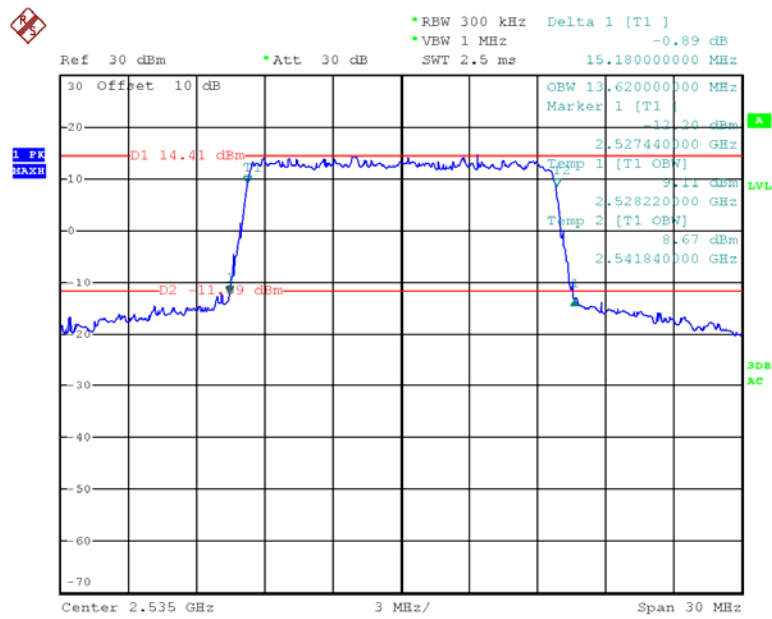
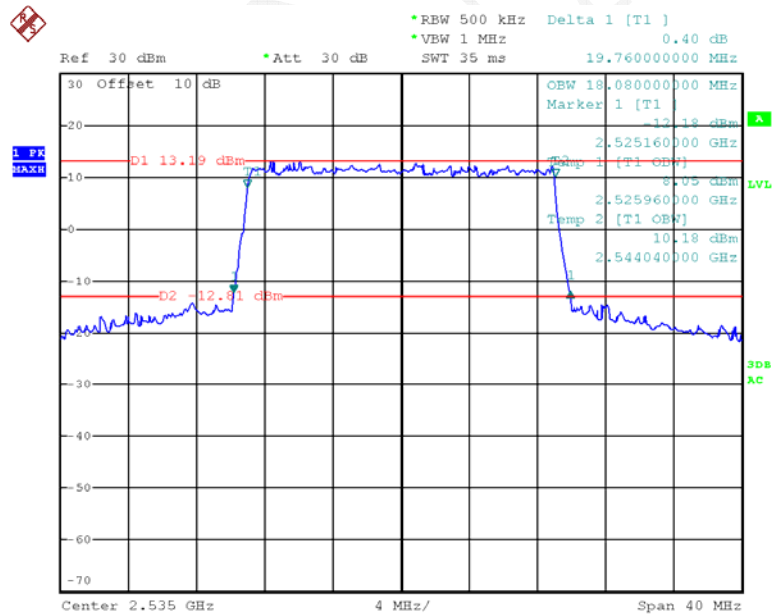


16QAM_15 MHz



Date: 14.JUN.2016 00:16:14

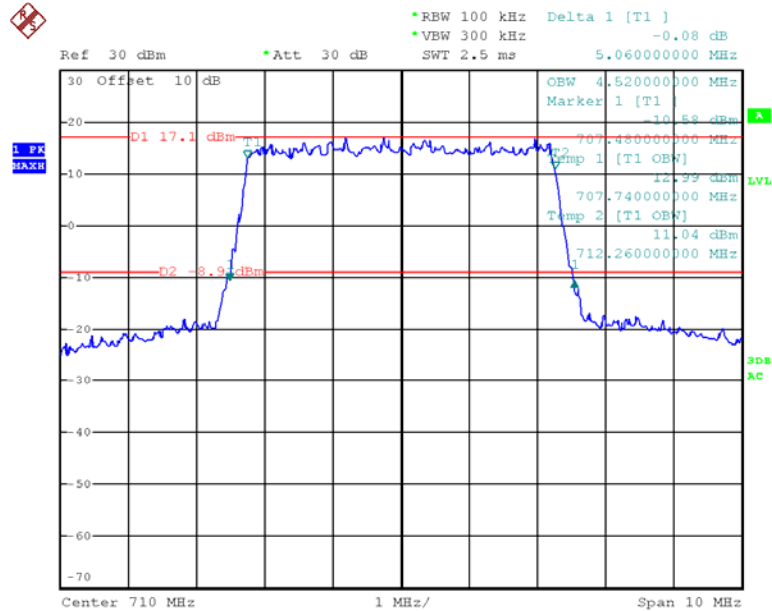
16QAM_20 MHz



Date: 14.JUN.2016 00:17:27

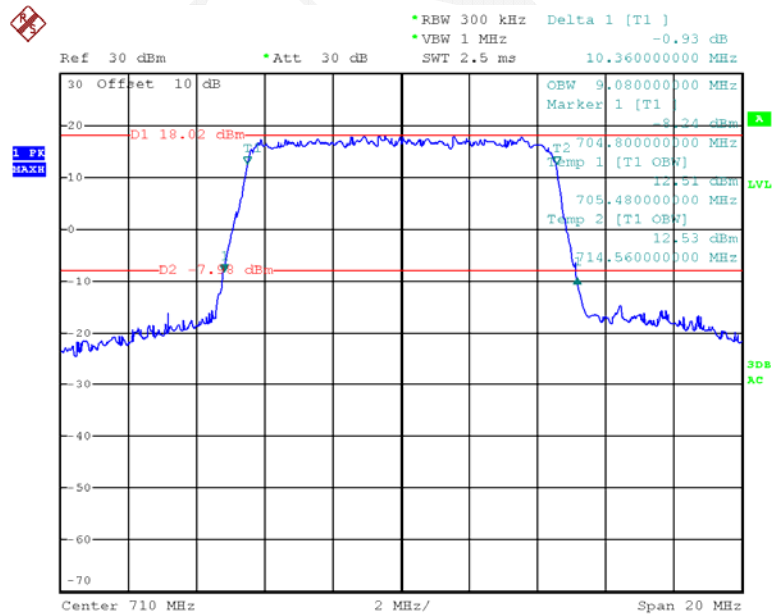
LTE Band 17

QPSK_5 MHz



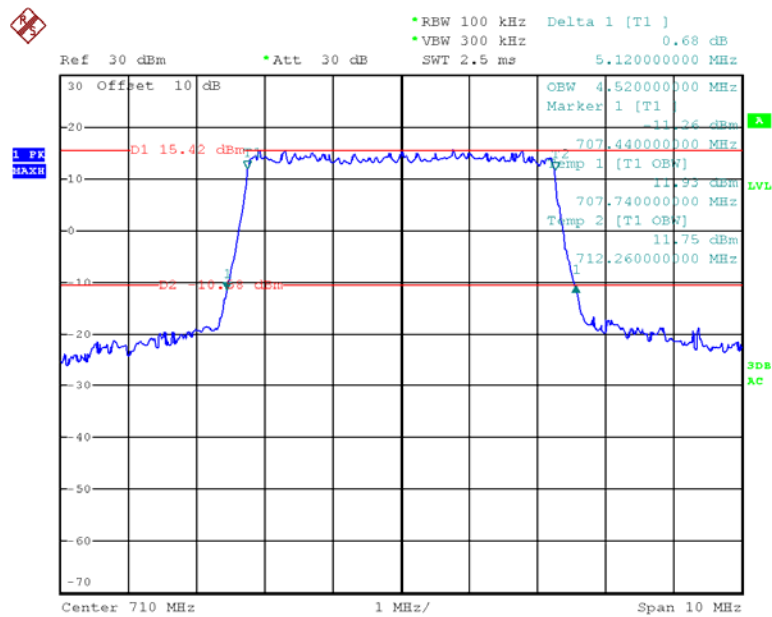
Date: 14.JUN.2016 00:22:16

QPSK_10 MHz



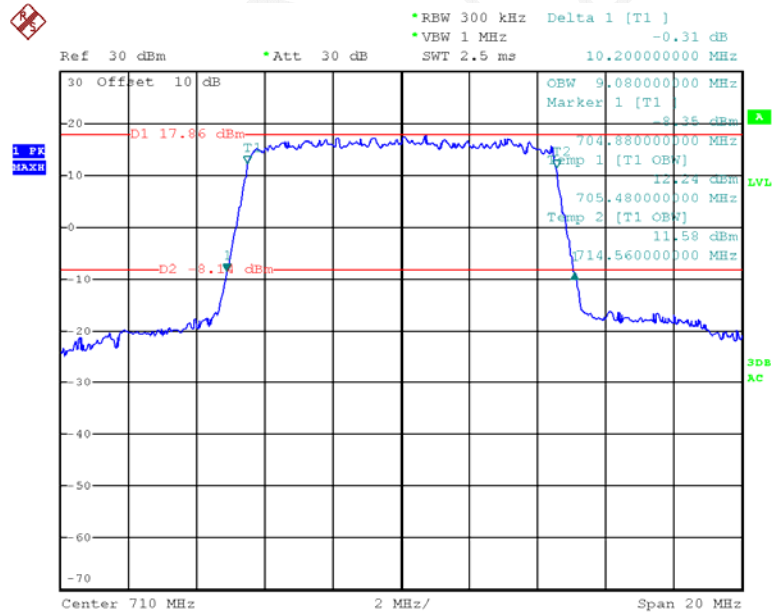
Date: 14.JUN.2016 00:23:02

16QAM_5 MHz



Date: 14.JUN.2016 00:21:35

16QAM_10 MHz



Date: 14.JUN.2016 00:23:39

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

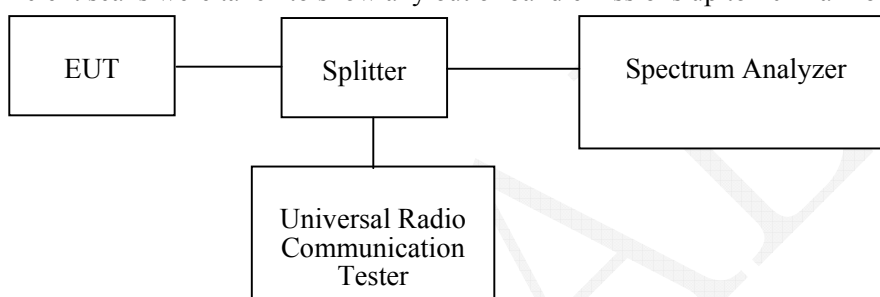
Applicable Standard

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

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

Test Procedure

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-11-23	2016-11-22
R&S	Spectrum Analyzer	FSEM	831259/019	2015-07-28	2016-07-27
R&S	Universal Radio Communication Tester	CMU200	109 038	2015-07-28	2016-07-27
R&S	Wideband Radio Communication Tester	CMW500	106891	2015-11-23	2016-11-23
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06
E-Microwave	Attenuator	EMCA10-5RN	0E01203239	2016-05-08	2017-05-08
Pasternack	RF Coaxial Cable	RF-01	N/A	2016-05-06	2017-05-06
Pasternack	RF Coaxial Cable	RF-02	N/A	2016-05-06	2017-05-06
N/A	Two-way Splitter	ODP-1-6-2S	0E0120142	2016-05-06	2017-05-06

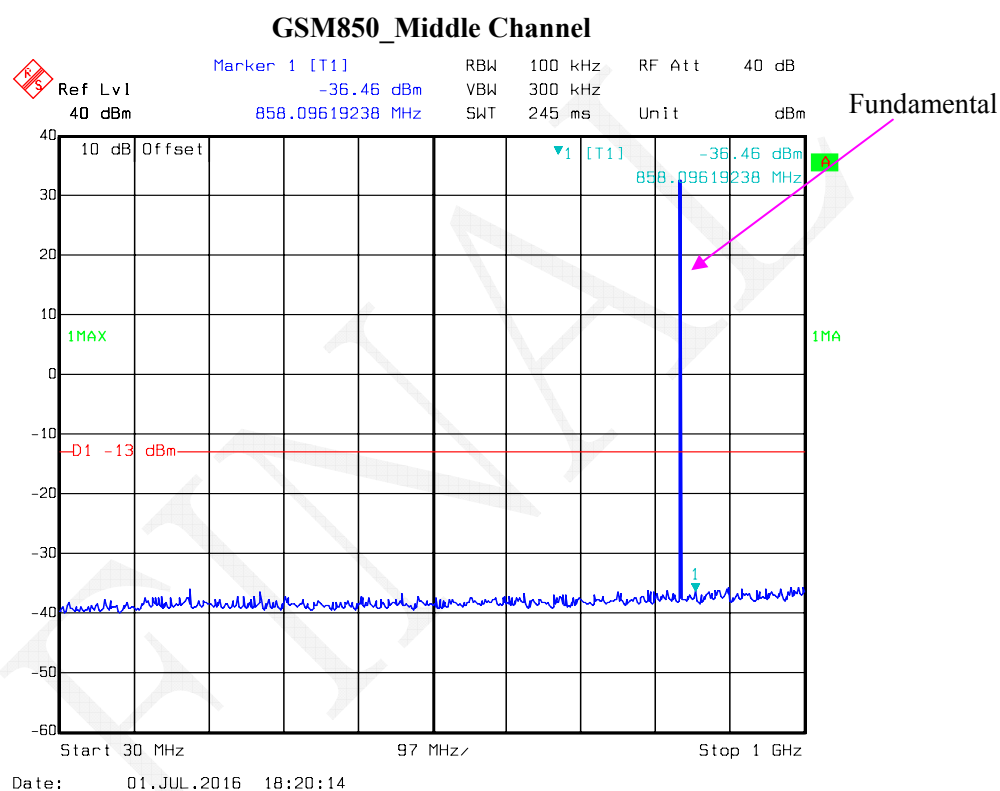
* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

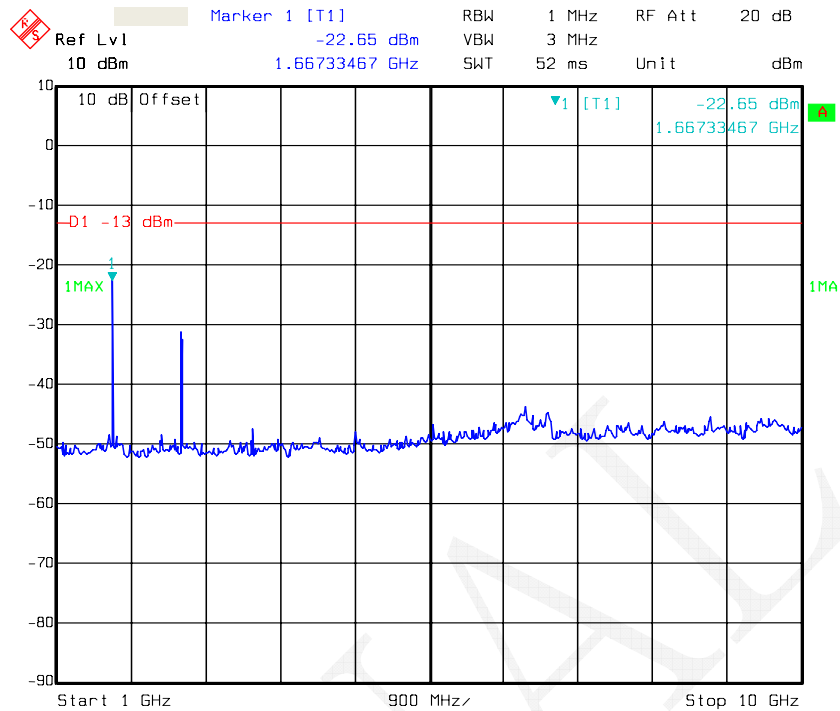
Test Data**Environmental Conditions**

Temperature:	28.5 °C
Relative Humidity:	39 %
ATM Pressure:	100.1 ~ 100.4 kPa

The testing was performed by Lion Xiao from 2016-06-30 to 2016-07-01.

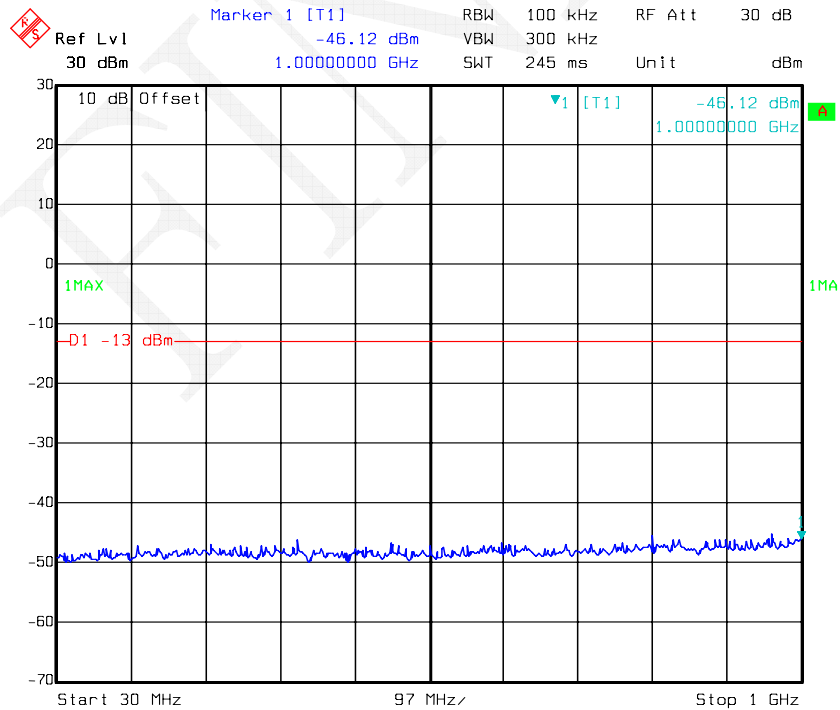
Please refer to the following plots.





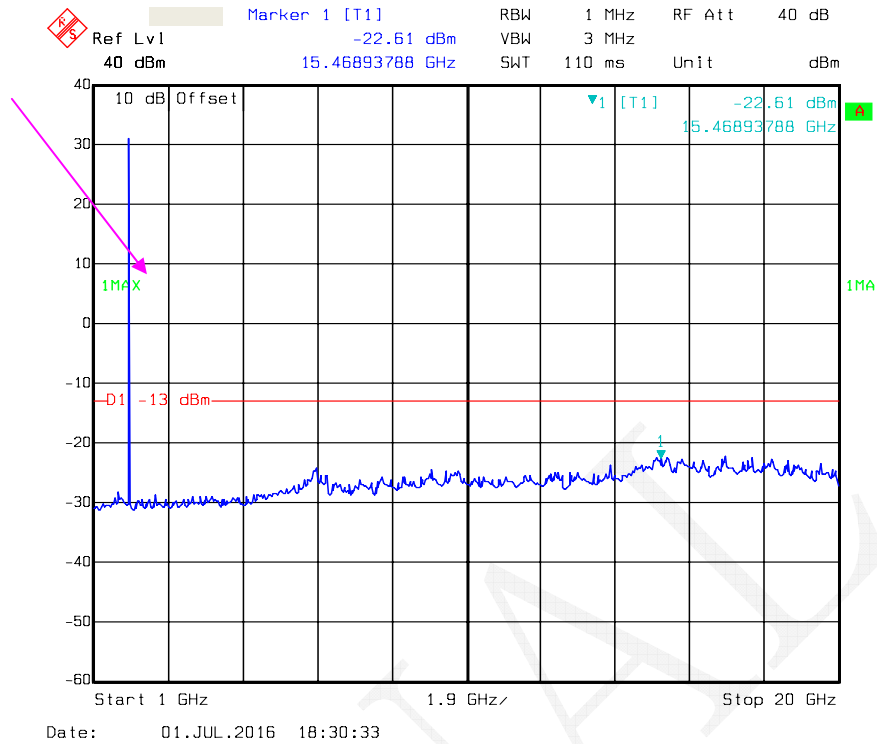
Date: 01.JUL.2016 18:37:12

PCS 1900_ Middle Channel

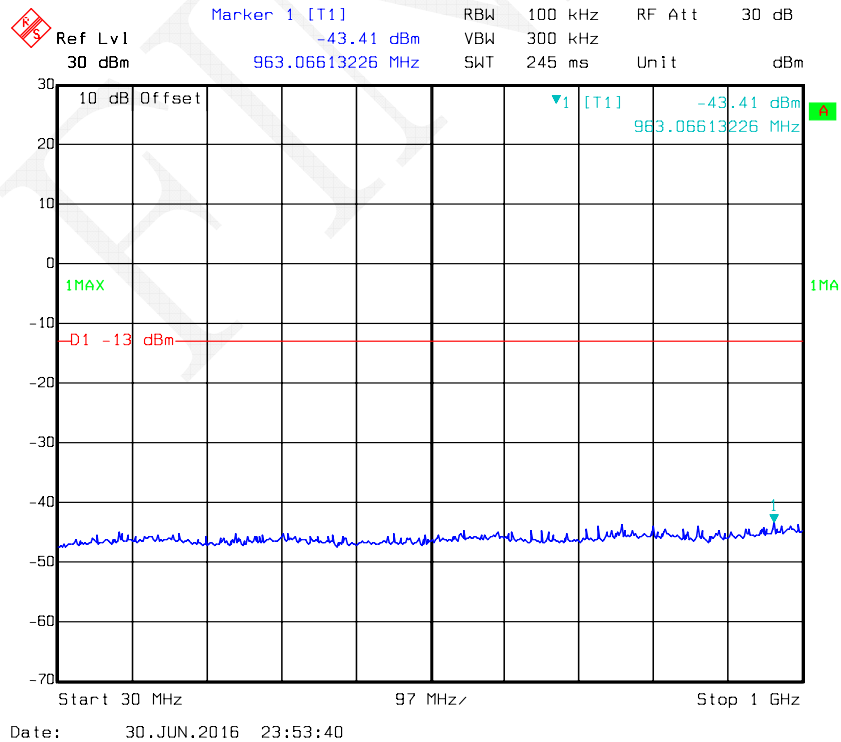


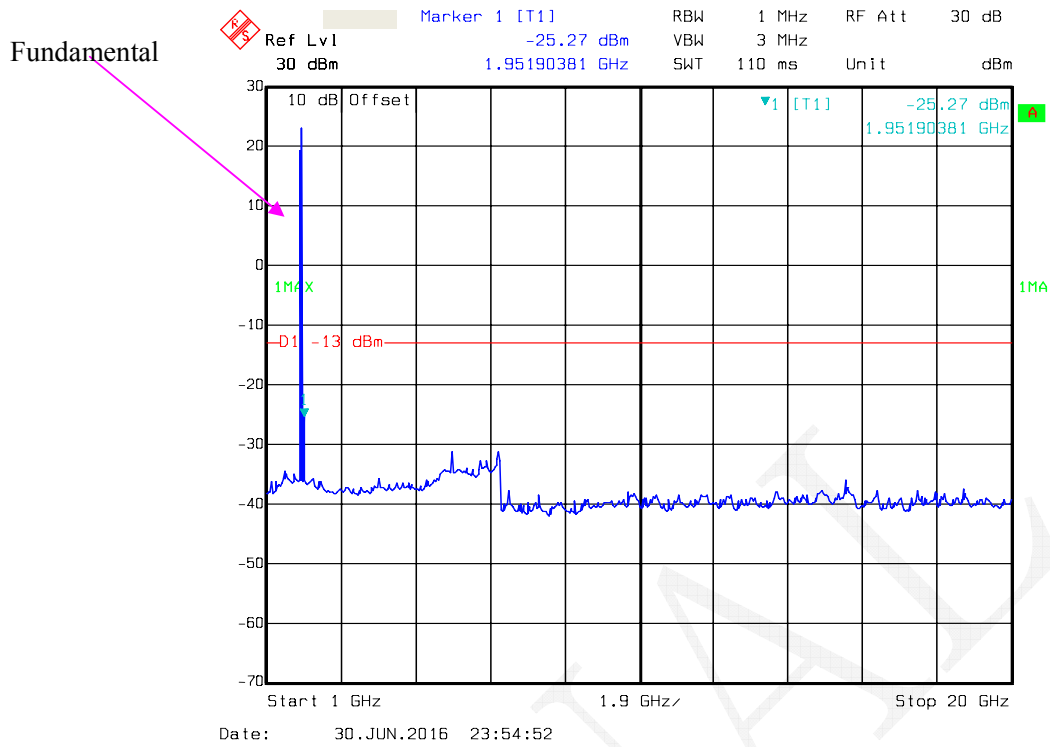
Date: 01.JUL.2016 18:28:43

Fundamental

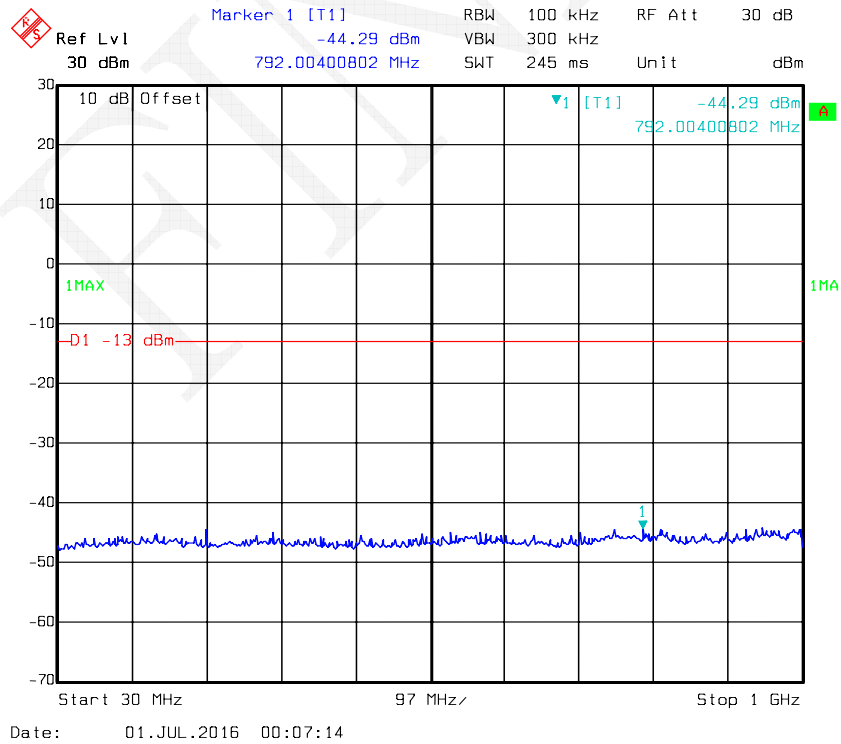


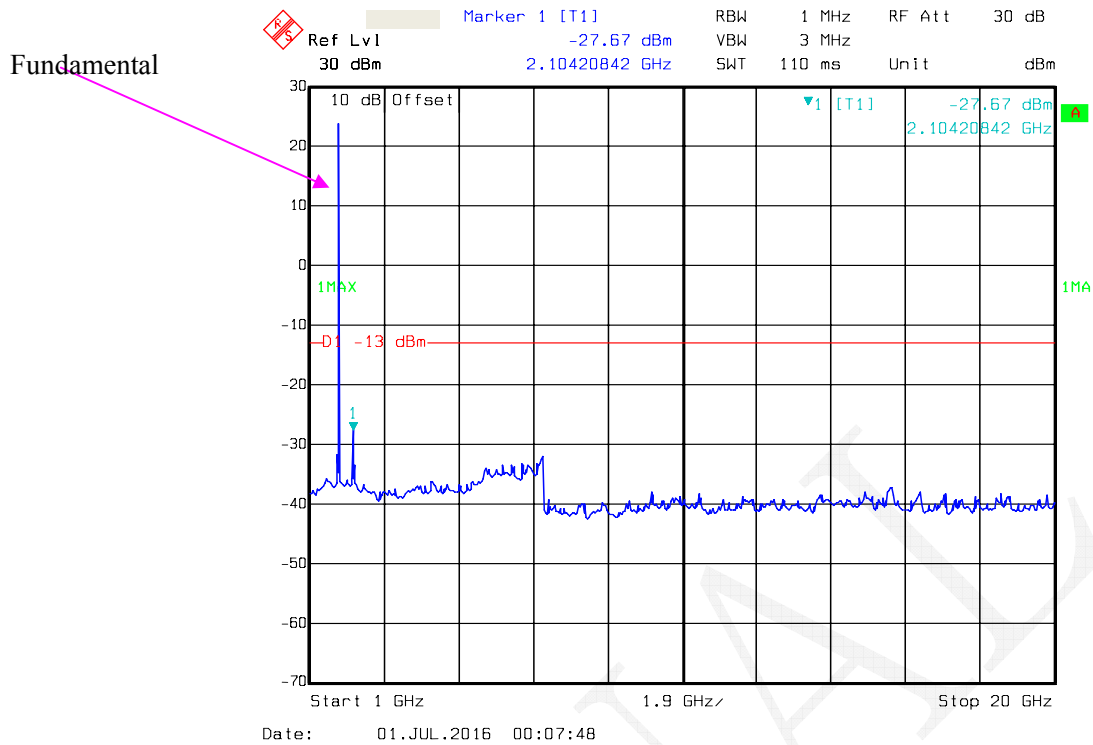
REL99 Band II_Middle Channel



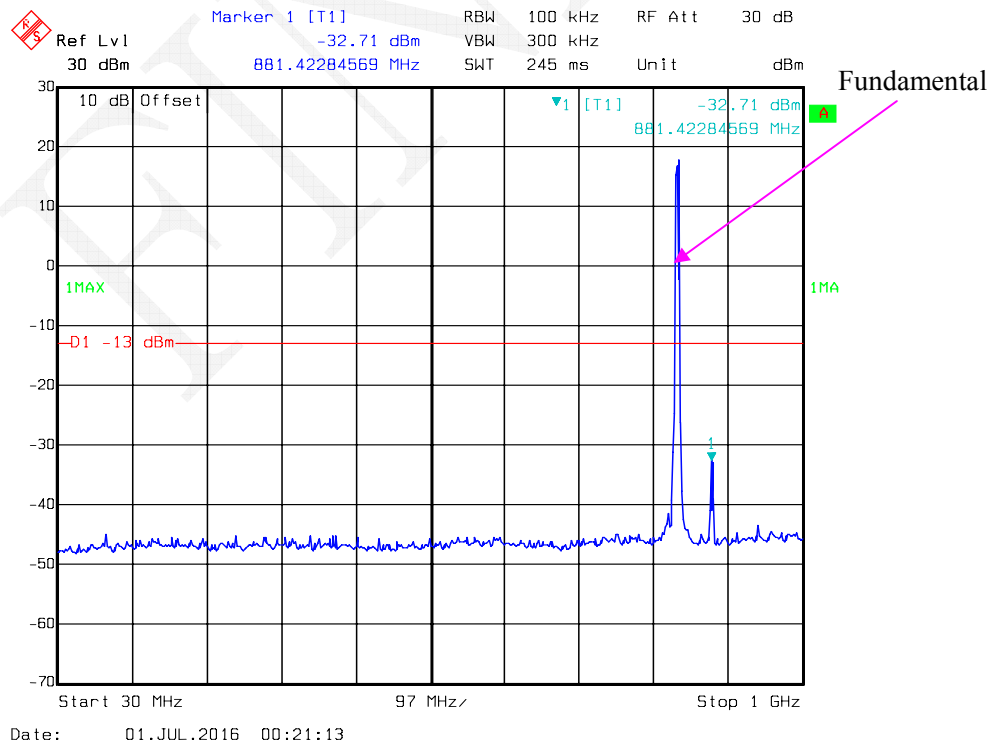


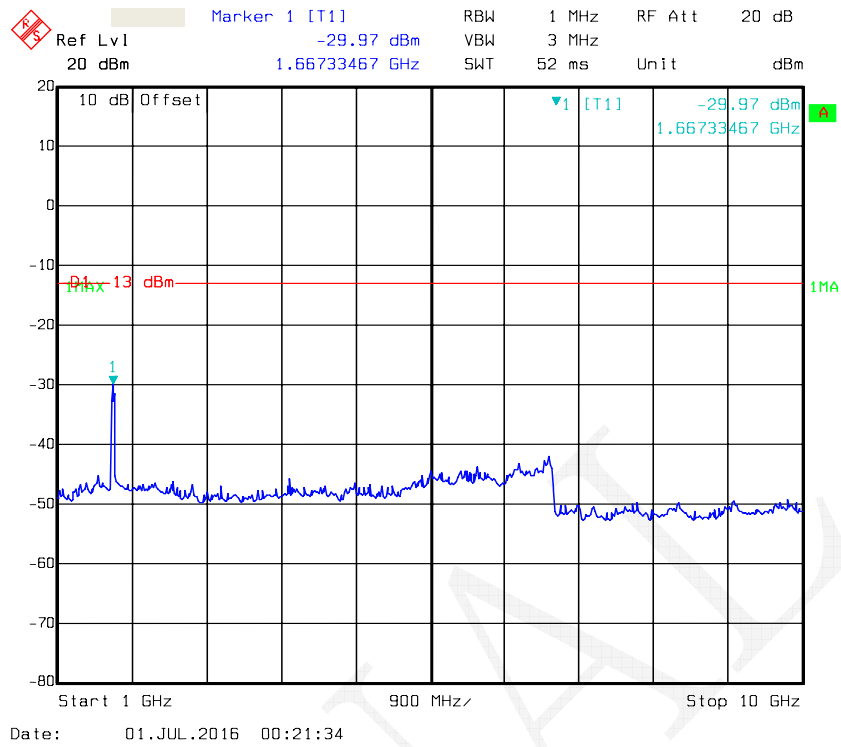
REL99 Band IV_ Middle Channel





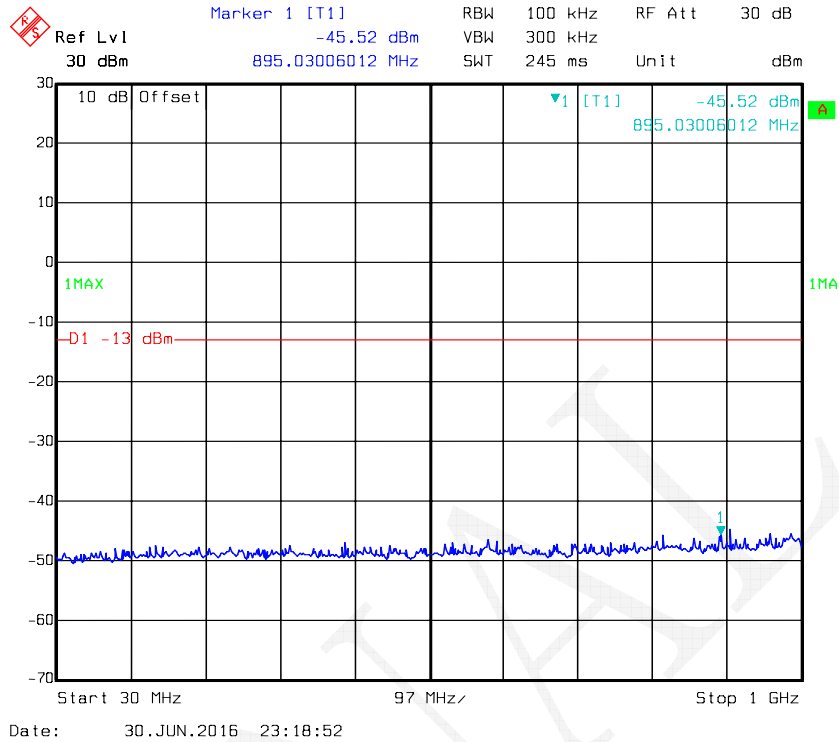
REL99 Band V_ Middle Channel



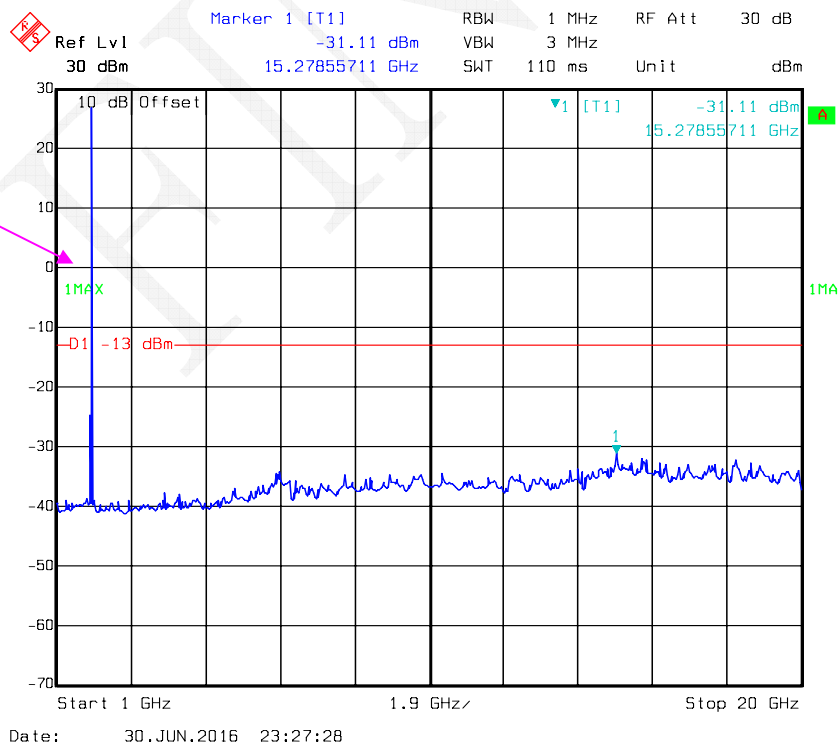


LTE Band II (Middle Channel)

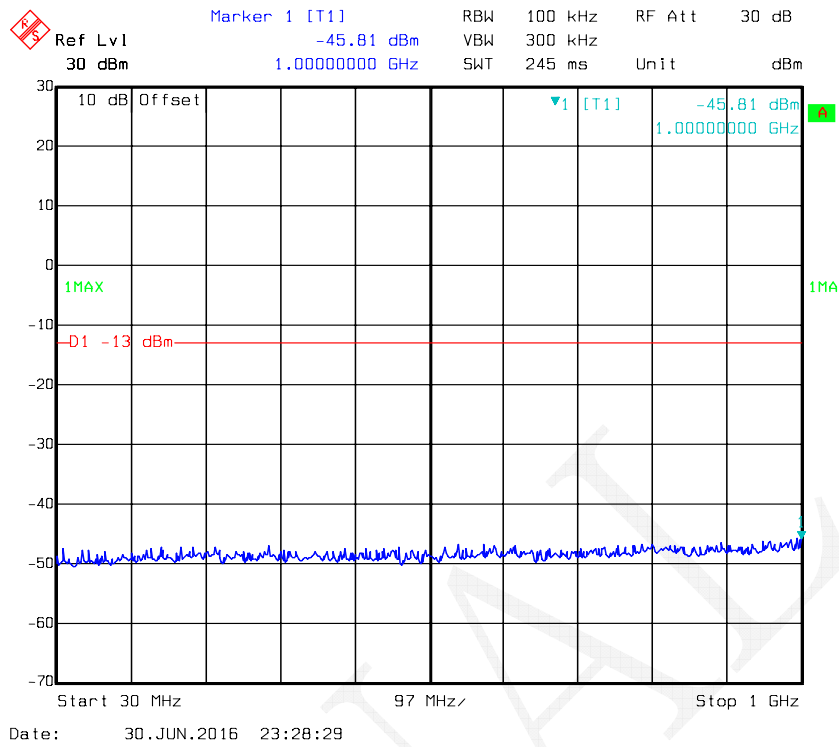
QPSK-1.4 MHz



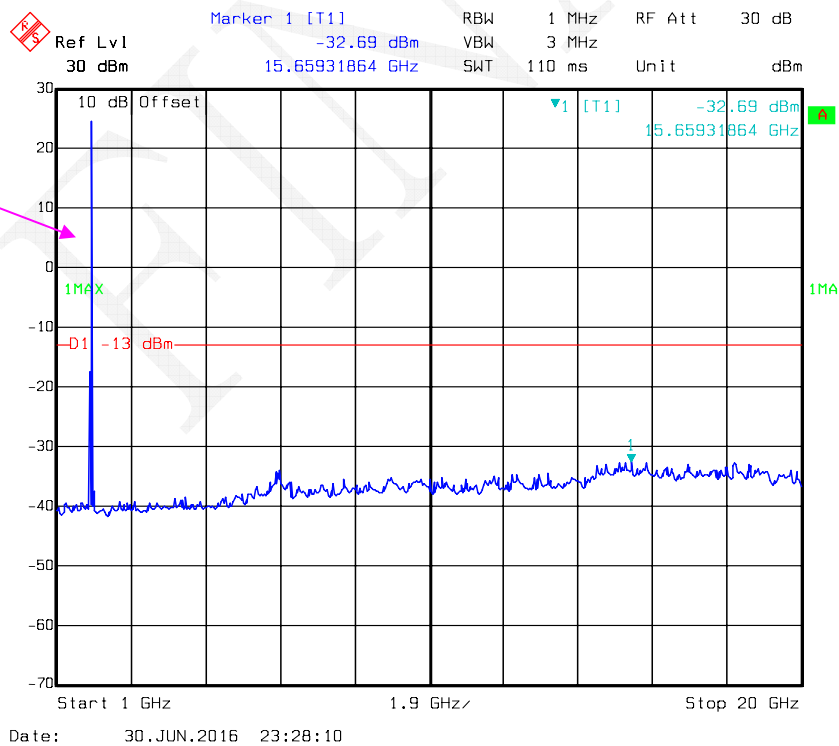
Fundamental



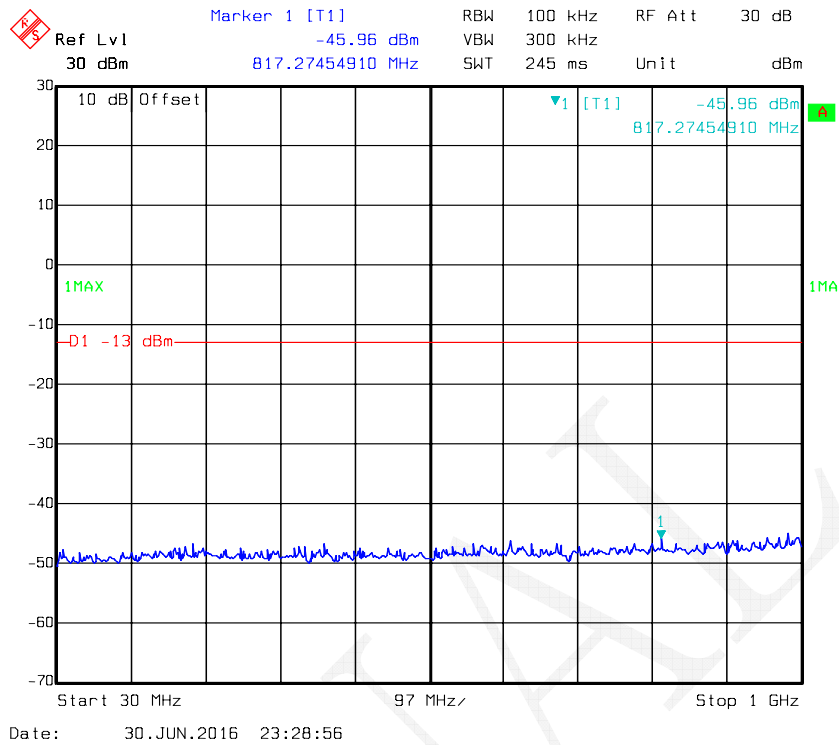
QPSK_3MHz



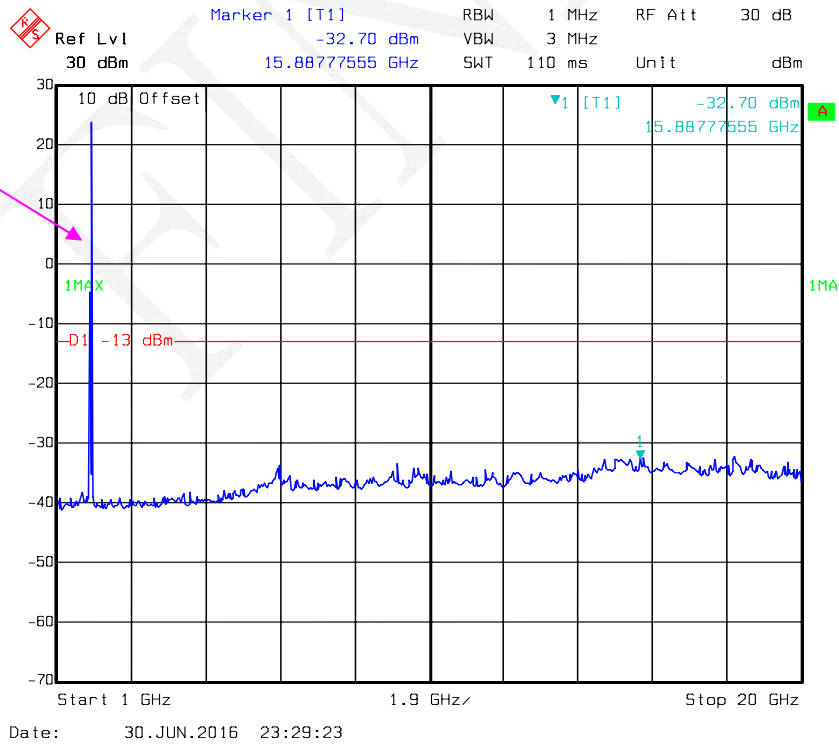
Fundamental



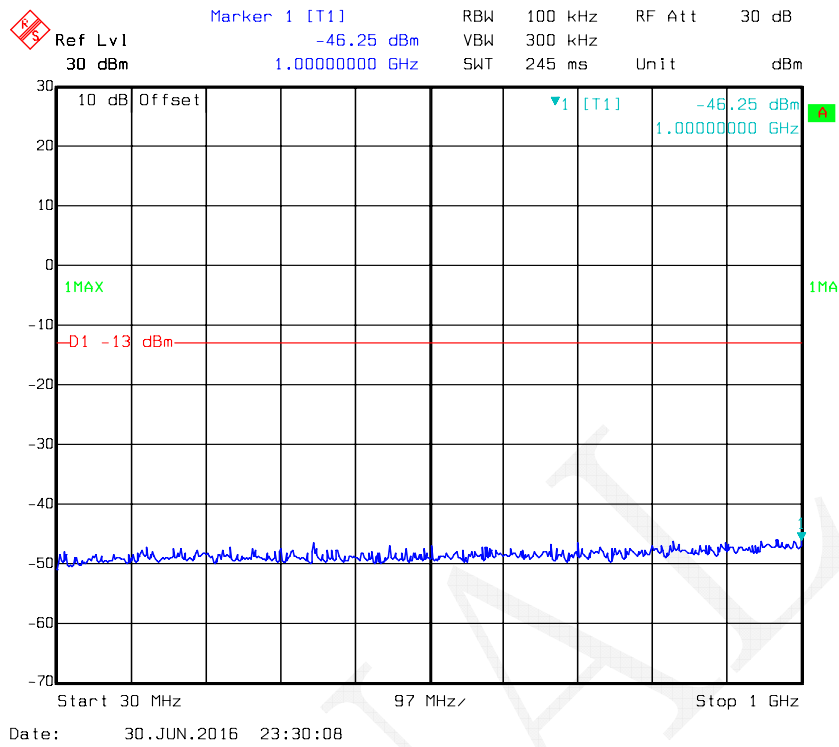
QPSK_5MHz



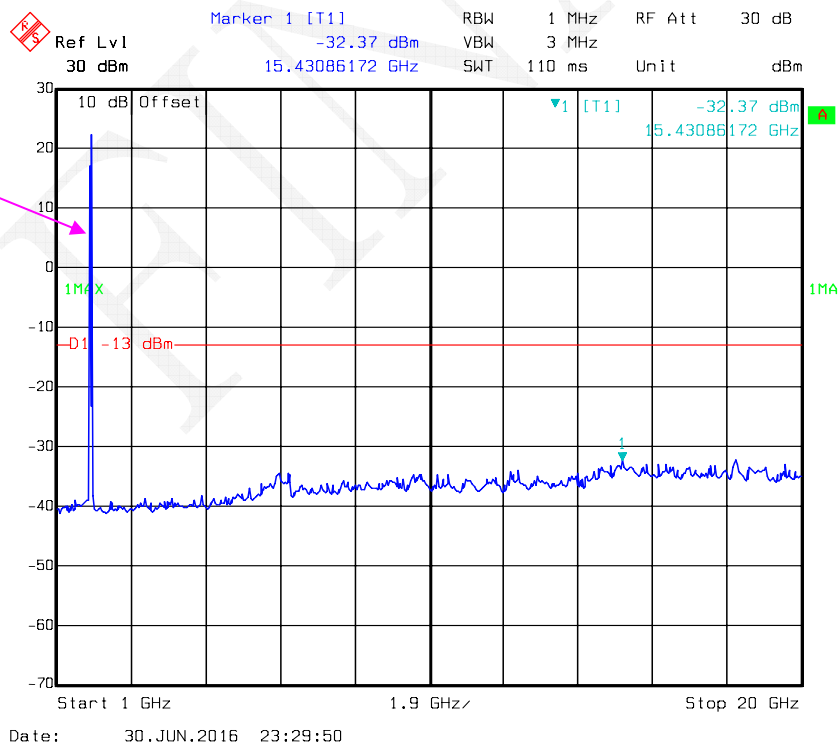
Fundamental



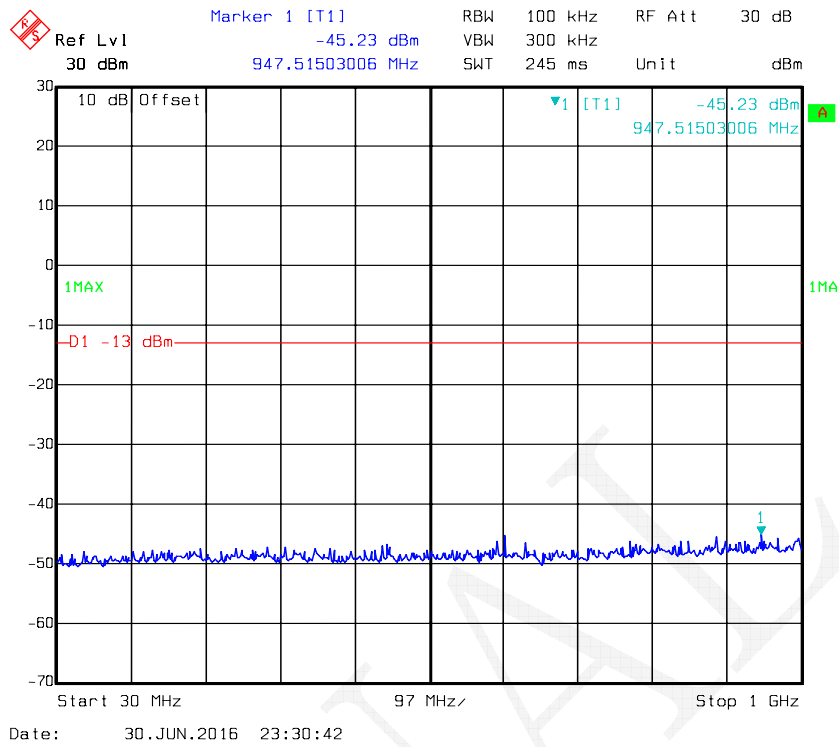
QPSK_10MHz



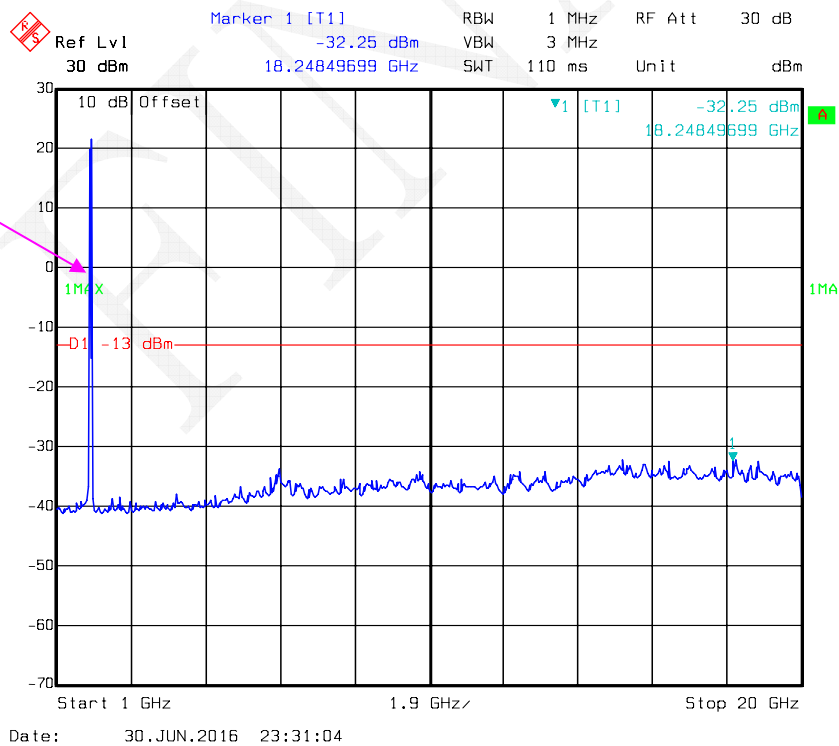
Fundamental



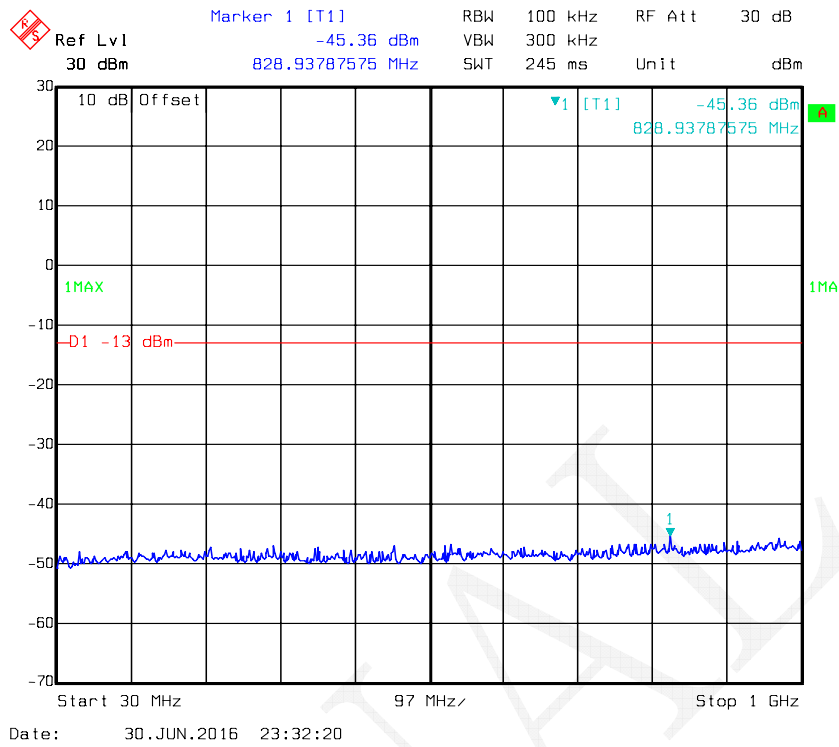
QPSK_15MHz



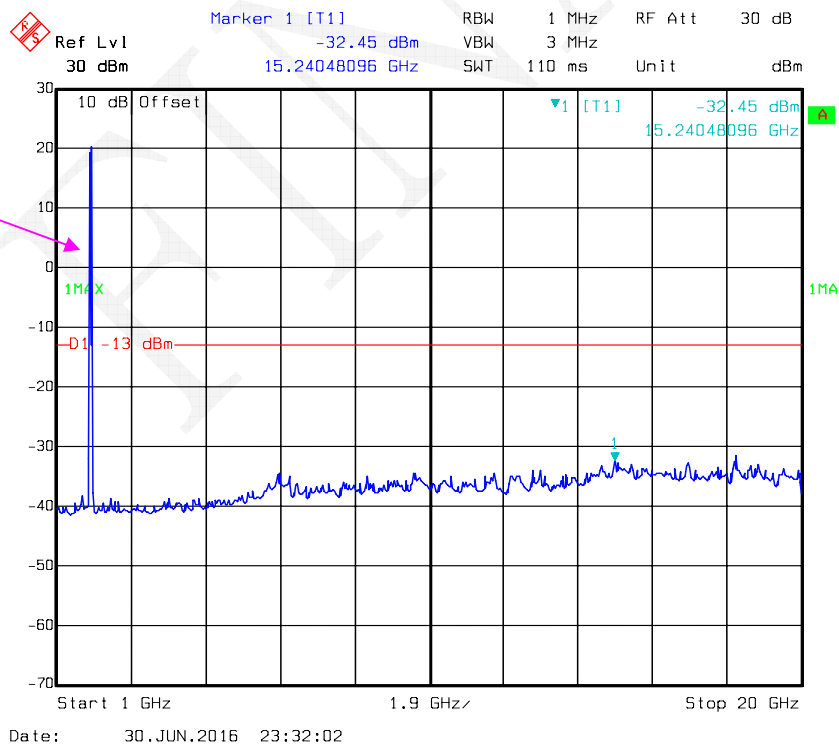
Fundamental



QPSK_20MHz

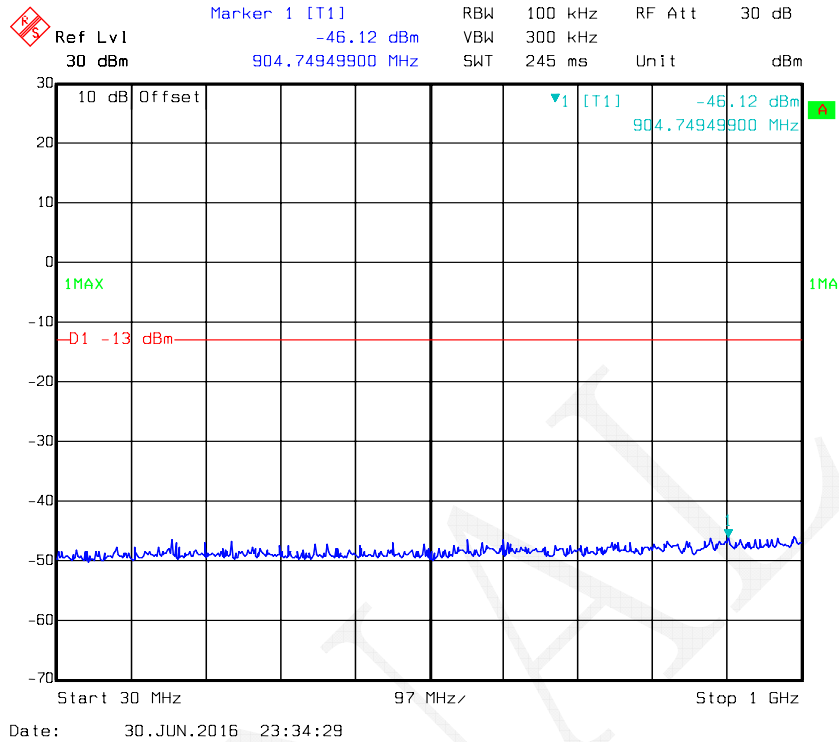


Fundamental

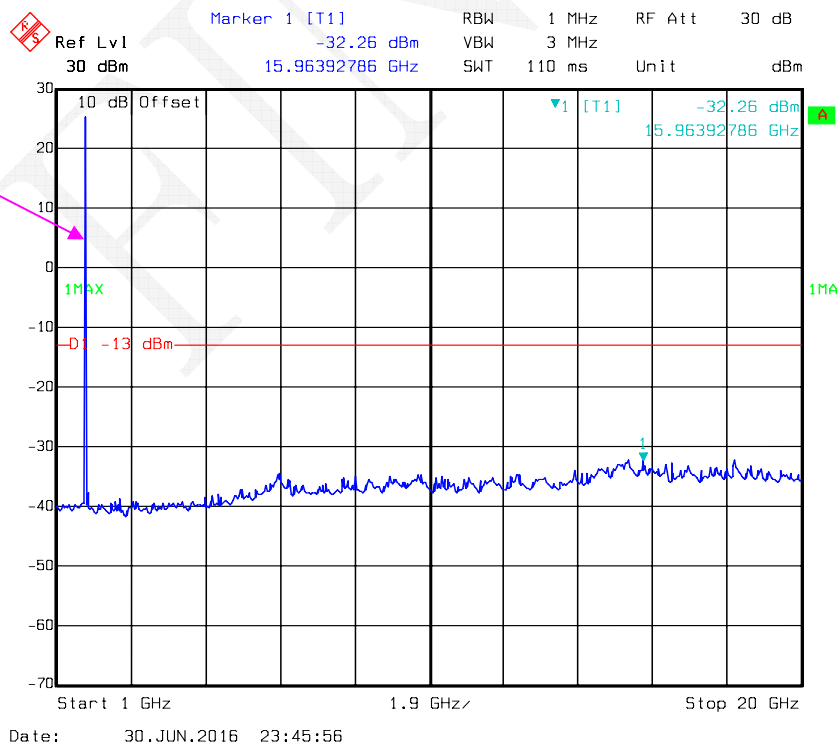


LTE Band IV (Middle Channel)

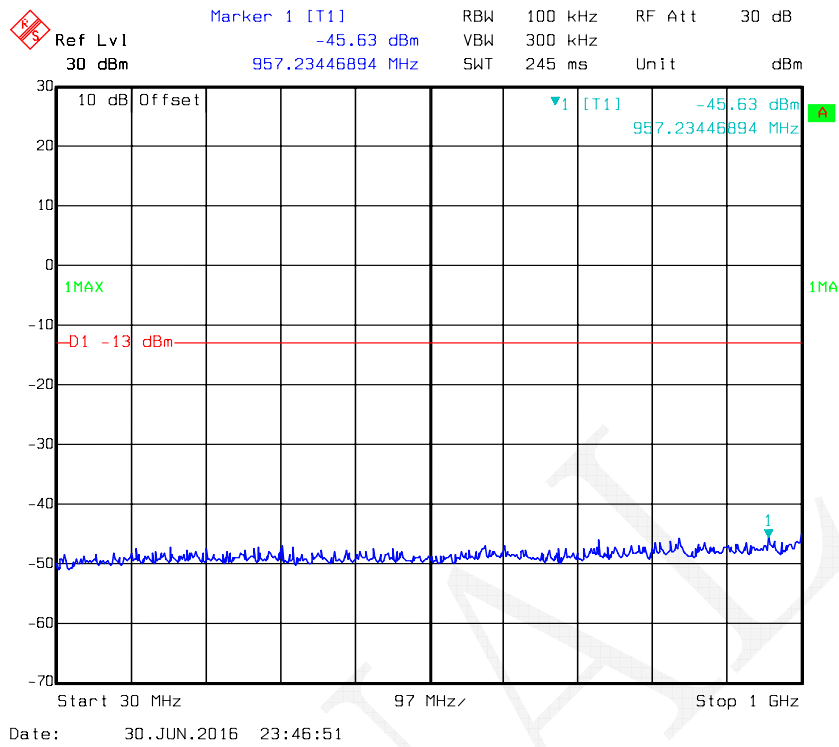
QPSK-1.4 MHz



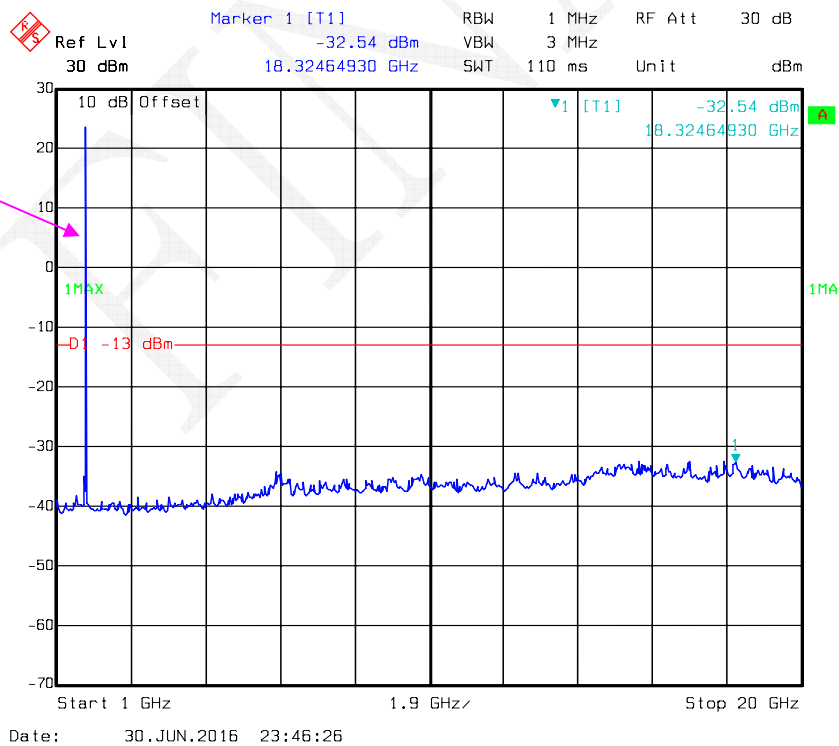
Fundamental



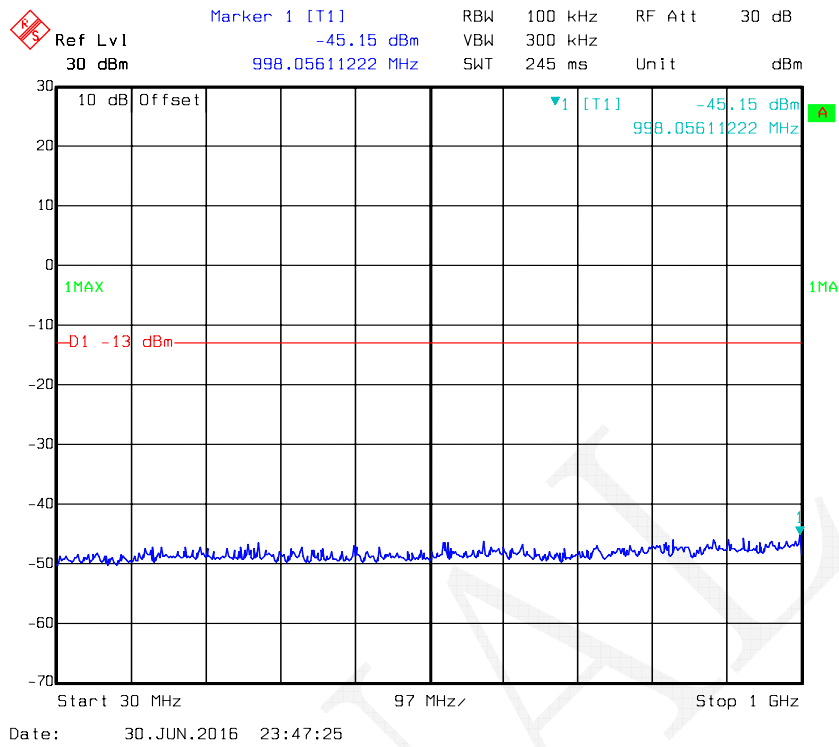
QPSK_3MHz



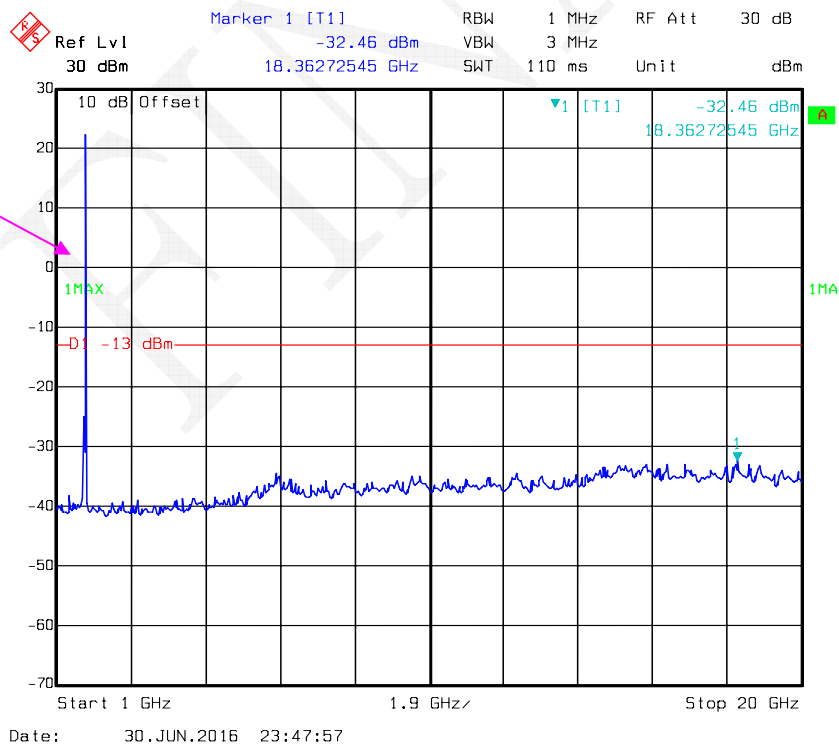
Fundamental



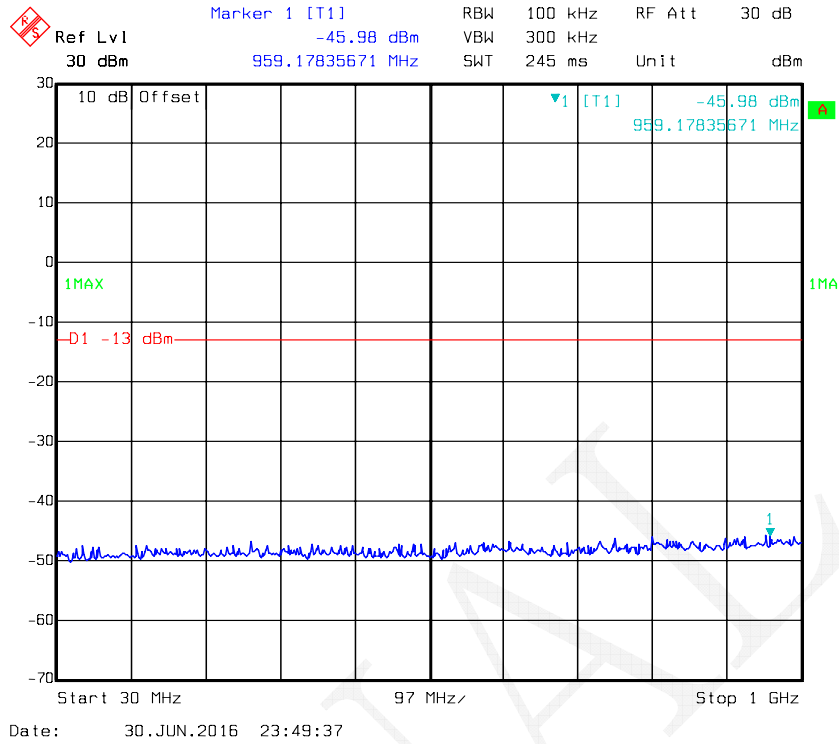
QPSK_5MHz



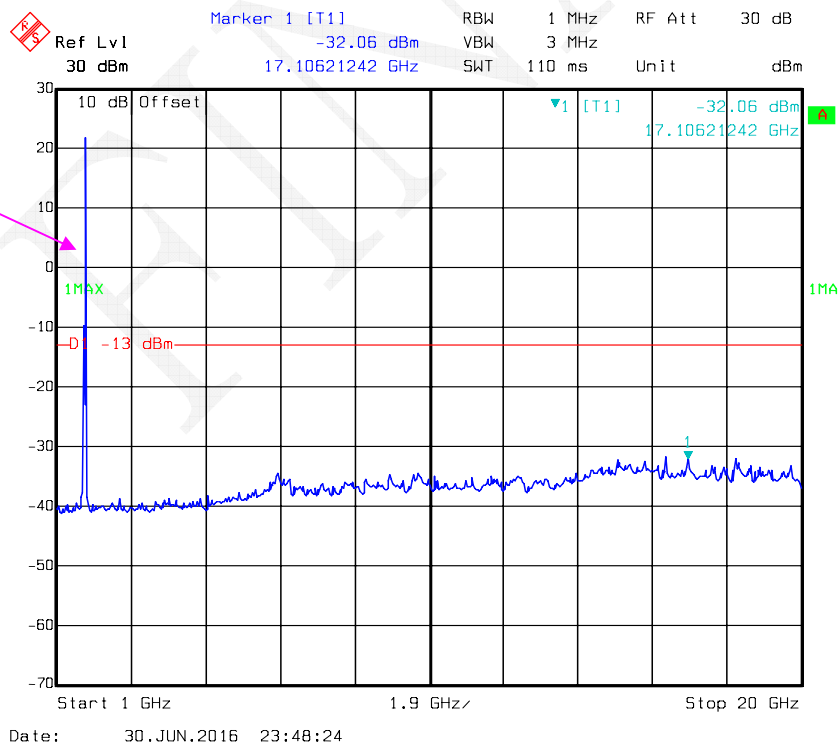
Fundamental



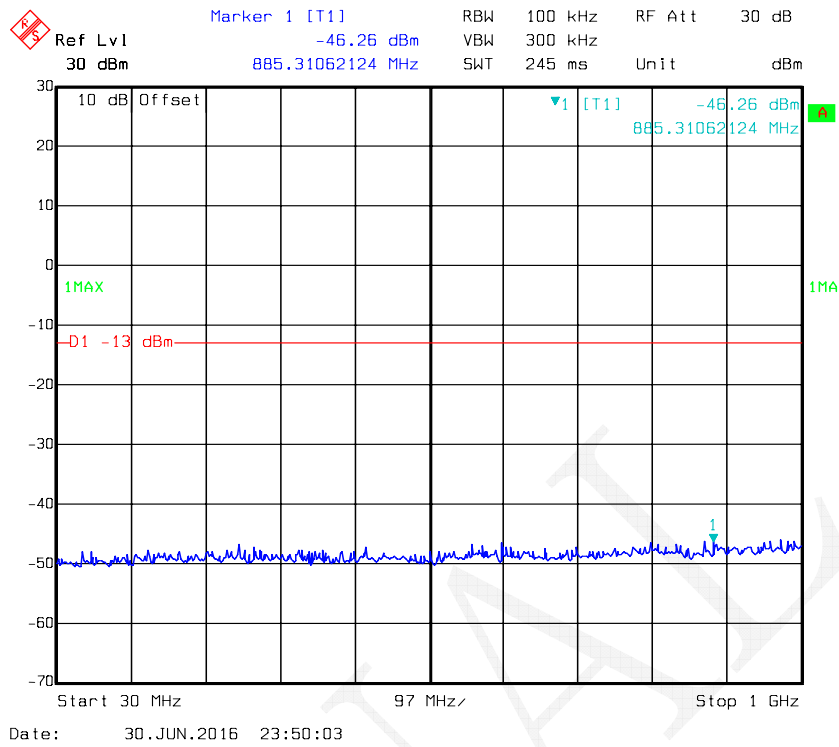
QPSK_10MHz



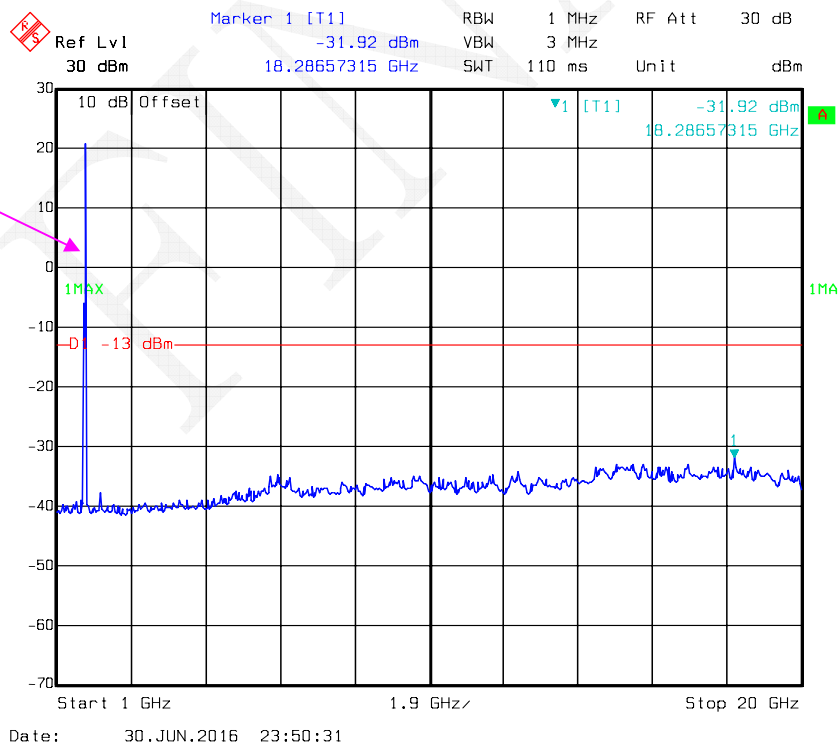
Fundamental



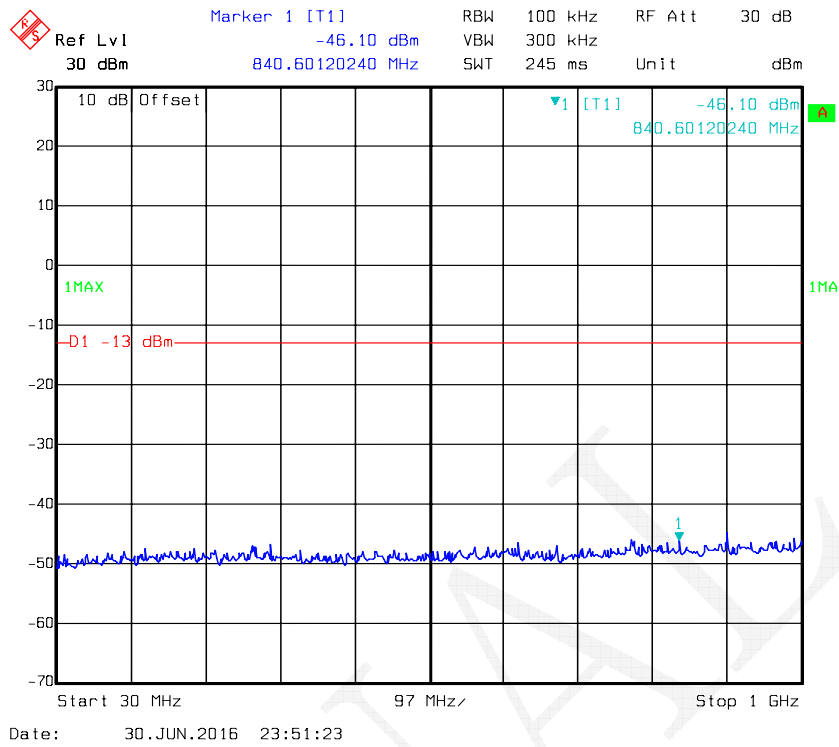
QPSK_15MHz



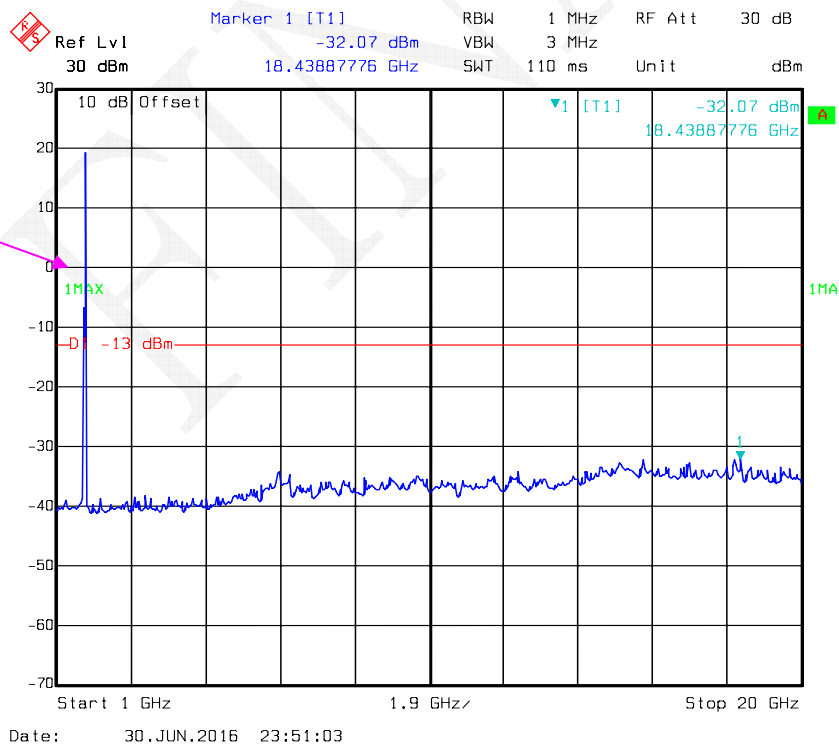
Fundamental



QPSK_20MHz

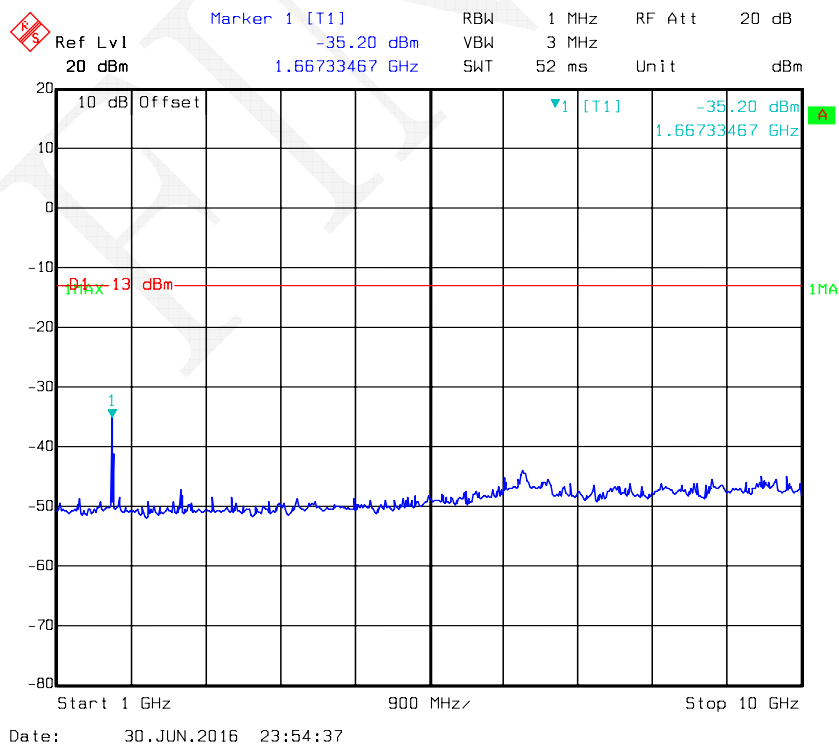
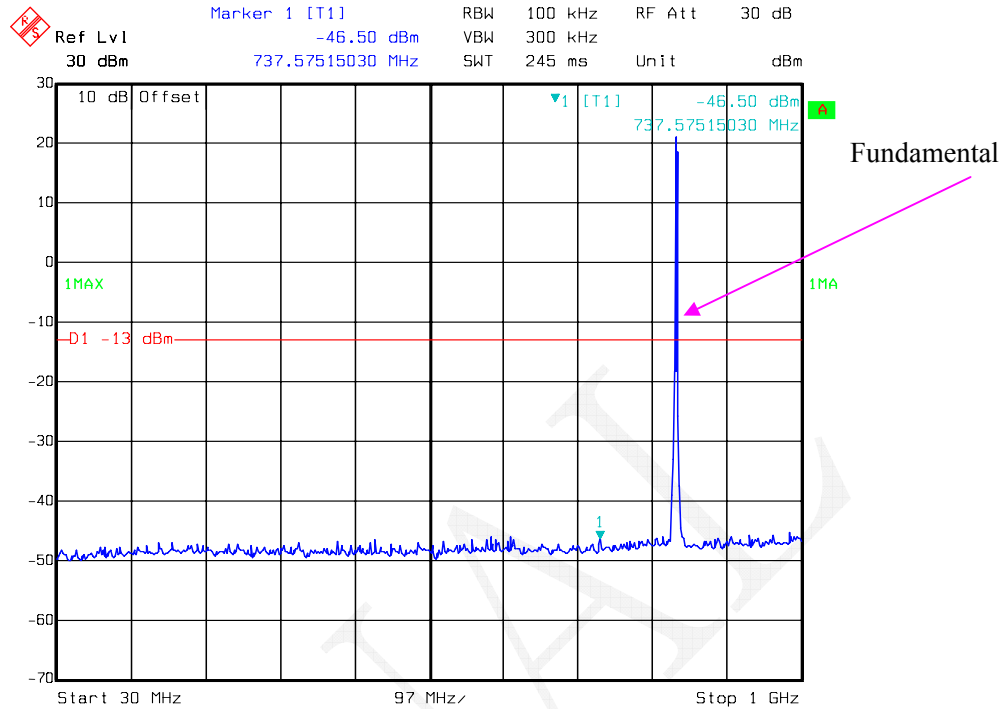


Fundamental

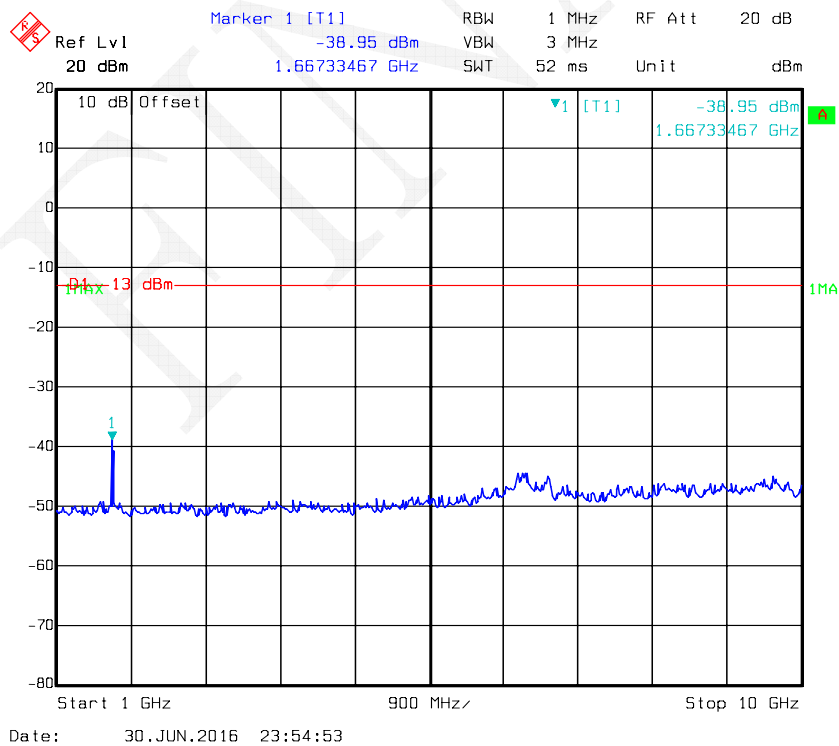
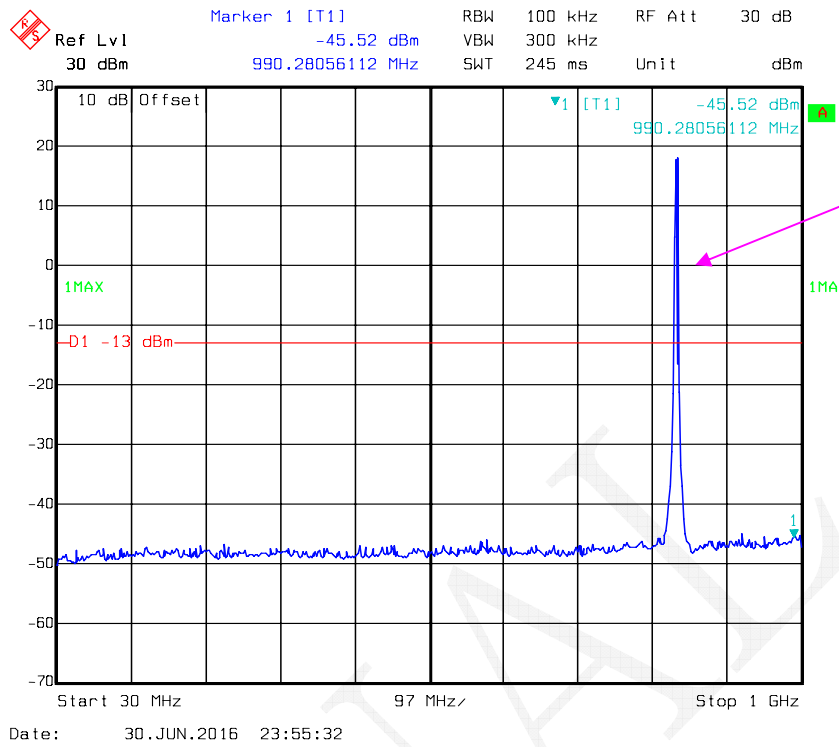


LTE Band V (Middle Channel)

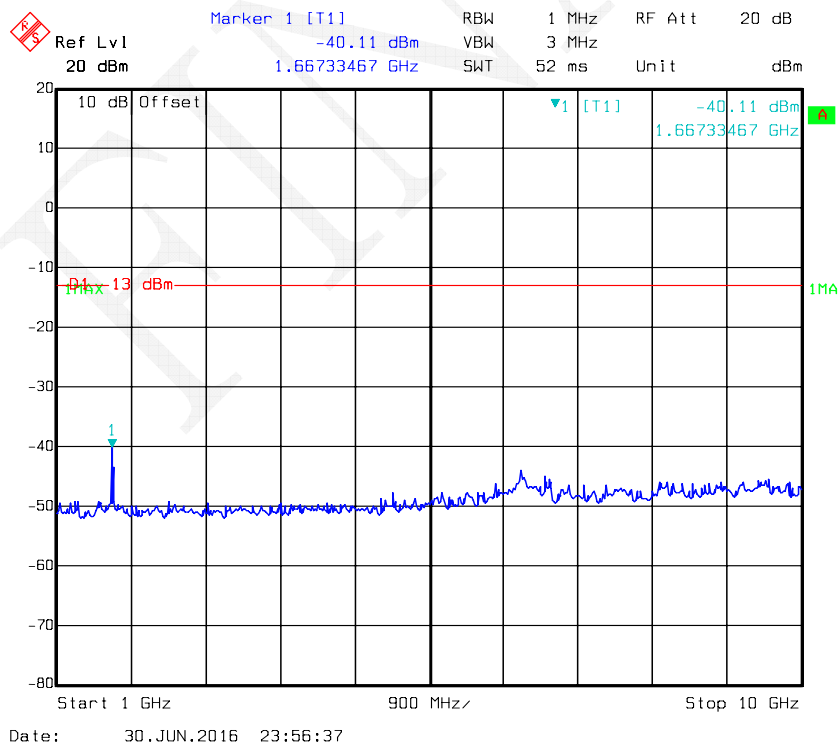
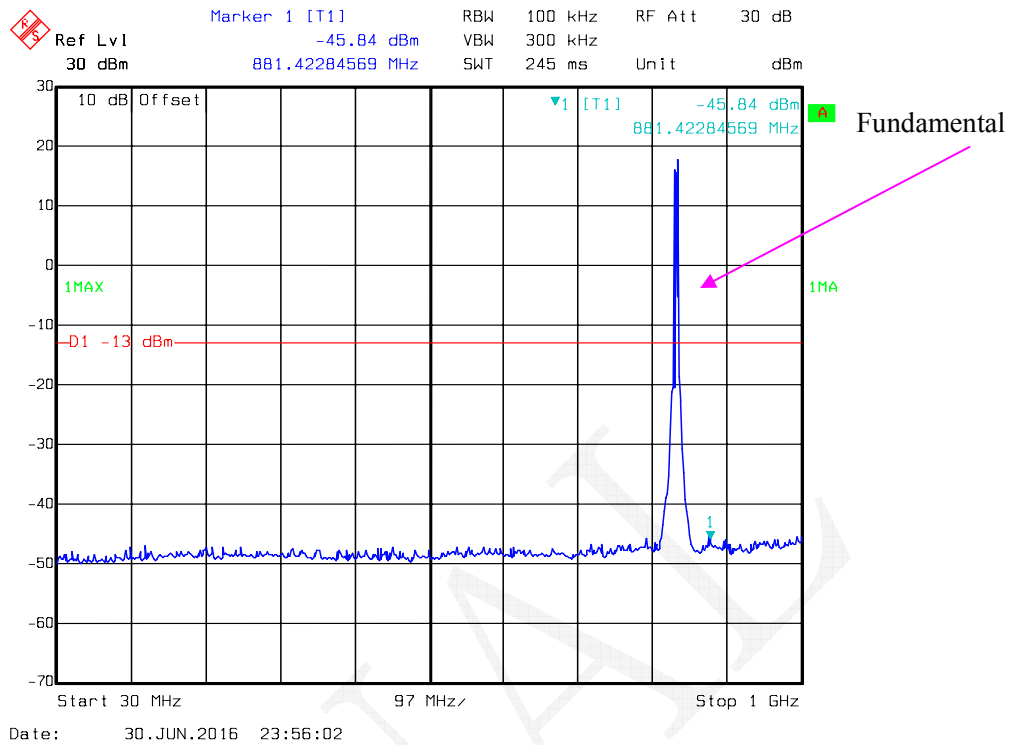
QPSK-1.4 MHz



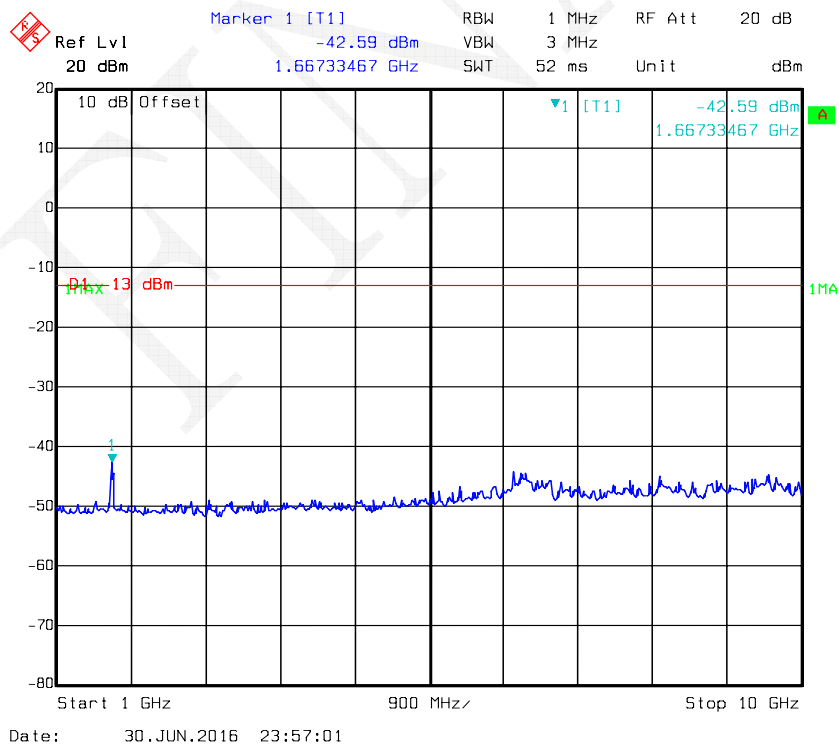
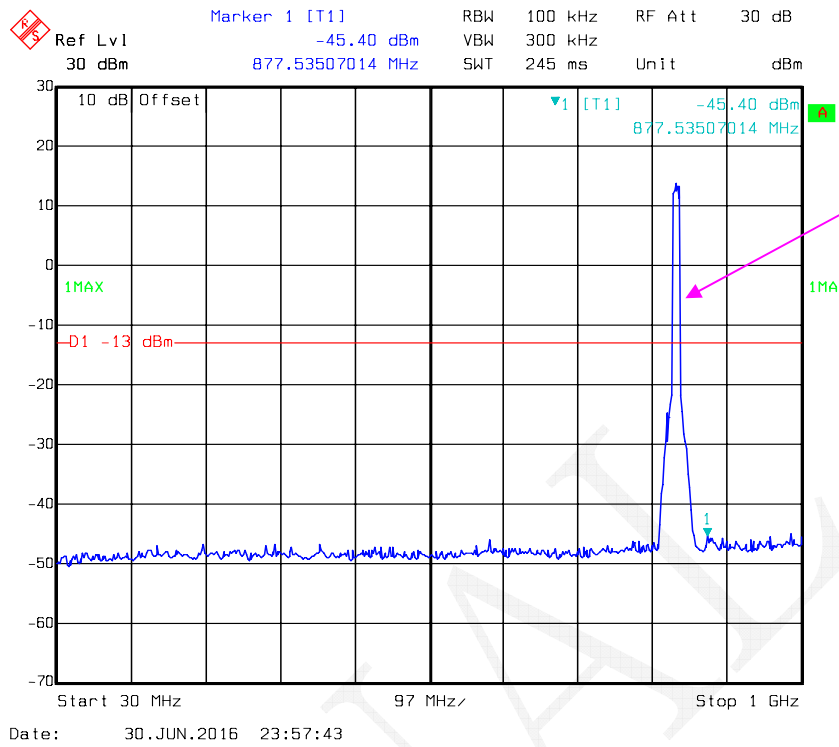
QPSK_3MHz



QPSK_5MHz

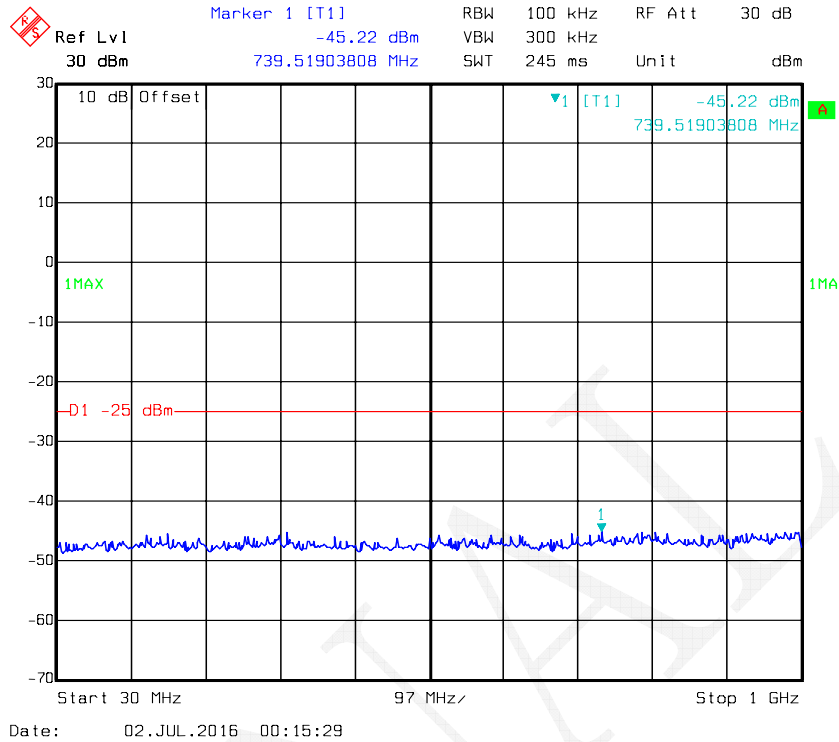


QPSK_10MHz

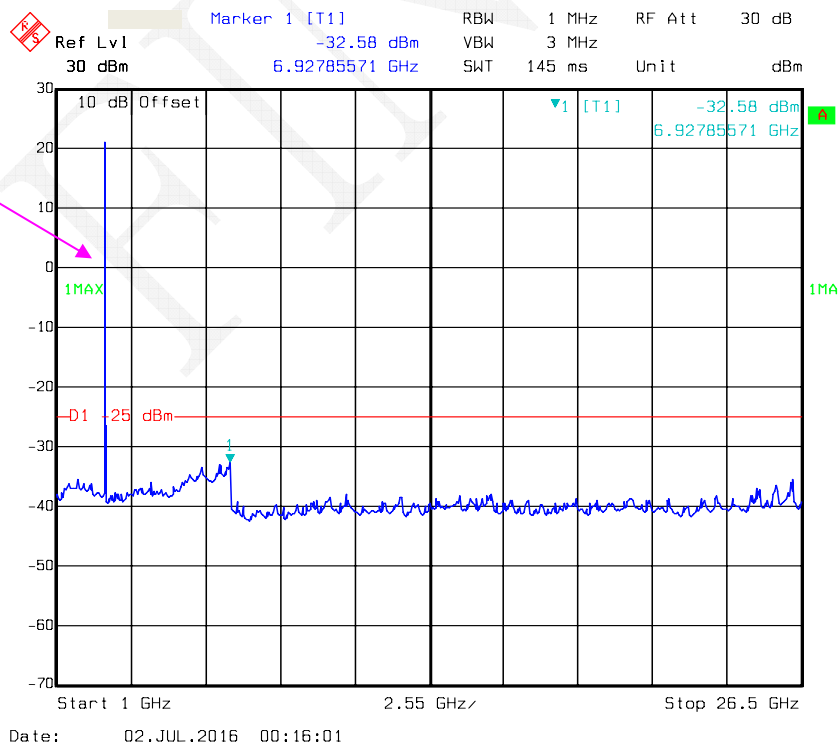


LTE Band VII (Middle Channel)

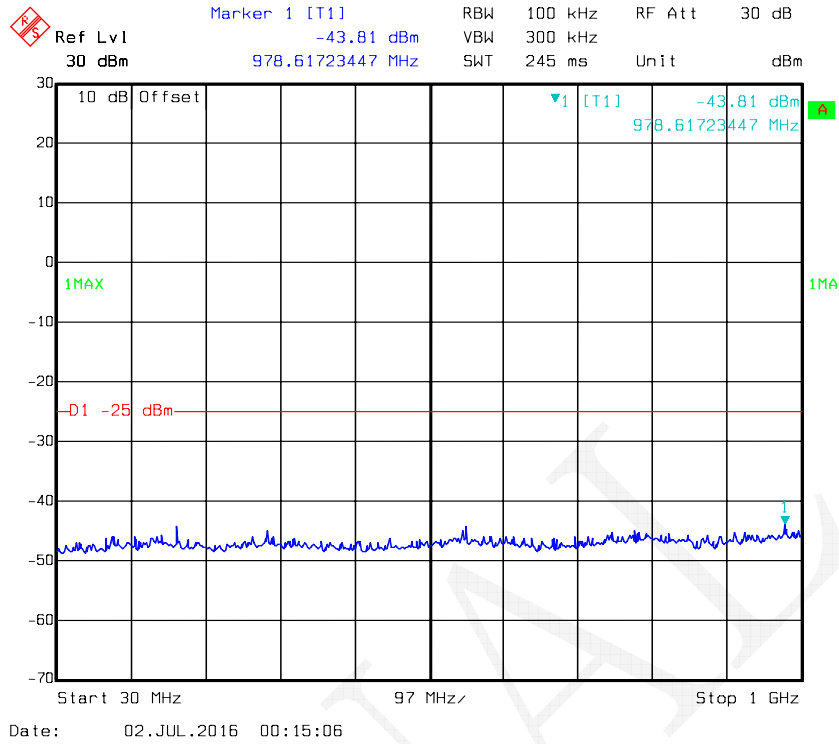
QPSK_5MHz



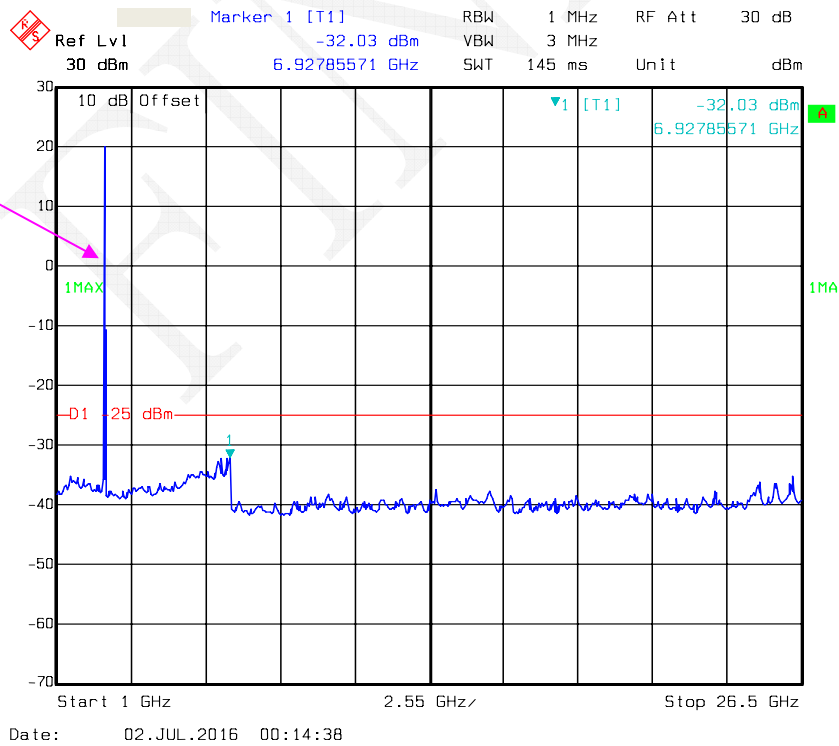
Fundamental



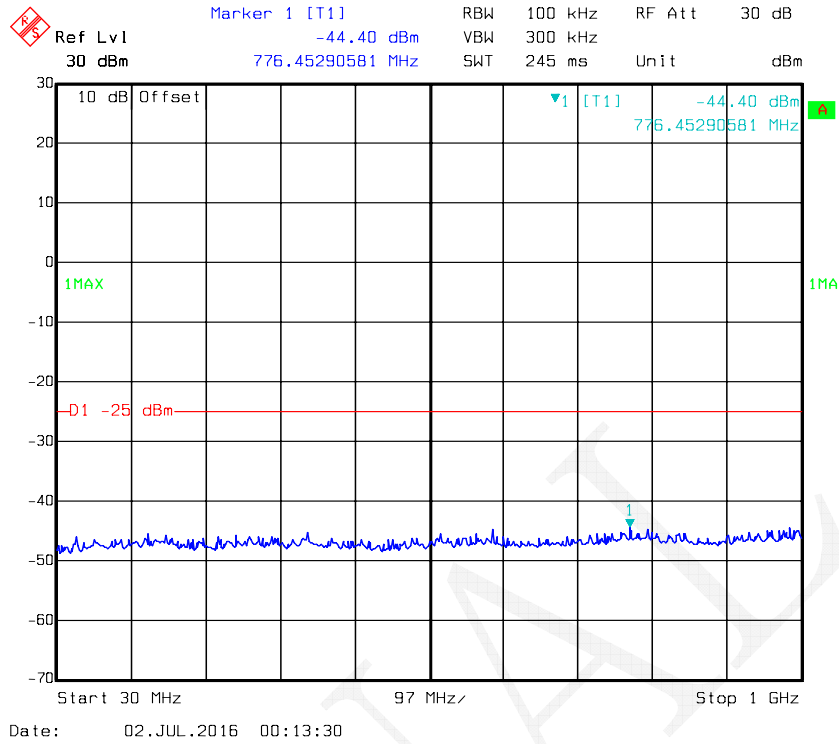
QPSK_10MHz



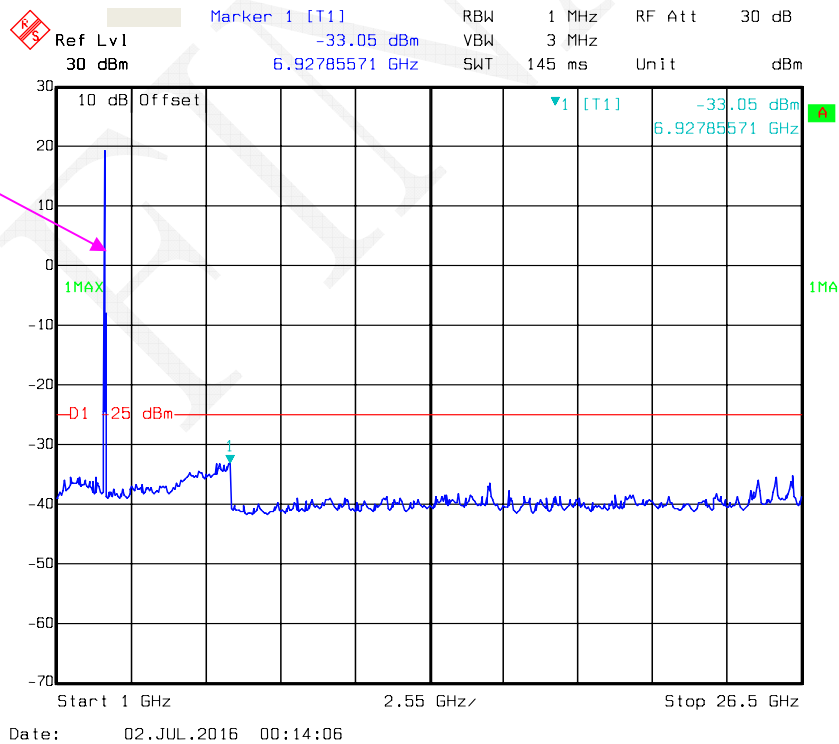
Fundamental



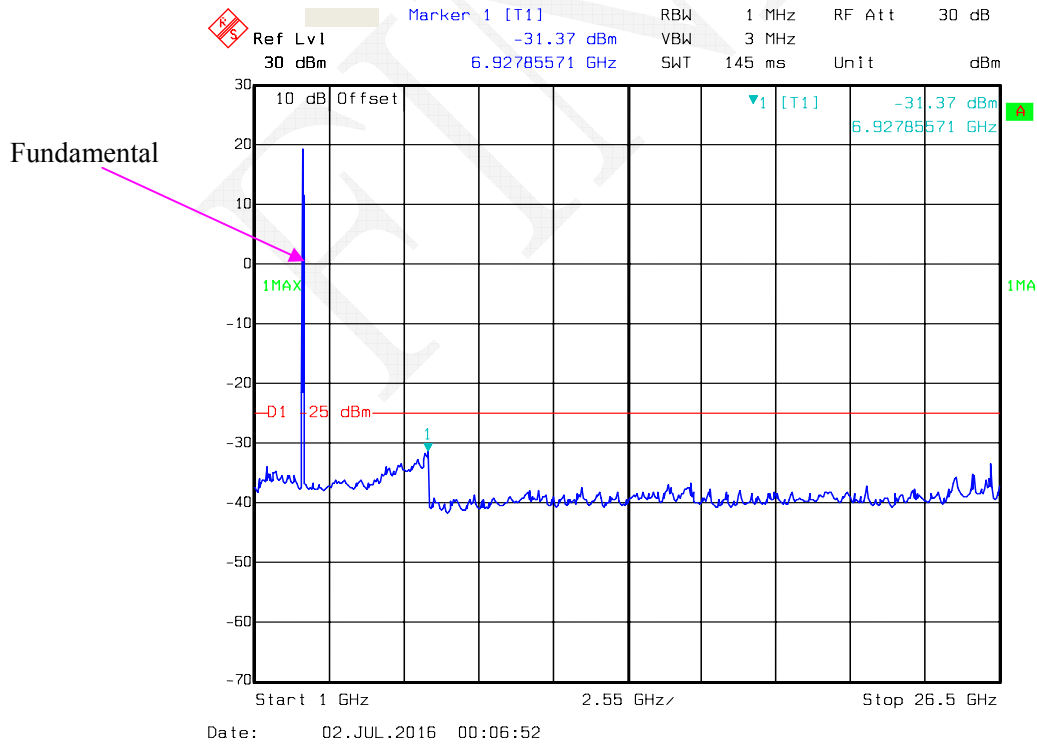
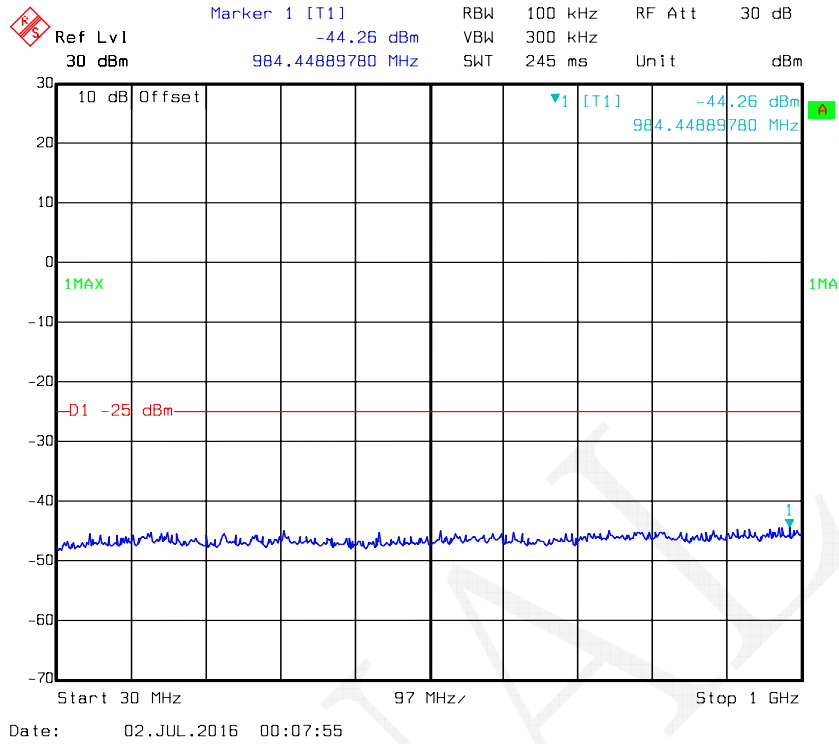
QPSK_15MHz



Fundamental

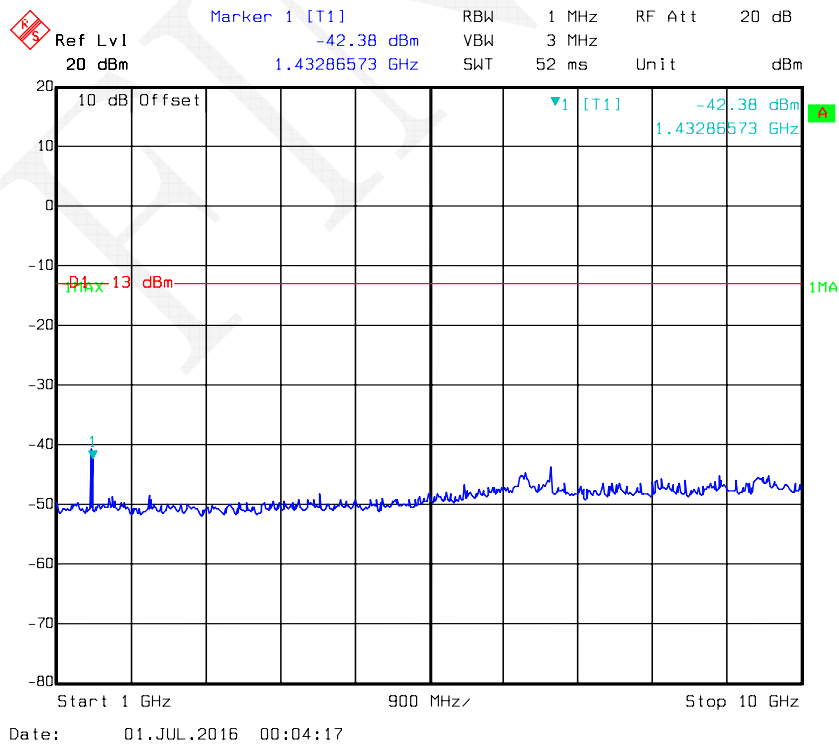
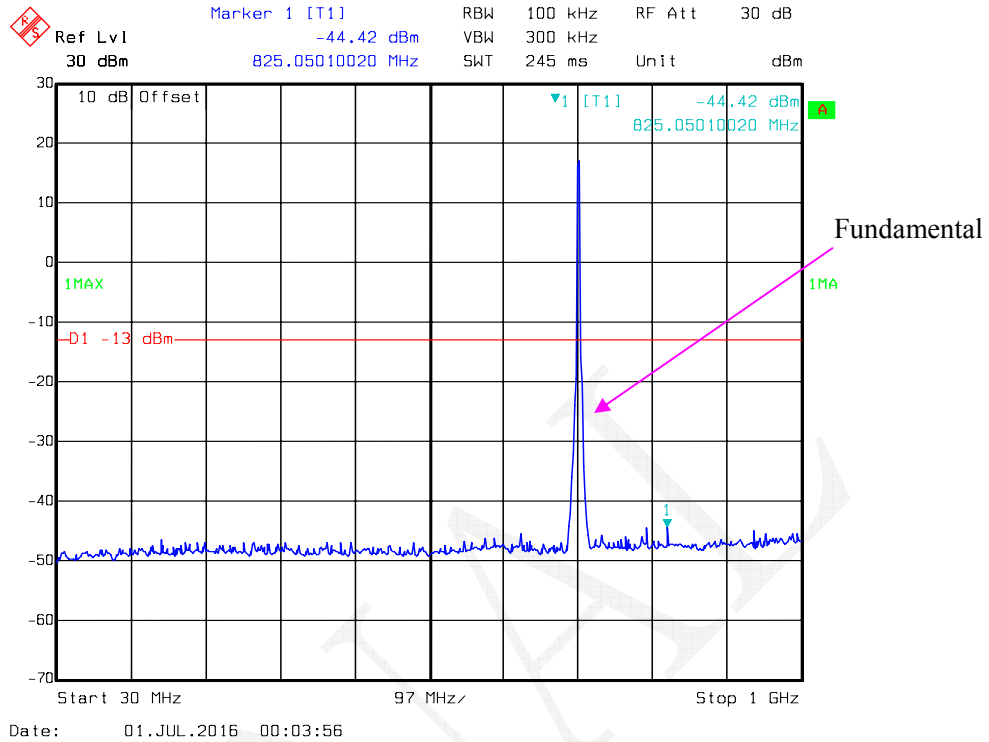


QPSK_20MHz

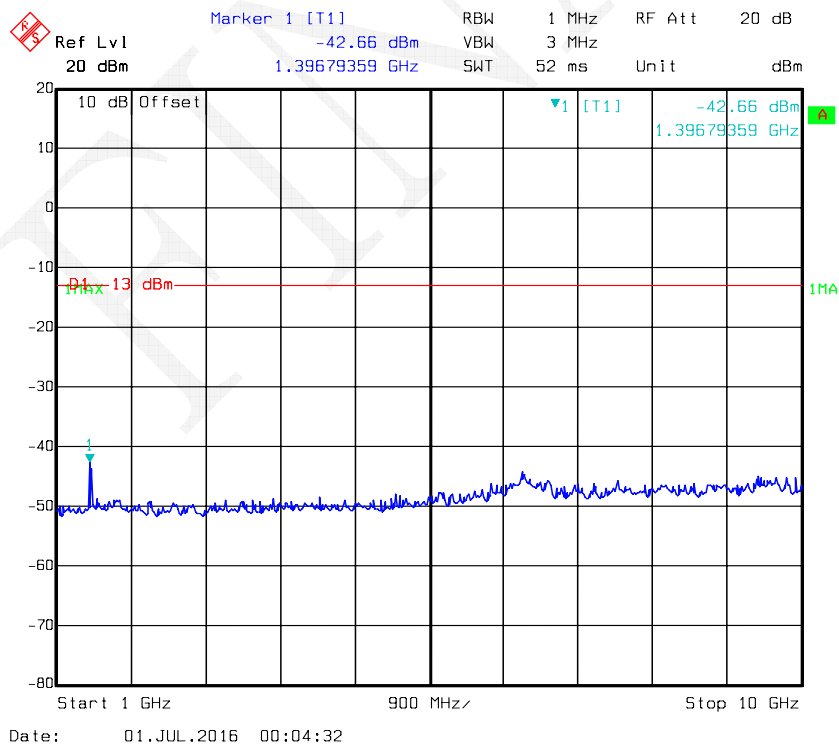
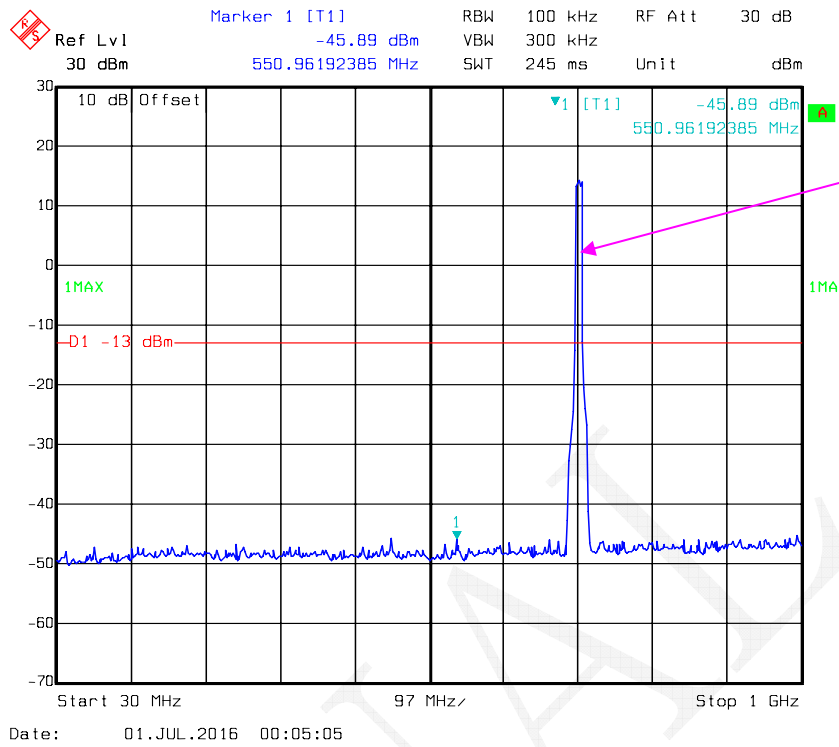


LTE Band 17 (Middle Channel)

QPSK_5MHz



QPSK_10MHz



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

Applicable Standard

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

Test Procedure

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

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

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

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

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2015-08-03	2016-08-02
Sunol Sciences	Antenna	JB3	A060611-3	2014-07-28	2017-07-27
HP	Amplifier	8447E	2434A02181	2015-09-01	2016-09-01
R&S	Spectrum Analyzer	FSEM	DE23437	2015-11-23	2016-11-22
ETS LINDGREN	Horn Antenna	3115	000 527 35	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2016-02-19	2017-02-19
Agilent	MXG Vector Signal Generator	N5182B	MY51350142	2016-03-30	2017-03-29
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2015-09-06	2018-09-06
N/A	Coaxial Cable	14m	N/A	2016-05-06	2017-05-06
N/A	Coaxial Cable	8m	N/A	2016-05-06	2017-05-06
N/A	Coaxial Cable	2m	N/A	2016-05-06	2017-05-06
Mini Circuit	High Pass Filter	VHF-3100+	31251	2016-05-06	2017-05-06
Mini Circuit	High Pass Filte	VHF-1200+	N/A	2016-05-06	2017-05-06

* **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:	28.5 °C
Relative Humidity:	39 %
ATM Pressure:	100.1 kPa

The testing was performed by Lion Xiao on 2016-06-27.

EUT Operation Mode: Transmitting

Cellular Band

30MHz-10 GHz

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM850, Frequency:836.600 MHz								
1673.200	H	33.67	-67.4	10.6	1.5	-58.3	-13.0	45.3
1673.200	V	38.35	-63	10.6	1.5	-53.9	-13.0	40.9
2509.800	H	31.03	-67	13.1	2.8	-56.7	-13.0	43.7
2509.800	V	36.47	-60.6	13.1	2.8	-50.3	-13.0	37.3
289.300	H	35.72	-71.9	0.0	0.5	-72.4	-13.0	59.4
252.800	V	36.89	-68.8	0.0	0.5	-69.3	-13.0	56.3
WCDMA Band V R99,Frequency:836.600 MHz								
1673.200	H	32.45	-68.6	10.6	1.5	-59.5	-13.0	46.5
1673.200	V	36.08	-65.3	10.6	1.5	-56.2	-13.0	43.2
2509.800	H	31.63	-66.4	13.1	2.8	-56.1	-13.0	43.1
2509.800	V	34.39	-62.7	13.1	2.8	-52.4	-13.0	39.4
289.300	H	35.01	-72.6	0.0	0.5	-73.1	-13.0	60.1
252.800	V	36.75	-69	0.0	0.5	-69.5	-13.0	56.5

30MHz-20GHz:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM1900, Frequency:1880.000 MHz								
3760.000	H	34.85	-59.4	13.8	2.9	-48.5	-13.0	35.5
3760.000	V	36.60	-56.5	13.8	2.9	-45.6	-13.0	32.6
5800.000	H	37.97	-53.8	14.1	2.3	-42.0	-13.0	29.0
5800.000	V	39.10	-52.6	14.1	2.3	-40.8	-13.0	27.8
231.700	H	35.69	-72.3	0.0	0.5	-72.8	-13.0	59.8
299.400	V	36.11	-68.9	0.0	0.5	-69.4	-13.0	56.4
WCDMA Band II, R99, Frequency:1880.000 MHz								
3760.000	H	32.81	-61.5	13.8	2.9	-50.6	-13.0	37.6
3760.000	V	33.04	-60	13.8	2.9	-49.1	-13.0	36.1
5640.000	V	39.93	-51.7	14.0	2.1	-39.8	-13.0	26.8
5640.000	H	41.43	-50.3	14.0	2.1	-38.4	-13.0	25.4
231.700	H	35.49	-72.5	0.0	0.5	-73.0	-13.0	60.0
299.400	V	36.34	-68.6	0.0	0.5	-69.1	-13.0	56.1
WCDMA Band IV, R99, Frequency:1880.000 MHz								
3465.000	H	37.13	-59.8	13.9	1.9	-47.8	-13.0	34.8
3465.000	V	38.34	-57.8	13.9	1.9	-45.8	-13.0	32.8
5197.500	H	46.24	-44.8	14.0	2.3	-33.1	-13.0	20.1
5197.500	V	47.08	-45.5	14.0	2.3	-33.8	-13.0	20.8
266.400	H	35.93	-72	0.0	0.5	-72.5	-13.0	59.5
302.700	V	36.40	-68.2	0.0	0.5	-68.7	-13.0	55.7

LTE Bands(Worst case as below):**30MHz-20GHz:**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
LTE band II, QPSK, Test Frequency:1880.00 MHz								
3760.000	H	38.20	-56.1	13.8	2.9	-45.2	-13.0	32.2
3760.000	V	35.41	-57.7	13.8	2.9	-46.8	-13.0	33.8
5640.000	H	45.39	-46.3	14.0	2.1	-34.4	-13.0	21.4
5640.000	V	45.86	-45.8	14.0	2.1	-33.9	-13.0	20.9
231.700	H	35.41	-72.6	0.0	0.5	-73.1	-13.0	60.1
299.400	V	36.38	-68.6	0.0	0.5	-69.1	-13.0	56.1
LTE Band IV, QPSK, Test Frequency:1732.50 MHz								
3465.000	H	36.21	-60.7	13.9	1.9	-48.7	-13.0	35.7
3465.000	V	38.03	-58.1	13.9	1.9	-46.1	-13.0	33.1
5197.500	H	50.65	-40.4	14.0	2.3	-28.7	-13.0	15.7
5197.500	V	50.84	-41.7	14.0	2.3	-30.0	-13.0	17.0
266.400	H	35.19	-72.7	0.0	0.5	-73.2	-13.0	60.2
302.700	V	36.32	-68.3	0.0	0.5	-68.8	-13.0	55.8

LTE Band V(30MHz-10GHz):

ETD Band V (50MHz-10GHz):								
Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 836.5MHz								
1673.000	H	40.57	-60.5	10.6	1.5	-51.4	-13.0	38.4
1673.000	V	42.82	-58.6	10.6	1.5	-49.5	-13.0	36.5
2509.500	H	39.45	-58.6	13.1	2.8	-48.3	-13.0	35.3
2509.500	V	40.13	-57	13.1	2.8	-46.7	-13.0	33.7
289.300	H	35.98	-71.6	0.0	0.5	-72.1	-13.0	59.1
252.800	V	36.51	-69.2	0.0	0.5	-69.7	-13.0	56.7

LTE Band VII(30MHz-26GHz):

EFL Band VR(50MHz-25GHz)								
Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK,Frequency:2535.00 MHz								
5070.000	H	48.51	-42.8	13.9	2.4	-31.3	-25.0	6.3
5070.000	V	50.17	-42	13.9	2.4	-30.5	-25.0	5.5
7605.000	H	45.81	-41.7	13.2	3.1	-31.6	-25.0	6.6
7605.000	V	47.22	-40.3	13.2	3.1	-30.2	-25.0	5.2
250.900	H	35.98	-72.2	0.0	0.5	-72.7	-25.0	47.7
291.700	V	36.05	-69	0.0	0.5	-69.5	-25.0	44.5

LTE Band 17(30MHz-10GHz)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK,Frequency:710.00 MHz								
1420.000	H	46.97	-53.9	9.1	1.3	-46.1	-13.0	33.1
1420.000	V	51.23	-49.4	9.1	1.3	-41.6	-13.0	28.6
2130.000	H	44.66	-51.3	11.2	1.4	-41.5	-13.0	28.5
2130.000	V	48.41	-46.4	11.2	1.4	-36.6	-13.0	23.6
305.100	H	35.84	-71	0.0	0.5	-71.5	-13.0	58.5
273.900	V	36.57	-68.8	0.0	0.5	-69.3	-13.0	56.3

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 = SG Level - Cable loss + Antenna Gain
- 3) Margin = Limit - Absolute Level

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

Applicable Standard

According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

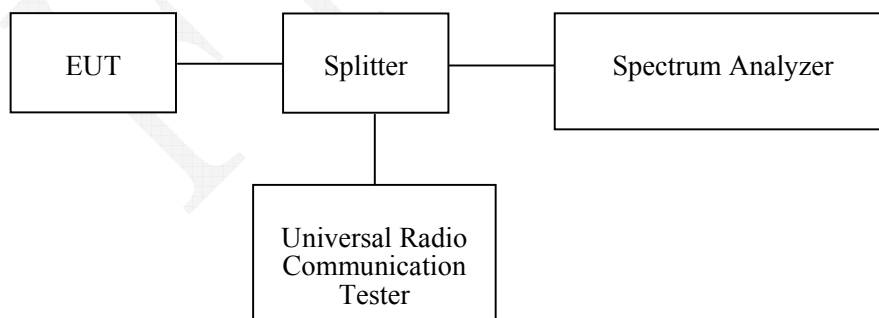
According to §27.53 (h), AWS emission limits—(1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

According to §27.53 (m), (4) For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log(P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log(P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Test Procedure

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

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-11-23	2016-11-22
R&S	Spectrum Analyzer	FSEM	831259/019	2015-07-28	2016-07-27
R&S	Universal Radio Communication Tester	CMU200	109 038	2015-07-28	2016-07-27
R&S	Wideband Radio Communication Tester	CMW500	106891	2015-11-23	2016-11-23
N/A	Coaxial Cable	0.1m	N/A	2016-05-06	2017-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2016-05-06	2017-05-06
E-Microwave	Attenuator	EMCA10-5RN	0E01203239	2016-05-08	2017-05-08
Pasternack	RF Coaxial Cable	RF-01	N/A	2016-05-06	2017-05-06
Pasternack	RF Coaxial Cable	RF-02	N/A	2016-05-06	2017-05-06
N/A	Two-way Splitter	ODP-1-6-2S	0E0120142	2016-05-06	2017-05-06

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

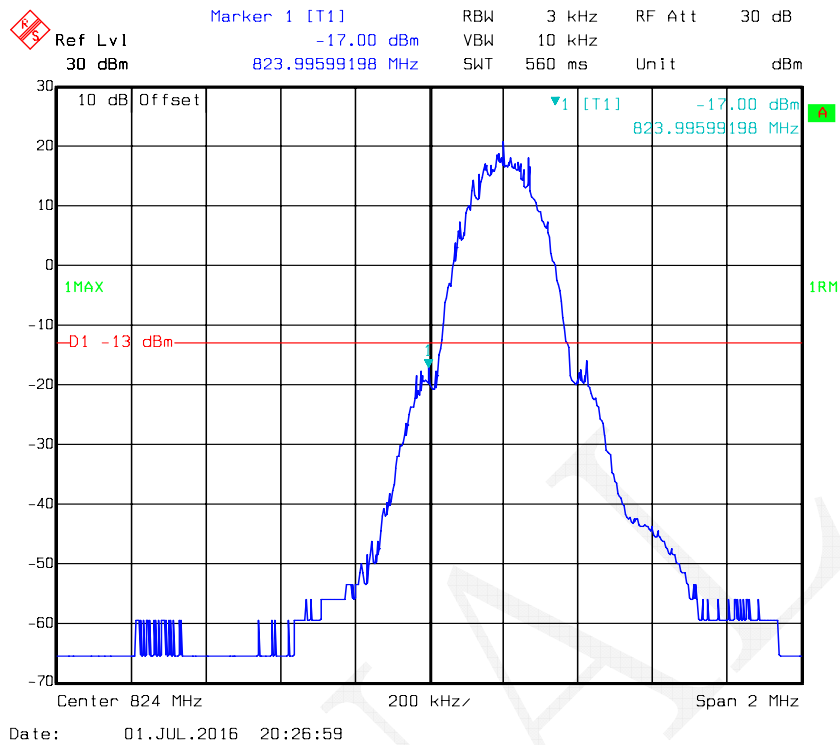
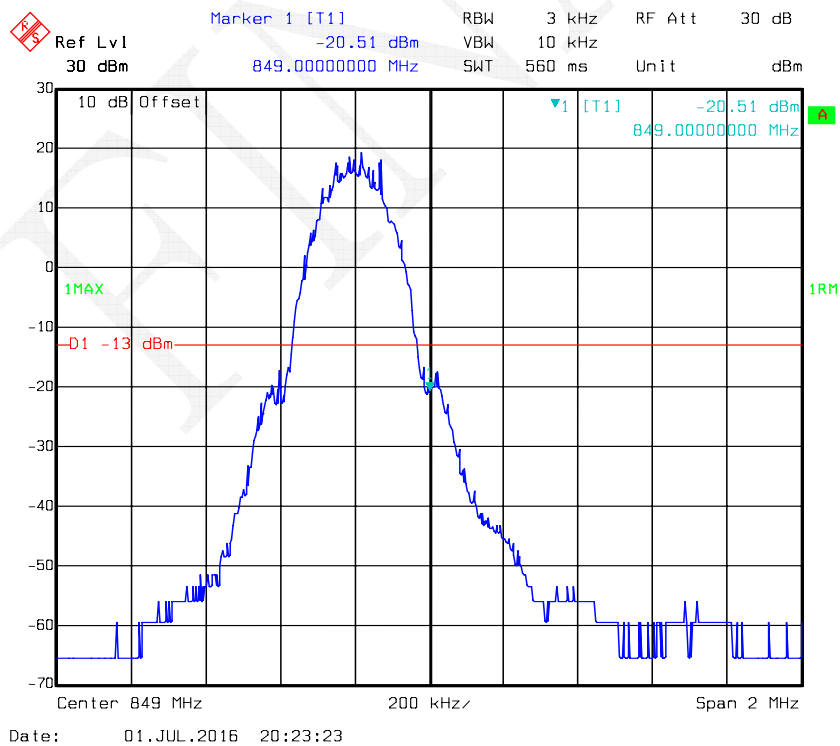
Test Data**Environmental Conditions**

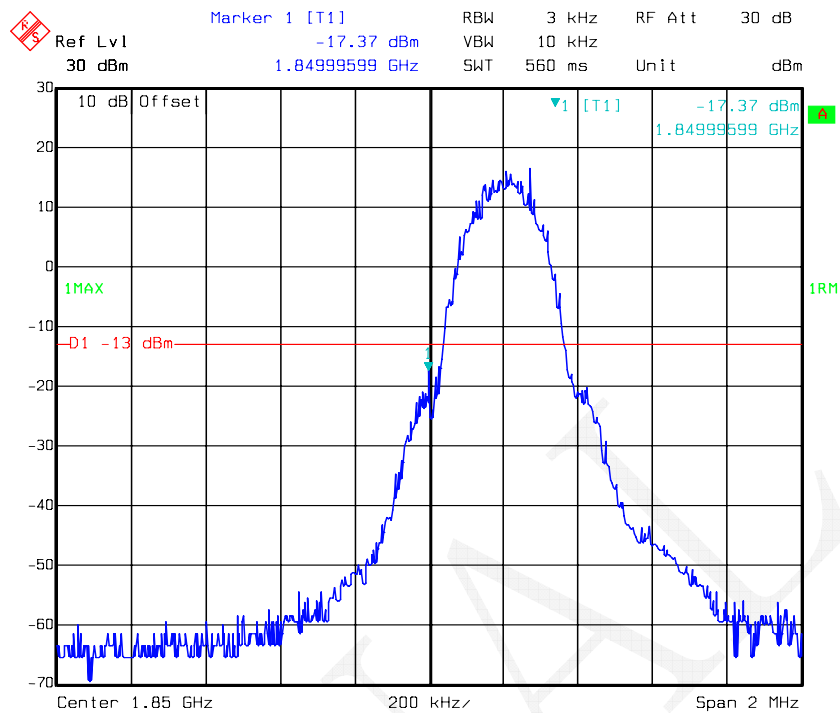
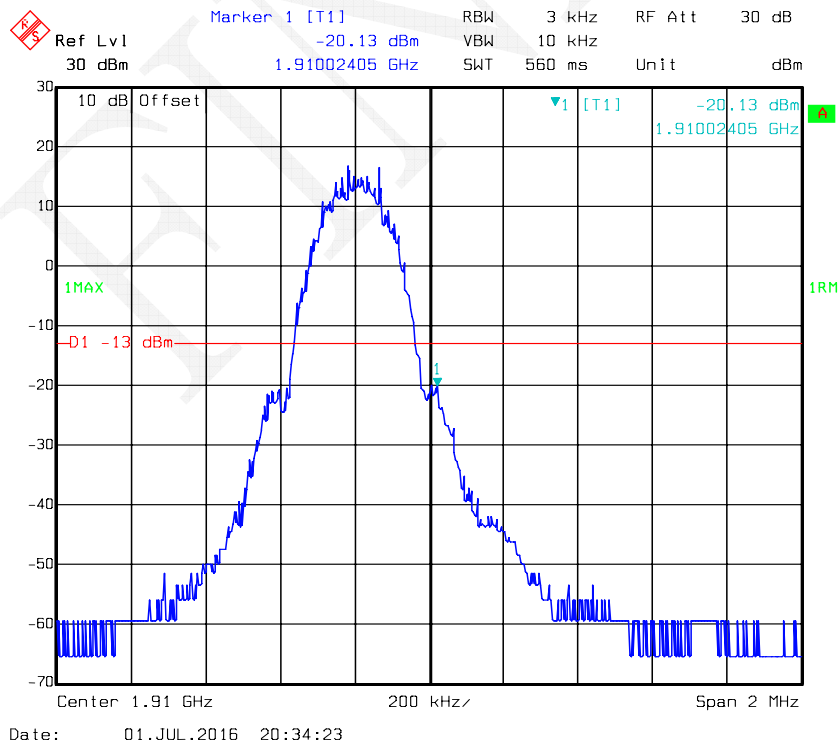
Temperature:	26.2 ~ 28.6 °C
Relative Humidity:	39 ~ 58%
ATM Pressure:	99.7~100.4 kPa

The testing was performed by Lion Xiao from 2016-06-15 to 2016-07-01.

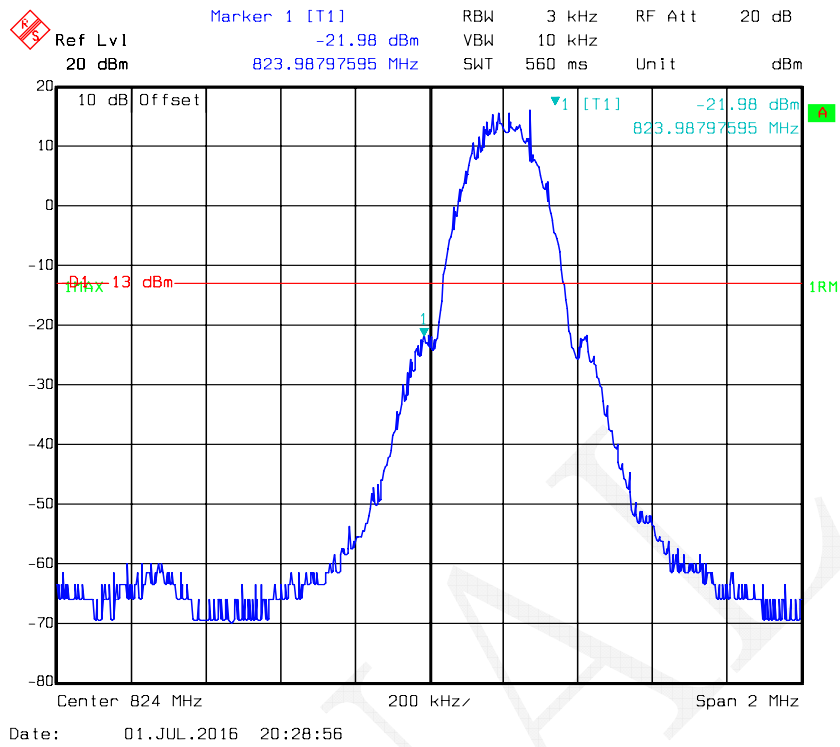
Test Mode: Transmitting

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

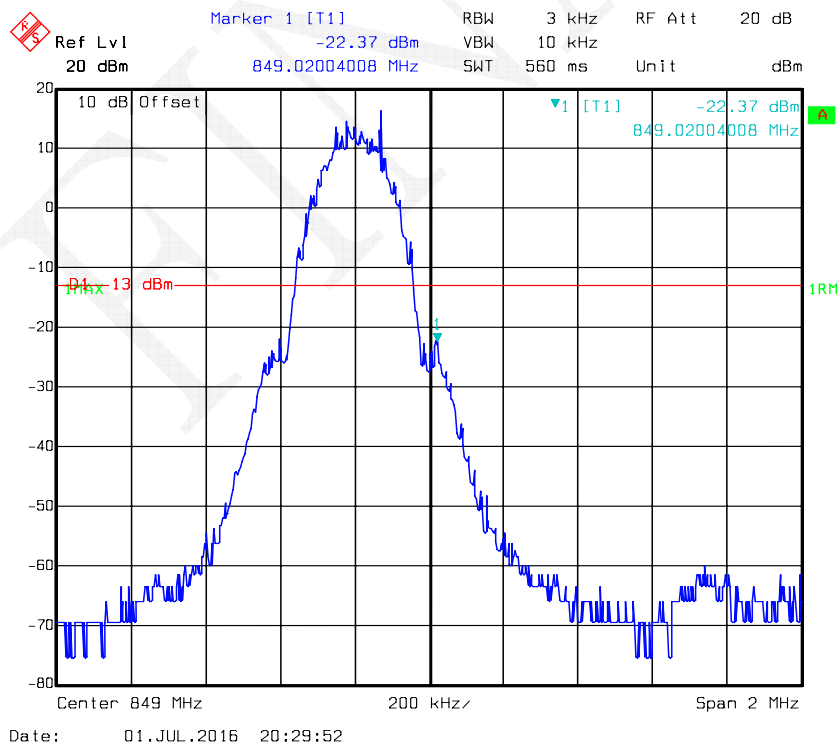
GSM 850, Left Band Edge**GSM 850, Right Band Edge**

GSM 1900, Left Band Edge**GSM 1900, Right Band Edge**

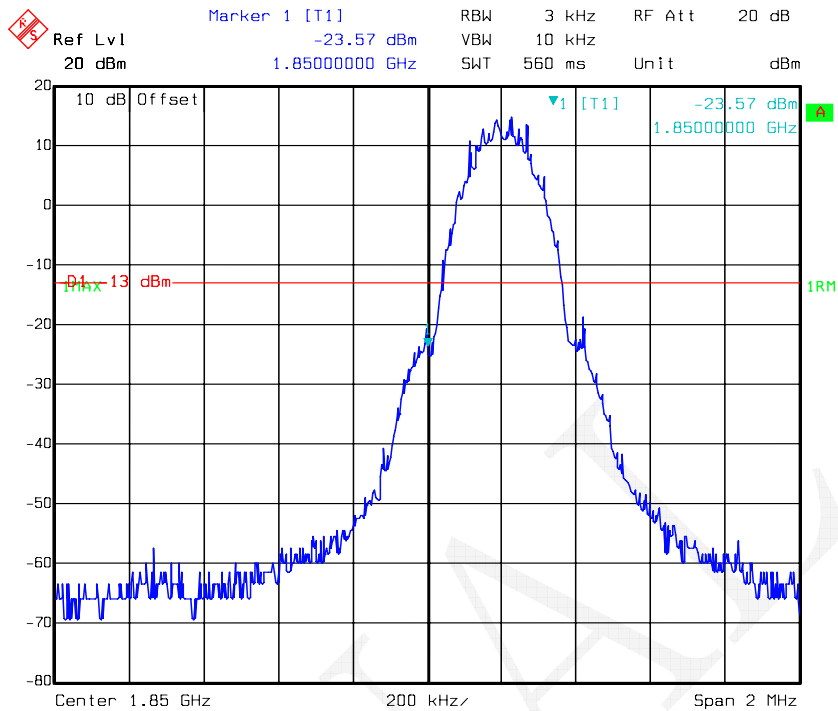
EDGE 850, Left Band Edge



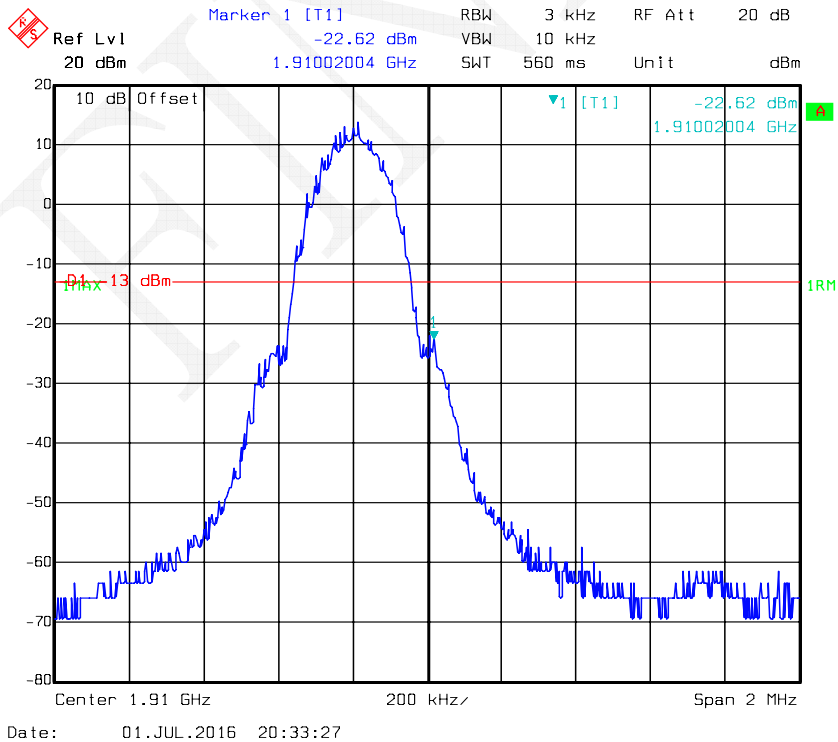
EDGE 850, Right Band Edge



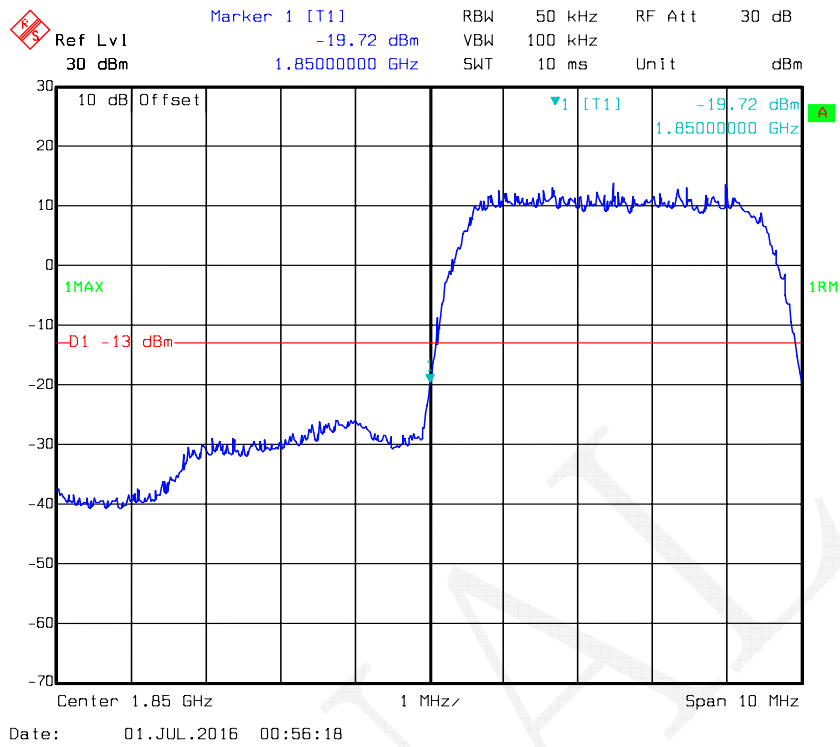
EDGE 1900, Left Band Edge



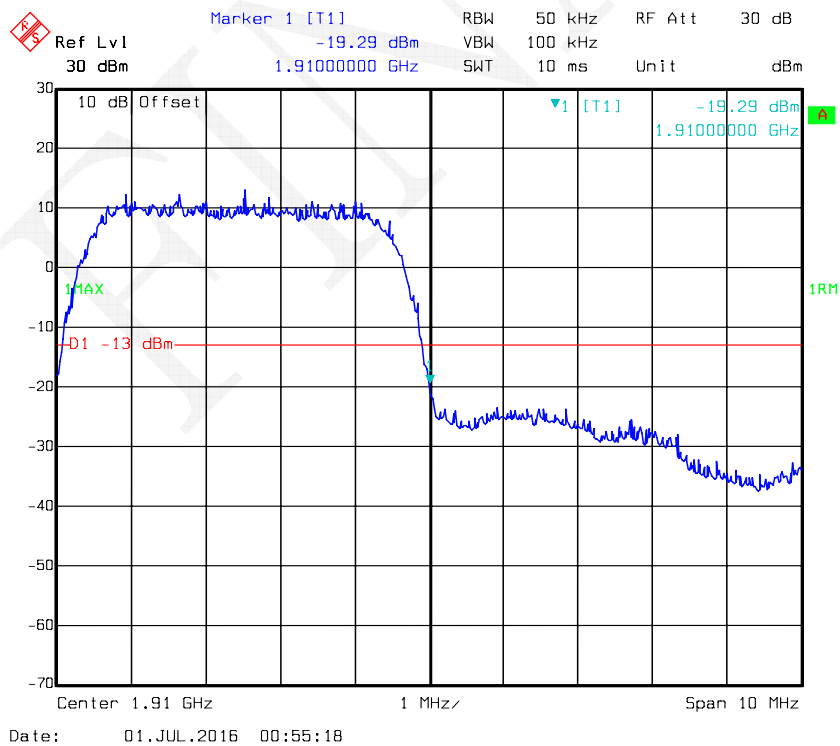
EDGE 1900, Right Band Edge



REL99 Band II, Left Band Edge



REL99 Band II, Right Band Edge



Ref Lvl 30 dBm

Marker 1 [T1] -19.94 dBm 1.85000000 GHz

RBW 50 kHz RF Att 30 dB

VBW 100 kHz

SWT 10 ms Unit dBm

10 dB Offset

1MAX

-D1 -13 dBm

1RM

Center 1.85 GHz 1 MHz/ Span 10 MHz

Date: 01.JUL.2016 00:51:24

Ref Lvl 30 dBm Offset 10 dB

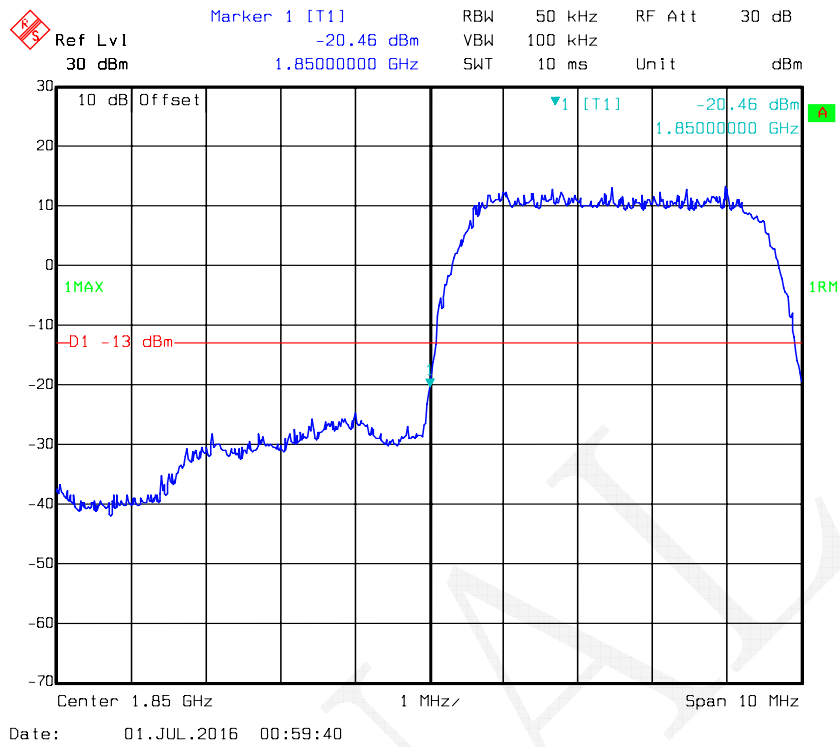
Marker 1 [T1] -18.64 dBm 1.91000000 GHz

RBW 50 kHz VBW 100 kHz SWT 10 ms Unit dBm

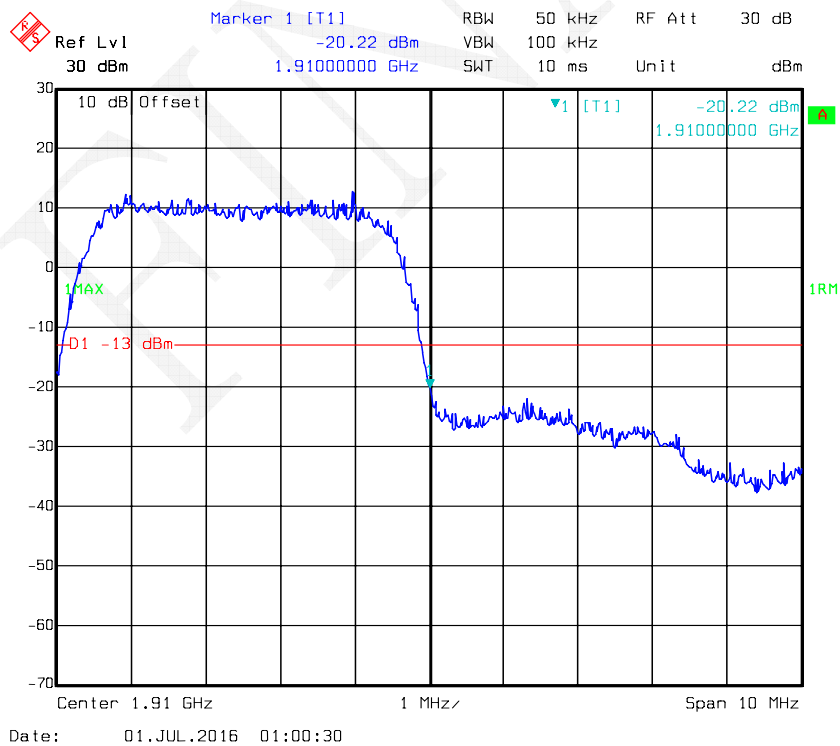
Center 1.91 GHz 1 MHz/ Span 10 MHz

Date: 01.JUL.2016 00:51:59

HSUPA Band II, Left Band Edge

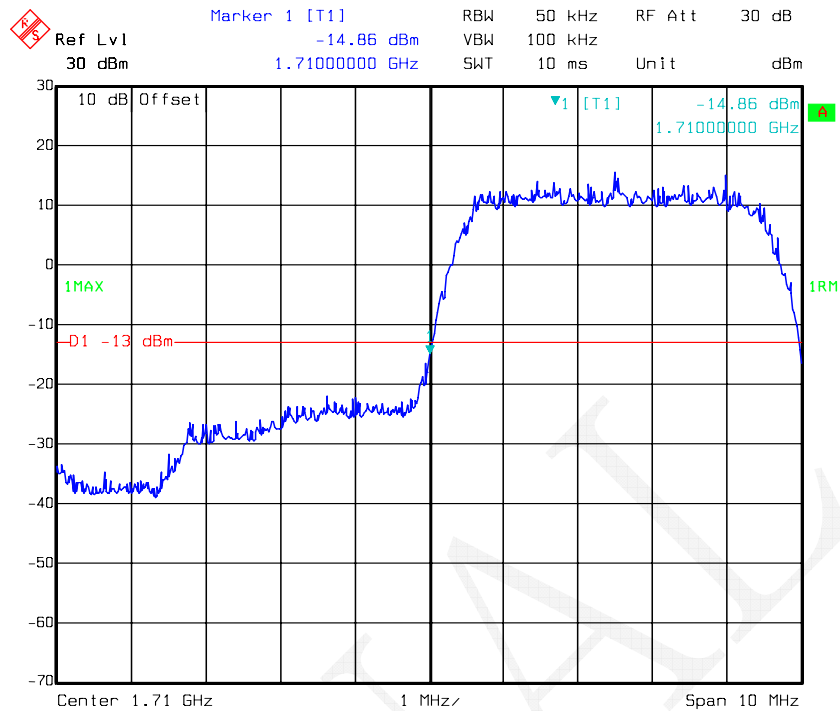


HSUPA Band II, Right Band Edge



WCDMA Band IV

REL99 Band IV, Left Band Edge



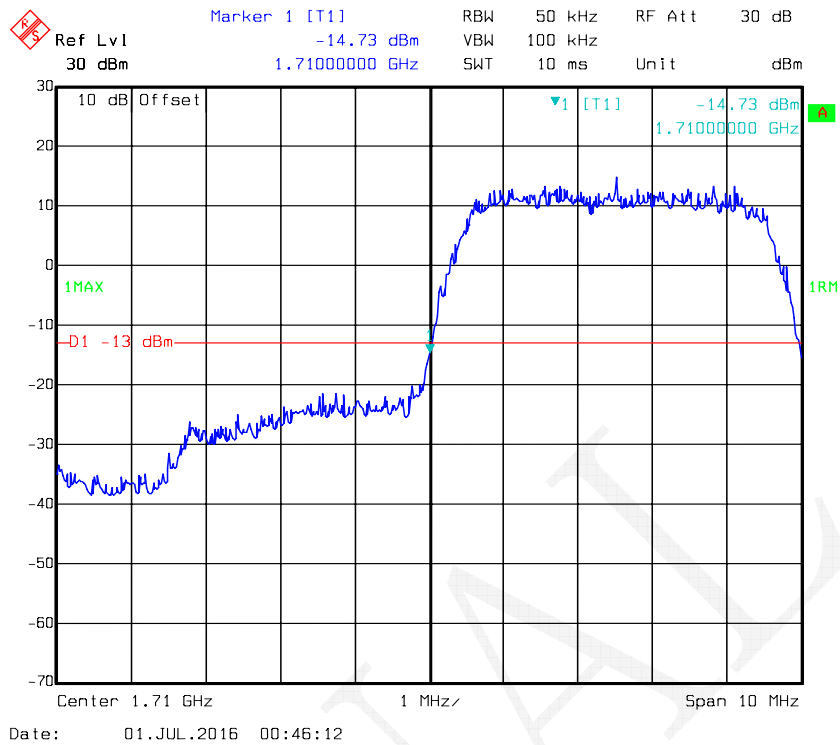
Date: 01.JUL.2016 00:36:51

REL99 Band IV Right Band Edge

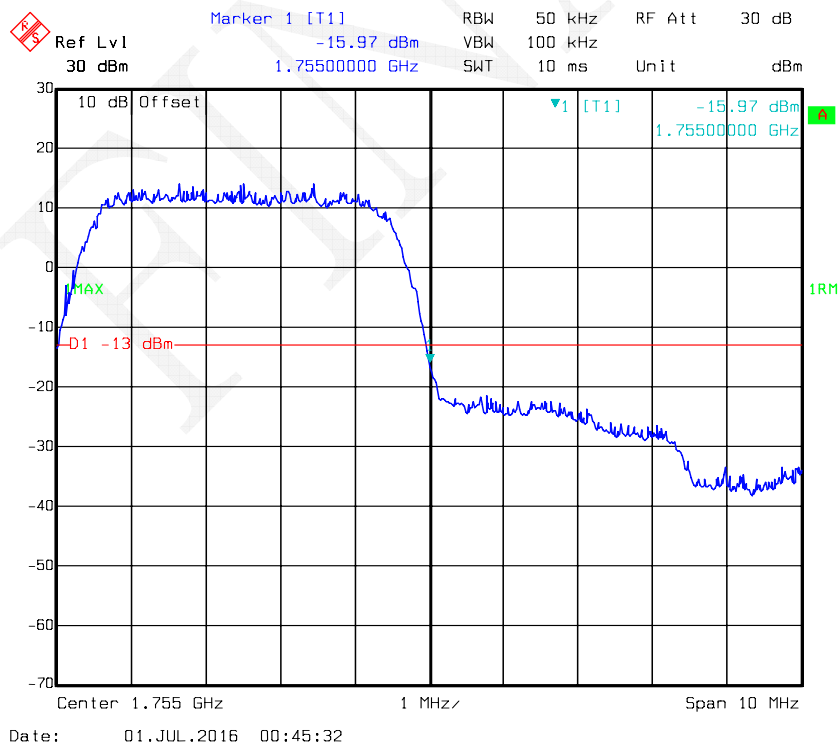


Date: 01.JUL.2016 00:35:39

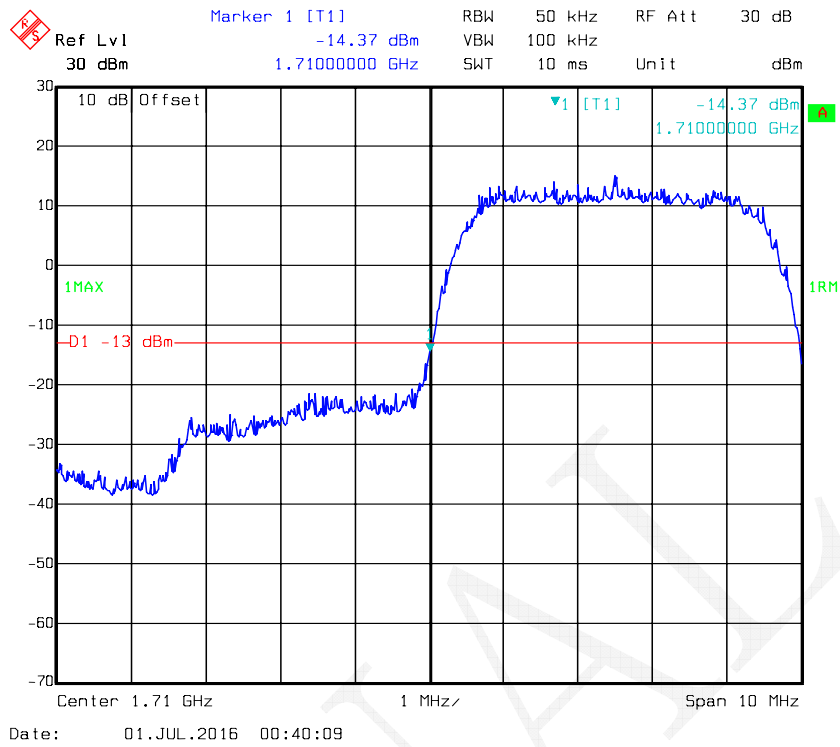
HSDPA Band IV, Left Band Edge



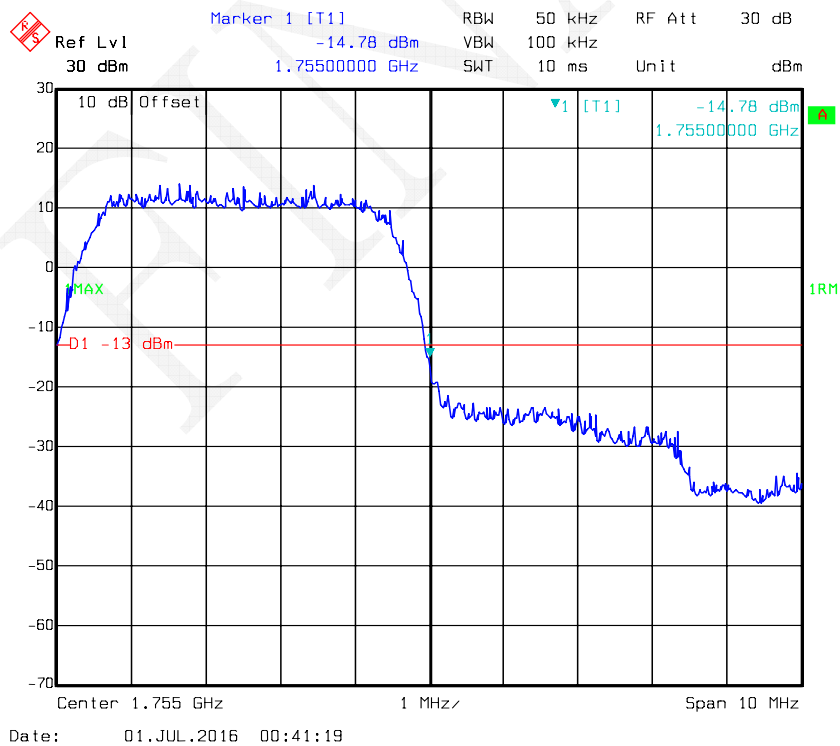
HSDPA Band IV, Right Band Edge



HSUPA Band IV, Left Band Edge

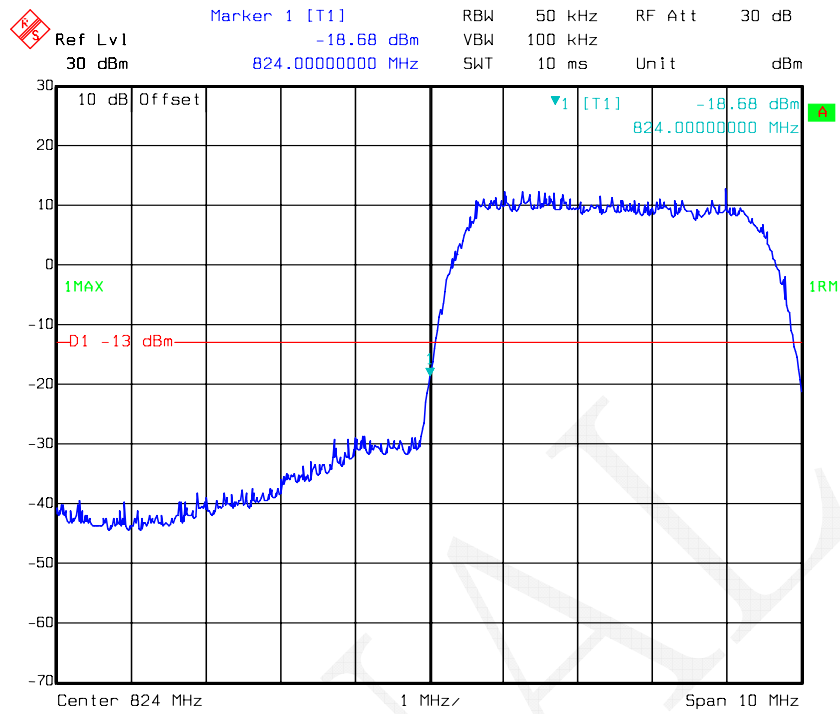


HSUPA Band IV, Right Band Edge



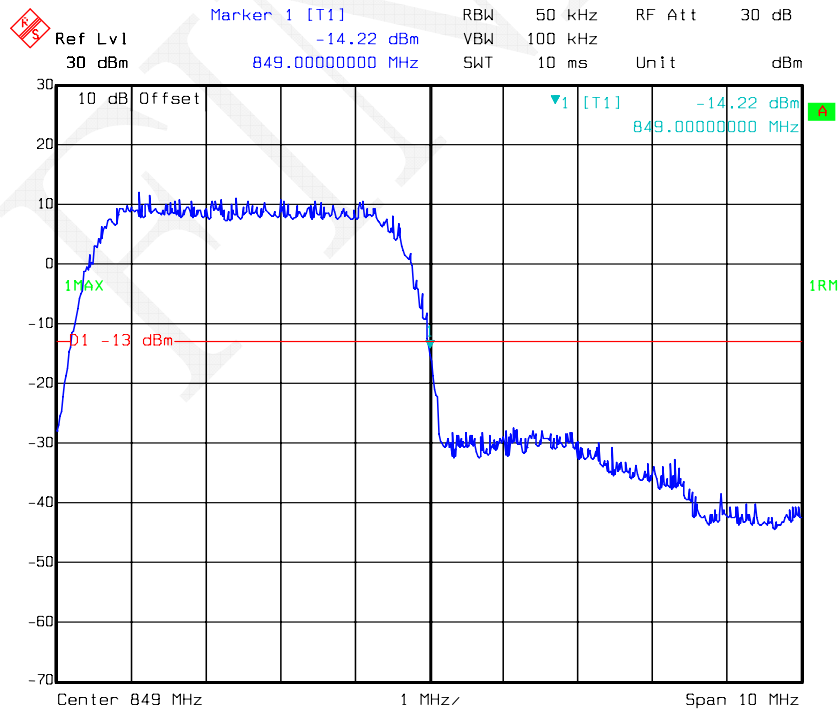
WCDMA Band V

REL99 Band V, Left Band Edge



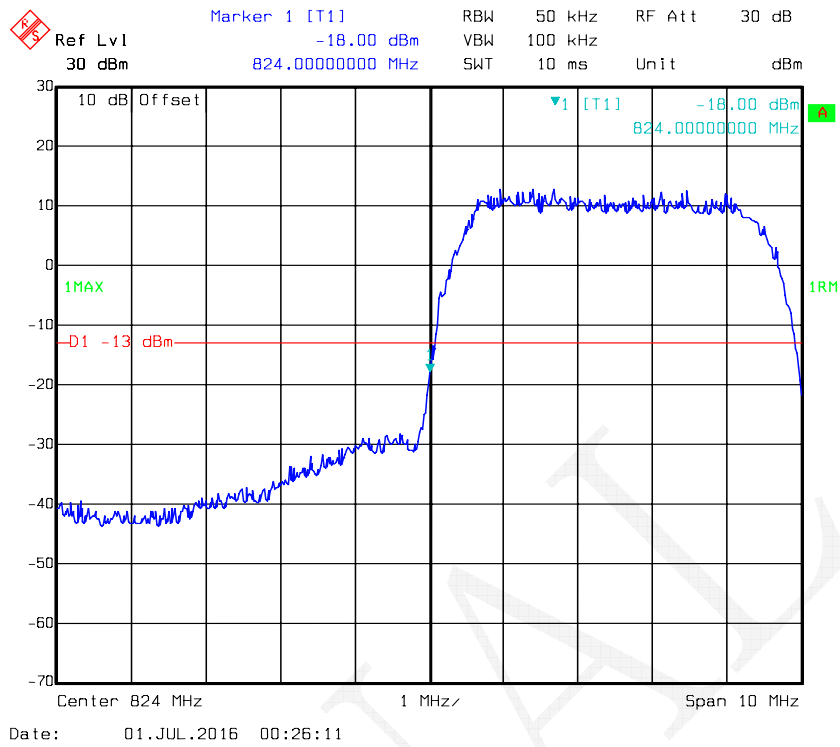
Date: 01.JUL.2016 00:33:43

REL99 Band V Right Band Edge

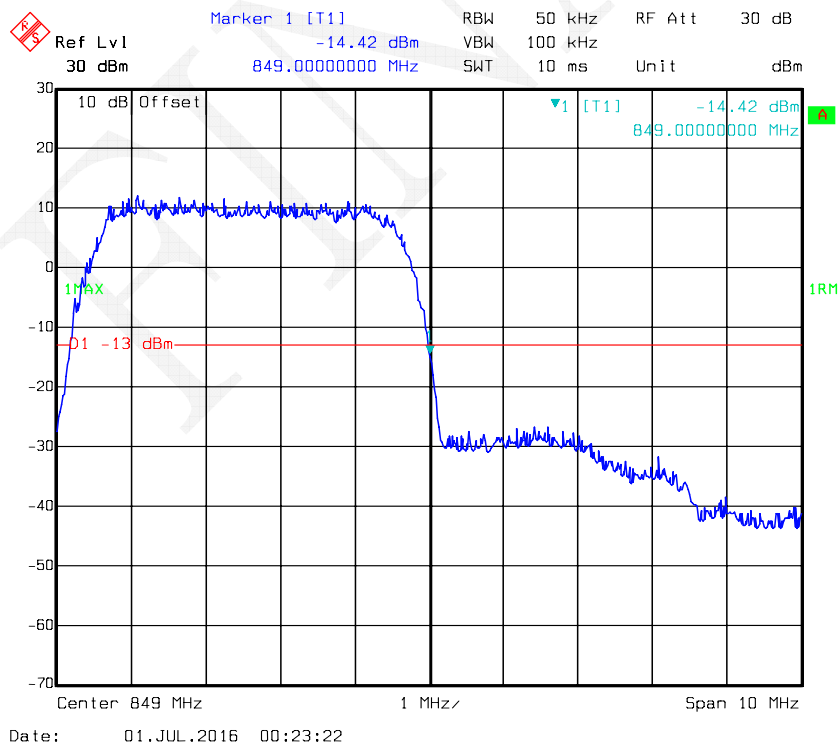


Date: 01.JUL.2016 00:33:15

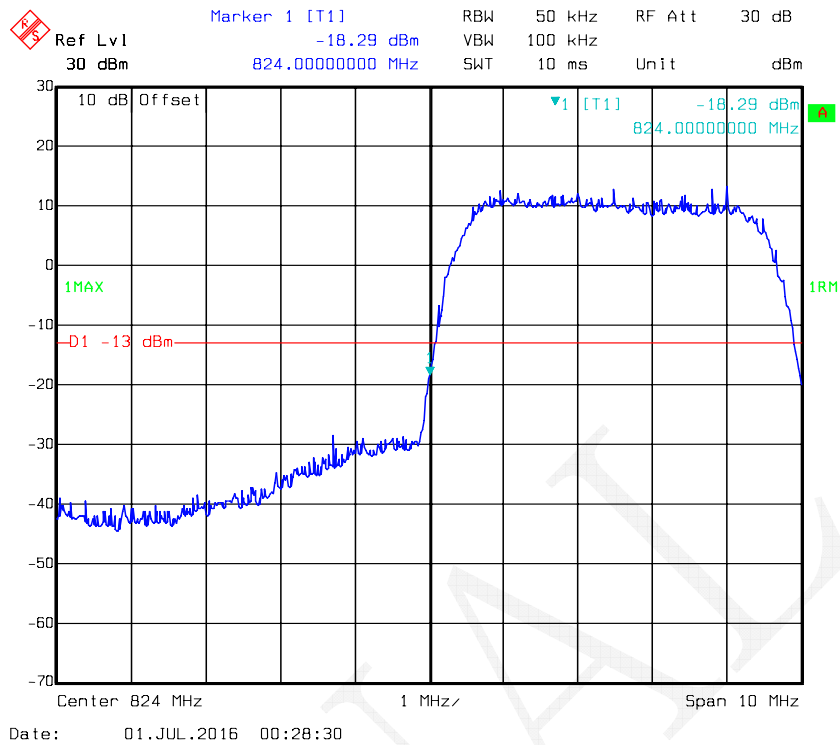
HSDPA Band V, Left Band Edge



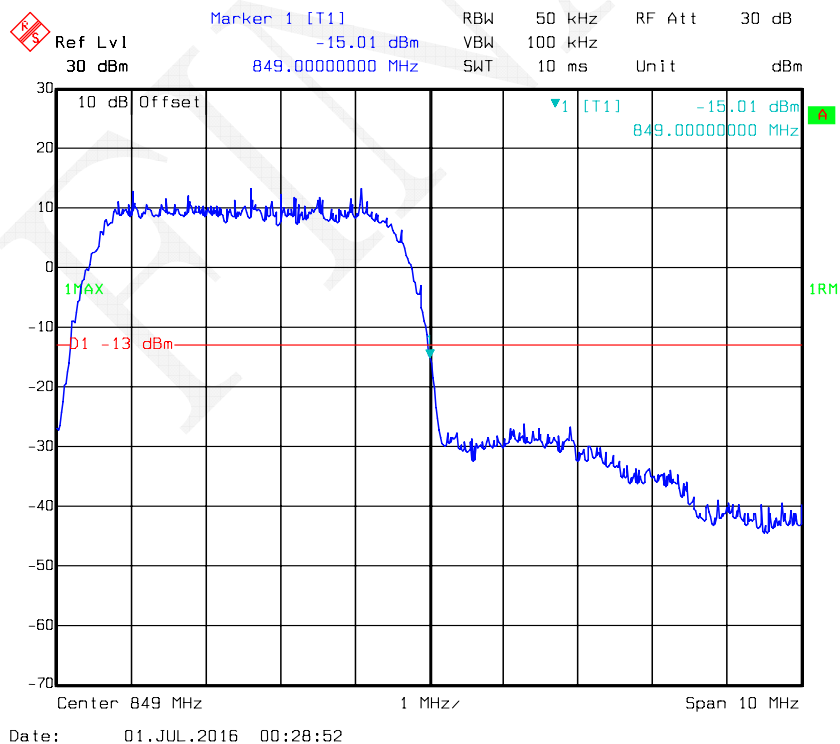
HSDPA Band V, Right Band Edge



HSUPA Band V, Left Band Edge

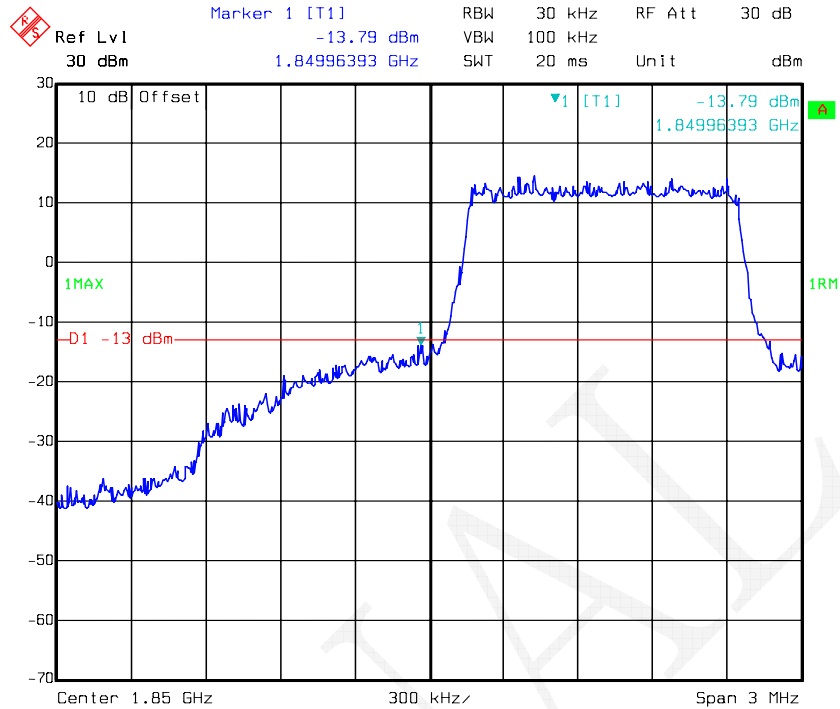


HSUPA Band V, Right Band Edge



LTE Band II

QPSK_1.4MHz_FULL RB_Left



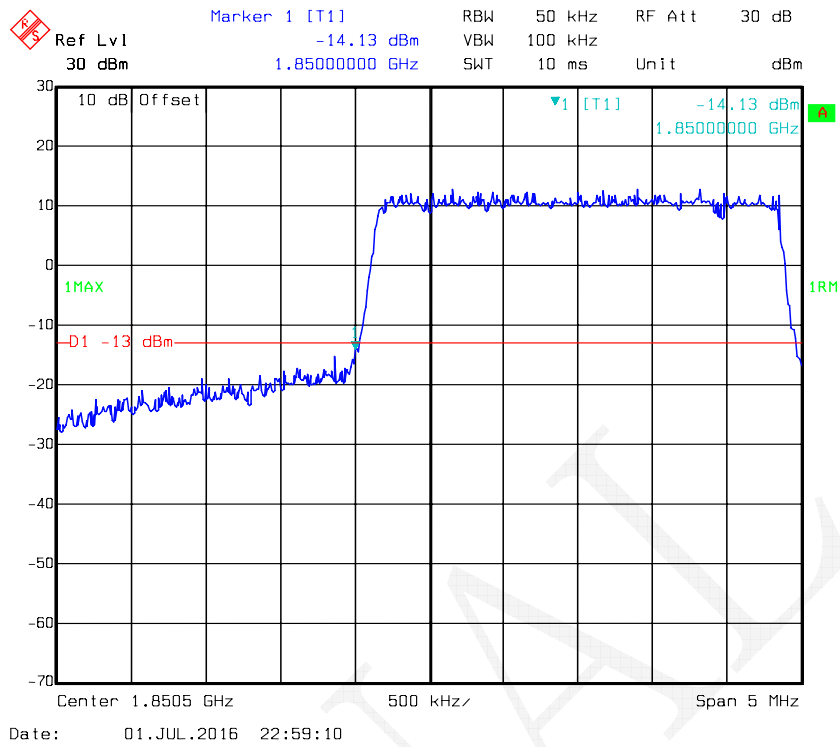
Date: 01.JUL.2016 23:06:36

QPSK_1.4MHz_FULL RB_Right

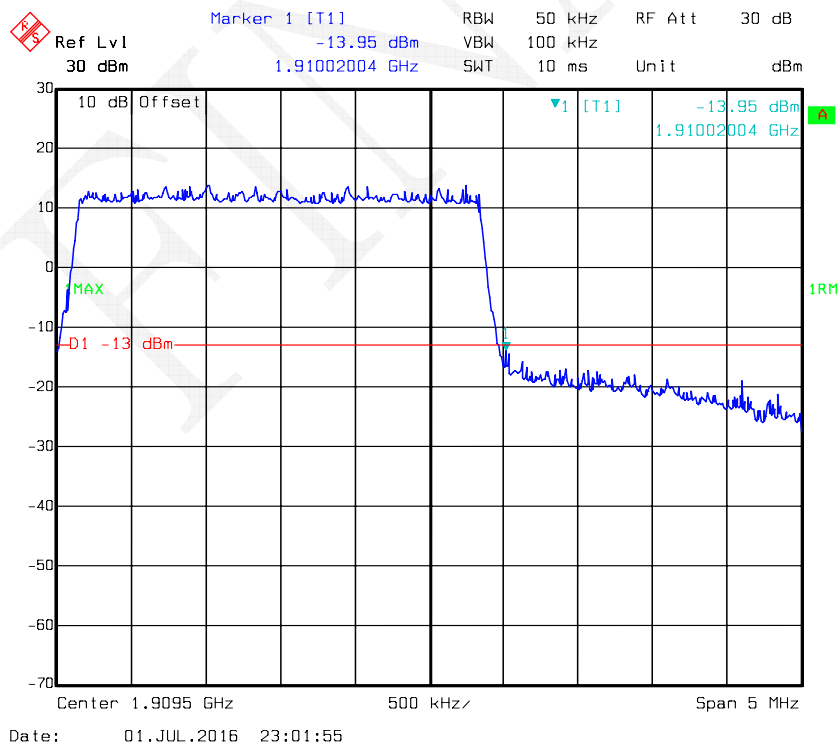


Date: 01.JUL.2016 23:03:08

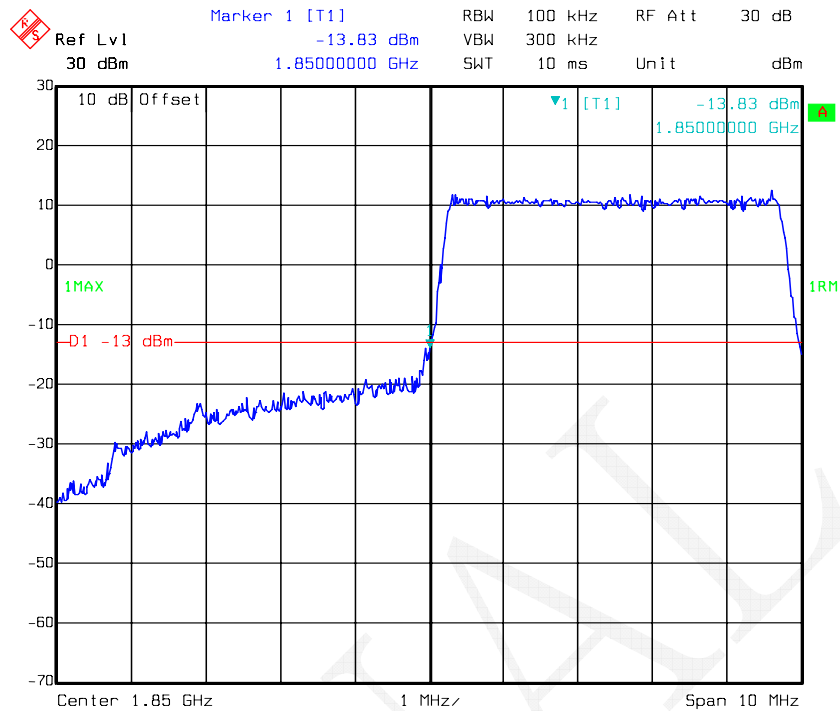
QPSK_3MHz_FULL RB_Left



QPSK_3MHz_FULL RB_Right

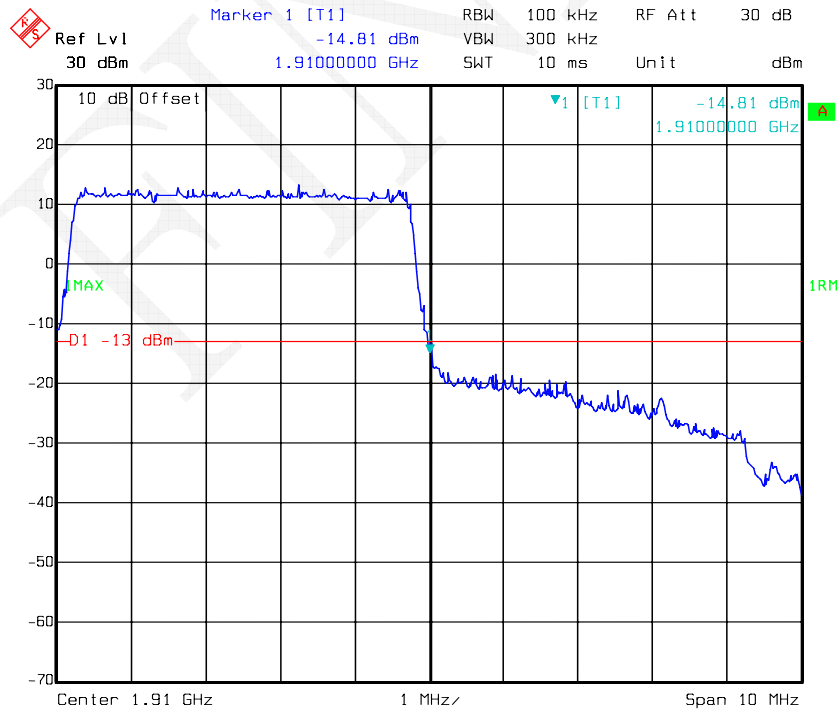


QPSK_5MHz_FULL RB_ Left



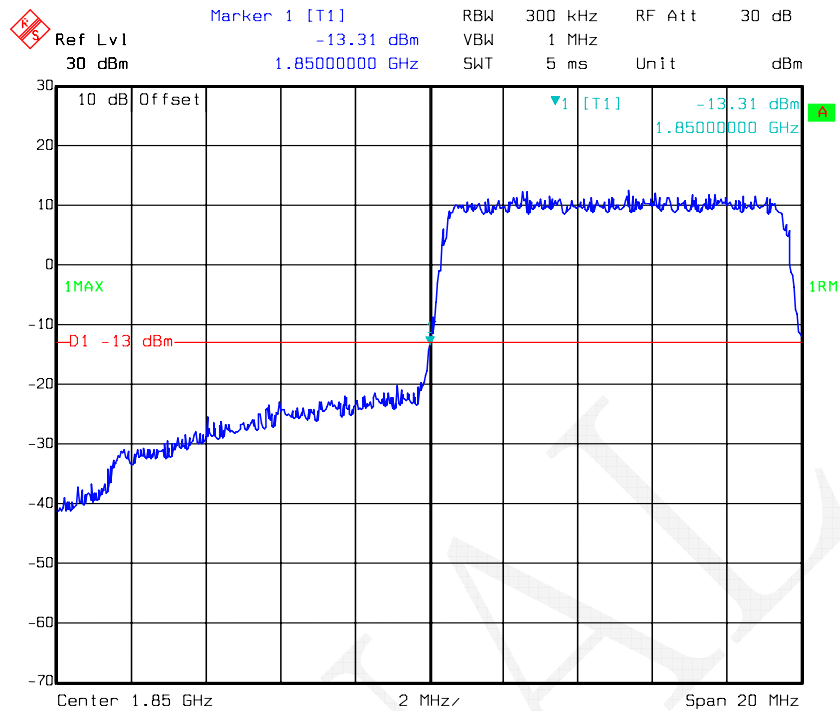
Date: 01.JUL.2016 22:56:51

QPSK_5MHz_FULL RB_ Right



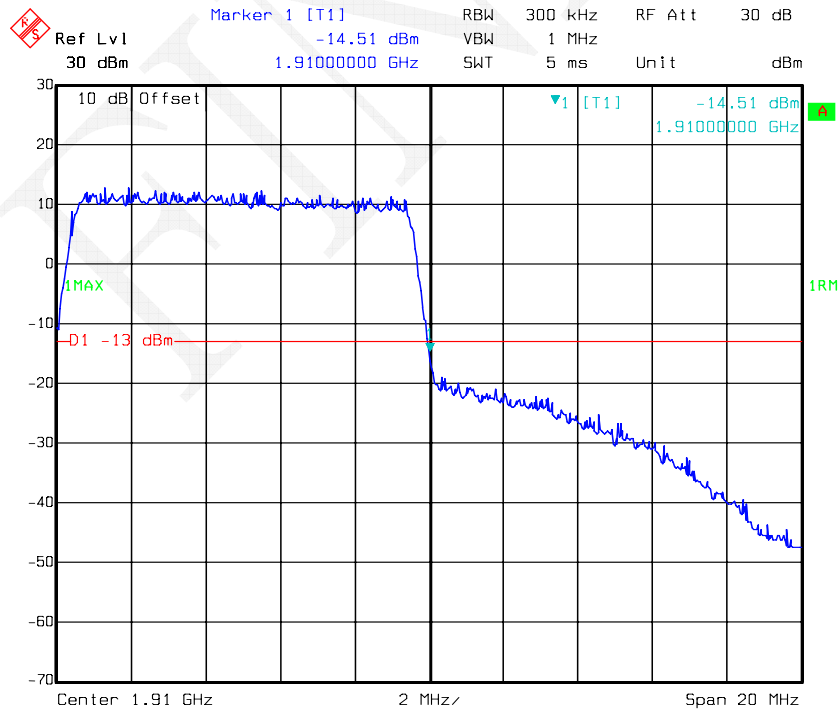
Date: 01.JUL.2016 22:55:00

QPSK_10MHz_FULL RB_Left



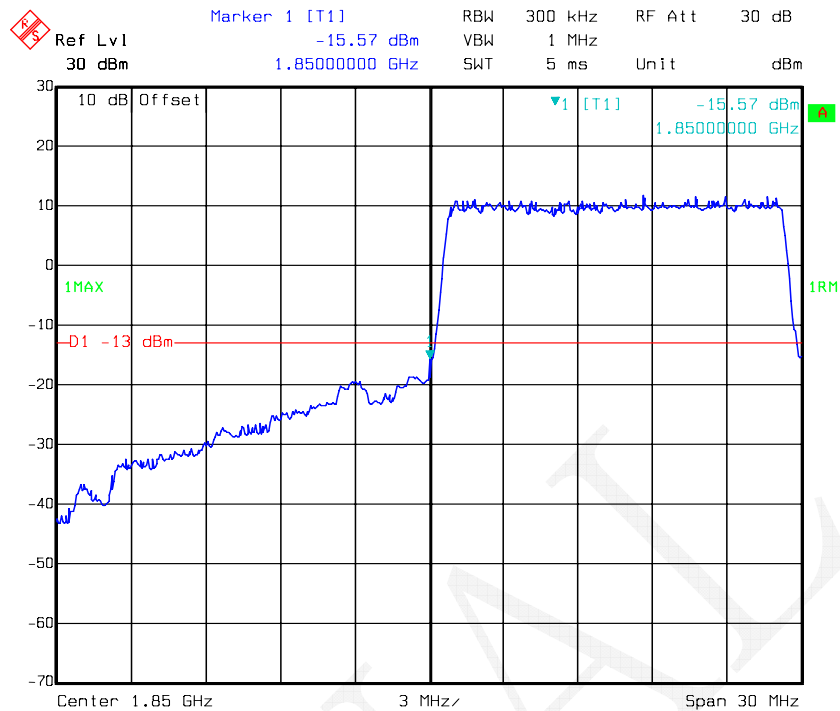
Date: 01.JUL.2016 22:51:30

QPSK_10MHz_FULL RB_Right



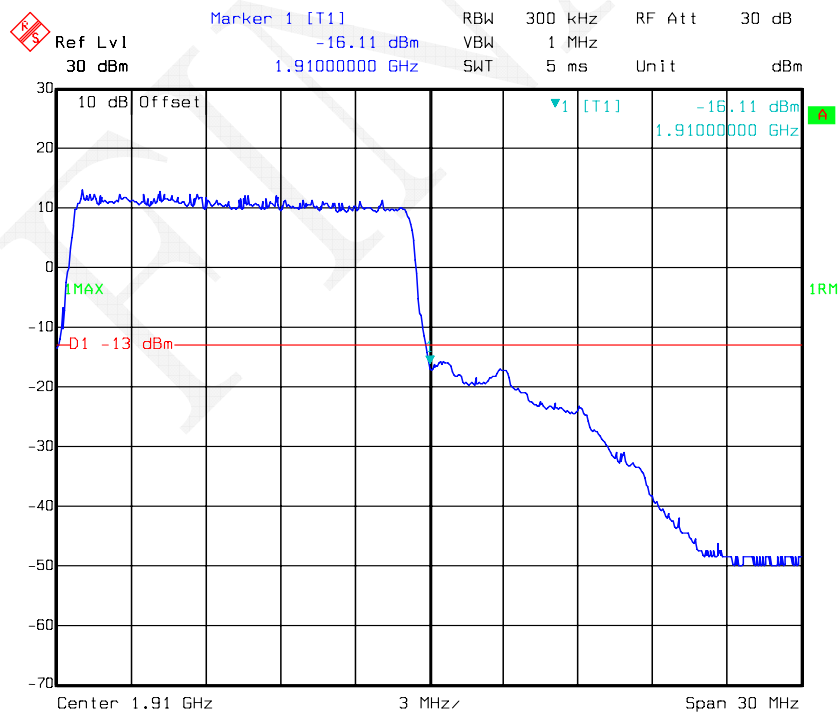
Date: 01.JUL.2016 22:53:02

QPSK_15MHz_FULL RB_Left



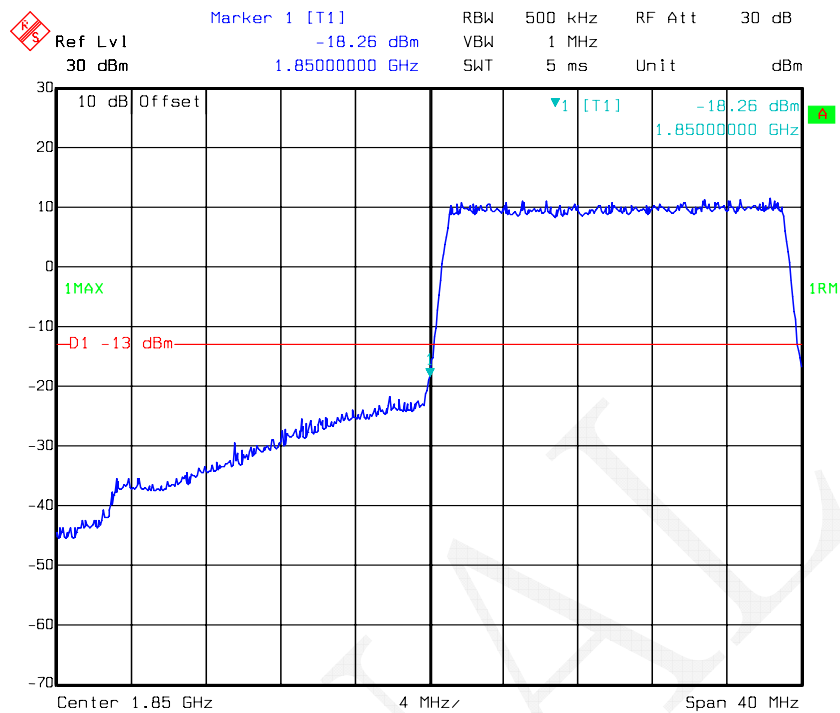
Date: 01.JUL.2016 22:50:38

QPSK_15MHz_FULL RB_Right



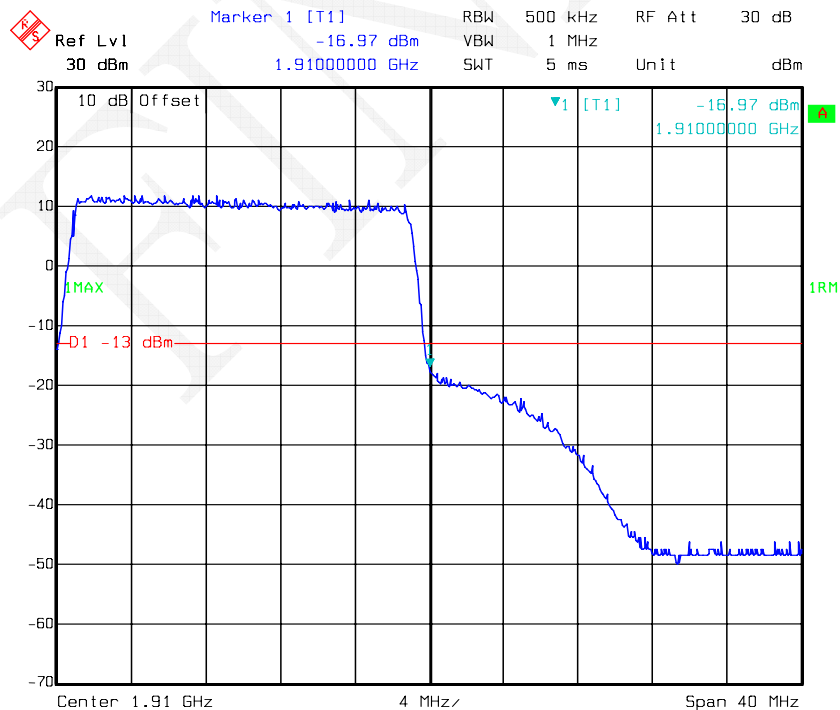
Date: 01.JUL.2016 22:48:54

QPSK_20MHz_FULL RB_Left



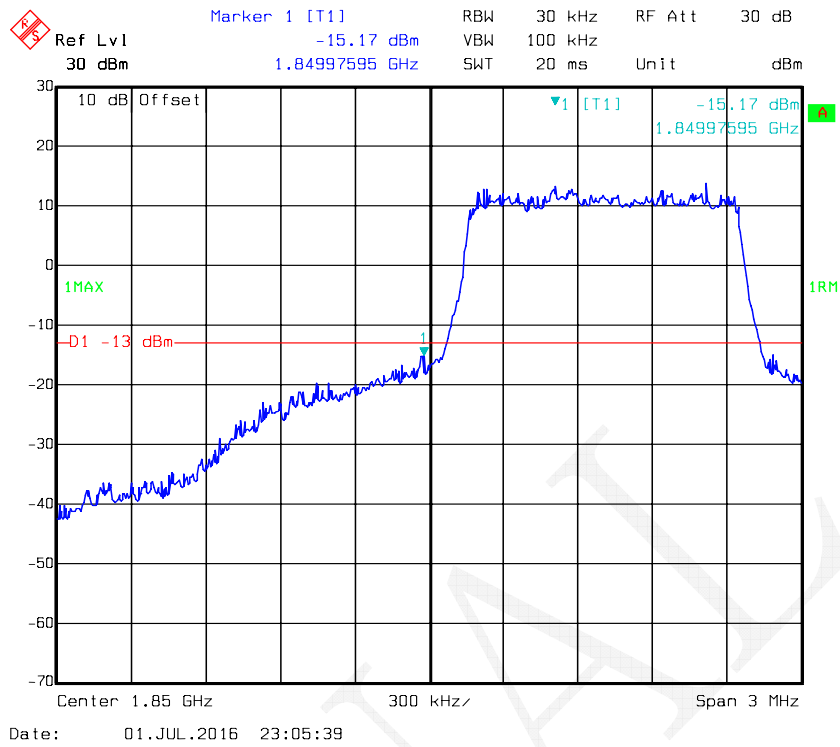
Date: 01.JUL.2016 22:46:37

QPSK_20MHz_FULL RB_Right

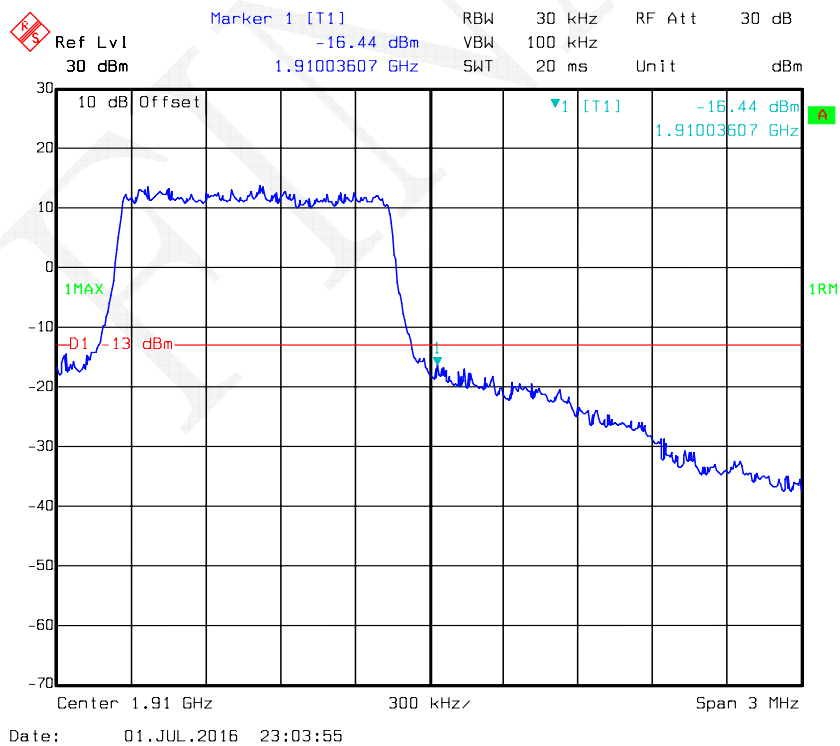


Date: 01.JUL.2016 22:47:59

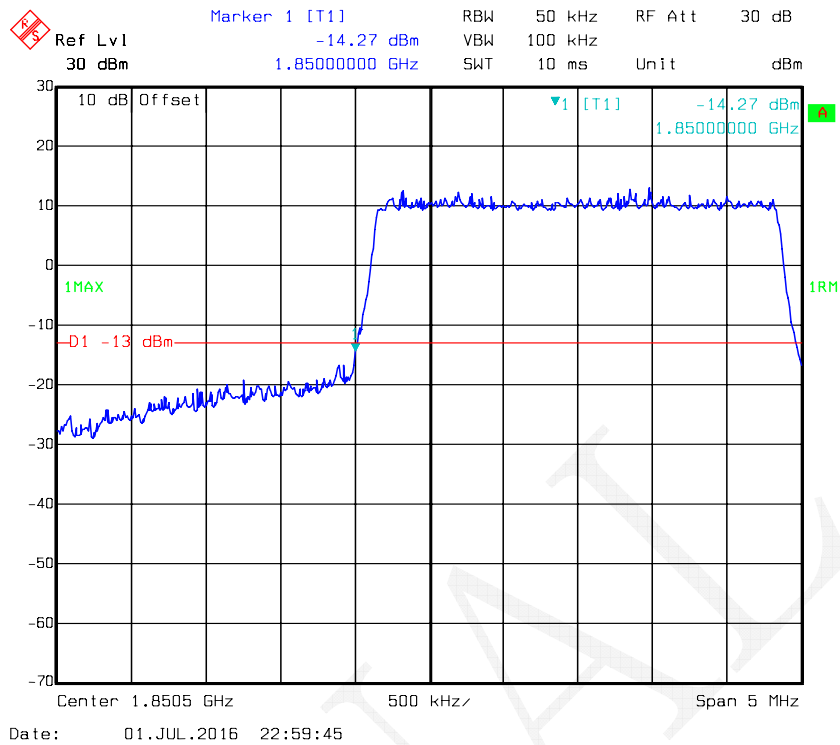
16QAM_1.4MHz_FULL RB_Left



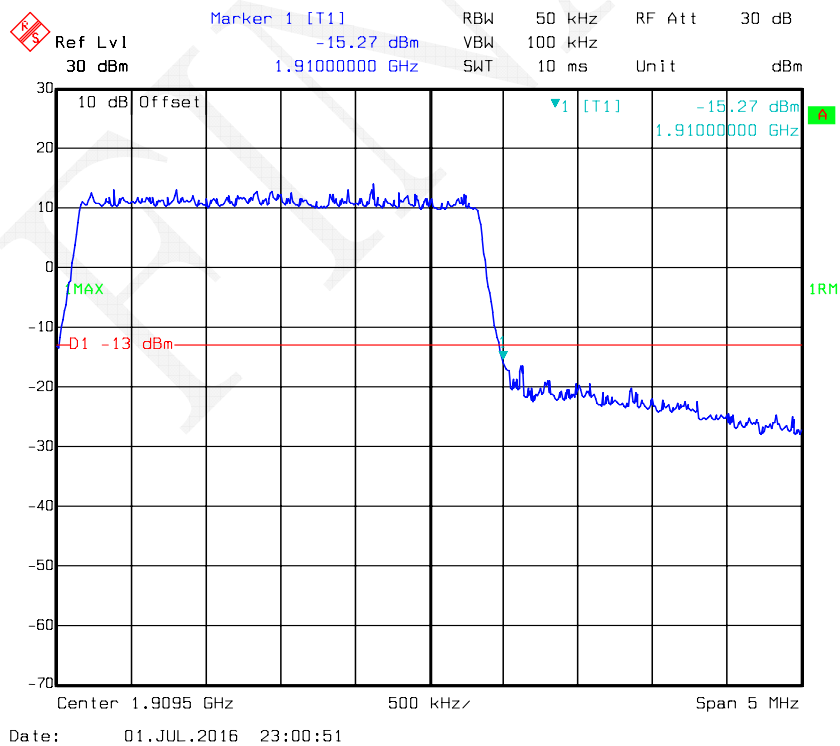
16QAM_1.4MHz_FULL RB_Right



16QAM_3MHz_FULL RB_Left



16QAM_3M_FULL RB_Right



Ref Lvl 10 dB Offset

30 dBm

Marker 1 [T1] -13.68 dBm 1.85000000 GHz

RBW 100 kHz RF Att 30 dB

VBW 300 kHz

SWT 10 ms Unit dBm

1MAX

-D1 -13 dBm

1RM

Center 1.85 GHz 1 MHz/ Span 10 MHz

Date: 01.JUL.2016 22:56:23

Ref Lvl 30 dBm

Marker 1 [T1] -15.82 dBm 1.91000000 GHz

RBW 100 kHz VBW 300 kHz RF Att 30 dB

SWT 10 ms Unit dBm

10 dB Offset

MAX

D1 -13 dBm

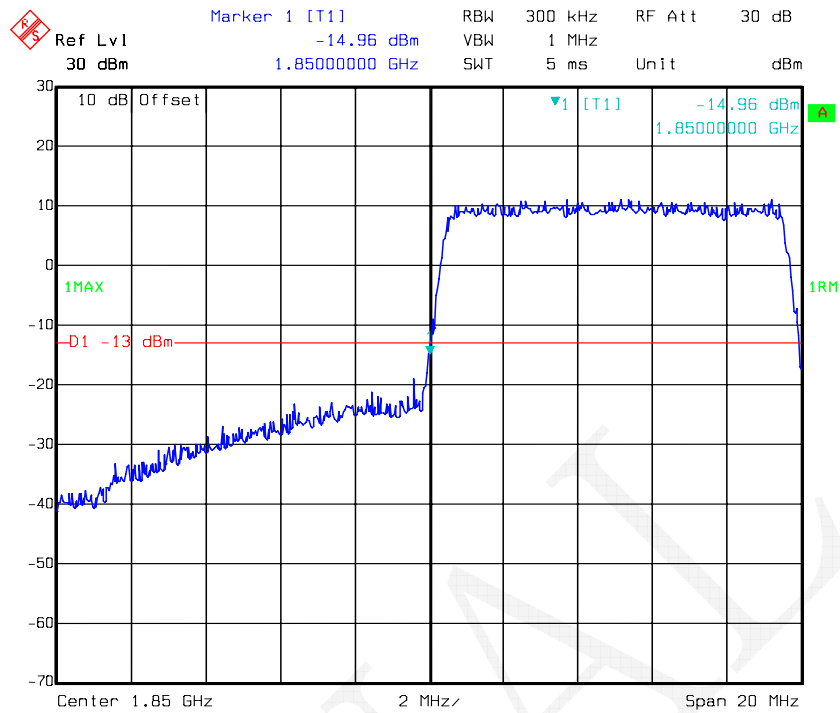
1.91 GHz

1 MHz

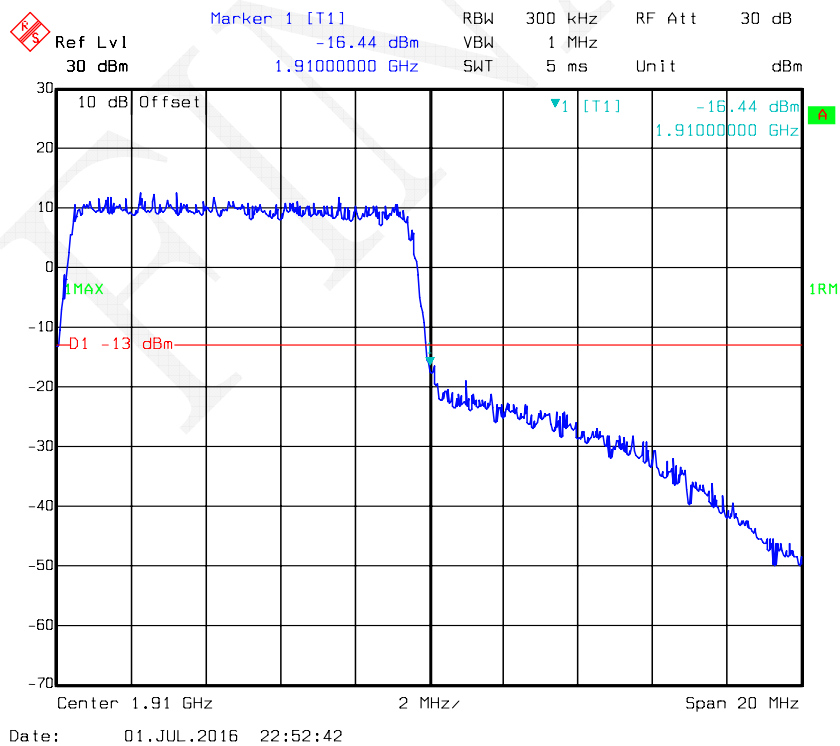
Span 10 MHz

Date: 01.JUL.2016 22:55:36

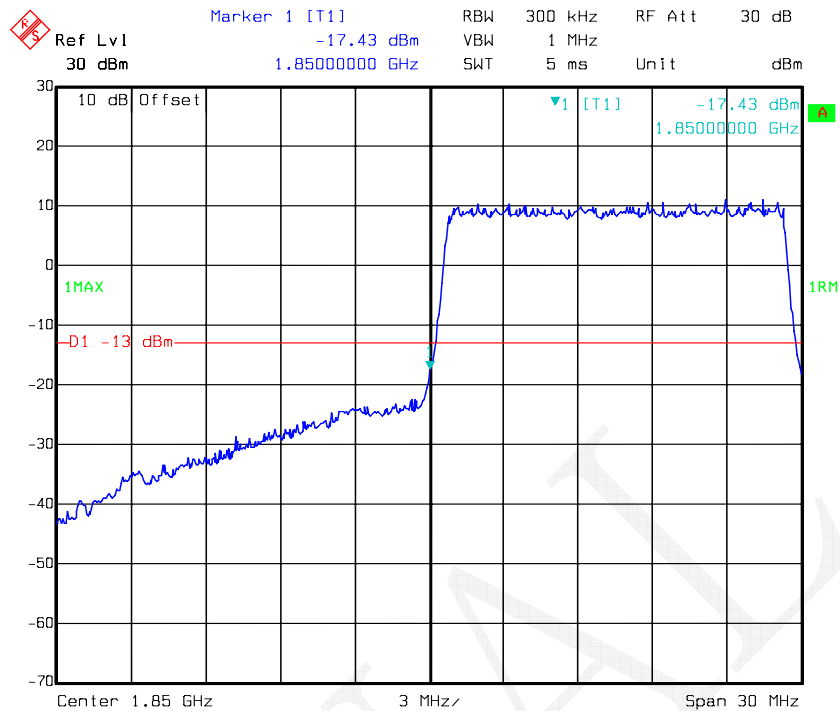
16QAM_10MHz_FULL RB_Left



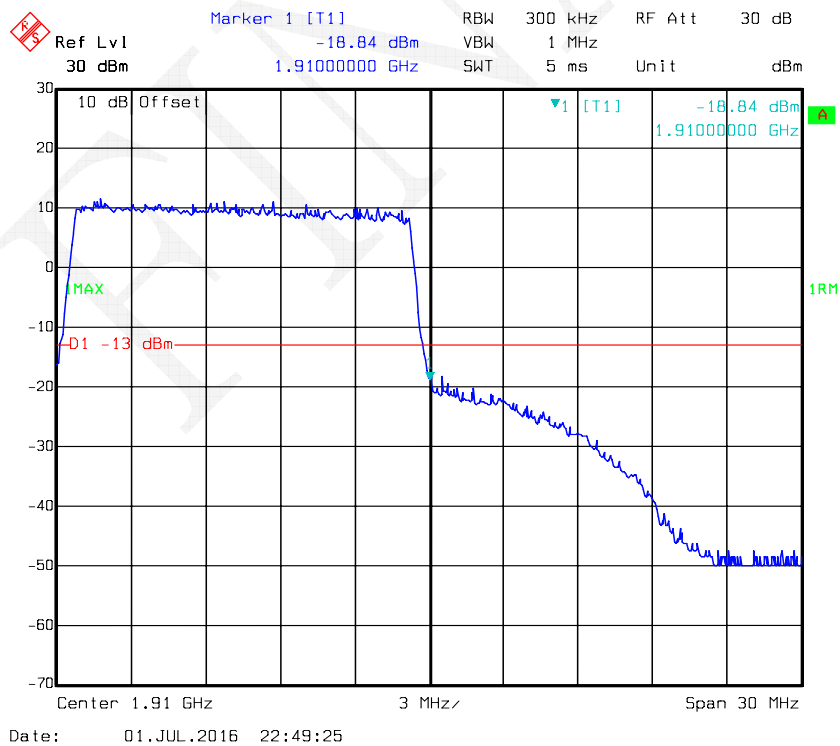
16QAM_10MHz_FULL RB_Right



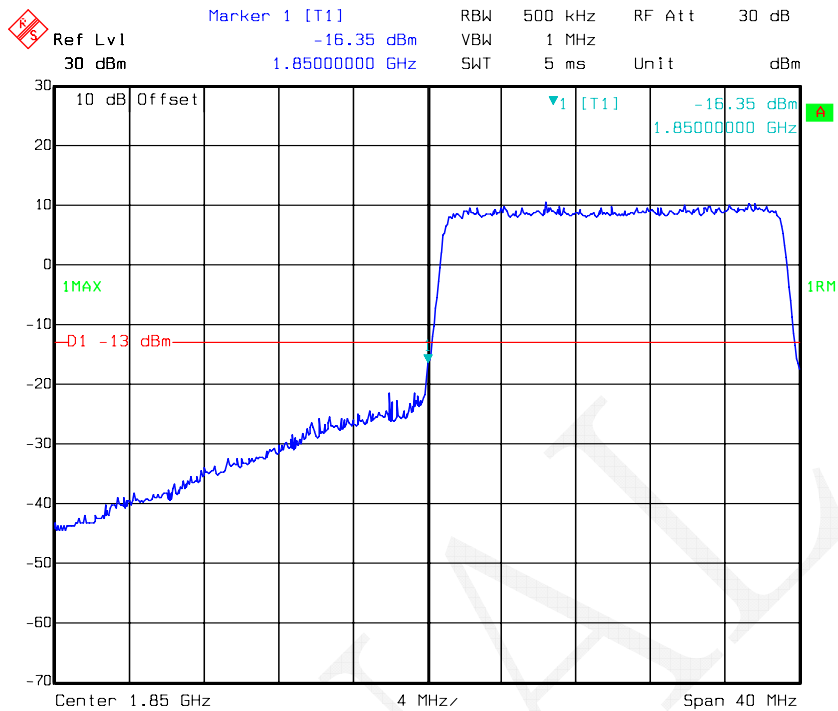
16QAM_15MHz_FULL RB_ Left



16QAM_15MHz_FULL RB_ Right

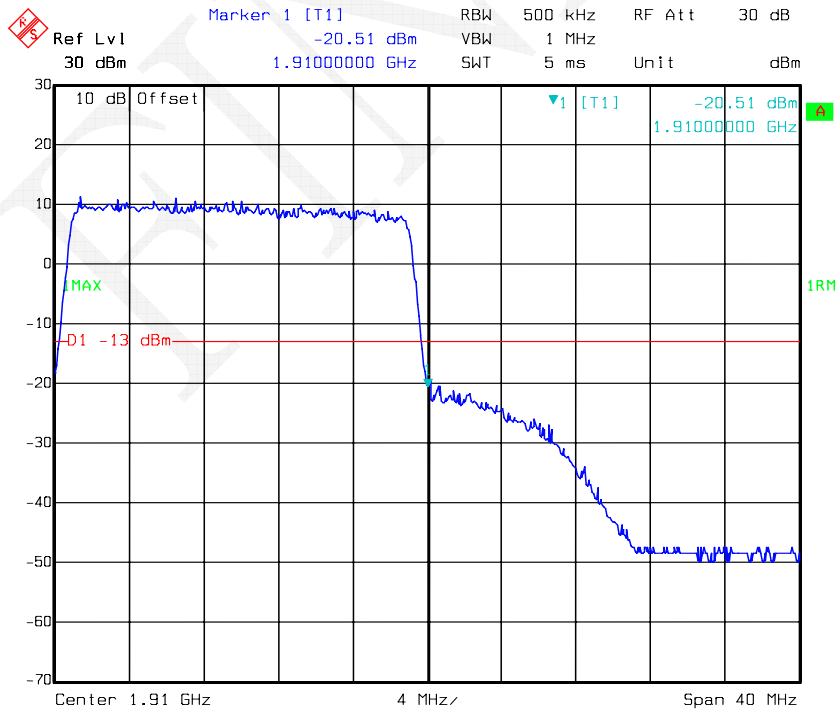


16QAM_20MHz_FULL RB_Left



Date: 01.JUL.2016 22:47:07

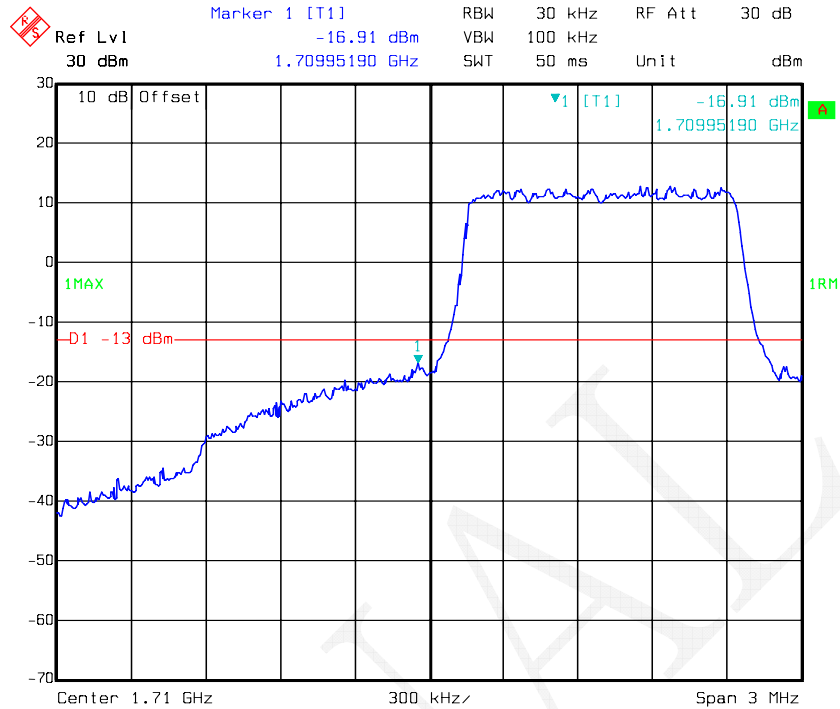
16QAM_20MHz_FULL RB_Right



Date: 01.JUL.2016 22:47:27

LTE Band IV

QPSK_1.4MHz_FULL RB_Left



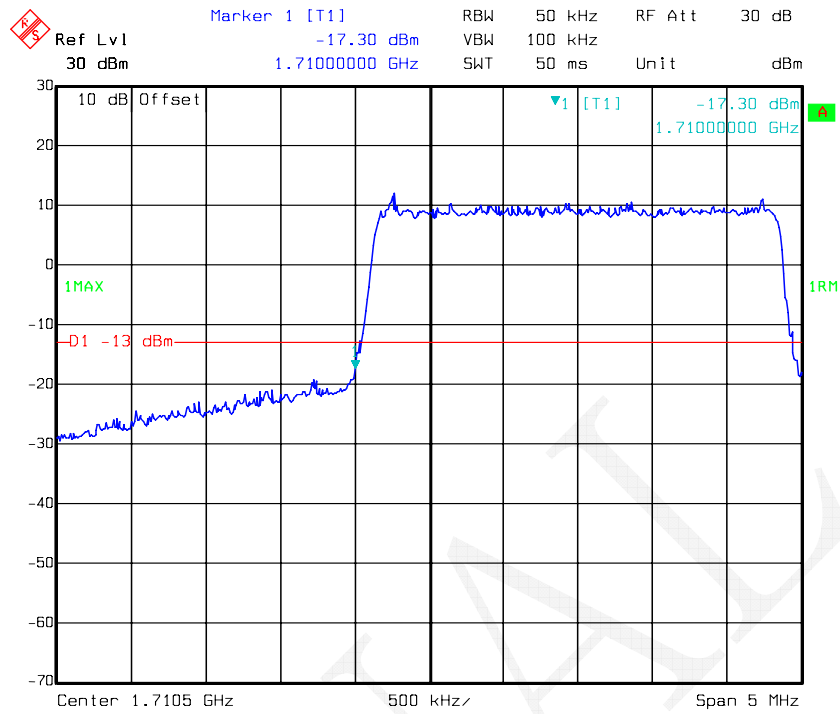
Date: 01.JUL.2016 22:30:37

QPSK_1.4MHz_FULL RB_Right

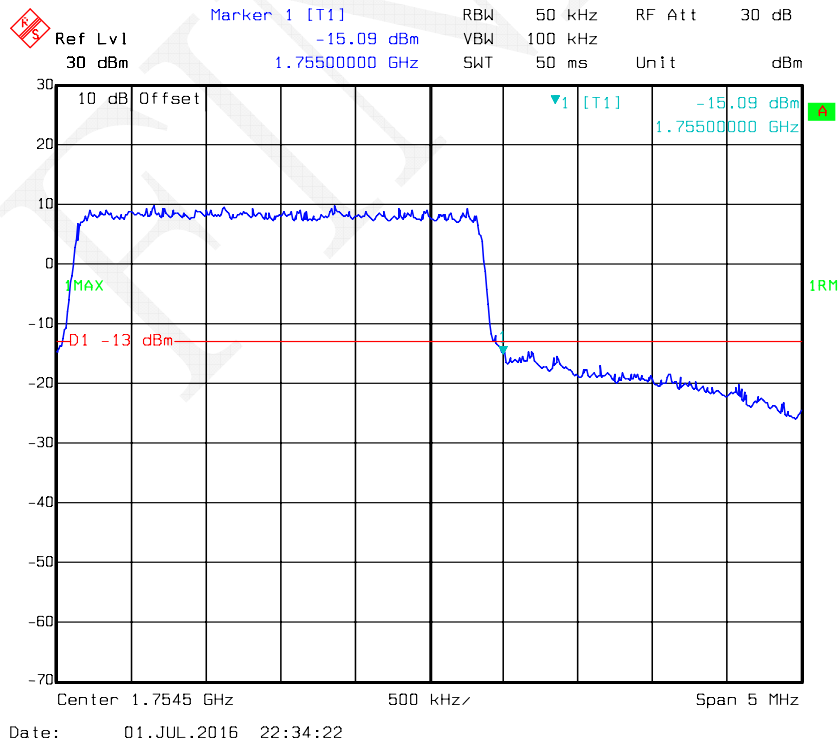


Date: 01.JUL.2016 22:29:02

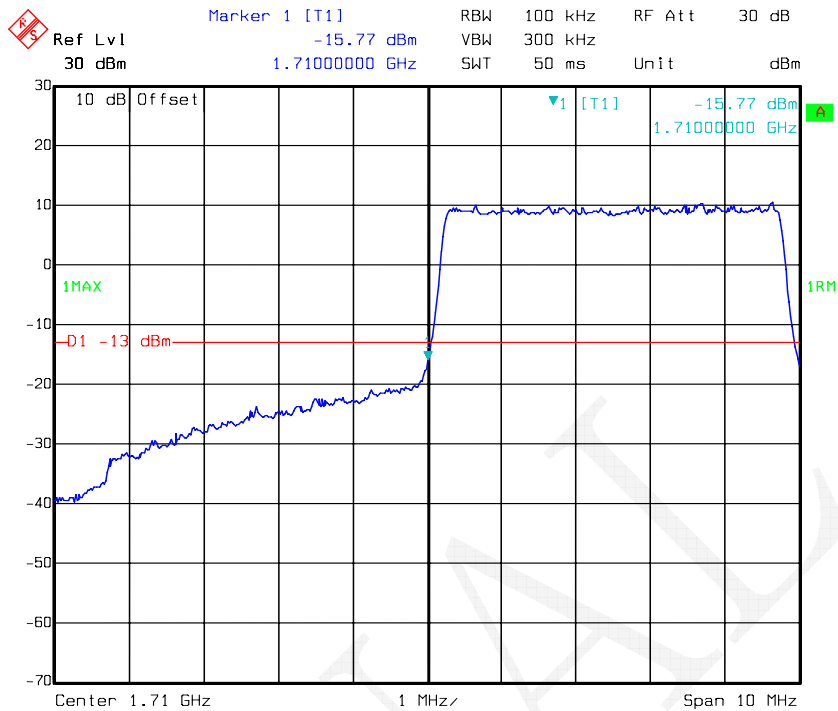
QPSK_3MHz_FULL RB_Left



QPSK_3MHz_FULL RB_Right

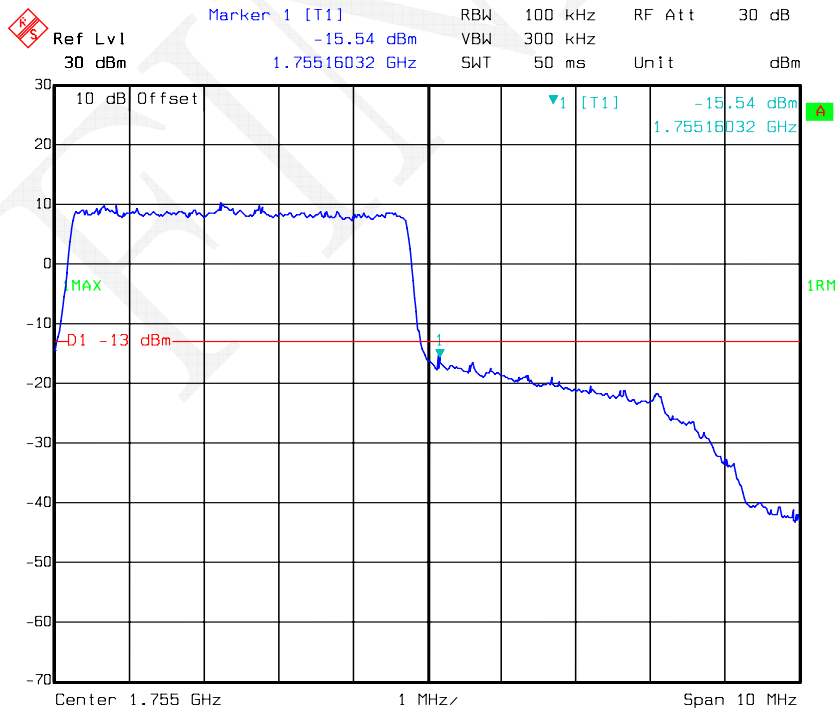


QPSK_5MHz_FULL RB_ Left



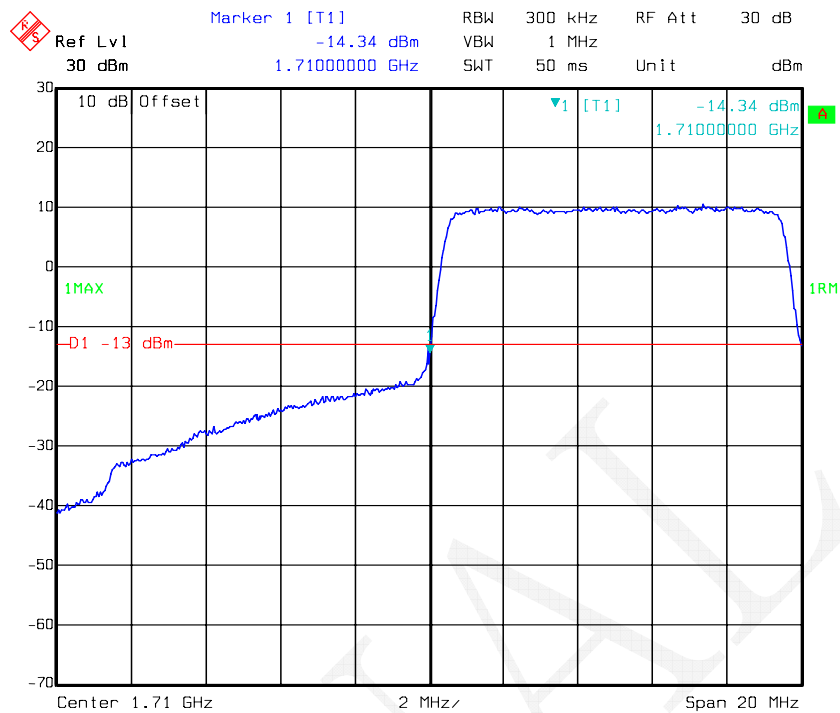
Date: 01.JUL.2016 22:37:49

QPSK_5MHz_FULL RB_ Right



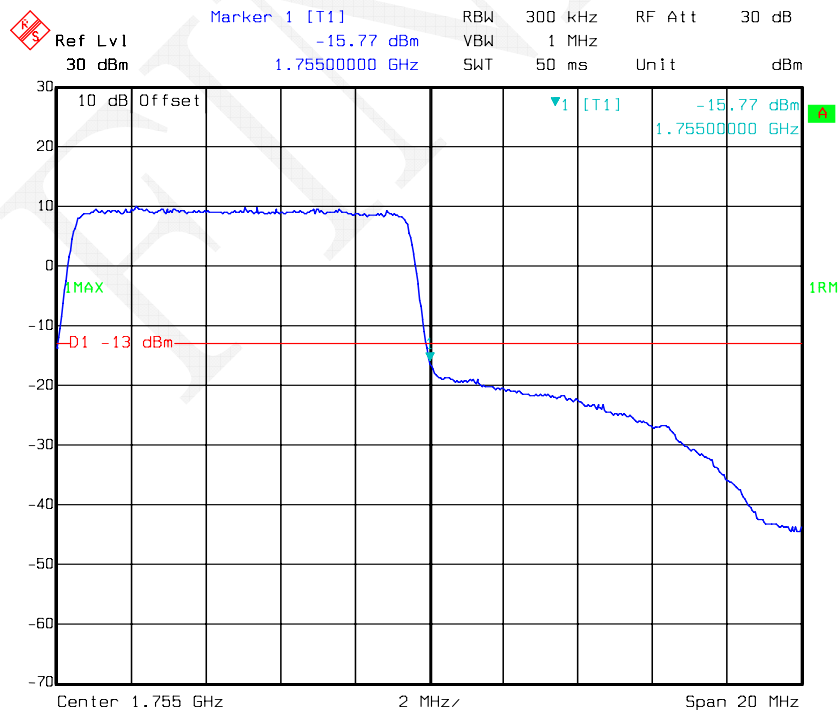
Date: 01.JUL.2016 22:35:47

QPSK_10MHz_FULL RB_Left



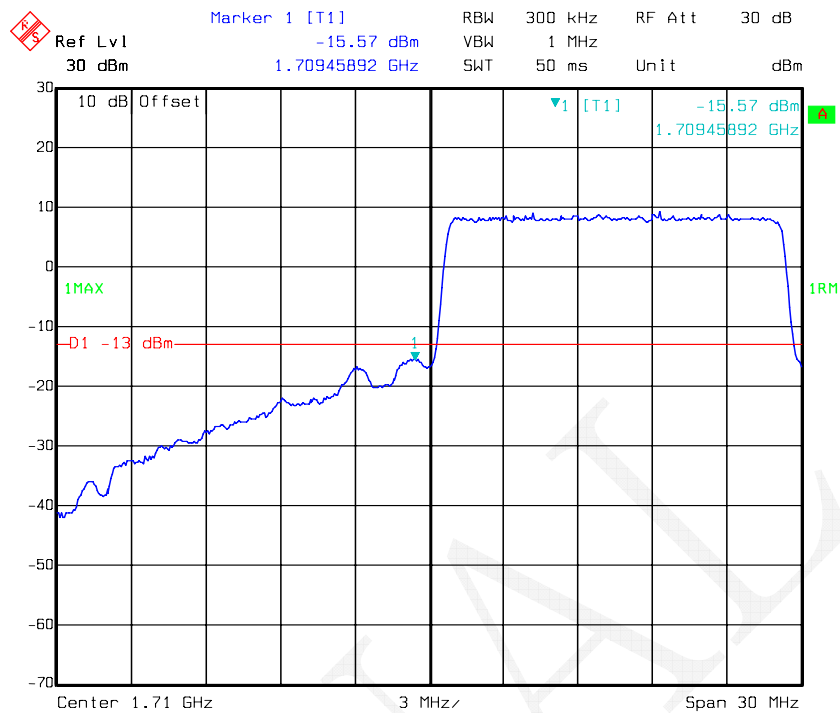
Date: 01.JUL.2016 22:38:39

QPSK_10MHz_FULL RB_Right



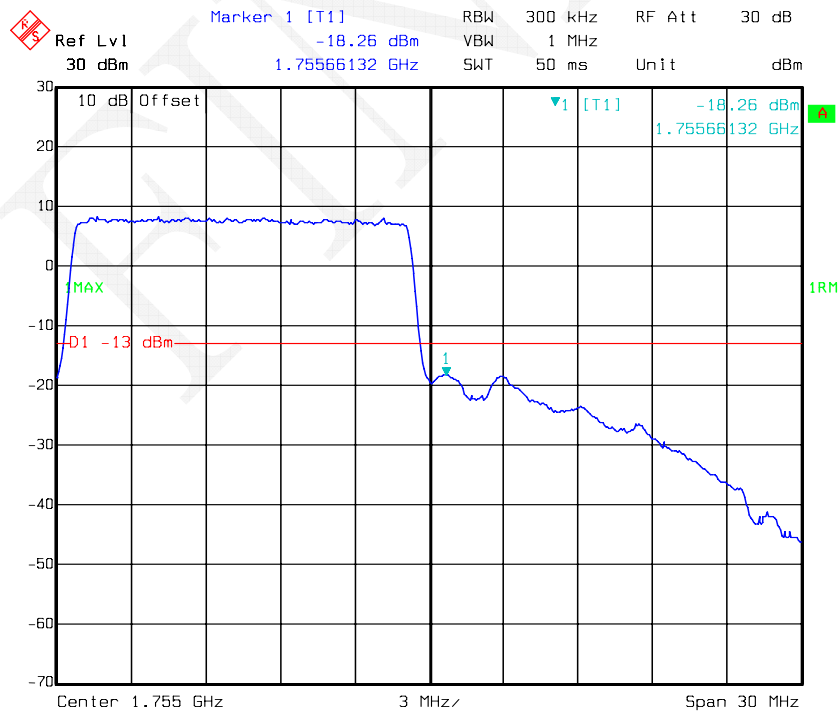
Date: 01.JUL.2016 22:40:27

QPSK_15MHz_FULL RB_Left



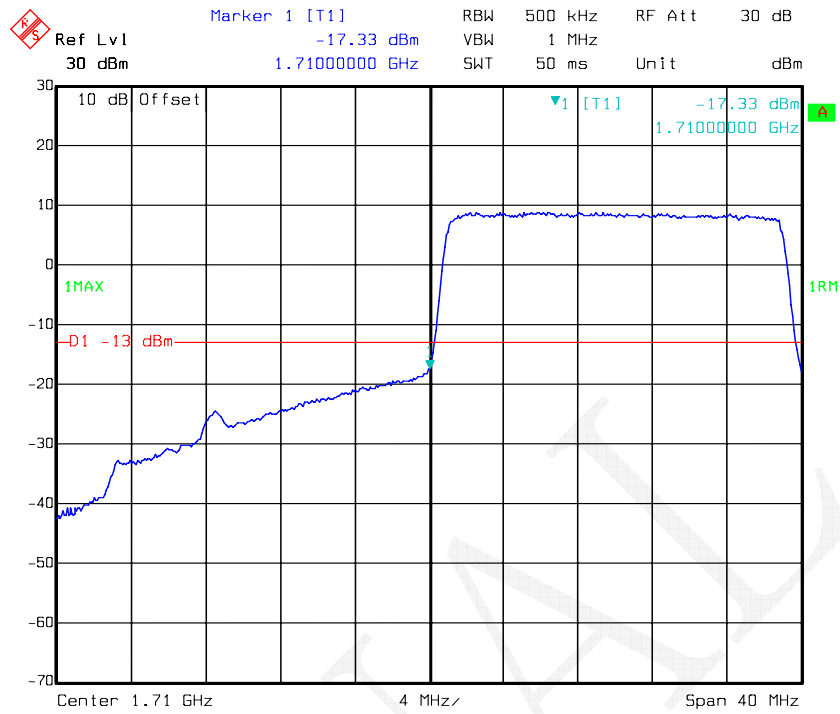
Date: 01.JUL.2016 22:43:04

QPSK_15MHz_FULL RB_Right



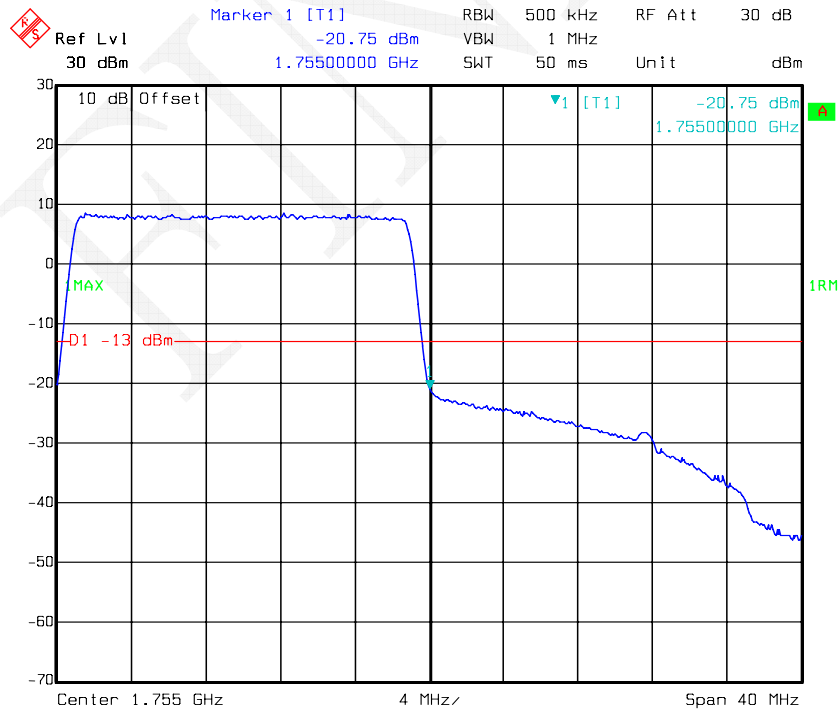
Date: 01.JUL.2016 22:41:42

QPSK_20MHz_FULL RB_Left



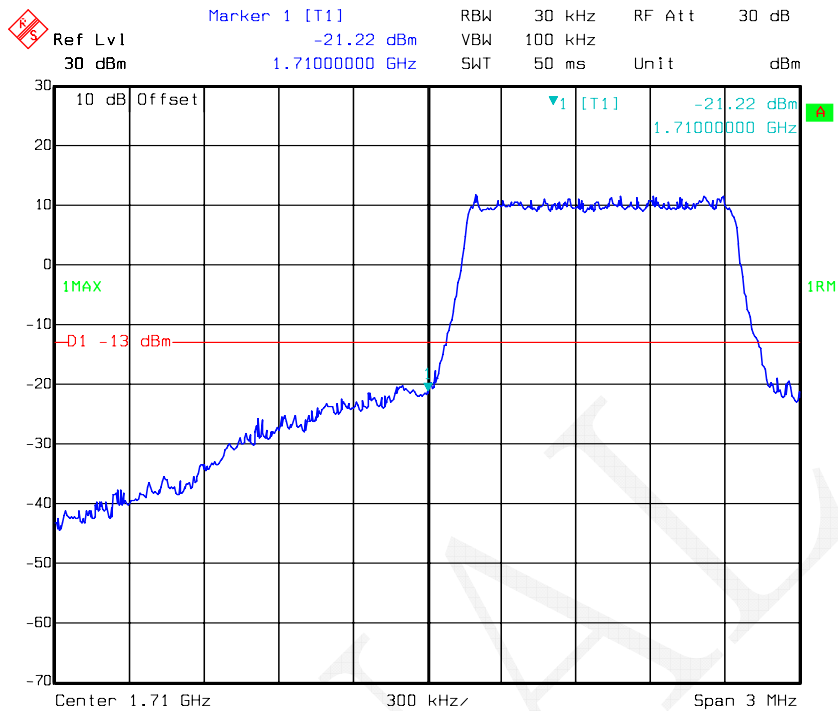
Date: 01.JUL.2016 22:44:12

QPSK_20MHz_FULL RB_Right



Date: 01.JUL.2016 22:45:36

16QAM_1.4MHz_FULL RB_Left



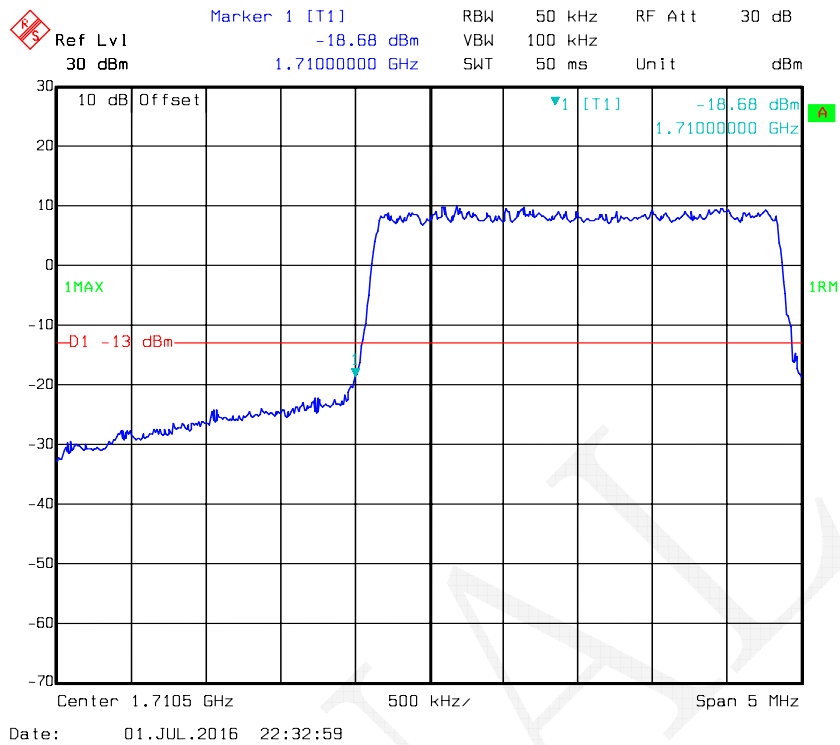
Date: 01.JUL.2016 22:30:02

16QAM_1.4MHz_FULL RB_Right

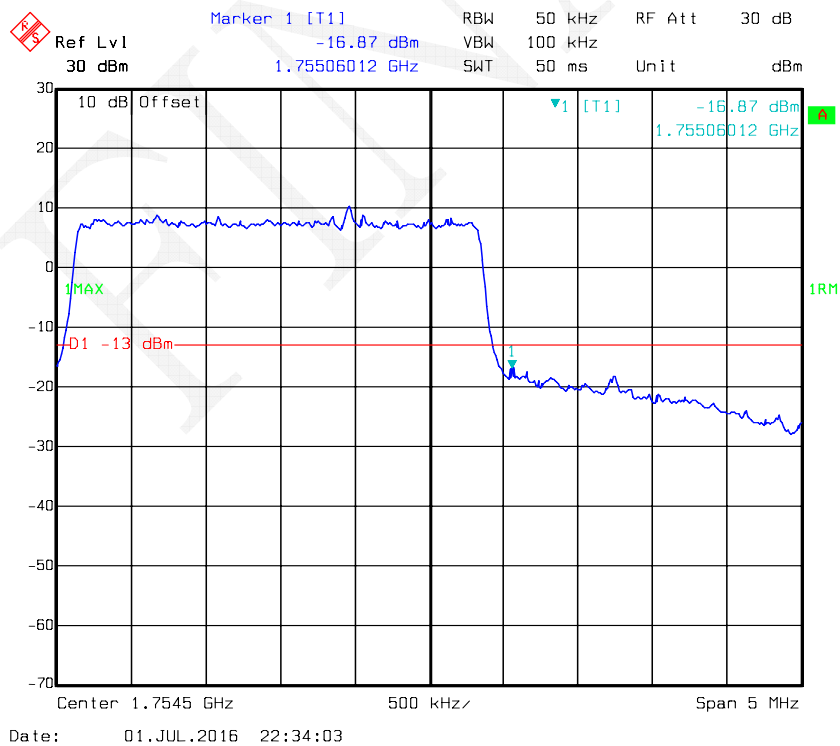


Date: 01.JUL.2016 22:28:34

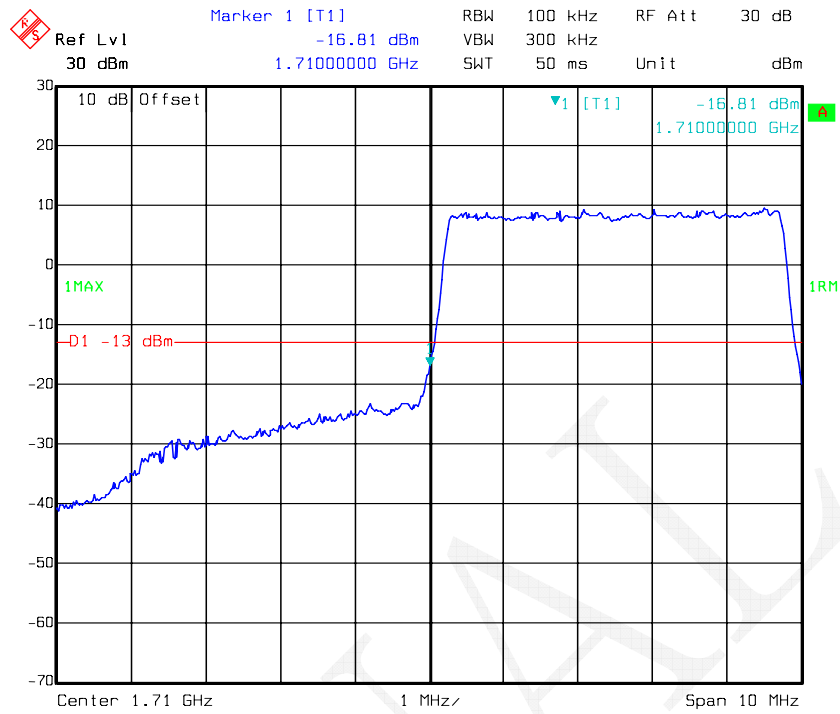
16QAM_3MHz_FULL RB_Left



16QAM_3M_FULL RB_Right

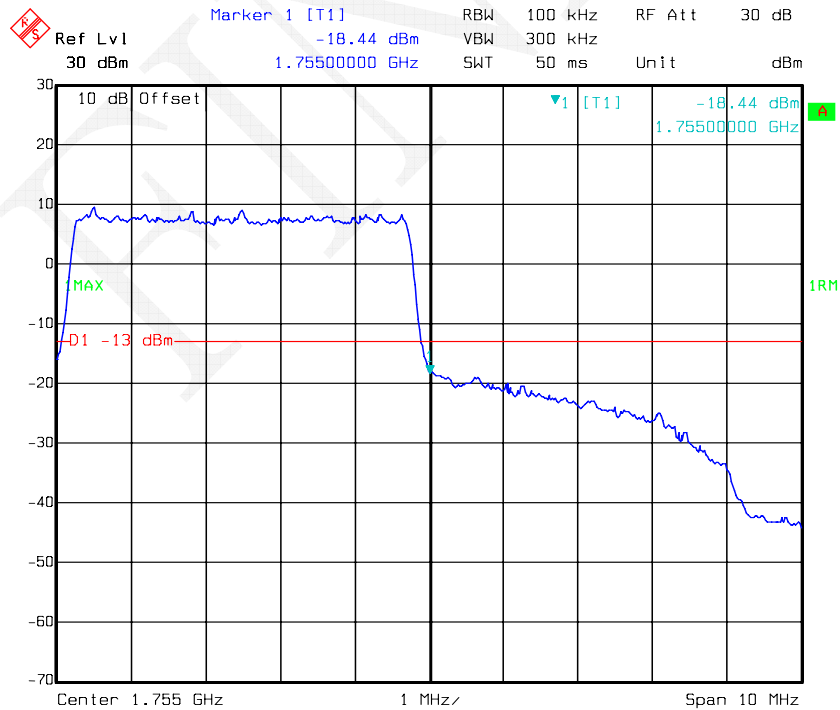


16QAM_5MHz_FULL RB_Left



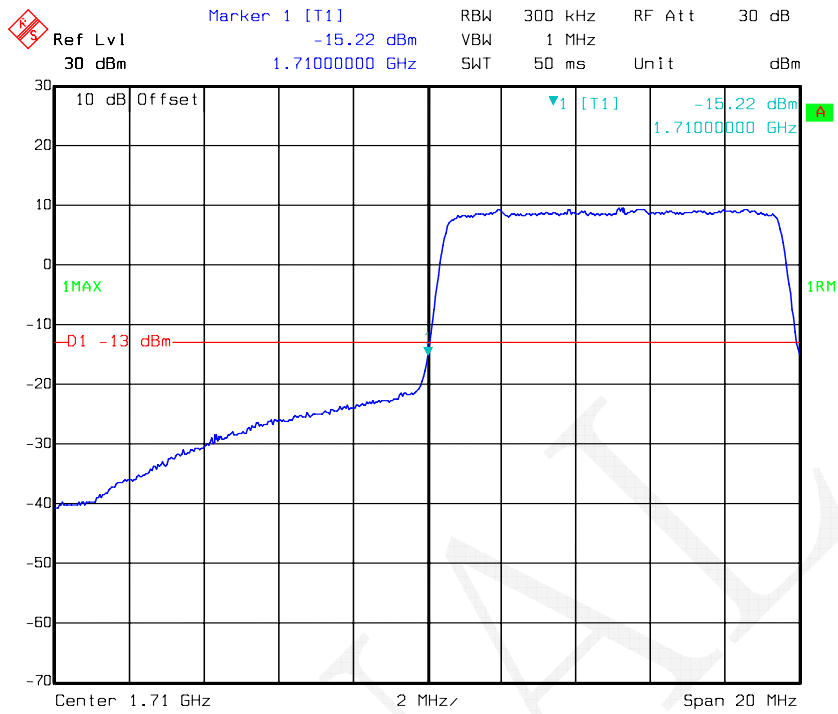
Date: 01.JUL.2016 22:37:21

16QAM_5MHz_FULL RB_Right



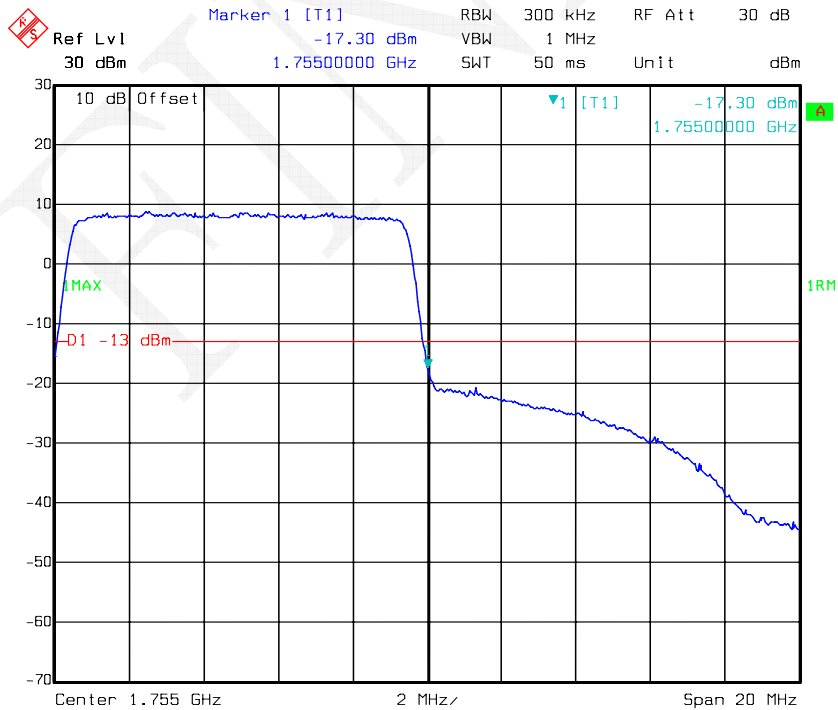
Date: 01.JUL.2016 22:36:37

16QAM_10MHz_FULL RB_Left



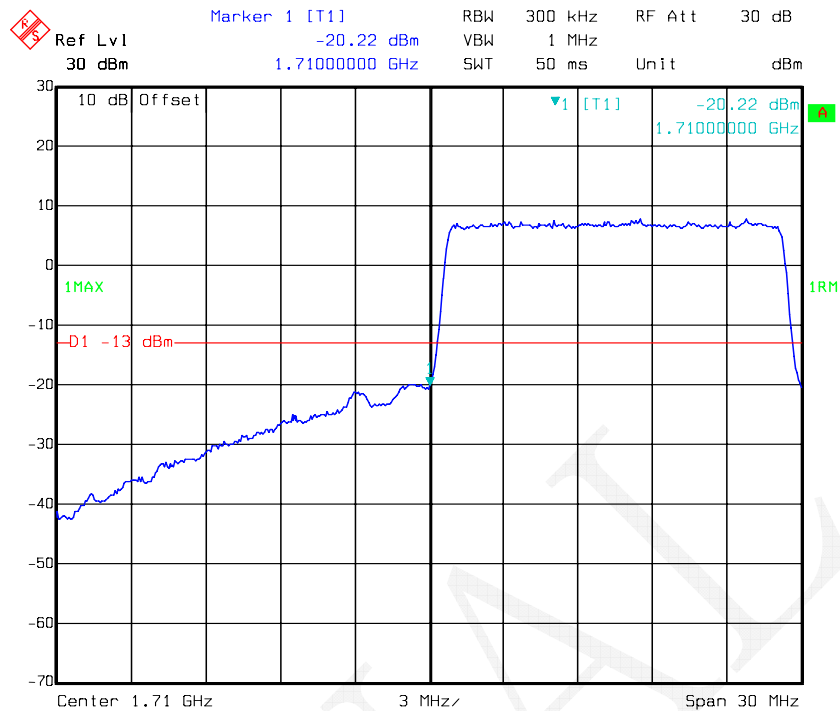
Date: 01.JUL.2016 22:39:16

16QAM_10MHz_FULL RB_Right

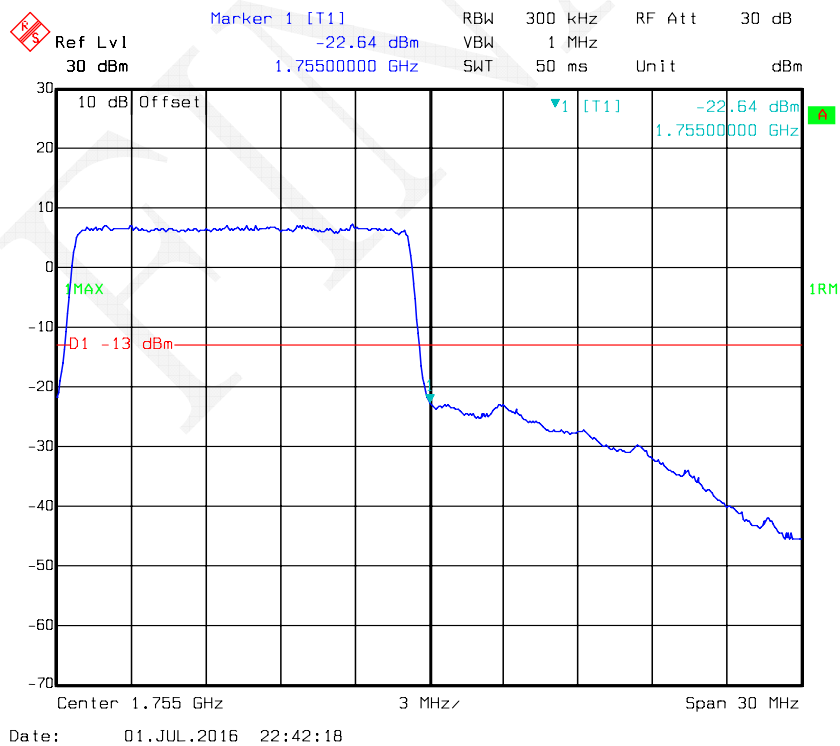


Date: 01.JUL.2016 22:39:50

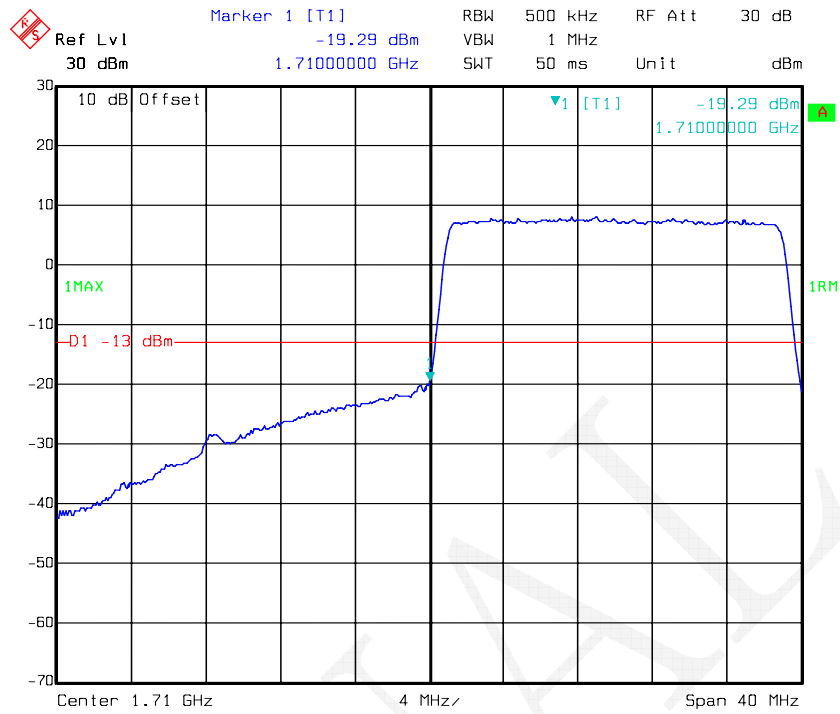
16QAM_15MHz_FULL RB_ Left



16QAM_15MHz_FULL RB_ Right

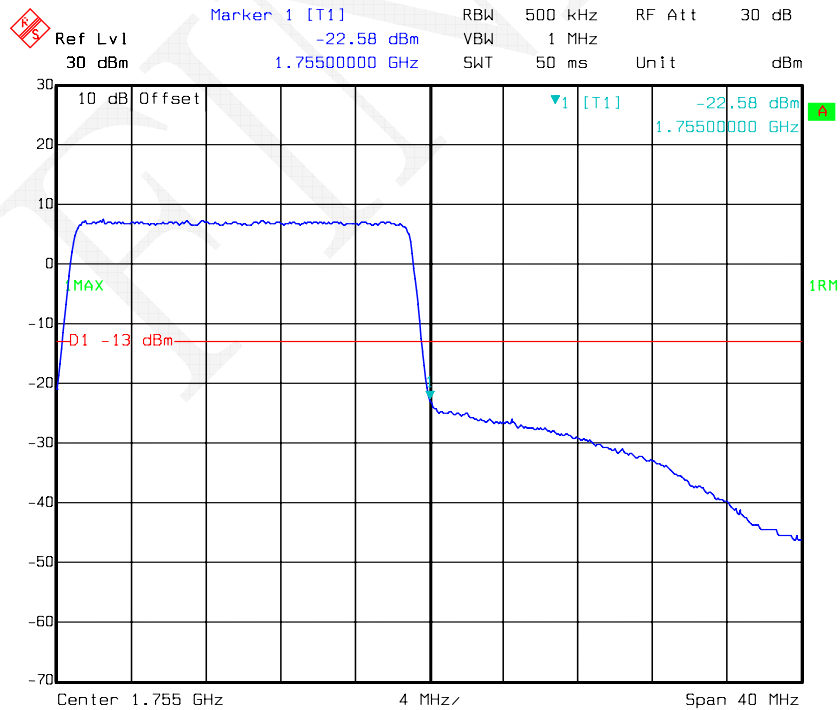


16QAM_20MHz_FULL RB_Left



Date: 01.JUL.2016 22:44:41

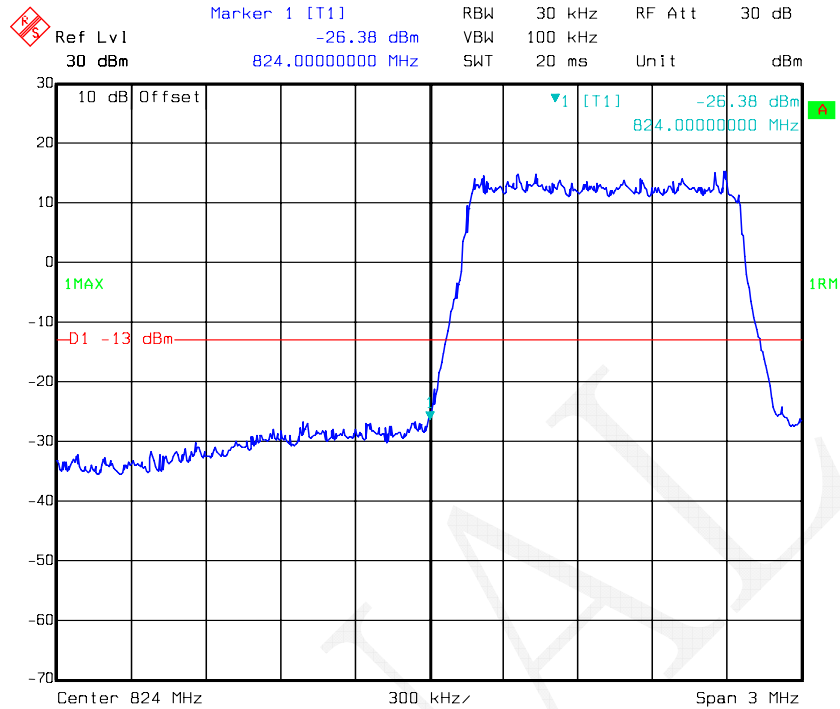
16QAM_20MHz_FULL RB_Right



Date: 01.JUL.2016 22:45:13

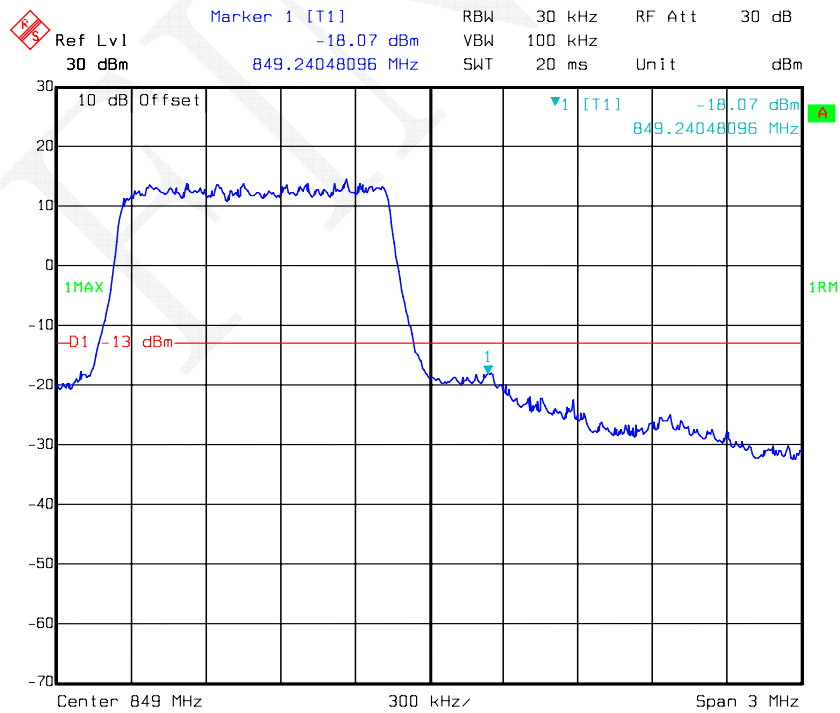
LTE Band V

QPSK_1.4MHz_FULL RB_Left



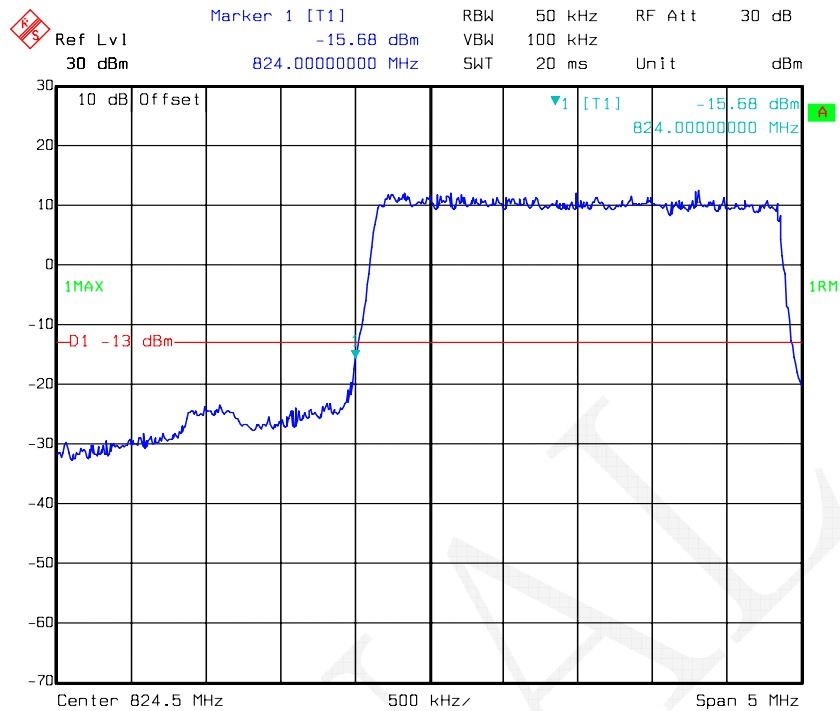
Date: 01.JUL.2016 21:04:56

QPSK_1.4MHz_FULL RB_Right



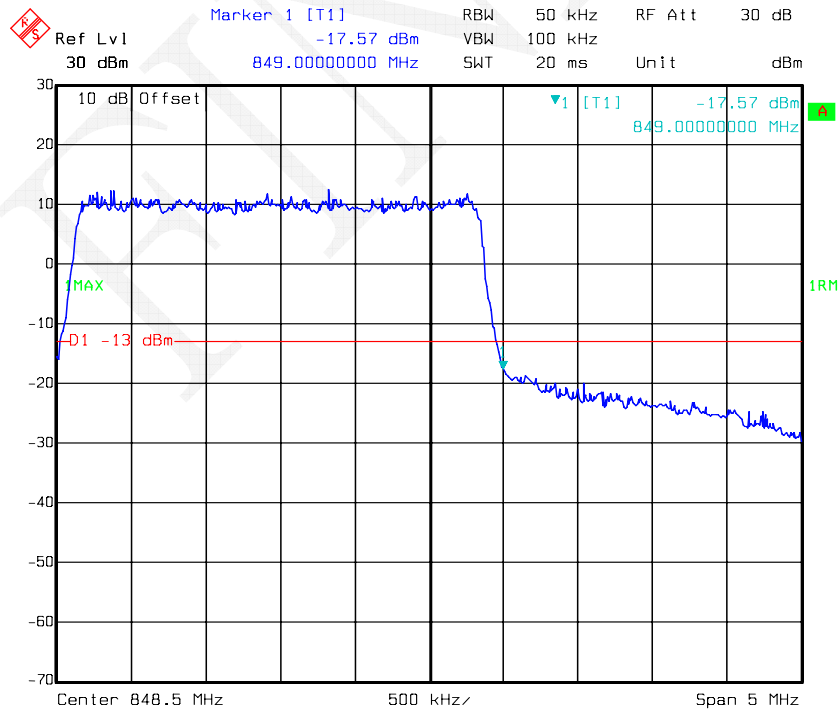
Date: 01.JUL.2016 21:07:45

QPSK_3MHz_FULL RB_ Left



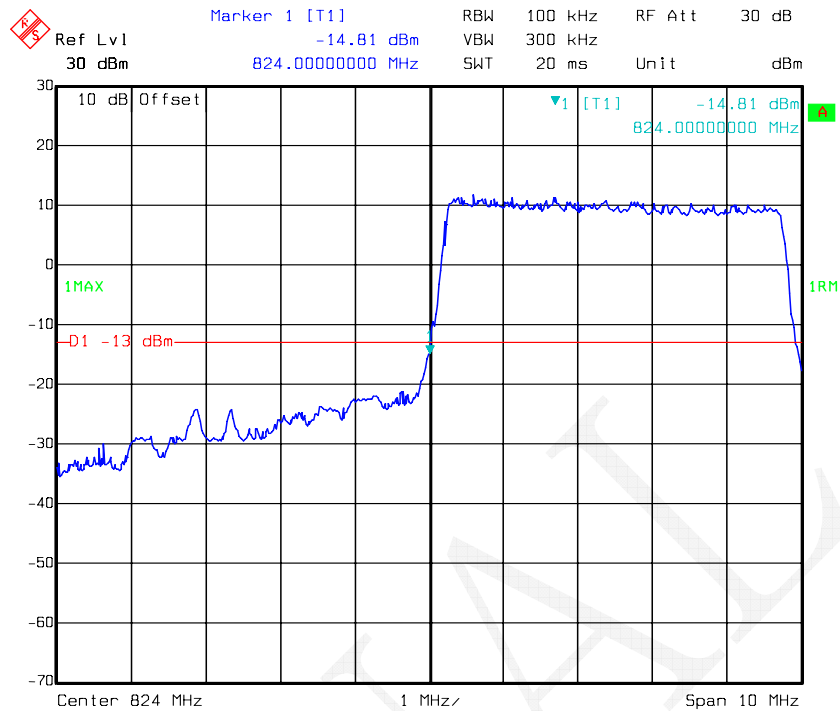
Date: 01.JUL.2016 21:12:07

QPSK_3MHz_FULL RB_ Right



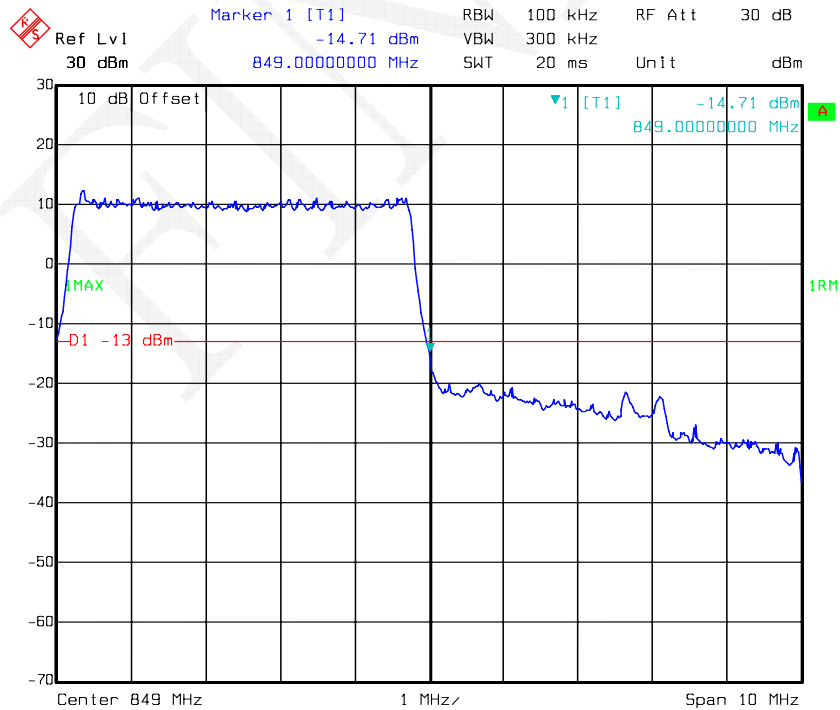
Date: 01.JUL.2016 21:09:32

QPSK_5MHz_FULL RB_Left



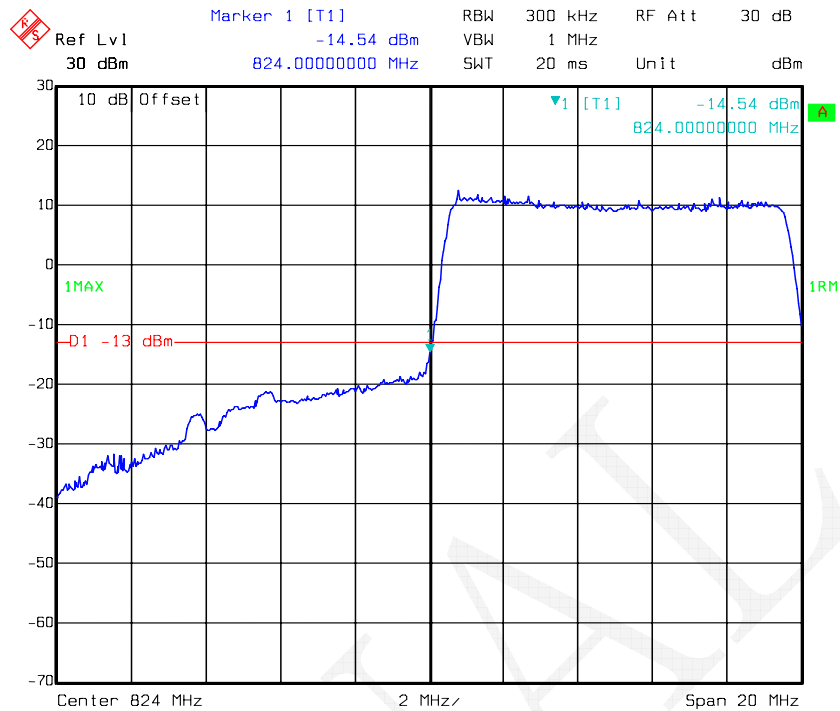
Date: 01.JUL.2016 21:13:28

QPSK_5MHz_FULL RB_Right



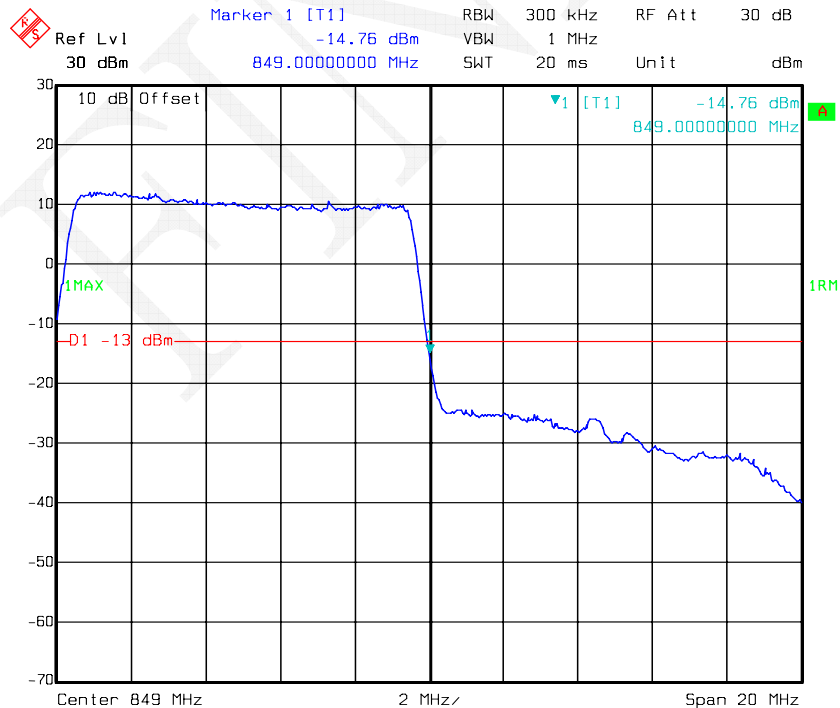
Date: 01.JUL.2016 21:16:11

QPSK_10MHz_FULL RB_Left



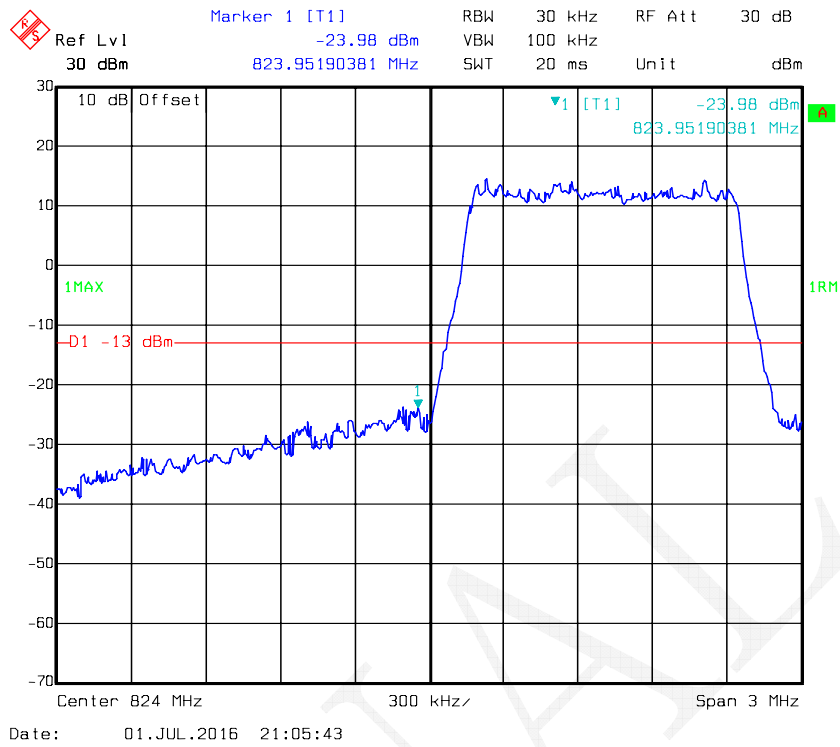
Date: 01.JUL.2016 21:19:32

QPSK_10MHz_FULL RB_Right

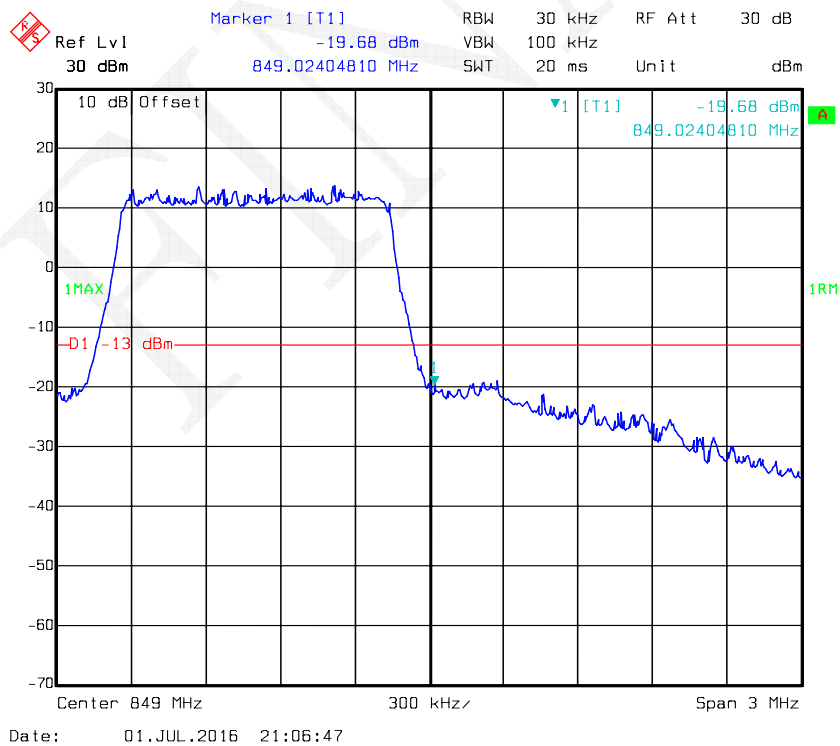


Date: 01.JUL.2016 21:17:28

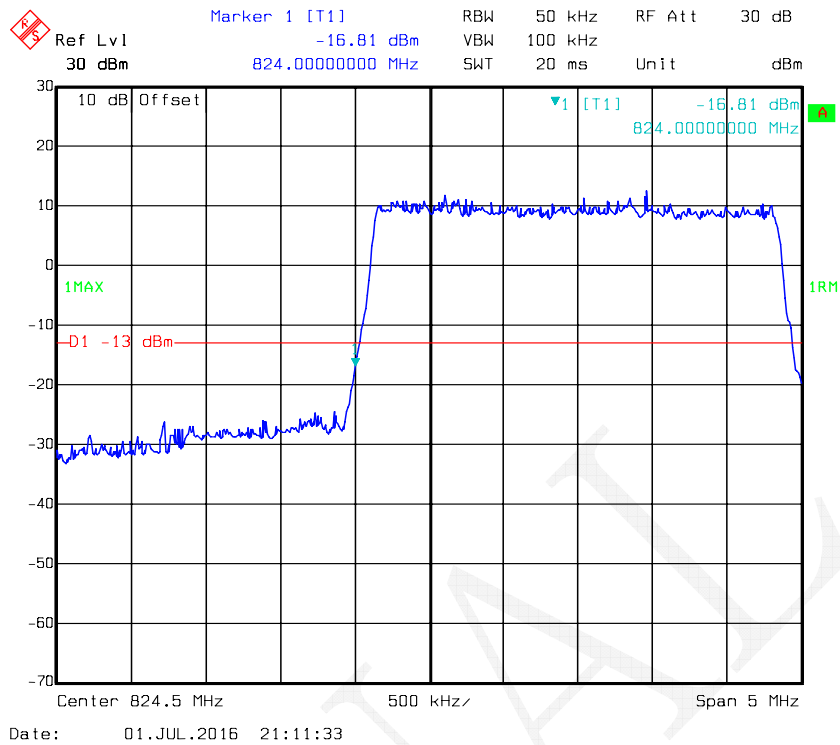
16QAM_1.4MHz_FULL RB_Left



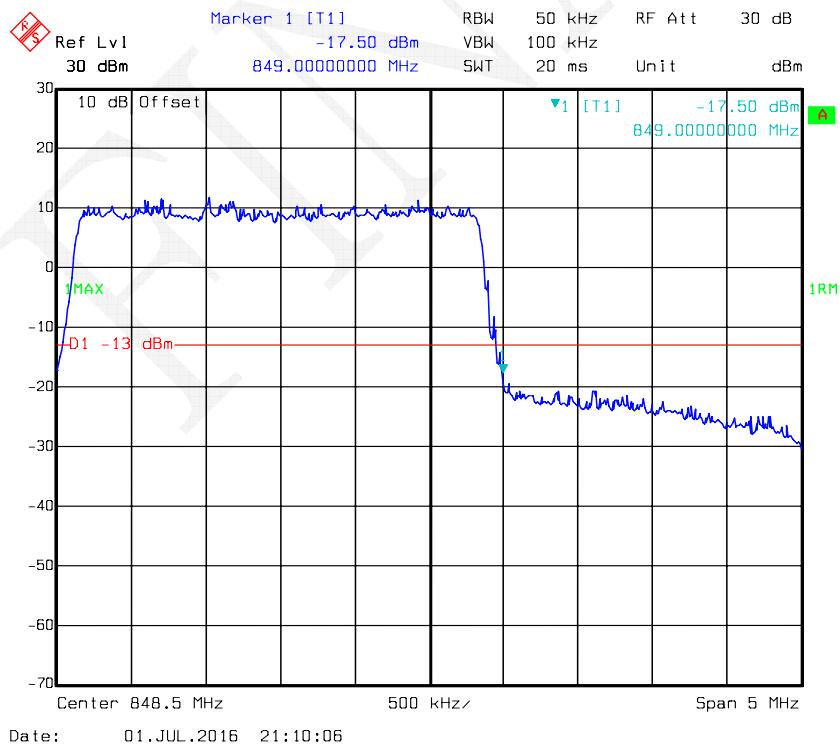
16QAM_1.4MHz_FULL RB_Right



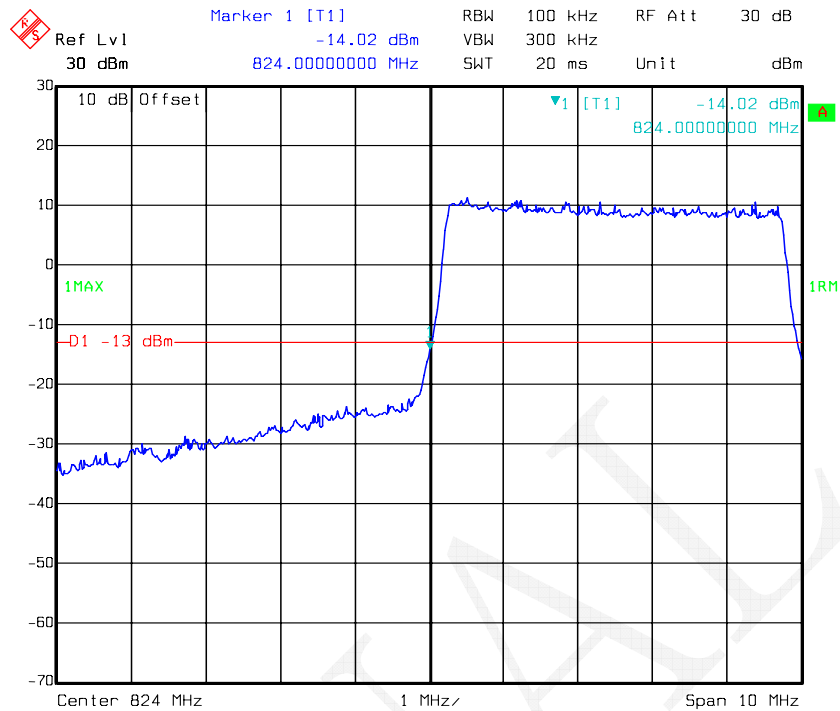
16QAM_3MHz_FULL RB_Left



16QAM_3M_FULL RB_Right

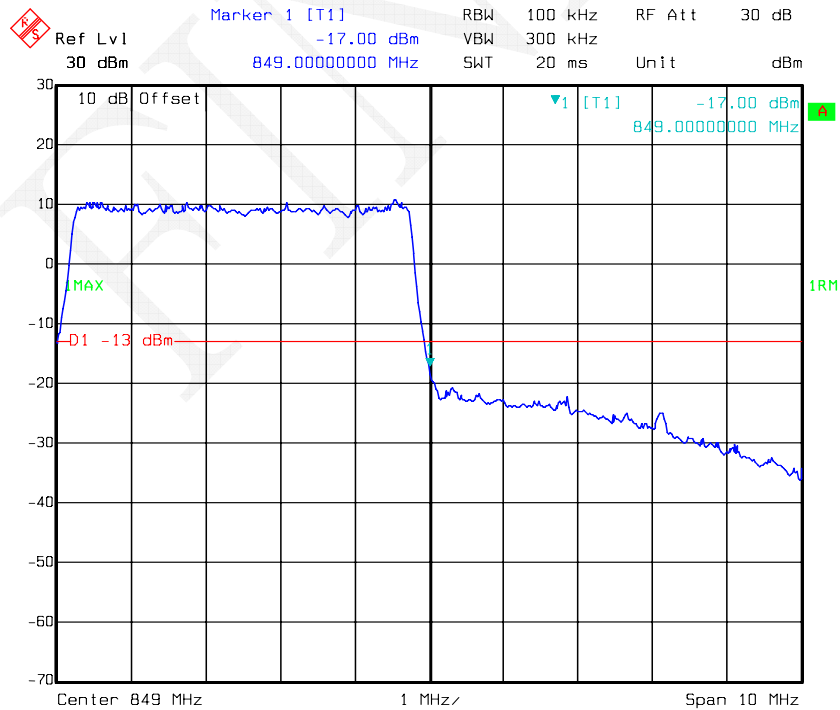


16QAM_5MHz_FULL RB_ Left



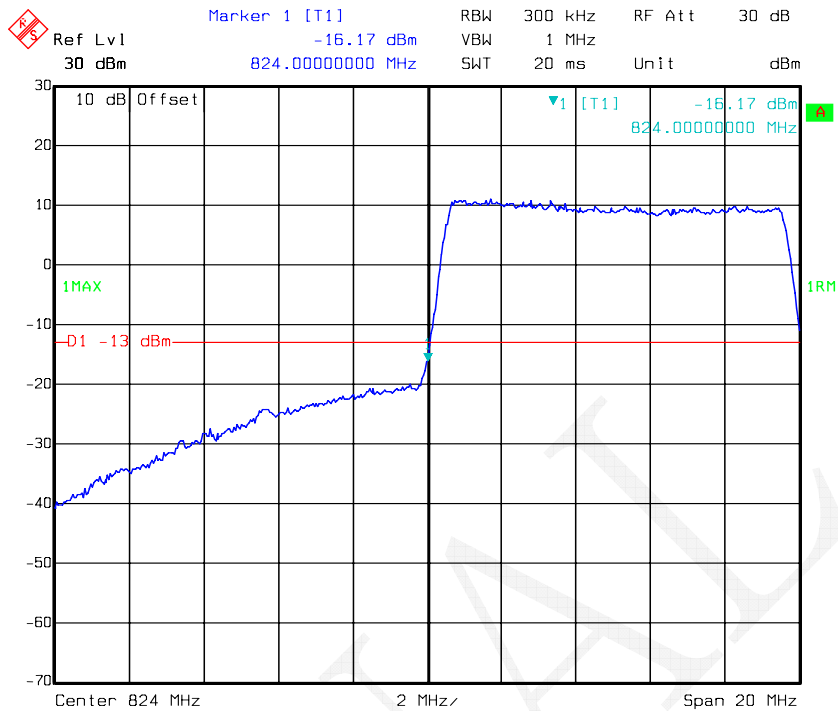
Date: 01.JUL.2016 21:14:28

16QAM_5MHz_FULL RB_ Right



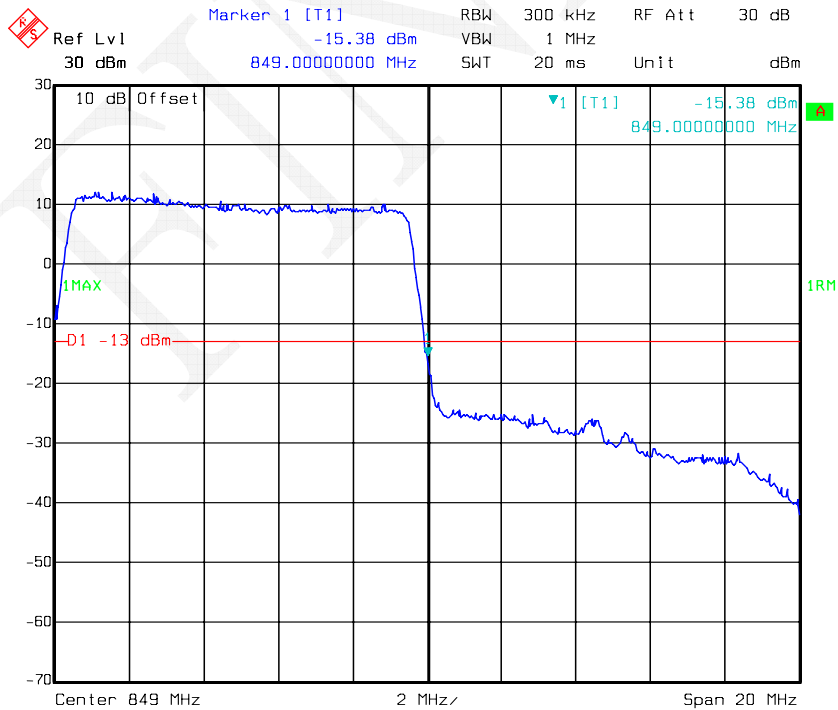
Date: 01.JUL.2016 21:15:28

16QAM_10MHz_FULL RB_Left



Date: 01.JUL.2016 21:20:49

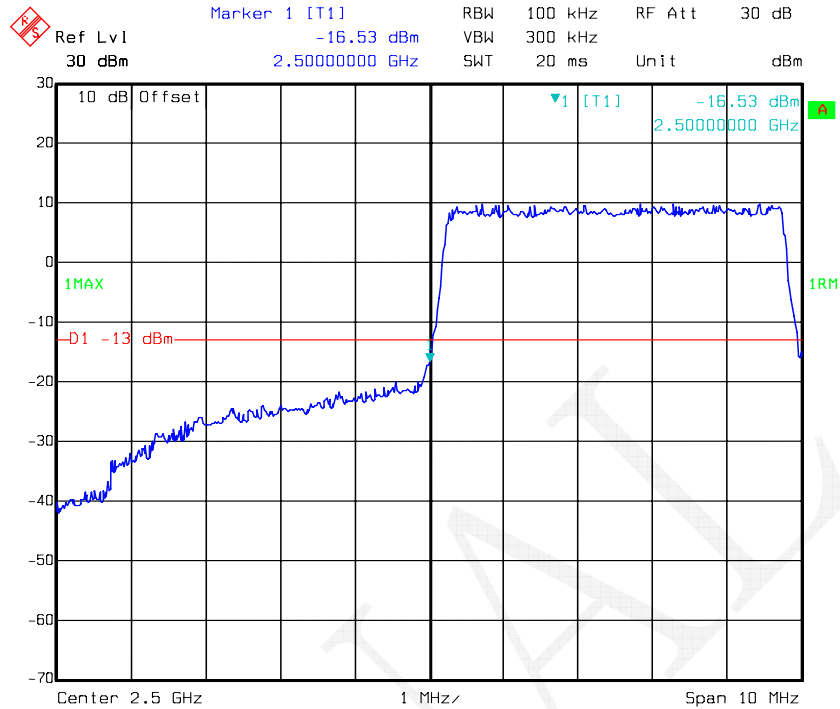
16QAM_10MHz_FULL RB_Right



Date: 01.JUL.2016 21:16:52

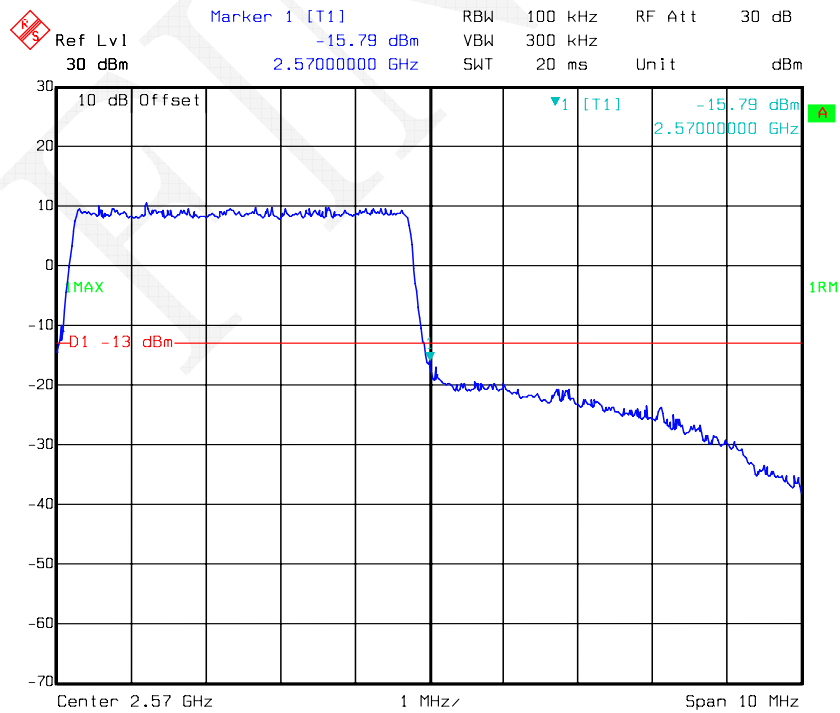
LTE Band VII

QPSK_5MHz_FULL RB_Left



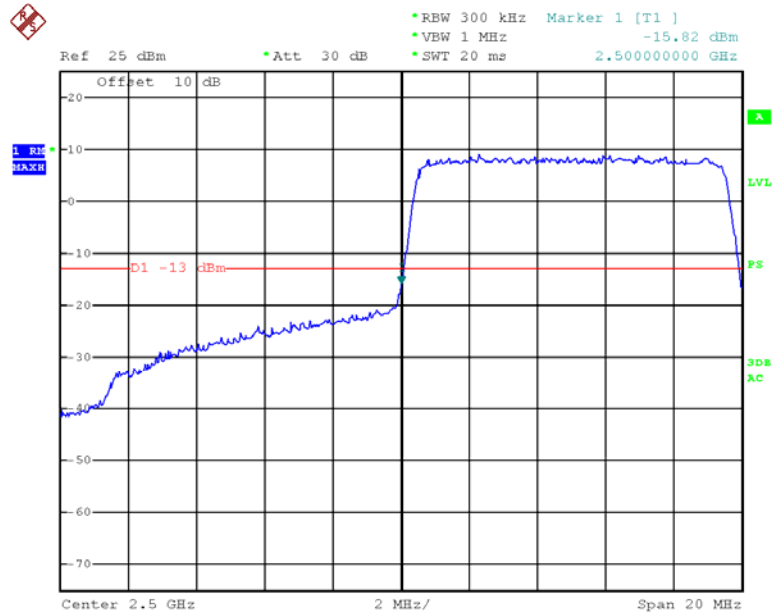
Date: 01.JUL.2016 22:17:28

QPSK_5MHz_FULL RB_Right



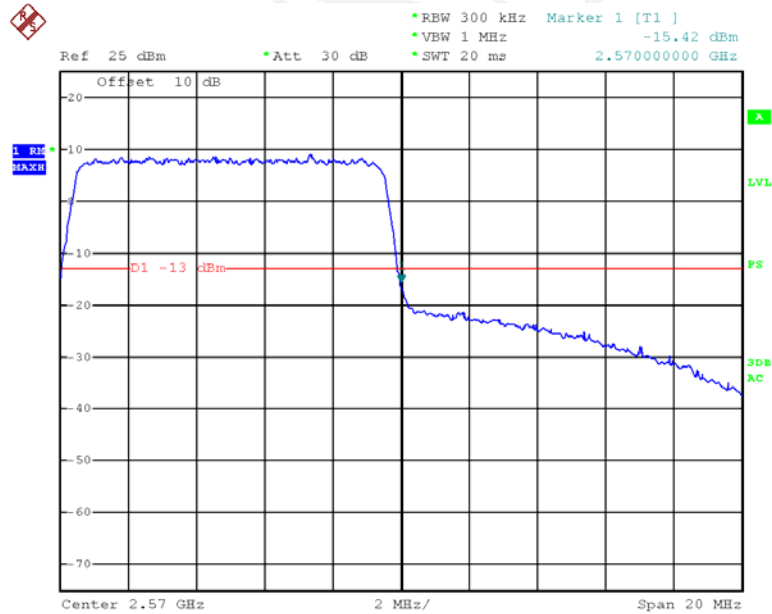
Date: 01.JUL.2016 22:19:22

QPSK_10MHz_FULL RB_Left



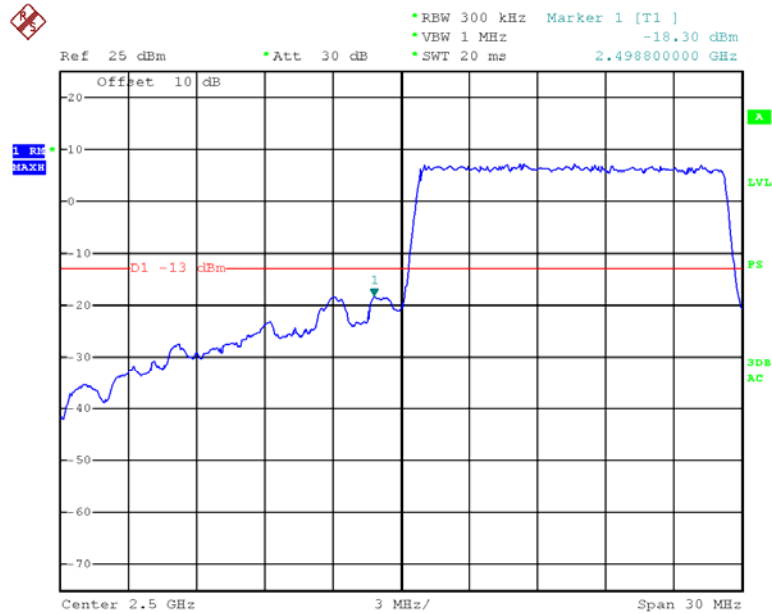
Date: 15.JUN.2016 23:26:11

QPSK_10MHz_FULL RB_Right



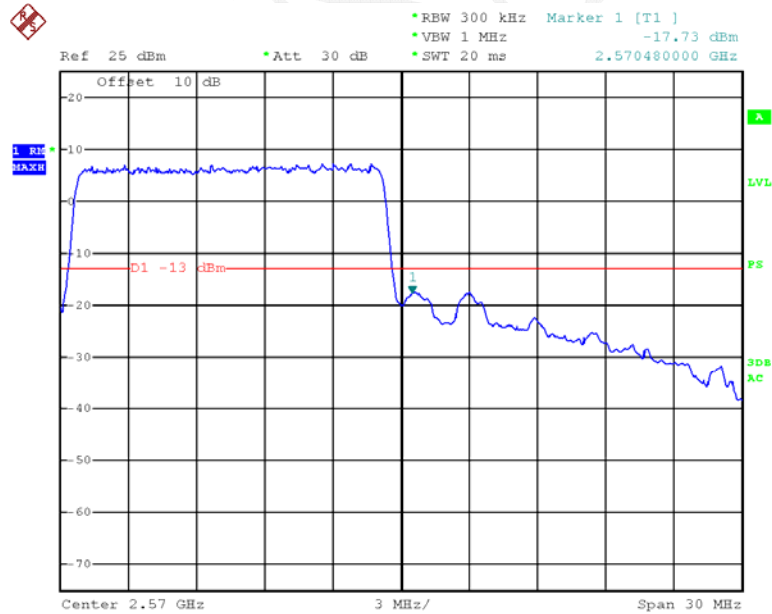
Date: 15.JUN.2016 23:25:34

QPSK_15MHz_FULL RB_Left



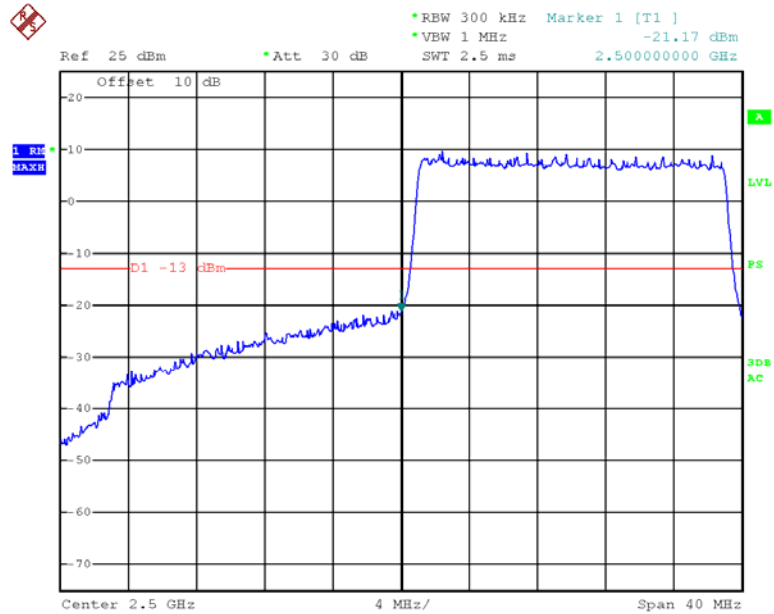
Date: 15.JUN.2016 23:28:05

QPSK_15MHz_FULL RB_Right



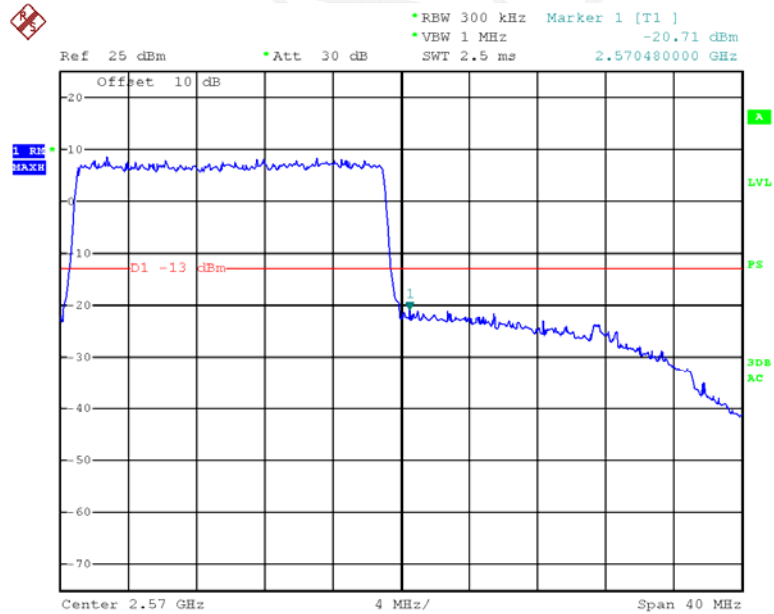
Date: 15.JUN.2016 23:29:52

QPSK_20MHz_FULL RB_Left



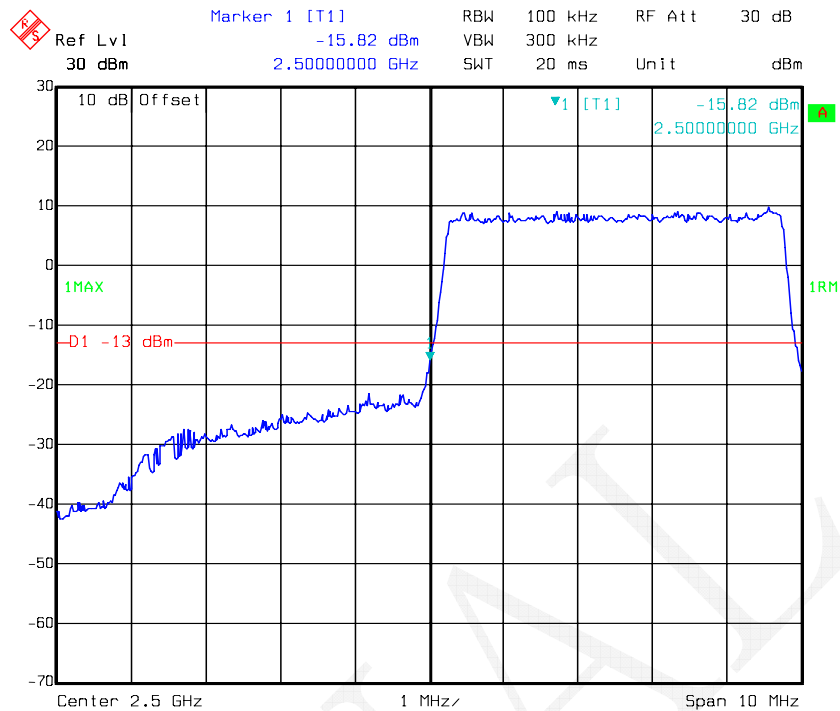
Date: 15.JUN.2016 23:32:19

QPSK_20MHz_FULL RB_Right

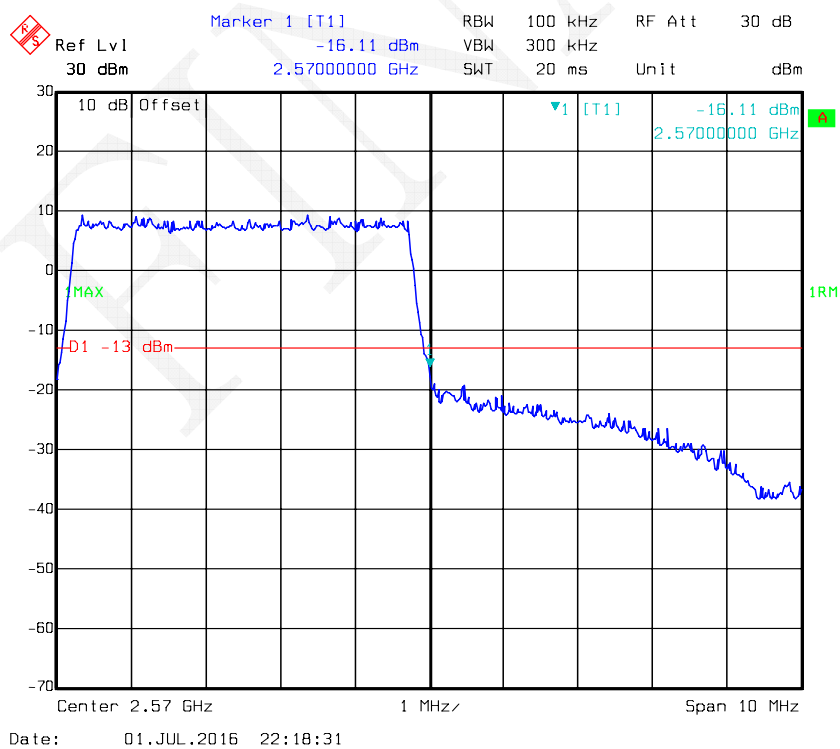


Date: 15.JUN.2016 23:31:15

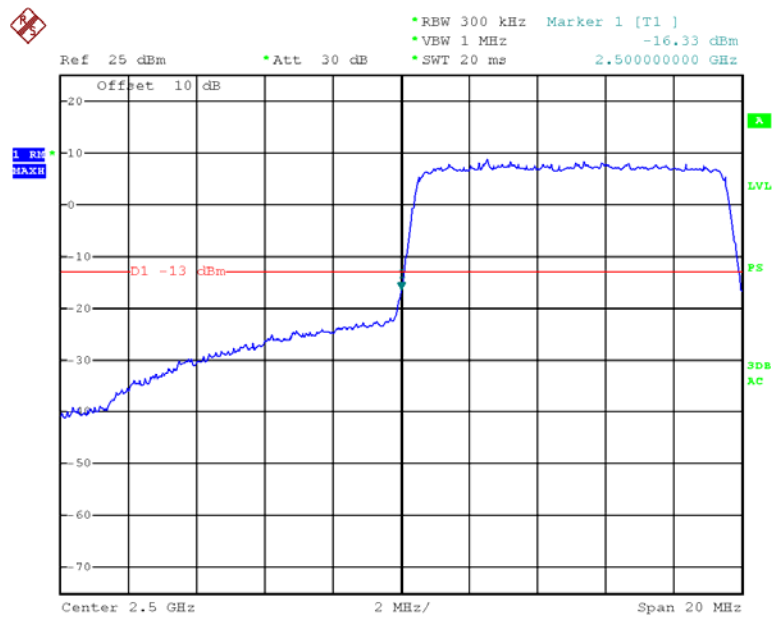
16QAM_5MHz_FULL RB_Left



16QAM_5MHz_FULL RB_Right

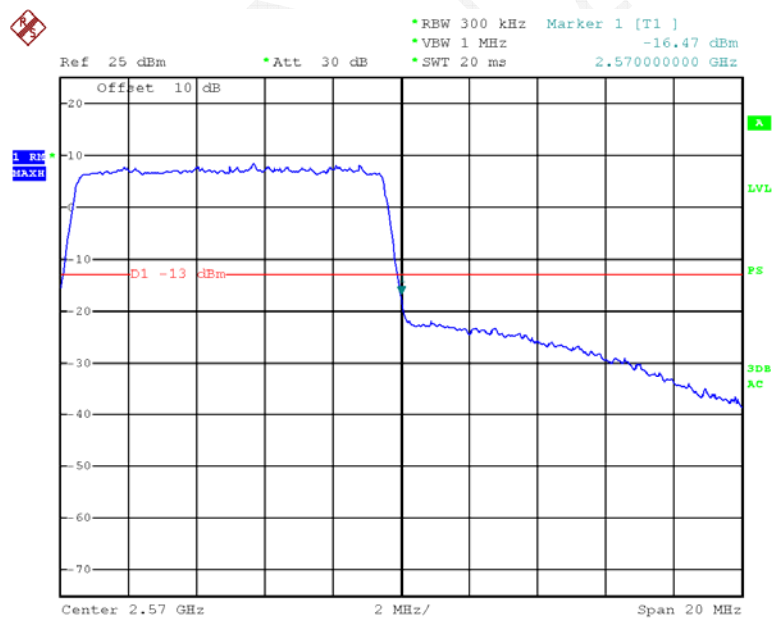


16QAM_10MHz_FULL RB_Left



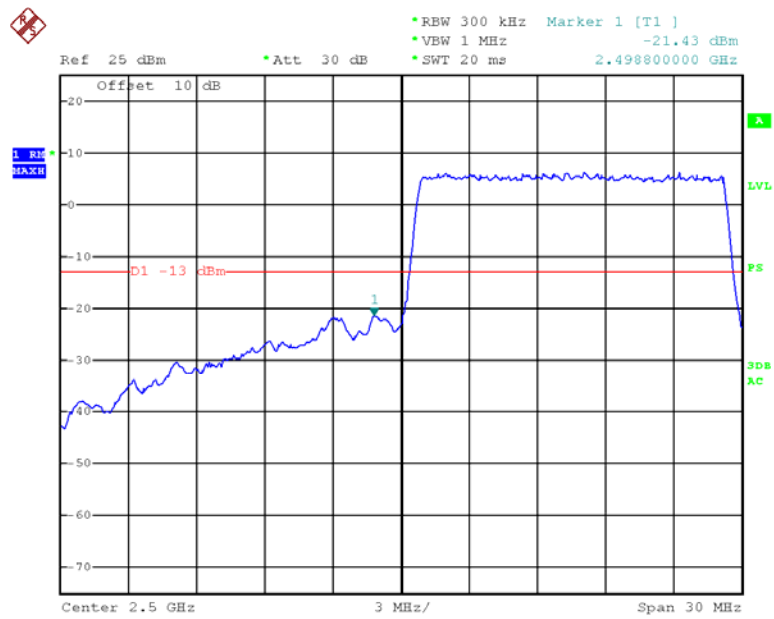
Date: 15.JUN.2016 23:27:05

16QAM_10MHz_FULL RB_Right



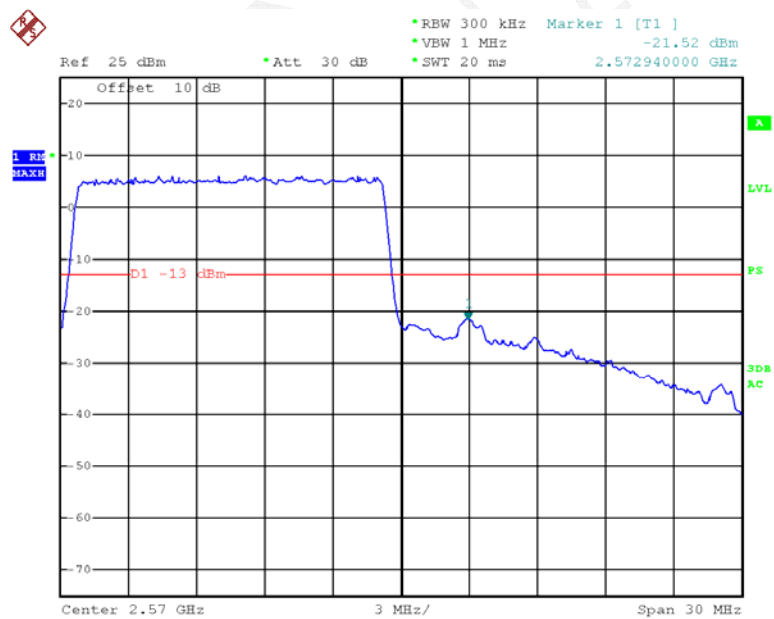
Date: 15.JUN.2016 23:24:47

16QAM_15MHz_FULL RB_ Left



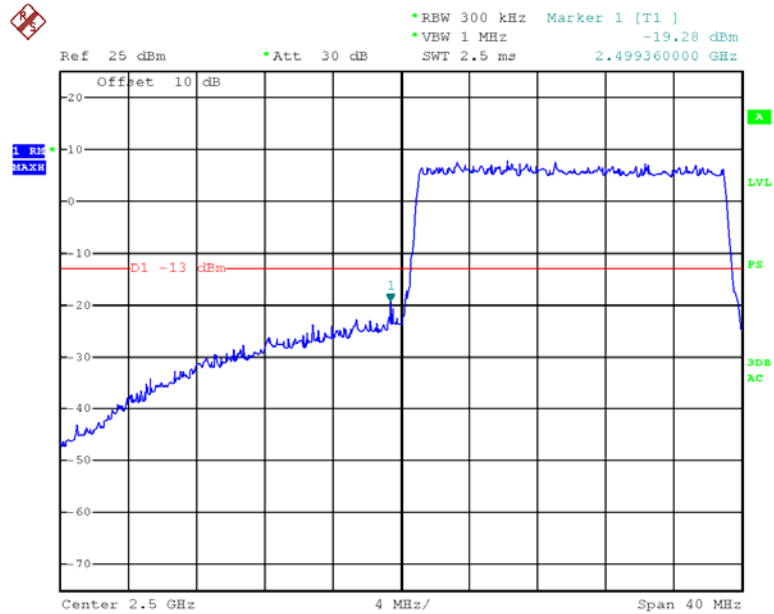
Date: 15.JUN.2016 23:28:30

16QAM_15MHz_FULL RB_ Right



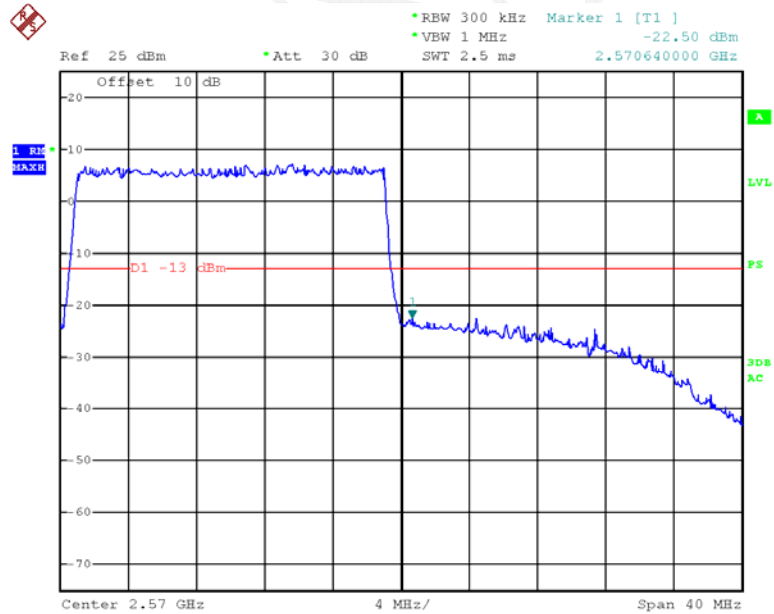
Date: 15.JUN.2016 23:29:33

16QAM_20MHz_FULL RB_Left



Date: 15.JUN.2016 23:31:55

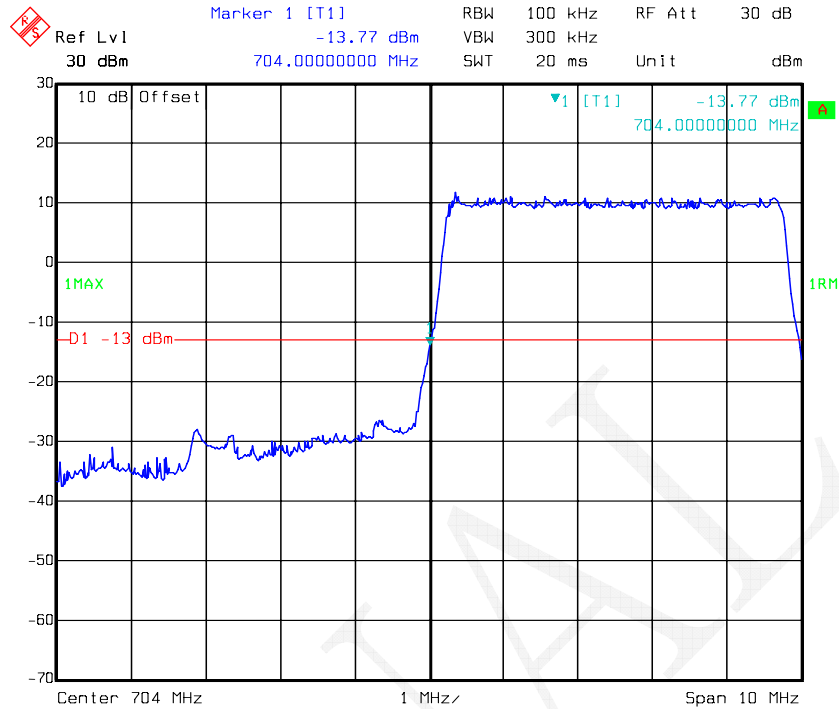
16QAM_20MHz_FULL RB_Right



Date: 15.JUN.2016 23:31:35

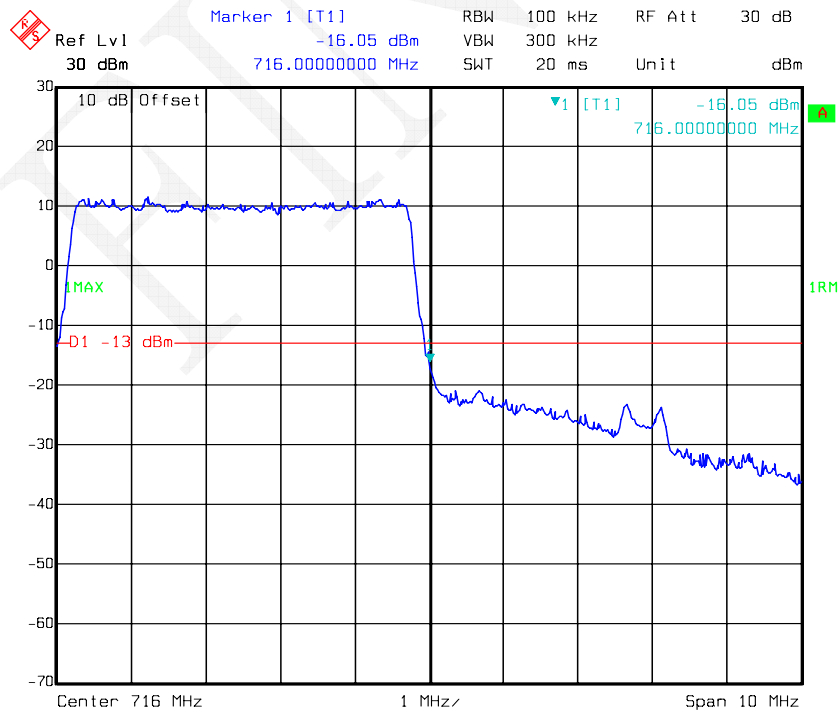
LTE Band 17

QPSK_5MHz_FULL RB_Left



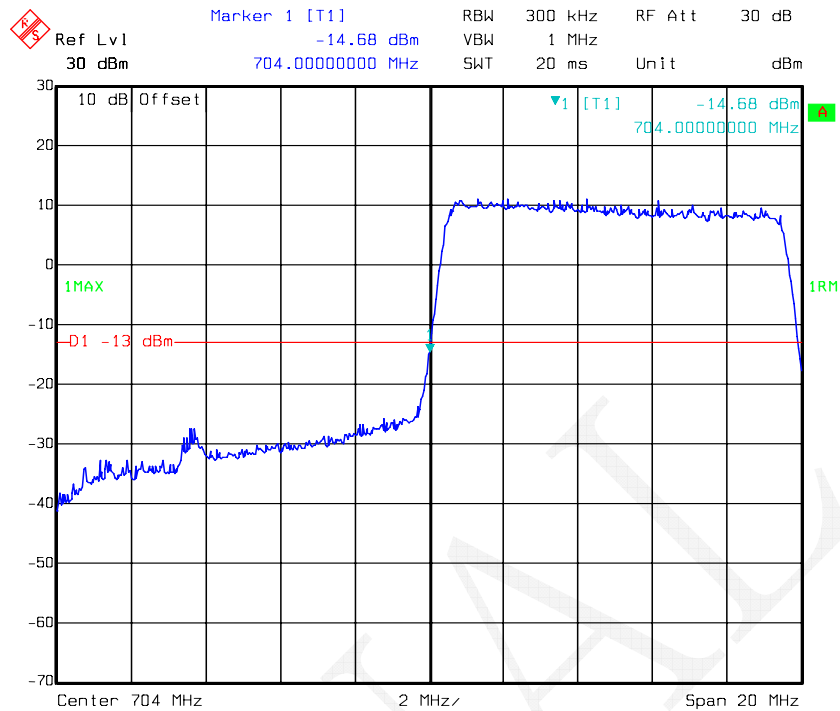
Date: 01.JUL.2016 22:10:57

QPSK_5MHz_FULL RB_Right



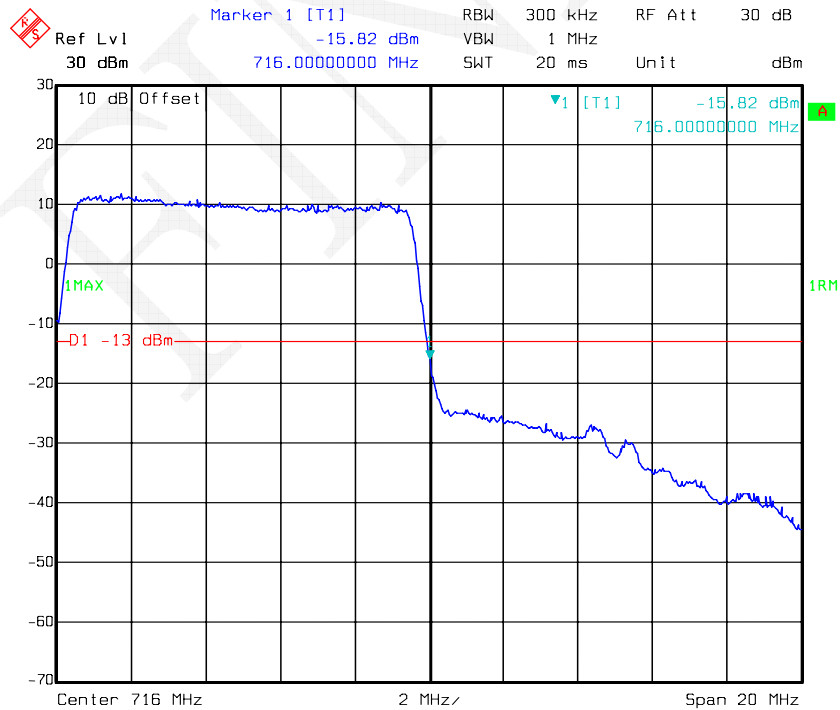
Date: 01.JUL.2016 22:12:50

QPSK_10MHz_FULL RB_Left



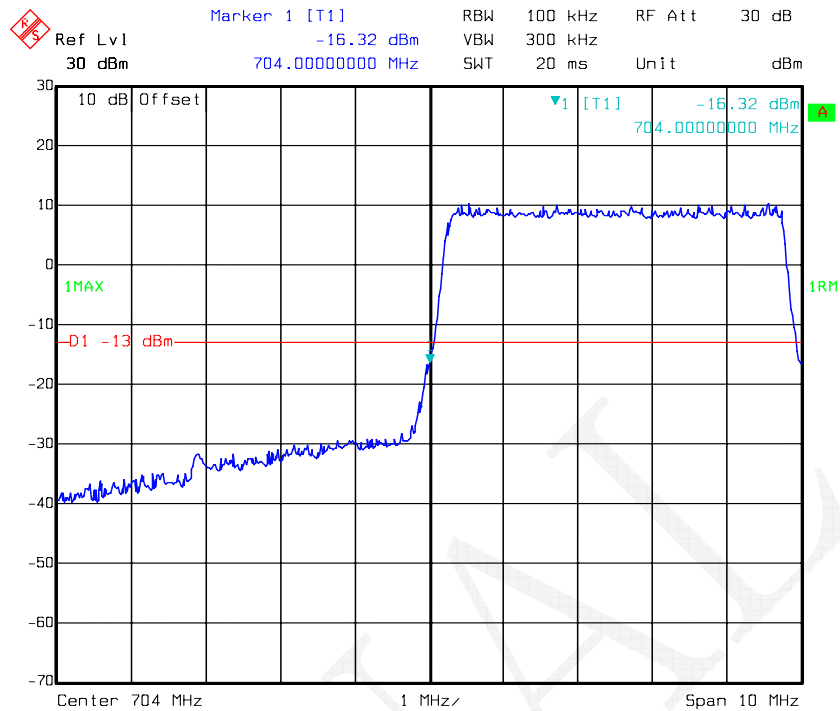
Date: 01.JUL.2016 22:15:51

QPSK_10MHz_FULL RB_Right



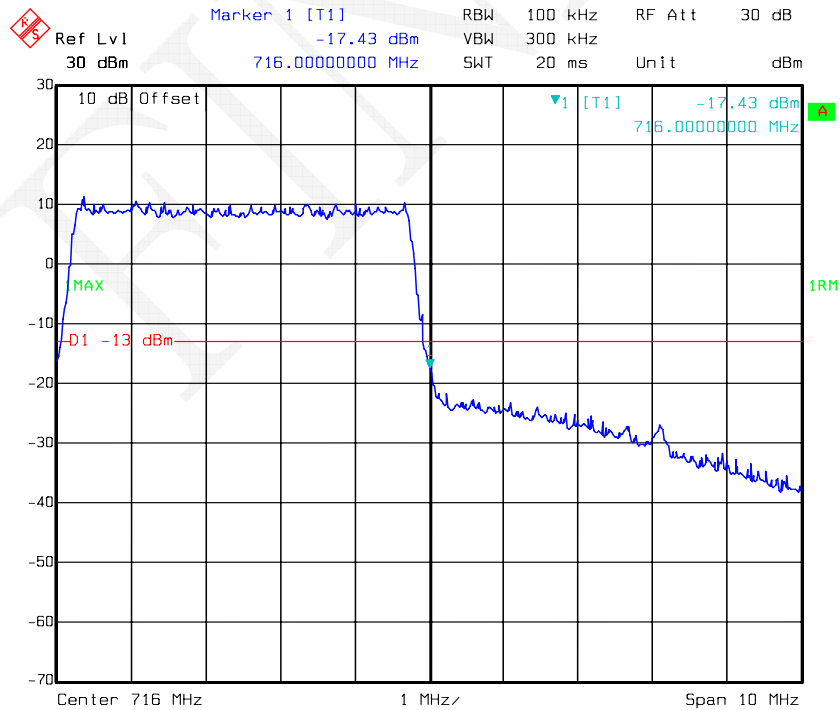
Date: 01.JUL.2016 22:13:39

16QAM_5MHz_FULL RB_Left



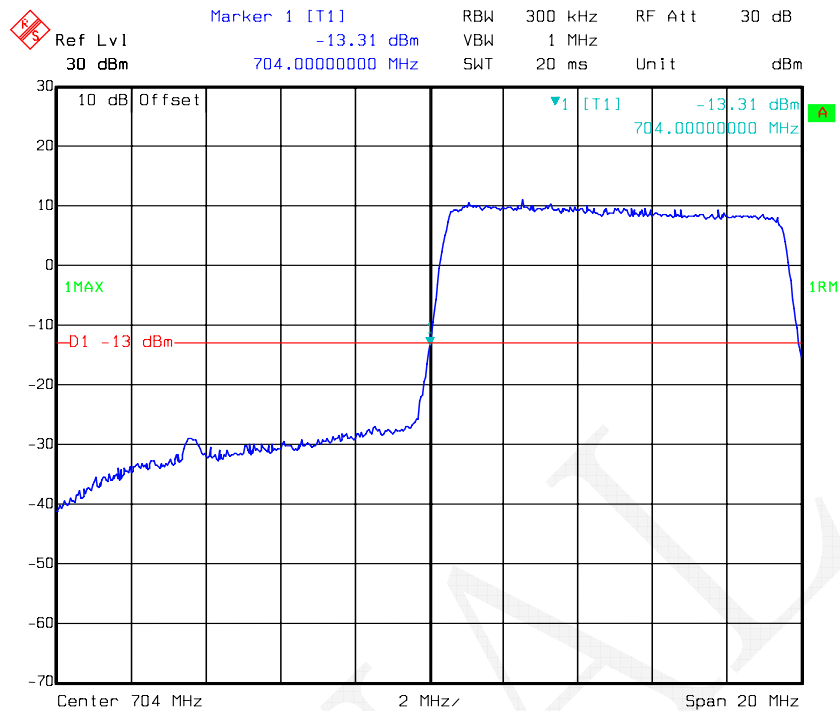
Date: 01.JUL.2016 22:11:21

16QAM_5MHz_FULL RB_Right

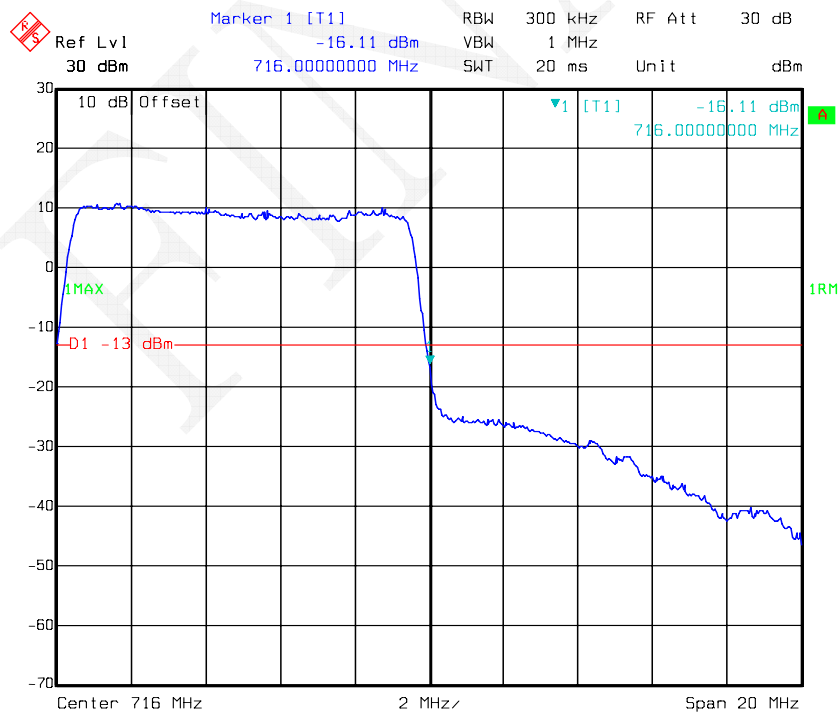


Date: 01.JUL.2016 22:12:22

16QAM_10MHz_FULL RB_ Left



16QAM_10MHz_FULL RB_ Right



FCC §2.1055, §22.355 & §24.235 & §27.54 - FREQUENCY STABILITY**Applicable Standard**

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

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.

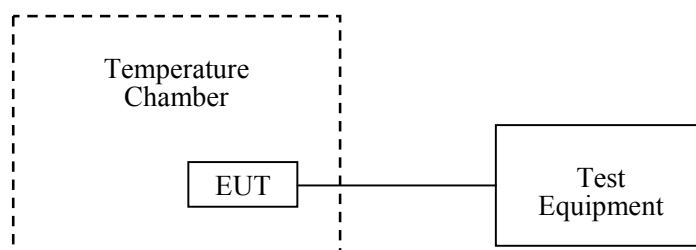
According to §27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Test Procedure

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

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

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-3	2015-09-10	2016-09-09
R&S	Universal Radio Communication Tester	CMU200	109 038	2016-05-09	2017-05-09
R&S	Wideband Radio Communication Tester	CMW500	1201.002K50-146520-wh	2015-12-19	2016-12-19
UNI-T	Multimeter	UT39A	M130199938	2016-04-02	2017-04-02
Pasternack	RF Coaxial Cable	RF-01	/	2016-05-06	2017-05-06

* **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:	28.5°C
Relative Humidity:	39 %
ATM Pressure:	100.1kPa

The testing was performed by Lion Xiao on 2016-06-27.

Cellular Band (Part 22H)

GMSK, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.8	12	0.014	2.5
-20	3.8	14	0.017	2.5
-10	3.8	10	0.012	2.5
0	3.8	13	0.016	2.5
10	3.8	11	0.013	2.5
20	3.8	19	0.023	2.5
30	3.8	15	0.018	2.5
40	3.8	12	0.014	2.5
50	3.8	21	0.025	2.5
25	3.6	20	0.024	2.5
25	4.35	16	0.019	2.5

Cellular Band (Part 22H)

EDGE, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.8	-1	-0.001	2.5
-20	3.8	-2	-0.002	2.5
-10	3.8	-6	-0.007	2.5
0	3.8	8	0.010	2.5
10	3.8	2	0.002	2.5
20	3.8	2	0.002	2.5
30	3.8	2	0.002	2.5
40	3.8	8	0.010	2.5
50	3.8	7	0.008	2.5
25	3.6	12	0.014	2.5
25	4.35	13	0.016	2.5

PCS Band (Part 24E)

GMSK, Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.8	17	0.009	Pass
-20	3.8	23	0.012	Pass
-10	3.8	20	0.011	Pass
0	3.8	24	0.013	Pass
10	3.8	21	0.011	Pass
20	3.8	19	0.010	Pass
30	3.8	14	0.007	Pass
40	3.8	18	0.010	Pass
50	3.8	11	0.006	Pass
25	3.6	16	0.009	Pass
25	4.35	13	0.007	Pass

PCS Band (Part 24E)

EDGE, Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.8	-3	-0.002	Pass
-20	3.8	3	0.002	Pass
-10	3.8	-3	-0.002	Pass
0	3.8	2	0.001	Pass
10	3.8	-1	-0.001	Pass
20	3.8	-3	-0.002	Pass
30	3.8	-1	-0.001	Pass
40	3.8	-4	-0.002	Pass
50	3.8	-10	-0.005	Pass
25	3.6	-8	-0.004	Pass
25	4.35	-11	-0.006	Pass

WCDMA Band V: Re199

Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.8	-7	-0.008	2.5
-20	3.8	-3	-0.004	2.5
-10	3.8	0	0.000	2.5
0	3.8	2	0.002	2.5
10	3.8	-6	-0.007	2.5
20	3.8	4	0.005	2.5
30	3.8	-4	-0.005	2.5
40	3.8	2	0.002	2.5
50	3.8	0	0.000	2.5
25	3.6	1	0.001	2.5
25	4.35	-1	-0.001	2.5

WCDMA Band IV: Re199

Middle Channel, $f_c = 1732.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.8	-5	-0.003	2.5
-20	3.8	-3	-0.002	2.5
-10	3.8	-1	-0.001	2.5
0	3.8	2	0.001	2.5
10	3.8	-4	-0.002	2.5
20	3.8	-3	-0.002	2.5
30	3.8	1	0.001	2.5
40	3.8	-5	-0.003	2.5
50	3.8	-1	-0.001	2.5
25	3.6	2	0.001	2.5
25	4.35	0	0.000	2.5

WCDMA Band II: Re199

Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.8	-2	-0.001	Pass
-20	3.8	5	0.003	Pass
-10	3.8	4	0.002	Pass
0	3.8	-1	-0.001	Pass
10	3.8	5	0.003	Pass
20	3.8	0	0.000	Pass
30	3.8	1	0.001	Pass
40	3.8	3	0.002	Pass
50	3.8	4	0.002	Pass
25	3.6	0	0.000	Pass
25	4.35	2	0.001	Pass

LTE Band II:

QPSK, Channel Bandwidth:10MHz Middle Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.8	17.27	0.0092	Pass
-20	3.8	16.64	0.0089	Pass
-10	3.8	16.11	0.0086	Pass
0	3.8	17.12	0.0091	Pass
10	3.8	16.87	0.0090	Pass
20	3.8	16.50	0.0088	Pass
30	3.8	16.19	0.0086	Pass
40	3.8	16.82	0.0089	Pass
50	3.8	16.71	0.0089	Pass
25	3.6	16.87	0.0090	Pass
25	4.35	16.39	0.0087	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.8	17.71	0.0094	Pass
-20	3.8	17.99	0.0096	Pass
-10	3.8	17.54	0.0093	Pass
0	3.8	16.76	0.0089	Pass
10	3.8	17.14	0.0091	Pass
20	3.8	16.52	0.0088	Pass
30	3.8	18.18	0.0097	Pass
40	3.8	17.66	0.0094	Pass
50	3.8	16.66	0.0089	Pass
25	3.6	18.29	0.0097	Pass
25	4.35	16.98	0.0090	Pass

LTE Band IV:

QPSK, Channel Bandwidth:10MHz Middle Channel, $f_c = 1732.5$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.8	-18.09	-0.0104	Pass
-20	3.8	-16.79	-0.0097	Pass
-10	3.8	-17.32	-0.0100	Pass
0	3.8	-17.98	-0.0104	Pass
10	3.8	-18.16	-0.0105	Pass
20	3.8	-17.62	-0.0102	Pass
30	3.8	-18.30	-0.0106	Pass
40	3.8	-18.39	-0.0106	Pass
50	3.8	-17.25	-0.0100	Pass
25	3.6	-16.77	-0.0097	Pass
25	4.35	-17.60	-0.0102	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, $f_c = 1732.5$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.8	15.87	0.0092	Pass
-20	3.8	16.71	0.0096	Pass
-10	3.8	16.45	0.0095	Pass
0	3.8	16.05	0.0093	Pass
10	3.8	15.86	0.0092	Pass
20	3.8	15.89	0.0092	Pass
30	3.8	16.97	0.0098	Pass
40	3.8	16.80	0.0097	Pass
50	3.8	15.37	0.0089	Pass
25	3.6	17.54	0.0101	Pass
25	4.35	16.55	0.0096	Pass

LTE Band V:

QPSK, Channel Bandwidth:10MHz Middle Channel, $f_c = 836.5$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.8	20.66	0.0247	Pass
-20	3.8	20.53	0.0245	Pass
-10	3.8	20.29	0.0243	Pass
0	3.8	19.91	0.0238	Pass
10	3.8	20.50	0.0245	Pass
20	3.8	20.69	0.0247	Pass
30	3.8	19.89	0.0238	Pass
40	3.8	20.18	0.0241	Pass
50	3.8	19.45	0.0233	Pass
25	3.6	19.11	0.0228	Pass
25	4.35	20.33	0.0243	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, $f_c = 836.5$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.8	17.29	0.0207	Pass
-20	3.8	18.29	0.0219	Pass
-10	3.8	17.96	0.0215	Pass
0	3.8	18.86	0.0225	Pass
10	3.8	17.34	0.0207	Pass
20	3.8	17.63	0.0211	Pass
30	3.8	17.64	0.0211	Pass
40	3.8	17.99	0.0215	Pass
50	3.8	18.15	0.0217	Pass
25	3.6	17.28	0.0207	Pass
25	4.35	17.68	0.0211	Pass

LTE Band VII:

QPSK, Channel Bandwidth:10MHz Middle Channel, $f_c = 2535$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.8	25.52	0.0101	Pass
-20	3.8	25.45	0.0100	Pass
-10	3.8	26.36	0.0104	Pass
0	3.8	25.49	0.0101	Pass
10	3.8	24.89	0.0098	Pass
20	3.8	26.76	0.0106	Pass
30	3.8	25.01	0.0099	Pass
40	3.8	26.17	0.0103	Pass
50	3.8	24.40	0.0096	Pass
25	3.6	25.92	0.0102	Pass
25	4.35	26.93	0.0106	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, $f_c = 2535$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.8	23.15	0.0091	Pass
-20	3.8	23.02	0.0091	Pass
-10	3.8	22.85	0.0090	Pass
0	3.8	22.79	0.0090	Pass
10	3.8	24.20	0.0095	Pass
20	3.8	24.87	0.0098	Pass
30	3.8	24.16	0.0095	Pass
40	3.8	23.80	0.0094	Pass
50	3.8	24.21	0.0096	Pass
25	3.6	22.98	0.0091	Pass
25	4.35	23.40	0.0092	Pass

LTE Band 17:

QPSK, Channel Bandwidth:10MHz Middle Channel, $f_c = 710$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.8	-21.10	-0.0297	Pass
-20	3.8	-21.78	-0.0307	Pass
-10	3.8	-22.12	-0.0312	Pass
0	3.8	-21.92	-0.0309	Pass
10	3.8	-21.97	-0.0309	Pass
20	3.8	-21.40	-0.0301	Pass
30	3.8	-22.01	-0.0310	Pass
40	3.8	-21.70	-0.0306	Pass
50	3.8	-21.81	-0.0307	Pass
25	3.6	-21.91	-0.0309	Pass
25	4.35	-22.03	-0.0310	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, $f_c = 710$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.8	-19.98	-0.0281	Pass
-20	3.8	-19.59	-0.0276	Pass
-10	3.8	-18.70	-0.0263	Pass
0	3.8	-19.60	-0.0276	Pass
10	3.8	-19.80	-0.0279	Pass
20	3.8	-19.25	-0.0271	Pass
30	3.8	-19.19	-0.0270	Pass
40	3.8	-19.59	-0.0276	Pass
50	3.8	-19.28	-0.0272	Pass
25	3.6	-19.23	-0.0271	Pass
25	4.35	-19.98	-0.0281	Pass

Note: The fundamental emissions stay within the authorized bands of operation based on the frequency deviation measured is small.

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