FCC §2.1051, §22.917(a) & §24.238(a) & §27.53, §90.691 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

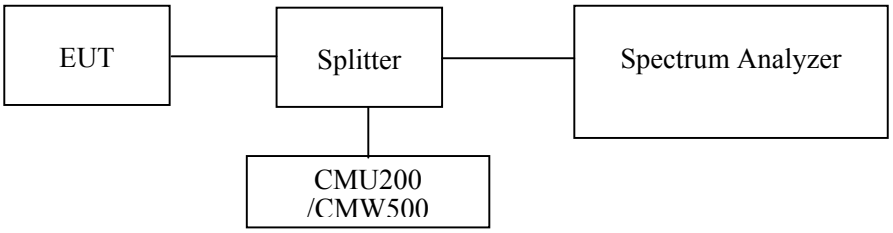
Applicable Standard

FCC §2.1051, §22.917(a) , §24.238(a) and §27.53, §90.691.

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

Test Procedure

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2018-08-03	2019-08-03
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	/
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	/
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	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

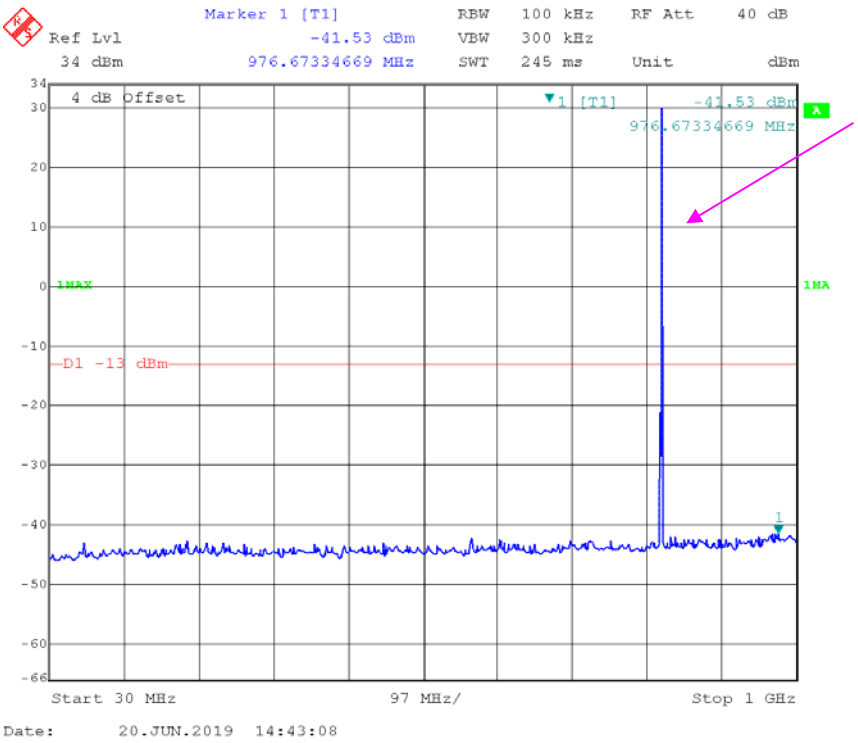
Environmental Conditions

Temperature:	28.1°C~28.9°C
Relative Humidity:	51 %~55 %
ATM Pressure:	100.3 kPa~100.5 kPa

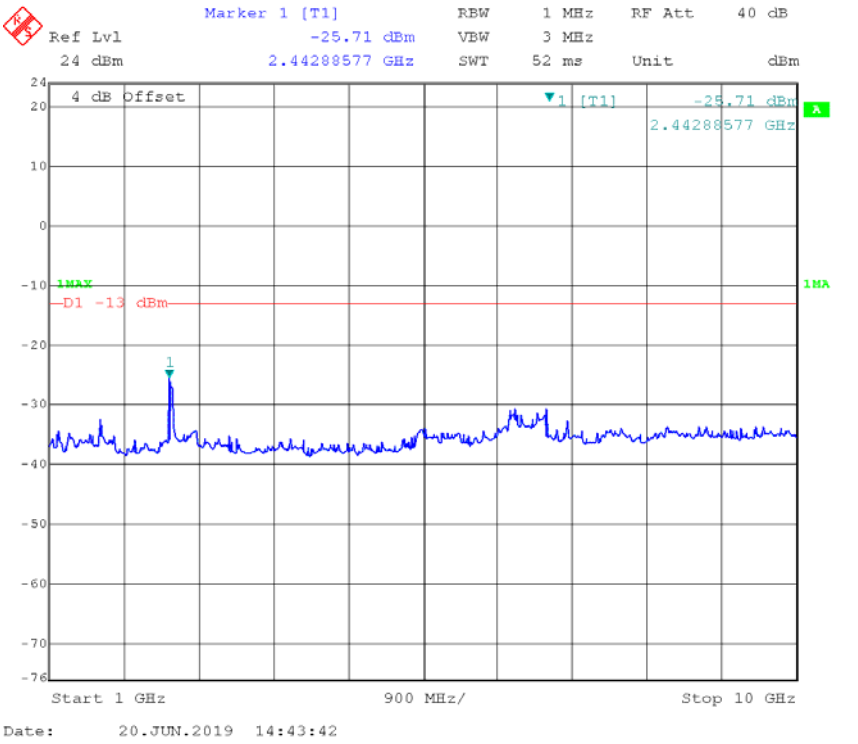
** The testing was performed by Blake Yang on 2019-06-18~2019-06-20.*

Please refer to the following plots.

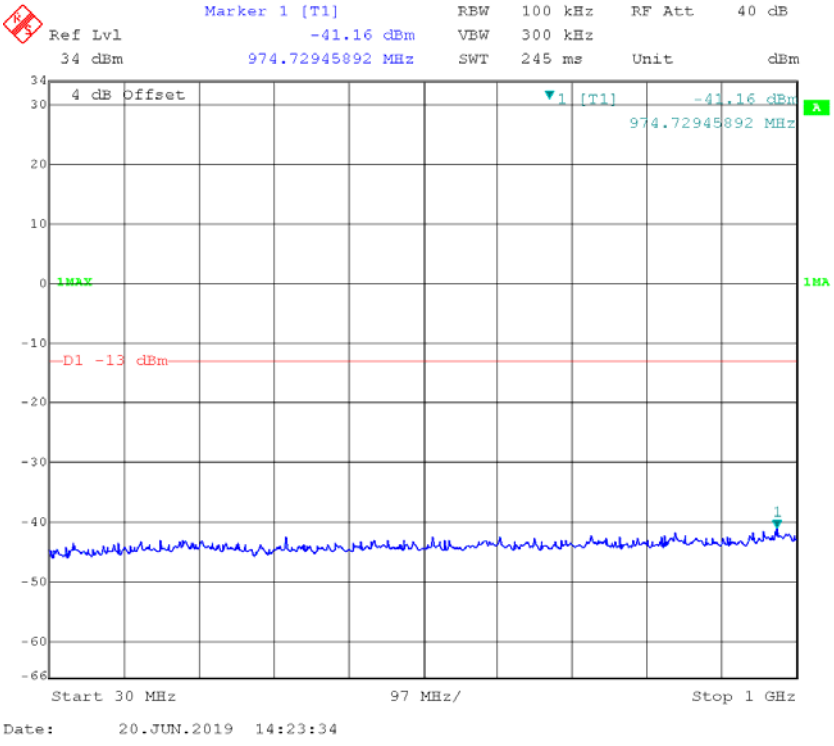
GPRS850_Middle Channel



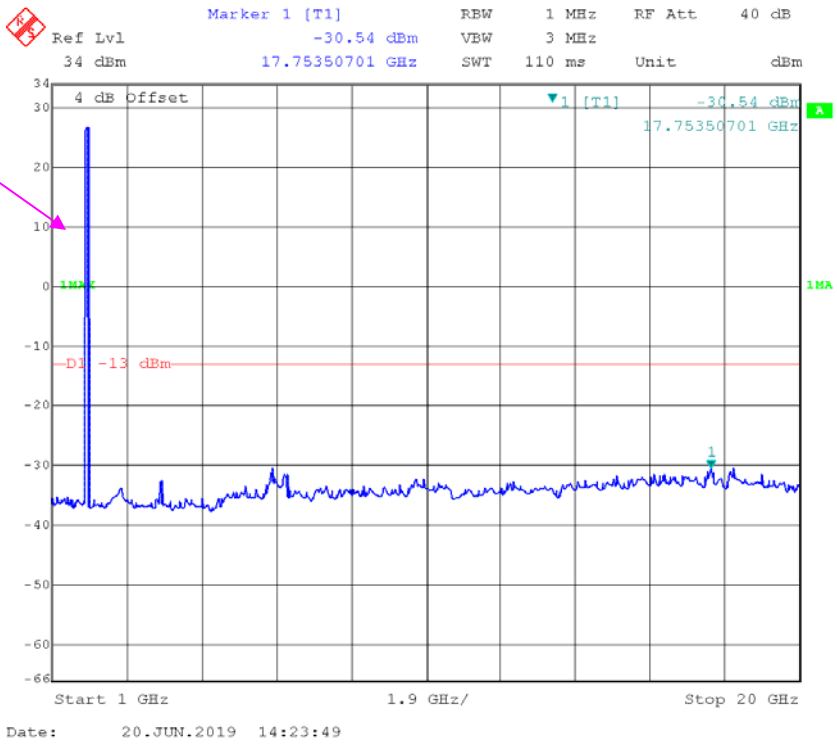
Fundamental



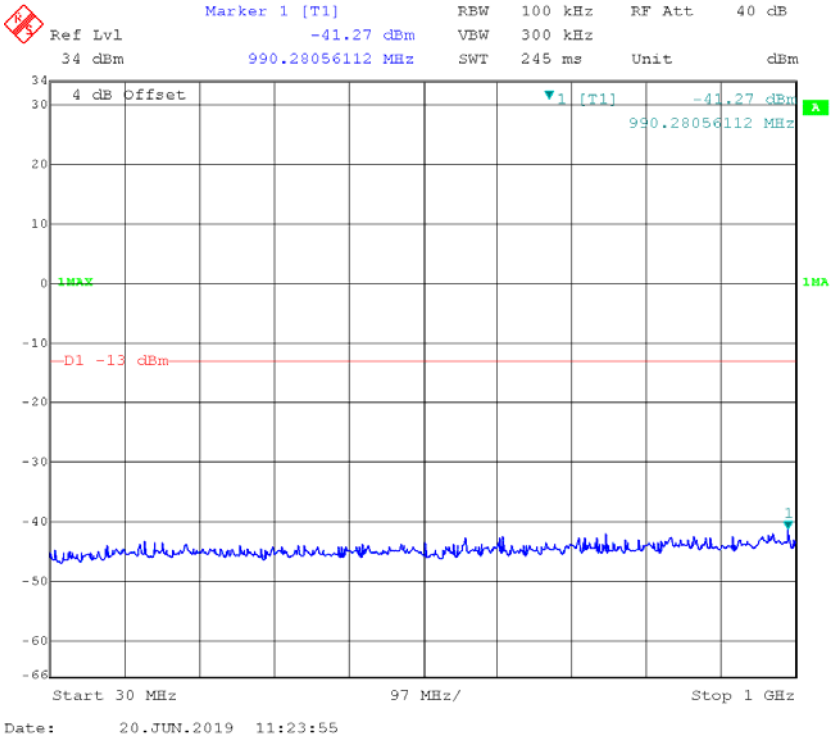
PCS 1900_ Middle Channel

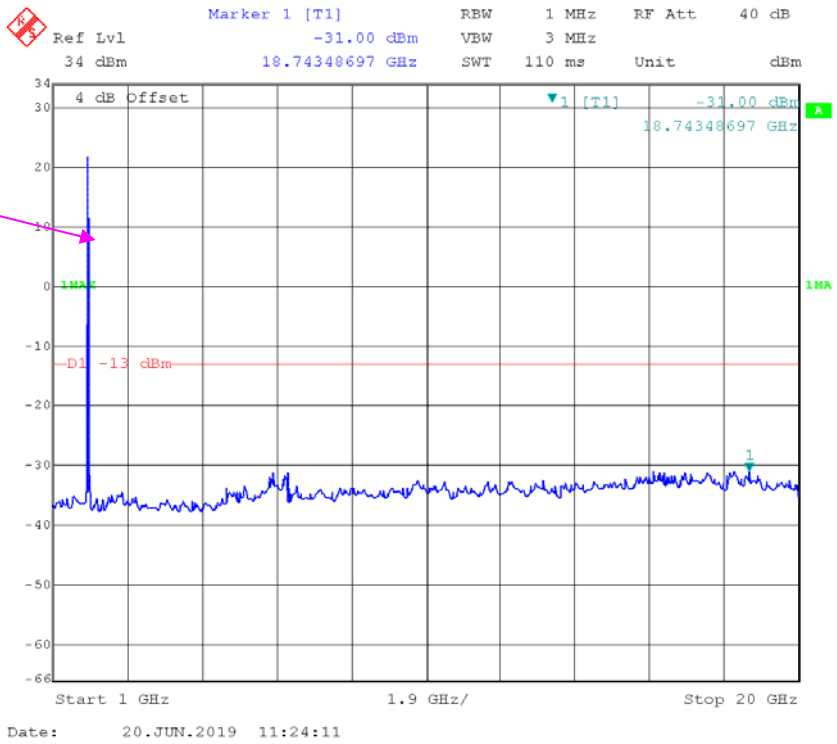


Fundamental



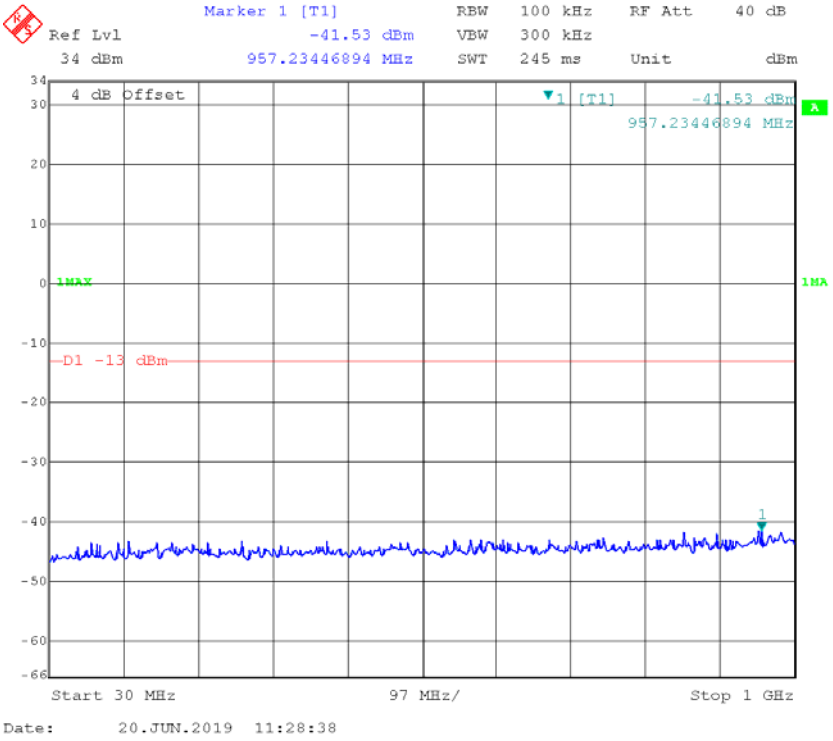
WCDMA Band II,Rel99

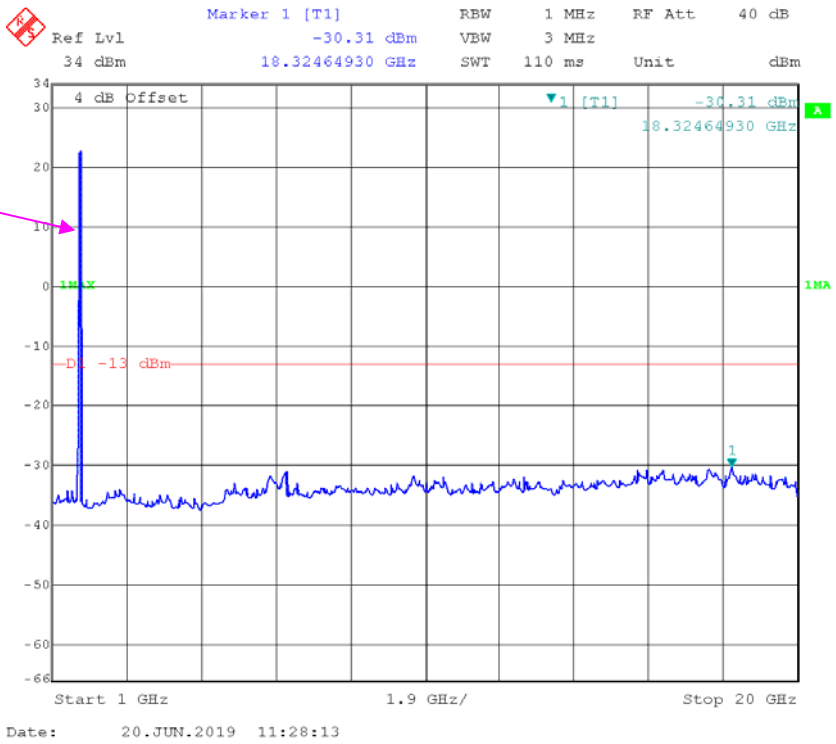




Fundamental

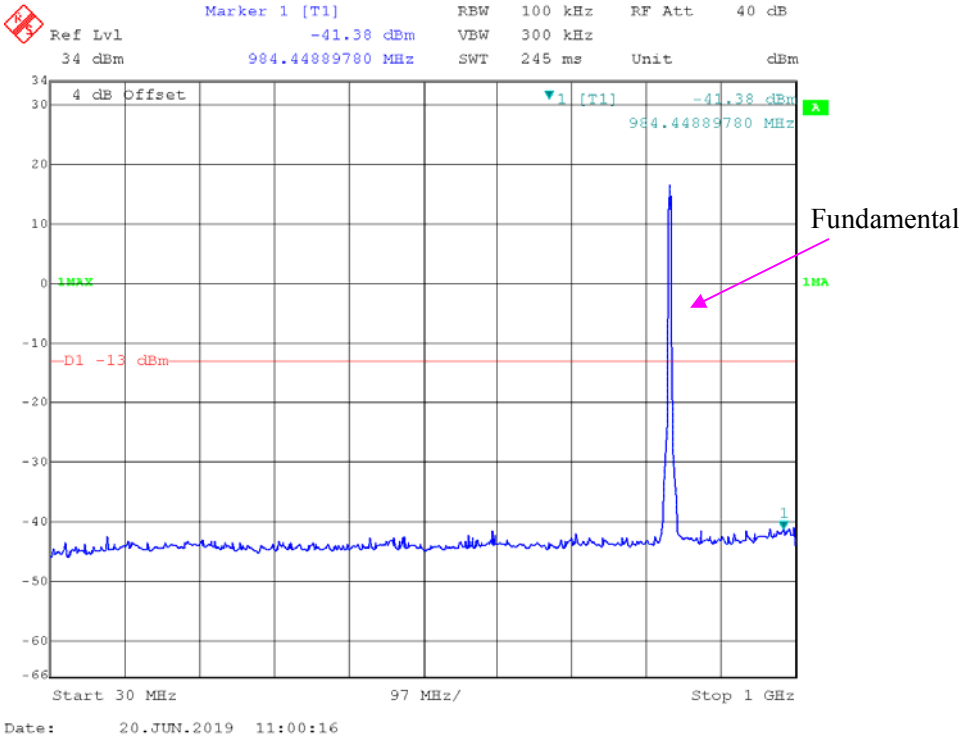
WCDMA Band IV,Rel99

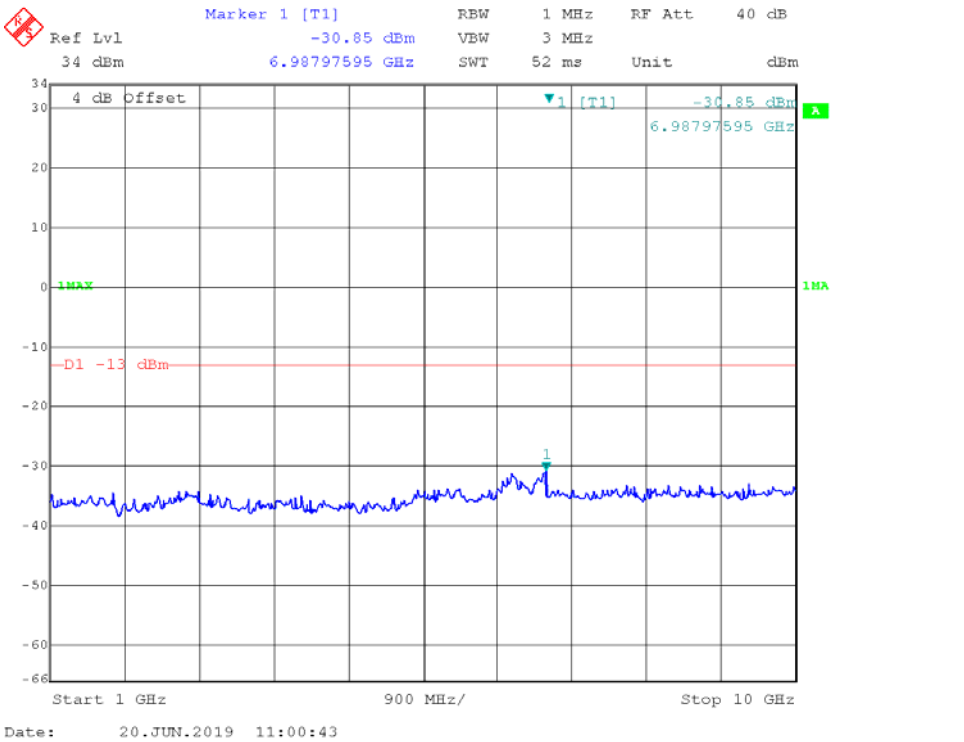




Fundamental

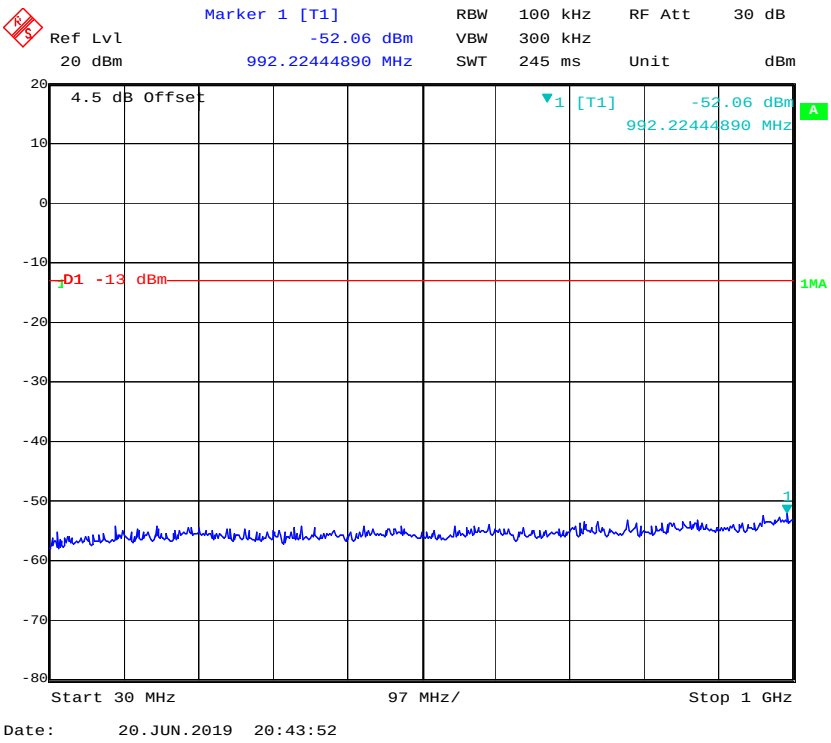
WCDMA Band V,Rel99

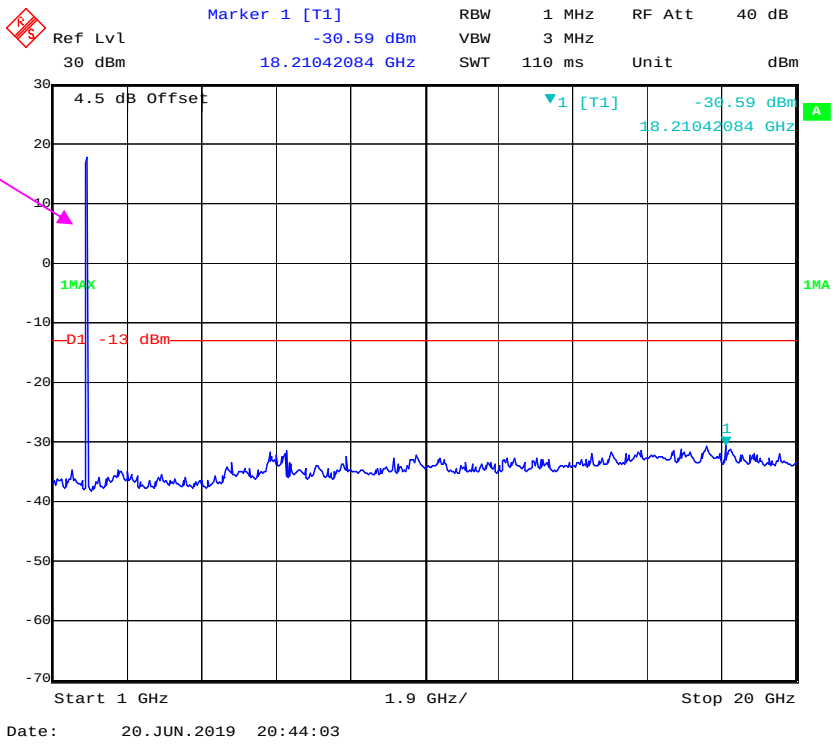




LTE Band 2 (Middle Channel)

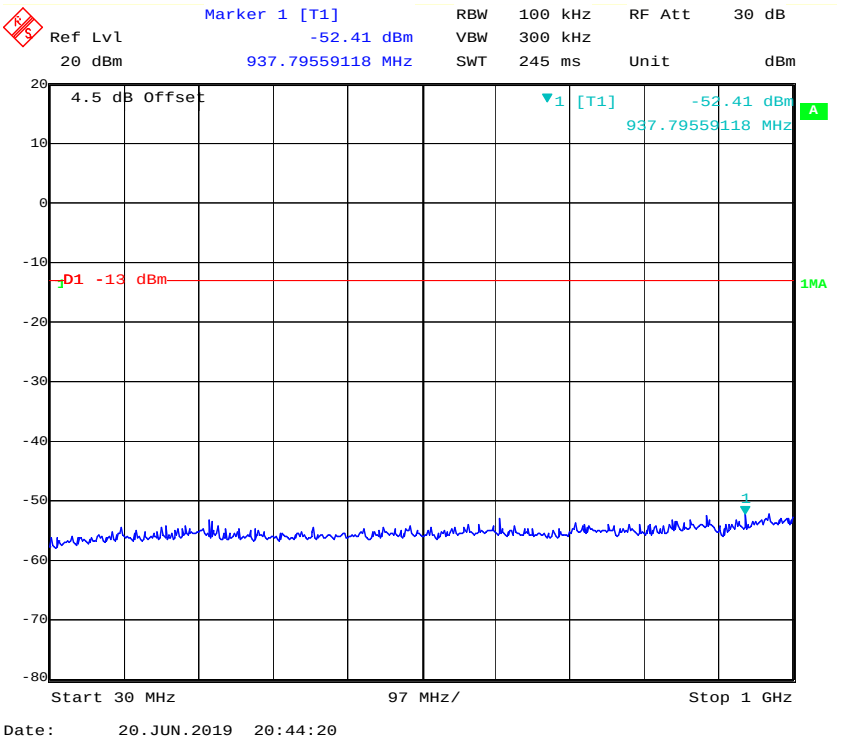
QPSK_1.4 MHz

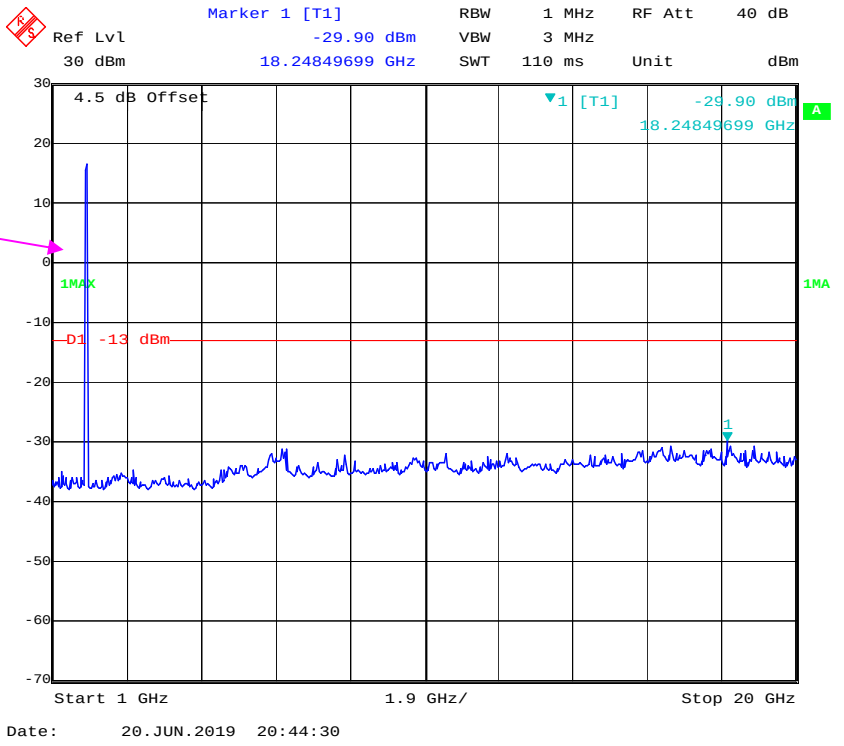




Fundamental

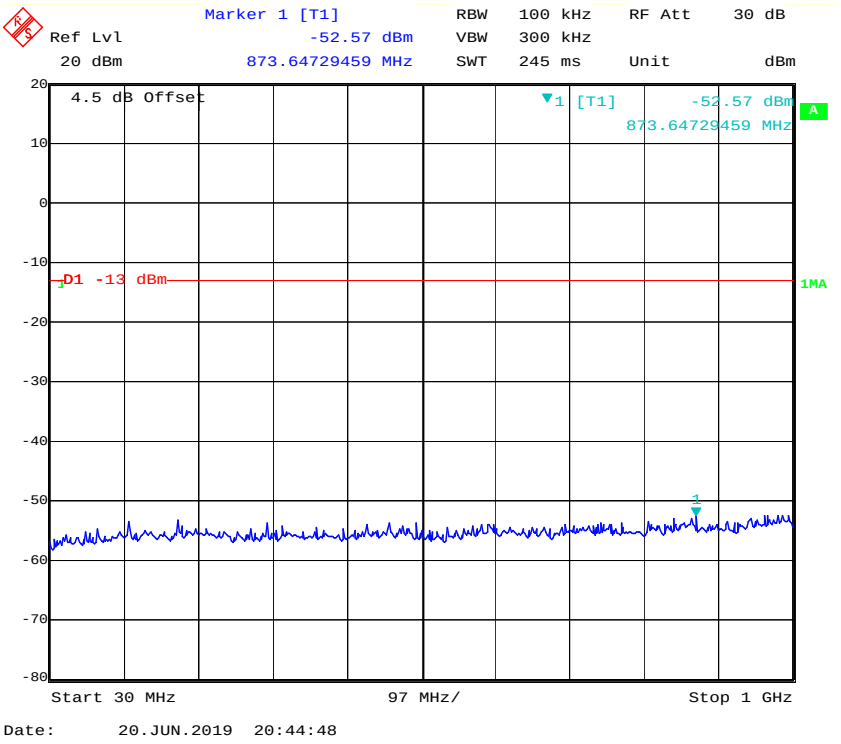
QPSK_3 MHz

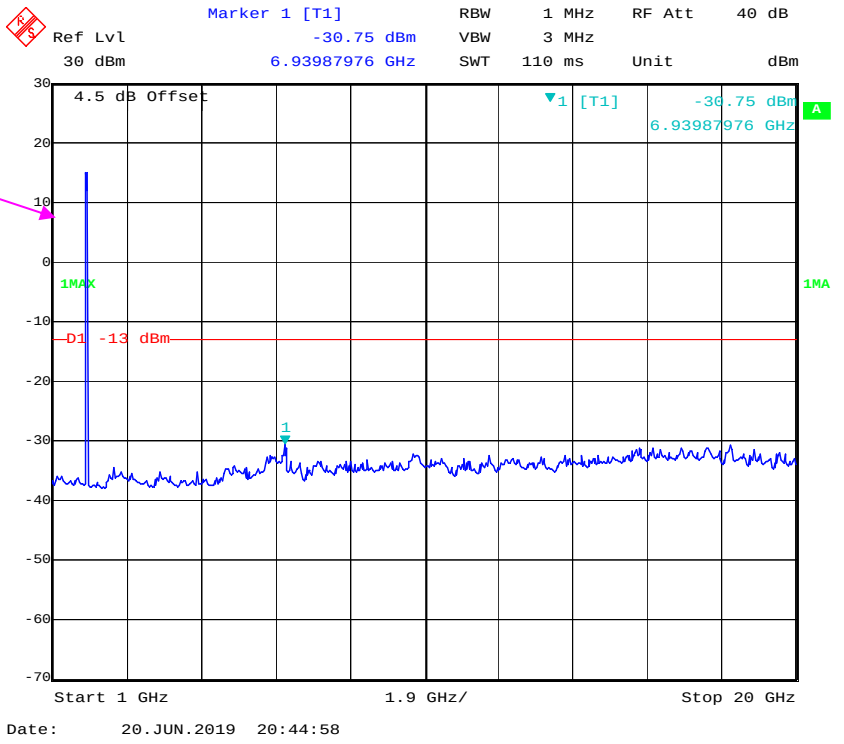




Fundamental

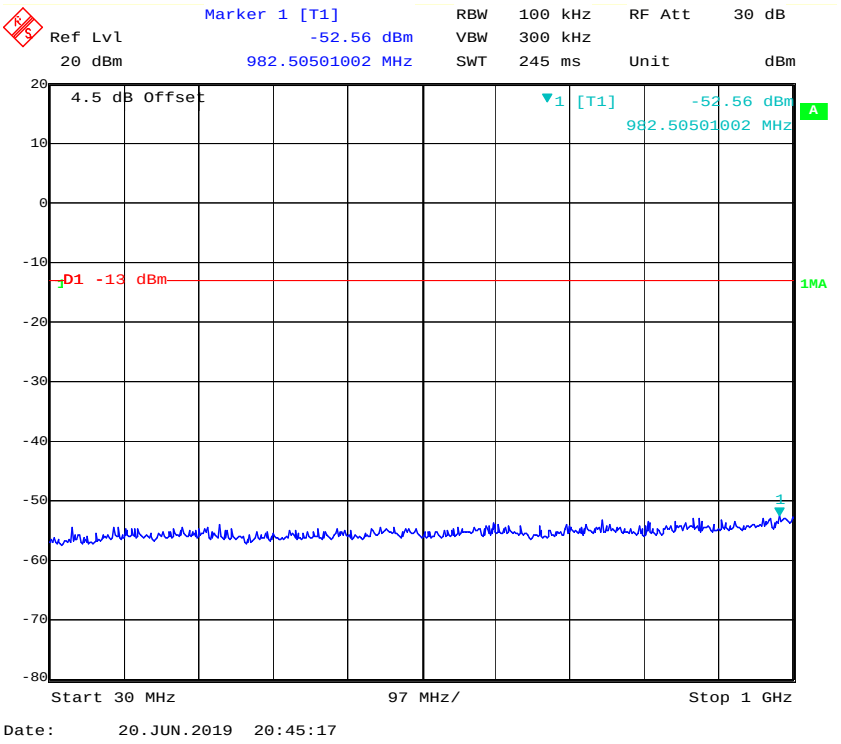
QPSK_5 MHz

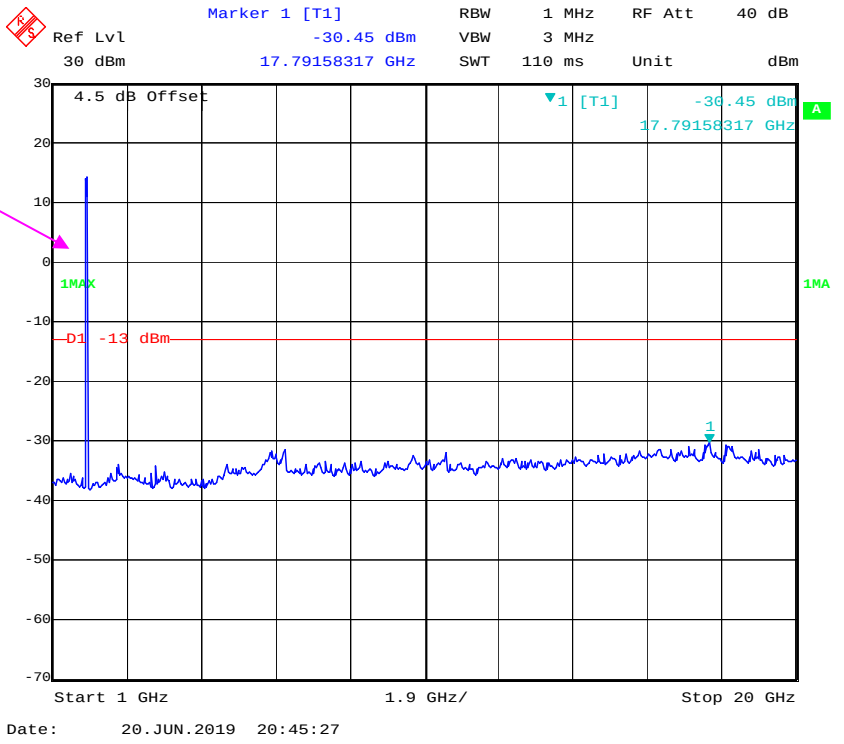




Fundamental

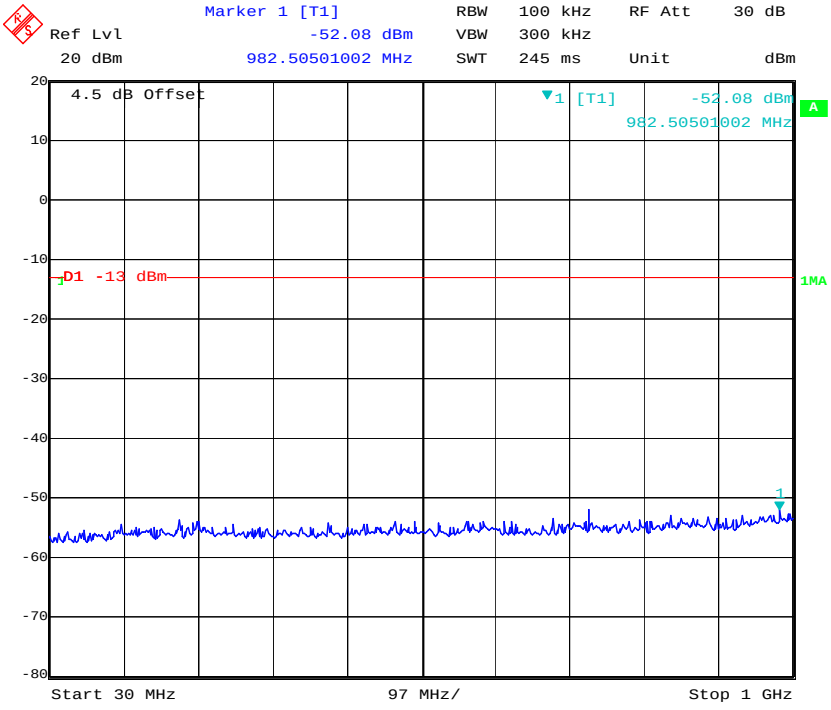
QPSK_10 MHz

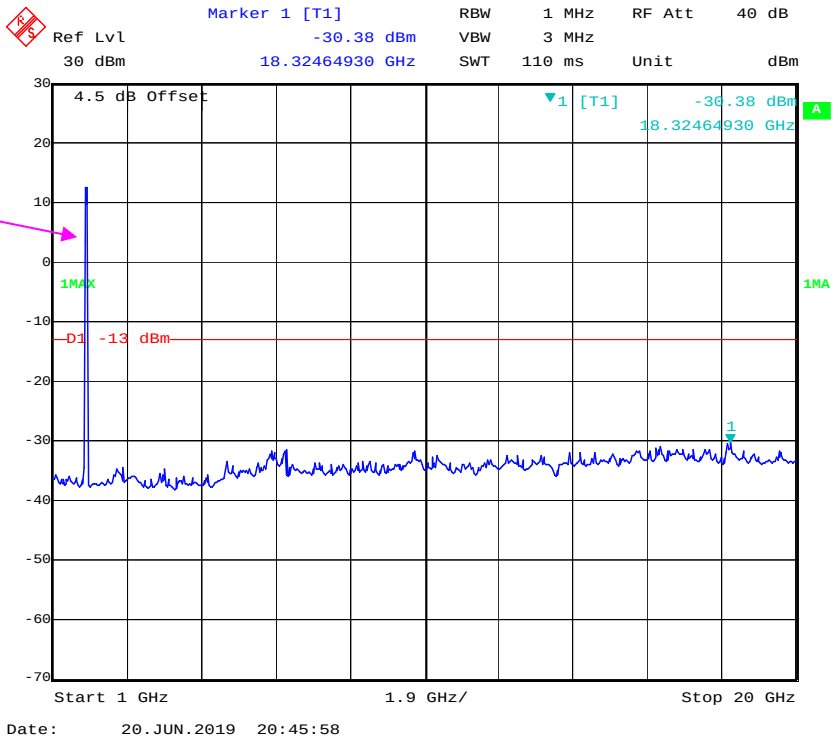




Fundamental

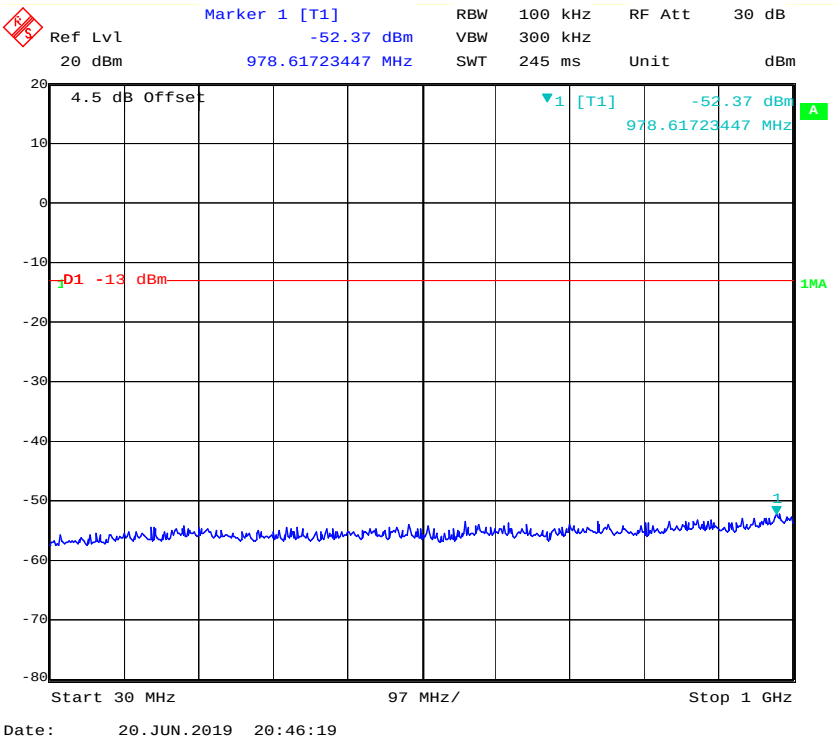
QPSK_15 MHz

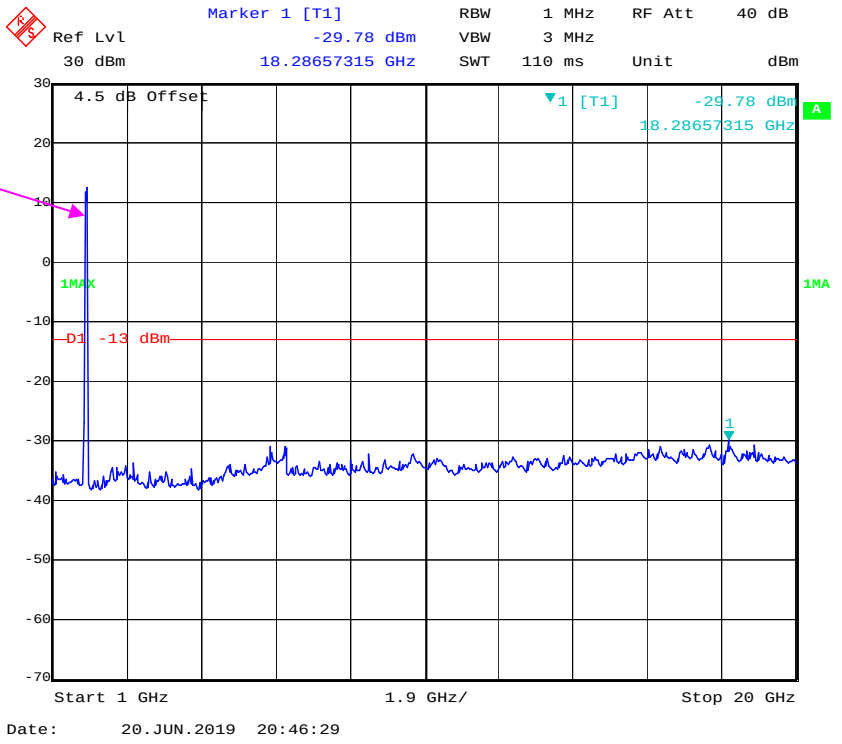




Fundamental

QPSK_20 MHz

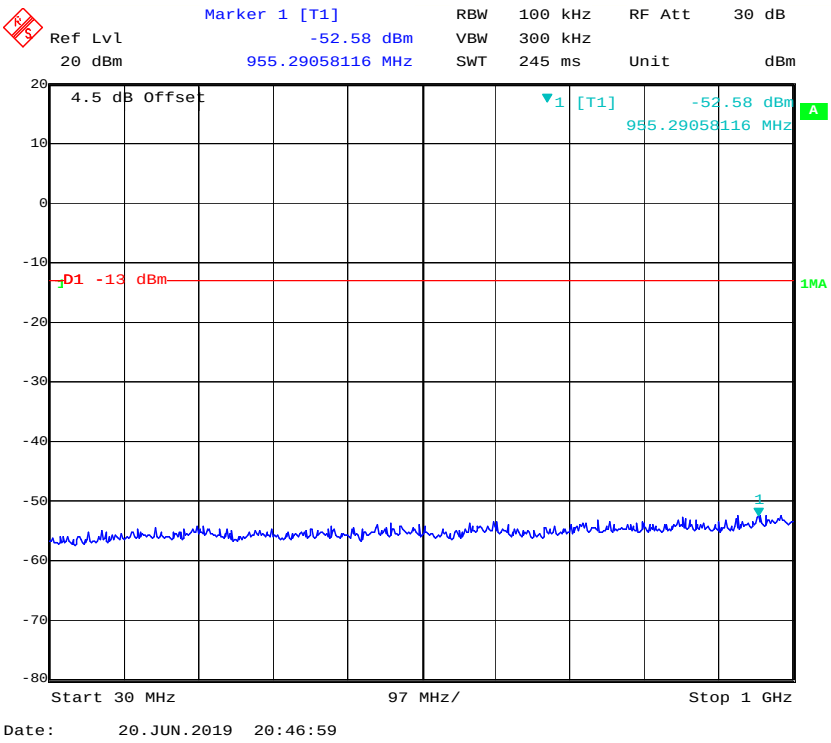


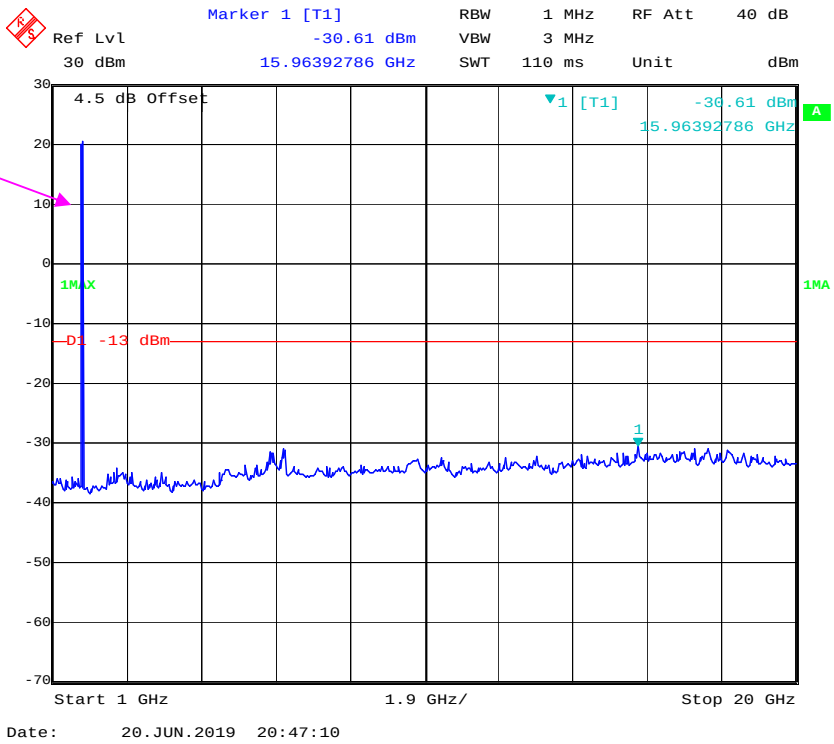


Fundamental

LTE Band 4 (Middle Channel)

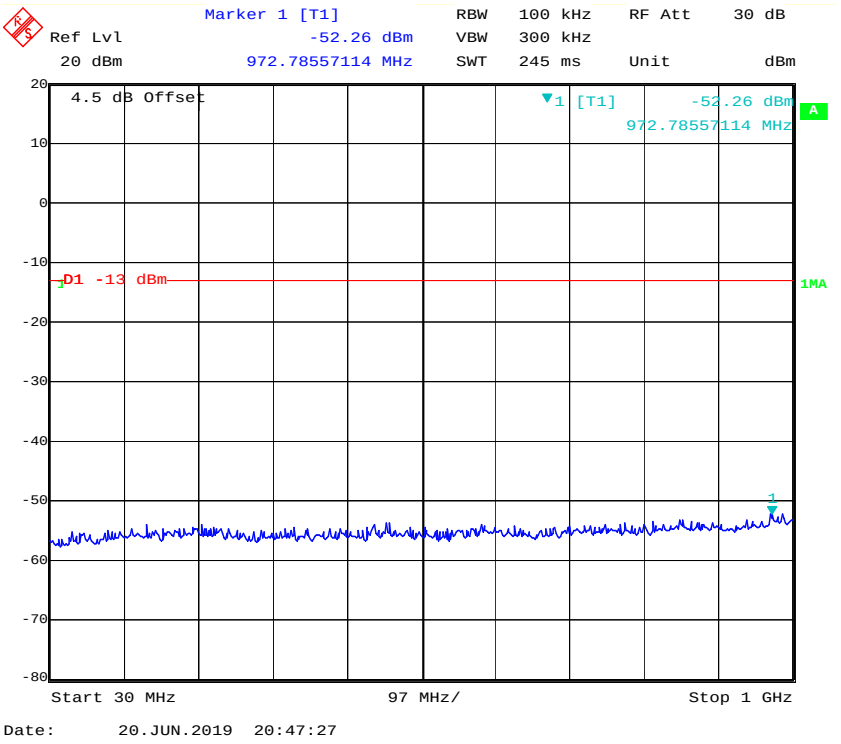
QPSK_1.4 MHz

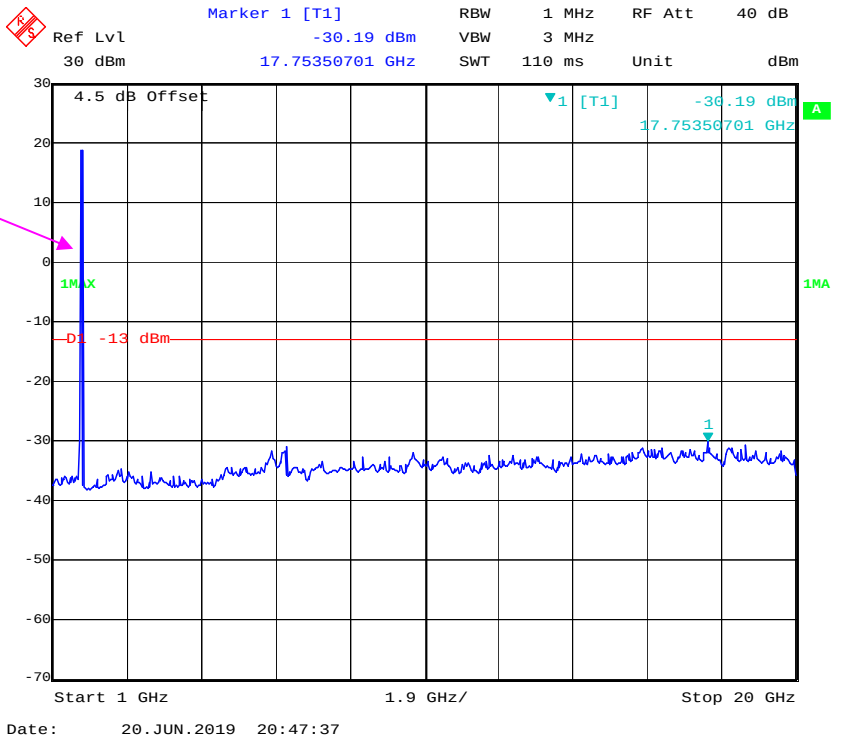




Fundamental

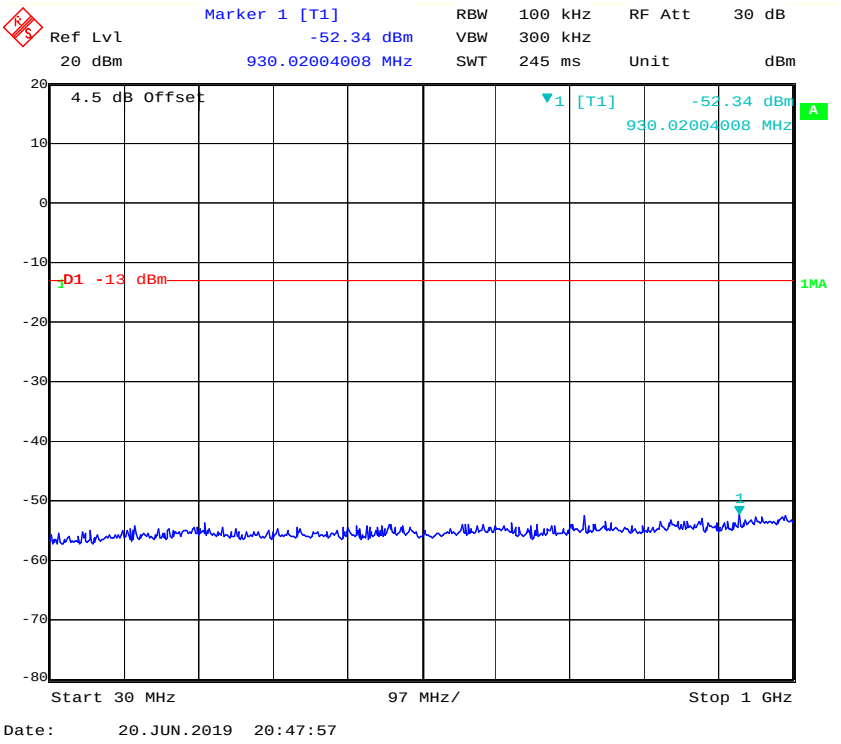
QPSK_3 MHz

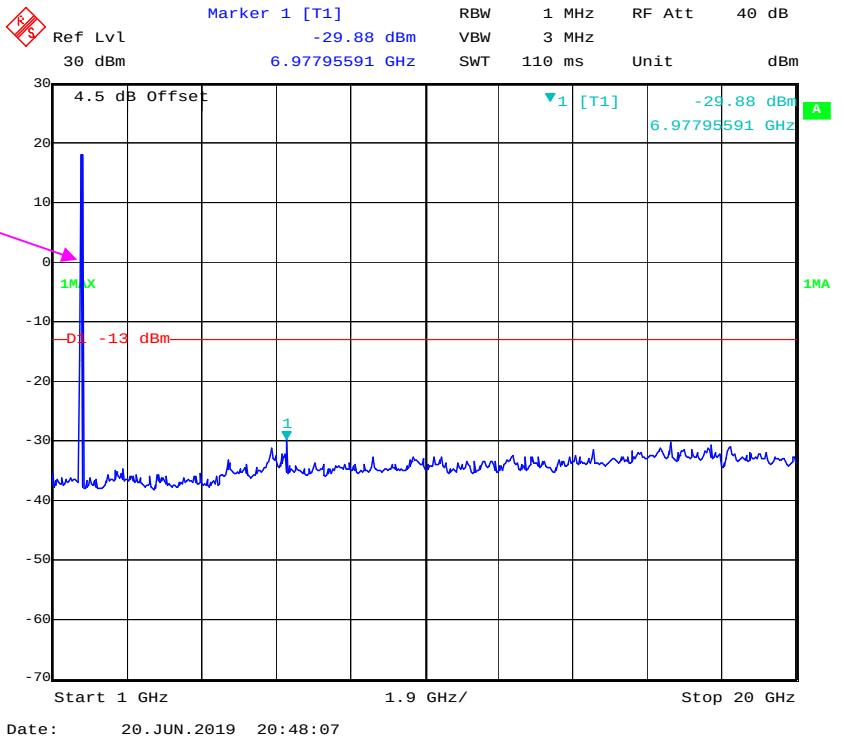




Fundamental

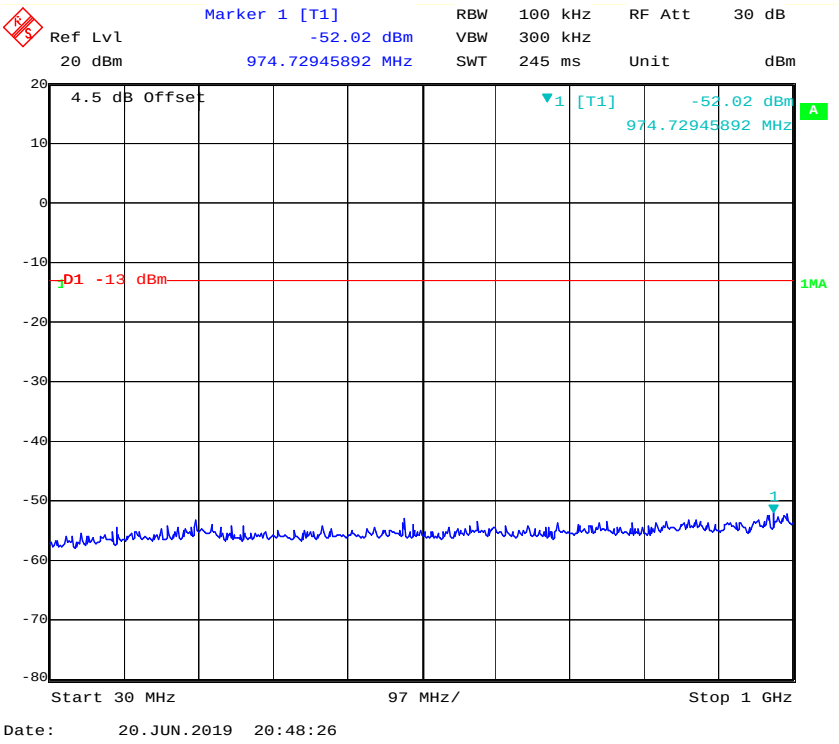
QPSK_5 MHz

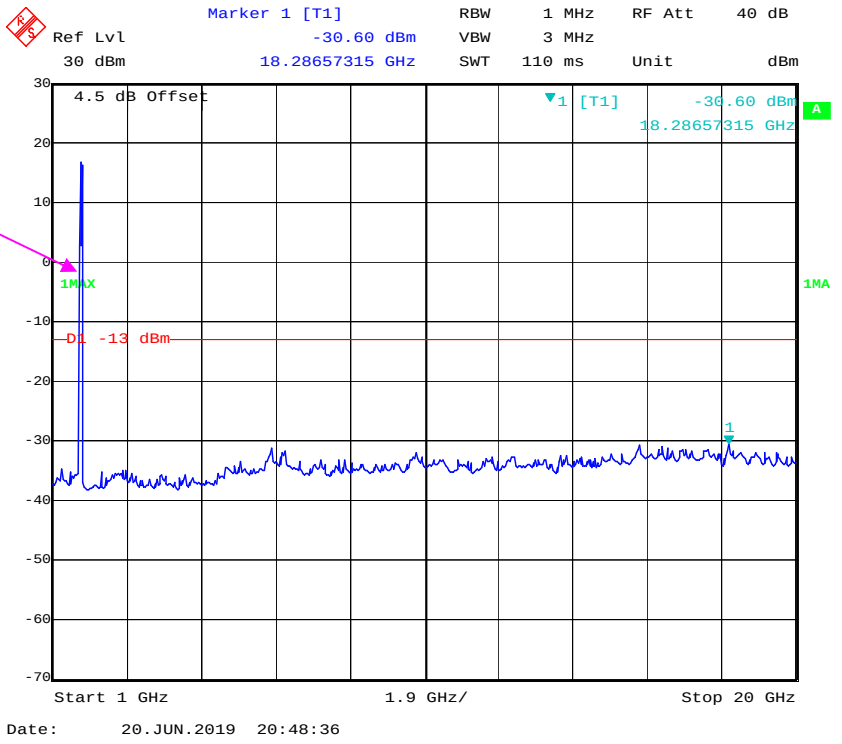




Fundamental

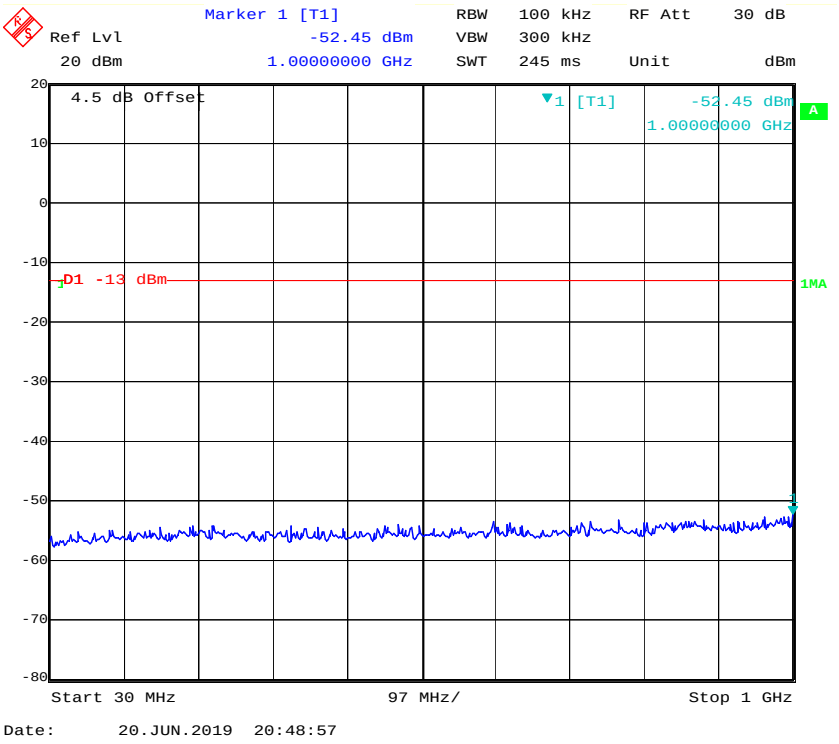
QPSK_10 MHz

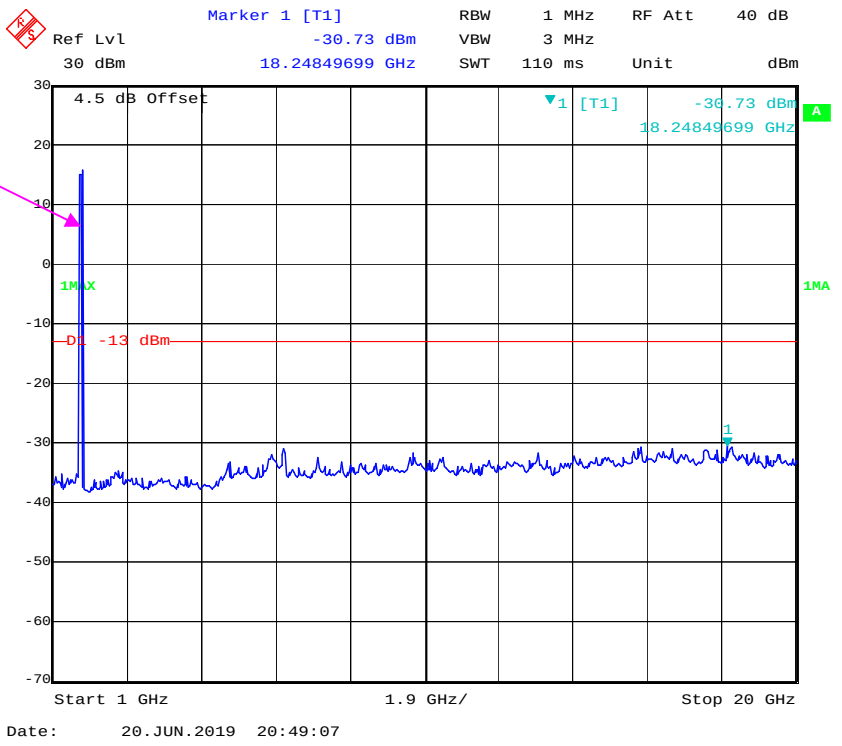




Fundamental

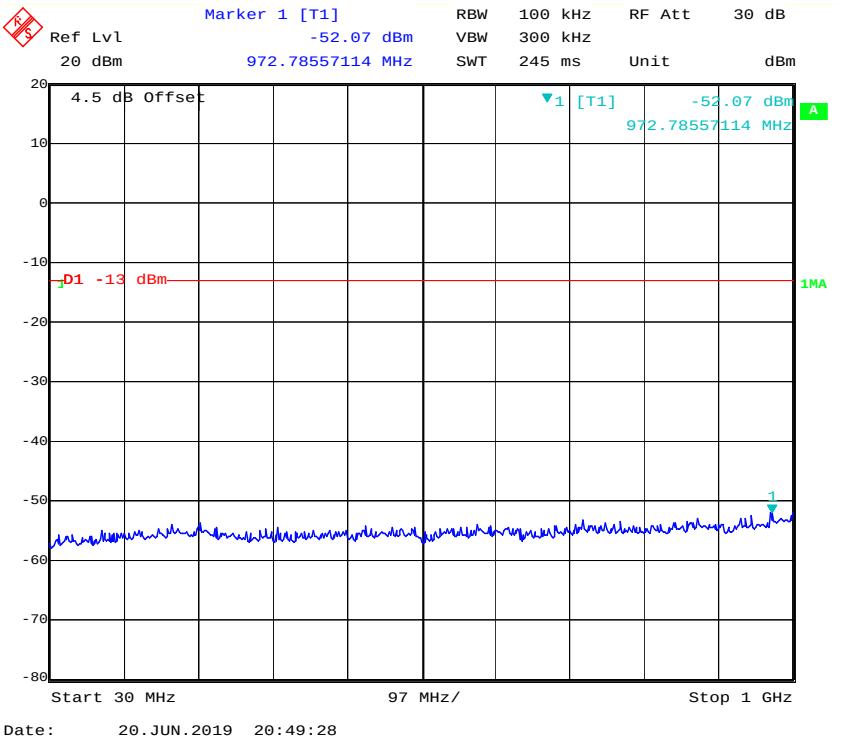
QPSK_15 MHz

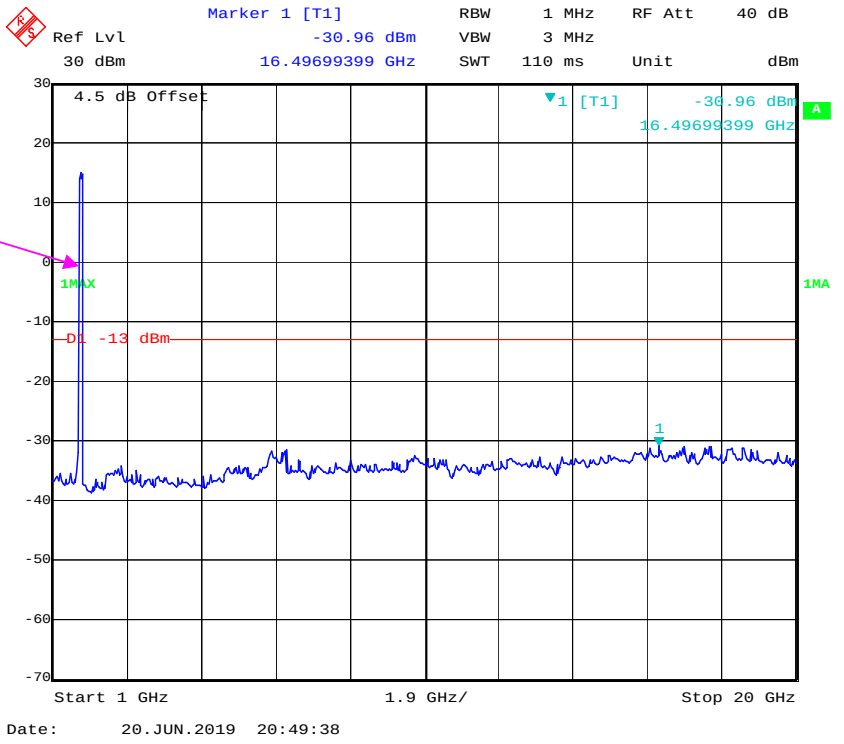




Fundamental

QPSK_20 MHz

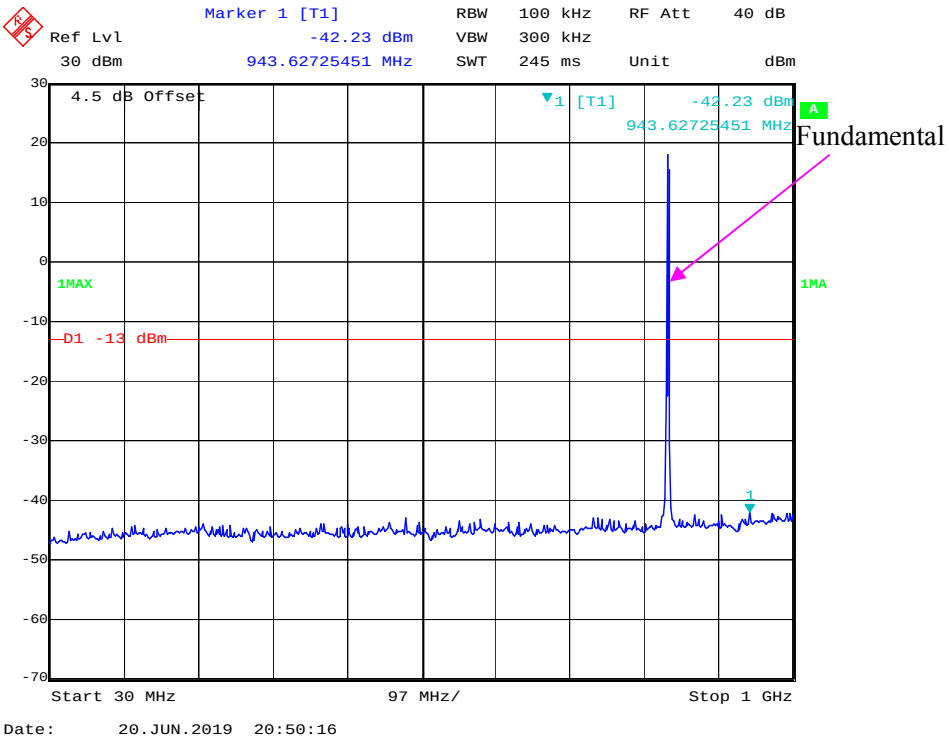


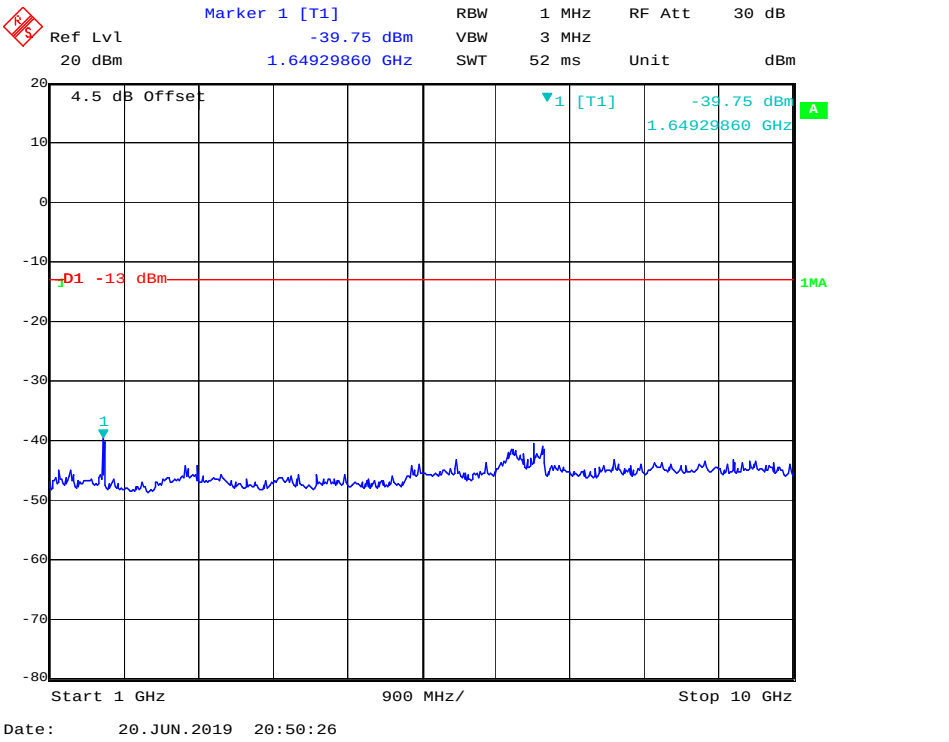


Fundamental

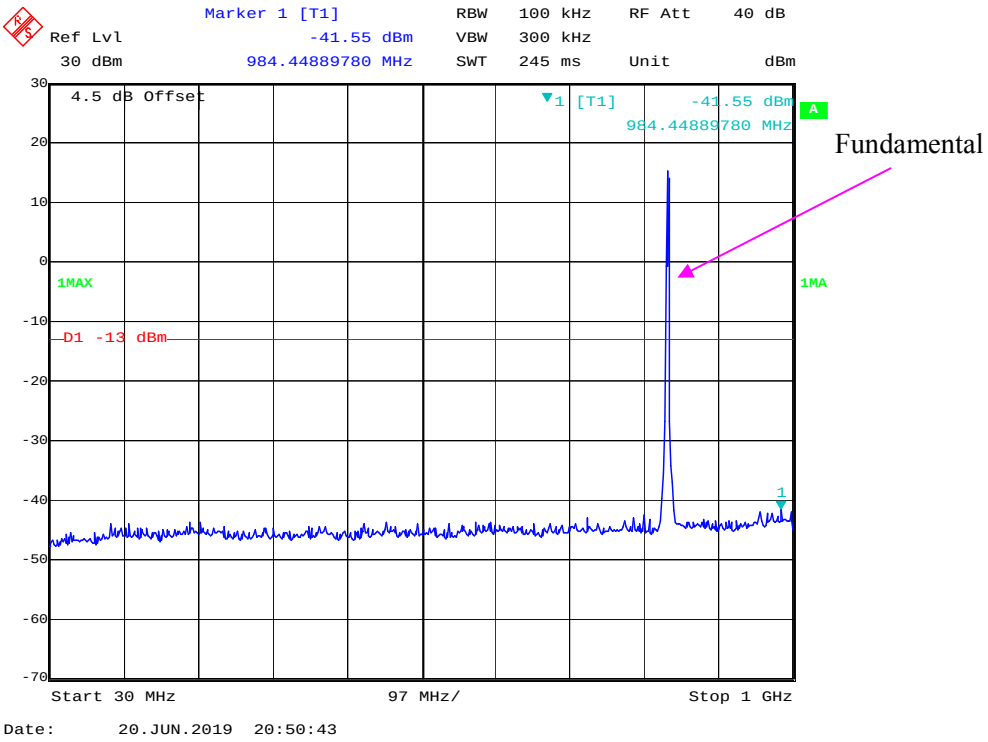
LTE Band 5 (Middle Channel)

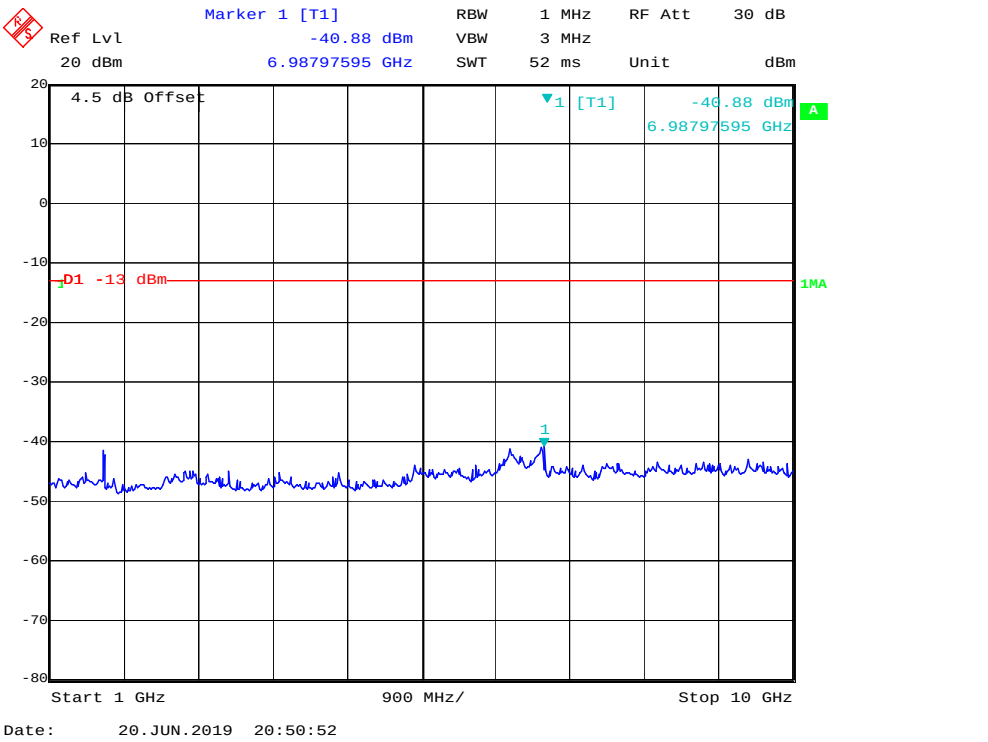
QPSK_1.4 MHz



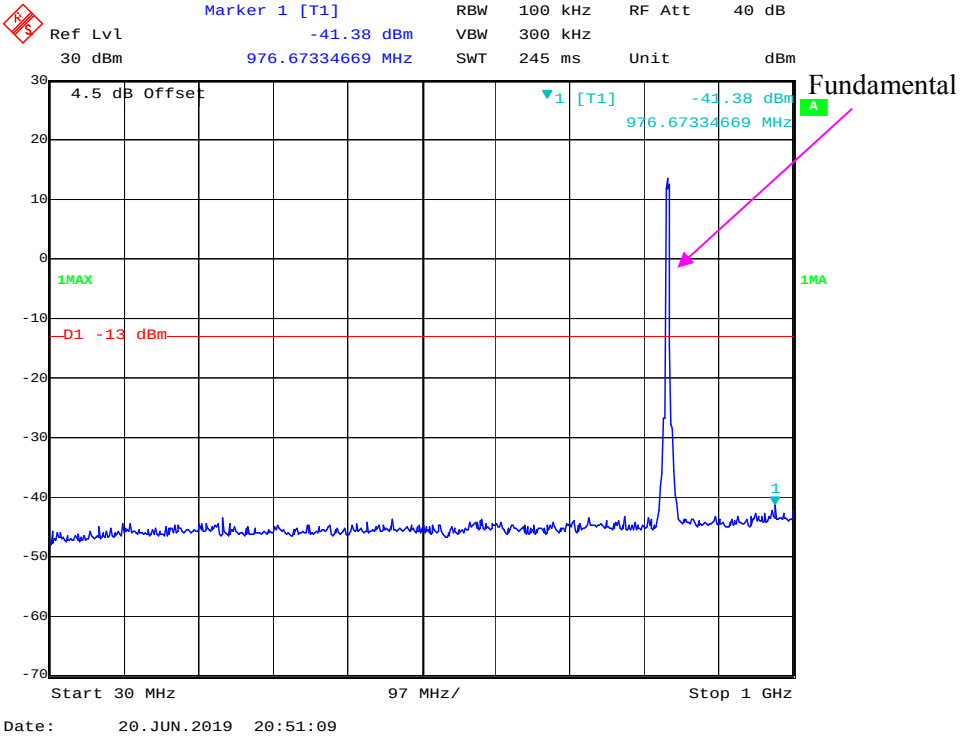


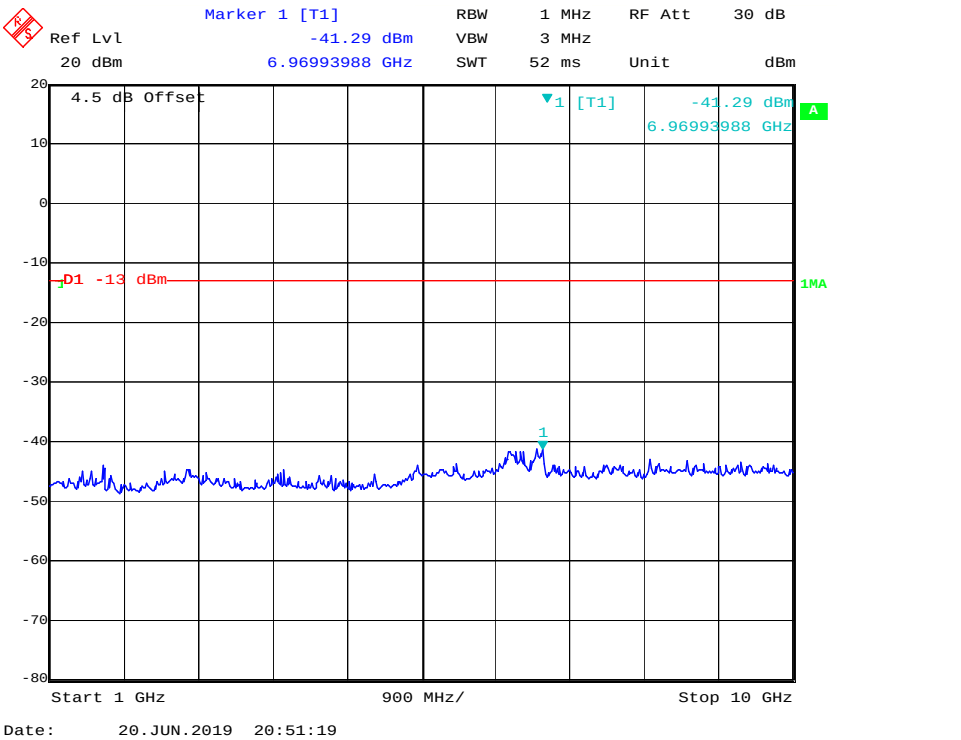
QPSK_3 MHz


Marker 1 [T1]
Ref Lvl
30 dBm
-41.55 dBm
984.44889780 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 40 dB
Unit dBm
4.5 dB Offset
1 [T1] -41.55 dBm
984.44889780 MHz
Fundamental
1MAX
1MA
D1 -13 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 20.JUN.2019 20:50:43

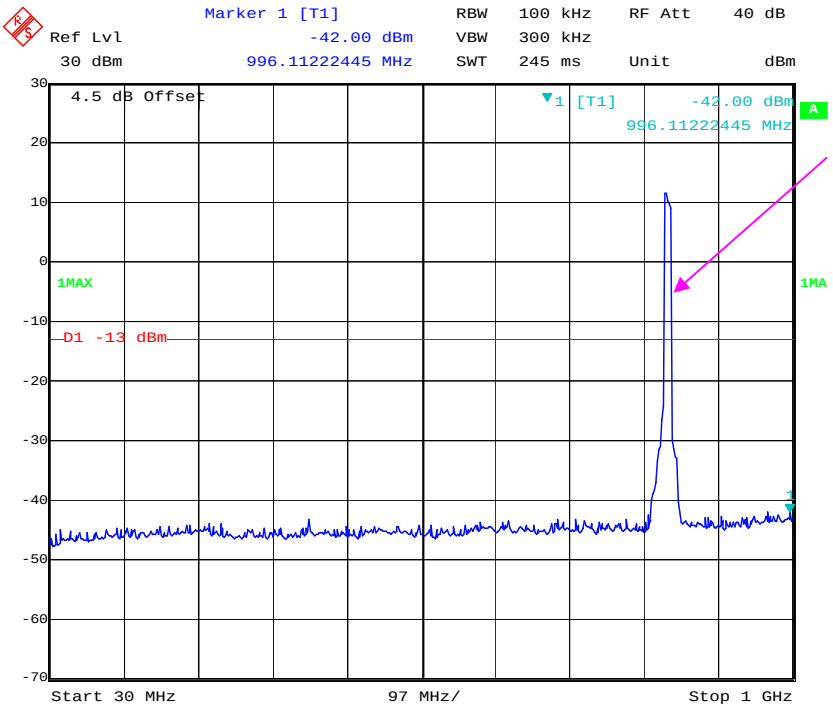

Marker 1 [T1]
Ref Lvl
20 dBm
-40.88 dBm
6.98797595 GHz
RBW 1 MHz
VBW 3 MHz
SWT 52 ms
RF Att 30 dB
Unit dBm
4.5 dB Offset
1 [T1] -40.88 dBm
6.98797595 GHz
1MA
D1 -13 dBm
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 20.JUN.2019 20:50:52

QPSK_5 MHz

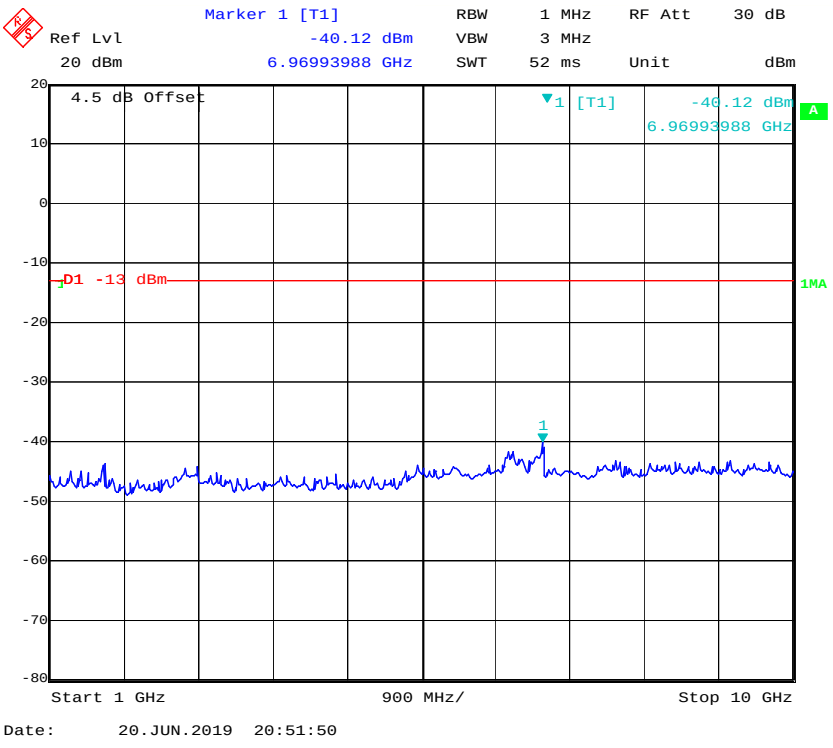

Marker 1 [T1]
Ref Lvl
30 dBm
-41.38 dBm
976.67334669 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 40 dB
Unit dBm
4.5 dB Offset
1 [T1] -41.38 dBm
976.67334669 MHz
Fundamental
1MAX
1MA
D1 -13 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 20.JUN.2019 20:51:09


Marker 1 [T1]
Ref Lvl
20 dBm
-41.29 dBm
6.96993988 GHz
RBW 1 MHz
VBW 3 MHz
SWT 52 ms
RF Att 30 dB
Unit dBm
4.5 dB Offset
1 [T1] -41.29 dBm
6.96993988 GHz
1MA
D1 -13 dBm
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 20.JUN.2019 20:51:19

QPSK_10 MHz

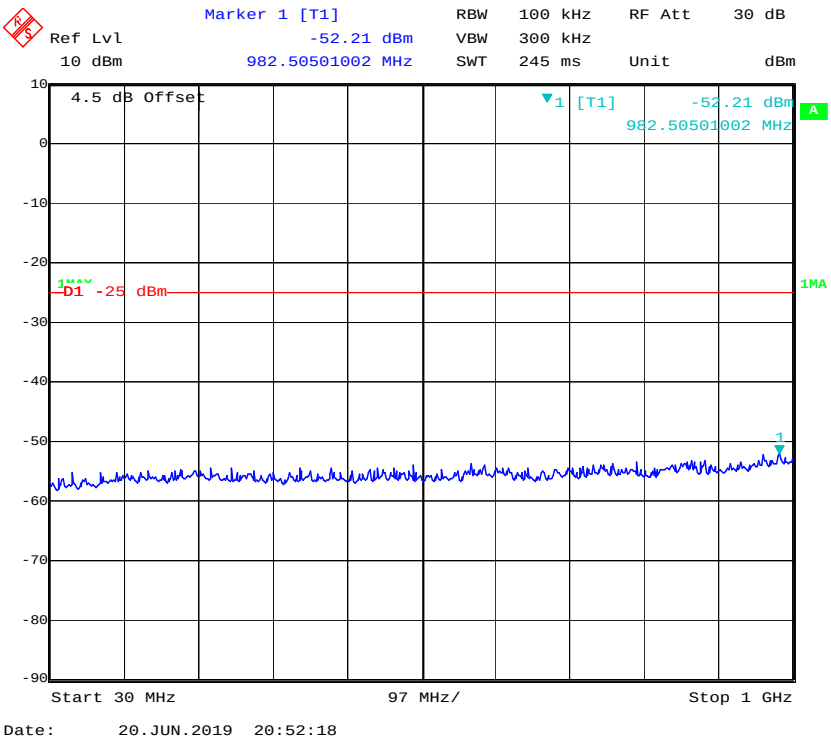


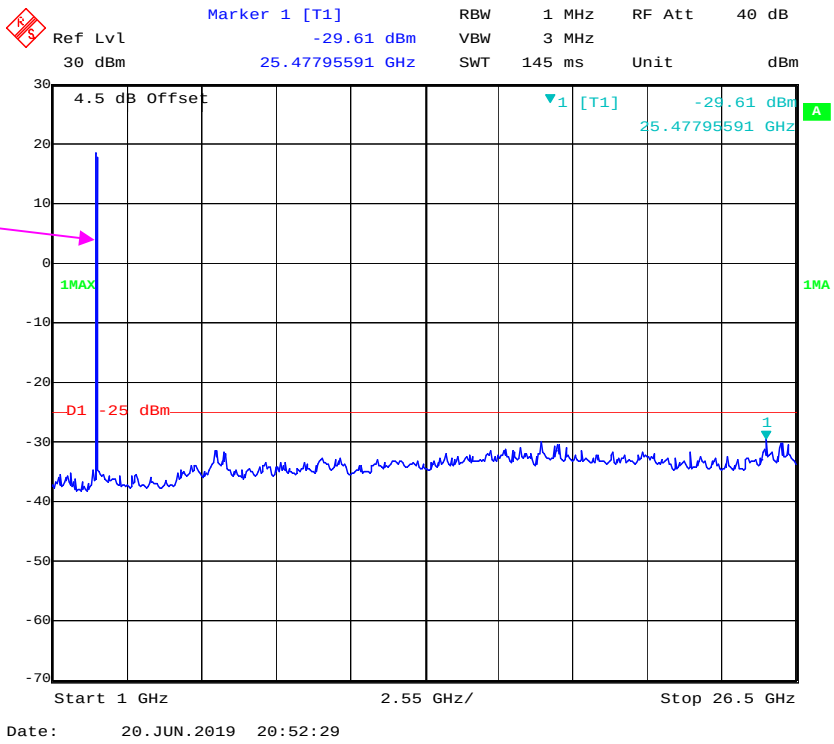
Fundamental



LTE Band 7 (Middle Channel)

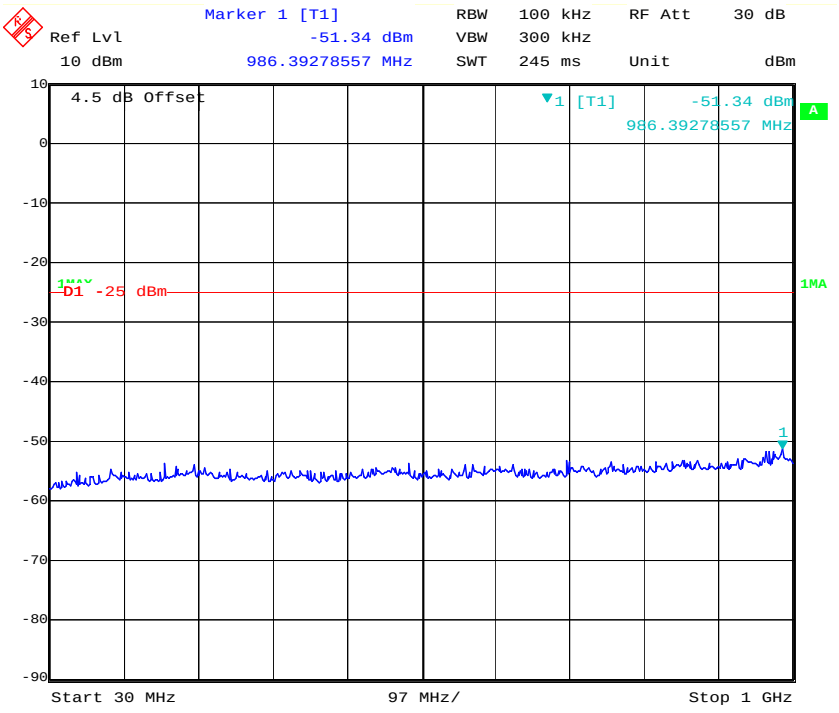
QPSK_5 MHz

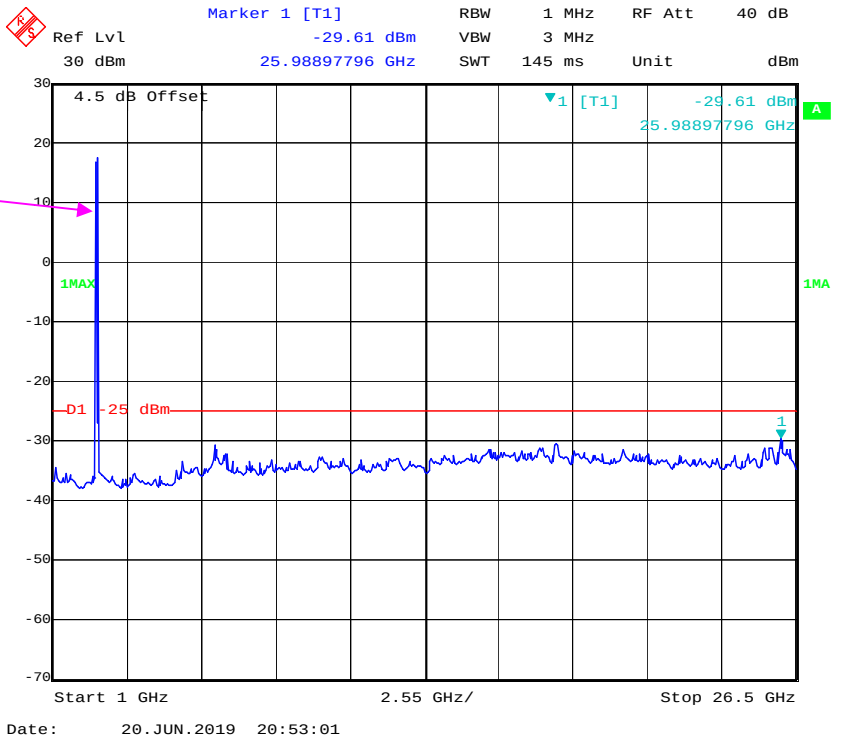




Fundamental

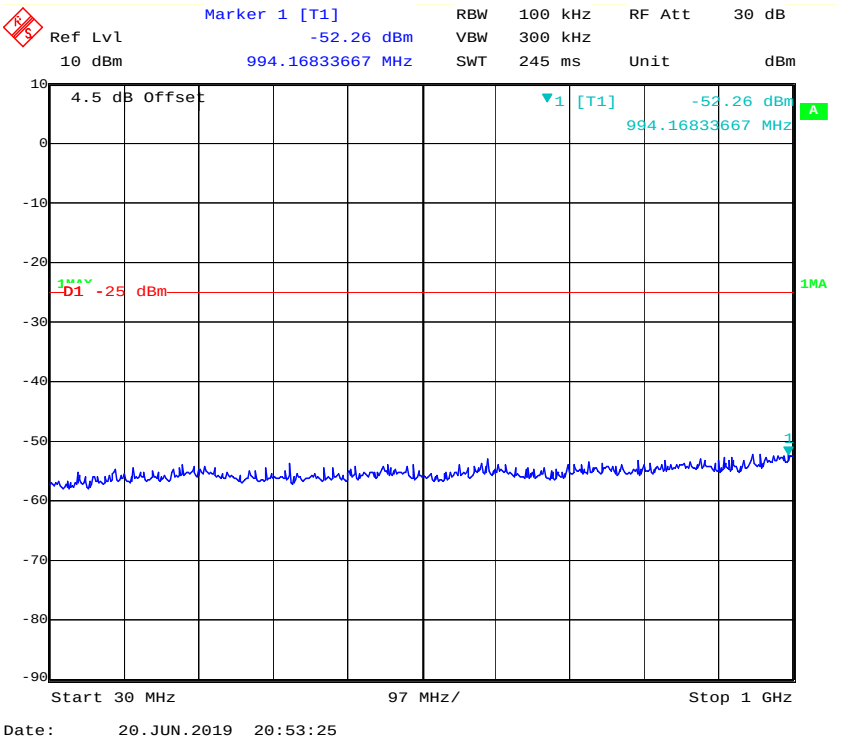
QPSK_10 MHz

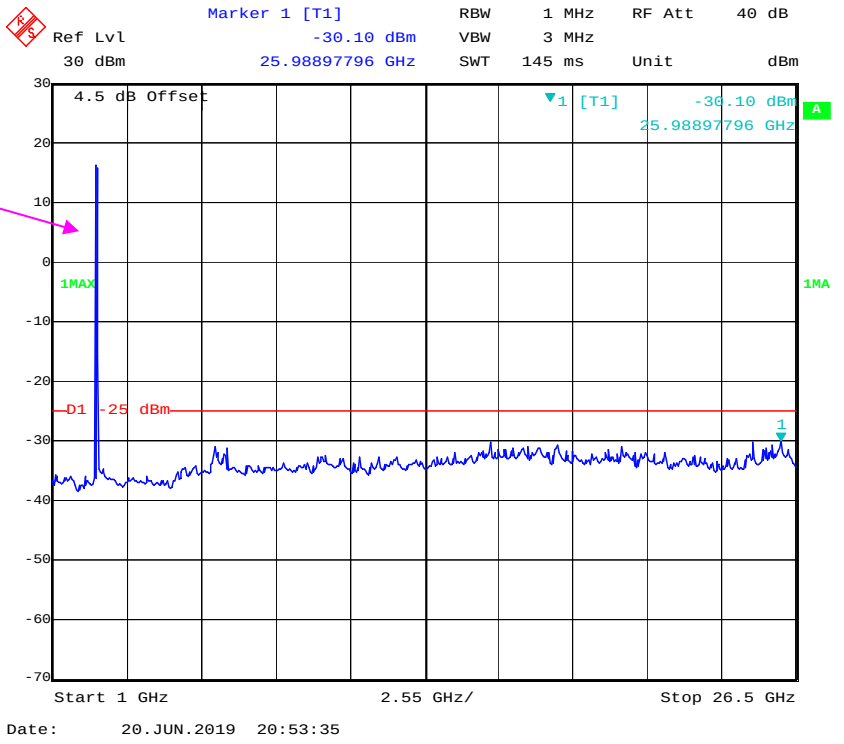




Fundamental

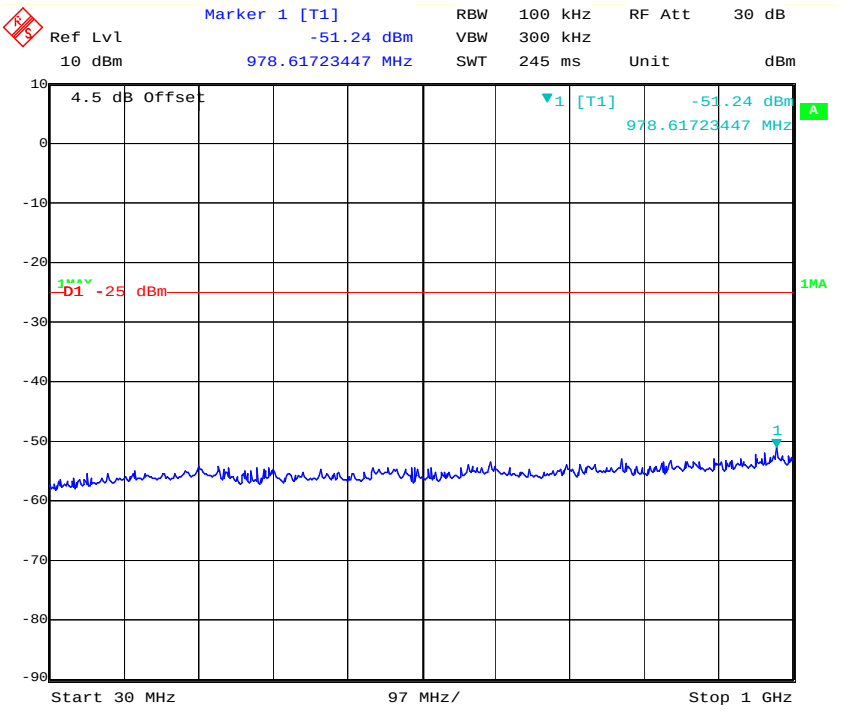
QPSK_15 MHz

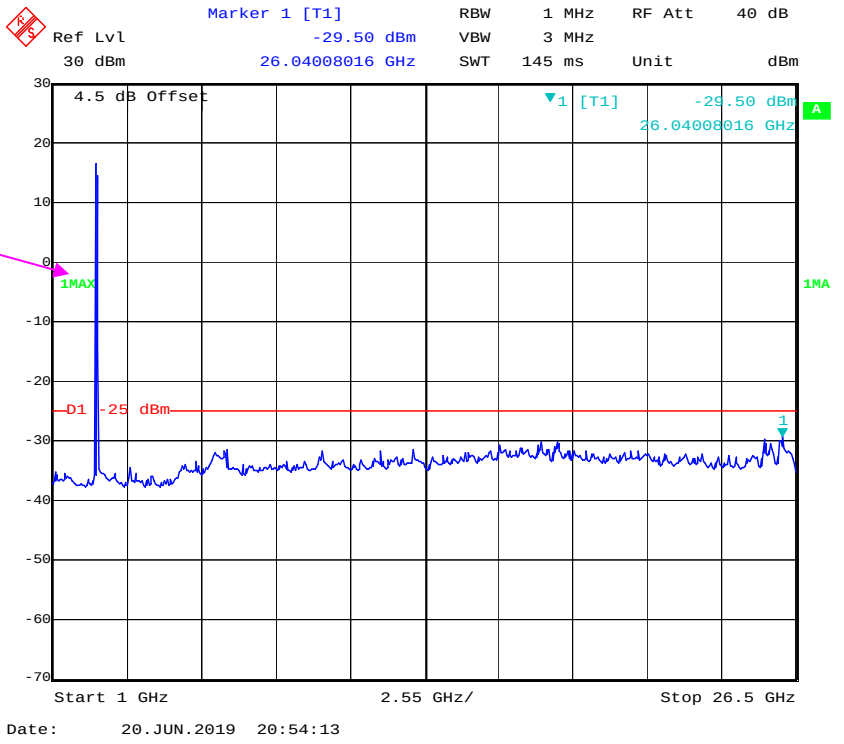




Fundamental

QPSK_20 MHz

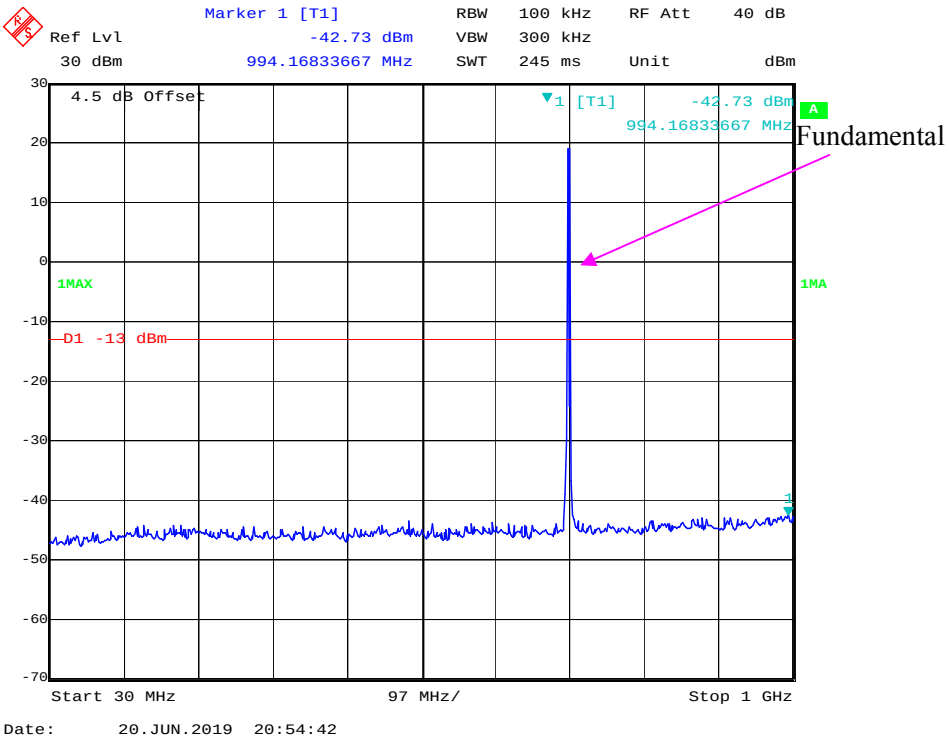


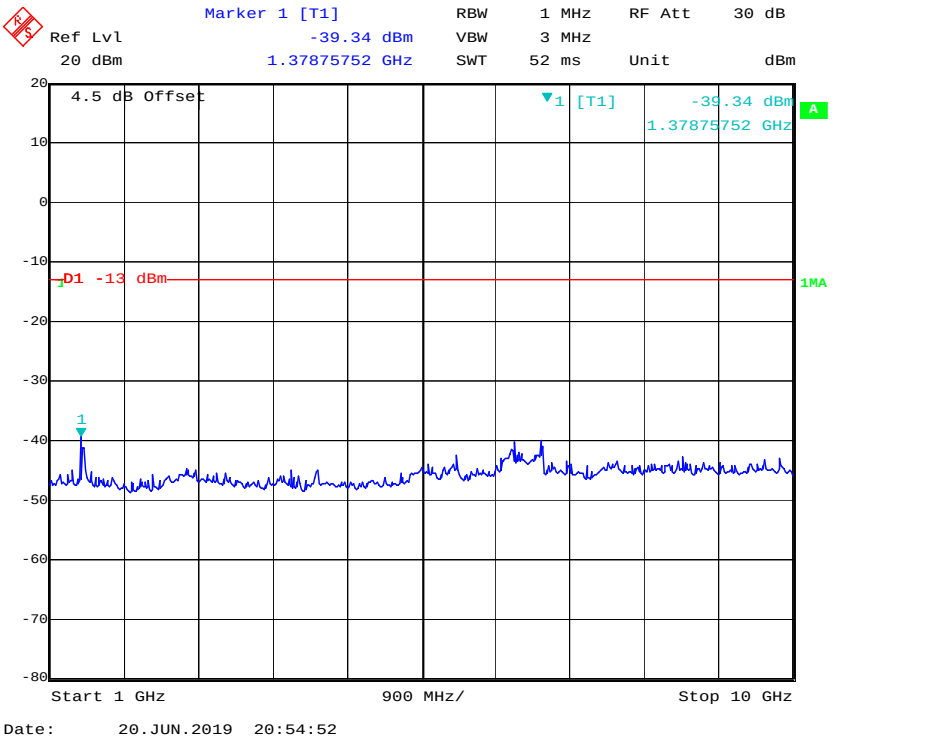


Fundamental

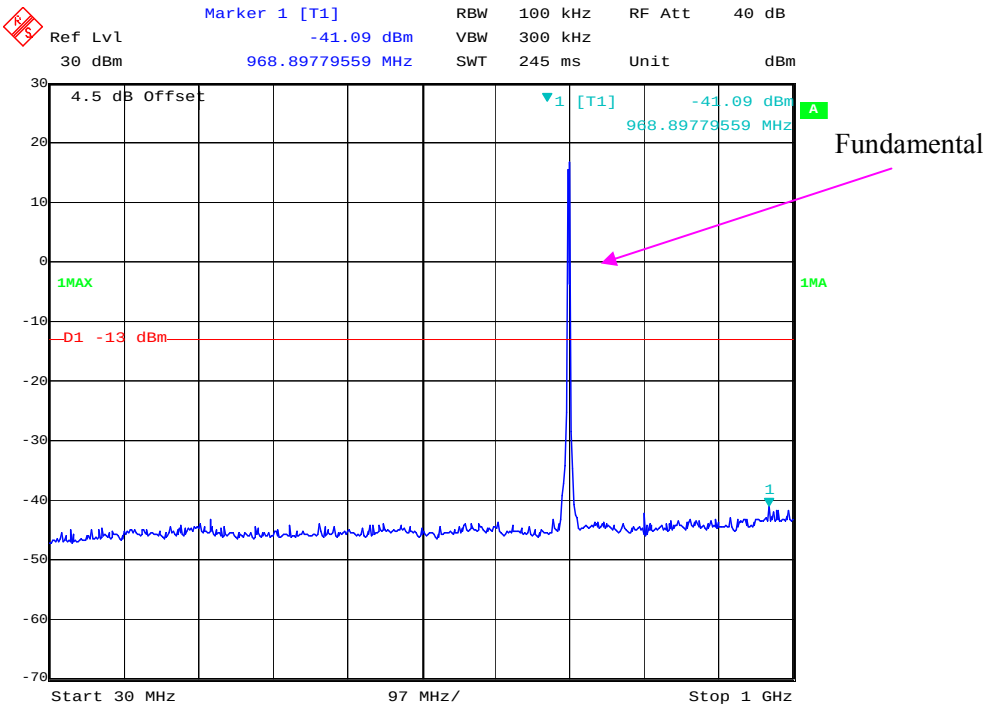
LTE Band 12 (Middle Channel)

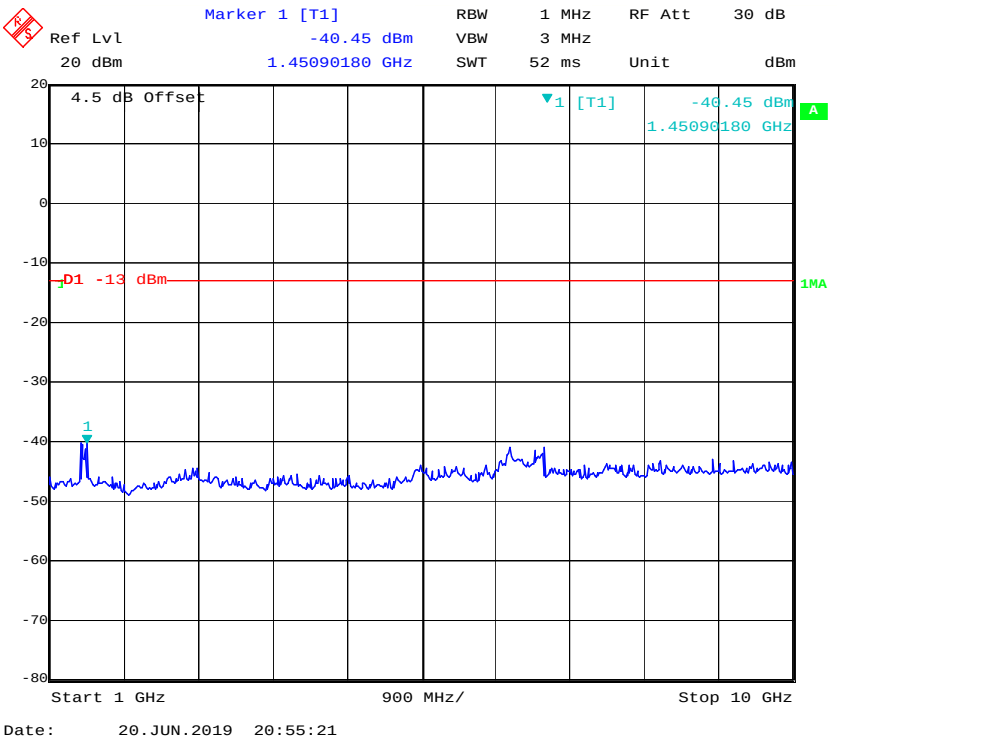
QPSK_1.4 MHz



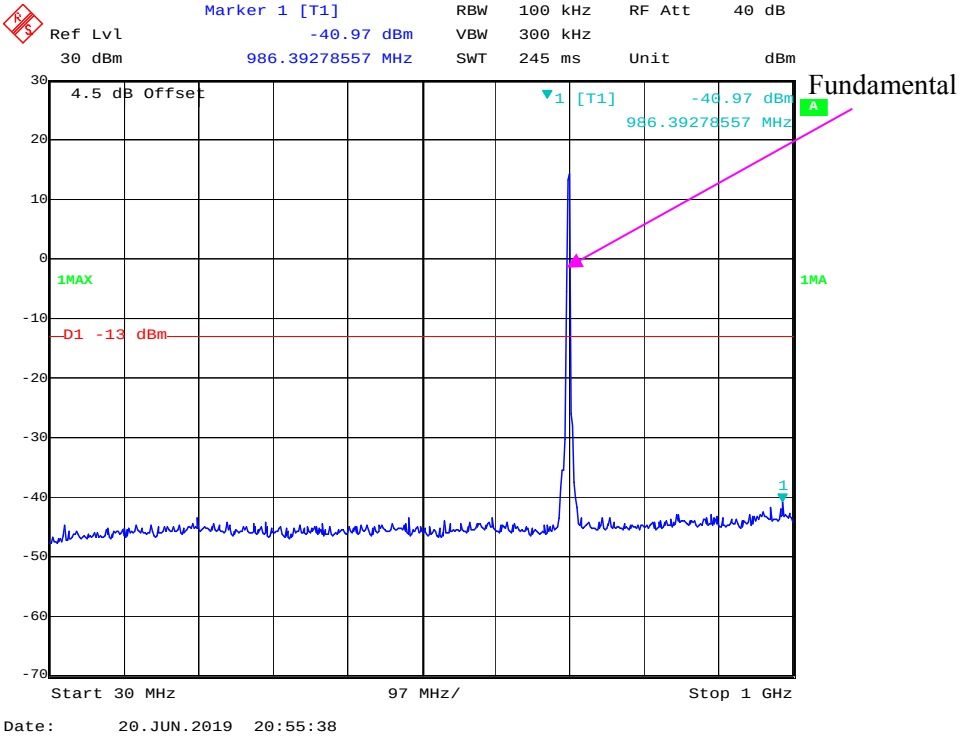


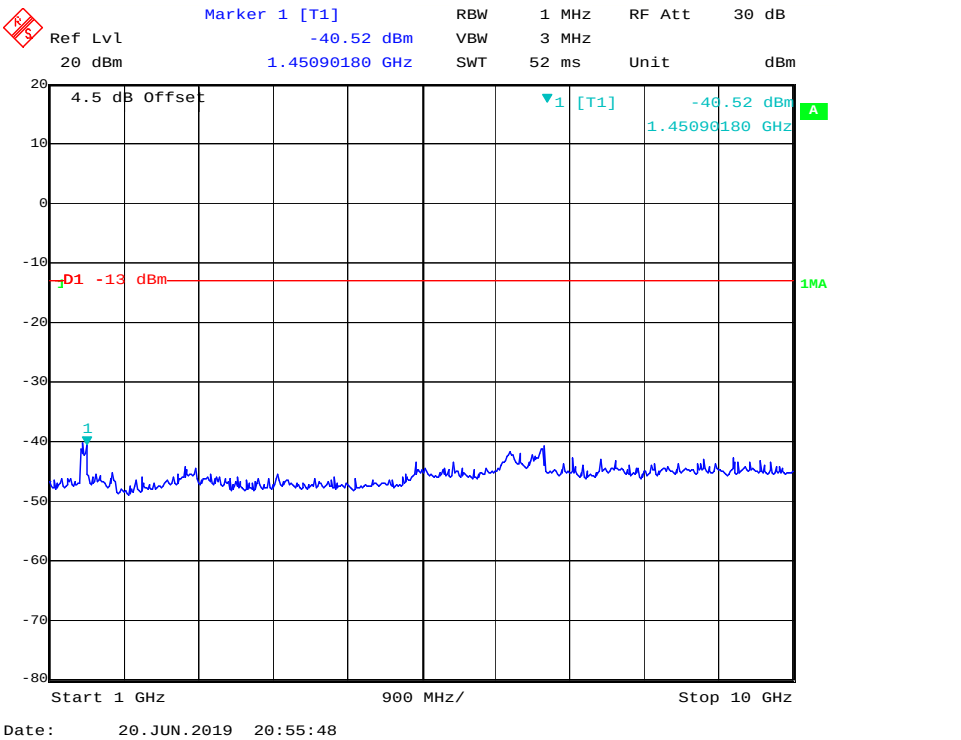
QPSK_3 MHz


Marker 1 [T1]
Ref Lvl
30 dBm
-41.09 dBm
968.89779559 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 40 dB
Unit dBm
4.5 dB Offset
1 [T1] -41.09 dBm
968.89779559 MHz
Fundamental
1MAX
1MA
D1 -13 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 20.JUN.2019 20:55:11

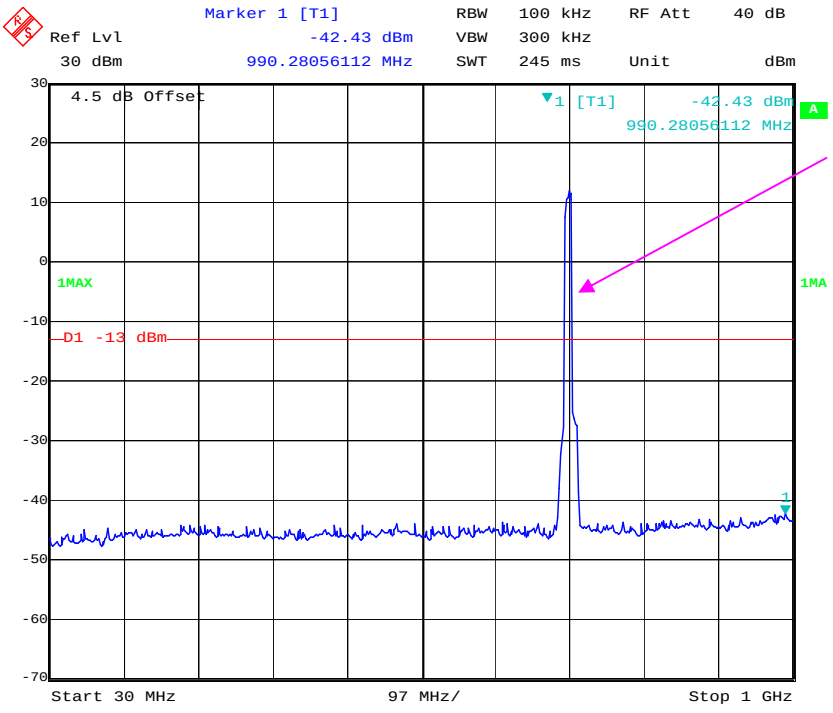

Marker 1 [T1]
Ref Lvl
20 dBm
-40.45 dBm
1.45090180 GHz
RBW 1 MHz
VBW 3 MHz
SWT 52 ms
RF Att 30 dB
Unit dBm
4.5 dB Offset
1 [T1] -40.45 dBm
1.45090180 GHz
1MA
D1 -13 dBm
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 20.JUN.2019 20:55:21

QPSK_5 MHz

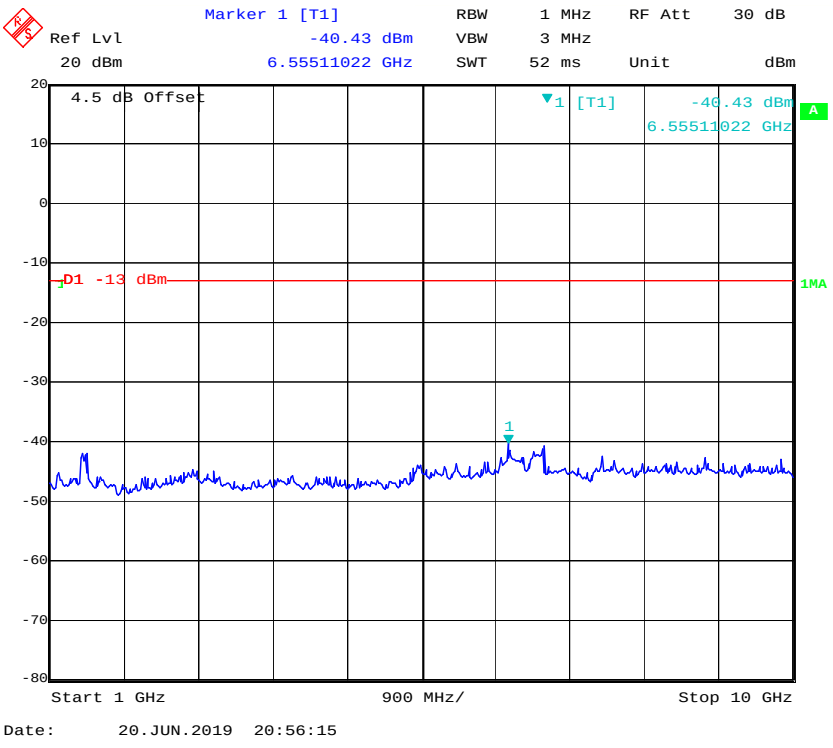

Marker 1 [T1]
Ref Lvl
30 dBm
-40.97 dBm
986.39278557 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 40 dB
Unit dBm
4.5 dB Offset
1 [T1] -40.97 dBm
986.39278557 MHz
Fundamental
1MAX
1MA
D1 -13 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 20.JUN.2019 20:55:38


Marker 1 [T1]
Ref Lvl
20 dBm
-40.52 dBm
1.45090180 GHz
RBW 1 MHz
VBW 3 MHz
SWT 52 ms
RF Att 30 dB
Unit dBm
4.5 dB Offset
1 [T1] -40.52 dBm
1.45090180 GHz
D1 -13 dBm
1MA
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 20.JUN.2019 20:55:48

QPSK_10 MHz

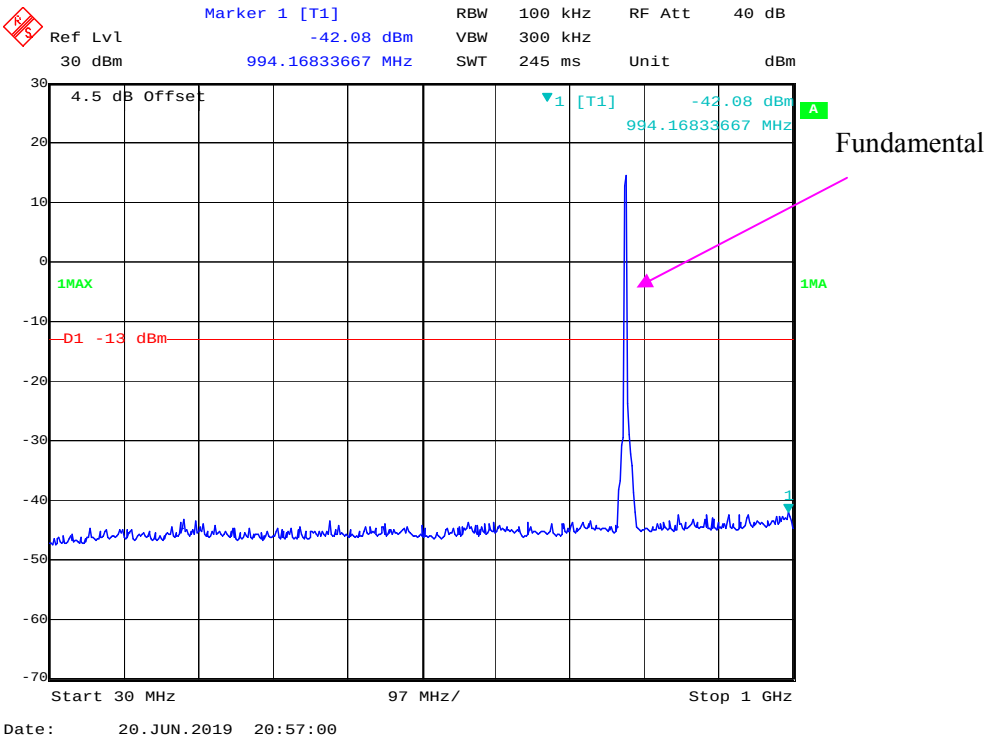


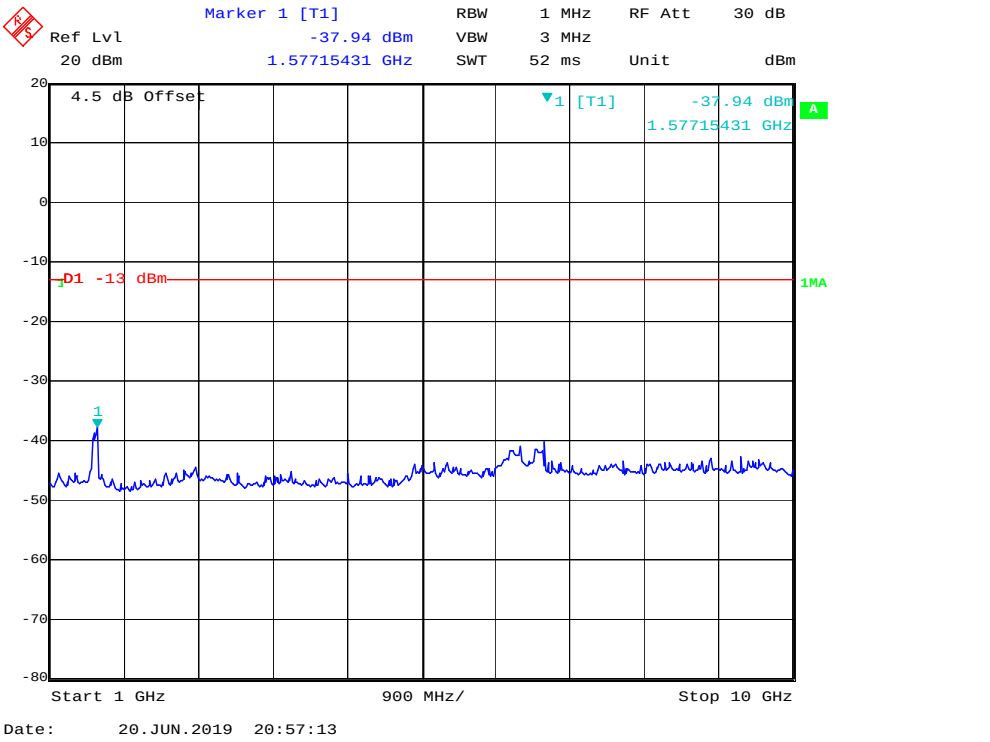
Fundamental

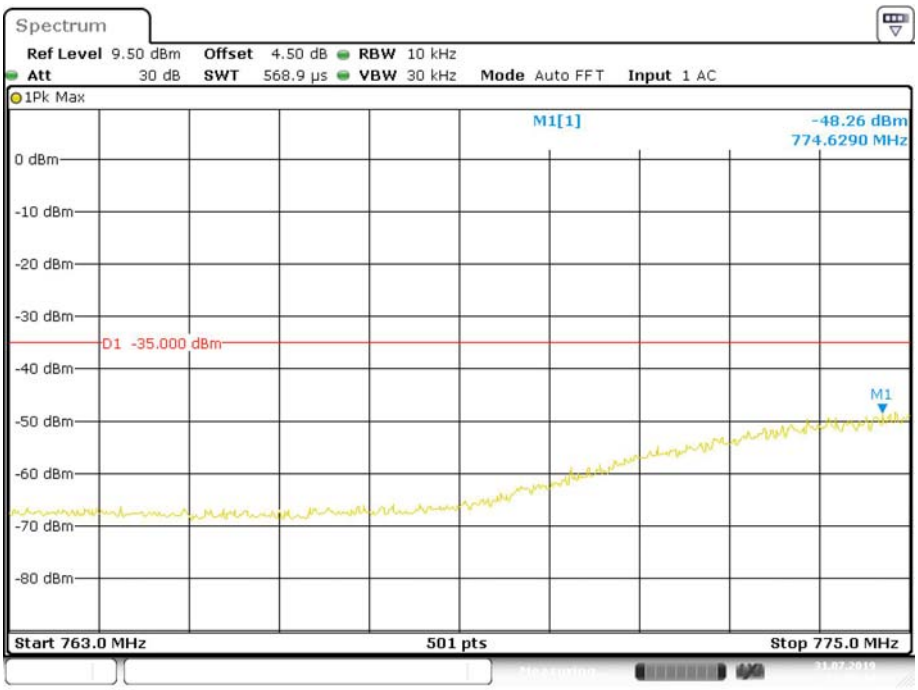


LTE Band 13 (Middle Channel)

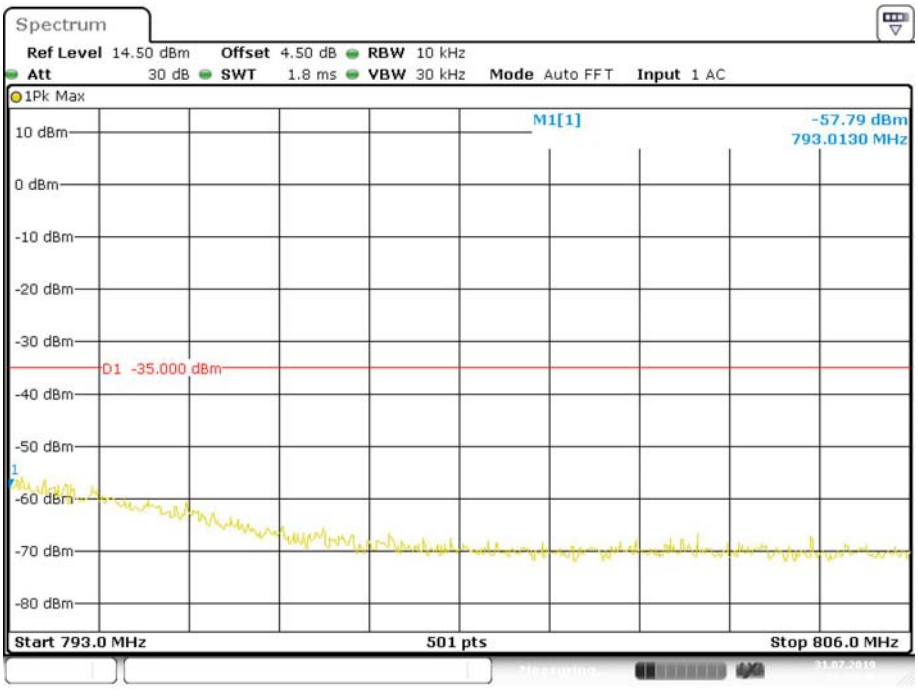
QPSK_5 MHz



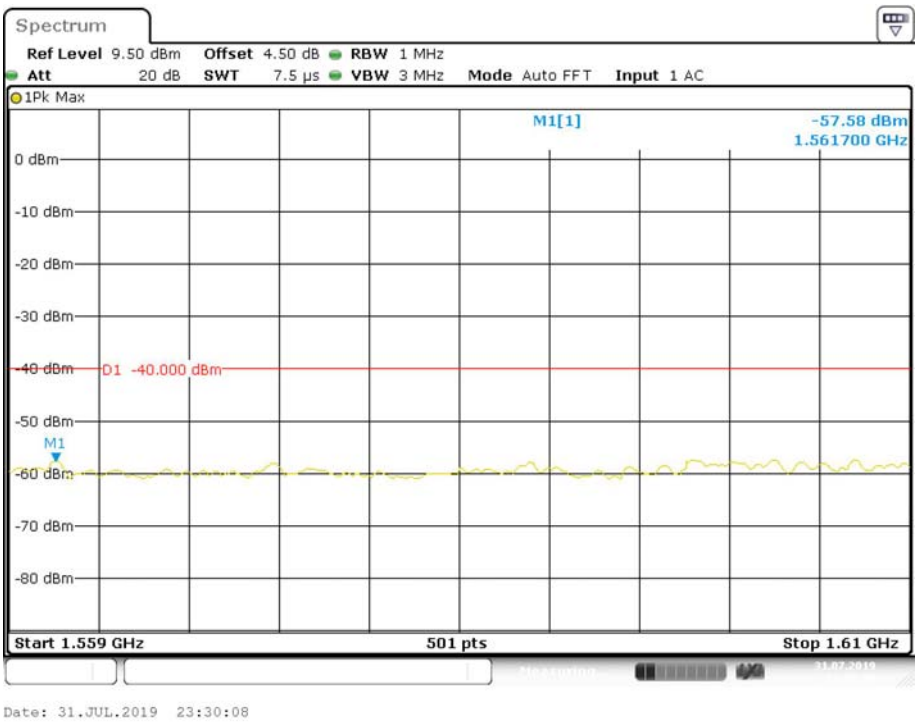




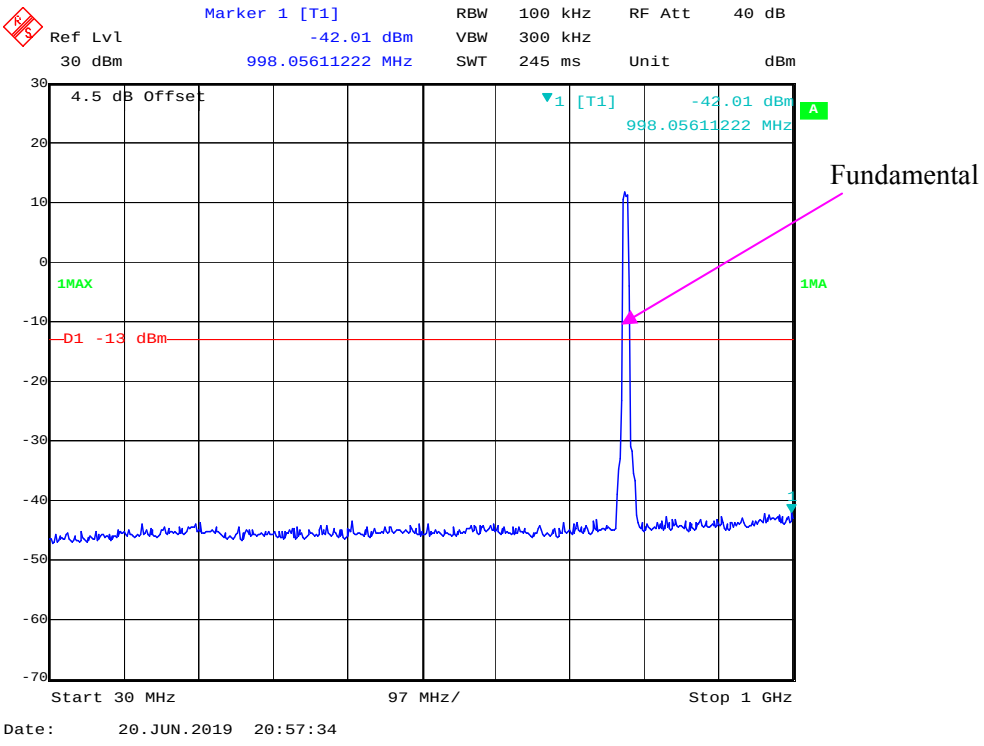
Date: 31.JUL.2019 23:33:44

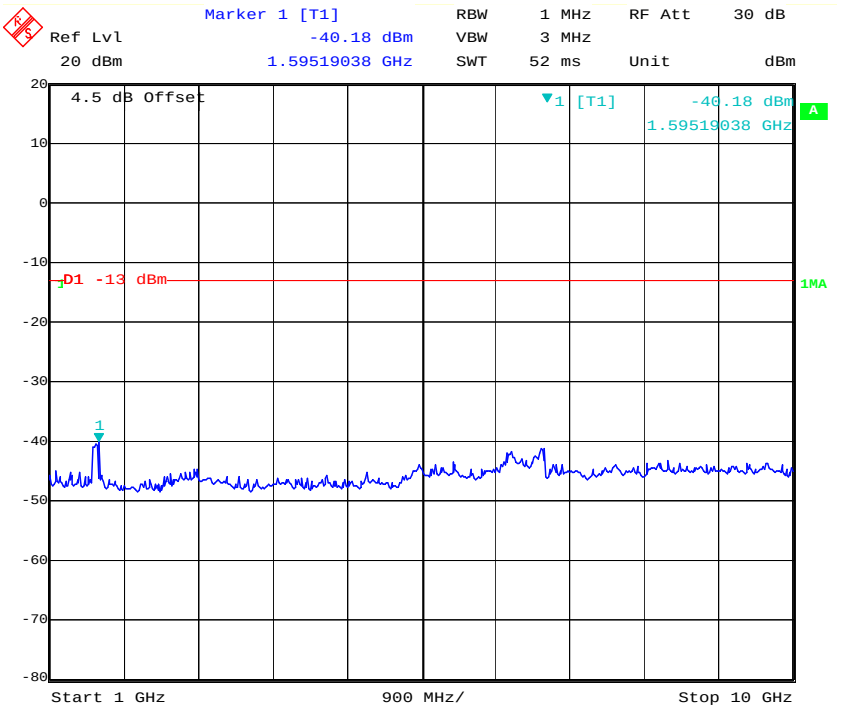


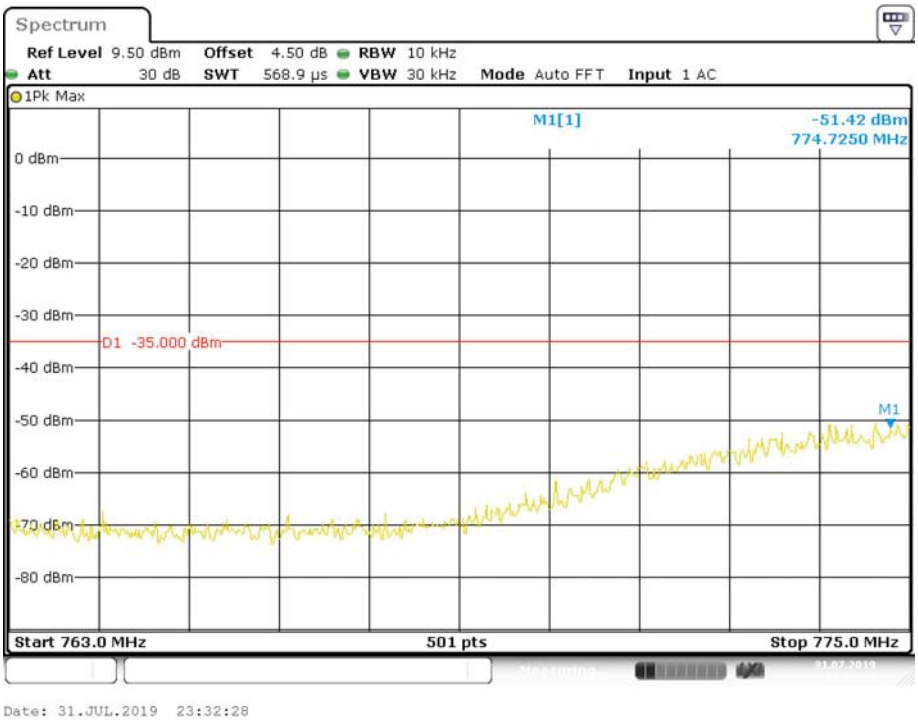
Date: 31.JUL.2019 23:23:40

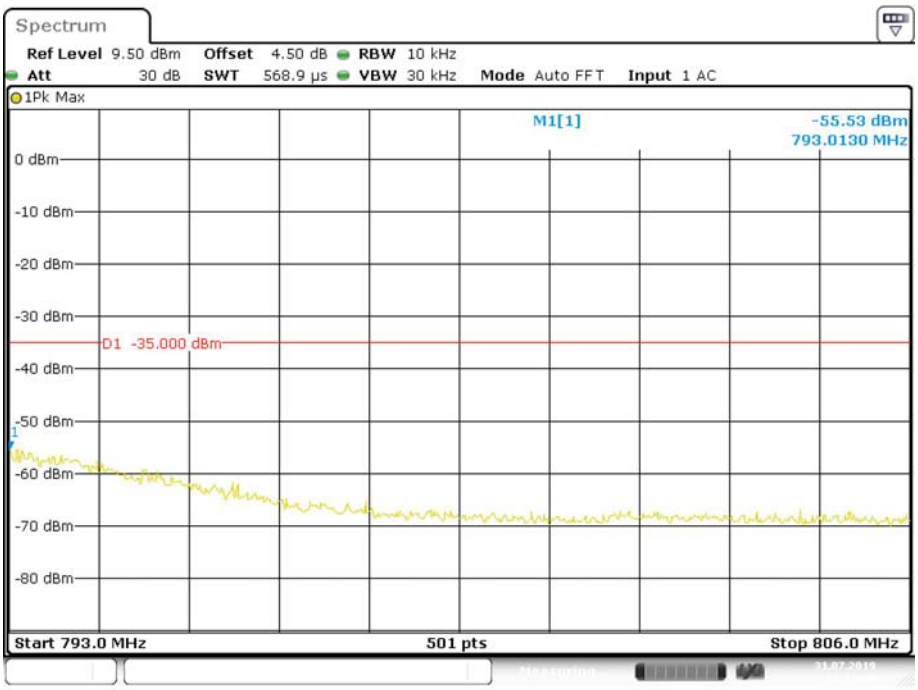

Spectrum
Ref Level 9.50 dBm Offset 4.50 dB RBW 1 MHz
Att 20 dB SWT 7.5 µs VBW 3 MHz Mode Auto FFT Input 1 AC
1Pk Max
M1[1] -57.58 dBm
1.561700 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
D1 -40.000 dBm
-50 dBm
M1
-60 dBm
-70 dBm
-80 dBm
Start 1.559 GHz
501 pts
Stop 1.61 GHz
Date: 31.JUL.2019 23:30:08

QPSK_10 MHz

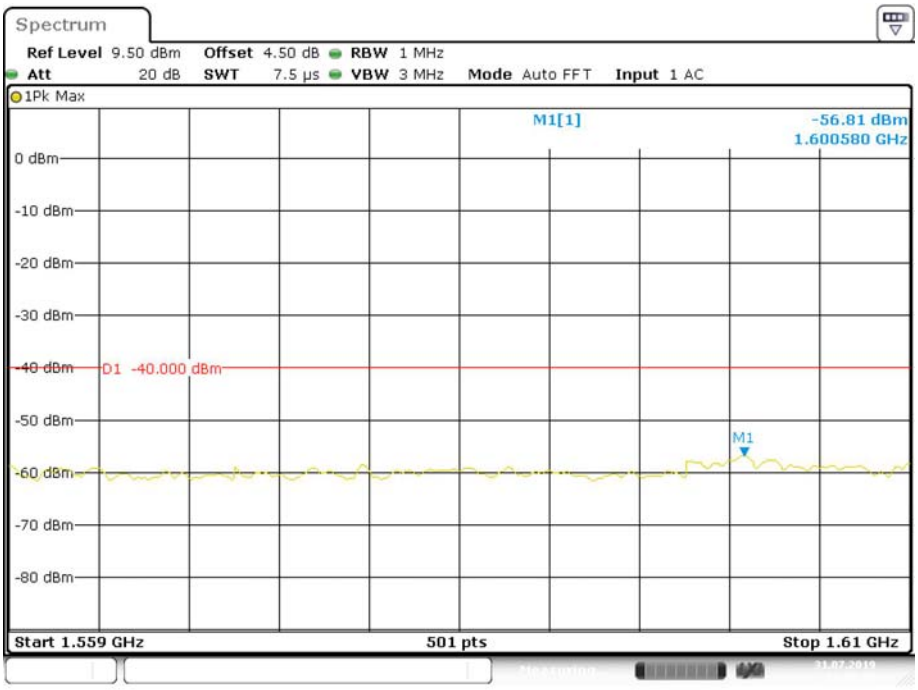

Marker 1 [T1]
Ref Lvl
30 dBm
-42.01 dBm
998.05611222 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 40 dB
Unit dBm
4.5 dB Offset
1 [T1] -42.01 dBm
998.05611222 MHz
A
Fundamental
1MAX
1MA
D1 -13 dBm
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 20.JUN.2019 20:57:34


Marker 1 [T1]
Ref Lvl
20 dBm
-40.18 dBm
1.59519038 GHz
RBW 1 MHz
VBW 3 MHz
SWT 52 ms
RF Att 30 dB
Unit dBm
4.5 dB Offset
1 [T1]
-40.18 dBm
1.59519038 GHz
D1 -13 dBm
1MA
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 20.JUN.2019 20:57:44


Spectrum
Ref Level 9.50 dBm Offset 4.50 dB RBW 10 kHz
Att 30 dB SWT 568.9 µs VBW 30 kHz Mode Auto FFT Input 1 AC
1Pk Max
M1[1]
-51.42 dBm
774.7250 MHz
D1 -35.000 dBm
M1
Start 763.0 MHz
501 pts
Stop 775.0 MHz
Date: 31.JUL.2019 23:32:28



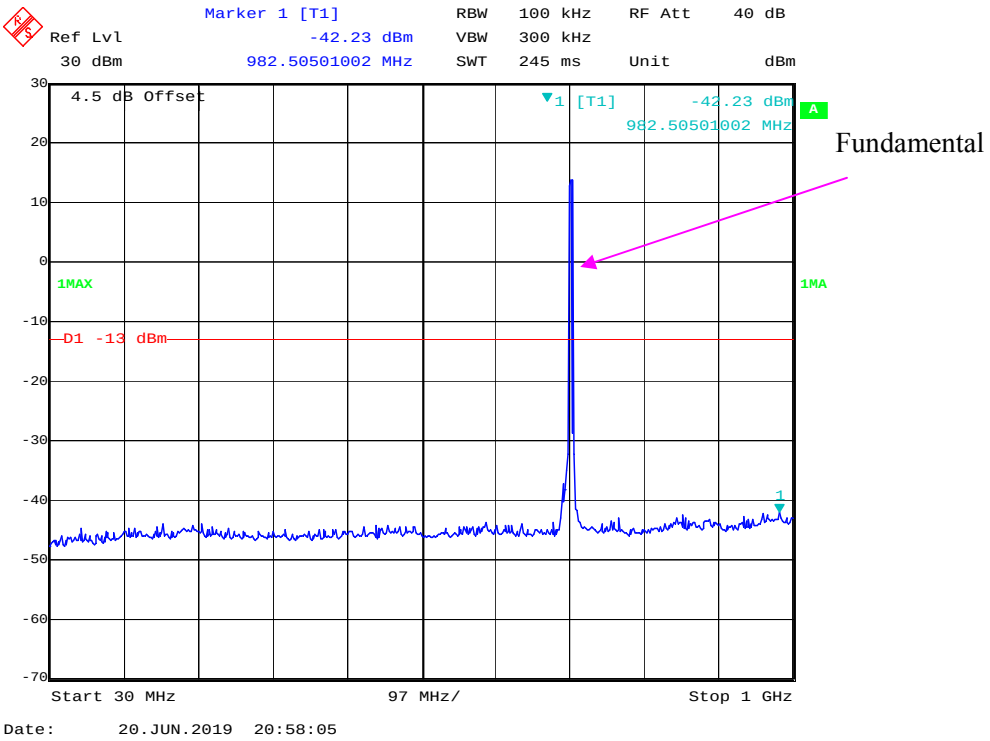
Date: 31.JUL.2019 23:31:49

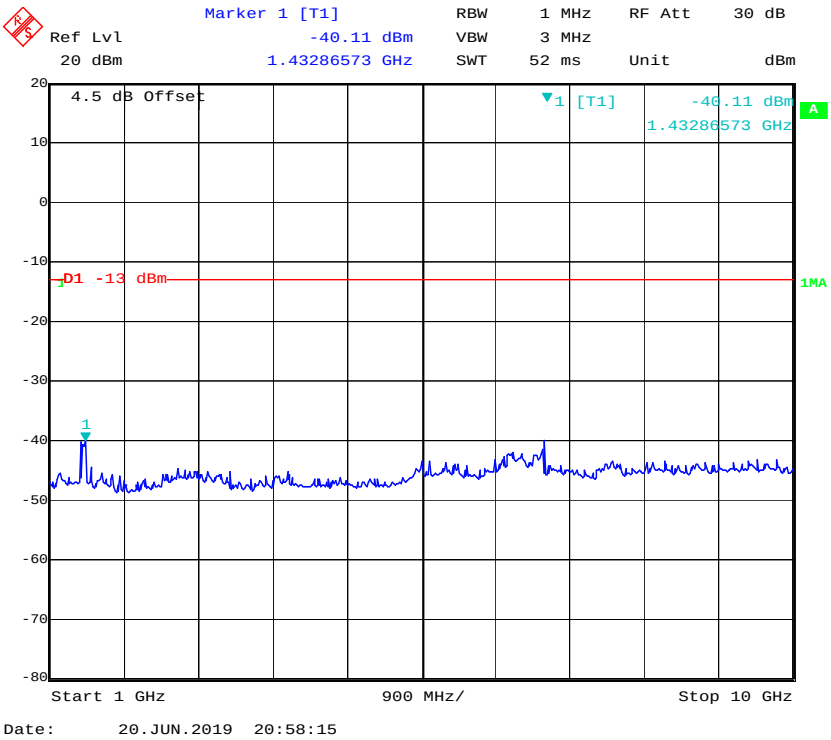


Date: 31.JUL.2019 23:30:37

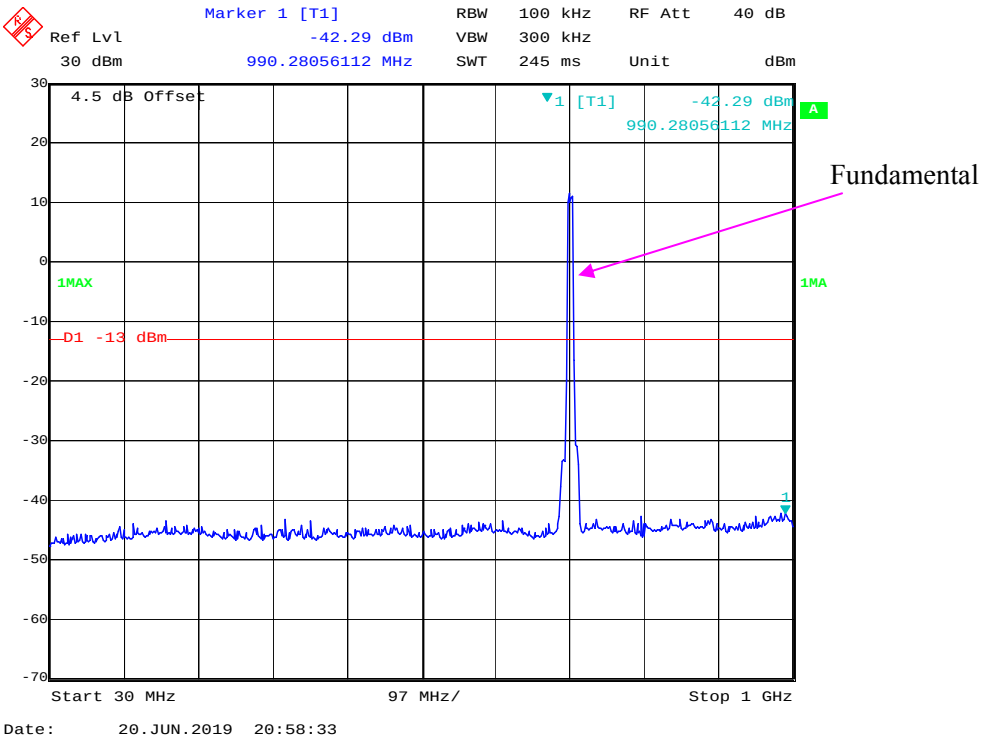
LTE Band 17 (Middle Channel)

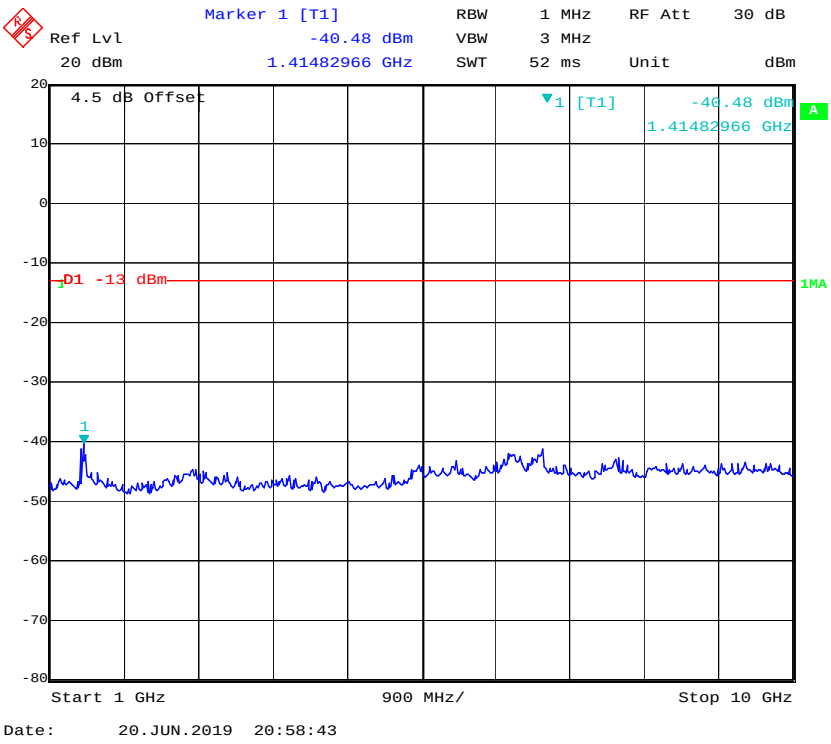
QPSK_5 MHz





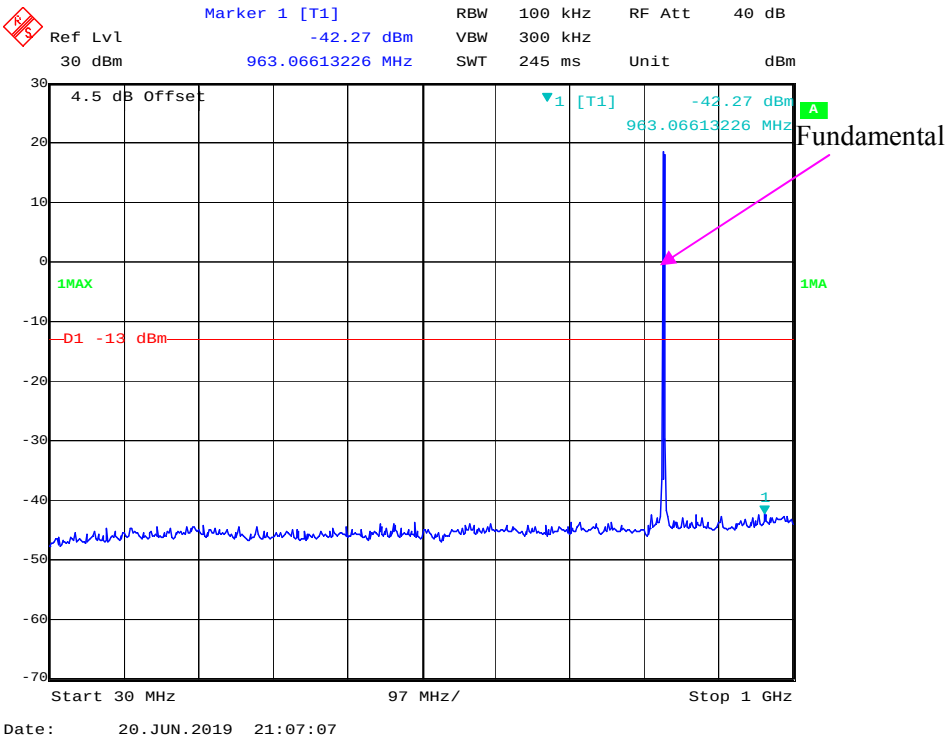
QPSK_10 MHz

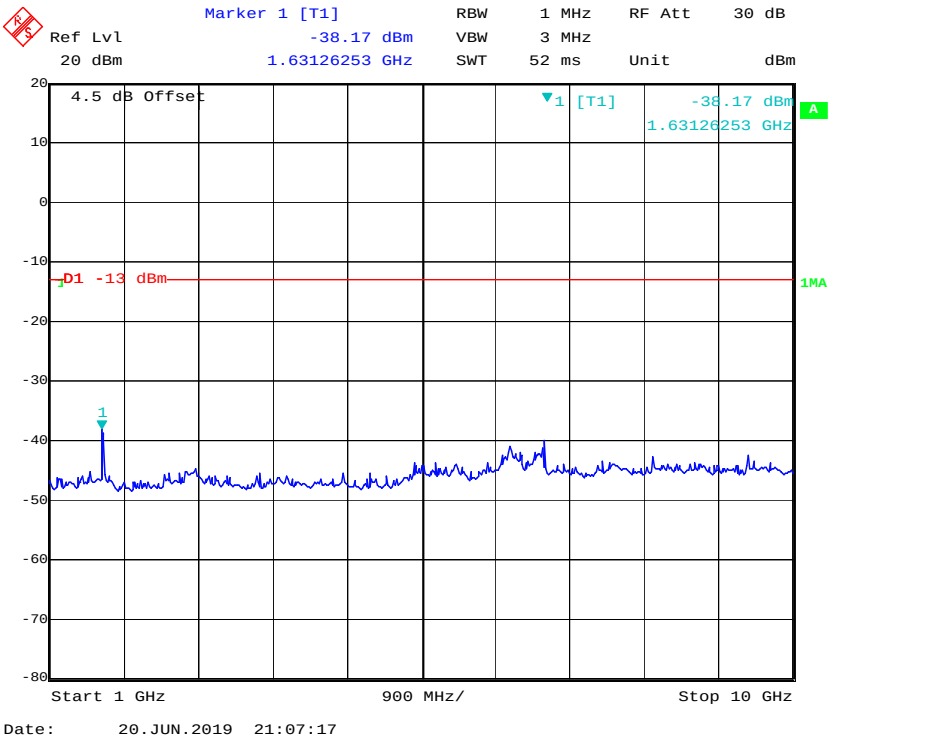

Marker 1 [T1]
Ref Lvl
30 dBm
-42.29 dBm
990.28056112 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 40 dB
Unit dBm
4.5 dB Offset
1 [T1] -42.29 dBm
990.28056112 MHz
A
1MAX
1MA
D1 -13 dBm
Fundamental
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 20.JUN.2019 20:58:33


Marker 1 [T1]
Ref Lvl
20 dBm
-40.48 dBm
1.41482966 GHz
RBW 1 MHz
VBW 3 MHz
SWT 52 ms
RF Att 30 dB
Unit dBm
4.5 dB Offset
1 [T1] -40.48 dBm
1.41482966 GHz
A
1MA
D1 -13 dBm
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 20.JUN.2019 20:58:43

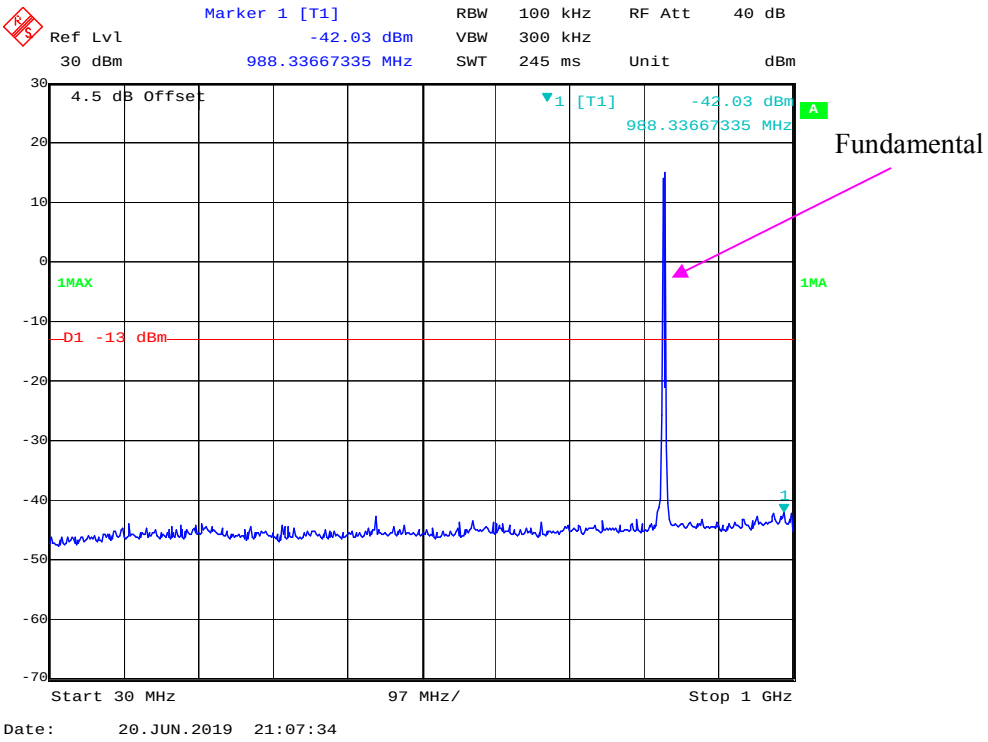
LTE Band 26 (Middle Channel)

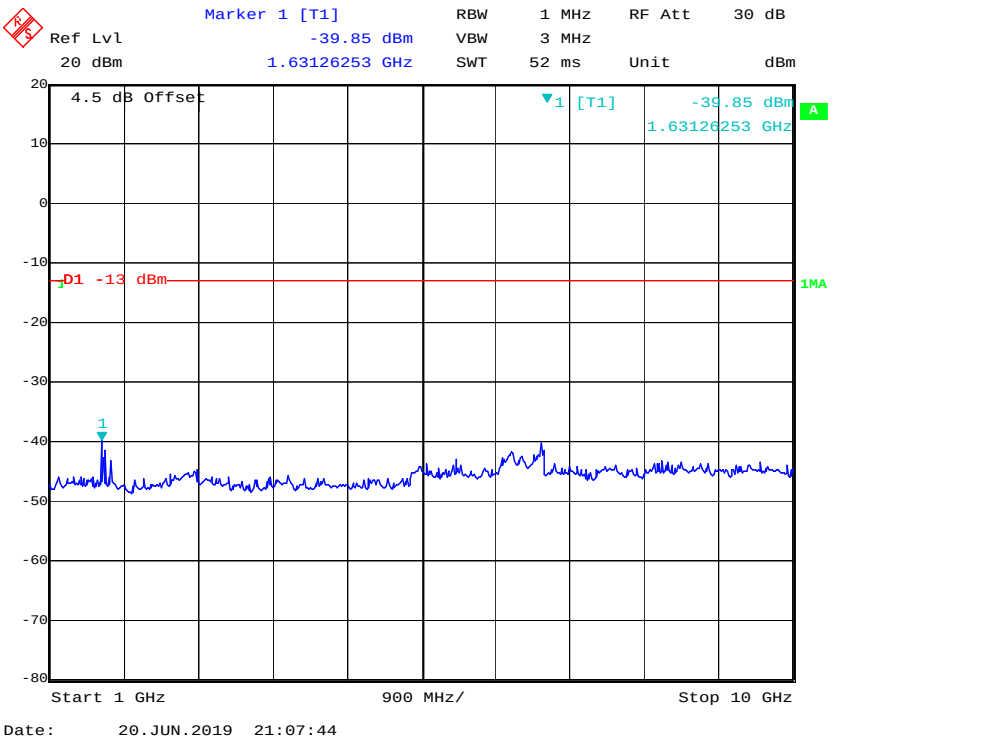
QPSK_1.4 MHz



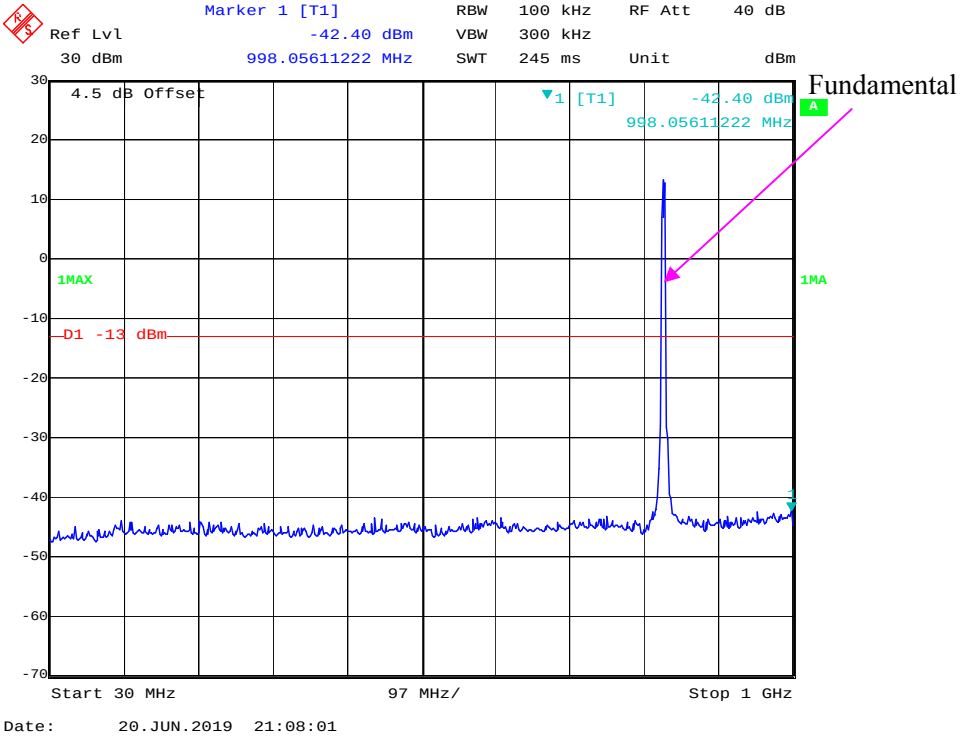


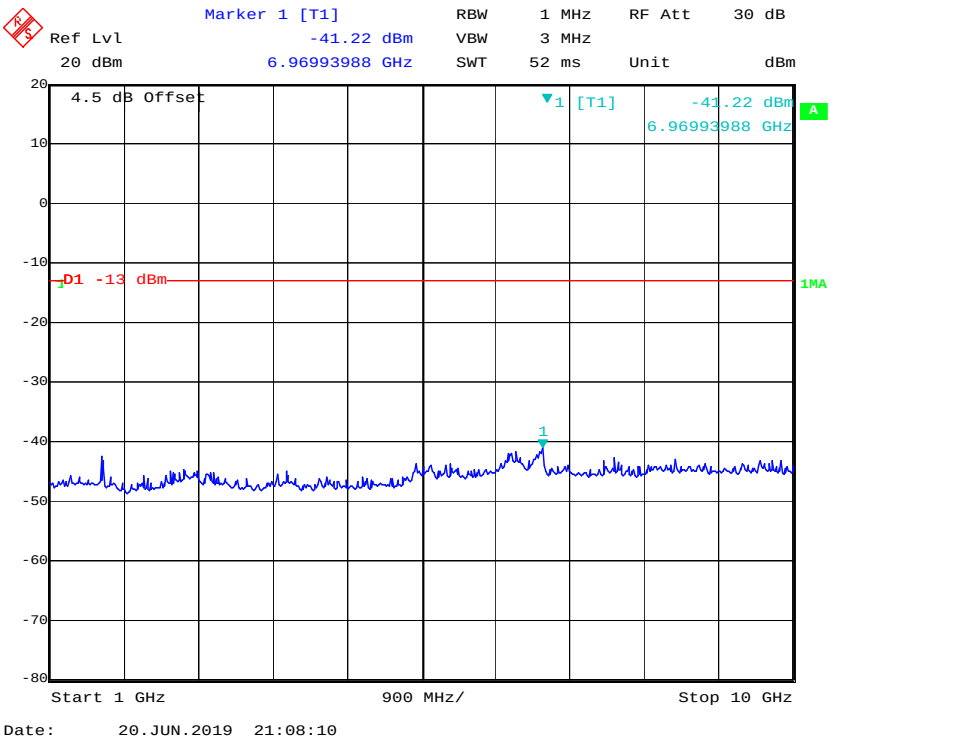
QPSK_3 MHz


Marker 1 [T1]
Ref Lvl
30 dBm
-42.03 dBm
988.33667335 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 40 dB
Unit dBm
4.5 dB Offset
1 [T1] -42.03 dBm
988.33667335 MHz
Fundamental
1MAX
1MA
D1 -13 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 20.JUN.2019 21:07:34

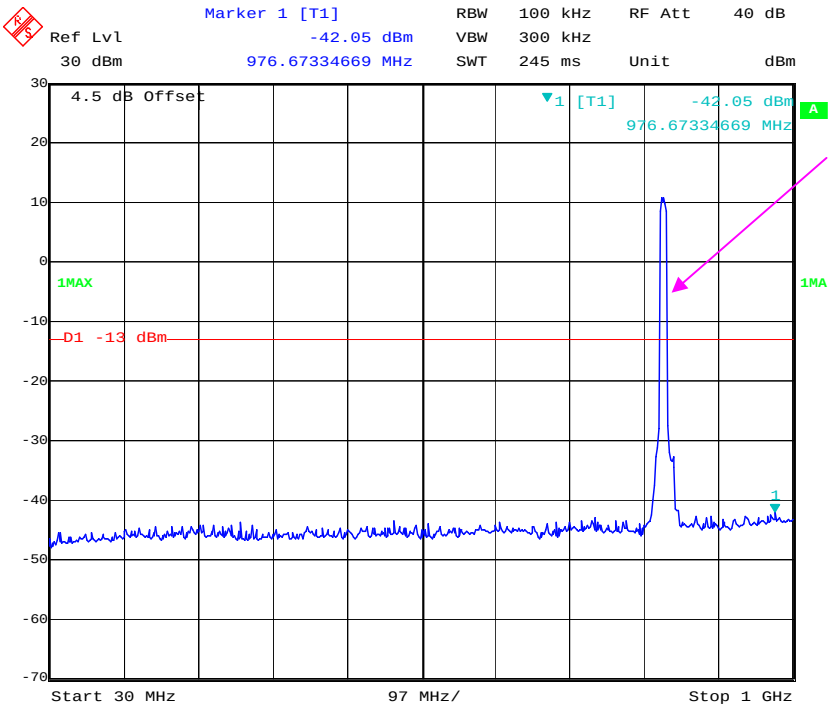

Marker 1 [T1]
Ref Lvl
20 dBm
-39.85 dBm
1.63126253 GHz
RBW 1 MHz
VBW 3 MHz
SWT 52 ms
RF Att 30 dB
Unit dBm
4.5 dB Offset
1 [T1] -39.85 dBm
1.63126253 GHz
1MA
D1 -13 dBm
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 20.JUN.2019 21:07:44

QPSK_5 MHz

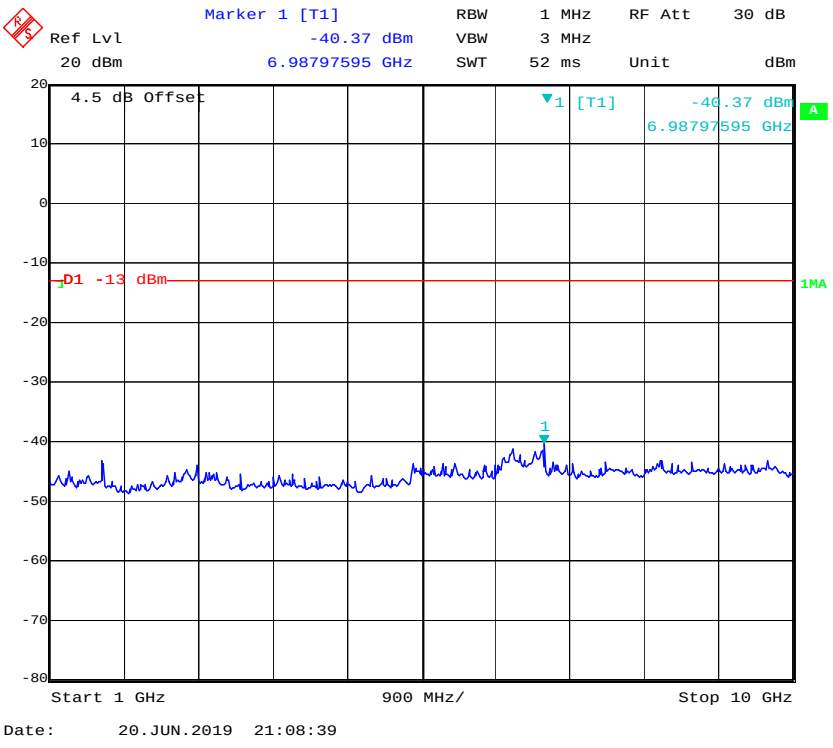

Marker 1 [T1]
Ref Lvl
30 dBm
-42.40 dBm
998.05611222 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 40 dB
Unit dBm
4.5 dB Offset
1 [T1] -42.40 dBm
998.05611222 MHz
Fundamental
1MAX
1MA
D1 -13 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 20.JUN.2019 21:08:01


Marker 1 [T1]
Ref Lvl
20 dBm
-41.22 dBm
6.96993988 GHz
RBW 1 MHz
VBW 3 MHz
SWT 52 ms
RF Att 30 dB
Unit dBm
4.5 dB Offset
1 [T1] -41.22 dBm
6.96993988 GHz
1MA
D1 -13 dBm
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 20.JUN.2019 21:08:10

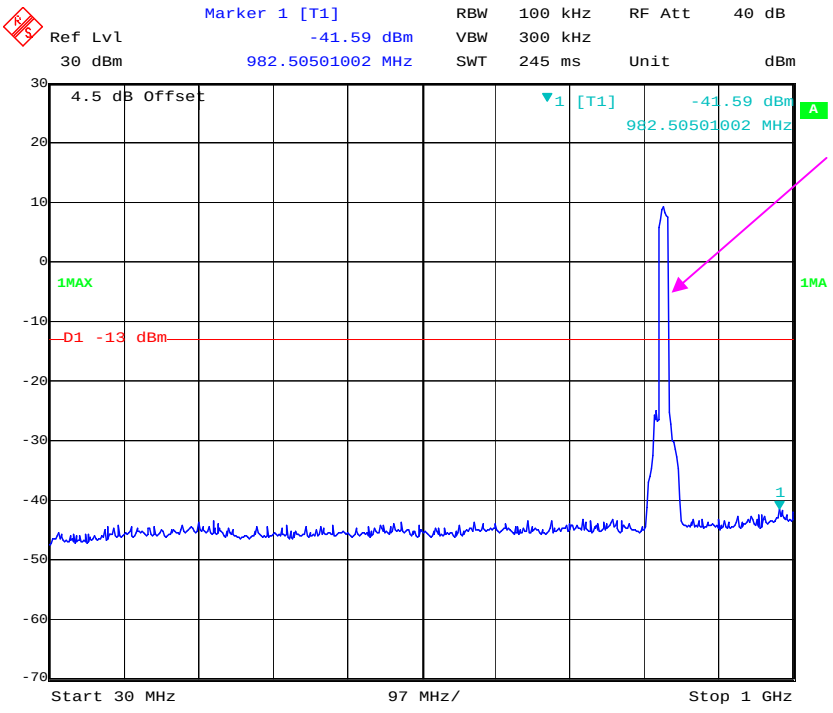
QPSK_10 MHz



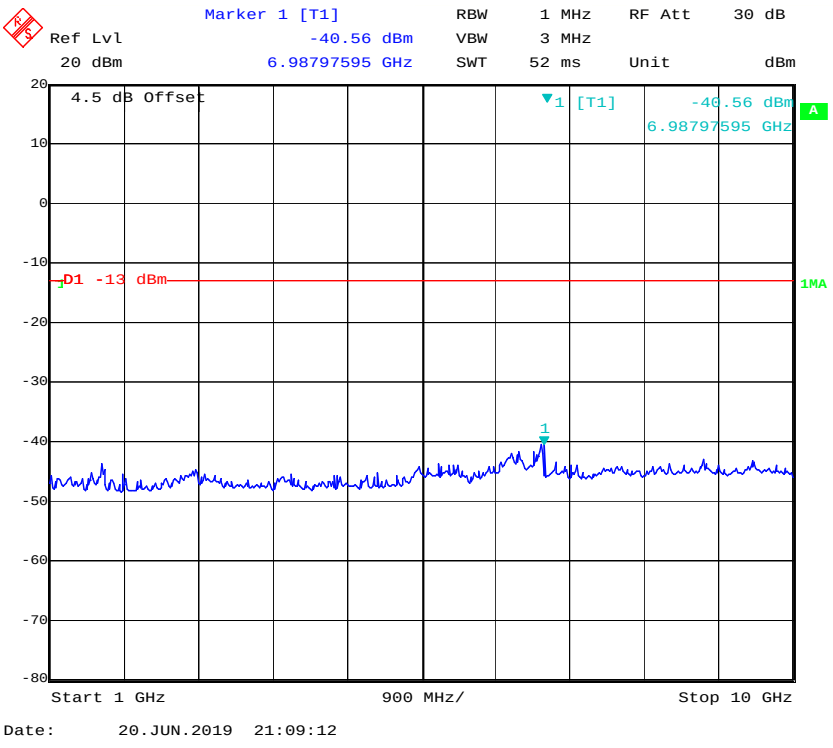
Fundamental



QPSK_15 MHz

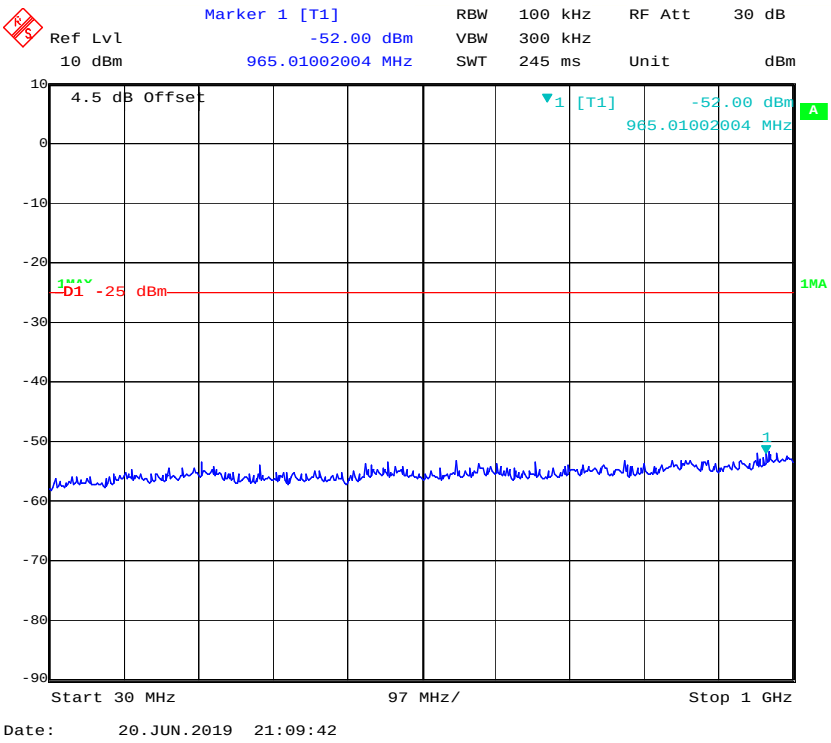


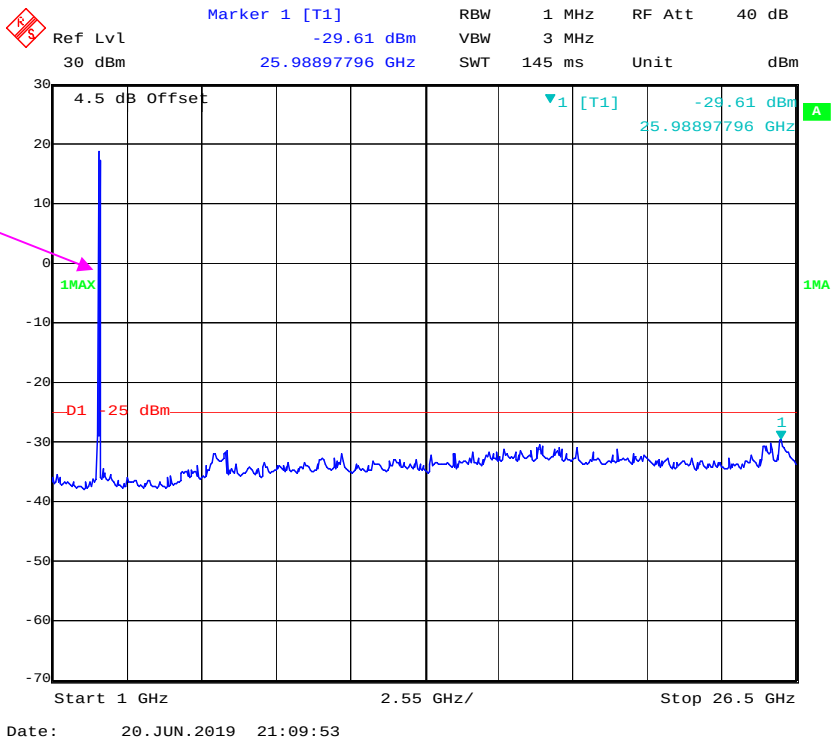
Fundamental



LTE Band 38 (Middle Channel)

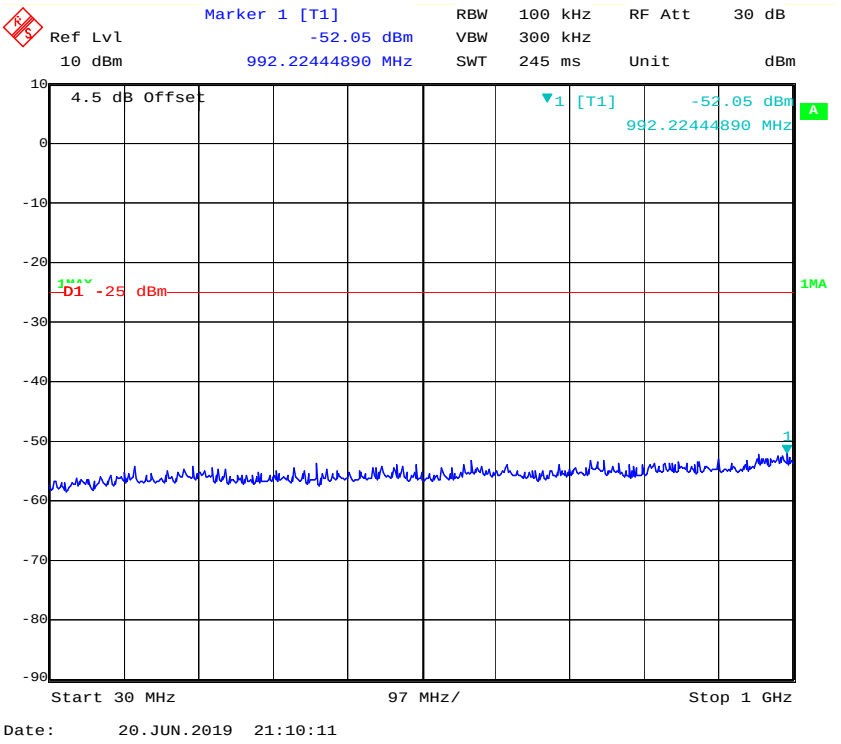
QPSK_5 MHz

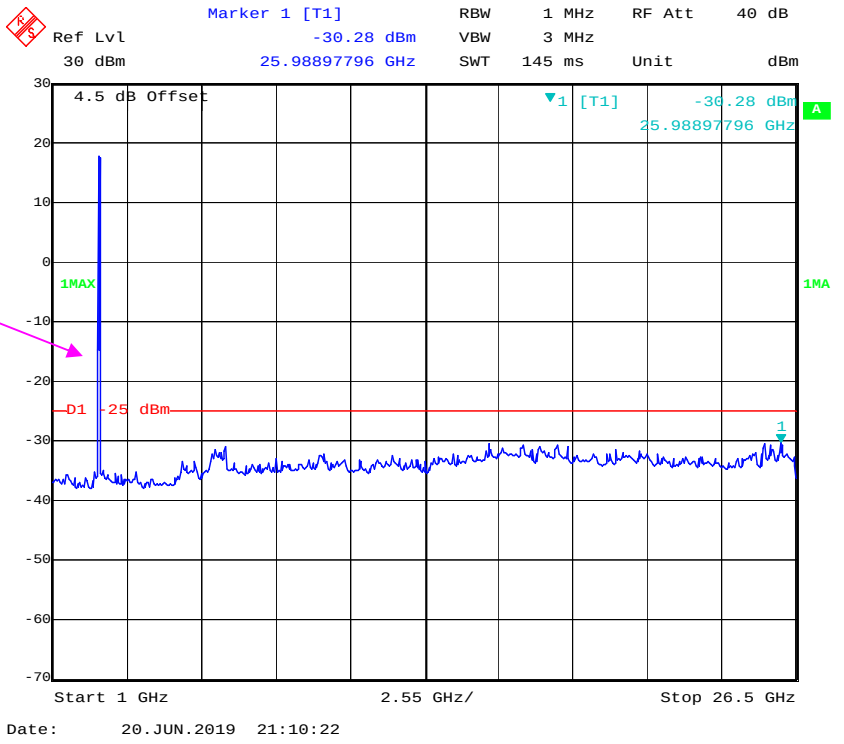




Fundamental

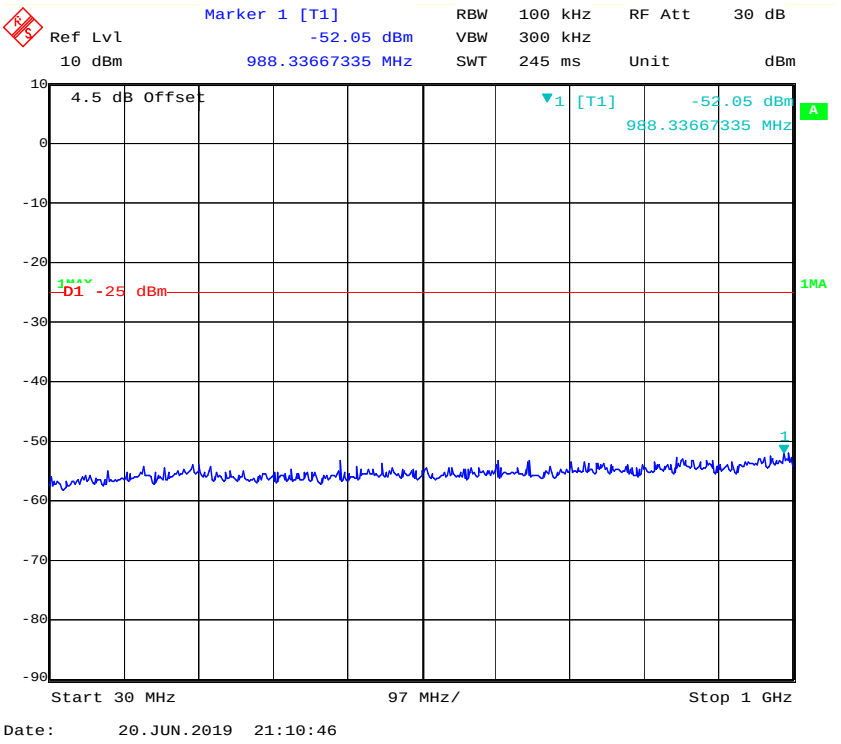
QPSK_10 MHz

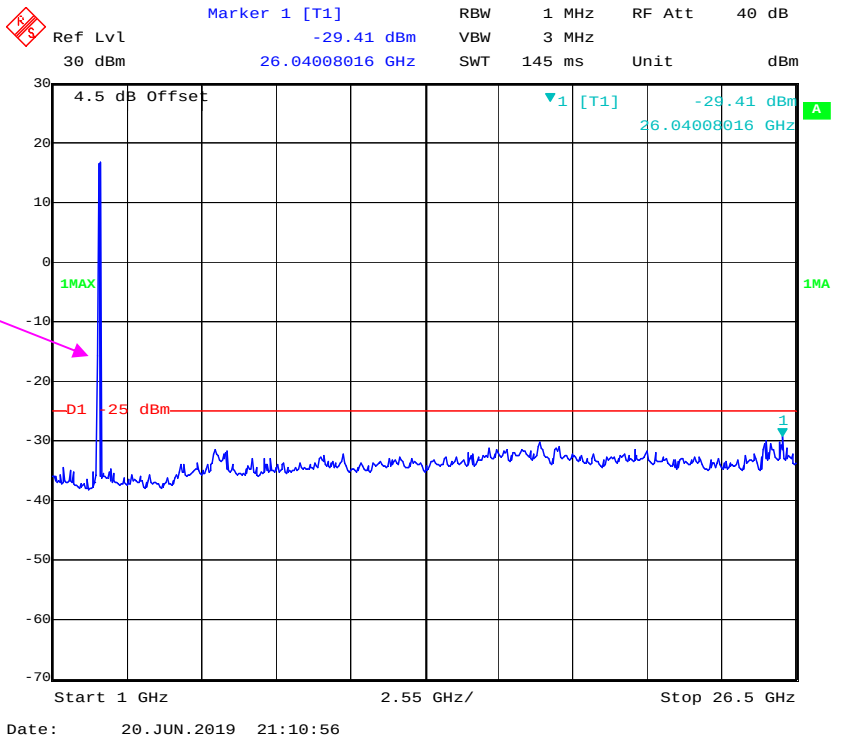




Fundamental

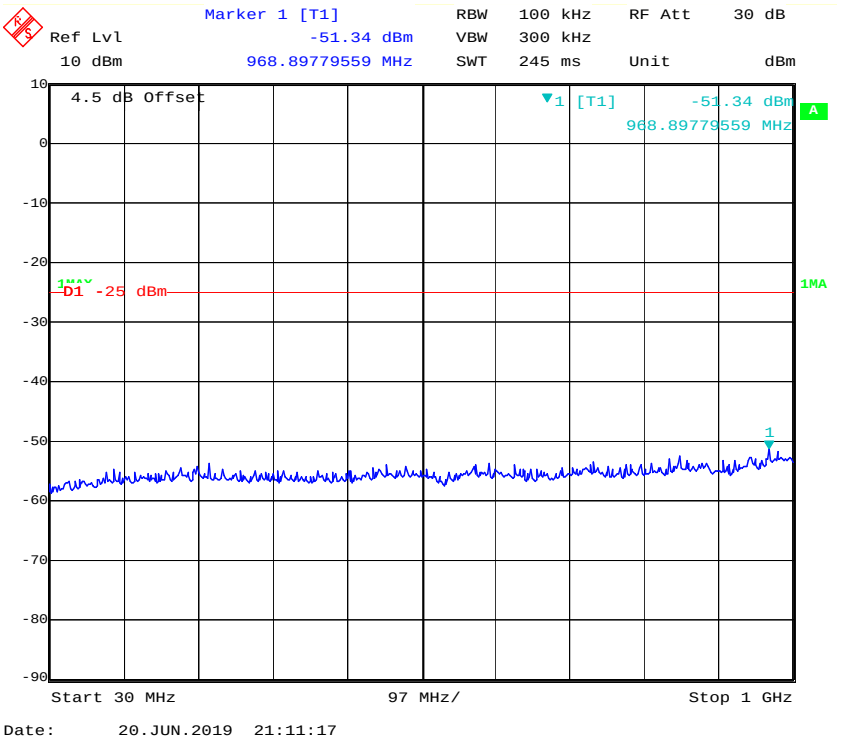
QPSK_15 MHz

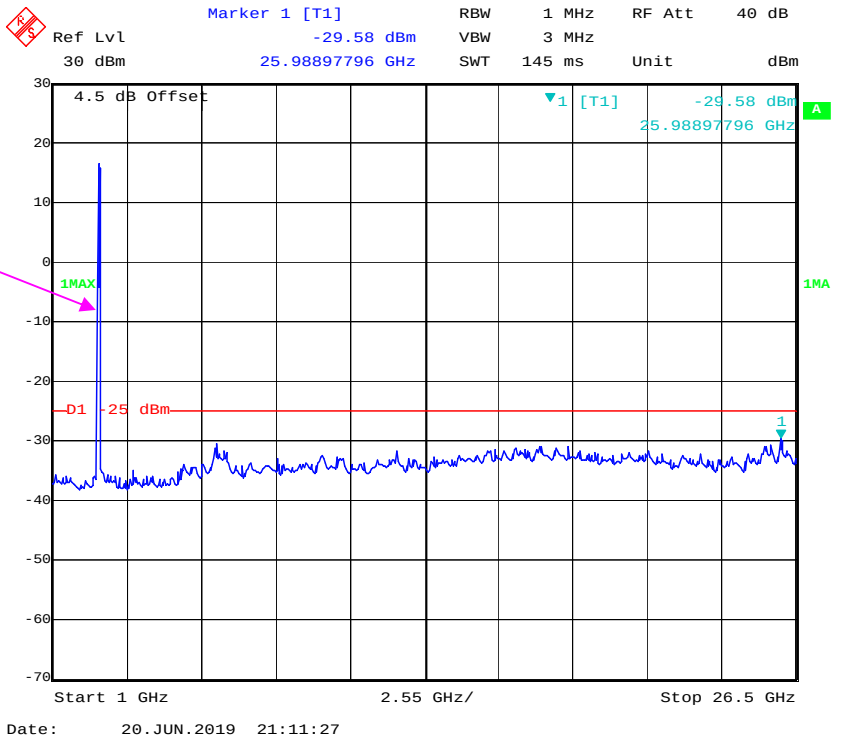




Fundamental

QPSK_20 MHz

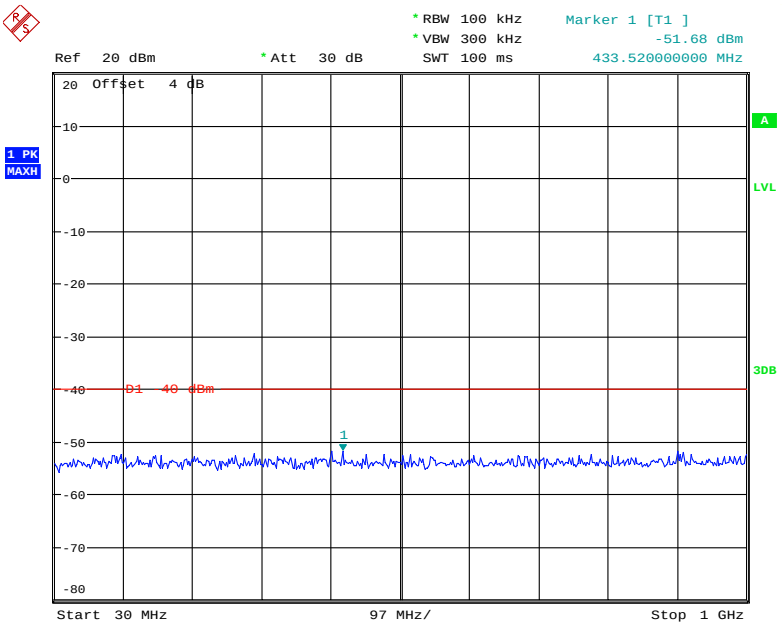




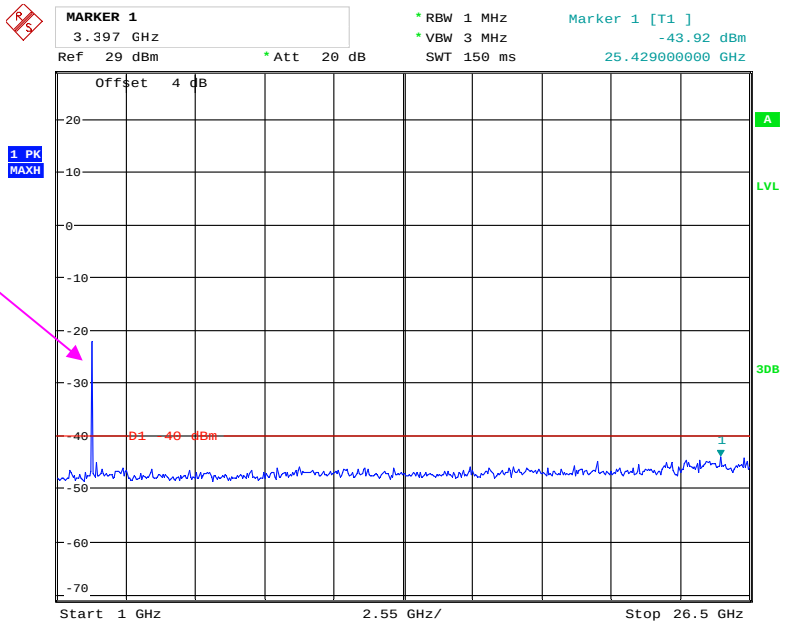
Fundamental

LTE Band 40 2305-2315 MHz(Middle Channel)

QPSK_5 MHz



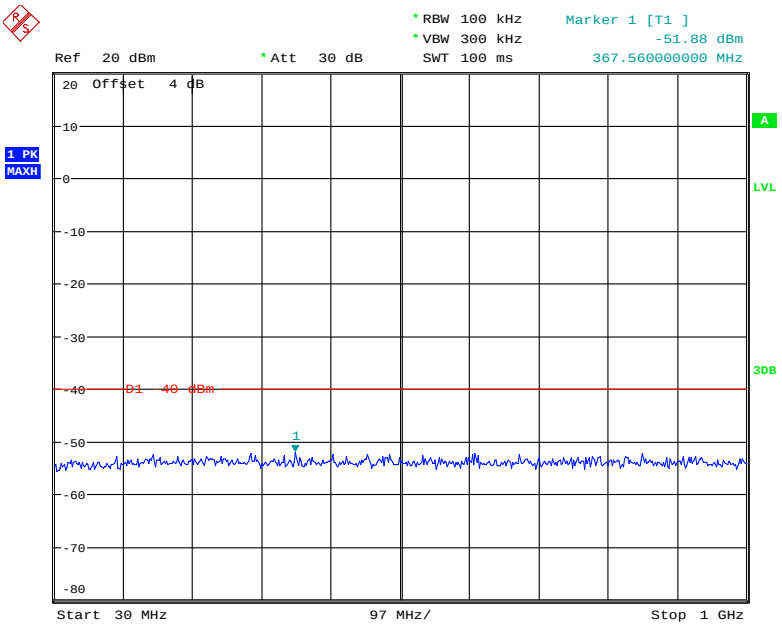
Date: 31.JUL.2019 14:30:42



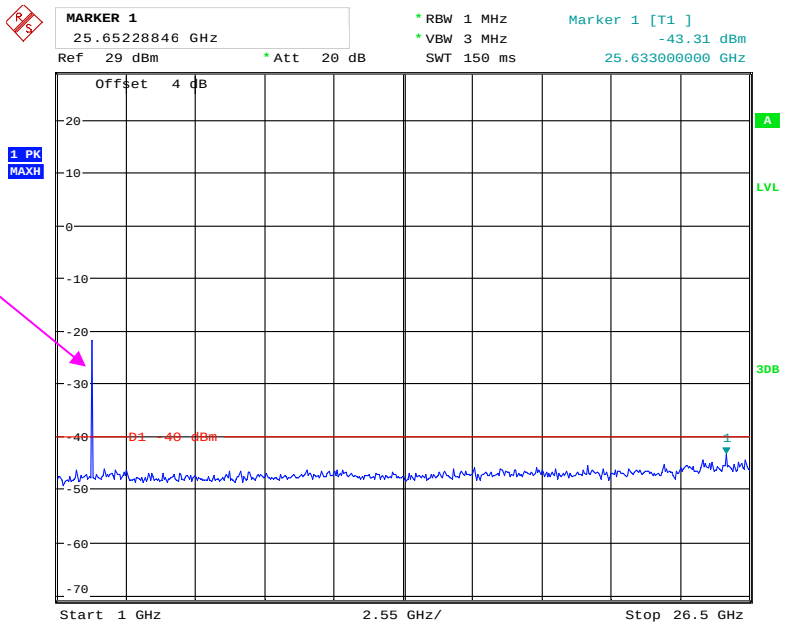
Fundamental test with Filter

Date: 31.JUL.2019 14:31:13

QPSK_10 MHz



Date: 31.JUL.2019 14:31:36

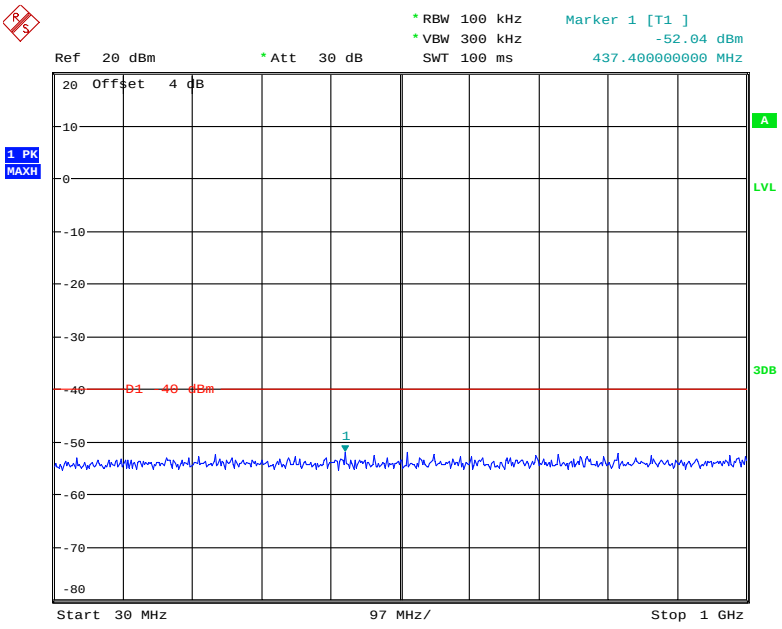


Fundamental test with Filter

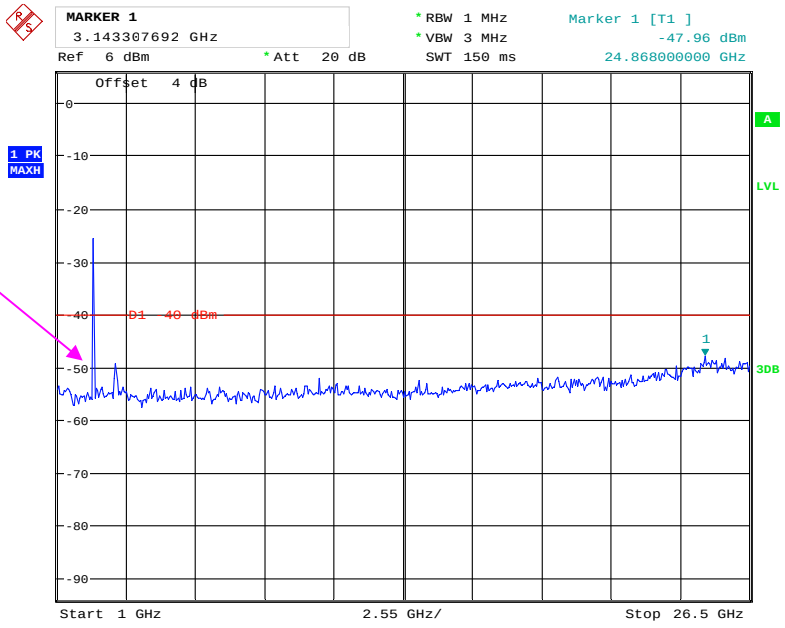
Date: 31.JUL.2019 14:32:04

LTE Band 40 2350-2360 MHz(Middle Channel)

QPSK_5 MHz



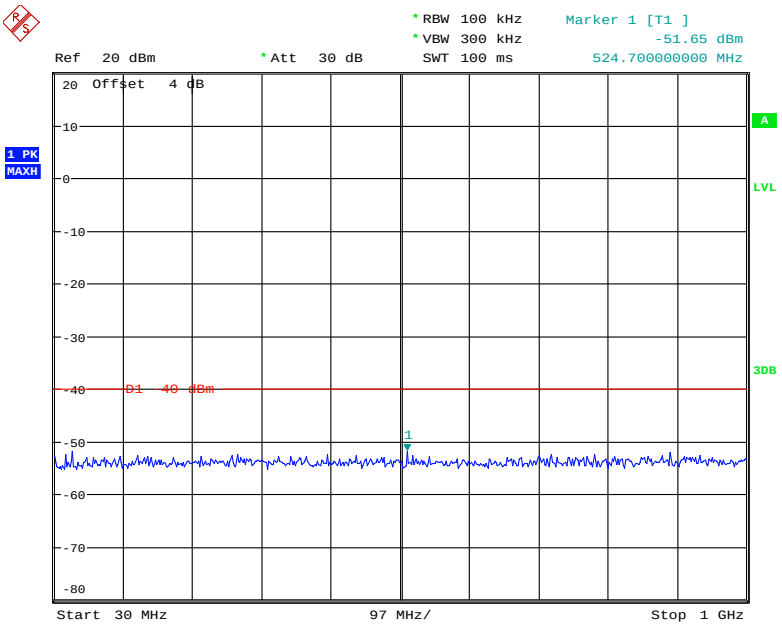
Date: 31.JUL.2019 14:35:11



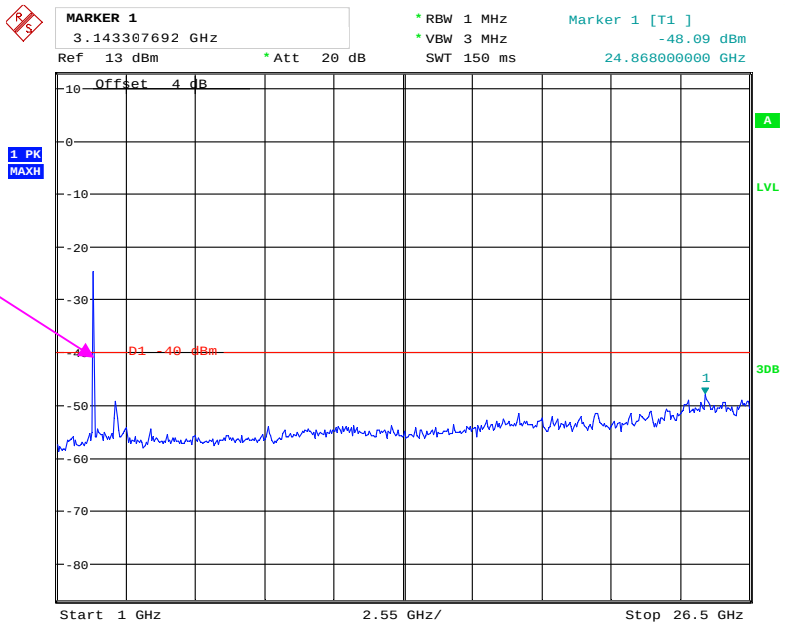
Fundamental test with Filter

Date: 31.JUL.2019 14:35:36

QPSK_10 MHz



Date: 31.JUL.2019 14:36:02

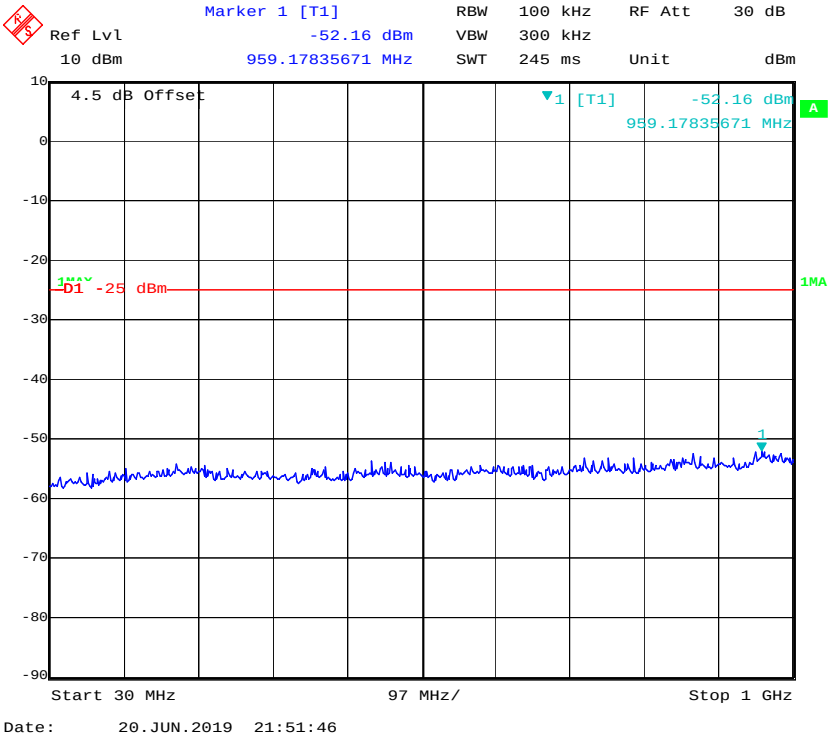


Fundamental test with Filter

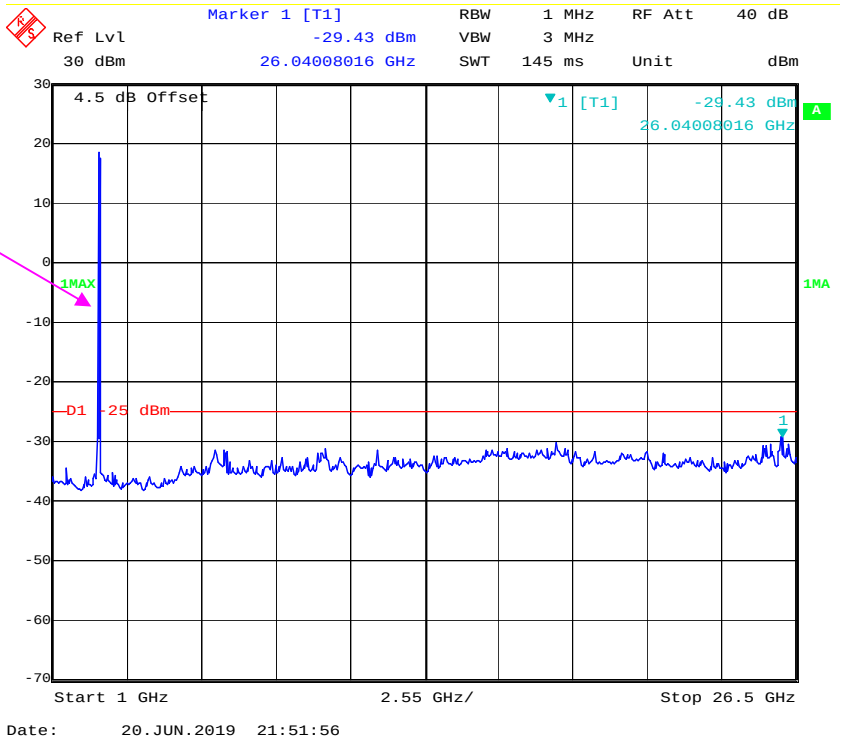
Date: 31.JUL.2019 14:36:27

LTE Band 41 (Middle Channel)

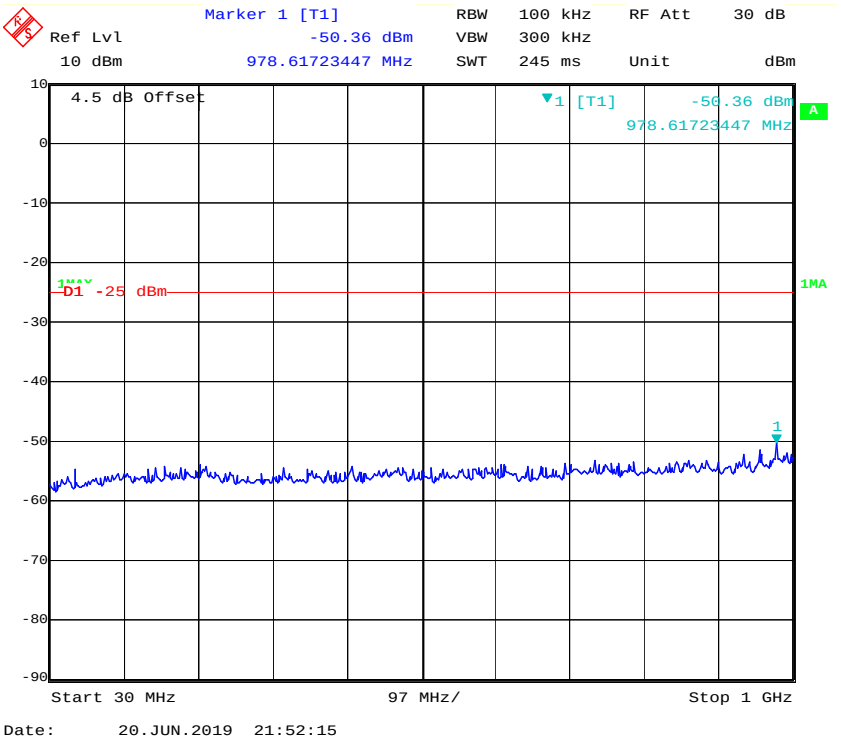
QPSK_5 MHz

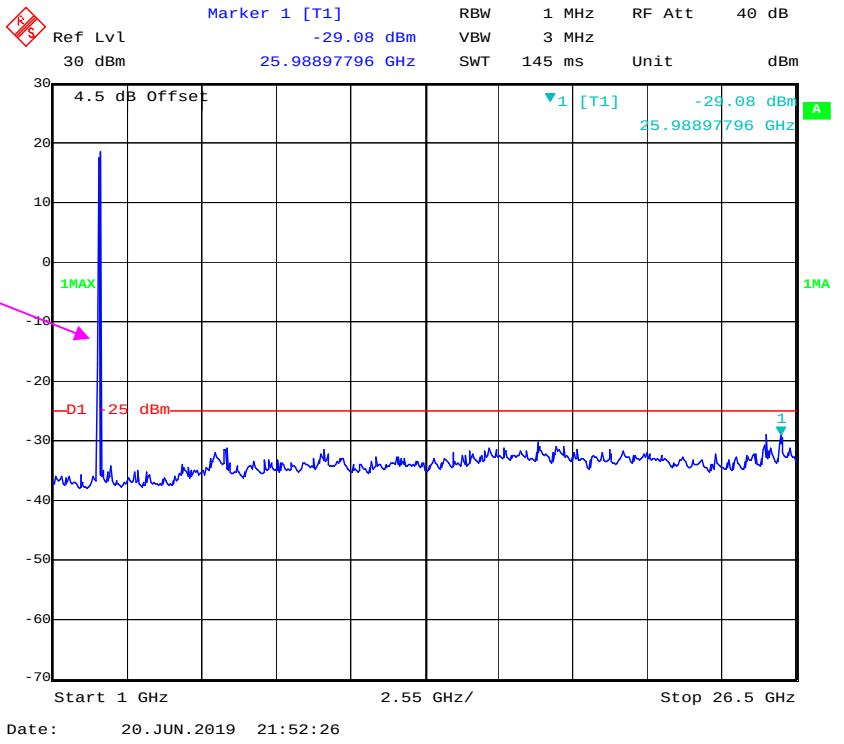


Fundamental



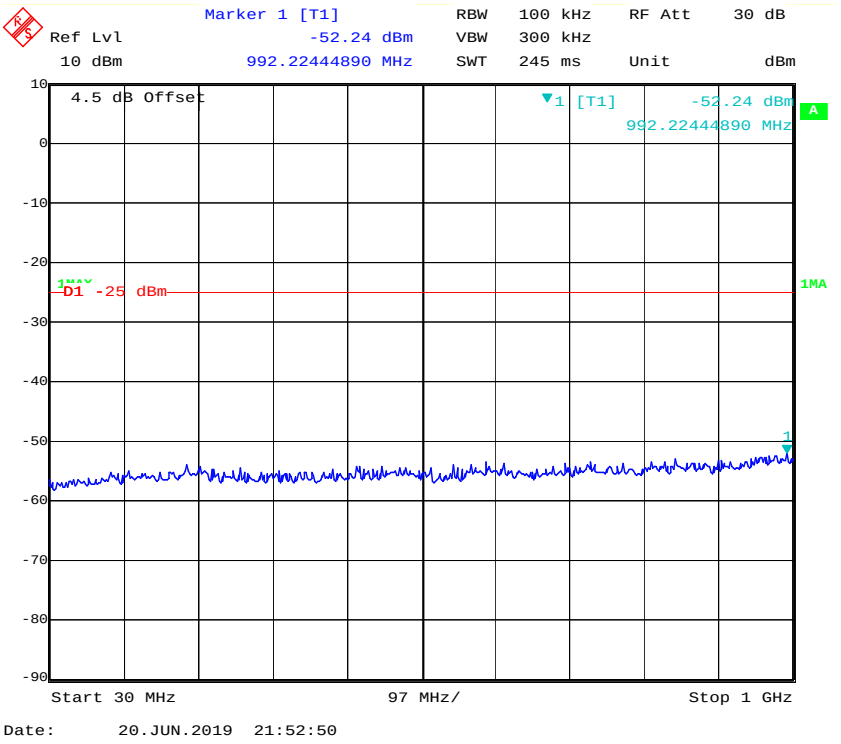
QPSK_10 MHz

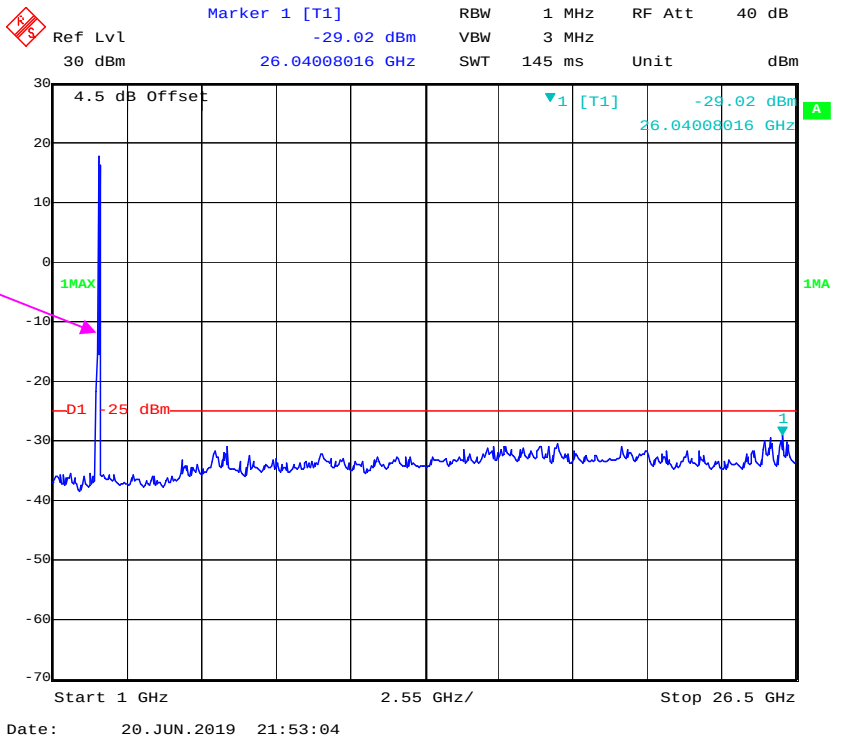




Fundamental

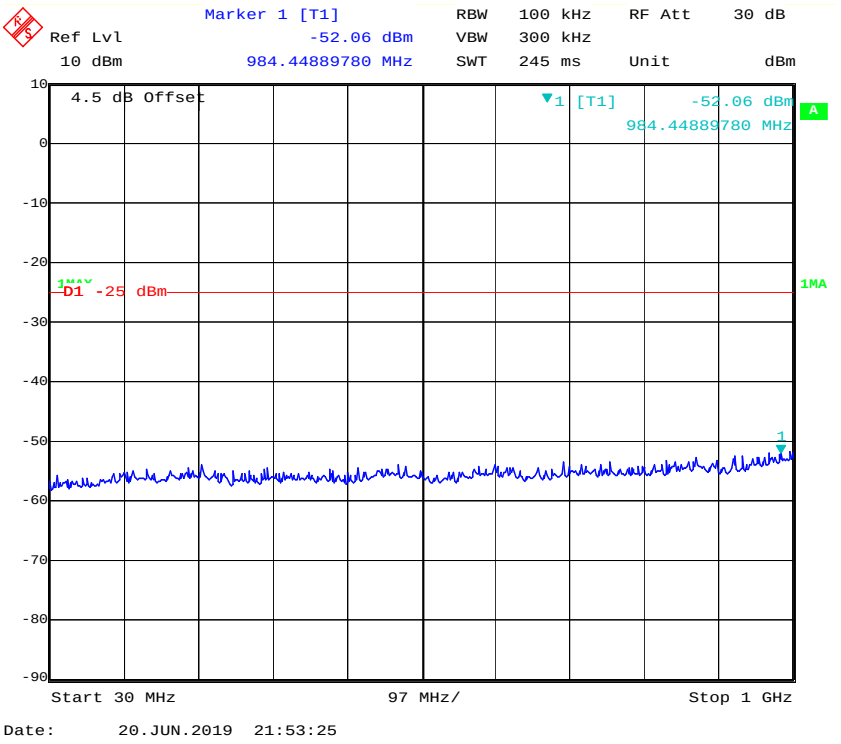
QPSK_15 MHz

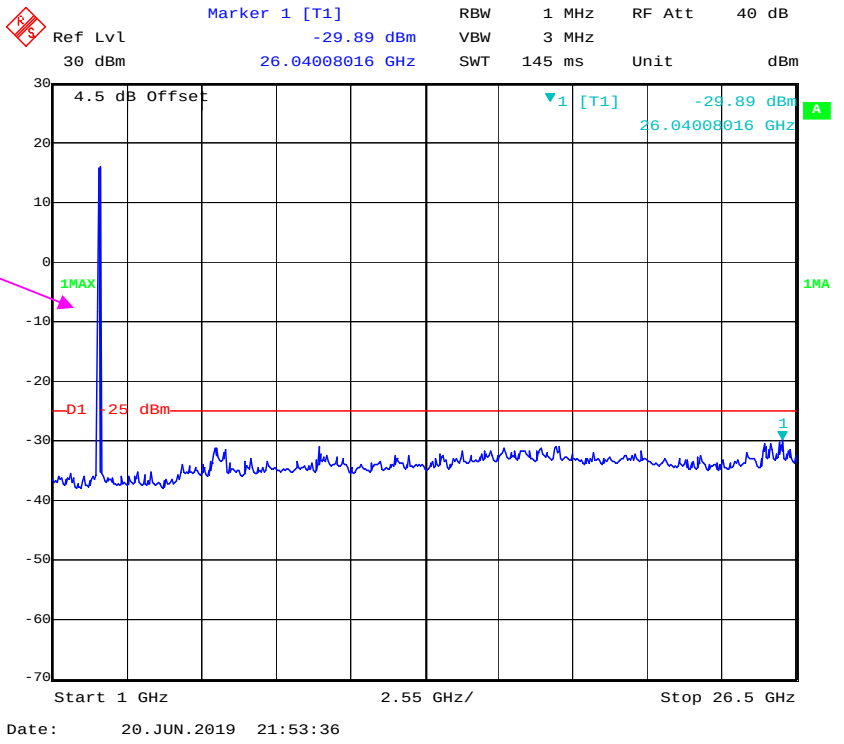




Fundamental

QPSK_20 MHz





Fundamental

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	ESCI	100224	2018-12-10	2019-12-10
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
EMCO	Adjustable Dipole Antenna	3121C	9109-753	Not Required	/
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2018-05-06	2019-05-06
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2018-09-05	2019-09-05
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2018-09-05	2019-09-05
Agilent	Signal Generator	E8247C	MY43321350	2018-12-10	2019-12-10
R&S	Universal Radio Communication Tester	CMU200	110 822	2018-12-14	2019-12-14
R&S	Wideband Radio Communication Tester	CMW500	147473	2018-08-03	2019-08-03
Agilent	Spectrum Analyzer	E4440A	SG43360054	2019-01-04	2020-01-04
HP	Amplifier	8447D	2727A05902	2018-09-05	2019-09-05
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	2018-09-05	2019-09-05
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	2018-06-27	2019-06-27
Sinoscite	Band-stop filter	BSF1710-1785MN-0383-003	0383003	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF824-862MS-1438-001	1438001	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF2300-2400MS-0777-003	0777003	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

*** 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:	28.9°C
Relative Humidity:	55 %
ATM Pressure:	100.2 kPa

** The testing was performed by Tyler Pan on 2019-06-18.*

EUT Operation Mode: Transmitting

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	49.04	-55.34	10.5	1.27	-46.1	-13.0	33.1
1673.200	V	57.32	-46.99	10.5	1.27	-37.7	-13.0	24.7
2509.800	H	47.52	-55.25	12.2	1.25	-44.3	-13.0	31.3
2509.800	V	44.74	-59.42	12.2	1.25	-48.5	-13.0	35.5
3346.400	H	47.31	-53.88	12.3	1.58	-43.2	-13.0	30.2
3346.400	V	42.65	-57.47	12.3	1.58	-46.8	-13.0	33.8
7777.500	H	37.13	-53.98	12.9	1.53	-42.6	-13.0	29.6
700.300	V	39.54	-64.36	0.0	0.94	-65.3	-13.0	52.3
WCDMA Band V R99,Frequency:836.600 MHz								
1673.200	H	40.32	-64.06	10.5	1.27	-54.8	-13.0	41.8
1673.200	V	44.67	-59.64	10.5	1.27	-50.4	-13.0	37.4
2509.800	H	39.11	-63.66	12.2	1.25	-52.7	-13.0	39.7
2509.800	V	39.22	-64.94	12.2	1.25	-54.0	-13.0	41.0
3346.400	H	37.24	-63.95	12.3	1.58	-53.3	-13.0	40.3
3346.400	V	36.99	-63.13	12.3	1.58	-52.5	-13.0	39.5
700.300	H	40.54	-60.88	0.0	0.94	-61.8	-13.0	48.8
227.200	V	40.34	-71.32	0.0	0.5	-71.8	-13.0	58.8

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	46.83	-53.38	12.3	1.53	-42.7	-13.0	29.7
3760.000	V	49.50	-50.41	12.3	1.53	-39.7	-13.0	26.7
5640.000	H	47.38	-47.92	13.0	1.28	-36.2	-13.0	23.2
5640.000	V	46.92	-48.69	13.0	1.28	-37.0	-13.0	24.0
277.800	H	46.41	-62.5	0.0	0.51	-63.0	-13.0	50.0
377.400	V	42.01	-66.57	0.0	0.59	-67.2	-13.0	54.2
WCDMA Band II R99,Frequency: 1880.000 MHz								
3760.000	H	42.95	-57.26	12.3	1.53	-46.5	-13.0	33.5
3760.000	V	46.77	-53.14	12.3	1.53	-42.4	-13.0	29.4
5640.000	H	44.56	-50.74	13.0	1.28	-39.0	-13.0	26.0
5640.000	V	48.68	-46.93	13.0	1.28	-35.2	-13.0	22.2
176.700	H	44.62	-64.71	0.0	0.44	-65.2	-13.0	52.2
75.600	V	42.92	-73.15	-2.2	0.32	-75.7	-13.0	62.7
WCDMA Band IV R99,Frequency: 1732.600 MHz								
3465.200	H	44.69	-56.28	12.2	1.6	-45.7	-13.0	32.7
3465.200	V	44.11	-55.45	12.2	1.6	-44.8	-13.0	31.8
5197.800	H	42.66	-53.42	12.9	1.36	-41.9	-13.0	28.9
5197.800	V	43.56	-52.49	12.9	1.36	-40.9	-13.0	27.9
126.200	H	40.89	-63.31	0.0	0.32	-63.6	-13.0	50.6
300.200	V	40.45	-69.53	0.0	0.52	-70.1	-13.0	57.1

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	48.74	-51.47	12.25	1.53	-40.75	-13.00	27.75
3760.00	V	49.37	-50.54	12.25	1.53	-39.82	-13.00	26.82
5640.00	H	48.82	-46.48	13.00	1.28	-34.76	-13.00	21.76
5640.00	V	43.87	-51.74	13.00	1.28	-40.02	-13.00	27.02
700.30	H	34.94	-66.48	0.00	0.94	-67.42	-13.00	54.42
698.90	V	35.72	-68.20	0.00	0.94	-69.14	-13.00	56.14

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	50.52	-50.45	12.21	1.60	-39.84	-13.00	26.84
3465.00	V	49.75	-49.81	12.21	1.60	-39.20	-13.00	26.20
5197.50	H	46.33	-49.75	12.92	1.36	-38.19	-13.00	25.19
5197.50	V	48.40	-47.65	12.92	1.36	-36.09	-13.00	23.09
81.20	H	42.61	-72.49	0.00	0.38	-72.87	-13.00	59.87
40.50	V	46.52	-41.15	-25.74	0.21	-67.10	-13.00	54.10

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	41.88	-62.50	10.52	1.27	-53.25	-13.00	40.25
1673.00	V	44.57	-59.74	10.52	1.27	-50.49	-13.00	37.49
2509.50	H	39.03	-63.74	12.20	1.24	-52.78	-13.00	39.78
2509.50	V	42.71	-61.45	12.20	1.24	-50.49	-13.00	37.49
3346.00	H	37.76	-63.43	12.26	1.58	-52.75	-13.00	39.75
3346.00	V	38.32	-61.80	12.26	1.58	-51.12	-13.00	38.12
780.30	H	36.86	-62.34	0.00	0.93	-63.27	-13.00	50.27
666.60	V	39.97	-64.43	0.00	0.88	-65.31	-13.00	52.31

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	45.09	-51.22	12.97	1.41	-39.66	-25.00	14.66
5070.00	V	44.66	-51.42	12.97	1.41	-39.86	-25.00	14.86
7605.00	H	50.84	-40.54	12.84	1.40	-29.10	-25.00	4.10
7605.00	V	52.31	-39.74	12.84	1.40	-28.30	-25.00	3.30
544.50	H	36.20	-67.10	0.00	0.73	-67.83	-25.00	42.83
58.64	V	41.90	-64.67	-10.93	0.23	-75.83	-25.00	50.83

LTE Band 12 (30MHz-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)			
QPSK, Frequency: 707.500 MHz								
1415.00	H	39.21	-64.68	9.64	1.25	-56.29	-13.00	43.29
1415.00	V	40.43	-63.52	9.64	1.25	-55.13	-13.00	42.13
2122.50	H	39.88	-63.85	11.67	1.16	-53.34	-13.00	40.34
2122.50	V	38.94	-65.10	11.67	1.16	-54.59	-13.00	41.59
2830.00	H	37.56	-64.60	12.33	1.41	-53.68	-13.00	40.68
2830.00	V	37.47	-65.10	12.33	1.41	-54.18	-13.00	41.18
666.60	H	37.28	-64.38	0.00	0.88	-65.26	-13.00	52.26
425.20	V	41.72	-66.22	0.00	0.64	-66.86	-13.00	53.86

LTE Band 13 (30MHz-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)			
QPSK, Frequency: 782.000 MHz								
1564.00	H	38.97	-65.52	10.19	1.32	-56.65	-40.00	16.65
1564.00	V	42.39	-62.03	10.19	1.32	-53.16	-40.00	13.16
2346.00	H	39.24	-63.94	11.98	1.21	-53.17	-13.00	40.17
2346.00	V	39.08	-65.06	11.98	1.21	-54.29	-13.00	41.29
3128.00	H	38.35	-63.25	12.35	1.53	-52.43	-13.00	39.43
3128.00	V	38.79	-62.34	12.35	1.53	-51.52	-13.00	38.52
425.20	H	39.70	-64.96	0.00	0.64	-65.60	-13.00	52.60
349.30	V	39.78	-69.31	0.00	0.56	-69.87	-13.00	56.87

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	39.77	-64.16	9.66	1.25	-55.75	-13.00	42.75
1420.00	V	41.33	-62.66	9.66	1.25	-54.25	-13.00	41.25
2130.00	H	38.90	-64.82	11.68	1.16	-54.30	-13.00	41.30
2130.00	V	39.12	-64.92	11.68	1.16	-54.40	-13.00	41.40
2840.00	H	38.81	-63.33	12.34	1.42	-52.41	-13.00	39.41
2840.00	V	38.65	-63.87	12.34	1.42	-52.95	-13.00	39.95
399.90	H	38.09	-66.72	0.00	0.61	-67.33	-13.00	54.33
53.20	V	47.14	-56.17	-13.43	0.22	-69.82	-13.00	56.82

LTE Band 26 (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:831.500 MHz								
1663.00	H	39.50	-64.89	10.49	1.28	-55.68	-13.00	42.68
1663.00	V	43.16	-61.16	10.49	1.28	-51.95	-13.00	38.95
2494.50	H	38.73	-64.07	12.19	1.24	-53.12	-13.00	40.12
2494.50	V	42.91	-61.30	12.19	1.24	-50.35	-13.00	37.35
3326.00	H	39.06	-62.17	12.27	1.57	-51.47	-13.00	38.47
3326.00	V	39.67	-60.54	12.27	1.57	-49.84	-13.00	36.84
425.20	H	40.21	-64.45	0.00	0.64	-65.09	-13.00	52.09
67.20	V	52.30	-59.63	-6.48	0.24	-66.35	-13.00	53.35

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	44.31	-51.79	12.92	1.36	-40.23	-25.00	15.23
5190.00	V	42.40	-53.66	12.92	1.36	-42.10	-25.00	17.10
7785.00	H	46.79	-44.31	12.91	1.53	-32.93	-25.00	7.93
7785.00	V	49.31	-42.41	12.91	1.53	-31.03	-25.00	6.03
39.10	H	39.93	-52.75	-25.97	0.22	-78.94	-25.00	53.94
107.90	V	45.25	-66.76	0.00	0.28	-67.04	-25.00	42.04

LTE Band 40 (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:2310.000 MHz								
4620.00	H	37.69	-59.99	13.30	1.52	-48.21	-40.00	8.21
4620.00	V	42.12	-55.75	13.30	1.52	-43.97	-40.00	3.97
6930.00	H	34.91	-57.06	13.50	1.81	-45.37	-40.00	5.37
6930.00	V	37.90	-54.24	13.50	1.81	-42.55	-40.00	2.55
609.10	H	35.48	-66.59	0.00	0.78	-67.37	-40.00	27.37
425.20	V	38.12	-69.82	0.00	0.64	-70.46	-40.00	30.46
QPSK,Frequency:2355.000 MHz								
4710.00	H	37.07	-60.31	13.23	1.50	-48.58	-40.00	8.58
4710.00	V	40.36	-57.09	13.23	1.50	-45.36	-40.00	5.36
7065.00	H	35.43	-56.31	13.32	1.76	-44.75	-40.00	4.75
7065.00	V	37.56	-54.45	13.32	1.76	-42.89	-40.00	2.89
666.60	H	37.86	-63.80	0.00	0.88	-64.68	-40.00	24.68
425.20	V	39.24	-68.70	0.00	0.64	-69.34	-40.00	29.34

LTE Band 41 (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	44.19	-51.91	12.93	1.37	-40.35	-25.00	15.35
5190.00	V	42.76	-53.30	12.93	1.37	-41.74	-25.00	16.74
7785.00	H	46.87	-44.24	12.91	1.53	-32.86	-25.00	7.86
7785.00	V	49.92	-41.81	12.91	1.53	-30.43	-25.00	5.43
425.20	H	39.07	-65.59	0.00	0.64	-66.23	-25.00	41.23
39.10	V	45.02	-40.88	-25.97	0.22	-67.07	-25.00	42.07

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& §90.691 - BAND EDGES

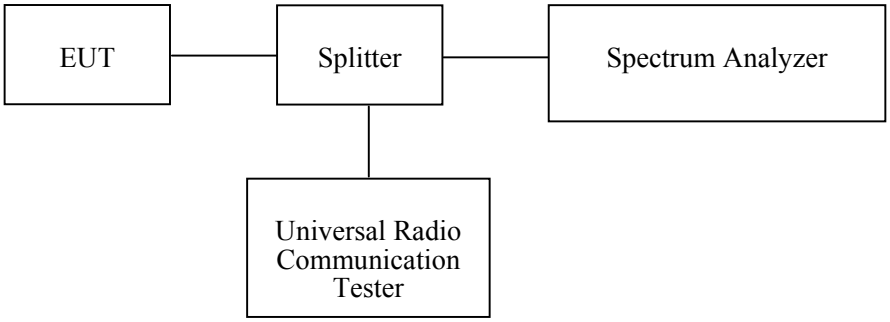
Applicable Standard

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

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
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2018-08-03	2019-08-03
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	/
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	/
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	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

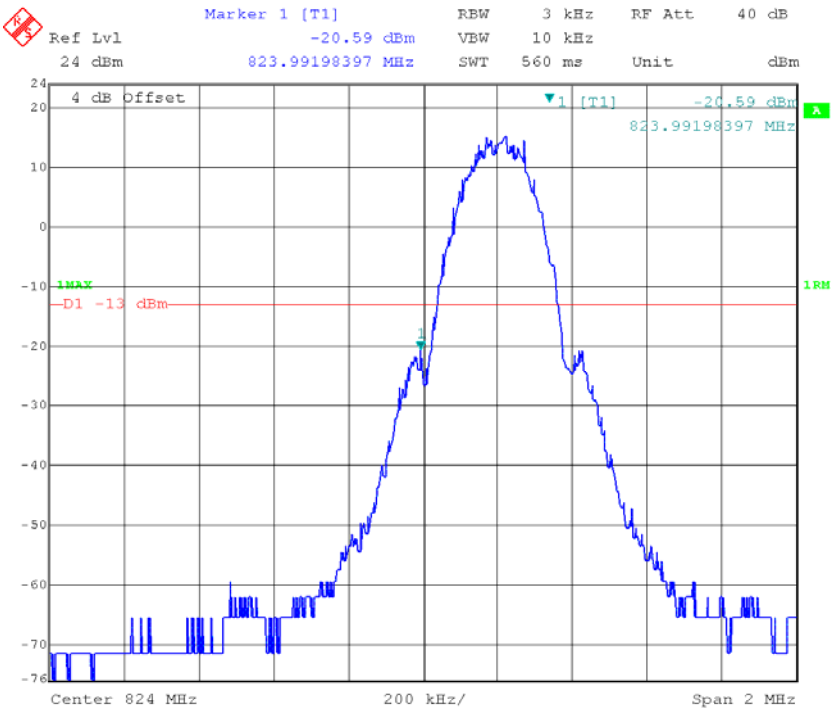
Environmental Conditions

Temperature:	28.1°C~28.9°C
Relative Humidity:	51 %~55 %
ATM Pressure:	100.3 kPa~100.5 kPa

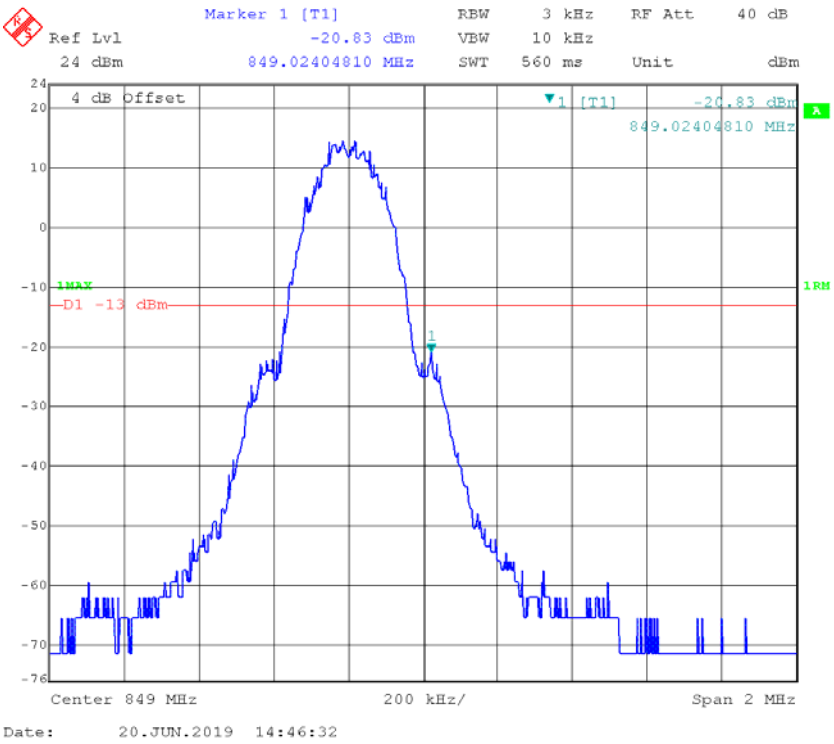
** The testing was performed by Blake Yang on 2019-06-18~2019-06-20.*

Test Mode: Transmitting
Test Result: Compliant. Please refer to the following plots.

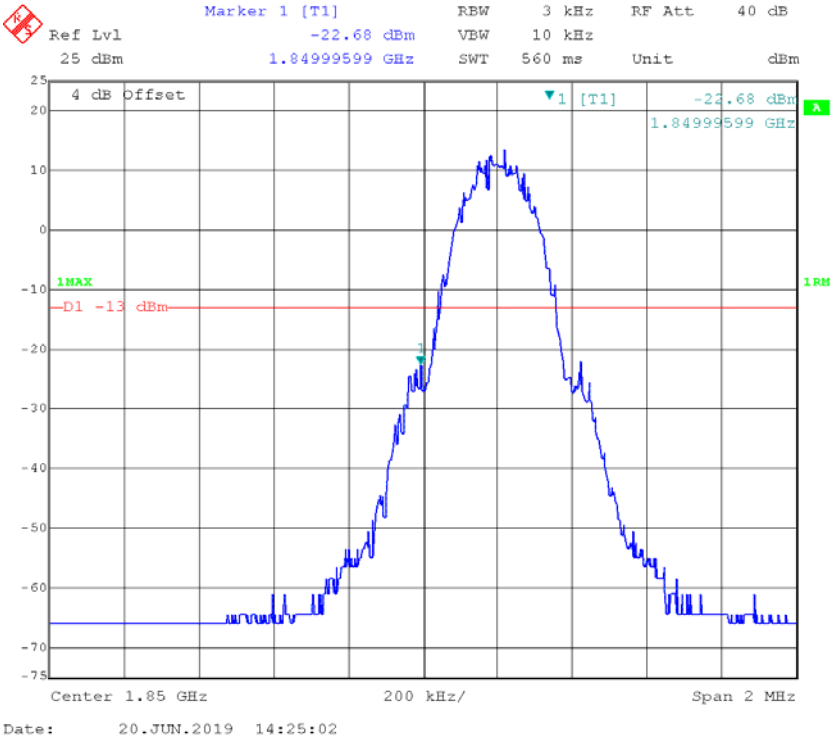
GPRS 850, Left Band Edge



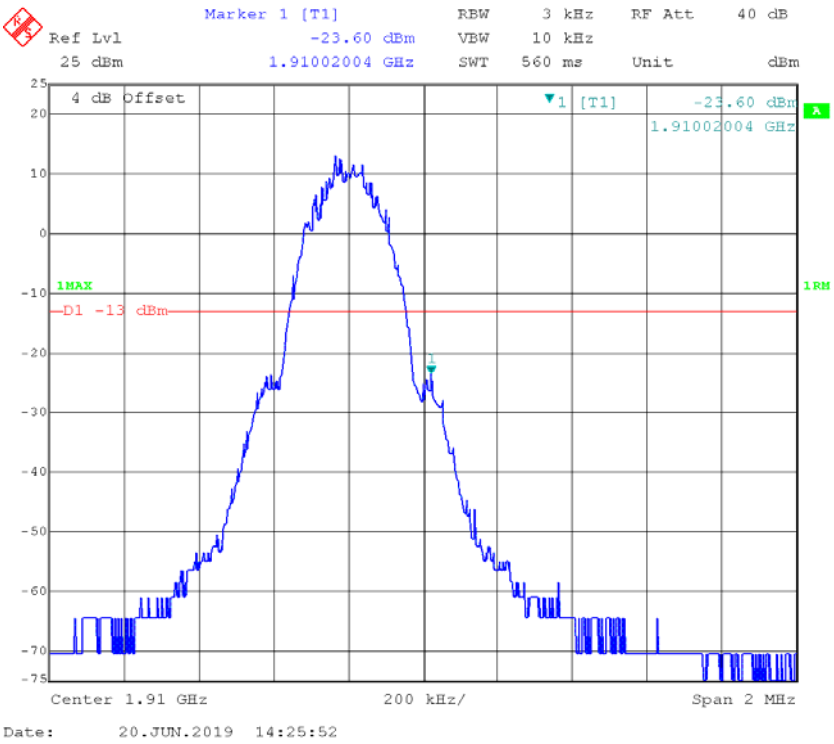
GPRS 850, Right Band Edge



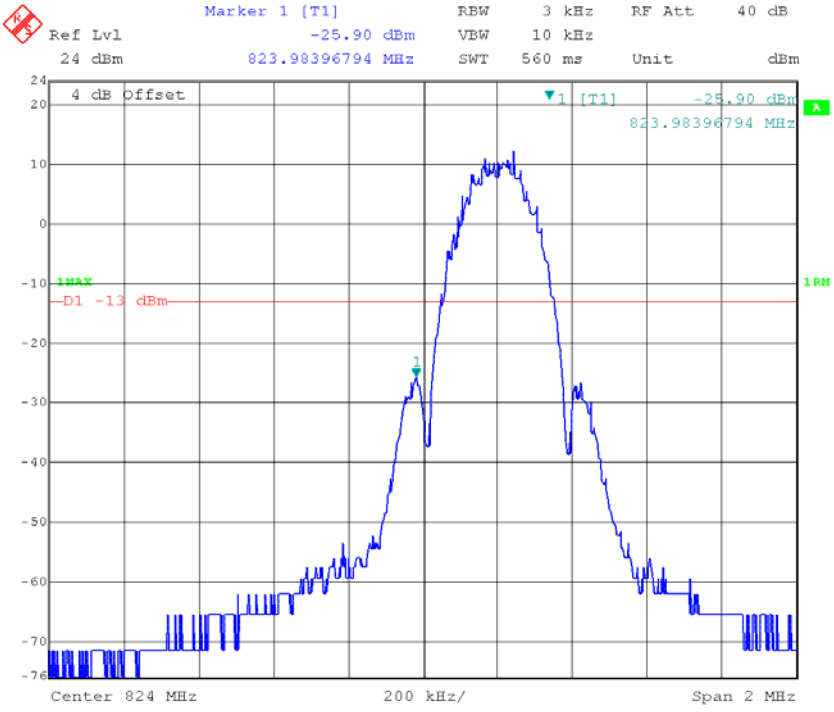
GPRS 1900, Left Band Edge



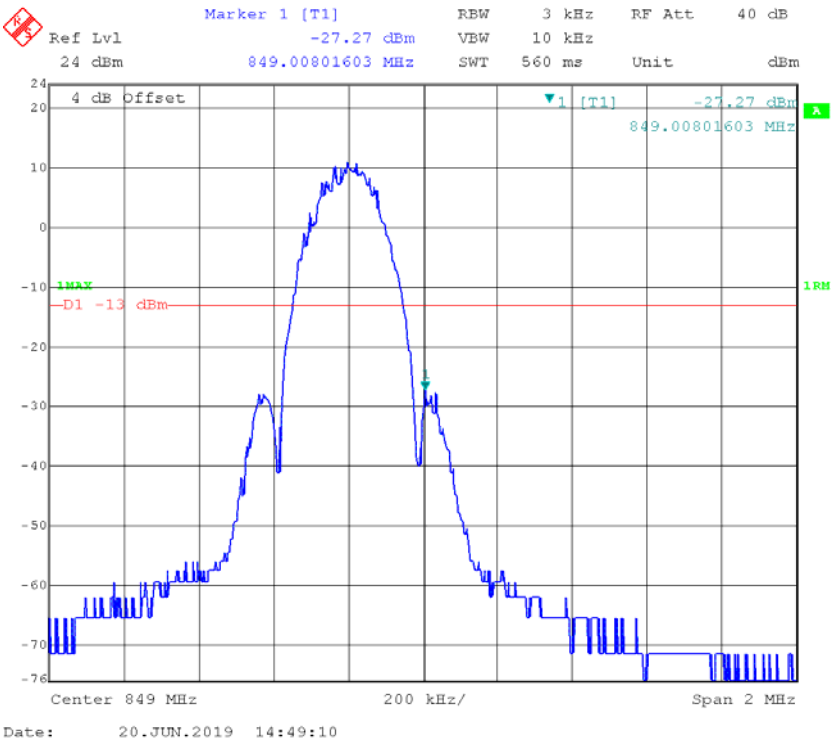
GPRS 1900, Right Band Edge



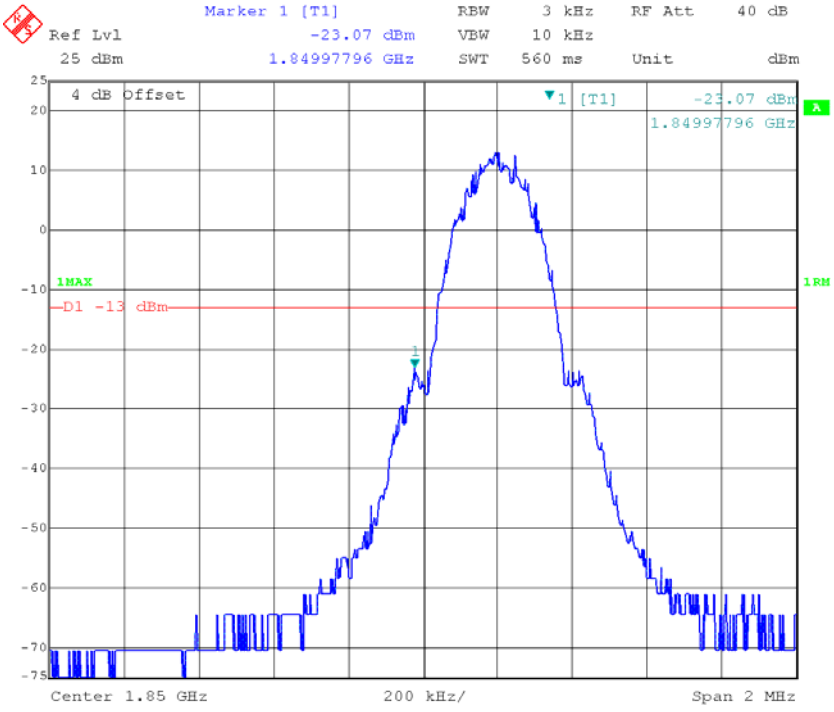
EDGE 850, Left Band Edge



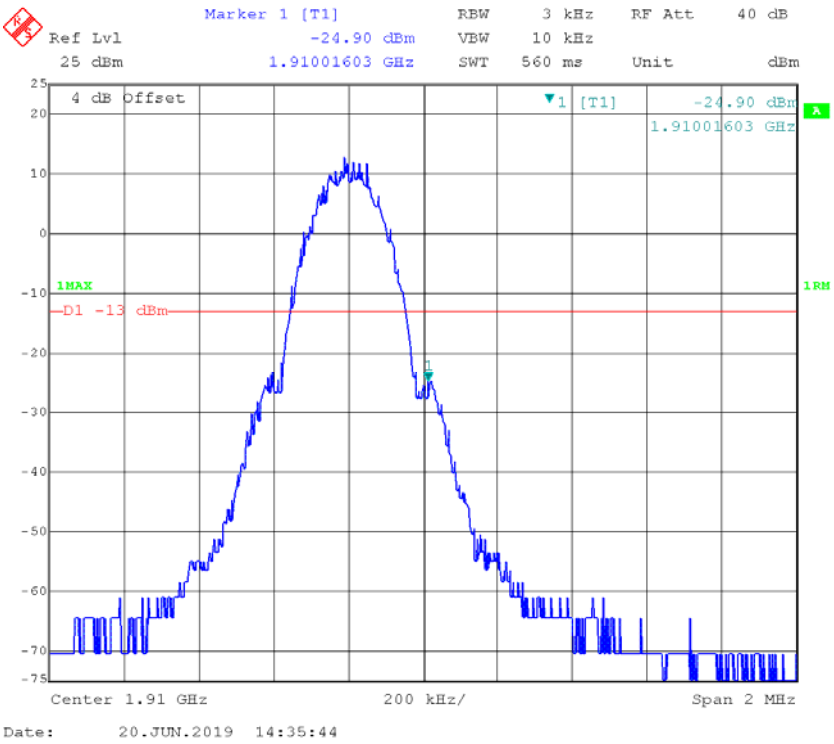
EDGE 850, Right Band Edge



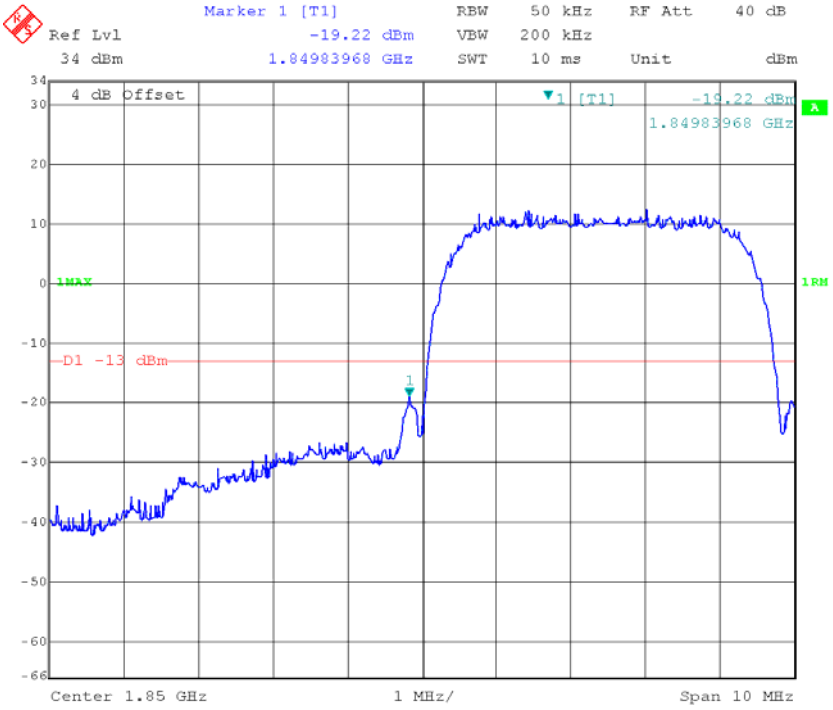
EDGE 1900, Left Band Edge



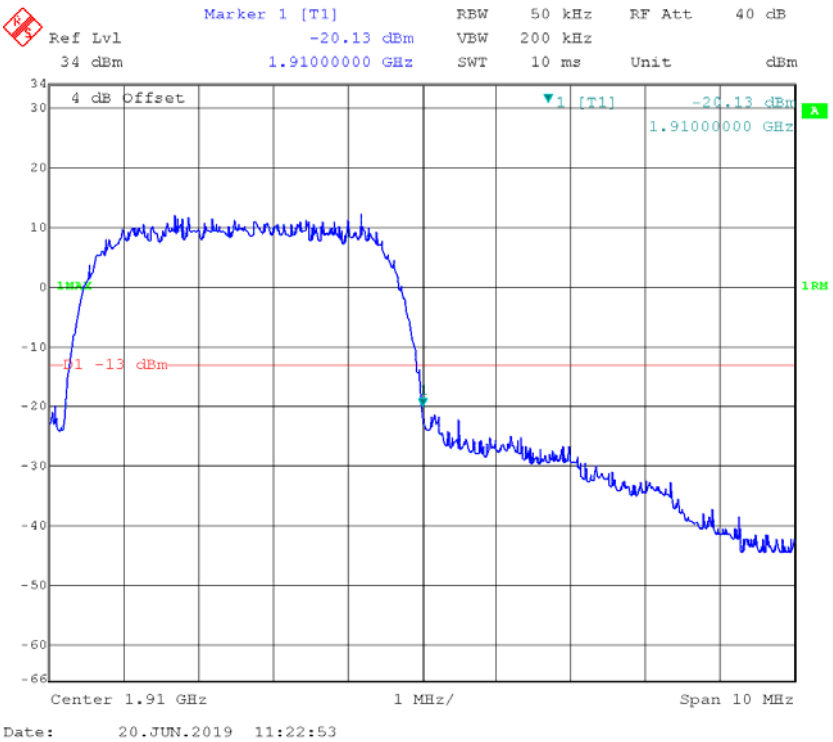
EDGE 1900, Right Band Edge



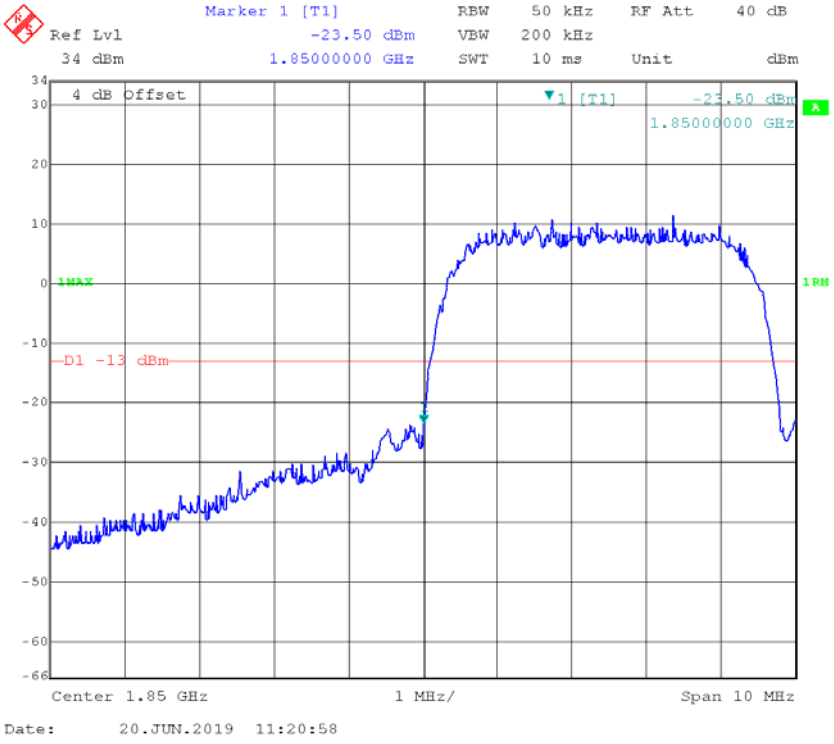
WCDMA Band II Rel 99, Left Band Edge



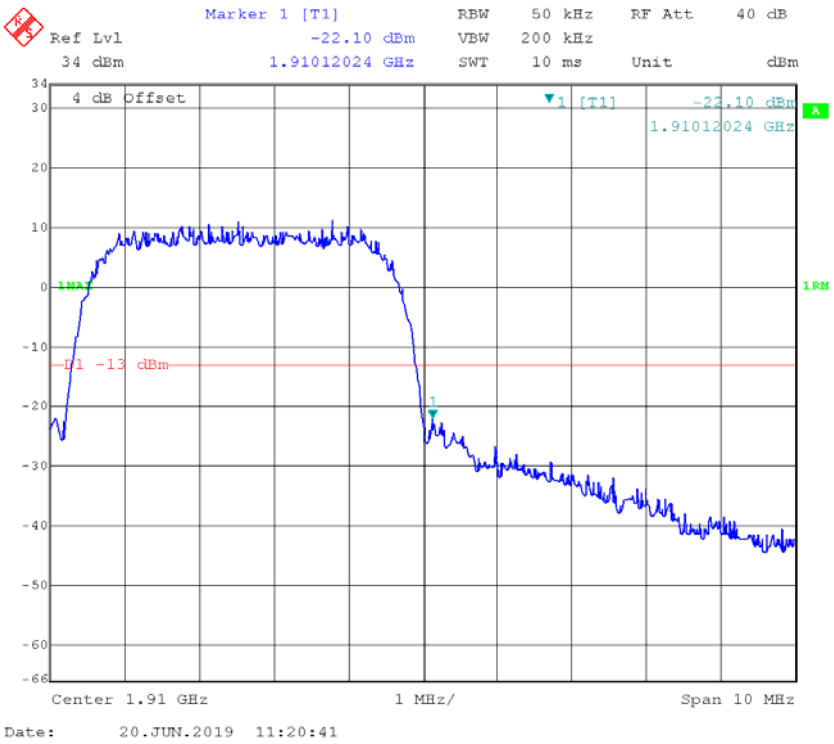
WCDMA Band II Rel 99, Right Band Edge



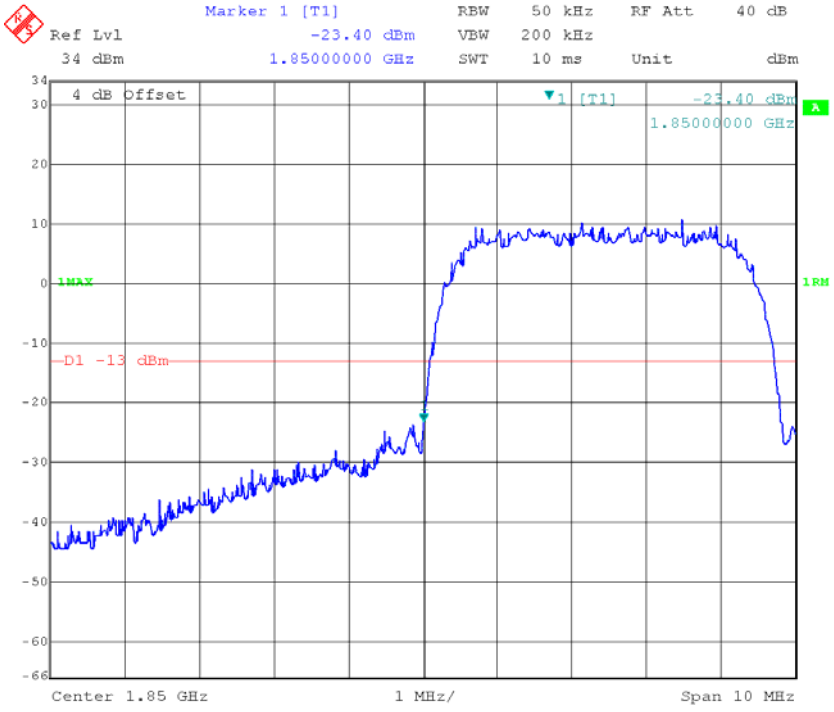
WCDMA Band II HSDPA, Left Band Edge



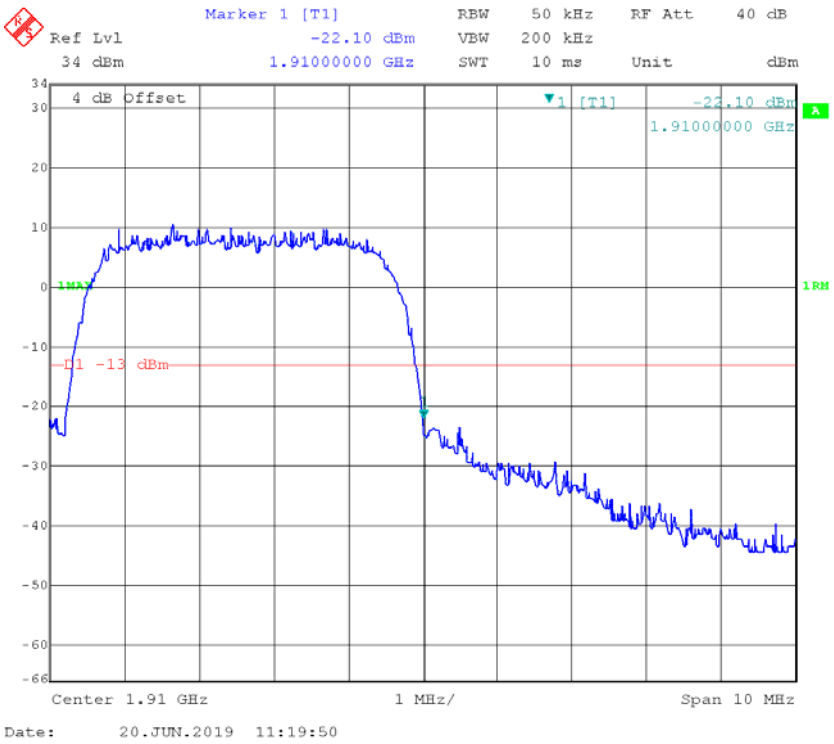
WCDMA Band II HSDPA, Right Band Edge



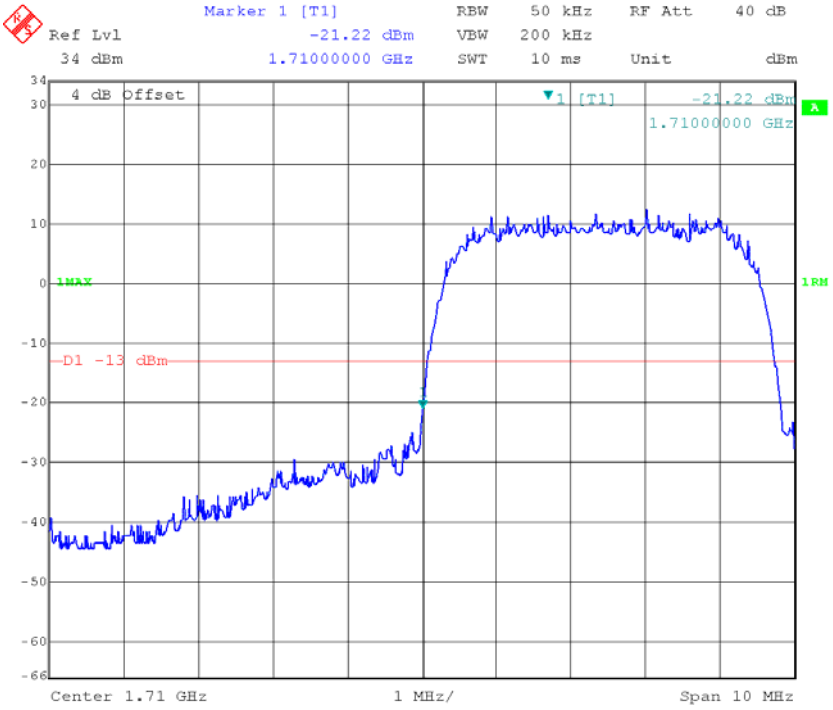
WCDMA Band II HSUPA, Left Band Edge



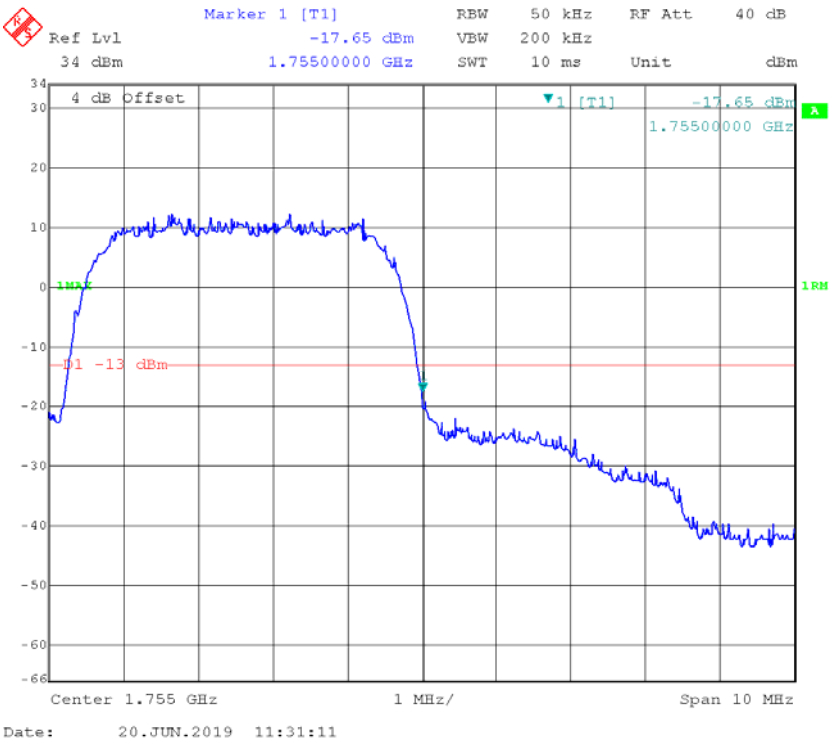
WCDMA Band II HSUPA, Right Band Edge



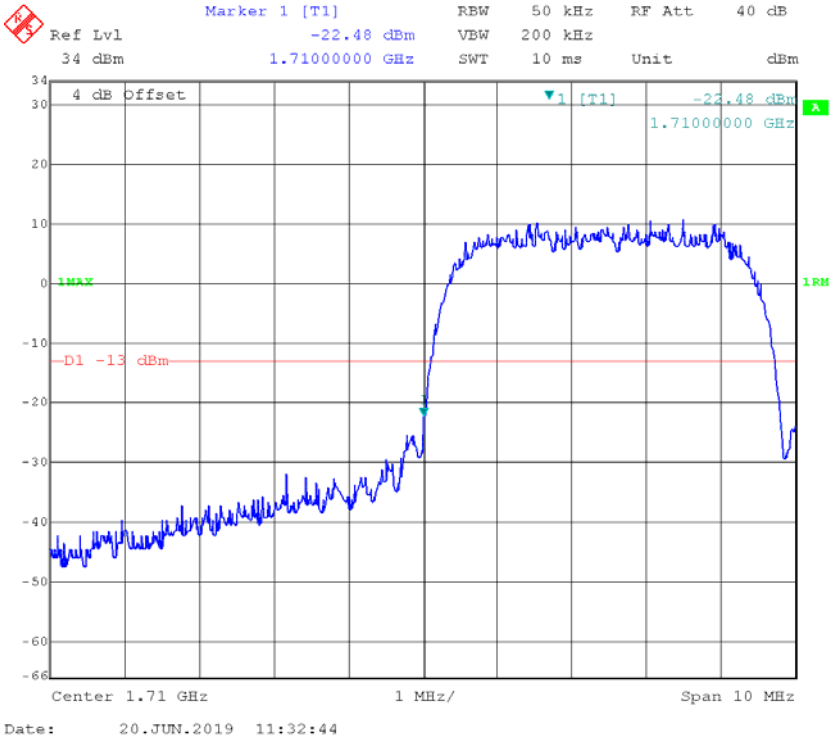
WCDMA Band IV Rel 99, Left Band Edge



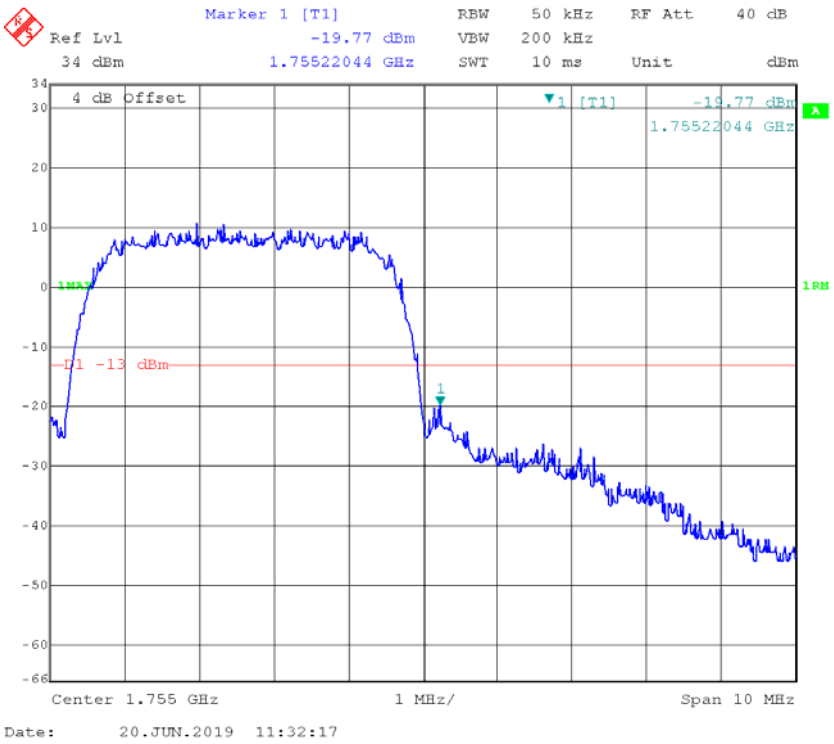
WCDMA Band IV Rel 99, Right Band Edge



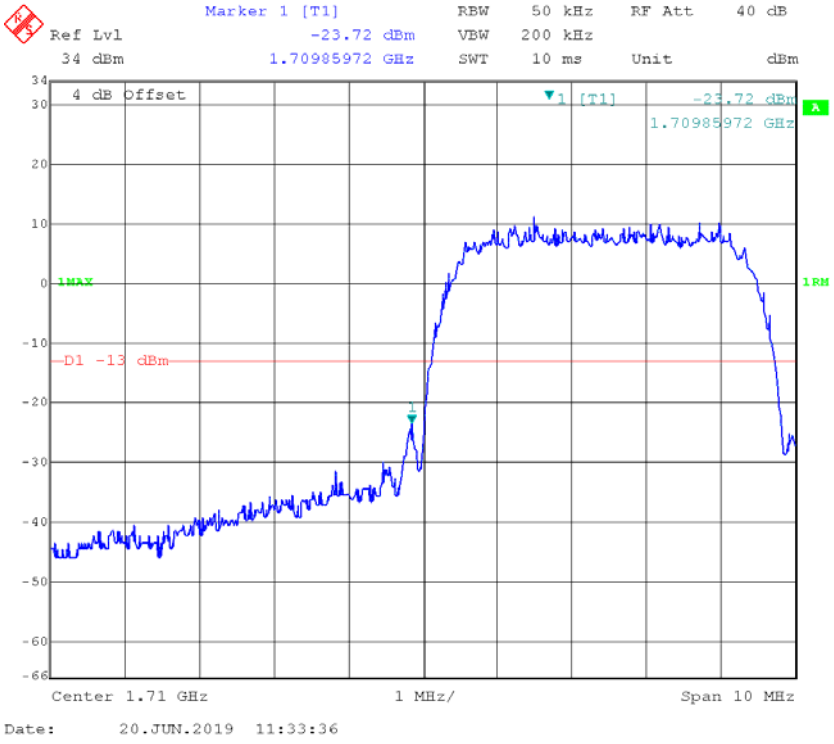
WCDMA Band IV HSDPA, Left Band Edge



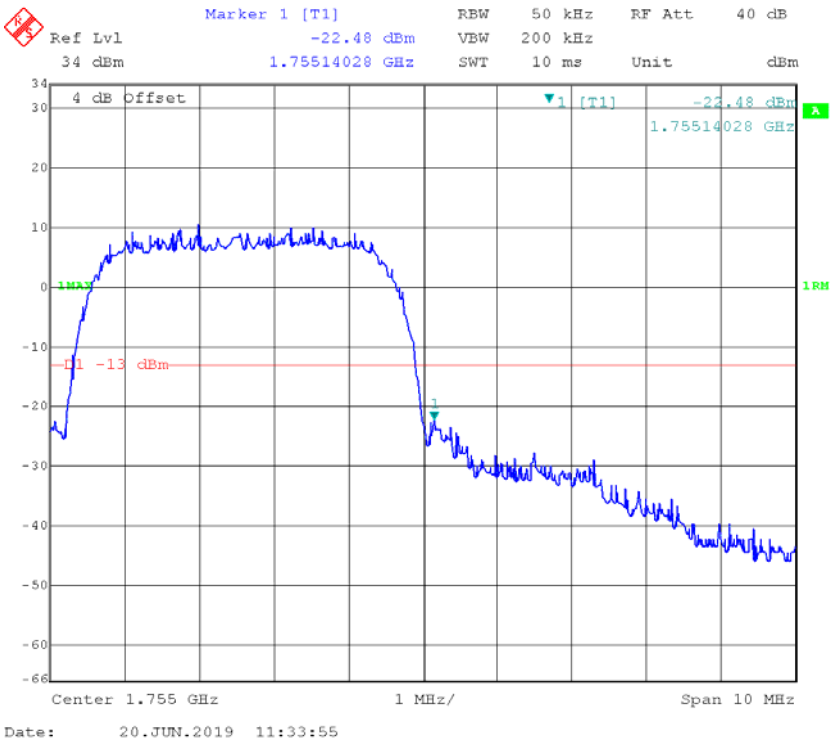
WCDMA Band IV HSDPA, Right Band Edge



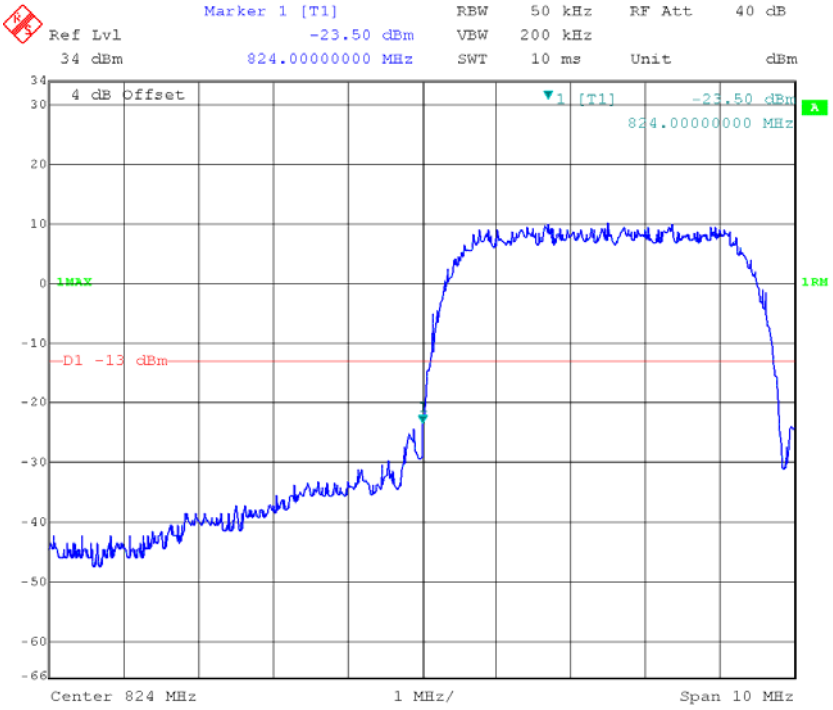
WCDMA Band IV HSUPA, Left Band Edge



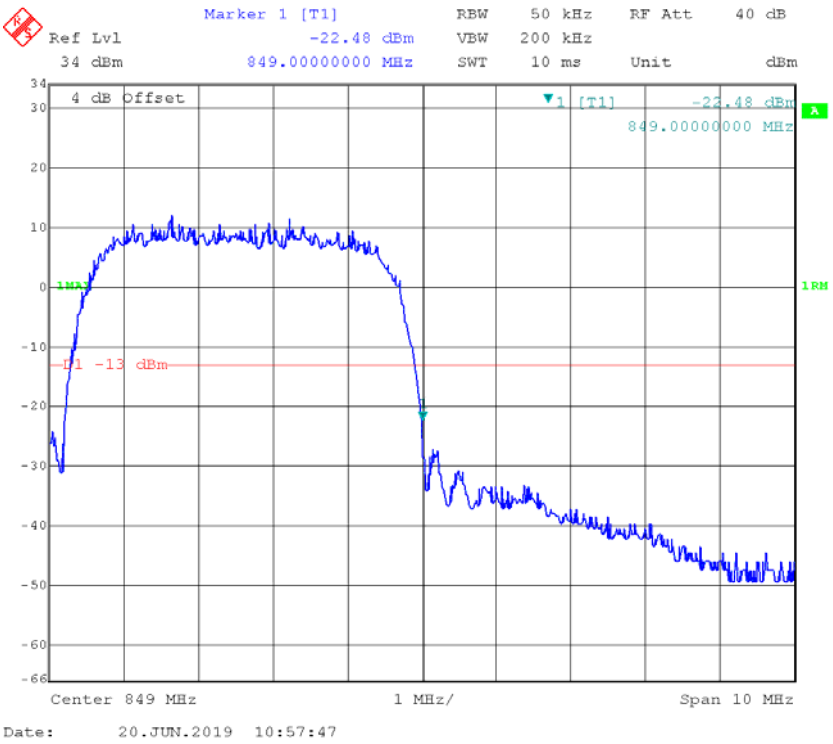
WCDMA Band IV HSUPA, Right Band Edge



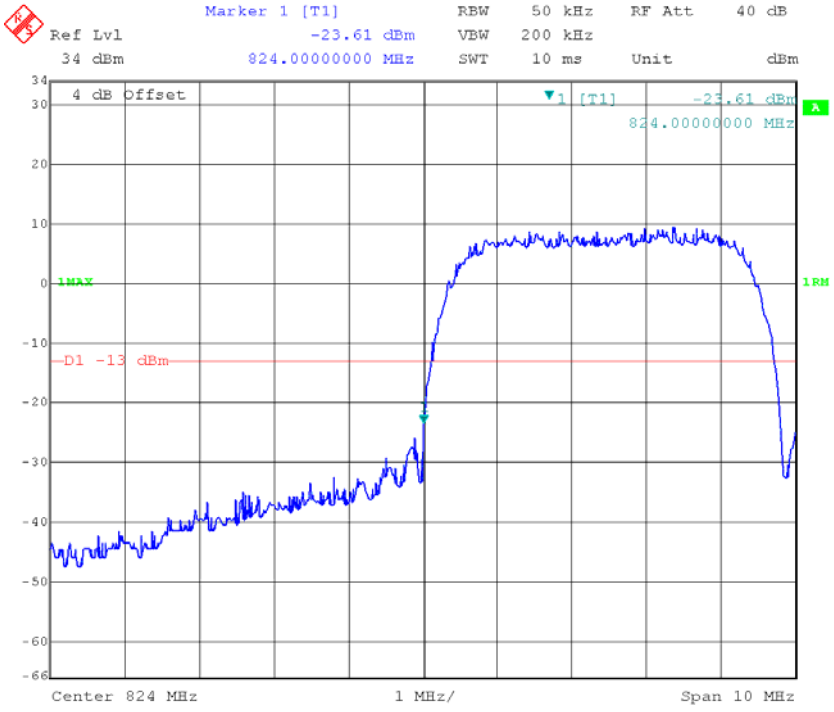
WCDMA Band V Rel 99, Left Band Edge



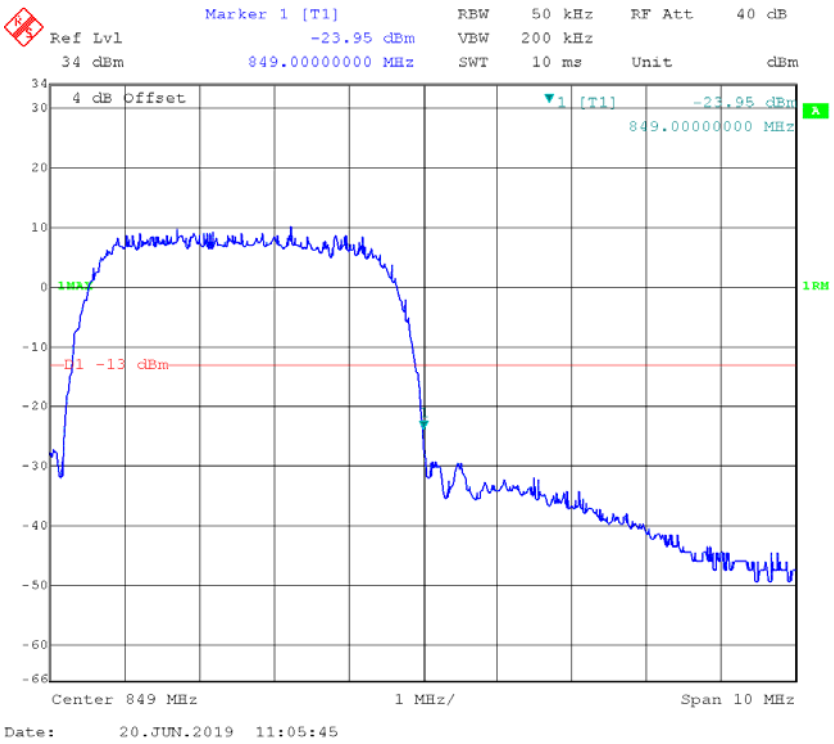
WCDMA Band V Rel 99, Right Band Edge



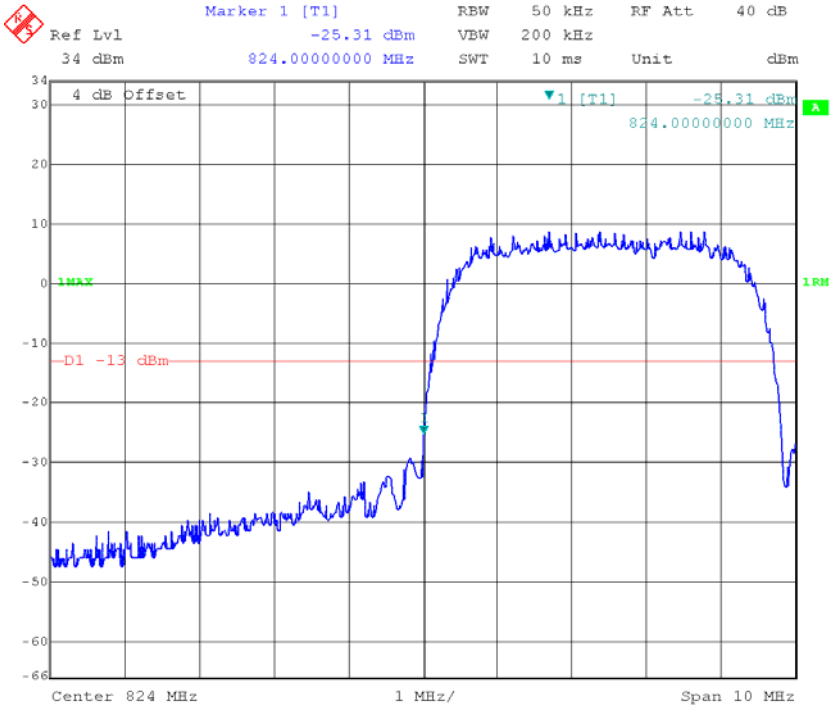
WCDMA Band V HSDPA, Left Band Edge



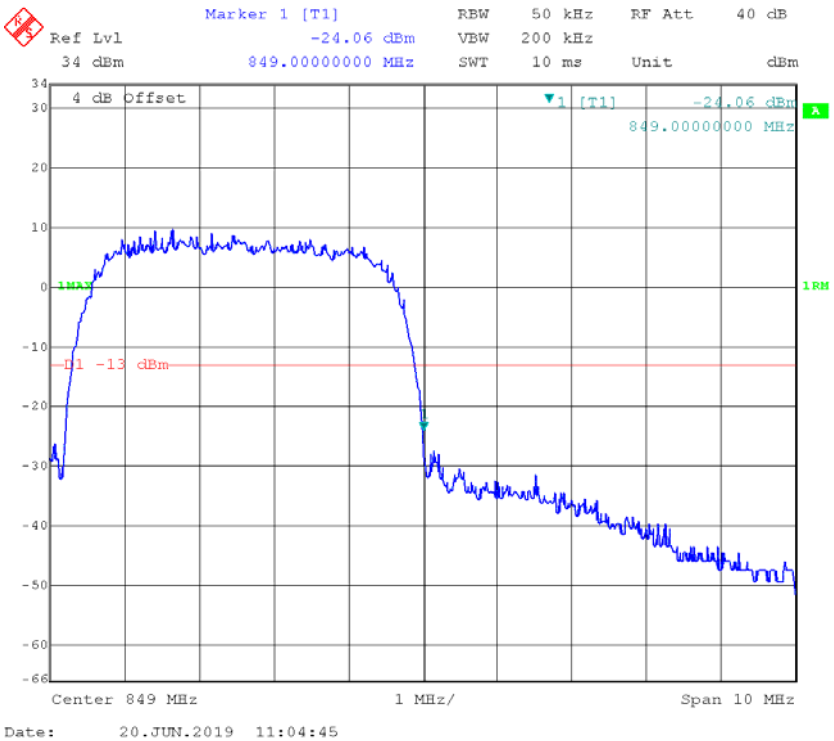
WCDMA Band V HSDPA, Right Band Edge



WCDMA Band V HSUPA, Left Band Edge

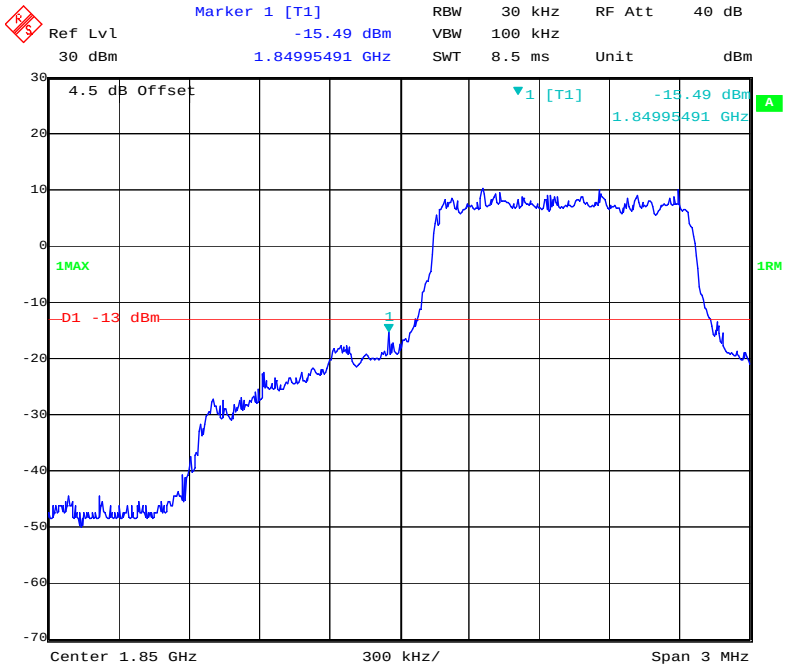


WCDMA Band V HSUPA, Right Band Edge

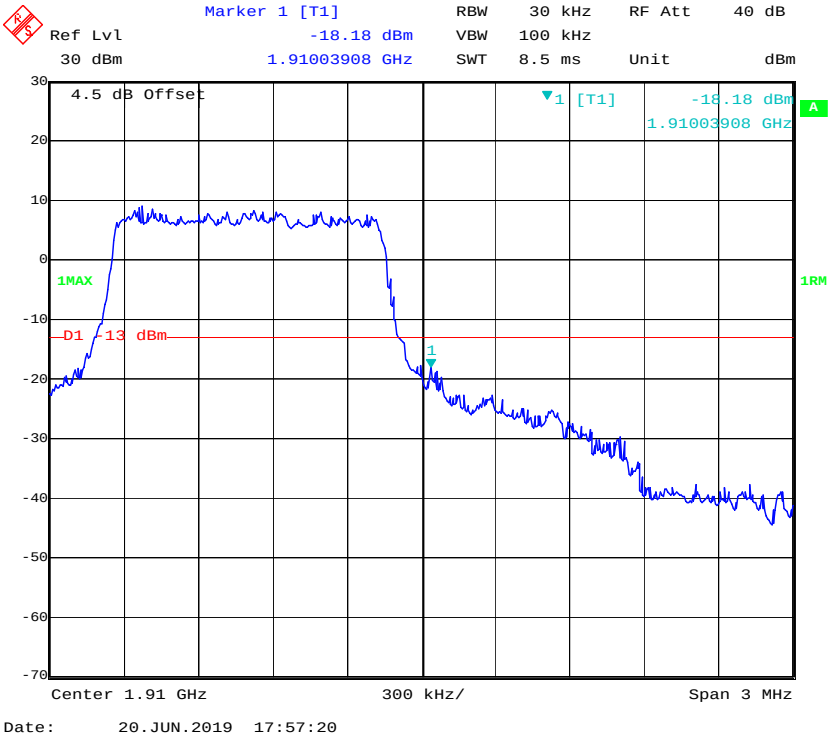


LTE Band 2

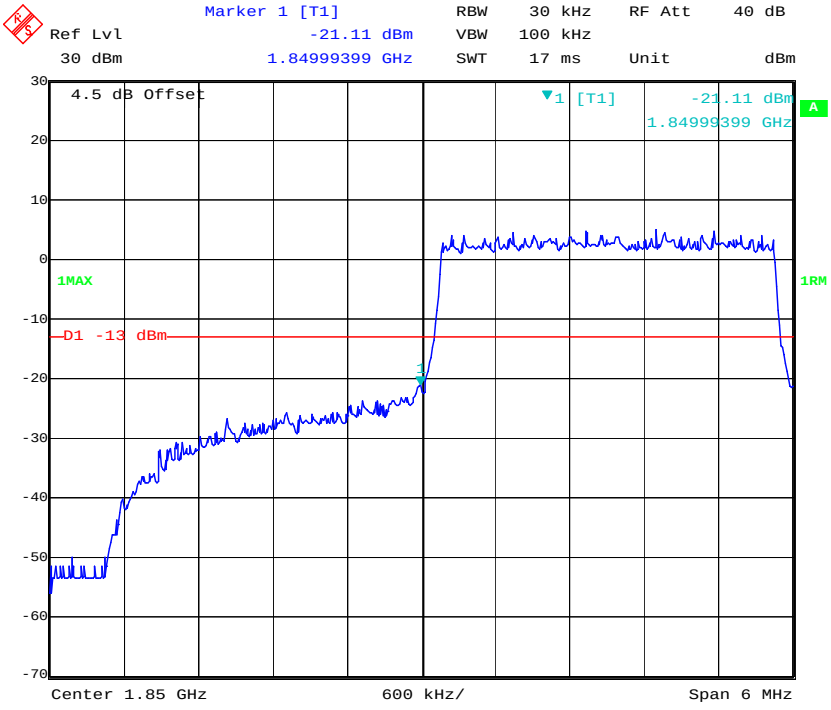
QPSK_1.4MHz_ 6 RB_ Left



QPSK_1.4MHz_ 6 RB_ Right

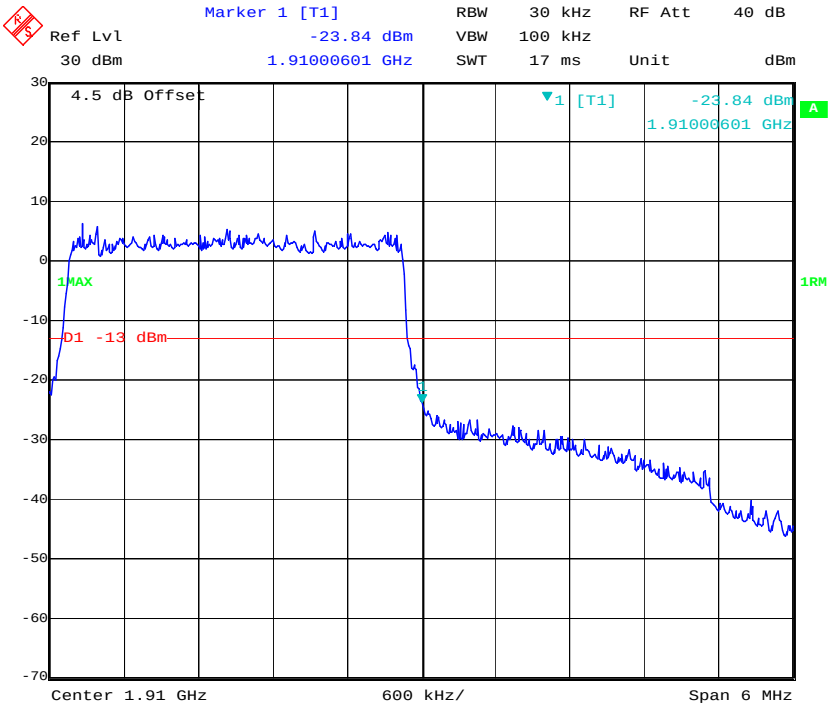


QPSK_3MHz_ 15 RB_ Left



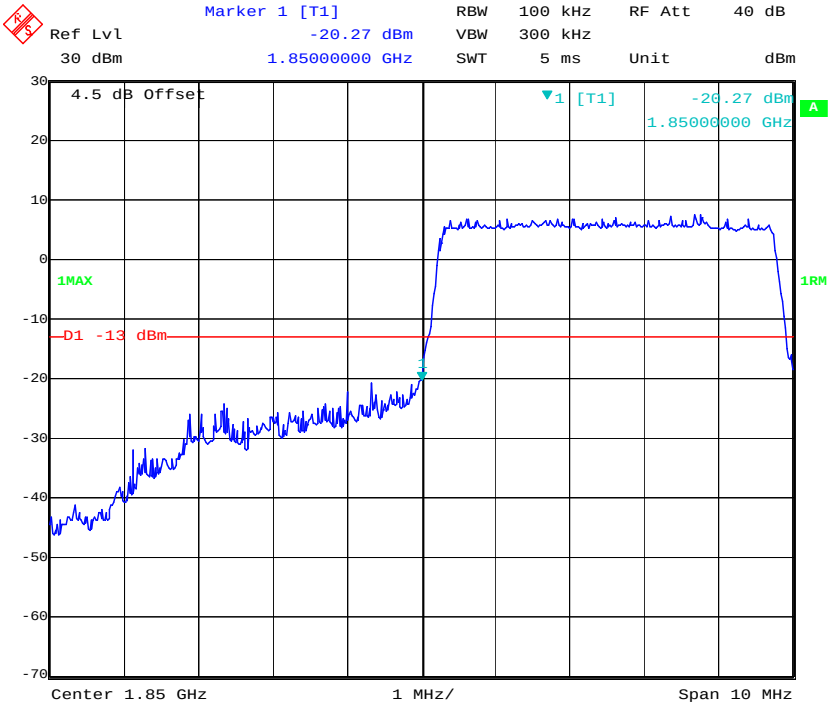
Date: 20.JUN.2019 18:03:00

QPSK_3MHz_ 15 RB_ Right



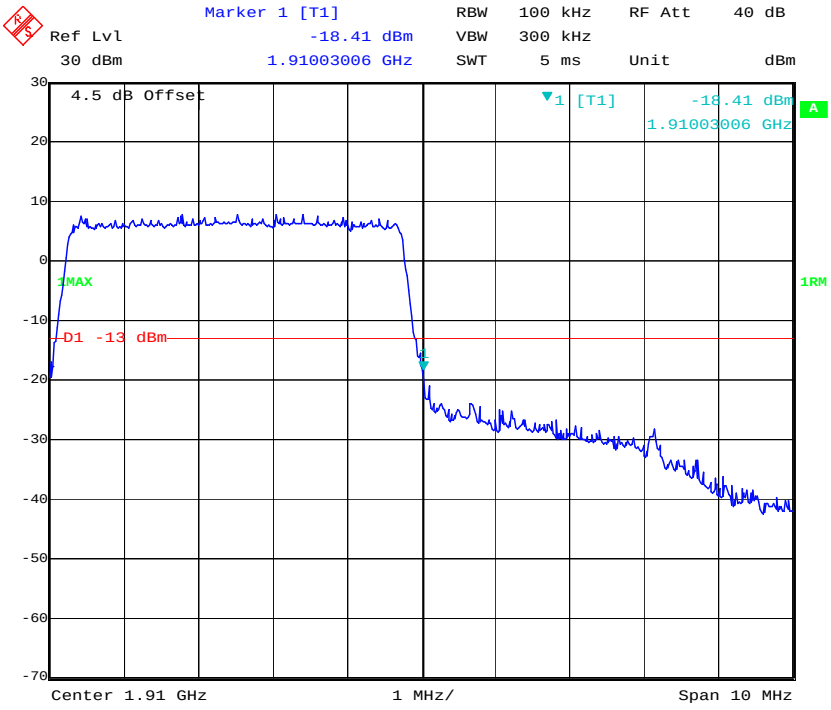
Date: 20.JUN.2019 18:04:10

QPSK_5MHz_ 25 RB_ Left



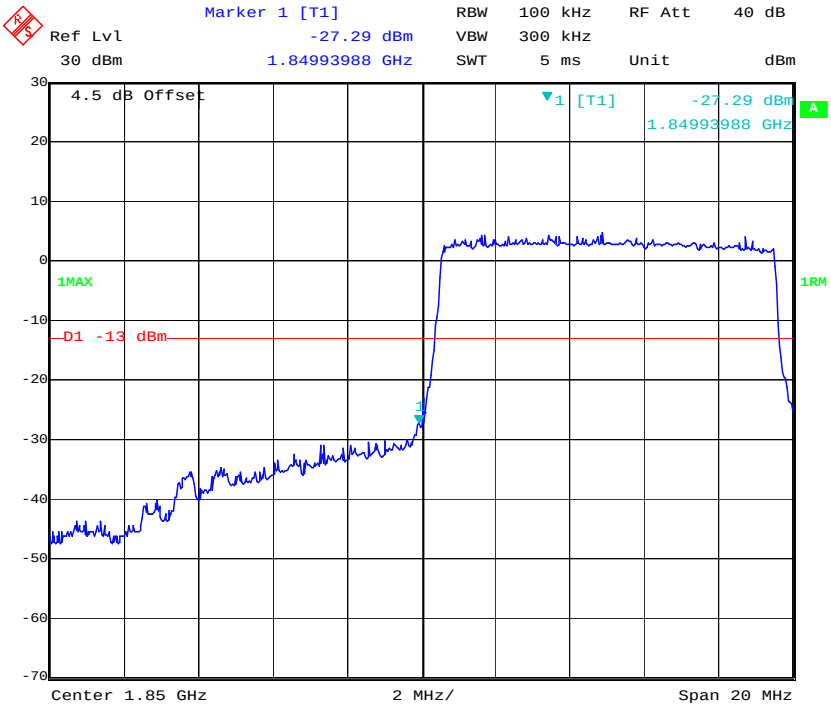
Date: 20.JUN.2019 18:05:22

QPSK_5MHz_ 25 RB_ Right



Date: 20.JUN.2019 18:06:25

QPSK_10MHz_ 50 RB_ Left

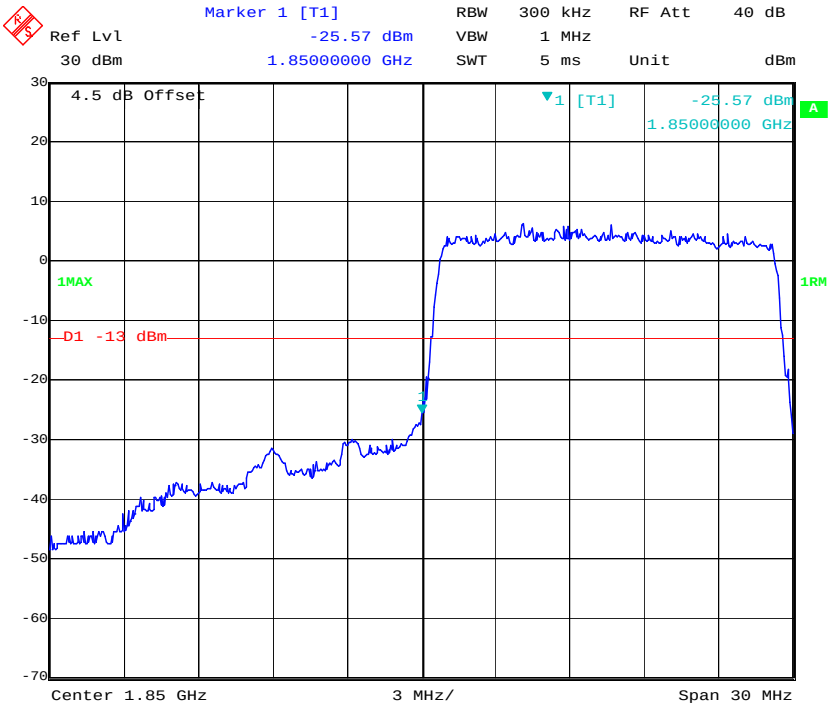


Date: 20.JUN.2019 18:07:26

QPSK_10MHz_ 50 RB_ Right

Date: 20.JUN.2019 18:08:29

QPSK_15MHz_ 75 RB_ Left

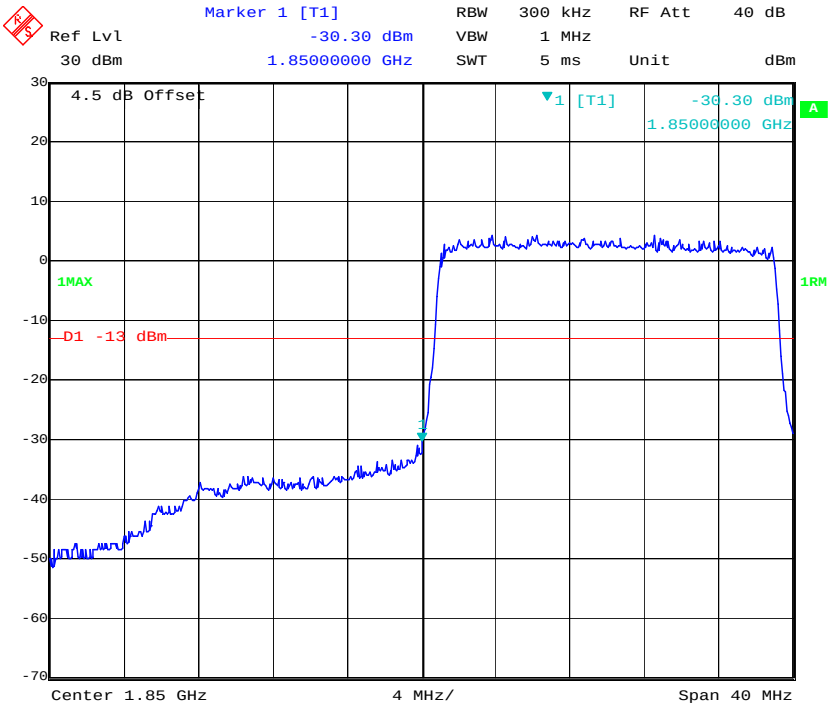


Date: 20.JUN.2019 18:09:31

QPSK_15MHz_ 75 RB_ Right

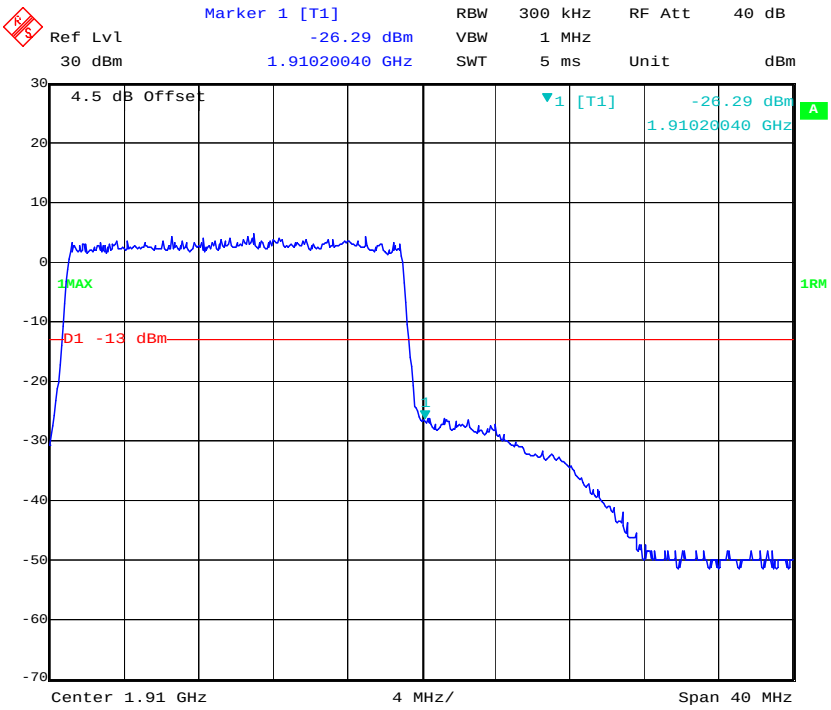
Date: 20.JUN.2019 18:10:31

QPSK_20MHz_ FULL RB_ Left



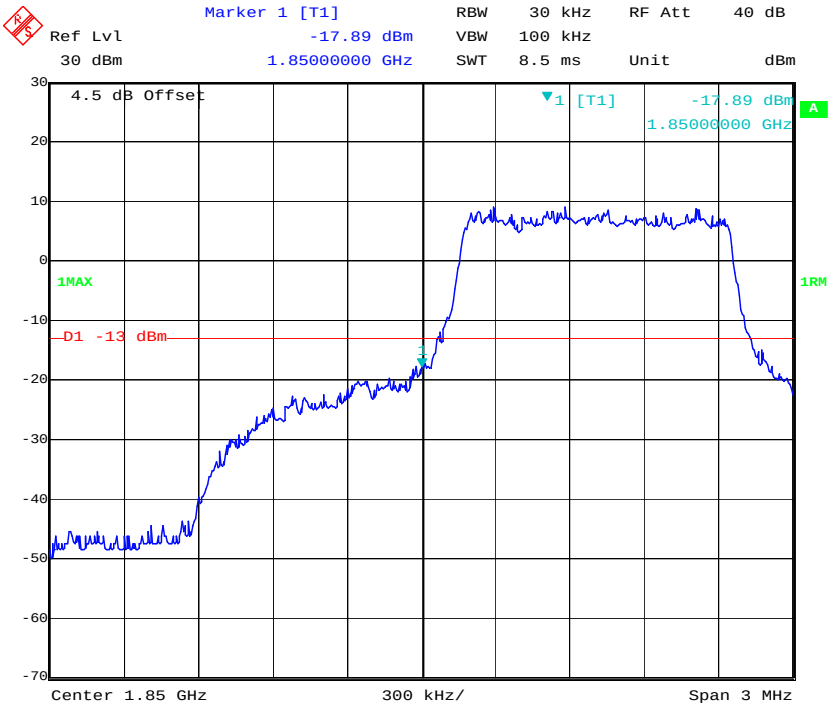
Date: 20.JUN.2019 18:11:45

QPSK_20MHz_ FULL RB_ Right



Date: 20.JUN.2019 18:12:58

16QAM_1.4MHz_ 6 RB_ Left

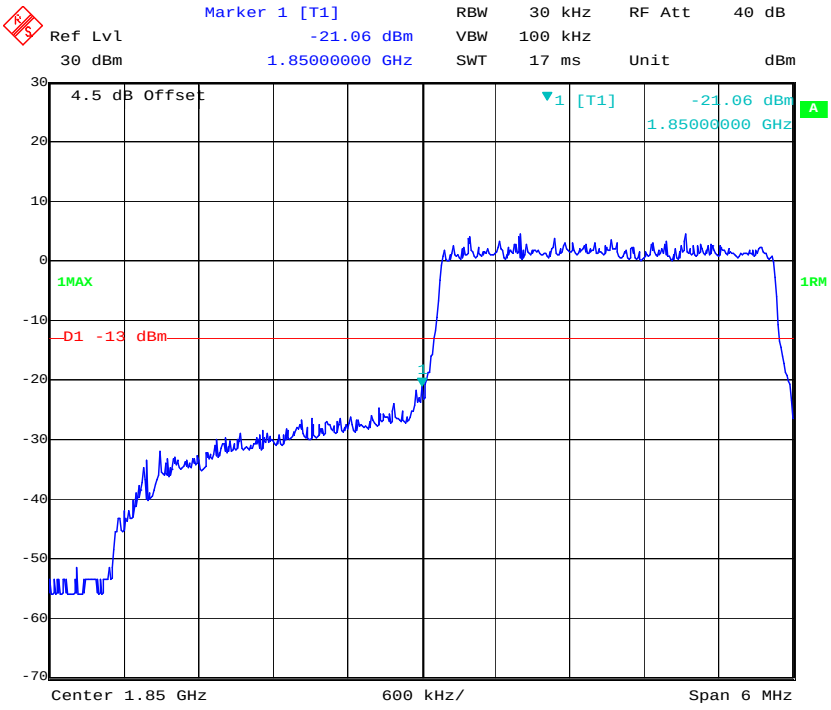


Date: 20.JUN.2019 17:56:36

16QAM_1.4MHz_ 6 RB_ Right

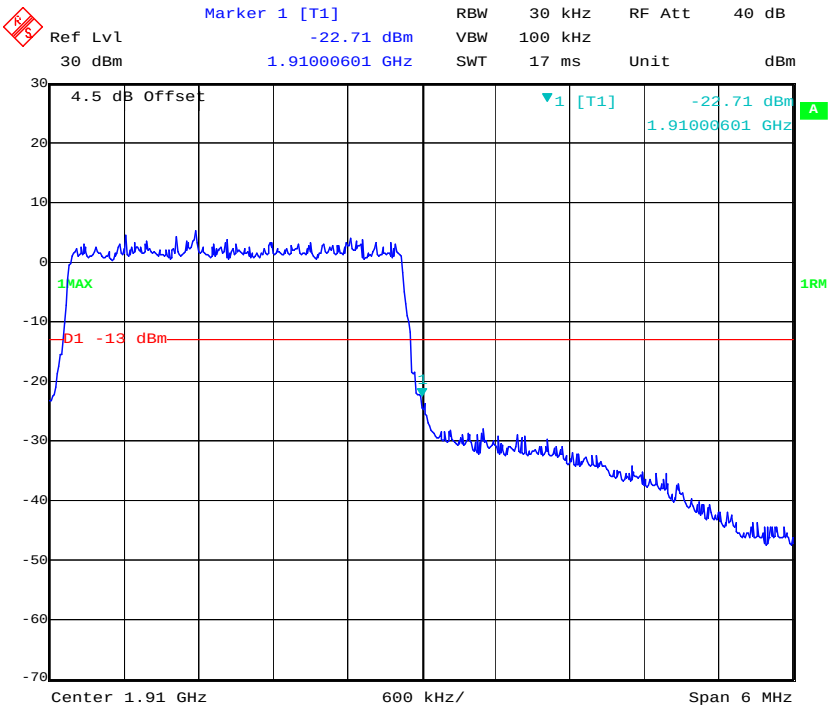
Date: 20.JUN.2019 18:00:06

16QAM_3MHz_ 15 RB_ Left



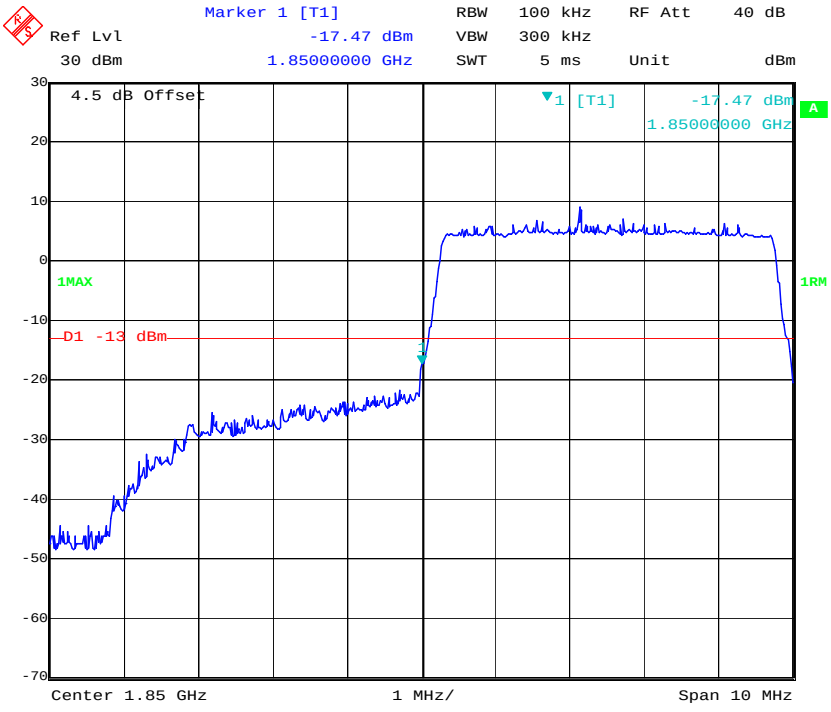
Date: 20.JUN.2019 18:03:33

16QAM_3MHz_ 15 RB_ Right



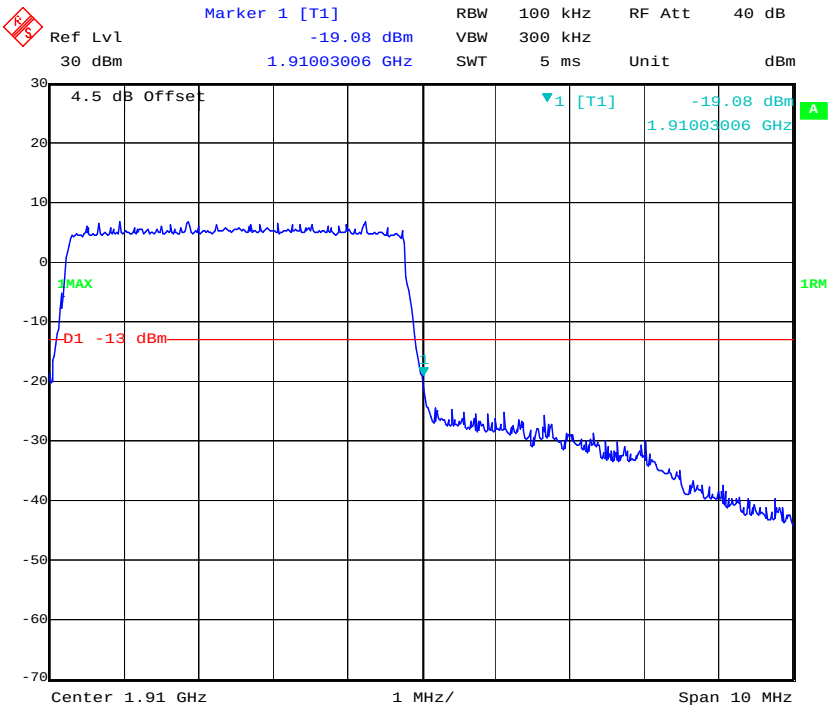
Date: 20.JUN.2019 18:04:52

16QAM_5MHz_ 25 RB_ Left



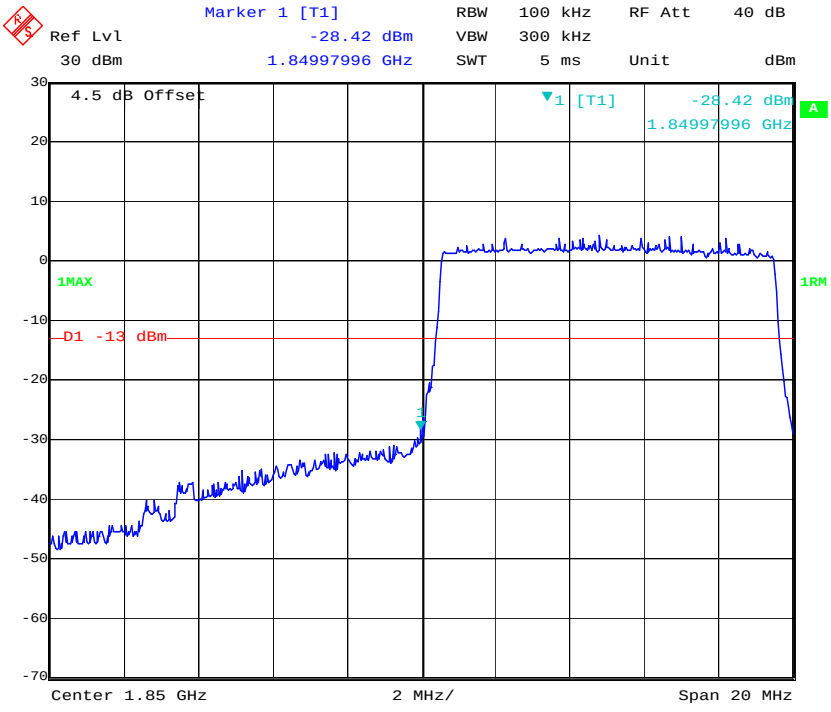
Date: 20.JUN.2019 18:05:58

16QAM_5MHz_ 25 RB_ Right



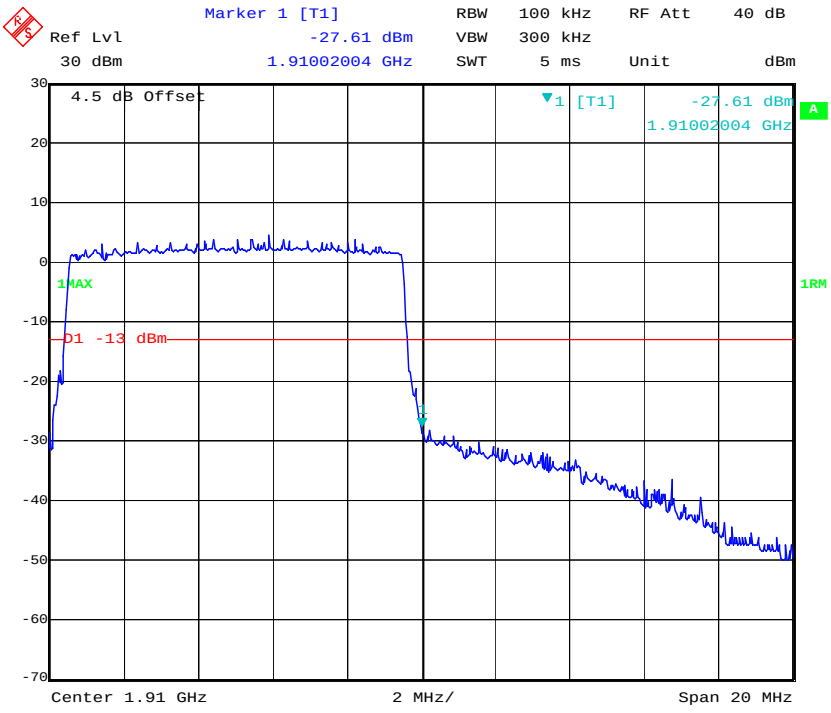
Date: 20.JUN.2019 18:06:55

16QAM_10MHz_ 50 RB_ Left



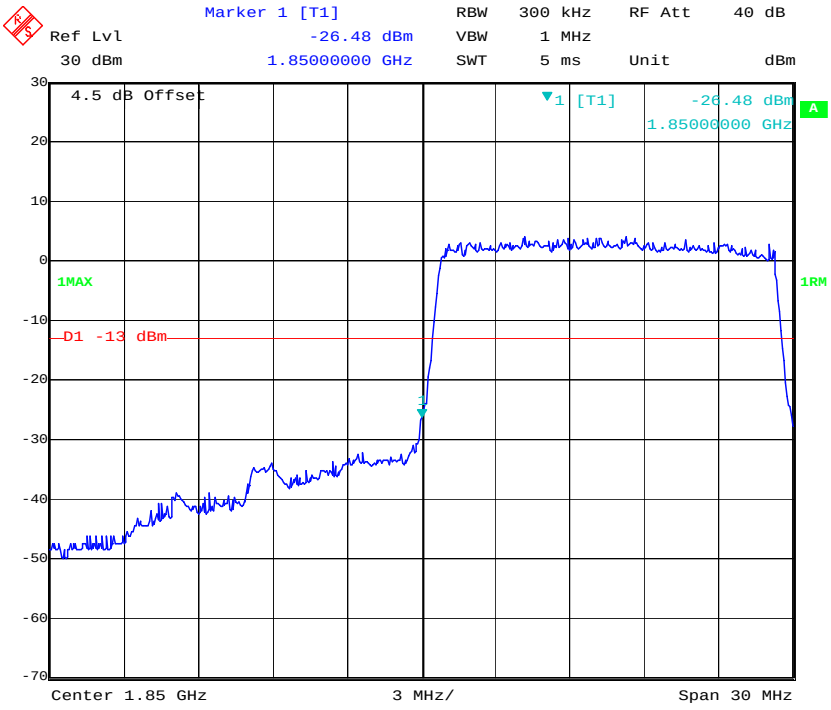
Date: 20.JUN.2019 18:07:57

16QAM_10MHz_ 50 RB_ Right



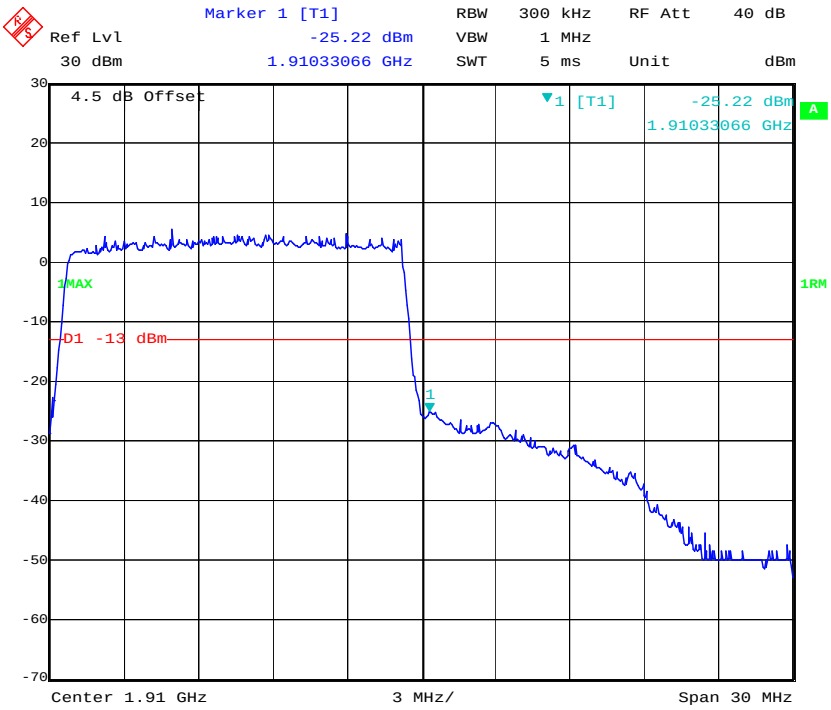
Date: 20.JUN.2019 18:08:53

16QAM_15MHz_ 75 RB_ Left



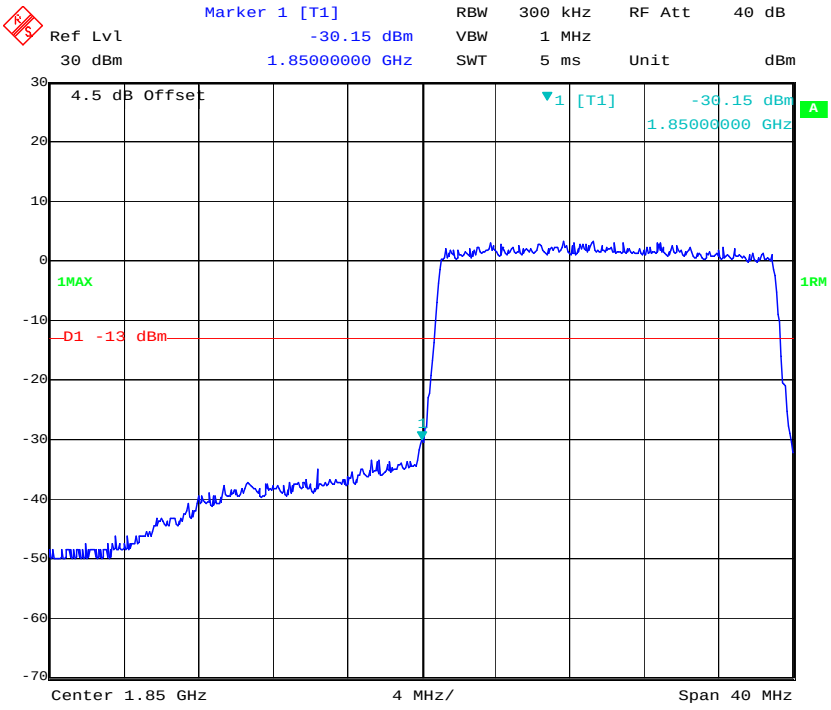
Date: 20.JUN.2019 18:09:57

16QAM_15MHz_ 75 RB_ Right



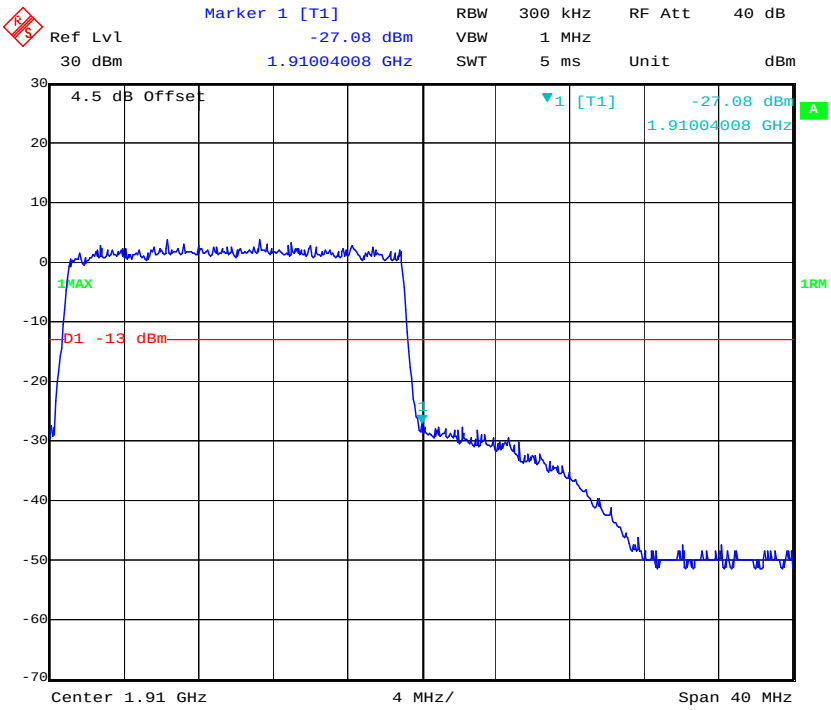
Date: 20.JUN.2019 18:11:04

16QAM_20MHz_ FULL RB_ Left



Date: 20.JUN.2019 18:12:24

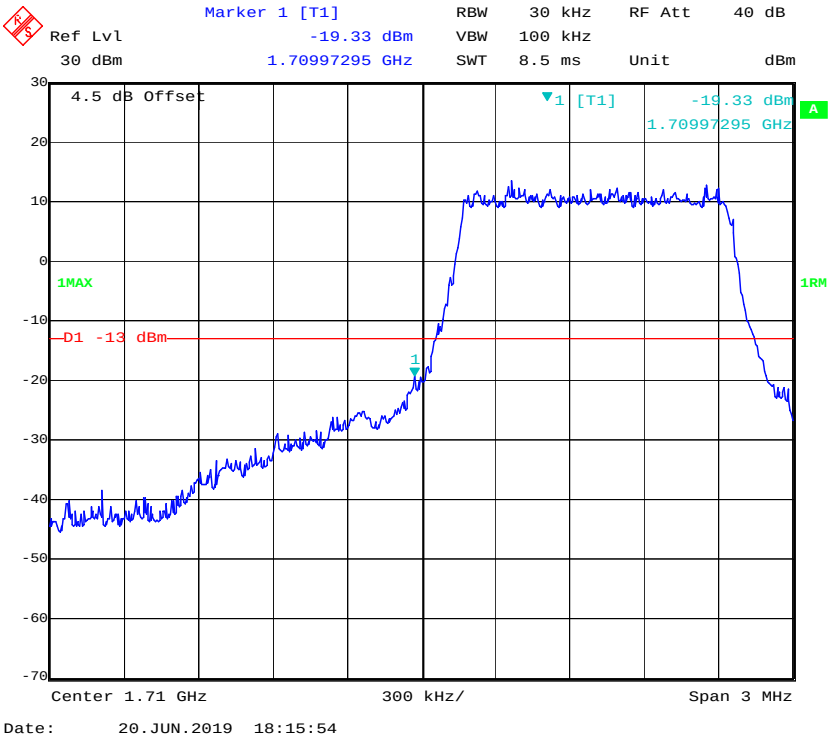
16QAM_20MHz_ FULL RB_ Right



Date: 20.JUN.2019 18:13:28

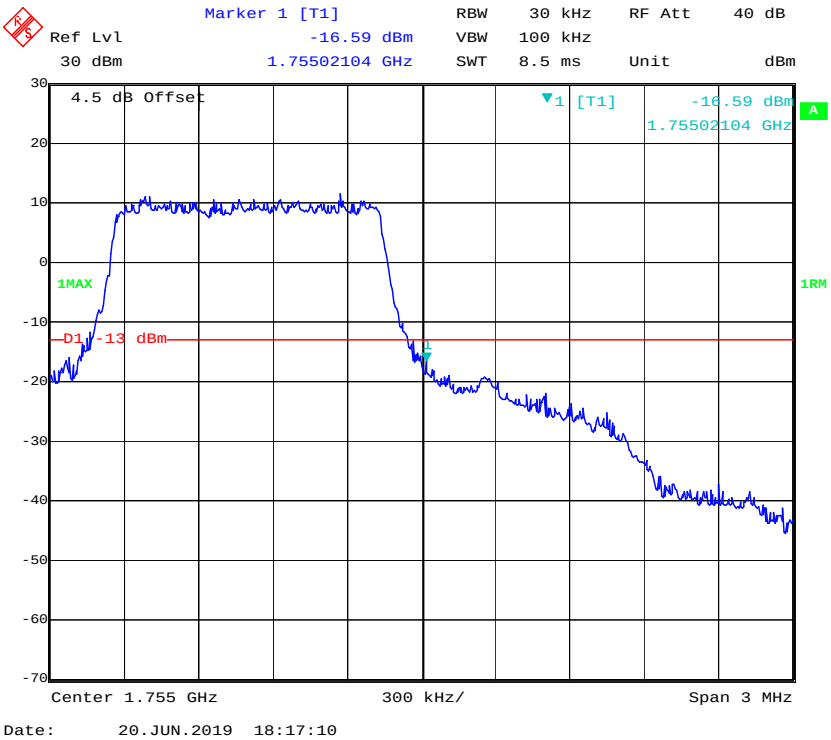
LTE Band 4

QPSK_1.4MHz_ 6 RB_ Left



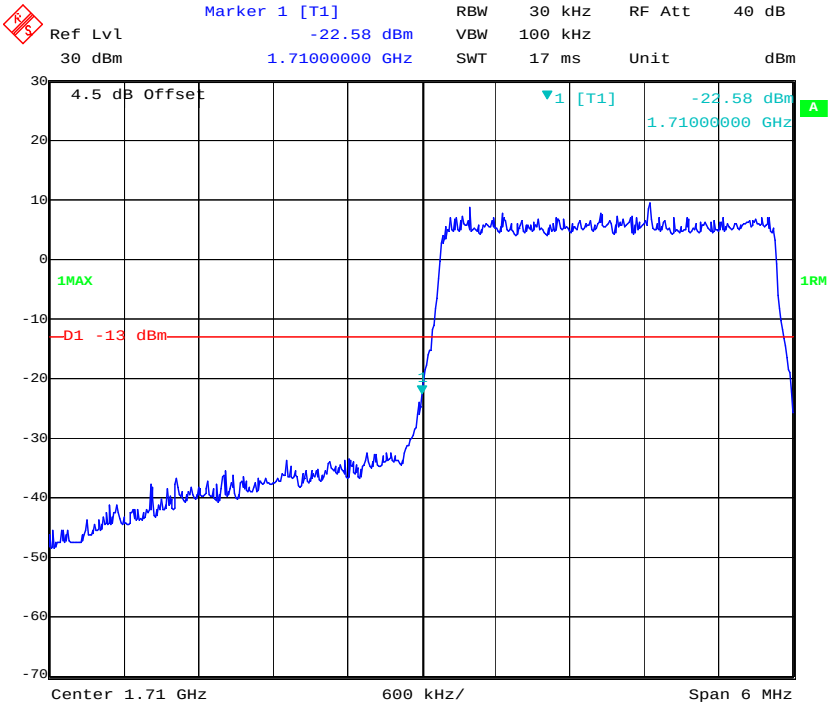
Date: 20.JUN.2019 18:15:54

QPSK_1.4MHz_ 6 RB_ Right



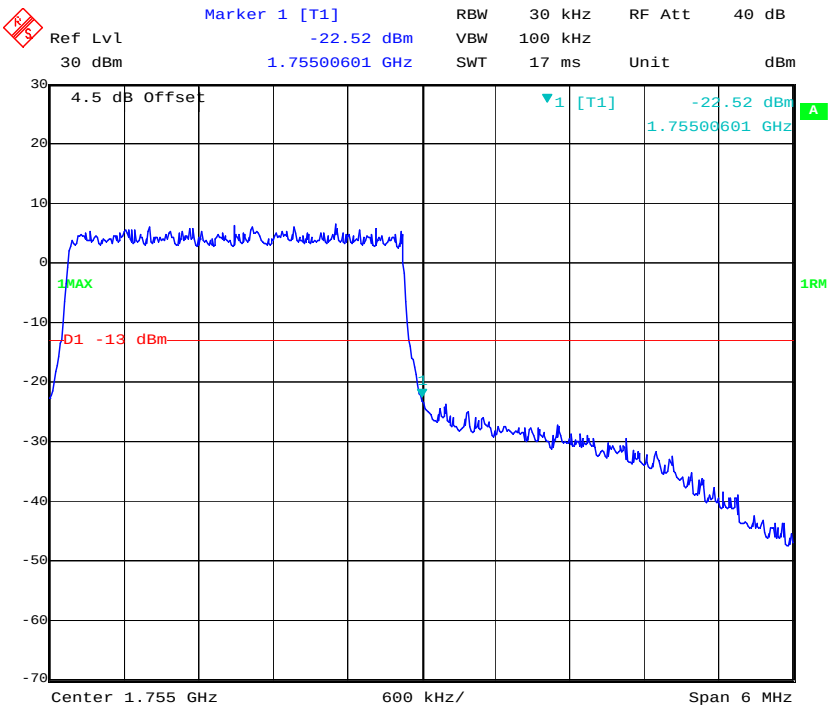
Date: 20.JUN.2019 18:17:10

QPSK_3MHz_ 15 RB_ Left



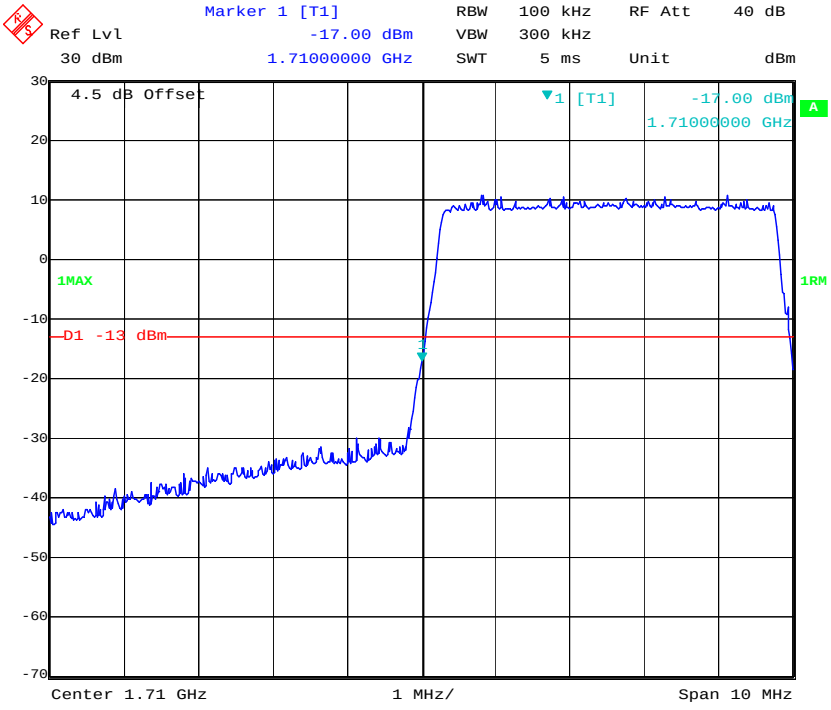
Date: 20.JUN.2019 18:18:13

QPSK_3MHz_ 15 RB_ Right



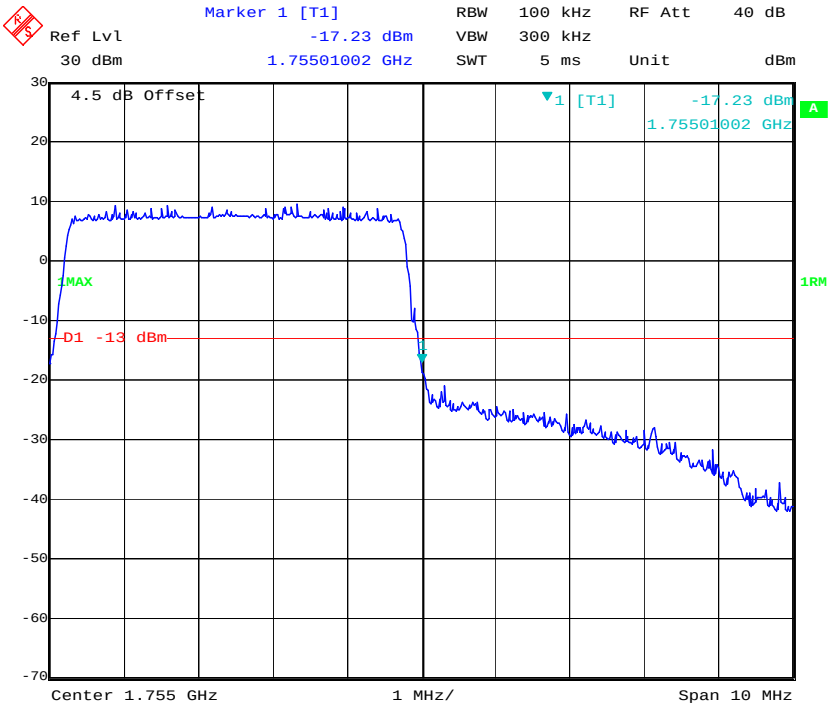
Date: 20.JUN.2019 18:19:35

QPSK_5MHz_ 25 RB_ Left



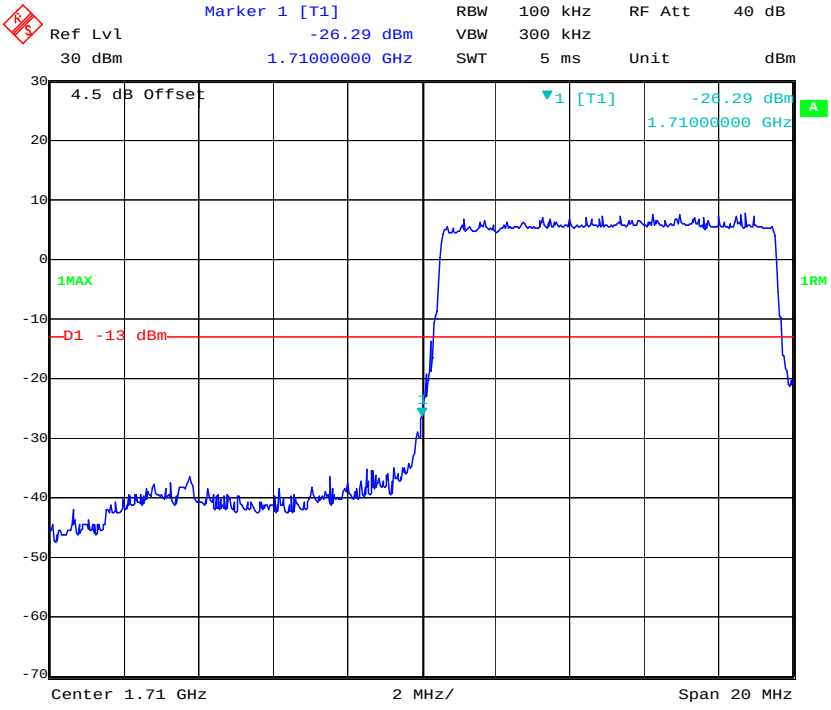
Date: 20.JUN.2019 18:28:57

QPSK_5MHz_ 25 RB_ Right



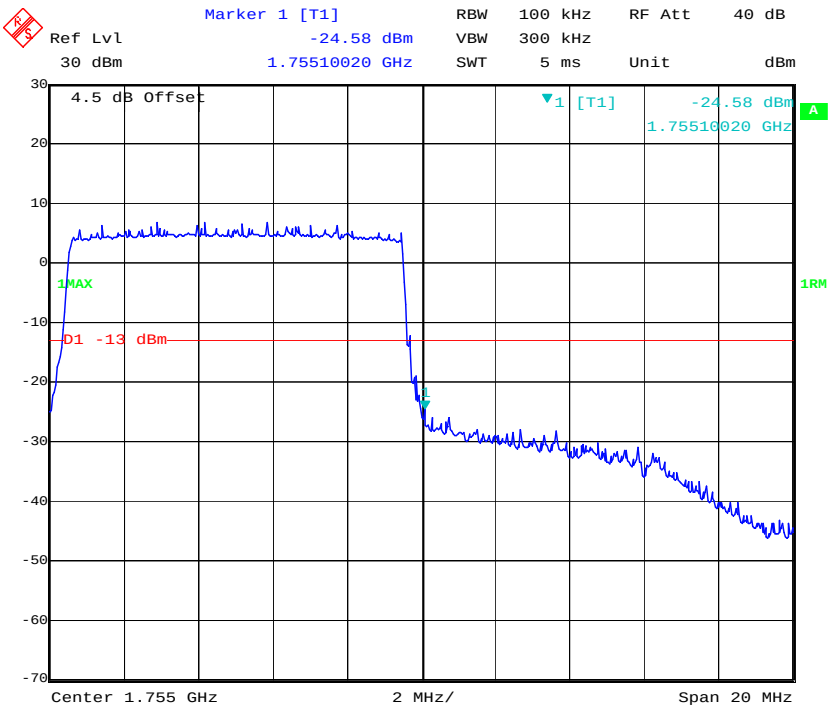
Date: 20.JUN.2019 18:30:03

QPSK_10MHz_ 50 RB_ Left



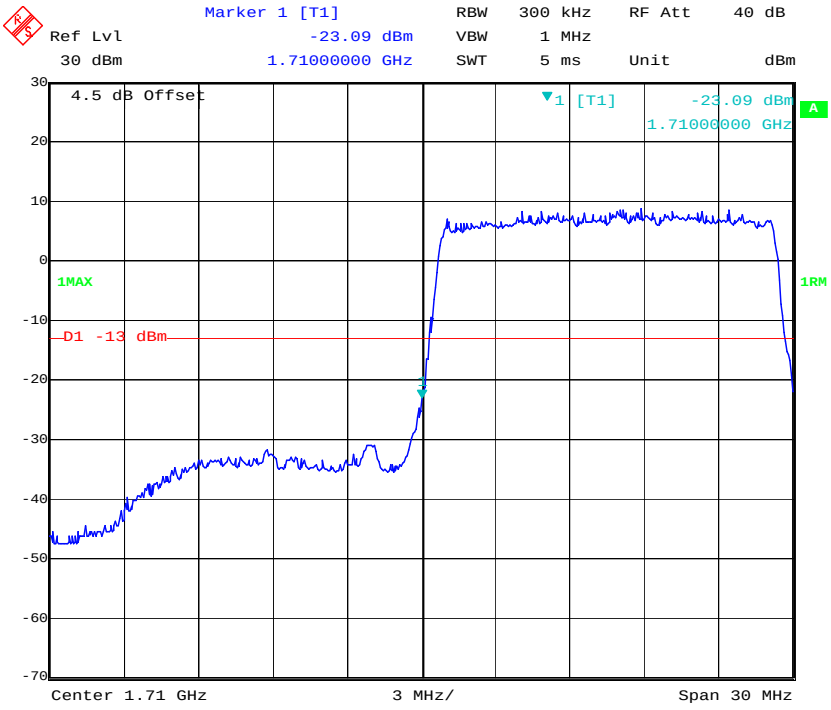
Date: 20.JUN.2019 18:31:20

QPSK_10MHz_ 50 RB_ Right



Date: 20.JUN.2019 18:32:29

QPSK_15MHz_ 75 RB_ Left

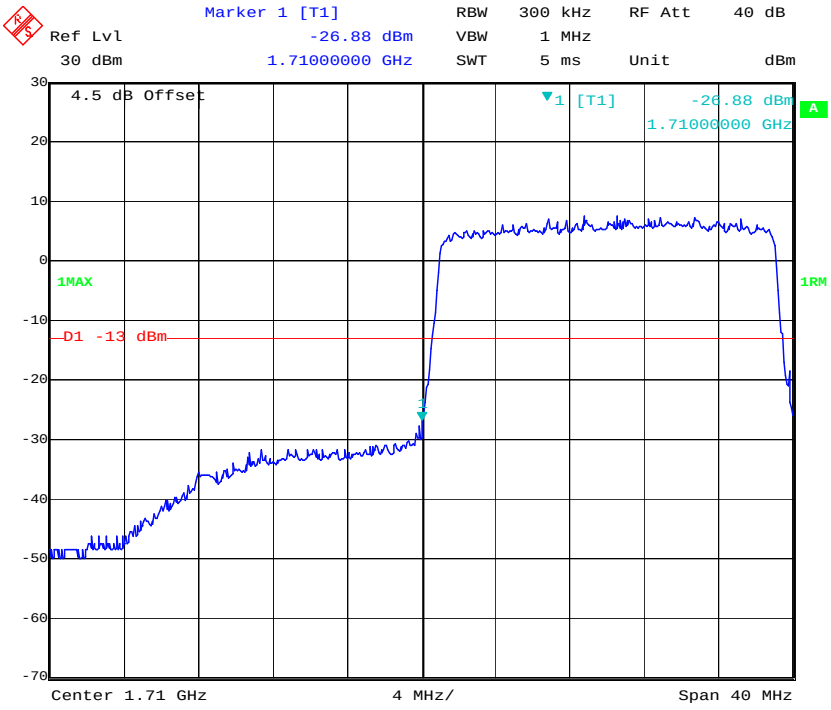


Date: 20.JUN.2019 18:39:32

QPSK_15MHz_ 75 RB_ Right

Date: 20.JUN.2019 18:40:46

QPSK_20MHz_ FULL RB_ Left

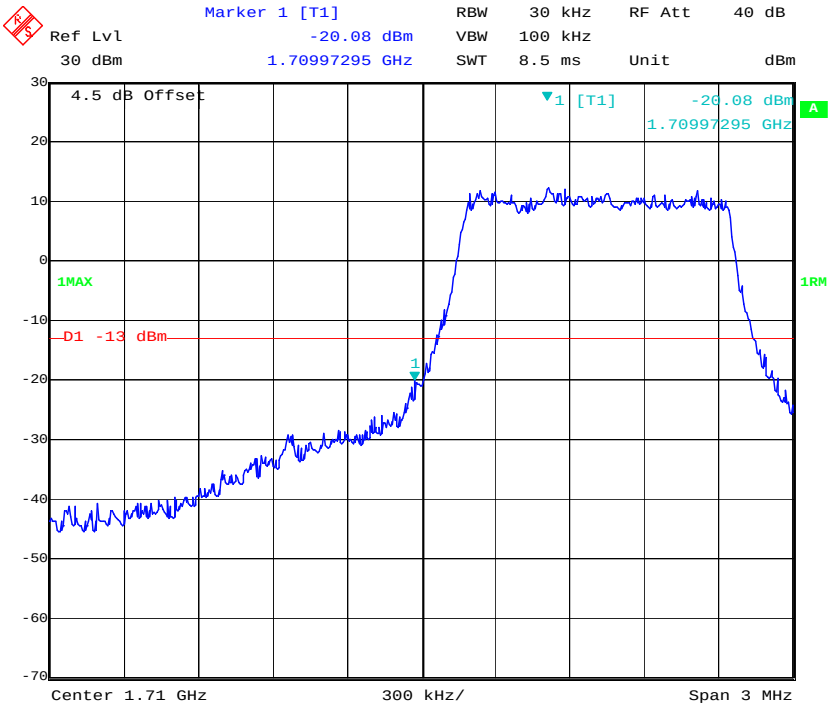


Date: 20.JUN.2019 18:47:42

QPSK_20MHz_ FULL RB_ Right

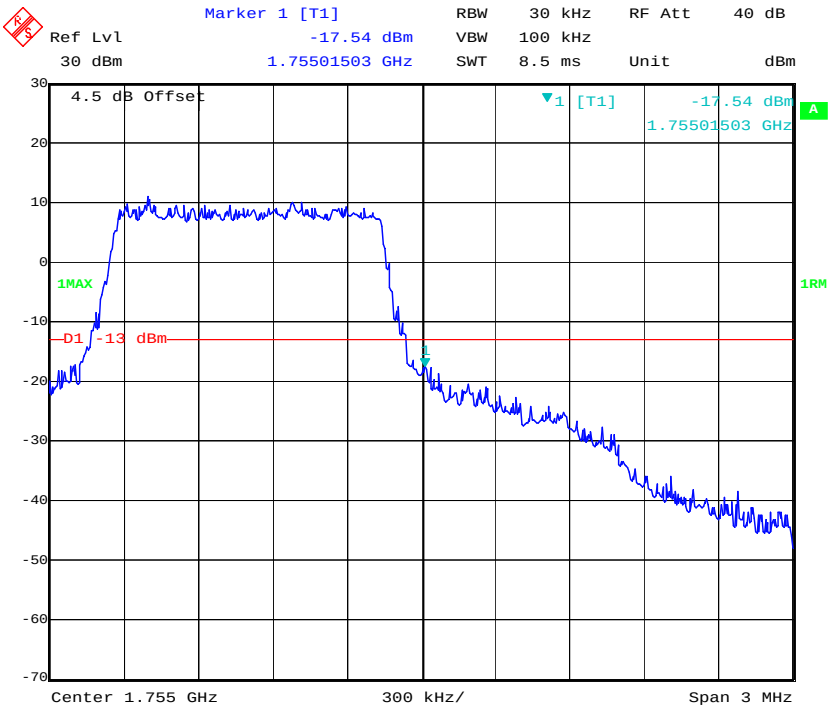
Date: 20.JUN.2019 18:48:52

16QAM_1.4MHz_ 6 RB_ Left



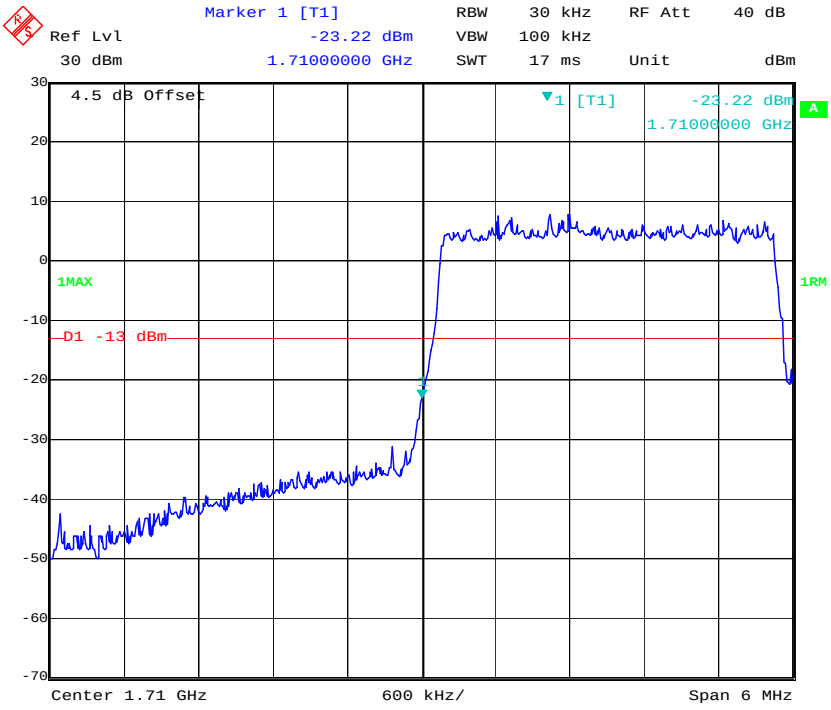
Date: 20.JUN.2019 18:16:34

16QAM_1.4MHz_ 6 RB_ Right



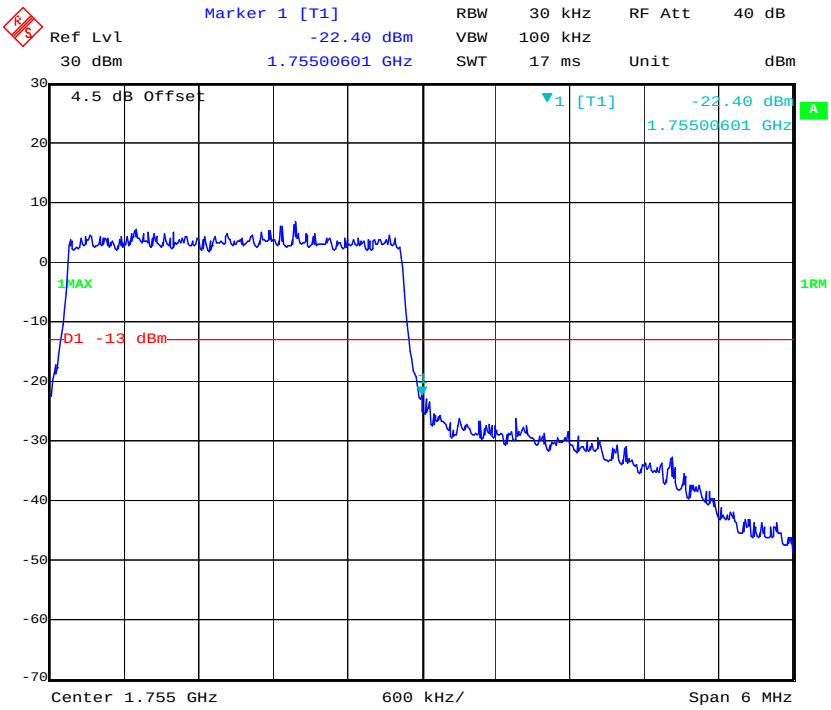
Date: 20.JUN.2019 18:17:40

16QAM_3MHz_ 15 RB_ Left



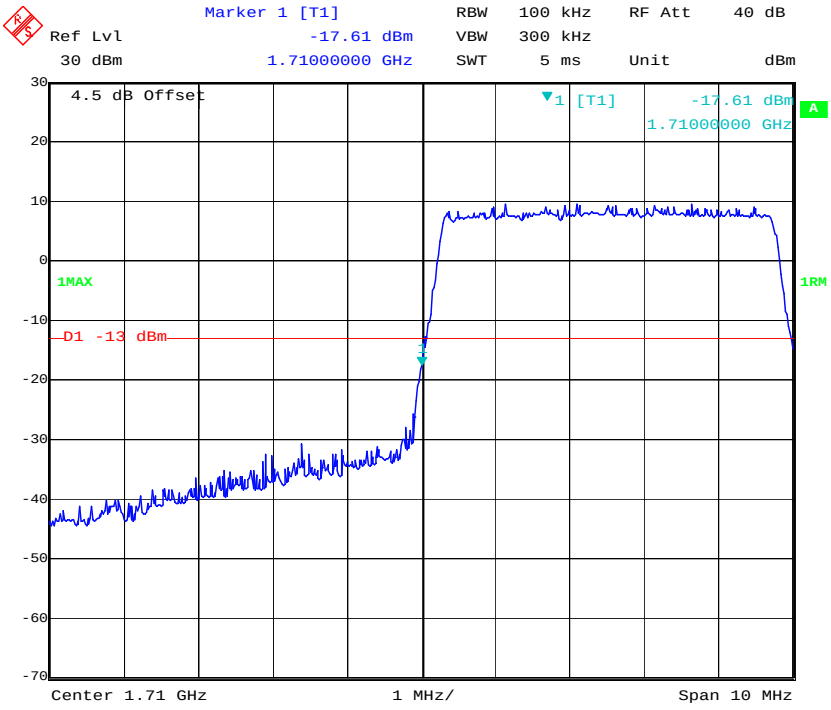
Date: 20.JUN.2019 18:18:56

16QAM_3MHz_ 15 RB_ Right



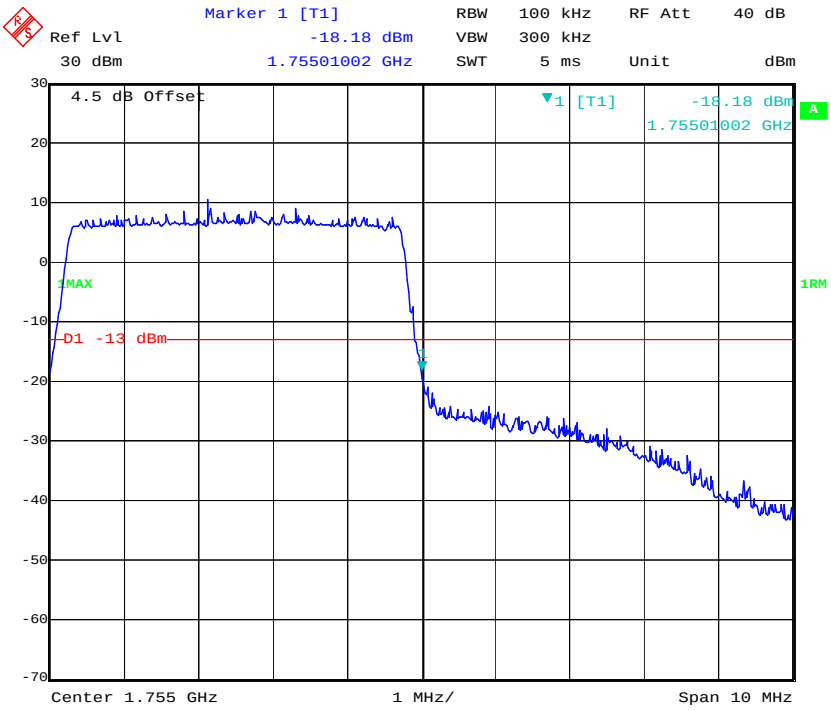
Date: 20.JUN.2019 18:20:18

16QAM_5MHz_ 25 RB_ Left



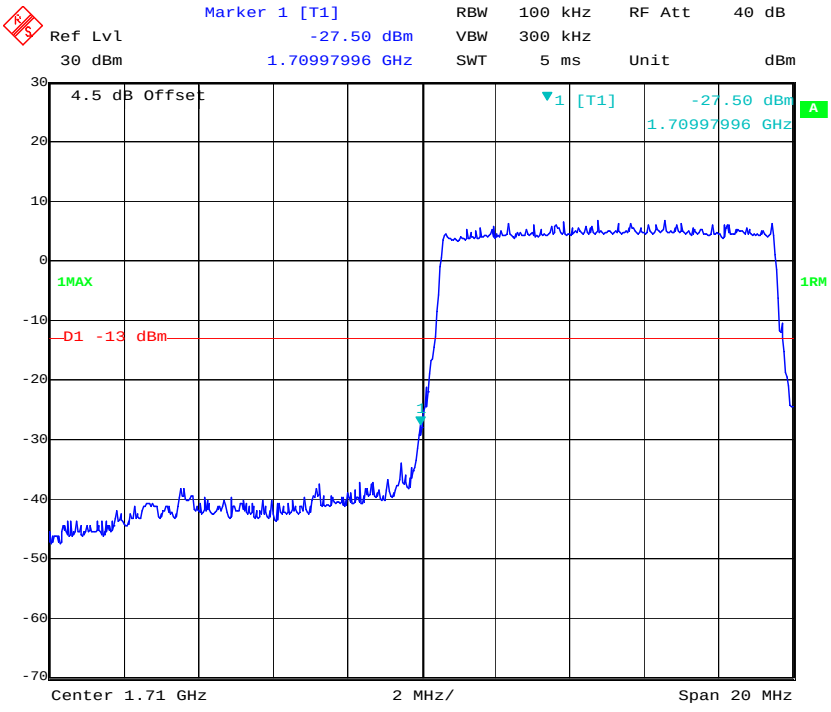
Date: 20.JUN.2019 18:29:26

16QAM_5MHz_ 25 RB_ Right



Date: 20.JUN.2019 18:30:42

16QAM_10MHz_ 50 RB_ Left

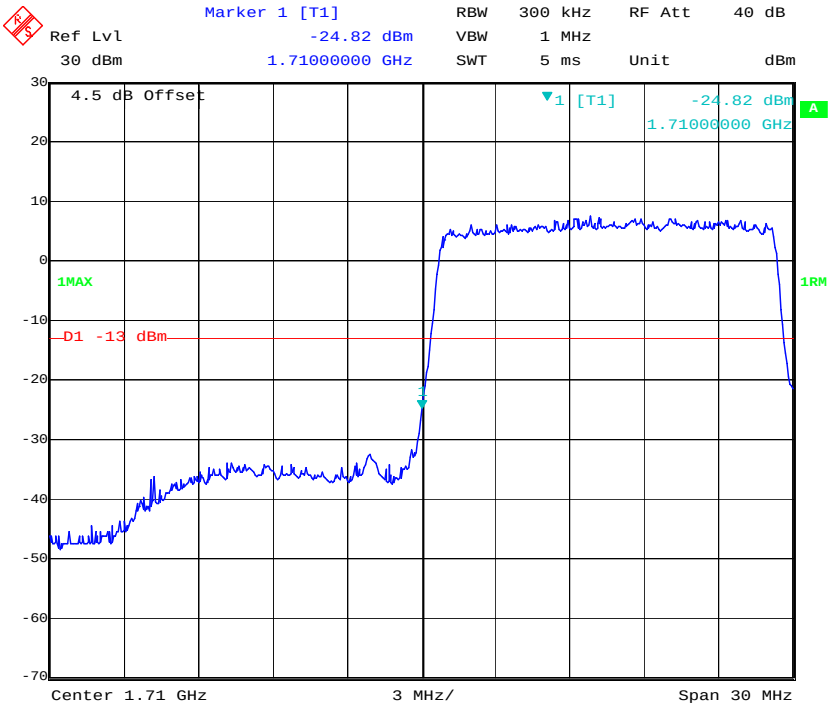


Date: 20.JUN.2019 18:31:51

16QAM_10MHz_ 50 RB_ Right

Date: 20.JUN.2019 18:32:59

16QAM_15MHz_ 75 RB_ Left

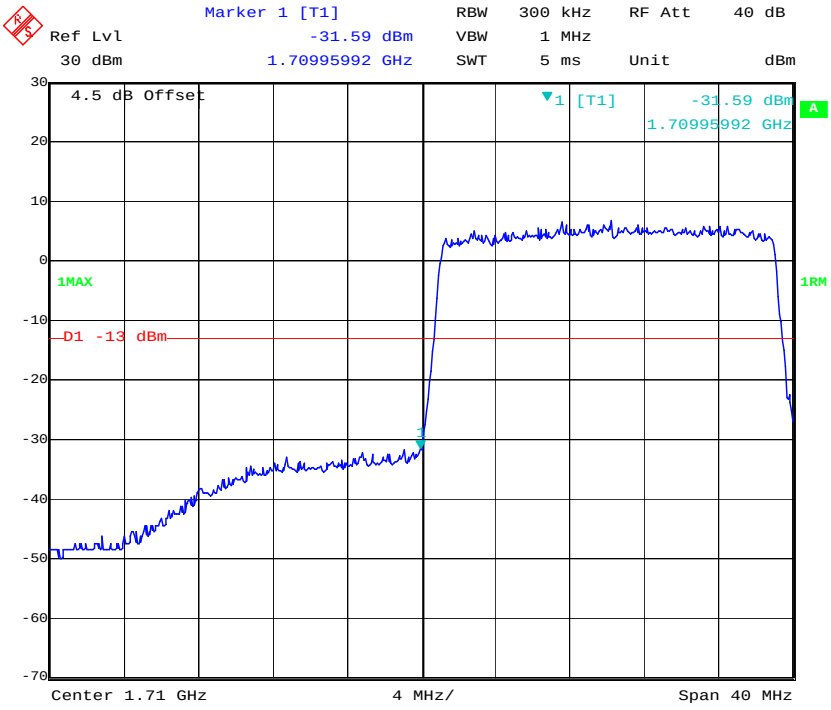


Date: 20.JUN.2019 18:40:09

16QAM_15MHz_ 75 RB_ Right

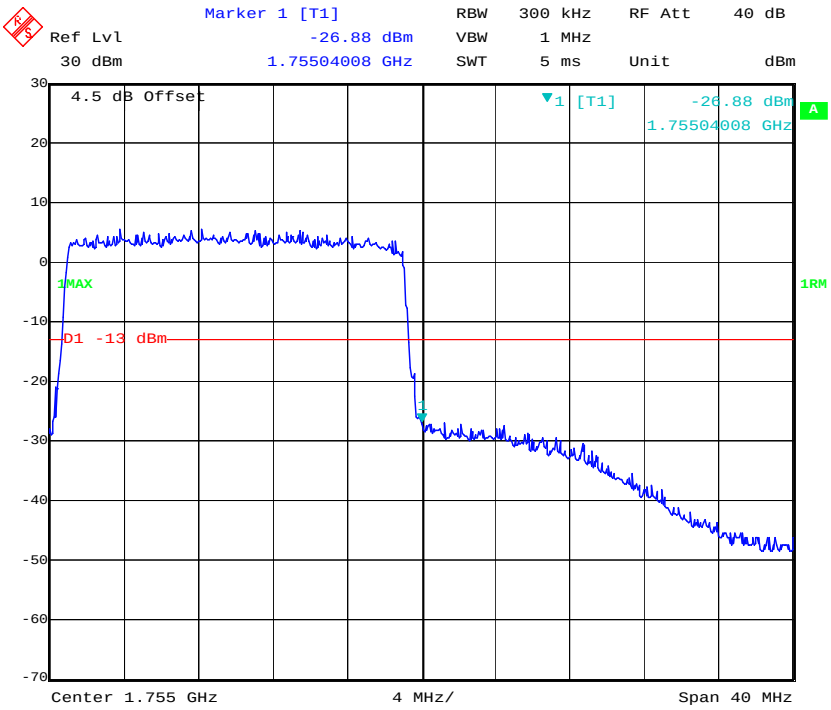
Date: 20.JUN.2019 18:41:19

16QAM_20MHz_ FULL RB_ Left



Date: 20.JUN.2019 18:48:21

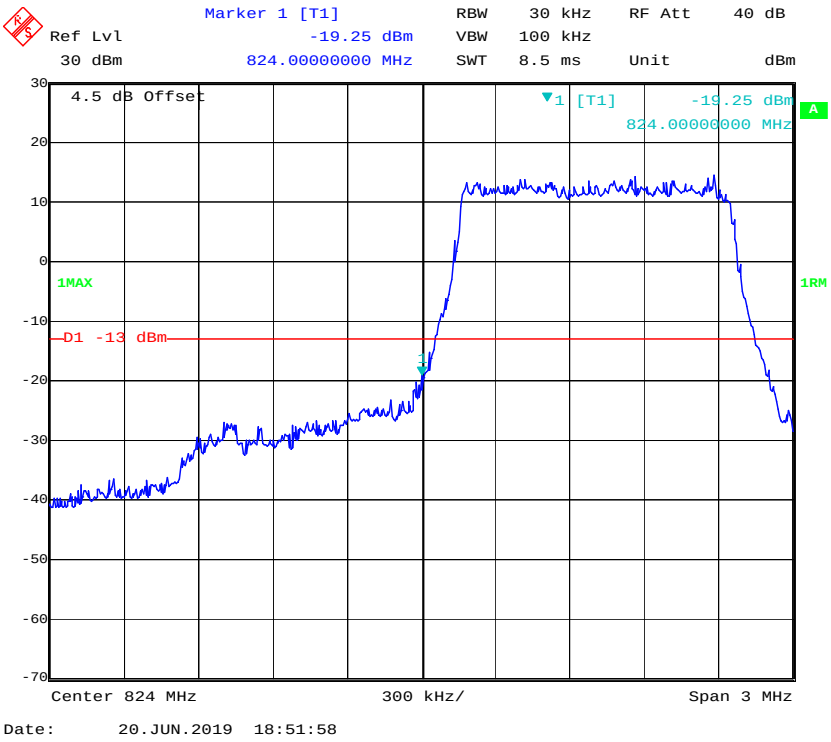
16QAM_20MHz_ FULL RB_ Right



Date: 20.JUN.2019 18:49:19

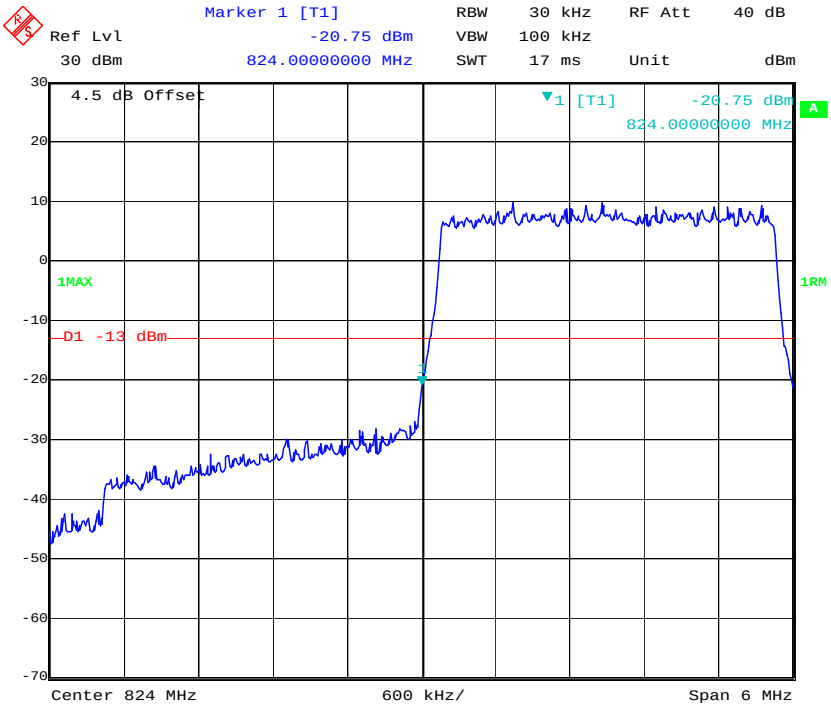
LTE Band 5

QPSK_1.4MHz_ 6 RB_ Left

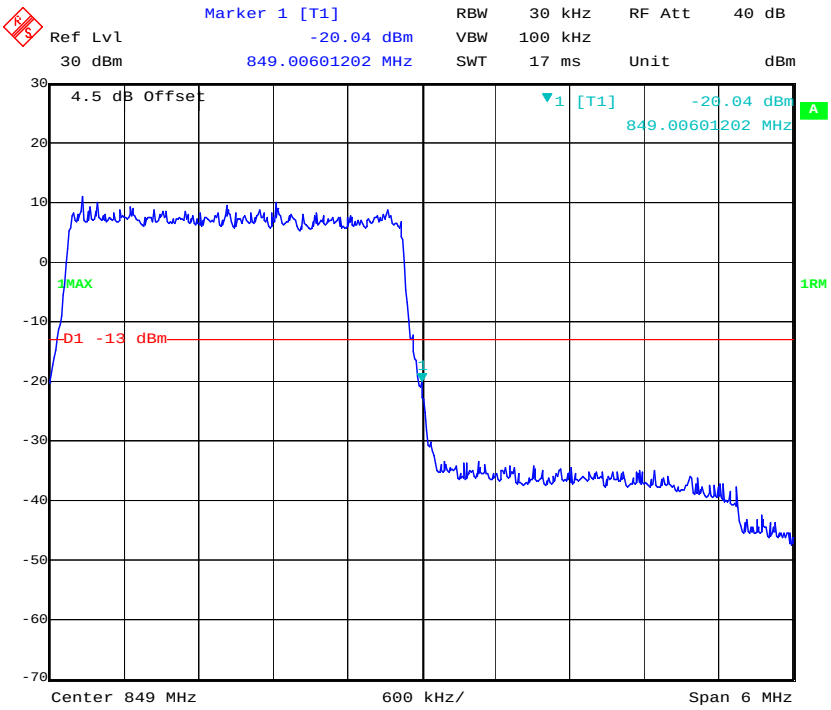


QPSK_1.4MHz_ 6 RB_ Right

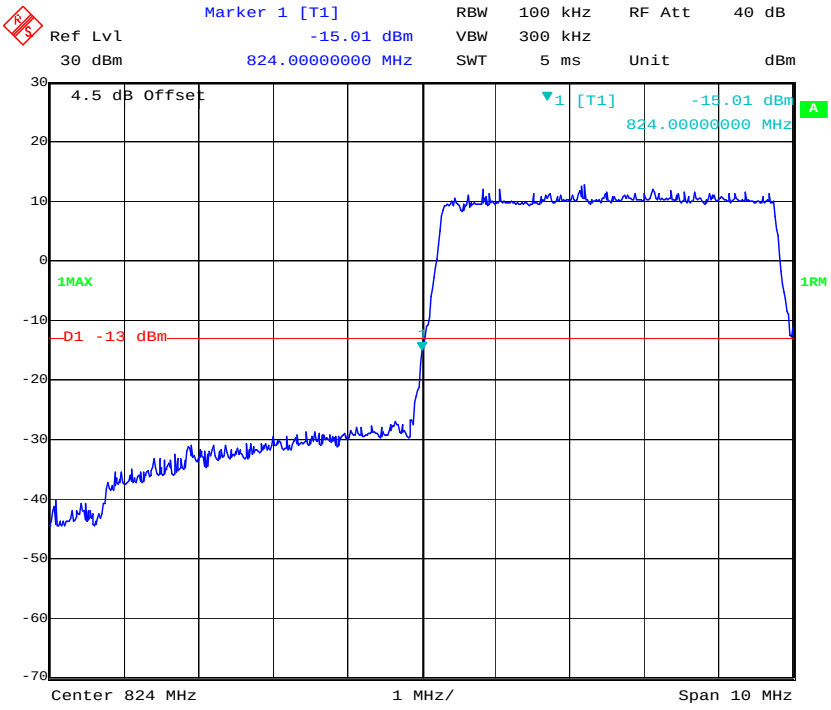
QPSK_3MHz_ 15 RB_ Left



QPSK_3MHz_ 15 RB_ Right

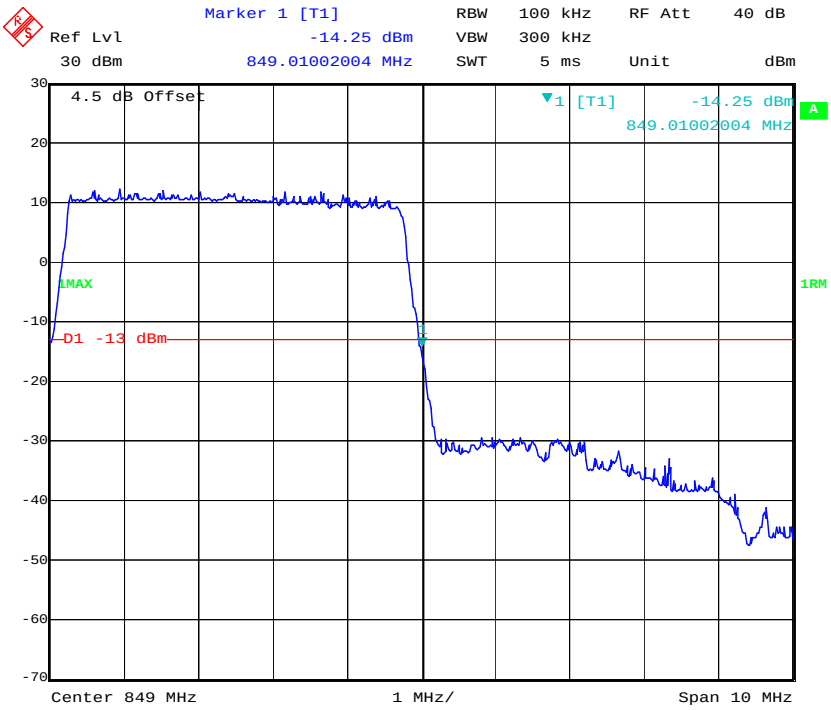


QPSK_5MHz_ 25 RB_ Left



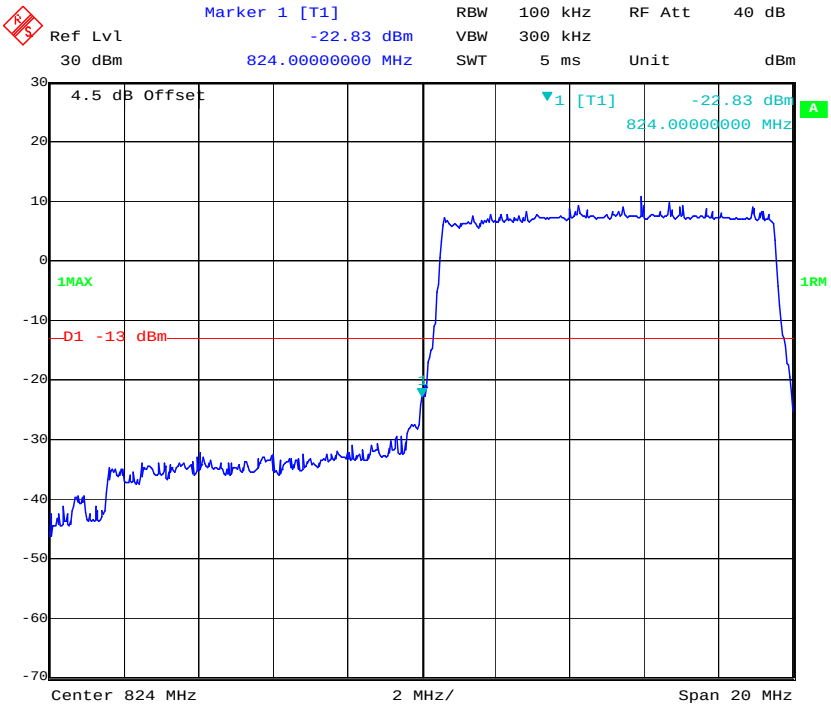
Date: 20.JUN.2019 19:04:58

QPSK_5MHz_ 25 RB_ Right



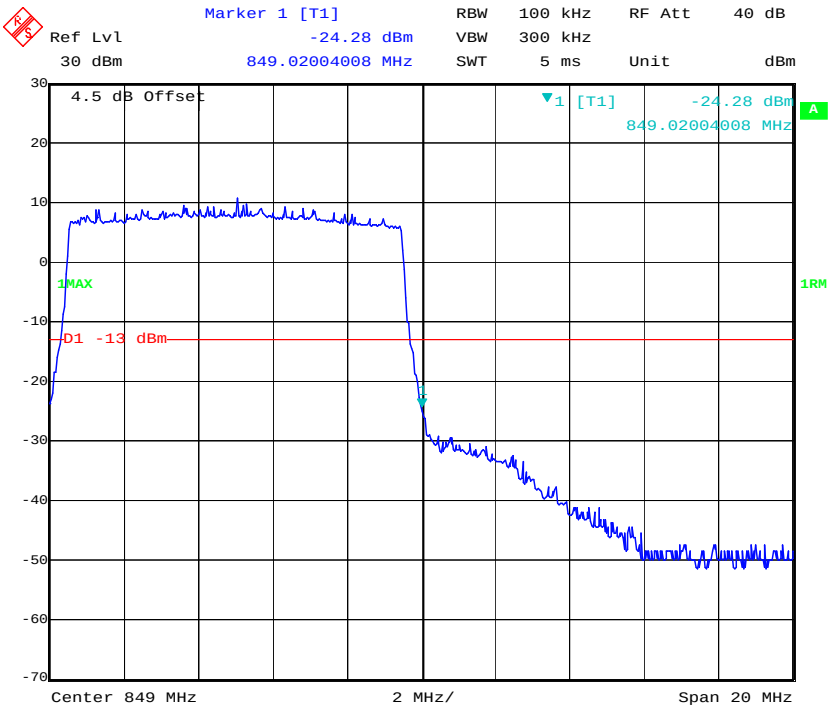
Date: 20.JUN.2019 19:06:04

QPSK_10MHz_ 50 RB_ Left



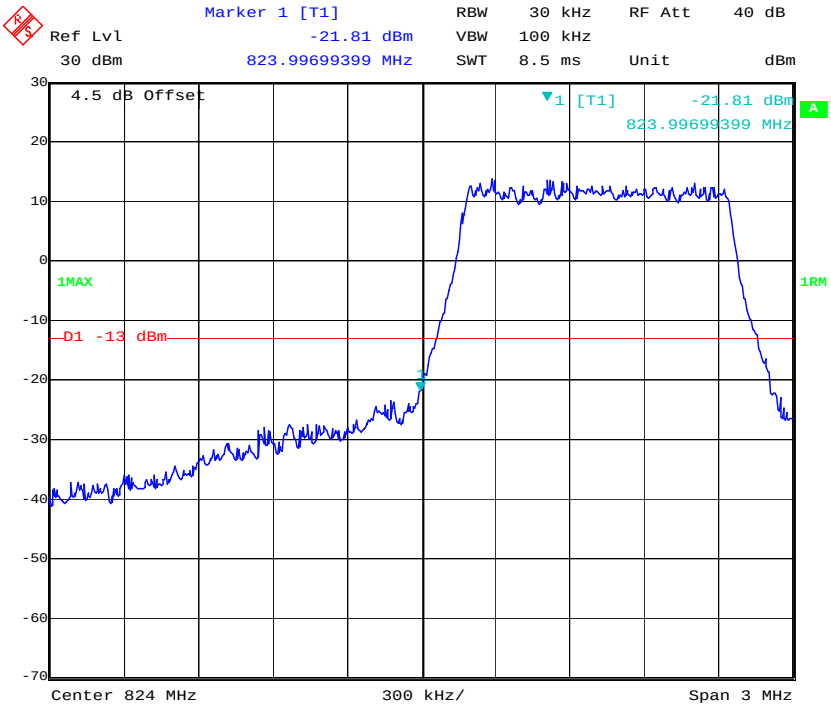
Date: 20.JUN.2019 19:08:41

QPSK_10MHz_ 50 RB_ Right



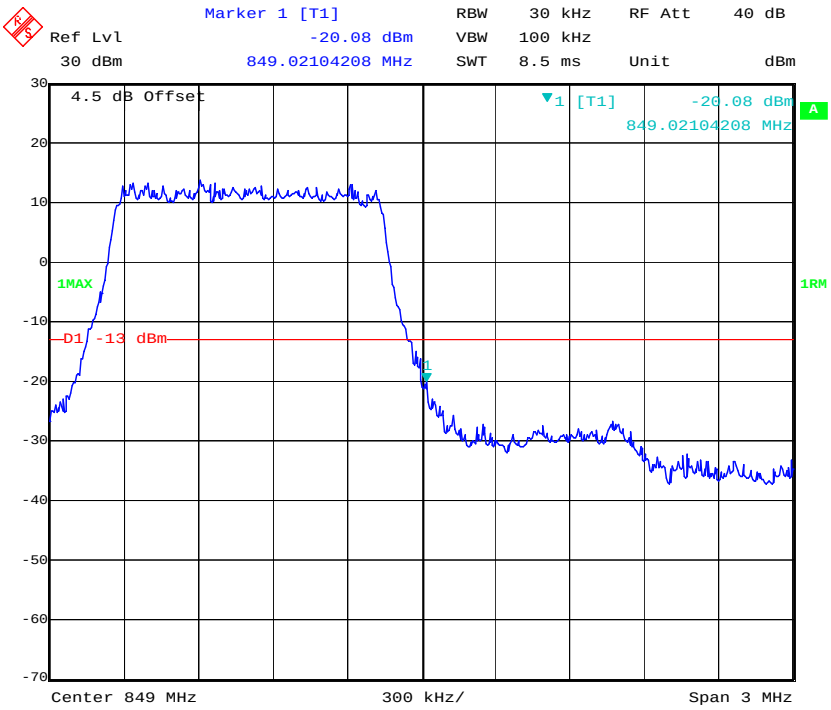
Date: 20.JUN.2019 19:09:43

16QAM_1.4MHz_ 6 RB_ Left



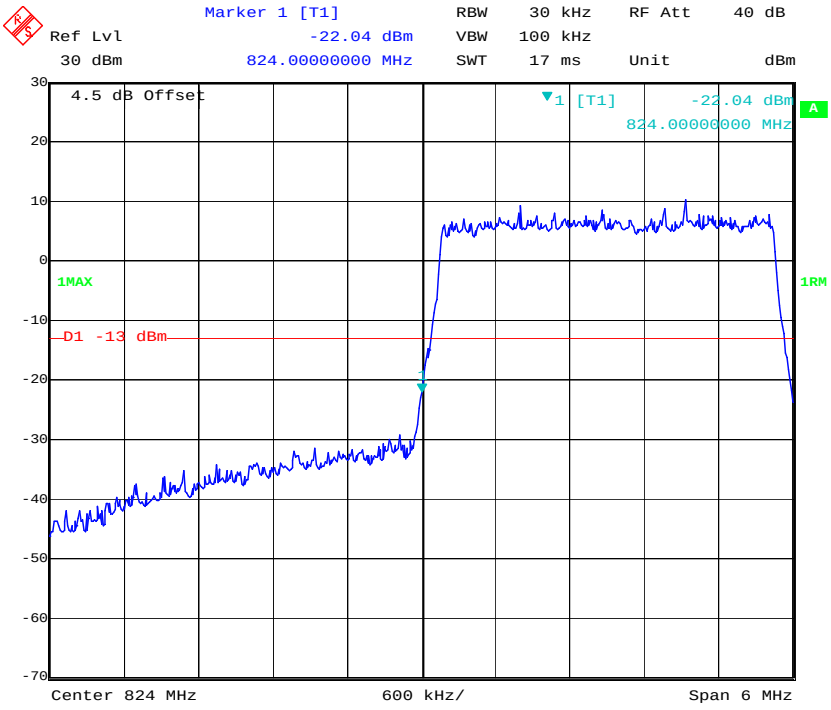
Date: 20.JUN.2019 18:52:46

16QAM_1.4MHz_ 6 RB_ Right



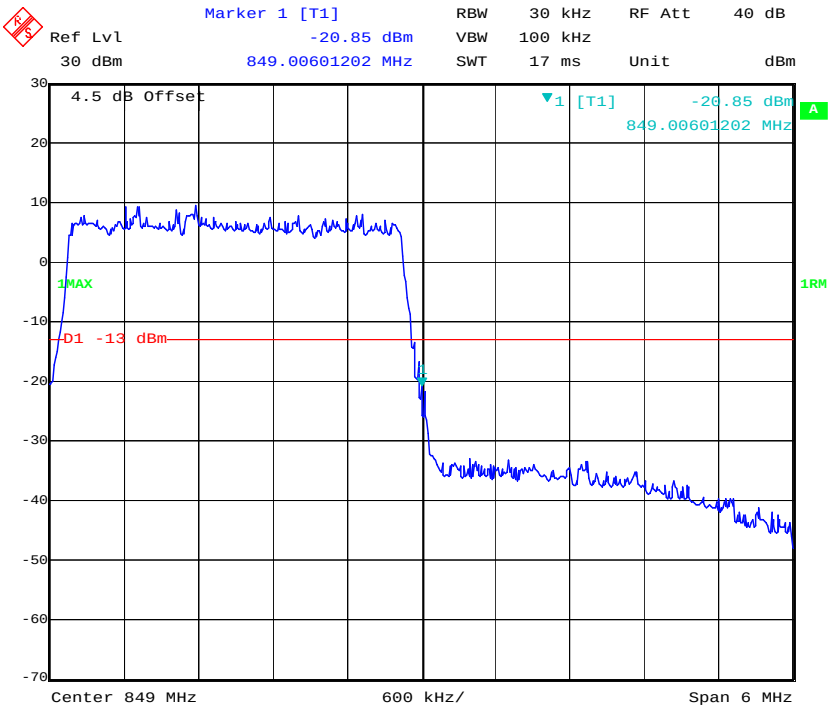
Date: 20.JUN.2019 18:54:25

16QAM_3MHz_ 15 RB_ Left



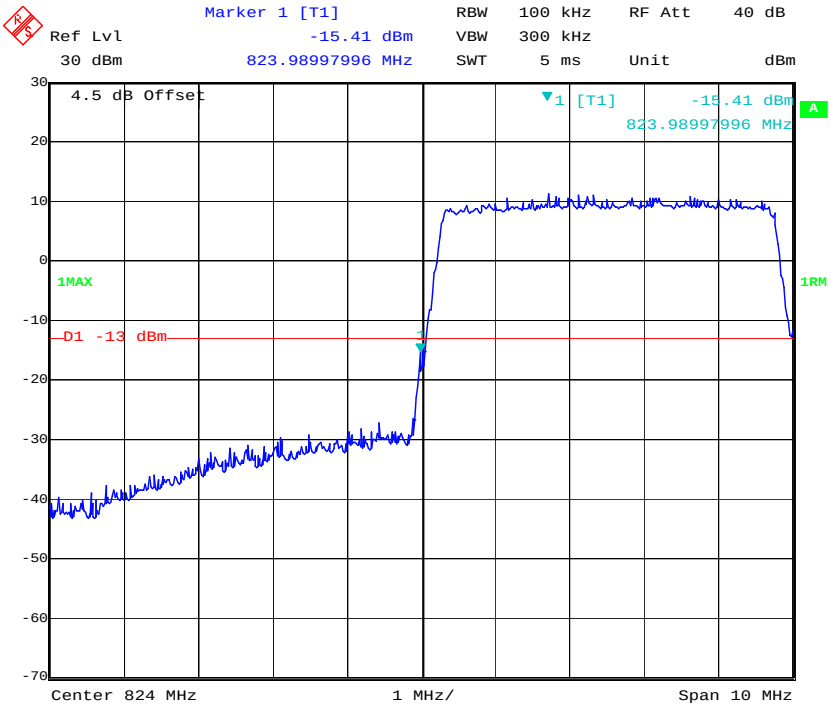
Date: 20.JUN.2019 18:58:17

16QAM_3MHz_ 15 RB_ Right



Date: 20.JUN.2019 18:59:33

16QAM_5MHz_ 25 RB_ Left

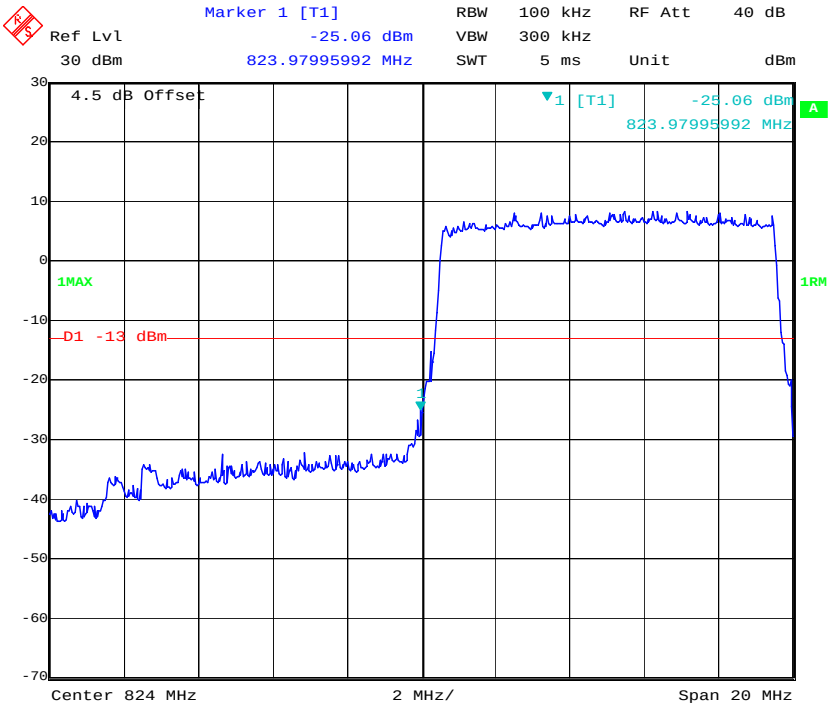


Date: 20.JUN.2019 19:05:28

16QAM_5MHz_ 25 RB_ Right

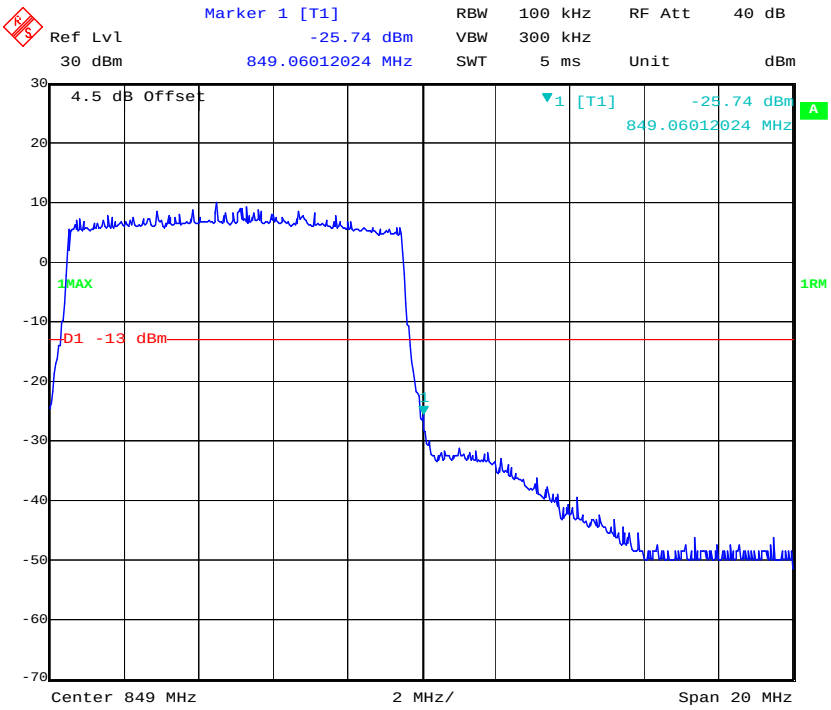
Date: 20.JUN.2019 19:06:37

16QAM_10MHz_ 50 RB_ Left



Date: 20.JUN.2019 19:09:12

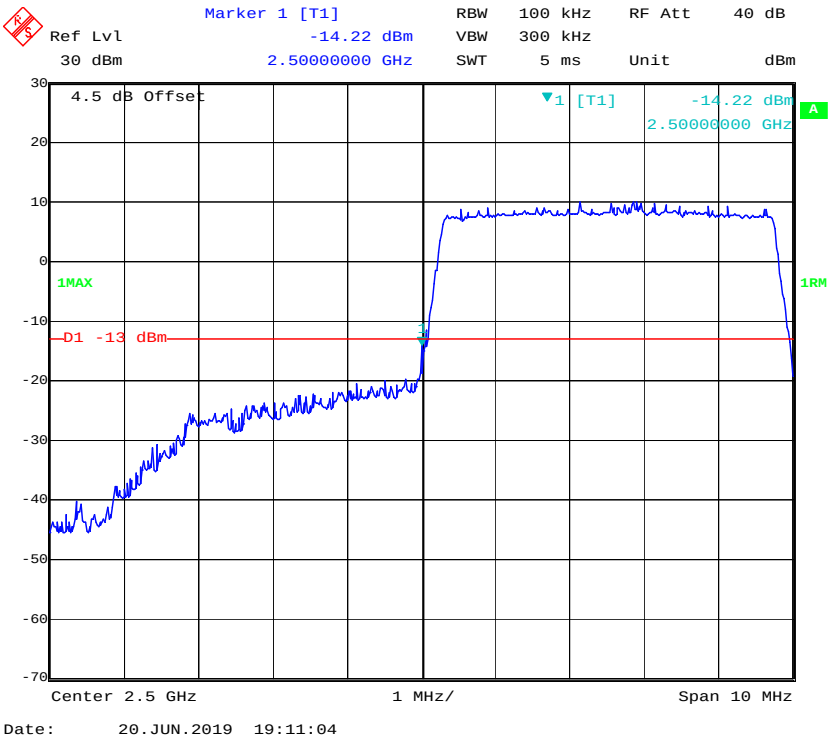
16QAM_10MHz_ 50 RB_ Right



Date: 20.JUN.2019 19:10:26

LTE Band 7

QPSK_5MHz_ 25 RB_ Left

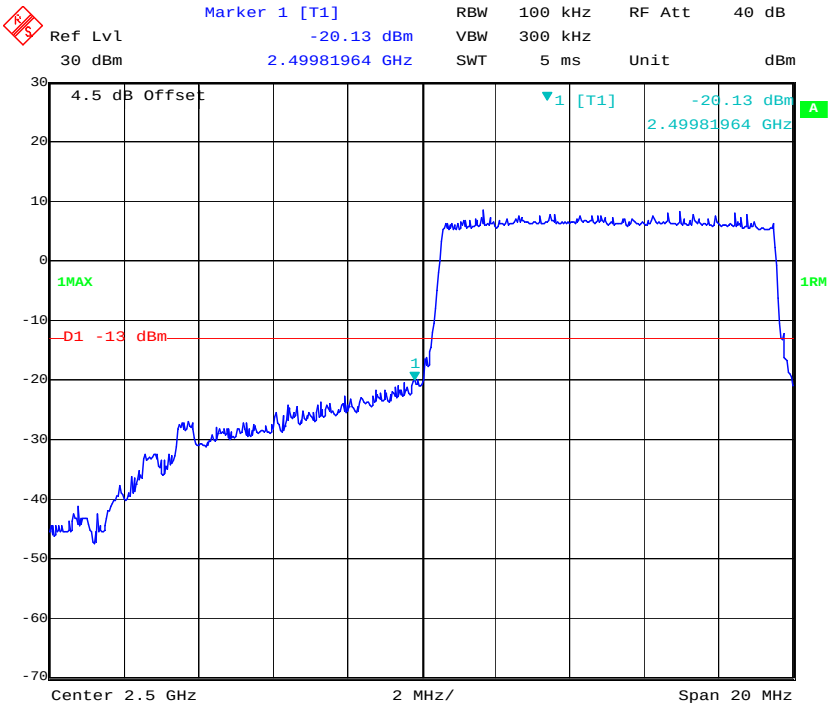


Date: 20.JUN.2019 19:11:04

QPSK_5MHz_ 25 RB_ Right

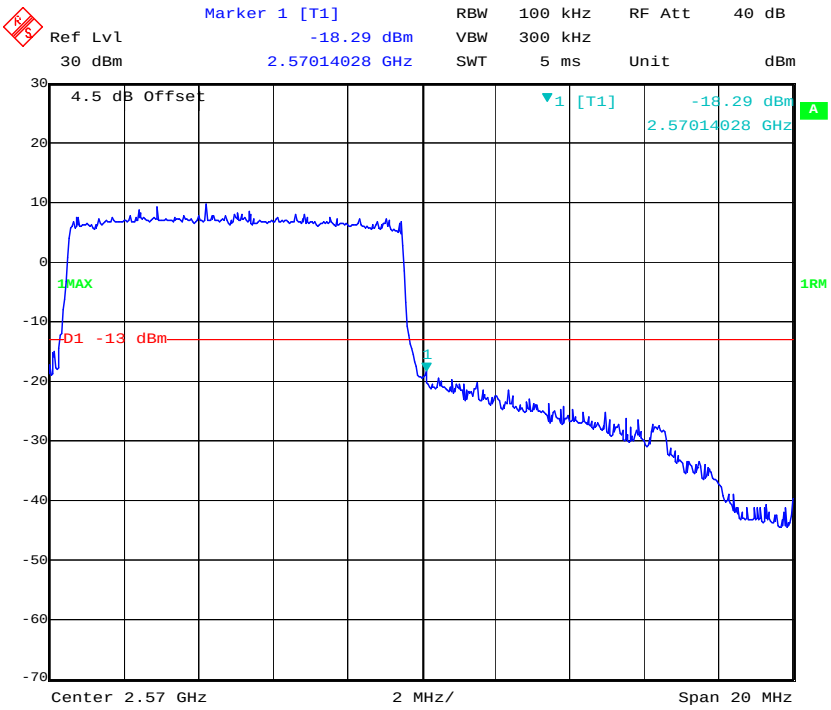
Date: 20.JUN.2019 19:12:16

QPSK_10MHz_ 50 RB_ Left



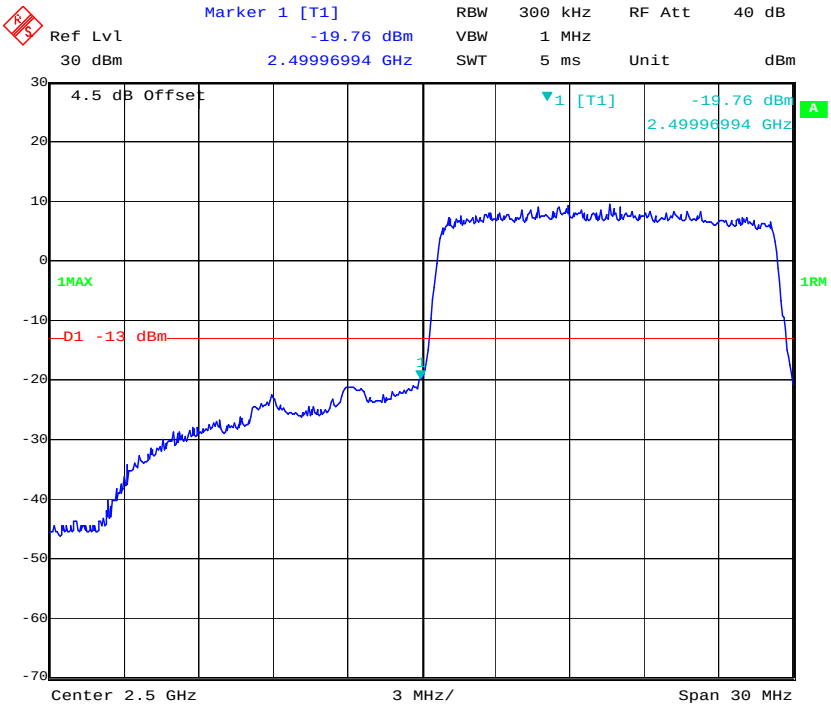
Date: 20.JUN.2019 19:13:29

QPSK_10MHz_ 50 RB_ Right



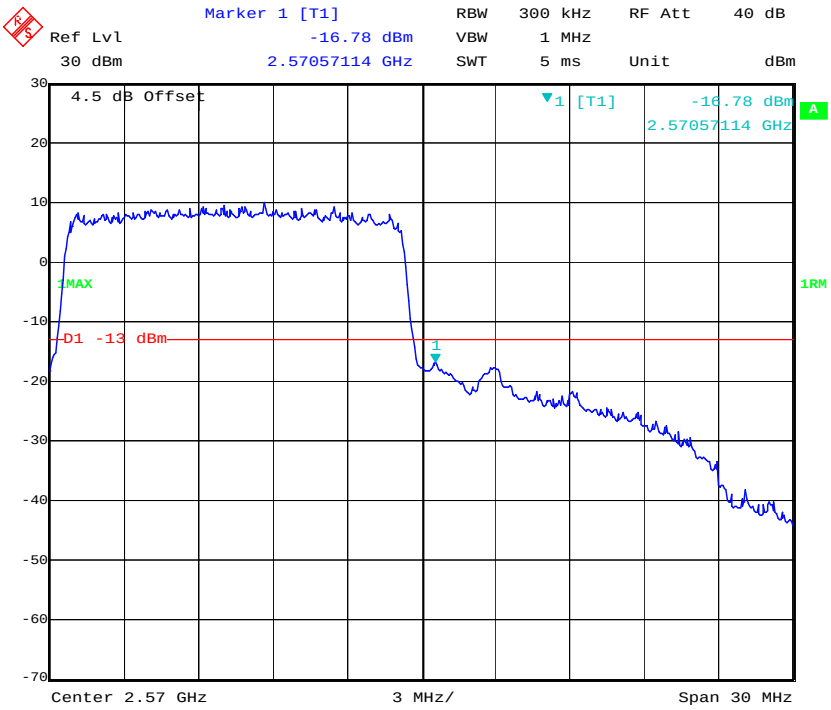
Date: 20.JUN.2019 19:14:31

QPSK_15MHz_ 75 RB_ Left



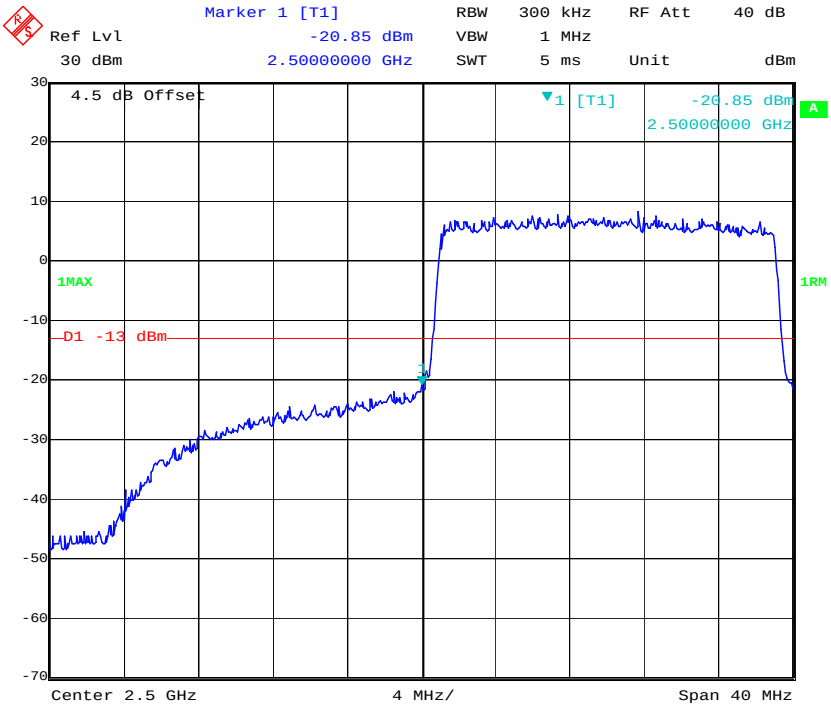
Date: 20.JUN.2019 19:15:49

QPSK_15MHz_ 75 RB_ Right



Date: 20.JUN.2019 19:17:05

QPSK_20MHz_ FULL RB_ Left

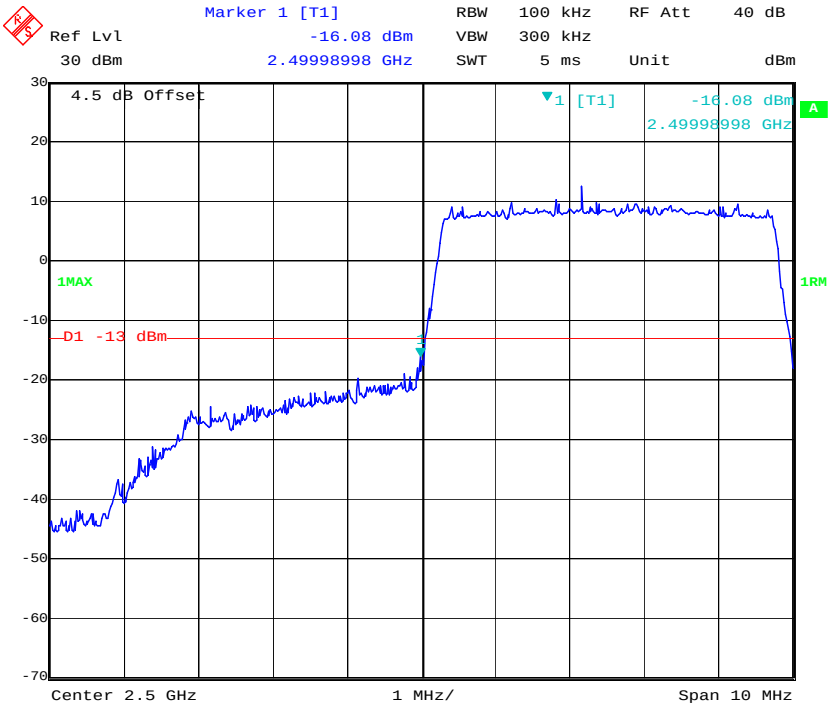


Date: 20.JUN.2019 19:18:15

QPSK_20MHz_ FULL RB_ Right

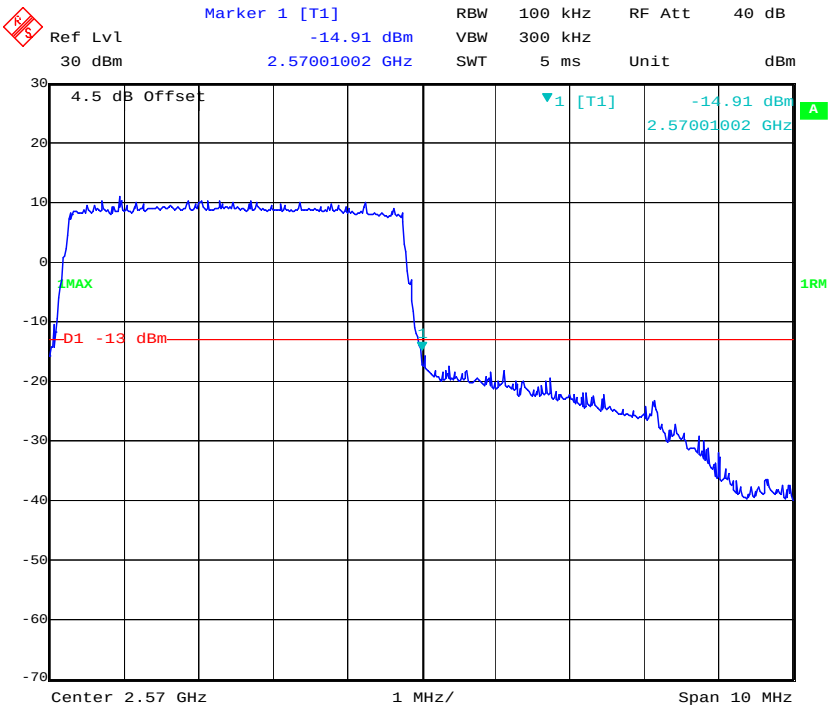
Date: 20.JUN.2019 19:19:28

16QAM_5MHz_ 25 RB_ Left



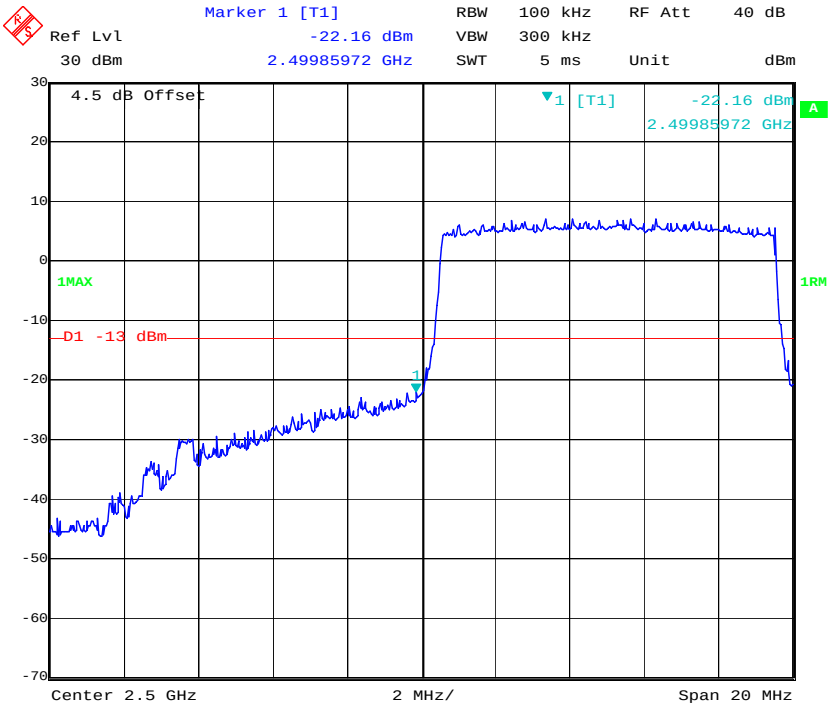
Date: 20.JUN.2019 19:11:36

16QAM_5MHz_ 25 RB_ Right



Date: 20.JUN.2019 19:12:51

16QAM_10MHz_ 50 RB_ Left

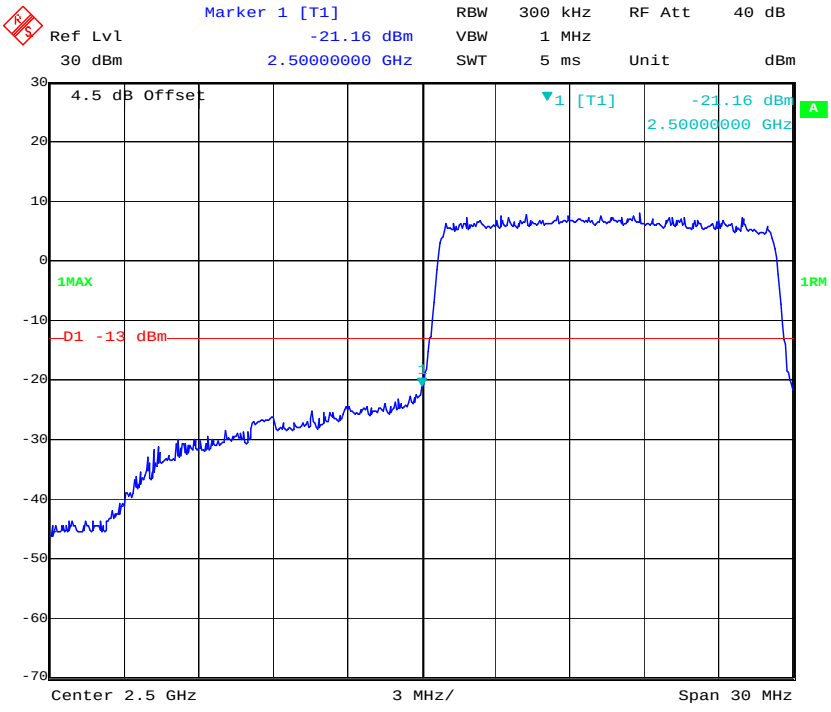


Date: 20.JUN.2019 19:14:03

16QAM_10MHz_ 50 RB_ Right

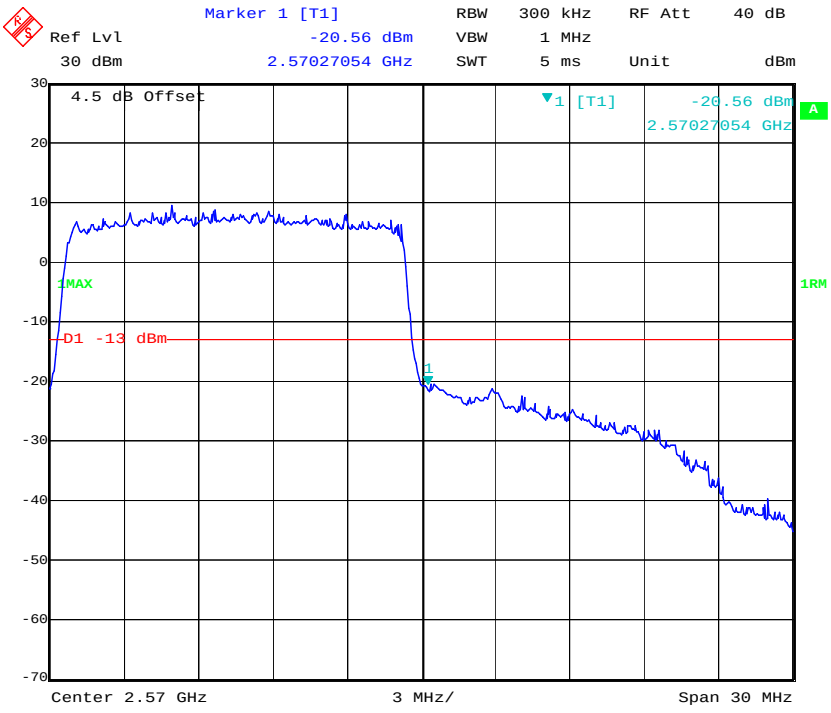
Date: 20.JUN.2019 19:15:08

16QAM_15MHz_ 75 RB_ Left



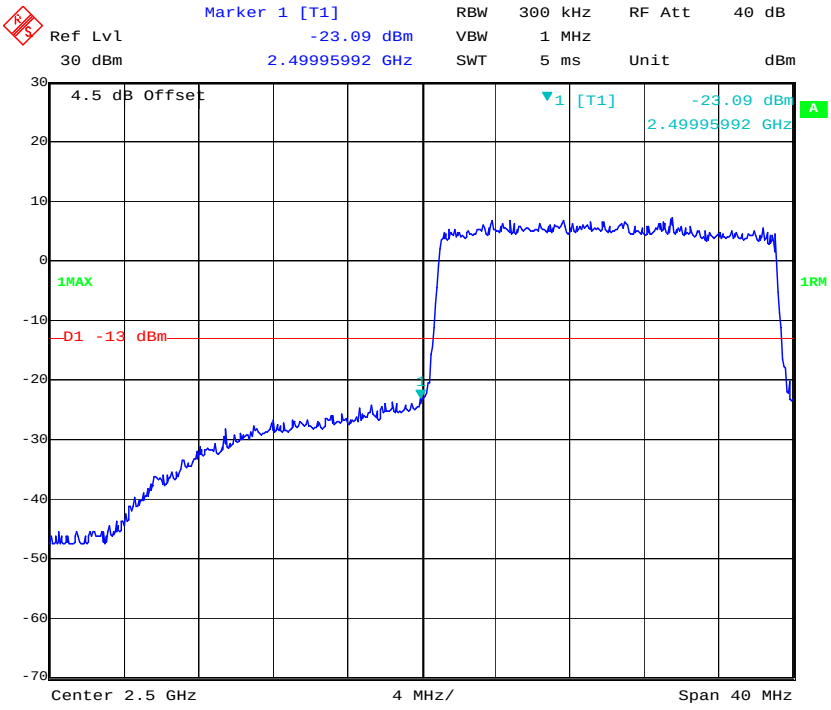
Date: 20.JUN.2019 19:16:28

16QAM_15MHz_ 75 RB_ Right



Date: 20.JUN.2019 19:17:41

16QAM_20MHz_ FULL RB_ Left



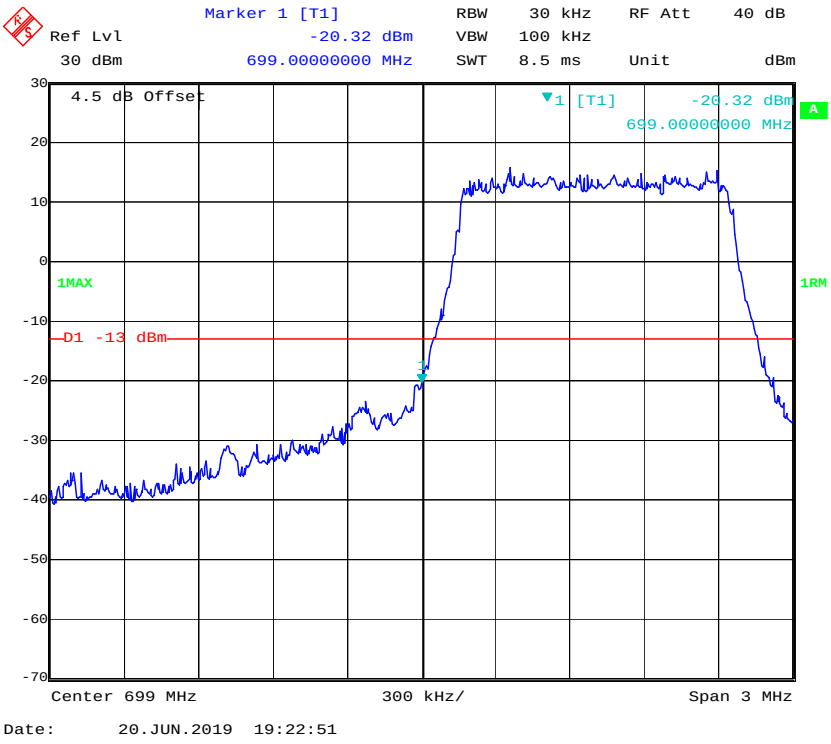
Date: 20.JUN.2019 19:18:51

16QAM_20MHz_ FULL RB_ Right

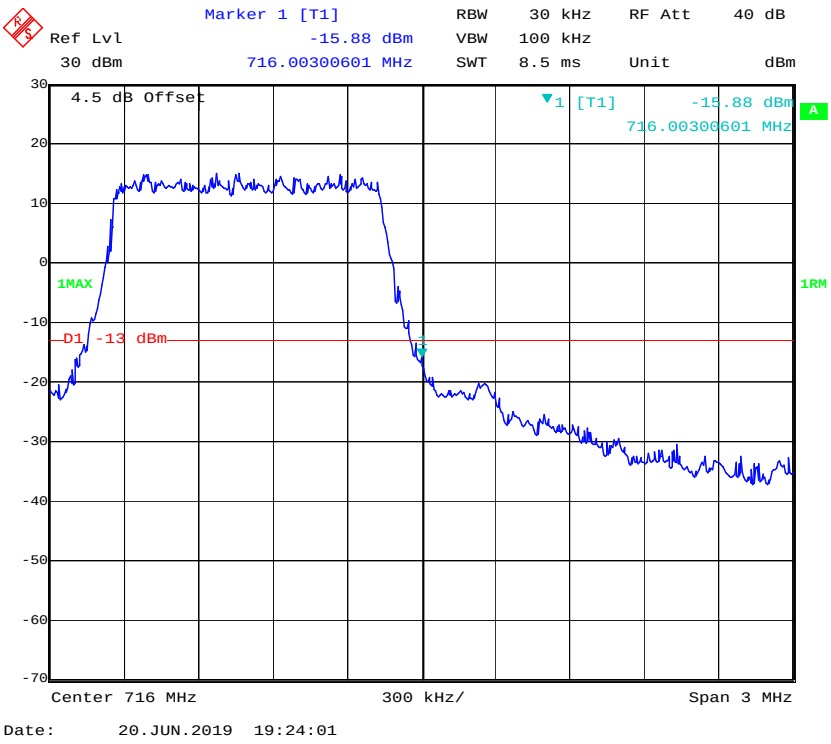
Date: 20.JUN.2019 19:20:04

LTE Band 12

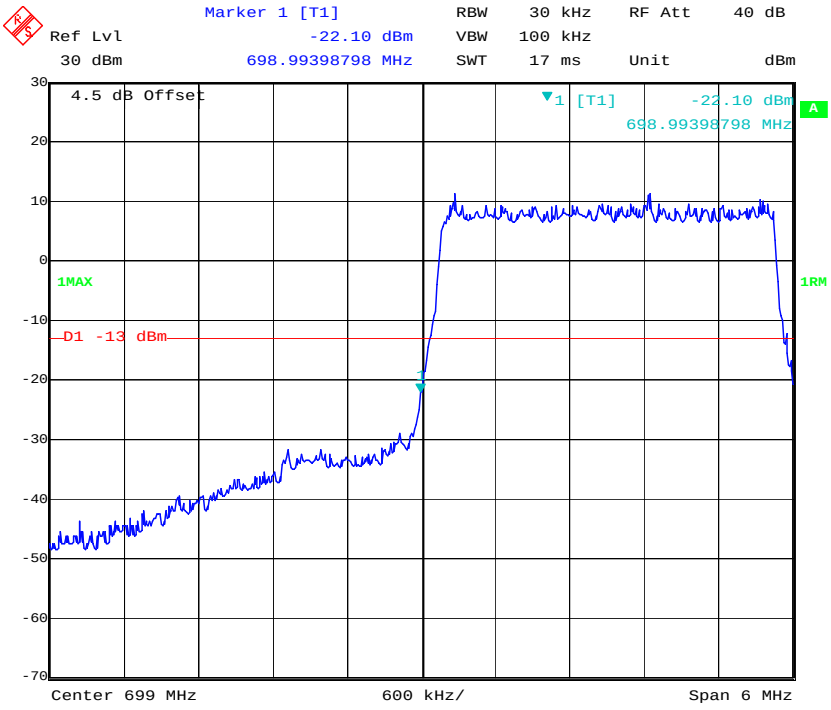
QPSK_1.4MHz_ 6 RB_ Left



QPSK_1.4MHz_ 6 RB_ Right

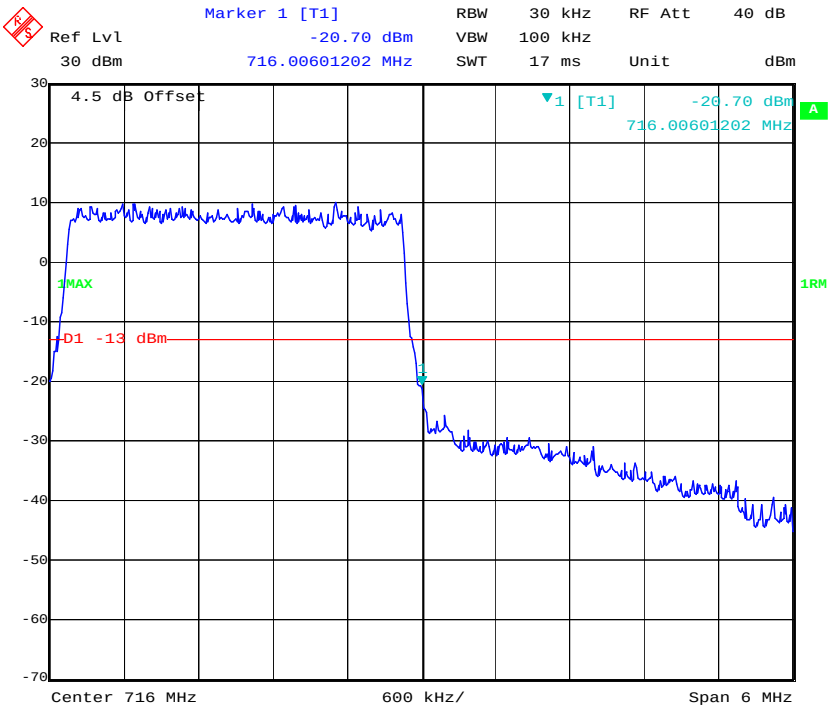


QPSK_3MHz_ 15 RB_ Left



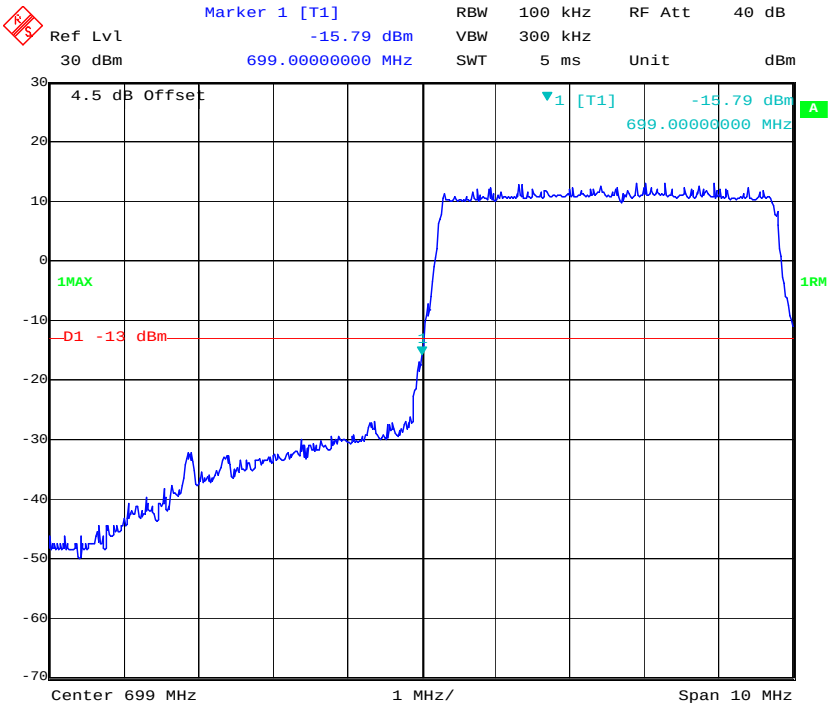
Date: 20.JUN.2019 19:25:15

QPSK_3MHz_ 15 RB_ Right



Date: 20.JUN.2019 19:26:18

QPSK_5MHz_ 25 RB_ Left

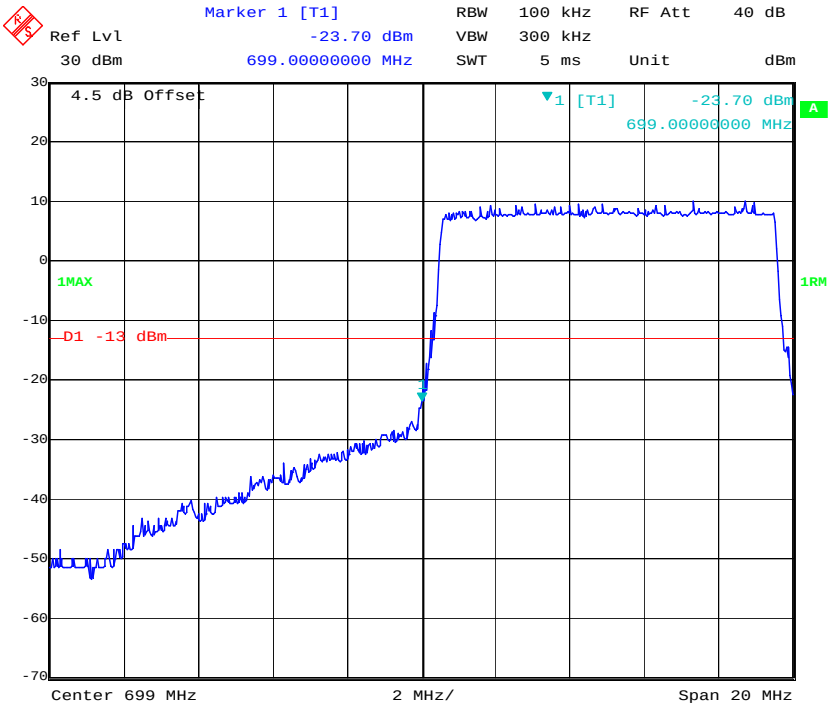


Date: 20.JUN.2019 19:27:30

QPSK_5MHz_ 25 RB_ Right

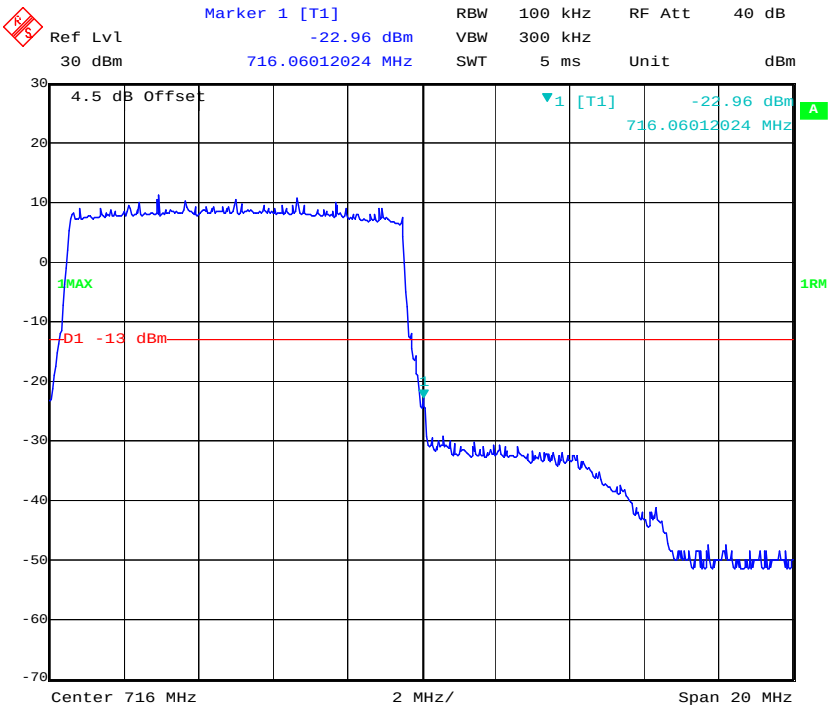
Date: 20.JUN.2019 19:28:27

QPSK_10MHz_ 50 RB_ Left



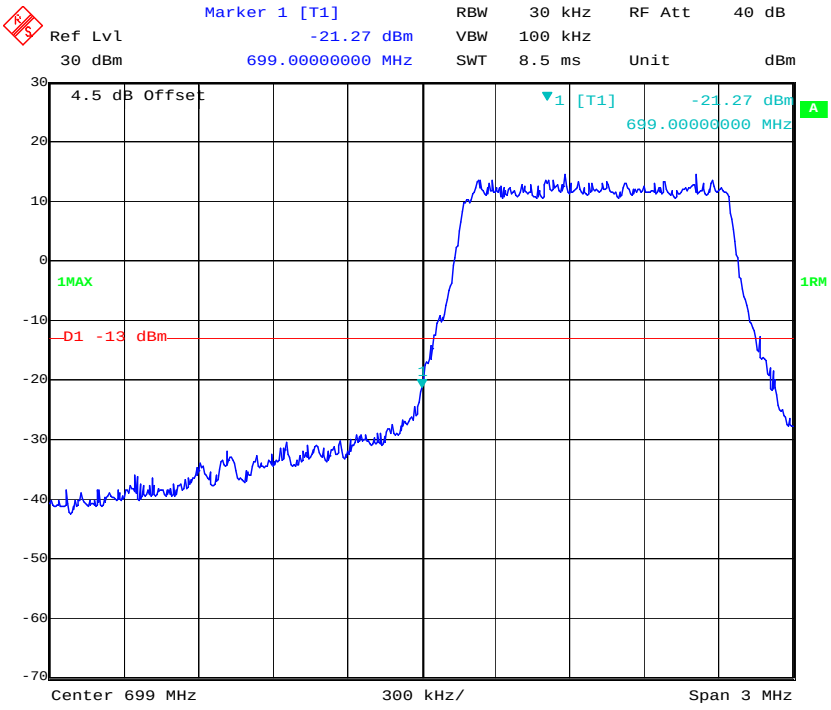
Date: 20.JUN.2019 19:29:32

QPSK_10MHz_ 50 RB_ Right

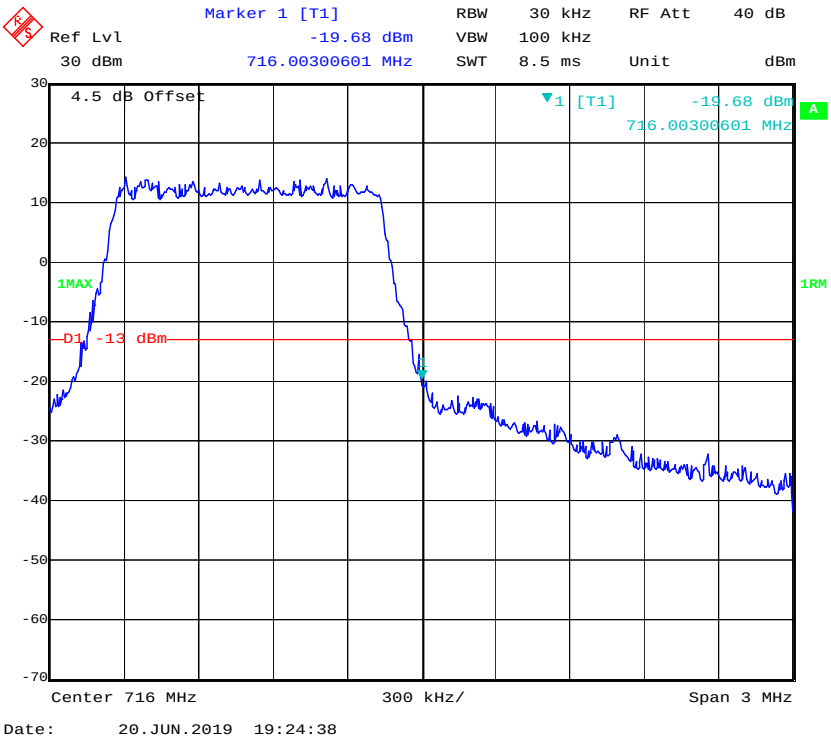


Date: 20.JUN.2019 19:30:43

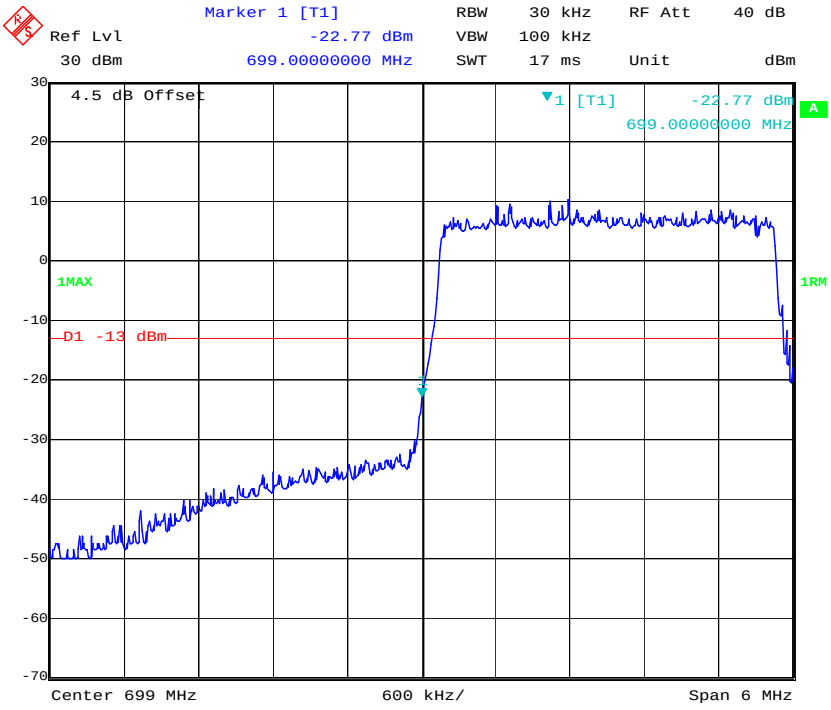
16QAM_1.4MHz_ 6 RB_ Left



16QAM_1.4MHz_ 6 RB_ Right

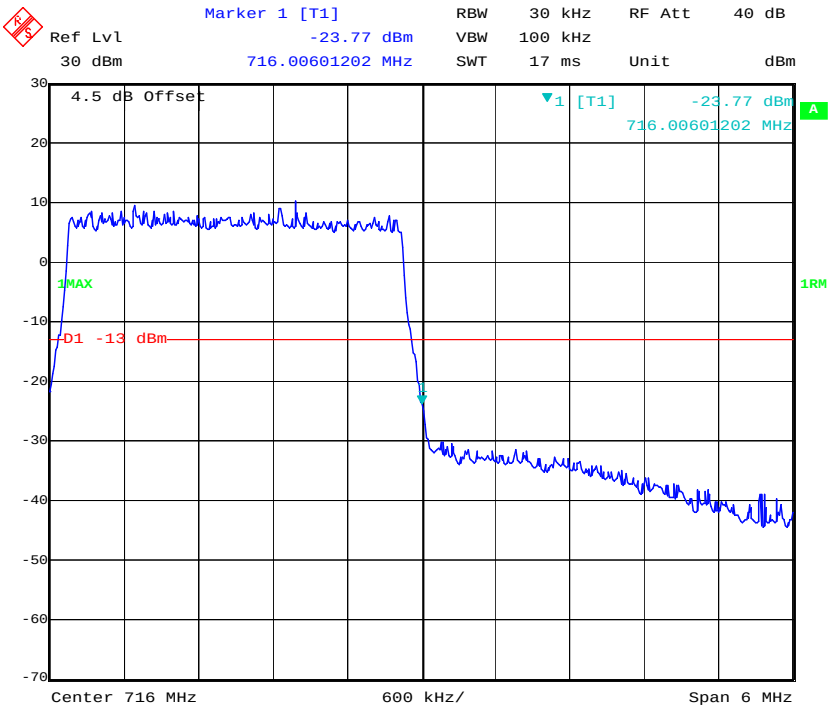


16QAM_3MHz_ 15 RB_ Left



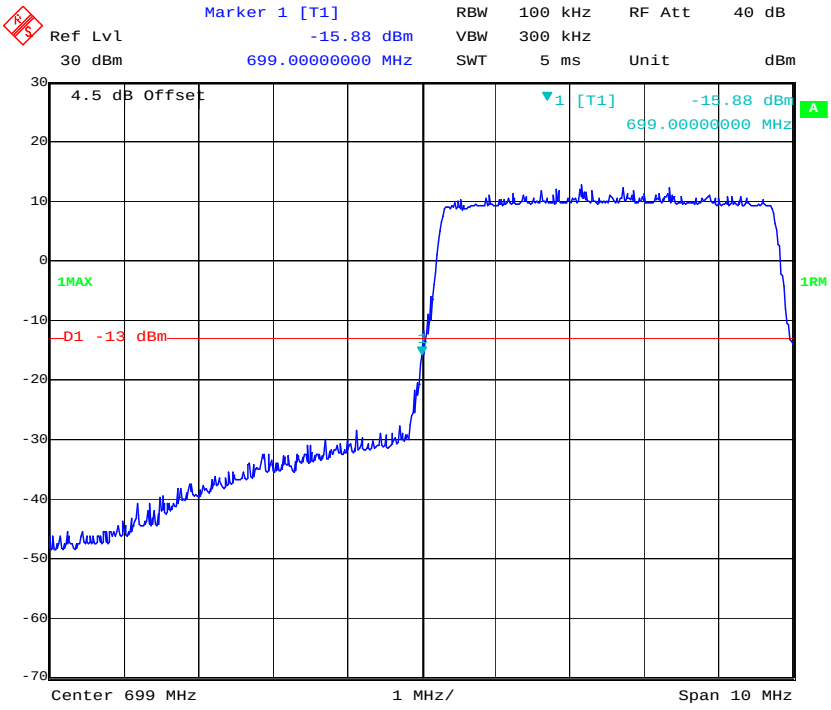
Date: 20.JUN.2019 19:25:44

16QAM_3MHz_ 15 RB_ Right



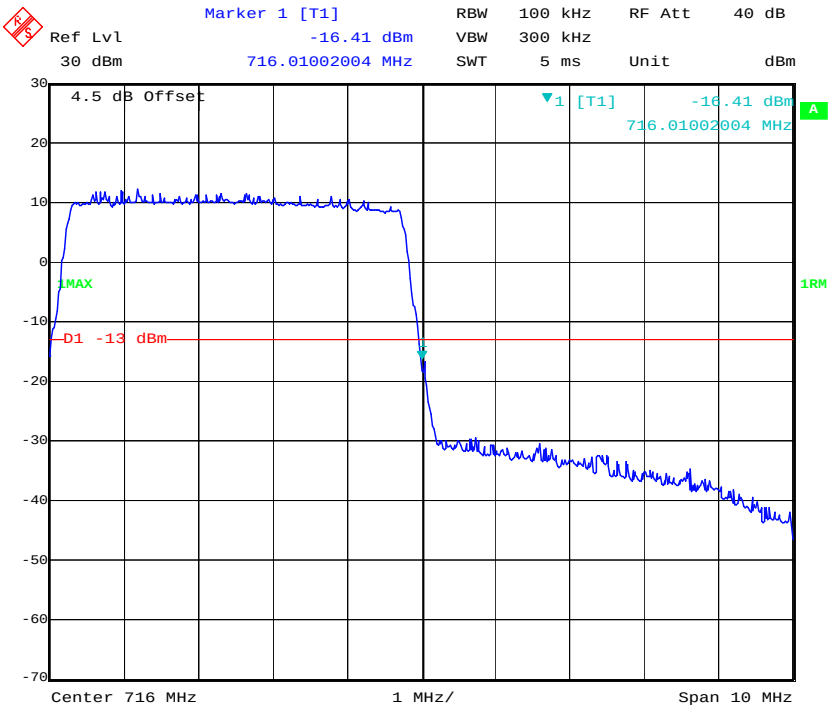
Date: 20.JUN.2019 19:26:56

16QAM_5MHz_ 25 RB_ Left



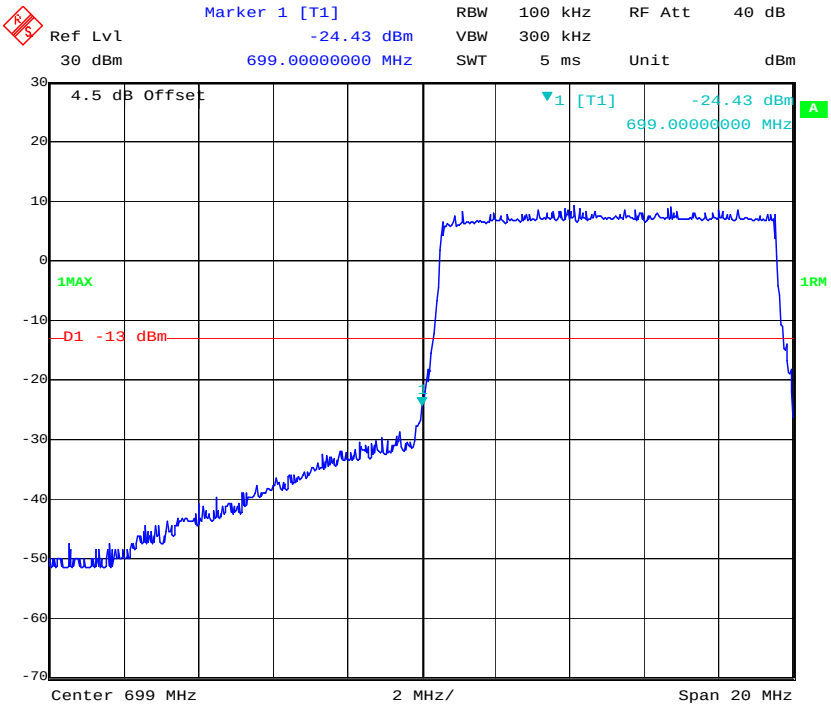
Date: 20.JUN.2019 19:27:57

16QAM_5MHz_ 25 RB_ Right



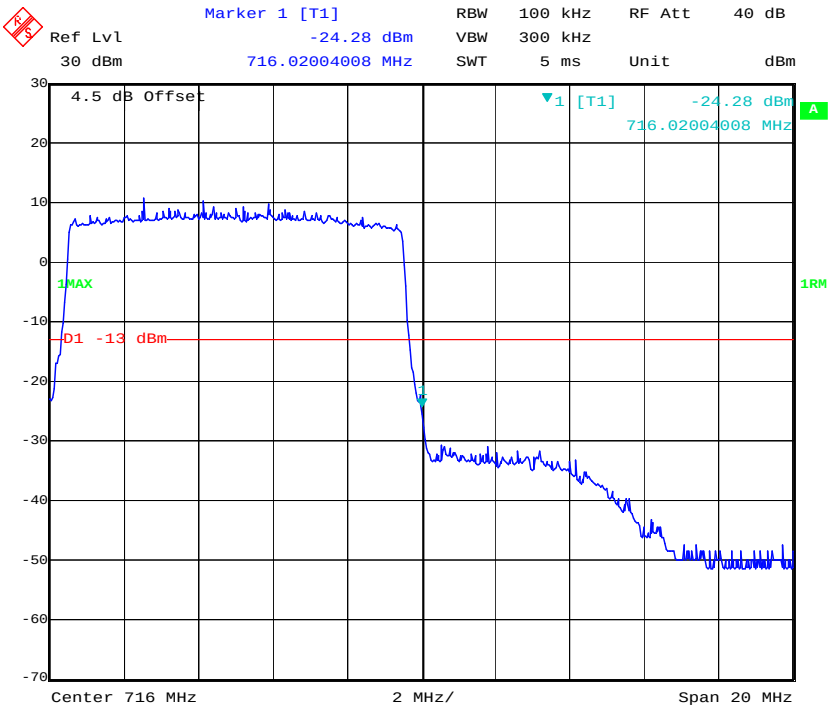
Date: 20.JUN.2019 19:28:57

16QAM_10MHz_ 50 RB_ Left



Date: 20.JUN.2019 19:30:05

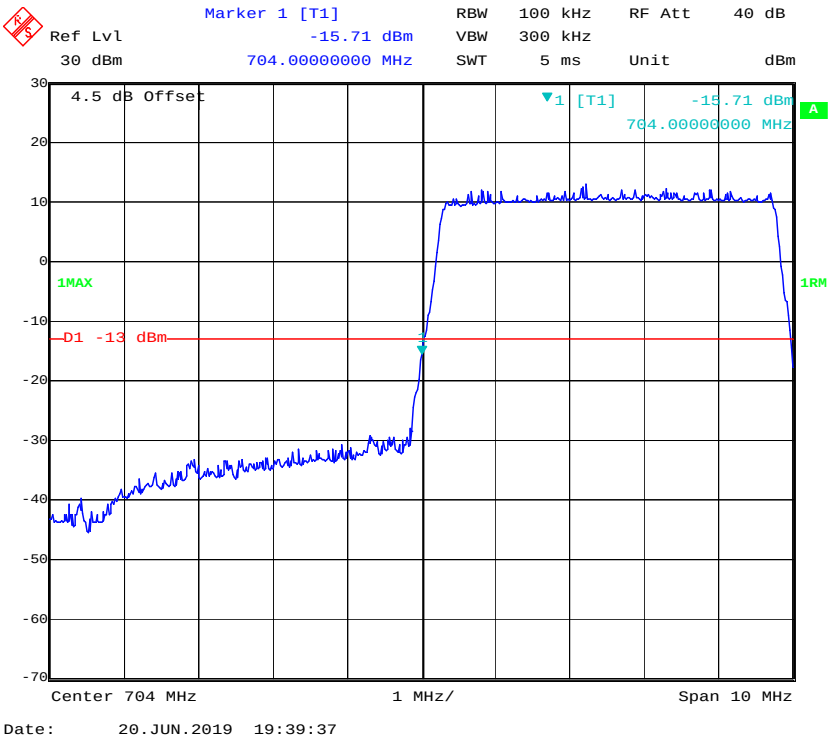
16QAM_10MHz_ 50 RB_ Right



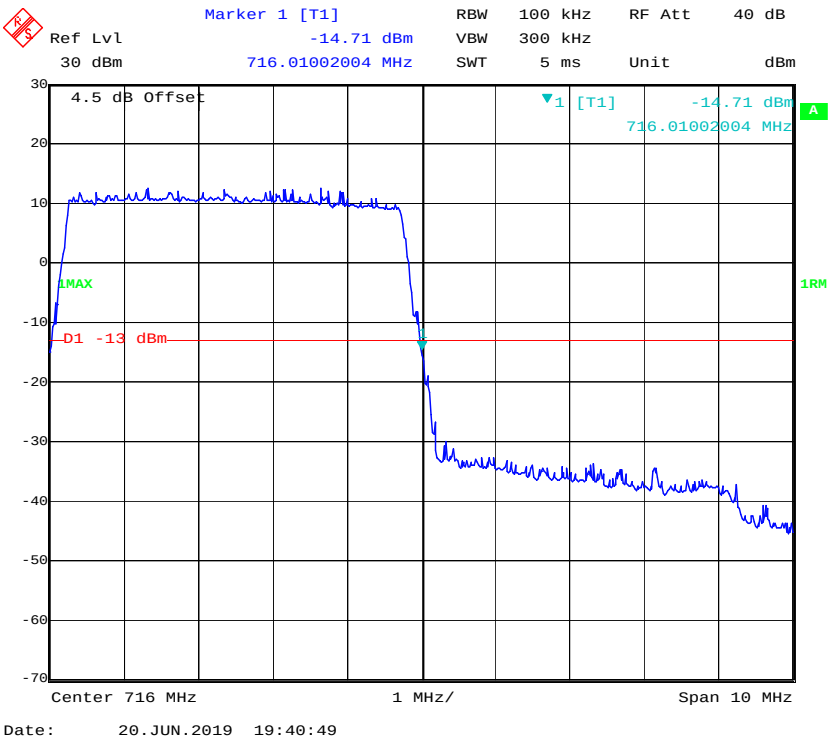
Date: 20.JUN.2019 19:31:17

LTE Band 17

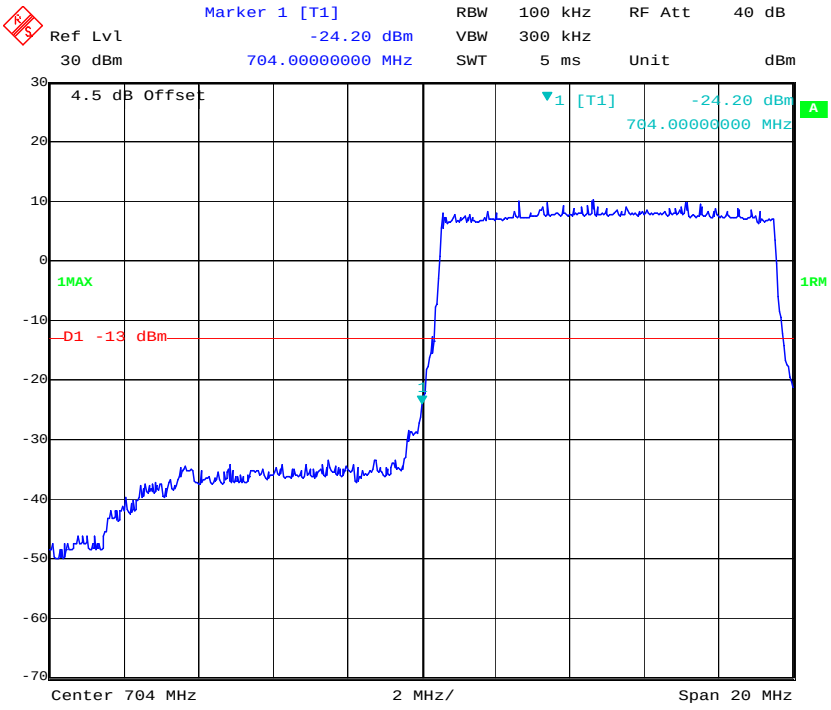
QPSK_5MHz_ 25 RB_ Left



QPSK_5MHz_ 25 RB_ Right

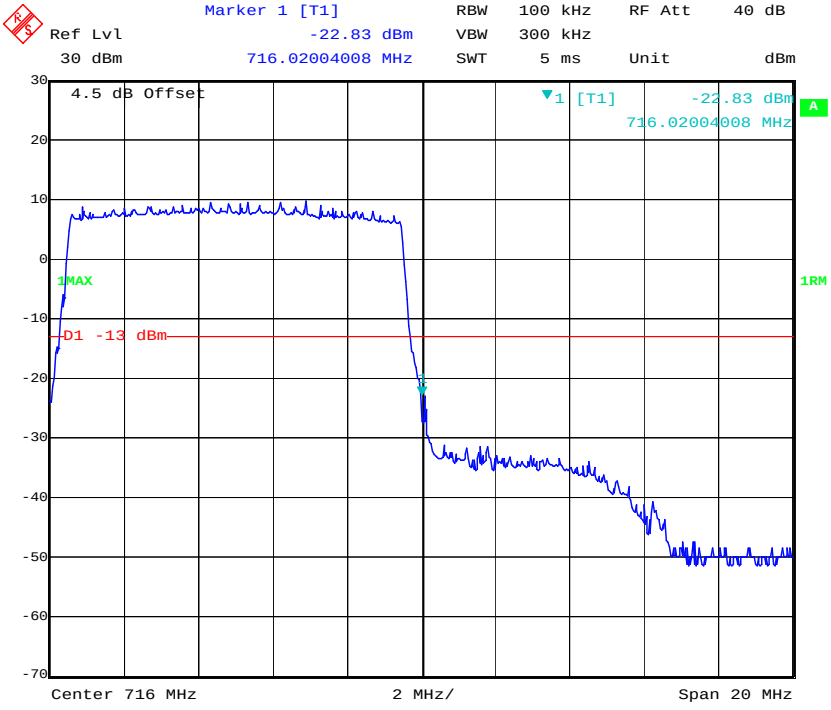


QPSK_10MHz_ 50 RB_ Left



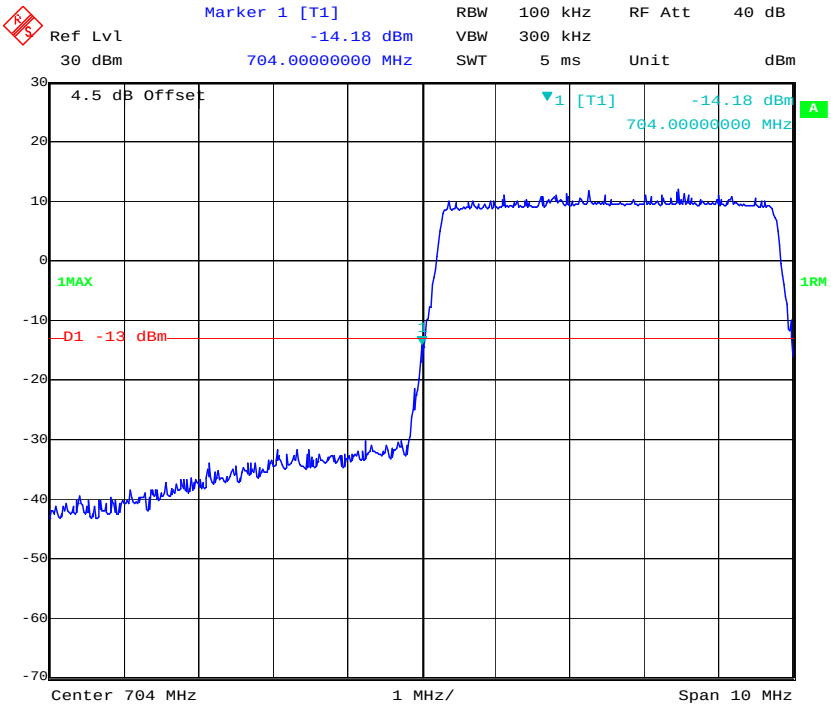
Date: 20.JUN.2019 19:44:10

QPSK_10MHz_ 50 RB_ Right



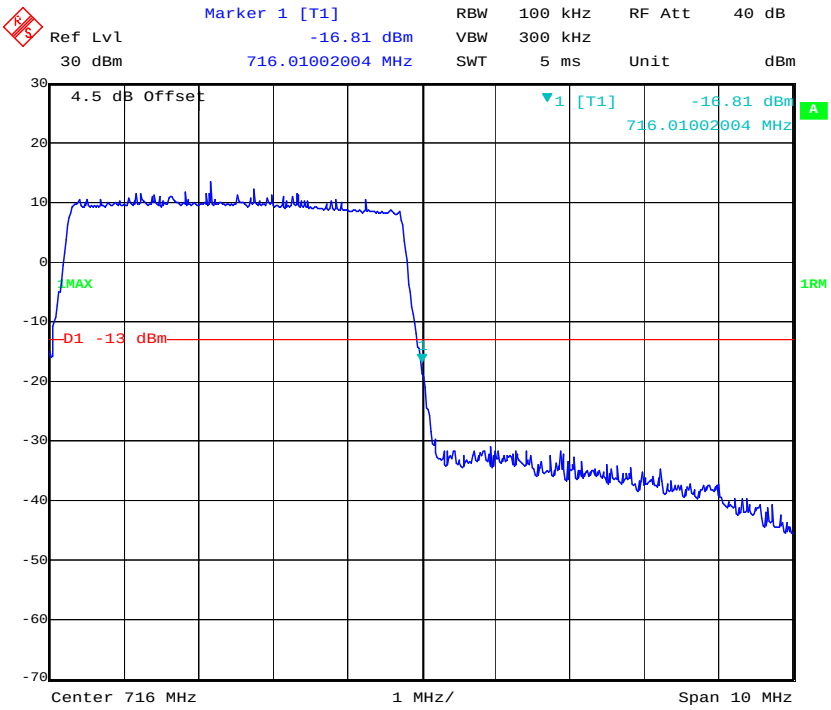
Date: 20.JUN.2019 19:45:31

16QAM_5MHz_ 25 RB_ Left



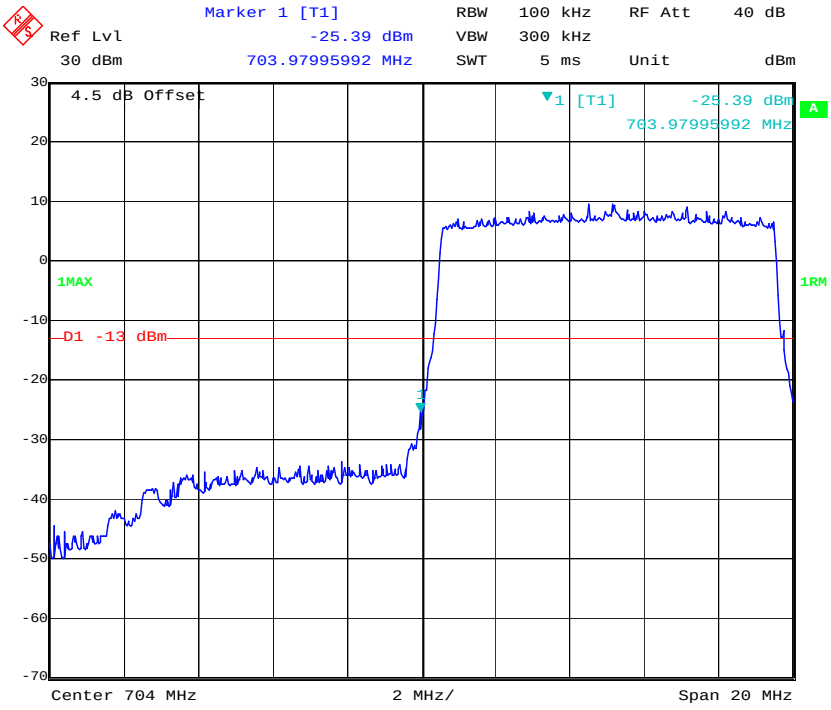
Date: 20.JUN.2019 19:40:16

16QAM_5MHz_ 25 RB_ Right



Date: 20.JUN.2019 19:41:19

16QAM_10MHz_ 50 RB_ Left



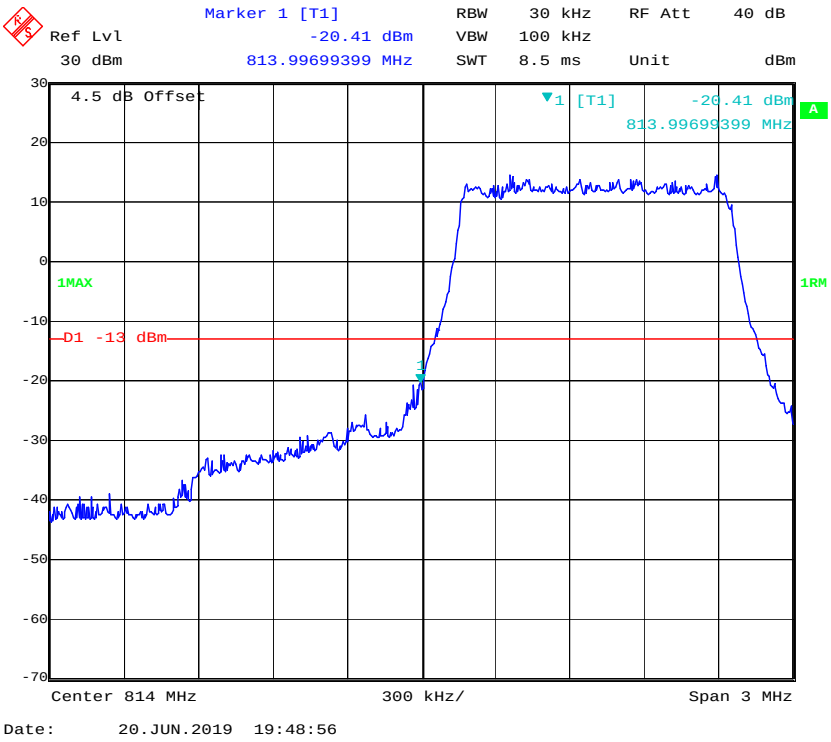
Date: 20.JUN.2019 19:44:50

16QAM_10MHz_ 50 RB_ Right

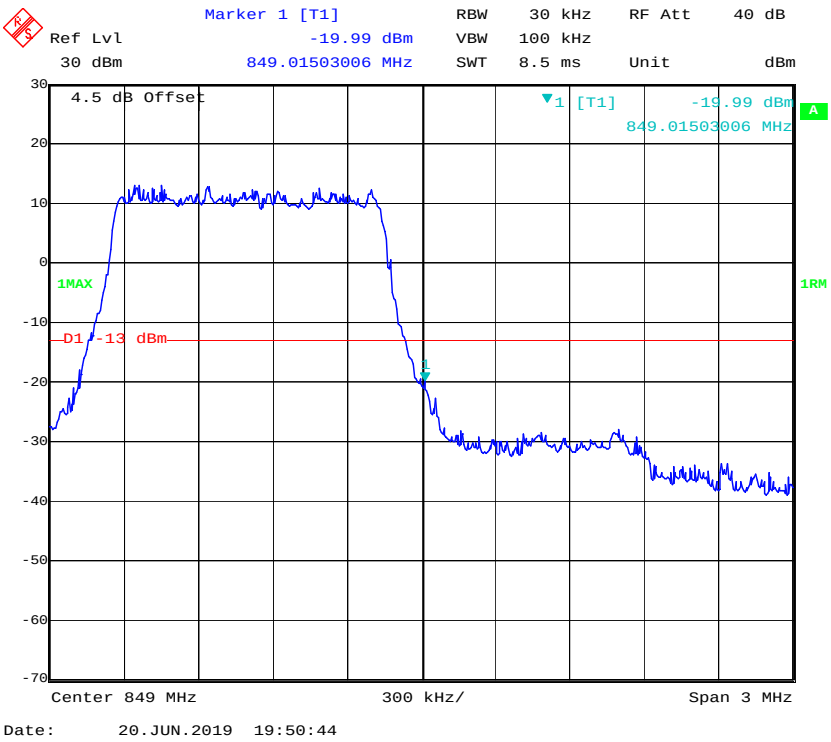
Date: 20.JUN.2019 19:46:20

LTE Band 26

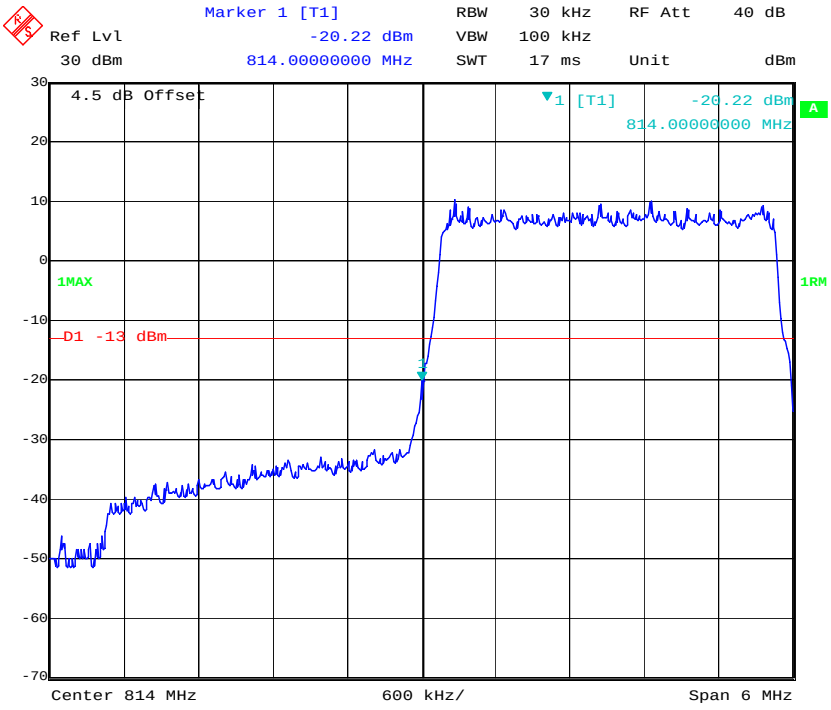
QPSK_1.4MHz_ 6 RB_ Left



QPSK_1.4MHz_ 6 RB_ Right

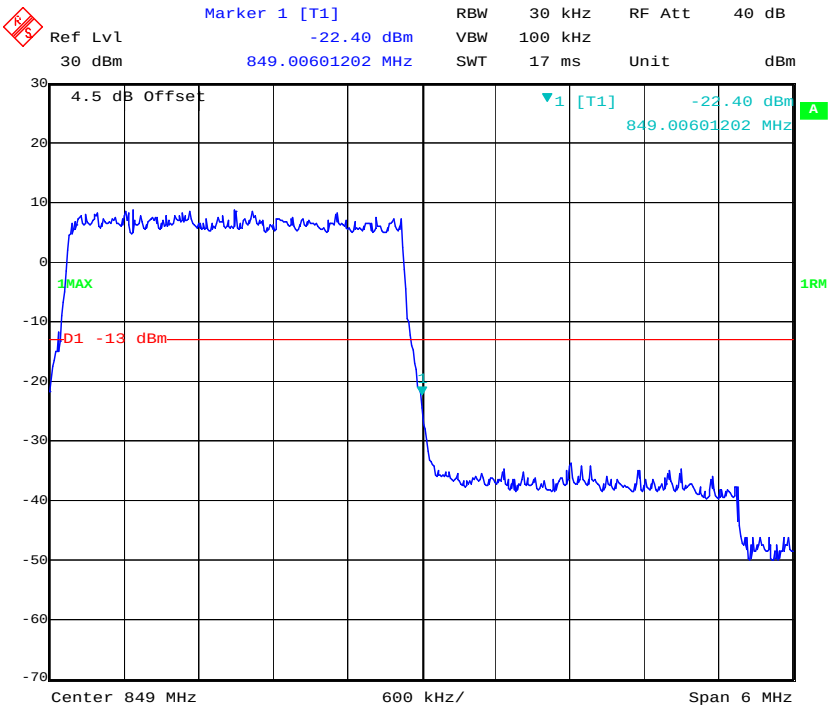


QPSK_3MHz_ 15 RB_ Left



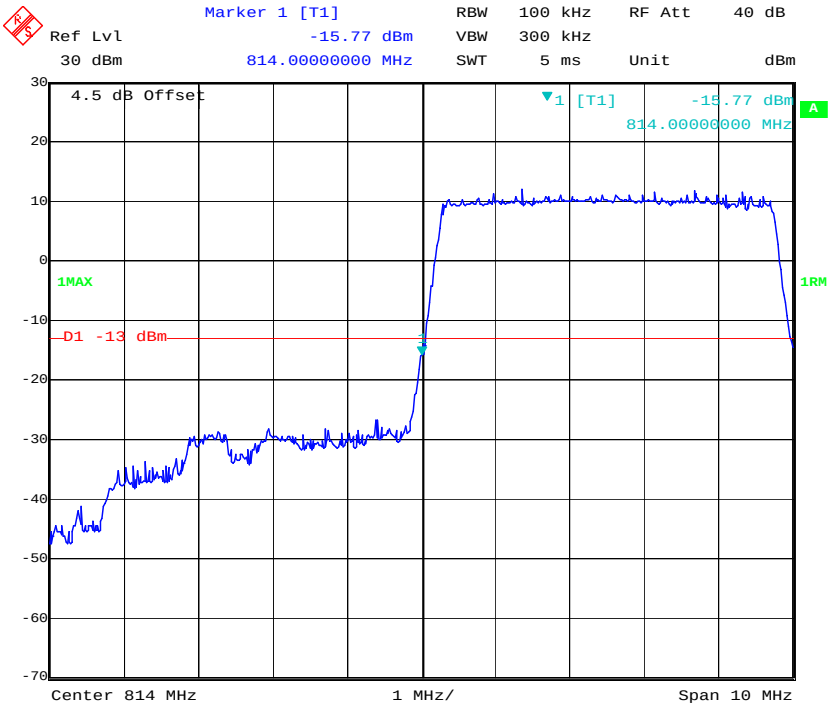
Date: 20.JUN.2019 19:52:00

QPSK_3MHz_ 15 RB_ Right



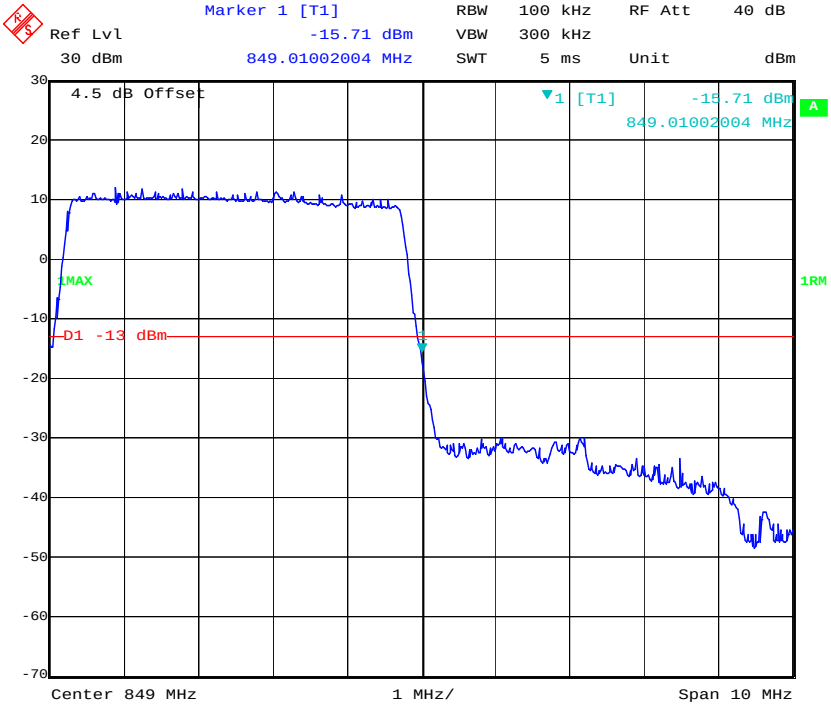
Date: 20.JUN.2019 19:53:00

QPSK_5MHz_ 25 RB_ Left



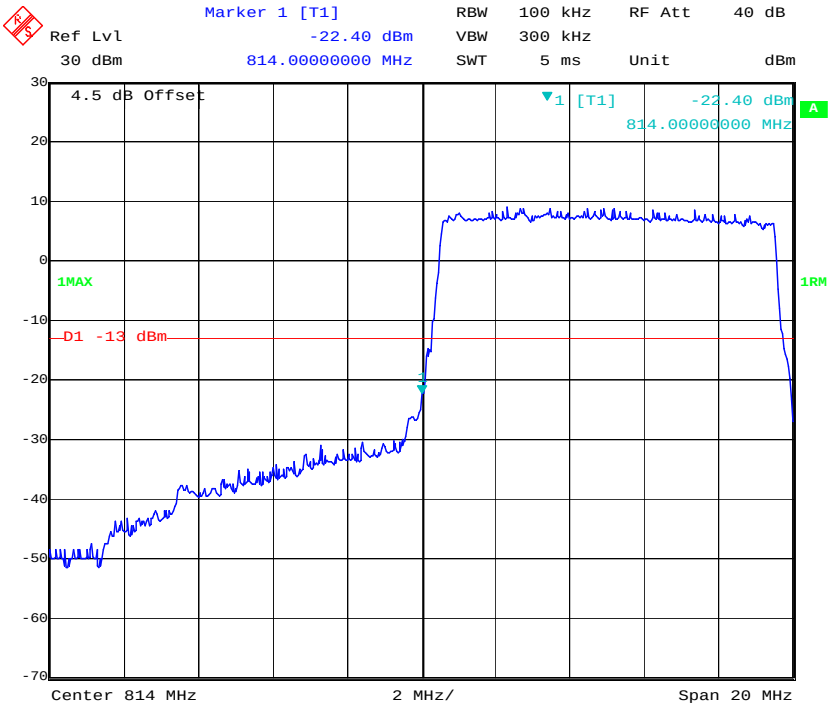
Date: 20.JUN.2019 19:54:06

QPSK_5MHz_ 25 RB_ Right



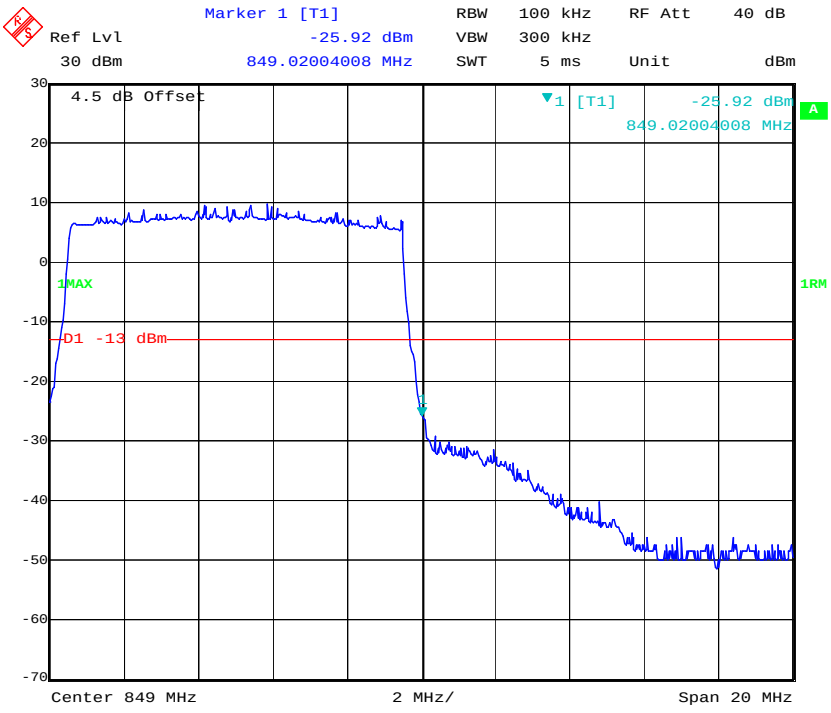
Date: 20.JUN.2019 19:55:09

QPSK_10MHz_ 50 RB_ Left



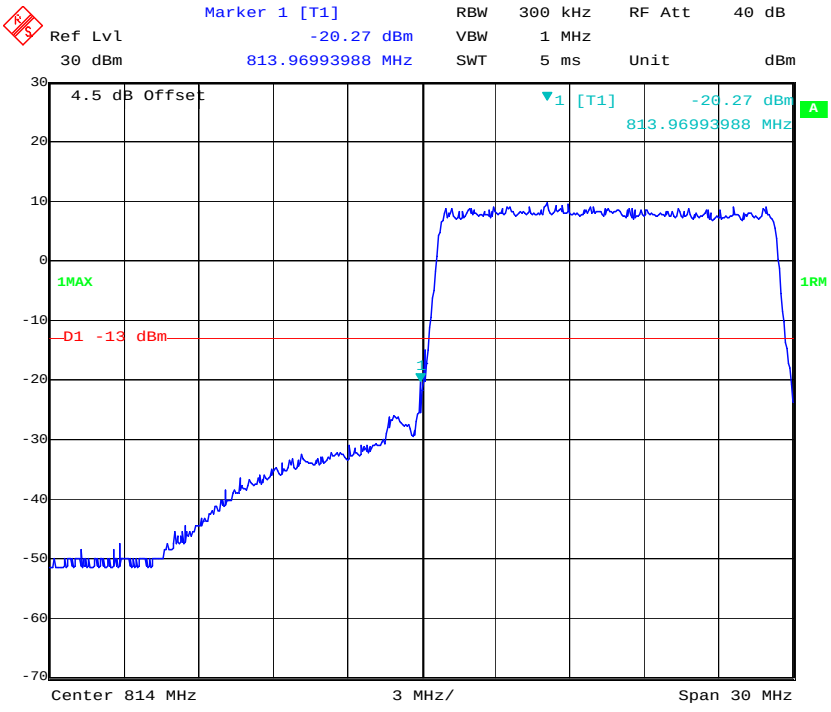
Date: 20.JUN.2019 19:56:20

QPSK_10MHz_ 50 RB_ Right



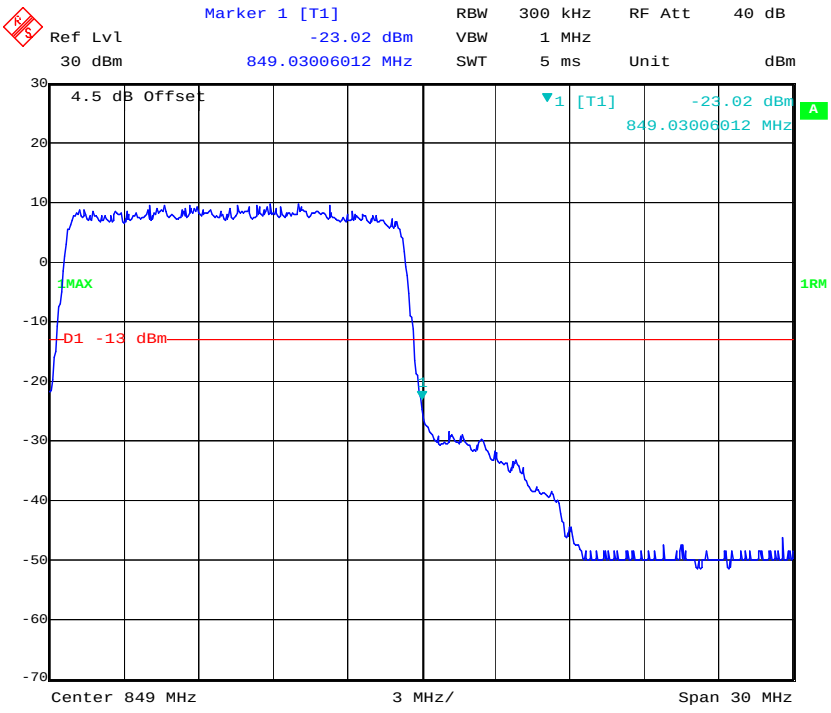
Date: 20.JUN.2019 19:57:44

QPSK_15MHz_ 75 RB_ Left



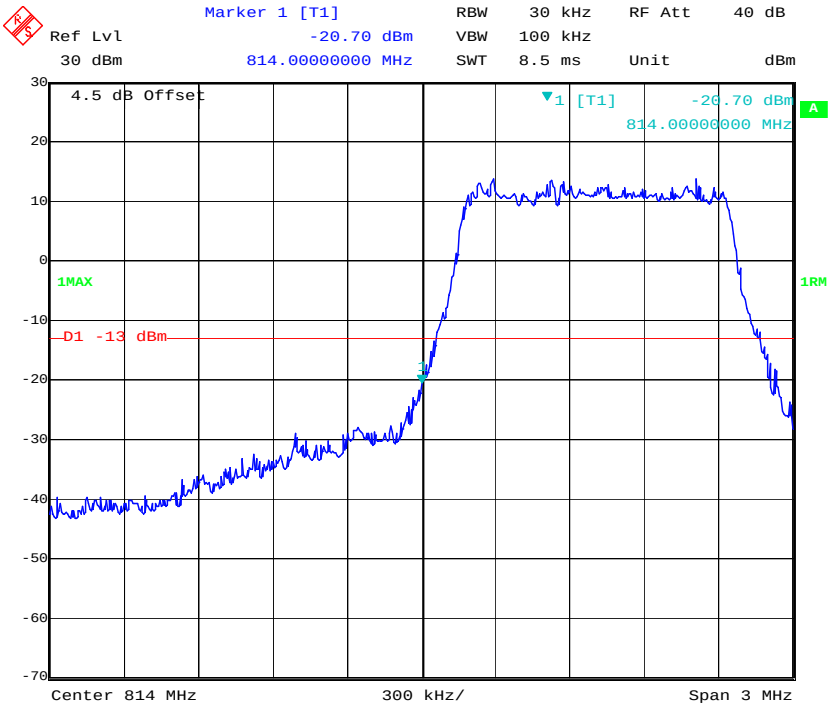
Date: 20.JUN.2019 20:02:06

QPSK_15MHz_ 75 RB_ Right



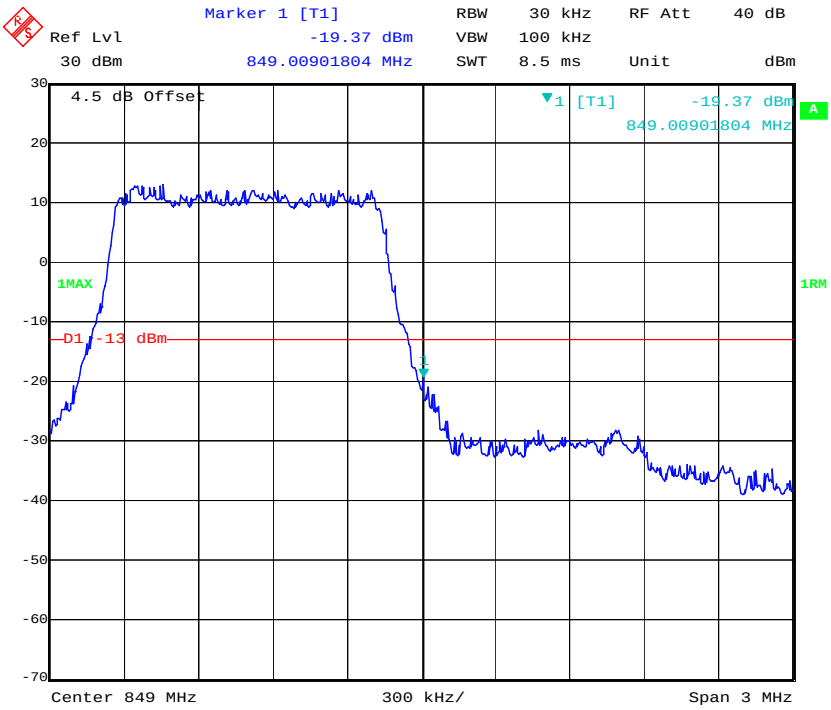
Date: 20.JUN.2019 20:03:15

16QAM_1.4MHz_ 6 RB_ Left



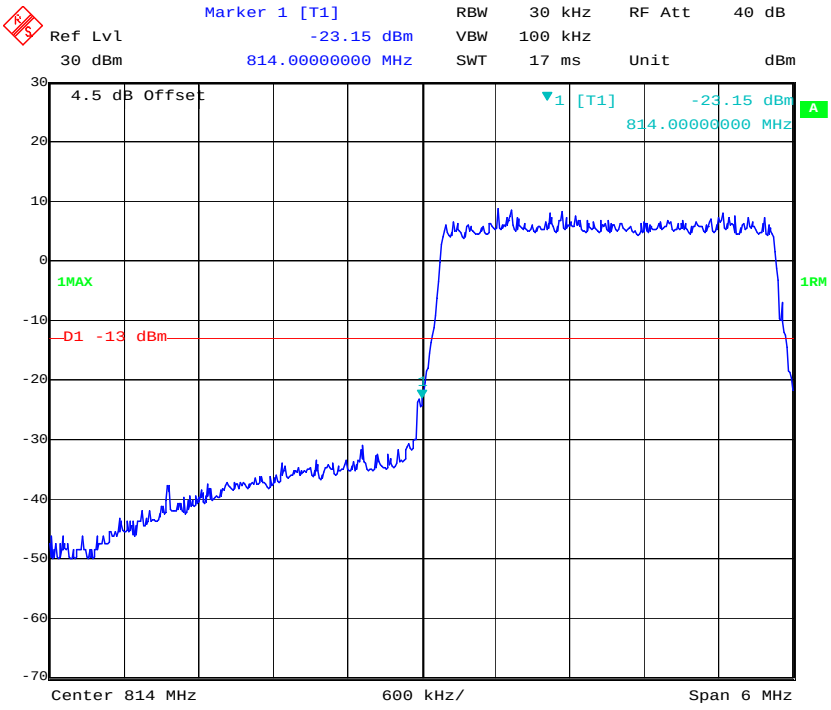
Date: 20.JUN.2019 19:49:29

16QAM_1.4MHz_ 6 RB_ Right



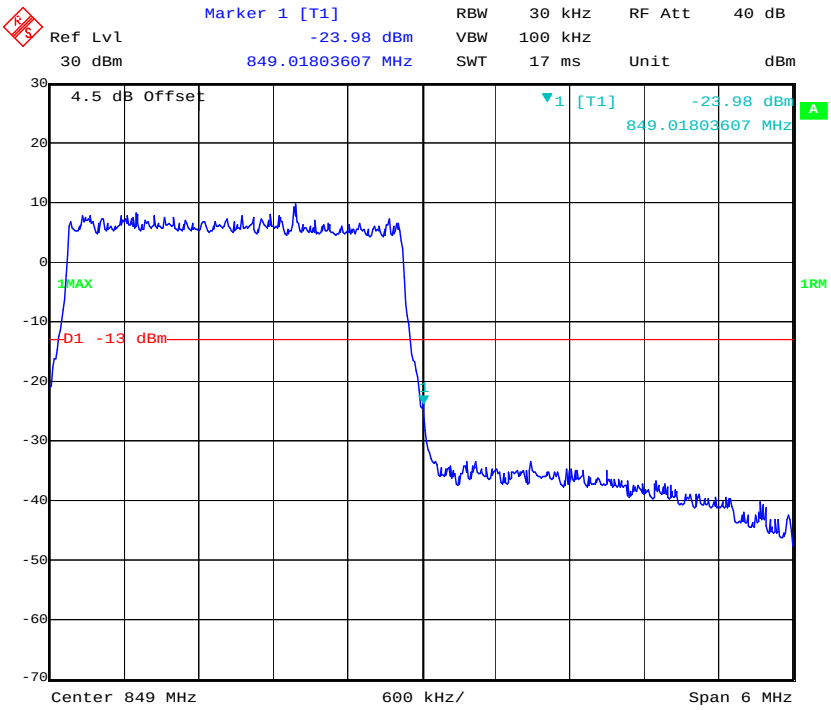
Date: 20.JUN.2019 19:51:17

16QAM_3MHz_ 15 RB_ Left



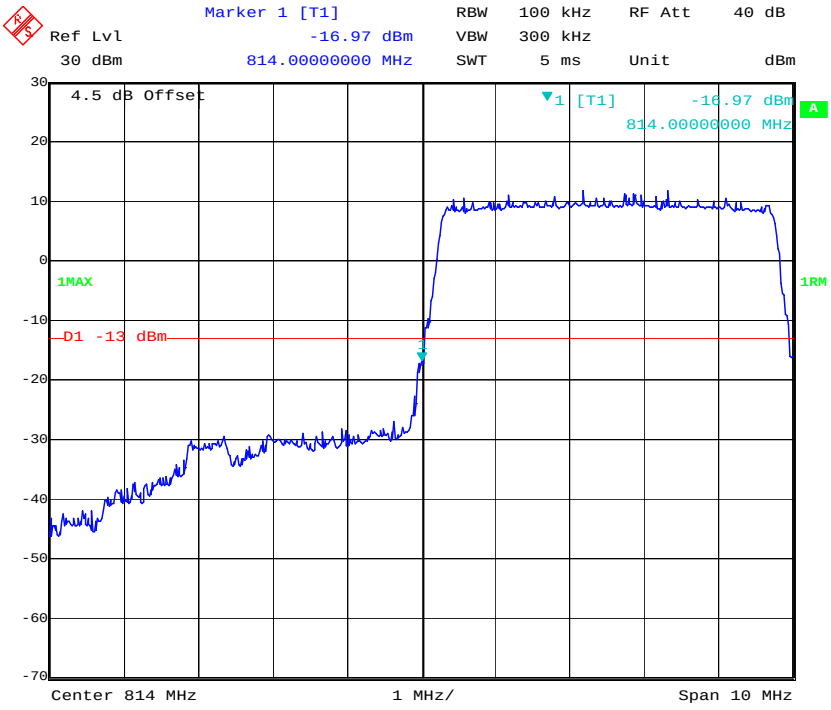
Date: 20.JUN.2019 19:52:29

16QAM_3MHz_ 15 RB_ Right



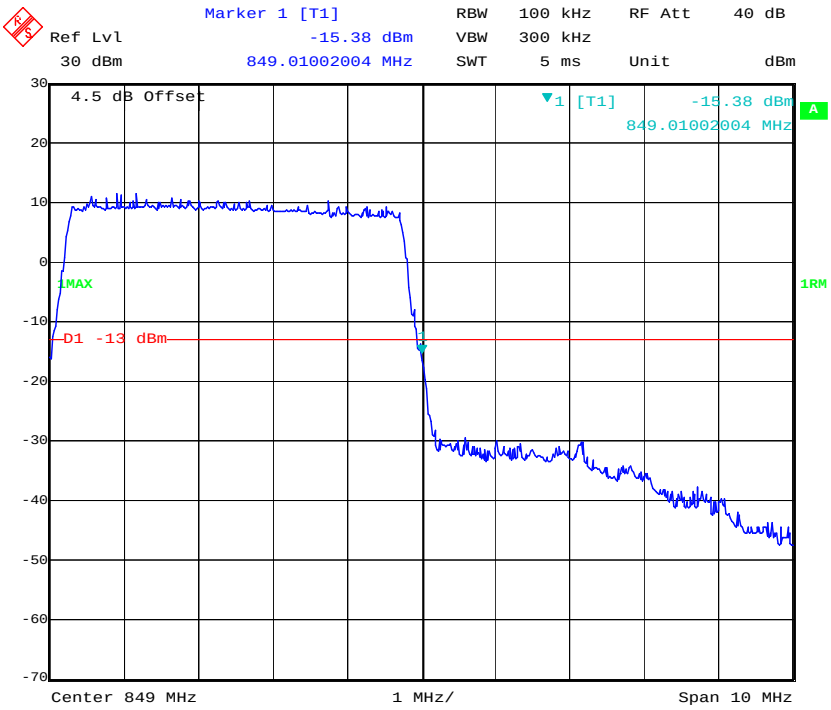
Date: 20.JUN.2019 19:53:38

16QAM_5MHz_ 25 RB_ Left



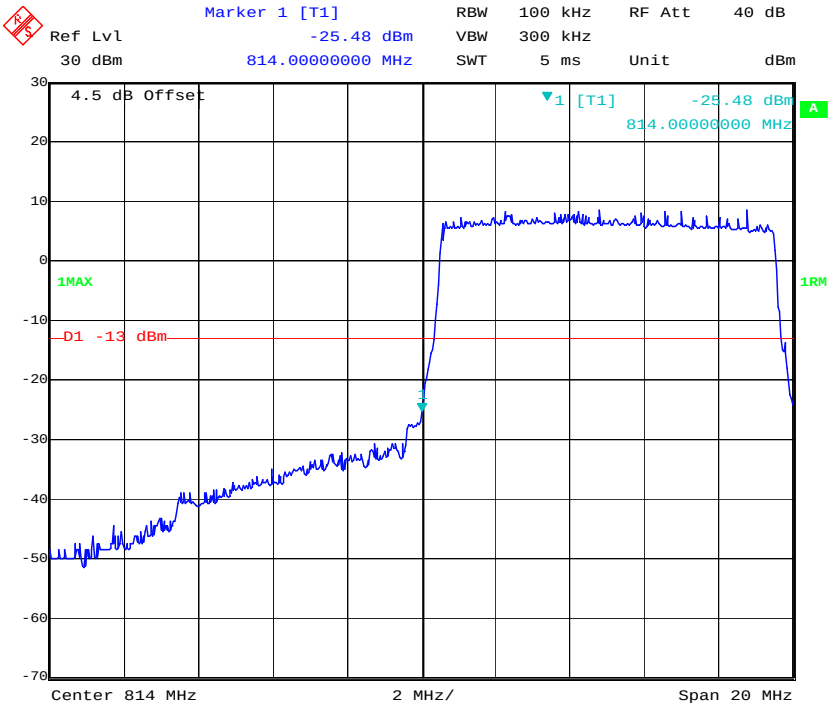
Date: 20.JUN.2019 19:54:39

16QAM_5MHz_ 25 RB_ Right



Date: 20.JUN.2019 19:55:39

16QAM_10MHz_ 50 RB_ Left

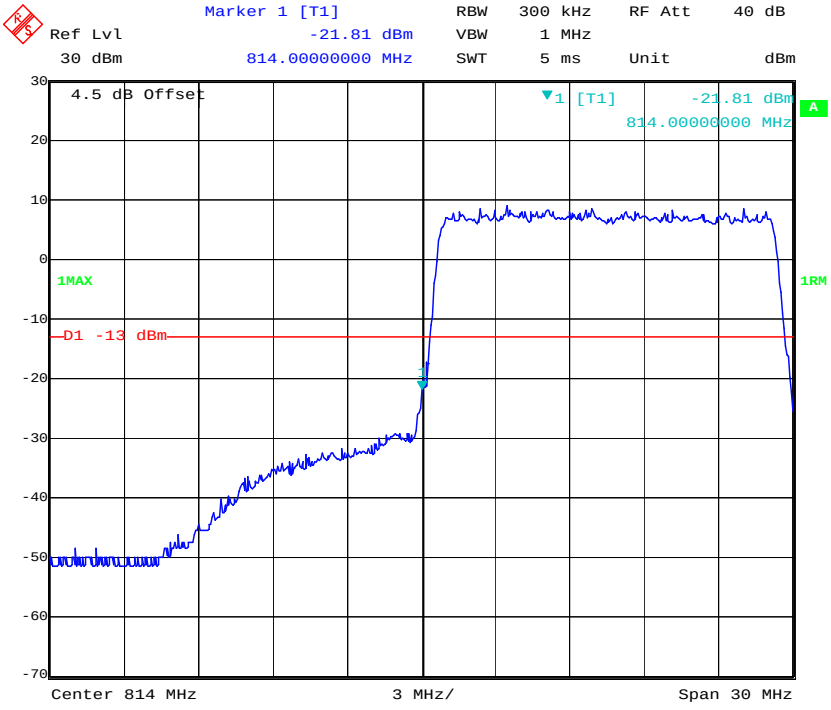


Date: 20.JUN.2019 19:57:00

16QAM_10MHz_ 50 RB_ Right

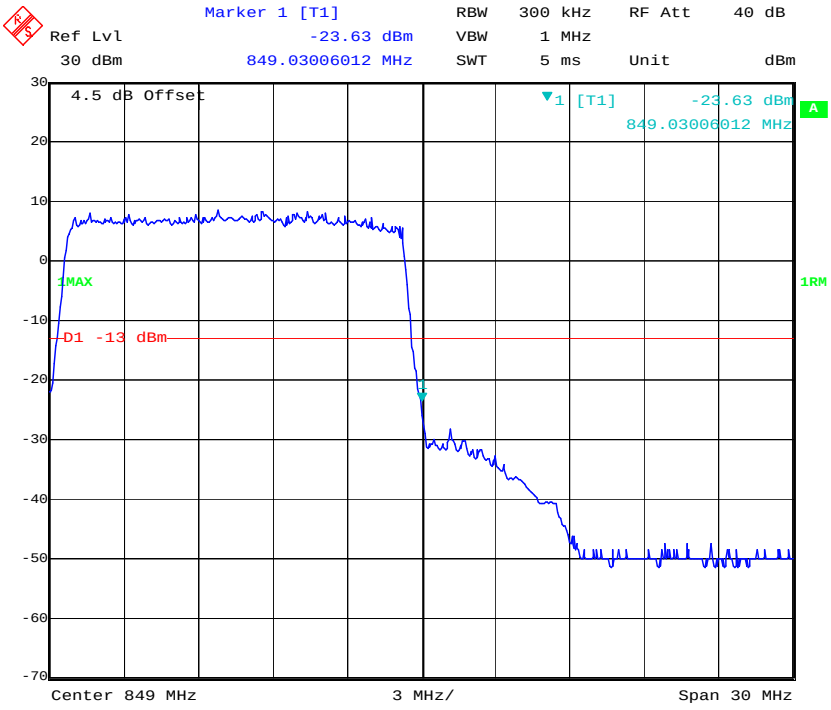
Date: 20.JUN.2019 19:58:24

16QAM_15MHz_ 75 RB_ Left



Date: 20.JUN.2019 20:02:42

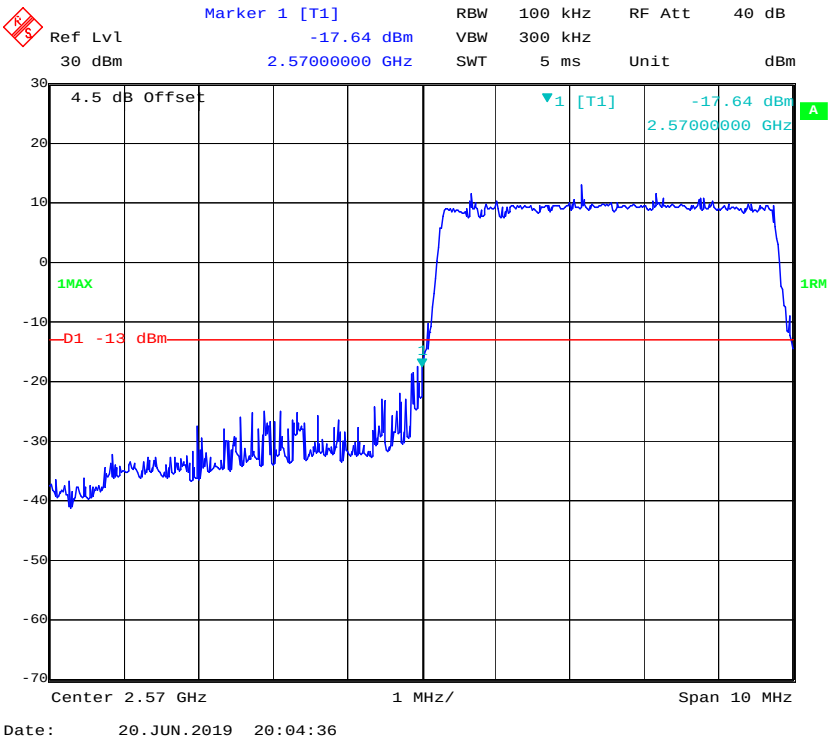
16QAM_15MHz_ 75 RB_ Right



Date: 20.JUN.2019 20:03:45

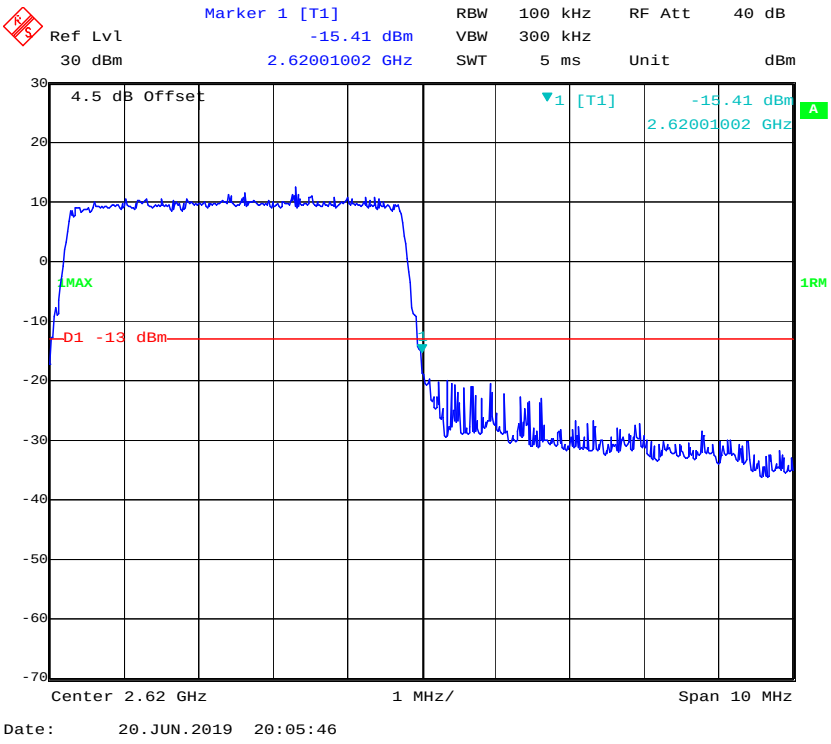
LTE Band 38

QPSK_5MHz_ 25 RB_ Left



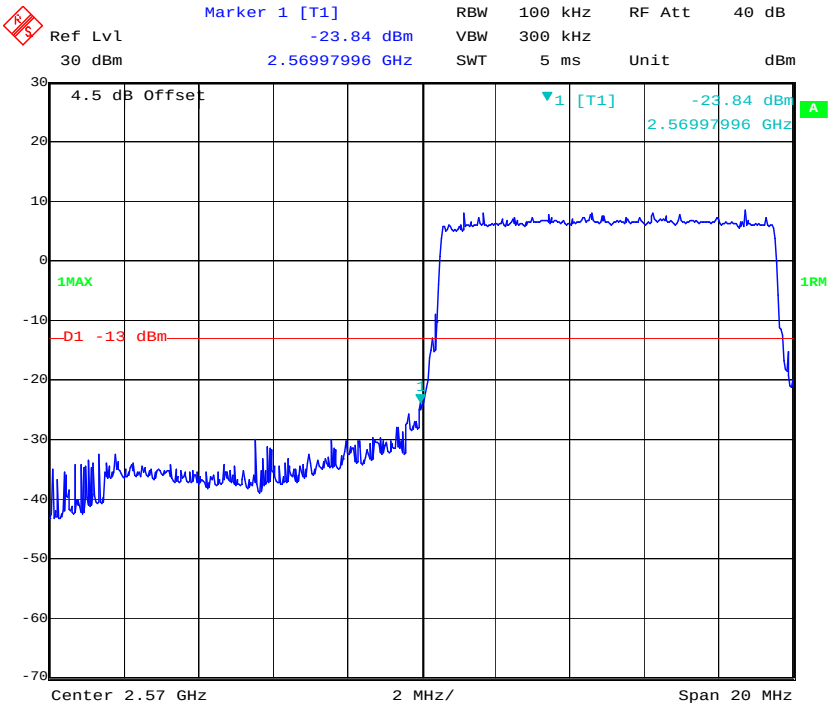
Date: 20.JUN.2019 20:04:36

QPSK_5MHz_ 25 RB_ Right



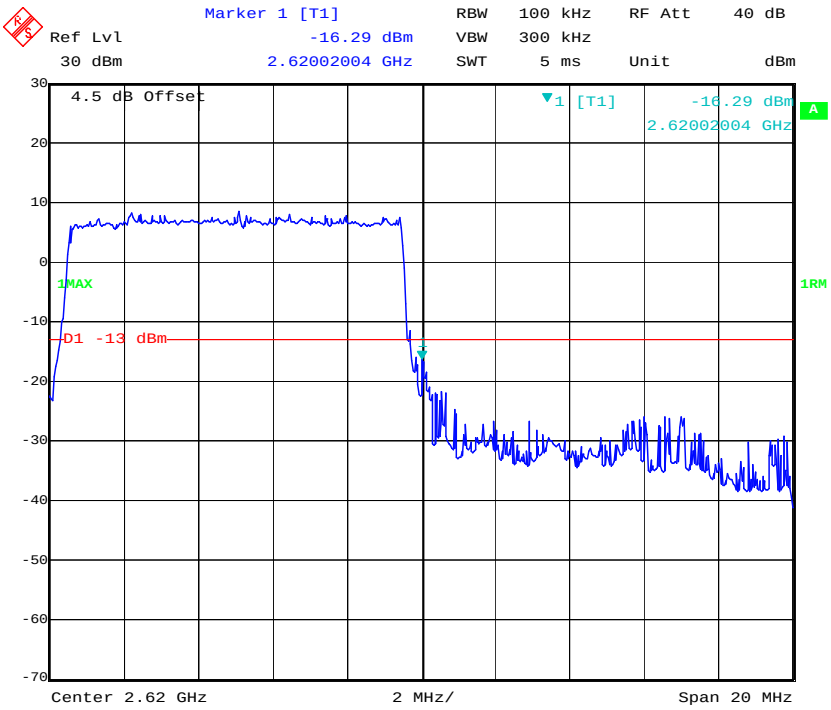
Date: 20.JUN.2019 20:05:46

QPSK_10MHz_ 50 RB_ Left



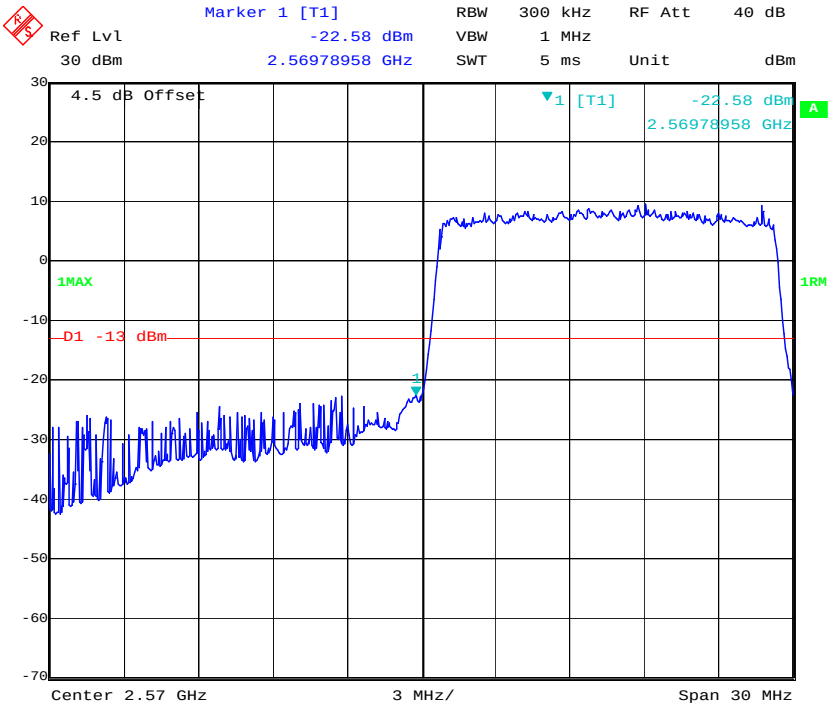
Date: 20.JUN.2019 20:08:20

QPSK_10MHz_ 50 RB_ Right



Date: 20.JUN.2019 20:10:03

QPSK_15MHz_ 75 RB_ Left

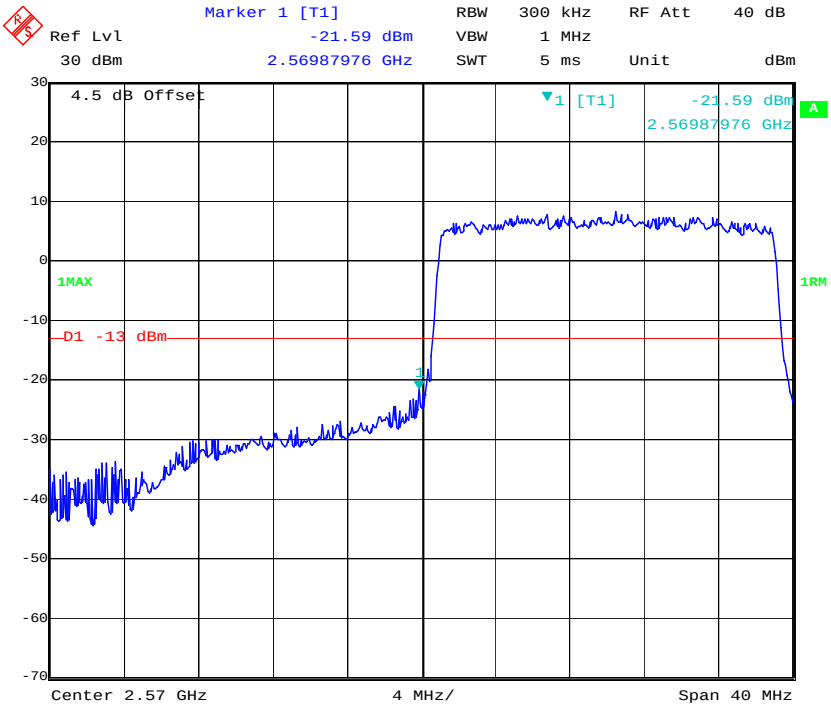


Date: 20.JUN.2019 20:12:44

QPSK_15MHz_ 75 RB_ Right

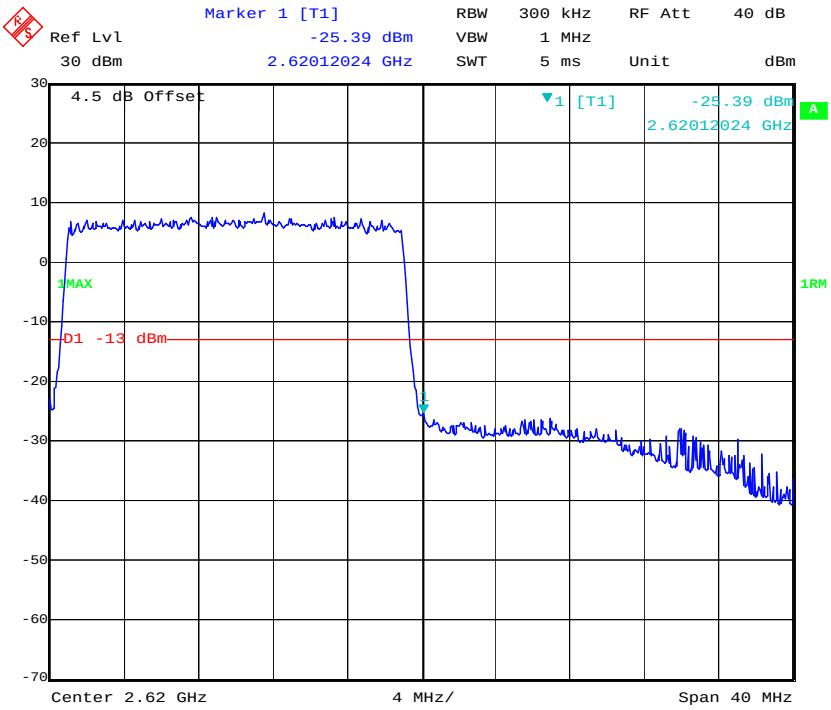
Date: 20.JUN.2019 20:14:31

QPSK_20MHz_ FULL RB_ Left



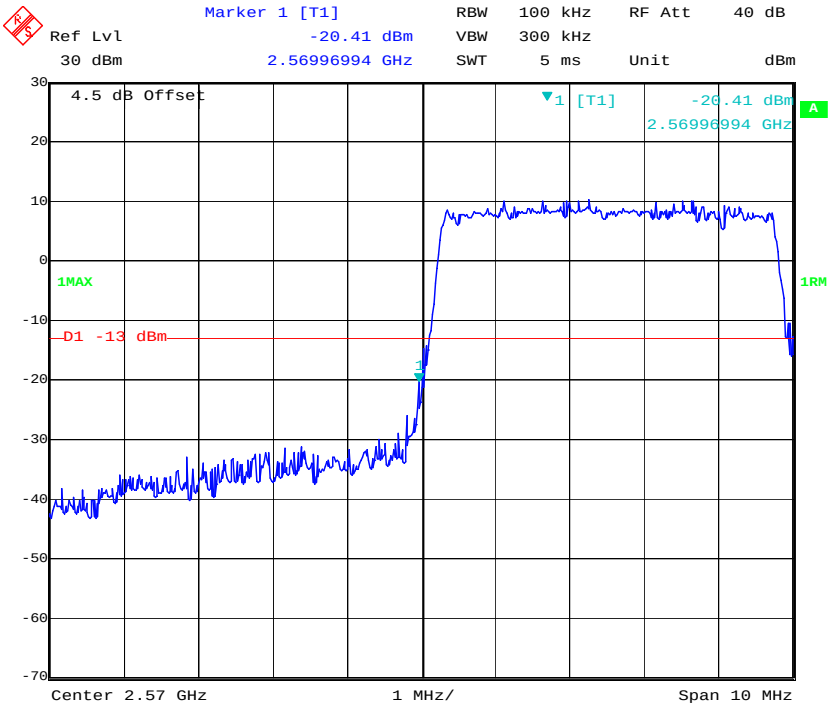
Date: 20.JUN.2019 20:19:19

QPSK_20MHz_ FULL RB_ Right

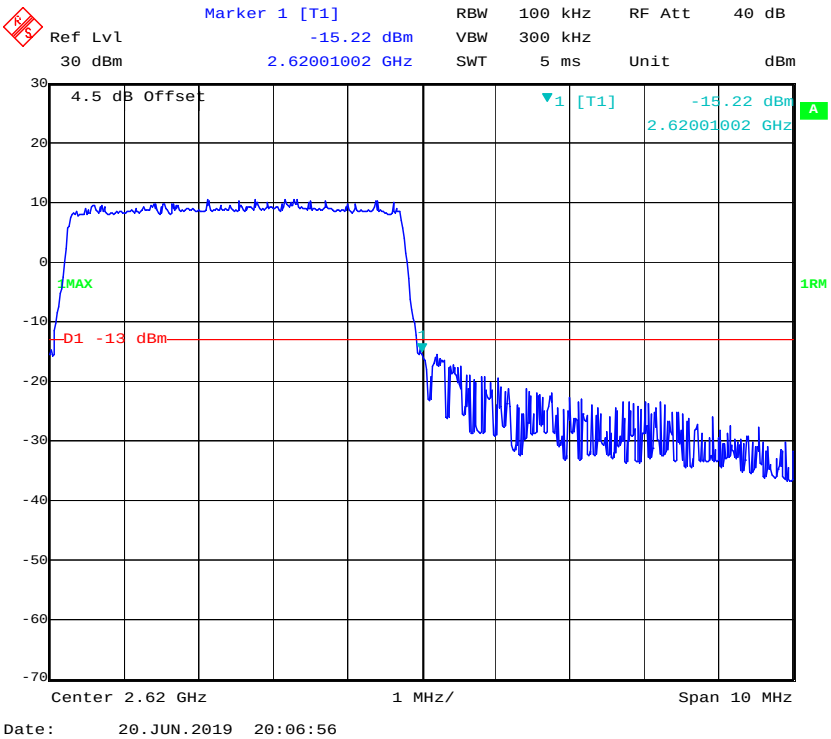


Date: 20.JUN.2019 20:20:57

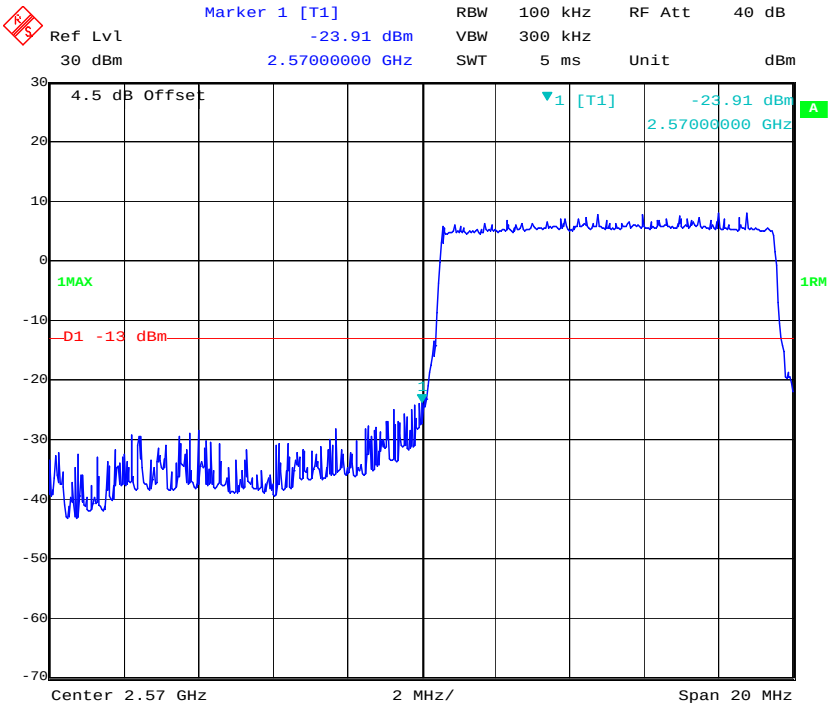
16QAM_5MHz_ 25 RB_ Left



16QAM_5MHz_ 25 RB_ Right

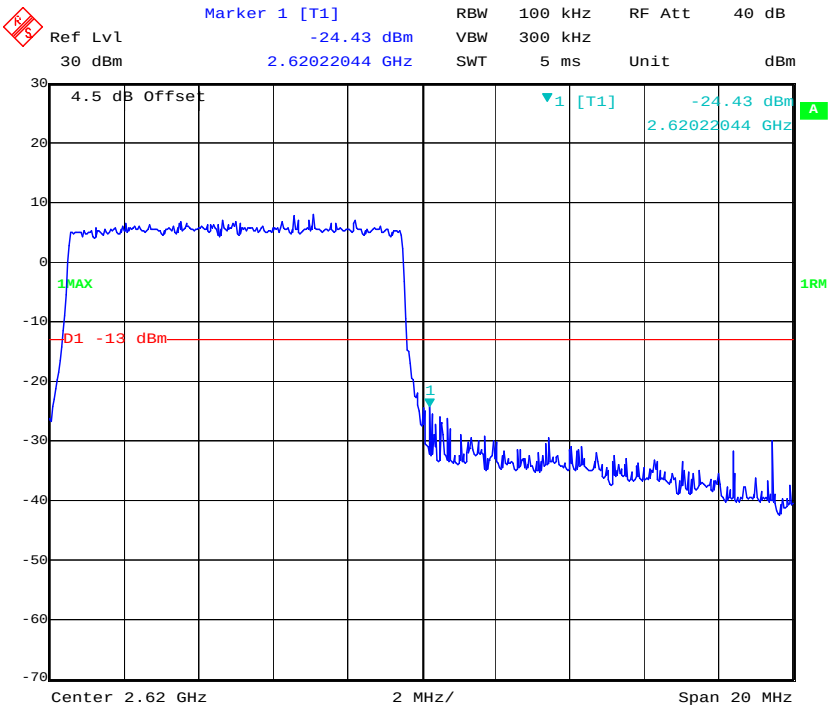


16QAM_10MHz_ 50 RB_ Left



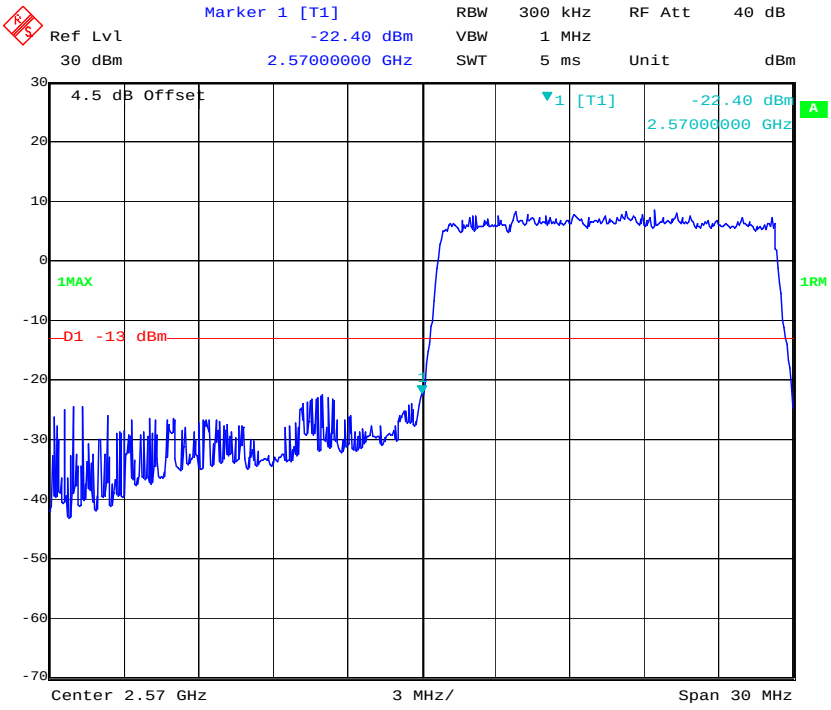
Date: 20.JUN.2019 20:09:19

16QAM_10MHz_ 50 RB_ Right



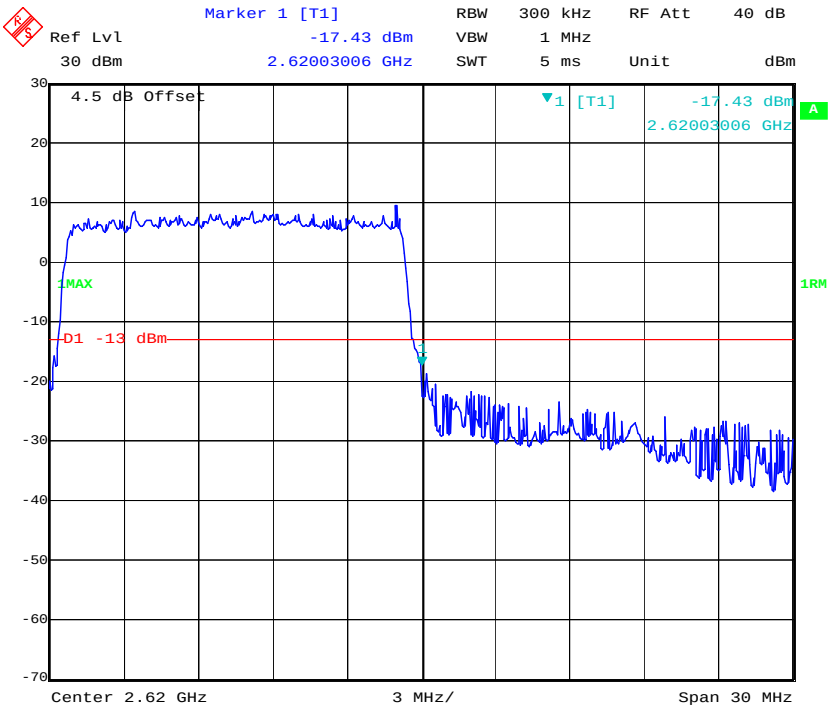
Date: 20.JUN.2019 20:10:37

16QAM_15MHz_ 75 RB_ Left



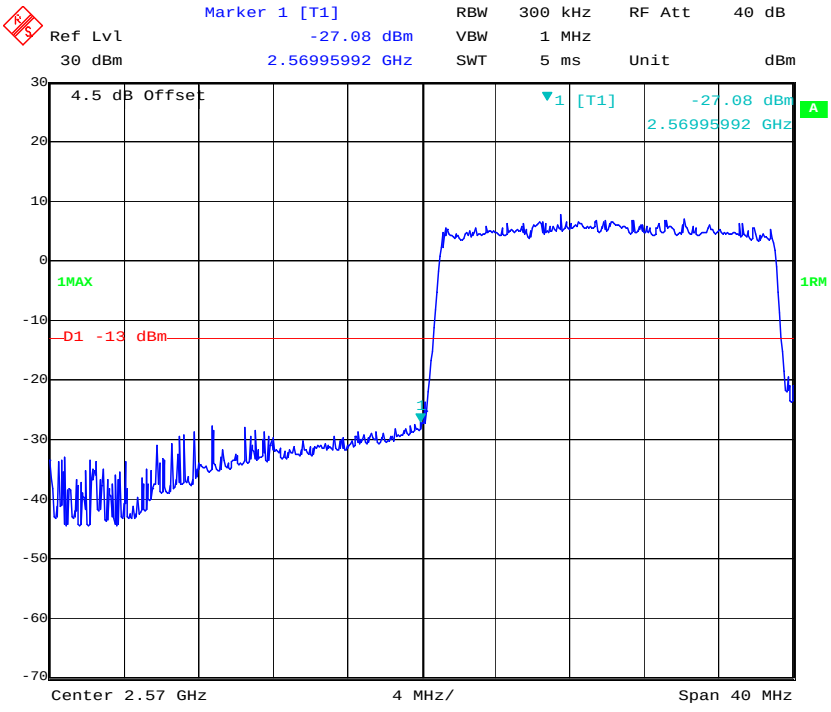
Date: 20.JUN.2019 20:13:45

16QAM_15MHz_ 75 RB_ Right



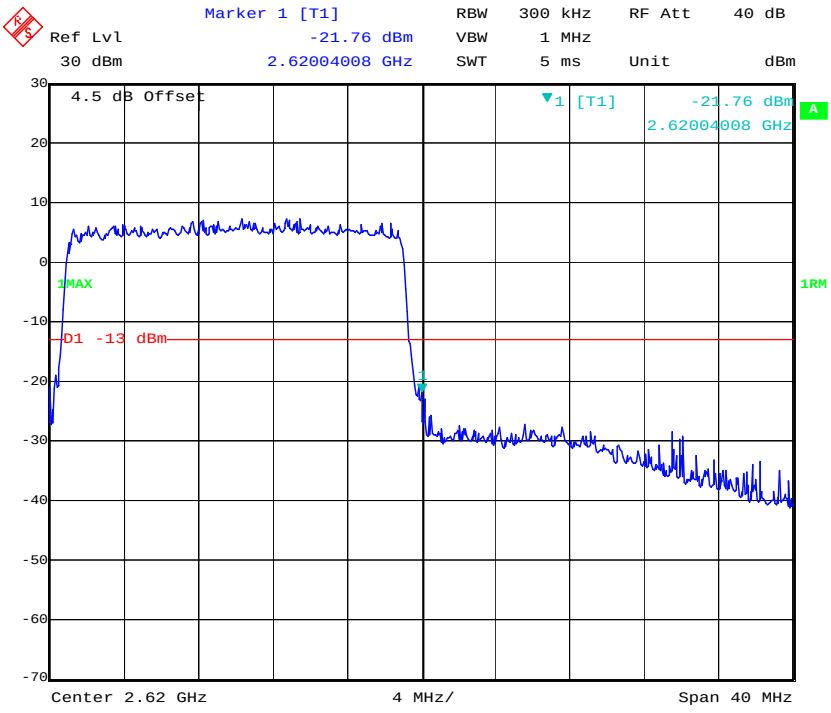
Date: 20.JUN.2019 20:15:26

16QAM_20MHz_ FULL RB_ Left



Date: 20.JUN.2019 20:20:14

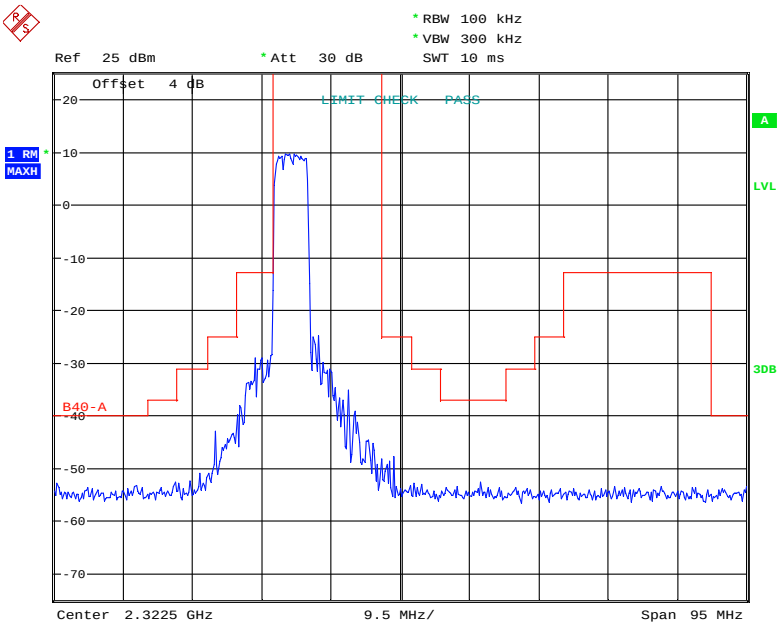
16QAM_20MHz_ FULL RB_ Right



Date: 20.JUN.2019 20:21:39

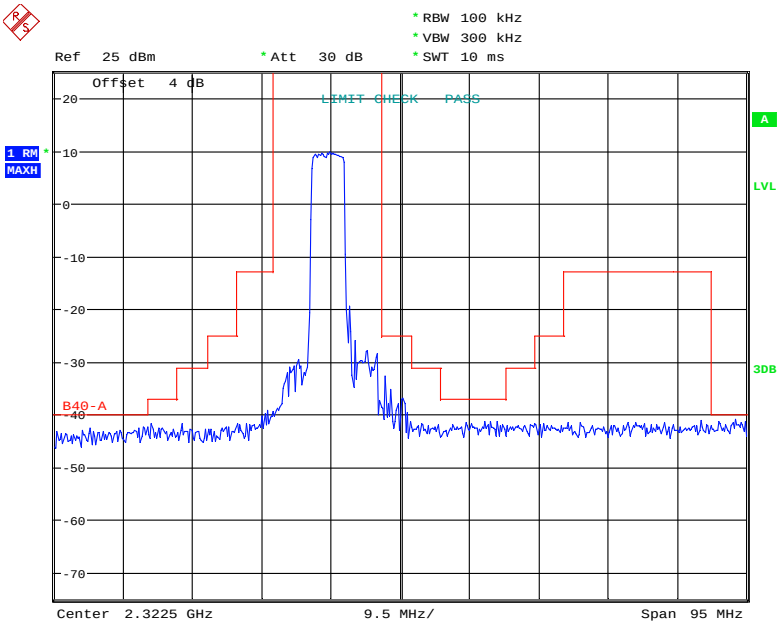
LTE Band 40 2305-2315 MHz

QPSK_5MHz_ 25 RB_ Left



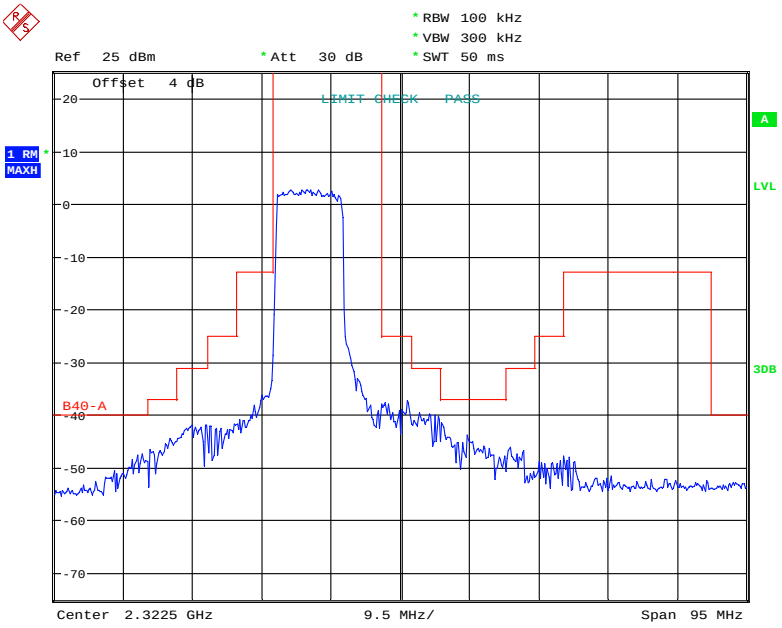
Date: 31.JUL.2019 15:14:39

QPSK_5MHz_ 25 RB_ Right



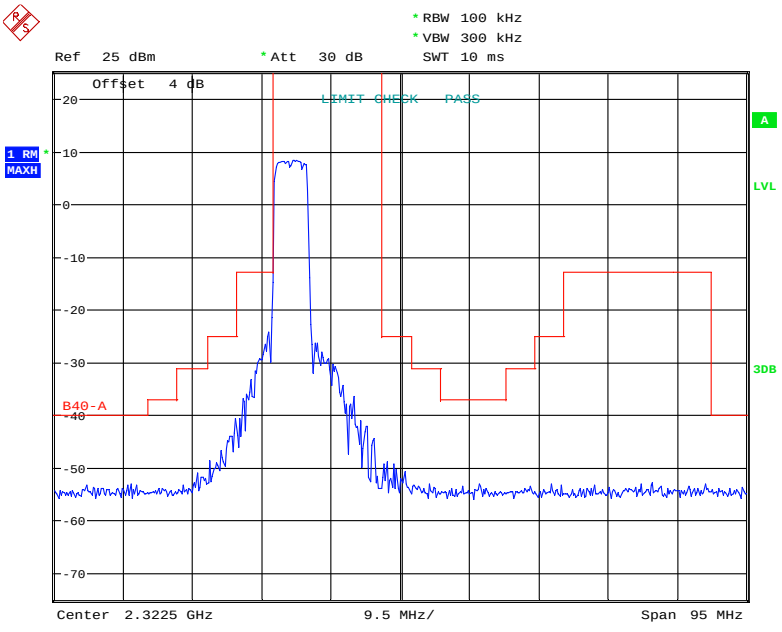
Date: 31.JUL.2019 15:15:07

QPSK_10MHz_ 50 RB



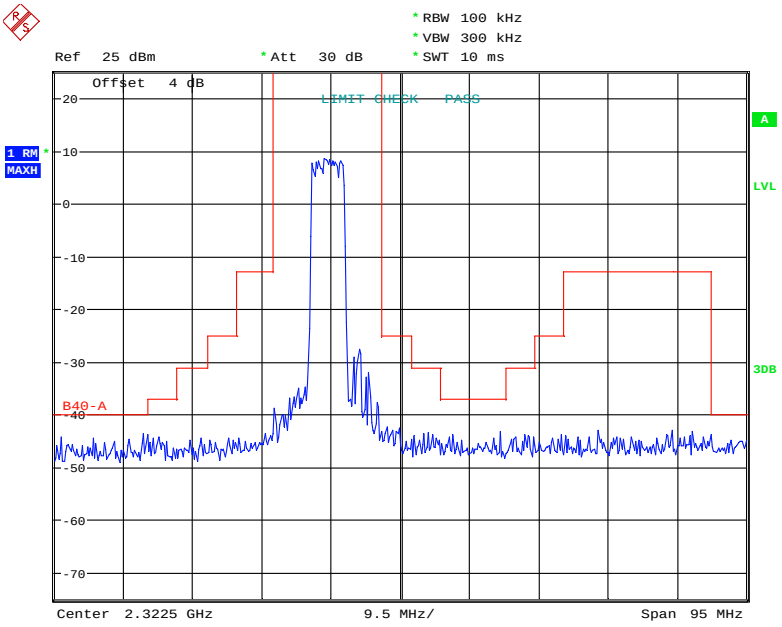
Date: 31.JUL.2019 15:16:46

16QAM _5MHz_ 25 RB_ Left



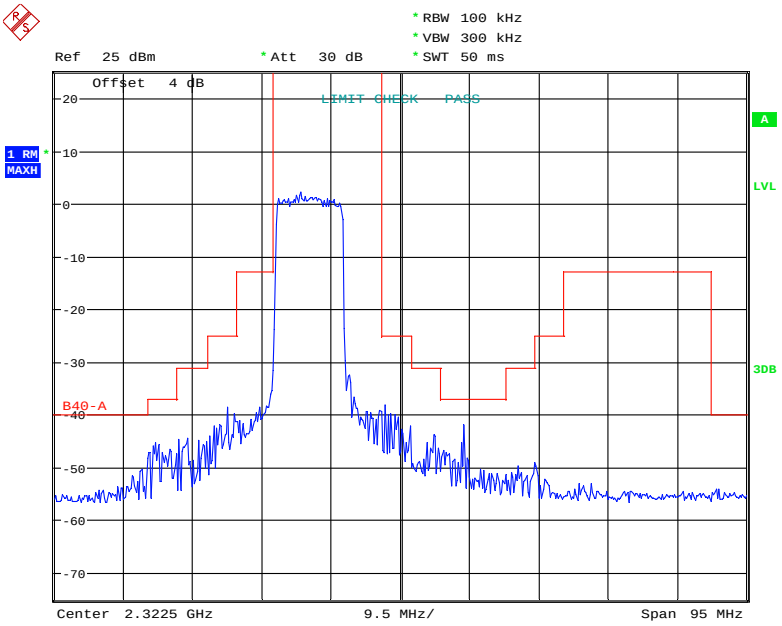
Date: 31.JUL.2019 15:14:21

16QAM _5MHz_ 25 RB_ Right



Date: 31.JUL.2019 15:15:34

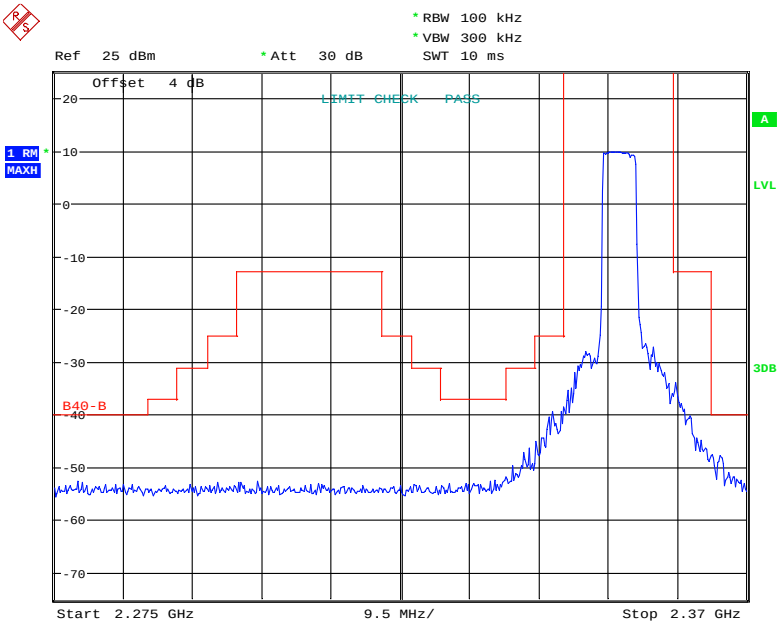
16QAM_10MHz_ 50 RB



Date: 31.JUL.2019 15:17:27

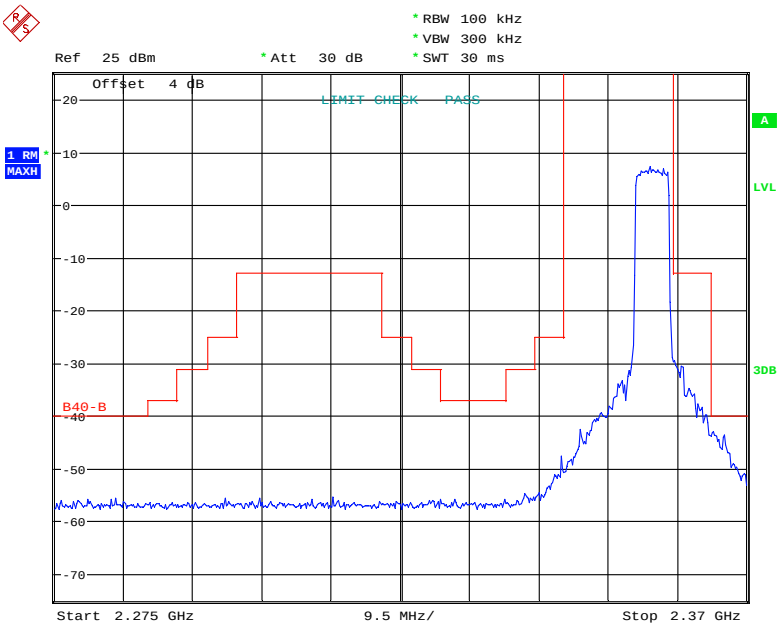
LTE Band 40 2305-2315 MHz

QPSK_5MHz_ 25 RB_ Left



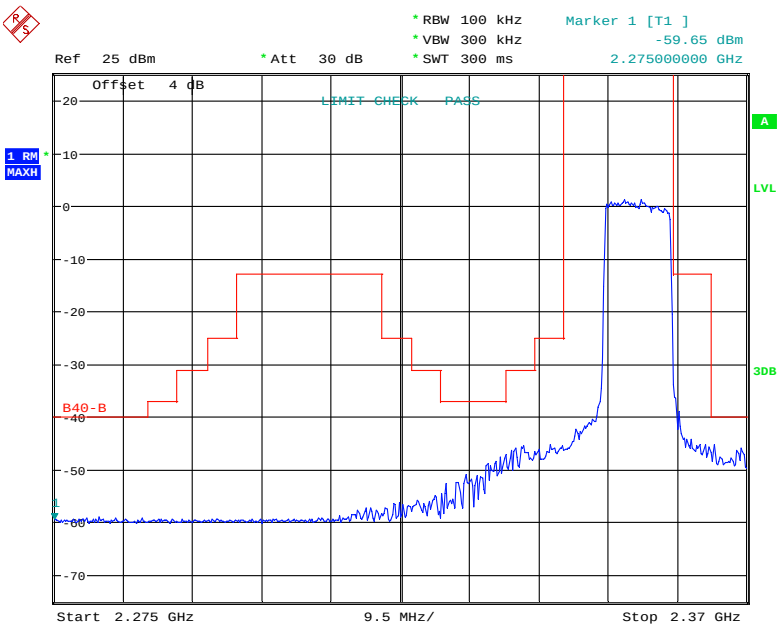
Date: 31.JUL.2019 15:11:02

QPSK_5MHz_ 25 RB_ Right



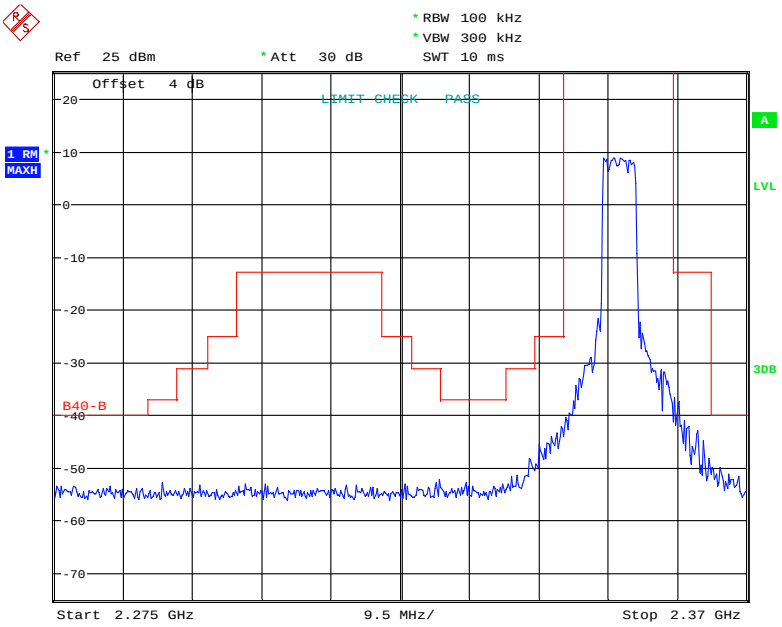
Date: 31.JUL.2019 15:12:11

QPSK_10MHz_ 50 RB



Date: 31.JUL.2019 15:02:32

16QAM _5MHz_ 25 RB_ Left



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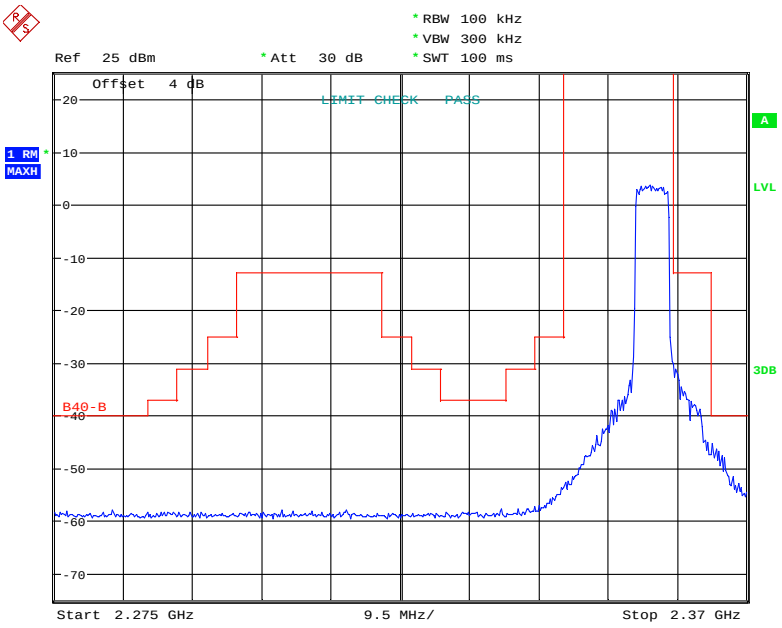
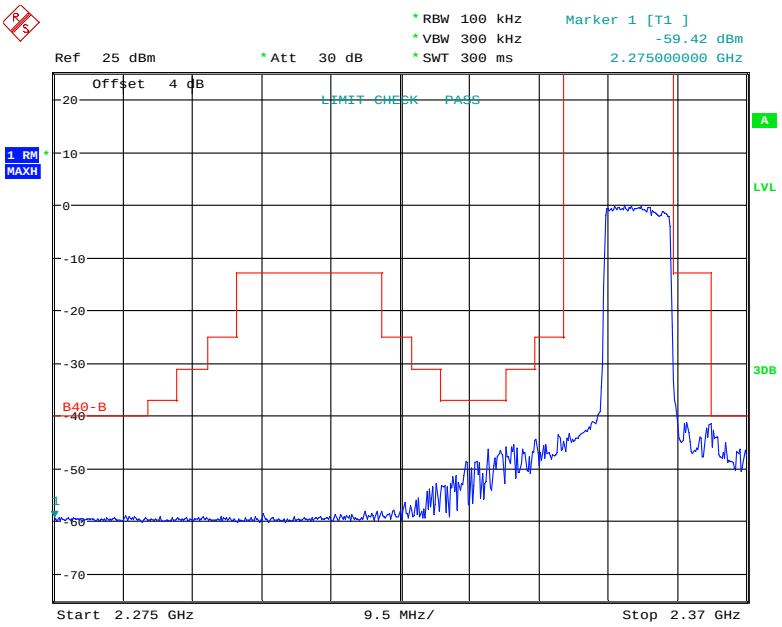
16QAM _5MHz_ 25 RB_ Right



Date: 31.JUL.2019 15:13:16

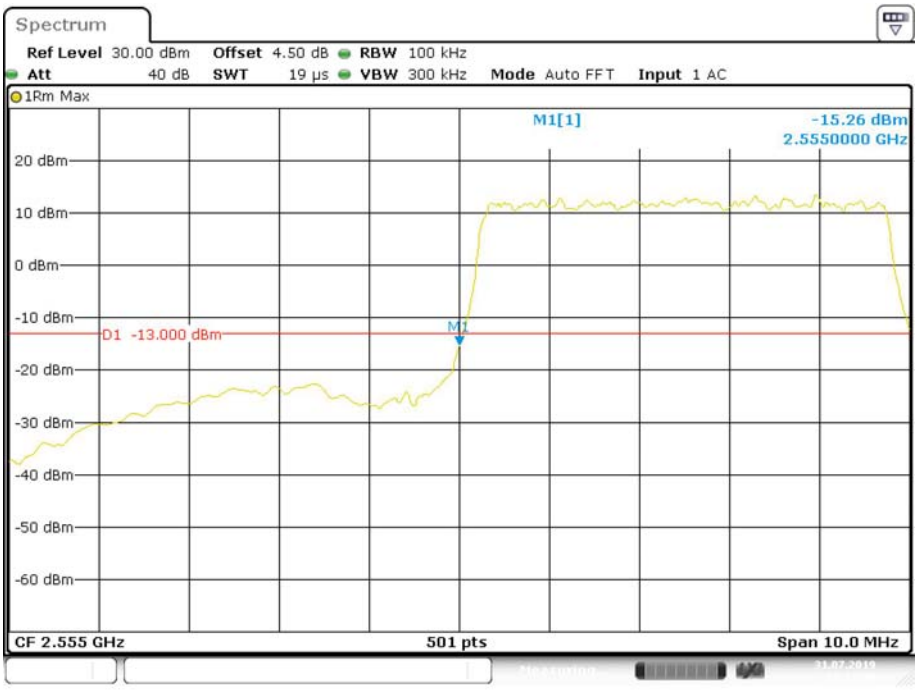
16QAM_10MHz_ 50 RB



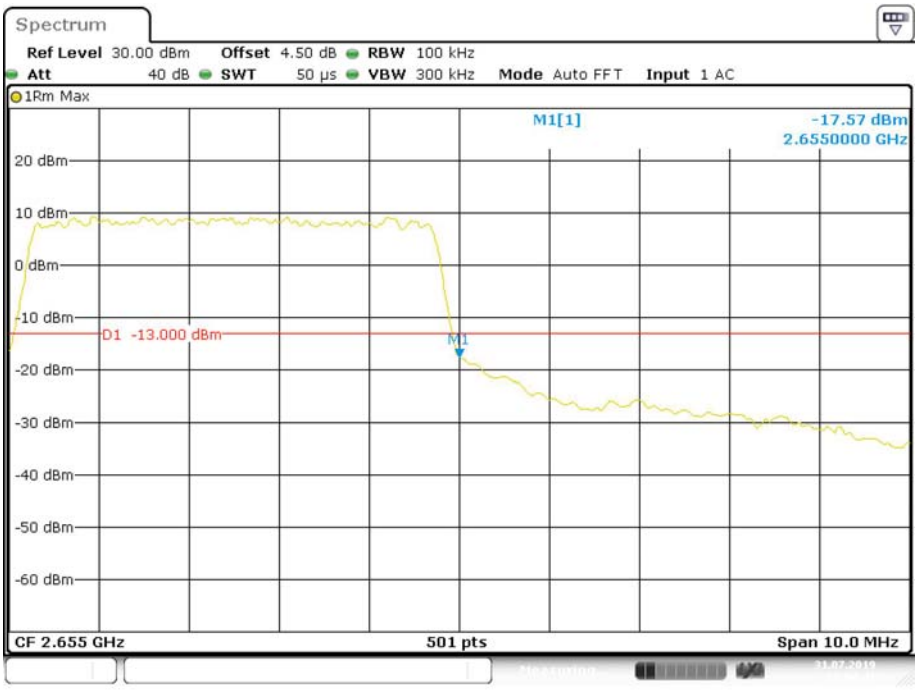
Date: 31.JUL.2019 15:03:27

LTE Band 41

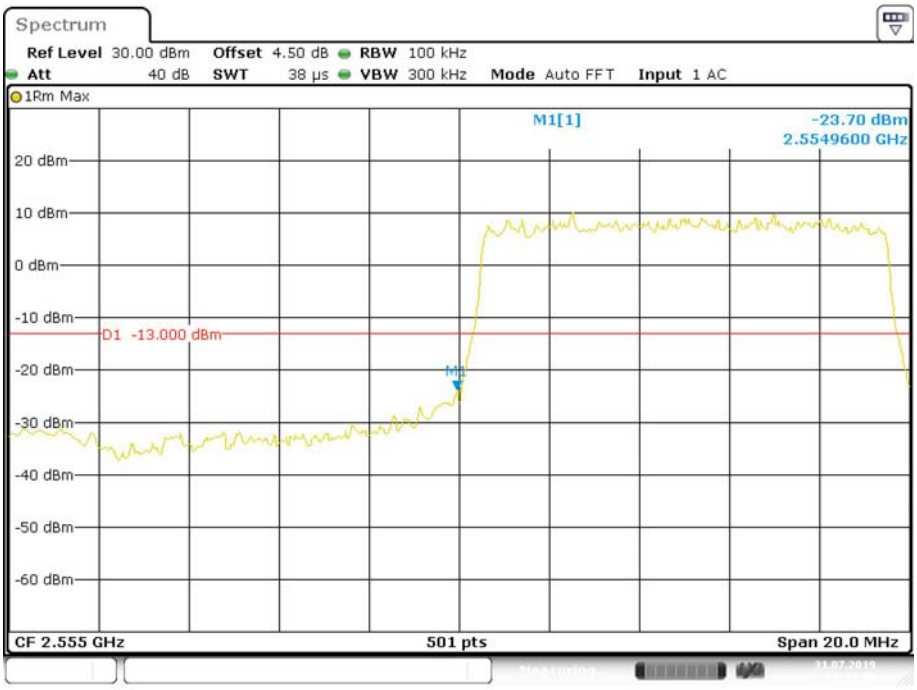
QPSK_5MHz_ 25 RB_ Left



QPSK_5MHz_ 25 RB_ Right

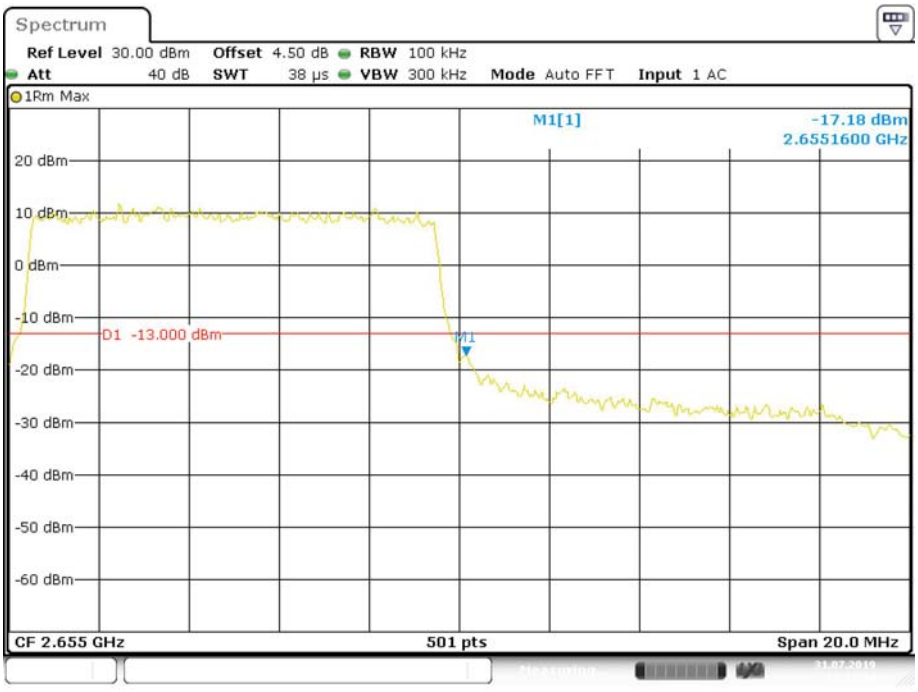


QPSK_10MHz_ 50 RB_ Left



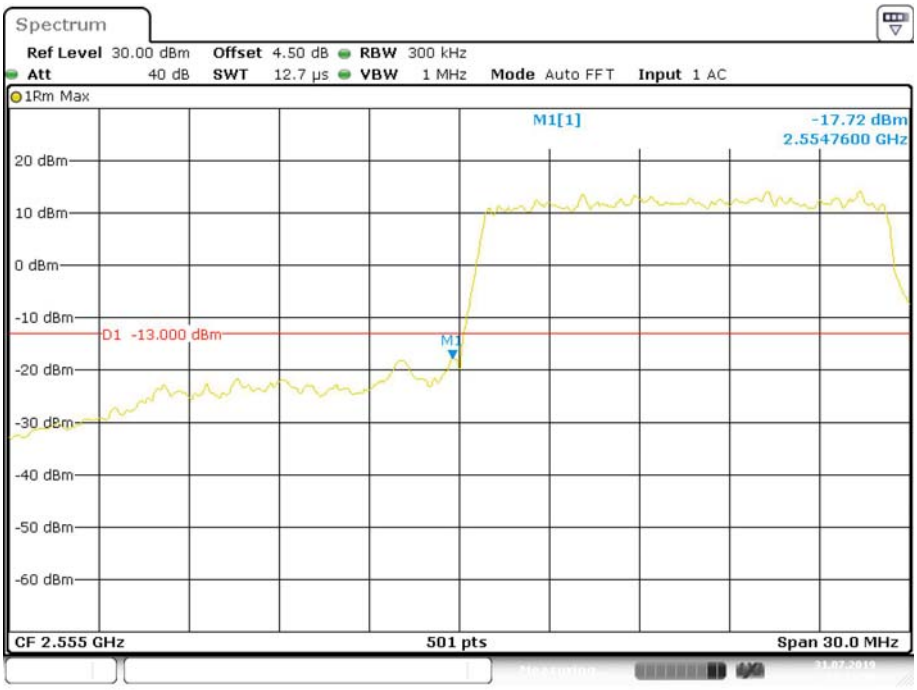
Date: 31.JUL.2019 22:15:09

QPSK_10MHz_ 50 RB_ Right

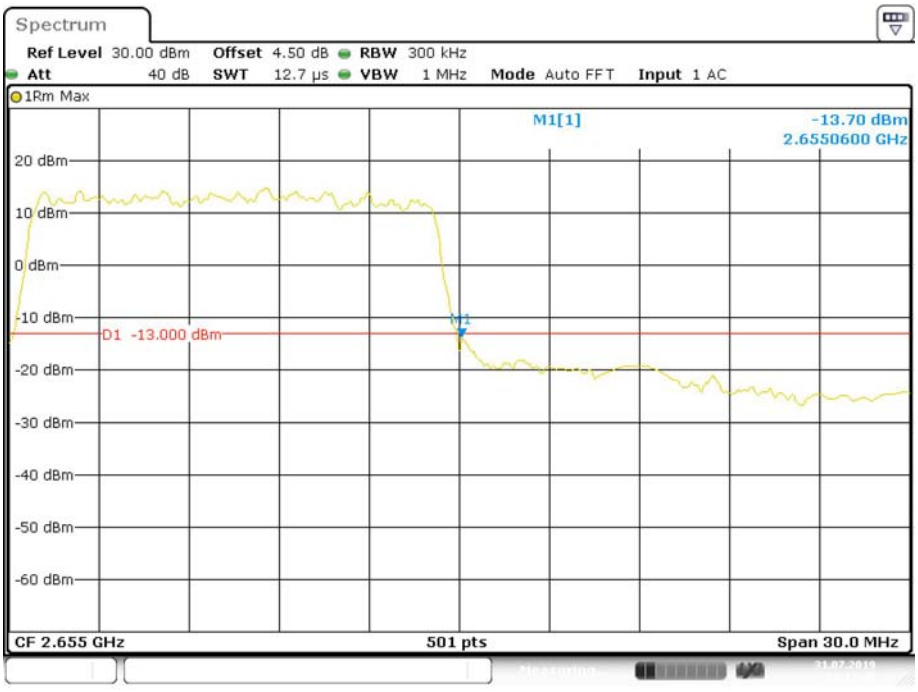


Date: 31.JUL.2019 22:15:54

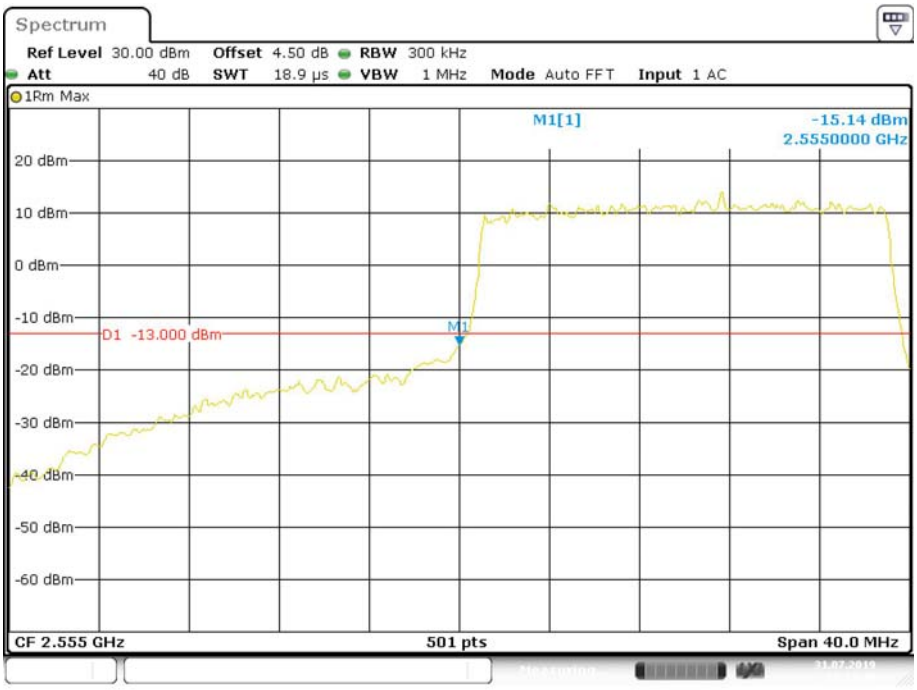
QPSK_15MHz_ 75 RB_ Left



QPSK_15MHz_ 75 RB_ Right

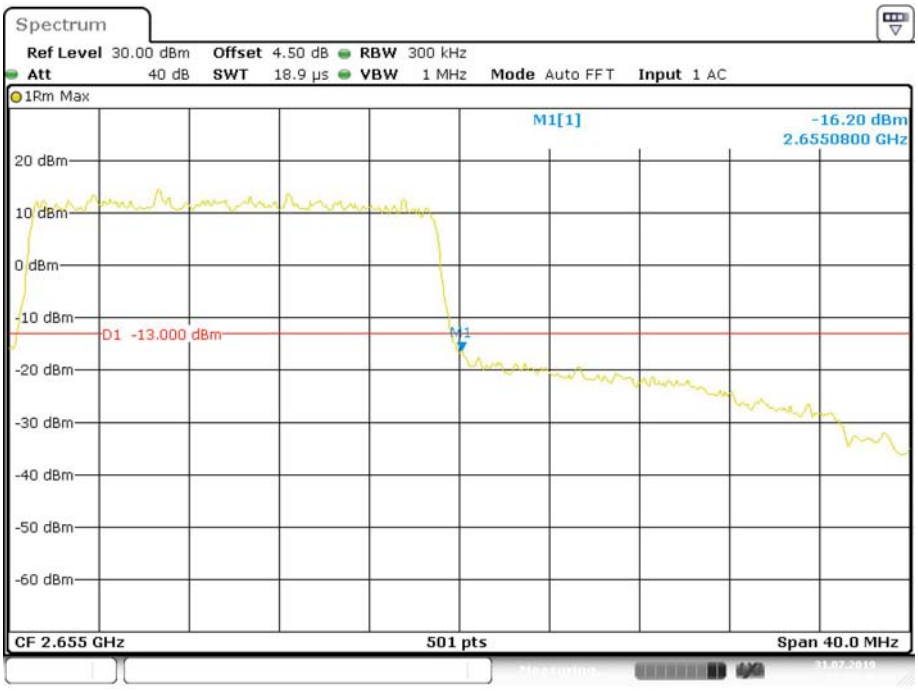


QPSK_20MHz_ FULL RB_ Left



Date: 31.JUL.2019 22:18:43

QPSK_20MHz_ FULL RB_ Right



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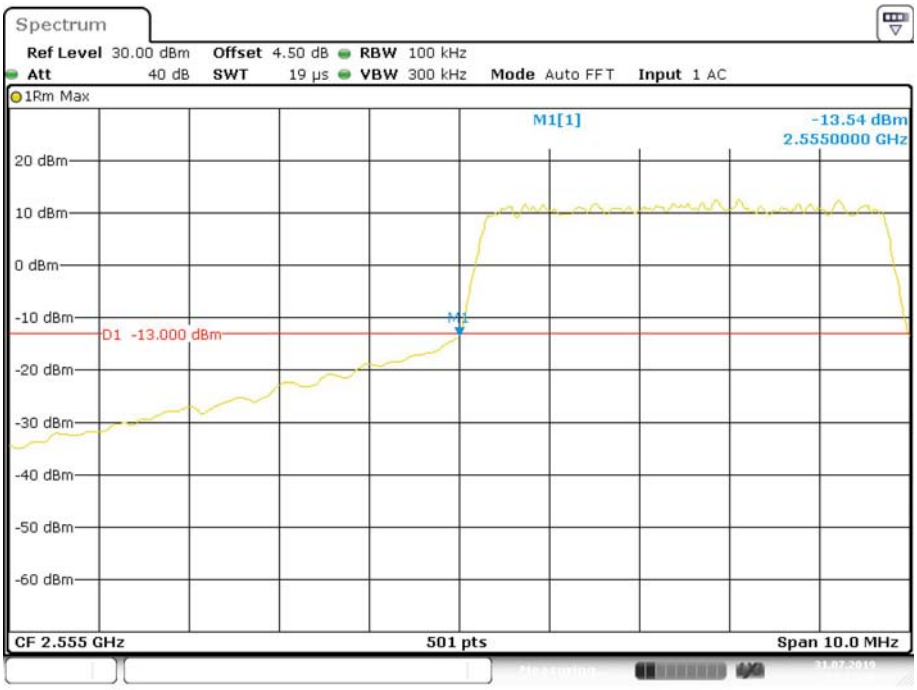
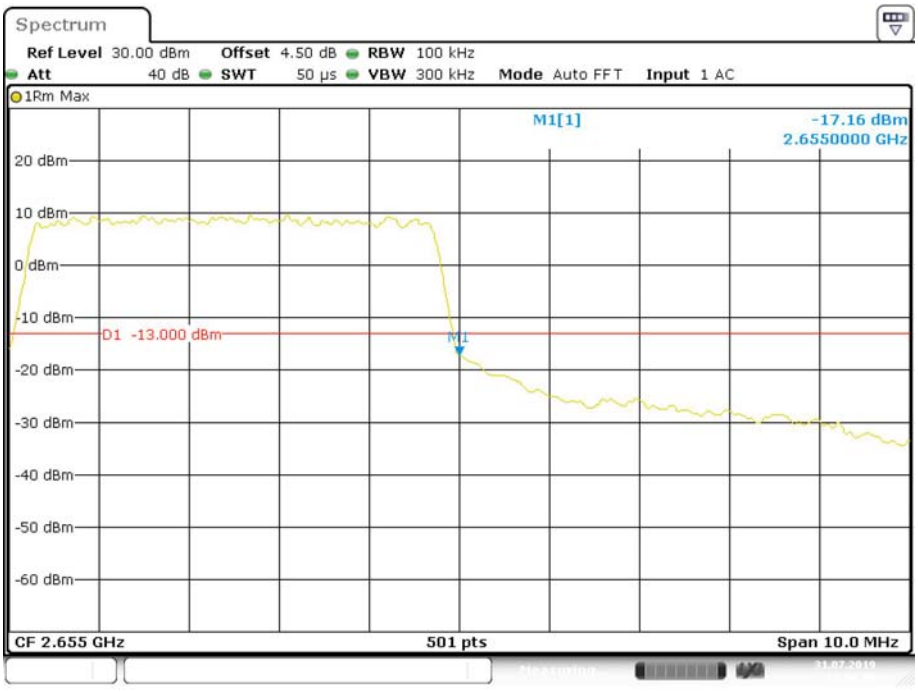
16QAM_5MHz_ 25 RB_ Left



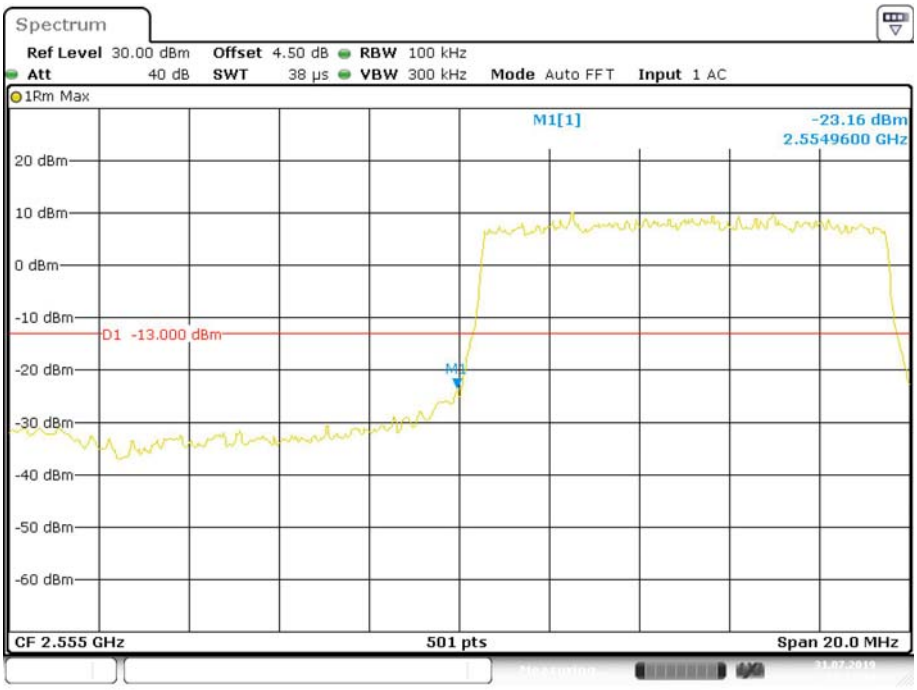
Date: 31.JUL.2019 22:12:56

16QAM_5MHz_ 25 RB_ Right



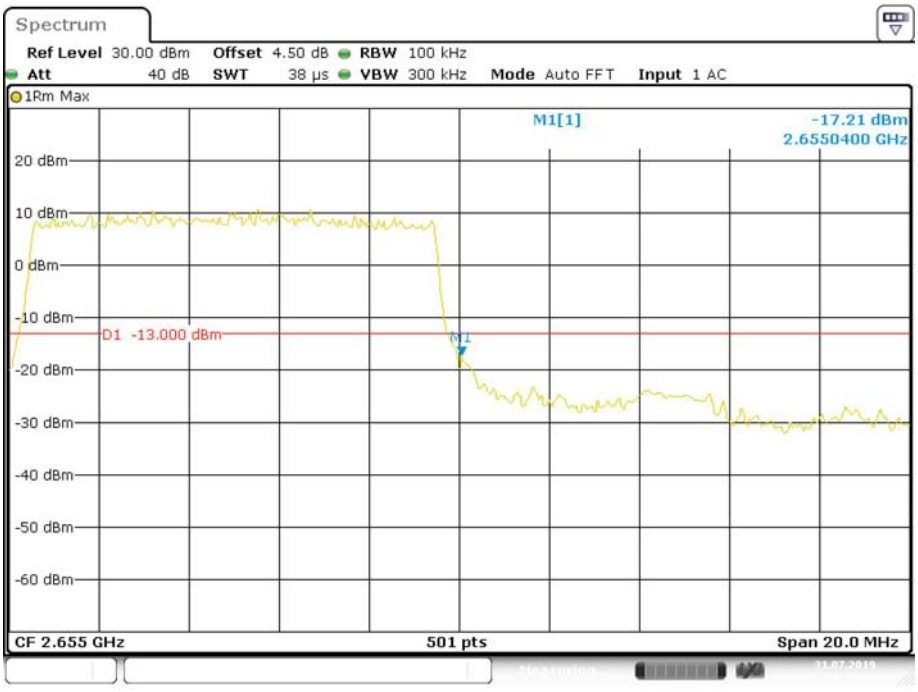
Date: 31.JUL.2019 23:04:00

16QAM_10MHz_ 50 RB_ Left



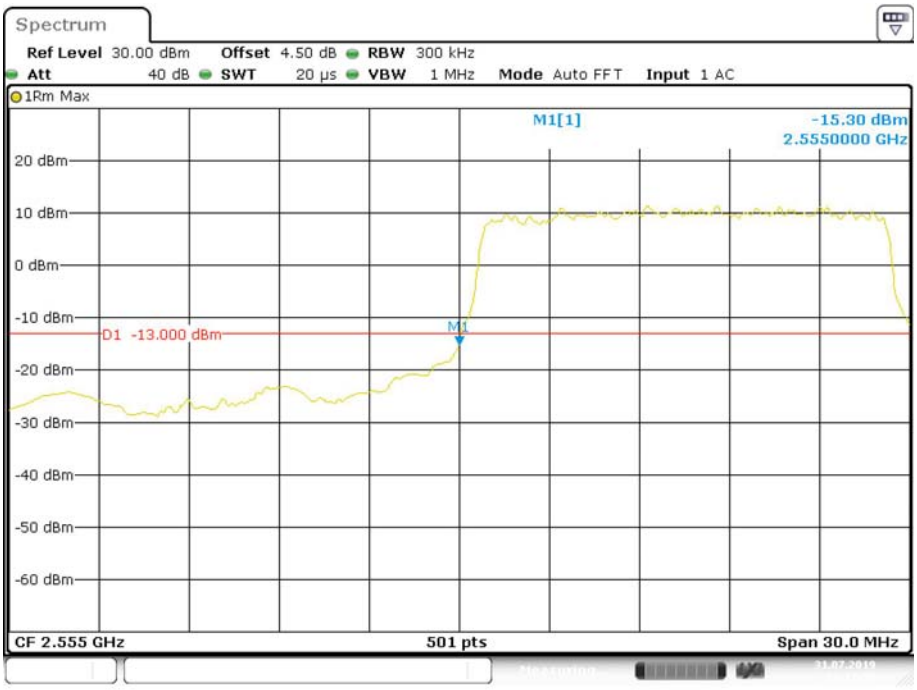
Date: 31.JUL.2019 22:15:34

16QAM_10MHz_ 50 RB_ Right



Date: 31.JUL.2019 22:16:16

16QAM_15MHz_ 75 RB_ Left



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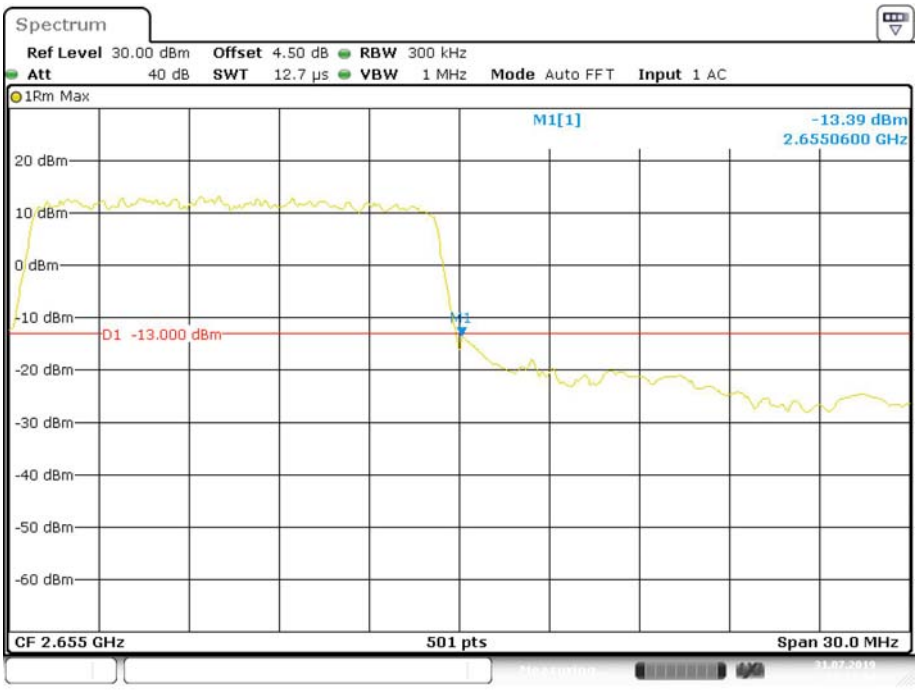
16QAM_15MHz_ 75 RB_ Right



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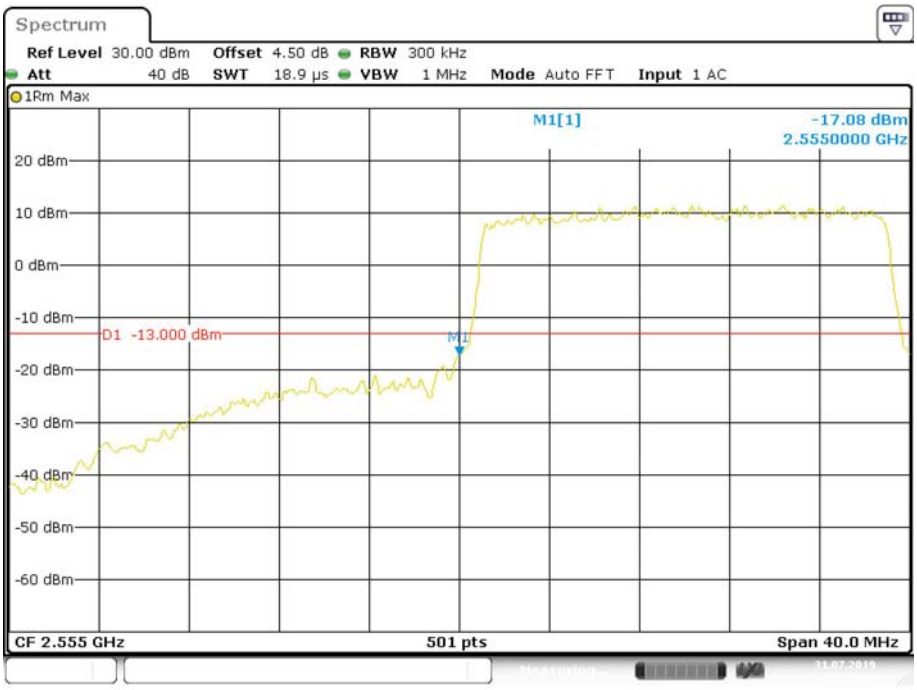
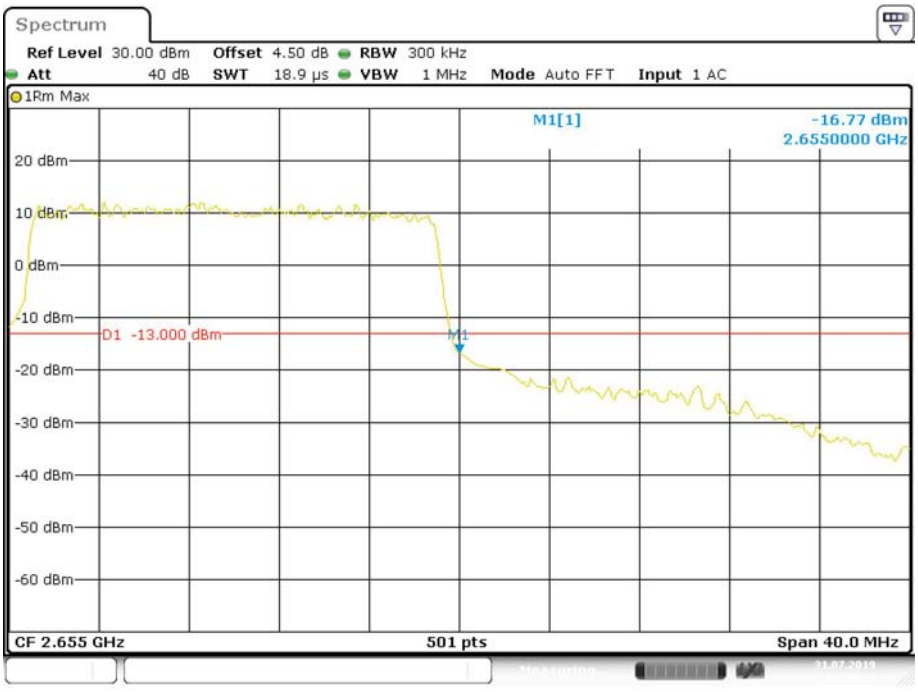
16QAM_20MHz_ FULL RB_ Left



16QAM_20MHz_ FULL RB_ Right



FCC §2.1055, §22.355 & §24.235 & §27.54& §90.213 - FREQUENCY STABILITY

Applicable Standard

FCC § 2.1055 (a), § 2.1055 (d), §22.355, §24.235, §27.54, §90.213

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile > 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

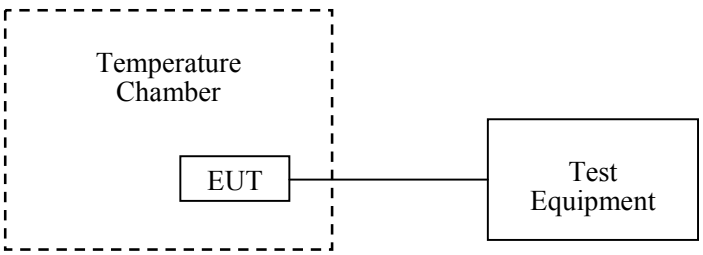
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external AC 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 AC 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 AC 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
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2018-08-03	2019-08-03
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	/
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	/
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	Each time	/
R&S	Wideband Radio Communication Tester	CMW500	147473	2018-08-03	2019-08-03
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2019-03-26	2020-03-26
UNI-T	Multimeter	UT39A	M130199938	2018-07-24	2019-07-24
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:	28.1°C~28.9°C
Relative Humidity:	51 %~55 %
ATM Pressure:	100.3 kPa~100.5 kPa

** The testing was performed by Blake Yang on 2019-06-18~2019-06-20.*

GPRS, Middle Channel, f_c = 836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**FCC Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.85	7	0.00837	2.5
-20		4	0.00478	
-10		1	0.00120	
0		-2	-0.00239	
10		8	0.00956	
20		7	0.00837	
30		6	0.00717	
40		6	0.00717	
50		4	0.00478	
20	4.4	1	0.00120	
20	3.6	-3	-0.00359	

EGPRS, Middle Channel, f_c = 836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**FCC Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.85	-2	-0.00239	2.5
-20		-4	-0.00478	
-10		1	0.00120	
0		7	0.00837	
10		5	0.00598	
20		4	0.00478	
30		2	0.00239	
40		4	0.00478	
50		-2	-0.00239	
20	4.4	1	0.00120	
20	3.6	0	0.00000	

GPRS1900, Middle Channel, f_c = 1880.0 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.85	-4	-0.00213	Pass
-20		3	0.00160	
-10		0	0.00000	
0		-1	-0.00053	
10		2	0.00106	
20		3	0.00160	
30		6	0.00319	
40		3	0.00160	
50		7	0.00372	
20	4.4	-1	-0.00053	
20	3.6	4	0.00213	

EGPRS1900, Middle Channel, f_c = 1880.0 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.85	3	0.00160	Pass
-20		1	0.00053	
-10		-2	-0.00106	
0		6	0.00319	
10		4	0.00213	
20		4	0.00213	
30		1	0.00053	
40		6	0.00319	
50		3	0.00160	
20	4.4	5	0.00266	
20	3.6	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	3.85	7	0.00372	Pass
-20		4	0.00213	
-10		3	0.00160	
0		8	0.00426	
10		7	0.00372	
20		-2	-0.00106	
30		3	0.00160	
40		6	0.00319	
50		1	0.00053	
20	4.4	4	0.00213	
20	3.6	8	0.00426	

WCDMA Band IV: R99

Temperature	**Voltage**	**Test Result (MHz)**		**Limit (MHz)**	
℃	**V_{DC}**	**F_L**	**F_H**	**F_L**	**F_H**
-30	3.85	1710.57145	1754.5625	1710	1755
-20		1710.57165	1754.5677	1710	1755
-10		1710.57187	1754.5682	1710	1755
0		1710.57123	1754.5677	1710	1755
10		1710.57163	1754.5625	1710	1755
20		1710.57188	1754.5641	1710	1755
30		1710.57124	1754.5662	1710	1755
40		1710.57141	1754.5631	1710	1755
50		1710.57138	1754.5674	1710	1755
20	4.4	1710.57166	1754.5687	1710	1755
20	3.6	1710.57154	1754.5677	1710	1755

WCDMA Band Ⅴ: R99

Middle Channel, f_c =836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.85	-3	-0.00359	2.5
-20		6	0.00717	
-10		4	0.00478	
0		-2	-0.00239	
10		5	0.00598	
20		7	0.00837	
30		8	0.00956	
40		-6	-0.00717	
50		2	0.00239	
20	4.4	4	0.00478	
20	3.6	3	0.00359	

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	3.85	4	0.0021	Pass
-20		7	0.0037	
-10		8	0.0043	
0		8	0.0043	
10		6	0.0032	
20		9	0.0048	
30		10	0.0053	
40		5	0.0027	
50		5	0.0027	
20	4.4	9	0.0048	
20	3.6	8	0.0043	

16QAM, Channel Bandwidth:10MHz Middle Channel, f_c =1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.85	7	0.0037	Pass
-20		6	0.0032	
-10		4	0.0021	
0		4	0.0021	
10		5	0.0027	
20		8	0.0043	
30		7	0.0037	
40		6	0.0032	
50		5	0.0027	
20	4.4	4	0.0021	
20	3.6	7	0.0037	

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	3.85	1710.570712	1754.509462	1710	1755
-20		1710.570786	1754.509262	1710	1755
-10		1710.570970	1754.508694	1710	1755
0		1710.570756	1754.508611	1710	1755
10		1710.571103	1754.508802	1710	1755
20		1710.571140	1754.509020	1710	1755
30		1710.571550	1754.509509	1710	1755
40		1710.571390	1754.508920	1710	1755
50		1710.570836	1754.508552	1710	1755
20	4.4	1710.571504	1754.508638	1710	1755
20	3.6	1710.570964	1754.509288	1710	1755

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	1710.571358	1754.509344	1710	1755
-20		1710.571005	1754.509444	1710	1755
-10		1710.571456	1754.508568	1710	1755
0		1710.570917	1754.509144	1710	1755
10		1710.570890	1754.509062	1710	1755
20		1710.571140	1754.509020	1710	1755
30		1710.571351	1754.509007	1710	1755
40		1710.571101	1754.509405	1710	1755
50		1710.570860	1754.509323	1710	1755
20	4.4	1710.571105	1754.508936	1710	1755
20	3.6	1710.570704	1754.509474	1710	1755

LTE Band 5:

Middle Channel, f_c = 836.5 MHz, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.85	-5	-0.006	2.5
-20		-6	-0.0072	
-10		-8	-0.0096	
0		-4	-0.0048	
10		-9	-0.0108	
20		-8	-0.0096	
30		-7	-0.0084	
40		-6	-0.0072	
50		-5	-0.006	
20	4.4	-3	-0.0036	
20	3.6	-4	-0.0048	

Middle Channel, f_c = 836.5 MHz, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.85	-5	-0.006	2.5
-20		-8	-0.0096	
-10		-9	-0.0108	
0		-7	-0.0084	
10		-3	-0.0036	
20		-6	-0.0072	
30		-4	-0.0048	
40		-4	-0.0048	
50		-7	-0.0084	
20	4.4	-8	-0.0096	
20	3.6	-6	-0.0072	

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	3.85	2500.530765	2569.508788	2500	2570
-20		2500.531050	2569.508840	2500	2570
-10		2500.530781	2569.508684	2500	2570
0		2500.531031	2569.508961	2500	2570
10		2500.531339	2569.508722	2500	2570
20		2500.531060	2569.509020	2500	2570
30		2500.531311	2569.508785	2500	2570
40		2500.531442	2569.508592	2500	2570
50		2500.530664	2569.509054	2500	2570
20	4.4	2500.530778	2569.508640	2500	2570
20	3.6	2500.531037	2569.509096	2500	2570

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2500.570824	2569.509321	2500	2570
-20		2500.571457	2569.508845	2500	2570
-10		2500.571171	2569.508837	2500	2570
0		2500.571454	2569.509365	2500	2570
10		2500.570880	2569.508717	2500	2570
20		2500.571140	2569.509020	2500	2570
30		2500.571484	2569.508617	2500	2570
40		2500.571177	2569.508737	2500	2570
50		2500.570710	2569.509184	2500	2570
20	4.4	2500.570706	2569.508700	2500	2570
20	3.6	2500.570745	2569.509010	2500	2570

LTE Band 12:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	699.571001	715.509214	699	716
-20		699.571418	715.508568	699	716
-10		699.570798	715.509257	699	716
0		699.570824	715.509418	699	716
10		699.571004	715.508833	699	716
20		699.571142	715.509018	699	716
30		699.571094	715.509263	699	716
40		699.571066	715.508651	699	716
50		699.570659	715.509039	699	716
20	4.4	699.571126	715.508640	699	716
20	3.6	699.571618	715.508649	699	716

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	699.570854	715.468613	699	716
-20		699.570927	715.468499	699	716
-10		699.570862	715.468576	699	716
0		699.570729	715.469107	699	716
10		699.571210	715.468512	699	716
20		699.571142	715.468938	699	716
30		699.570749	715.469217	699	716
40		699.571083	715.469230	699	716
50		699.571260	715.468849	699	716
20	4.4	699.571520	715.469283	699	716
20	3.6	699.571208	715.469053	699	716

LTE Band 13:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	777.531347	786.508860	777	787
-20		777.531442	786.509490	777	787
-10		777.531442	786.508570	777	787
0		777.531241	786.508532	777	787
10		777.530635	786.508910	777	787
20		777.531062	786.509018	777	787
30		777.531551	786.509501	777	787
40		777.531503	786.508563	777	787
50		777.530999	786.508971	777	787
20	4.4	777.531386	786.508946	777	787
20	3.6	777.530587	786.508573	777	787

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	777.571185	786.509506	777	787
-20		777.571519	786.508703	777	787
-10		777.570827	786.509497	777	787
0		777.571281	786.509092	777	787
10		777.570654	786.509224	777	787
20		777.571142	786.509018	777	787
30		777.571463	786.508747	777	787
40		777.570832	786.509209	777	787
50		777.570657	786.509427	777	787
20	4.4	777.570934	786.508773	777	787
20	3.6	777.571257	786.508912	777	787

LTE Band 17:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	704.531439	715.509395	704	716
-20		704.531111	715.509008	704	716
-10		704.530724	715.508675	704	716
0		704.531224	715.508595	704	716
10		704.531040	715.509430	704	716
20		704.531062	715.509018	704	716
30		704.530793	715.508770	704	716
40		704.531136	715.508683	704	716
50		704.530694	715.509164	704	716
20	4.4	704.531202	715.508816	704	716
20	3.6	704.530973	715.509288	704	716

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	704.571357	715.508872	704	716
-20		704.571177	715.508741	704	716
-10		704.571282	715.508830	704	716
0		704.571341	715.509403	704	716
10		704.571406	715.509446	704	716
20		704.571142	715.509018	704	716
30		704.571259	715.509116	704	716
40		704.571330	715.508907	704	716
50		704.571618	715.509033	704	716
20	4.4	704.571633	715.509403	704	716
20	3.6	704.571612	715.508990	704	716

LTE Band 26:

Middle Channel, f_c = 831.5 MHz, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.85	-0.56	-0.0007	2.5
-20		-0.36	-0.0004	
-10		0.03	0.0000	
0		0.53	0.0006	
10		-0.69	-0.0008	
20		-0.34	-0.0004	
30		-0.36	-0.0004	
40		-1.29	-0.0016	
50		-0.97	-0.0012	
20	4.4	-0.66	-0.0008	
20	3.6	-0.83	-0.0010	

Middle Channel, f_c = 831.5 MHz, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.85	-0.44	-0.0005	2.5
-20		-0.83	-0.0010	
-10		-1.06	-0.0013	
0		-0.03	0.0000	
10		-0.92	-0.0011	
20		-0.53	-0.0006	
30		-0.36	-0.0004	
40		-0.33	-0.0004	
50		-0.82	-0.0010	
20	4.4	-0.90	-0.0011	
20	3.6	0.07	0.0001	

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	3.85	2570.571332	2619.509425	2570	2620
-20		2570.570903	2619.508605	2570	2620
-10		2570.570999	2619.508857	2570	2620
0		2570.570737	2619.509272	2570	2620
10		2570.571350	2619.509005	2570	2620
20		2570.571140	2619.509020	2570	2620
30		2570.570751	2619.509303	2570	2620
40		2570.571359	2619.508923	2570	2620
50		2570.570957	2619.509426	2570	2620
20	4.4	2570.570760	2619.508827	2570	2620
20	3.6	2570.571285	2619.508677	2570	2620

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2570.570992	2619.509265	2570	2620
-20		2570.571512	2619.509381	2570	2620
-10		2570.571235	2619.508539	2570	2620
0		2570.571007	2619.509191	2570	2620
10		2570.570750	2619.509091	2570	2620
20		2570.571140	2619.509020	2570	2620
30		2570.571378	2619.509182	2570	2620
40		2570.571570	2619.508699	2570	2620
50		2570.571432	2619.509360	2570	2620
20	4.4	2570.570911	2619.508877	2570	2620
20	3.6	2570.570864	2619.509054	2570	2620

LTE Band 40 2305-2315 MHz:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2305.490000	2314.470000	2305	2315
-20		2305.530000	2314.490000	2305	2315
-10		2305.540000	2314.450000	2305	2315
0		2305.470000	2314.500000	2305	2315
10		2305.560000	2314.450000	2305	2315
20		2305.520000	2314.480000	2305	2315
30		2305.530000	2314.460000	2305	2315
40		2305.480000	2314.510000	2305	2315
50		2305.520000	2314.520000	2305	2315
20	4.4	2305.530000	2314.440000	2305	2315
20	3.6	2305.510000	2314.490000	2305	2315

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2305.560000	2314.470000	2305	2315
-20		2305.510000	2314.530000	2305	2315
-10		2305.540000	2314.440000	2305	2315
0		2305.490000	2314.470000	2305	2315
10		2305.480000	2314.510000	2305	2315
20		2305.520000	2314.480000	2305	2315
30		2305.530000	2314.470000	2305	2315
40		2305.560000	2314.500000	2305	2315
50		2305.520000	2314.480000	2305	2315
20	4.4	2305.500000	2314.440000	2305	2315
20	3.6	2305.570000	2314.520000	2305	2315

LTE Band 40 2350-2360 MHz:

QPSK, Channel Bandwidth:10MHz					
Temperature	**Voltage**	**Test Result (MHz)**		**Limit (MHz)**	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2350.490000	2359.510000	2350	2360
-20		2350.530000	2359.450000	2350	2360
-10		2350.560000	2359.430000	2350	2360
0		2350.530000	2359.500000	2350	2360
10		2350.500000	2359.460000	2350	2360
20		2350.520000	2359.480000	2350	2360
30		2350.560000	2359.500000	2350	2360
40		2350.520000	2359.470000	2350	2360
50		2350.480000	2359.500000	2350	2360
20	4.4	2350.510000	2359.500000	2350	2360
20	3.6	2350.530000	2359.440000	2350	2360

16QAM, Channel Bandwidth:10MHz					
Temperature	**Voltage**	**Test Result (MHz)**		**Limit (MHz)**	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2350.470000	2359.520000	2350	2360
-20		2350.540000	2359.470000	2350	2360
-10		2350.550000	2359.510000	2350	2360
0		2350.550000	2359.480000	2350	2360
10		2350.490000	2359.480000	2350	2360
20		2350.520000	2359.480000	2350	2360
30		2350.480000	2359.470000	2350	2360
40		2350.480000	2359.490000	2350	2360
50		2350.560000	2359.460000	2350	2360
20	4.4	2350.540000	2359.510000	2350	2360
20	3.6	2350.570000	2359.480000	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	3.85	2555.488000	2654.442000	2555	2655
-20		2555.480000	2654.485000	2555	2655
-10		2555.547000	2654.415000	2555	2655
0		2555.496000	2654.426000	2555	2655
10		2555.570000	2654.468000	2555	2655
20		2555.529000	2654.451000	2555	2655
30		2555.490000	2654.442000	2555	2655
40		2555.520000	2654.420000	2555	2655
50		2555.505000	2654.449000	2555	2655
20	4.4	2555.516000	2654.495000	2555	2655
20	3.6	2555.558000	2654.457000	2555	2655

16QAM, Channel Bandwidth:10MHz					
Temperature	**Voltage**	**Test Result (MHz)**		**Limit (MHz)**	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2555.565000	2654.403000	2555	2655
-20		2555.566000	2654.446000	2555	2655
-10		2555.488000	2654.453000	2555	2655
0		2555.541000	2654.461000	2555	2655
10		2555.494000	2654.409000	2555	2655
20		2555.529000	2654.451000	2555	2655
30		2555.523000	2654.457000	2555	2655
40		2555.539000	2654.405000	2555	2655
50		2555.509000	2654.495000	2555	2655
20	4.4	2555.565000	2654.470000	2555	2655
20	3.6	2555.498000	2654.401000	2555	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 *******