



## FCC PART 22H, PART 24E

## FCC PART 27

# MEASUREMENT AND TEST REPORT

For

## Posh Mobile Limited

1011A, 10/F., Harbour Centre Tower 1, No. 1 Hok Cheung St., Hung Hom, Kowloon, Hong Kong

**FCC ID: 2ABN6L530**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Optima LTE
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**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan).

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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

The *Posh Mobile Limited*'s product, model number: *L530(FCC ID: 2ABN6L530)* (the "EUT") in this report was a *Optima LTE*, which was measured approximately: 14.3 cm (L) x 7.1 cm (W) x 0.83cm (H), rated input voltage: DC3.8V rechargeable Li-ion battery or DC5V charging from adapter.

Adapter information:

PART NO.: C01-L530

MODEL: A88-501500

INPUT: 100-240V ~ 50/60Hz 0.35A

OUTPUT: DC 5V, 1.5A

*All measurement and test data in this report was gathered from production sample serial number: 160407001 (Assigned by BACL, Dongguan). The EUT was received on 2016-04-13.*

### Objective

This report is prepared on behalf of *Posh Mobile 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: 2ABN6L530

FCC Part 15C DSS submissions with FCC ID: 2ABN6L530

FCC Part 15C DTS submissions with FCC ID: 2ABN6L530

### 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.

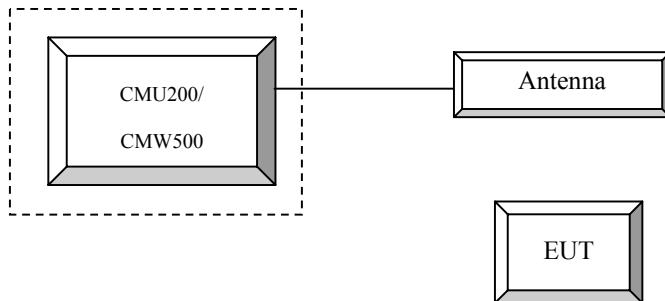
### Equipment Modifications

No modification was made to the EUT.

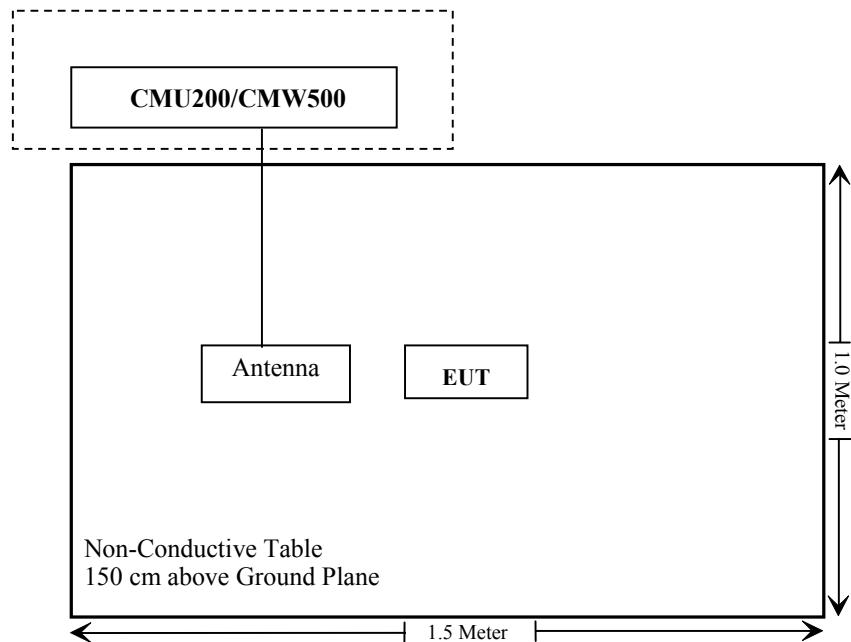
### Support Equipment List and Details

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: RDG160407001-20.

## **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 stable)

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).

<b>WCDMA General Settings</b>	Loopback Mode	Test Mode 1		
	Rel99 RMC	12.2kbps RMC		
	Power Control Algorithm	Algorithm2		
	$\beta_c / \beta_d$	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 1	HSDPA 2	HSDPA 3	HSDPA 4
	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			
	$\beta_c$	2/15	12/15	15/15	15/15
	$\beta_d$	15/15	15/15	8/15	4/15
	$\beta_d$ (SF)	64			
	$\beta_c / \beta_d$	2/15	12/15	15/8	15/4
	$\beta_{hs}$	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			
	$A_{hs} = \beta_{hs} / \beta_c$	30/15			

## WCDMA HSUPA

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

	<b>Mode</b>	<b>HSUPA</b>	<b>HSUPA</b>	<b>HSUPA</b>	<b>HSUPA</b>	<b>HSUPA</b>
	<b>Subset</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>WCDM A General Settings</b>	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	$\beta_c$	11/15	6/15	15/15	2/15	15/15
	$\beta_d$	15/15	15/15	9/15	15/15	0
	$\beta_{ec}$	209/225	12/15	30/15	2/15	5/15
	$\beta_c / \beta_d$	11/15	6/15	15/9	2/15	-
<b>HSDPA Specific Settings</b>	$\beta_{hs}$	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
	DACK	8				
	DNAK	8				
	DCQI	8				
<b>HSUPA Specific Settings</b>	Ack-Nack repetition factor	3				
	CQI Feedback	4ms				
	CQI Repetition Factor	2				
	$A_{hs} = \beta_{hs} / \beta_c$	30/15				
	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
<b>HSUPA Specific Settings</b>	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_FCl	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 PO 4 E-TFCI 67 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

<b>Sub-test</b>	$\beta_c$ (Note 3)	$\beta_d$	$\beta_{HS}$ (Note 1)	$\beta_{ec}$	$\beta_{ed}$ (2xSF2) (Note 4)	$\beta_{ed}$ (2xSF4) (Note 4)	<b>CM</b> (dB) (Note 2)	<b>MPR</b> (dB) (Note 2)	<b>AG Index</b> (Note 4)	<b>E-TFCI</b> (Note 5)	<b>E-TFCI</b> (boost)
1	1	0	30/15	30/15	$\beta_{ed1}: 30/15$ $\beta_{ed2}: 30/15$	$\beta_{ed3}: 24/15$ $\beta_{ed4}: 24/15$	3.5	2.5	14	105	105

Note 1:  $\Delta_{ACK}, \Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{hs} = 30/15 * \beta_c$ .

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  $\beta_c$  is set to 1 and  $\beta_d = 0$  by default.

Note 4:  $\beta_{ed}$  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**

<b>Parameter</b>	<b>Unit</b>	<b>Value</b>
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Proces ses	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
64 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 Signalling 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
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 <sup>1</sup>	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	2015-05-09	2016-05-09
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	DE31388	2015-05-09	2016-05-09
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	2015-05-06	2016-05-06
N/A	Coaxial Cable	8m	N/A	2015-05-06	2016-05-06
N/A	Coaxial Cable	0.1m	N/A	2015-05-06	2016-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2015-05-06	2016-05-06
E-Microwave	Attenuator	EMCA10-5RN	OE01203239	2015-05-08	2016-05-08
Pasternack	RF Coaxial Cable	RF-01	N/A	2015-05-06	2016-05-06
Pasternack	RF Coaxial Cable	RF-02	N/A	2015-05-06	2016-05-06
N/A	Two-way Splitter	ODP-1-6-2S	OE0120142	2015-05-06	2016-05-06

\* **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

<b>Temperature:</b>	25.6~25.7°C
<b>Relative Humidity:</b>	61~71 %
<b>ATM Pressure:</b>	100.3~101.1 kPa

The testing was performed by Rocky Xiao from 2016-04-14 to 2016-04-19.

**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	32.30	32.23	31.51	29.49	28.37	25.80	24.87	22.98	22.33	
	190	32.30	32.24	31.49	29.37	28.26	25.75	24.76	22.03	22.31	
	251	32.20	32.17	31.42	29.25	28.14	25.66	24.71	22.02	22.31	
PCS	512	29.90	29.82	28.95	27.16	26.51	26.75	26.02	23.85	22.34	
	661	29.90	29.86	29.03	27.37	26.69	26.77	26.07	24.03	22.32	
	810	29.90	29.88	29.25	27.85	27.24	26.67	26.02	23.98	22.55	

**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	22.98	2.64	22.99	2.50	23.07	2.52
HSDPA (QPSK)	1	22.49	2.56	22.55	2.44	22.58	2.43
	2	22.54	2.57	22.52	2.43	22.65	2.41
	3	22.56	2.62	22.49	2.41	22.68	2.50
	4	22.57	2.59	22.50	2.42	22.66	2.47
HSUPA (QPSK)	1	22.57	2.60	22.53	2.49	22.65	2.45
	2	22.54	2.56	22.57	2.43	22.64	2.42
	3	22.56	2.58	22.53	2.46	22.62	2.46
	4	22.54	2.54	22.54	2.44	22.59	2.49
	5	22.58	2.56	22.54	2.42	22.63	2.43
DC-HSDPA (QPSK)	1	22.5	2.54	22.57	2.44	22.64	2.42
	2	22.52	2.61	22.57	2.46	22.62	2.45
	3	22.48	2.59	22.57	2.48	22.58	2.45
	4	22.56	2.63	22.52	2.48	22.58	2.44
HSPA+ (16QAM)	1	22.56	2.63	22.53	2.46	22.62	2.42

**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	23.05	2.92	23.04	3.06	22.97	2.94
HSDPA (QPSK)	1	22.54	2.9	22.5	3.04	22.55	2.98
	2	22.55	2.91	22.52	3.03	22.52	2.98
	3	22.54	2.92	22.52	3.05	22.52	2.98
	4	22.51	2.87	22.50	3.01	22.53	3.05
HSUPA (QPSK)	1	22.55	2.91	22.51	3.04	22.51	2.98
	2	22.58	2.90	22.53	3.04	22.57	3.00
	3	22.54	2.87	22.57	2.99	22.55	3.05
	4	22.56	2.84	22.58	3.04	22.55	2.98
DC-HSDPA (QPSK)	1	22.52	2.86	22.57	3.03	22.52	3.02
	2	22.57	2.91	22.54	3.04	22.53	3.03
	3	22.58	2.91	22.56	3.00	22.56	3.03
	4	22.56	2.86	22.59	3.04	22.59	3.05
	5	22.51	2.85	22.50	3.04	22.57	3.04
HSPA+ (16QAM)	1	22.58	2.88	22.55	3.06	22.55	3.04

**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	21.40	21.64	21.61
		1#3	21.45	21.68	21.65
		1#5	21.41	21.67	21.62
		3#0	21.52	21.76	21.68
		3#1	21.52	21.77	21.68
		3#3	21.52	21.77	21.69
		6#0	20.34	20.62	20.51
	16QAM	1#0	20.43	20.66	20.70
		1#3	20.52	20.70	20.72
		1#5	20.46	20.70	20.69
		3#0	20.43	20.64	20.70
		3#1	20.54	20.71	20.71
		3#3	20.44	20.68	20.66
		6#0	20.34	20.39	20.37

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
3 MHz	QPSK	1#0	21.27	21.62	21.58
		1#7	21.26	21.65	21.58
		1#14	21.30	21.61	21.51
		8#0	20.34	20.71	20.57
		8#4	20.41	20.62	20.57
		8#7	20.34	20.63	20.60
		15#0	20.37	20.71	20.65
	16QAM	1#0	20.24	20.59	20.52
		1#7	20.27	20.61	20.56
		1#14	20.35	20.61	20.59
		8#0	21.03	20.45	20.38
		8#4	20.44	20.44	20.37
		8#7	20.34	20.36	20.31
		15#0	20.14	20.39	20.33
5 MHz	QPSK	1#0	21.02	21.26	21.27
		1#12	20.97	21.35	21.29
		1#24	21.00	21.31	21.24
		12#0	20.74	21.07	21.07
		12#6	20.78	21.09	21.02
		12#11	20.79	21.1	21.04
		25#0	20.8	21.1	21.01
	16QAM	1#0	20.62	20.94	20.97
		1#12	20.72	21.04	21.01
		1#24	20.77	21.08	21.00
		12#0	20.67	20.09	20.08
		12#6	20.37	20.66	20.63
		12#11	20.39	20.69	20.61
		25#0	20.41	20.64	20.59
10 MHz	QPSK	1#0	21.71	21.91	21.94
		1#24	20.73	21.00	21.02
		1#49	20.69	21.01	20.94
		25#0	20.36	20.67	20.57
		25#12	20.45	20.68	20.64
		25#24	20.34	20.7	20.58
		50#0	20.44	20.69	20.60
	16QAM	1#0	20.31	20.56	20.54
		1#24	20.33	20.65	20.60
		1#49	20.5	20.68	20.57
		25#0	20.32	20.45	20.39
		25#12	20.38	20.37	20.38
		25#24	20.41	20.34	20.45
		50#0	20.43	20.35	20.48

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15 MHz	QPSK	1#0	21.27	21.41	21.37
		1#37	21.28	21.59	21.62
		1#74	21.33	21.64	21.57
		36#0	20.30	20.70	20.66
		36#17	20.43	20.68	20.63
		36#35	20.32	20.64	20.63
		75#0	20.41	20.69	20.58
	16QAM	1#0	20.27	20.60	20.50
		1#37	20.28	20.67	20.52
		1#74	20.32	20.68	20.58
		36#0	20.30	19.69	19.71
		36#17	21.10	20.49	20.51
		36#35	20.23	20.45	20.46
		75#0	20.14	20.42	20.42
20 MHz	QPSK	1#0	21.78	21.94	21.92
		1#49	21.79	22.09	22.11
		1#99	21.81	22.12	22.03
		50#0	21.02	21.40	21.36
		50#24	21.11	21.38	21.33
		50#49	21.02	21.31	21.35
		100#0	21.10	21.41	21.27
	16QAM	1#0	21.01	21.25	21.25
		1#49	20.99	21.34	21.28
		1#99	21.03	21.33	21.32
		50#0	20.96	20.46	20.34
		50#24	20.42	20.43	20.36
		50#49	20.80	20.40	20.49
		100#0	20.56	20.35	20.76

**LTE Band IV (PART 27)**

<b>Channel Bandwidth</b>	<b>Modulation</b>	<b>Resource Block &amp; RB offset</b>	<b>Low Channel (dBm)</b>	<b>Middle Channel (dBm)</b>	<b>High Channel (dBm)</b>
1.4MHz	QPSK	1#0	21.22	21.59	21.63
		1#3	21.21	21.42	21.38
		1#5	21.19	21.42	21.40
		3#0	21.35	21.56	21.50
		3#1	21.28	21.51	21.42
		3#3	21.27	21.54	21.51
		6#0	21.10	21.37	21.26
	16QAM	1#0	20.54	20.48	20.45
		1#3	20.58	20.50	20.48
		1#5	20.38	20.46	20.47
		3#0	20.67	20.46	20.46
		3#1	20.31	20.51	20.50
		3#3	20.53	20.50	20.43
		6#0	20.63	20.32	20.49
3 MHz	QPSK	1#0	21.39	21.51	21.53
		1#7	21.38	21.58	21.54
		1#14	21.40	21.59	21.51
		8#0	21.40	21.62	21.56
		8#4	21.47	21.69	21.62
		8#7	21.44	21.67	21.55
		15#0	21.48	21.66	21.59
	16QAM	1#0	21.39	21.50	21.46
		1#7	21.40	21.59	21.50
		1#14	21.40	21.61	21.52
		8#0	21.41	20.72	20.66
		8#4	20.52	20.63	20.63
		8#7	20.48	20.58	20.61
		15#0	20.54	20.63	20.51

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	1#0	21.37	21.51	21.55
		1#12	21.40	21.62	21.54
		1#24	21.43	21.55	21.52
		12#0	21.39	21.62	21.58
		12#6	21.49	21.67	21.55
		12#11	21.50	21.62	21.58
		25#0	21.45	21.62	21.62
	16QAM	1#0	21.32	21.52	21.50
		1#12	21.37	21.64	21.50
		1#24	21.46	21.64	21.53
		12#0	21.45	20.72	20.60
		12#6	20.48	20.70	20.59
		12#11	20.50	20.65	20.54
		25#0	20.52	20.58	20.55
10 MHz	QPSK	1#0	21.11	21.23	21.26
		1#24	21.07	21.26	21.22
		1#49	21.15	21.25	21.27
		25#0	21.12	21.37	21.29
		25#12	21.23	21.38	21.33
		25#24	21.16	21.38	21.32
		50#0	21.18	21.30	21.33
	16QAM	1#0	20.40	20.57	20.65
		1#24	20.47	20.55	20.49
		1#49	20.31	20.39	20.74
		25#0	20.46	20.35	20.35
		25#12	20.41	20.35	20.49
		25#24	20.35	20.38	20.32
		50#0	20.55	20.32	20.31

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15 MHz	QPSK	1#0	21.42	21.57	21.59
		1#37	21.40	21.64	21.59
		1#74	21.37	21.58	21.49
		36#0	20.42	20.59	20.63
		36#17	20.54	20.64	20.59
		36#35	20.46	20.63	20.54
		75#0	20.47	20.66	20.64
	16QAM	1#0	20.35	20.50	20.53
		1#37	20.37	20.59	20.57
		1#74	20.41	20.65	20.60
		36#0	20.38	20.74	20.63
		36#17	20.49	20.62	20.57
		36#35	20.42	20.62	20.59
		75#0	20.51	20.60	20.55
20 MHz	QPSK	1#0	21.53	21.59	21.59
		1#49	21.52	21.69	21.67
		1#99	21.56	21.62	21.65
		50#0	20.49	20.70	20.73
		50#24	20.56	20.79	20.74
		50#49	20.56	20.71	20.71
		100#0	20.63	20.78	20.73
	16QAM	1#0	20.47	20.60	20.56
		1#49	20.49	20.66	20.64
		1#99	20.52	20.71	20.69
		50#0	20.54	20.79	20.72
		50#24	20.59	20.73	20.71
		50#49	20.53	20.69	20.62
		100#0	20.64	20.67	20.65

**LTE Band VII (PART 27)**

<b>Channel Bandwidth</b>	<b>Modulation</b>	<b>Resource Block &amp; RB offset</b>	<b>Low Channel (dBm)</b>	<b>Middle Channel (dBm)</b>	<b>High Channel (dBm)</b>
5 MHz	QPSK	1#0	21.13	21.48	21.46
		1#12	21.07	21.42	21.44
		1#24	21.10	21.43	21.39
		12#0	20.36	20.47	20.46
		12#6	20.40	20.49	20.41
		12#11	20.36	20.48	20.51
		25#0	20.36	20.52	20.41
	16QAM	1#0	20.35	20.38	20.44
		1#12	20.38	20.48	20.45
		1#24	20.41	20.49	20.42
		12#0	20.44	20.71	20.71
		12#6	20.44	20.76	20.68
		12#11	20.31	20.66	20.65
		25#0	20.48	20.69	20.58
10 MHz	QPSK	1#0	21.17	21.55	21.52
		1#24	21.22	21.51	21.49
		1#49	21.26	21.51	21.48
		25#0	20.25	20.58	20.56
		25#12	20.31	20.64	20.56
		25#24	20.38	20.56	20.60
		50#0	20.46	20.56	20.55
	16QAM	1#0	20.42	20.46	20.54
		1#24	20.36	20.52	20.54
		1#49	20.42	20.53	20.54
		25#0	20.59	20.64	20.55
		25#12	20.30	20.66	20.55
		25#24	20.32	20.59	20.57
		50#0	20.37	20.53	20.47

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15 MHz	QPSK	1#0	21.43	21.74	21.79
		1#37	21.38	21.76	21.68
		1#74	21.36	21.74	21.67
		36#0	20.42	20.77	20.72
		36#17	20.43	20.73	20.75
		36#35	20.44	20.73	20.79
		75#0	20.50	20.81	20.71
	16QAM	1#0	20.38	20.66	20.72
		1#37	20.41	20.72	20.73
		1#74	20.38	20.74	20.70
		36#0	20.42	20.79	20.75
		36#17	20.45	20.83	20.69
		36#35	20.44	20.73	20.69
		75#0	20.48	20.71	20.64
20 MHz	QPSK	1#0	21.36	21.71	21.68
		1#49	21.29	21.69	21.64
		1#99	21.31	21.61	21.60
		50#0	20.30	20.70	20.68
		50#24	20.42	20.66	20.67
		50#49	20.34	20.67	20.71
		100#0	20.39	20.70	20.64
	16QAM	1#0	20.30	20.63	20.60
		1#49	20.33	20.63	20.62
		1#99	20.34	20.71	20.64
		50#0	20.46	20.73	20.69
		50#24	20.36	20.70	20.62
		50#49	20.36	20.63	20.65
		100#0	20.48	20.65	20.57

**LTE Band 17 (PART 27)**

<b>Channel Bandwidth</b>	<b>Modulation</b>	<b>Resource Block &amp; RB offset</b>	<b>Low Channel (dBm)</b>	<b>Middle Channel (dBm)</b>	<b>High Channel (dBm)</b>
5 MHz	QPSK	1#0	20.30	20.55	20.56
		1#12	20.31	20.69	20.66
		1#24	20.37	20.59	20.58
		12#0	20.34	20.74	20.66
		12#6	20.37	20.64	20.61
		12#11	20.37	20.72	20.69
		25#0	20.36	20.72	20.65
	16QAM	1#0	20.38	20.65	20.70
		1#12	20.45	20.69	20.71
		1#24	20.46	20.79	20.73
		12#0	20.31	20.75	20.64
		12#6	20.44	20.72	20.60
		12#11	20.35	20.64	20.63
		25#0	20.42	20.64	20.56
10 MHz	QPSK	1#0	21.37	21.60	21.64
		1#24	21.29	21.66	21.64
		1#49	21.35	21.63	21.59
		25#0	20.38	20.71	20.68
		25#12	20.37	20.66	20.62
		25#24	20.35	20.65	20.71
		50#0	20.45	20.70	20.63
	16QAM	1#0	20.26	20.63	20.57
		1#24	20.29	20.67	20.67
		1#49	20.32	20.68	20.60
		25#0	20.42	20.87	20.78
		25#12	20.54	20.81	20.71
		25#24	20.50	20.73	20.72
		50#0	20.47	20.67	20.63

**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	4.00	3.44	13
	100 RB		5.24	5.32	4.32	13
16QAM	1 RB	20 MHz	6.36	6.44	6.32	13
	100 RB		7.16	7.24	7.16	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	4.64	4.72	4.80	13
	100 RB		4.92	5.64	5.48	13
16QAM	1 RB	20 MHz	6.32	6.40	6.44	13
	100 RB		7.00	7.08	7.16	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	3.36	3.92	3.44	13
	100 RB		4.64	5.00	3.80	13
16QAM	1 RB	20 MHz	6.36	6.52	6.40	13
	100 RB		7.08	7.20	7.00	13

**Band 17**

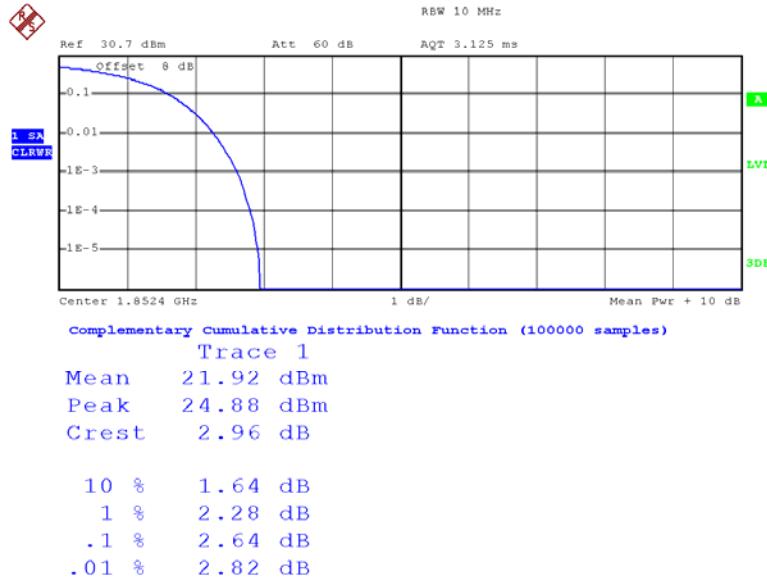
Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	5.04	5.08	5.36	13
	100 RB		6.08	6.08	6.40	13
16QAM	1 RB	10 MHz	5.76	5.68	5.76	13
	100 RB		6.76	6.76	6.68	13

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

Peak-to-average ratio (PAR)

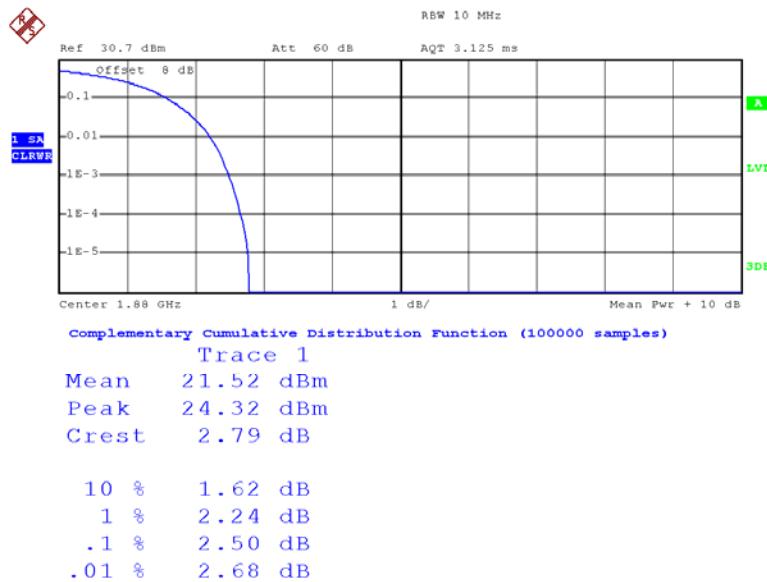
## WCDMA Band II

### Low Channel

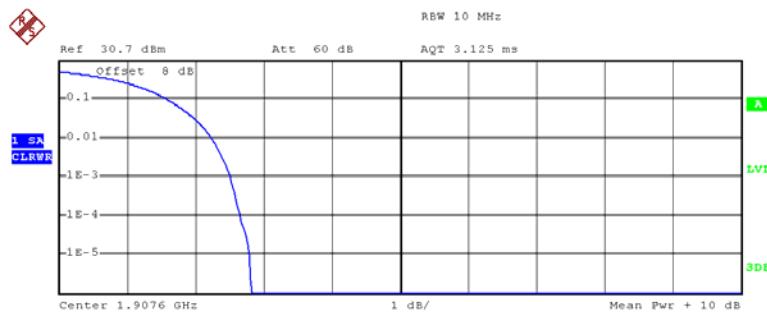


Date: 19.APR.2016 16:05:51

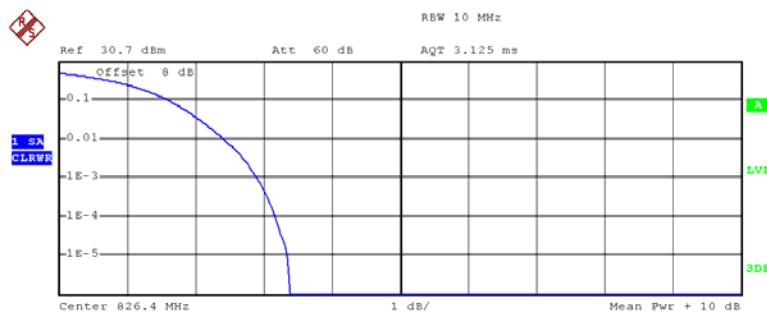
### Middle Channel



Date: 19.APR.2016 16:06:08

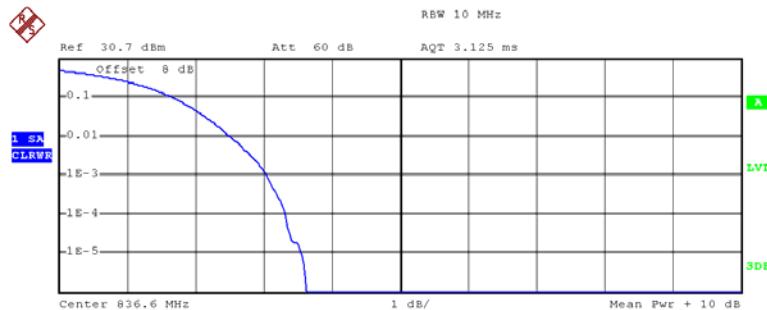
**High Channel**

Date: 19.APR.2016 16:06:25

**WCDMA Band V****Low Channel**

Date: 19.APR.2016 16:04:39

### Middle Channel



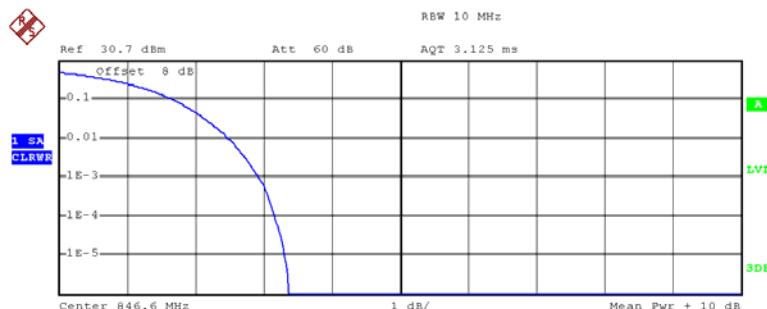
complementary Cumulative Distribution Function (100000 samples)

Trace 1  
Mean 22.45 dBm  
Peak 26.08 dBm  
Crest 3.63 dB

10 % 1.70 dB  
1 % 2.52 dB  
.1 % 3.06 dB  
.01 % 3.32 dB

Date: 19.APR.2016 16:05:04

### High Channel

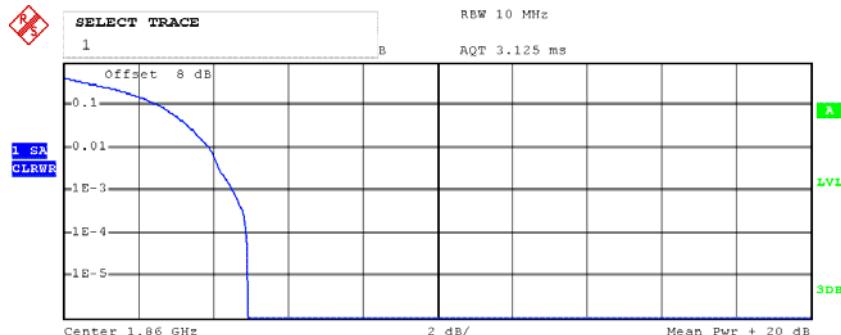


complementary Cumulative Distribution Function (100000 samples)

Trace 1  
Mean 22.35 dBm  
Peak 25.73 dBm  
Crest 3.38 dB

10 % 1.70 dB  
1 % 2.50 dB  
.1 % 2.94 dB  
.01 % 3.18 dB

Date: 19.APR.2016 16:05:18

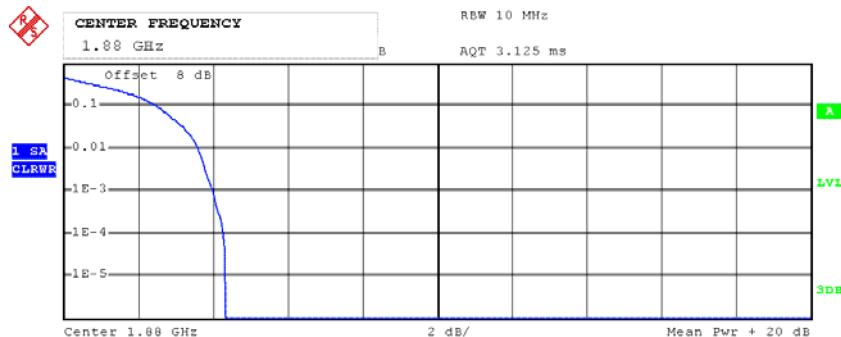
**LTE Band II (PART 27)****QPSK\_20MHz\_1RB\_Low Channel**

Complementary Cumulative Distribution Function (100000 samples)

Trace 1  
Mean 21.59 dBm  
Peak 26.53 dBm  
Crest 4.94 dB

10% @ 2.60 dB  
1% @ 3.92 dB  
.1% @ 4.56 dB

Date: 14.APR.2016 20:33:57

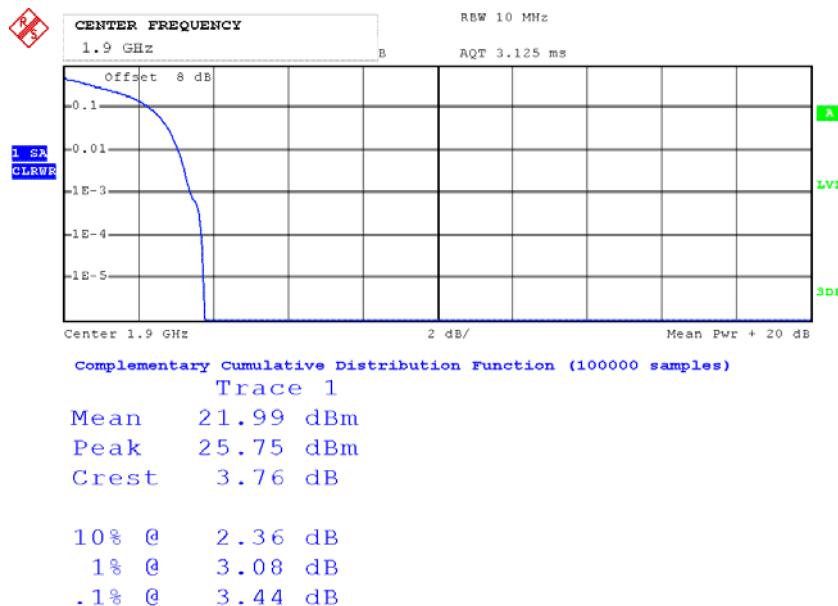
**QPSK\_20MHz\_1RB Middle Channel**

Complementary Cumulative Distribution Function (100000 samples)

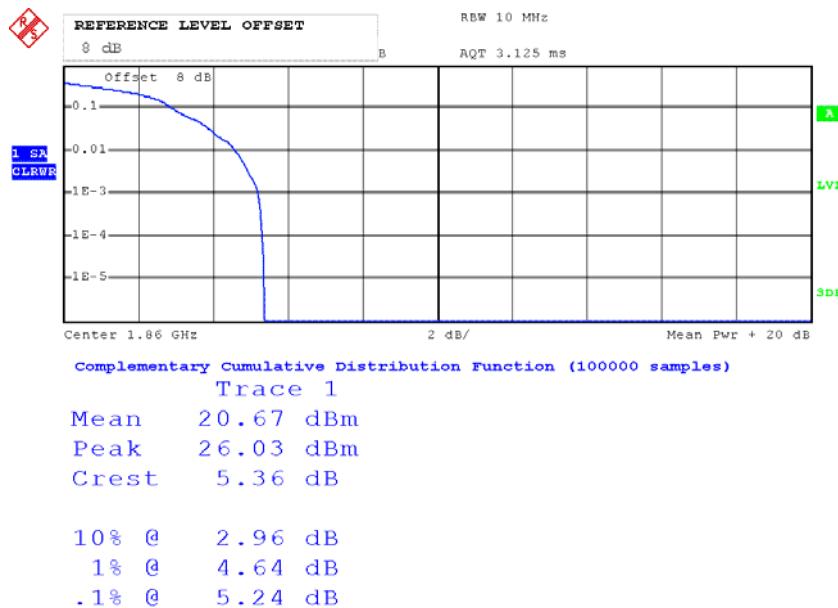
Trace 1  
Mean 21.97 dBm  
Peak 26.32 dBm  
Crest 4.35 dB

10% @ 2.52 dB  
1% @ 3.64 dB  
.1% @ 4.00 dB

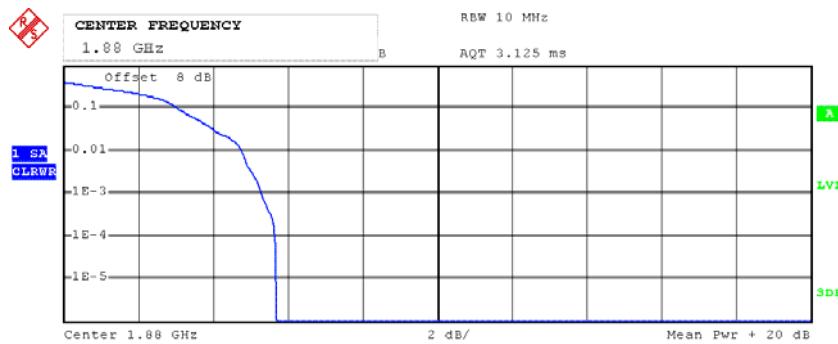
Date: 14.APR.2016 20:34:16

**QPSK\_20MHz\_1RB High Channel**

Date: 14.APR.2016 20:34:29

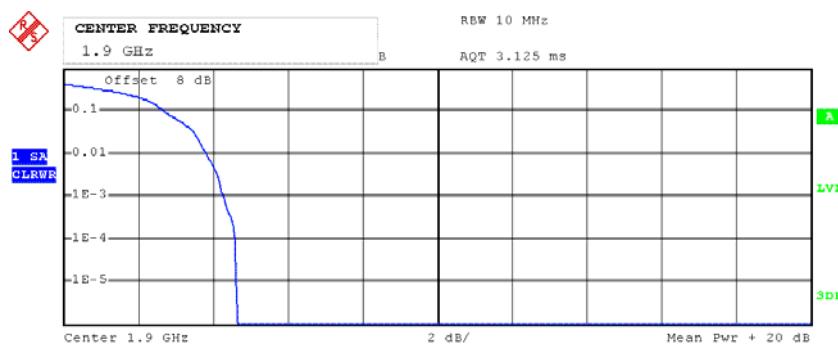
**QPSK\_20MHz\_FULL RB Low Channel**

Date: 14.APR.2016 20:38:19

**QPSK\_20MHz\_FULL RB Middle Channel**

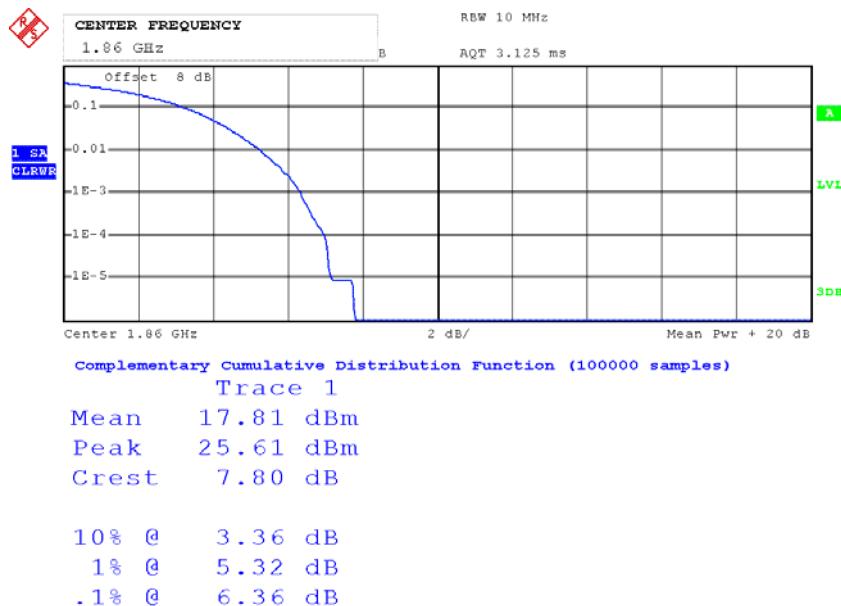
Complementary Cumulative Distribution Function (100000 samples)  
 Trace 1  
 Mean 20.76 dBm  
 Peak 26.46 dBm  
 Crest 5.69 dB  
 10% @ 3.12 dB  
 1% @ 4.80 dB  
 .1% @ 5.32 dB

Date: 14.APR.2016 20:38:33

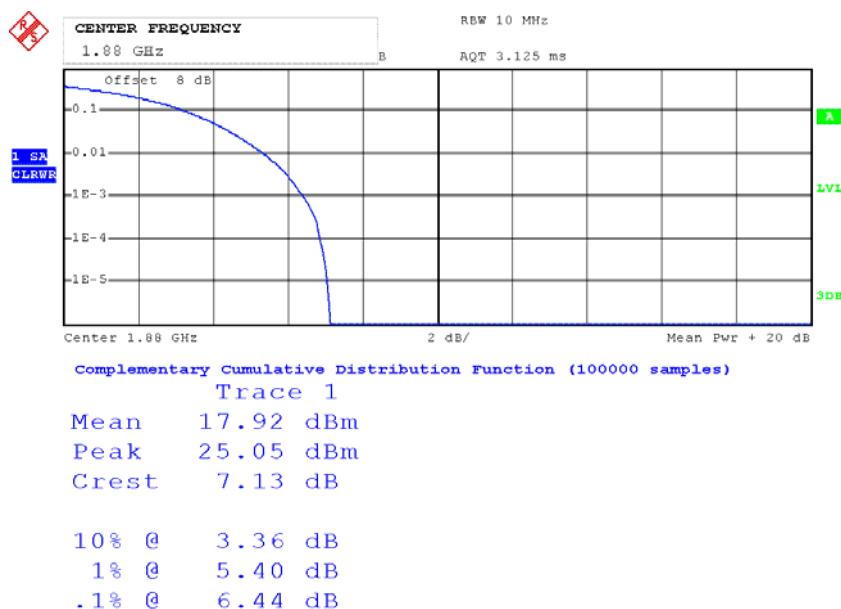
**QPSK 20MHz\_FULL RB High Channel**

Complementary Cumulative Distribution Function (100000 samples)  
 Trace 1  
 Mean 21.12 dBm  
 Peak 25.75 dBm  
 Crest 4.63 dB  
 10% @ 2.76 dB  
 1% @ 3.84 dB  
 .1% @ 4.32 dB

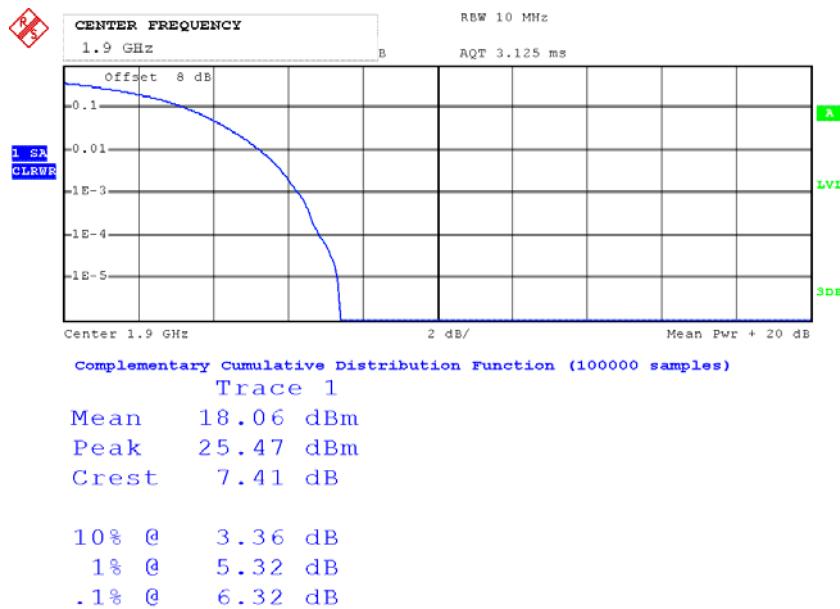
Date: 14.APR.2016 20:38:45

**16QAM\_20MHz\_1RB\_Low Channel**

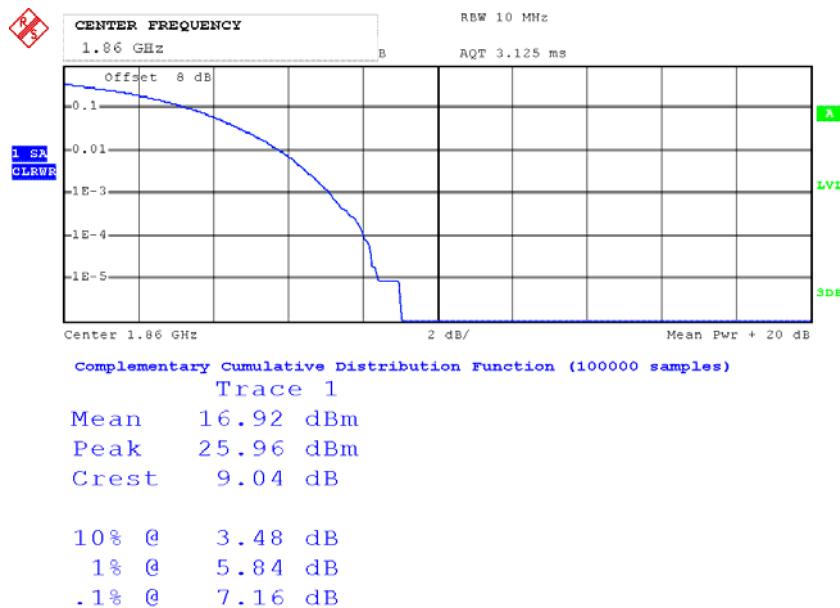
Date: 14.APR.2016 20:35:45

**16QAM 20MHz\_1RB Middle Channel**

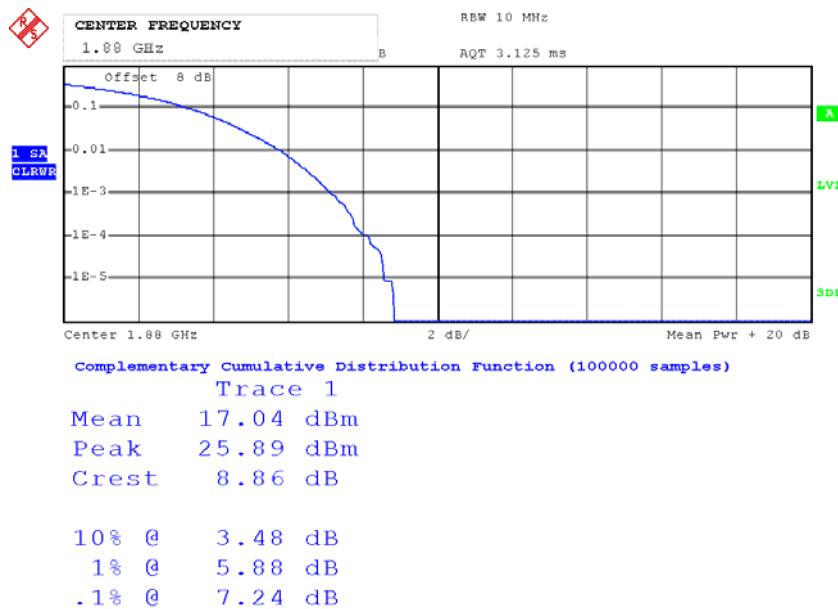
Date: 14.APR.2016 20:36:01

**16QAM 20MHz\_1RB High Channel**

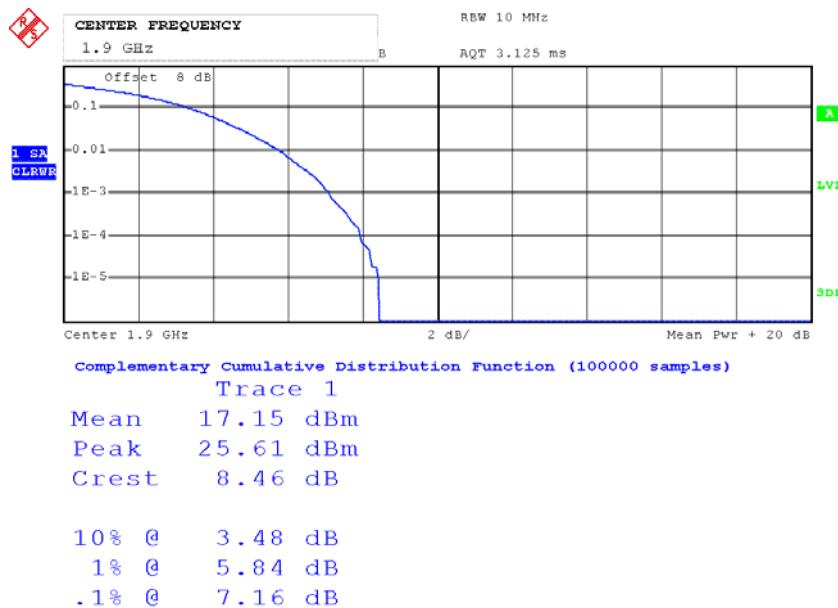
Date: 14.APR.2016 20:36:19

**16QAM 20MHz\_FULL RB Low Channel**

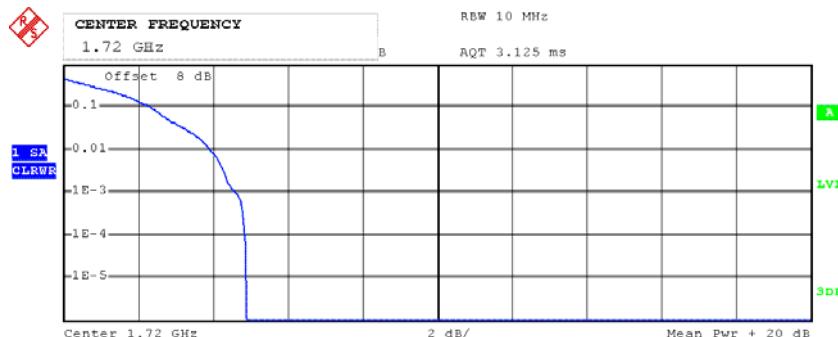
Date: 14.APR.2016 20:39:13

**16QAM 20MHz\_FULL RB Middle Channel**

Date: 14.APR.2016 20:39:25

**16QAM 20MHz\_FULL RB High Channel**

Date: 14.APR.2016 20:39:37

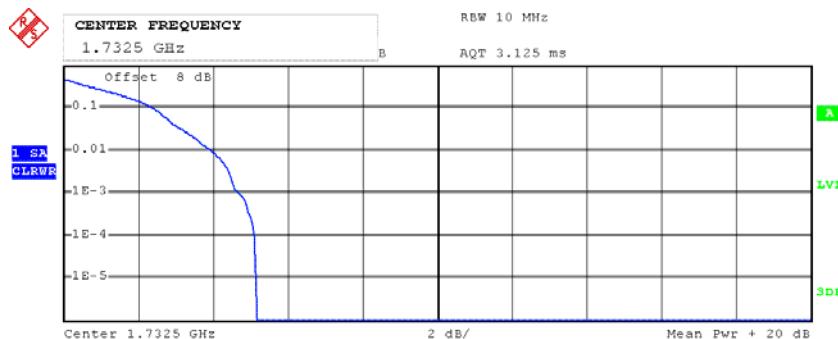
**LTE Band IV (PART 27)****QPSK\_20MHz\_1RB\_Low Channel**

Complementary Cumulative Distribution Function (100000 samples)

Trace 1  
Mean 20.57 dBm  
Peak 25.47 dBm  
Crest 4.90 dB

10% @ 2.40 dB  
1% @ 3.96 dB  
.1% @ 4.64 dB

Date: 14.APR.2016 20:40:45

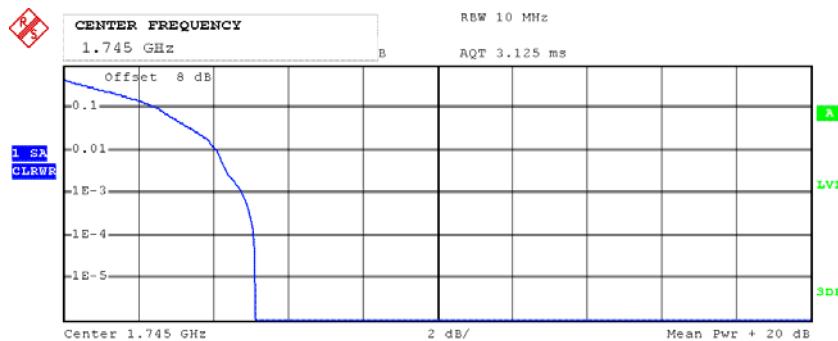
**QPSK\_20MHz\_1RB Middle Channel**

Complementary Cumulative Distribution Function (100000 samples)

Trace 1  
Mean 20.53 dBm  
Peak 25.68 dBm  
Crest 5.16 dB

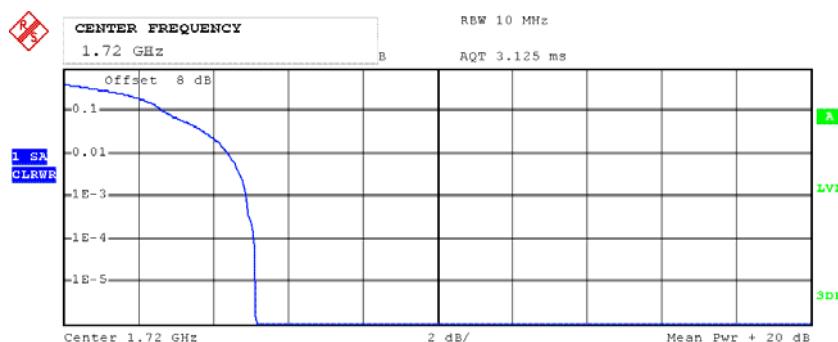
10% @ 2.44 dB  
1% @ 4.00 dB  
.1% @ 4.72 dB

Date: 14.APR.2016 20:41:00

**QPSK\_20MHz\_1RB High Channel**

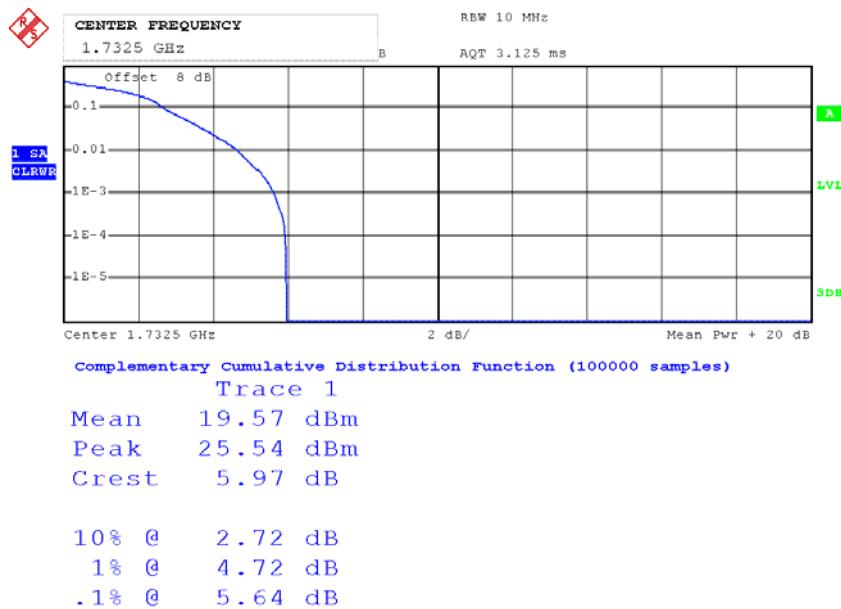
Complementary Cumulative Distribution Function (100000 samples)  
 Trace 1  
 Mean 20.48 dBm  
 Peak 25.61 dBm  
 Crest 5.13 dB  
 10% @ 2.56 dB  
 1% @ 4.12 dB  
 .1% @ 4.80 dB

Date: 14.APR.2016 20:41:11

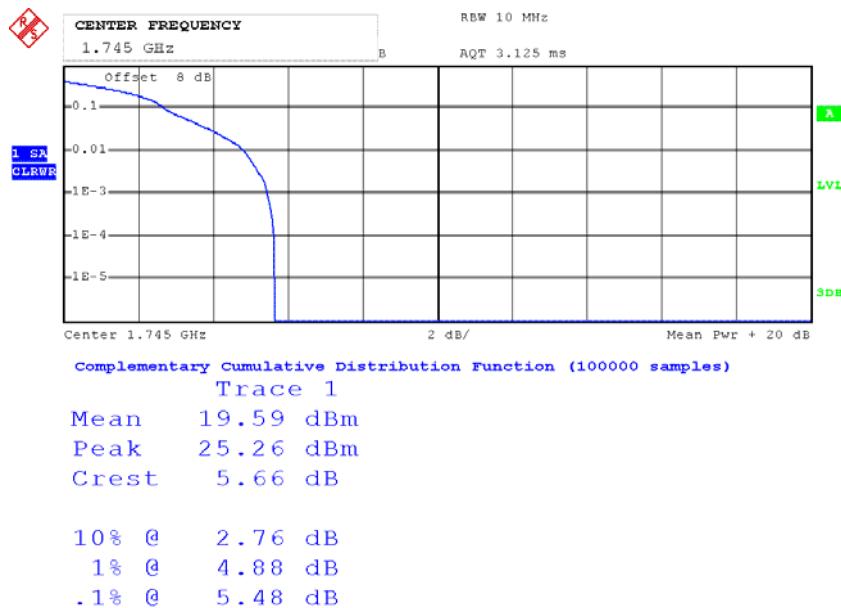
**QPSK\_20MHz\_FULL RB Low Channel**

Complementary Cumulative Distribution Function (100000 samples)  
 Trace 1  
 Mean 19.61 dBm  
 Peak 24.76 dBm  
 Crest 5.15 dB  
 10% @ 2.72 dB  
 1% @ 4.44 dB  
 .1% @ 4.92 dB

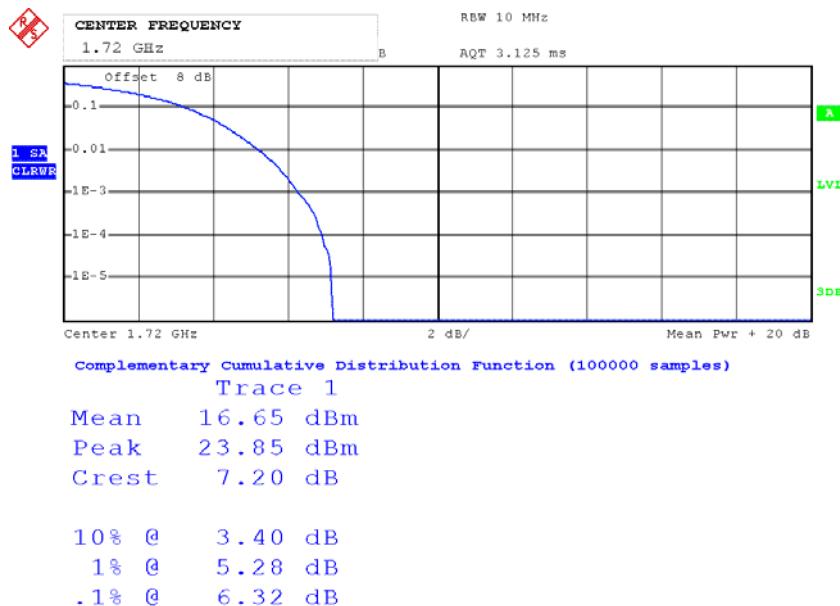
Date: 14.APR.2016 20:43:02

**QPSK\_20MHz\_FULL RB Middle Channel**

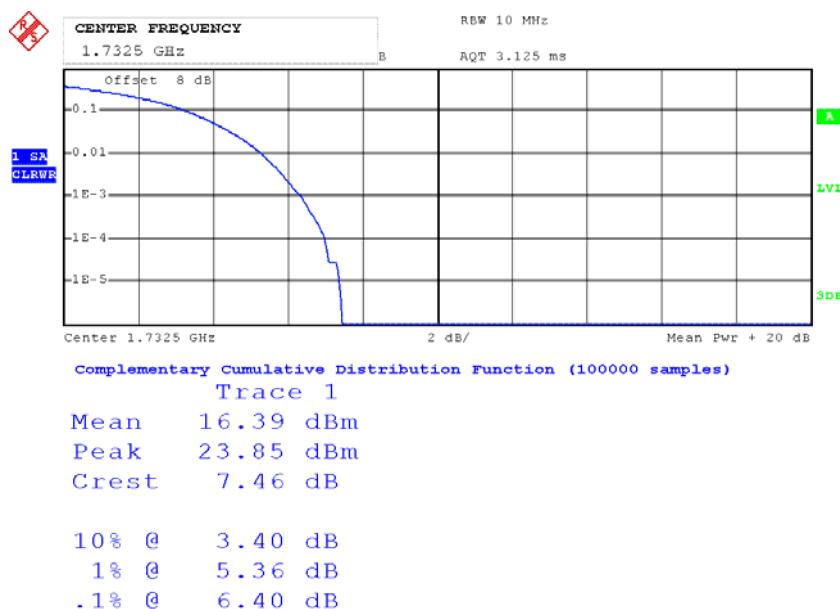
Date: 14.APR.2016 20:43:57

**QPSK 20MHz\_FULL RB High Channel**

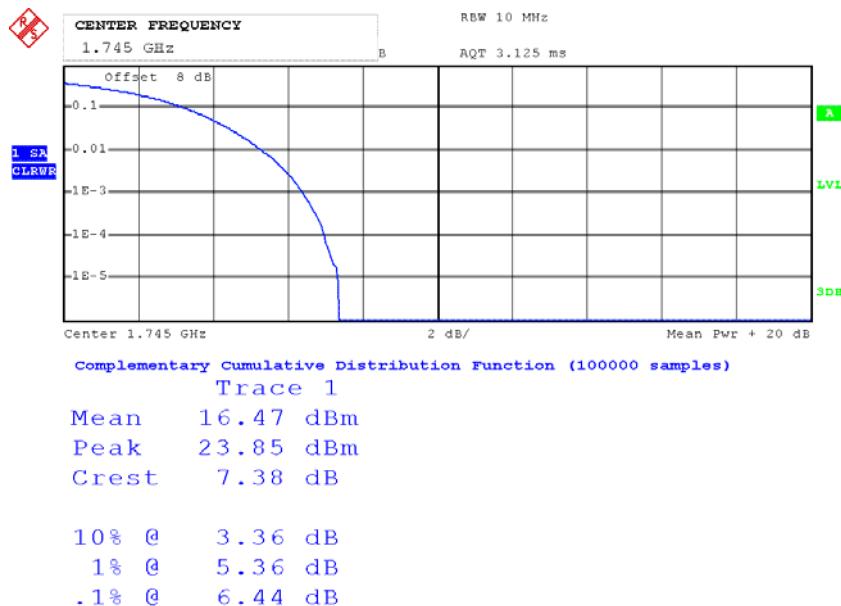
Date: 14.APR.2016 20:44:13

**16QAM\_20MHz\_1RB\_Low Channel**

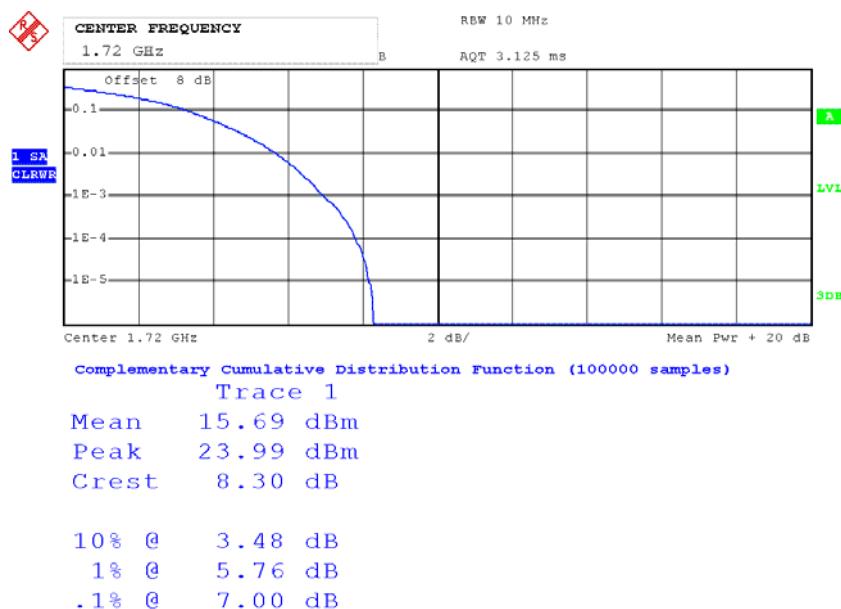
Date: 14.APR.2016 20:41:49

**16QAM 20MHz\_1RB Middle Channel**

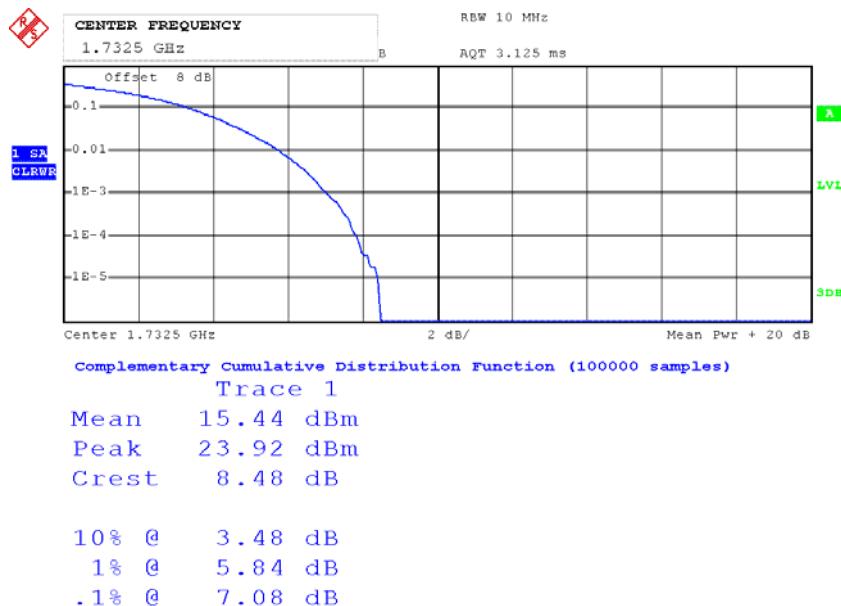
Date: 14.APR.2016 20:42:11

**16QAM 20MHz\_1RB High Channel**

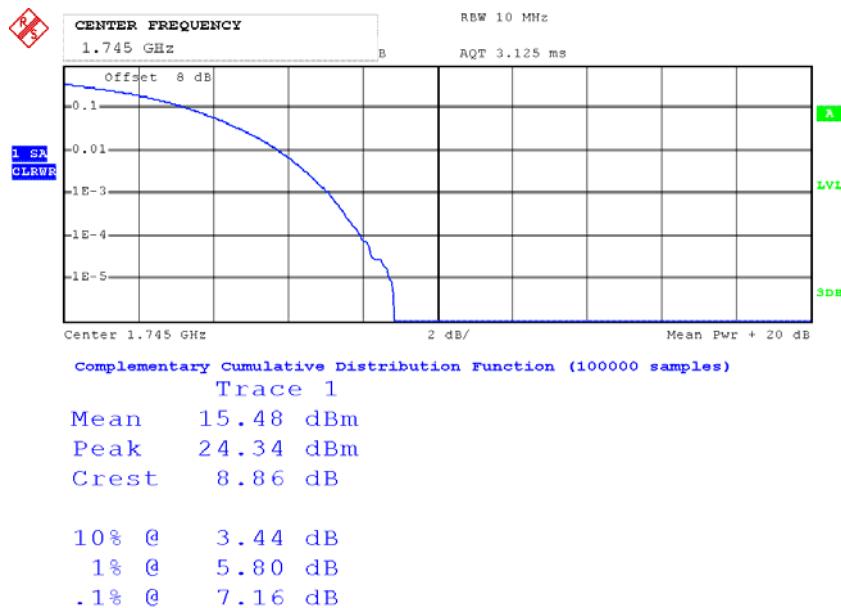
Date: 14.APR.2016 20:42:23

**16QAM 20MHz\_FULL RB Low Channel**

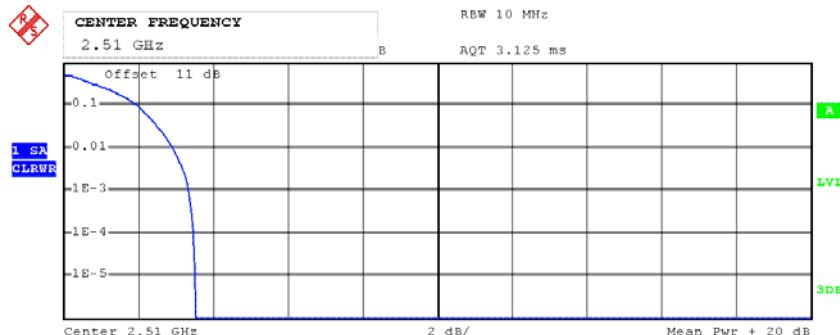
Date: 14.APR.2016 20:44:43

**16QAM 20MHz\_FULL RB Middle Channel**

Date: 14.APR.2016 20:45:08

**16QAM 20MHz\_FULL RB High Channel**

Date: 14.APR.2016 20:45:20

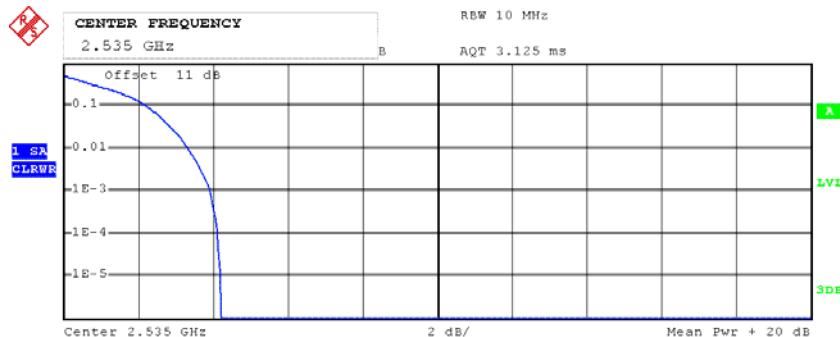
**LTE Band VII (PART 27)****QPSK\_20MHz\_1RB\_Low Channel**

Complementary Cumulative Distribution Function (100000 samples)

Trace 1  
 Mean 21.92 dBm  
 Peak 25.44 dBm  
 Crest 3.52 dB

10% @ 2.00 dB  
 1% @ 2.96 dB  
 .1% @ 3.36 dB

Date: 14.APR.2016 20:54:17

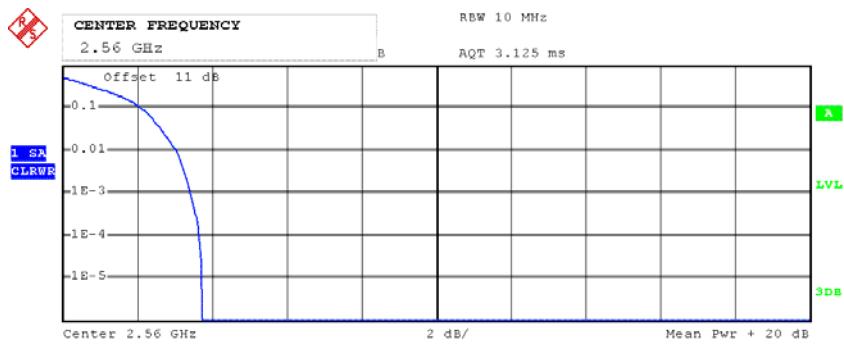
**QPSK\_20MHz\_1RB Middle Channel**

Complementary Cumulative Distribution Function (100000 samples)

Trace 1  
 Mean 20.93 dBm  
 Peak 25.15 dBm  
 Crest 4.22 dB

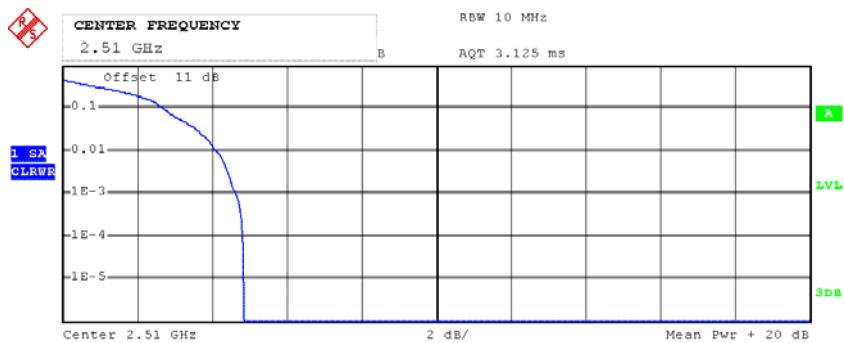
10% @ 2.24 dB  
 1% @ 3.36 dB  
 .1% @ 3.92 dB

Date: 14.APR.2016 20:54:31

**QPSK\_20MHz\_1RB High Channel**

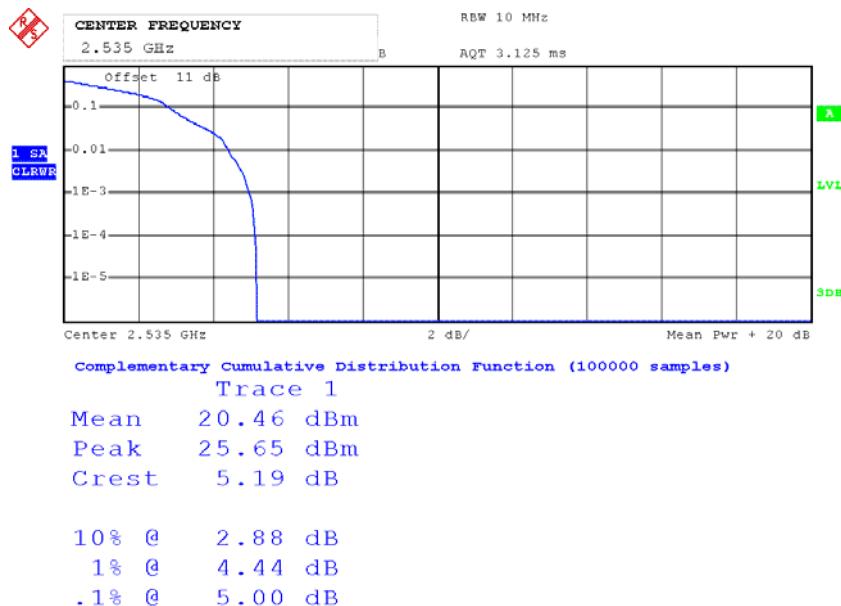
Complementary Cumulative Distribution Function (100000 samples)  
 Trace 1  
 Mean 21.48 dBm  
 Peak 25.22 dBm  
 Crest 3.75 dB  
 10% @ 2.12 dB  
 1% @ 3.08 dB  
 .1% @ 3.44 dB

Date: 14.APR.2016 20:54:47

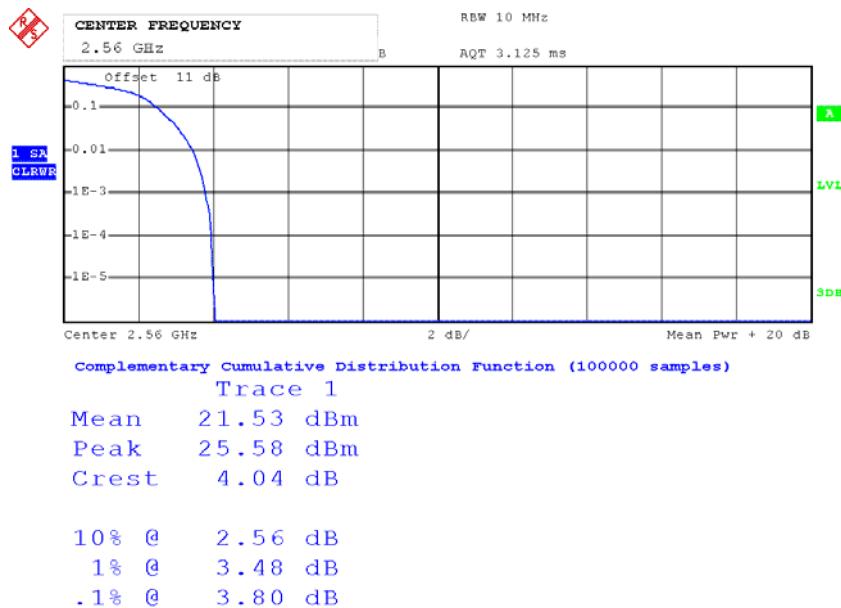
**QPSK\_20MHz\_FULL RB Low Channel**

Complementary Cumulative Distribution Function (100000 samples)  
 Trace 1  
 Mean 20.59 dBm  
 Peak 25.44 dBm  
 Crest 4.85 dB  
 10% @ 2.72 dB  
 1% @ 4.16 dB  
 .1% @ 4.64 dB

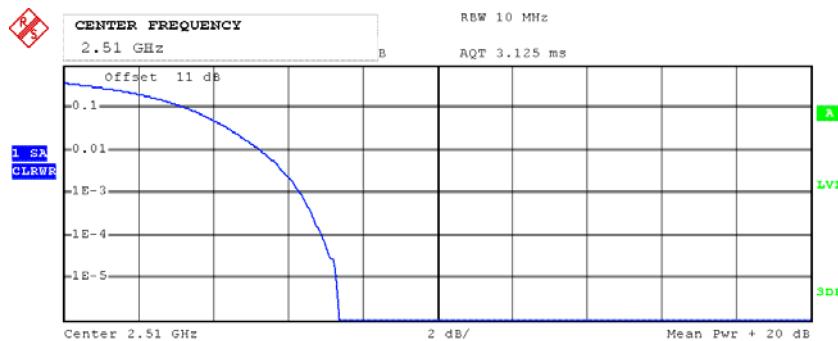
Date: 14.APR.2016 21:18:50

**QPSK\_20MHz\_FULL RB Middle Channel**

Date: 14.APR.2016 21:19:05

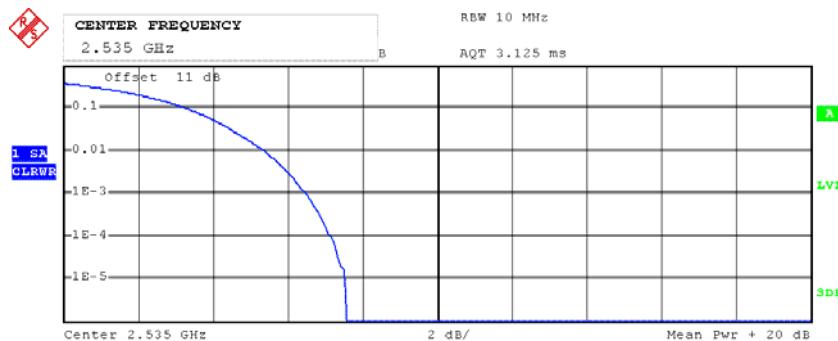
**QPSK 20MHz\_FULL RB High Channel**

Date: 14.APR.2016 21:19:17

**16QAM\_20MHz\_1RB\_Low Channel**

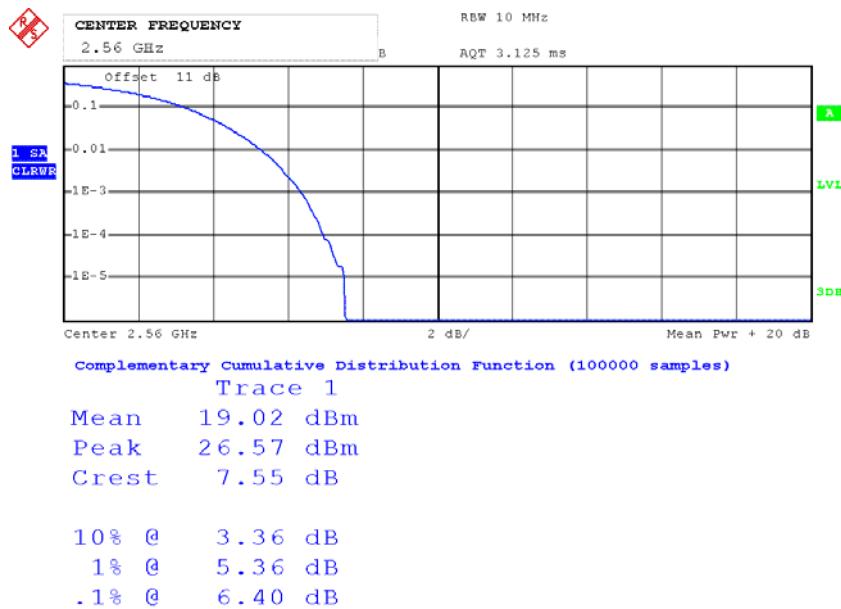
Complementary Cumulative Distribution Function (100000 samples)  
Trace 1  
Mean 18.14 dBm  
Peak 25.51 dBm  
Crest 7.37 dB  
  
10 % @ 3.36 dB  
1 % @ 5.32 dB  
.1 % @ 6.36 dB

Date: 14.APR.2016 20:55:12

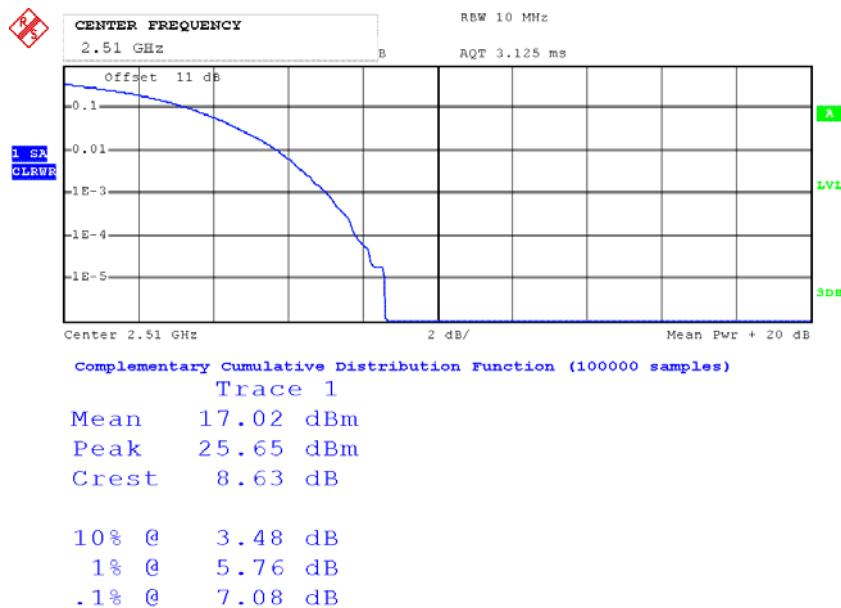
**16QAM 20MHz\_1RB Middle Channel**

Complementary Cumulative Distribution Function (100000 samples)  
Trace 1  
Mean 17.23 dBm  
Peak 24.80 dBm  
Crest 7.57 dB  
  
10 % @ 3.40 dB  
1 % @ 5.44 dB  
.1 % @ 6.52 dB

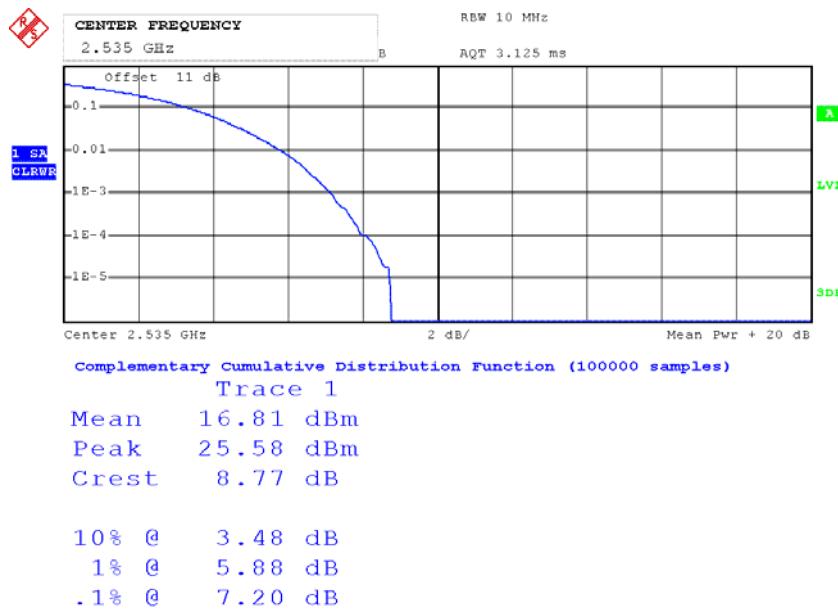
Date: 14.APR.2016 20:55:22

**16QAM 20MHz\_1RB High Channel**

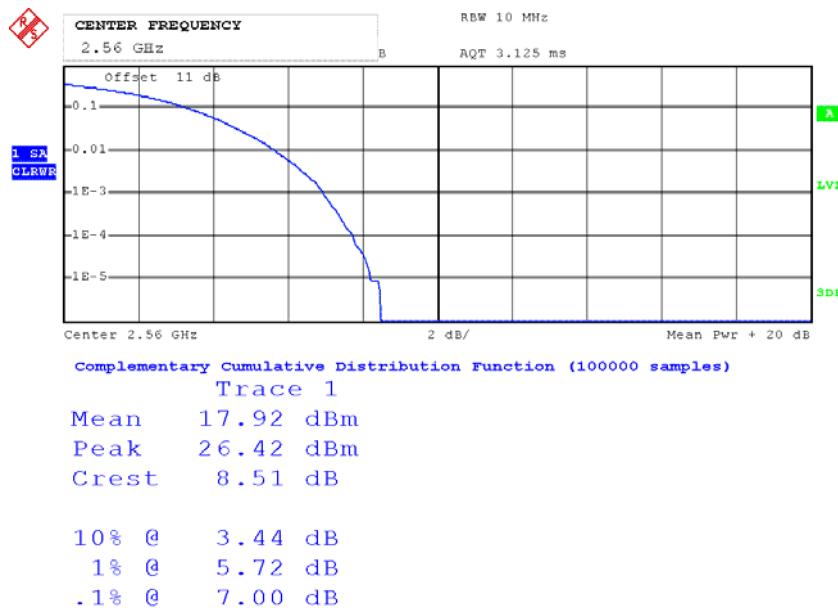
Date: 14.APR.2016 21:18:24

**16QAM 20MHz\_FULL RB Low Channel**

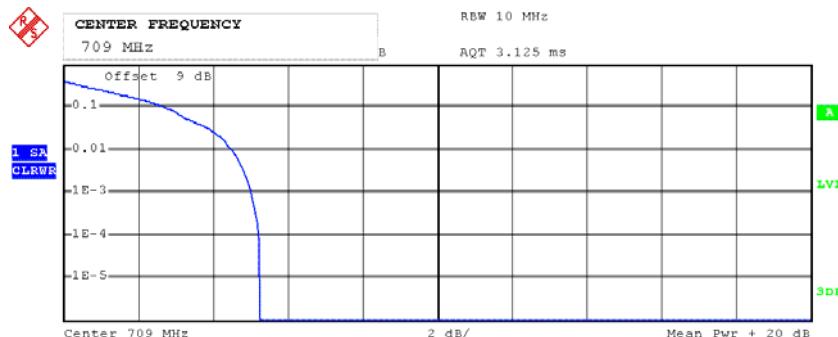
Date: 14.APR.2016 21:19:36

**16QAM 20MHz\_FULL RB Middle Channel**

Date: 14.APR.2016 21:19:50

**16QAM 20MHz\_FULL RB High Channel**

Date: 14.APR.2016 21:19:57

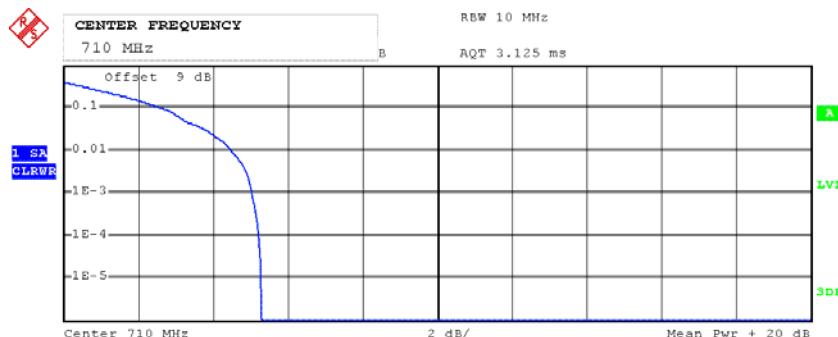
**LTE Band 17 (PART 27)****QPSK\_10MHz\_1RB\_Low Channel**

Complementary Cumulative Distribution Function (100000 samples)

Trace 1  
Mean 21.28 dBm  
Peak 26.54 dBm  
Crest 5.26 dB

10% @ 2.80 dB  
1% @ 4.52 dB  
.1% @ 5.04 dB

Date: 14.APR.2016 20:11:31

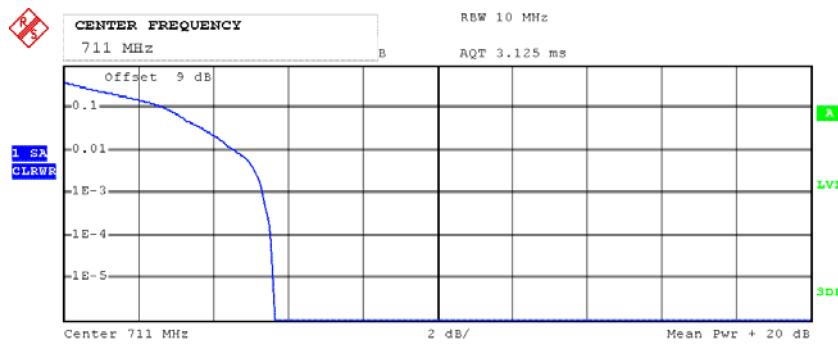
**QPSK\_10MHz\_1RB Middle Channel**

Complementary Cumulative Distribution Function (100000 samples)

Trace 1  
Mean 21.32 dBm  
Peak 26.61 dBm  
Crest 5.29 dB

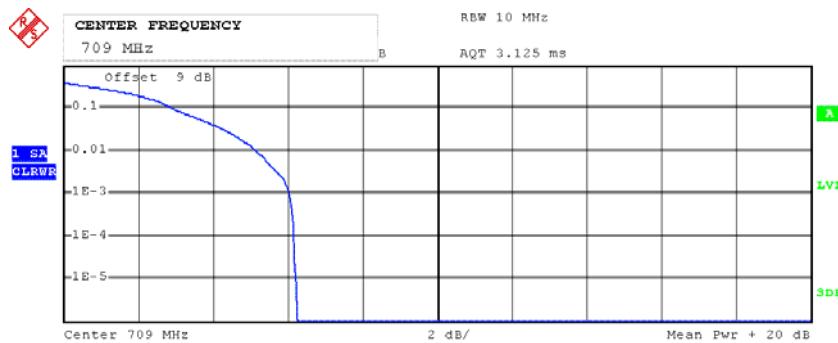
10% @ 2.72 dB  
1% @ 4.52 dB  
.1% @ 5.08 dB

Date: 14.APR.2016 20:11:42

**QPSK\_10MHz\_1RB High Channel**

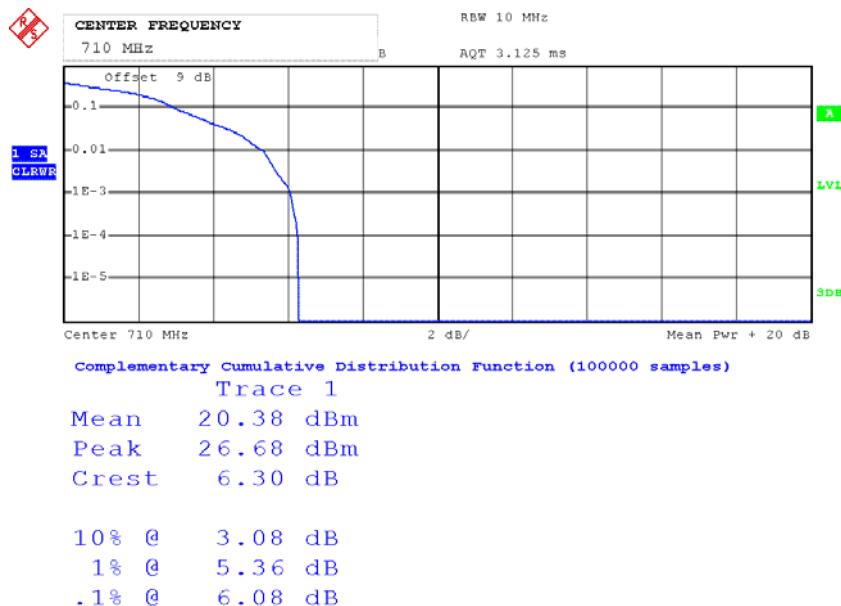
Complementary Cumulative Distribution Function (100000 samples)  
 Trace 1  
 Mean 21.25 dBm  
 Peak 26.89 dBm  
 Crest 5.64 dB  
 10% @ 2.80 dB  
 1% @ 4.64 dB  
 .1% @ 5.36 dB

Date: 14.APR.2016 20:11:55

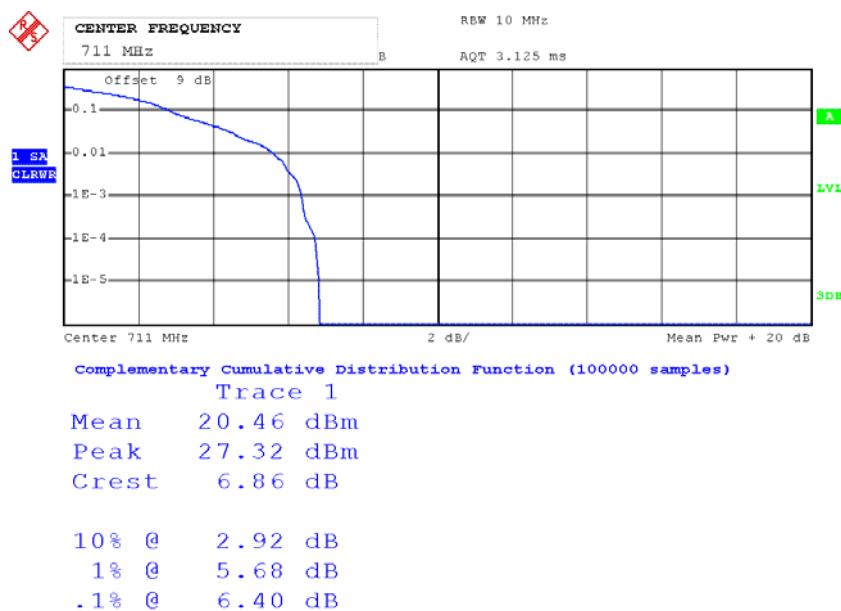
**QPSK\_10MHz\_FULL RB Low Channel**

Complementary Cumulative Distribution Function (100000 samples)  
 Trace 1  
 Mean 20.35 dBm  
 Peak 26.61 dBm  
 Crest 6.26 dB  
 10% @ 3.00 dB  
 1% @ 5.20 dB  
 .1% @ 6.08 dB

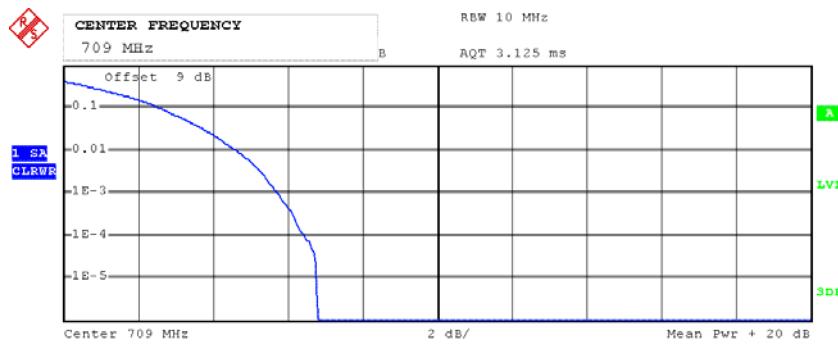
Date: 14.APR.2016 20:13:14

**QPSK\_10MHz\_FULL RB Middle Channel**

Date: 14.APR.2016 20:13:25

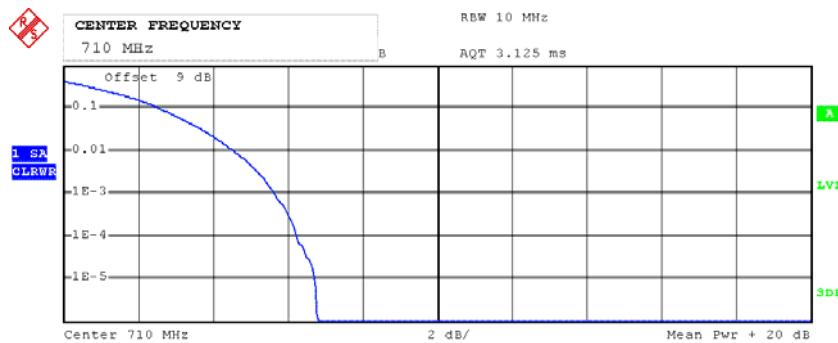
**QPSK 10MHz\_FULL RB High Channel**

Date: 14.APR.2016 20:13:35

**16QAM\_10MHz\_1RB\_Low Channel**

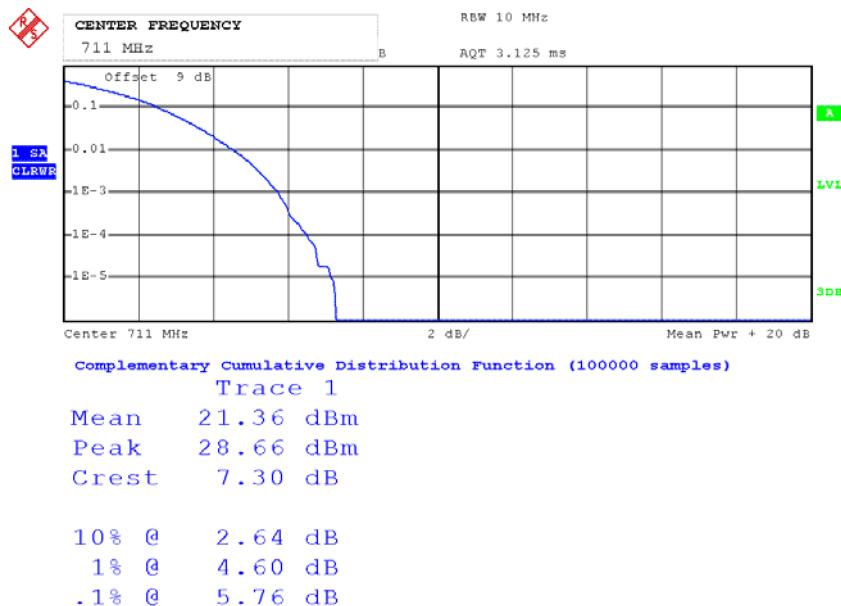
Complementary Cumulative Distribution Function (100000 samples)  
Trace 1  
Mean 21.37 dBm  
Peak 28.16 dBm  
Crest 6.79 dB  
  
10 % @ 2.64 dB  
1 % @ 4.68 dB  
.1% @ 5.76 dB

Date: 14.APR.2016 20:12:31

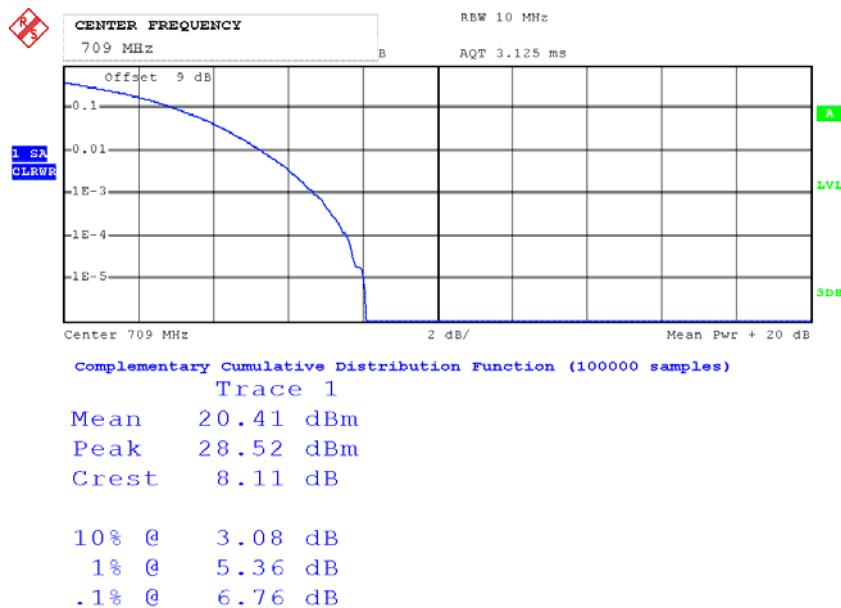
**16QAM 10MHz\_1RB Middle Channel**

Complementary Cumulative Distribution Function (100000 samples)  
Trace 1  
Mean 21.37 dBm  
Peak 28.16 dBm  
Crest 6.80 dB  
  
10 % @ 2.64 dB  
1 % @ 4.60 dB  
.1% @ 5.68 dB

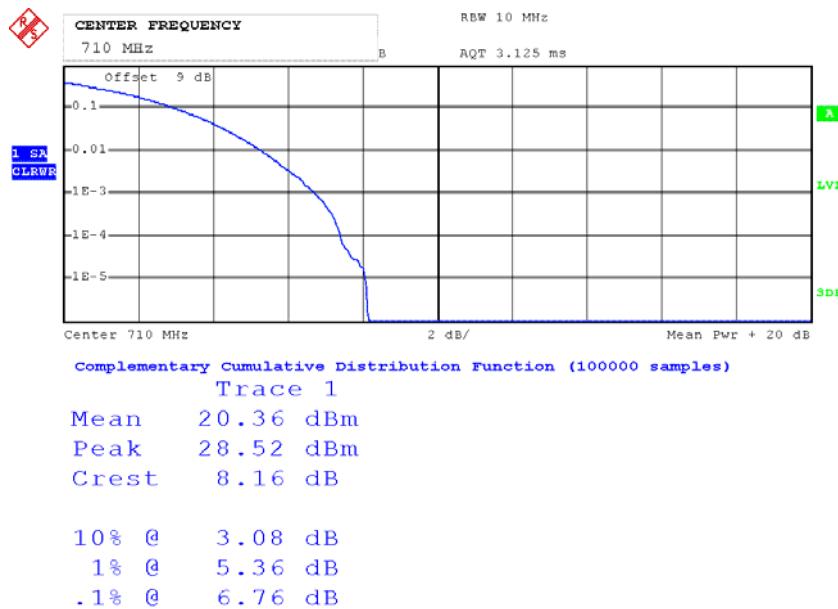
Date: 14.APR.2016 20:12:39

**16QAM 10MHz\_1RB High Channel**

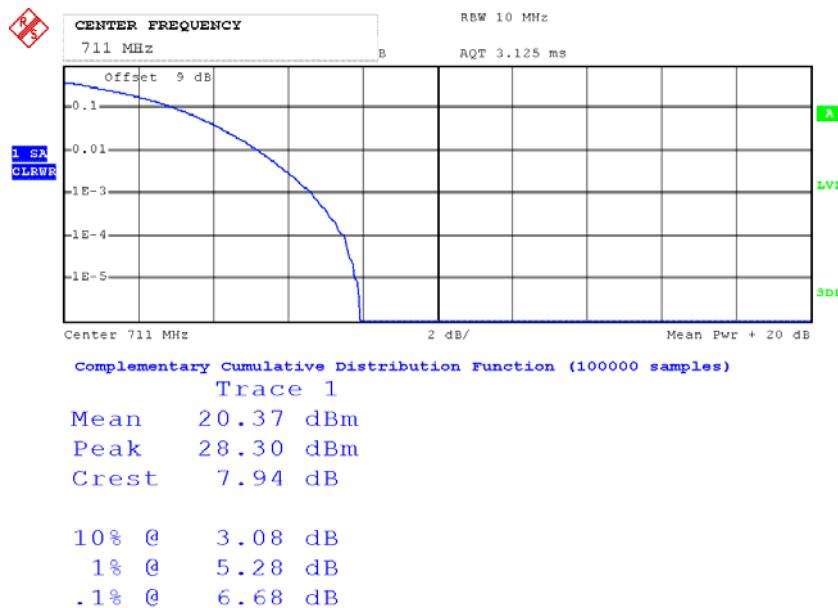
Date: 14.APR.2016 20:12:49

**16QAM 10MHz\_FULL RB Low Channel**

Date: 14.APR.2016 20:14:03

**16QAM 10MHz\_FULL RB Middle Channel**

Date: 14.APR.2016 20:14:17

**16QAM 10MHz\_FULL RB High Channel**

Date: 14.APR.2016 20:14:28

## ERP &amp; EIRP

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>GSM 850 Middle Channel</b>								
836.600	H	93.65	18.7	0.0	1	17.7	38.45	20.8
836.600	V	104.05	32.3	0.0	1	31.3	38.45	7.2
<b>EGPRS 850 Middle Channel</b>								
836.600	H	87.78	12.9	0.0	1	11.9	38.45	26.6
836.600	V	99.48	27.7	0.0	1	26.7	38.45	11.8
<b>WCDMA Band V Middle Channel</b>								
836.600	H	84.92	10	0.0	1	9.0	38.45	29.5
836.600	V	94.81	23	0.0	1	22.0	38.45	16.5
<b>PCS 1900 Middle Channel</b>								
1880.000	H	91.36	19.8	11.7	1.4	30.1	33.0	2.9
1880.000	V	86.32	14.9	11.7	1.4	25.2	33.0	7.8
<b>EGPRS 1900 Middle Channel</b>								
1880.000	H	88.60	17	11.7	1.4	27.3	33.0	5.7
1880.000	V	84.23	12.8	11.7	1.4	23.1	33.0	9.9
<b>WCDMA Band II Middle Channel</b>								
1880.000	H	86.21	14.6	11.7	1.4	24.9	33.0	8.1
1880.000	V	81.12	9.7	11.7	1.4	20.0	33.0	13.0

**LTE Band II**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>QPSK 1.4 MHz Middle Channel</b>								
1880.000	H	85.52	13.9	11.7	1.4	24.2	33.00	8.8
1880.000	V	82.01	10.6	11.7	1.4	20.9	33.00	12.1
<b>QPSK 3 MHz Middle Channel</b>								
1880.000	H	84.24	12.6	11.7	1.4	22.9	33.00	10.1
1880.000	V	80.75	9.3	11.7	1.4	19.6	33.00	13.4
<b>QPSK 5 MHz Middle Channel</b>								
1880.000	H	83.95	12.4	11.7	1.4	22.7	33.00	10.3
1880.000	V	80.47	9	11.7	1.4	19.3	33.00	13.7
<b>QPSK 10 MHz Middle Channel</b>								
1880.000	H	81.76	10.2	11.7	1.4	20.5	33.00	12.5
1880.000	V	79.23	7.8	11.7	1.4	18.1	33.00	14.9
<b>QPSK 15 MHz Middle Channel</b>								
1880.000	H	80.46	8.9	11.7	1.4	19.2	33.00	13.8
1880.000	V	77.99	6.5	11.7	1.4	16.8	33.00	16.2
<b>QPSK 20 MHz Middle Channel</b>								
1880.000	H	83.23	11.6	11.7	1.4	21.9	33.00	11.1
1880.000	V	79.73	8.3	11.7	1.4	18.6	33.00	14.4
<b>16QAM 1.4 MHz Middle Channel</b>								
1880.000	H	84.35	12.8	11.7	1.4	23.1	33.00	9.9
1880.000	V	80.99	9.5	11.7	1.4	19.8	33.00	13.2
<b>16QAM 3 MHz Middle Channel</b>								
1880.000	H	83.86	12.3	11.7	1.4	22.6	33.00	10.4
1880.000	V	80.42	9	11.7	1.4	19.3	33.00	13.7
<b>16QAM 5 MHz Middle Channel</b>								
1880.000	H	82.53	10.9	11.7	1.4	21.2	33.00	11.8
1880.000	V	79.07	7.6	11.7	1.4	17.9	33.00	15.1
<b>16QAM 10 MHz Middle Channel</b>								
1880.000	H	83.12	11.5	11.7	1.4	21.8	33.00	11.2
1880.000	V	79.73	8.3	11.7	1.4	18.6	33.00	14.4
<b>16QAM 15 MHz Middle Channel</b>								
1880.000	H	81.80	10.2	11.7	1.4	20.5	33.00	12.5
1880.000	V	78.41	7	11.7	1.4	17.3	33.00	15.7
<b>16QAM 20 MHz Middle Channel</b>								
1880.000	H	82.51	10.9	11.7	1.4	21.2	33.00	11.8
1880.000	V	79.16	7.7	11.7	1.4	18.0	33.00	15.0

**LTE Band IV**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>QPSK 1.4 MHz Middle Channel</b>								
1732.500	H	88.35	15.3	10.9	1.4	24.8	30.00	5.2
1732.500	V	84.26	10.9	10.9	1.4	20.4	30.00	9.6
<b>QPSK 3 MHz Middle Channel</b>								
1732.500	H	87.19	14.2	10.9	1.4	23.7	30.00	6.3
1732.500	V	83.03	9.7	10.9	1.4	19.2	30.00	10.8
<b>QPSK 5 MHz Middle Channel</b>								
1732.500	H	86.07	13.1	10.9	1.4	22.6	30.00	7.4
1732.500	V	81.97	8.6	10.9	1.4	18.1	30.00	11.9
<b>QPSK 10 MHz Middle Channel</b>								
1732.500	H	85.95	12.9	10.9	1.4	22.4	30.00	7.6
1732.500	V	81.81	8.5	10.9	1.4	18.0	30.00	12.0
<b>QPSK 15 MHz Middle Channel</b>								
1732.500	H	84.82	11.8	10.9	1.4	21.3	30.00	8.7
1732.500	V	81.71	8.4	10.9	1.4	17.9	30.00	12.1
<b>QPSK 20 MHz Middle Channel</b>								
1732.500	H	84.69	11.7	10.9	1.4	21.2	30.00	8.8
1732.500	V	80.58	7.3	10.9	1.4	16.8	30.00	13.2
<b>16QAM 1.4 MHz Middle Channel</b>								
1732.500	H	88.28	15.3	10.9	1.4	24.8	30.00	5.2
1732.500	V	83.94	10.6	10.9	1.4	20.1	30.00	9.9
<b>16QAM 3 MHz Middle Channel</b>								
1732.500	H	87.99	15	10.9	1.4	24.5	30.00	5.5
1732.500	V	84.65	11.3	10.9	1.4	20.8	30.00	9.2
<b>16QAM 5 MHz Middle Channel</b>								
1732.500	H	86.72	13.7	10.9	1.4	23.2	30.00	6.8
1732.500	V	83.39	10.1	10.9	1.4	19.6	30.00	10.4
<b>16QAM 10 MHz Middle Channel</b>								
1732.500	H	85.47	12.5	10.9	1.4	22.0	30.00	8.0
1732.500	V	82.12	8.8	10.9	1.4	18.3	30.00	11.7
<b>16QAM 15 MHz Middle Channel</b>								
1732.500	H	85.21	12.2	10.9	1.4	21.7	30.00	8.3
1732.500	V	80.90	7.6	10.9	1.4	17.1	30.00	12.9
<b>16QAM 20 MHz Middle Channel</b>								
1732.500	H	83.95	10.9	10.9	1.4	20.4	30.00	9.6
1732.500	V	79.62	6.3	10.9	1.4	15.8	30.00	14.2

**LTE Band VII**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>QPSK 5 MHz Middle Channel</b>								
2535.000	H	82.07	10.9	13.1	2.5	21.5	33.00	11.5
2535.000	V	77.25	7.5	13.1	2.5	18.1	33.00	14.9
<b>QPSK 10 MHz Middle Channel</b>								
2535.000	H	80.51	9.3	13.1	2.5	19.9	33.00	13.1
2535.000	V	75.72	6	13.1	2.5	16.6	33.00	16.4
<b>QPSK 15 MHz Middle Channel</b>								
2535.000	H	79.84	8.6	13.1	2.5	19.2	33.00	13.8
2535.000	V	75.06	5.3	13.1	2.5	15.9	33.00	17.1
<b>QPSK 20 MHz Middle Channel</b>								
2535.000	H	79.28	8.1	13.1	2.5	18.7	33.00	14.3
2535.000	V	74.55	4.8	13.1	2.5	15.4	33.00	17.6
<b>16QAM 5 MHz Middle Channel</b>								
2535.000	H	82.57	11.4	13.1	2.5	22.0	33.00	11.0
2535.000	V	77.70	8	13.1	2.5	18.6	33.00	14.4
<b>16QAM 10 MHz Middle Channel</b>								
2535.000	H	81.17	10	13.1	2.5	20.6	33.00	12.4
2535.000	V	76.29	6.5	13.1	2.5	17.1	33.00	15.9
<b>16QAM 15 MHz Middle Channel</b>								
2535.000	H	79.68	8.5	13.1	2.5	19.1	33.00	13.9
2535.000	V	74.81	5.1	13.1	2.5	15.7	33.00	17.3
<b>16QAM 20 MHz Middle Channel</b>								
2535.000	H	78.60	7.4	13.1	2.5	18.0	33.00	15.0
2535.000	V	73.74	4	13.1	2.5	14.6	33.00	18.4

**LTE Band 17**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>QPSK 5 MHz Middle Channel</b>								
710.000	H	92.92	16.1	0.0	0.9	15.2	34.77	19.6
710.000	V	97.37	23	0.0	0.9	22.1	34.77	12.7
<b>QPSK 10 MHz Middle Channel</b>								
710.000	H	92.65	15.8	0.0	0.9	14.9	34.77	19.9
710.000	V	95.44	21.1	0.0	0.9	20.2	34.77	14.6
<b>16QAM 5 MHz Middle Channel</b>								
710.000	H	86.08	9.3	0.0	0.9	8.4	34.77	26.4
710.000	V	94.67	20.3	0.0	0.9	19.4	34.77	15.4
<b>16QAM 10 MHz Middle Channel</b>								
710.000	H	84.25	7.4	0.0	0.9	6.5	34.77	28.3
710.000	V	95.11	20.8	0.0	0.9	19.9	34.77	14.9

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

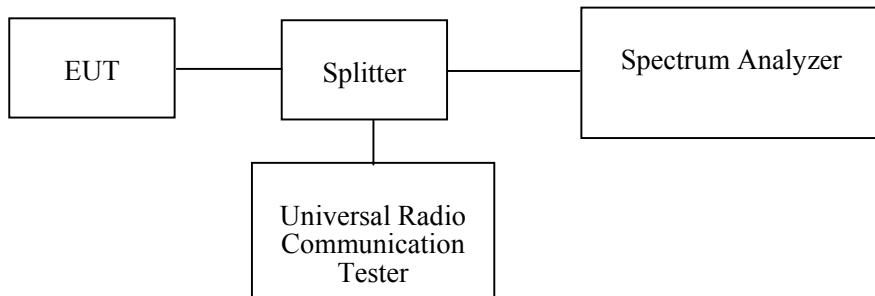
### **Applicable Standard**

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	2015-05-09	2016-05-09
R&S	Spectrum Analyzer	FSEM	831259/019	2015-05-09	2016-05-09
R&S	Universal Radio Communication Tester	CMU200	109 038	2015-05-09	2016-05-09
R&S	Wideband Radio Communication Tester	CMW500	106891	2015-11-23	2016-11-23
N/A	Coaxial Cable	0.1m	N/A	2015-05-06	2016-05-06
E-Microwave	DC Blocking	EMDCB-00036	0E01201047	2015-05-06	2016-05-06
E-Microwave	Attenuator	EMCA10-5RN	OE01203239	2015-05-08	2016-05-08
Pasternack	RF Coaxial Cable	RF-01	N/A	2015-05-06	2016-05-06
Pasternack	RF Coaxial Cable	RF-02	N/A	2015-05-06	2016-05-06
N/A	Two-way Spliter	ODP-1-6-2S	OE0120142	2015-05-06	2016-05-06

\* **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

<b>Temperature:</b>	26.4~26.5°C
<b>Relative Humidity:</b>	68~71 %
<b>ATM Pressure:</b>	100.3~100.5 kPa

The testing was performed by Rocky Xiao from 2016-04-14 to 2016-04-15.

Test Mode: Transmitting

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

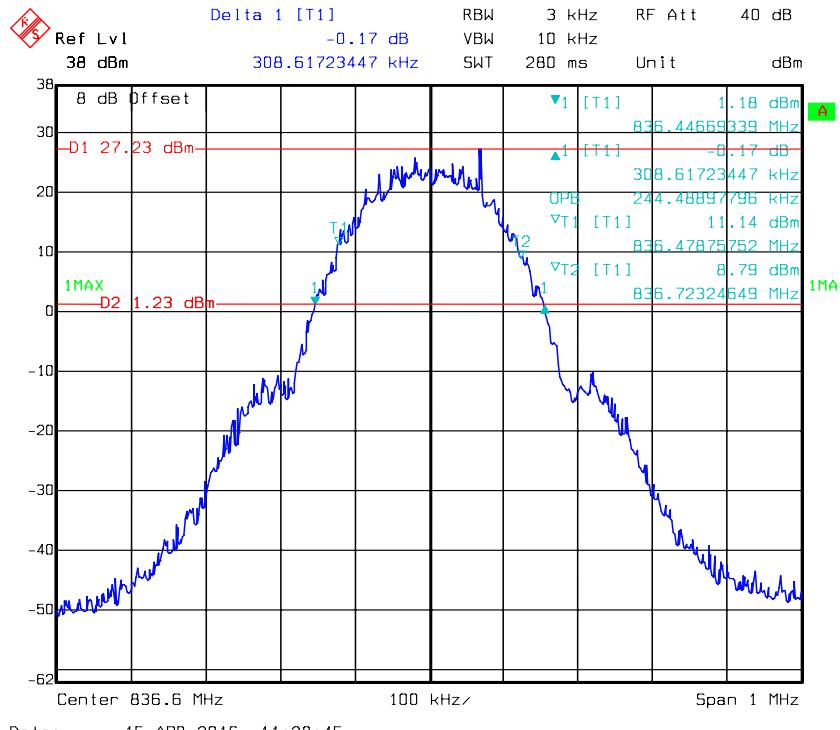
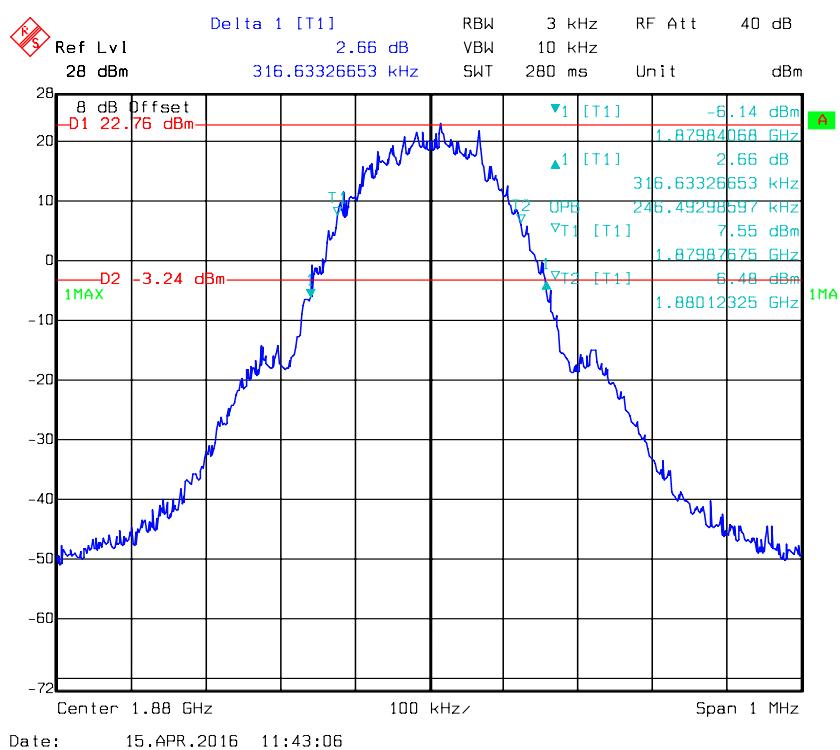
Band	Channel No.	Mode	99% Occupied Bandwidth (kHz)	26 dB Occupied Bandwidth (kHz)
Cellular	190	GSM	244	309
		EDGE	249	319
PCS	661	PCS	246	317
		EDGE	246	317
WCDMA Band II	9400	Rel 99	4228	4930
	9400	HSDPA	4228	4930
	9400	HSUPA	4228	4930
WCDMA Band V	4175	Rel 99	4208	4910
	4175	HSDPA	4208	4890
	4175	HSUPA	4228	4890

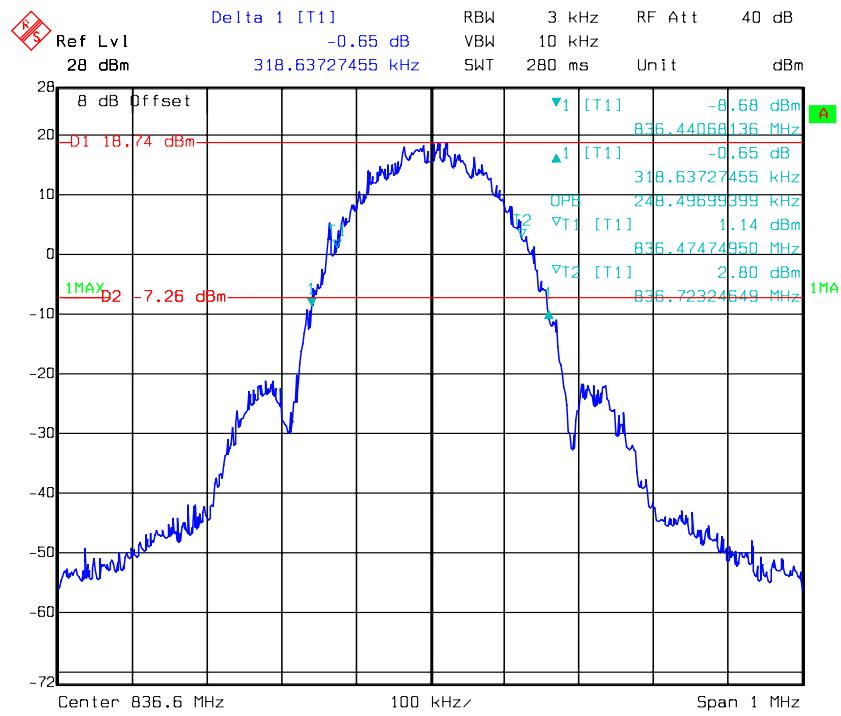
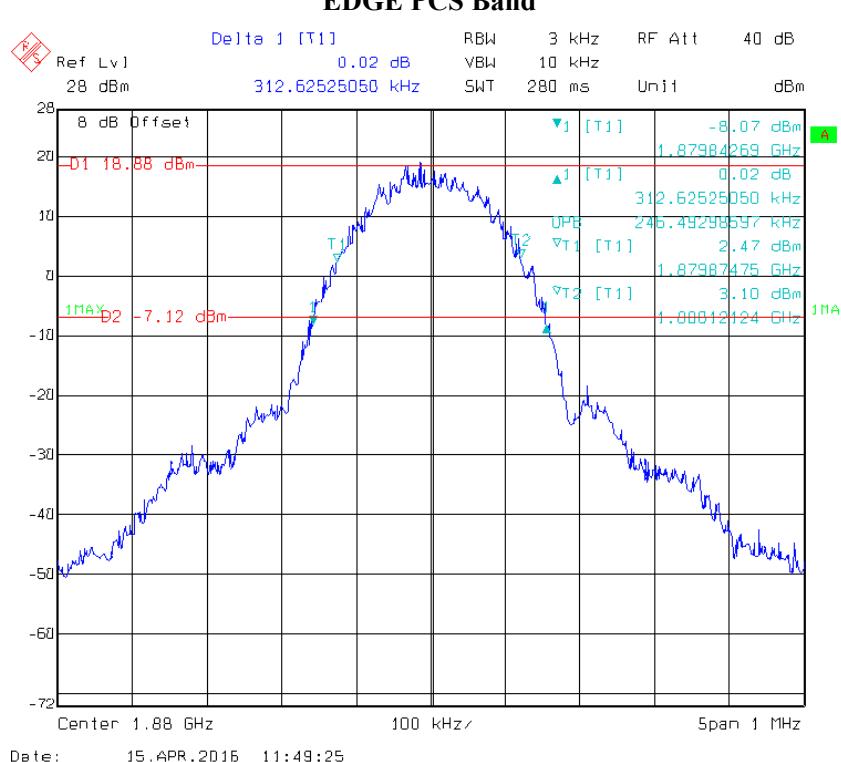
Band	Test Modulation	Test Bandwidth (MHz)	Test Channel	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
LTE Band II	QPSK	1.4	M	1.11	1.29
		3		2.71	2.96
		5		4.57	5.08
		10		9.14	10.38
		15		13.59	15.16
		20		18.04	19.70
	16QAM	1.4	M	1.11	1.29
		3		2.72	3.00
		5		4.53	5.08
		10		9.14	10.30
		15		13.53	15.10
		20		18.12	19.62

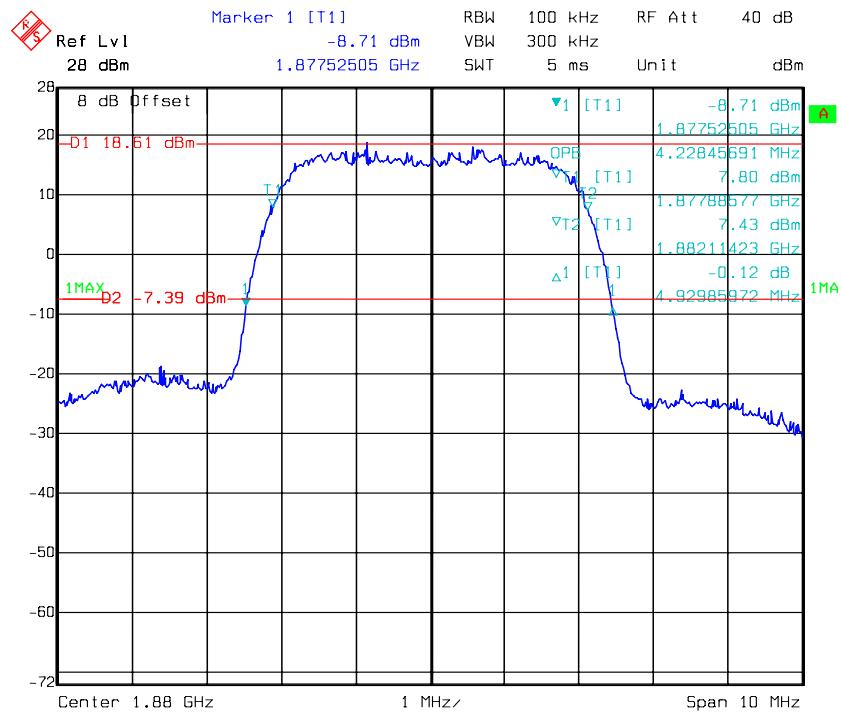
Band	Test Modulation	Test Bandwidth (MHz)	Test Channel	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
LTE Band IV	QPSK	1.4	M	1.10	1.28
		3		2.72	2.97
		5		4.55	5.07
		10		9.10	10.41
		15		13.59	15.23
		20		18.04	19.68
	16QAM	1.4	M	1.11	1.28
		3		2.72	2.96
		5		4.55	5.11
		10		9.14	10.29
		15		13.59	15.11
		20		18.04	19.60

Band	Test Modulation	Test Bandwidth (MHz)	Test Channel	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
LTE Band VII	QPSK	5	M	4.55	5.11
		10		9.14	10.38
		15		13.59	15.12
		20		17.96	19.64
	16QAM	5	M	4.55	5.09
		10		9.14	10.34
		15		13.59	15.00
		20		18.04	19.56

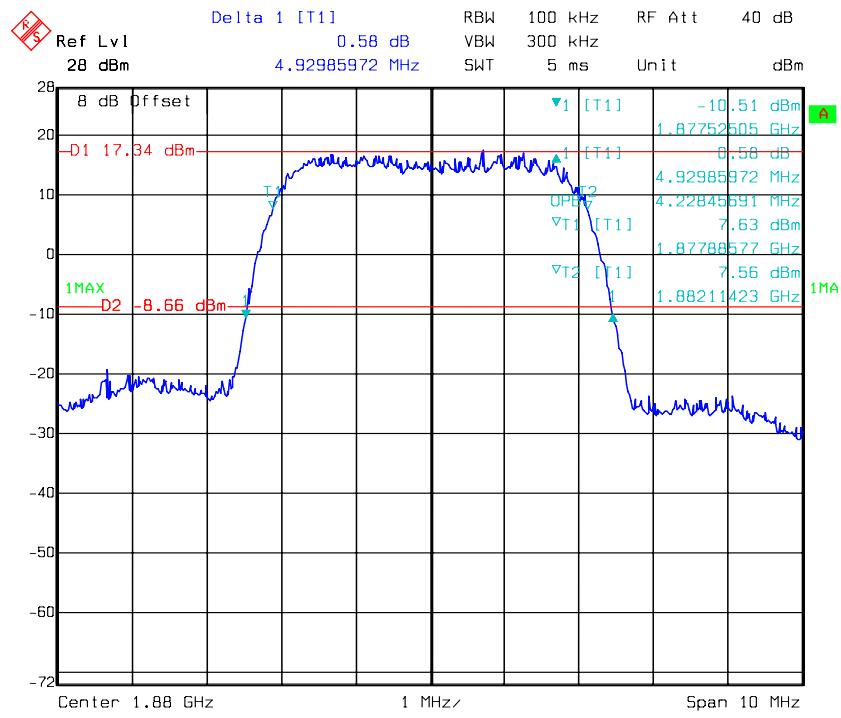
Band	Test Modulation	Test Bandwidth (MHz)	Test Channel	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
LTE Band XVII	QPSK	5	M	4.53	5.07
		10		9.10	10.33
	16QAM	5	M	4.53	5.07
		10		9.10	10.29

**GMSK 850 Cellular Band****GMSK PCS Band**

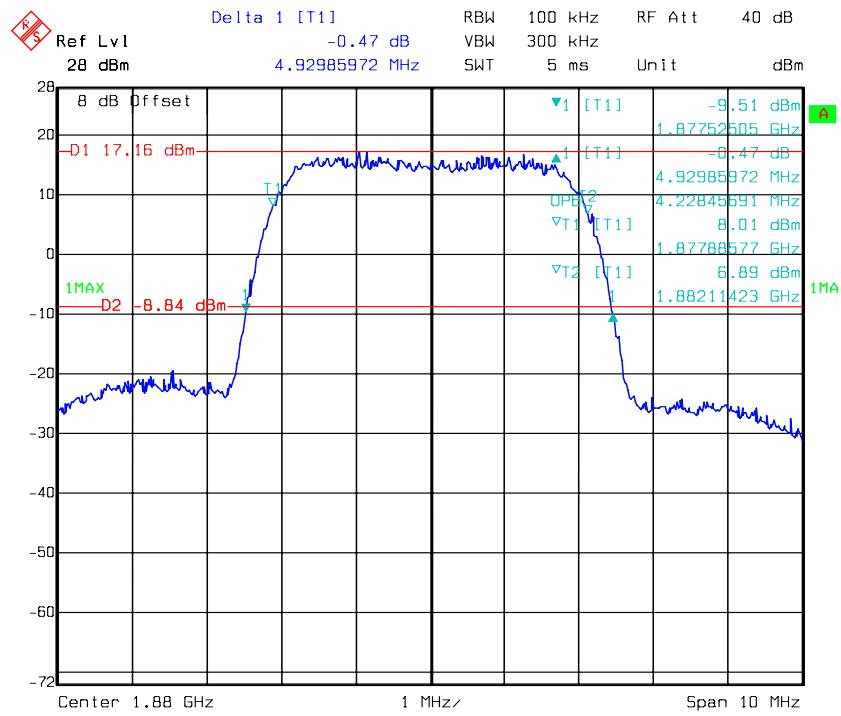
**EDGE 850 Cellular Band****EDGE PCS Band**

**REL99 Band II**

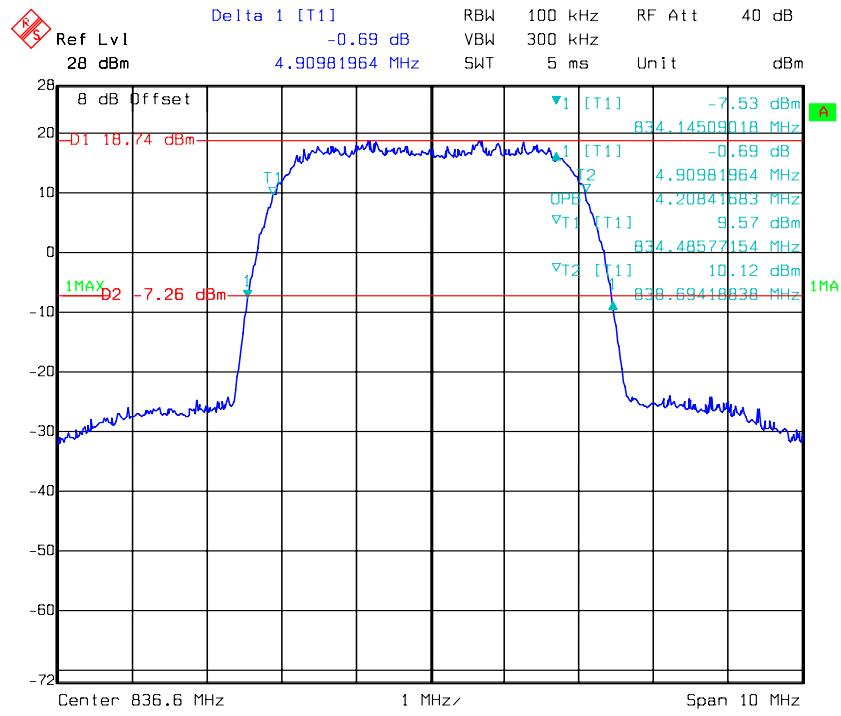
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**HSDPA Band II**

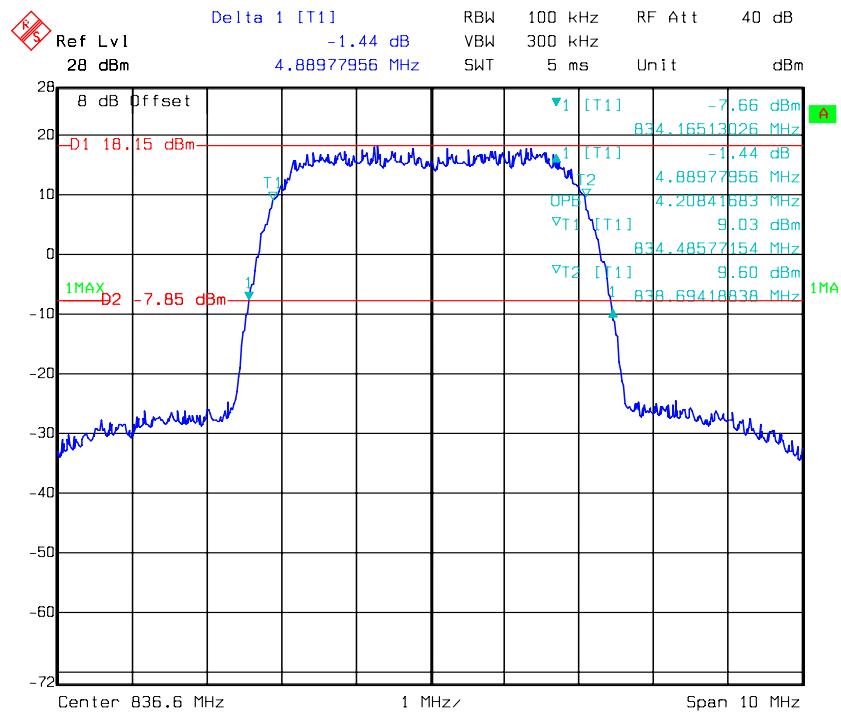
Date: 15.APR.2016 12:02:31

**HSUPA Band II**

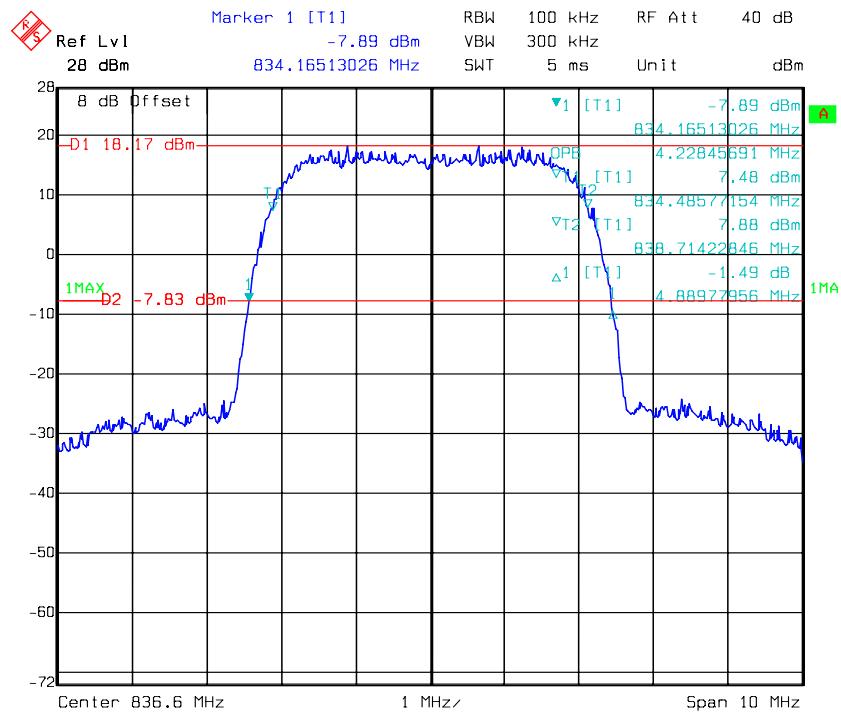
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**REL99 Band V**

Date: 15.APR.2016 14:00:54

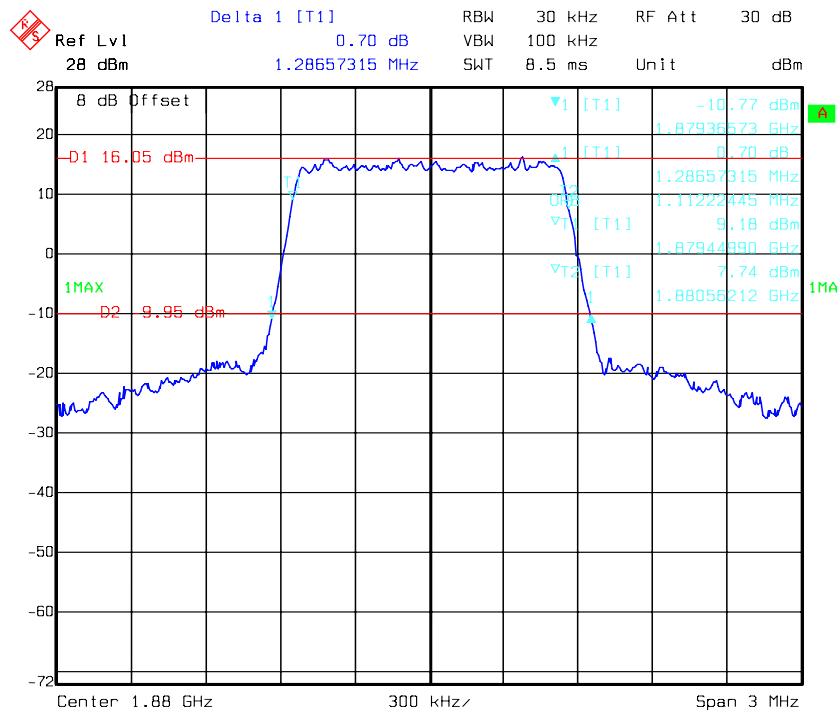
**HSDPA Band V**

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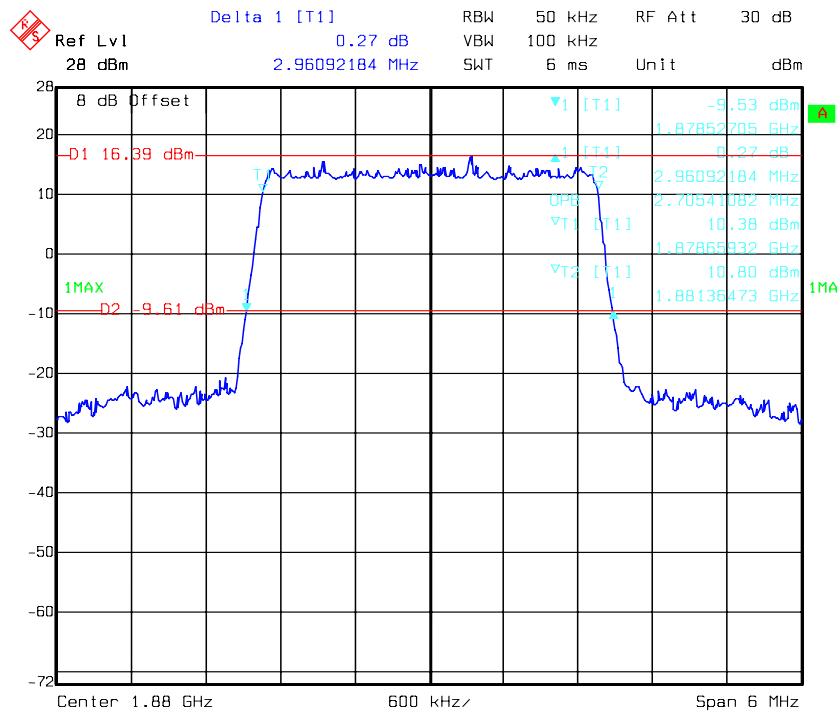
**HSUPA Band V**

Date: 15.APR.2016 14:02:48

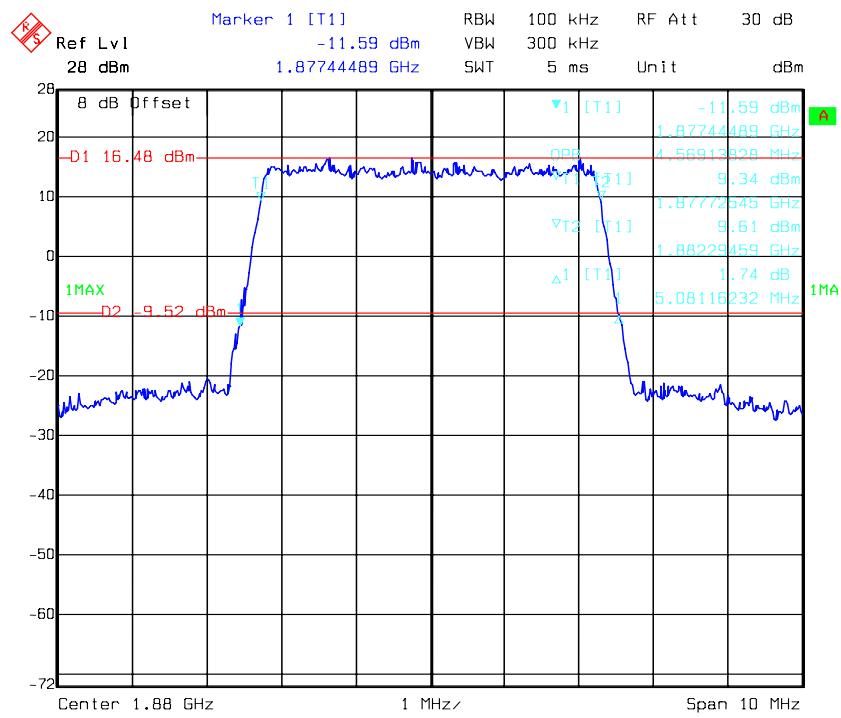
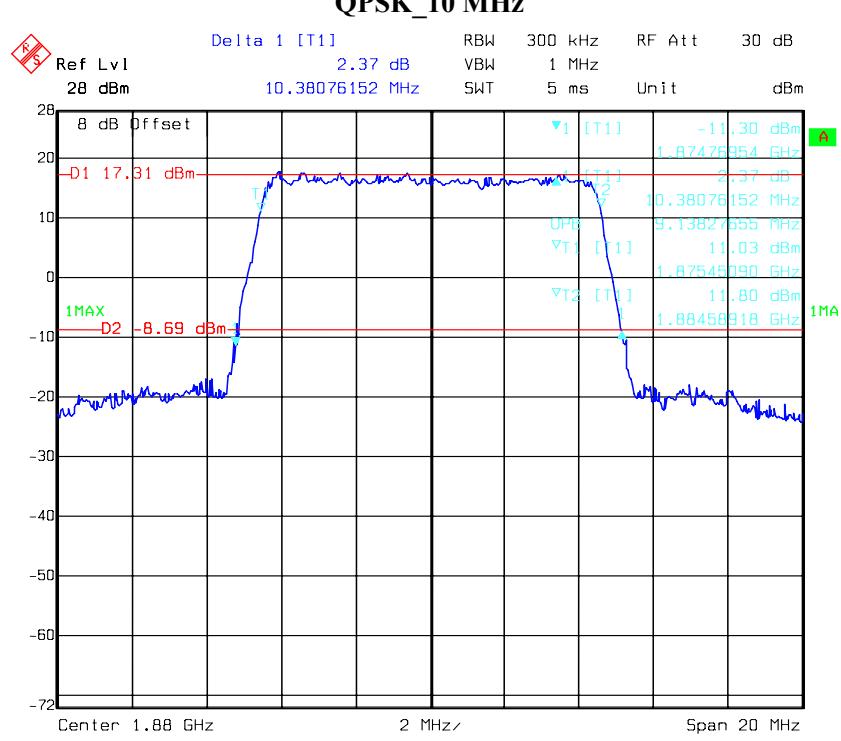
## LTE Band II

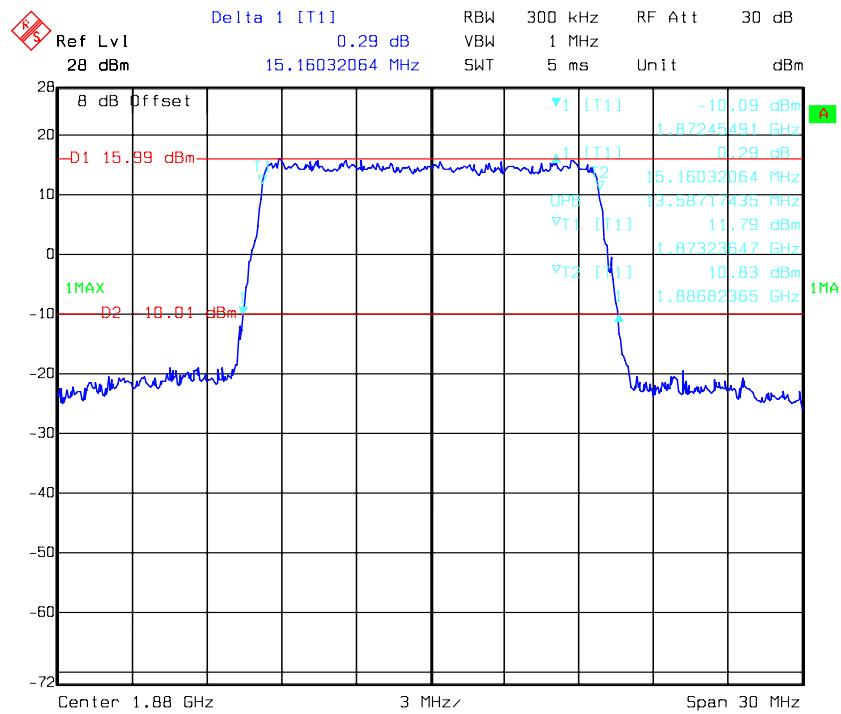
**QPSK\_1.4 MHz**

Date: 14.APR.2016 11:20:27

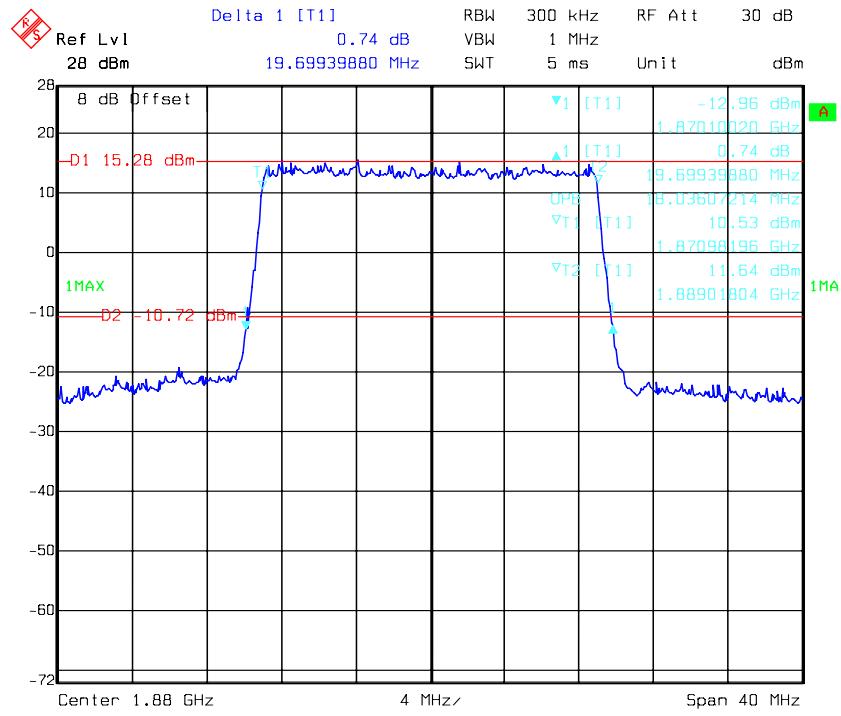
**QPSK\_3 MHz**

Date: 14.APR.2016 11:24:26

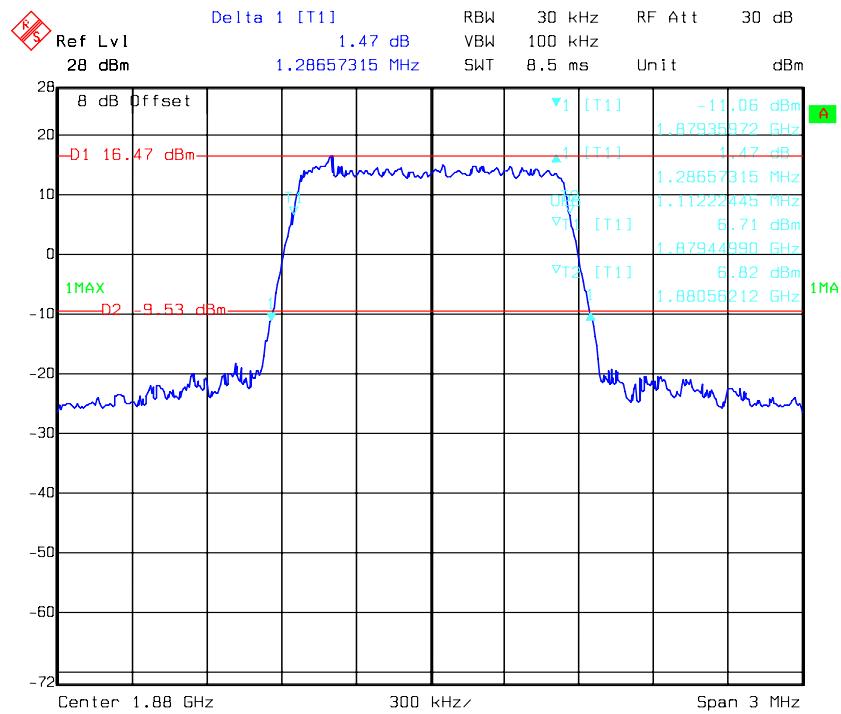
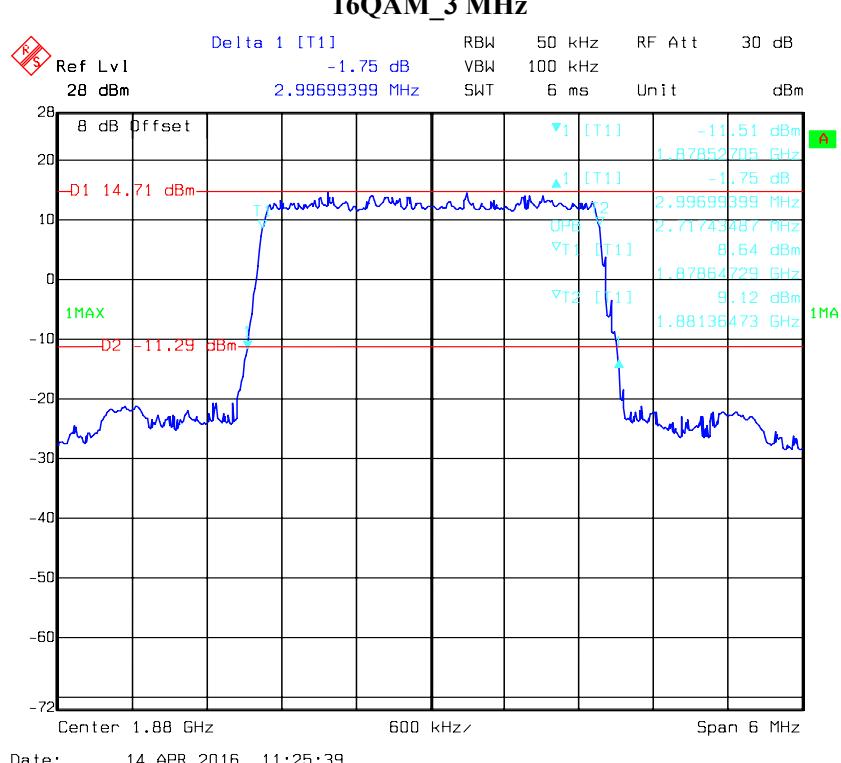
**QPSK\_5 MHz****QPSK\_10 MHz**

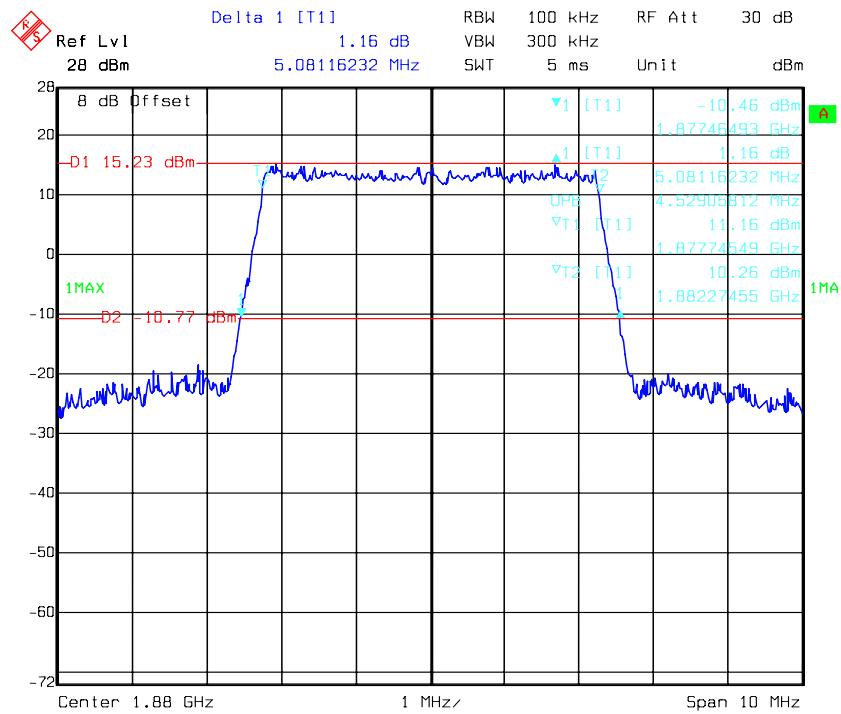
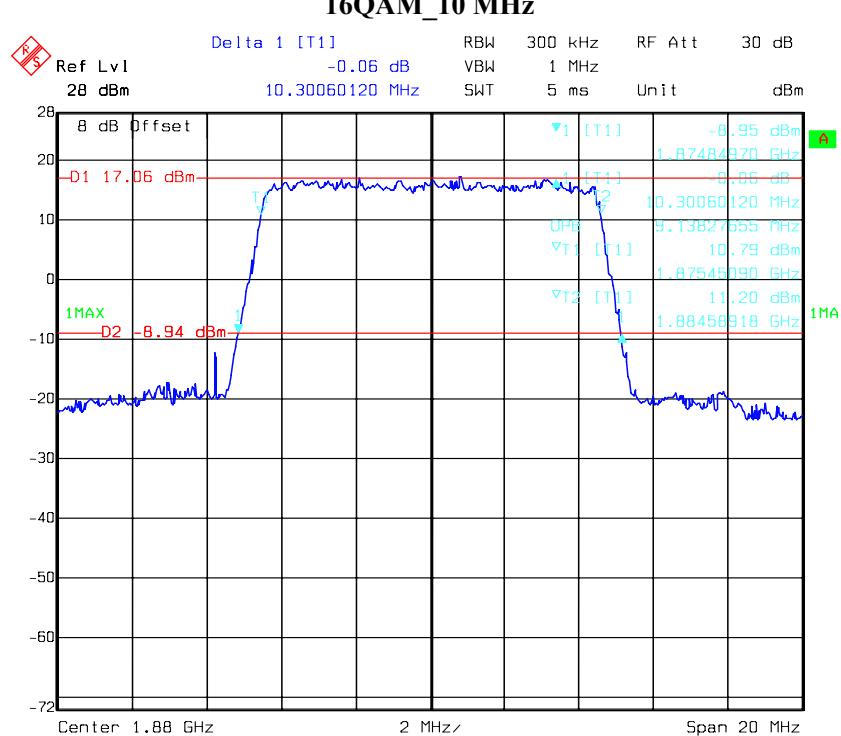
**QPSK\_15 MHz**

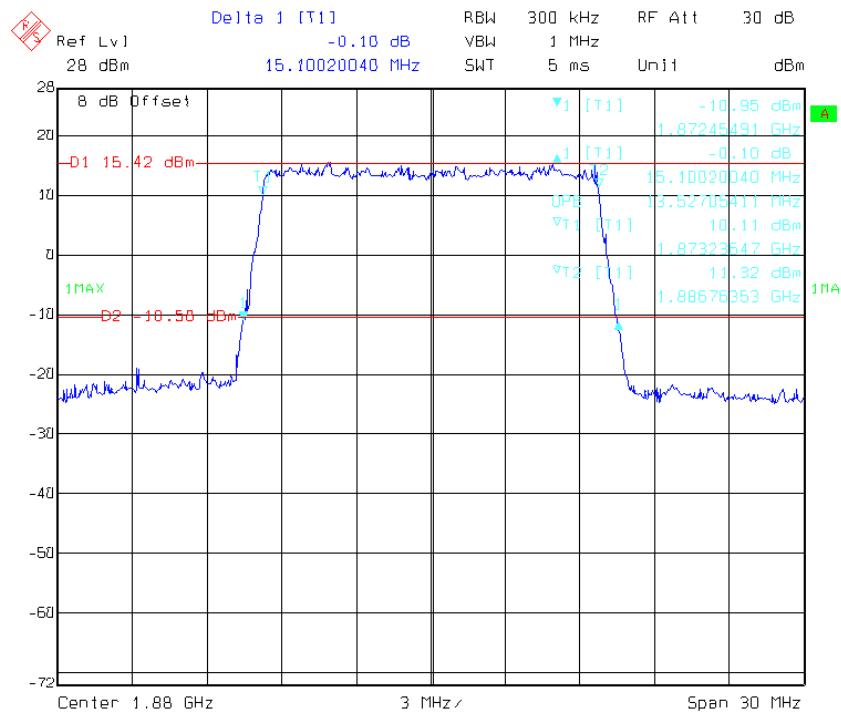
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**QPSK\_20 MHz**

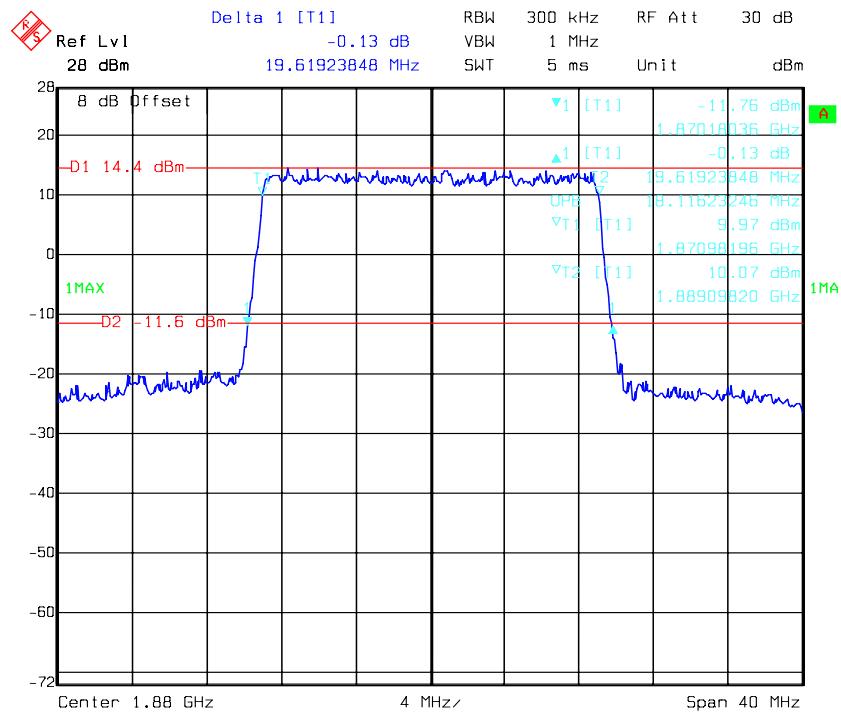
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**16QAM\_1.4 MHz****16QAM\_3 MHz**

**16QAM\_5 MHz****16QAM\_10 MHz**

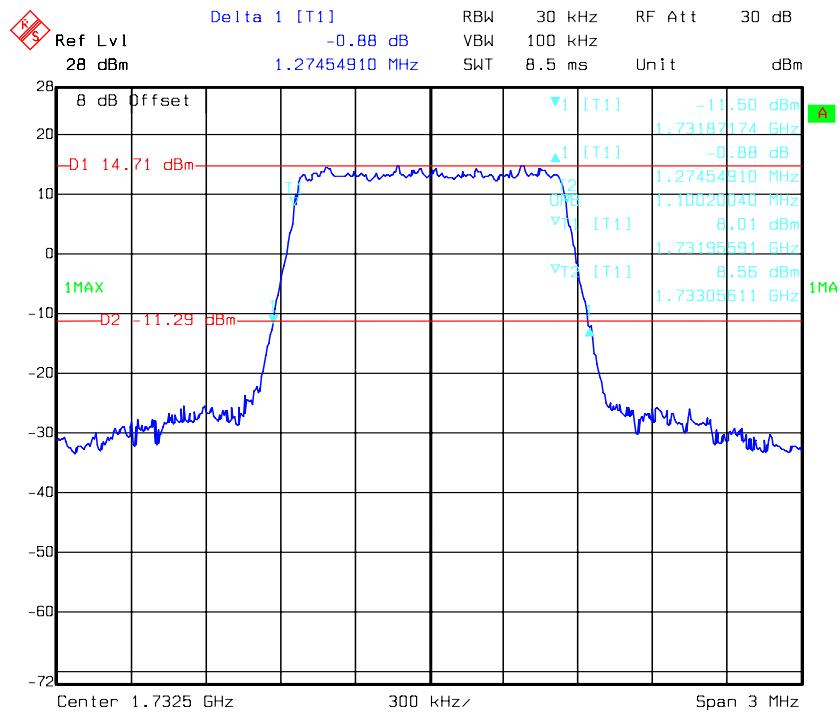
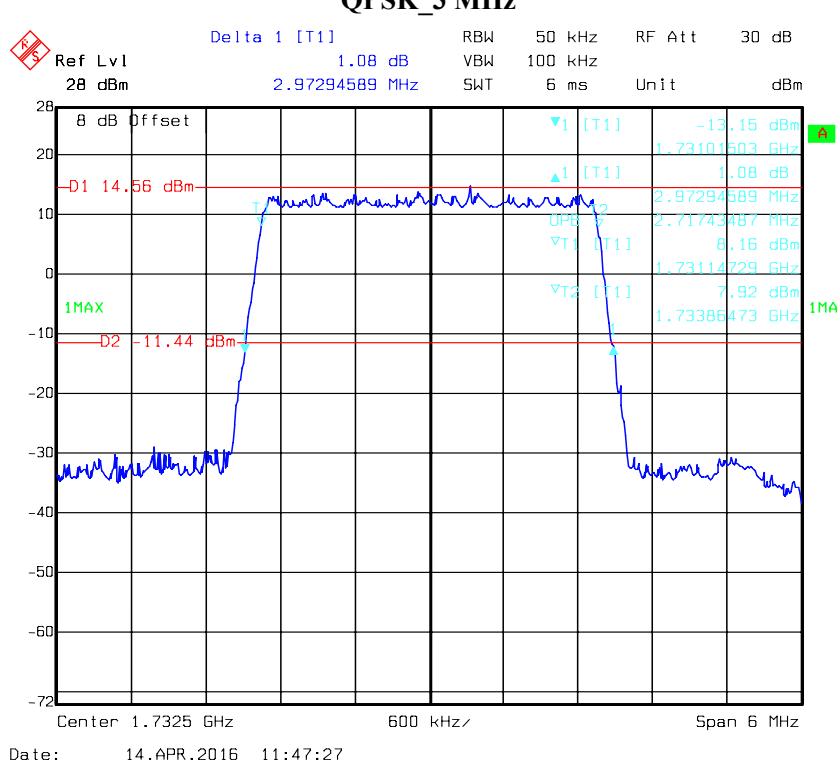
**16QAM\_15 MHz**

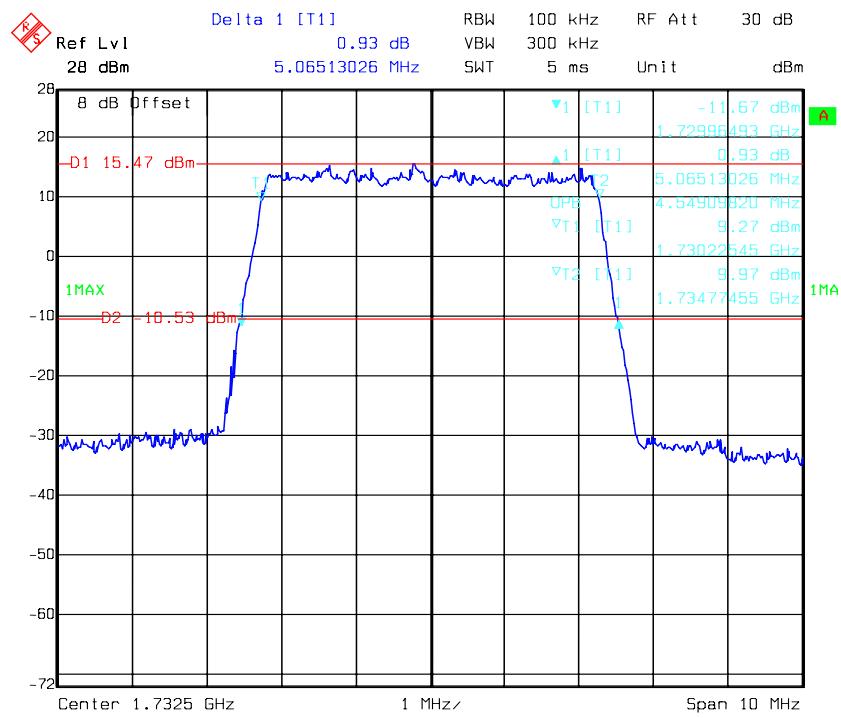
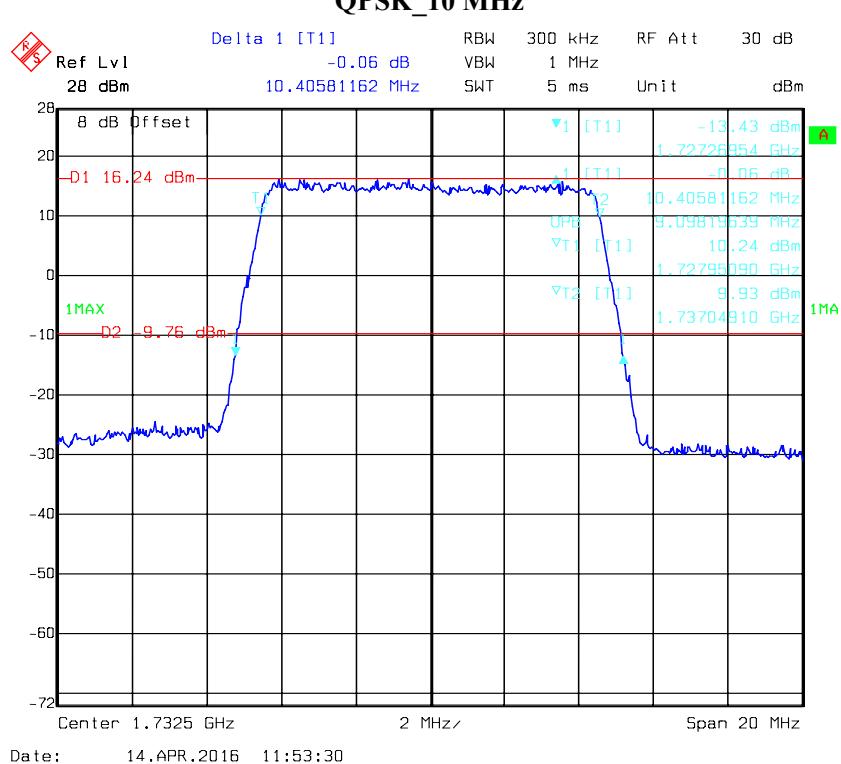
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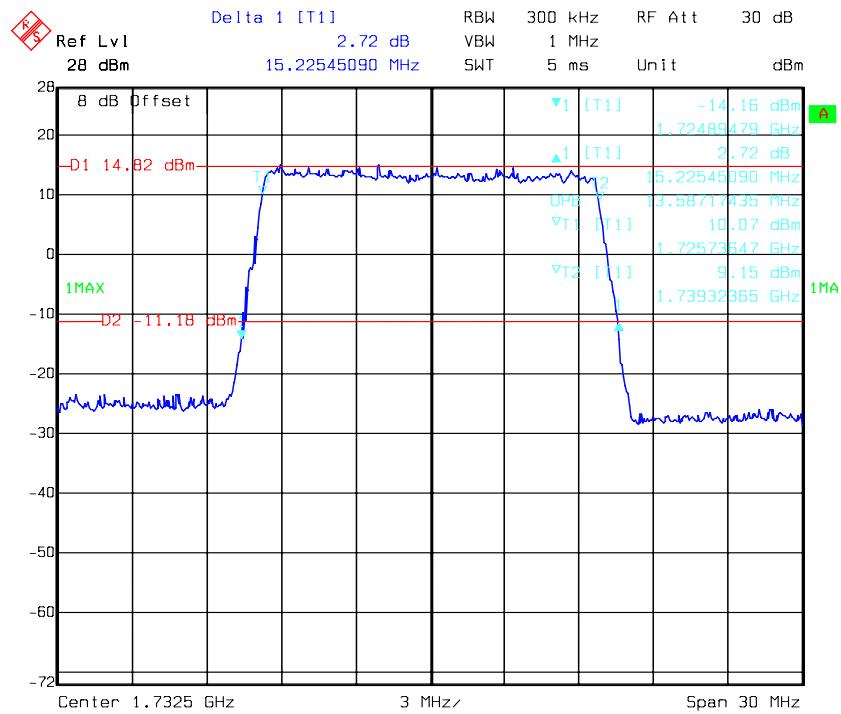
**16QAM\_20 MHz**

Date: 14.APR.2016 11:37:29

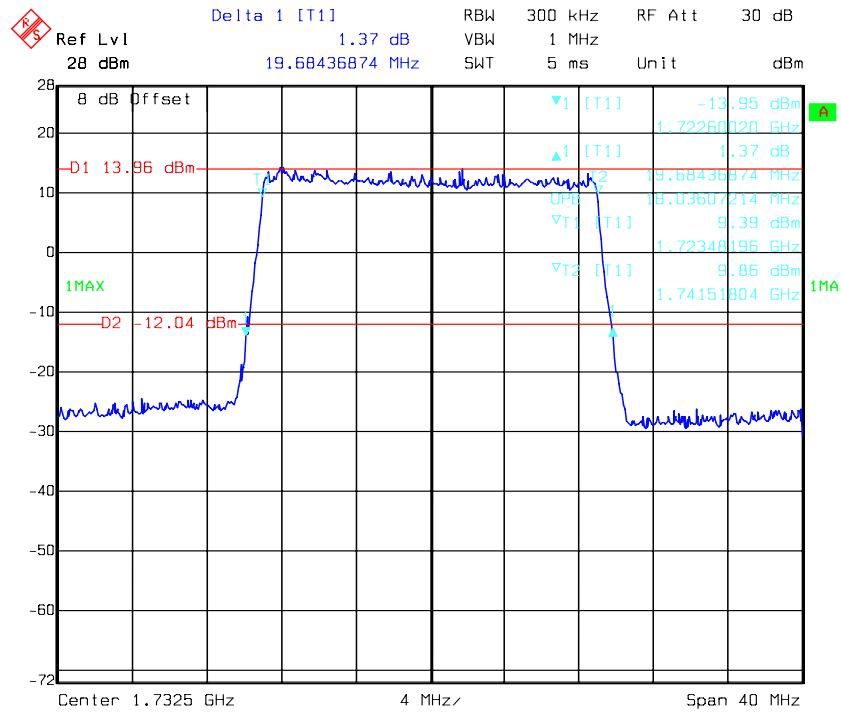
## LTE Band IV

**QPSK\_1.4 MHz****QPSK\_3 MHz**

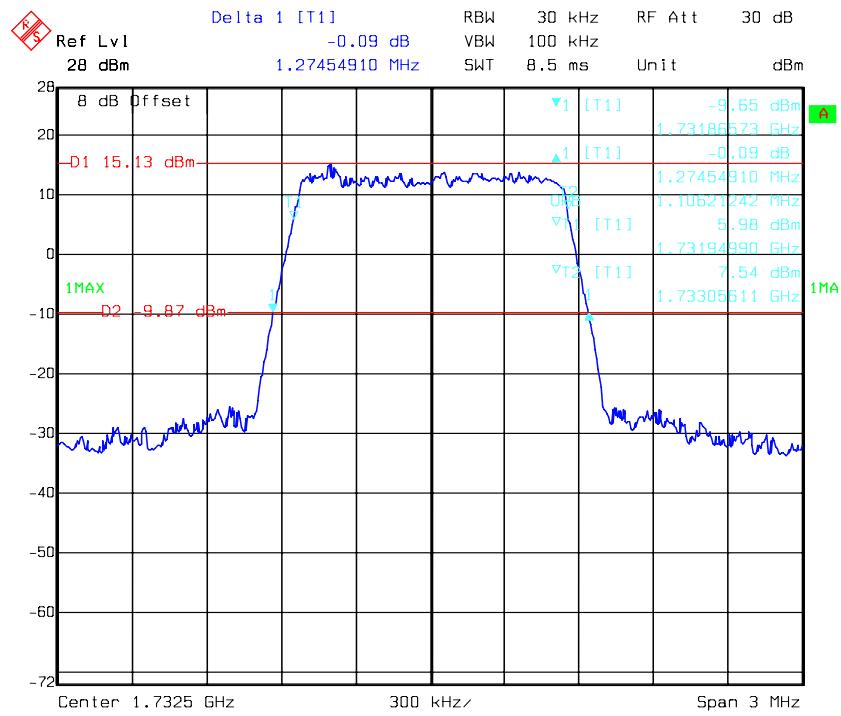
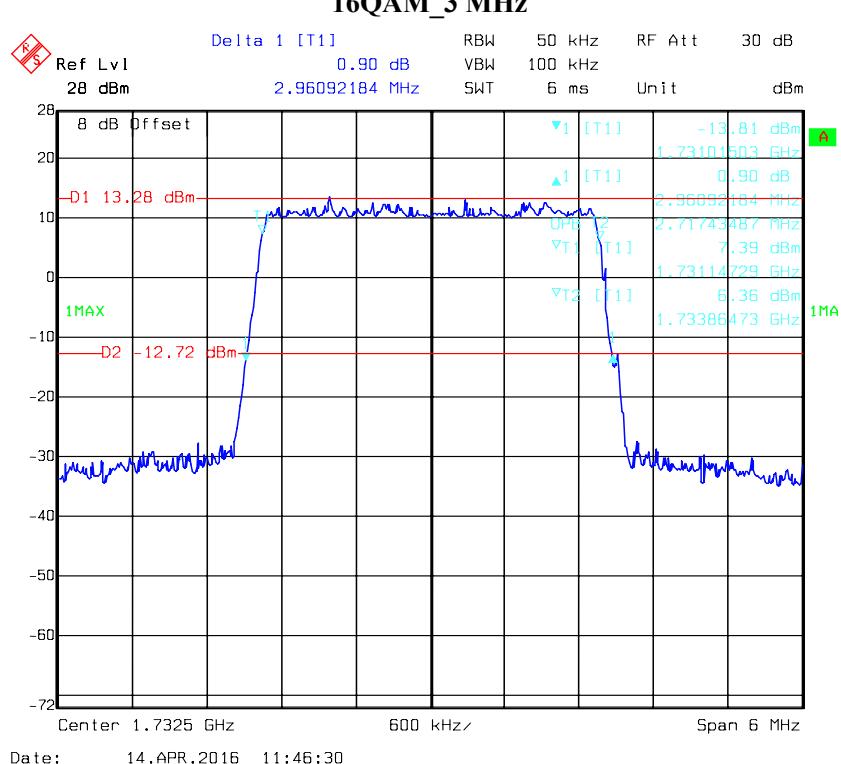
**QPSK\_5 MHz****QPSK\_10 MHz**

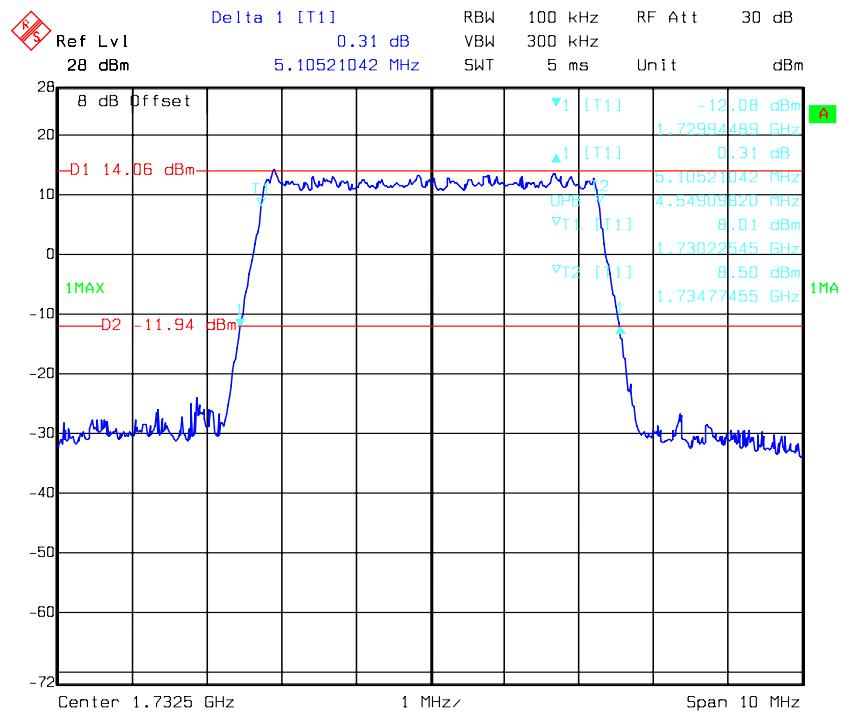
**QPSK\_15 MHz**

Date: 14.APR.2016 11:57:34

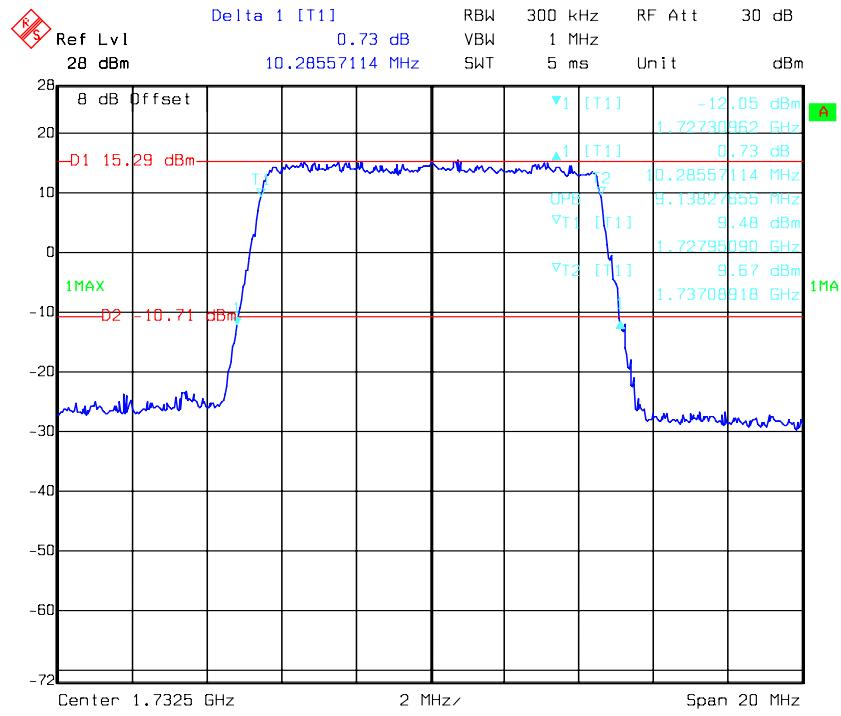
**QPSK\_20 MHz**

Date: 14.APR.2016 11:59:25

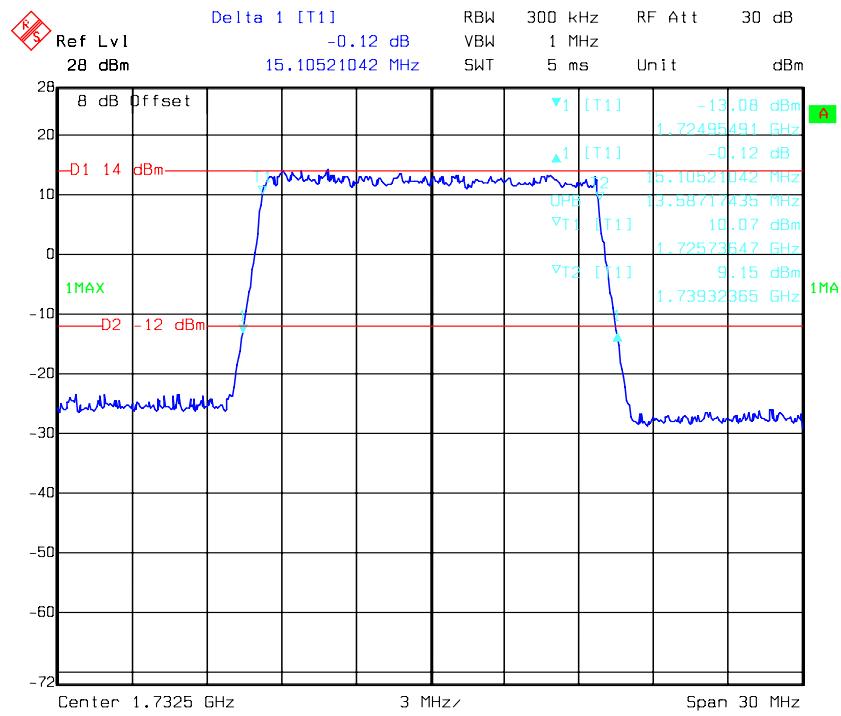
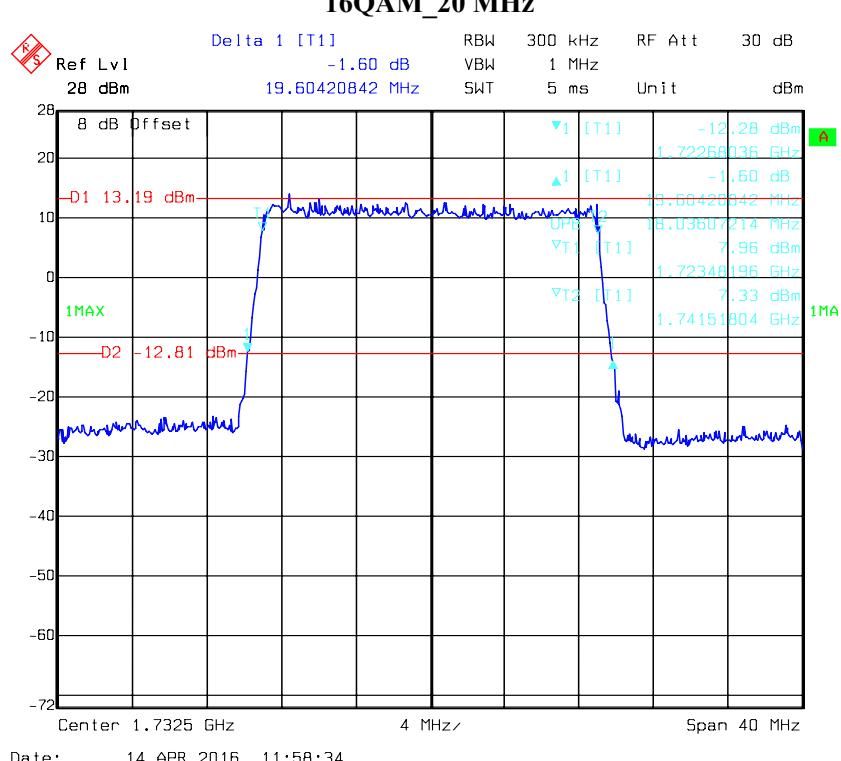
**16QAM\_1.4 MHz****16QAM\_3 MHz**

**16QAM\_5 MHz**

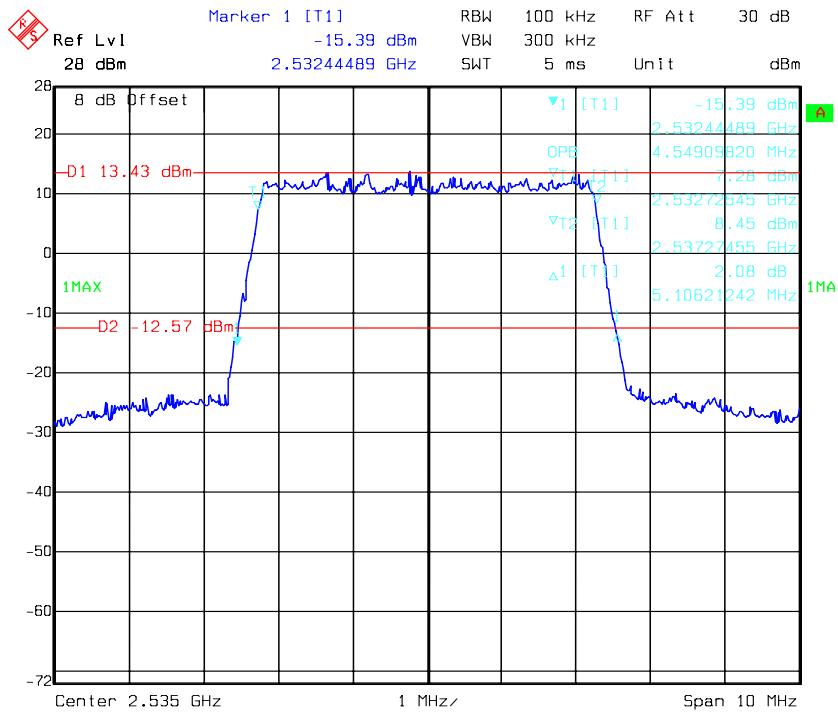
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**16QAM\_10 MHz**

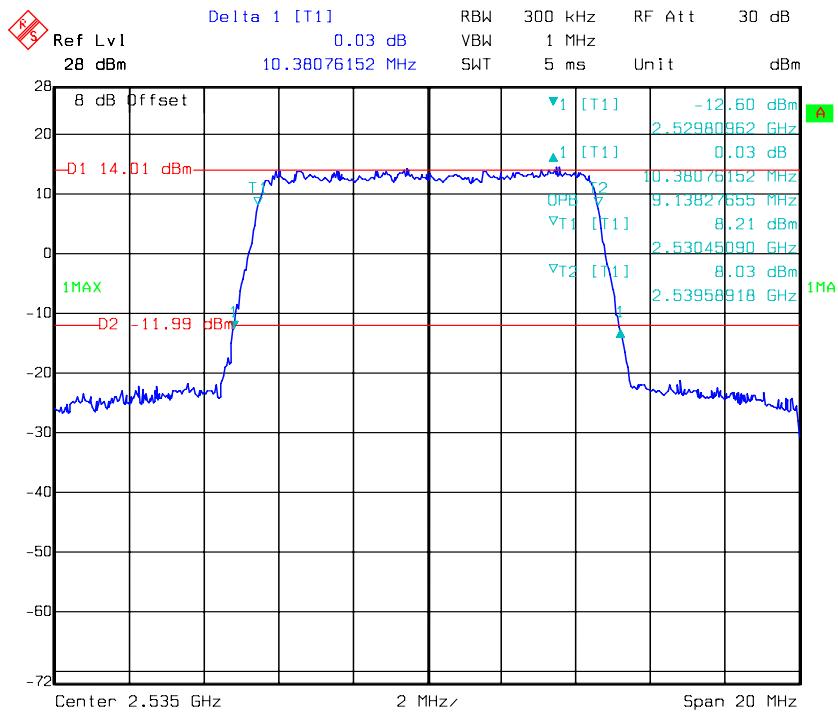
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**16QAM\_15 MHz****16QAM\_20 MHz**

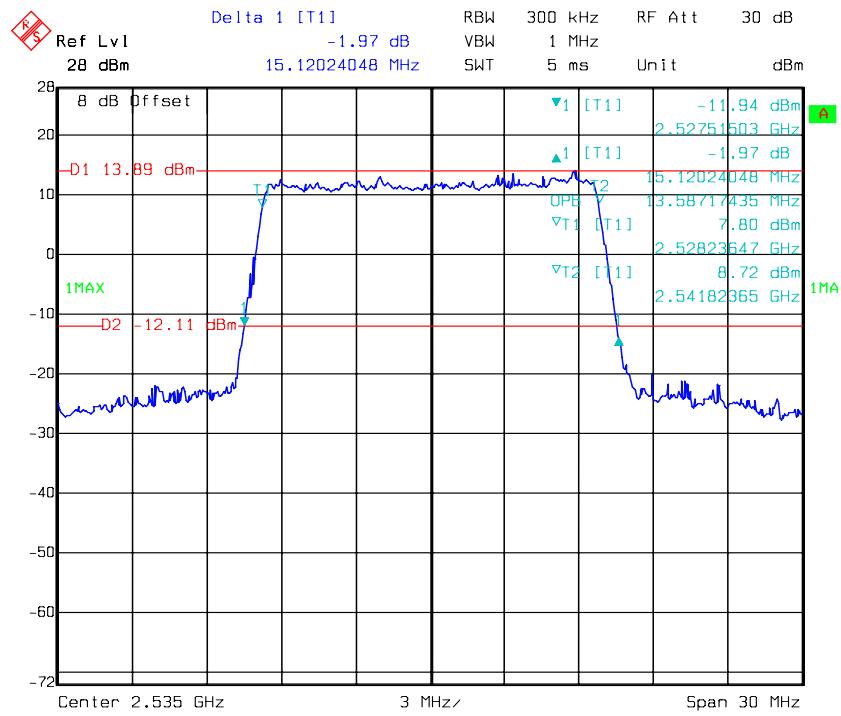
## LTE Band VII

**QPSK\_5 MHz**

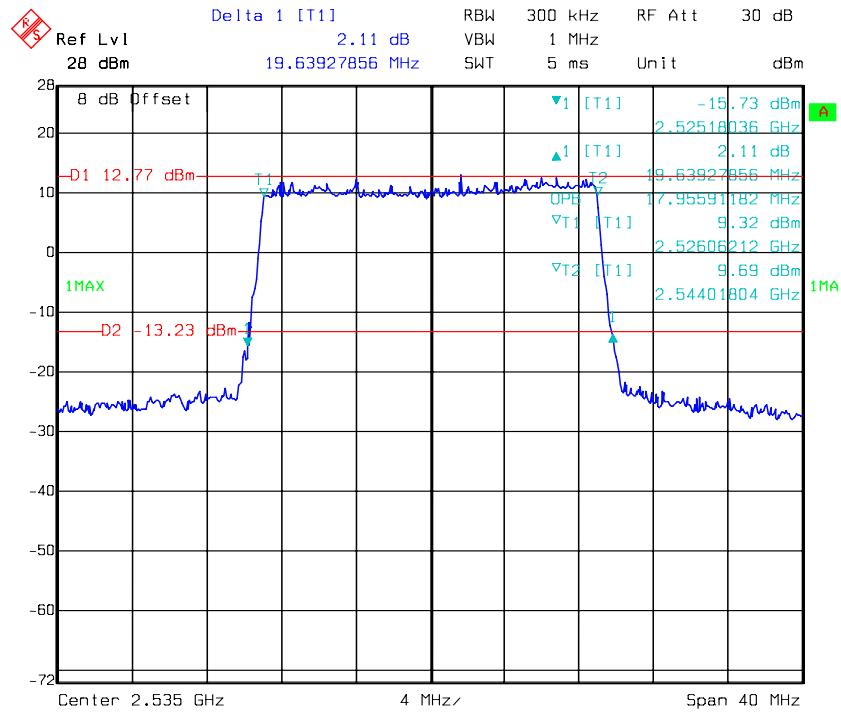
Date: 14.APR.2016 13:07:41

**QPSK\_10 MHz**

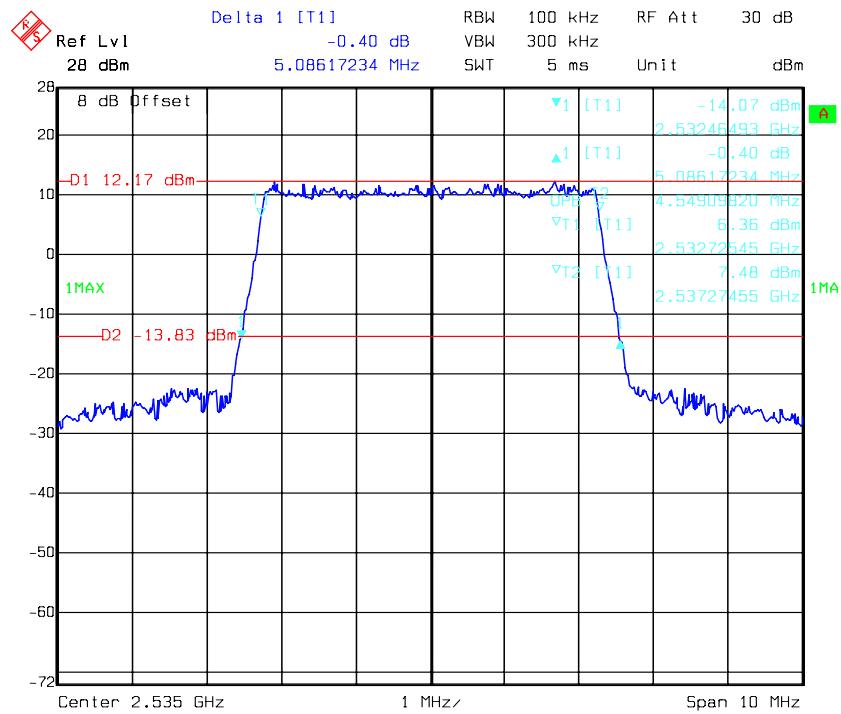
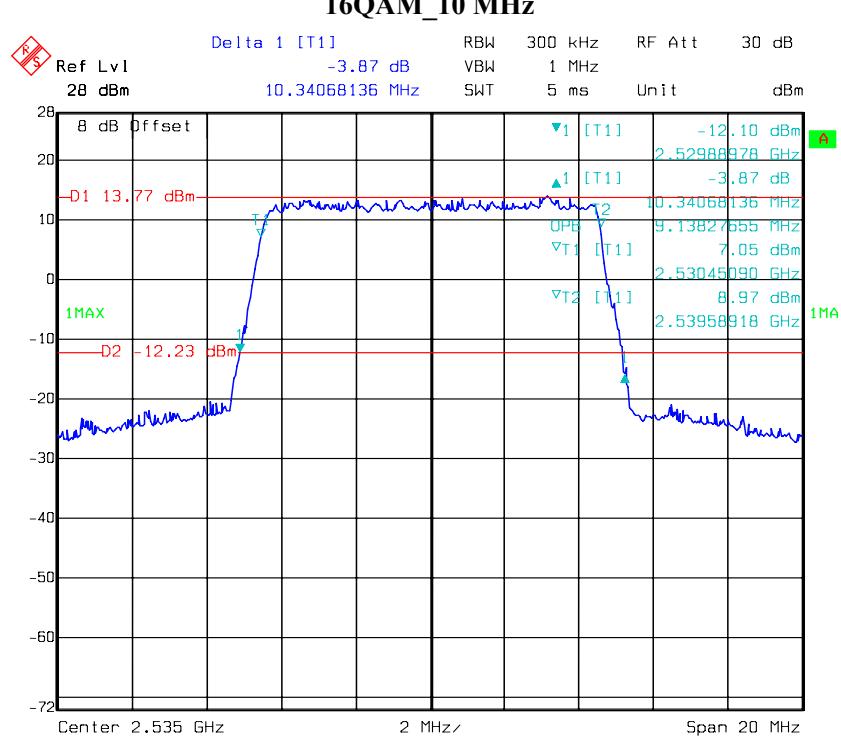
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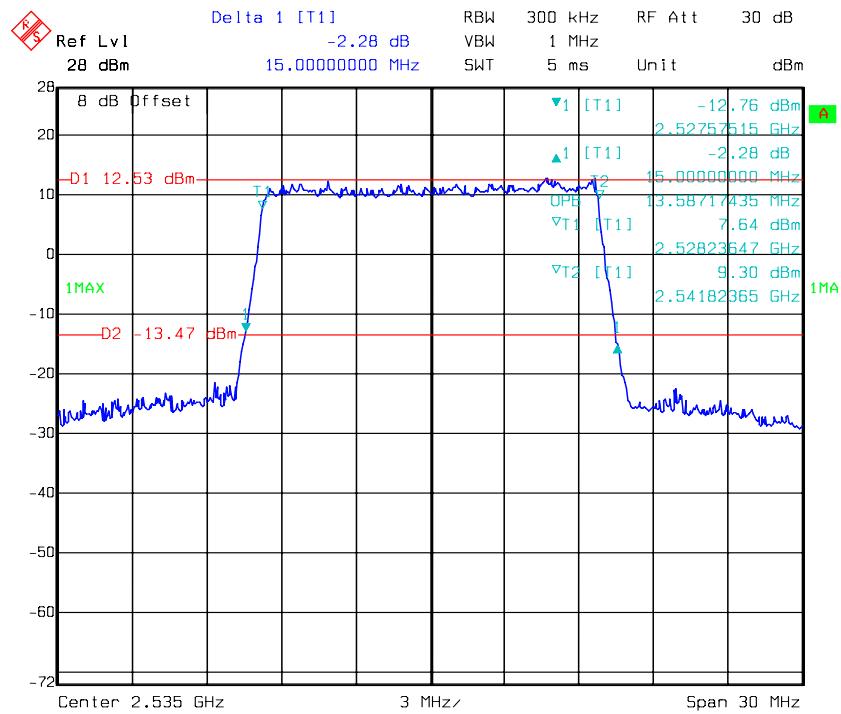
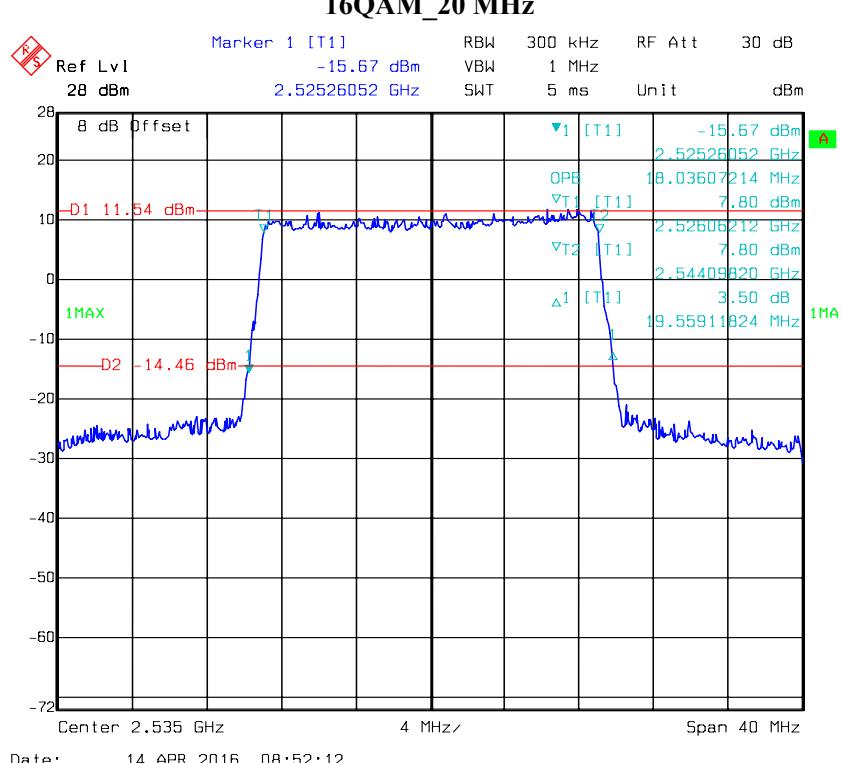
**QPSK\_15 MHz**

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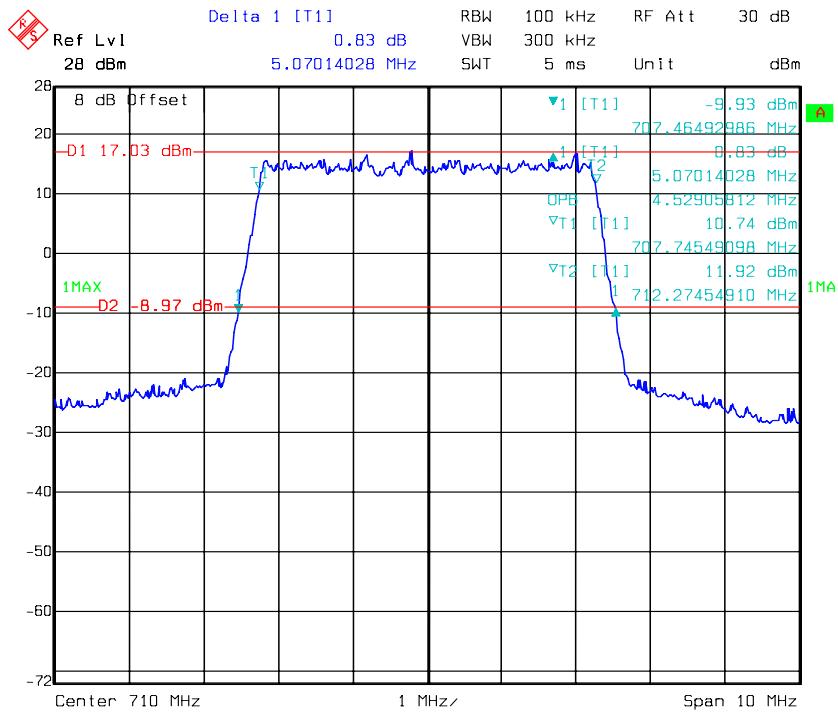
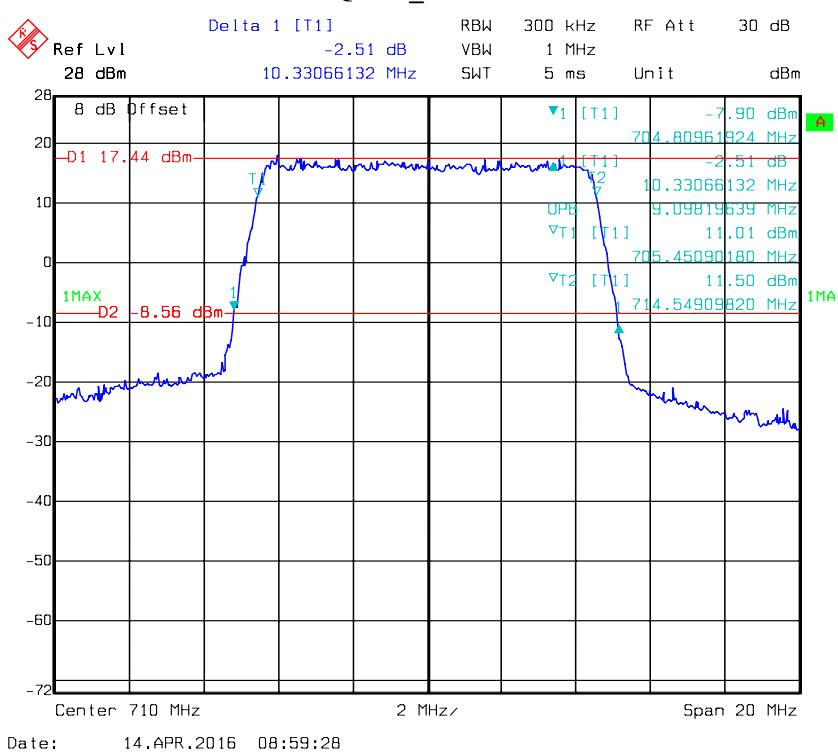
**QPSK\_20 MHz**

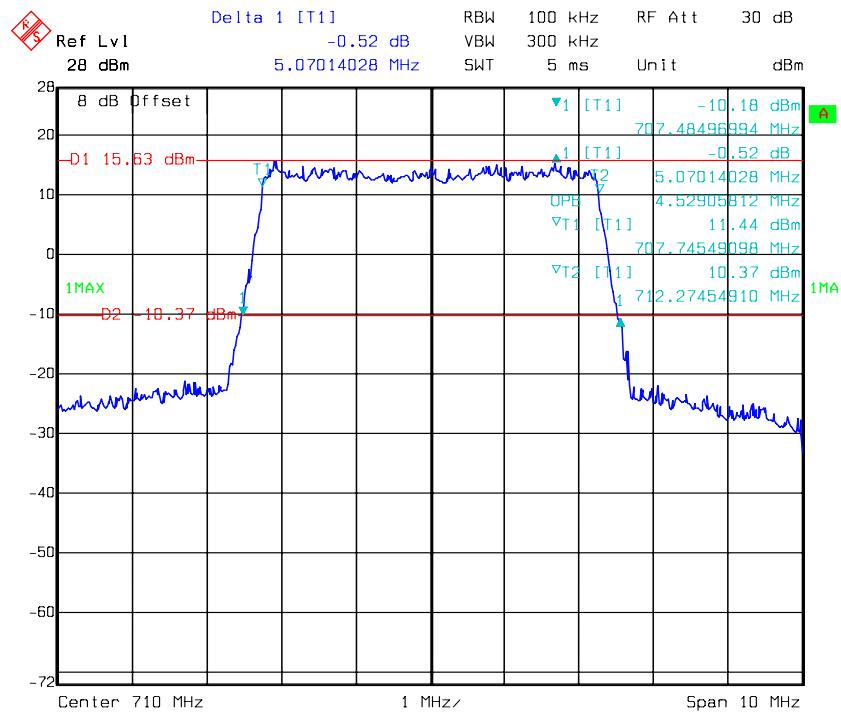
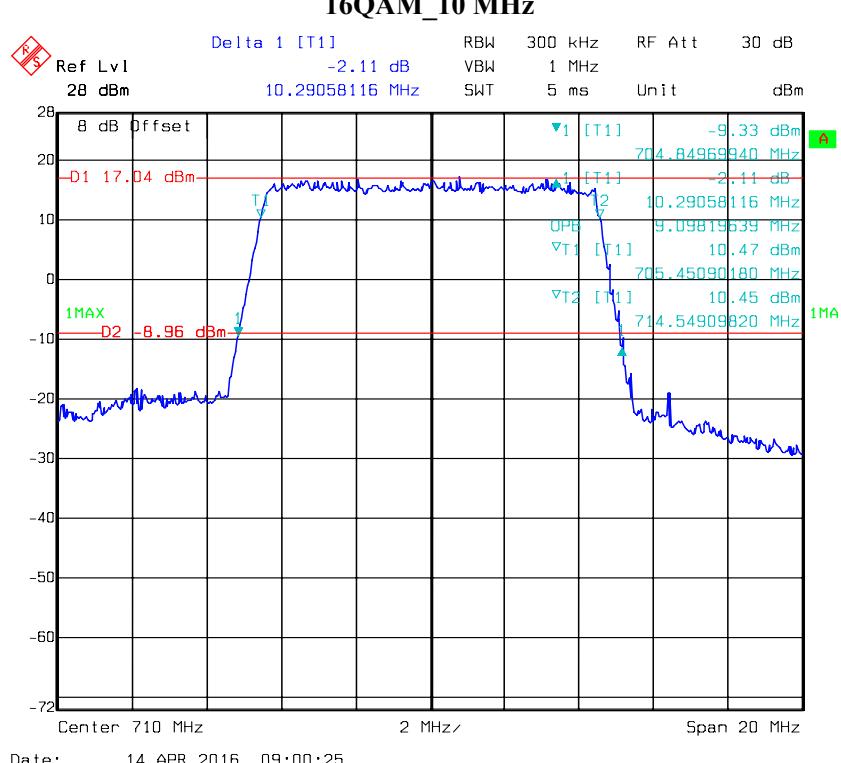
Date: 14.APR.2016 08:51:20

**16QAM\_5 MHz****16QAM\_10 MHz**

**16QAM\_15 MHz****16QAM\_20 MHz**

LTE Band 17

**QPSK\_5 MHz****QPSK\_10 MHz**

**16QAM\_5 MHz****16QAM\_10 MHz**

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

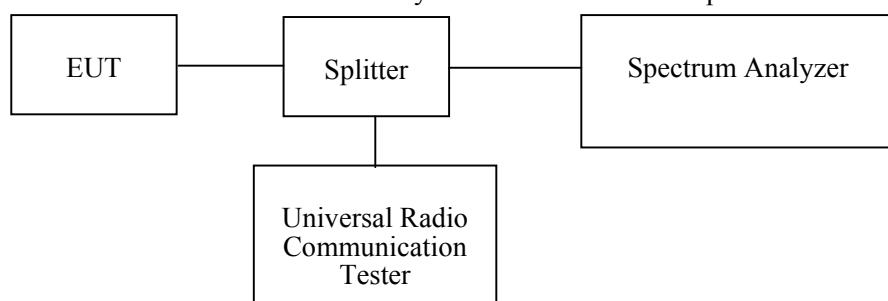
### Applicable Standard

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 10<sup>th</sup> harmonic.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09
R&S	Spectrum Analyzer	FSEM	831259/019	2015-05-09	2016-05-09
R&S	Universal Radio Communication Tester	CMU200	109 038	2015-05-09	2016-05-09
R&S	Wideband Radio Communication Tester	CMW500	106891	2015-11-23	2016-11-23
N/A	Coaxial Cable	0.1m	N/A	2015-05-06	2016-05-06
E-Microwave	DC Blocking	EMDCB-00036	OE01201047	2015-05-06	2016-05-06
E-Microwave	Attenuator	EMCA10-5RN	OE01203239	2015-05-08	2016-05-08
Pasternack	RF Coaxial Cable	RF-01	N/A	2015-05-06	2016-05-06
Pasternack	RF Coaxial Cable	RF-02	N/A	2015-05-06	2016-05-06
N/A	Two-way Spliter	ODP-1-6-2S	OE0120142	2015-05-06	2016-05-06

\* **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).

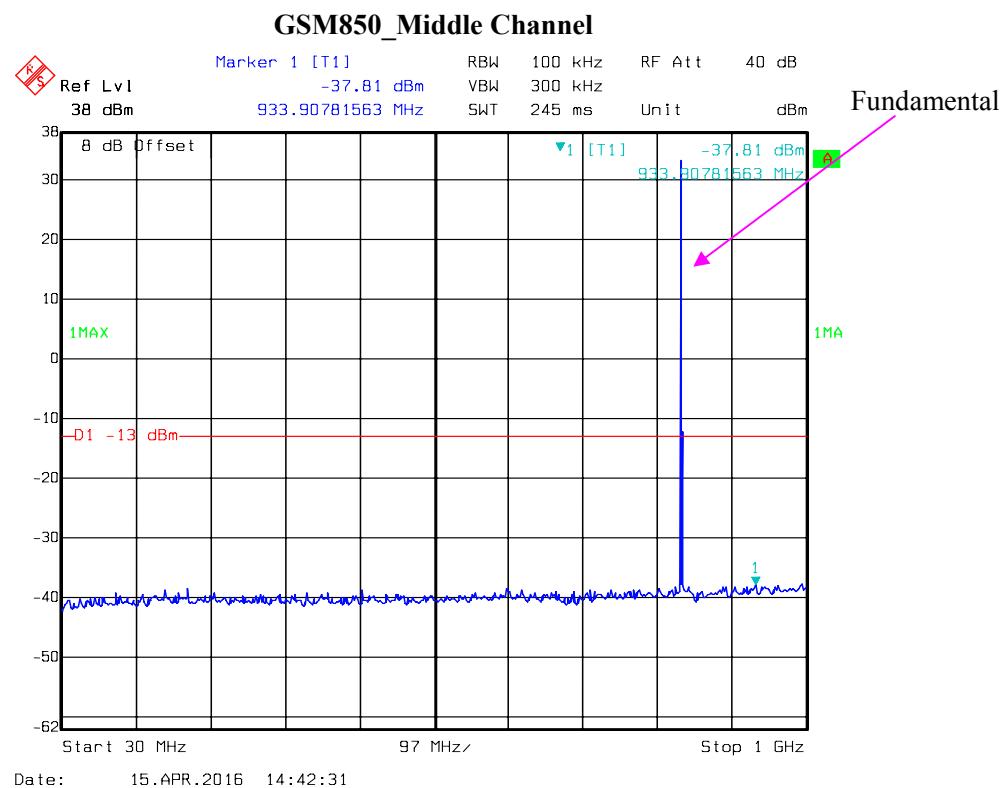
## Test Data

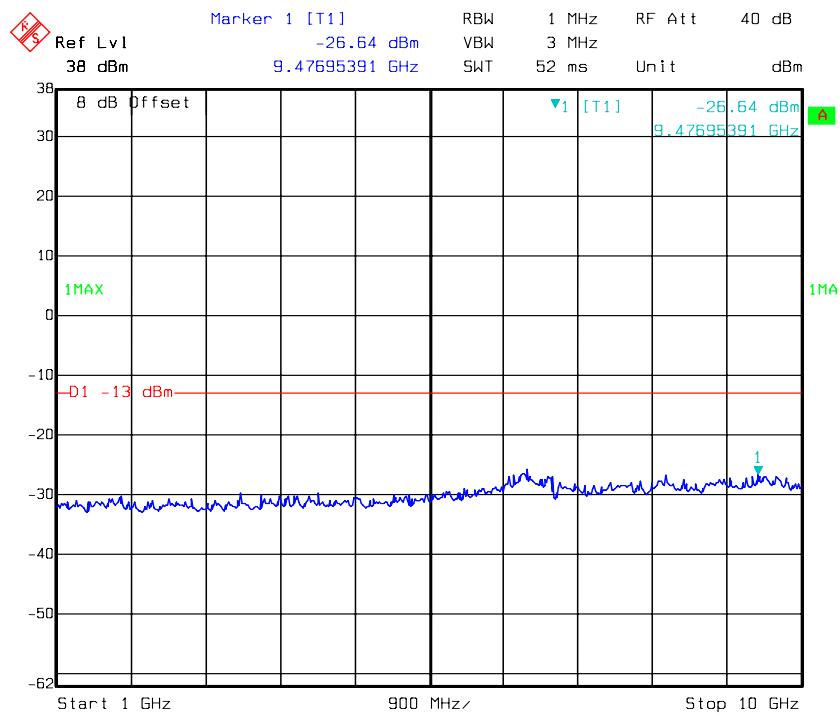
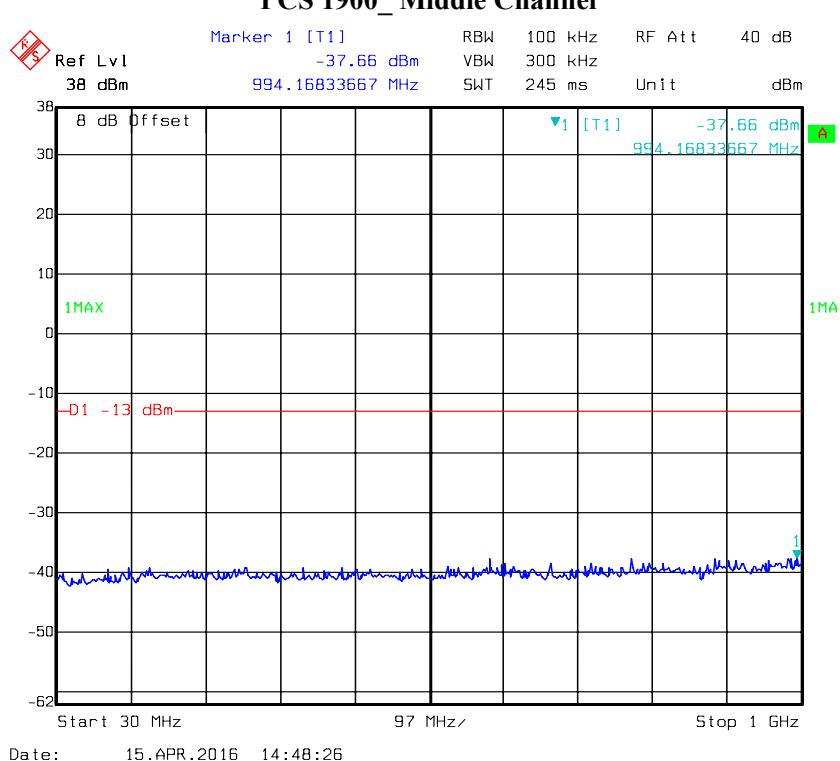
### Environmental Conditions

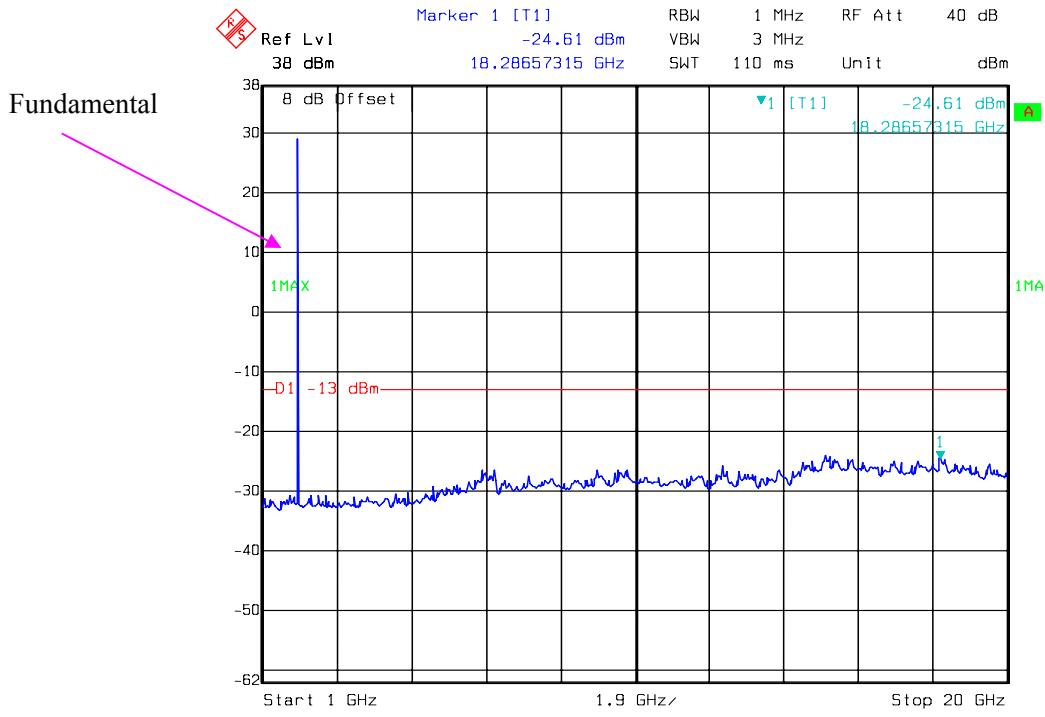
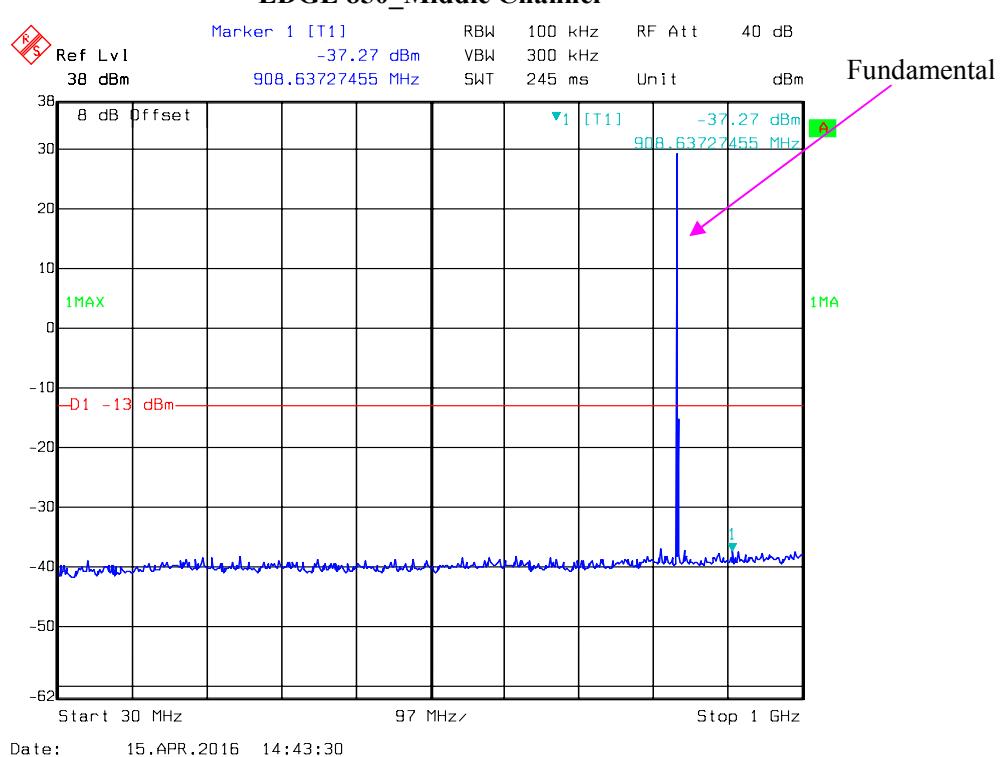
<b>Temperature:</b>	26.4~26.5°C
<b>Relative Humidity:</b>	68~71 %
<b>ATM Pressure:</b>	100.3~100.5 kPa

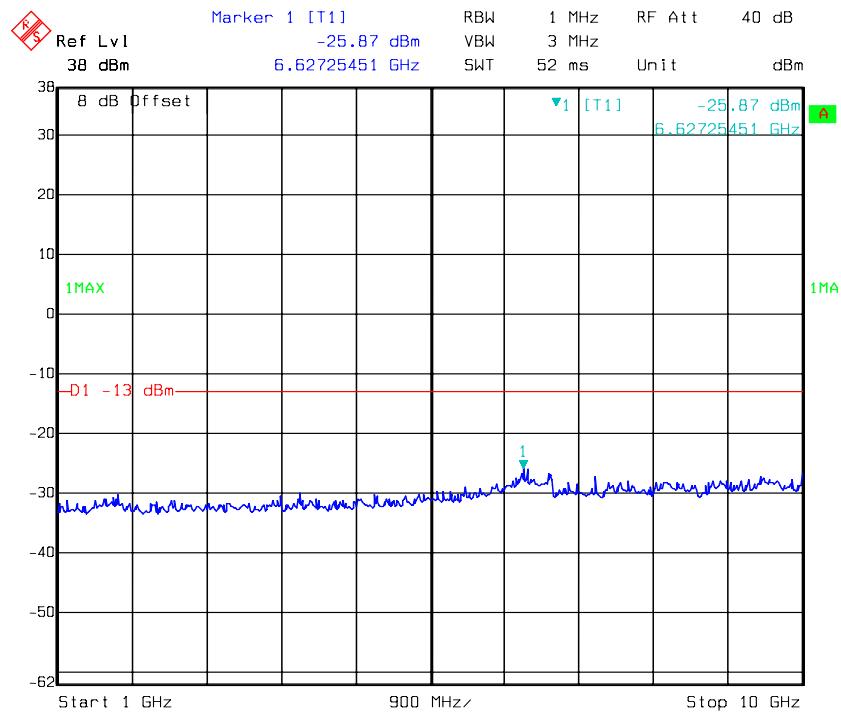
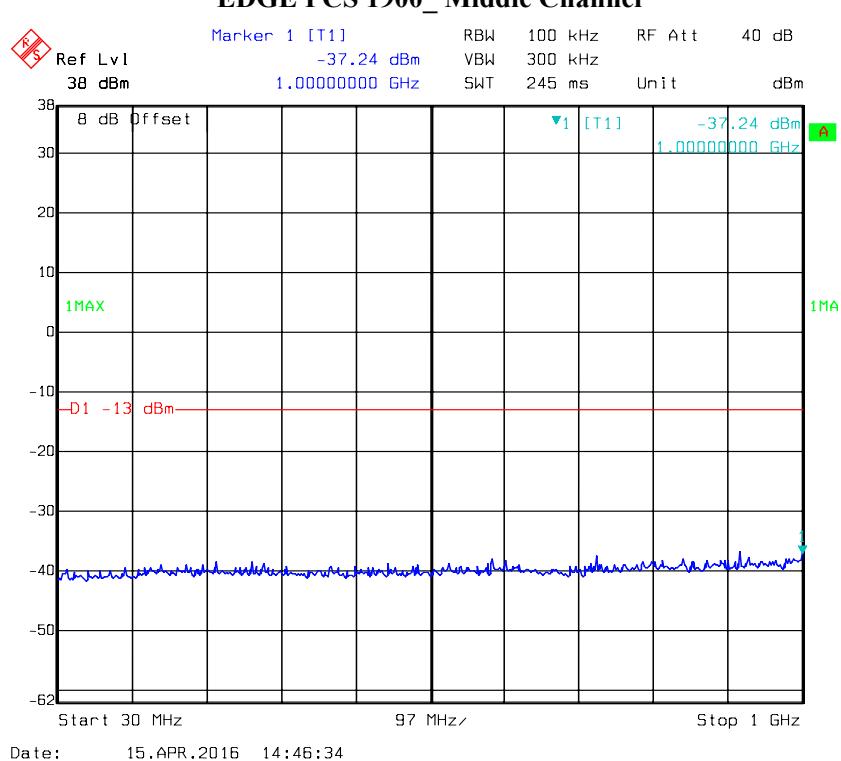
The testing was performed by Rocky Xiao from 2016-04-14 to 2016-04-15.

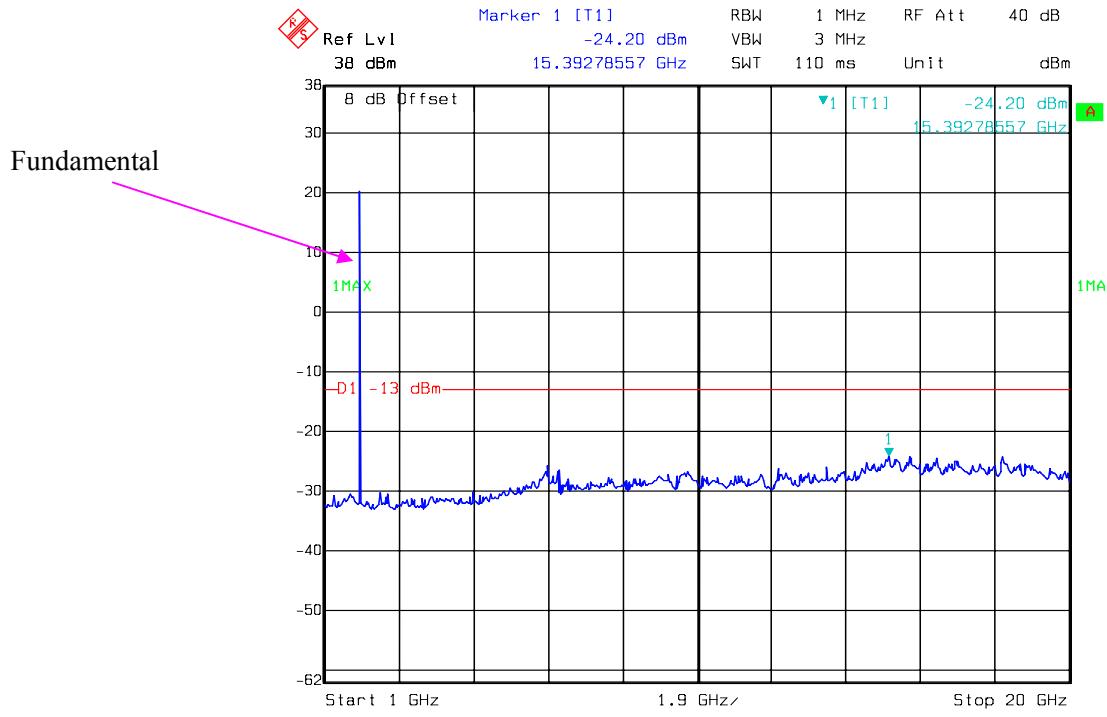
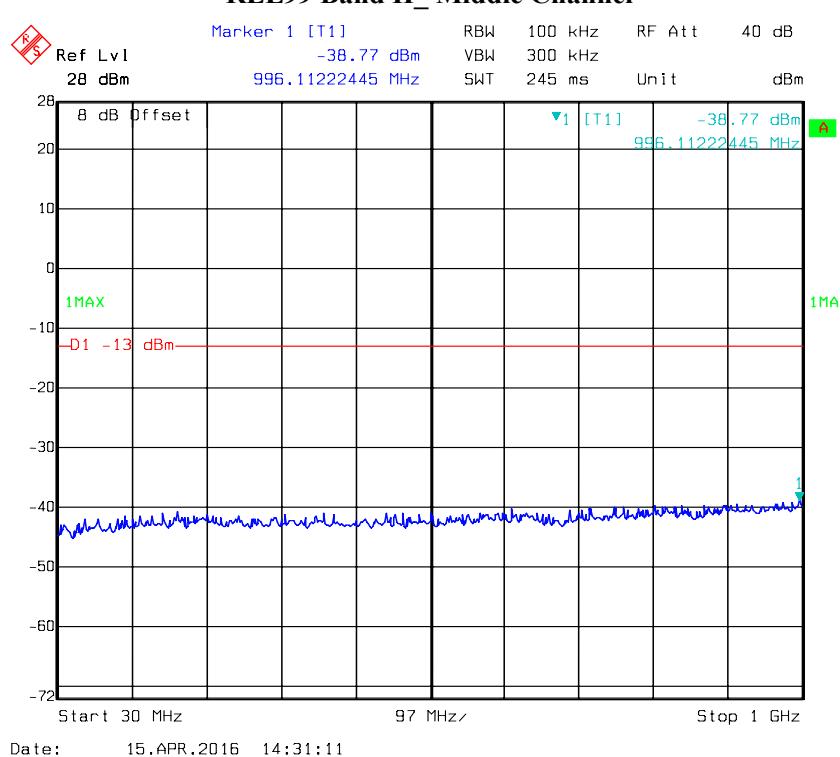
Please refer to the following plots.

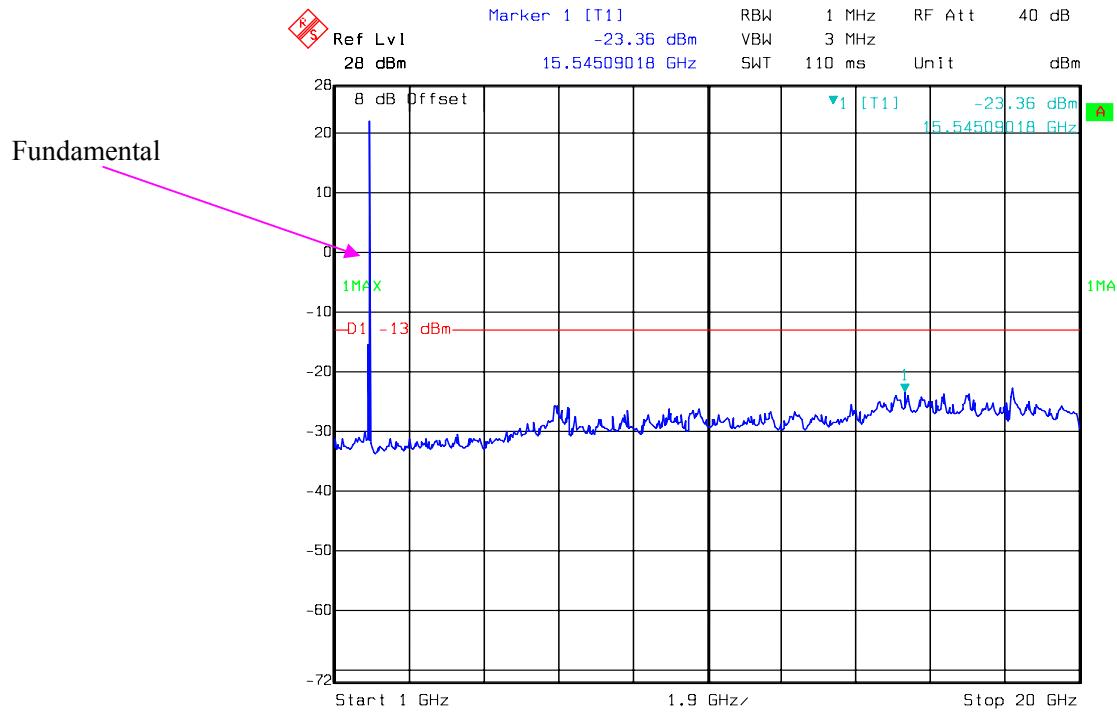
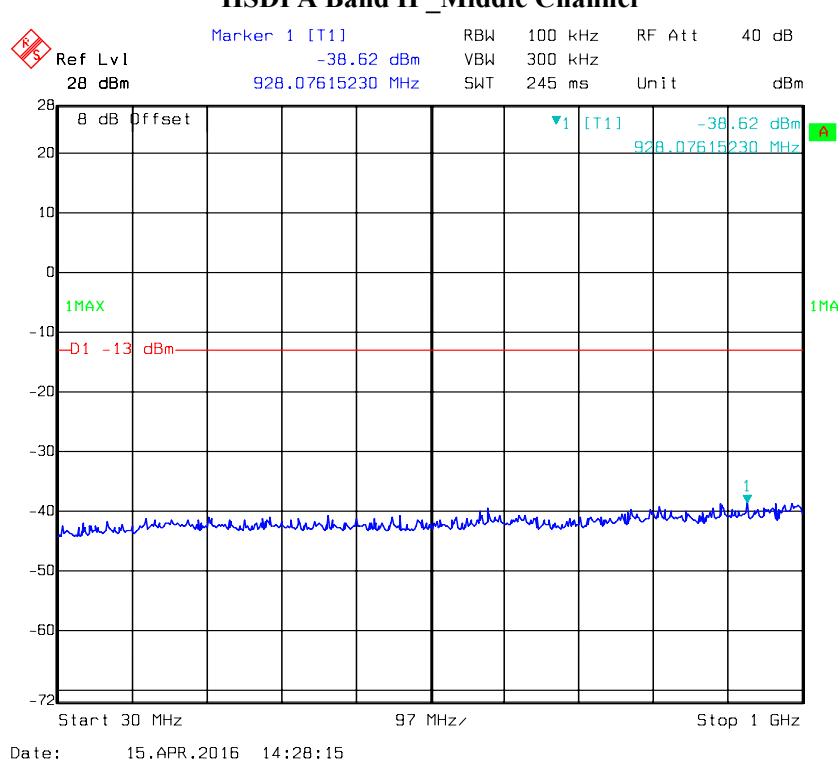


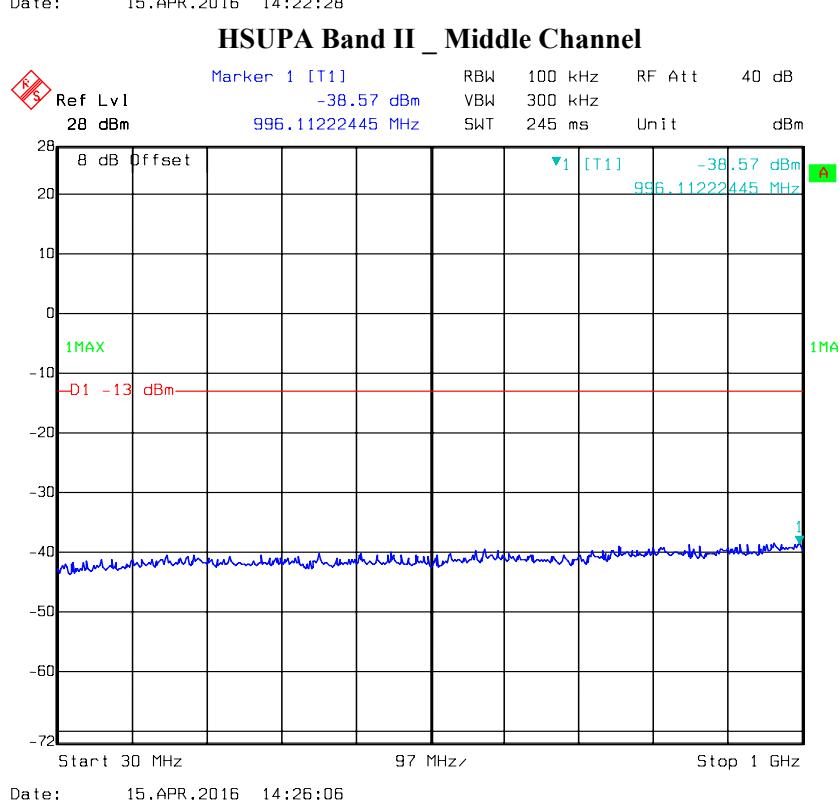
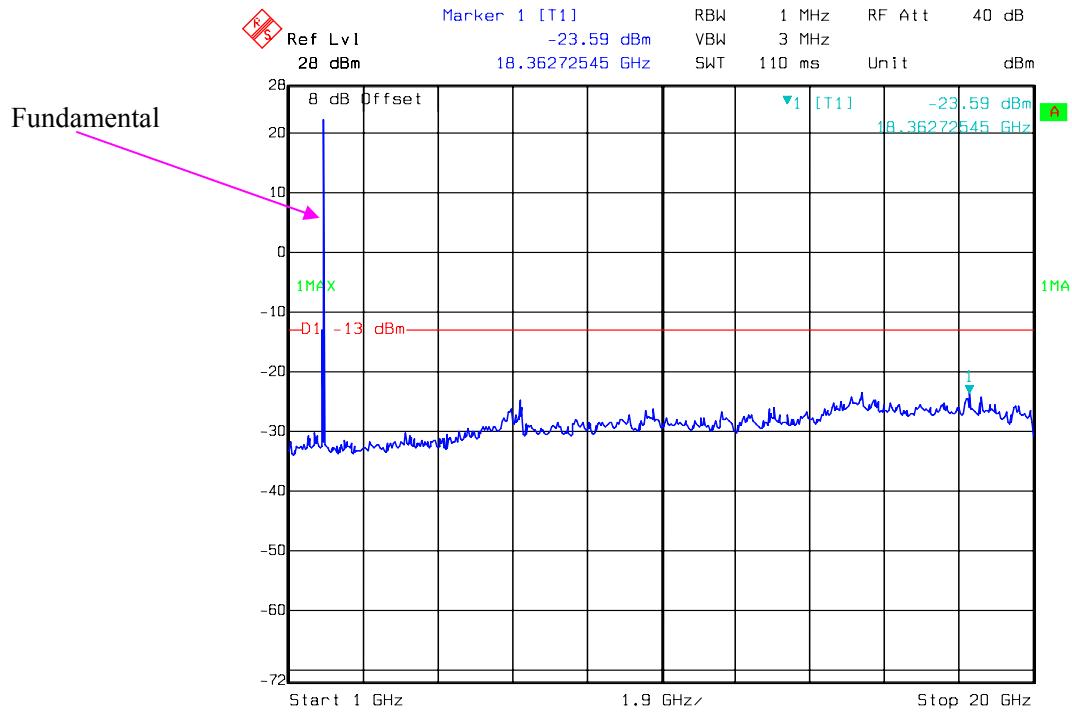
**PCS 1900\_Middle Channel**

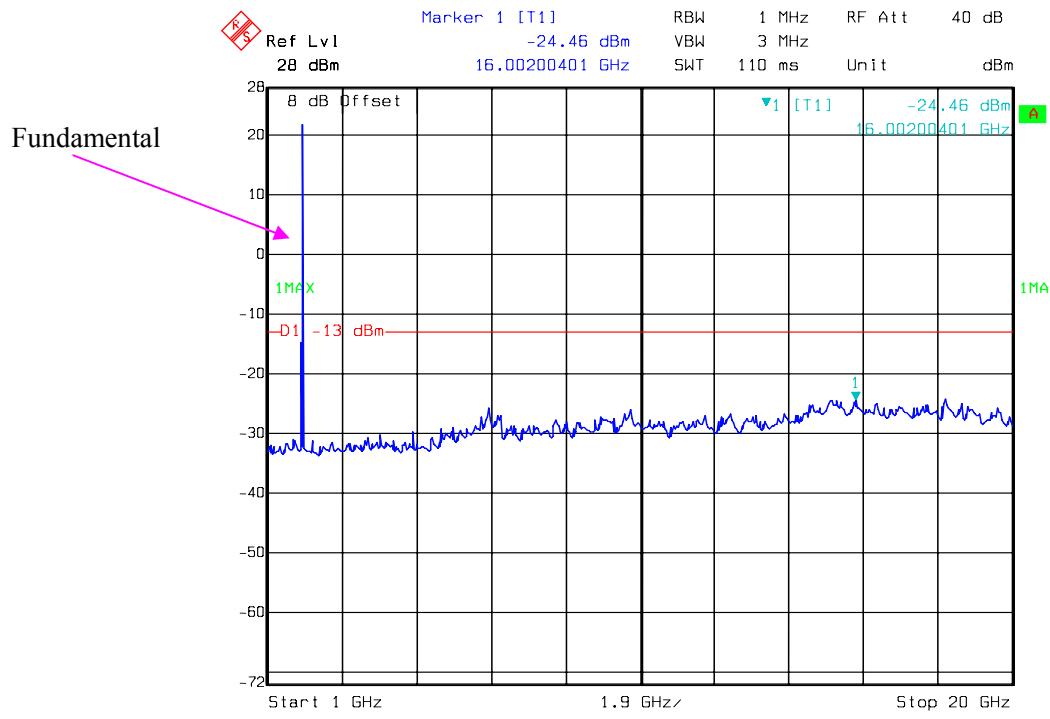
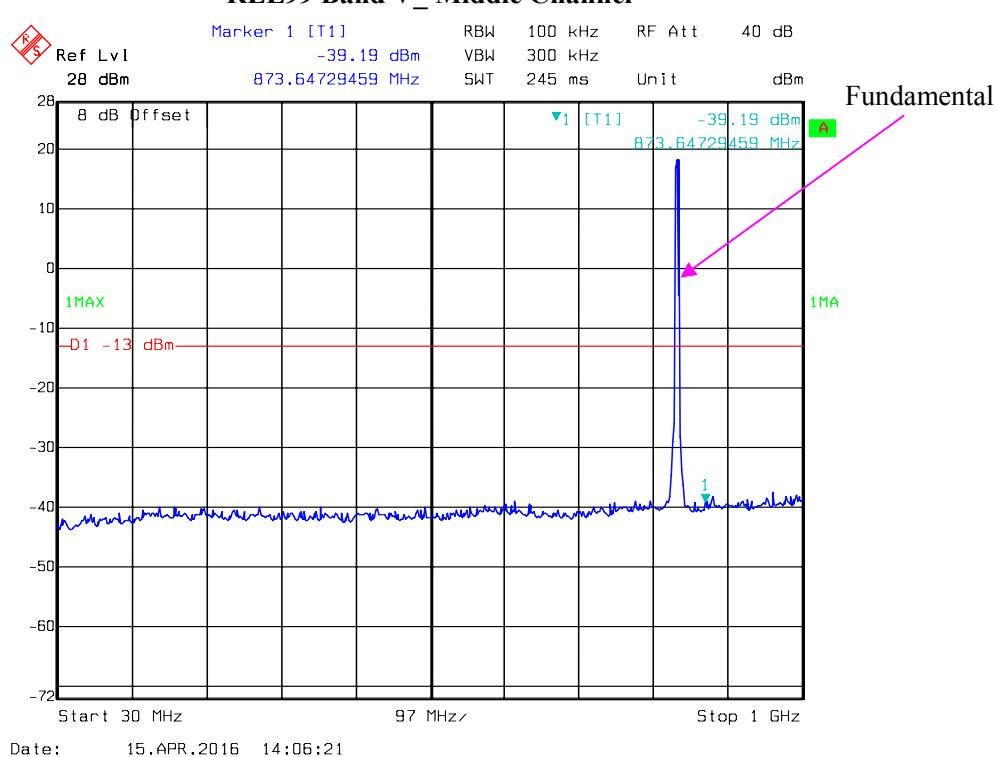
**EDGE 850\_Middle Channel**

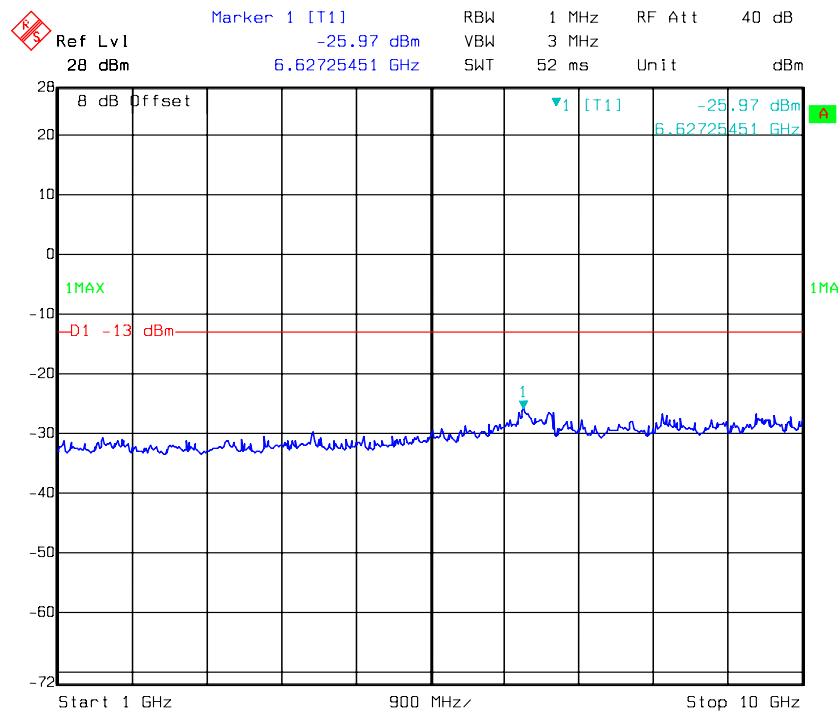
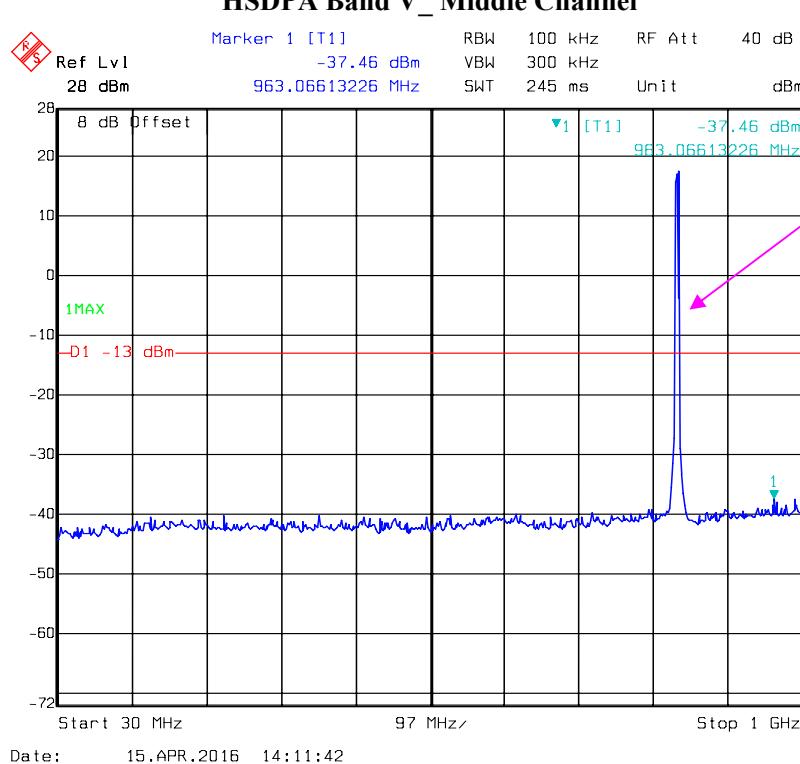
**EDGE PCS 1900\_Middle Channel**

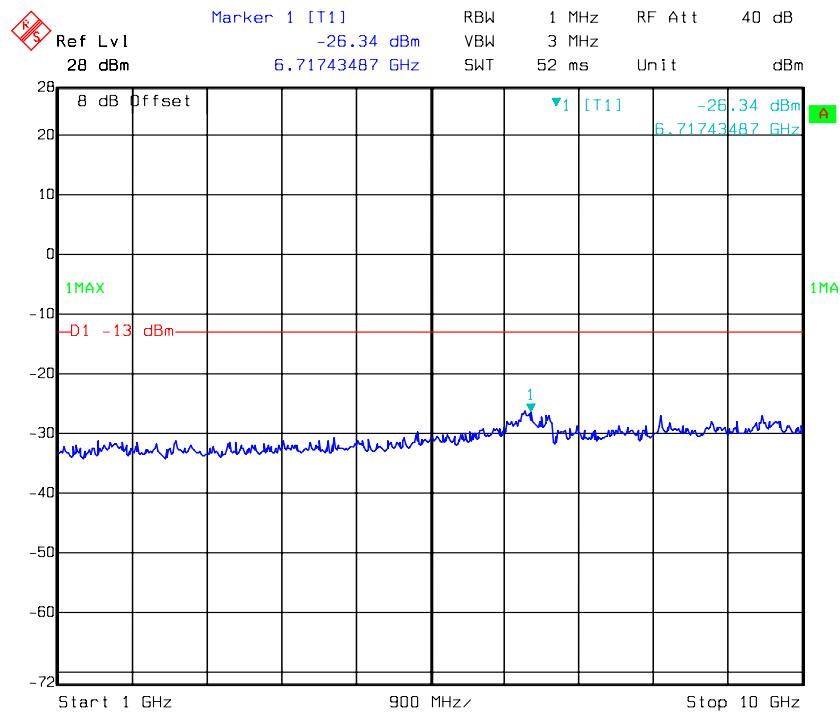
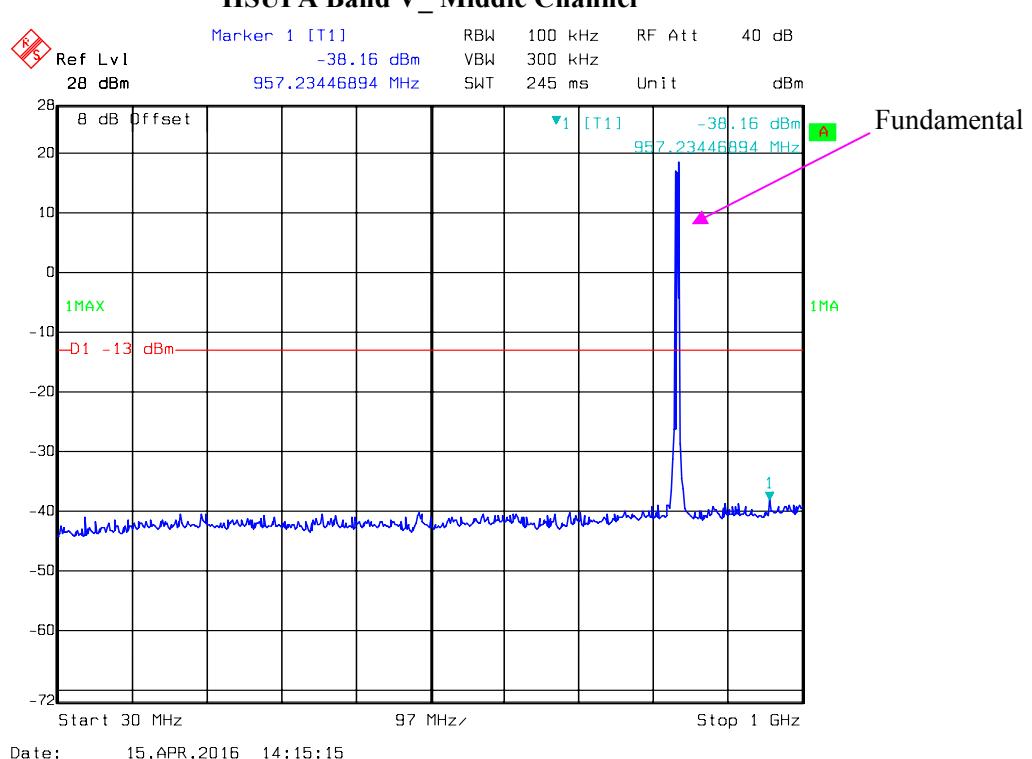
**REL99 Band II\_ Middle Channel**

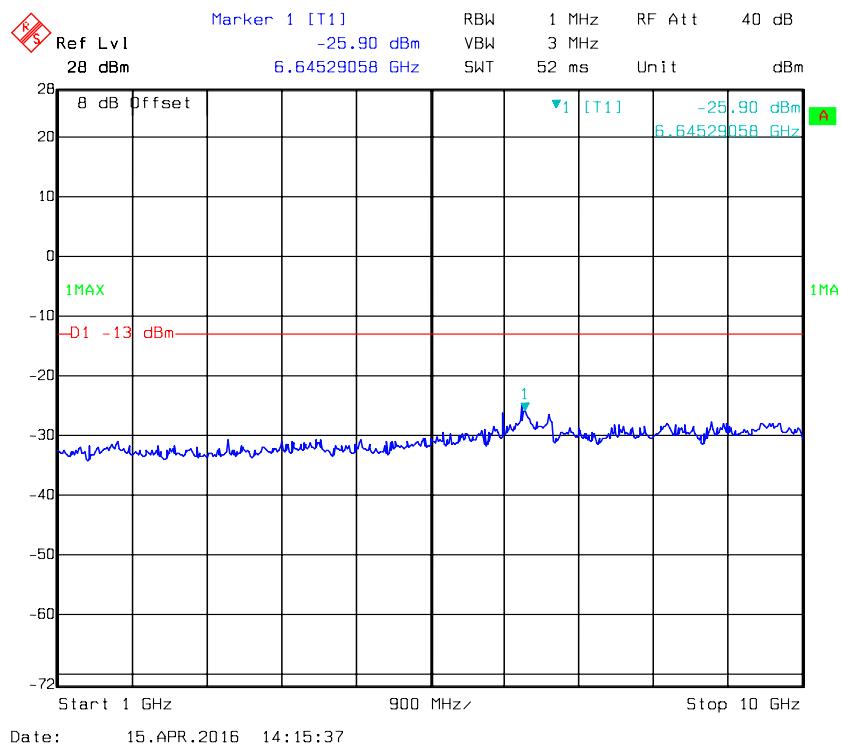
**HSDPA Band II \_Middle Channel**



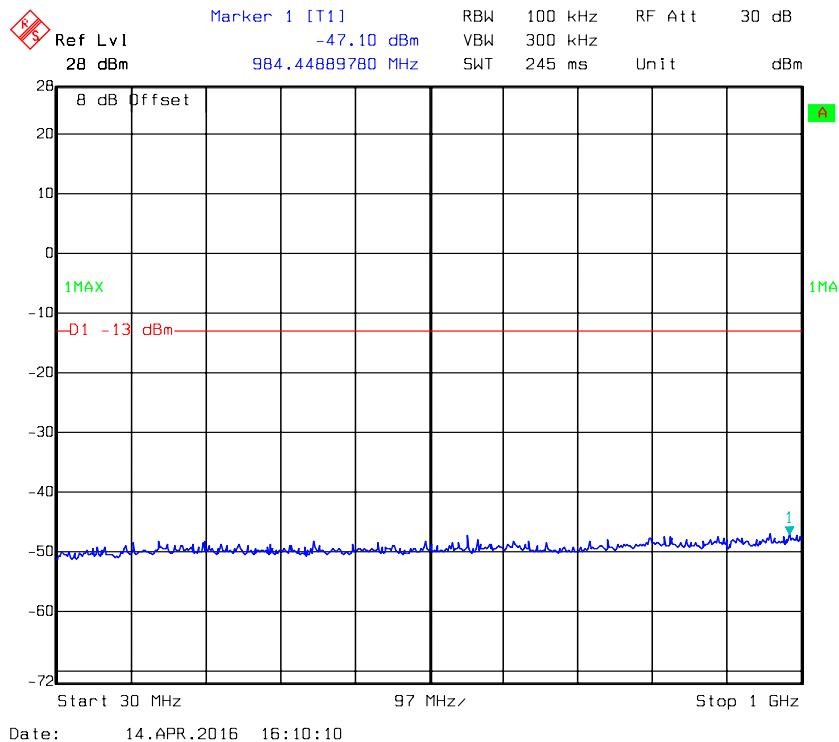
**REL99 Band V\_ Middle Channel**

**HSDPA Band V\_Middle Channel**

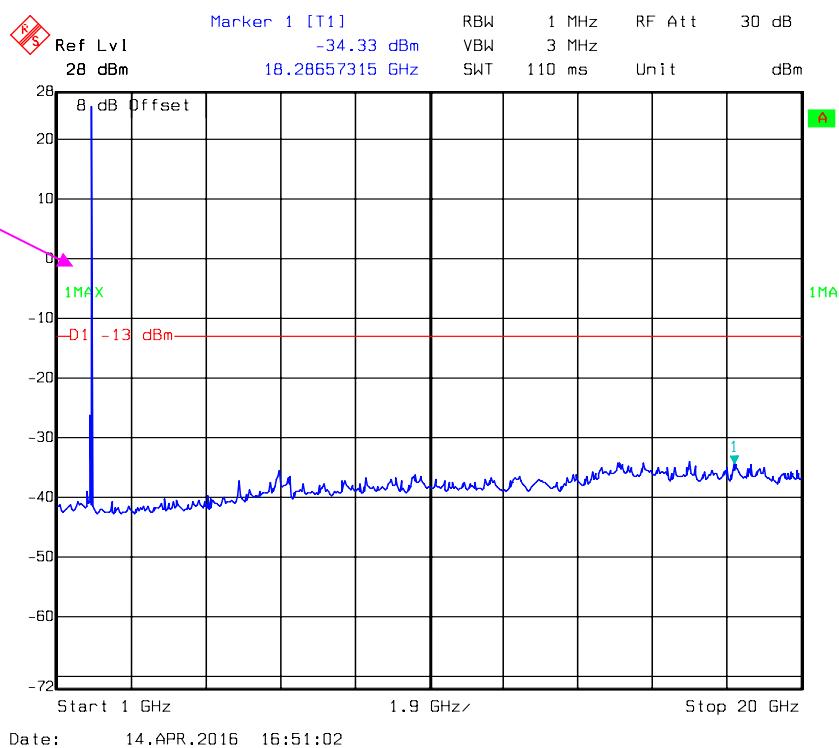
**HSUPA Band V\_Middle Channel**

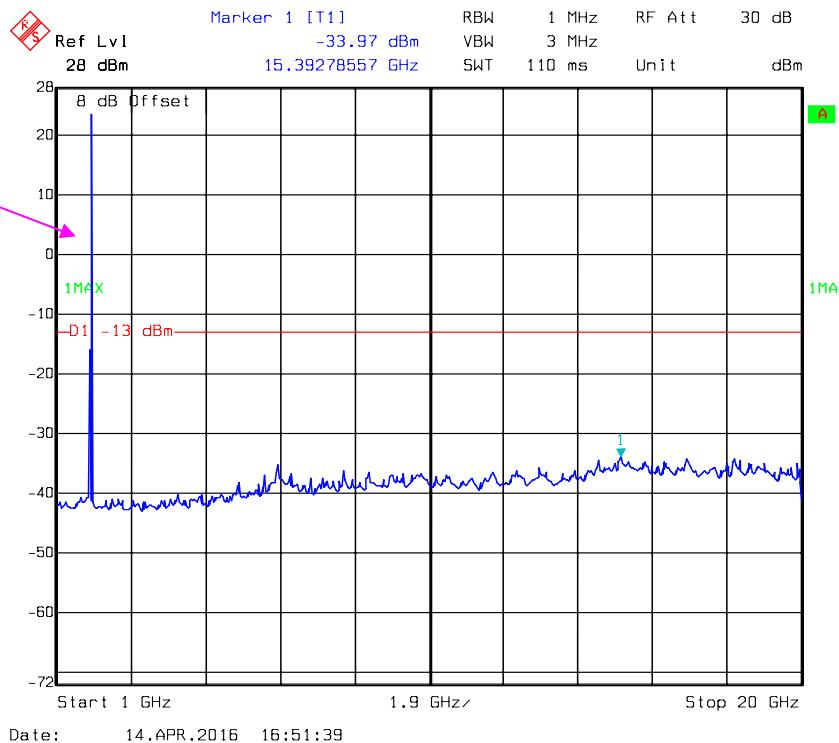
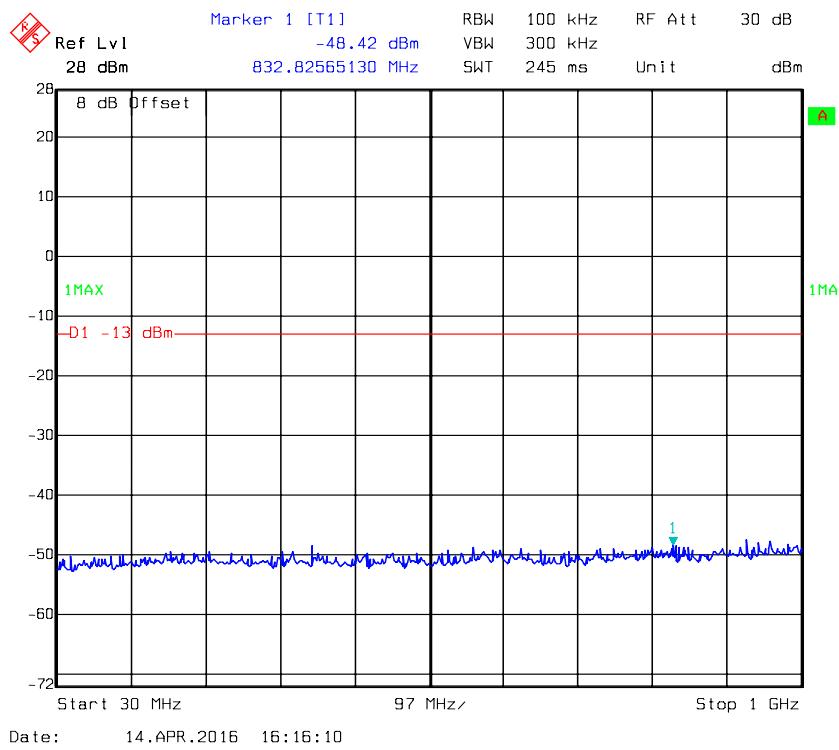


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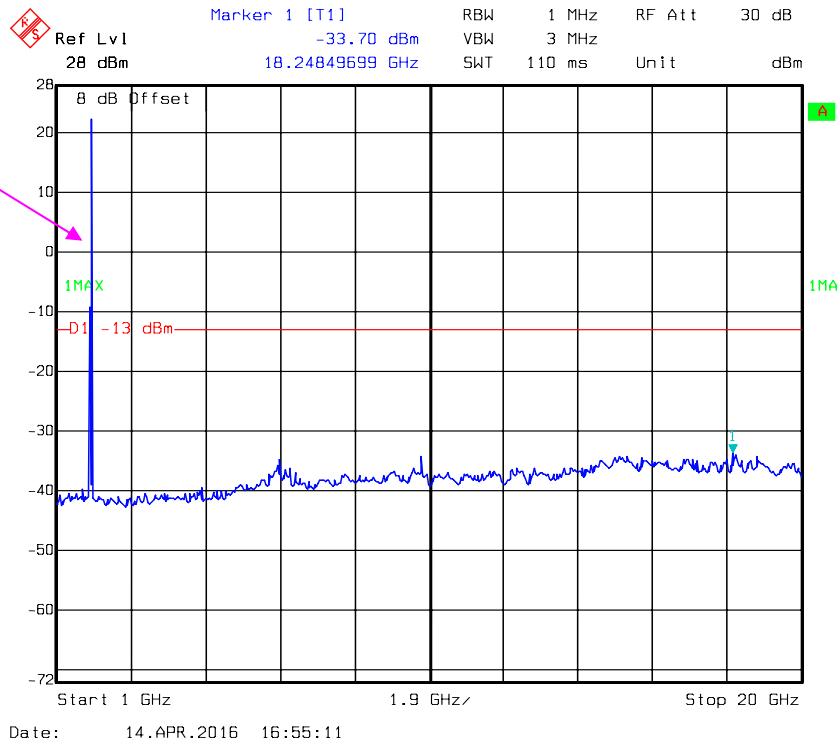
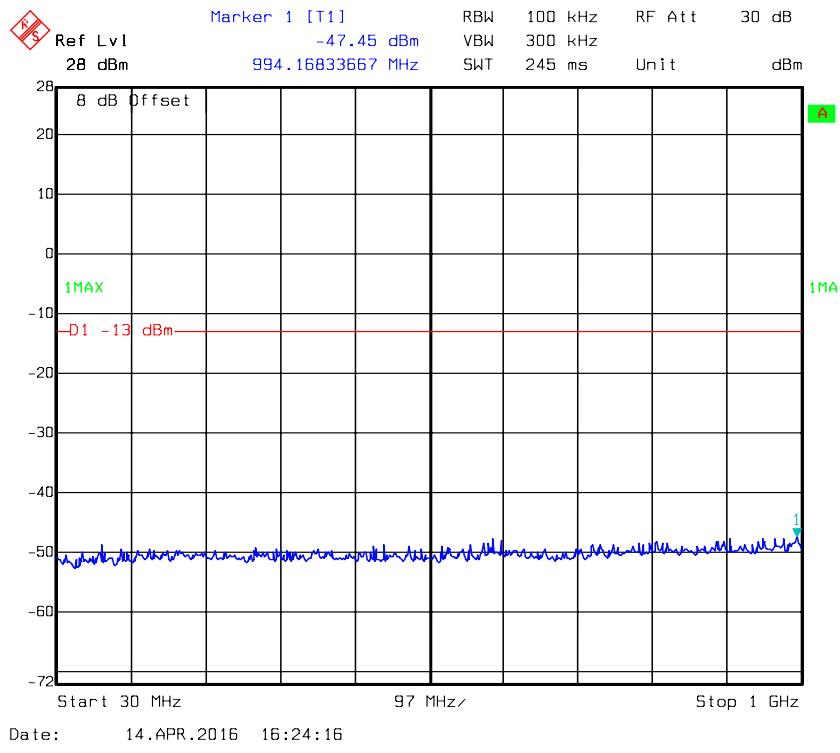
**LTE Band II (Middle Channel)****QPSK-1.4 MHz**

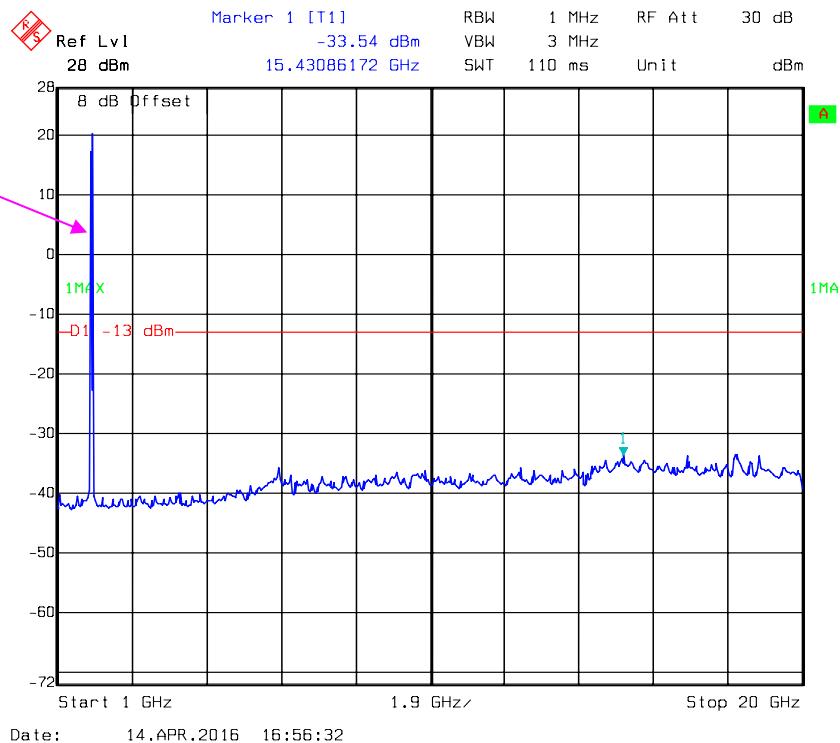
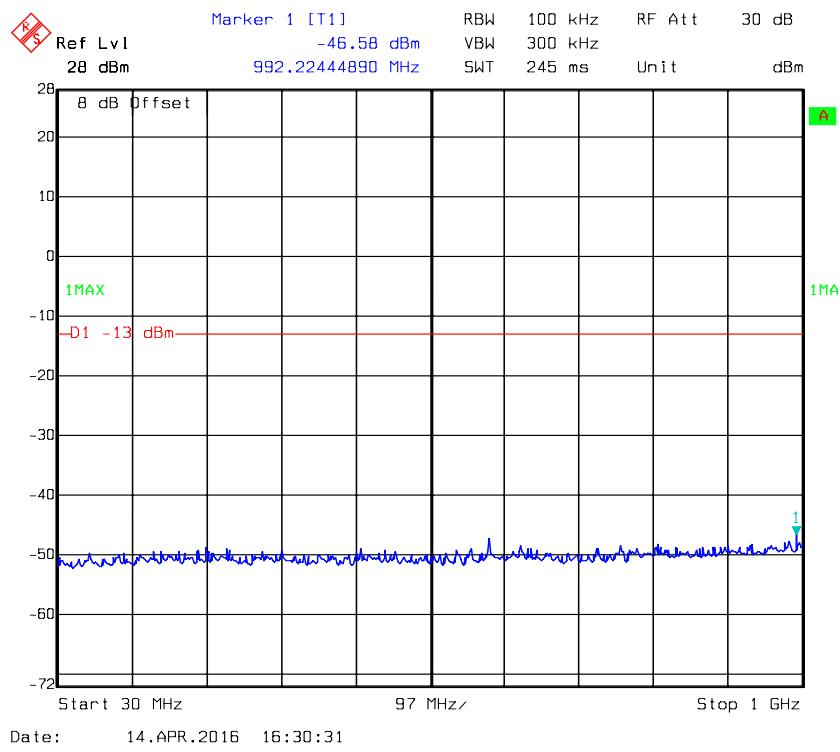
Fundamental

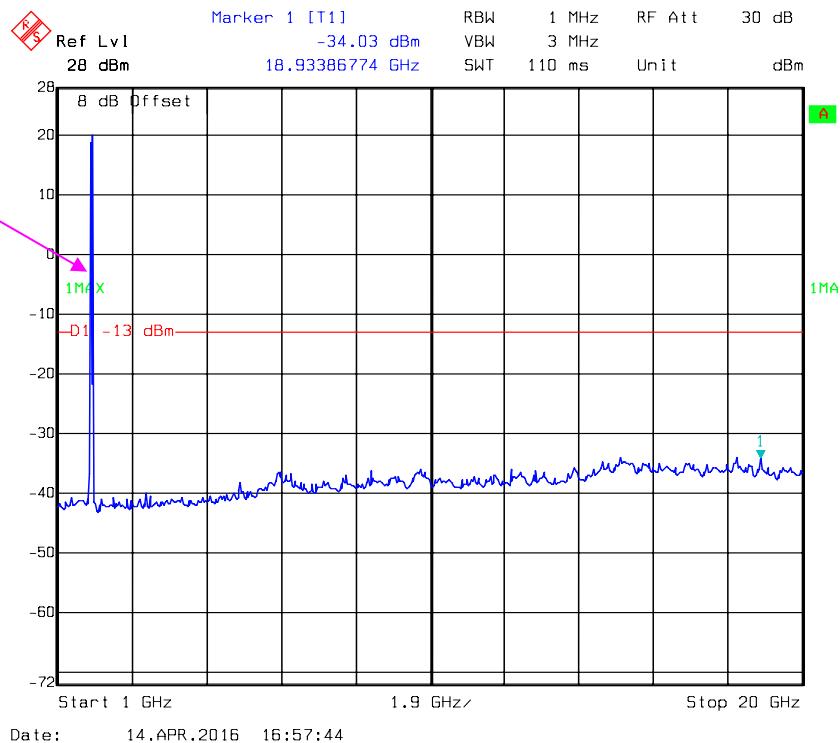
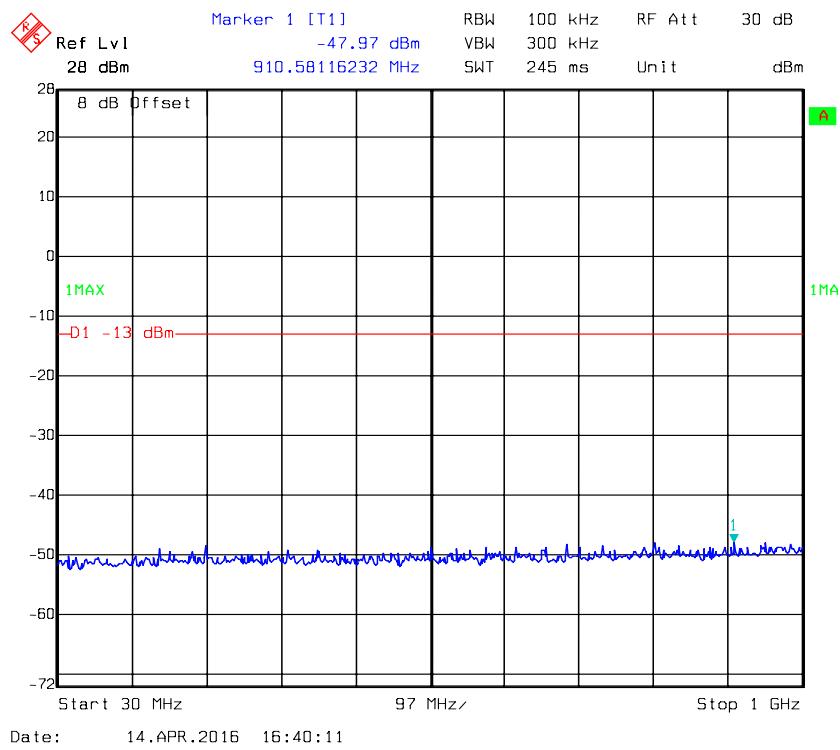


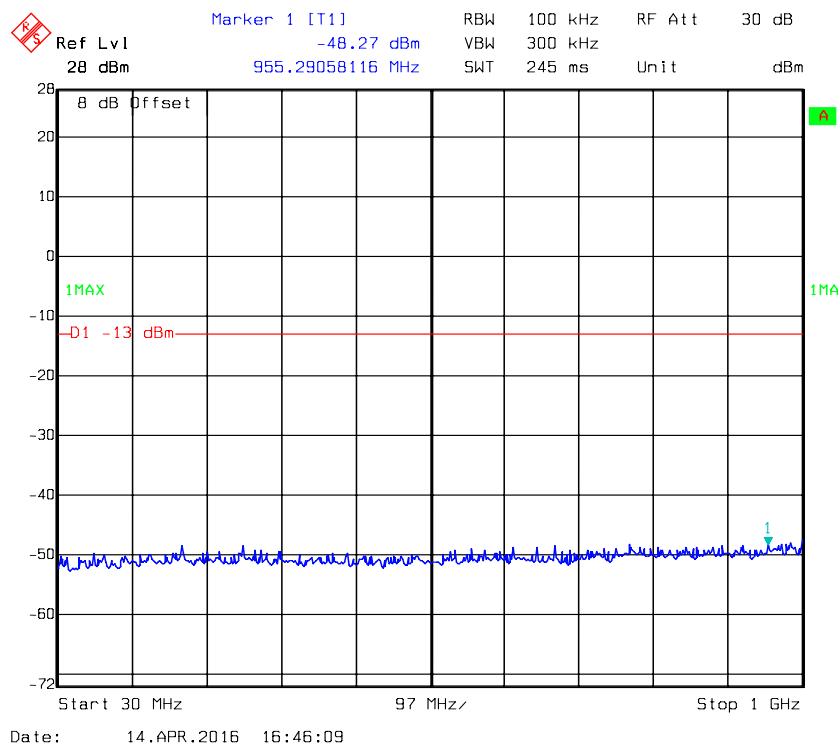
**QPSK\_3MHz**

Fundamental

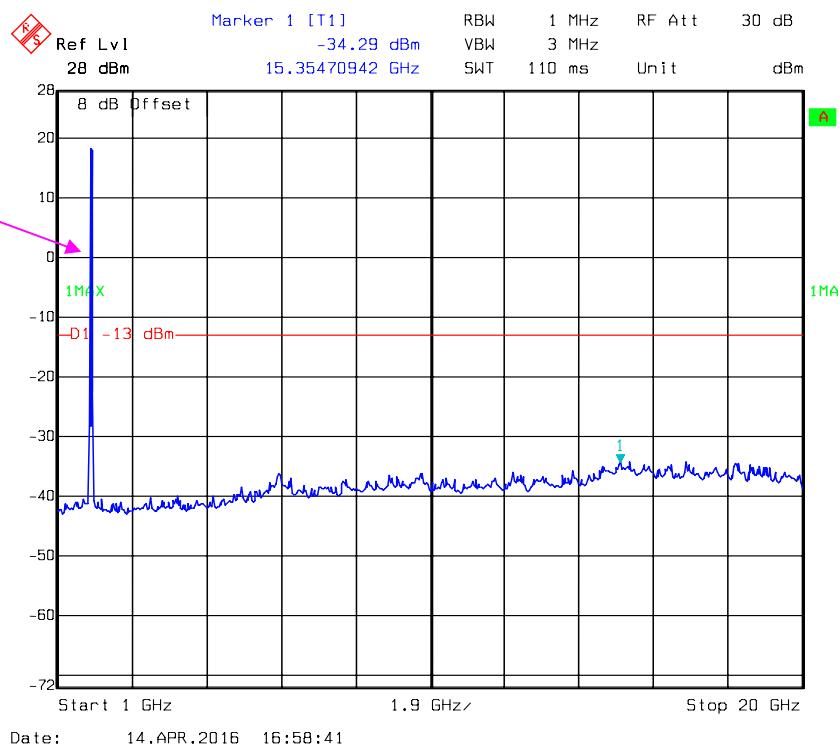
**QPSK\_5MHz**

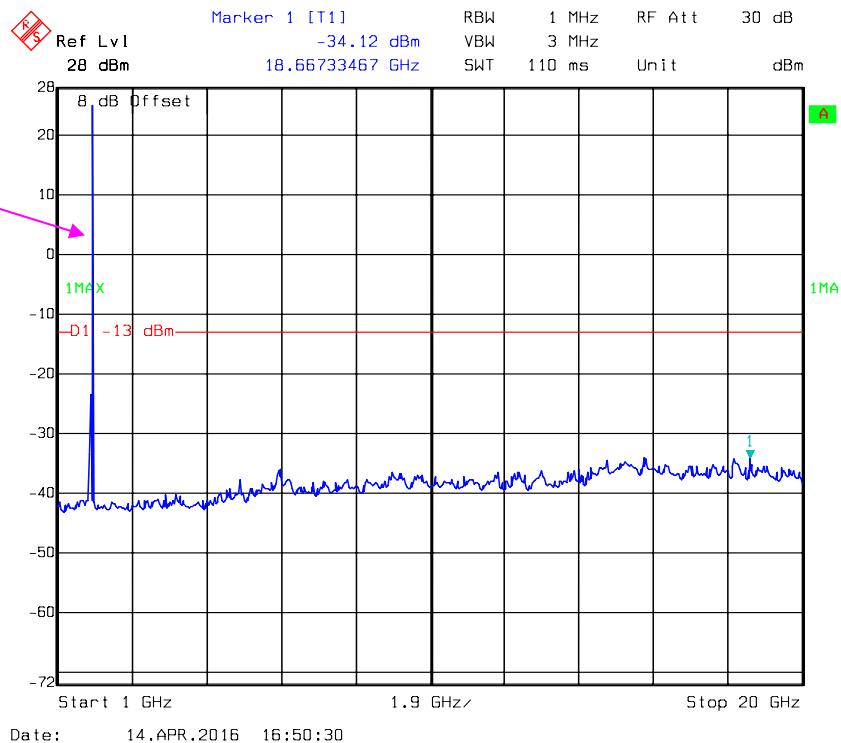
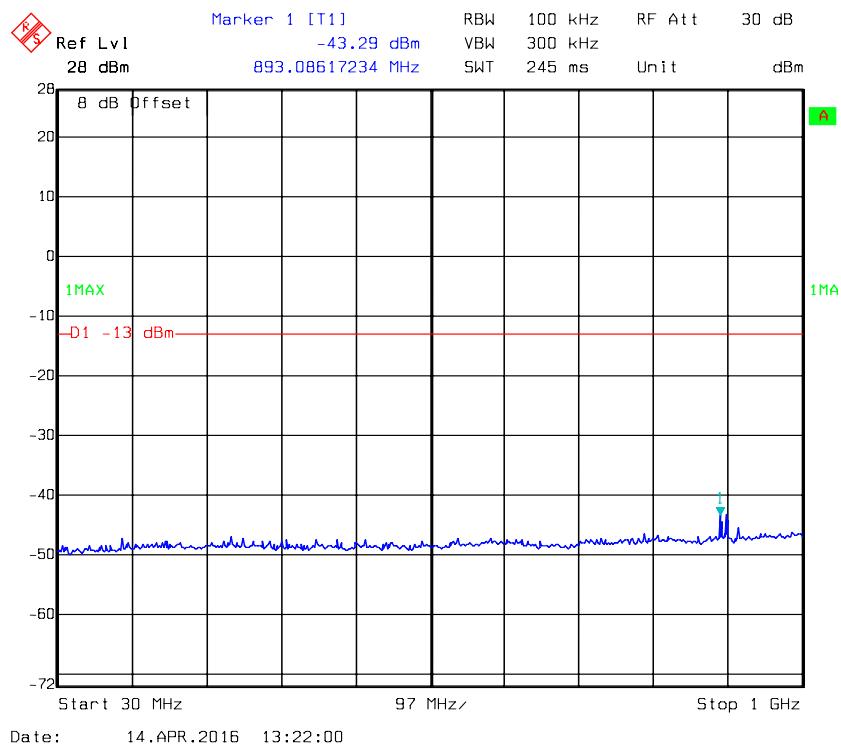
**QPSK\_10MHz**

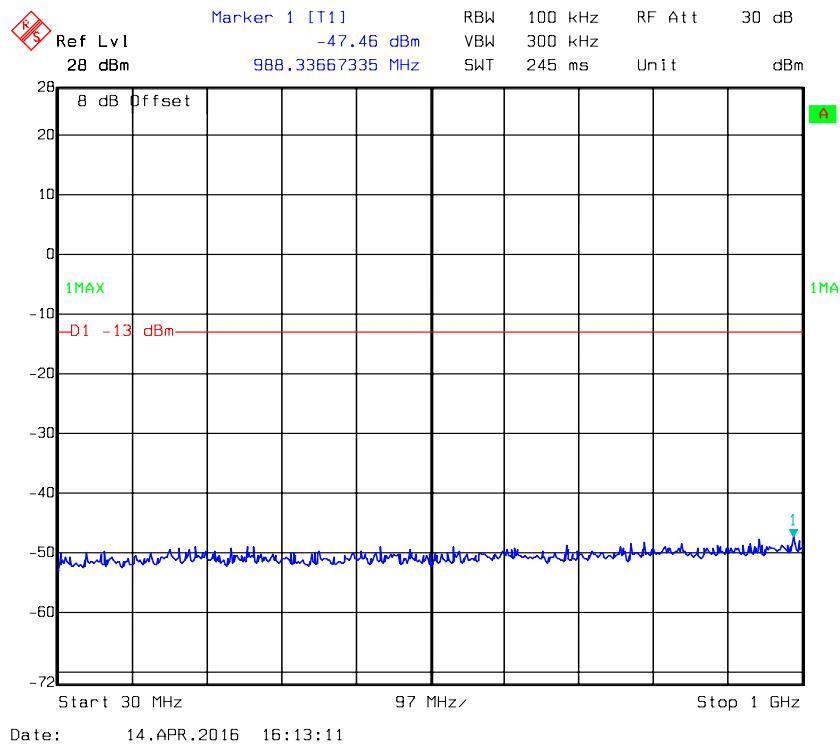
**QPSK\_15MHz**

**QPSK\_20MHz**

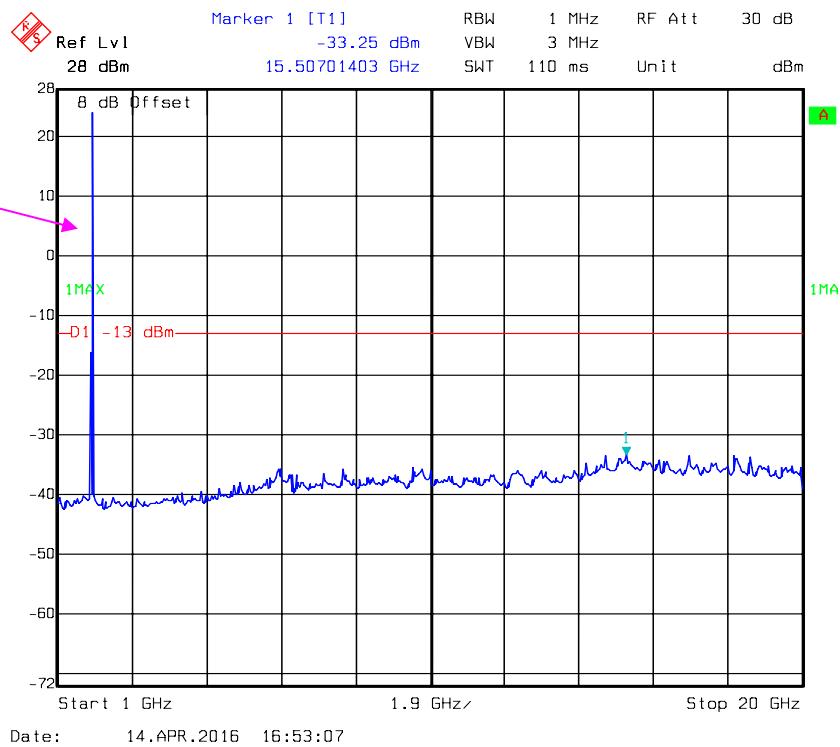
Fundamental

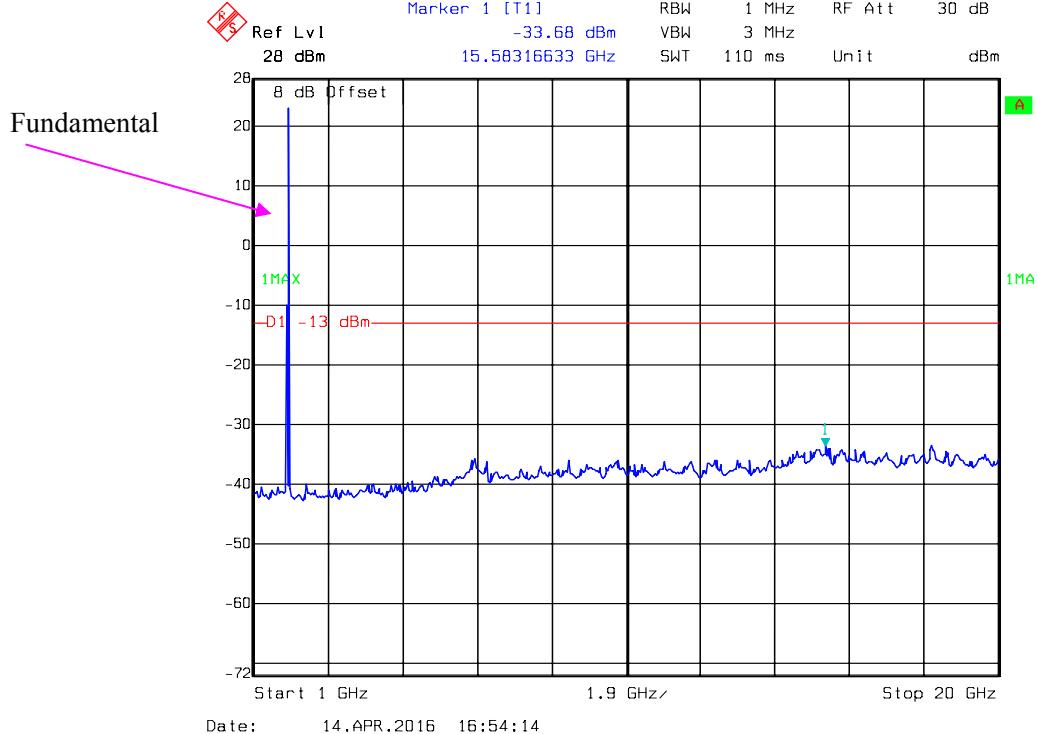
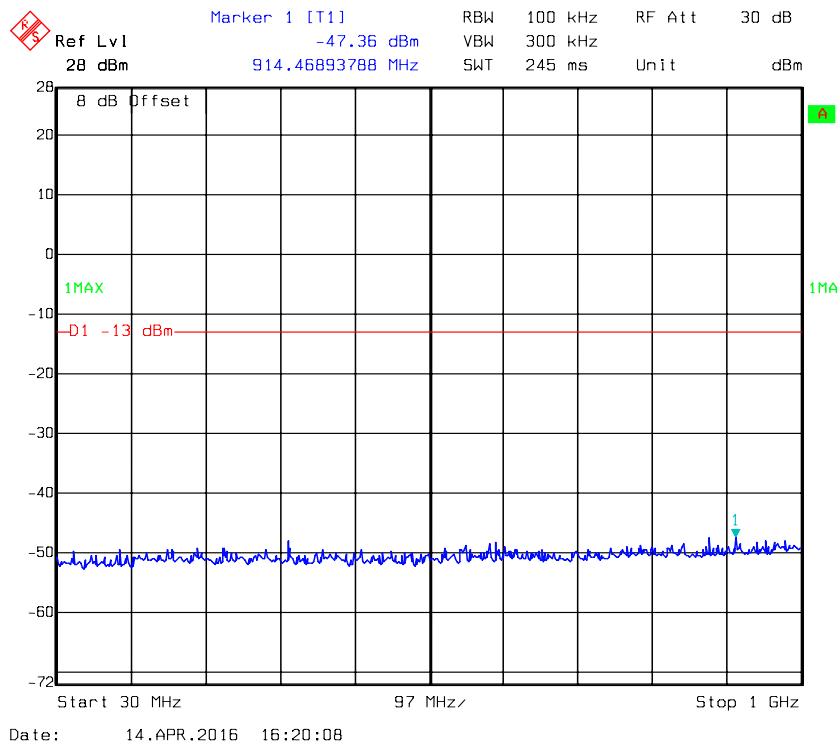


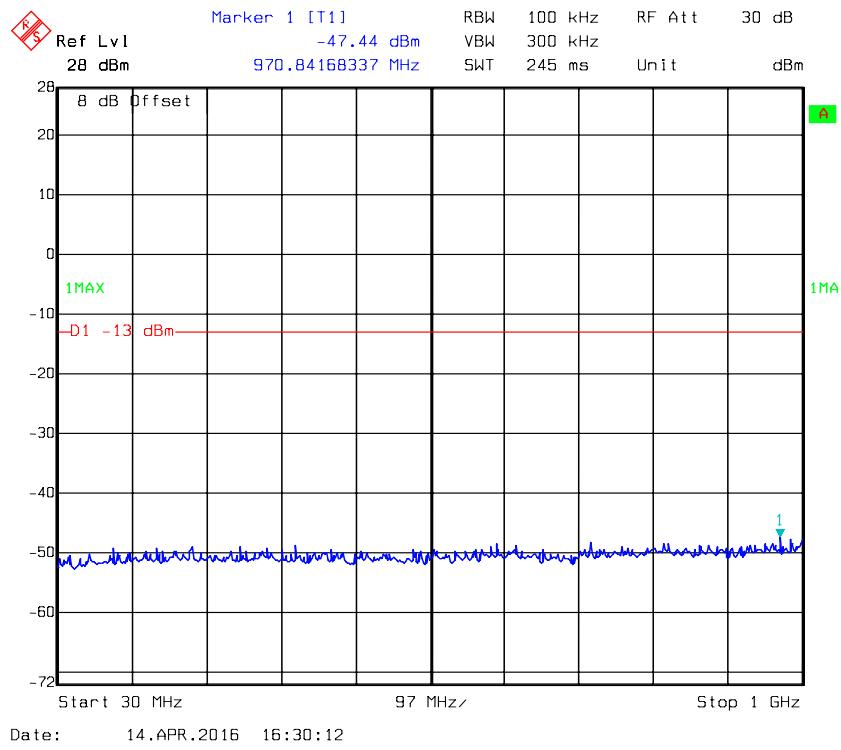
**16QAM\_1.4 MHz**

**16QAM\_3 MHz**

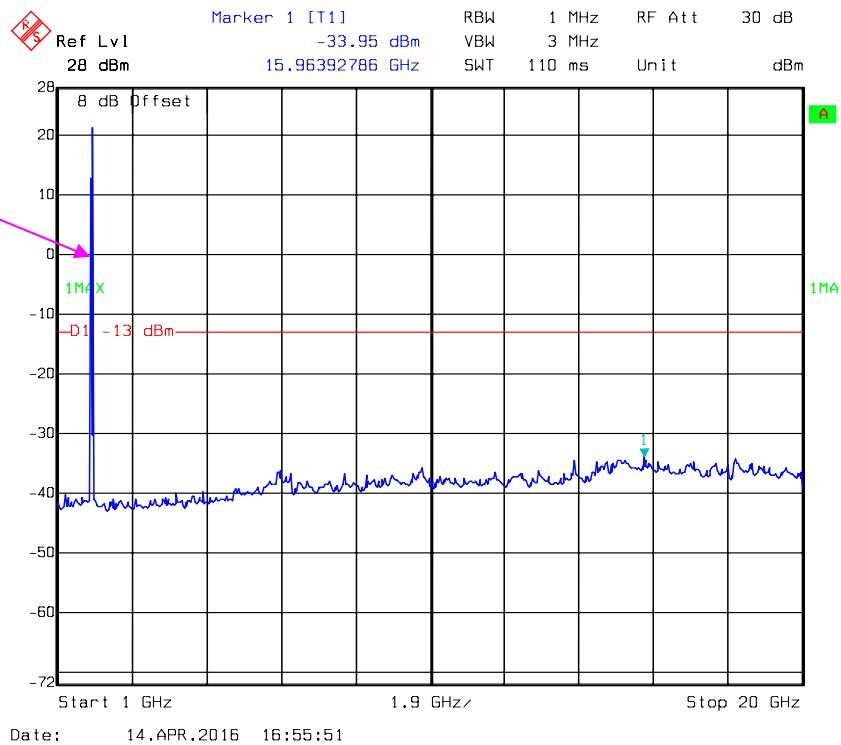
Fundamental

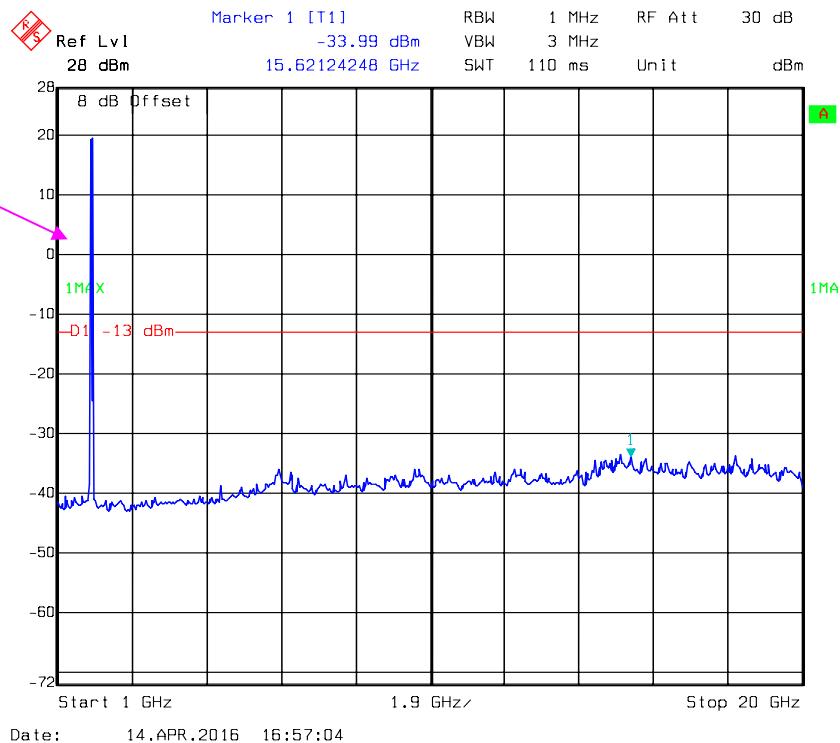
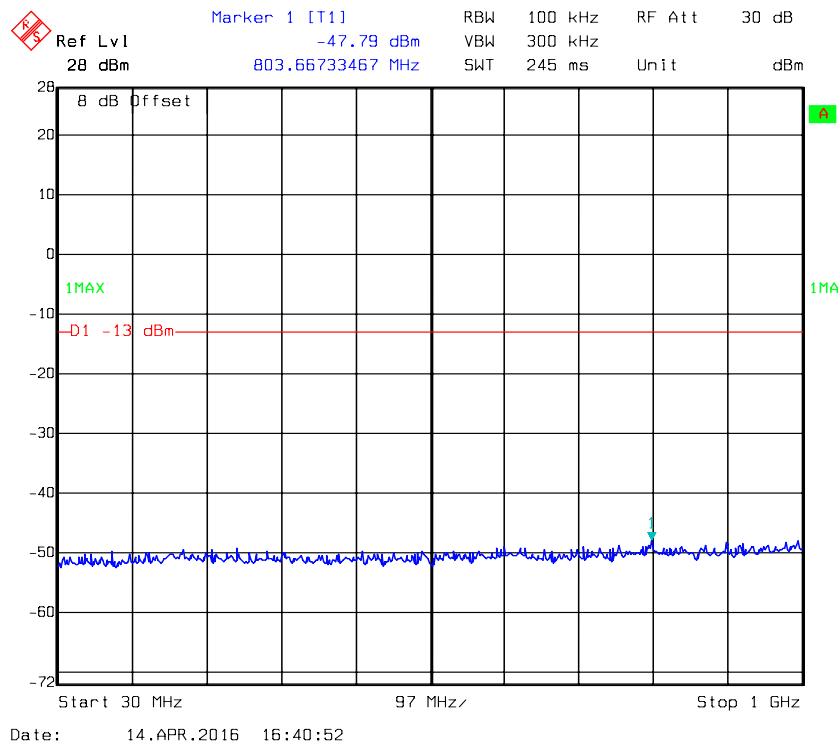


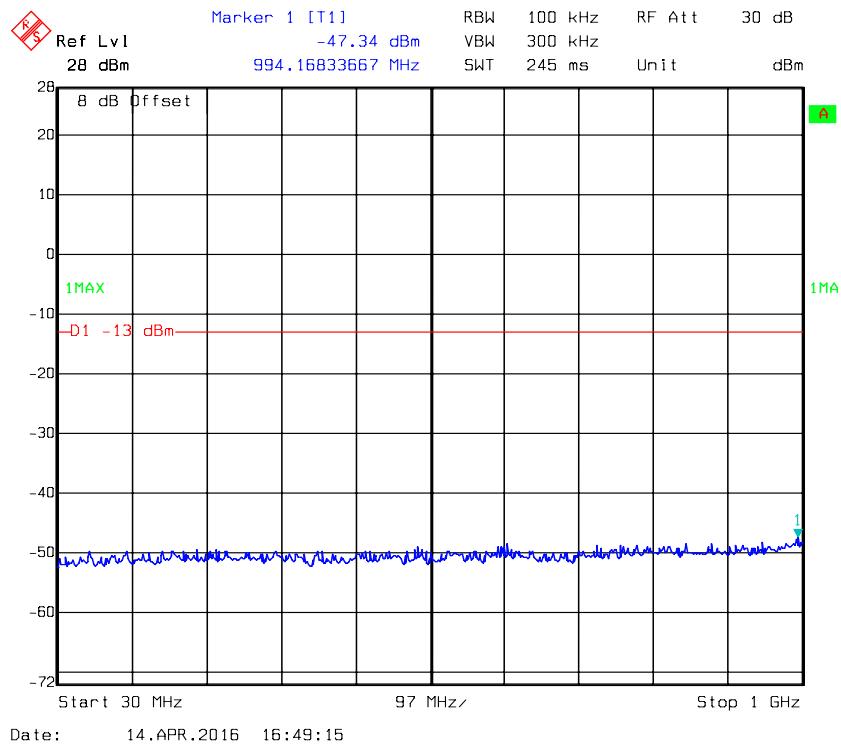
**16QAM\_5MHz**

**16QAM\_10MHz**

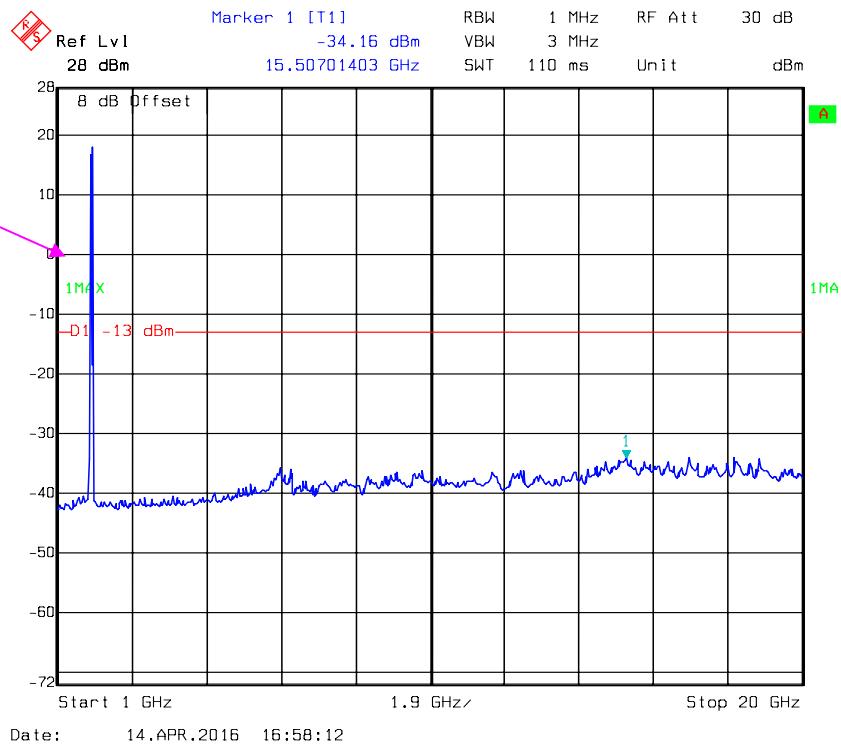
Fundamental

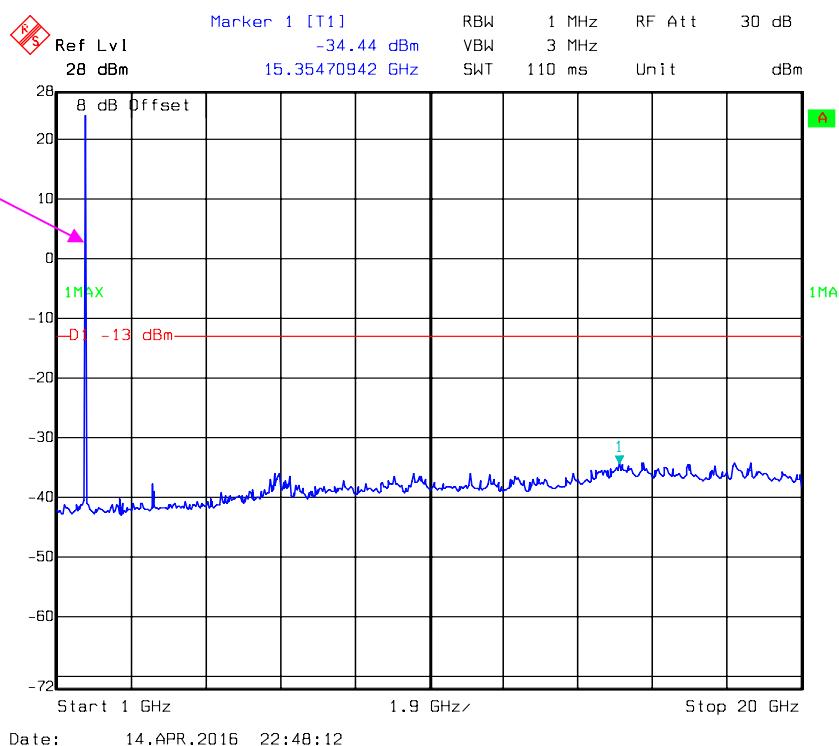
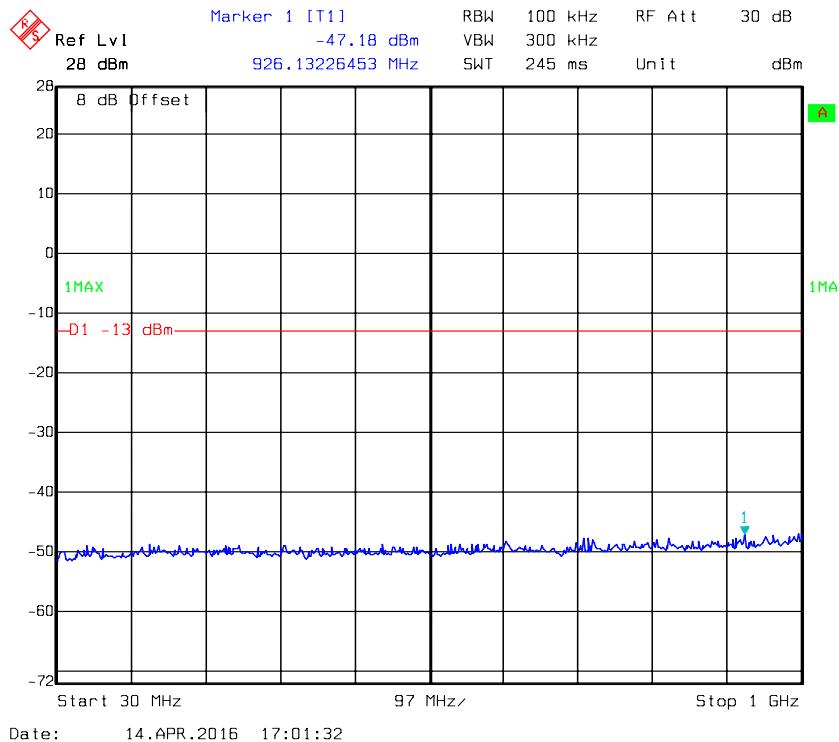


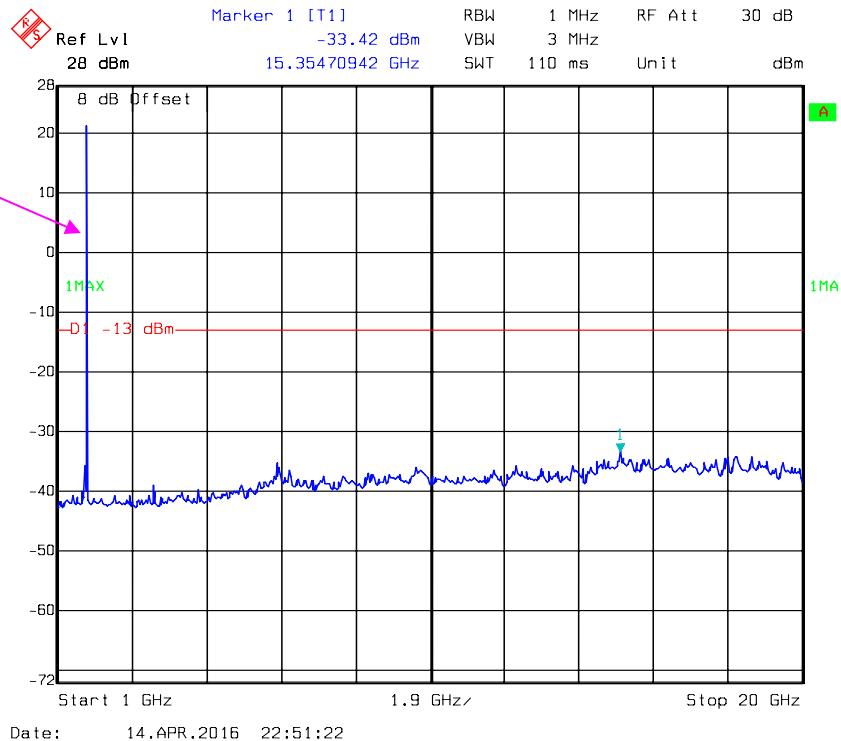
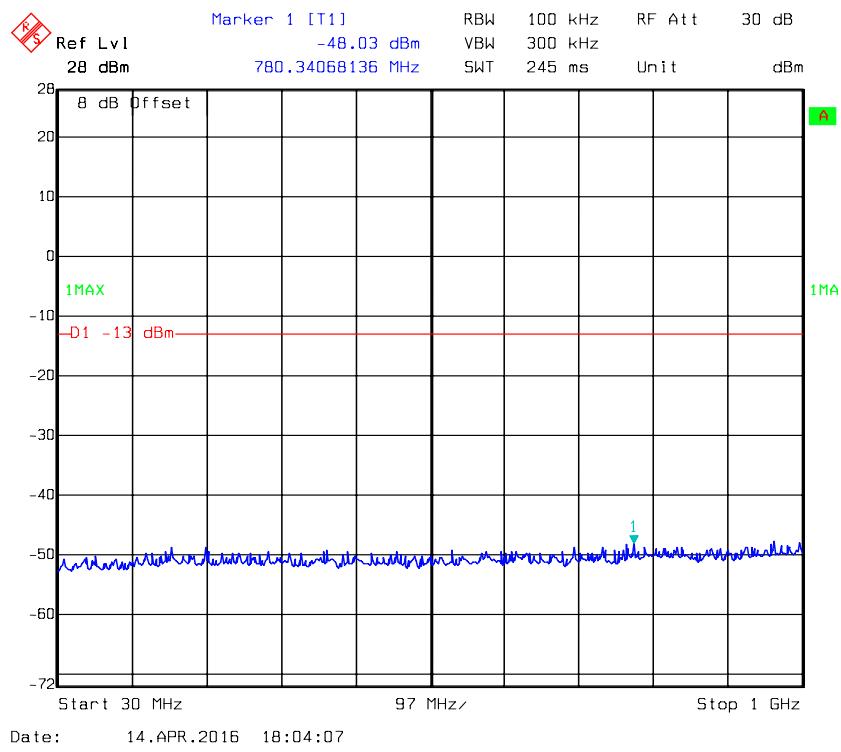
**16QAM\_15 MHz**

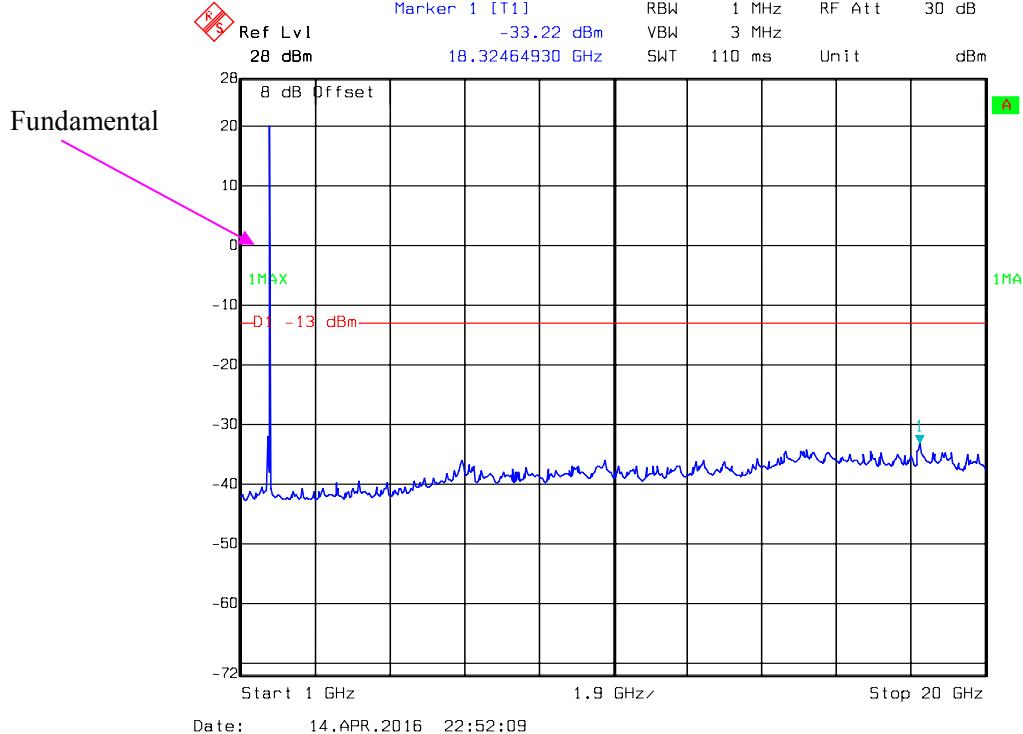
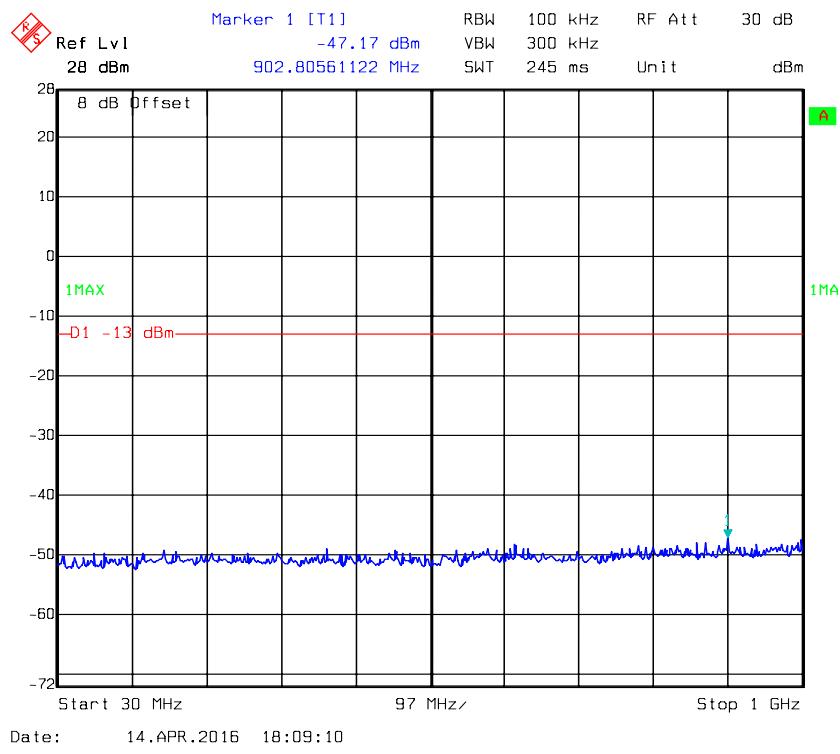
**16QAM\_20 MHz**

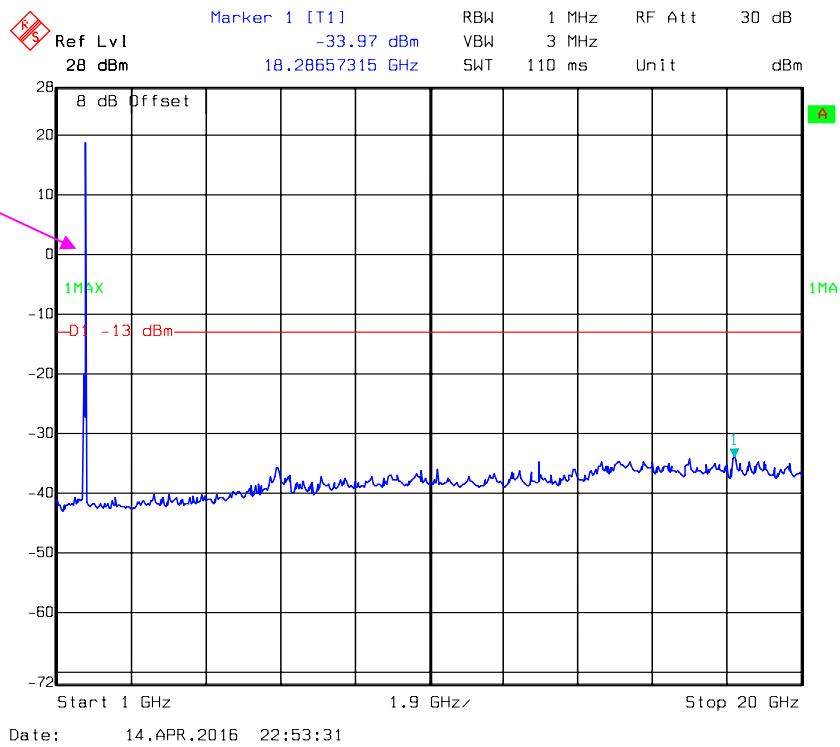
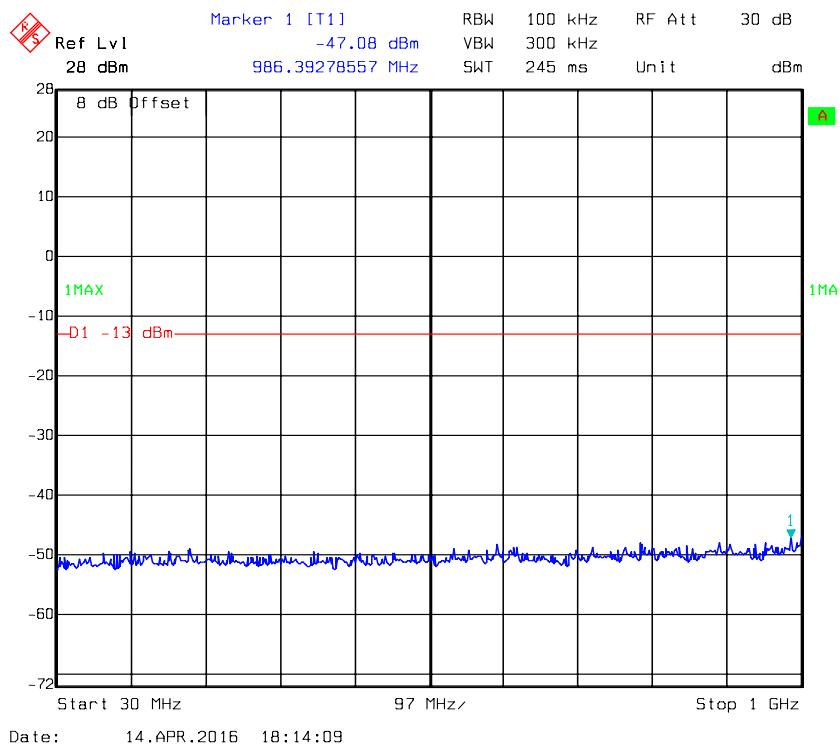
Fundamental

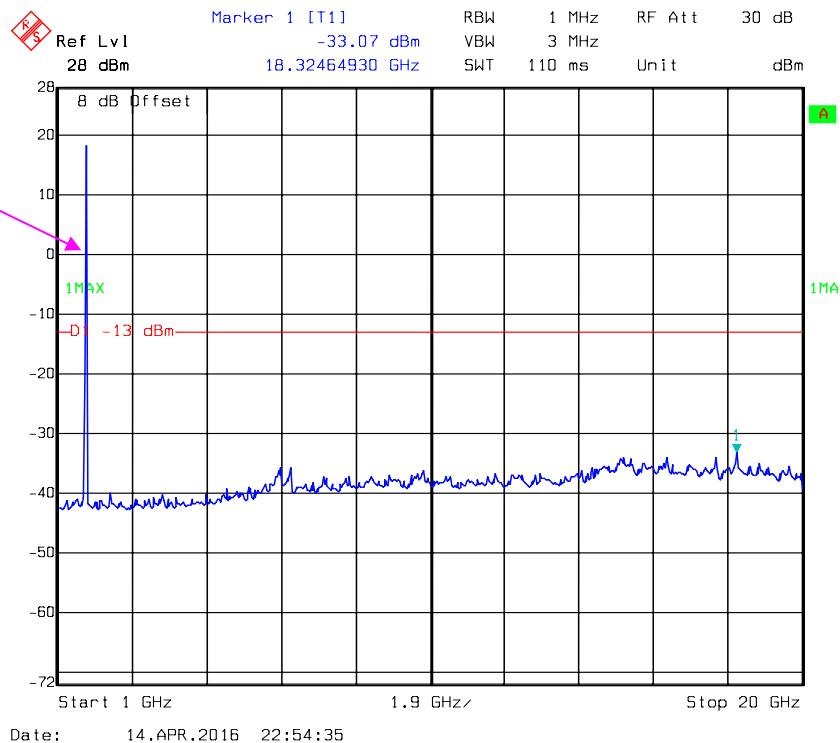
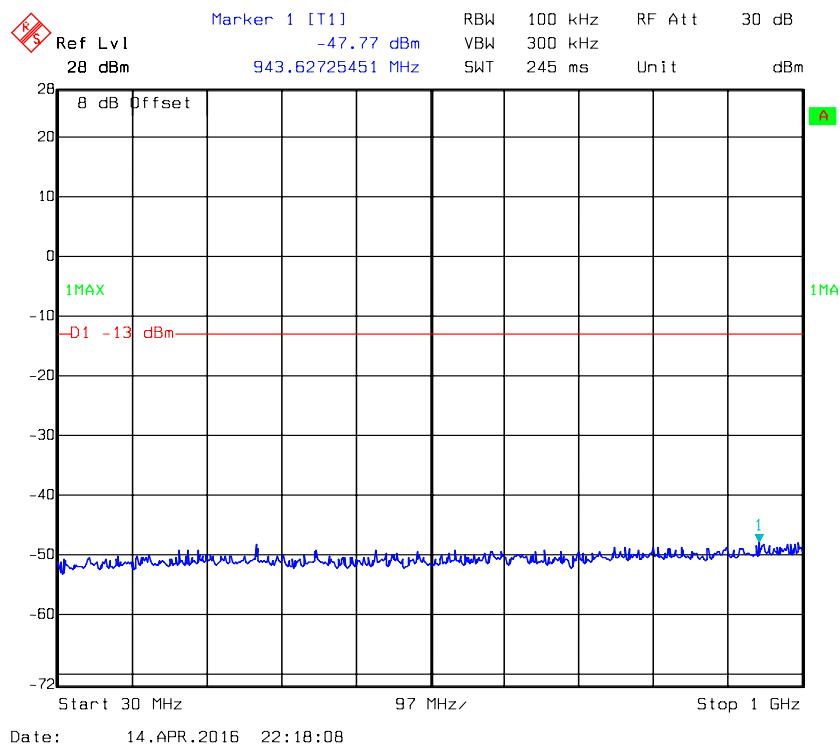


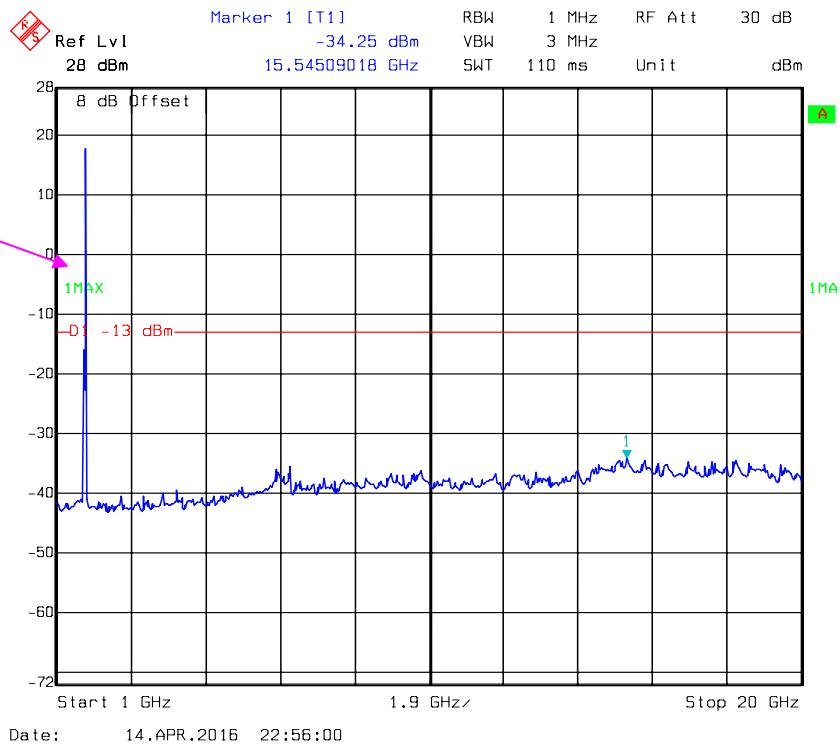
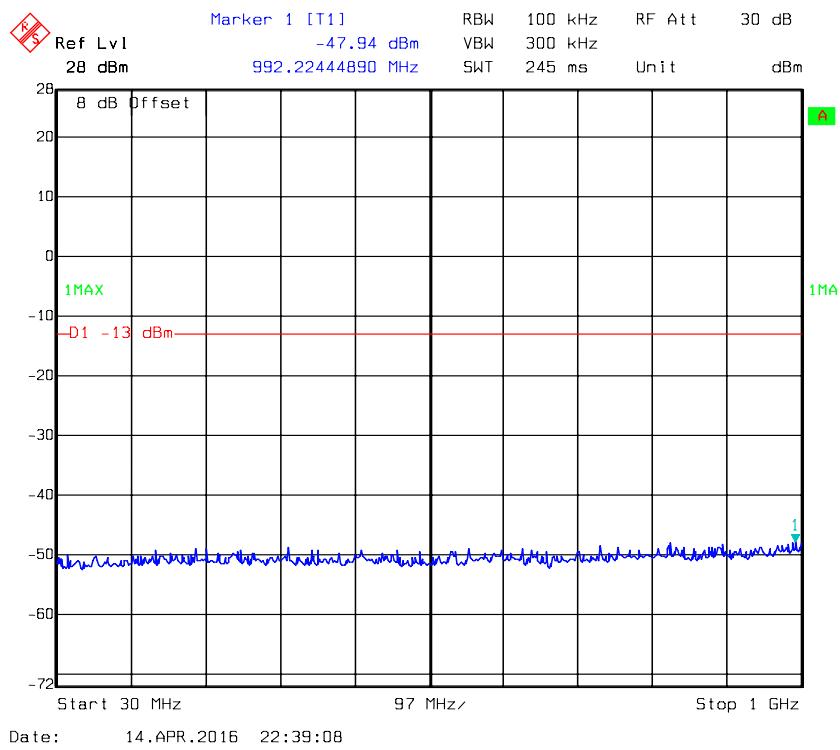
**LTE Band IV (Middle Channel)****QPSK-1.4 MHz**

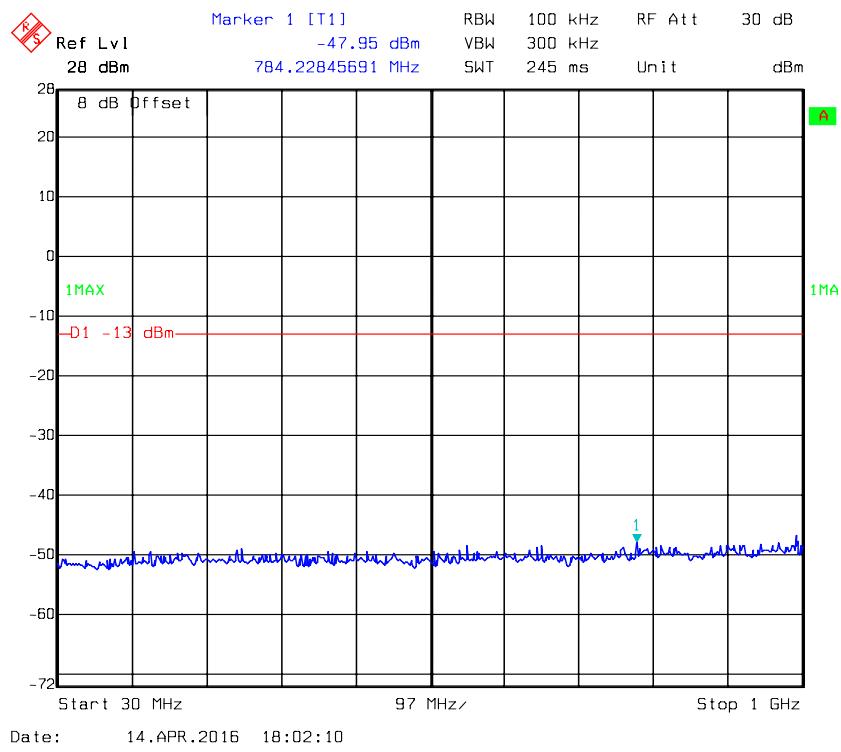
**QPSK\_3MHz**

**QPSK\_5MHz**

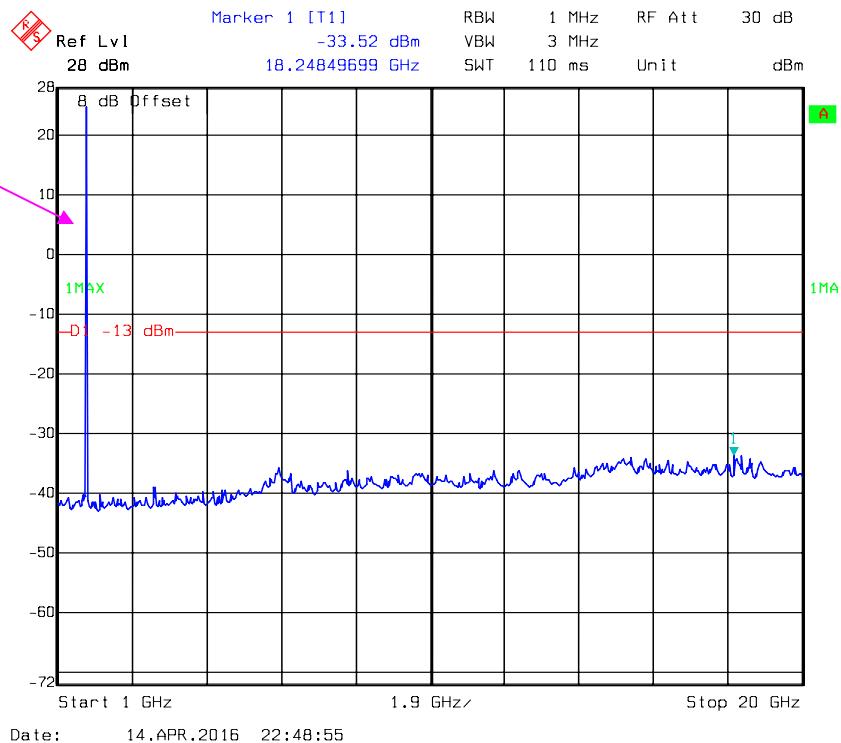
**QPSK\_10MHz**

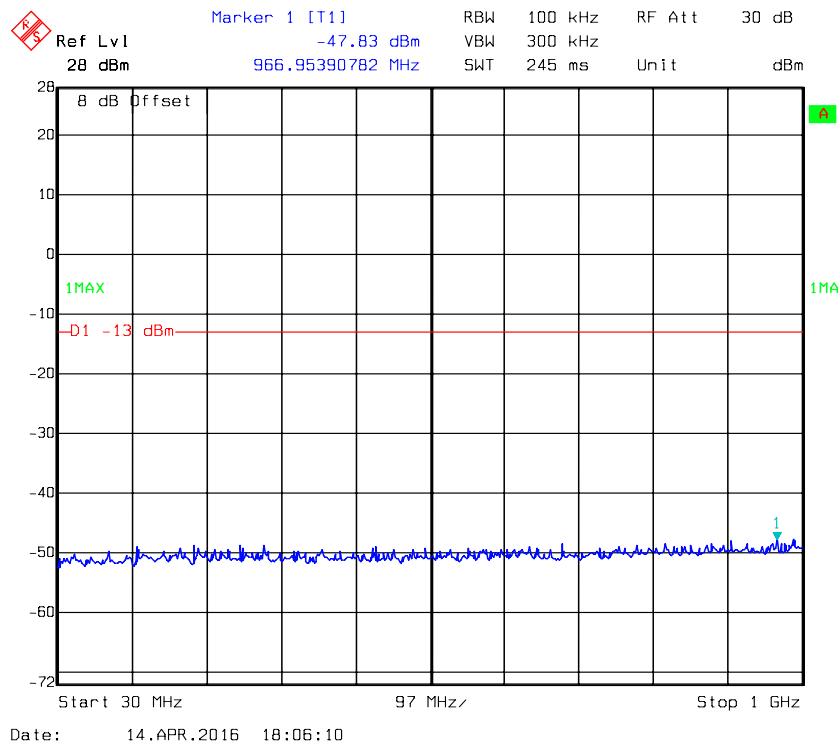
**QPSK\_15MHz**

**QPSK\_20MHz**

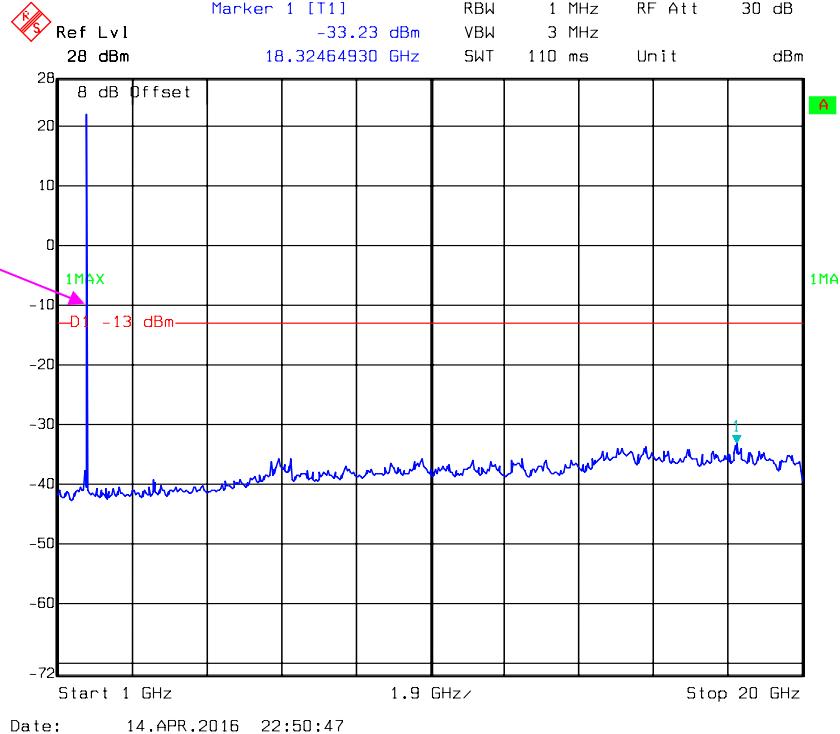
**16QAM\_1.4 MHz**

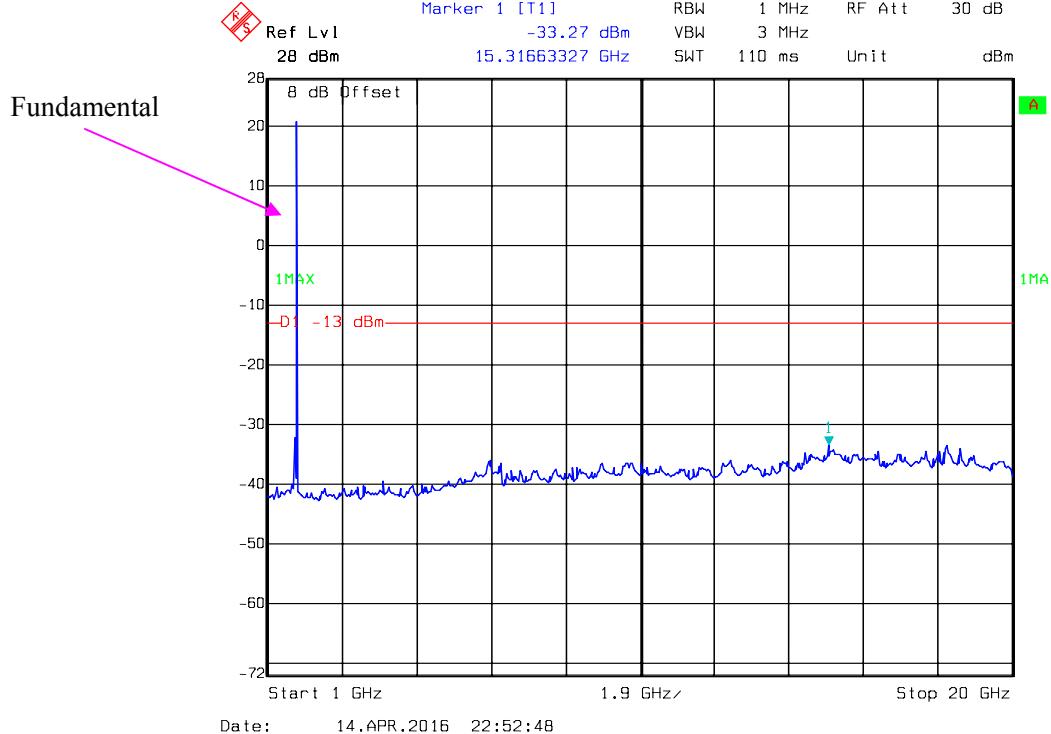
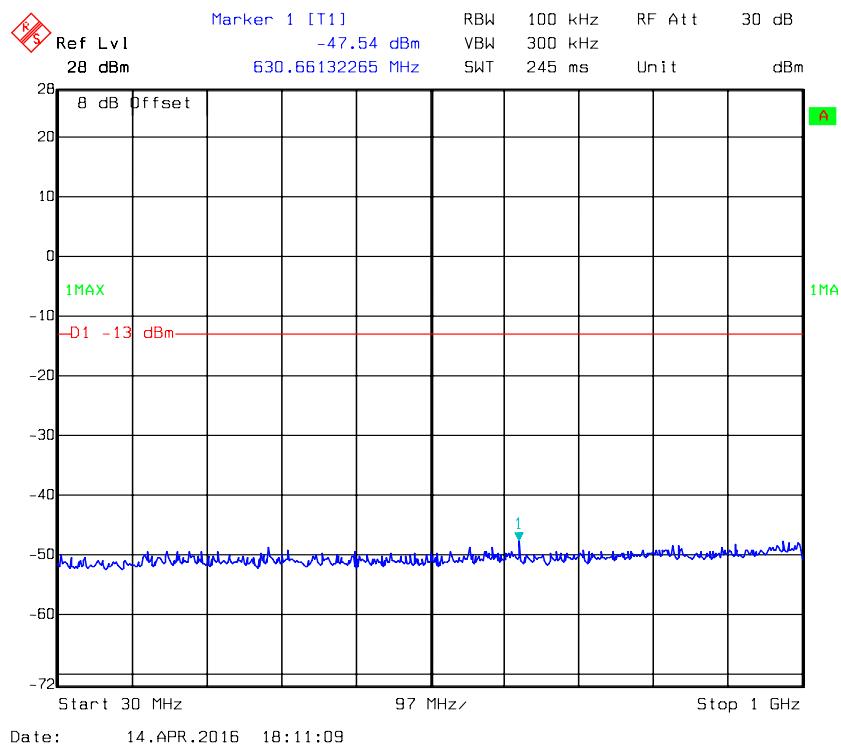
Fundamental

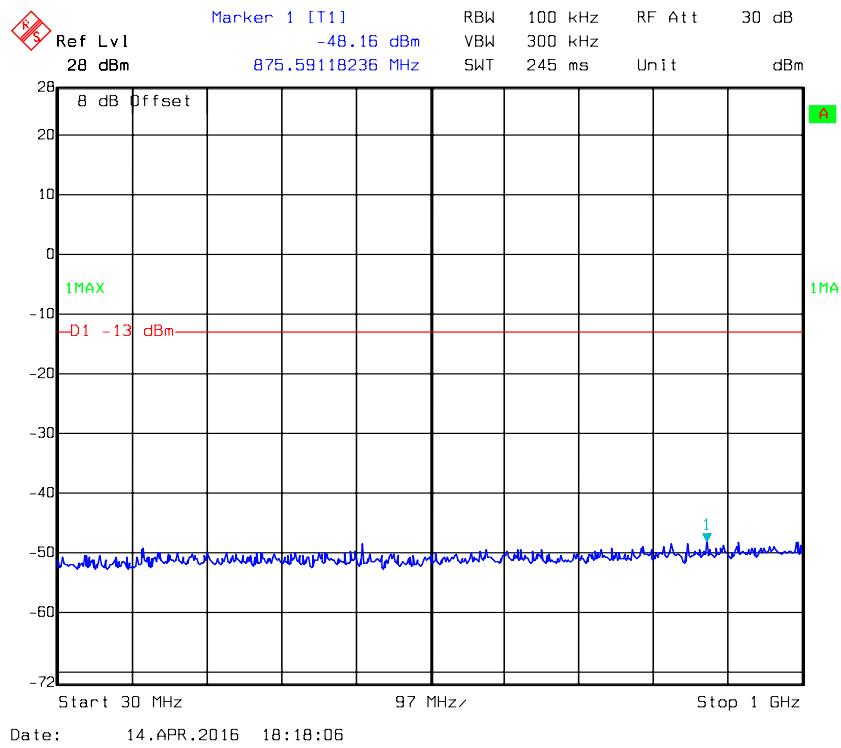


**16QAM\_3 MHz**

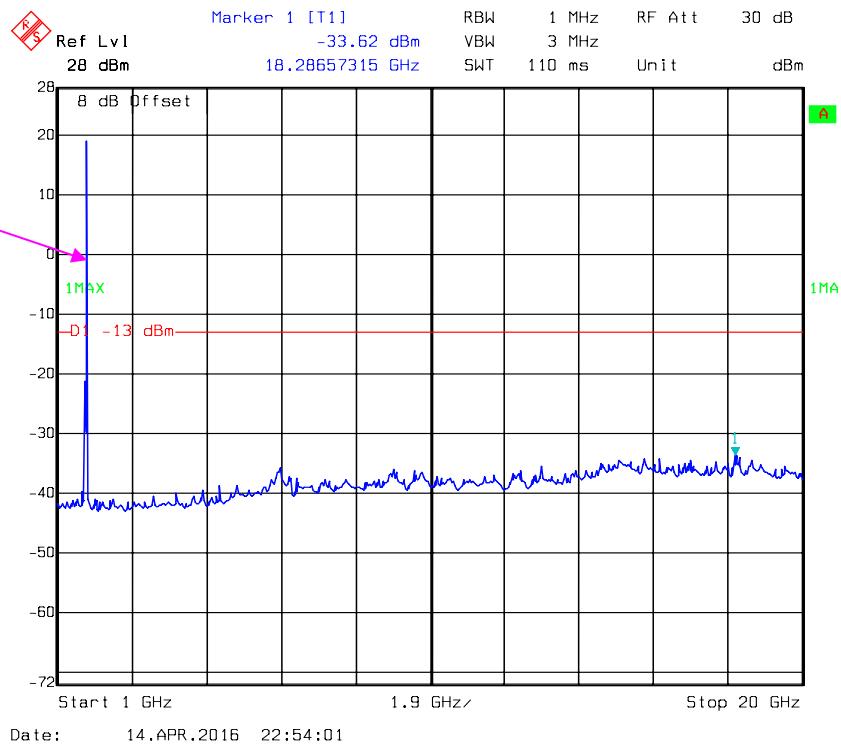
Fundamental

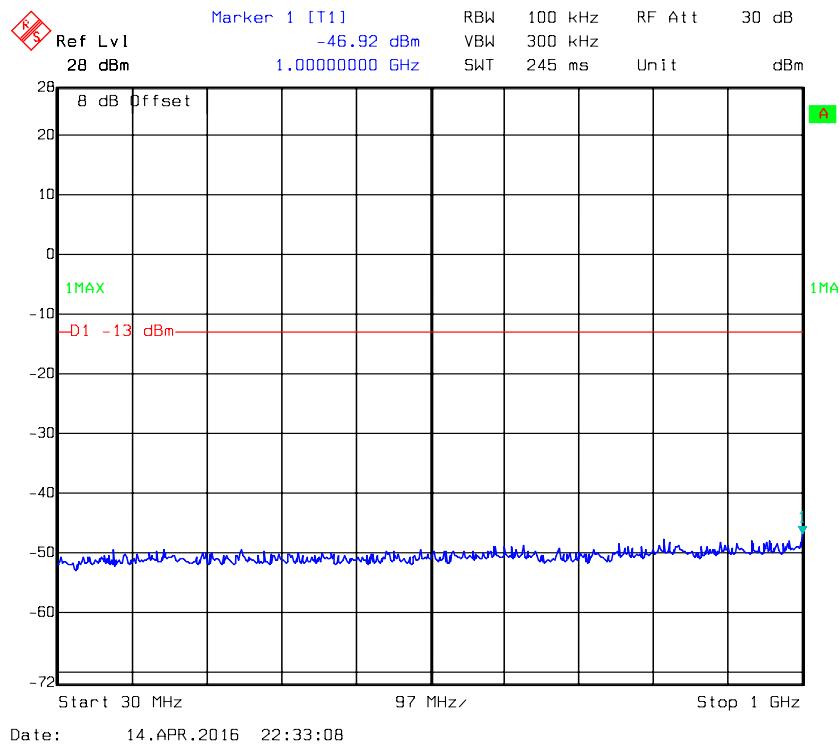


**16QAM\_5MHz**

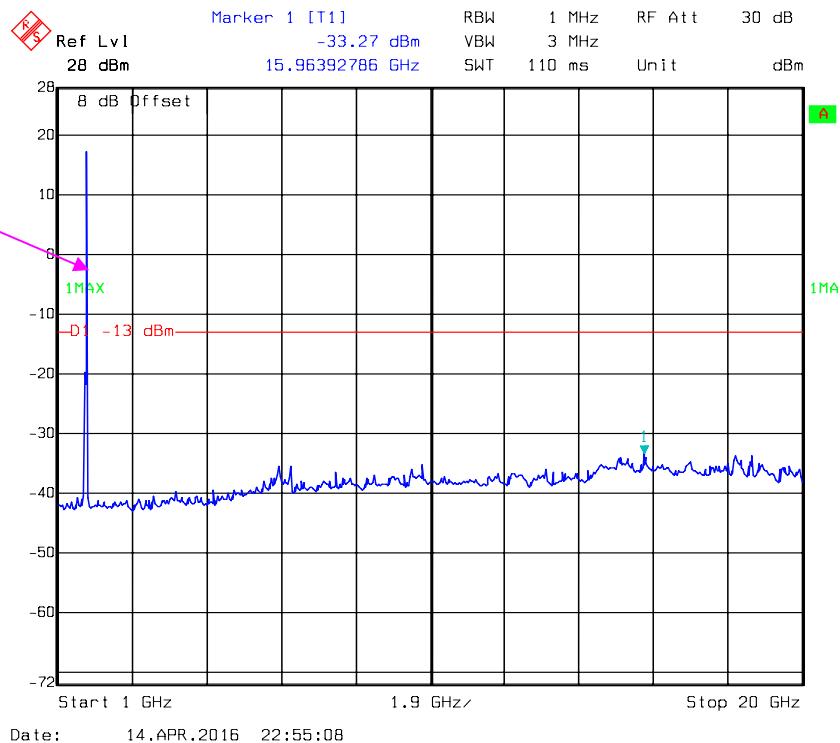
**16QAM\_10MHz**

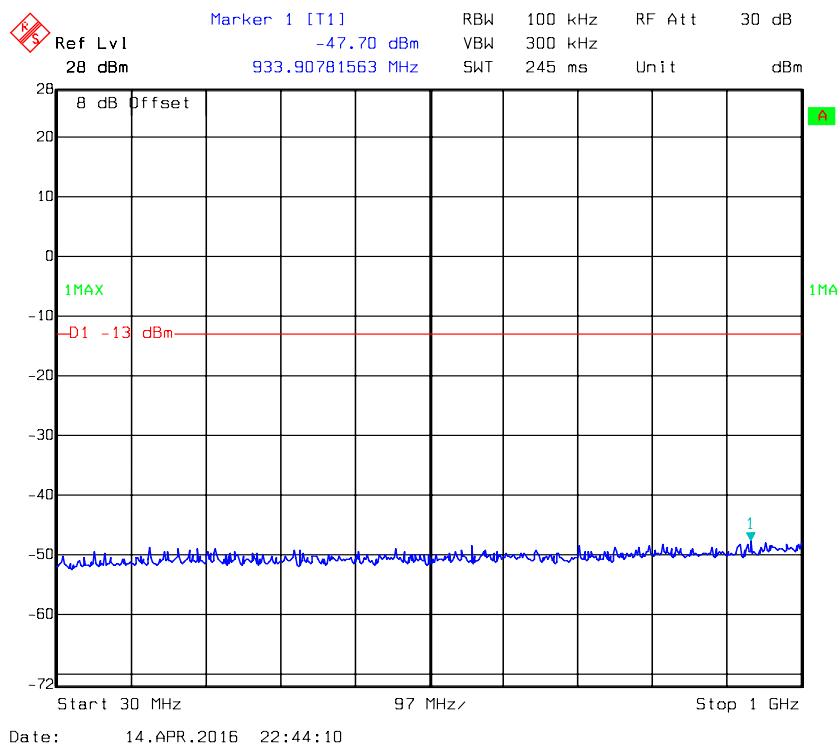
Fundamental



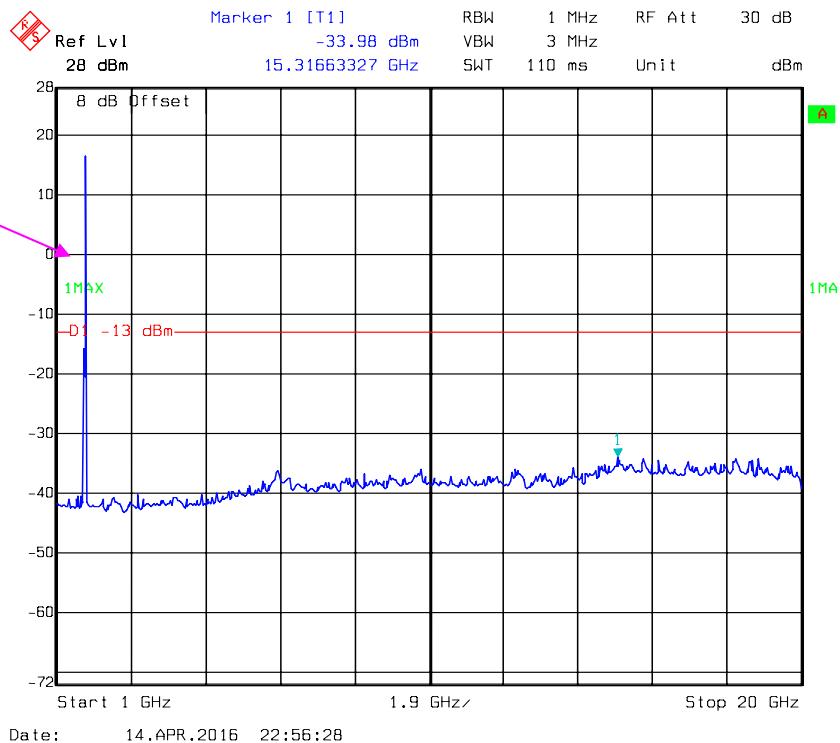
**16QAM\_15 MHz**

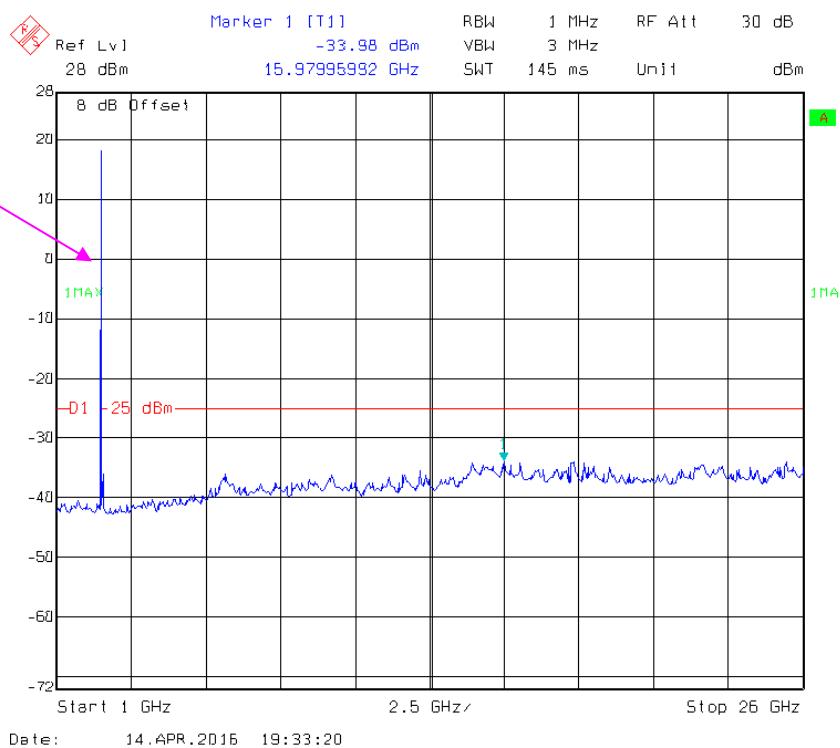
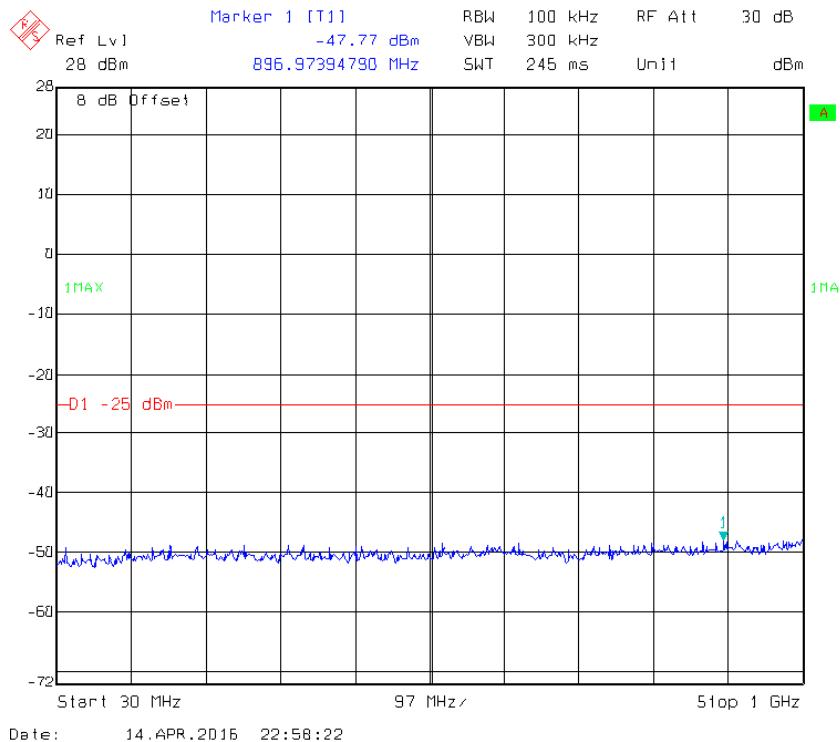
Fundamental

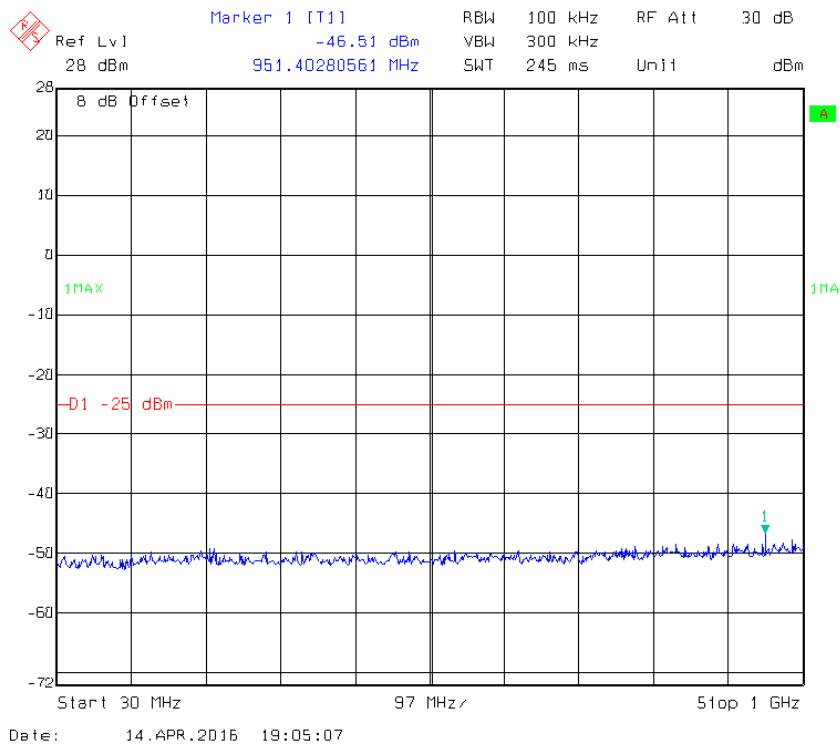


**16QAM\_20 MHz**

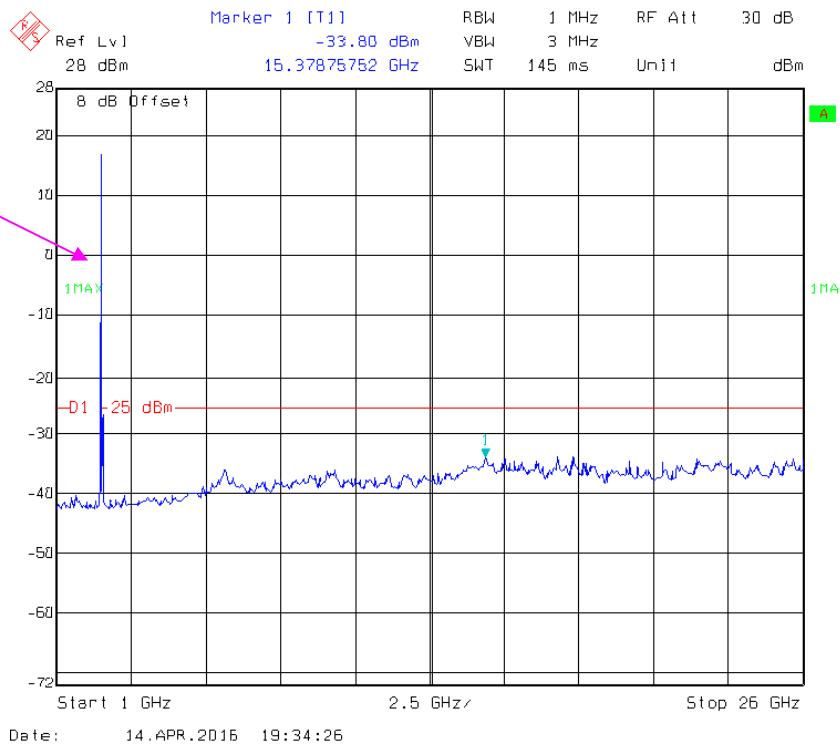
Fundamental

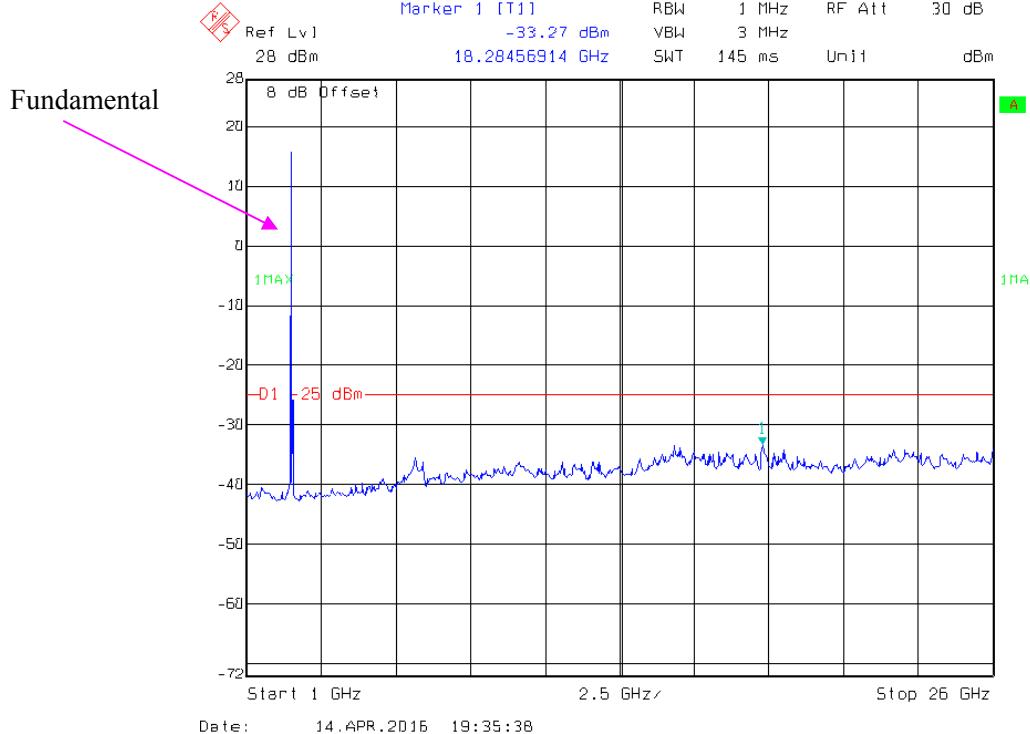
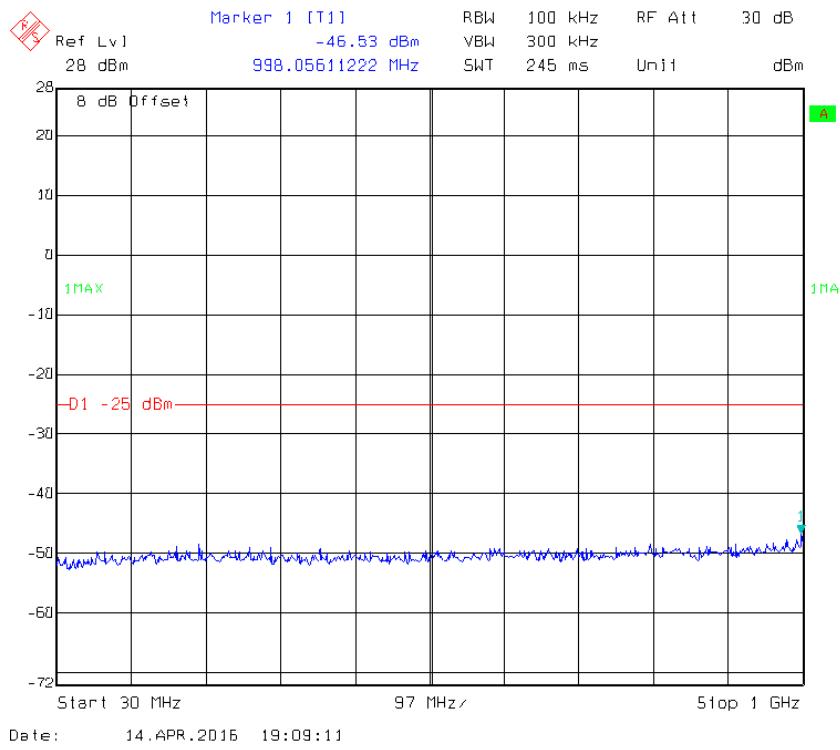


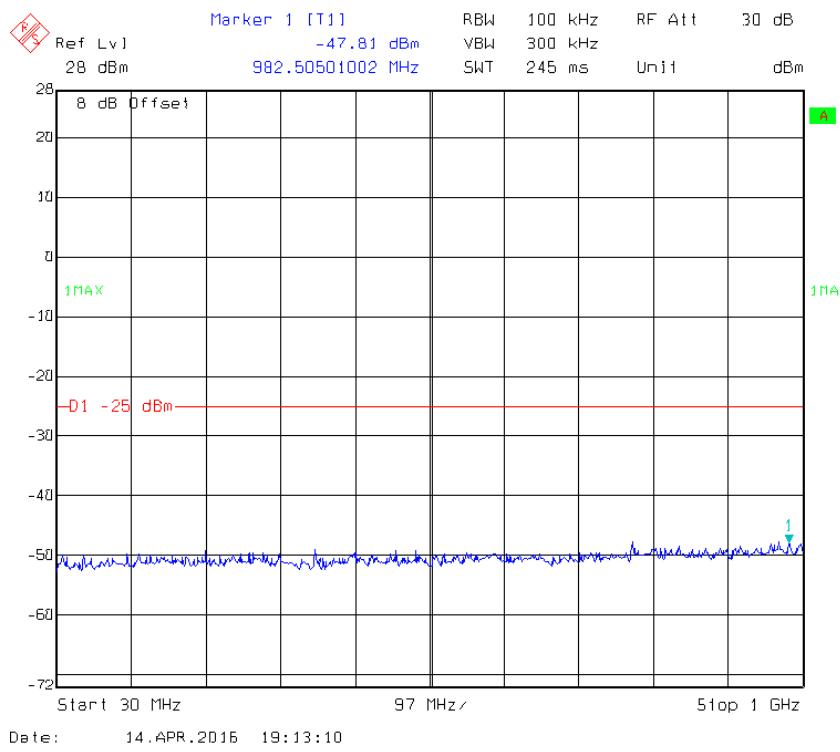
**LTE Band VII (Middle Channel)****QPSK\_5MHz**

**QPSK\_10MHz**

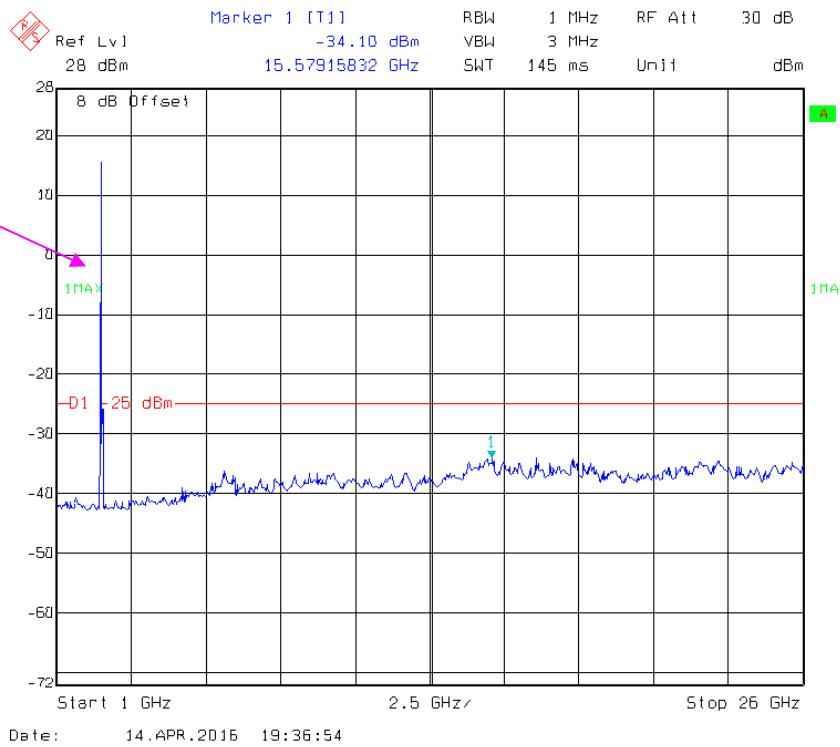
Fundamental

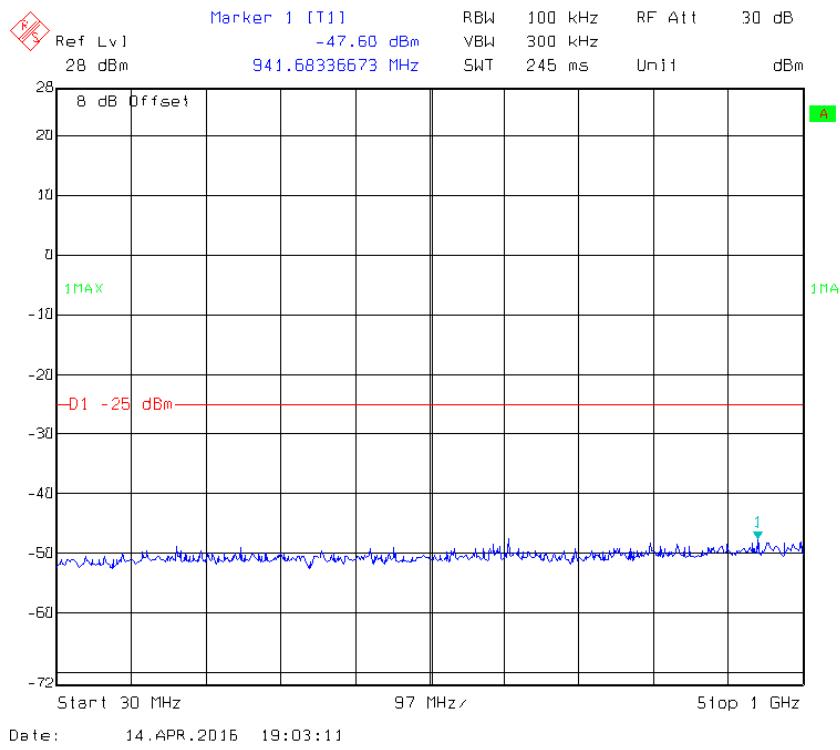


**QPSK\_15MHz**

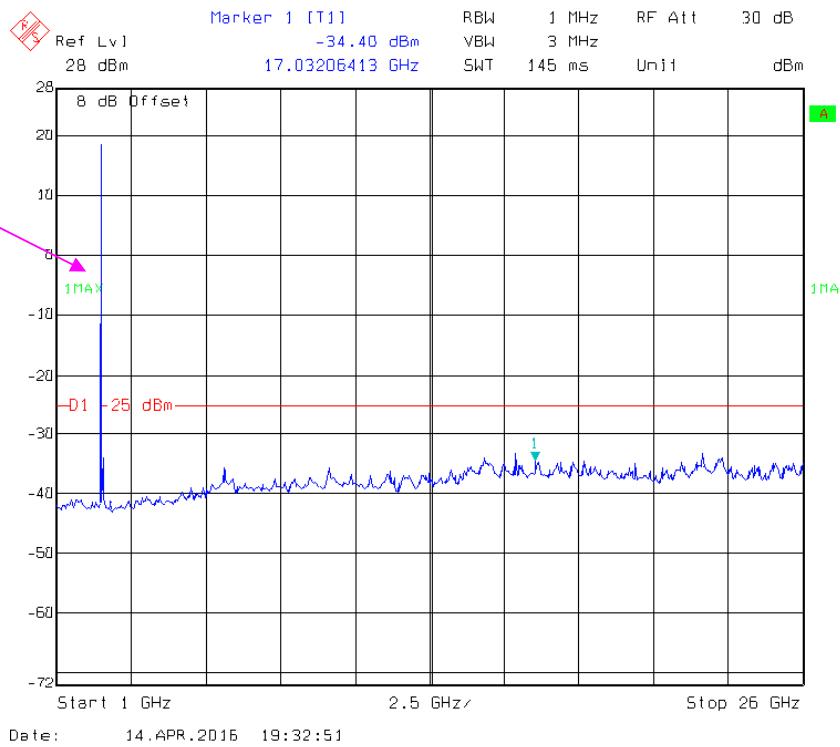
**QPSK\_20MHz**

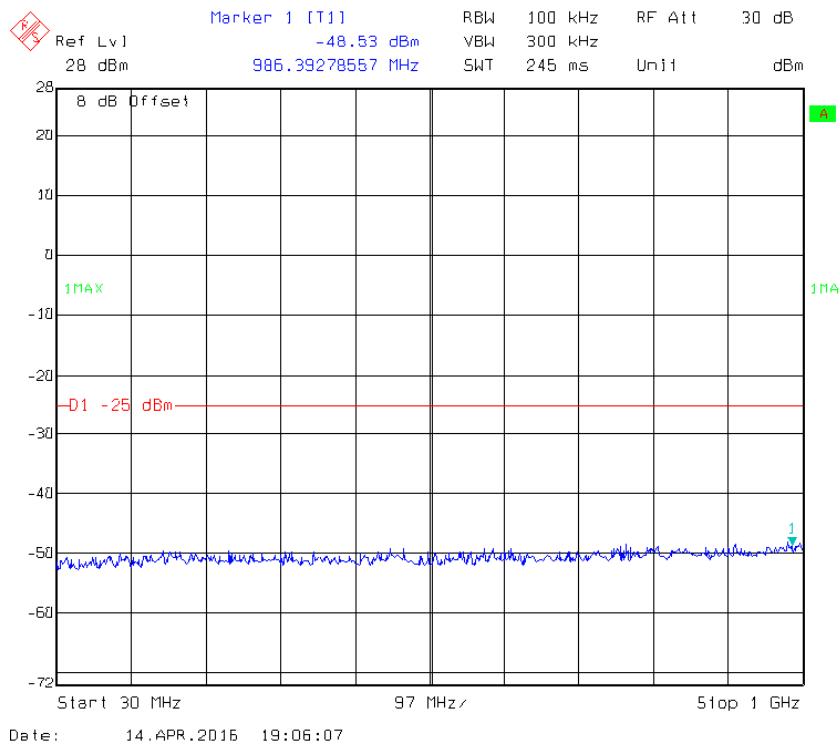
Fundamental



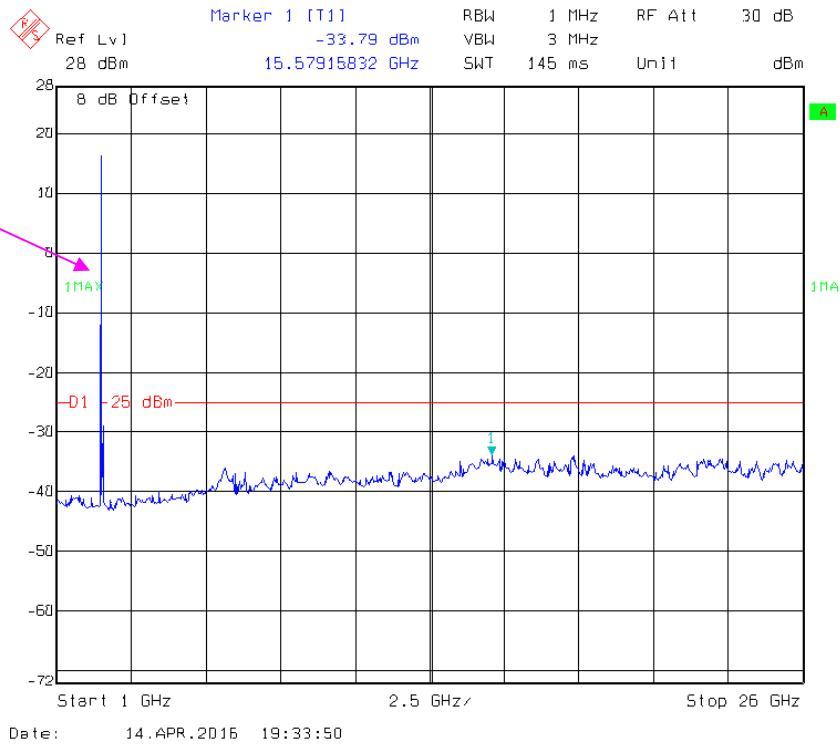
**16QAM\_5MHz**

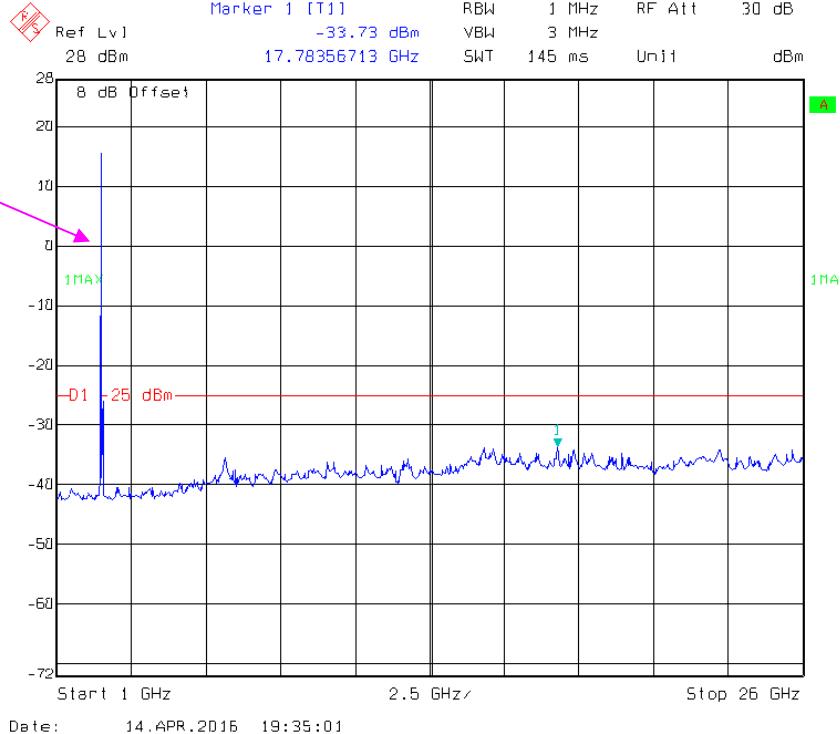
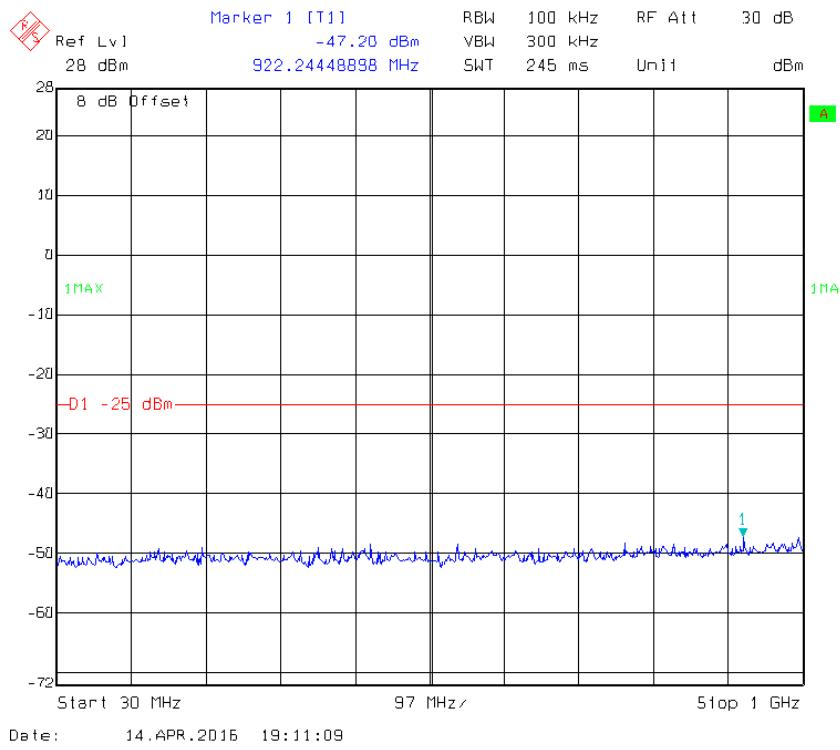
Fundamental

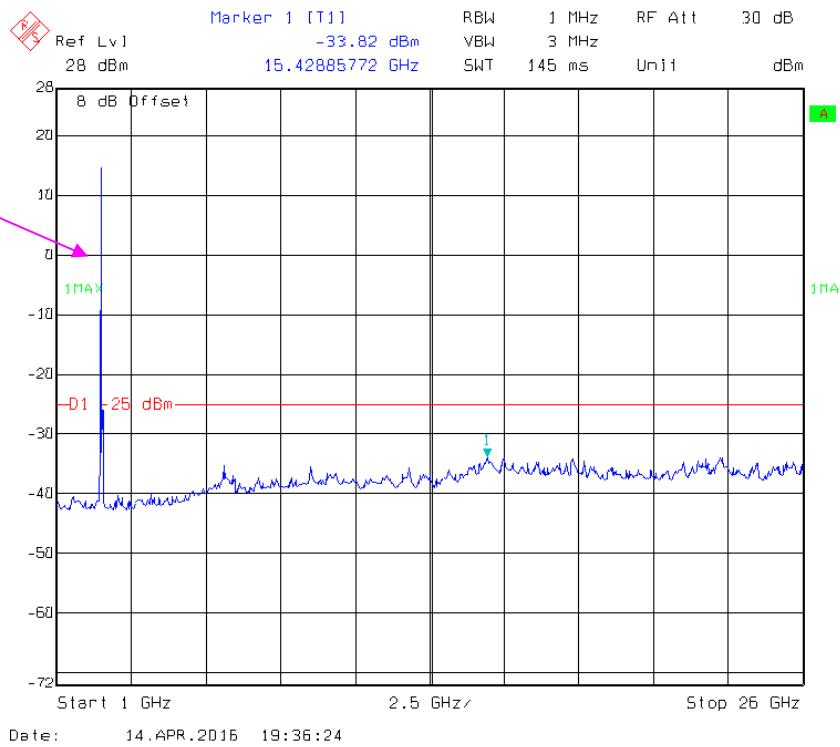
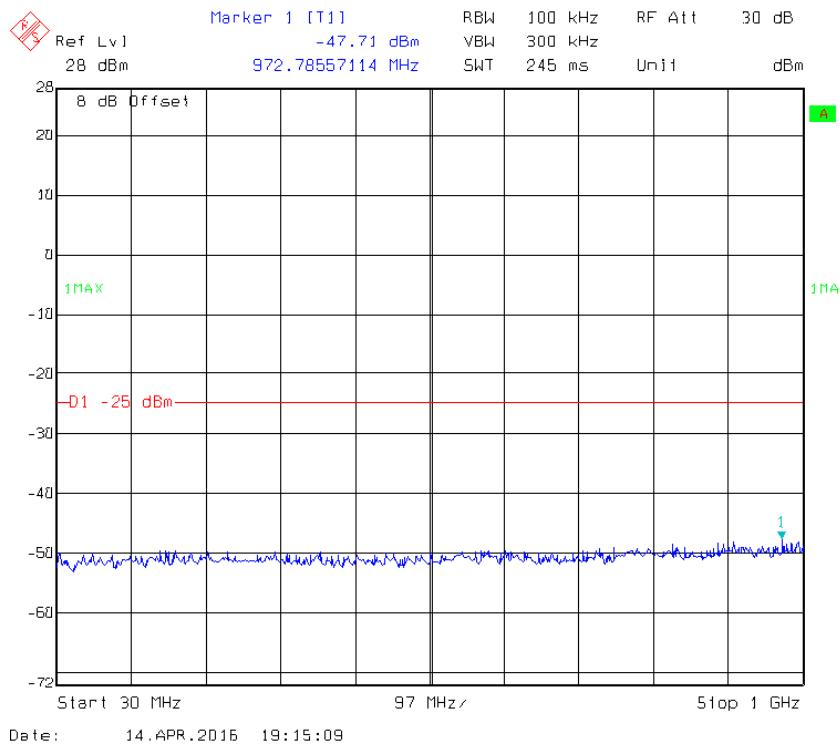


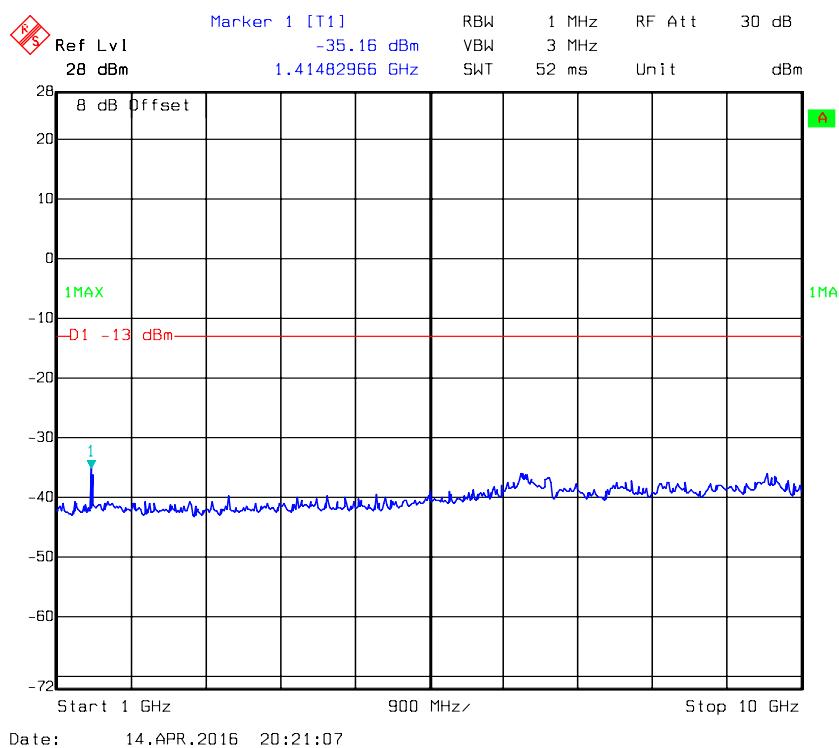
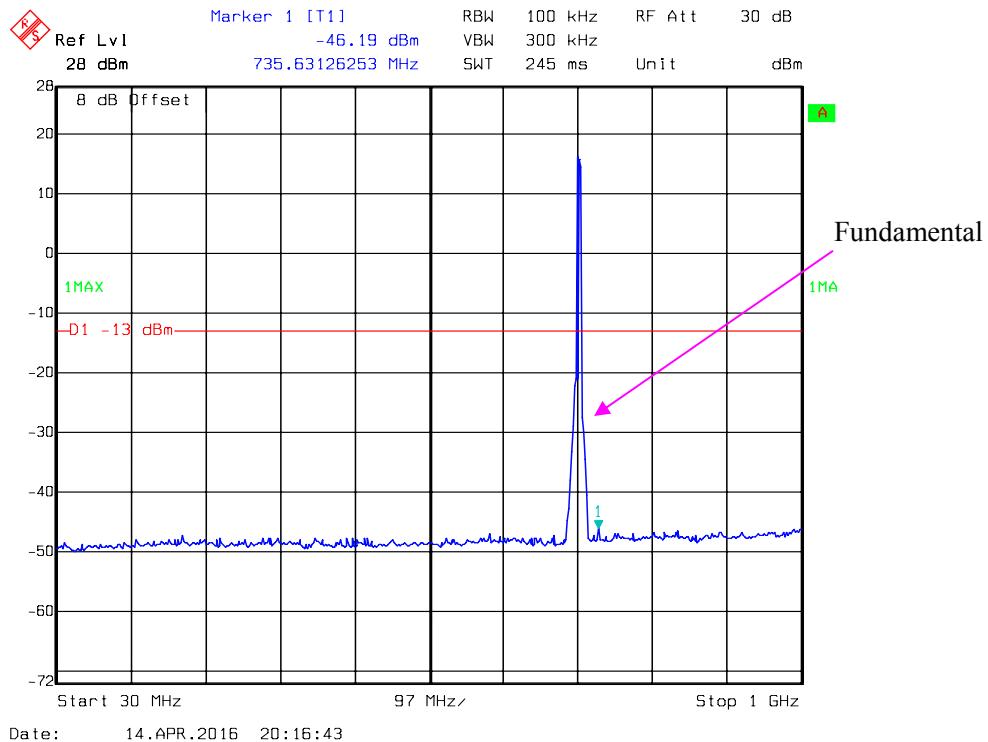
**16QAM\_10MHz**

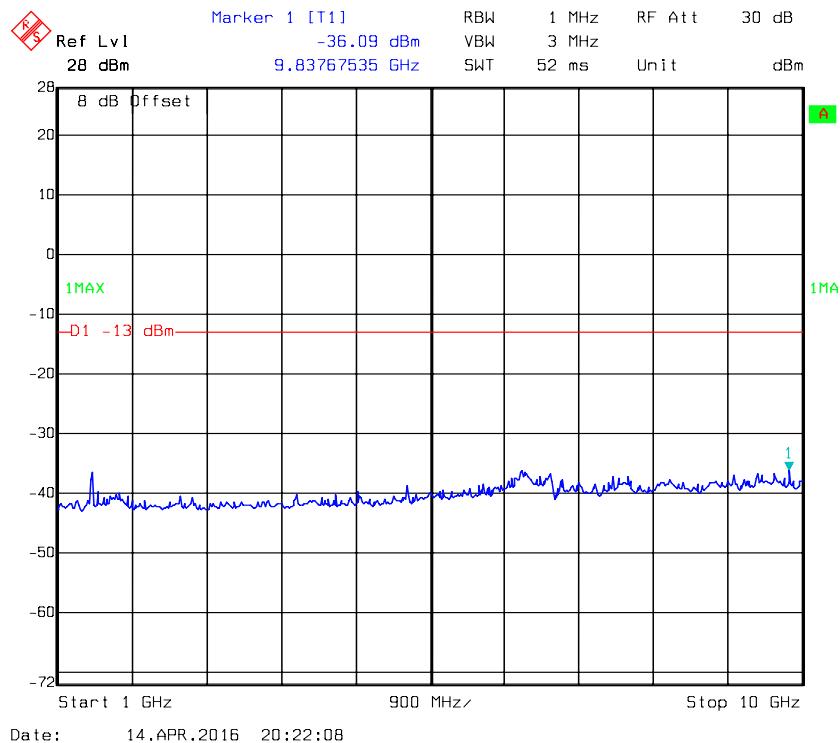
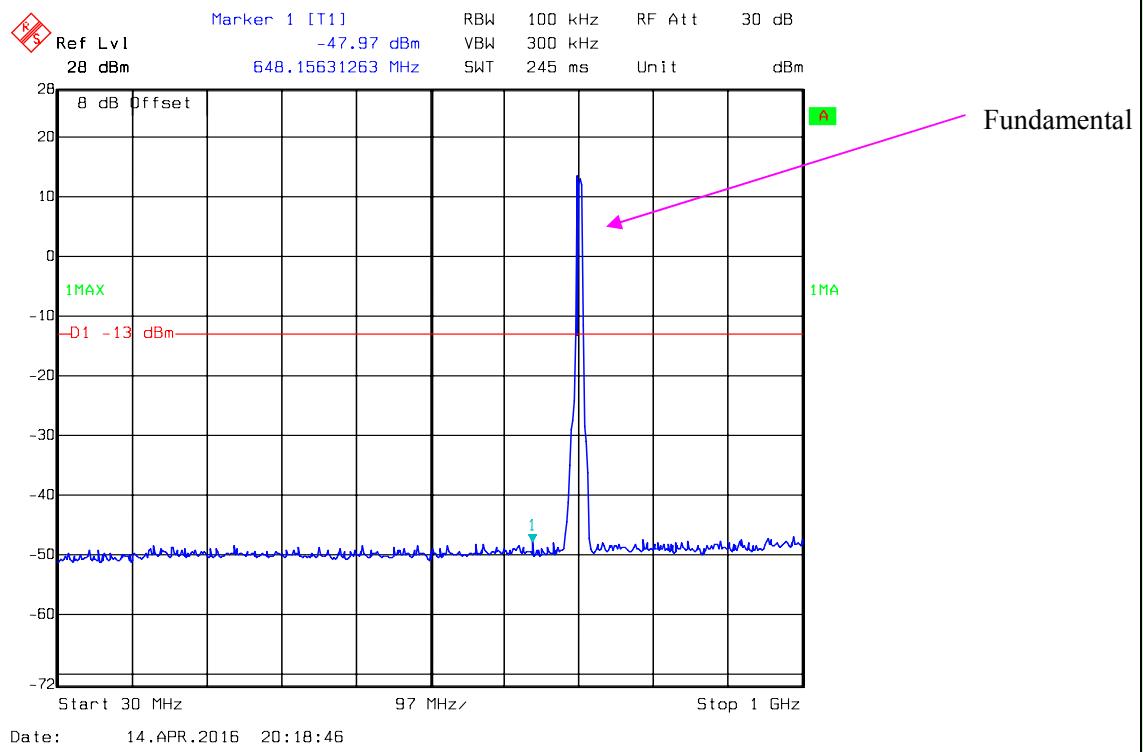
Fundamental



**16QAM\_15 MHz**

**16QAM\_20 MHz**

**LTE Band 17 (Middle Channel)****QPSK\_5MHz**

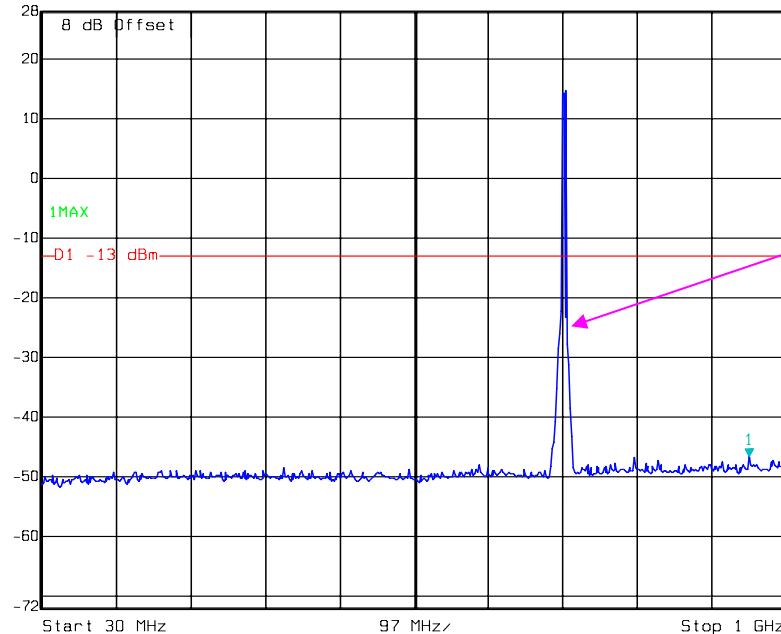
**QPSK\_10MHz**

**16QAM\_5MHz**

Ref Lvl  
28 dBm

Marker 1 [T1] -46.74 dBm 951.40280561 MHz

RBW 100 kHz VBW 300 kHz  
SWT 245 ms Unit dBm



Date: 14.APR.2016 20:17:52

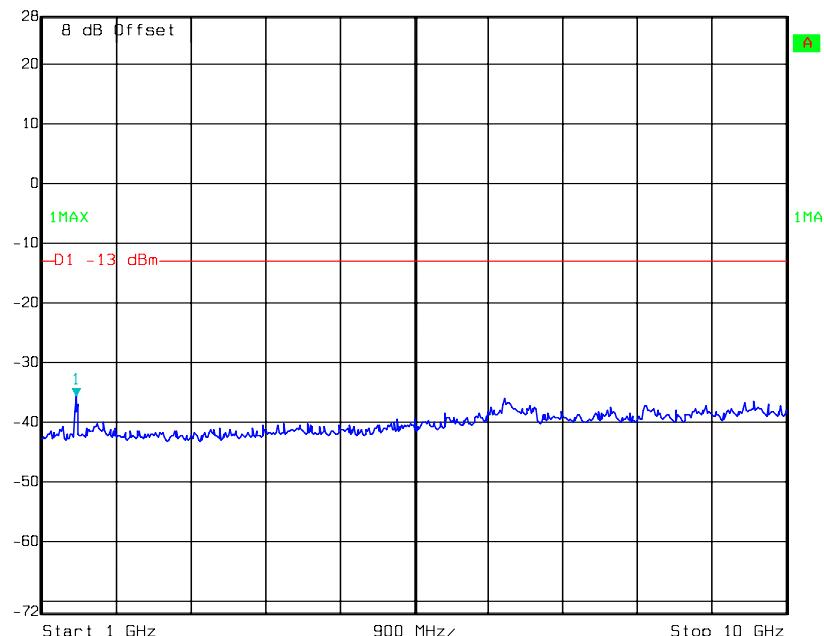
Fundamental

1MA

Ref Lvl  
28 dBm

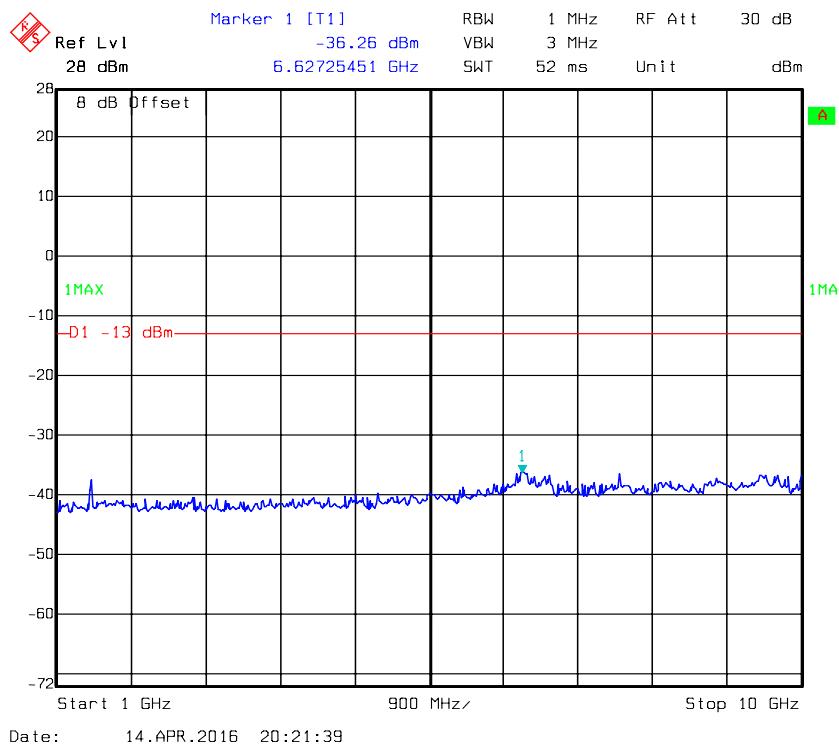
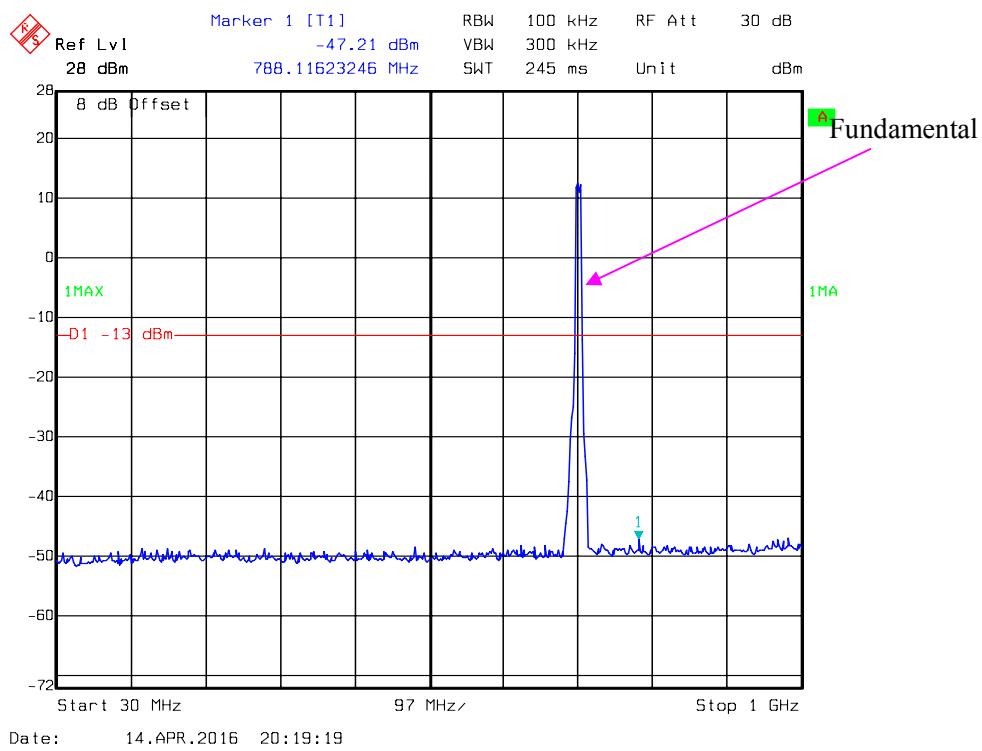
Marker 1 [T1] -35.51 dBm 1.41482966 GHz

RBW 1 MHz VBW 3 MHz  
SWT 52 ms Unit dBm



Date: 14.APR.2016 20:20:33

1MA

**16QAM\_10MHz**

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

### Applicable Standard

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

### Test Procedure

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

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

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

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

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

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

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2015-05-09	2016-05-09
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	DE31388	2015-05-09	2016-05-09
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	2015-05-09	2016-05-09
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	2015-05-06	2016-05-06
N/A	Coaxial Cable	8m	N/A	2015-05-06	2016-05-06
N/A	Coaxial Cable	2m	N/A	2015-05-06	2016-05-06
Mini Circuit	High Pass Filter	VHF-3100+	31251	2015-05-06	2016-05-06
Mini Circuit	High Pass Filte	VHF-1200+	N/A	2015-05-06	2016-05-06

\* **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

<b>Temperature:</b>	24.5 °C
<b>Relative Humidity:</b>	73 %
<b>ATM Pressure:</b>	100.8 kPa

The testing was performed by Rocky Xiao on 2016-04-20.

EUT Operation Mode: Transmitting

### Cellular Band

#### 30MHz-10 GHz

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	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	45.97	-55.1	10.6	1.5	-46.0	-13.0	33.0
1673.200	V	44.44	-56.9	10.6	1.5	-47.8	-13.0	34.8
2509.800	H	54.63	-43.4	13.1	2.8	-33.1	-13.0	20.1
2509.800	V	46.16	-50.9	13.1	2.8	-40.6	-13.0	27.6
184.900	H	38.20	-70.3	0.0	0.5	-70.8	-13.0	57.8
184.900	V	35.80	-70.9	0.0	0.5	-71.4	-13.0	58.4
WCDMA Band V R99, Frequency:836.600 MHz								
1673.200	H	41.63	-59.4	10.6	1.5	-50.3	-13.0	37.3
1673.200	V	40.08	-61.3	10.6	1.5	-52.2	-13.0	39.2
2509.800	H	44.32	-53.7	13.1	2.8	-43.4	-13.0	30.4
2509.800	V	42.03	-55.1	13.1	2.8	-44.8	-13.0	31.8
184.900	H	37.20	-71.3	0.0	0.5	-71.8	-13.0	58.8
184.900	V	35.40	-71.3	0.0	0.5	-71.8	-13.0	58.8

**PCS Band****30MHz-20GHz:**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM1900, Frequency:1880.000 MHz								
3760.000	H	34.46	-59.8	13.8	2.9	-48.9	-13.0	35.9
3760.000	V	33.43	-59.6	13.8	2.9	-48.7	-13.0	35.7
184.900	H	37.80	-70.7	0.0	0.5	-71.2	-13.0	58.2
184.900	V	35.70	-71	0.0	0.5	-71.5	-13.0	58.5
WCDMA Band II, R99, Frequency:1880.000 MHz								
3760.000	H	33.04	-61.3	13.8	2.9	-50.4	-13.0	37.4
3760.000	V	33.32	-59.7	13.8	2.9	-48.8	-13.0	35.8
184.900	H	37.90	-70.6	0.0	0.5	-71.1	-13.0	58.1
184.900	V	35.60	-71.1	0.0	0.5	-71.6	-13.0	58.6

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

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	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	33.06	-61.2	13.8	2.9	-50.3	-13.0	37.3
3760.000	V	31.48	-61.6	13.8	2.9	-50.7	-13.0	37.7
5640.000	H	39.06	-52.6	14.0	2.1	-40.7	-13.0	27.7
5640.000	V	32.70	-59	14.0	2.1	-47.1	-13.0	34.1
185.100	H	37.62	-70.9	0.0	0.5	-71.4	-13.0	58.4
185.100	V	34.20	-72.5	0.0	0.5	-73.0	-13.0	60.0

**LTE Band IV(30MHz-20GHz):**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	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	36.40	-60.5	13.9	1.9	-48.5	-13.0	35.5
3465.000	V	36.38	-59.8	13.9	1.9	-47.8	-13.0	34.8
5197.500	H	39.42	-51.6	14.0	2.3	-39.9	-13.0	26.9
5197.500	V	33.18	-59.4	14.0	2.3	-47.7	-13.0	34.7
185.100	H	37.41	-71.1	0.0	0.5	-71.6	-13.0	58.6
185.100	V	33.92	-72.8	0.0	0.5	-73.3	-13.0	60.3

**LTE Band VII(30MHz-26GHz):**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	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	37.40	-53.9	13.9	2.4	-42.4	-25.0	17.4
5070.000	V	32.48	-59.7	13.9	2.4	-48.2	-25.0	23.2
7605.000	H	40.84	-46.6	13.2	3.1	-36.5	-25.0	11.5
7605.000	V	35.83	-51.7	13.2	3.1	-41.6	-25.0	16.6
185.100	H	36.66	-71.8	0.0	0.5	-72.3	-25.0	47.3
185.100	V	33.94	-72.8	0.0	0.5	-73.3	-25.0	48.3

**LTE Band 17(30MHz-10GHz)**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB $\mu$ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 710.00 MHz								
1420.000	H	50.16	-50.7	9.1	1.3	-42.9	-13.0	29.9
1420.000	V	50.42	-50.2	9.1	1.3	-42.4	-13.0	29.4
2130.000	H	38.22	-57.7	11.2	1.4	-47.9	-13.0	34.9
2130.000	V	34.27	-60.5	11.2	1.4	-50.7	-13.0	37.7
185.100	H	36.63	-71.9	0.0	0.5	-72.4	-13.0	59.4
185.100	V	34.25	-72.5	0.0	0.5	-73.0	-13.0	60.0

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Absolute Level = SG Level - Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level

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

### Applicable Standard

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

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

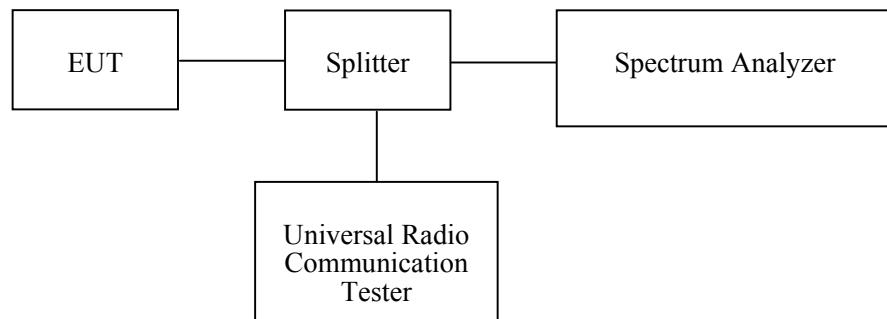
According to §27.53 (h), AWS emission limits—(1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission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

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

### Test Procedure

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

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



## Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09
R&S	Spectrum Analyzer	FSEM	831259/019	2015-05-09	2016-05-09
R&S	Universal Radio Communication Tester	CMU200	109 038	2015-05-09	2016-05-09
R&S	Wideband Radio Communication Tester	CMW500	106891	2015-11-23	2016-11-23
N/A	Coaxial Cable	0.1m	N/A	2015-05-06	2016-05-06
E-Microwave	DC Blocking	EMDCB-00036	OE01201047	2015-05-06	2016-05-06
E-Microwave	Attenuator	EMCA10-5RN	OE01203239	2015-05-08	2016-05-08
Pasternack	RF Coaxial Cable	RF-01	N/A	2015-05-06	2016-05-06
Pasternack	RF Coaxial Cable	RF-02	N/A	2015-05-06	2016-05-06
N/A	Two-way Spliter	ODP-1-6-2S	OE0120142	2015-05-06	2016-05-06

\* **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

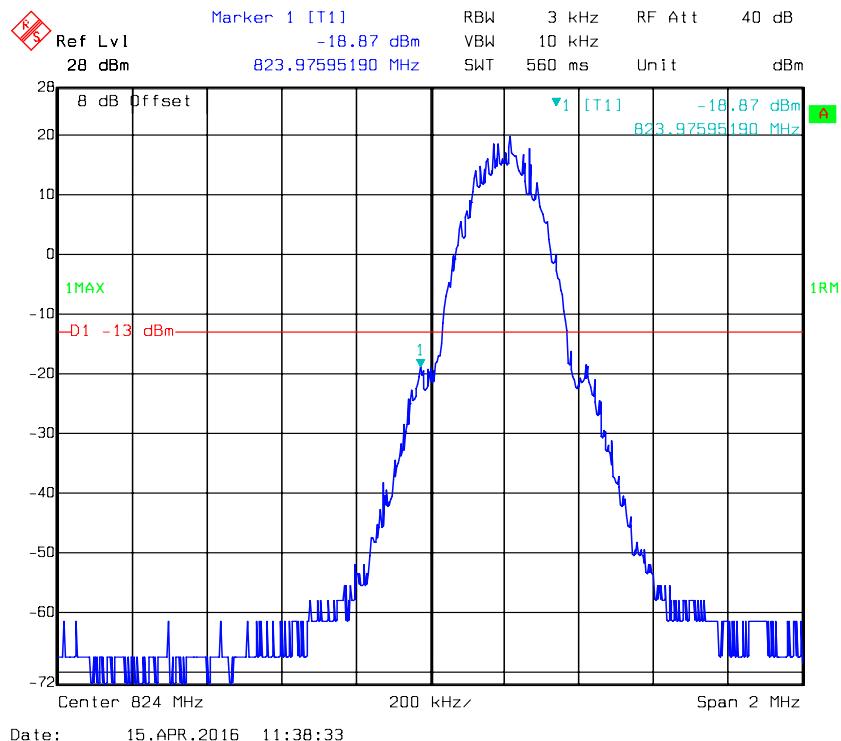
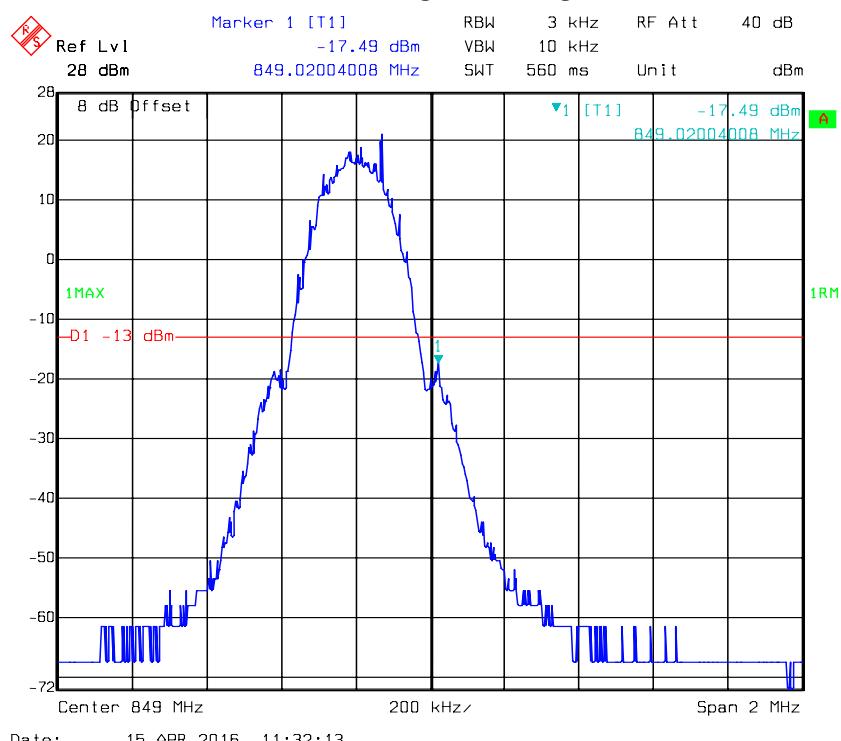
### Environmental Conditions

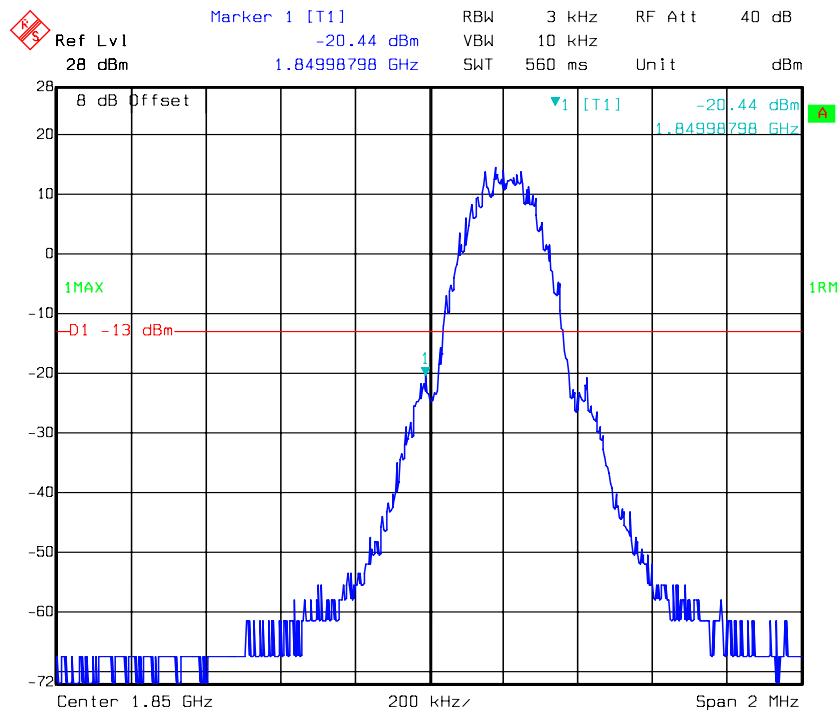
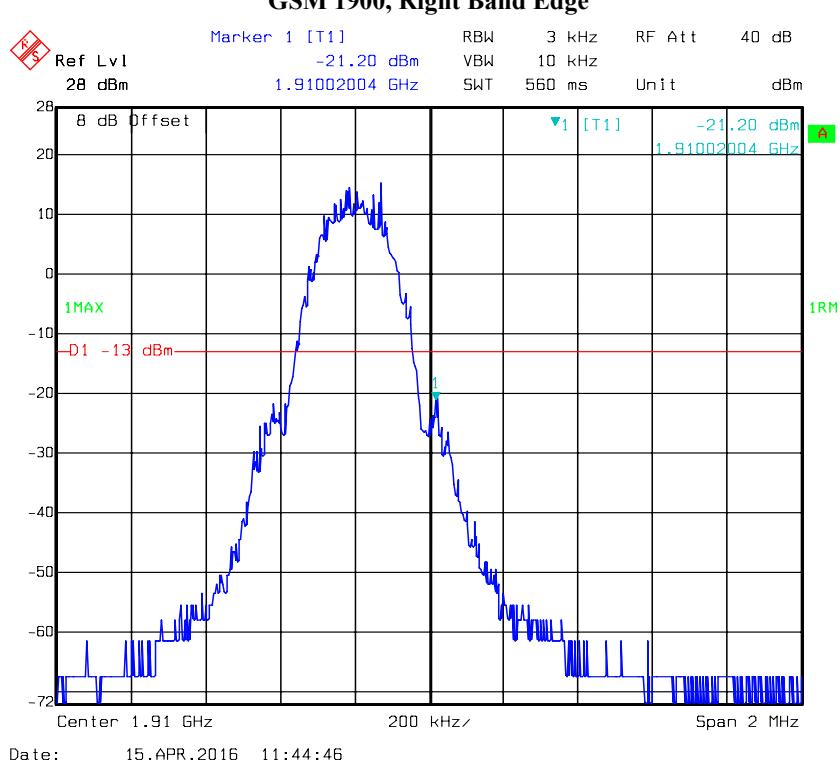
<b>Temperature:</b>	26.4~26.5°C
<b>Relative Humidity:</b>	68~71 %
<b>ATM Pressure:</b>	100.3~100.5 kPa

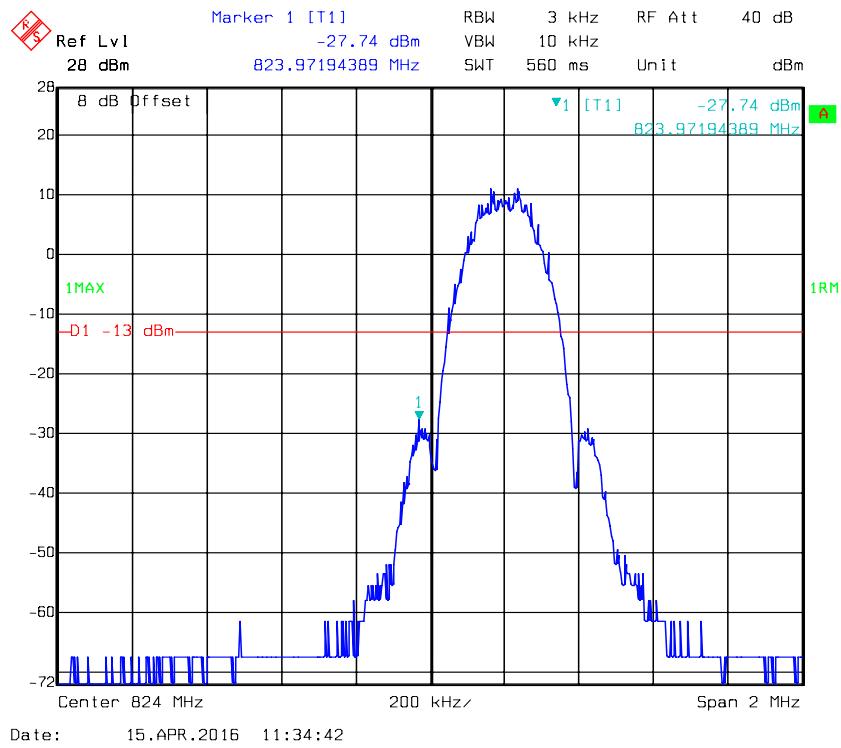
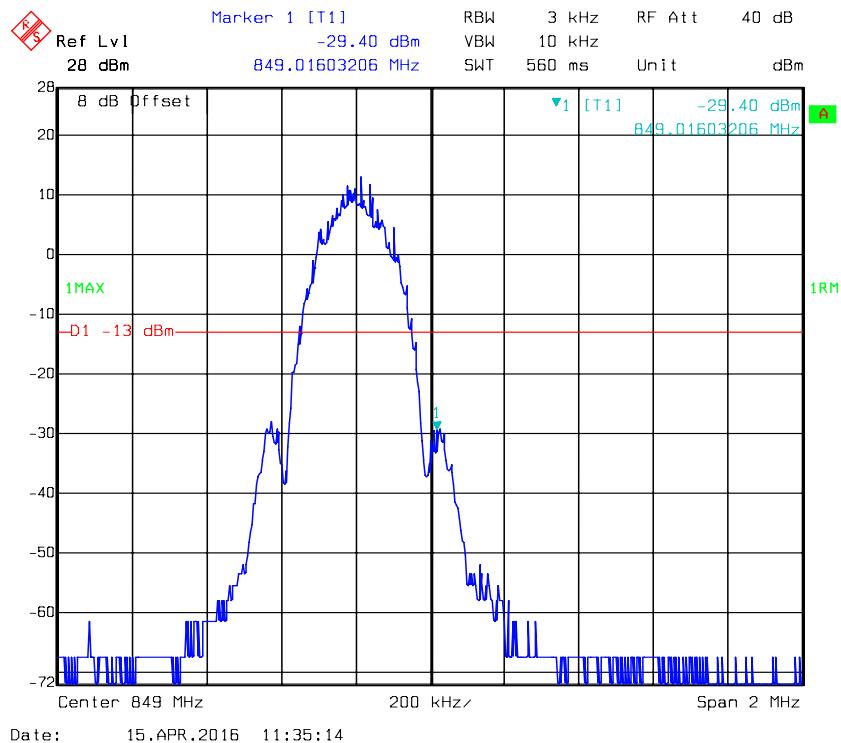
The testing was performed by Rocky Xiao from 2016-04-14 to 2016-04-15.

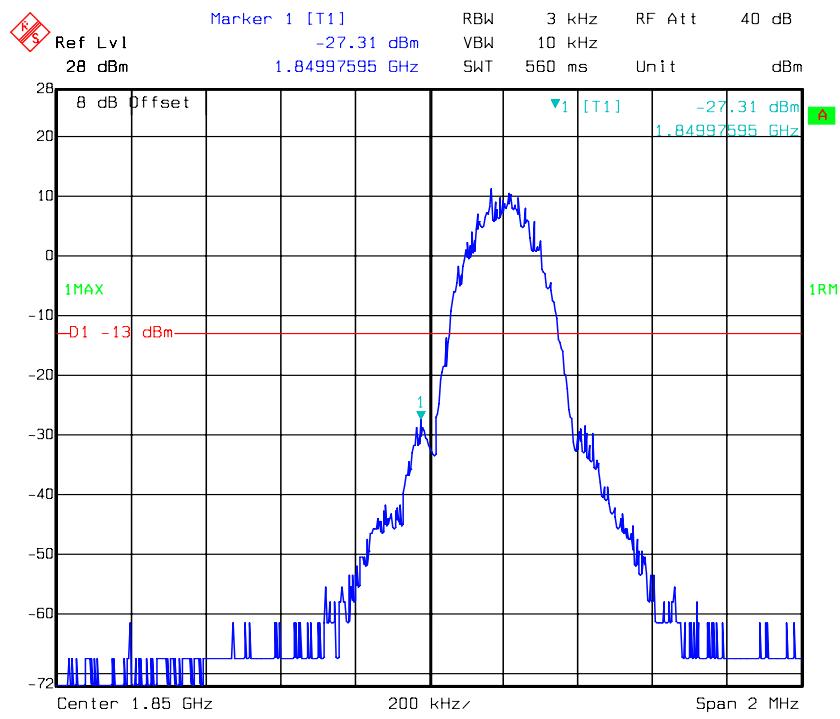
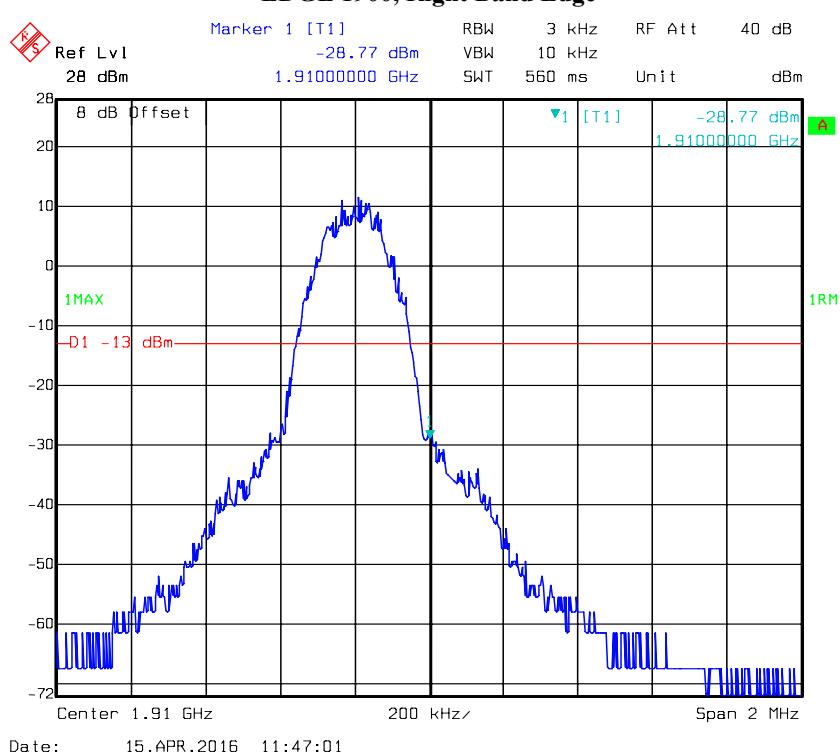
Test Mode: Transmitting

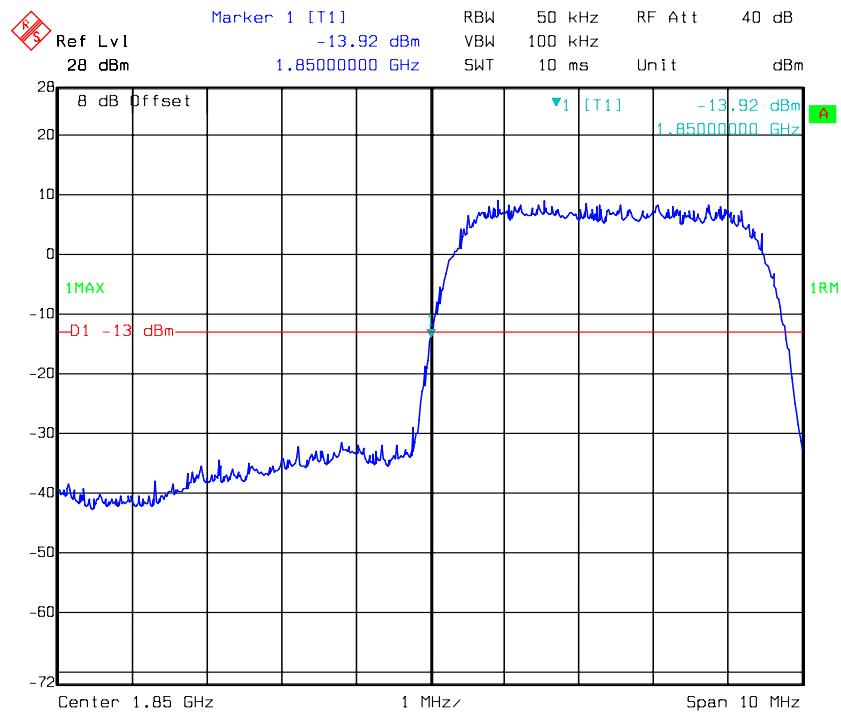
Test Result: Compliant. Please refer to the following plots.

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

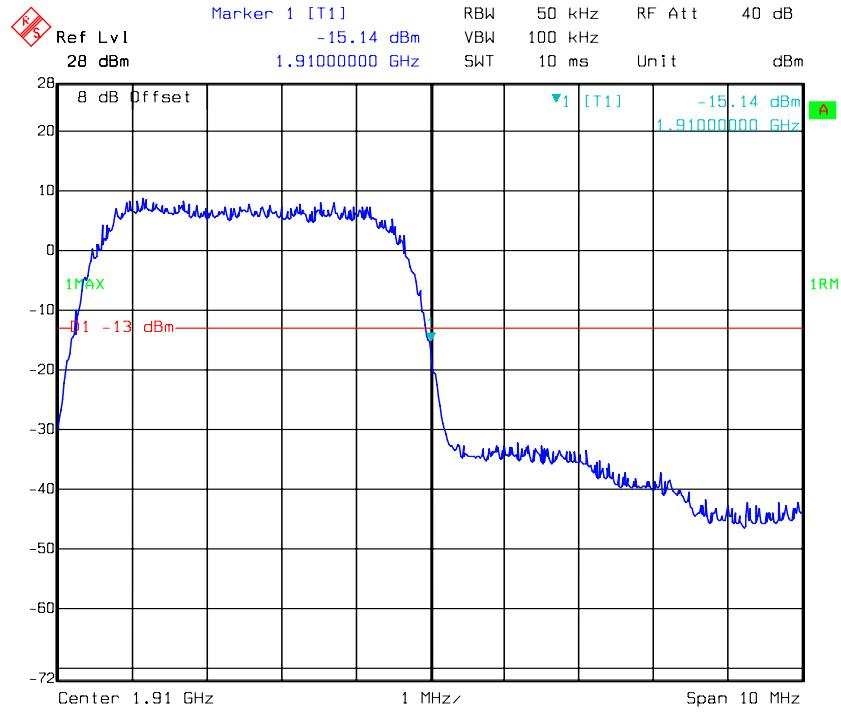
**GSM 1900, Left Band Edge****GSM 1900, Right Band Edge**

**EDGE 850, Left Band Edge****EDGE 850, Right Band Edge**

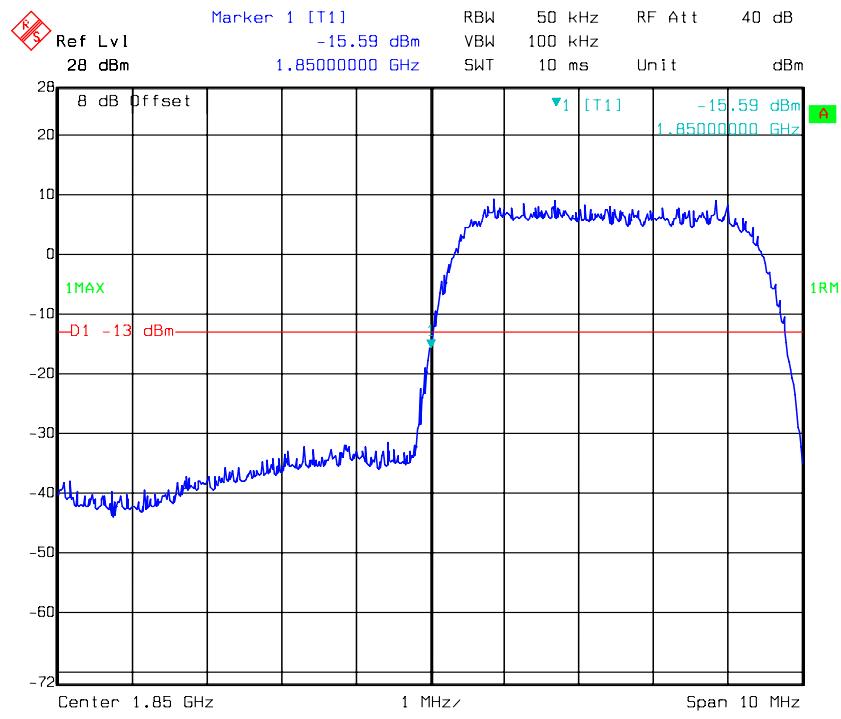
**EDGE 1900, Left Band Edge****EDGE 1900, Right Band Edge**

**REL99 Band II, Left Band Edge**

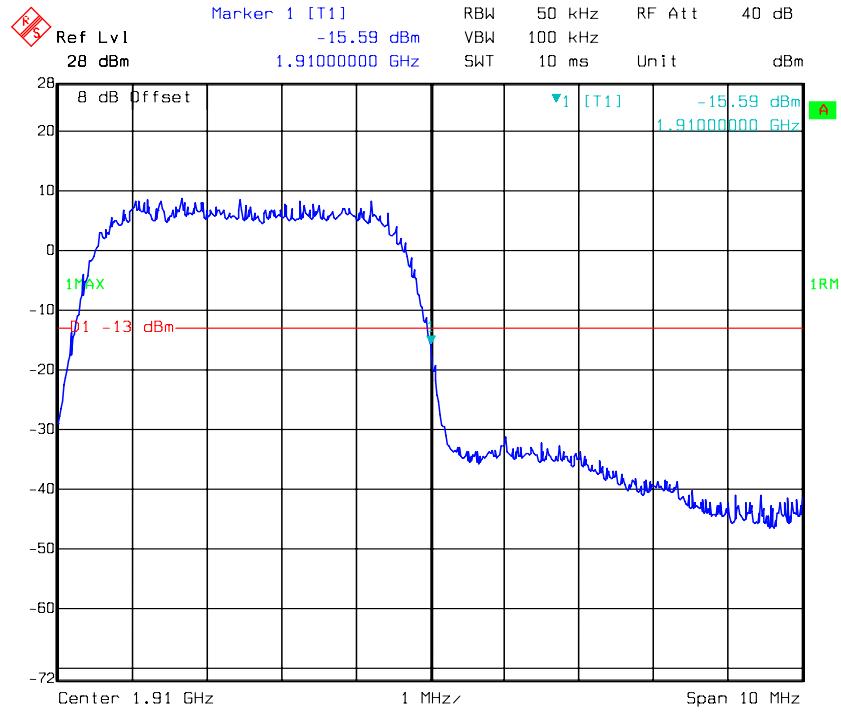
Date: 15.APR.2016 12:05:41

**REL99 Band II, Right Band Edge**

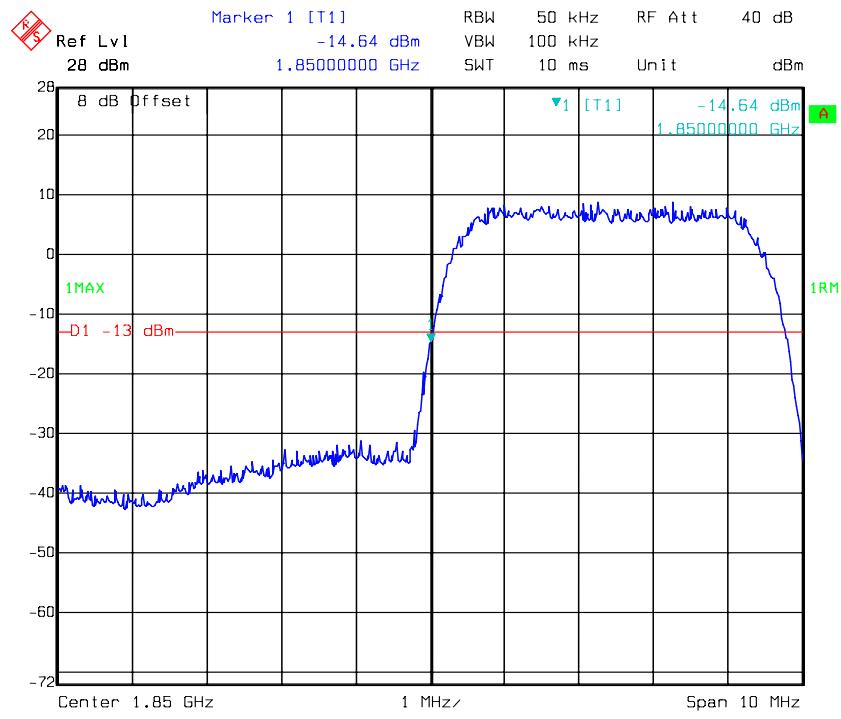
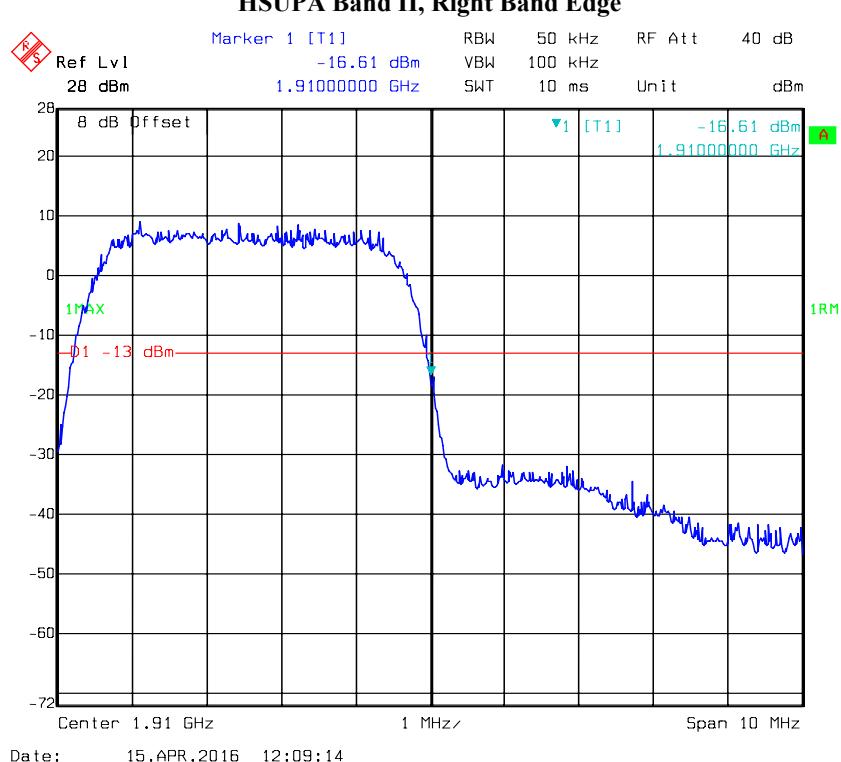
Date: 15.APR.2016 12:08:12

**HSDPA Band II, Left Band Edge**

Date: 15.APR.2016 12:06:48

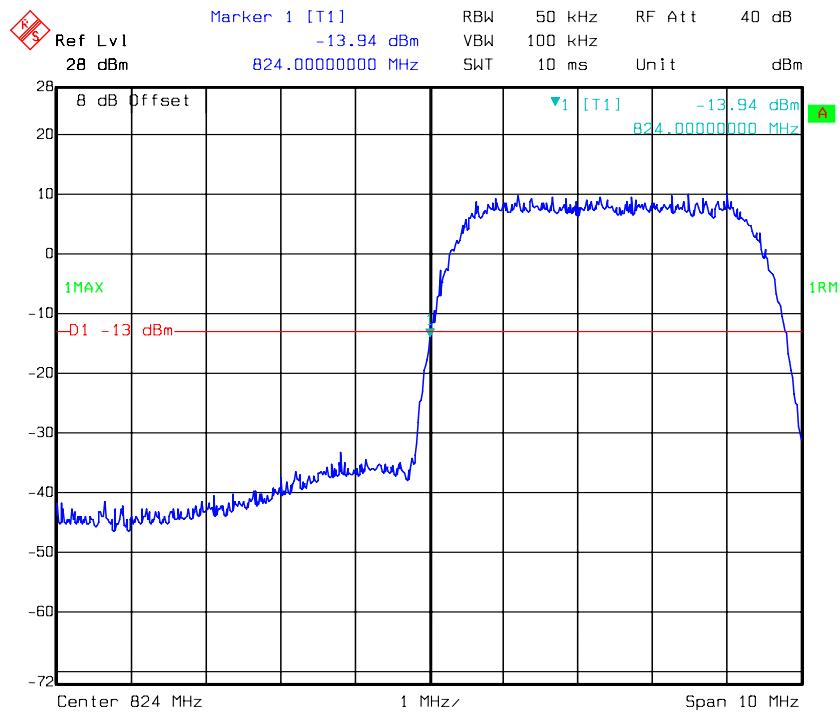
**HSDPA Band II, Right Band Edge**

Date: 15.APR.2016 12:08:43

**HSUPA Band II, Left Band Edge****HSUPA Band II, Right Band Edge**

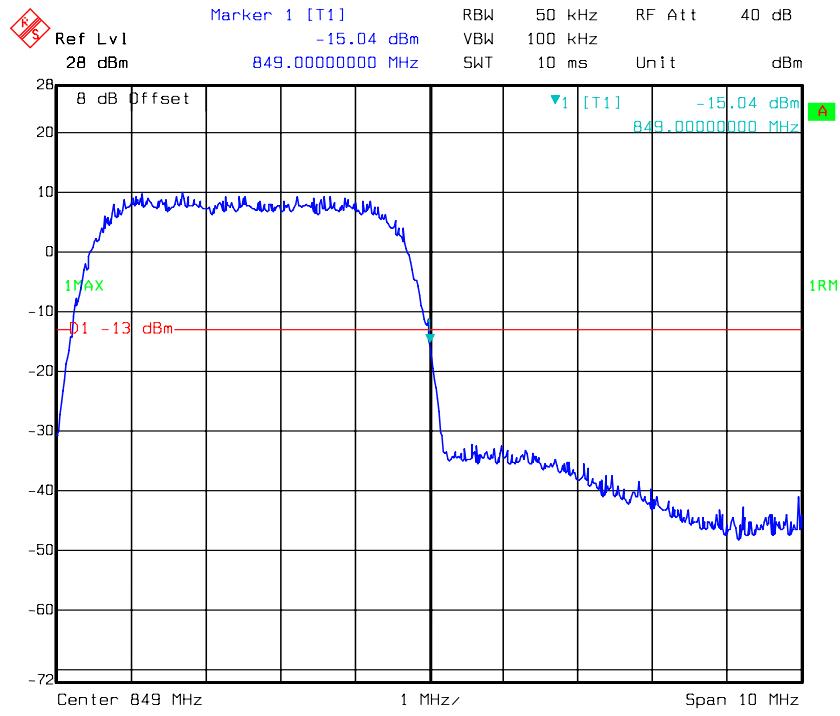
## WCDMA Band V

## REL99 Band V, Left Band Edge

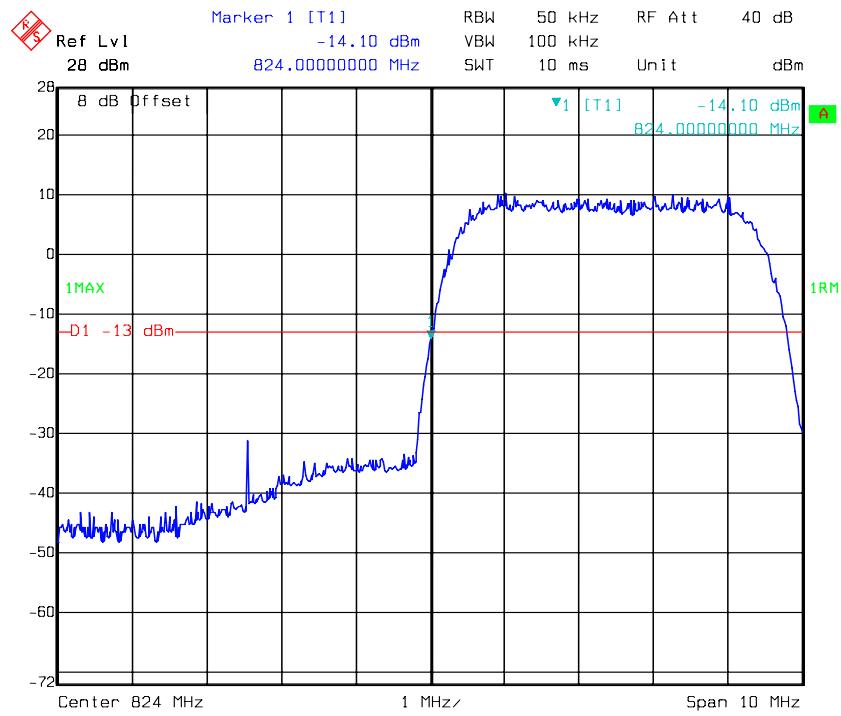


Date: 15.APR.2016 13:54:26

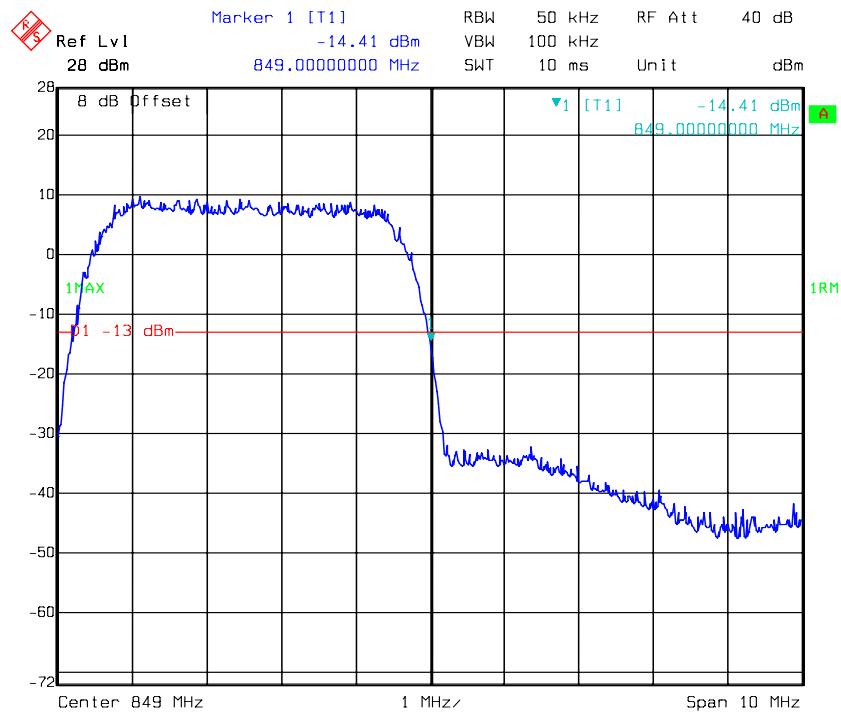
## REL99 Band V Right Band Edge



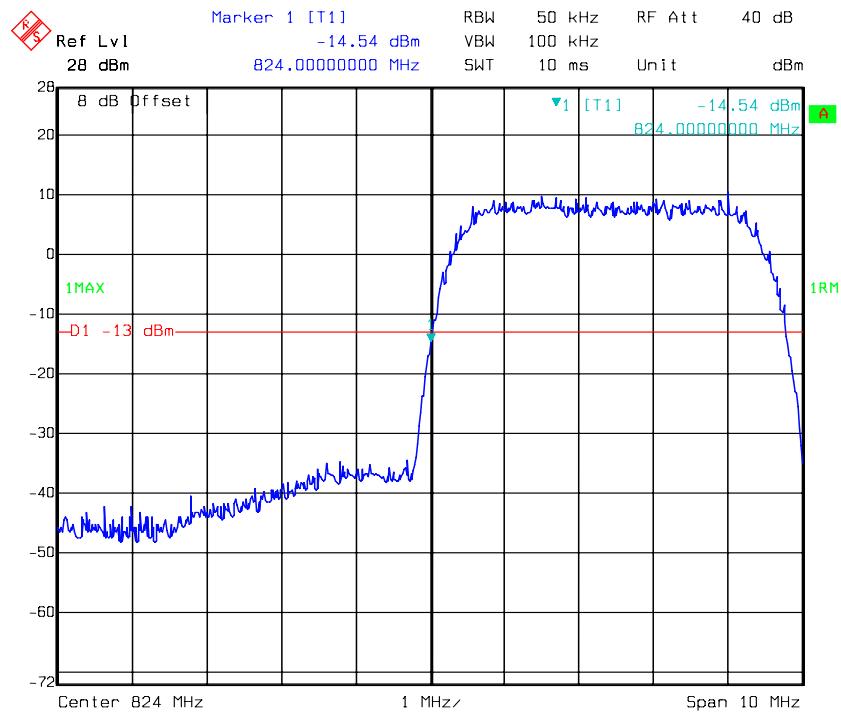
Date: 15.APR.2016 13:57:42

**HSDPA Band V, Left Band Edge**

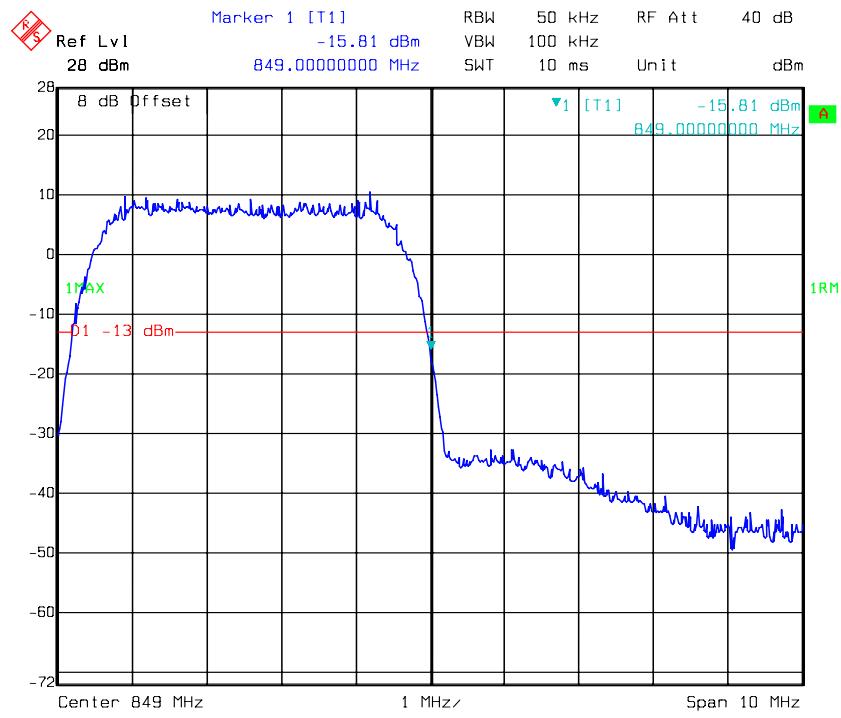
Date: 15.APR.2016 13:55:52

**HSDPA Band V, Right Band Edge**

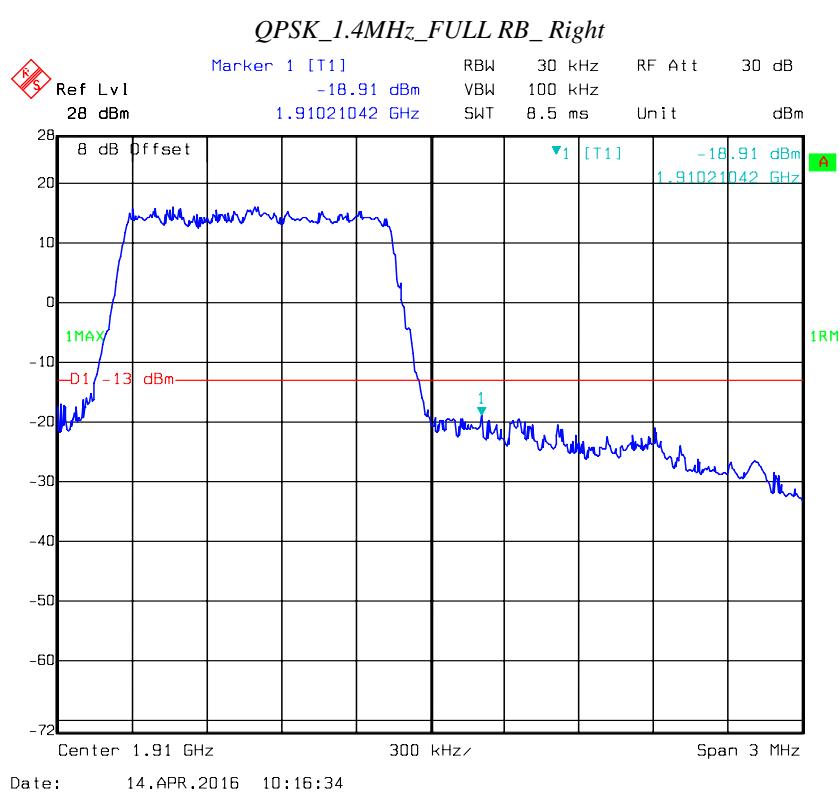
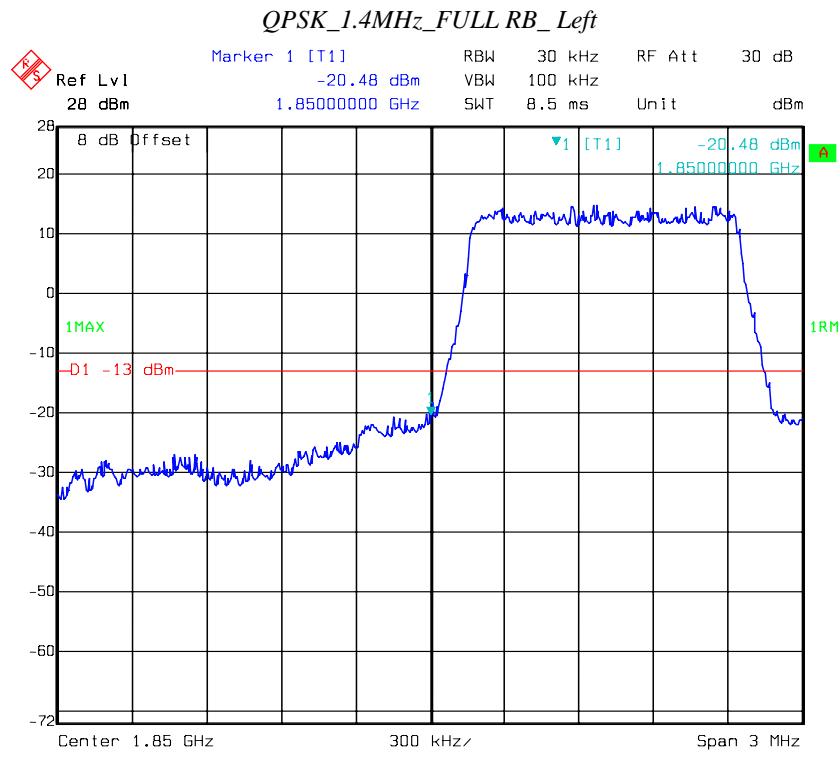
Date: 15.APR.2016 13:58:32

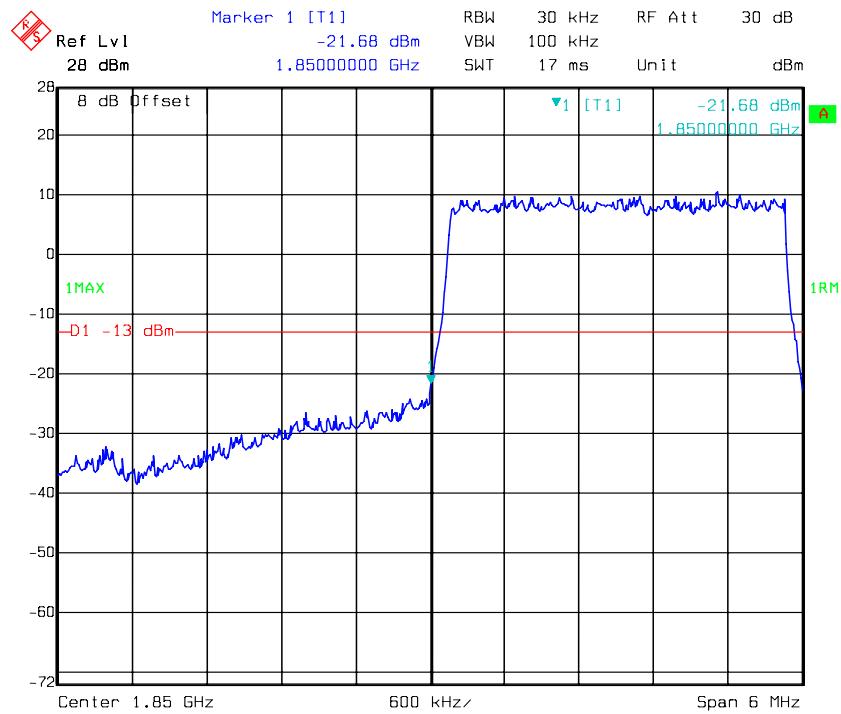
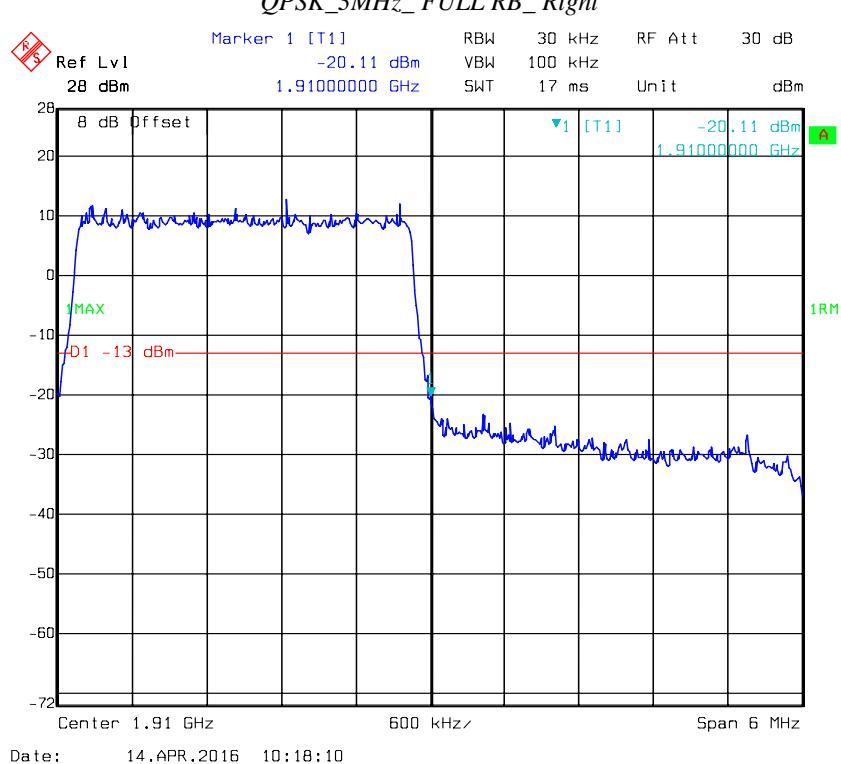
**HSUPA Band V, Left Band Edge**

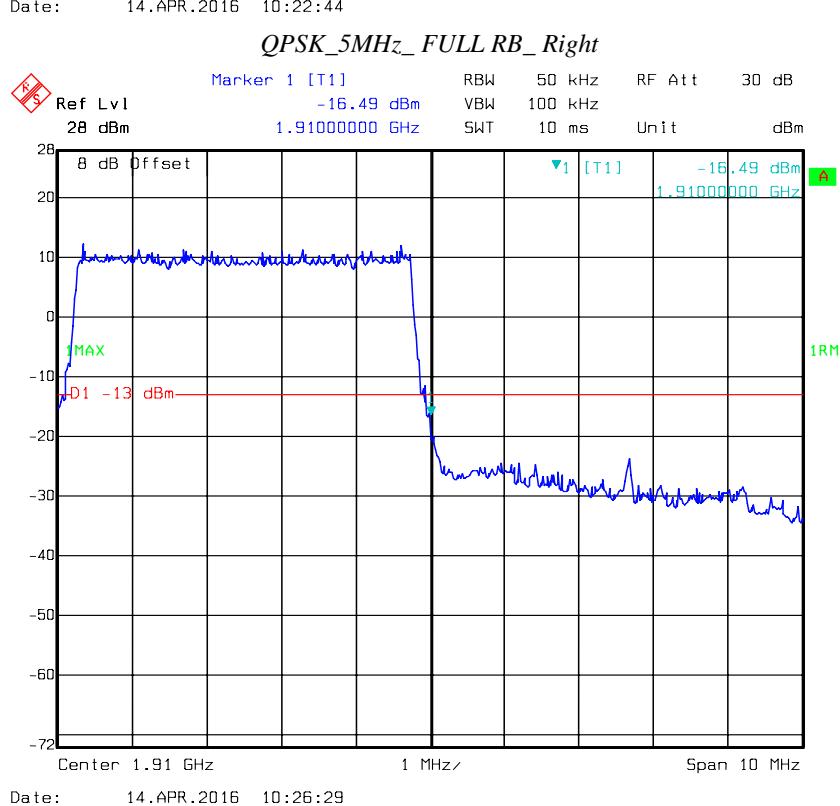
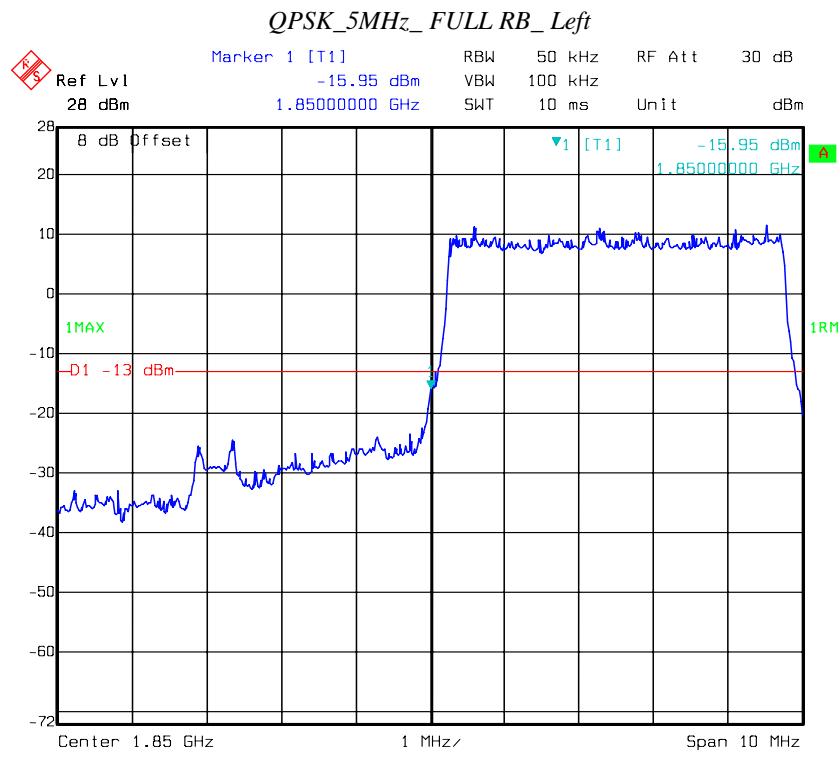
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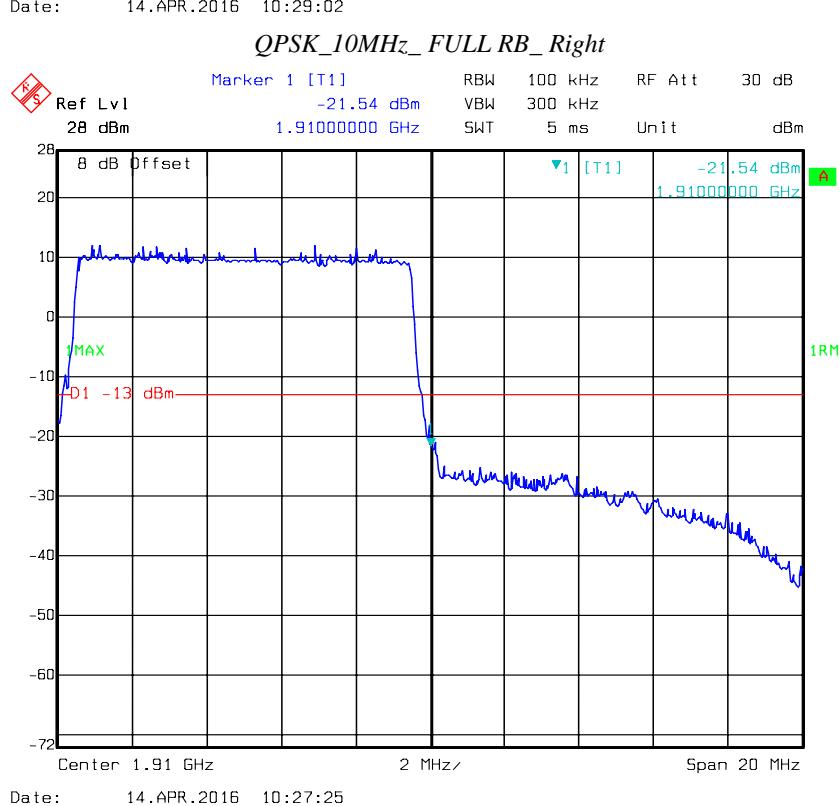
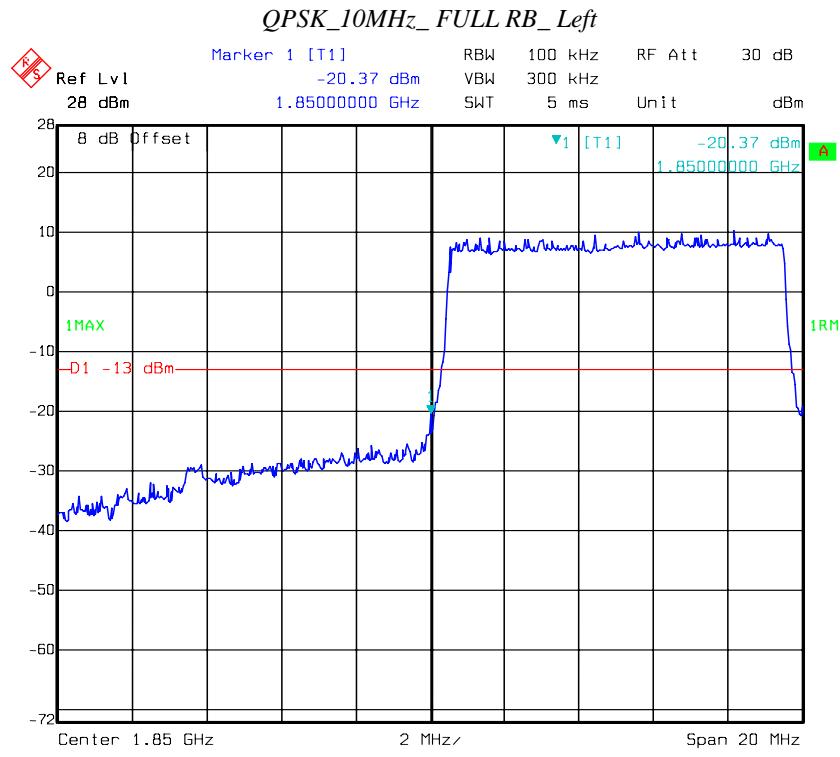
**HSUPA Band V, Right Band Edge**

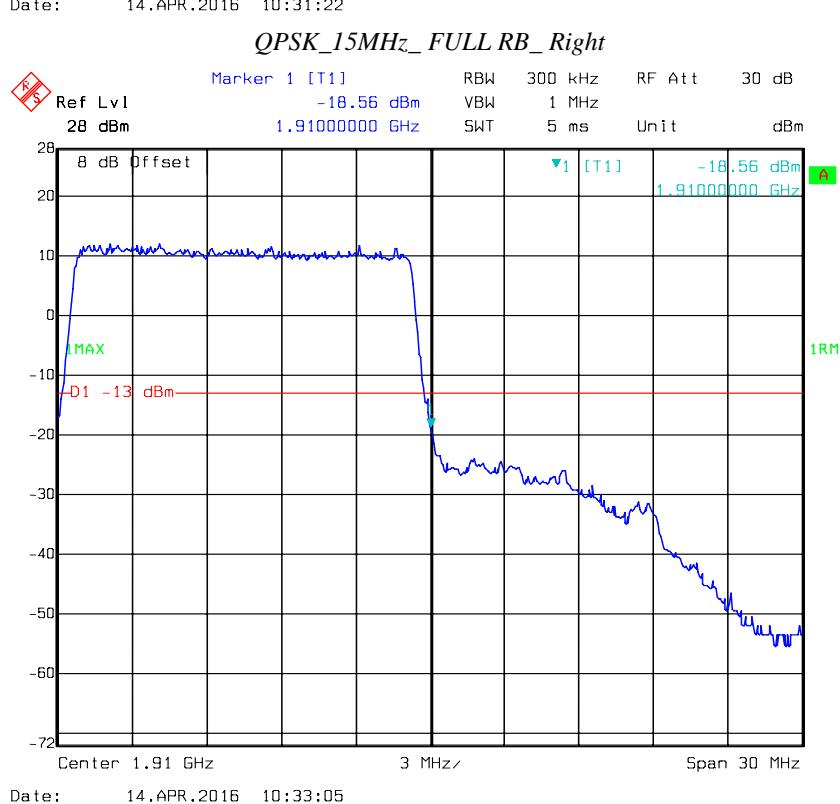
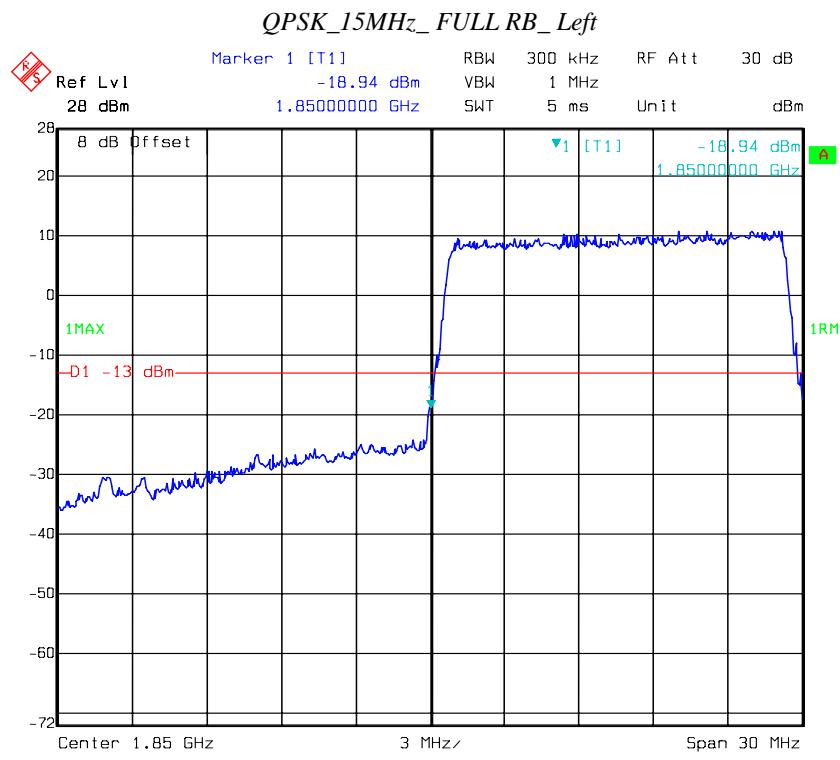
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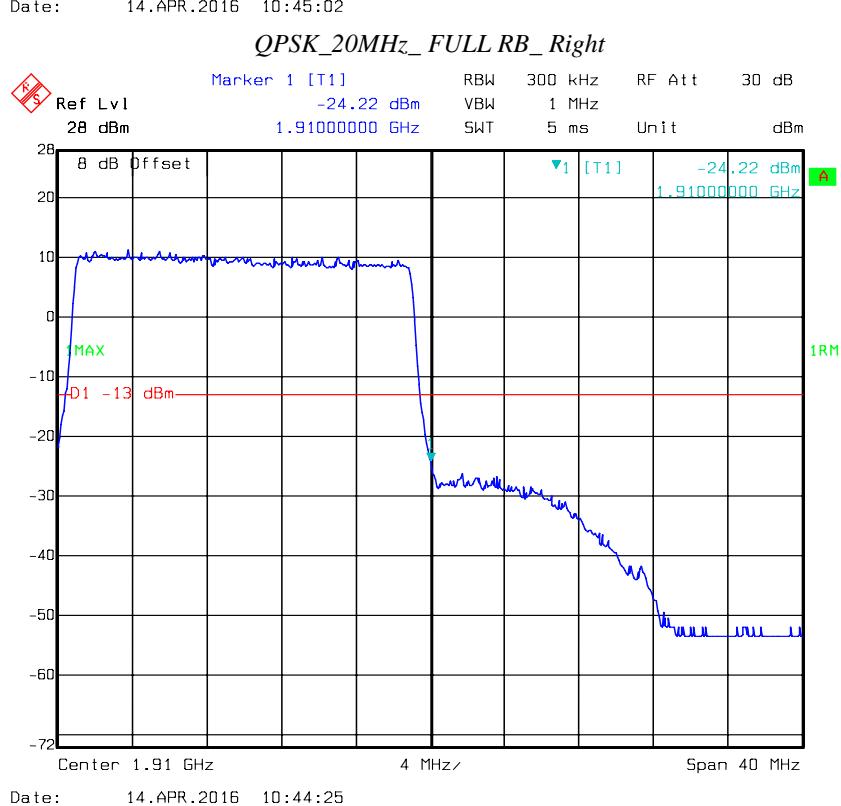
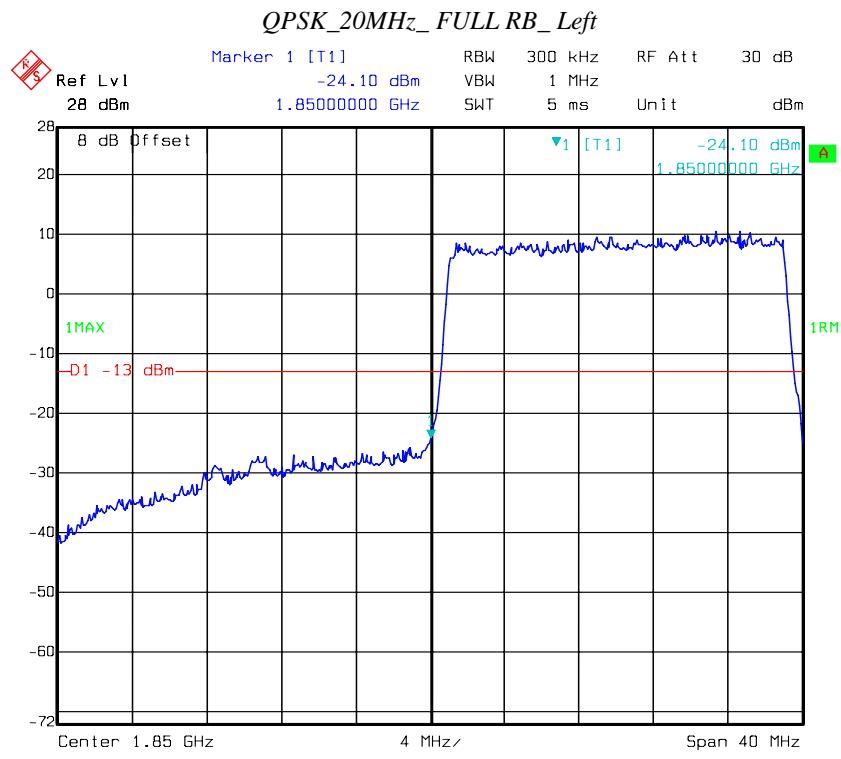
**LTE Band II**

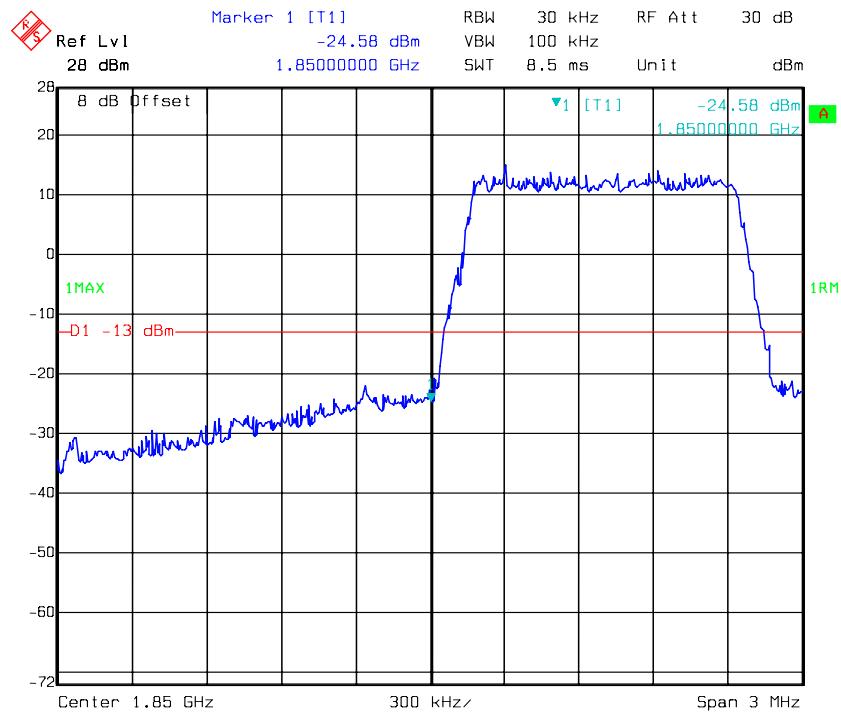
*QPSK\_3MHz\_FULL RB\_Left**QPSK\_3MHz\_FULL RB\_Right*



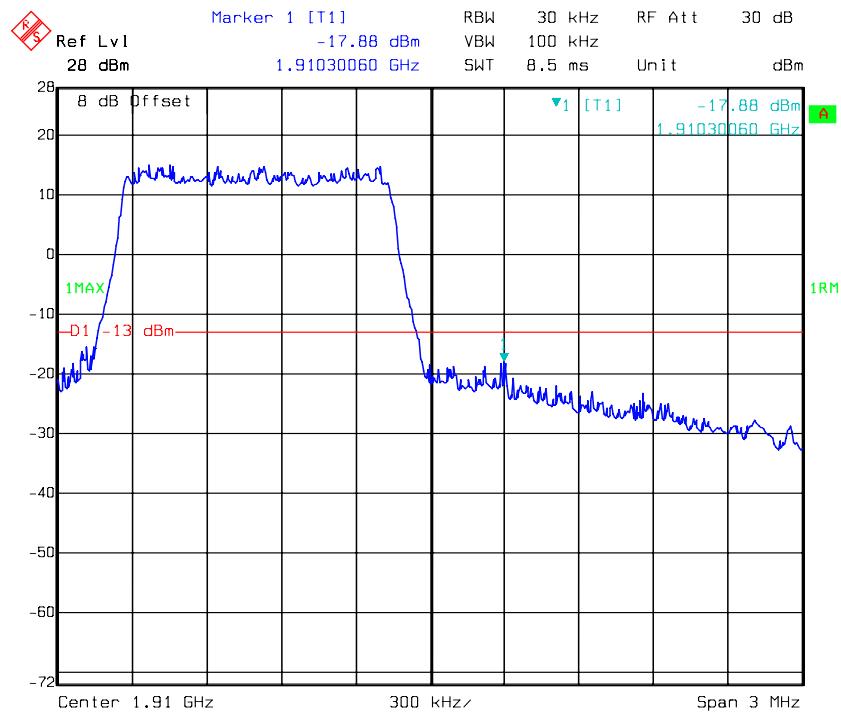




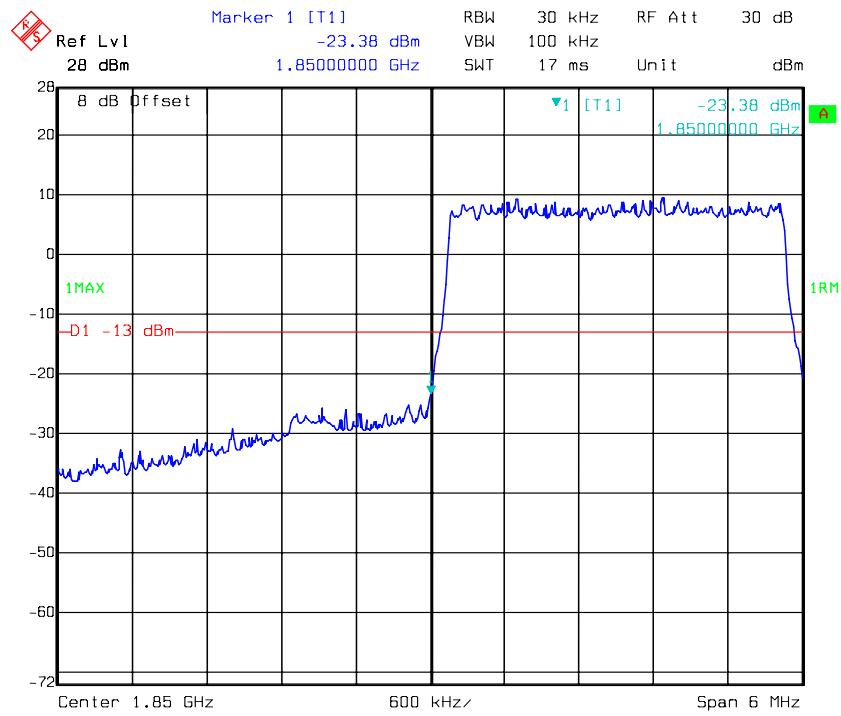


*16QAM\_1.4MHz\_FULL RB\_Left*

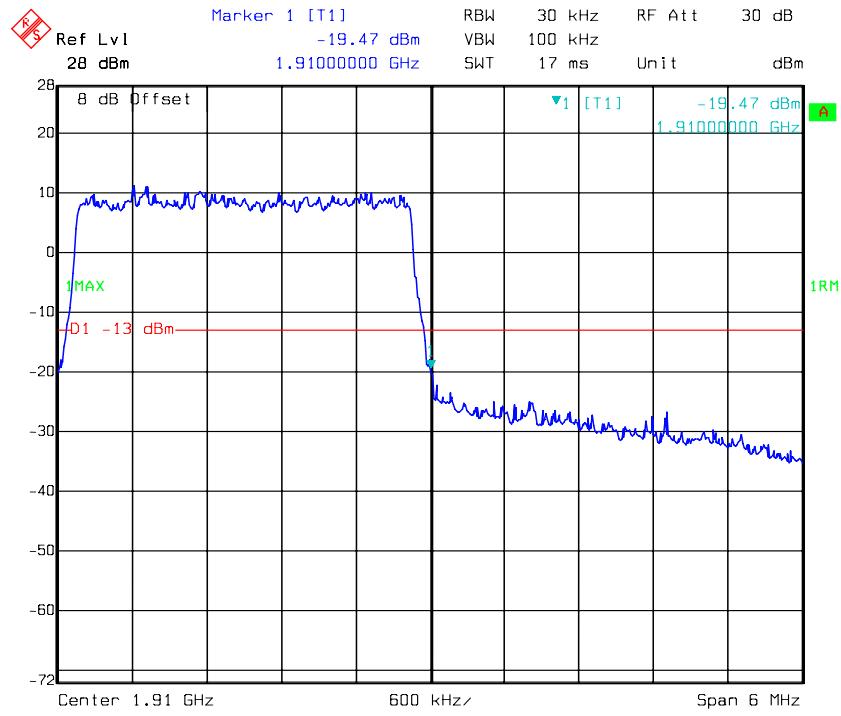
Date: 14.APR.2016 10:15:01

*16QAM\_1.4MHz\_FULL RB\_Right*

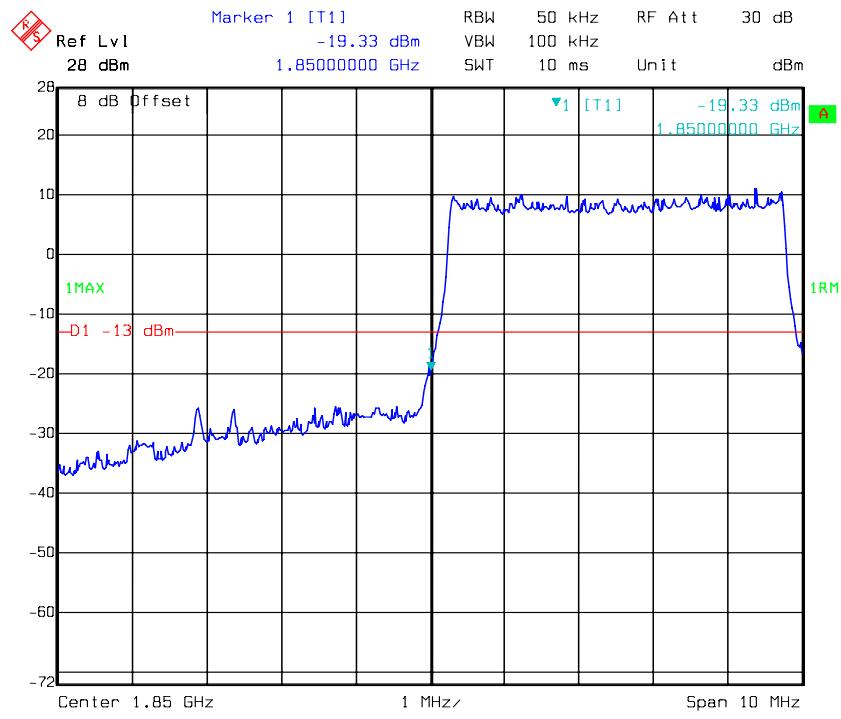
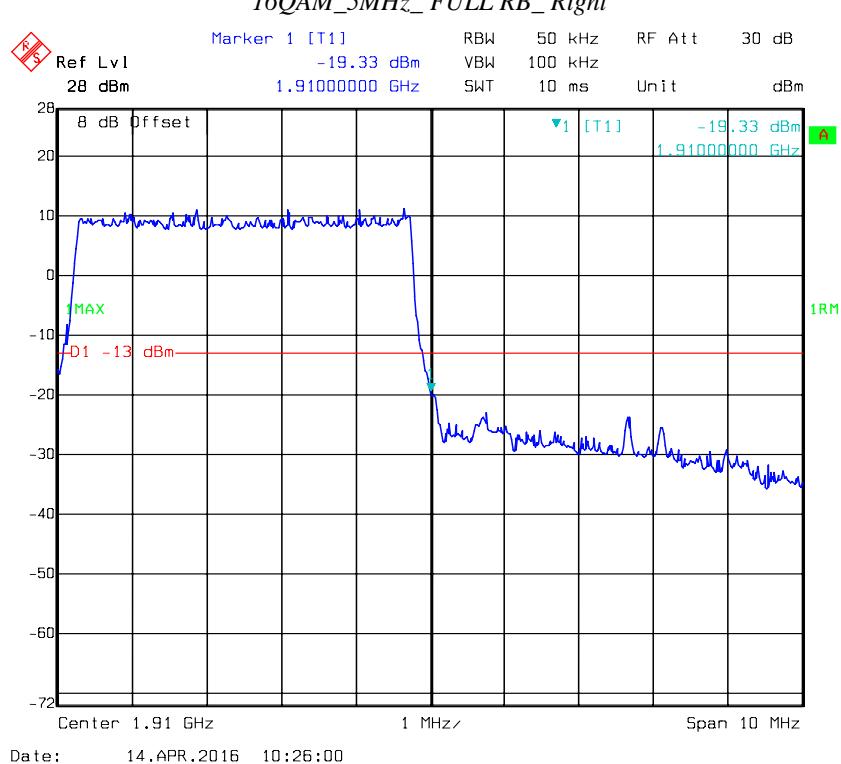
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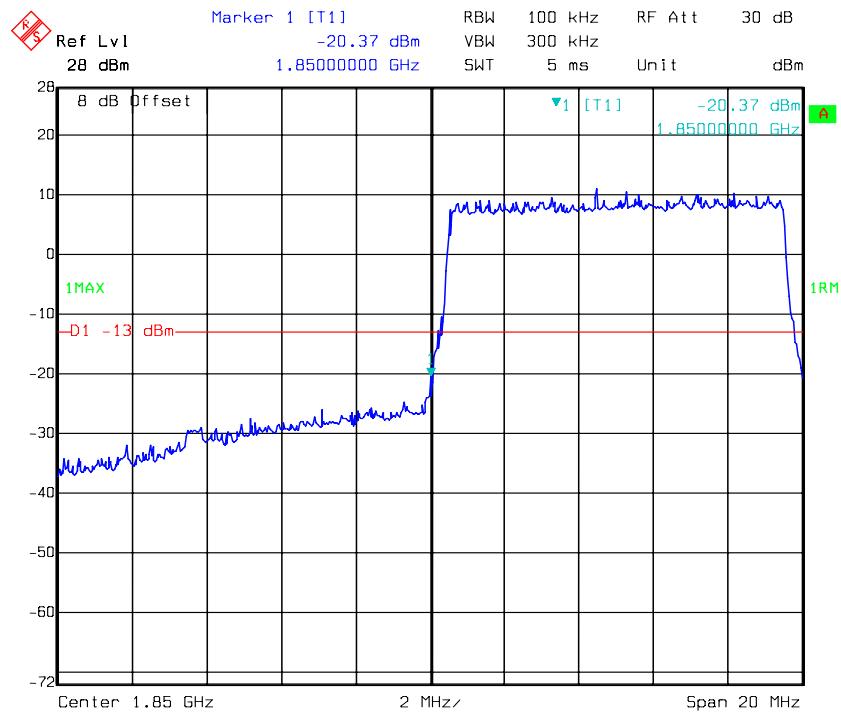
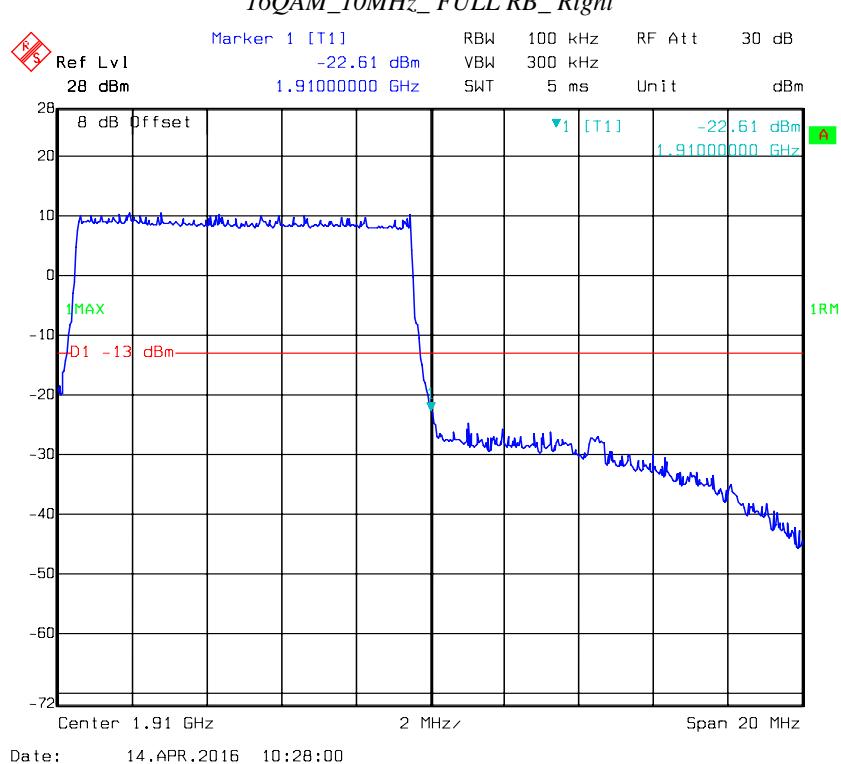
*16QAM\_3MHz\_FULL RB\_Left*

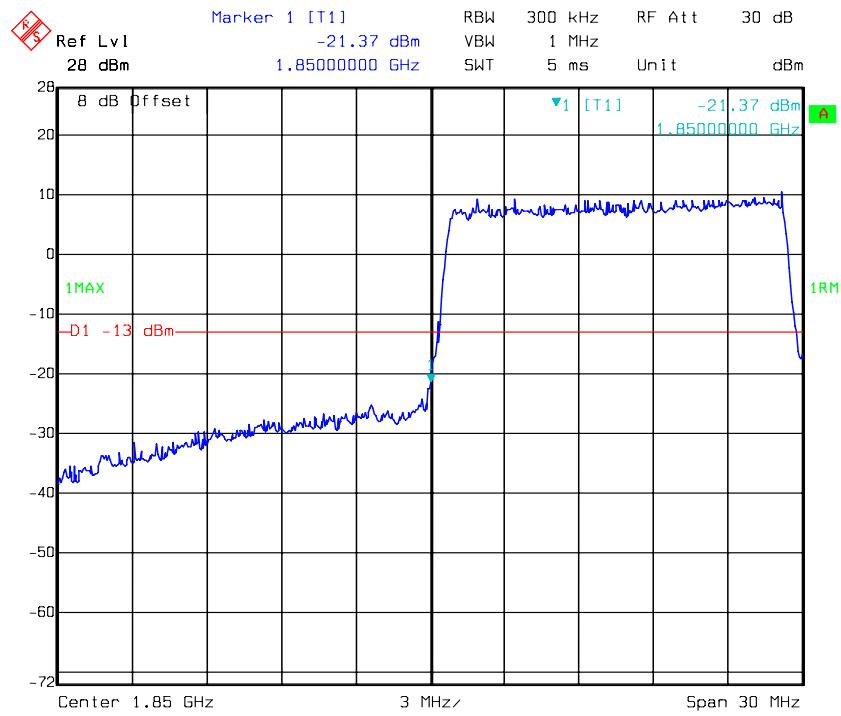
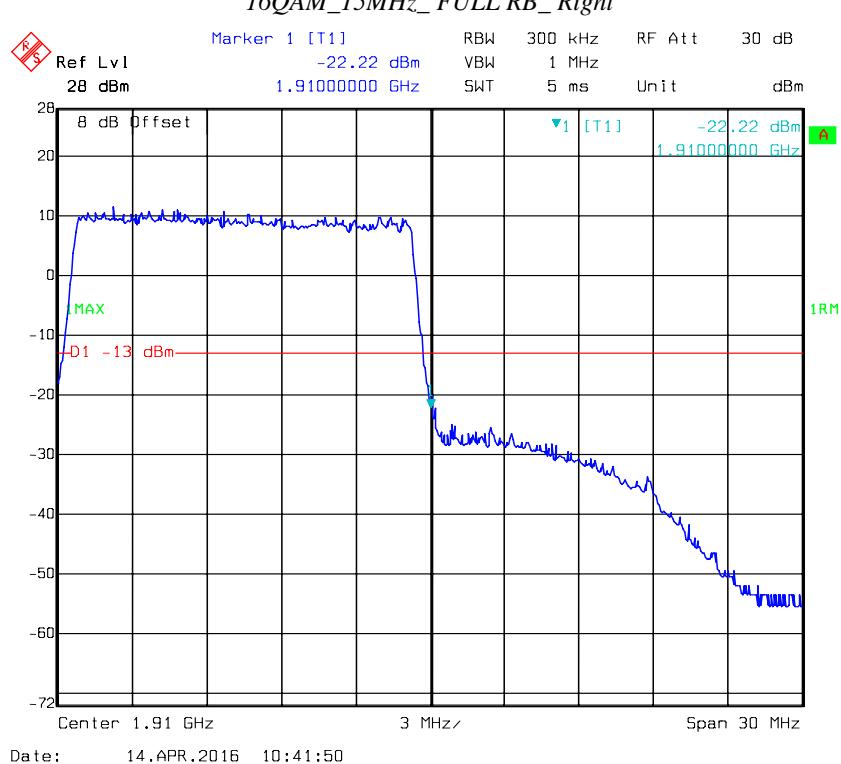
Date: 14.APR.2016 10:20:47

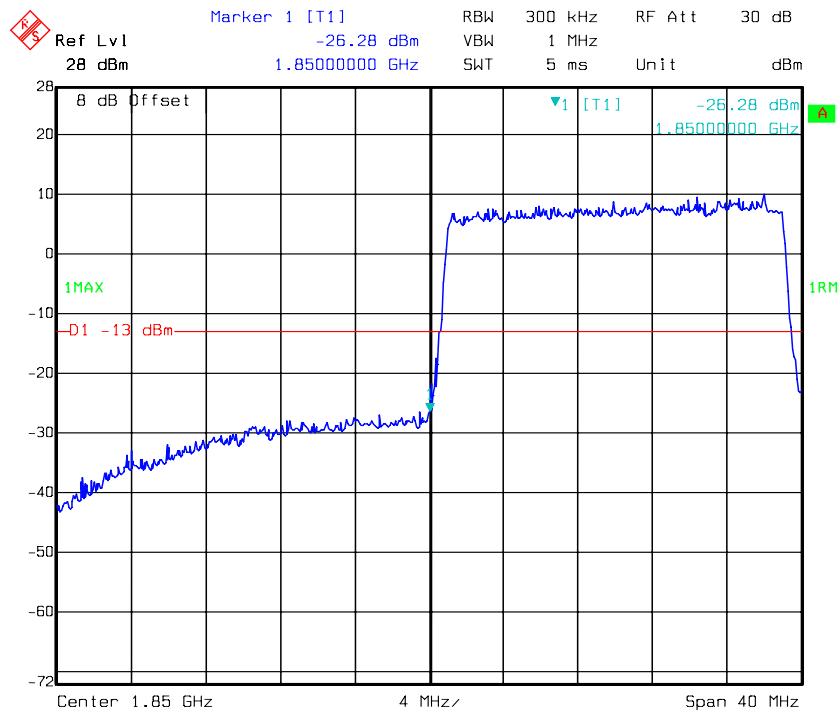
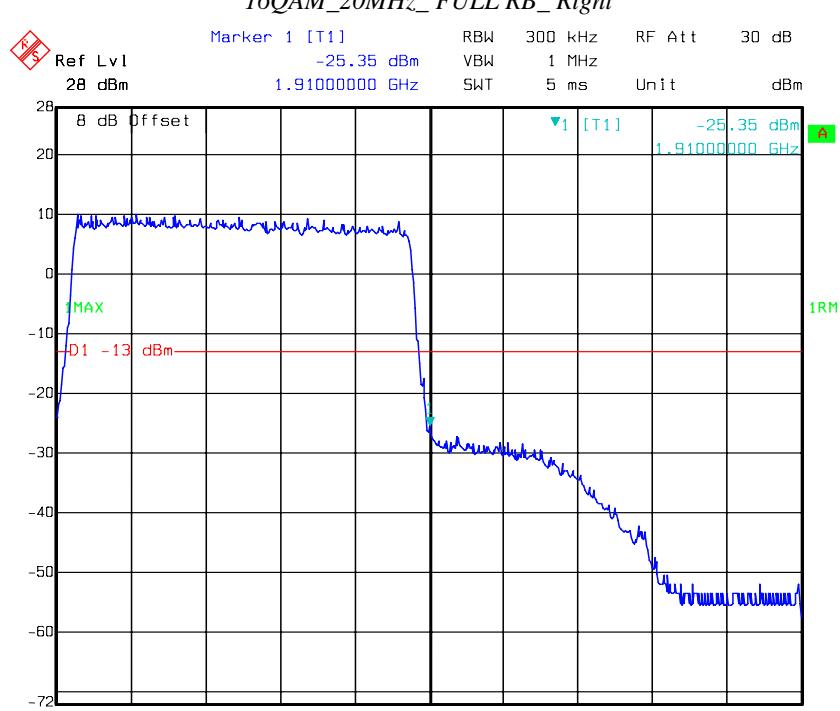
*16QAM\_3M\_FULL RB\_Right*

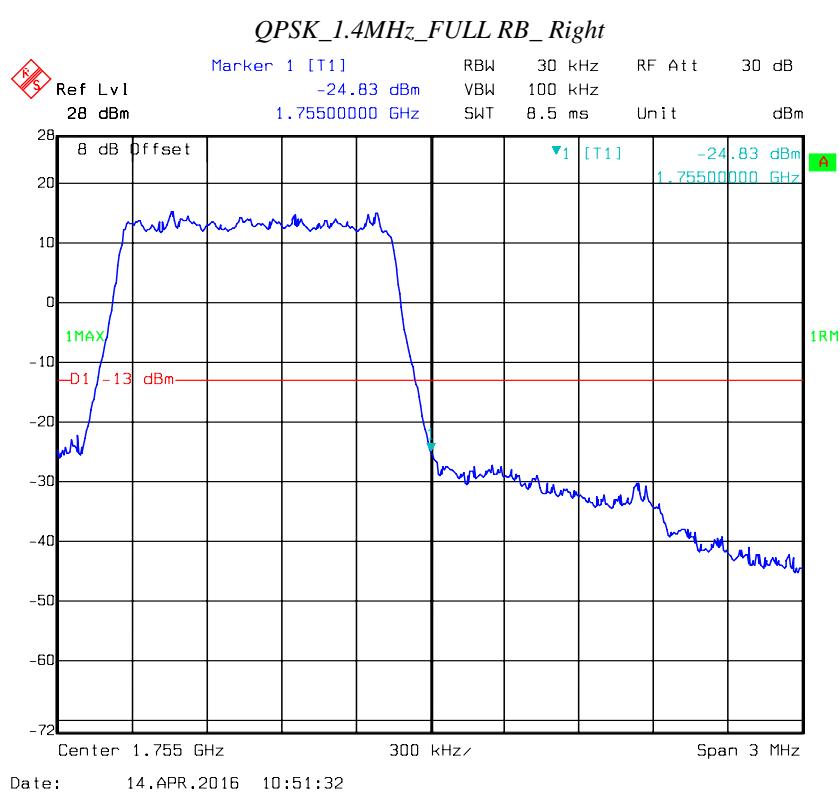
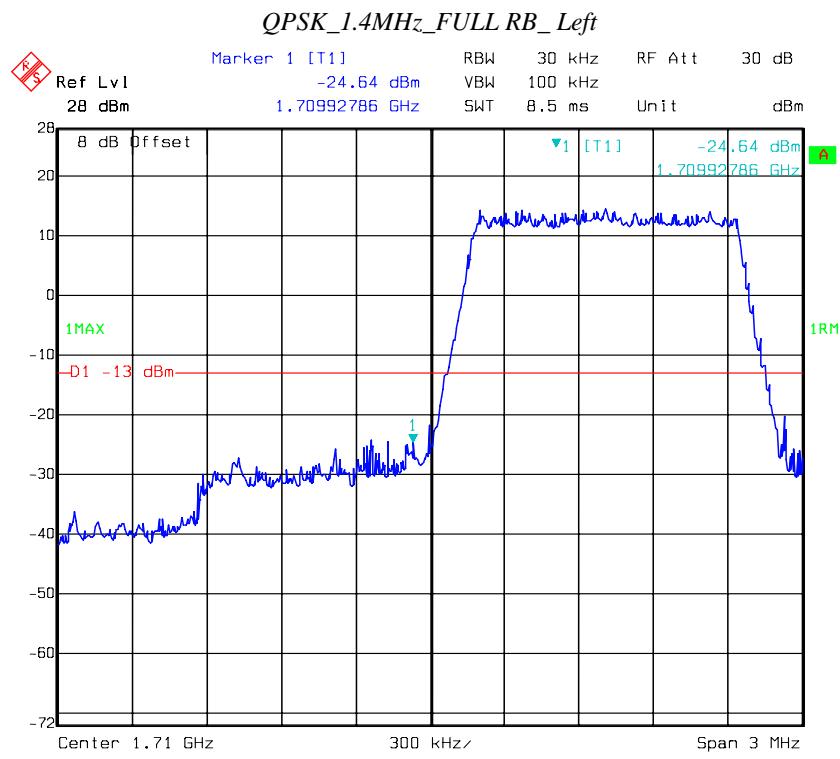
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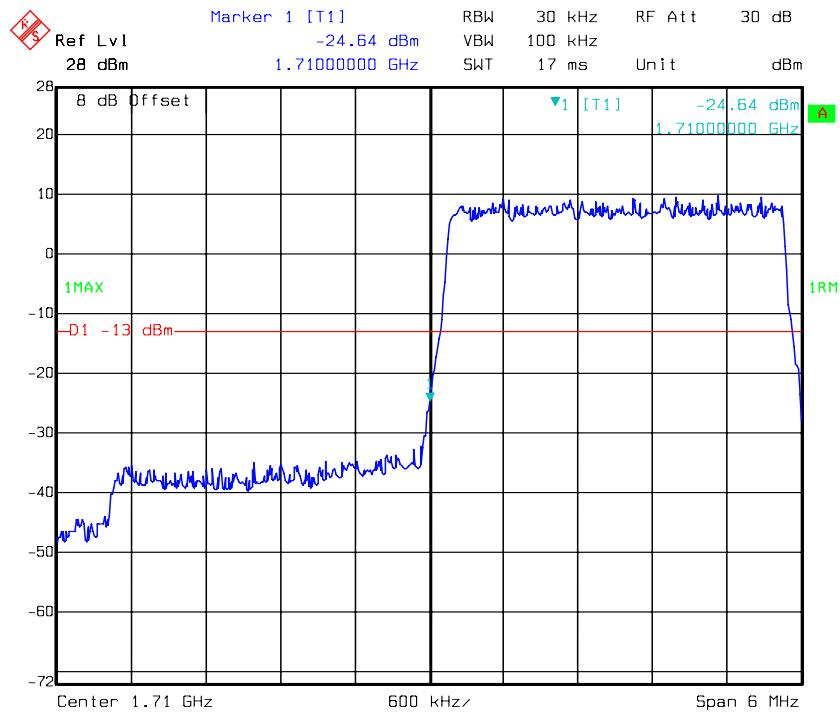
**16QAM\_5MHz\_FULL RB\_Left****16QAM\_5MHz\_FULL RB\_Right**

*16QAM\_10MHz\_FULL RB\_Left**16QAM\_10MHz\_FULL RB\_Right*

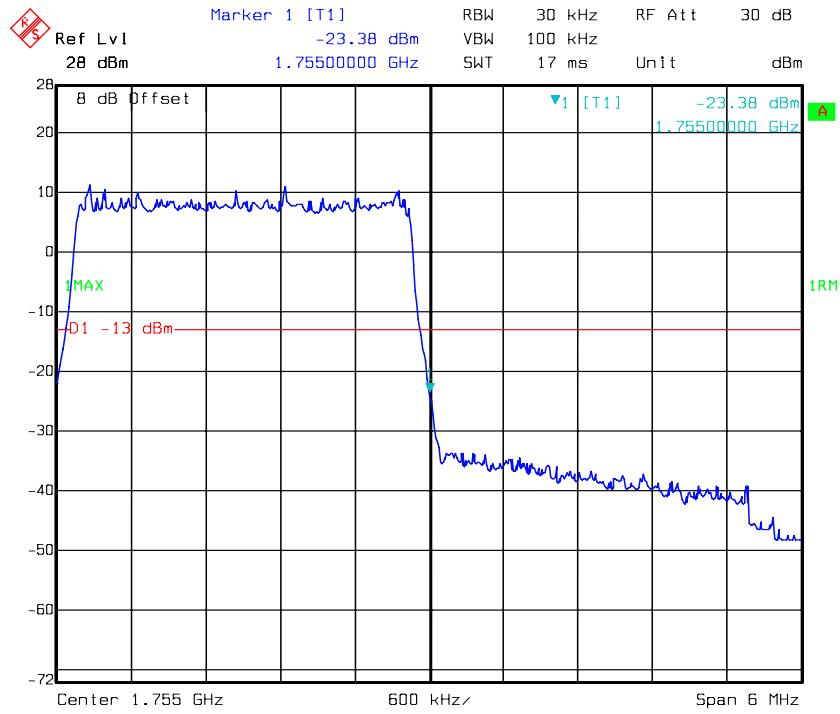
*16QAM\_15MHz\_FULL RB\_Left**16QAM\_15MHz\_FULL RB\_Right*

*16QAM\_20MHz\_FULL RB\_Left**16QAM\_20MHz\_FULL RB\_Right*

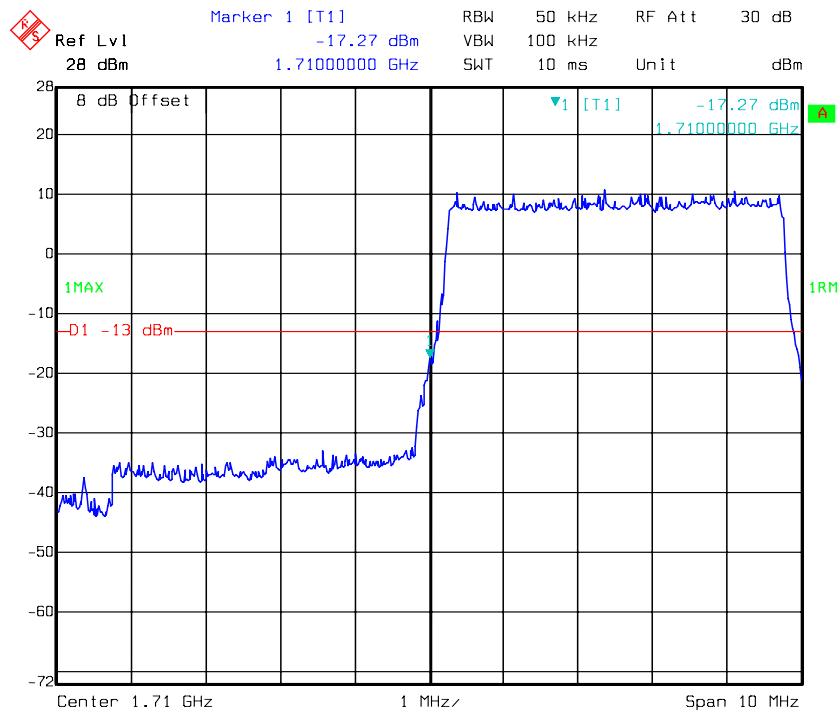
**LTE Band IV**

*QPSK\_3MHz\_FULL RB\_Left*

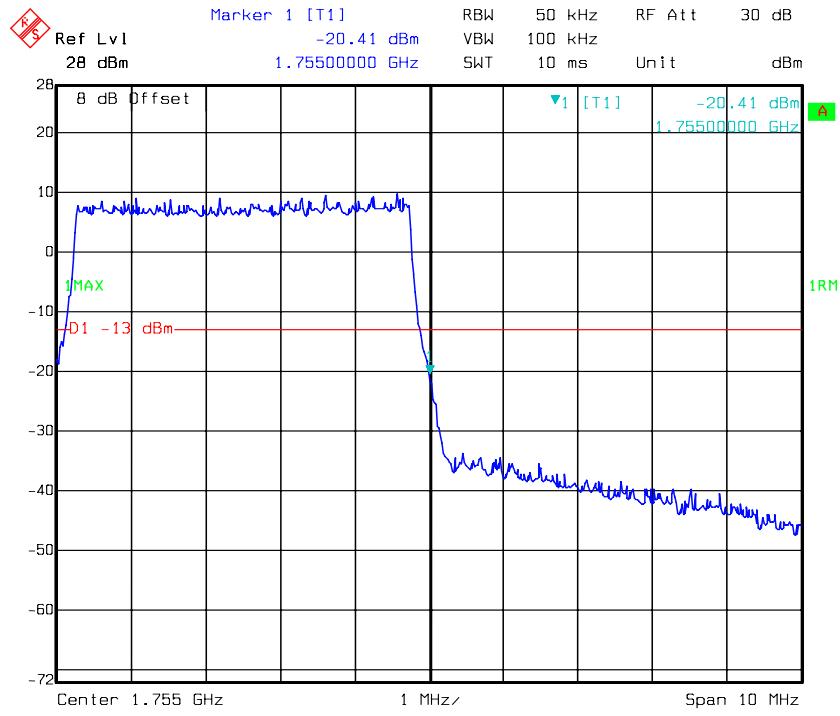
Date: 14.APR.2016 10:56:36

*QPSK\_3MHz\_FULL RB\_Right*

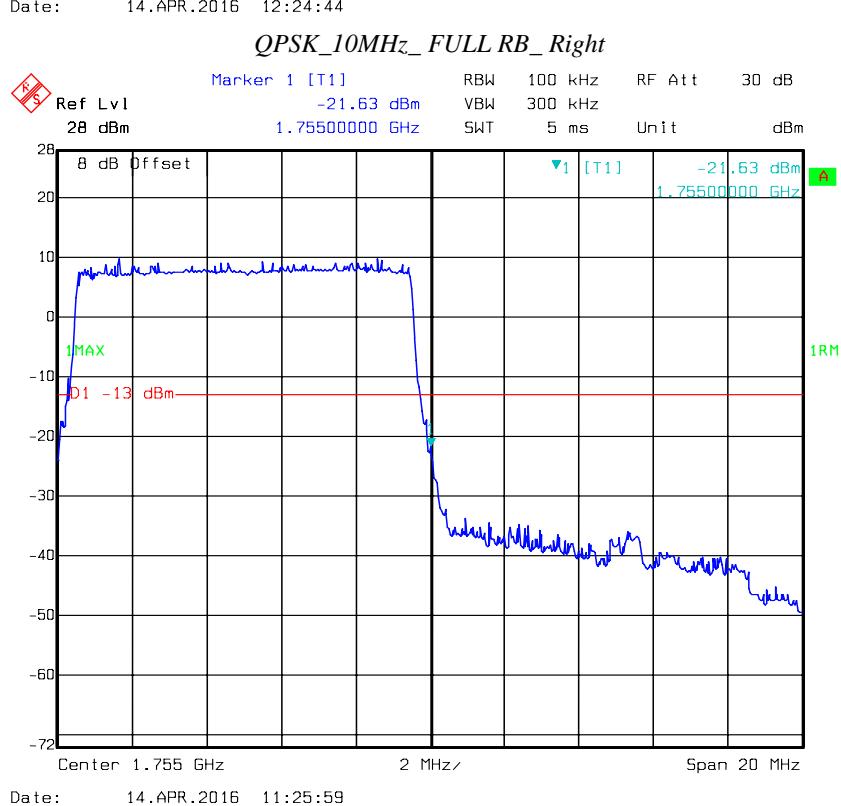
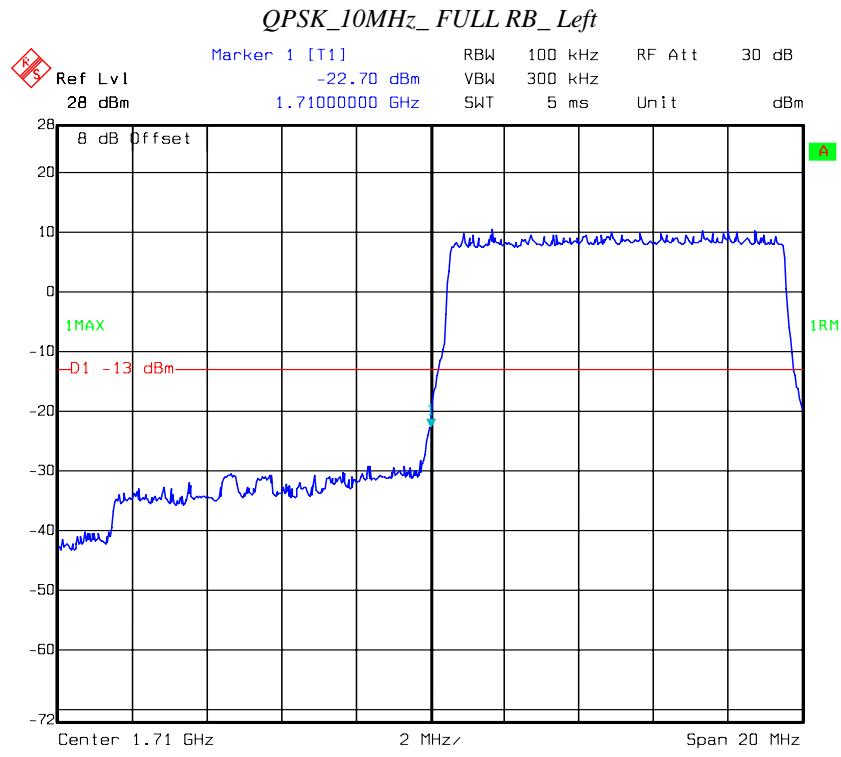
Date: 14.APR.2016 10:53:59

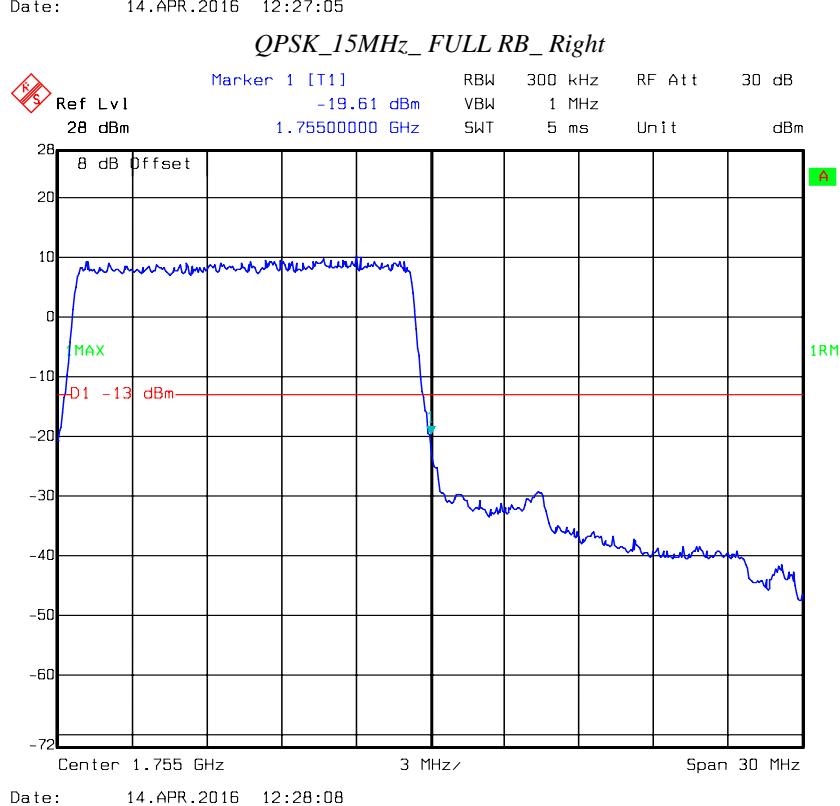
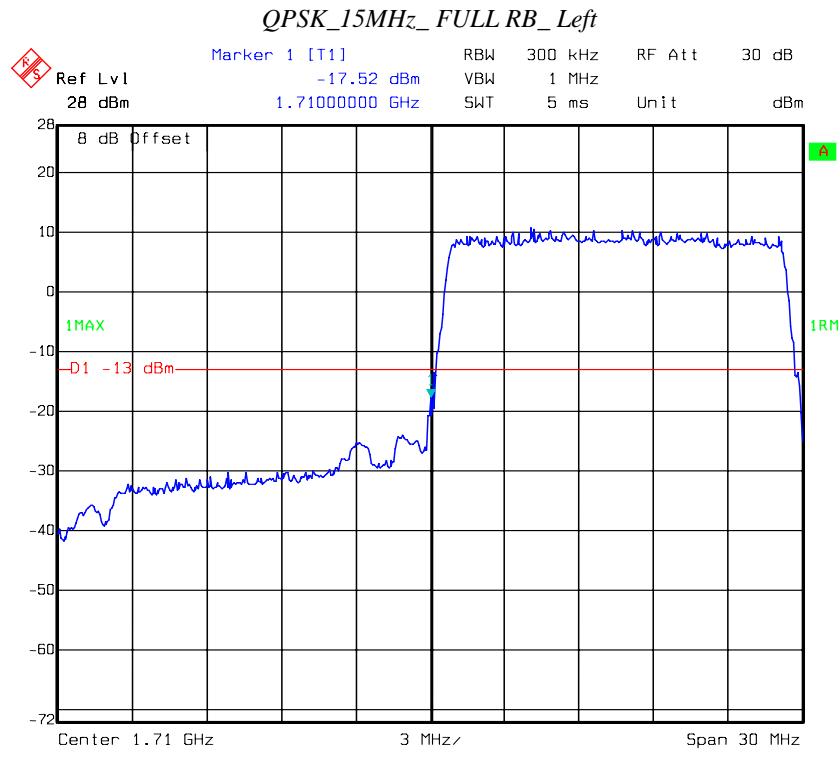
*QPSK\_5MHz\_FULL RB\_Left*

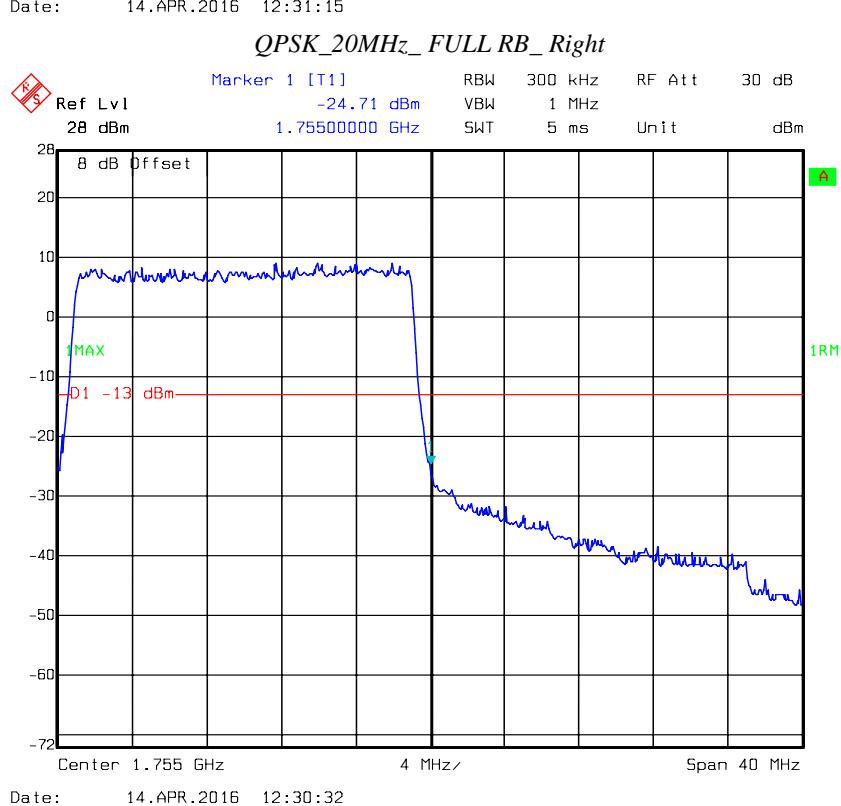
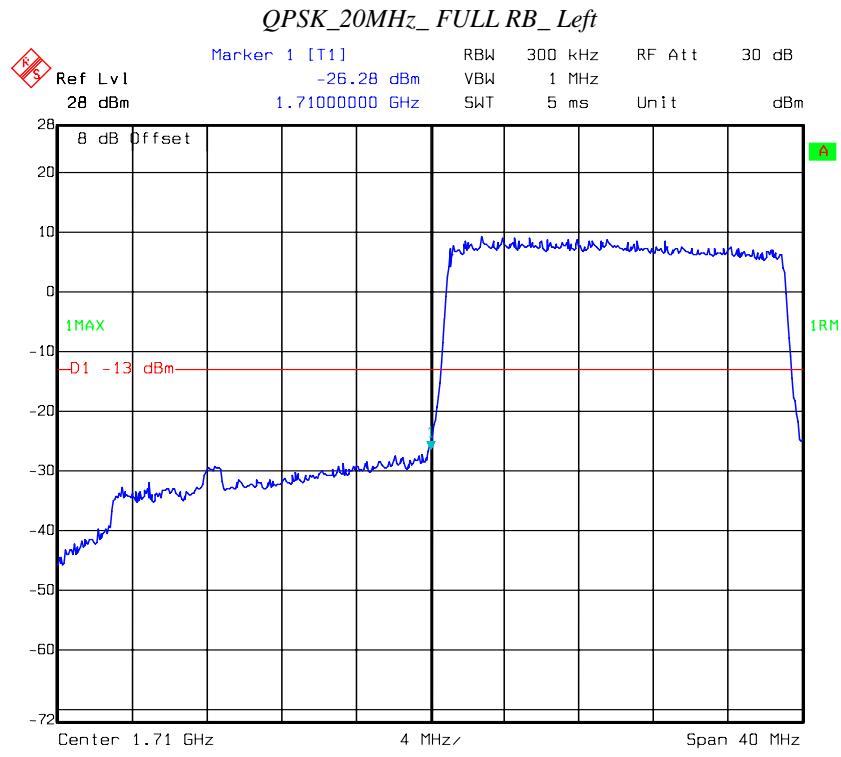
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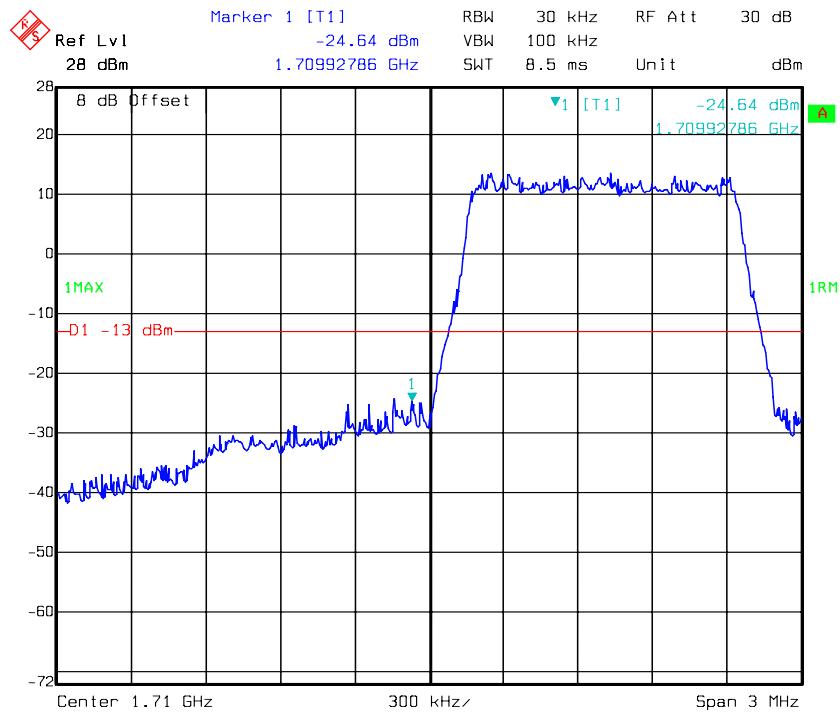
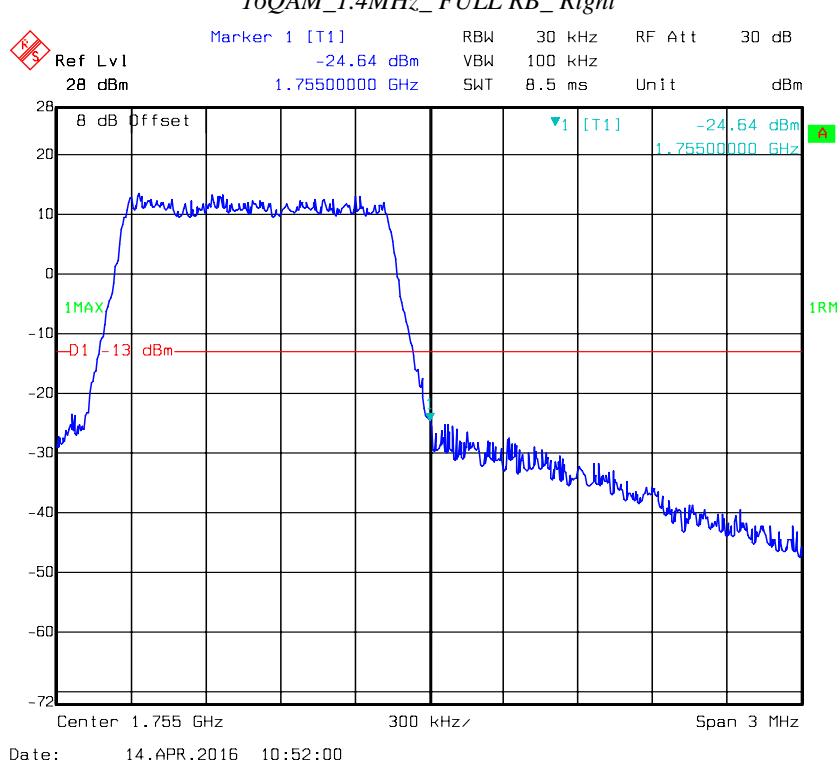
*QPSK\_5MHz\_FULL RB\_Right*

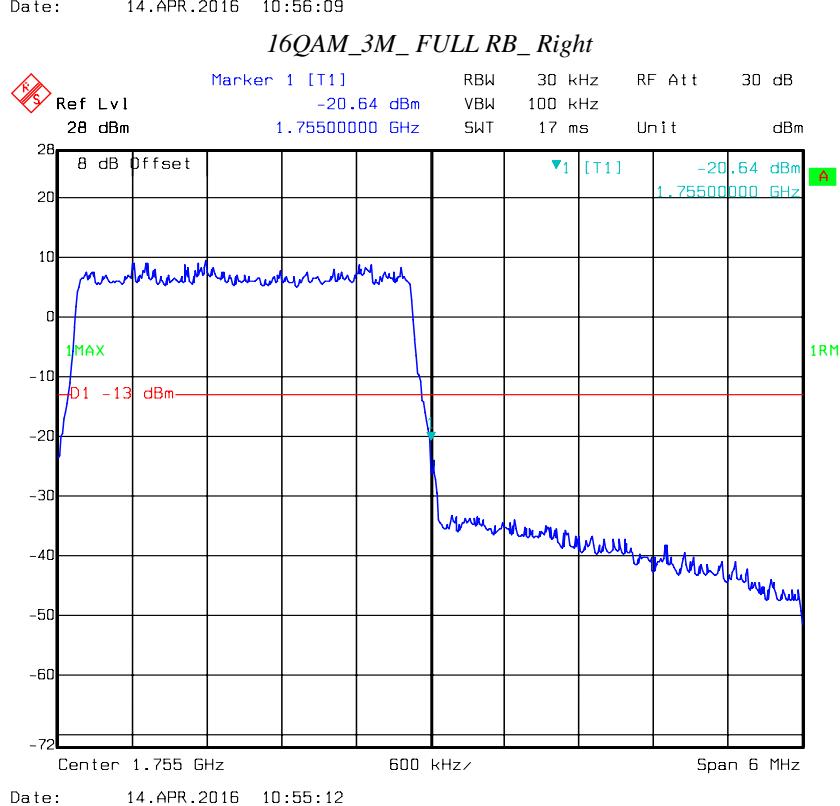
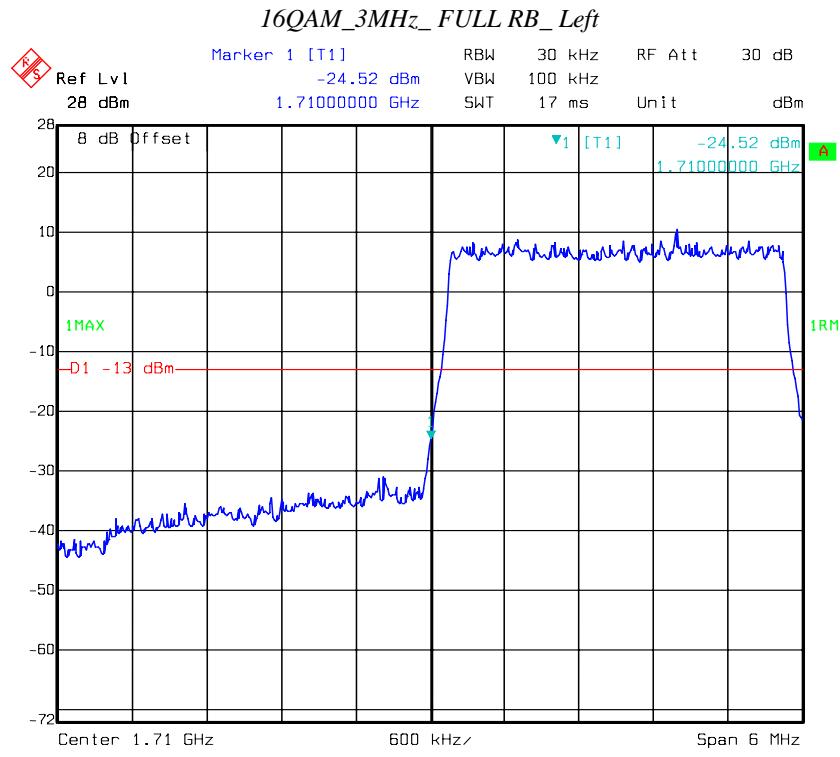
Date: 14.APR.2016 11:10:27

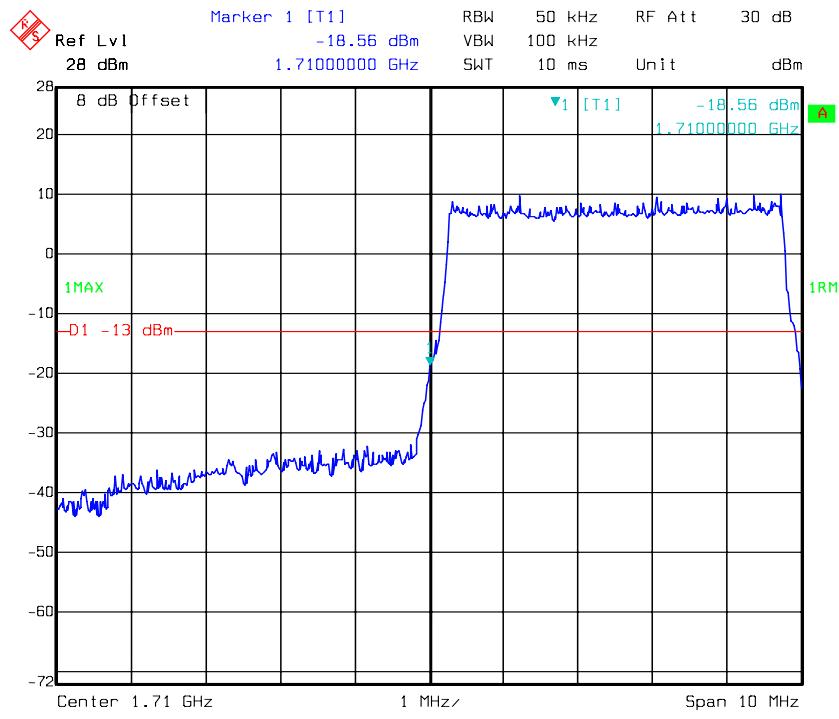
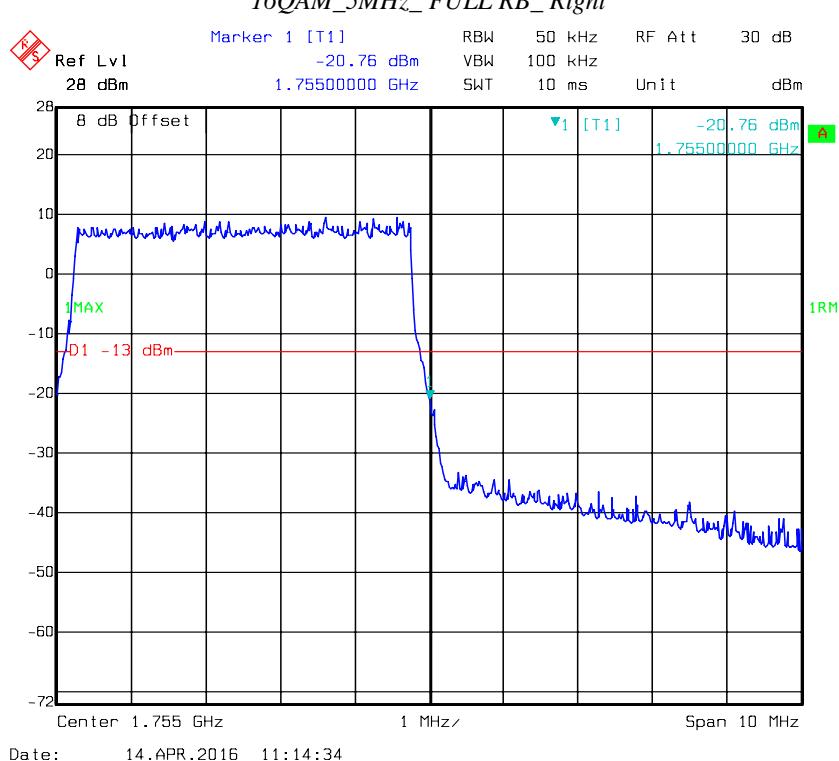


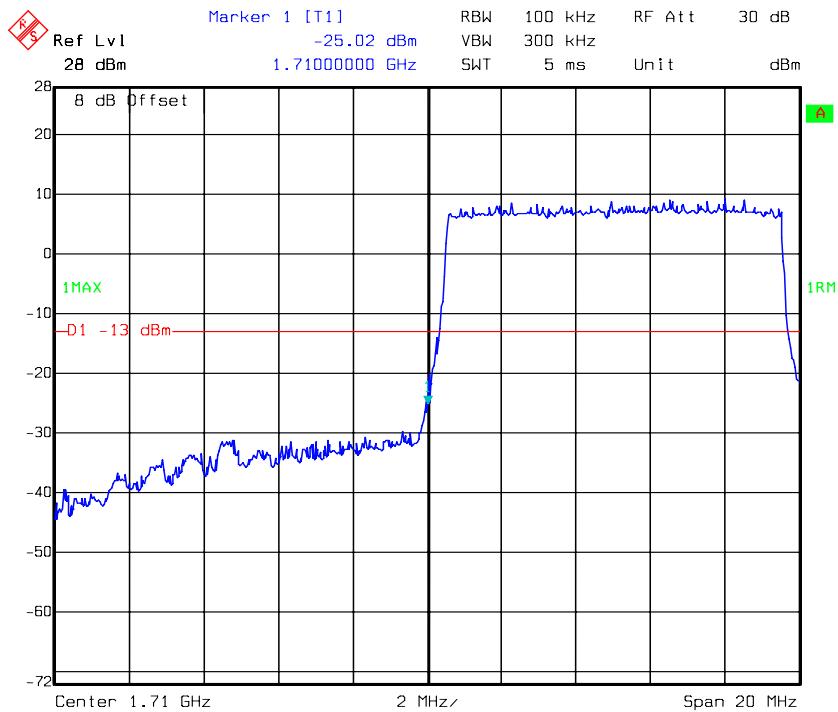
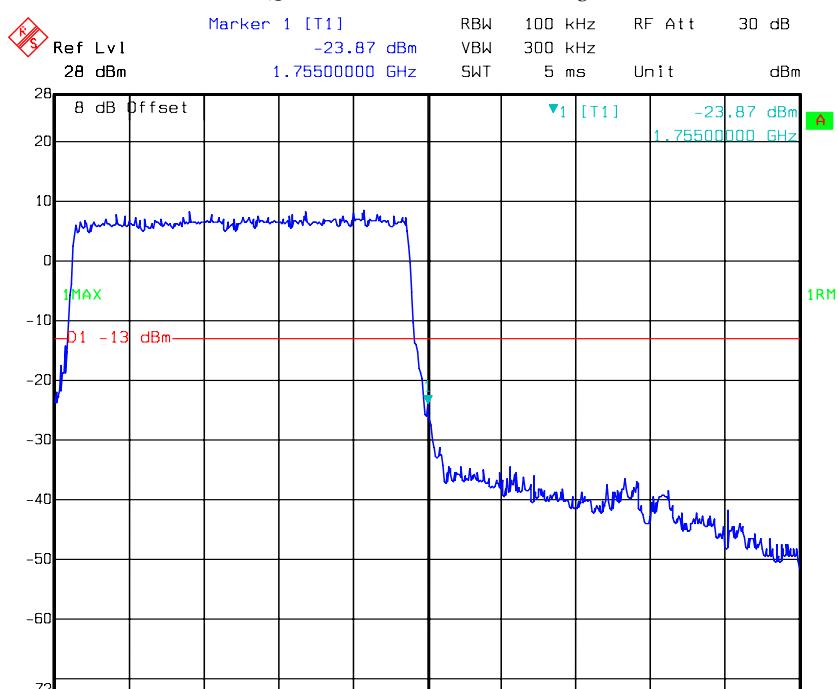


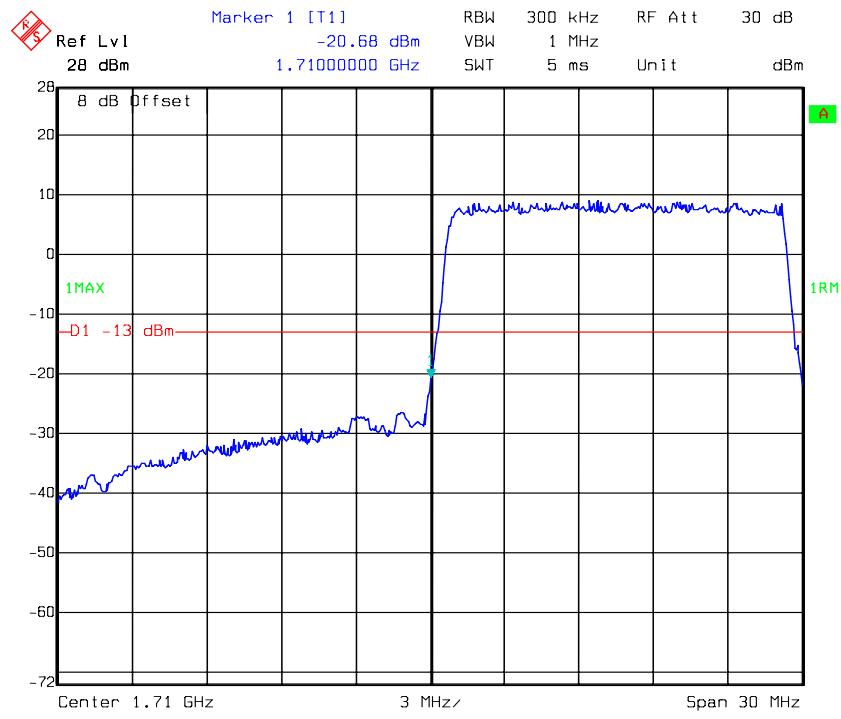
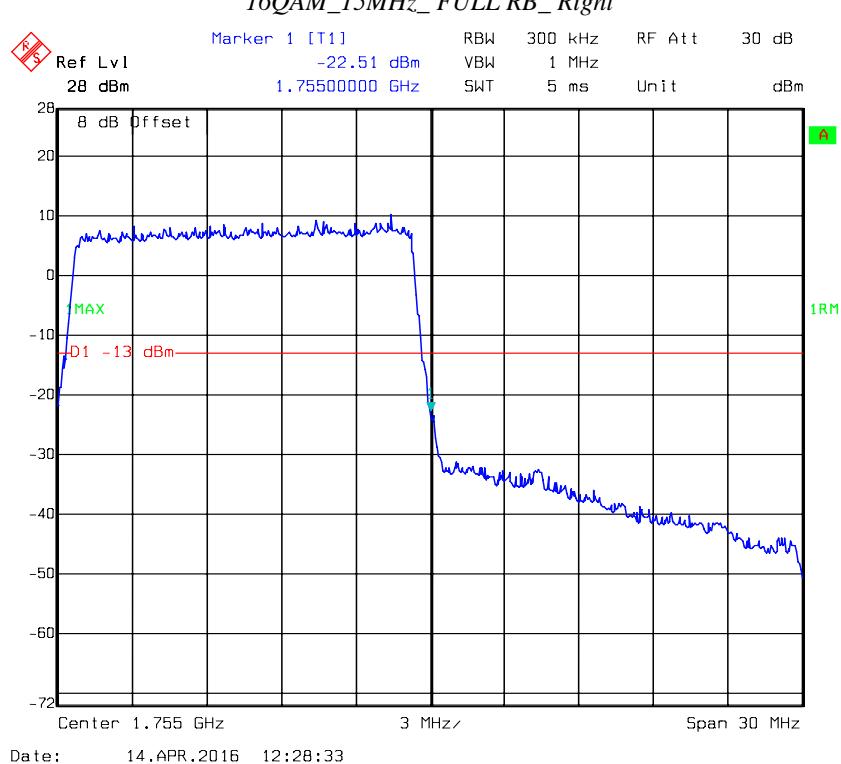


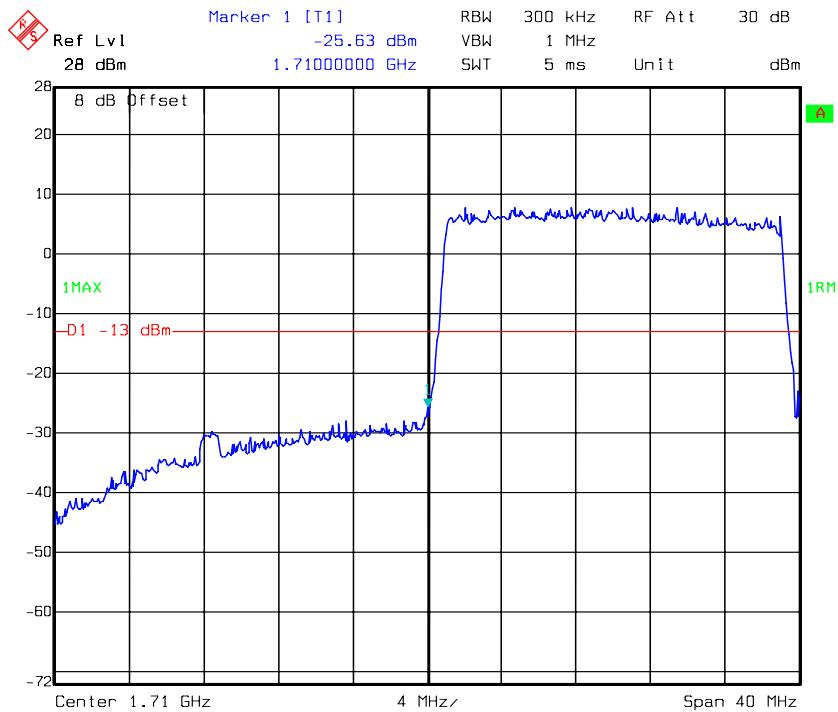
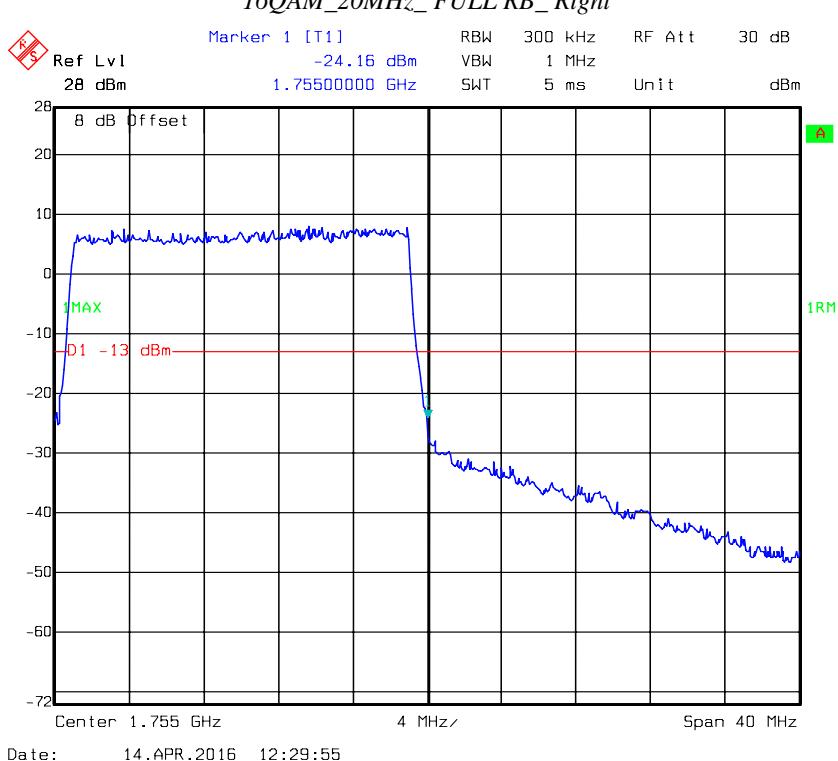
*16QAM\_1.4MHz\_FULL RB\_Left**16QAM\_1.4MHz\_FULL RB\_Right*

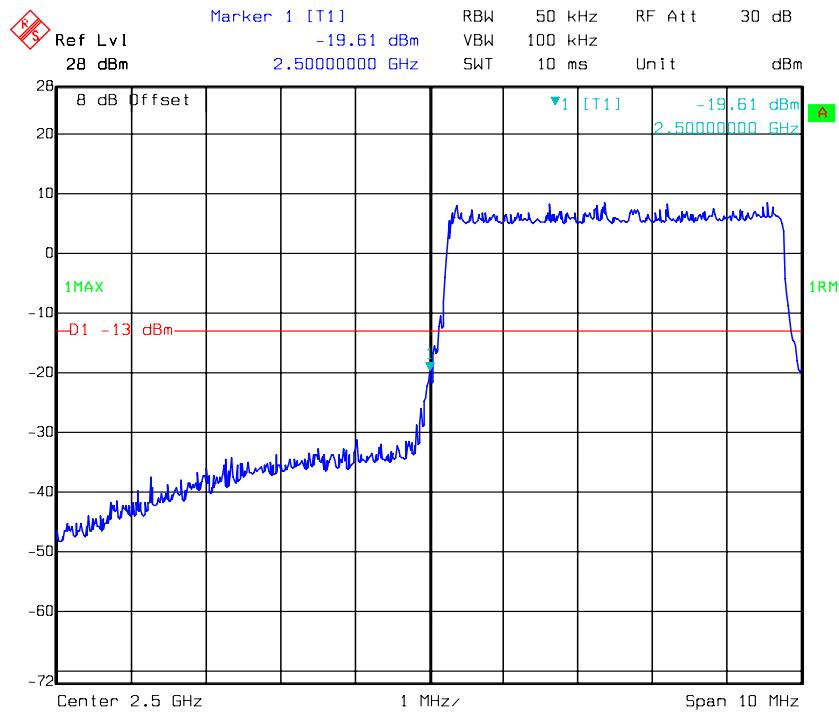


*16QAM\_5MHz\_FULL RB\_Left**16QAM\_5MHz\_FULL RB\_Right*

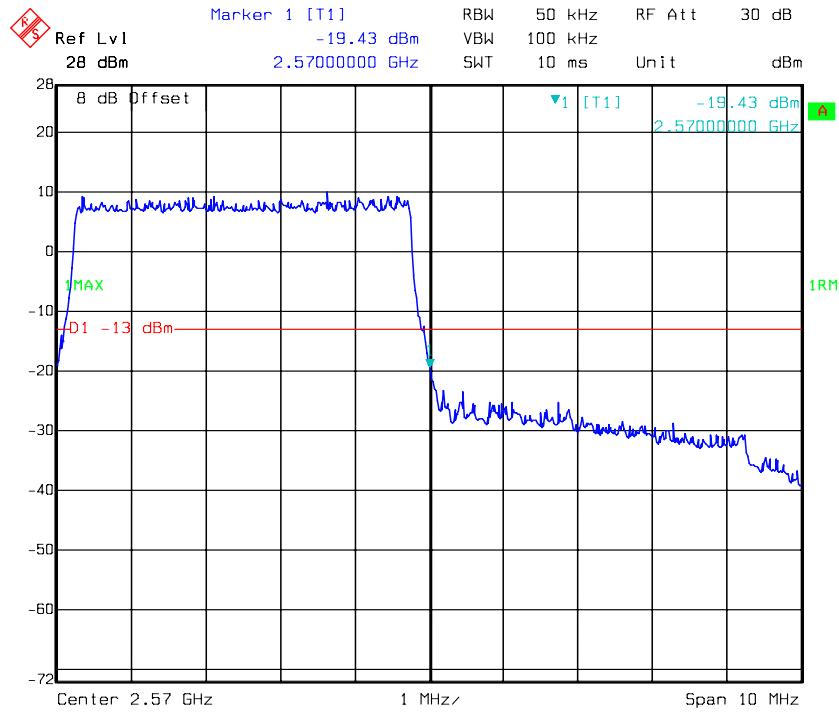
*16QAM\_10MHz\_FULL RB\_Left**16QAM\_10MHz\_FULL RB\_Right*

*16QAM\_15MHz\_FULL RB\_Left**16QAM\_15MHz\_FULL RB\_Right*

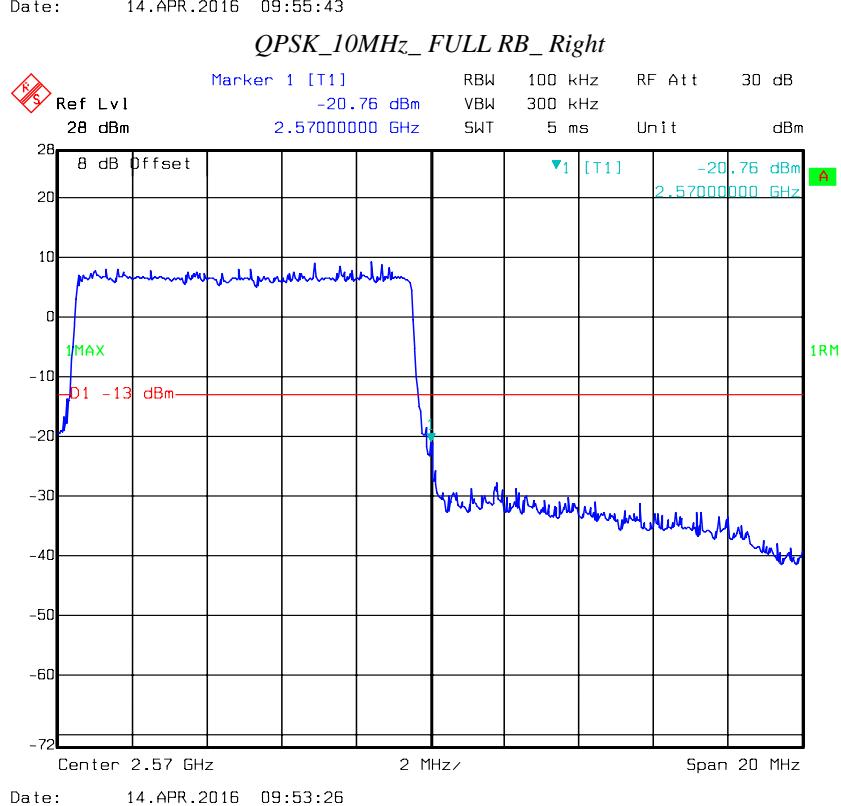
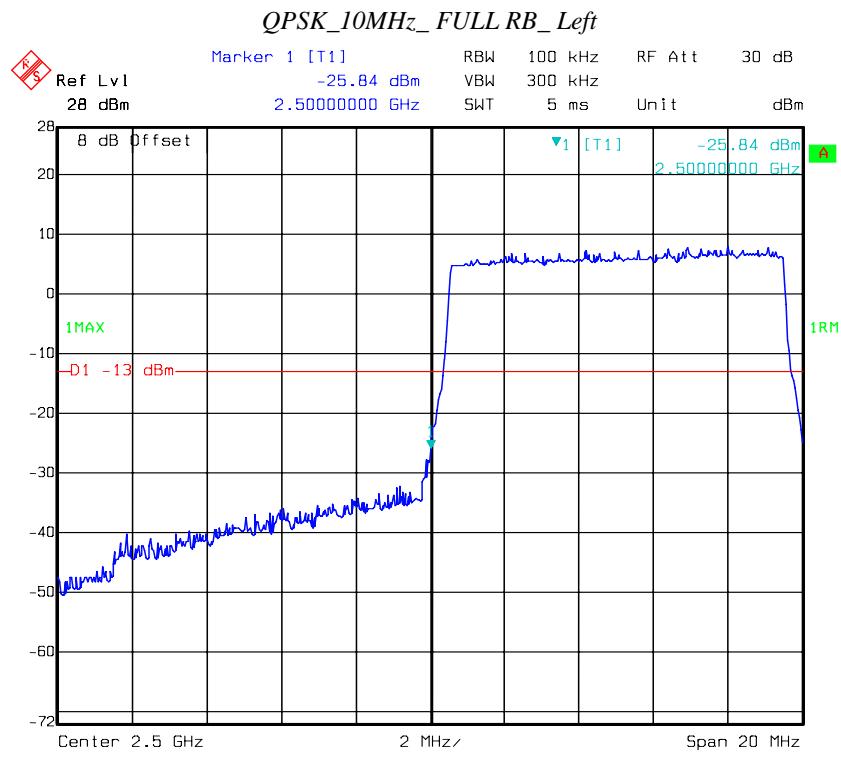
*16QAM\_20MHz\_FULL RB\_Left**16QAM\_20MHz\_FULL RB\_Right*

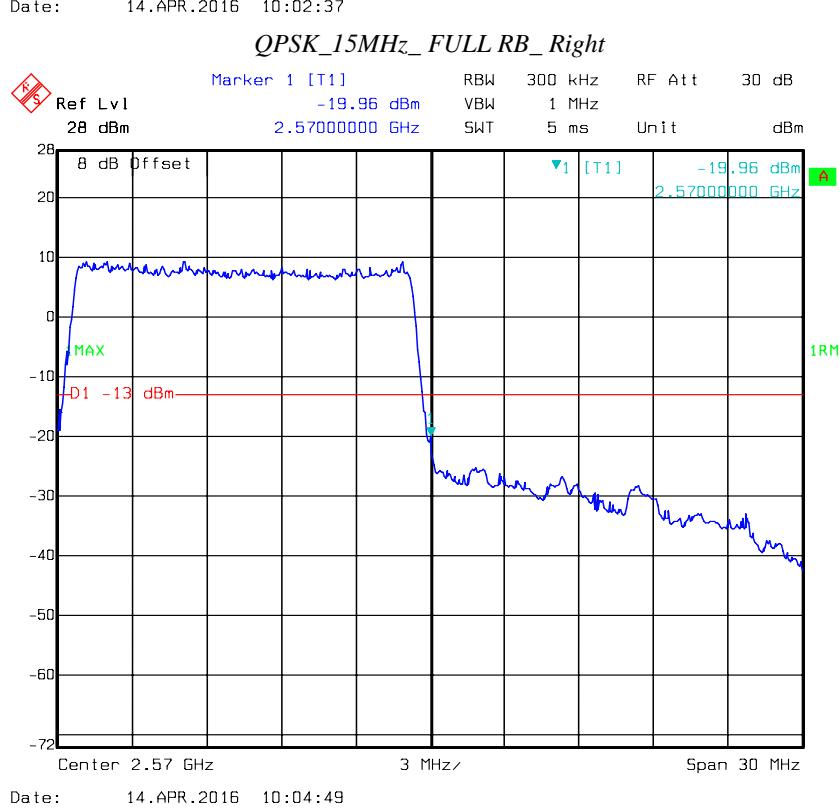
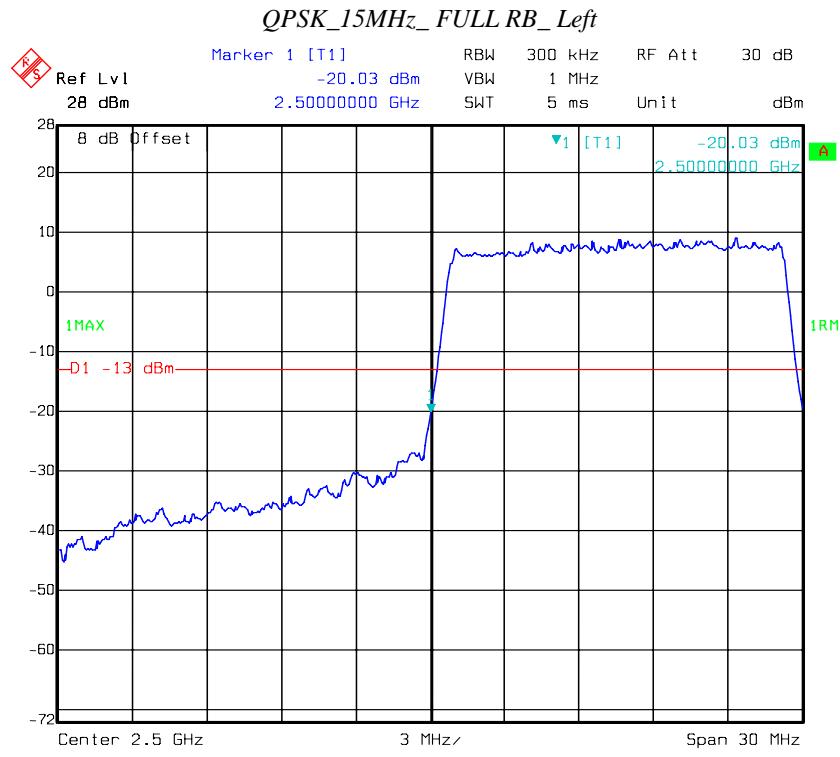
**LTE Band VII***QPSK\_5MHz\_FULL RB\_Left*

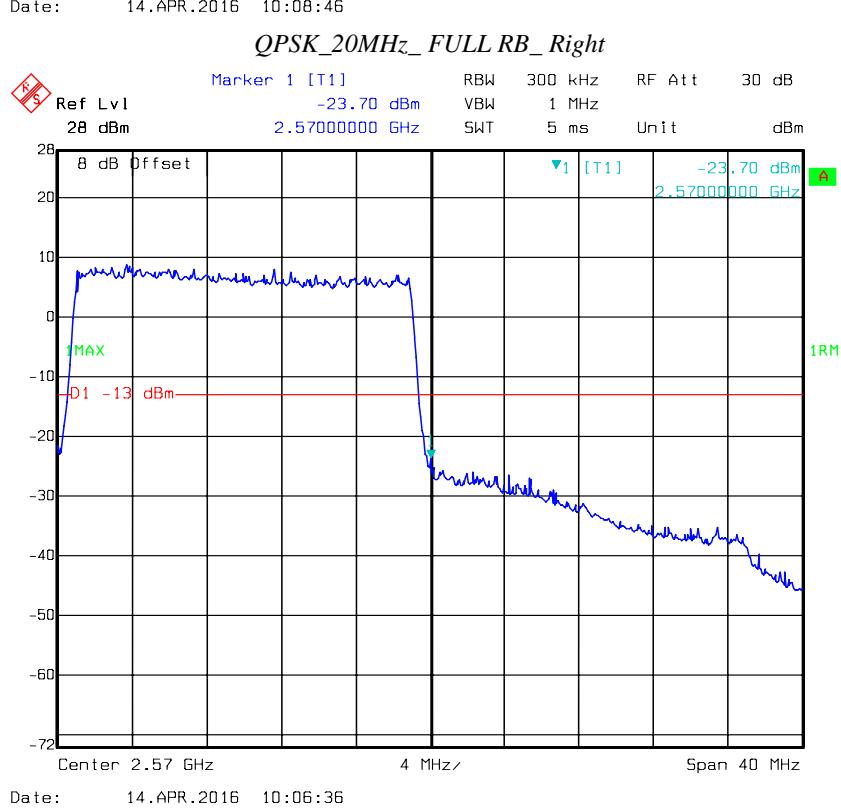
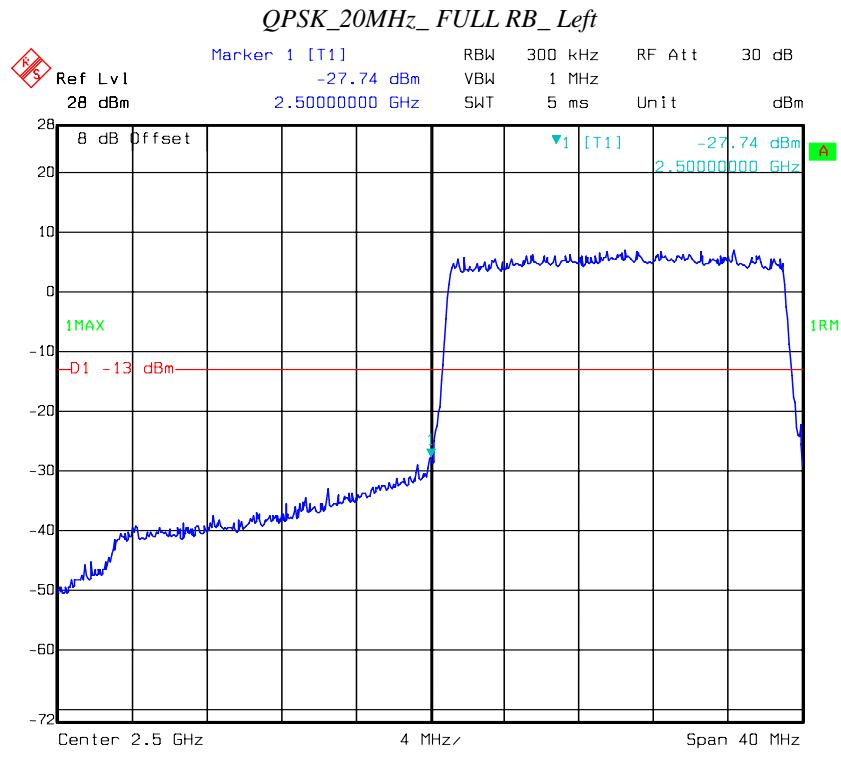
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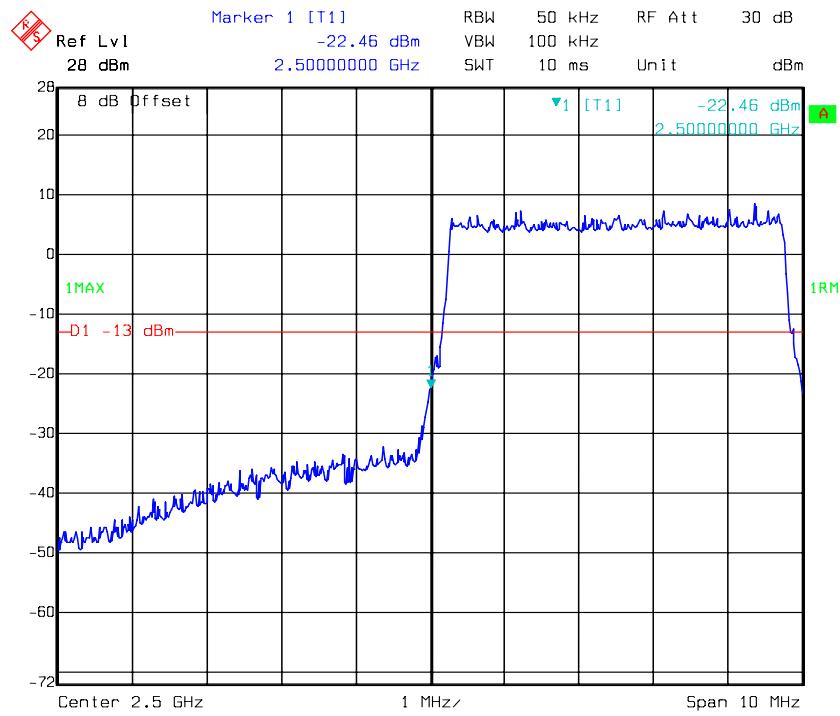
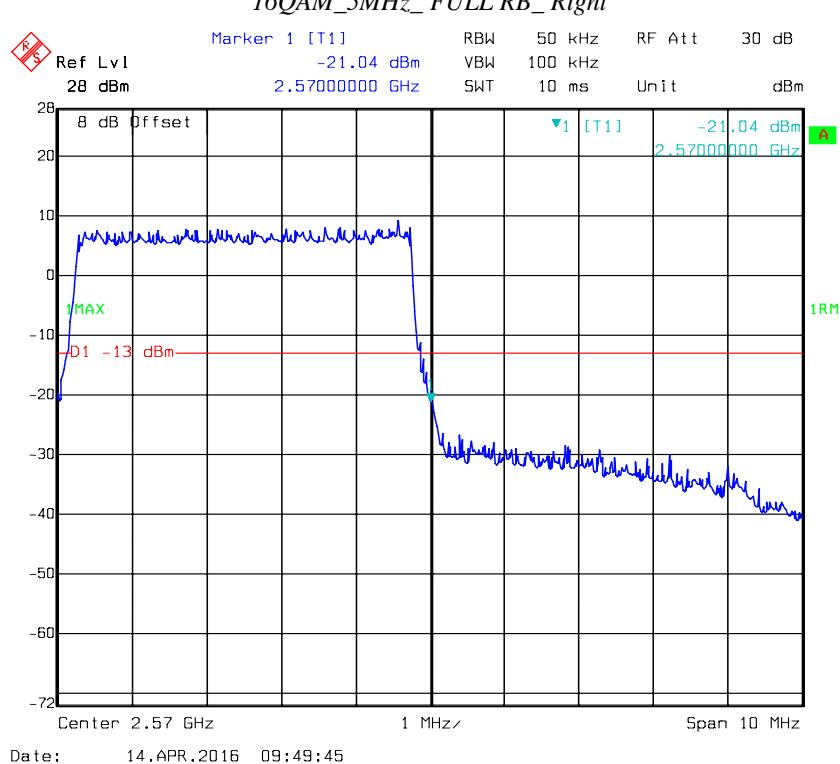
*QPSK\_5MHz\_FULL RB\_Right*

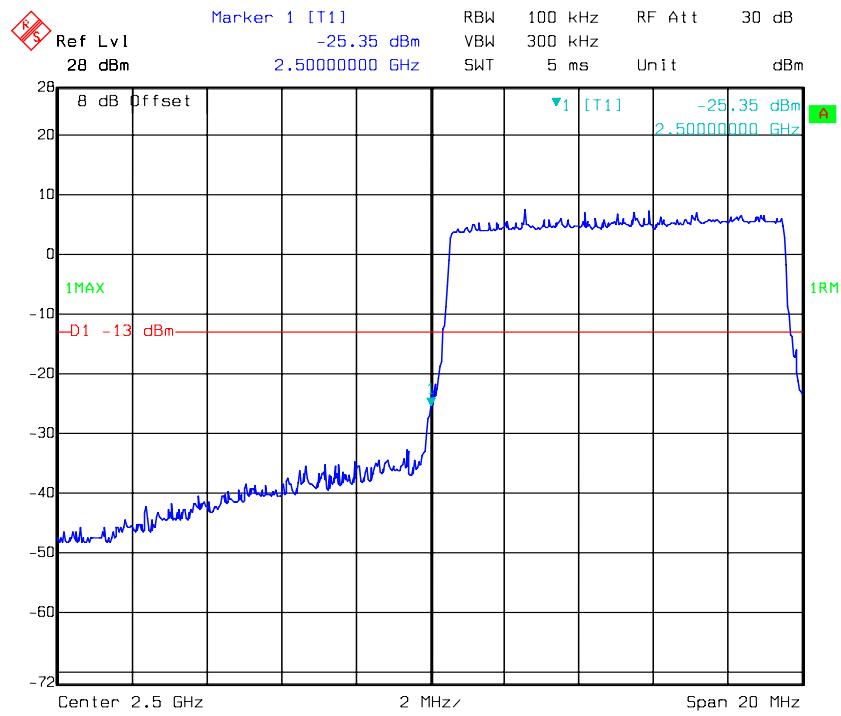
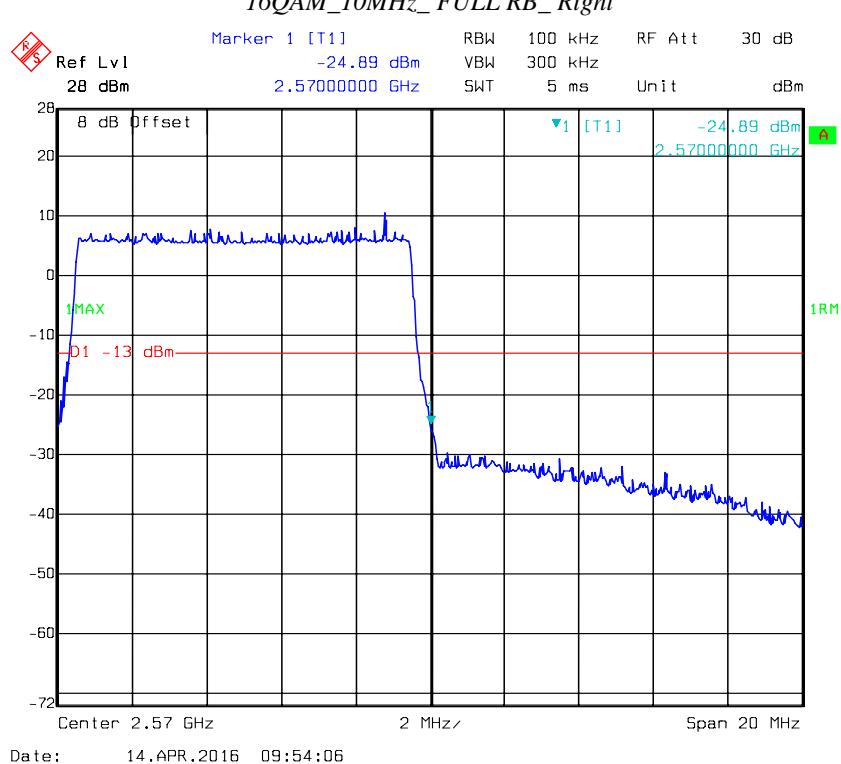
Date: 14.APR.2016 09:50:47

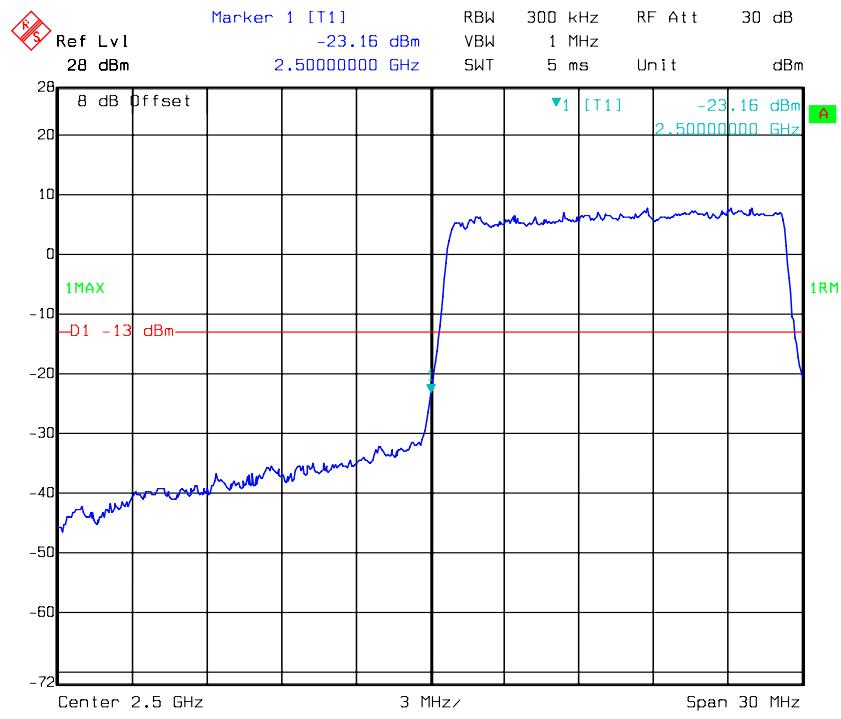




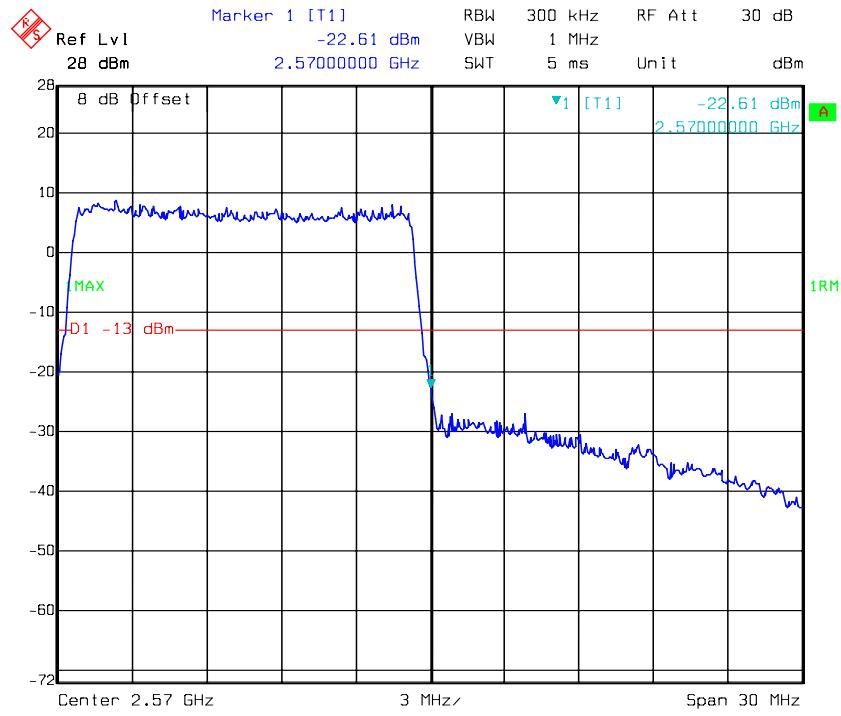


**16QAM\_5MHz\_FULL RB\_Left****16QAM\_5MHz\_FULL RB\_Right**

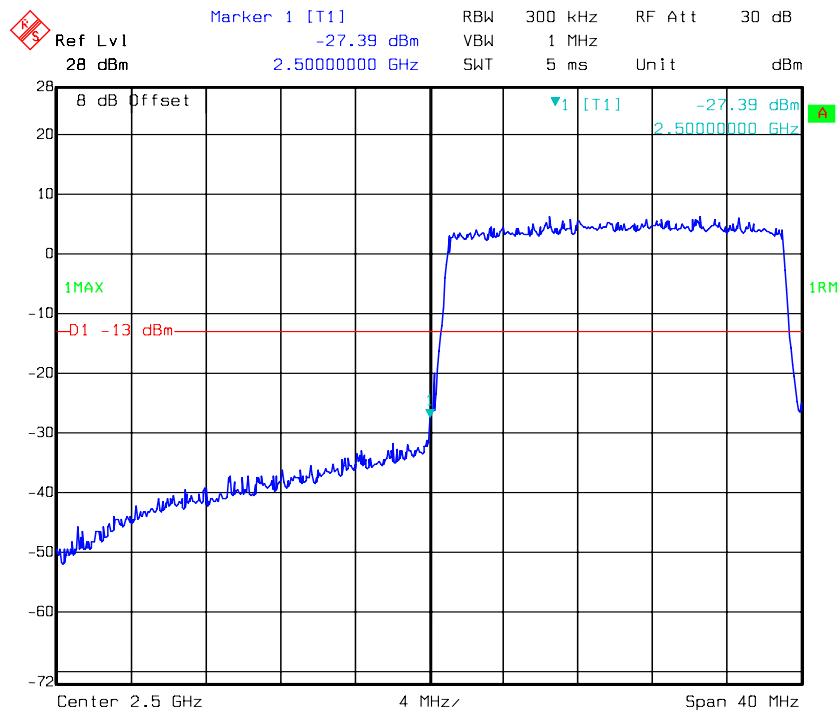
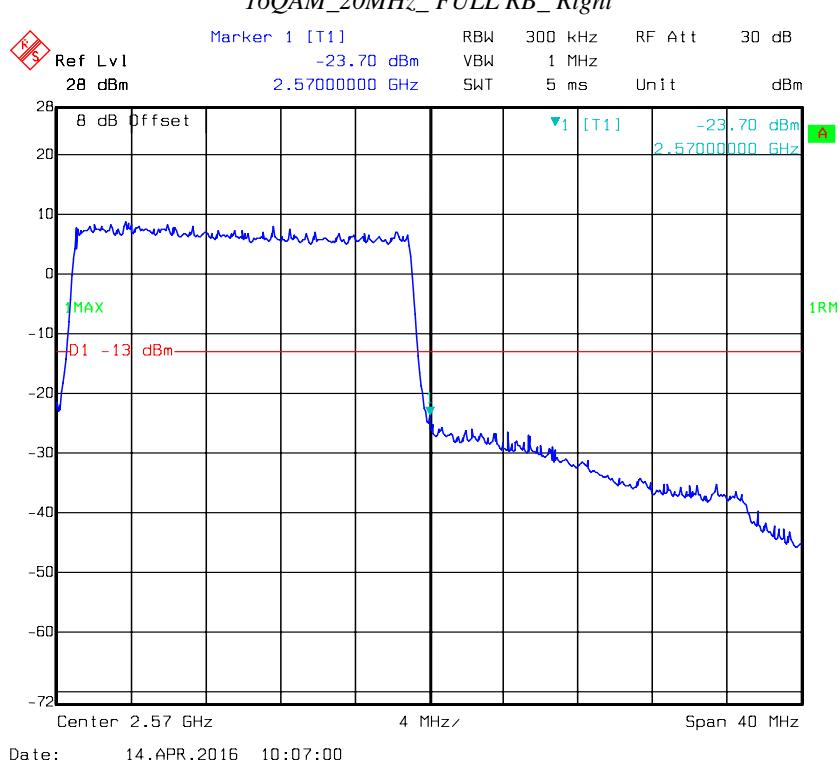
*16QAM\_10MHz\_FULL RB\_Left**16QAM\_10MHz\_FULL RB\_Right*

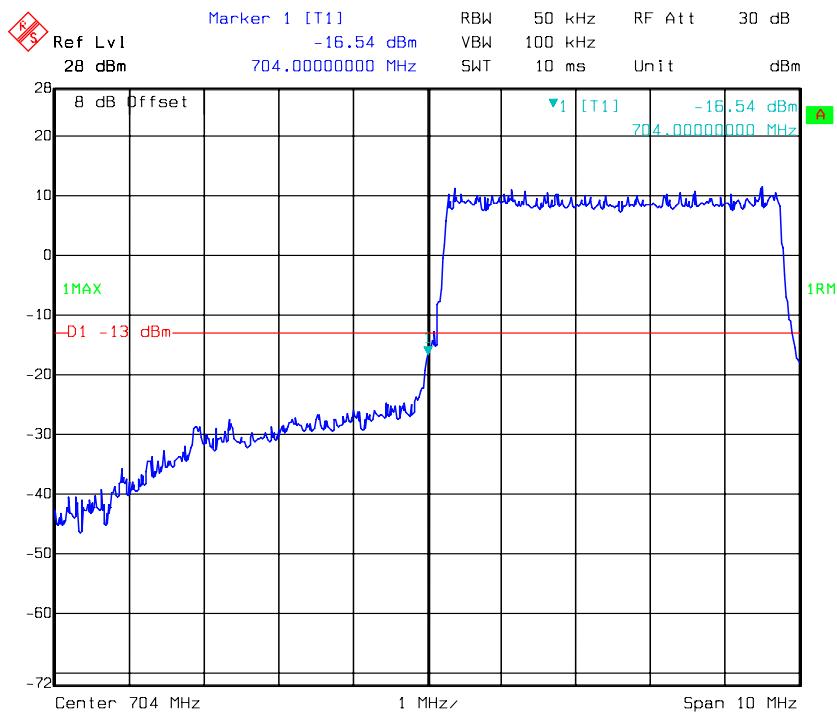
*16QAM\_15MHz\_FULL RB\_Left*

Date: 14.APR.2016 09:59:47

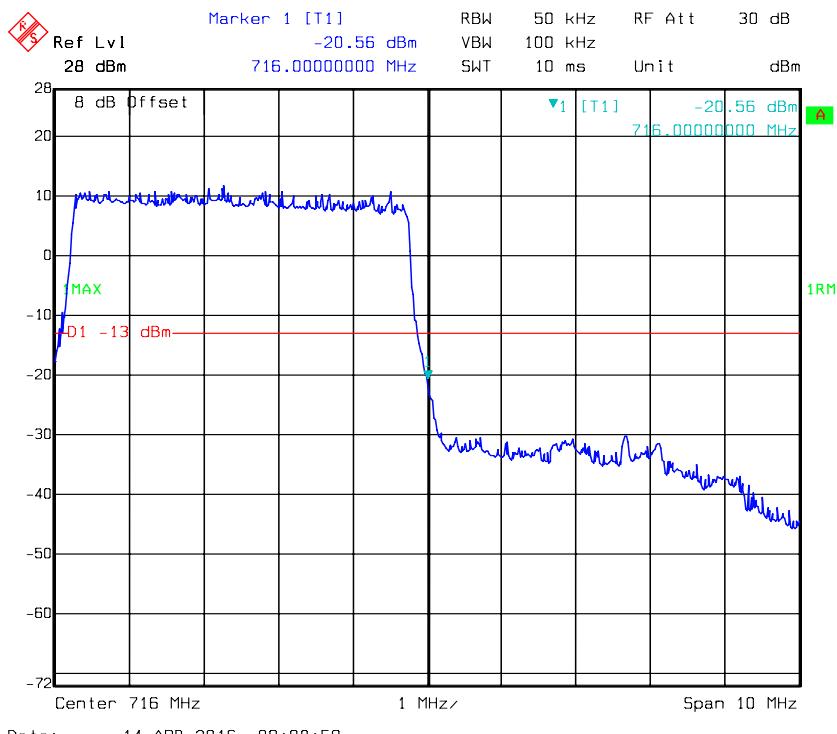
*16QAM\_15MHz\_FULL RB\_Right*

Date: 14.APR.2016 10:05:19

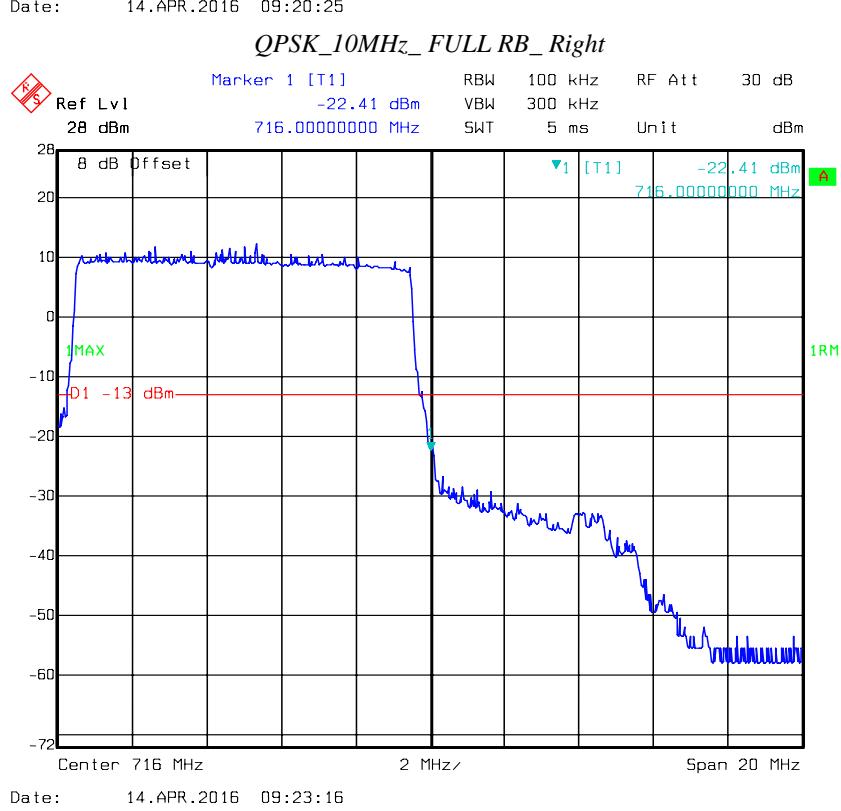
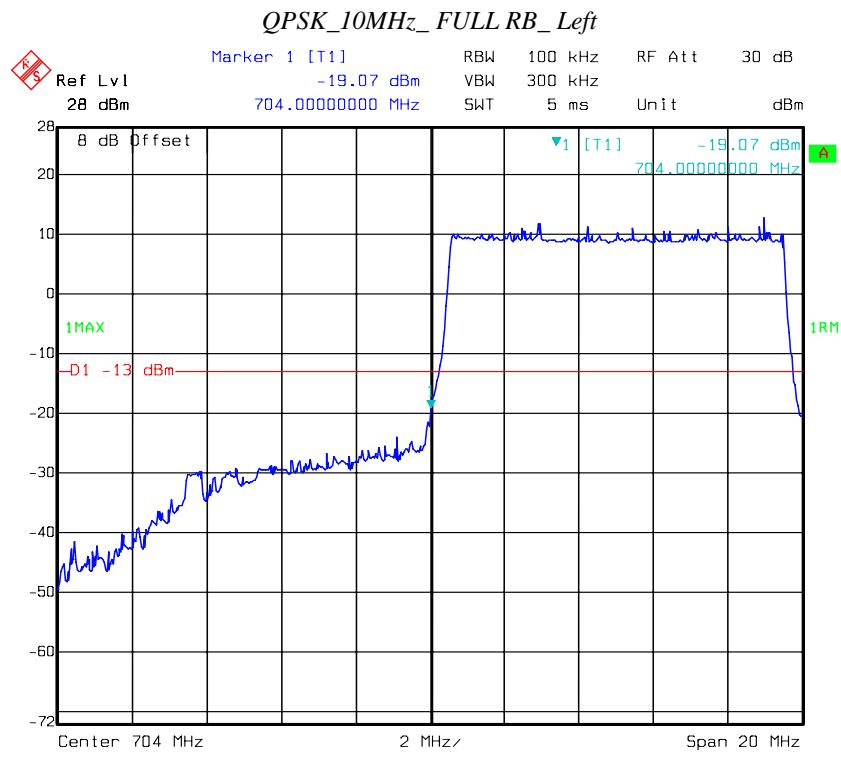
*16QAM\_20MHz\_FULL RB\_Left**16QAM\_20MHz\_FULL RB\_Right*

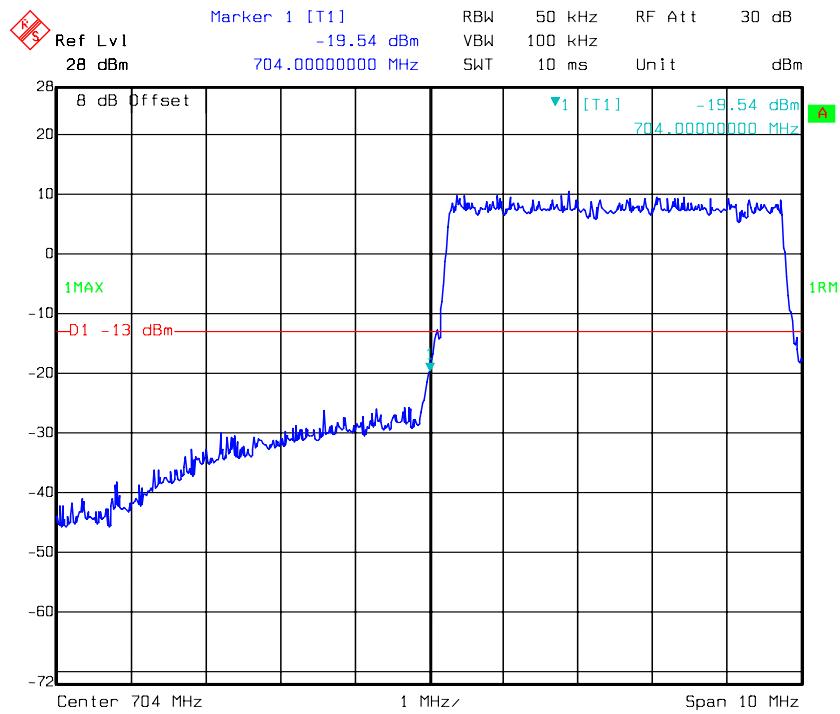
**LTE Band 17***QPSK\_5MHz\_FULL RB\_Left*

Date: 14.APR.2016 09:06:43

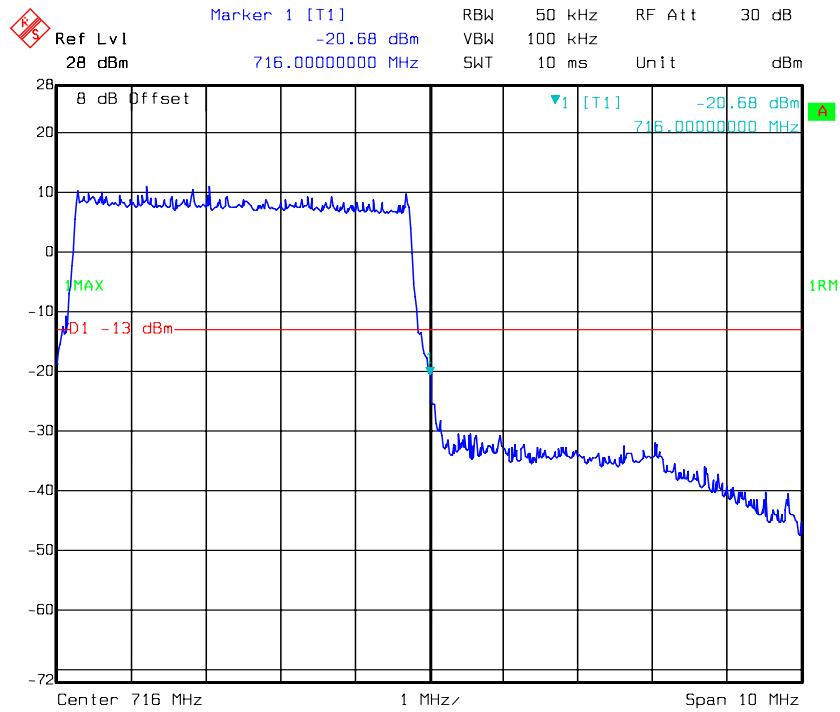
*QPSK\_5MHz\_FULL RB\_Right*

Date: 14.APR.2016 09:08:59

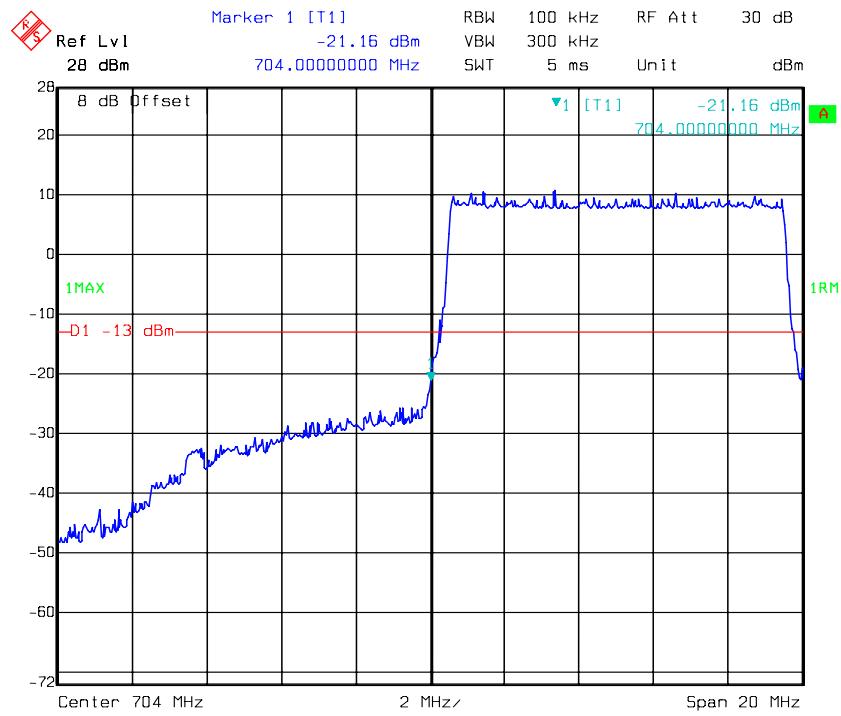
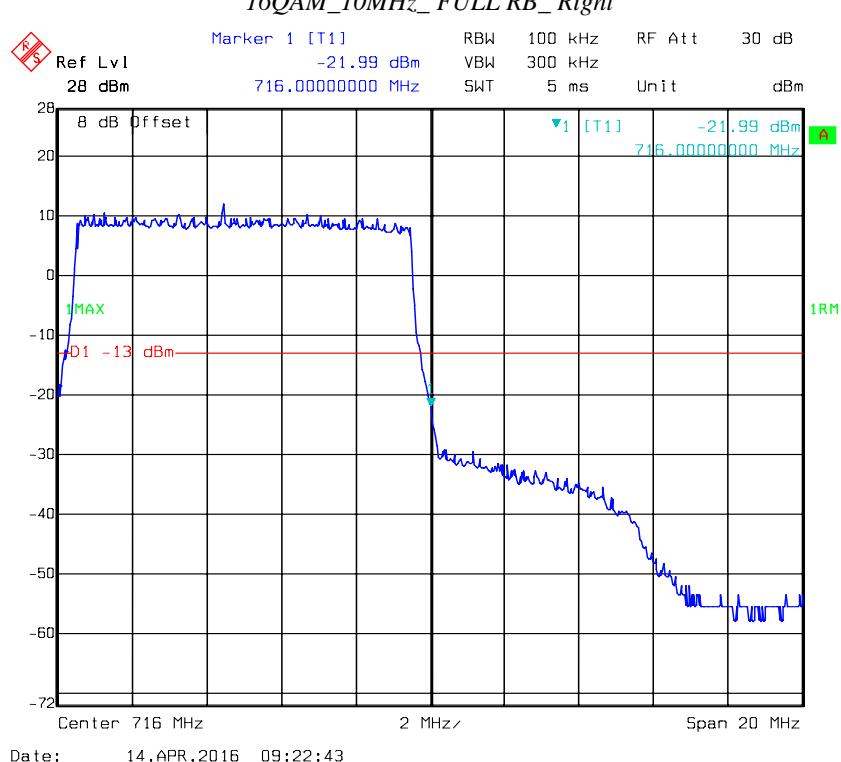


*16QAM\_5MHz\_FULL RB\_Left*

Date: 14.APR.2016 09:10:44

*16QAM\_5MHz\_FULL RB\_Right*

Date: 14.APR.2016 09:10:18

*16QAM\_10MHz\_FULL RB\_Left**16QAM\_10MHz\_FULL RB\_Right*

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

### Applicable Standard

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

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

Frequency Tolerance for Transmitters in the Public Mobile Services

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

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

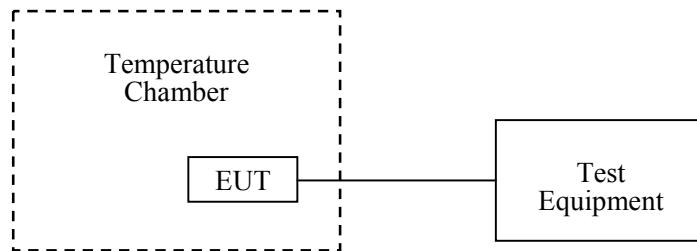
According to §27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### Test Procedure

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

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

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



**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-3	2015-09-10	2016-09-09
R&S	Universal Radio Communication Tester	CMU200	109 038	2015-05-09	2016-05-09
R&S	Wideband Radio Communication Tester	CMW500	106891	2015-11-23	2016-11-23
UNI-T	Multimeter	UT39A	M130199938	2016-04-02	2017-04-02
Pasternack	RF Coaxial Cable	RF-01	/	2015-05-06	2016-05-06

\* **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**

<b>Temperature:</b>	26.4°C
<b>Relative Humidity:</b>	68 %
<b>ATM Pressure:</b>	100.5 kPa

The testing was performed by Rocky Xiao from 2016-04-14.

**Cellular Band (Part 22H)**

GMSK, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V <sub>DC</sub>	Hz	ppm	ppm
-30	3.8	9	0.011	2.5
-20	3.8	11	0.013	2.5
-10	3.8	12	0.014	2.5
0	3.8	13	0.016	2.5
10	3.8	15	0.018	2.5
20	3.8	11	0.013	2.5
30	3.8	10	0.012	2.5
40	3.8	10	0.012	2.5
50	3.8	12	0.014	2.5
25	3.6	9	0.011	2.5
25	4.35	10	0.012	2.5

**Cellular Band (Part 22H)**

EDGE, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V <sub>DC</sub>	Hz	ppm	ppm
-30	3.8	6	0.007	2.5
-20	3.8	13	0.016	2.5
-10	3.8	12	0.014	2.5
0	3.8	8	0.010	2.5
10	3.8	13	0.016	2.5
20	3.8	9	0.011	2.5
30	3.8	13	0.016	2.5
40	3.8	8	0.010	2.5
50	3.8	7	0.008	2.5
25	3.6	12	0.014	2.5
25	4.35	13	0.016	2.5

**PCS Band (Part 24E)**

GMSK, Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.8	-11	-0.006	Pass
-20	3.8	-7	-0.004	Pass
-10	3.8	-6	-0.003	Pass
0	3.8	-6	-0.003	Pass
10	3.8	-3	-0.002	Pass
20	3.8	-9	-0.005	Pass
30	3.8	-9	-0.005	Pass
40	3.8	-9	-0.005	Pass
50	3.8	-9	-0.005	Pass
25	3.6	-6	-0.003	Pass
25	4.35	-7	-0.004	Pass

**PCS Band (Part 24E)**

EDGE, Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.8	-7	-0.004	Pass
-20	3.8	-7	-0.004	Pass
-10	3.8	-3	-0.002	Pass
0	3.8	-8	-0.004	Pass
10	3.8	-5	-0.003	Pass
20	3.8	-6	-0.003	Pass
30	3.8	-9	-0.005	Pass
40	3.8	-4	-0.002	Pass
50	3.8	-10	-0.005	Pass
25	3.6	-8	-0.004	Pass
25	4.35	-11	-0.006	Pass

**WCDMA Band V: Re199**

Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V <sub>DC</sub>	Hz	ppm	ppm
-30	3.8	5	0.006	2.5
-20	3.8	11	0.013	2.5
-10	3.8	10	0.012	2.5
0	3.8	5	0.006	2.5
10	3.8	7	0.008	2.5
20	3.8	13	0.016	2.5
30	3.8	13	0.016	2.5
40	3.8	9	0.011	2.5
50	3.8	5	0.006	2.5
25	3.6	11	0.013	2.5
25	4.35	9	0.011	2.5

**WCDMA Band II: Re199**

Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.8	-7	-0.004	Pass
-20	3.8	-8	-0.004	Pass
-10	3.8	-11	-0.006	Pass
0	3.8	-9	-0.005	Pass
10	3.8	-11	-0.006	Pass
20	3.8	-5	-0.003	Pass
30	3.8	-5	-0.003	Pass
40	3.8	-3	-0.002	Pass
50	3.8	-4	-0.002	Pass
25	3.6	-11	-0.006	Pass
25	4.35	-5	-0.003	Pass

**WCDMA Band V: HSUPA**

Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V <sub>DC</sub>	Hz	ppm	ppm
-30	3.8	8	0.010	2.5
-20	3.8	7	0.008	2.5
-10	3.8	13	0.016	2.5
0	3.8	11	0.013	2.5
10	3.8	10	0.012	2.5
20	3.8	13	0.016	2.5
30	3.8	12	0.014	2.5
40	3.8	13	0.016	2.5
50	3.8	6	0.007	2.5
25	3.6	7	0.008	2.5
25	4.35	10	0.012	2.5

**WCDMA Band II: HSUPA**

Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.8	-8	-0.004	Pass
-20	3.8	-8	-0.004	Pass
-10	3.8	-4	-0.002	Pass
0	3.8	-5	-0.003	Pass
10	3.8	-9	-0.005	Pass
20	3.8	-9	-0.005	Pass
30	3.8	-10	-0.005	Pass
40	3.8	-5	-0.003	Pass
50	3.8	-7	-0.004	Pass
25	3.6	-4	-0.002	Pass
25	4.35	-4	-0.002	Pass

**WCDMA Band V: HSDPA**

Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V <sub>DC</sub>	Hz	ppm	ppm
-30	3.8	13	0.016	2.5
-20	3.8	11	0.013	2.5
-10	3.8	13	0.016	2.5
0	3.8	8	0.010	2.5
10	3.8	7	0.008	2.5
20	3.8	11	0.013	2.5
30	3.8	12	0.014	2.5
40	3.8	13	0.016	2.5
50	3.8	8	0.010	2.5
25	3.6	10	0.012	2.5
25	4.35	6	0.007	2.5

**WCDMA Band II: HSDPA**

Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.8	-4	-0.002	Pass
-20	3.8	-7	-0.004	Pass
-10	3.8	-9	-0.005	Pass
0	3.8	-9	-0.005	Pass
10	3.8	-6	-0.003	Pass
20	3.8	-6	-0.003	Pass
30	3.8	-7	-0.004	Pass
40	3.8	-5	-0.003	Pass
50	3.8	-6	-0.003	Pass
25	3.6	-6	-0.003	Pass
25	4.35	-7	-0.004	Pass

**LTE Band II:**

QPSK, Channel Bandwidth:10MHz Middle Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.8	-11	-0.006	Pass
-20	3.8	-12	-0.006	Pass
-10	3.8	-12	-0.006	Pass
0	3.8	-10	-0.005	Pass
10	3.8	-10	-0.005	Pass
20	3.8	-13	-0.007	Pass
30	3.8	-8	-0.004	Pass
40	3.8	-15	-0.008	Pass
50	3.8	-11	-0.006	Pass
25	3.6	-15	-0.008	Pass
25	4.35	-10	-0.005	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.8	-15	-0.008	Pass
-20	3.8	-13	-0.007	Pass
-10	3.8	-14	-0.007	Pass
0	3.8	-12	-0.006	Pass
10	3.8	-15	-0.008	Pass
20	3.8	-14	-0.007	Pass
30	3.8	-9	-0.005	Pass
40	3.8	-10	-0.005	Pass
50	3.8	-14	-0.007	Pass
25	3.6	-10	-0.005	Pass
25	4.35	-13	-0.007	Pass

**LTE Band IV:**

QPSK, Channel Bandwidth:10MHz Middle Channel, $f_c = 1732.5$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.8	-13	-0.008	Pass
-20	3.8	-12	-0.007	Pass
-10	3.8	-14	-0.008	Pass
0	3.8	-7	-0.004	Pass
10	3.8	-10	-0.006	Pass
20	3.8	-8	-0.005	Pass
30	3.8	-12	-0.007	Pass
40	3.8	-8	-0.005	Pass
50	3.8	-11	-0.006	Pass
25	3.6	-12	-0.007	Pass
25	4.35	-11	-0.006	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, $f_c = 1732.5$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.8	-10	-0.006	Pass
-20	3.8	-13	-0.008	Pass
-10	3.8	-8	-0.005	Pass
0	3.8	-7	-0.004	Pass
10	3.8	-9	-0.005	Pass
20	3.8	-10	-0.006	Pass
30	3.8	-13	-0.008	Pass
40	3.8	-13	-0.008	Pass
50	3.8	-11	-0.006	Pass
25	3.6	-11	-0.006	Pass
25	4.35	-12	-0.007	Pass

**LTE Band VII:**

QPSK, Channel Bandwidth:10MHz Middle Channel, $f_c = 2535$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.8	-7	-0.003	Pass
-20	3.8	-12	-0.005	Pass
-10	3.8	-7	-0.003	Pass
0	3.8	-9	-0.004	Pass
10	3.8	-13	-0.005	Pass
20	3.8	-12	-0.005	Pass
30	3.8	-13	-0.005	Pass
40	3.8	-8	-0.003	Pass
50	3.8	-12	-0.005	Pass
25	3.6	-7	-0.003	Pass
25	4.35	-14	-0.006	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, $f_c = 2535$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.8	-13	-0.005	Pass
-20	3.8	-14	-0.006	Pass
-10	3.8	-13	-0.005	Pass
0	3.8	-14	-0.006	Pass
10	3.8	-9	-0.004	Pass
20	3.8	-12	-0.005	Pass
30	3.8	-11	-0.004	Pass
40	3.8	-13	-0.005	Pass
50	3.8	-15	-0.006	Pass
25	3.6	-14	-0.006	Pass
25	4.35	-13	-0.005	Pass

**LTE Band 17:**

QPSK, Channel Bandwidth:10MHz Middle Channel, $f_c = 710$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.8	14	0.020	Pass
-20	3.8	12	0.017	Pass
-10	3.8	13	0.018	Pass
0	3.8	13	0.018	Pass
10	3.8	13	0.018	Pass
20	3.8	8	0.011	Pass
30	3.8	11	0.015	Pass
40	3.8	8	0.011	Pass
50	3.8	11	0.015	Pass
25	3.6	7	0.010	Pass
25	4.35	13	0.018	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, $f_c = 710$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V <sub>DC</sub>	Hz	ppm	
-30	3.8	9	0.013	Pass
-20	3.8	8	0.011	Pass
-10	3.8	10	0.014	Pass
0	3.8	14	0.020	Pass
10	3.8	13	0.018	Pass
20	3.8	14	0.020	Pass
30	3.8	13	0.018	Pass
40	3.8	7	0.010	Pass
50	3.8	9	0.013	Pass
25	3.6	12	0.017	Pass
25	4.35	8	0.011	Pass

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

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