

FCC §2.1051, §22.917(a) & §24.238(a) & §27.53- SPURIOUS EMISSIONS AT ANTENNA TERMINALS

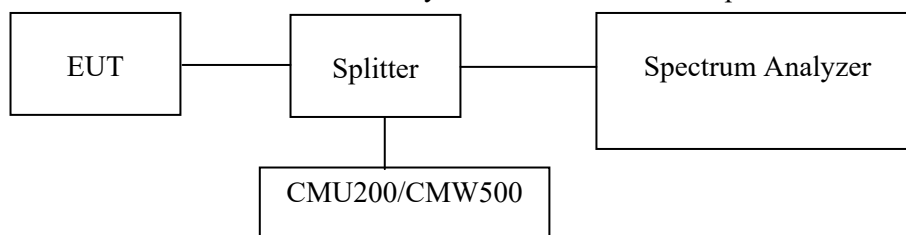
Applicable Standard

FCC §2.1051, §22.917(a) , §24.238(a) and §27.53.

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2020-01-09	2021-01-09
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	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
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).

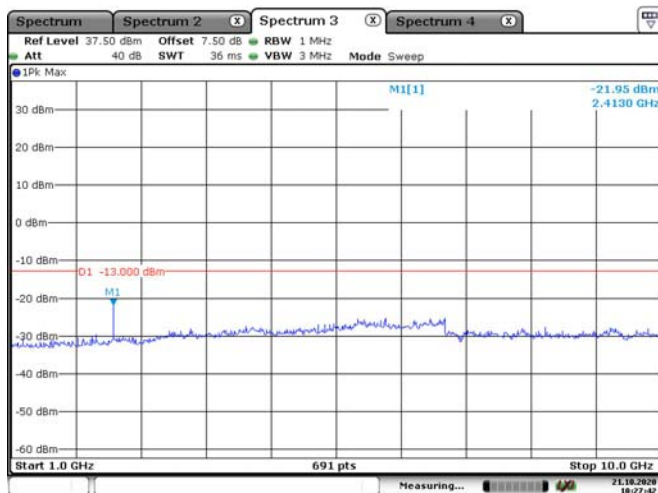
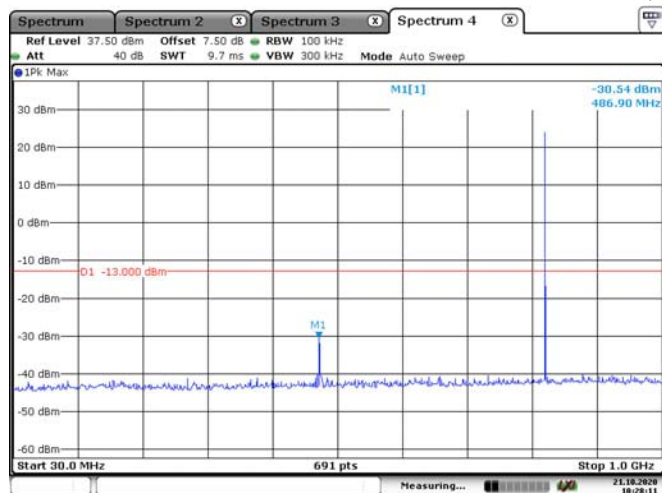
Test Data

Environmental Conditions

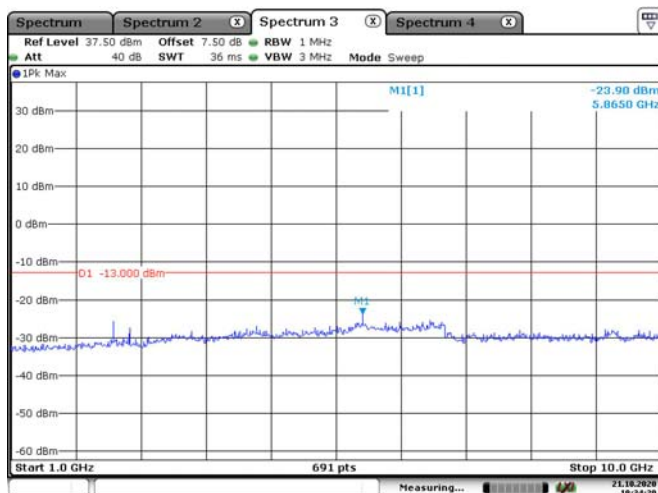
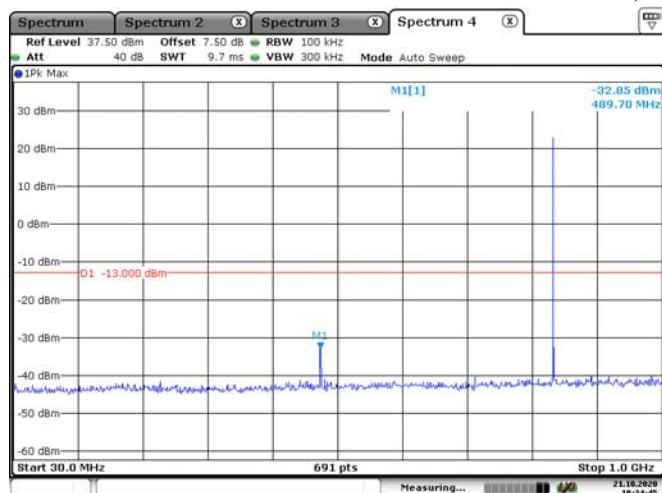
Temperature:	27.1 °C
Relative Humidity:	36 %
ATM Pressure:	101.2kPa
Tester:	Rita Huang
Test Date:	2020-11-04

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

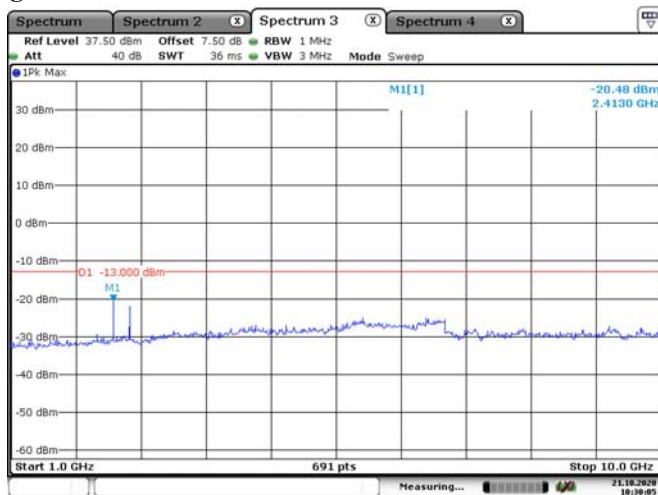
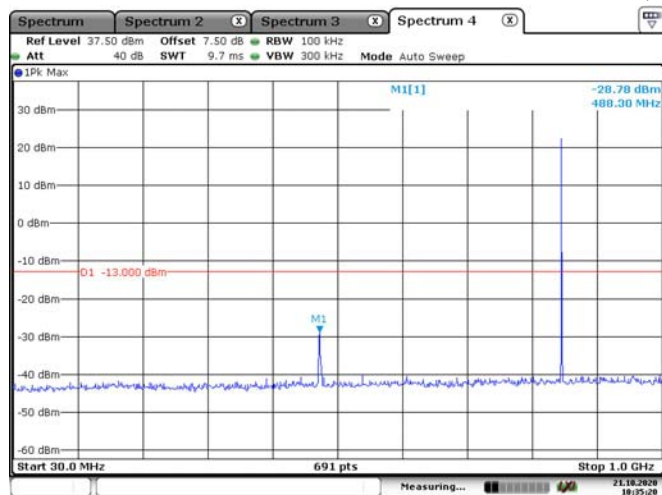
GSM 850, Low Channel



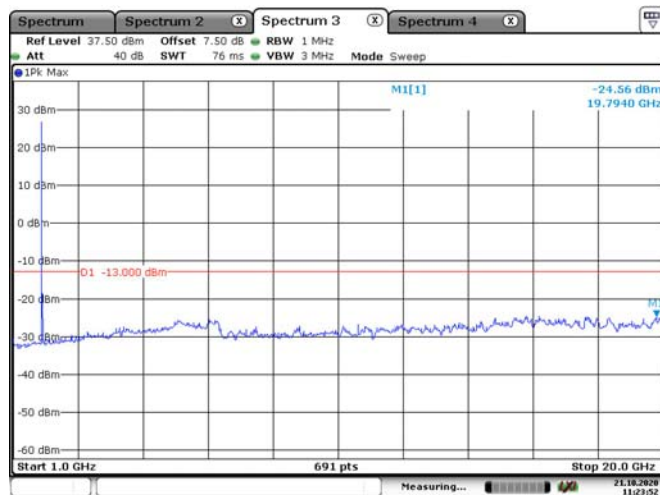
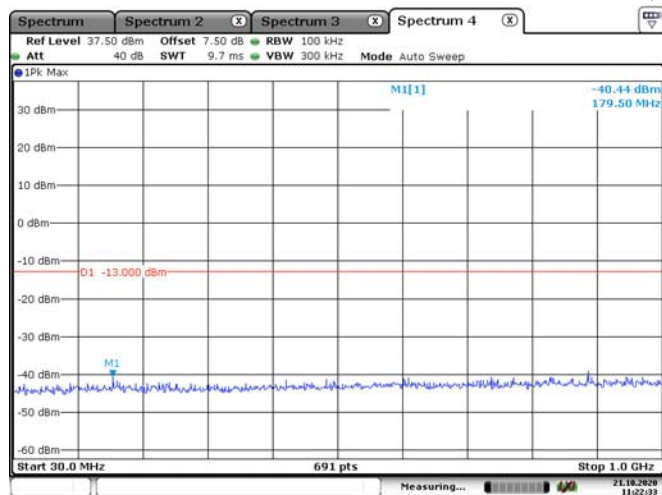
GSM 850, Middle Channel



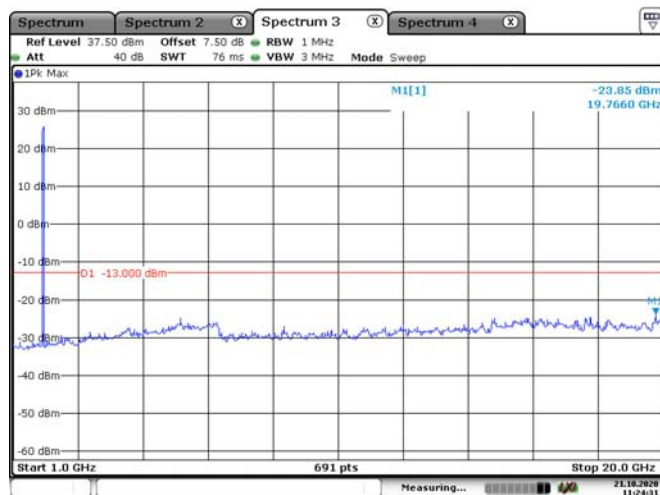
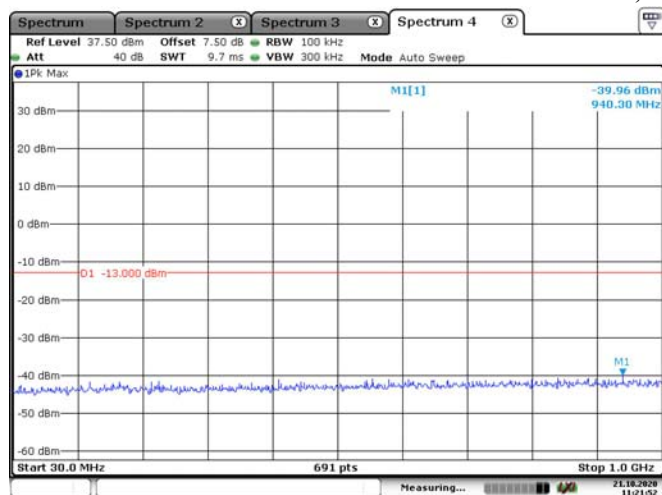
GSM 850, High Channel



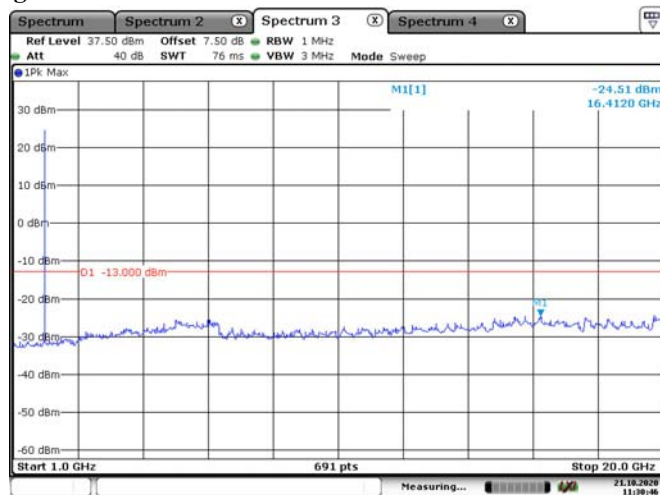
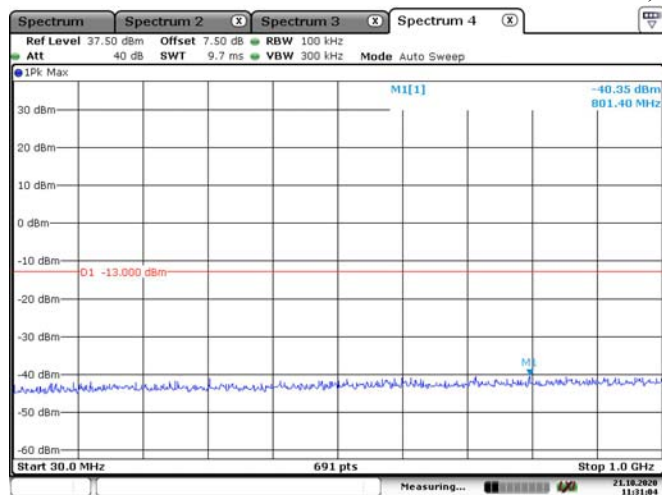
PCS 1900, Low Channel



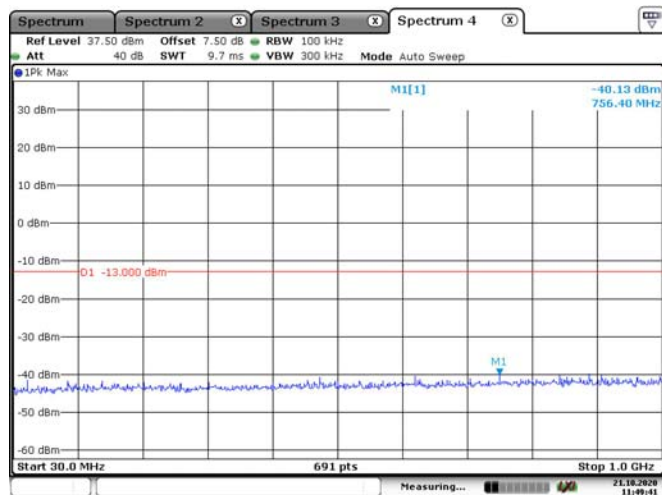
PCS 1900, Middle Channel



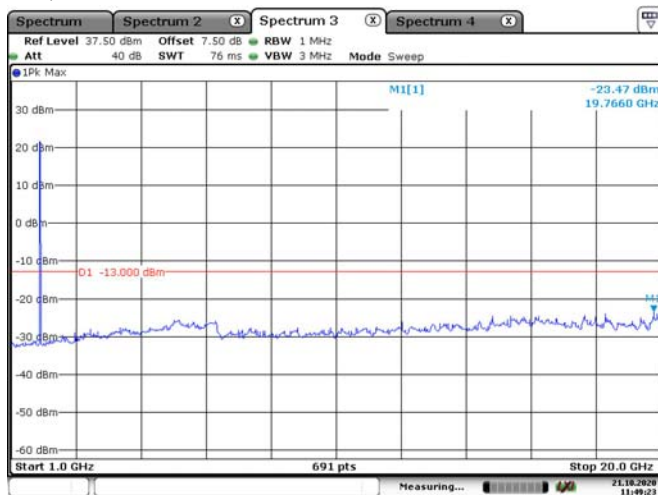
PCS 1900, High Channel



WCDMA Band II, R99, Low Channel

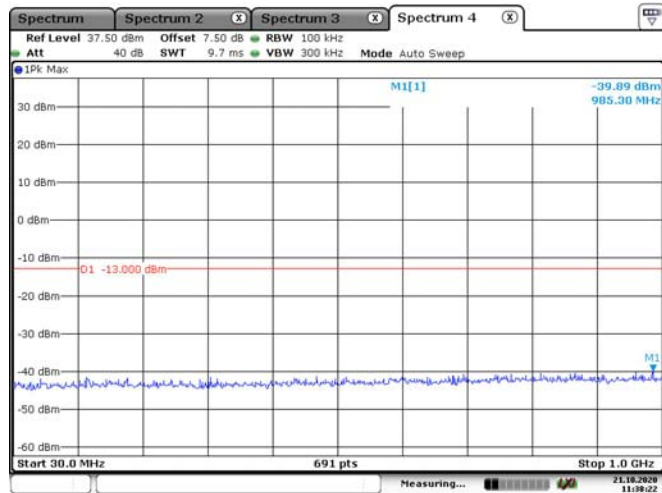


Date: 21.OCT.2020 11:49:40

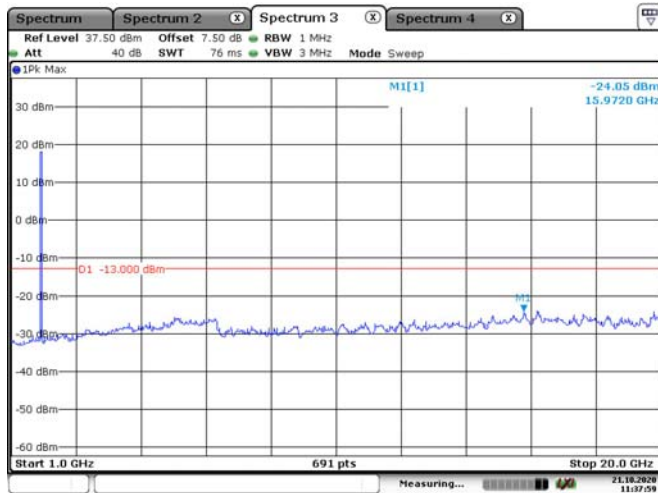


Date: 21.OCT.2020 11:49:23

WCDMA Band II, R99, Middle Channel

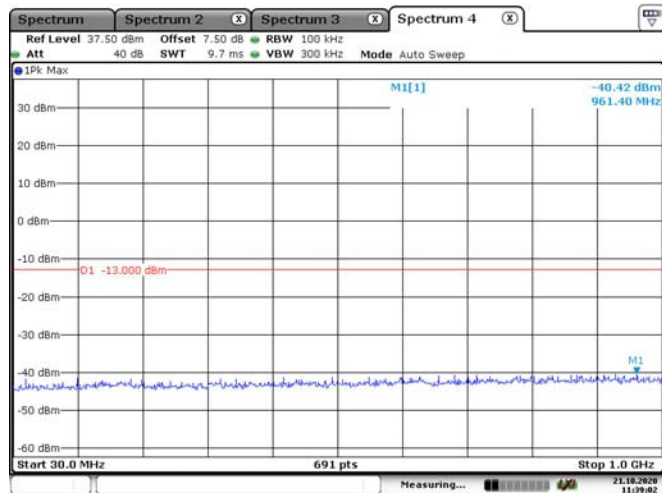


Date: 21.OCT.2020 11:38:22

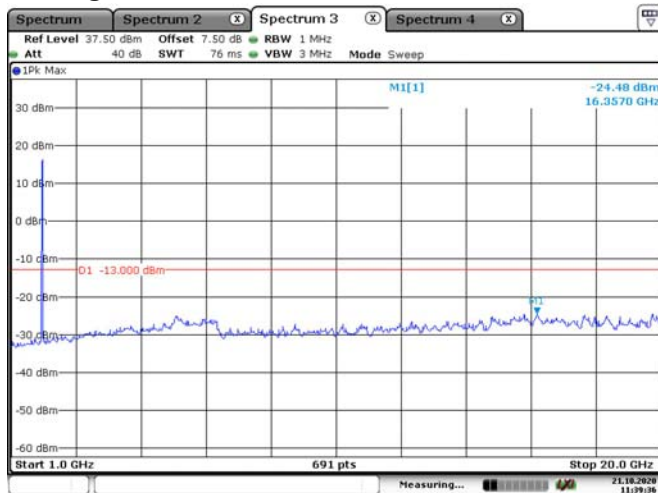


Date: 21.OCT.2020 11:37:59

WCDMA Band II, R99, High Channel

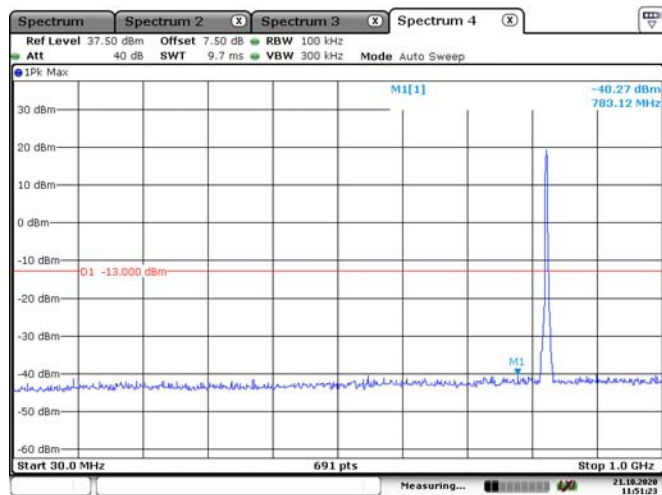


Date: 21.OCT.2020 11:39:02

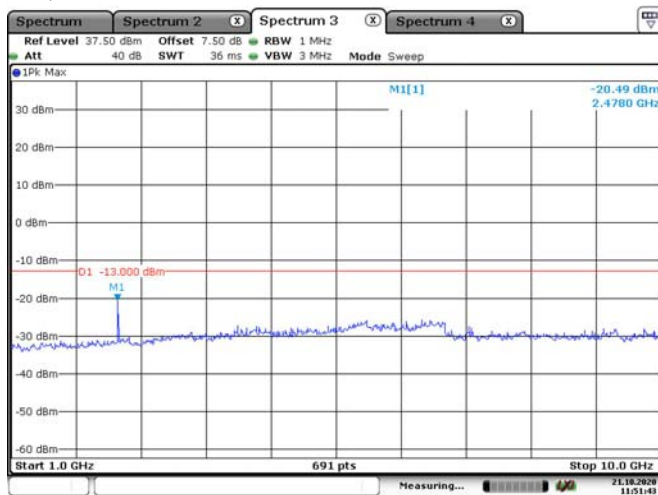


Date: 21.OCT.2020 11:39:36

WCDMA Band V, R99, Low Channel

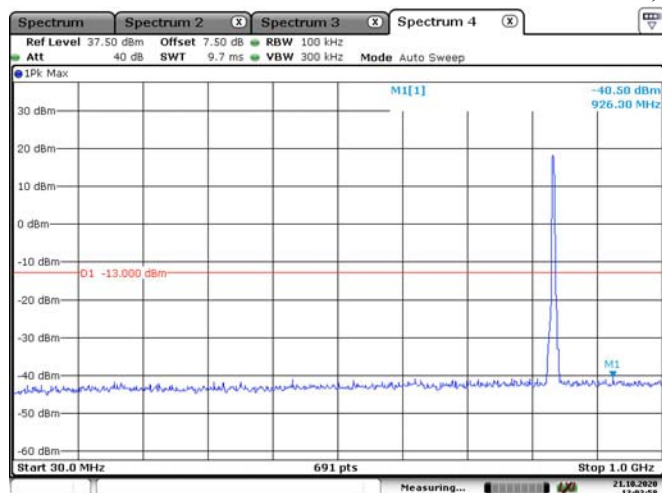


Date: 21.OCT.2020 11:51:22

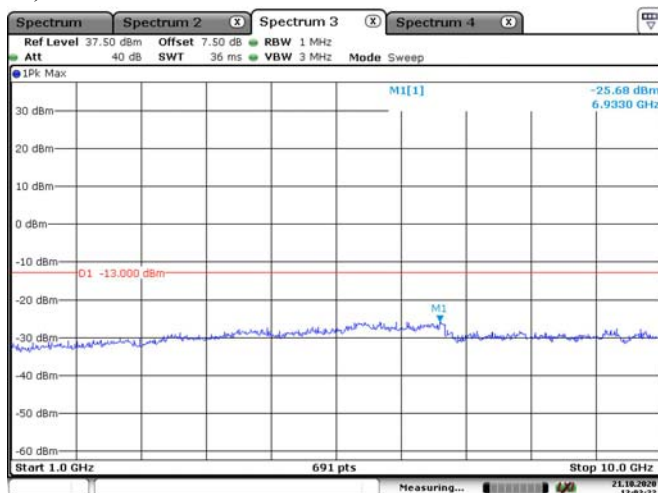


Date: 21.OCT.2020 11:51:43

WCDMA Band V, R99, Middle Channel

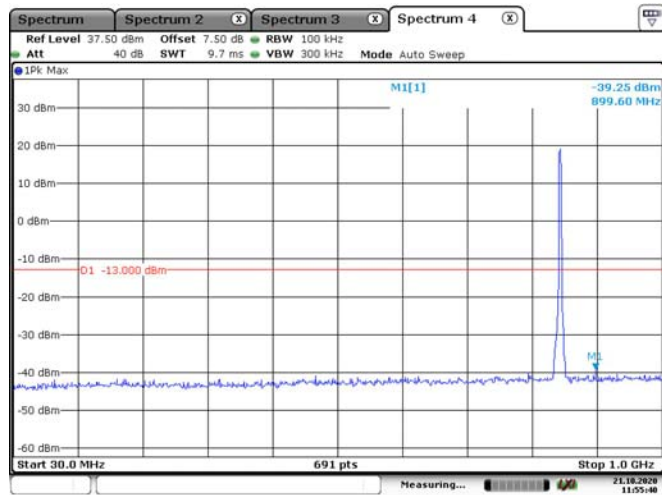


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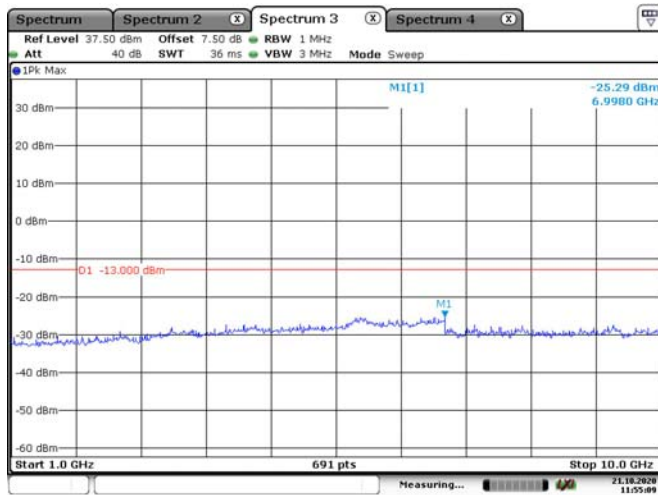


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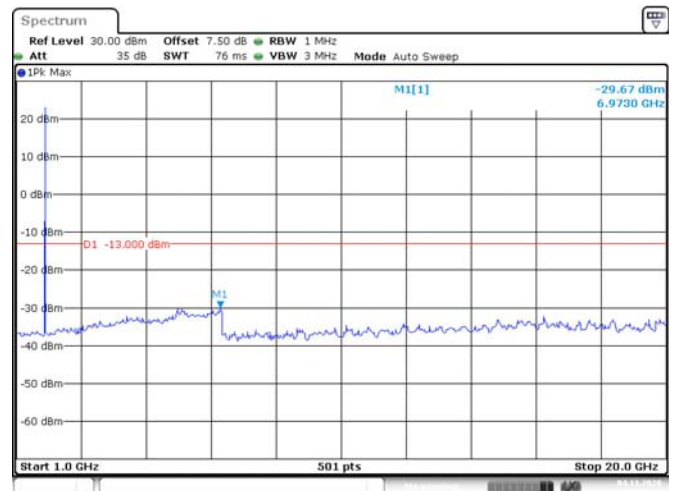
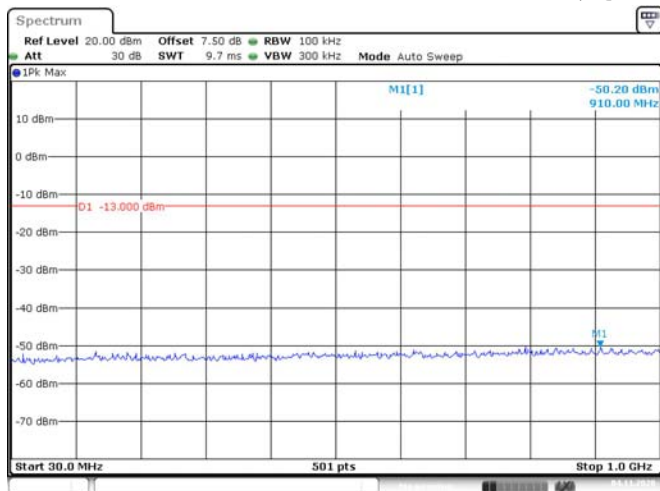
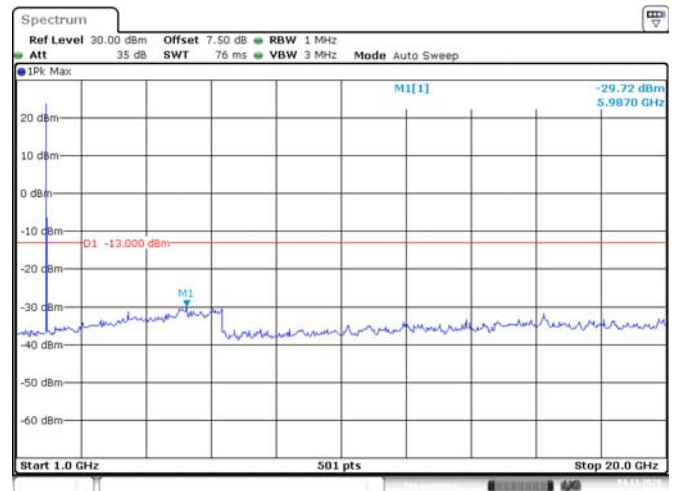
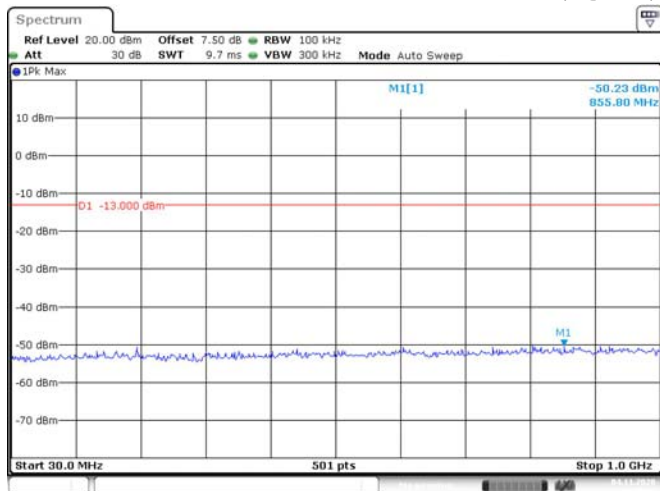
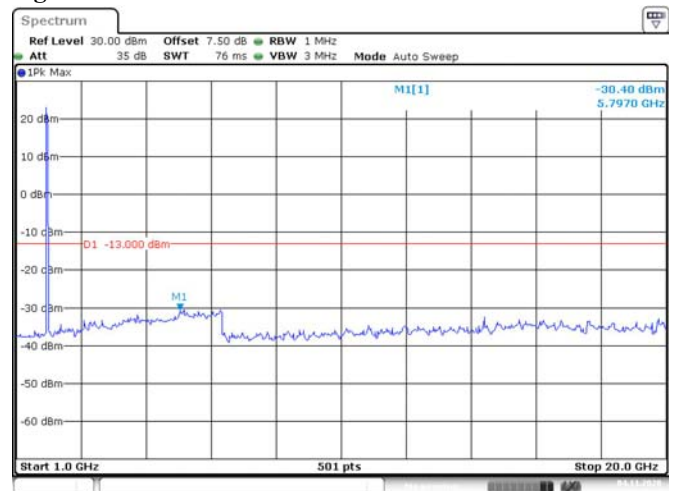
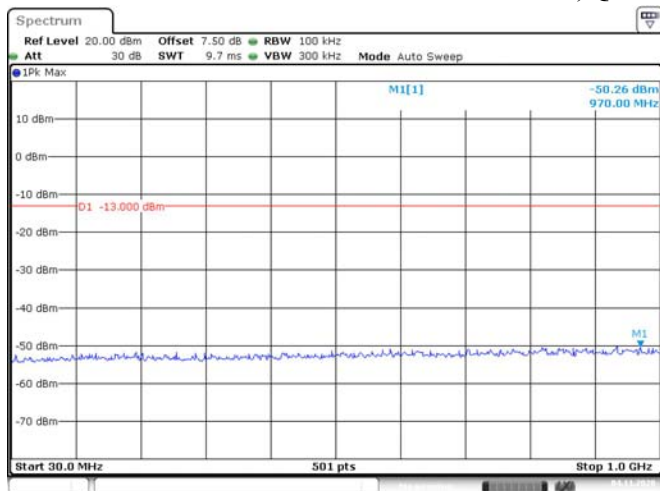
WCDMA Band V, R99, High Channel



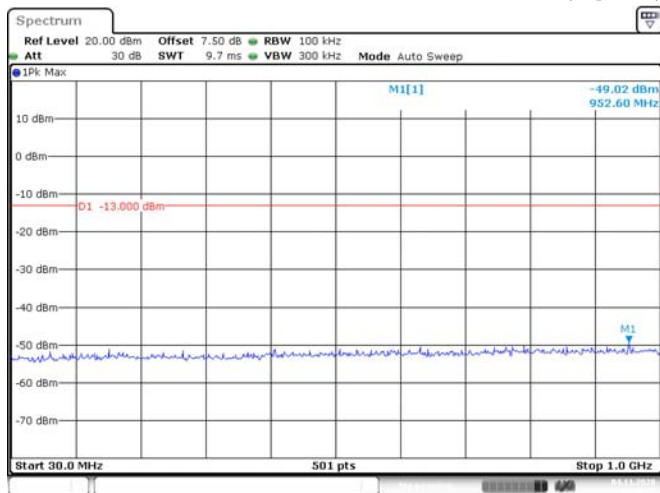
Date: 21.OCT.2020 11:55:39



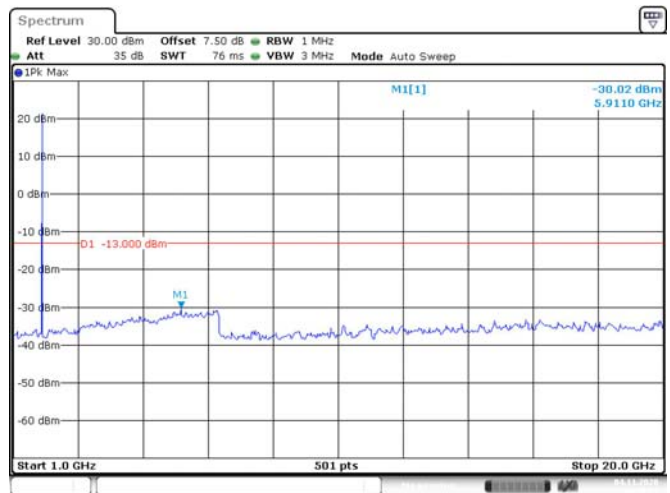
Date: 21.OCT.2020 11:55:09

LTE Band 2:**1.4M, QPSK, Low Channel****1.4M, QPSK, Middle Channel****1.4M, QPSK, High Channel**

3M, QPSK, Low Channel

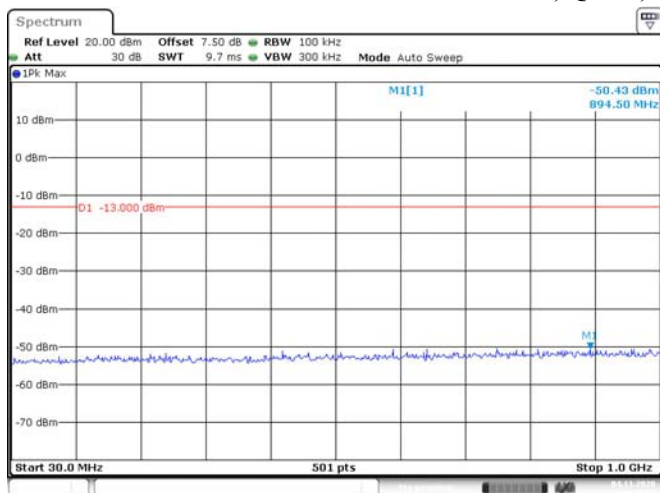


Date: 4.NOV.2020 13:48:36

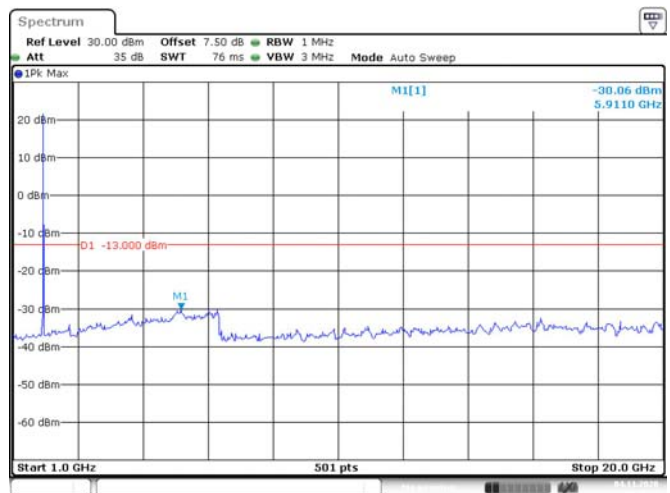


Date: 4.NOV.2020 13:48:52

3M, QPSK, Middle Channel

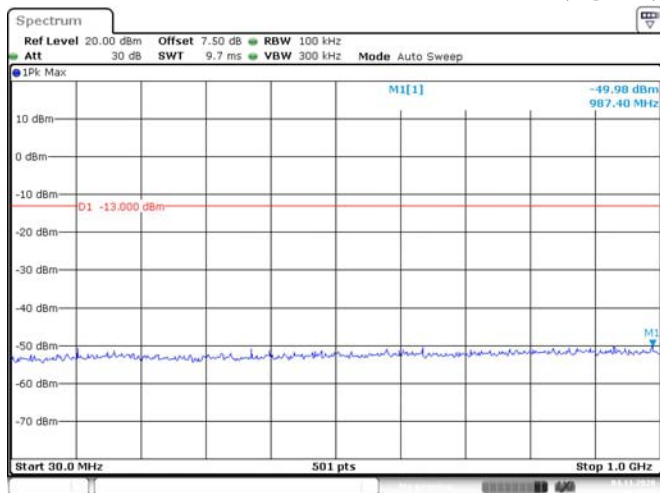


Date: 4.NOV.2020 13:19:05

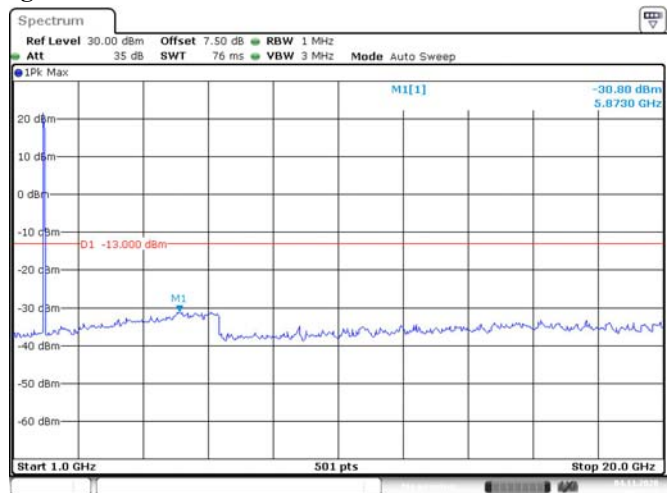


Date: 4.NOV.2020 13:19:28

3M, QPSK, High Channel

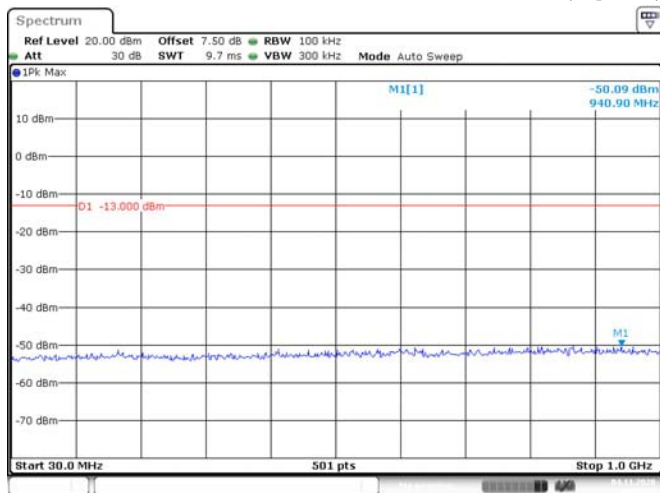


Date: 4.NOV.2020 14:14:59

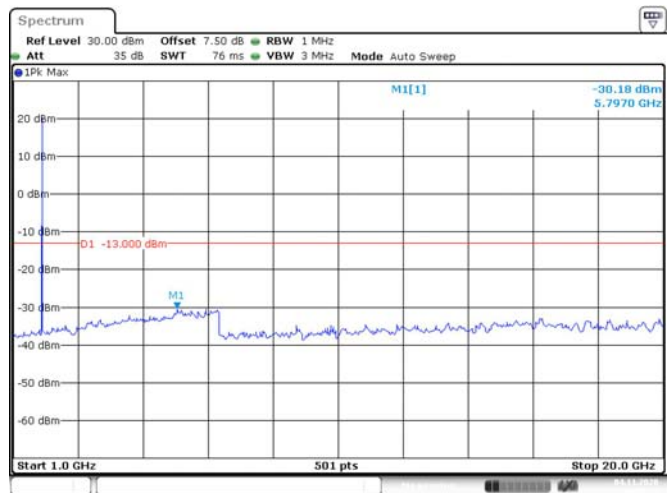


Date: 4.NOV.2020 14:15:22

5M, QPSK, Low Channel

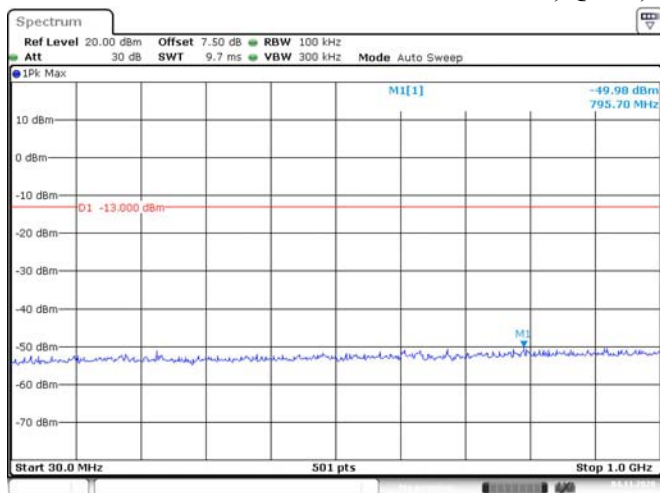


Date: 4.NOV.2020 13:49:56

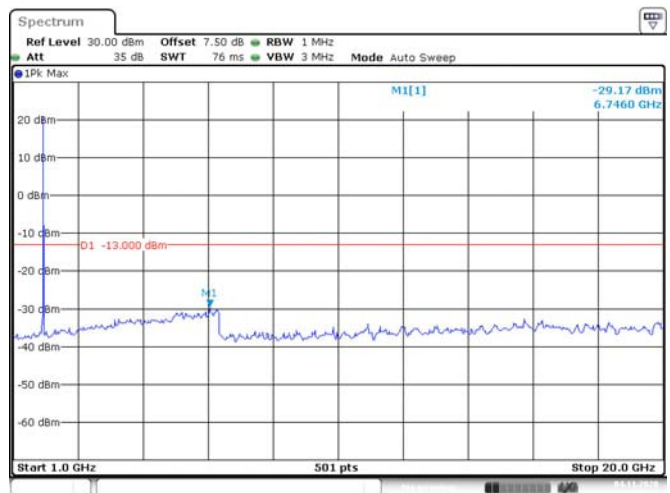


Date: 4.NOV.2020 13:50:24

5M, QPSK, Middle Channel

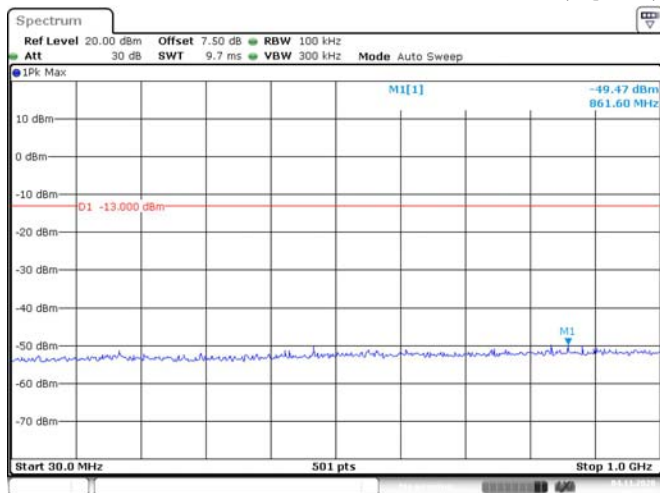


Date: 4.NOV.2020 13:19:59

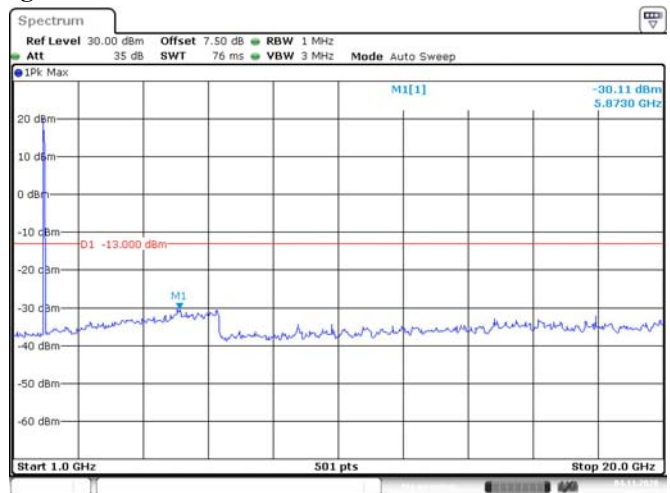


Date: 4.NOV.2020 13:20:21

5M, QPSK, High Channel

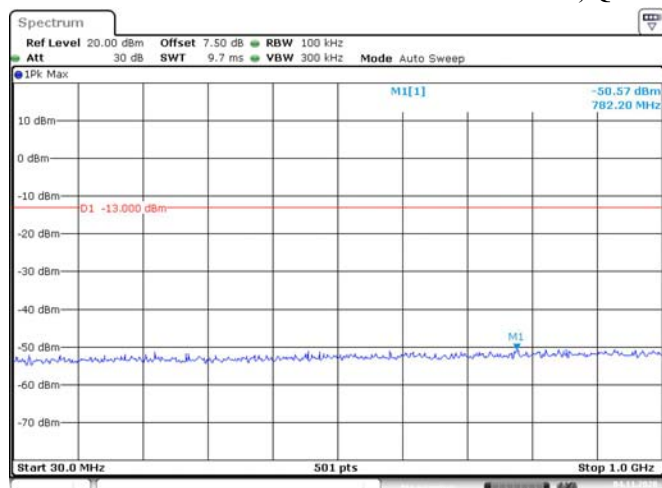


Date: 4.NOV.2020 14:15:59

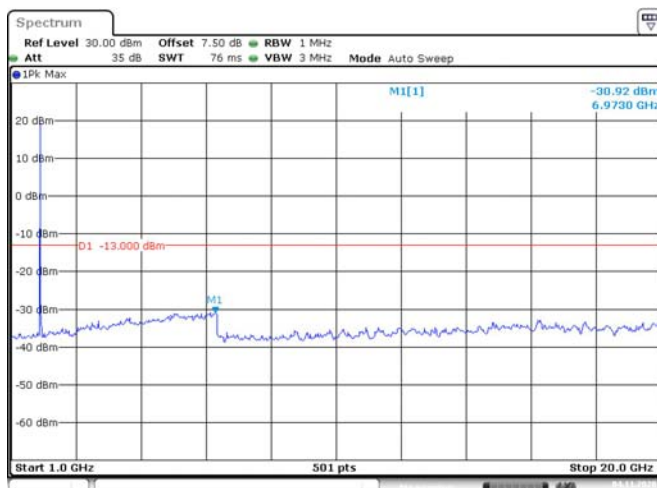


Date: 4.NOV.2020 14:16:22

10M, QPSK, Low Channel

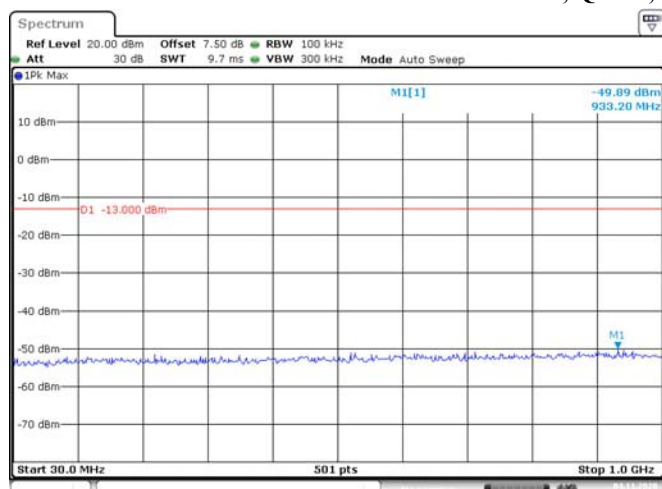


Date: 4.NOV.2020 13:50:57

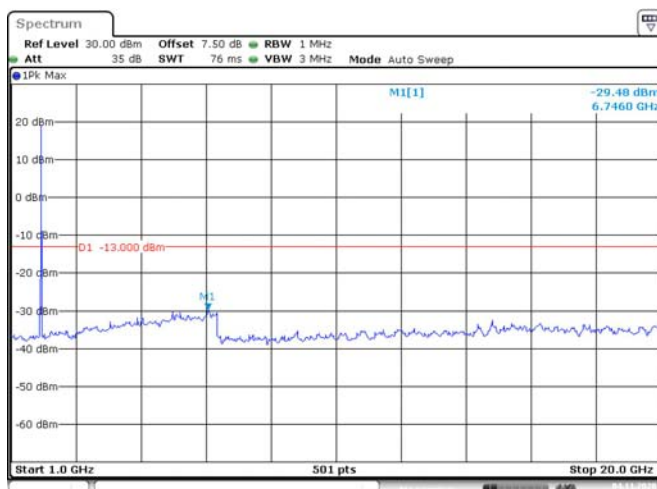


Date: 4.NOV.2020 13:51:22

10M, QPSK, Middle Channel

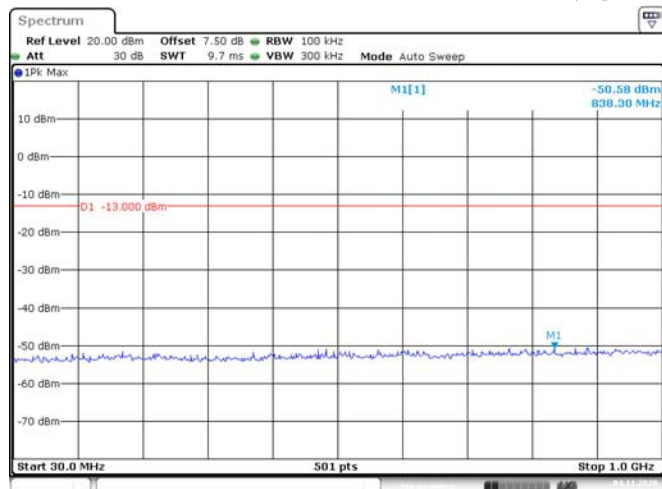


Date: 4.NOV.2020 13:20:52

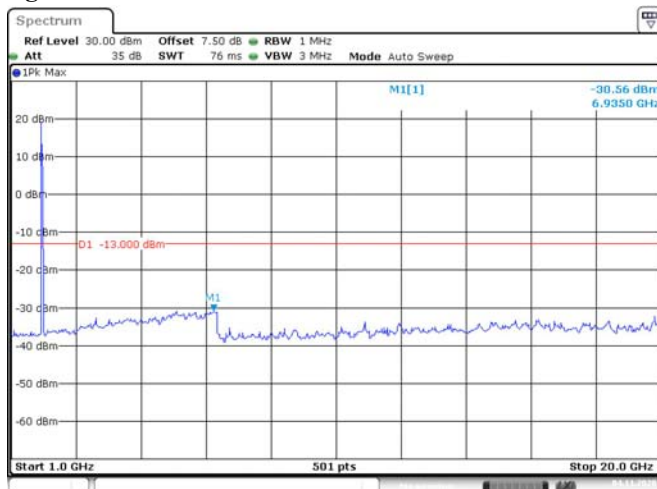


Date: 4.NOV.2020 13:21:18

10M, QPSK, High Channel



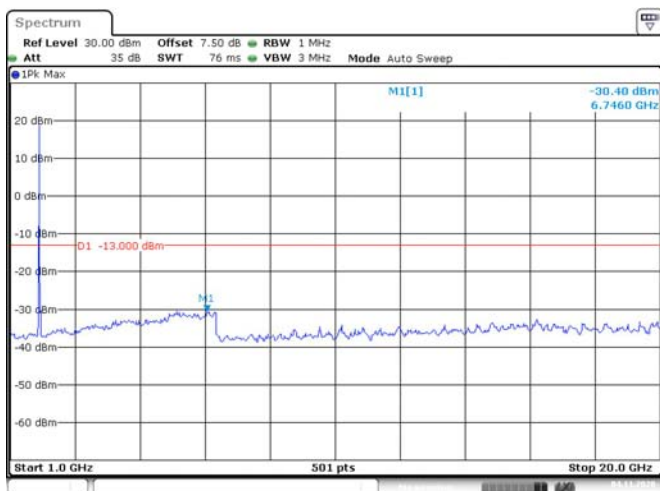
Date: 4.NOV.2020 14:16:55



Date: 4.NOV.2020 14:17:17

The screenshot shows a Spectrum Analyzer interface. At the top, the following settings are displayed: **Ref Level** 20.00 dBm, **Offset** 7.50 dB, **RBW** 100 kHz, **Att** 30 dB, **SWT** 9.7 ms, **VBW** 300 kHz, and **Mode** Auto Sweep. The main display area shows a spectrum plot with a blue trace representing the signal. The y-axis is labeled in dBm, ranging from -70 dBm to 10 dBm. The x-axis is labeled in MHz, ranging from 30.0 MHz to 1.0 GHz. A red horizontal line is drawn at -13.000 dBm, labeled "D1 -13.000 dBm". A small blue peak is visible at approximately 804.80 MHz, labeled "M1[1]" and "M1". The peak level is indicated as -50.43 dBm. The bottom of the screen shows the frequency range "Start 30.0 MHz" and "Stop 1.0 GHz", with "501 pts" indicating the number of data points.

Date: 4.NOV.2020 13:52:04



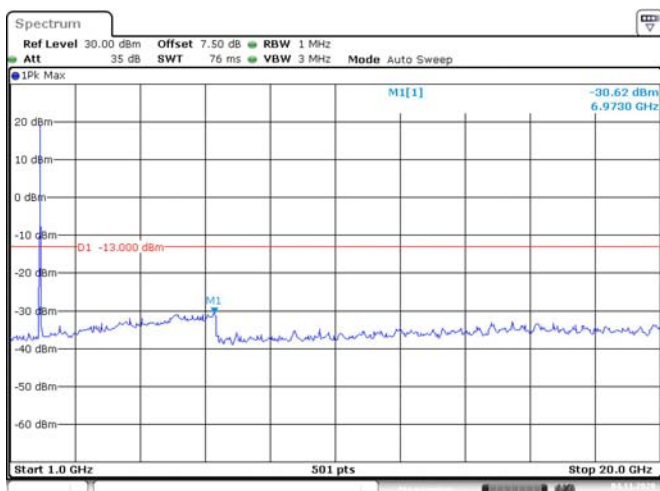
Date: 4.NOV.2020 13:52:30

The screenshot shows the Spectrum Analyzer interface. The top control bar includes the following settings:

- Ref Level:** 20.00 dBm
- Offset:** 7.50 dB
- RBW:** 100 kHz
- Att:** 30 dB
- SWT:** 9.7 ms
- VBW:** 300 kHz
- Mode:** Auto Sweep

 The main display area shows a spectrum plot with a blue trace representing the noise floor, fluctuating around -50 dBm. A horizontal red line is drawn across the plot at -13.000 dBm, labeled 'D1 -13.000 dBm'. The plot has a grid with major lines every 10 dB on the vertical axis and 501 points on the horizontal axis. The horizontal axis is labeled 'Start 30.0 MHz' and 'Stop 1.0 GHz'. The vertical axis is labeled from -70 dBm to 10 dBm. There are two blue labels on the plot: 'M1[1]' at the top right and 'M1' at the bottom right.

Date: 4.NOV.2020 13:21:50

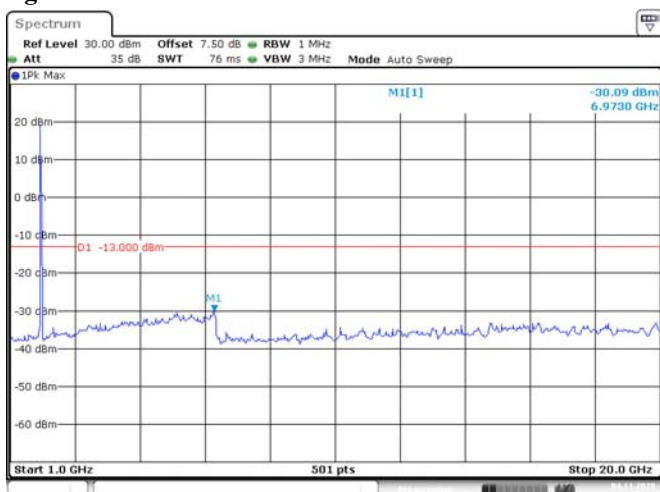


Date: 4.NOV.2020 13:22:12

The screenshot shows a Spectrum Analyzer interface. At the top, the title "Spectrum" is displayed. Below it, a control bar contains the following settings: "Ref Level" set to 20.00 dBm, "Offset" set to 7.50 dB, "RBW" set to 100 kHz, "Att" set to 30 dB, "SWT" set to 9.7 ms, "VBW" set to 300 kHz, and "Mode" set to "Auto Sweep". A blue dot icon and the text "1Pk Max" are visible on the left side of the plot area.

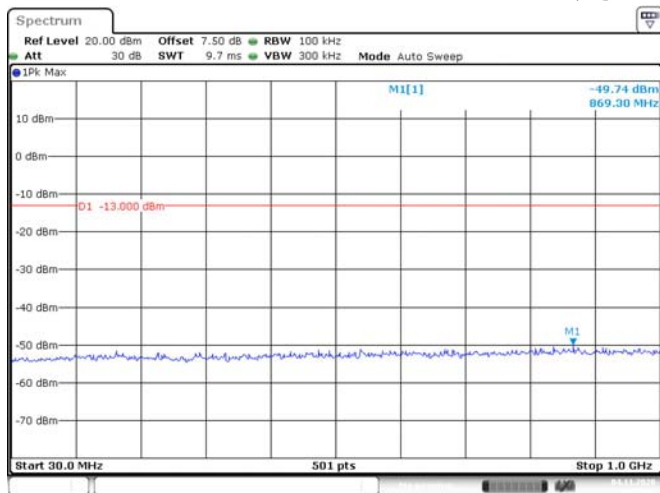
The main plot area displays a spectrum with a blue trace representing the noise floor, which is centered around -50 dBm. A horizontal red line is drawn across the plot at -13.000 dBm, with a label "D1 -13.000 dBm" next to it. The plot has a grid with major lines every 10 dBm, ranging from -70 dBm to 10 dBm. The x-axis is labeled "Start 30.0 MHz" on the left and "Stop 1.0 GHz" on the right, with "501 pts" indicated in the center. A blue label "M1[1]" is positioned above the plot area, and a blue label "M1" is positioned below the plot area near the right edge. On the far right, the values "-49.77 dBm" and "789.90 MHz" are displayed.

Date: 4.NOV.2020 14:18:34

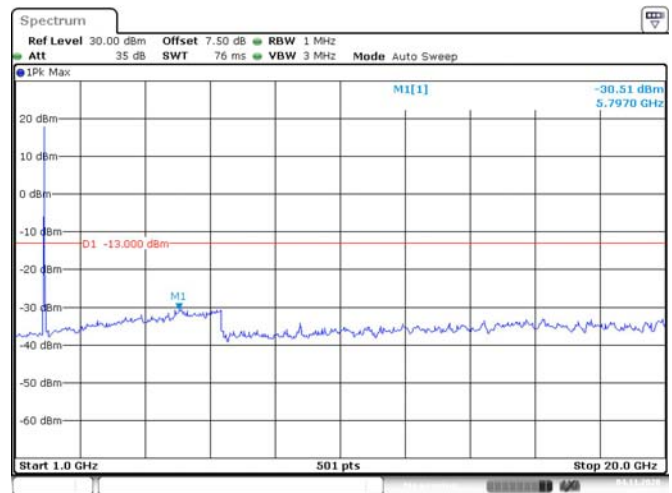


Date: 4.NOV.2020 14:18:57

20M, QPSK, Low Channel

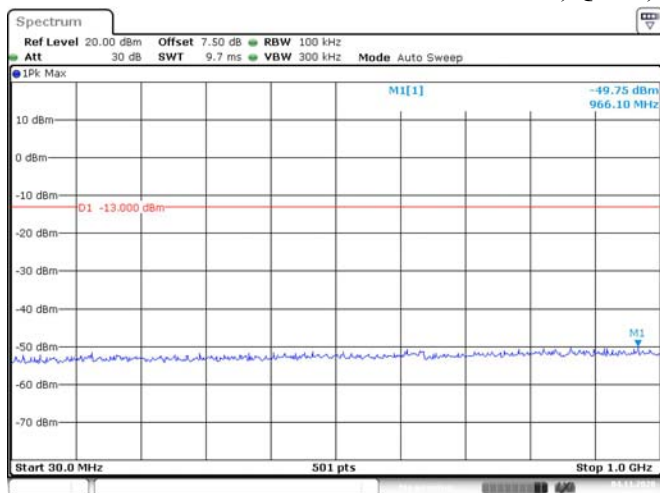


Date: 4.NOV.2020 13:53:07

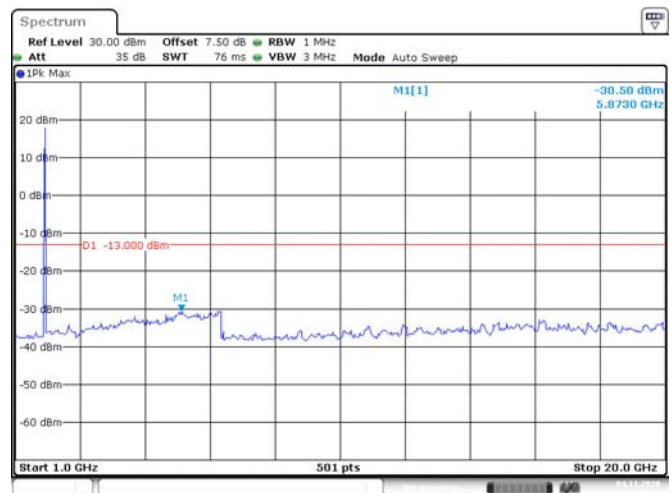


Date: 4.NOV.2020 13:53:33

20M, QPSK, Middle Channel

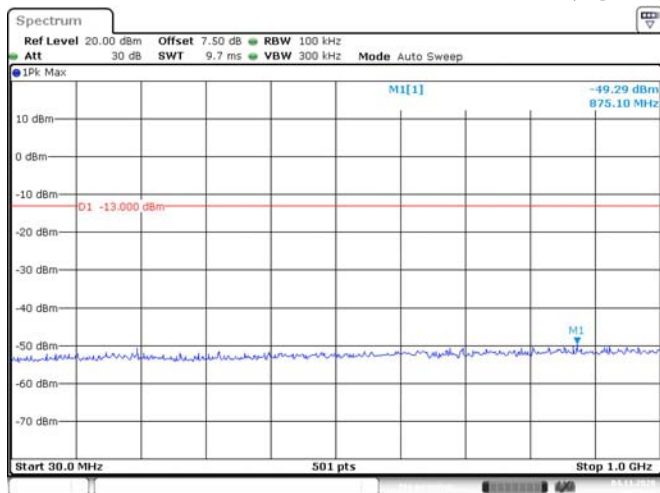


Date: 4.NOV.2020 13:22:56

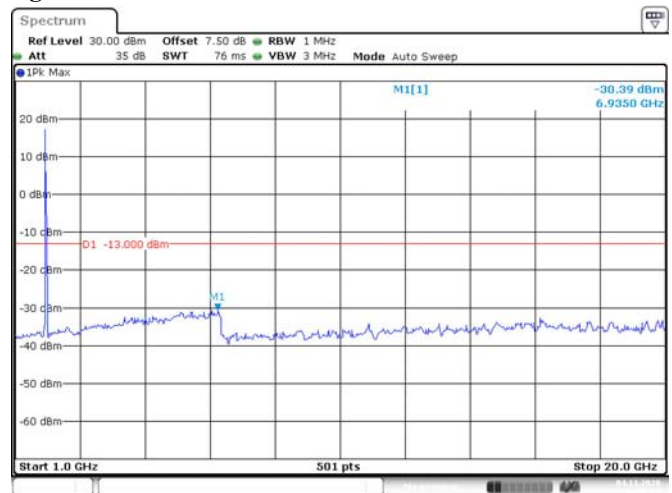


Date: 4.NOV.2020 13:23:19

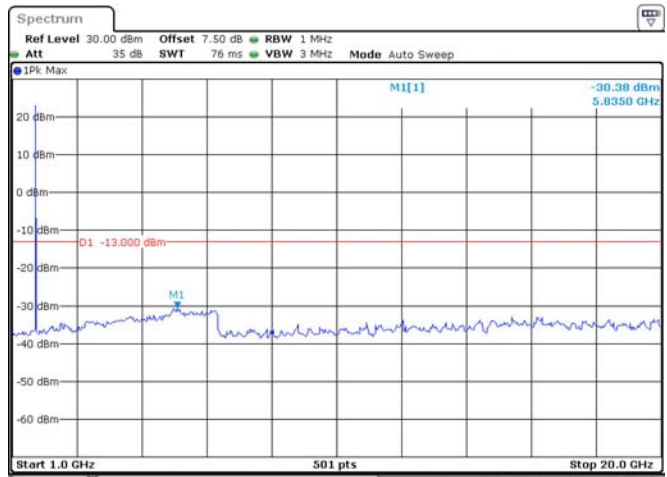
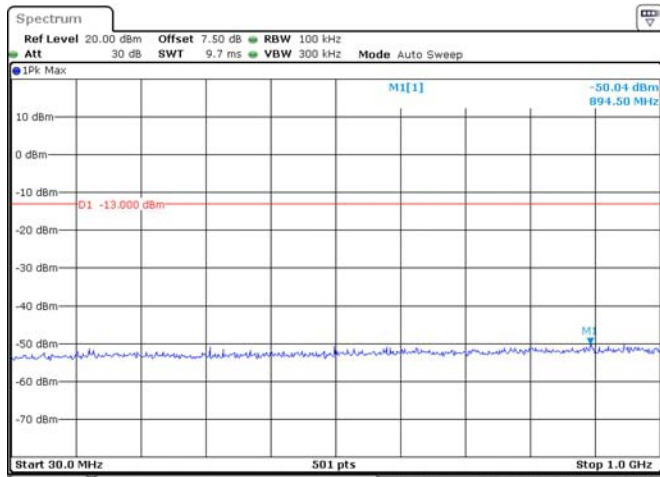
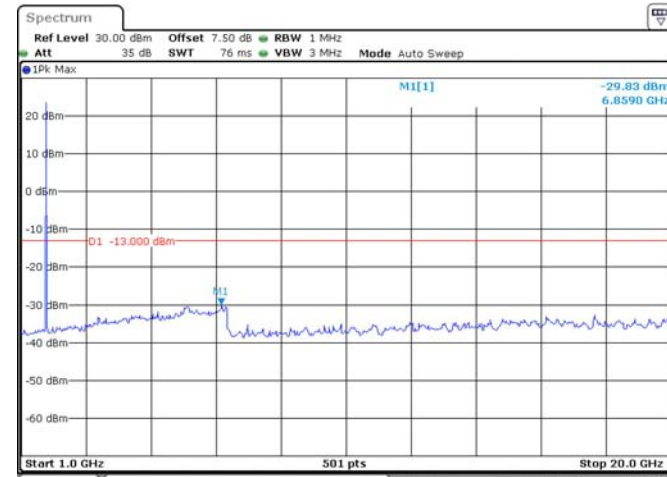
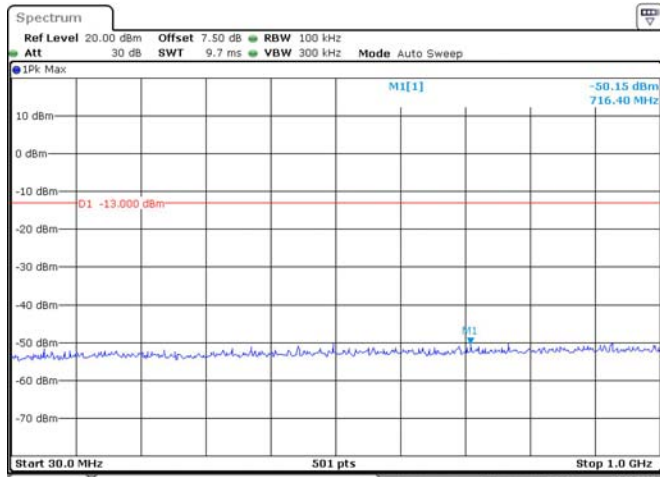
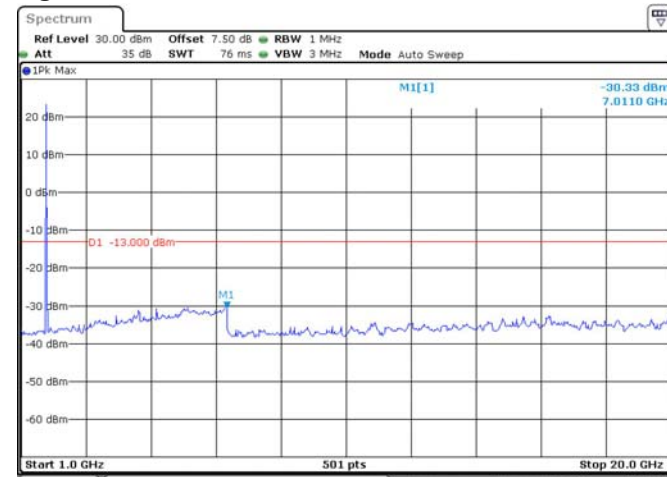
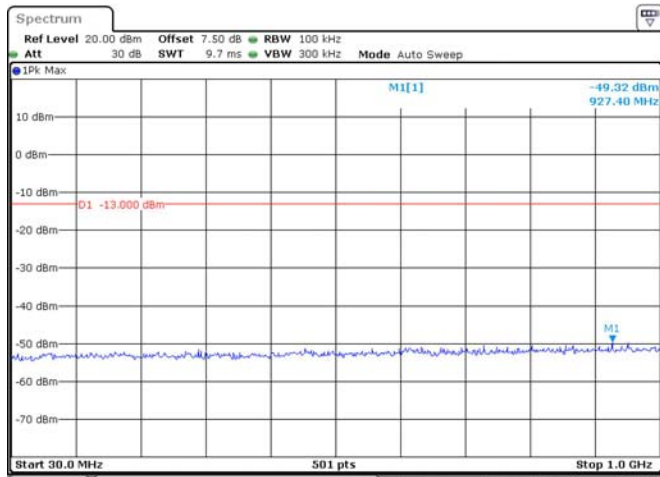
20M, QPSK, High Channel



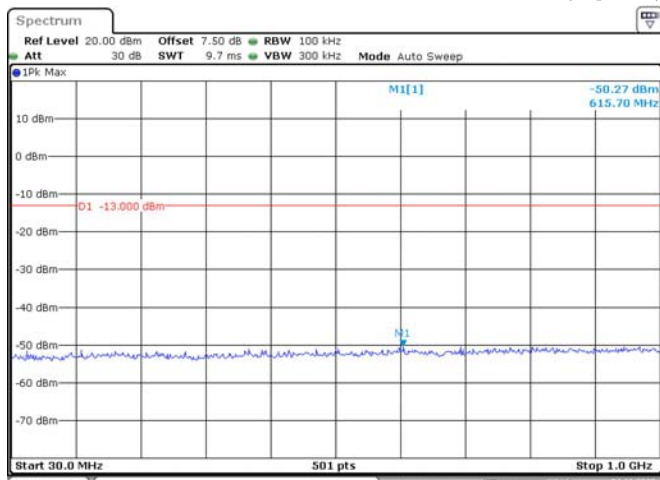
Date: 4.NOV.2020 14:19:44



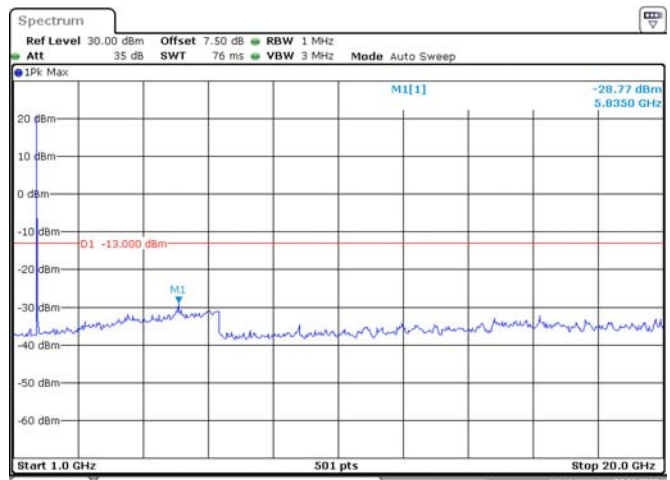
Date: 4.NOV.2020 14:20:03

LTE Band 4:**1.4M, QPSK, Low Channel****1.4M, QPSK, Middle Channel****1.4M, QPSK, High Channel**

3M, QPSK, Low Channel

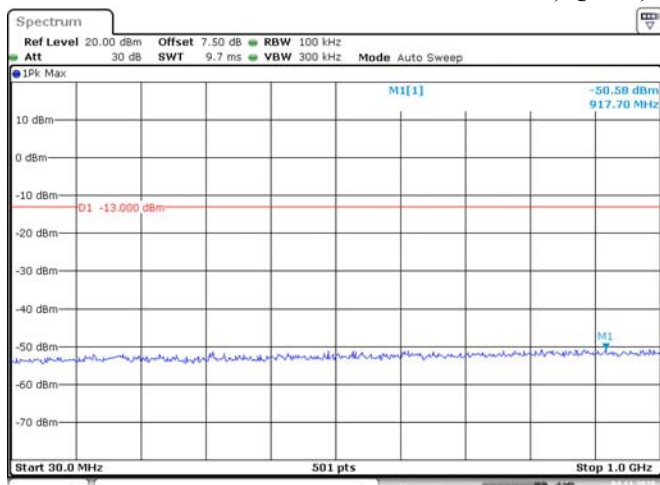


Date: 4.NOV.2020 13:55:57

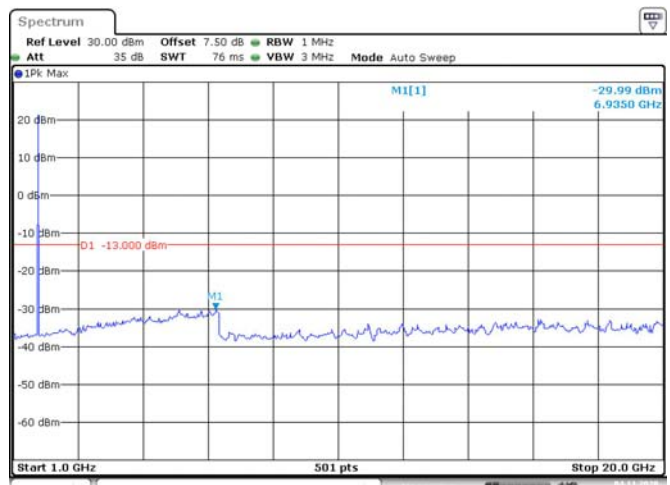


Date: 4.NOV.2020 13:56:20

3M, QPSK, Middle Channel

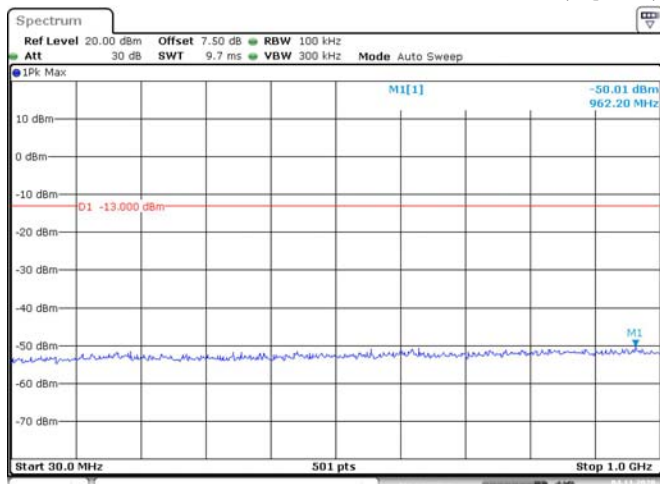


Date: 4.NOV.2020 13:24:56

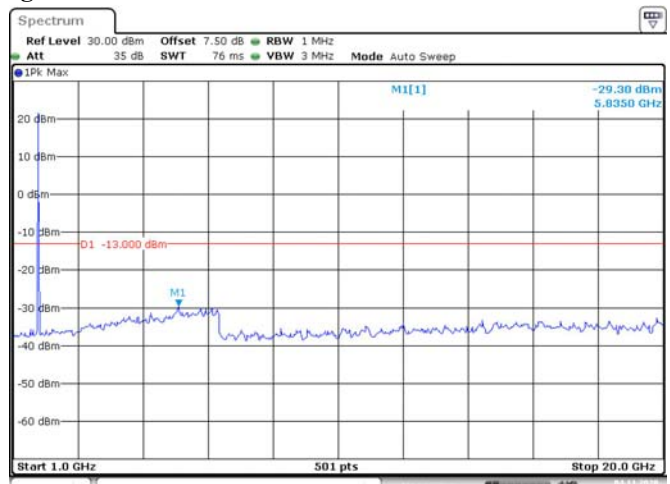


Date: 4.NOV.2020 13:25:25

3M, QPSK, High Channel

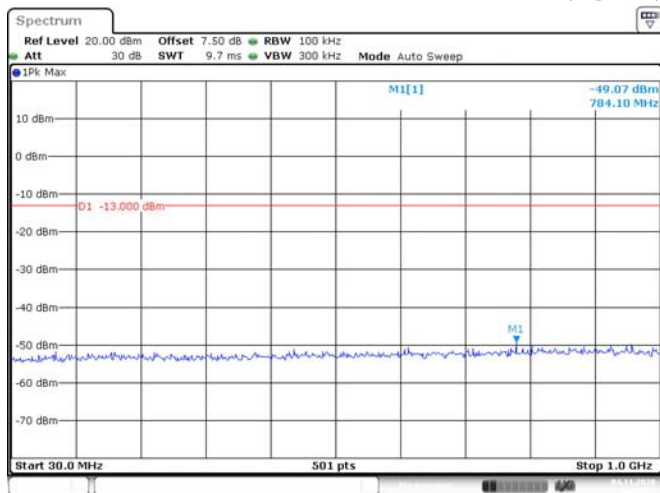


Date: 4.NOV.2020 14:21:55

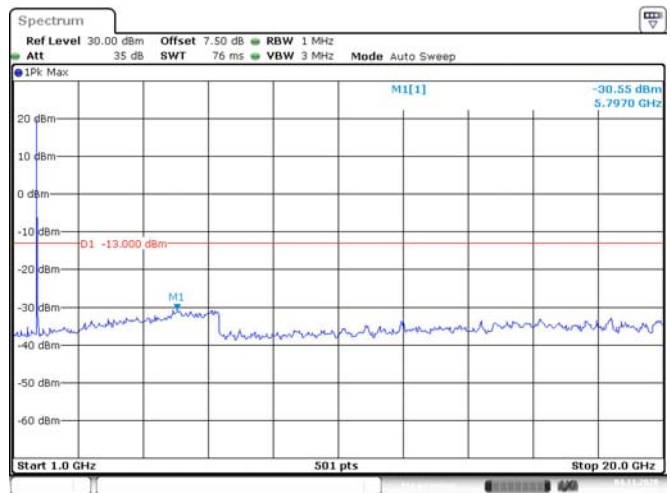


Date: 4.NOV.2020 14:22:20

5M, QPSK, Low Channel

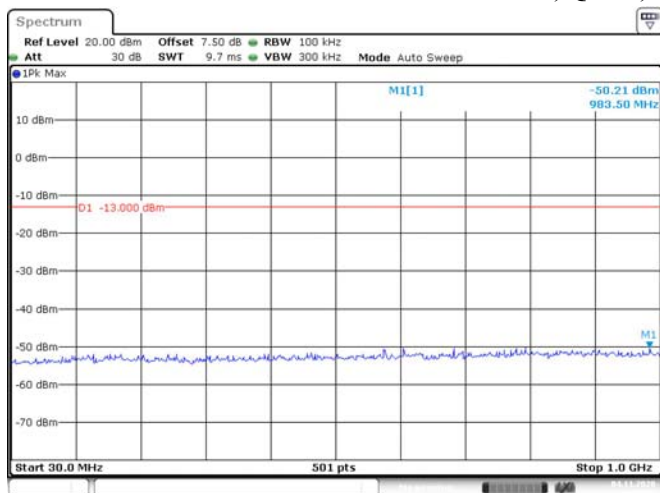


Date: 4.NOV.2020 13:56:53

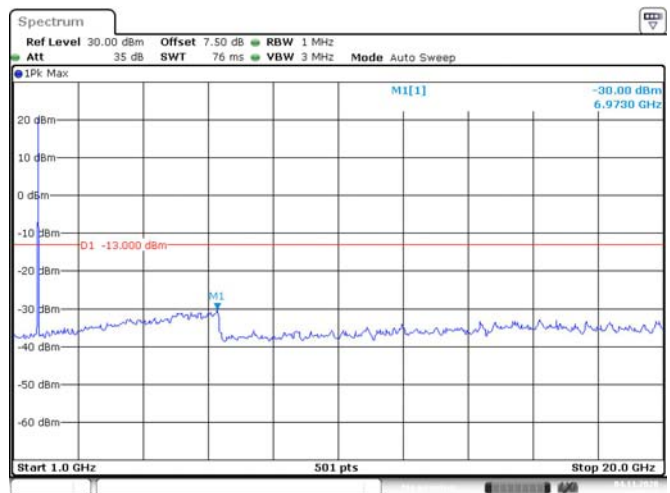


Date: 4.NOV.2020 13:57:16

5M, QPSK, Middle Channel

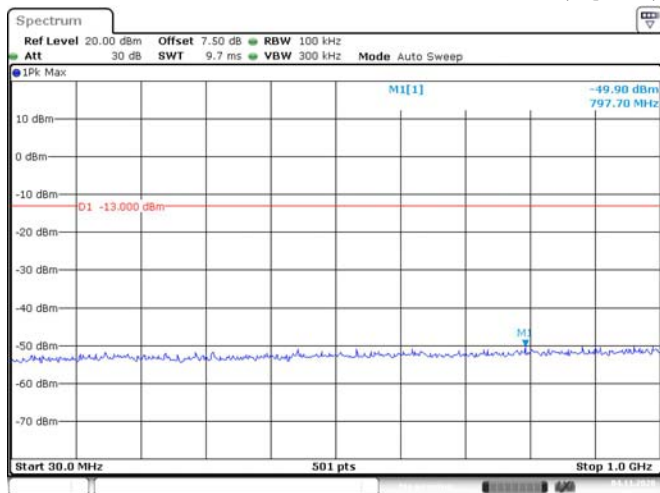


Date: 4.NOV.2020 13:25:56

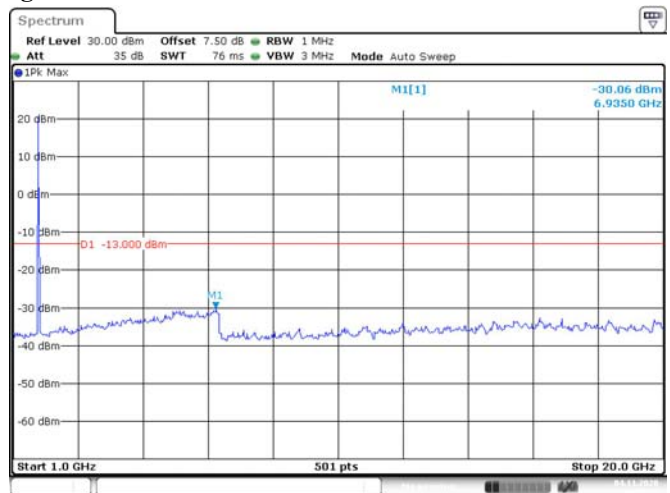


Date: 4.NOV.2020 13:26:22

5M, QPSK, High Channel

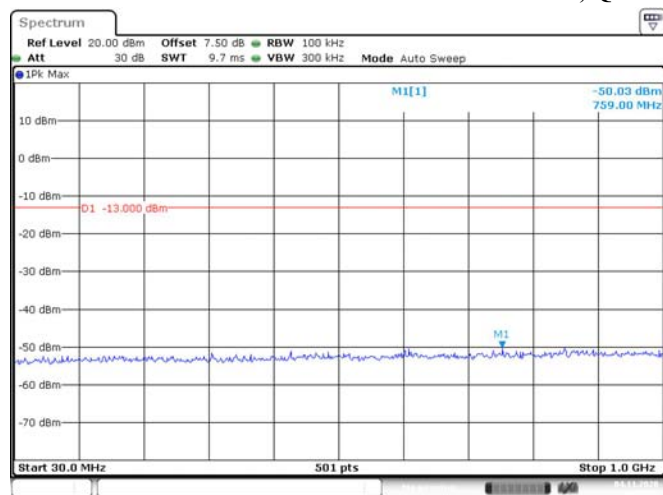


Date: 4.NOV.2020 14:22:57

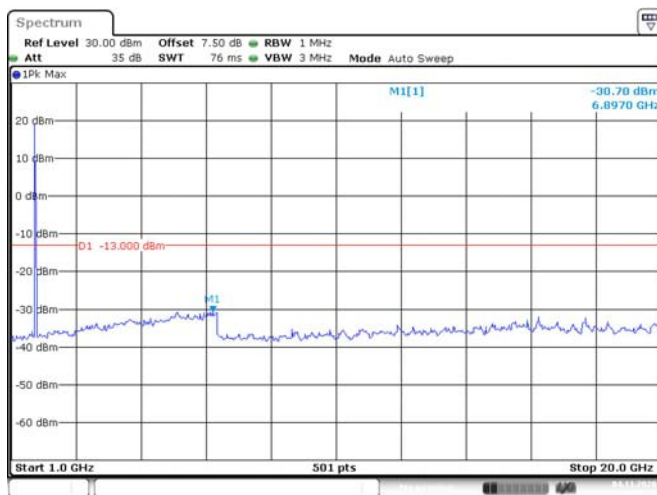


Date: 4.NOV.2020 14:23:20

10M, QPSK, Low Channel

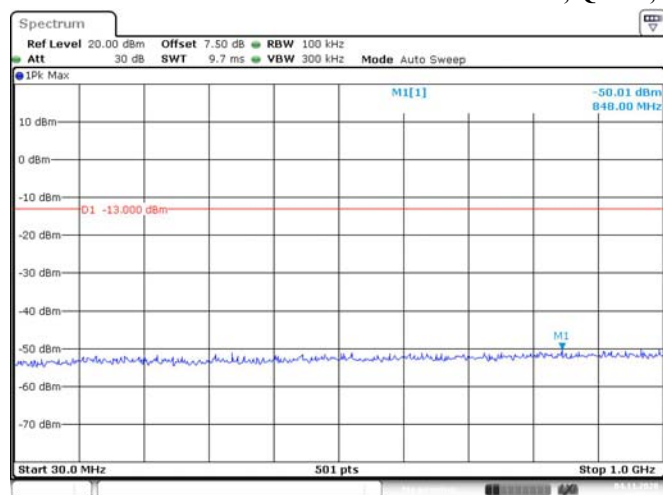


Date: 4.NOV.2020 13:57:51

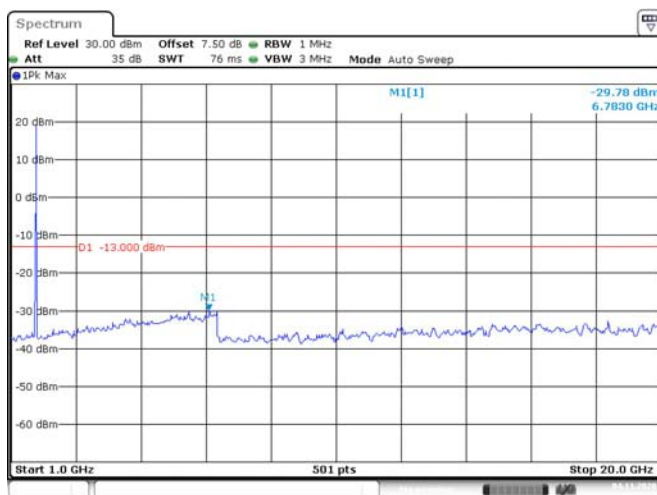


Date: 4.NOV.2020 13:58:13

10M, QPSK, Middle Channel

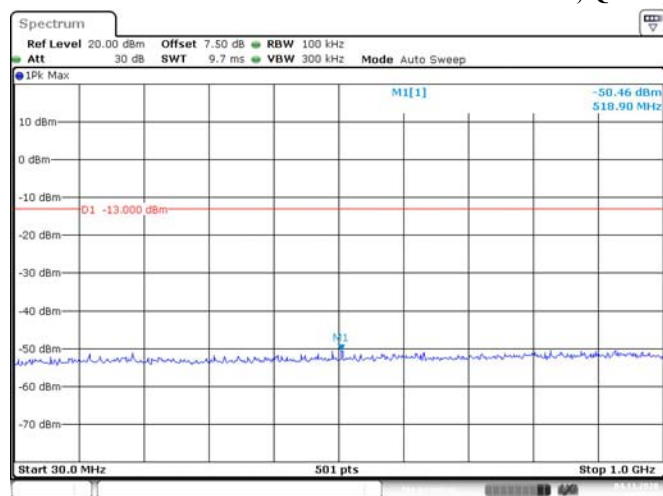


Date: 4.NOV.2020 13:26:56

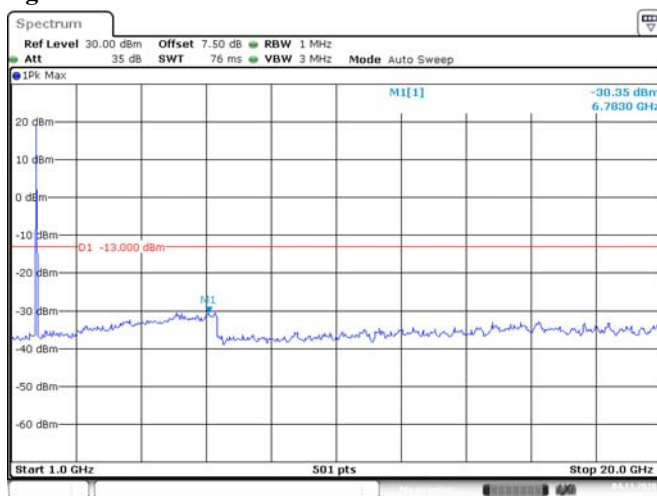


Date: 4.NOV.2020 13:27:21

10M, QPSK, High Channel

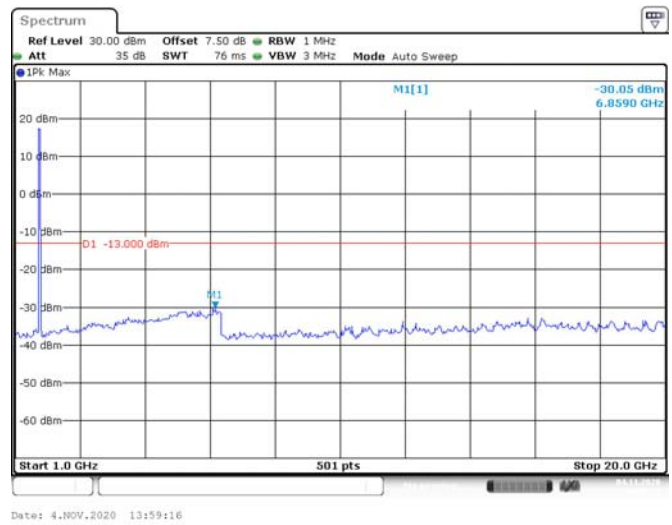
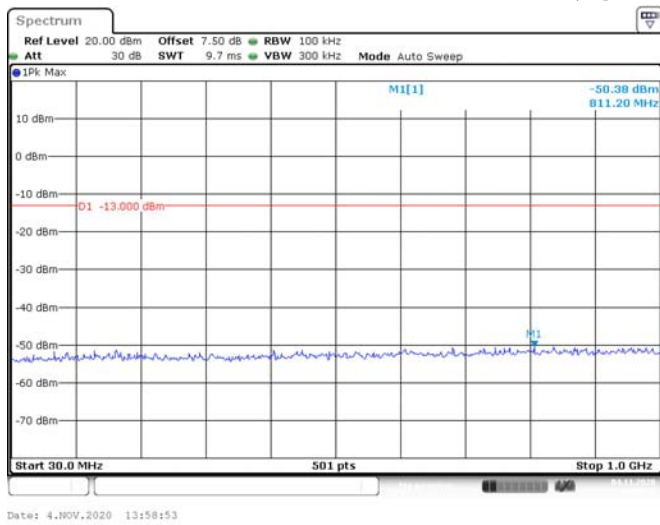


Date: 4.NOV.2020 14:23:58

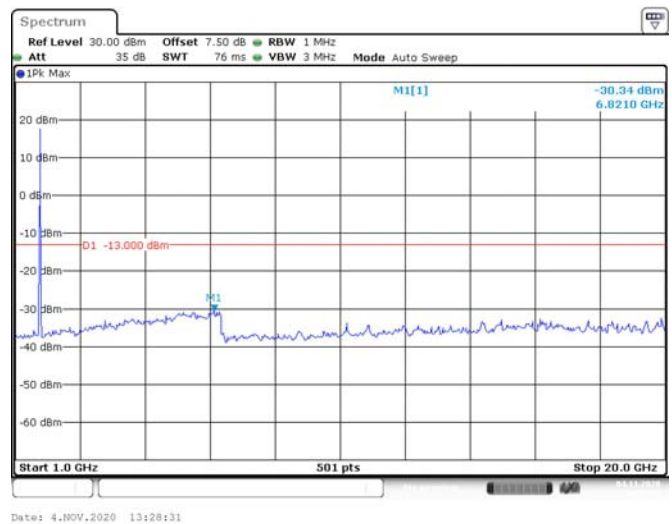
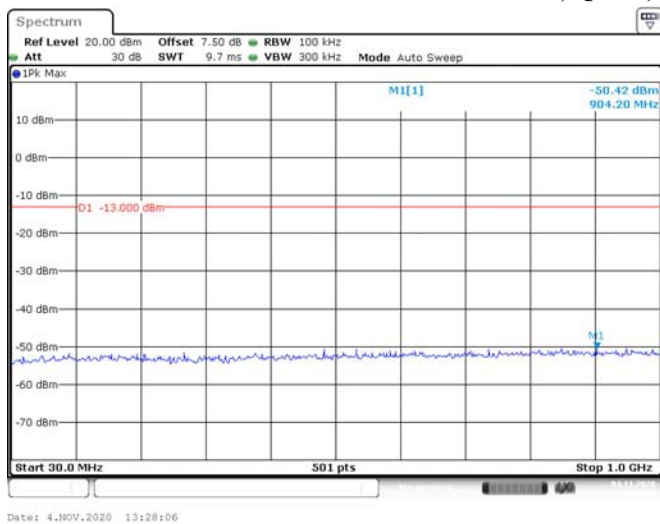


Date: 4.NOV.2020 14:24:24

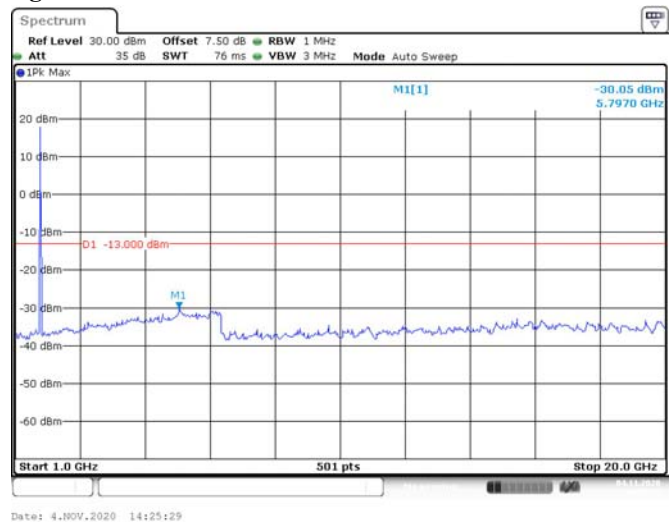
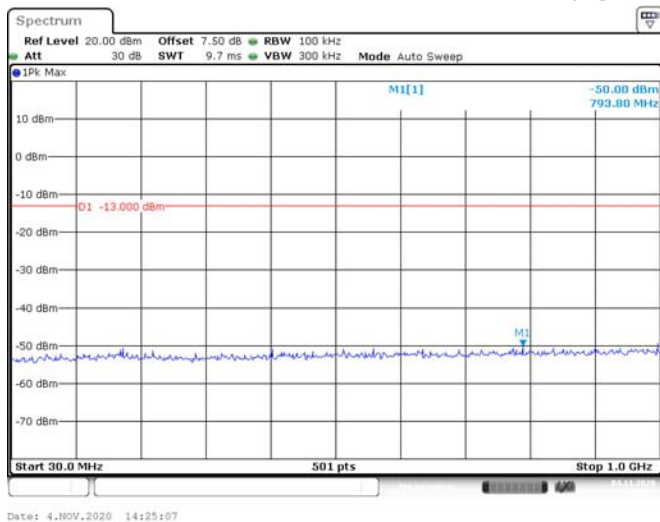
15M, QPSK, Low Channel



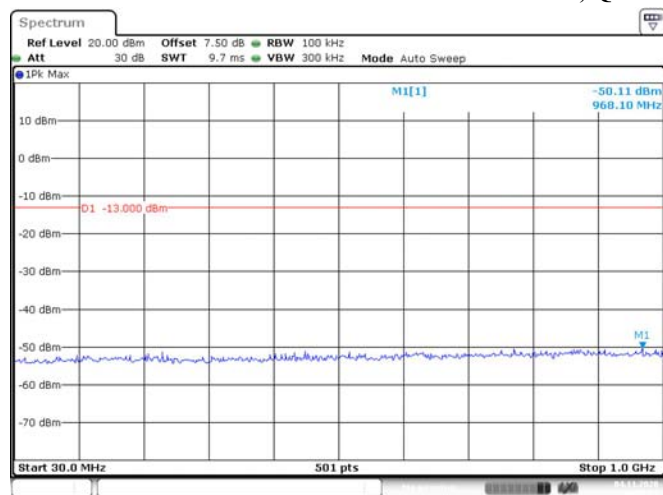
15M, QPSK, Middle Channel



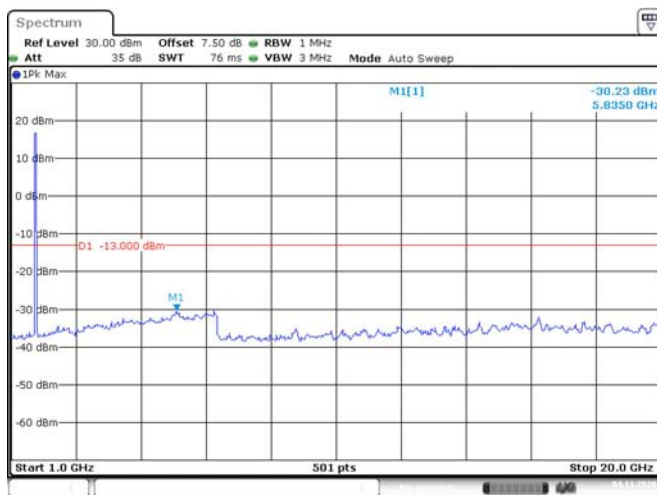
15M, QPSK, High Channel



20M, QPSK, Low Channel

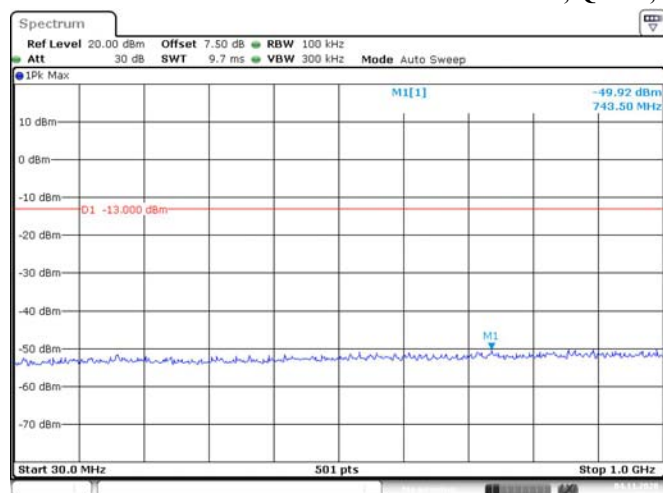


Date: 4.NOV.2020 13:59:51

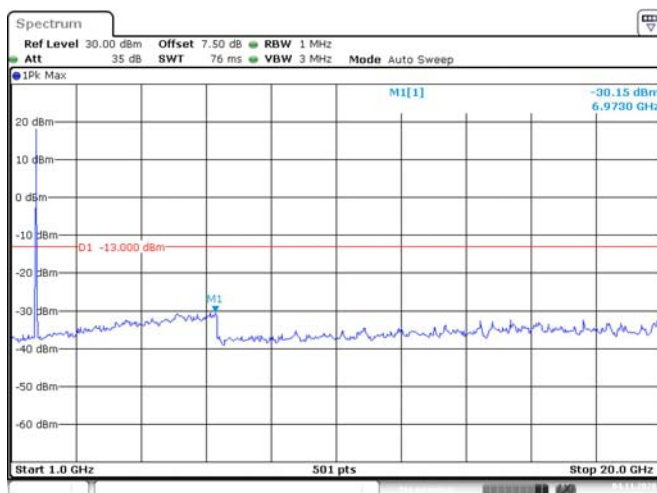


Date: 4.NOV.2020 14:00:14

20M, QPSK, Middle Channel

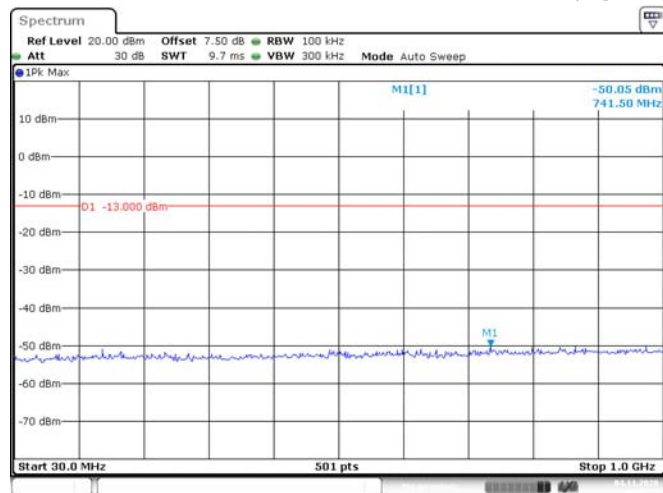


Date: 4.NOV.2020 13:29:15

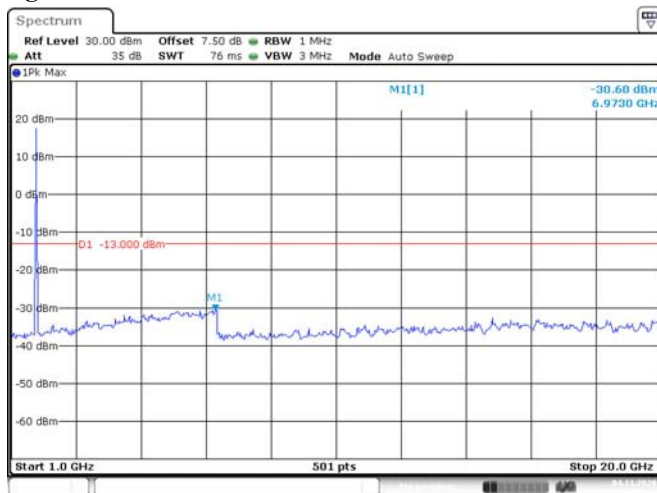


Date: 4.NOV.2020 13:29:41

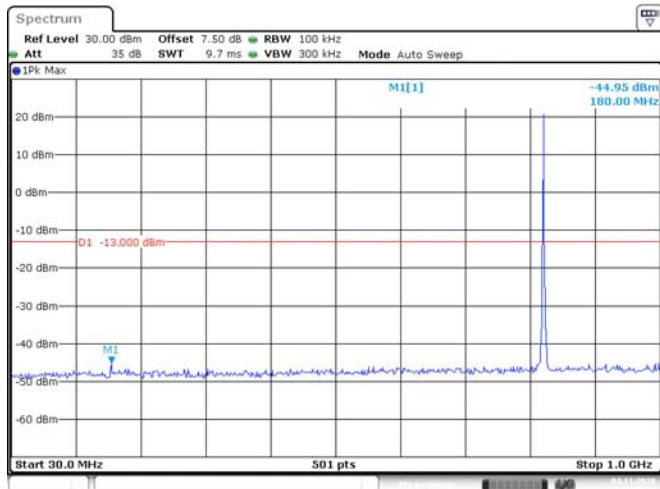
20M, QPSK, High Channel



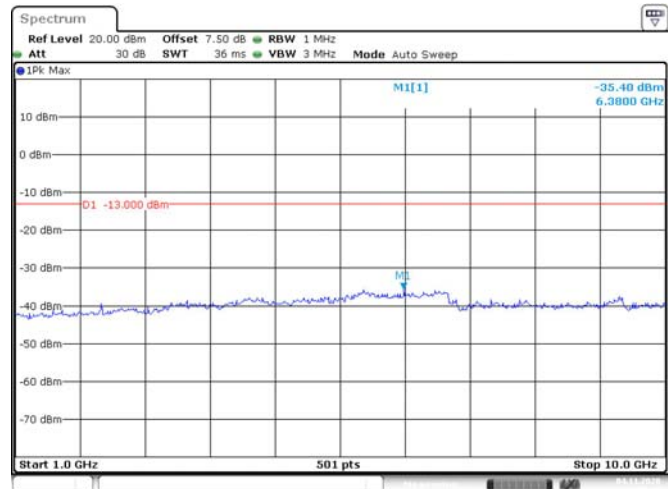
Date: 4.NOV.2020 14:26:21



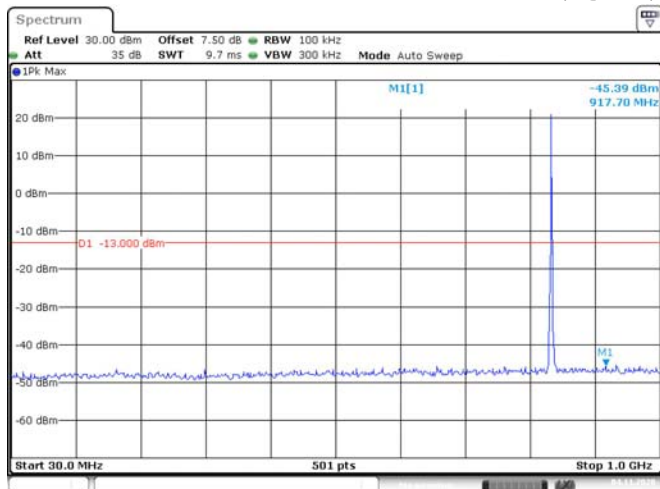
Date: 4.NOV.2020 14:26:49

LTE Band 5:**1.4M, QPSK, Low Channel**

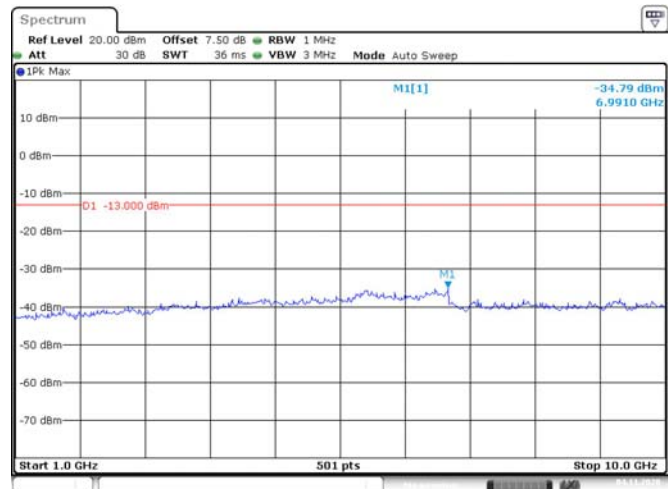
Date: 4.NOV.2020 14:01:15



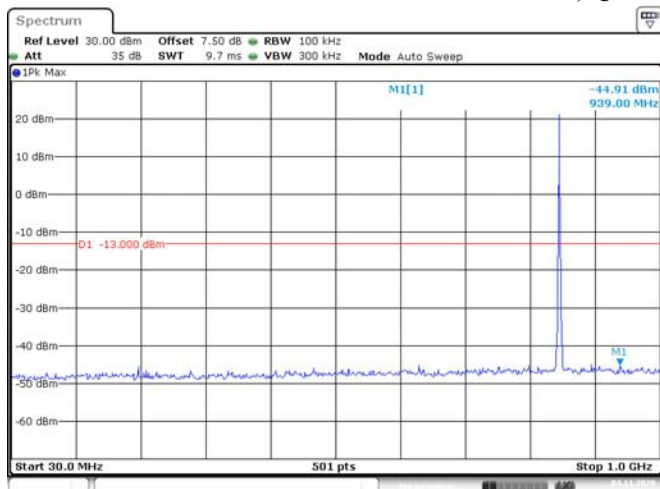
Date: 4.NOV.2020 14:01:41

1.4M, QPSK, Middle Channel

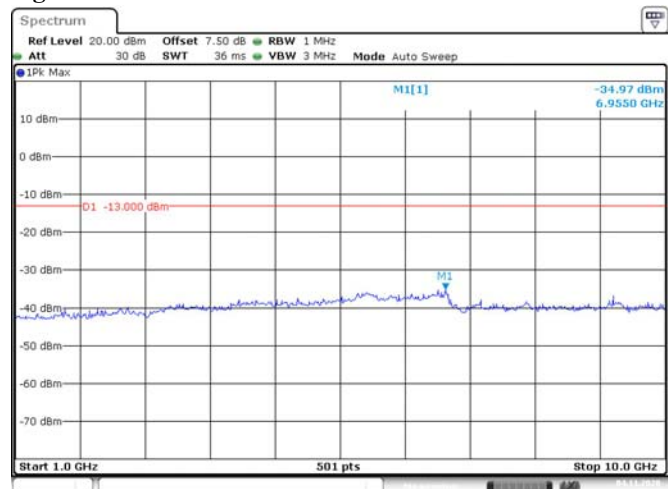
Date: 4.NOV.2020 13:30:16



Date: 4.NOV.2020 13:30:42

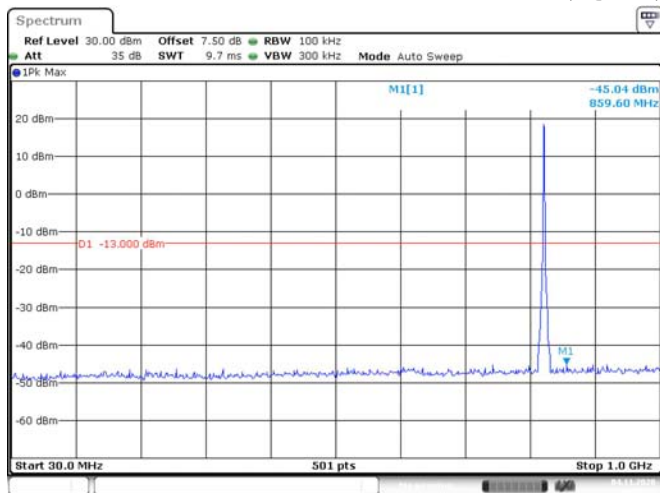
1.4M, QPSK, High Channel

Date: 4.NOV.2020 14:28:15

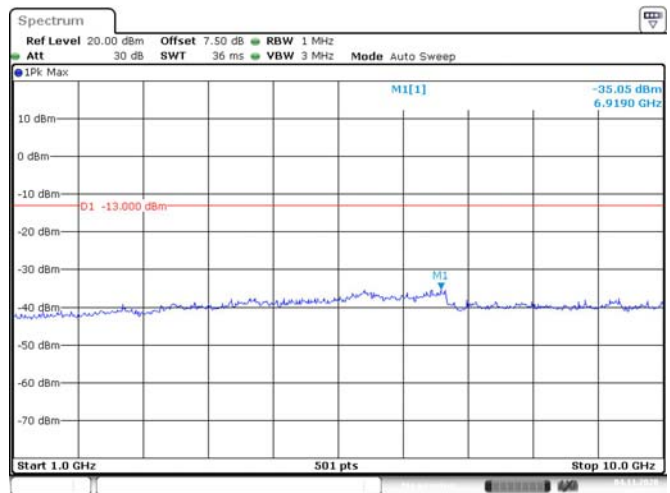


Date: 4.NOV.2020 14:28:38

3M, QPSK, Low Channel

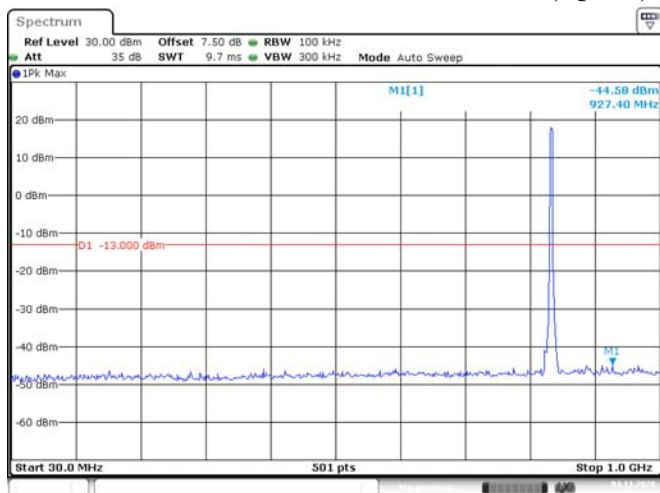


Date: 4.NOV.2020 14:02:10

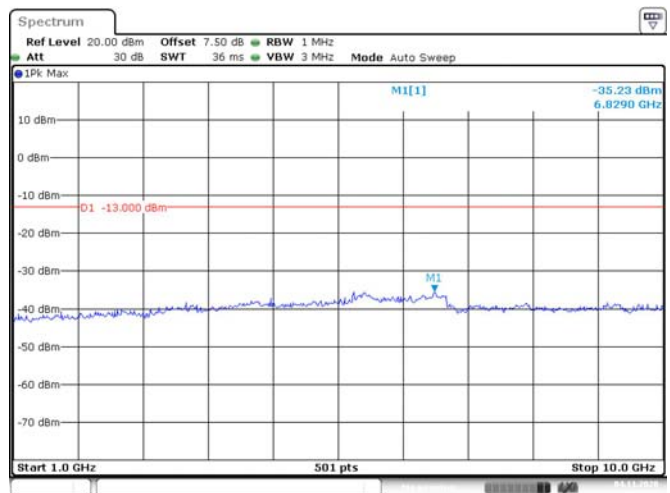


Date: 4.NOV.2020 14:02:59

3M, QPSK, Middle Channel

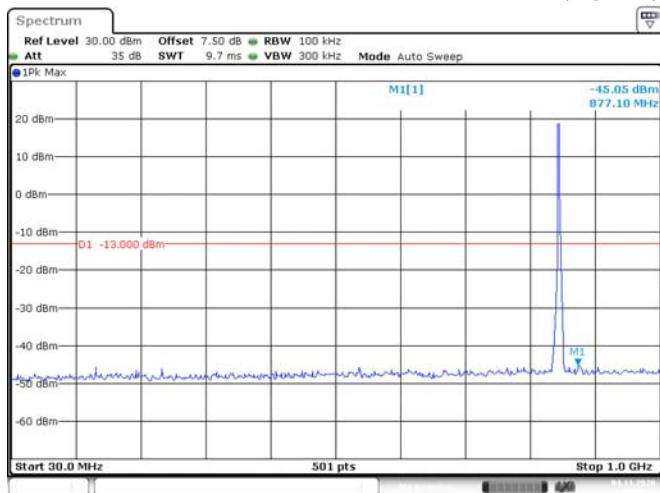


Date: 4.NOV.2020 13:31:15

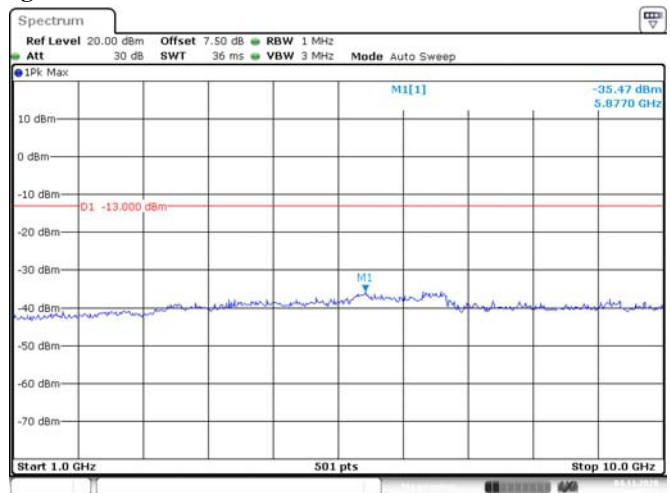


Date: 4.NOV.2020 13:31:37

3M, QPSK, High Channel

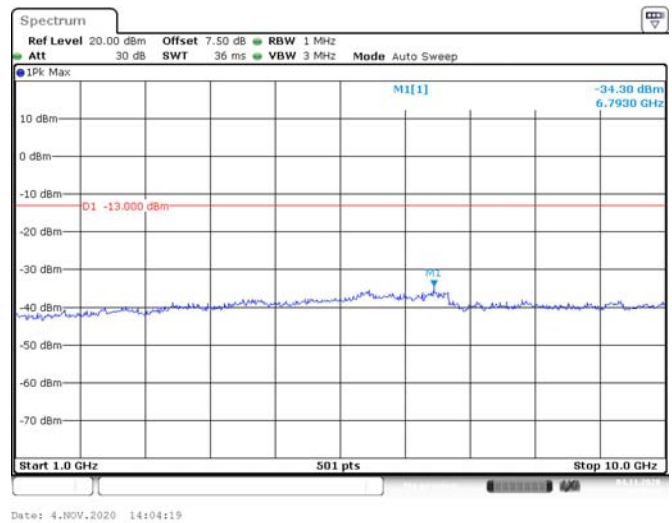
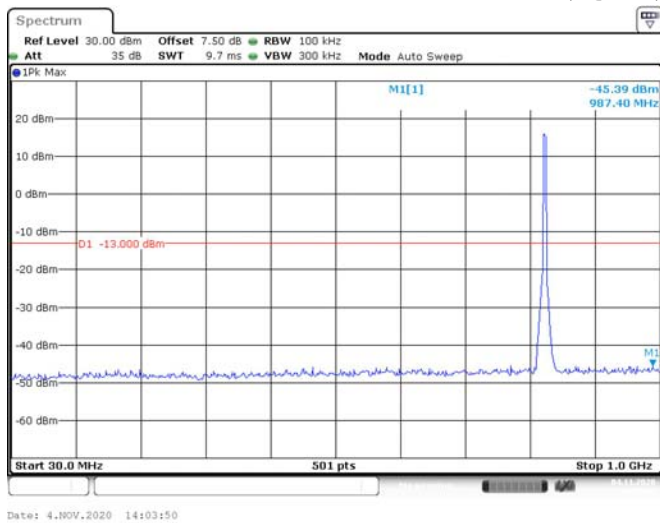


Date: 4.NOV.2020 14:29:29

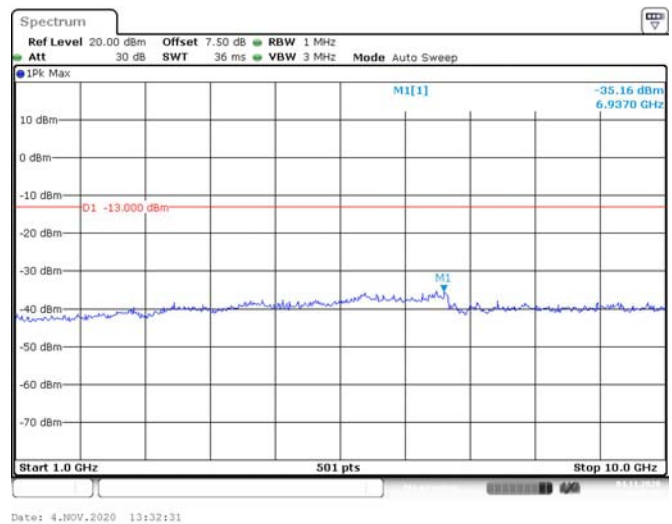
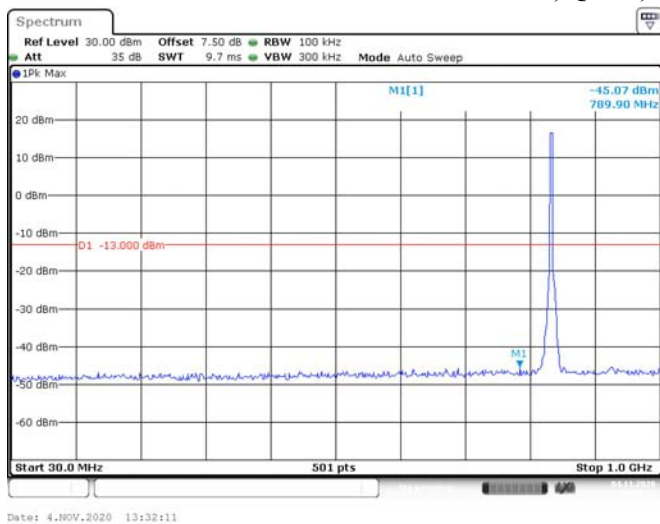


Date: 4.NOV.2020 14:29:51

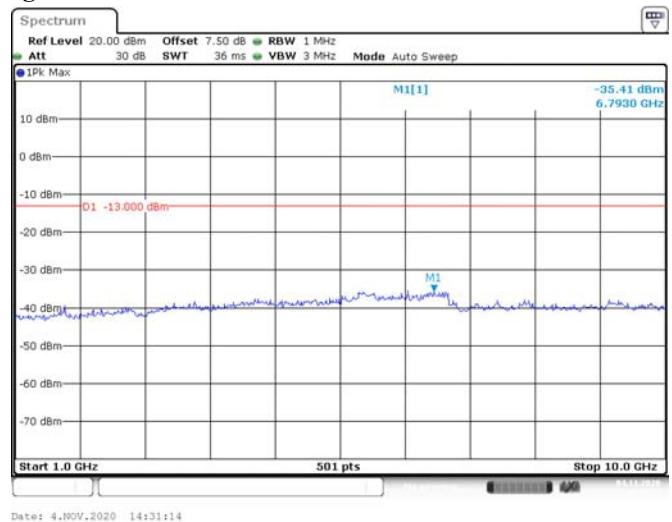
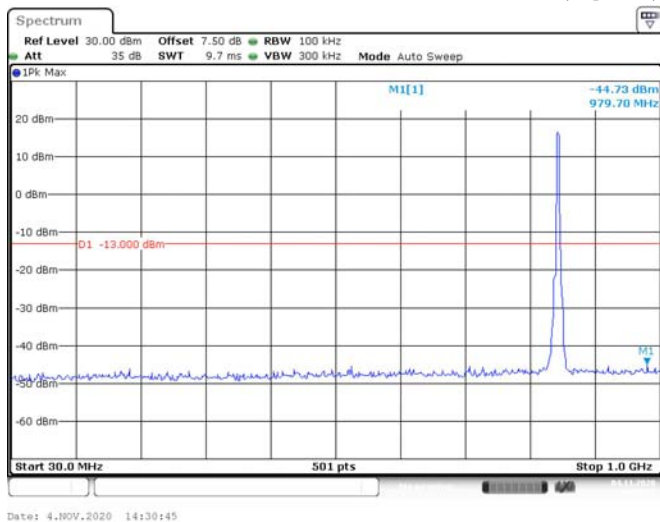
5M, QPSK, Low Channel



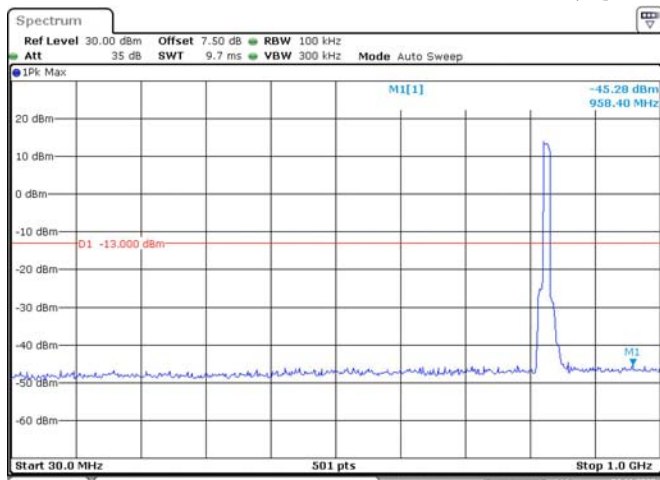
5M, QPSK, Middle Channel



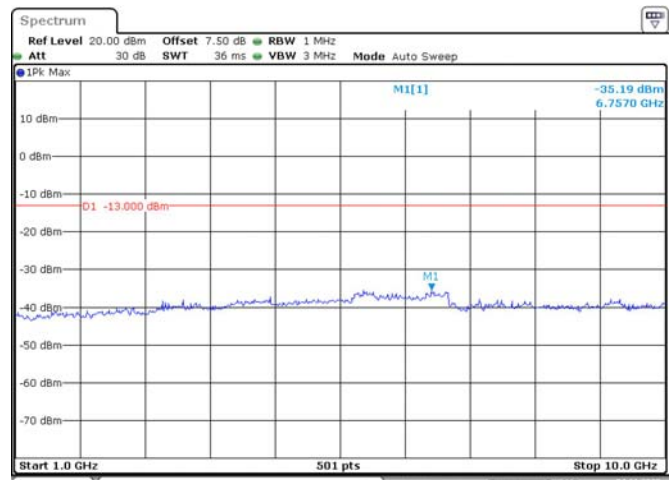
5M, QPSK, High Channel



10M, QPSK, Low Channel

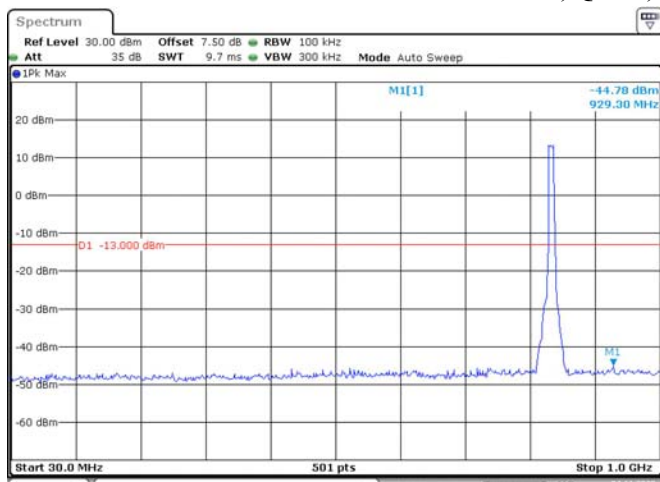


Date: 4.NOV.2020 14:05:21

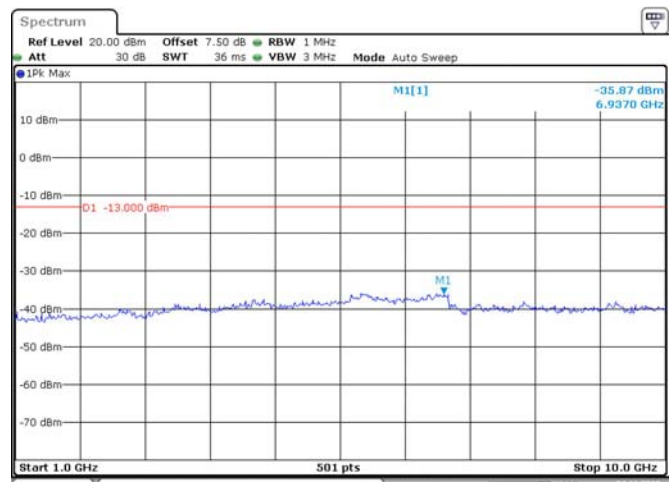


Date: 4.NOV.2020 14:05:50

10M, QPSK, Middle Channel

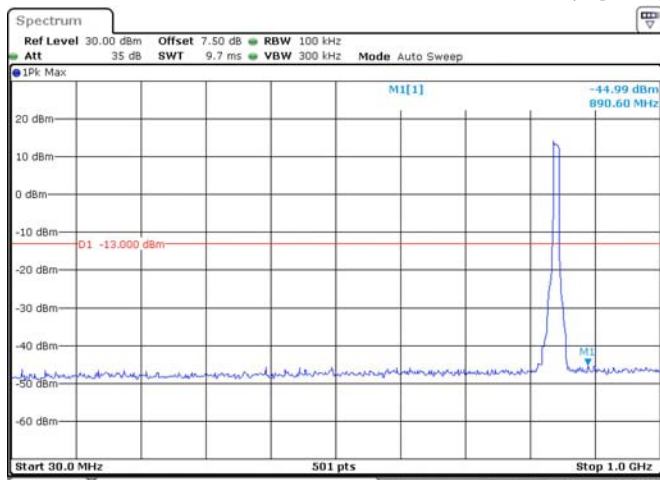


Date: 4.NOV.2020 13:33:05

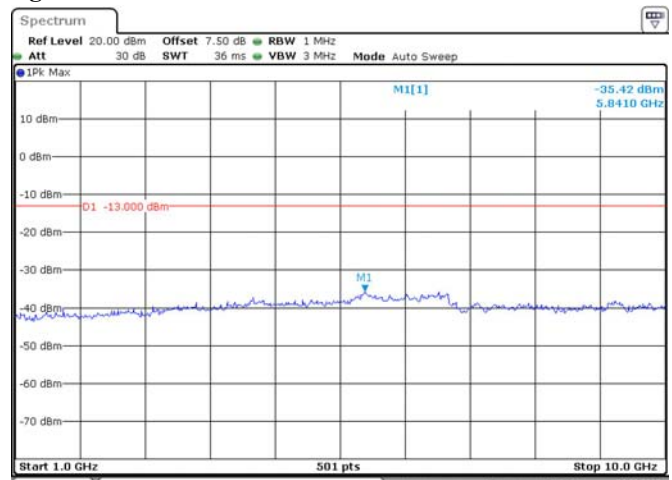


Date: 4.NOV.2020 13:33:24

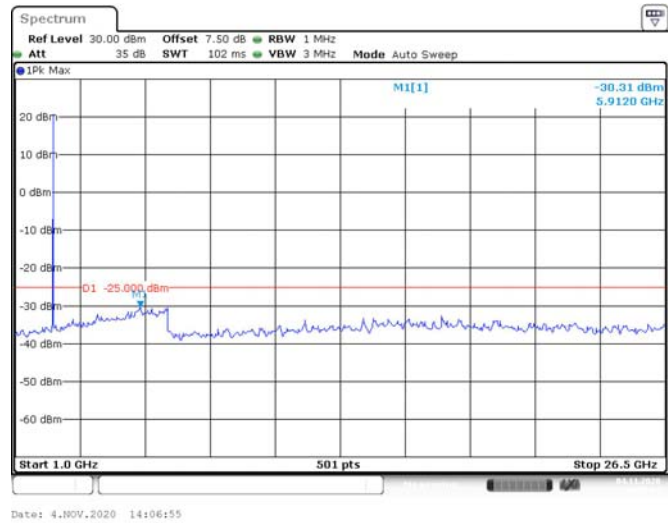
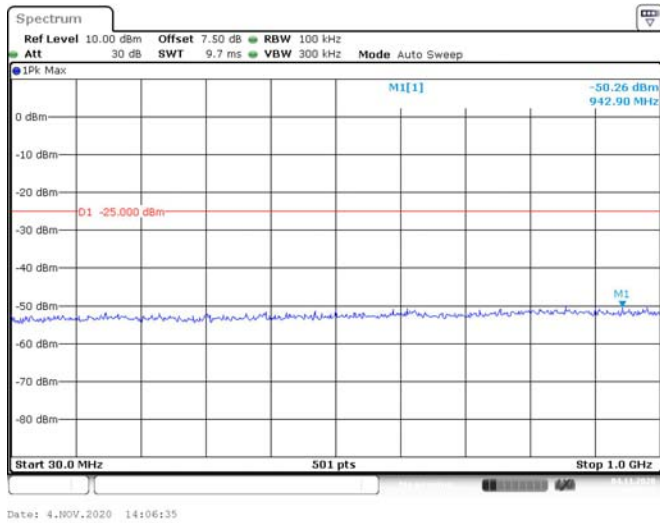
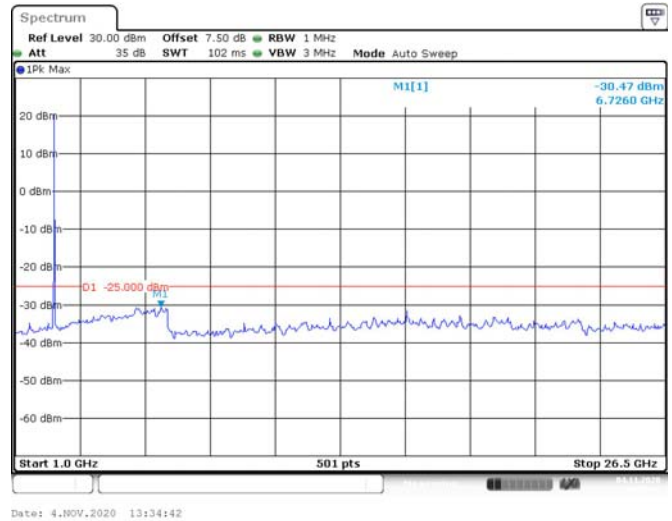
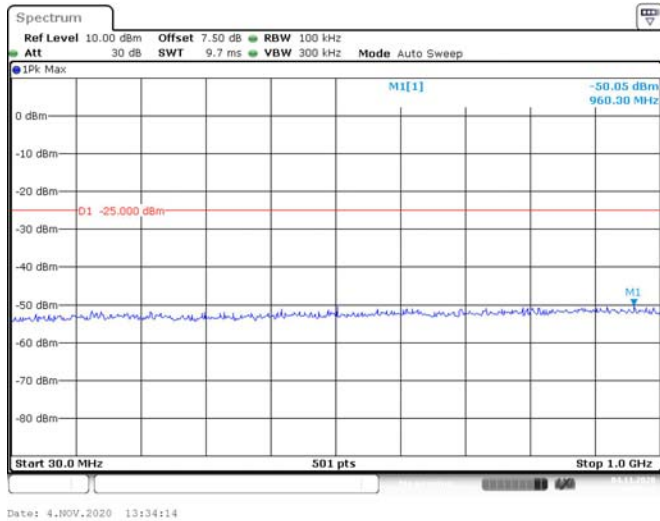
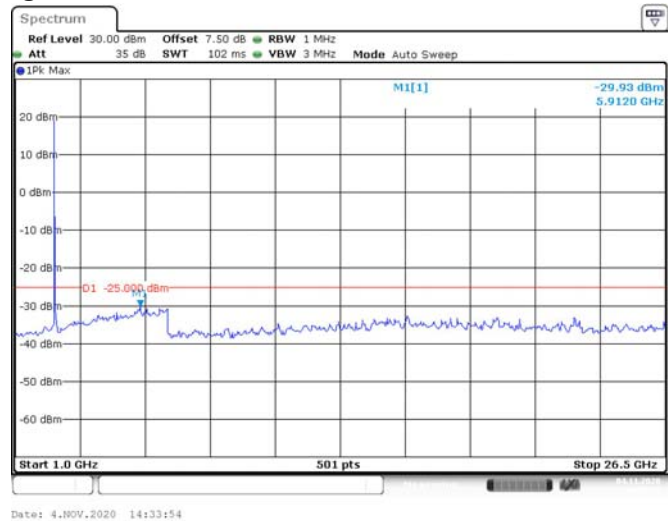
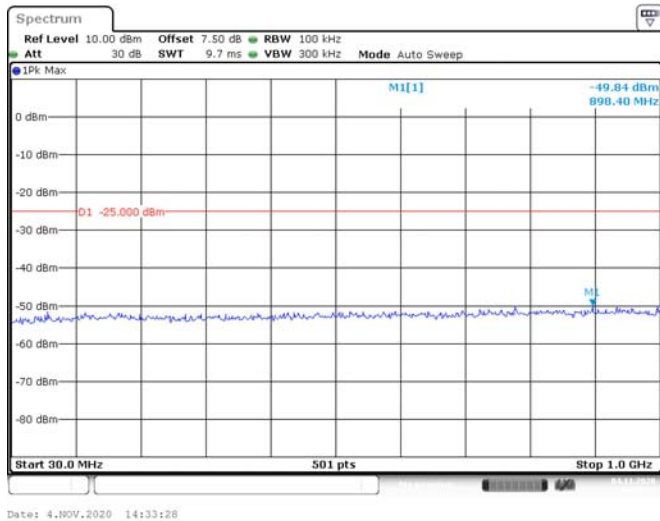
10M, QPSK, High Channel



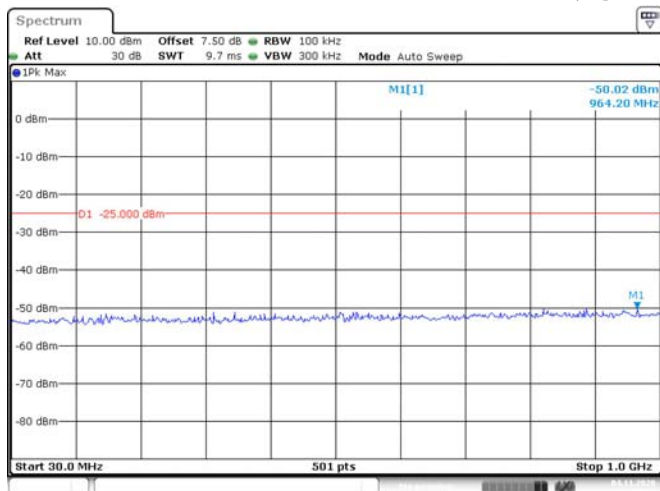
Date: 4.NOV.2020 14:32:21



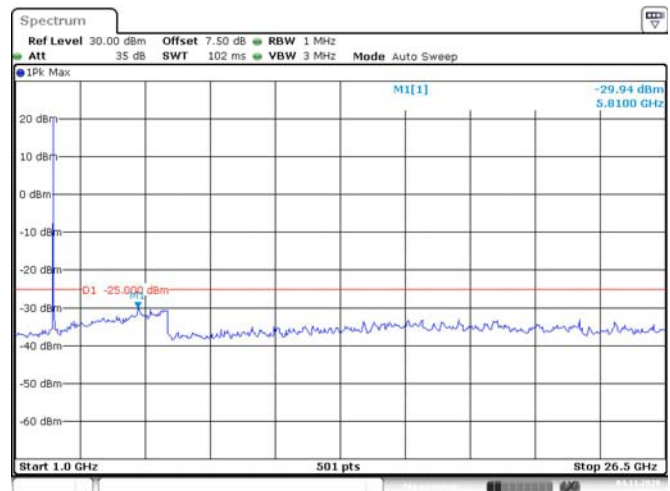
Date: 4.NOV.2020 14:32:41

LTE Band 7:**5M, QPSK, Low Channel****5M, QPSK, Middle Channel****5M, QPSK, High Channel**

10M, QPSK, Low Channel

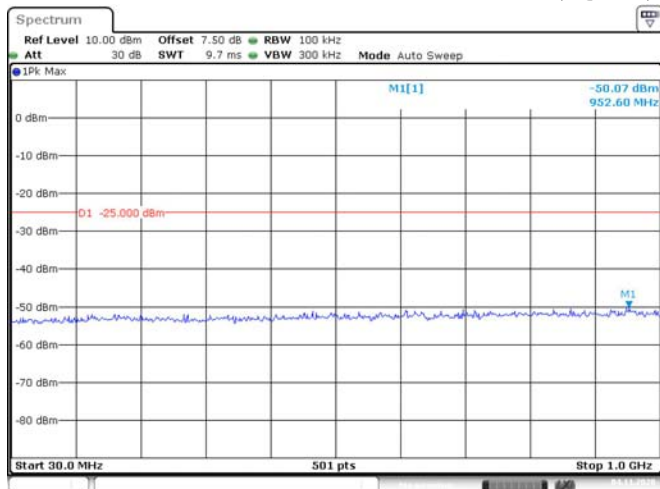


Date: 4.NOV.2020 14:07:34

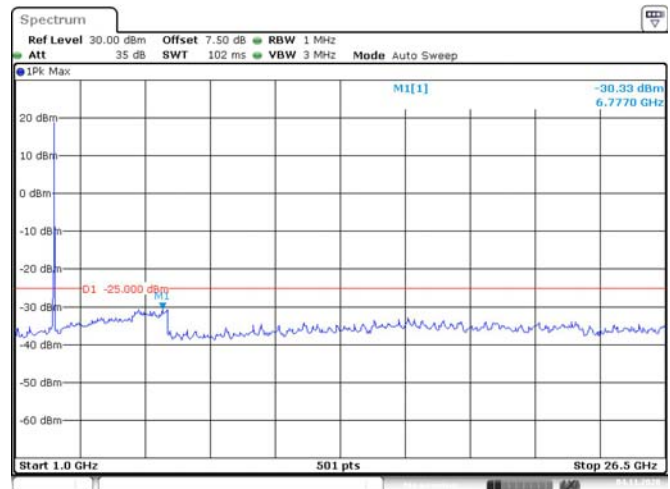


Date: 4.NOV.2020 14:08:03

10M, QPSK, Middle Channel

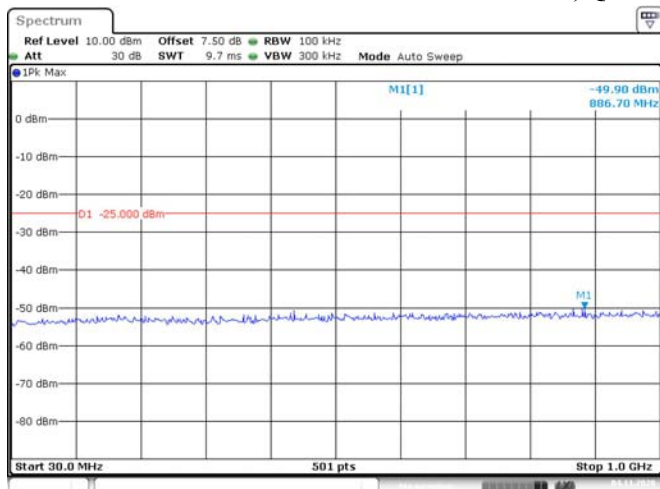


Date: 4.NOV.2020 13:35:20

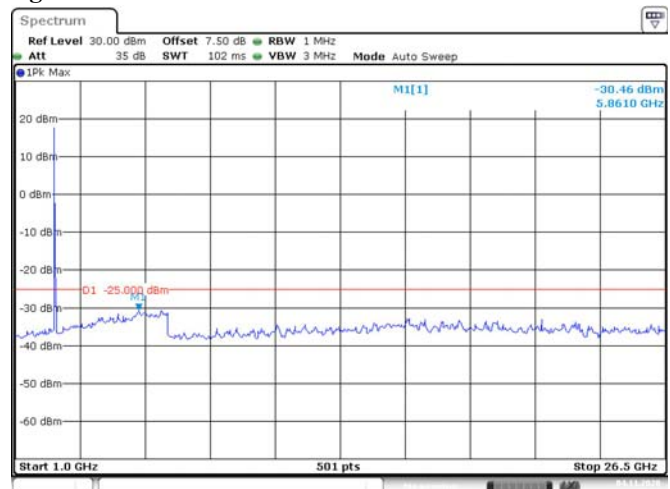


Date: 4.NOV.2020 13:35:39

10M, QPSK, High Channel

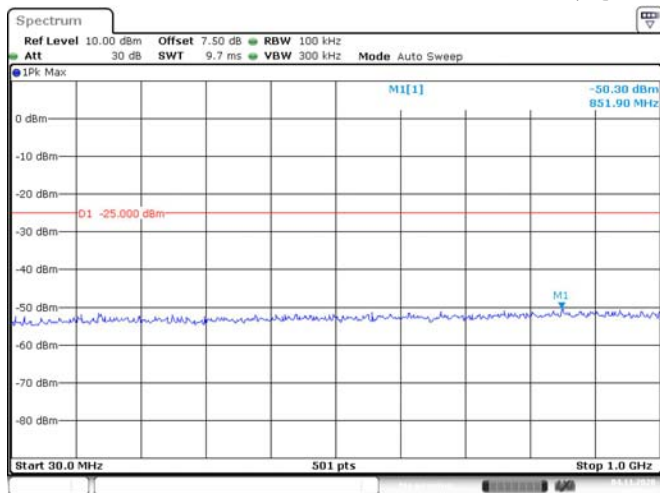


Date: 4.NOV.2020 14:34:29

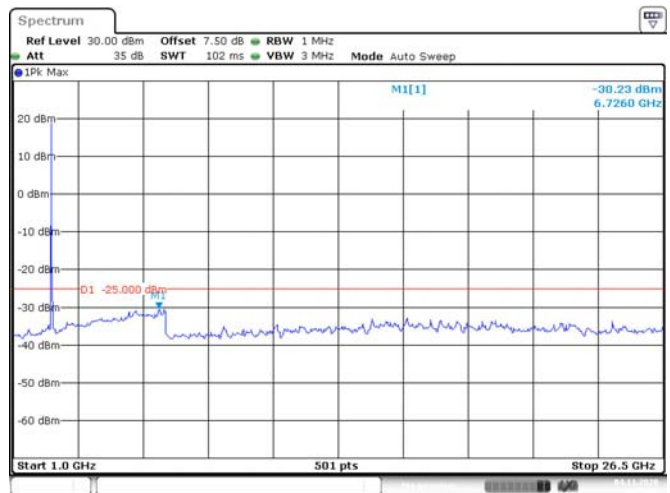


Date: 4.NOV.2020 14:34:52

15M, QPSK, Low Channel

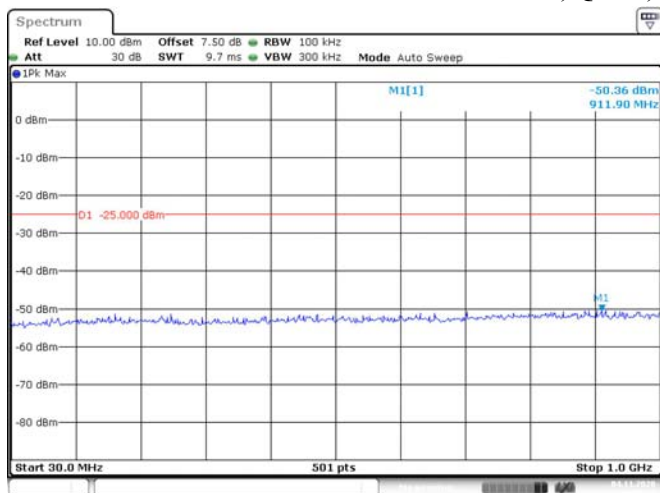


Date: 4.NOV.2020 14:08:35

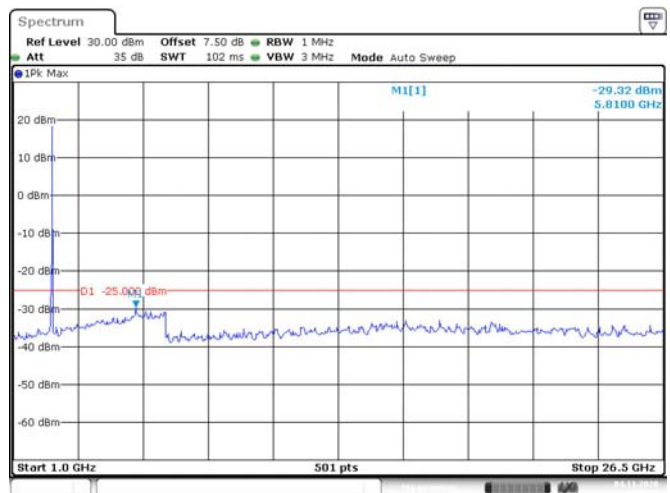


Date: 4.NOV.2020 14:09:01

15M, QPSK, Middle Channel

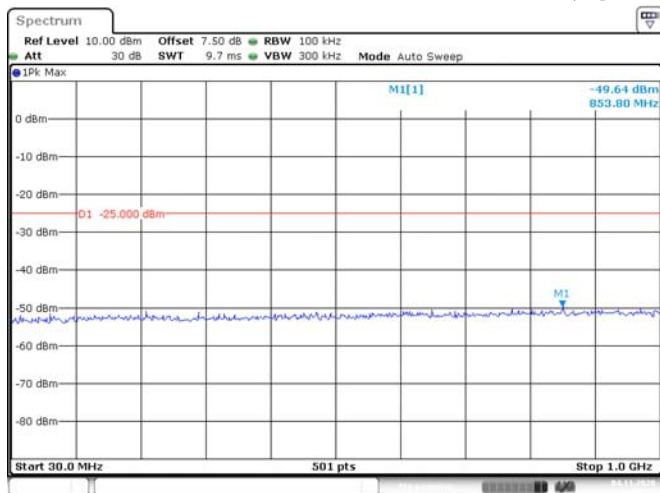


Date: 4.NOV.2020 13:36:14

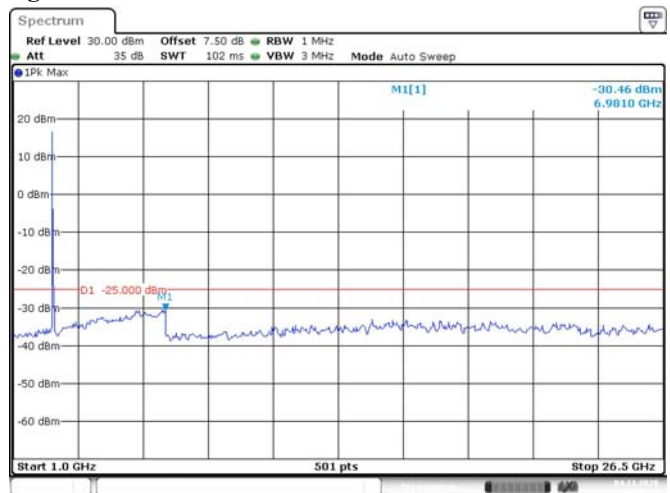


Date: 4.NOV.2020 13:36:33

15M, QPSK, High Channel

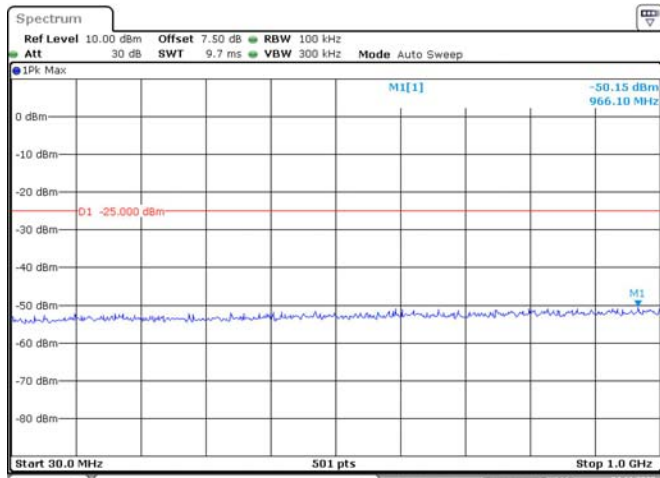


Date: 4.NOV.2020 14:36:28

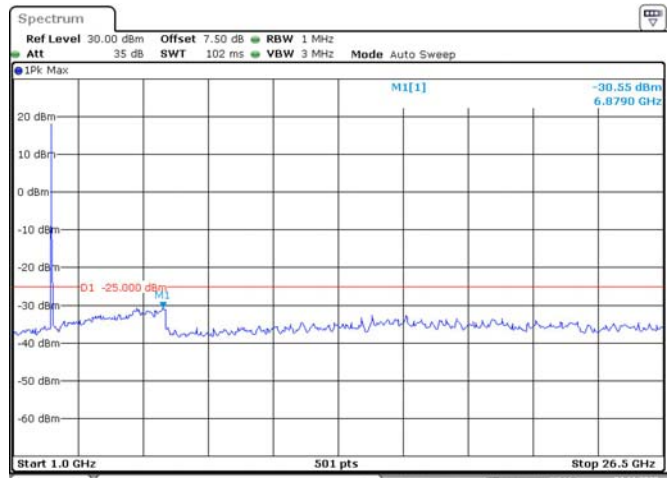


Date: 4.NOV.2020 14:36:54

20M, QPSK, Low Channel

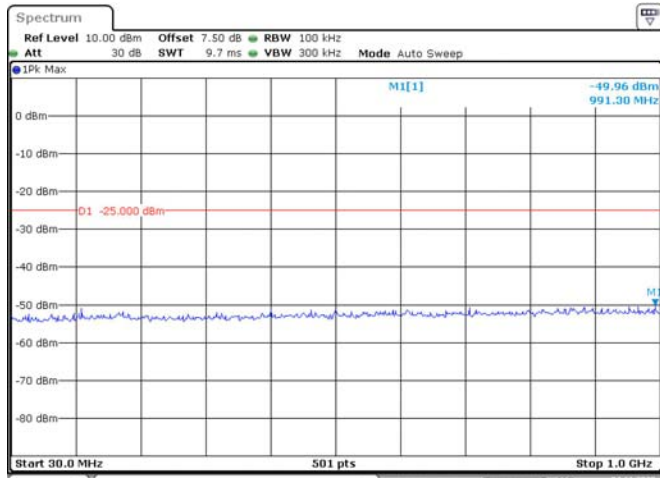


Date: 4.NOV.2020 14:09:32

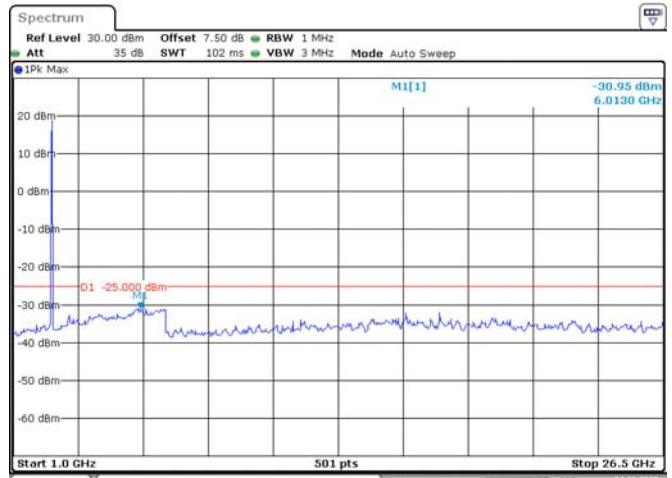


Date: 4.NOV.2020 14:11:27

20M, QPSK, Middle Channel

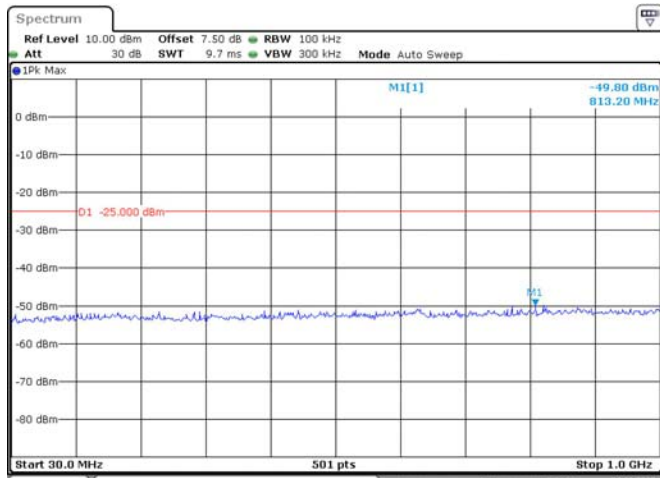


Date: 4.NOV.2020 13:37:11

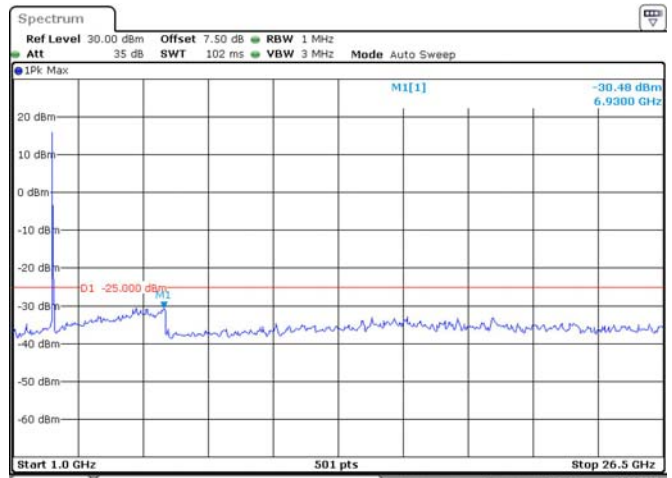


Date: 4.NOV.2020 13:37:33

20M, QPSK, High Channel



Date: 4.NOV.2020 14:37:39



Date: 4.NOV.2020 14:37:59

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
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
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
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
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
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
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

* **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:	26.3~27.2°C	27.1°C
Relative Humidity:	37%	36%
ATM Pressure:	100.8~100.9kPa	101.2kPa
Tester:	Jalon Liu, Joker Chen	Felix Wang, Bond Qin
Test Date:	2020-10-16~2020-10-19	2020-11-04

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	55.09	-49.09	10.44	0.71	-39.36	-13.00	26.36
1648.40	V	57.27	-47.51	10.44	0.71	-37.78	-13.00	24.78
2472.60	H	47.41	-55.37	12.88	1.25	-43.74	-13.00	30.74
2472.60	V	48.41	-54.42	12.88	1.25	-42.79	-13.00	29.79
3296.80	H	45.92	-53.86	13.60	1.59	-41.85	-13.00	28.85
3296.80	V	46.29	-53.50	13.60	1.59	-41.49	-13.00	28.49
597.80	H	49.52	-52.66	0.00	0.76	-53.42	-13.00	40.42
597.80	V	55.46	-49.97	0.00	0.76	-50.73	-13.00	37.73
GSM850 Frequency:836.6MHz								
1673.20	H	54.23	-49.71	10.61	0.73	-39.83	-13.00	26.83
1673.20	V	56.12	-48.42	10.61	0.73	-38.54	-13.00	25.54
2509.80	H	50.23	-52.68	13.11	1.25	-40.82	-13.00	27.82
2509.80	V	52.15	-50.79	13.11	1.25	-38.93	-13.00	25.93
3346.40	H	42.39	-57.29	13.83	1.61	-45.07	-13.00	32.07
3346.40	V	43.57	-56.15	13.83	1.61	-43.93	-13.00	30.93
489.70	H	58.52	-45.77	0.00	0.70	-46.47	-13.00	33.47
489.70	V	67.32	-40.03	0.00	0.70	-40.73	-13.00	27.73
GSM850 Frequency:848.8MHz								
1697.60	H	51.94	-51.76	10.78	0.75	-41.73	-13.00	28.73
1697.60	V	52.40	-51.90	10.78	0.75	-41.87	-13.00	28.87
2546.40	H	49.45	-53.50	13.15	1.27	-41.62	-13.00	28.62
2546.40	V	51.36	-51.73	13.15	1.27	-39.85	-13.00	26.85
3395.20	H	41.52	-58.00	14.08	1.64	-45.56	-13.00	32.56
3395.20	V	43.26	-56.36	14.08	1.64	-43.92	-13.00	30.92
492.50	H	56.14	-48.13	0.00	0.70	-48.83	-13.00	35.83
499.60	V	51.92	-55.34	0.00	0.71	-56.05	-13.00	43.05

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	41.55	-63.18	10.47	0.72	-53.43	-13.00	40.43
2479.20	H	38.02	-64.79	12.93	1.25	-53.11	-13.00	40.11
2479.20	V	37.42	-65.43	12.93	1.25	-53.75	-13.00	40.75
3305.60	H	38.33	-61.47	13.63	1.59	-49.43	-13.00	36.43
3305.60	V	37.26	-62.55	13.63	1.59	-50.51	-13.00	37.51
913.70	H	48.86	-47.71	0.00	1.01	-48.72	-13.00	35.72
300.20	V	40.94	-69.04	0.00	0.52	-69.56	-13.00	56.56
WCDMA Band 5 Frequency:836.6MHz								
1673.20	H	40.41	-63.53	10.61	0.73	-53.65	-13.00	40.65
1673.20	V	41.47	-63.07	10.61	0.73	-53.19	-13.00	40.19
2509.80	H	40.21	-62.70	13.11	1.25	-50.84	-13.00	37.84
2509.80	V	39.54	-63.40	13.11	1.25	-51.54	-13.00	38.54
3346.40	H	41.15	-58.53	13.83	1.61	-46.31	-13.00	33.31
3346.40	V	39.22	-60.50	13.83	1.61	-48.28	-13.00	35.28
176.70	H	47.71	-61.62	0.00	0.44	-62.06	-13.00	49.06
51.80	V	42.50	-59.97	-14.07	0.21	-74.25	-13.00	61.25
WCDMA Band 5 Frequency:846.6MHz								
1693.20	H	39.63	-64.12	10.75	0.75	-54.12	-13.00	41.12
1693.20	V	40.21	-64.14	10.75	0.75	-54.14	-13.00	41.14
2539.80	H	38.77	-64.17	13.14	1.27	-52.30	-13.00	39.30
2539.80	V	37.57	-65.49	13.14	1.27	-53.62	-13.00	40.62
3386.40	H	39.19	-60.36	14.03	1.63	-47.96	-13.00	34.96
3386.40	V	38.41	-61.23	14.03	1.63	-48.83	-13.00	35.83
905.20	H	46.73	-50.19	0.00	1.03	-51.22	-13.00	38.22
700.30	V	40.68	-63.22	0.00	0.94	-64.16	-13.00	51.16

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	45.75	-52.24	14.00	1.83	-40.07	-13.00	27.07
3700.40	V	45.87	-52.10	14.00	1.83	-39.93	-13.00	26.93
5550.60	H	41.35	-52.62	13.95	1.27	-39.94	-13.00	26.94
5550.60	V	42.65	-51.17	13.95	1.27	-38.49	-13.00	25.49
597.80	H	50.79	-51.39	0.00	0.76	-52.15	-13.00	39.15
597.80	V	57.94	-47.49	0.00	0.76	-48.25	-13.00	35.25
GSM 1900 Frequency:1880MHz								
3760.00	H	47.76	-49.88	13.76	1.63	-37.75	-13.00	24.75
3760.00	V	49.32	-48.18	13.76	1.63	-36.05	-13.00	23.05
5640.00	H	39.81	-53.78	14.02	1.31	-41.07	-13.00	28.07
5640.00	V	43.19	-50.29	14.02	1.31	-37.58	-13.00	24.58
464.50	H	43.88	-60.56	0.00	0.67	-61.23	-13.00	48.23
464.50	V	46.69	-60.89	0.00	0.67	-61.56	-13.00	48.56
GSM 1900 Frequency:1909.8MHz								
3819.60	H	46.21	-51.04	13.56	1.50	-38.98	-13.00	25.98
3819.60	V	47.38	-49.69	13.56	1.50	-37.63	-13.00	24.63
5729.40	H	38.46	-55.25	13.96	1.31	-42.60	-13.00	29.60
5729.40	V	39.16	-54.52	13.96	1.31	-41.87	-13.00	28.87
826.60	H	45.17	-53.08	0.00	0.96	-54.04	-13.00	41.04
602.00	V	47.28	-58.08	0.00	0.76	-58.84	-13.00	45.84

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	40.75	-57.21	13.98	1.81	-45.04	-13.00	32.04
3704.80	V	40.79	-57.14	13.98	1.81	-44.97	-13.00	31.97
5557.20	H	42.63	-51.26	13.97	1.27	-38.56	-13.00	25.56
5557.20	V	43.10	-50.64	13.97	1.27	-37.94	-13.00	24.94
126.20	H	45.45	-58.75	0.00	0.32	-59.07	-13.00	46.07
300.30	V	41.18	-68.79	0.00	0.52	-69.31	-13.00	56.31
WCDMA Band II, Frequency:1880 MHz								
3760.00	H	40.81	-56.83	13.76	1.63	-44.70	-13.00	31.70
3760.00	V	40.41	-57.09	13.76	1.63	-44.96	-13.00	31.96
5640.00	H	39.66	-53.93	14.02	1.31	-41.22	-13.00	28.22
5640.00	V	39.59	-53.89	14.02	1.31	-41.18	-13.00	28.18
176.70	H	48.25	-61.08	0.00	0.44	-61.52	-13.00	48.52
700.30	V	40.73	-63.17	0.00	0.94	-64.11	-13.00	51.11
WCDMA Band II, Frequency:1907.6MHz								
3815.20	H	41.96	-55.32	13.57	1.50	-43.25	-13.00	30.25
3815.20	V	41.24	-55.86	13.57	1.50	-43.79	-13.00	30.79
5722.80	H	39.95	-53.81	13.95	1.32	-41.18	-13.00	28.18
5722.80	V	40.03	-53.69	13.95	1.32	-41.06	-13.00	28.06
906.60	H	44.81	-52.06	0.00	1.03	-53.09	-13.00	40.09
910.90	V	41.11	-57.51	0.00	1.02	-58.53	-13.00	45.53

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	42.36	-55.62	13.99	1.83	-43.46	-13.00	30.46
3701.40	V	41.16	-56.80	13.99	1.83	-44.64	-13.00	31.64
5552.10	H	43.60	-50.35	13.96	1.27	-37.66	-13.00	24.66
5552.10	V	41.26	-52.54	13.96	1.27	-39.85	-13.00	26.85
960.00	H	36.79	-57.85	0.00	0.86	-58.71	-13.00	45.71
960.00	V	35.76	-60.47	0.00	0.86	-61.33	-13.00	48.33
QPSK, Frequency: 1880 MHz								
3760.00	H	45.97	-51.67	13.76	1.63	-39.54	-13.00	26.54
3760.00	V	45.48	-52.02	13.76	1.63	-39.89	-13.00	26.89
5640.00	H	44.02	-49.57	14.02	1.31	-36.86	-13.00	23.86
5640.00	V	43.21	-50.27	14.02	1.31	-37.56	-13.00	24.56
960.00	H	36.77	-57.87	0.00	0.86	-58.73	-13.00	45.73
960.00	V	35.67	-60.56	0.00	0.86	-61.42	-13.00	48.42
QPSK, Frequency: 1909.3 MHz								
3818.60	H	45.13	-52.13	13.56	1.50	-40.07	-13.00	27.07
3818.60	V	44.30	-52.77	13.56	1.50	-40.71	-13.00	27.71
5727.90	H	43.57	-50.15	13.96	1.31	-37.50	-13.00	24.50
5727.90	V	42.36	-51.33	13.96	1.31	-38.68	-13.00	25.68
960.00	H	36.86	-57.78	0.00	0.86	-58.64	-13.00	45.64
960.00	V	35.72	-60.51	0.00	0.86	-61.37	-13.00	48.37

LTE Band 4 (30MHz-20GHz):

EFL Band 4 (36MHz-26GHz):								
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	43.59	-55.81	14.04	1.63	-43.40	-13.00	30.40
3421.40	V	45.03	-54.45	14.04	1.63	-42.04	-13.00	29.04
5132.10	H	45.06	-49.62	13.93	1.37	-37.06	-13.00	24.06
5132.10	V	43.91	-50.68	13.93	1.37	-38.12	-13.00	25.12
960.00	H	36.49	-58.15	0.00	0.86	-59.01	-13.00	46.01
960.00	V	36.12	-60.11	0.00	0.86	-60.97	-13.00	47.97
QPSK, Frequency: 1732.5 MHz								
3465.00	H	42.85	-56.34	13.91	1.62	-44.05	-13.00	31.05
3465.00	V	43.62	-55.60	13.91	1.62	-43.31	-13.00	30.31
5197.50	H	41.20	-53.49	14.00	1.52	-41.01	-13.00	28.01
5197.50	V	40.37	-54.39	14.00	1.52	-41.91	-13.00	28.91
961.40	H	35.30	-59.29	0.00	0.86	-60.15	-13.00	47.15
960.00	V	36.24	-59.99	0.00	0.86	-60.85	-13.00	47.85
QPSK, Frequency: 1754.3 MHz								
3508.60	H	43.03	-55.98	13.83	1.60	-43.75	-13.00	30.75
3508.60	V	42.66	-56.35	13.83	1.60	-44.12	-13.00	31.12
5262.90	H	47.92	-47.17	14.19	1.29	-34.27	-13.00	21.27
5262.90	V	45.57	-49.60	14.19	1.29	-36.70	-13.00	23.70
960.00	H	36.81	-57.83	0.00	0.86	-58.69	-13.00	45.69
960.00	V	35.88	-60.35	0.00	0.86	-61.21	-13.00	48.21

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	41.03	-63.14	10.45	0.71	-53.40	-13.00	40.40
1649.40	V	39.96	-64.81	10.45	0.71	-55.07	-13.00	42.07
2474.10	H	41.86	-60.93	12.89	1.25	-49.29	-13.00	36.29
2474.10	V	40.11	-62.73	12.89	1.25	-51.09	-13.00	38.09
3298.80	H	38.62	-61.19	13.60	1.59	-49.18	-13.00	36.18
3298.80	V	38.41	-61.40	13.60	1.59	-49.39	-13.00	36.39
399.90	H	36.87	-67.94	0.00	0.61	-68.55	-13.00	55.55
399.90	V	37.16	-71.01	0.00	0.61	-71.62	-13.00	58.62
QPSK, Frequency: 836.5 MHz								
1673.00	H	42.98	-60.96	10.61	0.73	-51.08	-13.00	38.08
1673.00	V	41.87	-62.67	10.61	0.73	-52.79	-13.00	39.79
2509.50	H	41.23	-61.68	13.11	1.25	-49.82	-13.00	36.82
2509.50	V	39.87	-63.07	13.11	1.25	-51.21	-13.00	38.21
3346.00	H	37.60	-62.08	13.83	1.61	-49.86	-13.00	36.86
3346.00	V	37.98	-61.74	13.83	1.61	-49.52	-13.00	36.52
399.90	H	36.92	-67.89	0.00	0.61	-68.50	-13.00	55.50
399.90	V	37.11	-71.06	0.00	0.61	-71.67	-13.00	58.67
QPSK, Frequency: 848.3 MHz								
1696.60	H	41.55	-62.16	10.78	0.75	-52.13	-13.00	39.13
1696.60	V	41.27	-63.04	10.78	0.75	-53.01	-13.00	40.01
2544.90	H	43.77	-59.18	13.14	1.27	-47.31	-13.00	34.31
2544.90	V	40.20	-62.88	13.14	1.27	-51.01	-13.00	38.01
3393.20	H	39.06	-60.47	14.07	1.64	-48.04	-13.00	35.04
3393.20	V	38.62	-61.00	14.07	1.64	-48.57	-13.00	35.57
399.90	H	36.94	-67.87	0.00	0.61	-68.48	-13.00	55.48
399.90	V	37.20	-70.97	0.00	0.61	-71.58	-13.00	58.58

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	39.18	-56.89	14.00	1.43	-44.32	-25.00	19.32
5005.00	V	37.08	-58.75	14.00	1.43	-46.18	-25.00	21.18
7507.50	H	35.89	-52.75	13.20	1.33	-40.88	-25.00	15.88
7507.50	V	35.62	-53.50	13.20	1.33	-41.63	-25.00	16.63
960.00	H	36.33	-58.31	0.00	0.86	-59.17	-25.00	34.17
960.00	V	36.83	-59.40	0.00	0.86	-60.26	-25.00	35.26
QPSK, Frequency:2535 MHz								
5070.00	H	38.84	-56.27	13.93	1.34	-43.68	-25.00	18.68
5070.00	V	37.94	-56.98	13.93	1.34	-44.39	-25.00	19.39
7605.00	H	36.42	-52.46	13.21	1.40	-40.65	-25.00	15.65
7605.00	V	35.85	-53.43	13.21	1.40	-41.62	-25.00	16.62
960.00	H	36.26	-58.38	0.00	0.86	-59.24	-25.00	34.24
399.90	V	37.27	-70.90	0.00	0.61	-71.51	-25.00	46.51
QPSK, Frequency: 2567.5 MHz								
5135.00	H	39.58	-55.10	13.94	1.38	-42.54	-25.00	17.54
5135.00	V	39.19	-55.40	13.94	1.38	-42.84	-25.00	17.84
7702.50	H	36.03	-53.09	13.40	1.47	-41.16	-25.00	16.16
7702.50	V	35.59	-53.85	13.40	1.47	-41.92	-25.00	16.92
960.00	H	36.49	-58.15	0.00	0.86	-59.01	-25.00	34.01
960.00	V	37.12	-59.11	0.00	0.86	-59.97	-25.00	34.97

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

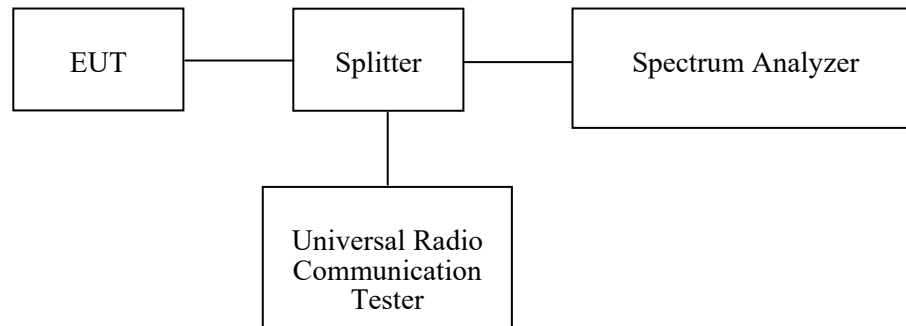
Applicable Standard

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	2020-01-09	2021-01-09
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	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
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

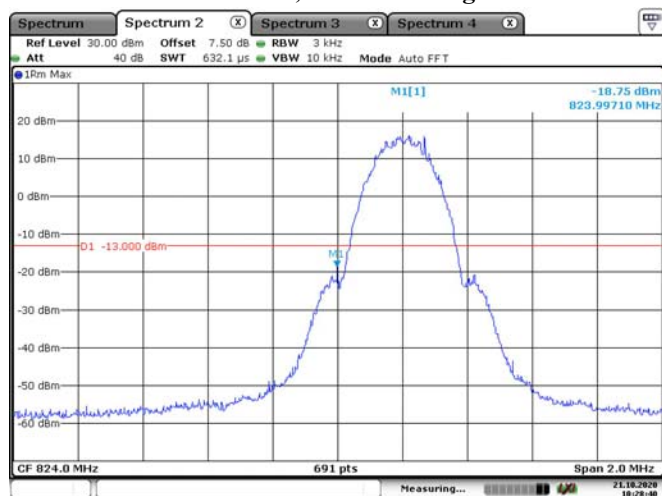
Environmental Conditions

Temperature:	25.6~28.1 °C
Relative Humidity:	30~47%
ATM Pressure:	100.6~101.9kPa
Tester:	Rita Huang
Test Date:	2020-10-21~2020-11-05

Test Mode: Transmitting

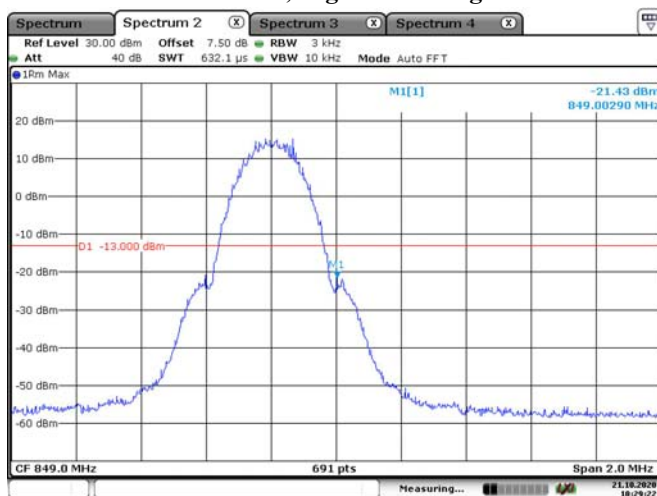
Test Result: Compliance. Please refer to the following plots.

GSM 850, Left Band Edge



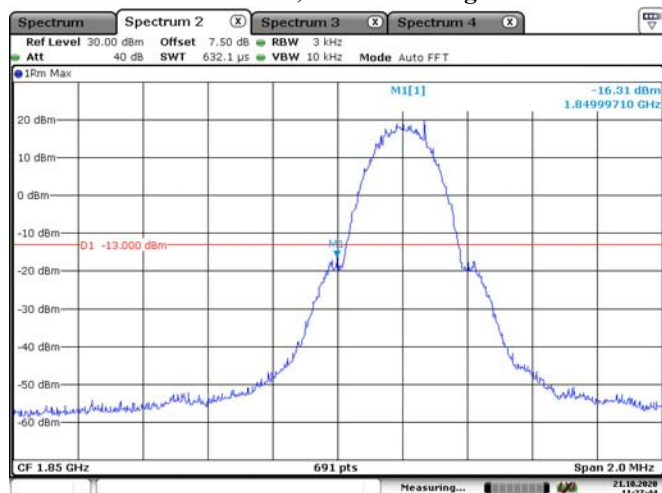
Date: 21.OCT.2020 10:28:41

GSM 850, Right Band Edge



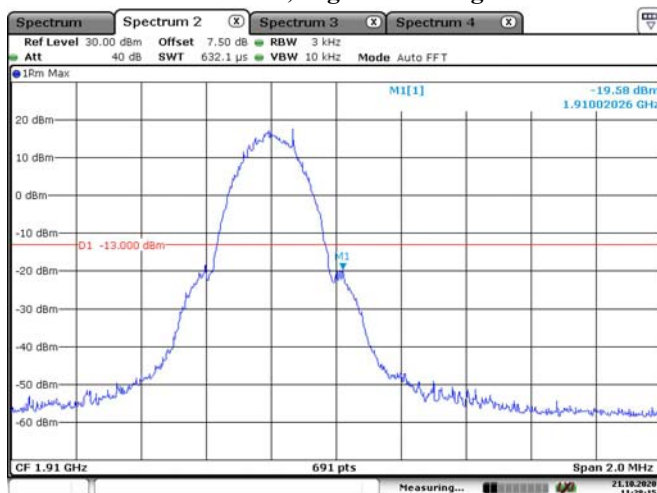
Date: 21.OCT.2020 10:29:23

PCS 1900, Left Band Edge



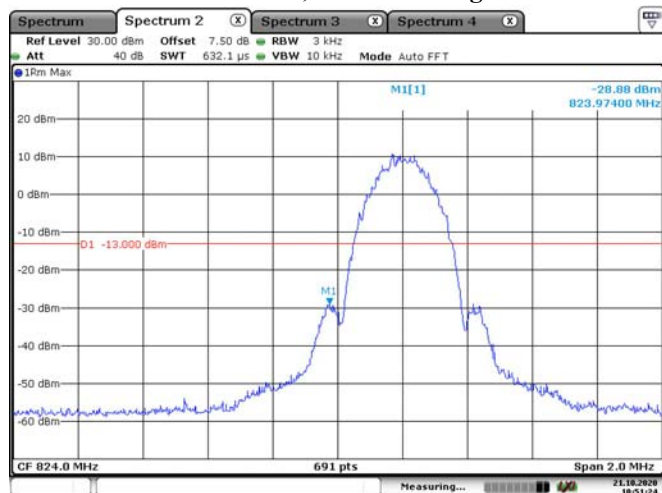
Date: 21.OCT.2020 11:27:44

PCS 1900, Right Band Edge



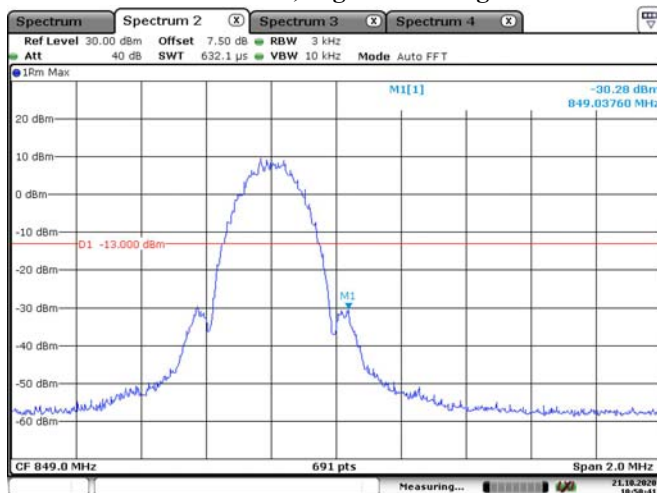
Date: 21.OCT.2020 11:28:15

EDGE 850, Left Band Edge



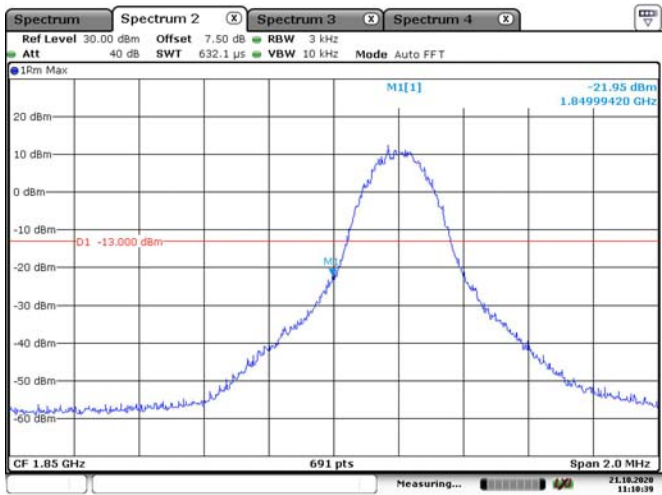
Date: 21.OCT.2020 10:51:25

EDGE 850, Right Band Edge



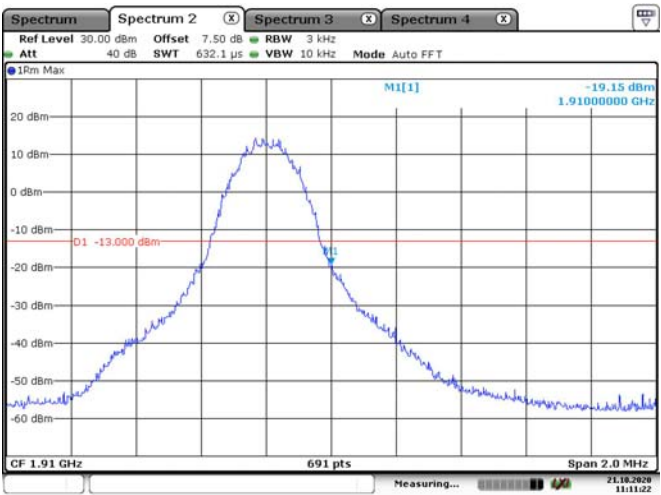
Date: 21.OCT.2020 10:50:42

EDGE 1900, Left Band Edge



Date: 21.OCT.2020 11:10:40

EDGE 1900, Right Band Edge



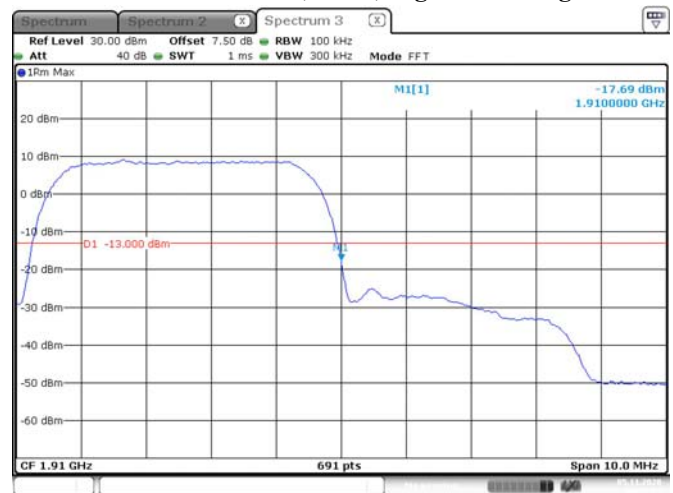
Date: 21.OCT.2020 11:11:23

WCDMA Band II, Rel99, Left Band Edge



Date: 5.NOV.2020 09:31:42

WCDMA Band II, Rel99, Right Band Edge



Date: 5.NOV.2020 09:51:05

WCDMA Band II, HSDPA, Left Band Edge



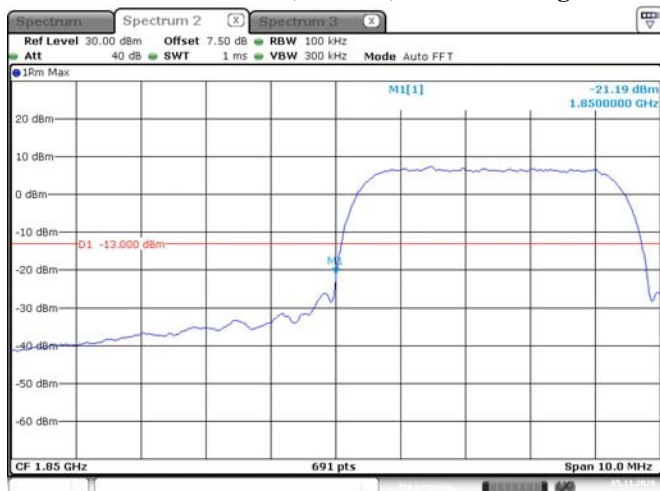
Date: 5.NOV.2020 09:40:46

WCDMA Band II, HSDPA, Right Band Edge



Date: 5.NOV.2020 09:51:36

WCDMA Band II, HSUPA, Left Band Edge



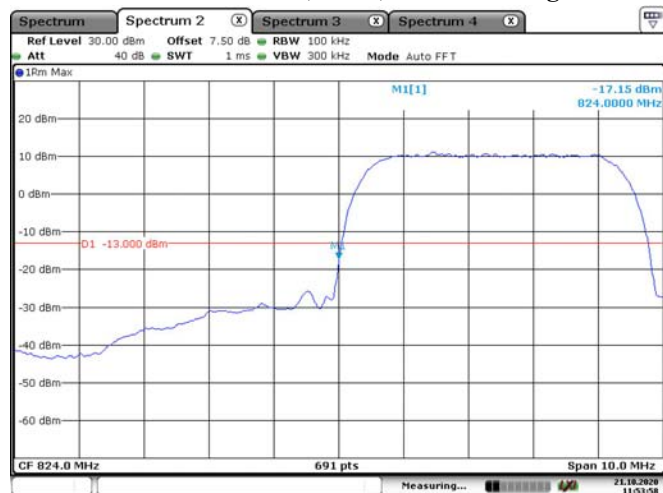
Date: 5.NOV.2020 09:47:49

WCDMA Band II, HSUPA, Right Band Edge



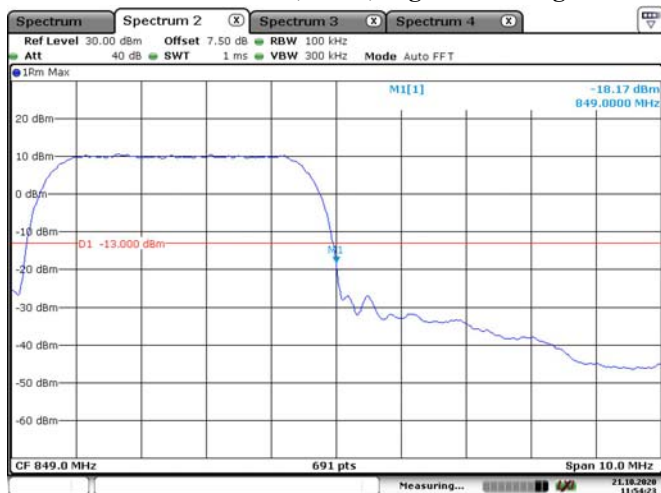
Date: 5.NOV.2020 09:46:48

WCDMA Band V, Rel99, Left Band Edge



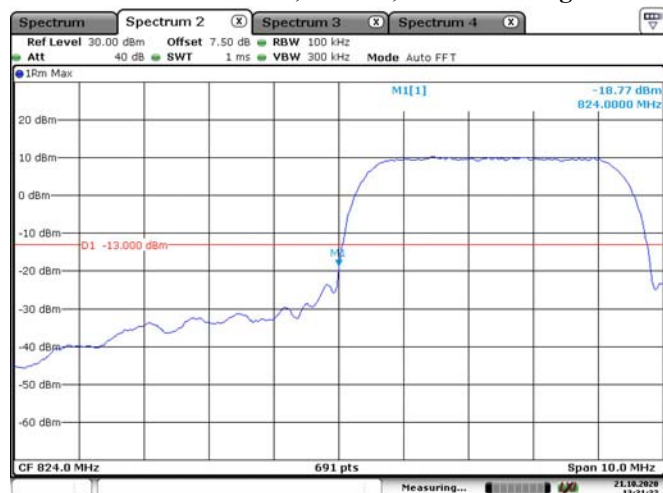
Date: 21.OCT.2020 11:53:58

WCDMA Band V, Rel99, Right Band Edge



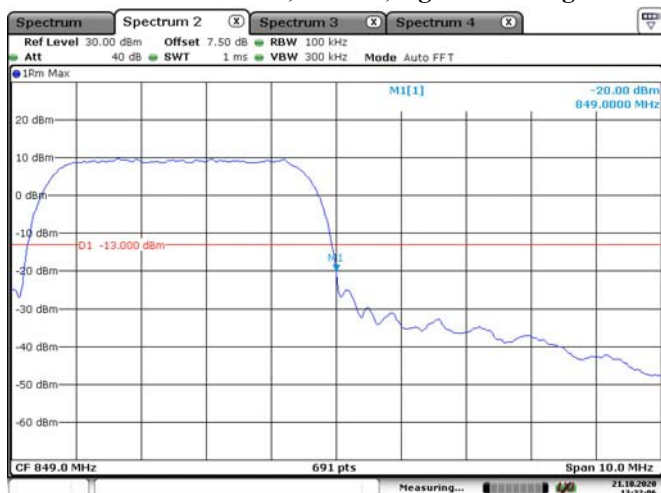
Date: 21.OCT.2020 11:54:23

WCDMA Band V, HSDPA, Left Band Edge



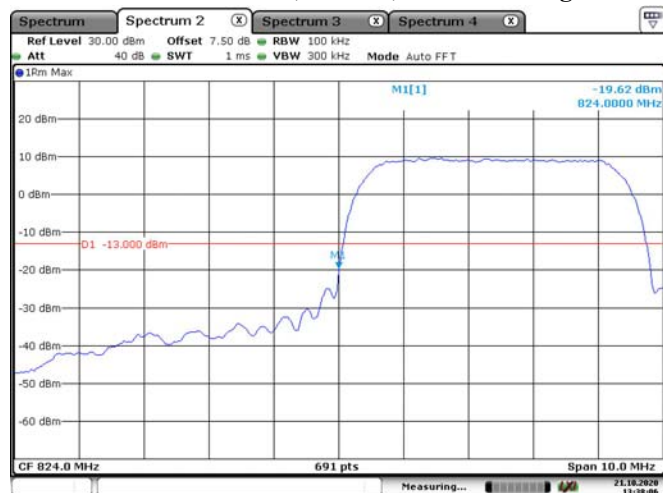
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WCDMA Band V, HSDPA, Right Band Edge



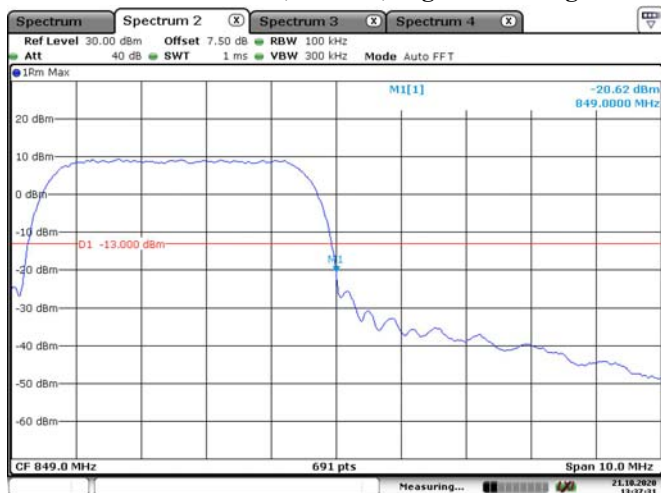
Date: 21.OCT.2020 13:32:06

WCDMA Band V, HSUPA, Left Band Edge



Date: 21.OCT.2020 13:38:06

WCDMA Band V, HSUPA, Right Band Edge



Date: 21.OCT.2020 13:37:31