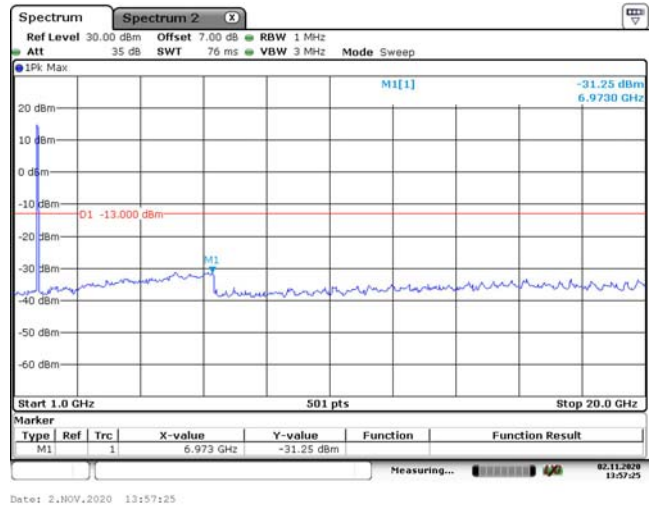
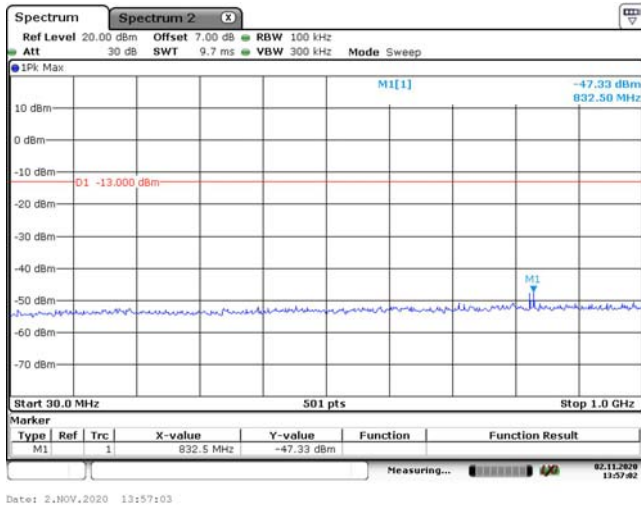
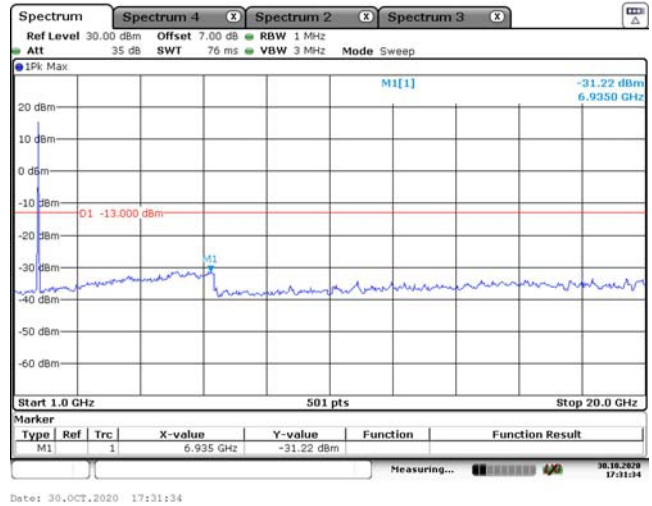
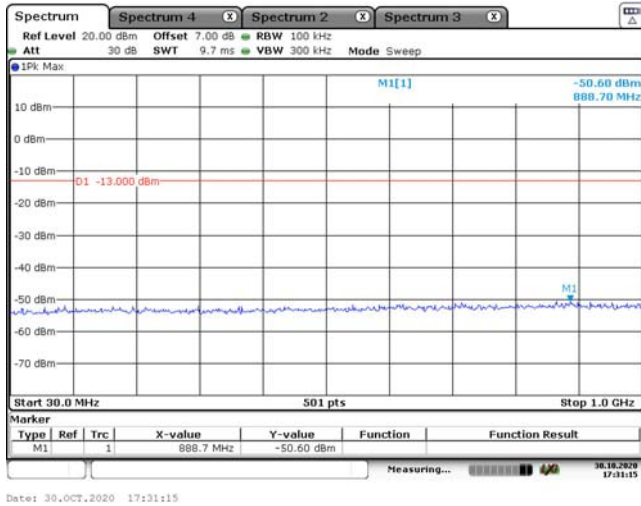


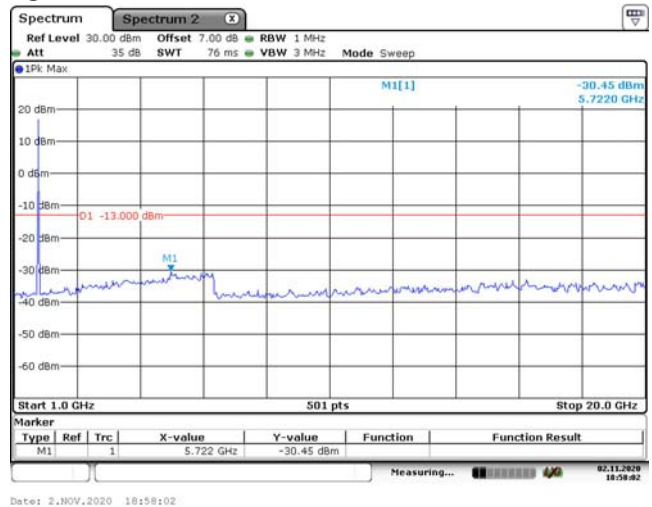
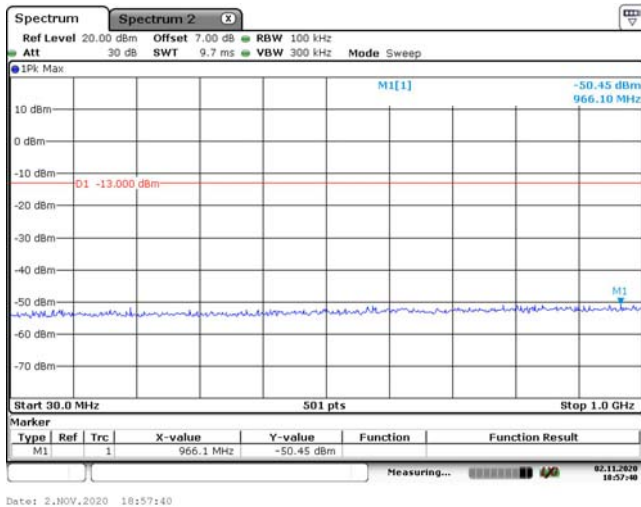
20M, QPSK, Low Channel



20M, QPSK, Middle Channel

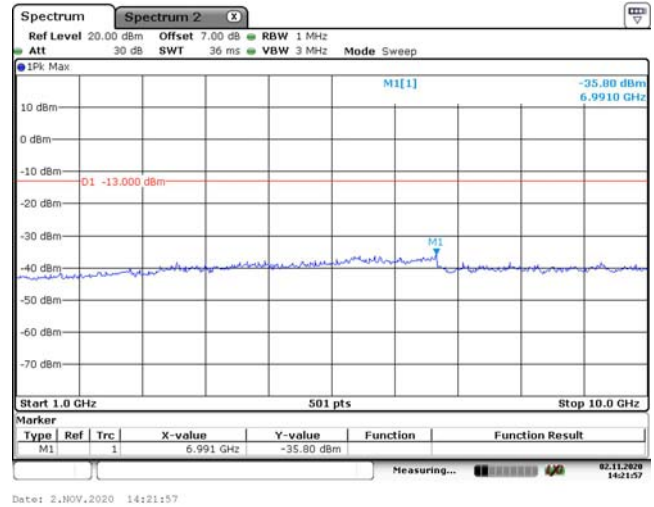
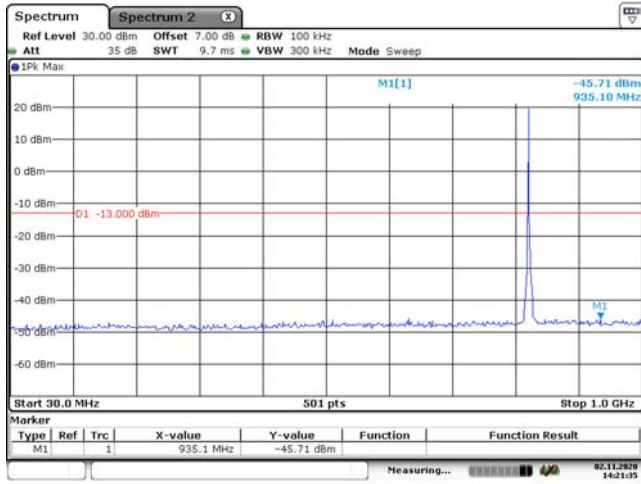


20M, QPSK, High Channel

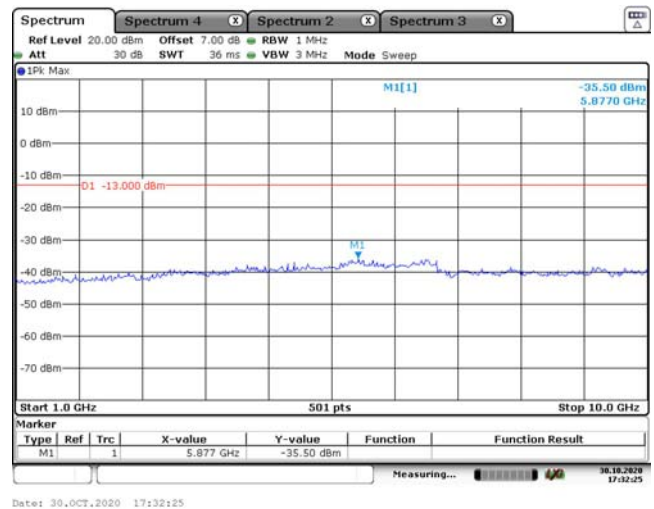
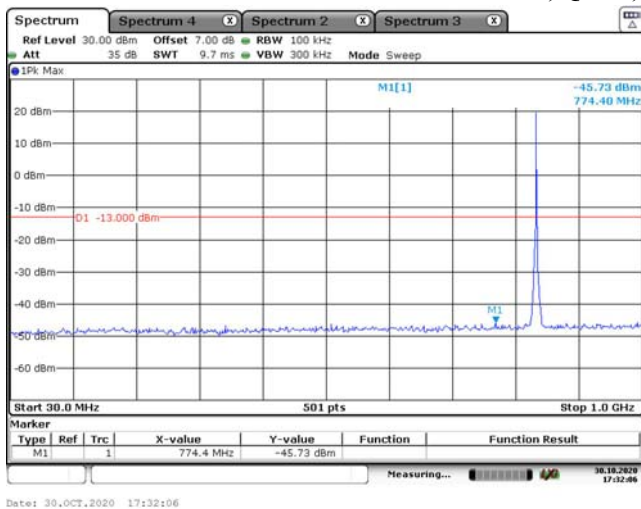


LTE Band 5:

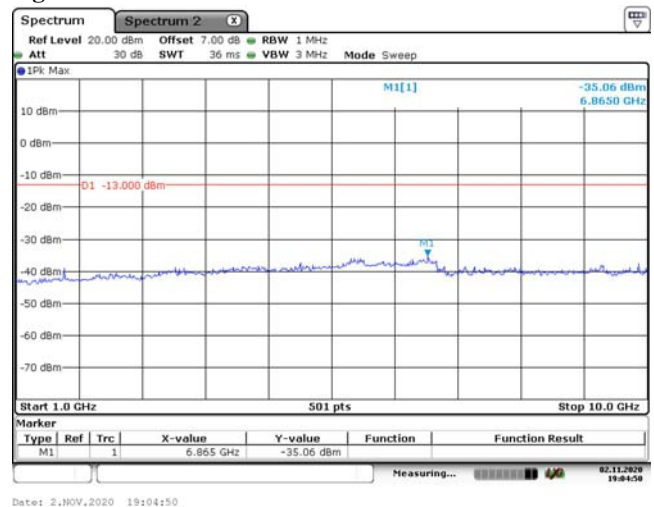
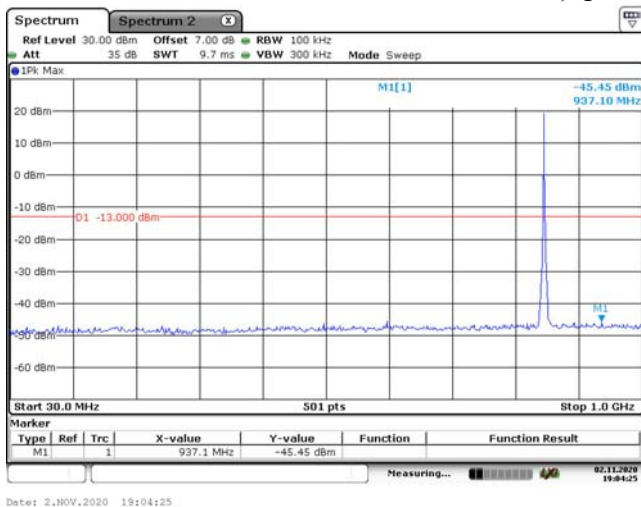
1.4M, QPSK, Low Channel



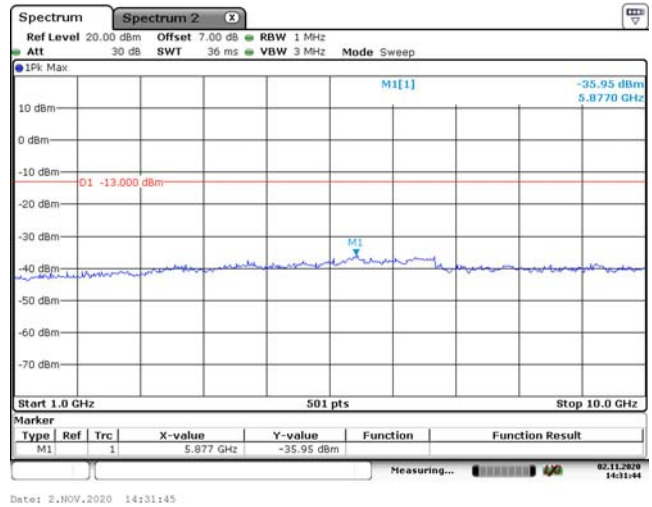
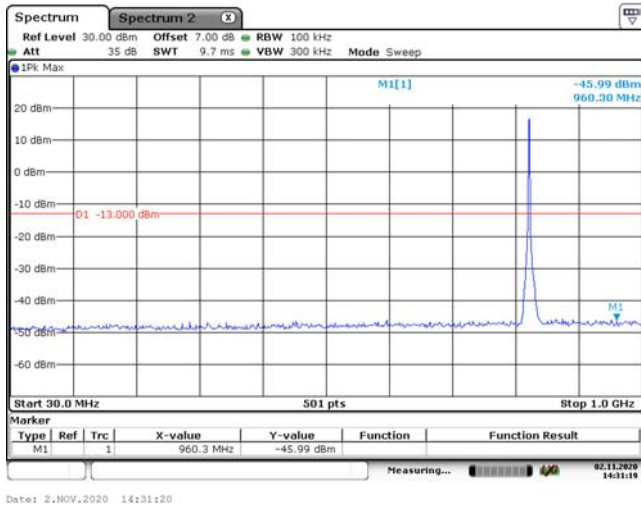
1.4M, QPSK, Middle Channel



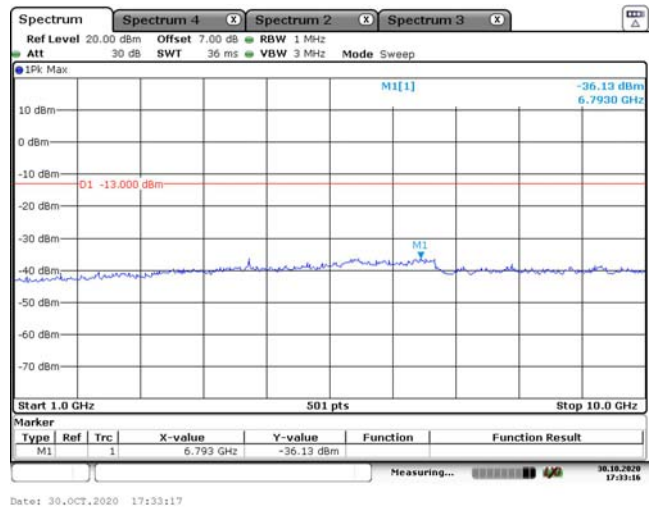
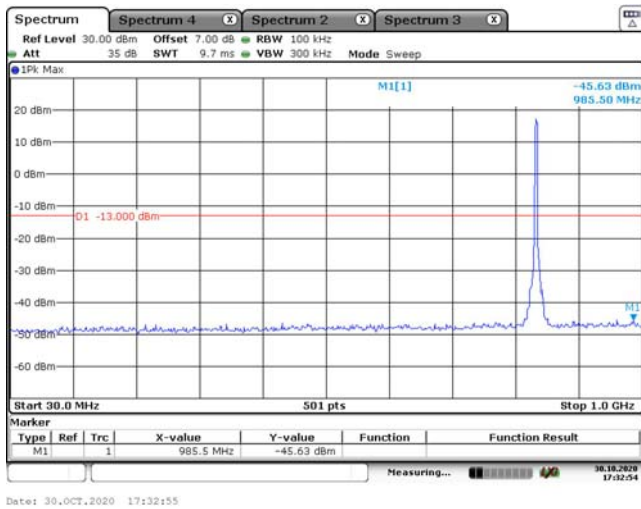
1.4M, QPSK, High Channel



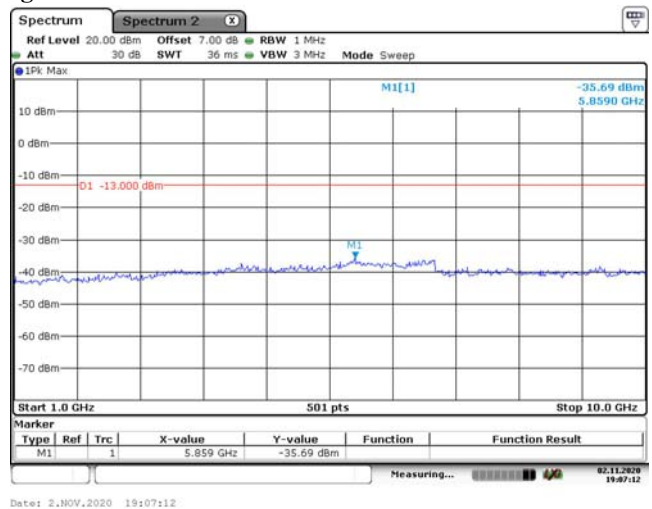
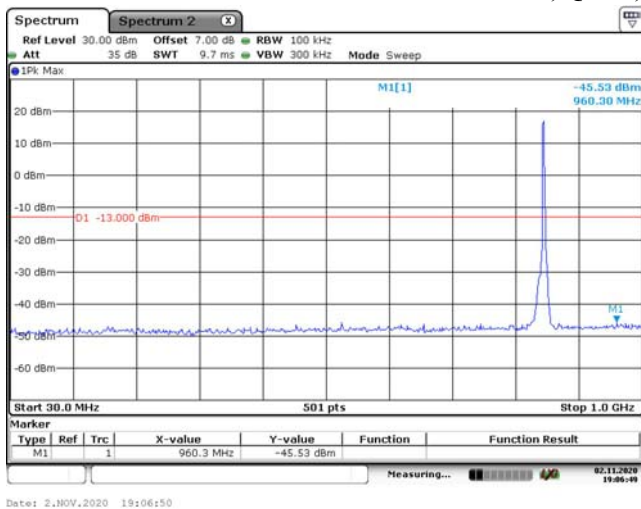
3M, QPSK, Low Channel



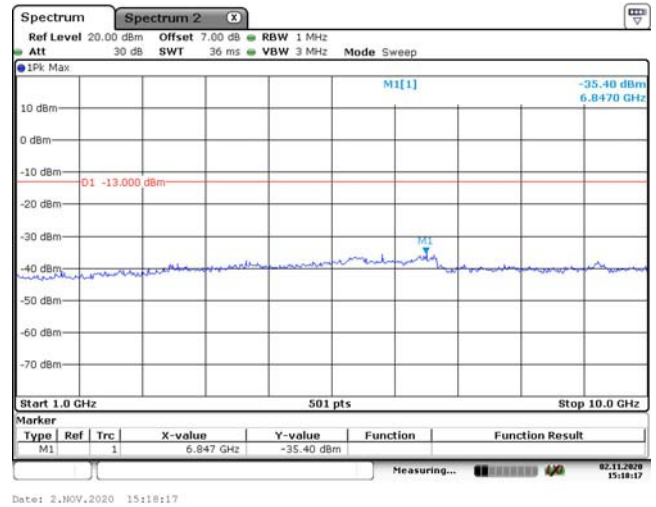
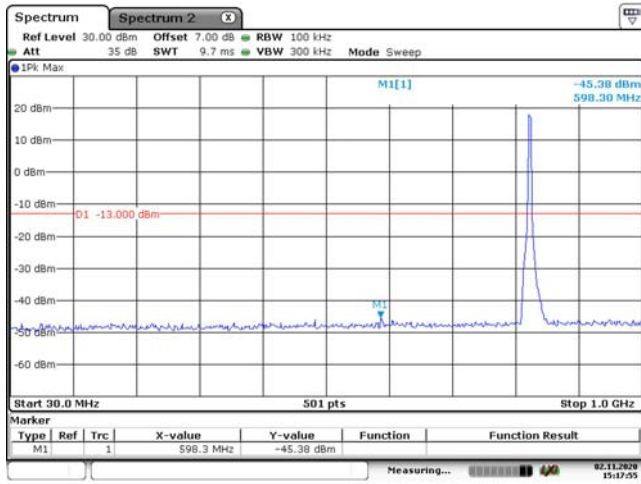
3M, QPSK, Middle Channel



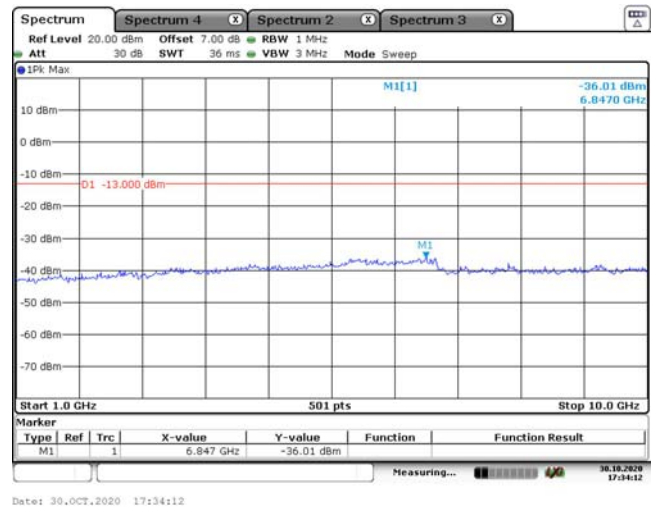
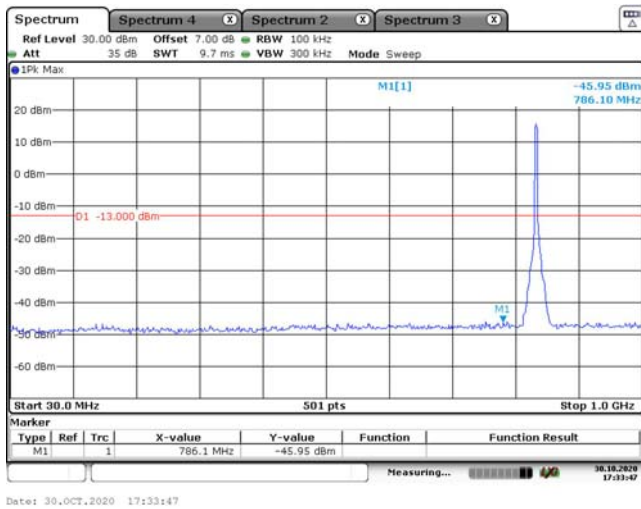
3M, QPSK, High Channel



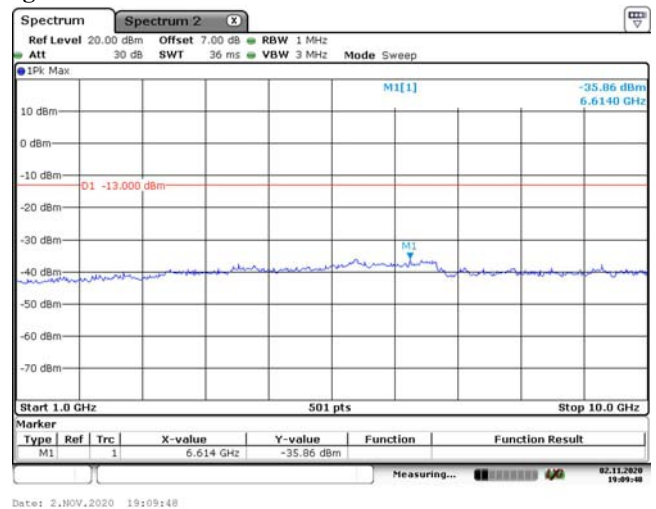
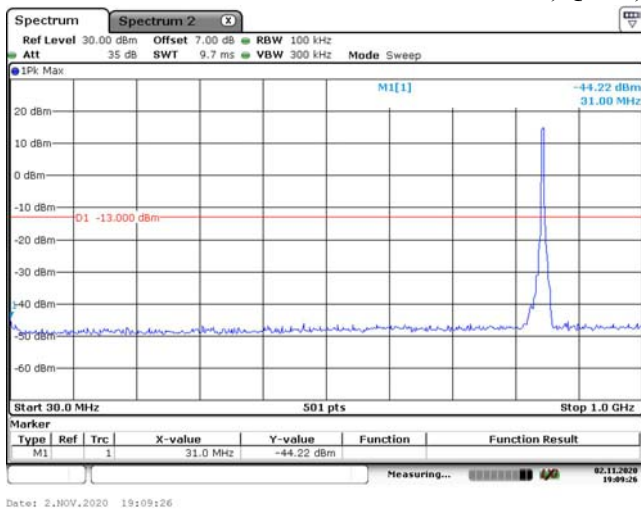
5M, QPSK, Low Channel



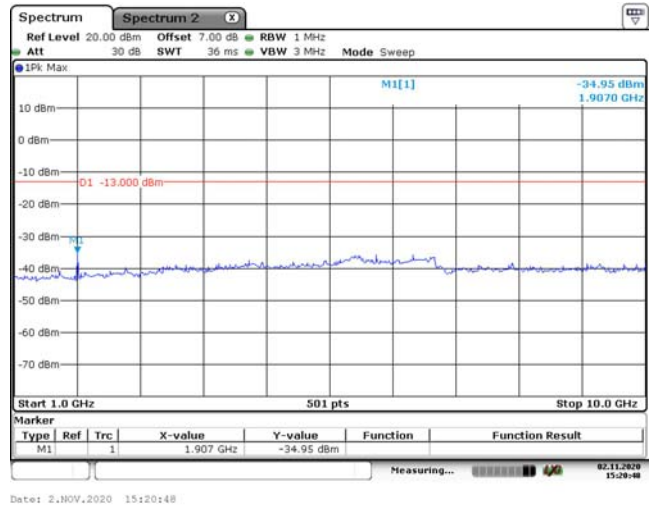
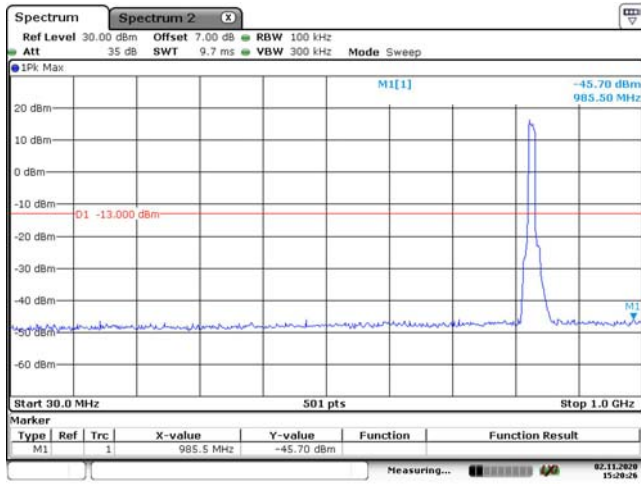
5M, QPSK, Middle Channel



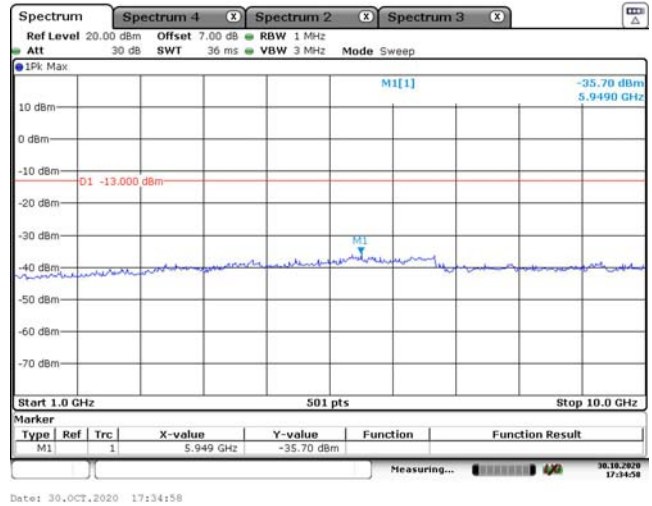
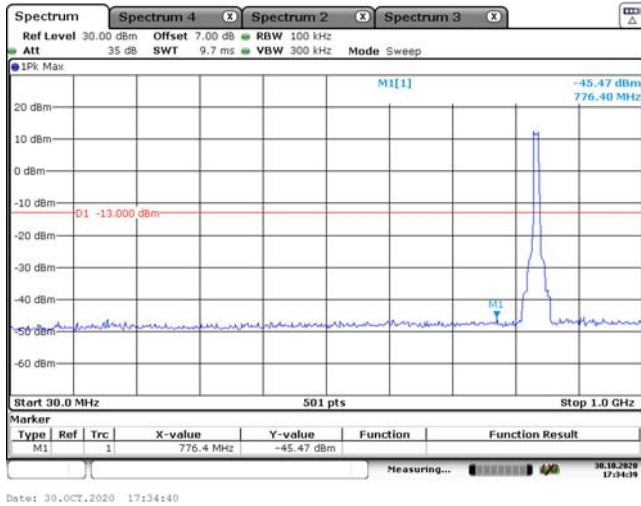
5M, QPSK, High Channel



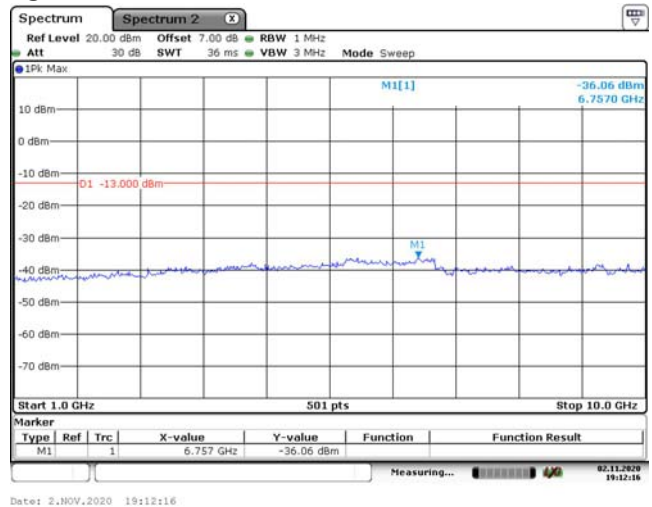
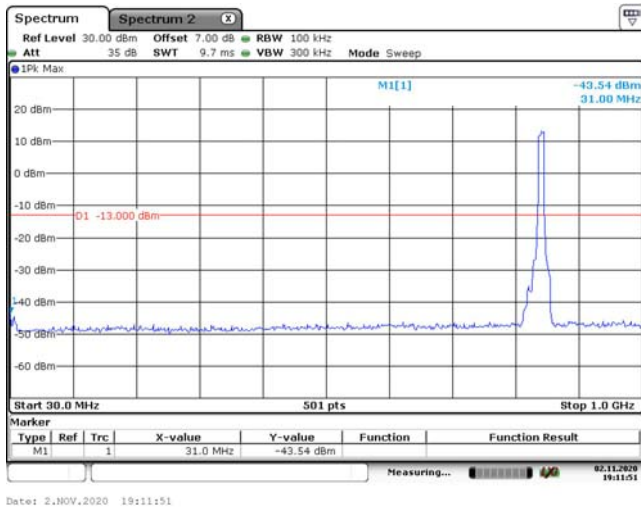
10M, QPSK, Low Channel



10M, QPSK, Middle Channel

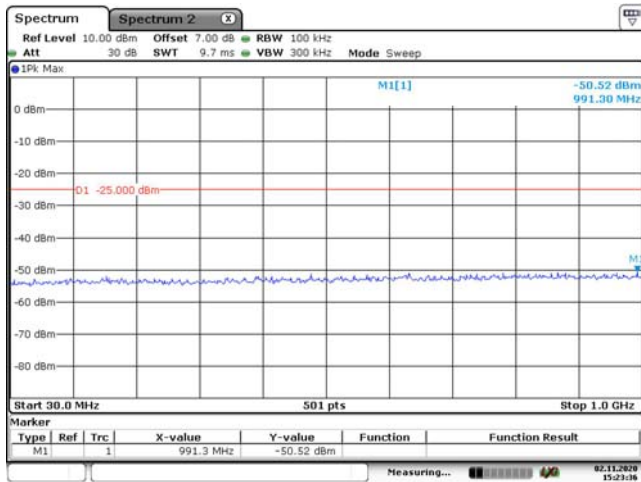


10M, QPSK, High Channel

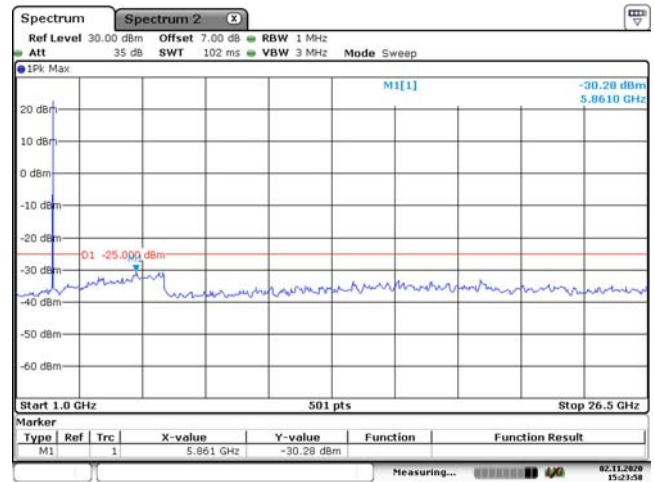


LTE Band 7:

5M, QPSK, Low Channel

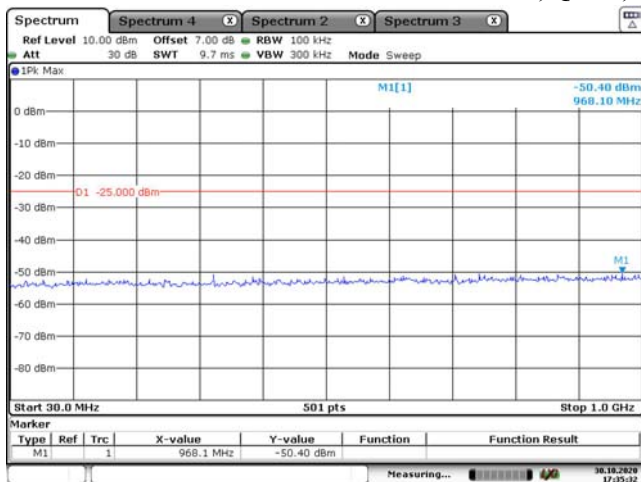


Date: 2.NOV.2020 15:23:37

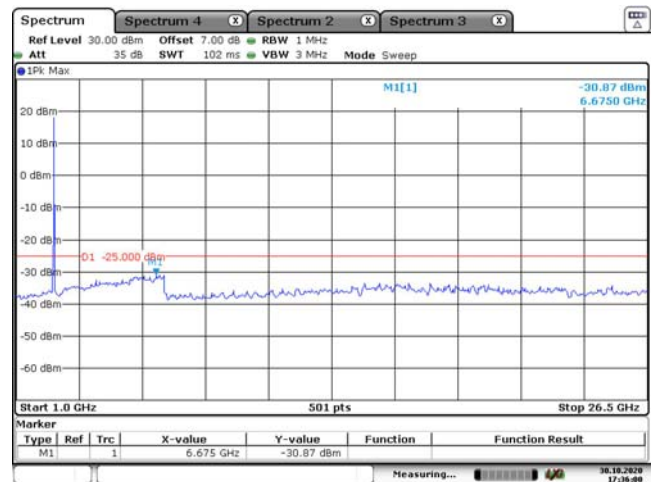


Date: 2.NOV.2020 15:23:59

5M, QPSK, Middle Channel

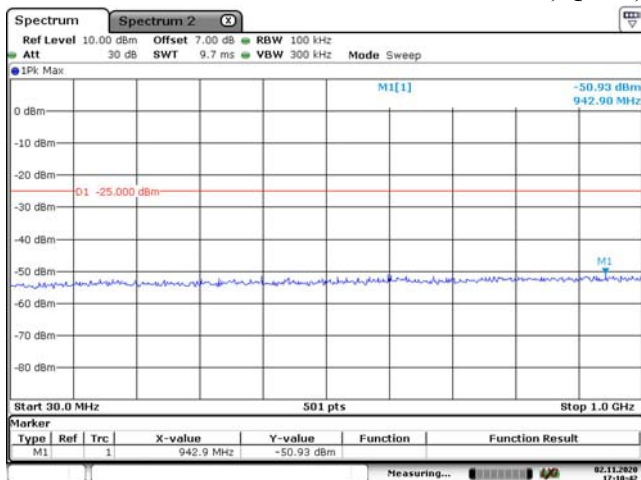


Date: 30.OCT.2020 17:35:32

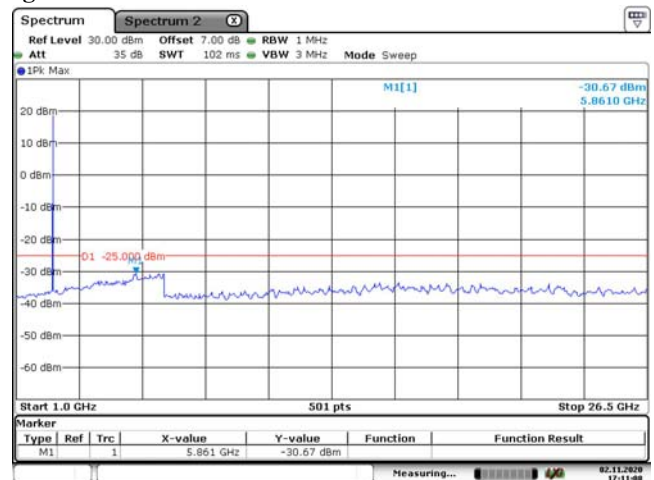


Date: 30.OCT.2020 17:36:00

5M, QPSK, High Channel

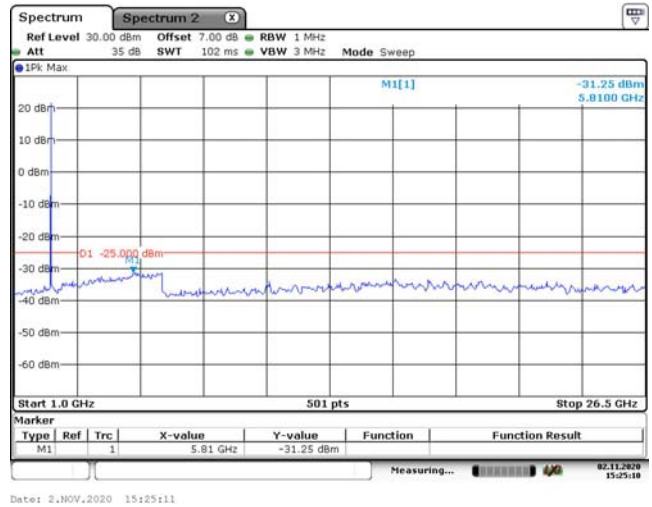
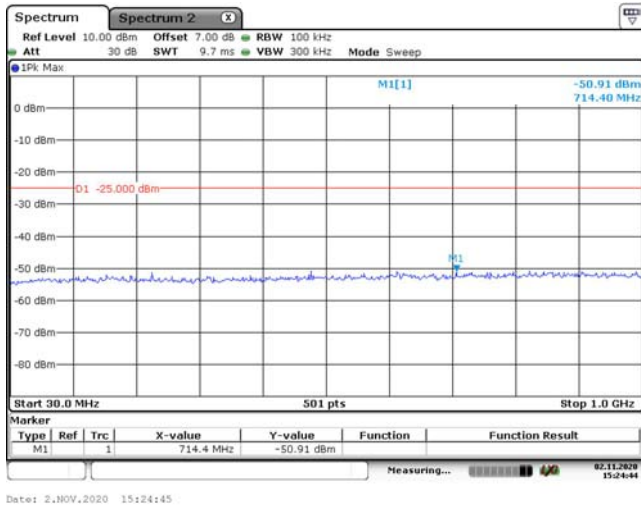


Date: 2.NOV.2020 17:10:42

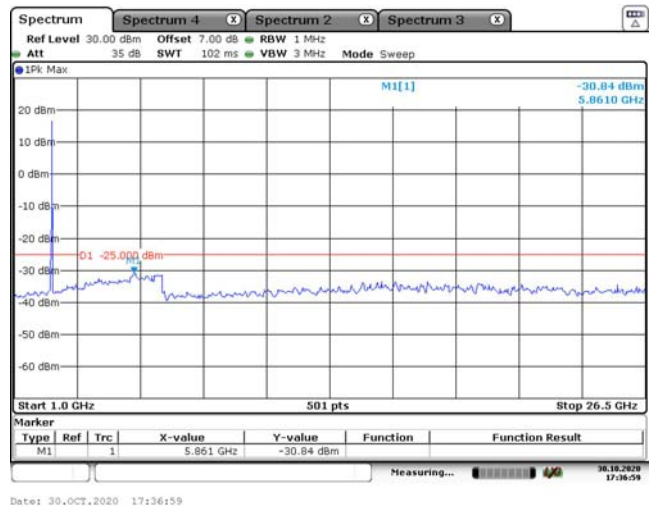
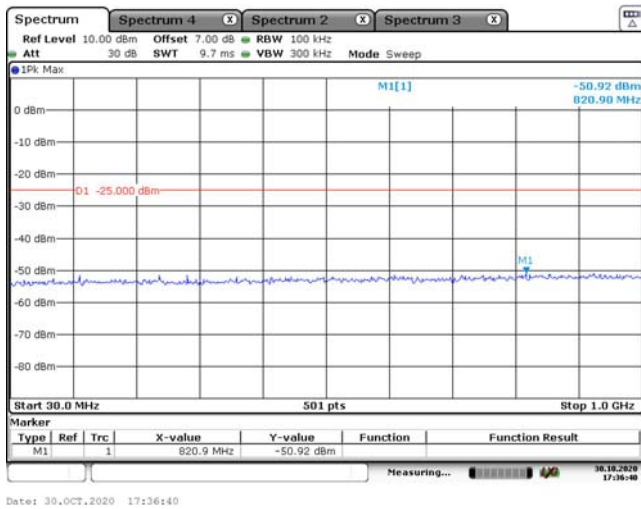


Date: 2.NOV.2020 17:11:07

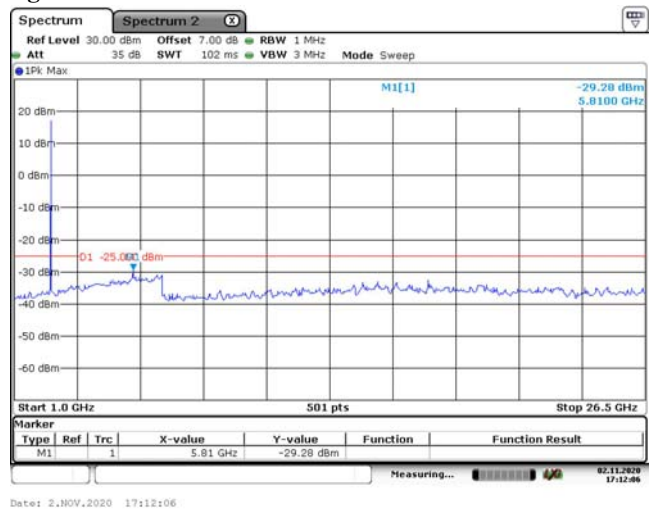
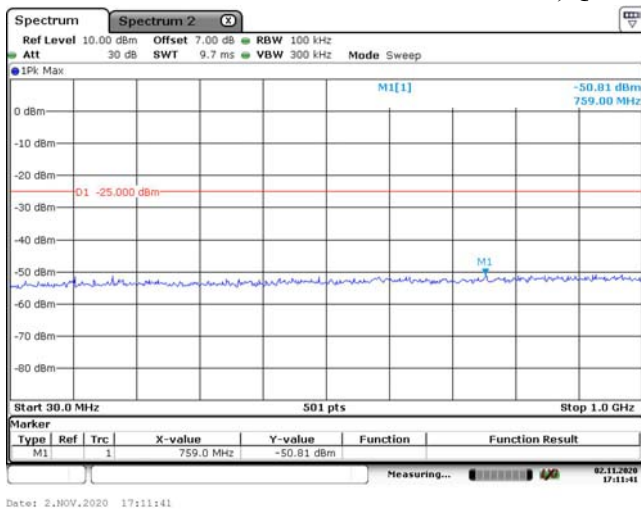
10M, QPSK, Low Channel



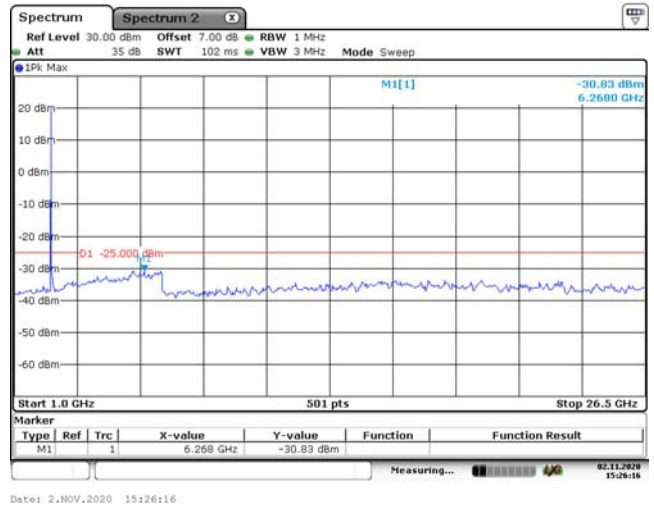
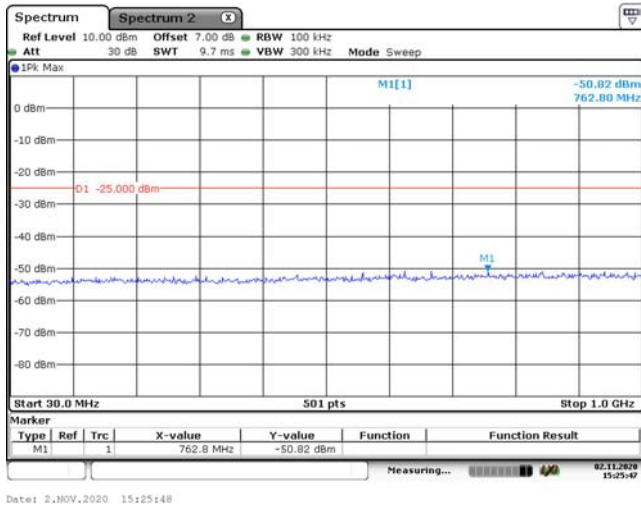
10M, QPSK, Middle Channel



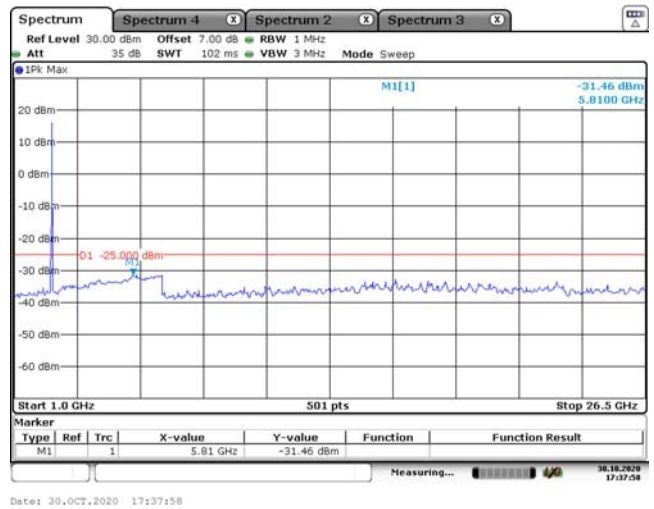
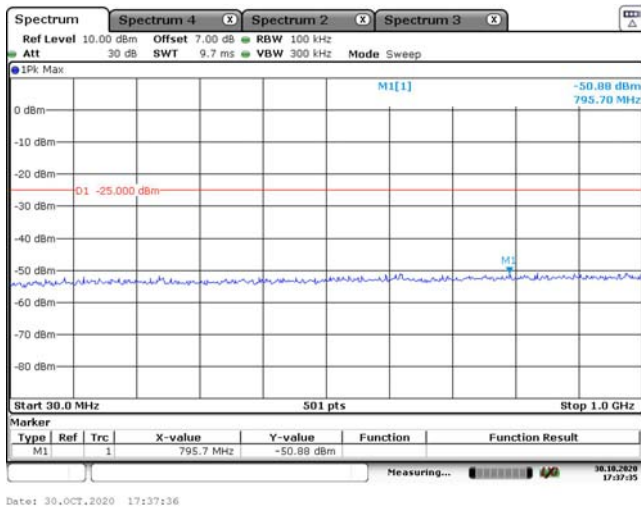
10M, QPSK, High Channel



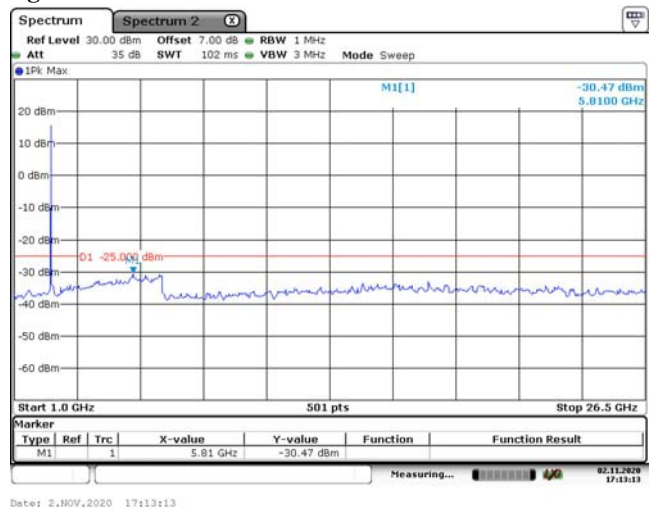
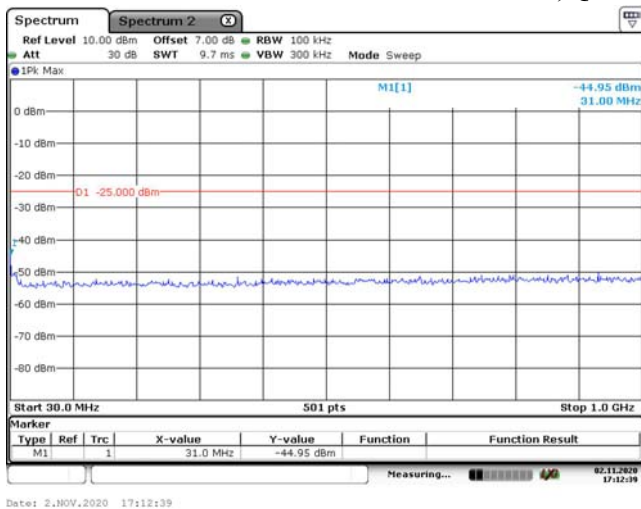
15M, QPSK, Low Channel



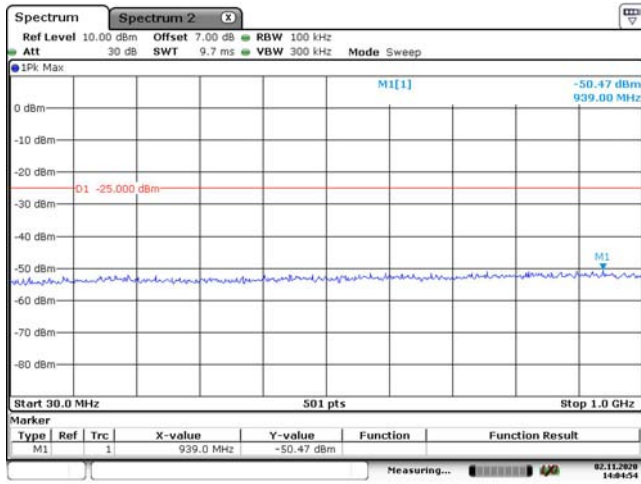
15M, QPSK, Middle Channel



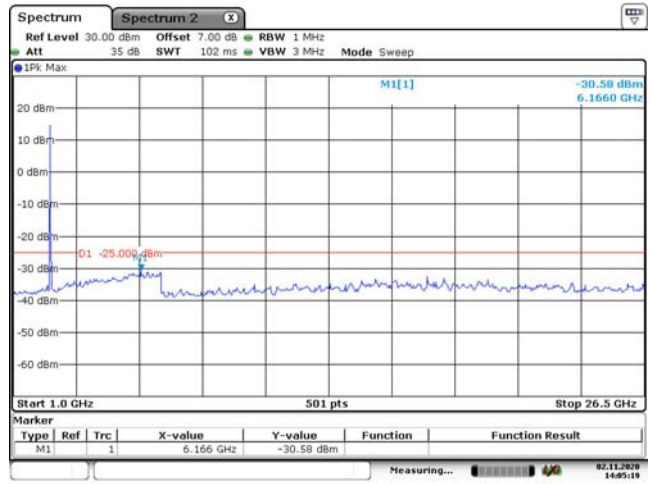
15M, QPSK, High Channel



20M, QPSK, Low Channel

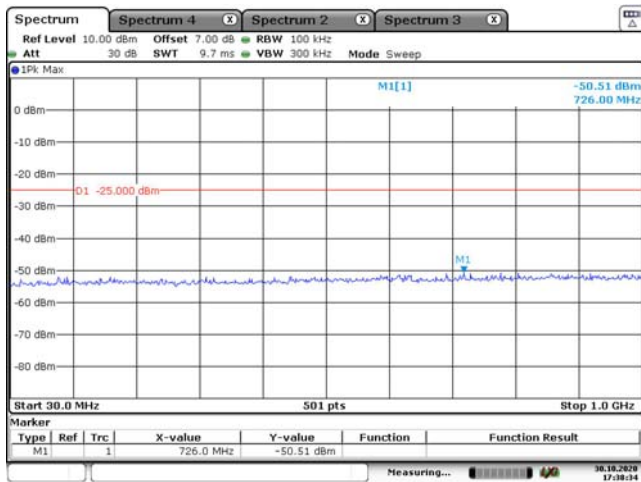


Date: 2.NOV.2020 14:04:54

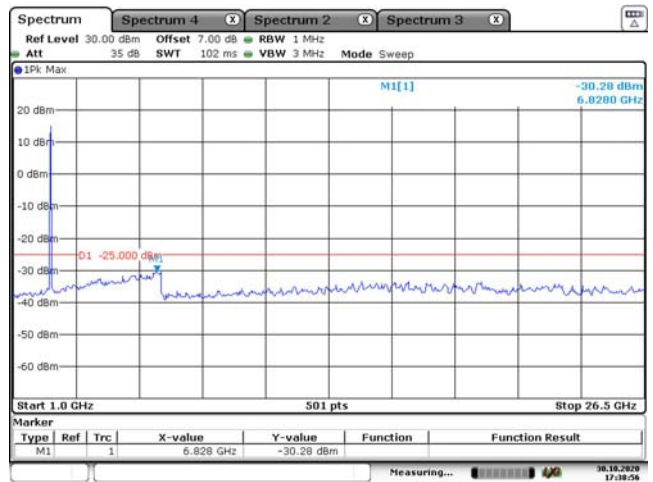


Date: 2.NOV.2020 14:05:19

20M, QPSK, Middle Channel

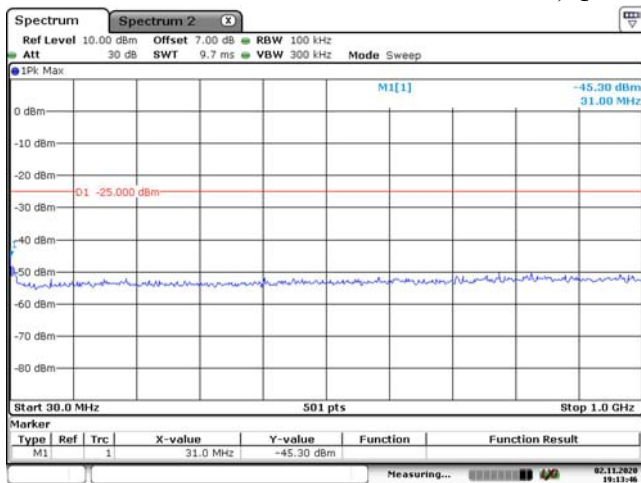


Date: 30.OCT.2020 17:38:15

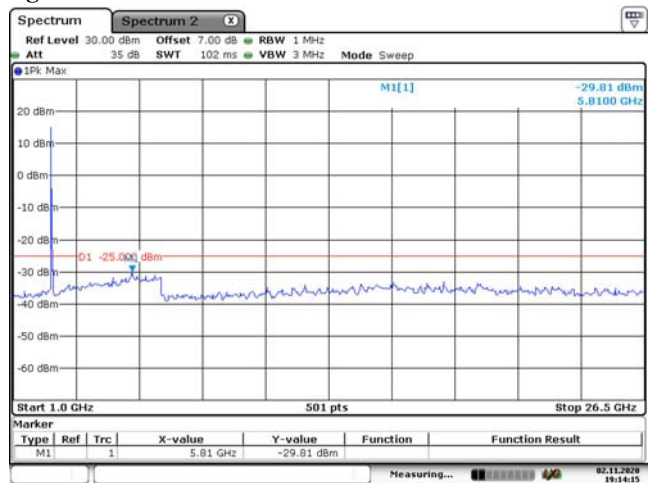


Date: 30.OCT.2020 17:38:57

20M, QPSK, High Channel



Date: 2.NOV.2020 19:13:47



Date: 2.NOV.2020 19:14:15

FCC §2.1053, §22.917 & §24.238 & §27.53- SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053, §22.917, § 24.238 and § 27.53;

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = $10 \lg (\text{TXpwr in Watts}/0.001)$ – the absolute level

Spurious attenuation limit in dB = $43 + 10 \text{Log}_{10} (\text{power out in Watts})$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
R&S	EMI Test Receiver	ESR3	102453	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2020-05-06	2021-05-06
HP	Amplifier	8447D	2727A05902	2020-09-05	2021-09-05
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2020-09-05	2021-09-05
Agilent	Signal Generator	E8247C	MY43321350	2019-12-10	2020-12-10
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Agilent	Spectrum Analyzer	E4440A	SG43360054	2020-07-07	2021-07-07
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2020-06-27	2021-06-27
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2017-12-06	2020-12-05
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2017-12-06	2020-12-05
Sinoscite	Band-stop filter	BSF1850-1910MS-0935V2	0935V2	2020-06-16	2021-06-16
Sinoscite	Band-stop filter	BSF2500-2750MS-1439-001	1437001	2020-06-16	2021-06-16
Micro-tronics	High Pass Filter	HPM50111	S/N-G217	2020-06-16	2021-06-16
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2020-09-05	2021-09-05
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2020-09-05	2021-09-05

* **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**

Test Items	Radiation Below 1GHz	Radiation Above 1GHz
Temperature:	26.4 ~ 29 °C	25.5 ~ 26.6°C
Relative Humidity:	37 ~ 55 %	37 ~ 42%
ATM Pressure:	100.9 ~ 101kPa	101~ 101.3kPa
Tester:	Joker Chen	Felix Wang, Joker Chen
Test Date:	2020-10-09, 2020-10-10	2020-10-11, 2020-11-05

Test Result: Compliance.

EUT Operation Mode: Transmitting

Cellular Band (PART 22H)**30 MHz-10 GHz:**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM850 Frequency:824.2MHz								
1648.40	H	48.80	-55.38	10.44	0.71	-45.65	-13.00	32.65
1648.40	V	42.83	-61.95	10.44	0.71	-52.22	-13.00	39.22
2472.60	H	44.11	-58.67	12.88	1.25	-47.04	-13.00	34.04
2472.60	V	45.65	-57.18	12.88	1.25	-45.55	-13.00	32.55
3296.80	H	38.84	-60.94	13.60	1.59	-48.93	-13.00	35.93
3296.80	V	42.36	-57.43	13.60	1.59	-45.42	-13.00	32.42
700.30	H	44.86	-56.56	0.00	0.94	-57.50	-13.00	44.50
700.30	V	41.88	-62.02	0.00	0.94	-62.96	-13.00	49.96
GSM850 Frequency:836.6MHz								
1673.20	H	48.21	-55.73	10.61	0.73	-45.85	-13.00	32.85
1673.20	V	45.50	-59.04	10.61	0.73	-49.16	-13.00	36.16
2509.80	H	42.25	-60.66	13.11	1.25	-48.80	-13.00	35.80
2509.80	V	43.23	-59.71	13.11	1.25	-47.85	-13.00	34.85
3346.40	H	41.18	-58.50	13.83	1.61	-46.28	-13.00	33.28
3346.40	V	44.94	-54.78	13.83	1.61	-42.56	-13.00	29.56
700.30	H	44.80	-56.62	0.00	0.94	-57.56	-13.00	44.56
700.30	V	41.85	-62.05	0.00	0.94	-62.99	-13.00	49.99
GSM850 Frequency:848.8MHz								
1697.60	H	49.18	-54.52	10.78	0.75	-44.49	-13.00	31.49
1697.60	V	49.88	-54.42	10.78	0.75	-44.39	-13.00	31.39
2546.40	H	43.49	-59.46	13.15	1.27	-47.58	-13.00	34.58
2546.40	V	41.63	-61.46	13.15	1.27	-49.58	-13.00	36.58
3395.20	H	42.91	-56.61	14.08	1.64	-44.17	-13.00	31.17
3395.20	V	45.86	-53.76	14.08	1.64	-41.32	-13.00	28.32
700.30	H	44.84	-56.58	0.00	0.94	-57.52	-13.00	44.52
700.30	V	41.93	-61.97	0.00	0.94	-62.91	-13.00	49.91

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
WCDMA Band 5 Frequency:826.4 MHz								
1652.80	H	39.56	-64.57	10.47	0.72	-54.82	-13.00	41.82
1652.80	V	41.21	-63.52	10.47	0.72	-53.77	-13.00	40.77
2479.20	H	41.61	-61.20	12.93	1.25	-49.52	-13.00	36.52
2479.20	V	39.23	-63.62	12.93	1.25	-51.94	-13.00	38.94
3305.60	H	37.48	-62.32	13.63	1.59	-50.28	-13.00	37.28
3305.60	V	38.26	-61.55	13.63	1.59	-49.51	-13.00	36.51
374.60	H	45.26	-60.52	0.00	0.59	-61.11	-13.00	48.11
374.60	V	46.34	-62.29	0.00	0.59	-62.88	-13.00	49.88
WCDMA Band 5 Frequency:836.6MHz								
1673.20	H	39.58	-64.36	10.61	0.73	-54.48	-13.00	41.48
1673.20	V	40.25	-64.29	10.61	0.73	-54.41	-13.00	41.41
2509.80	H	38.44	-64.47	13.11	1.25	-52.61	-13.00	39.61
2509.80	V	39.12	-63.82	13.11	1.25	-51.96	-13.00	38.96
3346.40	H	37.83	-61.85	13.83	1.61	-49.63	-13.00	36.63
3346.40	V	38.42	-61.30	13.83	1.61	-49.08	-13.00	36.08
374.60	H	45.21	-60.57	0.00	0.59	-61.16	-13.00	48.16
374.60	V	46.30	-62.33	0.00	0.59	-62.92	-13.00	49.92
WCDMA Band 5 Frequency:846.6MHz								
1693.20	H	38.26	-65.49	10.75	0.75	-55.49	-13.00	42.49
1693.20	V	39.97	-64.38	10.75	0.75	-54.38	-13.00	41.38
2539.80	H	39.24	-63.70	13.14	1.27	-51.83	-13.00	38.83
2539.80	V	39.65	-63.41	13.14	1.27	-51.54	-13.00	38.54
3386.40	H	36.42	-63.13	14.03	1.63	-50.73	-13.00	37.73
3386.40	V	37.03	-62.61	14.03	1.63	-50.21	-13.00	37.21
374.60	H	45.17	-60.61	0.00	0.59	-61.20	-13.00	48.20
374.60	V	46.25	-62.38	0.00	0.59	-62.97	-13.00	49.97

PCS Band (PART 24E)**30 MHz-20 GHz:**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM1900 Frequency:1850.2MHz								
3700.40	H	59.67	-38.32	14.00	1.83	-26.15	-13.00	13.15
3700.40	V	54.20	-43.77	14.00	1.83	-31.60	-13.00	18.60
5550.60	H	64.20	-29.77	13.95	1.27	-17.09	-13.00	4.09
5550.60	V	62.17	-31.65	13.95	1.27	-18.97	-13.00	5.97
936.10	H	42.01	-53.63	0.00	0.94	-54.57	-13.00	41.57
936.10	V	44.12	-53.27	0.00	0.94	-54.21	-13.00	41.21
GSM 1900 Frequency:1880MHz								
3760.00	H	61.19	-36.45	13.76	1.63	-24.32	-13.00	11.32
3760.00	V	56.22	-41.28	13.76	1.63	-29.15	-13.00	16.15
5640.00	H	60.47	-33.12	14.02	1.31	-20.41	-13.00	7.41
5640.00	V	59.82	-33.66	14.02	1.31	-20.95	-13.00	7.95
936.10	H	42.06	-53.58	0.00	0.94	-54.52	-13.00	41.52
936.10	V	44.04	-53.35	0.00	0.94	-54.29	-13.00	41.29
GSM 1900 Frequency:1909.8MHz								
3819.60	H	60.34	-36.91	13.56	1.50	-24.85	-13.00	11.85
3819.60	V	56.89	-40.18	13.56	1.50	-28.12	-13.00	15.12
5729.40	H	64.09	-29.62	13.96	1.31	-16.97	-13.00	3.97
5729.40	V	58.09	-35.59	13.96	1.31	-22.94	-13.00	9.94
936.10	H	42.08	-53.56	0.00	0.94	-54.50	-13.00	41.50
936.10	V	44.07	-53.32	0.00	0.94	-54.26	-13.00	41.26

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
WCDMA Band II, Frequency:1852.4 MHz								
3704.80	H	39.21	-58.75	13.98	1.81	-46.58	-13.00	33.58
3704.80	V	39.17	-58.76	13.98	1.81	-46.59	-13.00	33.59
5557.20	H	35.93	-57.96	13.97	1.27	-45.26	-13.00	32.26
5557.20	V	35.88	-57.86	13.97	1.27	-45.16	-13.00	32.16
374.60	H	45.41	-60.37	0.00	0.59	-60.96	-13.00	47.96
585.20	V	43.22	-62.45	0.00	0.75	-63.20	-13.00	50.20
WCDMA Band II, Frequency:1880 MHz								
3760.00	H	37.15	-60.49	13.76	1.63	-48.36	-13.00	35.36
3760.00	V	37.56	-59.94	13.76	1.63	-47.81	-13.00	34.81
5640.00	H	35.11	-58.48	14.02	1.31	-45.77	-13.00	32.77
5640.00	V	35.07	-58.41	14.02	1.31	-45.70	-13.00	32.70
374.60	H	45.35	-60.43	0.00	0.59	-61.02	-13.00	48.02
585.20	V	43.10	-62.57	0.00	0.75	-63.32	-13.00	50.32
WCDMA Band II, Frequency:1907.6MHz								
3815.20	H	37.90	-59.38	13.57	1.50	-47.31	-13.00	34.31
3815.20	V	37.14	-59.96	13.57	1.50	-47.89	-13.00	34.89
5722.80	H	35.67	-58.09	13.95	1.32	-45.46	-13.00	32.46
5722.80	V	35.96	-57.76	13.95	1.32	-45.13	-13.00	32.13
374.60	H	45.38	-60.40	0.00	0.59	-60.99	-13.00	47.99
374.60	V	46.33	-62.30	0.00	0.59	-62.89	-13.00	49.89

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level

LTE Band 2 (30MHz-20GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK,Frequency:1850.7 MHz								
3701.40	H	37.72	-60.26	13.99	1.83	-48.10	-13.00	35.10
3701.40	V	36.84	-61.12	13.99	1.83	-48.96	-13.00	35.96
5552.10	H	35.53	-58.42	13.96	1.27	-45.73	-13.00	32.73
5552.10	V	36.16	-57.64	13.96	1.27	-44.95	-13.00	31.95
374.60	H	45.77	-60.01	0.00	0.59	-60.60	-13.00	47.60
374.60	V	46.93	-61.70	0.00	0.59	-62.29	-13.00	49.29
QPSK,Frequency:1880 MHz								
3760.00	H	37.83	-59.81	13.76	1.63	-47.68	-13.00	34.68
3760.00	V	36.99	-60.51	13.76	1.63	-48.38	-13.00	35.38
5640.00	H	35.60	-57.99	14.02	1.31	-45.28	-13.00	32.28
5640.00	V	36.10	-57.38	14.02	1.31	-44.67	-13.00	31.67
374.60	H	45.75	-60.03	0.00	0.59	-60.62	-13.00	47.62
374.60	V	46.96	-61.67	0.00	0.59	-62.26	-13.00	49.26
QPSK,Frequency:1909.3 MHz								
3818.60	H	37.95	-59.31	13.56	1.50	-47.25	-13.00	34.25
3818.60	V	37.10	-59.97	13.56	1.50	-47.91	-13.00	34.91
5727.90	H	35.69	-58.03	13.96	1.31	-45.38	-13.00	32.38
5727.90	V	36.26	-57.43	13.96	1.31	-44.78	-13.00	31.78
374.60	H	45.83	-59.95	0.00	0.59	-60.54	-13.00	47.54
374.60	V	46.99	-61.64	0.00	0.59	-62.23	-13.00	49.23

LTE Band 4 (30MHz-20GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 1710.7 MHz								
3421.40	H	41.95	-57.45	14.04	1.63	-45.04	-13.00	32.04
3421.40	V	42.15	-57.33	14.04	1.63	-44.92	-13.00	31.92
5132.10	H	38.63	-56.05	13.93	1.37	-43.49	-13.00	30.49
5132.10	V	36.62	-57.97	13.93	1.37	-45.41	-13.00	32.41
374.60	H	47.49	-58.29	0.00	0.59	-58.88	-13.00	45.88
374.60	V	46.54	-62.09	0.00	0.59	-62.68	-13.00	49.68
QPSK, Frequency: 1732.5 MHz								
3465.00	H	41.89	-57.30	13.91	1.62	-45.01	-13.00	32.01
3465.00	V	42.08	-57.14	13.91	1.62	-44.85	-13.00	31.85
5197.50	H	38.54	-56.15	14.00	1.52	-43.67	-13.00	30.67
5197.50	V	36.49	-58.27	14.00	1.52	-45.79	-13.00	32.79
374.60	H	47.43	-58.35	0.00	0.59	-58.94	-13.00	45.94
374.60	V	46.50	-62.13	0.00	0.59	-62.72	-13.00	49.72
QPSK, Frequency: 1754.3 MHz								
3508.60	H	41.72	-57.29	13.83	1.60	-45.06	-13.00	32.06
3508.60	V	41.89	-57.12	13.83	1.60	-44.89	-13.00	31.89
5262.90	H	38.43	-56.66	14.19	1.29	-43.76	-13.00	30.76
5262.90	V	36.39	-58.78	14.19	1.29	-45.88	-13.00	32.88
374.60	H	47.51	-58.27	0.00	0.59	-58.86	-13.00	45.86
374.60	V	46.57	-62.06	0.00	0.59	-62.65	-13.00	49.65

LTE Band 5(30MHz-10GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 824.7 MHz								
1649.40	H	42.39	-61.78	10.45	0.71	-52.04	-13.00	39.04
1649.40	V	40.50	-64.27	10.45	0.71	-54.53	-13.00	41.53
2474.10	H	58.44	-44.35	12.89	1.25	-32.71	-13.00	19.71
2474.10	V	52.67	-50.17	12.89	1.25	-38.53	-13.00	25.53
3298.80	H	41.91	-57.90	13.60	1.59	-45.89	-13.00	32.89
3298.80	V	43.46	-56.35	13.60	1.59	-44.34	-13.00	31.34
374.60	H	45.36	-60.42	0.00	0.59	-61.01	-13.00	48.01
374.60	V	46.49	-62.14	0.00	0.59	-62.73	-13.00	49.73
QPSK, Frequency: 836.5 MHz								
1673.00	H	45.08	-58.86	10.61	0.73	-48.98	-13.00	35.98
1673.00	V	41.66	-62.88	10.61	0.73	-53.00	-13.00	40.00
2509.50	H	62.09	-40.82	13.11	1.25	-28.96	-13.00	15.96
2509.50	V	57.03	-45.91	13.11	1.25	-34.05	-13.00	21.05
3346.00	H	39.31	-60.37	13.83	1.61	-48.15	-13.00	35.15
3346.00	V	41.62	-58.10	13.83	1.61	-45.88	-13.00	32.88
374.60	H	45.30	-60.48	0.00	0.59	-61.07	-13.00	48.07
374.60	V	46.56	-62.07	0.00	0.59	-62.66	-13.00	49.66
QPSK, Frequency: 848.3 MHz								
1696.60	H	43.13	-60.58	10.78	0.75	-50.55	-13.00	37.55
1696.60	V	40.22	-64.09	10.78	0.75	-54.06	-13.00	41.06
2544.90	H	56.24	-46.71	13.14	1.27	-34.84	-13.00	21.84
2544.90	V	53.47	-49.61	13.14	1.27	-37.74	-13.00	24.74
3393.20	H	40.86	-58.67	14.07	1.64	-46.24	-13.00	33.24
3393.20	V	43.31	-56.31	14.07	1.64	-43.88	-13.00	30.88
374.60	H	45.41	-60.37	0.00	0.59	-60.96	-13.00	47.96
374.60	V	46.52	-62.11	0.00	0.59	-62.70	-13.00	49.70

LTE Band 7(30MHz-26.5GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 2502.5 MHz								
5005.00	H	38.83	-57.24	14.00	1.43	-44.67	-25.00	19.67
5005.00	V	40.42	-55.41	14.00	1.43	-42.84	-25.00	17.84
7507.50	H	36.43	-52.21	13.20	1.33	-40.34	-25.00	15.34
7507.50	V	36.31	-52.81	13.20	1.33	-40.94	-25.00	15.94
374.60	H	47.26	-58.52	0.00	0.59	-59.11	-25.00	34.11
374.60	V	46.36	-62.27	0.00	0.59	-62.86	-25.00	37.86
QPSK, Frequency:2535 MHz								
5070.00	H	36.91	-58.20	13.93	1.34	-45.61	-25.00	20.61
5070.00	V	40.38	-54.54	13.93	1.34	-41.95	-25.00	16.95
7605.00	H	36.43	-52.45	13.21	1.40	-40.64	-25.00	15.64
7605.00	V	36.65	-52.63	13.21	1.40	-40.82	-25.00	15.82
374.60	H	47.21	-58.57	0.00	0.59	-59.16	-25.00	34.16
374.60	V	46.31	-62.32	0.00	0.59	-62.91	-25.00	37.91
QPSK, Frequency: 2567.5MHz								
5135.00	H	36.31	-58.37	13.94	1.38	-45.81	-25.00	20.81
5135.00	V	39.20	-55.39	13.94	1.38	-42.83	-25.00	17.83
7702.50	H	36.10	-53.02	13.40	1.47	-41.09	-25.00	16.09
7702.50	V	35.56	-53.88	13.40	1.47	-41.95	-25.00	16.95
374.60	H	47.24	-58.54	0.00	0.59	-59.13	-25.00	34.13
374.60	V	46.29	-62.34	0.00	0.59	-62.93	-25.00	37.93

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level

FCC §22.917(a) & §24.238(a) & §27.53 - BAND EDGES

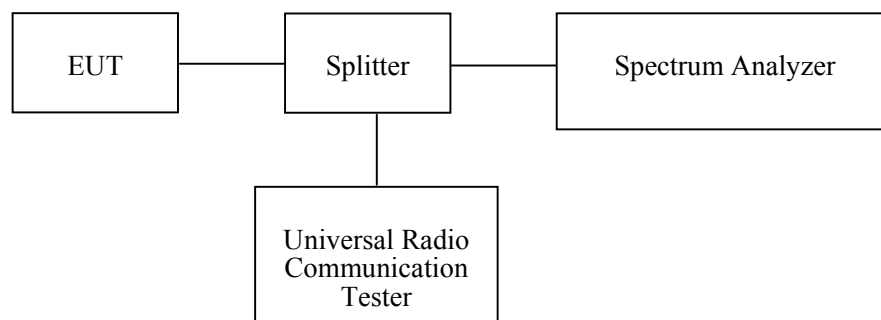
Applicable Standard

FCC § 2.1053, §22.917, § 24.238 and § 27.53

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2020-07-07	2021-07-07
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2020-09-12	2021-09-12
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	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

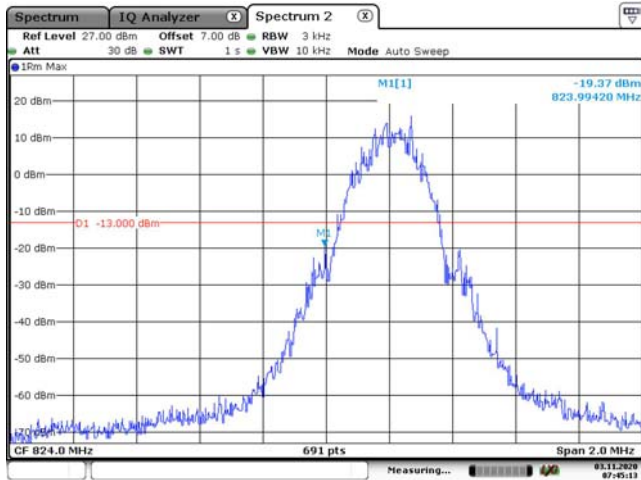
Environmental Conditions

Temperature:	25.4~27.1 °C
Relative Humidity:	30~49%
ATM Pressure:	101~101.9kPa
Tester:	Taylor Li
Test Date:	2020-10-30~2020-11-17

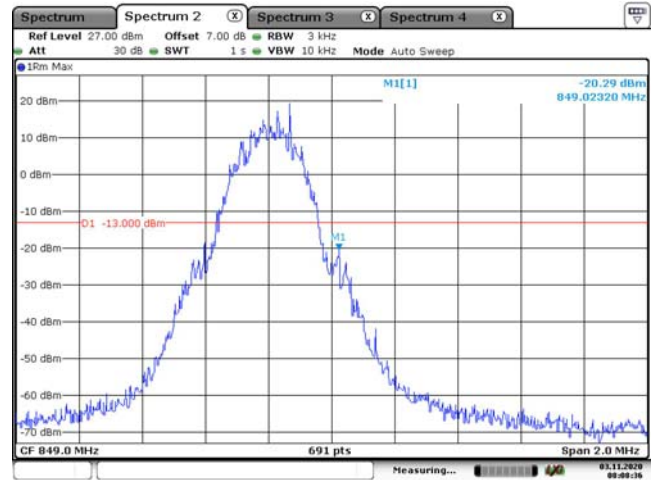
Test Mode: Transmitting

Test Result: Compliance. Please refer to the following plots.

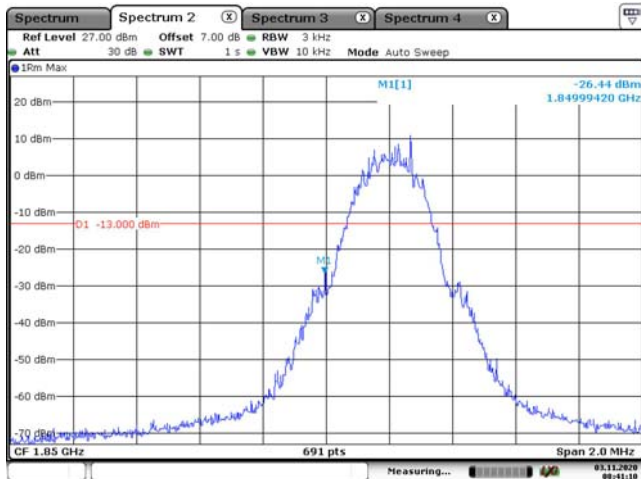
GSM 850, Left Band Edge



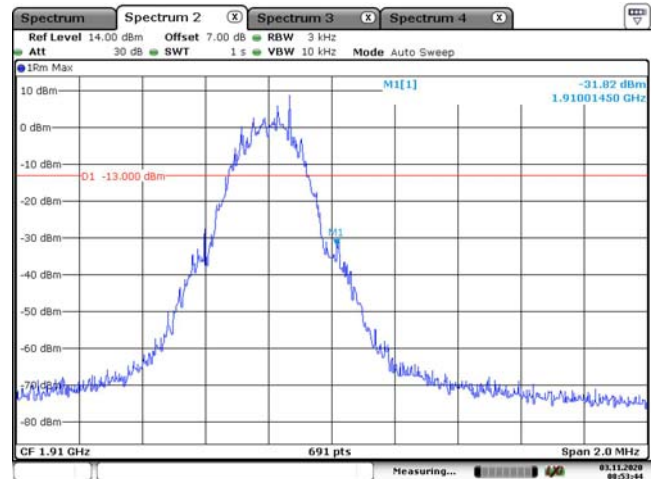
GSM 850, Right Band Edge



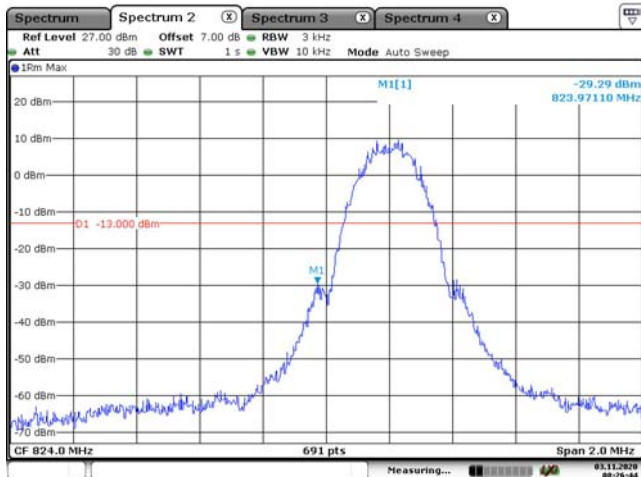
PCS 1900, Left Band Edge



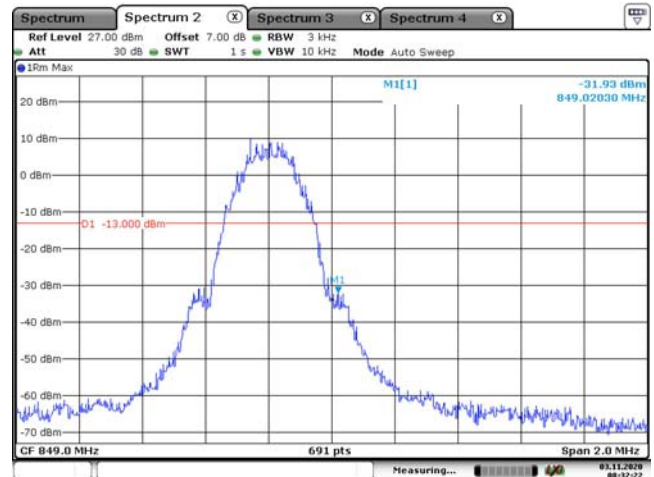
PCS 1900, Right Band Edge



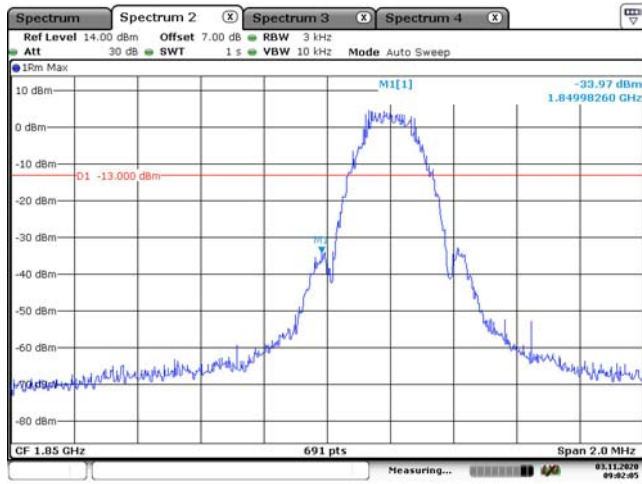
EDGE 850, Left Band Edge



EDGE 850, Right Band Edge

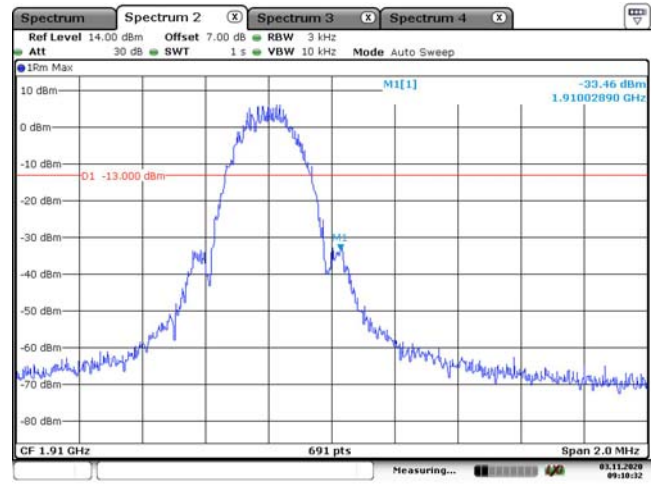


EDGE 1900, Left Band Edge



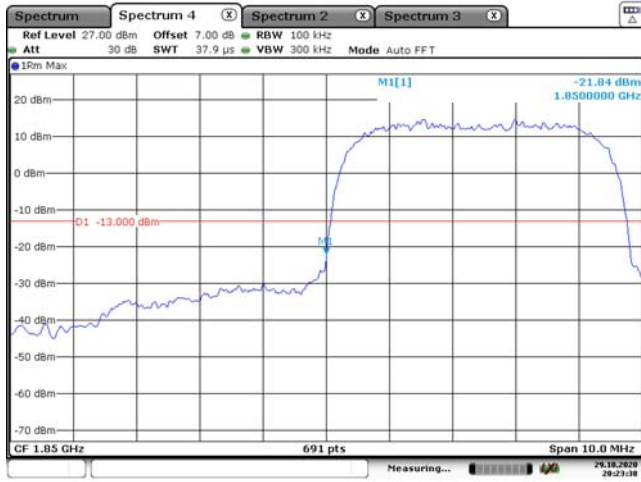
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EDGE 1900, Right Band Edge



Date: 3.NOV.2020 09:10:32

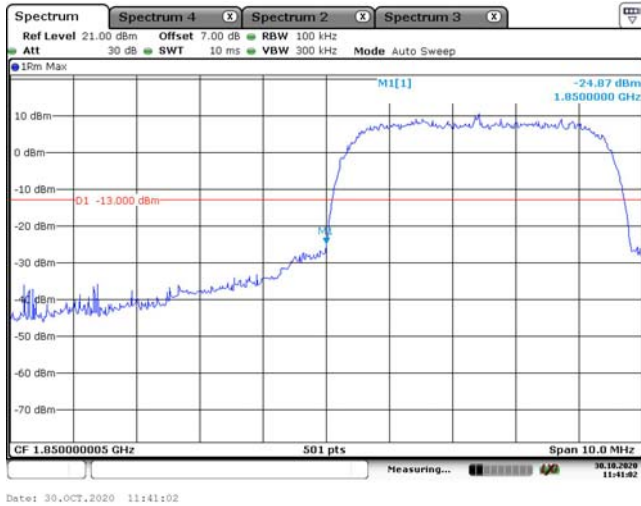
WCDMA Band II,Rel99, Left Band Edge



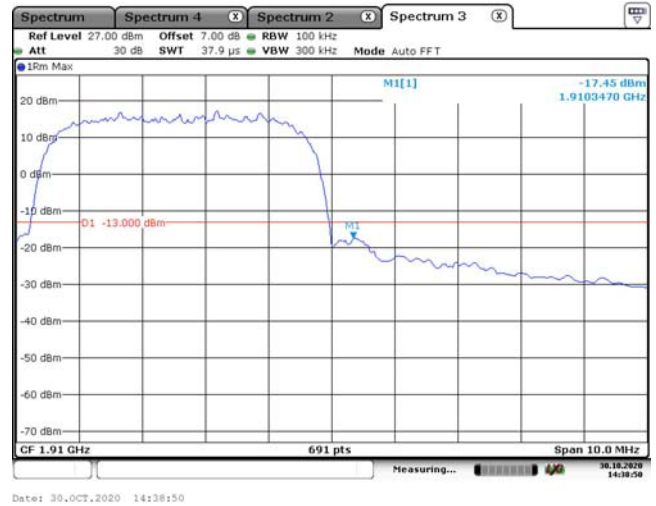
WCDMA Band II,Rel99, Right Band Edge



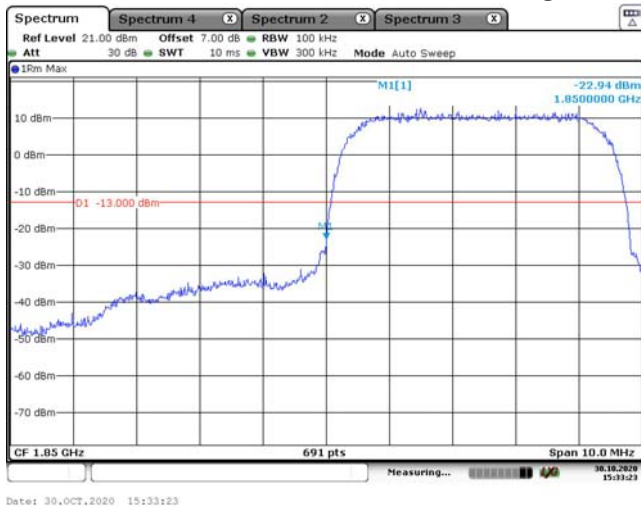
WCDMA Band II,HSDPA, Left Band Edge



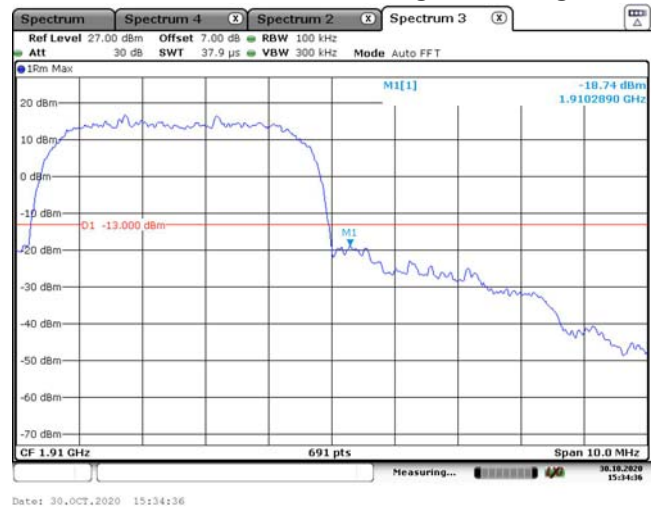
WCDMA Band II,HSDPA,Right Band Edge



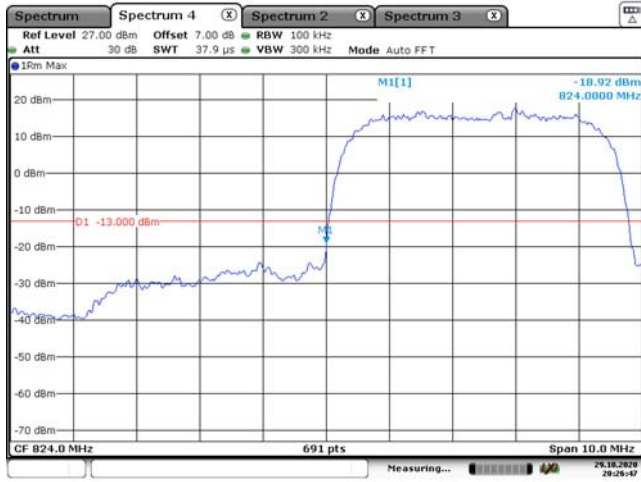
WCDMA Band II,HSUPA, Left Band Edge



WCDMA Band II,HSUPA, Right Band Edge



WCDMA Band V,Rel99, Left Band Edge



WCDMA Band V,Rel99, Right Band Edge



WCDMA Band V,HSDPA, Left Band Edge



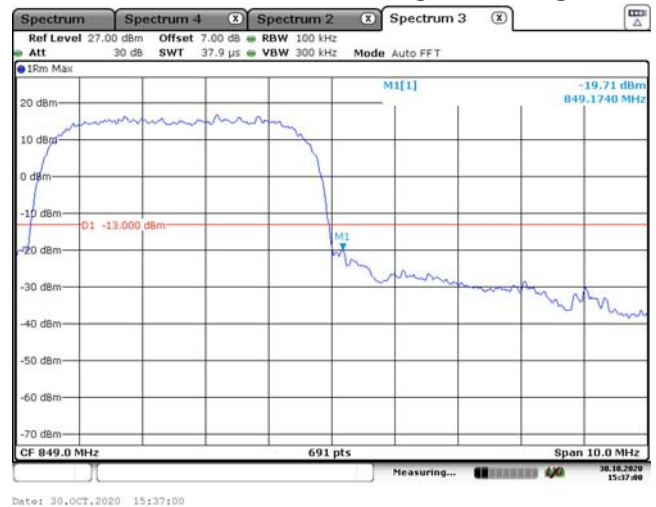
WCDMA Band V,HSDPA,Right Band Edge



WCDMA Band V,HSUPA, Left Band Edge

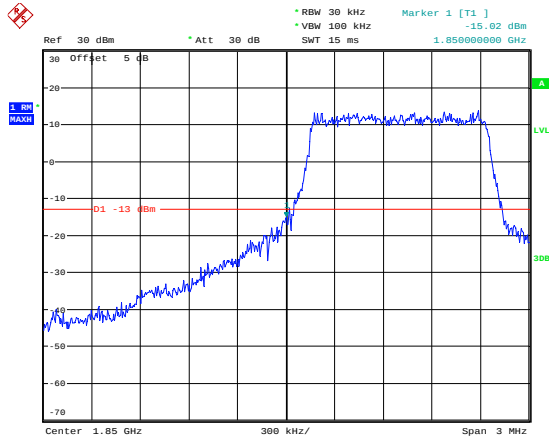


WCDMA Band V,HSUPA, Right Band Edge



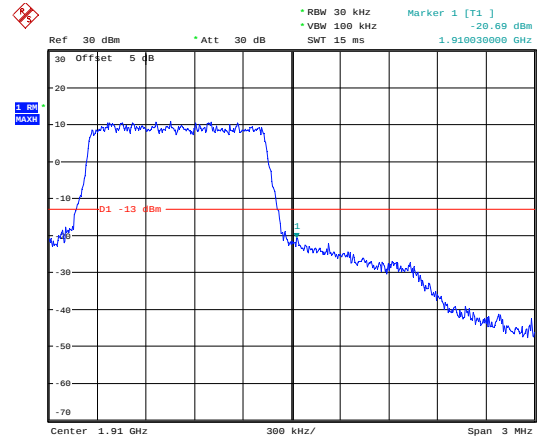
LTE Band 2:

1.4M, QPSK, Left Band Edge



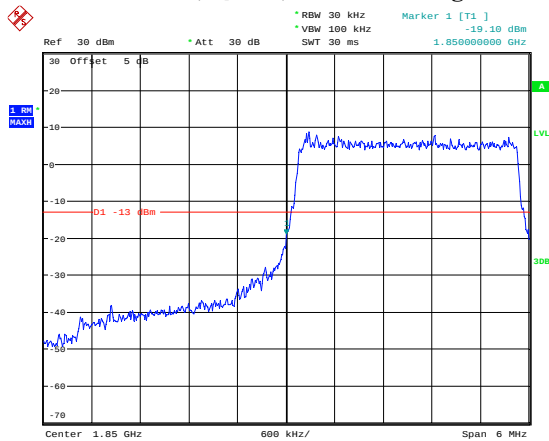
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1.4M, QPSK, Right Band Edge



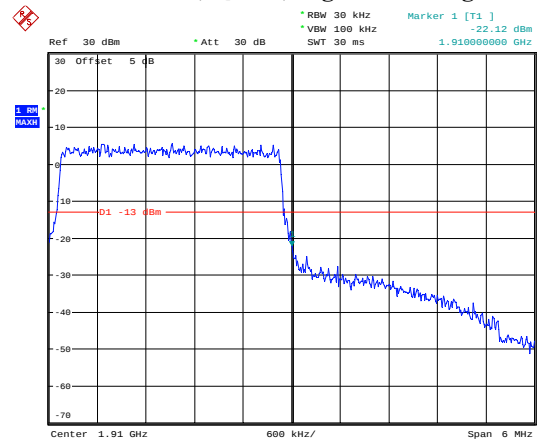
Date: 17.NOV.2020 09:34:26

3M, QPSK, Left Band Edge



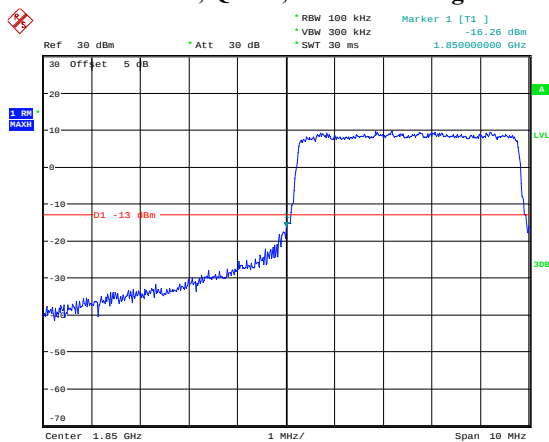
Date: 17.NOV.2020 09:35:07

3M, QPSK, Right Band Edge



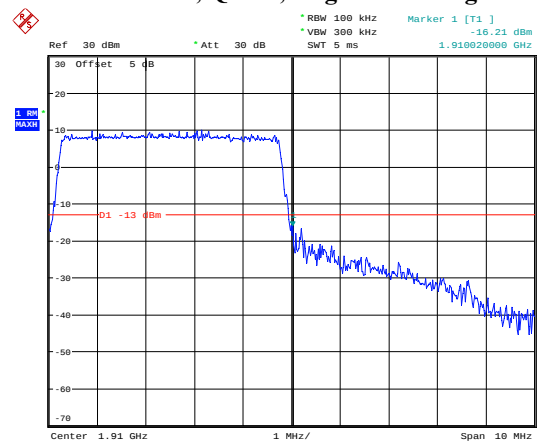
Date: 17.NOV.2020 09:35:46

5M, QPSK, Left Band Edge



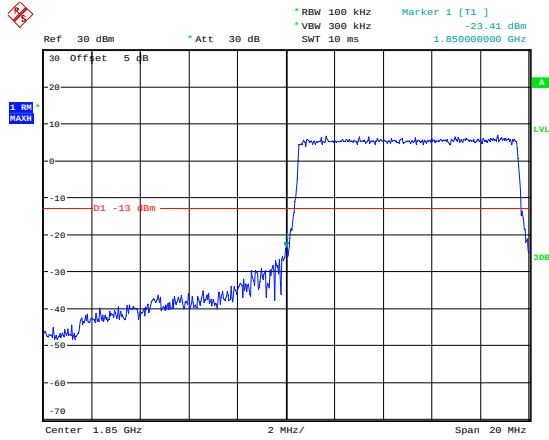
Date: 17.NOV.2020 10:34:47

5M, QPSK, Right Band Edge



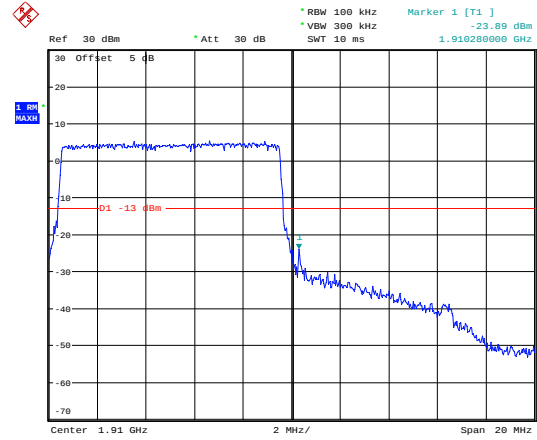
Date: 17.NOV.2020 09:37:25

10M, QPSK, Left Band Edge



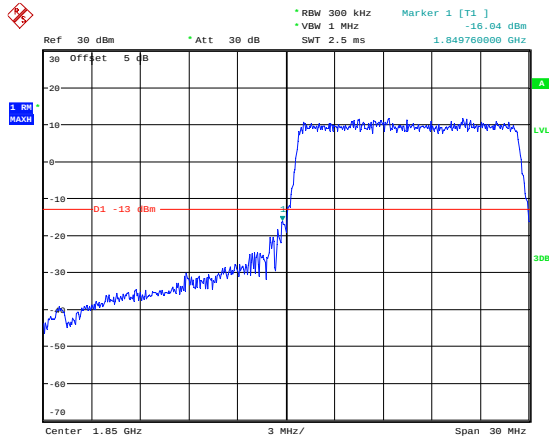
Date: 17.NOV.2020 09:38:12

10M, QPSK, Right Band Edge



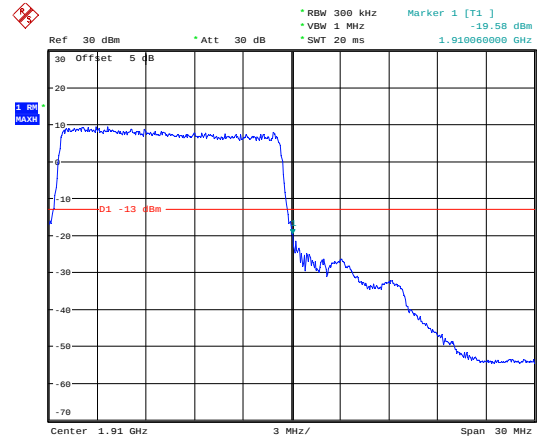
Date: 17.NOV.2020 09:39:42

15M, QPSK, Left Band Edge



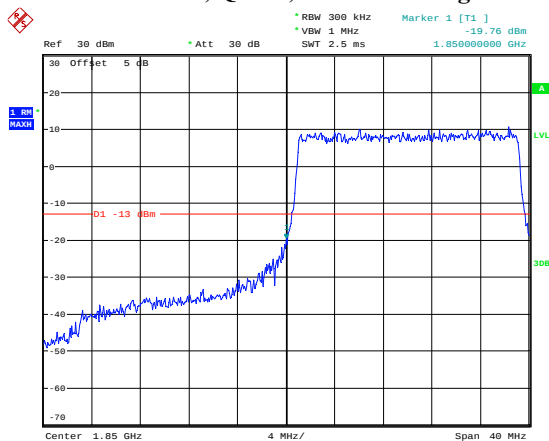
Date: 17.NOV.2020 09:40:37

15M, QPSK, Right Band Edge



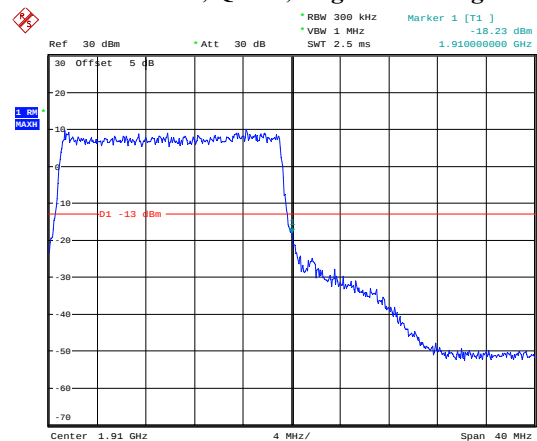
Date: 17.NOV.2020 10:38:29

20M, QPSK, Left Band Edge



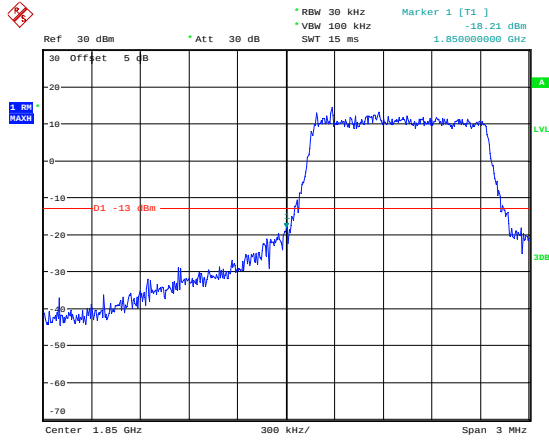
Date: 17.NOV.2020 09:42:16

20M, QPSK, Right Band Edge



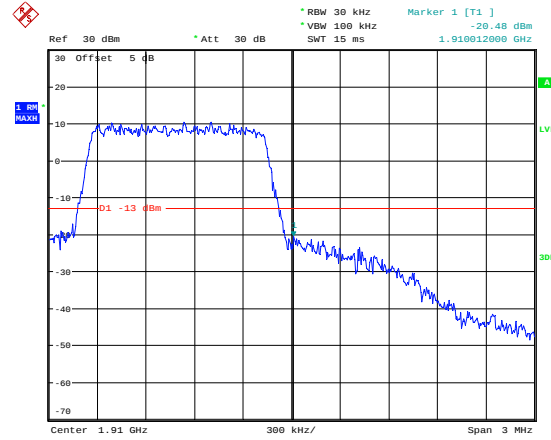
Date: 17.NOV.2020 09:43:08

1.4M, 16QAM, Left Band Edge



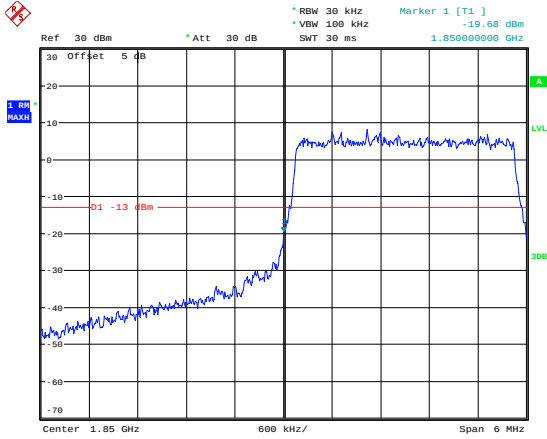
Date: 17.NOV.2020 09:34:00

1.4M, 16QAM, Right Band Edge



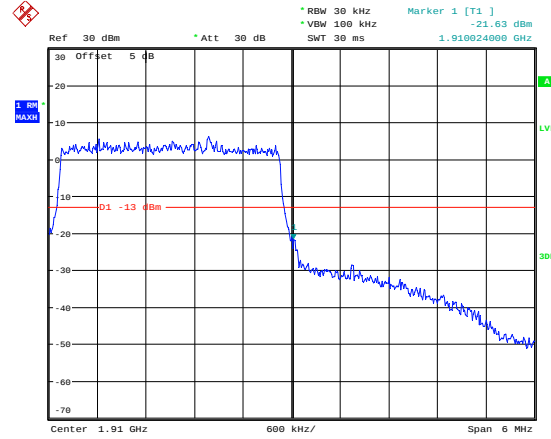
Date: 17.NOV.2020 09:34:47

3M, 16QAM, Left Band Edge



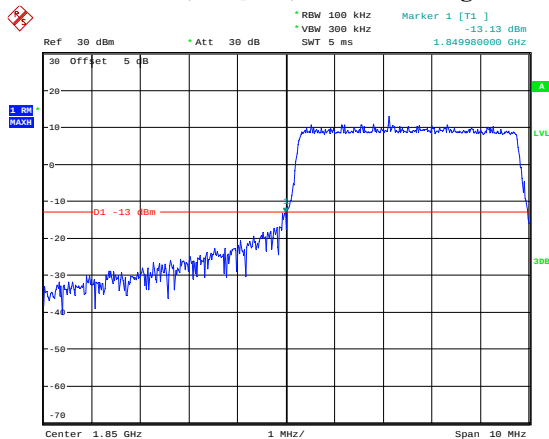
Date: 17.NOV.2020 09:35:28

3M, 16QAM, Right Band Edge



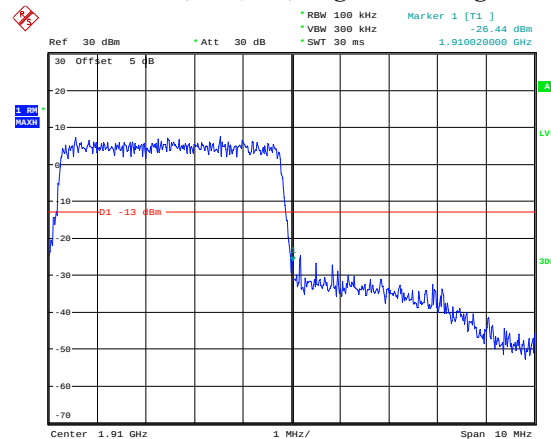
Date: 17.NOV.2020 09:36:07

5M, 16QAM, Left Band Edge



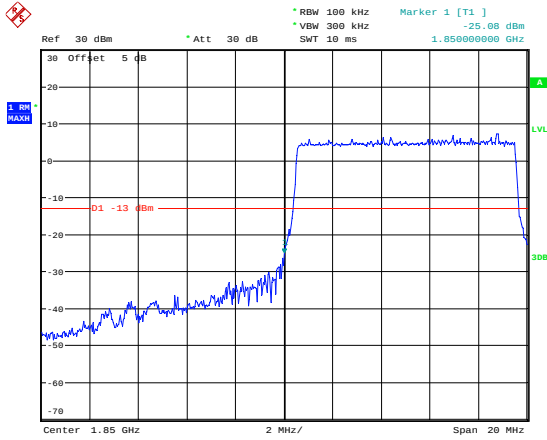
Date: 17.NOV.2020 09:37:02

5M, 16QAM, Right Band Edge



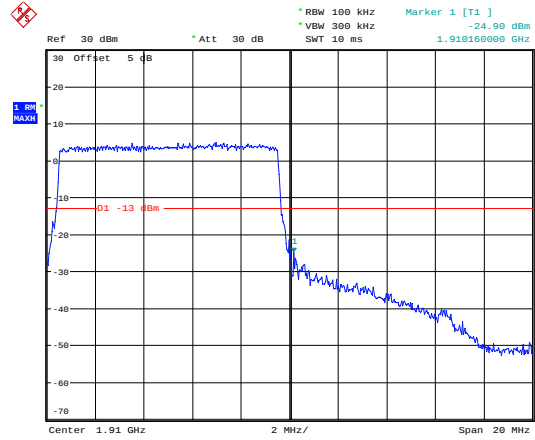
Date: 17.NOV.2020 10:36:26

10M, 16QAM, Left Band Edge



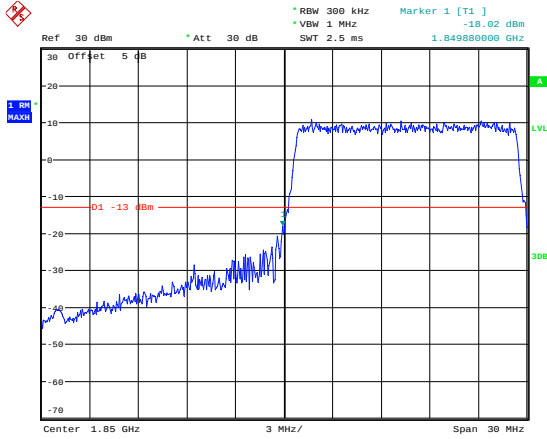
Date: 17.NOV.2020 09:39:22

10M, 16QAM, Right Band Edge



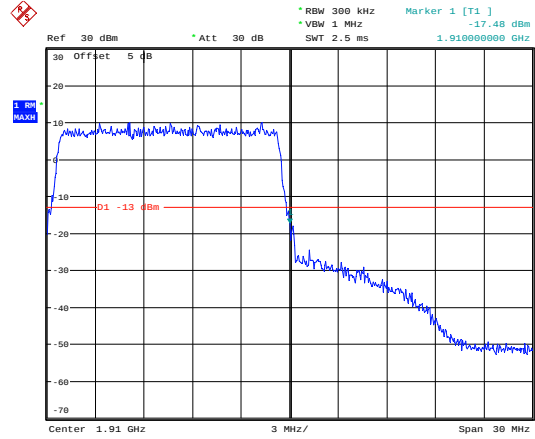
Date: 17.NOV.2020 09:40:04

15M, 16QAM, Left Band Edge



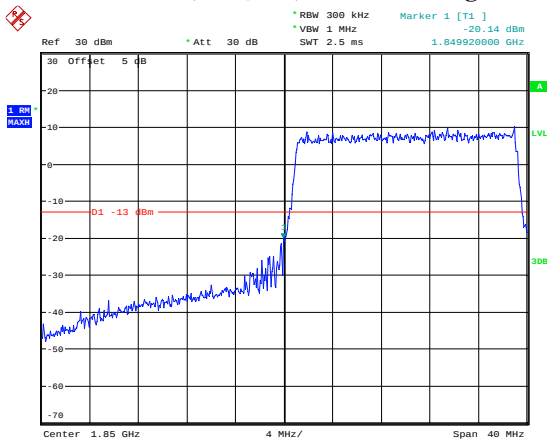
Date: 17.NOV.2020 09:41:02

15M, 16QAM, Right Band Edge



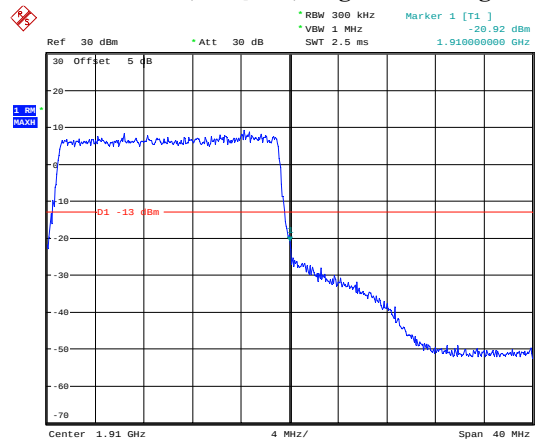
Date: 17.NOV.2020 09:41:47

20M, 16QAM, Left Band Edge



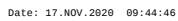
Date: 17.NOV.2020 09:42:41

20M, 16QAM, Right Band Edge



Date: 17.NOV.2020 09:43:33

1.4M, QPSK, Left Band Edge



Date: 17.NOV.2020 09:45:39

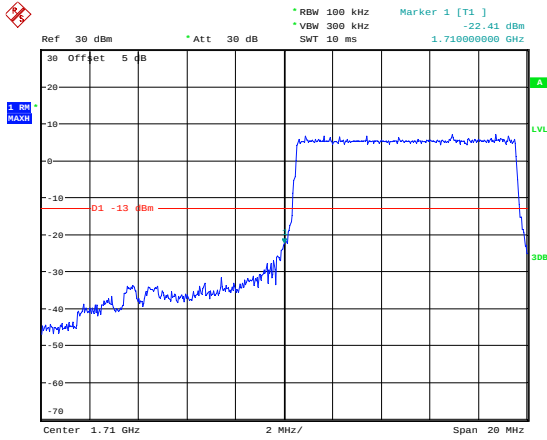
Date: 17.NOV.2020 09:46:24

Date: 17.NOV.2020 09:47:04

Date: 17.NOV.2020 09:47:54

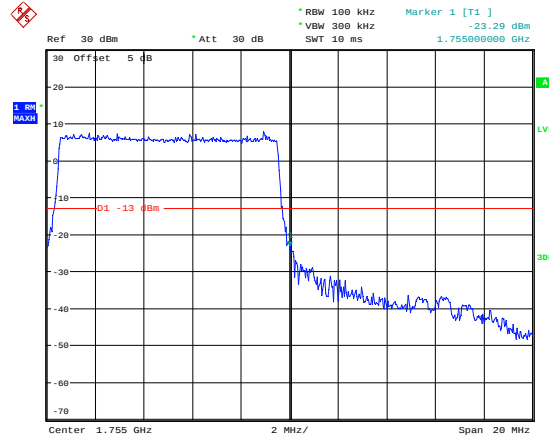
Date: 17.NOV.2020 09:49:28

10M, QPSK, Left Band Edge



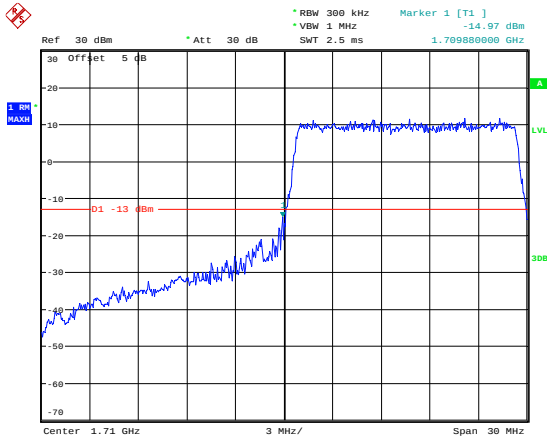
Date: 17.NOV.2020 09:58:50

10M, QPSK, Right Band Edge



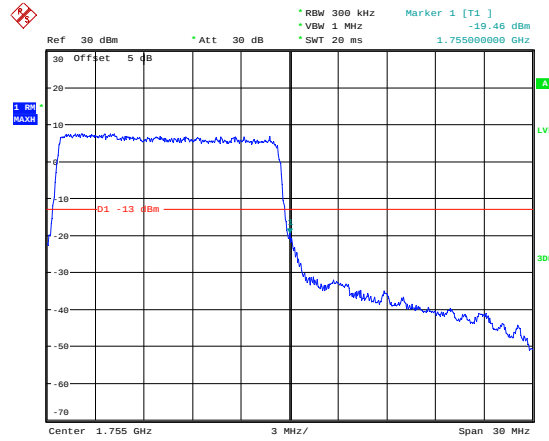
Date: 17.NOV.2020 09:51:35

15M, QPSK, Left Band Edge



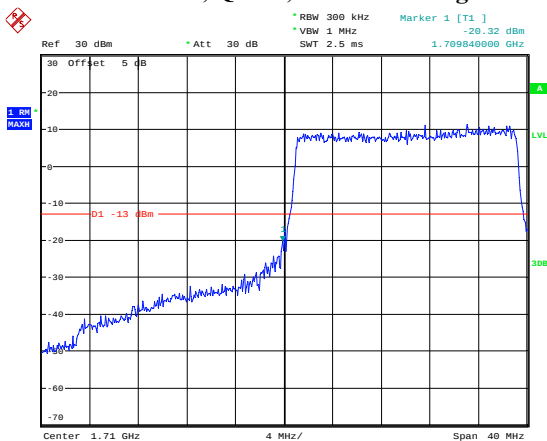
Date: 17.NOV.2020 09:52:22

15M, QPSK, Right Band Edge



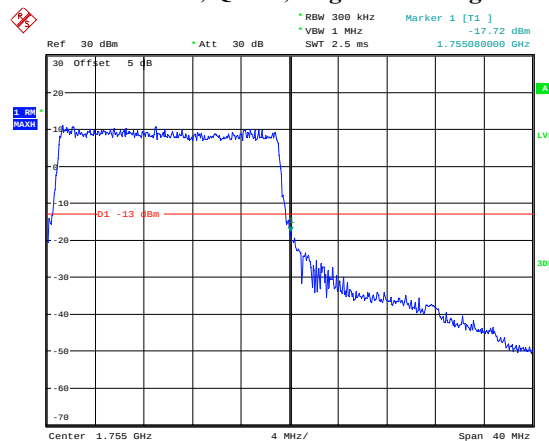
Date: 17.NOV.2020 09:55:09

20M, QPSK, Left Band Edge



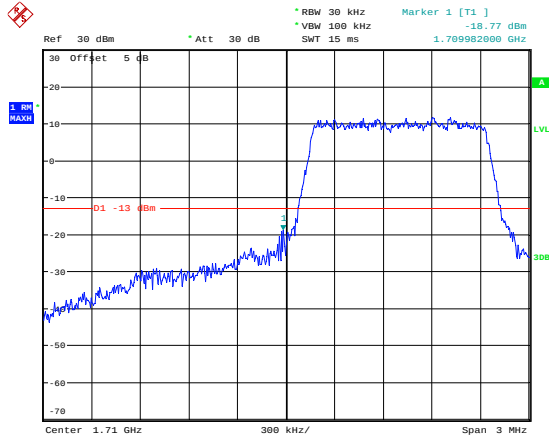
Date: 17.NOV.2020 09:56:21

20M, QPSK, Right Band Edge



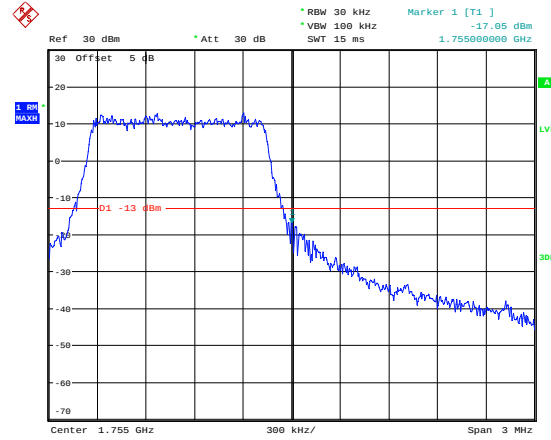
Date: 17.NOV.2020 09:57:16

1.4M, 16QAM, Left Band Edge



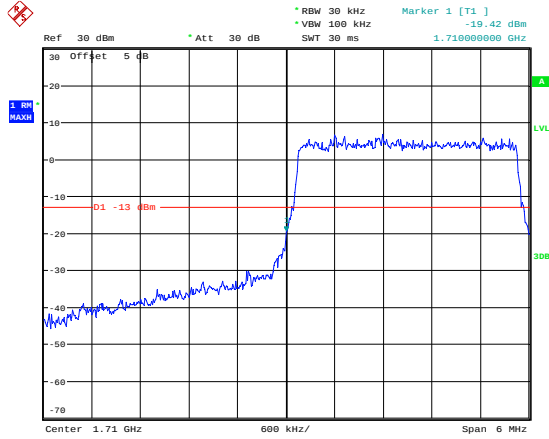
Date: 17.NOV.2020 09:45:14

1.4M, 16QAM, Right Band Edge



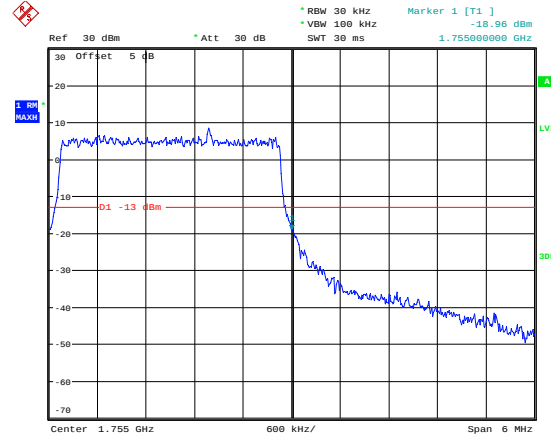
Date: 17.NOV.2020 09:46:04

3M, 16QAM, Left Band Edge



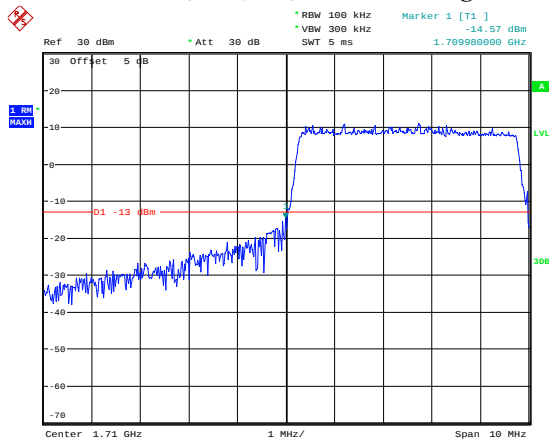
Date: 17.NOV.2020 09:46:45

3M, 16QAM, Right Band Edge



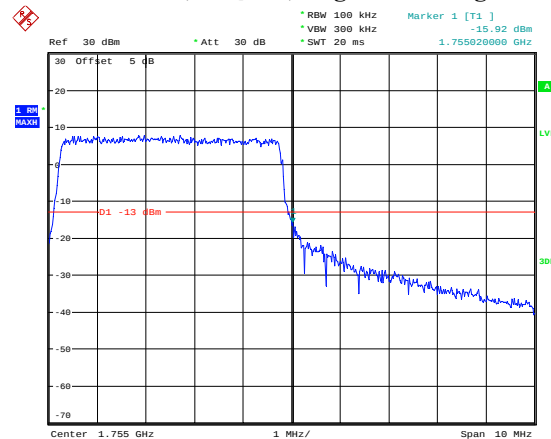
Date: 17.NOV.2020 09:47:25

5M, 16QAM, Left Band Edge



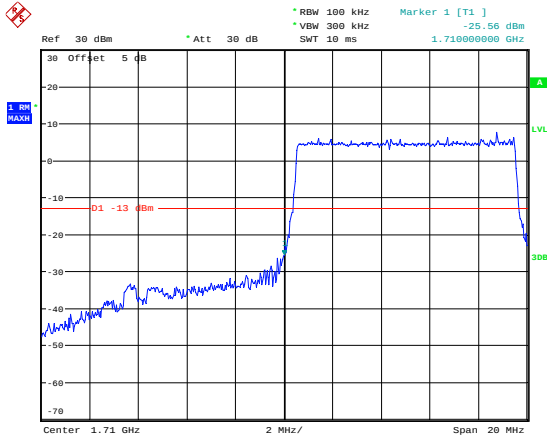
Date: 17.NOV.2020 09:48:19

5M, 16QAM, Right Band Edge



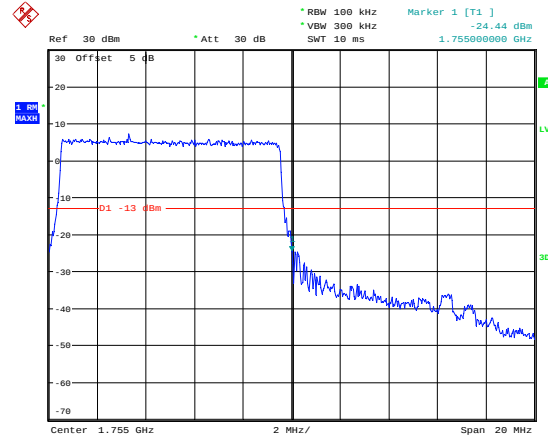
Date: 17.NOV.2020 09:50:20

10M, 16QAM, Left Band Edge



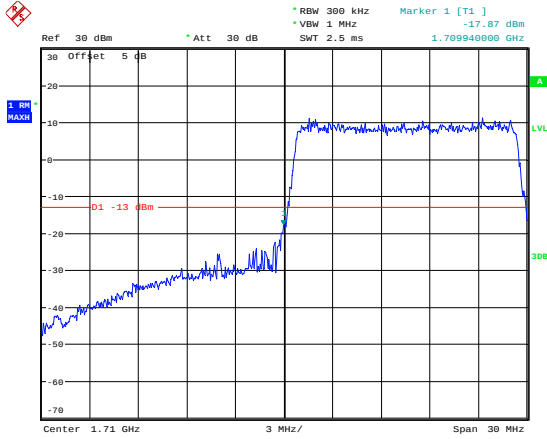
Date: 17.NOV.2020 09:51:12

10M, 16QAM, Right Band Edge



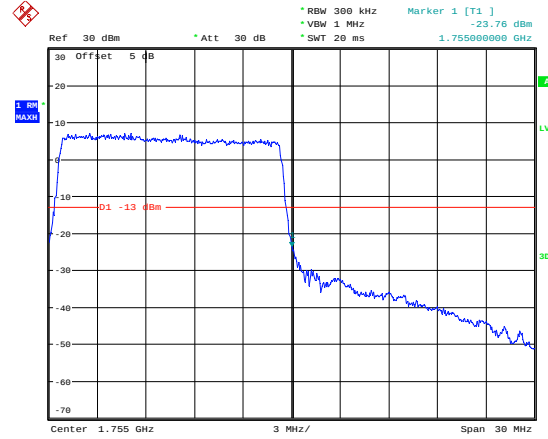
Date: 17.NOV.2020 09:51:53

15M, 16QAM, Left Band Edge



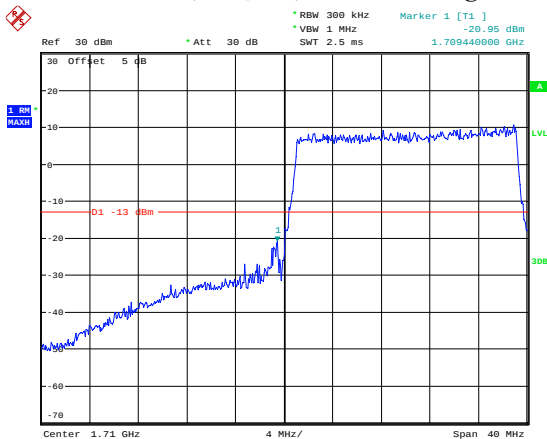
Date: 17.NOV.2020 09:52:46

15M, 16QAM, Right Band Edge



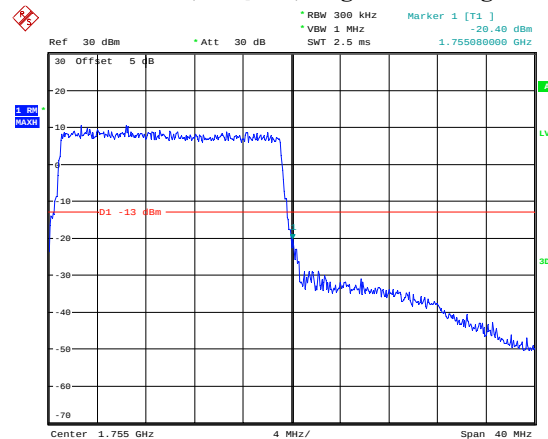
Date: 17.NOV.2020 09:55:52

20M, 16QAM, Left Band Edge



Date: 17.NOV.2020 09:56:46

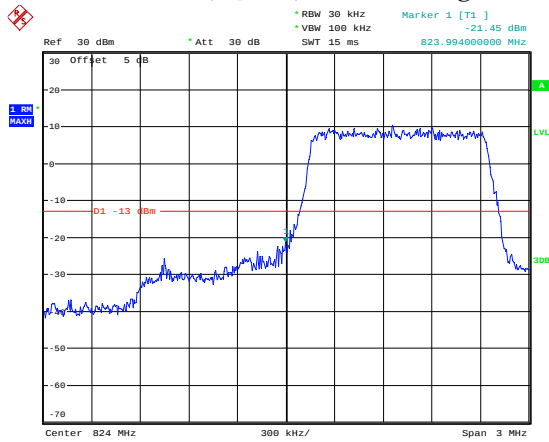
20M, 16QAM, Right Band Edge



Date: 17.NOV.2020 09:57:42

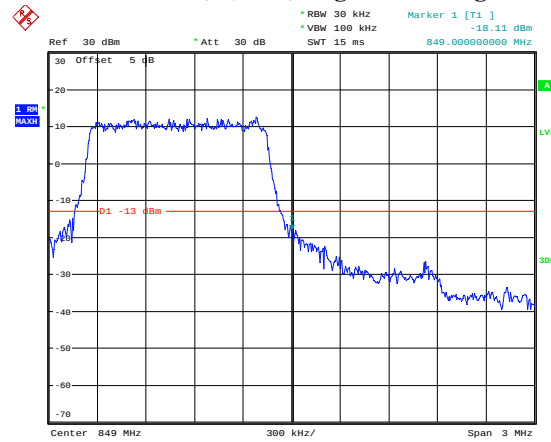
LTE Band 5:

1.4M, QPSK, Left Band Edge



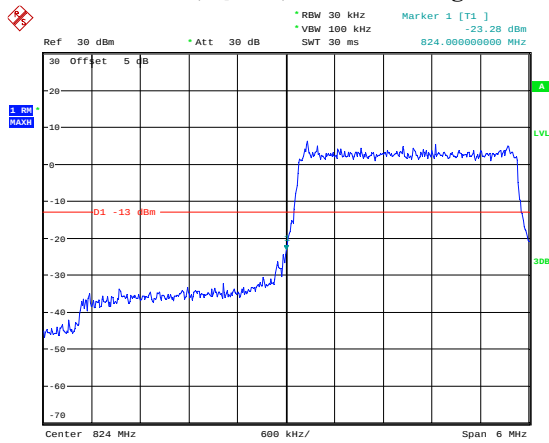
Date: 17.NOV.2020 09:58:02

1.4M, QPSK, Right Band Edge



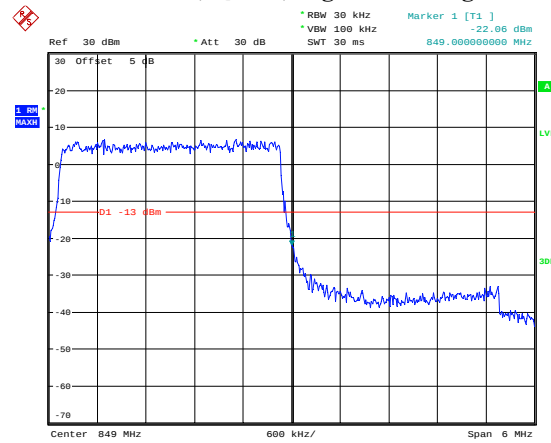
Date: 17.NOV.2020 09:58:53

3M, QPSK, Left Band Edge



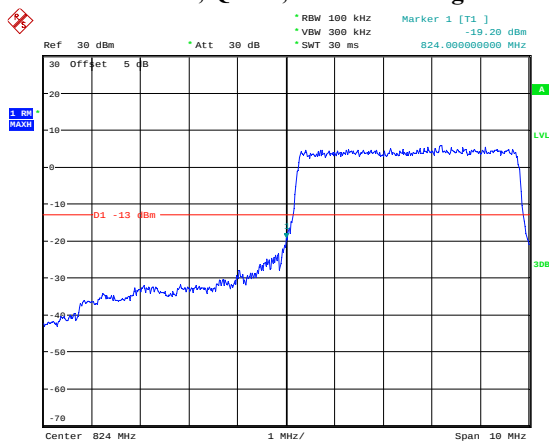
Date: 17.NOV.2020 09:59:31

3M, QPSK, Right Band Edge



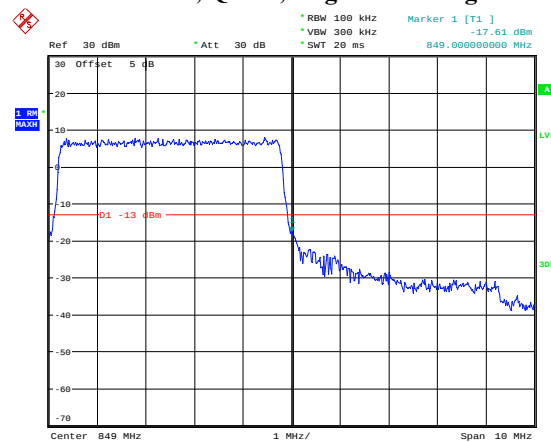
Date: 17.NOV.2020 10:00:12

5M, QPSK, Left Band Edge



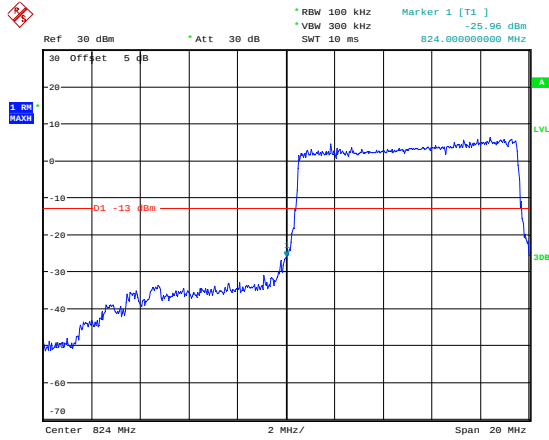
Date: 17.NOV.2020 10:01:23

5M, QPSK, Right Band Edge



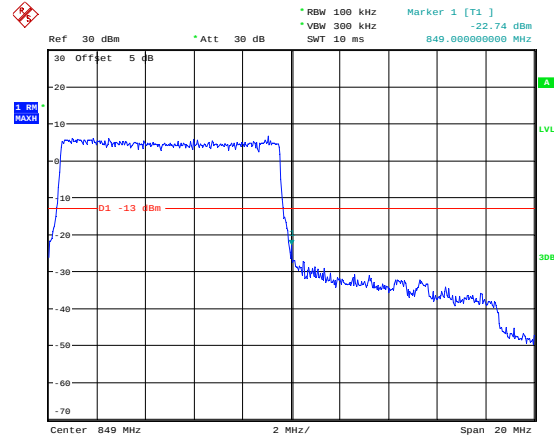
Date: 17.NOV.2020 10:02:48

10M, QPSK, Left Band Edge



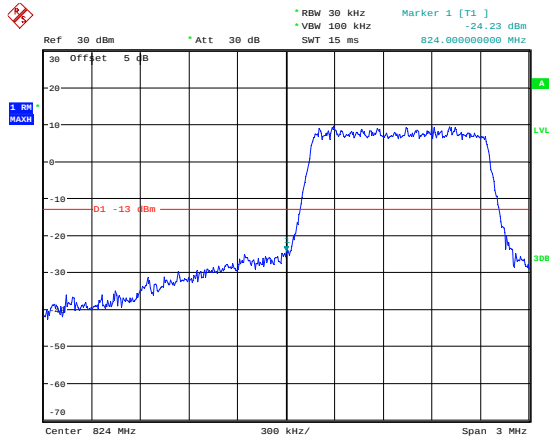
Date: 17.NOV.2020 10:03:47

10M, QPSK, Right Band Edge



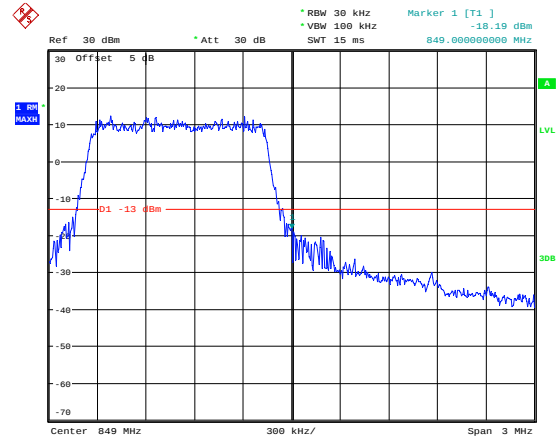
Date: 17.NOV.2020 10:04:25

1.4M, 16QAM, Left Band Edge



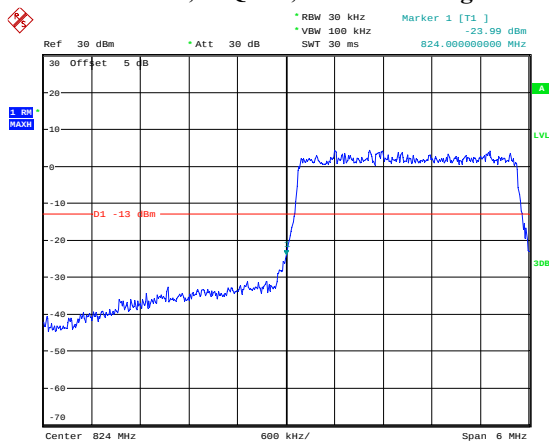
Date: 17.NOV.2020 09:58:24

1.4M, 16QAM, Right Band Edge



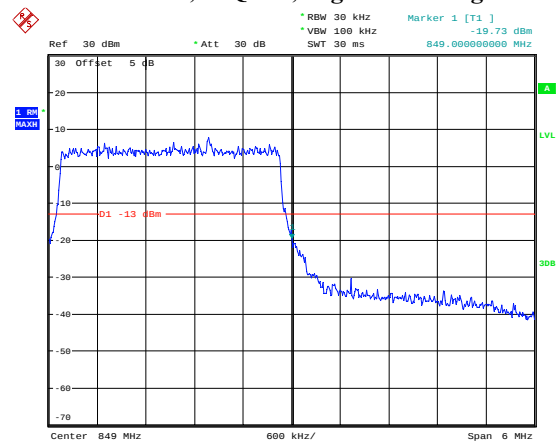
Date: 17.NOV.2020 09:59:10

3M, 16QAM, Left Band Edge



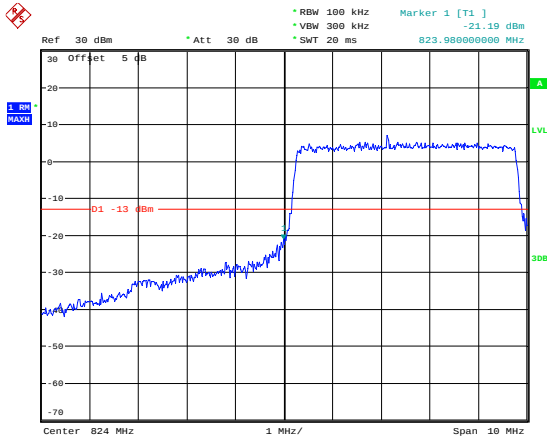
Date: 17.NOV.2020 09:59:53

3M, 16QAM, Right Band Edge



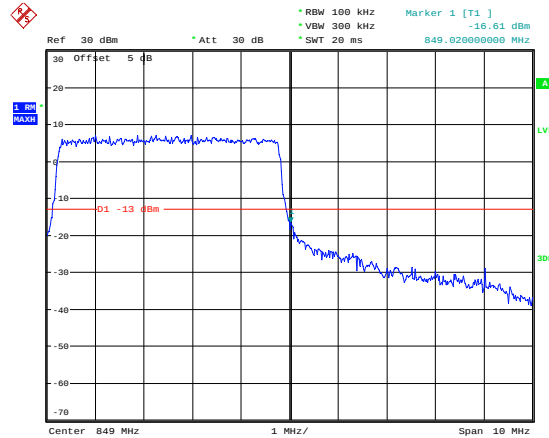
Date: 17.NOV.2020 10:00:33

5M, 16QAM, Left Band Edge



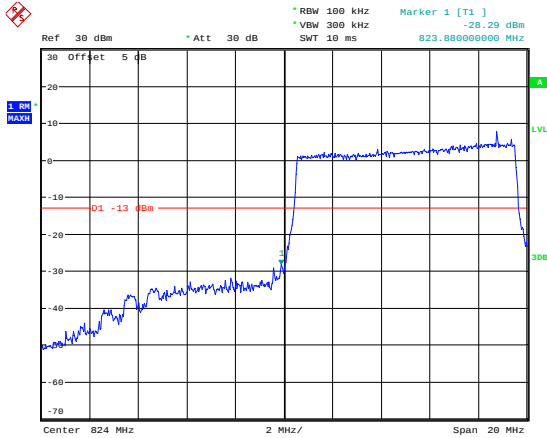
Date: 17.NOV.2020 10:02:01

5M, 16QAM, Right Band Edge



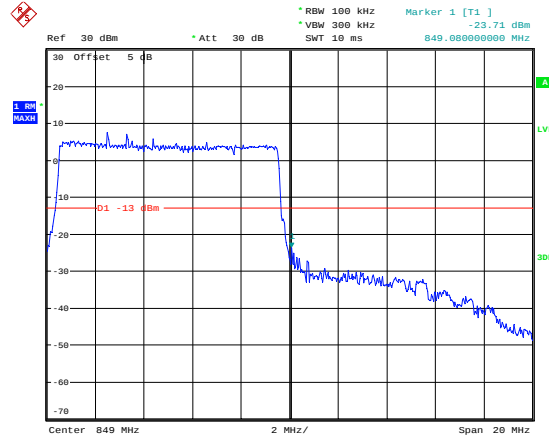
Date: 17.NOV.2020 10:03:25

10M, 16QAM, Left Band Edge



Date: 17.NOV.2020 10:04:05

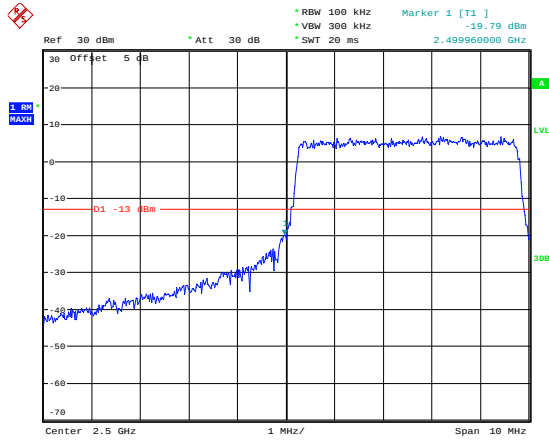
10M, 16QAM, Right Band Edge



Date: 17.NOV.2020 10:04:47

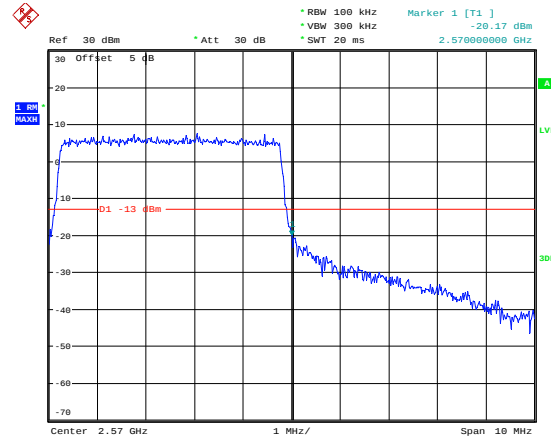
LTE Band 7:

5M, QPSK, Left Band Edge



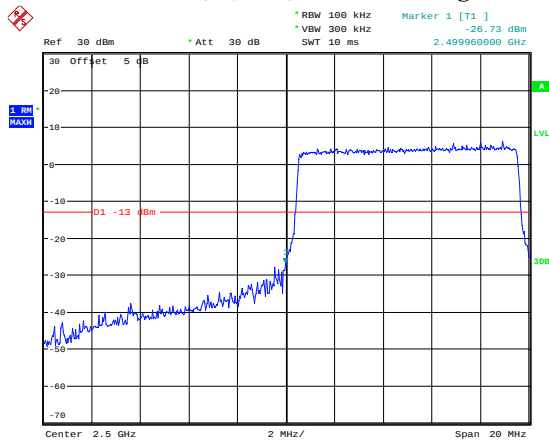
Date: 17.NOV.2020 10:05:39

5M, QPSK, Right Band Edge



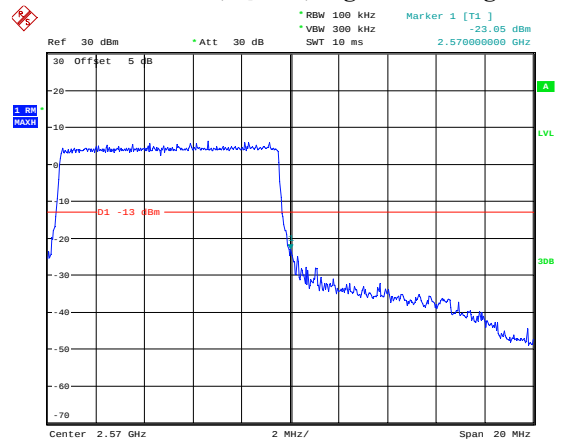
Date: 17.NOV.2020 10:07:01

10M, QPSK, Left Band Edge



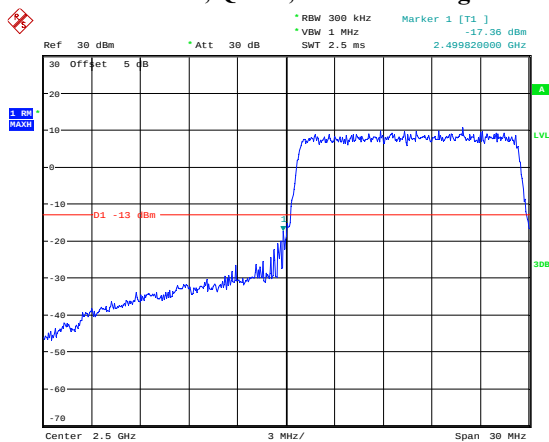
Date: 17.NOV.2020 10:07:59

10M, QPSK, Right Band Edge



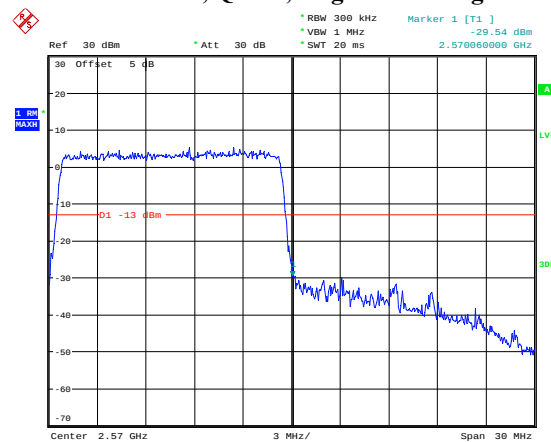
Date: 17.NOV.2020 10:08:45

15M, QPSK, Left Band Edge



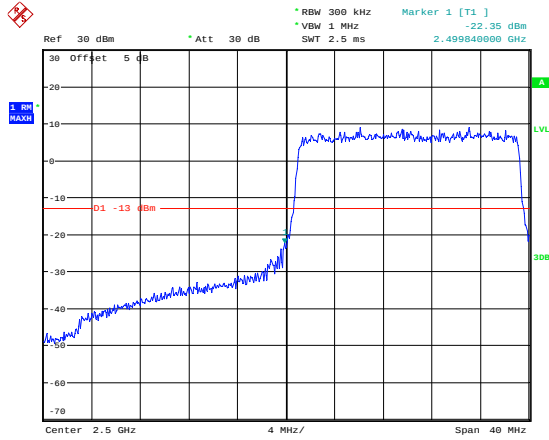
Date: 17.NOV.2020 10:09:36

15M, QPSK, Right Band Edge



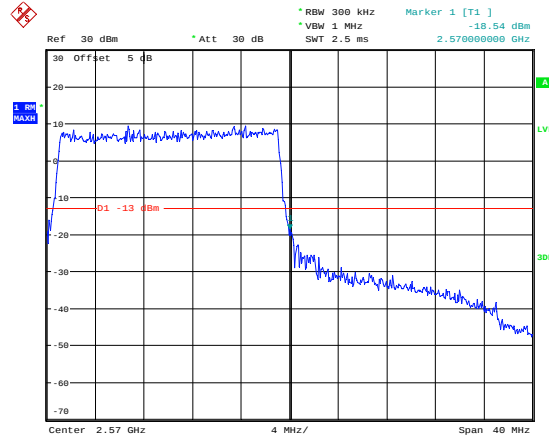
Date: 17.NOV.2020 10:11:14

20M, QPSK, Left Band Edge



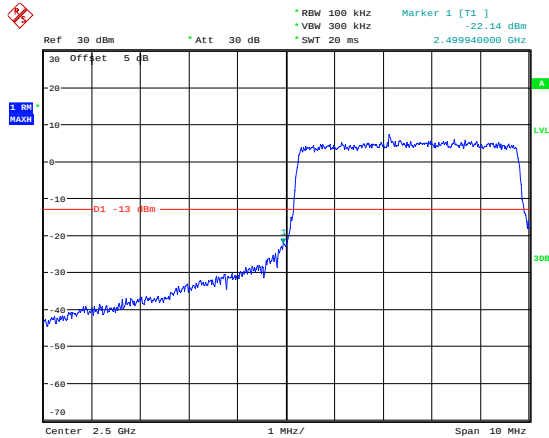
Date: 17.NOV.2020 10:12:30

20M, QPSK, Right Band Edge



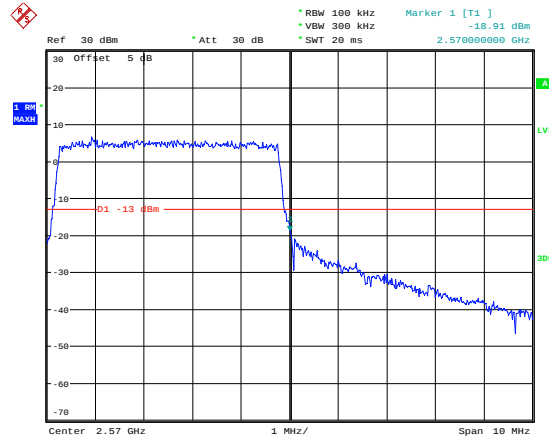
Date: 17.NOV.2020 10:13:27

5M, 16QAM, Left Band Edge



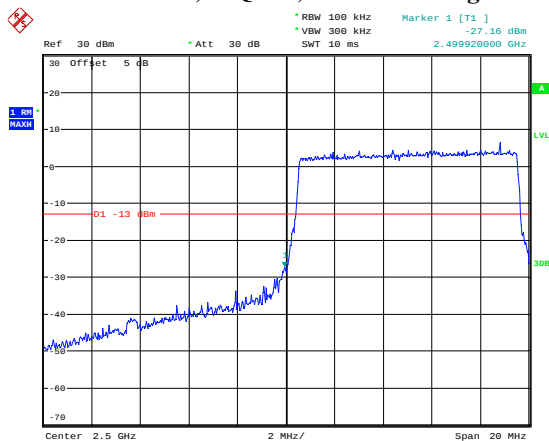
Date: 17.NOV.2020 10:06:22

5M, 16QAM, Right Band Edge



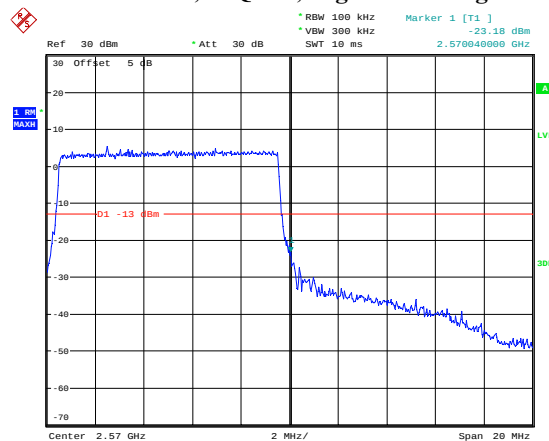
Date: 17.NOV.2020 10:07:34

10M, 16QAM, Left Band Edge



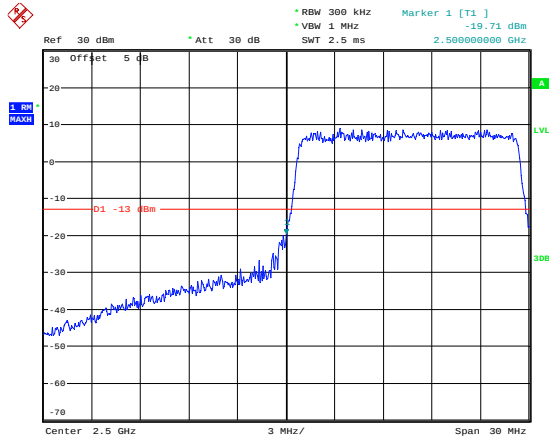
Date: 17.NOV.2020 10:08:22

10M, 16QAM, Right Band Edge



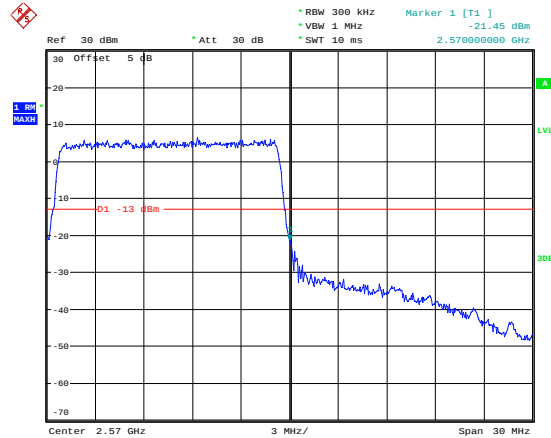
Date: 17.NOV.2020 10:09:07

15M, 16QAM, Left Band Edge



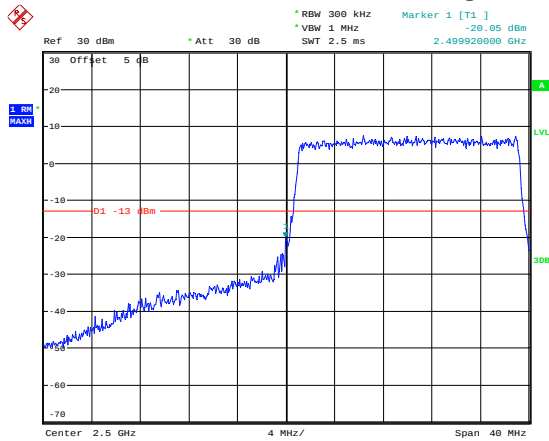
Date: 17.NOV.2020 10:10:01

15M, 16QAM, Right Band Edge



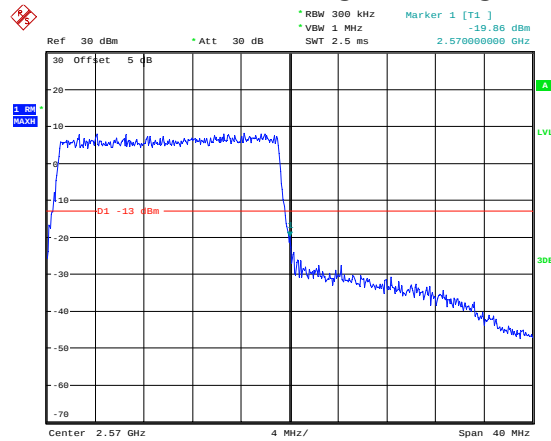
Date: 17.NOV.2020 10:11:57

20M, 16QAM, Left Band Edge



Date: 17.NOV.2020 10:12:56

20M, 16QAM, Right Band Edge



Date: 17.NOV.2020 10:13:53

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

Applicable Standard

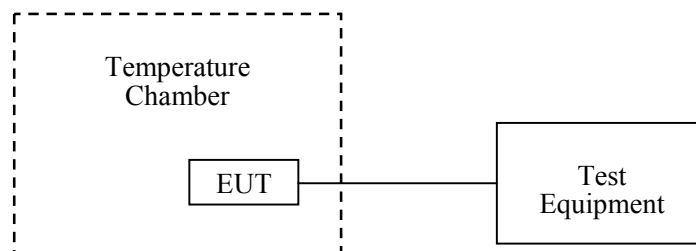
FCC § 2.1055 (a), § 2.1055 (d), §22.355, §24.235, §27.54

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	101474	2020-07-07	2021-07-07
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	110 822	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	2020-03-10	2021-03-09
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:	25.6~26.3 °C
Relative Humidity:	30~47%
ATM Pressure:	101~101.9kPa
Tester:	Tylor Li
Test Date:	2020-10-30~2020-11-03

Test Result: Compliance.

Cellular Band

GMSK, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.8	2	0.00239	2.5
-20		-1	-0.00120	
-10		3	0.00359	
0		-12	-0.01434	
10		7	0.00837	
20		-3	-0.00359	
30		4	0.00478	
40		10	0.01195	
50		7	0.00837	
20	3.6	-8	-0.00956	
20	4.35	-13	-0.01554	

8PSK, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.8	11	0.01315	2.5
-20		3	0.00359	
-10		-5	-0.00598	
0		7	0.00837	
10		8	0.00956	
20		3	0.00359	
30		-5	-0.00598	
40		-7	-0.00837	
50		7	0.00837	
20	3.6	11	0.01315	
20	4.35	-11	-0.01315	

PCS Band

GMSK, Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
°C	V _{DC}	Hz	ppm	
-30	3.8	-13	-0.00691	Pass
-20		11	0.00585	
-10		6	0.00319	
0		1	0.00053	
10		-1	-0.00053	
20		2	0.00106	
30		-2	-0.00106	
40		0	0.00000	
50		-9	-0.00479	
20	3.6	-8	-0.00426	
20	4.35	2	0.00106	

8PSK, Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
°C	V _{DC}	Hz	ppm	
-30	3.8	-4	-0.00213	Pass
-20		6	0.00319	
-10		1	0.00053	
0		-2	-0.00106	
10		-9	-0.00479	
20		6	0.00319	
30		-11	-0.00585	
40		9	0.00479	
50		9	0.00479	
20	3.6	11	0.00585	
20	4.35	-7	-0.00372	

WCDMA Band II: R99

Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.8	-1	-0.00053191	Pass
-20		-2	-0.00106383	
-10		-1	-0.00053191	
0		1	0.00053191	
10		3	0.00159574	
20		1	0.00053191	
30		2	0.00106383	
40		-4	-0.00212766	
50		-2	-0.00106383	
20	3.6	-3	-0.00159574	
20	4.35	-5	-0.00265957	

WCDMA Band V: R99

Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.8	-6	-0.00717189	2.5
-20		-2	-0.00239063	
-10		-3	-0.00358594	
0		-4	-0.00478126	
10		-4	-0.00478126	
20		2	0.00239063	
30		2	0.00239063	
40		3	0.00358594	
50		-1	-0.00119531	
20	3.6	-3	-0.00358594	
20	4.35	-2	-0.00239063	

LTE Band 2:

QPSK, Channel Bandwidth:20MHz High Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.8	-5.61	-0.003	Pass
-20		8.50	0.0045	
-10		6.41	0.0034	
0		-7.72	-0.0041	
10		8.30	0.0044	
20		-6.15	-0.0033	
30		9.02	0.0048	
40		-8.77	-0.0047	
50		-5.04	-0.0027	
20	3.6	8.30	0.0044	
20	4.35	5.75	0.0031	

16QAM, Channel Bandwidth:20MHz High Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.8	-29.15	-0.0155	Pass
-20		7.30	0.0039	
-10		7.84	0.0042	
0		7.37	0.0039	
10		7.46	0.004	
20		-8.61	-0.0046	
30		9.23	0.0049	
40		-7.21	-0.0038	
50		-9.52	-0.0051	
20	3.6	-7.00	-0.0037	
20	4.35	7.61	0.004	

LTE Band 4

QPSK, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	℃	MHz	MHz	MHz	MHz
3.8	-30	1710.535	1710	1754.414	1755
	-20	1710.529		1754.409	
	-10	1710.525		1754.413	
	0	1710.522		1754.411	
	10	1710.520		1754.409	
	20	1710.514		1754.471	
	30	1710.538		1754.420	
	40	1710.532		1754.421	
	50	1710.534		1754.427	
4.35	20	1710.528	1710	1754.425	1755
3.6	20	1710.532		1754.421	

16QAM, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	℃	MHz	MHz	MHz	MHz
3.8	-30	1710.535	1710	1754.414	1755
	-20	1710.529		1754.409	
	-10	1710.525		1754.413	
	0	1710.522		1754.411	
	10	1710.520		1754.409	
	20	1710.485		1754.471	
	30	1710.538		1754.420	
	40	1710.537		1754.410	
	50	1710.534		1754.427	
4.35	20	1710.528	1710	1754.425	1755
3.6	20	1710.532		1754.445	

LTE Band 5:

High Channel, $f_c = 836.5$ MHz, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.8	16.25	0.0194	2.5
-20		-9.02	-0.0108	
-10		-8.77	-0.0105	
0		-8.00	-0.0096	
10		-7.90	-0.0094	
20		-9.50	-0.0114	
30		-5.22	-0.0062	
40		-7.40	-0.0088	
50		9.91	0.0118	
20	3.6	7.54	0.009	2.5
20	4.35	-9.55	-0.0114	

High Channel, $f_c = 836.5$ MHz, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.8	-0.14	-0.0002	2.5
-20		-9.25	-0.0111	
-10		-7.71	-0.0092	
0		-8.89	-0.0106	
10		-9.81	-0.0117	
20		-5.87	-0.007	
30		-6.79	-0.0081	
40		9.55	0.0114	
50		-9.40	-0.0112	
20	3.6	9.53	0.0114	2.5
20	4.35	8.83	0.0106	

LTE Band 7

QPSK, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	℃	MHz	MHz	MHz	MHz
3.8	-30	2500.532	2500	2569.490	2570
	-20	2500.520		2569.520	
	-10	2500.500		2569.520	
	0	2500.500		2569.520	
	10	2500.520		2569.520	
	20	2500.514		2569.471	
	30	2500.534		2569.490	
	40	2500.520		2569.520	
	50	2500.516		2569.510	
3.6	20	2500.516	2500	2569.510	2570
4.35	20	2500.520		2569.520	

16QAM, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	℃	MHz	MHz	MHz	MHz
3.8	-30	2500.510	2500	2569.490	2570
	-20	2500.520		2569.516	
	-10	2500.500		2569.490	
	0	2500.520		2569.480	
	10	2500.520		2569.516	
	20	2500.514		2569.471	
	30	2500.520		2569.520	
	40	2500.520		2569.480	
	50	2500.520		2569.480	
3.6	20	2500.516	2500	2569.520	2570
4.35	20	2500.520		2569.480	

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 *******