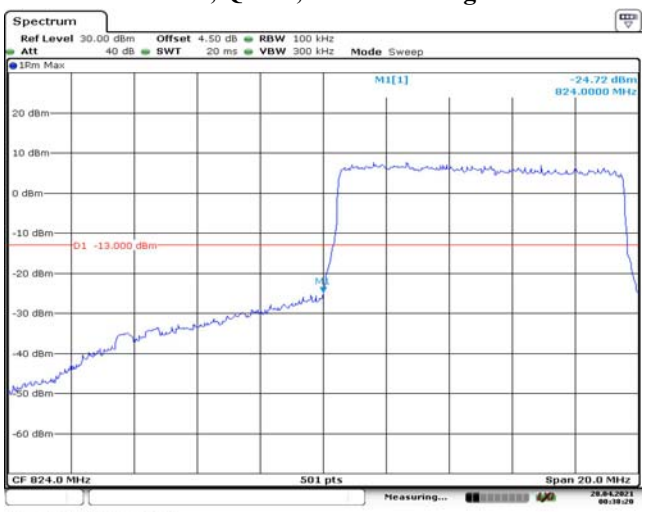
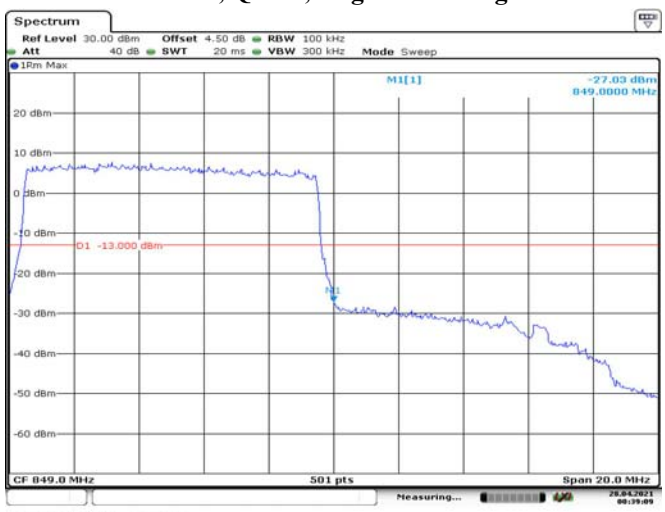
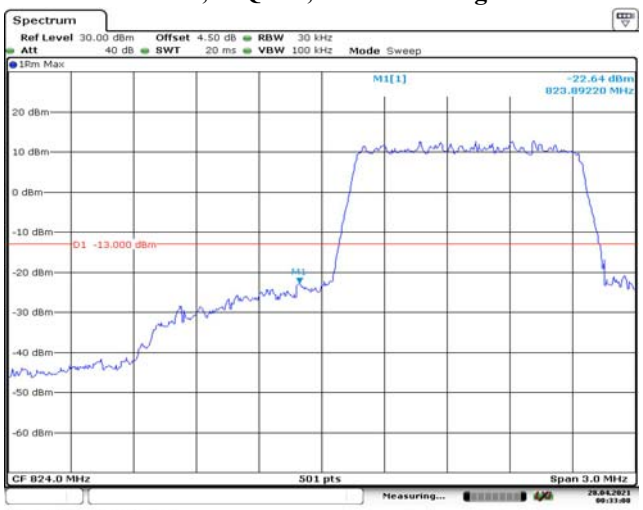
10M, QPSK, Left Band Edge



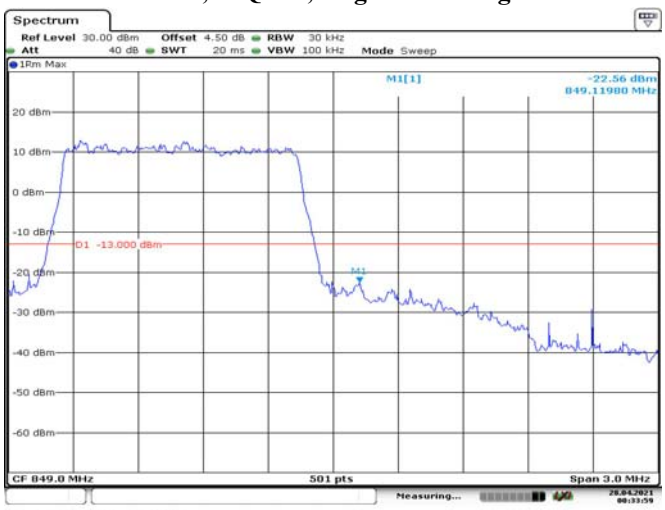
10M, QPSK, Right Band Edge



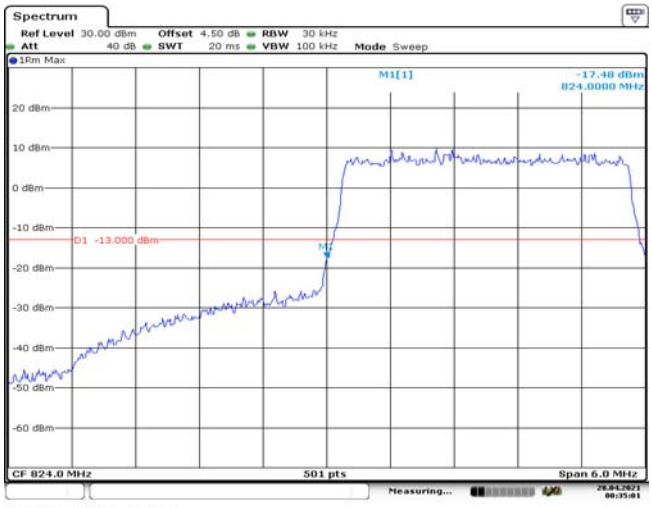
1.4M, 16QAM, Left Band Edge



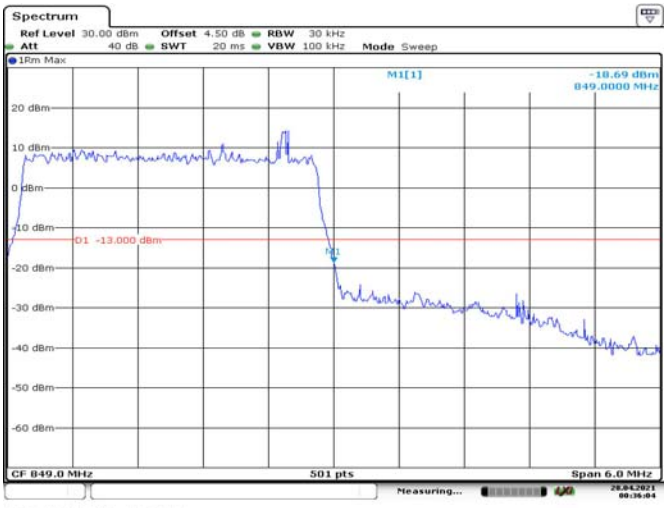
1.4M, 16QAM, Right Band Edge



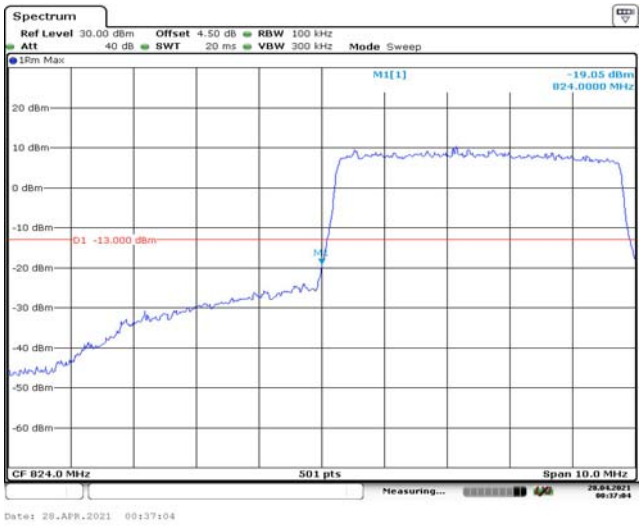
3M, 16QAM, Left Band Edge



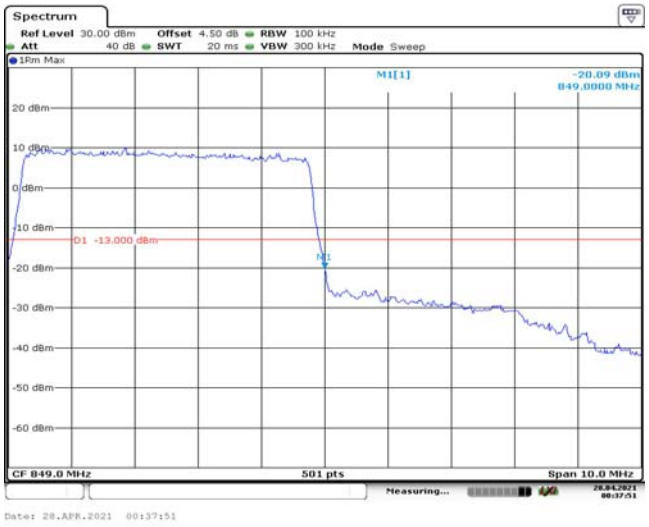
3M, 16QAM, Right Band Edge



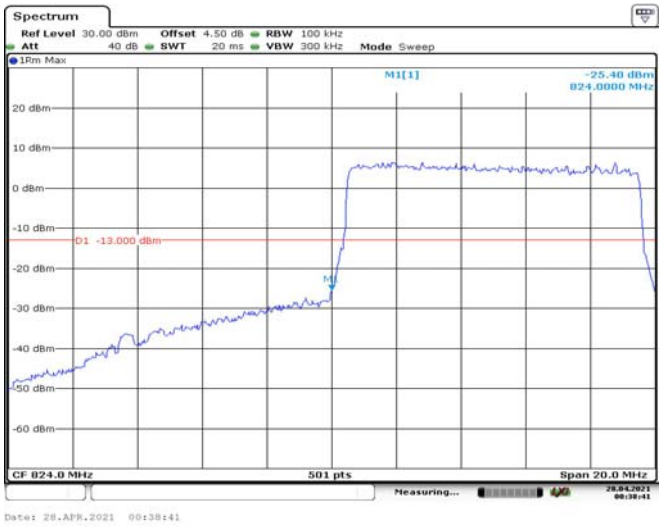
5M, 16QAM, Left Band Edge



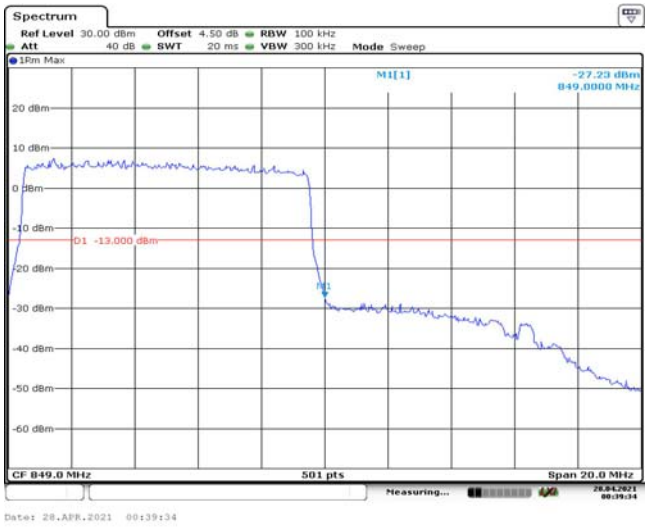
5M, 16QAM, Right Band Edge



10M, 16QAM, Left Band Edge

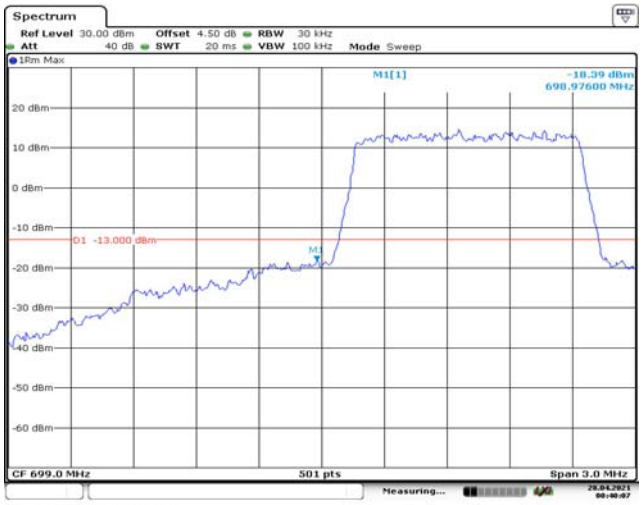


10M, 16QAM, Right Band Edge

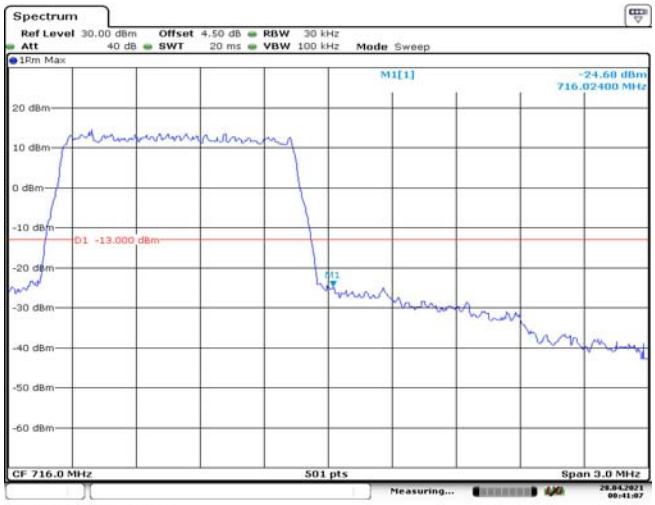


LTE Band 12:

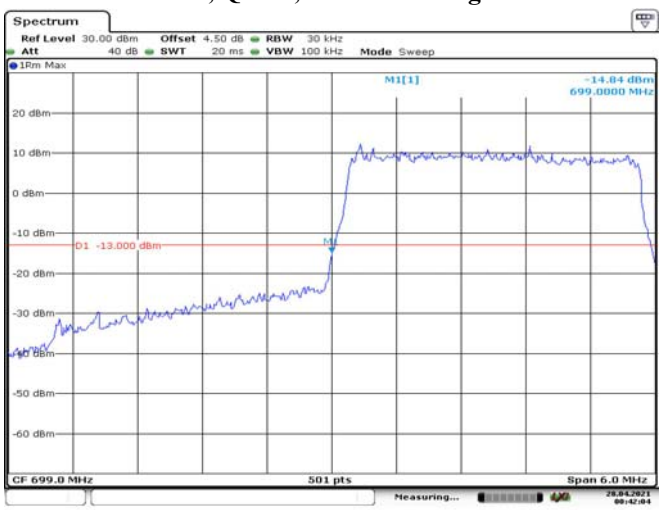
1.4M, QPSK, Left Band Edge



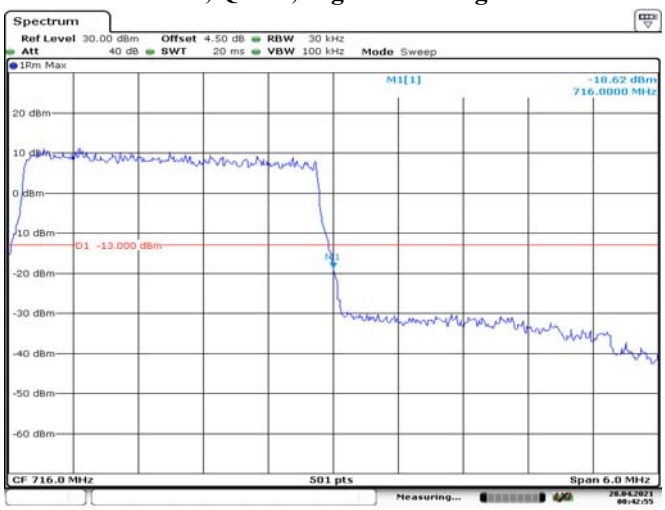
1.4M, QPSK, Right Band Edge



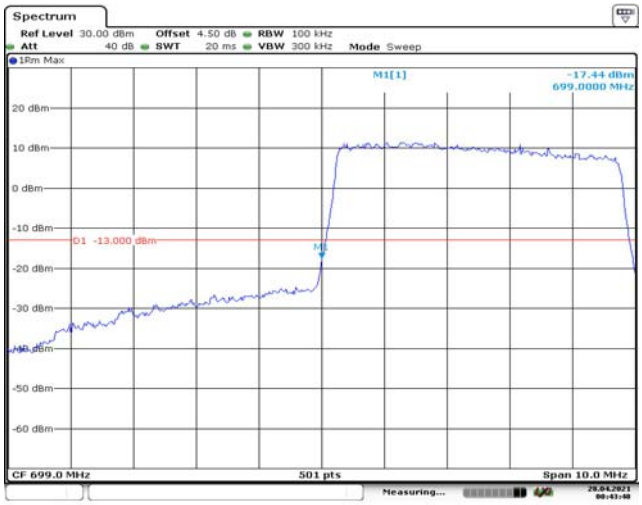
3M, QPSK, Left Band Edge



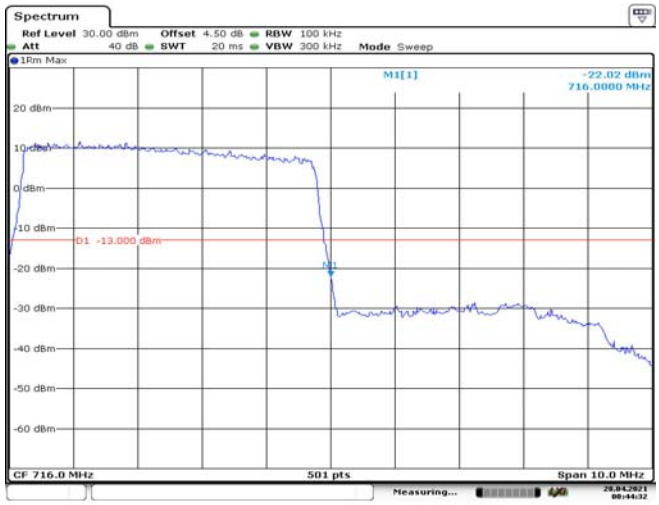
3M, QPSK, Right Band Edge



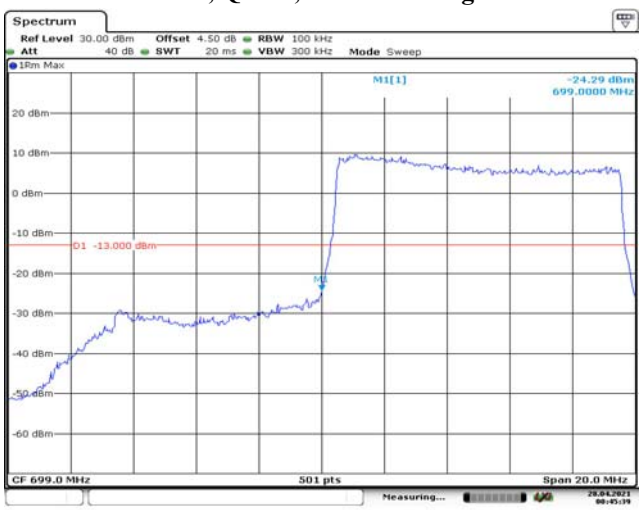
5M, QPSK, Left Band Edge



5M, QPSK, Right Band Edge

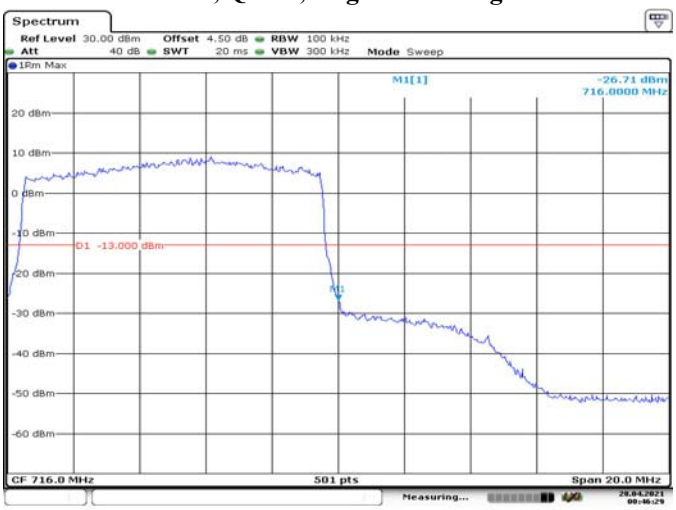


10M, QPSK, Left Band Edge



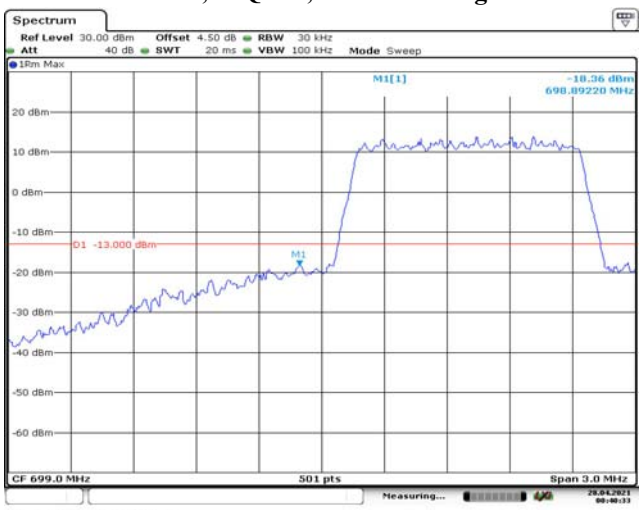
Date: 28.APR.2021 00:45:40

10M, QPSK, Right Band Edge



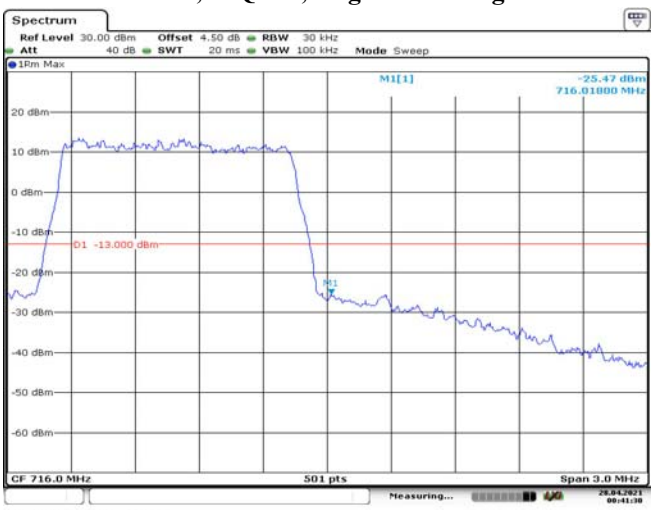
Date: 28.APR.2021 00:46:29

1.4M, 16QAM, Left Band Edge



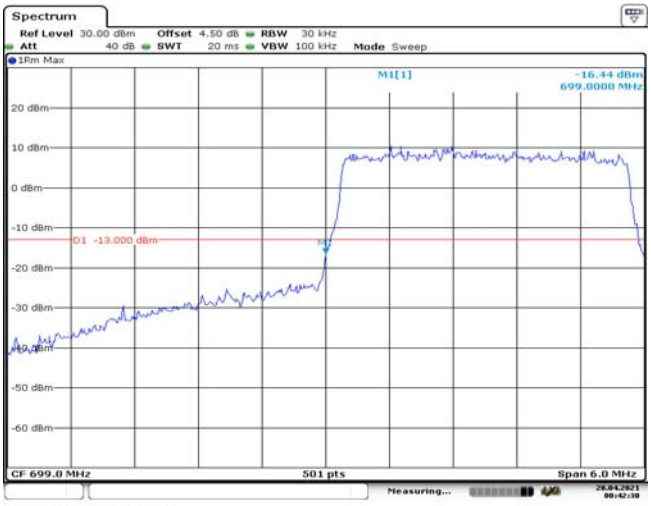
Date: 28.APR.2021 00:40:33

1.4M, 16QAM, Right Band Edge



Date: 28.APR.2021 00:41:30

3M, 16QAM, Left Band Edge



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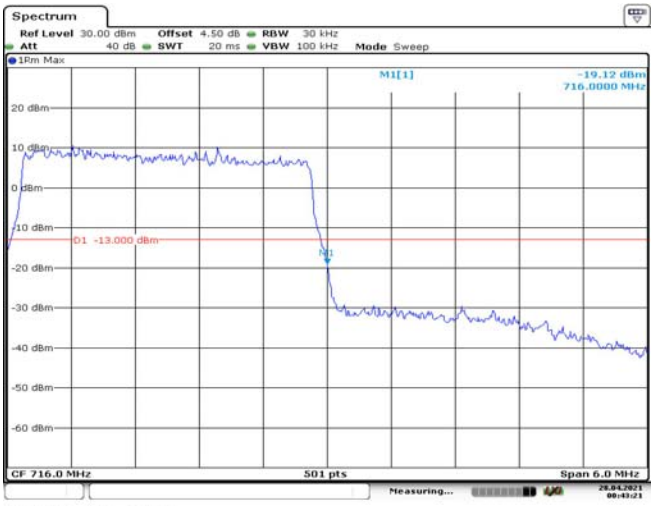
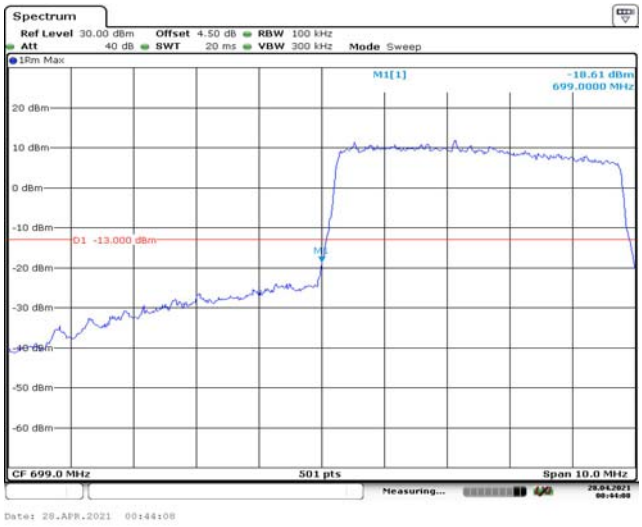
3M, 16QAM, Right Band Edge

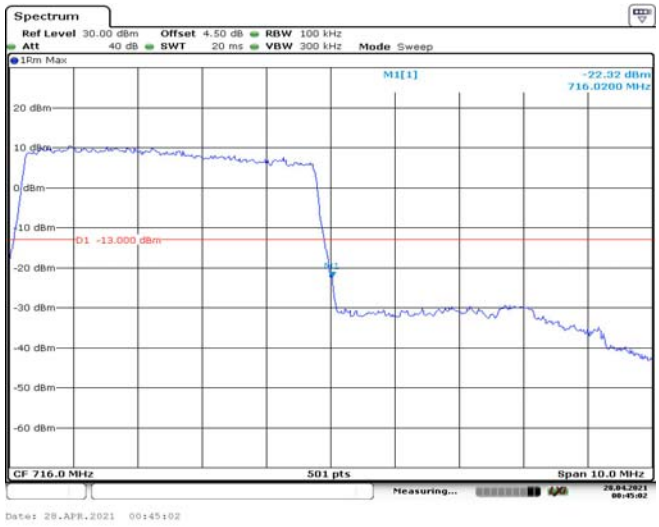


Date: 28.APR.2021 00:43:21

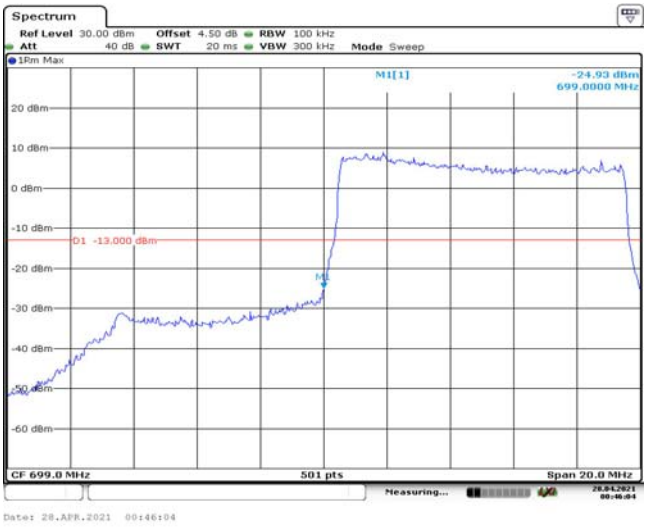
5M, 16QAM, Left Band Edge



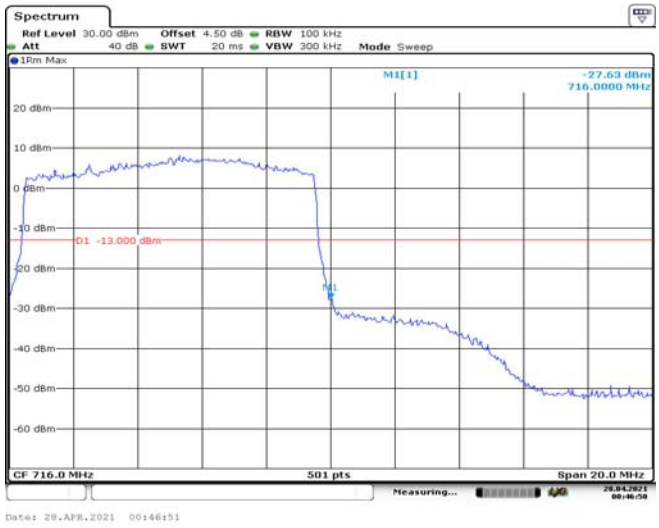
5M, 16QAM, Right Band Edge



10M, 16QAM, Left Band Edge

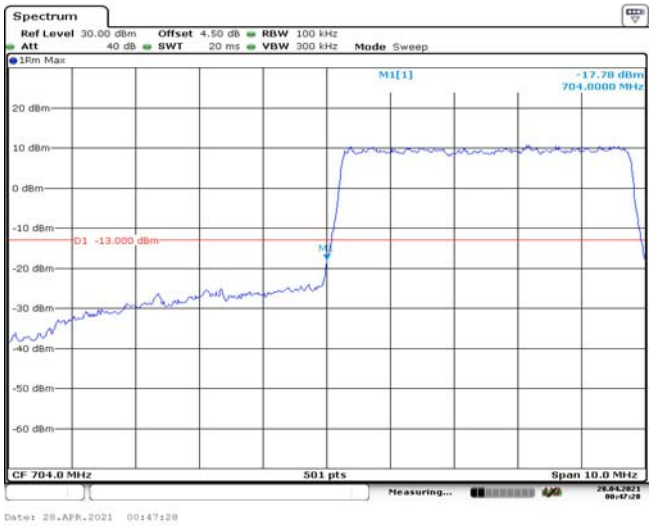


10M, 16QAM, Right Band Edge

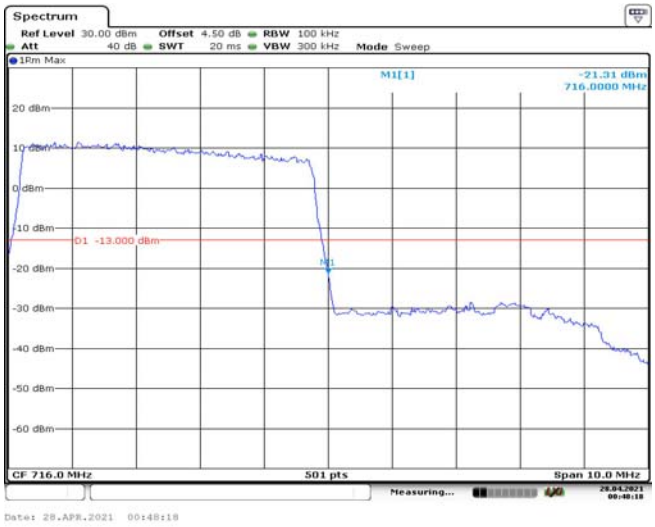


LTE Band 17:

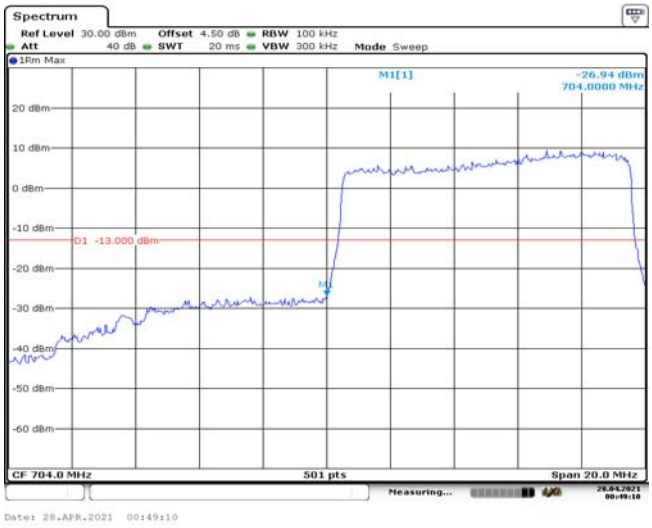
5M, QPSK, Left Band Edge



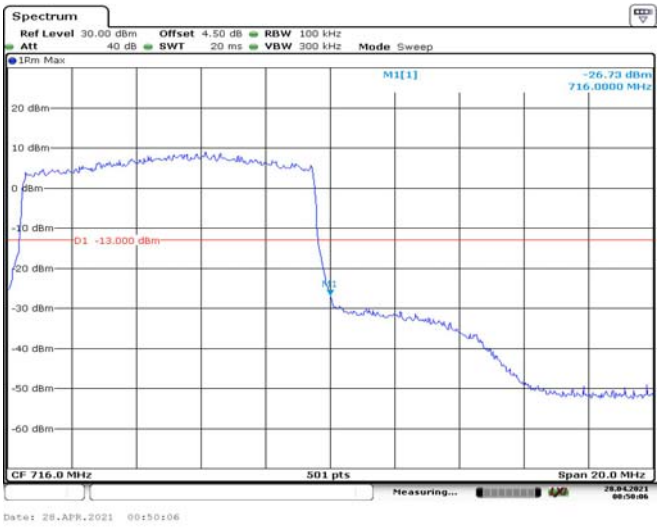
5M, QPSK, Right Band Edge



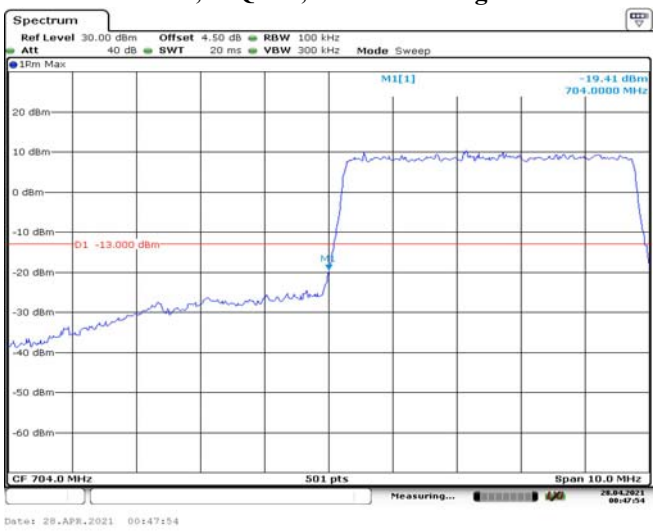
10M, QPSK, Left Band Edge



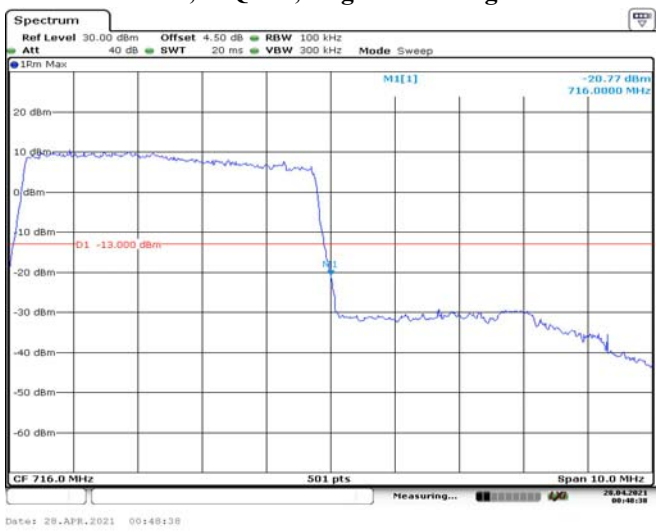
10M, QPSK, Right Band Edge



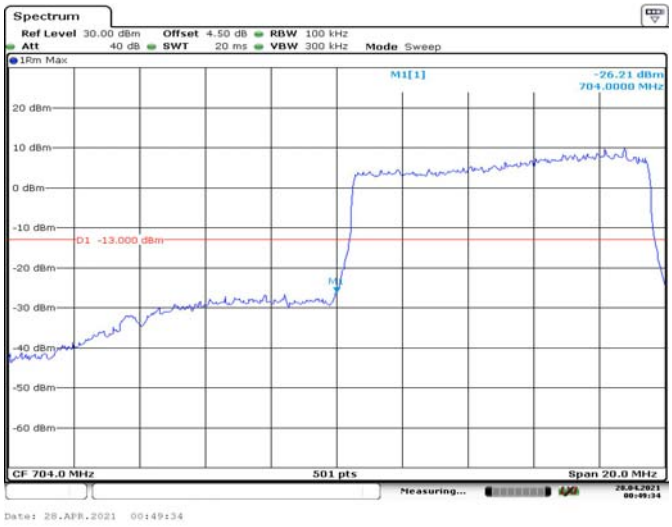
5M, 16QAM, Left Band Edge



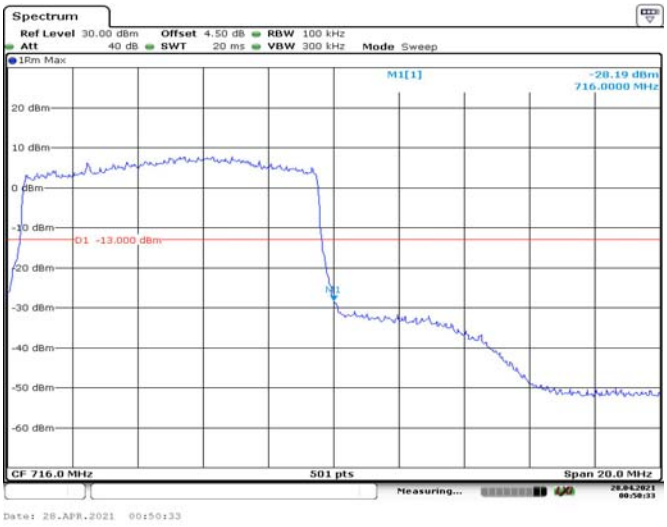
5M, 16QAM, Right Band Edge



10M, 16QAM, Left Band Edge

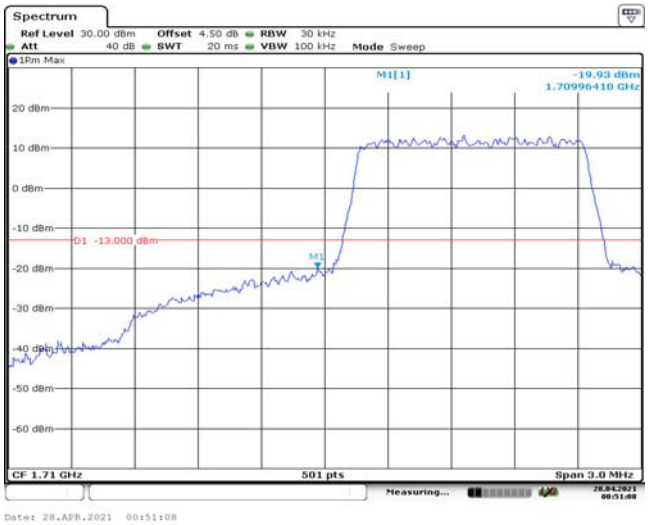


10M, 16QAM, Right Band Edge

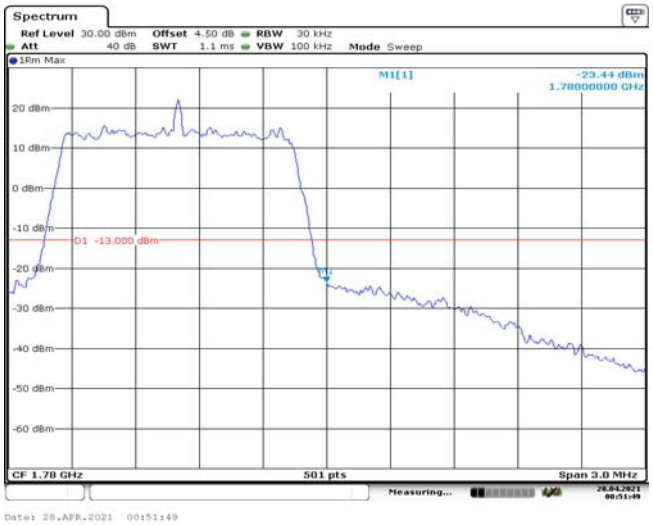


LTE Band 66:

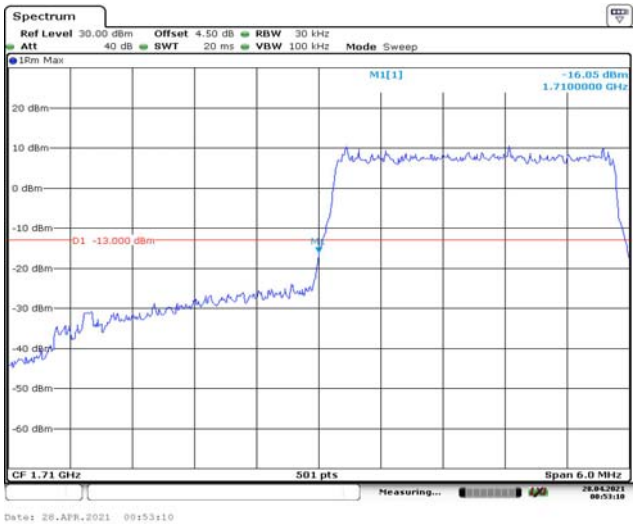
1.4M, QPSK, Left Band Edge



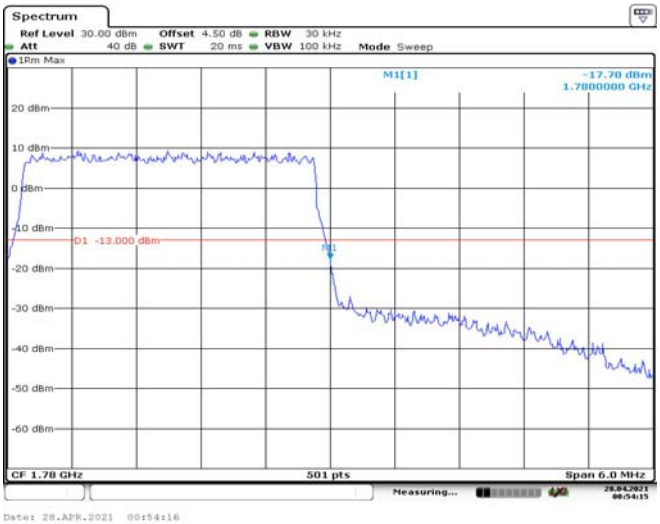
1.4M, QPSK, Right Band Edge



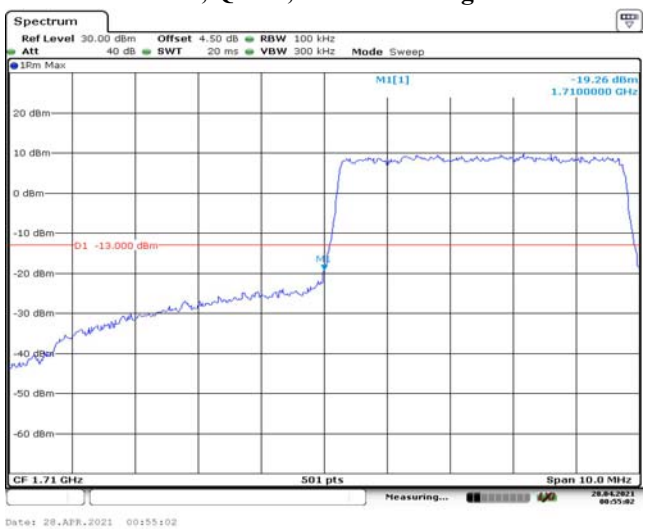
3M, QPSK, Left Band Edge



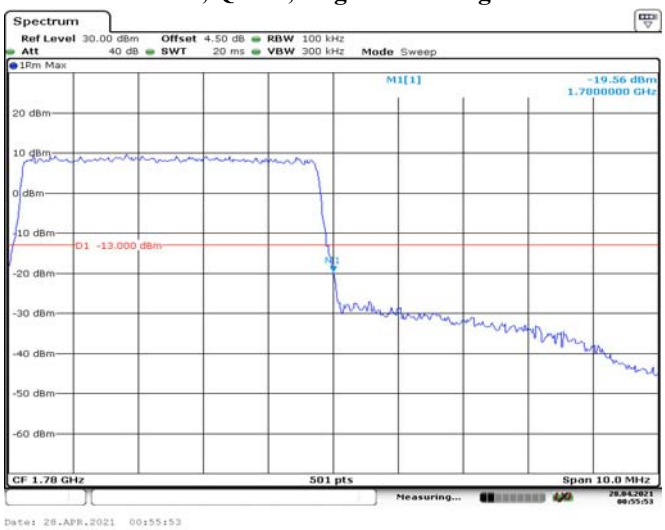
3M, QPSK, Right Band Edge



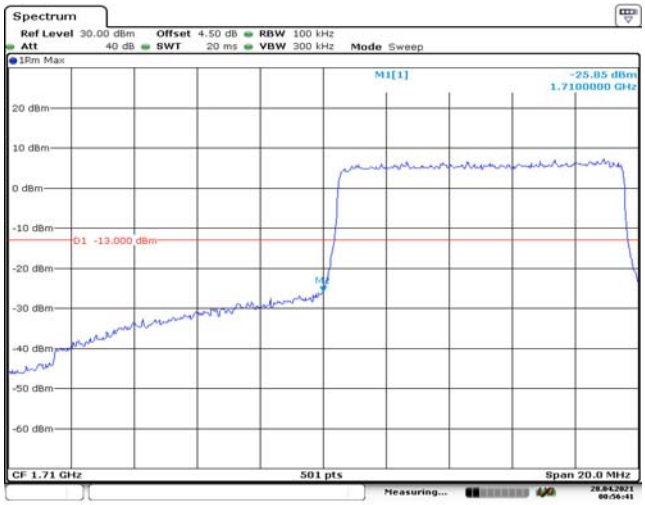
5M, QPSK, Left Band Edge



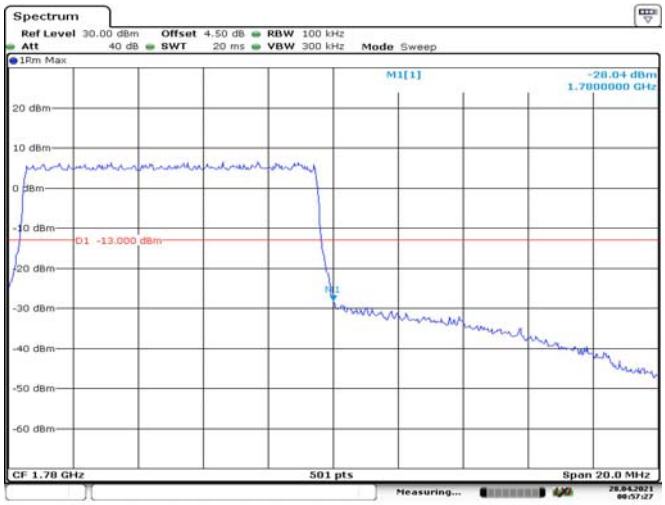
5M, QPSK, Right Band Edge



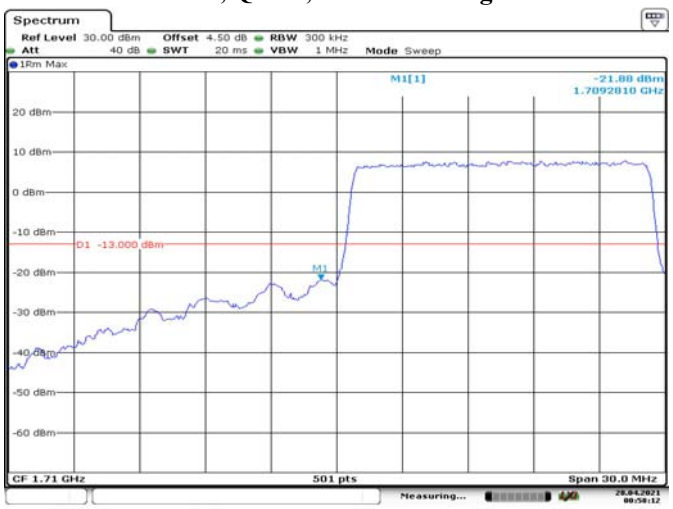
10M, QPSK, Left Band Edge



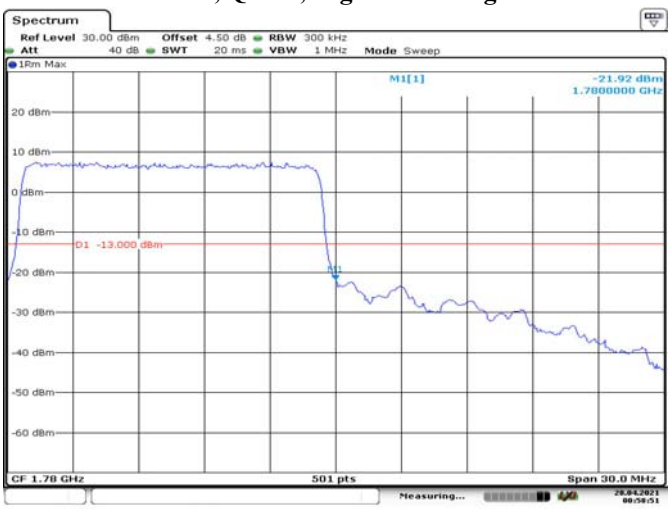
10M, QPSK, Right Band Edge



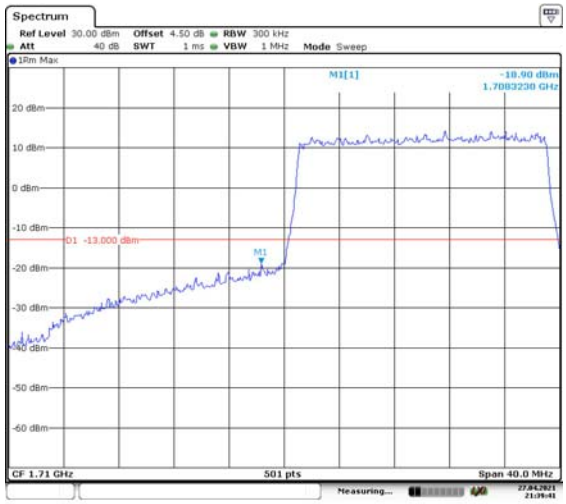
15M, QPSK, Left Band Edge



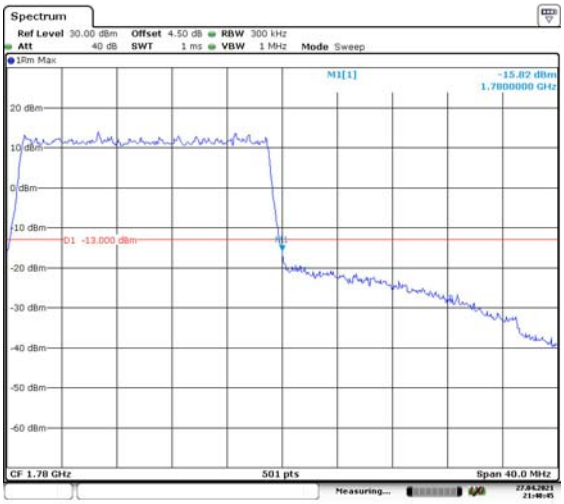
15M, QPSK, Right Band Edge



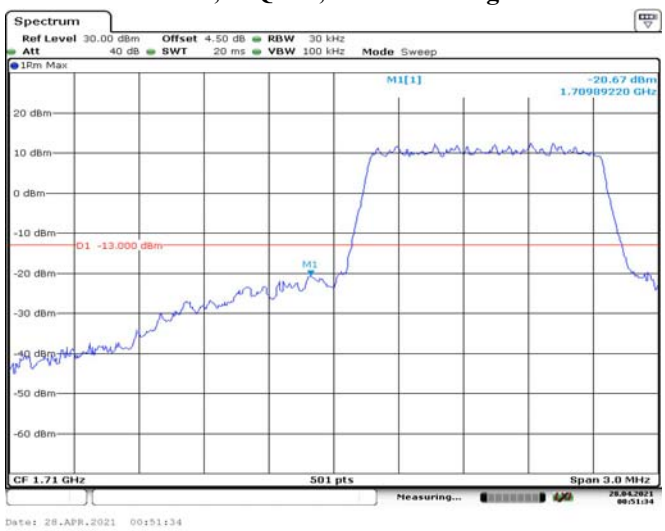
20M, QPSK, Left Band Edge



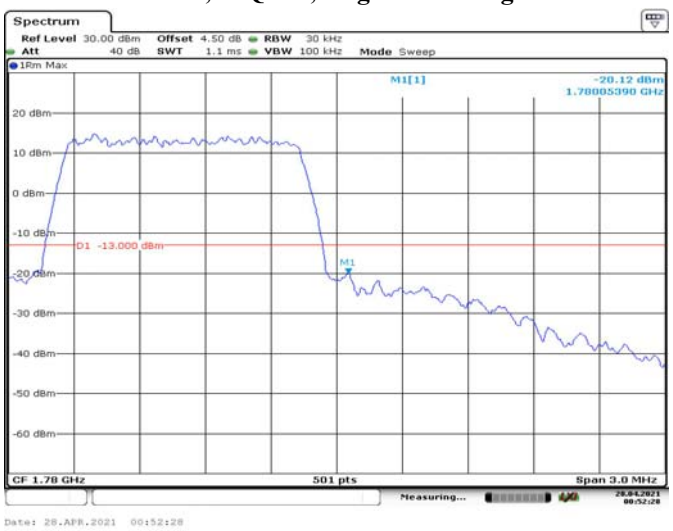
20M, QPSK, Right Band Edge



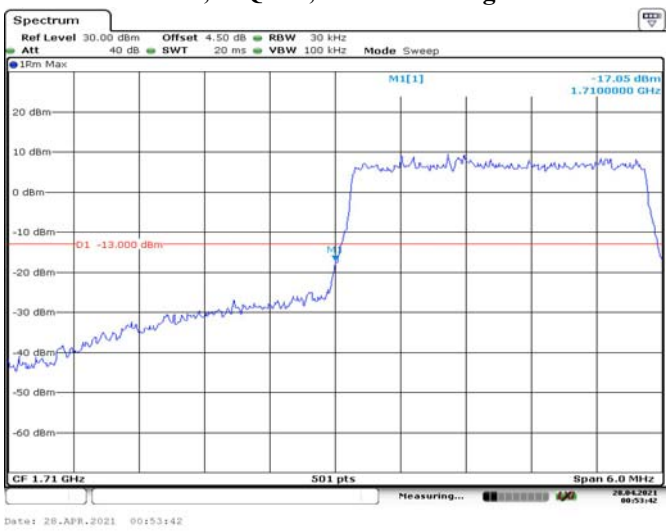
1.4M, 16QAM, Left Band Edge



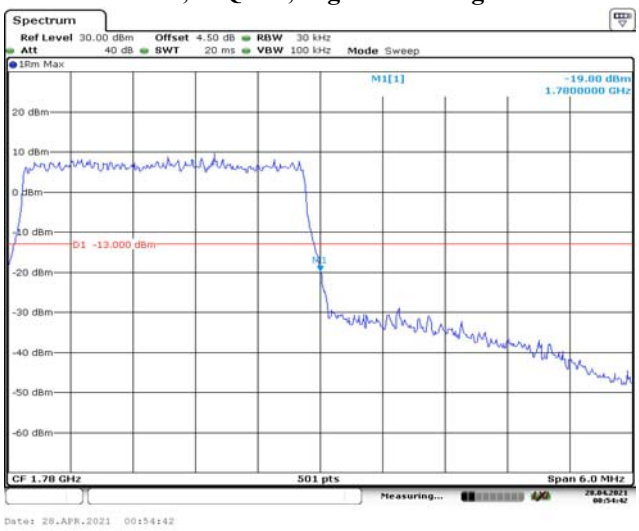
1.4M, 16QAM, Right Band Edge



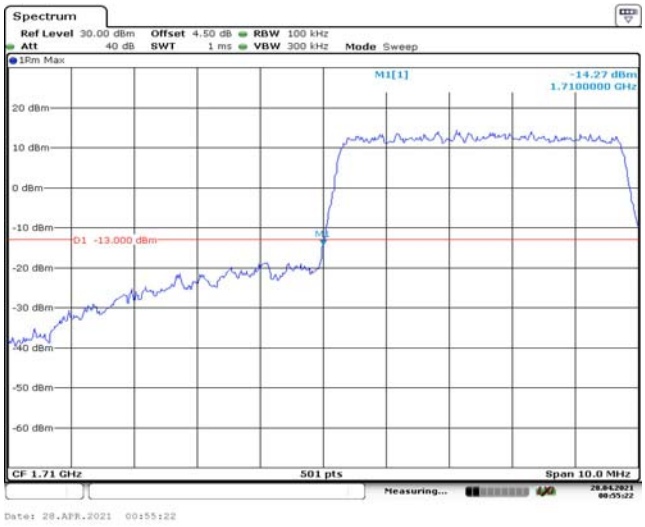
3M, 16QAM, Left Band Edge



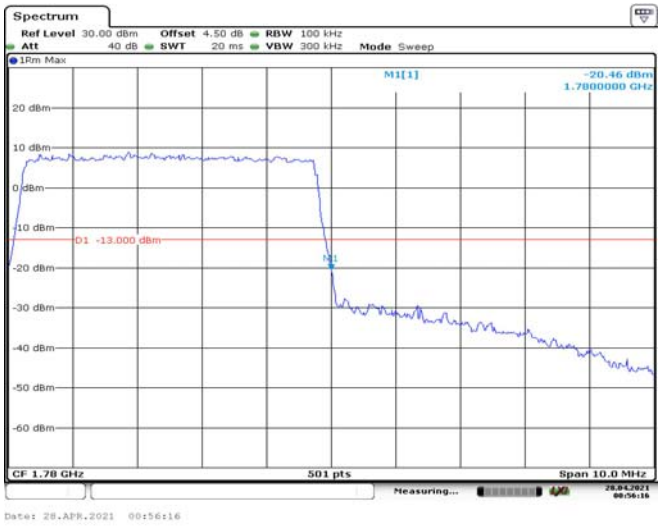
3M, 16QAM, Right Band Edge



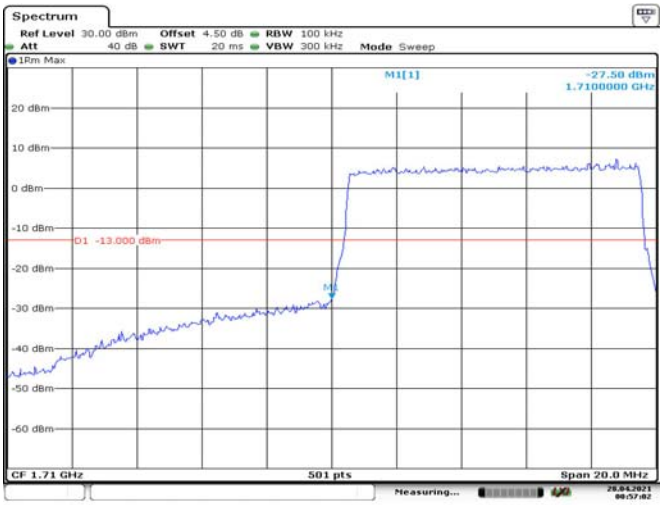
5M, 16QAM, Left Band Edge



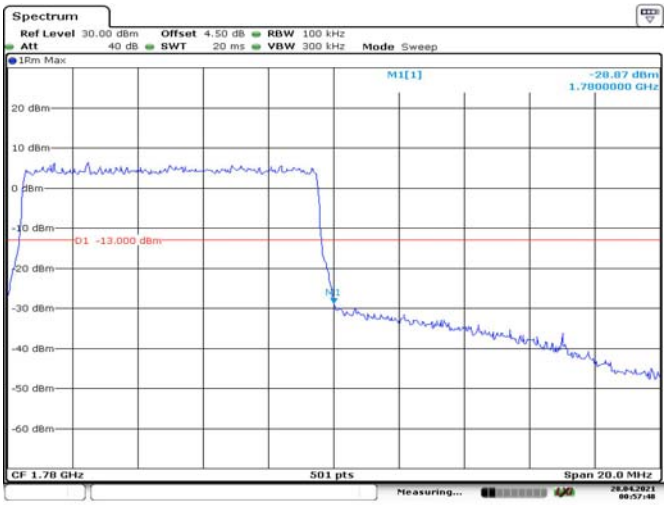
5M, 16QAM, Right Band Edge



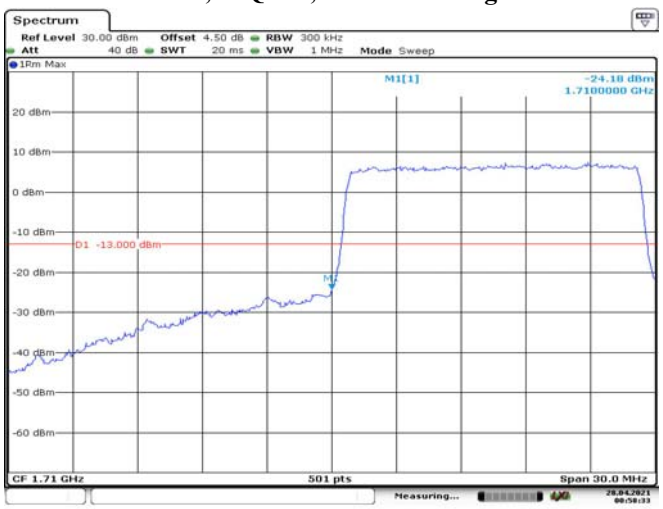
10M, 16QAM, Left Band Edge



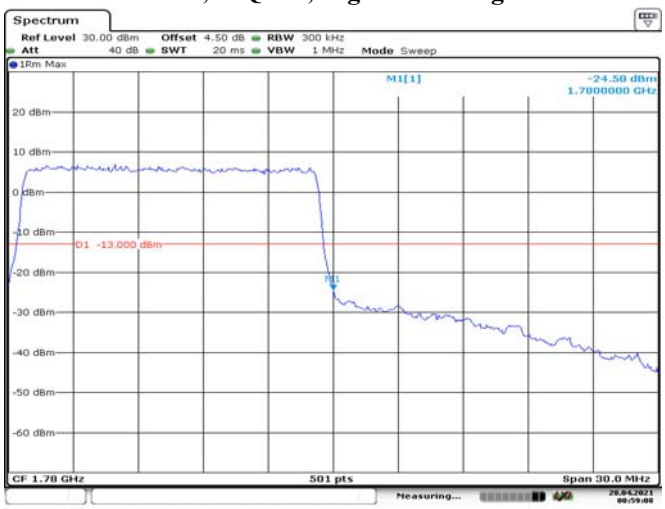
10M, 16QAM, Right Band Edge



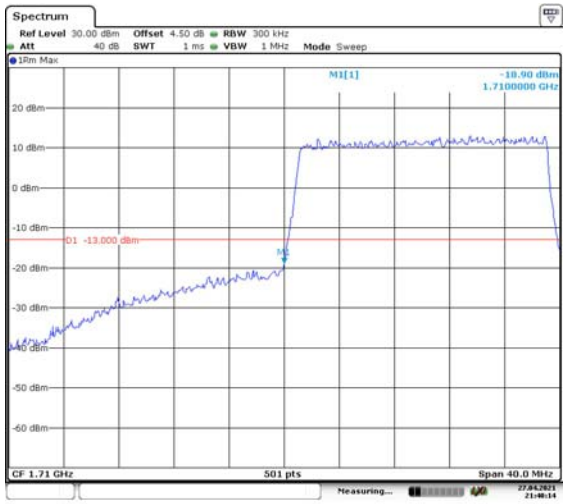
15M, 16QAM, Left Band Edge



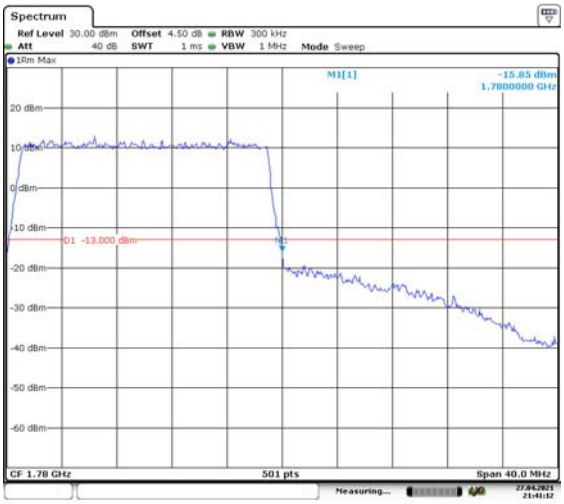
15M, 16QAM, Right Band Edge



20M, 16QAM, Left Band Edge



20M, 16QAM, Right Band Edge



FCC §2.1055, §22.355 & §24.235 & §27.54 - FREQUENCY STABILITY

Applicable Standard

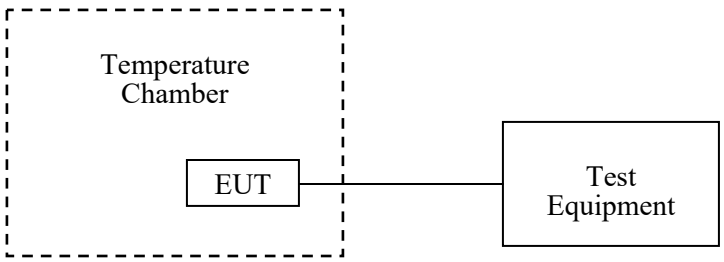
FCC § 2.1055 (a), § 2.1055 (d), §22.355, §24.235, §27.54

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set from 85% to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101589	2020-06-24	2021-06-23
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	106 891	2020-09-12	2021-09-12
R&S	Wideband Radio Communication Tester	CMW500	149216	2020-09-12	2021-09-12
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2021-03-10	2022-03-09
UNI-T	Multimeter	UT39A	M130199938	2020-07-24	2021-07-24
Pro instrument	DC Power Supply	pps3300	3300012	N/A	N/A

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	26.11~27.2 °C
Relative Humidity:	43~49%
ATM Pressure:	100.8~101.5kPa
Tester:	Theshy Xie
Test Date:	2021-04-27~2021-04-30

Test Result: Compliance.

GMSK, Middle Channel, f_c = 836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.7	-5	-0.00598	2.5
-20		-7	-0.00837	
-10		6	0.00717	
0		2	0.00239	
10		5	0.00598	
20		-6	-0.00717	
30		-2	-0.00239	
40		1	0.00120	
50		11	0.01315	
20	3.5	11	0.01315	
20	4.2	5	0.00598	

GMSK, Middle Channel, f_c = 1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.7	4	0.00478	Pass
-20		-13	-0.01554	
-10		-15	-0.01793	
0		6	0.00717	
10		2	0.00239	
20		-5	-0.00598	
30		-8	-0.00956	
40		-12	-0.01434	
50		6	0.00717	
20	3.5	13	0.01554	
20	4.2	7	0.00837	

8PSK, Middle Channel, f_c = 836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.7	-12	-0.00638	2.5
-20		5	0.00266	
-10		7	0.00372	
0		-7	-0.00372	
10		9	0.00479	
20		11	0.00585	
30		13	0.00691	
40		4	0.00213	
50		-6	-0.00319	
20	3.5	-8	-0.00426	
20	4.2	4	0.00213	

8PSK, Middle Channel, f_c = 1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.7	-11	-0.00585	Pass
-20		-7	-0.00372	
-10		5	0.00266	
0		8	0.00426	
10		2	0.00106	
20		9	0.00479	
30		-7	-0.00372	
40		-8	-0.00426	
50		-7	-0.00372	
20	3.5	-5	-0.00266	
20	4.2	2	0.00106	

WCDMA Band II: R99

Middle Channel, f_c = 1880.0 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
℃	V_{DC}	Hz	ppm	
-30	3.7	5	0.00266	Pass
-20		2	0.00106	
-10		-2	-0.00106	
0		-3	-0.00160	
10		4	0.00213	
20		1	0.00053	
30		8	0.00426	
40		4	0.00213	
50		3	0.00160	
20	3.5	-4	-0.00213	
20	4.2	7	0.00372	

WCDMA Band IV: R99

Power Supplied	Temperature	F_L	Limit	F_H	Limit
V_{DC}	℃	MHz	MHz	MHz	MHz
3.7	-30	1710.54600	1710	1754.49400	1755
	-20	1710.56400		1754.46900	
	-10	1710.54800		1754.49500	
	0	1710.53800		1754.52800	
	10	1710.53000		1754.43200	
	20	1710.54600		1754.48800	
	30	1710.54500		1754.50400	
	40	1710.55300		1754.44800	
	50	1710.54500		1754.53000	
3.5	20	1710.56000		1754.45400	
4.2	20	1710.55200		1754.53400	

WCDMA Band V: R99

Middle Channel, f_c = 836.6 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.7	-4	-0.00478	2.5
-20		-6	-0.00717	
-10		10	0.01195	
0		-7	-0.00837	
10		-5	-0.00598	
20		-1	-0.00120	
30		7	0.00837	
40		5	0.00598	
50		-7	-0.00837	
20	3.5	-9	-0.01076	
20	4.2	2	0.00239	

LTE Band 2:

QPSK, Channel Bandwidth:10MHz Middle Channel, f_c = 1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.7	-32.66	-0.0174	Pass
-20		-10.00	-0.0053	
-10		-6.84	-0.0036	
0		9.77	0.0052	
10		-7.43	-0.004	
20		-9.52	-0.0051	
30		5.15	0.0027	
40		-5.95	-0.0032	
50		7.90	0.0042	
20	3.5	6.37	0.0034	
20	4.2	7.59	0.004	

16QAM, Channel Bandwidth:10MHz Middle Channel, f_c =1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.7	-32.82	-0.0175	Pass
-20		-7.40	-0.0039	
-10		9.93	0.0053	
0		-6.77	-0.0036	
10		9.56	0.0051	
20		-9.97	-0.0053	
30		6.64	0.0035	
40		7.28	0.0039	
50		-9.72	-0.0052	
20	3.5	7.58	0.004	
20	4.2	-6.00	-0.0032	

LTE Band 4

QPSK, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	℃	MHz	MHz	MHz	MHz
3.7	-30	1710.545600	1710	1754.538000	1755
	-20	1710.545600		1754.484800	
	-10	1710.560800		1754.530400	
	0	1710.553200		1754.530400	
	10	1710.545600		1754.439200	
	20	1710.540800		1754.492500	
	30	1710.538000		1754.454400	
	40	1710.538000		1754.446800	
	50	1710.545600		1754.492400	
3.5	20	1710.568400		1754.469600	
4.2	20	1710.553200		1754.522800	

16-QAM, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	℃	MHz	MHz	MHz	MHz
3.7	-30	1710.545600	1710	1754.439200	1755
	-20	1710.545600		1754.538000	
	-10	1710.545600		1754.469600	
	0	1710.560800		1754.500000	
	10	1710.545600		1754.500000	
	20	1710.507500		1754.492500	
	30	1710.538000		1754.484800	
	40	1710.538000		1754.538000	
	50	1710.553200		1754.462000	
3.5	20	1710.538000		1754.515200	
4.2	20	1710.553200		1754.500000	

LTE Band 5:

QPSK, Middle Channel, f_c = 836.5 MHz, Channel Bandwidth:10MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.7	-2.82	-0.0034	2.5
-20		-5.02	-0.006	
-10		-6.92	-0.0083	
0		-5.59	-0.0067	
10		-9.80	-0.0117	
20		5.98	0.0071	
30		-9.84	-0.0118	
40		-6.37	-0.0076	
50		7.42	0.0089	
20	3.5	6.66	0.008	
20	4.2	6.29	0.0075	

16-QAM,Middle Channel, f_c = 836.5 MHz, Channel Bandwidth:10MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.7	-28.50	-0.0341	2.5
-20		-8.48	-0.0101	
-10		-6.91	-0.0083	
0		-9.89	-0.0118	
10		-8.58	-0.0103	
20		-5.82	-0.007	
30		6.75	0.0081	
40		-8.67	-0.0104	
50		-5.60	-0.0067	
20	3.5	-10.00	-0.012	
20	4.2	6.92	0.0083	

LTE Band 12

QPSK, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	℃	MHz	MHz	MHz	MHz
3.7	-30	699.560800	699	715.515200	716
	-20	699.553200		715.477200	
	-10	699.553200		715.492400	
	0	699.538000		715.500000	
	10	699.538000		715.507600	
	20	699.507500		715.459200	
	30	699.568400		715.538000	
	40	699.568400		715.454400	
	50	699.560800		715.477200	
3.5	20	699.545600		715.492400	
4.2	20	699.560800		715.462000	

16-QAM, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	℃	MHz	MHz	MHz	MHz
3.7	-30	699.568400	699	715.446800	716
	-20	699.568400		715.538000	
	-10	699.538000		715.469600	
	0	699.545600		715.522800	
	10	699.553200		715.492400	
	20	699.507500		715.459200	
	30	699.560800		715.454400	
	40	699.545600		715.431600	
	50	699.553200		715.507600	
3.5	20	699.568400		715.507600	
4.2	20	699.553200		715.492400	

LTE Band 17

QPSK, Channel Bandwidth:10MHz					
Power Supplied	**Temperature**	**F_L**	**Limit**	**F_H**	**Limit**
Vdc	**℃**	**MHz**	**MHz**	**MHz**	**MHz**
3.7	-30	704.560800	704	715.484800	716
	-20	704.560800		715.507600	
	-10	704.545600		715.515200	
	0	704.568400		715.492400	
	10	704.553200		715.500000	
	20	704.540800		715.459200	
	30	704.553200		715.446800	
	40	704.568400		715.507600	
	50	704.568400		715.484800	
3.5	20	704.568400		715.477200	
4.2	20	704.553200		715.462000	

16-QAM, Channel Bandwidth:10MHz					
Power Supplied	**Temperature**	**F_L**	**Limit**	**F_H**	**Limit**
Vdc	**℃**	**MHz**	**MHz**	**MHz**	**MHz**
3.7	-30	704.553200	704	715.492400	716
	-20	704.553200		715.431600	
	-10	704.560800		715.515200	
	0	704.545600		715.515200	
	10	704.568400		715.431600	
	20	704.540800		715.459200	
	30	704.560800		715.446800	
	40	704.538000		715.522800	
	50	704.560800		715.462000	
3.5	20	704.568400		715.484800	
4.2	20	704.545600		715.446800	

LTE Band 66

QPSK, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	℃	MHz	MHz	MHz	MHz
3.7	-30	1710.553200	1710	1779.484800	1780
	-20	1710.545600		1779.454400	
	-10	1710.560800		1779.454400	
	0	1710.538000		1779.515200	
	10	1710.553200		1779.484800	
	20	1710.507500		1779.492500	
	30	1710.568400		1779.431600	
	40	1710.538000		1779.462000	
	50	1710.568400		1779.507600	
3.5	20	1710.553200		1779.484800	
4.2	20	1710.545600		1779.500000	

16-QAM, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	℃	MHz	MHz	MHz	MHz
3.7	-30	1710.568400	1710	1779.431600	1780
	-20	1710.553200		1779.431600	
	-10	1710.538000		1779.530400	
	0	1710.560800		1779.522800	
	10	1710.560800		1779.484800	
	20	1710.507500		1779.492500	
	30	1710.553200		1779.507600	
	40	1710.568400		1779.469600	
	50	1710.553200		1779.515200	
3.5	20	1710.568400		1779.469600	
4.2	20	1710.538000		1779.454400	

Note: The fundamental emissions stay within the authorized bands of operation based on the frequency deviation measured is small, the extreme voltage was declared by applicant.

******* END OF REPORT *******