FCC PART 22H, PART 24E

FCC PART 27

MEASUREMENT AND TEST REPORT

For

HONG KONG IPRO TECHNOLOGY CO.,LIMITED

FLAT/RM A3, 9/F SILVERCORP INT TOWER 707-713 NATHAN RD MONGKOK, HONGKONG

FCC ID: PQ4IPROSPEEDL

Report Type:	Product Type:
Original Report	Mobile Phone

Test Engineer:	Robin Zheng
Report Number:	RDG160511008-00C
Report Date:	2016-05-26
Reviewed By:	Jerry Zhang EMC Manager
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *HONG KONG IPRO TECHNOLOGY CO.,LIMITED*'s product, model number: *SPEED L(FCC ID: PQ4IPROSPEEDL)* (the "EUT") in this report was a *Mobile Phone* , which was measured approximately: 15.4 cm (L) x 7.8 cm (W) x 0.9cm (H), rated input voltage: DC3.8V rechargeable Li-ion battery or DC5.0V charging from adapter.

Adapter information:
MODEL: NTR-S05
INPUT: AC100-240V - 50/60Hz 150mA
OUTPUT: DC 5.0V, 700mA

All measurement and test data in this report was gathered from production sample serial number: 160511008 (Assigned by BACL, Dongguan). The EUT was received on 2016-05-11.

Objective

This report is prepared on behalf of *HONG KONG IPRO TECHNOLOGY CO.,LIMITED* in accordance with: Part 2-Subpart J, Part 22-Subpart H, Part 24-Subpart E and part 27 of the Federal Communications Commission's rules.

The objective is to determine compliance with FCC rules for output power, modulation characteristic, occupied bandwidth, spurious emissions at antenna terminal, spurious radiated emission, frequency stability and band edge.

Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: PQ4IPROSPEEDL
FCC Part 15C DSS submissions with FCC ID: PQ4IPROSPEEDL
FCC Part 15C DTS submissions with FCC ID: PQ4IPROSPEEDL

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 22 Subpart H - Public Mobile Services
Part 24 Subpart E - Personal Communication Services
Part 27 – Miscellaneous wireless communications services

Applicable Standards: TIA/EIA 603-D-2010.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp.(Dongguan).

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA/EIA-603-D-2010.

The test items were performed with the EUT operating at testing mode.

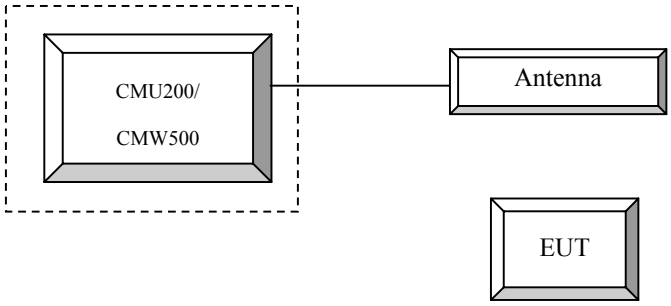
Equipment Modifications

No modification was made to the EUT.

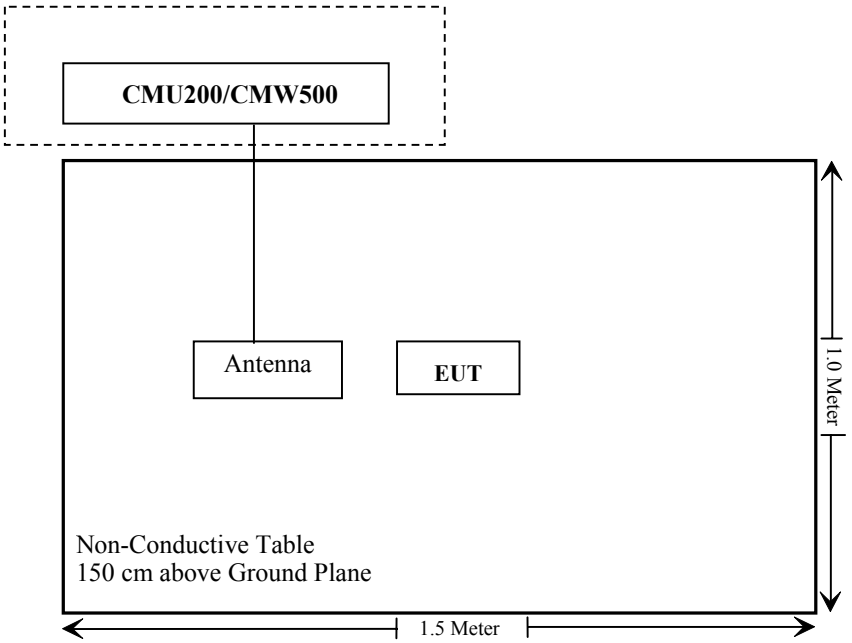
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester	CMU200	109038
R&S	Wideband Radio Communication Tester	CMW500	106891
N/A	ANTENNA	N/A	N/A

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310, §2.1093	RF Exposure	Compliance
§2.1046; § 22.913 (a); § 24.232 (c); §27.50	RF Output Power	Compliance
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905 § 22.917; § 24.238; §27.53	Occupied Bandwidth	Compliance
§ 2.1051, § 22.917 (a); § 24.238 (a); §27.53	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053 § 22.917 (a); § 24.238 (a); §27.53	Spurious Radiation Emissions	Compliance
§ 22.917 (a); § 24.238 (a); §27.53	Out of band emission, Band Edge	Compliance
§ 2.1055 § 22.355; § 24.235; §27.54	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance

FCC §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliant, please refer to the SAR report: RDG160511008-20.

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & 24E, Part 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC § 2.1046, § 22.913 (a) & § 24.232 (c) & § 27.50 - RF OUTPUT POWER

Applicable Standard

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to FCC §2.1046 and §24.232 (C), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications..

According to FCC §2.1046 and §27.50 (d), (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

According to §24.232 (d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Test Procedure

GSM/GPRS

Function: Menu select > GSM Mobile Station > GSM 850/1900
Press Connection control to choose the different menus
Press RESET > choose all the reset all settings
Connection Press Signal Off to turn off the signal and change settings
Network Support > GSM + GPRS or GSM + EGSM
Main Service > Packet Data
Service selection > Test Mode A – Auto Slot Config. off
MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting
> Slot configuration > Uplink/Gamma
> 33 dBm for GPRS 850
> 30 dBm for GPRS 1900
BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel
Frequency Offset > + 0 Hz
Mode > BCCH and TCH
BCCH Level > -85 dBm (May need to adjust if link is not stabe)
BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]
Channel Type > Off
P0 > 4 dB
Slot Config > Unchanged (if already set under MS signal)
TCH > choose desired test channel
Hopping > Off
Main Timeslot > 3
Network Coding Scheme > CS4 (GPRS)
Bit Stream > 2E9-1 PSR Bit Stream
AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input
Connection Press Signal on to turn on the signal and change settings

WCDMA-Release 99

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification. The EUT has a nominal maximum output power of 24dBm (+1.7/-3.7).

WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	βc / βd	8/15

WCDMA HSDPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subset	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	βd (SF)	64			
	βc/ βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR(dB)	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	Ahs=βhs/ βc	30/15			

WCDMA HSUPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subset	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	0
	βec	209/225	12/15	30/15	2/15	5/15
	βc/ βd	11/15	6/15	15/9	2/15	-
	βhs	22/15	12/15	30/15	4/15	5/15
	CM(dB)	1.0	3.0	2.0	3.0	1.0
	MPR(dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback	4ms				
	CQI Repetition Factor	2				
	Ahs=βhs/ βc	30/15				
HSUPA Specific Settings	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_FCIs	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	

HSPA+

The following tests were conducted according to the test requirements in Table C.11.1.4 of 3GPP TS 34.121-1

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed}1: 30/15 β_{ed}2: 30/15	β_{ed}3: 24/15 β_{ed}4: 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c .
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.
Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

DC-HSDPA

The following tests were conducted according to the test requirements in Table C.8.1.12 of 3GPP TS 34.121-1

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK

Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.

LTE:

The following tests were conducted according to the test requirements in 3GPP TS36.101

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4,10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23[1]	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

Radiated method:

ANSI/TIA 603-D section 2.2.17

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	2014-11-06	2017-11-05
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
Giga	Signal Generator	1026	320408	2015-11-23	2016-11-22
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	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	OE01203239	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 Spliter	ODP-1-6-2S	OE0120142	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:	25.1°C
Relative Humidity:	54 %
ATM Pressure:	100.6kPa

The testing was performed by Robin Zheng on 2016-05-16.

Conducted Power

Cellular Band (Part 22H) & PCS Band (Part 24E)

Band	Channel No.	Peak Output Power (dBm)								
		GSM	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
Cellular	128	32.71	32.68	32.14	30.66	29.62	26.27	25.22	23.15	22.09
	190	32.67	32.71	32.12	30.52	29.39	26.47	25.45	23.41	22.37
	251	32.72	32.72	32.10	30.48	29.34	26.43	25.44	23.33	22.29
PCS	512	29.63	29.58	28.85	26.92	25.73	25.34	24.31	22.12	21.01
	661	29.72	29.67	28.96	27.01	25.92	25.33	24.30	22.15	21.02
	810	29.79	29.73	29.04	27.19	26.03	25.36	24.27	22.20	21.05

WCDMA Band Ⅱ

Mode	3GPP Sub Test	Average Output Power (dBm)					
		Low Channel (Ave. Power)	Low Channel (PAR)	Middle Channel (Ave. Power)	Middle Channel (PAR)	High Channel (Ave. Power)	High Channel (PAR)
Rel 99 (QPSK)	1	22.48	2.88	22.49	2.56	22.67	2.68
HSDPA (QPSK)	1	21.46	2.98	21.51	2.54	21.66	2.70
	2	21.44	2.82	21.53	2.29	21.63	2.47
	3	21.42	2.66	21.51	2.60	21.65	2.39
	4	21.40	3.04	21.49	2.45	21.64	2.66
HSUPA (QPSK)	1	21.45	2.91	21.50	2.67	21.68	2.56
	2	21.43	2.86	21.47	2.64	21.66	2.45
	3	21.44	2.75	21.52	2.53	21.63	2.54
	4	21.42	2.92	21.51	2.48	21.67	2.72
	5	21.41	2.74	21.48	2.64	21.65	2.83
DC-HSDPA (QPSK)	1	21.46	2.84	21.50	2.67	21.68	2.45
	2	21.42	2.78	21.47	2.51	21.61	2.86
	3	21.40	2.97	21.46	2.49	21.64	2.43
	4	21.43	2.90	21.49	2.70	21.60	2.51
HSPA+ (16QAM)	1	21.41	2.79	21.48	2.53	21.66	2.45

WCDMA Band V

Mode	3GPP Sub Test	Average Output Power (dBm)					
		Low Channel (Ave. Power)	Low Channel (PAR)	Middle Channel (Ave. Power)	Middle Channel (PAR)	High Channel (Ave. Power)	High Channel (PAR)
Rel 99 (QPSK)	1	22.84	3.00	22.61	2.84	22.63	2.96
HSDPA (QPSK)	1	21.74	2.91	21.56	2.79	21.59	3.00
	2	21.71	2.79	21.54	2.86	21.56	2.87
	3	21.73	3.18	21.53	2.91	21.57	2.90
	4	21.70	3.13	21.50	2.67	21.53	2.95
HSUPA (QPSK)	1	21.76	3.06	21.54	3.02	21.59	2.84
	2	21.74	3.00	21.51	2.73	21.55	2.93
	3	21.71	2.71	21.52	3.01	21.57	2.86
	4	21.73	3.11	21.49	2.69	21.52	2.97
DC-HSDPA (QPSK)	1	21.70	2.93	21.50	2.93	21.54	2.77
	2	21.75	2.82	21.54	2.81	21.56	3.08
	3	21.70	2.79	21.52	2.76	21.50	2.67
	4	21.72	3.11	21.47	2.82	21.52	2.98
	5	21.68	3.04	21.46	2.88	21.54	3.02
HSPA+ (16QAM)	1	21.71	2.74	21.51	2.92	2.53	2.99

LTE Band II (PART 27)

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	21.28	21.41	20.96
		1#3	21.34	21.46	20.75
		1#5	21.25	21.38	20.81
		3#0	21.29	21.41	20.90
		3#1	21.26	21.44	20.91
		3#3	21.32	21.37	20.82
		6#0	20.21	20.32	20.80
	16QAM	1#0	20.21	20.39	20.09
		1#3	20.30	20.45	19.97
		1#5	20.23	20.37	20.02
		3#0	20.24	20.41	19.95
		3#1	20.18	20.39	19.92
		3#3	20.25	20.37	20.03
		6#0	19.15	19.31	19.13

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
3 MHz	QPSK	1#0	21.27	21.37	21.23
		1#7	21.31	21.42	21.26
		1#14	21.25	21.35	21.21
		8#0	20.26	20.32	20.25
		8#4	20.21	20.35	20.18
		8#7	20.24	20.37	20.23
		15#0	20.28	20.40	20.19
	16QAM	1#0	20.35	20.78	20.14
		1#7	20.31	20.81	20.21
		1#14	20.34	20.76	20.13
		8#0	19.43	19.53	19.38
		8#4	19.38	19.42	19.26
		8#7	19.34	19.51	19.21
		15#0	19.24	19.45	19.23
5 MHz	QPSK	1#0	21.36	21.47	21.24
		1#12	21.39	21.43	21.17
		1#24	21.42	21.51	21.06
		12#0	20.36	20.35	19.97
		12#6	20.41	20.42	19.92
		12#11	20.34	20.45	19.88
		25#0	20.28	20.36	19.85
	16QAM	1#0	20.62	20.41	20.28
		1#12	20.72	20.46	20.24
		1#24	20.68	20.53	20.11
		12#0	19.46	19.56	19.07
		12#6	19.41	19.45	19.12
		12#11	19.37	19.43	19.03
		25#0	19.28	19.46	18.92
10 MHz	QPSK	1#0	21.27	21.47	20.94
		1#24	21.35	21.52	20.98
		1#49	21.19	21.41	21.02
		25#0	20.27	20.39	20.16
		25#12	20.31	20.42	20.12
		25#24	20.36	20.36	20.07
		50#0	20.29	20.39	19.92
	16QAM	1#0	20.39	20.86	20.12
		1#24	20.43	20.92	20.16
		1#49	20.36	20.84	20.04
		25#0	19.53	19.63	19.13
		25#12	19.56	19.52	19.28
		25#24	19.48	19.65	19.03
		50#0	19.35	19.42	18.98

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15 MHz	QPSK	1#0	21.31	21.42	21.32
		1#37	21.43	21.39	21.27
		1#74	21.35	21.35	21.34
		36#0	20.34	20.48	20.33
		36#17	20.29	20.41	20.36
		36#35	20.37	20.45	20.25
		75#0	20.45	20.44	20.08
	16QAM	1#0	20.39	20.85	20.53
		1#37	20.42	20.84	20.57
		1#74	20.35	20.92	20.51
		36#0	19.84	19.73	19.56
		36#17	19.78	19.68	19.48
		36#35	19.75	19.63	19.52
		75#0	19.41	19.47	19.12
20 MHz	QPSK	1#0	21.36	21.47	21.30
		1#49	21.32	21.53	21.26
		1#99	21.39	21.44	21.24
		50#0	20.38	20.36	20.32
		50#24	20.31	20.34	20.21
		50#49	20.42	20.37	20.24
		100#0	20.33	20.29	20.18
	16QAM	1#0	20.44	20.64	20.71
		1#49	20.41	20.57	20.75
		1#99	20.38	20.54	20.68
		50#0	19.46	19.51	19.36
		50#24	19.43	19.56	19.31
		50#49	19.45	19.47	19.28
		100#0	19.35	19.33	19.19

LTE Band IV (PART 27)

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	21.72	21.27	21.39
		1#3	21.76	21.24	21.43
		1#5	21.71	21.28	21.35
		3#0	21.83	21.36	21.41
		3#1	21.77	21.37	21.40
		3#3	21.79	21.31	21.36
		6#0	20.72	20.25	20.38
	16QAM	1#0	20.80	20.25	20.35
		1#3	20.83	20.27	20.36
		1#5	20.76	20.21	20.31
		3#0	20.78	20.31	20.28
		3#1	20.81	20.24	20.24
		3#3	20.77	20.26	20.33
		6#0	19.67	19.27	19.28
3 MHz	QPSK	1#0	21.66	21.30	21.39
		1#7	21.61	21.35	21.42
		1#14	21.63	21.32	21.36
		8#0	20.56	20.31	20.38
		8#4	20.53	20.36	20.35
		8#7	20.62	20.28	20.41
		15#0	20.68	20.34	20.38
	16QAM	1#0	20.76	20.79	20.37
		1#7	20.74	20.82	20.35
		1#14	20.79	20.76	20.41
		8#0	19.65	19..48	19.53
		8#4	19.72	19.42	19.51
		8#7	19.68	19.45	19.56
		15#0	19.60	19.38	19.42

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	1#0	21.81	21.40	21.50
		1#12	21.78	21.43	21.48
		1#24	21.83	21.36	21.53
		12#0	20.74	20.37	20.45
		12#6	20.79	20.35	20.51
		12#11	20.72	20.39	20.58
		25#0	20.67	20.32	20.39
	16QAM	1#0	21.02	20.37	20.56
		1#12	21.14	20.41	20.62
		1#24	21.08	20.39	20.53
		12#0	19.67	19.57	19.43
		12#6	19.62	19.51	19.38
		12#11	19.71	19.53	19.42
		25#0	19.58	19.44	19.36
10 MHz	QPSK	1#0	22.10	21.55	21.65
		1#24	22.07	21.53	21.62
		1#49	22.02	21.49	21.68
		25#0	21.06	20.50	20.73
		25#12	21.01	20.53	20.76
		25#24	20.97	20.49	20.67
		50#0	20.99	20.51	20.65
	16QAM	1#0	21.02	21.09	21.09
		1#24	21.05	21.04	21.13
		1#49	21.13	21.08	21.05
		25#0	20.11	19.67	19.95
		25#12	20.05	19.72	19.86
		25#24	20.07	19.64	19.92
		50#0	19.98	19.56	19.83

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15 MHz	QPSK	1#0	22.08	21.76	21.64
		1#37	22.10	21.79	21.68
		1#74	22.06	21.81	21.62
		36#0	21.15	20.83	20.81
		36#17	21.08	20.87	20.72
		36#35	21.12	20.76	20.75
		75#0	21.01	20.74	20.74
	16QAM	1#0	21.19	21.22	21.19
		1#37	21.23	21.26	21.23
		1#74	21.16	21.18	21.27
		36#0	20.36	19.93	20.06
		36#17	20.28	19.96	20.11
		36#35	20.25	19.85	20.04
		75#0	20.23	19.84	19.94
20 MHz	QPSK	1#0	22.13	21.85	21.61
		1#49	22.21	21.93	21.56
		1#99	22.18	21.86	21.58
		50#0	20.96	20.73	20.86
		50#24	20.92	20.65	20.91
		50#49	20.85	20.75	20.78
		100#0	20.88	20.68	20.73
	16QAM	1#0	21.28	21.05	21.26
		1#49	21.35	21.13	21.28
		1#99	21.31	21.06	21.30
		50#0	20.35	20.63	20.68
		50#24	20.41	20.54	20.61
		50#49	20.38	20.46	20.58
		100#0	19.88	19.77	19.72

LTE Band VII (PART 27)

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	1#0	21.19	21.49	21.66
		1#12	21.16	21.53	21.64
		1#24	21.26	21.45	21.69
		12#0	20.24	20.48	20.53
		12#6	20.17	20.43	20.42
		12#11	20.23	20.51	20.45
		25#0	20.11	20.43	20.47
	16QAM	1#0	20.40	20.46	20.74
		1#12	20.42	20.51	20.71
		1#24	20.38	20.42	20.83
		12#0	19.16	19.68	19.53
		12#6	19.24	19.53	19.43
		12#11	19.32	19.63	19.49
		25#0	18.98	19.56	19.46
10 MHz	QPSK	1#0	21.07	21.46	21.59
		1#24	21.03	21.51	21.55
		1#49	21.11	21.43	21.52
		25#0	20.16	20.56	20.58
		25#12	20.08	20.58	20.62
		25#24	20.11	20.52	20.54
		50#0	20.06	20.49	20.48
	16QAM	1#0	20.15	20.88	20.46
		1#24	20.18	20.93	20.43
		1#49	20.12	20.85	20.51
		25#0	19.15	19.68	19.63
		25#12	19.20	19.57	19.53
		25#24	19.12	19.54	19.57
		50#0	19.02	19.53	19.59

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15 MHz	QPSK	1#0	21.11	21.44	21.58
		1#37	21.08	21.41	21.64
		1#74	21.15	21.46	21.54
		36#0	20.26	20.53	20.73
		36#17	20.18	20.57	20.71
		36#35	20.13	20.52	20.65
		75#0	20.16	20.50	20.67
	16QAM	1#0	20.33	20.86	20.89
		1#37	20.35	20.84	20.93
		1#74	20.28	20.91	20.85
		36#0	19.10	19.65	19.73
		36#17	19.02	19.62	19.67
		36#35	19.06	19.57	19.62
		75#0	19.04	19.51	19.65
20 MHz	QPSK	1#0	21.23	21.46	21.51
		1#49	21.26	21.52	21.54
		1#99	21.31	21.48	21.46
		50#0	20.26	20.46	20.59
		50#24	20.28	20.49	20.62
		50#49	20.31	20.41	20.54
		100#0	20.24	20.45	20.52
	16QAM	1#0	20.31	20.66	20.92
		1#49	20.35	20.63	20.98
		1#99	20.34	20.69	20.91
		50#0	19.26	19.60	19.64
		50#24	19.17	19.53	19.57
		50#49	19.21	19.57	19.53
		100#0	19.15	19.51	19.56

Band II

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.56	3.00	4.08	13
	100 RB		6.36	6.28	6.32	13
16QAM	1 RB	20 MHz	5.24	3.96	5.16	13
	100 RB		7.20	6.96	7.12	13

Band IV

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.84	4.36	5.20	13
	100 RB		6.32	6.24	6.28	13
16QAM	1 RB	20 MHz	5.08	5.52	5.84	13
	100 RB		7.08	7.08	7.08	13

Band VII

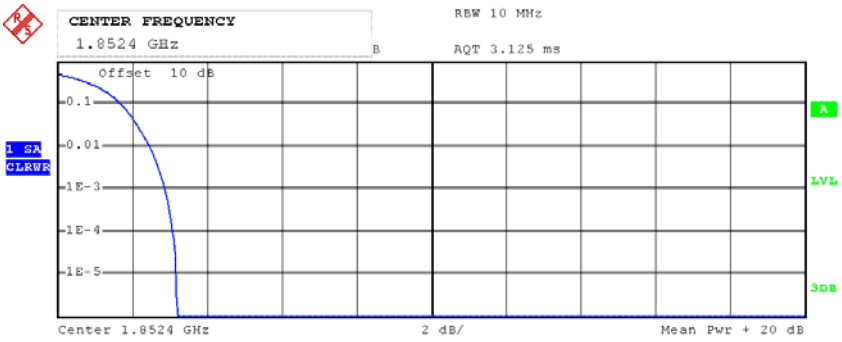
Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.16	3.96	3.52	13
	100 RB		6.32	6.36	6.08	13
16QAM	1 RB	20 MHz	5.04	4.88	4.24	13
	100 RB		6.96	7.12	7.00	13

Note: peak-to-average ratio (PAR) <13 dB.

Peak-to-average ratio (PAR)

WCDMA Band Ⅱ

Low Channel

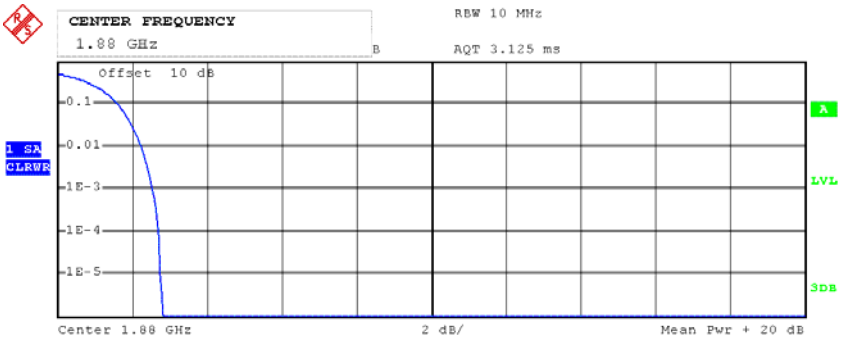


Complementary Cumulative Distribution Function (100000 samples)

Trace 1	
Mean	18.56 dBm
Peak	21.76 dBm
Crest	3.20 dB
10% @	1.72 dB
1% @	2.48 dB
.1% @	2.88 dB

Date: 16.MAY.2016 09:54:45

Middle Channel

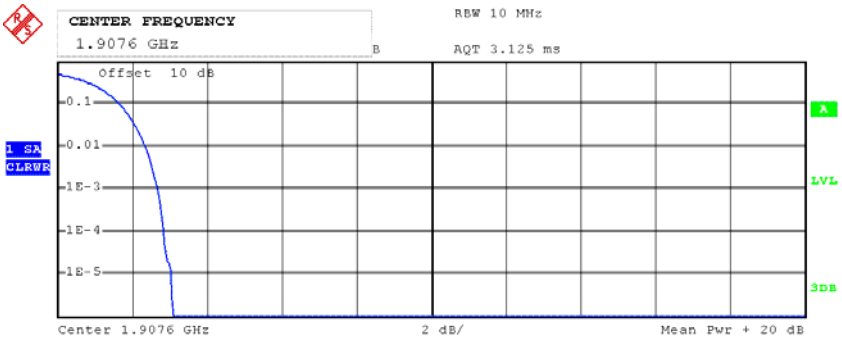


Complementary Cumulative Distribution Function (100000 samples)

Trace 1	
Mean	19.78 dBm
Peak	22.60 dBm
Crest	2.82 dB
10% @	1.64 dB
1% @	2.28 dB
.1% @	2.56 dB

Date: 16.MAY.2016 09:50:13

High Channel



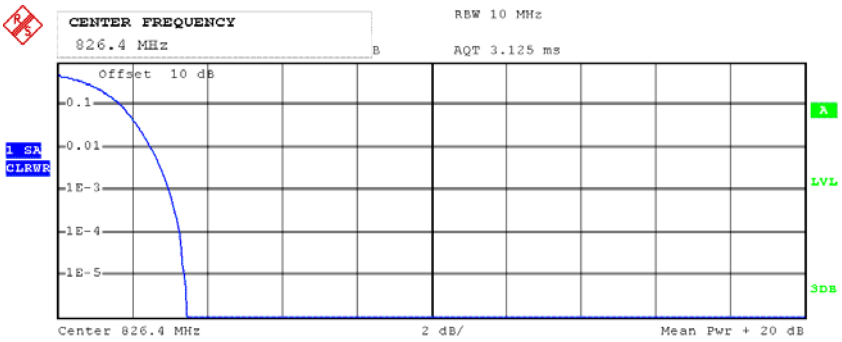
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	17.05 dBm
Peak	20.13 dBm
Crest	3.08 dB
10% @	1.68 dB
1% @	2.36 dB
.1% @	2.68 dB

Date: 16.MAY.2016 09:54:25

WCDMA Band Ⅴ

Low Channel

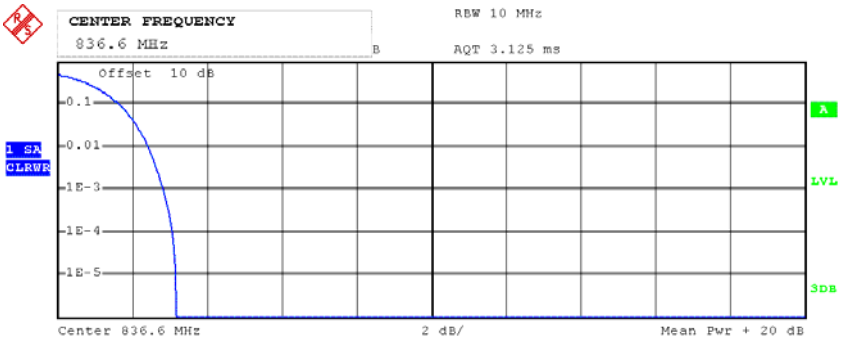


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.68 dBm
Peak	24.15 dBm
Crest	3.48 dB
10% @	1.72 dB
1% @	2.52 dB
.1% @	3.00 dB

Date: 16.MAY.2016 09:57:16

Middle Channel

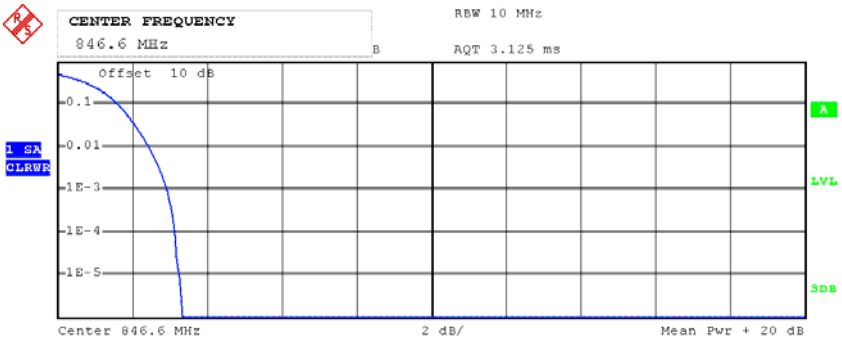


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.41 dBm
Peak	23.59 dBm
Crest	3.18 dB
10% @	1.68 dB
1% @	2.44 dB
.1% @	2.84 dB

Date: 16.MAY.2016 09:56:51

High Channel



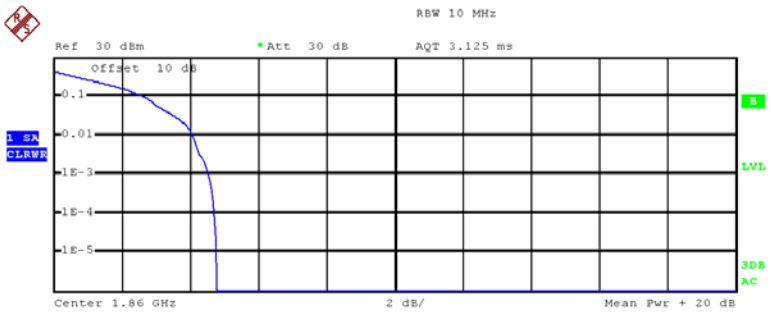
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.04 dBm
Peak	23.38 dBm
Crest	3.34 dB
10% @	1.64 dB
1% @	2.48 dB
.1% @	2.96 dB

Date: 16.MAY.2016 10:11:51

LTE Band II (PART 27)

QPSK_20MHz_1RB_Low Channel

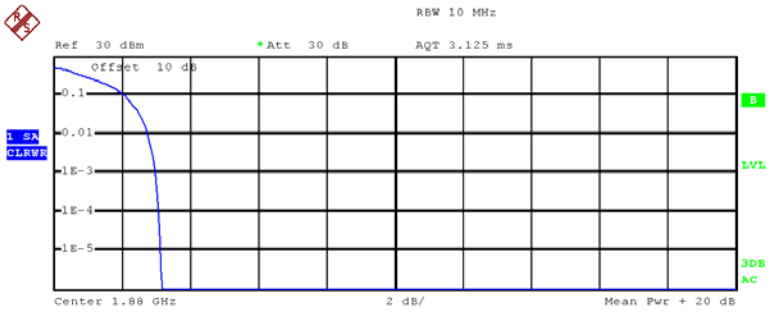


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.53 dBm
Peak	29.30 dBm
Crest	4.77 dB
10 %	2.68 dB
1 %	4.08 dB
.1 %	4.56 dB
.01 %	4.72 dB

Date: 16.MAY.2016 14:22:35

QPSK_20MHz_1RB Middle Channel

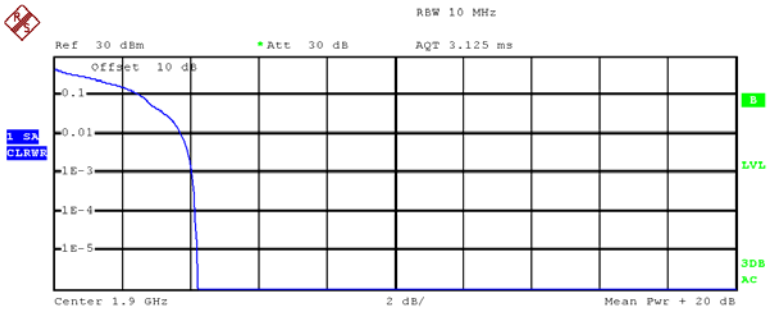


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.52 dBm
Peak	27.67 dBm
Crest	3.16 dB
10 %	2.12 dB
1 %	2.76 dB
.1 %	3.00 dB
.01 %	3.08 dB

Date: 16.MAY.2016 14:22:03

QPSK_20MHz_1RB High Channel

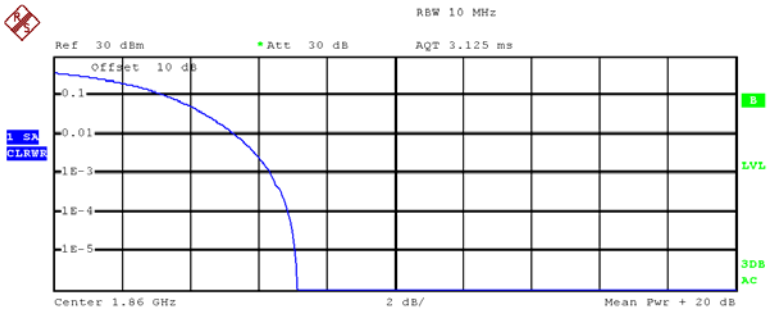


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.95 dBm
Peak	28.17 dBm
Crest	4.22 dB
10 %	2.56 dB
1 %	3.76 dB
.1 %	4.08 dB
.01 %	4.16 dB

Date: 16.MAY.2016 14:23:10

QPSK_20MHz_FULL RB Low Channel

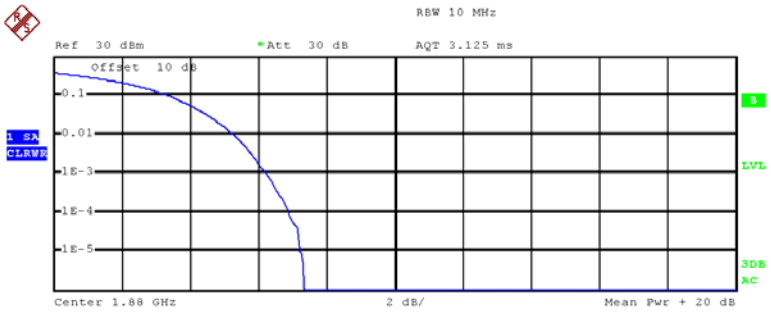


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.25 dBm
Peak	27.39 dBm
Crest	7.14 dB
10 %	3.36 dB
1 %	5.36 dB
.1 %	6.36 dB
.01 %	6.88 dB

Date: 16.MAY.2016 14:24:28

QPSK_20MHz_FULL RB Middle Channel

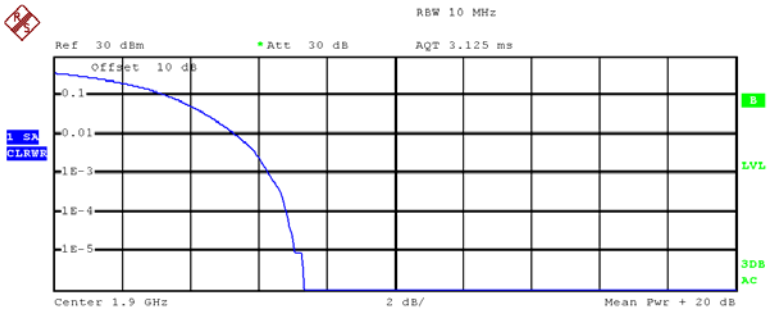


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.05 dBm
Peak	27.39 dBm
Crest	7.34 dB
10 %	3.44 dB
1 %	5.28 dB
.1 %	6.28 dB
.01 %	6.92 dB

Date: 16.MAY.2016 14:24:10

QPSK 20MHz_FULL RB High Channel

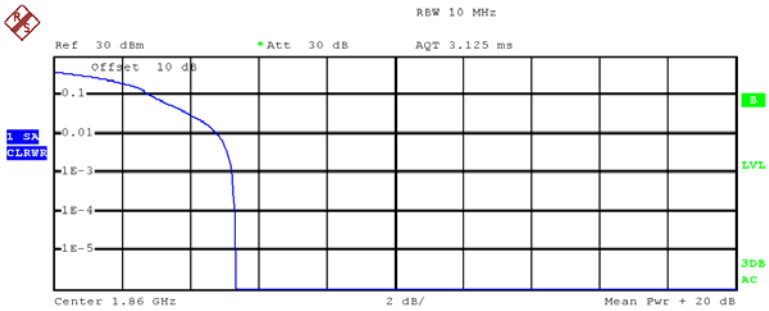


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.84 dBm
Peak	27.18 dBm
Crest	7.34 dB
10 %	3.40 dB
1 %	5.36 dB
.1 %	6.32 dB
.01 %	6.84 dB

Date: 16.MAY.2016 14:23:38

16QAM_20MHz_1RB_Low Channel

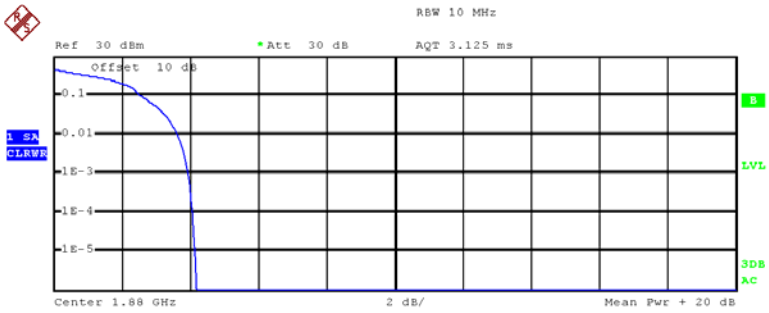


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.68 dBm
Peak	29.01 dBm
Crest	5.34 dB
10 %	2.88 dB
1 %	4.84 dB
.1 %	5.24 dB
.01 %	5.32 dB

Date: 16.MAY.2016 14:22:45

16QAM 20MHz_1RB Middle Channel

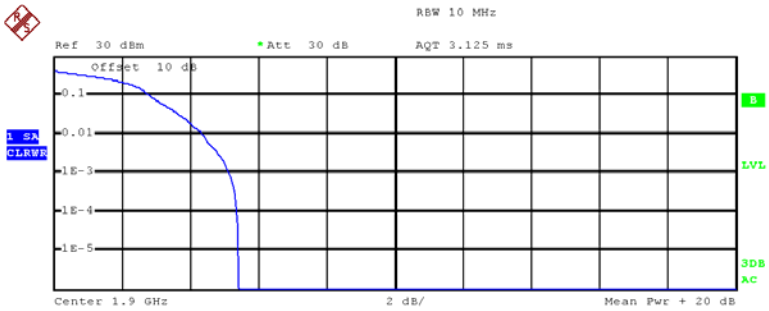


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.50 dBm
Peak	27.67 dBm
Crest	4.17 dB
10 %	2.60 dB
1 %	3.64 dB
.1 %	3.96 dB
.01 %	4.08 dB

Date: 16.MAY.2016 14:21:54

16QAM 20MHz_1RB High Channel

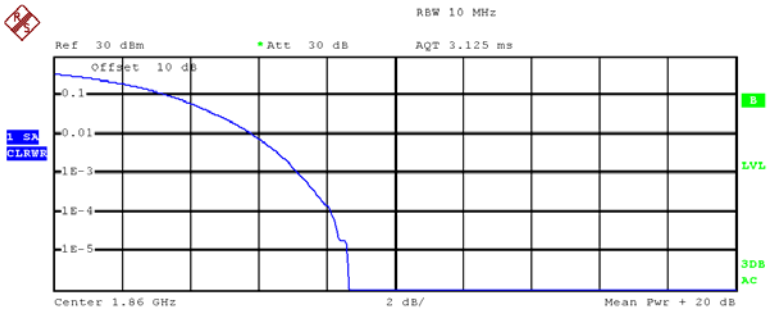


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.02 dBm
Peak	28.45 dBm
Crest	5.43 dB
10 %	2.84 dB
1 %	4.40 dB
.1 %	5.16 dB
.01 %	5.36 dB

Date: 16.MAY.2016 14:23:00

16QAM 20MHz_FULL RB Low Channel

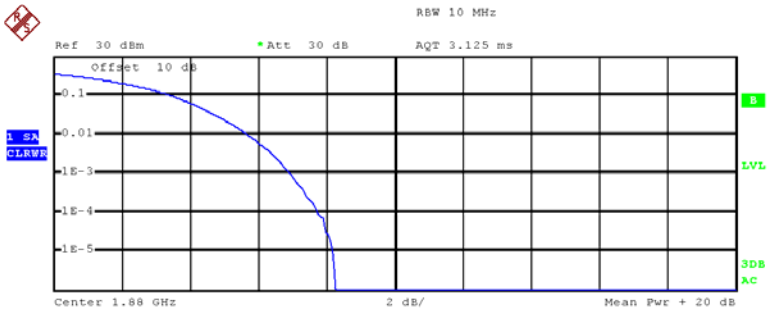


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.31 dBm
Peak	27.96 dBm
Crest	8.64 dB
10 %	3.48 dB
1 %	5.88 dB
.1 %	7.20 dB
.01 %	8.16 dB

Date: 16.MAY.2016 14:24:36

16QAM 20MHz_FULL RB Middle Channel

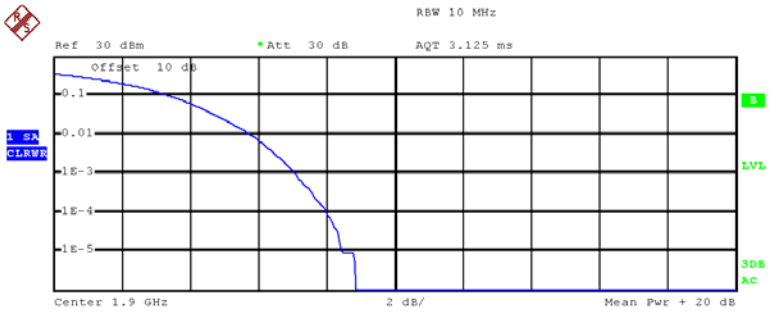


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.07 dBm
Peak	27.32 dBm
Crest	8.25 dB
10 %	3.52 dB
1 %	5.72 dB
.1 %	6.96 dB
.01 %	7.76 dB

Date: 16.MAY.2016 14:24:00

16QAM 20MHz_FULL RB High Channel



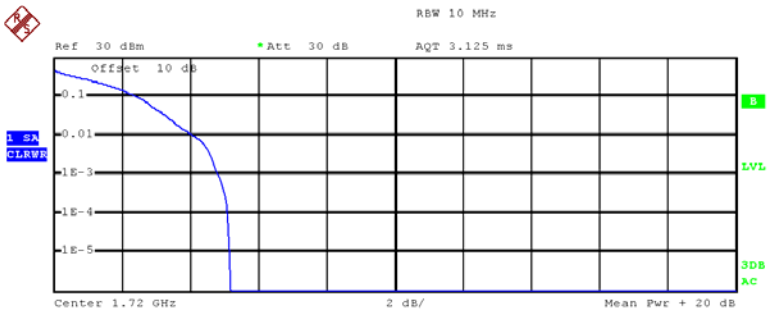
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	18.95 dBm
Peak	27.82 dBm
Crest	8.86 dB
10 %	3.48 dB
1 %	5.80 dB
.1 %	7.12 dB
.01 %	8.00 dB

Date: 16.MAY.2016 14:23:47

LTE Band IV (PART 27)

QPSK_20MHz_1RB_Low Channel

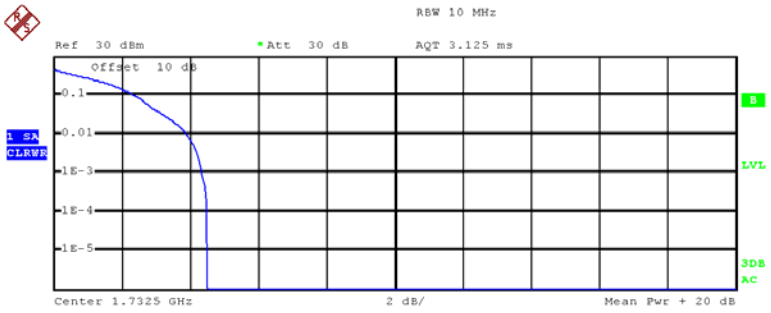


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	25.09 dBm
Peak	30.28 dBm
Crest	5.19 dB
10 %	2.52 dB
1 %	4.12 dB
.1 %	4.84 dB
.01 %	5.12 dB

Date: 16.MAY.2016 14:15:34

QPSK_20MHz_1RB Middle Channel

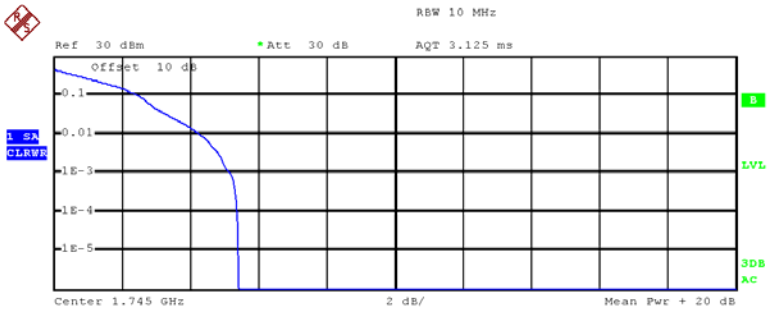


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.87 dBm
Peak	29.37 dBm
Crest	4.50 dB
10 %	2.44 dB
1 %	3.92 dB
.1 %	4.36 dB
.01 %	4.52 dB

Date: 16.MAY.2016 14:15:54

QPSK_20MHz_1RB High Channel

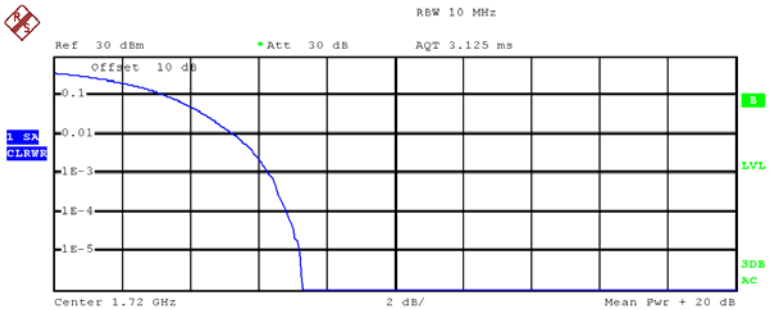


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.95 dBm
Peak	30.36 dBm
Crest	5.40 dB
10 %	2.52 dB
1 %	4.32 dB
.1 %	5.20 dB
.01 %	5.40 dB

Date: 16.MAY.2016 14:16:44

QPSK_20MHz_FULL RB Low Channel

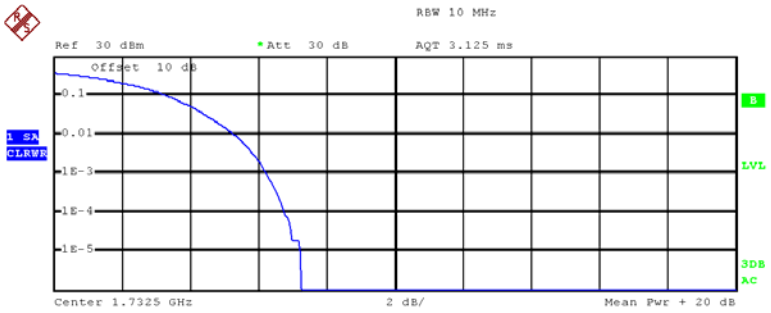


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.60 dBm
Peak	27.89 dBm
Crest	7.28 dB
10 %	3.36 dB
1 %	5.32 dB
.1 %	6.32 dB
.01 %	6.84 dB

Date: 16.MAY.2016 14:13:56

QPSK_20MHz_FULL RB Middle Channel

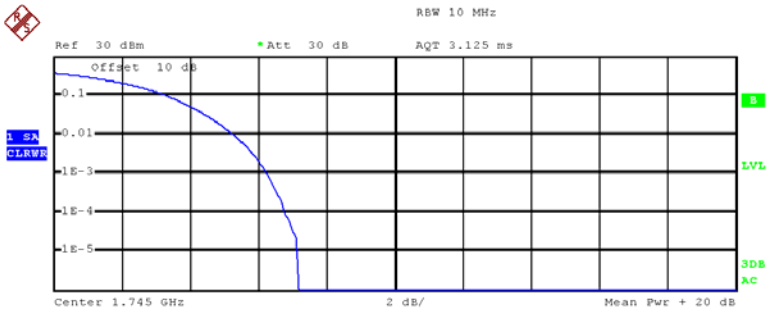


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.76 dBm
Peak	28.03 dBm
Crest	7.26 dB
10 %	3.40 dB
1 %	5.32 dB
.1 %	6.24 dB
.01 %	6.76 dB

Date: 16.MAY.2016 14:12:28

QPSK 20MHz_FULL RB High Channel

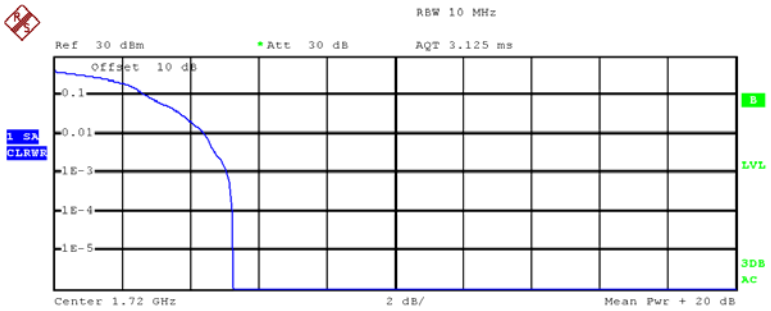


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.44 dBm
Peak	27.60 dBm
Crest	7.16 dB
10 %	3.40 dB
1 %	5.28 dB
.1 %	6.28 dB
.01 %	6.80 dB

Date: 16.MAY.2016 14:13:33

16QAM_20MHz_1RB_Low Channel

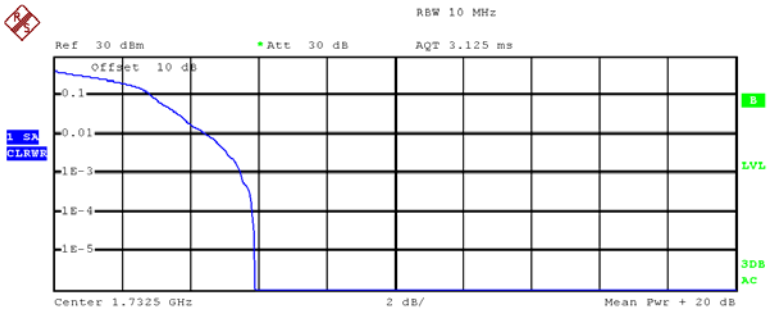


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.31 dBm
Peak	29.58 dBm
Crest	5.27 dB
10 %	2.76 dB
1 %	4.44 dB
.1 %	5.08 dB
.01 %	5.24 dB

Date: 16.MAY.2016 14:14:33

16QAM 20MHz_1RB Middle Channel

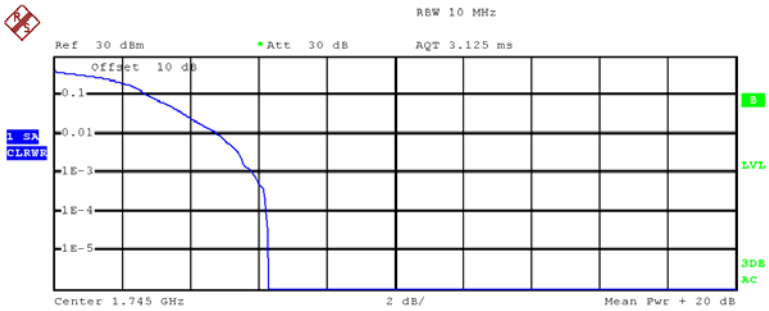


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.75 dBm
Peak	29.65 dBm
Crest	5.90 dB
10 %	2.88 dB
1 %	4.52 dB
.1 %	5.52 dB
.01 %	5.84 dB

Date: 16.MAY.2016 14:16:06

16QAM 20MHz_1RB High Channel

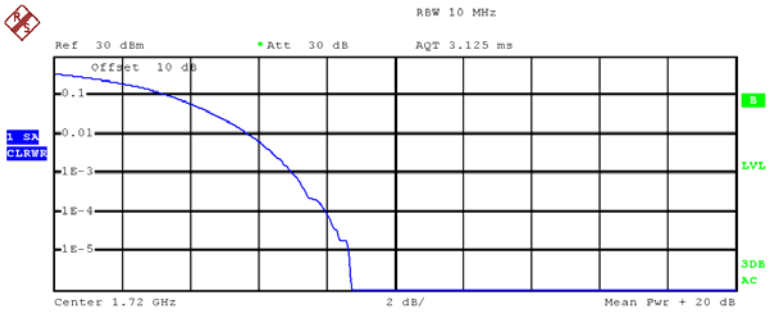


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.06 dBm
Peak	30.36 dBm
Crest	6.30 dB
10 %	2.80 dB
1 %	4.84 dB
.1 %	5.84 dB
.01 %	6.24 dB

Date: 16.MAY.2016 14:19:58

16QAM 20MHz_FULL RB Low Channel

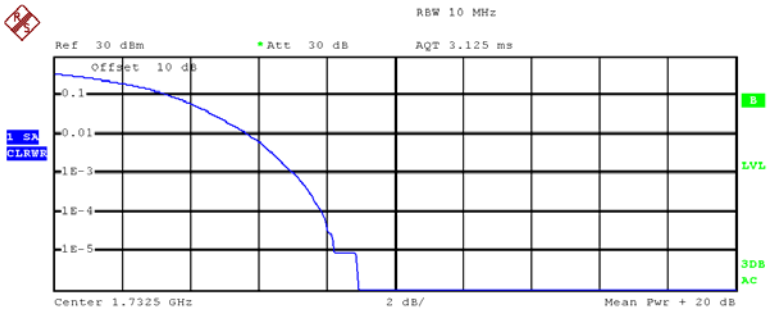


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.66 dBm
Peak	28.38 dBm
Crest	8.72 dB
10 %	3.48 dB
1 %	5.76 dB
.1 %	7.08 dB
.01 %	8.00 dB

Date: 16.MAY.2016 14:14:06

16QAM 20MHz_FULL RB Middle Channel

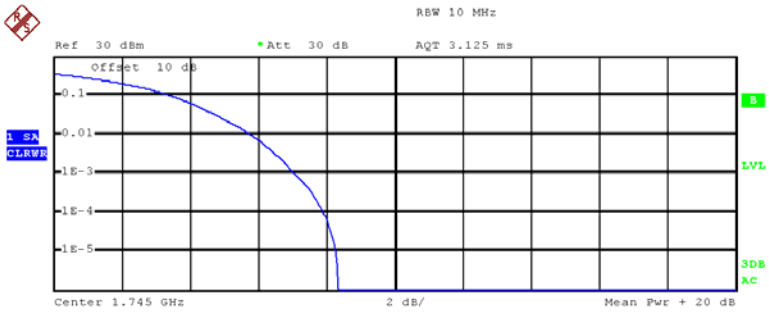


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.81 dBm
Peak	28.73 dBm
Crest	8.92 dB
10 %	3.48 dB
1 %	5.76 dB
.1 %	7.08 dB
.01 %	7.88 dB

Date: 16.MAY.2016 14:12:39

16QAM 20MHz_FULL RB High Channel



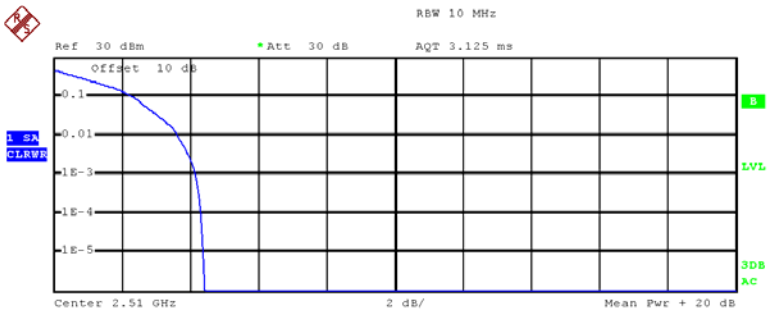
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.48 dBm
Peak	27.82 dBm
Crest	8.34 dB
10 %	3.52 dB
1 %	5.80 dB
.1 %	7.08 dB
.01 %	7.92 dB

Date: 16.MAY.2016 14:13:21

LTE Band VII (PART 27)

QPSK_20MHz_1RB_Low Channel

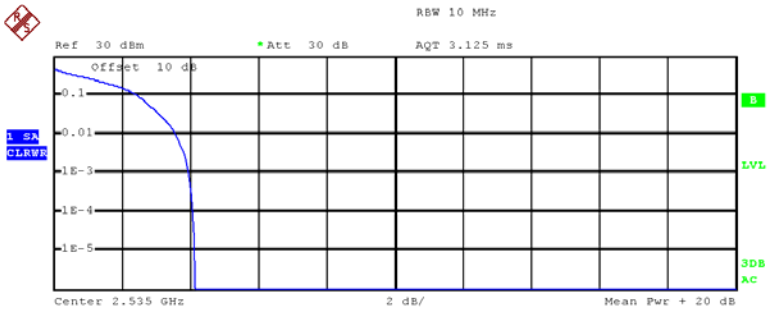


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.47 dBm
Peak	28.87 dBm
Crest	4.40 dB
10 %	2.36 dB
1 %	3.64 dB
.1 %	4.16 dB
.01 %	4.32 dB

Date: 16.MAY.2016 14:32:12

QPSK_20MHz_1RB Middle Channel

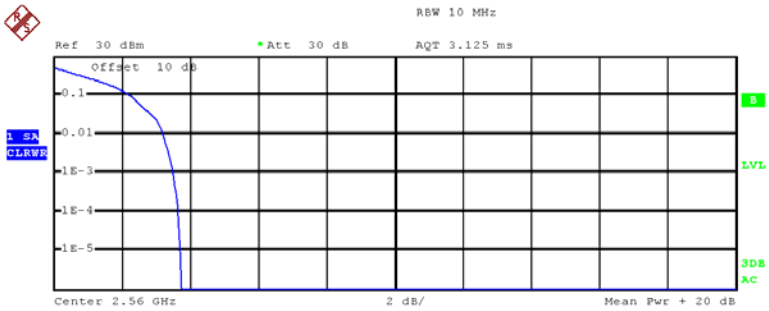


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.75 dBm
Peak	28.87 dBm
Crest	4.13 dB
10 %	2.48 dB
1 %	3.60 dB
.1 %	3.96 dB
.01 %	4.08 dB

Date: 16.MAY.2016 14:31:37

QPSK_20MHz_1RB High Channel

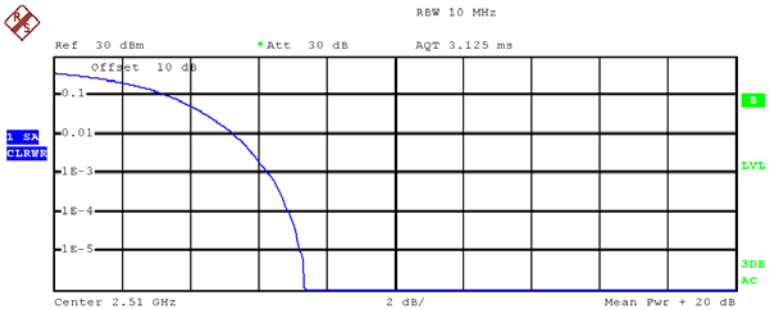


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.91 dBm
Peak	28.66 dBm
Crest	3.75 dB
10 %	2.28 dB
1 %	3.20 dB
.1 %	3.52 dB
.01 %	3.68 dB

Date: 16.MAY.2016 14:33:14

QPSK_20MHz_FULL RB Low Channel

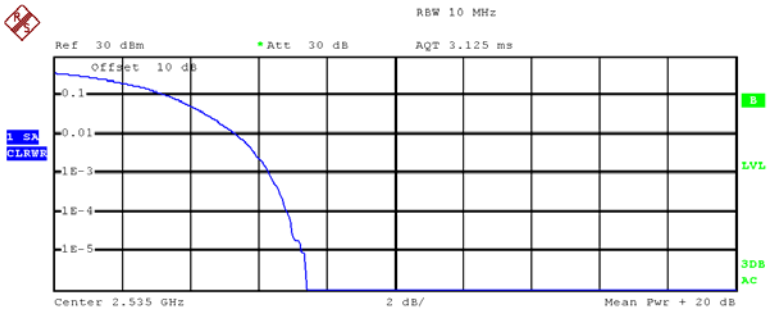


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.18 dBm
Peak	27.53 dBm
Crest	7.35 dB
10 %	3.44 dB
1 %	5.32 dB
.1 %	6.32 dB
.01 %	6.92 dB

Date: 16.MAY.2016 14:34:43

QPSK_20MHz_FULL RB Middle Channel

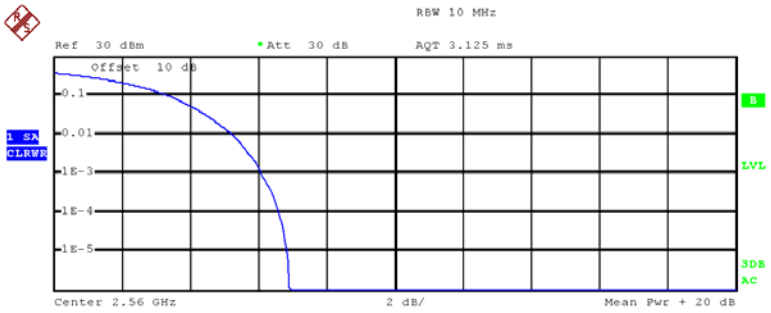


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.19 dBm
Peak	27.60 dBm
Crest	7.41 dB
10 %	3.40 dB
1 %	5.40 dB
.1 %	6.36 dB
.01 %	6.88 dB

Date: 16.MAY.2016 14:34:09

QPSK 20MHz_FULL RB High Channel

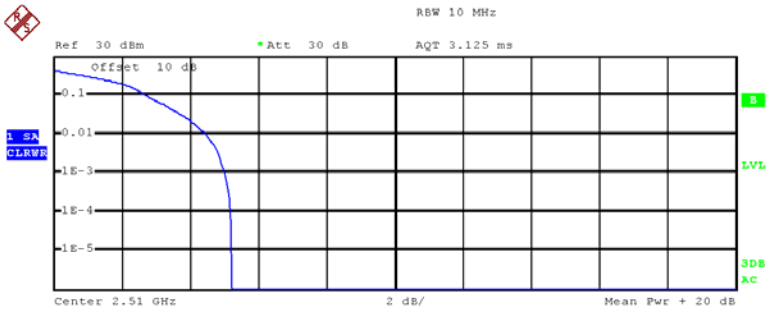


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	20.62 dBm
Peak	27.53 dBm
Crest	6.92 dB
10 %	3.44 dB
1 %	5.24 dB
.1 %	6.08 dB
.01 %	6.60 dB

Date: 16.MAY.2016 14:33:50

16QAM_20MHz_1RB_Low Channel

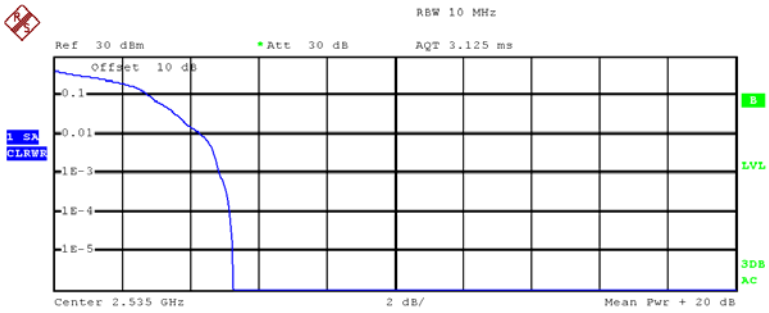


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.53 dBm
Peak	28.73 dBm
Crest	5.21 dB
10 %	2.76 dB
1 %	4.48 dB
.1 %	5.04 dB
.01 %	5.20 dB

Date: 16.MAY.2016 14:32:34

16QAM 20MHz_1RB Middle Channel

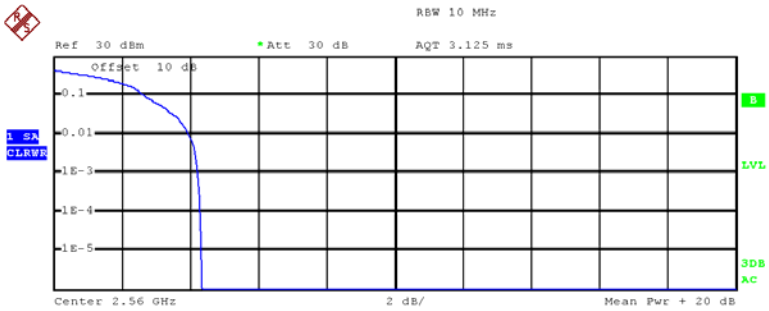


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	23.75 dBm
Peak	29.01 dBm
Crest	5.27 dB
10 %	2.84 dB
1 %	4.36 dB
.1 %	4.88 dB
.01 %	5.16 dB

Date: 16.MAY.2016 14:31:22

16QAM 20MHz_1RB High Channel

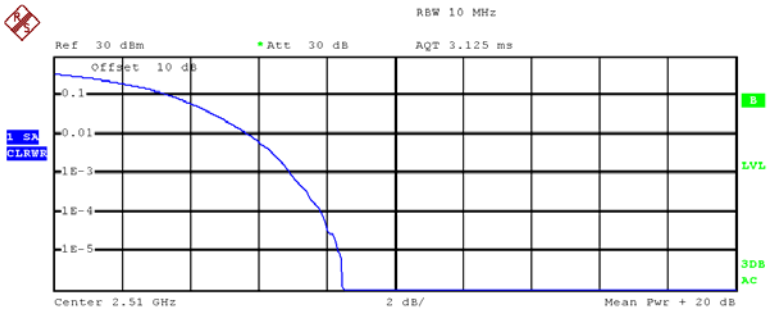


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.06 dBm
Peak	28.38 dBm
Crest	4.32 dB
10 %	2.68 dB
1 %	3.96 dB
.1 %	4.24 dB
.01 %	4.32 dB

Date: 16.MAY.2016 14:33:05

16QAM 20MHz_FULL RB Low Channel

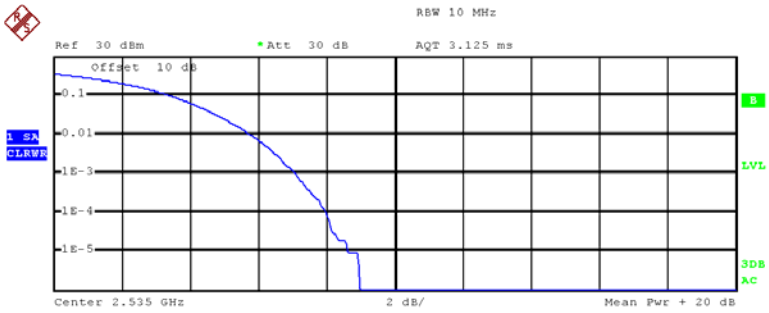


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.27 dBm
Peak	27.75 dBm
Crest	8.47 dB
10 %	3.52 dB
1 %	5.76 dB
.1 %	6.96 dB
.01 %	7.88 dB

Date: 16.MAY.2016 14:34:34

16QAM 20MHz_FULL RB Middle Channel

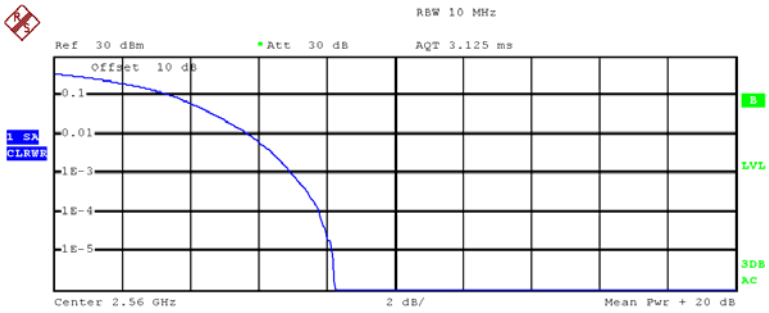


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.05 dBm
Peak	28.03 dBm
Crest	8.98 dB
10 %	3.52 dB
1 %	5.80 dB
.1 %	7.12 dB
.01 %	8.00 dB

Date: 16.MAY.2016 14:34:19

16QAM 20MHz_FULL RB High Channel



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.65 dBm
Peak	27.89 dBm
Crest	8.24 dB
10 %	3.56 dB
1 %	5.76 dB
.1 %	7.00 dB
.01 %	7.80 dB

Date: 16.MAY.2016 14:33:40

ERP & EIRP

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)			
GSM 850 Middle Channel								
836.600	H	100.12	25.2	0.0	1	24.2	38.5	14.3
836.600	V	105.27	33.5	0.0	1	32.5	38.5	6.0
EGPRS 850 Middle Channel								
836.600	H	95.41	20.5	0.0	1	19.5	38.5	19.0
836.600	V	100.46	28.7	0.0	1	27.7	38.5	10.8
WCDMA Band V Middle Channel								
836.600	H	88.28	13.4	0.0	1	12.4	38.5	26.1
836.600	V	93.01	21.2	0.0	1	20.2	38.5	18.3
PCS 1900 Middle Channel								
1880.000	H	91.99	20.4	11.7	1.4	30.7	33.0	2.3
1880.000	V	88.26	16.8	11.7	1.4	27.1	33.0	5.9
EGPRS 1900 Middle Channel								
1880.000	H	87.30	15.7	11.7	1.4	26.0	33.0	7.0
1880.000	V	84.72	13.3	11.7	1.4	23.6	33.0	9.4
WCDMA Band II Middle Channel								
1880.000	H	83.37	15.8	11.7	1.4	23.1	33.0	9.9
1880.000	V	80.09	11.6	11.7	1.4	18.9	33.0	14.1

LTE Band II

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 1.4 MHz Middle Channel								
1880.000	H	85.28	13.7	11.7	1.4	24.0	33.00	8.0
1880.000	V	84.45	13	11.7	1.4	23.3	33.00	9.7
QPSK 3 MHz Middle Channel								
1880.000	H	84.99	13.4	11.7	1.4	23.7	33.00	9.3
1880.000	V	84.14	12.7	11.7	1.4	23.0	33.00	10.0
QPSK 5 MHz Middle Channel								
1880.000	H	85.81	14.2	11.7	1.4	24.5	33.00	8.5
1880.000	V	85.06	13.6	11.7	1.4	23.9	33.00	9.1
QPSK 10 MHz Middle Channel								
1880.000	H	85.11	13.5	11.7	1.4	23.8	33.00	9.2
1880.000	V	83.68	12.2	11.7	1.4	22.5	33.00	10.5
QPSK 15 MHz Middle Channel								
1880.000	H	84.70	13.1	11.7	1.4	23.4	33.00	9.6
1880.000	V	82.92	11.5	11.7	1.4	21.8	33.00	11.2
QPSK 20 MHz Middle Channel								
1880.000	H	83.75	12.2	11.7	1.4	22.5	33.00	10.5
1880.000	V	82.04	10.6	11.7	1.4	20.9	33.00	12.1
16QAM 1.4 MHz Middle Channel								
1880.000	H	85.74	14.1	11.7	1.4	24.4	33.00	8.6
1880.000	V	84.77	13.3	11.7	1.4	23.6	33.00	9.4
16QAM 3 MHz Middle Channel								
1880.000	H	84.58	13	11.7	1.4	23.3	33.00	9.7
1880.000	V	82.60	11.1	11.7	1.4	21.4	33.00	11.6
16QAM 5 MHz Middle Channel								
1880.000	H	85.60	14	11.7	1.4	24.3	33.00	8.7
1880.000	V	85.49	14	11.7	1.4	24.3	33.00	8.7
16QAM 10 MHz Middle Channel								
1880.000	H	85.24	13.6	11.7	1.4	23.9	33.00	9.1
1880.000	V	84.30	12.8	11.7	1.4	23.1	33.00	9.9
16QAM 15 MHz Middle Channel								
1880.000	H	83.09	11.5	11.7	1.4	21.8	33.00	11.2
1880.000	V	81.99	10.5	11.7	1.4	20.8	33.00	12.2
16QAM 20 MHz Middle Channel								
1880.000	H	82.25	10.7	11.7	1.4	21.0	33.00	12.0
1880.000	V	81.53	10.1	11.7	1.4	20.4	33.00	12.6

LTE Band IV

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 1.4 MHz Middle Channel								
1732.500	H	87.81	14.8	10.9	1.4	24.3	30.00	5.7
1732.500	V	87.78	14.5	10.9	1.4	24.0	30.00	6.0
QPSK 3 MHz Middle Channel								
1732.500	H	86.06	13.1	10.9	1.4	22.6	30.00	7.4
1732.500	V	85.19	11.9	10.9	1.4	21.4	30.00	8.6
QPSK 5 MHz Middle Channel								
1732.500	H	85.33	12.3	10.9	1.4	21.8	30.00	8.2
1732.500	V	84.46	11.1	10.9	1.4	20.6	30.00	9.4
QPSK 10 MHz Middle Channel								
1732.500	H	84.21	11.2	10.9	1.4	20.7	30.00	9.3
1732.500	V	83.34	10	10.9	1.4	19.5	30.00	10.5
QPSK 15 MHz Middle Channel								
1732.500	H	83.38	10.4	10.9	1.4	19.9	30.00	10.1
1732.500	V	82.41	9.1	10.9	1.4	18.6	30.00	11.4
QPSK 20 MHz Middle Channel								
1732.500	H	83.45	10.4	10.9	1.4	19.9	30.00	10.1
1732.500	V	82.54	9.2	10.9	1.4	18.7	30.00	11.3
16QAM 1.4 MHz Middle Channel								
1732.500	H	88.14	15.1	10.9	1.4	24.6	30.00	5.4
1732.500	V	87.58	14.3	10.9	1.4	23.8	30.00	6.2
16QAM 3 MHz Middle Channel								
1732.500	H	86.29	13.3	10.9	1.4	22.8	30.00	7.2
1732.500	V	85.38	12.1	10.9	1.4	21.6	30.00	8.4
16QAM 5 MHz Middle Channel								
1732.500	H	85.02	12	10.9	1.4	21.5	30.00	8.5
1732.500	V	84.98	11.7	10.9	1.4	21.2	30.00	8.8
16QAM 10 MHz Middle Channel								
1732.500	H	83.96	11	10.9	1.4	20.5	30.00	9.5
1732.500	V	83.01	9.7	10.9	1.4	19.2	30.00	10.8
16QAM 15 MHz Middle Channel								
1732.500	H	82.34	9.3	10.9	1.4	18.8	30.00	11.2
1732.500	V	81.39	8.1	10.9	1.4	17.6	30.00	12.4
16QAM 20 MHz Middle Channel								
1732.500	H	84.57	11.6	10.9	1.4	21.1	30.00	8.9
1732.500	V	83.61	10.3	10.9	1.4	19.8	30.00	10.2

LTE Band VII

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 5 MHz Middle Channel								
2535.000	H	82.99	11.8	13.1	2.5	22.4	33.00	10.6
2535.000	V	80.75	11.0	13.1	2.5	21.6	33.00	11.4
QPSK 10 MHz Middle Channel								
2535.000	H	84.76	13.6	13.1	2.5	24.2	33.00	8.8
2535.000	V	82.81	13.1	13.1	2.5	23.7	33.00	9.3
QPSK 15 MHz Middle Channel								
2535.000	H	84.15	12.9	13.1	2.5	23.5	33.00	9.5
2535.000	V	82.24	12.5	13.1	2.5	23.1	33.00	9.9
QPSK 20 MHz Middle Channel								
2535.000	H	83.58	12.4	13.1	2.5	23.0	33.00	10.0
2535.000	V	81.59	11.8	13.1	2.5	22.4	33.00	10.6
16QAM 5 MHz Middle Channel								
2535.000	H	86.48	15.3	13.1	2.5	25.9	33.00	7.1
2535.000	V	84.58	14.8	13.1	2.5	25.4	33.00	7.6
16QAM 10 MHz Middle Channel								
2535.000	H	85.34	14.1	13.1	2.5	24.7	33.00	8.3
2535.000	V	83.42	13.7	13.1	2.5	24.3	33.00	8.7
16QAM 15 MHz Middle Channel								
2535.000	H	83.46	12.3	13.1	2.5	22.9	33.00	10.1
2535.000	V	81.59	11.8	13.1	2.5	22.4	33.00	10.6
16QAM 20 MHz Middle Channel								
2535.000	H	82.69	11.5	13.1	2.5	22.1	33.00	10.9
2535.000	V	80.73	11.0	13.1	2.5	21.6	33.00	11.4

FCC §2.1049, §22.917, §22.905 & §24.238 & §27.53- OCCUPIED BANDWIDTH

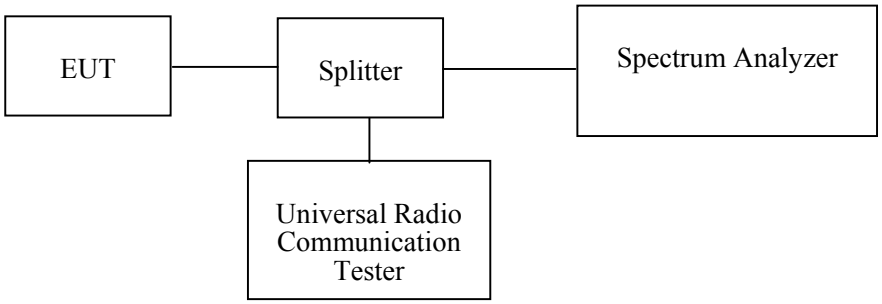
Applicable Standard

FCC §2.1049, §22.917, §22.905, §24.238 and §27.53.

Test Procedure

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

The 26 dB & 99% bandwidth was recorded.



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	OE01203239	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 Spliter	ODP-1-6-2S	OE0120142	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:	26.4~28.7°C
Relative Humidity:	45~52 %
ATM Pressure:	100.3~100.6 kPa

The testing was performed by Robin Zheng from 2016-05-13 to 2016-05-19.

Test Mode: Transmitting

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

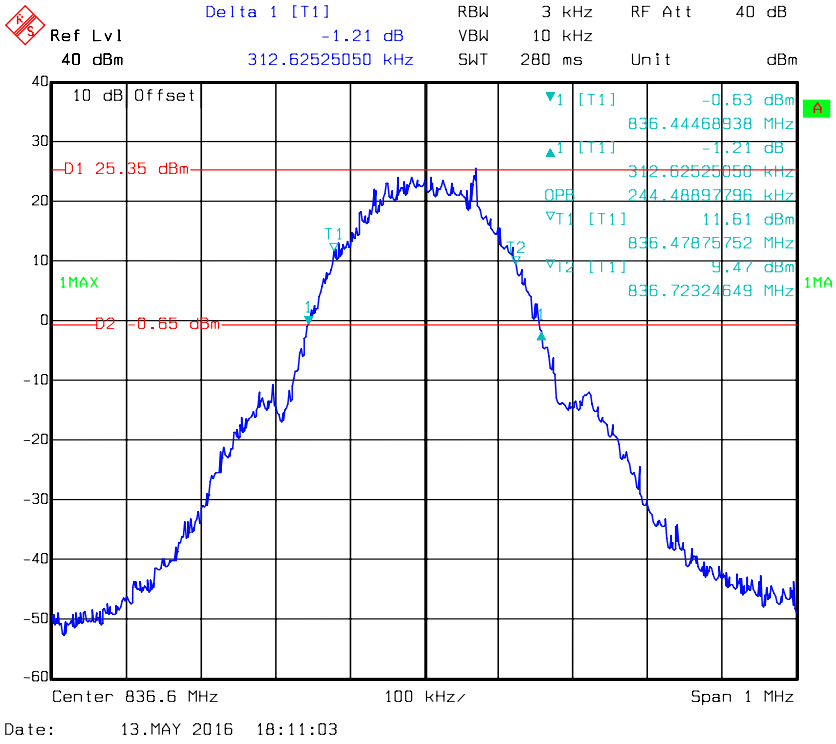
Band	Test Channel	Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Cellular	M	GSM	0.244	0.313
		EDGE	0.246	0.311
PCS	M	PCS	0.242	0.323
		EDGE	0.248	0.319
WCDMA Band Ⅱ	M	Rel 99	4.208	4.890
	M	HSDPA	4.208	4.870
	M	HSUPA	4.208	4.890
WCDMA Band V	M	Rel 99	4.208	4.890
	M	HSDPA	4.208	4.930
	M	HSUPA	4.208	4.910

Band	Test Modulation	Test Bandwidth (MHz)	Test Channel	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
LTE Band II	QPSK	1.4	M	1.112	1.281
		3		2.766	3.102
		5		4.549	5.070
		10		9.138	10.381
		15		13.587	15.030
		20		18.196	20.120
	16QAM	1.4	M	1.118	1.287
		3		2.766	3.114
		5		4.569	5.130
		10		9.138	10.341
		15		13.587	15.150
		20		18.196	19.960

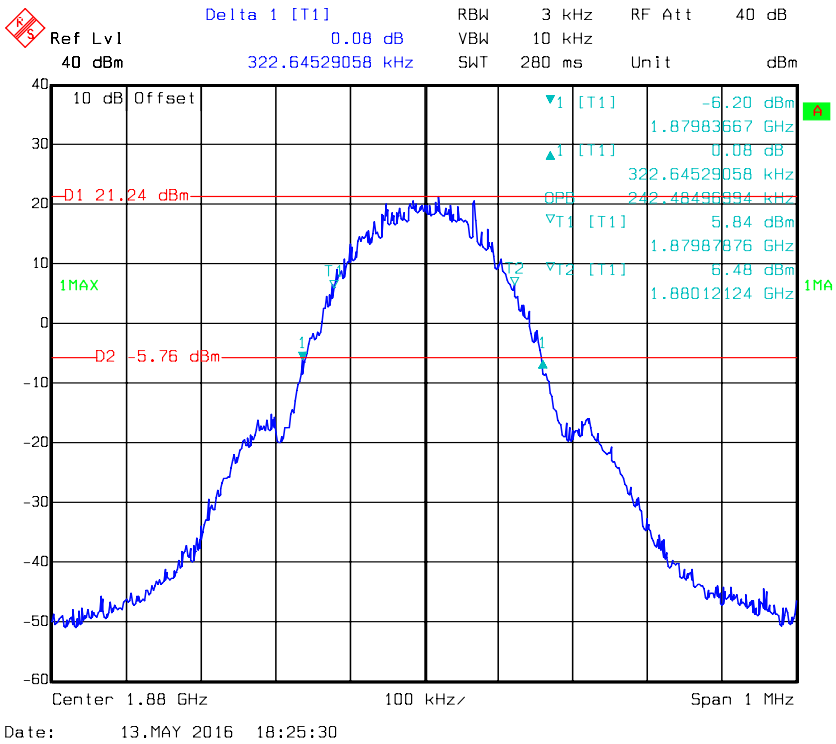
Band	Test Modulation	Test Bandwidth (MHz)	Test Channel	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
LTE Band IV	QPSK	1.4	M	1.106	1.275
		3		2.766	3.102
		5		4.549	5.070
		10		9.138	10.341
		15		13.587	15.150
		20		18.196	20.120
	16QAM	1.4	M	1.106	1.281
		3		2.754	3.090
		5		4.569	5.090
		10		9.138	10.341
		15		13.587	15.090
		20		18.277	20.120

Band	Test Modulation	Test Bandwidth (MHz)	Test Channel	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
LTE Band VII	QPSK	5	M	4.549	5.090
		10		9.098	10.381
		15		13.587	15.150
		20		18.116	20.040
	16QAM	5	M	4.549	5.130
		10		9.098	10.301
		15		13.527	14.970
		20		18.196	20.120

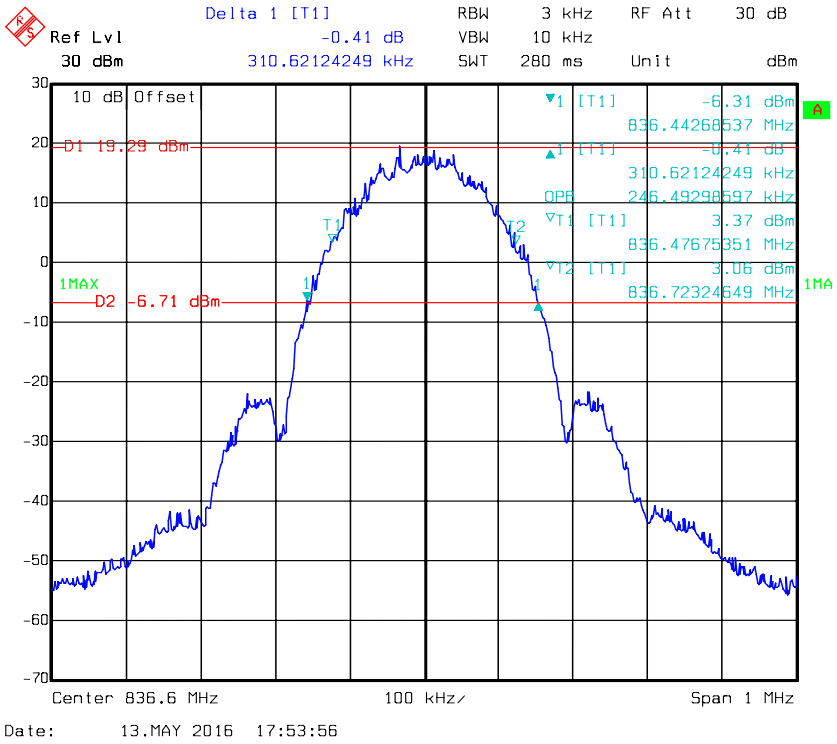
GMSK 850 Cellular Band



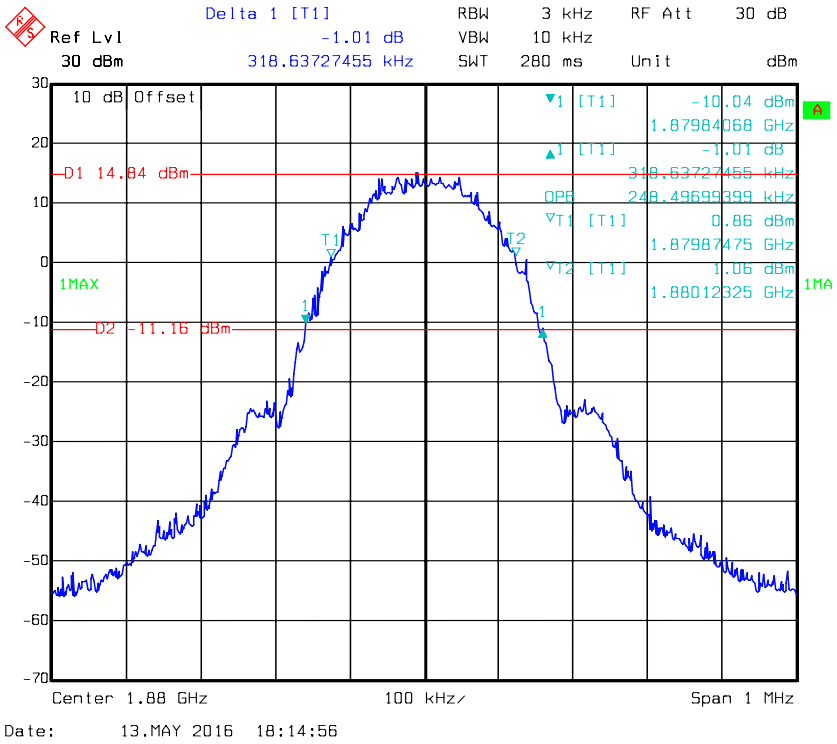
GMSK PCS Band



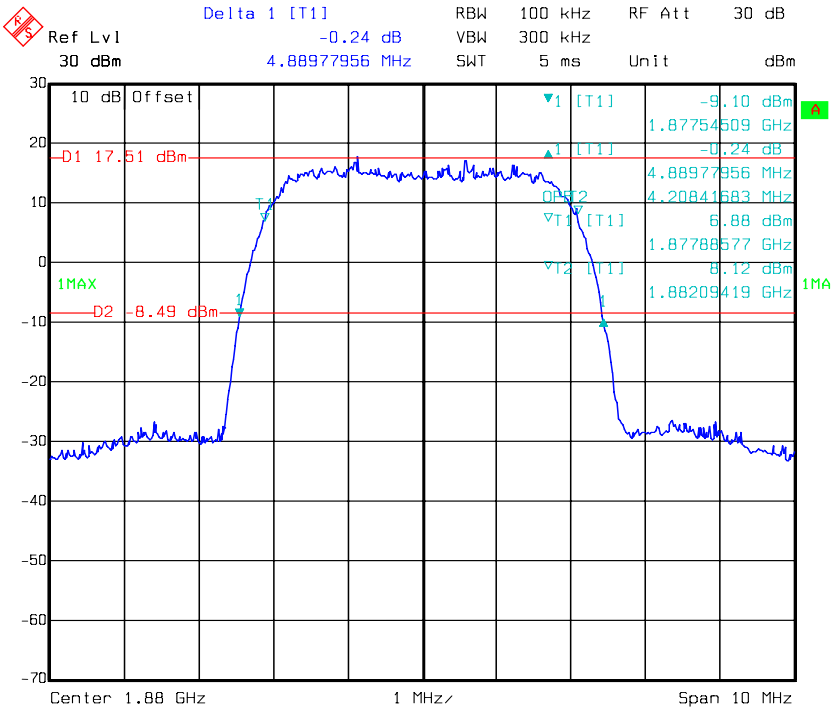
EDGE 850 Cellular Band



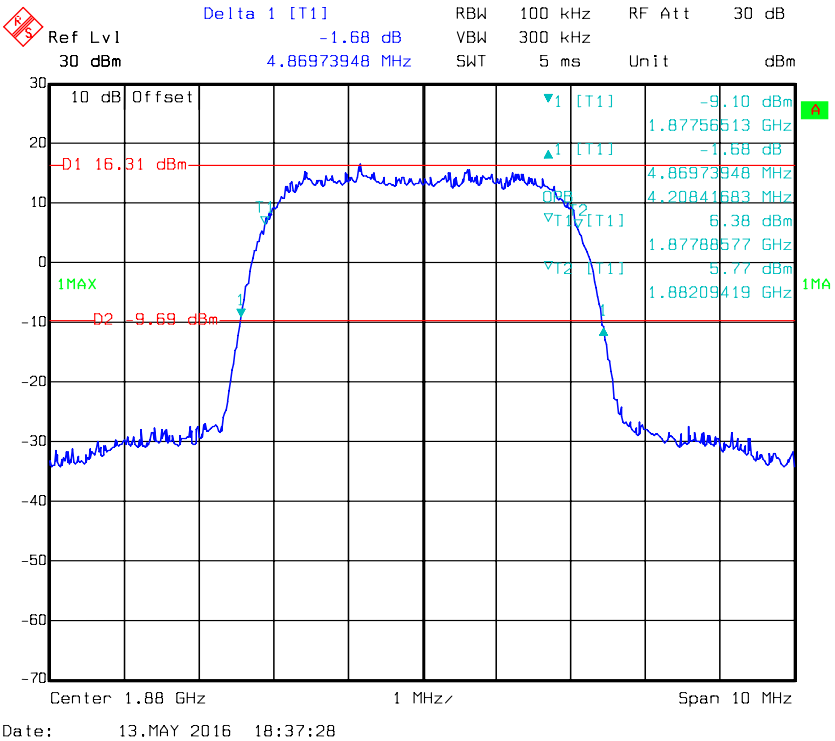
EDGE PCS Band



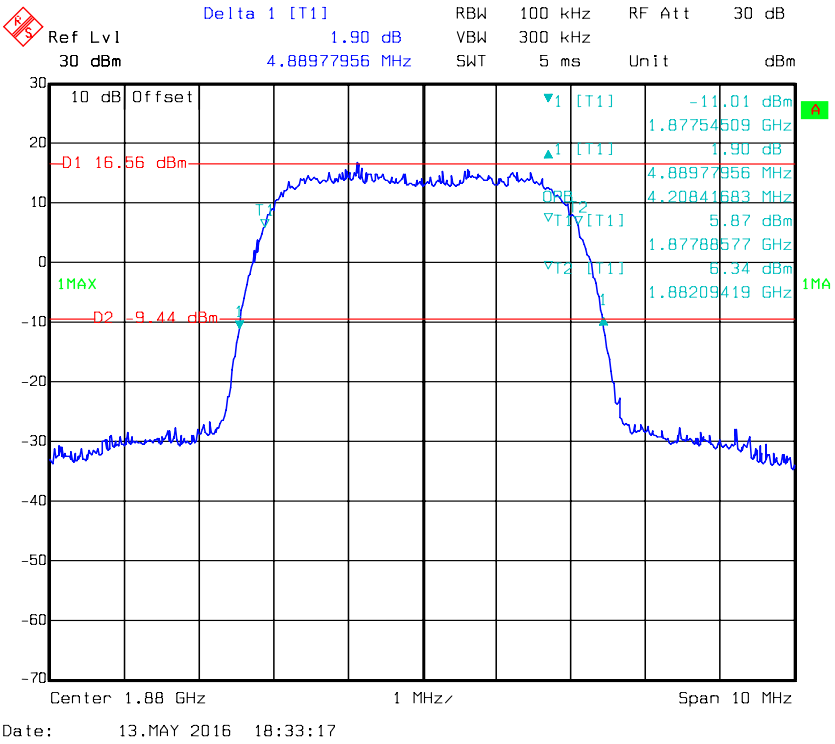
REL99 Band II



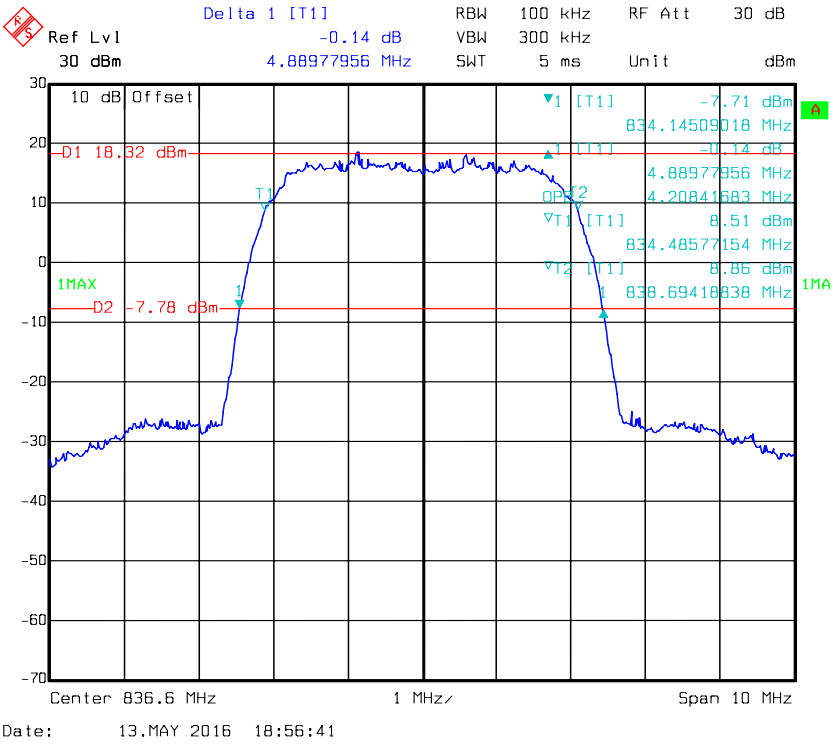
HSDPA Band II



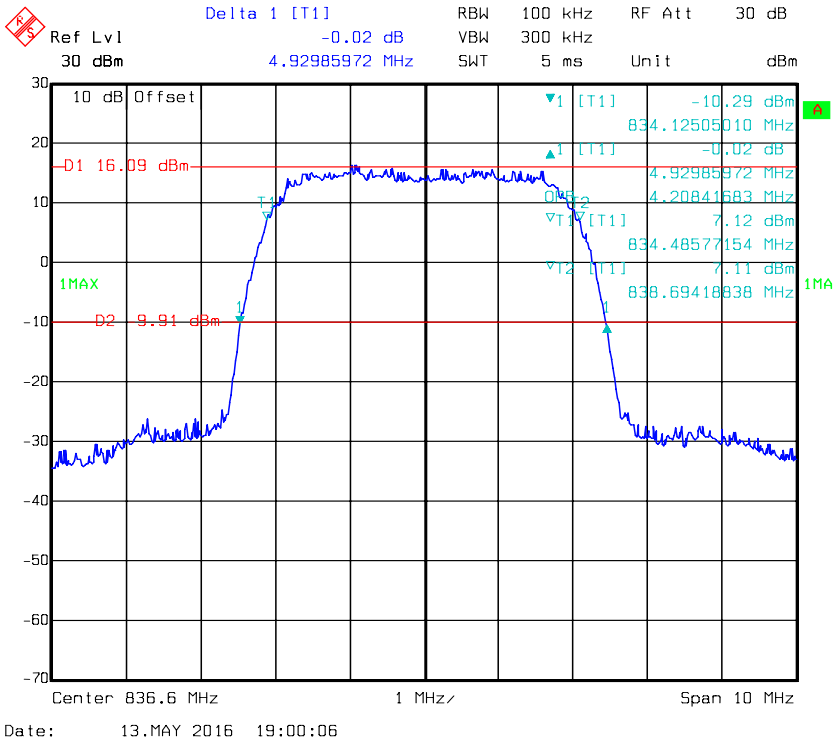
HSUPA Band II



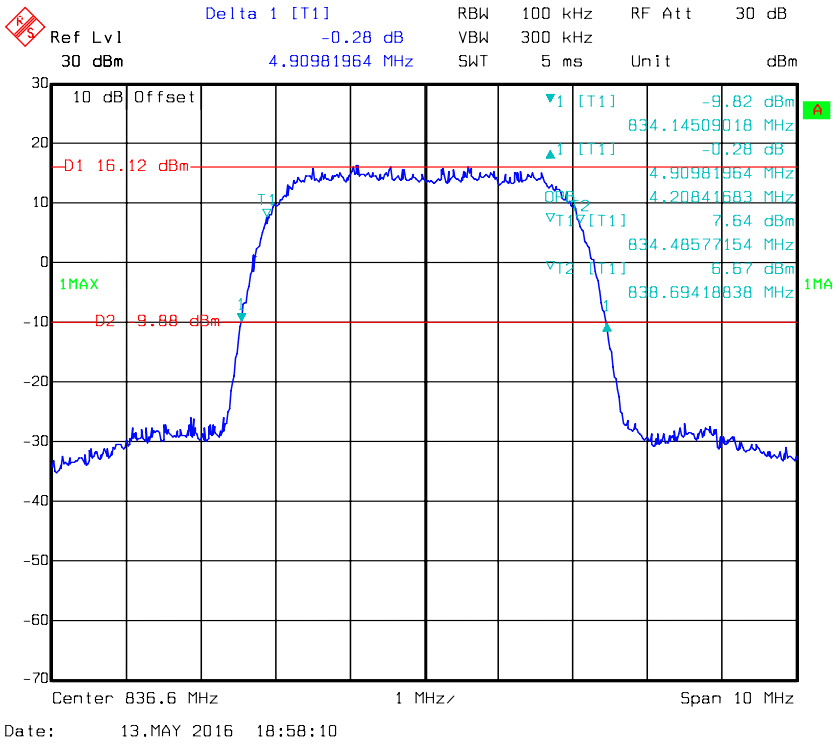
REL99 Band V



HSDPA Band V

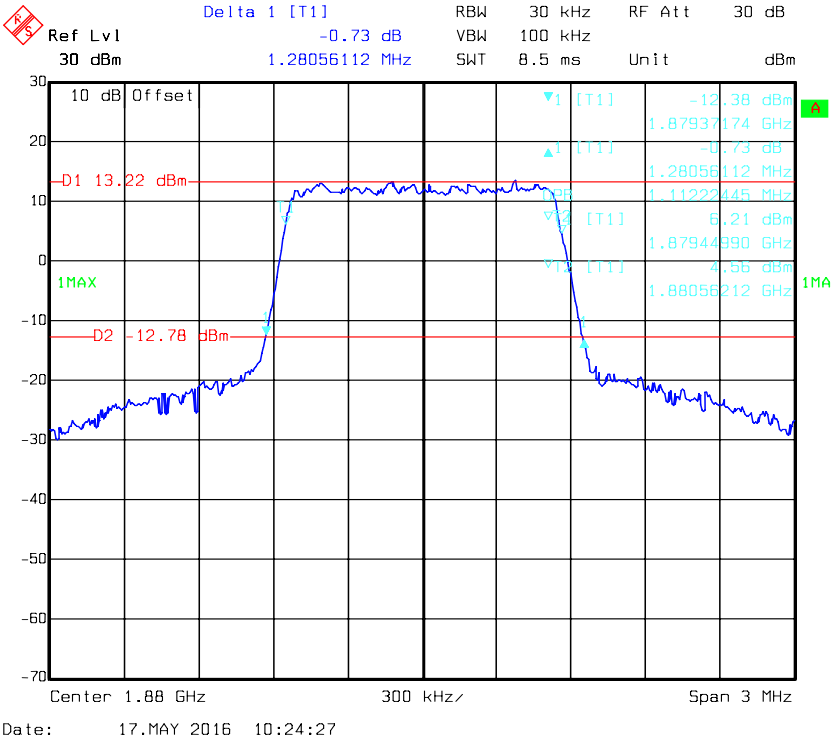


HSUPA Band V

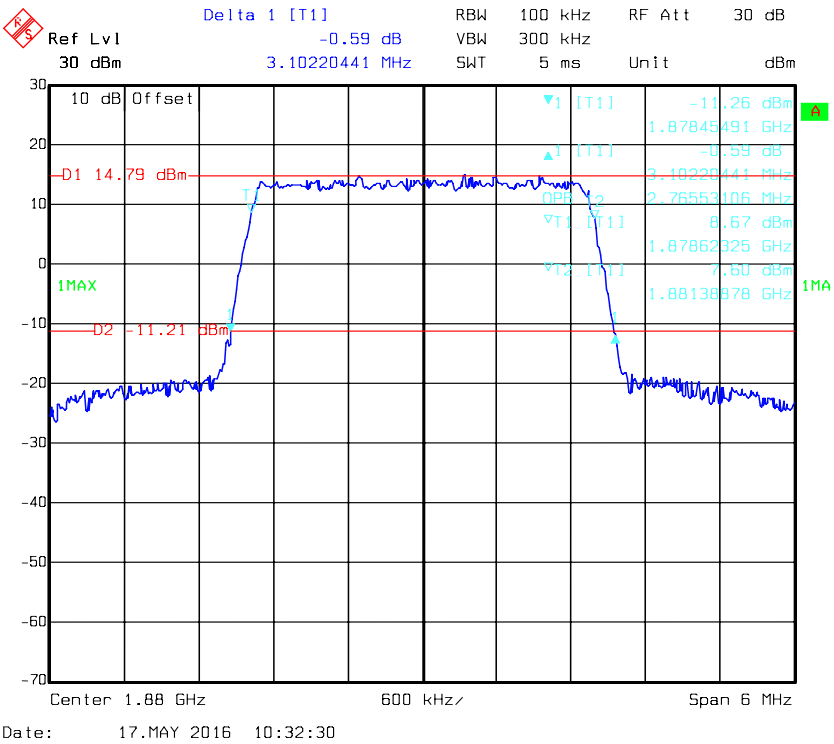


LTE Band II

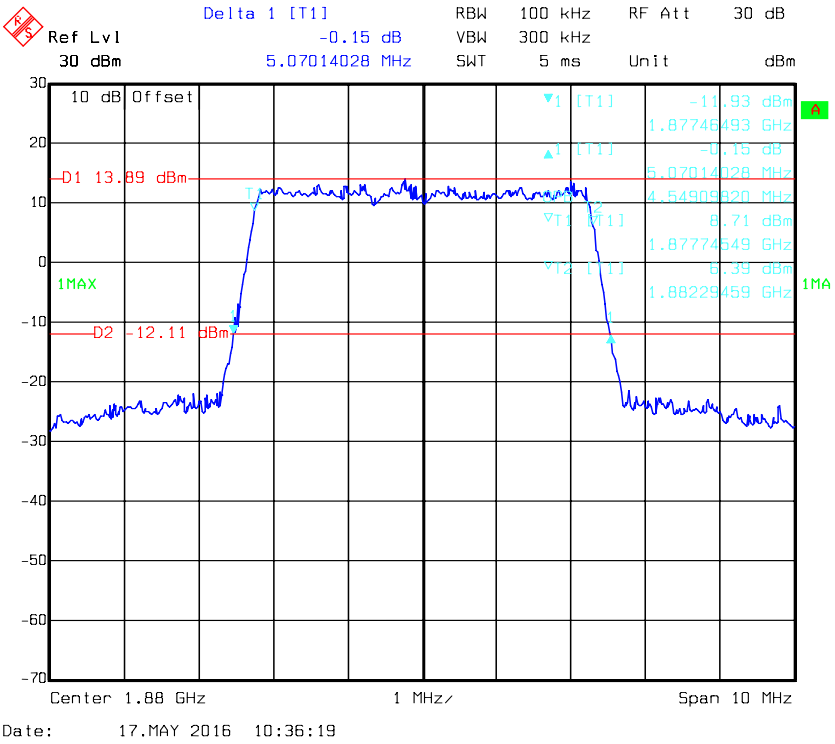
QPSK_1.4 MHz



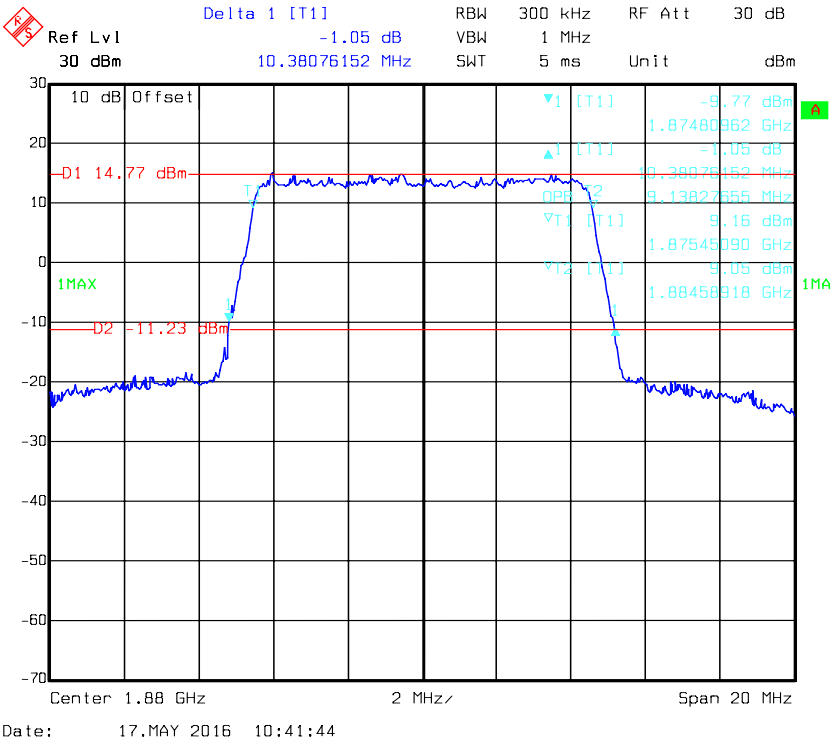
QPSK_3 MHz



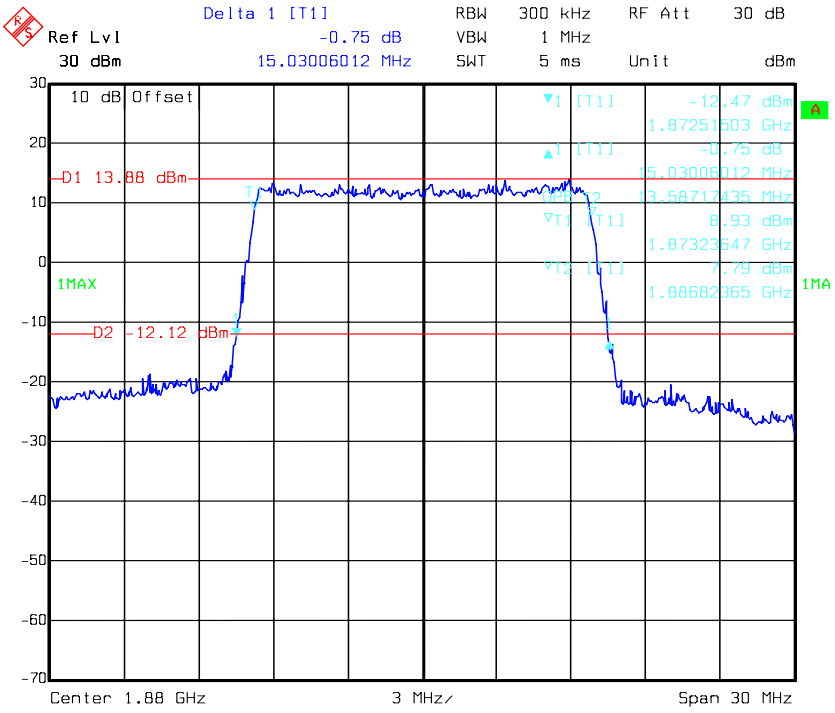
QPSK_5 MHz



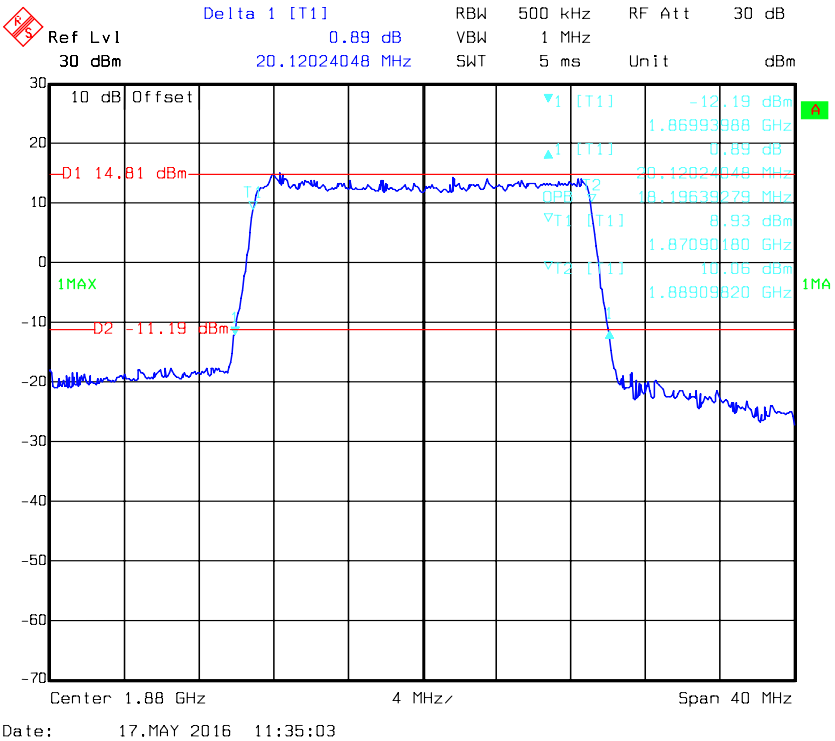
QPSK_10 MHz



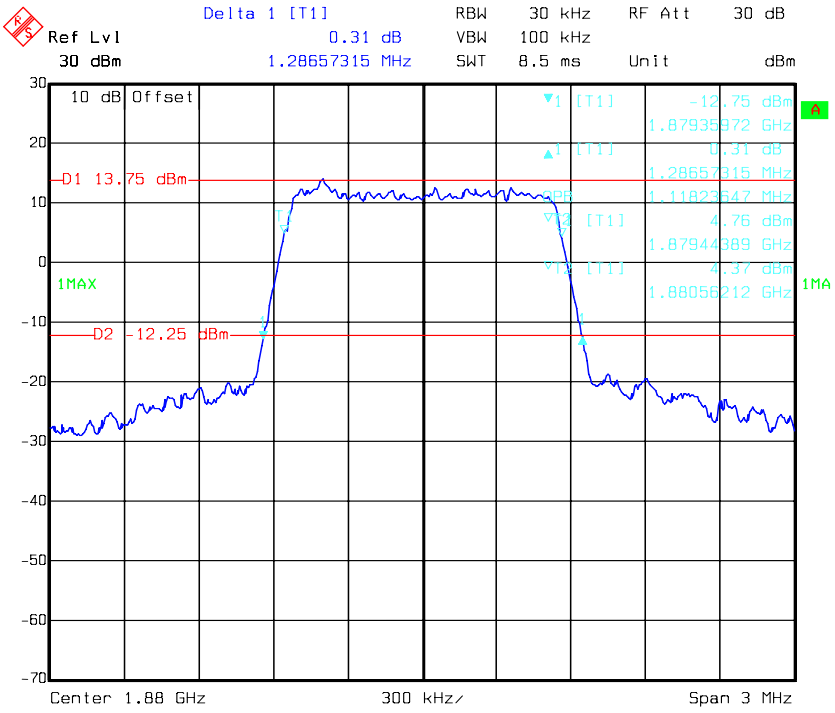
QPSK_15 MHz



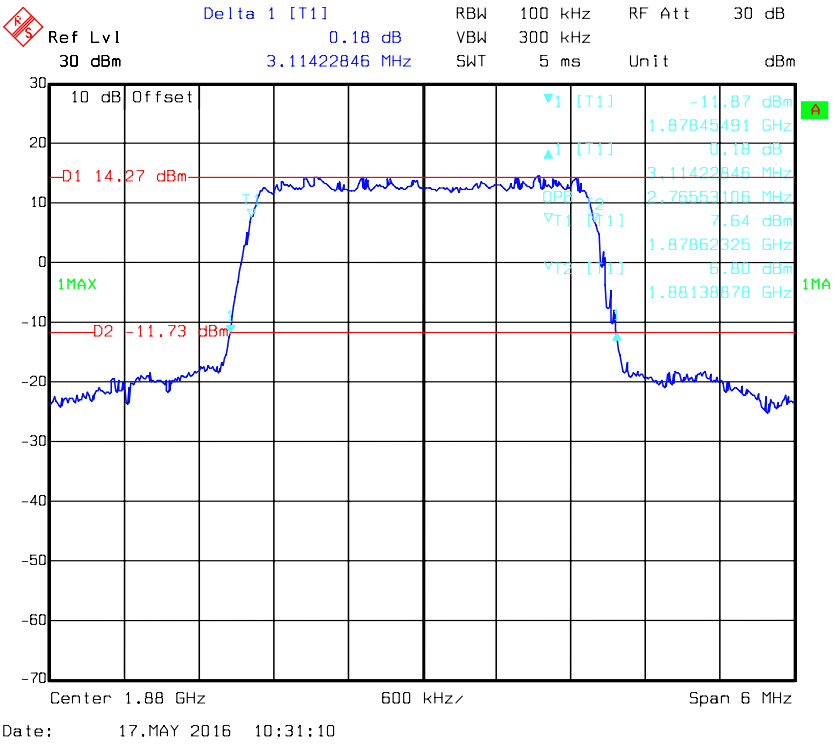
QPSK_20 MHz



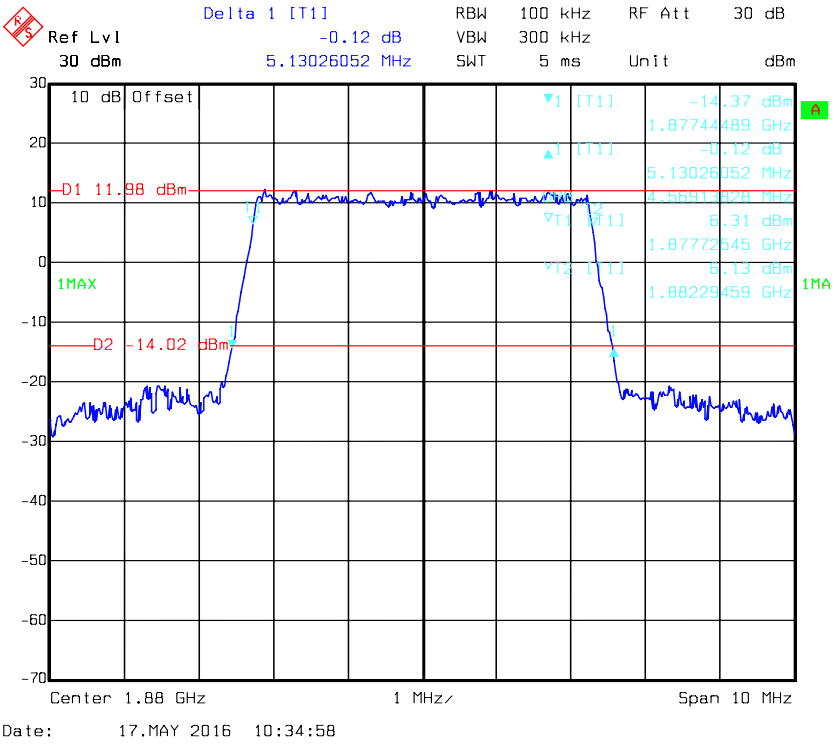
16QAM_1.4 MHz



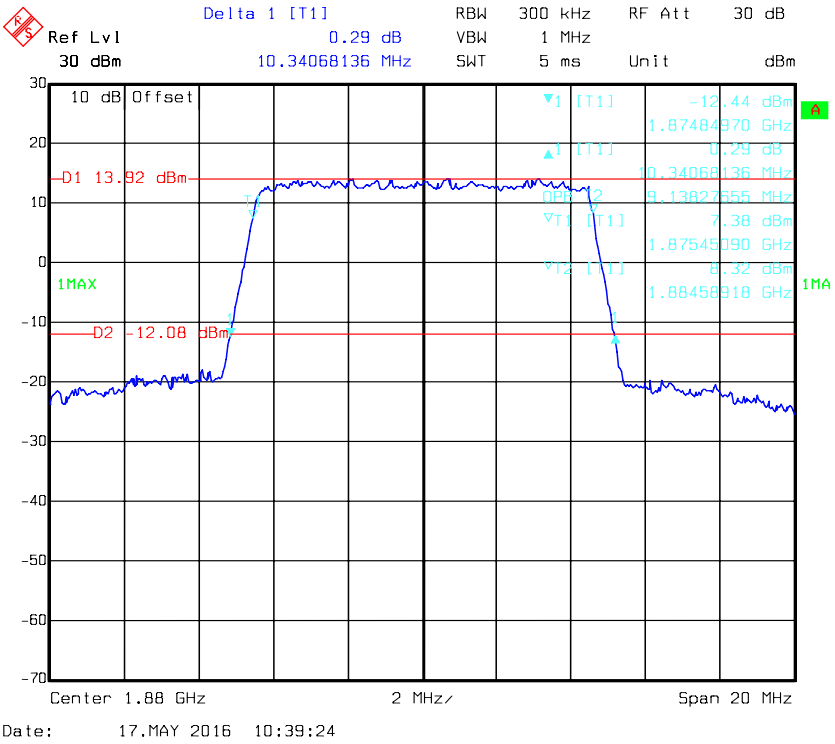
16QAM_3 MHz



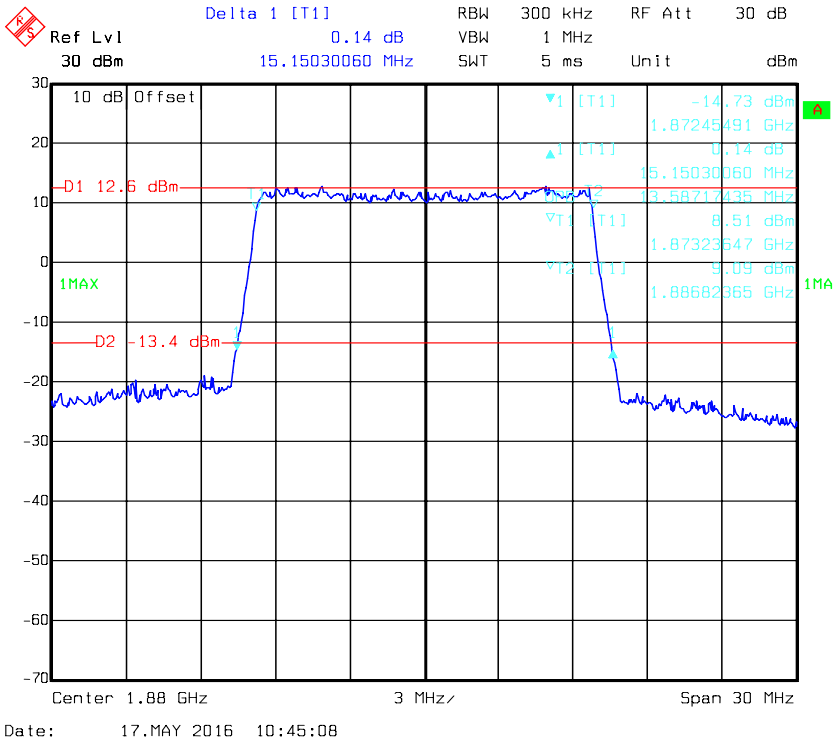
16QAM_5 MHz



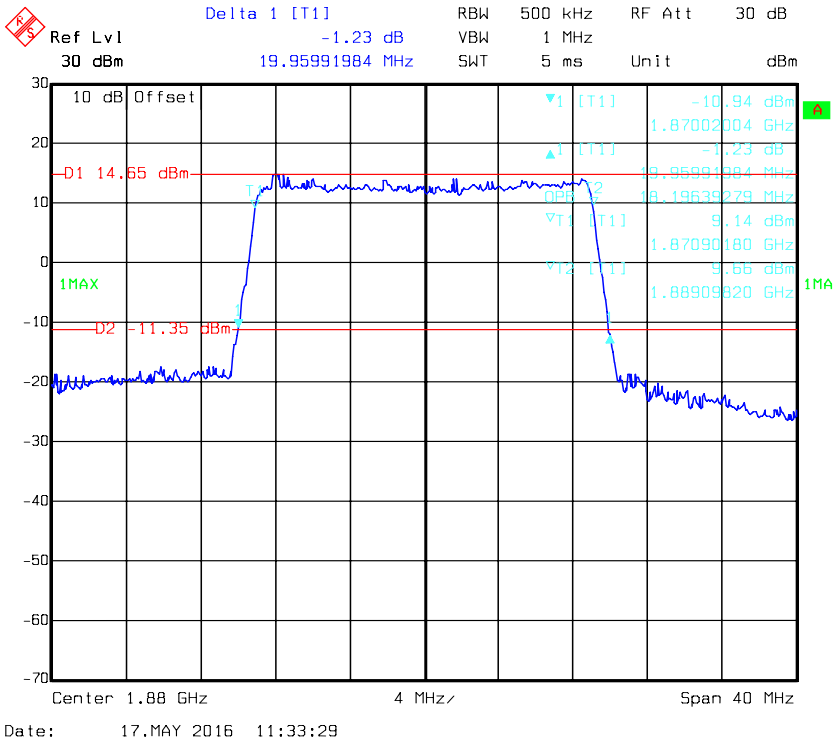
16QAM_10 MHz



16QAM_15 MHz

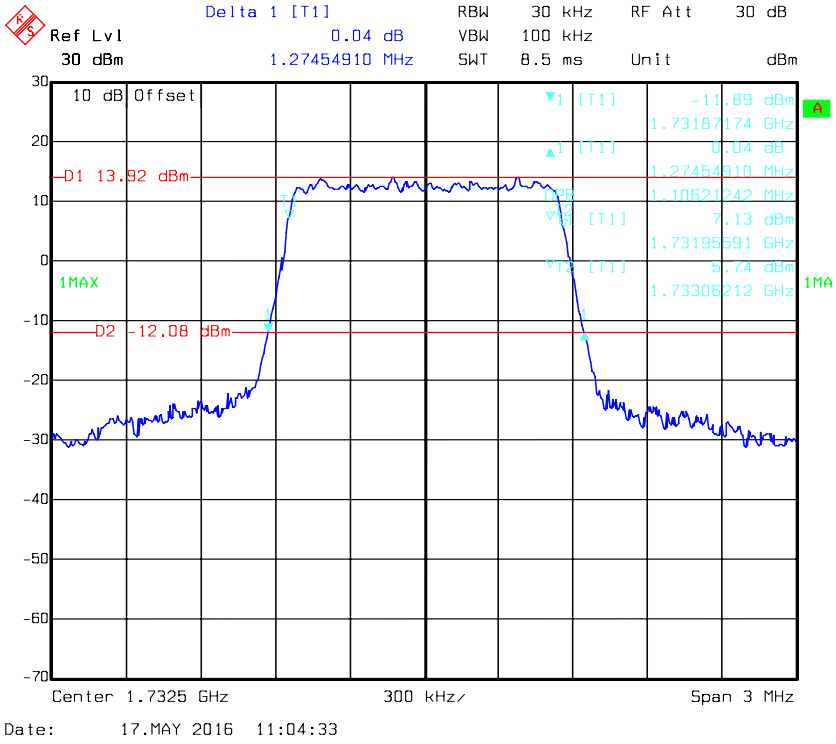


16QAM_20 MHz

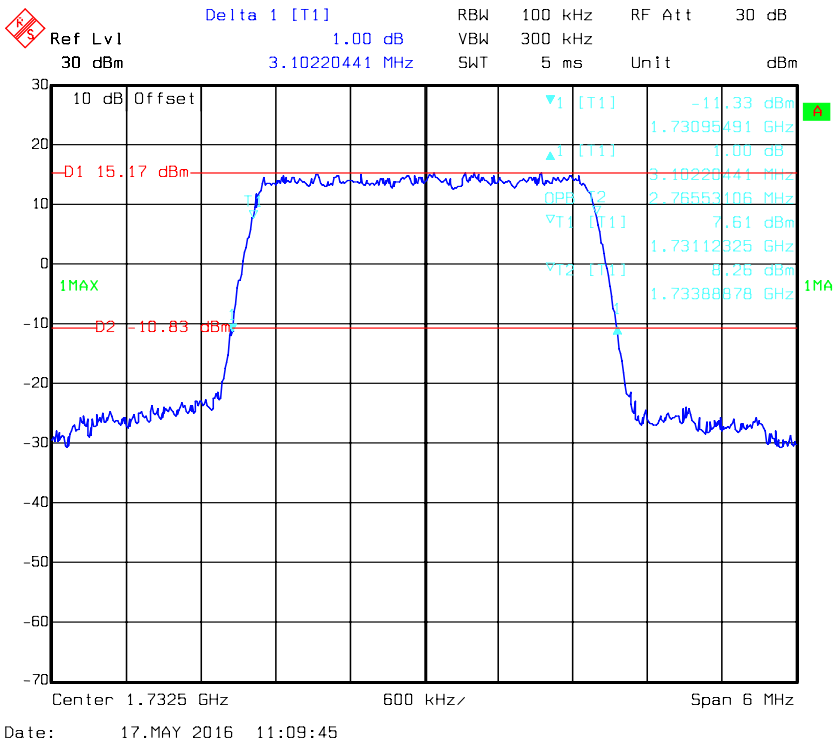


LTE Band IV

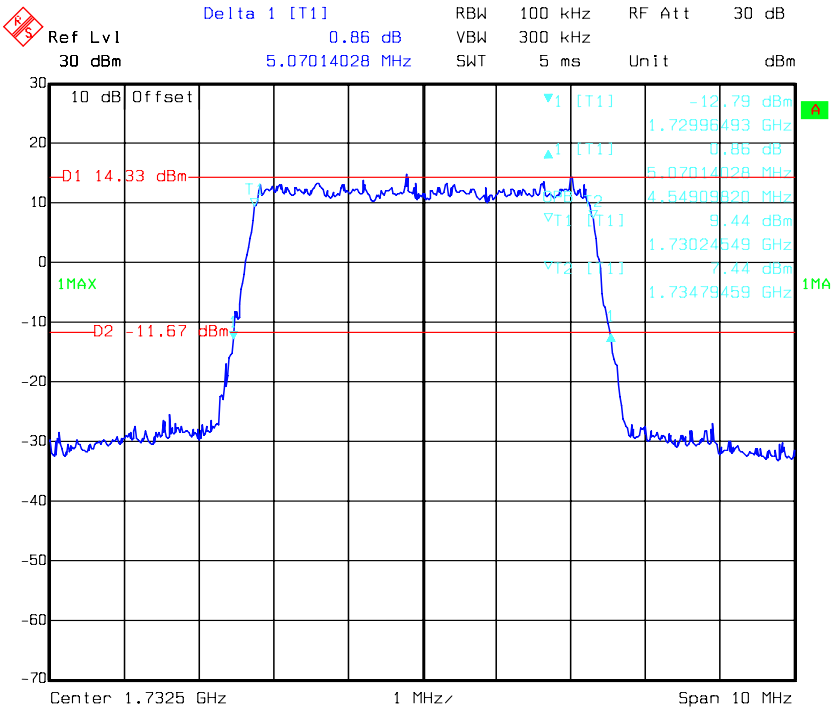
QPSK_1.4 MHz



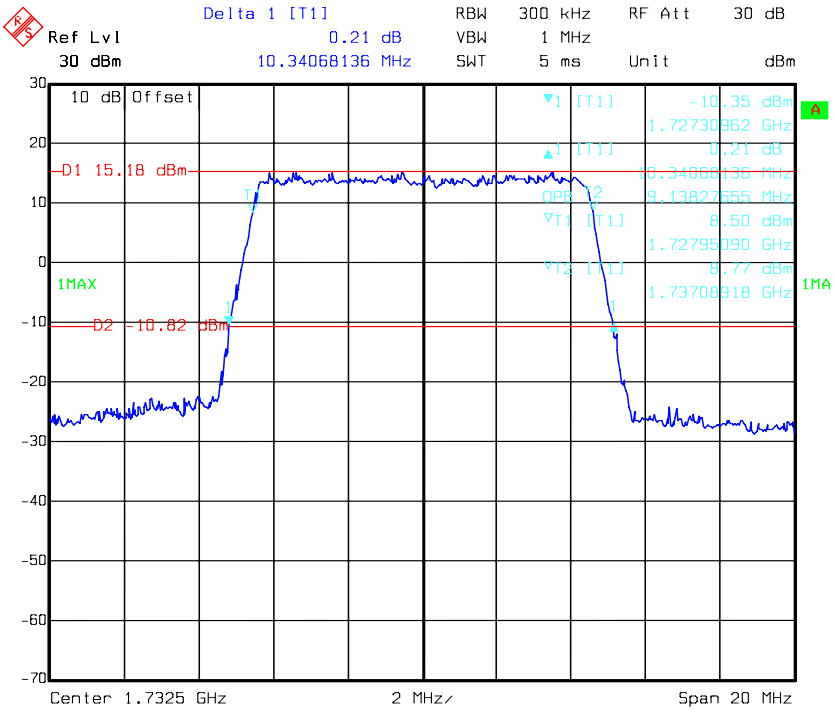
QPSK_3 MHz



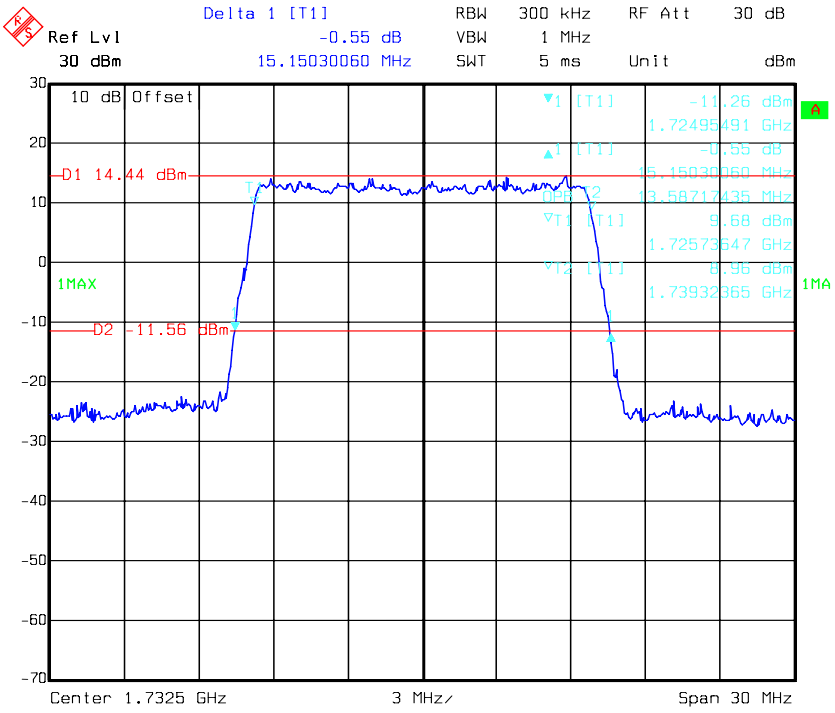
QPSK_5 MHz



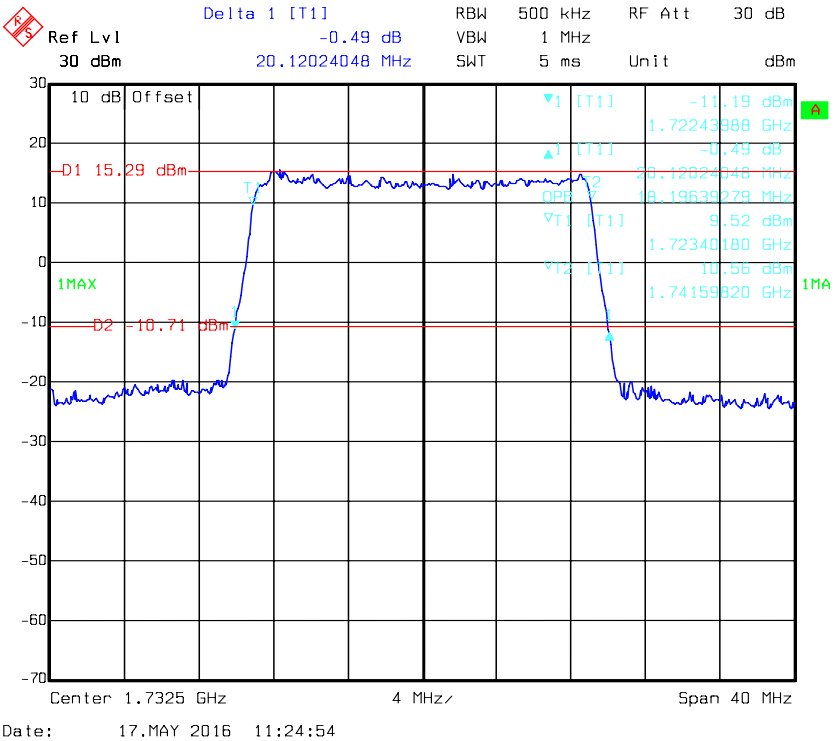
QPSK_10 MHz



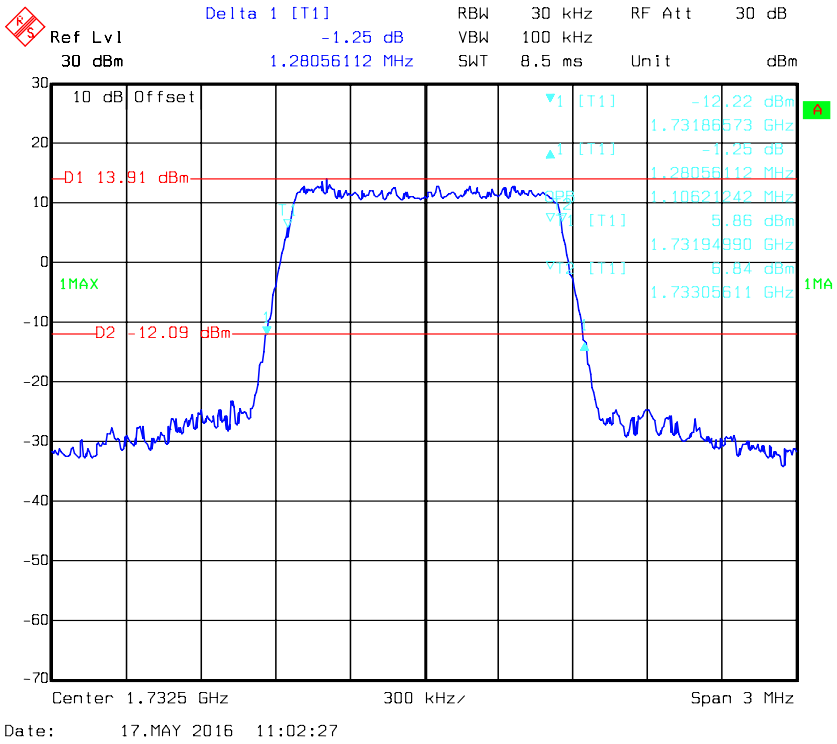
QPSK_15 MHz



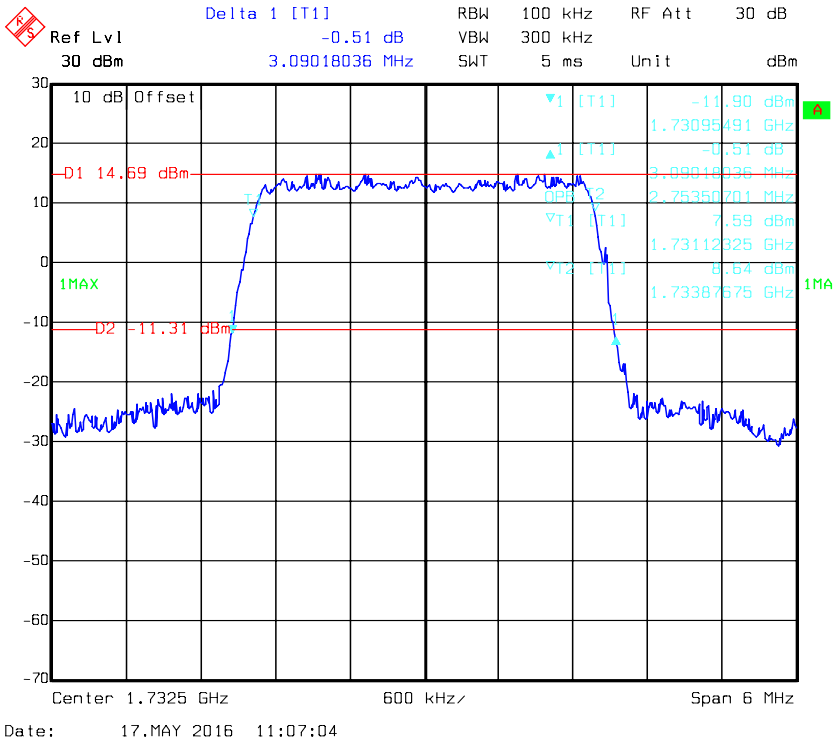
QPSK_20 MHz



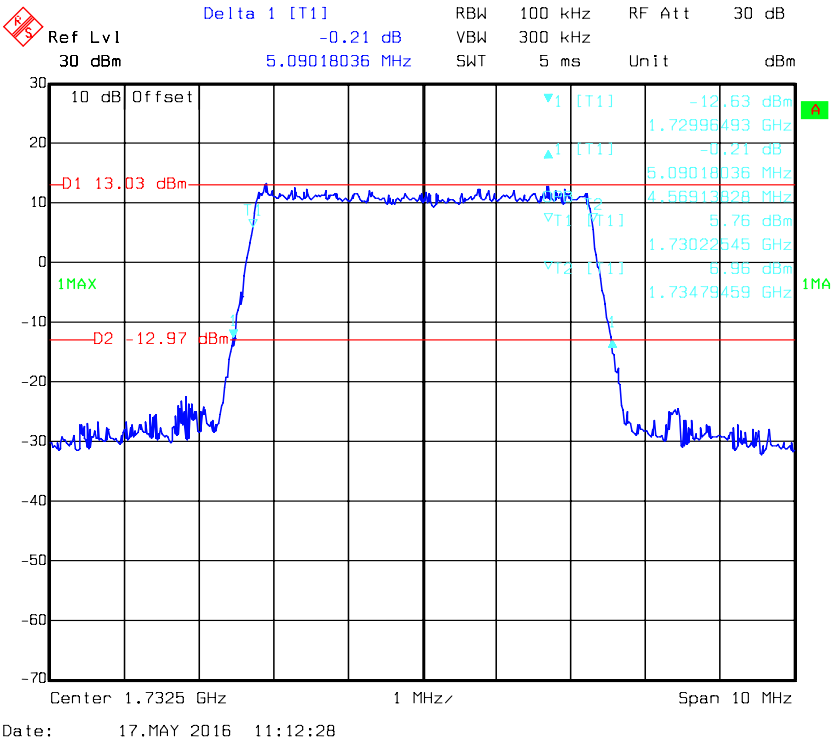
16QAM_1.4 MHz



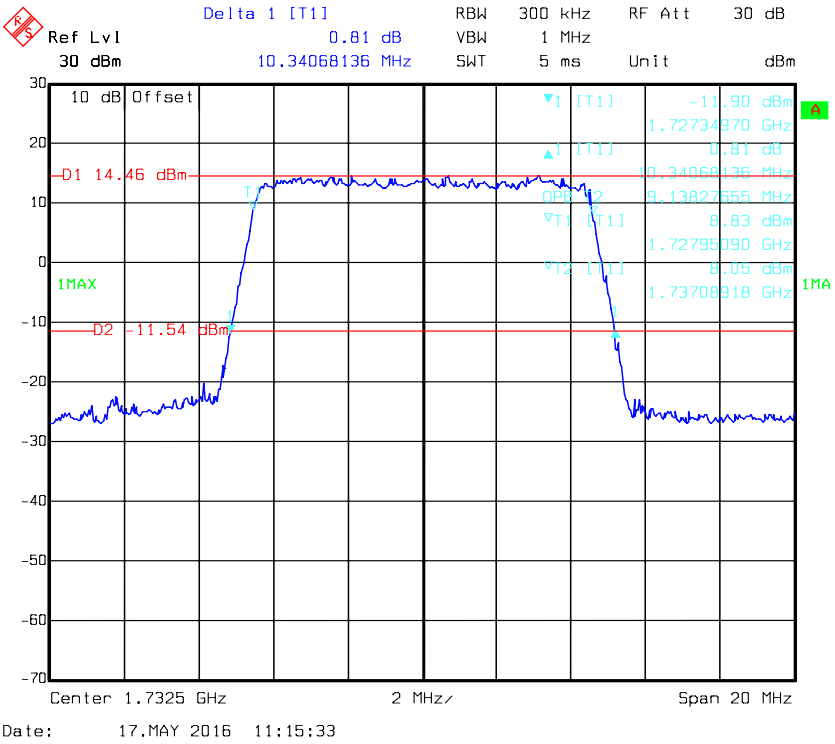
16QAM_3 MHz



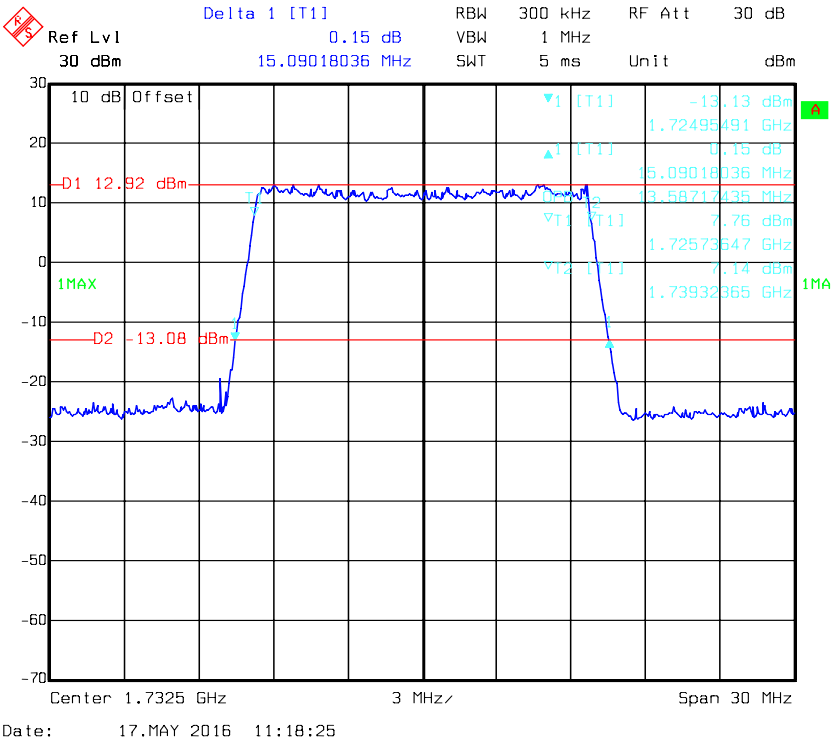
16QAM_5 MHz



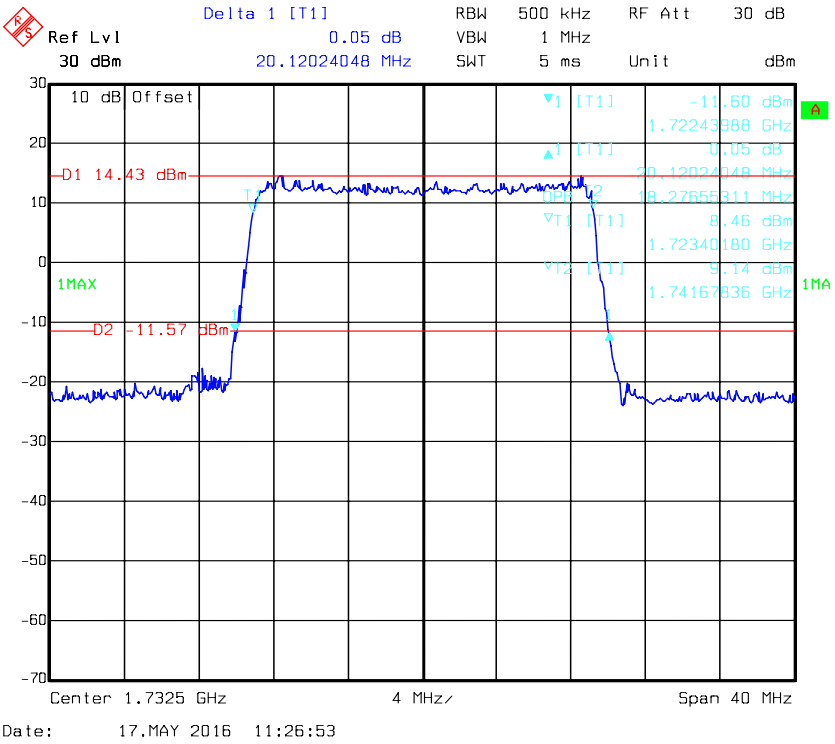
16QAM_10 MHz



16QAM_15 MHz

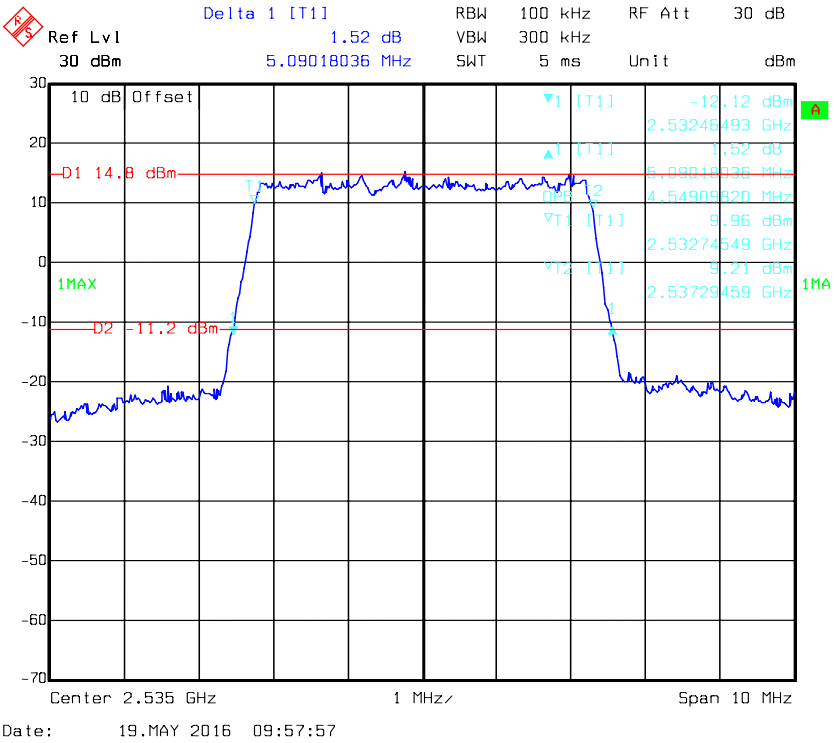


16QAM_20 MHz

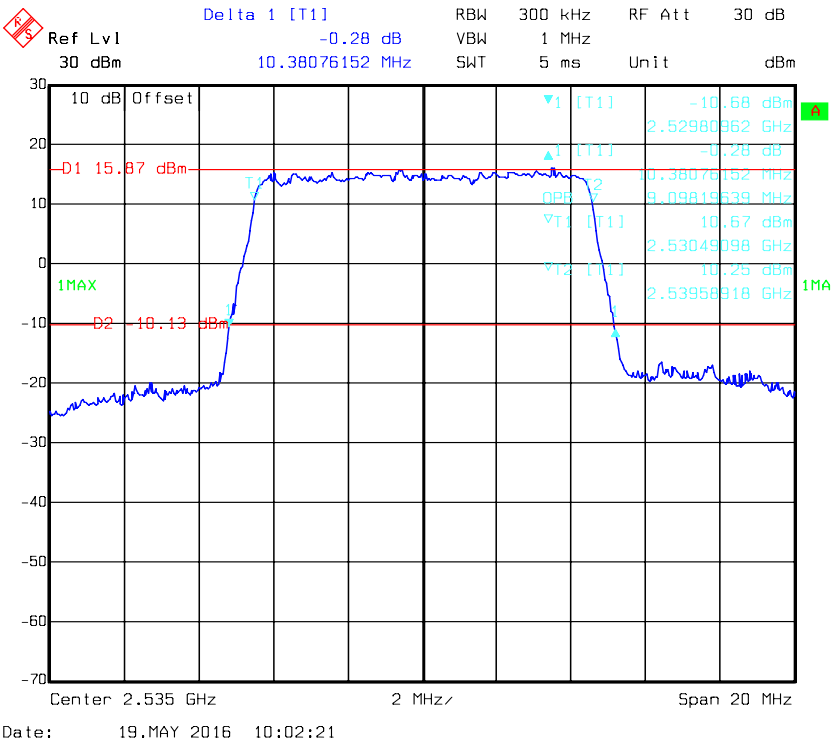


LTE Band VII

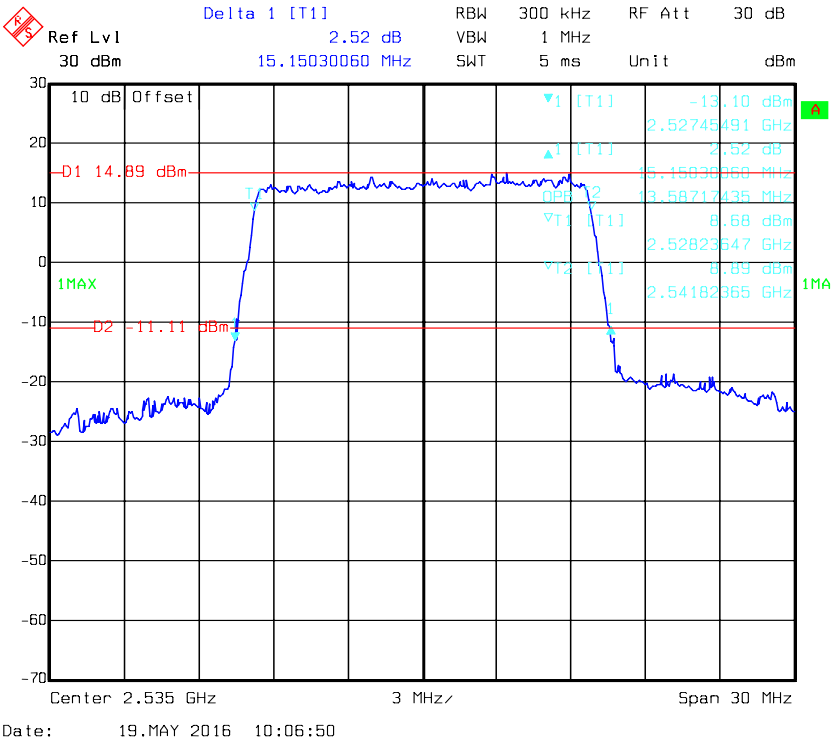
QPSK_5 MHz



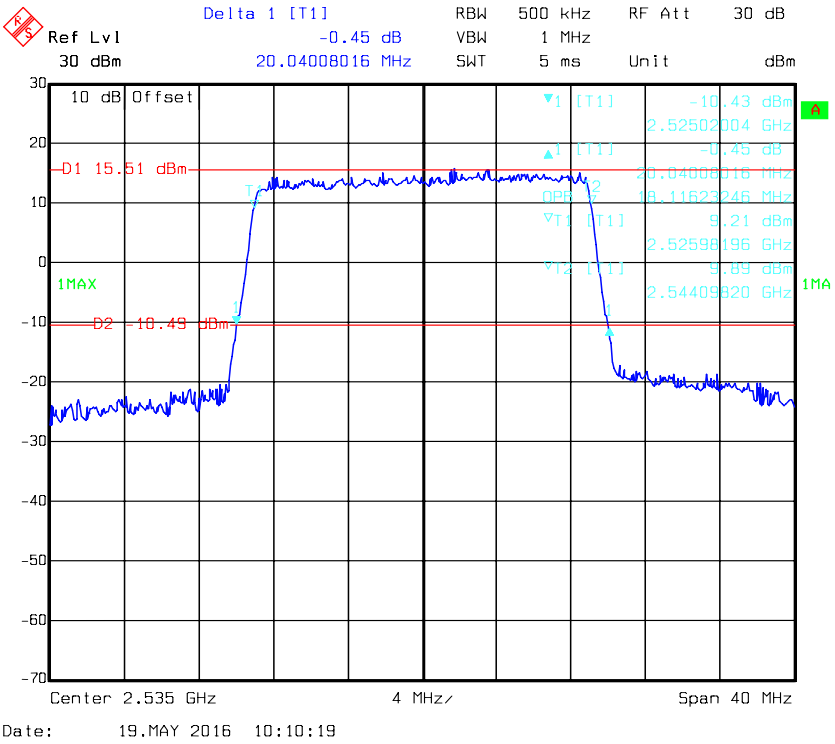
QPSK_10 MHz



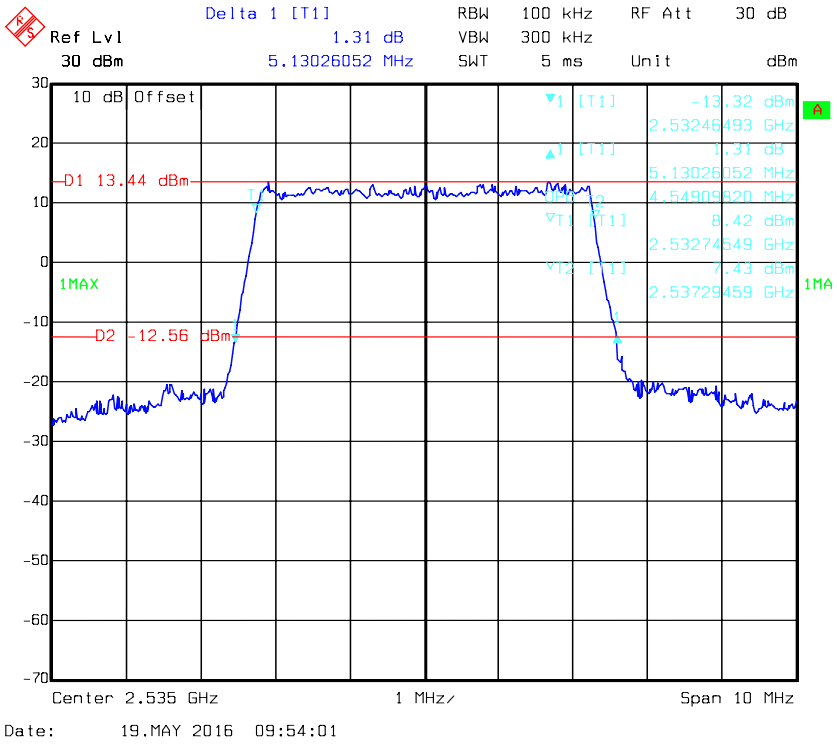
QPSK_15 MHz



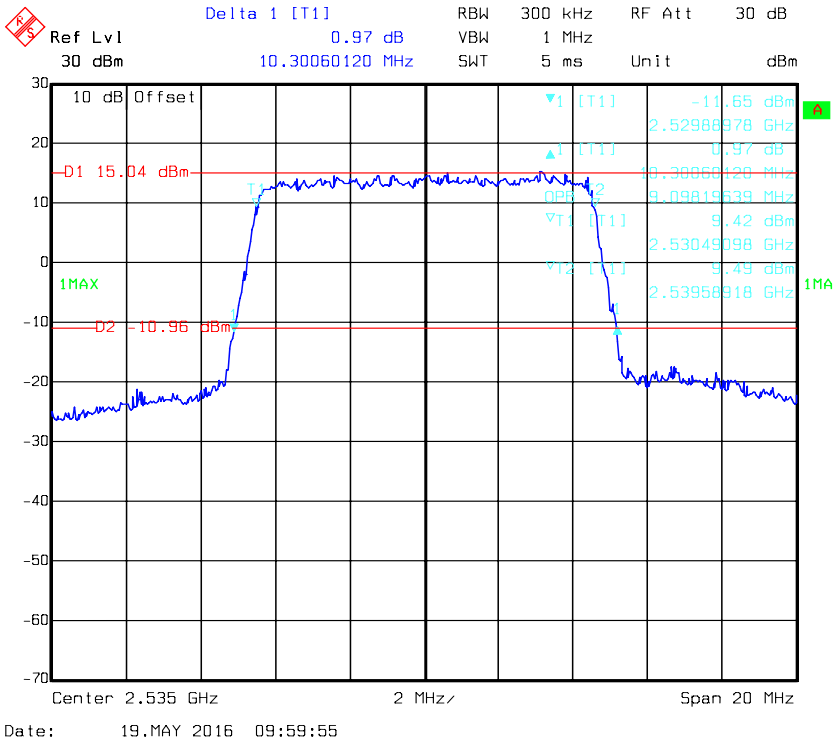
QPSK_20 MHz



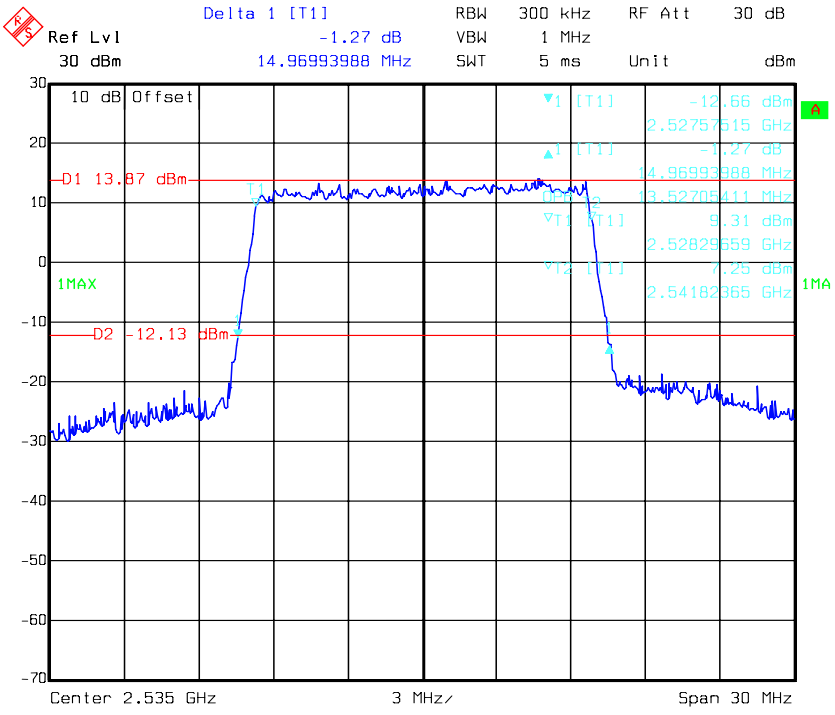
16QAM_5 MHz



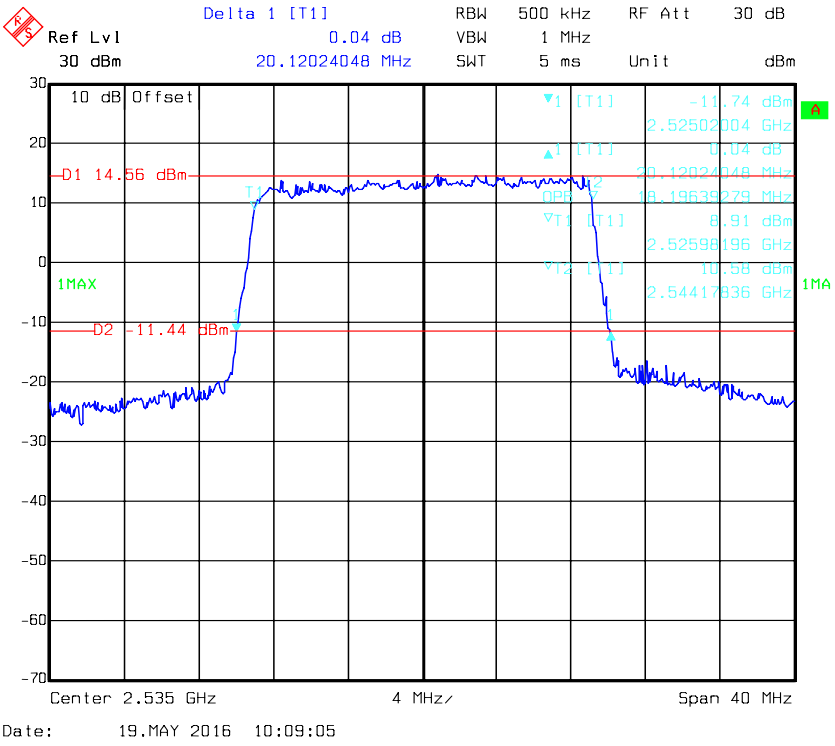
16QAM_10 MHz



16QAM_15 MHz



16QAM_20 MHz



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

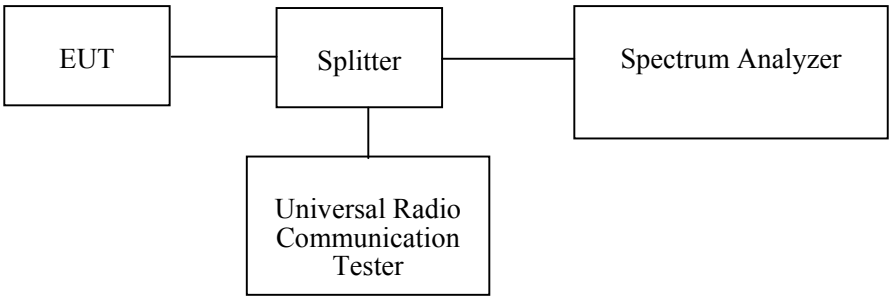
Applicable Standard

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	1201.002K50-146520-wh	2015-12-19	2016-12-19
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	OE01203239	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 Spliter	ODP-1-6-2S	OE0120142	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

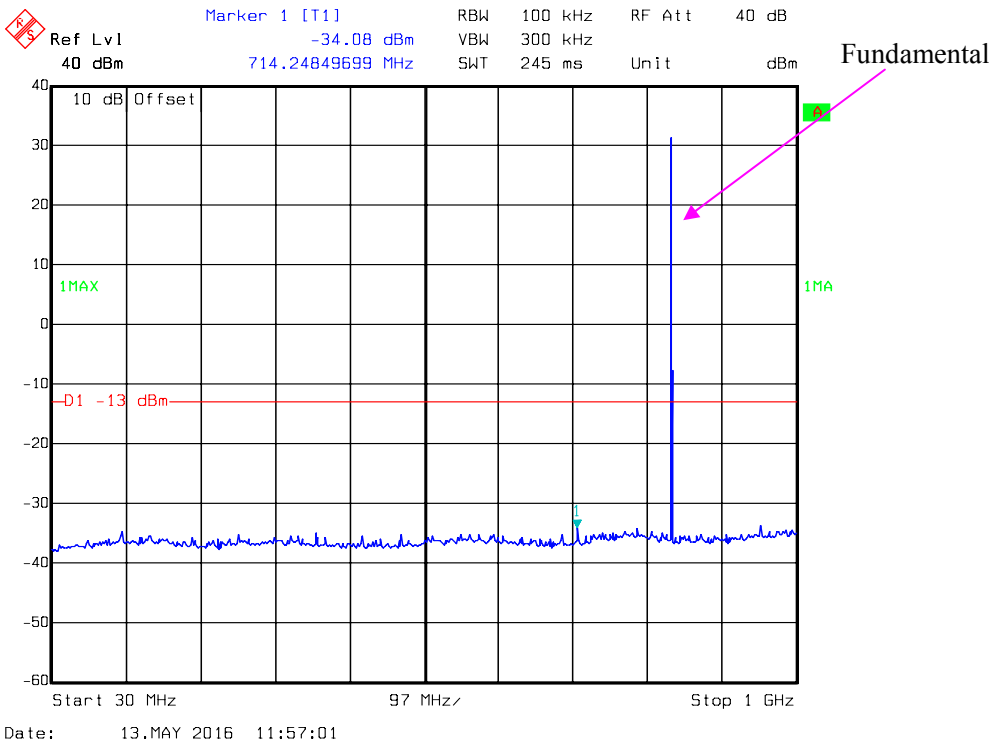
Temperature:	25.1~28.7°C
Relative Humidity:	52~54 %
ATM Pressure:	100.6~100.8 kPa

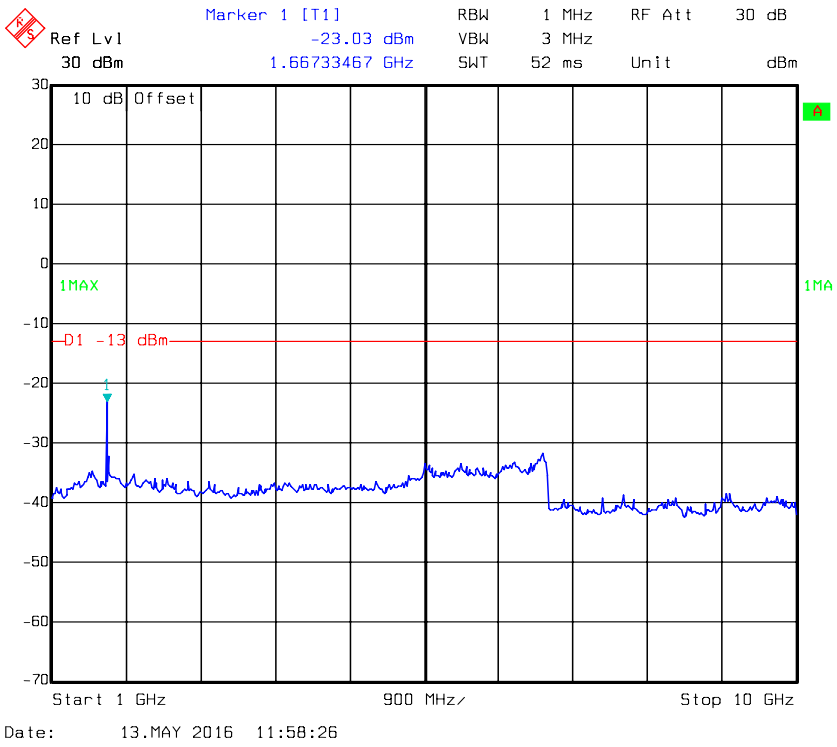
The testing was performed by Robin Zheng from 2016-05-13 to 2016-05-16.

Test mode: Transmitting-worst case

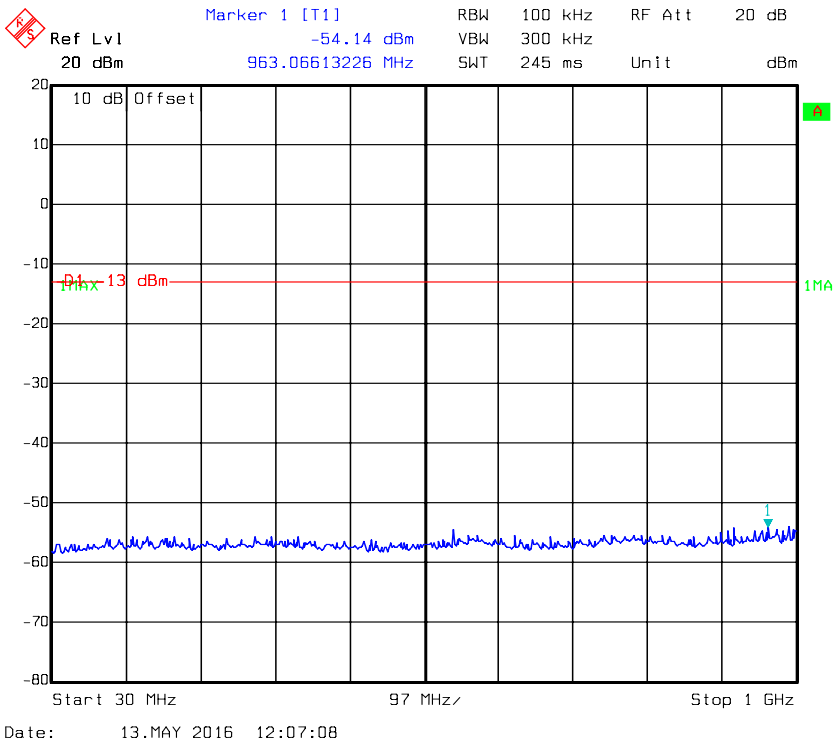
Please refer to the following plots.

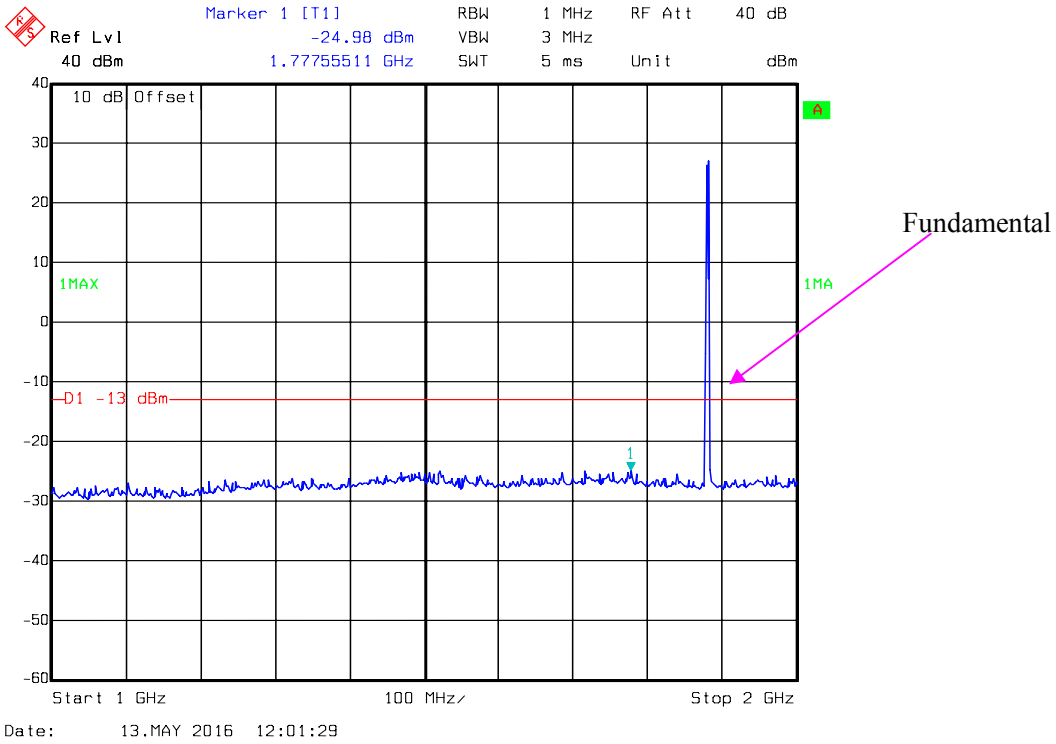
GSM850_Middle Channel

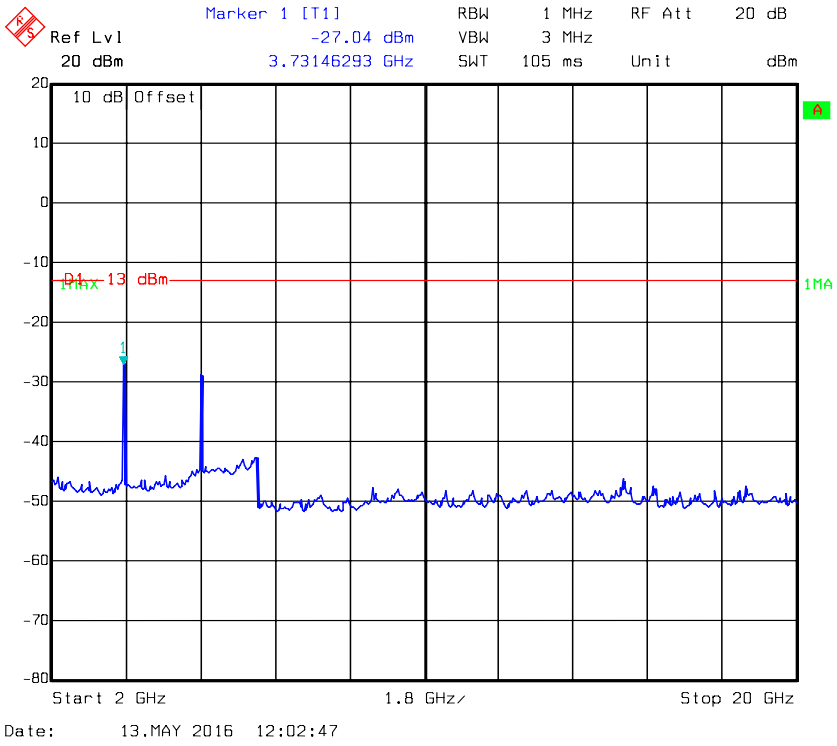




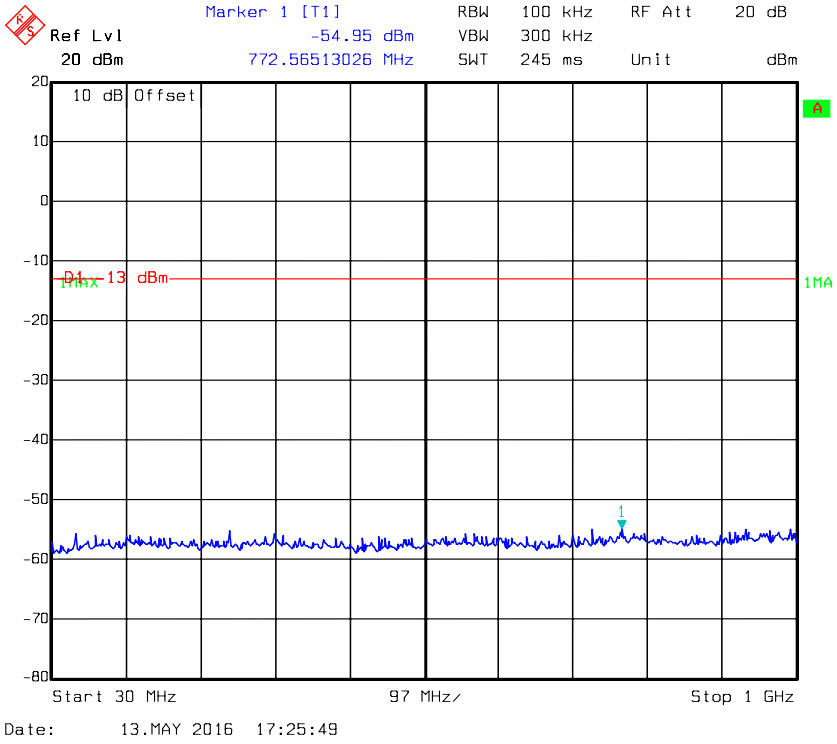
PCS 1900_ Middle Channel

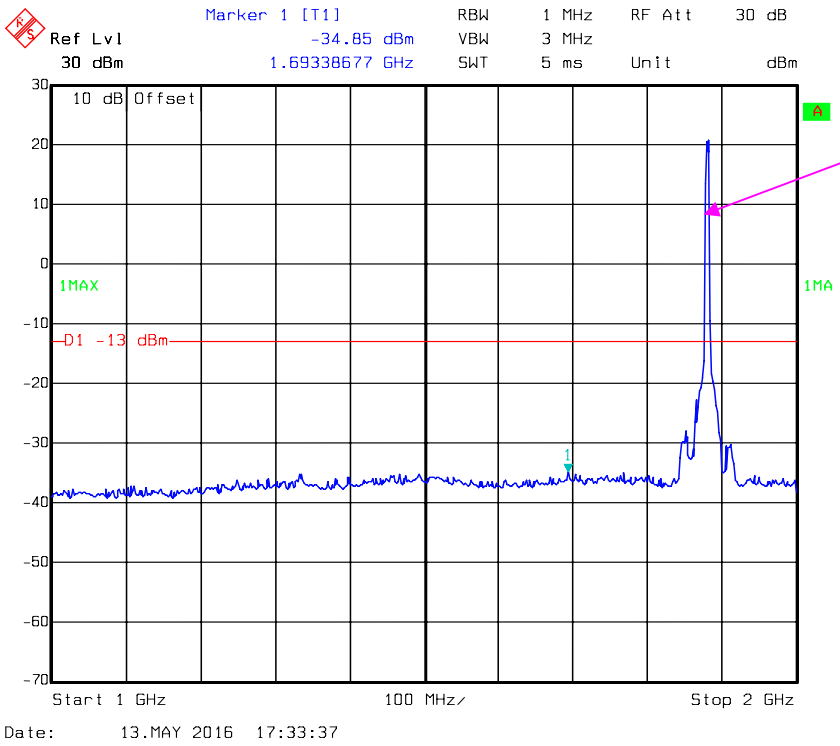



Marker 1 [T1]
-24.98 dBm
1.77755511 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 40 dB
Unit dBm
Ref Lvl
40 dBm
10 dB Offset
1MAX
1MA
D1 -13 dBm
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 13.MAY 2016 12:01:29
Fundamental

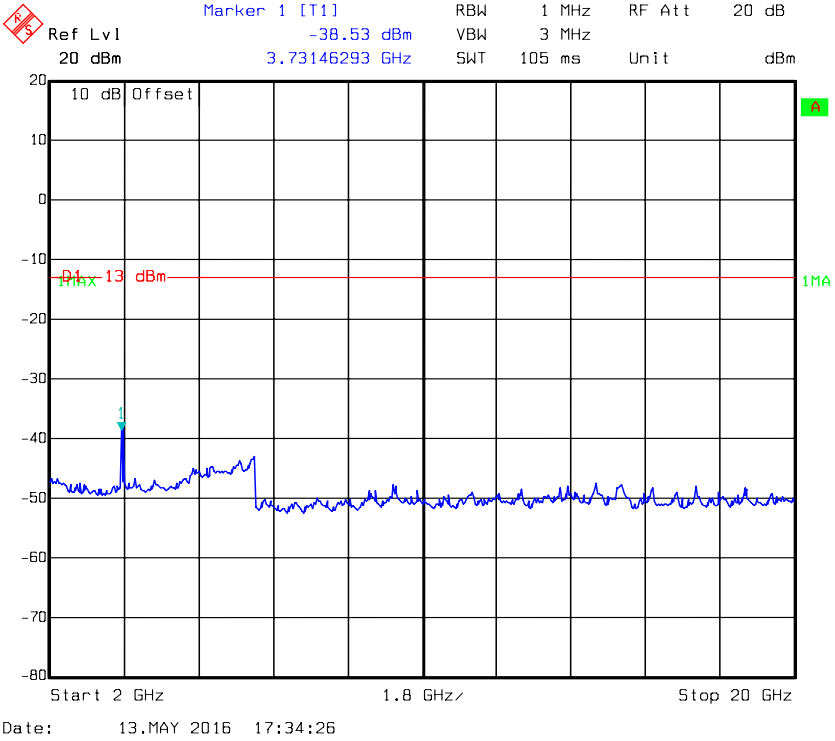

Marker 1 [T1]
-27.04 dBm
3.73146293 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 20 dB
Unit dBm
Ref Lvl
20 dBm
10 dB Offset
1MAX
1MA
D1 -13 dBm
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 13.MAY 2016 12:02:47

REL99 Band II _Middle Channel

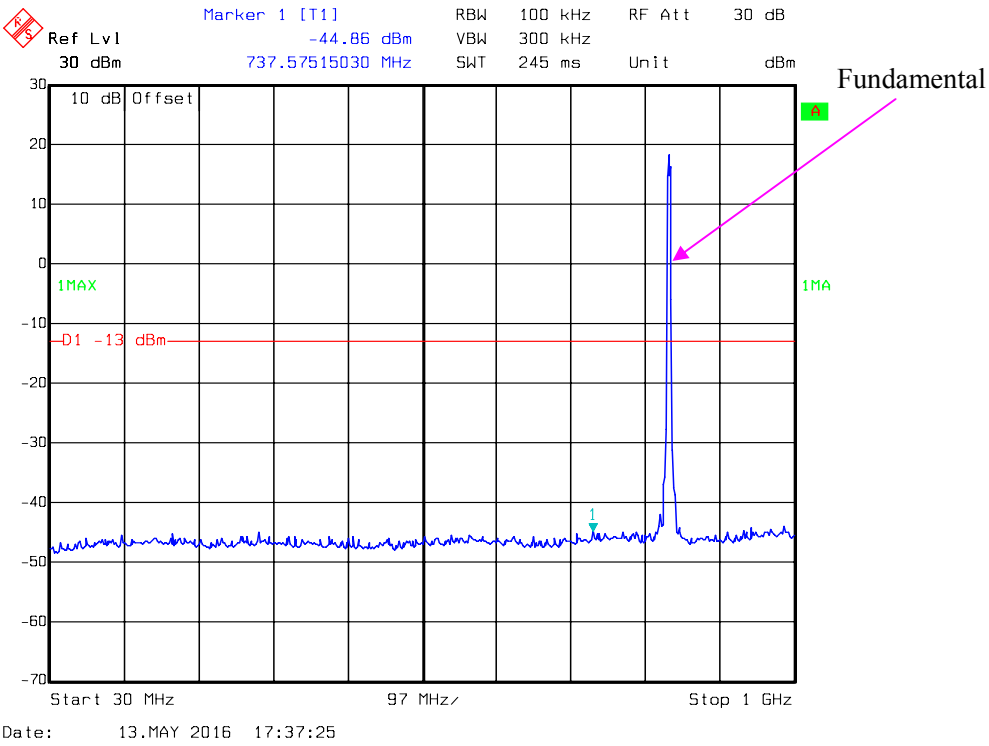


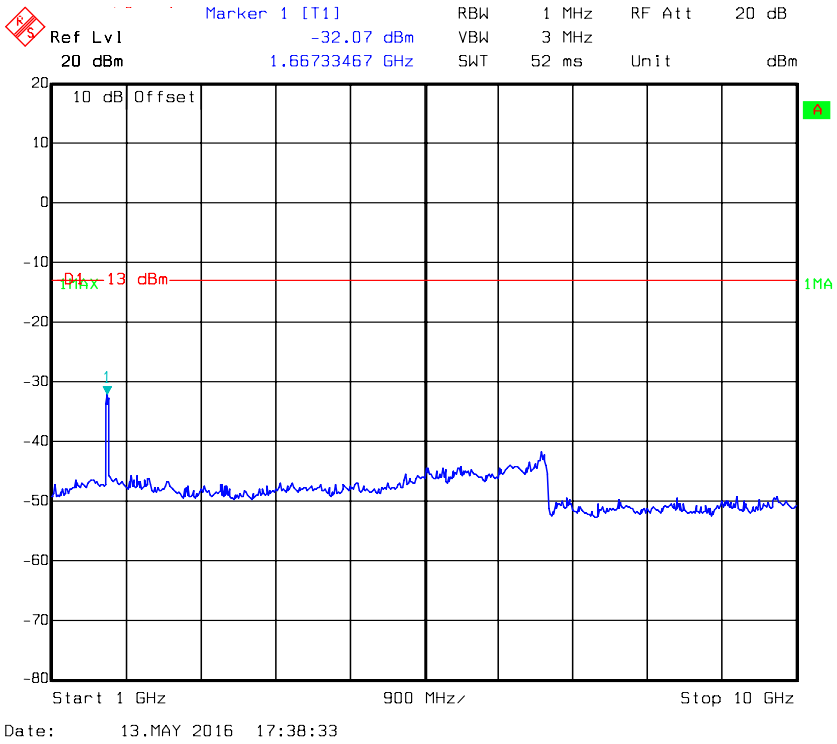


Fundamental



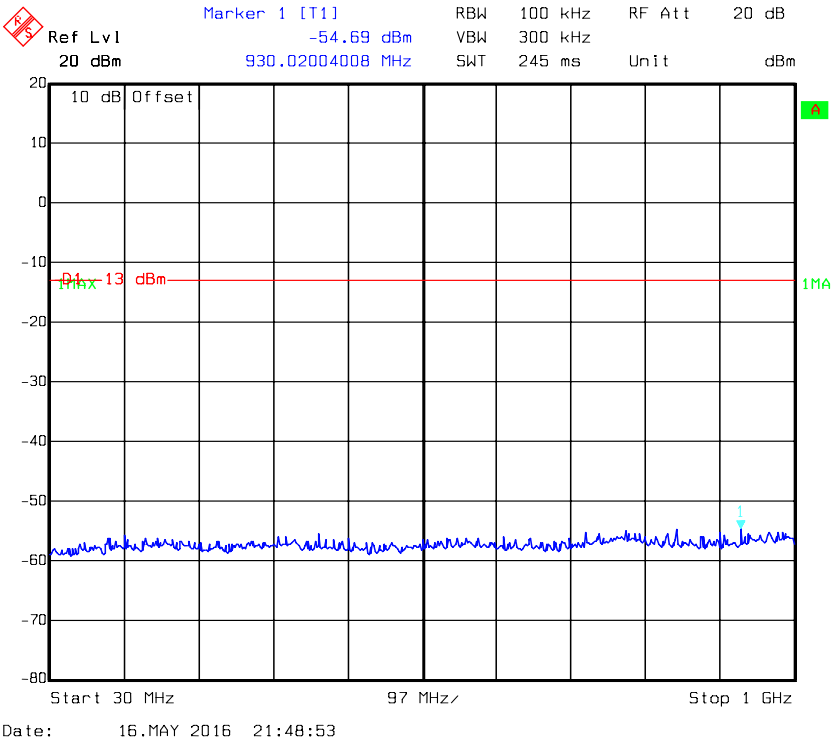
REL99 Band V_ Middle Channel

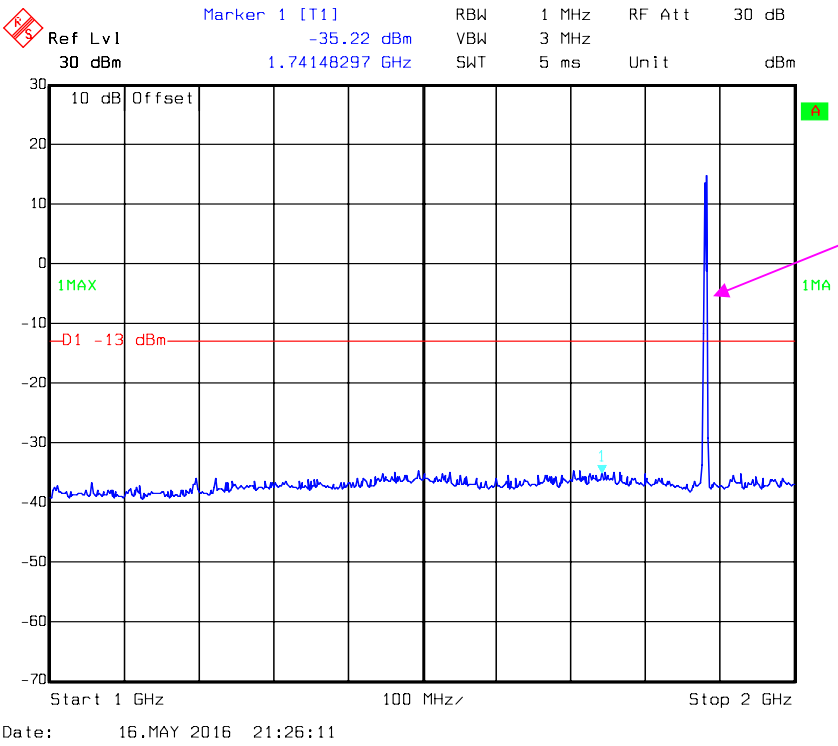



Marker 1 [T1]
Ref Lvl
20 dBm
-32.07 dBm
1.66733467 GHz
RBW 1 MHz
VBW 3 MHz
SWT 52 ms
RF Att 20 dB
Unit dBm
10 dB Offset
D1 -13 dBm
1MAX
1MA
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 13.MAY 2016 17:38:33

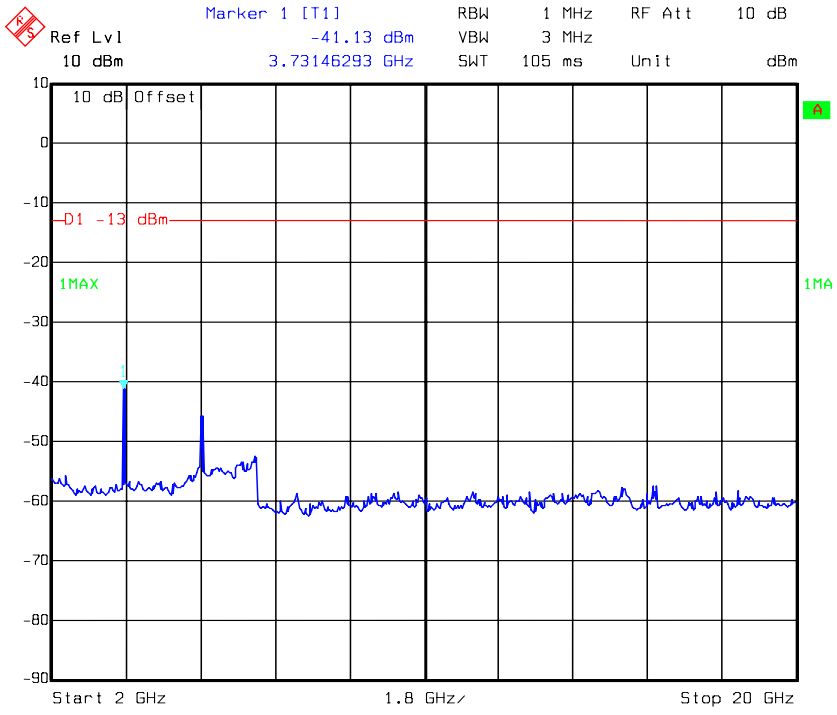
LTE Band II (Middle Channel)

QPSK-1.4 MHz

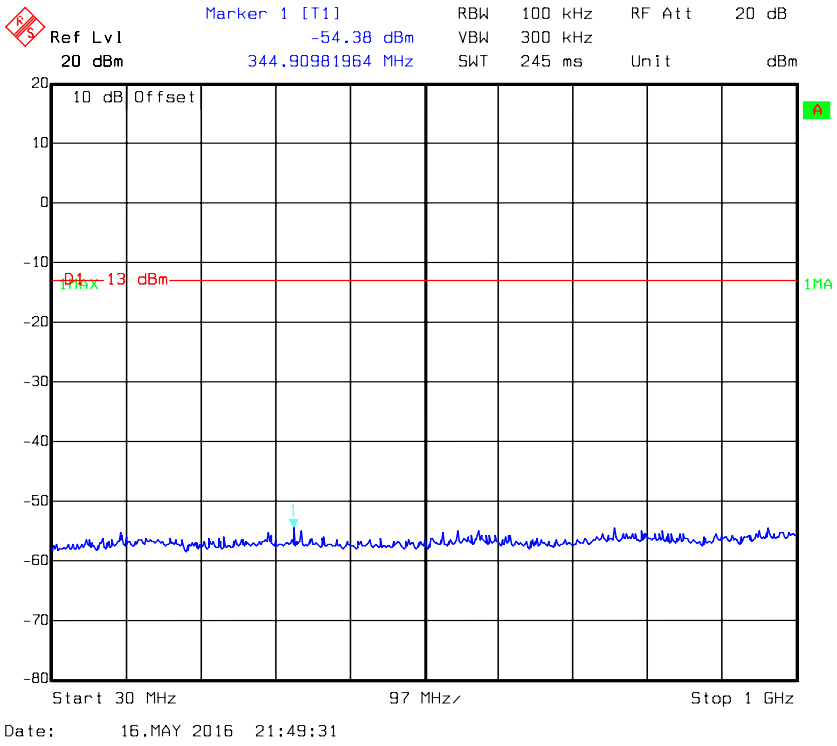


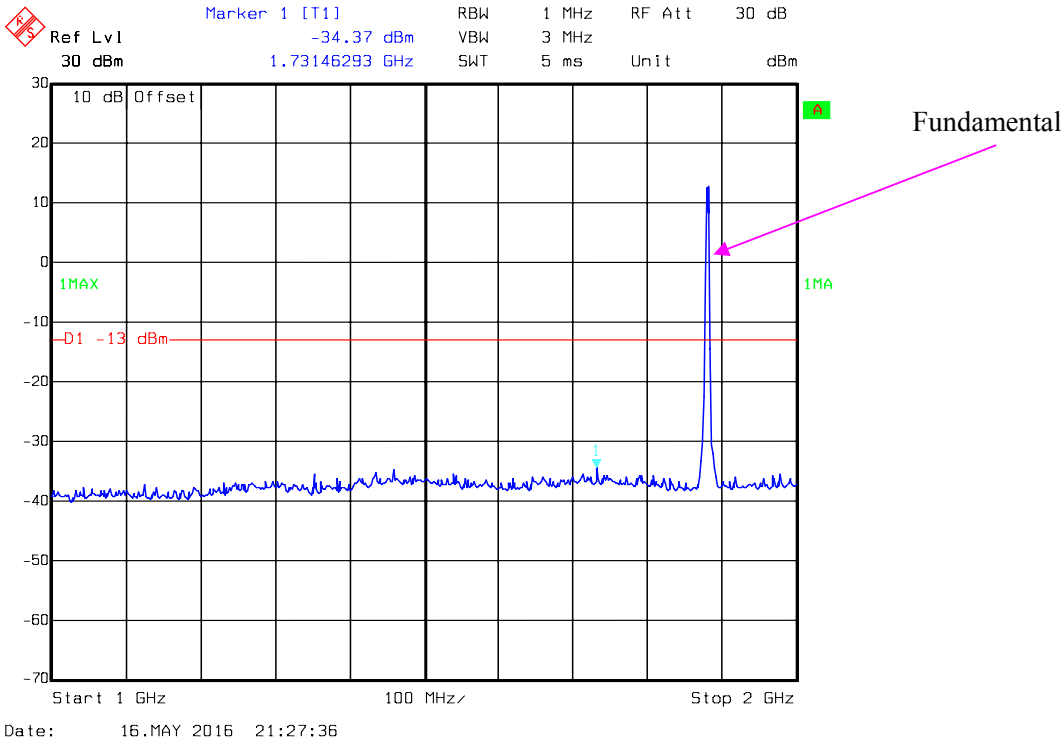


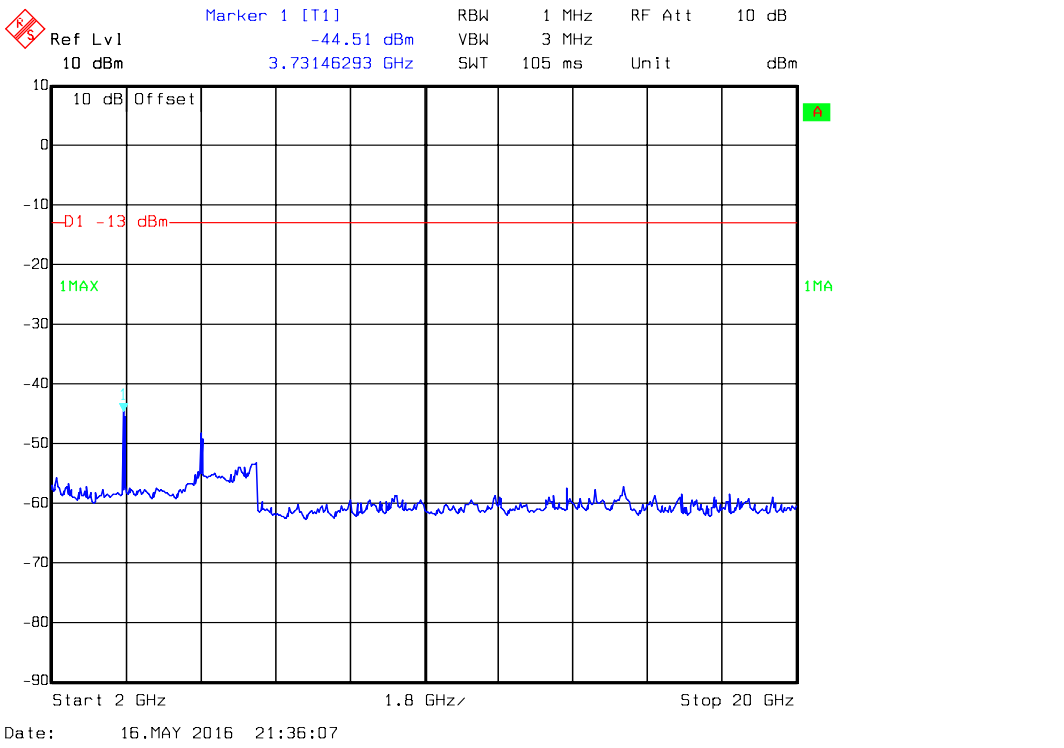
Fundamental


Marker 1 [T1]
Ref Lvl
10 dBm
-41.13 dBm
3.73146293 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 10 dB
Unit dBm
10 dB Offset
D1 -13 dBm
1MAX
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 16.MAY 2016 21:35:09

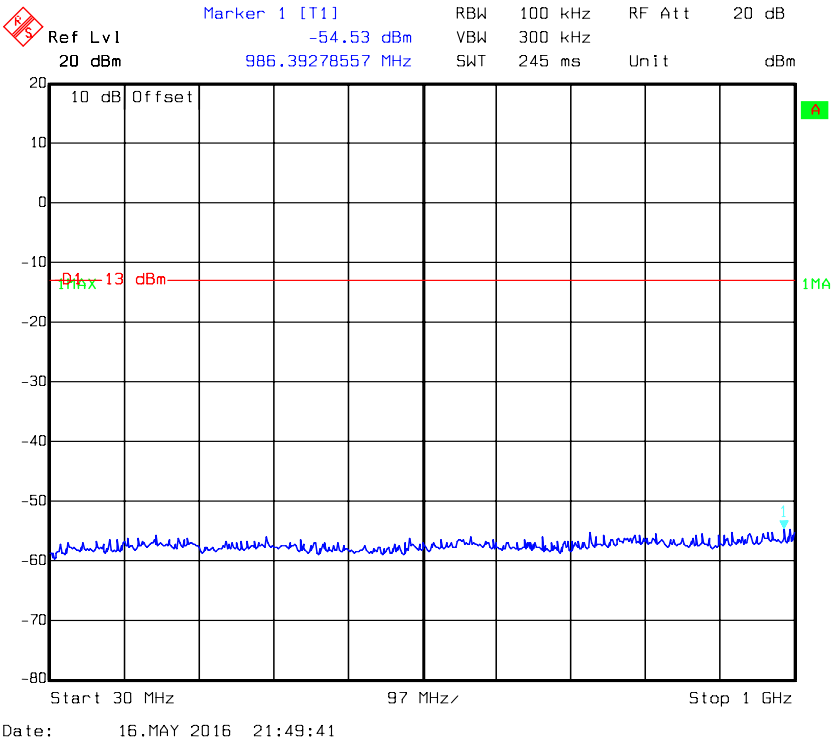
QPSK_3MHz

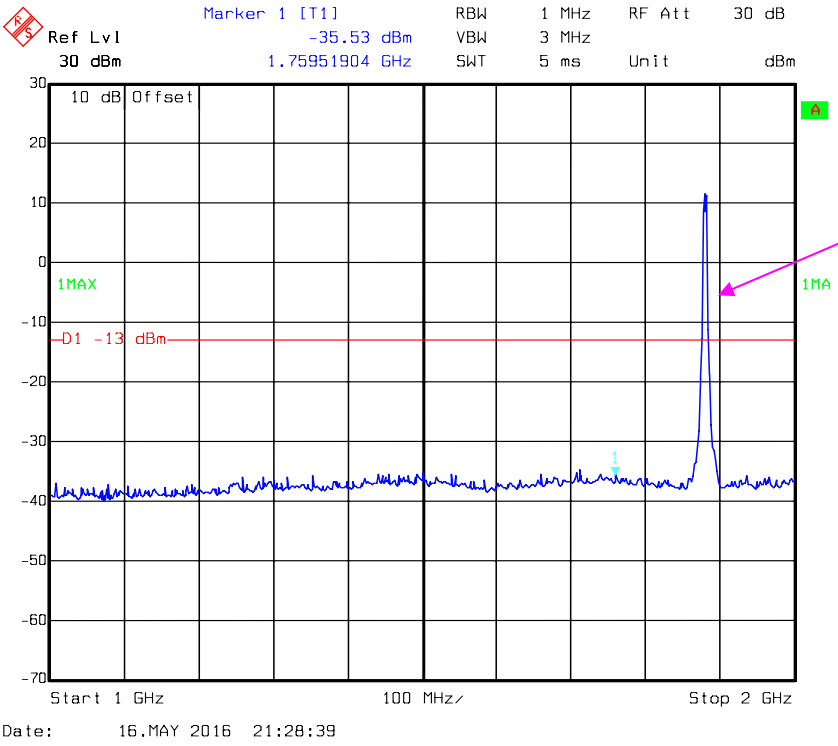

Marker 1 [T1]
Ref Lvl
20 dBm
-54.38 dBm
344.90981964 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 20 dB
Unit dBm
10 dB Offset
D1 -13 dBm
1MAX
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 16.MAY 2016 21:49:31


Marker 1 [T1]
Ref Lvl
30 dBm
-34.37 dBm
1.73146293 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -13 dBm
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 16.MAY 2016 21:27:36
Fundamental

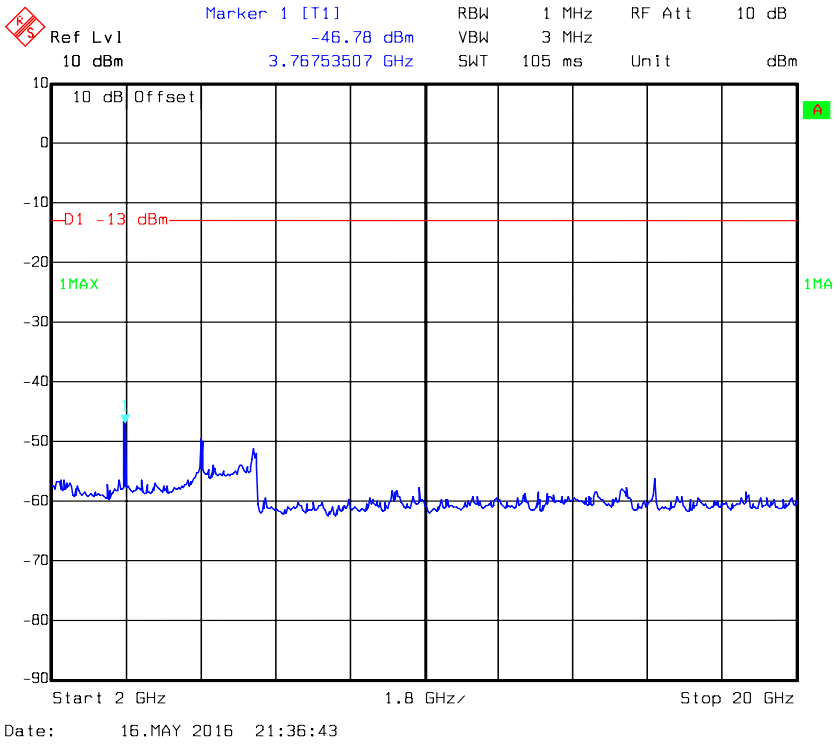

Marker 1 [T1]
Ref Lvl
10 dBm
-44.51 dBm
3.73146293 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 10 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -13 dBm
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 16.MAY 2016 21:36:07

QPSK_5MHz

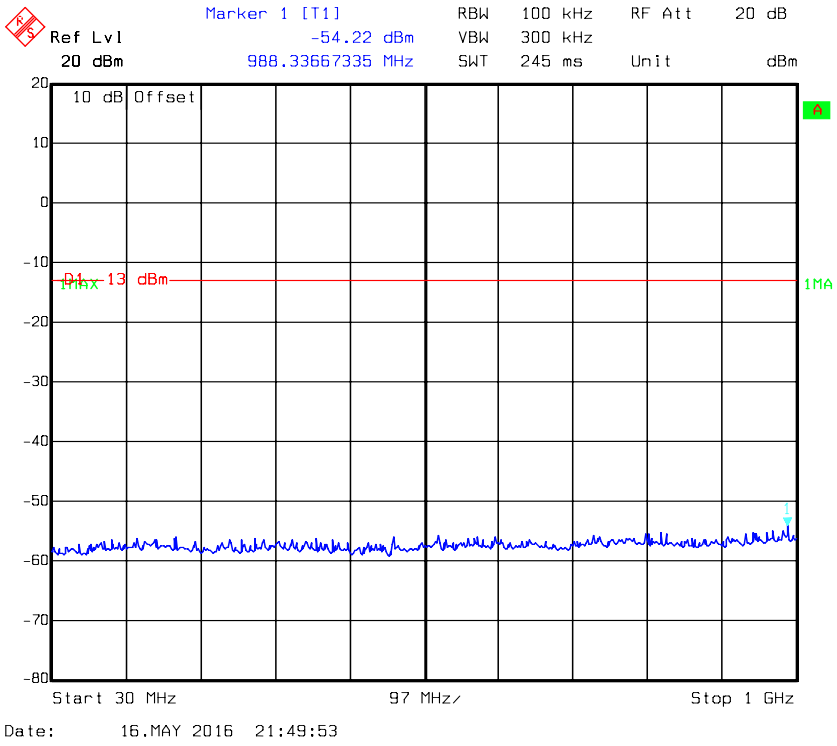


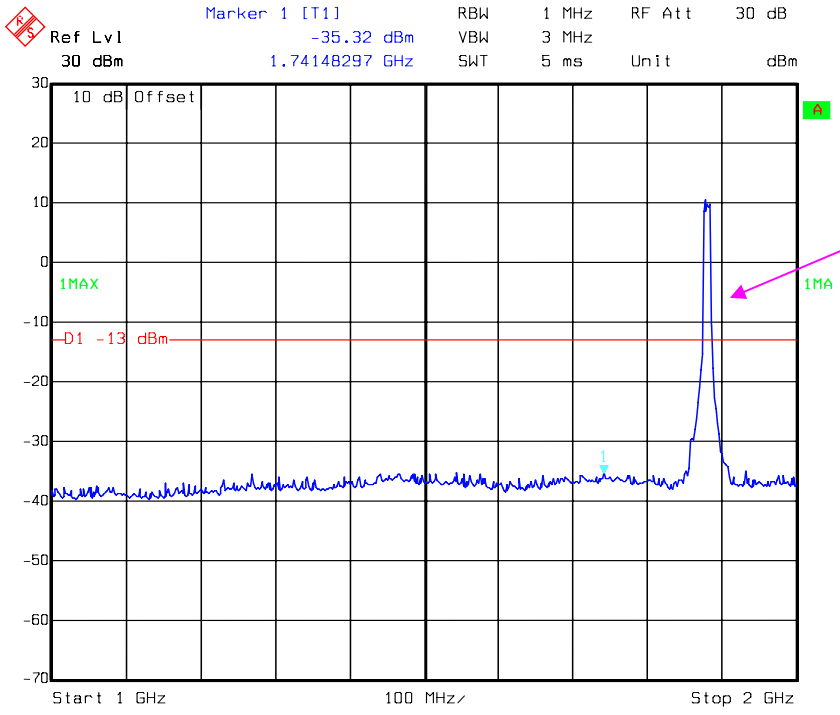


Fundamental

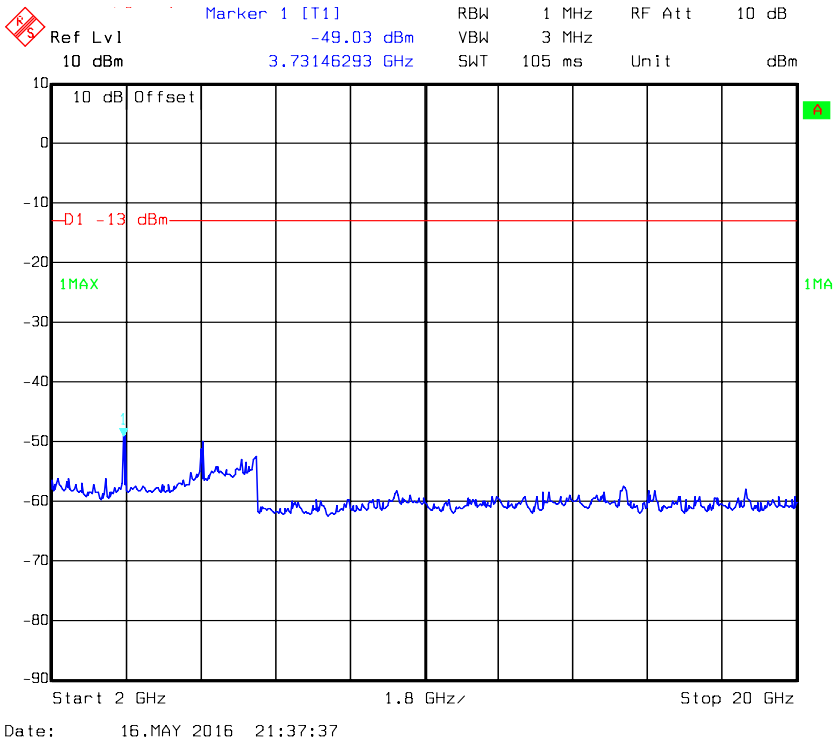

Marker 1 [T1]
-46.78 dBm
3.76753507 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 10 dB
Unit dBm
Ref Lvl
10 dBm
10 dB Offset
D1 -13 dBm
1MAX
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 16.MAY 2016 21:36:43

QPSK_10MHz

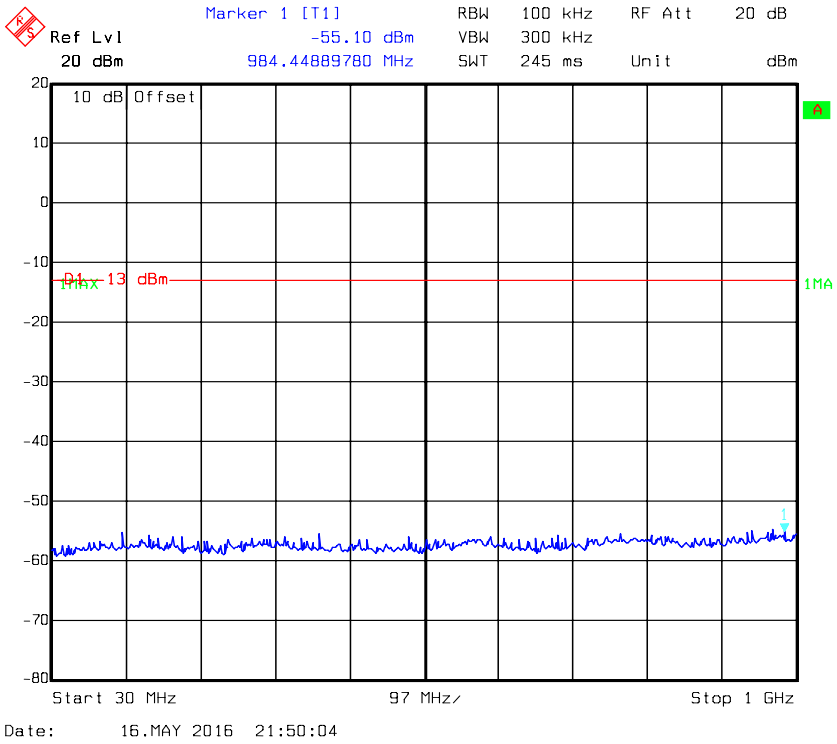

Marker 1 [T1]
-54.22 dBm
988.33667335 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 20 dB
Unit dBm
Ref Lvl
20 dBm
10 dB Offset
D1 -13 dBm
1MAX
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 16.MAY 2016 21:49:53

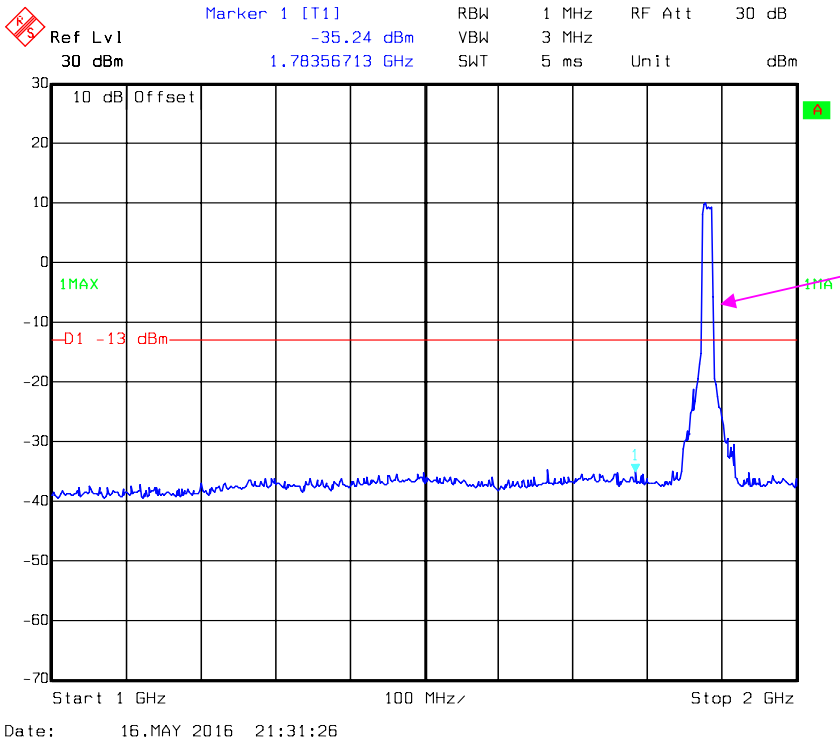


Fundamental

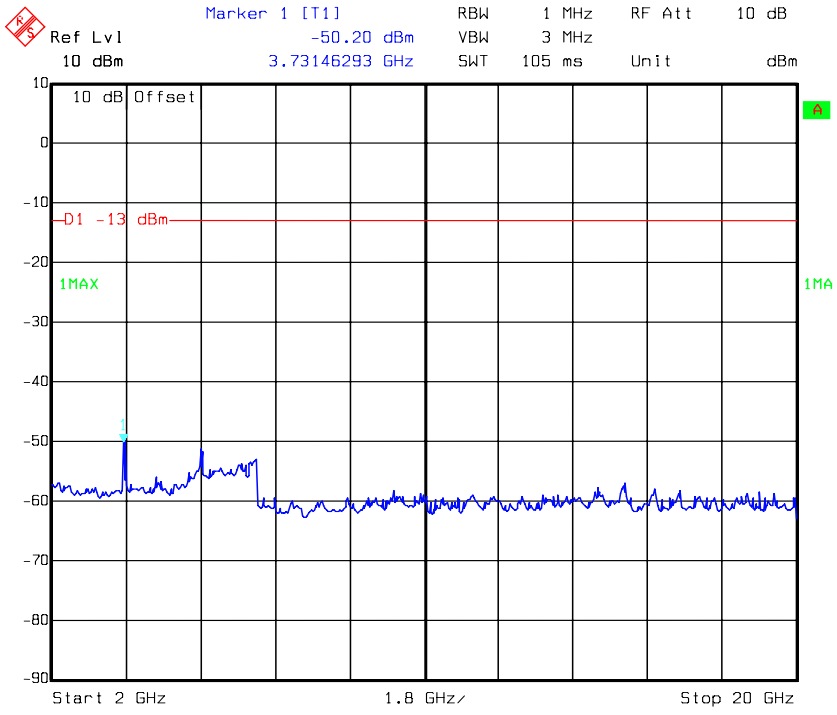


QPSK_15MHz

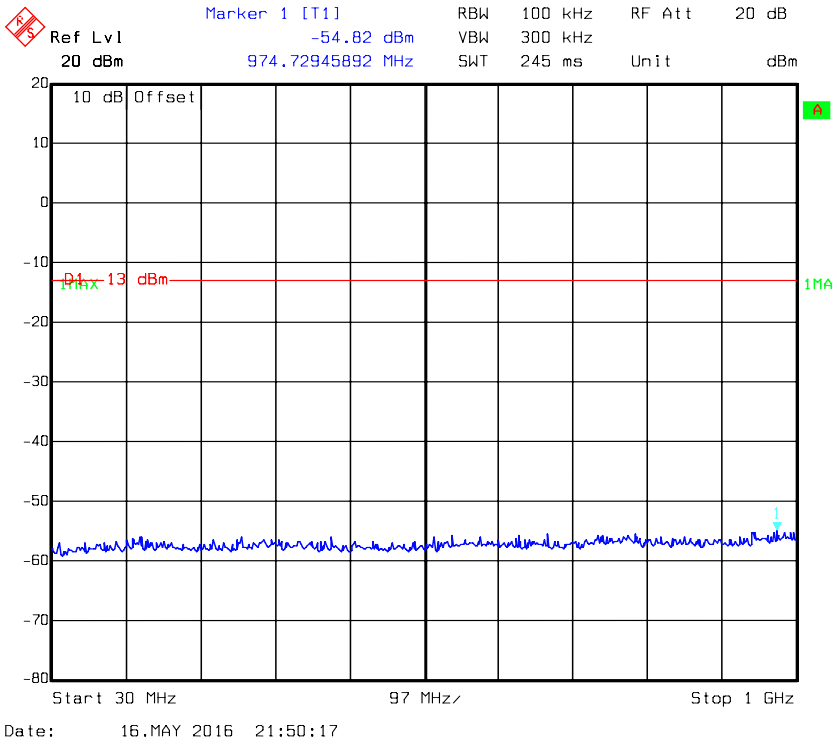


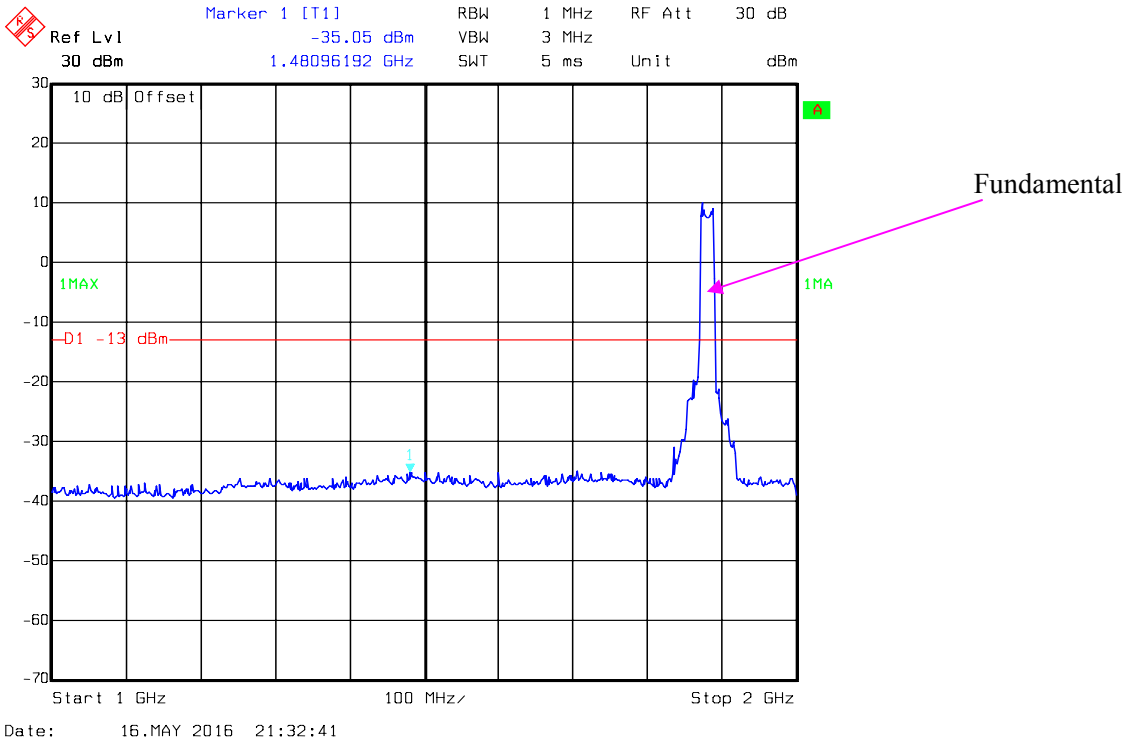


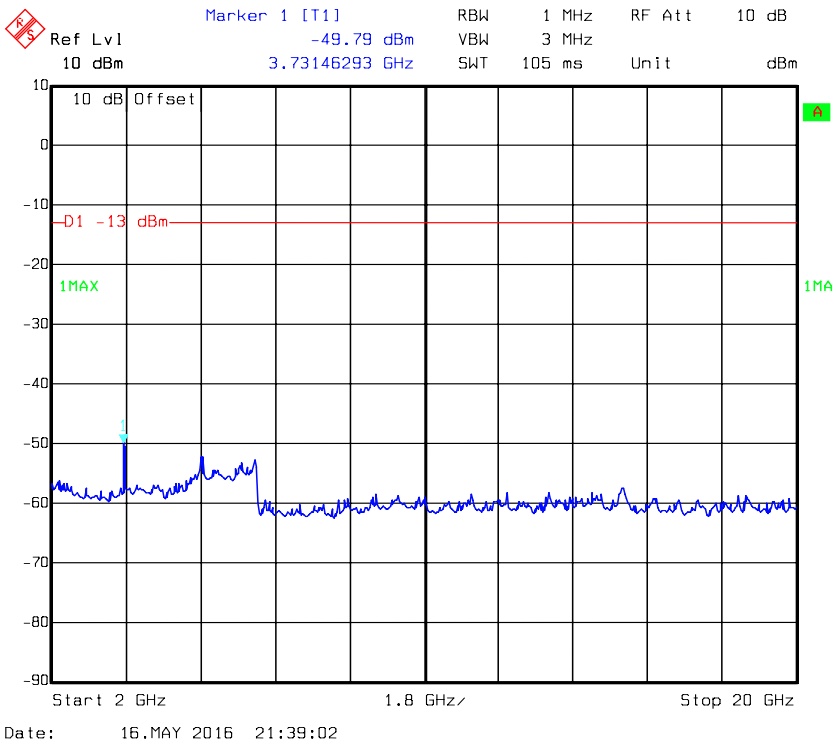
Fundamental


Marker 1 [T1]
Ref Lvl
10 dBm
-50.20 dBm
3.73146293 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 10 dB
Unit dBm
10 dB Offset
D1 -13 dBm
1MAX
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 16.MAY 2016 21:38:21

QPSK_20MHz

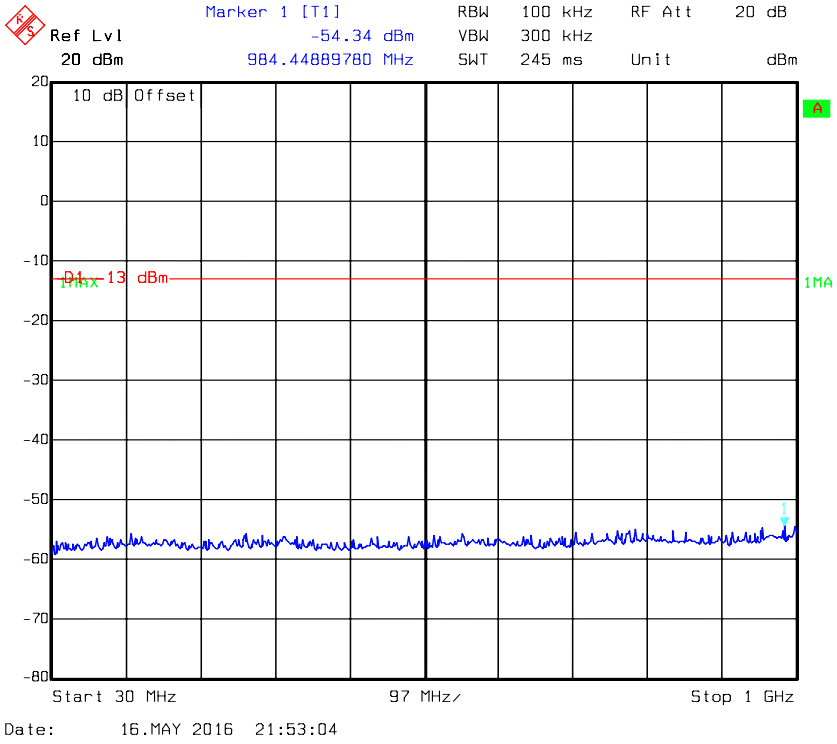

Marker 1 [T1]
Ref Lvl
20 dBm
-54.82 dBm
974.72945892 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 20 dB
Unit dBm
10 dB Offset
D1 -13 dBm
1MAX
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 16.MAY 2016 21:50:17

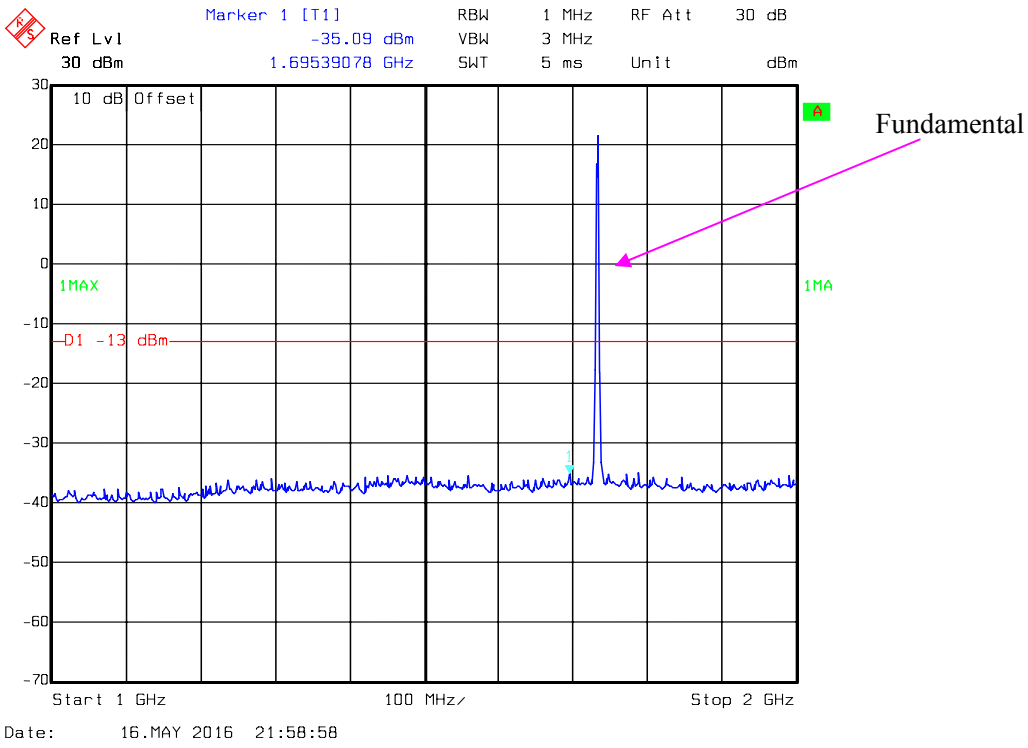

Marker 1 [T1]
Ref Lvl
30 dBm
-35.05 dBm
1.48096192 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -13 dBm
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 16.MAY 2016 21:32:41
Fundamental

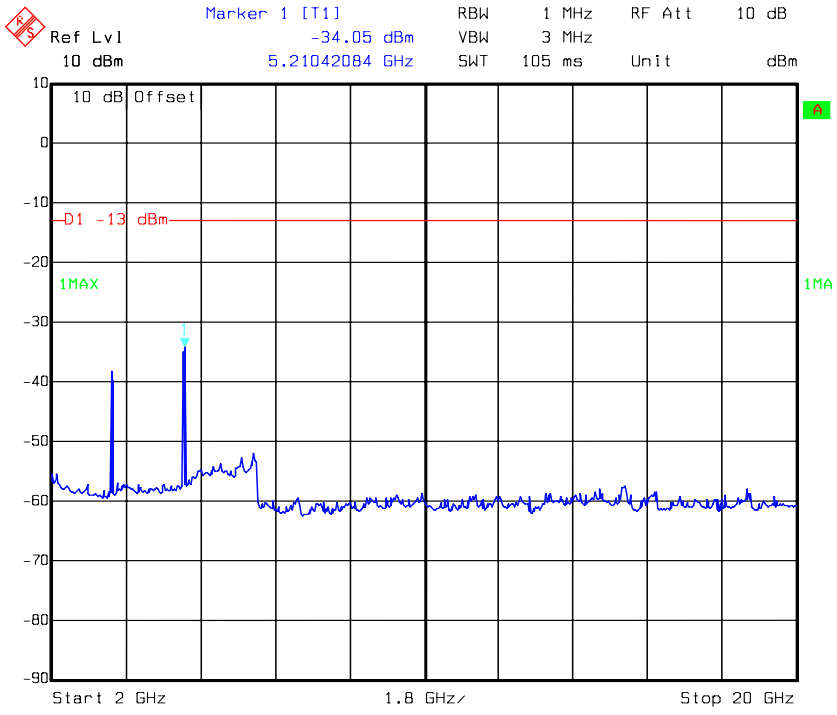

Marker 1 [T1]
Ref Lvl
10 dBm
-49.79 dBm
3.73146293 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 10 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -13 dBm
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 16.MAY 2016 21:39:02

LTE Band IV (Middle Channel)

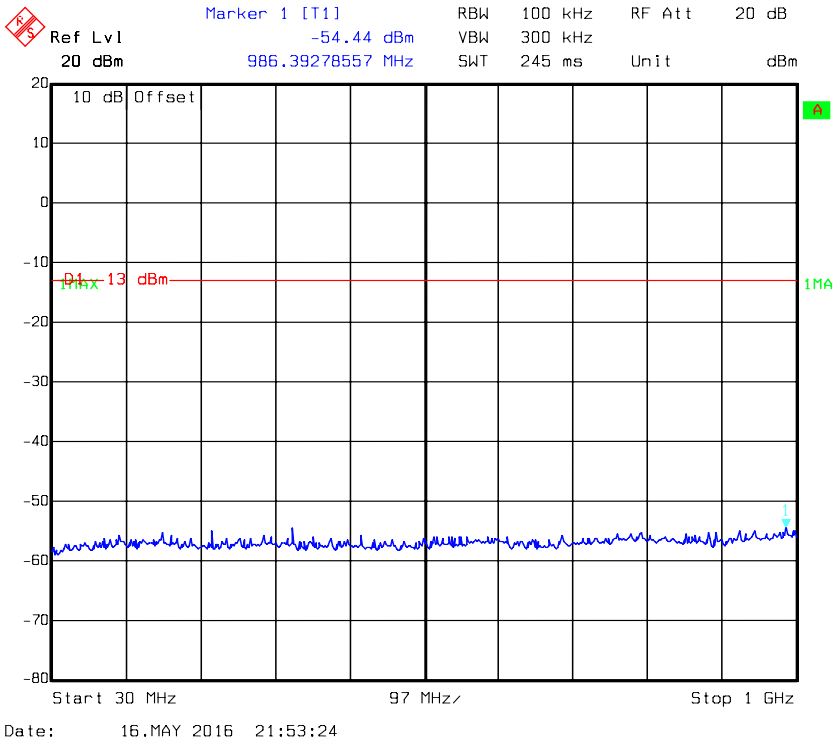
QPSK-1.4 MHz

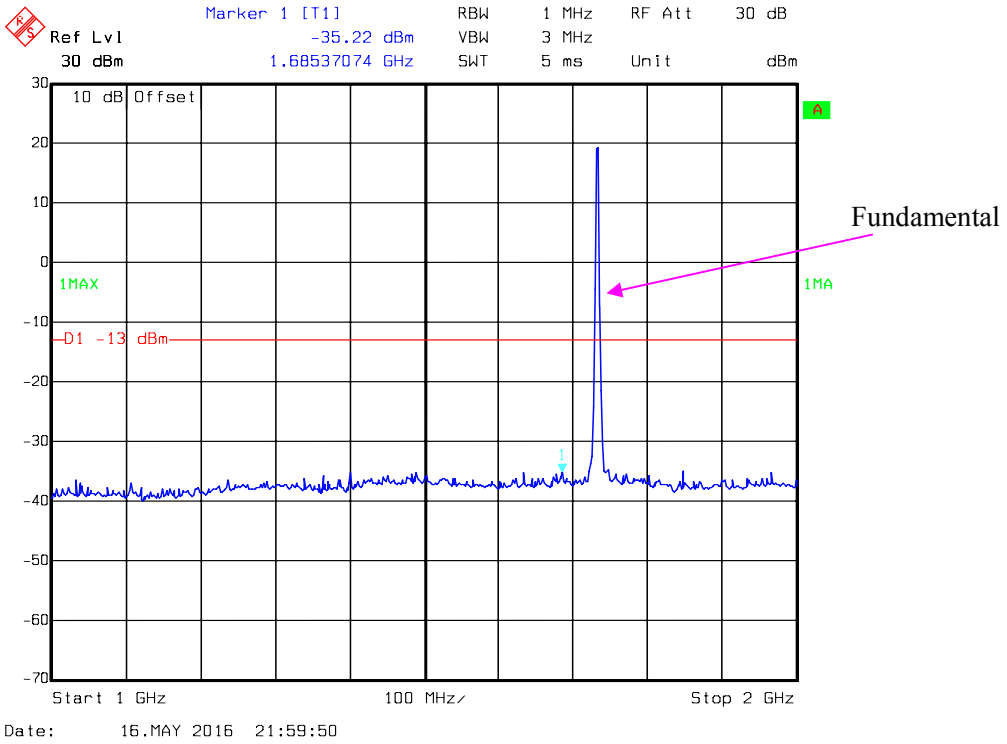


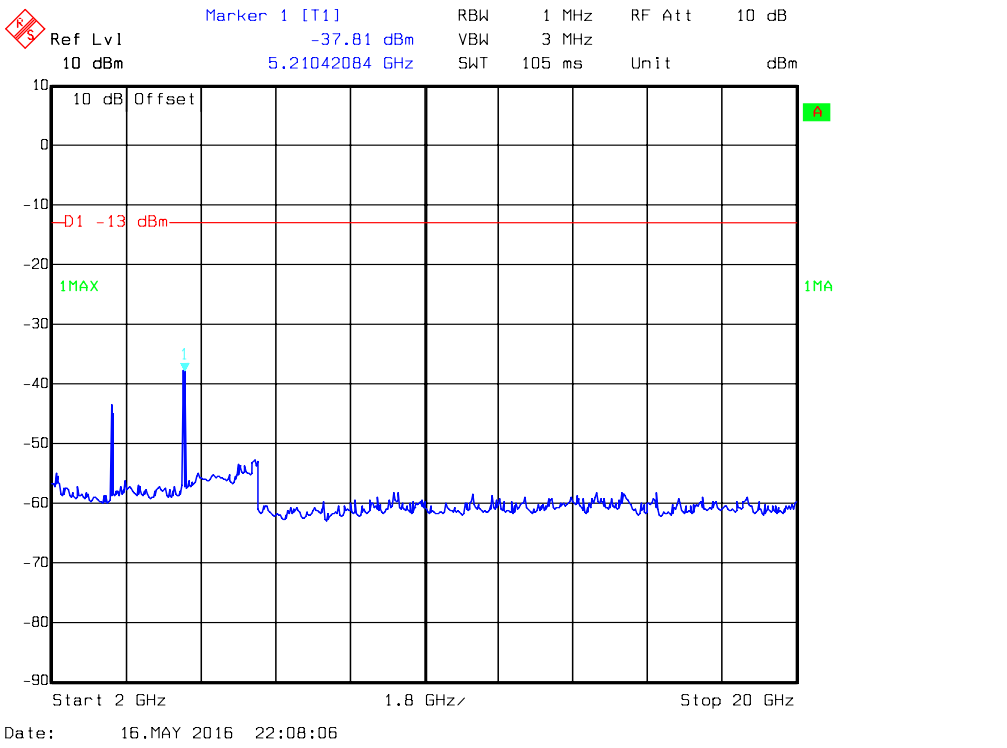



Marker 1 [T1]
Ref Lvl
10 dBm
-34.05 dBm
5.21042084 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 10 dB
Unit dBm
10 dB Offset
D1 -13 dBm
1MAX
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 16.MAY 2016 22:07:40

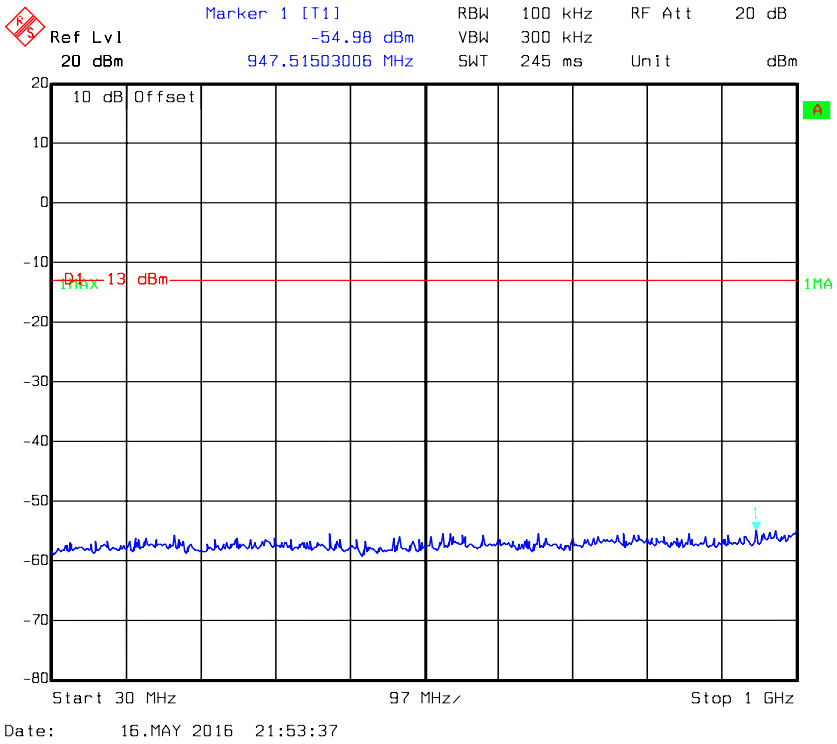
QPSK_3MHz

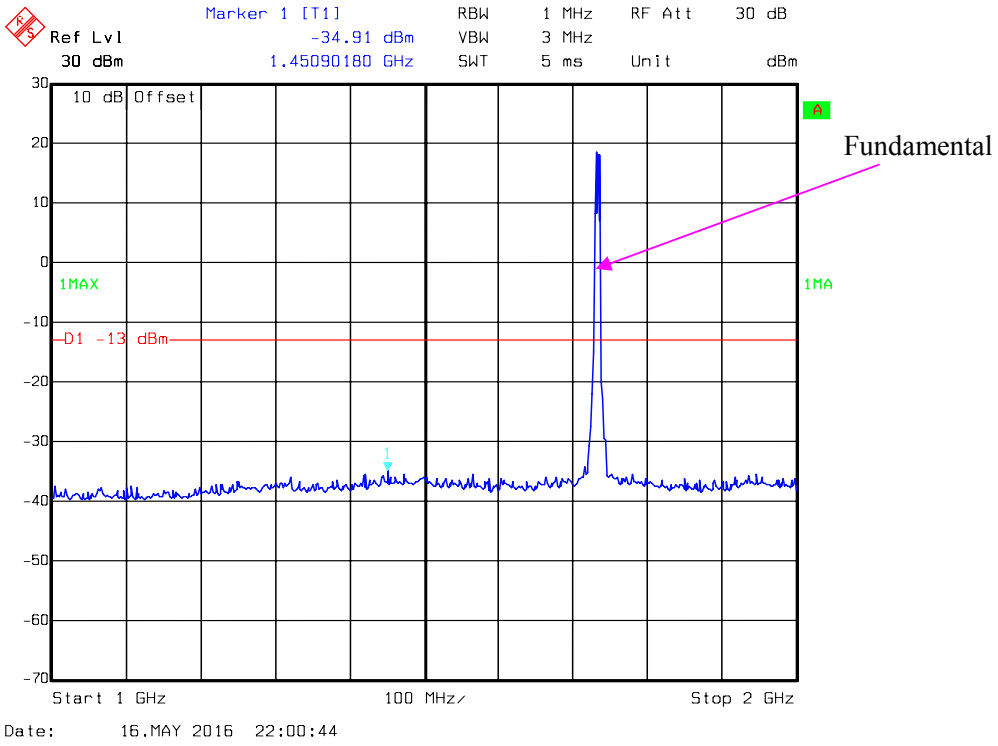

Marker 1 [T1]
Ref Lvl
20 dBm
-54.44 dBm
986.39278557 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 20 dB
Unit dBm
10 dB Offset
D1 -13 dBm
1MAX
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 16.MAY 2016 21:53:24

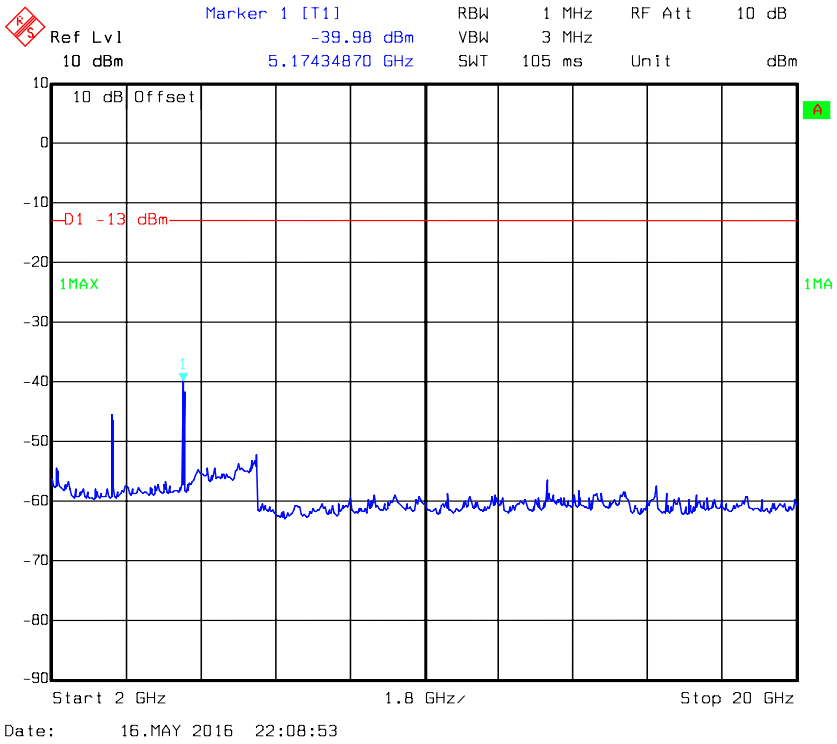

Marker 1 [T1]
Ref Lvl
30 dBm
-35.22 dBm
1.68537074 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -13 dBm
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 16.MAY 2016 21:59:50
Fundamental


Marker 1 [T1]
Ref Lvl
10 dBm
-37.81 dBm
5.21042084 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 10 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -13 dBm
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 16.MAY 2016 22:08:06

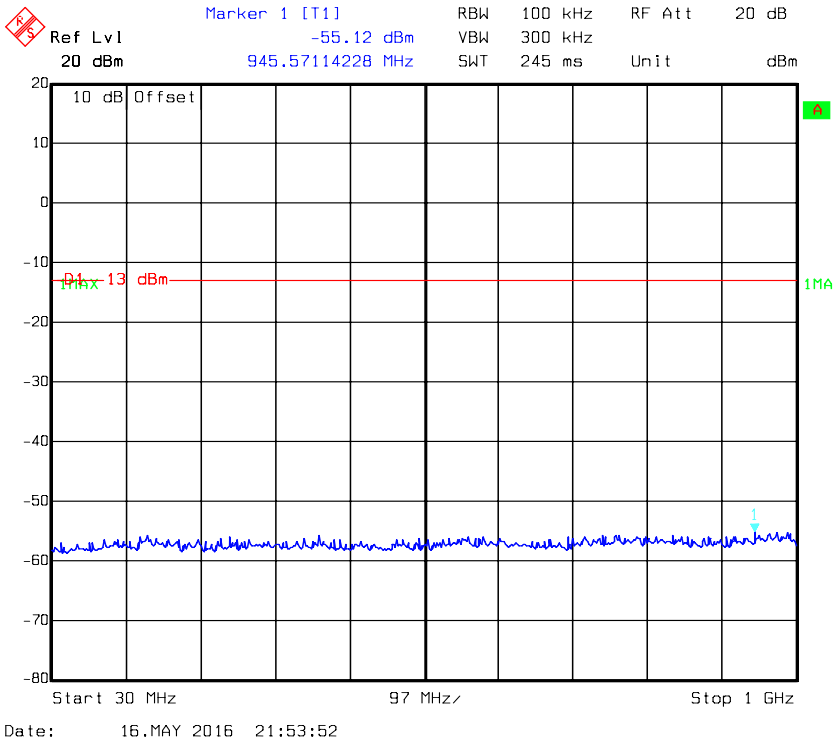
QPSK_5MHz

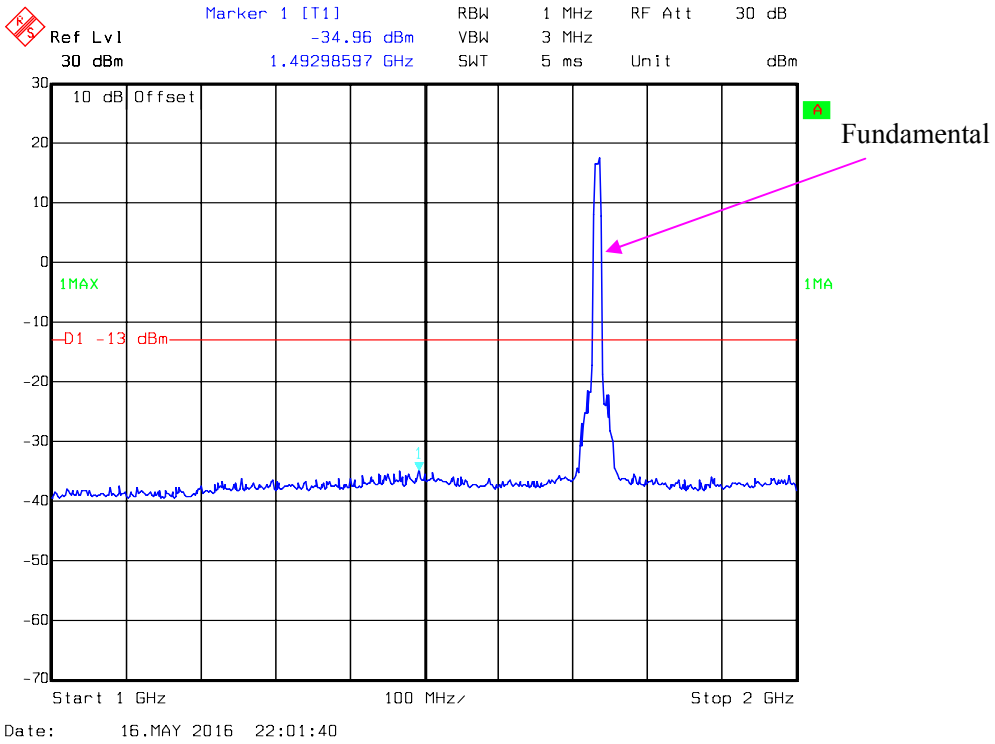

Marker 1 [T1]
Ref Lvl
20 dBm
-54.98 dBm
947.51503006 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 20 dB
Unit dBm
10 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 16.MAY 2016 21:53:37

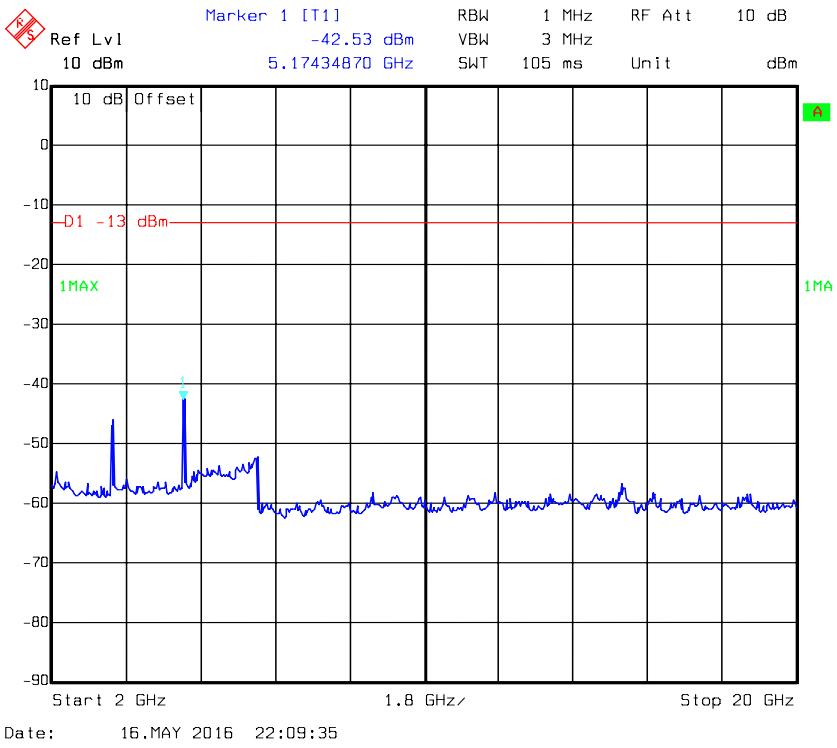

Marker 1 [T1]
Ref Lvl
30 dBm
-34.91 dBm
1.45090180 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
10 dB Offset
1MAX
D1 -13 dBm
1MA
Fundamental
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 16.MAY 2016 22:00:44


Marker 1 [T1]
Ref Lvl
10 dBm
-39.98 dBm
5.17434870 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 10 dB
Unit dBm
10 dB Offset
D1 -13 dBm
1MAX
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 16.MAY 2016 22:08:53

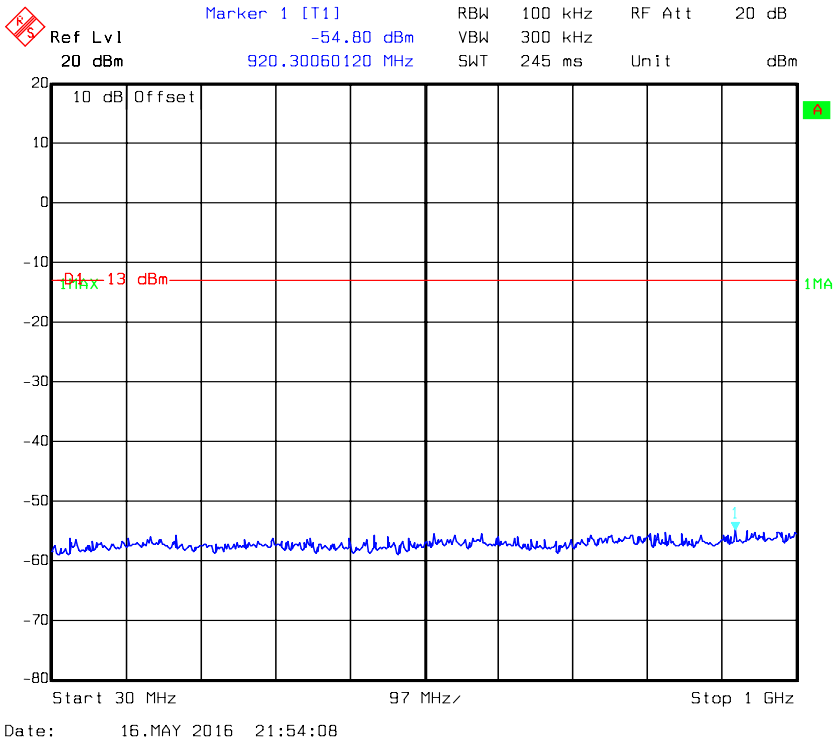
QPSK_10MHz

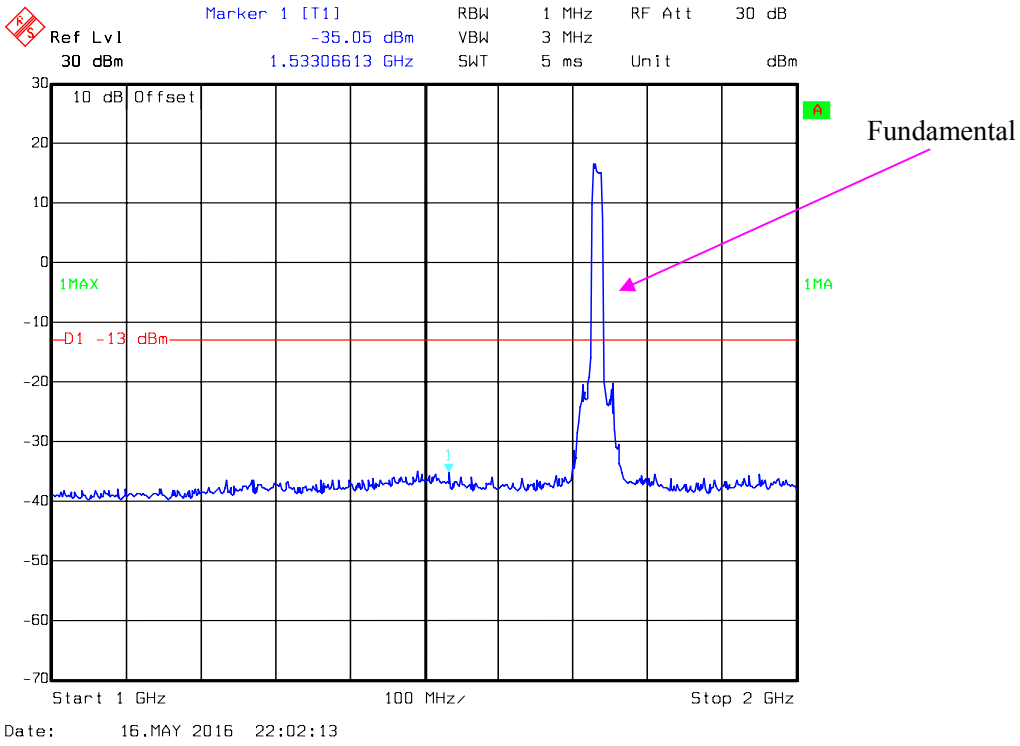

Marker 1 [T1]
Ref Lvl
20 dBm
-55.12 dBm
945.57114228 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 20 dB
Unit dBm
10 dB Offset
D1 -13 dBm
1MAX
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 16.MAY 2016 21:53:52

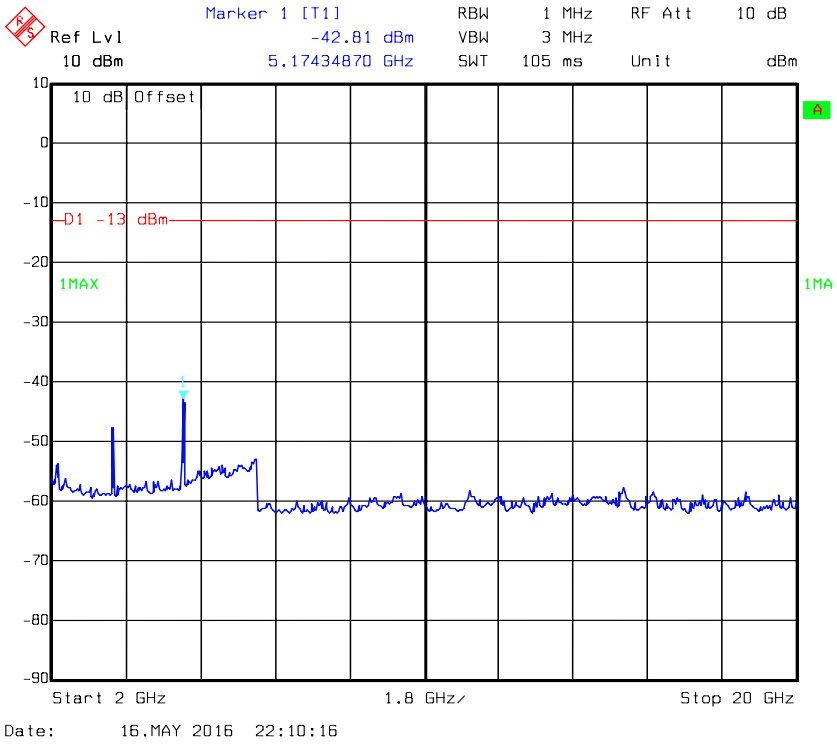

Marker 1 [T1]
Ref Lvl
30 dBm
-34.96 dBm
1.49298597 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -13 dBm
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 16.MAY 2016 22:01:40
Fundamental


Marker 1 [T1]
Ref Lvl
10 dBm
-42.53 dBm
5.17434870 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 10 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -13 dBm
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 16.MAY 2016 22:09:35

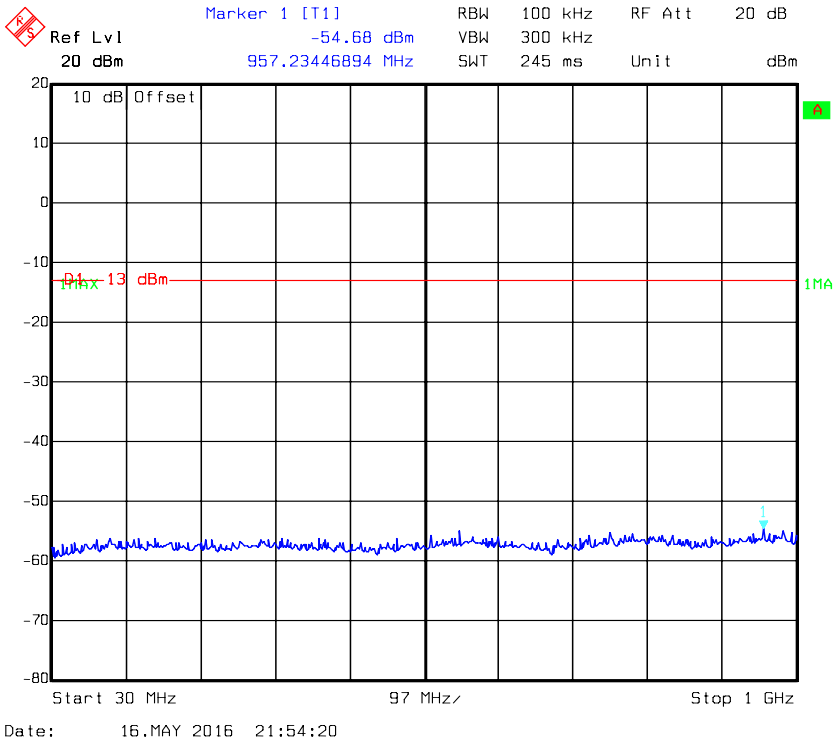
QPSK_15MHz

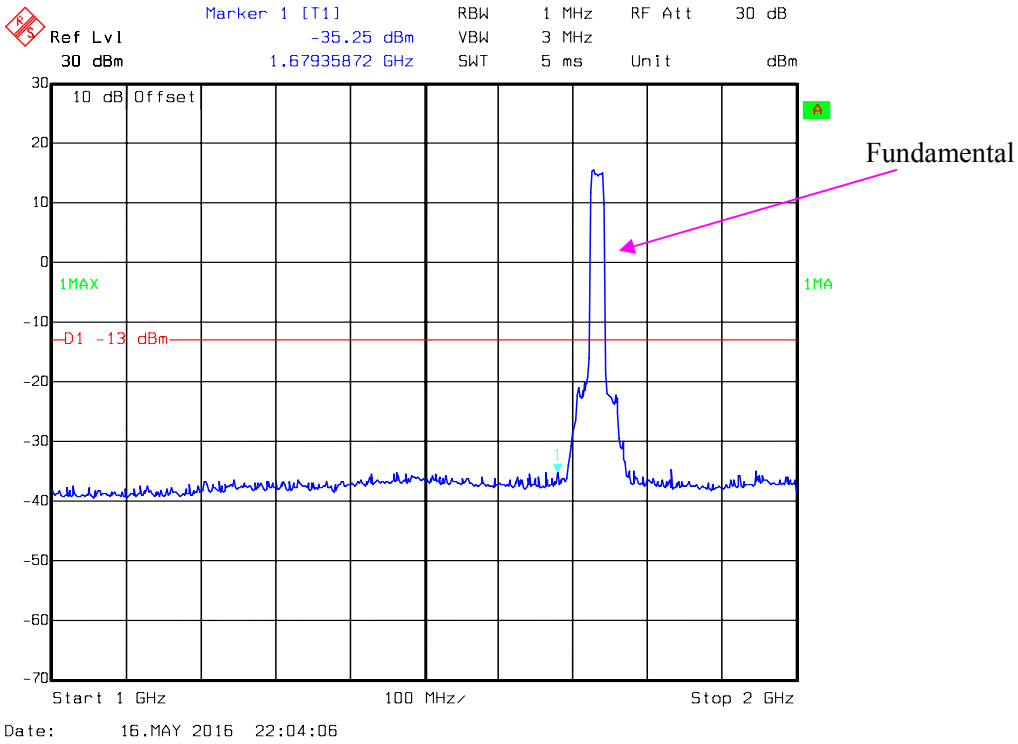

Marker 1 [T1]
Ref Lvl
20 dBm
-54.80 dBm
920.30060120 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 20 dB
Unit dBm
10 dB Offset
1MAX
D1 -13 dBm
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 16.MAY 2016 21:54:08

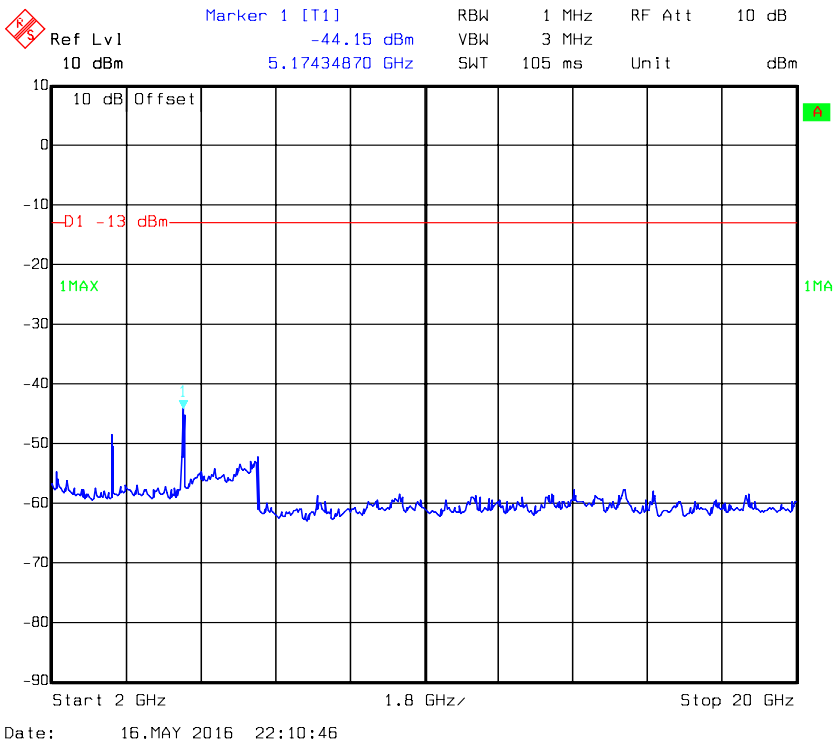

Marker 1 [T1]
Ref Lvl
30 dBm
-35.05 dBm
1.53306613 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
10 dB Offset
1MAX
D1 -13 dBm
1MA
Fundamental
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 16.MAY 2016 22:02:13


Marker 1 [T1]
Ref Lvl
10 dBm
-42.81 dBm
5.17434870 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 10 dB
Unit dBm
10 dB Offset
D1 -13 dBm
1MAX
1MA
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 16.MAY 2016 22:10:16

QPSK_20MHz

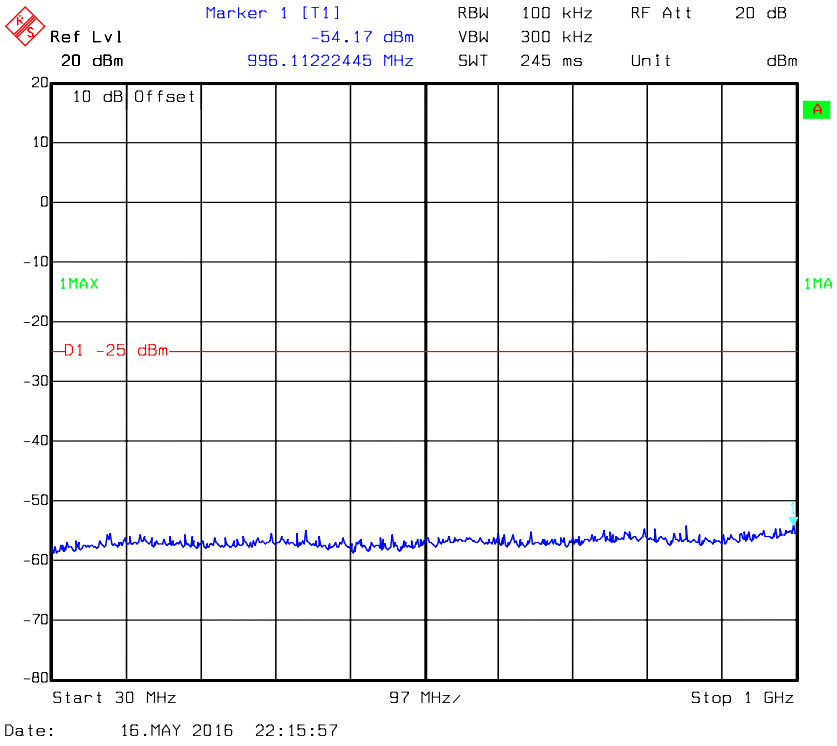

Marker 1 [T1]
Ref Lvl
20 dBm
-54.68 dBm
957.23446894 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 20 dB
Unit dBm
10 dB Offset
D1 -13 dBm
1MAX
1MA
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 16.MAY 2016 21:54:20

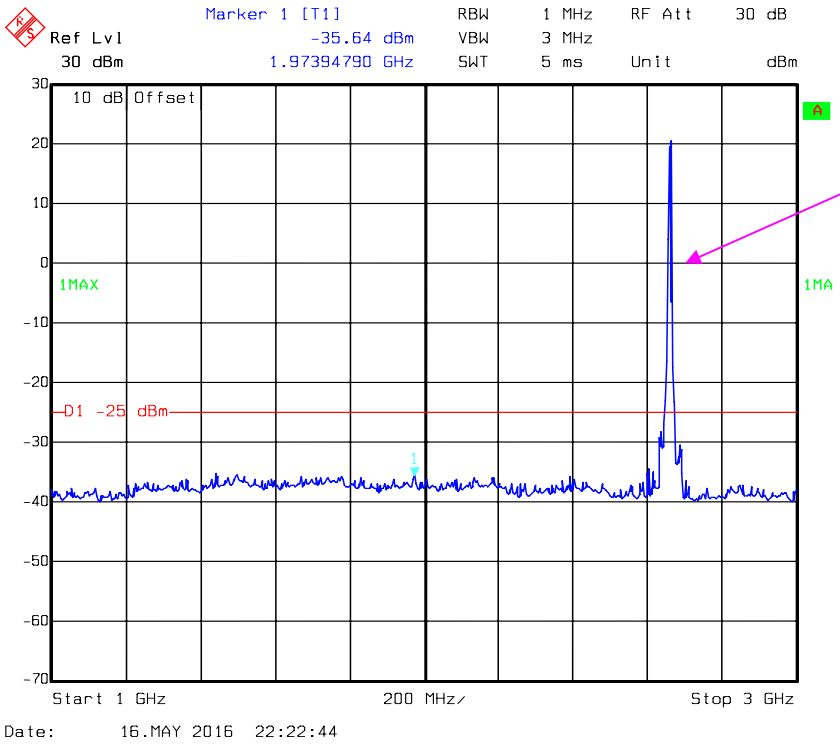

Marker 1 [T1]
Ref Lvl
30 dBm
-35.25 dBm
1.67935872 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -13 dBm
Start 1 GHz
100 MHz/
Stop 2 GHz
Date: 16.MAY 2016 22:04:06
Fundamental


Marker 1 [T1]
Ref Lvl
10 dBm
-44.15 dBm
5.17434870 GHz
RBW 1 MHz
VBW 3 MHz
SWT 105 ms
RF Att 10 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -13 dBm
Start 2 GHz
1.8 GHz/
Stop 20 GHz
Date: 16.MAY 2016 22:10:46

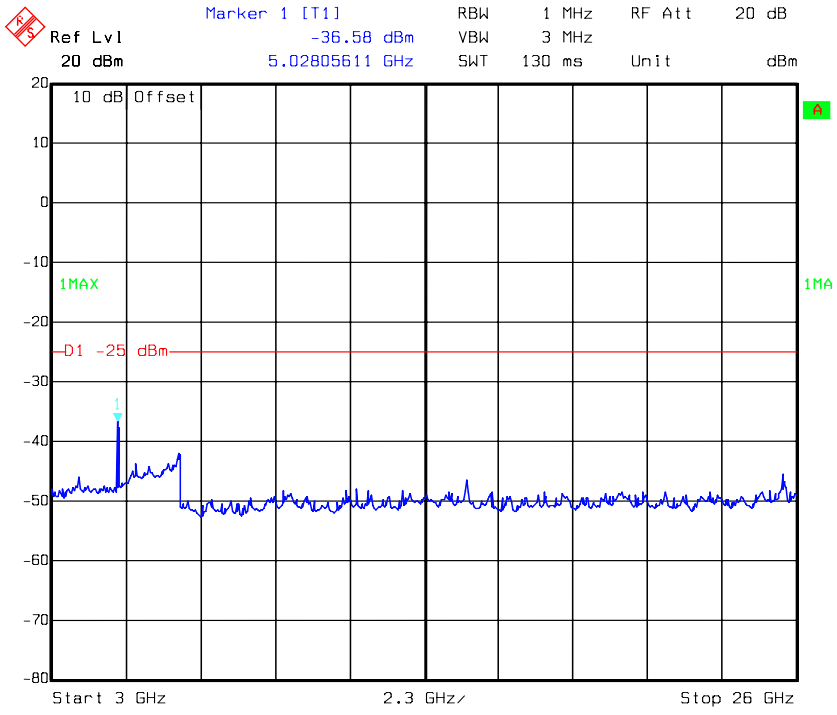
LTE Band VII (Middle Channel)

QPSK_5MHz

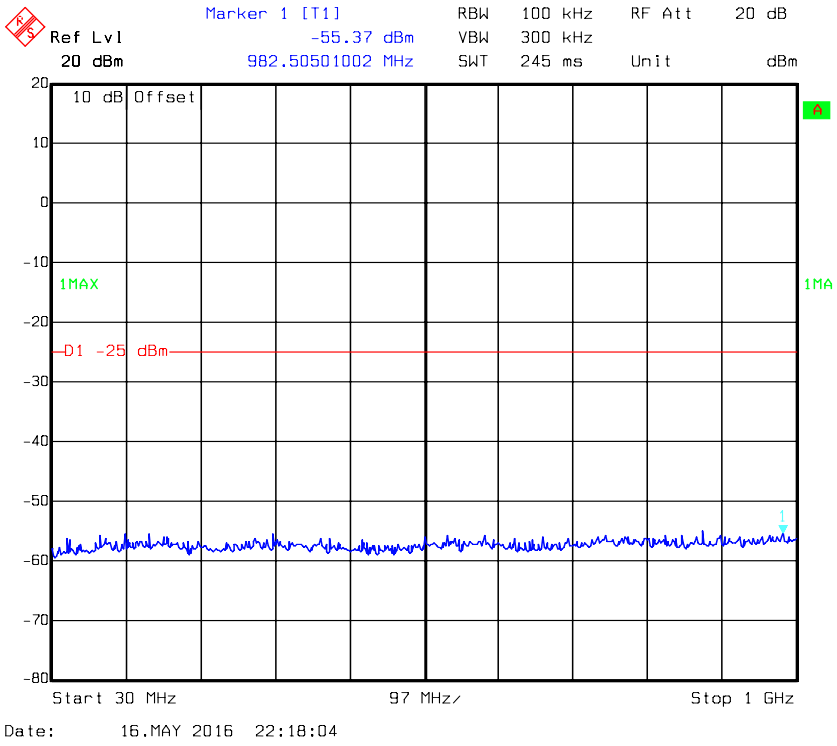


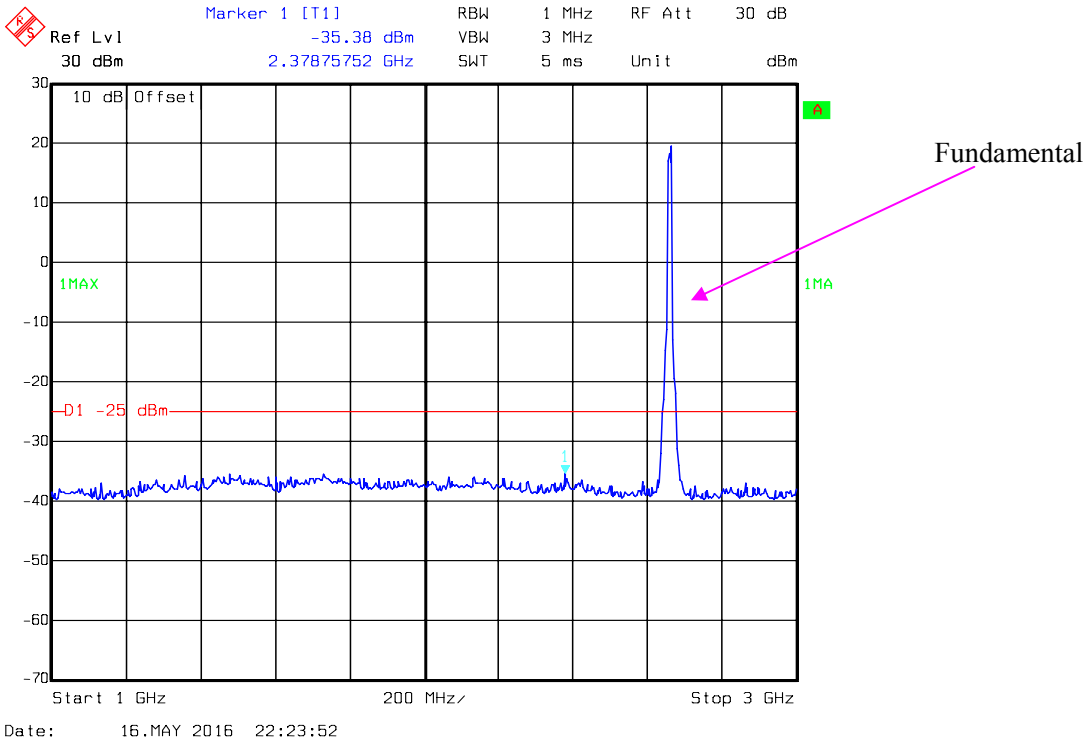


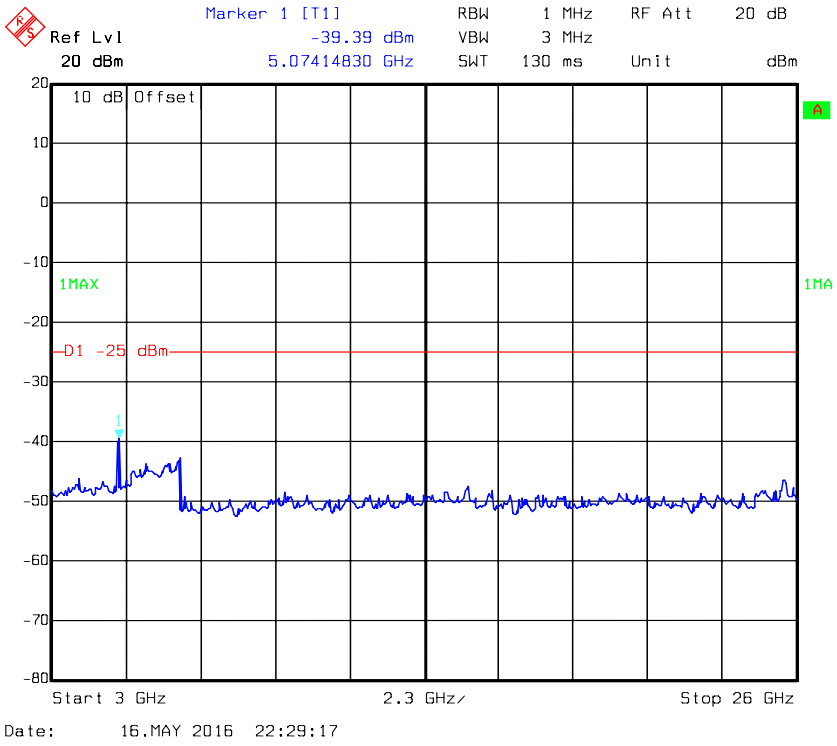
Fundamental


Marker 1 [T1]
Ref Lvl
20 dBm
-36.58 dBm
5.02805611 GHz
RBW 1 MHz
VBW 3 MHz
SWT 130 ms
RF Att 20 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -25 dBm
Start 3 GHz
2.3 GHz/
Stop 26 GHz
Date: 16.MAY 2016 22:28:39

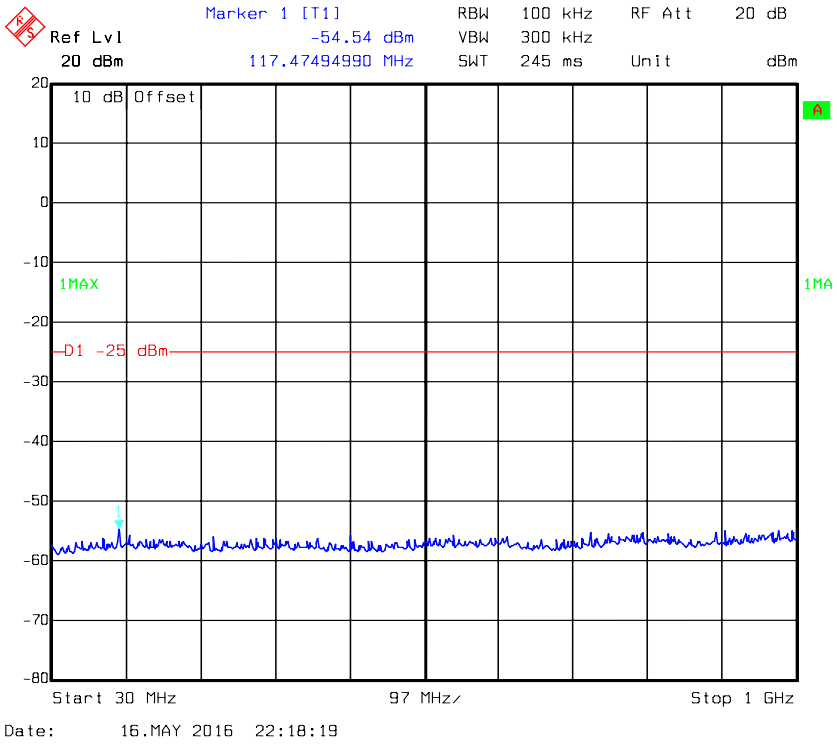
QPSK_10MHz

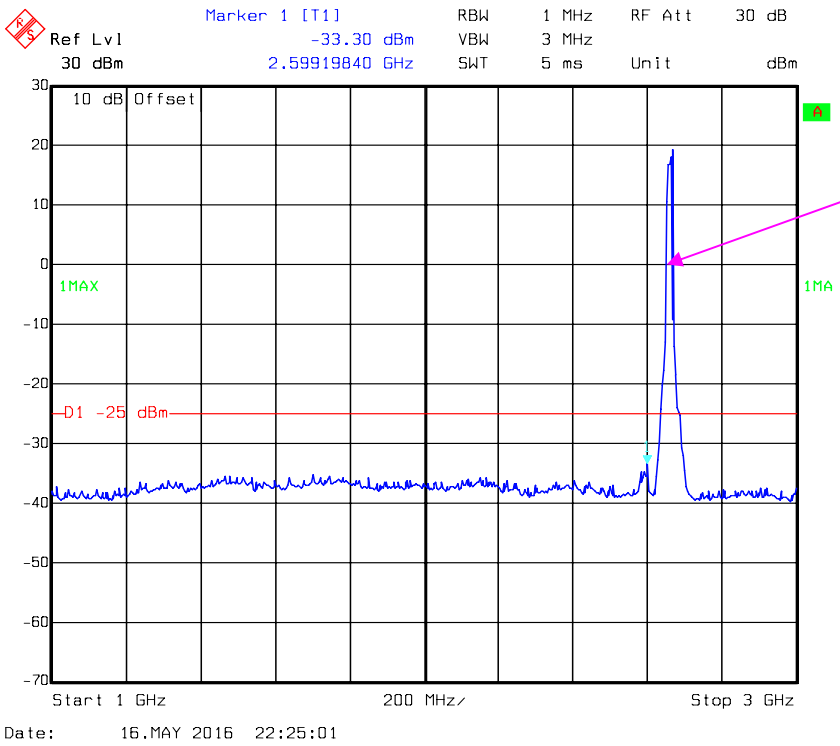

Marker 1 [T1]
Ref Lvl
20 dBm
-55.37 dBm
982.50501002 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 20 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -25 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 16.MAY 2016 22:18:04


Marker 1 [T1]
-35.38 dBm
2.37875752 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
30 dBm
10 dB Offset
1MAX
1MA
D1 -25 dBm
Start 1 GHz
200 MHz/
Stop 3 GHz
Date: 16.MAY 2016 22:23:52
Fundamental

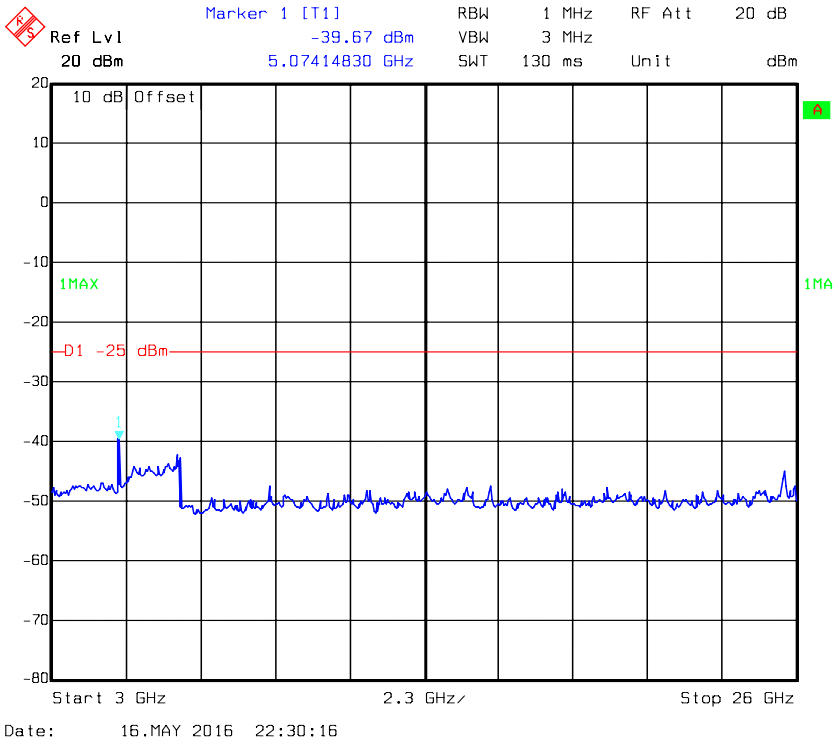

Marker 1 [T1]
-39.39 dBm
5.07414830 GHz
RBW 1 MHz
VBW 3 MHz
SWT 130 ms
RF Att 20 dB
Unit dBm
Ref Lvl
20 dBm
10 dB Offset
1MAX
1MA
D1 -25 dBm
Start 3 GHz
2.3 GHz/
Stop 26 GHz
Date: 16.MAY 2016 22:29:17

QPSK_15MHz

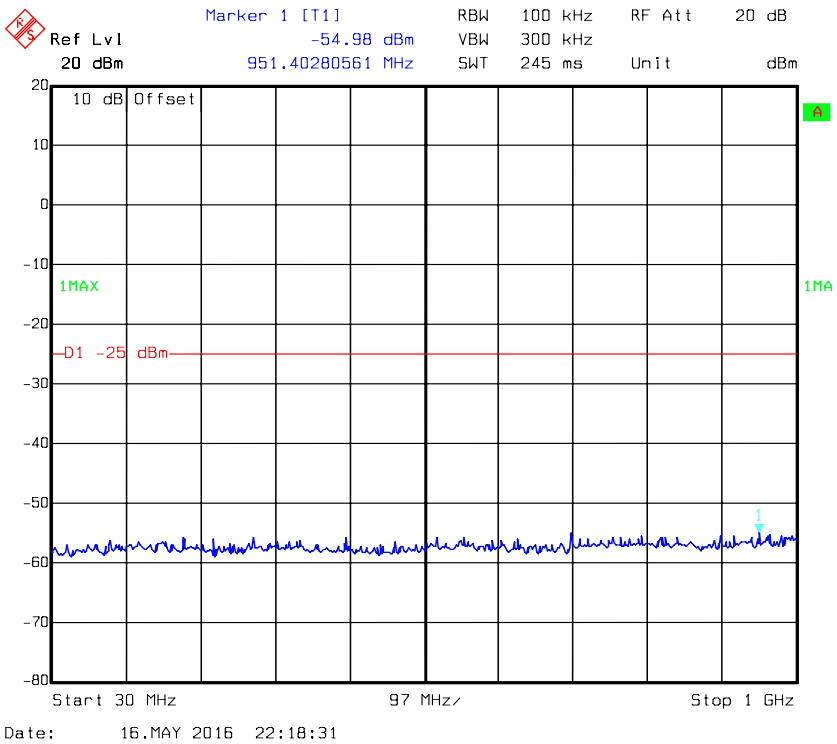


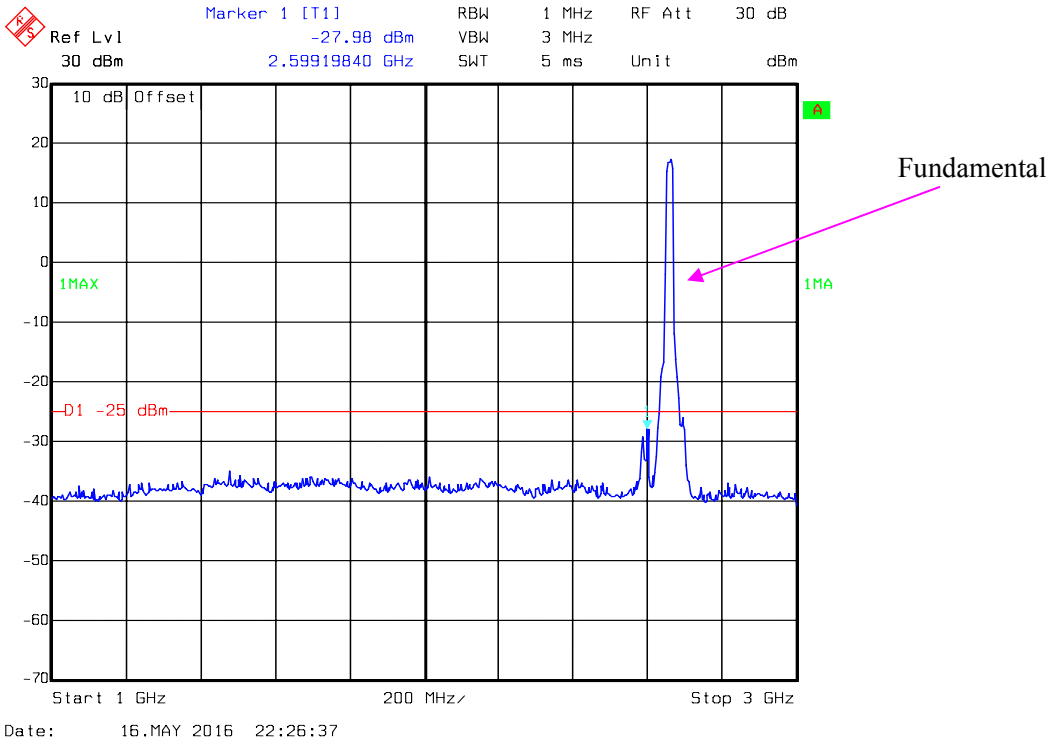


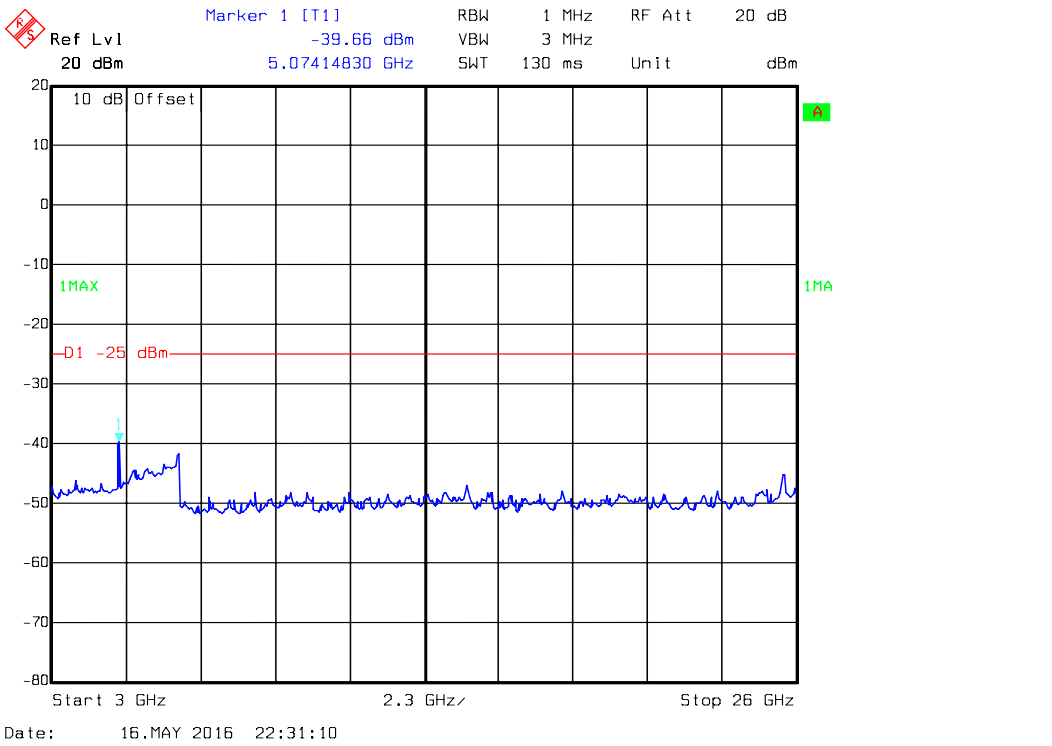
Fundamental


Marker 1 [T1]
Ref Lvl
20 dBm
-39.67 dBm
5.07414830 GHz
RBW 1 MHz
VBW 3 MHz
SWT 130 ms
RF Att 20 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -25 dBm
Start 3 GHz
2.3 GHz/
Stop 26 GHz
Date: 16.MAY 2016 22:30:16

QPSK_20MHz


Marker 1 [T1]
Ref Lvl
20 dBm
-54.98 dBm
951.40280561 MHz
RBW 100 kHz
VBW 300 kHz
SWT 245 ms
RF Att 20 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -25 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 16.MAY 2016 22:18:31


Marker 1 [T1]
Ref Lvl
30 dBm
-27.98 dBm
2.59919840 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -25 dBm
Start 1 GHz
200 MHz/
Stop 3 GHz
Date: 16.MAY 2016 22:26:37
Fundamental


Marker 1 [T1]
Ref Lvl
20 dBm
-39.66 dBm
5.07414830 GHz
RBW 1 MHz
VBW 3 MHz
SWT 130 ms
RF Att 20 dB
Unit dBm
10 dB Offset
1MAX
1MA
D1 -25 dBm
Start 3 GHz
2.3 GHz/
Stop 26 GHz
Date: 16.MAY 2016 22:31:10

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 (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	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	831259/019	2015-07-28	2016-07-27
ETS-Lindgren	Horn Antenna	3115	9808-5557	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:	26 °C
Relative Humidity:	73 %
ATM Pressure:	100.8 kPa

The testing was performed by Robin Zheng on 2016-05-20.

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	42.16	-58.9	10.6	1.5	-49.8	-13.0	36.8
1673.200	V	39.28	-62.1	10.6	1.5	-53.0	-13.0	40.0
2509.800	H	45.75	-52.3	13.1	2.8	-42.0	-13.0	29.0
2509.800	V	43.81	-53.3	13.1	2.8	-43.0	-13.0	30.0
384.100	H	32.24	-65.1	0.0	0.6	-65.7	-13.0	52.7
289.900	V	31.73	-73.4	0.0	0.5	-73.9	-13.0	60.9
WCDMA Band V R99,Frequency:836.600 MHz								
1673.200	H	43.05	-58	10.6	1.5	-48.9	-13.0	35.9
1673.200	V	41.10	-60.3	10.6	1.5	-51.2	-13.0	38.2
2509.800	H	35.18	-62.8	13.1	2.8	-52.5	-13.0	39.5
2509.800	V	35.82	-61.3	13.1	2.8	-51.0	-13.0	38.0
384.100	H	32.91	-64.4	0.0	0.6	-65.0	-13.0	52.0
289.900	V	31.67	-73.5	0.0	0.5	-74.0	-13.0	61.0

PCS Band

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	35.64	-58.7	13.8	2.9	-47.8	-13.0	34.8
3760.000	V	34.66	-58.4	13.8	2.9	-47.5	-13.0	34.5
384.100	H	33.51	-63.8	0.0	0.6	-64.4	-13.0	51.4
289.900	V	31.94	-73.2	0.0	0.5	-73.7	-13.0	60.7
WCDMA Band II, R99, Frequency:1880.000 MHz								
3760.000	H	35.61	-58.7	13.8	2.9	-47.8	-13.0	34.8
3760.000	V	33.83	-59.2	13.8	2.9	-48.3	-13.0	35.3
5640.000	H	45.81	-45.9	14.0	2.1	-34.0	-13.0	21.0
5640.000	V	46.10	-45.6	14.0	2.1	-33.7	-13.0	20.7
384.100	H	32.86	-64.4	0.0	0.6	-65.0	-13.0	52.0
289.900	V	31.28	-73.8	0.0	0.5	-74.3	-13.0	61.3

LTE Bands(Worst case as below):

LTE band II(30MHz-20GMHz):

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:1880.00 MHz								
3760.000	H	33.68	-60.6	13.8	2.9	-49.7	-13.0	36.7
3760.000	V	33.99	-59.1	13.8	2.9	-48.2	-13.0	35.2
5640.000	H	49.82	-41.9	14.0	2.1	-30.0	-13.0	17.0
5640.000	V	46.82	-44.8	14.0	2.1	-32.9	-13.0	19.9
384.100	H	34.29	-63	0.0	0.6	-63.6	-13.0	50.6
289.900	V	35.47	-69.7	0.0	0.5	-70.2	-13.0	57.2

LTE Band IV(30MHz-20GMHz):

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:1732.50 MHz								
3465.000	H	34.96	-62	13.9	1.9	-50.0	-13.0	37.0
3465.000	V	33.85	-62.3	13.9	1.9	-50.3	-13.0	37.3
5197.500	H	52.88	-38.1	14.0	2.3	-26.4	-13.0	13.4
5197.500	V	58.63	-33.9	14.0	2.3	-22.2	-13.0	9.2
384.100	H	34.61	-62.7	0.0	0.6	-63.3	-13.0	50.3
289.900	V	35.83	-69.3	0.0	0.5	-69.8	-13.0	56.8

LTE Band VII(30MHz-26GHz):

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	43.25	-48.1	13.9	2.4	-36.6	-25.0	11.6
5070.000	V	50.36	-41.8	13.9	2.4	-30.3	-25.0	5.3
7605.000	H	33.87	-53.6	13.2	3.1	-43.5	-25.0	18.5
7605.000	V	33.83	-53.7	13.2	3.1	-43.6	-25.0	18.6
384.100	H	34.57	-62.7	0.0	0.6	-63.3	-25.0	38.3
289.900	V	35.86	-69.3	0.0	0.5	-69.8	-25.0	44.8

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.

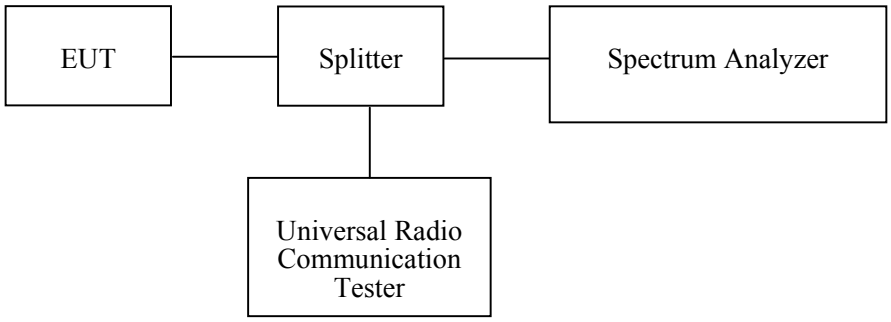
According to §27.53 (h), AWS emission limits—(1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (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 that 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	1201.002K50-146520-wh	2015-12-19	2016-12-19
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	OE01203239	2016-05-06	2017-05-06
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 Spliter	ODP-1-6-2S	OE0120142	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

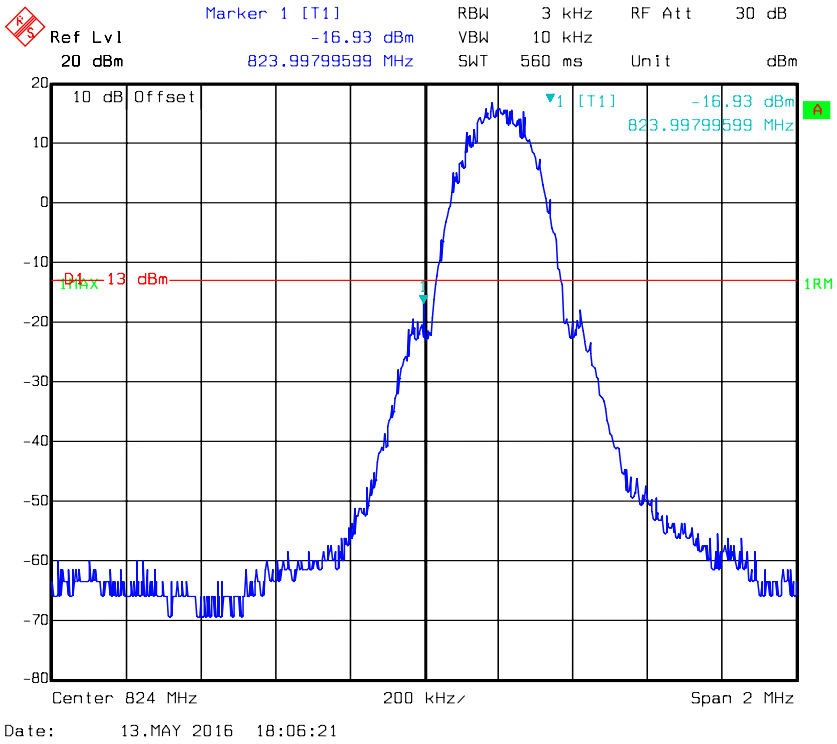
Temperature:	27.6~28.7°C
Relative Humidity:	45~52 %
ATM Pressure:	100.3~100.6 kPa

The testing was performed by Robin Zheng from 2016-05-13 to 2016-05-24.

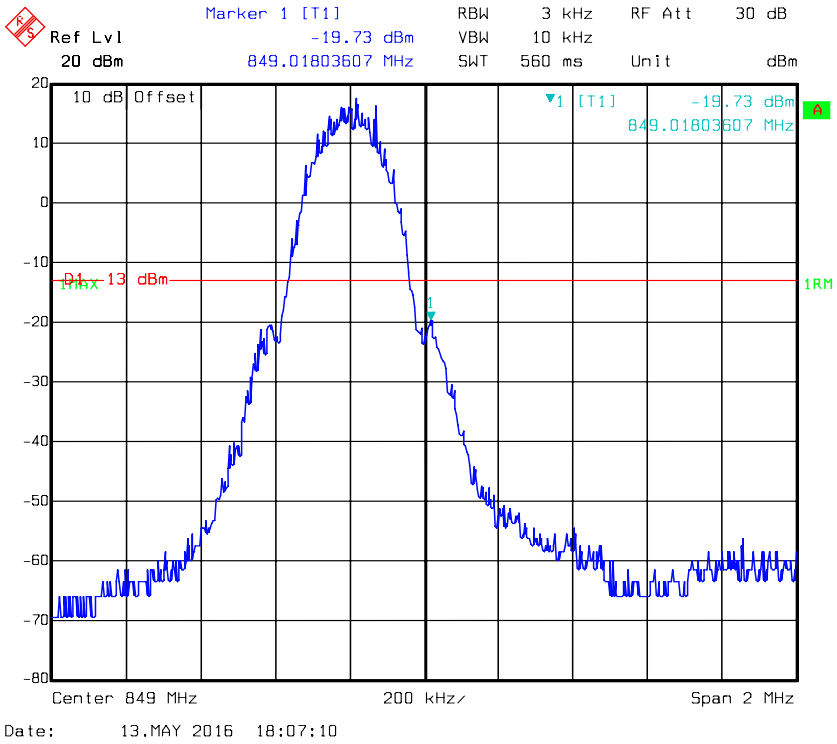
Test Mode: Transmitting

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

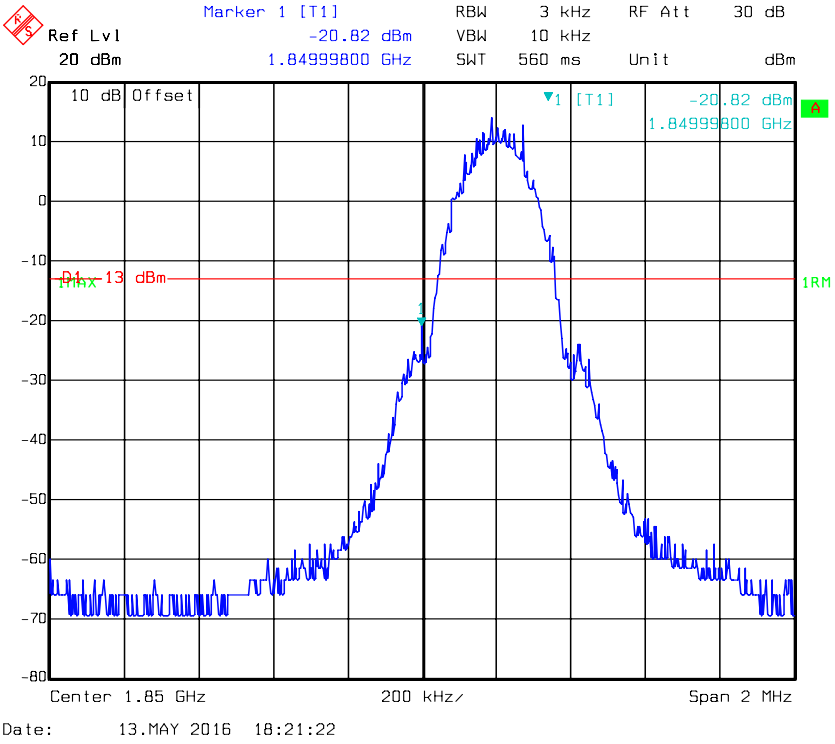
GSM 850, Left Band Edge



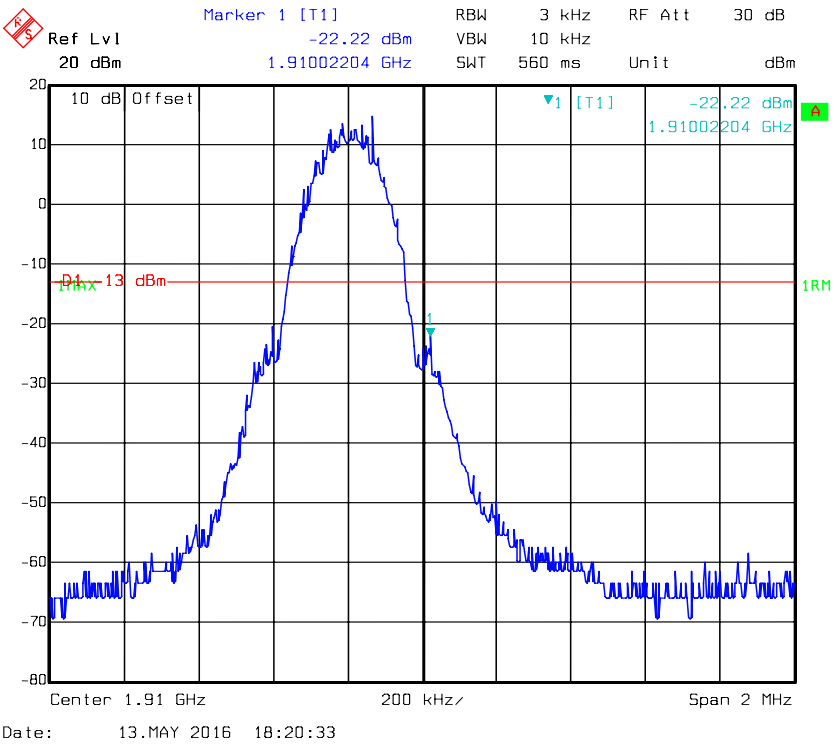
GSM 850, Right Band Edge



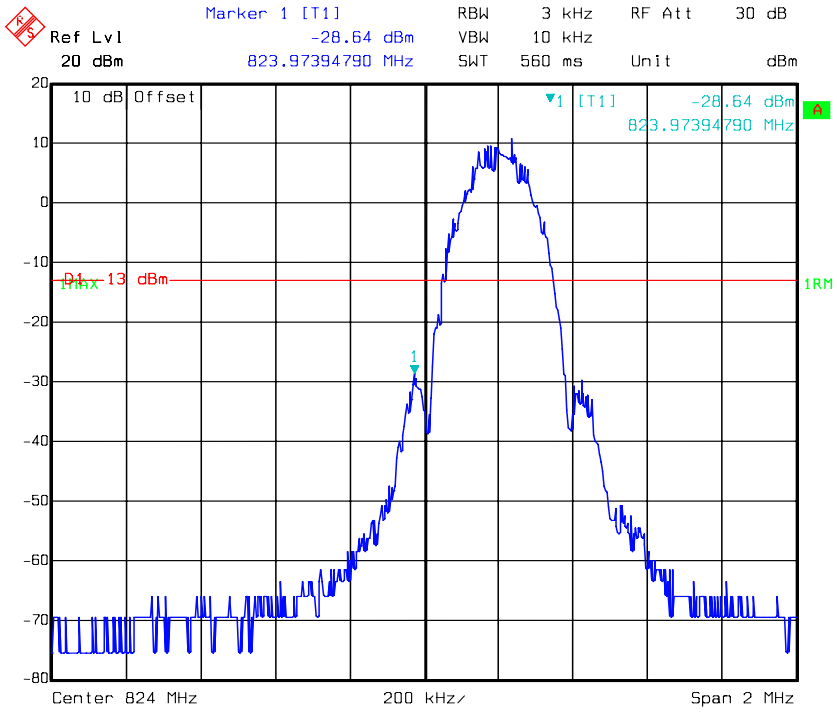
GSM 1900, Left Band Edge



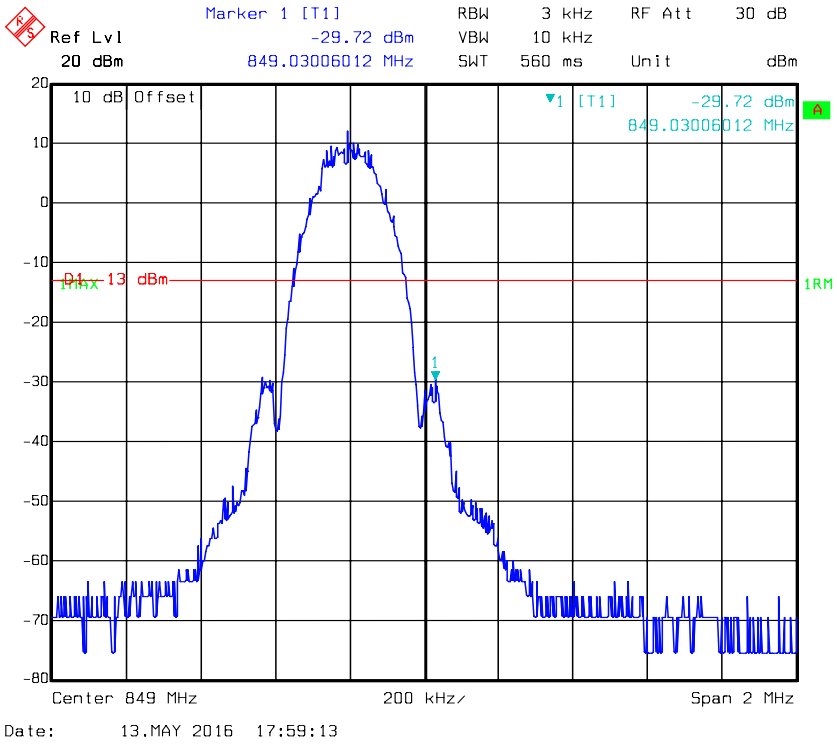
GSM 1900, Right Band Edge



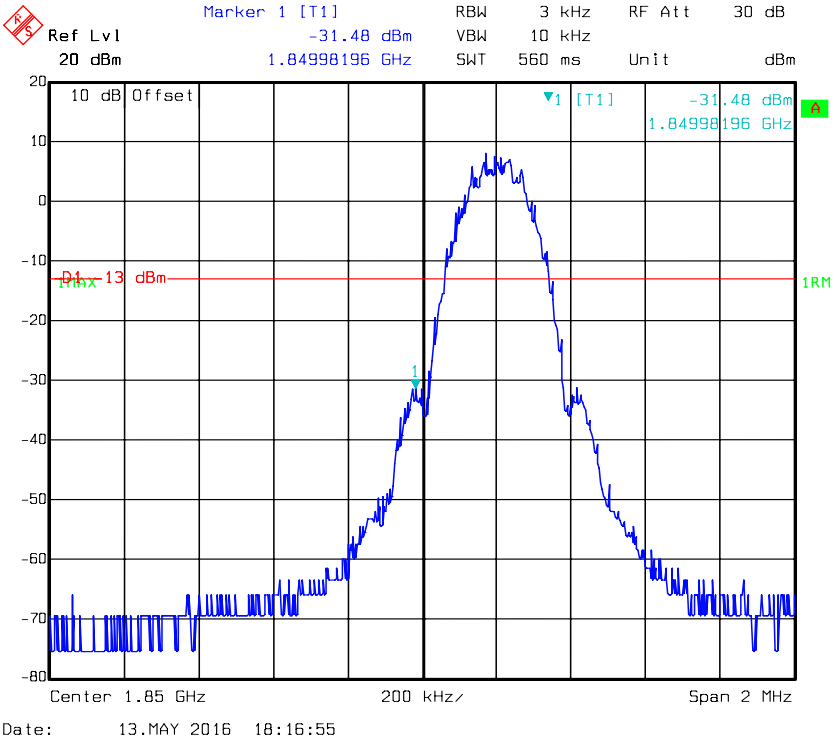
EDGE 850, Left Band Edge



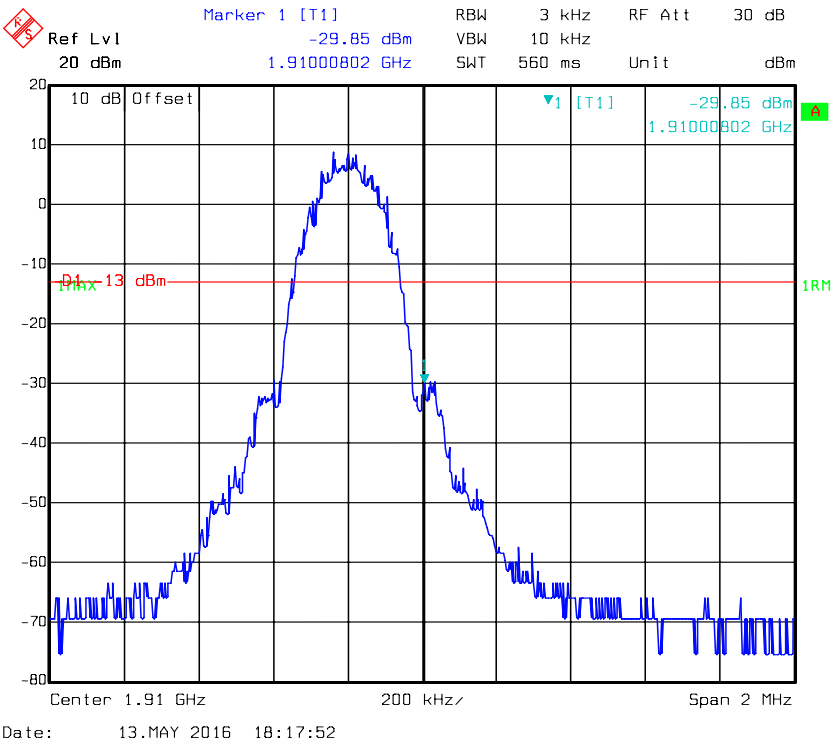
EDGE 850, Right Band Edge



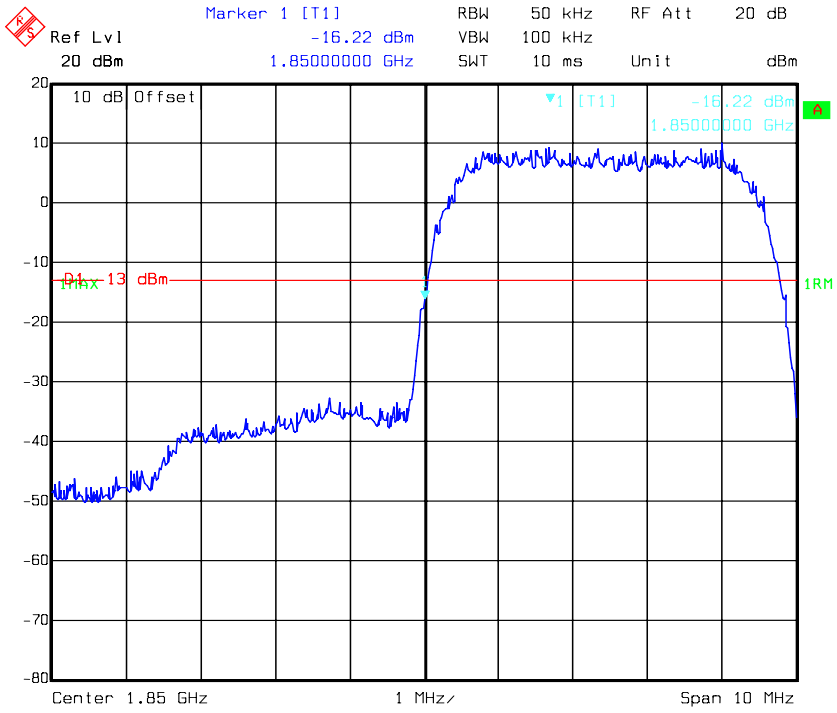
EDGE 1900, Left Band Edge



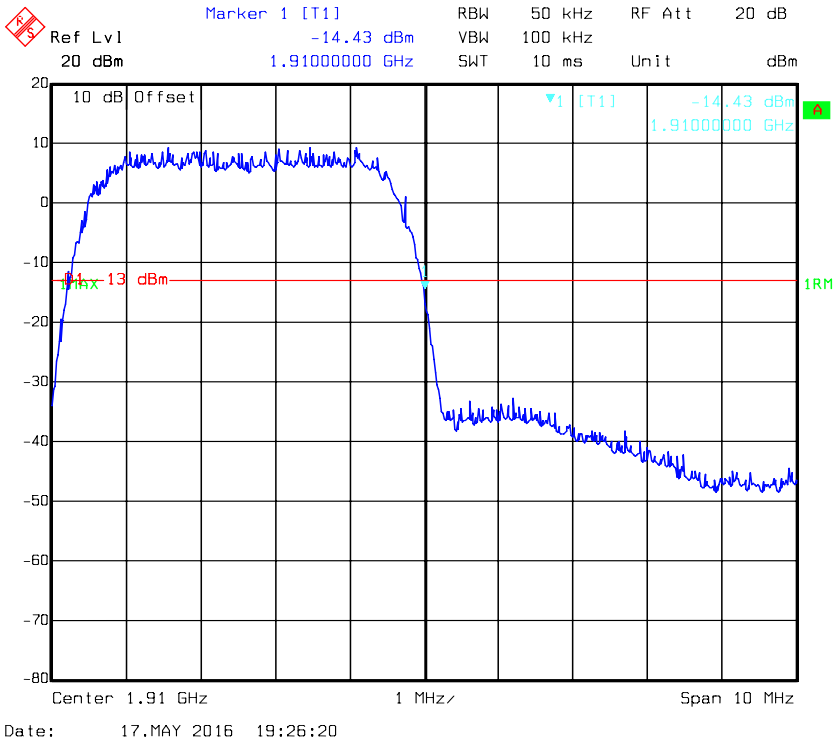
EDGE 1900, Right Band Edge



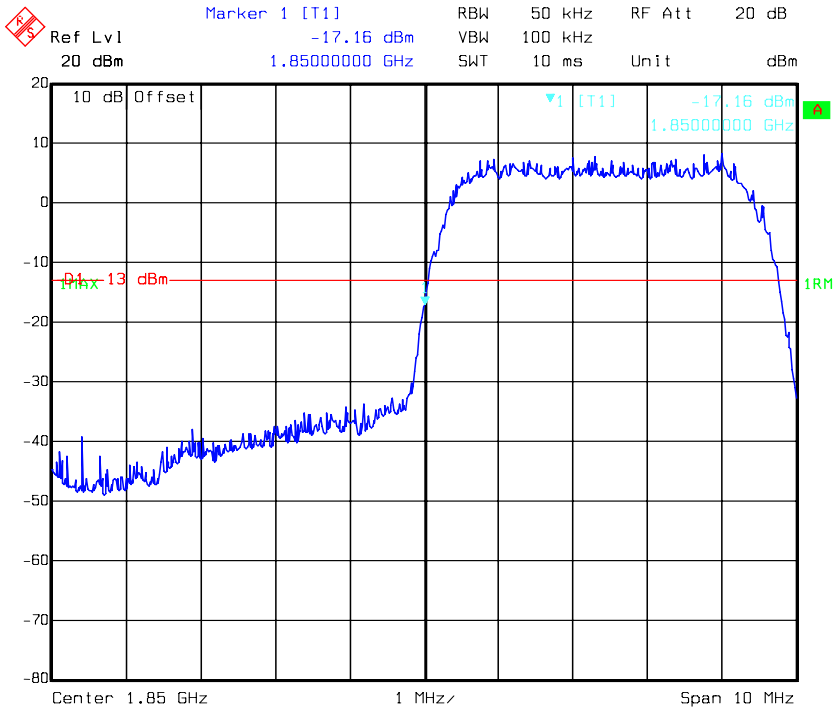
REL99 Band II, Left Band Edge



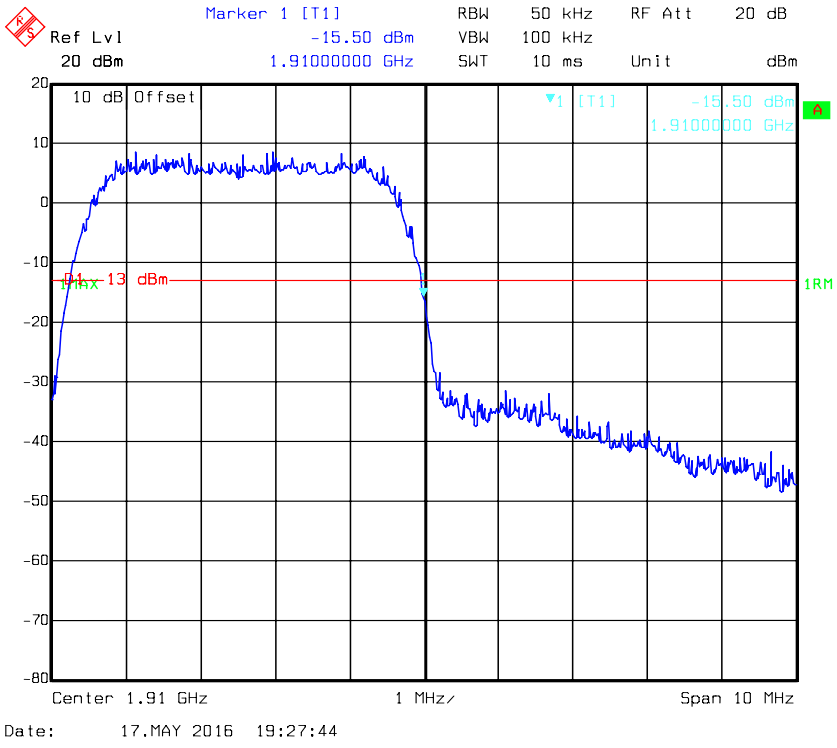
REL99 Band II, Right Band Edge



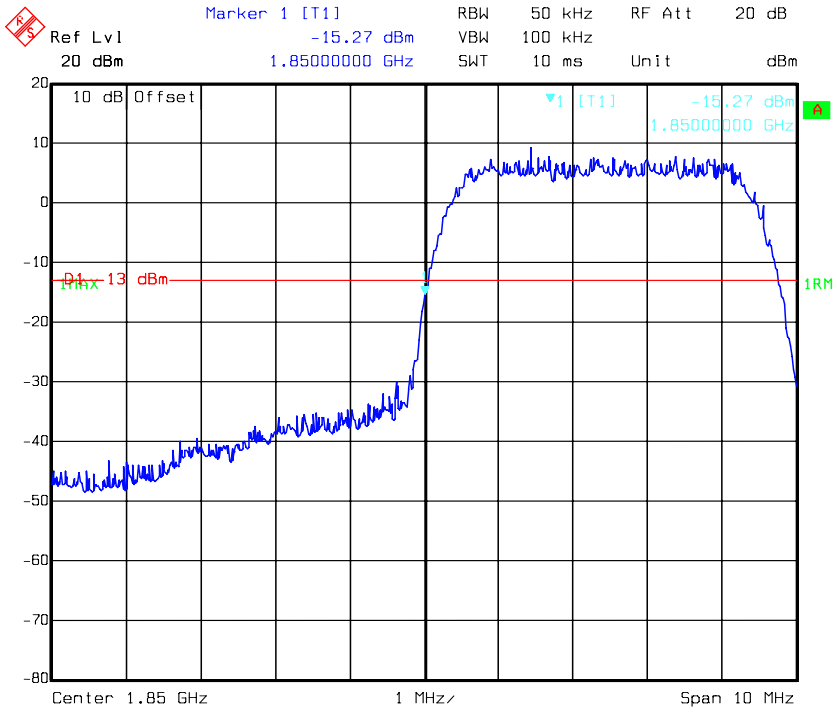
HSDPA Band II, Left Band Edge



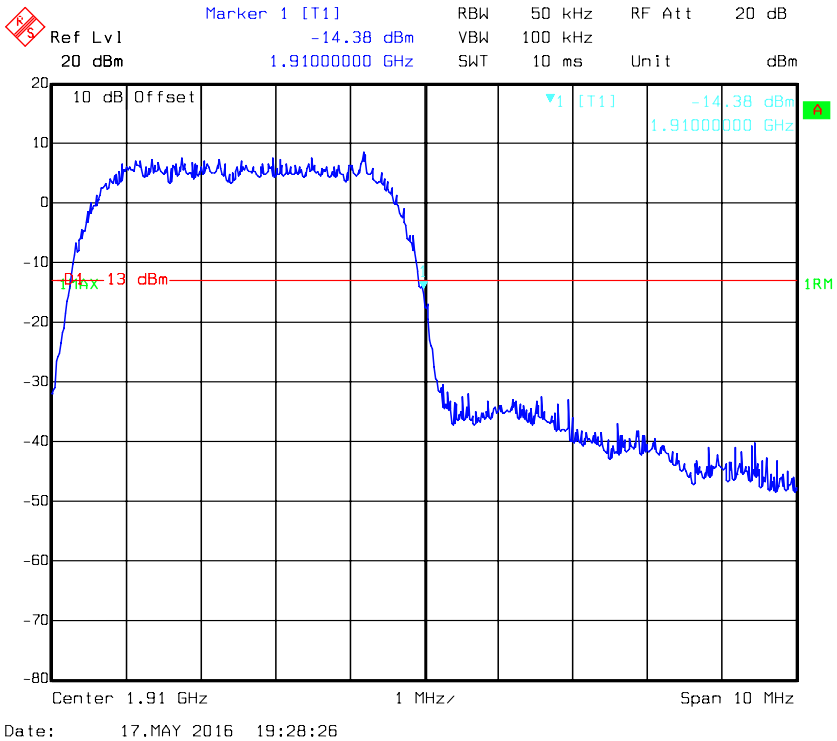
HSDPA Band II, Right Band Edge



HSUPA Band II, Left Band Edge

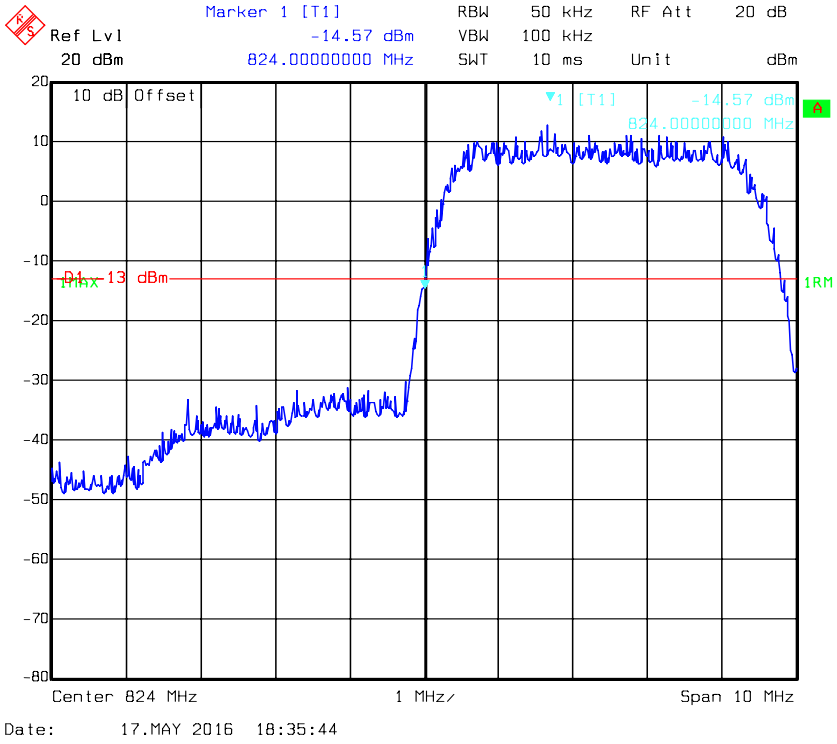


HSUPA Band II, Right Band Edge

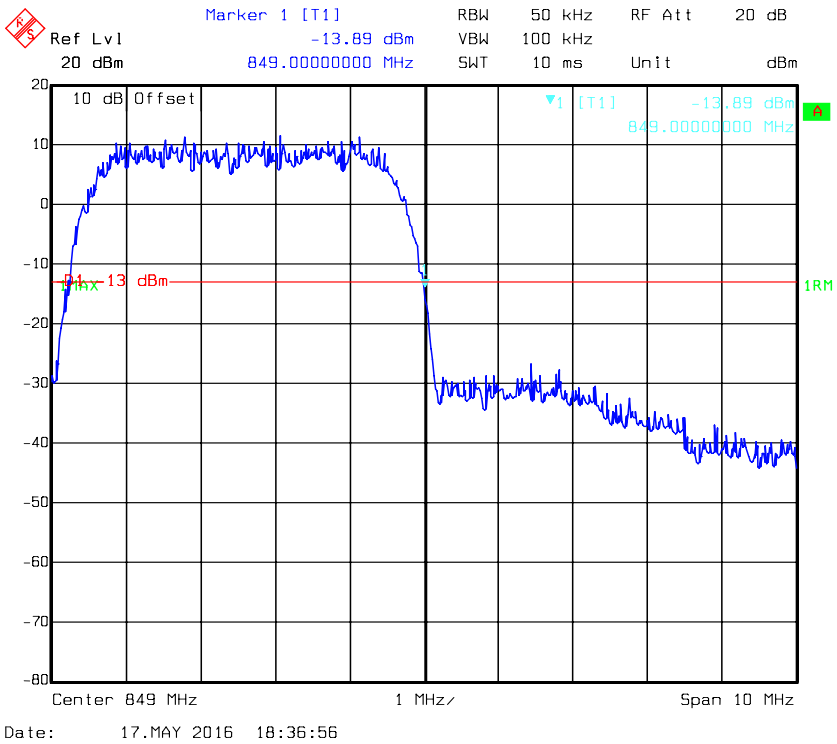


WCDMA Band V

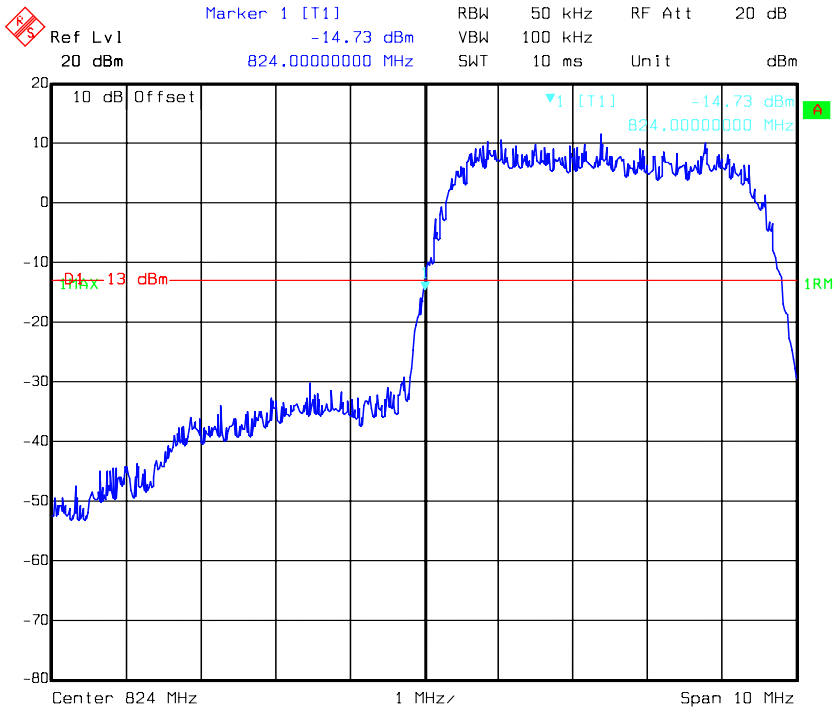
REL99 Band V, Left Band Edge



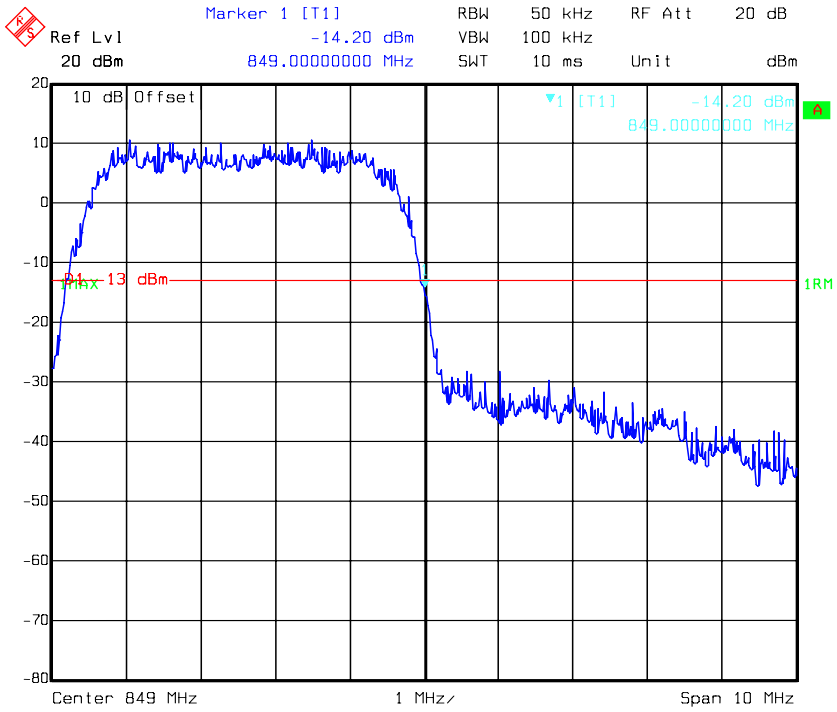
REL99 Band V Right Band Edge



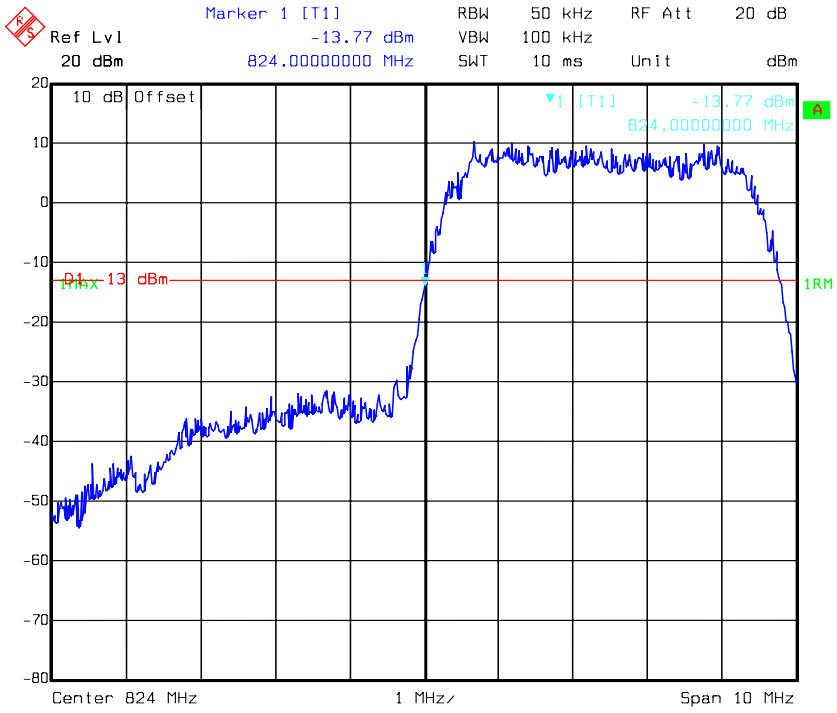
HSDPA Band V, Left Band Edge



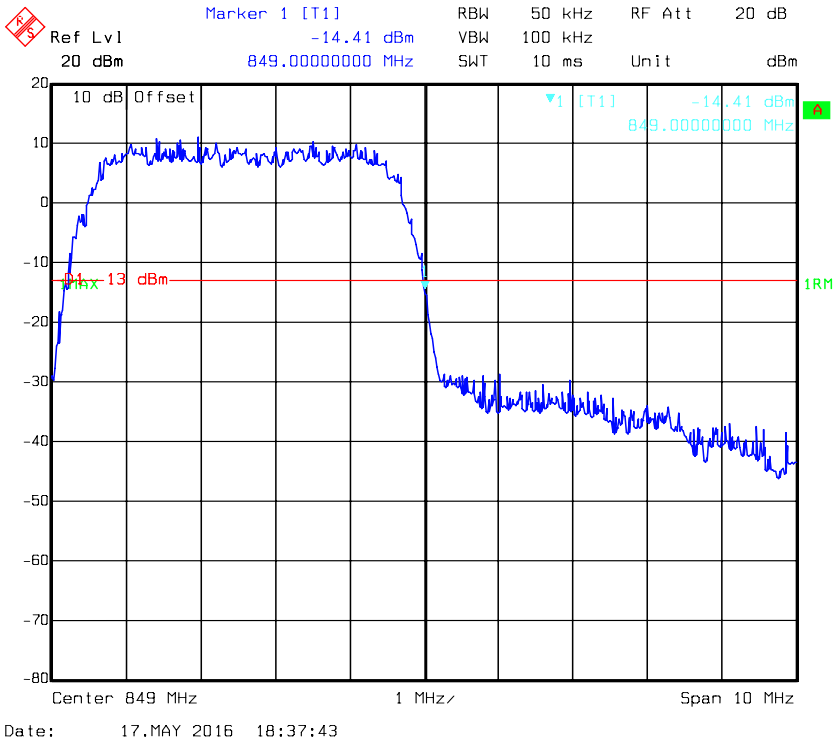
HSDPA Band V, Right Band Edge



HSUPA Band V, Left Band Edge

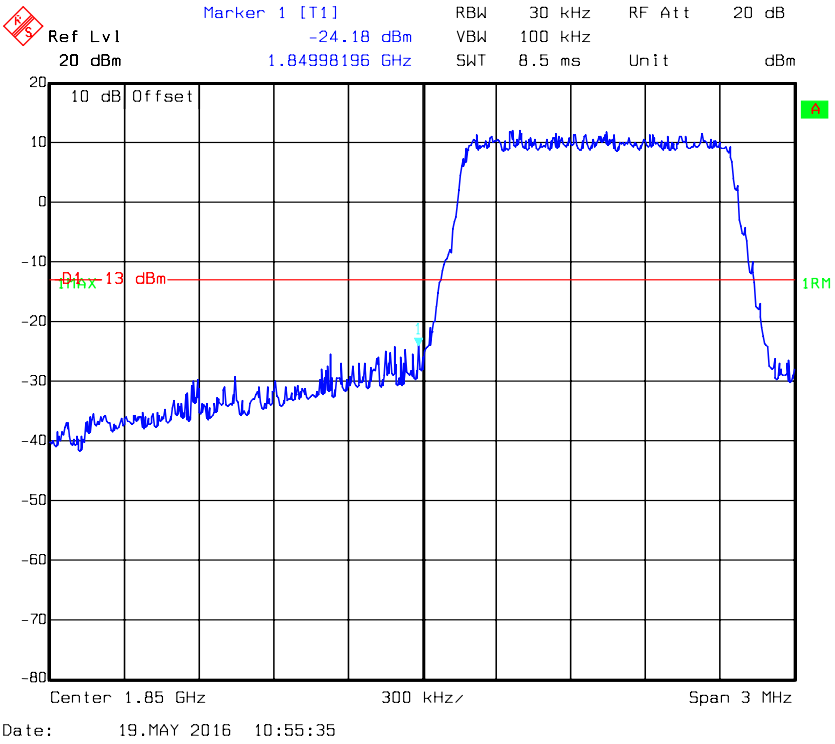


HSUPA Band V, Right Band Edge

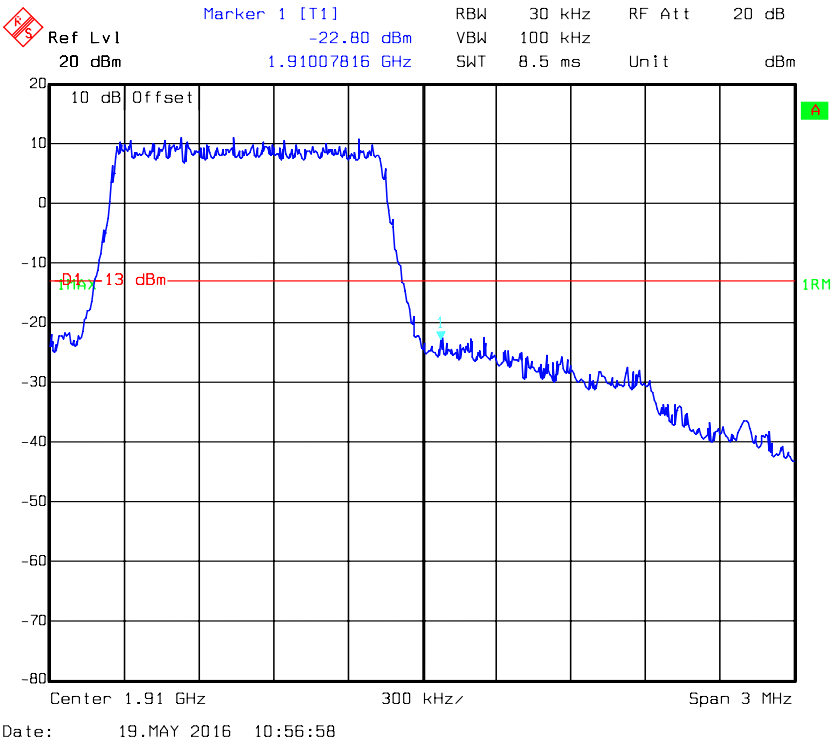


LTE Band II

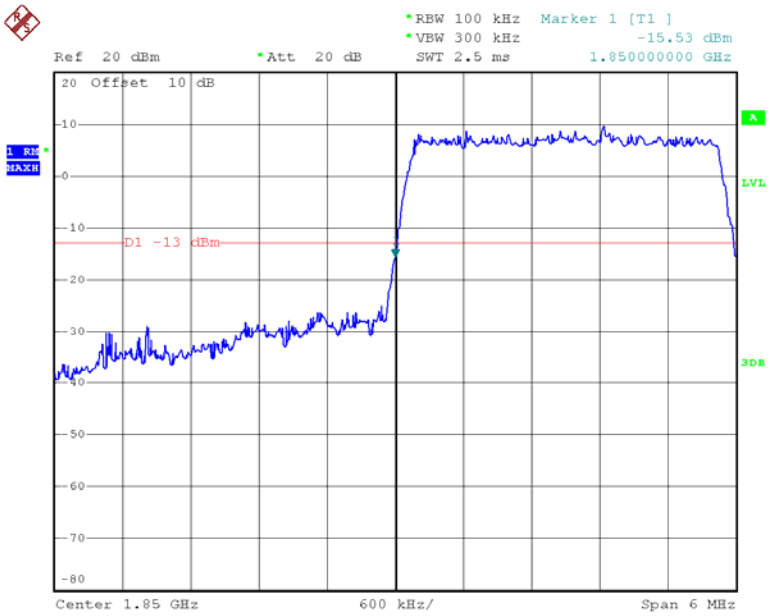
QPSK_1.4MHz_FULL RB_ Left



QPSK_1.4MHz_FULL RB_ Right

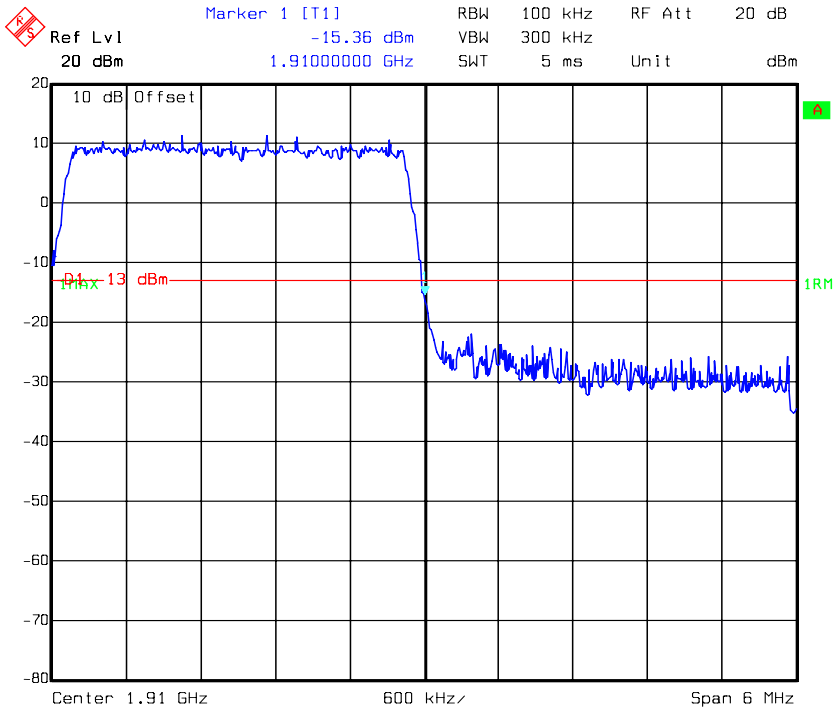


QPSK_3MHz_FULL RB_ Left



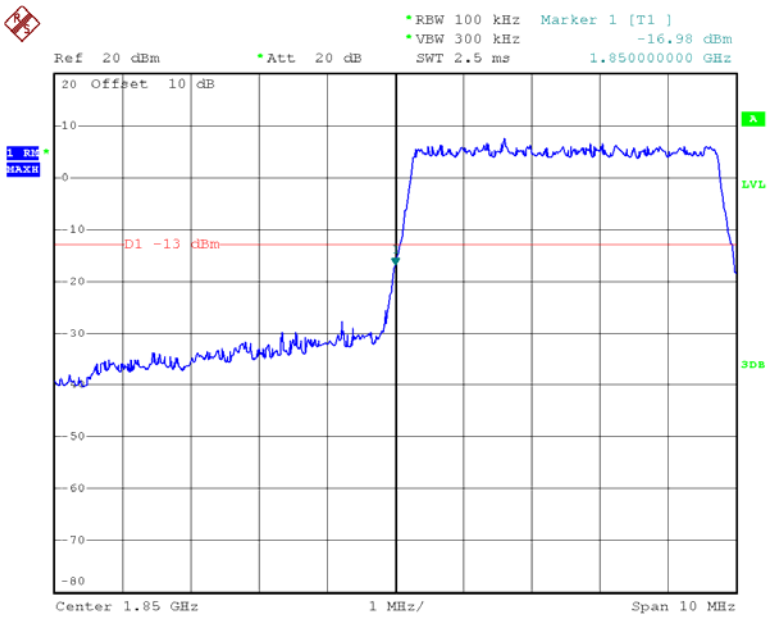
Date: 24.MAY.2016 06:00:46

QPSK_3MHz_ FULL RB_ Right



Date: 19.MAY 2016 10:53:56

QPSK_5MHz_ FULL RB_ Left



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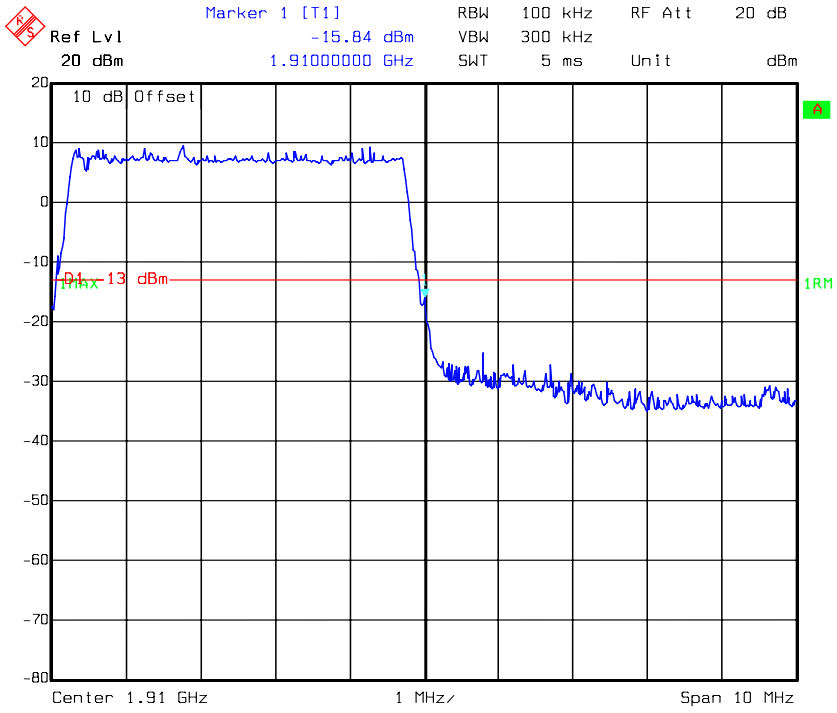
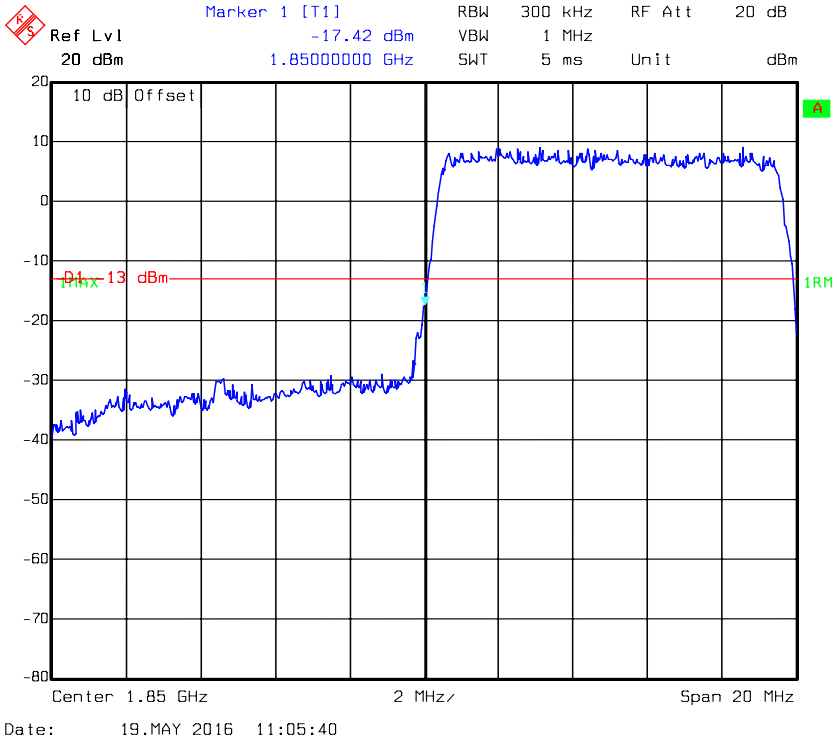
QPSK_5MHz_ FULL RB_ Right

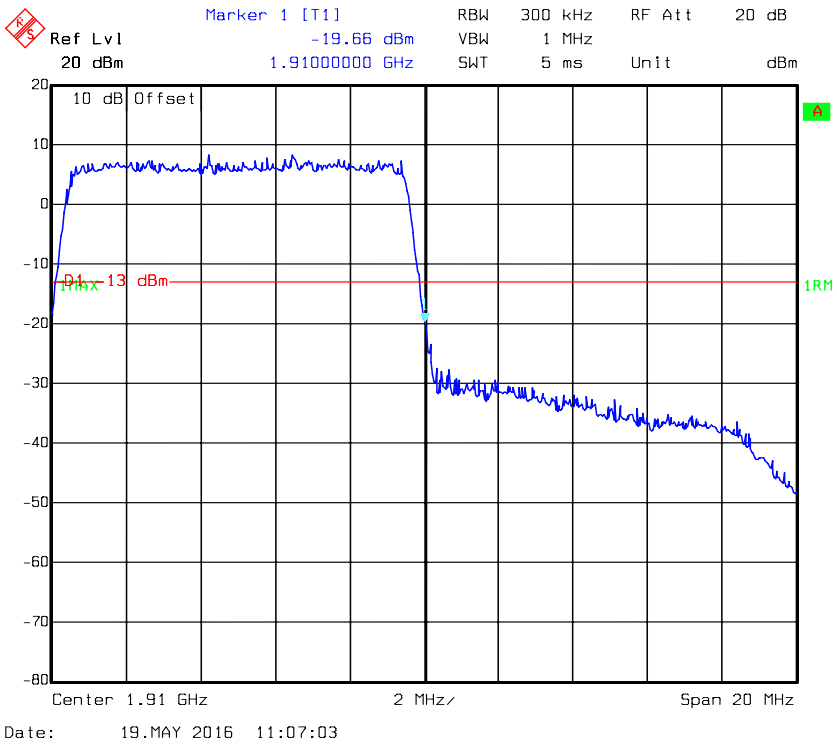


Date: 19.MAY 2016 11:02:40

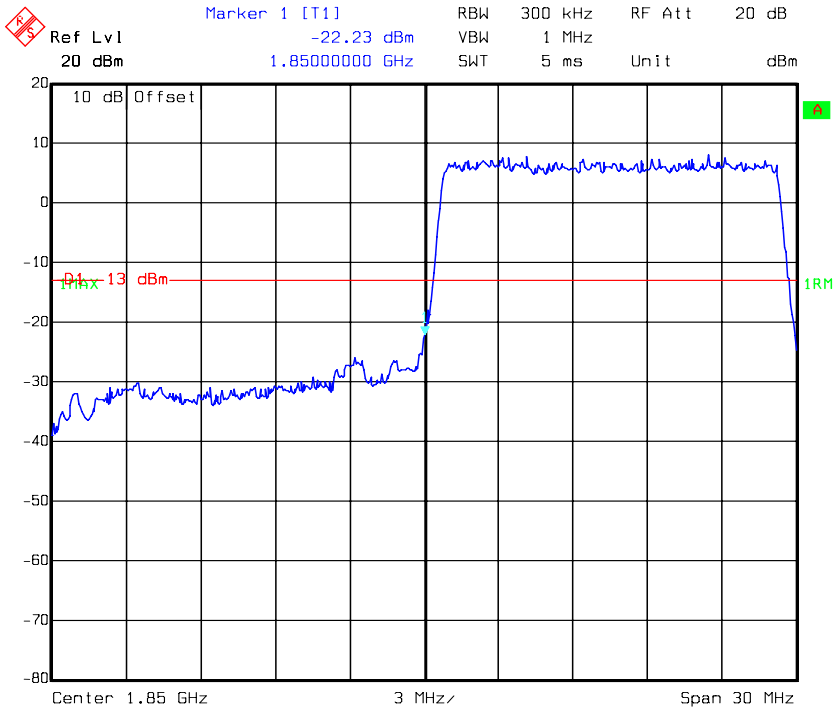
QPSK_10MHz_ FULL RB_ Left



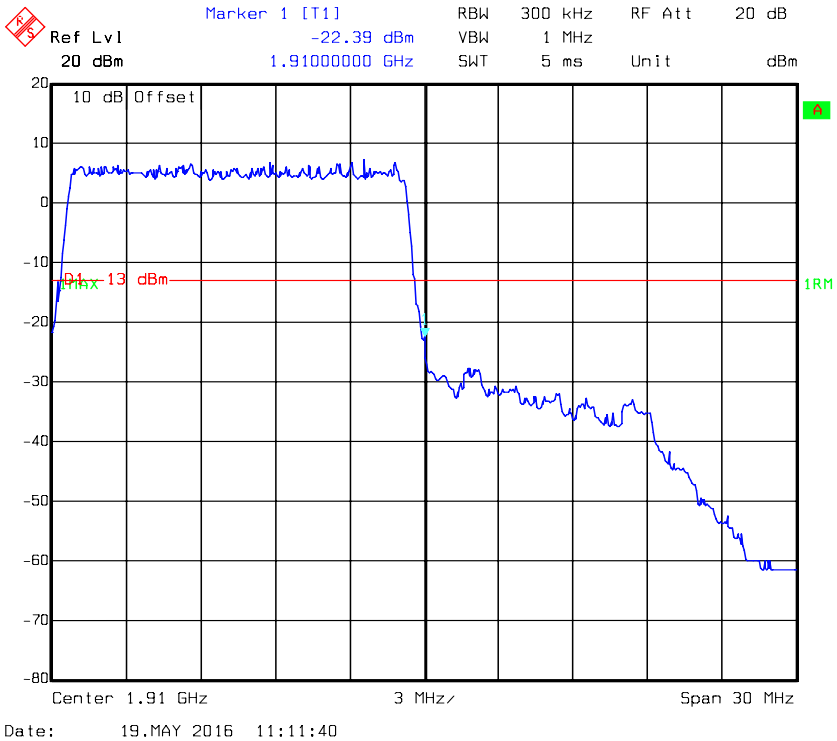
QPSK_10MHz_ FULL RB_ Right



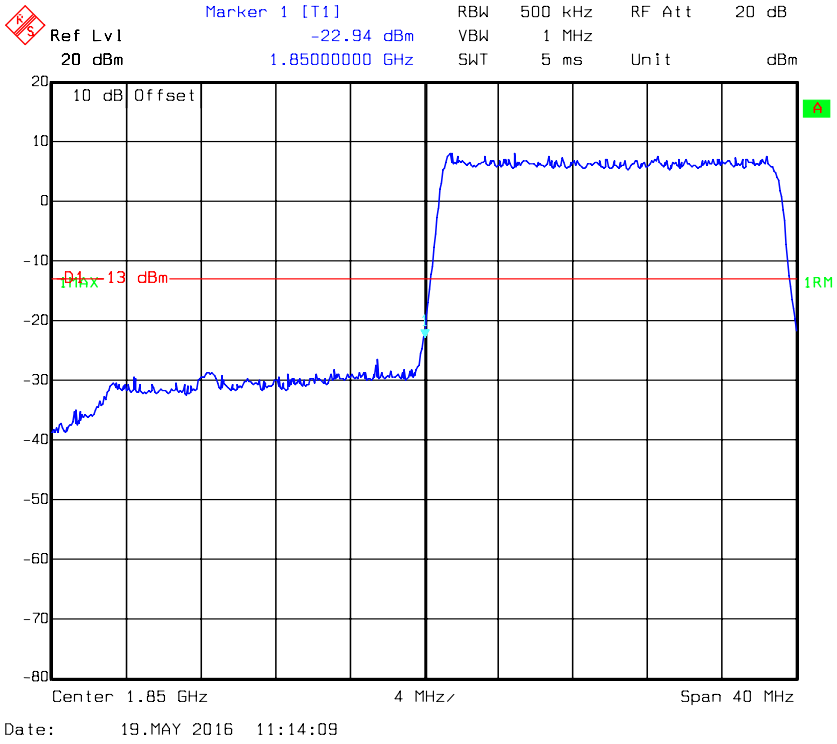
QPSK_15MHz_ FULL RB_ Left



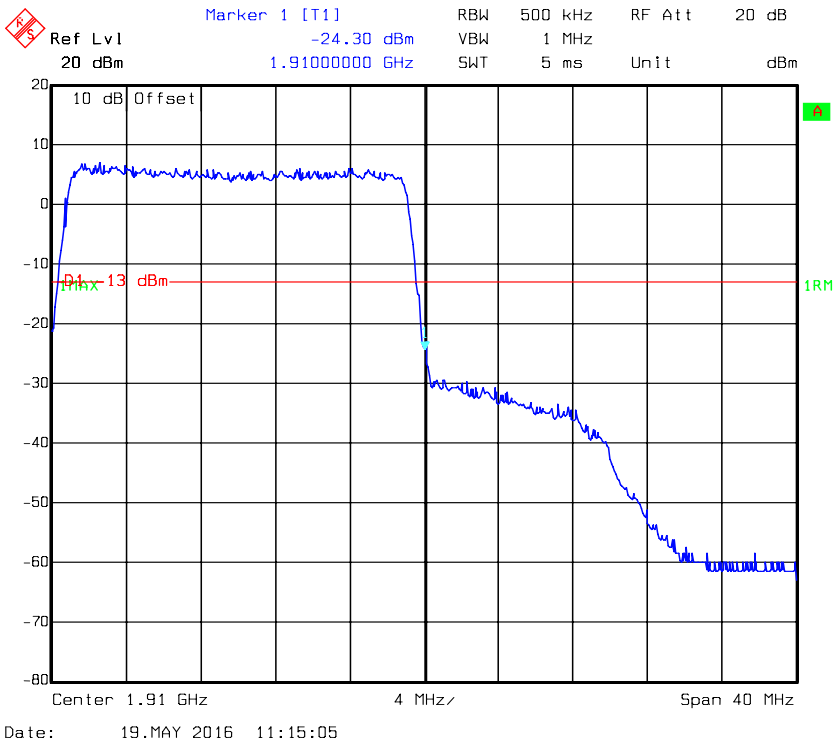
QPSK_15MHz_ FULL RB_ Right



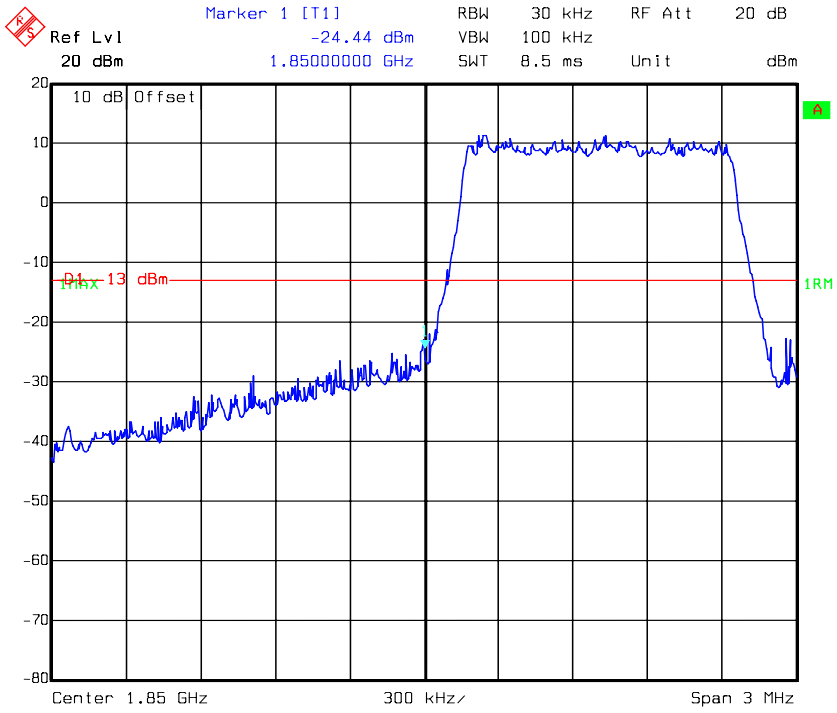
QPSK_20MHz_ FULL RB_ Left



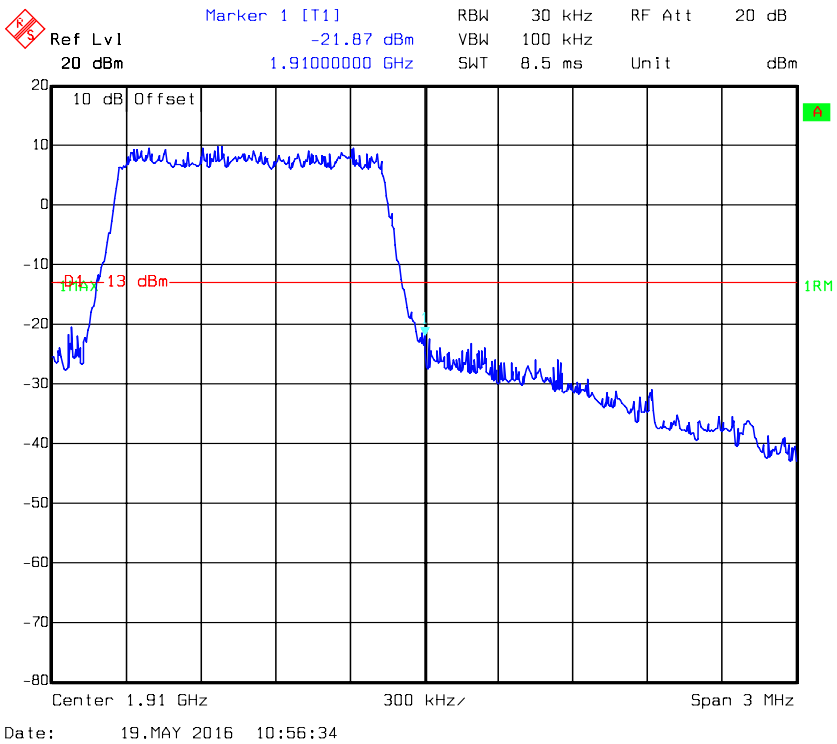
QPSK_20MHz_ FULL RB_ Right



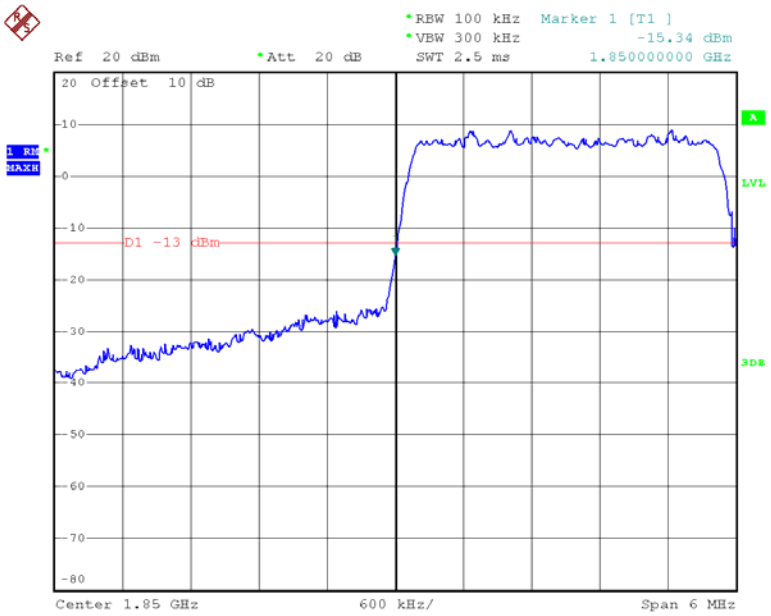
16QAM_1.4MHz_ FULL RB_ Left



16QAM_1.4MHz_ FULL RB_ Right

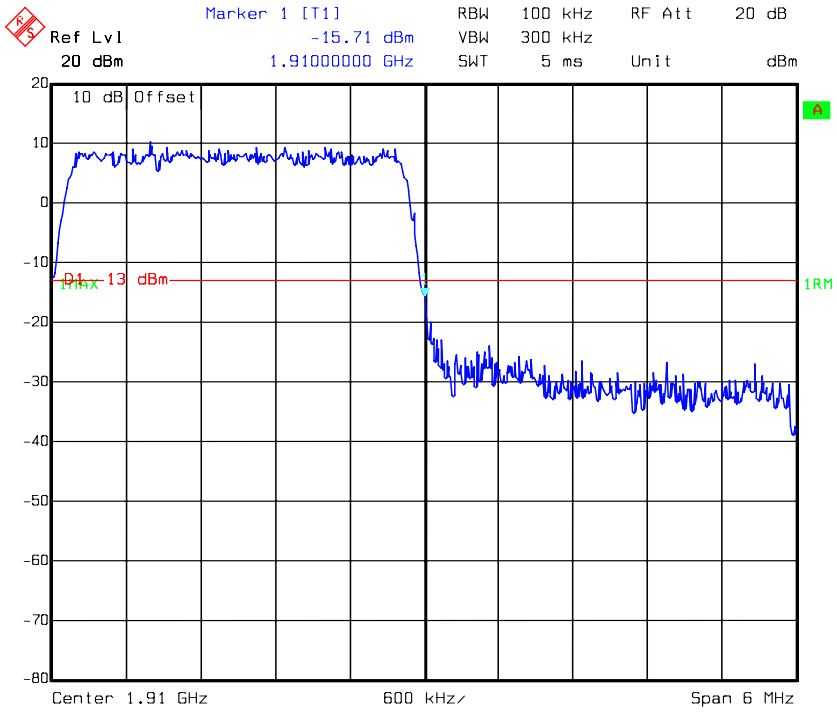


16QAM_3MHz_ FULL RB_ Left



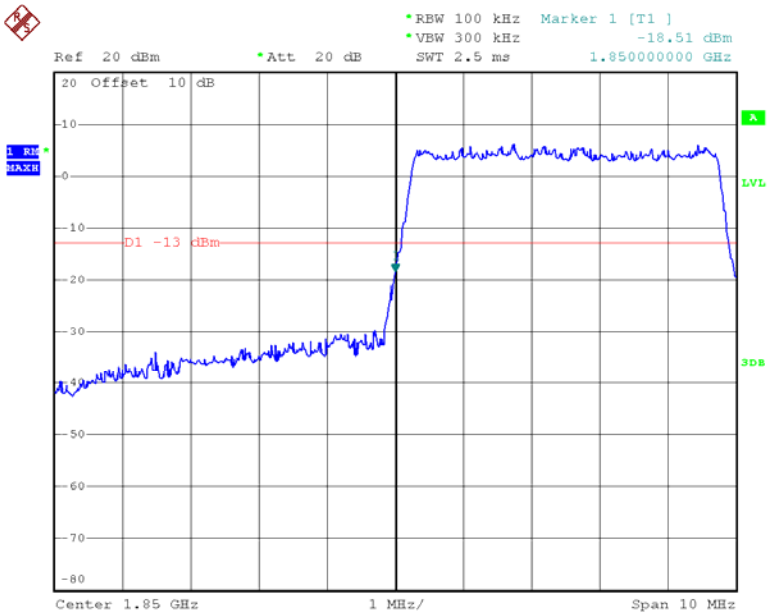
Date: 24.MAY.2016 05:56:02

16QAM_3M_ FULL RB_ Right



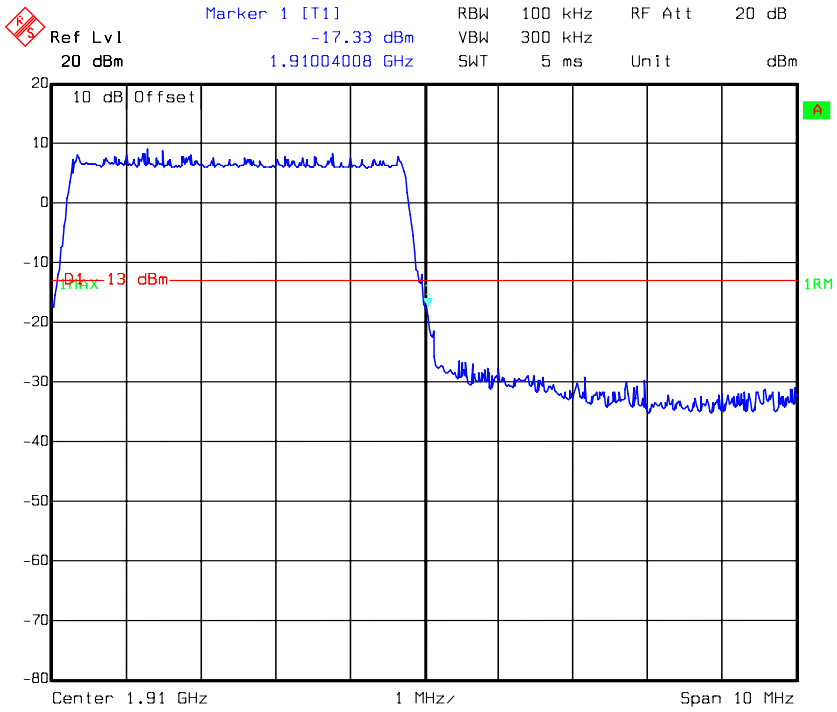
Date: 19.MAY.2016 10:53:40

16QAM_5MHz_ FULL RB_ Left



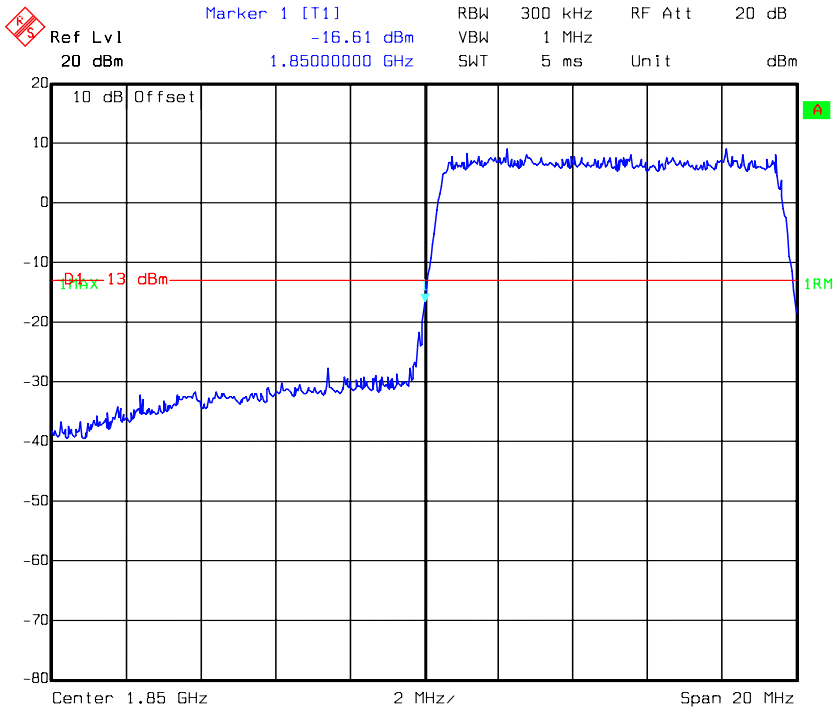
Date: 24.MAY.2016 06:03:29

16QAM_5MHz_ FULL RB_ Right

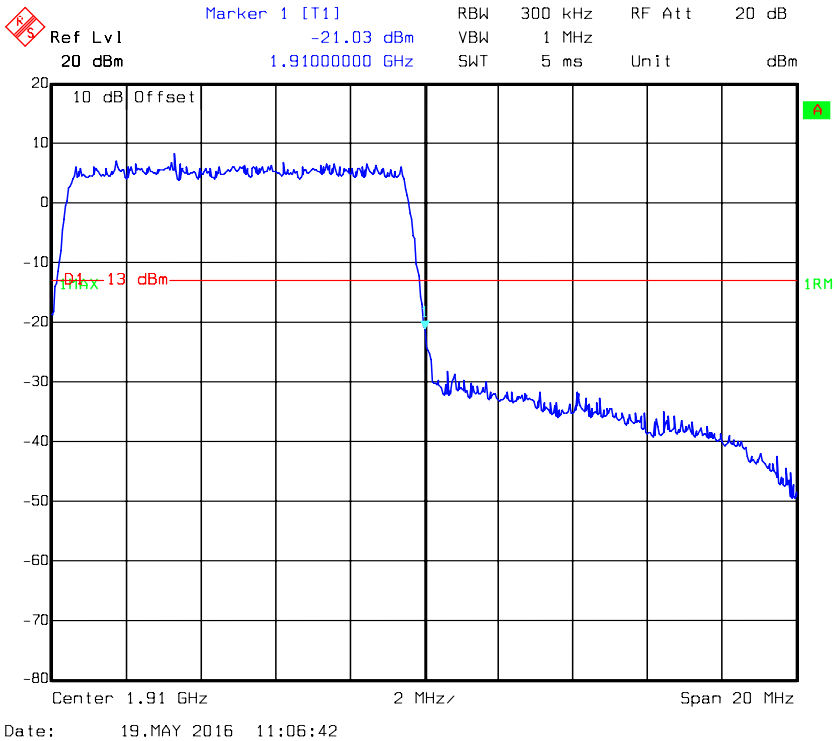


Date: 19.MAY 2016 11:02:15

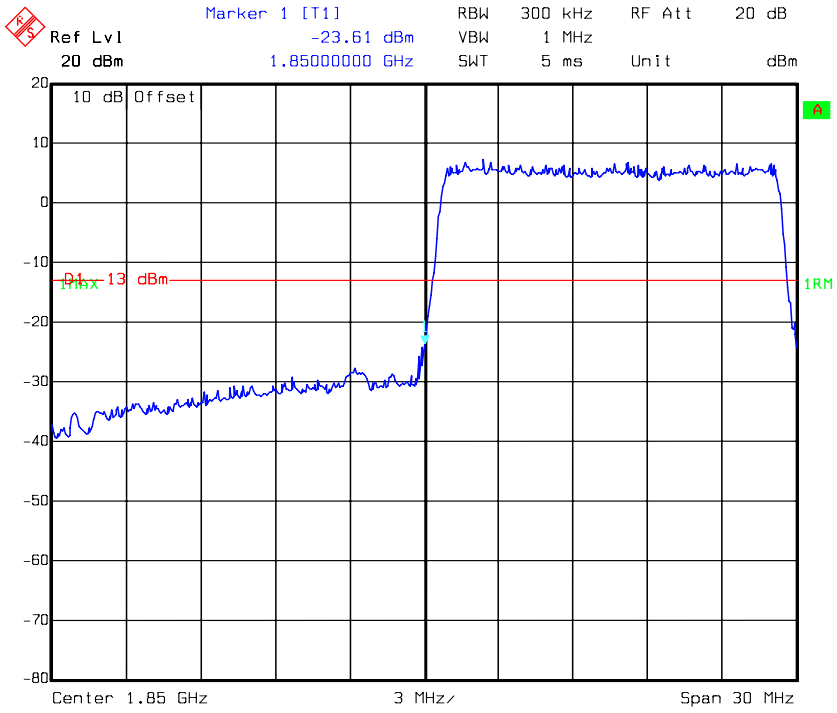
16QAM_10MHz_ FULL RB_ Left



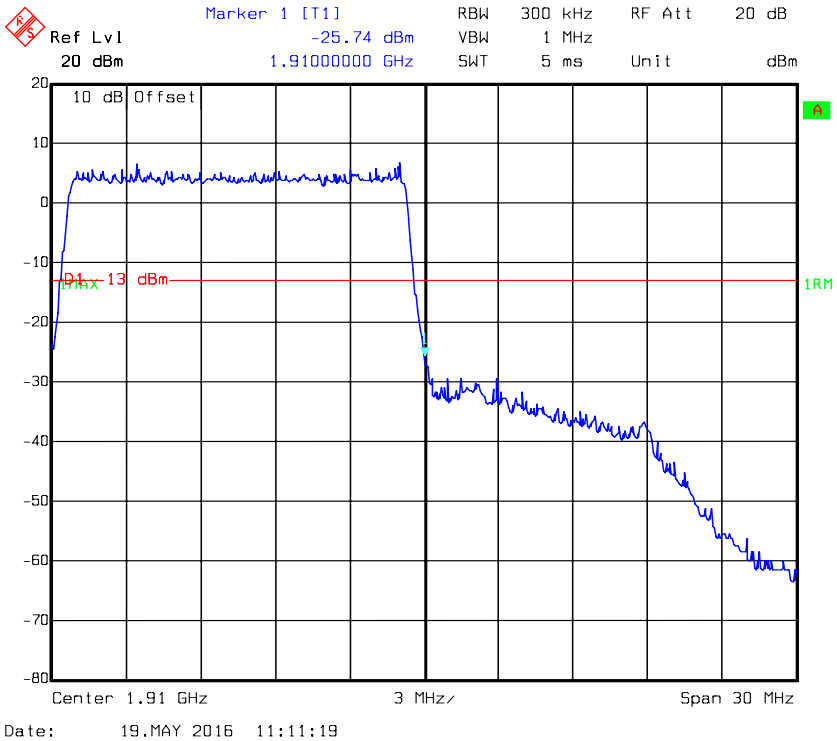
16QAM_10MHz_ FULL RB_ Right



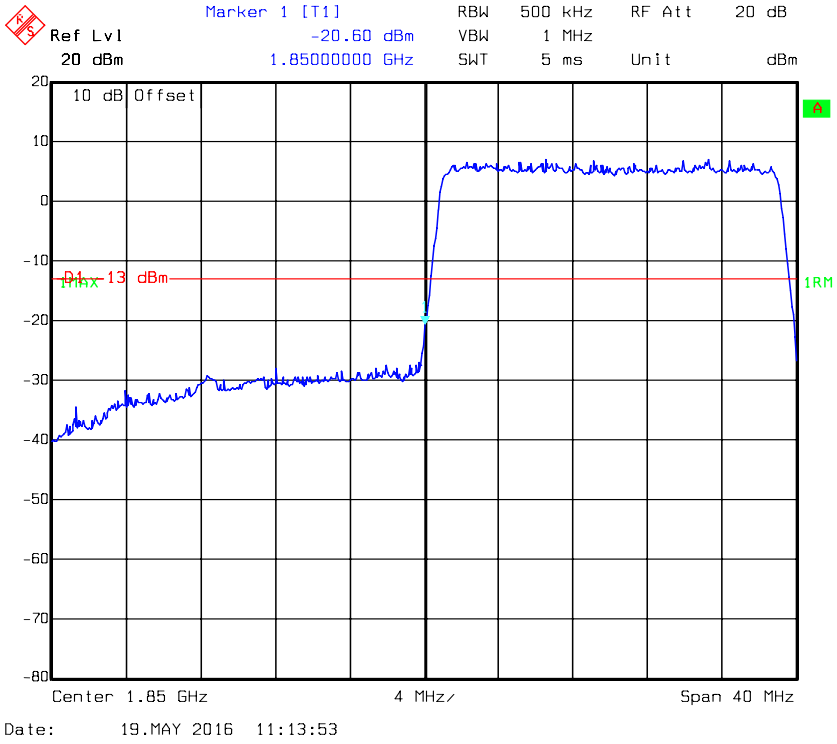
16QAM_15MHz_ FULL RB_ Left



16QAM_15MHz_ FULL RB_ Right



16QAM_20MHz_ FULL RB_ Left



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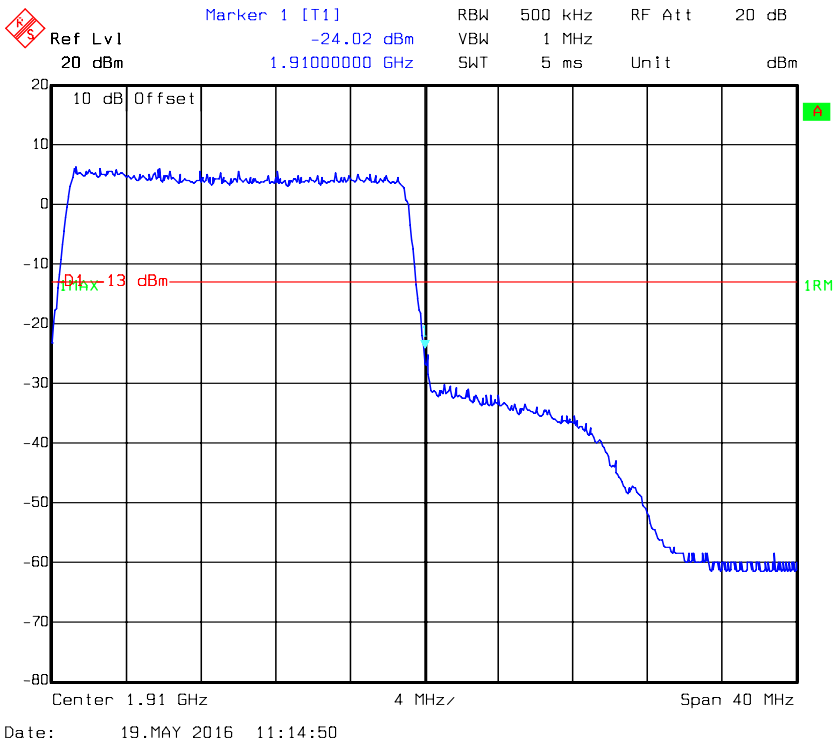

LTE Band IV

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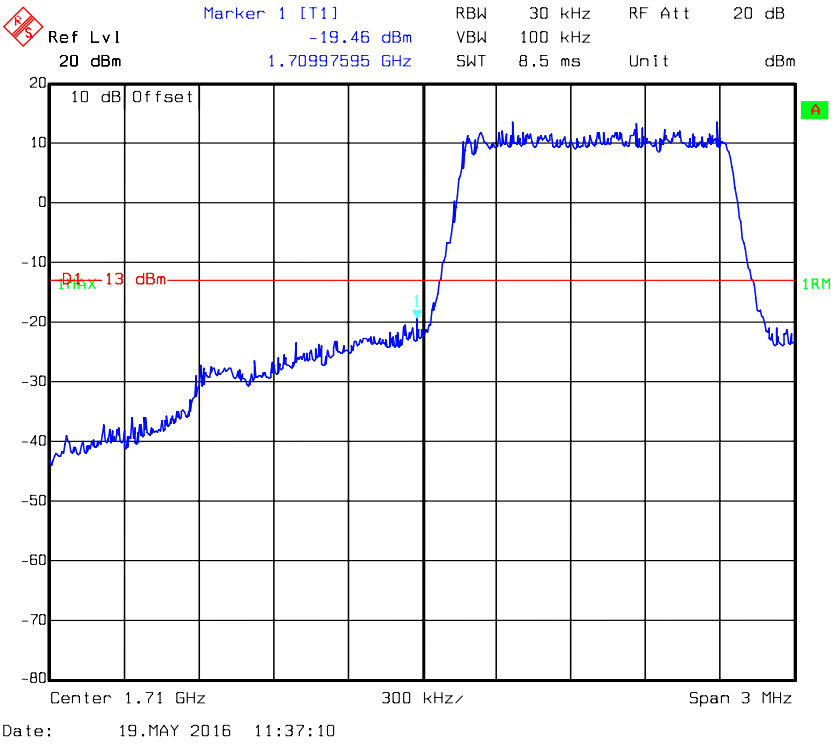

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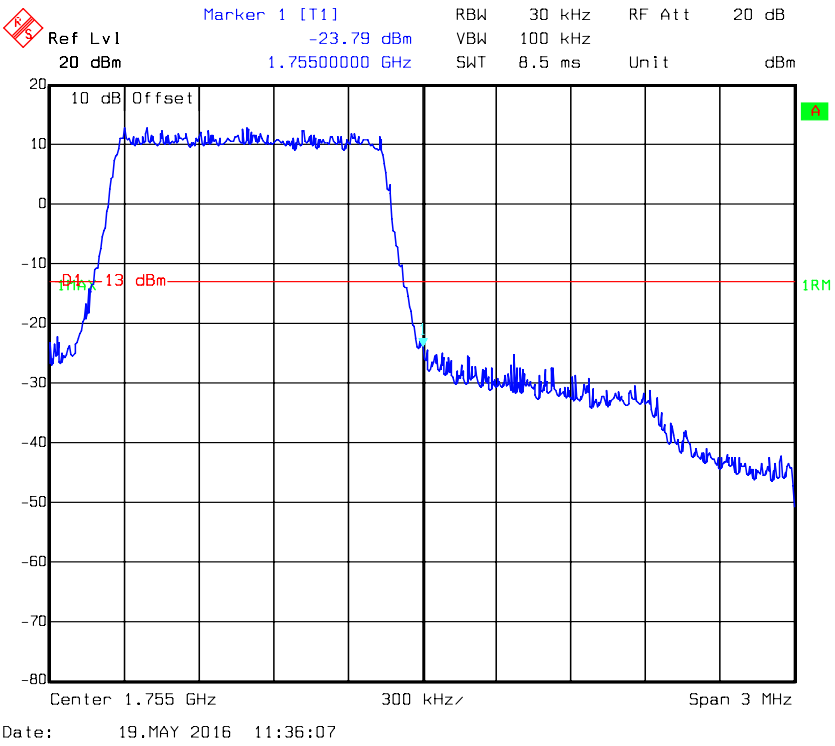

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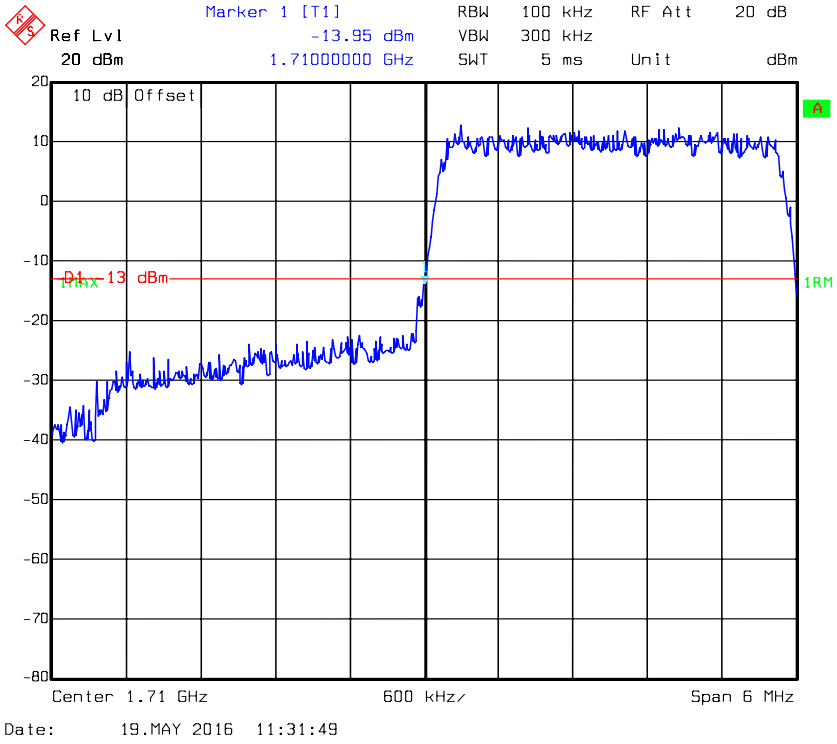

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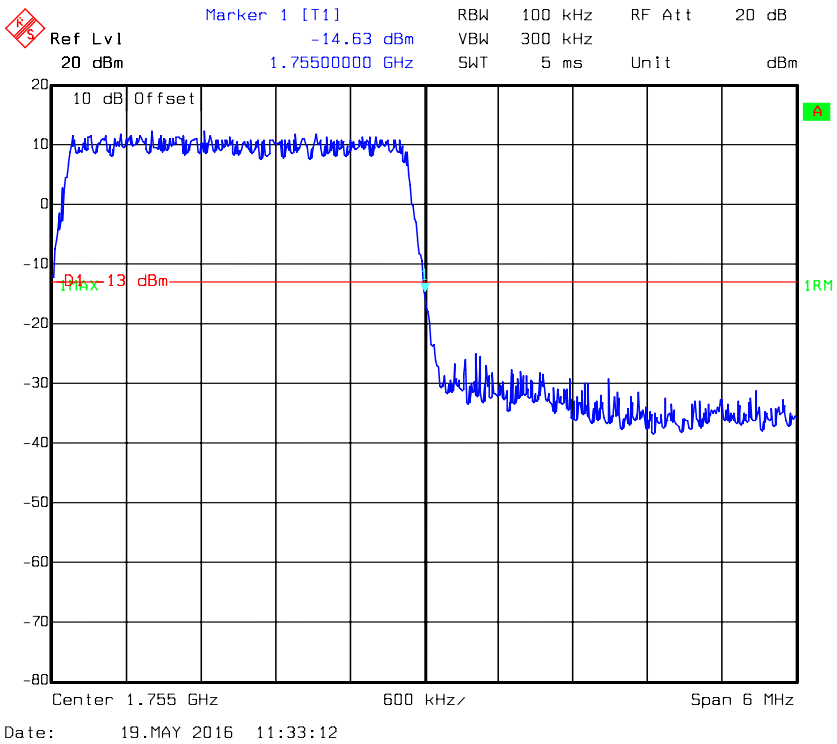

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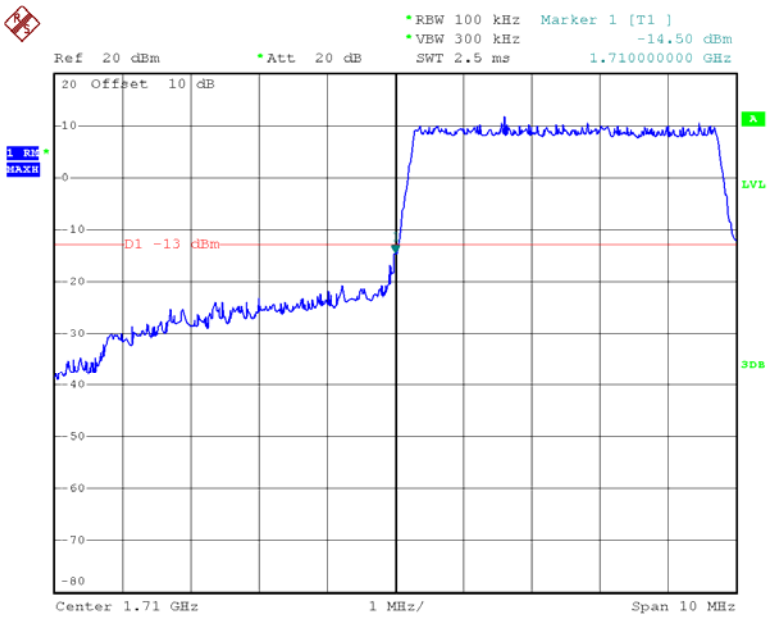

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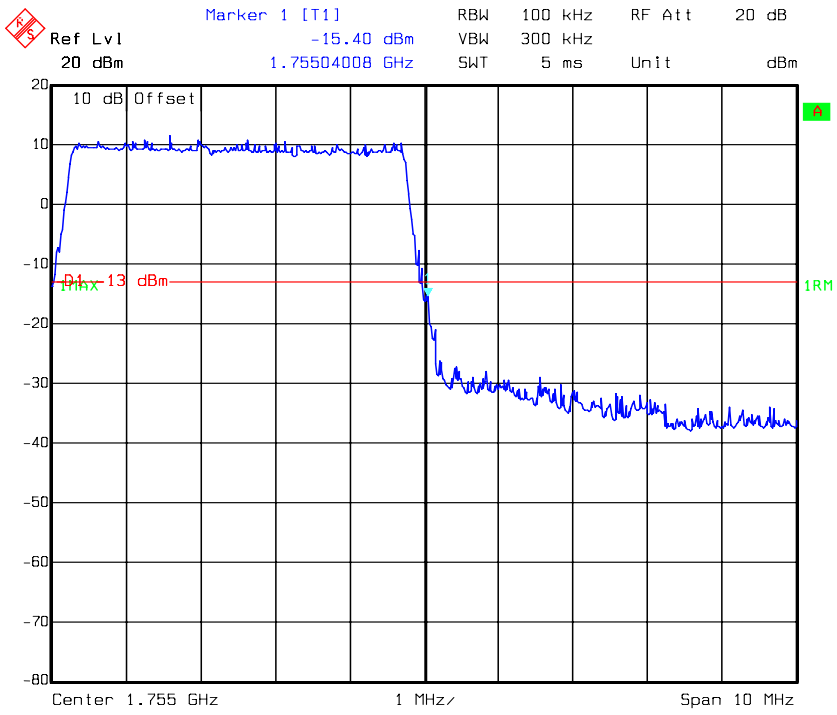

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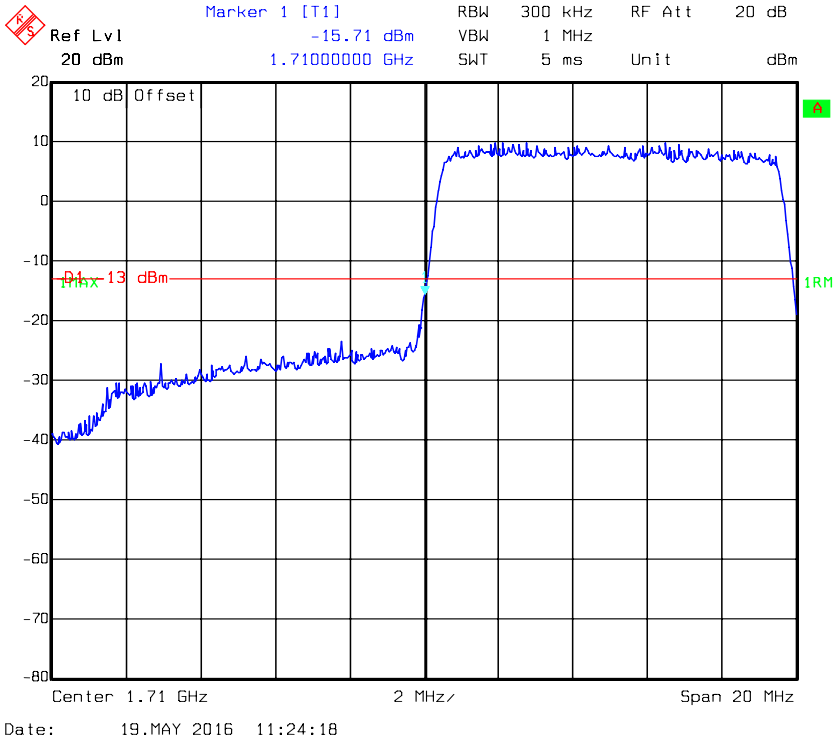

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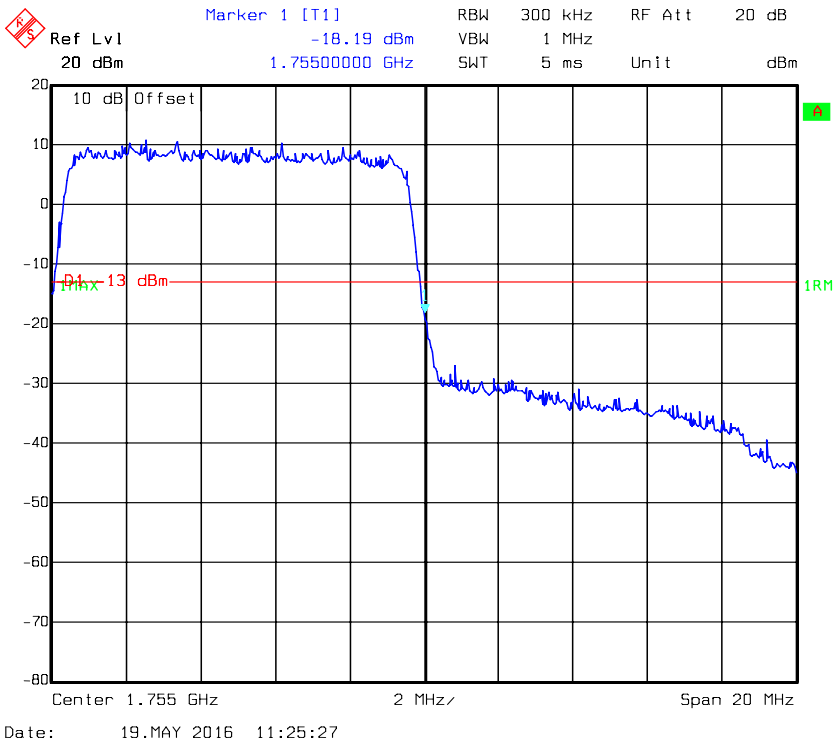

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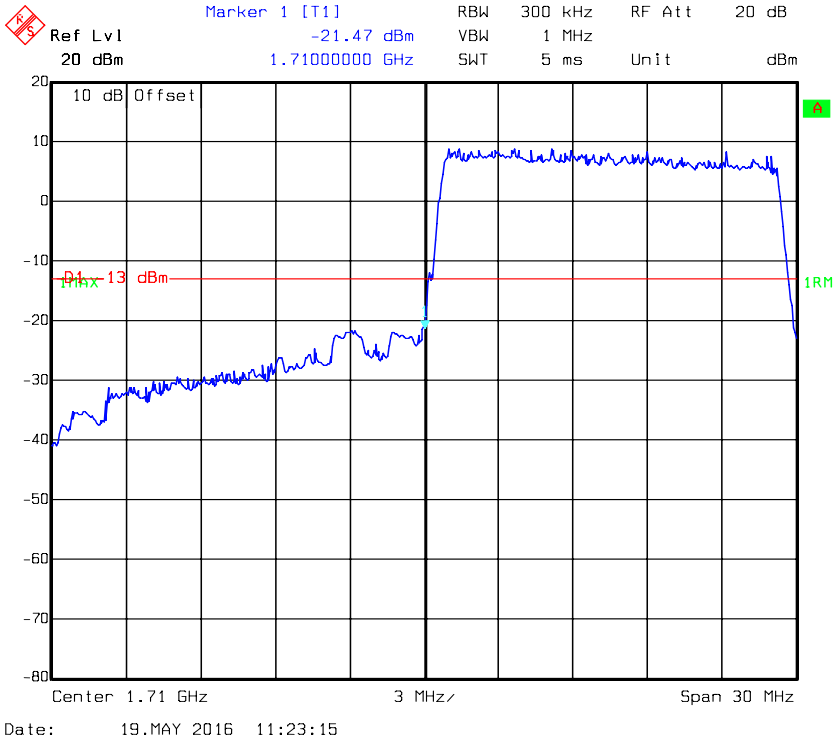

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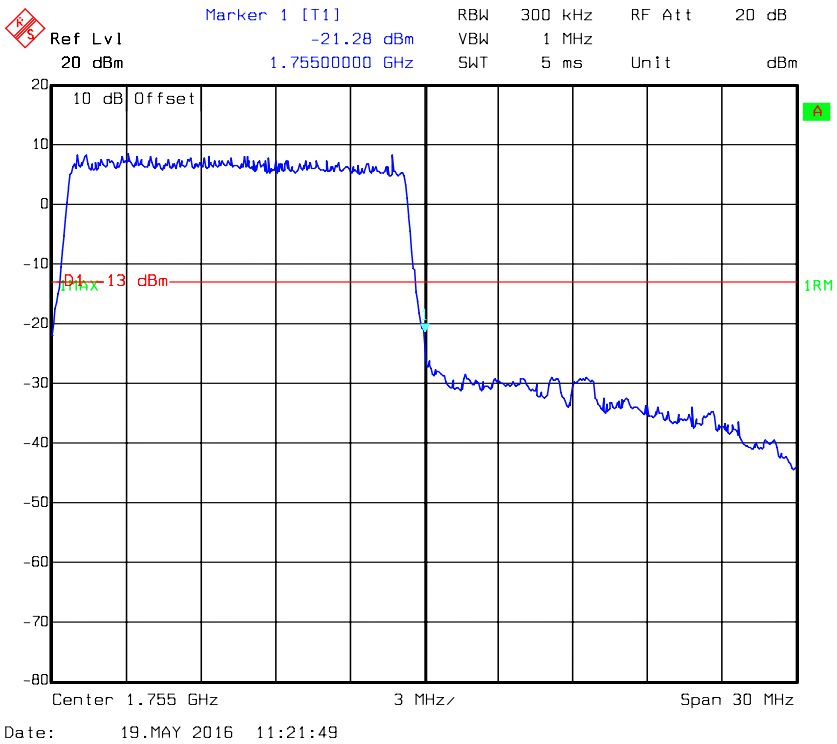
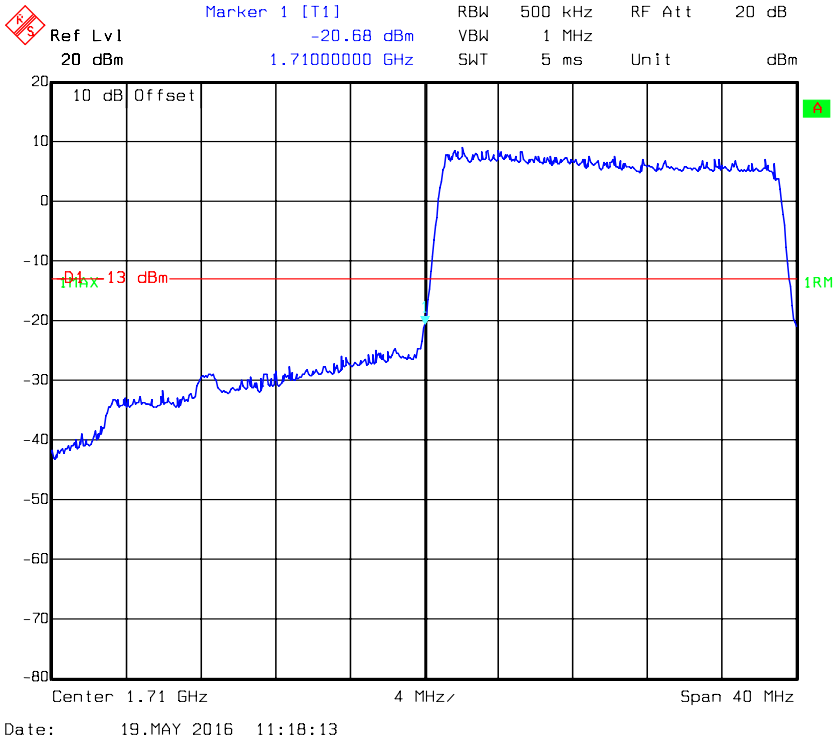


QPSK_20MHz_ FULL RB_ Left



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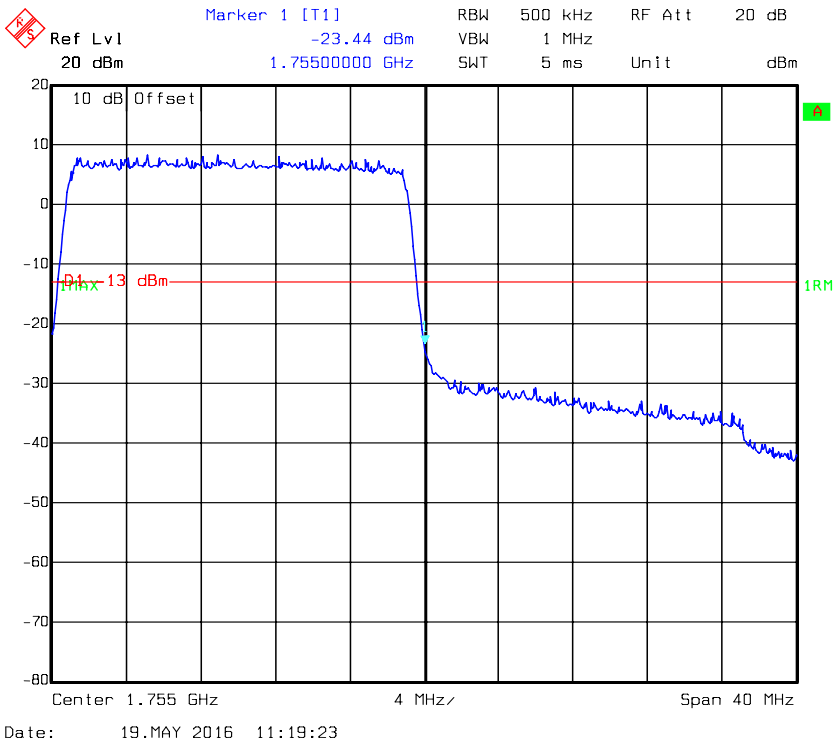

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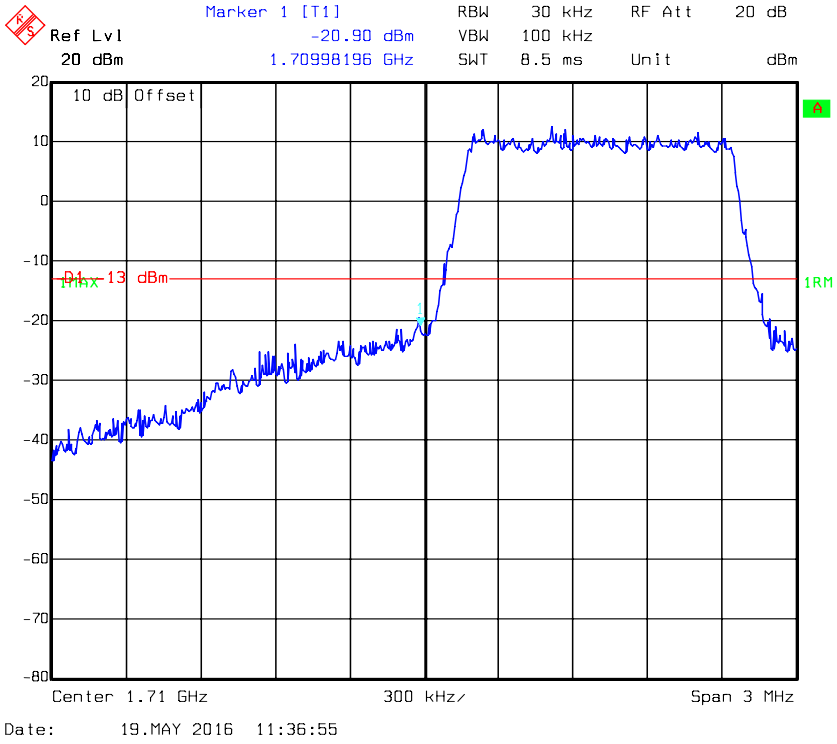

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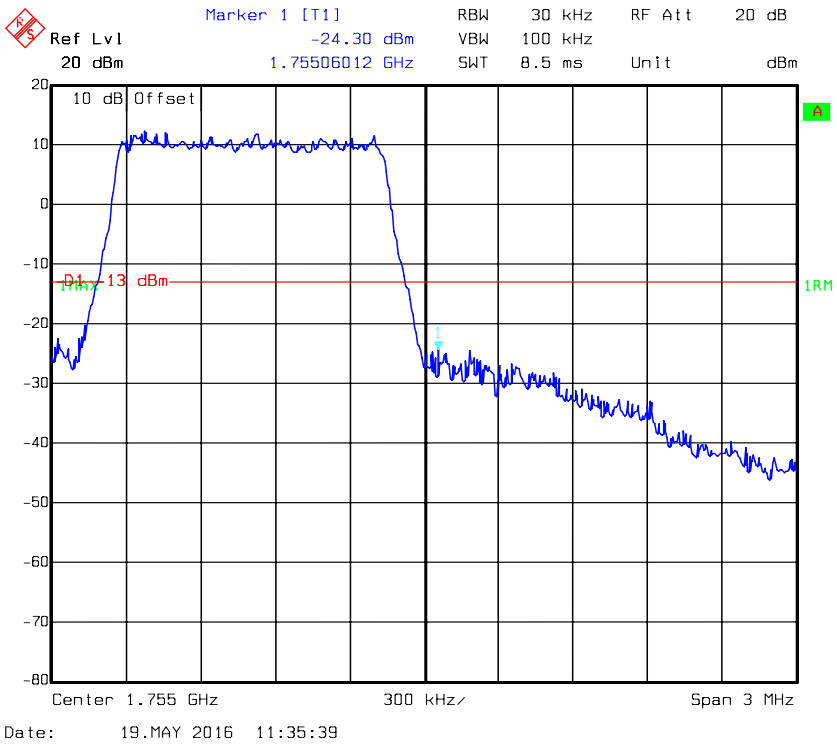

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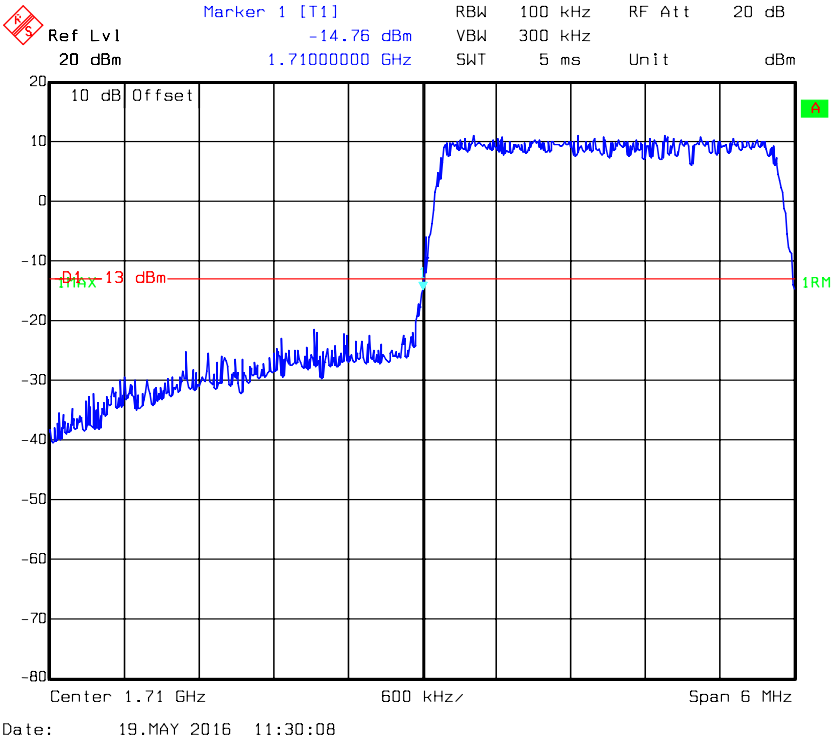
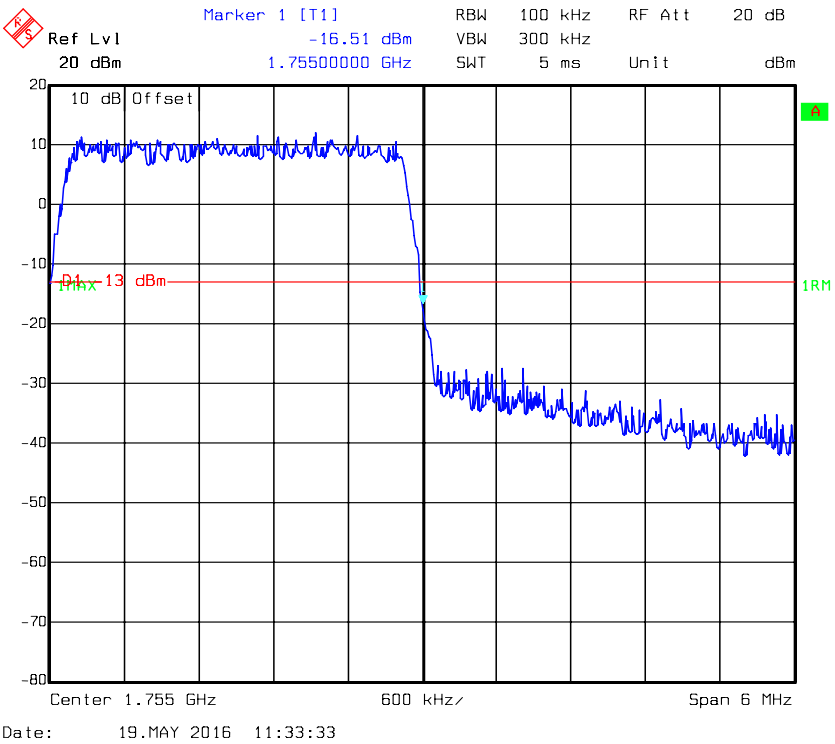
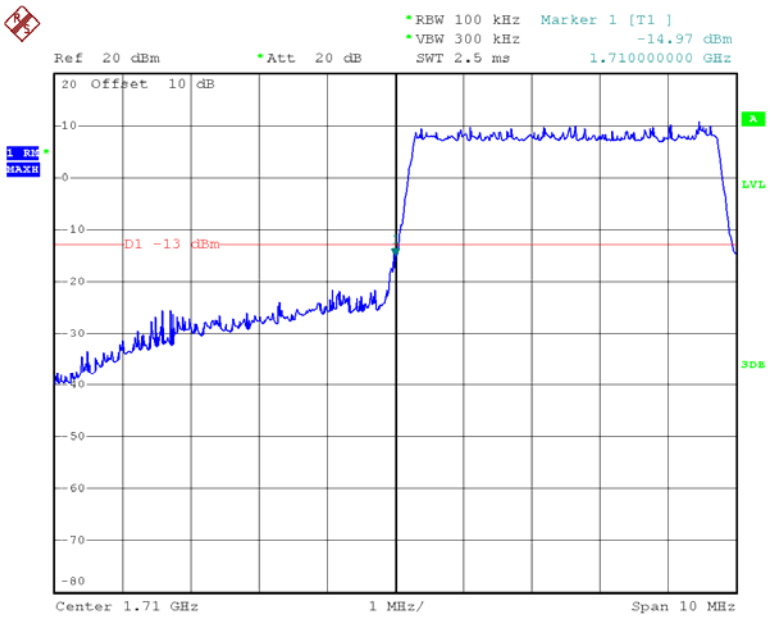


16QAM_3M_ FULL RB_ Right



16QAM_5MHz_ FULL RB_ Left



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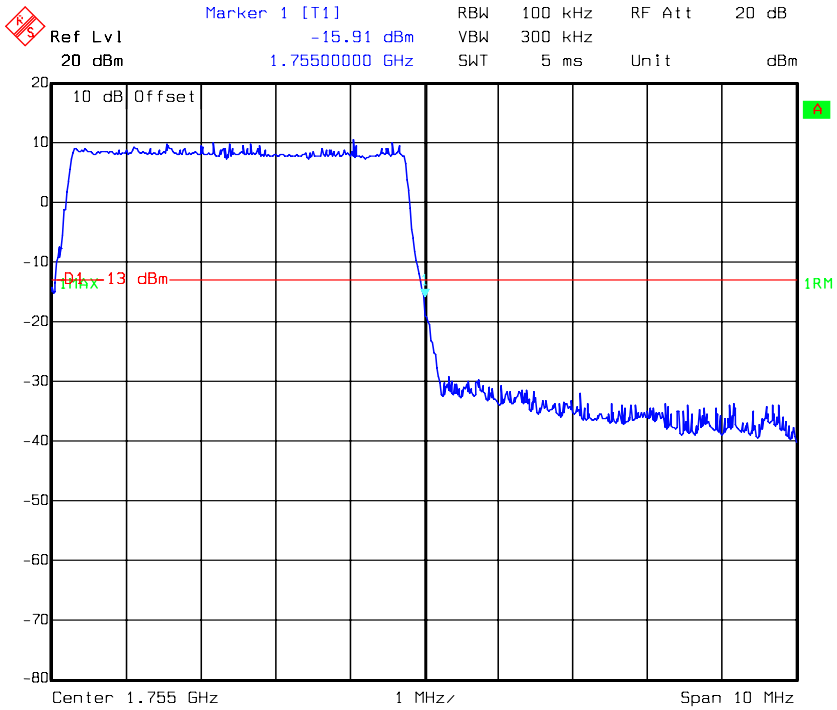

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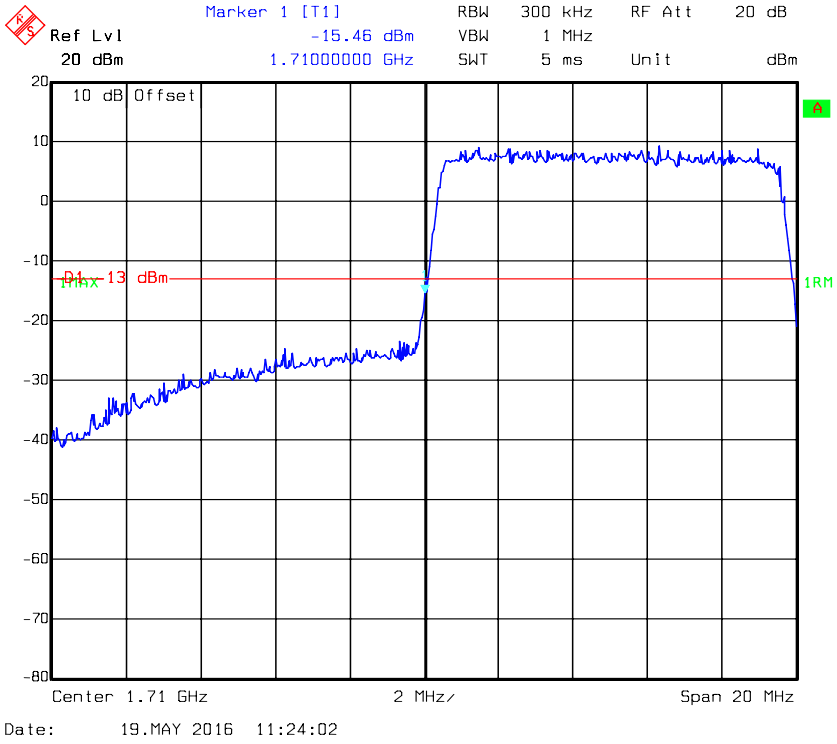

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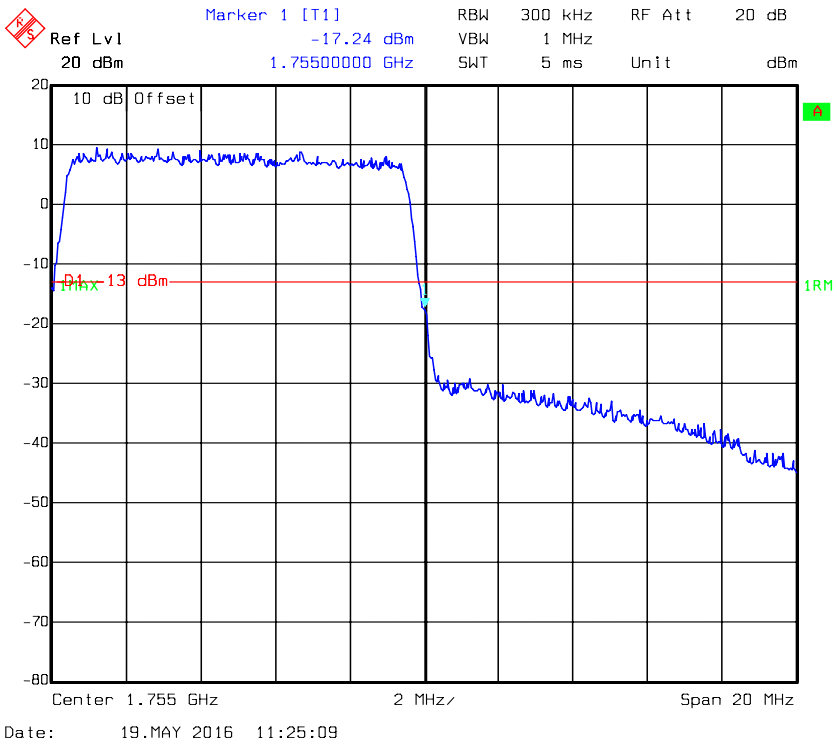

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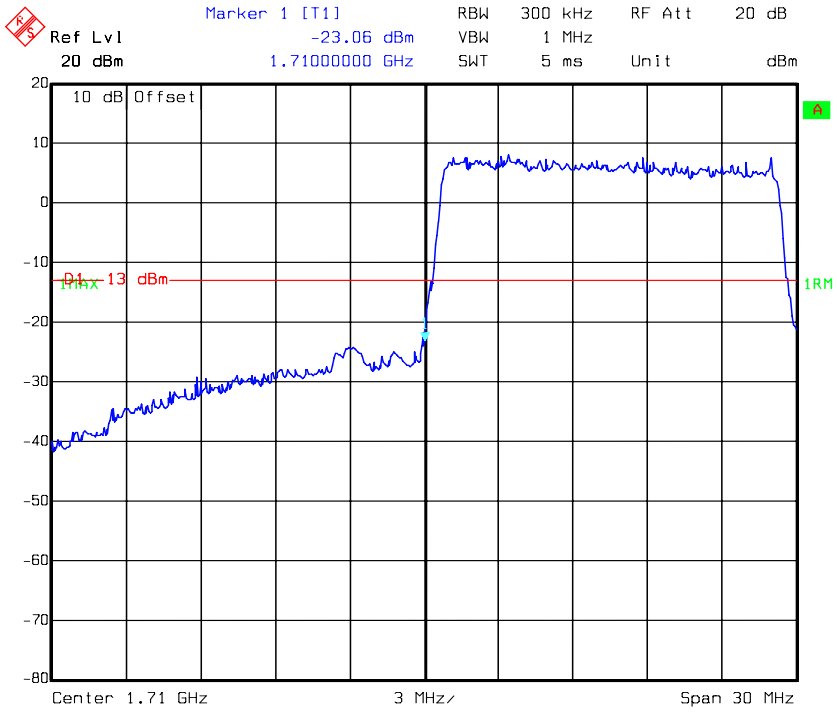

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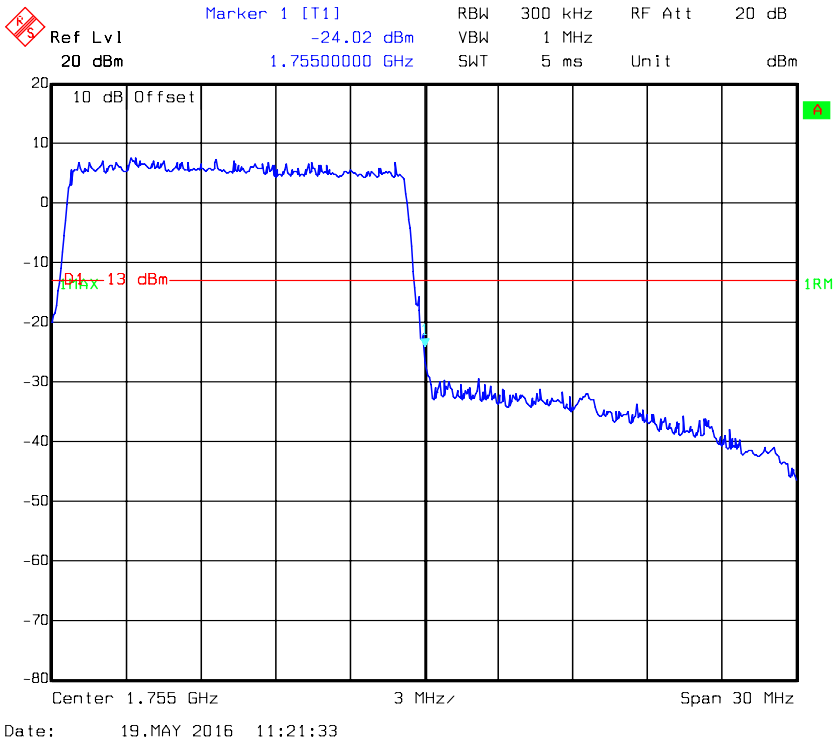

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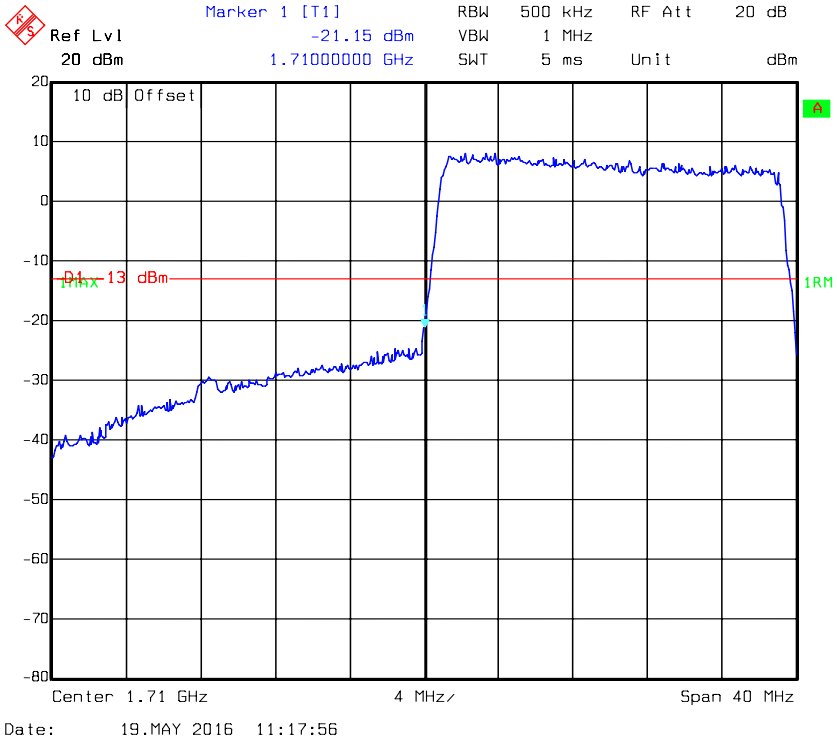
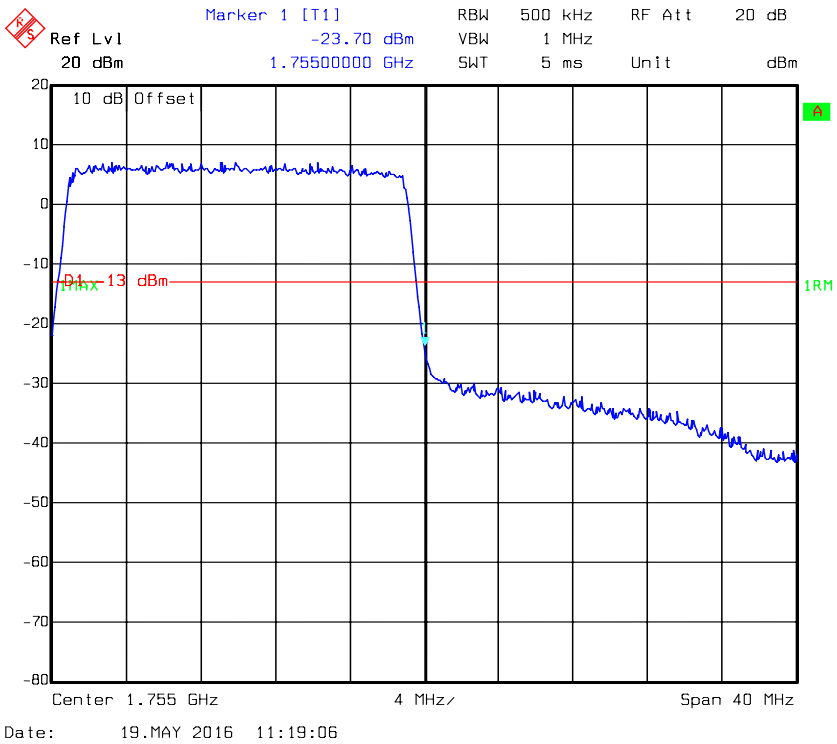
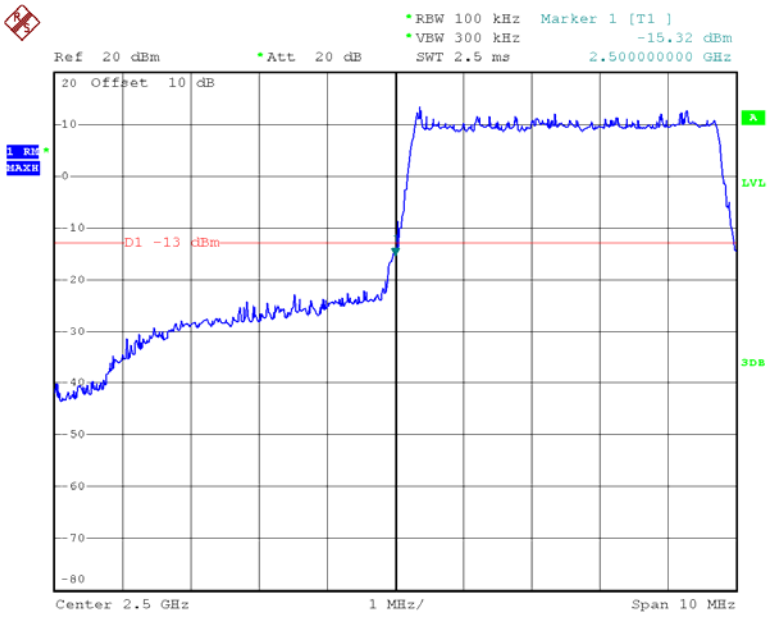


16QAM_20MHz_ FULL RB_ Right

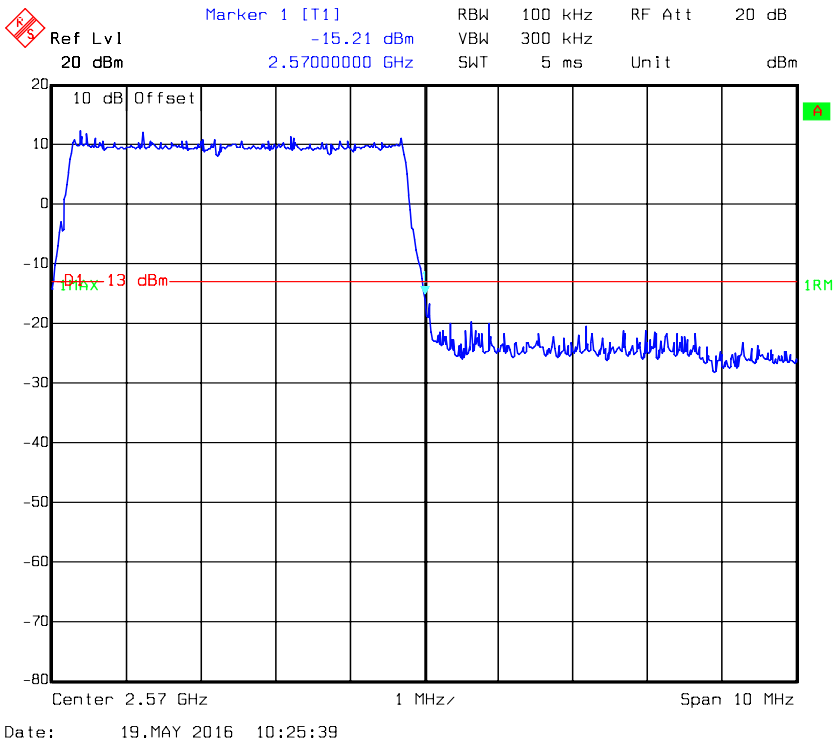


LTE Band VII

QPSK_5MHz_ FULL RB_ Left



QPSK_5MHz_ FULL RB_ Right



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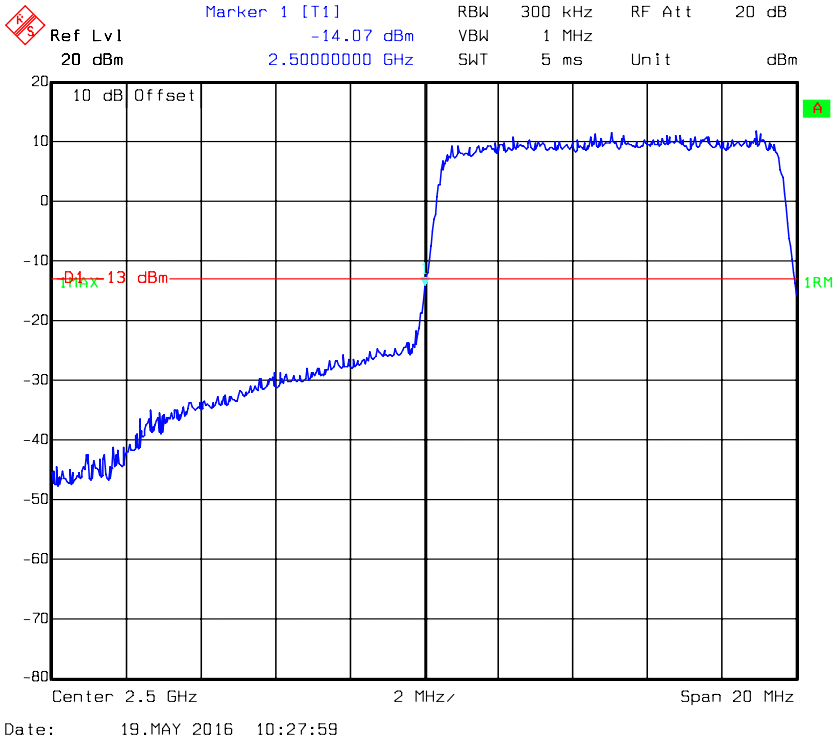
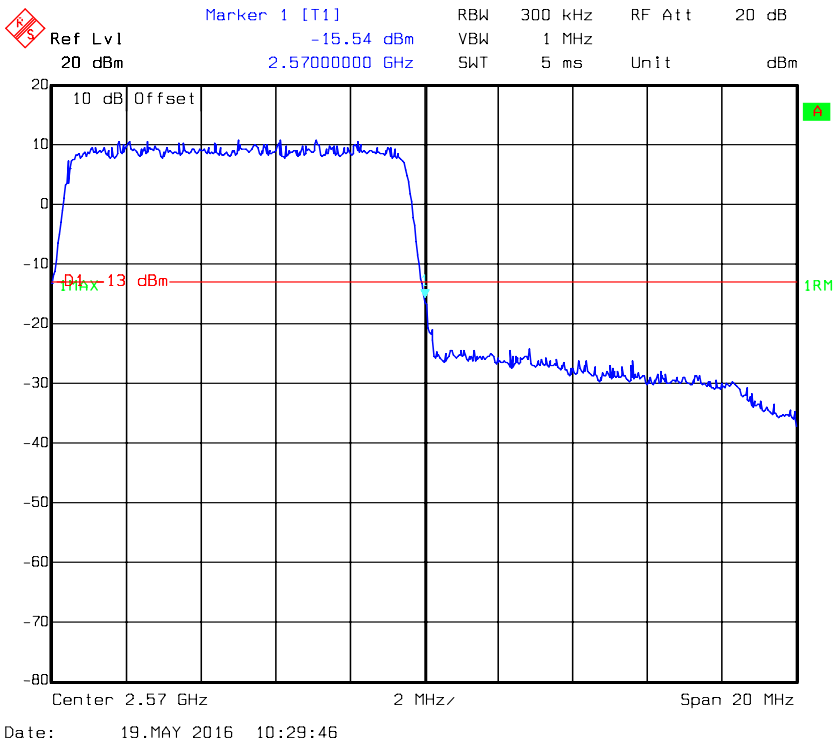


QPSK_10MHz_ FULL RB_ Right



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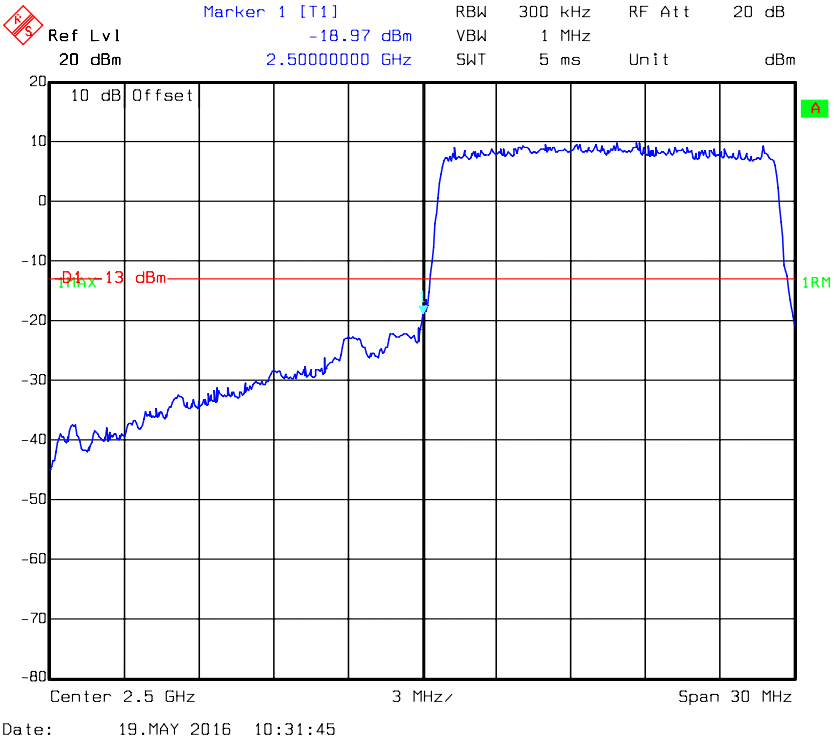

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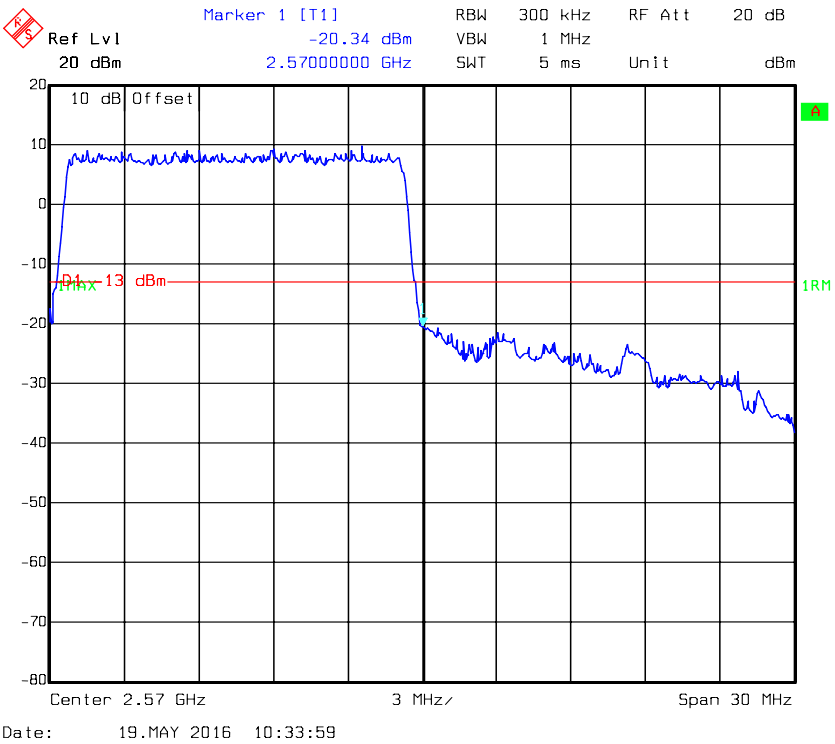

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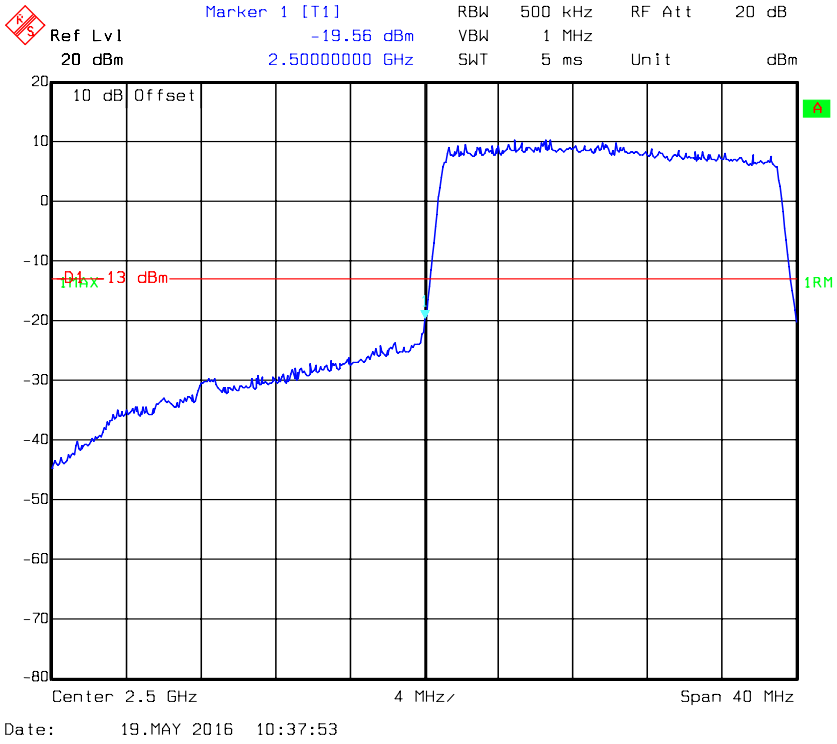
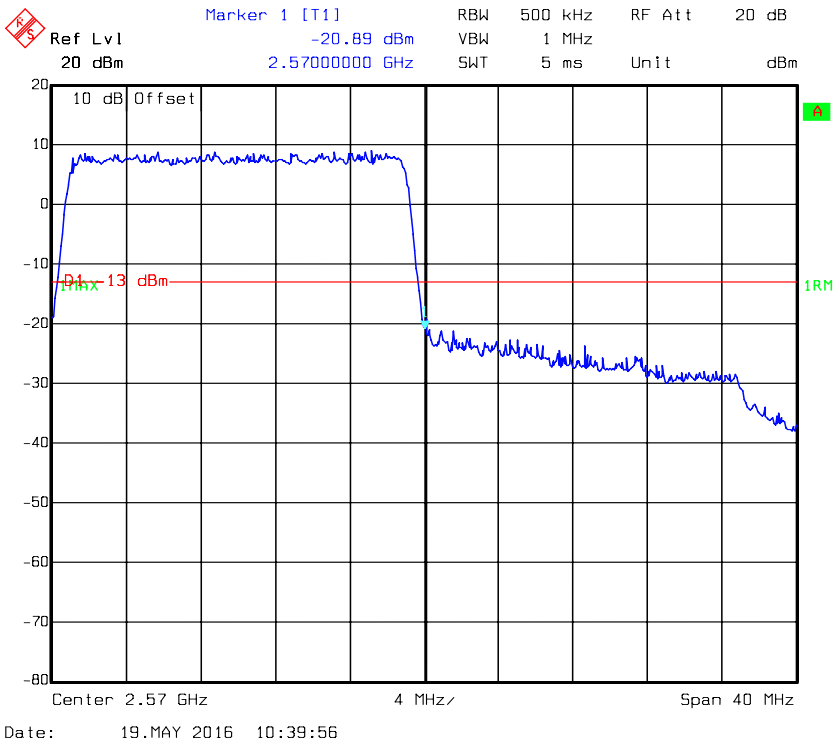
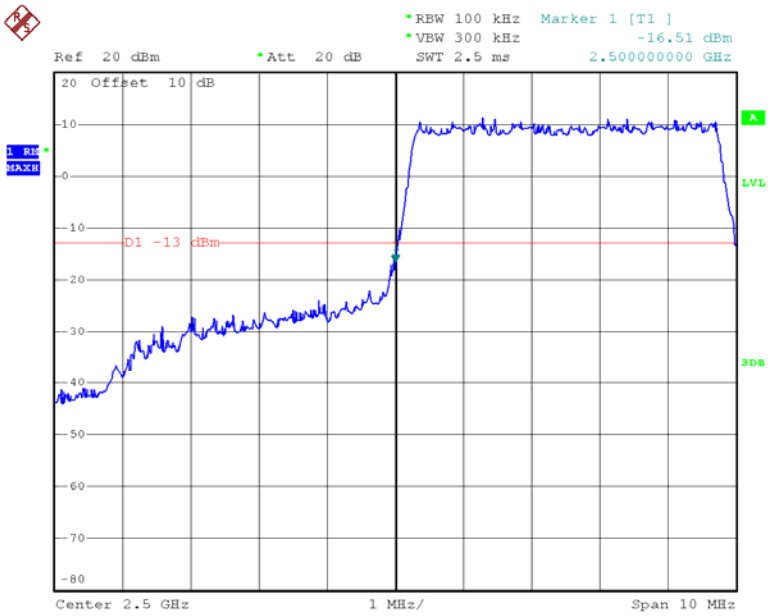


QPSK_20MHz_ FULL RB_ Right



16QAM_5MHz_ FULL RB_ Left



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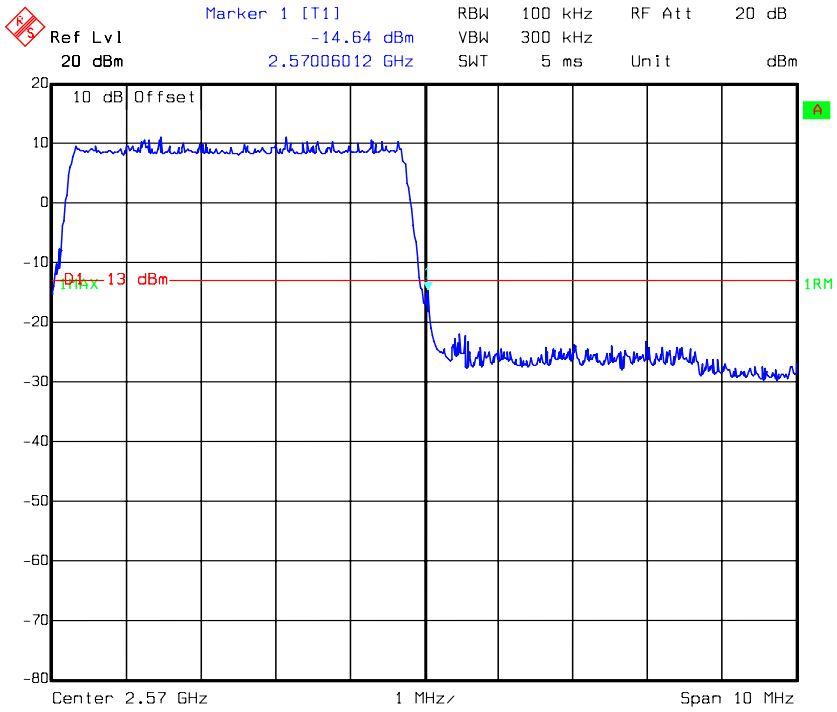
16QAM_5MHz_ FULL RB_ Right



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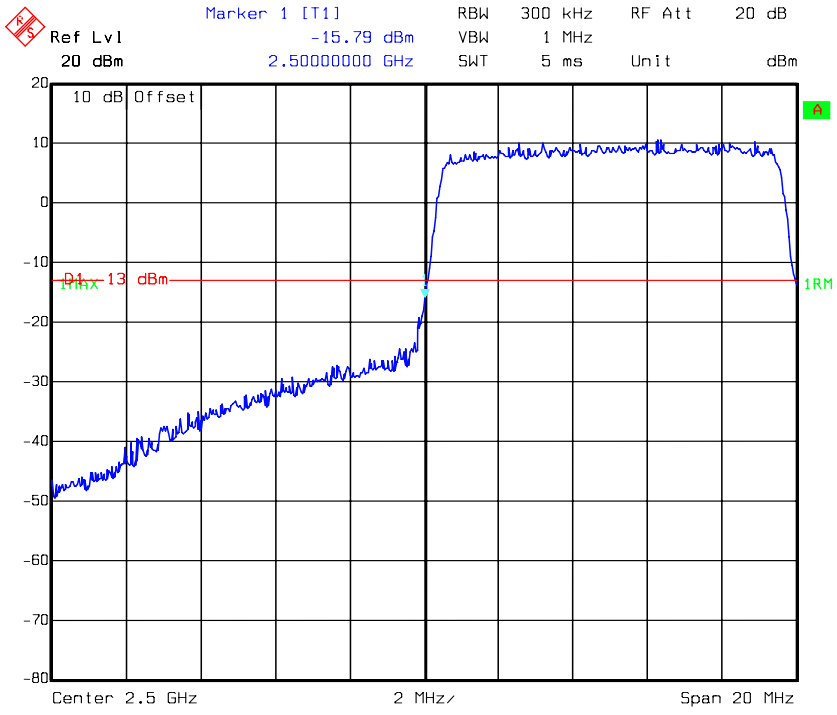
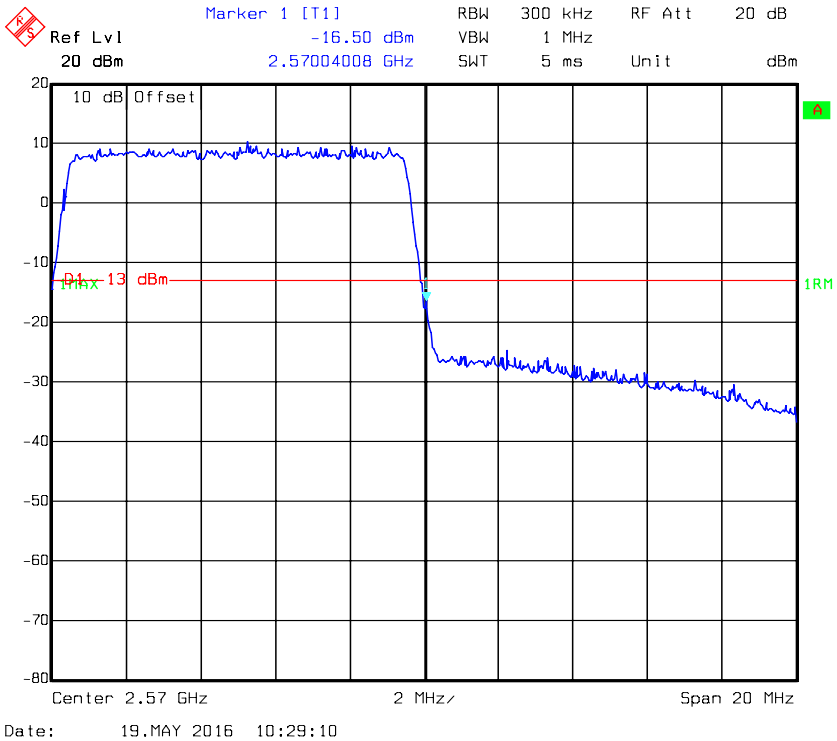
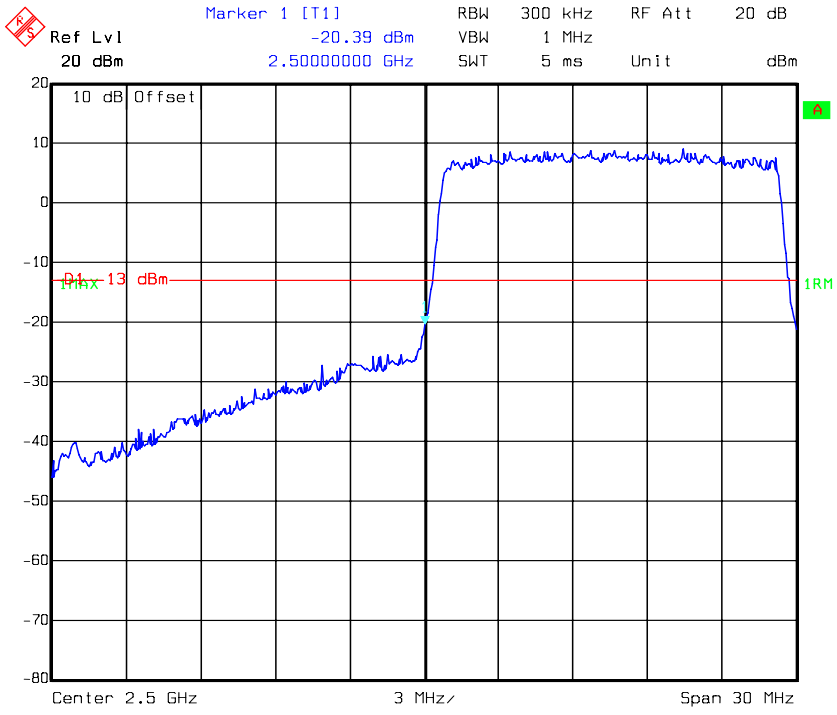


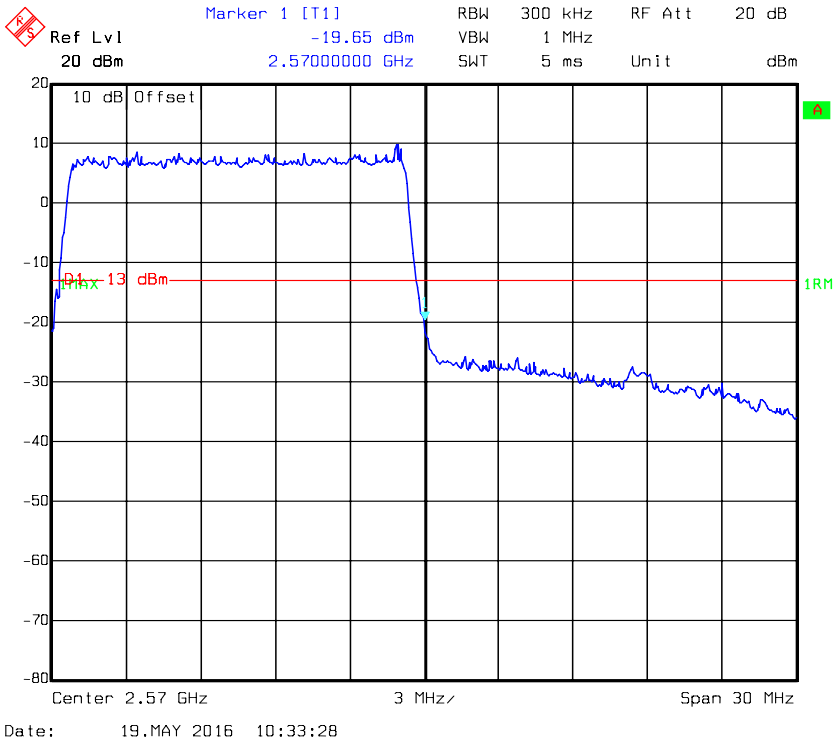
16QAM_10MHz_ FULL RB_ Right



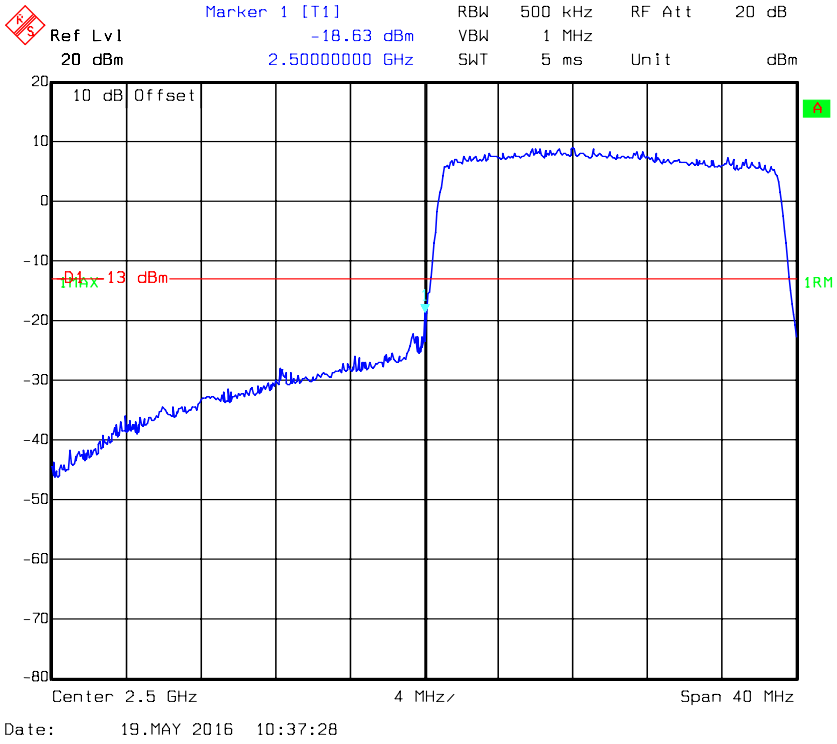
16QAM_15MHz_ FULL RB_ Left



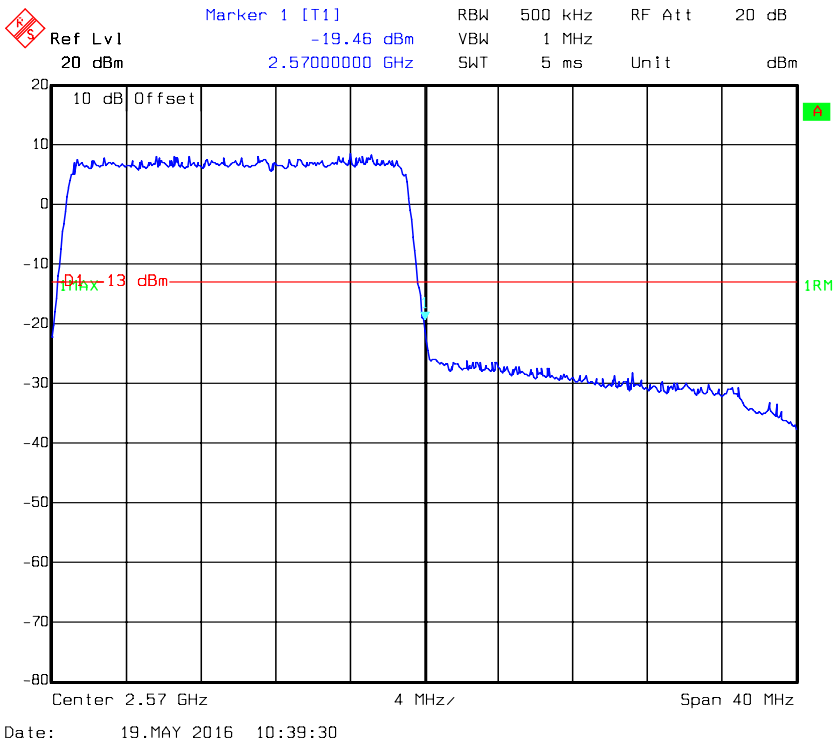
16QAM_15MHz_ FULL RB_ Right



16QAM_20MHz_ FULL RB_ Left



16QAM_20MHz_ 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.

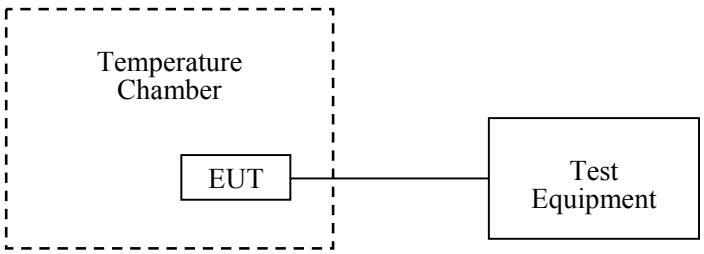
According to §27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

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	2015-07-28	2016-07-27
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:	28.1°C
Relative Humidity:	62 %
ATM Pressure:	100.8 kPa

The testing was performed by Robin Zheng from 2016-05-20.

Cellular Band (Part 22H)

GMSK, Middle Channel, f_c = 836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.8	2	0.002	2.5
-20	3.8	4	0.005	2.5
-10	3.8	1	0.001	2.5
0	3.8	-2	-0.002	2.5
10	3.8	0	0.000	2.5
20	3.8	1	0.001	2.5
30	3.8	5	0.006	2.5
40	3.8	3	0.004	2.5
50	3.8	-1	-0.001	2.5
25	3.6	1	0.001	2.5
25	4.35	0	0.000	2.5

PCS Band (Part 24E)

GMSK, Middle Channel, f_c = 1880.0 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	8	0.004	Pass
-20	3.8	11	0.006	Pass
-10	3.8	13	0.007	Pass
0	3.8	9	0.005	Pass
10	3.8	10	0.005	Pass
20	3.8	12	0.006	Pass
30	3.8	11	0.006	Pass
40	3.8	7	0.004	Pass
50	3.8	9	0.005	Pass
25	3.6	12	0.006	Pass
25	4.35	14	0.007	Pass

WCDMA Band V: Re199

Middle Channel, f_c = 836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.8	-3	-0.004	2.5
-20	3.8	1	0.001	2.5
-10	3.8	-1	-0.001	2.5
0	3.8	0	0.000	2.5
10	3.8	4	0.005	2.5
20	3.8	2	0.002	2.5
30	3.8	-2	-0.002	2.5
40	3.8	3	0.004	2.5
50	3.8	5	0.006	2.5
25	3.6	2	0.002	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**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	3	0.002	Pass
-20	3.8	-1	-0.001	Pass
-10	3.8	0	0.000	Pass
0	3.8	5	0.003	Pass
10	3.8	1	0.001	Pass
20	3.8	3	0.002	Pass
30	3.8	-2	-0.001	Pass
40	3.8	-1	-0.001	Pass
50	3.8	4	0.002	Pass
25	3.6	2	0.001	Pass
25	4.35	1	0.001	Pass

LTE Band II:

QPSK, Channel Bandwidth:10MHz Middle Channel, f_c = 1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	2	0.0011	Pass
-20	3.8	3	0.0016	Pass
-10	3.8	6	0.0032	Pass
0	3.8	1	0.0005	Pass
10	3.8	-1	-0.0005	Pass
20	3.8	-2	-0.0011	Pass
30	3.8	0	0.0000	Pass
40	3.8	3	0.0016	Pass
50	3.8	0	0.0000	Pass
25	3.6	2	0.0011	Pass
25	4.35	6	0.0032	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, f_c = 1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	1	0.0005	Pass
-20	3.8	-3	-0.0016	Pass
-10	3.8	6	0.0032	Pass
0	3.8	1	0.0005	Pass
10	3.8	-1	-0.0005	Pass
20	3.8	-1	-0.0005	Pass
30	3.8	-3	-0.0016	Pass
40	3.8	3	0.0016	Pass
50	3.8	-2	-0.0011	Pass
25	3.6	6	0.0032	Pass
25	4.35	1	0.0005	Pass

LTE Band IV:

QPSK, Channel Bandwidth:10MHz Middle Channel, f_c = 1732.5 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	6	0.0035	Pass
-20	3.8	9	0.0052	Pass
-10	3.8	4	0.0023	Pass
0	3.8	11	0.0063	Pass
10	3.8	6	0.0035	Pass
20	3.8	12	0.0069	Pass
30	3.8	8	0.0046	Pass
40	3.8	1	0.0006	Pass
50	3.8	2	0.0012	Pass
25	3.6	7	0.0040	Pass
25	4.35	6	0.0035	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, f_c = 1732.5 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	5	0.0029	Pass
-20	3.8	10	0.0058	Pass
-10	3.8	3	0.0017	Pass
0	3.8	2	0.0012	Pass
10	3.8	5	0.0029	Pass
20	3.8	6	0.0035	Pass
30	3.8	6	0.0035	Pass
40	3.8	8	0.0046	Pass
50	3.8	4	0.0023	Pass
25	3.6	5	0.0029	Pass
25	4.35	1	0.0006	Pass

LTE Band VII:

QPSK, Channel Bandwidth:10MHz Middle Channel, f_c = 2535 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	1.00	0.0004	Pass
-20	3.8	13.00	0.0051	Pass
-10	3.8	10.00	0.0039	Pass
0	3.8	5.00	0.0020	Pass
10	3.8	1.00	0.0004	Pass
20	3.8	1.00	0.0004	Pass
30	3.8	12.00	0.0047	Pass
40	3.8	10.00	0.0039	Pass
50	3.8	3.00	0.0012	Pass
25	3.6	10.00	0.0039	Pass
25	4.35	5.00	0.0020	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, f_c =2535 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	6.00	0.0024	Pass
-20	3.8	7.00	0.0028	Pass
-10	3.8	3.00	0.0012	Pass
0	3.8	4.00	0.0016	Pass
10	3.8	6.00	0.0024	Pass
20	3.8	3.00	0.0012	Pass
30	3.8	11.00	0.0043	Pass
40	3.8	4.00	0.0016	Pass
50	3.8	10.00	0.0039	Pass
25	3.6	4.00	0.0016	Pass
25	4.35	5.00	0.0020	Pass

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

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