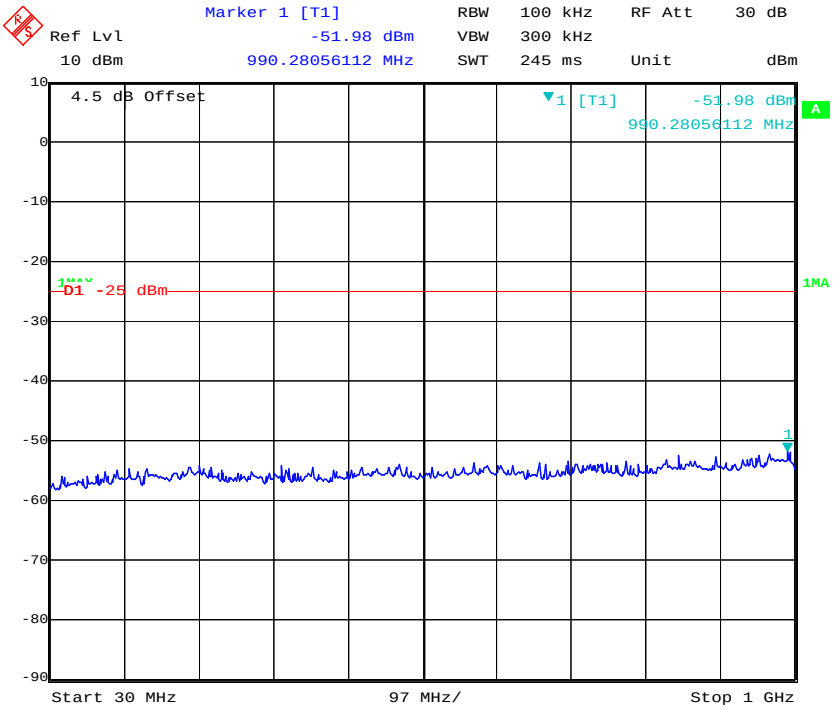
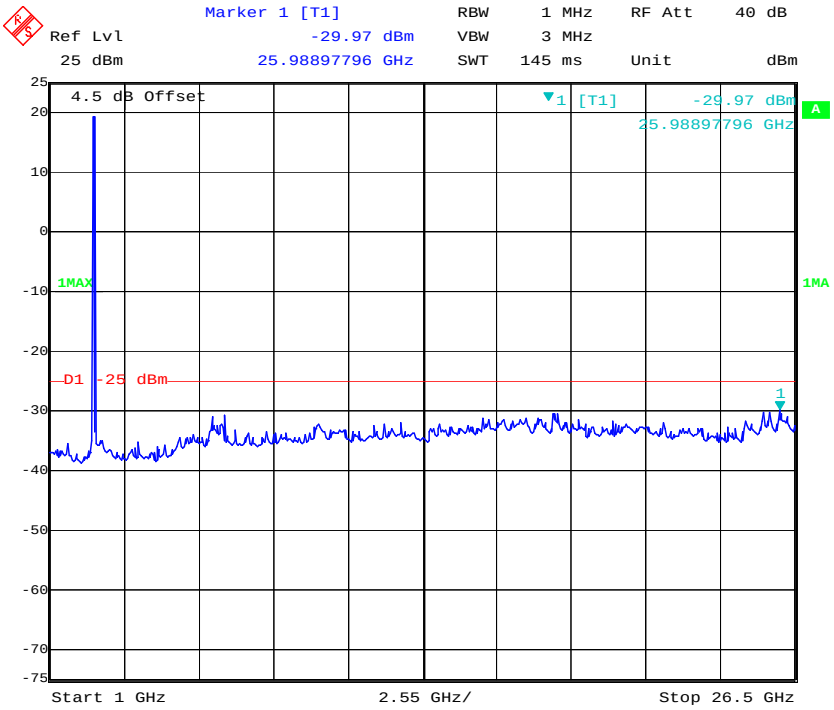
LTE Band 7, QPSK 5 MHz Middle Channel

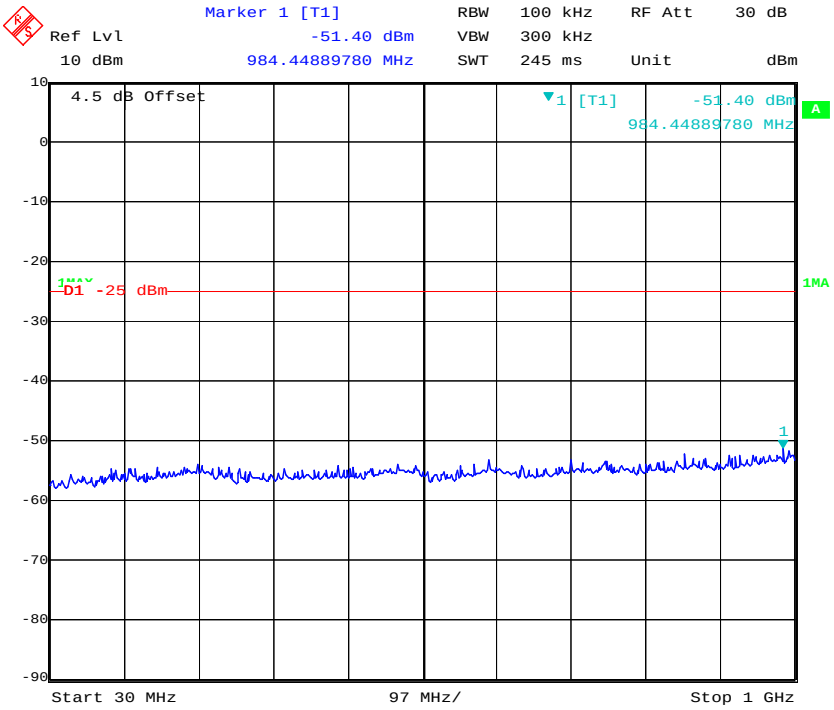


Date: 18.OCT.2019 23:46:18

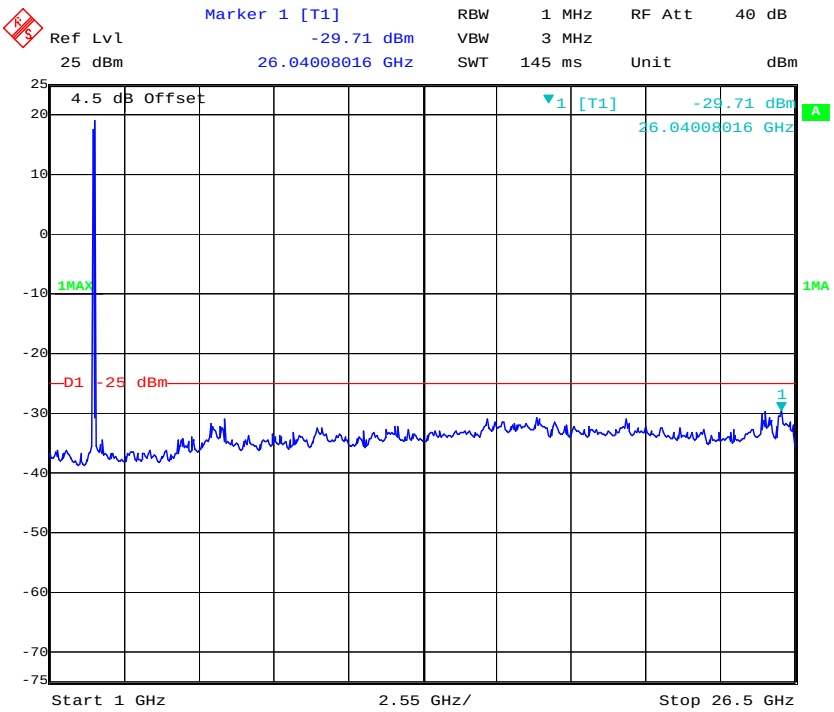


Date: 18.OCT.2019 23:46:30

LTE Band 7, QPSK 10 MHz Middle Channel

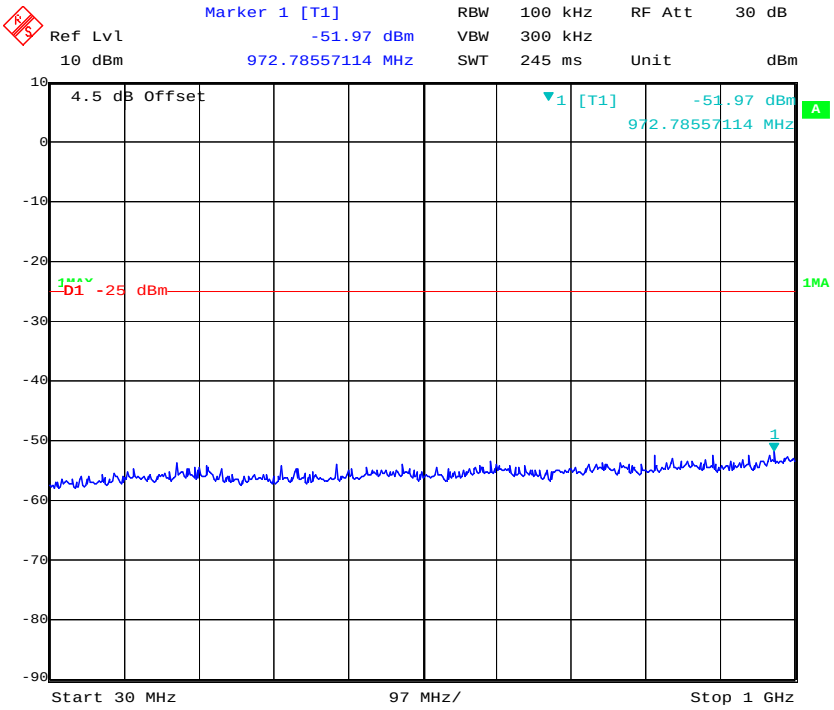


Date: 18.OCT.2019 23:46:54



Date: 18.OCT.2019 23:47:06

LTE Band 7, QPSK 15 MHz Middle Channel



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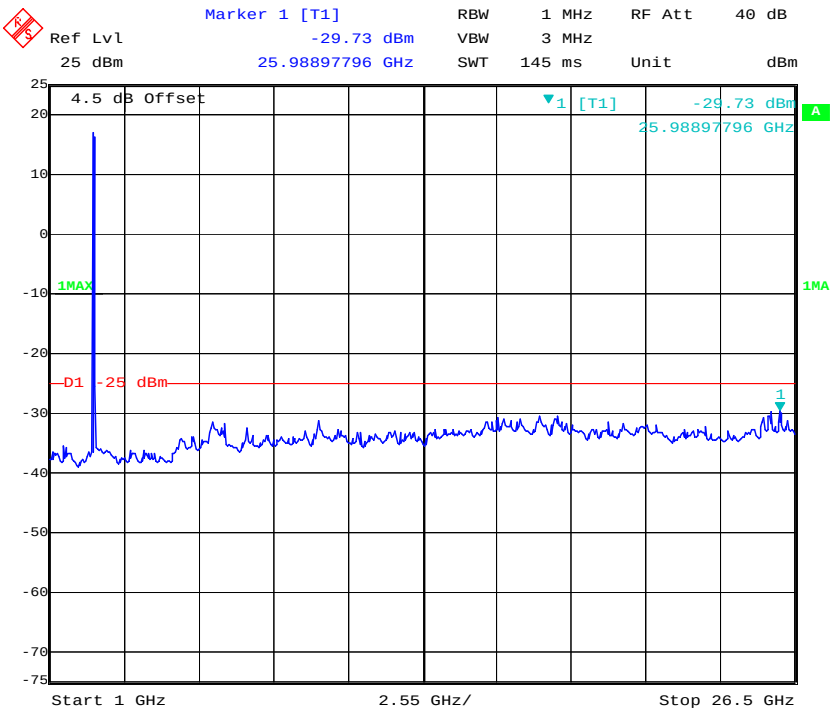
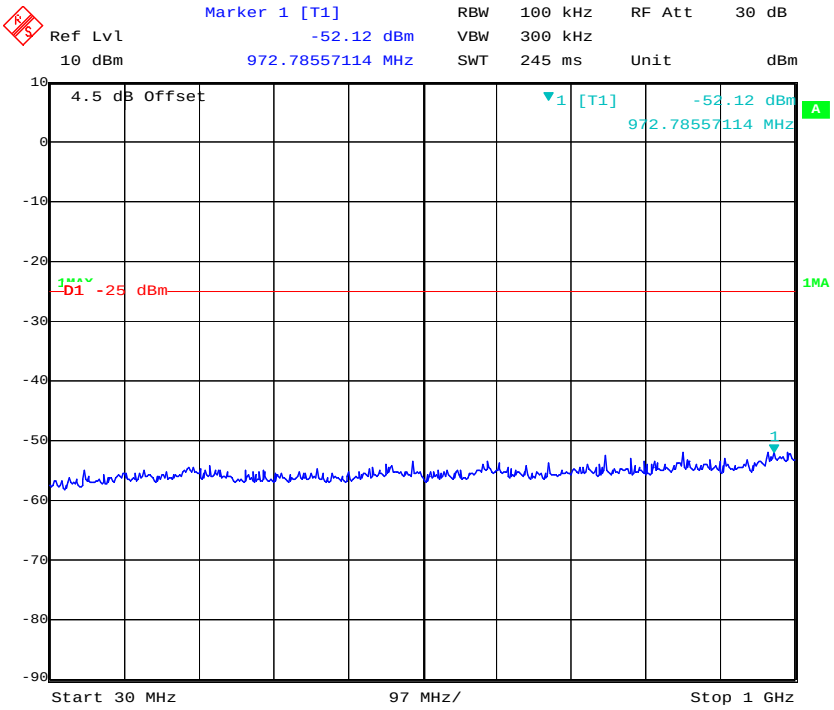
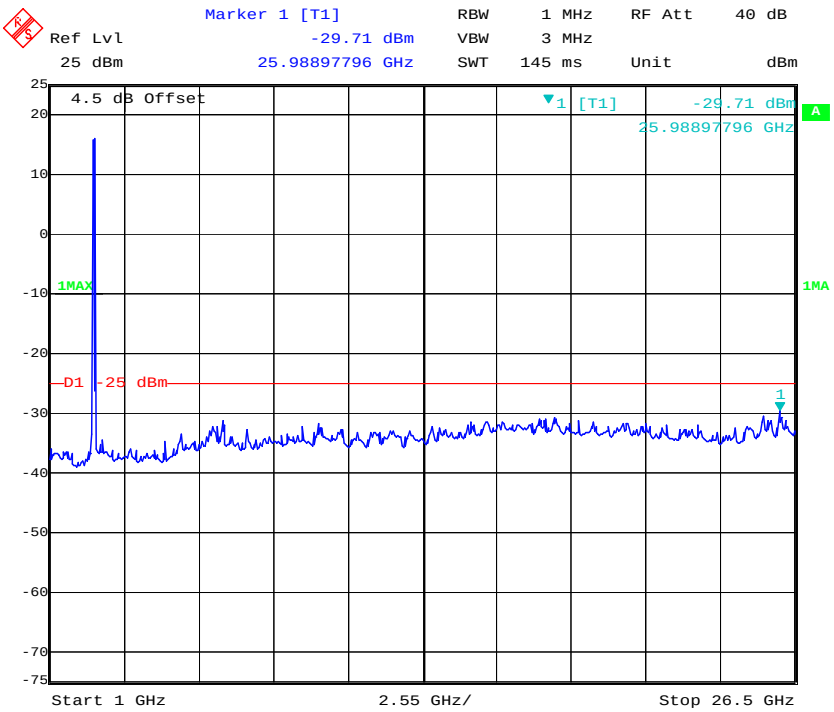


Date: 18.OCT.2019 23:47:40

LTE Band 7, QPSK 20 MHz Middle Channel

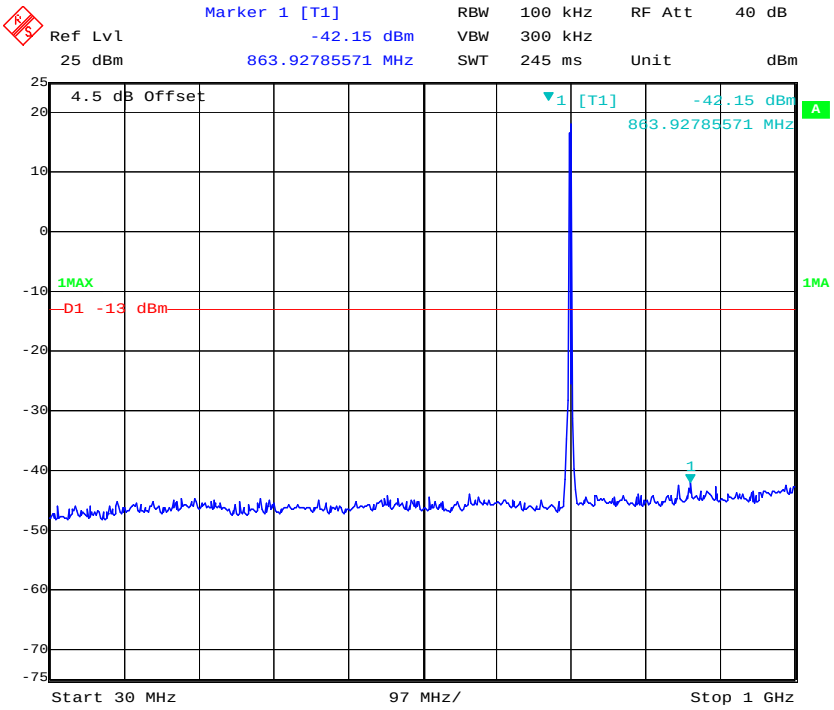


Date: 18.OCT.2019 23:48:03

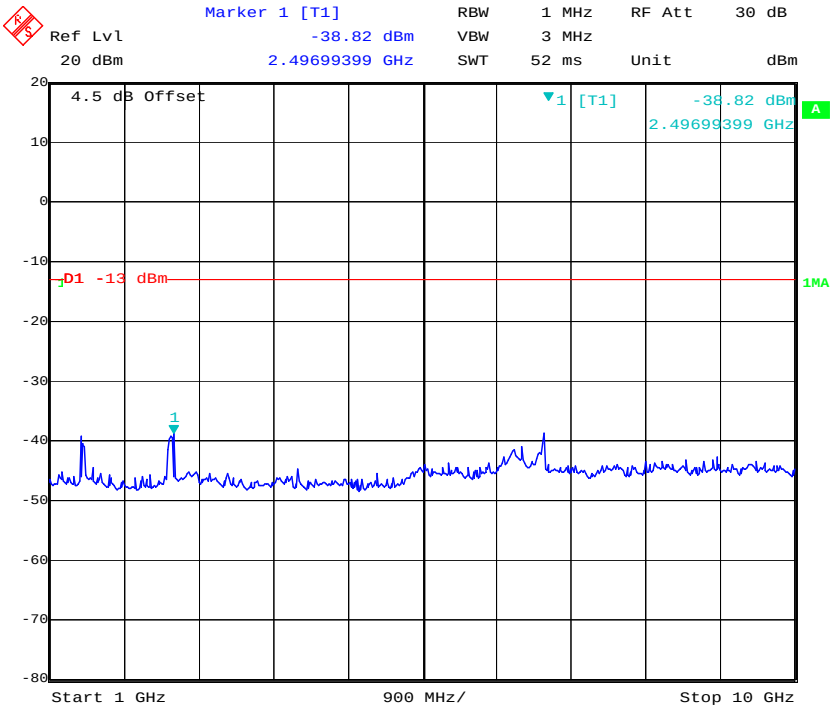


Date: 18.OCT.2019 23:48:15

LTE Band 12, QPSK 1.4 MHz Middle Channel

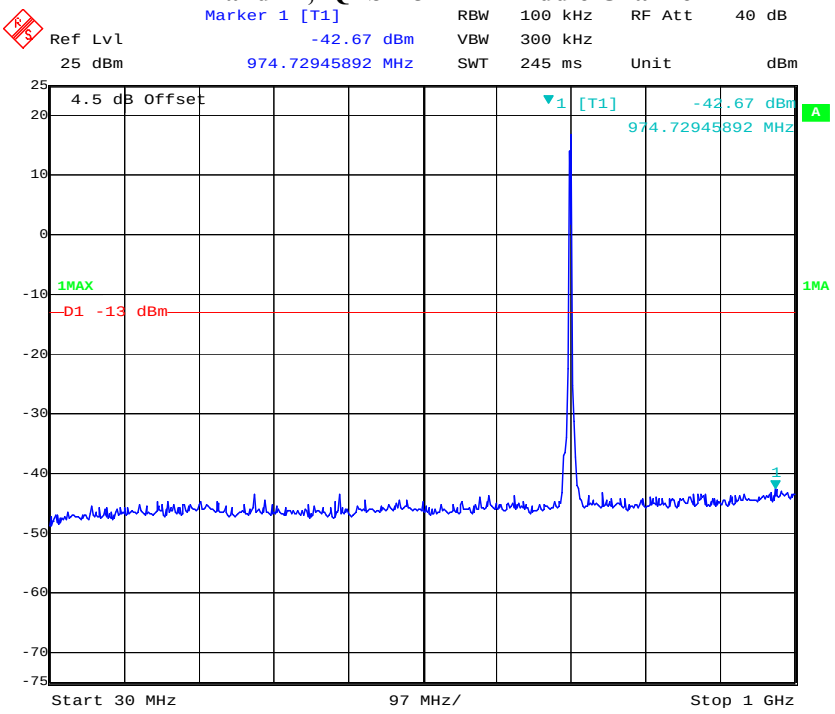


Date: 18.OCT.2019 23:48:57

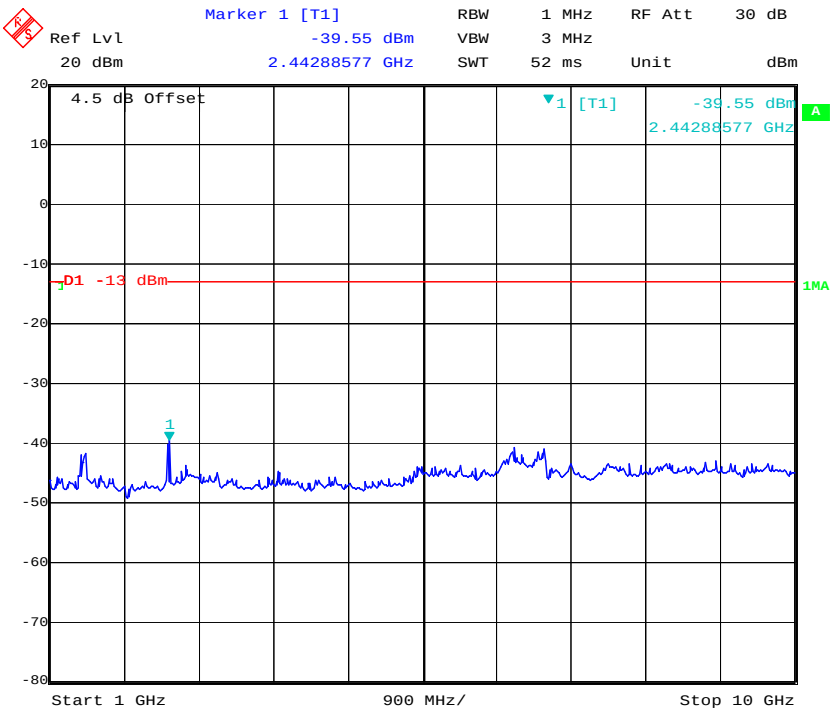


Date: 18.OCT.2019 23:49:08

LTE Band 12, QPSK 3 MHz Middle Channel

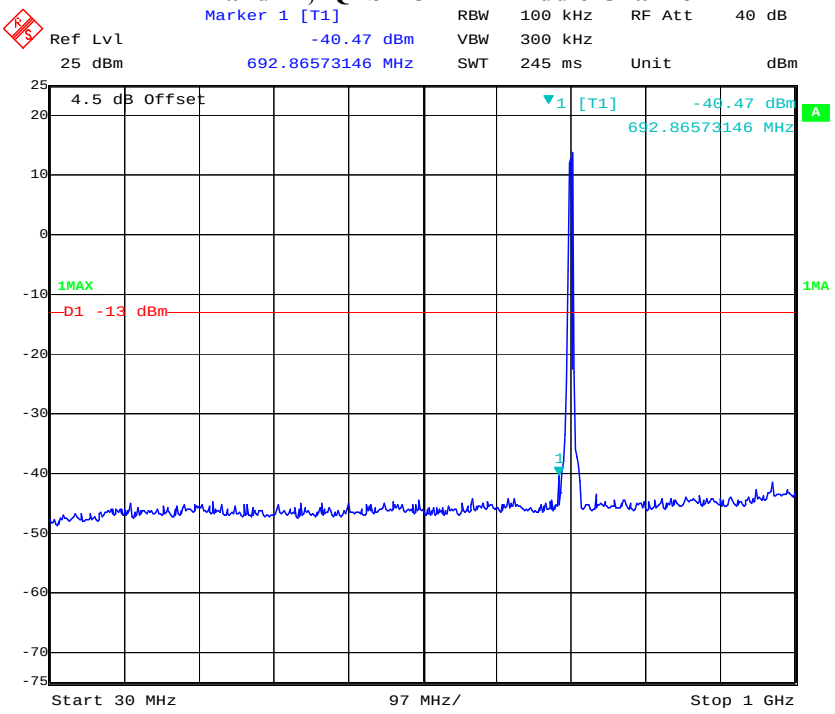


Date: 18.OCT.2019 23:49:30

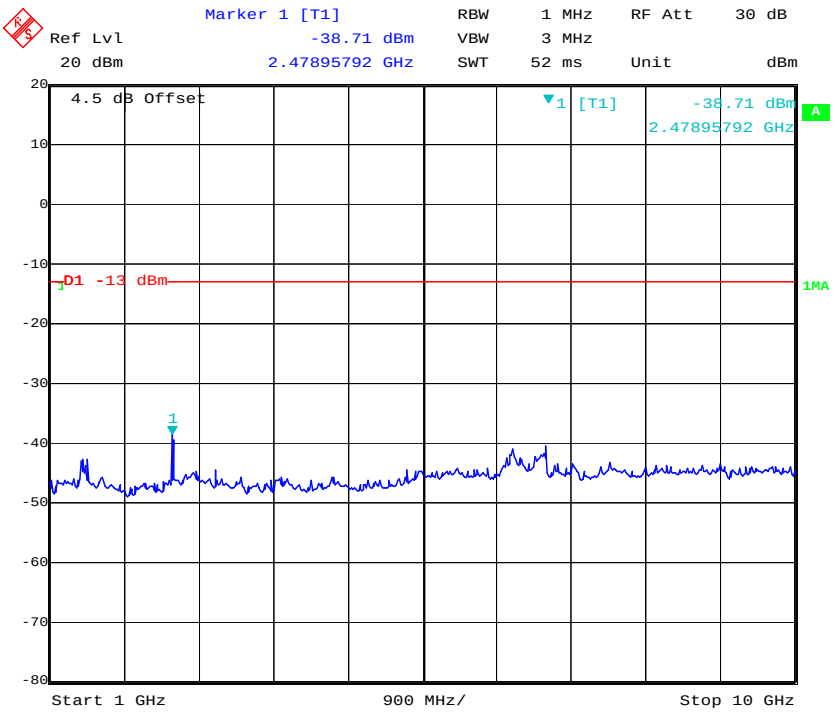


Date: 18.OCT.2019 23:49:44

LTE Band 12, QPSK 5 MHz Middle Channel

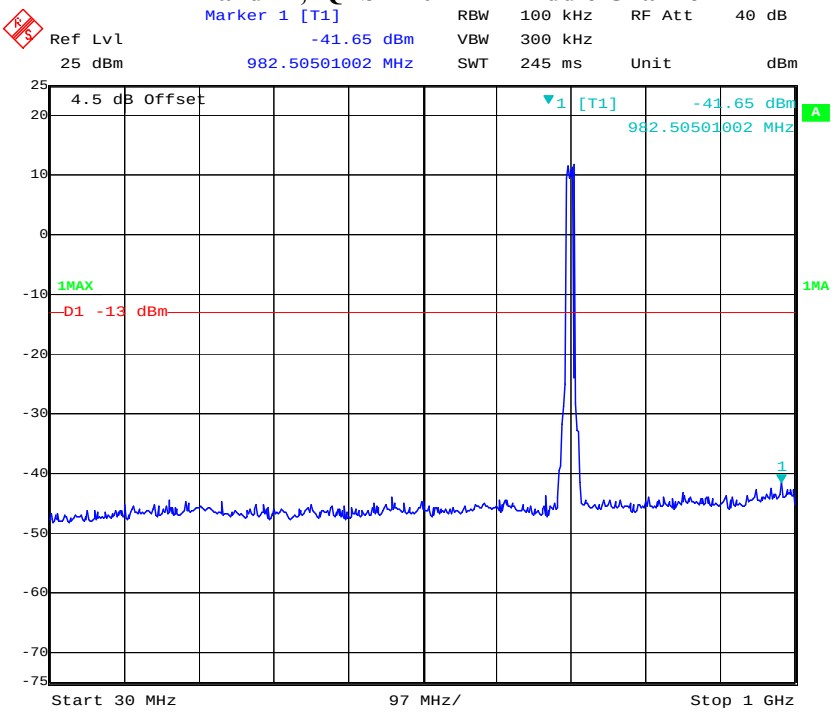


Date: 18.OCT.2019 23:50:03



Date: 18.OCT.2019 23:50:14

LTE Band 12, QPSK 10 MHz Middle Channel



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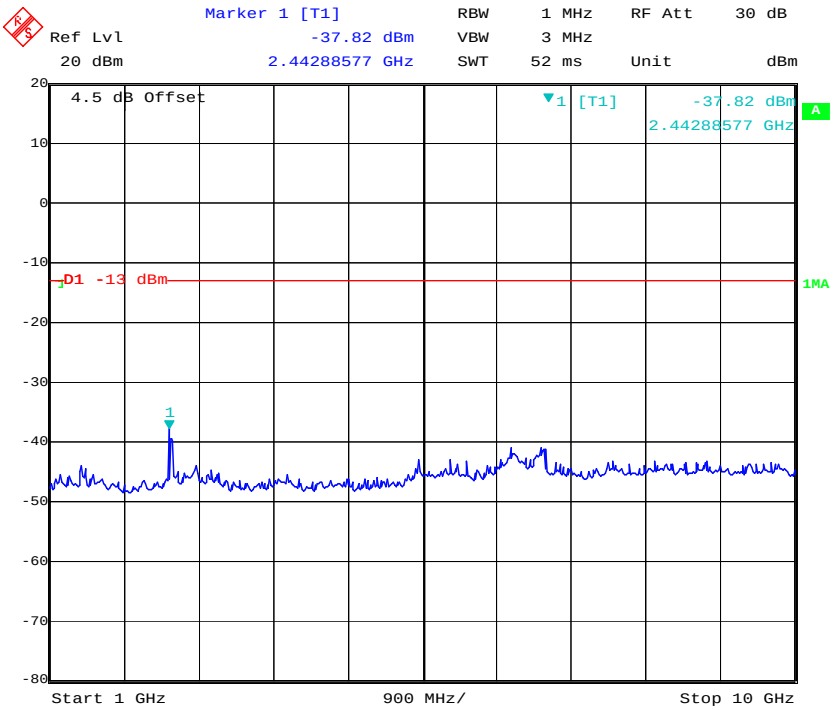

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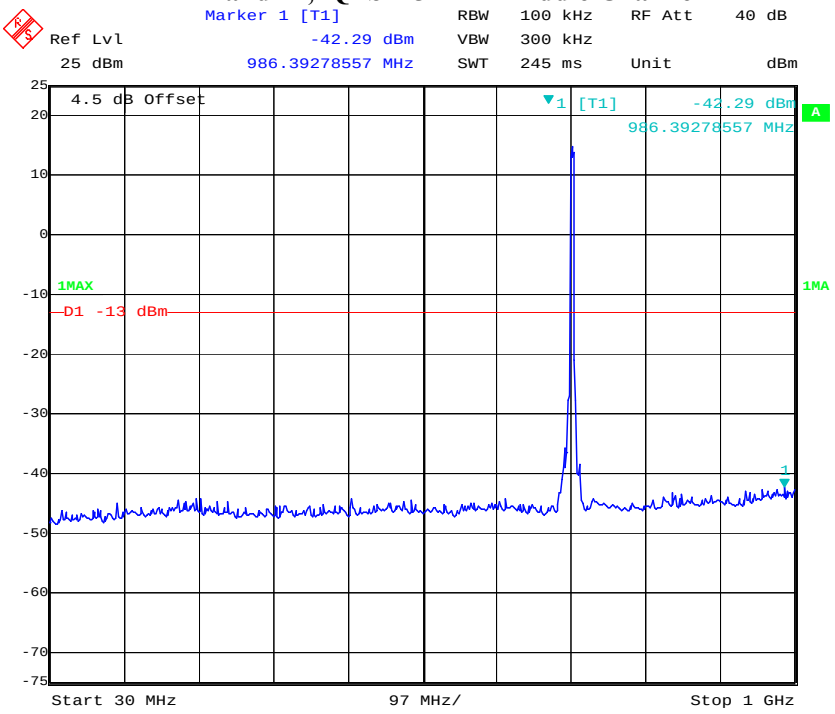
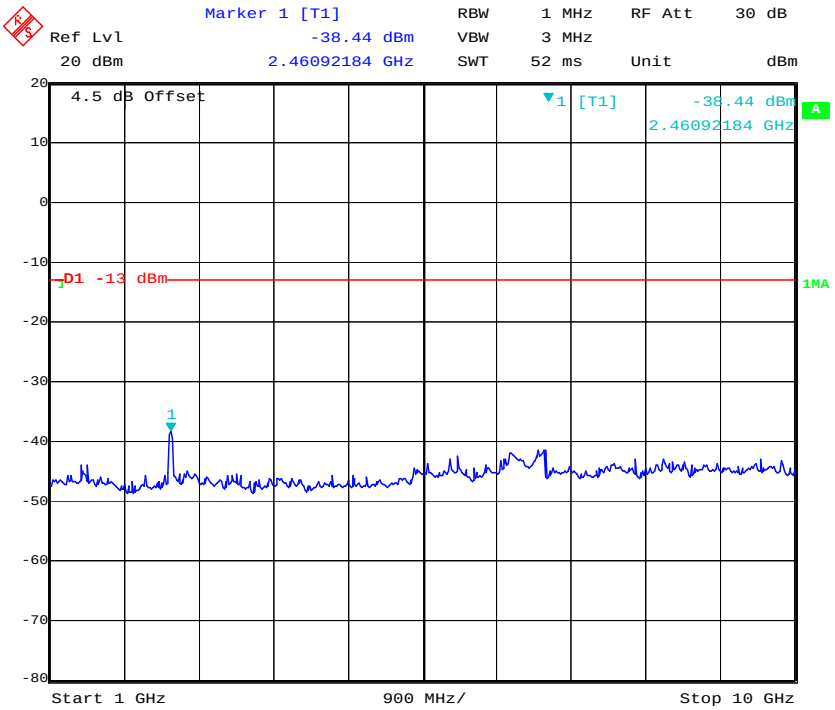
LTE Band 17, QPSK 5 MHz Middle Channel



Date: 18.OCT.2019 23:51:08



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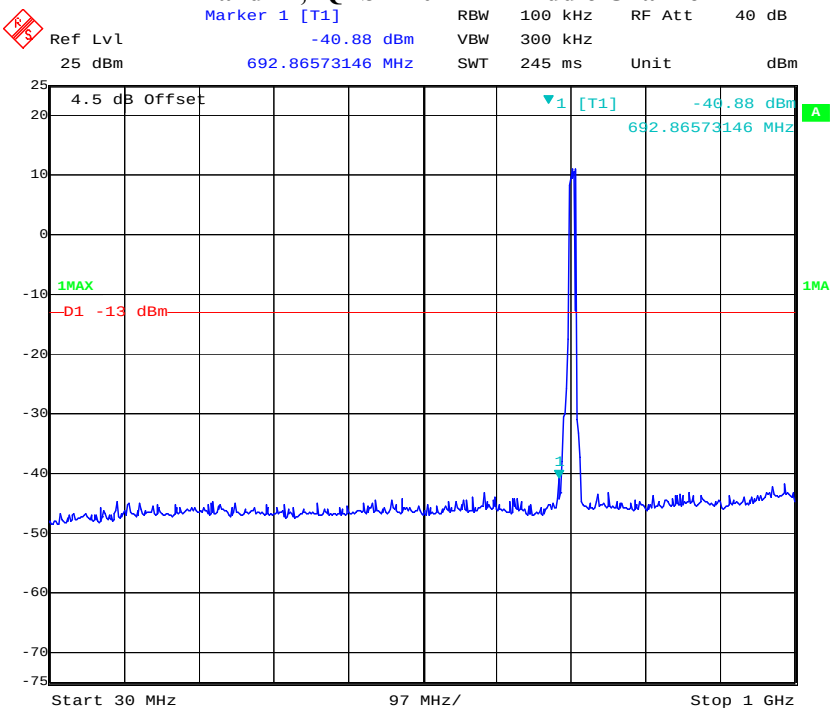
LTE Band 17, QPSK 10 MHz Middle Channel



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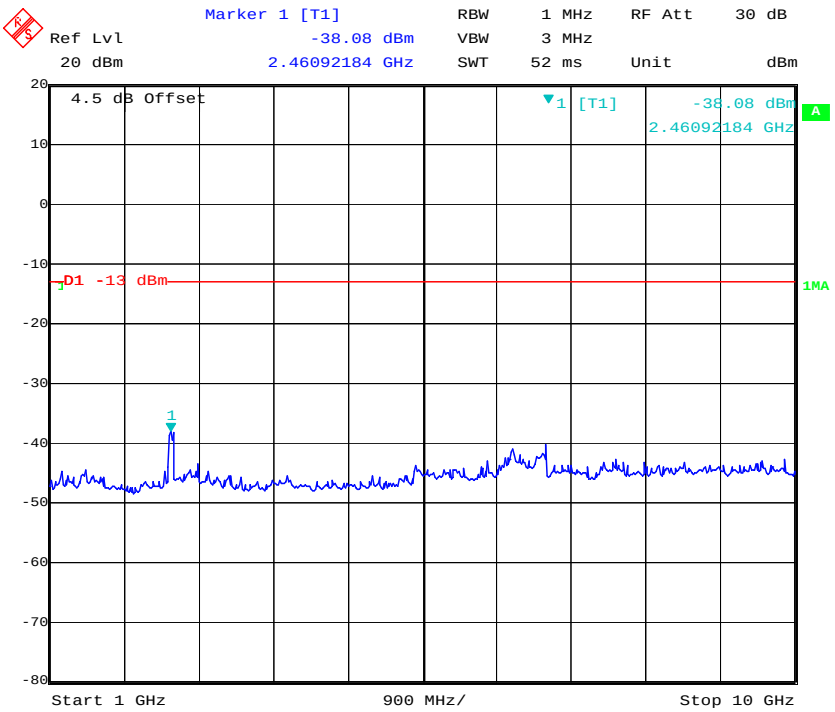

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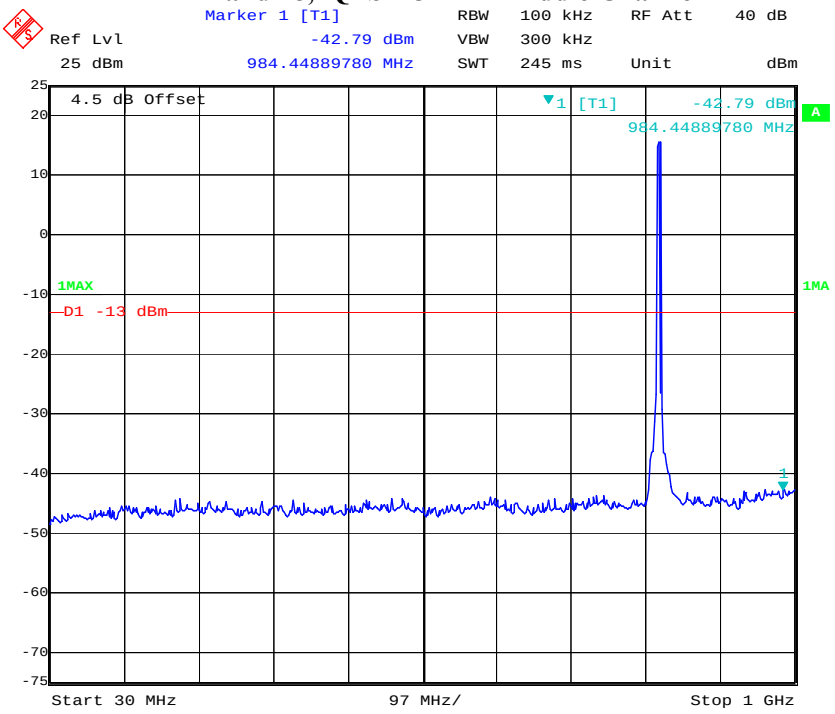
LTE Band 18, QPSK 5 MHz Middle Channel



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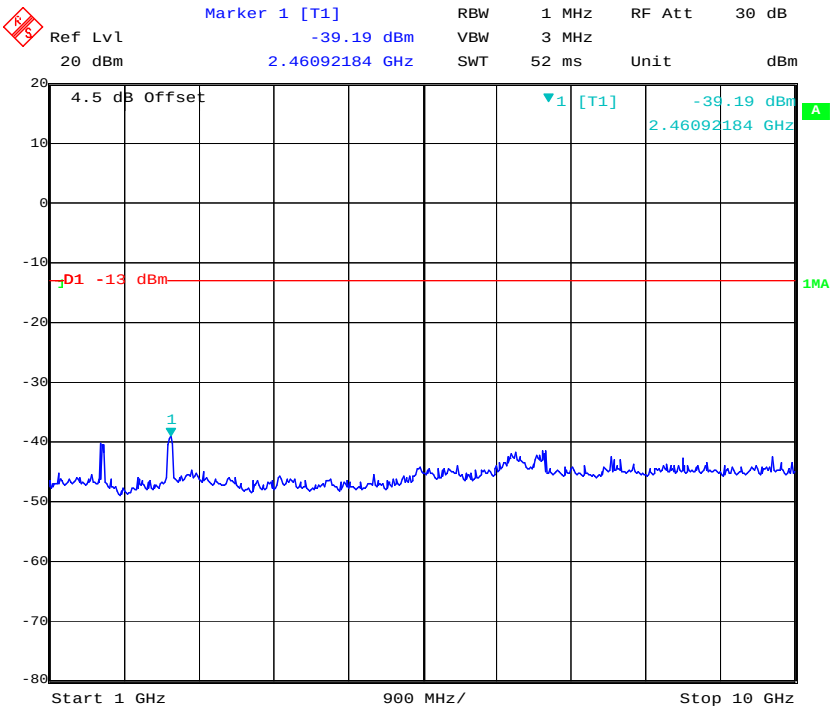

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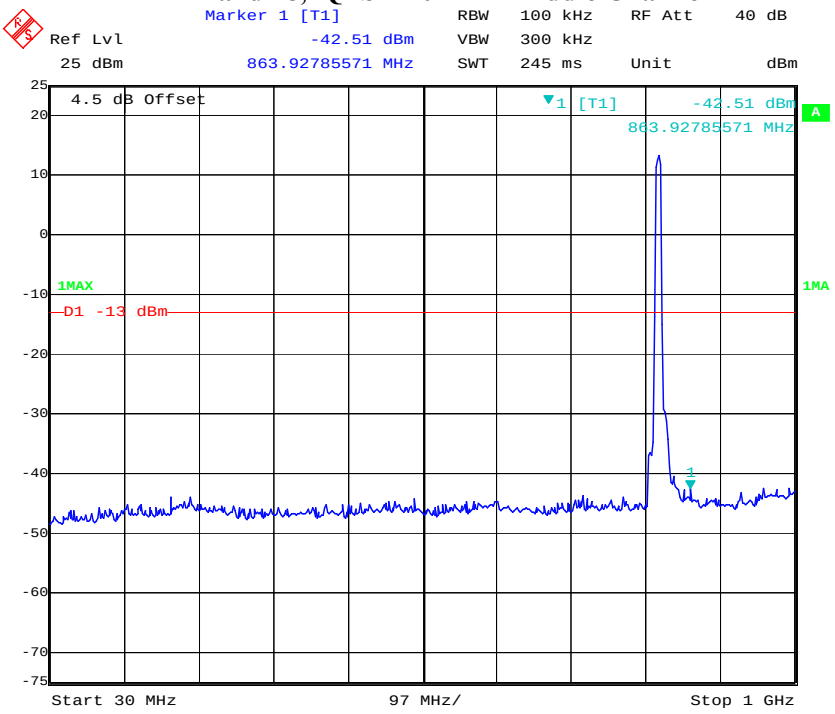
LTE Band 18, QPSK 10 MHz Middle Channel



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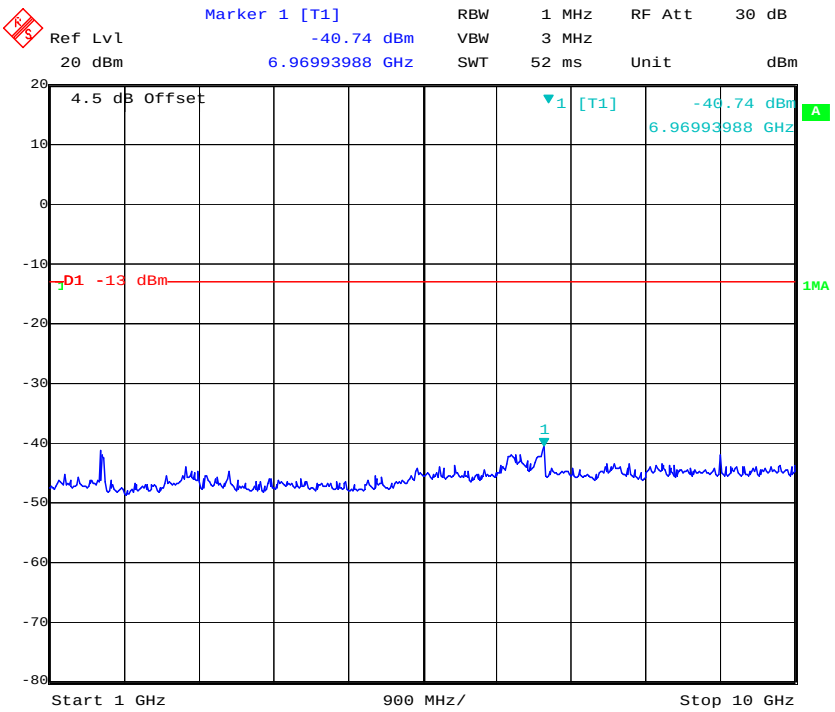

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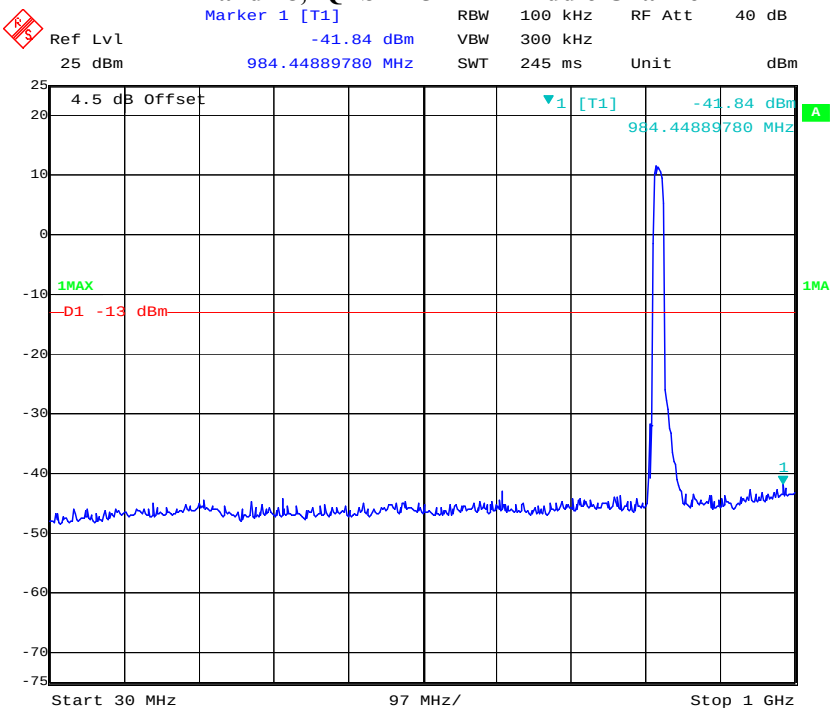
LTE Band 18, QPSK 15 MHz Middle Channel



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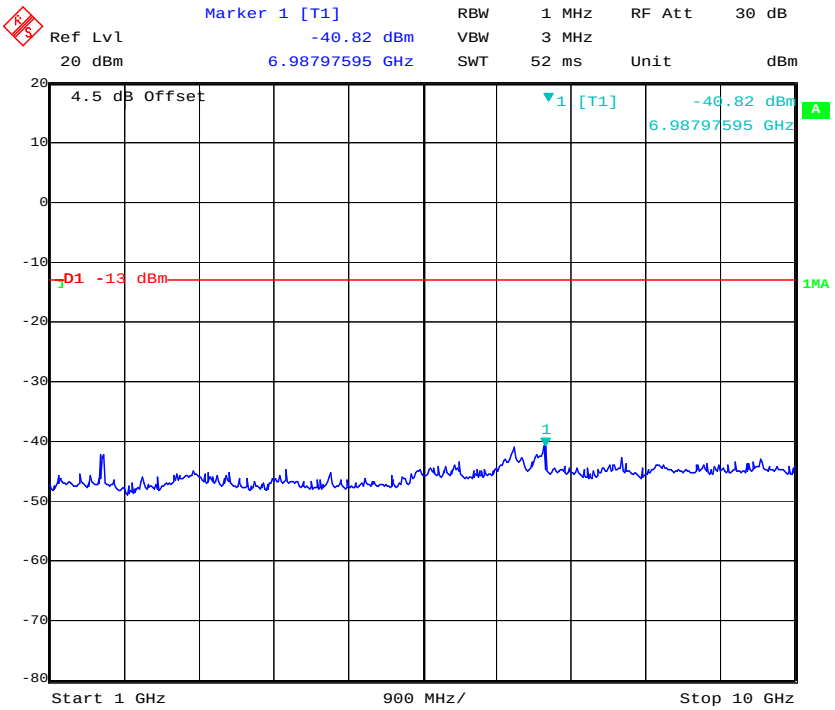

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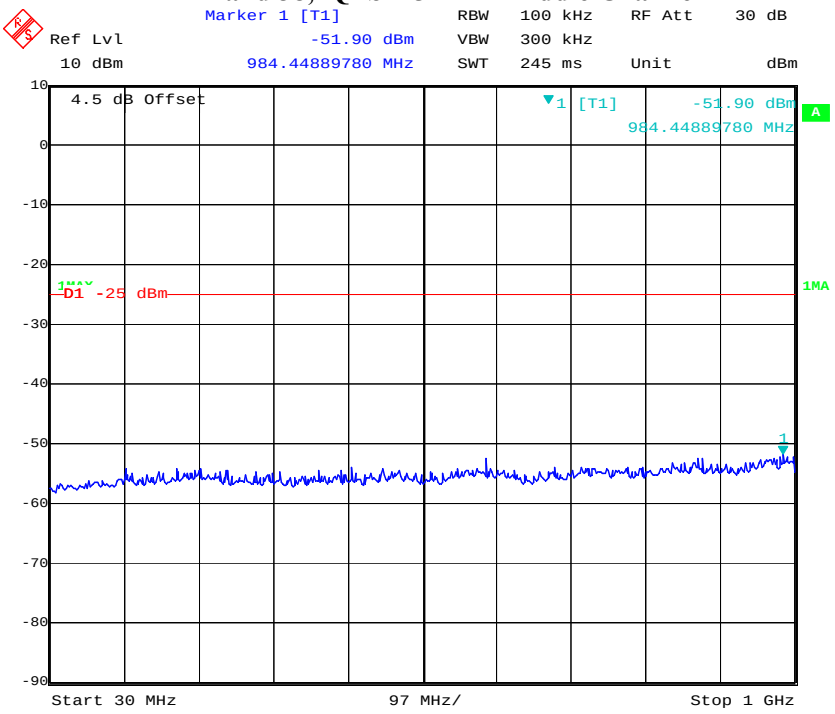
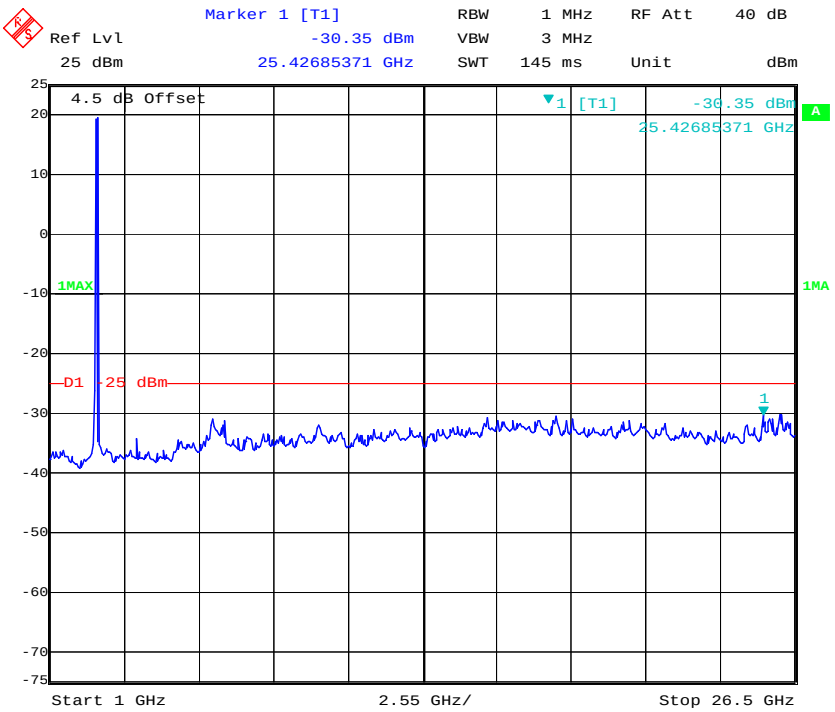
LTE Band 38, QPSK 5 MHz Middle Channel

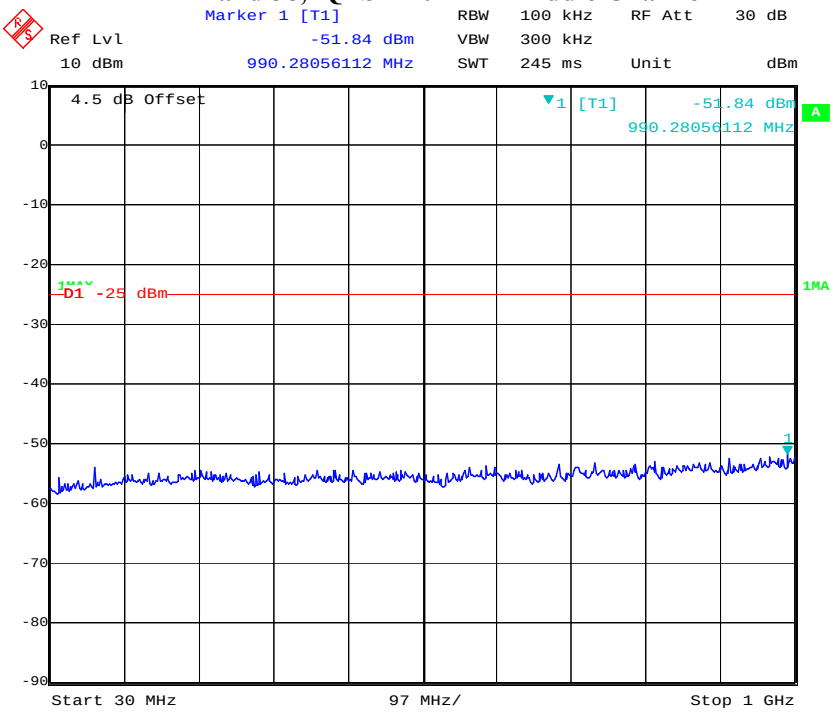


Date: 18.OCT.2019 23:58:02



Date: 18.OCT.2019 23:58:14

LTE Band 38, QPSK 10 MHz Middle Channel



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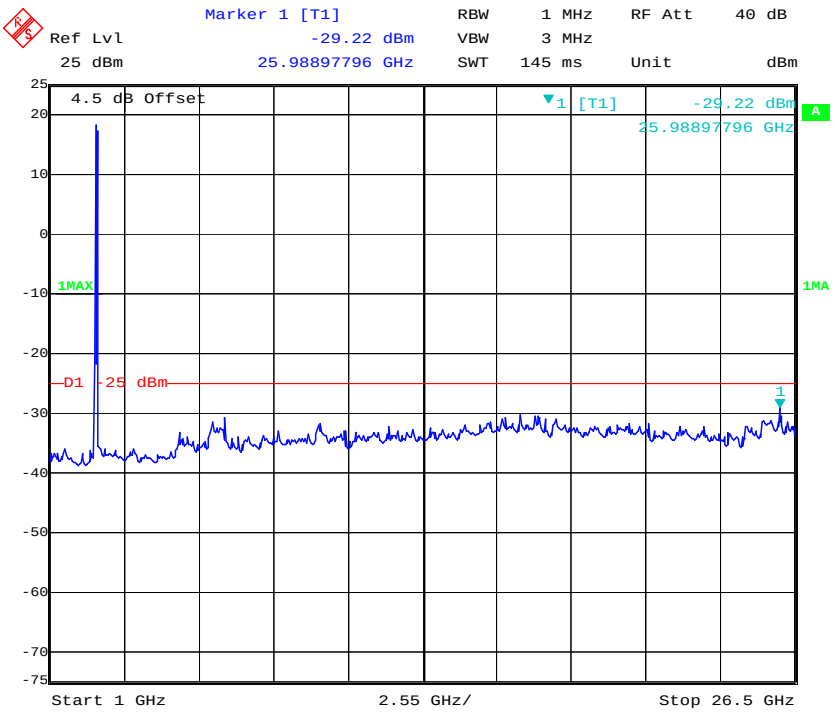

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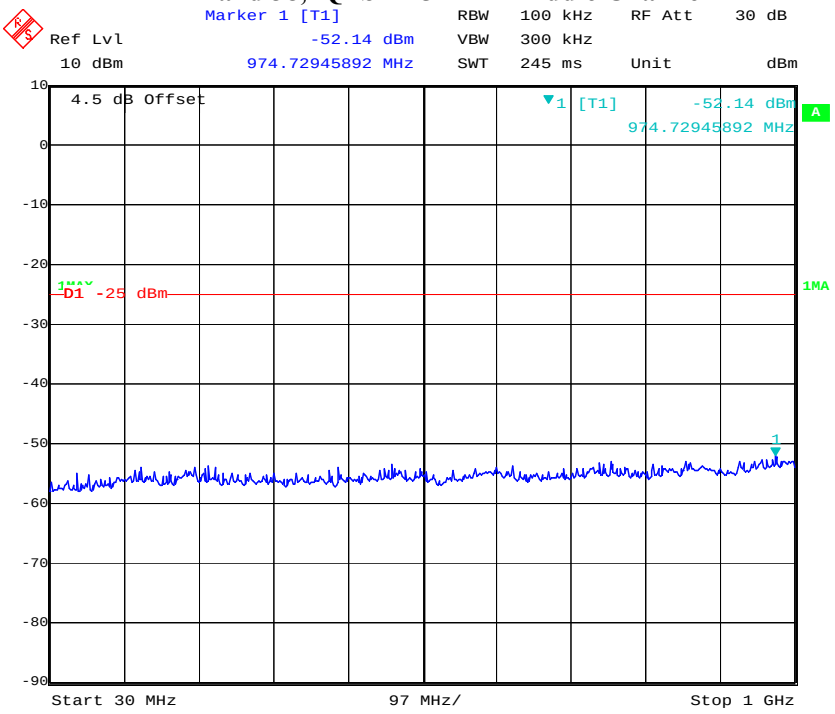
LTE Band 38, QPSK 15 MHz Middle Channel



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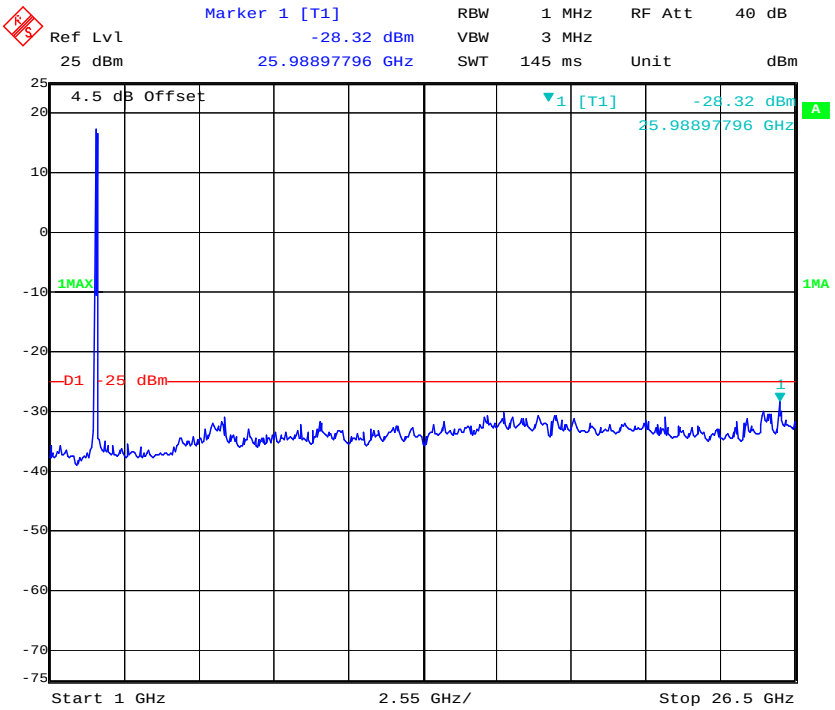
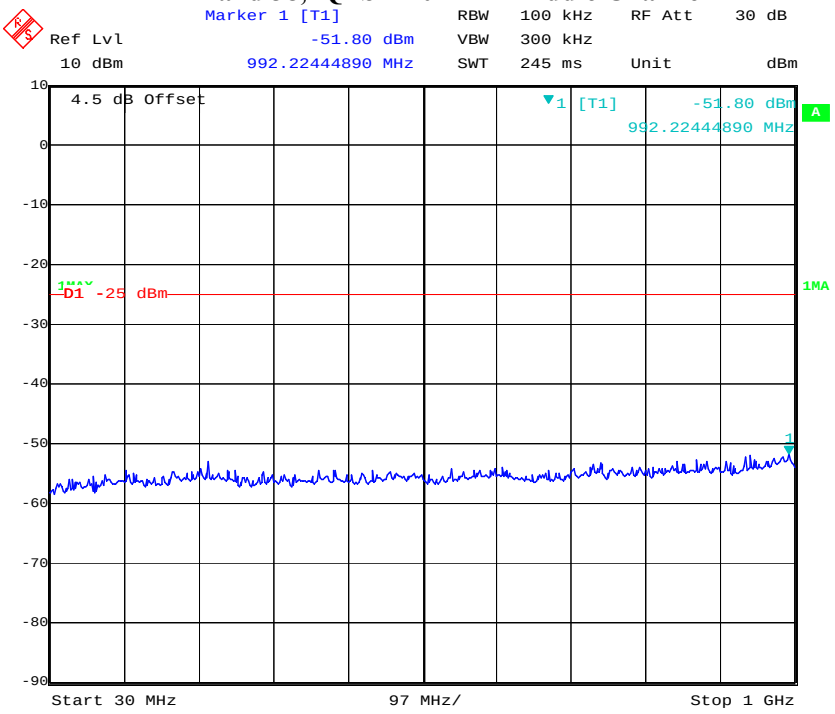


Date: 18.OCT.2019 23:59:24

LTE Band 38, QPSK 20 MHz Middle Channel



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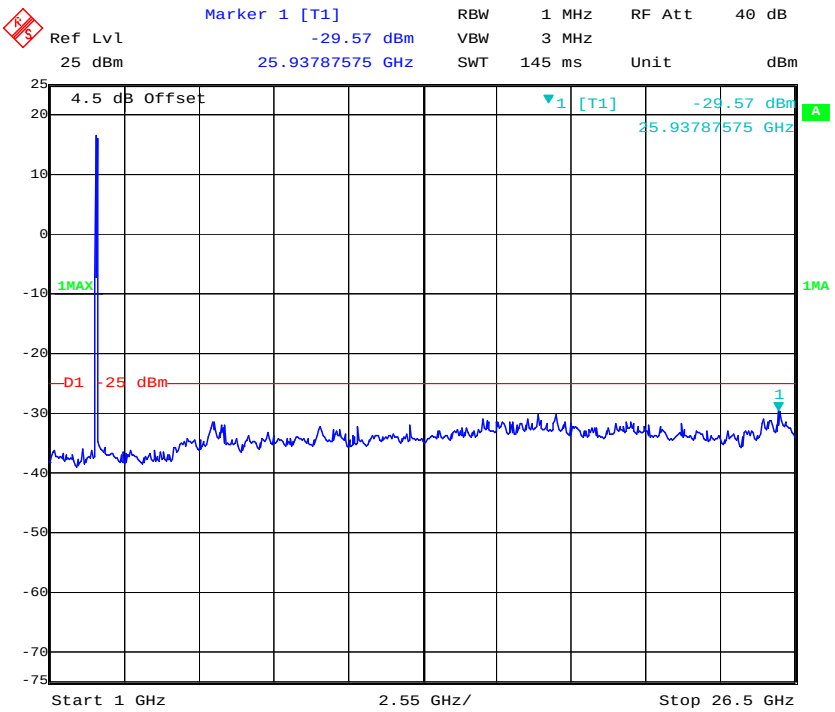
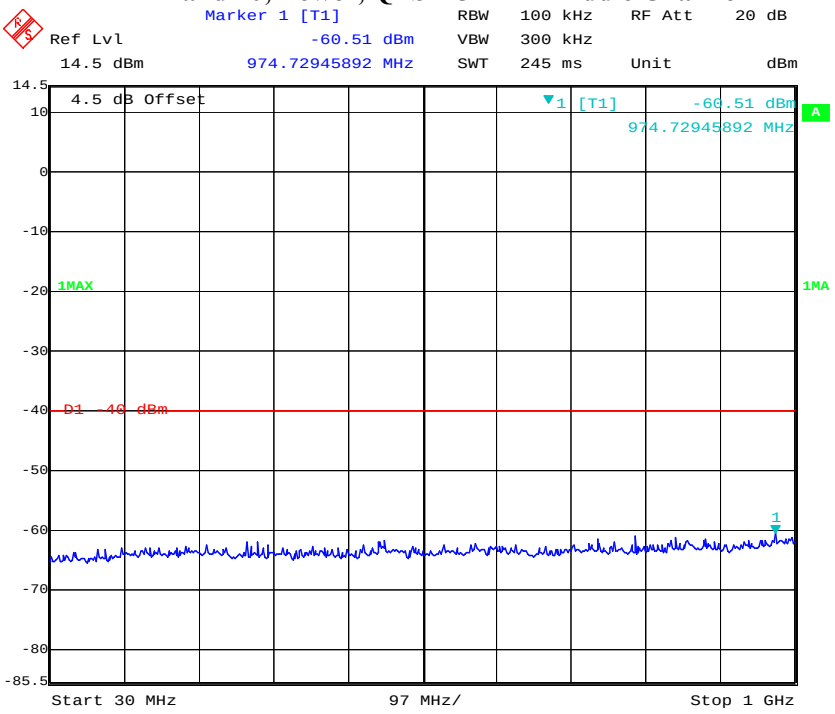
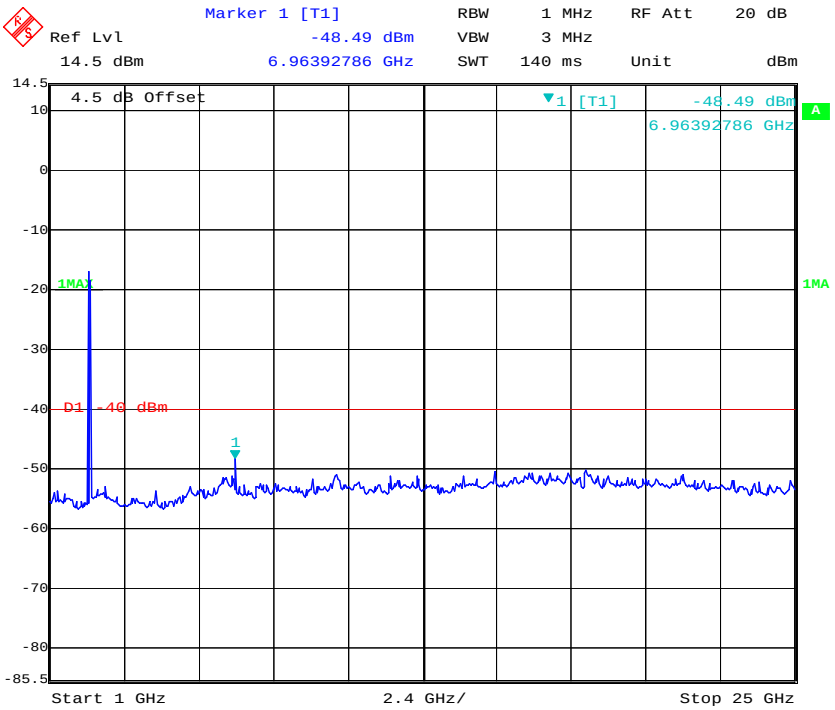


Date: 18.OCT.2019 23:59:59

LTE Band 40, Lower, QPSK 5 MHz Middle Channel

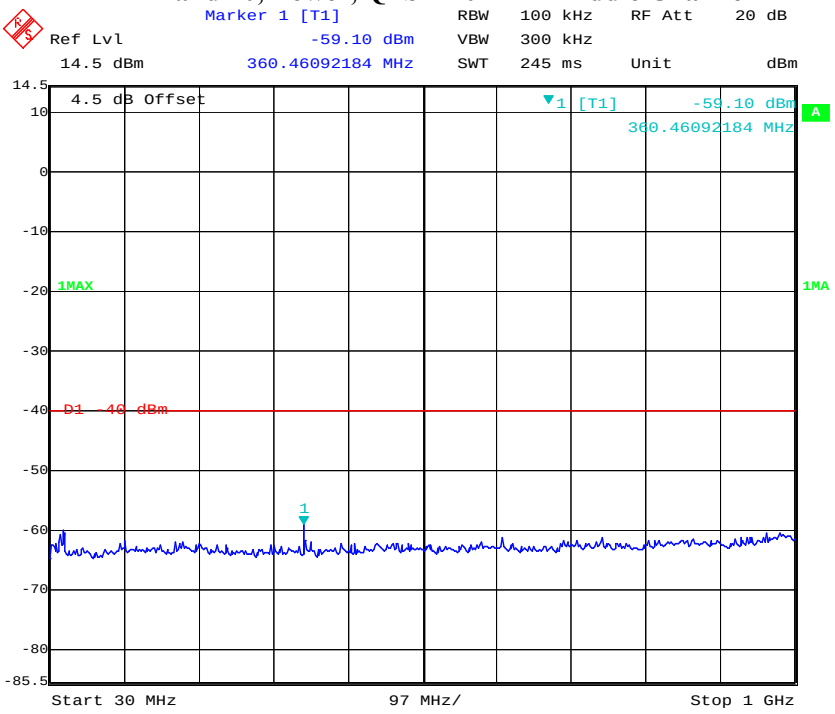


Date: 25.OCT.2019 17:46:24

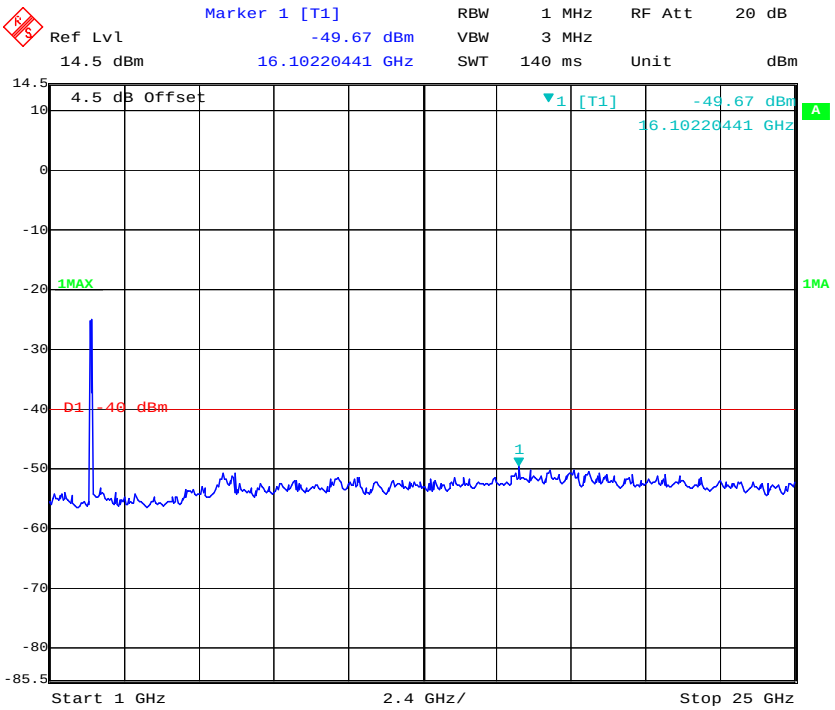


Date: 25.OCT.2019 17:44:57

LTE Band 40, Lower, QPSK 10 MHz Middle Channel

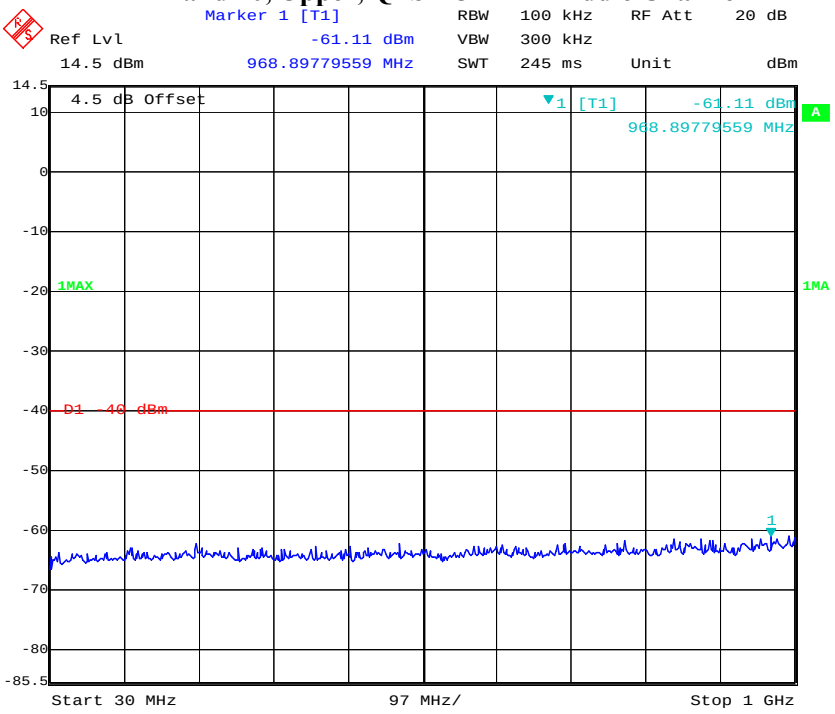


Date: 25.OCT.2019 17:46:07

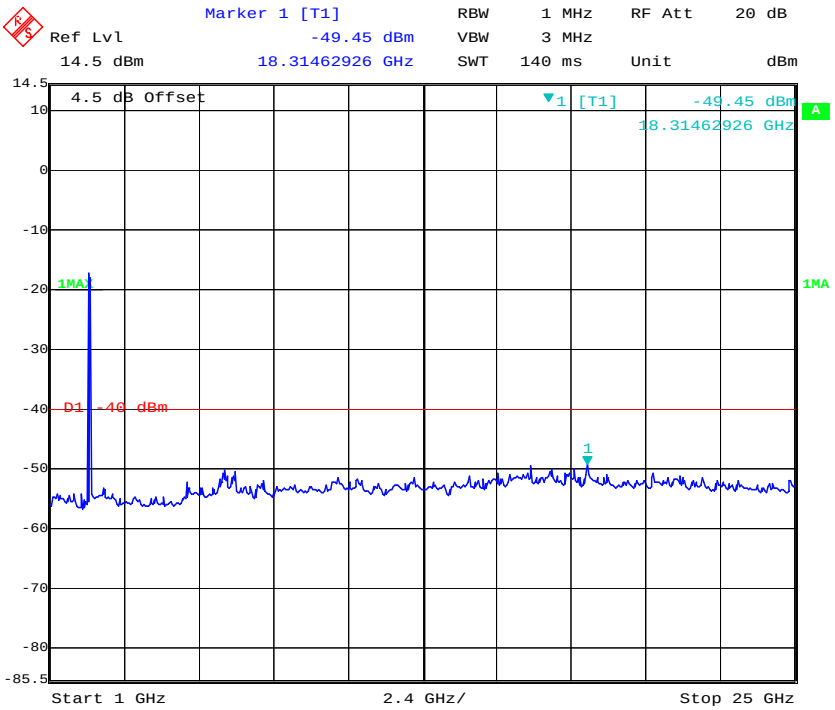


Date: 25.OCT.2019 17:42:32

LTE Band 40, Upper, QPSK 5 MHz Middle Channel

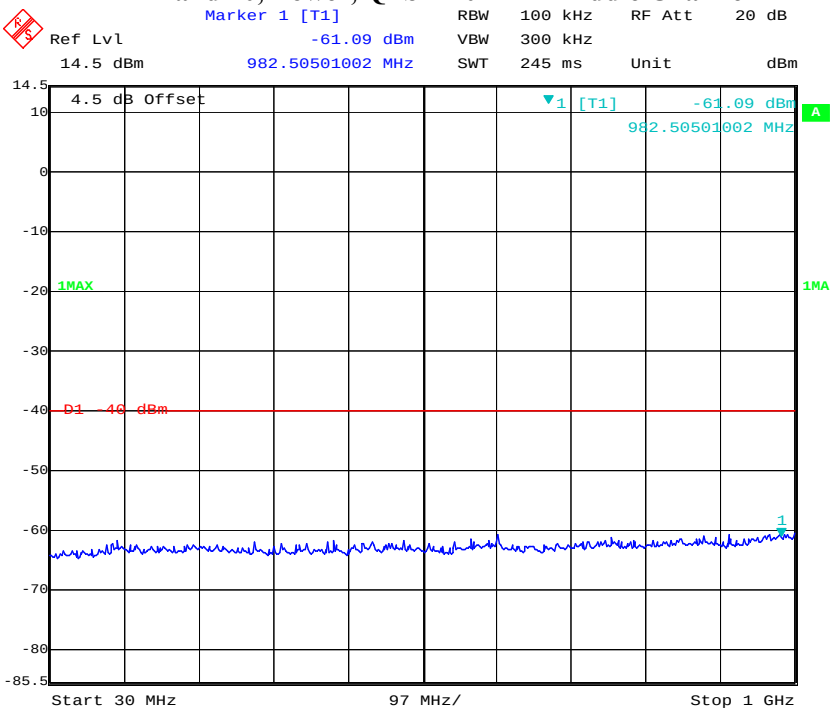


Date: 25.OCT.2019 17:46:37



Date: 25.OCT.2019 17:44:00

LTE Band 40, Lower, QPSK 10 MHz Middle Channel



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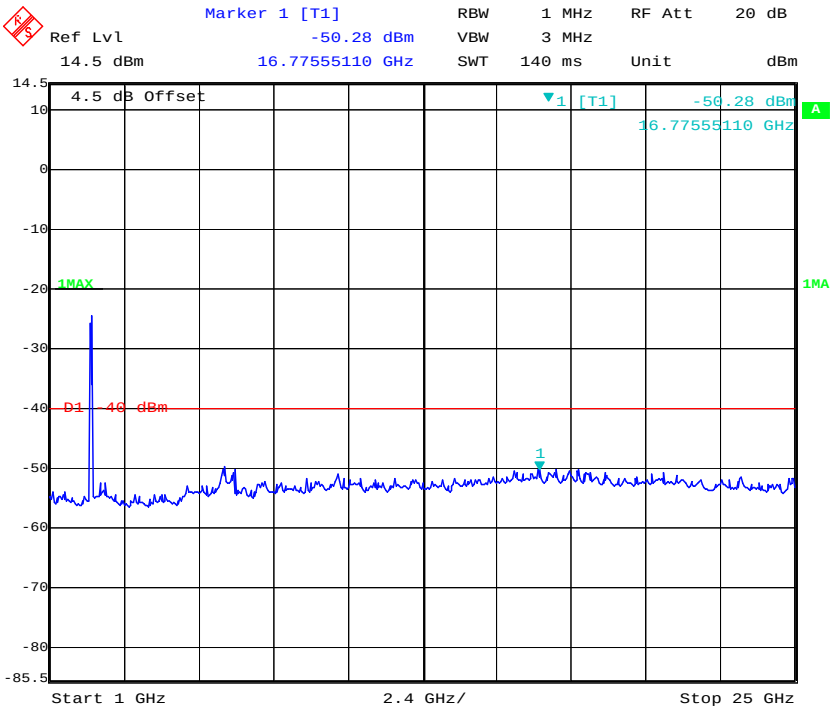
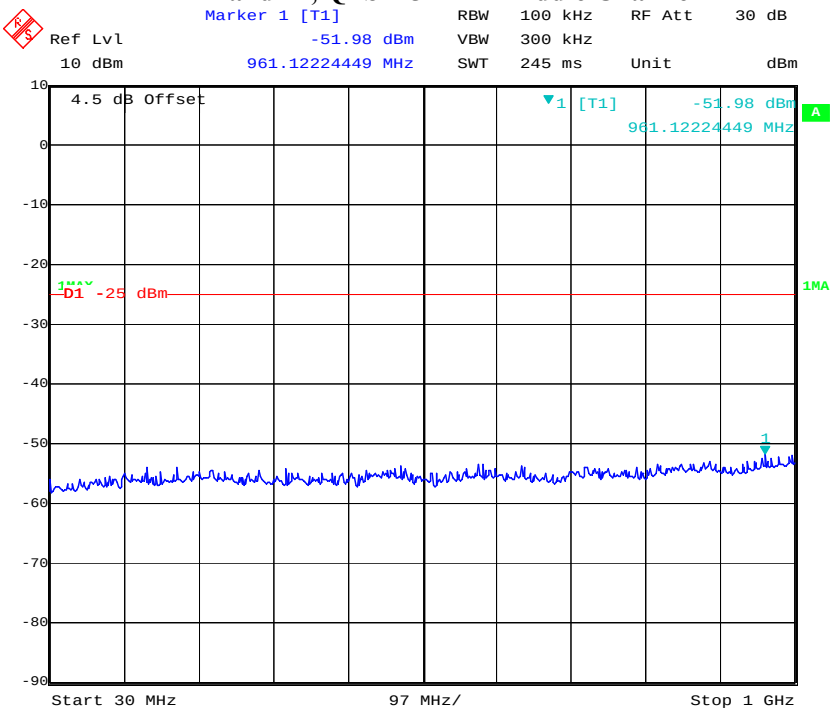
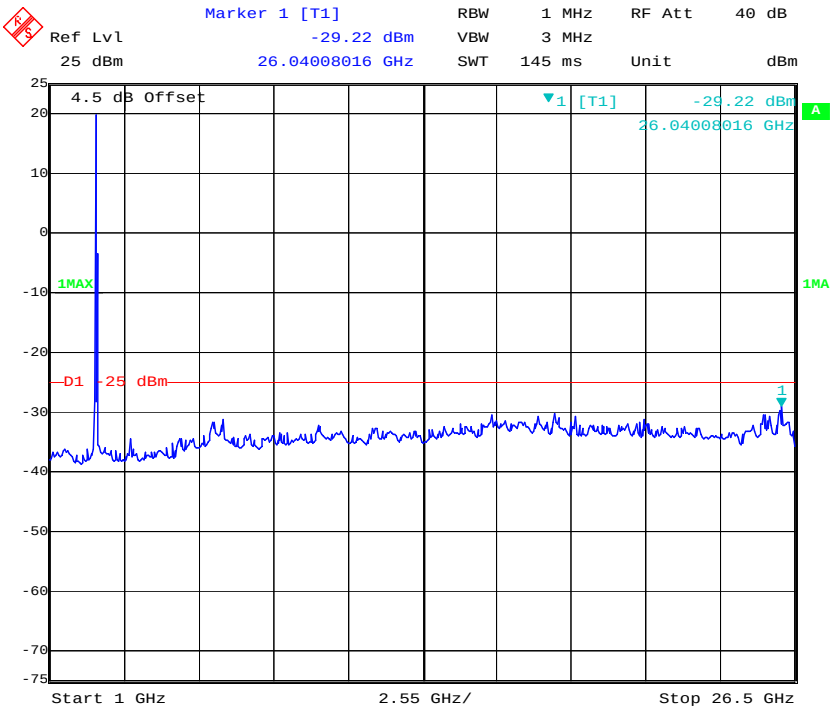


Date: 25.OCT.2019 17:43:16

LTE Band 41, QPSK 5 MHz Middle Channel

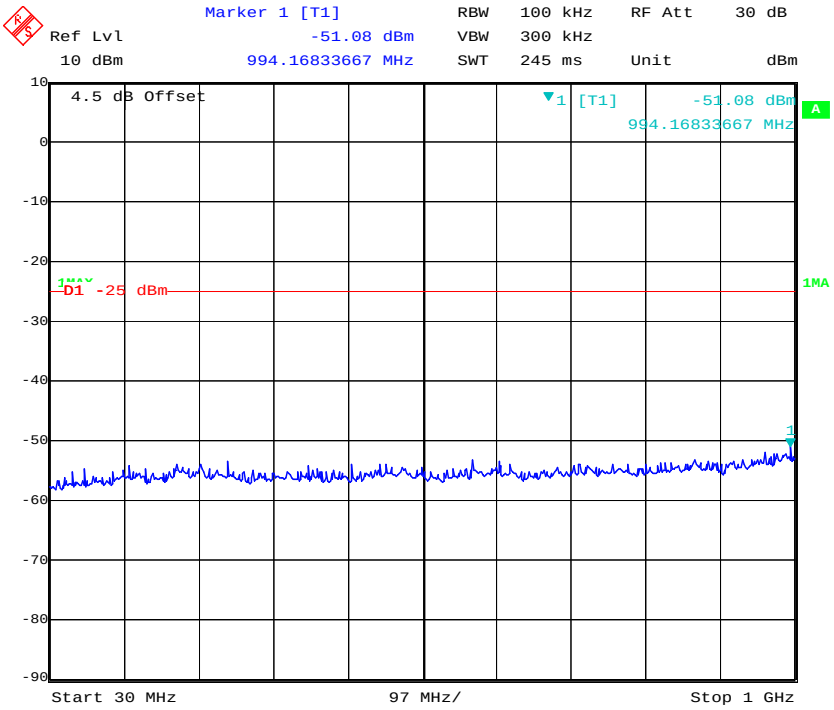


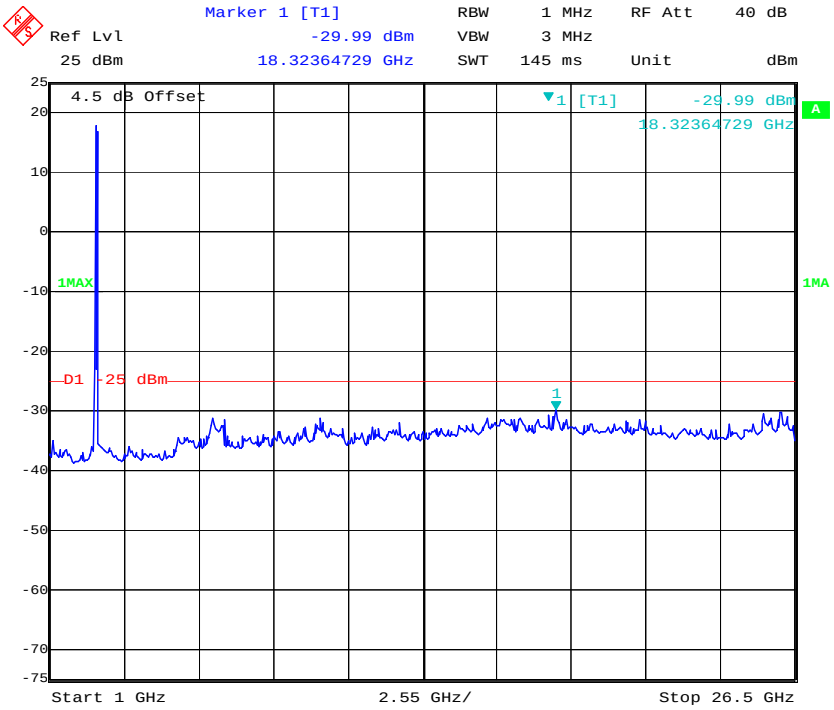
Date: 19.OCT.2019 00:03:30



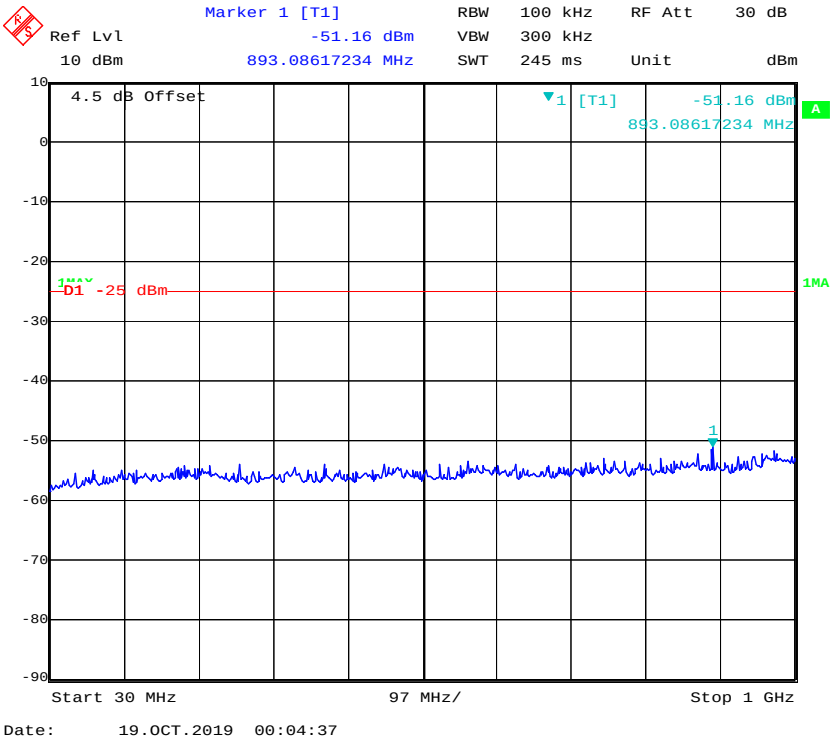
Date: 19.OCT.2019 00:03:42

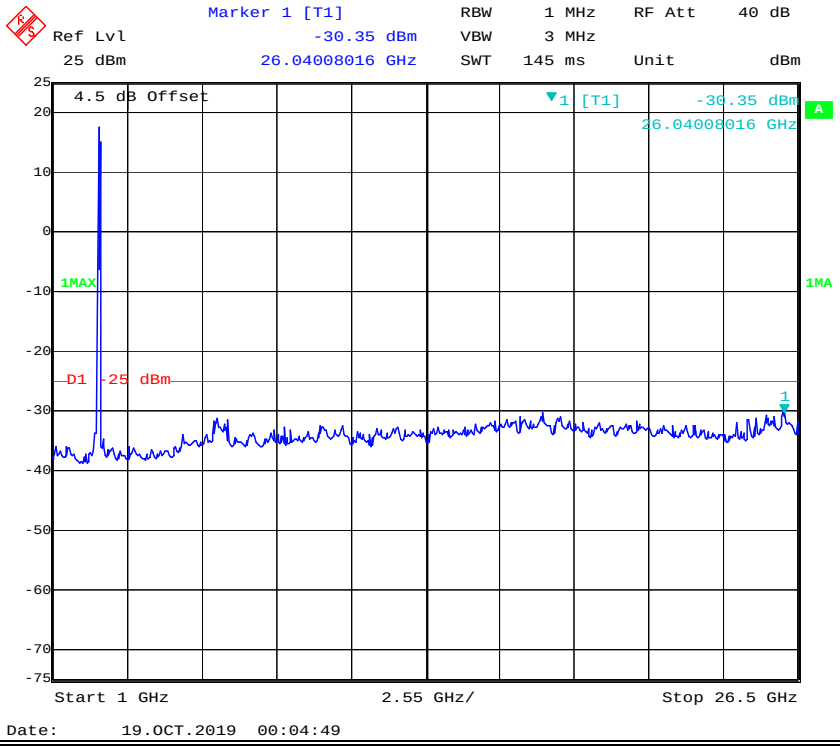
LTE Band 41, QPSK 10 MHz Middle Channel



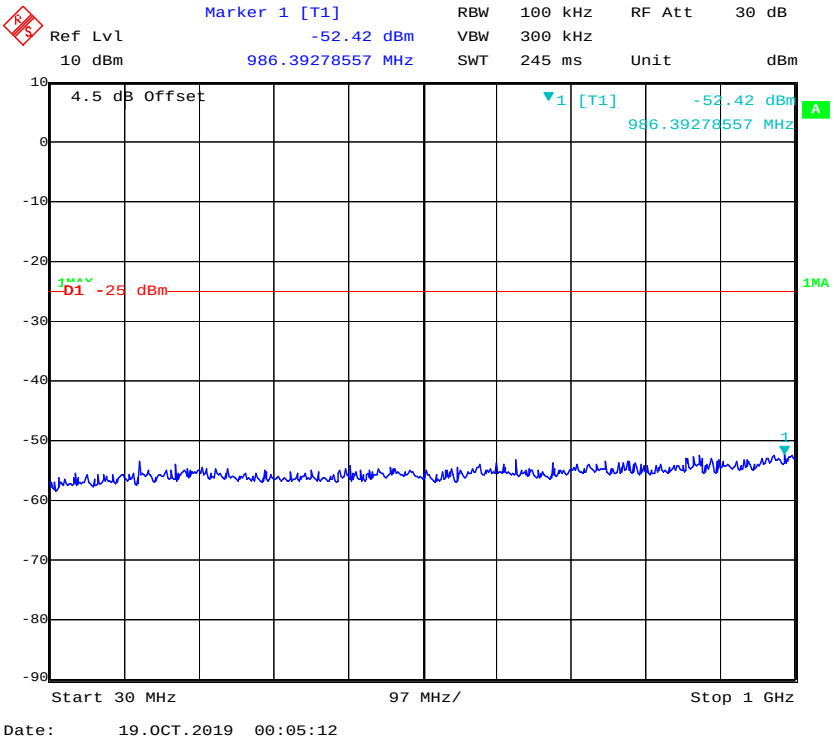


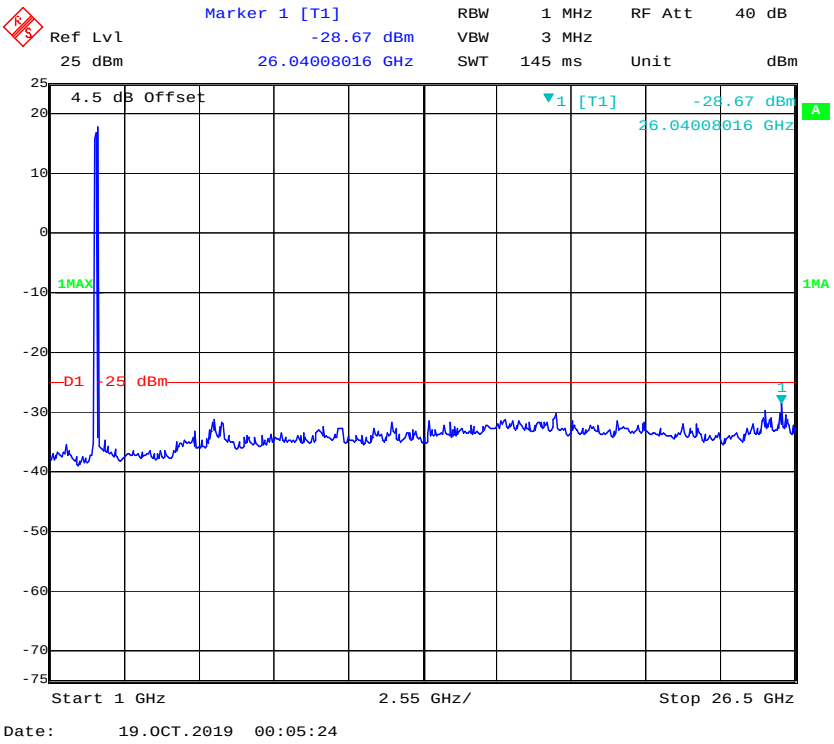
LTE Band 41, QPSK 15 MHz Middle Channel





LTE Band 41, QPSK 20 MHz Middle Channel





FCC §2.1053, §22.917 & §24.238 & §27.53& §90.691- SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053, §22.917, § 24.238 and § 27.53; § 90.691

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 (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESR3	102453	2019-06-26	2020-06-26
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2019-05-06	2020-05-06
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2019-09-05	2020-09-05
HP	Amplifier	8447D	2727A05902	2019-09-05	2020-09-05
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	2019-09-05	2020-09-05
Agilent	Signal Generator	E8247C	MY43321350	2018-12-10	2019-12-10
Agilent	Spectrum Analyzer	E4440A	SG43360054	2019-05-09	2020-05-09
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2019-09-05	2020-09-05
Sinoscite	Band-stop filter	BSF824-862MS-1438-001	1438001	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF1710-1785MN-0383-003	0383003	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF1850-1910MS-0935V2	0935V2	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF2500-2750MS-1439-001	1437001	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF2300-2400MS-0777-003	0777003	2019-06-16	2020-06-16
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2016-11-18	2019-11-18
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-02 1304	2016-11-18	2019-11-18
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2019-06-27	2020-06-27

*** 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:	24.3°C	24.3 °C
Relative Humidity:	39 %	39%
ATM Pressure:	102.1 kPa	102.1 kPa
Tester:	Tyler Pan	Lucy Lu
Test Date:	2019-12-21	2019-12-21

Test Result: Compliance.

EUT Operation Mode: Transmitting

Module 2:

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)			
GPRS850, Frequency:836.600 MHz								
1673.200	H	49.32	-25.06	10.6	2.47	-16.9	-13.0	3.9
1673.200	V	48.33	-26.41	10.6	2.47	-18.3	-13.0	5.3
2509.800	H	46.25	-26.52	13.1	3.1	-16.5	-13.0	3.5
2509.800	V	46.74	-24.74	13.1	3.1	-14.7	-13.0	1.7
3346.400	H	40.20	-30.85	13.8	3.55	-20.6	-13.0	7.6
3346.400	V	47.32	-23.82	13.8	3.55	-13.5	-13.0	0.5
250.000	H	48.49	-60.75	0.0	0.51	-61.3	-13.0	48.3
250.000	V	47.48	-65.18	0.0	0.51	-65.7	-13.0	52.7

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:1880.000 MHz								
3760.000	H	45.78	-51.86	13.8	1.63	-39.7	-13.0	26.7
3760.000	V	42.30	-55.2	13.8	1.63	-43.1	-13.0	30.1
5640.000	H	49.40	-44.19	14.0	1.31	-31.5	-13.0	18.5
5640.000	V	45.53	-47.95	14.0	1.31	-35.2	-13.0	22.2
250.000	H	47.22	-62.02	0.0	0.51	-62.5	-13.0	49.5
250.000	V	46.37	-66.29	0.0	0.51	-66.8	-13.0	53.8
WCDMA Band II, Frequency:1880.000 MHz								
3760.000	H	46.69	-50.95	13.8	1.63	-38.8	-13.0	25.8
3760.000	V	43.52	-53.98	13.8	1.63	-41.9	-13.0	28.9
5640.000	H	50.36	-43.23	14.0	1.31	-30.5	-13.0	17.5
5640.000	V	48.62	-44.86	14.0	1.31	-32.2	-13.0	19.2
250.000	H	46.01	-63.23	0.0	0.51	-63.7	-13.0	50.7
250.000	V	46.87	-65.79	0.0	0.51	-66.3	-13.0	53.3

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:1880.000 MHz								
3760.00	H	46.04	-51.60	13.76	1.63	-39.47	-13.00	26.47
3760.00	V	44.54	-52.96	13.76	1.63	-40.83	-13.00	27.83
5640.00	H	40.94	-52.65	14.02	1.31	-39.94	-13.00	26.94
5640.00	V	37.69	-55.79	14.02	1.31	-43.08	-13.00	30.08
250.00	H	45.52	-63.72	0.00	0.51	-64.23	-13.00	51.23
250.00	V	45.63	-67.03	0.00	0.51	-67.54	-13.00	54.54

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:1732.500 MHz								
3465.00	H	43.79	-55.40	13.91	1.62	-43.11	-13.00	30.11
3465.00	V	42.09	-57.13	13.91	1.62	-44.84	-13.00	31.84
5197.50	H	40.75	-53.94	14.00	1.52	-41.46	-13.00	28.46
5197.50	V	42.77	-51.99	14.00	1.52	-39.51	-13.00	26.51
250.00	H	45.73	-63.51	0.00	0.51	-64.02	-13.00	51.02
250.00	V	45.75	-66.91	0.00	0.51	-67.42	-13.00	54.42

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: 836.500 MHz								
1673.00	H	44.08	-59.86	10.61	0.73	-49.98	-13.00	36.98
1673.00	V	48.23	-56.31	10.61	0.73	-46.43	-13.00	33.43
2509.50	H	42.54	-60.37	13.11	1.25	-48.51	-13.00	35.51
2509.50	V	38.65	-64.29	13.11	1.25	-52.43	-13.00	39.43
3346.00	H	41.48	-58.20	13.83	1.61	-45.98	-13.00	32.98
3346.00	V	39.54	-60.18	13.83	1.61	-47.96	-13.00	34.96
250.00	H	45.66	-63.58	0.00	0.51	-64.09	-13.00	51.09
250.00	V	45.58	-67.08	0.00	0.51	-67.59	-13.00	54.59

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: 2535.000 MHz								
5070.00	H	36.84	-58.27	13.93	1.34	-45.68	-25.00	20.68
5070.00	V	36.58	-58.34	13.93	1.34	-45.75	-25.00	20.75
7605.00	H	36.59	-52.29	13.21	1.40	-40.48	-25.00	15.48
7605.00	V	36.19	-53.09	13.21	1.40	-41.28	-25.00	16.28
250.00	H	45.29	-63.95	0.00	0.51	-64.46	-25.00	39.46
250.00	V	45.84	-66.82	0.00	0.51	-67.33	-25.00	42.33

LTE Band 18(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:822.500 MHz								
1645.00	H	41.26	-62.95	10.42	0.71	-53.24	-13.00	40.24
1645.00	V	38.52	-66.29	10.42	0.71	-56.58	-13.00	43.58
2467.50	H	43.62	-59.14	12.84	1.26	-47.56	-13.00	34.56
2467.50	V	40.62	-62.20	12.84	1.26	-50.62	-13.00	37.62
3290.00	H	37.20	-62.51	13.60	1.59	-50.50	-13.00	37.50
3290.00	V	36.89	-62.82	13.60	1.59	-50.81	-13.00	37.81
250.00	H	45.12	-64.12	0.00	0.51	-64.63	-13.00	51.63
250.00	V	45.96	-66.70	0.00	0.51	-67.21	-13.00	54.21

LTE Band 38(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: 2595.000 MHz								
5190.00	H	35.87	-58.82	13.99	1.51	-46.34	-25	21.34
5190.00	V	35.61	-59.13	13.99	1.51	-46.65	-25	21.65
7785.00	H	35.87	-53.45	13.32	1.53	-41.66	-25	16.66
7785.00	V	35.69	-53.88	13.32	1.53	-42.09	-25	17.09
250.00	H	45.61	-63.63	0.00	0.51	-64.14	-25	39.14
250.00	V	45.74	-66.92	0.00	0.51	-67.43	-25	42.43

LTE Band 40(30MHz-25GHz):

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: 2310.000 MHz								
4620.00	H	38.84	-58.26	14.24	1.81	-45.83	-40.00	5.83
4620.00	V	37.33	-59.87	14.24	1.81	-47.44	-40.00	7.44
6930.00	H	35.41	-55.28	13.64	1.81	-43.45	-40.00	3.45
6930.00	V	35.26	-55.30	13.64	1.81	-43.47	-40.00	3.47
250.00	H	45.54	-63.70	0.00	0.51	-64.21	-40.00	24.21
250.00	V	45.85	-66.81	0.00	0.51	-67.32	-40.00	27.32
QPSK,Frequency: 2355.000 MHz								
4710.00	H	37.66	-59.46	14.39	1.66	-46.73	-40.00	6.73
4710.00	V	36.85	-60.36	14.39	1.66	-47.63	-40.00	7.63
7065.00	H	35.45	-54.79	13.31	1.76	-43.24	-40.00	3.24
7065.00	V	35.36	-54.79	13.31	1.76	-43.24	-40.00	3.24
250.00	H	45.55	-63.69	0.00	0.51	-64.20	-40.00	24.20
250.00	V	45.31	-67.35	0.00	0.51	-67.86	-40.00	27.86

LTE Band 41

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: 2595.000 MHz								
5190.00	H	35.30	-59.39	13.99	1.51	-46.91	-25.00	21.91
5190.00	V	35.26	-59.48	13.99	1.51	-47.00	-25.00	22.00
7785.00	H	35.23	-54.09	13.32	1.53	-42.30	-25.00	17.30
7785.00	V	35.41	-54.16	13.32	1.53	-42.37	-25.00	17.37
250.00	H	45.87	-63.37	0.00	0.51	-63.88	-25.00	38.88
250.00	V	45.45	-67.21	0.00	0.51	-67.72	-25.00	42.72

Module 1:

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)			
GPRS850, Frequency:836.600 MHz								
1673.200	H	49.32	-25.06	10.6	2.47	-16.9	-13.0	3.9
1673.200	V	48.33	-26.41	10.6	2.47	-18.3	-13.0	5.3
2509.800	H	46.25	-26.52	13.1	3.1	-16.5	-13.0	3.5
2509.800	V	46.74	-24.74	13.1	3.1	-14.7	-13.0	1.7
3346.400	H	40.20	-30.85	13.8	3.55	-20.6	-13.0	7.6
3346.400	V	47.32	-23.82	13.8	3.55	-13.5	-13.0	0.5
250.000	H	48.49	-60.75	0.0	0.51	-61.3	-13.0	48.3
250.000	V	47.48	-65.18	0.0	0.51	-65.7	-13.0	52.7

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)			
GPRS1900, Frequency:1880.000 MHz								
3760.000	H	45.78	-51.86	13.8	1.63	-39.7	-13.0	26.7
3760.000	V	42.30	-55.2	13.8	1.63	-43.1	-13.0	30.1
5640.000	H	49.40	-44.19	14.0	1.31	-31.5	-13.0	18.5
5640.000	V	45.53	-47.95	14.0	1.31	-35.2	-13.0	22.2
250.000	H	47.22	-62.02	0.0	0.51	-62.5	-13.0	49.5
250.000	V	46.37	-66.29	0.0	0.51	-66.8	-13.0	53.8
WCDMA Band II, Frequency:1880.000 MHz								
3760.000	H	46.69	-50.95	13.8	1.63	-38.8	-13.0	25.8
3760.000	V	43.52	-53.98	13.8	1.63	-41.9	-13.0	28.9
5640.000	H	50.36	-43.23	14.0	1.31	-30.5	-13.0	17.5
5640.000	V	48.62	-44.86	14.0	1.31	-32.2	-13.0	19.2
250.000	H	46.01	-63.23	0.0	0.51	-63.7	-13.0	50.7
250.000	V	46.87	-65.79	0.0	0.51	-66.3	-13.0	53.3

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:1880.000 MHz								
3760.00	H	54.49	-54.31	13.76	1.63	-42.18	-13.00	29.18
3760.00	V	58.91	-49.76	13.76	1.63	-37.63	-13.00	24.63
5640.00	H	55.60	-50.43	14.02	1.31	-37.72	-13.00	24.72
5640.00	V	56.11	-49.80	14.02	1.31	-37.09	-13.00	24.09
250.00	H	45.36	-63.88	0.00	0.51	-64.39	-13.00	51.39
250.00	V	45.77	-66.89	0.00	0.51	-67.40	-13.00	54.40

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:1732.500 MHz								
3465.00	H	52.17	-58.07	13.91	1.62	-45.78	-13.00	32.78
3465.00	V	60.44	-49.84	13.91	1.62	-37.55	-13.00	24.55
5197.50	H	49.87	-56.55	14.00	1.52	-44.07	-13.00	31.07
5197.50	V	54.13	-52.36	14.00	1.52	-39.88	-13.00	26.88
250.00	H	45.44	-63.80	0.00	0.51	-64.31	-13.00	51.31
250.00	V	45.75	-66.91	0.00	0.51	-67.42	-13.00	54.42

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: 836.500 MHz								
1673.00	H	46.77	-67.45	10.61	0.73	-57.57	-13.00	44.57
1673.00	V	48.71	-66.11	10.61	0.73	-56.23	-13.00	43.23
2509.50	H	48.15	-64.87	13.11	1.25	-53.01	-13.00	40.01
2509.50	V	48.97	-64.08	13.11	1.25	-52.22	-13.00	39.22
3346.00	H	53.29	-57.37	13.83	1.61	-45.15	-13.00	32.15
3346.00	V	57.66	-53.05	13.83	1.61	-40.83	-13.00	27.83
250.00	H	45.19	-64.05	0.00	0.51	-64.56	-13.00	51.56
250.00	V	45.23	-67.43	0.00	0.51	-67.94	-13.00	54.94

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: 2535.000 MHz								
5070.00	H	60.15	-46.65	13.93	1.34	-34.06	-25.00	9.06
5070.00	V	62.61	-44.00	13.93	1.34	-31.41	-25.00	6.41
7605.00	H	61.03	-39.33	13.21	1.40	-27.52	-25.00	2.52
7605.00	V	62.36	-38.40	13.21	1.40	-26.59	-25.00	1.59
250.00	H	45.58	-63.66	0.00	0.51	-64.17	-25.00	39.17
250.00	V	45.62	-67.04	0.00	0.51	-67.55	-25.00	42.55

LTE Band 12(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:707.500 MHz								
1415.00	H	58.67	-54.83	9.08	1.22	-46.97	-13.00	33.97
1415.00	V	53.06	-60.97	9.08	1.22	-53.11	-13.00	40.11
2122.50	H	77.64	-35.15	11.27	1.11	-24.99	-13.00	11.99
2122.50	V	76.04	-36.73	11.27	1.11	-26.57	-13.00	13.57
2830.00	H	49.12	-62.96	13.34	1.36	-50.98	-13.00	37.98
2830.00	V	54.90	-57.41	13.34	1.36	-45.43	-13.00	32.43
3537.50	H	59.32	-50.82	13.91	1.57	-38.48	-13.00	25.48
3537.50	V	55.95	-54.19	13.91	1.57	-41.85	-13.00	28.85
250.00	H	45.54	-63.70	0.00	0.51	-64.21	-13.00	51.21
250.00	V	45.85	-66.81	0.00	0.51	-67.32	-13.00	54.32

LTE Band 17(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:710.000 MHz								
1420.00	H	58.43	-55.17	9.10	1.23	-47.30	-13.00	34.30
1420.00	V	55.74	-58.36	9.10	1.23	-50.49	-13.00	37.49
2130.00	H	77.88	-34.87	11.22	1.11	-24.76	-13.00	11.76
2130.00	V	76.27	-36.45	11.22	1.11	-26.34	-13.00	13.34
2840.00	H	48.81	-63.23	13.42	1.36	-51.17	-13.00	38.17
2840.00	V	54.23	-58.05	13.42	1.36	-45.99	-13.00	32.99
3550.00	H	59.96	-50.19	13.95	1.56	-37.80	-13.00	24.80
3550.00	V	59.91	-50.24	13.95	1.56	-37.85	-13.00	24.85
250.00	H	45.77	-63.47	0.00	0.51	-63.98	-13.00	50.98
250.00	V	45.17	-67.49	0.00	0.51	-68.00	-13.00	55.00

LTE Band 18(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:822.500 MHz								
1645.00	H	46.93	-67.51	10.42	0.71	-57.80	-13.00	44.80
1645.00	V	48.78	-66.26	10.42	0.71	-56.55	-13.00	43.55
2467.50	H	50.04	-62.83	12.84	1.26	-51.25	-13.00	38.25
2467.50	V	49.10	-63.84	12.84	1.26	-52.26	-13.00	39.26
3290.00	H	47.56	-63.14	13.60	1.59	-51.13	-13.00	38.13
3290.00	V	48.73	-61.97	13.60	1.59	-49.96	-13.00	36.96
250.00	H	45.25	-63.99	0.00	0.51	-64.50	-13.00	51.50
250.00	V	45.38	-67.28	0.00	0.51	-67.79	-13.00	54.79

LTE Band 38(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: 2595.000 MHz								
5190.00	H	53.69	-52.73	13.99	1.51	-40.25	-25.00	15.25
5190.00	V	60.32	-46.15	13.99	1.51	-33.67	-25.00	8.67
7785.00	H	62.02	-38.42	13.32	1.53	-26.63	-25.00	1.63
7785.00	V	61.95	-38.74	13.32	1.53	-26.95	-25.00	1.95
250.00	H	45.42	-63.82	0.00	0.51	-64.33	-25.00	39.33
250.00	V	45.18	-67.48	0.00	0.51	-67.99	-25.00	42.99

LTE Band 40(30MHz-25GHz):

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: 2310.000 MHz								
4620.00	H	53.62	-54.83	14.24	1.81	-42.40	-40.00	2.40
4620.00	V	54.09	-54.46	14.24	1.81	-42.03	-40.00	2.03
6930.00	H	48.36	-53.94	13.64	1.81	-42.11	-40.00	2.11
6930.00	V	49.25	-52.91	13.64	1.81	-41.08	-40.00	1.08
250.00	H	45.35	-63.89	0.00	0.51	-64.40	-40.00	24.40
250.00	V	45.62	-67.04	0.00	0.51	-67.55	-40.00	27.55
QPSK,Frequency: 2355.000 MHz								
4710.00	H	48.32	-60.19	14.39	1.66	-47.46	-40.00	7.46
4710.00	V	51.03	-57.58	14.39	1.66	-44.85	-40.00	4.85
7065.00	H	48.02	-53.81	13.31	1.76	-42.26	-40.00	2.26
7065.00	V	48.36	-53.39	13.31	1.76	-41.84	-40.00	1.84
250.00	H	45.33	-63.91	0.00	0.51	-64.42	-40.00	24.42
250.00	V	45.17	-67.49	0.00	0.51	-68.00	-40.00	28.00

LTE Band 41

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: 2595.000 MHz								
5190.00	H	51.32	-55.09	13.99	1.50	-42.60	-25.00	17.60
5190.00	V	53.02	-53.44	13.99	1.50	-40.95	-25.00	15.95
7785.00	H	61.08	-39.35	13.32	1.53	-27.56	-25.00	2.56
7785.00	V	59.96	-40.73	13.32	1.53	-28.94	-25.00	3.94
250.00	H	45.22	-64.02	0.00	0.51	-64.53	-25.00	39.53
250.00	V	45.36	-67.30	0.00	0.51	-67.81	-25.00	42.81

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

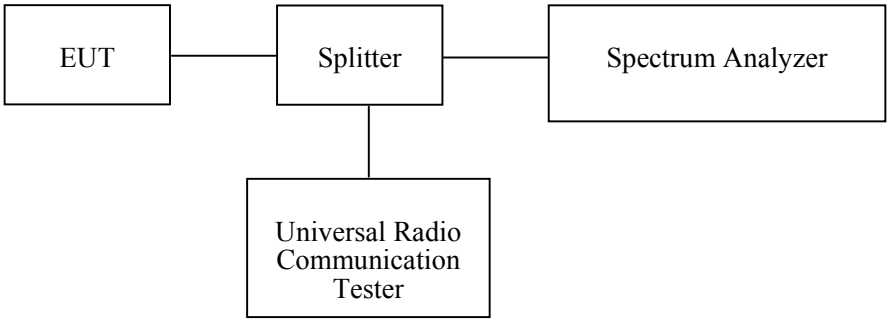
Applicable Standard

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	FSU 26	200256	2019-05-09	2020-05-09
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2019-08-03	2020-08-03
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010013	Each time	/
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	Each time	/
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each time	/

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

Test Data

Environmental Conditions

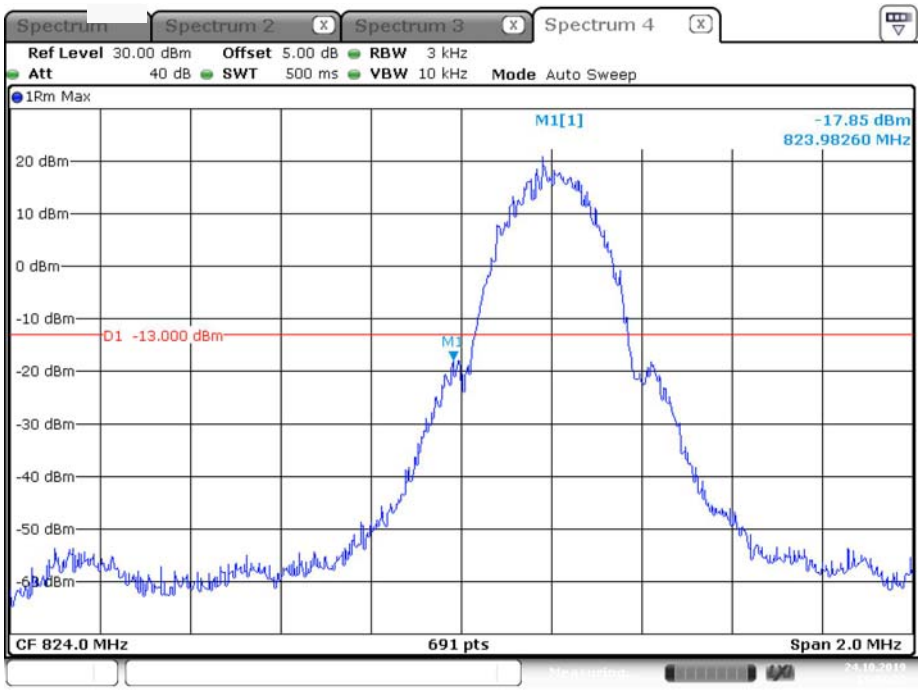
Temperature:	26.3~28.2 °C
Relative Humidity:	47~56%
ATM Pressure:	100.2~101.9kPa
Tester:	Blake Yang, Lily Xie
Test Date:	2019-10-15~2019-10-25

Test Mode: Transmitting

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

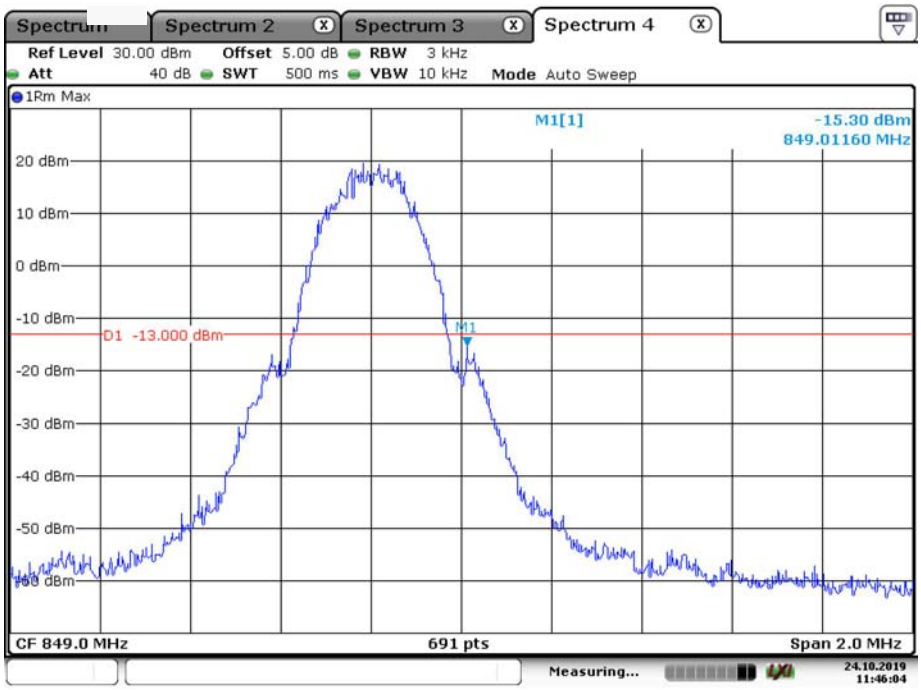
Module 2:

GPRS 850, Left Band Edge



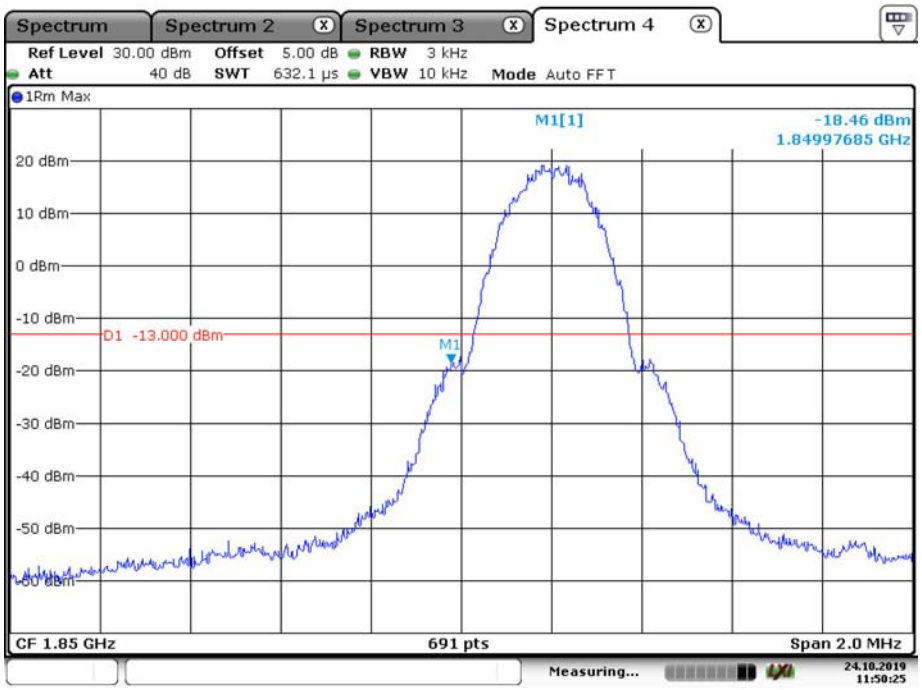
Date: 24.OCT.2019 11:41:22

GPRS 850, Right Band Edge



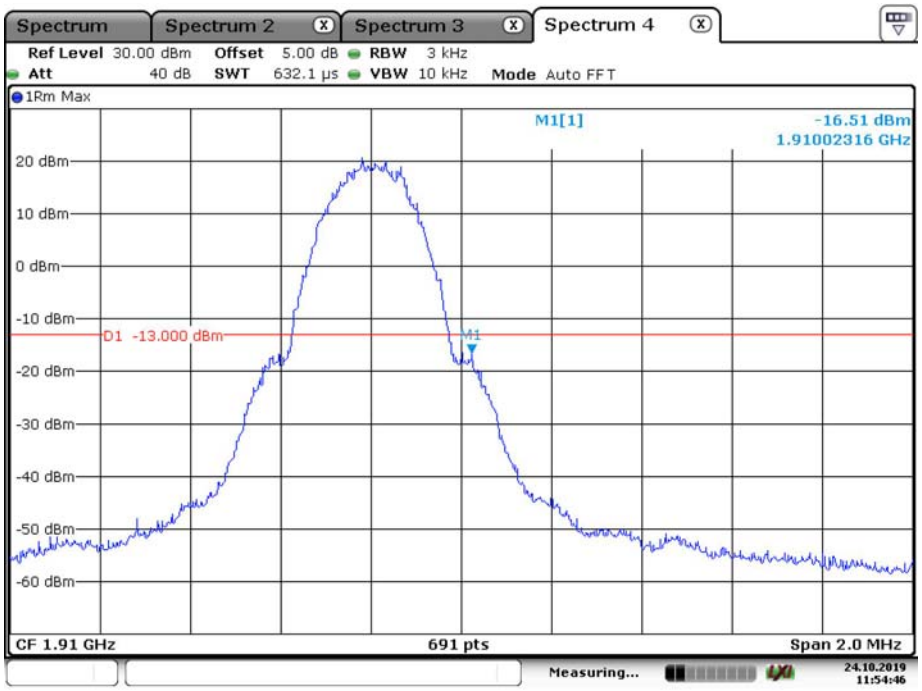
Date: 24.OCT.2019 11:46:04

GPRS 1900, Left Band Edge



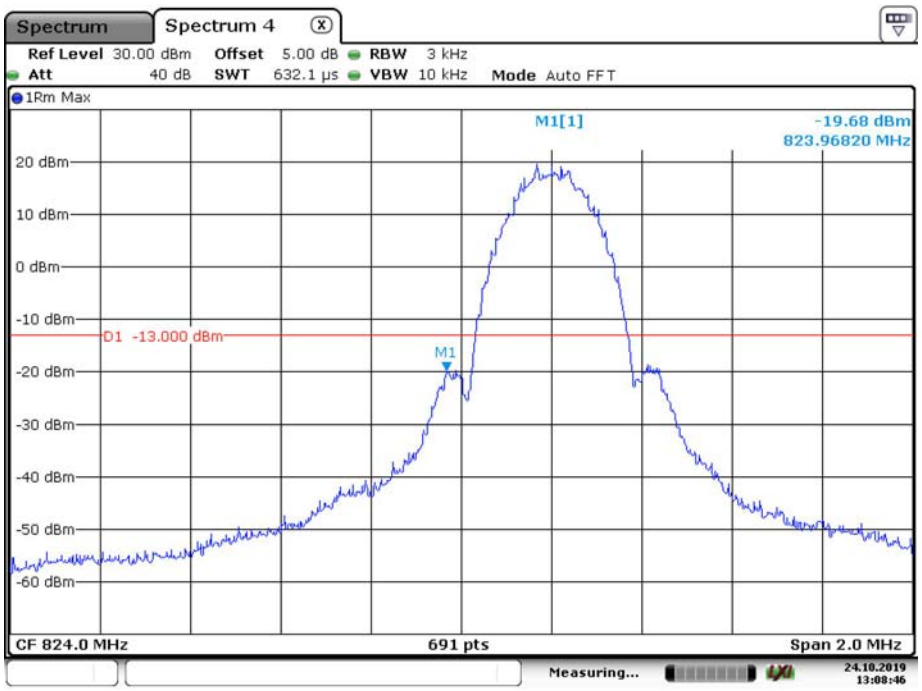
Date: 24.OCT.2019 11:50:26

GPRS 1900, Right Band Edge



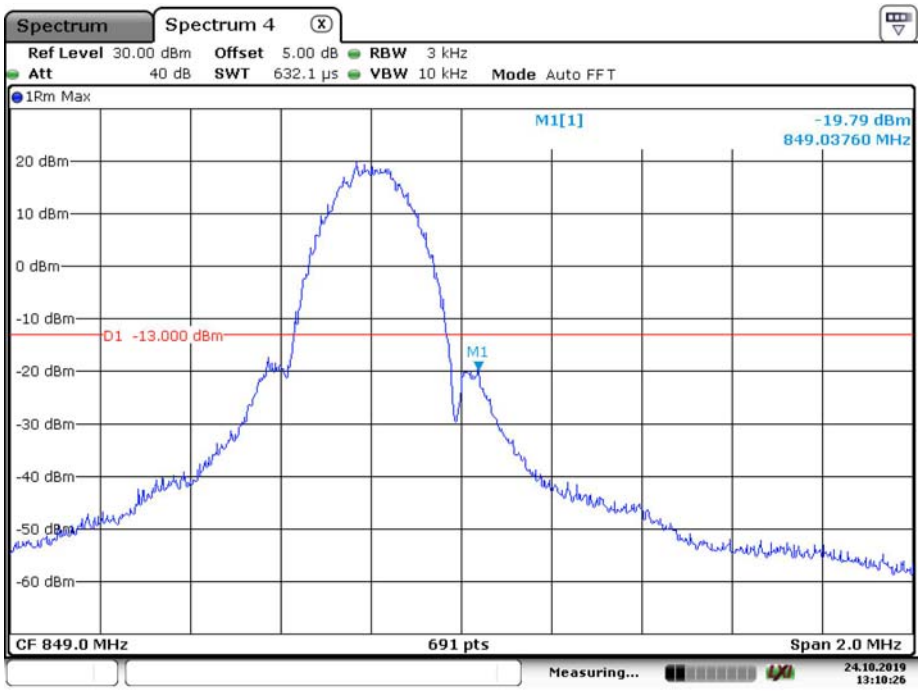
Date: 24.OCT.2019 11:54:46

EDGE 850, Left Band Edge



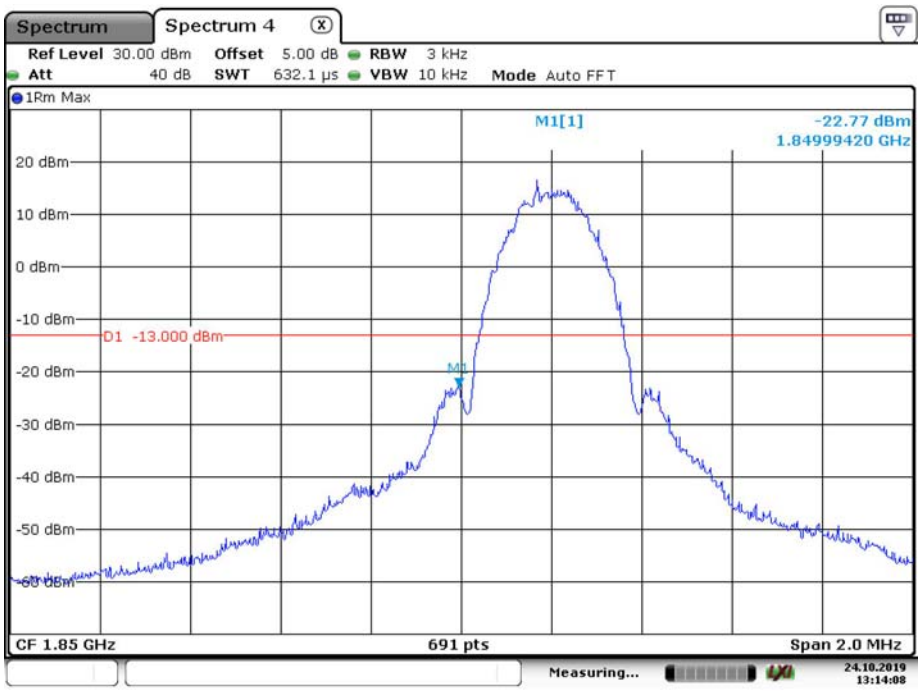
Date: 24.OCT.2019 13:08:47

EDGE 850, Right Band Edge



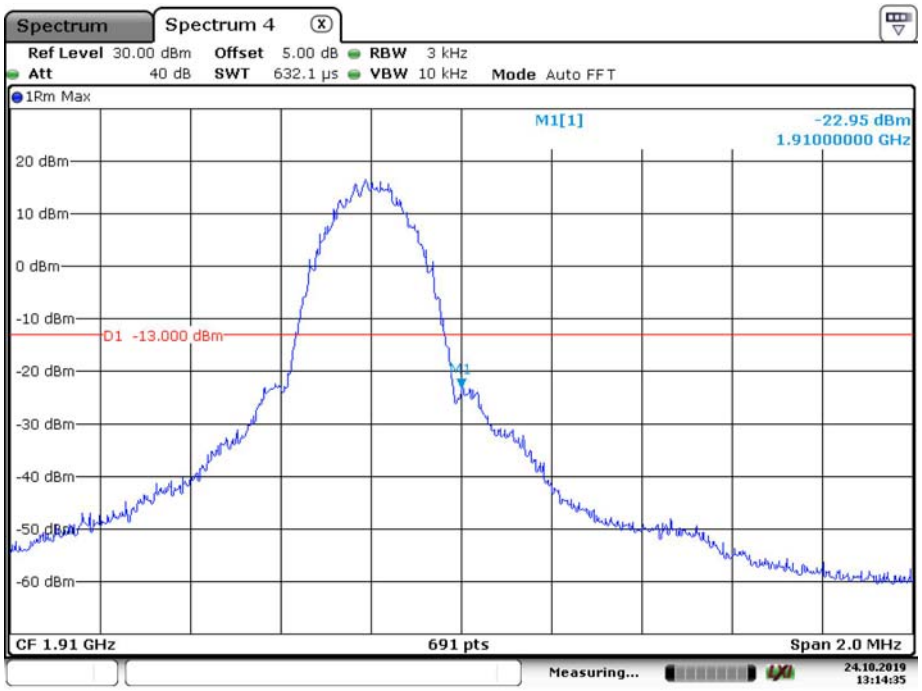
Date: 24.OCT.2019 13:10:27

EDGE 1900, Left Band Edge



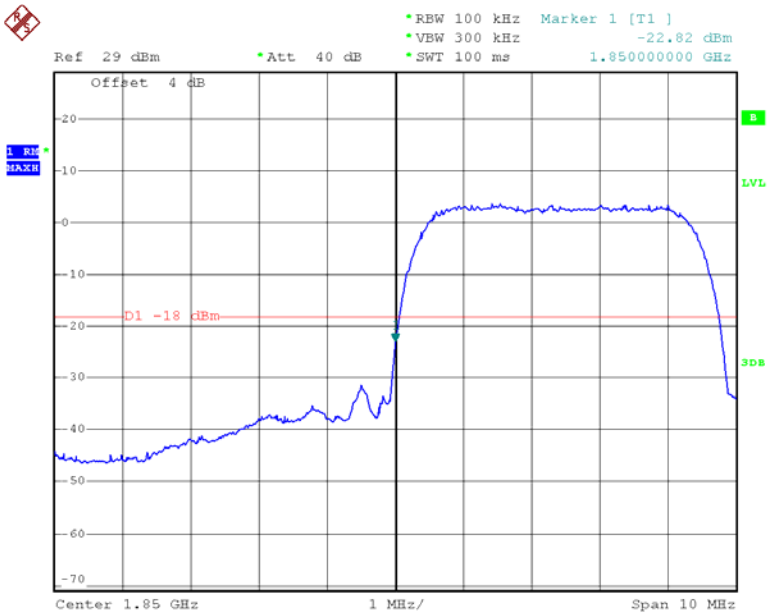
Date: 24.OCT.2019 13:14:08

EDGE 1900, Right Band Edge



Date: 24.OCT.2019 13:14:35

WCDMA Band 2 Rel 99, Left Band Edge



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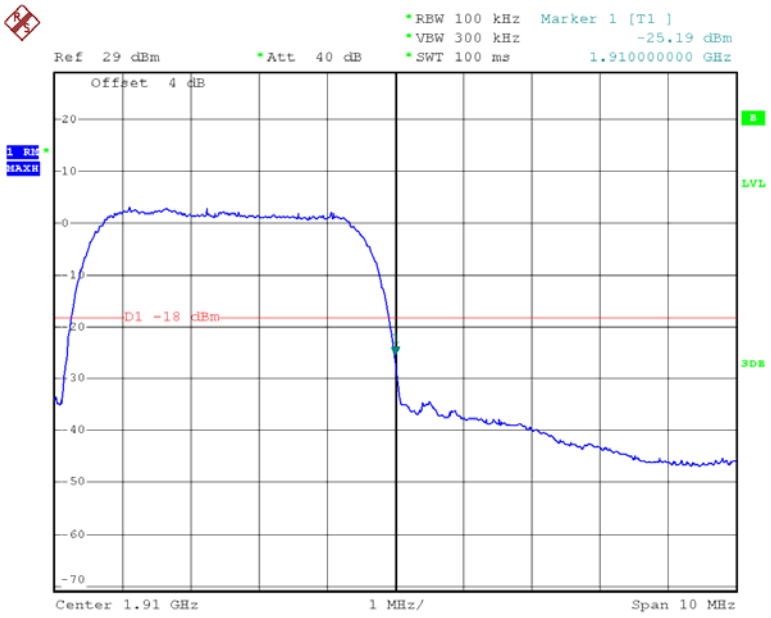
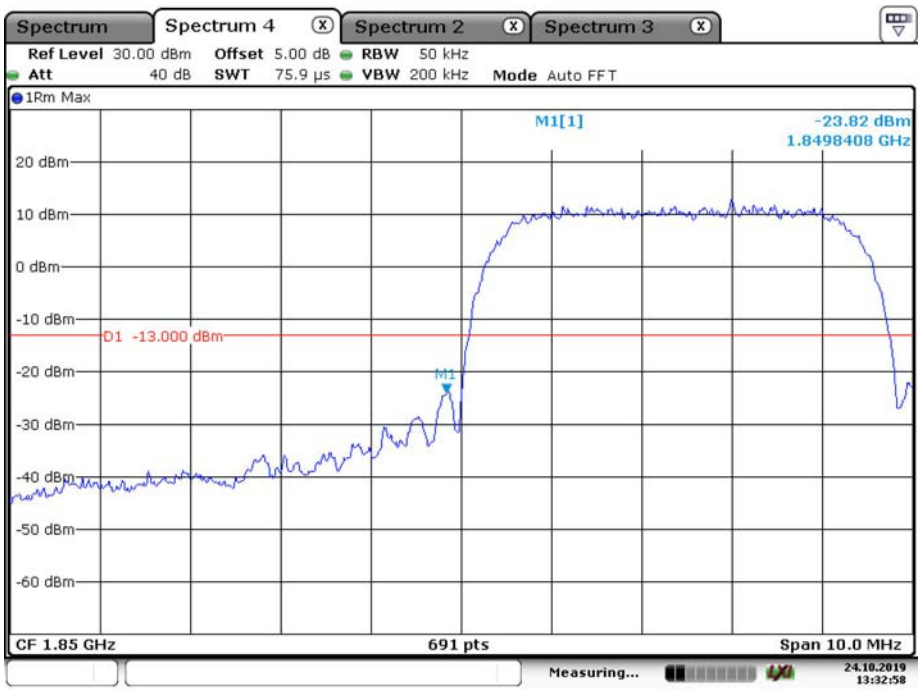
WCDMA Band 2 Rel 99, Right Band Edge



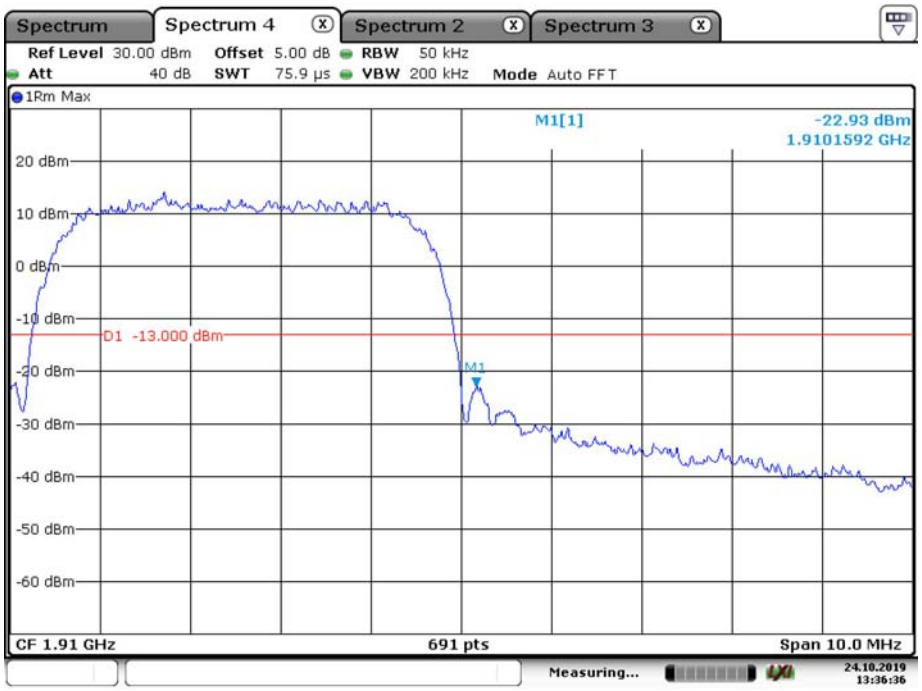
Date: 21.DEC.2019 09:29:55

WCDMA Band 2 HSDPA, Left Band Edge



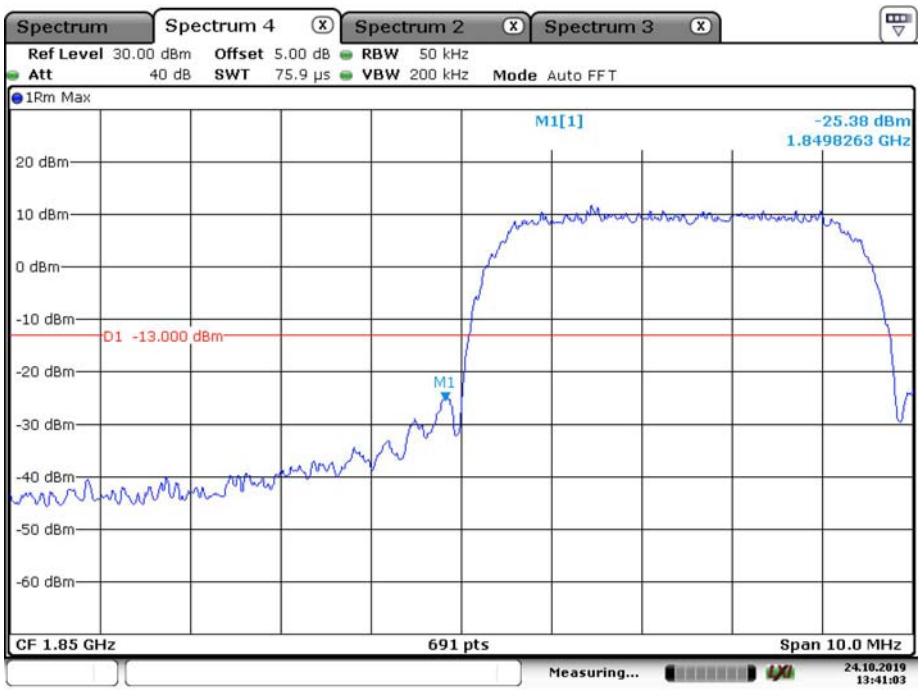
Date: 24.OCT.2019 13:32:58

WCDMA Band 2 HSDPA, Right Band Edge



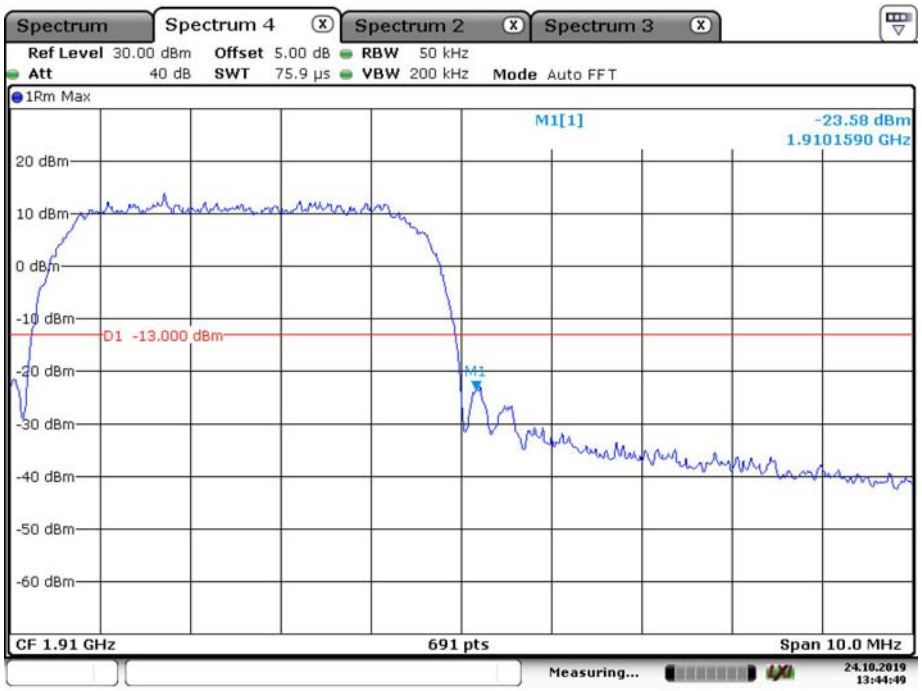
Date: 24.OCT.2019 13:36:36

WCDMA Band 2 HSUPA, Left Band Edge



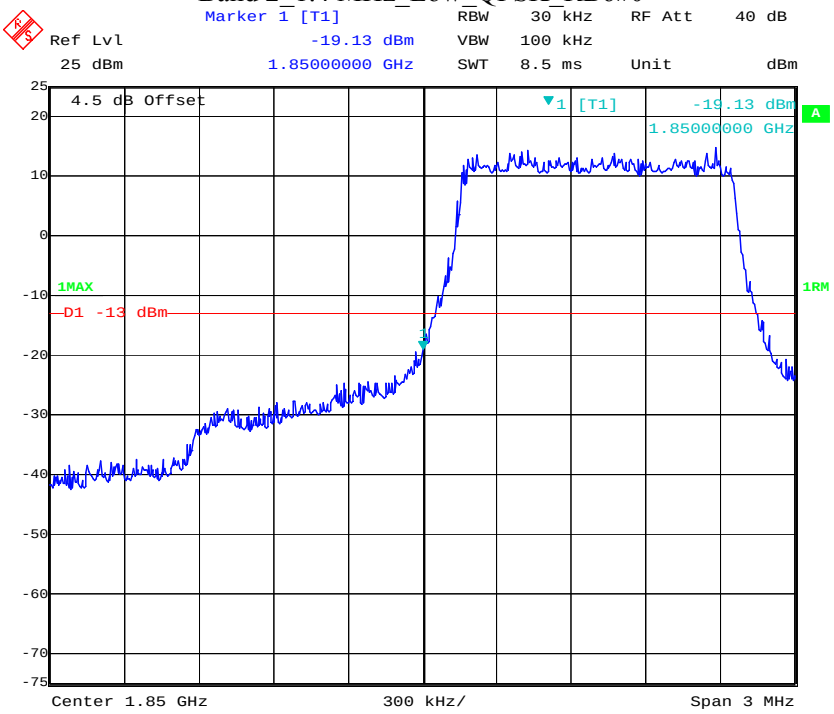
Date: 24.OCT.2019 13:41:04

WCDMA Band 2 HSUPA, Right Band Edge



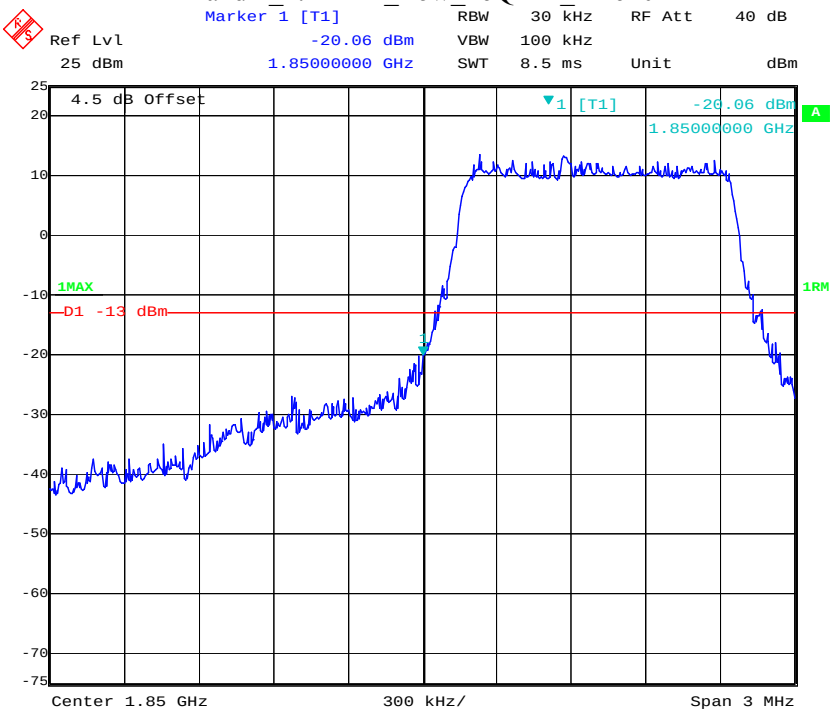
Date: 24.OCT.2019 13:44:49

Band 2_1.4 MHz_Low_QPSK_RB6#0



Date: 18.OCT.2019 17:02:25

Band 2_1.4 MHz_Low_16QAM_RB6#0

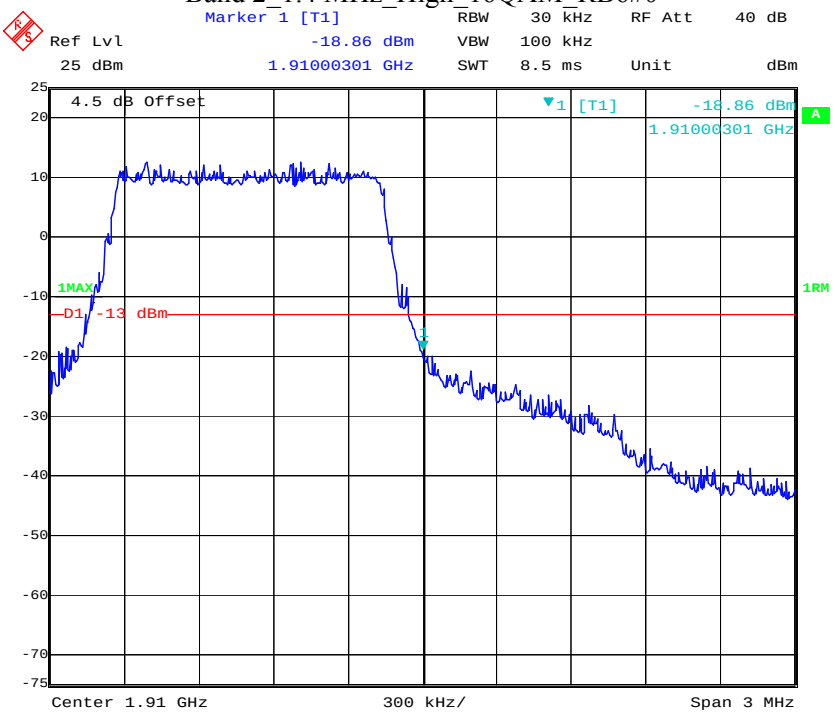


Date: 18.OCT.2019 17:02:47

Band 2_1.4 MHz_High_QPSK_RB6#0

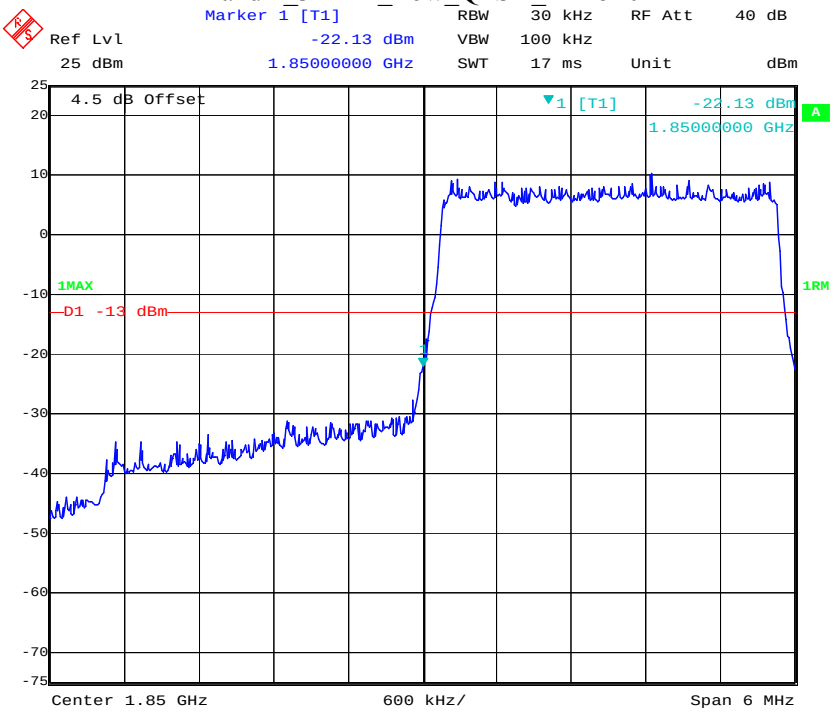
Date: 18.OCT.2019 17:03:07

Band 2_1.4 MHz_High_16QAM_RB6#0



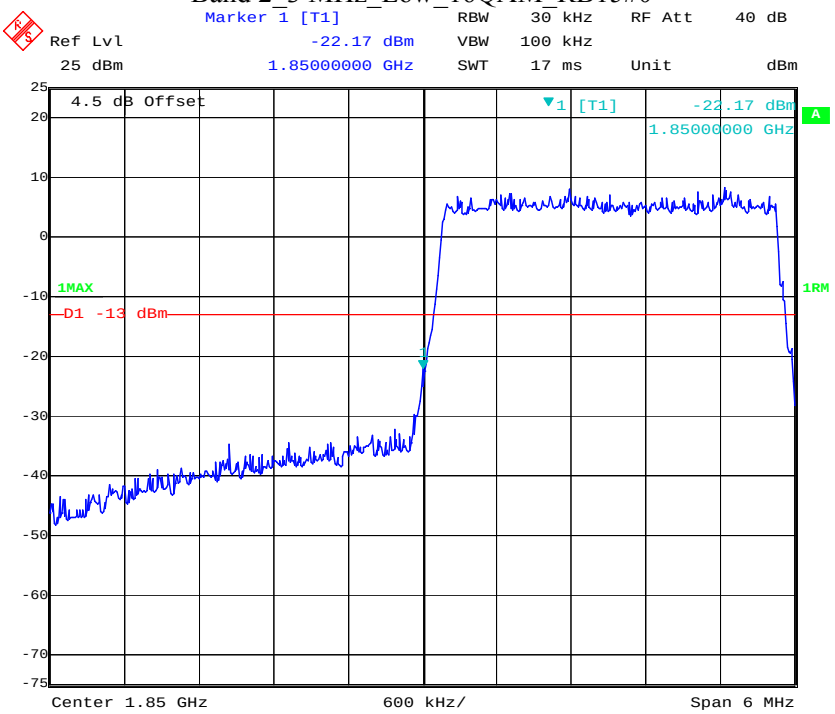
Date: 18.OCT.2019 17:03:26

Band 2_3 MHz_Low_QPSK_RB15#0



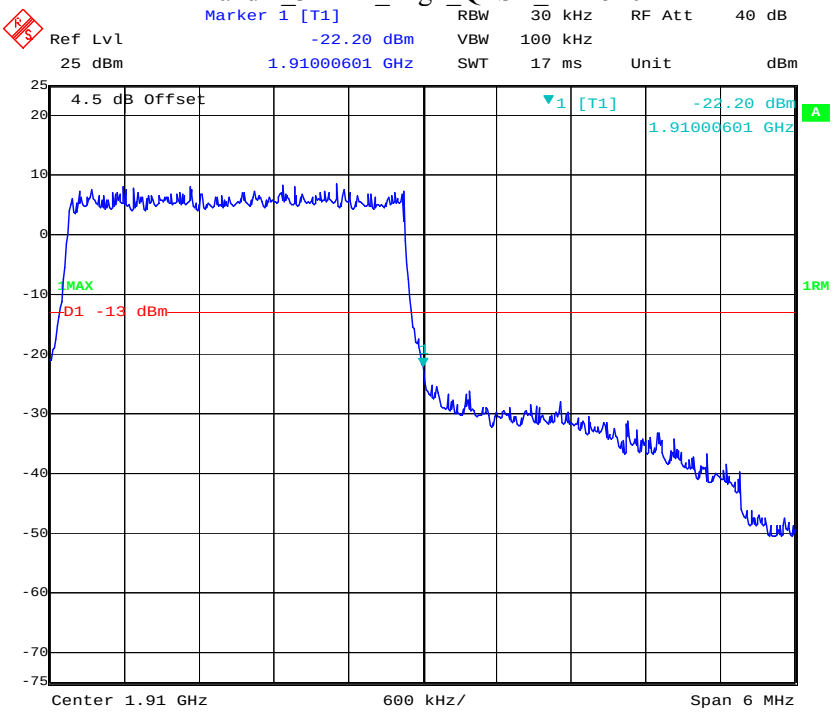
Date: 18.OCT.2019 17:03:51

Band 2_3 MHz_Low_16QAM_RB15#0



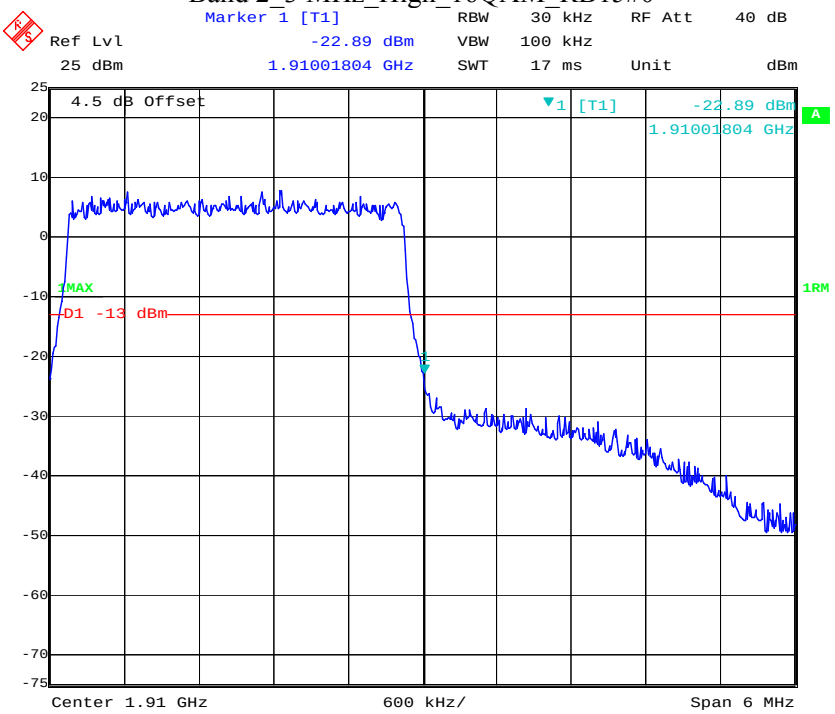
Date: 18.OCT.2019 17:04:08

Band 2_3 MHz_High_QPSK_RB15#0



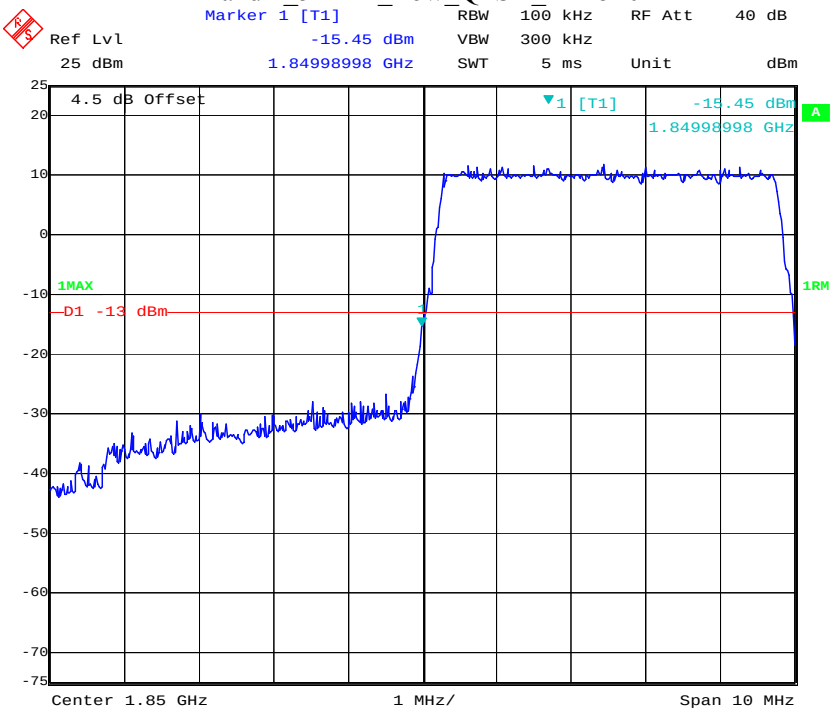
Date: 18.OCT.2019 17:04:28

Band 2_3 MHz_High_16QAM_RB15#0



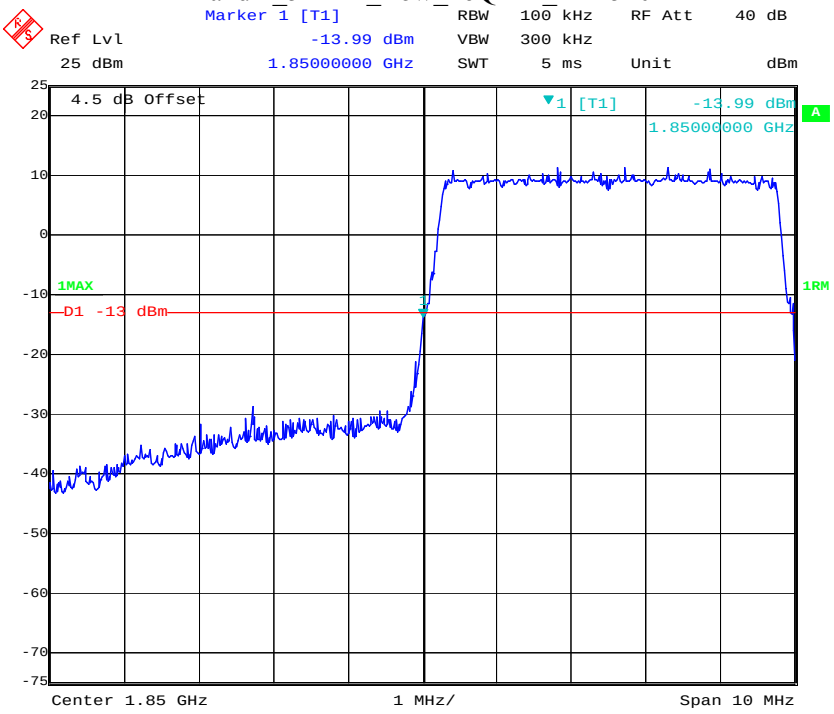
Date: 18.OCT.2019 17:04:47

Band 2_5 MHz_Low_QPSK_RB25#0



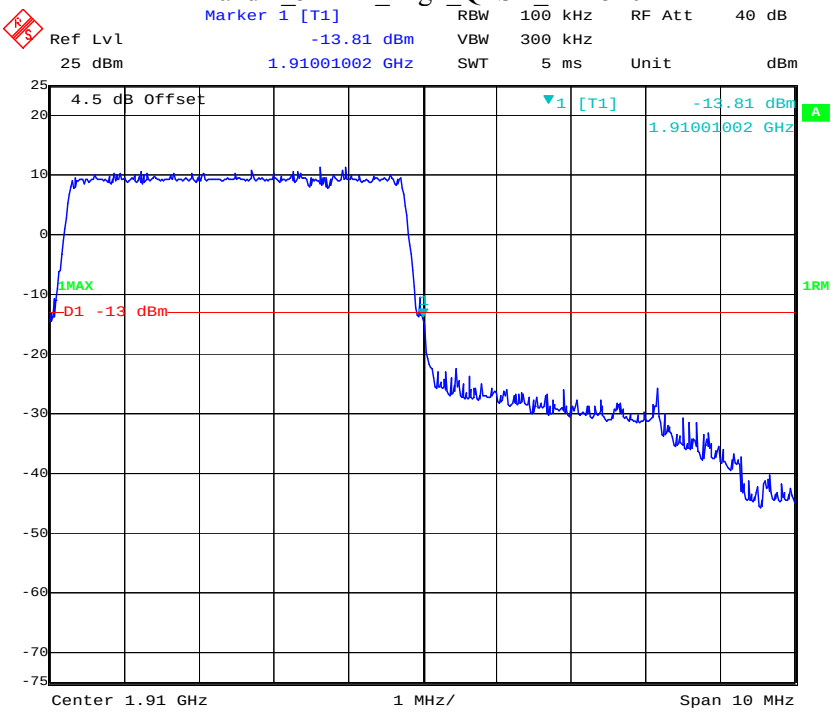
Date: 18.OCT.2019 17:05:12

Band 2_5 MHz_Low_16QAM_RB25#0



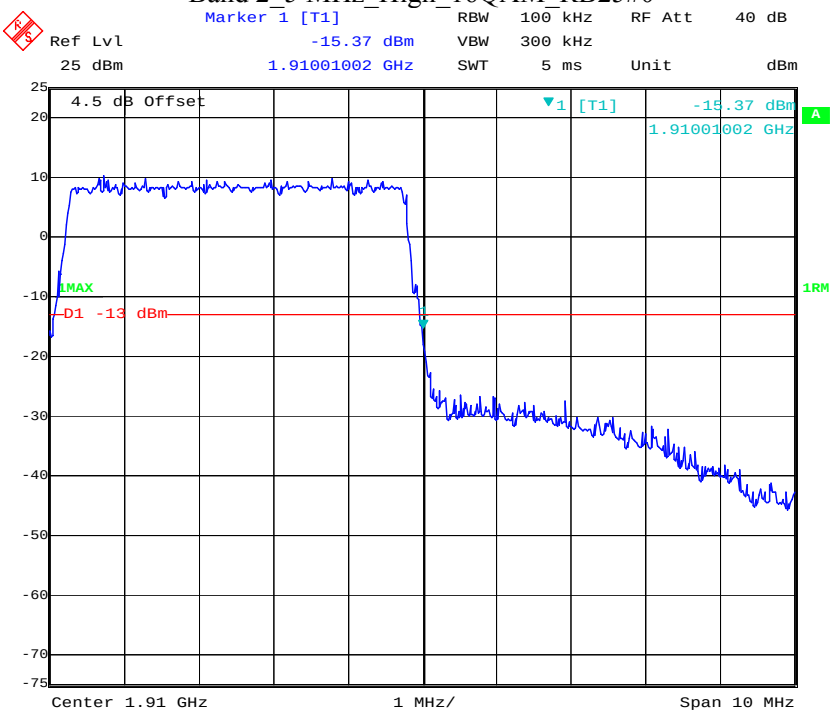
Date: 18.OCT.2019 17:05:31

Band 2_5 MHz_High_QPSK_RB25#0



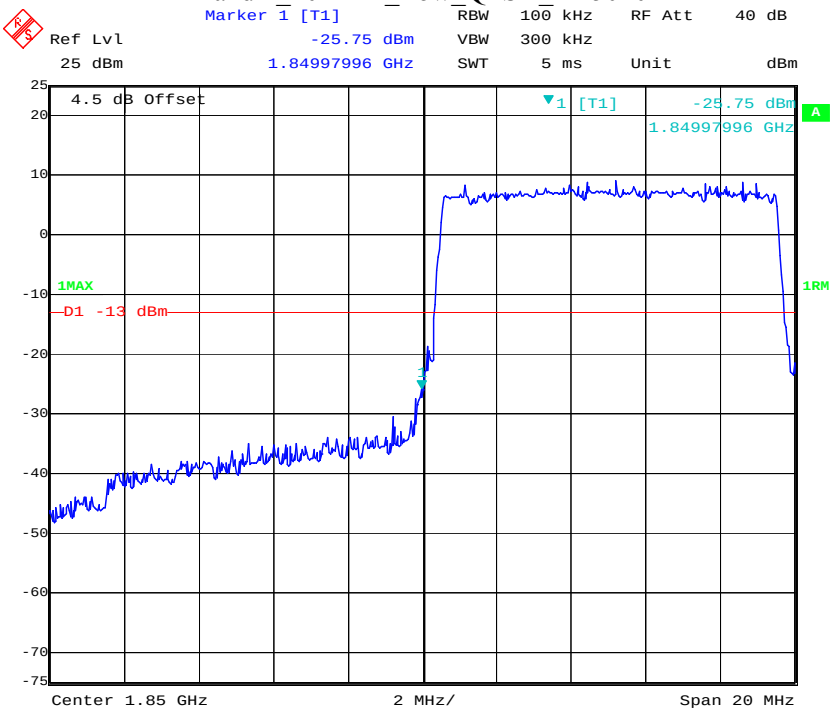
Date: 18.OCT.2019 17:05:52

Band 2_5 MHz_High_16QAM_RB25#0



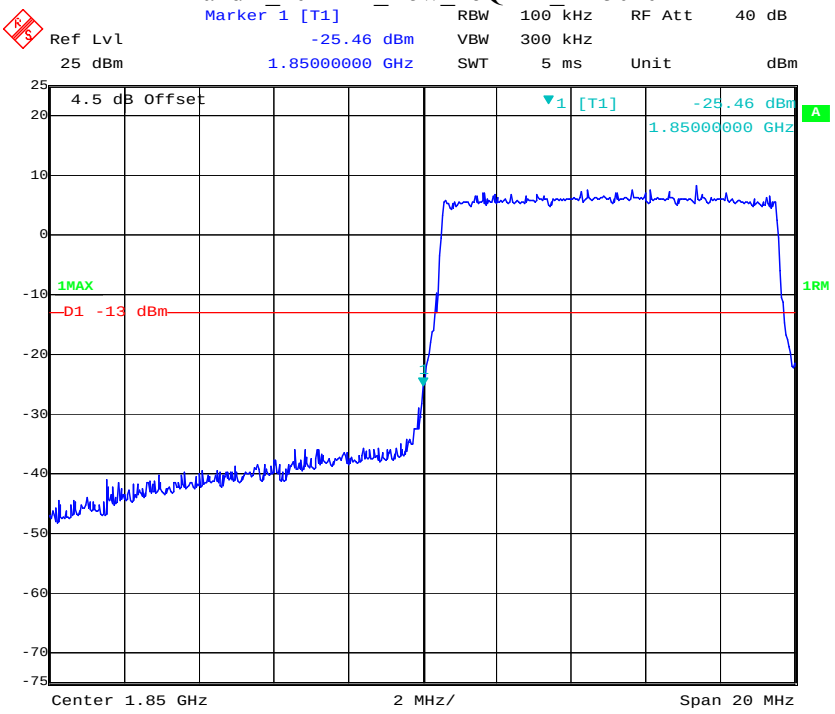
Date: 18.OCT.2019 17:06:11

Band 2_10 MHz_Low_QPSK_RB50#0



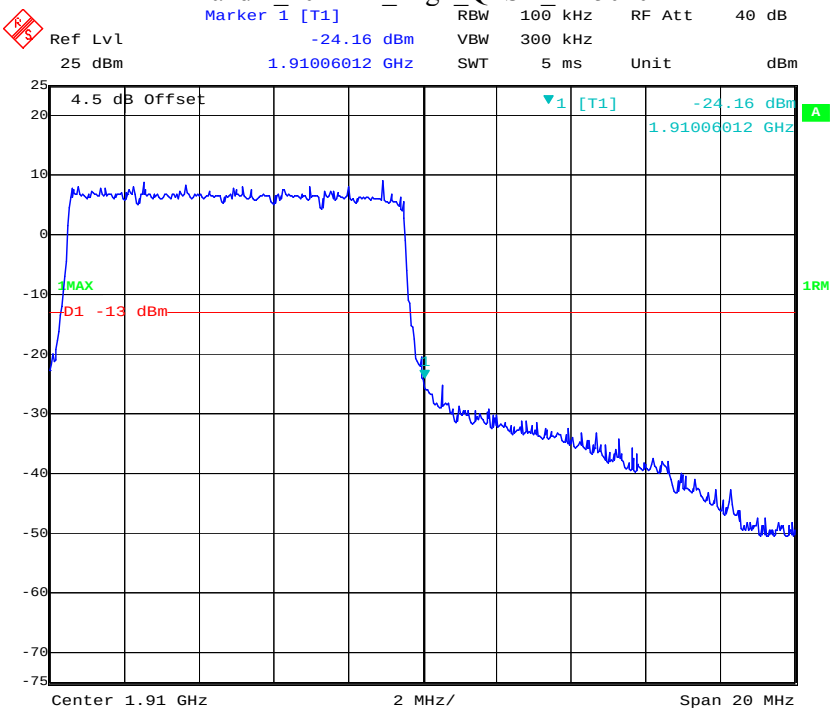
Date: 18.OCT.2019 17:06:33

Band 2_10 MHz_Low_16QAM_RB50#0



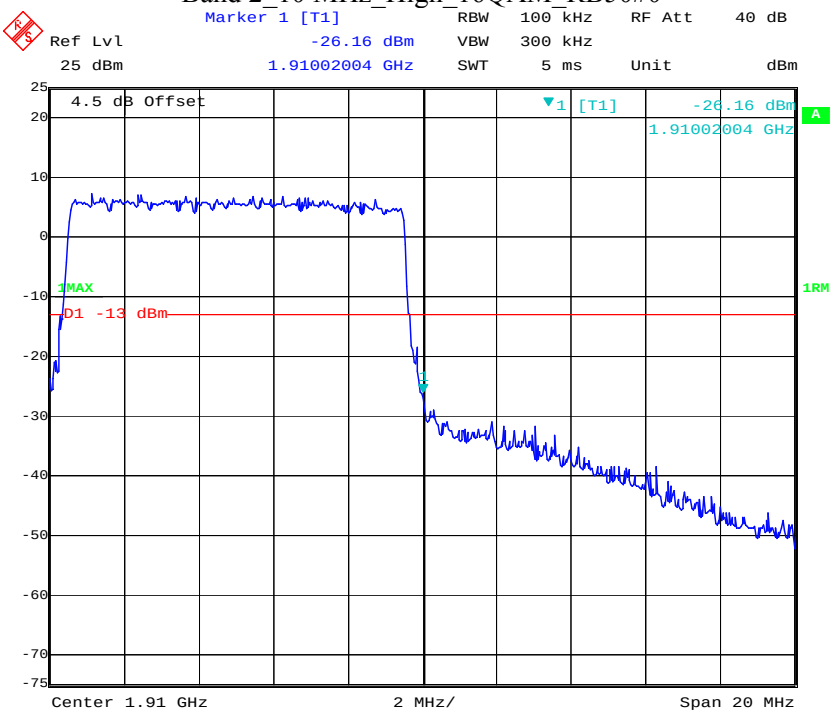
Date: 18.OCT.2019 17:06:54

Band 2_10 MHz_High_QPSK_RB50#0



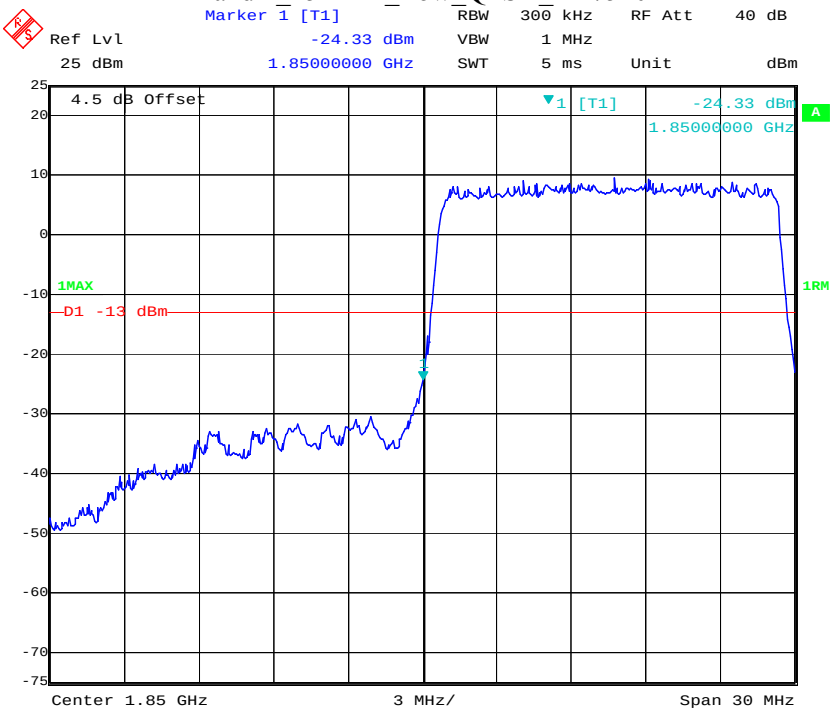
Date: 18.OCT.2019 17:07:15

Band 2_10 MHz_High_16QAM_RB50#0



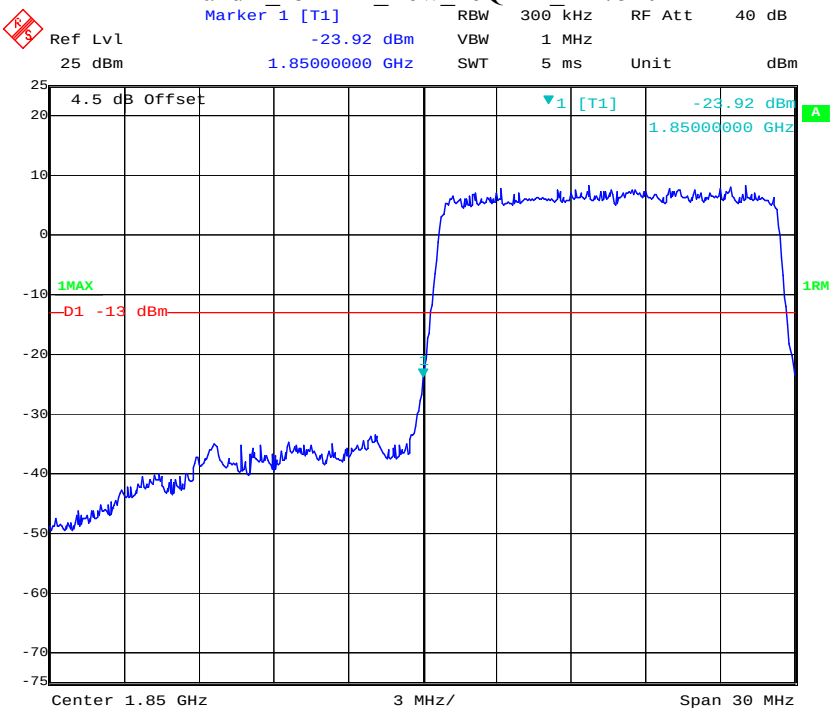
Date: 18.OCT.2019 17:07:36

Band 2_15 MHz_Low_QPSK_RB75#0



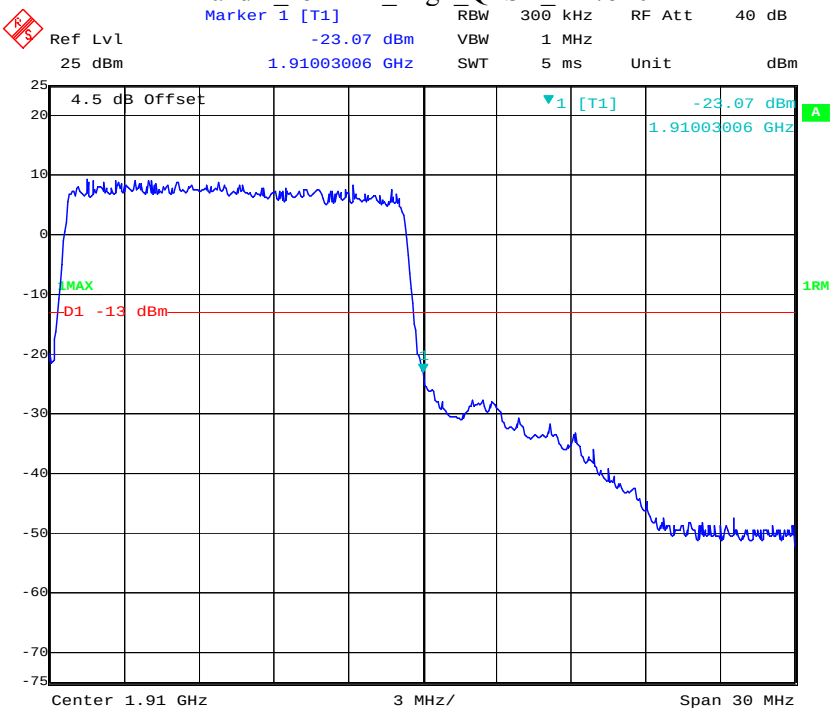
Date: 18.OCT.2019 17:07:59

Band 2_15 MHz_Low_16QAM_RB75#0



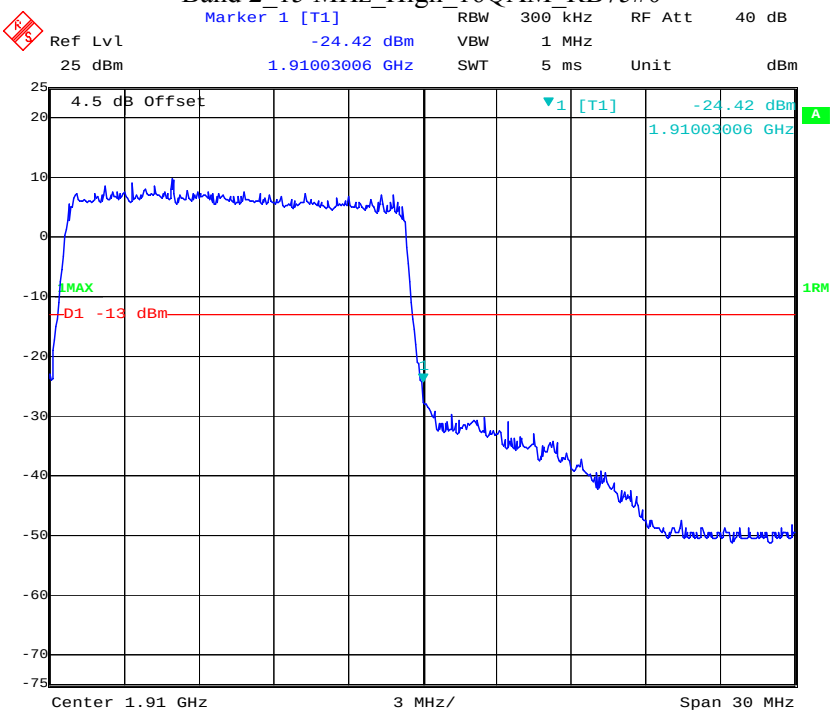
Date: 18.OCT.2019 17:08:18

Band 2_15 MHz_High_QPSK_RB75#0



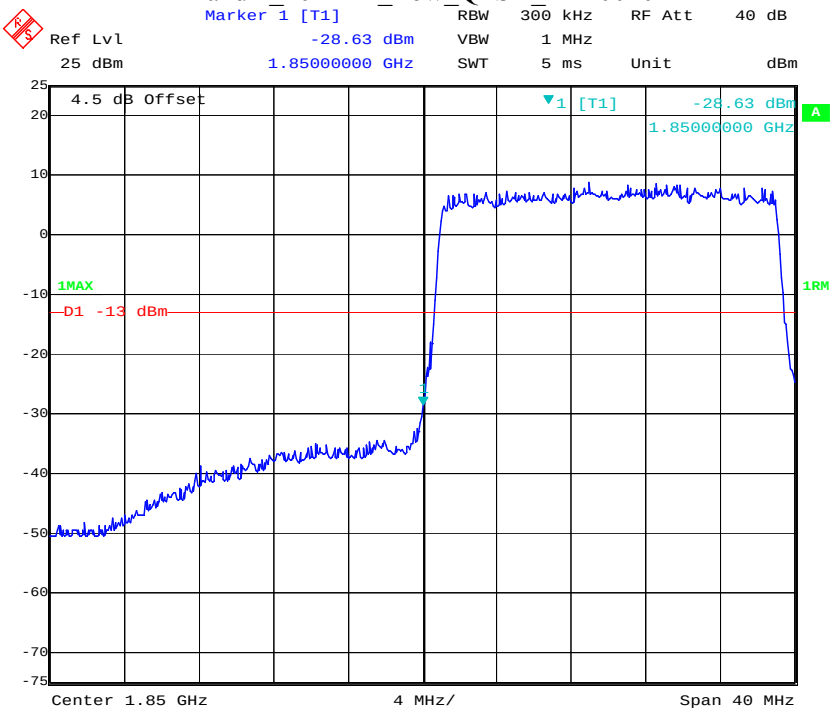
Date: 18.OCT.2019 17:08:37

Band 2_15 MHz_High_16QAM_RB75#0



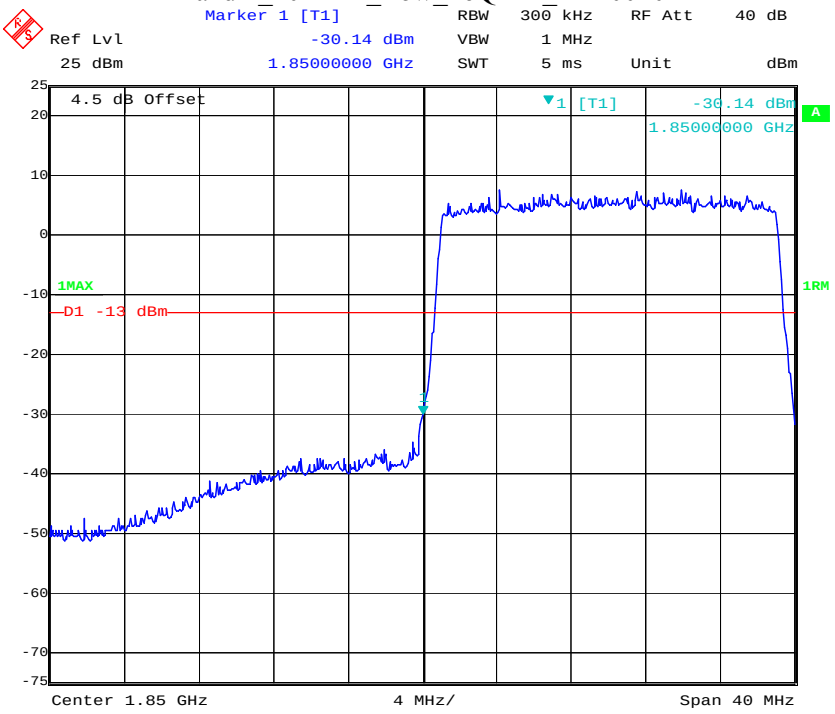
Date: 18.OCT.2019 17:08:55

Band 2_20 MHz_Low_QPSK_RB100#0



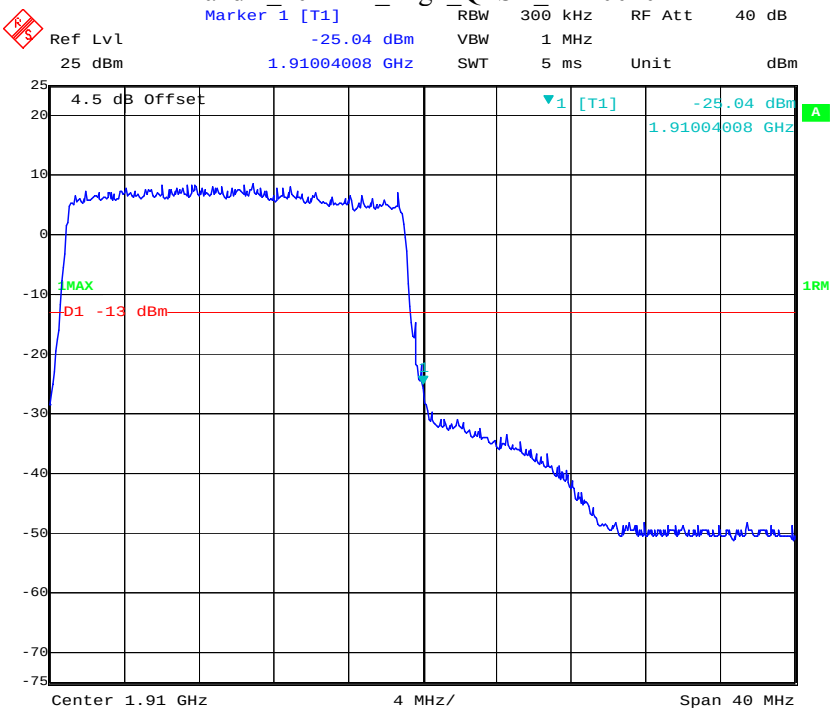
Date: 18.OCT.2019 17:15:49

Band 2_20 MHz_Low_16QAM_RB100#0



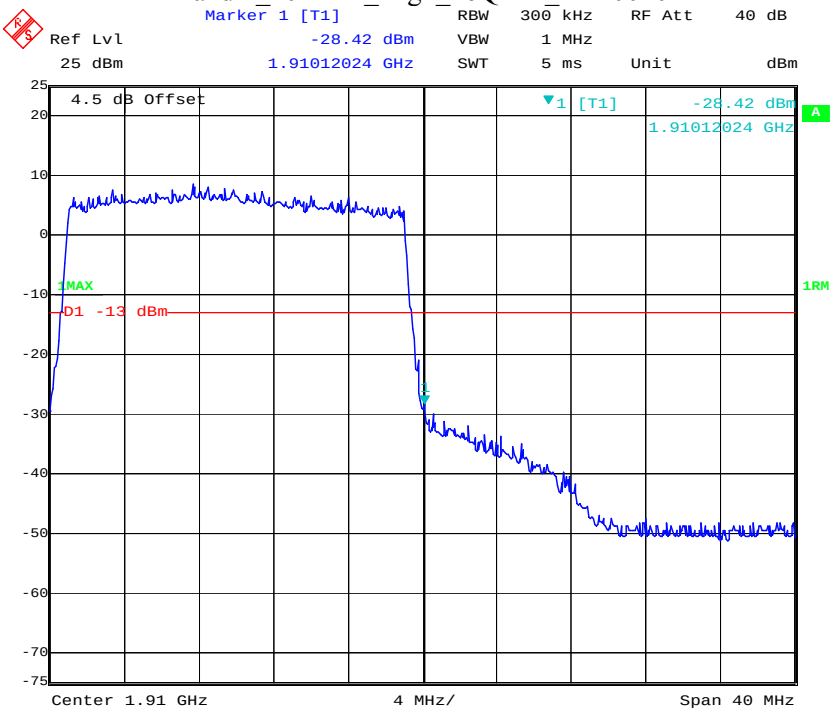
Date: 18.OCT.2019 17:16:07

Band 2_20 MHz_High_QPSK_RB100#0



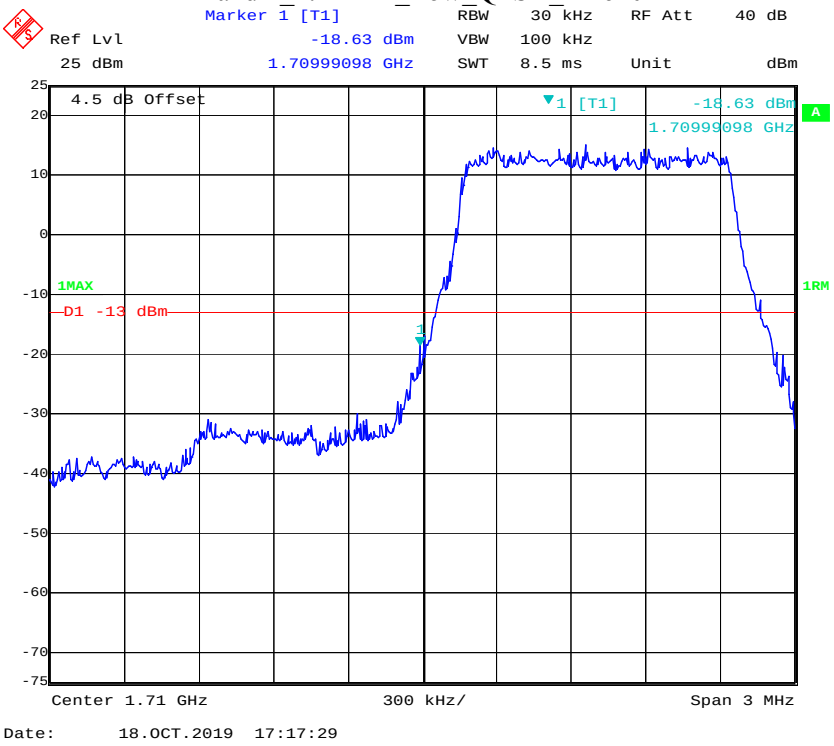
Date: 18.OCT.2019 17:16:30

Band 2_20 MHz_High_16QAM_RB100#0

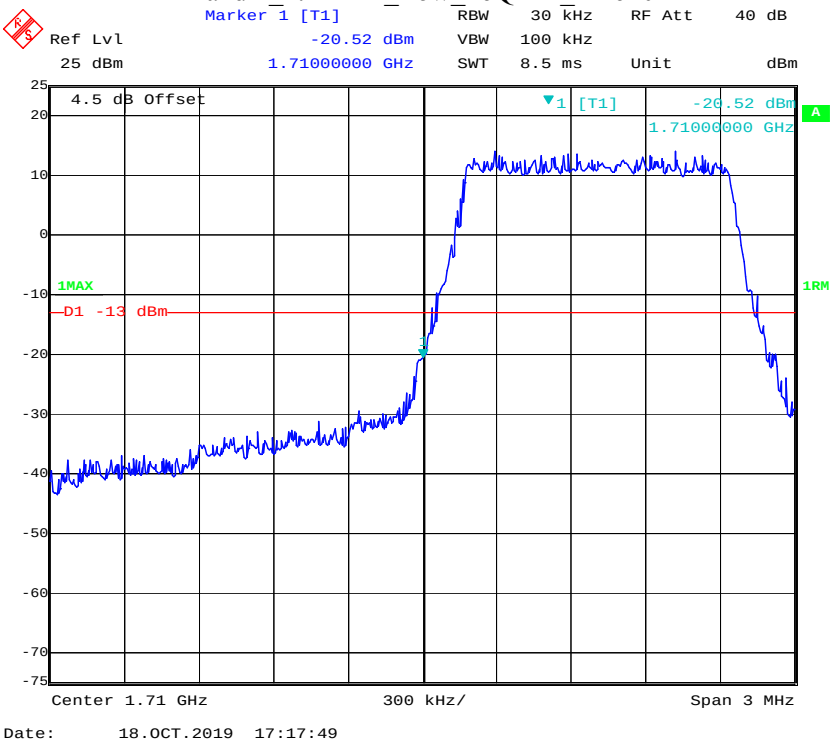


Date: 18.OCT.2019 17:16:54

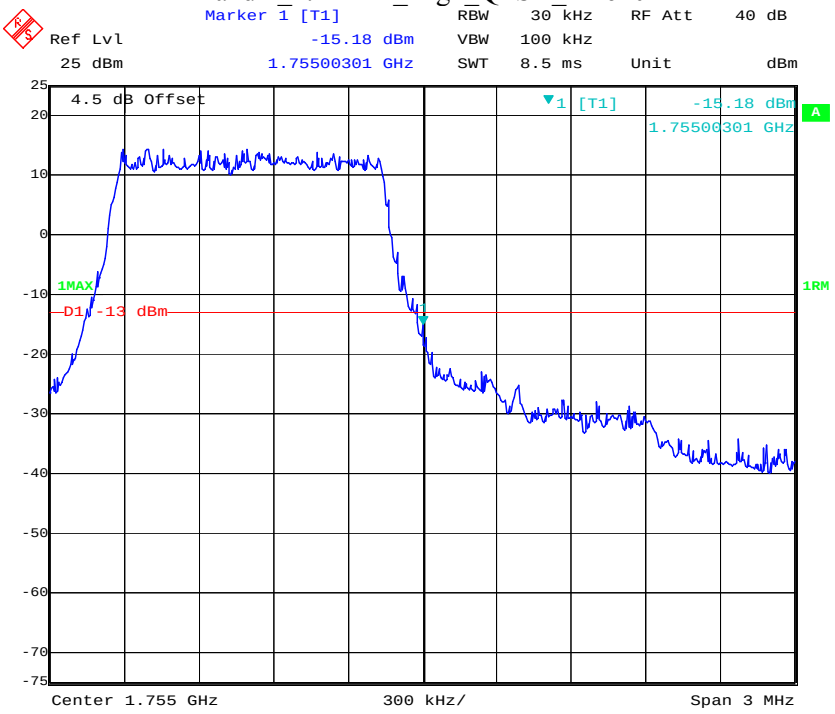
Band 4_1.4 MHz_Low_QPSK_RB6#0



Band 4_1.4 MHz_Low_16QAM_RB6#0

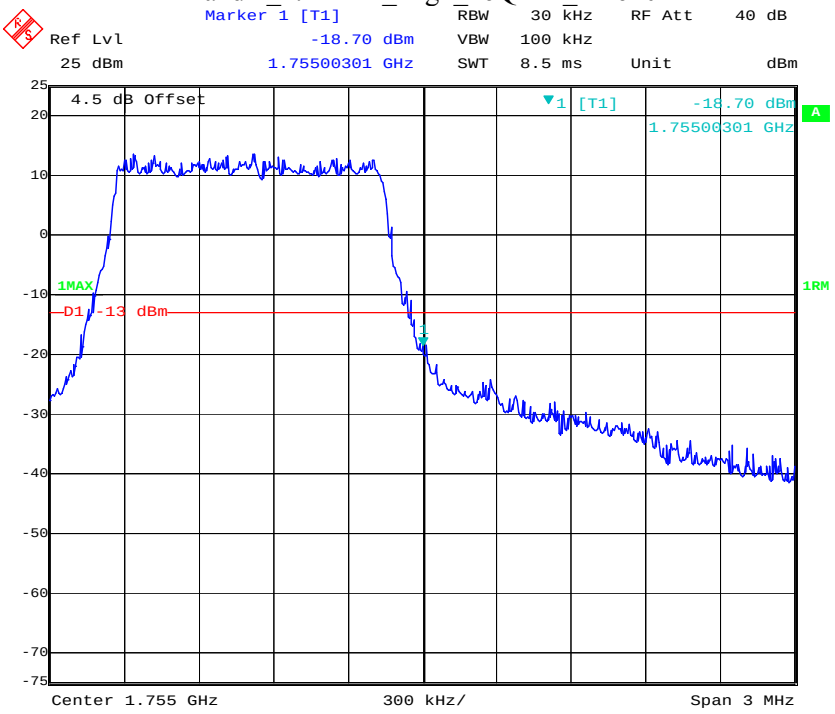


Band 4_1.4 MHz_High_QPSK_RB6#0



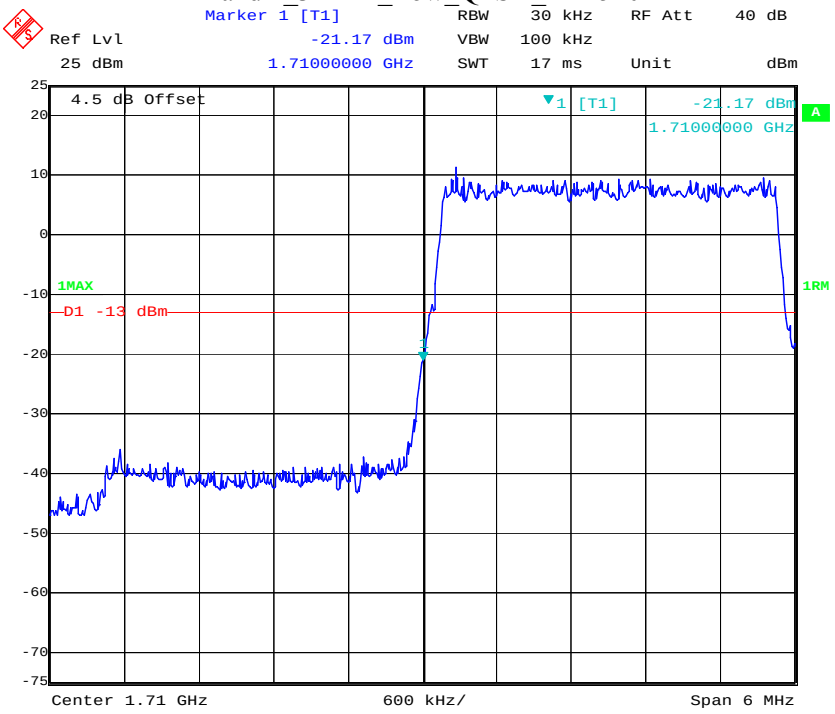
Date: 18.OCT.2019 17:18:09

Band 4_1.4 MHz_High_16QAM_RB6#0



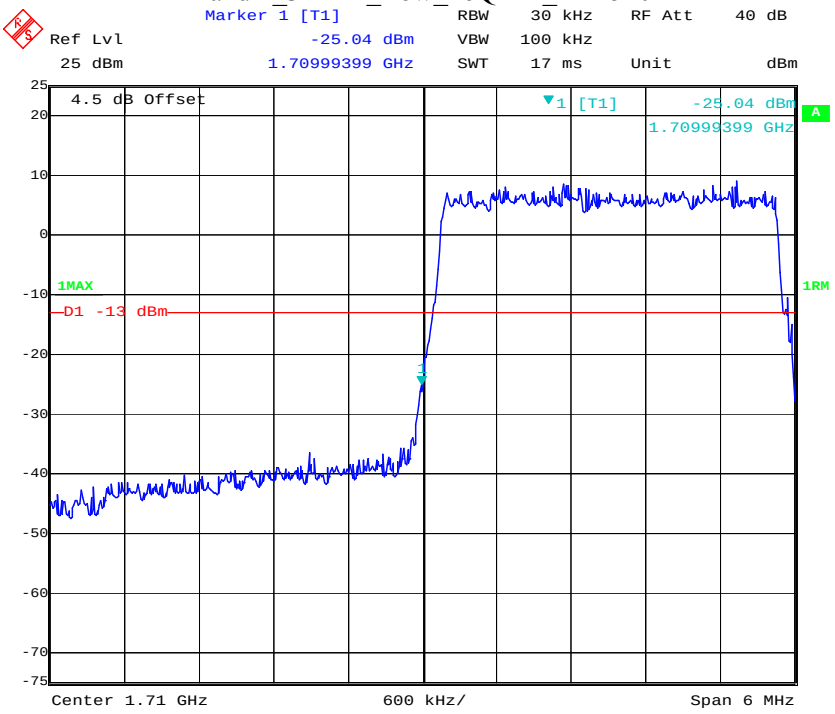
Date: 18.OCT.2019 17:18:28

Band 4_3 MHz_Low_QPSK_RB15#0



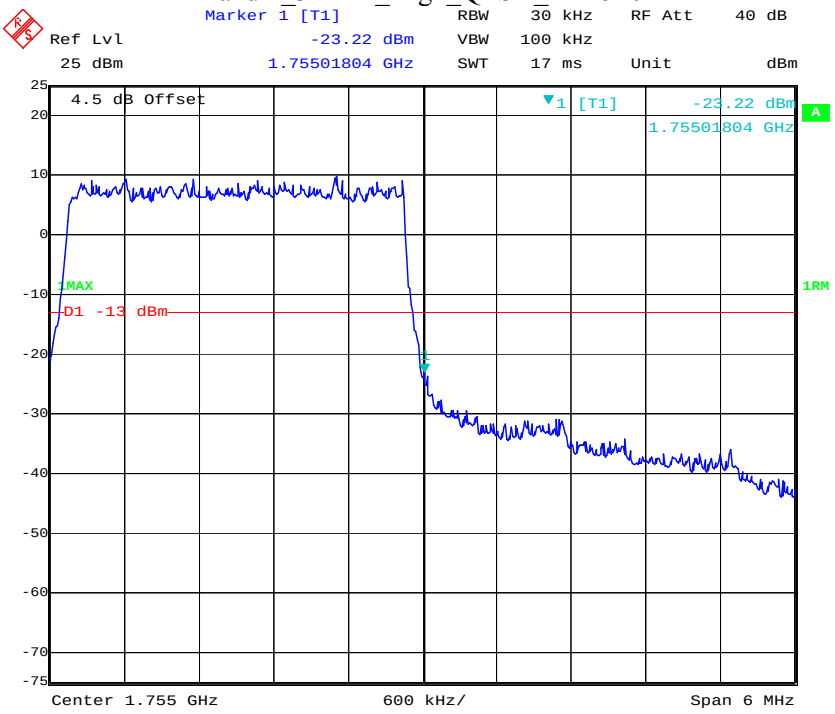
Date: 18.OCT.2019 17:18:53

Band 4_3 MHz_Low_16QAM_RB15#0



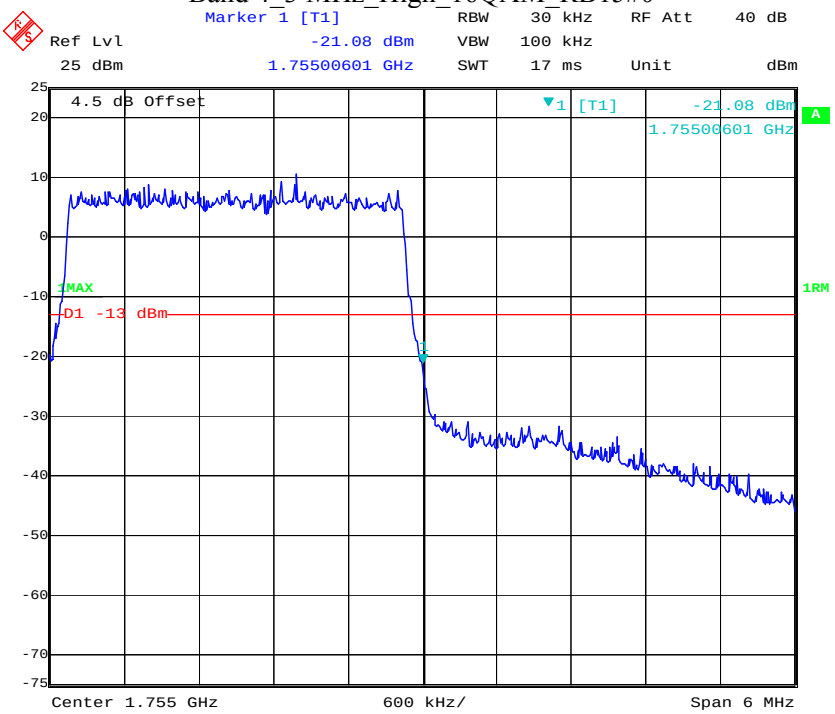
Date: 18.OCT.2019 17:19:09

Band 4_3 MHz_High_QPSK_RB15#0



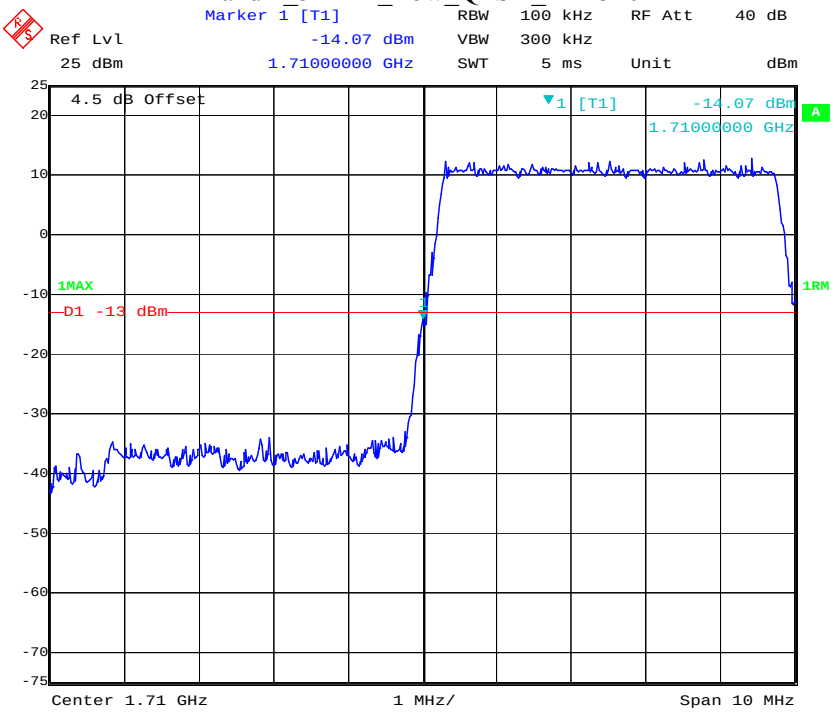
Date: 18.OCT.2019 17:19:29

Band 4_3 MHz_High_16QAM_RB15#0



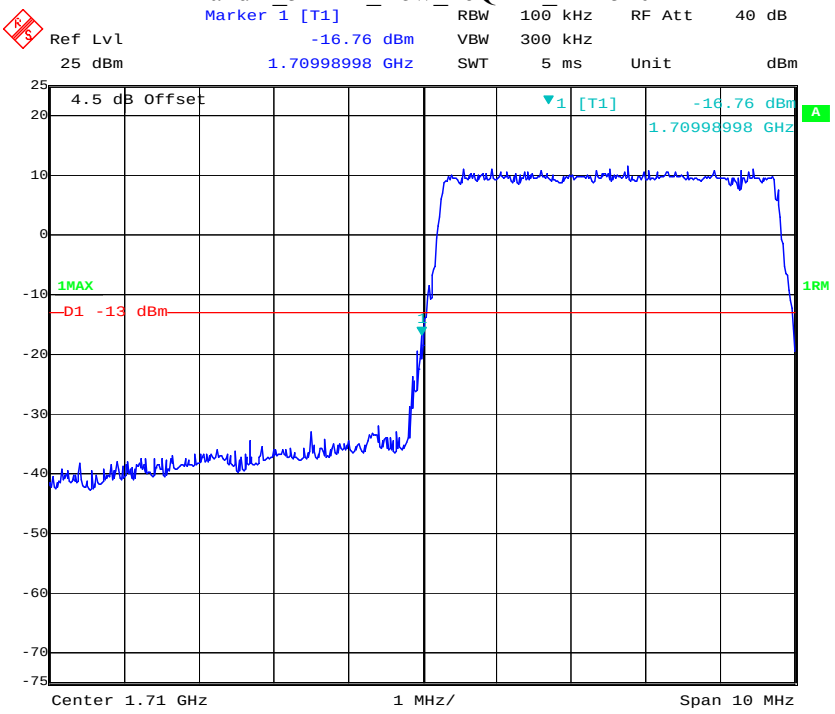
Date: 18.OCT.2019 17:19:49

Band 4_5 MHz_Low_QPSK_RB25#0



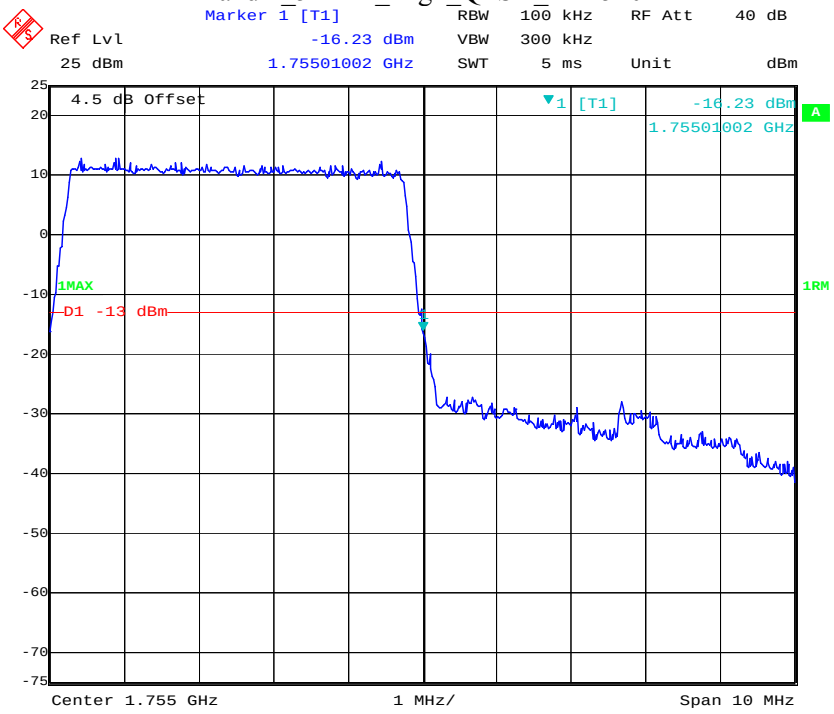
Date: 18.OCT.2019 17:20:13

Band 4_5 MHz_Low_16QAM_RB25#0



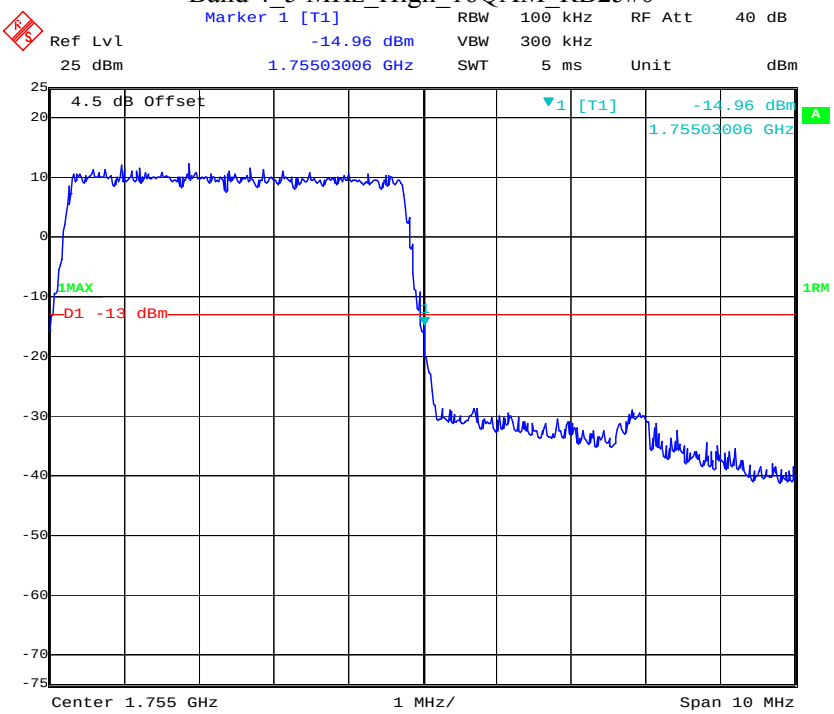
Date: 18.OCT.2019 17:20:30

Band 4_5 MHz_High_QPSK_RB25#0



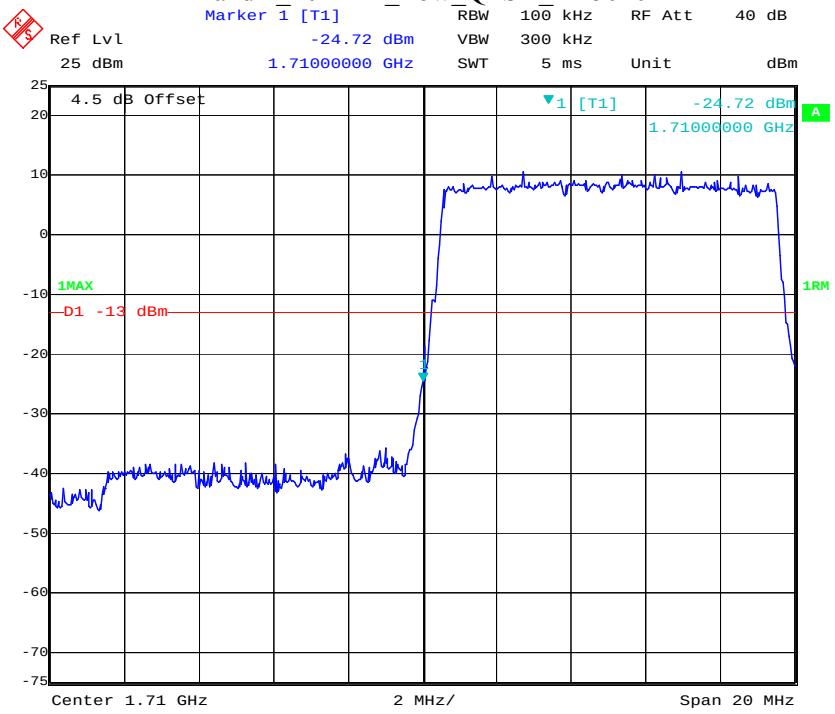
Date: 18.OCT.2019 17:20:50

Band 4_5 MHz_High_16QAM_RB25#0



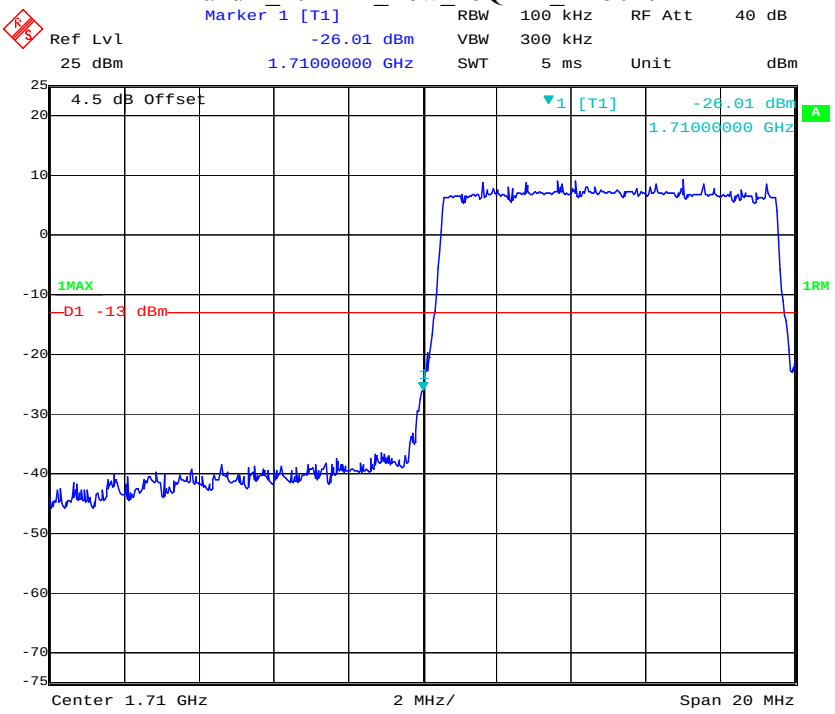
Date: 18.OCT.2019 17:21:06

Band 4_10 MHz_Low_QPSK_RB50#0



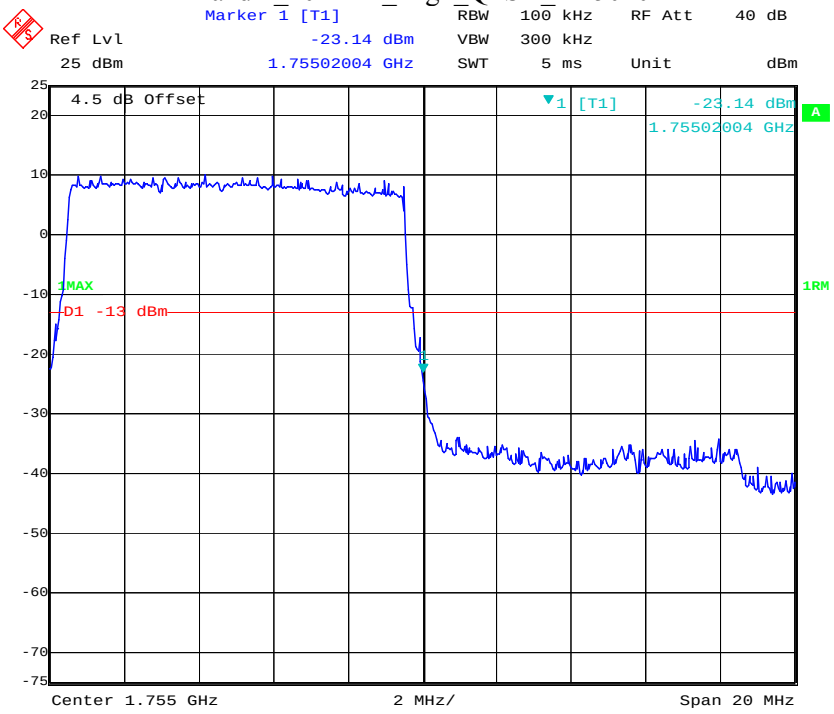
Date: 18.OCT.2019 17:21:32

Band 4_10 MHz_Low_16QAM_RB50#0



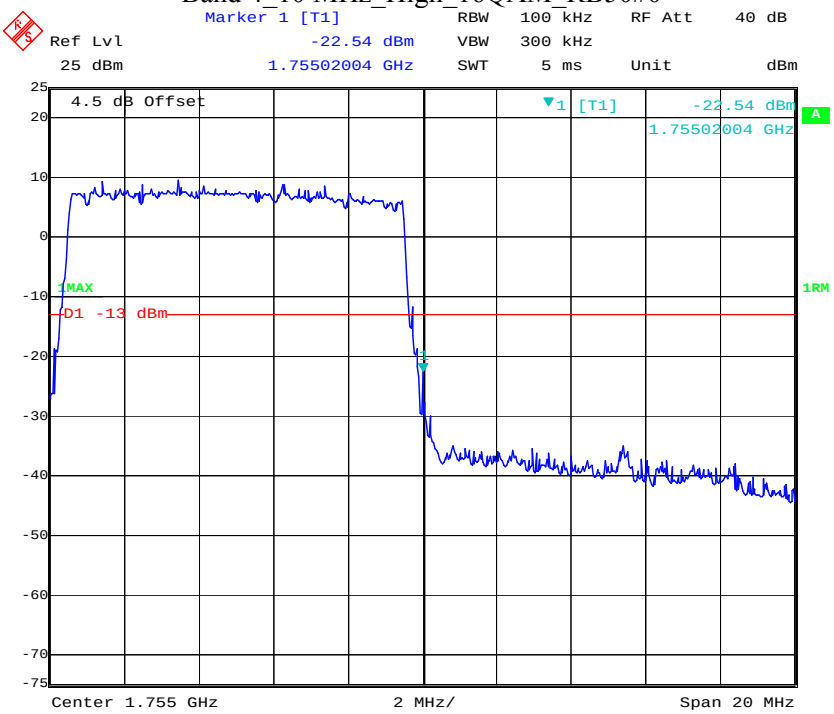
Date: 18.OCT.2019 17:21:52

Band 4_10 MHz_High_QPSK_RB50#0



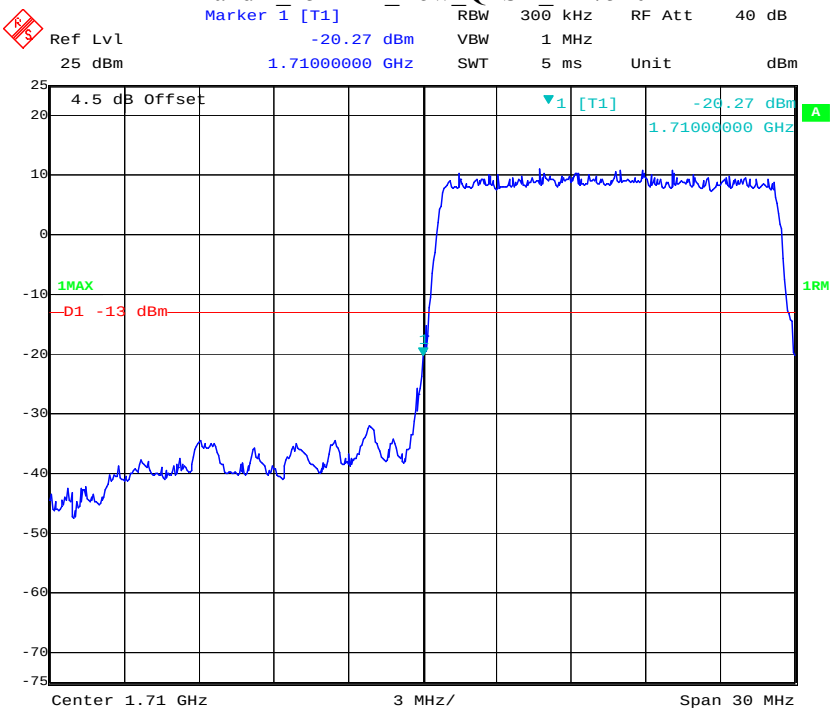
Date: 18.OCT.2019 17:22:13

Band 4_10 MHz_High_16QAM_RB50#0



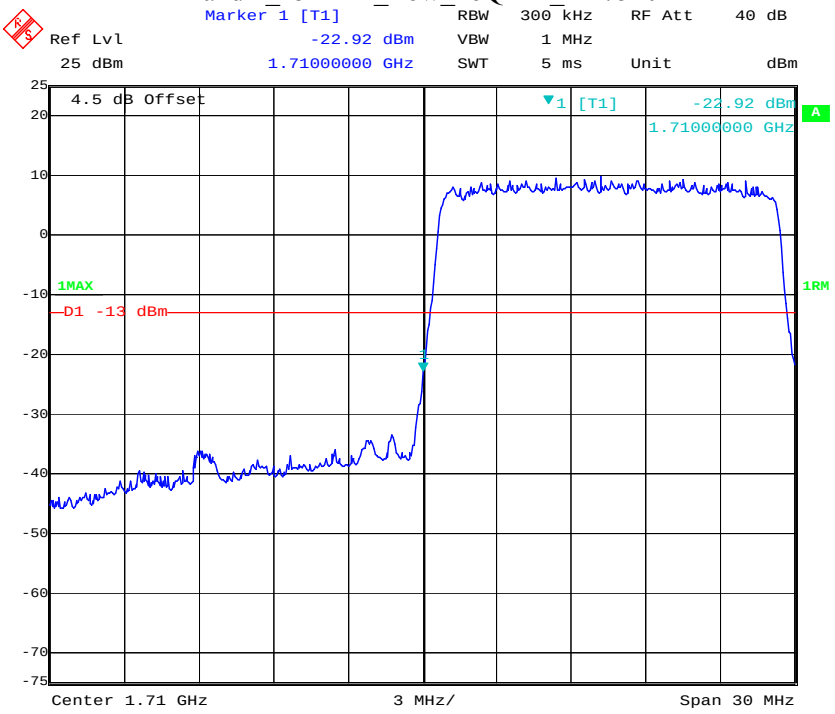
Date: 18.OCT.2019 17:22:31

Band 4_15 MHz_Low_QPSK_RB75#0



Date: 18.OCT.2019 17:22:58

Band 4_15 MHz_Low_16QAM_RB75#0



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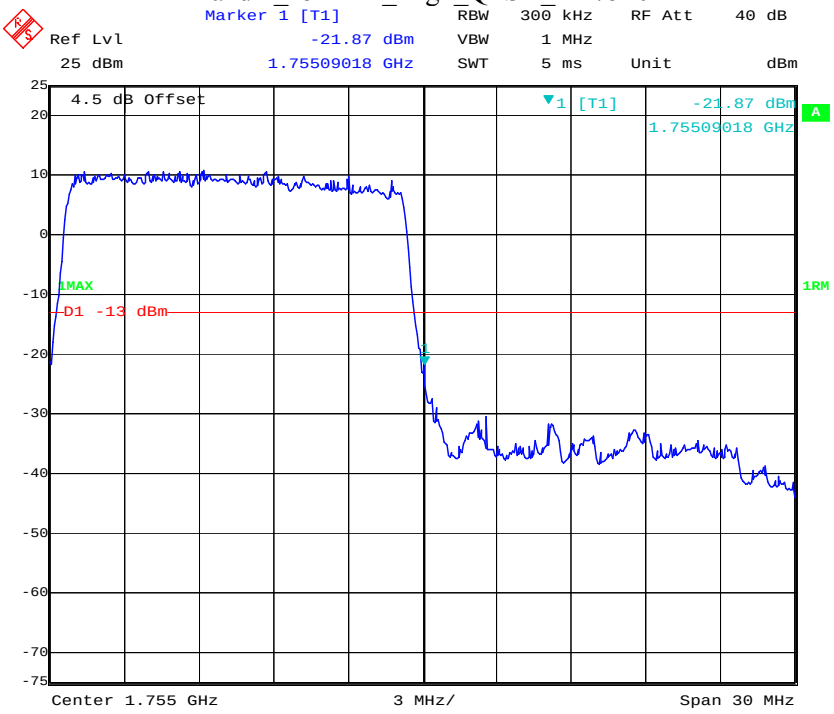
Band 4_15 MHz_High_QPSK_RB75#0



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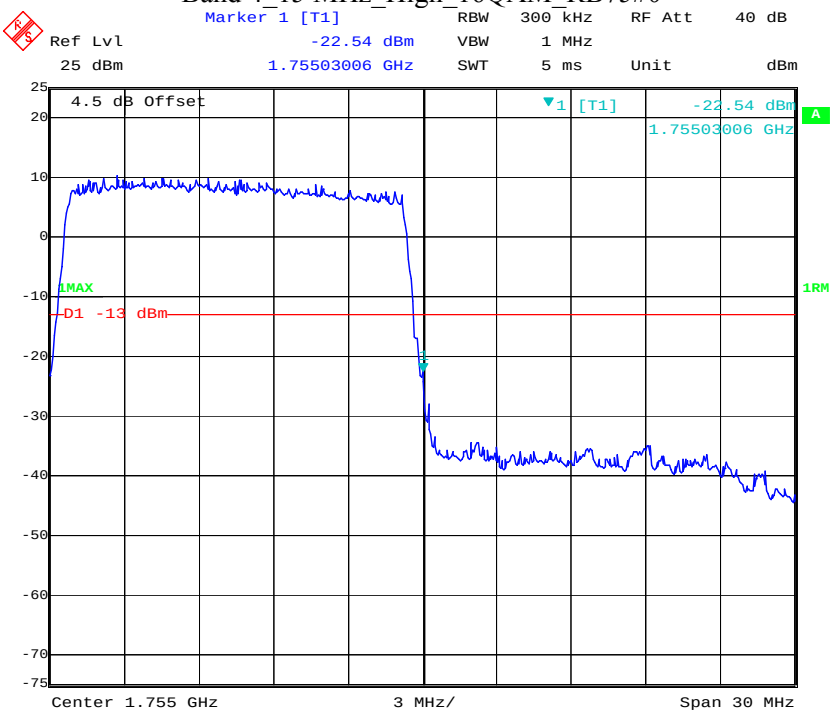
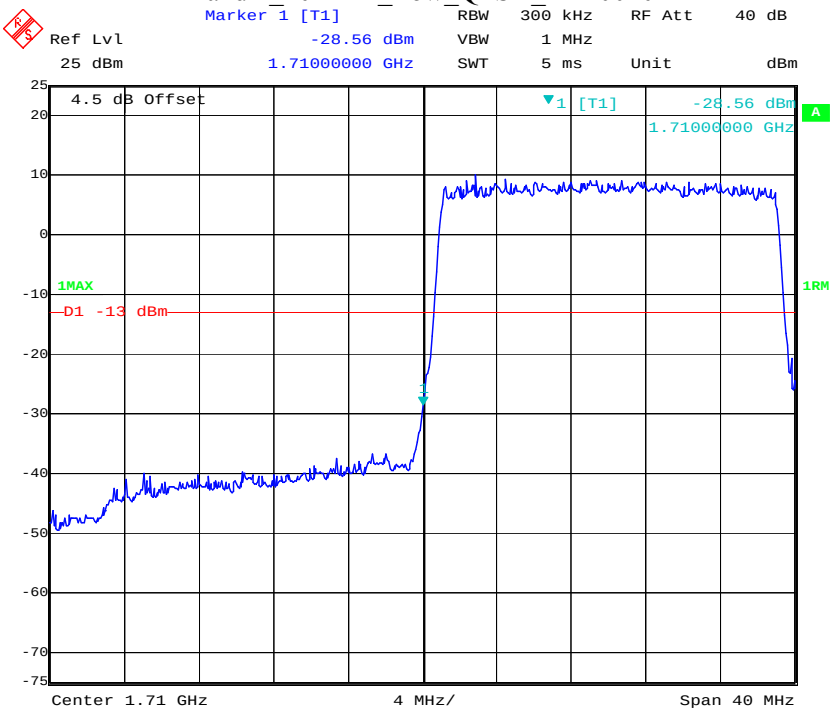
Band 4_15 MHz_High_16QAM_RB75#0



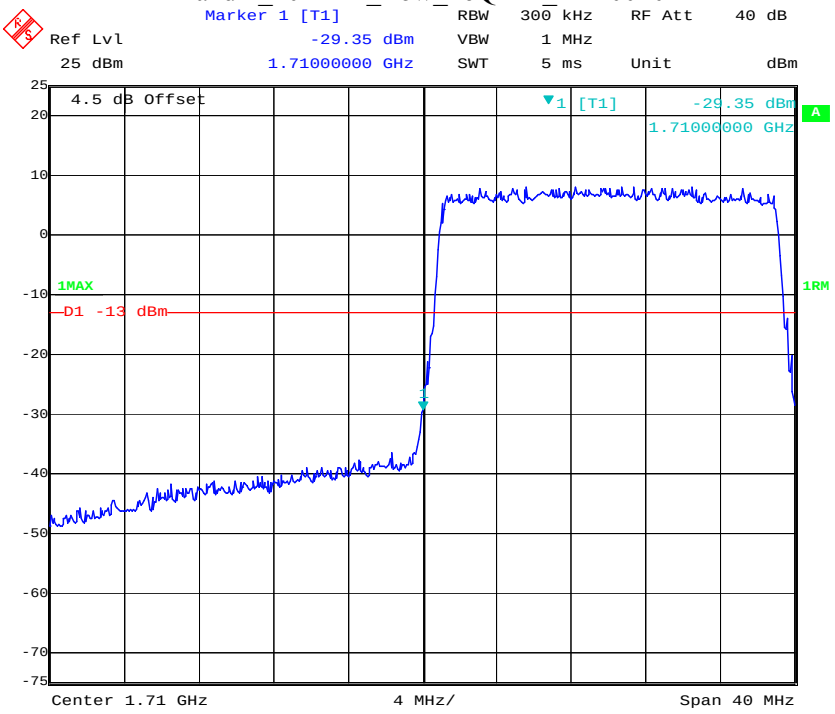
Date: 18.OCT.2019 17:24:04

Band 4_20 MHz_Low_QPSK_RB100#0



Date: 18.OCT.2019 17:24:28

Band 4_20 MHz_Low_16QAM_RB100#0



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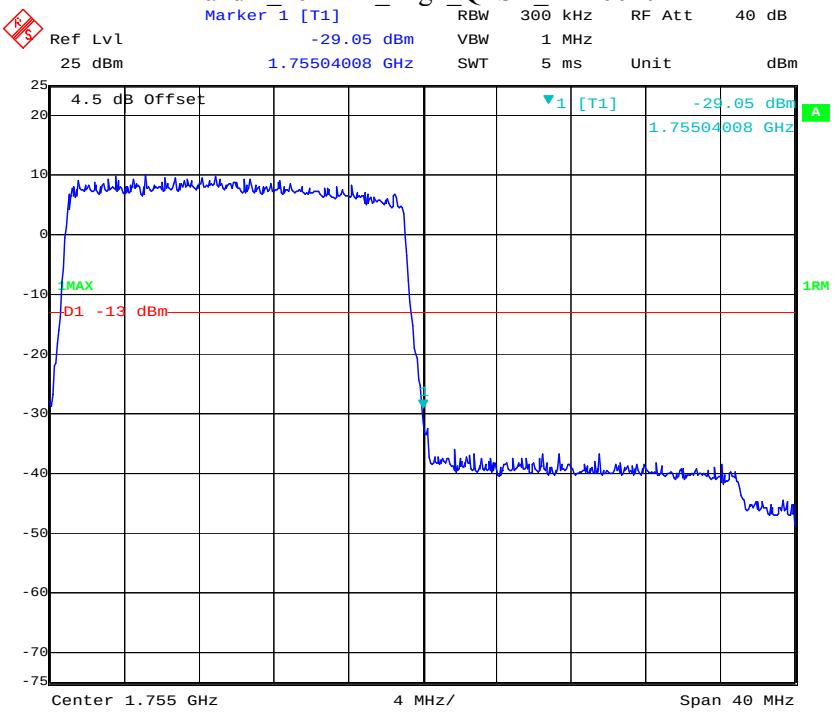
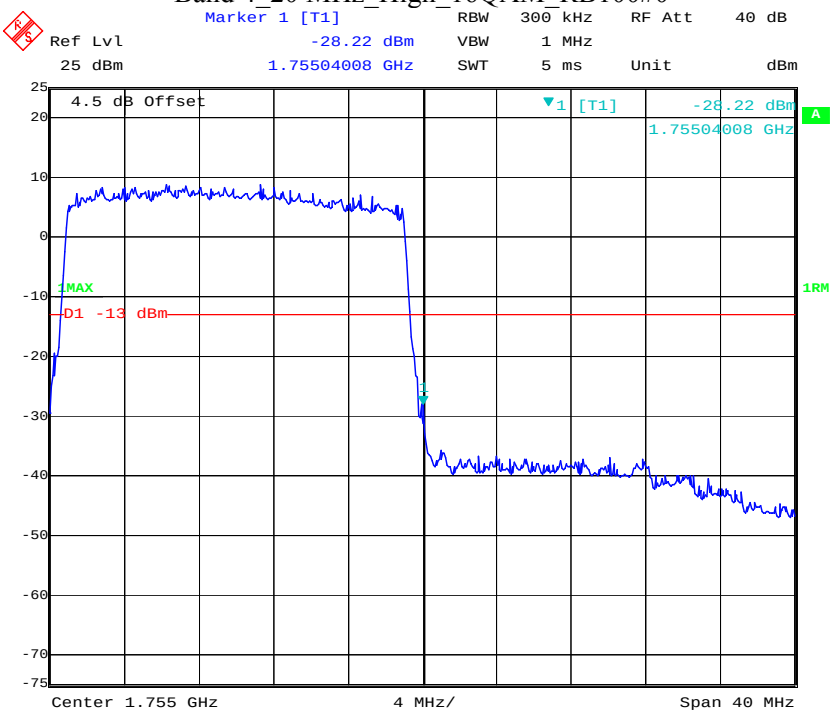
Band 4_20 MHz_High_QPSK_RB100#0



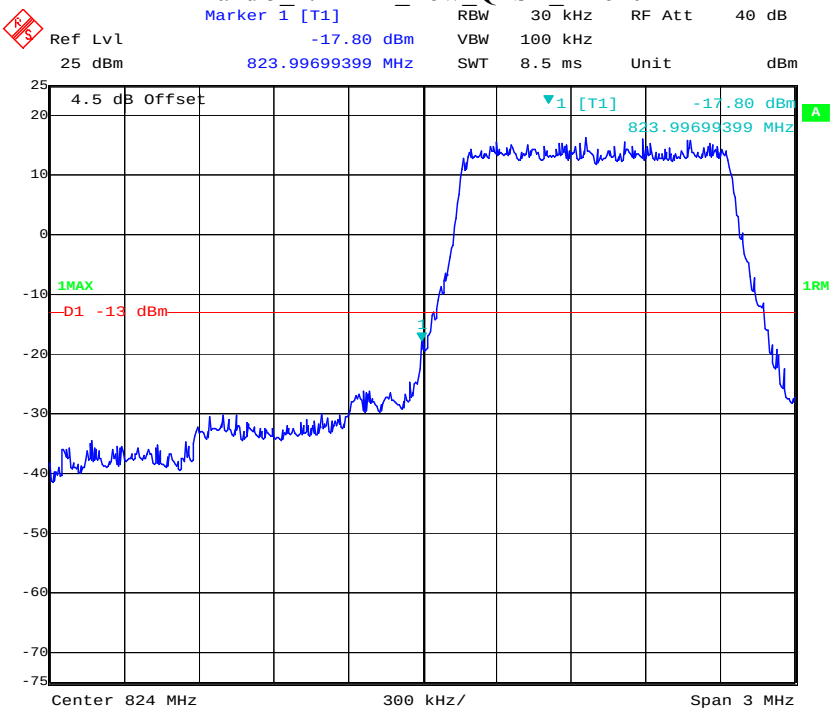
Date: 18.OCT.2019 17:25:05

Band 4_20 MHz_High_16QAM_RB100#0



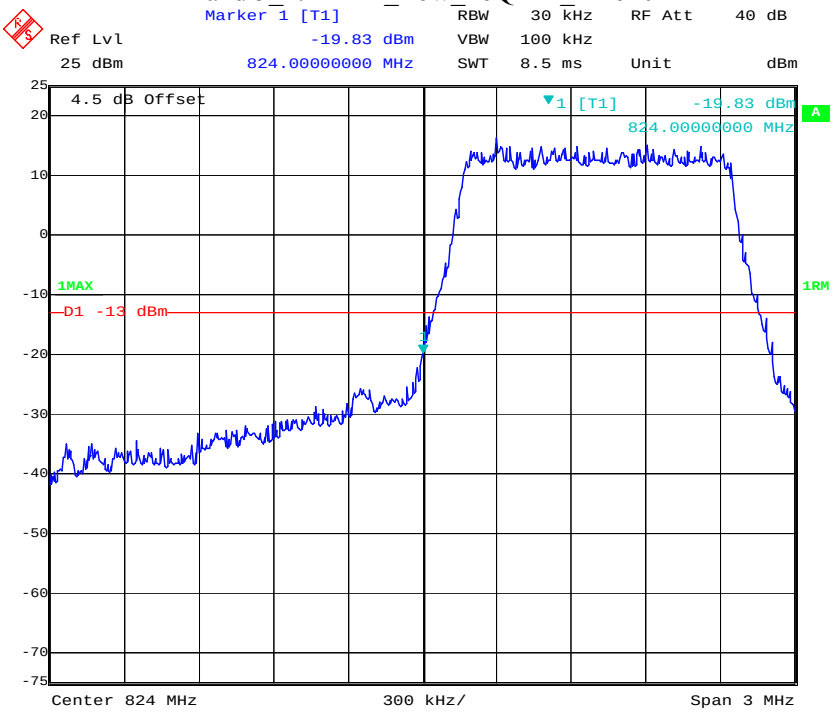
Date: 18.OCT.2019 17:25:23

Band 5_1.4 MHz_Low_QPSK_RB6#0



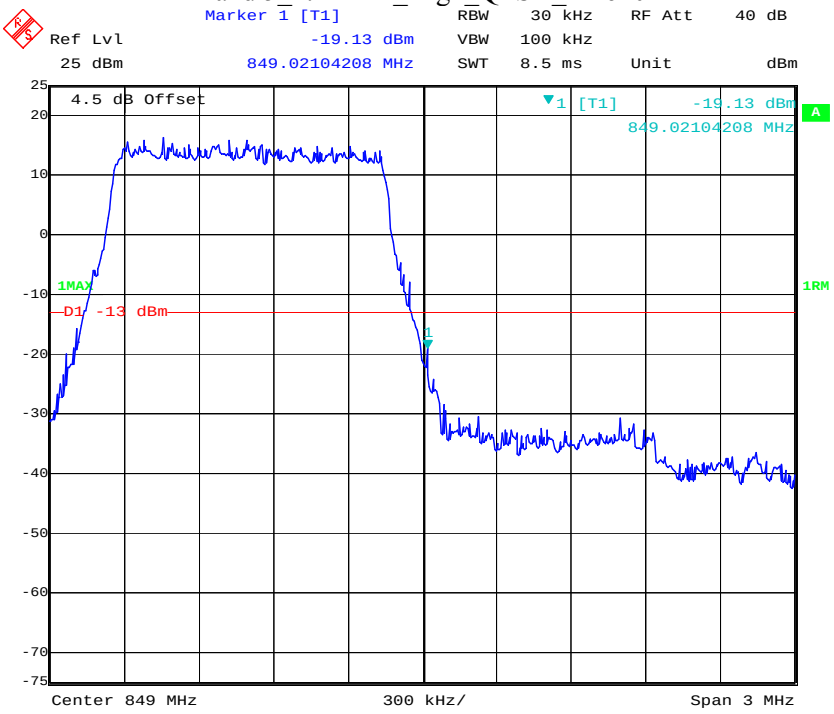
Date: 18.OCT.2019 17:25:55

Band 5_1.4 MHz_Low_16QAM_RB6#0



Date: 18.OCT.2019 17:26:15

Band 5_1.4 MHz_High_QPSK_RB6#0



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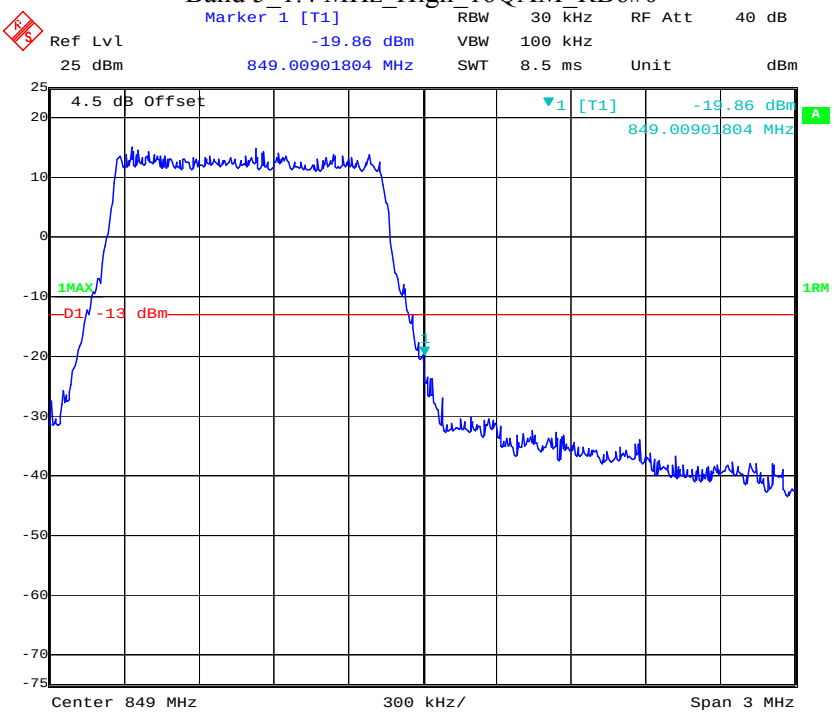
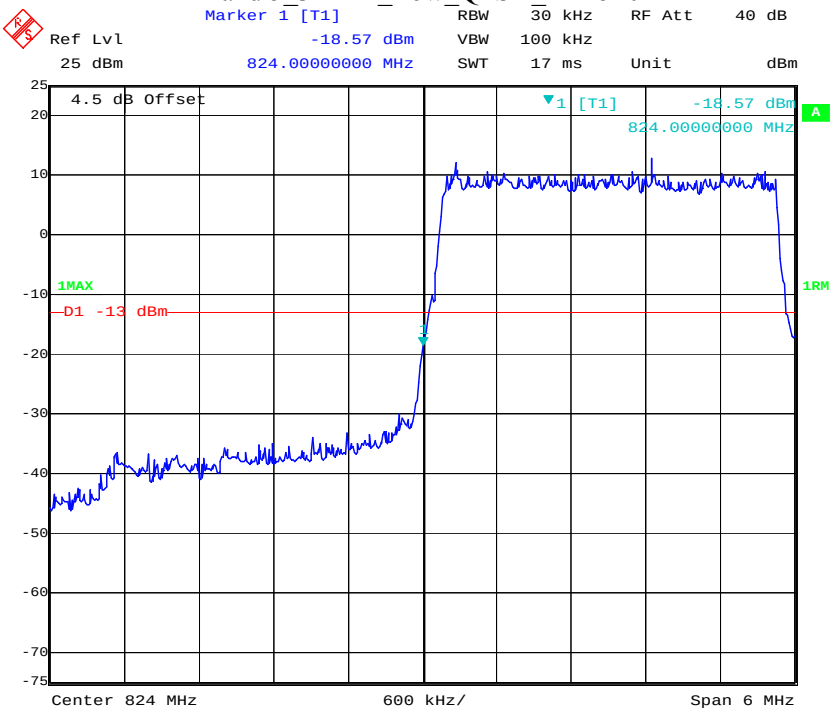
Band 5_1.4 MHz_High_16QAM_RB6#0



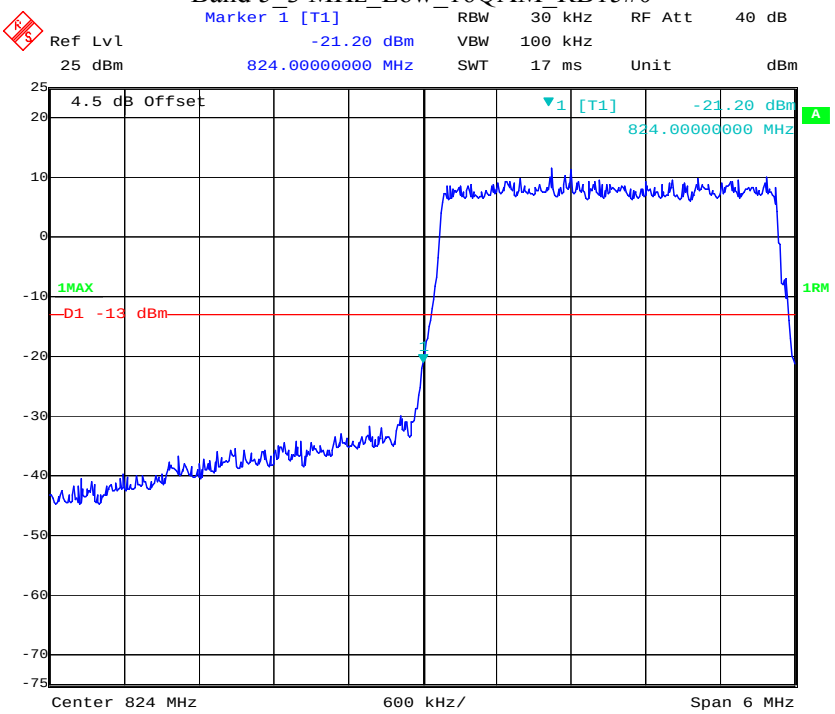
Date: 18.OCT.2019 17:26:54

Band 5_3 MHz_Low_QPSK_RB15#0



Date: 18.OCT.2019 17:27:19

Band 5_3 MHz_Low_16QAM_RB15#0



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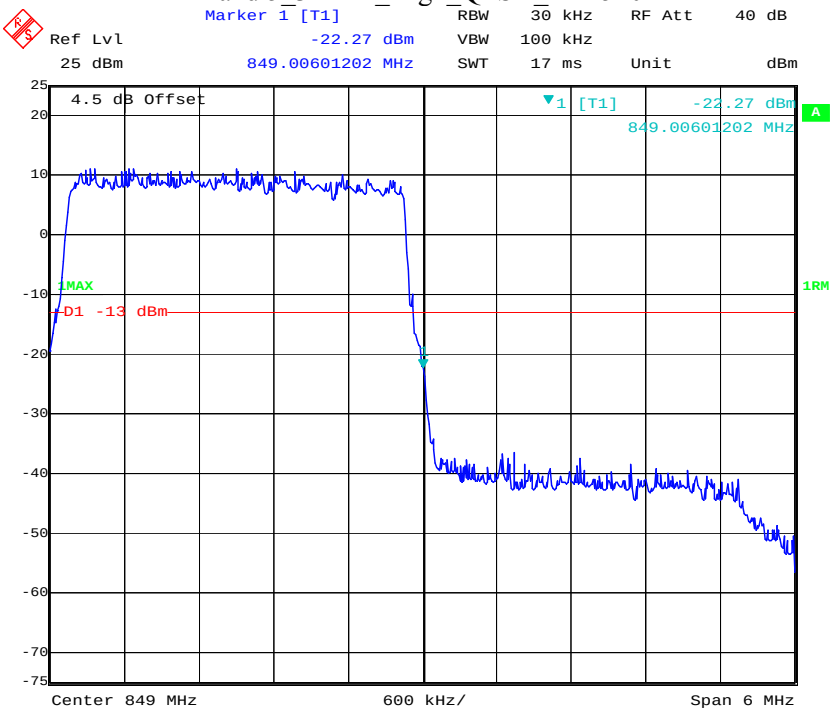
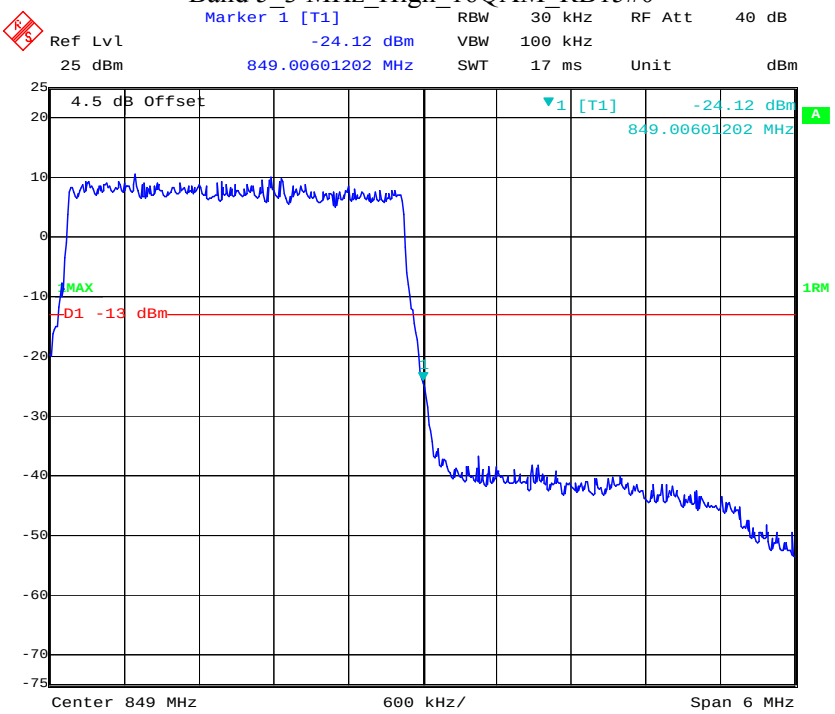
Band 5_3 MHz_High_QPSK_RB15#0



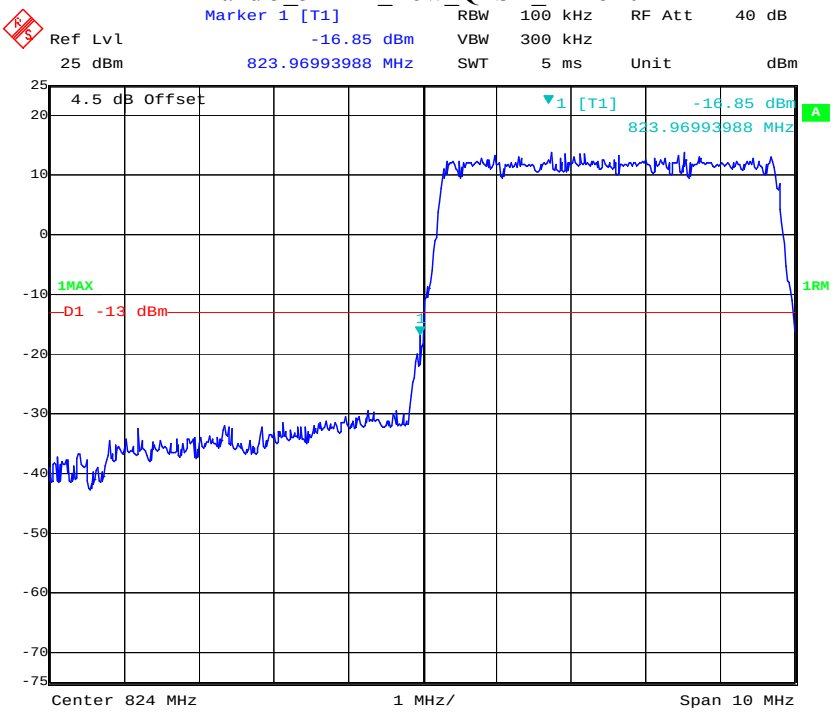
Date: 18.OCT.2019 17:27:58

Band 5_3 MHz_High_16QAM_RB15#0



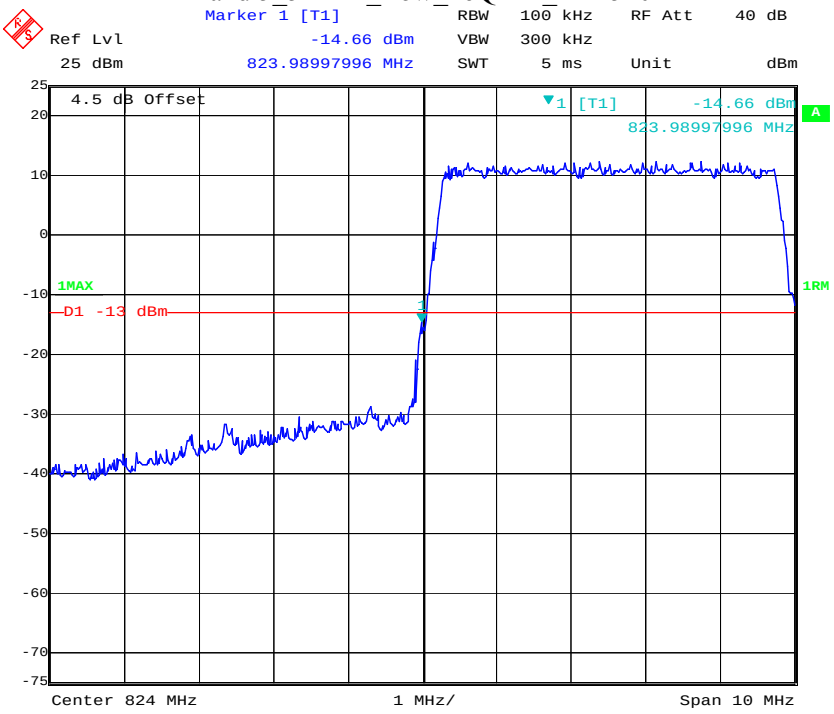
Date: 18.OCT.2019 17:28:18

Band 5_5 MHz_Low_QPSK_RB25#0



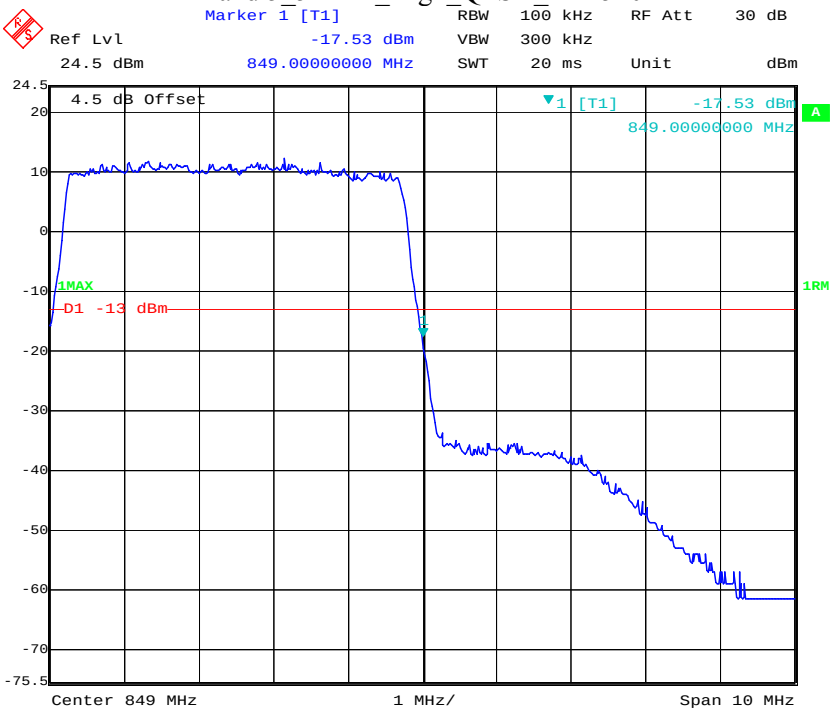
Date: 18.OCT.2019 17:28:56

Band 5_5 MHz_Low_16QAM_RB25#0



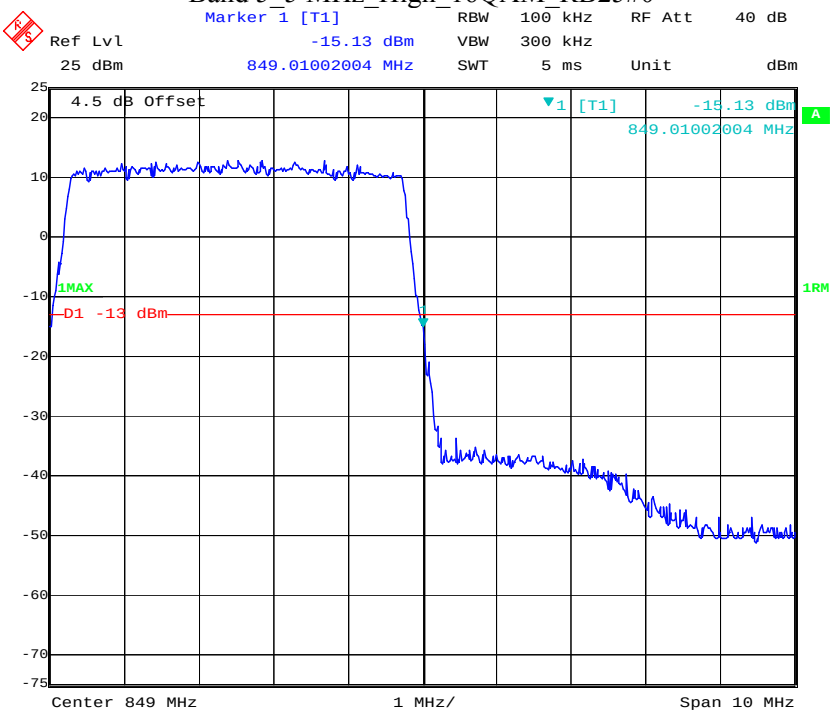
Date: 18.OCT.2019 17:29:15

Band 5_5 MHz_High_QPSK_RB25#0



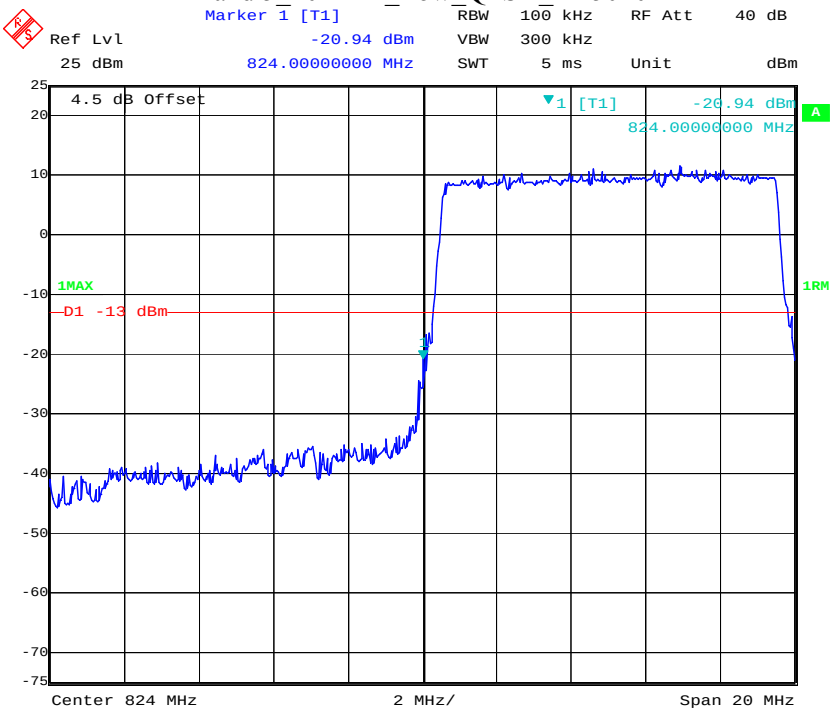
Date: 24.OCT.2019 22:16:21

Band 5_5 MHz_High_16QAM_RB25#0



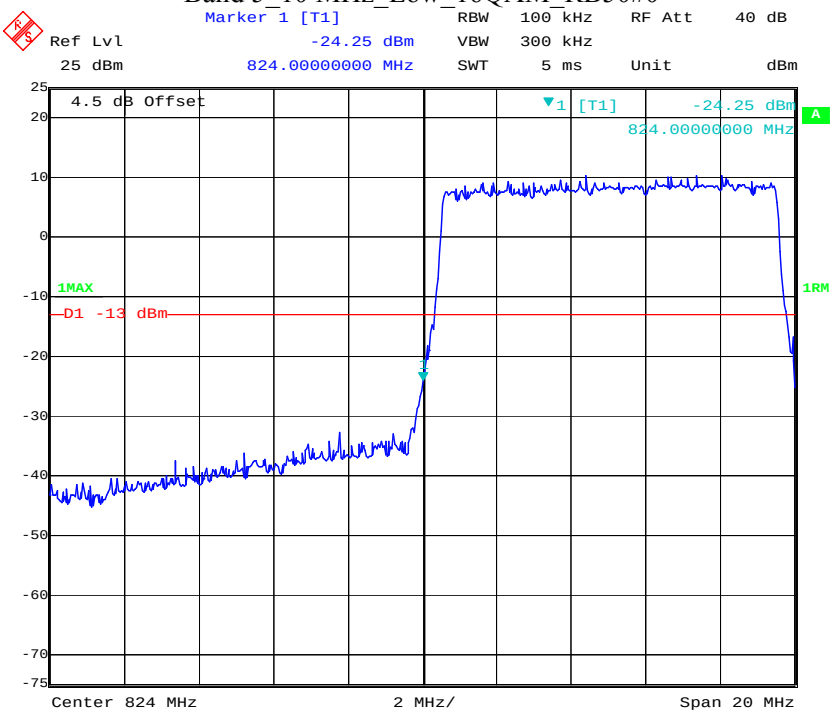
Date: 18.OCT.2019 17:29:48

Band 5_10 MHz_Low_QPSK_RB50#0



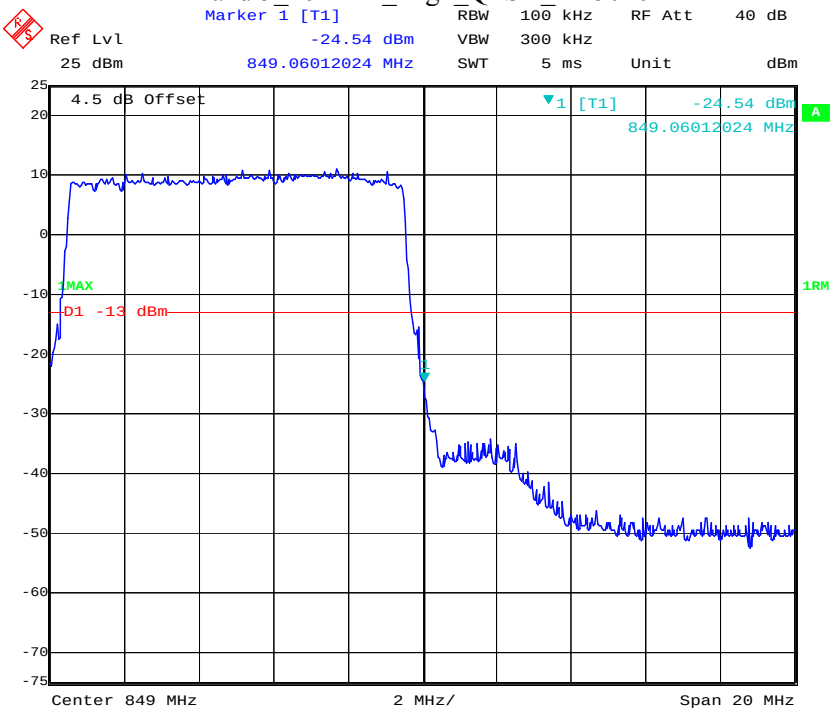
Date: 18.OCT.2019 17:30:14

Band 5_10 MHz_Low_16QAM_RB50#0



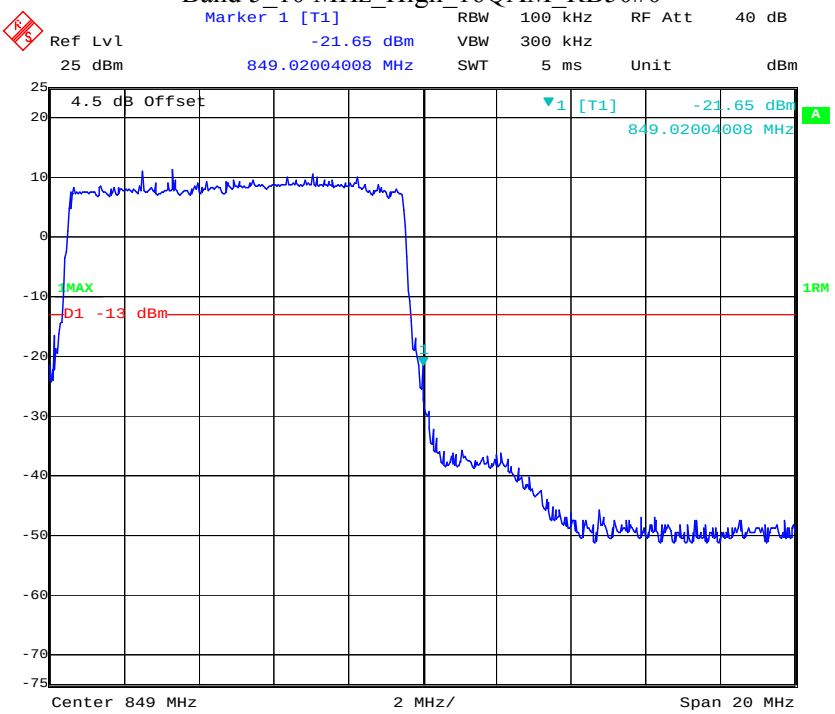
Date: 18.OCT.2019 17:30:34

Band 5_10 MHz_High_QPSK_RB50#0



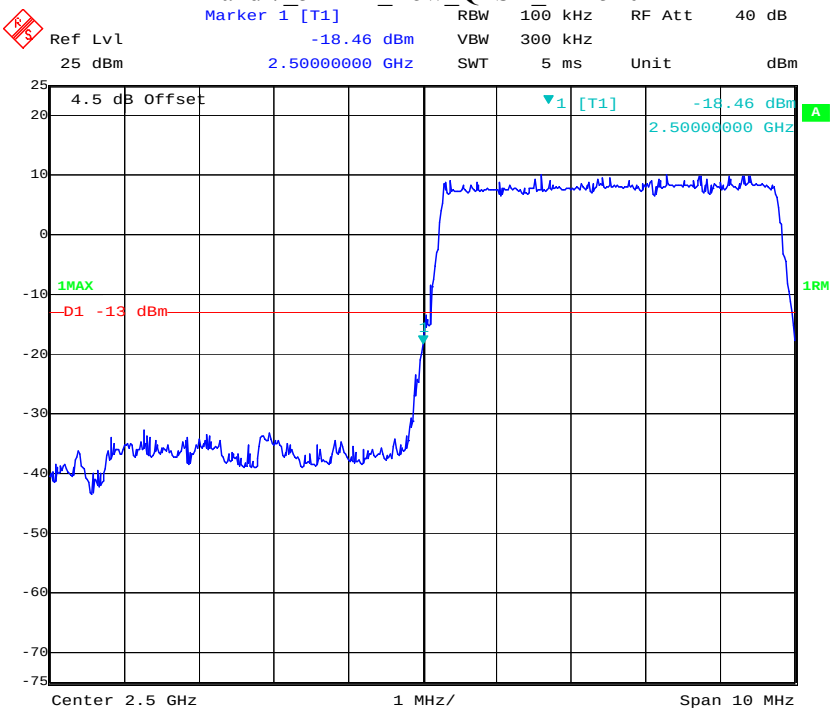
Date: 18.OCT.2019 17:30:56

Band 5_10 MHz_High_16QAM_RB50#0



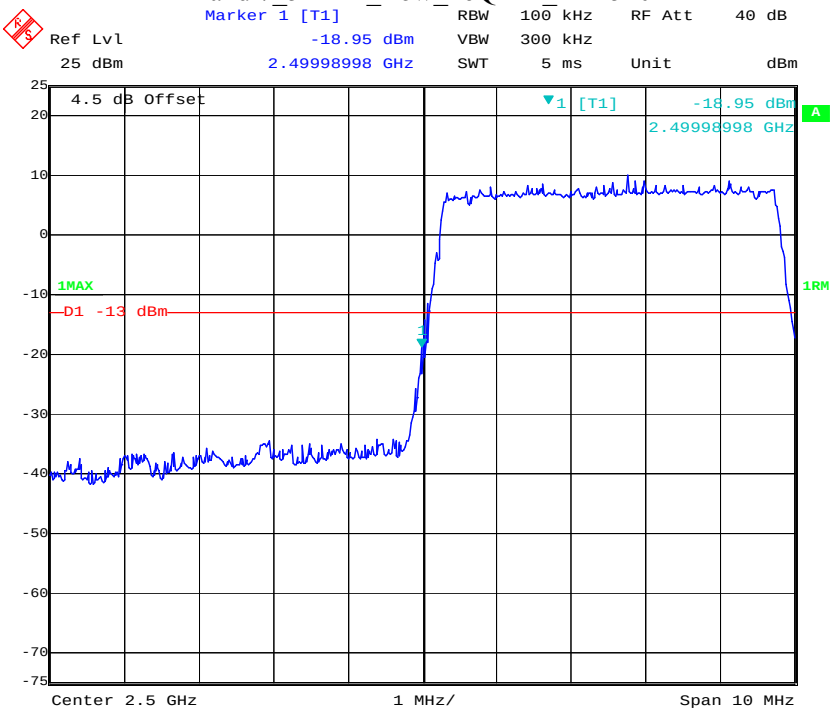
Date: 18.OCT.2019 17:31:16

Band 7_5 MHz_Low_QPSK_RB25#0



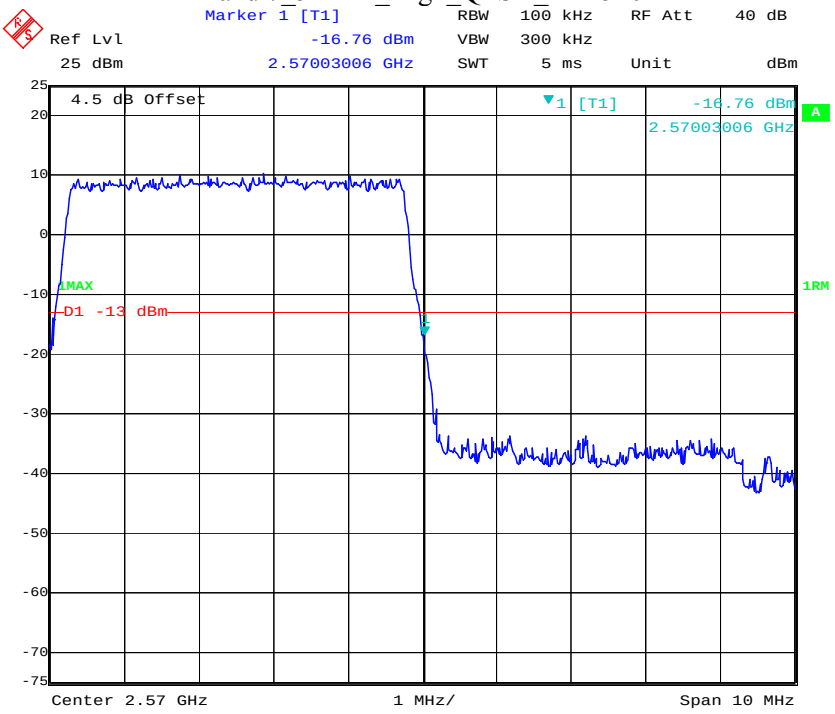
Date: 18.OCT.2019 17:31:50

Band 7_5 MHz_Low_16QAM_RB25#0



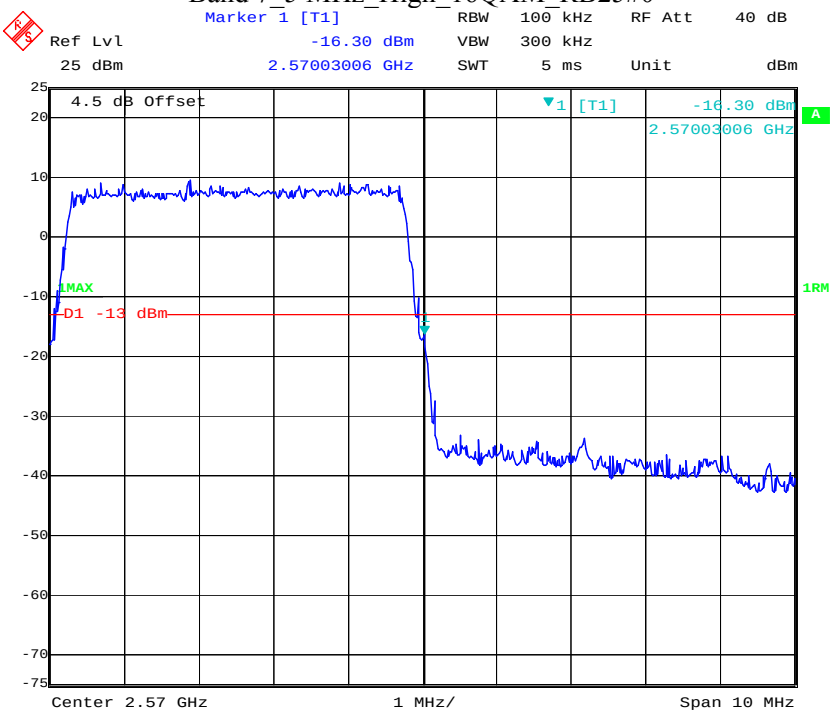
Date: 18.OCT.2019 17:32:09

Band 7_5 MHz_High_QPSK_RB25#0



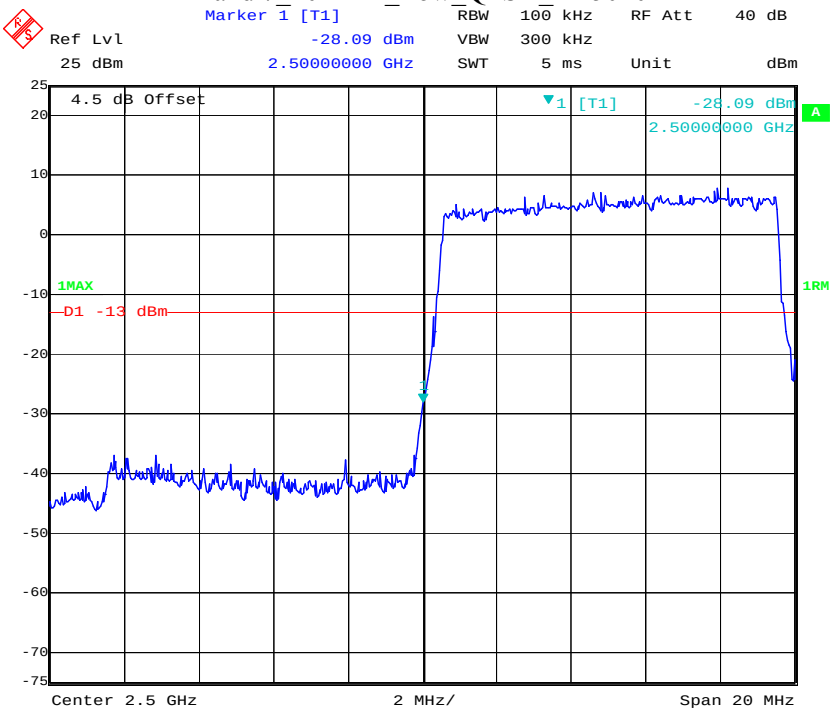
Date: 18.OCT.2019 17:32:29

Band 7_5 MHz_High_16QAM_RB25#0



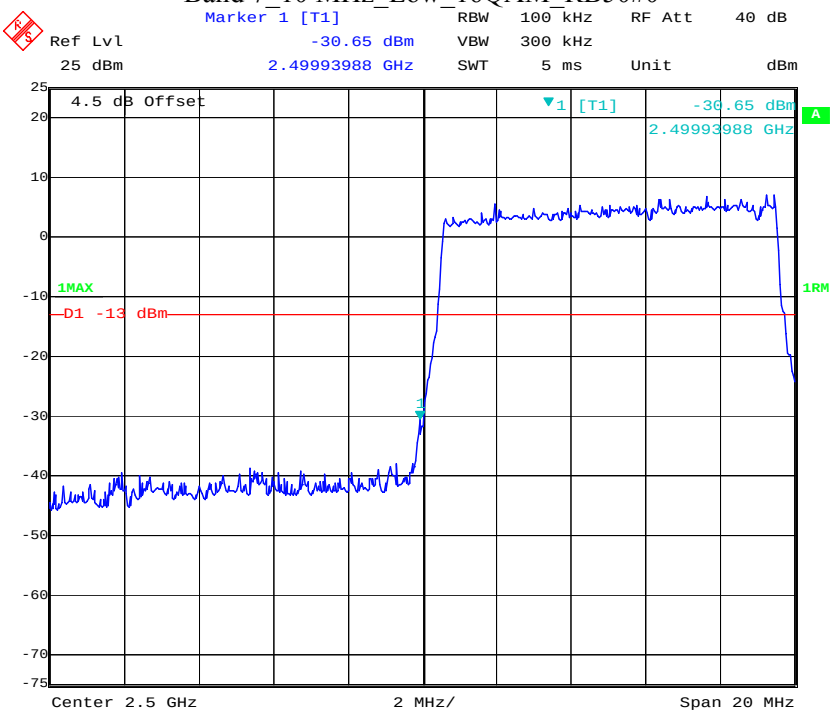
Date: 18.OCT.2019 17:32:45

Band 7_10 MHz_Low_QPSK_RB50#0



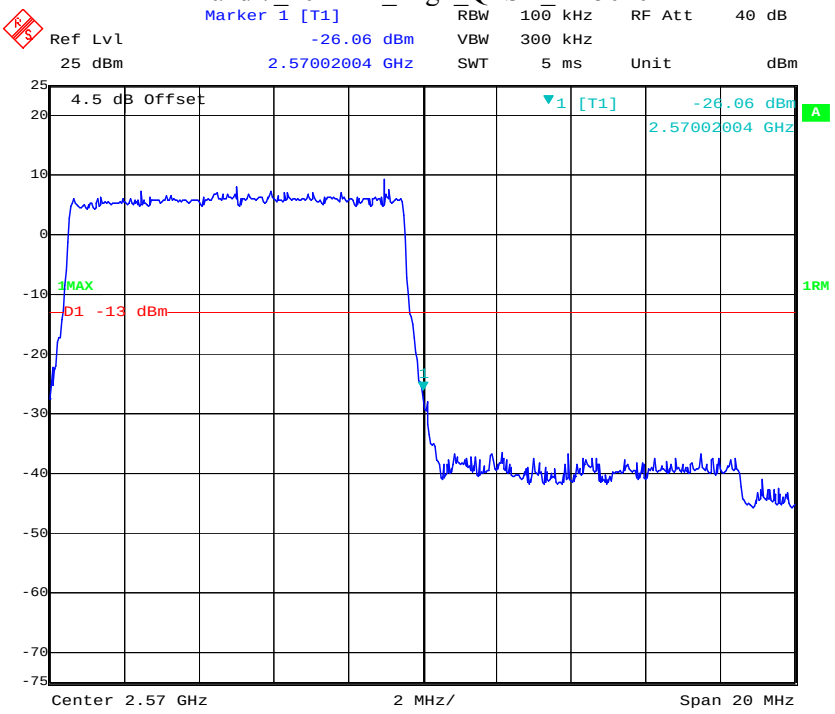
Date: 18.OCT.2019 17:33:08

Band 7_10 MHz_Low_16QAM_RB50#0



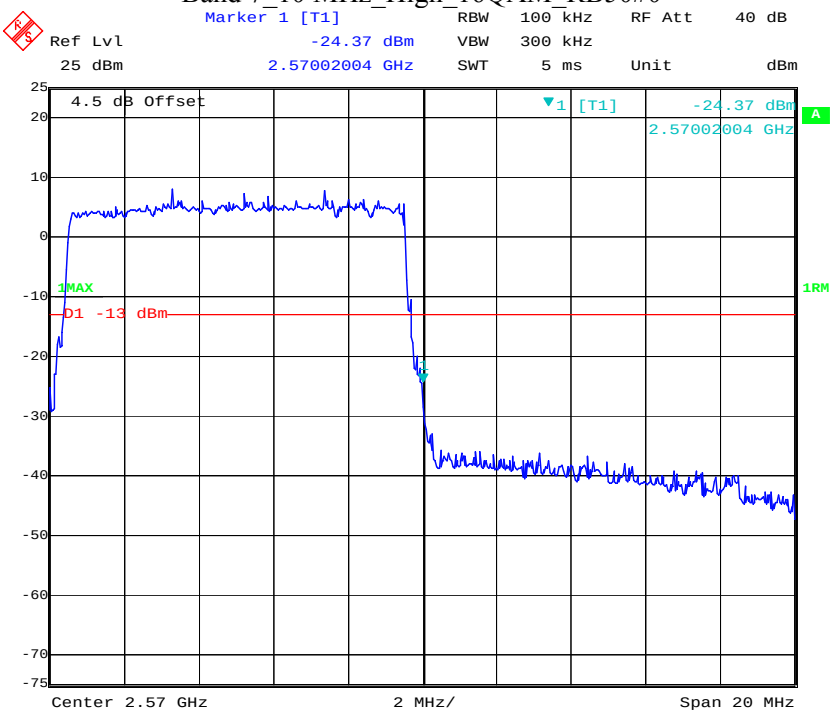
Date: 18.OCT.2019 17:33:25

Band 7_10 MHz_High_QPSK_RB50#0



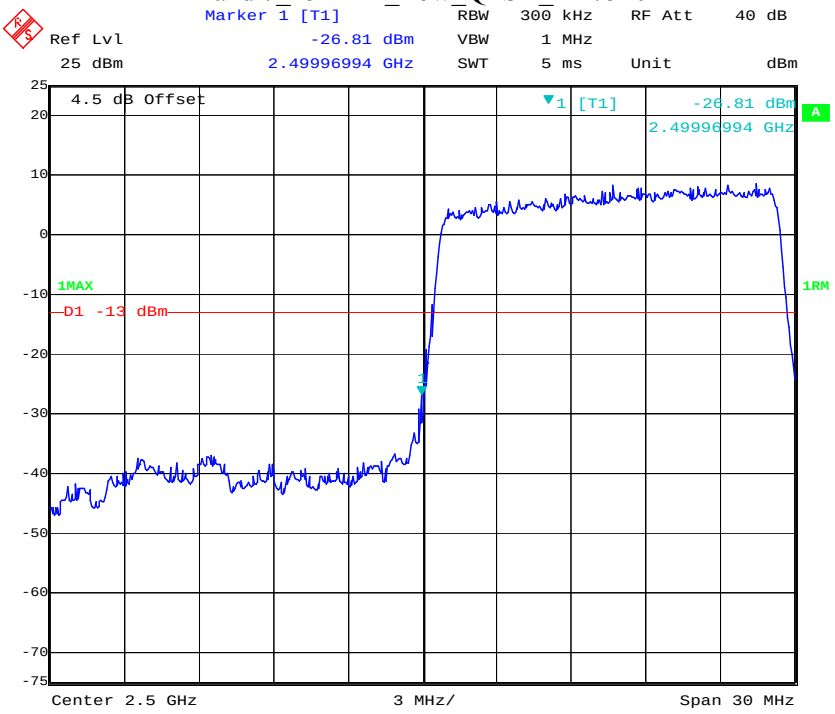
Date: 18.OCT.2019 17:33:46

Band 7_10 MHz_High_16QAM_RB50#0



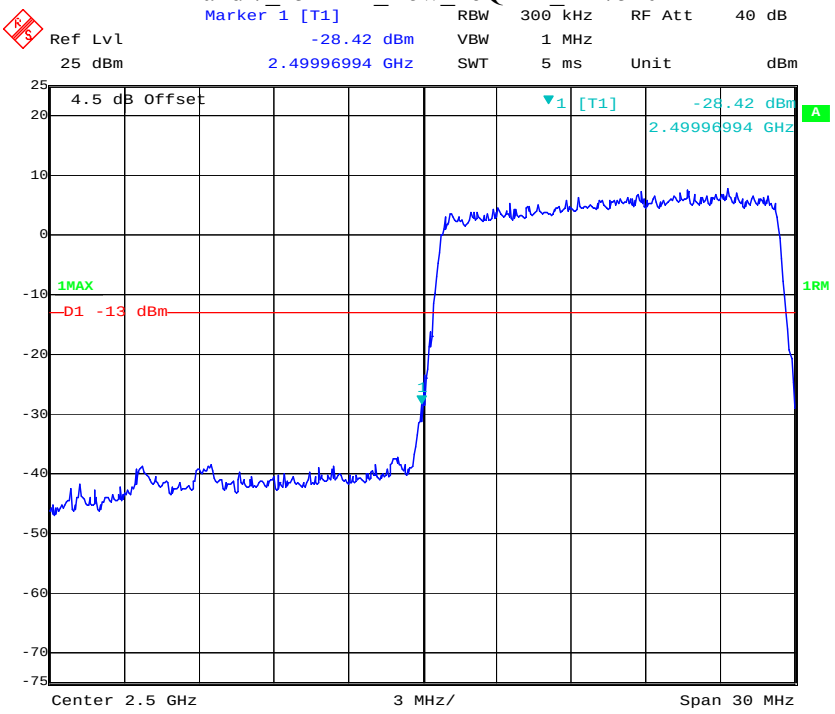
Date: 18.OCT.2019 17:34:07

Band 7_15 MHz_Low_QPSK_RB75#0



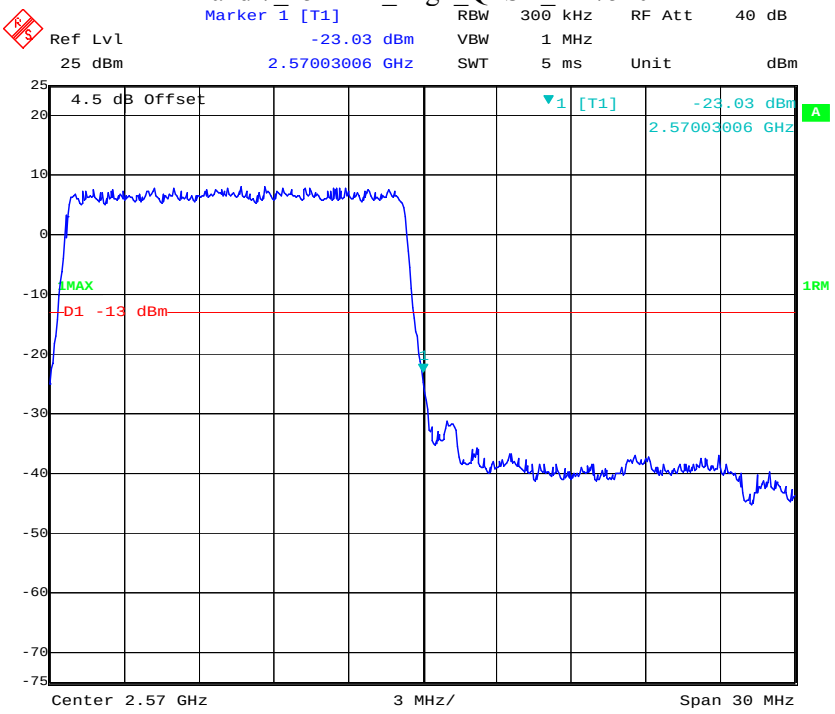
Date: 18.OCT.2019 17:34:35

Band 7_15 MHz_Low_16QAM_RB75#0



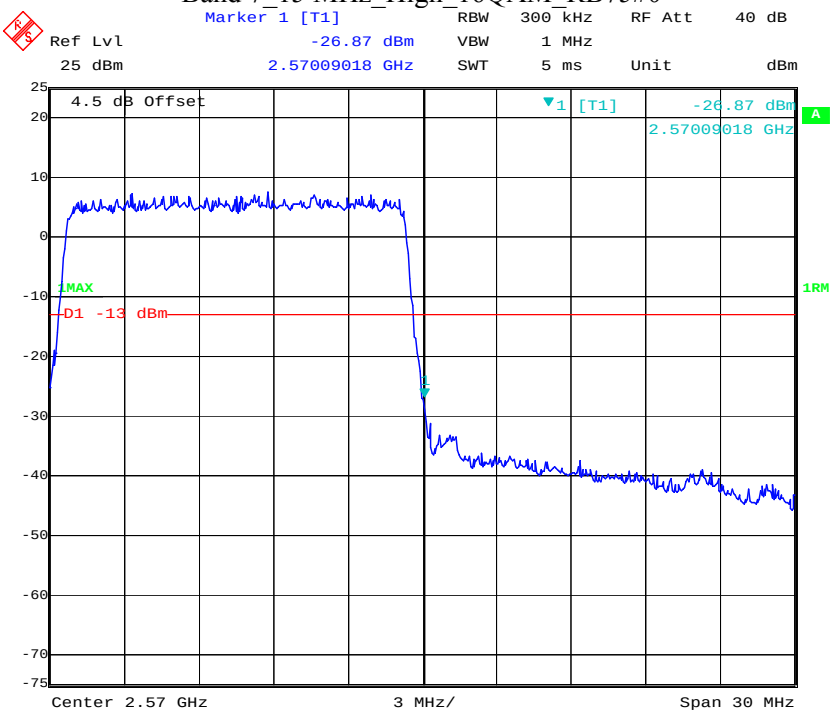
Date: 18.OCT.2019 17:34:56

Band 7_15 MHz_High_QPSK_RB75#0



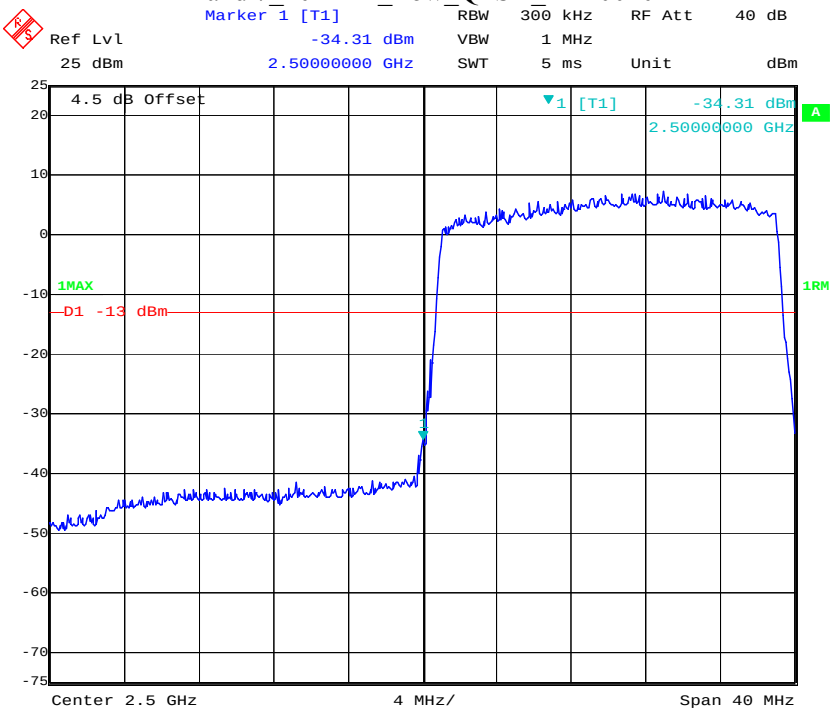
Date: 18.OCT.2019 17:35:19

Band 7_15 MHz_High_16QAM_RB75#0



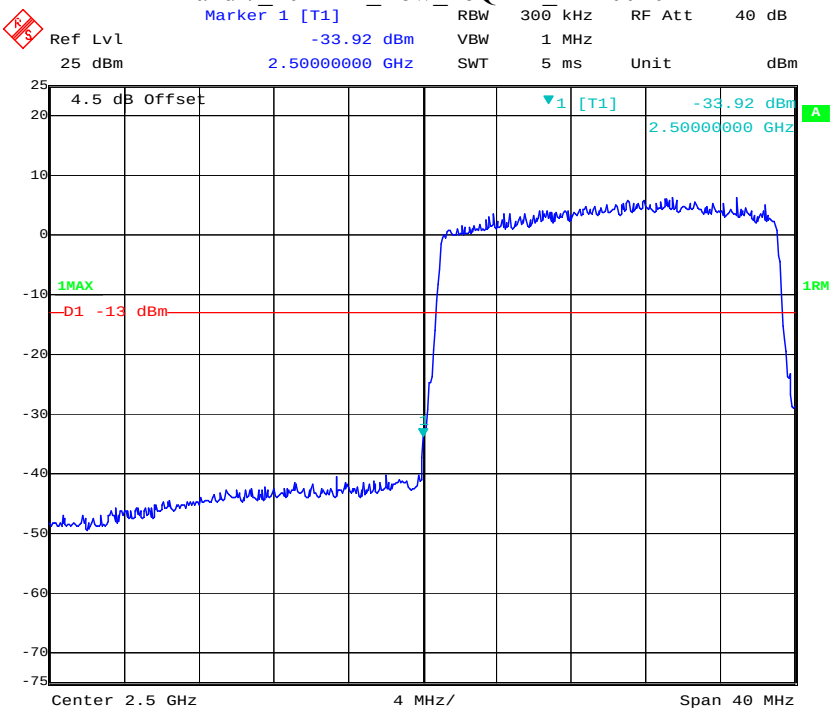
Date: 18.OCT.2019 17:35:37

Band 7_20 MHz_Low_QPSK_RB100#0



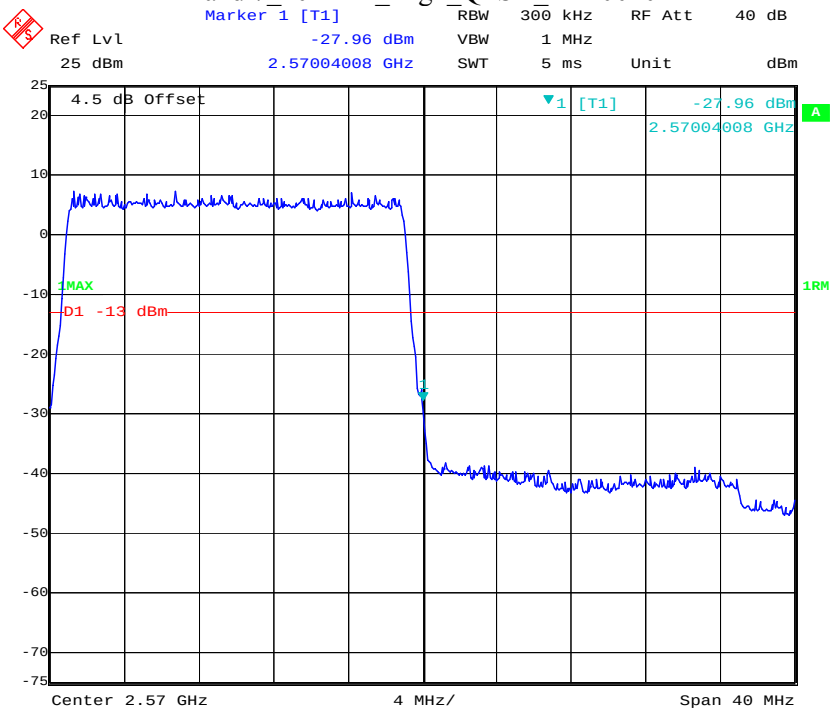
Date: 18.OCT.2019 17:36:01

Band 7_20 MHz_Low_16QAM_RB100#0



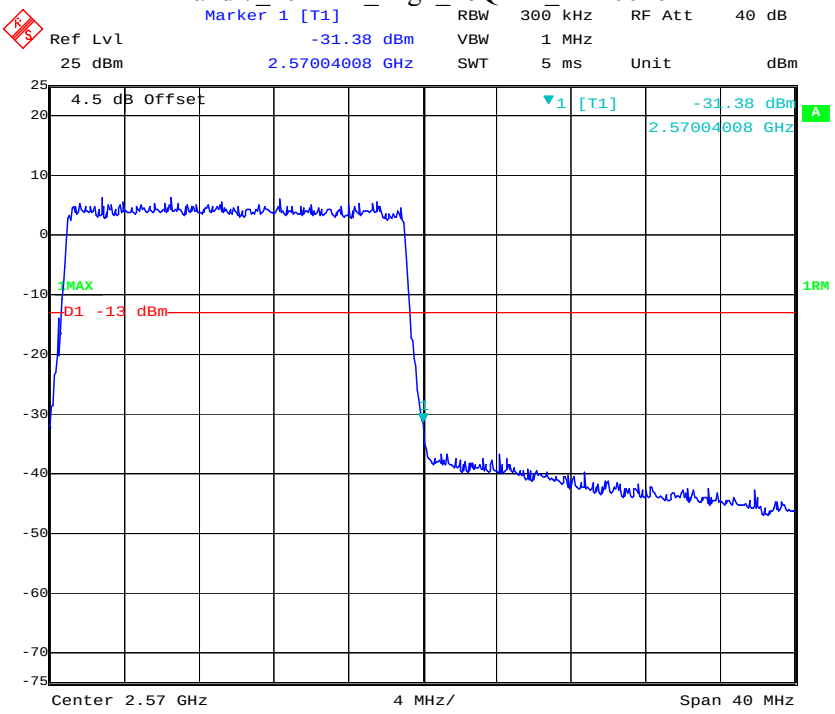
Date: 18.OCT.2019 17:36:19

Band 7_20 MHz_High_QPSK_RB100#0



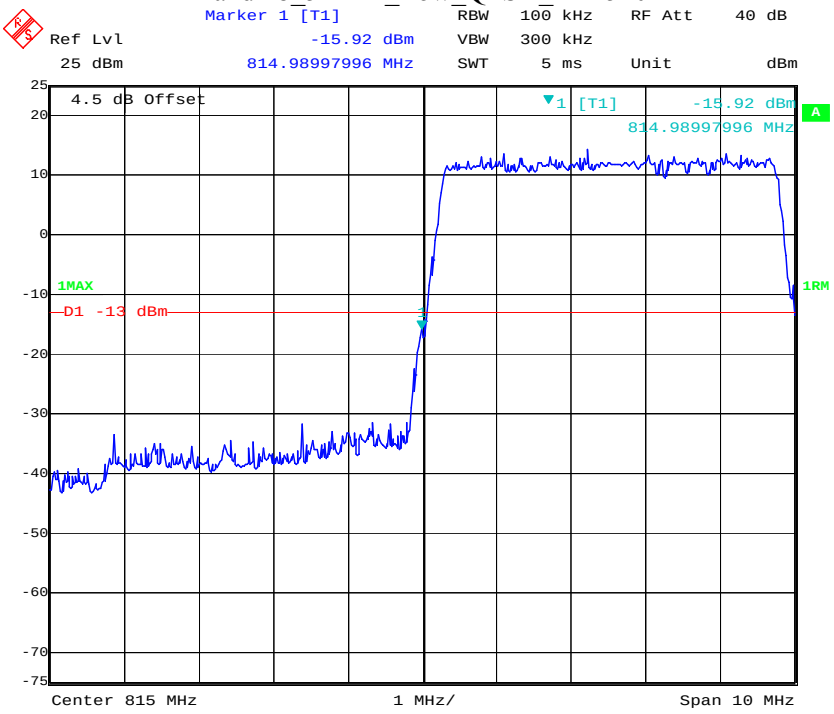
Date: 18.OCT.2019 17:36:42

Band 7_20 MHz_High_16QAM_RB100#0



Date: 18.OCT.2019 17:37:00

Band 18_5 MHz_Low_QPSK_RB25#0



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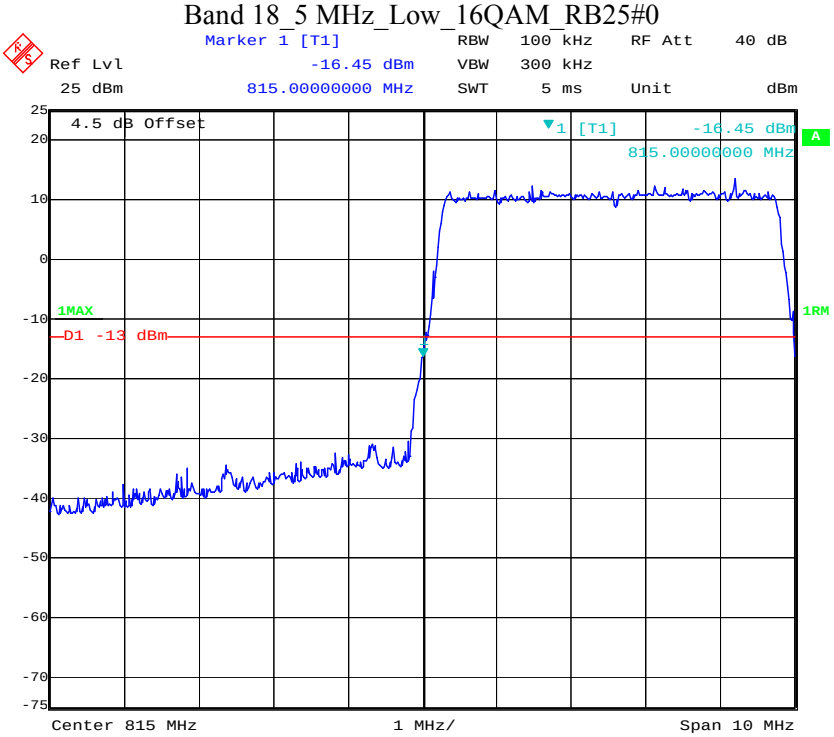
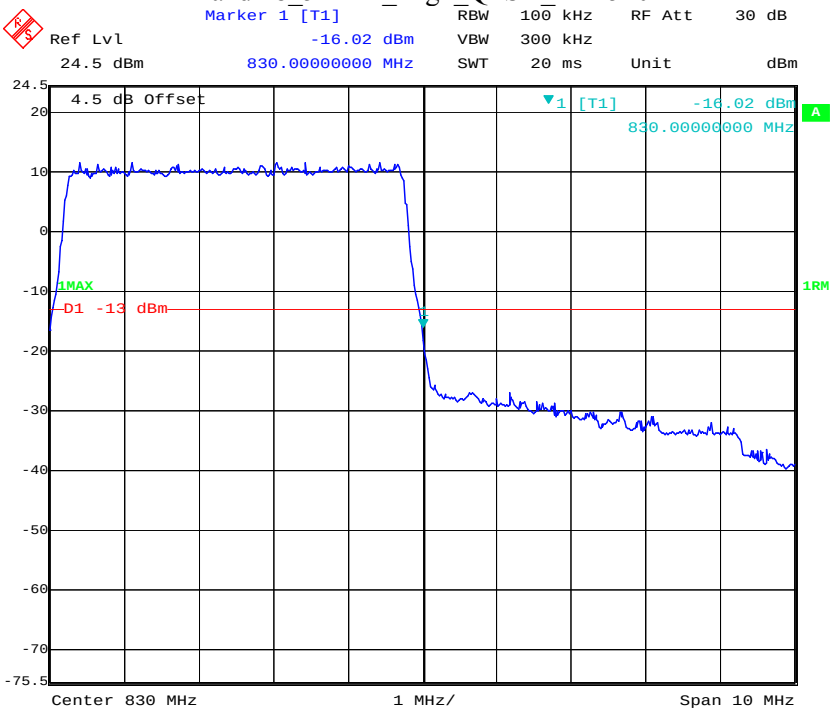
Band 18_5 MHz_Low_16QAM_RB25#0



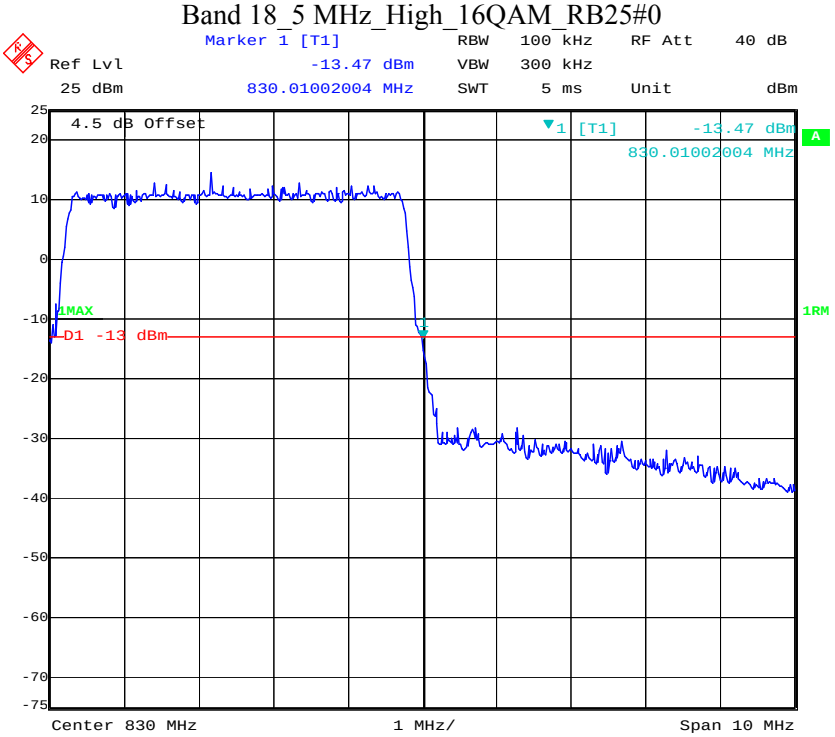
Date: 18.OCT.2019 17:46:43

Band 18_5 MHz_High_QPSK_RB25#0



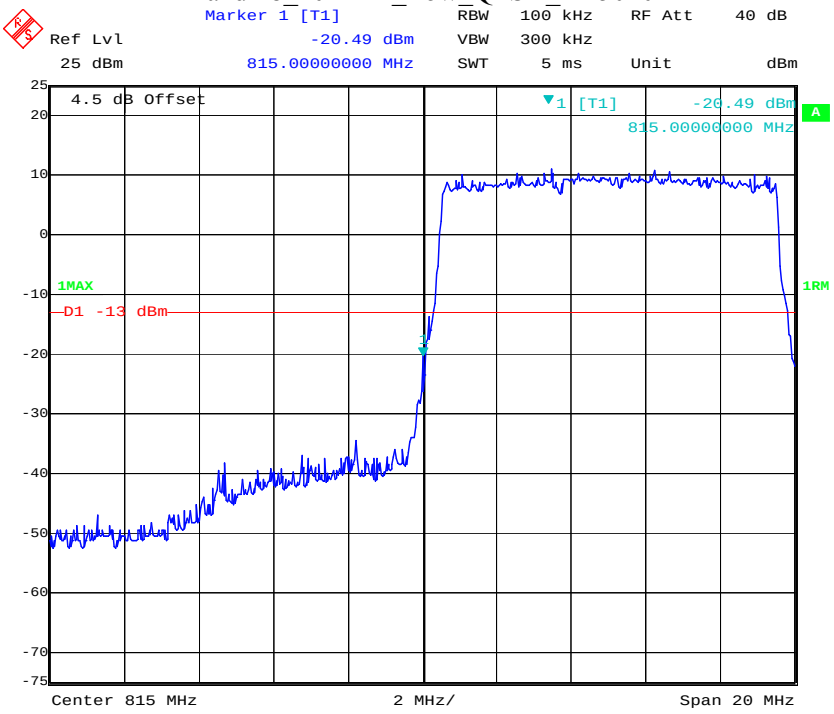
Date: 24.OCT.2019 22:17:13

Band 18_5 MHz_High_16QAM_RB25#0



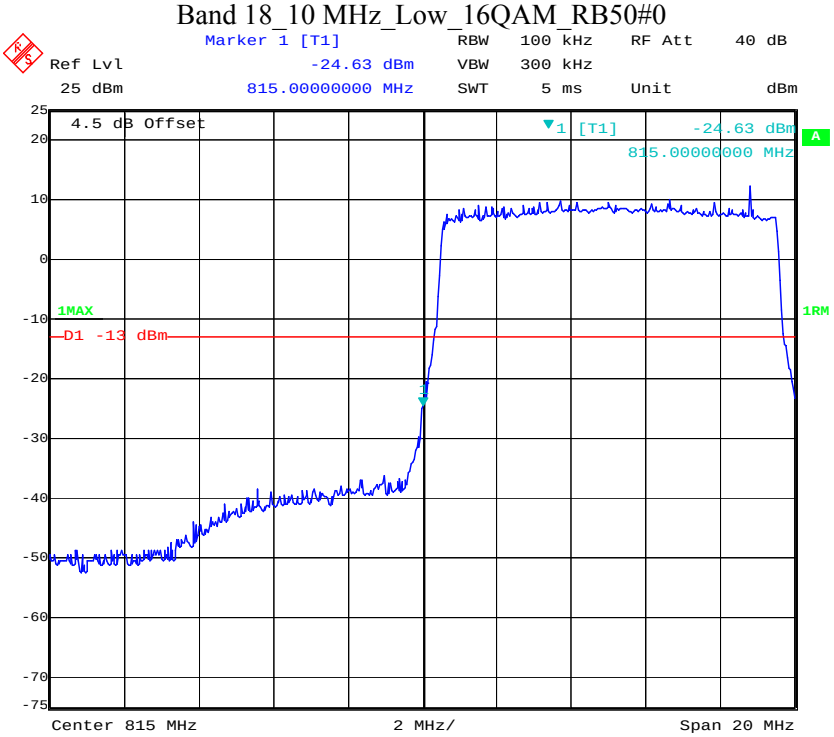
Date: 18.OCT.2019 17:47:19

Band 18_10 MHz_Low_QPSK_RB50#0



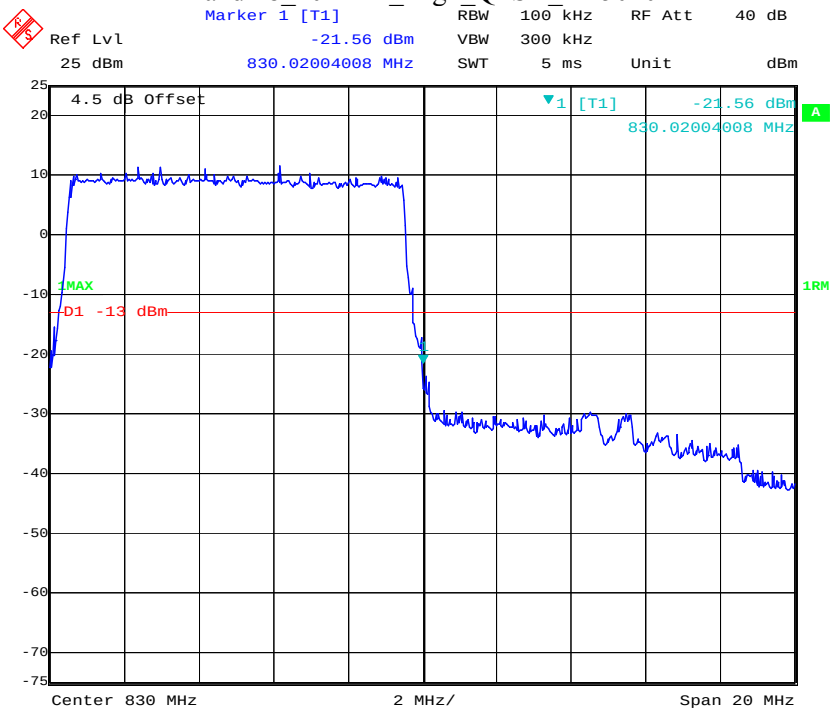
Date: 18.OCT.2019 17:47:41

Band 18_10 MHz_Low_16QAM_RB50#0



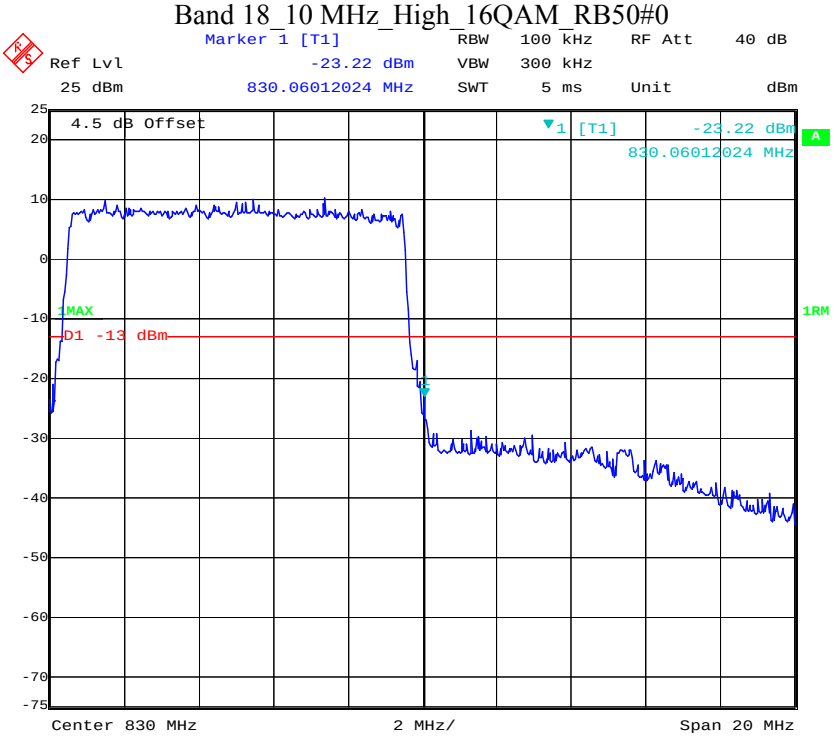
Date: 18.OCT.2019 17:48:02

Band 18_10 MHz_High_QPSK_RB50#0



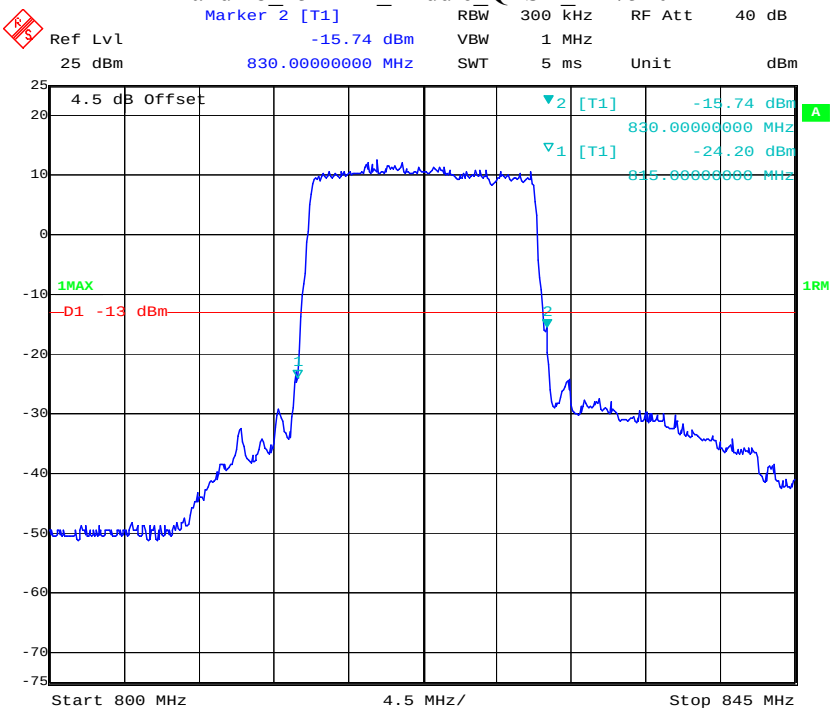
Date: 18.OCT.2019 17:48:23

Band 18_10 MHz_High_16QAM_RB50#0



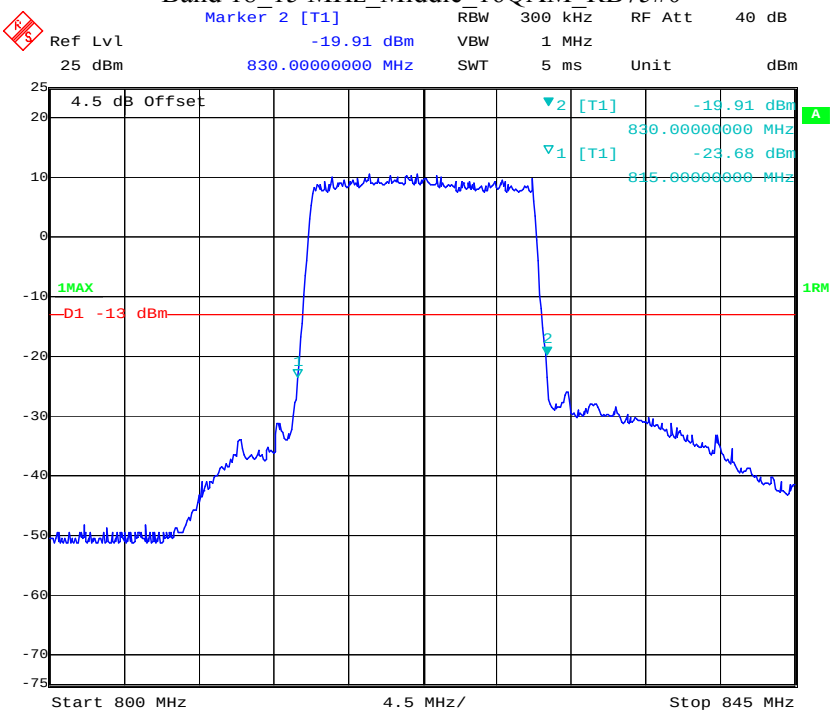
Date: 18.OCT.2019 17:48:40

Band 18_15 MHz_Middle_QPSK_RB75#0



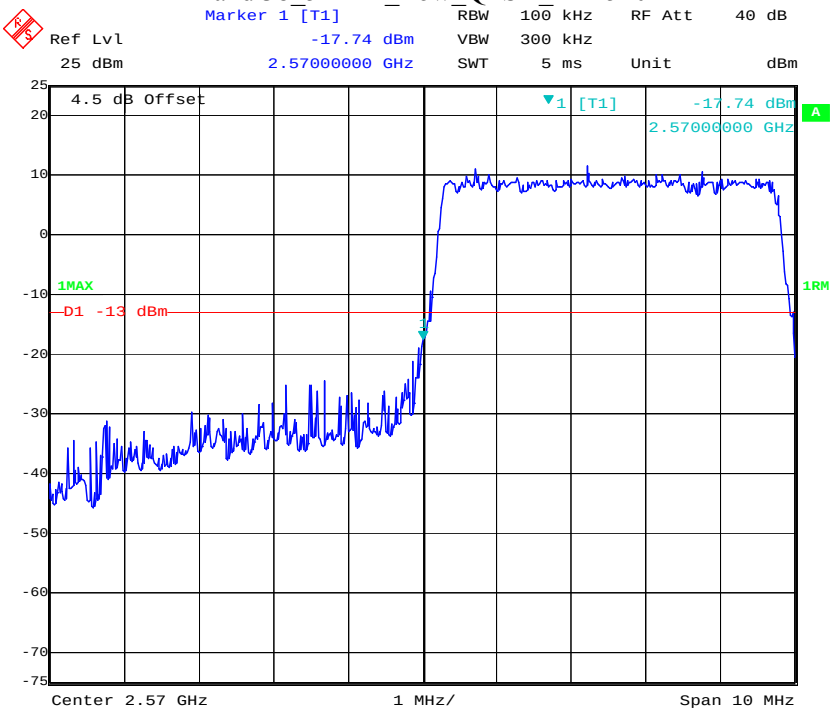
Date: 19.OCT.2019 00:15:22

Band 18_15 MHz_Middle_16QAM_RB75#0



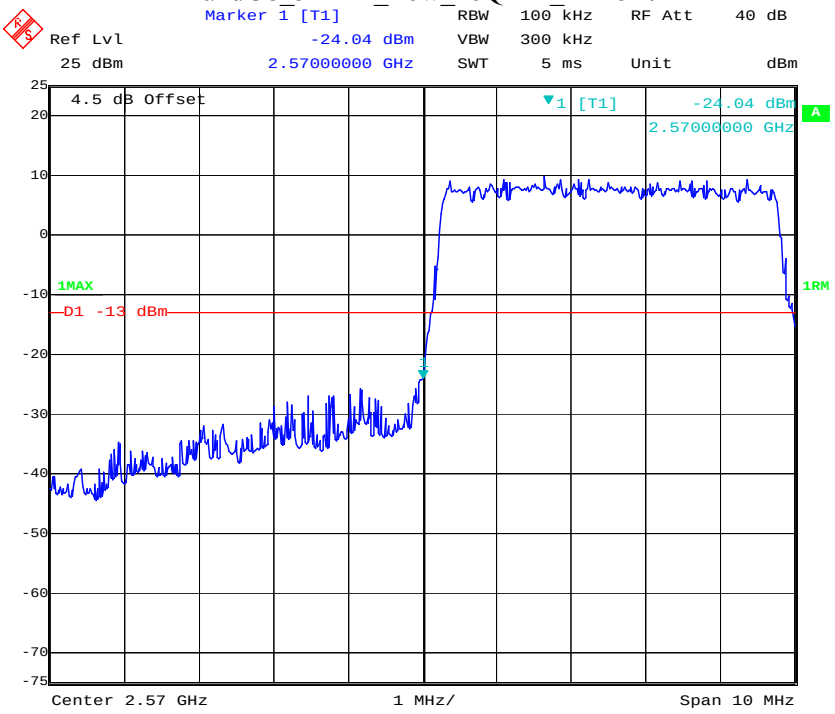
Date: 19.OCT.2019 00:16:37

Band 38_5 MHz_Low_QPSK_RB25#0



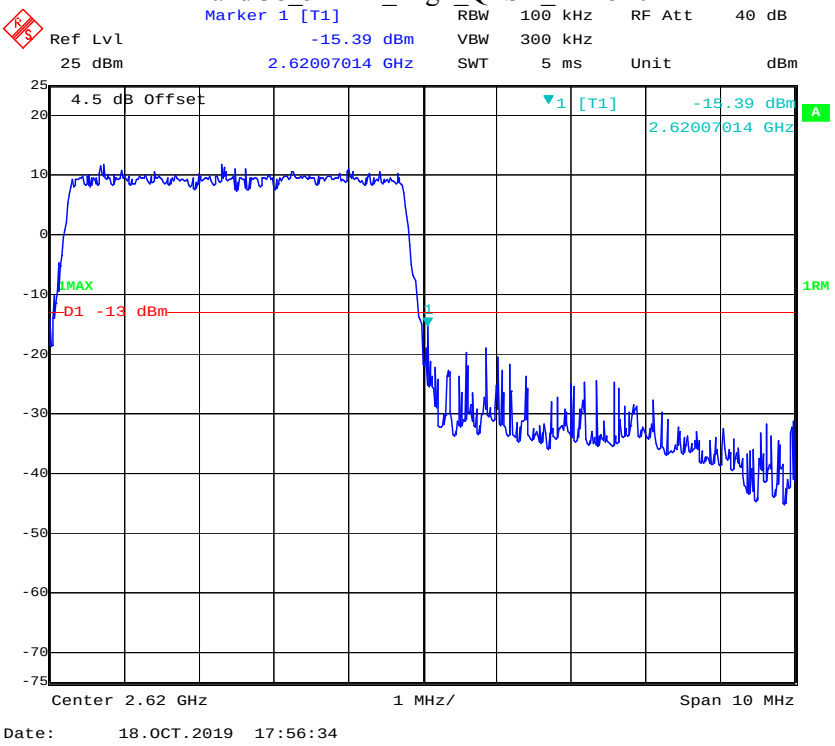
Date: 18.OCT.2019 17:55:42

Band 38_5 MHz_Low_16QAM_RB25#0

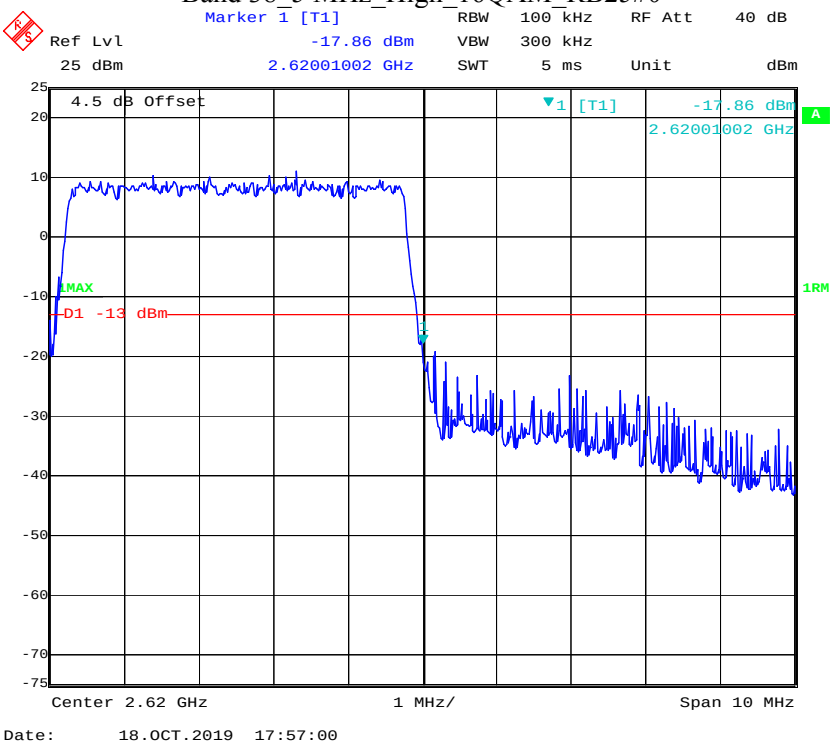


Date: 18.OCT.2019 17:56:08

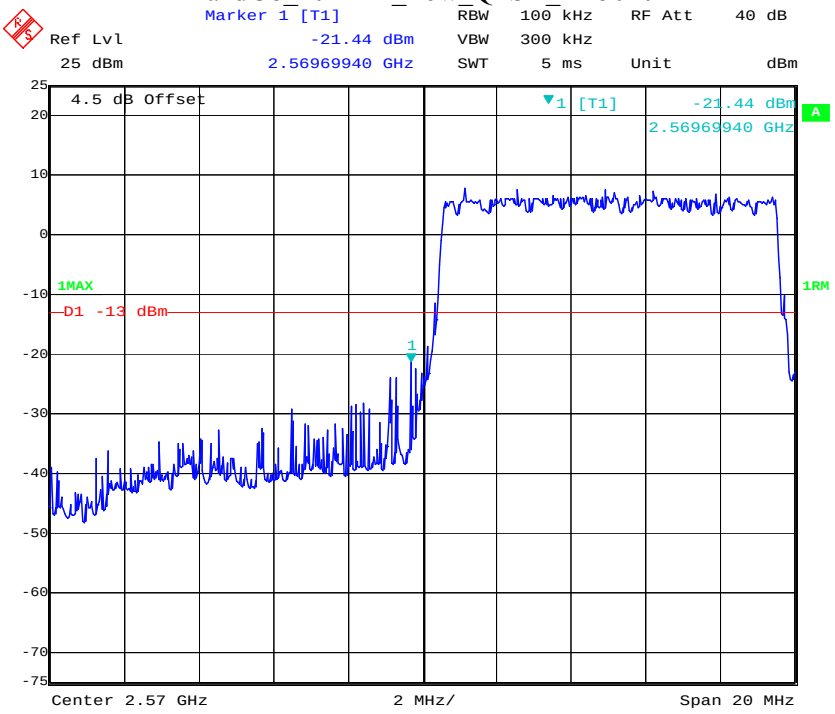
Band 38_5 MHz_High_QPSK_RB25#0



Band 38_5 MHz_High_16QAM_RB25#0

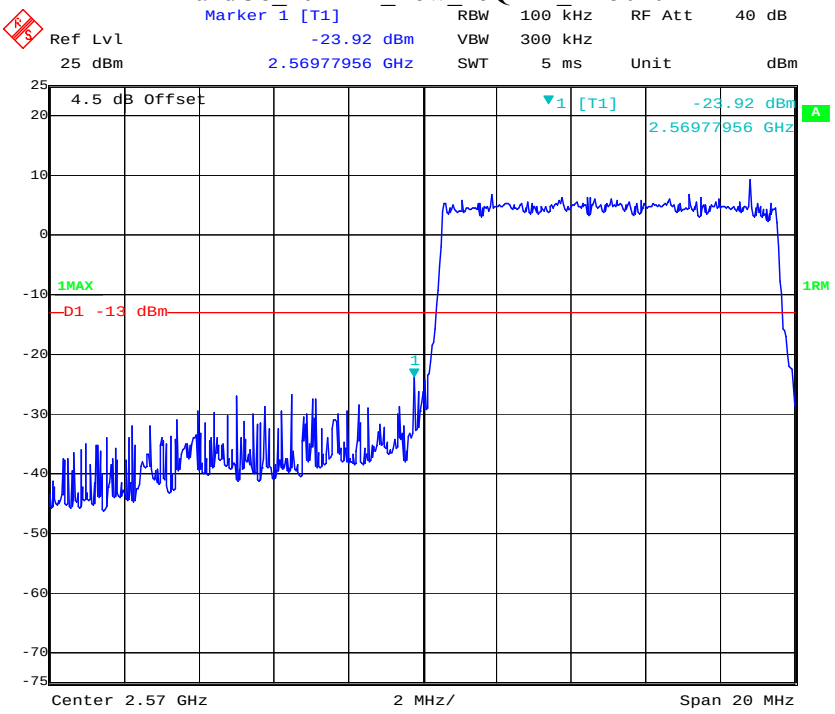


Band 38_10 MHz_Low_QPSK_RB50#0



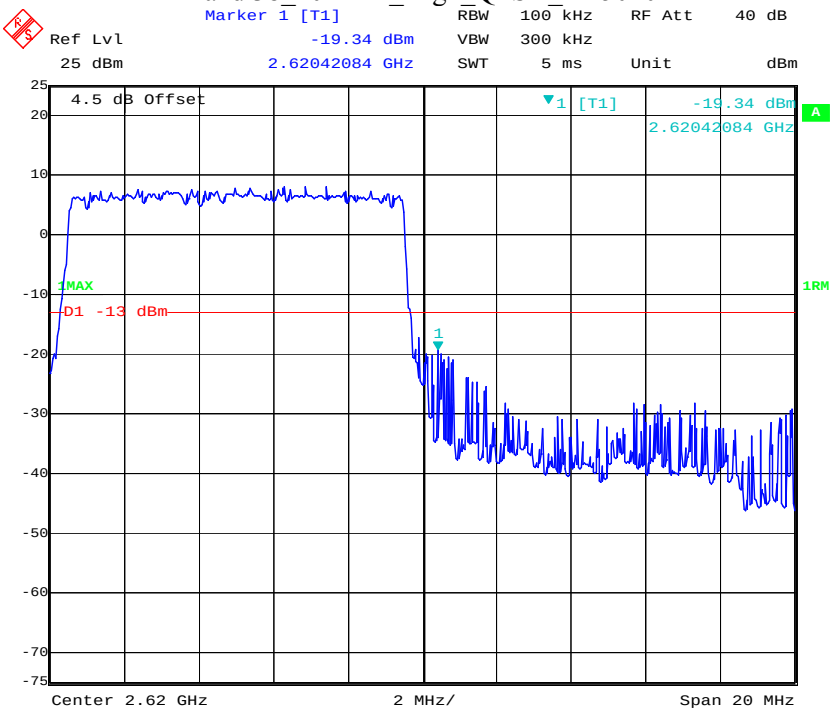
Date: 18.OCT.2019 17:57:26

Band 38_10 MHz_Low_16QAM_RB50#0



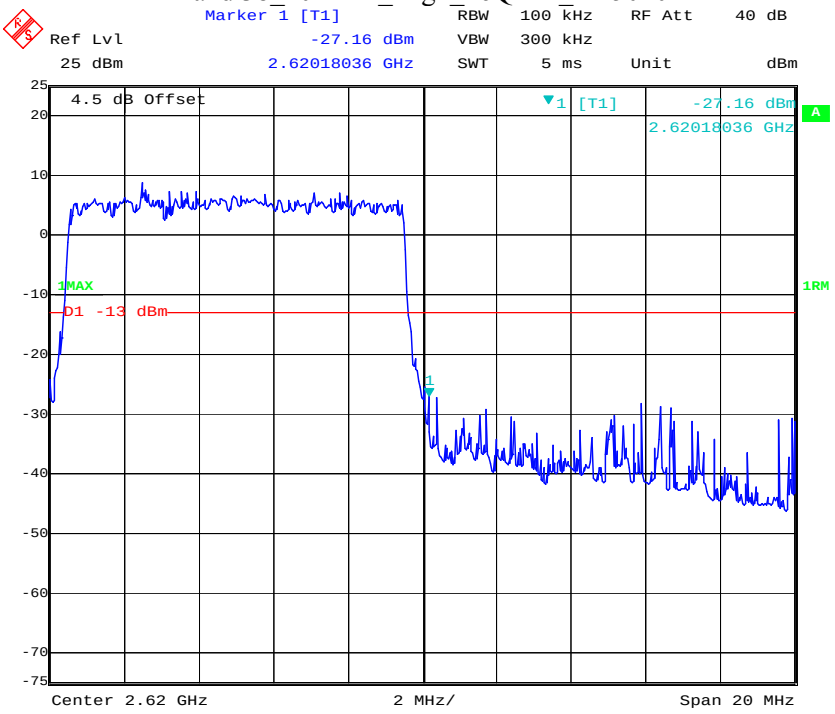
Date: 18.OCT.2019 17:57:53

Band 38_10 MHz_High_QPSK_RB50#0



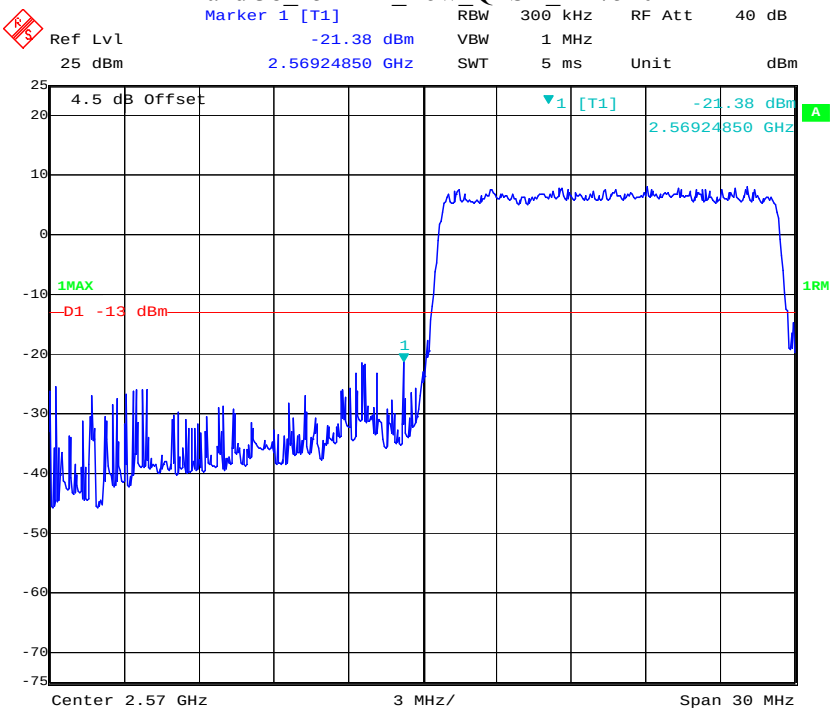
Date: 18.OCT.2019 17:58:24

Band 38_10 MHz_High_16QAM_RB50#0



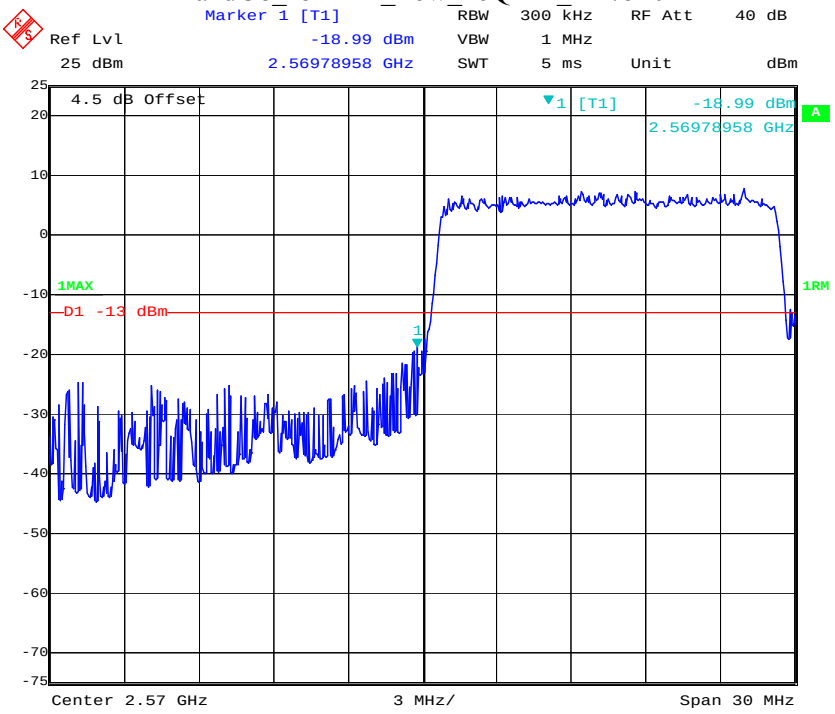
Date: 18.OCT.2019 17:58:45

Band 38_15 MHz_Low_QPSK_RB75#0



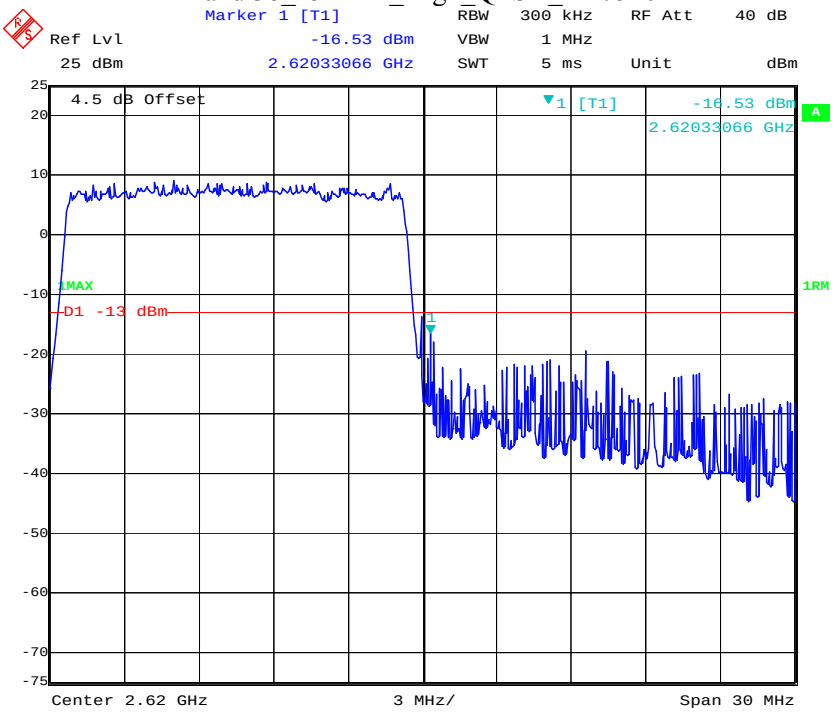
Date: 18.OCT.2019 17:59:22

Band 38_15 MHz_Low_16QAM_RB75#0



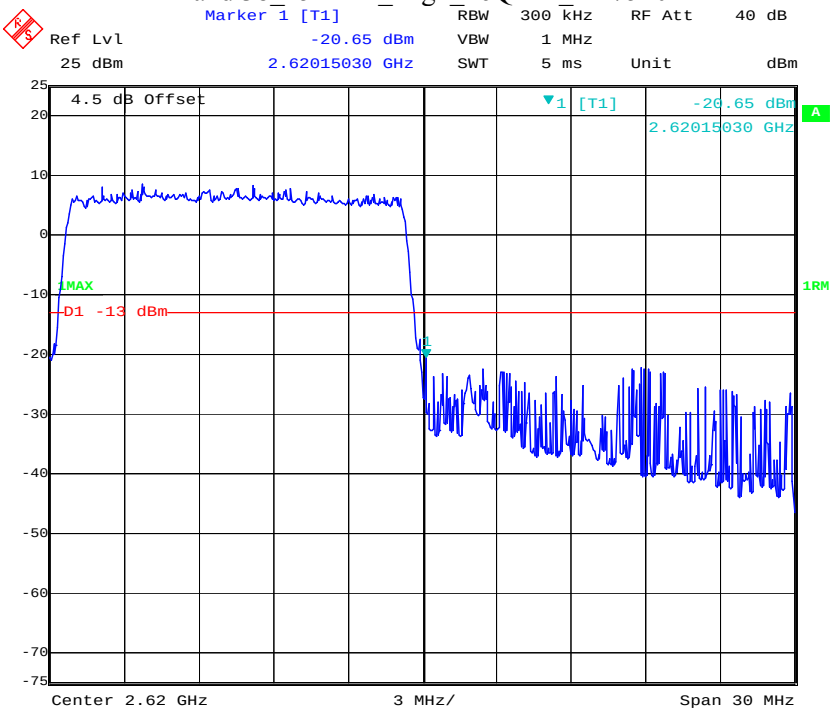
Date: 18.OCT.2019 17:59:59

Band 38_15 MHz_High_QPSK_RB75#0



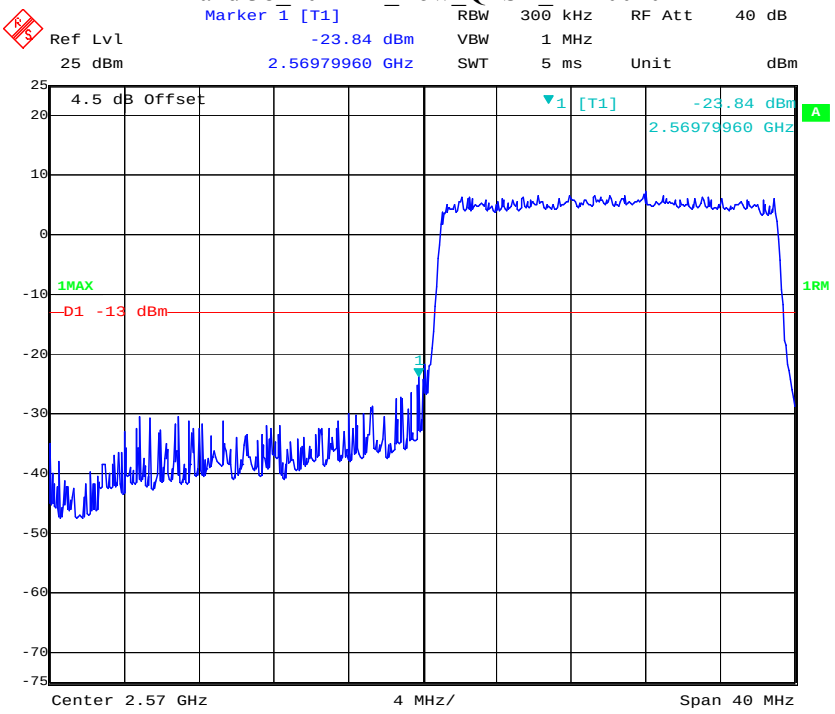
Date: 18.OCT.2019 18:00:32

Band 38_15 MHz_High_16QAM_RB75#0



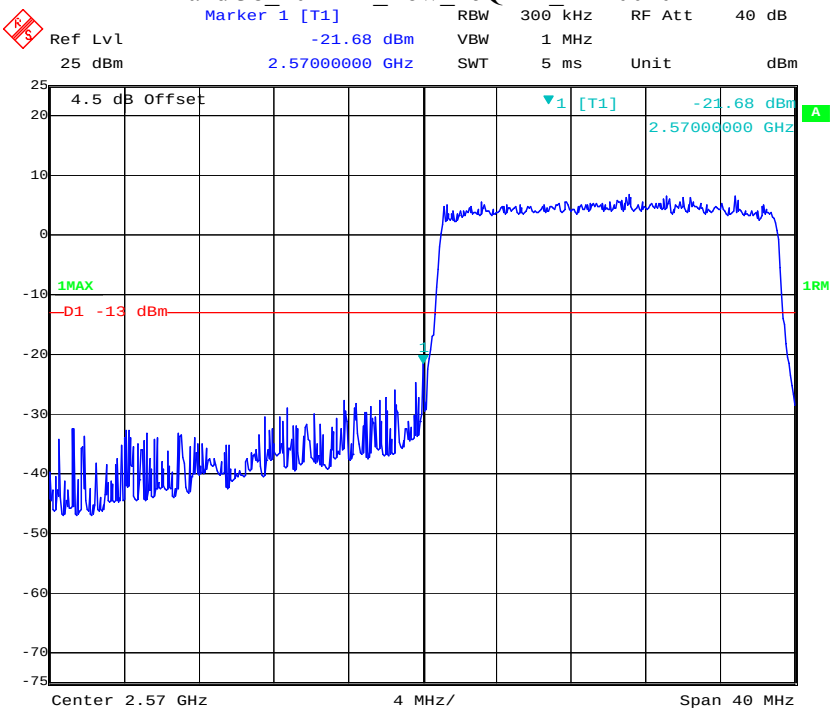
Date: 18.OCT.2019 18:01:06

Band 38_20 MHz_Low_QPSK_RB100#0



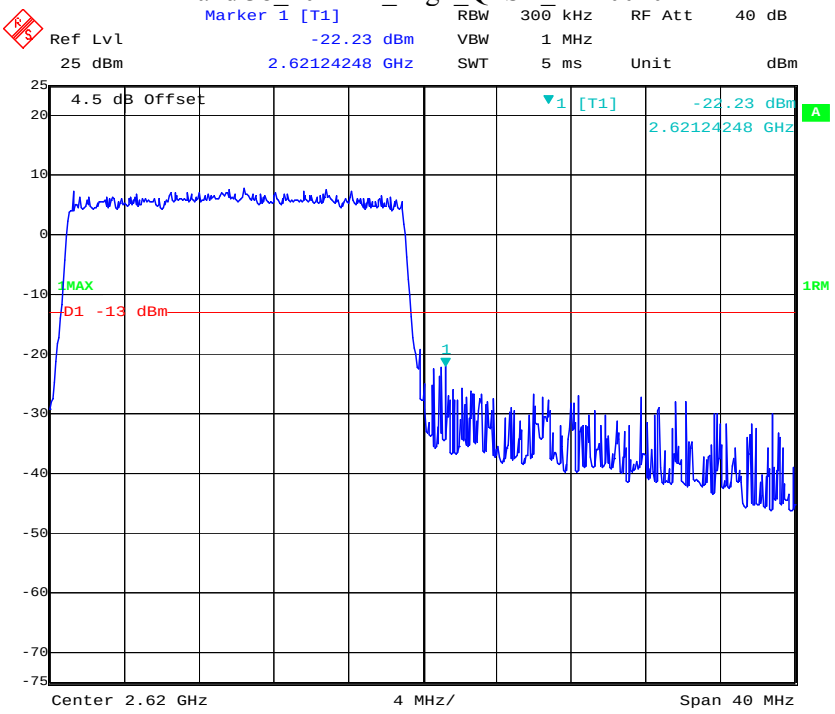
Date: 18.OCT.2019 18:01:40

Band 38_20 MHz_Low_16QAM_RB100#0



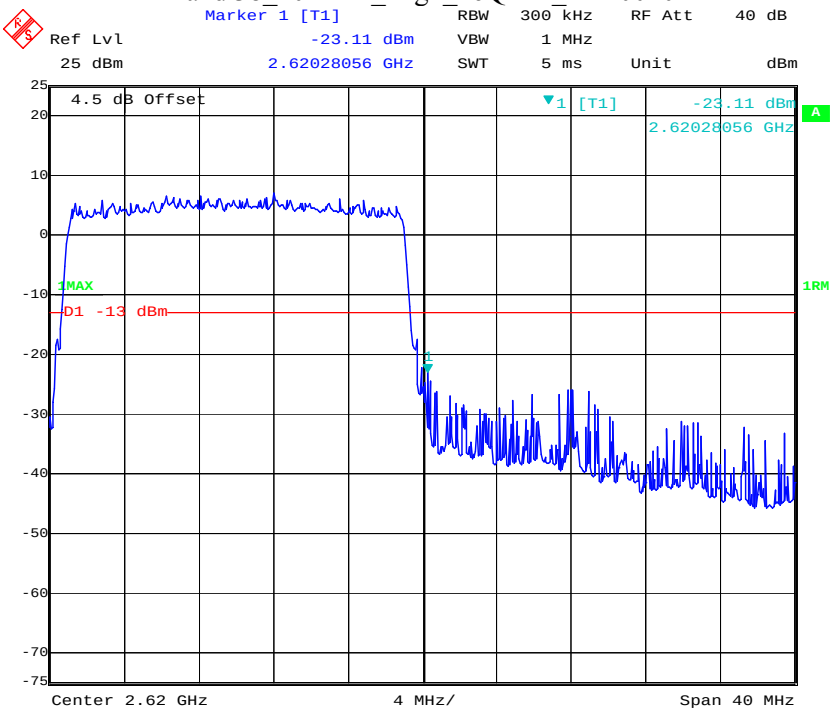
Date: 18.OCT.2019 18:02:15

Band 38_20 MHz_High_QPSK_RB100#0



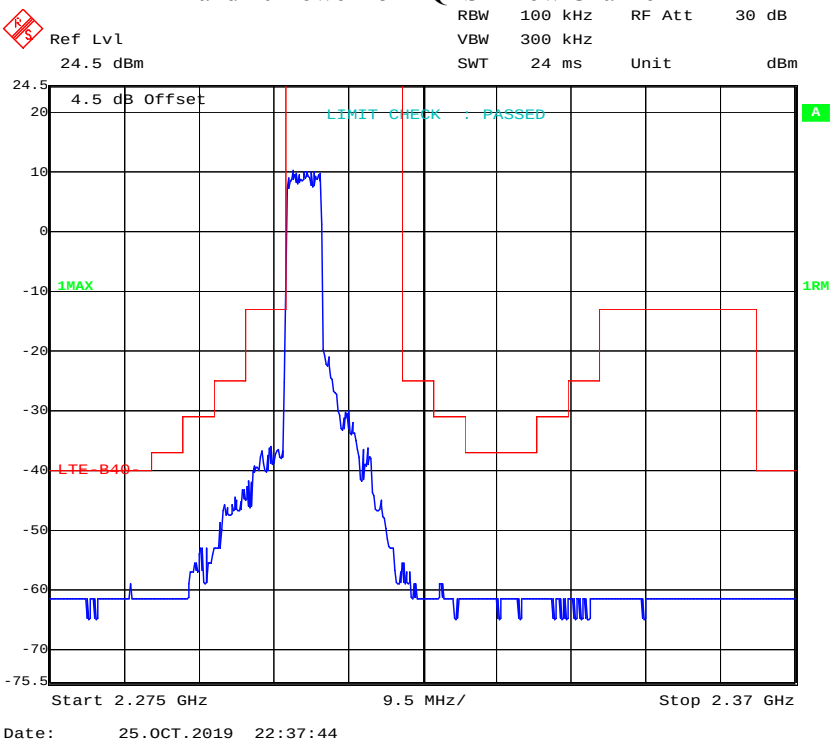
Date: 18.OCT.2019 18:02:47

Band 38_20 MHz_High_16QAM_RB100#0

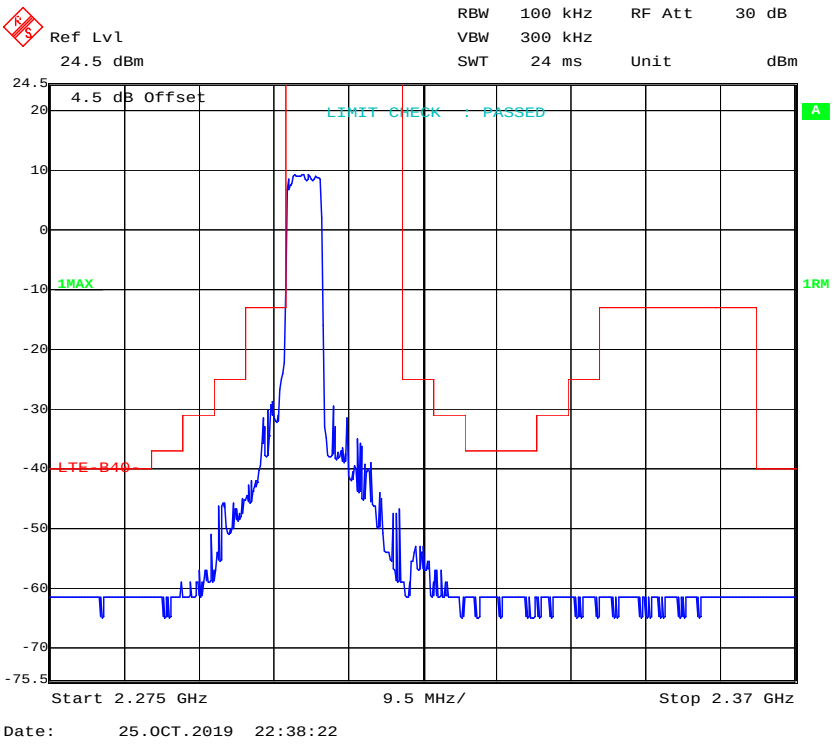


Date: 18.OCT.2019 18:03:12

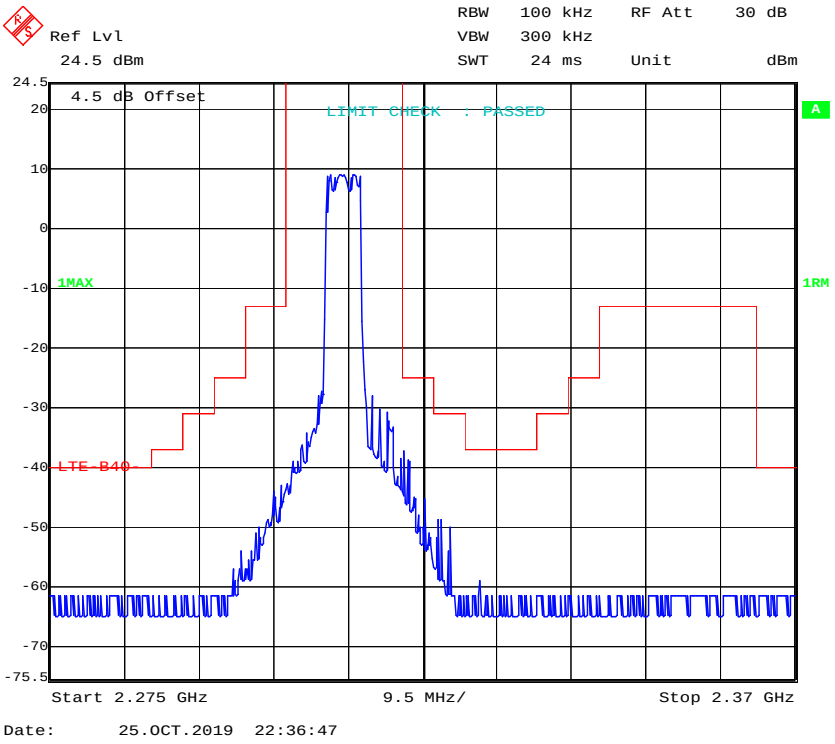
Band 40 Lower 5M-QPSK-Low Channel



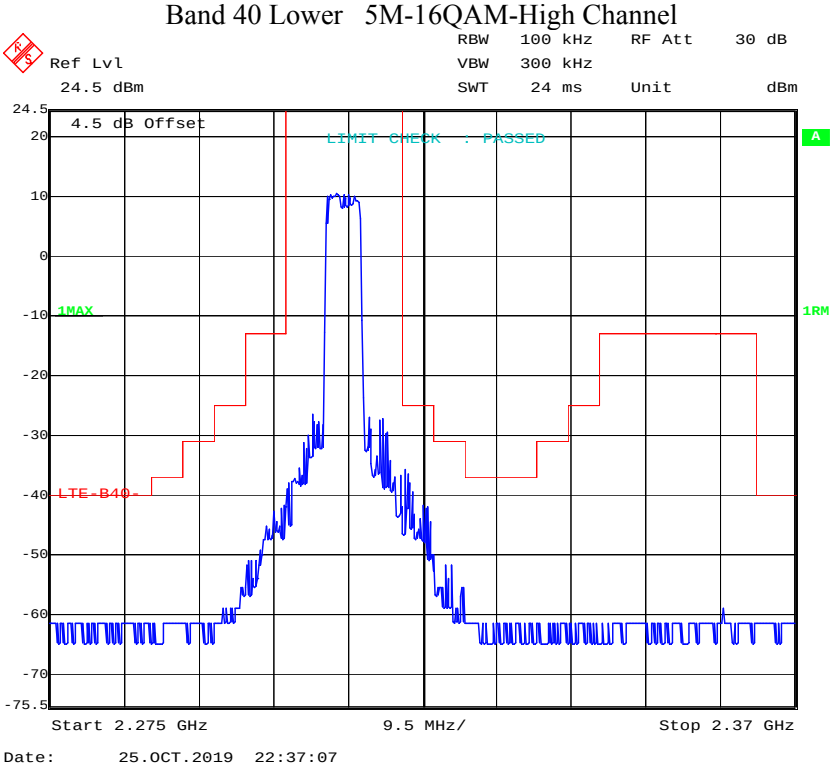
Band 40 Lower 5M-16QAM-Low Channel



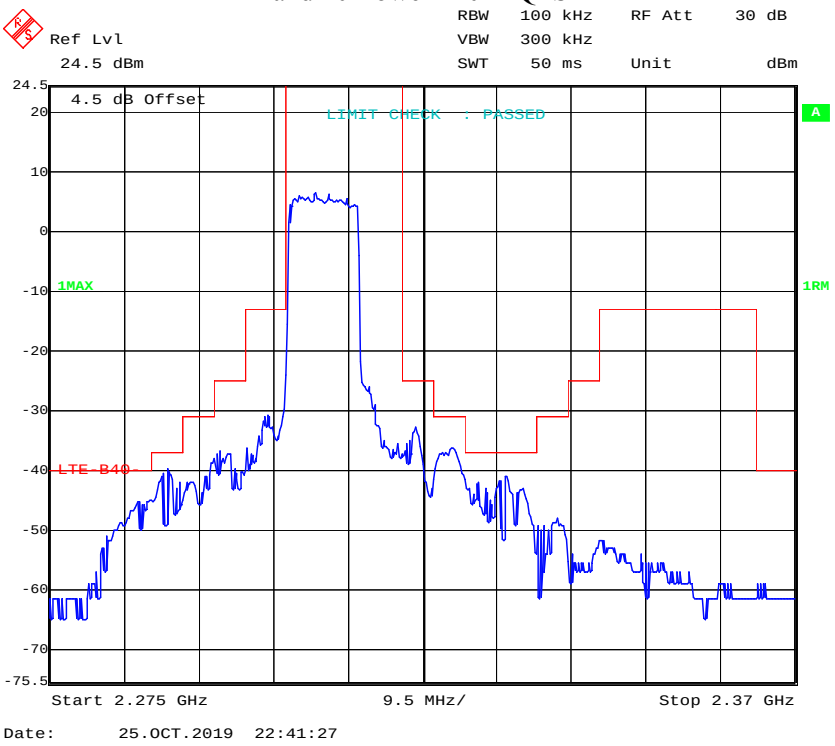
Band 40 Lower 5M-QPSK-High Channel



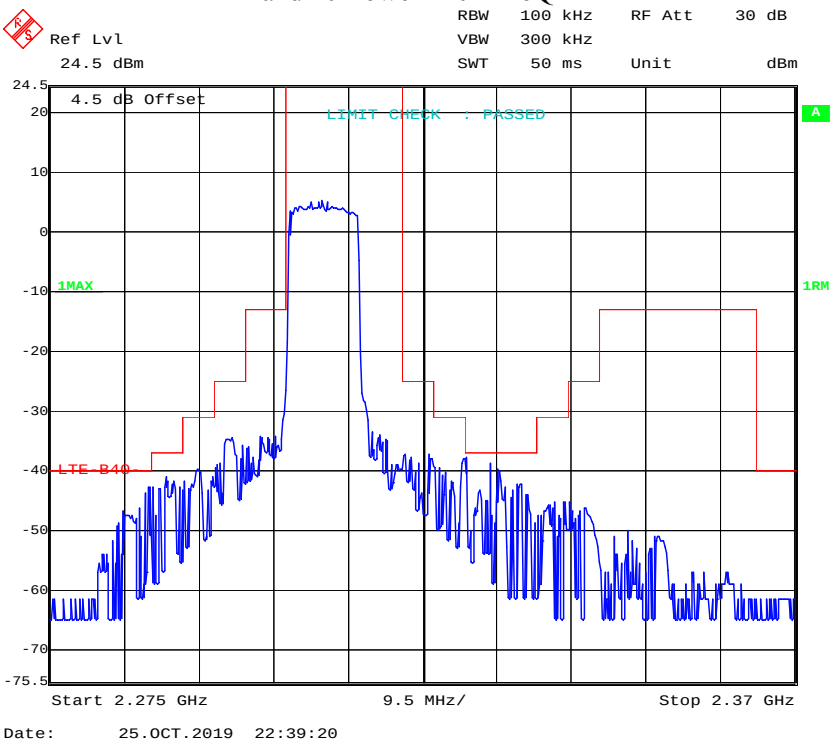
Band 40 Lower 5M-16QAM-High Channel



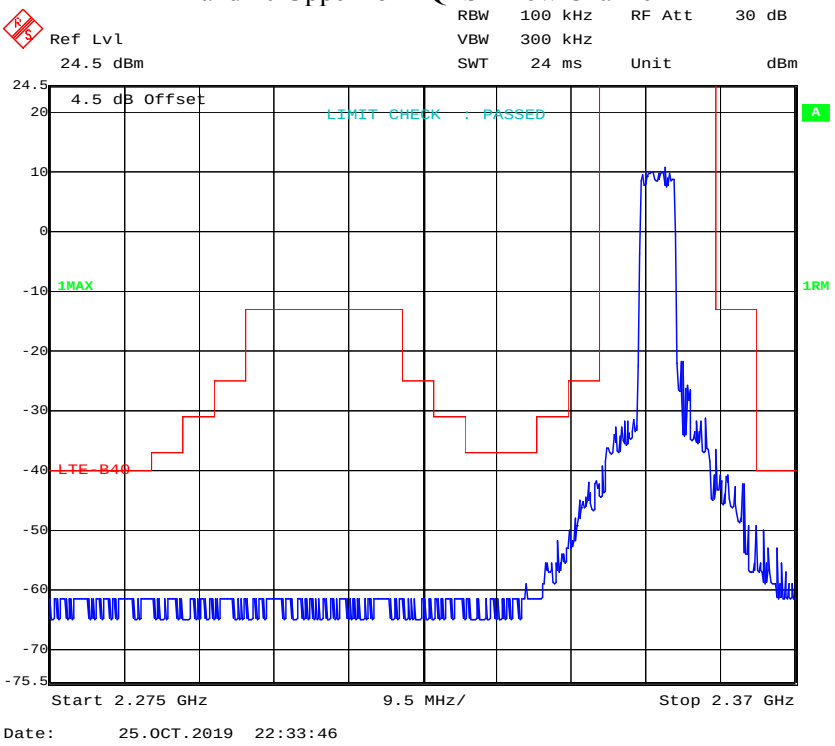
Band 40 Lower 10M-QPSK



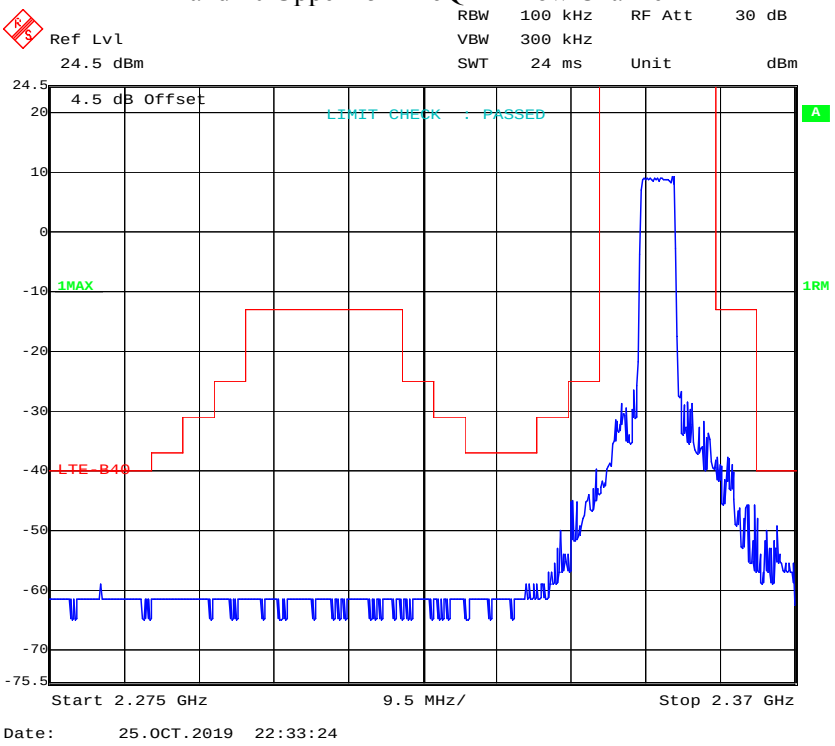
Band 40 Lower 10M-16QAM



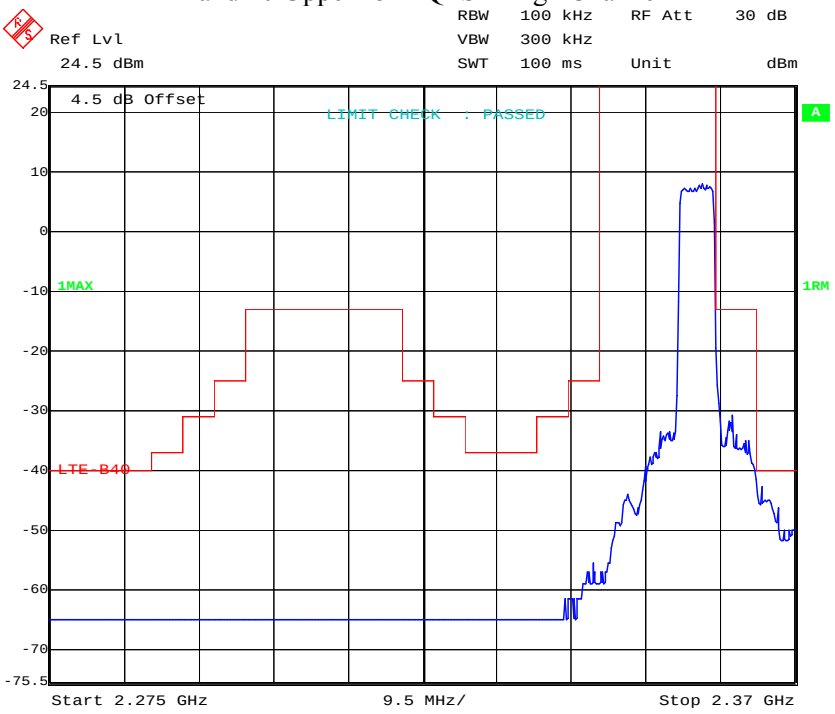
Band 40 Upper 5M-QPSK Low Channel



Band 40 Upper 5M-16QAM Low Channel

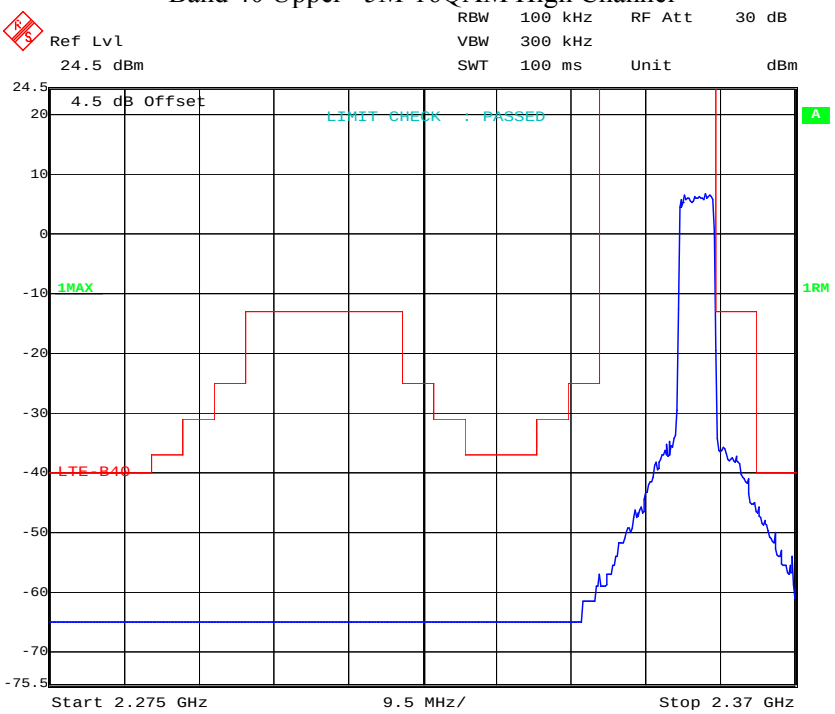


Band 40 Upper 5M-QPSK High Channel



Date: 25.OCT.2019 22:34:40

Band 40 Upper 5M-16QAM High Channel



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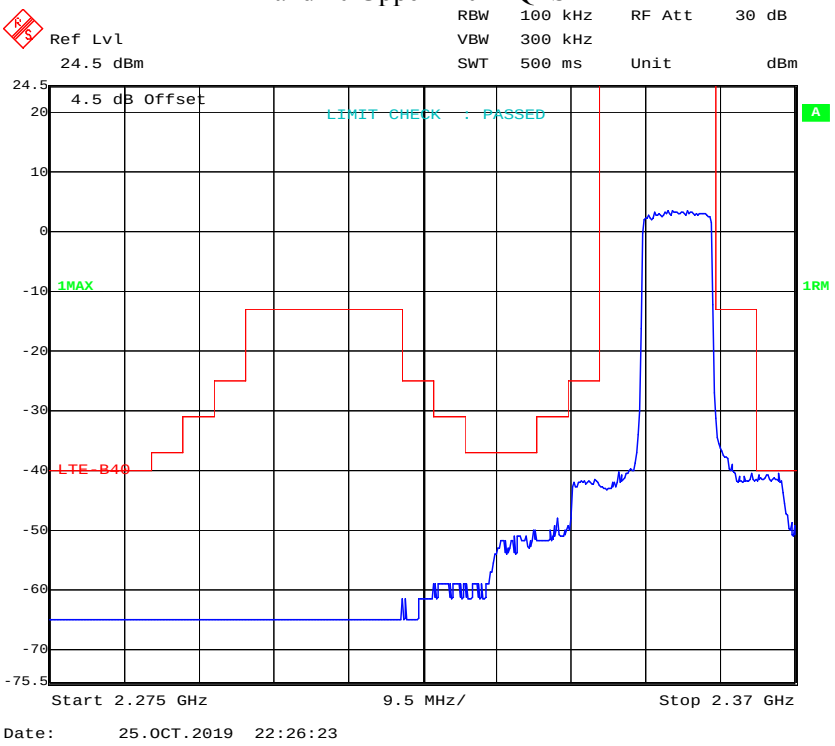
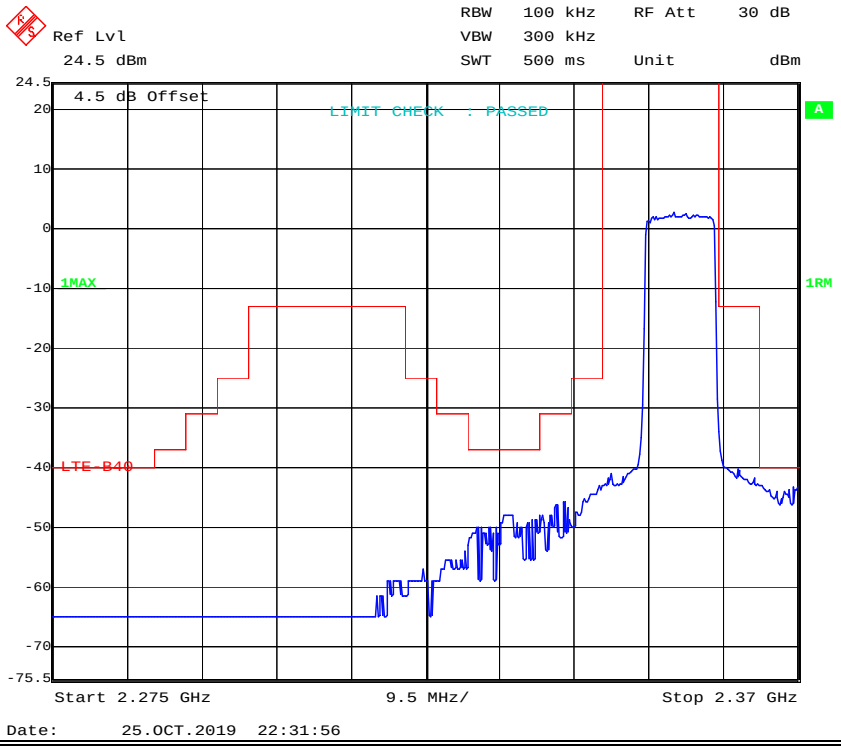
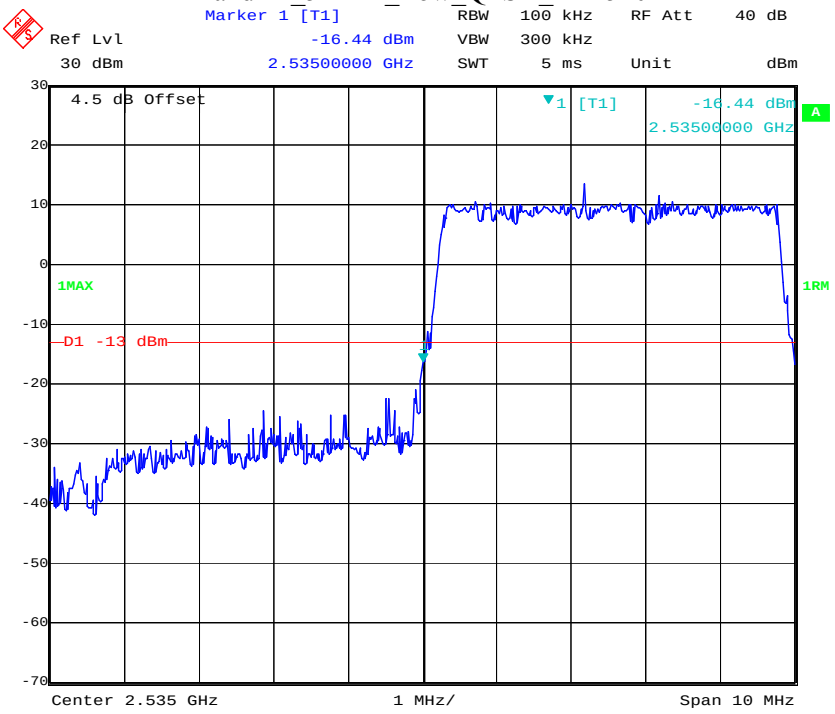
Band 40 Upper 10M-QPSK



Band 40 Upper 10M-16QAM

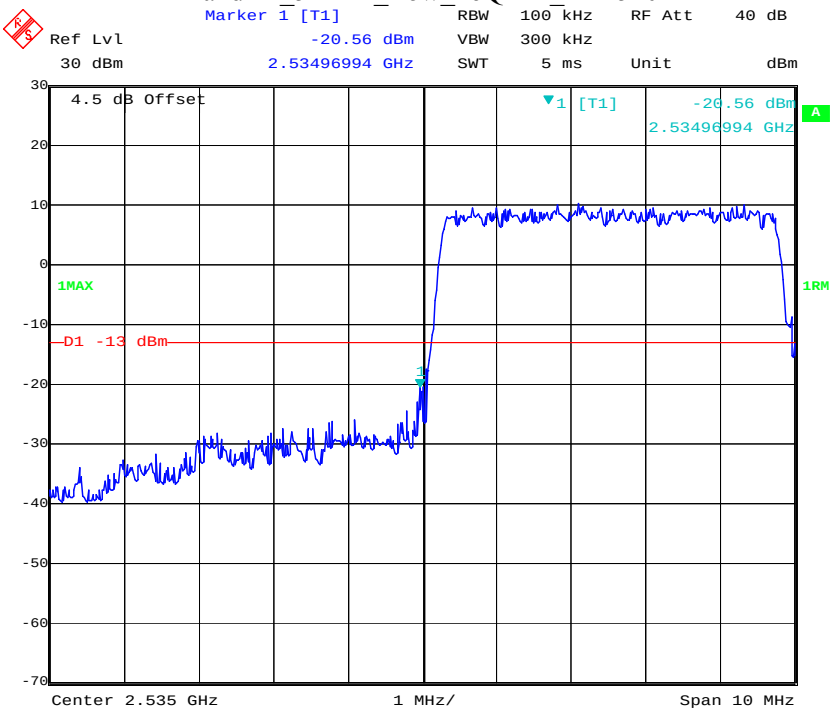


Band 41_5 MHz_Low_QPSK_RB25#0



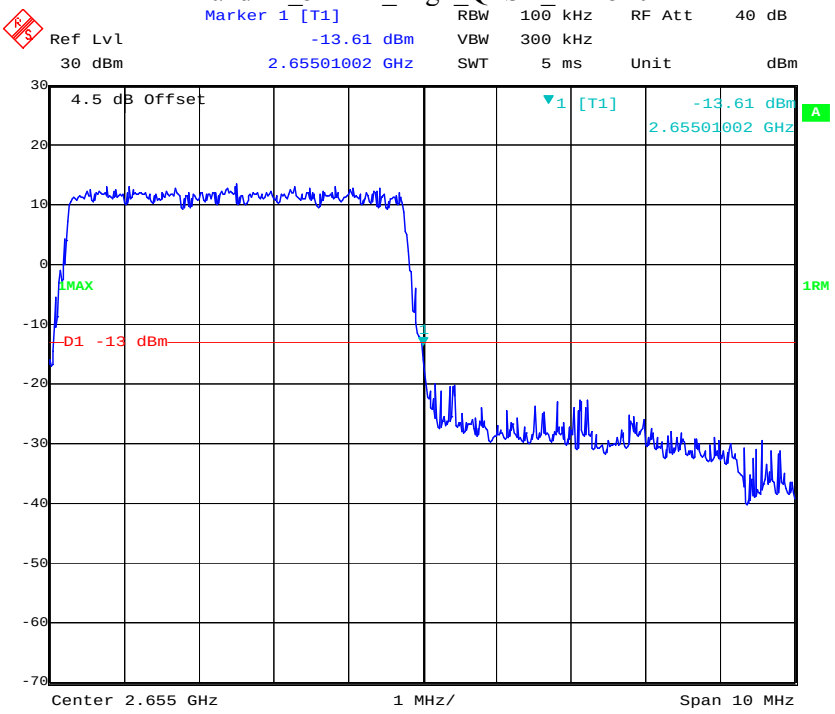
Date: 25.OCT.2019 20:50:00

Band 41_5 MHz_Low_16QAM_RB25#0



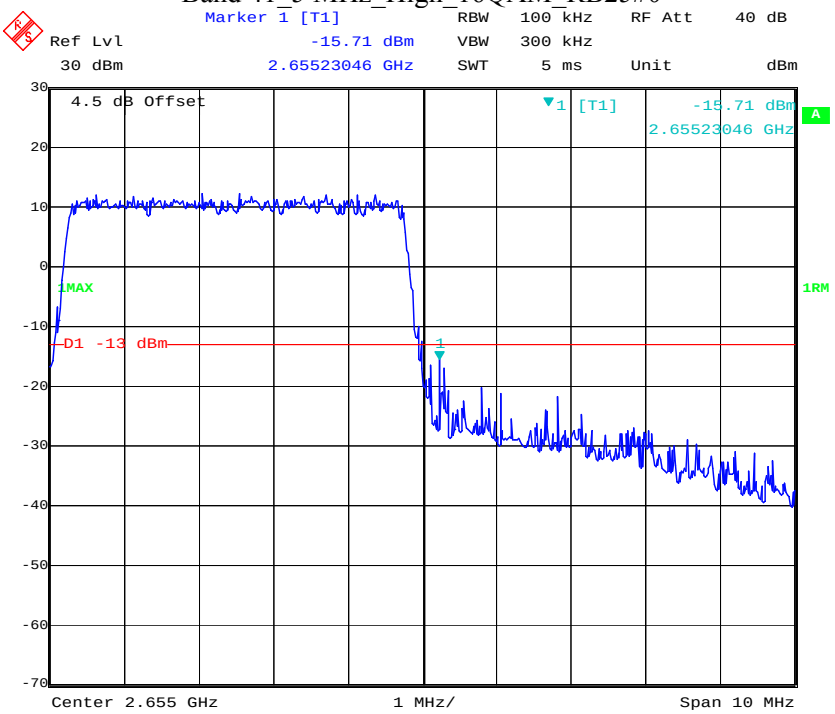
Date: 25.OCT.2019 20:50:23

Band 41_5 MHz_High_QPSK_RB25#0



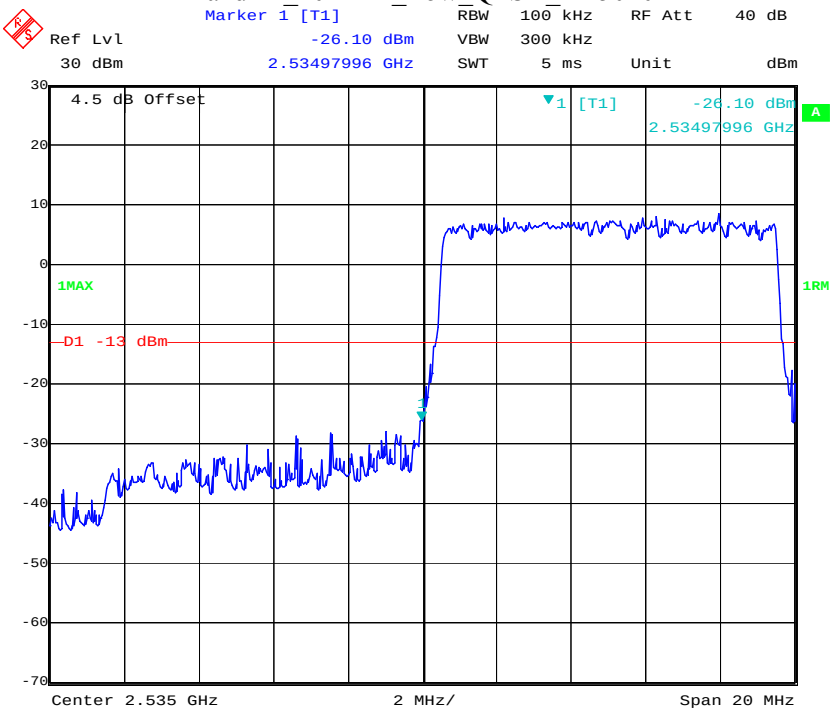
Date: 25.OCT.2019 20:50:46

Band 41_5 MHz_High_16QAM_RB25#0



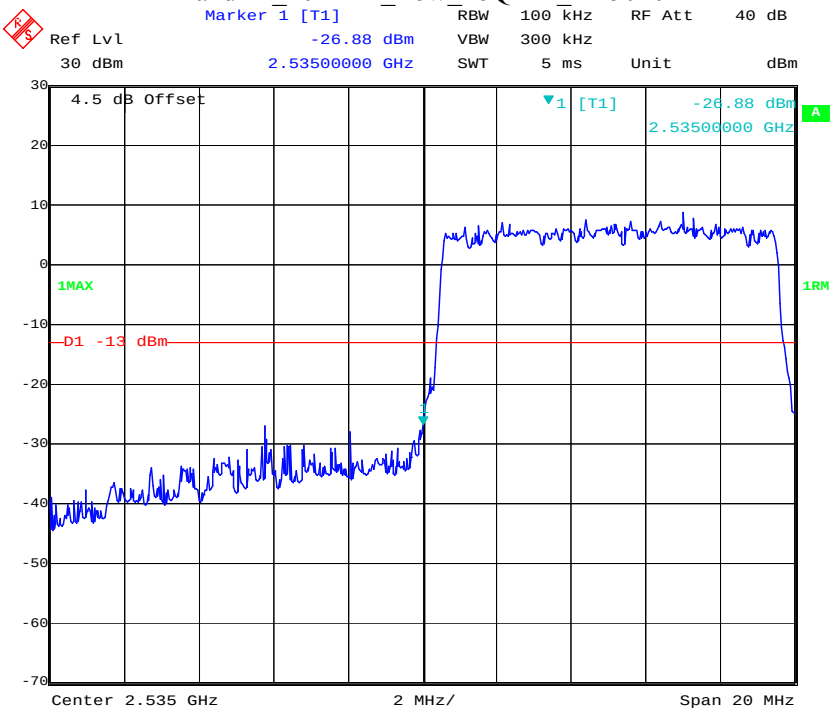
Date: 25.OCT.2019 20:51:06

Band 41_10 MHz_Low_QPSK_RB50#0



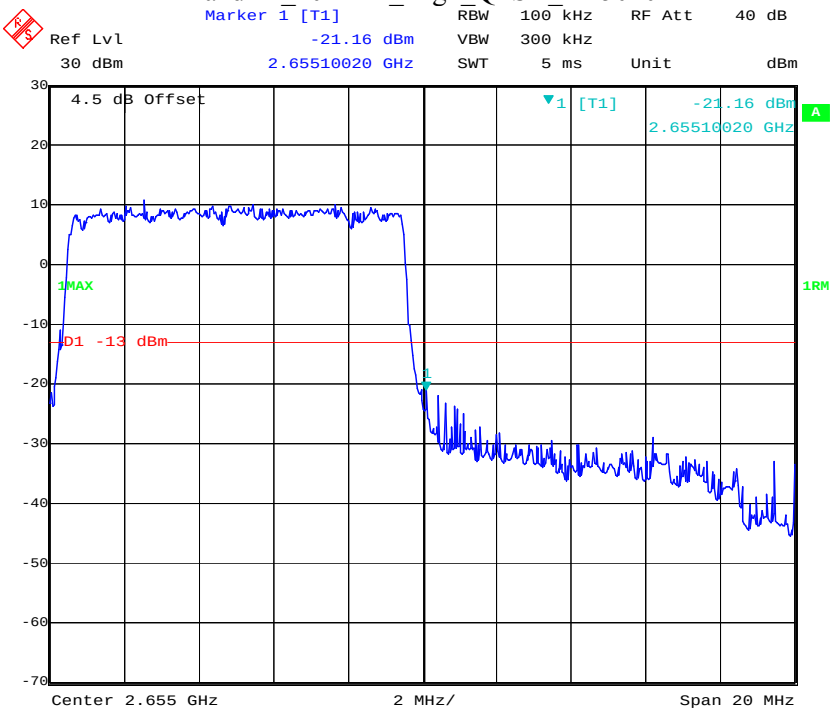
Date: 25.OCT.2019 20:51:36

Band 41_10 MHz_Low_16QAM_RB50#0



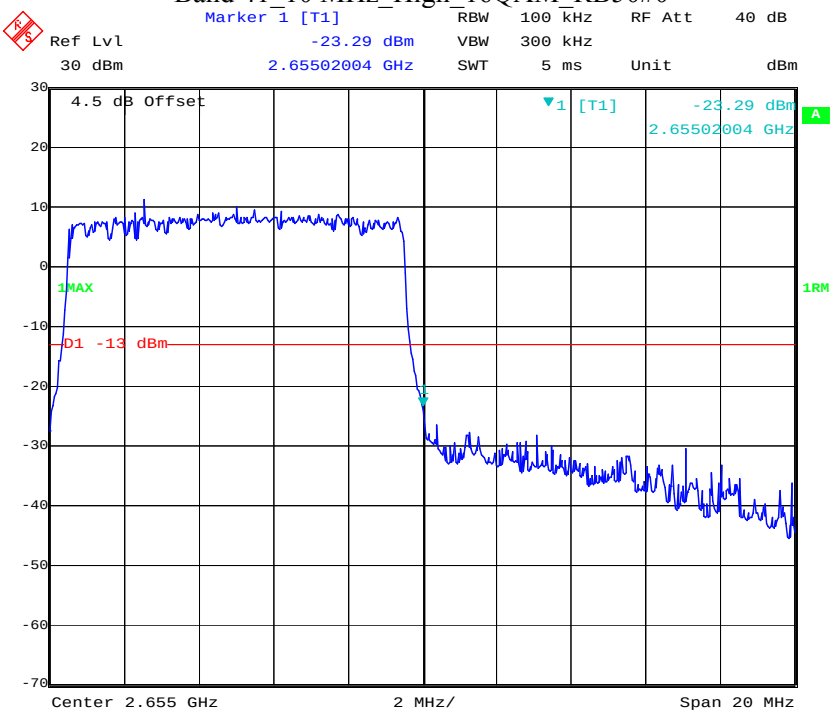
Date: 25.OCT.2019 20:52:00

Band 41_10 MHz_High_QPSK_RB50#0



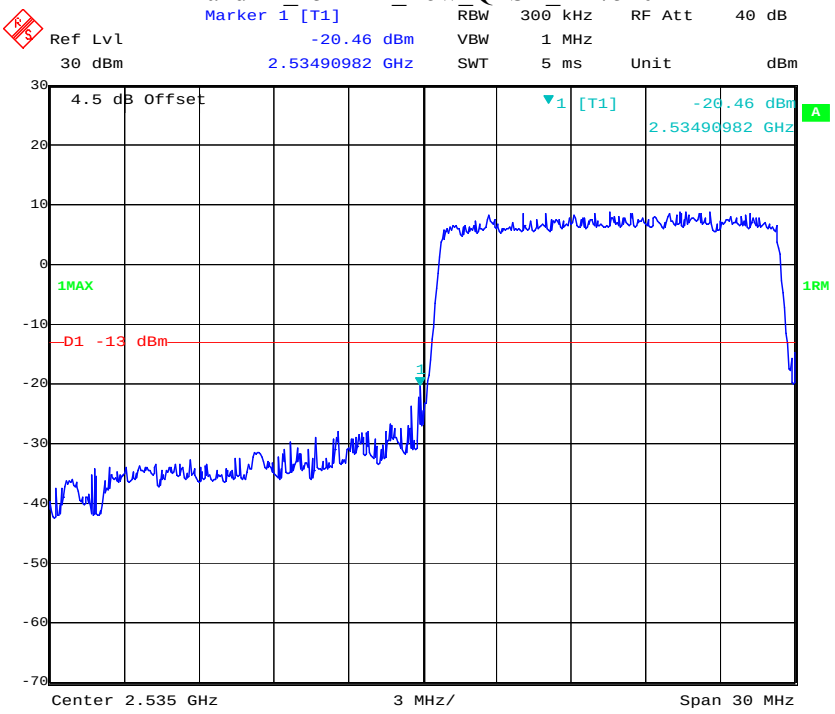
Date: 25.OCT.2019 20:52:24

Band 41_10 MHz_High_16QAM_RB50#0



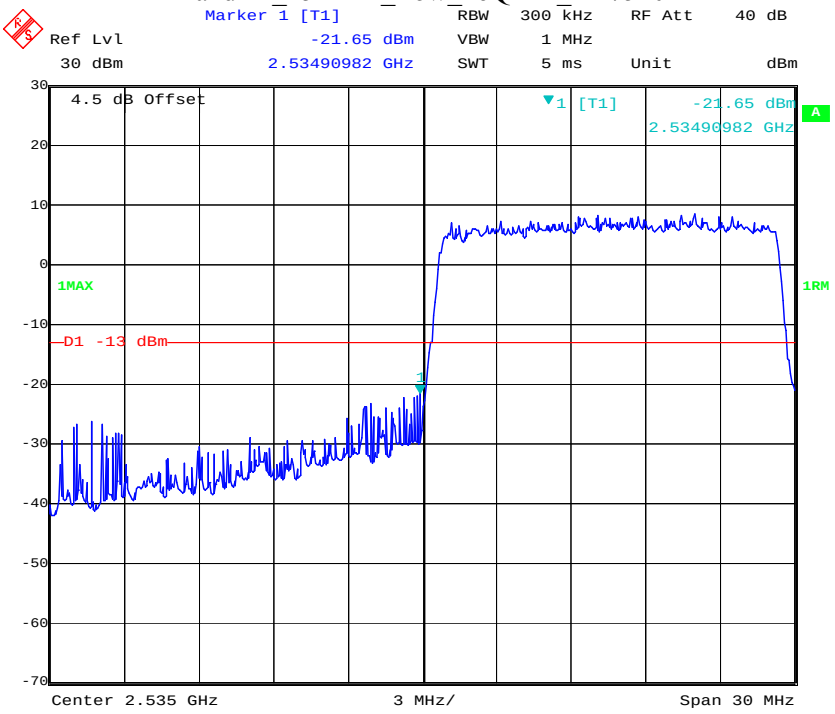
Date: 25.OCT.2019 20:52:48

Band 41_15 MHz_Low_QPSK_RB75#0



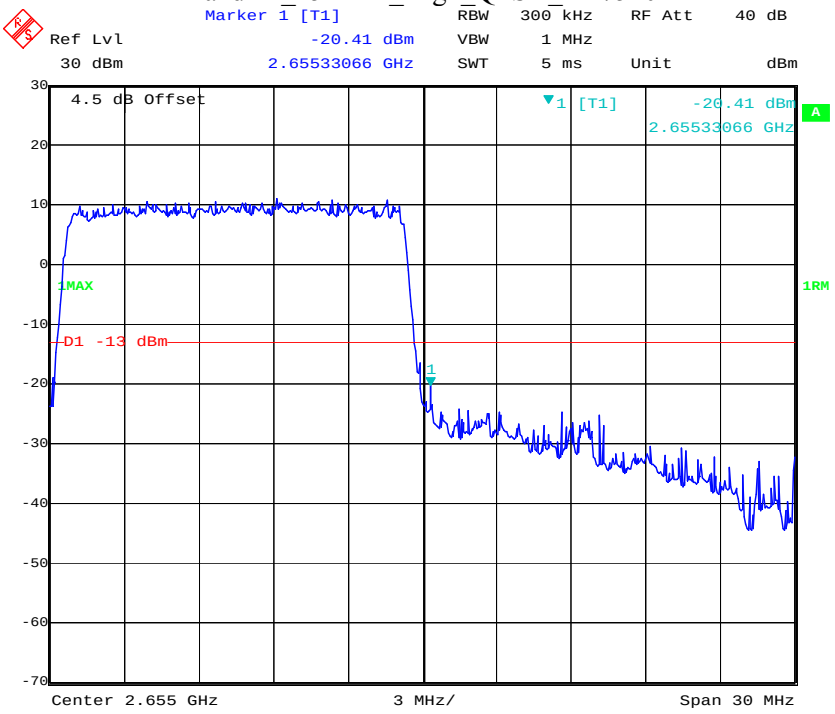
Date: 25.OCT.2019 20:53:18

Band 41_15 MHz_Low_16QAM_RB75#0



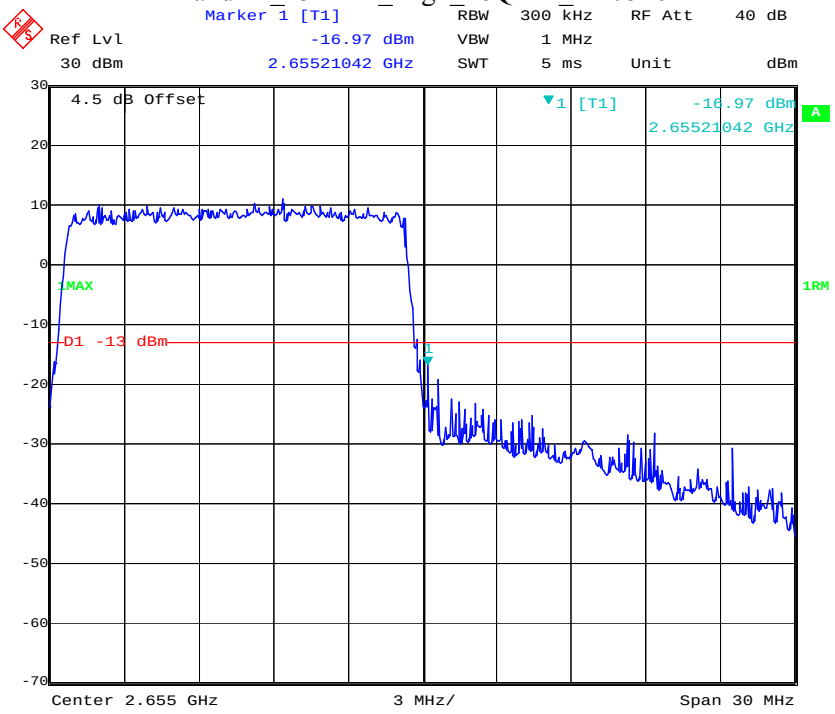
Date: 25.OCT.2019 20:53:44

Band 41_15 MHz_High_QPSK_RB75#0



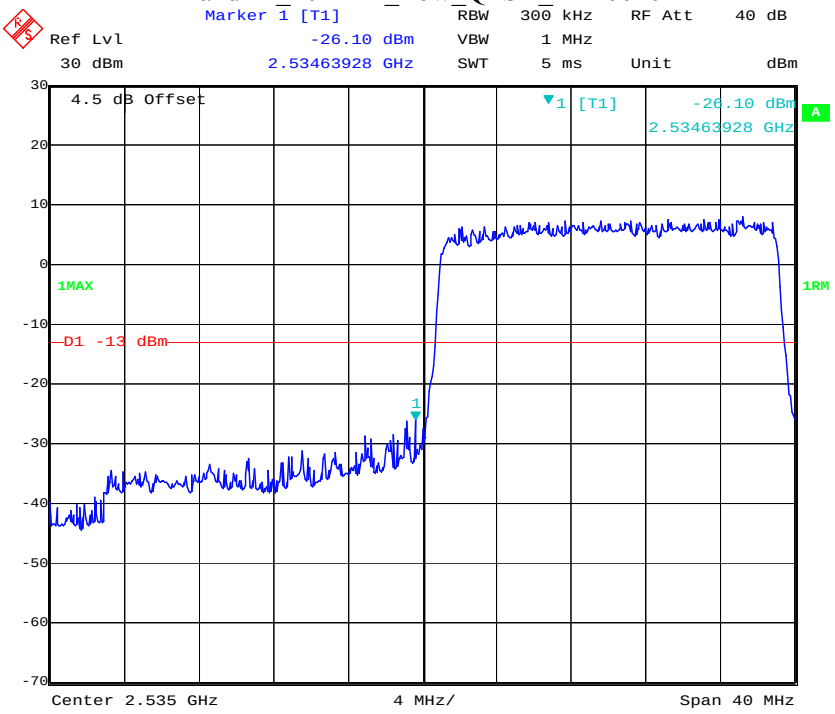
Date: 25.OCT.2019 20:54:08

Band 41_15 MHz_High_16QAM_RB75#0



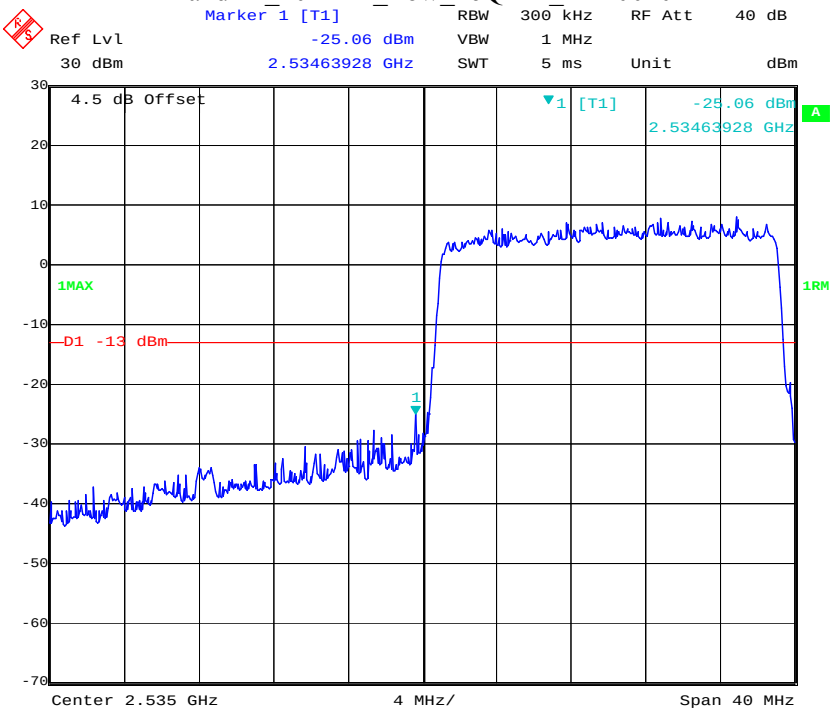
Date: 25.OCT.2019 20:54:37

Band 41_20 MHz_Low_QPSK_RB100#0



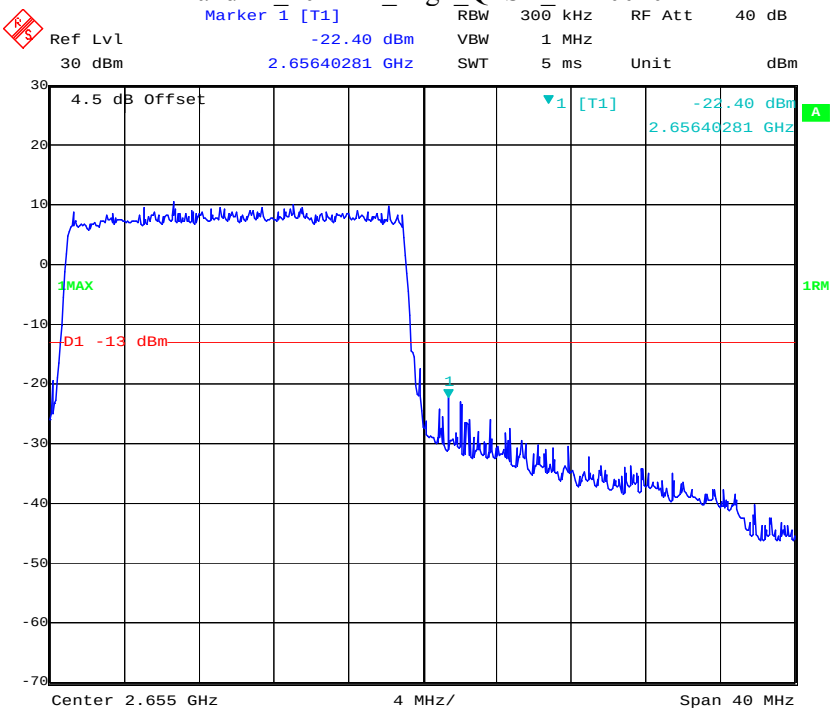
Date: 25.OCT.2019 20:55:09

Band 41_20 MHz_Low_16QAM_RB100#0



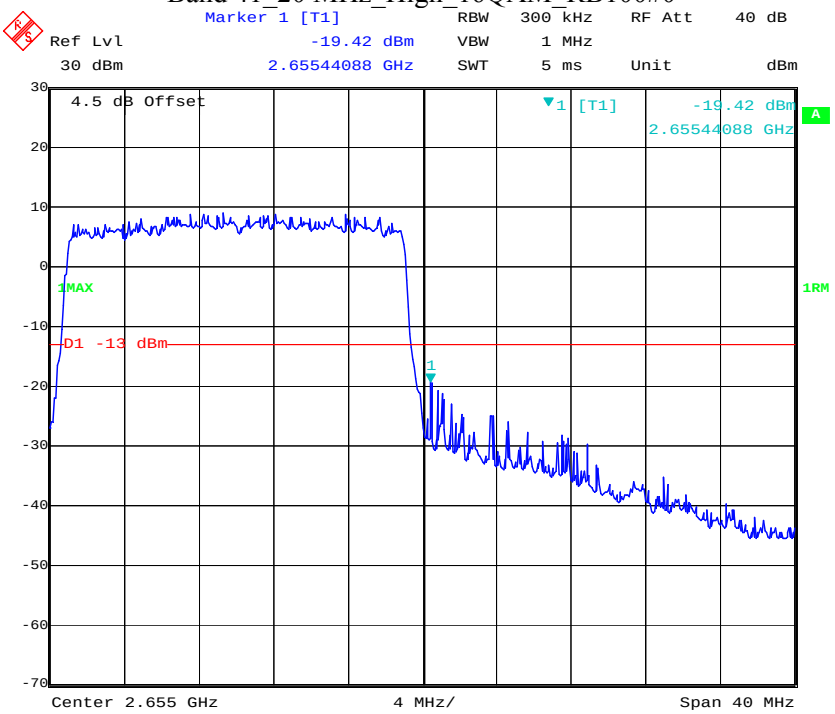
Date: 25.OCT.2019 20:55:31

Band 41_20 MHz_High_QPSK_RB100#0



Date: 25.OCT.2019 20:55:58

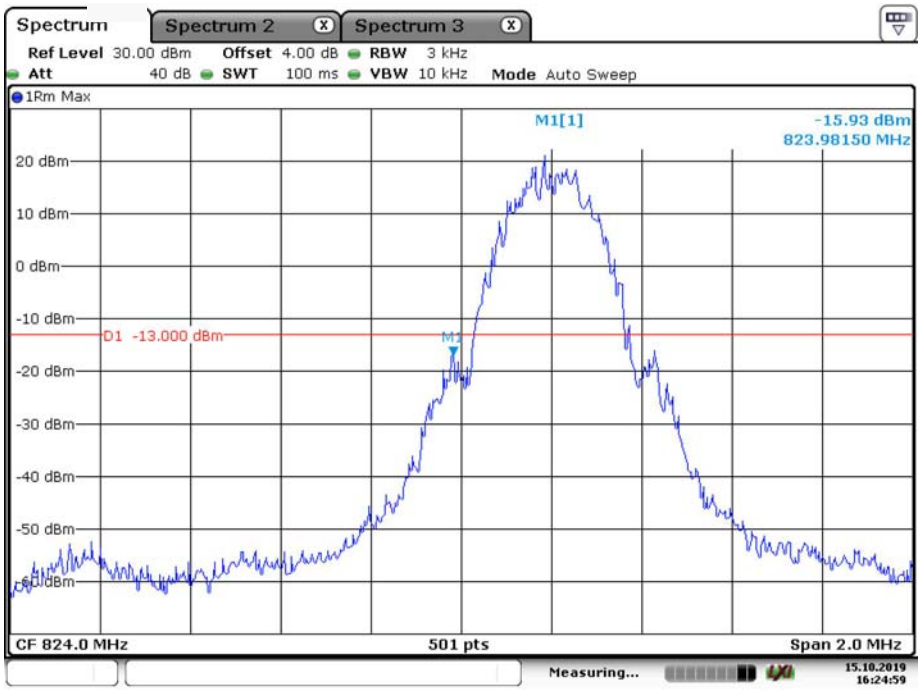
Band 41_20 MHz_High_16QAM_RB100#0



Date: 25.OCT.2019 20:56:24

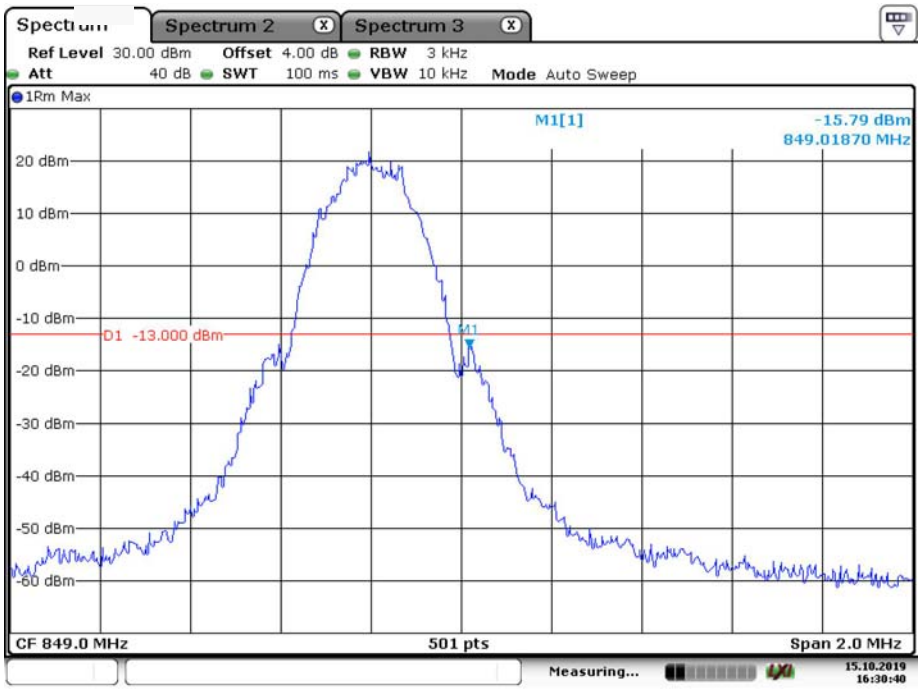
Module 1:

GPRS 850, Left Band Edge



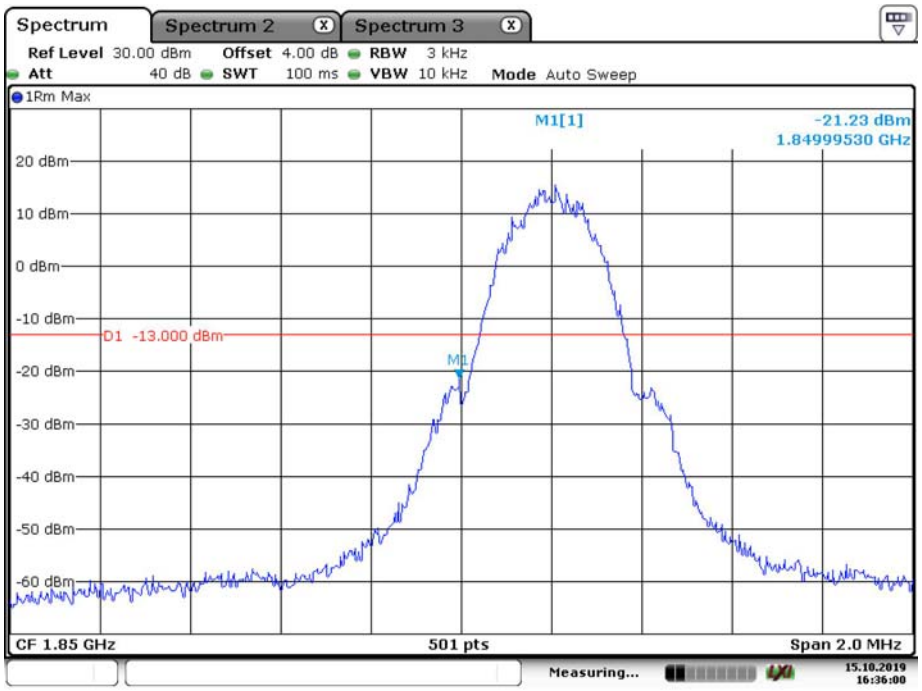
Date: 15.OCT.2019 16:24:59

GPRS 850, Right Band Edge



Date: 15.OCT.2019 16:30:40

GPRS 1900, Left Band Edge



Date: 15.OCT.2019 16:36:00

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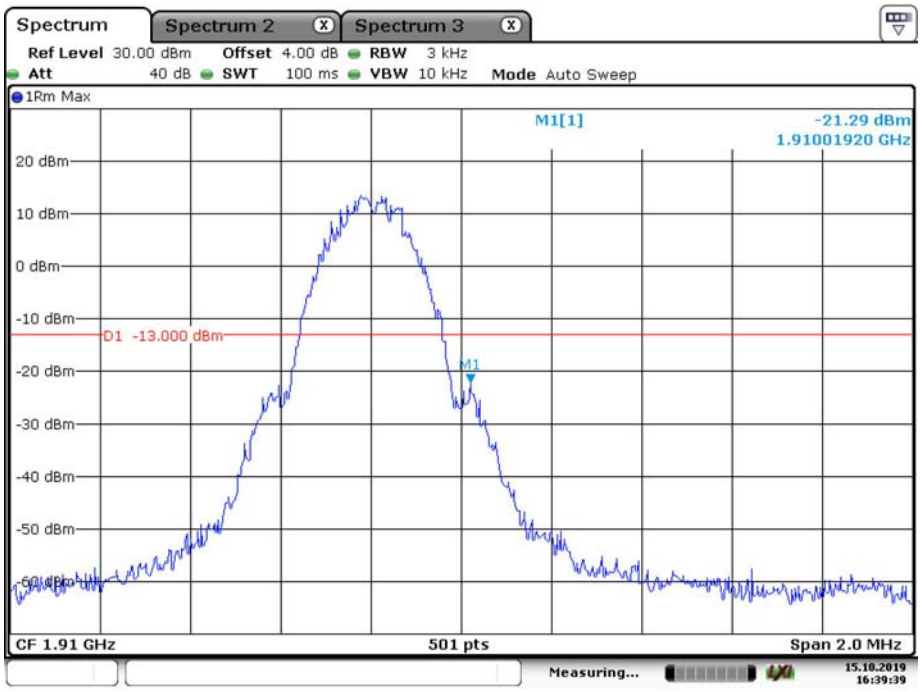
GPRS 1900, Right Band Edge



Date: 15.OCT.2019 16:39:39

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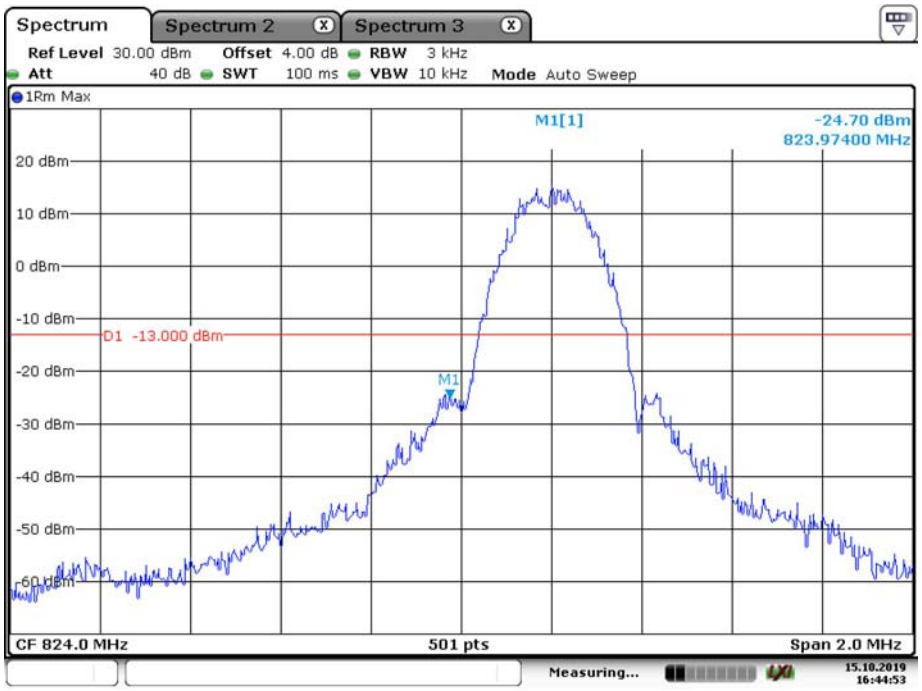
EDGE 850, Left Band Edge



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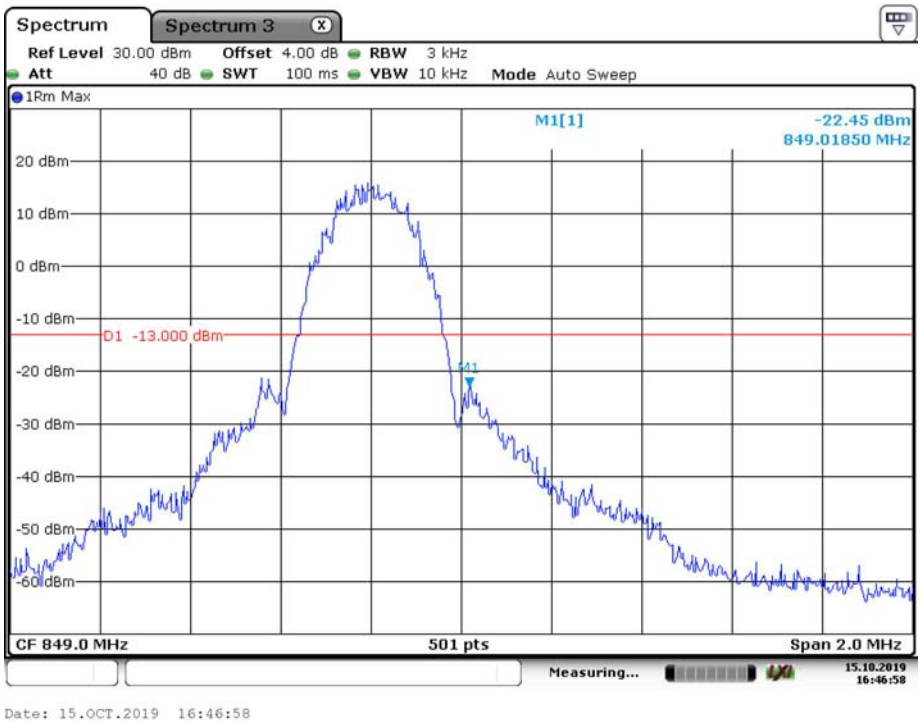
EDGE 850, Right Band Edge



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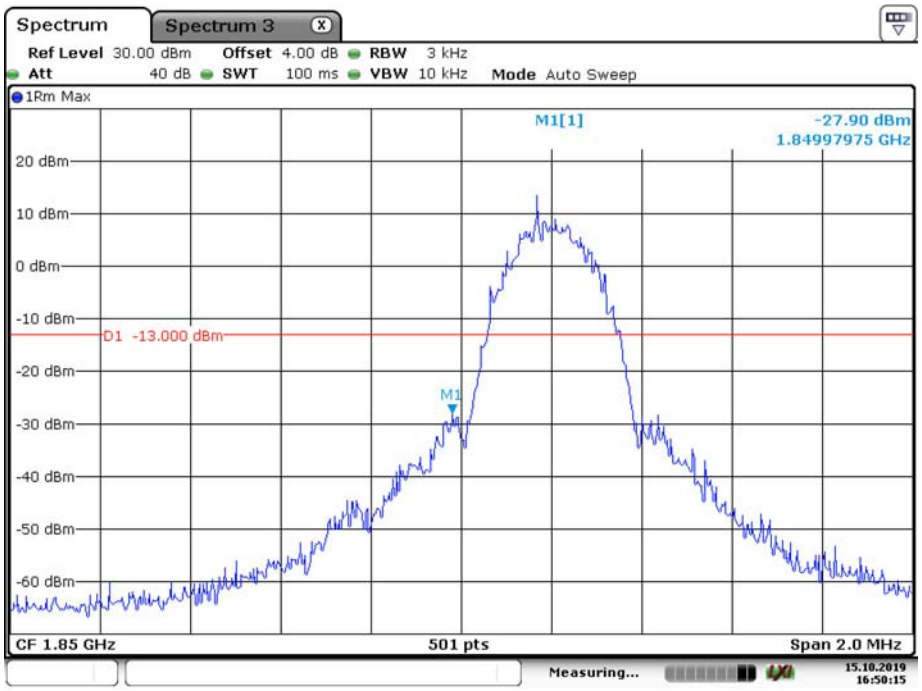
EDGE 1900, Left Band Edge



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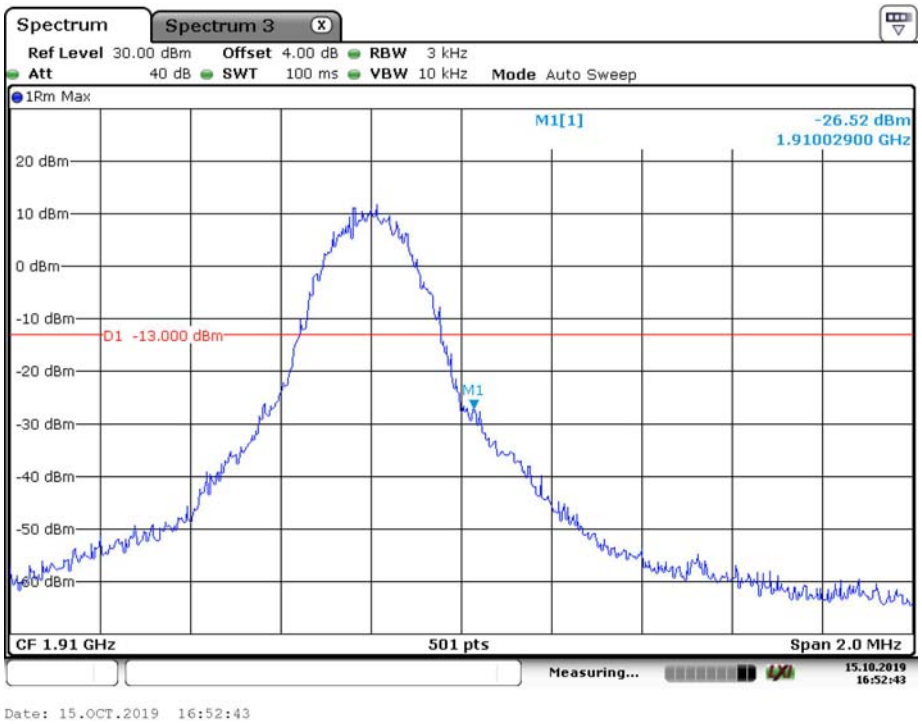
EDGE 1900, Right Band Edge



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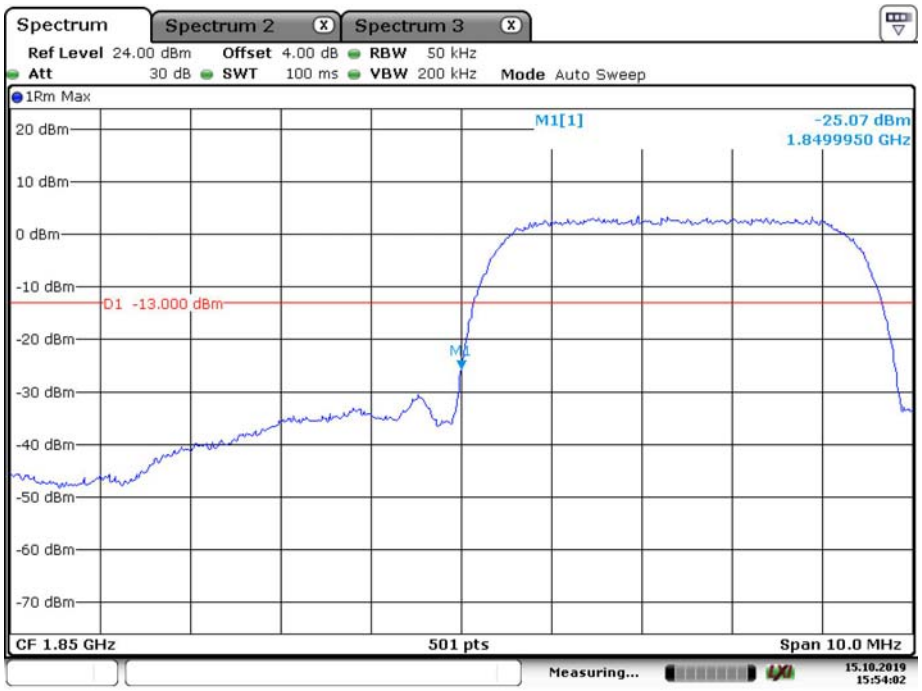
WCDMA Band 2 Rel 99, Left Band Edge



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WCDMA Band 2 Rel 99, Right Band Edge

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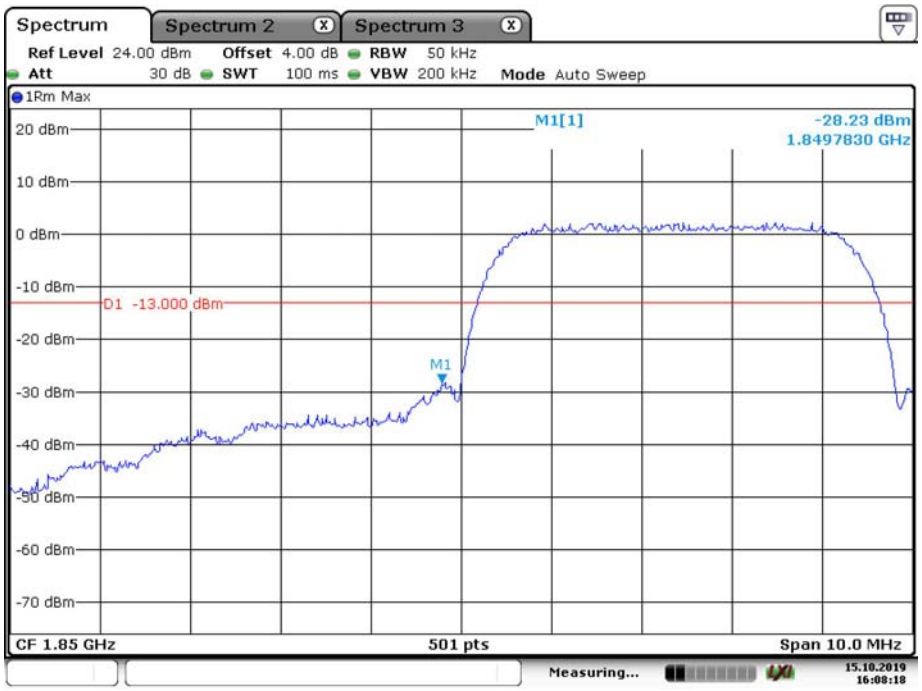
WCDMA Band 2 HSDPA, Left Band Edge



Date: 15.OCT.2019 16:08:18

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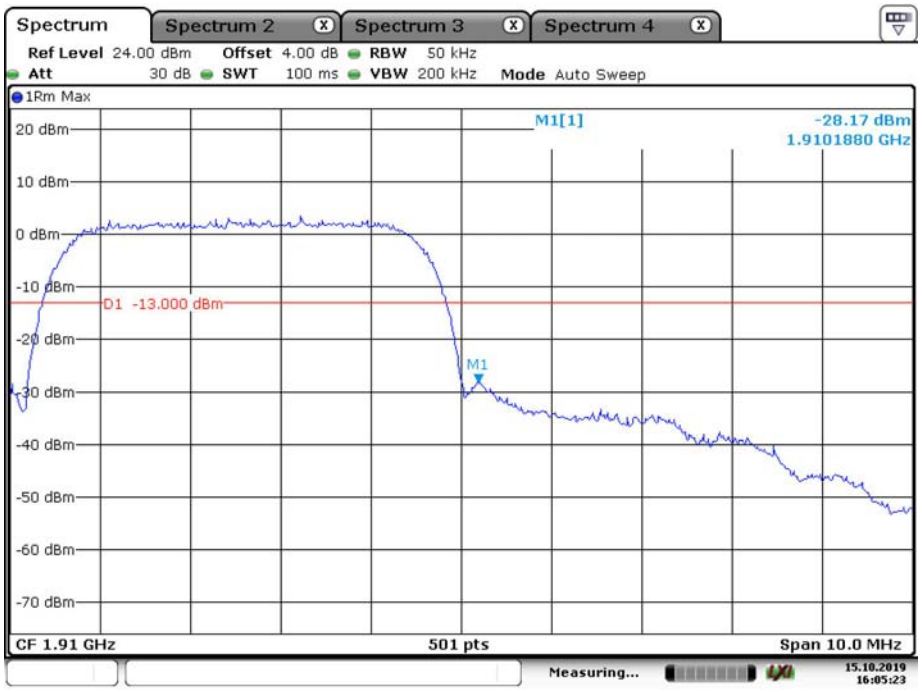
WCDMA Band 2 HSDPA, Right Band Edge



Date: 15.OCT.2019 16:05:23

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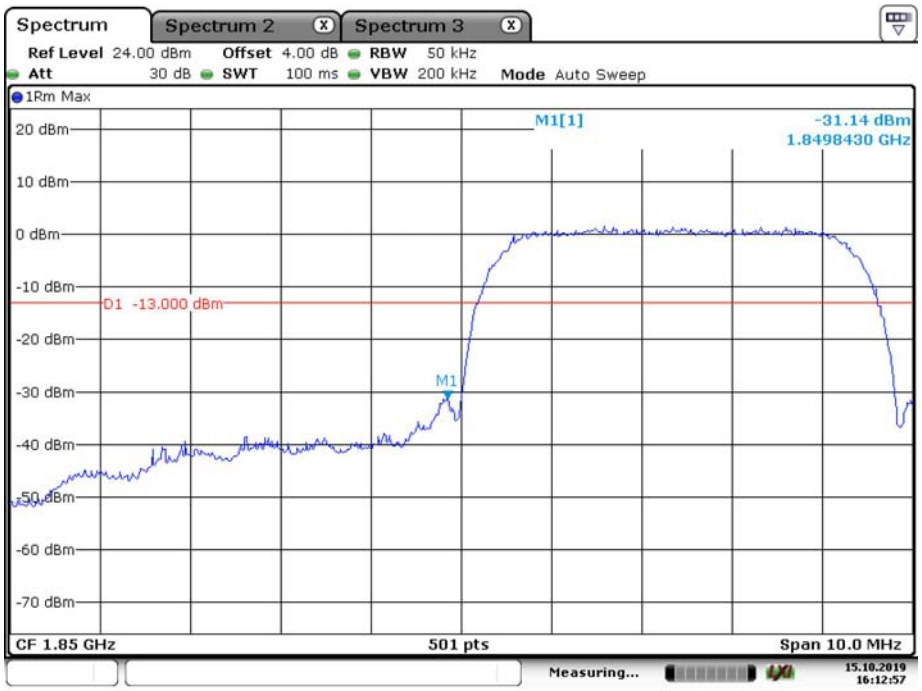
WCDMA Band 2 HSUPA, Left Band Edge



Date: 15.OCT.2019 16:12:57

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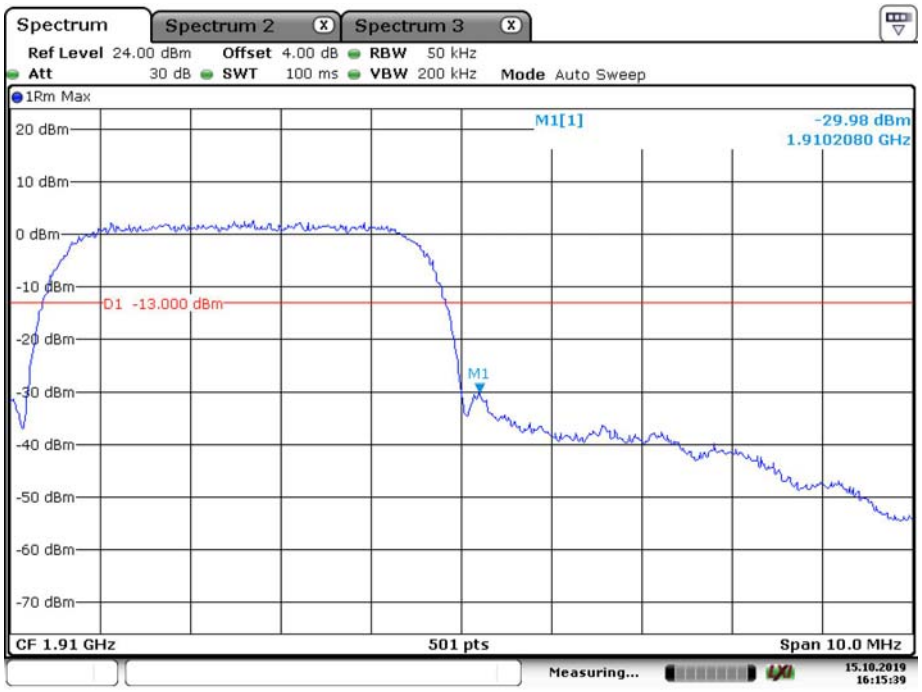
WCDMA Band 2 HSUPA, Right Band Edge



Date: 15.OCT.2019 16:15:39

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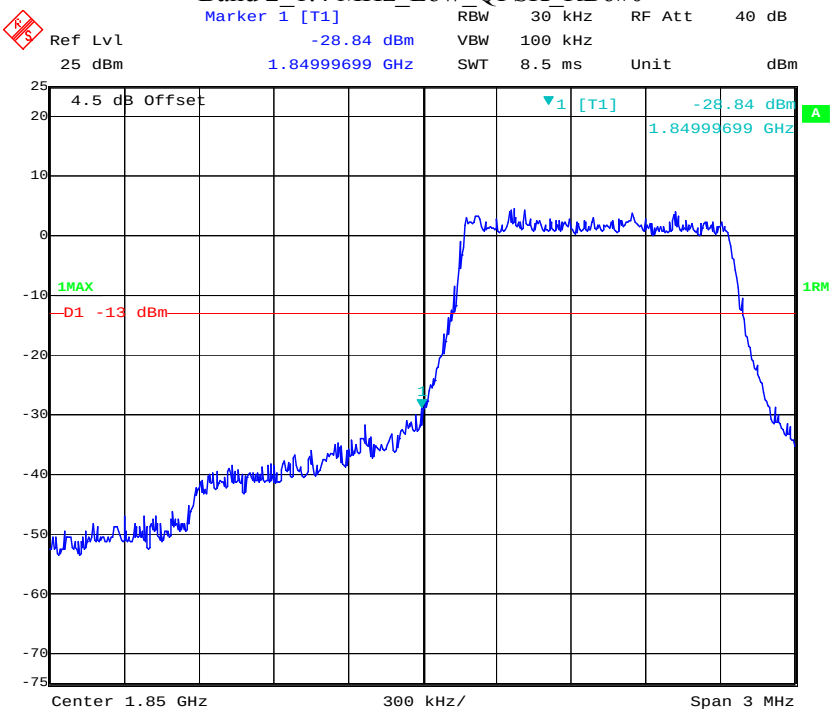
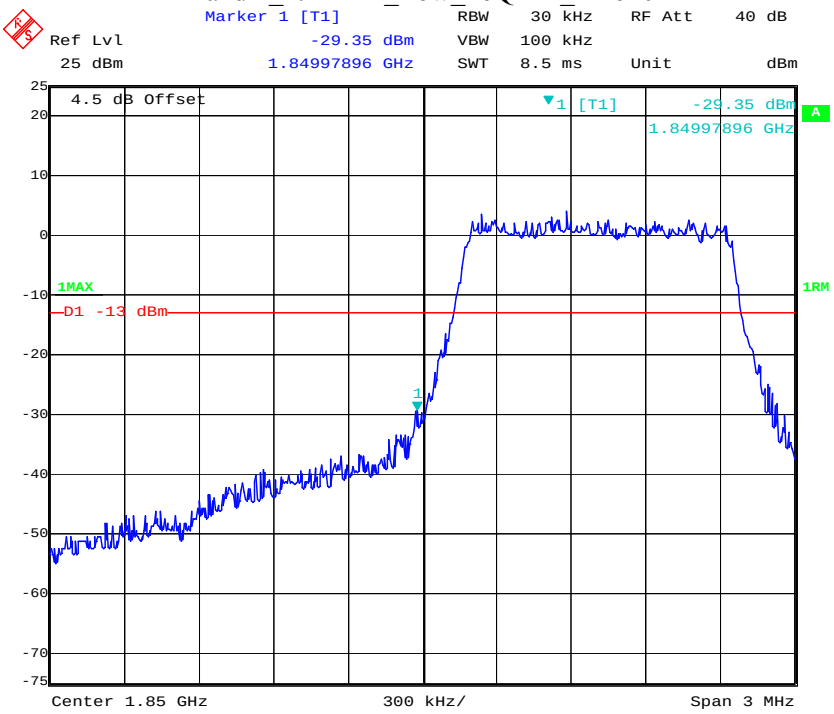
Band 2_1.4 MHz_Low_QPSK_RB6#0



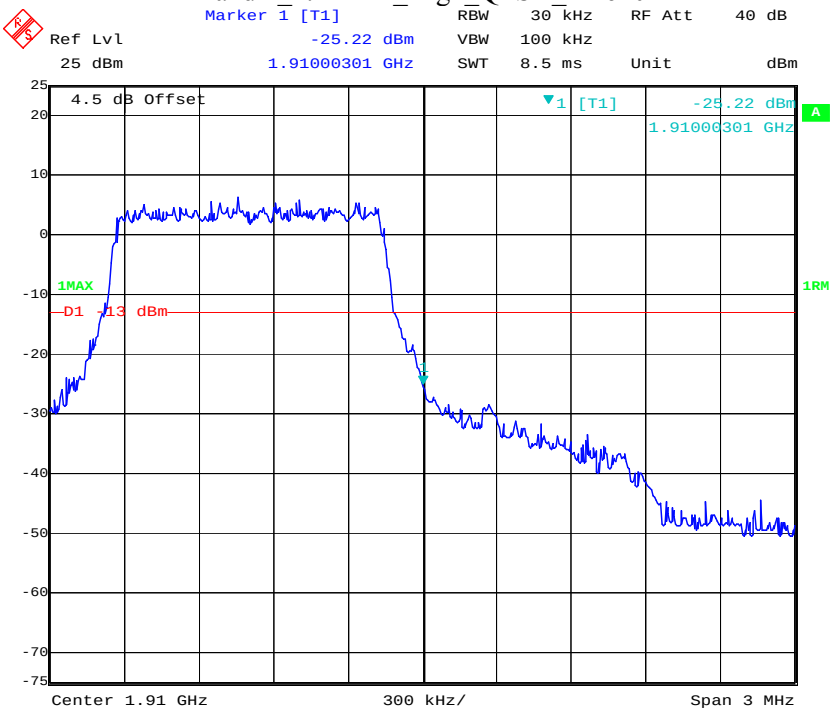
Date: 18.OCT.2019 21:40:33

Band 2_1.4 MHz_Low_16QAM_RB6#0



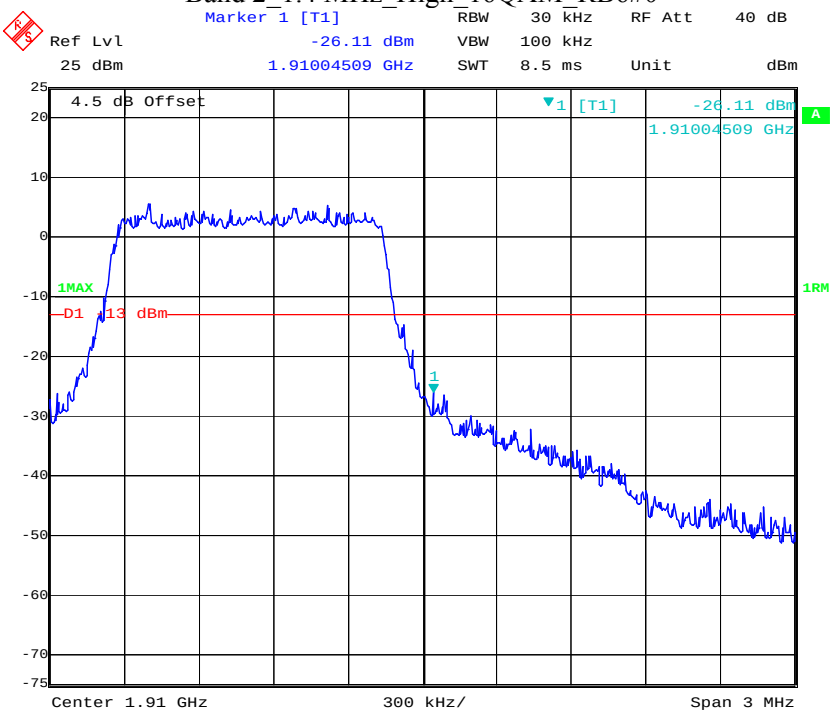
Date: 18.OCT.2019 21:40:55

Band 2_1.4 MHz_High_QPSK_RB6#0



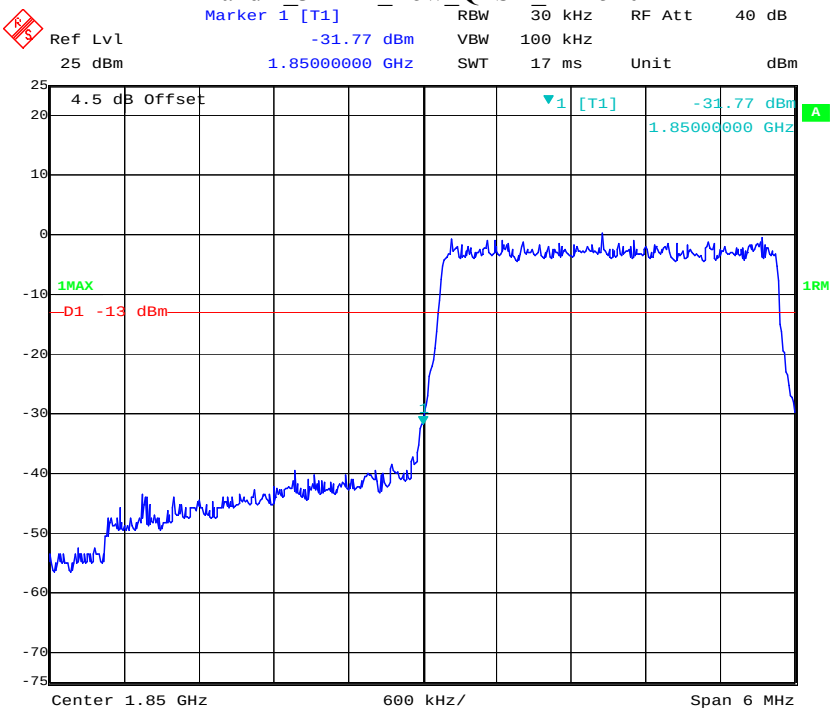
Date: 18.OCT.2019 21:41:15

Band 2_1.4 MHz_High_16QAM_RB6#0



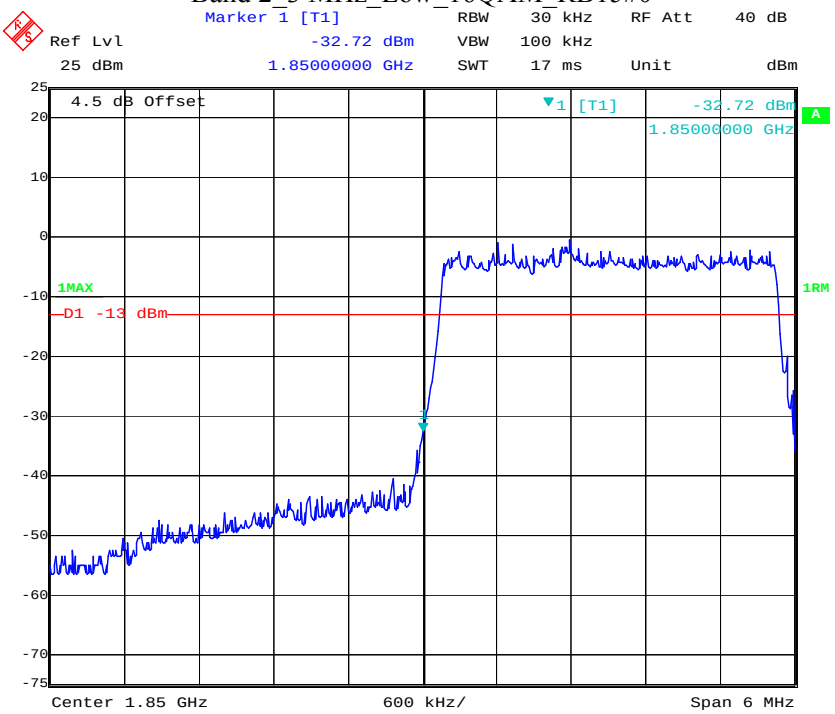
Date: 18.OCT.2019 21:41:41

Band 2_3 MHz_Low_QPSK_RB15#0



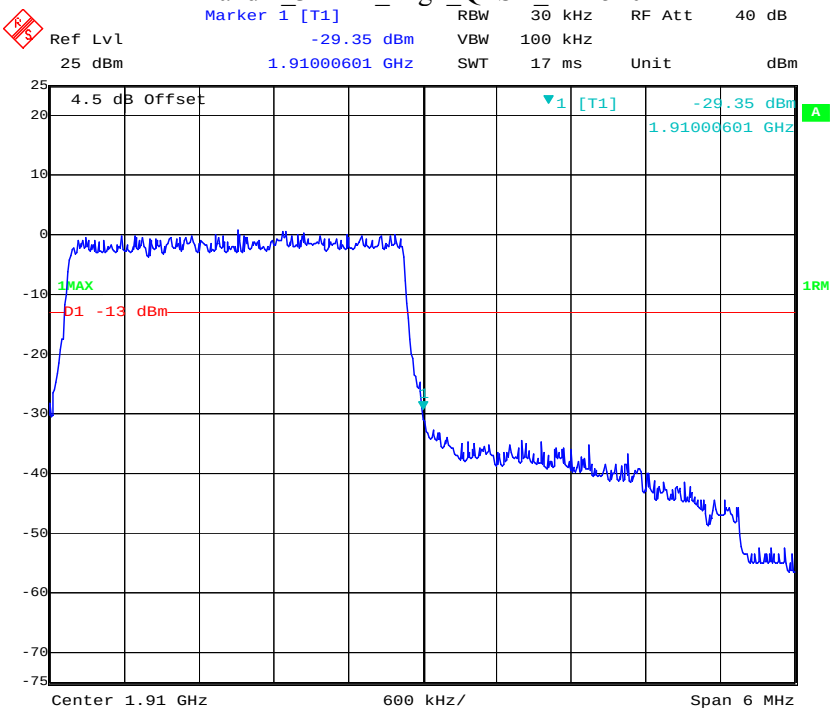
Date: 18.OCT.2019 21:42:10

Band 2_3 MHz_Low_16QAM_RB15#0



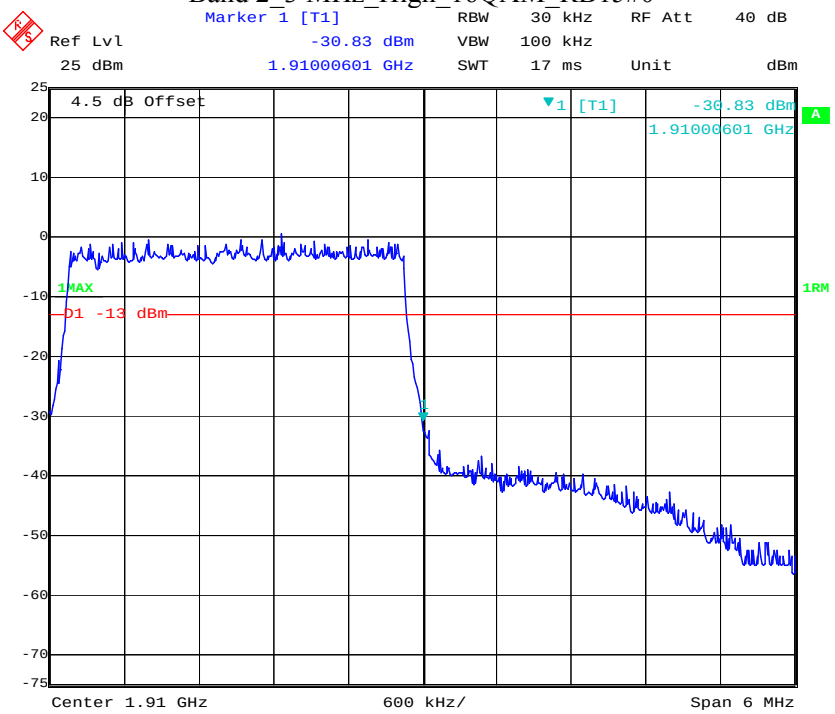
Date: 18.OCT.2019 21:42:30

Band 2_3 MHz_High_QPSK_RB15#0



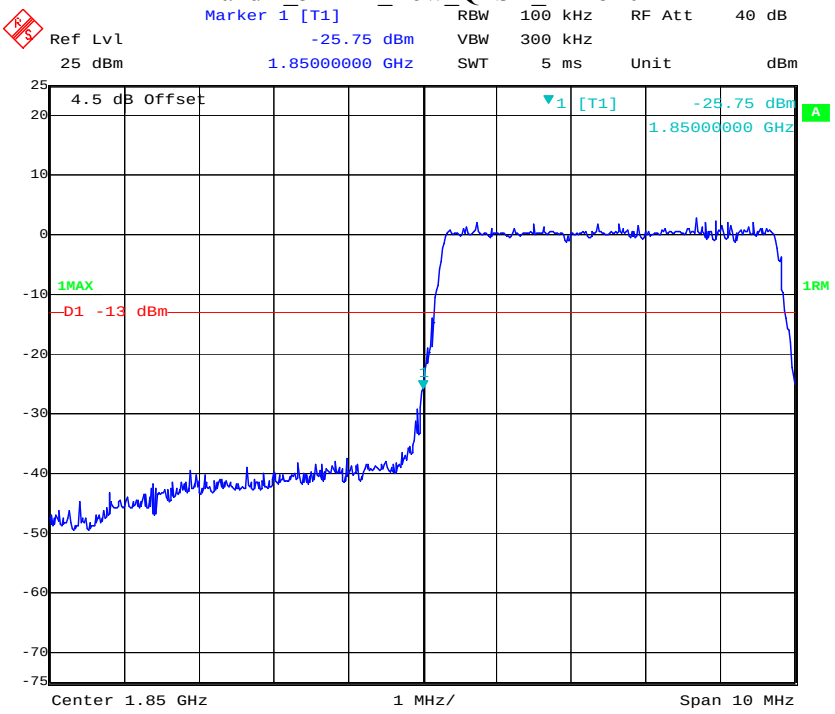
Date: 18.OCT.2019 21:42:50

Band 2_3 MHz_High_16QAM_RB15#0



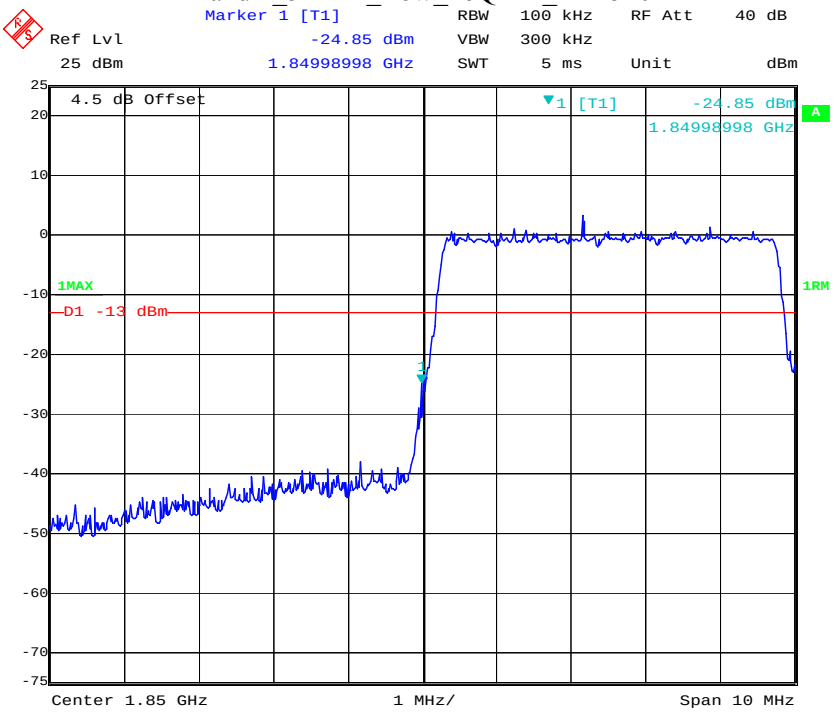
Date: 18.OCT.2019 21:43:09

Band 2_5 MHz_Low_QPSK_RB25#0



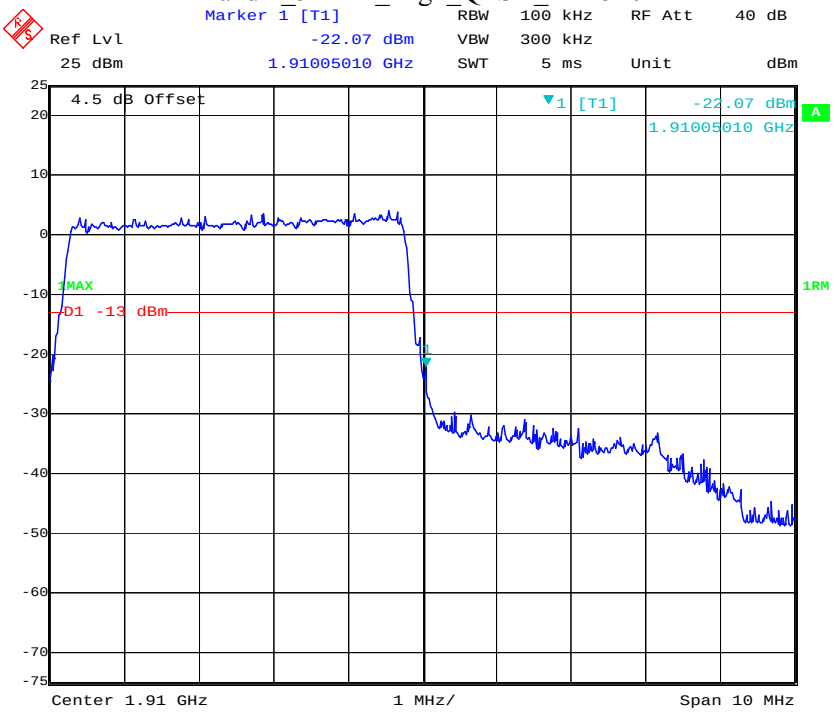
Date: 18.OCT.2019 21:43:36

Band 2_5 MHz_Low_16QAM_RB25#0



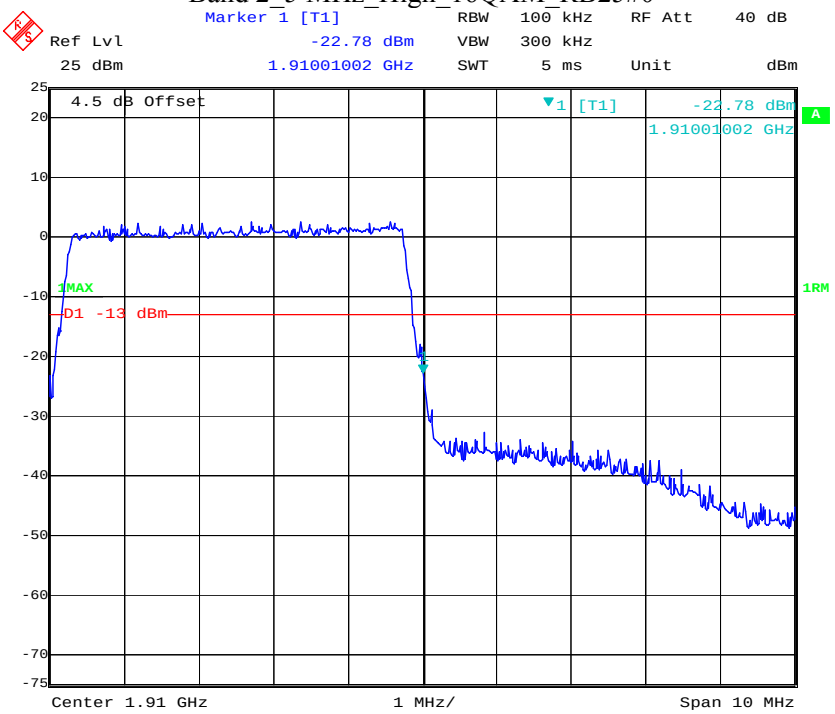
Date: 18.OCT.2019 21:43:56

Band 2_5 MHz_High_QPSK_RB25#0



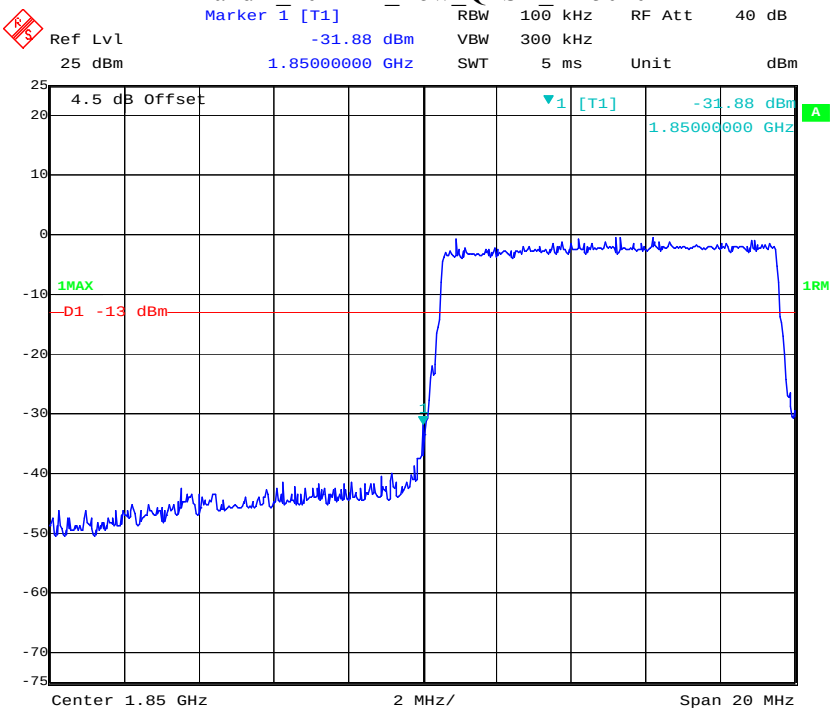
Date: 18.OCT.2019 21:44:16

Band 2_5 MHz_High_16QAM_RB25#0



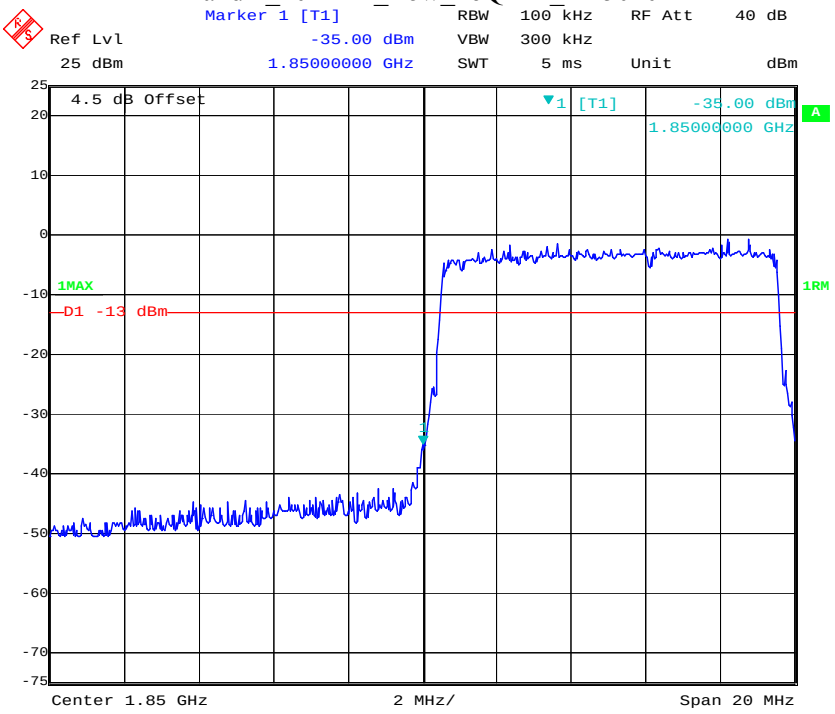
Date: 18.OCT.2019 21:44:35

Band 2_10 MHz_Low_QPSK_RB50#0



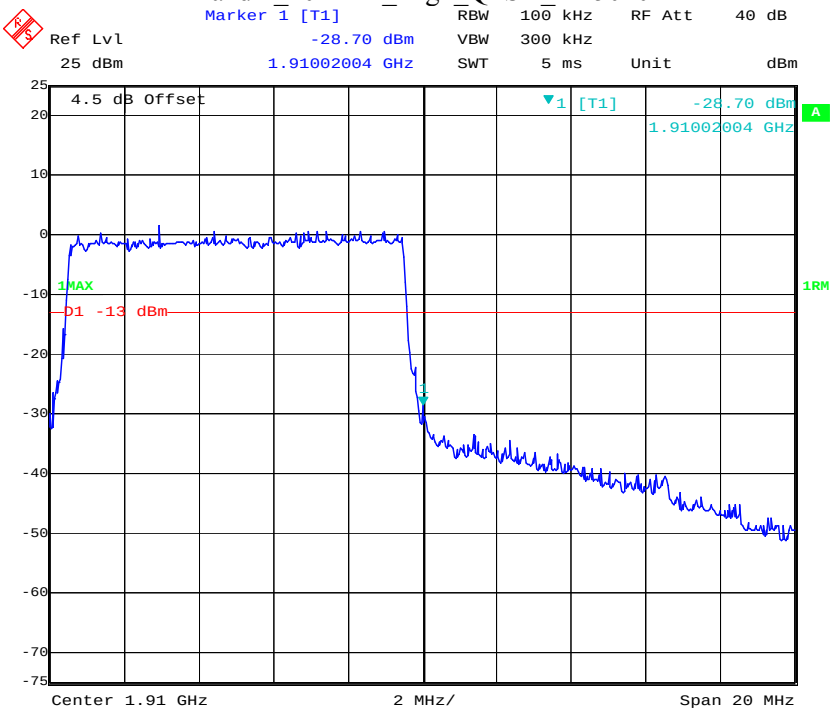
Date: 18.OCT.2019 21:45:04

Band 2_10 MHz_Low_16QAM_RB50#0



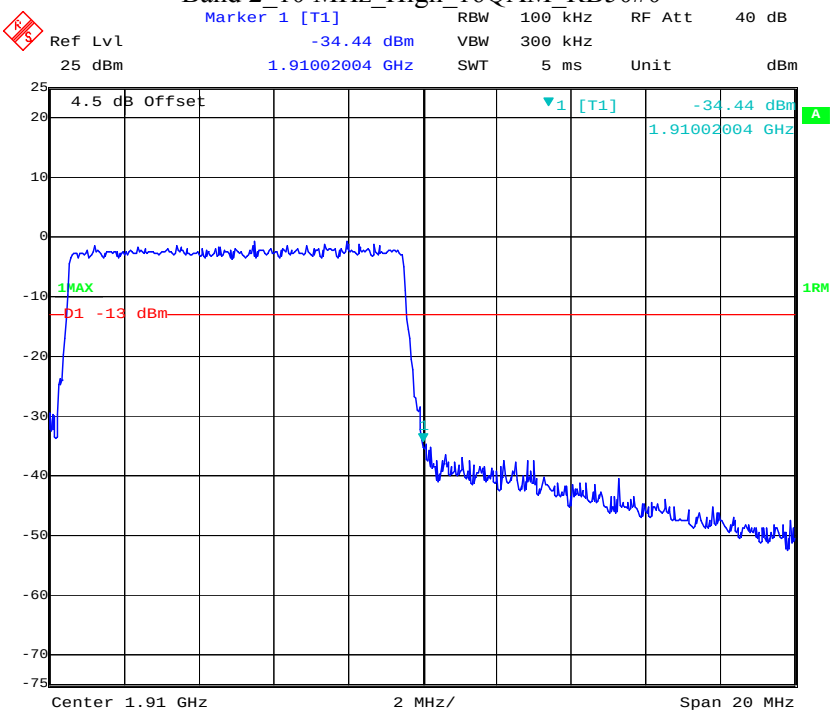
Date: 18.OCT.2019 21:45:21

Band 2_10 MHz_High_QPSK_RB50#0



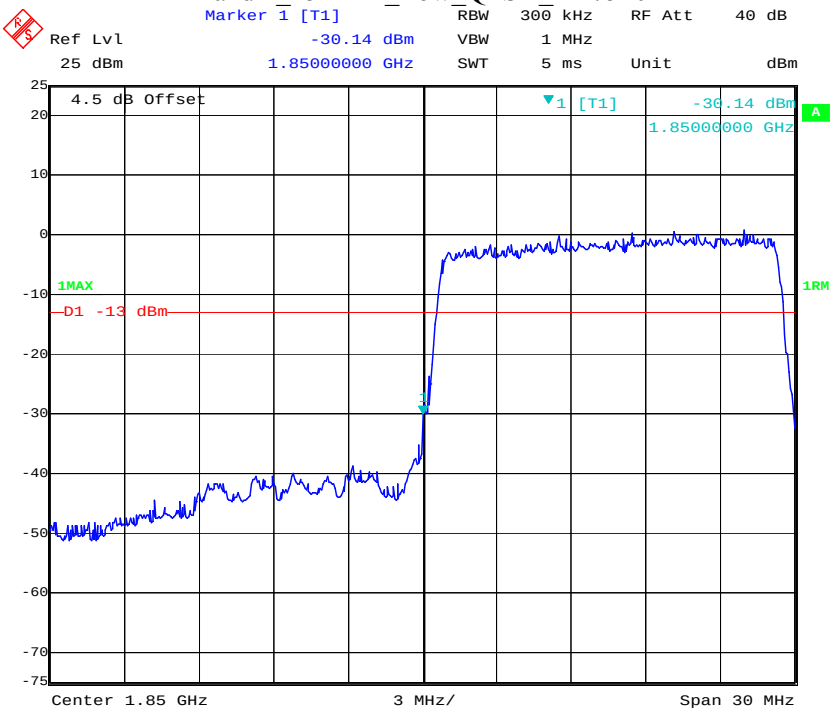
Date: 18.OCT.2019 21:45:42

Band 2_10 MHz_High_16QAM_RB50#0



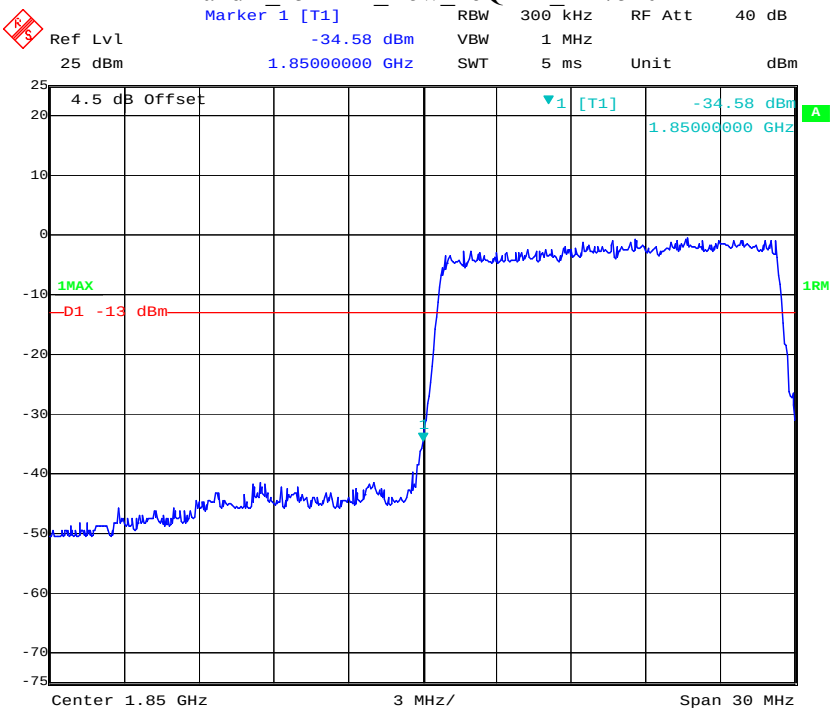
Date: 18.OCT.2019 21:45:59

Band 2_15 MHz_Low_QPSK_RB75#0



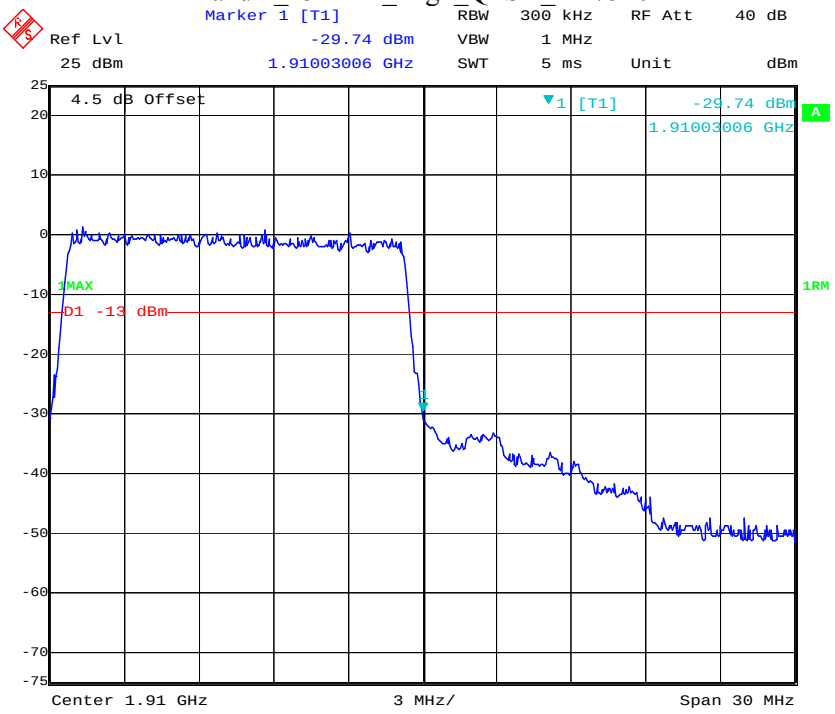
Date: 18.OCT.2019 21:46:26

Band 2_15 MHz_Low_16QAM_RB75#0



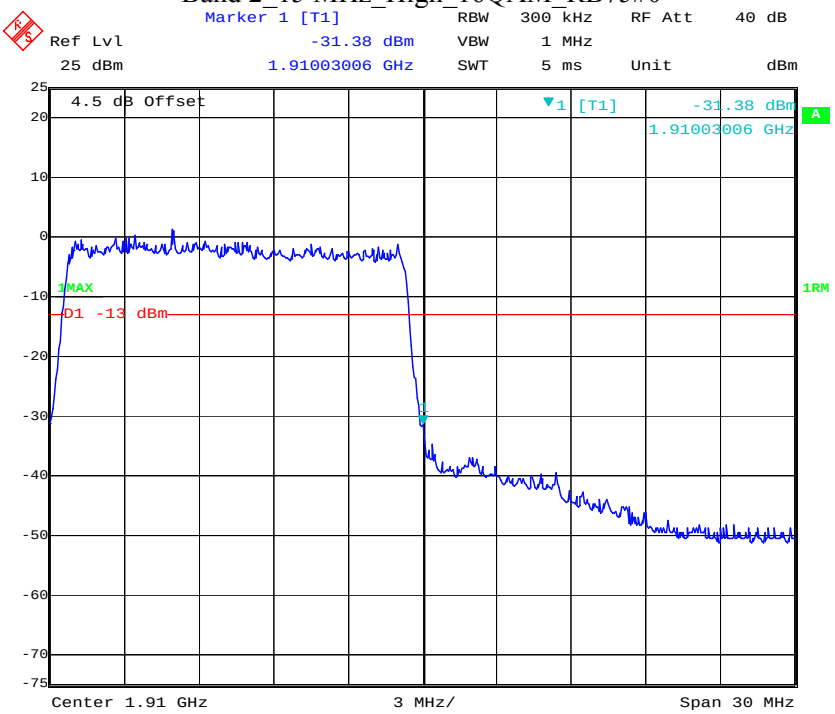
Date: 18.OCT.2019 21:46:44

Band 2_15 MHz_High_QPSK_RB75#0



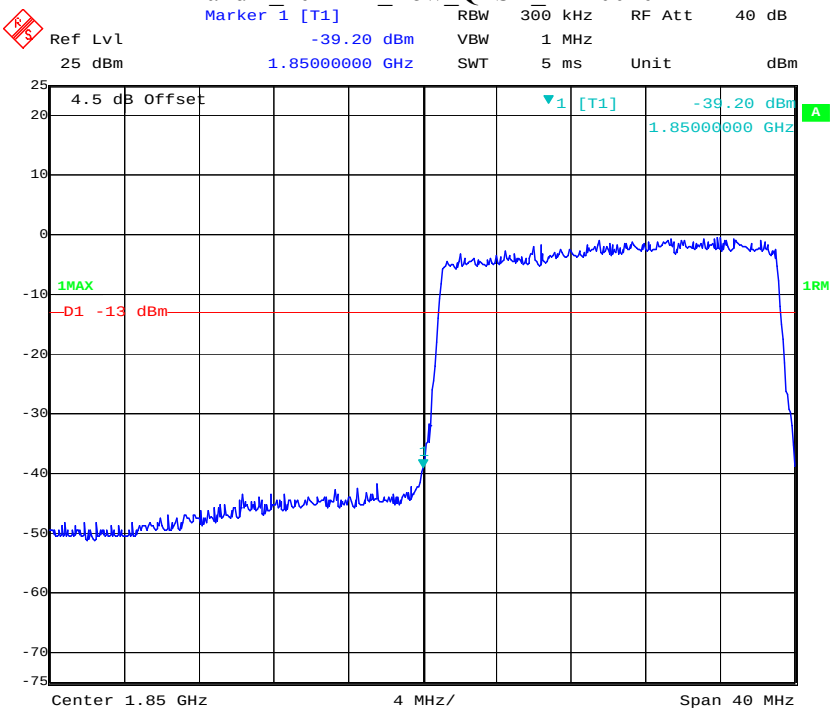
Date: 18.OCT.2019 21:47:03

Band 2_15 MHz_High_16QAM_RB75#0



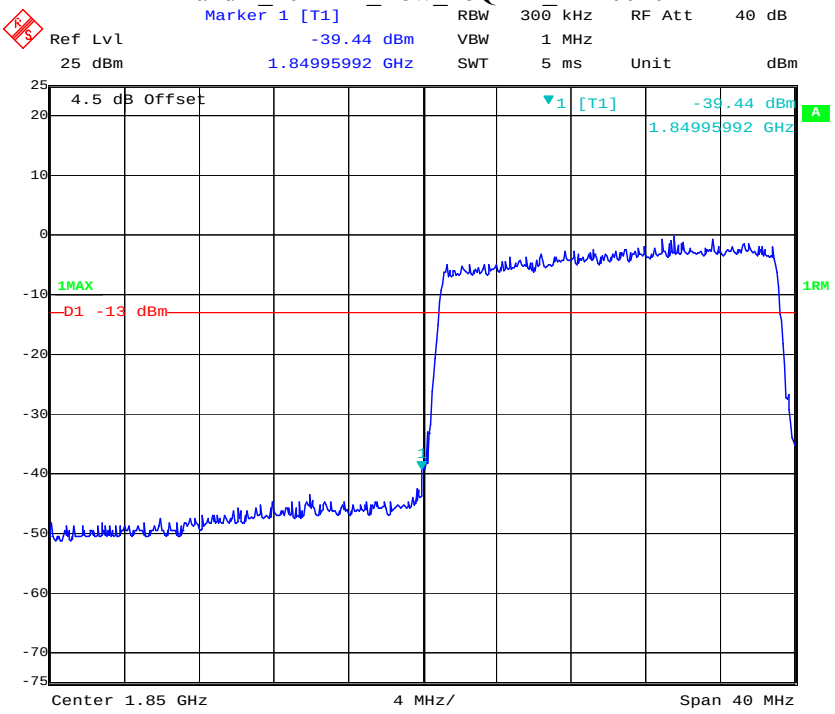
Date: 18.OCT.2019 21:47:21

Band 2_20 MHz_Low_QPSK_RB100#0



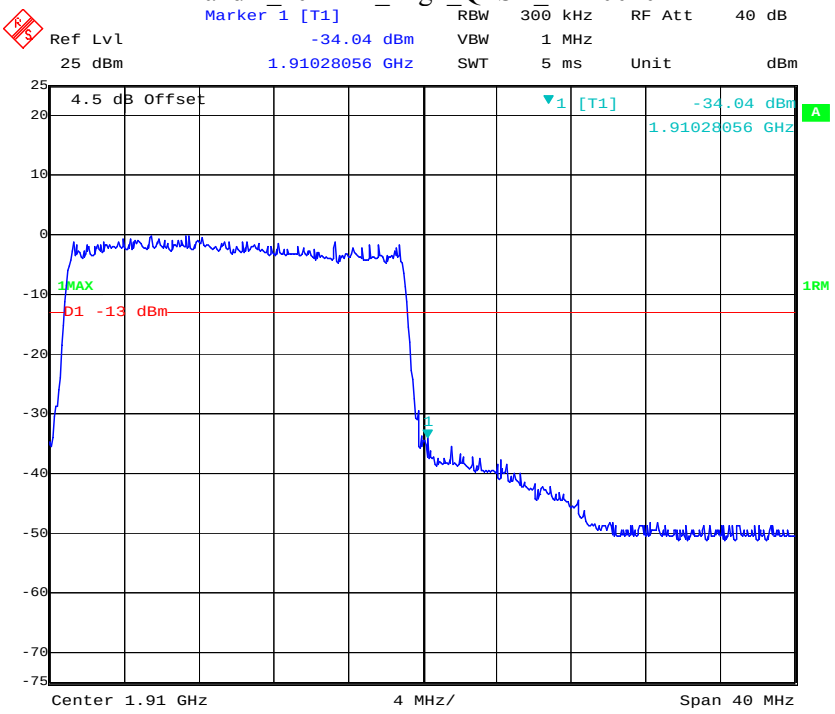
Date: 18.OCT.2019 21:47:48

Band 2_20 MHz_Low_16QAM_RB100#0



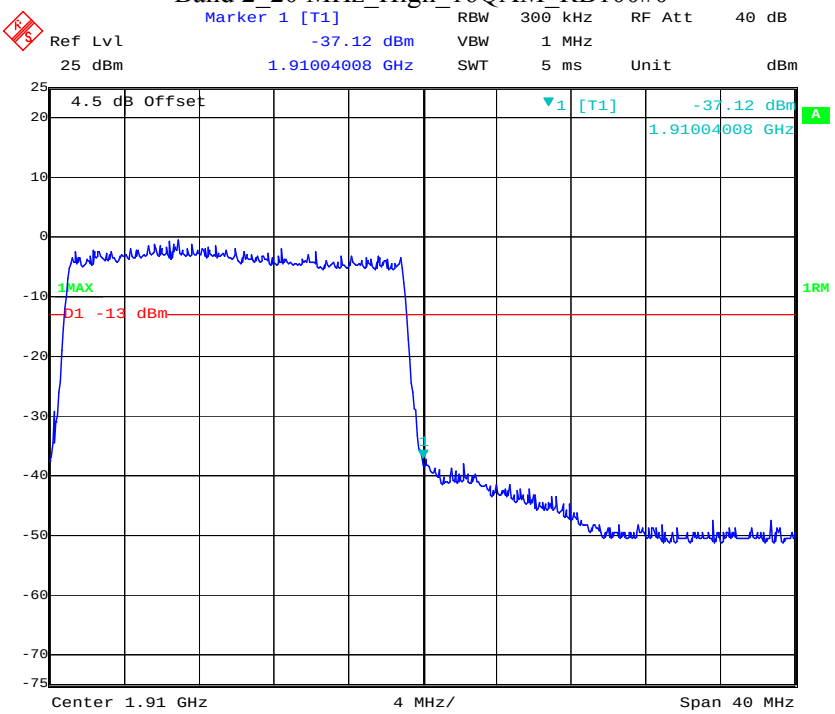
Date: 18.OCT.2019 21:48:06

Band 2_20 MHz_High_QPSK_RB100#0



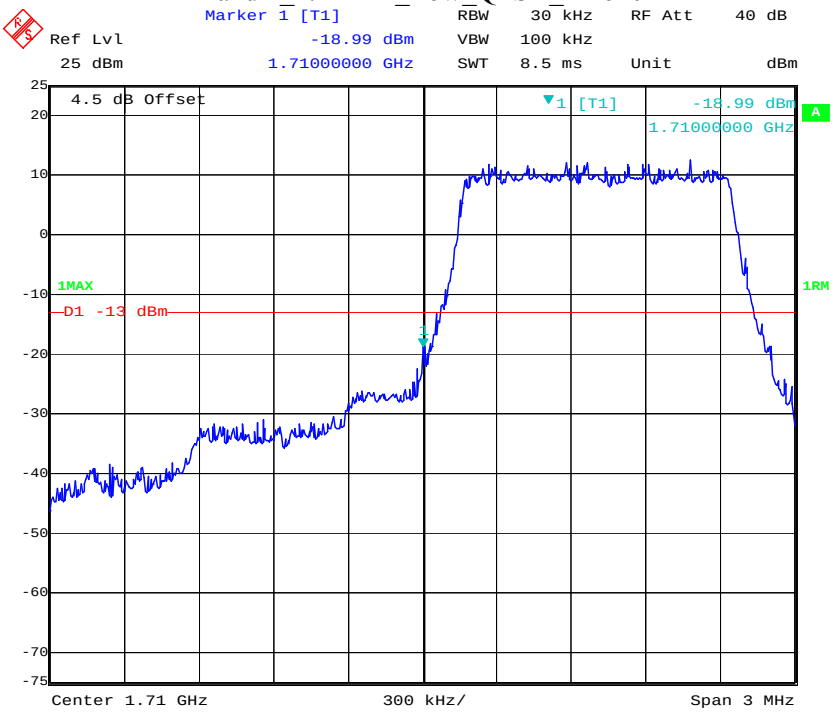
Date: 18.OCT.2019 21:48:26

Band 2_20 MHz_High_16QAM_RB100#0



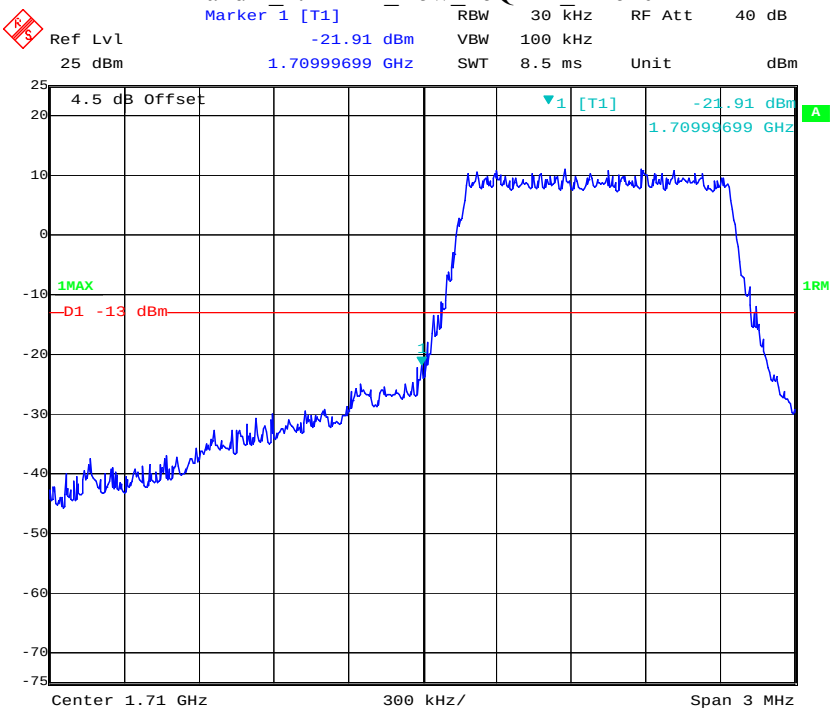
Date: 18.OCT.2019 21:48:44

Band 4_1.4 MHz_Low_QPSK_RB6#0



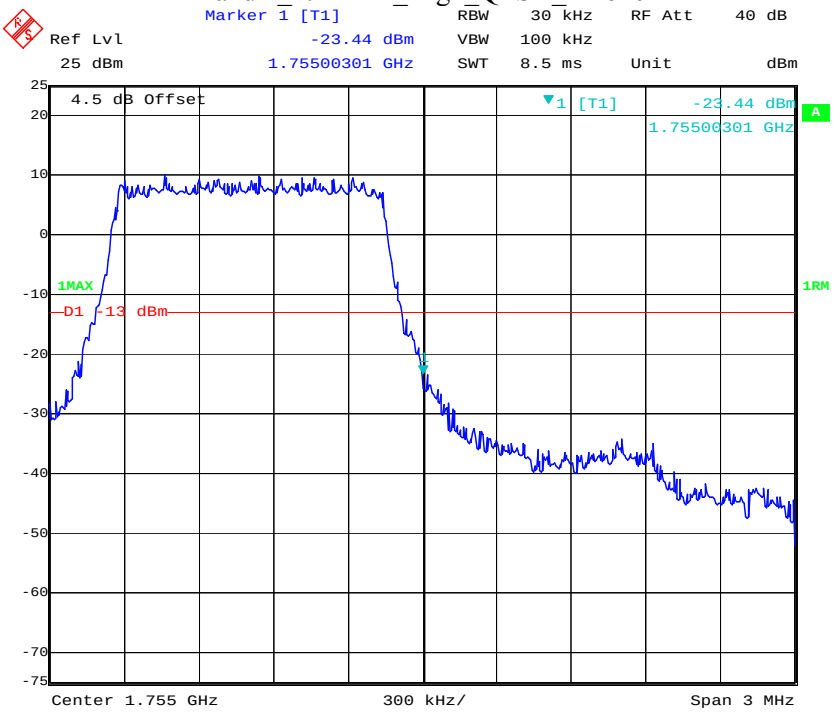
Date: 18.OCT.2019 21:49:17

Band 4_1.4 MHz_Low_16QAM_RB6#0



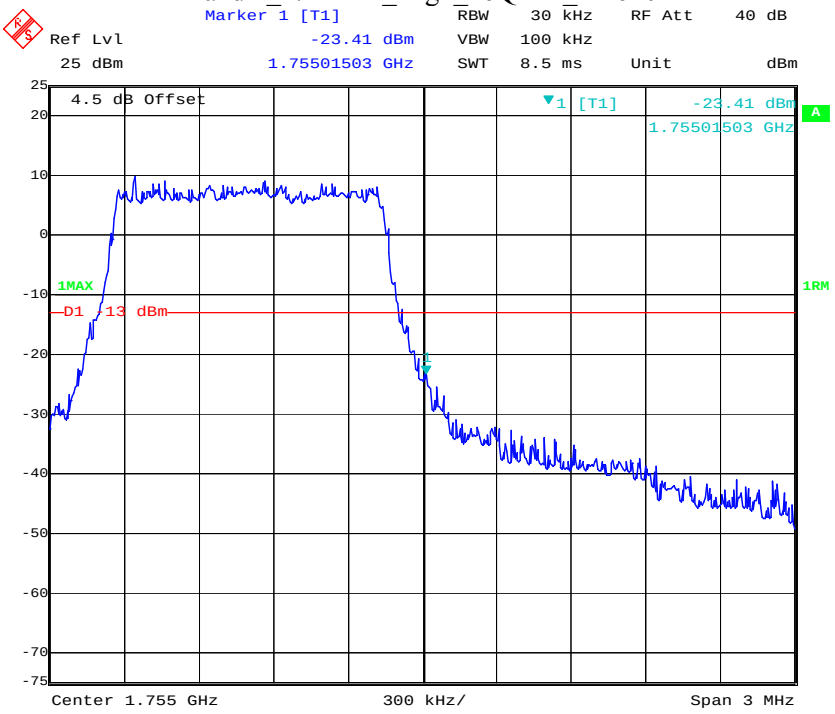
Date: 18.OCT.2019 21:49:37

Band 4_1.4 MHz_High_QPSK_RB6#0



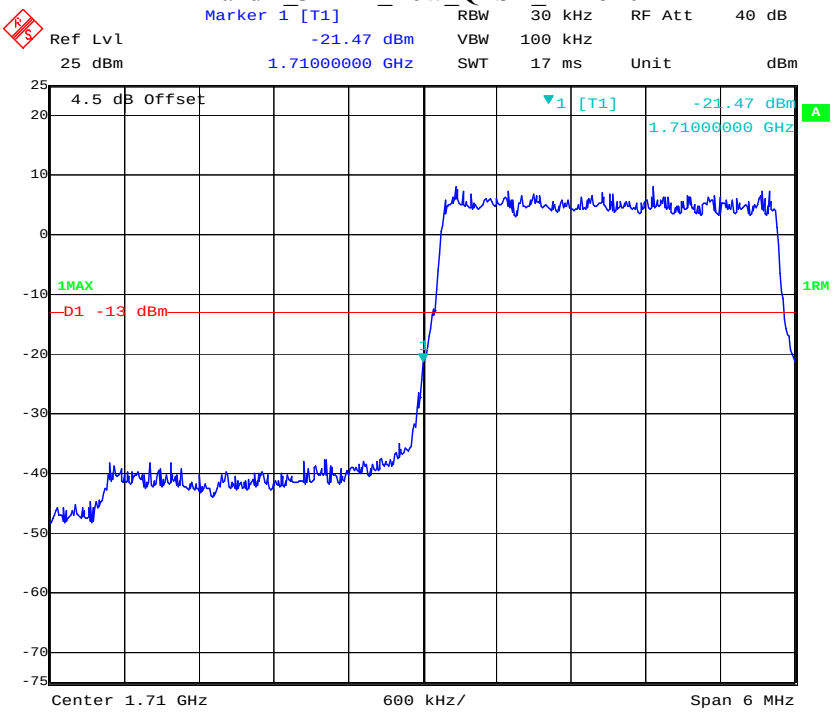
Date: 18.OCT.2019 21:49:57

Band 4_1.4 MHz_High_16QAM_RB6#0



Date: 18.OCT.2019 21:50:16

Band 4_3 MHz_Low_QPSK_RB15#0



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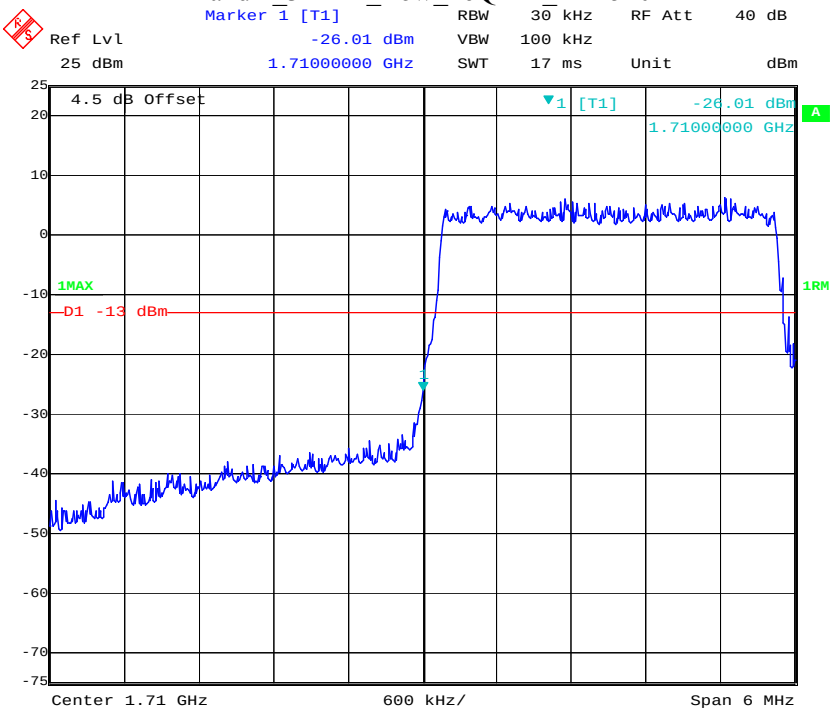
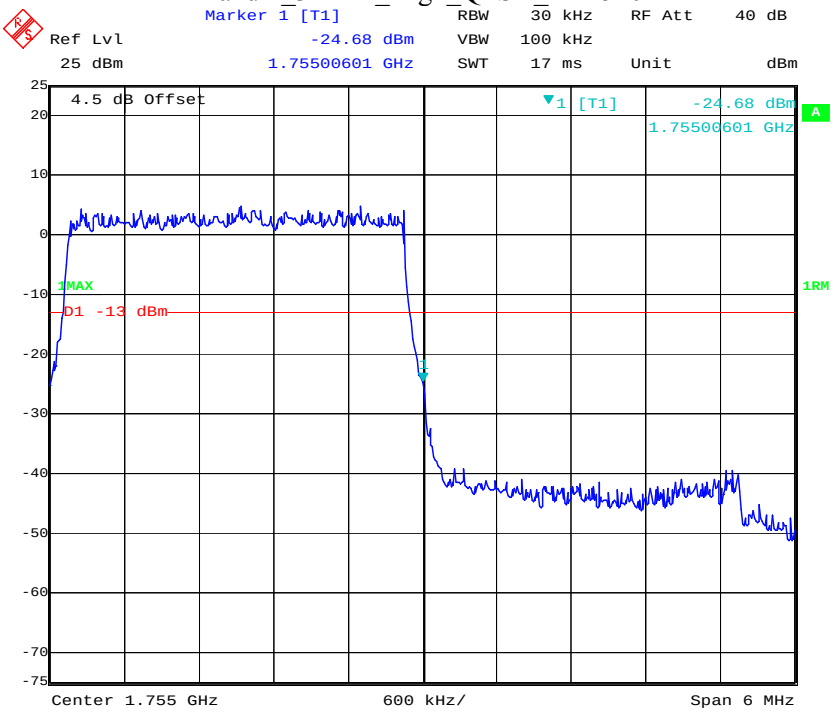
Band 4_3 MHz_Low_16QAM_RB15#0



Date: 18.OCT.2019 21:51:00

Band 4_3 MHz_High_QPSK_RB15#0



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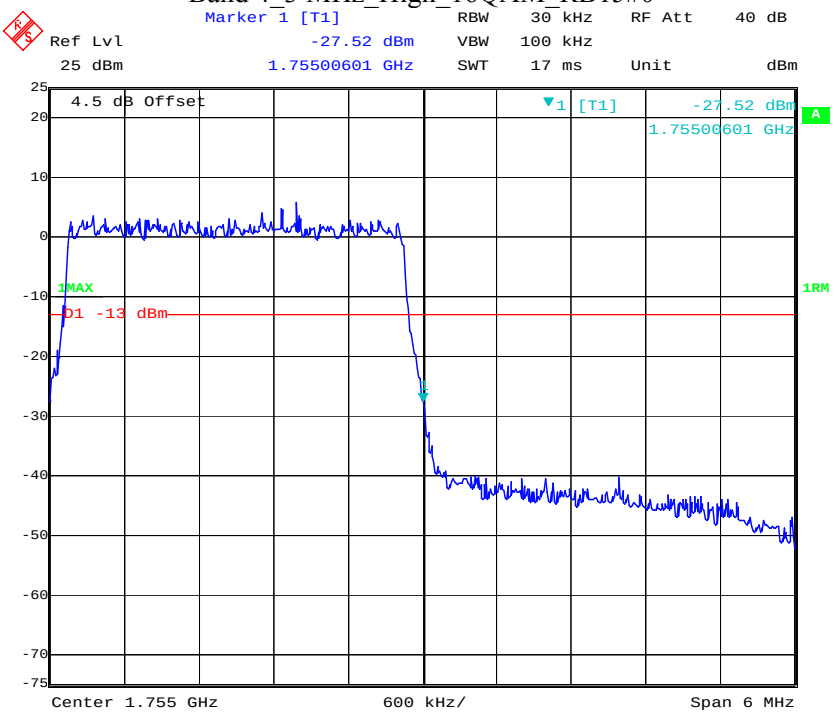
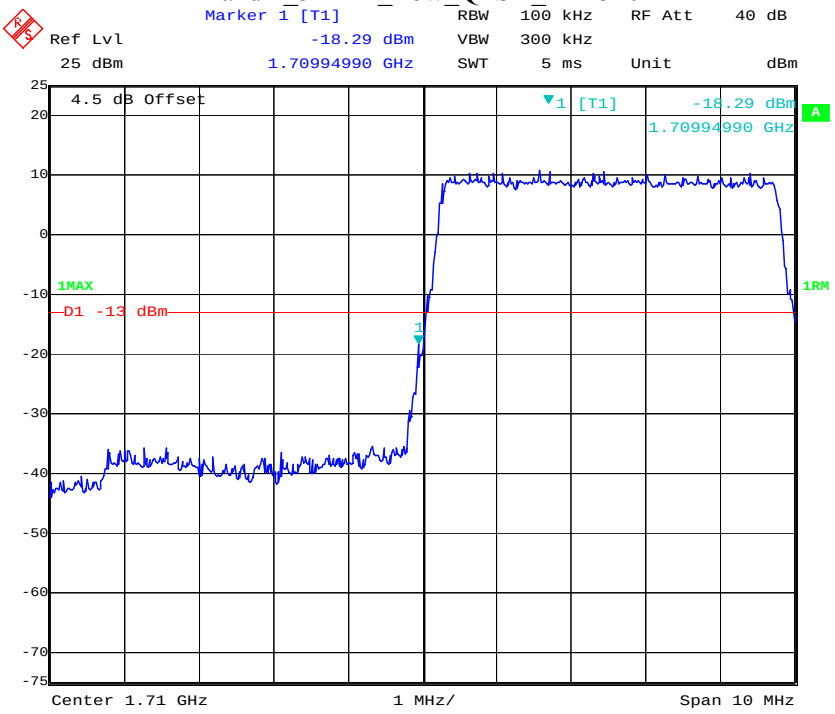
Band 4_3 MHz_High_16QAM_RB15#0



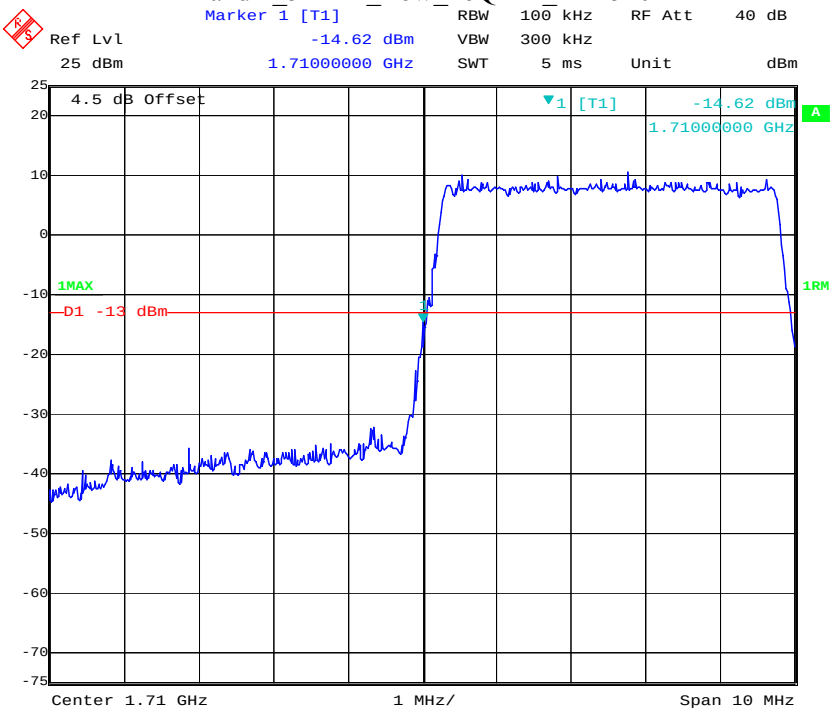
Date: 18.OCT.2019 21:51:32

Band 4_5 MHz_Low_QPSK_RB25#0



Date: 18.OCT.2019 21:52:00

Band 4_5 MHz_Low_16QAM_RB25#0



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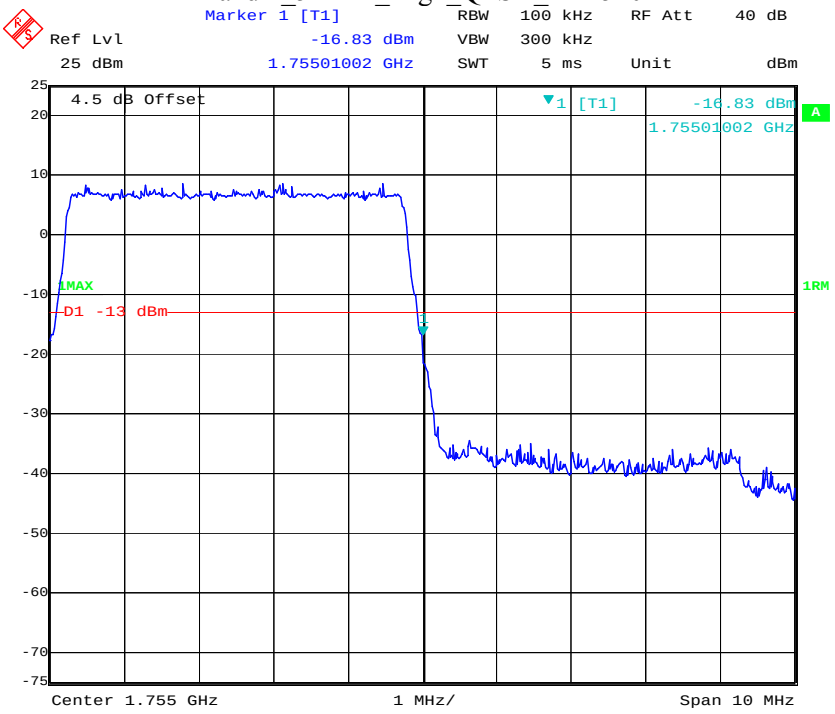
Band 4_5 MHz_High_QPSK_RB25#0



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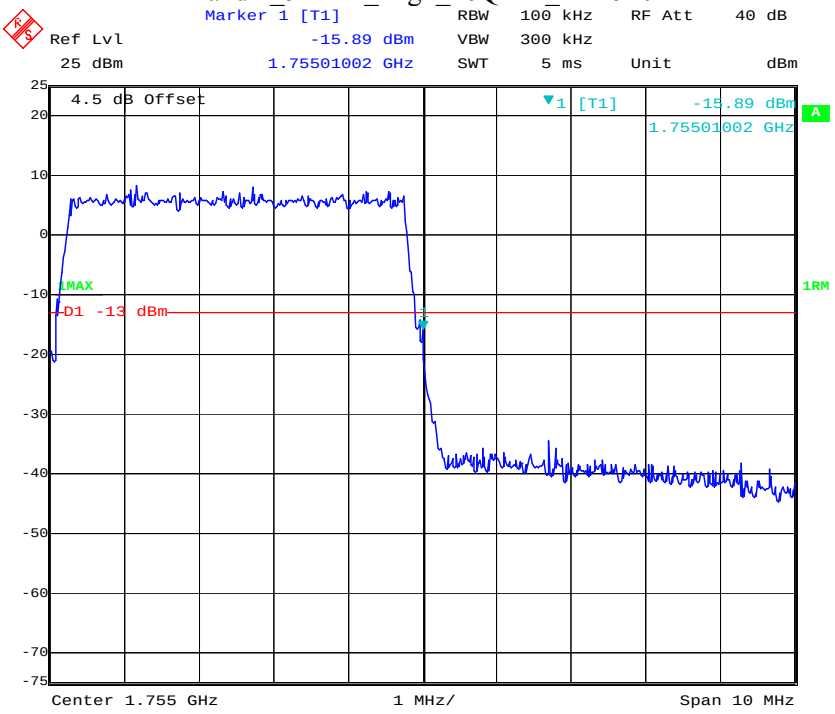
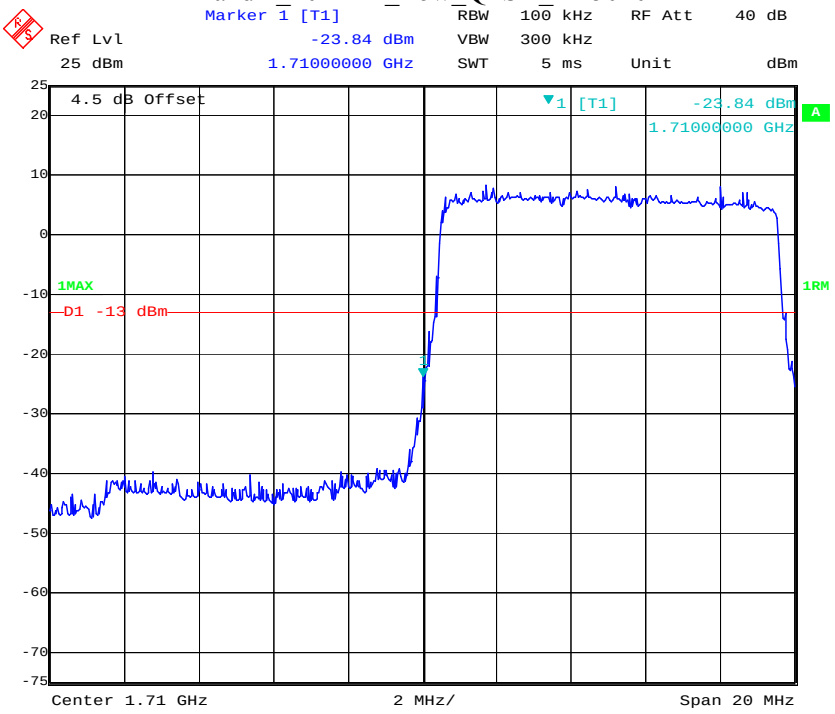
Band 4_5 MHz_High_16QAM_RB25#0



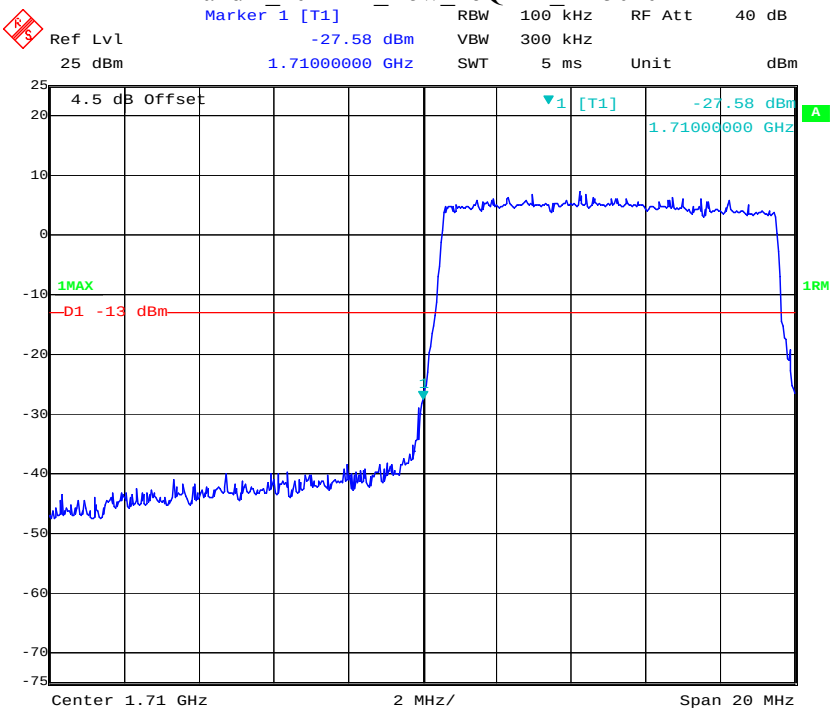
Date: 18.OCT.2019 21:52:56

Band 4_10 MHz_Low_QPSK_RB50#0



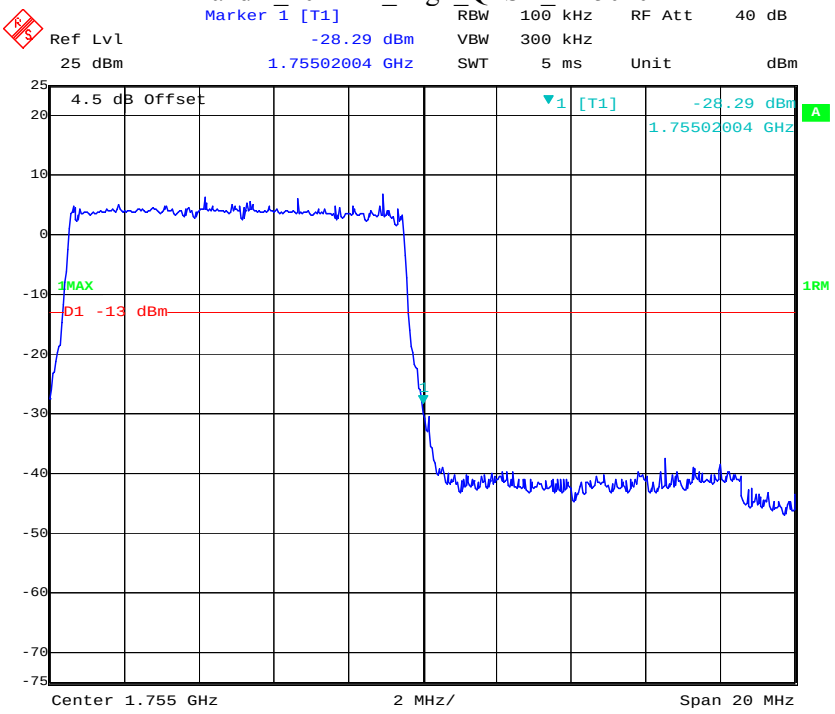
Date: 18.OCT.2019 21:53:24

Band 4_10 MHz_Low_16QAM_RB50#0



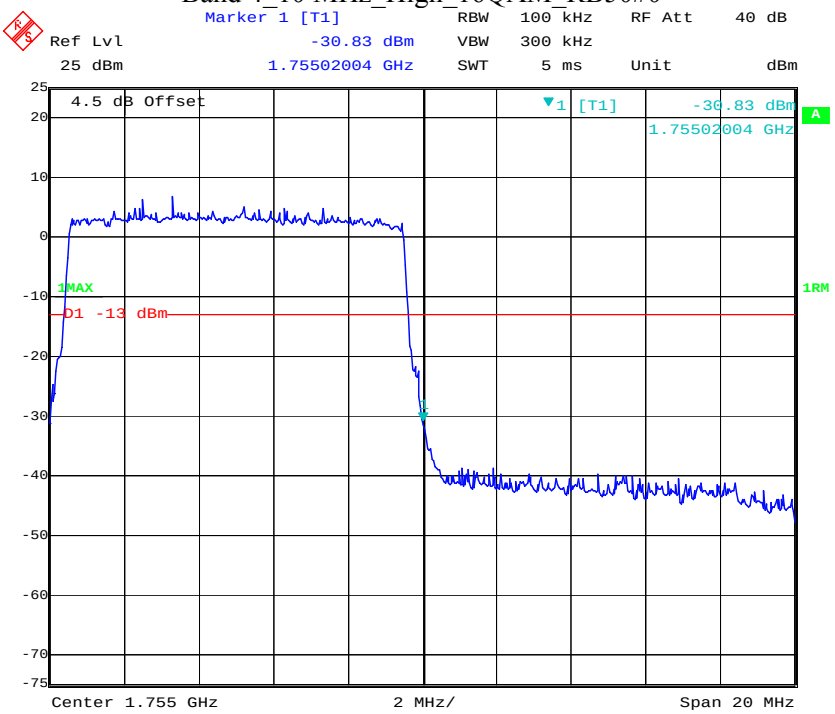
Date: 18.OCT.2019 21:53:45

Band 4_10 MHz_High_QPSK_RB50#0



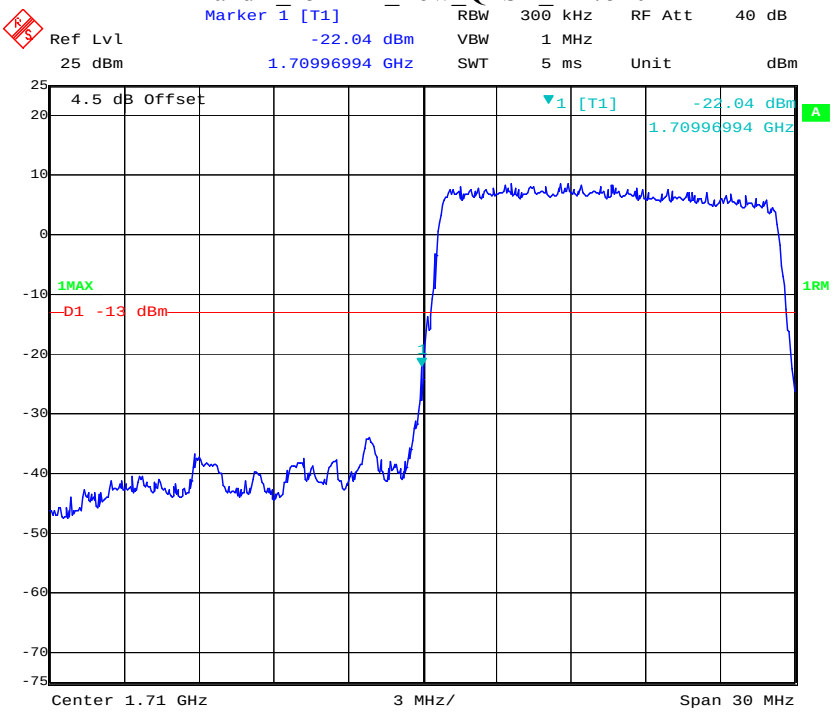
Date: 18.OCT.2019 21:54:06

Band 4_10 MHz_High_16QAM_RB50#0



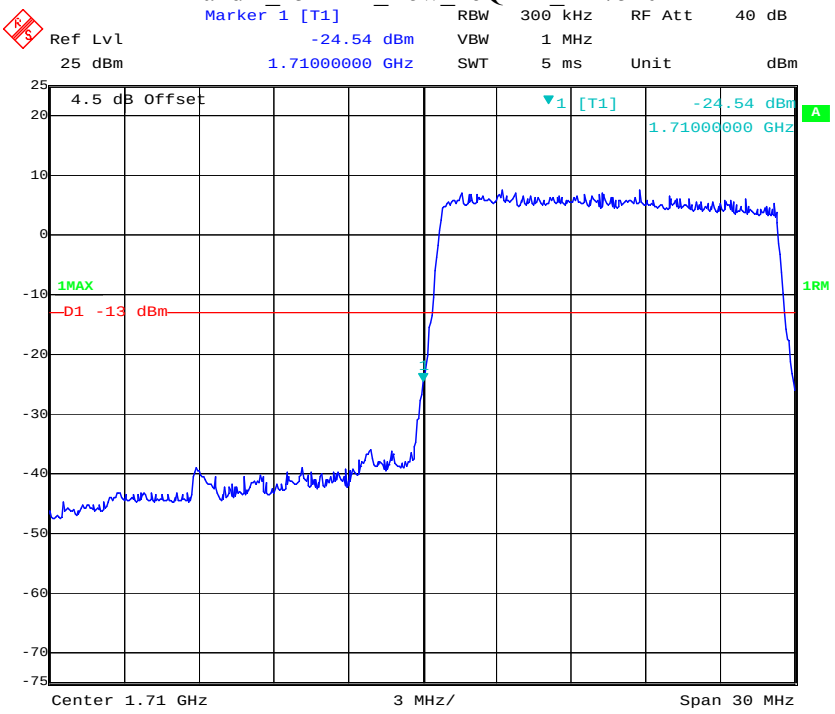
Date: 18.OCT.2019 21:54:27

Band 4_15 MHz_Low_QPSK_RB75#0



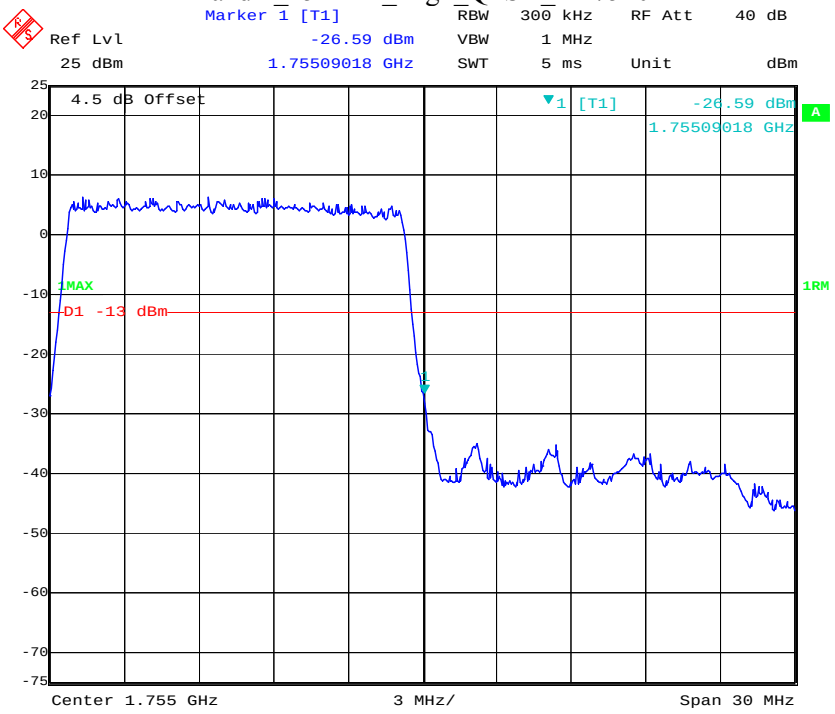
Date: 18.OCT.2019 21:55:00

Band 4_15 MHz_Low_16QAM_RB75#0



Date: 18.OCT.2019 21:55:18

Band 4_15 MHz_High_QPSK_RB75#0



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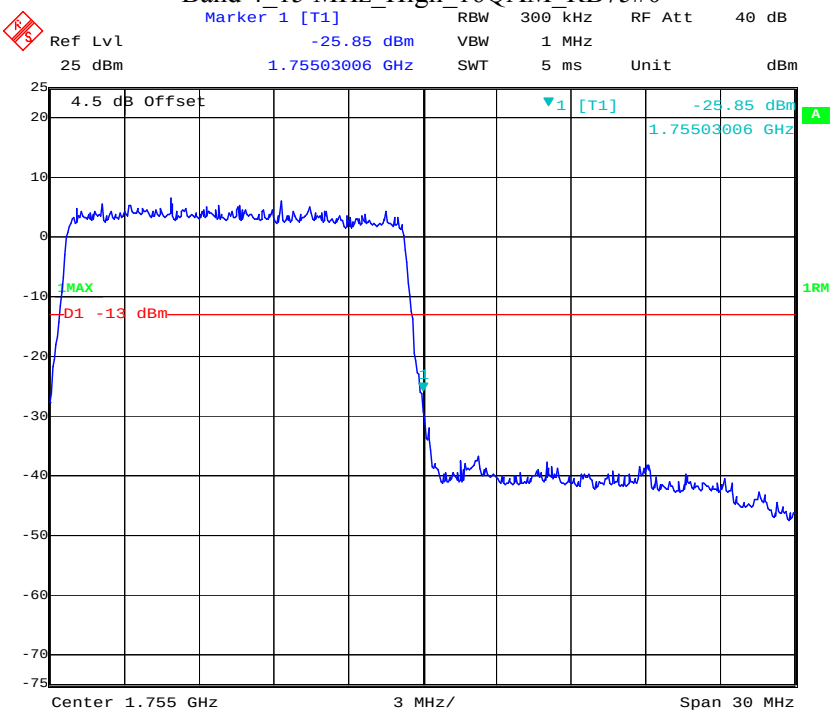
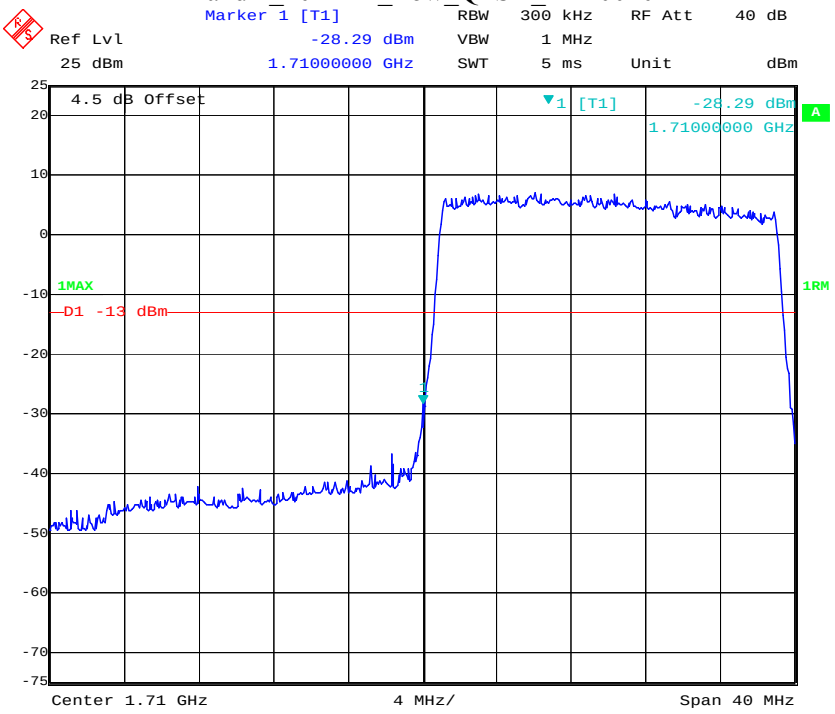
Band 4_15 MHz_High_16QAM_RB75#0



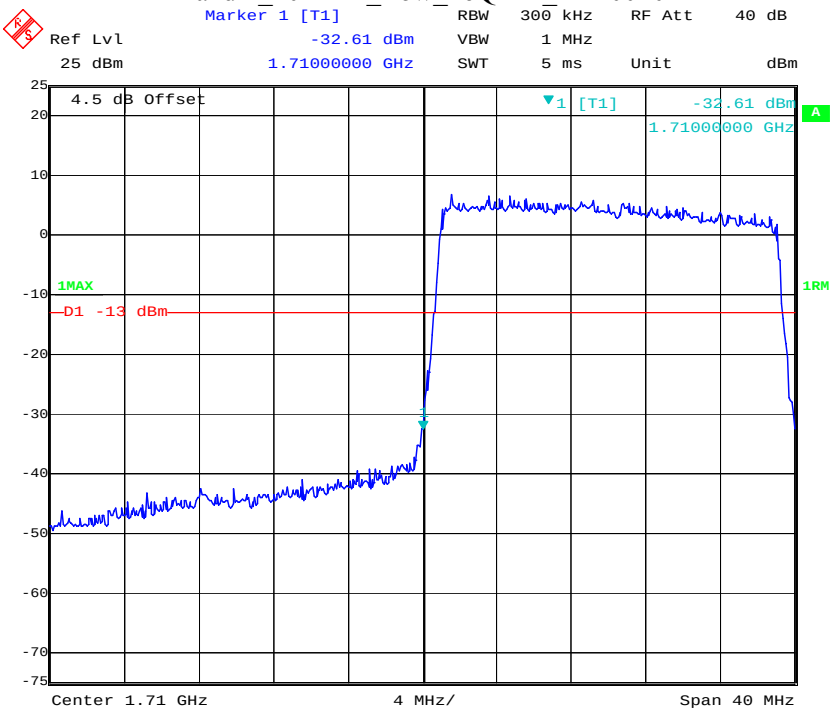
Date: 18.OCT.2019 21:55:59

Band 4_20 MHz_Low_QPSK_RB100#0



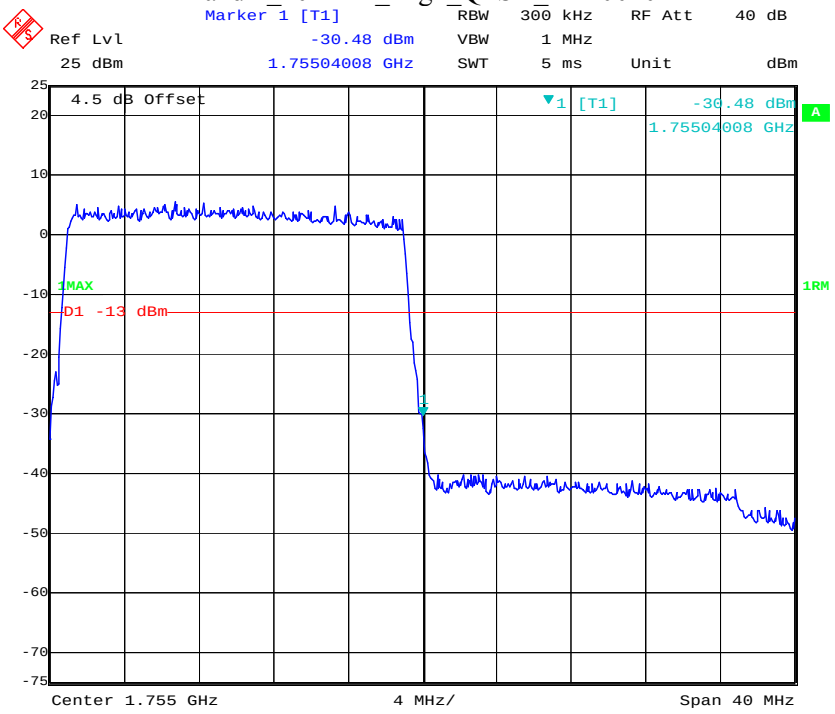
Date: 18.OCT.2019 21:56:20

Band 4_20 MHz_Low_16QAM_RB100#0



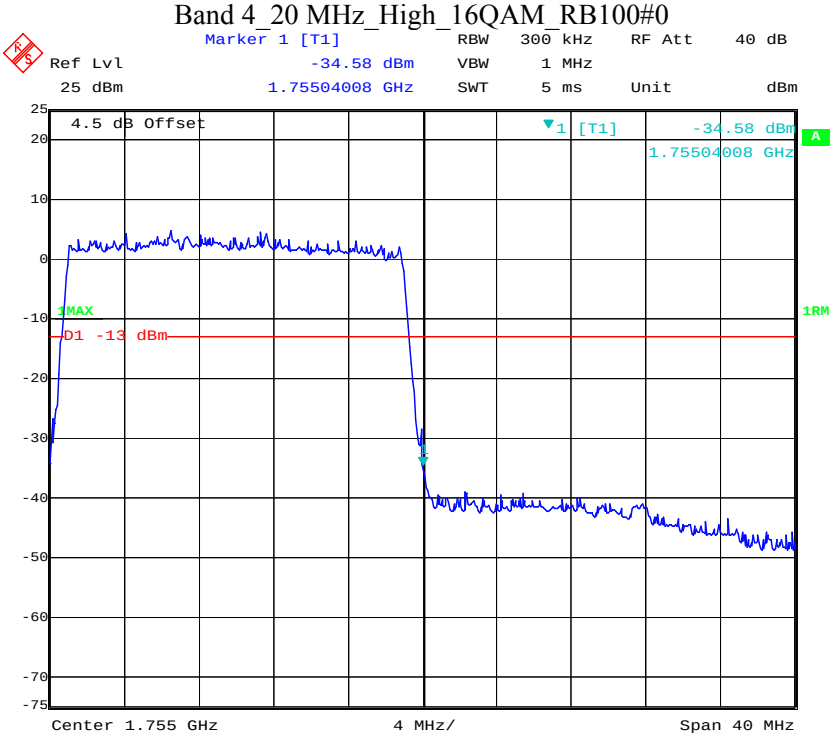
Date: 18.OCT.2019 21:56:39

Band 4_20 MHz_High_QPSK_RB100#0



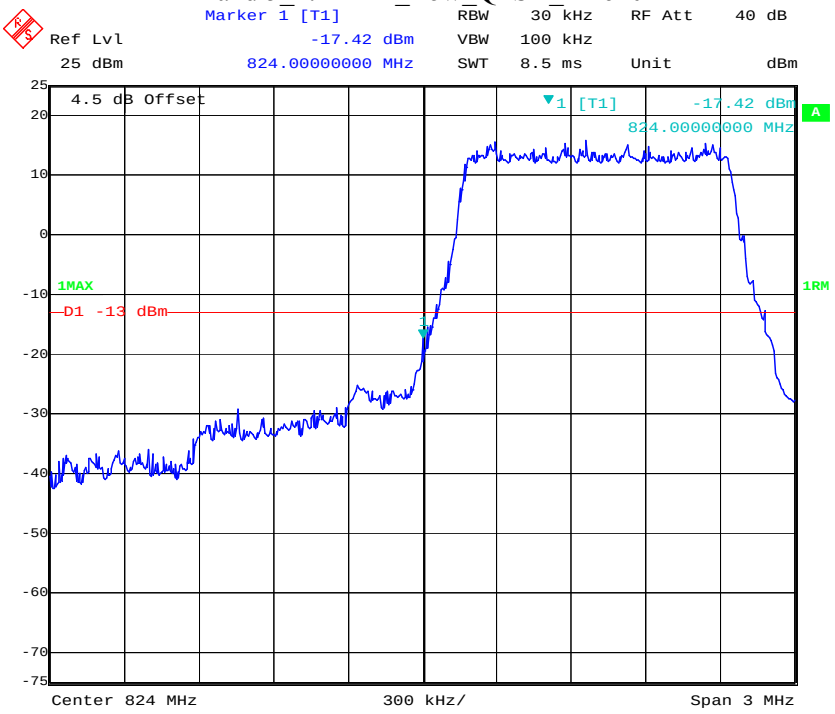
Date: 18.OCT.2019 21:56:58

Band 4_20 MHz_High_16QAM_RB100#0



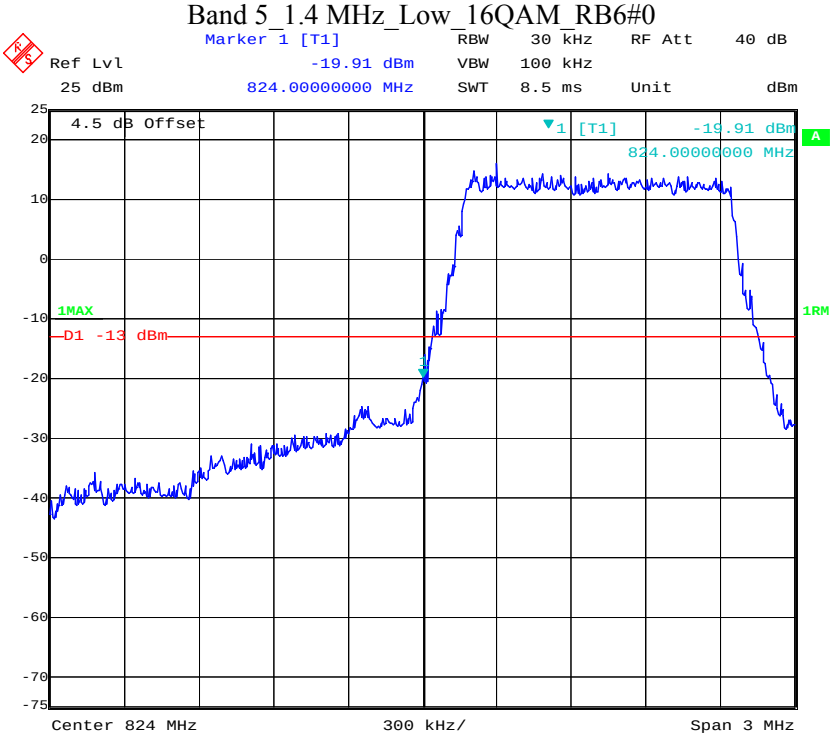
Date: 18.OCT.2019 21:57:16

Band 5_1.4 MHz_Low_QPSK_RB6#0



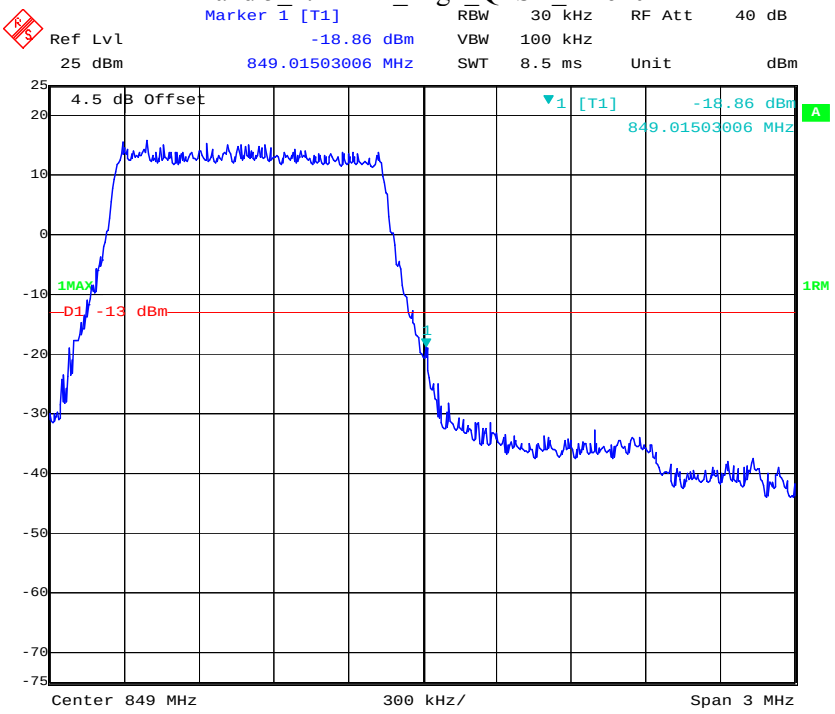
Date: 18.OCT.2019 21:57:51

Band 5_1.4 MHz_Low_16QAM_RB6#0

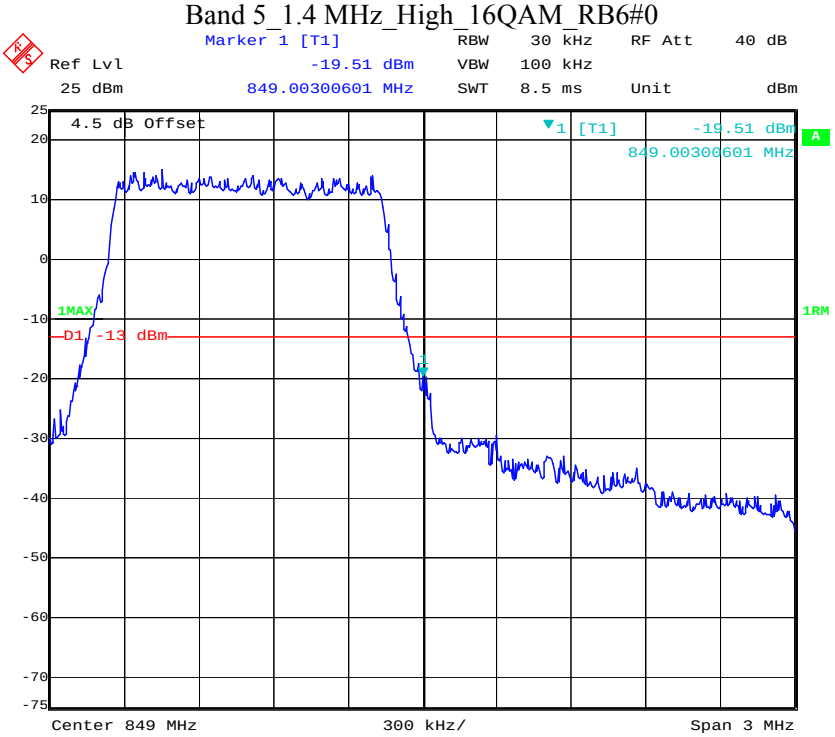


Date: 18.OCT.2019 21:58:10

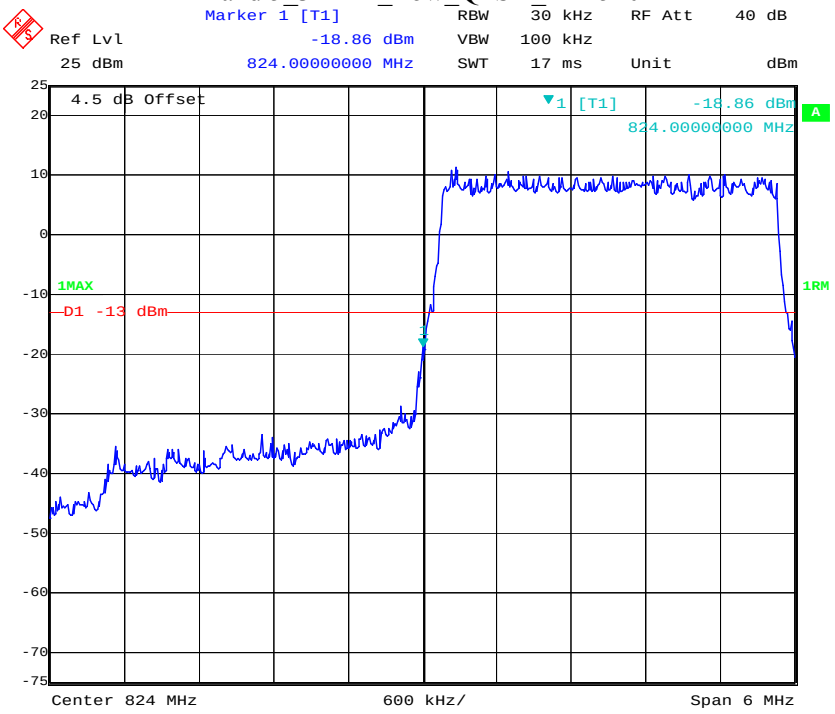
Band 5_1.4 MHz_High_QPSK_RB6#0



Band 5_1.4 MHz_High_16QAM_RB6#0

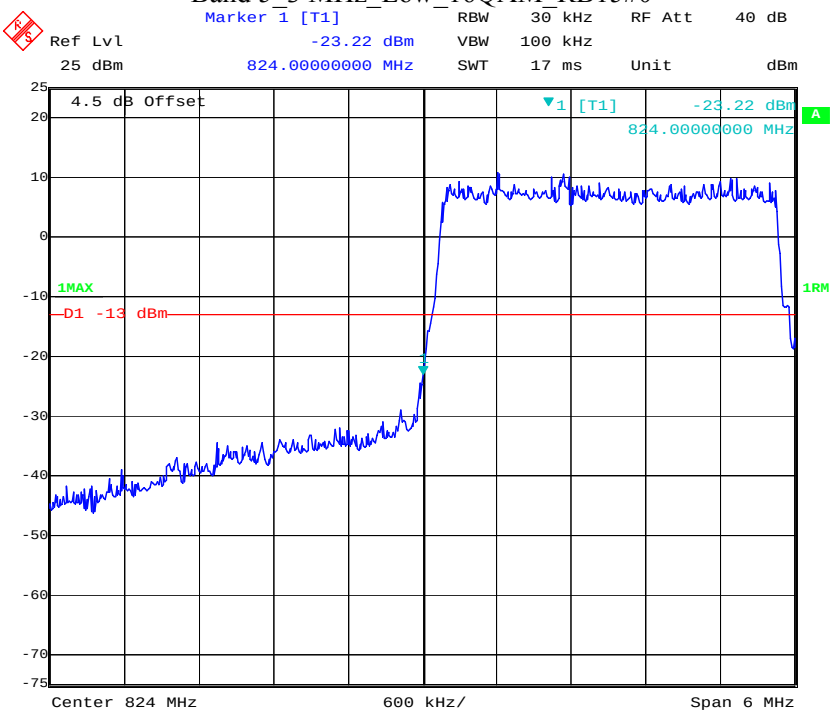


Band 5_3 MHz_Low_QPSK_RB15#0



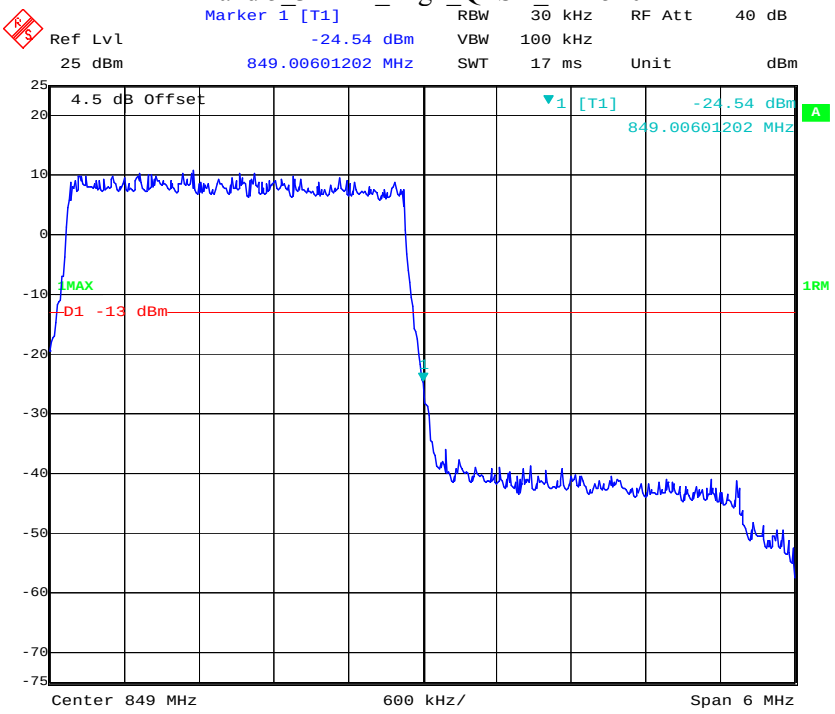
Date: 18.OCT.2019 21:59:13

Band 5_3 MHz_Low_16QAM_RB15#0



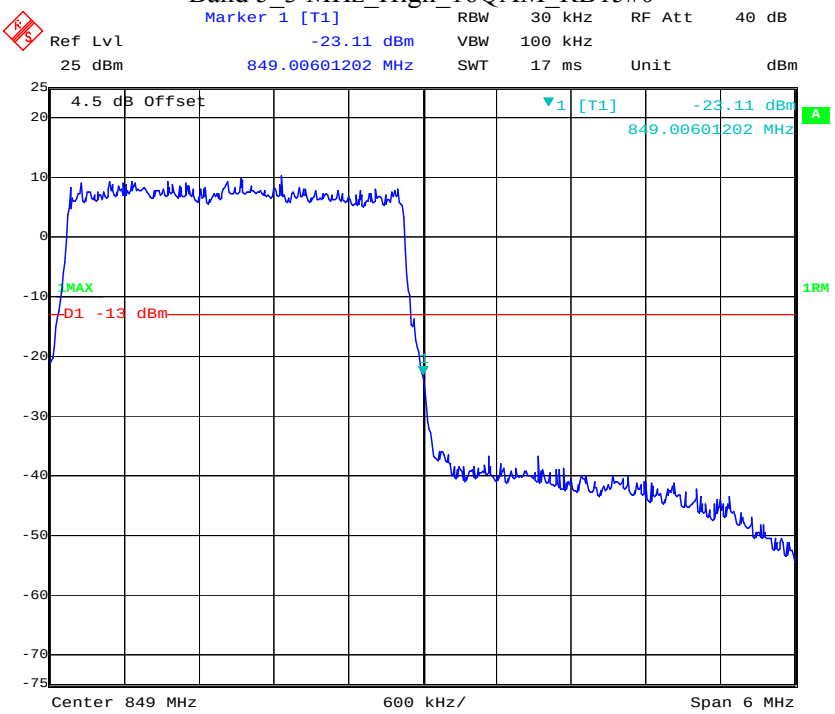
Date: 18.OCT.2019 21:59:32

Band 5_3 MHz_High_QPSK_RB15#0



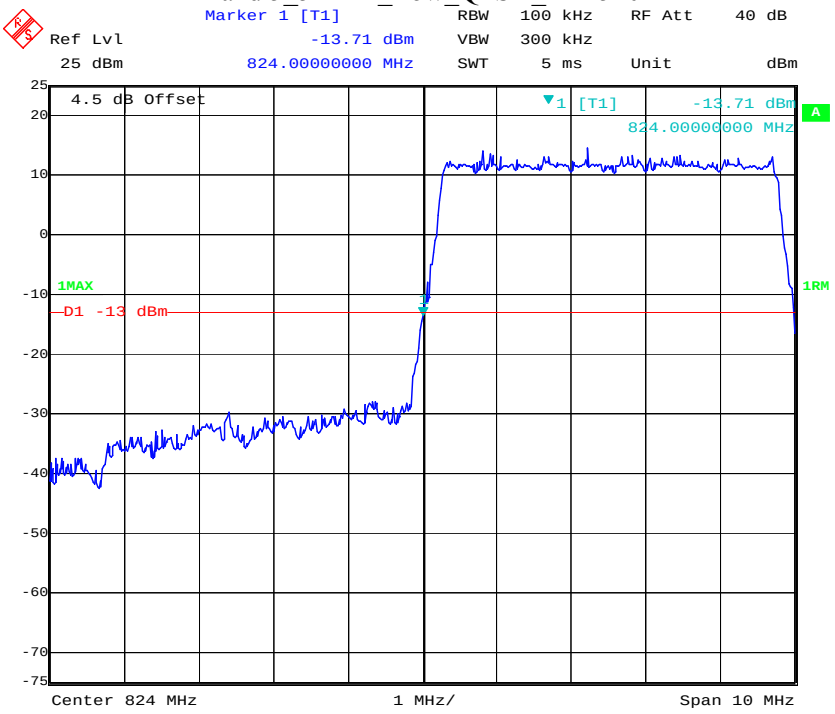
Date: 18.OCT.2019 21:59:49

Band 5_3 MHz_High_16QAM_RB15#0



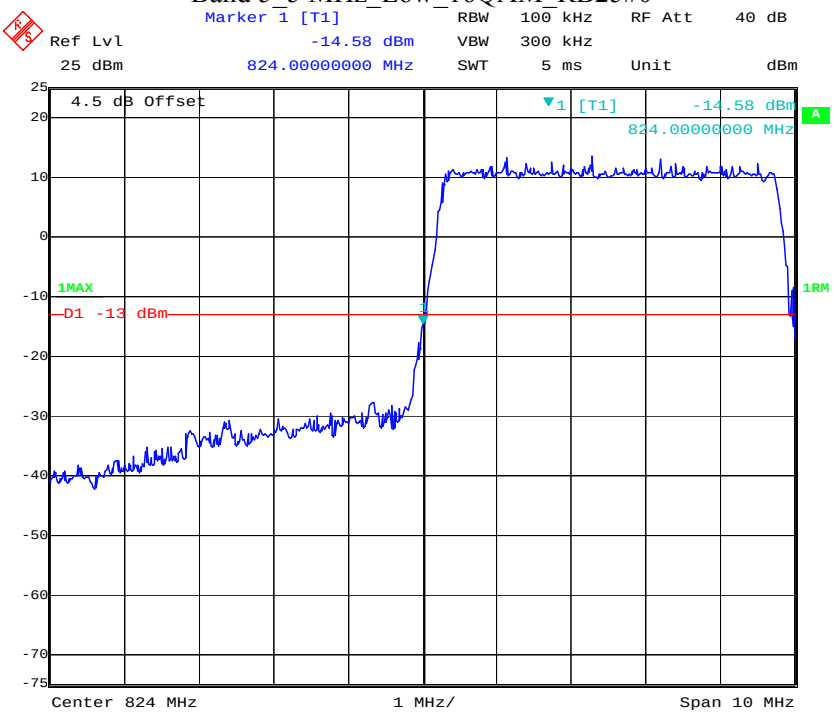
Date: 18.OCT.2019 22:00:08

Band 5_5 MHz_Low_QPSK_RB25#0



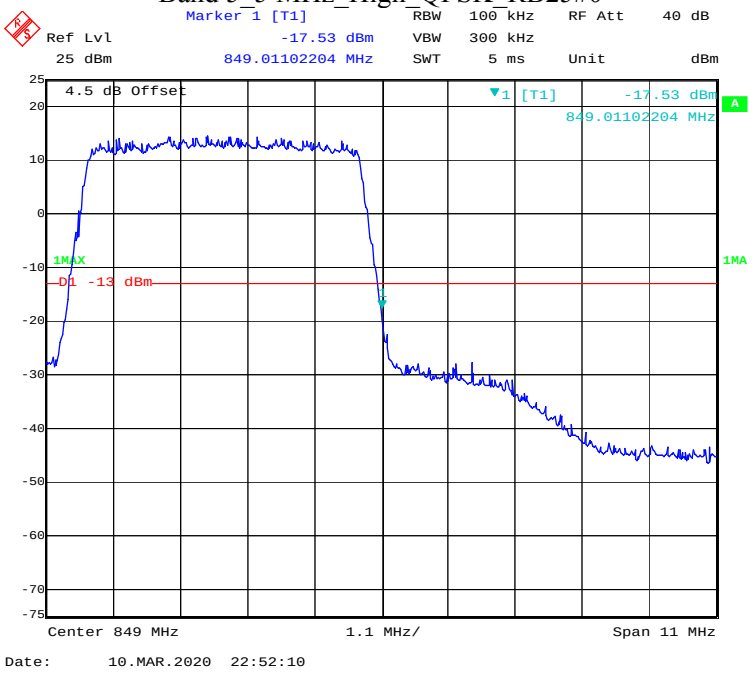
Date: 18.OCT.2019 22:00:52

Band 5_5 MHz_Low_16QAM_RB25#0

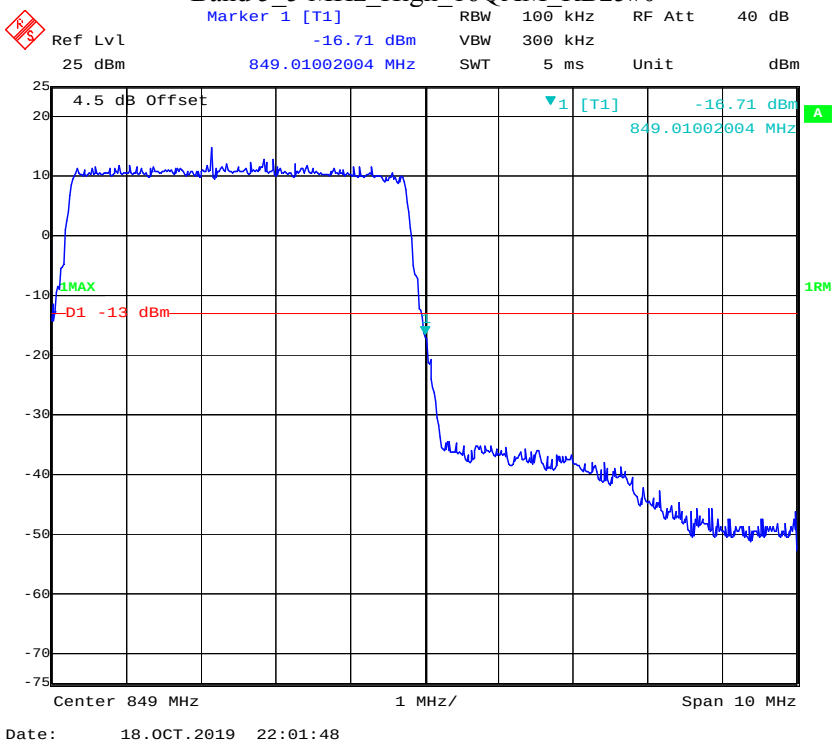


Date: 18.OCT.2019 22:01:11

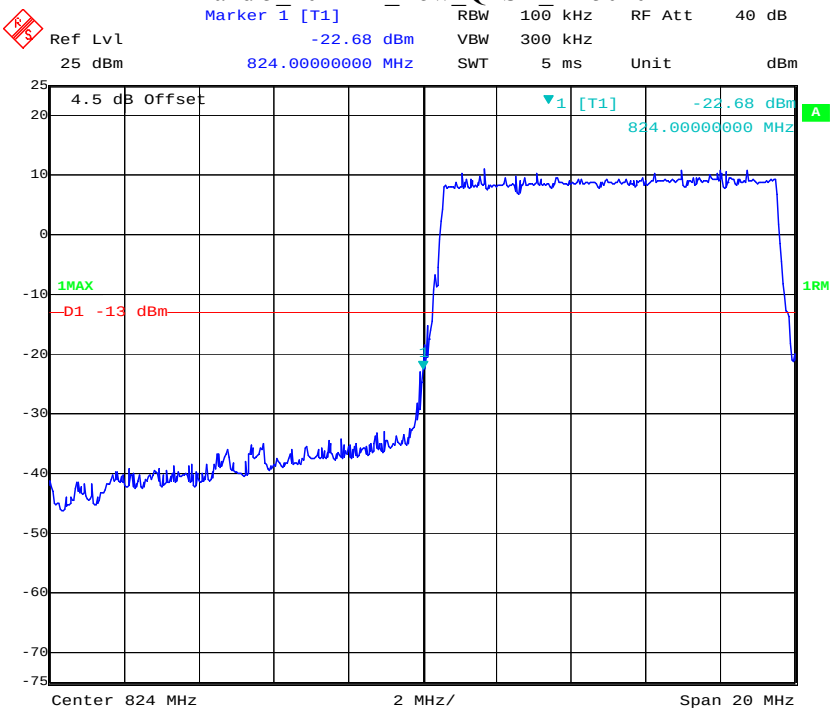
Band 5_5 MHz_High_QPSK_RB25#0



Band 5_5 MHz_High_16QAM_RB25#0

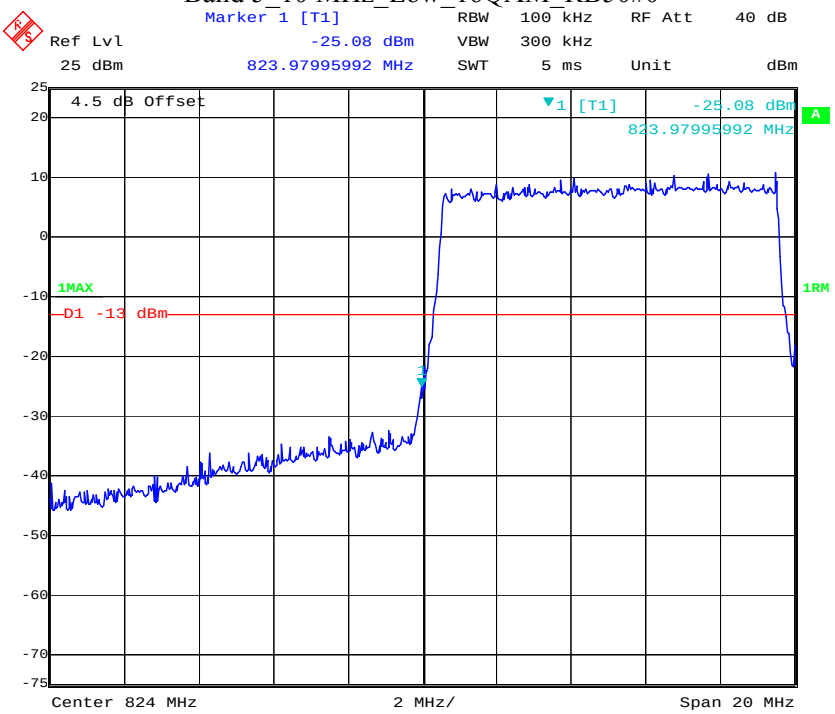


Band 5_10 MHz_Low_QPSK_RB50#0



Date: 18.OCT.2019 22:02:14

Band 5_10 MHz_Low_16QAM_RB50#0



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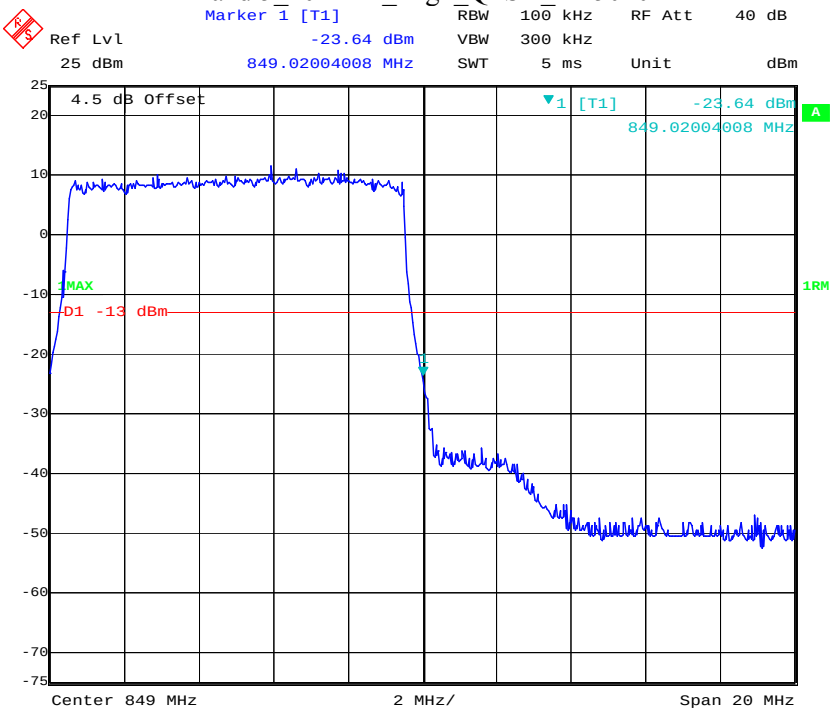
Band 5_10 MHz_High_QPSK_RB50#0



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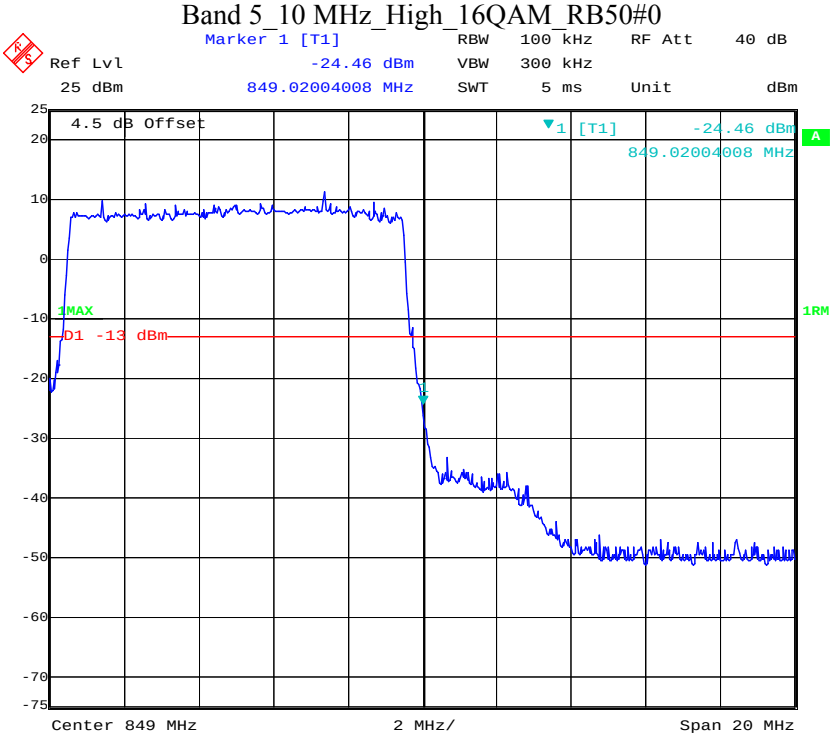
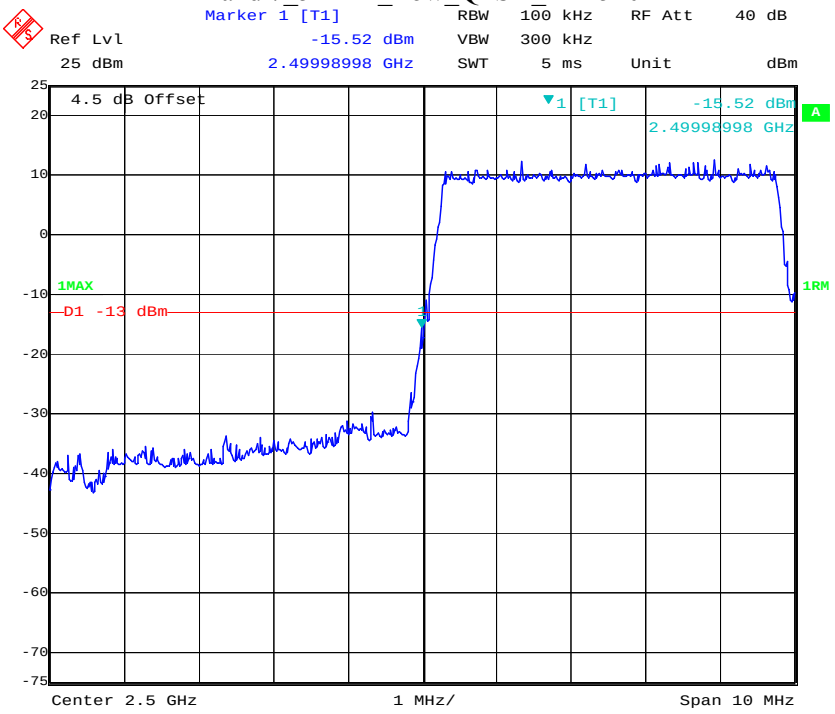
Band 5_10 MHz_High_16QAM_RB50#0



Date: 18.OCT.2019 22:03:10

Band 7_5 MHz_Low_QPSK_RB25#0



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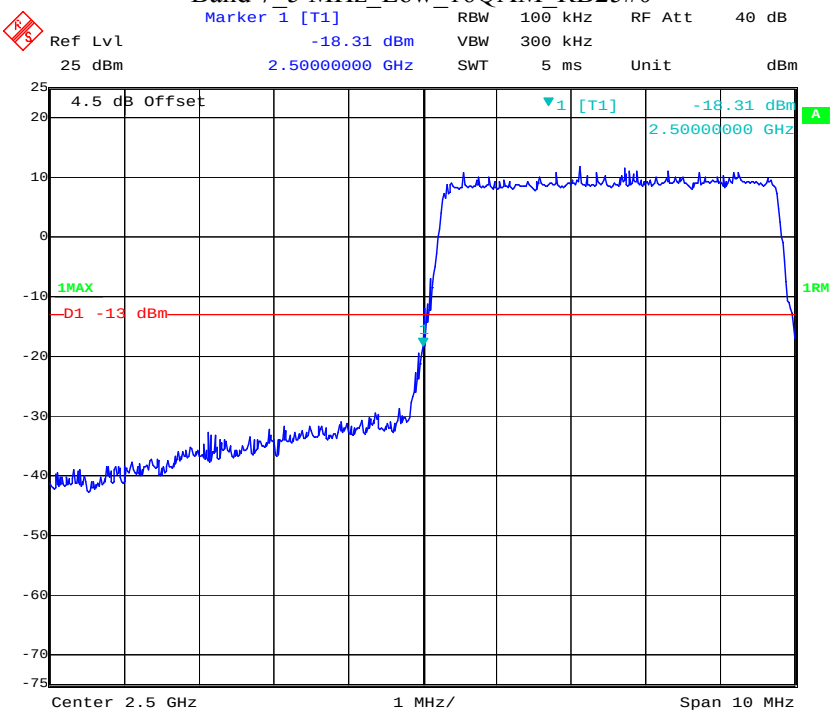
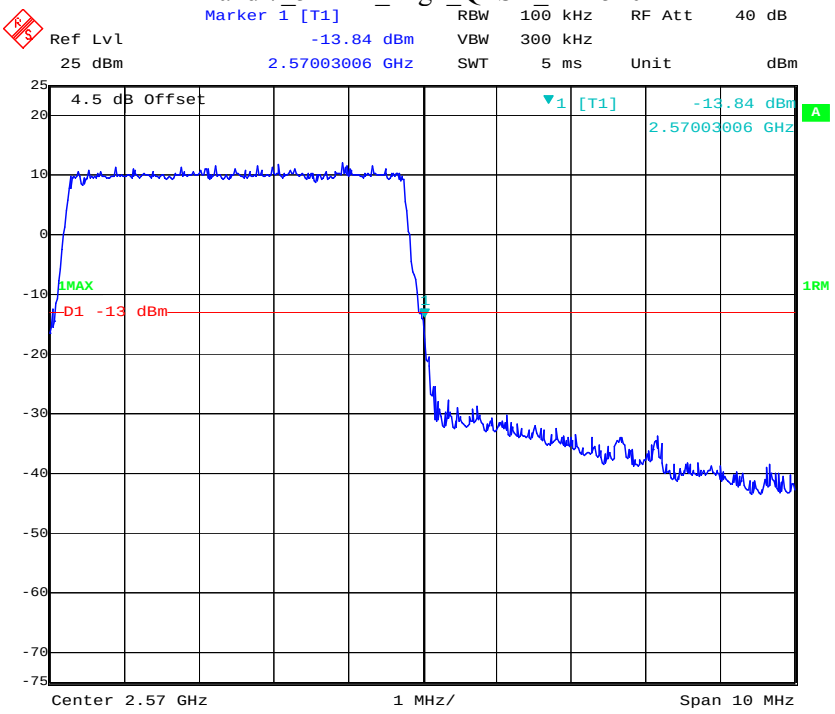
Band 7_5 MHz_Low_16QAM_RB25#0



Date: 18.OCT.2019 22:04:05

Band 7_5 MHz_High_QPSK_RB25#0



Date: 18.OCT.2019 22:04:25

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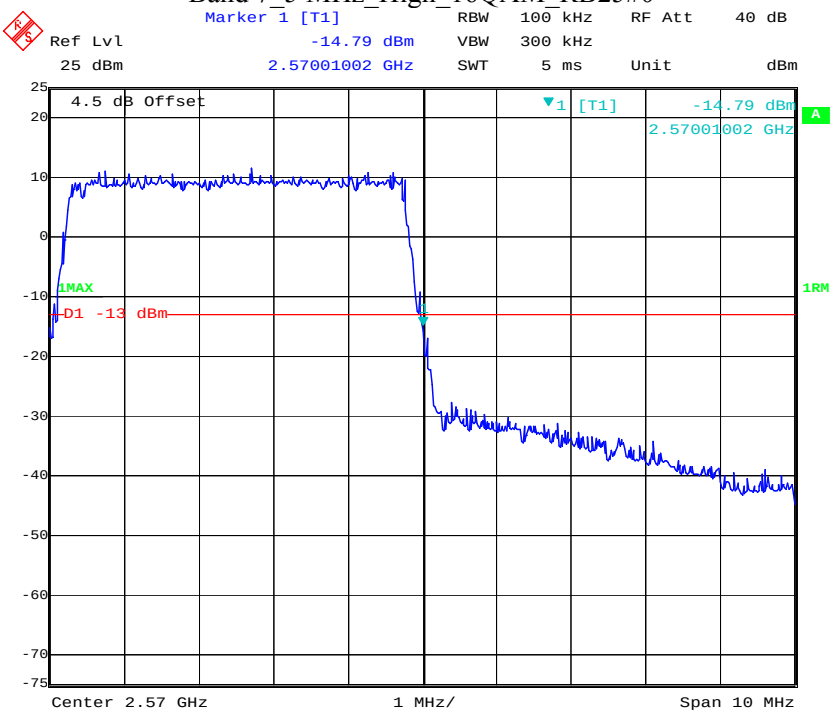

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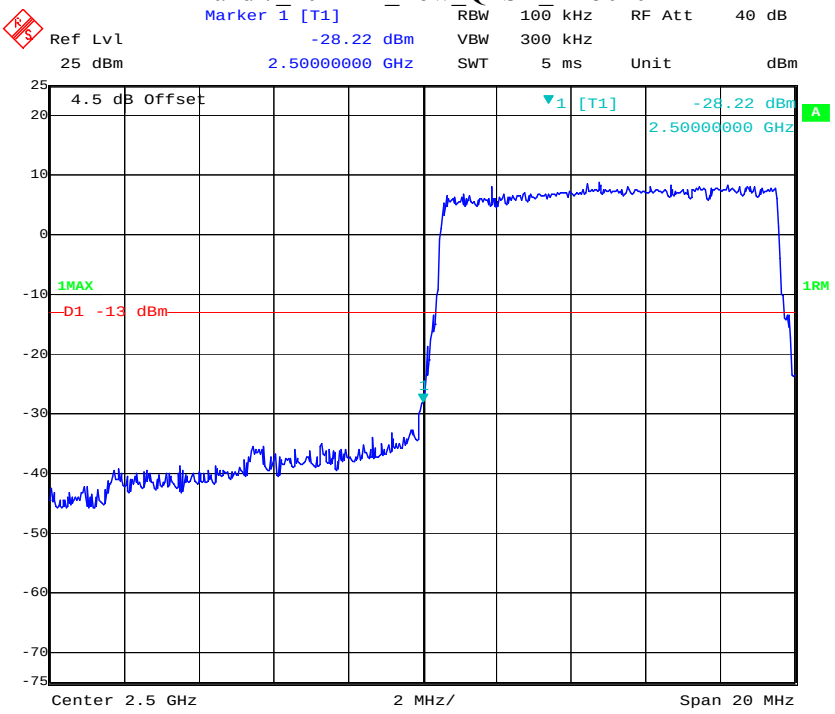
Band 7_10 MHz_Low_QPSK_RB50#0



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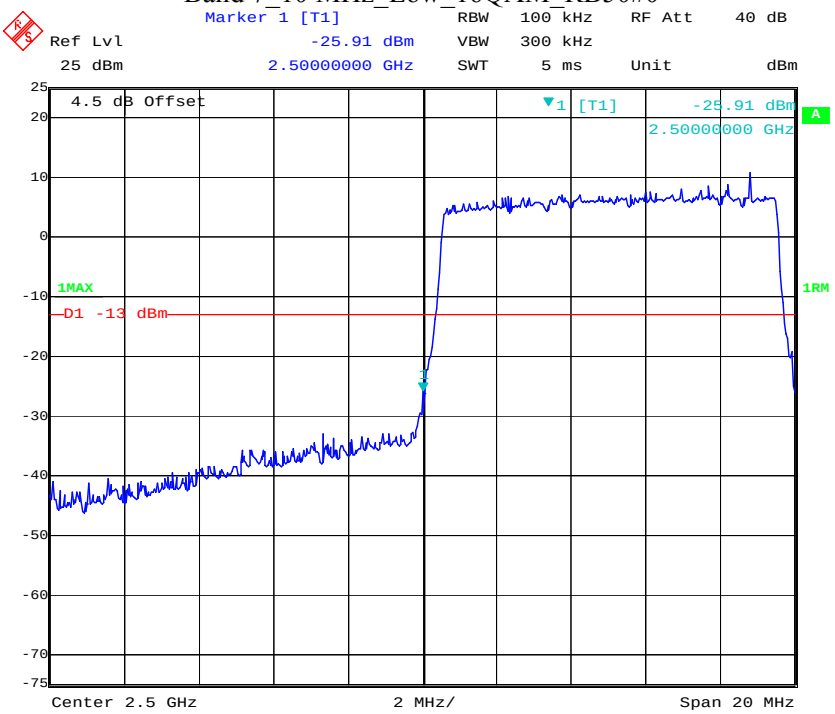
Band 7_10 MHz_Low_16QAM_RB50#0



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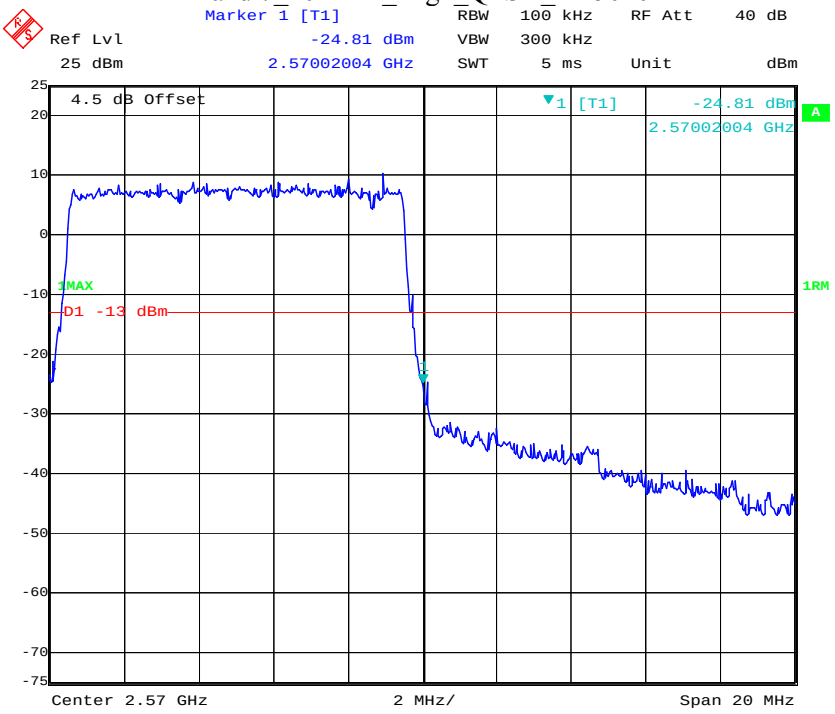

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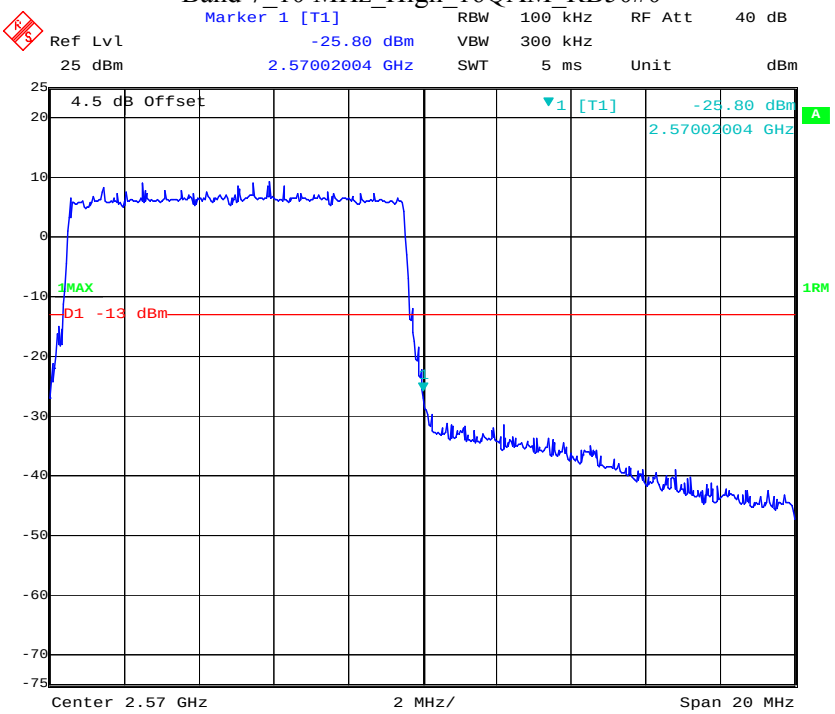
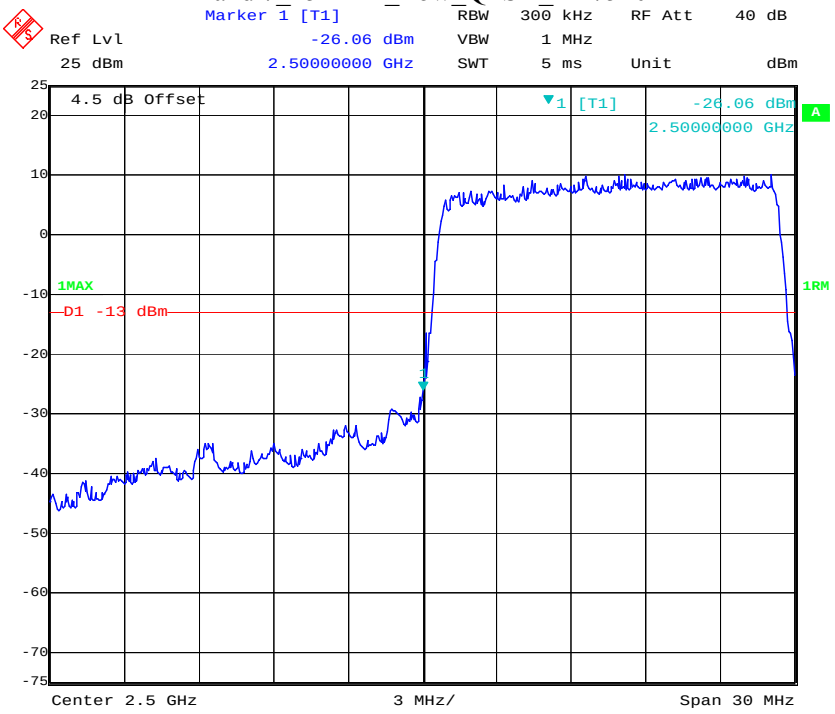
Band 7_10 MHz_High_16QAM_RB50#0



Date: 18.OCT.2019 22:06:09

Band 7_15 MHz_Low_QPSK_RB75#0



Date: 18.OCT.2019 22:06:35

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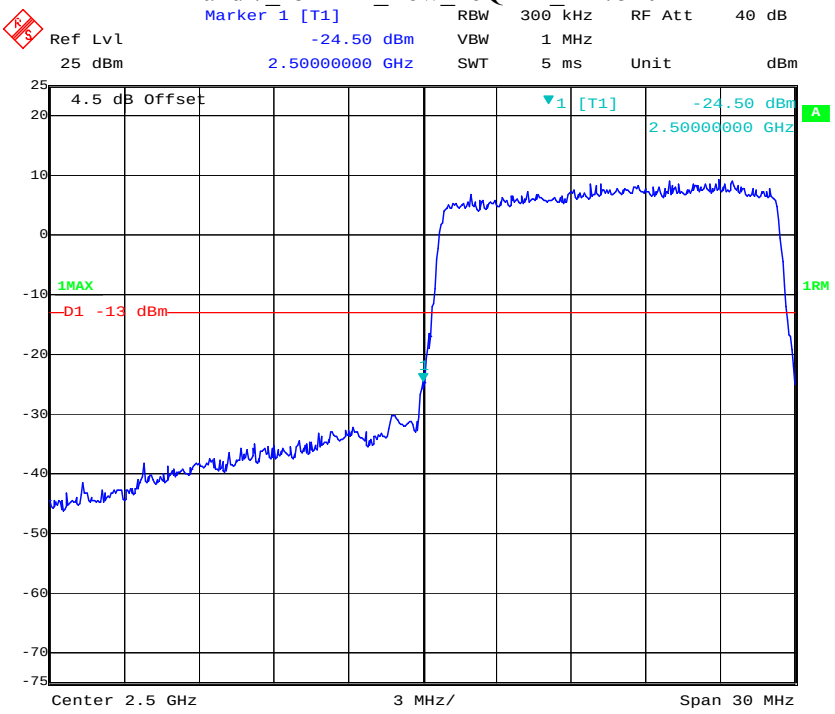
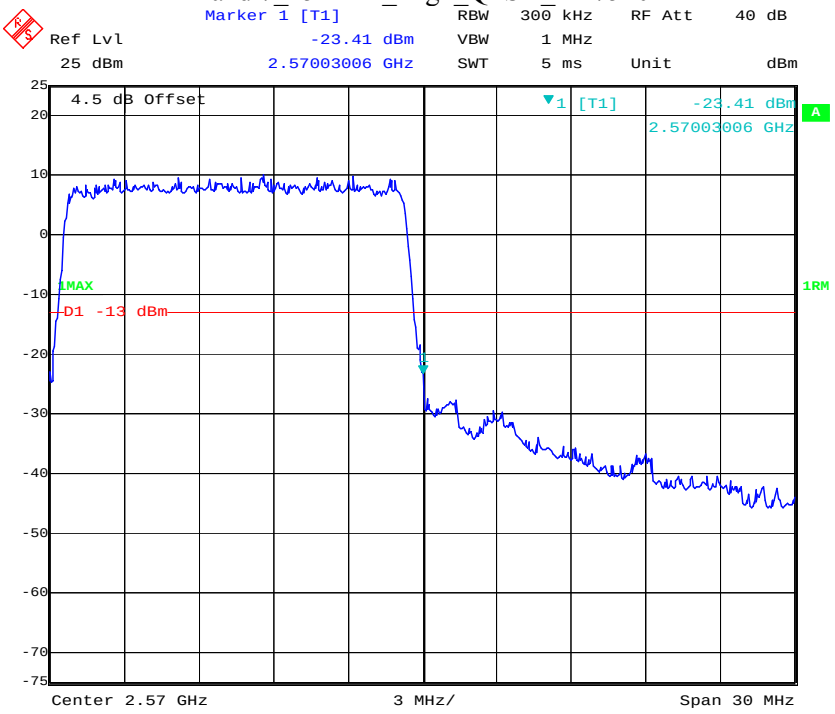


Date: 18.OCT.2019 22:06:57

Band 7_15 MHz_High_QPSK_RB75#0



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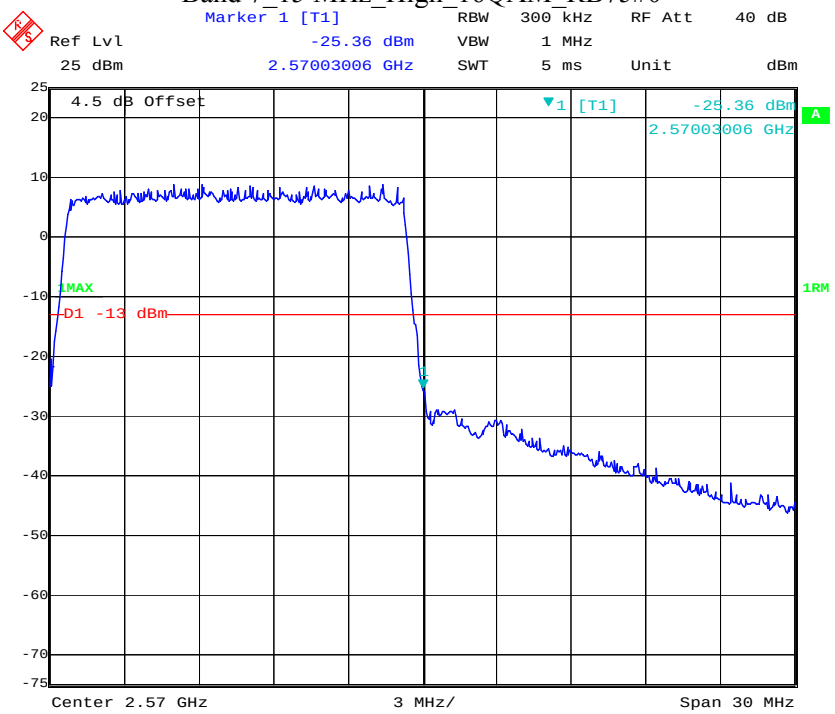
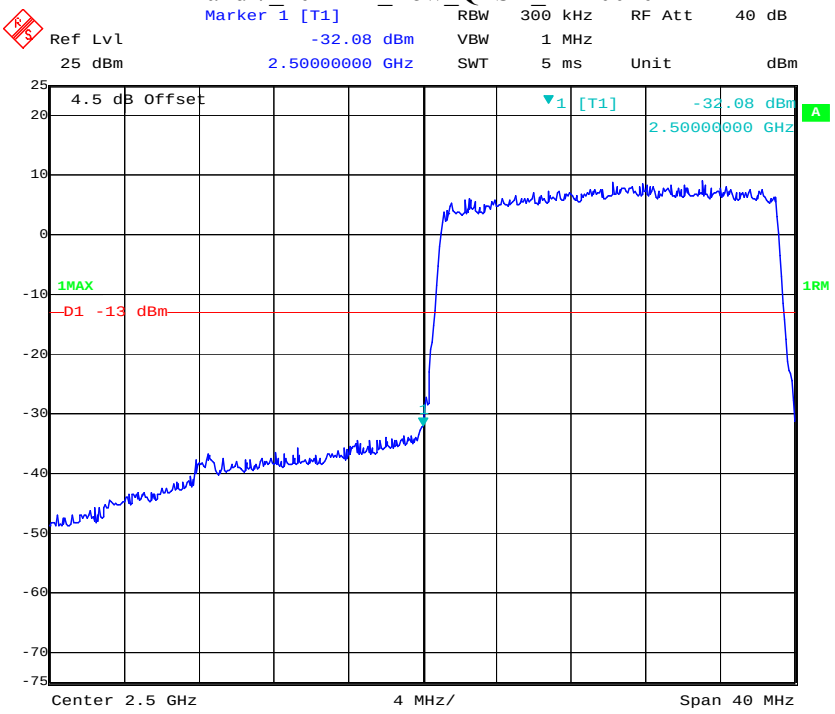


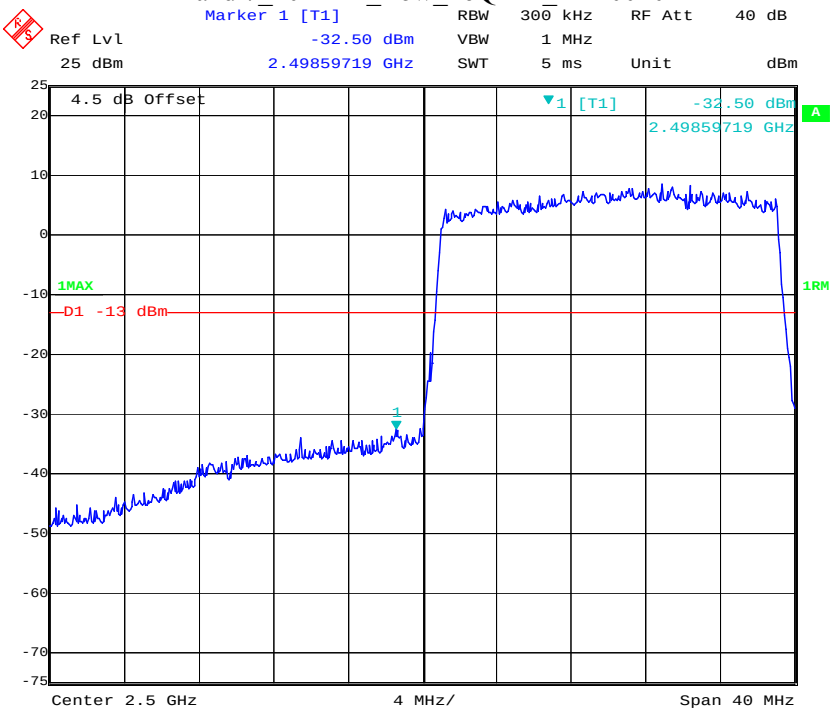
Date: 18.OCT.2019 22:07:34

Band 7_20 MHz_Low_QPSK_RB100#0



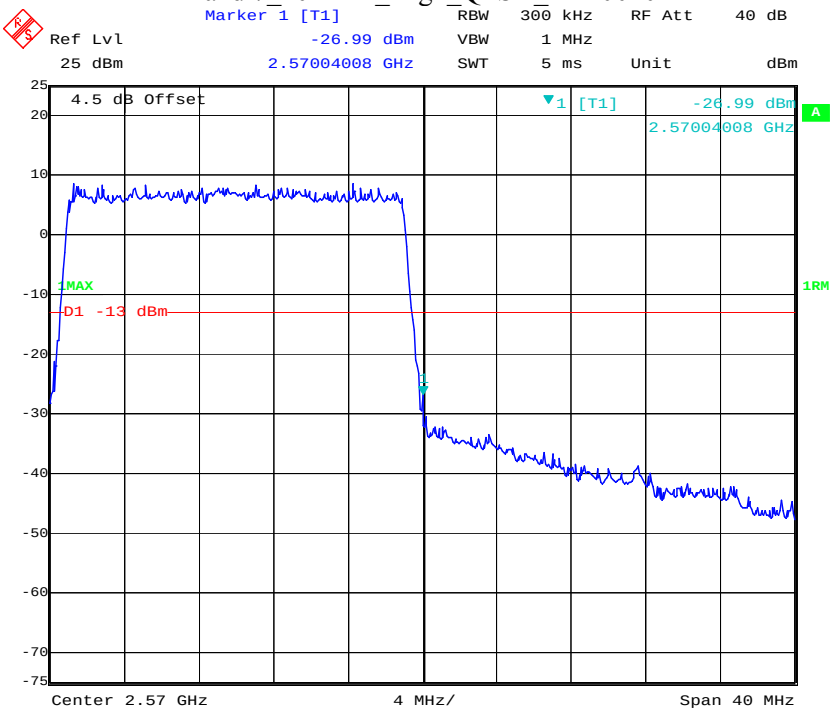
Date: 18.OCT.2019 22:08:01

Band 7_20 MHz_Low_16QAM_RB100#0



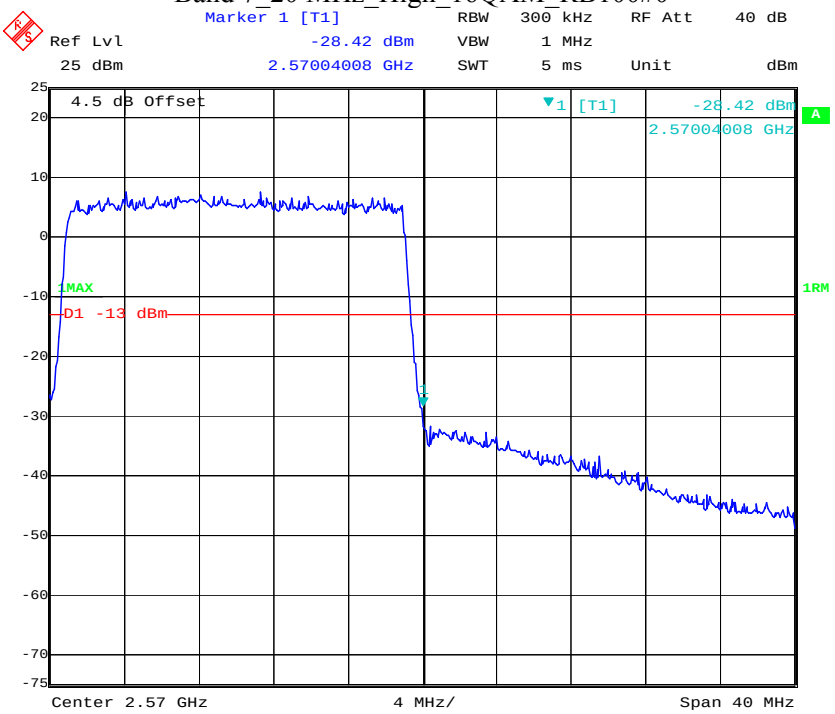
Date: 18.OCT.2019 22:08:19

Band 7_20 MHz_High_QPSK_RB100#0



Date: 18.OCT.2019 22:08:38

Band 7_20 MHz_High_16QAM_RB100#0



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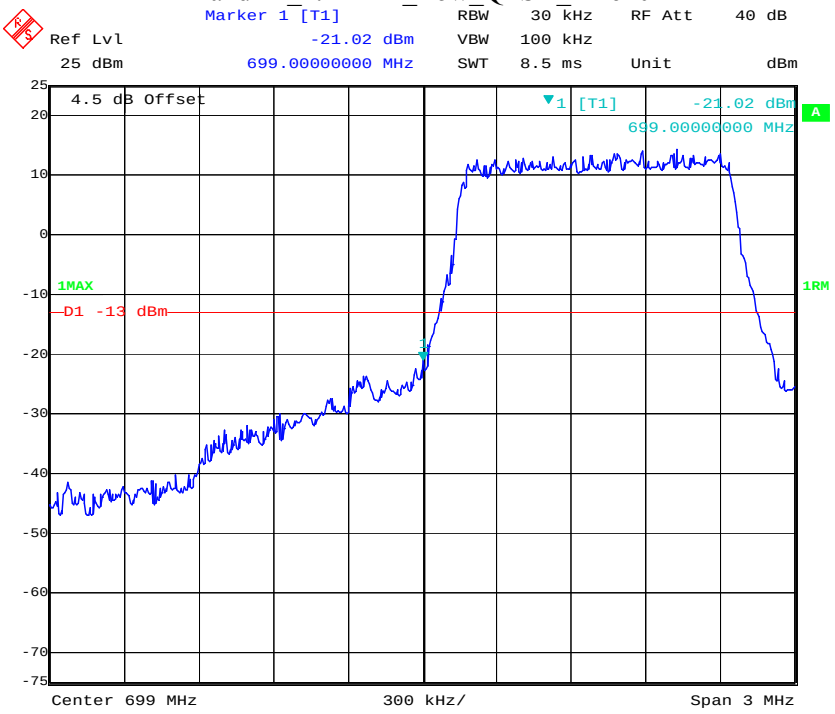
Band 12_1.4 MHz_Low_QPSK_RB6#0



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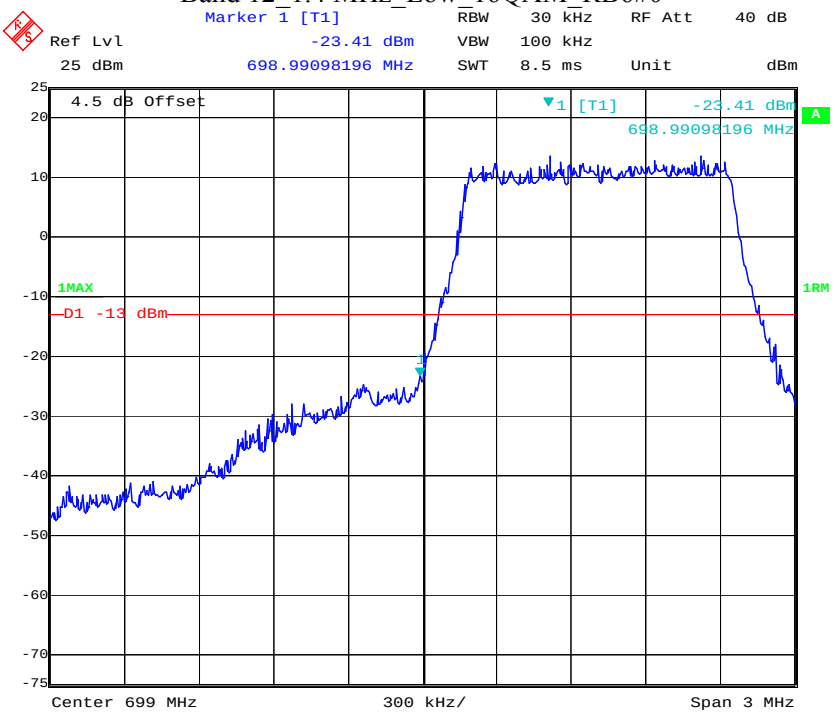
Band 12_1.4 MHz_Low_16QAM_RB6#0



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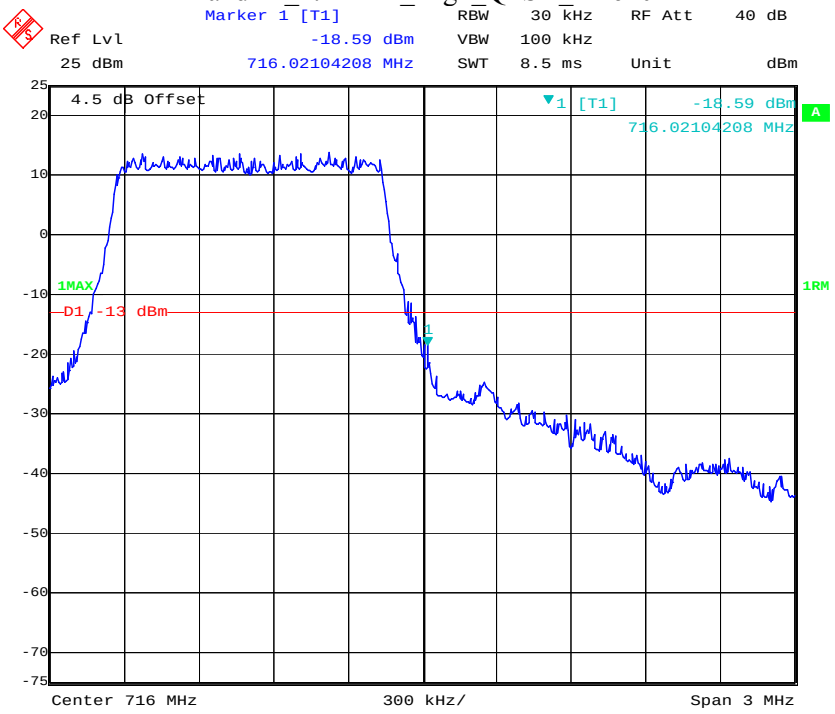

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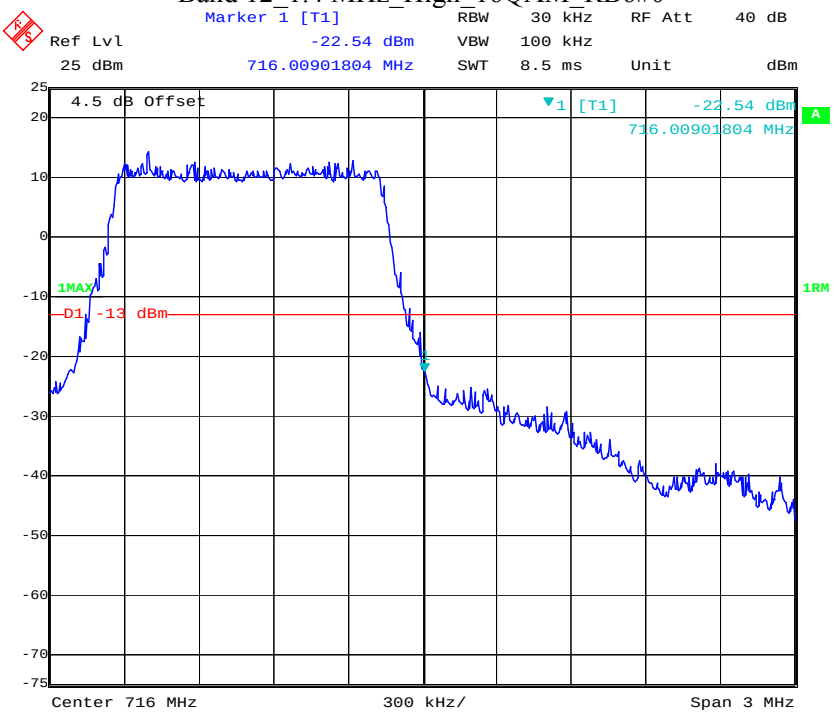
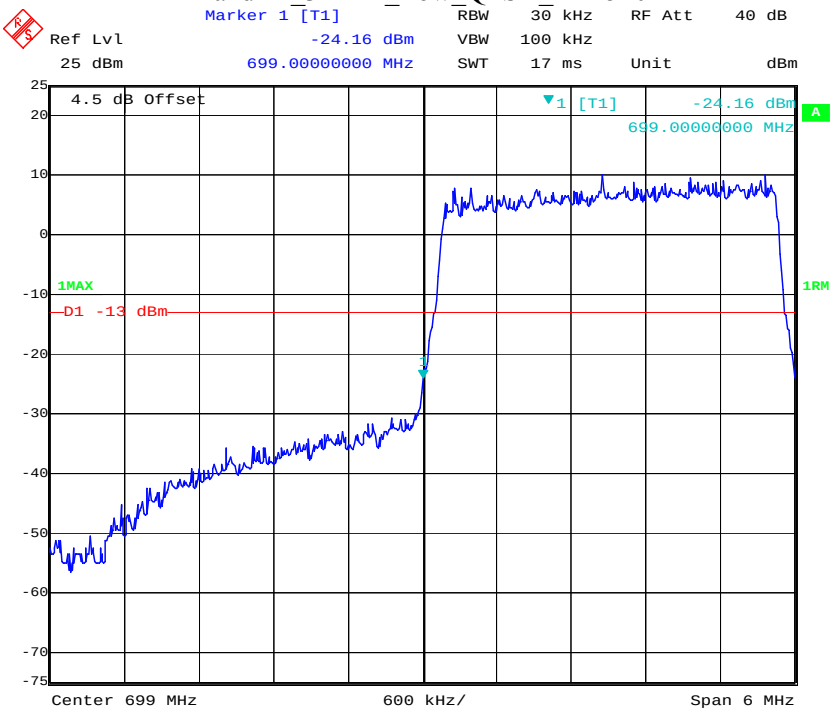
Band 12_1.4 MHz_High_16QAM_RB6#0



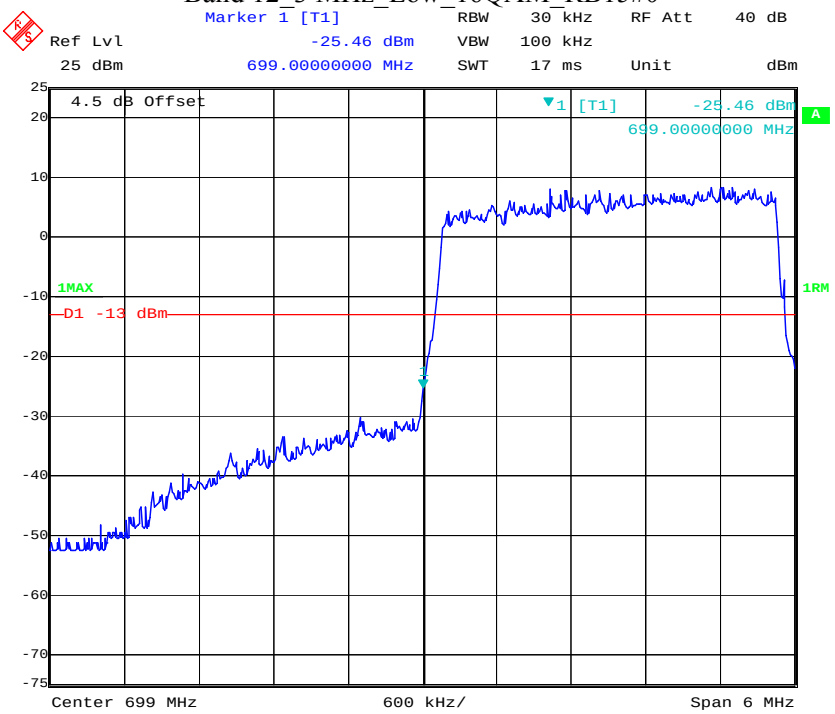
Date: 18.OCT.2019 22:10:40

Band 12_3 MHz_Low_QPSK_RB15#0



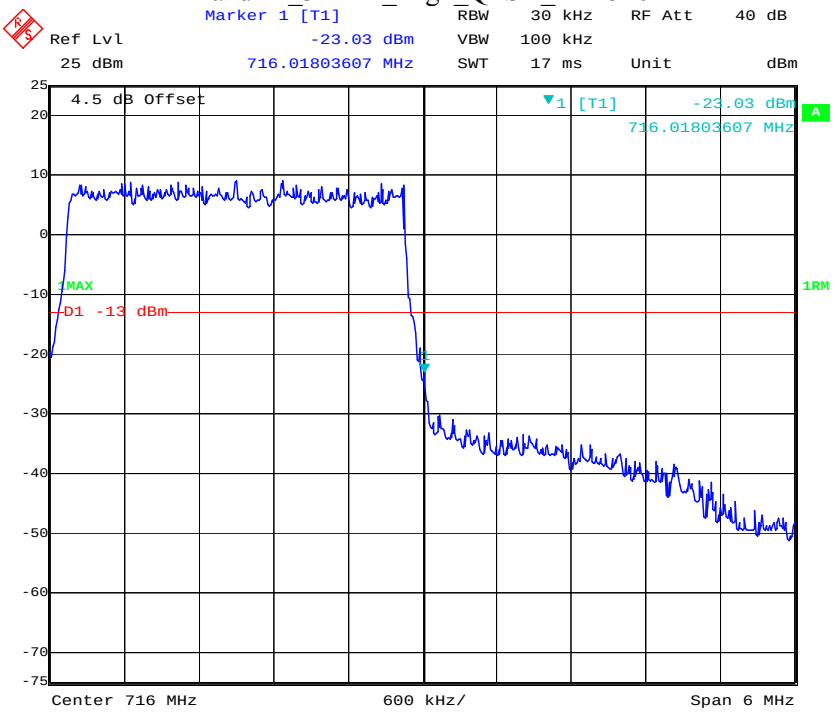
Date: 18.OCT.2019 22:11:07

Band 12_3 MHz_Low_16QAM_RB15#0



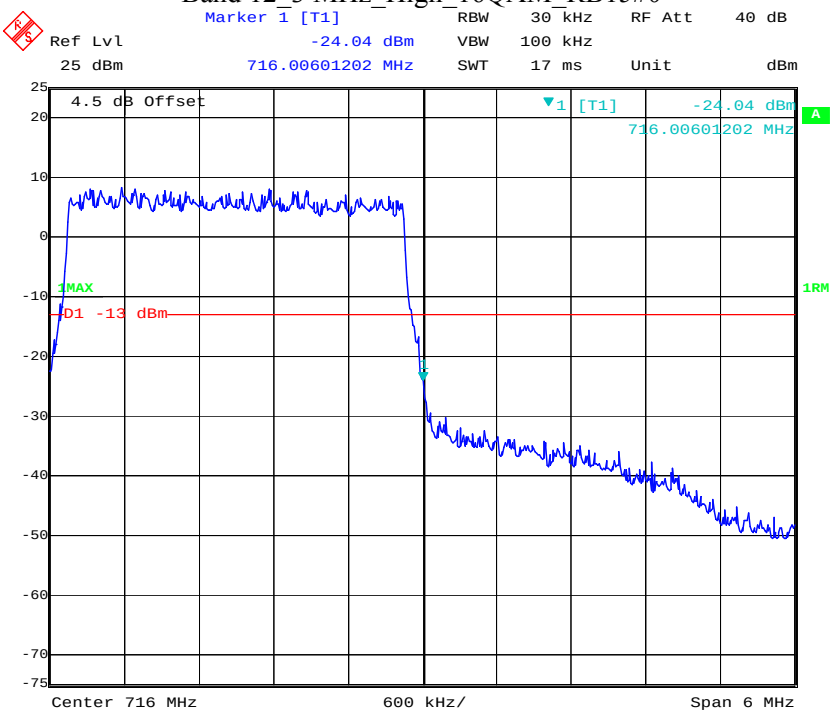
Date: 18.OCT.2019 22:11:26

Band 12_3 MHz_High_QPSK_RB15#0



Date: 18.OCT.2019 22:11:46

Band 12_3 MHz_High_16QAM_RB15#0



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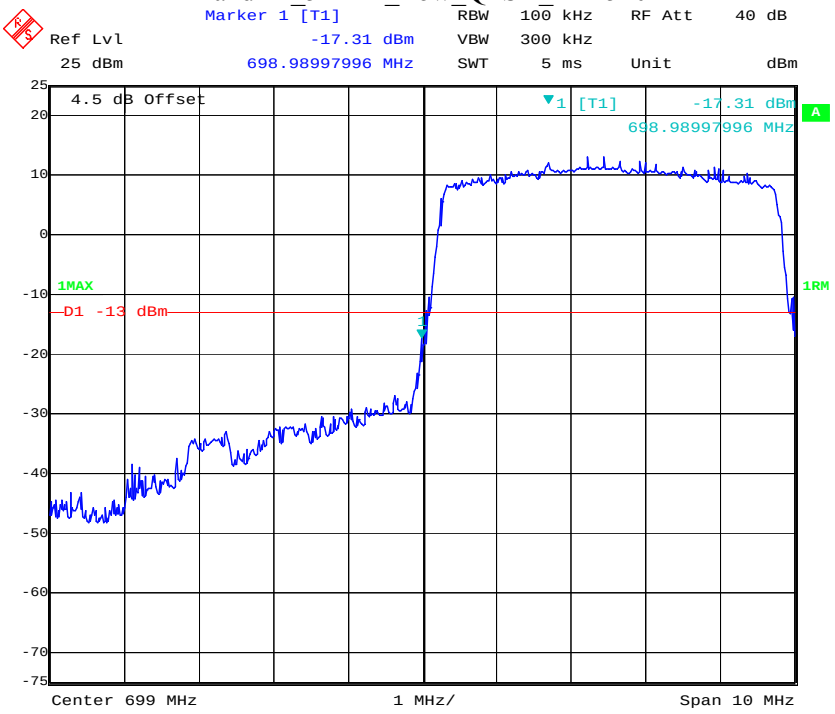
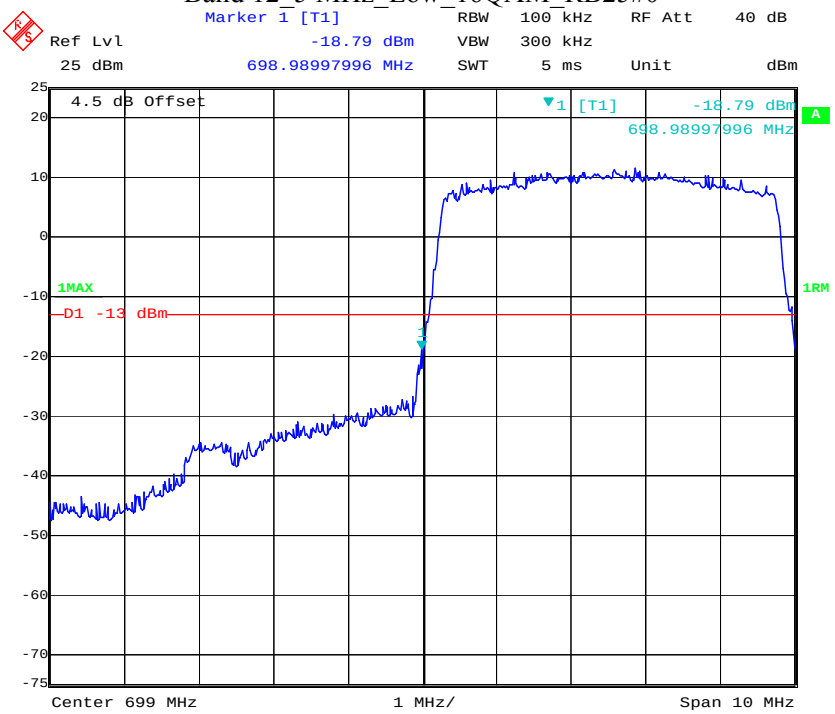
Band 12_5 MHz_Low_QPSK_RB25#0



Date: 18.OCT.2019 22:12:32

Band 12_5 MHz_Low_16QAM_RB25#0



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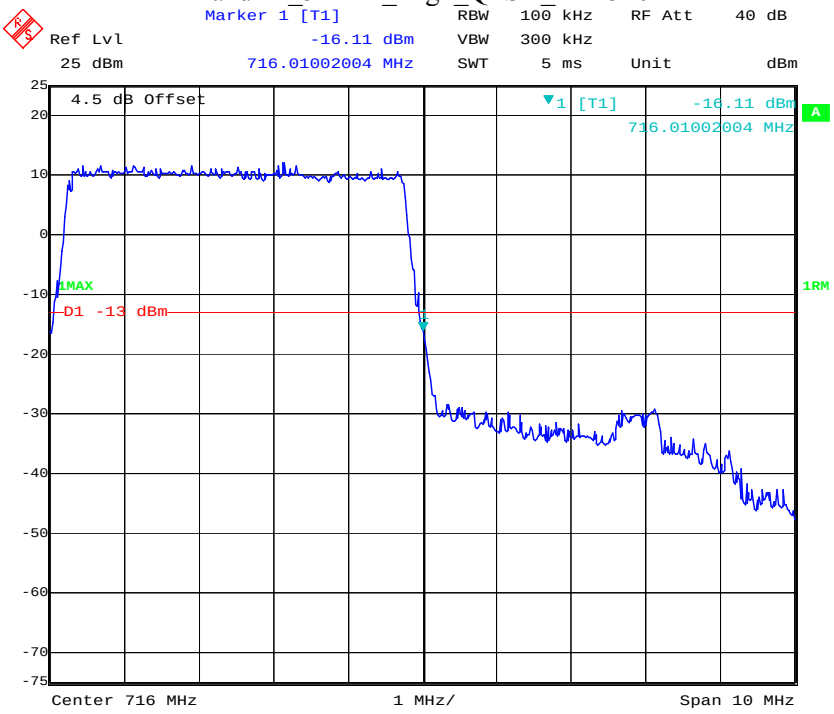
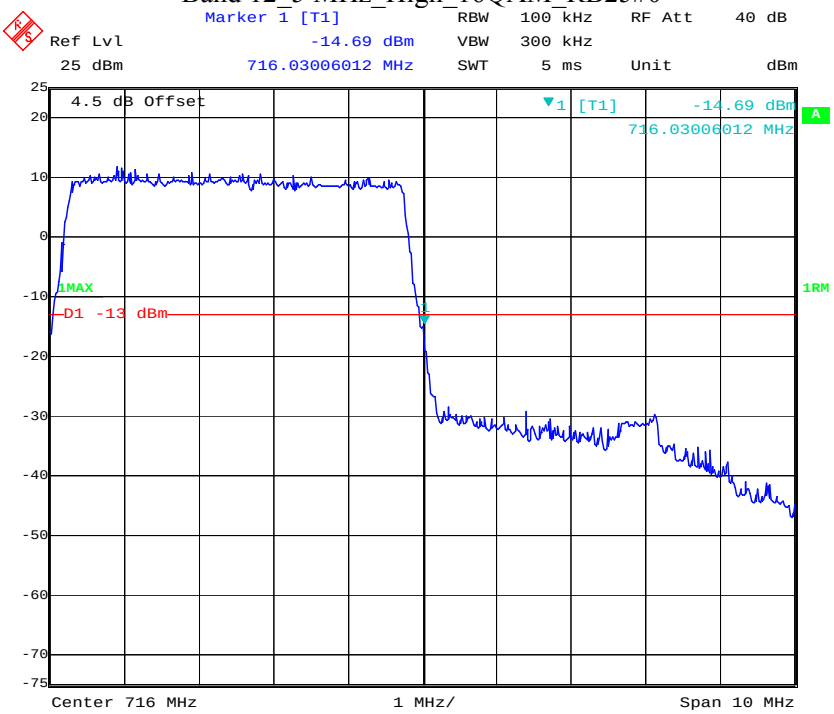
Band 12_5 MHz_High_QPSK_RB25#0



Date: 18.OCT.2019 22:13:12

Band 12_5 MHz_High_16QAM_RB25#0



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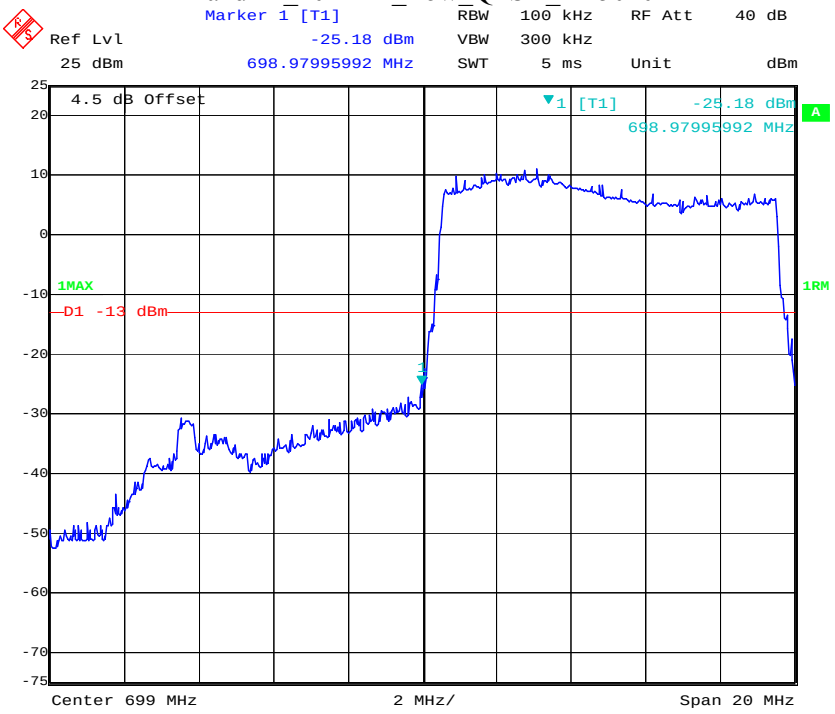
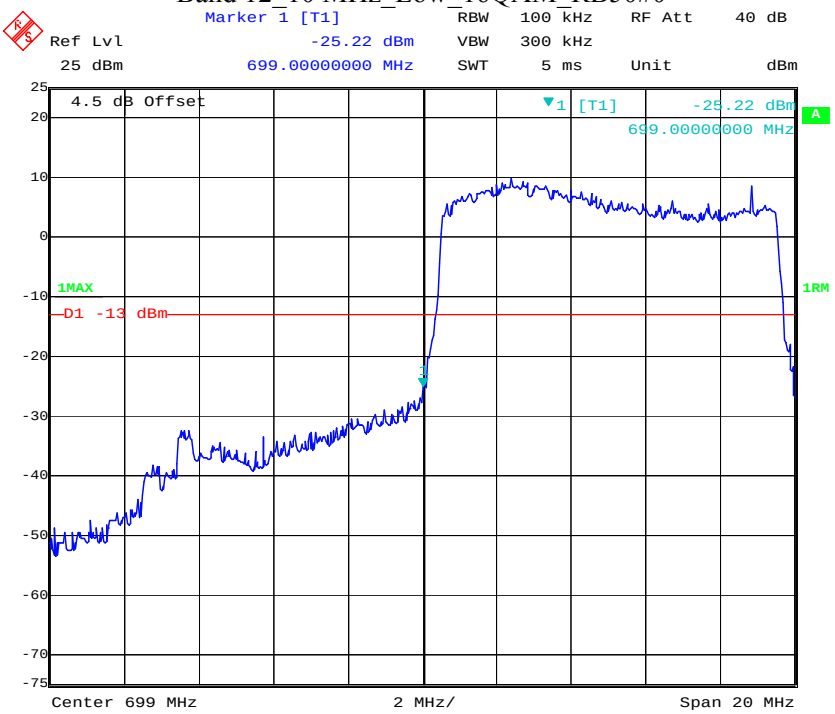
Band 12_10 MHz_Low_QPSK_RB50#0



Date: 18.OCT.2019 22:13:59

Band 12_10 MHz_Low_16QAM_RB50#0



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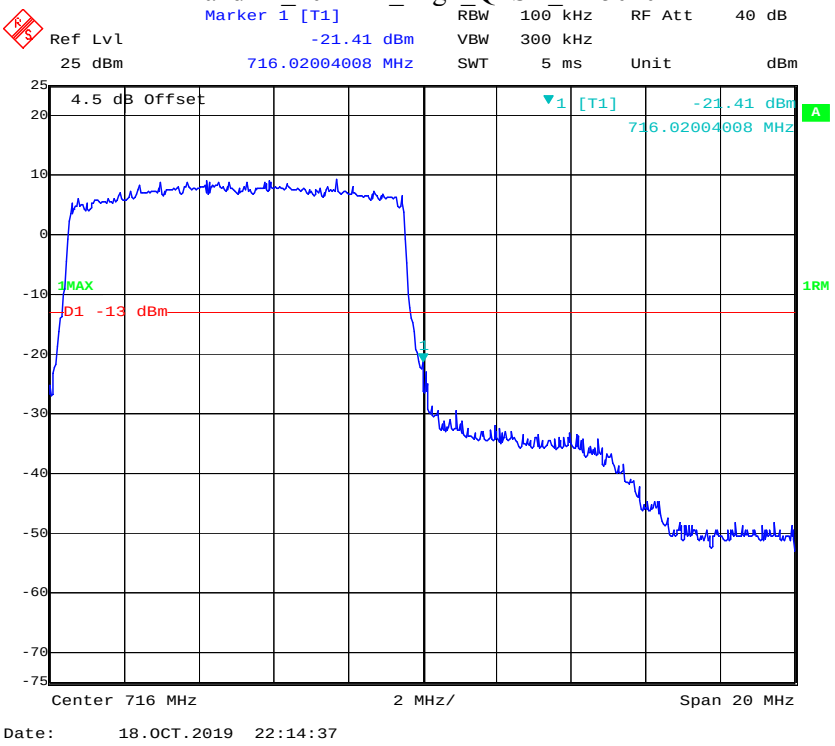
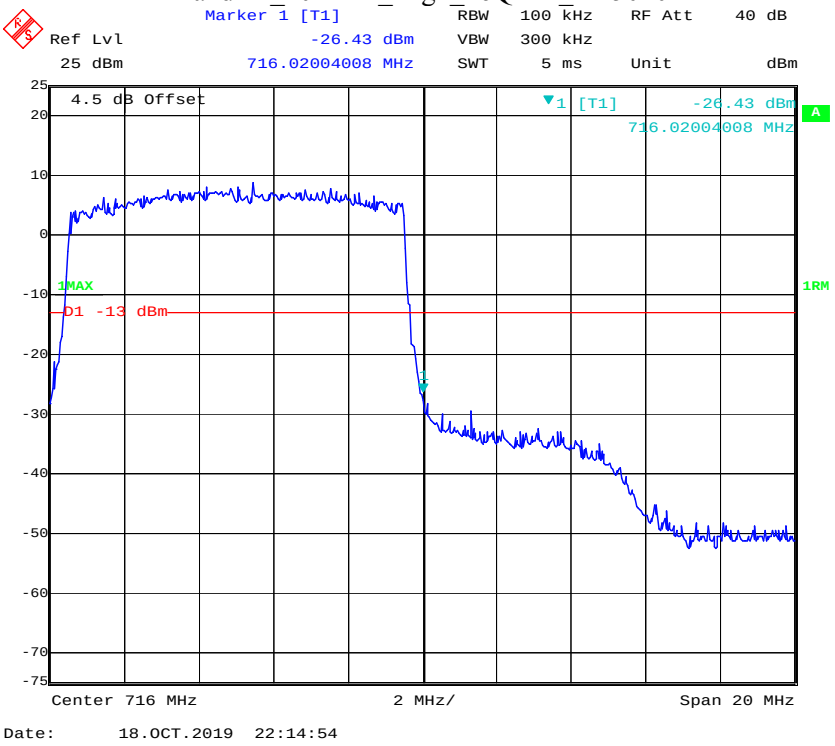
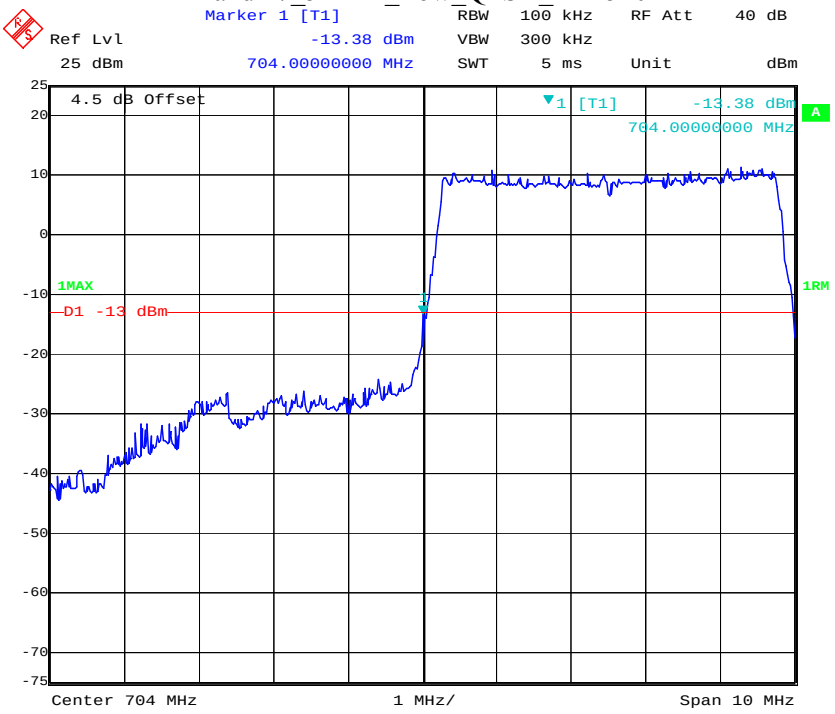
Band 12_10 MHz_High_QPSK_RB50#0



Band 12_10 MHz_High_16QAM_RB50#0

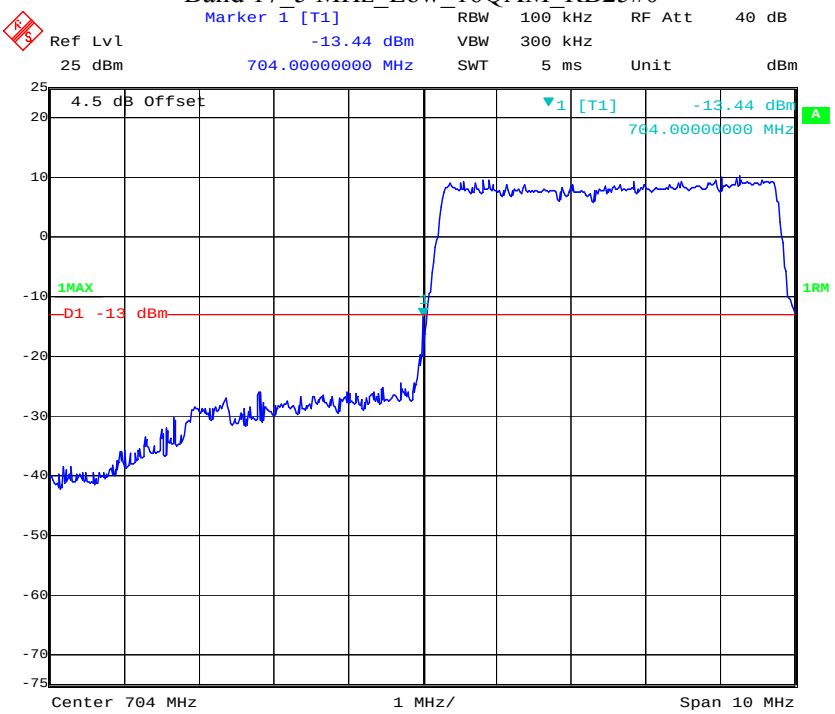


Band 17_5 MHz_Low_QPSK_RB25#0



Date: 18.OCT.2019 22:15:20

Band 17_5 MHz_Low_16QAM_RB25#0



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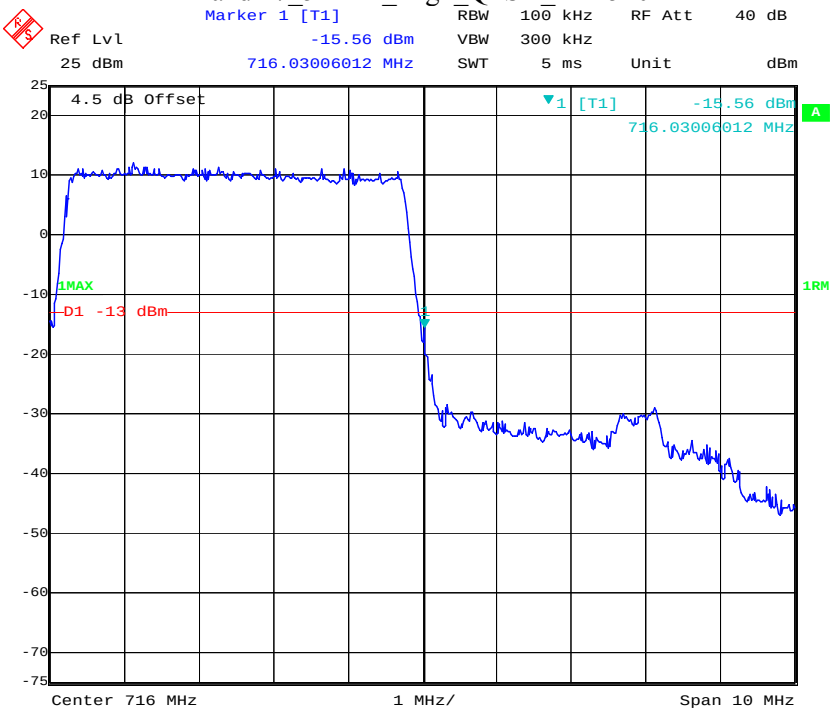
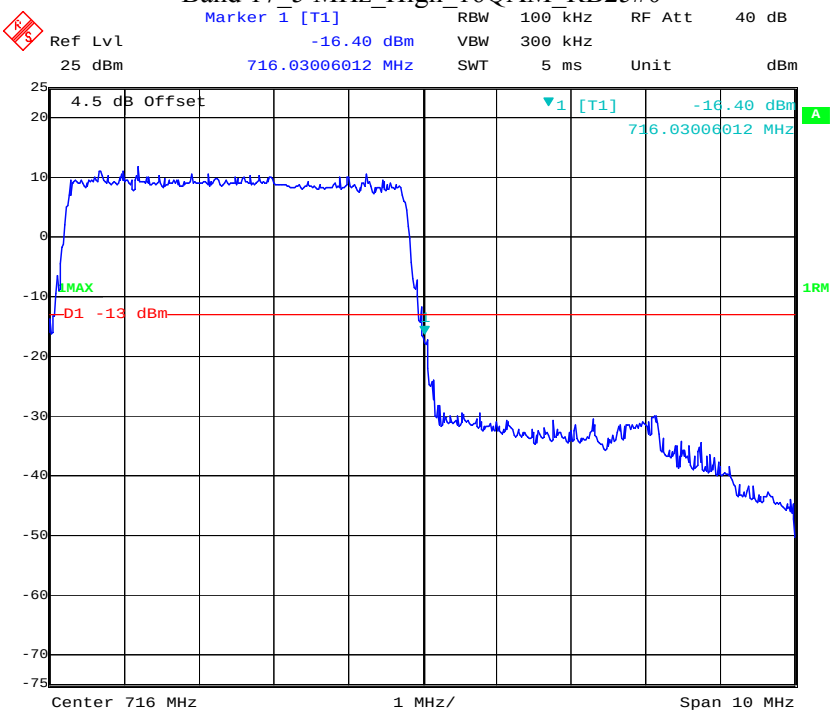
Band 17_5 MHz_High_QPSK_RB25#0



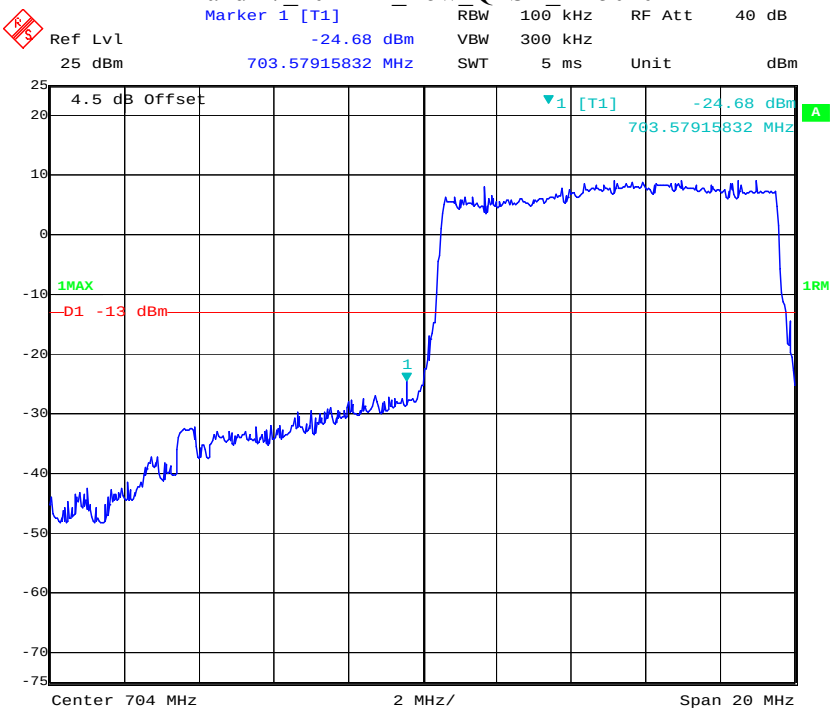
Date: 18.OCT.2019 22:16:00

Band 17_5 MHz_High_16QAM_RB25#0



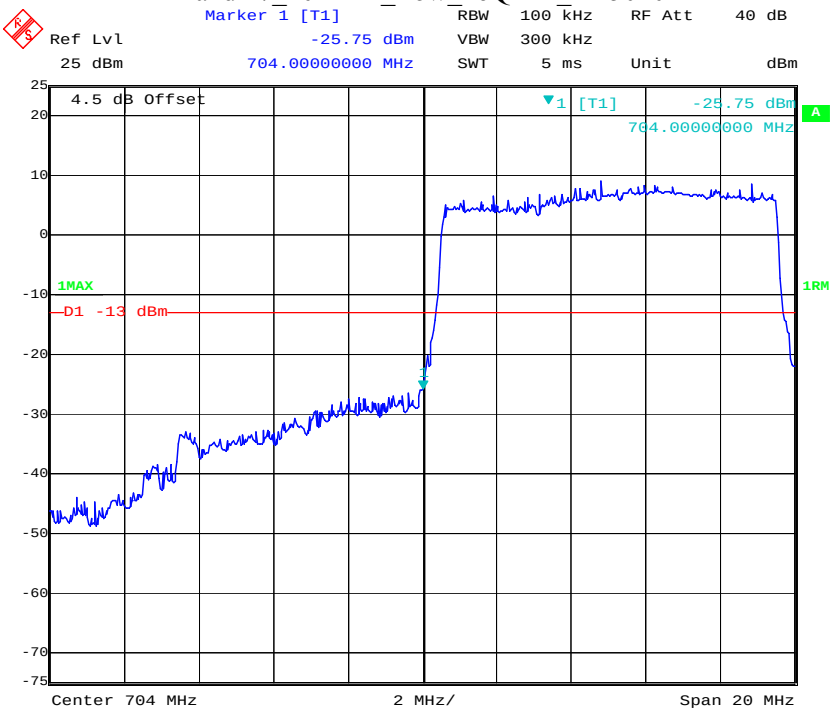
Date: 18.OCT.2019 22:16:19

Band 17_10 MHz_Low_QPSK_RB50#0



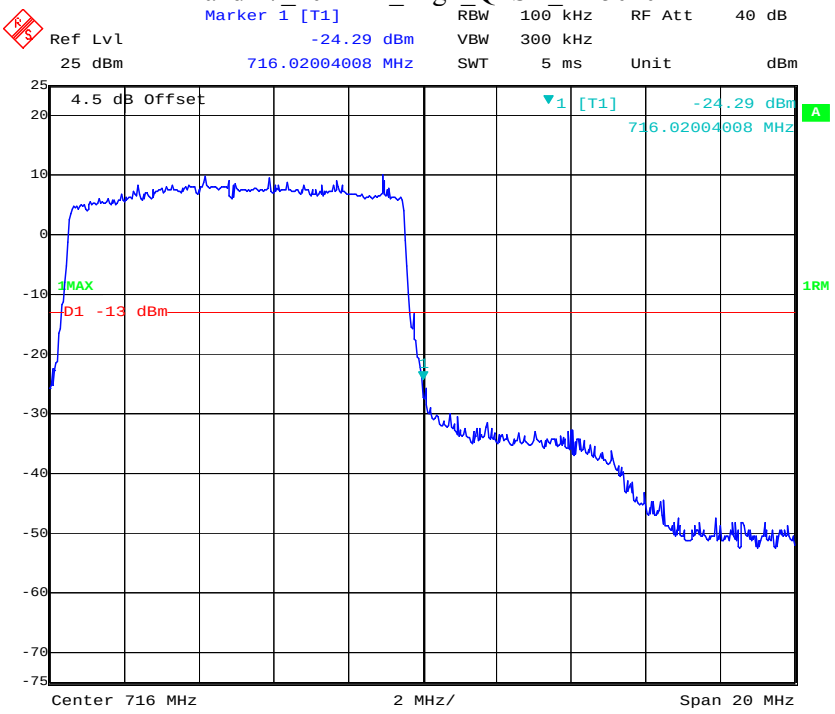
Date: 18.OCT.2019 22:16:46

Band 17_10 MHz_Low_16QAM_RB50#0



Date: 18.OCT.2019 22:17:07

Band 17_10 MHz_High_QPSK_RB50#0



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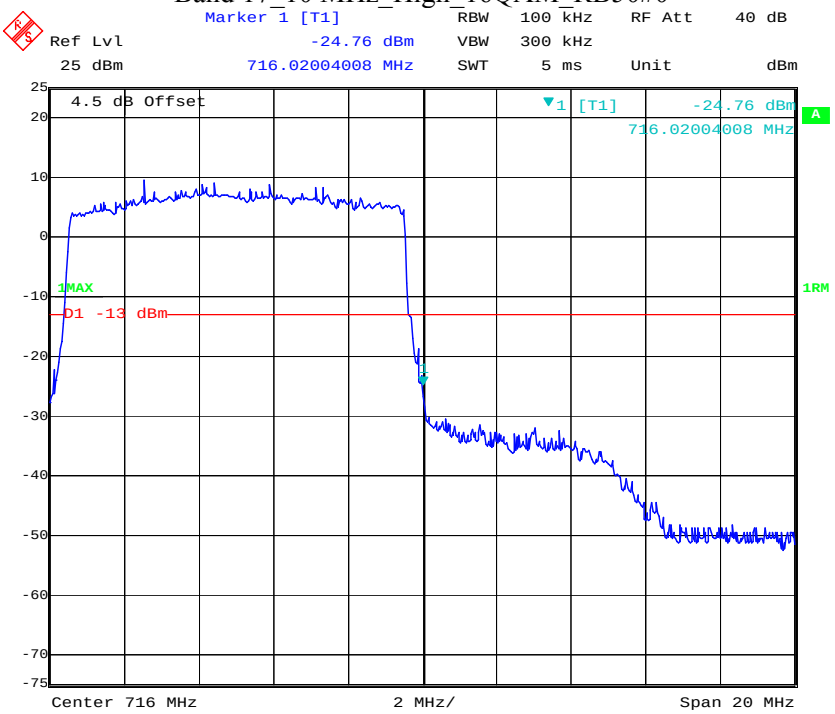
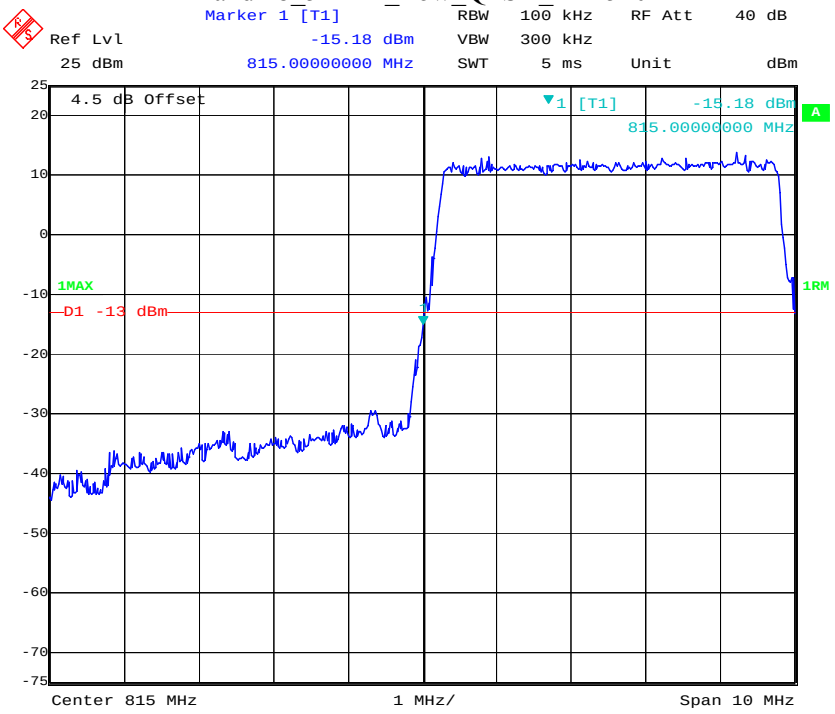


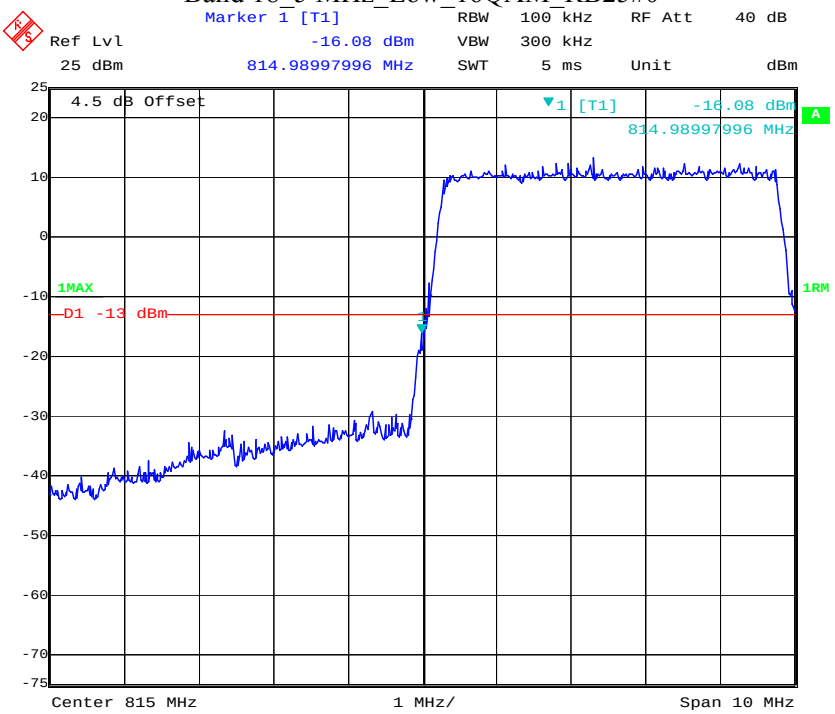
Date: 18.OCT.2019 22:17:48

Band 18_5 MHz_Low_QPSK_RB25#0



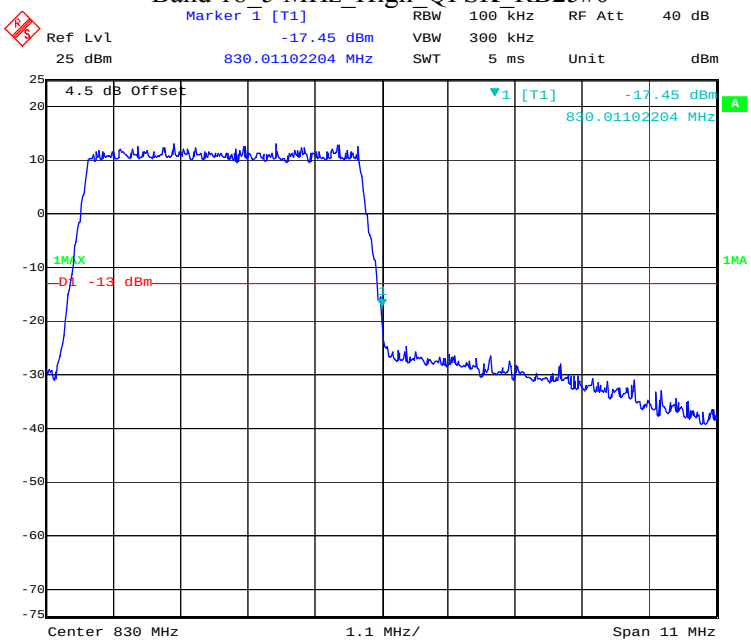
Date: 18.OCT.2019 22:18:34

Band 18_5 MHz_Low_16QAM_RB25#0

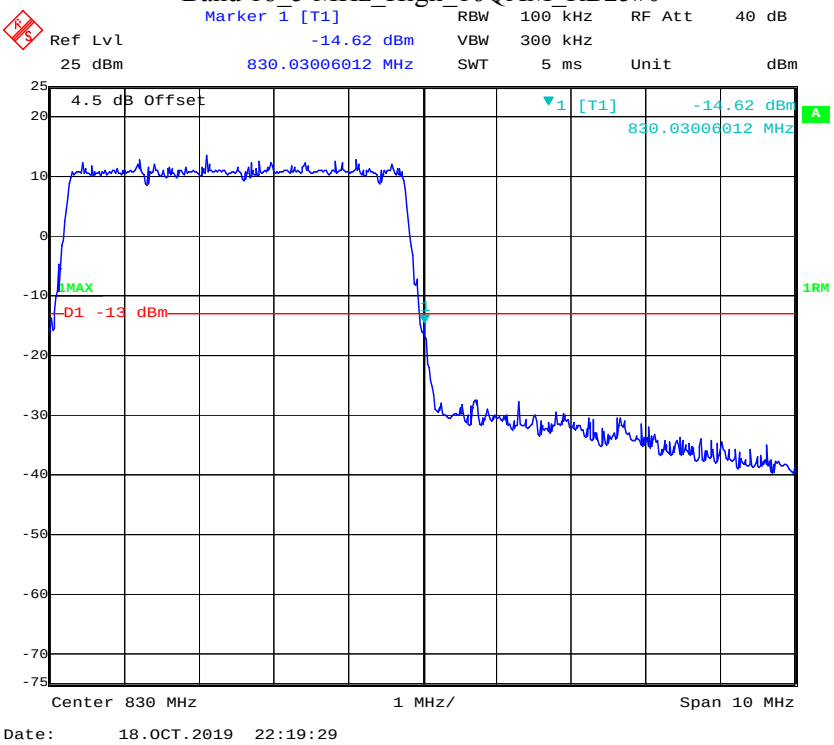


Date: 18.OCT.2019 22:18:53

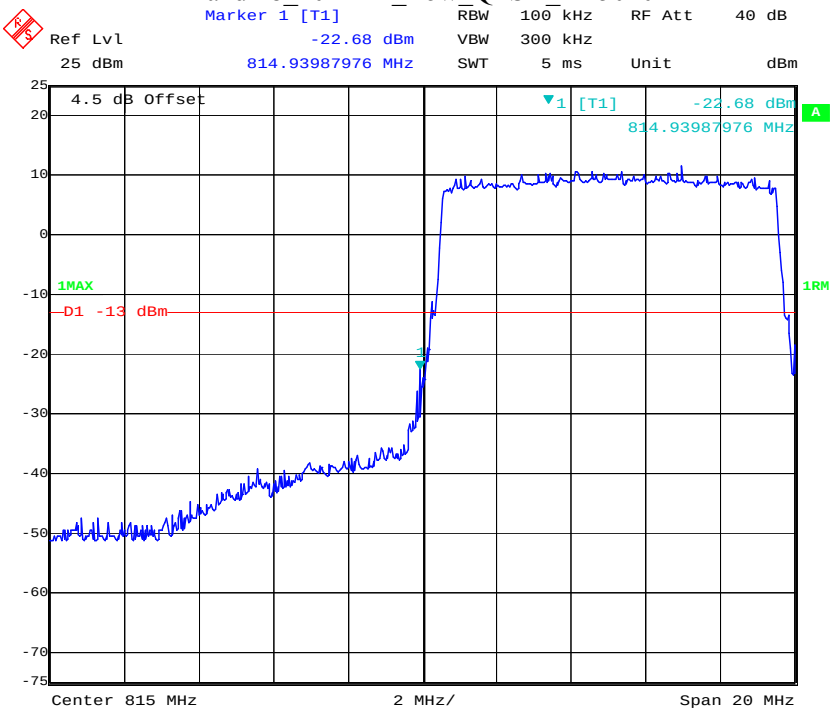
Band 18_5 MHz_High_QPSK_RB25#0



Band 18_5 MHz_High_16QAM_RB25#0



Band 18_10 MHz_Low_QPSK_RB50#0



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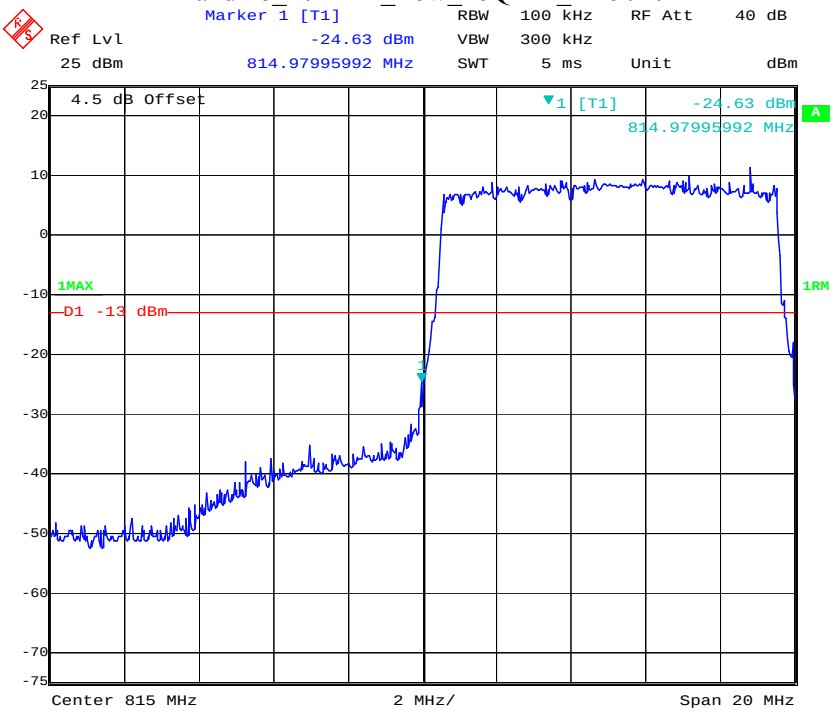
Band 18_10 MHz_Low_16QAM_RB50#0



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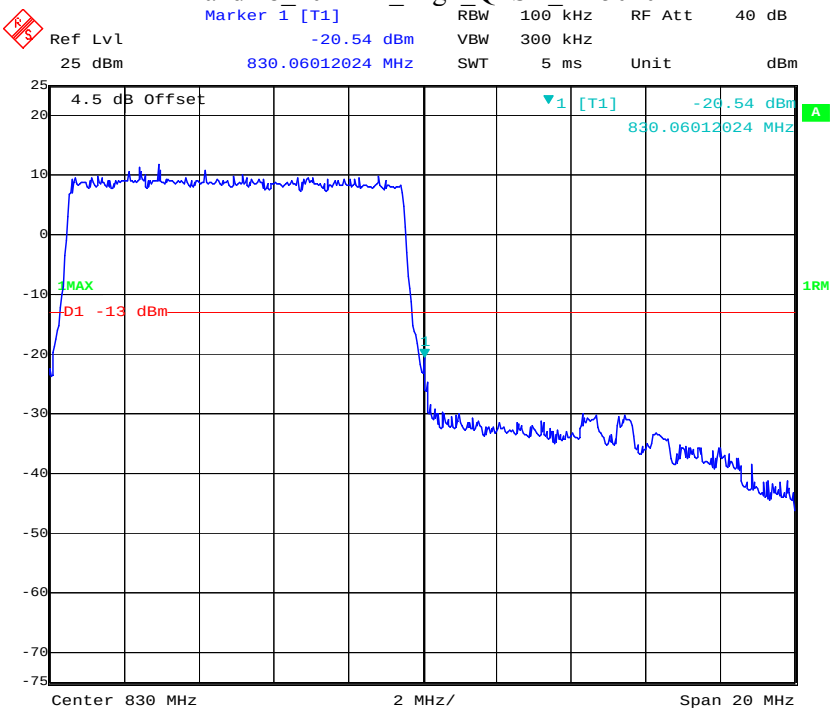
Band 18_10 MHz_High_QPSK_RB50#0



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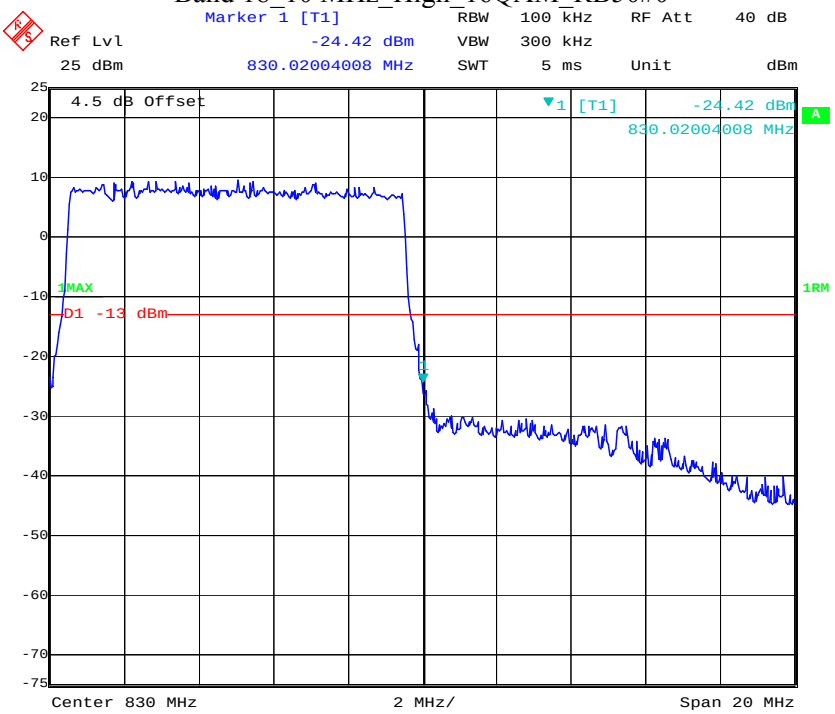
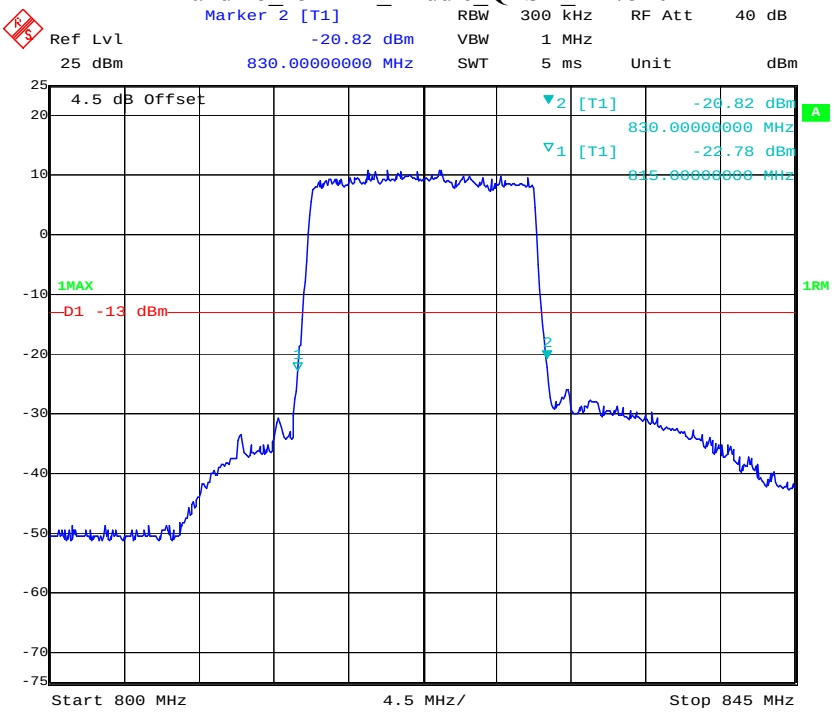
Band 18_10 MHz_High_16QAM_RB50#0



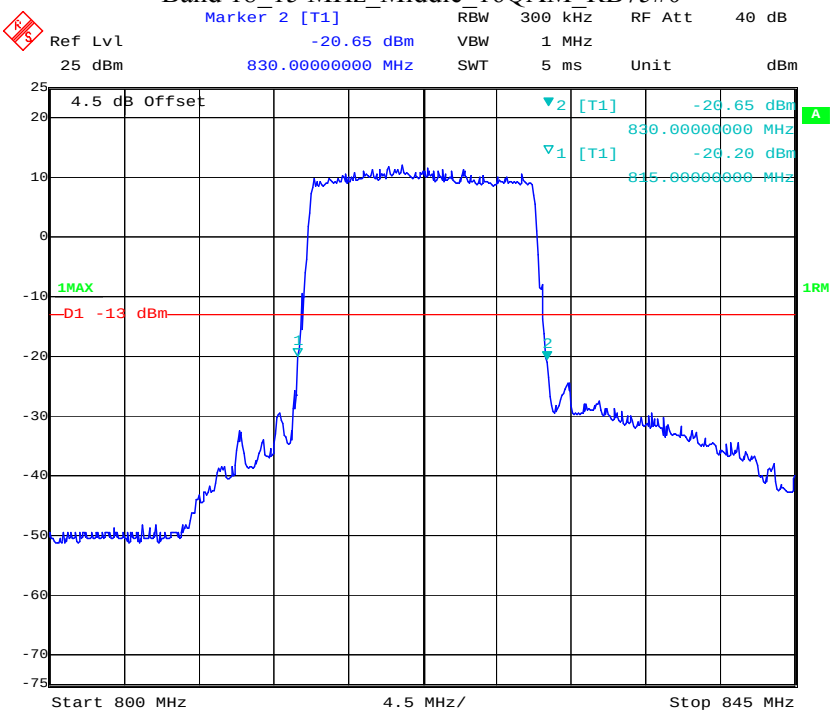
Date: 18.OCT.2019 22:20:53

Band 18_15 MHz_Middle_QPSK_RB75#0



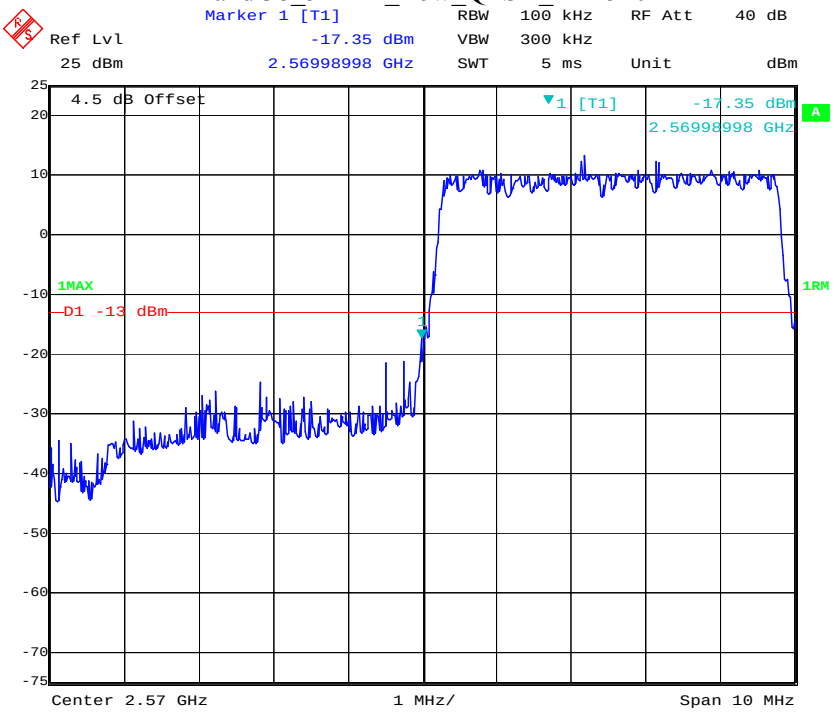
Date: 19.OCT.2019 00:17:54

Band 18_15 MHz_Middle_16QAM_RB75#0



Date: 19.OCT.2019 00:15:53

Band 38_5 MHz_Low_QPSK_RB25#0



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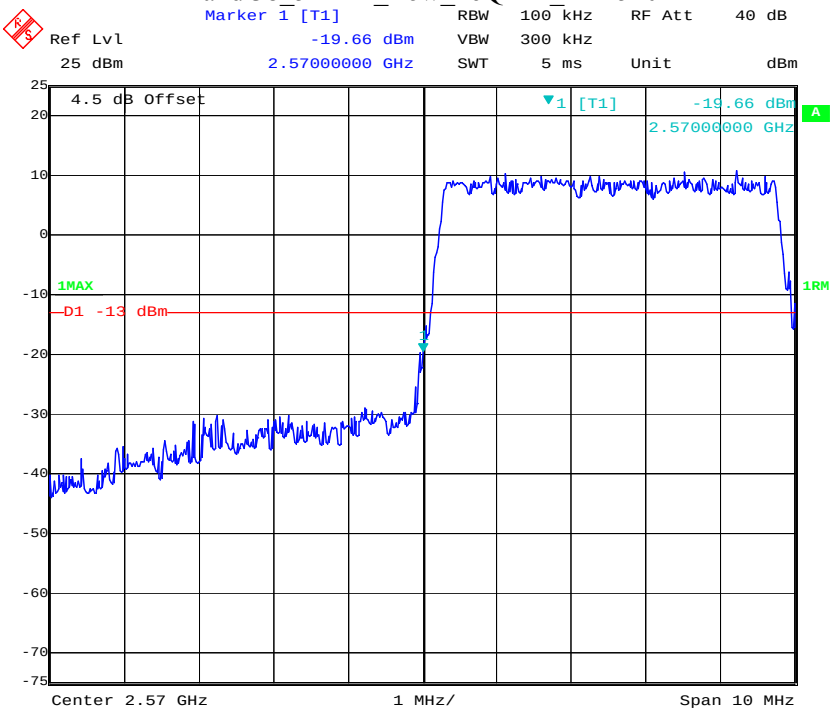
Band 38_5 MHz_Low_16QAM_RB25#0



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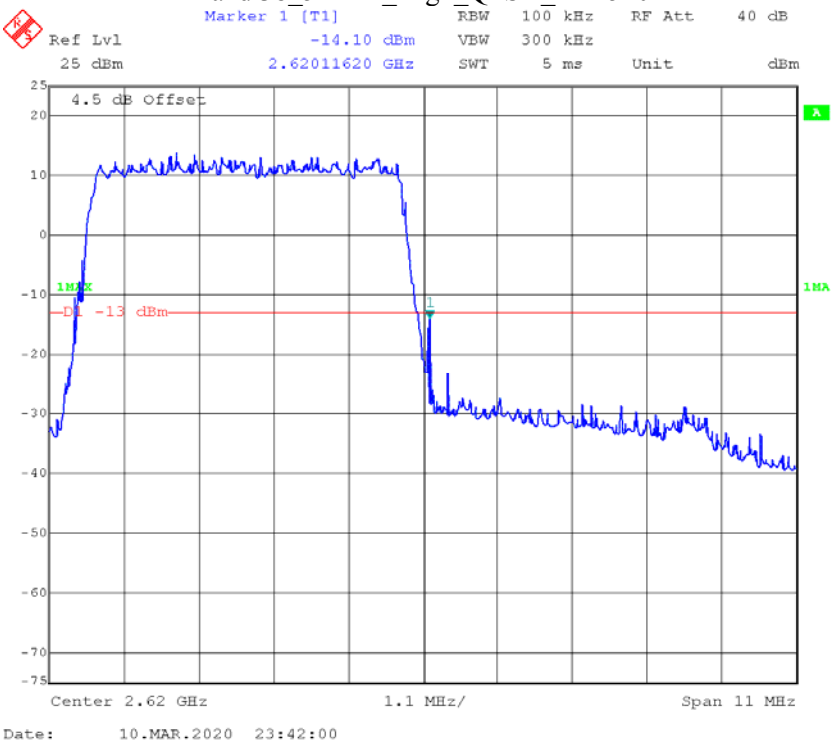
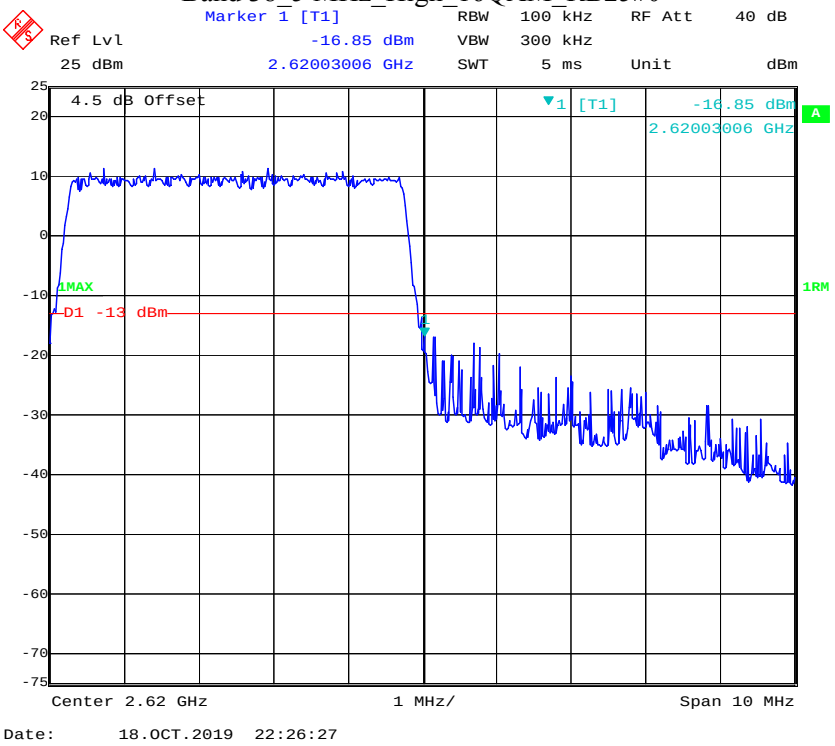
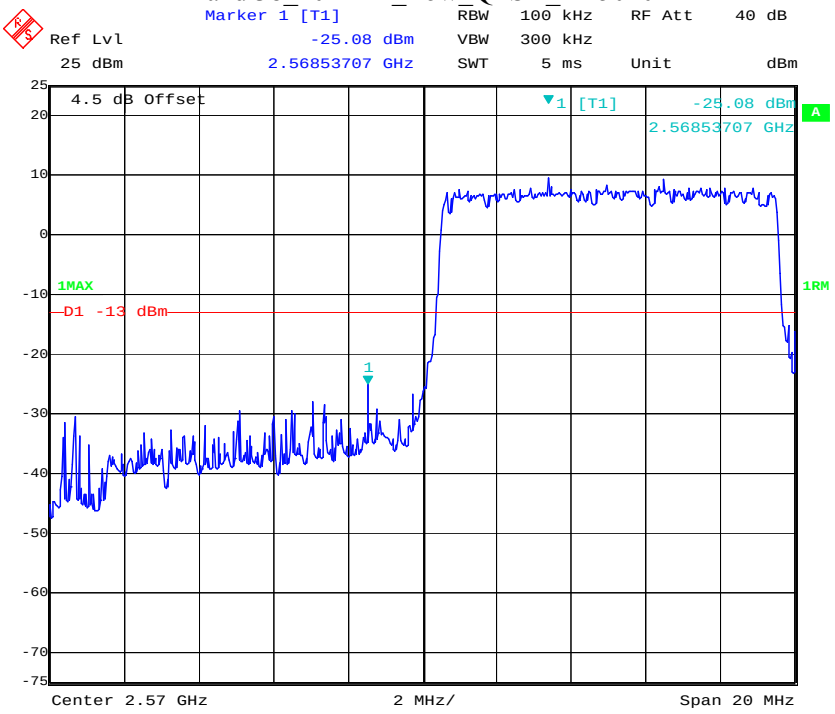
Band 38_5 MHz_High_QPSK_RB25#0



Band 38_5 MHz_High_16QAM_RB25#0

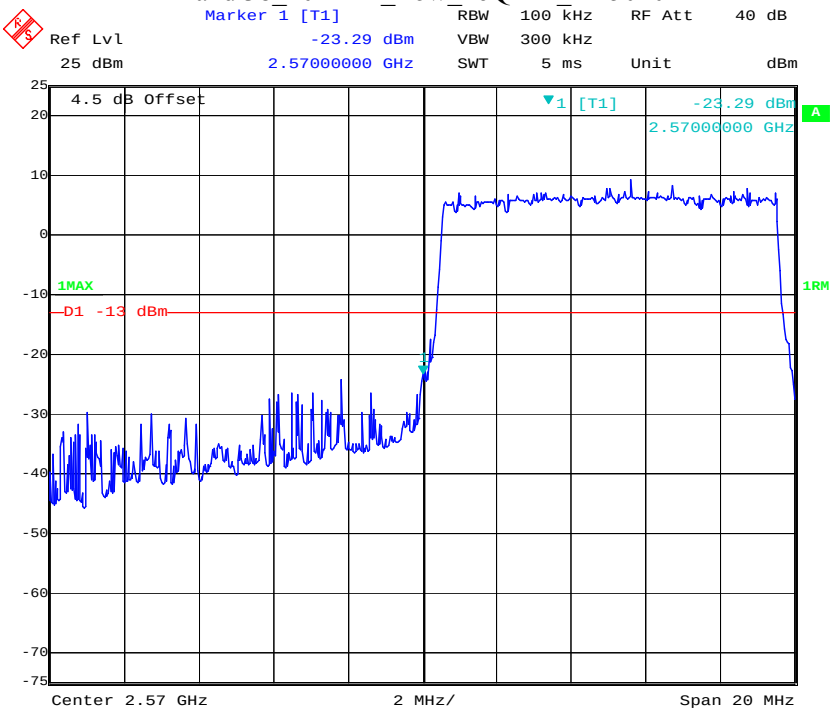


Band 38_10 MHz_Low_QPSK_RB50#0



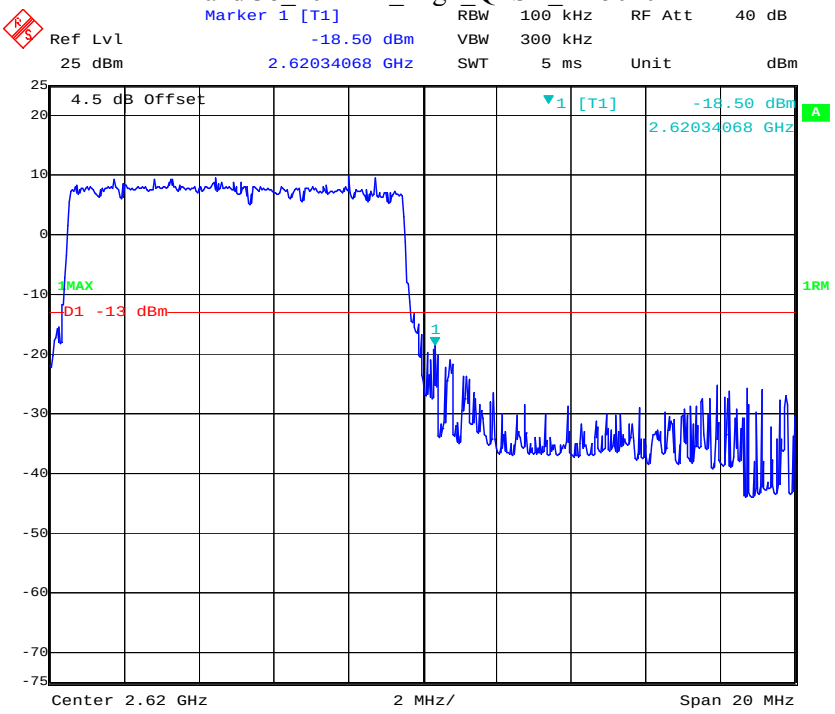
Date: 18.OCT.2019 22:27:24

Band 38_10 MHz_Low_16QAM_RB50#0



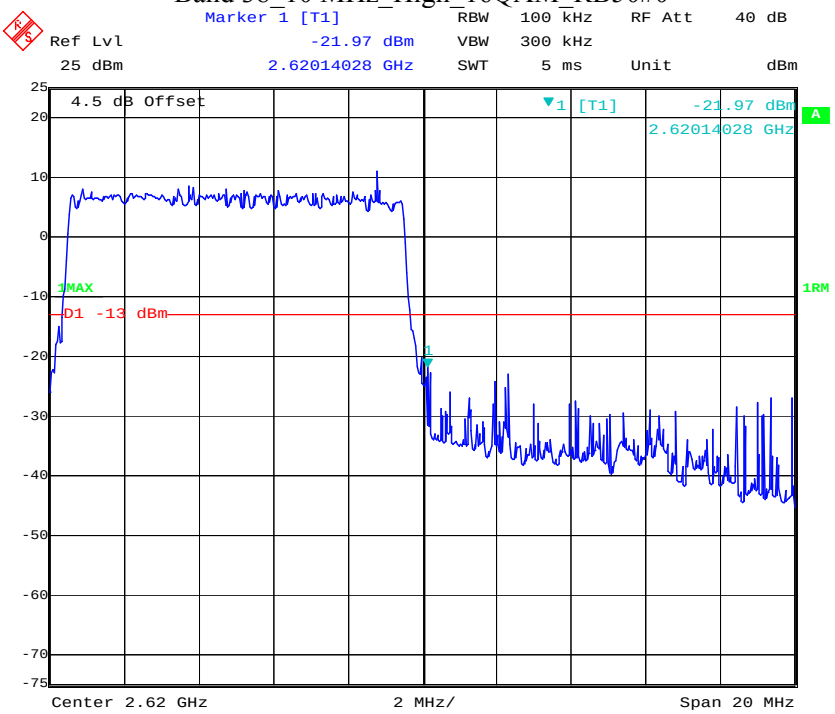
Date: 18.OCT.2019 22:27:57

Band 38_10 MHz_High_QPSK_RB50#0



Date: 18.OCT.2019 22:28:28

Band 38_10 MHz_High_16QAM_RB50#0



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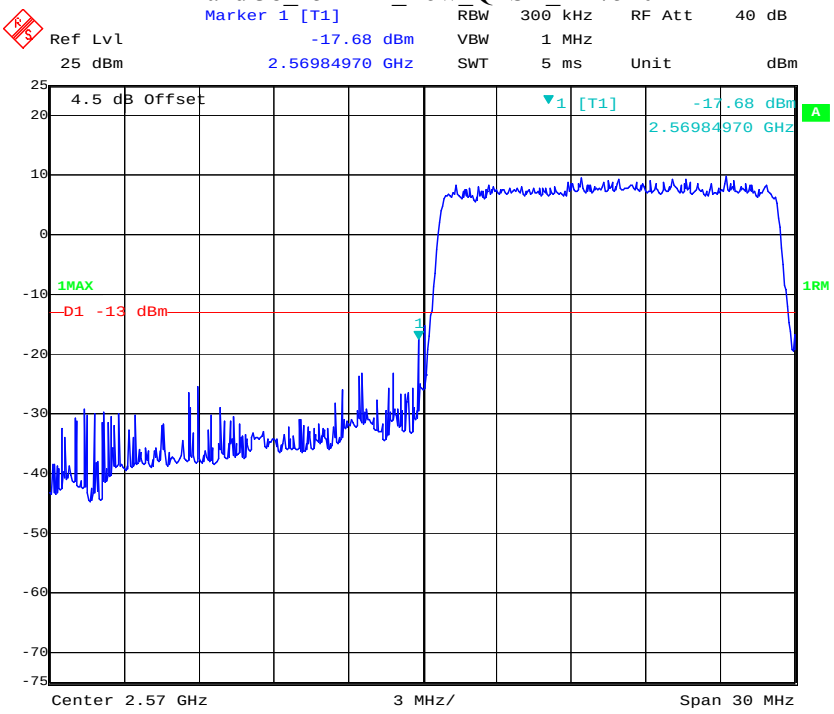
Band 38_15 MHz_Low_QPSK_RB75#0



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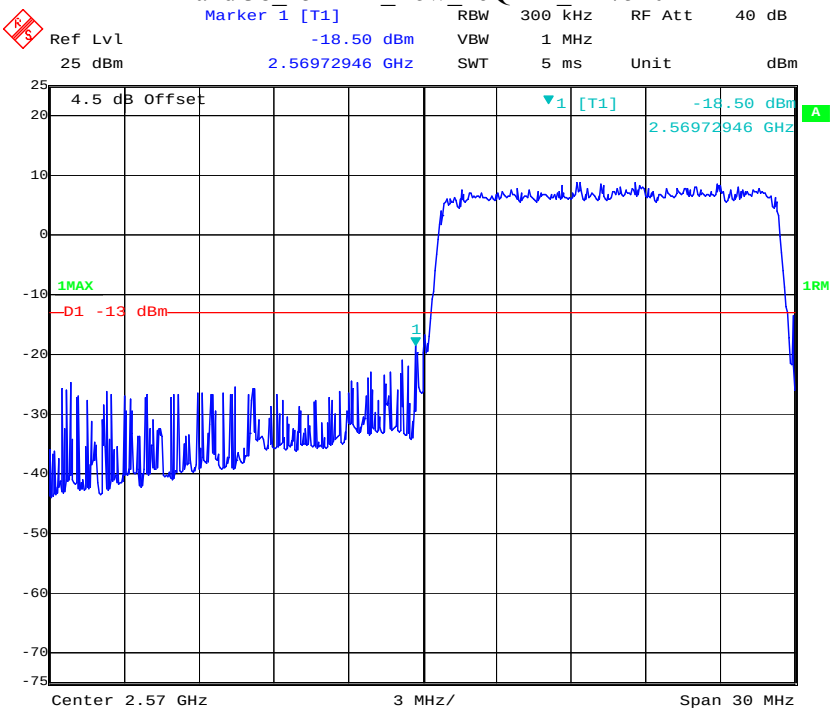
Band 38_15 MHz_Low_16QAM_RB75#0



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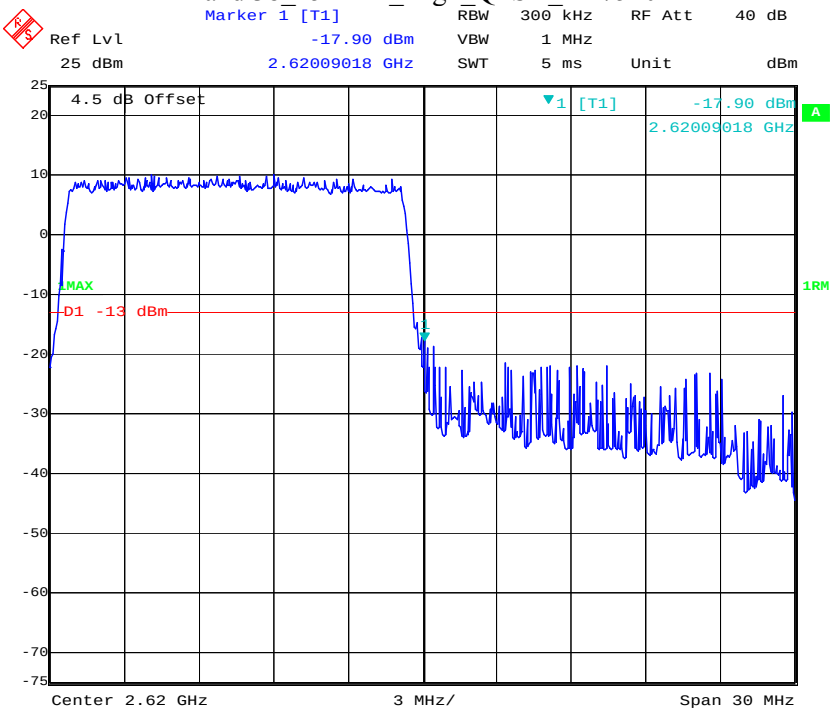
Band 38_15 MHz_High_QPSK_RB75#0



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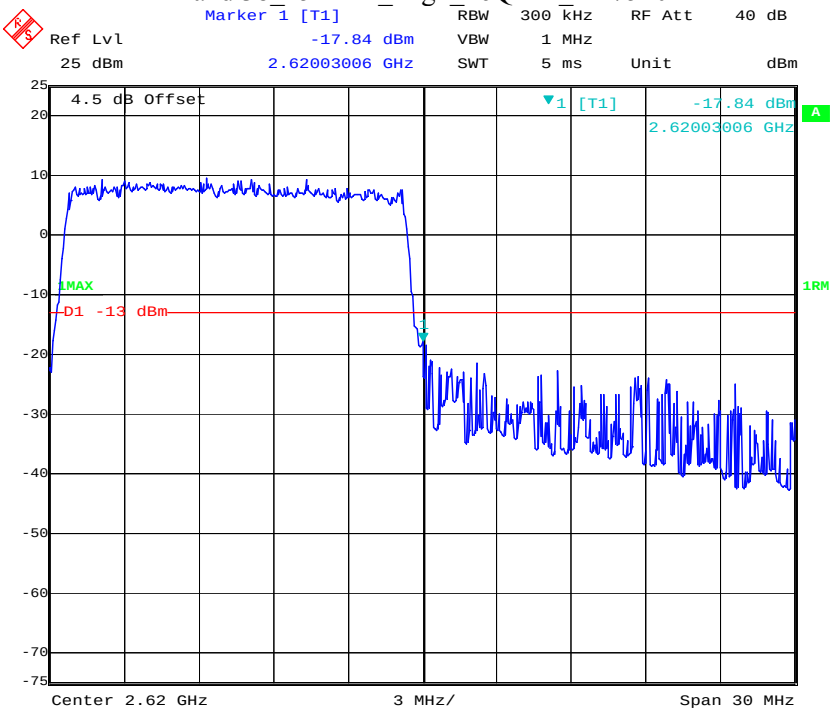
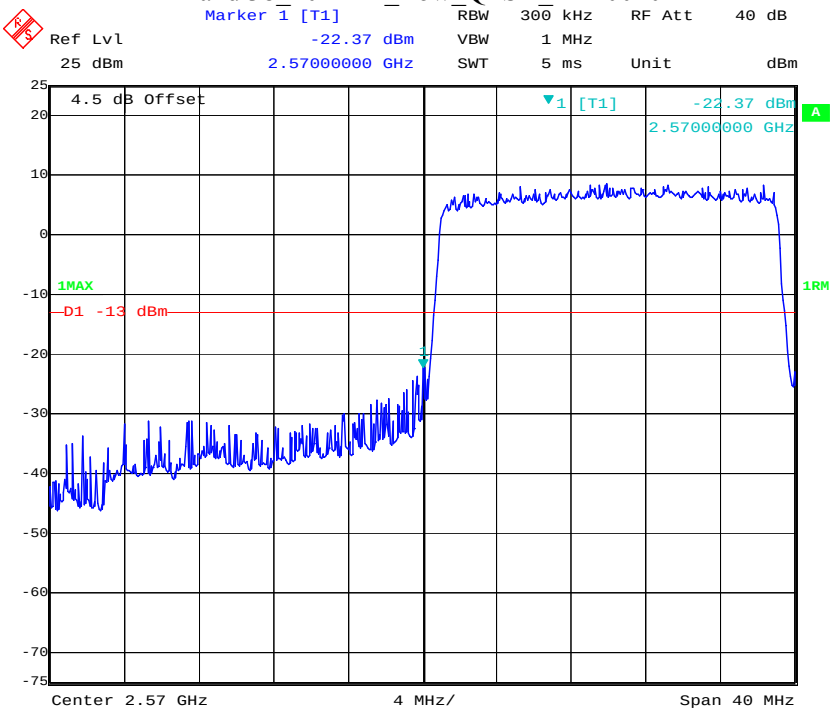
Band 38_15 MHz_High_16QAM_RB75#0



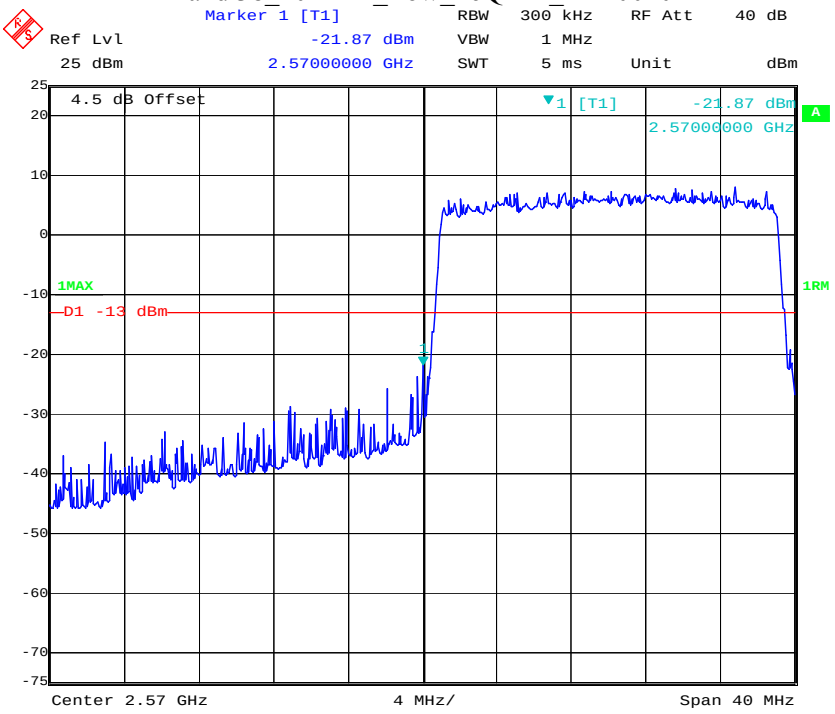
Date: 18.OCT.2019 22:30:57

Band 38_20 MHz_Low_QPSK_RB100#0



Date: 18.OCT.2019 22:31:34

Band 38_20 MHz_Low_16QAM_RB100#0



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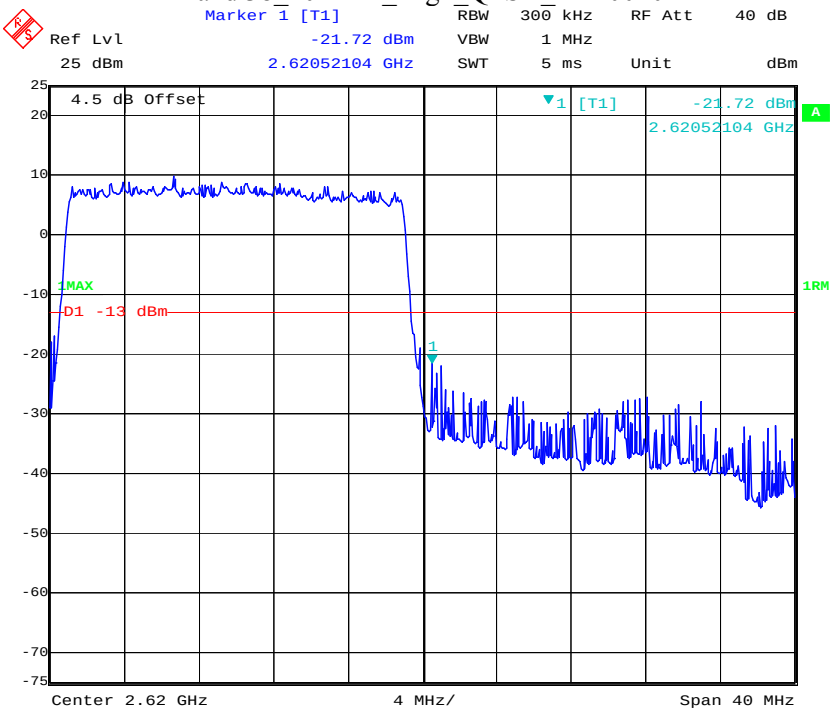

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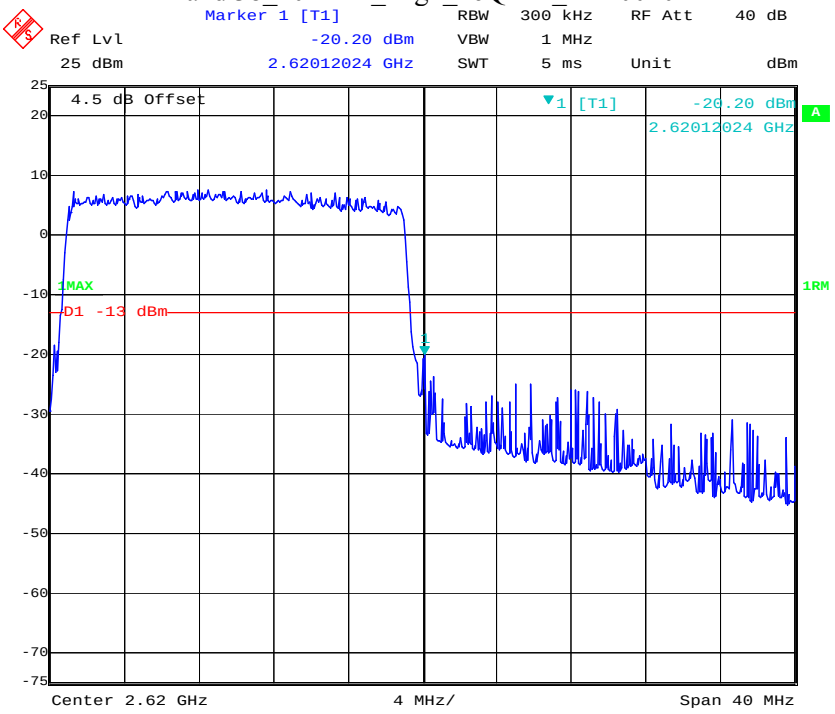
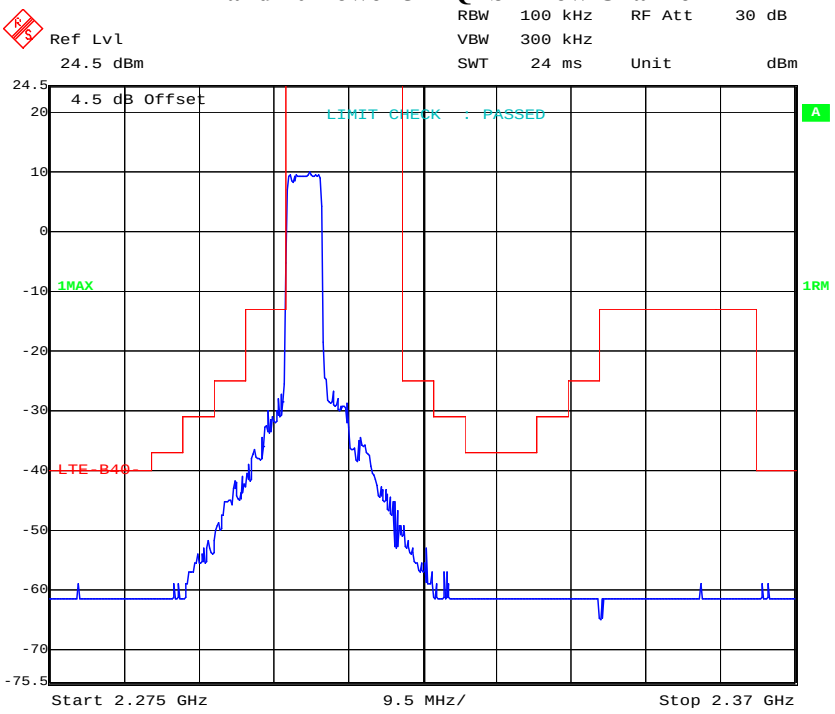
Band 38_20 MHz_High_16QAM_RB100#0



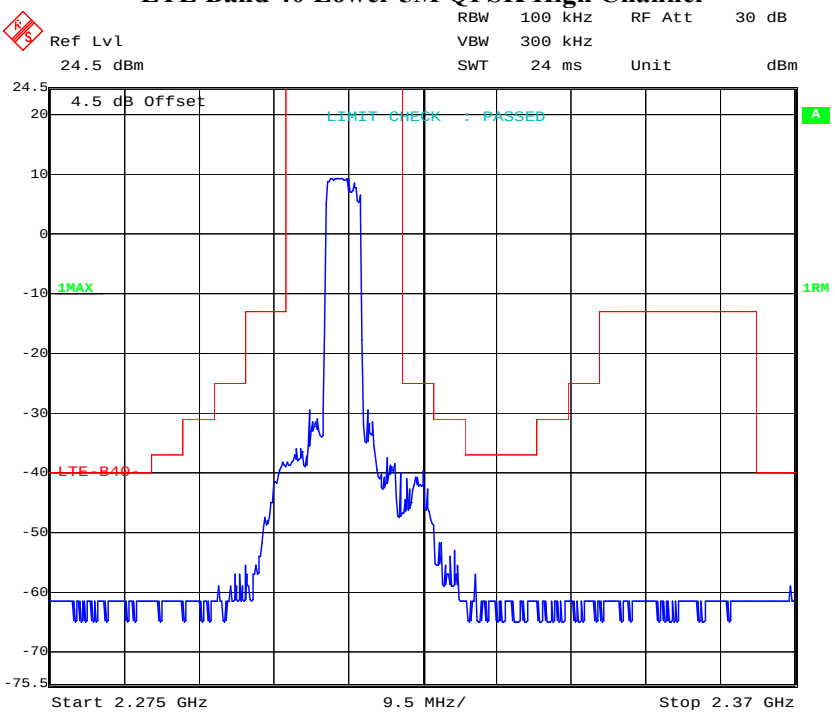
Date: 18.OCT.2019 22:32:56

LTE Band 40 Lower 5M QPSK Low Channel



Date: 25.OCT.2019 17:52:26

LTE Band 40 Lower 5M QPSK High Channel



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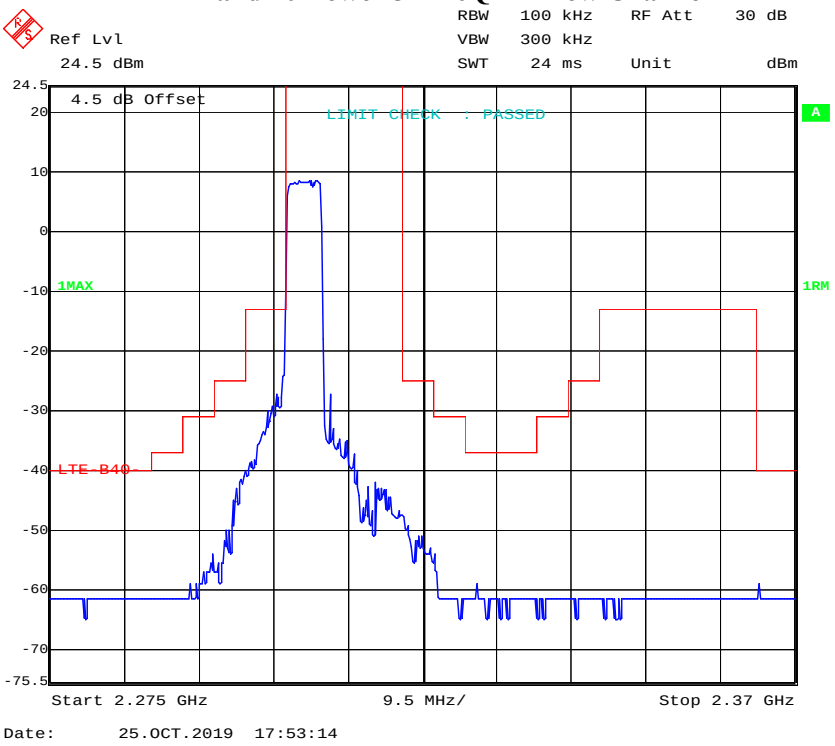
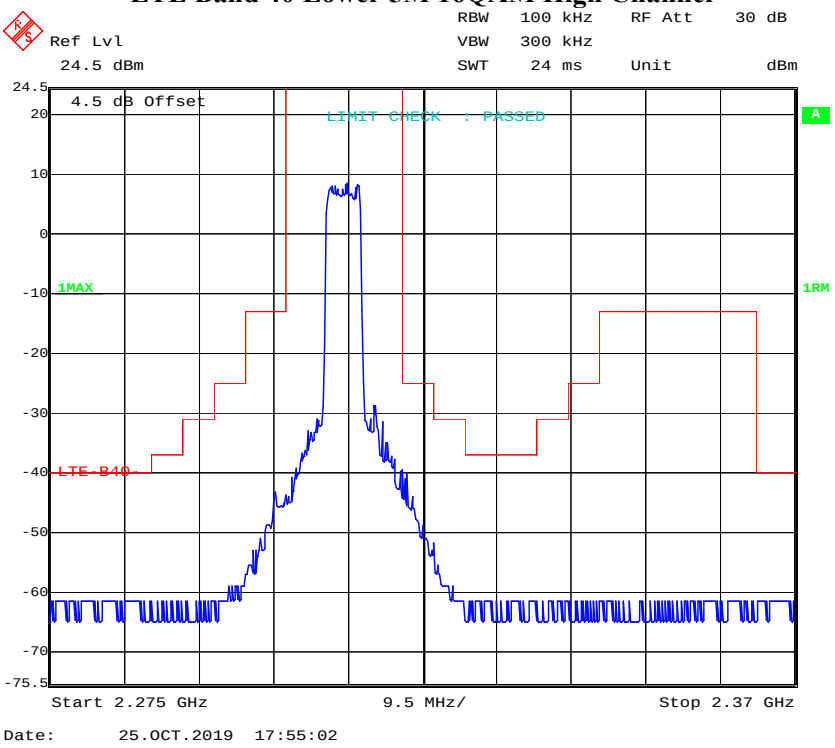
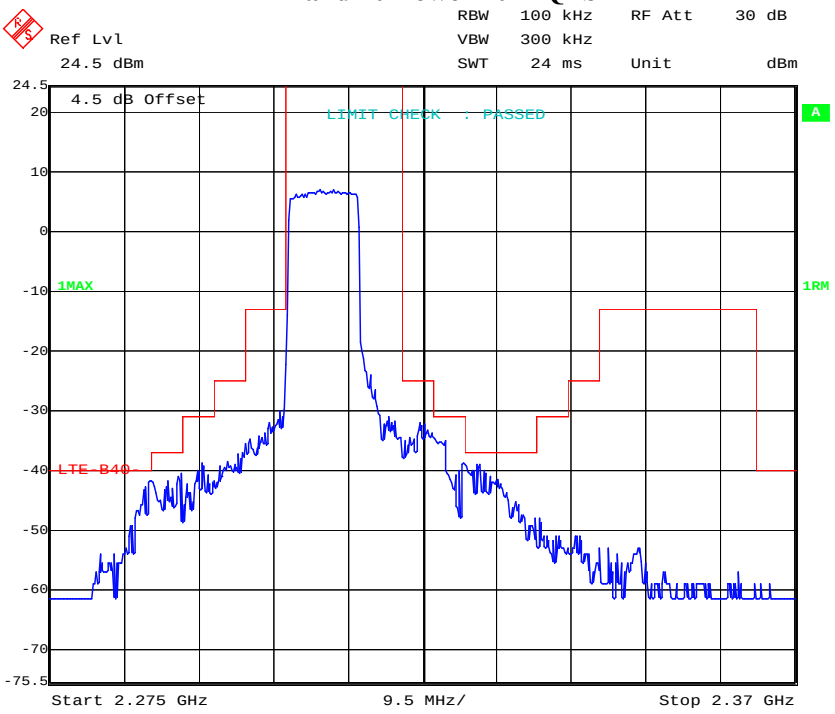
LTE Band 40 Lower 5M 16QAM Low Channel



LTE Band 40 Lower 5M 16QAM High Channel



LTE Band 40 Lower 10M QPSK



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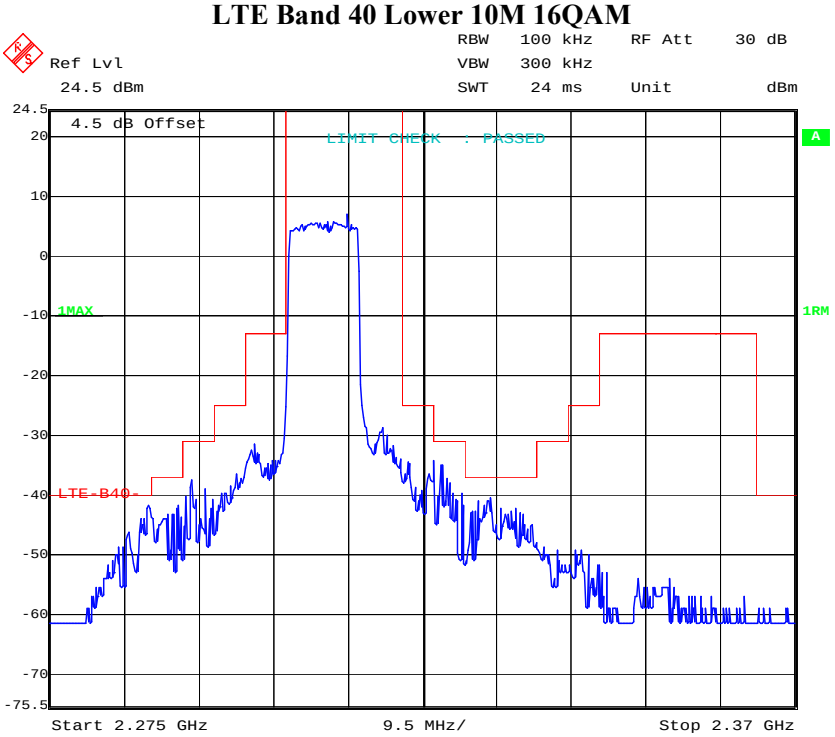
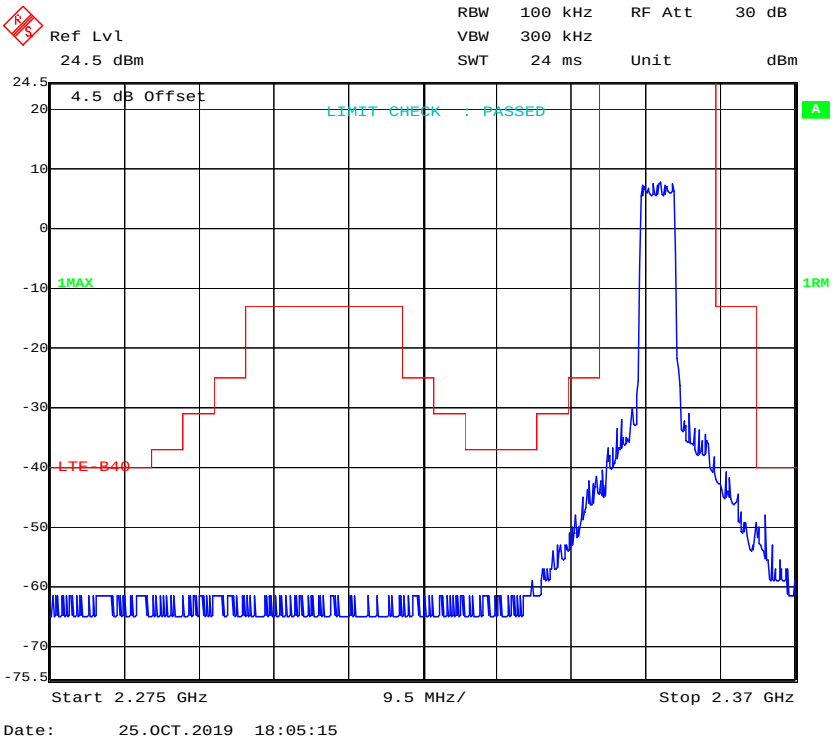
LTE Band 40 Lower 10M 16QAM

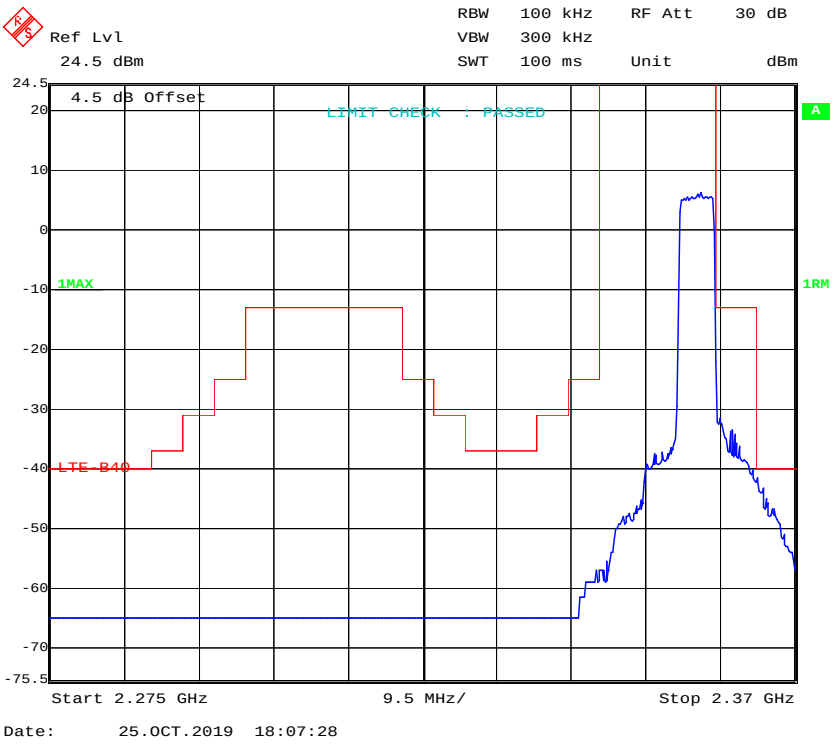


Date: 25.OCT.2019 17:58:06

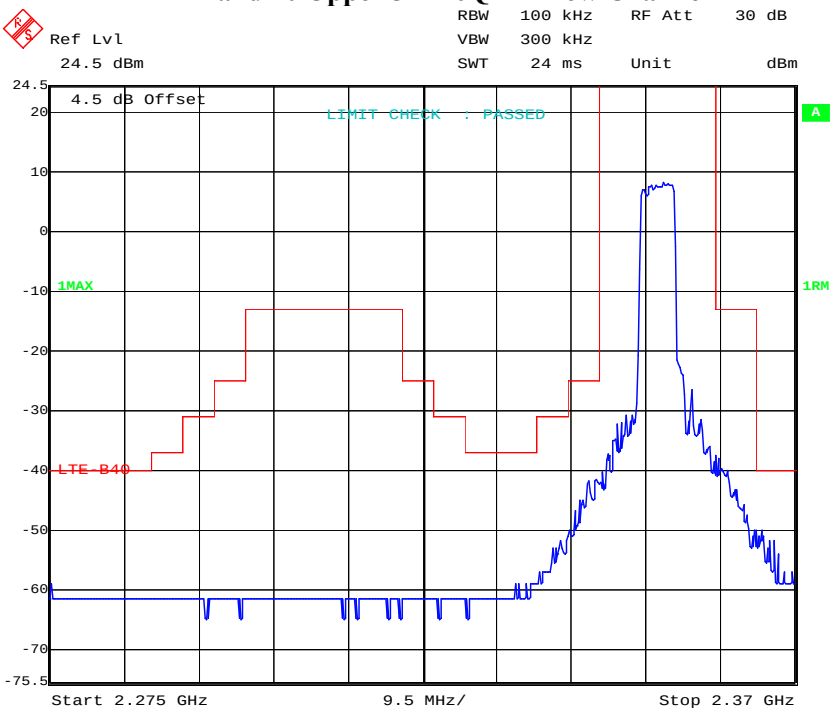
LTE Band 40 Upper 5M QPSK Low Channel



LTE Band 40 Upper 5M QPSK High Channel

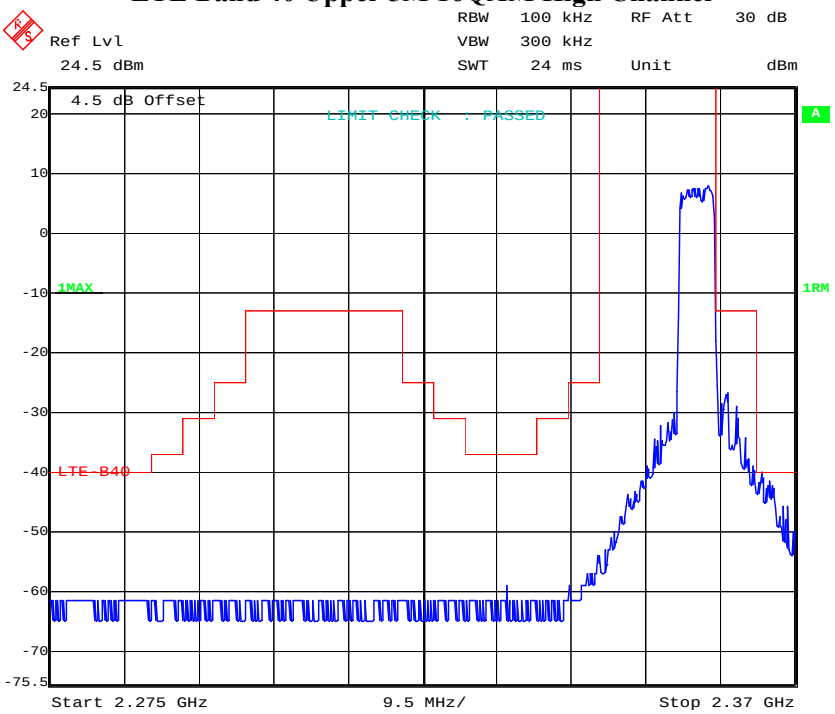


LTE Band 40 Upper 5M 16QAM Low Channel



Date: 25.OCT.2019 18:05:57

LTE Band 40 Upper 5M 16QAM High Channel



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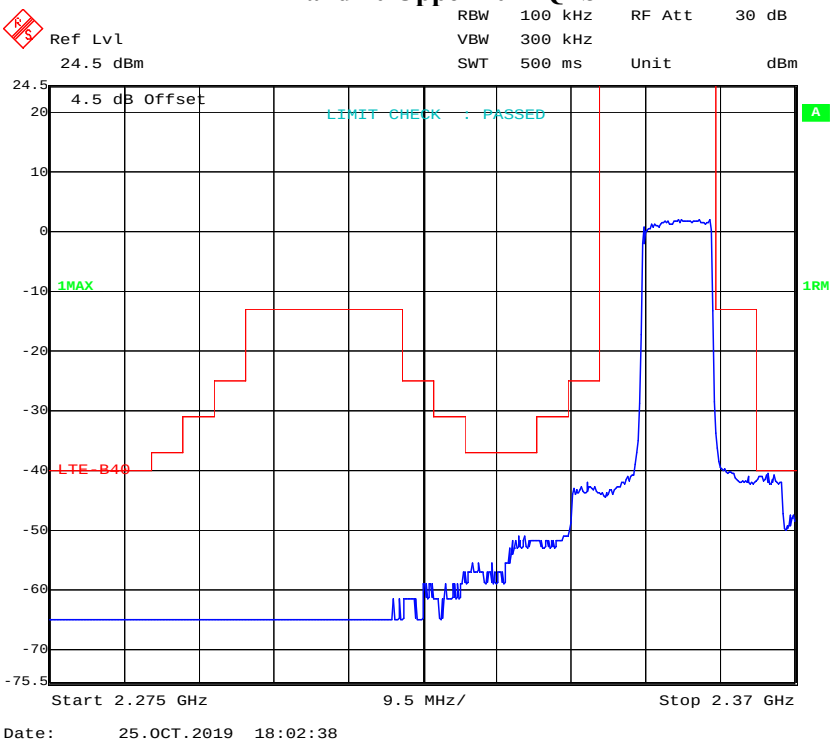
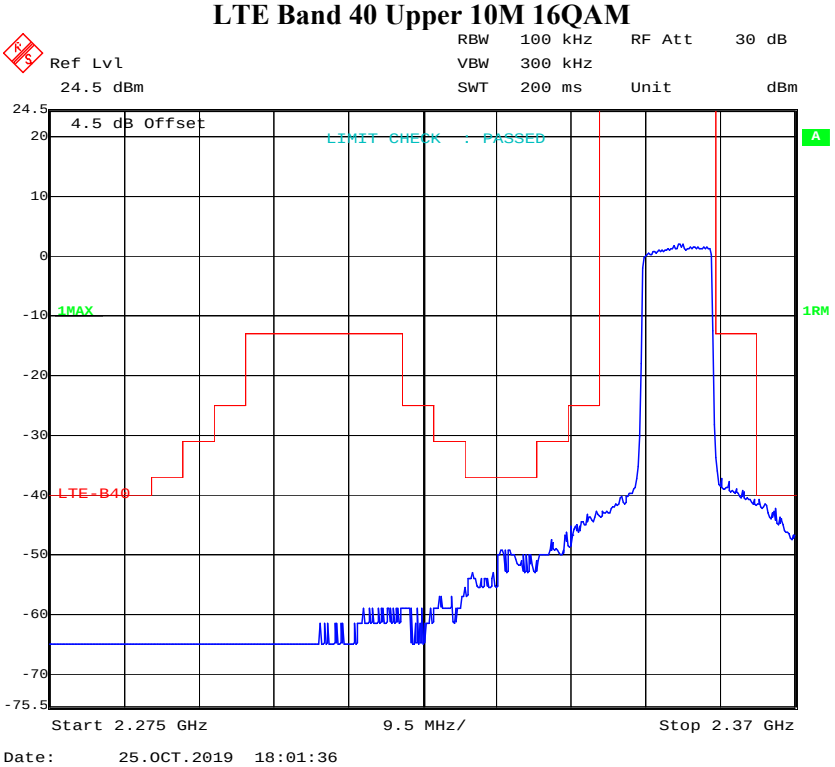
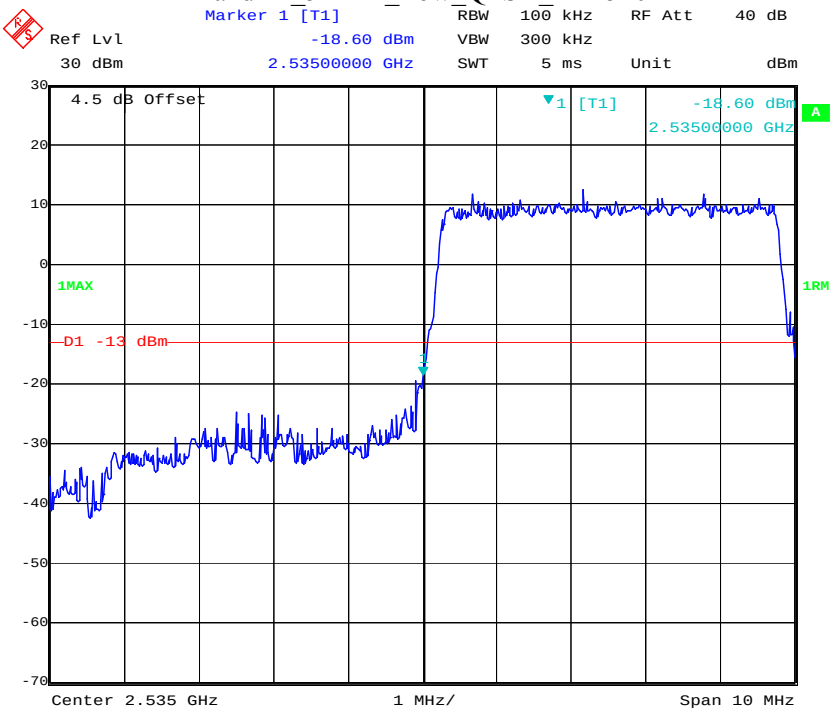
LTE Band 40 Upper 10M QPSK



LTE Band 40 Upper 10M 16QAM



Band 41_5 MHz_Low_QPSK_RB25#0



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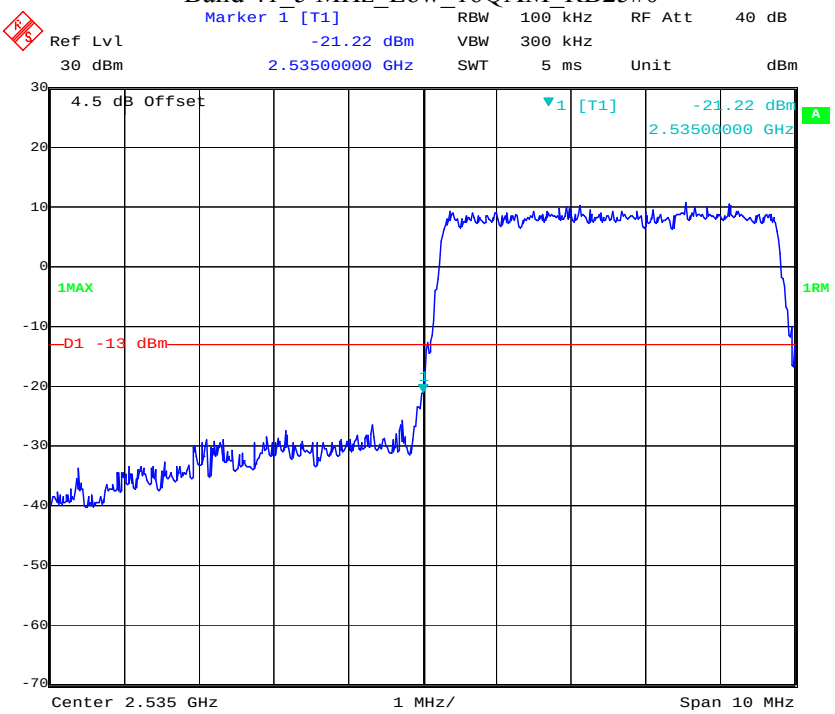
Band 41_5 MHz_Low_16QAM_RB25#0



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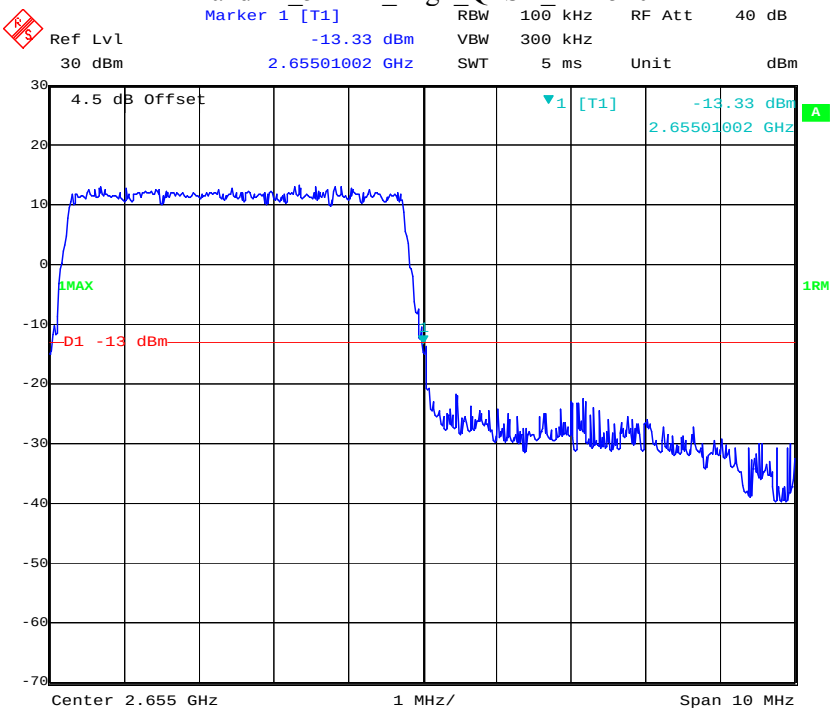
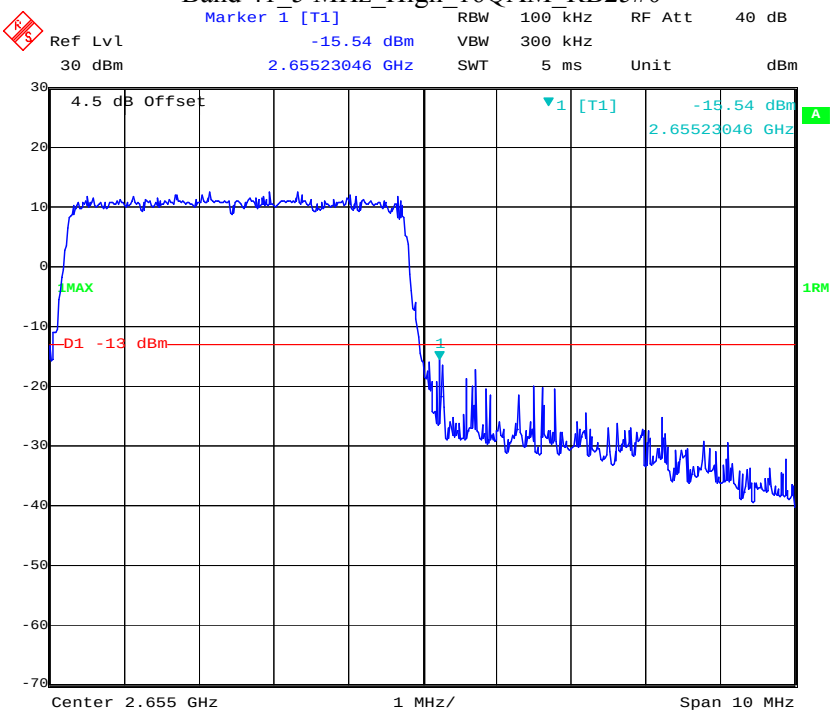
Band 41_5 MHz_High_QPSK_RB25#0



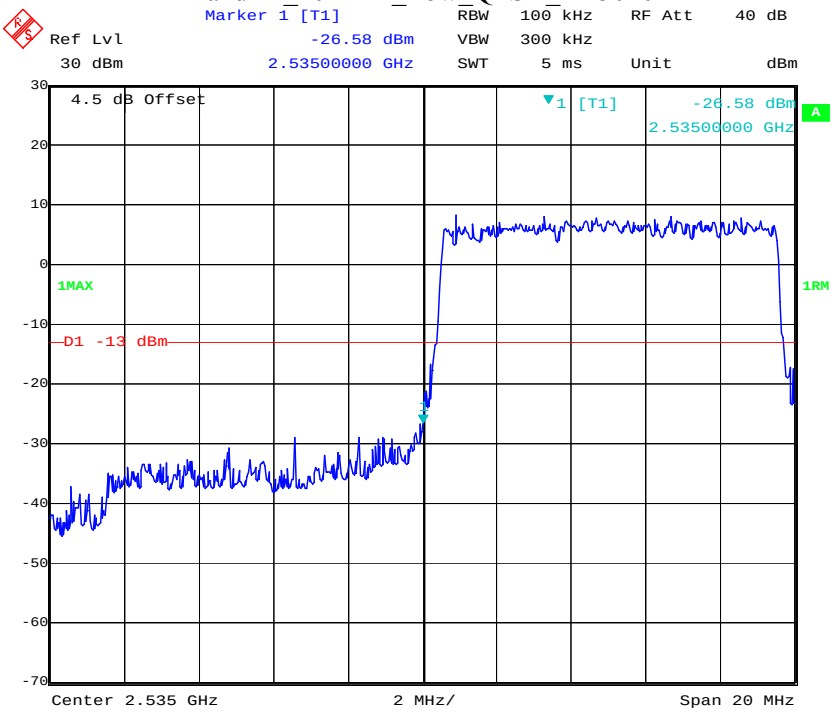
Date: 25.OCT.2019 21:12:44

Band 41_5 MHz_High_16QAM_RB25#0



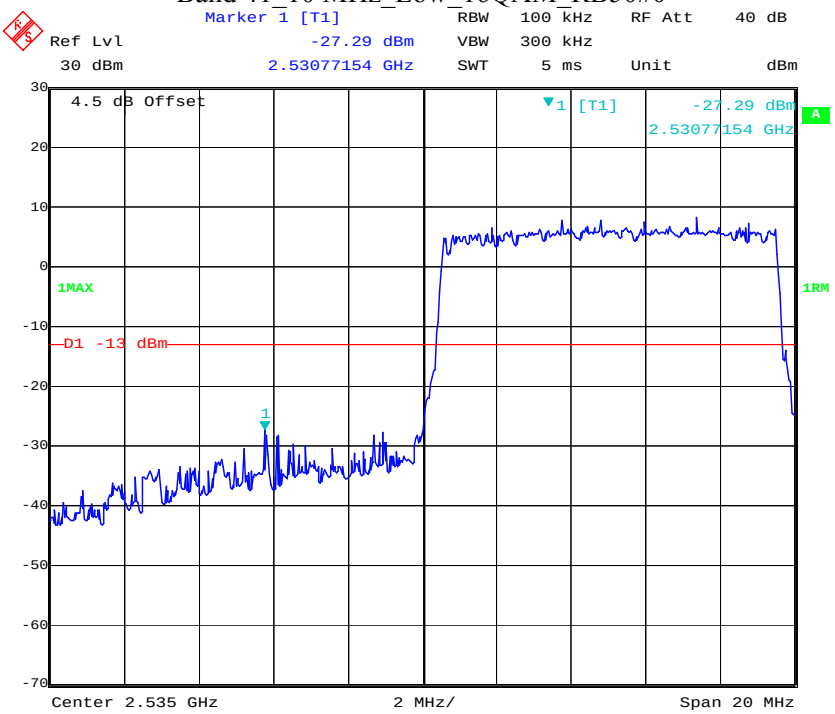
Date: 25.OCT.2019 21:13:06

Band 41_10 MHz_Low_QPSK_RB50#0



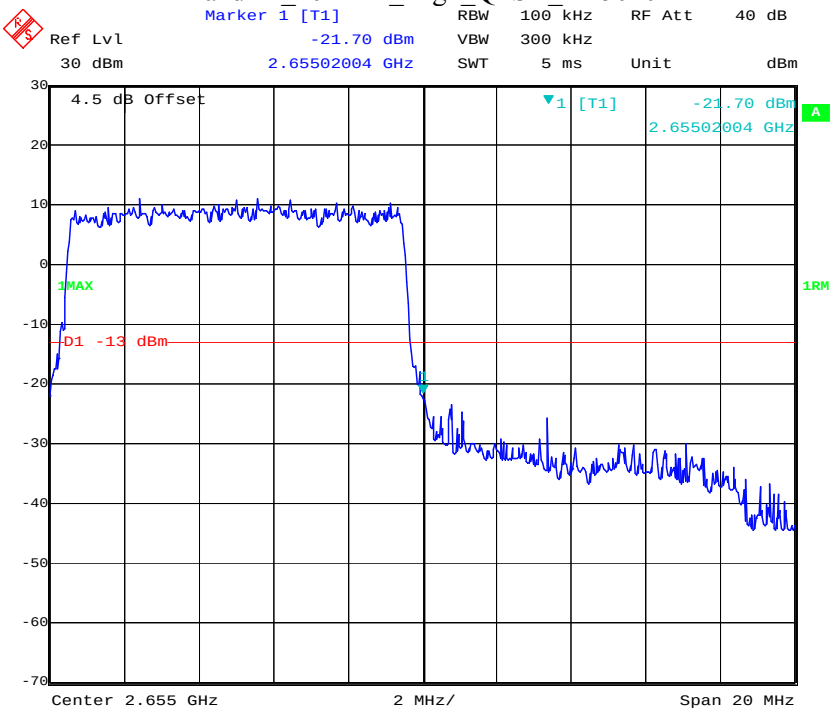
Date: 25.OCT.2019 21:13:34

Band 41_10 MHz_Low_16QAM_RB50#0



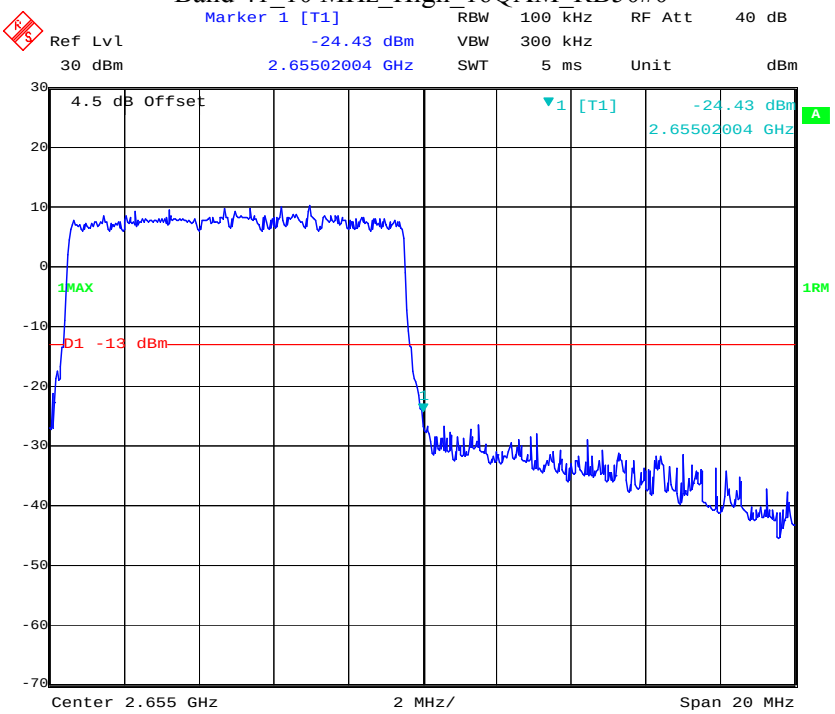
Date: 25.OCT.2019 21:14:01

Band 41_10 MHz_High_QPSK_RB50#0



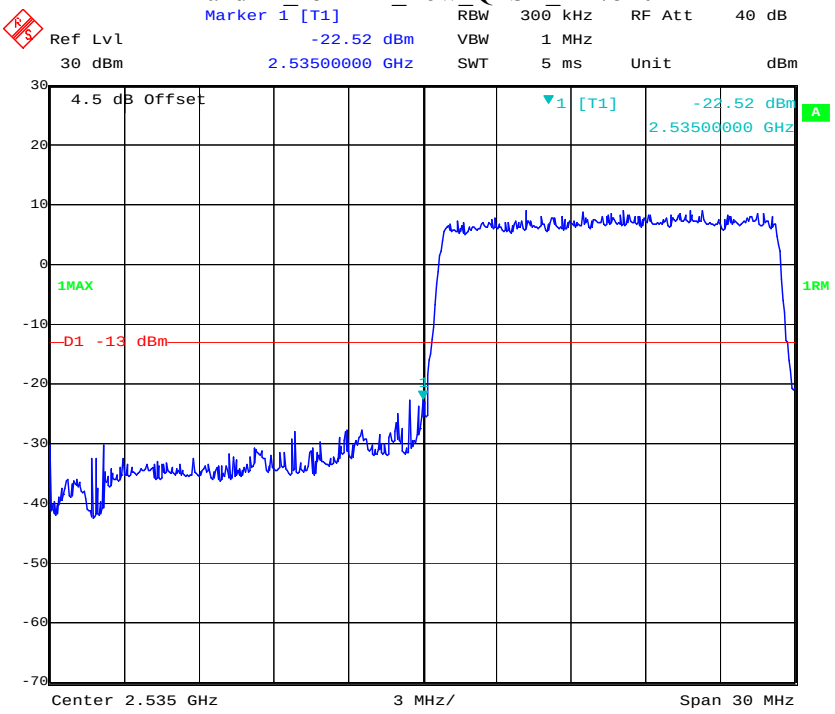
Date: 25.OCT.2019 21:14:26

Band 41_10 MHz_High_16QAM_RB50#0



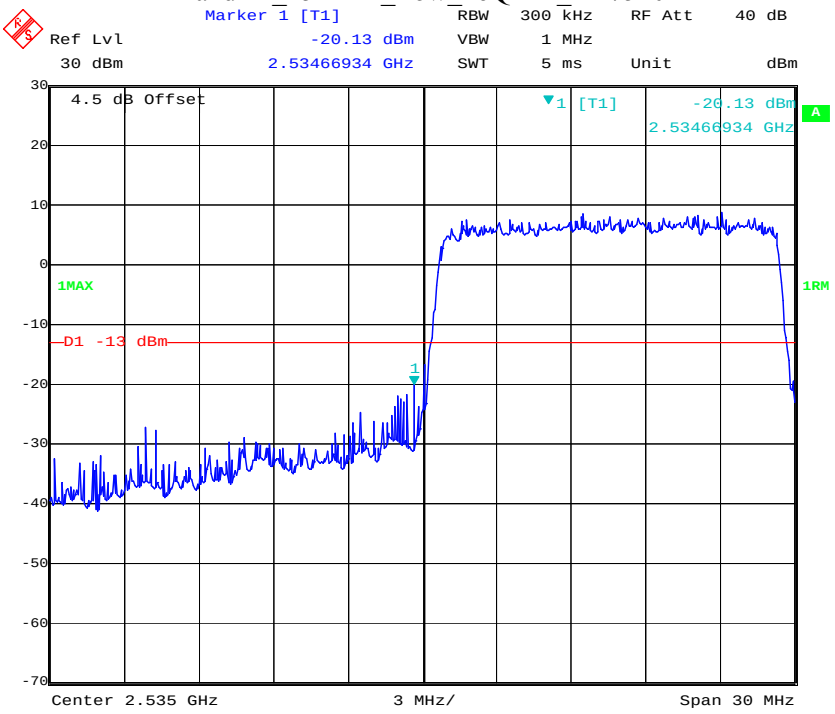
Date: 25.OCT.2019 21:14:49

Band 41_15 MHz_Low_QPSK_RB75#0



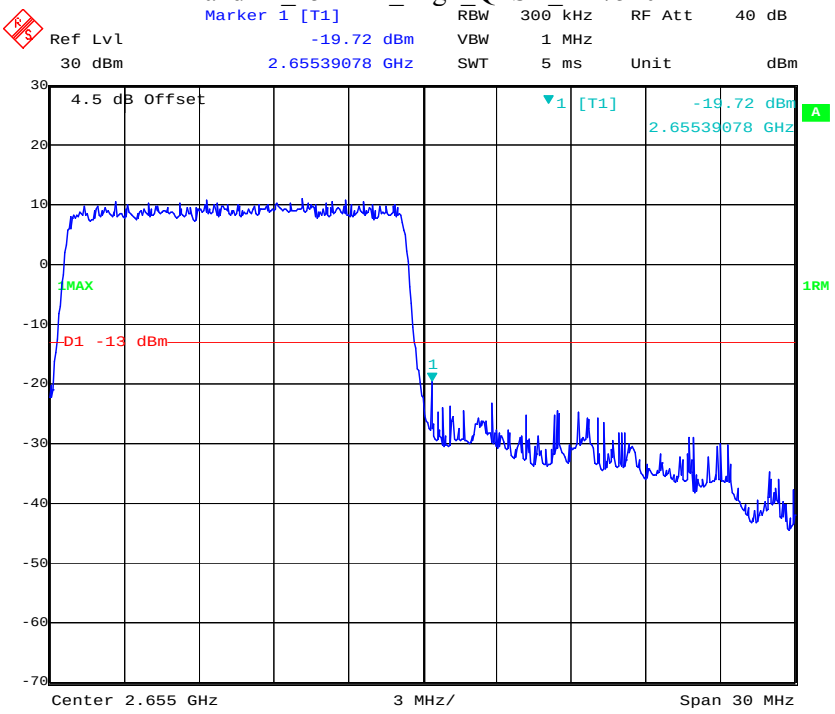
Date: 25.OCT.2019 21:15:19

Band 41_15 MHz_Low_16QAM_RB75#0



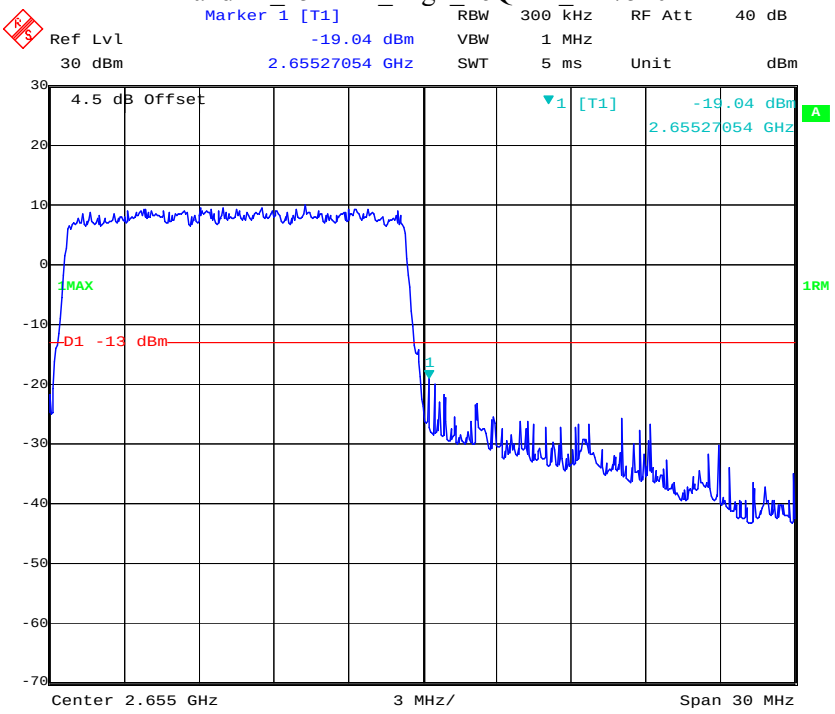
Date: 25.OCT.2019 21:15:45

Band 41_15 MHz_High_QPSK_RB75#0



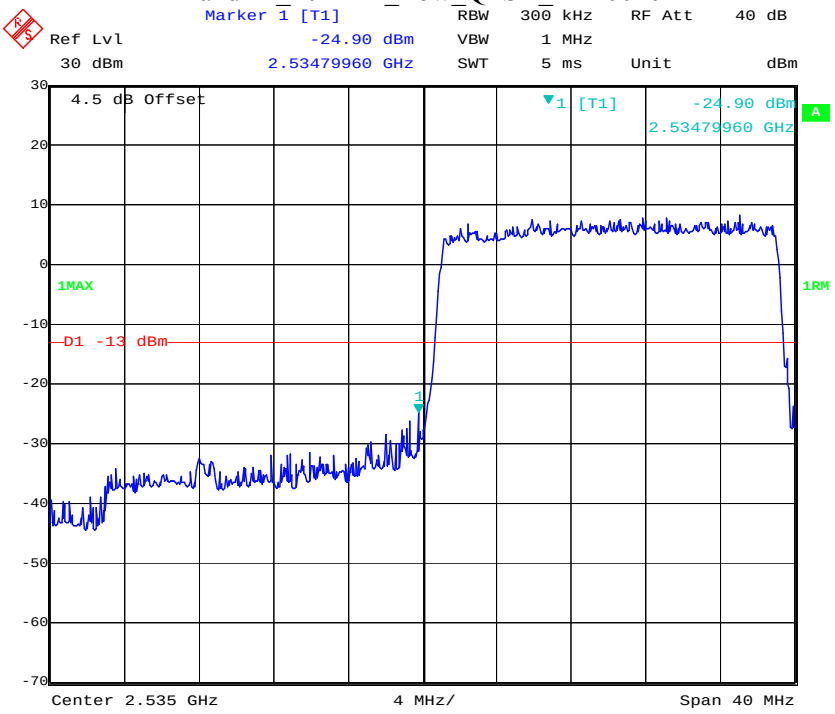
Date: 25.OCT.2019 21:16:09

Band 41_15 MHz_High_16QAM_RB75#0



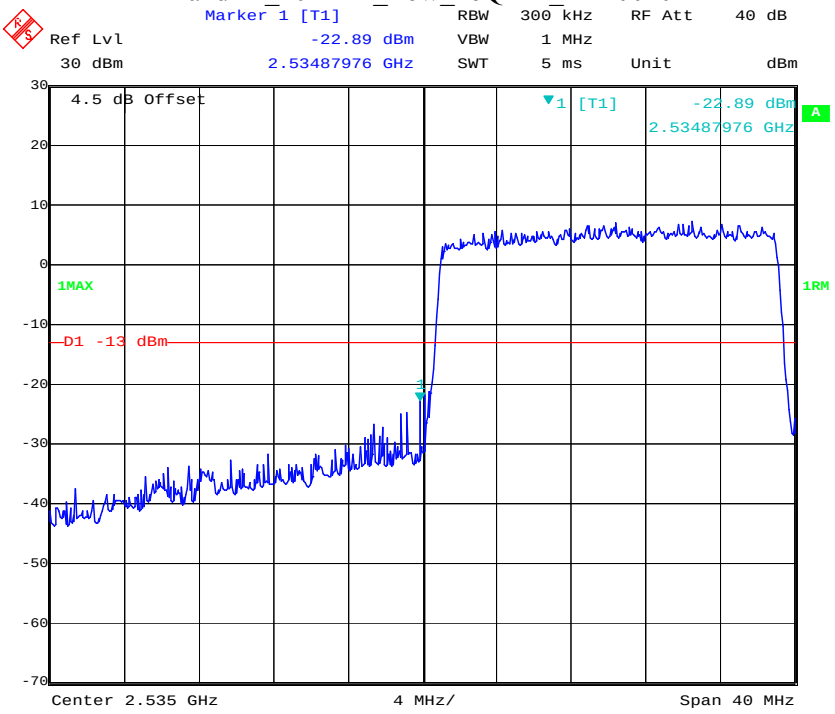
Date: 25.OCT.2019 21:16:32

Band 41_20 MHz_Low_QPSK_RB100#0



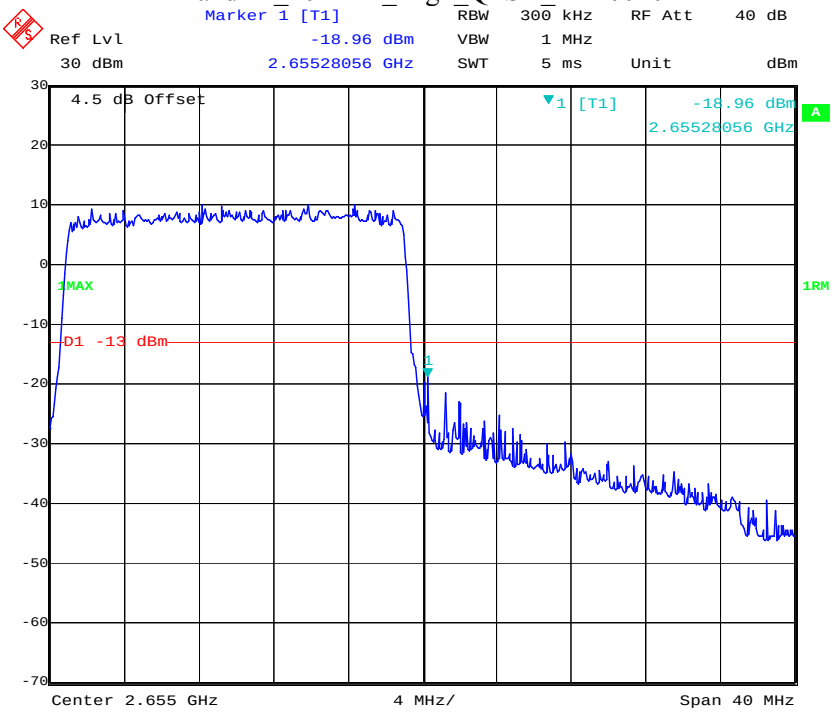
Date: 25.OCT.2019 21:17:03

Band 41_20 MHz_Low_16QAM_RB100#0



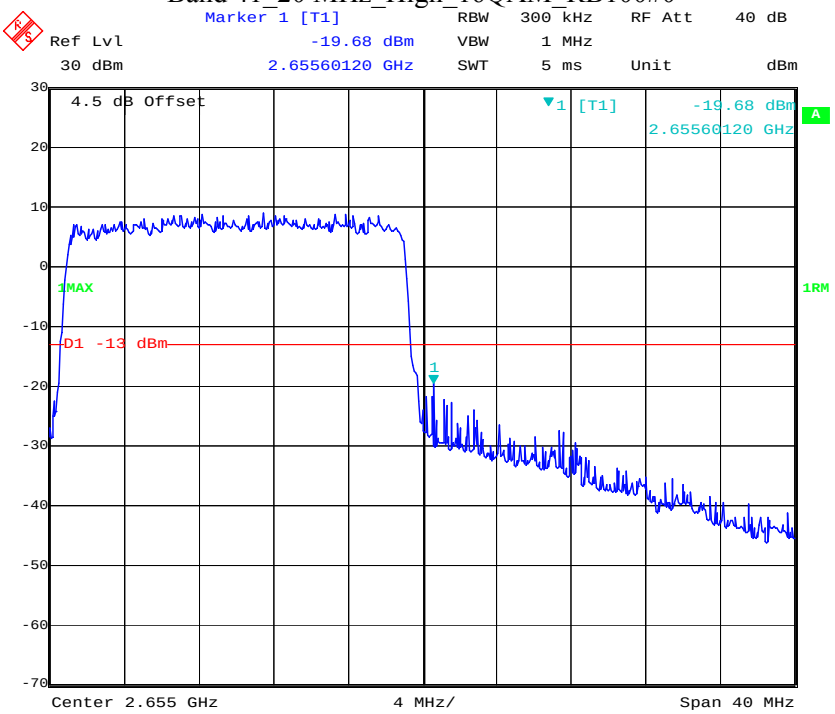
Date: 25.OCT.2019 21:17:25

Band 41_20 MHz_High_QPSK_RB100#0



Date: 25.OCT.2019 21:17:52

Band 41_20 MHz_High_16QAM_RB100#0



Date: 25.OCT.2019 21:18:18

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

Applicable Standard

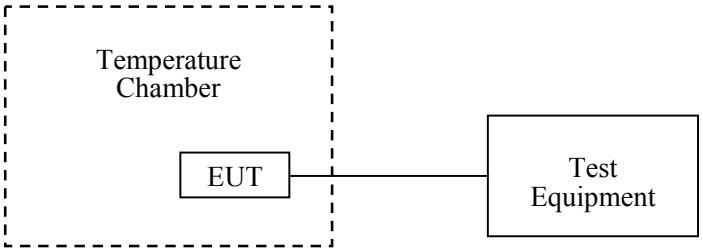
FCC § 2.1055 (a), § 2.1055 (d), §22.355, §24.235, §27.54

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	FSU 26	200256	2019-05-09	2020-05-09
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2019-08-03	2020-08-03
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	106 891	2018-12-14	2019-12-14
R&S	Wideband Radio Communication Tester	CMW500	147473	2019-08-03	2020-08-03
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2019-03-26	2020-03-26
UNI-T	Multimeter	UT39A	M130199938	2019-07-24	2020-07-24
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:	28.2 °C
Relative Humidity:	51%
ATM Pressure:	100.6kPa
Tester:	Blake Yang, Lily Xie
Test Date:	2019-10-25

Test Result: Compliance.

Module 2:
Cellular Band

GMSK, Middle Channel, f_c = 836.6 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.63	6	0.00717	2.5
-20		7	0.00837	
-10		5	0.00598	
0		6	0.00717	
10		8	0.00956	
20		7	0.00837	
30		4	0.00478	
40		6	0.00717	
50		5	0.00598	
20	4.2	7	0.00837	
20	3.5	4	0.00478	

EGPRS, Middle Channel, f_c = 836.6 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.63	10	0.01195	2.5
-20		8	0.00956	
-10		6	0.00717	
0		9	0.01076	
10		5	0.00598	
20		7	0.00837	
30		6	0.00717	
40		3	0.00359	
50		5	0.00598	
20	4.2	7	0.00837	
20	3.5	6	0.00717	

PCS Band

GMSK, Middle Channel, f_c = 1880.0 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
℃	V_{DC}	Hz	ppm	
-30	3.63	4	0.00213	Pass
-20		5	0.00266	
-10		7	0.00372	
0		9	0.00479	
10		6	0.00319	
20		7	0.00372	
30		7	0.00372	
40		8	0.00426	
50		5	0.00266	
20	4.2	8	0.00426	
20	3.5	7	0.00372	

EGPRS, Middle Channel, f_c = 1880.0 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
℃	V_{DC}	Hz	ppm	
-30	3.63	10	0.00532	Pass
-20		7	0.00372	
-10		8	0.00426	
0		10	0.00532	
10		9	0.00479	
20		10	0.00532	
30		8	0.00426	
40		9	0.00479	
50		8	0.00426	
20	4.2	6	0.00319	
20	3.5	7	0.00372	

WCDMA Band II: R99

Middle Channel, f_c = 1880.0 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
℃	V_{DC}	Hz	ppm	
-30	3.63	8	0.00426	Pass
-20		6	0.00319	
-10		9	0.00479	
0		8	0.00426	
10		9	0.00479	
20		7	0.00372	
30		10	0.00532	
40		8	0.00426	
50		9	0.00479	
20	4.2	6	0.00319	
20	3.5	7	0.00372	

LTE Band 2:

QPSK, Channel Bandwidth:10MHz Middle Channel, f_c = 1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.63	-3.11	-0.0017	Pass
-20		-8.25	-0.0044	
-10		-8.54	-0.0045	
0		9.89	0.0053	
10		8.88	0.0047	
20		6.09	0.0032	
30		-6.91	-0.0037	
40		6.10	0.0032	
50		-8.79	-0.0047	
20	4.2	-9.96	-0.0053	
20	3.5	5.16	0.0027	

16QAM, Channel Bandwidth:10MHz Middle Channel, f_c =1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.63	-4.40	-0.0023	Pass
-20		7.06	0.0038	
-10		-7.84	-0.0042	
0		-5.20	-0.0028	
10		5.88	0.0031	
20		6.16	0.0033	
30		7.73	0.0041	
40		-9.14	-0.0049	
50		5.87	0.0031	
20	4.2	8.65	0.0046	
20	3.5	9.22	0.0049	

LTE Band 5

QPSK, Channel Bandwidth:10MHz Middle Channel, f_c = 836.5 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.63	-0.81	-0.001	2.5
-20		-5.64	-0.0067	
-10		-7.52	-0.009	
0		7.35	0.0088	
10		-8.26	-0.0099	
20		-5.61	-0.0067	
30		8.45	0.0101	
40		-7.64	-0.0091	
50		9.07	0.0108	
20	4.2	9.70	0.0116	
20	3.5	-8.35	-0.01	

16QAM, Channel Bandwidth:10MHz Middle Channel, f_c =836.5 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.63	-1.26	-0.0015	2.5
-20		-6.19	-0.0074	
-10		-6.11	-0.0073	
0		-9.41	-0.0112	
10		9.53	0.0114	
20		-5.19	-0.0062	
30		-5.40	-0.0065	
40		-6.66	-0.008	
50		-9.63	-0.0115	
20	4.2	7.66	0.0092	
20	3.5	7.83	0.0094	

LTE Band 4:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	1710.531019	1754.509058	1710	1755
-20		1710.531083	1754.508978	1710	1755
-10		1710.531061	1754.508999	1710	1755
0		1710.531038	1754.508998	1710	1755
10		1710.531092	1754.509068	1710	1755
20		1710.531060	1754.509020	1710	1755
30		1710.531011	1754.508990	1710	1755
40		1710.531078	1754.509007	1710	1755
50		1710.531090	1754.509055	1710	1755
20	4.2	1710.531058	1754.509037	1710	1755
20	3.5	1710.531022	1754.508974	1710	1755

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	1710.531061	1754.508993	1710	1755
-20		1710.531101	1754.509060	1710	1755
-10		1710.531108	1754.509027	1710	1755
0		1710.531034	1754.508980	1710	1755
10		1710.531065	1754.509063	1710	1755
20		1710.531060	1754.509020	1710	1755
30		1710.531047	1754.508992	1710	1755
40		1710.531059	1754.509046	1710	1755
50		1710.531019	1754.508974	1710	1755
20	4.2	1710.531080	1754.509063	1710	1755
20	3.5	1710.531085	1754.509019	1710	1755

LTE Band 7:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2500.531037	2509.569007	2500	2570
-20		2500.531049	2509.568990	2500	2570
-10		2500.531108	2509.569056	2500	2570
0		2500.531016	2509.569002	2500	2570
10		2500.531032	2509.569048	2500	2570
20		2500.531060	2509.569020	2500	2570
30		2500.531069	2509.569031	2500	2570
40		2500.531054	2509.569066	2500	2570
50		2500.531039	2509.569046	2500	2570
20	4.2	2500.531106	2509.569045	2500	2570
20	3.5	2500.531038	2509.569052	2500	2570

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2500.531077	2509.568983	2500	2570
-20		2500.531090	2509.569007	2500	2570
-10		2500.531089	2509.569002	2500	2570
0		2500.531015	2509.568991	2500	2570
10		2500.531076	2509.569054	2500	2570
20		2500.531060	2509.569020	2500	2570
30		2500.531038	2509.569039	2500	2570
40		2500.531026	2509.569051	2500	2570
50		2500.531079	2509.568972	2500	2570
20	4.2	2500.531073	2509.569045	2500	2570
20	3.5	2500.531060	2509.569056	2500	2570

LTE Band 18:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	815.531051	829.508980	815	830
-20		815.531105	829.508986	815	830
-10		815.531050	829.508987	815	830
0		815.531052	829.508999	815	830
10		815.531076	829.509056	815	830
20		815.531062	829.509018	815	830
30		815.531045	829.509013	815	830
40		815.531019	829.508992	815	830
50		815.531106	829.509031	815	830
20	4.2	815.531099	829.508978	815	830
20	3.5	815.531082	829.508971	815	830

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	815.571135	829.508985	815	830
-20		815.571181	829.509017	815	830
-10		815.571127	829.509053	815	830
0		815.571154	829.509048	815	830
10		815.571163	829.509045	815	830
20		815.571142	829.509018	815	830
30		815.571188	829.509049	815	830
40		815.571131	829.508998	815	830
50		815.571160	829.509025	815	830
20	4.2	815.571127	829.509024	815	830
20	3.5	815.571148	829.508980	815	830

LTE Band 38:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2570.531110	2619.508974	2570	2620
-20		2570.531080	2619.509064	2570	2620
-10		2570.531099	2619.509040	2570	2620
0		2570.531029	2619.508974	2570	2620
10		2570.531071	2619.509005	2570	2620
20		2570.531060	2619.509020	2570	2620
30		2570.531032	2619.508984	2570	2620
40		2570.531084	2619.509022	2570	2620
50		2570.531057	2619.509021	2570	2620
20	4.2	2570.531107	2619.508972	2570	2620
20	3.5	2570.531037	2619.509002	2570	2620

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2570.531095	2619.508980	2570	2620
-20		2570.531088	2619.508980	2570	2620
-10		2570.531041	2619.508990	2570	2620
0		2570.531084	2619.508978	2570	2620
10		2570.531040	2619.509038	2570	2620
20		2570.571140	2619.509020	2570	2620
30		2570.531065	2619.509017	2570	2620
40		2570.531012	2619.509039	2570	2620
50		2570.531096	2619.509035	2570	2620
20	4.2	2570.531030	2619.509019	2570	2620
20	3.5	2570.531021	2619.509006	2570	2620

LTE Band 40:

Lower:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2305.570884	2314.508774	2305	2315
-20		2305.570710	2314.508841	2305	2315
-10		2305.570886	2314.508977	2305	2315
0		2305.570749	2314.508889	2305	2315
10		2305.570933	2314.508687	2305	2315
20		2305.571140	2314.509020	2305	2315
30		2305.570859	2314.508978	2305	2315
40		2305.570791	2314.508894	2305	2315
50		2305.571078	2314.508719	2305	2315
20	4.2	2305.570711	2314.508945	2305	2315
20	3.5	2305.571015	2314.508611	2305	2315

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2305.570884	2314.508719	2305	2315
-20		2305.571078	2314.508945	2305	2315
-10		2305.570711	2314.508977	2305	2315
0		2305.570791	2314.508889	2305	2315
10		2305.570933	2314.508687	2305	2315
20		2305.571140	2314.509020	2305	2315
30		2305.570886	2314.508978	2305	2315
40		2305.570749	2314.508894	2305	2315
50		2305.570710	2314.508774	2305	2315
20	4.2	2305.570859	2314.508841	2305	2315
20	3.5	2305.571015	2314.508611	2305	2315

Upper:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2350.571177	2359.508694	2350	2360
-20		2350.571101	2359.508632	2350	2360
-10		2350.570788	2359.508687	2350	2360
0		2350.570780	2359.508663	2350	2360
10		2350.570672	2359.508759	2350	2360
20		2350.571140	2359.509020	2350	2360
30		2350.570948	2359.508901	2350	2360
40		2350.570651	2359.508971	2350	2360
50		2350.570712	2359.508996	2350	2360
20	4.2	2350.570939	2359.509038	2350	2360
20	3.5	2350.571051	2359.508631	2350	2360

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2350.570651	2359.508652	2350	2360
-20		2350.570799	2359.508714	2350	2360
-10		2350.571105	2359.509038	2350	2360
0		2350.571128	2359.508659	2350	2360
10		2350.571150	2359.508852	2350	2360
20		2350.531060	2359.509020	2350	2360
30		2350.570900	2359.508932	2350	2360
40		2350.570817	2359.508900	2350	2360
50		2350.570854	2359.509017	2350	2360
20	4.2	2350.570996	2359.508637	2350	2360
20	3.5	2350.570692	2359.508988	2350	2360

LTE Band 41:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2535.571087	2654.508691	2535	2655
-20		2535.571184	2654.508637	2535	2655
-10		2535.571030	2654.508589	2535	2655
0		2535.570899	2654.508995	2535	2655
10		2535.570941	2654.508905	2535	2655
20		2535.571140	2654.509020	2535	2655
30		2535.571111	2654.508721	2535	2655
40		2535.570782	2654.508640	2535	2655
50		2535.570771	2654.509051	2535	2655
20	4.2	2535.571122	2654.508660	2535	2655
20	3.5	2535.570839	2654.509018	2535	2655

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2535.571102	2654.508528	2535	2655
-20		2535.570808	2654.508685	2535	2655
-10		2535.570979	2654.508612	2535	2655
0		2535.570733	2654.508832	2535	2655
10		2535.570814	2654.508783	2535	2655
20		2535.571140	2654.509020	2535	2655
30		2535.570912	2654.508805	2535	2655
40		2535.570805	2654.508573	2535	2655
50		2535.571124	2654.508967	2535	2655
20	4.2	2535.570779	2654.508924	2535	2655
20	3.5	2535.570834	2654.508870	2535	2655

Module 1:

Cellular Band

GMSK, Middle Channel, f_c = 836.6 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.63	6	0.00717	2.5
-20		4	0.00478	
-10		6	0.00717	
0		7	0.00837	
10		6	0.00717	
20		8	0.00956	
30		6	0.00717	
40		7	0.00837	
50		4	0.00478	
20	4.2	3	0.00359	
20	3.5	4	0.00478	

EGPRS, Middle Channel, f_c = 836.6 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.63	3	0.00359	2.5
-20		6	0.00717	
-10		4	0.00478	
0		8	0.00956	
10		4	0.00478	
20		9	0.01076	
30		2	0.00239	
40		5	0.00598	
50		5	0.00598	
20	4.2	8	0.00956	
20	3.5	5	0.00598	

PCS Band

GMSK, Middle Channel, f_c = 1880.0 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
℃	V_{DC}	Hz	ppm	
-30	3.63	6	0.00319	Pass
-20		5	0.00266	
-10		8	0.00426	
0		5	0.00266	
10		6	0.00319	
20		8	0.00426	
30		5	0.00266	
40		6	0.00319	
50		6	0.00319	
20	4.2	9	0.00479	
20	3.5	8	0.00426	

EGPRS, Middle Channel, f_c = 1880.0 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Results**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.63	10	0.00532	Pass
-20		11	0.00585	
-10		9	0.00479	
0		11	0.00585	
10		9	0.00479	
20		9	0.00479	
30		10	0.00532	
40		8	0.00426	
50		9	0.00479	
20	4.2	6	0.00319	
20	3.5	5	0.00266	

WCDMA Band II: R99

Middle Channel, f_c = 1880.0 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.63	9	0.00479	Pass
-20		7	0.00372	
-10		8	0.00426	
0		9	0.00479	
10		7	0.00372	
20		5	0.00266	
30		8	0.00426	
40		9	0.00479	
50		7	0.00372	
20	4.2	9	0.00479	
20	3.5	10	0.00532	

LTE Band 2:

QPSK, Channel Bandwidth:10MHz Middle Channel, f_c = 1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.63	-3.26	-0.0017	Pass
-20		-8.23	-0.0044	
-10		-8.39	-0.0045	
0		9.94	0.0053	
10		9.01	0.0048	
20		6.10	0.0032	
30		-6.76	-0.0036	
40		6.06	0.0032	
50		-8.96	-0.0048	
20	4.2	-9.86	-0.0052	
20	3.5	5.26	0.0028	

16QAM, Channel Bandwidth:10MHz Middle Channel, f_c =1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.63	-4.31	-0.0023	Pass
-20		7.08	0.0038	
-10		-7.99	-0.0043	
0		-5.39	-0.0029	
10		5.97	0.0032	
20		6.32	0.0034	
30		7.91	0.0042	
40		-9.32	-0.005	
50		5.68	0.003	
20	4.2	8.69	0.0046	
20	3.5	9.31	0.005	

LTE Band 5

QPSK, Channel Bandwidth:10MHz Middle Channel, f_c = 836.5 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.63	-0.79	-0.0009	2.5
-20		-5.45	-0.0065	
-10		-7.66	-0.0092	
0		7.33	0.0088	
10		-8.35	-0.01	
20		-5.53	-0.0066	
30		8.52	0.0102	
40		-7.76	-0.0093	
50		9.24	0.011	
20	4.2	9.69	0.0116	
20	3.5	-8.30	-0.0099	

16QAM, Channel Bandwidth:10MHz Middle Channel, f_c =836.5 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.63	-1.13	-0.0014	2.5
-20		-6.14	-0.0073	
-10		-6.07	-0.0073	
0		-9.32	-0.0111	
10		9.66	0.0115	
20		-5.32	-0.0064	
30		-5.34	-0.0064	
40		-6.82	-0.0082	
50		-9.58	-0.0115	
20	4.2	7.49	0.009	
20	3.5	7.83	0.0094	

LTE Band 4:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	1710.571096	1754.509000	1710	1755
-20		1710.571167	1754.509049	1710	1755
-10		1710.571138	1754.509047	1710	1755
0		1710.571148	1754.509000	1710	1755
10		1710.571136	1754.509028	1710	1755
20		1710.571140	1754.508979	1710	1755
30		1710.571178	1754.509020	1710	1755
40		1710.571137	1754.509047	1710	1755
50		1710.571143	1754.508988	1710	1755
20	4.2	1710.571180	1754.509042	1710	1755
20	3.5	1710.571180	1754.509003	1710	1755

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	1710.531028	1754.508993	1710	1755
-20		1710.531014	1754.509066	1710	1755
-10		1710.531055	1754.509055	1710	1755
0		1710.531056	1754.509057	1710	1755
10		1710.531015	1754.508989	1710	1755
20		1710.531060	1754.509020	1710	1755
30		1710.531049	1754.509044	1710	1755
40		1710.531032	1754.508970	1710	1755
50		1710.531093	1754.509011	1710	1755
20	4.2	1710.531068	1754.509010	1710	1755
20	3.5	1710.531066	1754.509025	1710	1755

LTE Band 7:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2500.571111	2569.508980	2500	2570
-20		2500.571152	2569.509017	2500	2570
-10		2500.571174	2569.508979	2500	2570
0		2500.571184	2569.509054	2500	2570
10		2500.571190	2569.509067	2500	2570
20		2500.571140	2569.509020	2500	2570
30		2500.571091	2569.509020	2500	2570
40		2500.571139	2569.508975	2500	2570
50		2500.571187	2569.509065	2500	2570
20	4.2	2500.571133	2569.508983	2500	2570
20	3.5	2500.571186	2569.508996	2500	2570

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2500.571113	2569.509038	2500	2570
-20		2500.571159	2569.509033	2500	2570
-10		2500.571153	2569.508993	2500	2570
0		2500.571093	2569.509064	2500	2570
10		2500.571160	2569.509030	2500	2570
20		2500.571140	2569.509020	2500	2570
30		2500.571139	2569.509054	2500	2570
40		2500.571175	2569.509034	2500	2570
50		2500.571113	2569.508997	2500	2570
20	4.2	2500.571168	2569.508984	2500	2570
20	3.5	2500.571108	2569.509022	2500	2570

LTE Band12:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	699.531042	715.509006	699	716
-20		699.531022	715.509000	699	716
-10		699.531050	715.508999	699	716
0		699.531101	715.508990	699	716
10		699.531026	715.509038	699	716
20		699.531062	715.509018	699	716
30		699.531034	715.509067	699	716
40		699.531081	715.509036	699	716
50		699.531033	715.508986	699	716
20	4.2	699.531044	715.509055	699	716
20	3.5	699.531083	715.509018	699	716

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	699.531089	715.509039	699	716
-20		699.531076	715.509010	699	716
-10		699.531069	715.509000	699	716
0		699.531055	715.509016	699	716
10		699.531101	715.508974	699	716
20		699.531062	715.509018	699	716
30		699.531024	715.508990	699	716
40		699.531054	715.508980	699	716
50		699.531020	715.509032	699	716
20	4.2	699.531093	715.509014	699	716
20	3.5	699.531083	715.508976	699	716

LTE Band17:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	704.571175	715.509019	704	716
-20		704.571162	715.509012	704	716
-10		704.571102	715.509020	704	716
0		704.571164	715.509066	704	716
10		704.571133	715.509059	704	716
20		704.571142	715.509018	704	716
30		704.571116	715.509011	704	716
40		704.571125	715.509013	704	716
50		704.571100	715.509068	704	716
20	4.2	704.571175	715.509058	704	716
20	3.5	704.571152	715.509014	704	716

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	704.571175	715.508984	704	716
-20		704.571132	715.509059	704	716
-10		704.571109	715.509021	704	716
0		704.571105	715.509037	704	716
10		704.571142	715.509063	704	716
20		704.571142	715.509018	704	716
30		704.571096	715.509006	704	716
40		704.571135	715.508998	704	716
50		704.571164	715.509036	704	716
20	4.2	704.571104	715.508996	704	716
20	3.5	704.571181	715.509023	704	716

LTE Band 18:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	815.571125	829.509010	815	830
-20		815.571161	829.509036	815	830
-10		815.571182	829.509058	815	830
0		815.571121	829.509036	815	830
10		815.571106	829.508976	815	830
20		815.571142	829.509018	815	830
30		815.571189	829.508988	815	830
40		815.571096	829.508986	815	830
50		815.571160	829.509065	815	830
20	4.2	815.571191	829.508984	815	830
20	3.5	815.571099	829.509050	815	830

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	815.571171	829.508984	815	830
-20		815.571125	829.509023	815	830
-10		815.571126	829.509061	815	830
0		815.571140	829.509008	815	830
10		815.571171	829.509037	815	830
20		815.571142	829.509018	815	830
30		815.571183	829.509008	815	830
40		815.571186	829.508973	815	830
50		815.571175	829.509065	815	830
20	4.2	815.571134	829.509050	815	830
20	3.5	815.571126	829.509058	815	830

LTE Band 38:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2570.571150	2619.509020	2570	2620
-20		2570.571118	2619.509032	2570	2620
-10		2570.571093	2619.508970	2570	2620
0		2570.571092	2619.508970	2570	2620
10		2570.571157	2619.508976	2570	2620
20		2570.571140	2619.509020	2570	2620
30		2570.571179	2619.508980	2570	2620
40		2570.571125	2619.509055	2570	2620
50		2570.571109	2619.509059	2570	2620
20	4.2	2570.571174	2619.508986	2570	2620
20	3.5	2570.571172	2619.508977	2570	2620

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2570.571116	2619.508985	2570	2620
-20		2570.571100	2619.508971	2570	2620
-10		2570.571144	2619.509007	2570	2620
0		2570.571130	2619.509065	2570	2620
10		2570.571114	2619.509048	2570	2620
20		2570.571140	2619.509020	2570	2620
30		2570.571170	2619.509011	2570	2620
40		2570.571182	2619.508972	2570	2620
50		2570.571128	2619.509005	2570	2620
20	4.2	2570.571157	2619.509054	2570	2620
20	3.5	2570.571095	2619.509066	2570	2620

LTE Band 40:
Lower:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2305.531487	2314.509510	2305	2315
-20		2305.531261	2314.509460	2305	2315
-10		2305.530659	2314.509417	2305	2315
0		2305.531361	2314.508538	2305	2315
10		2305.530941	2314.508586	2305	2315
20		2305.531060	2314.509020	2305	2315
30		2305.530940	2314.509024	2305	2315
40		2305.531110	2314.508867	2305	2315
50		2305.530826	2314.509166	2305	2315
20	4.2	2305.531474	2314.508640	2305	2315
20	3.5	2305.530982	2314.508996	2305	2315

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2305.531047	2314.469166	2305	2315
-20		2305.531408	2314.468848	2305	2315
-10		2305.531354	2314.468946	2305	2315
0		2305.530602	2314.469432	2305	2315
10		2305.530781	2314.469183	2305	2315
20		2305.531060	2314.468940	2305	2315
30		2305.531018	2314.468463	2305	2315
40		2305.531187	2314.469141	2305	2315
50		2305.531154	2314.469125	2305	2315
20	4.2	2305.530820	2314.469148	2305	2315
20	3.5	2305.531264	2314.468588	2305	2315

Upper:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2350.531498	2359.469042	2350	2360
-20		2350.531233	2359.469047	2350	2360
-10		2350.531207	2359.469204	2350	2360
0		2350.531411	2359.468524	2350	2360
10		2350.530623	2359.468739	2350	2360
20		2350.531060	2359.468940	2350	2360
30		2350.530841	2359.468529	2350	2360
40		2350.531158	2359.469211	2350	2360
50		2350.530974	2359.469318	2350	2360
20	4.2	2350.531382	2359.469357	2350	2360
20	3.5	2350.530615	2359.468618	2350	2360

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2350.531104	2359.469193	2350	2360
-20		2350.530641	2359.469093	2350	2360
-10		2350.531554	2359.468888	2350	2360
0		2350.530955	2359.469250	2350	2360
10		2350.531011	2359.468448	2350	2360
20		2350.531060	2359.468940	2350	2360
30		2350.530747	2359.468713	2350	2360
40		2350.530941	2359.468841	2350	2360
50		2350.531497	2359.469056	2350	2360
20	4.2	2350.530965	2359.468897	2350	2360
20	3.5	2350.530732	2359.469267	2350	2360

LTE Band 41:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2535.571170	2654.509298	2535	2655
-20		2535.570792	2654.509026	2535	2655
-10		2535.570806	2654.509258	2535	2655
0		2535.571111	2654.509204	2535	2655
10		2535.570793	2654.508731	2535	2655
20		2535.571140	2654.509020	2535	2655
30		2535.570659	2654.508701	2535	2655
40		2535.571146	2654.508718	2535	2655
50		2535.570881	2654.509133	2535	2655
20	4.2	2535.570931	2654.509178	2535	2655
20	3.5	2535.571396	2654.509118	2535	2655

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.63	2535.570868	2654.508818	2535	2655
-20		2535.570772	2654.509104	2535	2655
-10		2535.571425	2654.509155	2535	2655
0		2535.570935	2654.508913	2535	2655
10		2535.571297	2654.509436	2535	2655
20		2535.571140	2654.509020	2535	2655
30		2535.571533	2654.509507	2535	2655
40		2535.570860	2654.509256	2535	2655
50		2535.570844	2654.509414	2535	2655
20	4.2	2535.570931	2654.509367	2535	2655
20	3.5	2535.571556	2654.508582	2535	2655

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 *******