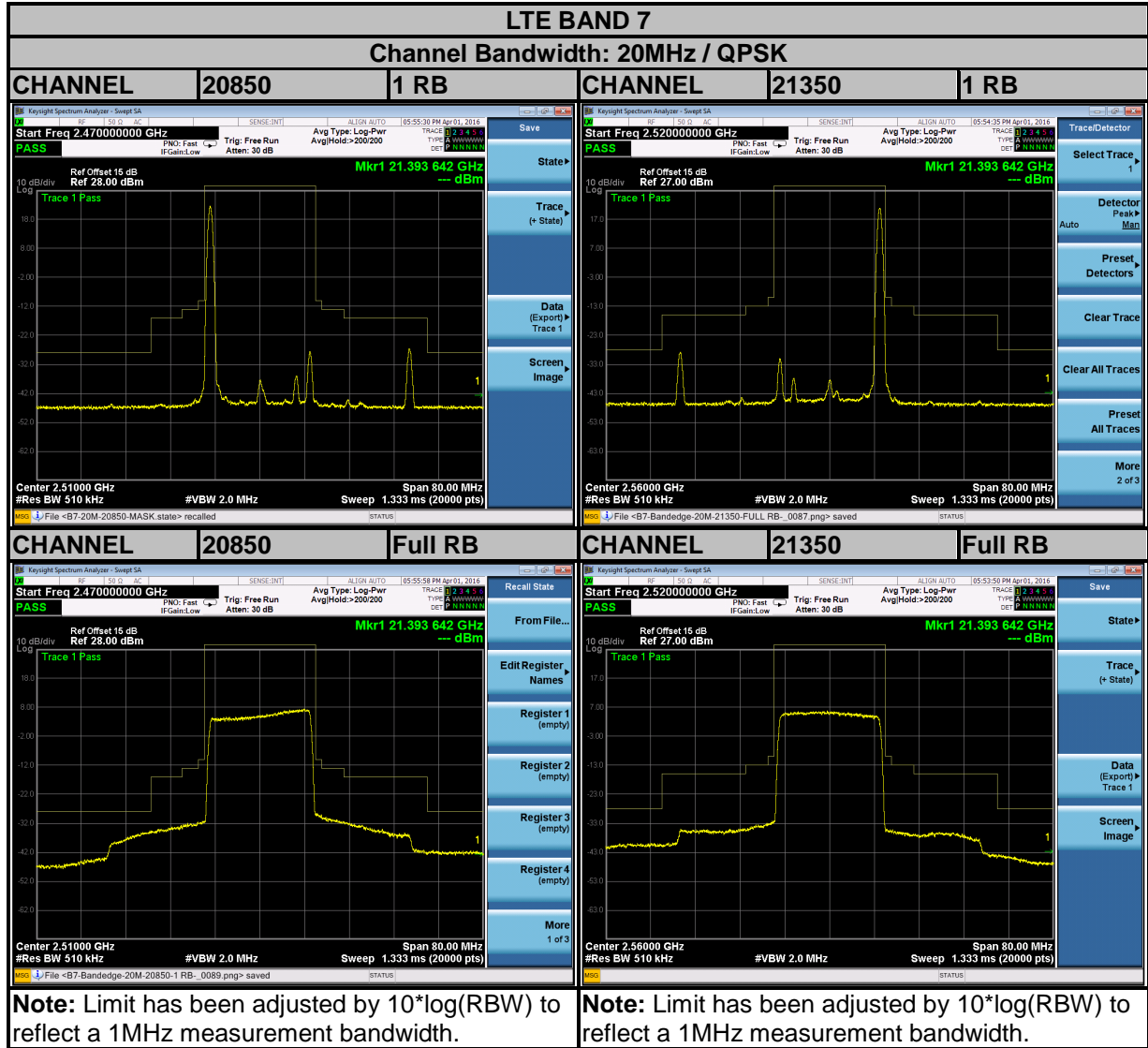


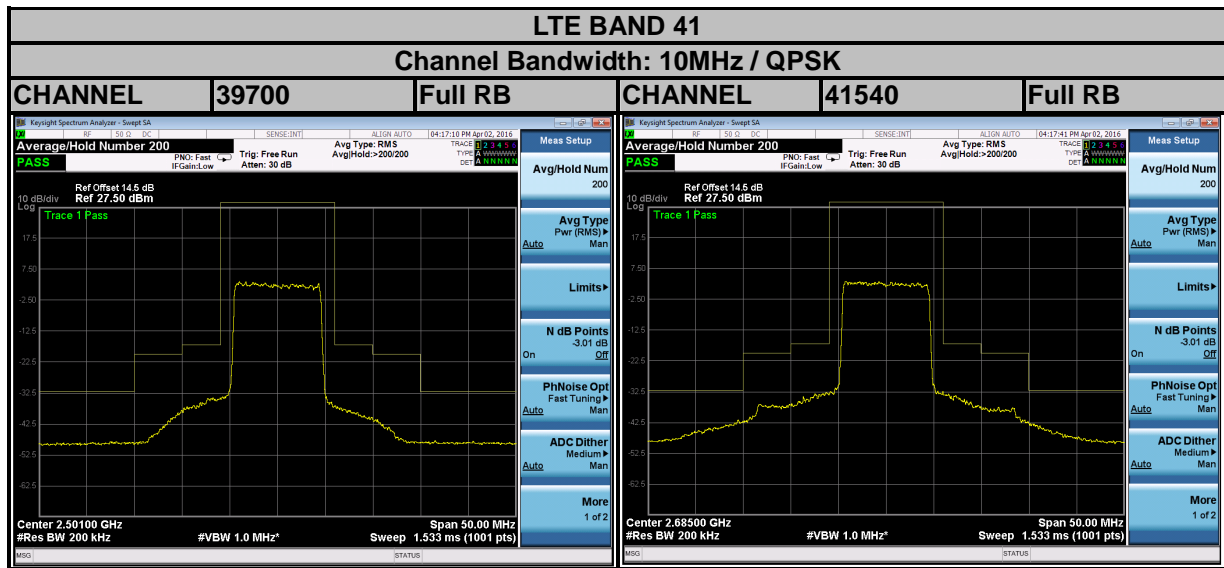
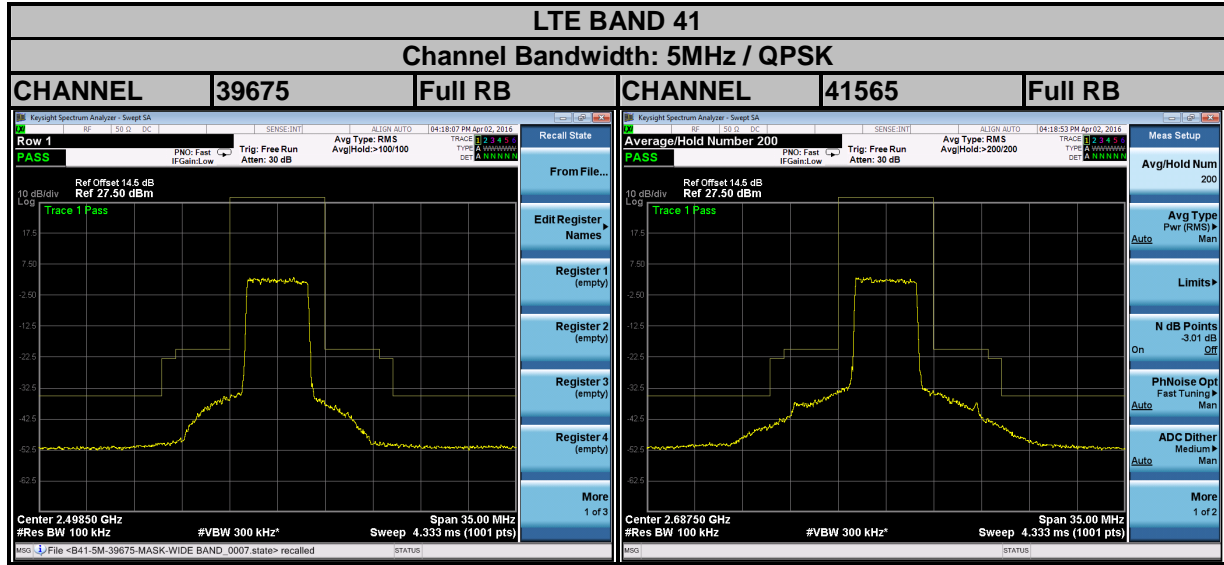
4.5.4 TEST RESULTS

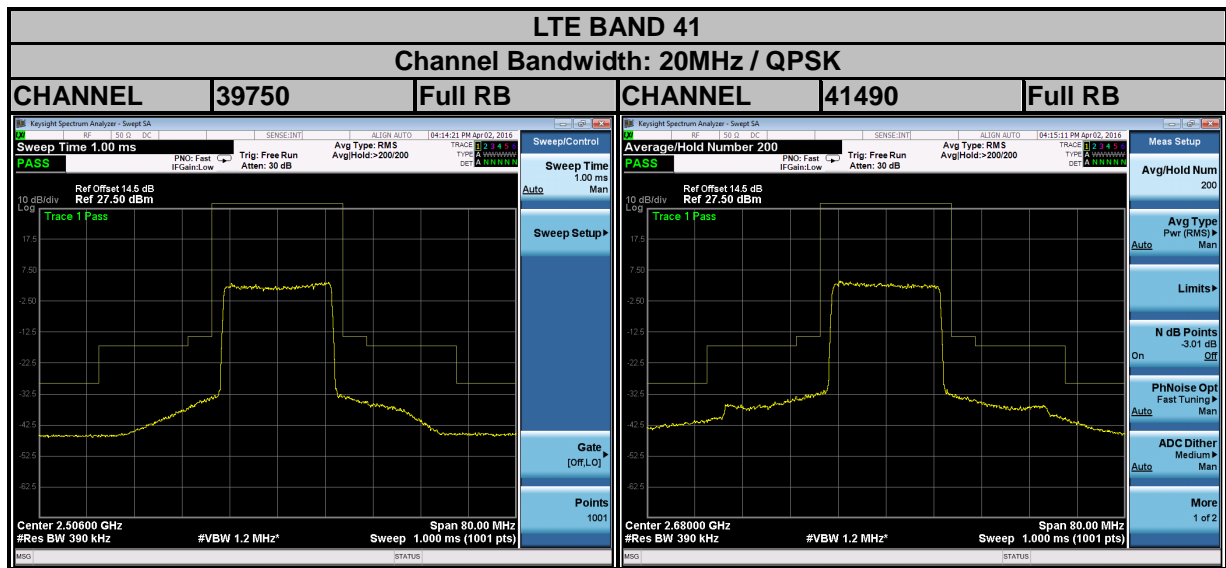
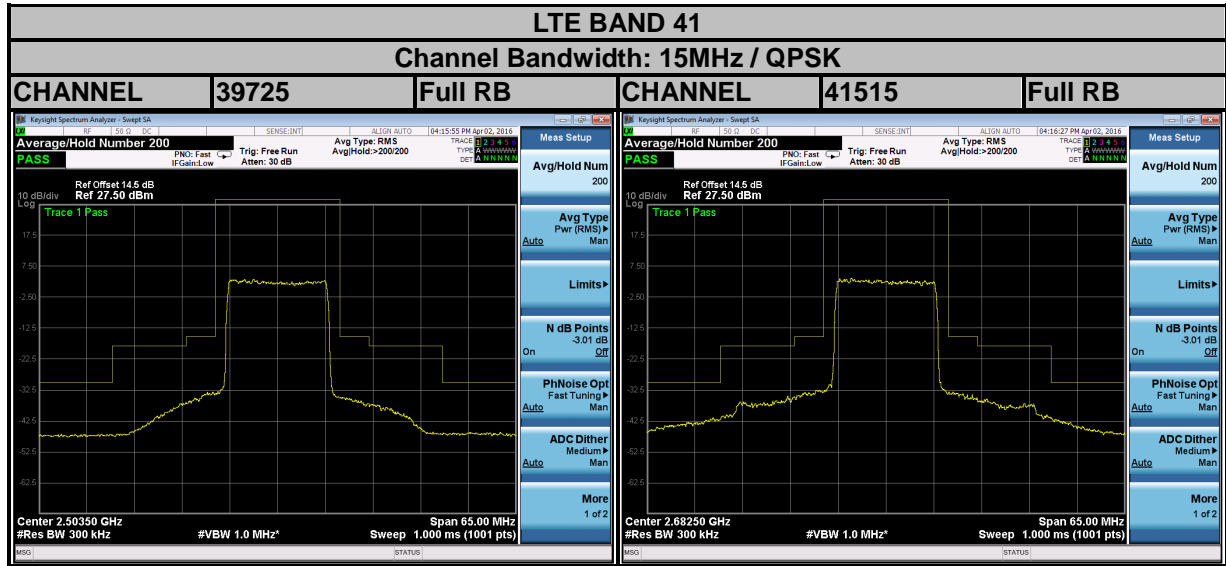














4.6 CONDUCTED SPURIOUS EMISSIONS

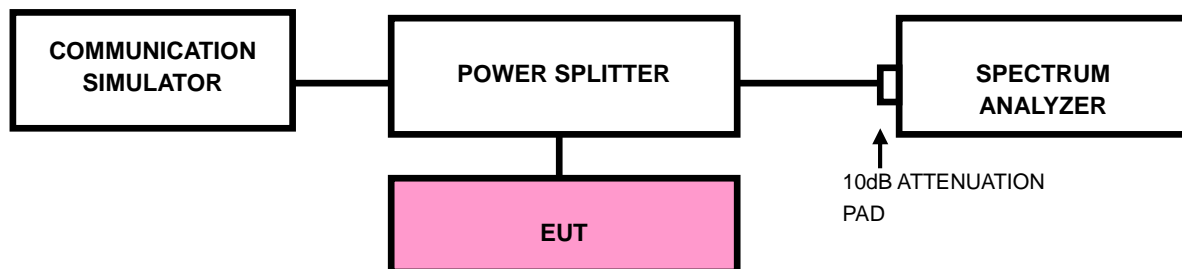
4.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $55 + 10 \log_{10}(P)$ dB. The limit of emission is equal to -25dBm.

4.6.2 TEST PROCEDURE

- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- b. Measuring frequency range is from 30MHz to 26GHz for LTE Band 7 and LTE Band 41. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

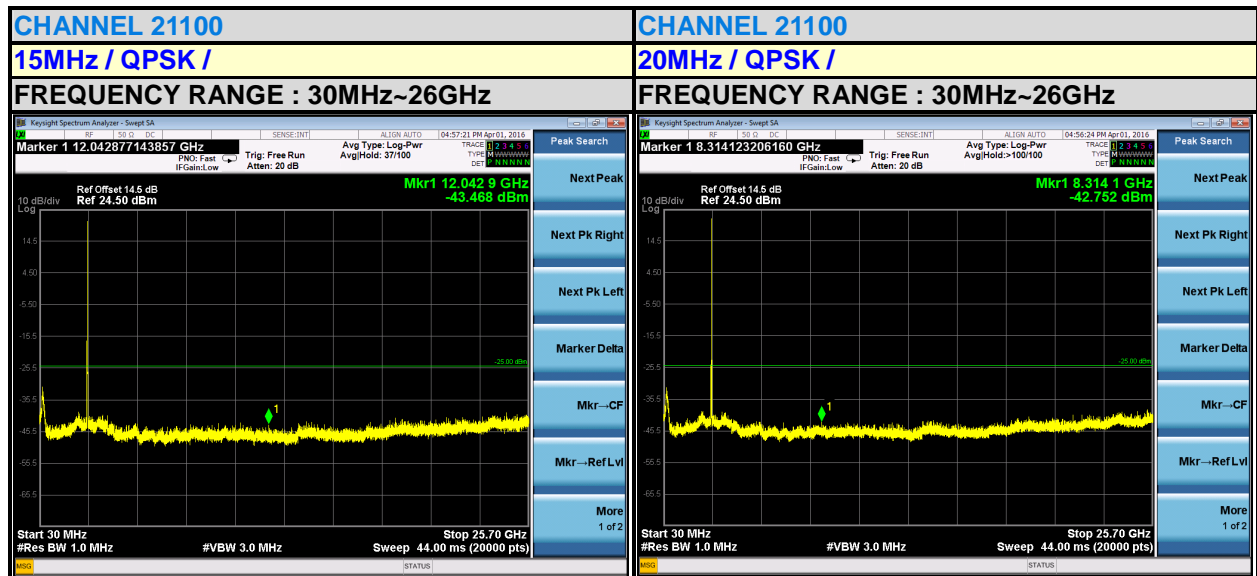
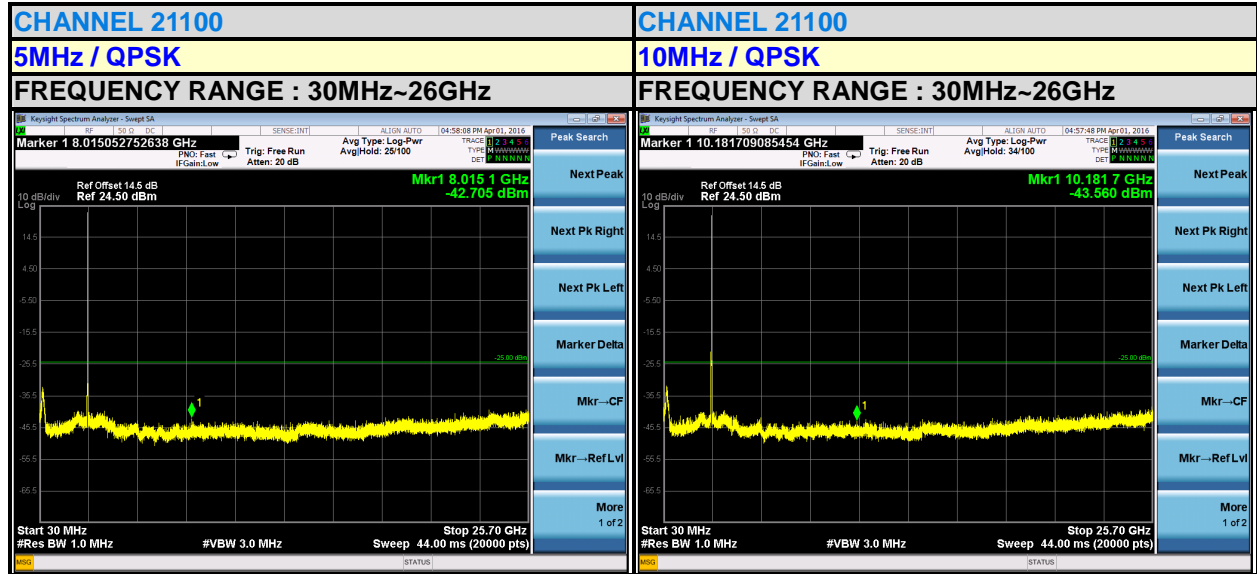
4.6.3 TEST SETUP





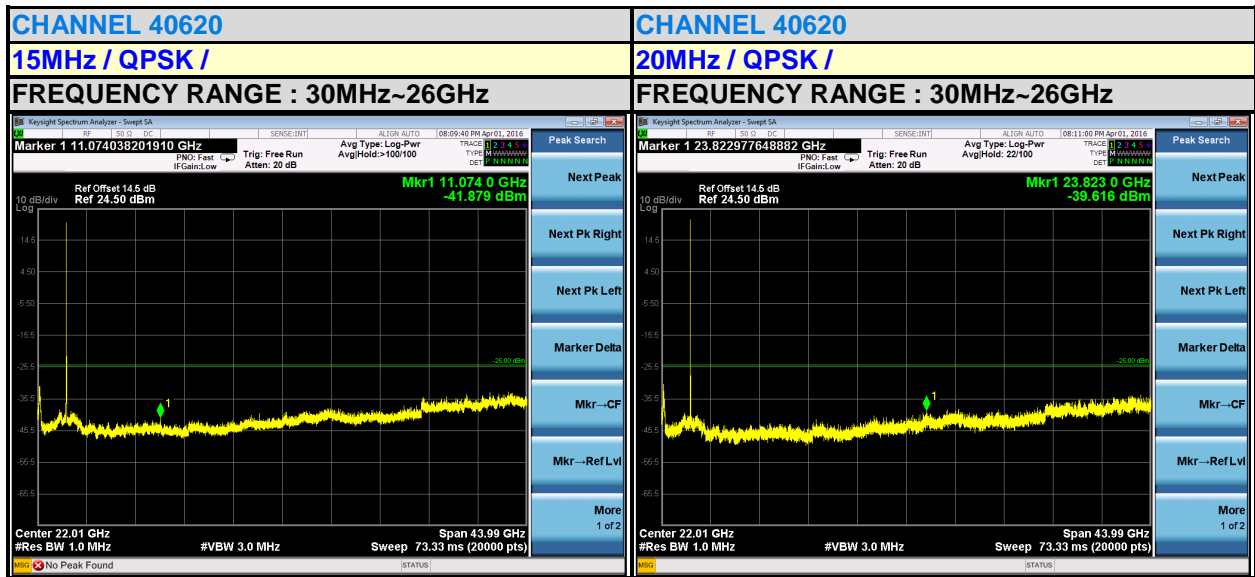
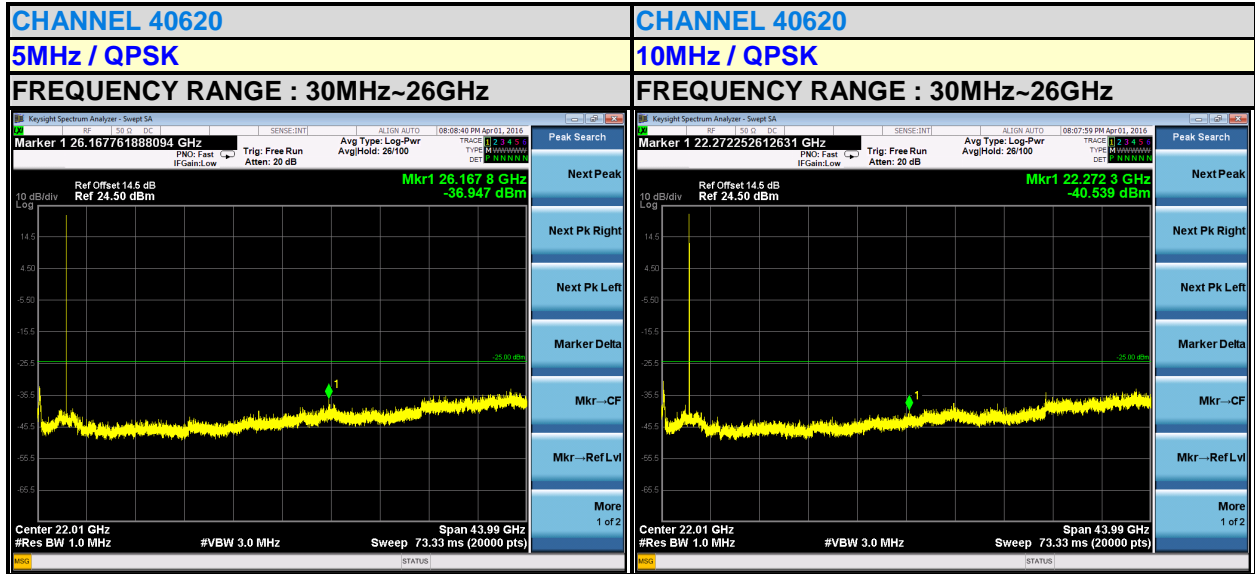
4.6.4 TEST RESULTS

LTE BAND 7





LTE BAND 41





4.7 RADIATED EMISSION MEASUREMENT

4.7.1 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 $55 + 10 \log_{10}(P)$ dB. The limit of emission is equal to -25dBm.

4.7.2 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.

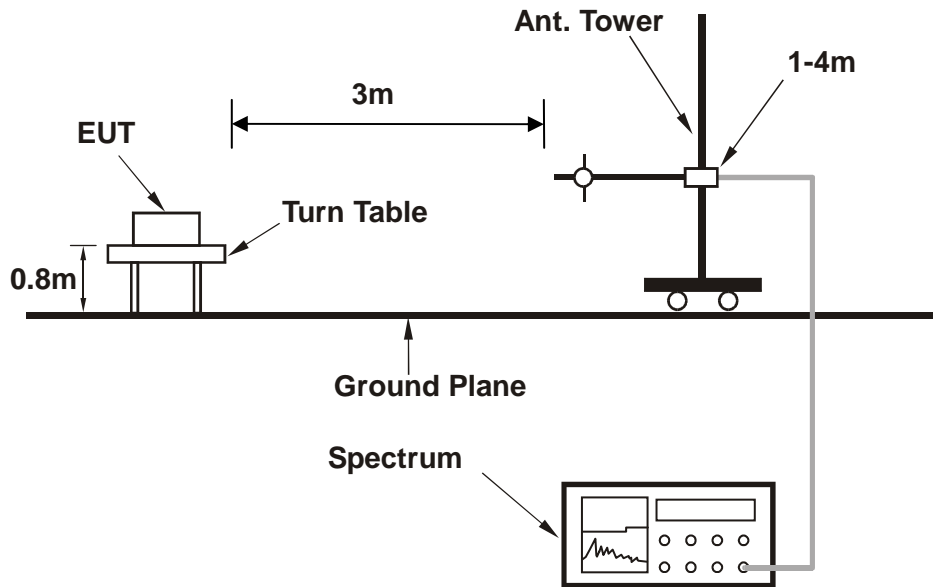
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.7.3 DEVIATION FROM TEST STANDARD

No deviation



4.7.4 TEST SETUP



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

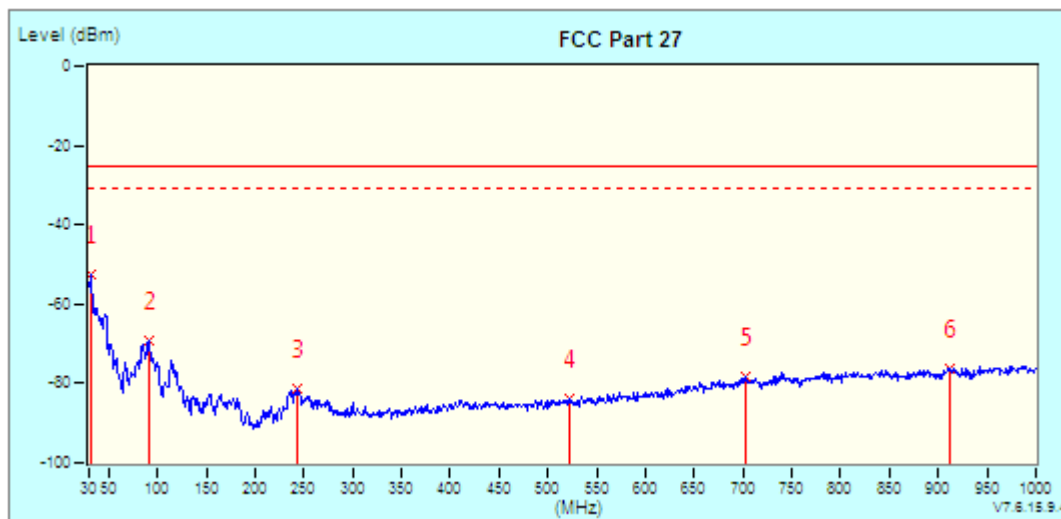


4.7.5 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

LTE Band 7:

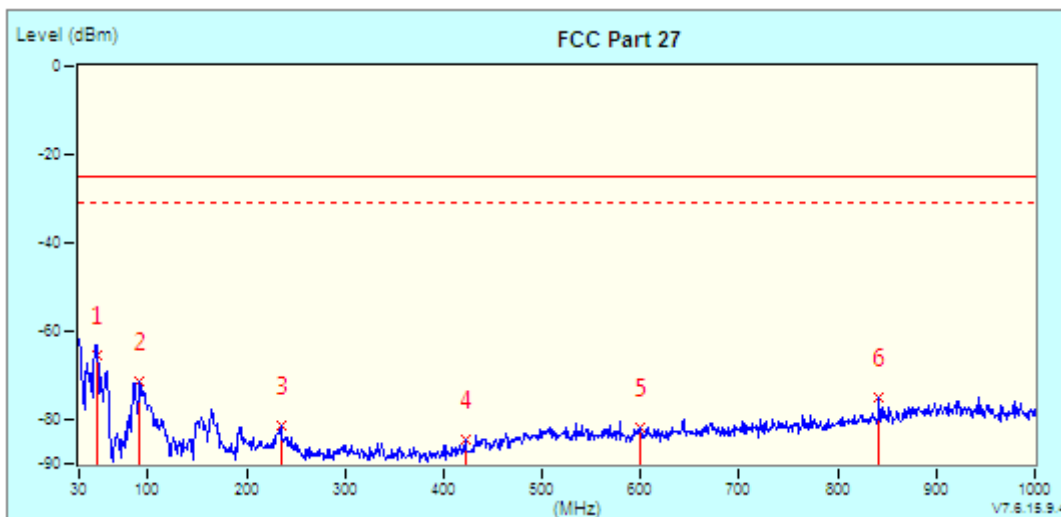
MODE	TX channel21100	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table	
							cm	deg
* 1	32.91	15.34	-67.78	-52.44	-25.00	-27.44	--	--
2	91.11	-9.28	-60.15	-69.43	-25.00	-44.43	--	--
3	242.43	-16.42	-65.01	-81.43	-25.00	-56.43	--	--
4	522.76	-10.00	-74.03	-84.03	-25.00	-59.03	--	--
5	702.21	-5.34	-73.03	-78.37	-25.00	-53.37	--	--
6	912.70	-3.44	-72.66	-76.10	-25.00	-51.10	--	--



MODE	TX channel21100	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			



No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg
*	1	-4.23	-61.40	-65.63	-25.00	-40.63	-- --
	2	-10.55	-60.64	-71.19	-25.00	-46.19	-- --
	3	-11.25	-70.03	-81.28	-25.00	-56.28	-- --
	4	-10.13	-74.64	-84.77	-25.00	-59.77	-- --
	5	-7.33	-74.53	-81.86	-25.00	-56.86	-- --
	6	-4.08	-70.98	-75.06	-25.00	-50.06	-- --

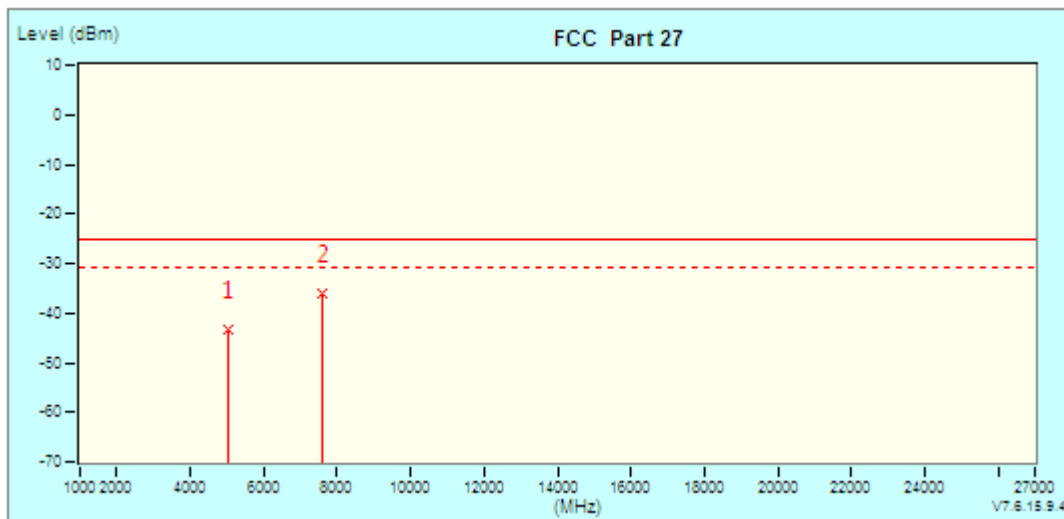


ABOVE 1GHz

LTE Band 7

CHANNEL BANDWIDTH: 5MHz / QPSK

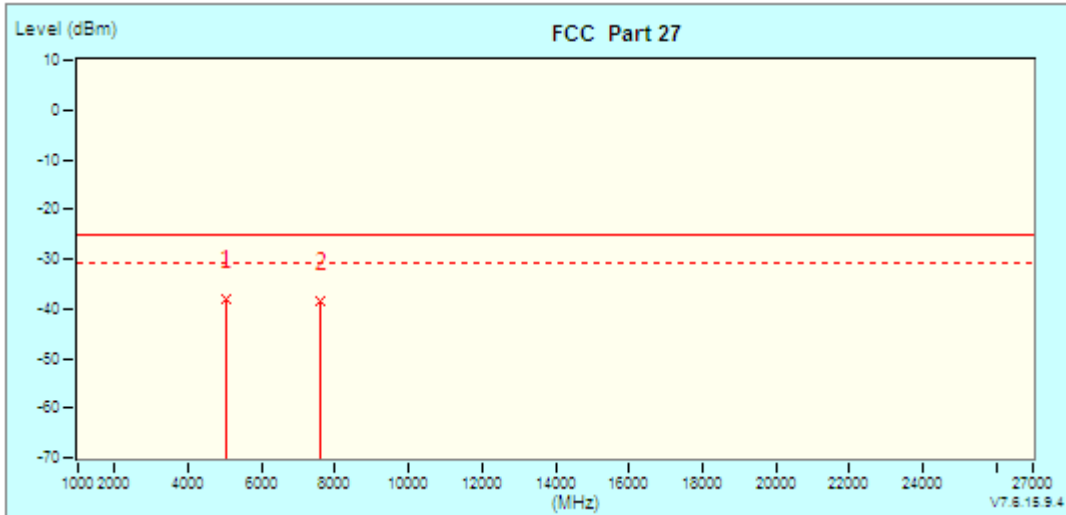
MODE	TX channel21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg	
1	5056.00 (PK)	8.44	-51.93	-43.49	-25.00	-18.49	200	360
* 2	7605.00 (PK)	13.48	-49.36	-35.88	-25.00	-10.88	200	360



MODE	TX channel21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

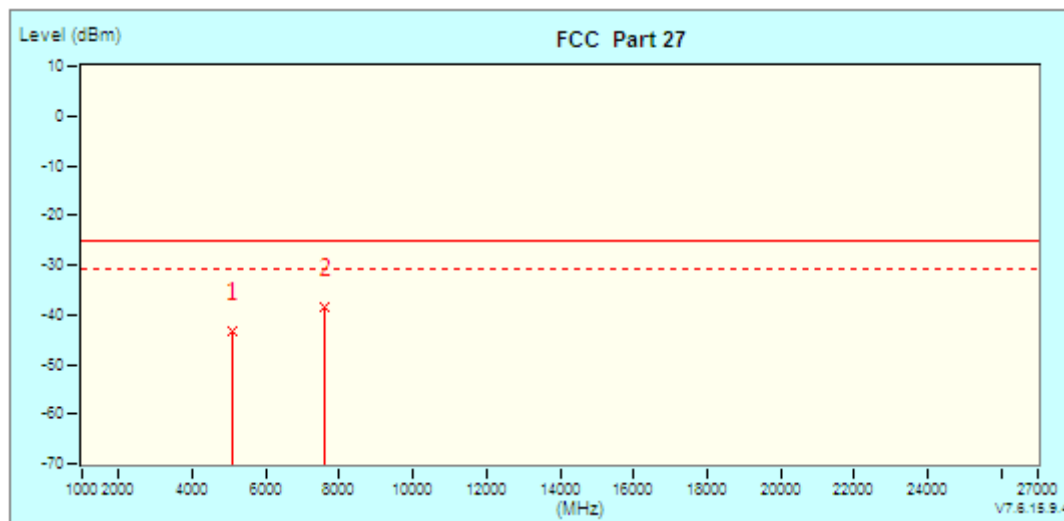


No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg	
* 1	5056.00 (PK)	7.99	-46.20	-38.21	-25.00	-13.21	100	0
2	7605.00 (PK)	12.99	-51.66	-38.67	-25.00	-13.67	100	0



CHANNEL BANDWIDTH: 10MHz / QPSK

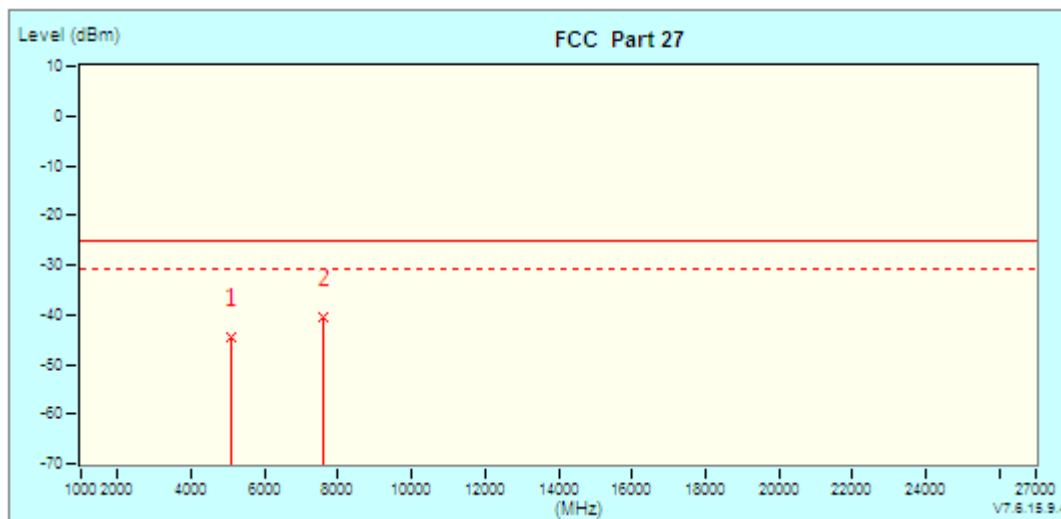
MODE	TX channel21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg	
1	5070.00 (PK)	8.46	-51.88	-43.42	-25.00	-18.42	100	0
* 2	7605.00 (PK)	13.48	-51.78	-38.30	-25.00	-13.30	100	0



MODE	TX channel21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

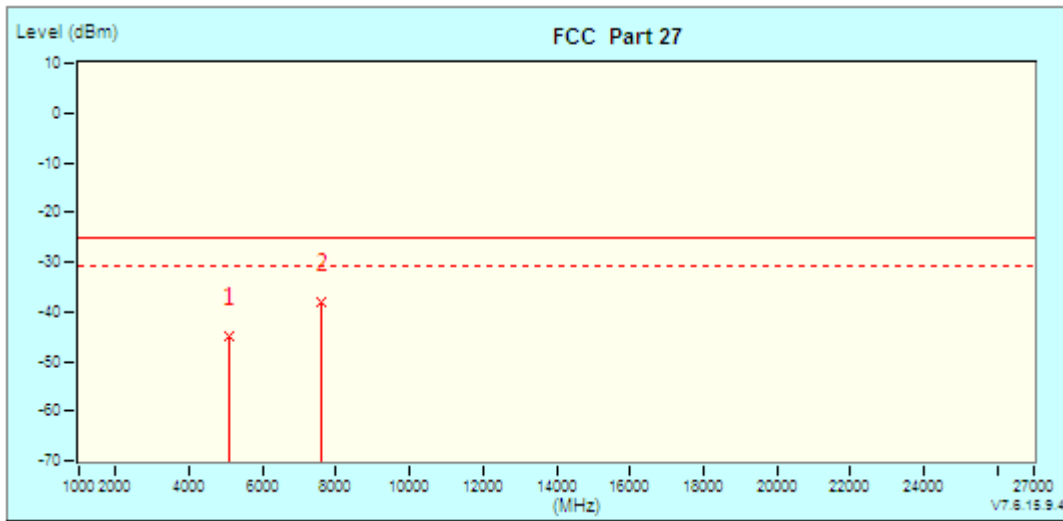


No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg	
1	5070.00 (PK)	7.99	-52.65	-44.66	-25.00	-19.66	100	360
* 2	7605.00 (PK)	12.99	-53.30	-40.31	-25.00	-15.31	100	360



CHANNEL BANDWIDTH: 15MHz / QPSK

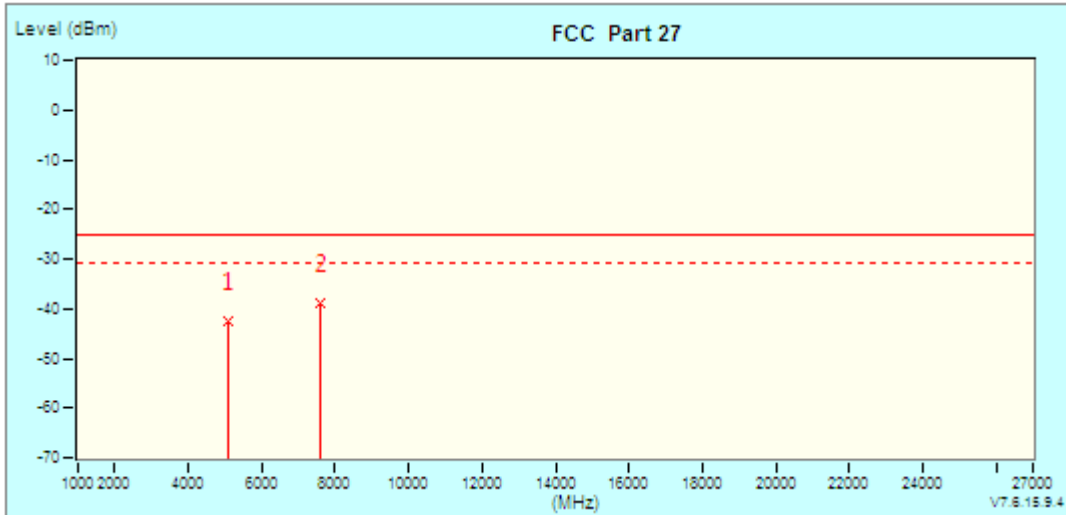
MODE	TX channel21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table	
							cm	deg
1	5070.00 (PK)	8.46	-53.27	-44.81	-25.00	-19.81	200	0
* 2	7605.00 (PK)	13.48	-51.70	-38.22	-25.00	-13.22	200	0



MODE	TX channel21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

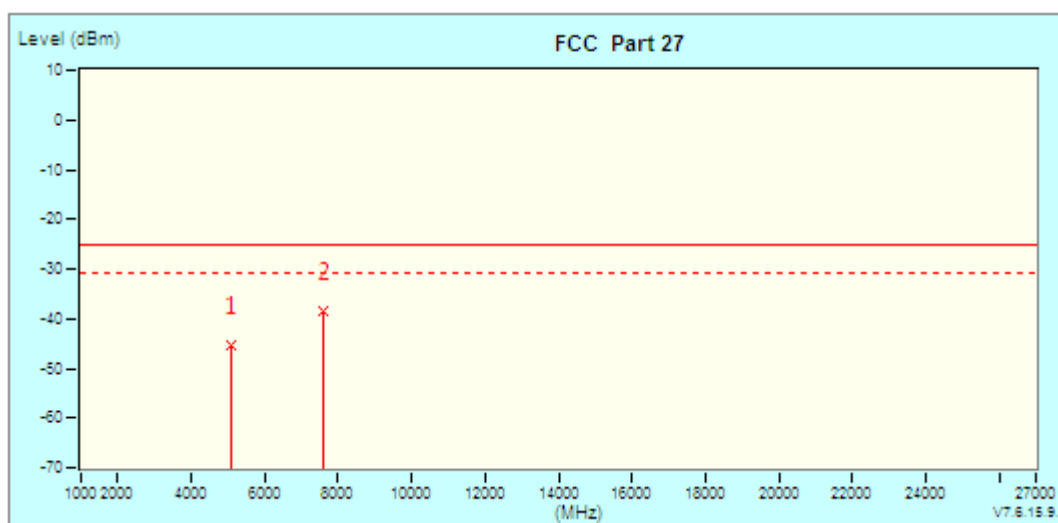


No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg	
1	5070.00 (PK)	7.99	-50.49	-42.50	-25.00	-17.50	200	360
* 2	7605.00 (PK)	12.99	-51.77	-38.78	-25.00	-13.78	200	360



CHANNEL BANDWIDTH: 20MHz / QPSK

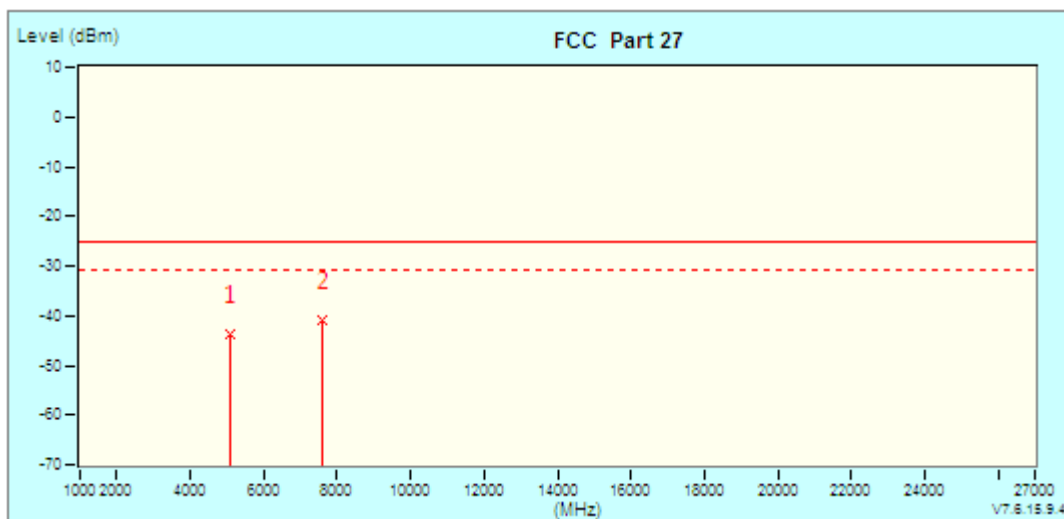
MODE	TX channel21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table	
							cm	deg
1	5070.00 (PK)	8.46	-53.83	-45.37	-25.00	-20.37	200	360
* 2	7605.00 (PK)	13.48	-52.00	-38.52	-25.00	-13.52	200	360



MODE	TX channel21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			



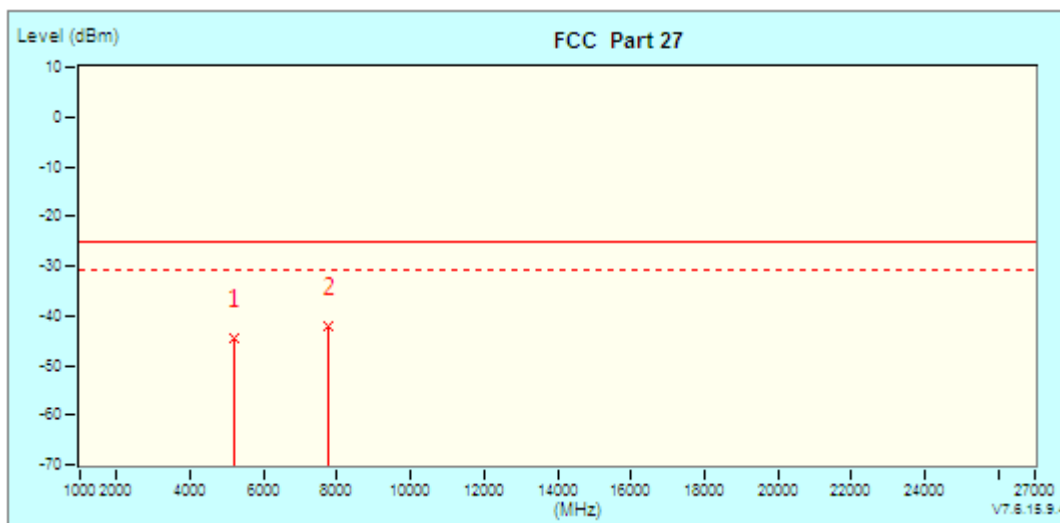
No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg	
1	5070.00 (PK)	7.99	-51.86	-43.87	-25.00	-18.87	200	0
*	7605.00 (PK)	12.99	-53.95	-40.96	-25.00	-15.96	200	0



LTE Band 41

CHANNEL BANDWIDTH: 5MHz / QPSK

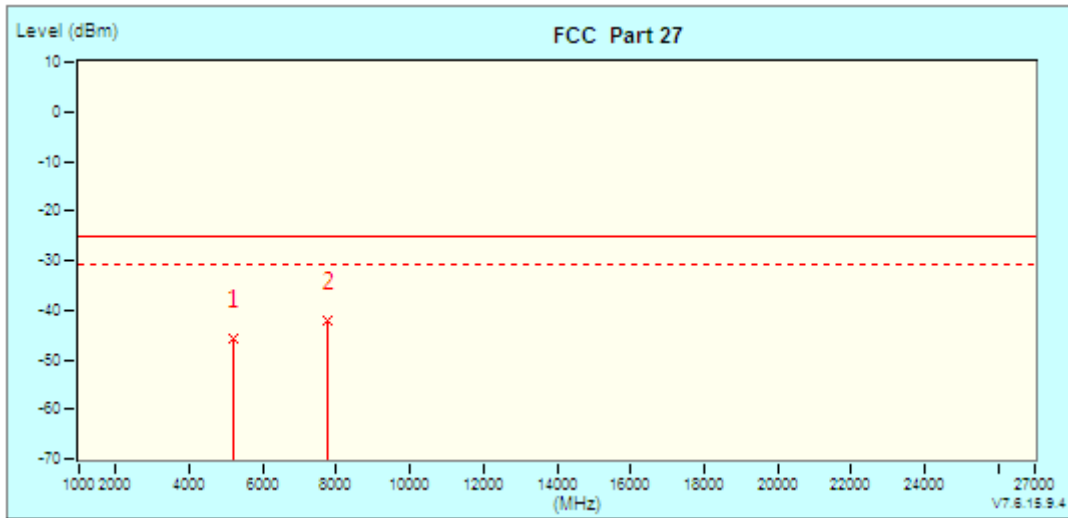
MODE	TX channel40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg	
1	5186.00 (PK)	8.59	-53.23	-44.64	-25.00	-19.64	100	0
* 2	7779.00 (PK)	13.73	-55.77	-42.04	-25.00	-17.04	100	0



MODE	TX channel40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

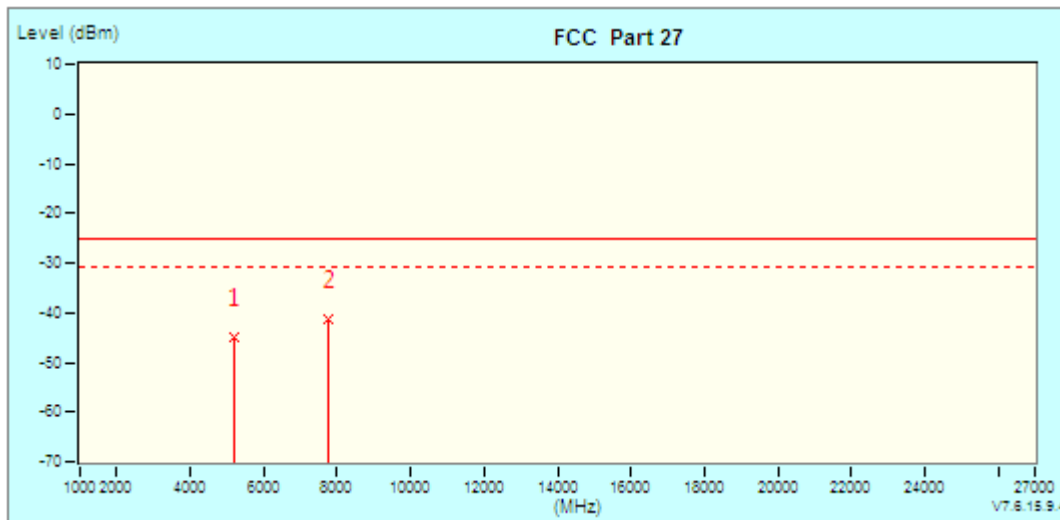


No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg	
1	5186.00 (PK)	7.98	-53.67	-45.69	-25.00	-20.69	100	360
*	7779.00 (PK)	13.29	-55.41	-42.12	-25.00	-17.12	100	360



CHANNEL BANDWIDTH: 10MHz / QPSK

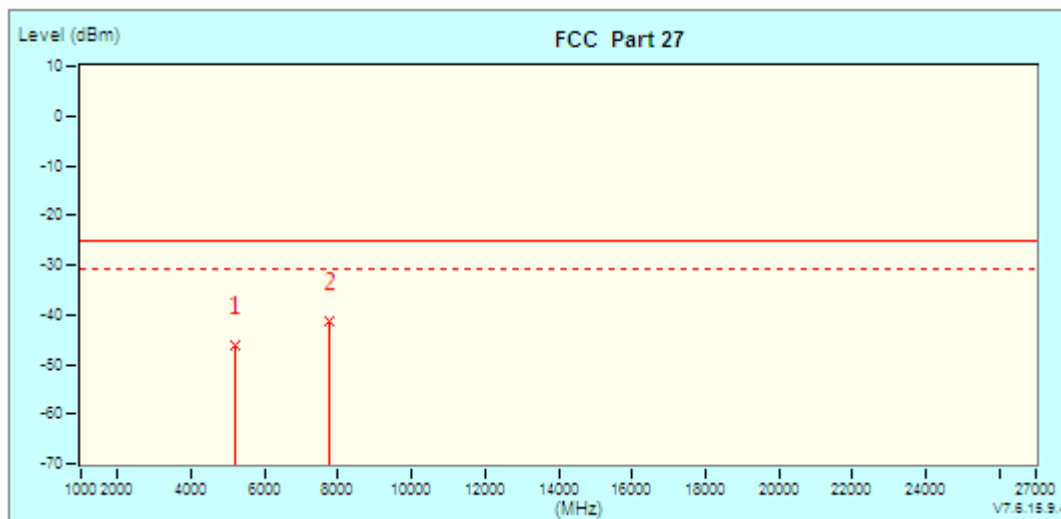
MODE	TX channel40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg	
1	5186.00 (PK)	8.59	-53.40	-44.81	-25.00	-19.81	100	360
*	7779.00 (PK)	13.73	-55.02	-41.29	-25.00	-16.29	100	360



MODE	TX channel40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

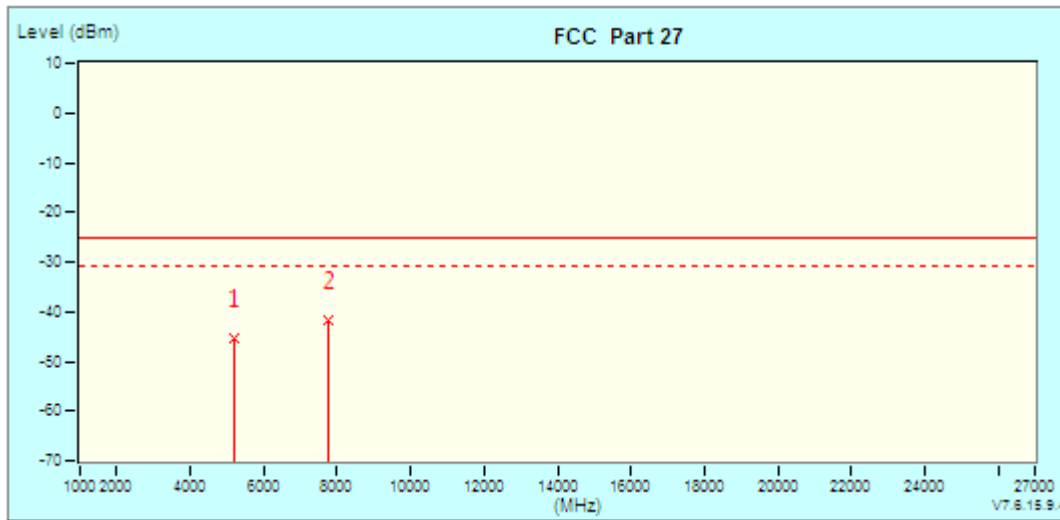


No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg	
1	5186.00 (PK)	7.98	-54.21	-46.23	-25.00	-21.23	100	0
* 2	7779.00 (PK)	13.29	-54.69	-41.40	-25.00	-16.40	100	0



CHANNEL BANDWIDTH: 15MHz / QPSK

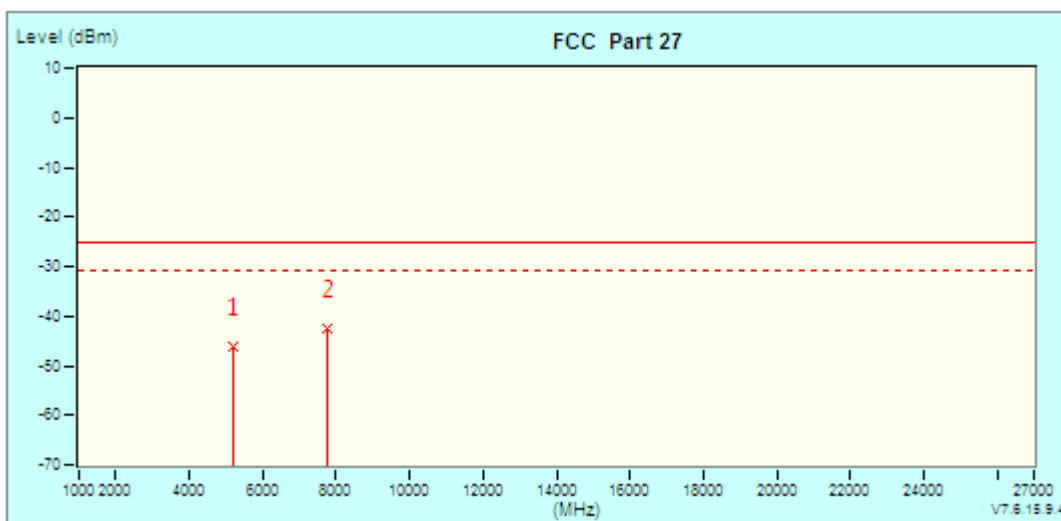
MODE	TX channel40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table	
							cm	deg
1	5186.00 (PK)	8.59	-53.88	-45.29	-25.00	-20.29	100	0
* 2	7779.00 (PK)	13.73	-55.46	-41.73	-25.00	-16.73	100	0



MODE	TX channel40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

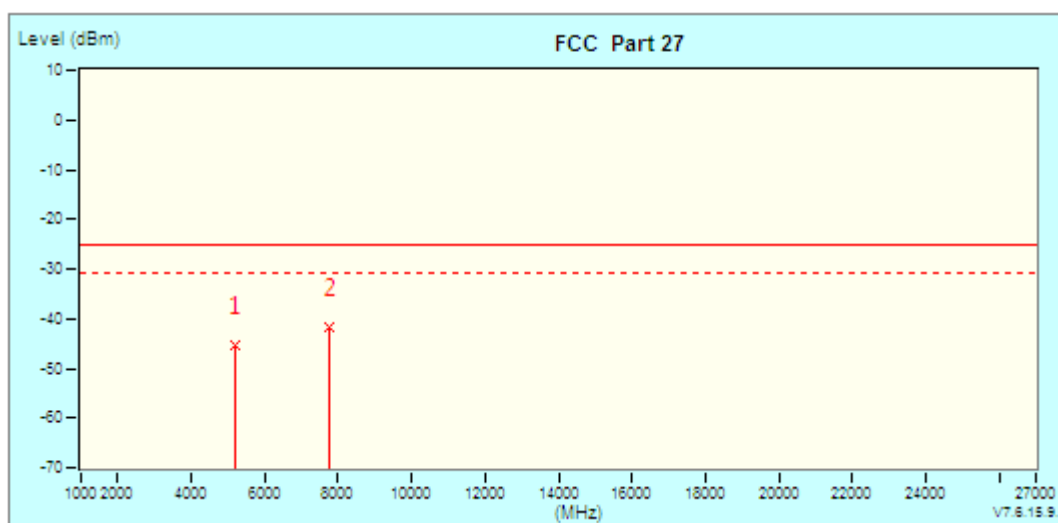


No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg	
1	5186.00 (PK)	7.98	-54.22	-46.24	-25.00	-21.24	100	360
* 2	7779.00 (PK)	13.29	-55.65	-42.36	-25.00	-17.36	100	360



CHANNEL BANDWIDTH: 20MHz / QPSK

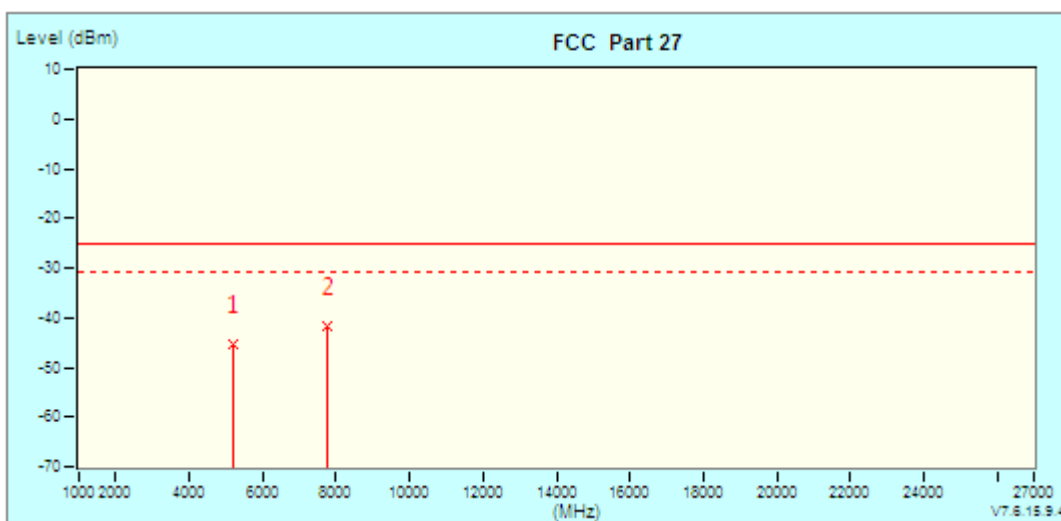
MODE	TX channel40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			



No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg	
1	5186.00 (PK)	8.59	-54.14	-45.55	-25.00	-20.55	100	0
* 2	7779.00 (PK)	13.73	-55.52	-41.79	-25.00	-16.79	100	0



MODE	TX channel40620	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 56%RH	INPUT POWER	DC 5V from adapter
TESTED BY	Alex Chen		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			



No.	Frequency MHz	Factor dB	Reading dBm	Emission dBm	Limit dBm	Margin dB	Tower / Table cm deg	
1	5186.00 (PK)	7.98	-53.39	-45.41	-25.00	-20.41	100	360
* 2	7779.00 (PK)	13.29	-55.09	-41.80	-25.00	-16.80	100	360



5 INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch, were founded in 2002 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.



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

No any modifications are made to the EUT by the lab during the test.

---END---