



**FCC PART 22H, PART 24E  
FCC PART 27  
MEASUREMENT AND TEST REPORT**

For

**SWAGTEK**

10205 NW 19th Street, STE101, Miami, Florida, United States, 33172

**FCC ID: O55554516**

<b>Report Type:</b> Original Report	<b>Product Name:</b> 5.5 inch LTE Smart Phone
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<b>Report Number:</b> <u>RDG161209003B</u>	
<b>Report Date:</b> <u>2017-02-07</u>	
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## GENERAL INFORMATION

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

The **SWAGTEK**'s product, model number: **L5.5 (FCC ID: O55554516)** (the "EUT") in this report was a **5.5 inch LTE Smart Phone**, which was measured approximately: 15.6 cm (L) × 7.8 cm (W) × 0.8 cm (H), rated input voltage: DC3.8V Li-polymer or DC5V from adapter.

#### Adapter Information:

Input: AC100-240V 50/60 Hz 0.2A

Output: DC5V/1.0A

*Note: The series product, model L5.5, LOGIC L5.5, iSWAG MEGA, UNONU UL551 are electrically identical, the differences between them are the model name and color, we selected L5.5 for fully testing, the details was explained in the declaration letter.*

*\*All measurement and test data in this report was gathered from final production sample, serial number: 161209003 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2016-12-29, and EUT conformed to test requirement.*

### Objective

This report is prepared on behalf of **SWAGTEK** 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: O55554516.

FCC Part 15C DTS submissions with FCC ID: O55554516.

FCC Part 15C DSS submissions with FCC ID: O55554516.

### 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, Part 22 Subpart H, Part 24 Subpart E and Part 27.

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

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Chengdu).

## **Test Facility**

The test site used by BACL to collect test data is located in the 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China.

Test site at BACL has been fully described in reports submitted to the Federal Communication 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 April 24, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

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## SYSTEM TEST CONFIGURATION

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### 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.

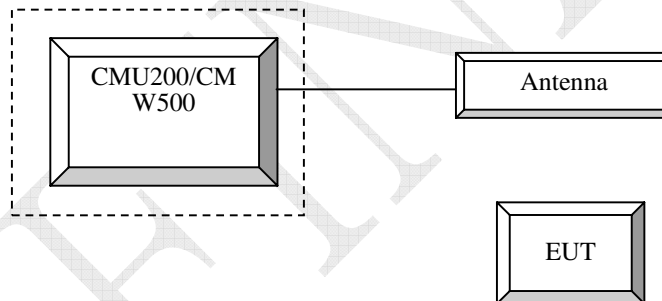
### Equipment Modifications

No modification was made to the EUT.

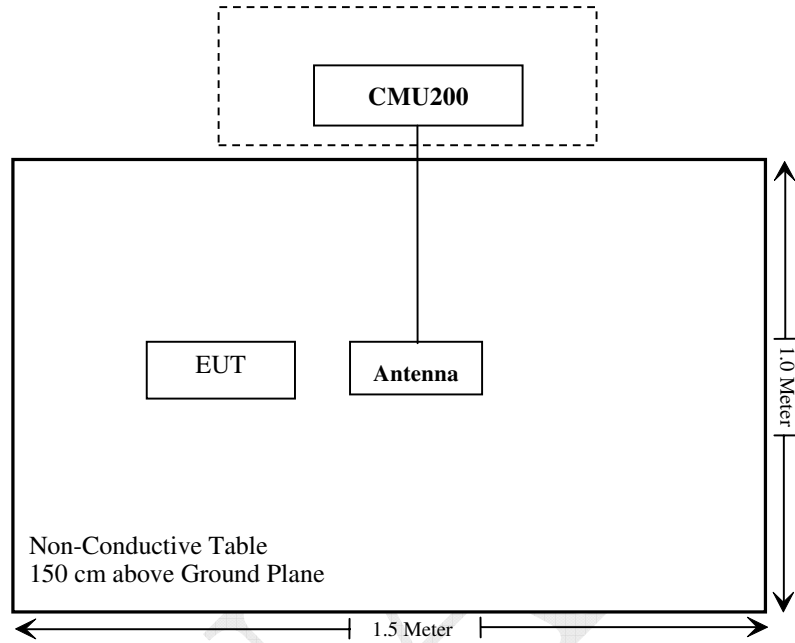
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester	CMU200	11-9435686-111
R&S	Universal 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**

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### **Applicable Standard**

FCC§1.1310 and §2.1093.

### **Test Result**

Compliant, please refer to the SAR report: RDG161209003-20.

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## **FCC §2.1047 - MODULATION CHARACTERISTIC**

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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.

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## **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/EGPRS**

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  
    > 27 dBm for EGPRS 850  
    > 26 dBm for EGPRS 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) and MCS5 (EGPRS)

Bit Stream > 2E9-1 PSR Bit Stream  
 AF/RF Connection Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input  
 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 Subset	HSDPA 1	HSDPA 2	HSDPA 3	HSDPA 4
<b>WCDMA General Settings</b>	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
<b>HSDPA Specific Settings</b>	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 outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subset	1	2	3	4	5
<b>WCDMA 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	-
	$\beta_{hs}$	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	
<b>HSDPA Specific Settings</b>	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				
<b>HSUPA Specific Settings</b>	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_FCIs	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	

### HSPA+

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

Sub-test	$\beta_c$ (Note3)	$\beta_d$	$\beta_{HS}$ (Note1)	$\beta_{ec}$	$\beta_{ed}$ (2xSF2) (Note 4)	$\beta_{ed}$ (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	$\beta_{ed1}$ : 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**

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

**LTE (FDD):**

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

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

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

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

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

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS\_01".

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

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks ( $N_{RB}$ )	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10, 15, 20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 <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 Number	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Sunol Sciences	Broadband Antenna	JB3	A101808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2016-12-02	2017-12-01
ETS	Horn Antenna	3115	003-6076	2016-12-02	2017-12-01
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-0113024	2014-06-16	2017-06-15
EMCO	Adjustable Dipole Antenna	3121C	9109-258	N/A	N/A
HP	Signal Generator	8648C	3623A04150	2016-05-23	2017-05-22
WILTRON	SWEPT FREQUENCY SYNTHESIZER	6737	213001	2016-05-23	2017-05-22
EMCT	Semi-Anechoic Chamber	966	N/A	2015-04-24	2018-04-23
N/A	RF Cable (below 1GHz)	NO.1	N/A	2016-11-10	2017-11-09
N/A	RF Cable (below 1GHz)	NO.1	N/A	2016-11-10	2017-11-09
N/A	RF Cable (below 1GHz)	NO.4	N/A	2016-11-10	2017-11-09
N/A	RF Cable (below 1GHz)	NO.4	N/A	2016-11-10	2017-11-09
N/A	RF Cable (above 1GHz)	NO.2	N/A	2016-11-10	2017-11-09
N/A	RF Cable (above 1GHz)	NO.2	N/A	2016-11-10	2017-11-09
R&S	Universal Radio Communication Tester	CMU200	11-9435686-111	2016-07-28	2017-07-27
R&S	Wideband Radio Communication Tester	CMW500	106891	2016-11-23	2017-11-23

\* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

### Test Data

#### Environmental Conditions

<b>Temperature:</b>	23.8~28.8 °C
<b>Relative Humidity:</b>	31~51 %
<b>ATM Pressure:</b>	101 ~102.1 kPa

*The testing was performed by Tom Tang from 2016-12-16 to 2017-01-05.*



**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	32.70	32.77	32.43	31.41	30.73	25.99	25.00	22.08	20.97
	190	32.80	32.74	32.42	31.35	30.68	25.89	24.85	22.81	20.86
	251	32.80	32.76	31.43	31.31	30.68	25.79	24.68	21.89	20.72
PCS	512	30.50	30.48	29.99	28.64	27.86	26.12	25.18	23.27	22.25
	661	30.30	30.38	29.86	28.52	27.79	25.92	25.01	23.12	22.06
	810	30.10	30.22	29.74	28.55	27.87	25.77	24.84	22.95	21.86

**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	22.27	2.36	22.06	2.36	22.32	1.84
HSDPA (QPSK)	1	21.03	2.32	20.87	2.45	21.28	1.93
	2	21.01	2.28	20.90	2.49	21.25	1.99
	3	21.05	2.36	20.85	2.51	21.32	1.87
	4	21.00	2.23	20.83	2.50	21.31	1.83
HSUPA (QPSK)	1	21.04	2.29	20.89	2.35	21.27	1.99
	2	21.02	2.21	20.84	2.45	21.22	1.96
	3	20.98	2.39	20.92	2.46	21.31	1.92
	4	21.08	2.35	20.95	2.31	21.35	1.85
	5	21.06	2.27	20.86	2.33	21.23	1.81
DC-HSDPA (QPSK)	1	21.42	2.40	21.34	2.43	21.32	1.92
	2	21.49	2.26	21.30	2.49	21.26	1.94
	3	21.41	2.28	21.42	2.47	21.23	1.76
	4	21.30	2.31	21.36	2.37	21.25	1.72
HSPA+ (16QAM)	1	21.62	2.32	21.36	2.25	21.42	1.75

**WCDMA Band IV**

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	23.16	1.80	23.12	2.32	22.82	1.76
HSDPA (QPSK)	1	22.36	1.92	22.31	2.28	21.93	1.90
	2	22.41	1.94	22.36	2.31	21.98	1.88
	3	22.43	1.77	22.38	2.17	21.97	1.82
	4	22.32	1.82	22.27	2.25	21.90	1.72
HSUPA (QPSK)	1	22.29	1.73	22.27	2.18	21.92	1.61
	2	22.36	1.69	22.18	2.32	21.88	1.63
	3	22.34	1.89	22.23	2.19	21.86	1.66
	4	22.25	1.90	22.16	2.21	21.96	1.82
DC-HSDPA (QPSK)	1	22.26	1.93	22.24	2.18	21.85	1.86
	2	22.26	2.18	22.02	2.24	22.28	1.72
	3	22.22	1.67	22.00	2.30	22.20	1.74
	4	22.29	1.65	22.07	2.18	22.26	1.77
	5	22.24	1.86	22.05	2.17	22.21	1.83
HSPA+ (16QAM)	1	22.26	1.82	22.03	2.25	22.21	1.85

**WCDMA Band V**

Mode	3GPP Sub Test	Average Output Power (dBm)					
		Low Channel (Ave. Power)	Low Channel (PAR)	Middle Channel (Ave. Power)	Middle Channel (PAR)	High Channel (Ave. Power)	High Channel (PAR)
Rel 99 (QPSK)	1	22.84	2.16	22.92	3.01	23.17	2.81
HSDPA (QPSK)	1	21.73	2.22	21.92	2.94	21.92	2.96
	2	21.70	2.31	21.88	2.99	21.87	2.92
	3	21.68	2.24	21.86	2.91	21.86	2.68
	4	21.75	2.12	21.96	2.95	21.95	2.69
HSUPA (QPSK)	1	21.79	2.15	21.97	3.06	21.97	2.95
	2	21.75	2.17	22.00	2.92	21.96	2.90
	3	21.73	2.05	21.99	3.04	21.92	2.88
	4	21.82	2.99	21.93	2.86	22.02	2.75
DC-HSDPA (QPSK)	1	21.84	2.17	21.94	3.08	22.00	2.78
	2	20.93	2.02	21.17	3.08	21.23	2.89
	3	21.00	2.07	21.11	2.87	21.25	2.81
	4	20.96	2.18	21.16	2.91	21.16	2.66
	5	20.97	2.10	21.14	2.86	21.11	2.70
HSPA+ (16QAM)	1	21.32	2.14	21.12	2.95	21.07	2.86

**LTE Band II (PART 24)**

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4 MHz	QPSK	1#0	21.85	21.99	21.58
		1#3	22.56	22.36	22.49
		1#5	22.38	22.36	22.48
		3#0	22.31	22.08	21.83
		3#1	22.30	22.11	21.80
		3#3	22.16	22.19	21.84
	16QAM	6#0	20.76	20.85	20.79
		1#0	21.61	21.59	21.16
		1#3	22.58	22.06	21.85
		1#5	22.41	22.05	21.99
		3#0	21.69	21.56	21.45
		3#1	21.71	21.51	21.67
3 MHz	QPSK	3#3	21.64	21.47	21.63
		6#0	20.72	20.69	20.77
		1#0	22.61	22.33	22.32
		1#7	22.55	22.26	22.15
		1#14	22.57	22.45	22.00
		8#0	21.89	21.99	21.88
	16QAM	8#4	21.88	22.12	21.76
		8#7	21.89	21.85	21.74
		15#0	21.42	21.18	21.08
		1#0	22.35	21.93	21.76
		1#7	22.42	21.86	21.63
		1#14	22.38	21.76	21.62
5 MHz	QPSK	8#0	21.74	21.47	21.20
		8#4	21.70	21.34	21.17
		8#7	21.69	21.41	21.40
		15#0	20.79	20.70	20.78
		1#0	22.66	22.29	22.11
		1#12	22.51	22.08	22.08
	16QAM	1#24	22.33	20.21	22.05
		12#0	21.71	21.57	21.51
		12#6	21.80	21.49	21.51
		12#11	21.60	21.34	21.56
		25#0	21.41	21.09	20.73
		1#0	21.75	21.61	21.71
16QAM	1#12	21.74	21.58	21.88	
	1#24	21.70	21.67	21.70	
	12#0	21.57	21.46	21.11	
	12#6	21.47	21.41	21.13	
	12#11	21.45	21.38	20.92	
	25#0	20.80	20.65	20.56	

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10 MHz	QPSK	1#0	22.53	22.19	22.10
		1#24	22.64	22.16	22.14
		1#49	22.46	22.23	22.15
		25#0	21.81	21.46	21.61
		25#12	21.67	21.47	21.60
		25#24	21.67	21.49	21.48
		50#0	21.12	20.73	20.84
	16QAM	1#0	22.04	21.71	21.61
		1#24	22.16	21.57	21.69
		1#49	21.05	21.78	21.53
		25#0	21.31	21.27	20.84
		25#12	21.35	21.38	21.07
		25#24	21.36	21.31	21.01
		50#0	20.93	20.49	20.24
15 MHz	QPSK	1#0	22.46	22.23	22.24
		1#37	22.24	22.41	22.20
		1#74	22.36	22.30	22.41
		36#0	21.49	21.89	21.68
		36#17	21.64	21.73	21.80
		36#35	21.64	21.87	21.83
		75#0	21.17	20.89	20.62
	16QAM	1#0	21.96	21.64	21.67
		1#37	21.95	21.78	21.47
		1#74	21.95	21.61	21.46
		36#0	21.51	21.19	20.80
		36#17	21.55	21.03	20.85
		36#35	21.38	21.21	20.75
		75#0	20.75	20.40	19.95
20 MHz	QPSK	1#0	22.38	22.48	22.27
		1#49	22.40	22.33	22.16
		1#99	22.32	22.28	22.23
		50#0	21.73	21.78	21.33
		50#24	21.56	21.34	21.80
		50#49	21.71	21.52	21.78
		100#0	20.80	20.77	20.82
	16QAM	1#0	21.67	21.78	21.76
		1#49	21.61	21.61	21.72
		1#99	21.59	21.73	21.65
		50#0	21.16	21.22	21.02
		50#24	21.16	21.15	20.88
		50#49	21.09	21.06	20.99
		100#0	20.68	20.57	20.30

LTE Band IV (PART 27)

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	22.04	21.89	21.12
		1#3	22.23	21.99	22.48
		1#5	22.51	22.07	22.35
		3#0	21.87	21.46	21.89
		3#1	21.82	21.29	21.70
		3#3	21.74	21.36	21.71
		6#0	21.05	21.79	21.62
	16QAM	1#0	21.84	21.32	21.47
		1#3	21.89	21.66	21.96
		1#5	21.98	21.64	22.05
		3#0	21.41	21.06	21.29
		3#1	21.38	20.98	21.32
		3#3	21.47	20.95	21.35
		6#0	20.78	20.66	20.64
3 MHz	QPSK	1#0	21.83	21.60	21.35
		1#7	22.37	21.82	22.18
		1#14	22.30	21.76	22.36
		8#0	21.74	21.35	21.58
		8#4	21.80	21.30	21.49
		8#7	21.75	21.41	21.50
		15#0	20.77	20.45	20.17
	16QAM	1#0	21.79	21.42	21.76
		1#7	21.98	21.35	22.00
		1#14	21.85	21.46	21.99
		8#0	21.10	20.64	21.24
		8#4	21.11	20.76	21.28
		8#7	21.10	20.82	21.29
		15#0	21.51	20.66	20.48
5 MHz	QPSK	1#0	22.49	22.03	21.72
		1#12	22.10	21.70	22.29
		1#24	22.08	21.75	22.37
		12#0	21.39	21.33	21.65
		12#6	22.41	21.30	21.68
		12#11	21.37	21.29	21.49
		25#0	20.44	20.69	20.82
	16QAM	1#0	21.56	20.99	20.95
		1#12	21.78	21.29	21.58
		1#24	21.79	21.43	21.63
		12#0	21.16	20.72	21.06
		12#6	21.29	20.77	21.11
		12#11	21.21	20.67	21.09
		25#0	21.41	21.68	20.98

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10 MHz	QPSK	1#0	21.60	21.06	20.17
		1#24	21.90	21.69	22.07
		1#49	21.83	21.48	22.04
		25#0	21.47	21.11	21.30
		25#12	21.39	21.08	21.26
		25#24	21.41	20.86	21.26
		50#0	21.35	21.75	21.05
	16QAM	1#0	21.11	21.71	21.03
		1#24	21.80	21.48	21.49
		1#49	21.73	21.38	21.55
		25#0	20.98	20.67	21.06
		25#12	20.97	20.79	21.09
		25#24	21.15	20.87	21.19
		50#0	20.33	20.68	20.23
15 MHz	QPSK	1#0	21.47	21.04	20.32
		1#37	21.98	21.46	21.88
		1#74	22.01	21.51	21.83
		36#0	21.46	21.16	21.33
		36#17	21.40	20.99	21.22
		36#35	21.50	21.02	21.36
		75#0	21.28	21.68	21.14
	16QAM	1#0	21.27	21.69	20.95
		1#37	21.42	21.36	21.57
		1#74	21.56	21.30	21.47
		36#0	20.98	20.93	20.92
		36#17	20.89	20.88	20.97
		36#35	20.75	21.00	21.09
		75#0	20.21	20.60	20.02
20 MHz	QPSK	1#0	22.20	22.50	22.08
		1#49	22.31	22.46	21.93
		1#99	22.07	22.26	22.08
		50#0	21.59	21.66	21.51
		50#24	21.73	21.61	21.34
		50#49	21.75	21.50	21.34
		100#0	21.17	20.65	20.93
	16QAM	1#0	21.57	21.37	21.50
		1#49	21.46	21.24	21.53
		1#99	21.45	21.31	21.54
		50#0	20.69	20.85	20.92
		50#24	20.64	20.68	20.83
		50#49	20.70	20.71	20.85
		100#0	20.19	20.27	20.38

**LTE Band V (PART 22)**

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4 MHz	QPSK	1#0	22.64	22.41	22.47
		1#3	22.50	22.29	22.61
		1#5	22.60	22.34	22.35
		3#0	22.26	22.17	22.20
		3#1	22.33	22.04	22.30
		3#3	22.27	22.17	22.05
		6#0	21.87	21.89	21.35
	16QAM	1#0	22.03	21.85	21.81
		1#3	21.87	22.00	21.73
		1#5	21.82	21.79	21.98
		3#0	21.44	21.55	21.51
		3#1	21.60	21.63	21.46
		3#3	21.71	21.82	21.51
		6#0	20.79	21.20	20.92
3 MHz	QPSK	1#0	22.62	22.88	22.52
		1#7	22.84	23.00	22.55
		1#14	22.84	22.74	22.69
		8#0	22.41	22.41	22.24
		8#4	22.30	22.33	22.25
		8#7	22.32	22.56	22.18
		15#0	21.98	22.01	21.82
	16QAM	1#0	21.94	22.25	21.86
		1#7	21.96	22.18	21.90
		1#14	21.98	22.06	21.75
		8#0	21.65	21.64	21.24
		8#4	21.50	21.78	21.35
		8#7	21.56	21.82	21.31
		15#0	21.02	21.26	21.07

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	1#0	22.86	22.85	22.75
		1#12	22.97	22.68	22.73
		1#24	22.79	22.85	22.89
		12#0	22.37	22.62	22.49
		12#6	22.29	22.54	22.25
		12#11	22.34	22.69	22.41
		25#0	21.78	21.69	21.48
	16QAM	1#0	22.15	22.24	21.79
		1#12	21.86	22.12	21.73
		1#24	22.07	22.14	21.73
		12#0	21.51	21.90	21.41
		12#6	21.54	21.83	21.34
		12#11	21.52	21.81	21.34
		25#0	21.05	21.14	20.88
10 MHz	QPSK	1#0	22.59	22.97	22.69
		1#24	22.70	22.91	22.67
		1#49	22.69	22.83	22.64
		25#0	22.33	22.55	22.18
		25#12	22.38	22.57	21.97
		25#24	22.22	22.57	21.98
		50#0	21.58	21.95	21.47
	16QAM	1#0	22.18	22.35	21.77
		1#24	22.23	22.38	21.81
		1#49	22.16	22.30	21.80
		25#0	21.63	21.97	21.47
		25#12	21.58	22.01	21.56
		25#24	21.79	21.83	21.33
		50#0	20.75	21.08	20.79



**LTE Band VII (PART 27)**

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	1#0	22.58	22.44	22.15
		1#12	22.53	22.56	22.12
		1#24	22.45	22.50	22.12
		12#0	21.75	21.76	21.47
		12#6	21.74	21.81	21.44
		12#11	19.73	21.77	21.55
		25#0	20.94	21.44	21.20
	16QAM	1#0	21.63	21.84	21.90
		1#12	21.60	21.89	21.73
		1#24	21.74	21.96	21.76
		12#0	21.15	21.45	20.97
		12#6	21.04	21.35	20.86
		12#11	21.17	21.33	21.04
		25#0	20.63	20.82	20.38
10 MHz	QPSK	1#0	22.60	22.50	22.20
		1#24	22.64	22.55	22.21
		1#49	22.57	22.55	22.24
		25#0	21.56	21.84	21.43
		25#12	21.55	21.67	21.48
		25#24	21.74	21.74	21.49
		50#0	21.07	21.47	21.07
	16QAM	1#0	21.52	21.89	21.88
		1#24	21.54	22.03	21.77
		1#49	21.54	22.02	21.89
		25#0	21.03	21.22	20.72
		25#12	20.92	21.20	20.89
		25#24	21.04	21.36	20.88
		50#0	20.46	20.51	20.41

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15 MHz	QPSK	1#0	22.44	22.53	22.00
		1#37	22.54	22.62	22.11
		1#74	22.50	22.47	22.16
		36#0	21.80	21.76	21.49
		36#17	21.91	21.74	21.63
		36#35	22.04	21.87	21.52
		75#0	21.08	21.15	21.00
	16QAM	1#0	21.71	21.89	21.58
		1#37	21.81	21.92	21.56
		1#74	21.81	21.93	21.55
		36#0	21.11	21.15	20.73
		36#17	21.04	21.17	20.88
		36#35	20.95	21.35	20.74
		75#0	20.58	20.50	20.18
20 MHz	QPSK	1#0	22.58	22.45	22.18
		1#49	22.57	22.68	22.05
		1#99	22.44	22.48	22.30
		50#0	21.88	21.93	21.69
		50#24	21.77	21.94	21.55
		50#49	21.86	21.90	21.54
		100#0	21.13	21.23	21.09
	16QAM	1#0	21.91	21.82	21.57
		1#49	21.83	21.93	21.54
		1#99	21.74	21.83	21.61
		50#0	20.89	21.24	21.02
		50#24	20.71	21.19	21.03
		50#49	20.87	21.15	20.92
		100#0	20.48	20.41	20.34

LTE Band 12 (PART 27)

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4 MHz	QPSK	1#0	23.21	21.42	23.15
		1#3	23.31	21.15	22.41
		1#5	23.18	21.38	22.09
		3#0	22.36	21.02	21.25
		3#1	22.54	21.14	21.72
		3#3	22.23	20.98	21.46
		6#0	22.14	20.69	22.14
	16QAM	1#0	22.09	20.56	21.75
		1#3	22.15	20.21	21.78
		1#5	21.83	20.38	21.33
		3#0	21.98	20.68	21.91
		3#1	22.03	21.21	21.56
		3#3	21.52	20.66	21.74
		6#0	20.99	20.78	21.03
3 MHz	QPSK	1#0	23.05	21.82	23.16
		1#7	23.17	21.51	23.23
		1#14	23.04	22.10	22.76
		8#0	22.58	22.35	21.97
		8#4	22.05	22.42	22.14
		8#7	21.87	21.54	22.32
		15#0	22.21	20.92	22.16
	16QAM	1#0	22.16	21.93	22.01
		1#7	21.99	20.99	22.05
		1#14	22.60	20.82	21.83
		8#0	22.12	21.20	21.63
		8#4	22.06	21.56	21.34
		8#7	21.42	21.86	22.75
		15#0	21.21	20.72	21.26

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	1#0	23.39	22.08	22.49
		1#12	23.24	21.16	23.32
		1#24	22.70	21.63	22.29
		12#0	22.15	20.61	21.82
		12#6	22.31	20.28	22.30
		12#11	22.31	20.23	22.23
		25#0	22.22	20.94	22.21
	16QAM	1#0	22.26	20.63	21.55
		1#12	21.97	20.56	22.32
		1#24	21.94	20.75	21.66
		12#0	21.18	20.84	20.89
		12#6	21.35	20.55	21.28
		12#11	21.32	20.45	21.29
		25#0	21.28	20.65	21.16
10 MHz	QPSK	1#0	23.29	23.33	22.16
		1#24	22.84	22.72	21.96
		1#49	22.66	22.25	21.56
		25#0	22.32	22.12	20.99
		25#12	20.84	21.51	21.34
		25#24	21.73	21.39	22.05
		50#0	21.80	20.93	21.27
	16QAM	1#0	22.26	22.67	20.95
		1#24	21.95	21.56	20.32
		1#49	21.42	22.07	21.14
		25#0	22.26	22.54	22.45
		25#12	21.95	22.23	22.11
		25#24	21.56	21.62	21.98
		50#0	20.97	20.35	20.70

**LTE Band 17 (PART 27)**

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	1#0	22.51	22.48	22.55
		1#12	22.56	22.53	22.59
		1#24	22.57	22.54	22.51
		12#0	22.01	21.91	21.88
		12#6	21.95	21.79	21.94
		12#11	22.03	21.86	21.88
		25#0	21.73	21.43	21.53
	16QAM	1#0	21.71	21.65	21.97
		1#12	21.60	21.58	21.84
		1#24	21.82	21.69	21.80
		12#0	20.93	21.17	21.37
		12#6	21.07	21.34	21.26
		12#11	21.15	21.18	21.32
		25#0	20.40	20.57	20.72
10 MHz	QPSK	1#0	22.41	22.38	22.31
		1#24	22.33	22.39	22.36
		1#49	22.45	22.36	22.34
		25#0	21.84	21.80	21.81
		25#12	21.82	21.79	21.96
		25#24	21.87	21.80	21.96
		50#0	20.49	21.22	21.36
	16QAM	1#0	21.85	21.57	21.90
		1#24	21.55	21.66	21.95
		1#49	21.45	21.71	21.90
		25#0	21.17	21.11	21.42
		25#12	21.15	21.03	21.42
		25#24	21.00	21.01	21.24
		50#0	20.47	20.57	20.72

**PAR, 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	3.97	3.57	3.21	13
	100 RB		3.73	3.89	3.57	13
16QAM	1 RB	20 MHz	4.57	4.33	4.09	13
	100 RB		5.41	5.49	5.37	13

**PAR, 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	2.53	3.37	3.73	13
	100 RB		3.77	3.89	3.85	13
16QAM	1 RB	20 MHz	2.77	4.29	4.93	13
	100 RB		5.13	5.53	5.37	13

**PAR, Band V**

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	4.53	3.65	4.81	13
	50 RB		4.21	3.69	4.37	13
16QAM	1 RB	10 MHz	5.09	4.73	5.17	13
	50 RB		5.61	5.45	5.81	13

**PAR, Band VII**

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.61	3.57	5.09	13
	100 RB		3.77	3.45	3.97	13
16QAM	1 RB	20 MHz	6.09	3.97	5.57	13
	100 RB		5.37	5.33	5.81	13

**PAR, Band 12**

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	4.37	3.81	4.29	13
	50 RB		4.01	4.21	4.17	13
16QAM	1 RB	10 MHz	5.33	4.05	5.25	13
	50 RB		5.49	5.41	5.65	13

**PAR, 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	2.81	3.13	3.85	13
	50 RB		4.13	3.85	4.49	13
16QAM	1 RB	10 MHz	3.61	3.97	4.33	13
	50 RB		5.29	5.37	5.61	13

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

FINAL

ERP & EIRP

**Part 22H**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>GSM 850_Middle Channel</b>								
836.600	H	85.12	17.2	0.0	0.5	16.7	38.5	21.8
836.600	V	96.35	31.4	0.0	0.5	30.9	38.5	7.6
<b>EDGE 850_Middle Channel</b>								
836.600	H	79.23	11.3	0.0	0.5	10.8	38.5	27.7
836.600	V	88.49	23.6	0.0	0.5	23.1	38.5	15.4
<b>WCDMA Band V Middle Channel</b>								
836.600	H	85.30	17.4	0.0	0.5	16.9	38.5	21.6
836.600	V	85.10	20.2	0.0	0.5	19.7	38.5	18.8

**Part 24E**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>PCS 1900_Middle Channel</b>								
1880.000	H	98.67	25.7	11.1	4.8	32.0	33.0	1.0
1880.000	V	94.57	21.4	11.1	4.8	27.7	33.0	5.3
<b>EDGE 1900_Middle Channel</b>								
1880.000	H	94.87	21.9	11.1	4.8	28.2	33.0	4.8
1880.000	V	90.27	17.1	11.1	4.8	23.4	33.0	9.6
<b>WCDMA Band II Middle Channel</b>								
1880.000	H	91.52	18.6	11.1	4.8	24.9	33.0	8.1
1880.000	V	85.74	12.6	11.1	4.8	18.9	33.0	14.1

**Part 27**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>WCDMA Band IV Middle Channel</b>								
1732.500	H	90.21	16.7	10.7	4.6	22.8	30.0	7.2
1732.500	V	85.55	11.8	10.7	4.6	17.9	30.0	12.1



**LTE Band II**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>QPSK 1.4 MHz Middle Channel</b>								
1880.000	H	86.37	14.8	11.7	1.4	25.1	33.00	7.9
1880.000	V	83.34	11.9	11.7	1.4	22.2	33.00	10.8
<b>QPSK 3 MHz Middle Channel</b>								
1880.000	H	85.41	13.8	11.7	1.4	24.1	33.00	8.9
1880.000	V	82.64	11.2	11.7	1.4	21.5	33.00	11.5
<b>QPSK 5 MHz Middle Channel</b>								
1880.000	H	85.34	13.7	11.7	1.4	24.0	33.00	9.0
1880.000	V	82.67	11.2	11.7	1.4	21.5	33.00	11.5
<b>QPSK 10 MHz Middle Channel</b>								
1880.000	H	84.85	13.3	11.7	1.4	23.6	33.00	9.4
1880.000	V	80.48	9	11.7	1.4	19.3	33.00	13.7
<b>QPSK 15 MHz Middle Channel</b>								
1880.000	H	83.27	11.7	11.7	1.4	22.0	33.00	11.0
1880.000	V	79.68	8.2	11.7	1.4	18.5	33.00	14.5
<b>QPSK 20 MHz Middle Channel</b>								
1880.000	H	83.18	11.6	11.7	1.4	21.9	33.00	11.1
1880.000	V	78.64	7.2	11.7	1.4	17.5	33.00	15.5
<b>16QAM 1.4 MHz Middle Channel</b>								
1880.000	H	86.13	14.5	11.7	1.4	24.8	33.00	8.2
1880.000	V	83.15	11.7	11.7	1.4	22.0	33.00	11.0
<b>16QAM 3 MHz Middle Channel</b>								
1880.000	H	85.06	13.5	11.7	1.4	23.8	33.00	9.2
1880.000	V	82.15	10.7	11.7	1.4	21.0	33.00	12.0
<b>16QAM 5 MHz Middle Channel</b>								
1880.000	H	85.05	13.5	11.7	1.4	23.8	33.00	9.2
1880.000	V	81.64	10.2	11.7	1.4	20.5	33.00	12.5
<b>16QAM 10 MHz Middle Channel</b>								
1880.000	H	84.67	13.1	11.7	1.4	23.4	33.00	9.6
1880.000	V	80.28	8.8	11.7	1.4	19.1	33.00	13.9
<b>16QAM 15 MHz Middle Channel</b>								
1880.000	H	83.16	11.6	11.7	1.4	21.9	33.00	11.1
1880.000	V	79.04	7.6	11.7	1.4	17.9	33.00	15.1
<b>16QAM 20 MHz Middle Channel</b>								
1880.000	H	82.37	10.8	11.7	1.4	21.1	33.00	11.9
1880.000	V	77.95	6.5	11.7	1.4	16.8	33.00	16.2

**LTE Band IV**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>QPSK 1.4 MHz Middle Channel</b>								
1732.500	H	87.64	14.6	10.9	1.4	24.1	30.00	5.9
1732.500	V	85.23	11.9	10.9	1.4	21.4	30.00	8.6
<b>QPSK 3 MHz Middle Channel</b>								
1732.500	H	87.05	14	10.9	1.4	23.5	30.00	6.5
1732.500	V	84.68	11.4	10.9	1.4	20.9	30.00	9.1
<b>QPSK 5 MHz Middle Channel</b>								
1732.500	H	86.34	13.3	10.9	1.4	22.8	30.00	7.2
1732.500	V	84.86	11.5	10.9	1.4	21.0	30.00	9.0
<b>QPSK 10 MHz Middle Channel</b>								
1732.500	H	85.21	12.2	10.9	1.4	21.7	30.00	8.3
1732.500	V	83.60	10.3	10.9	1.4	19.8	30.00	10.2
<b>QPSK 15 MHz Middle Channel</b>								
1732.500	H	83.69	10.7	10.9	1.4	20.2	30.00	9.8
1732.500	V	81.75	8.4	10.9	1.4	17.9	30.00	12.1
<b>QPSK 20 MHz Middle Channel</b>								
1732.500	H	82.09	9.1	10.9	1.4	18.6	30.00	11.4
1732.500	V	79.86	6.5	10.9	1.4	16.0	30.00	14.0
<b>16QAM 1.4 MHz Middle Channel</b>								
1732.500	H	86.84	13.8	10.9	1.4	23.3	30.00	6.7
1732.500	V	84.38	11.1	10.9	1.4	20.6	30.00	9.4
<b>16QAM 3 MHz Middle Channel</b>								
1732.500	H	86.36	13.4	10.9	1.4	22.9	30.00	7.1
1732.500	V	85.15	11.8	10.9	1.4	21.3	30.00	8.7
<b>16QAM 5 MHz Middle Channel</b>								
1732.500	H	86.37	13.4	10.9	1.4	22.9	30.00	7.1
1732.500	V	84.88	11.6	10.9	1.4	21.1	30.00	8.9
<b>16QAM 10 MHz Middle Channel</b>								
1732.500	H	84.67	11.7	10.9	1.4	21.2	30.00	8.8
1732.500	V	82.42	9.1	10.9	1.4	18.6	30.00	11.4
<b>16QAM 15 MHz Middle Channel</b>								
1732.500	H	83.15	10.1	10.9	1.4	19.6	30.00	10.4
1732.500	V	81.06	7.7	10.9	1.4	17.2	30.00	12.8
<b>16QAM 20 MHz Middle Channel</b>								
1732.500	H	81.86	8.9	10.9	1.4	18.4	30.00	11.6
1732.500	V	79.26	5.9	10.9	1.4	15.4	30.00	14.6

**LTE Band V**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>QPSK 1.4 MHz Middle Channel</b>								
836.500	H	78.25	10.4	0.0	0.5	9.9	38.5	28.6
836.500	V	86.54	21.6	0.0	0.5	21.1	38.5	17.4
<b>QPSK 3 MHz Middle Channel</b>								
836.500	H	77.36	9.5	0.0	0.5	9.0	38.5	29.5
836.500	V	85.00	20.1	0.0	0.5	19.6	38.5	18.9
<b>QPSK 5 MHz Middle Channel</b>								
836.500	H	76.12	8.2	0.0	0.5	7.7	38.5	30.8
836.500	V	83.25	18.3	0.0	0.5	17.8	38.5	20.7
<b>QPSK 10MHz Middle Channel</b>								
836.500	H	74.12	6.2	0.0	0.5	5.7	38.5	32.8
836.500	V	81.69	16.8	0.0	0.5	16.3	38.5	22.2
<b>16QAM 1.4 MHz Middle Channel</b>								
836.500	H	79.32	11.4	0.0	0.5	10.9	38.5	27.6
836.500	V	84.35	19.4	0.0	0.5	18.9	38.5	19.6
<b>16QAM 3 MHz Middle Channel</b>								
836.500	H	76.68	8.8	0.0	0.5	8.3	38.5	30.2
836.500	V	84.36	19.4	0.0	0.5	18.9	38.5	19.6
<b>16QAM 5 MHz Middle Channel</b>								
836.500	H	74.69	6.8	0.0	0.5	6.3	38.5	32.2
836.500	V	82.51	17.6	0.0	0.5	17.1	38.5	21.4
<b>16QAM 10 MHz Middle Channel</b>								
836.500	H	73.87	6	0.0	0.5	5.5	38.5	33
836.500	V	81.26	16.3	0.0	0.5	15.8	38.5	22.7

**LTE Band VII**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>QPSK 5 MHz Middle Channel</b>								
2535.000	H	85.34	14.1	13.1	2.5	24.7	33.00	8.3
2535.000	V	83.45	13.7	13.1	2.5	24.3	33.00	8.7
<b>QPSK 10 MHz Middle Channel</b>								
2535.000	H	85.06	13.9	13.1	2.5	24.5	33.00	8.5
2535.000	V	83.64	13.9	13.1	2.5	24.5	33.00	8.5
<b>QPSK 15 MHz Middle Channel</b>								
2535.000	H	84.30	13.1	13.1	2.5	23.7	33.00	9.3
2535.000	V	82.17	12.4	13.1	2.5	23.0	33.00	10.0
<b>QPSK 20MHz Middle Channel</b>								
2535.000	H	83.07	11.9	13.1	2.5	22.5	33.00	10.5
2535.000	V	80.36	10.6	13.1	2.5	21.2	33.00	11.8
<b>16QAM 5 MHz Middle Channel</b>								
2535.000	H	84.87	13.7	13.1	2.5	24.3	33.00	8.7
2535.000	V	82.31	12.6	13.1	2.5	23.2	33.00	9.8
<b>16QAM 10 MHz Middle Channel</b>								
2535.000	H	84.38	13.2	13.1	2.5	23.8	33.00	9.2
2535.000	V	82.31	12.6	13.1	2.5	23.2	33.00	9.8
<b>16QAM 15 MHz Middle Channel</b>								
2535.000	H	83.34	12.1	13.1	2.5	22.7	33.00	10.3
2535.000	V	81.64	11.9	13.1	2.5	22.5	33.00	10.5
<b>16QAM 20 MHz Middle Channel</b>								
2535.000	H	82.35	11.1	13.1	2.5	21.7	33.00	11.3
2535.000	V	79.67	9.9	13.1	2.5	20.5	33.00	12.5

**LTE Band 12**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>QPSK 1.4 MHz Middle Channel</b>								
707.500	H	80.87	10.3	0.0	0.4	9.9	34.77	24.87
707.500	V	88.94	21.3	0.0	0.4	20.9	34.77	13.87
<b>QPSK 3 MHz Middle Channel</b>								
707.500	H	82.68	12.1	0.0	0.4	11.7	34.77	23.07
707.500	V	87.22	19.6	0.0	0.4	19.2	34.77	15.57
<b>QPSK 5 MHz Middle Channel</b>								
707.500	H	83.01	12.5	0.0	0.4	12.1	34.77	22.67
707.500	V	88.14	20.5	0.0	0.4	20.1	34.77	14.67
<b>QPSK 10MHz Middle Channel</b>								
707.500	H	80.88	10.3	0.0	0.4	9.9	34.77	24.87
707.500	V	86.65	19	0.0	0.4	18.6	34.77	16.17
<b>16QAM 1.4 MHz Middle Channel</b>								
707.500	H	81.21	10.7	0.0	0.4	10.3	34.77	24.47
707.500	V	88.22	20.6	0.0	0.4	20.2	34.77	14.57
<b>16QAM 3 MHz Middle Channel</b>								
707.500	H	81.75	11.2	0.0	0.4	10.8	34.77	23.97
707.500	V	87.72	20.1	0.0	0.4	19.7	34.77	15.07
<b>16QAM 5 MHz Middle Channel</b>								
707.500	H	82.52	12	0.0	0.4	11.6	34.77	23.17
707.500	V	87.74	20.1	0.0	0.4	19.7	34.77	15.07
<b>16QAM 10 MHz Middle Channel</b>								
707.500	H	81.12	10.6	0.0	0.4	10.2	34.77	24.57
707.500	V	86.42	18.8	0.0	0.4	18.4	34.77	16.37

**LTE Band 17**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
<b>QPSK 5 MHz Middle Channel</b>								
710.000	H	82.12	11.6	0.0	0.4	11.2	34.77	23.57
710.000	V	88.36	20.8	0.0	0.4	20.4	34.77	14.37
<b>QPSK 10 MHz Middle Channel</b>								
710.000	H	80.69	10.2	0.0	0.4	9.8	34.77	24.97
710.000	V	86.74	19.1	0.0	0.4	18.7	34.77	16.07
<b>16QAM 5 MHz Middle Channel</b>								
710.000	H	81.35	10.9	0.0	0.4	10.5	34.77	24.27
710.000	V	87.45	19.8	0.0	0.4	19.4	34.77	15.37
<b>16QAM 10MHz Middle Channel</b>								
710.000	H	80.18	9.7	0.0	0.4	9.3	34.77	25.47
710.000	V	86.32	18.7	0.0	0.4	18.3	34.77	16.47

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

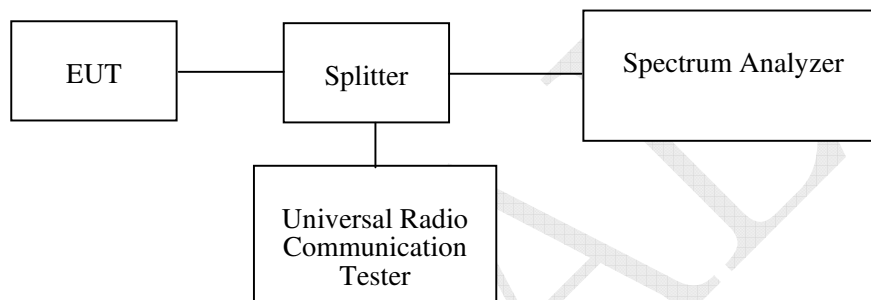
### Applicable Standard

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
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/
N/A	Two-way Splitter	N/A	OE0120121	Each Time	/

\* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

### Test Data

#### Environmental Conditions

<b>Temperature:</b>	23.2~28.8 °C
<b>Relative Humidity:</b>	31~52 %
<b>ATM Pressure:</b>	100.7 ~102.3 kPa

The testing was performed by Tom Tang from 2016-12-16 to 2017-02-04.

Test Mode: Transmitting

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

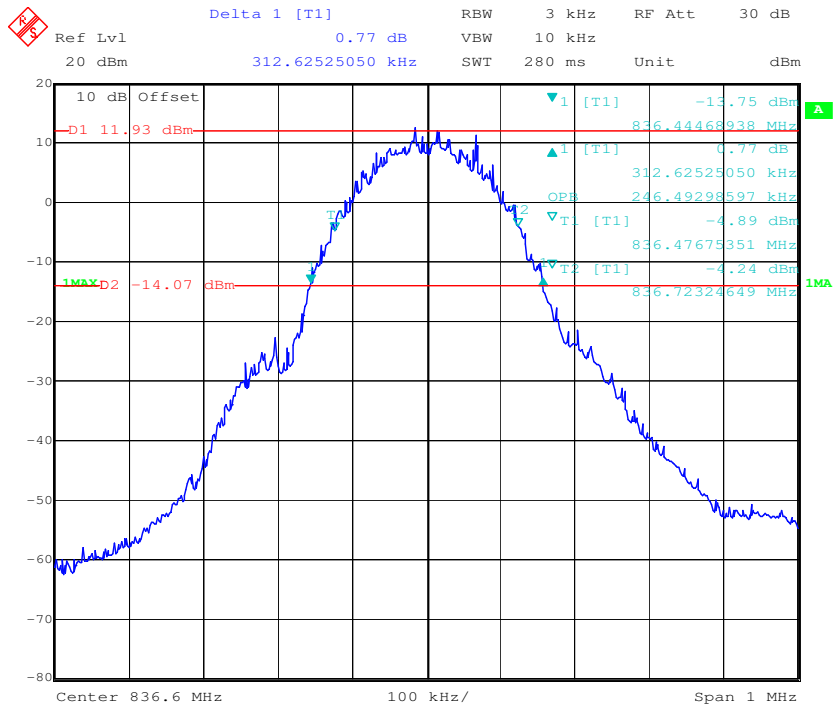
Band	Test Channel	Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Cellular	M	GSM	0.246	0.312
		EDGE	0.255	0.319
PCS		PCS	0.244	0.321
		EDGE	0.264	0.339
WCDMA Band II		Rel 99	4.248	4.950
		HSDPA	4.228	4.900
		HSUPA	4.228	4.910
WCDMA Band IV		Rel 99	4.228	4.890
		HSDPA	4.228	4.950
		HSUPA	4.228	4.950
WCDMA Band V	Rel 99	4.228	4.910	
	HSDPA	4.248	4.930	
	HSUPA	4.228	4.890	

Band	Test Modulation	Test Bandwidth (MHz)	Test Channel	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
LTE Band II	QPSK	1.4	M	1.112	1.299
		3		2.766	3.102
		5		4.569	5.170
		10		9.138	10.421
		15		13.587	15.090
		20		18.196	20.200
	16QAM	1.4	M	1.106	1.287
		3		2.778	3.138
		5		4.569	5.150
		10		9.098	10.301
		15		13.587	15.210
		20		18.277	20.361
LTE Band IV	QPSK	1.4	M	1.100	1.299
		3		2.778	3.114
		5		4.569	5.130
		10		9.178	10.421
		15		13.647	15.030
		20		18.196	21.120
	16QAM	1.4	M	1.106	1.299
		3		2.778	3.138
		5		4.569	5.110
		10		9.138	10.301
		15		13.527	15.150
		20		18.277	20.120

Band	Test Modulation	Test Bandwidth (MHz)	Test Channel	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
LTE Band V	QPSK	1.4	M	1.100	1.287
		3		2.766	3.138
		5		4.549	5.070
		10		9.138	10.461
	16QAM	1.4	M	1.106	1.293
		3		2.778	3.102
		5		4.540	5.090
		10		9.138	10.260
LTE Band VII	QPSK	5	M	4.569	5.130
		10		9.138	10.341
		15		13.587	15.090
		20		18.196	19.960
	16QAM	5	M	4.549	5.090
		10		9.138	10.341
		15		13.587	15.271
		20		18.277	19.960
LTE Band 12	QPSK	1.4	M	1.118	1.287
		3		2.778	3.162
		5		4.569	5.130
		10		9.298	10.421
	16QAM	1.4	M	1.100	1.299
		3		2.790	3.162
		5		4.569	5.130
		10		9.299	10.461
LTE Band 17	QPSK	5	M	4.569	5.130
		10		9.218	10.381
	16QAM	5	M	4.569	5.130
		10		9.218	10.381

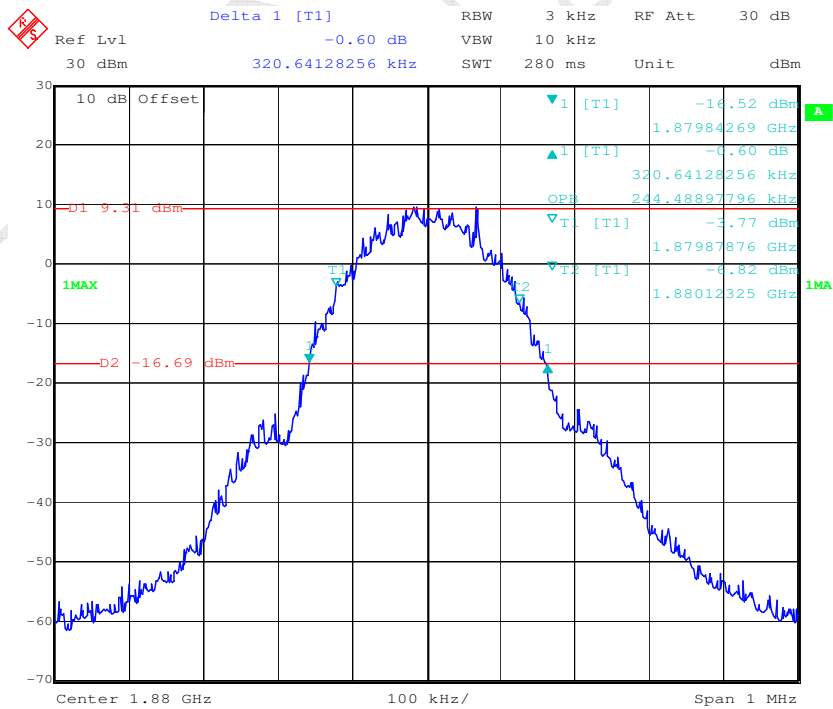


### GMSK 850 Cellular Band



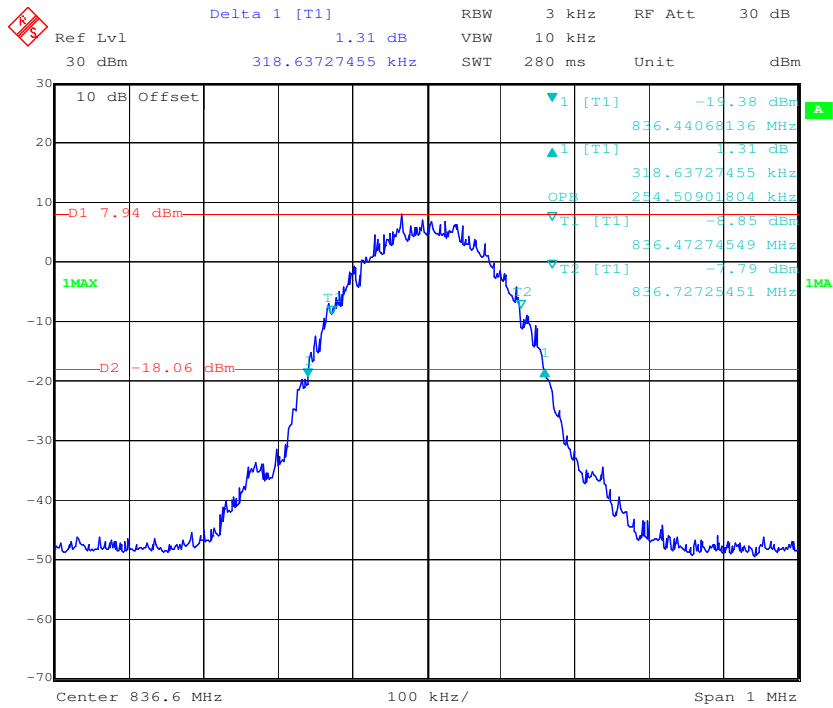
Date: 16.DEC.2016 21:05:56

### GMSK PCS Band



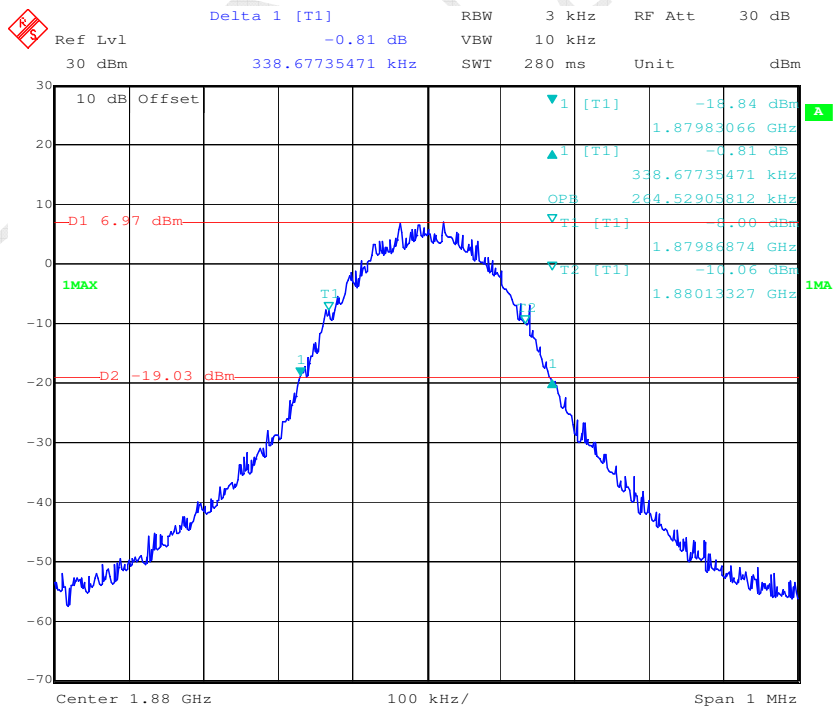
Date: 16.DEC.2016 21:34:39

### EDGE 850 Cellular Band



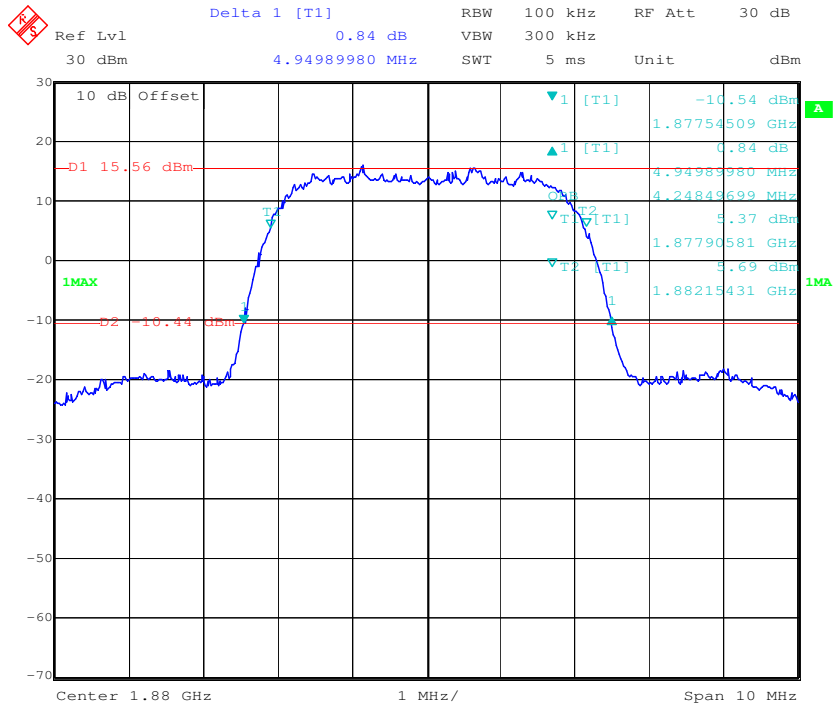
Date: 16.DEC.2016 21:28:03

### EDGE PCS Band



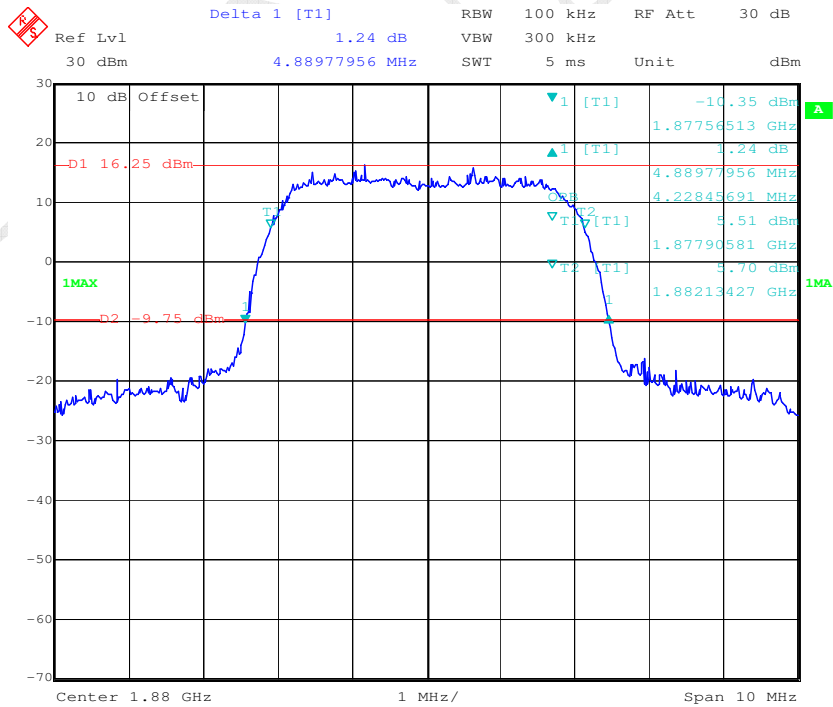
Date: 16.DEC.2016 21:32:04

### REL99 Band II



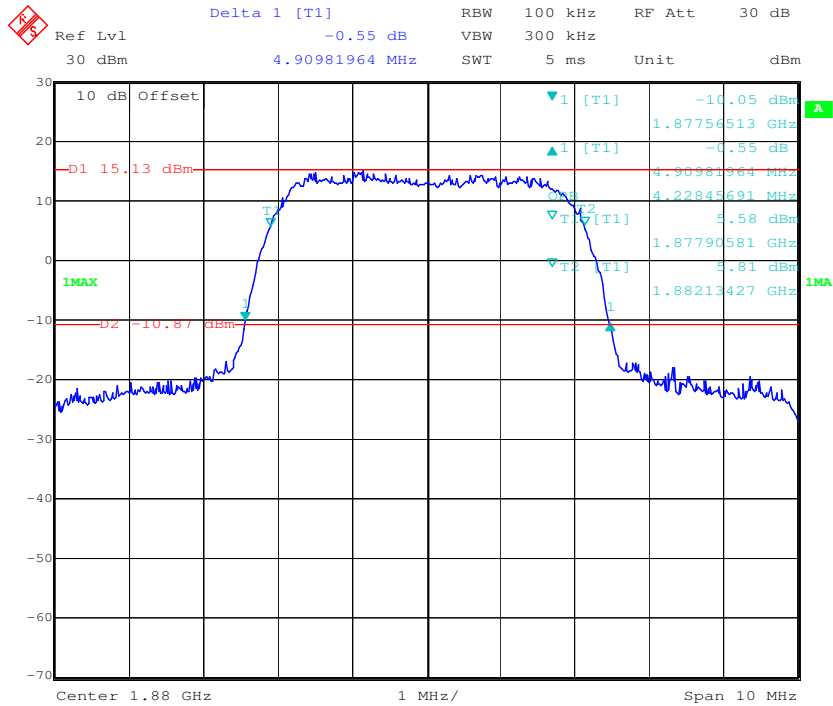
Date: 16.DEC.2016 21:49:33

### HSDPA Band II



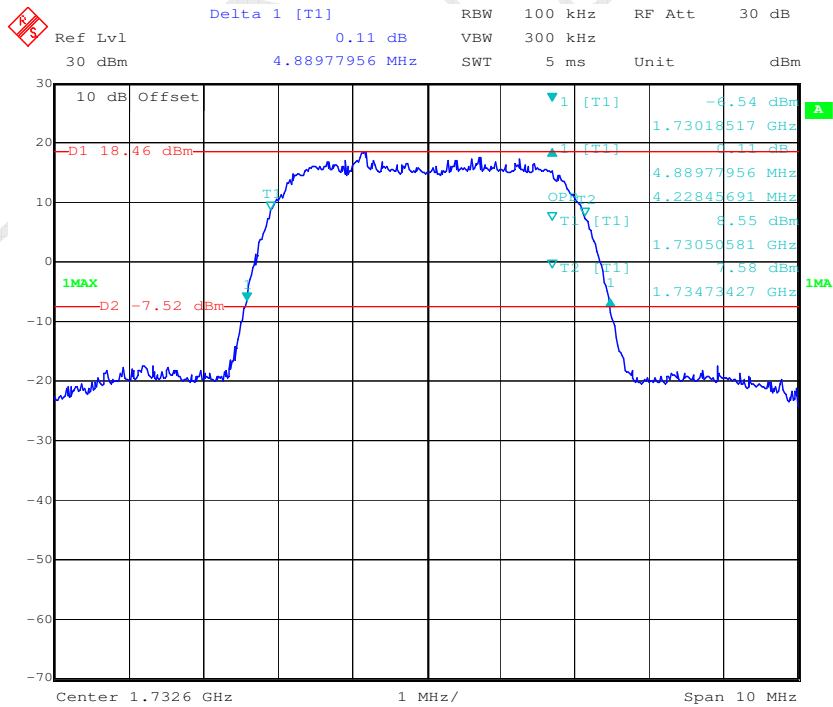
Date: 16.DEC.2016 22:32:39

### HSUPA Band II



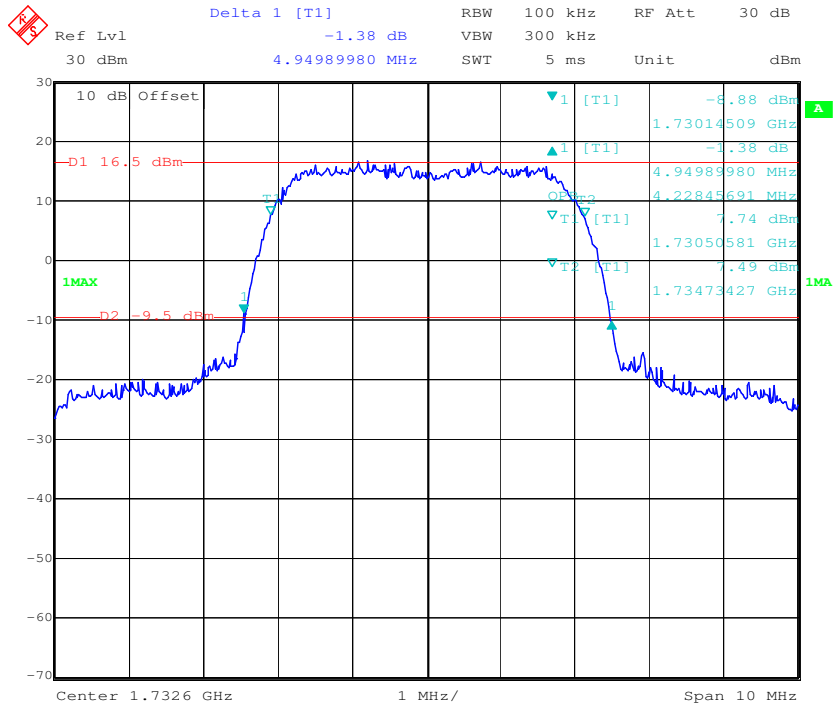
Date: 16.DEC.2016 22:41:47

### REL99 Band IV



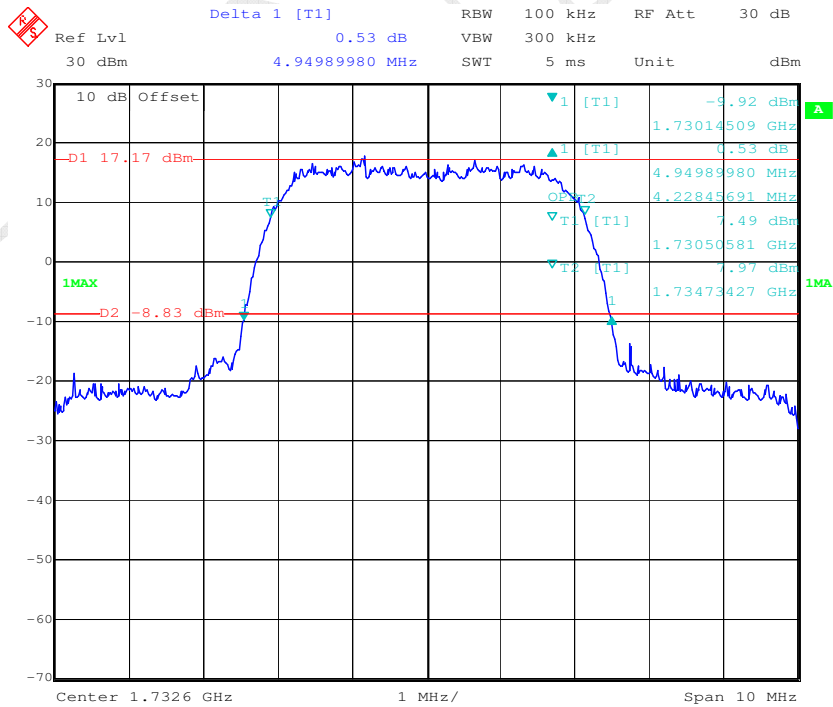
Date: 16.DEC.2016 23:17:48

### HSDPA Band IV



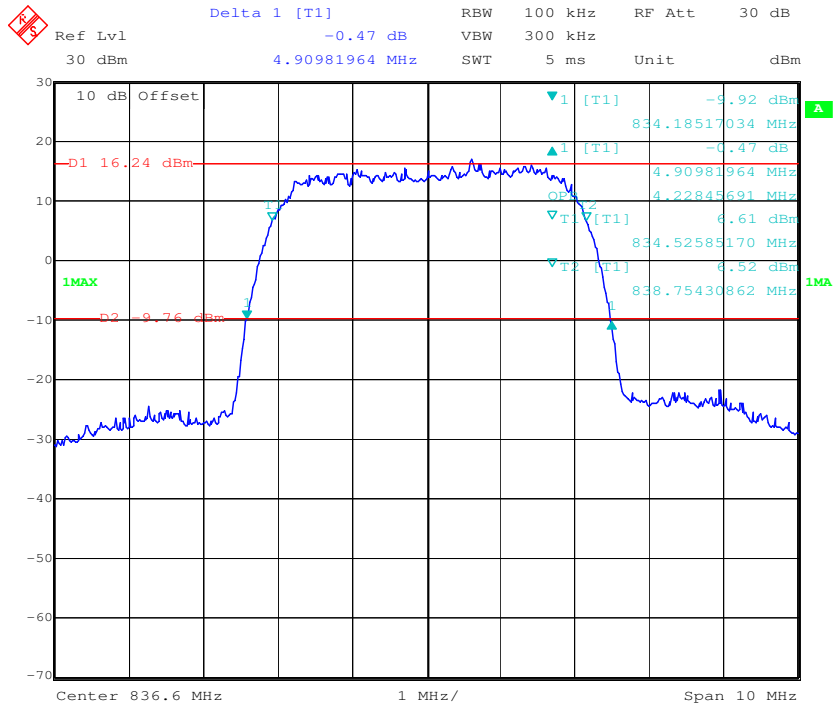
Date: 16.DEC.2016 23:00:08

### HSUPA Band IV

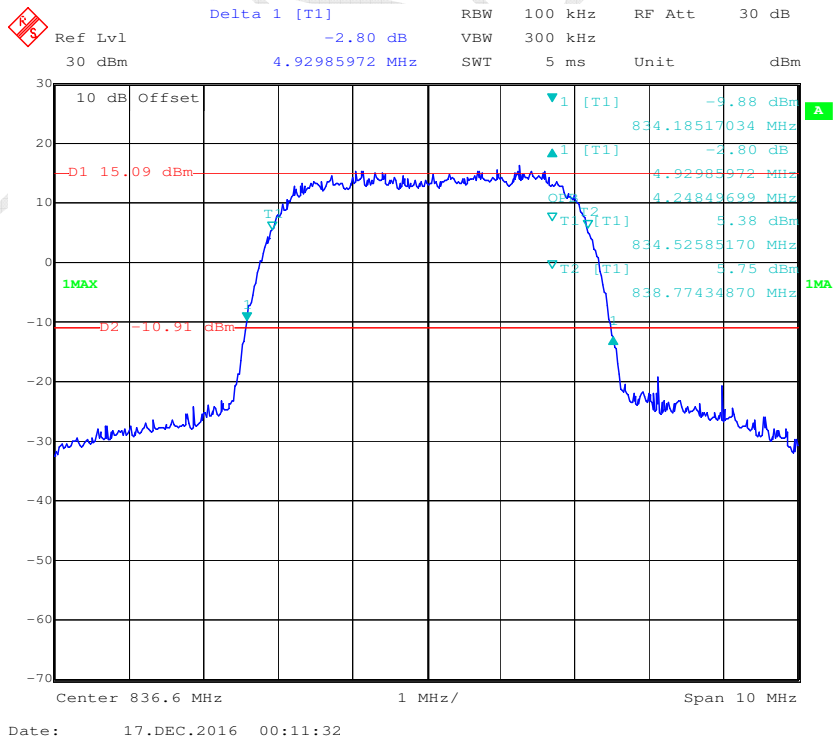


Date: 16.DEC.2016 22:54:20

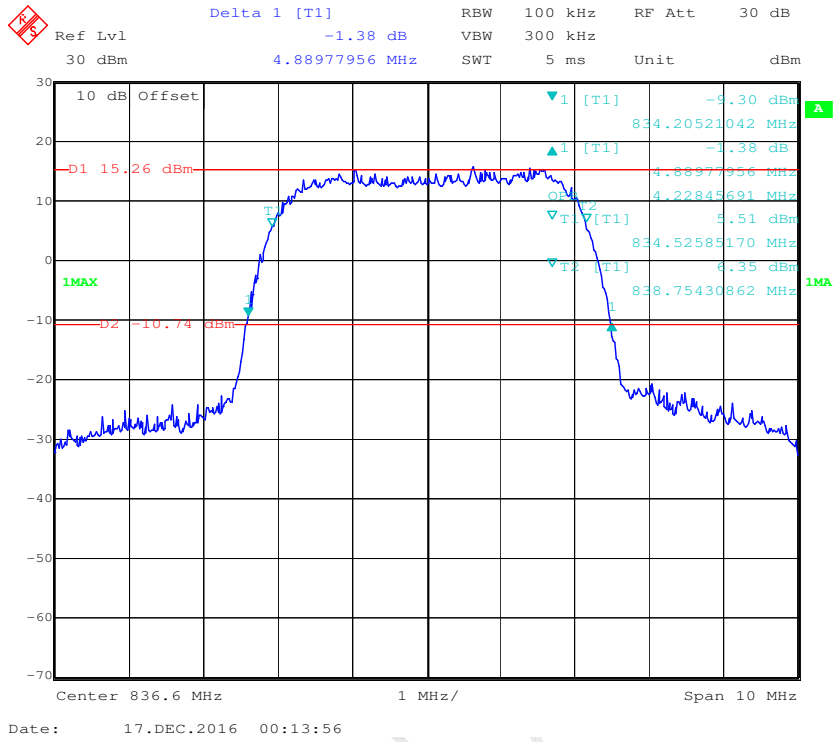
### REL99 Band V



### HSDPA Band V

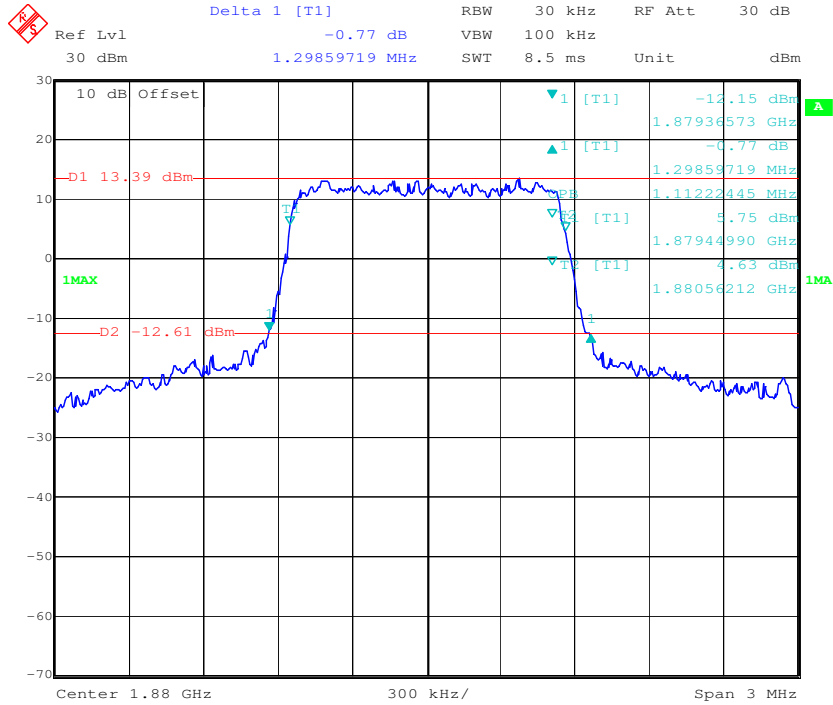


### HSUPA Band V



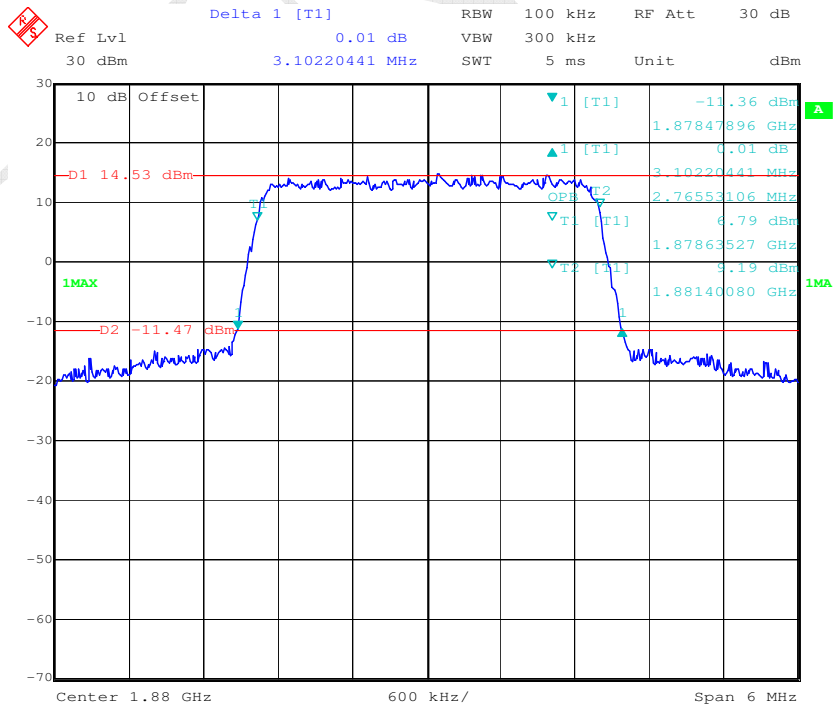
LTE Band II

QPSK\_1.4 MHz



Date: 4.JAN.2017 23:11:06

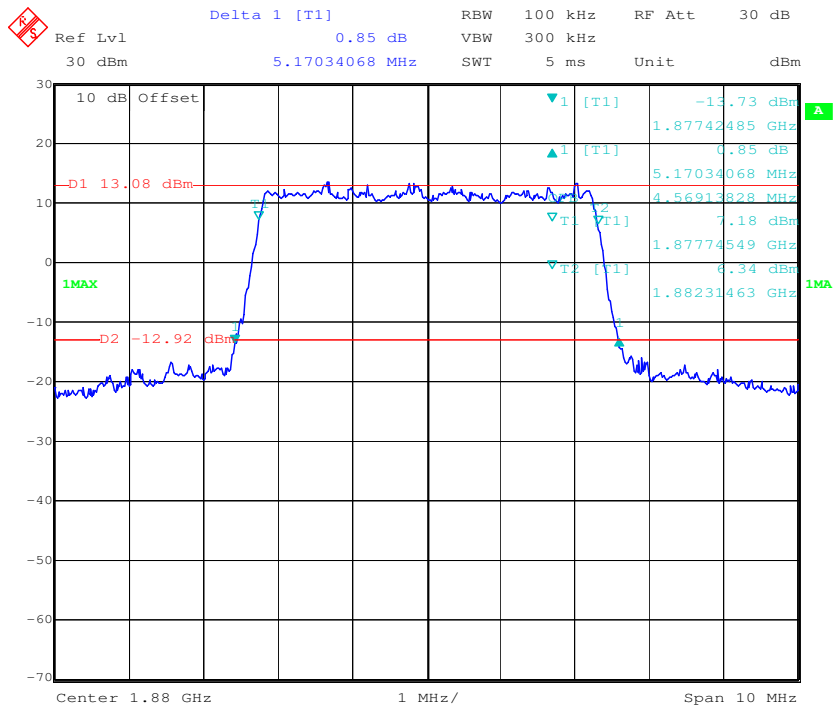
QPSK\_3 MHz



Date: 4.JAN.2017 23:08:09

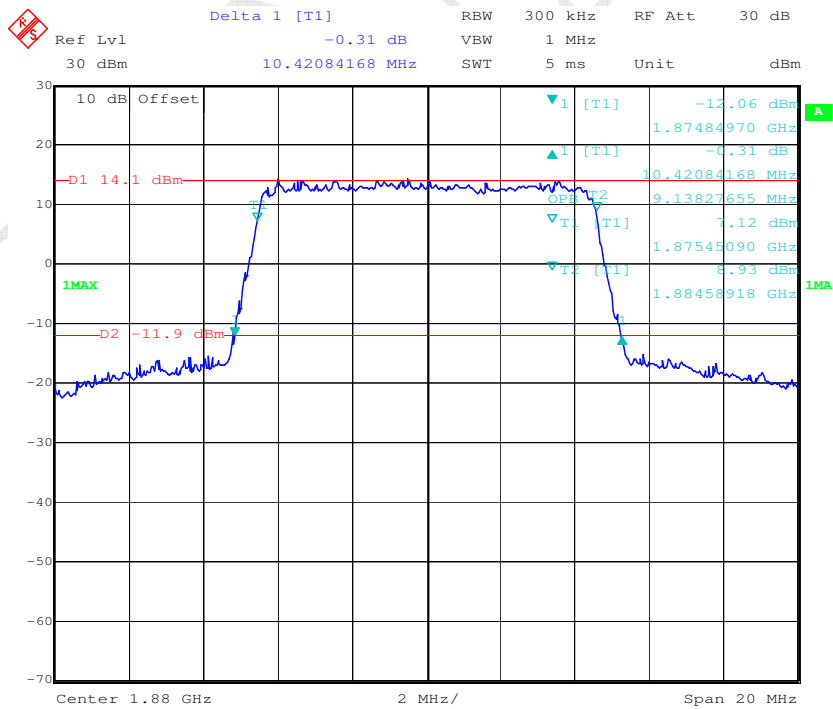


### QPSK\_5 MHz



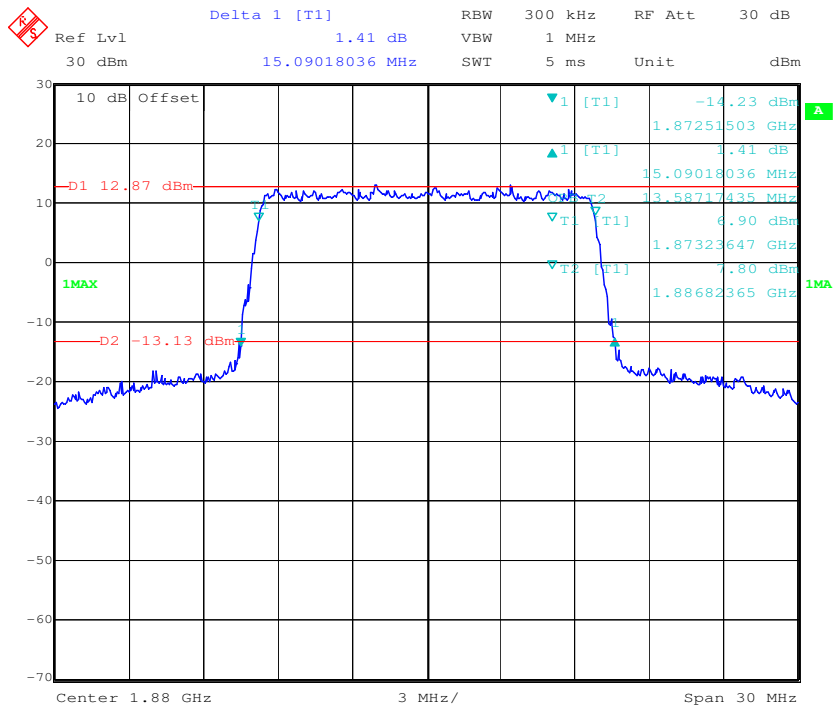
Date: 4.JAN.2017 23:02:52

### QPSK\_10 MHz



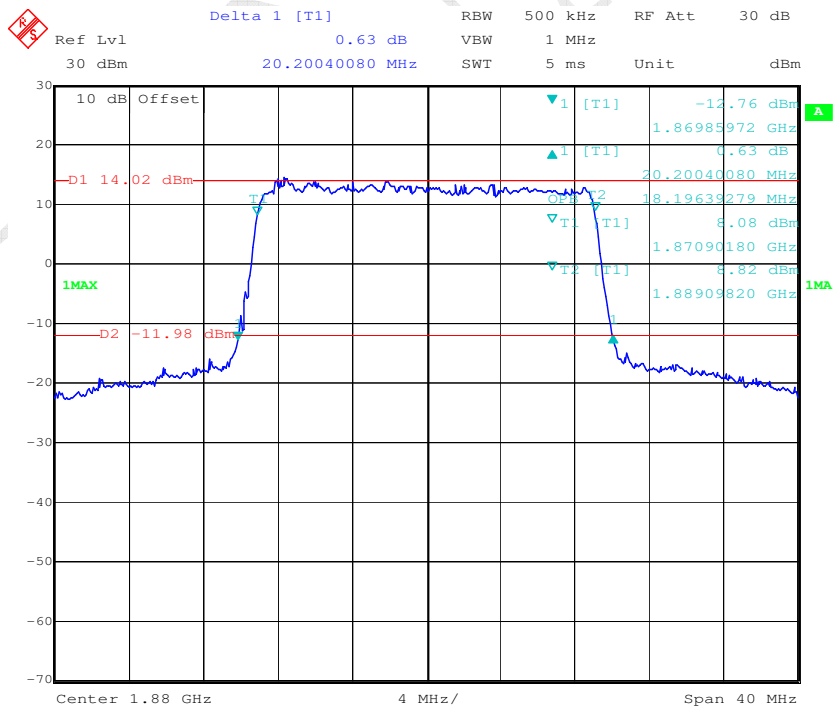
Date: 4.JAN.2017 22:58:28

### QPSK\_15 MHz



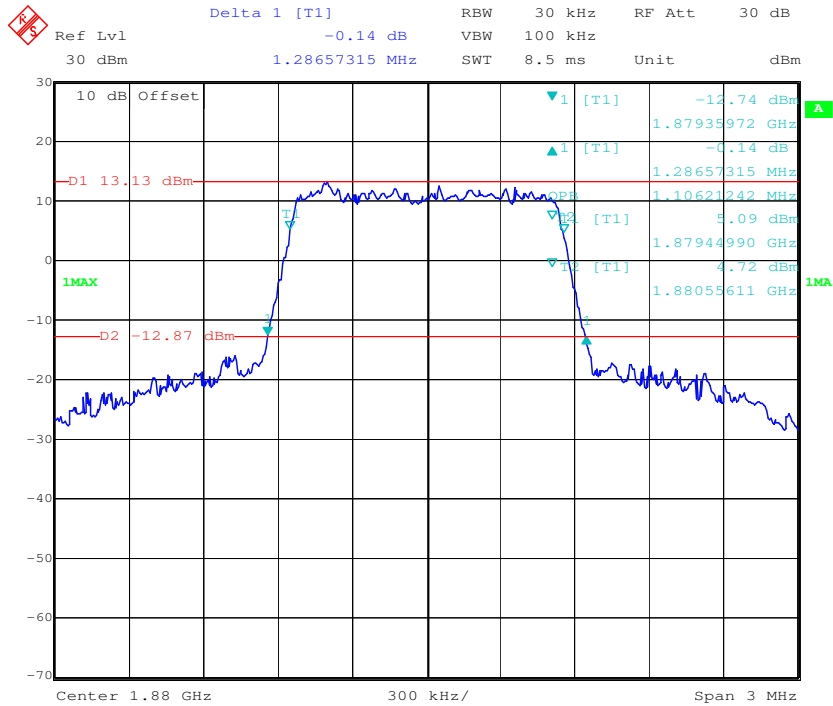
Date: 4.JAN.2017 22:56:38

### QPSK\_20 MHz



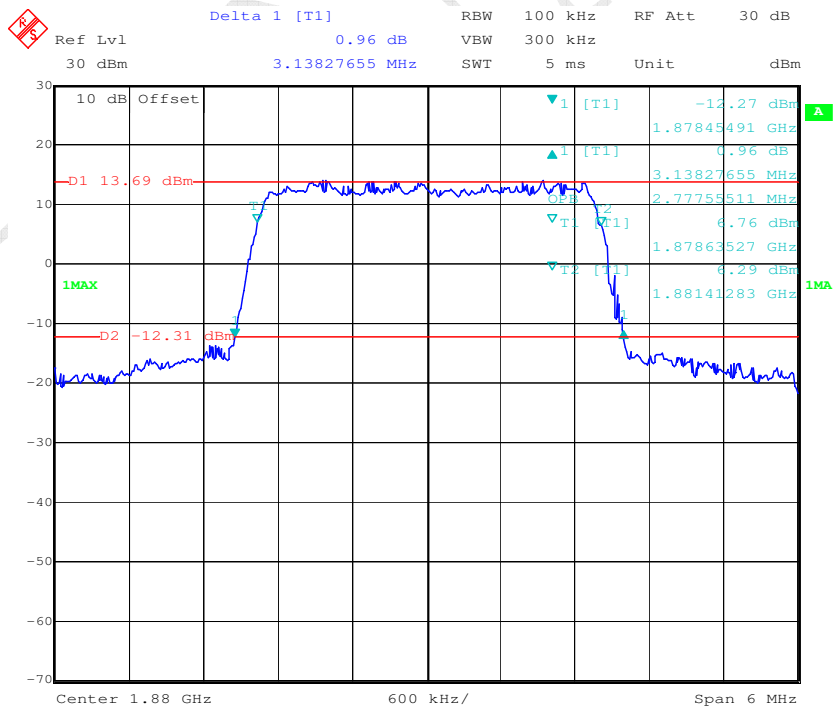
Date: 4.JAN.2017 22:51:12

### 16QAM\_1.4 MHz



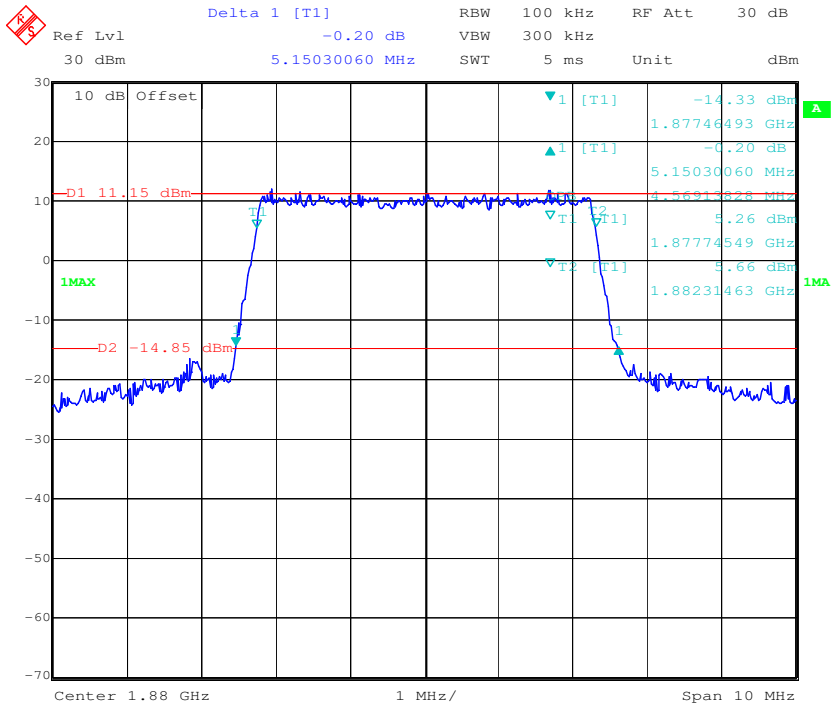
Date: 4.JAN.2017 23:09:59

### 16QAM\_3 MHz

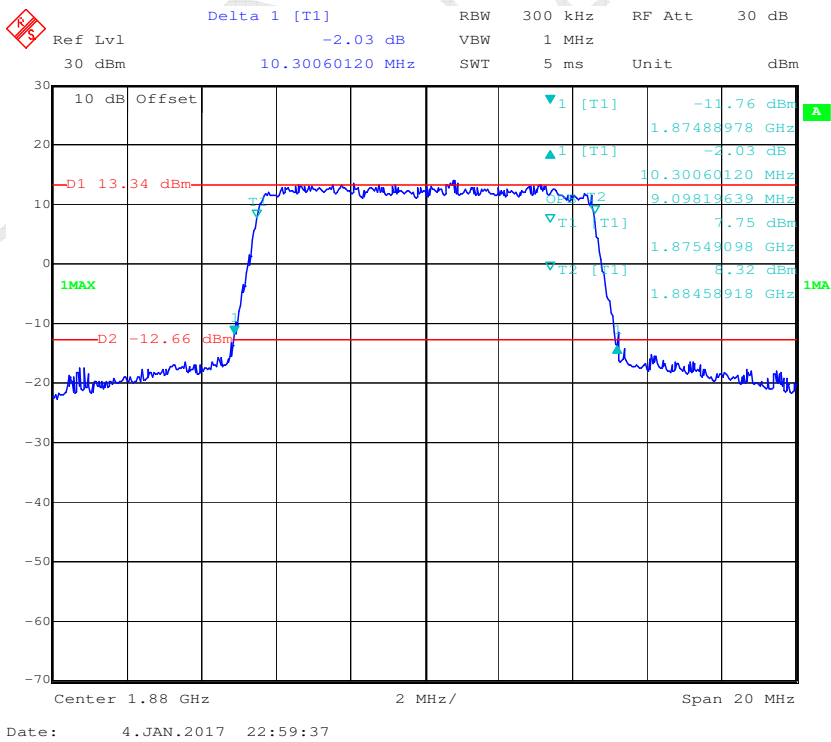


Date: 4.JAN.2017 23:06:54

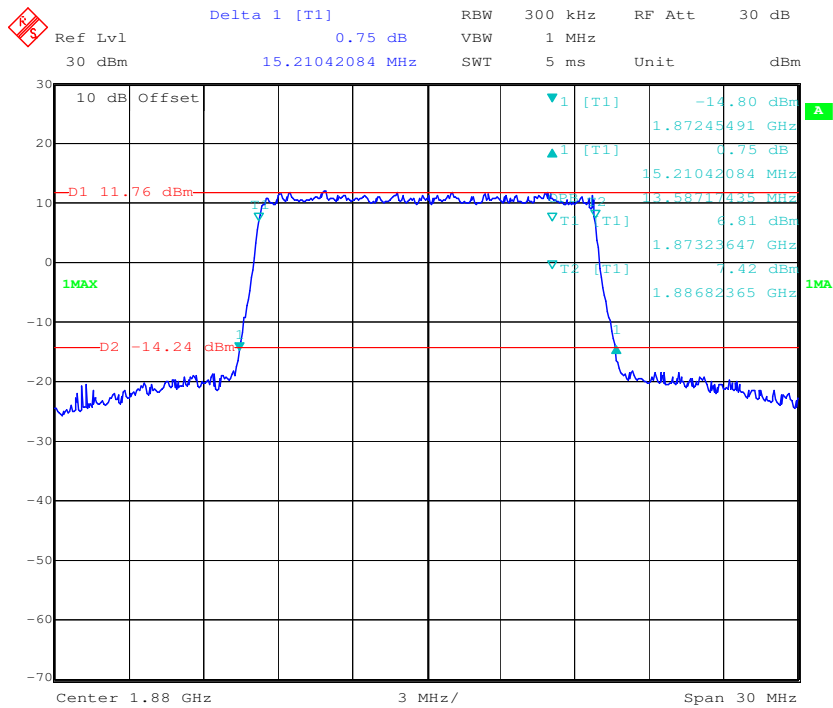
### 16QAM\_5 MHz



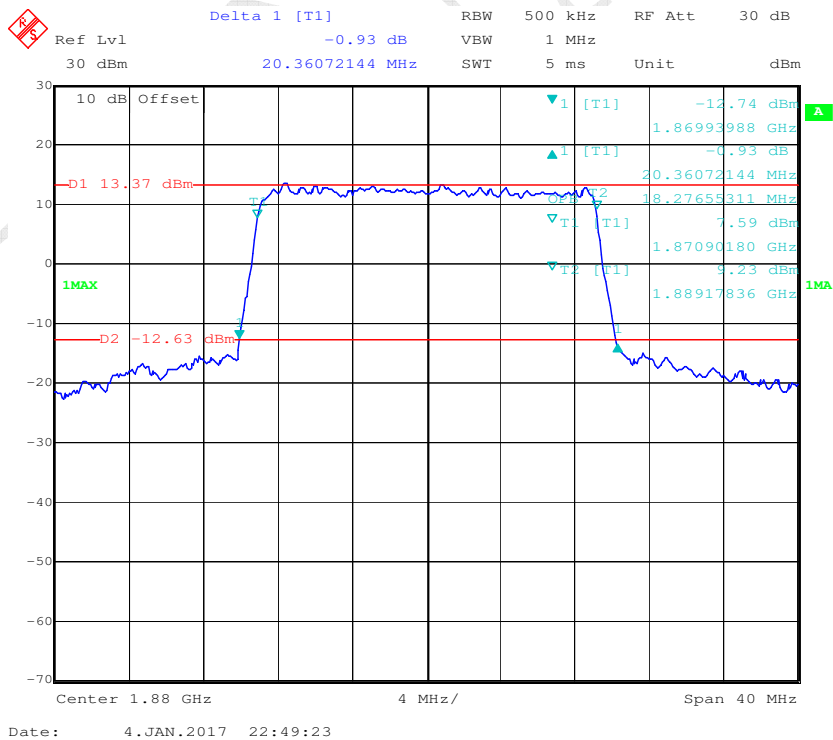
### 16QAM\_10 MHz



### 16QAM\_15 MHz

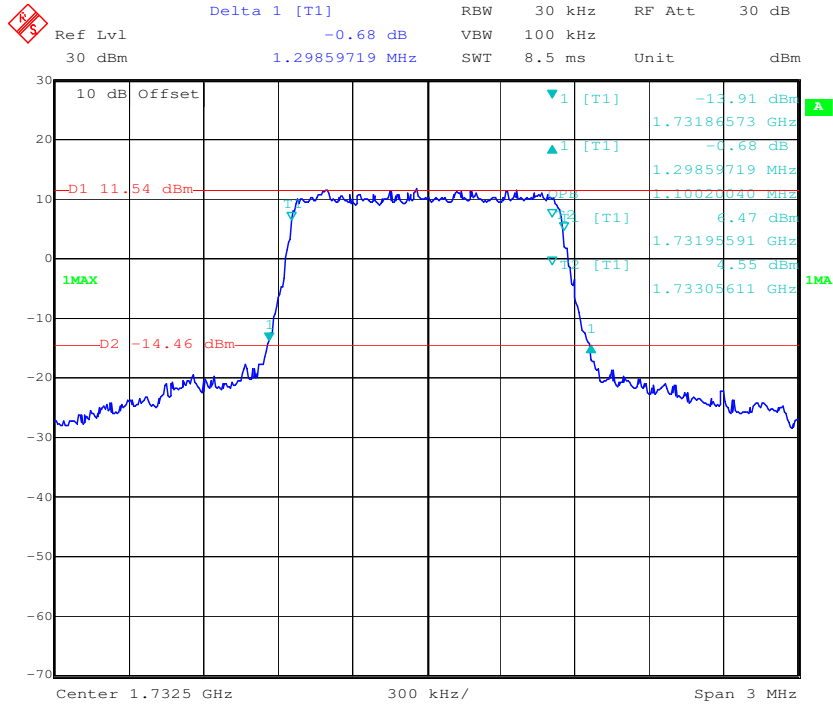


### 16QAM\_20 MHz



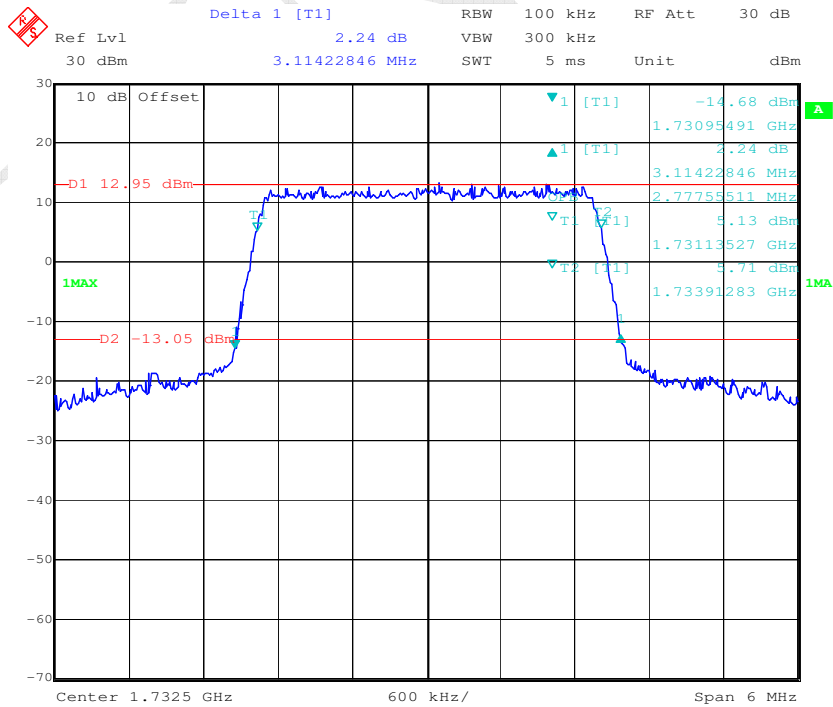
LTE Band IV:

QPSK\_1.4 MHz



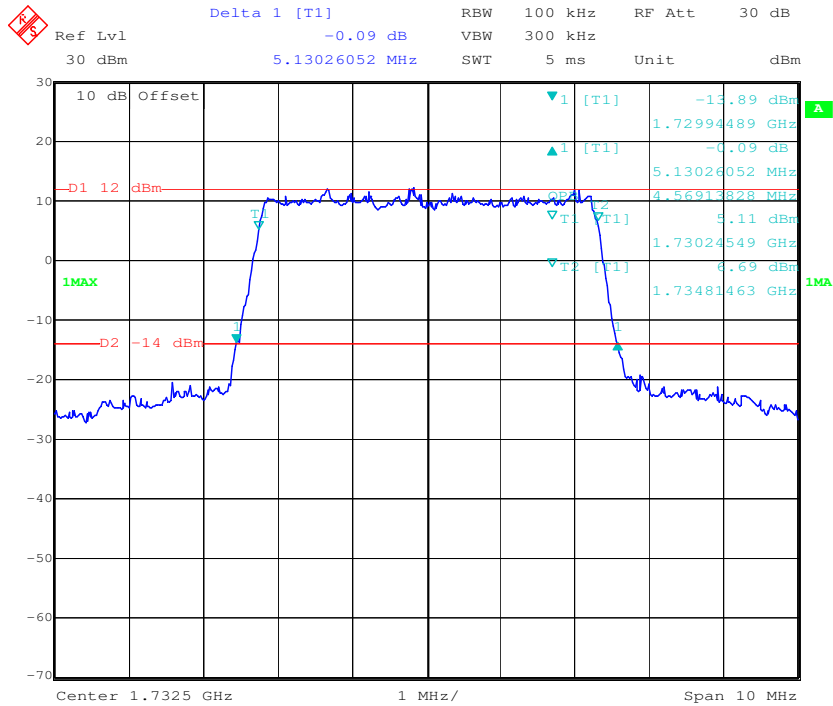
Date: 4.JAN.2017 23:12:40

QPSK\_3 MHz

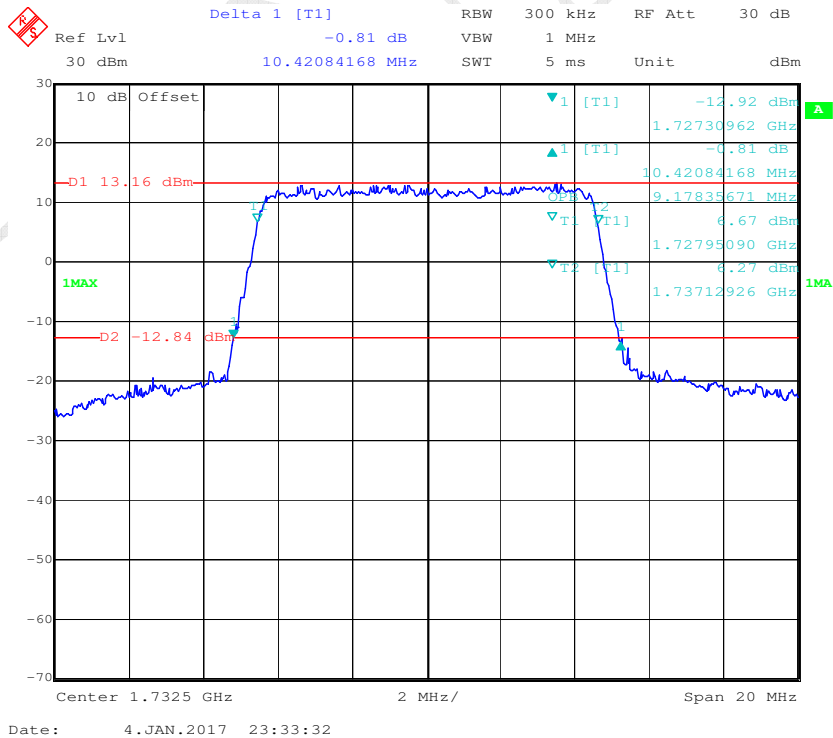


Date: 4.JAN.2017 23:15:22

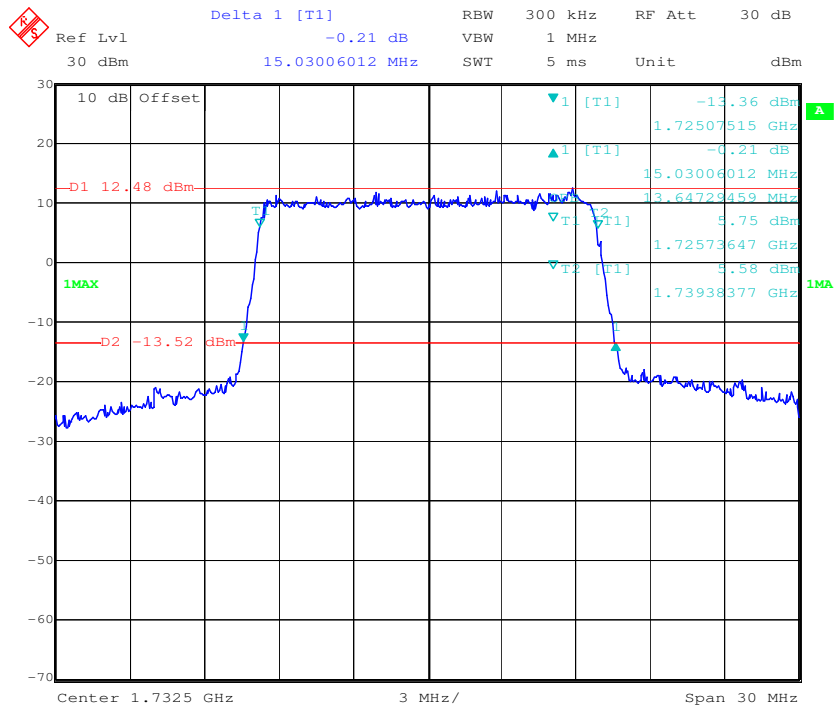
### QPSK\_5 MHz



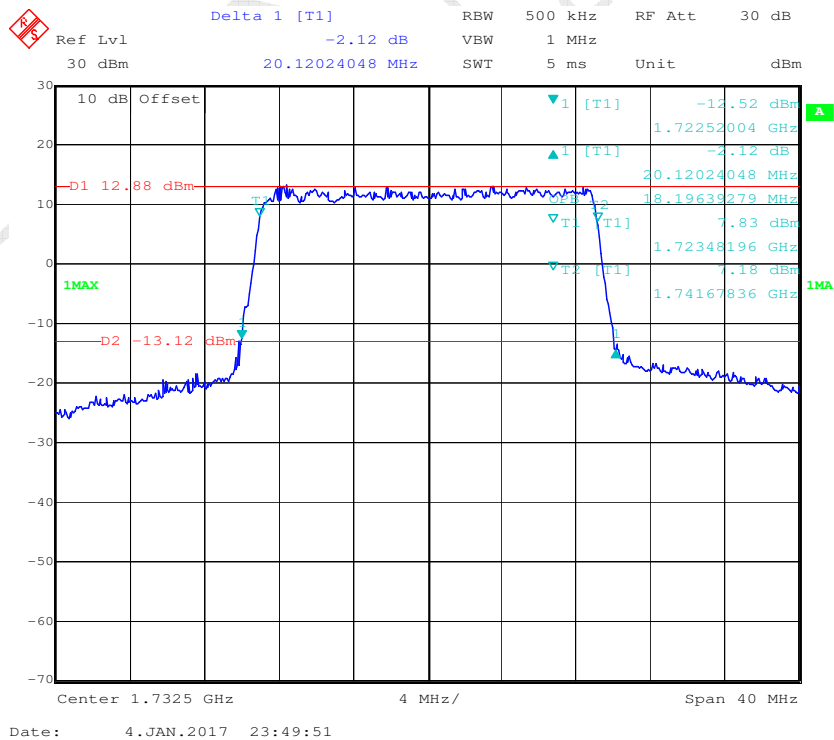
### QPSK\_10 MHz



### QPSK\_15 MHz

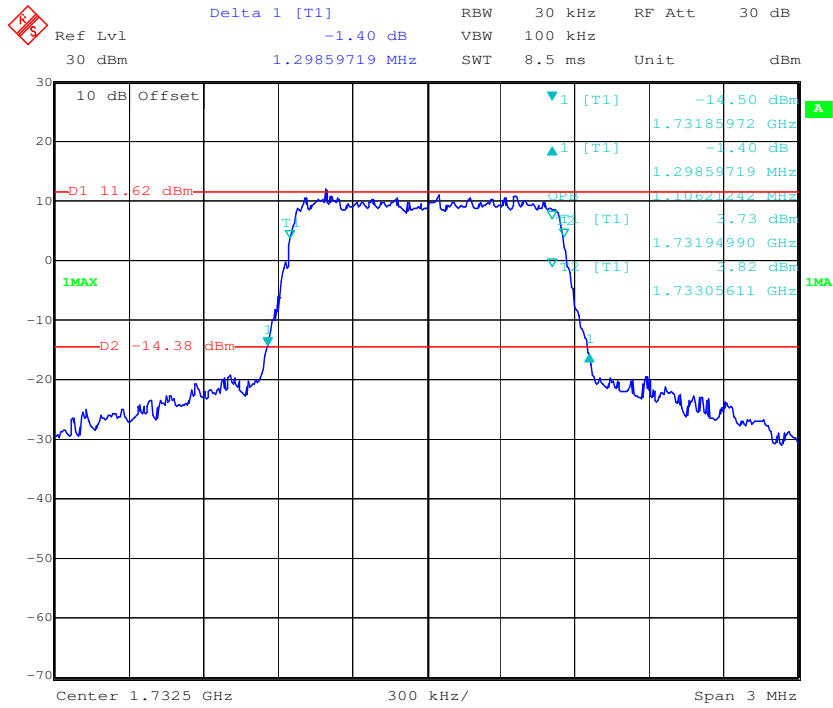


### QPSK\_20 MHz

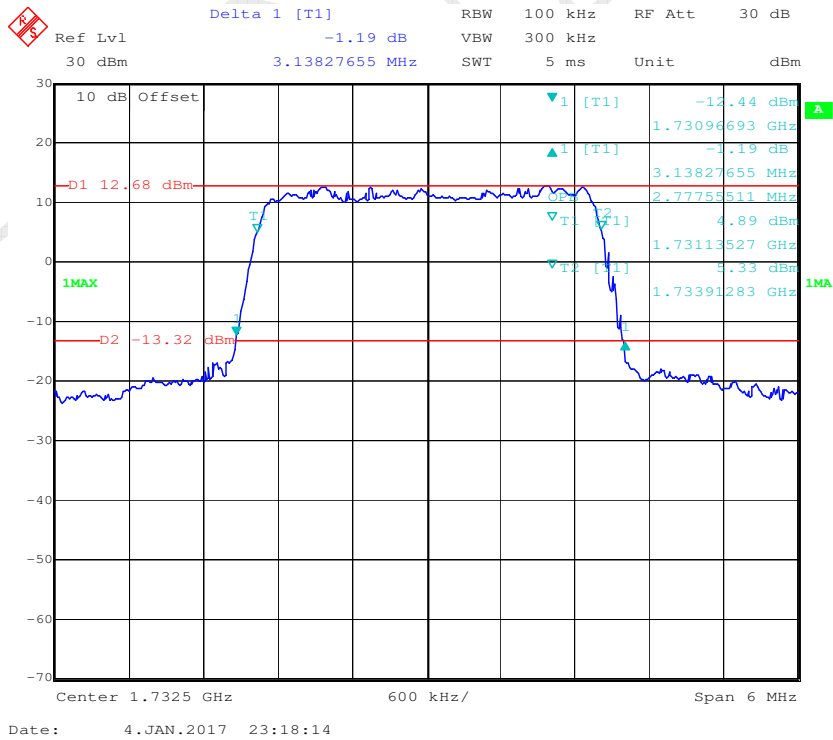




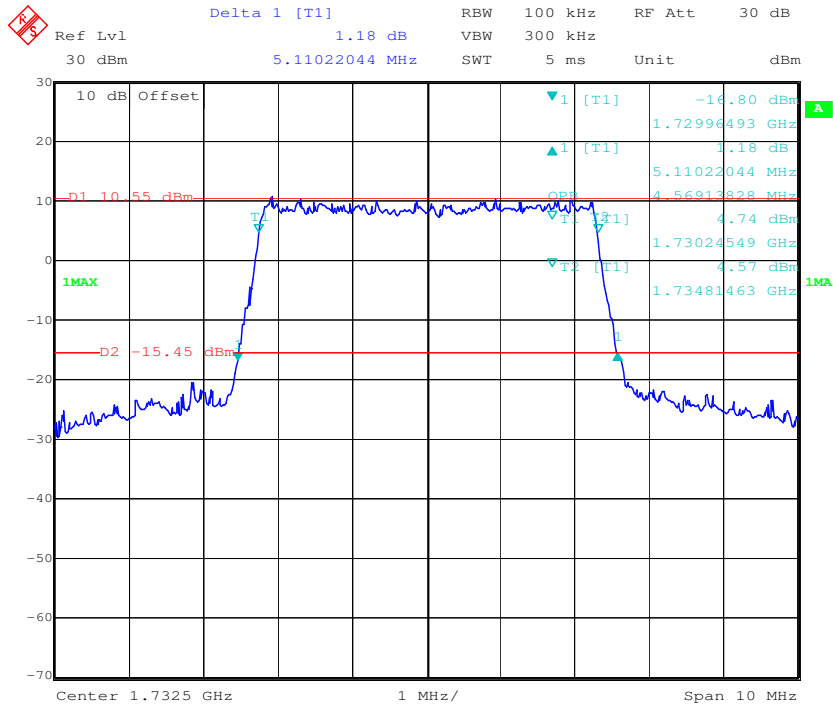
### 16QAM\_1.4 MHz



### 16QAM\_3 MHz

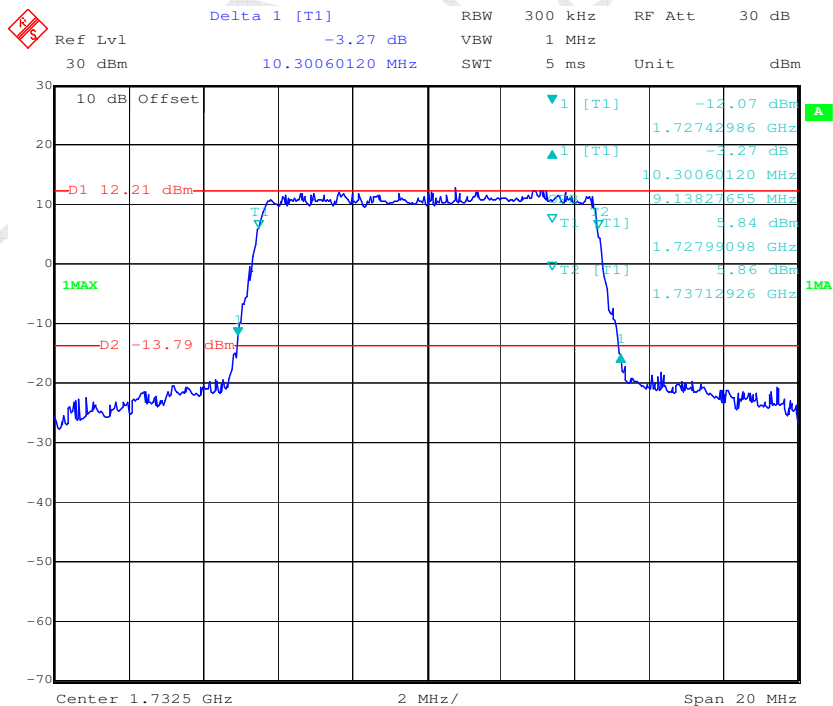


### 16QAM\_5 MHz



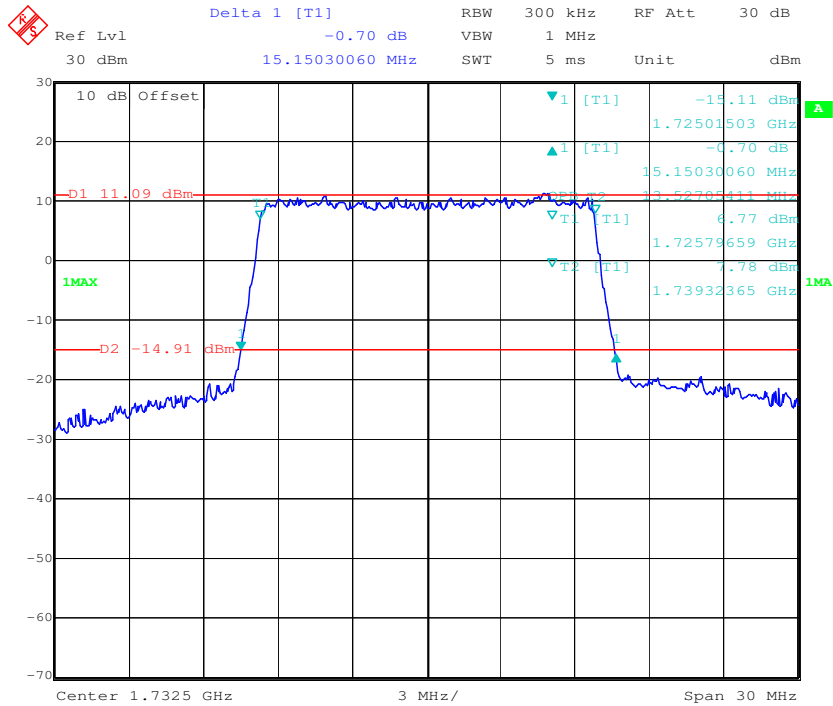
Date: 4.JAN.2017 23:26:37

### 16QAM\_10 MHz

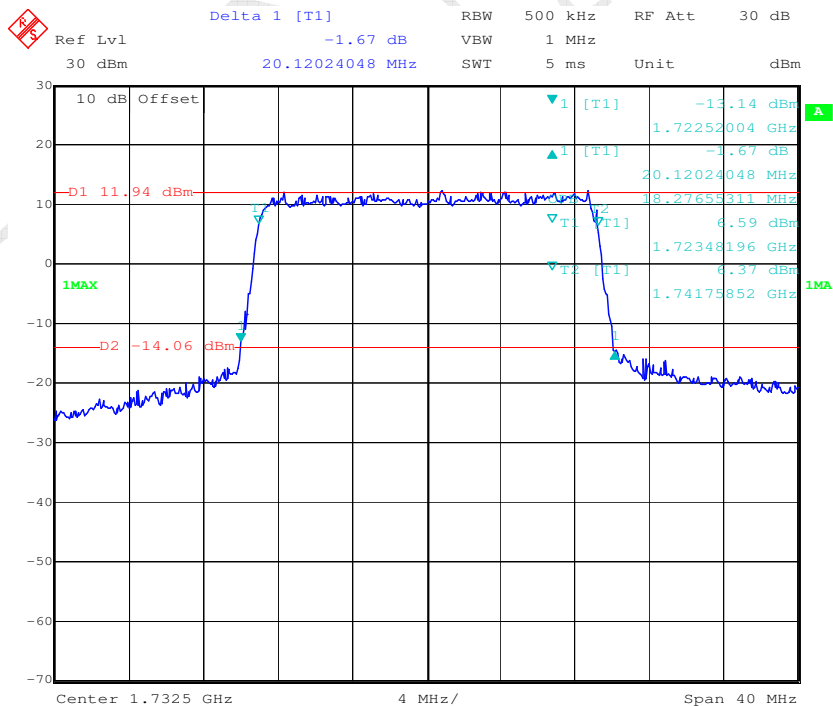


Date: 4.JAN.2017 23:32:11

### 16QAM\_15 MHz

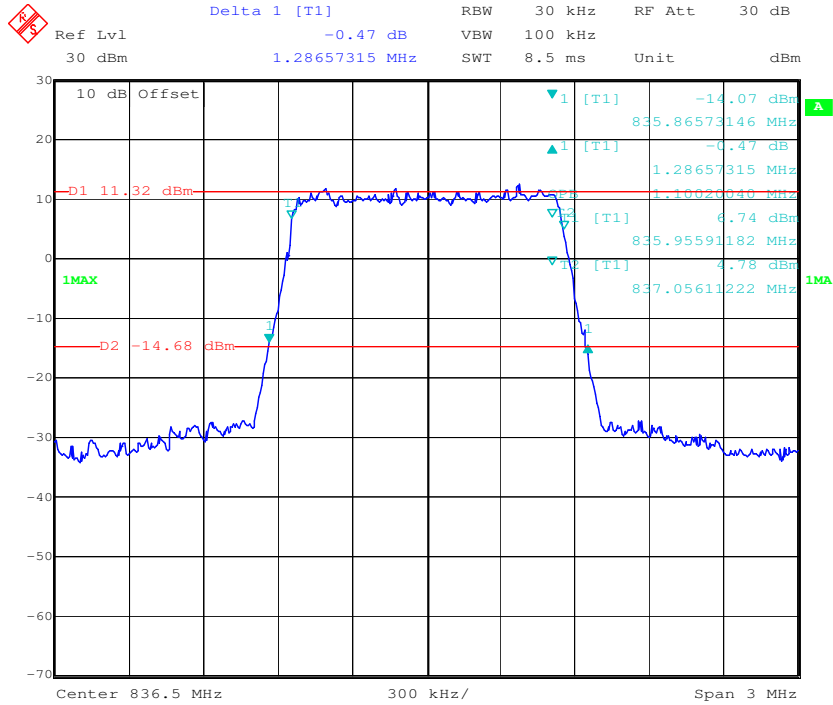


### 16QAM\_20 MHz

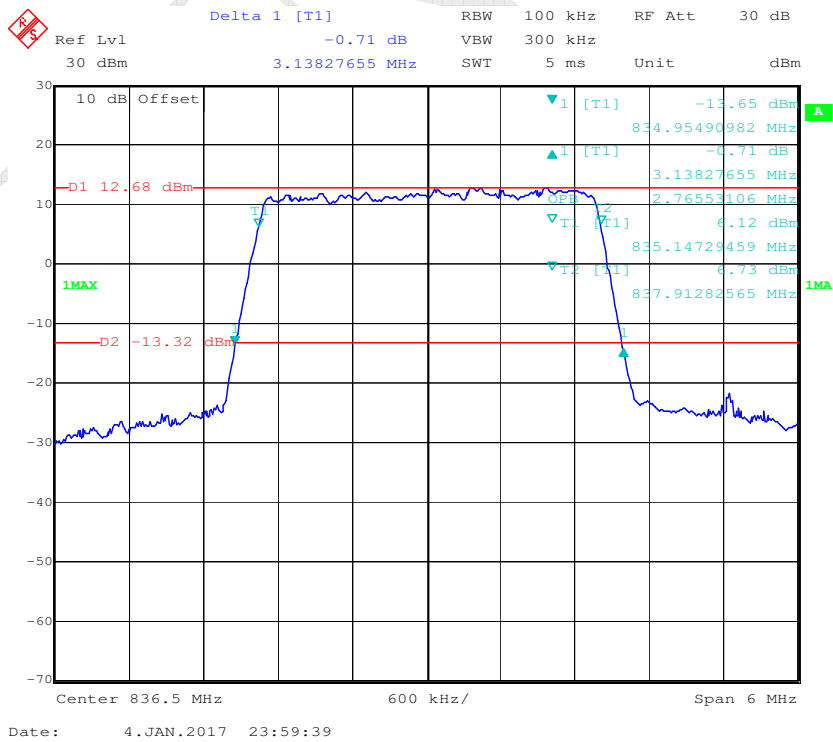


LTE Band V:

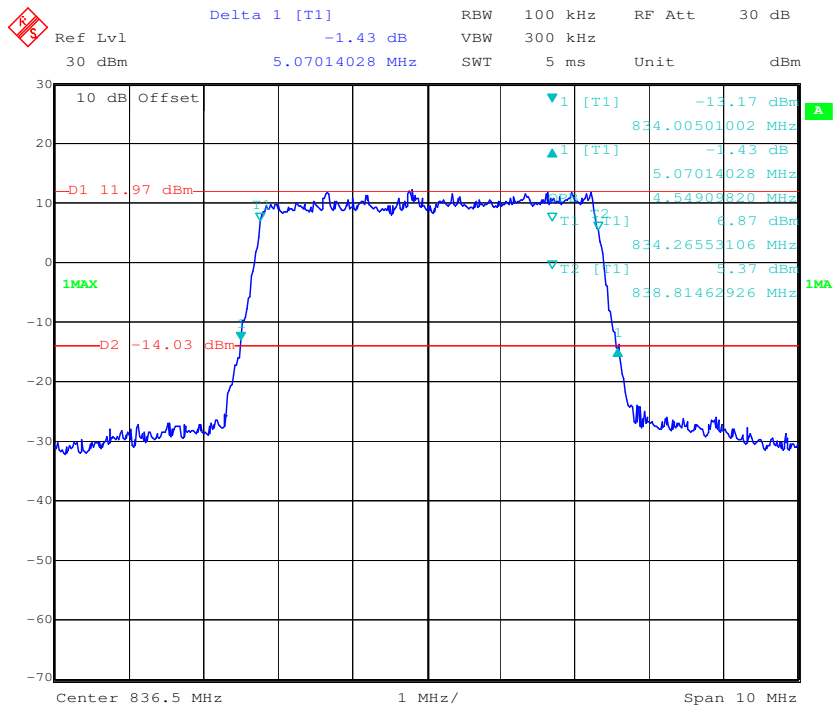
QPSK\_1.4 MHz



QPSK\_3 MHz

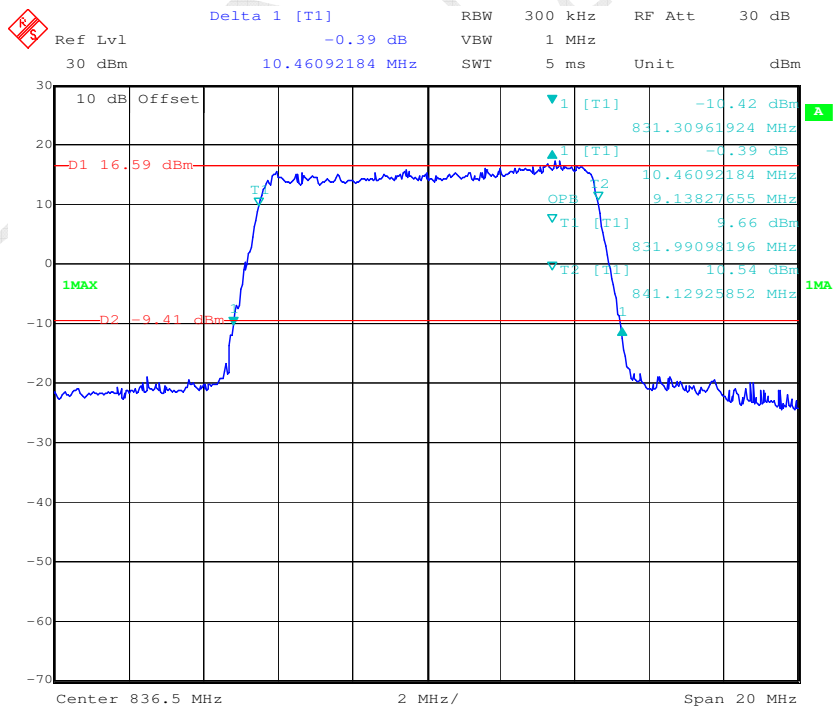


### QPSK\_5 MHz



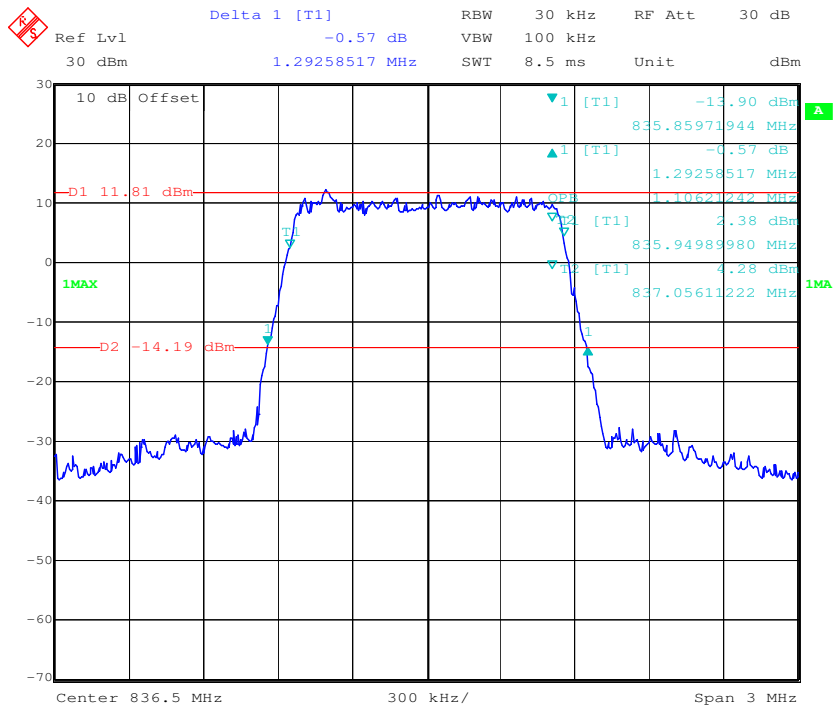
Date: 5.JAN.2017 00:01:32

### QPSK\_10 MHz

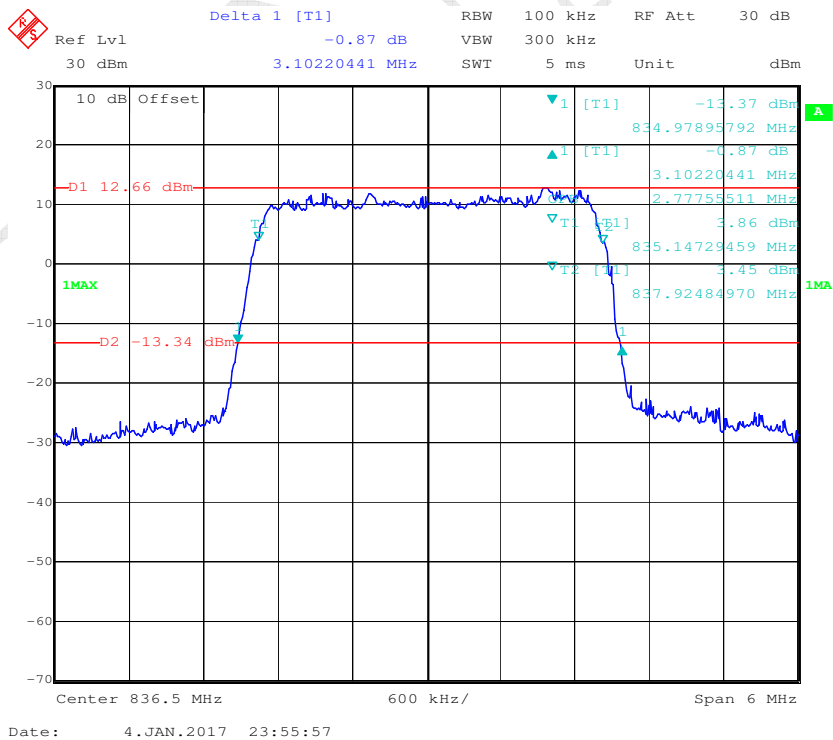


Date: 5.JAN.2017 00:42:09

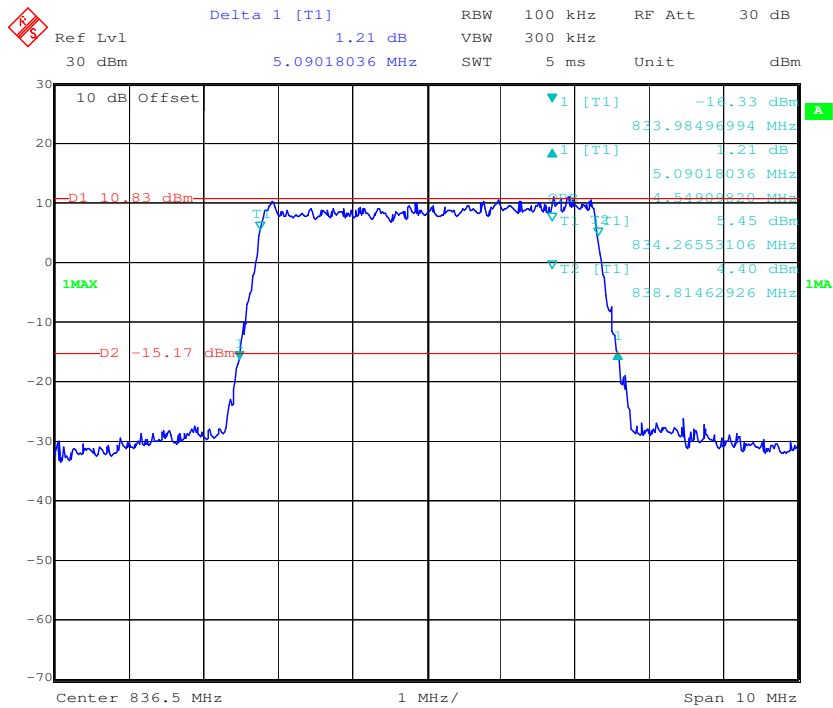
### 16QAM\_1.4 MHz



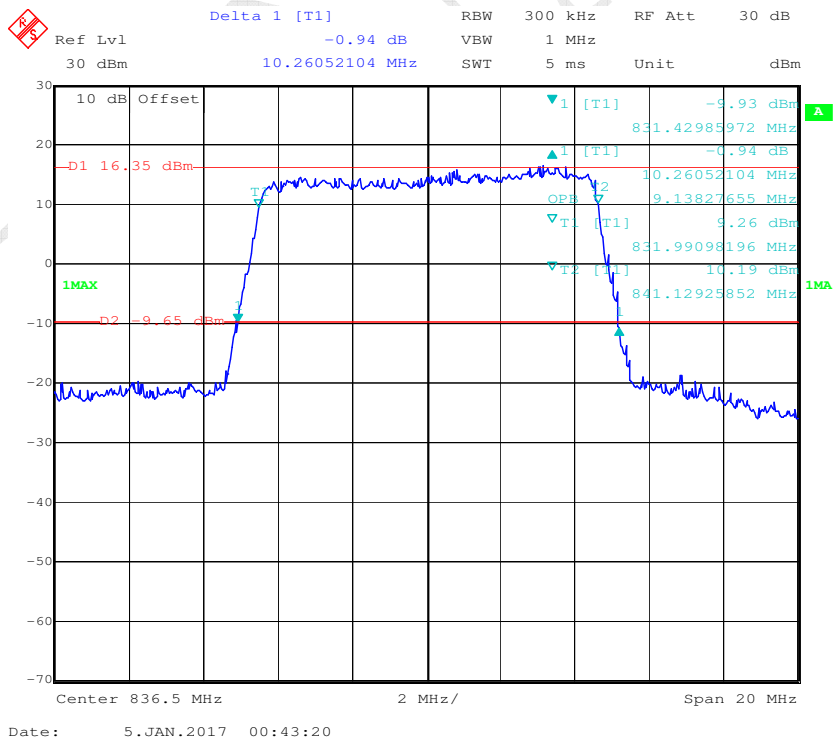
### 16QAM\_3 MHz



### 16QAM\_5 MHz

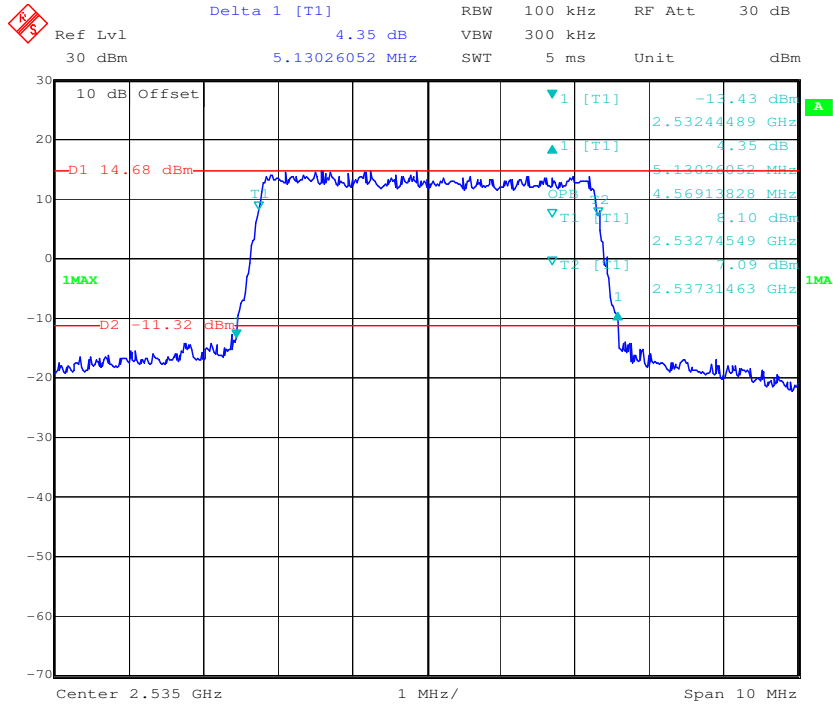


### 16QAM\_10 MHz



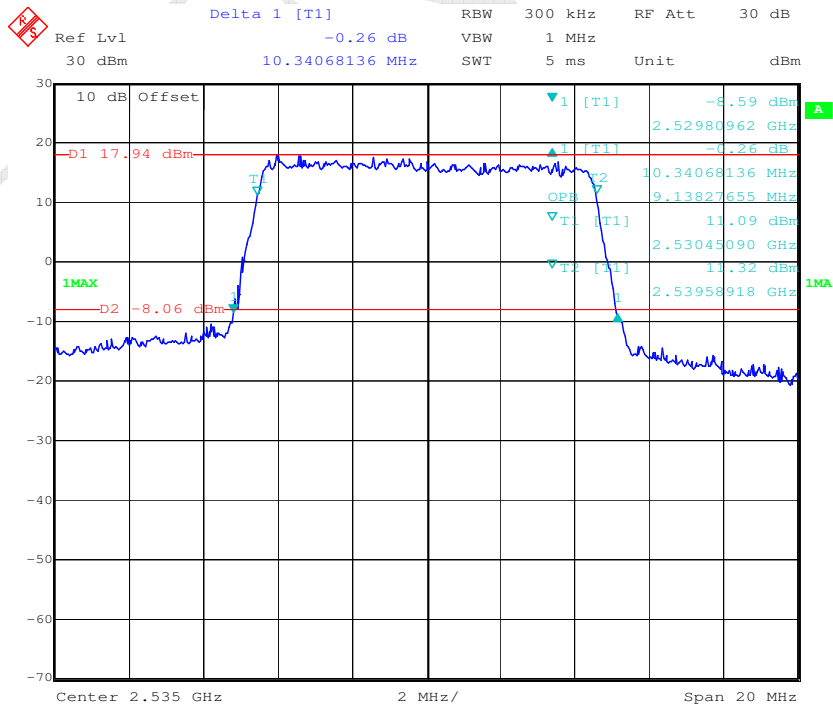
LTE Band VII:

**QPSK\_5 MHz**



Date: 5.JAN.2017 01:04:17

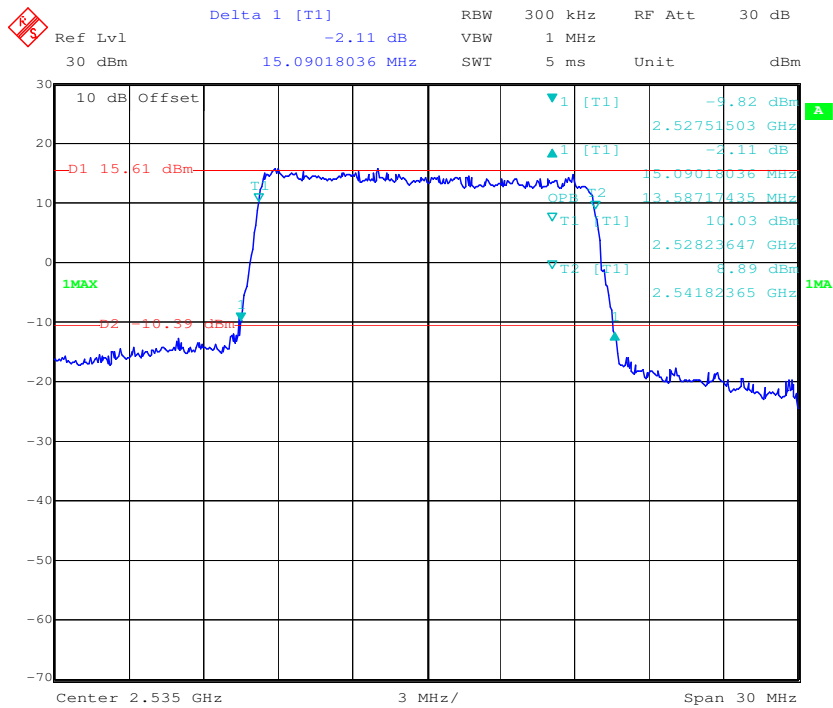
**QPSK\_10 MHz**



Date: 5.JAN.2017 01:08:33

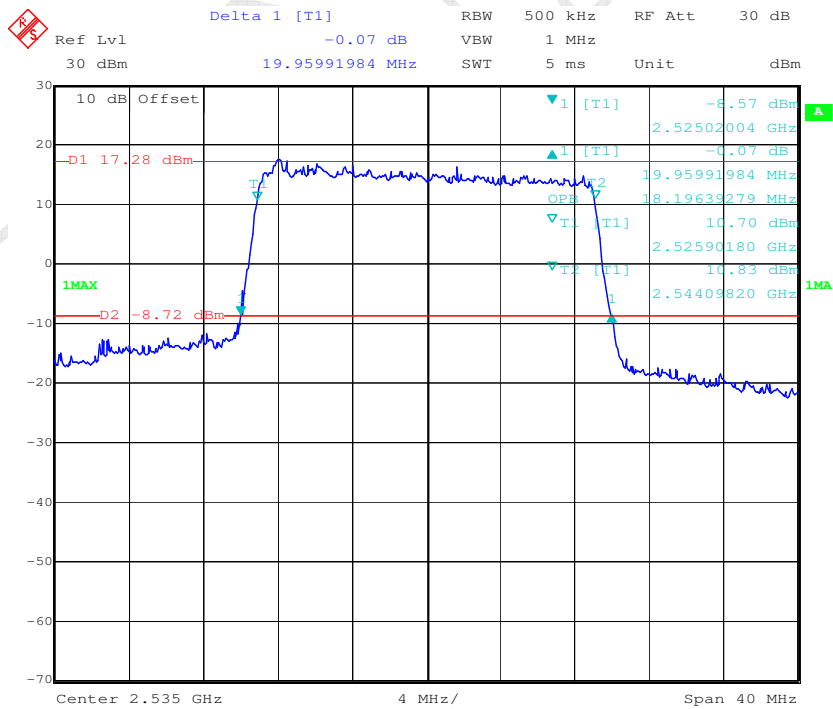


### QPSK\_15 MHz



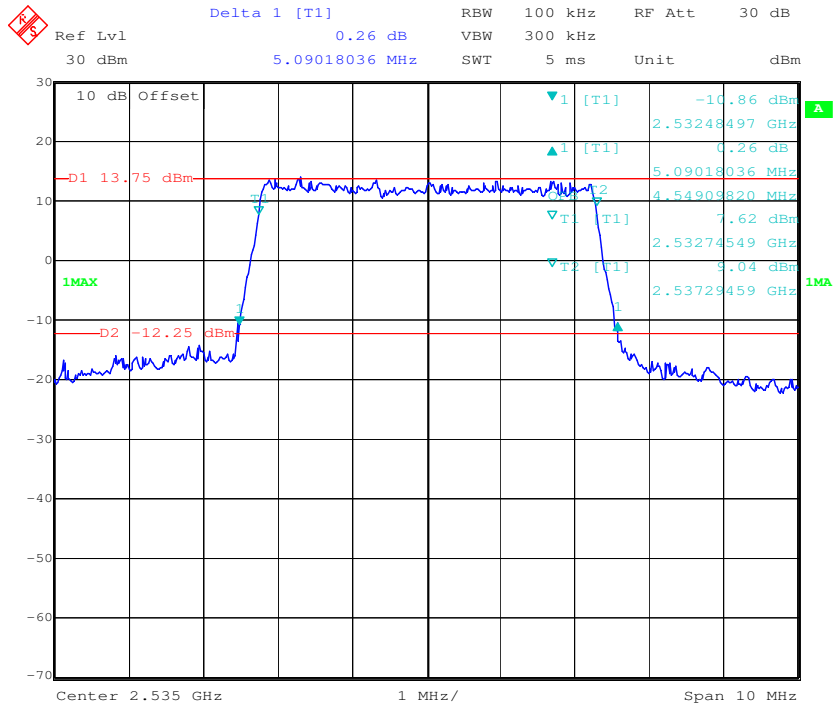
Date: 5.JAN.2017 01:10:54

### QPSK\_20 MHz

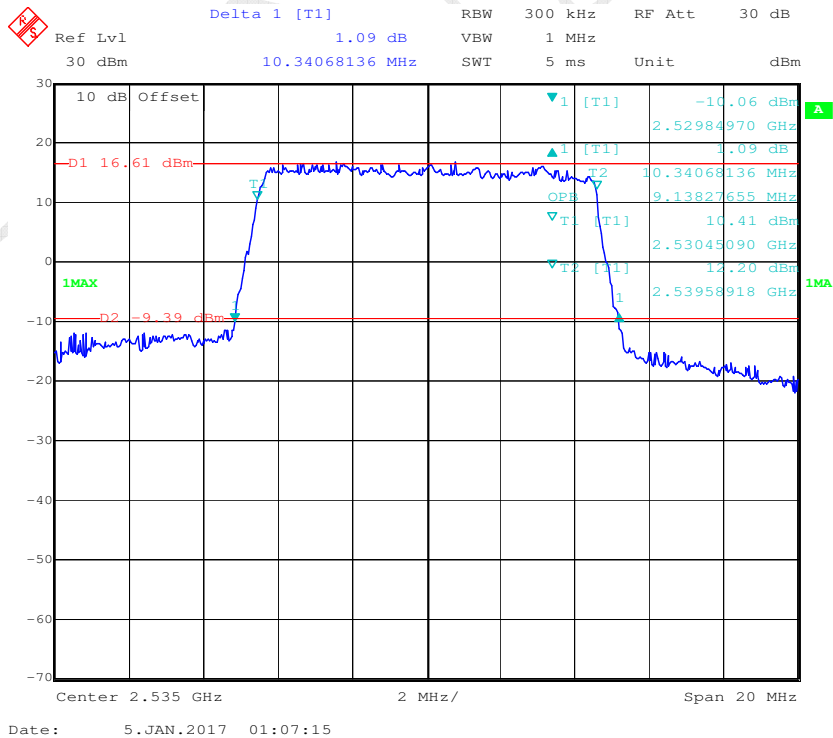


Date: 5.JAN.2017 01:12:54

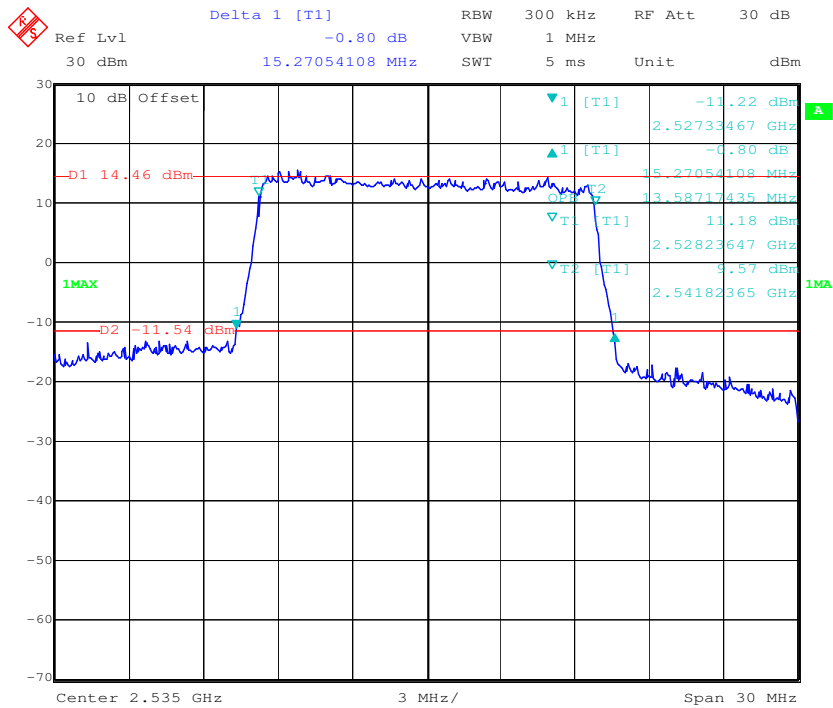
### 16QAM\_5 MHz



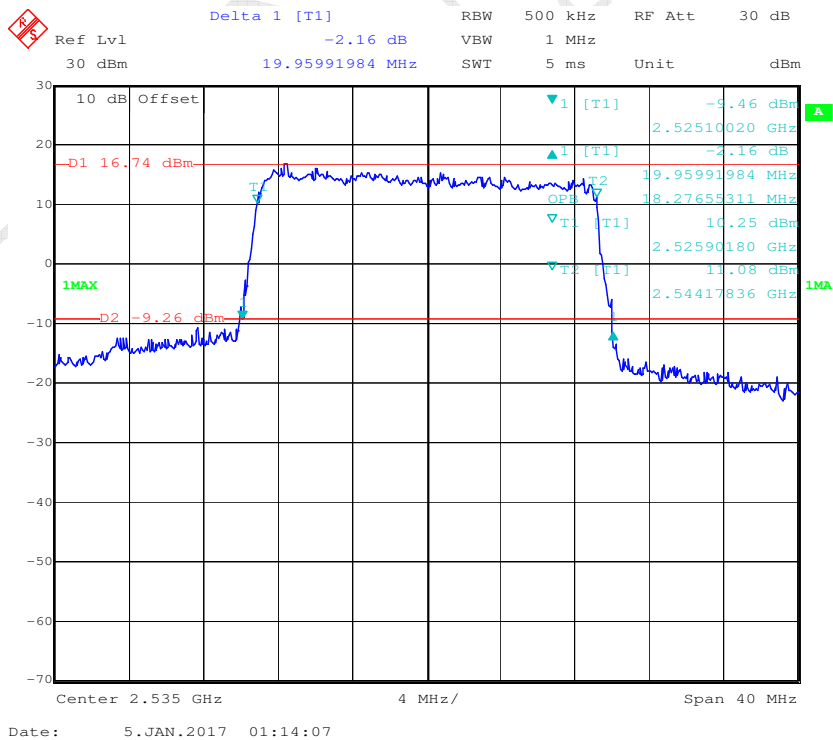
### 16QAM\_10 MHz



### 16QAM\_15 MHz

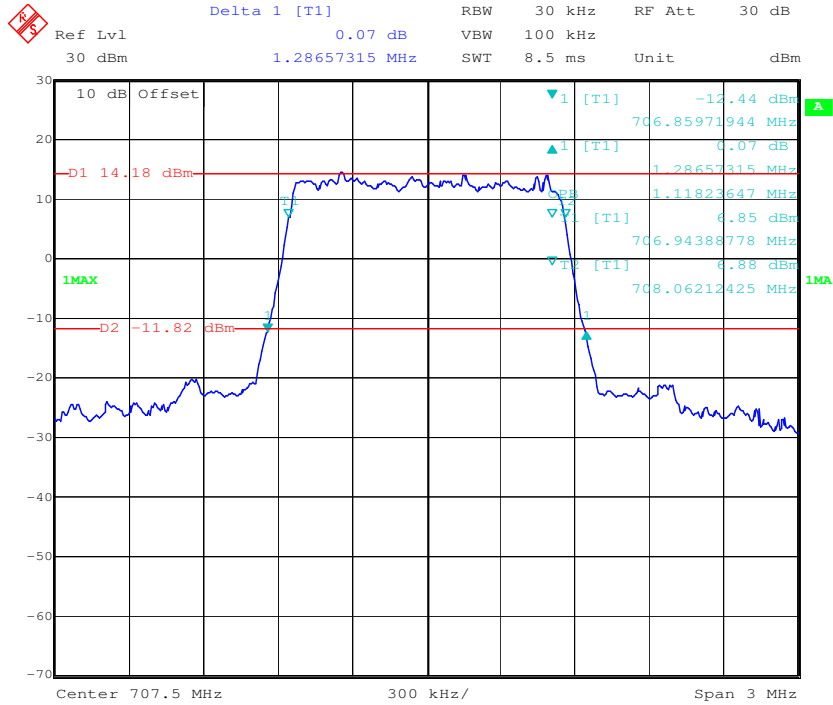


### 16QAM\_20 MHz



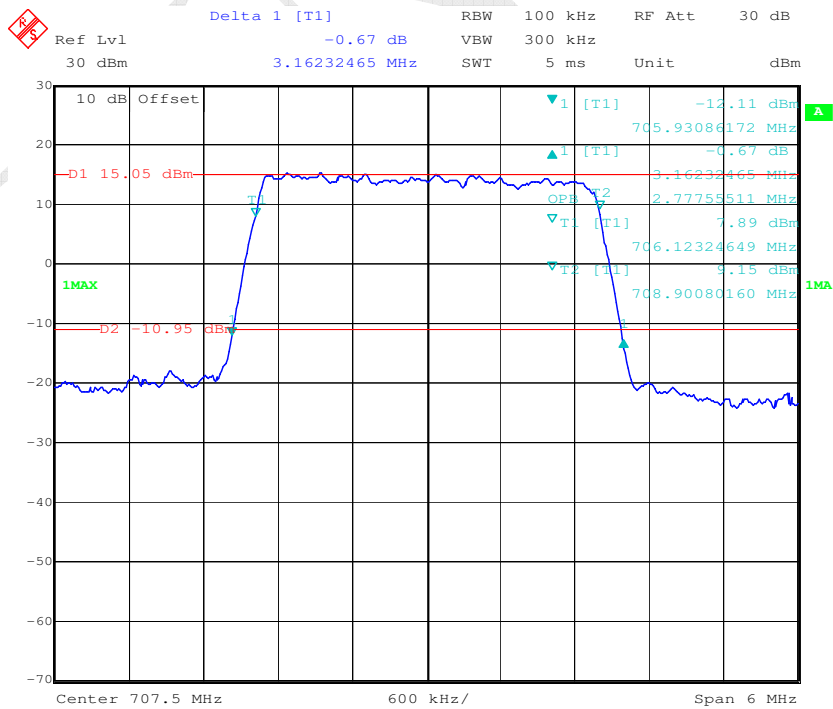
LTE Band 12

QPSK\_1.4 MHz



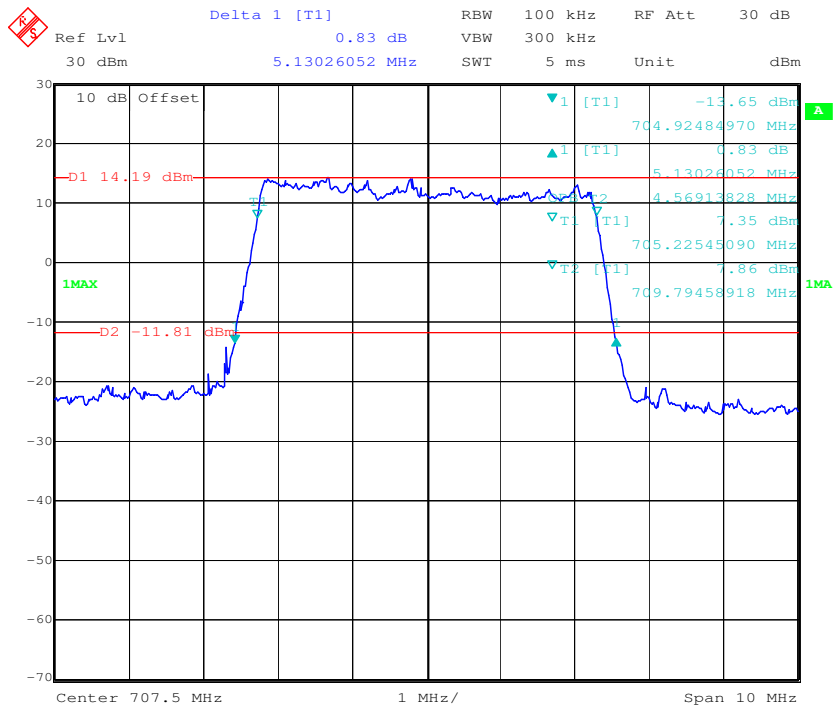
Date: 4.FEB.2017 20:56:00

QPSK\_3 MHz

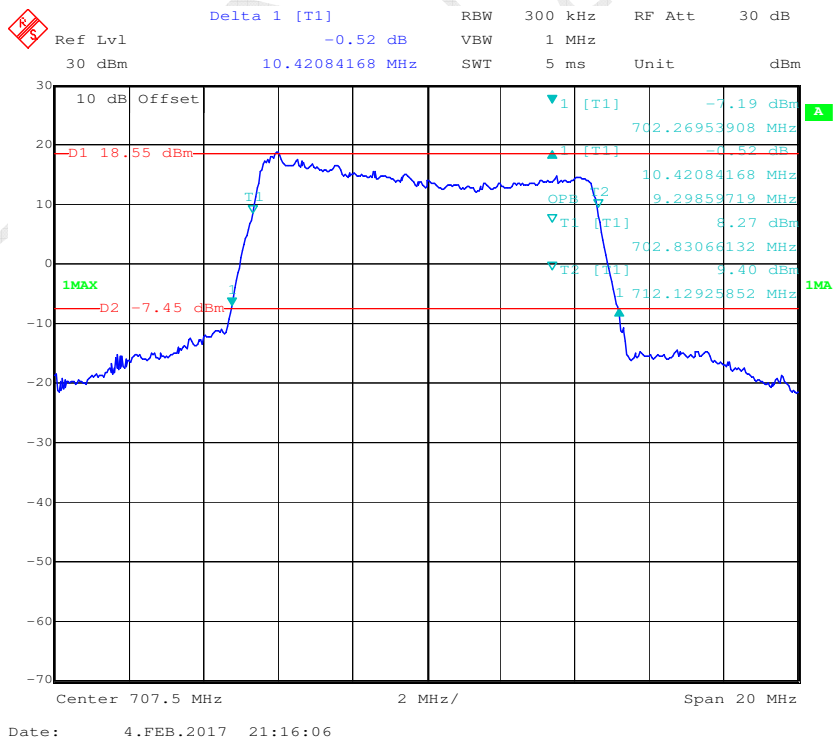


Date: 4.FEB.2017 21:05:23

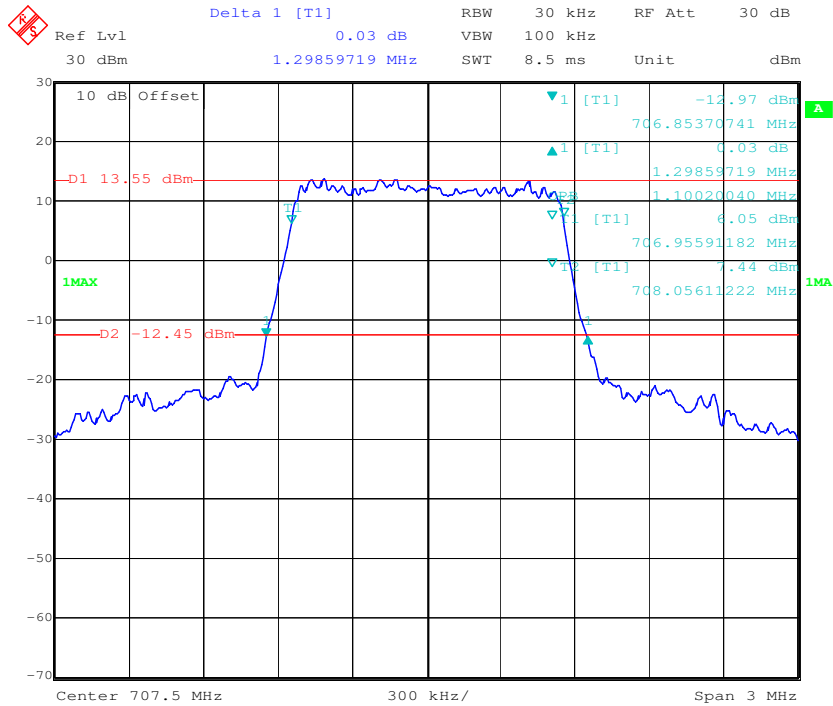
### QPSK\_5 MHz



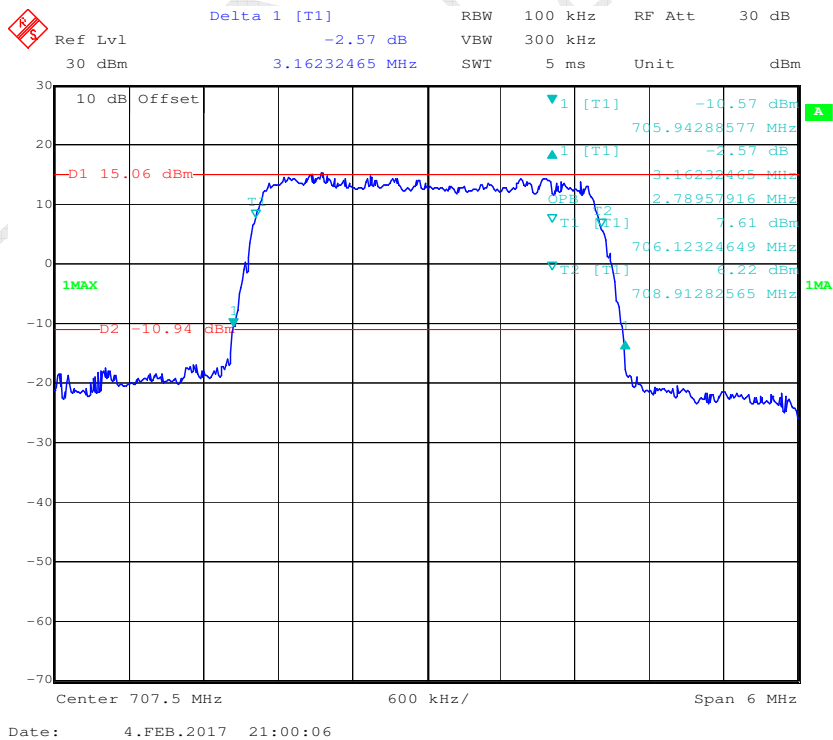
### QPSK\_10 MHz



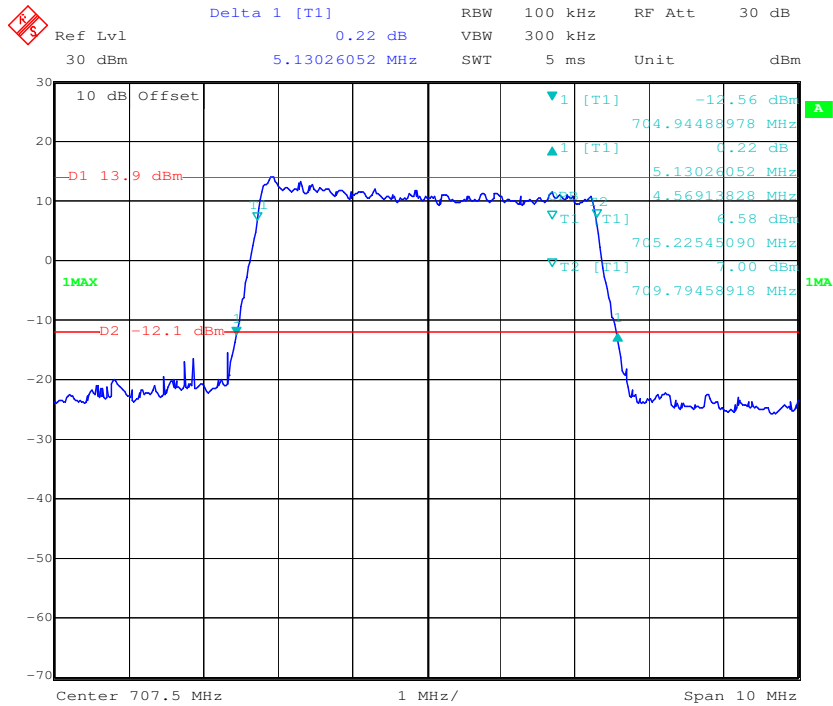
### 16QAM\_1.4 MHz



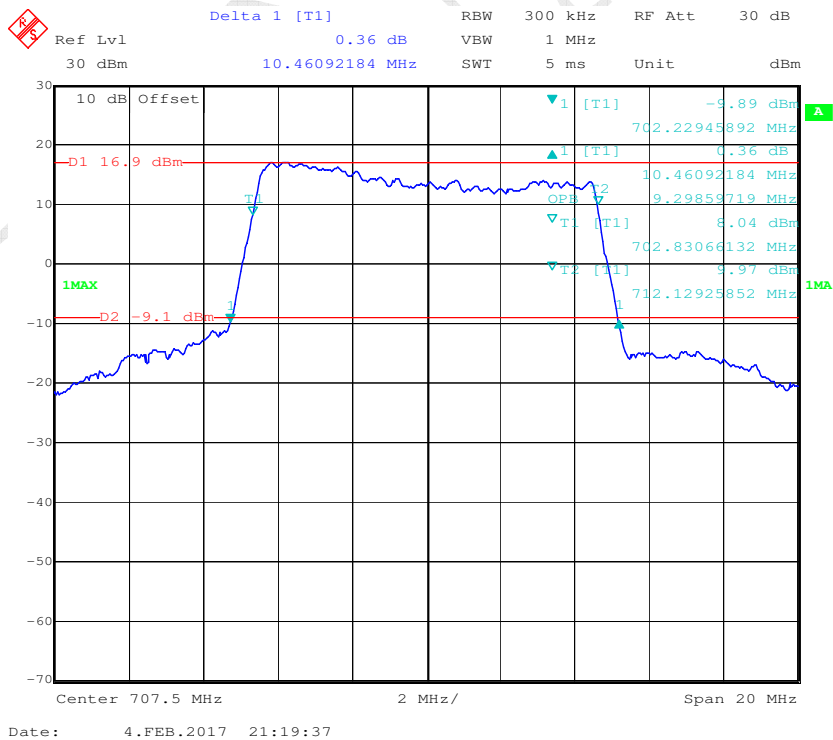
### 16QAM\_3 MHz



### 16QAM\_5 MHz

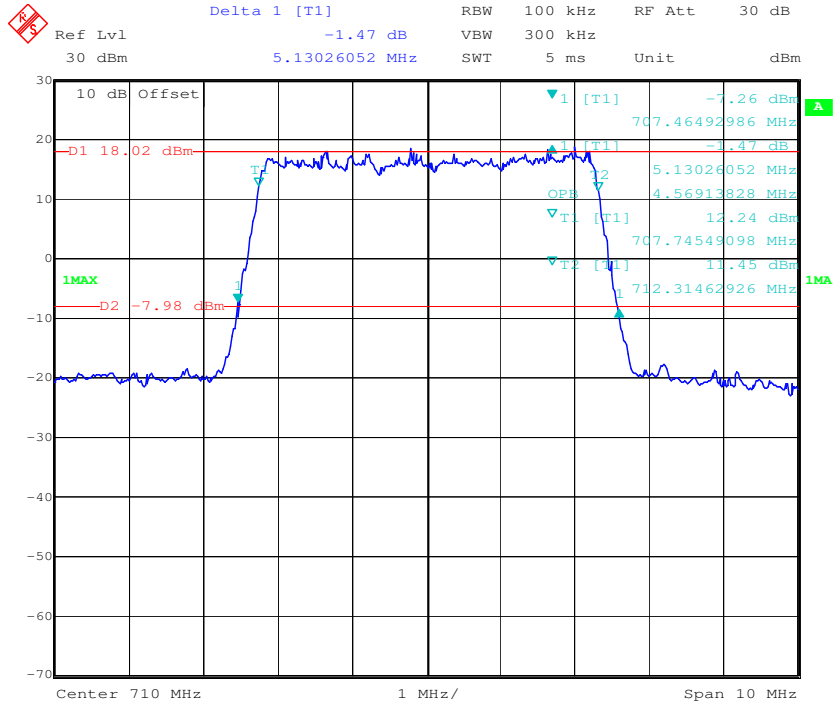


### 16QAM\_10 MHz



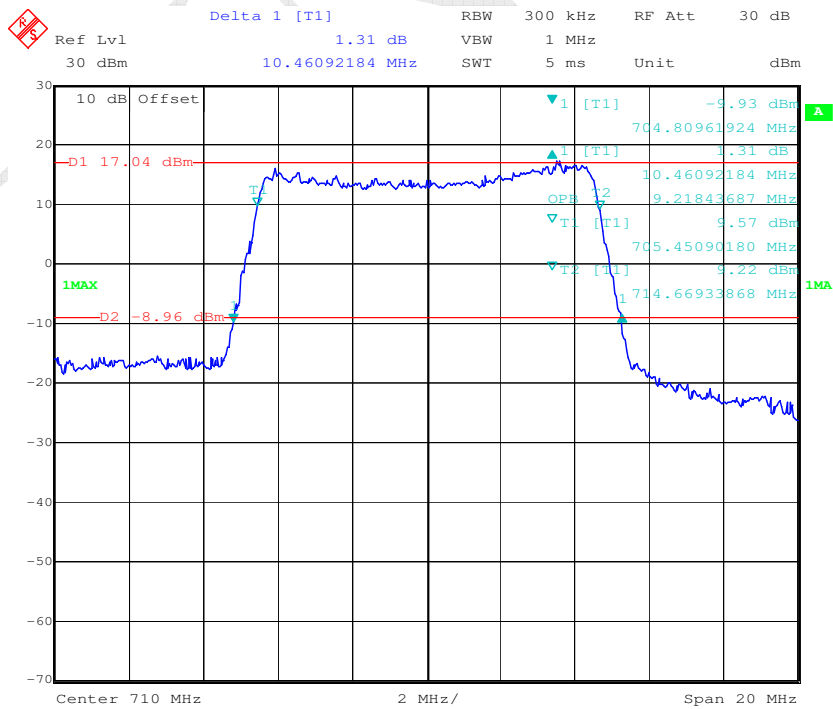
LTE Band 17:

QPSK\_5 MHz



Date: 5.JAN.2017 01:17:06

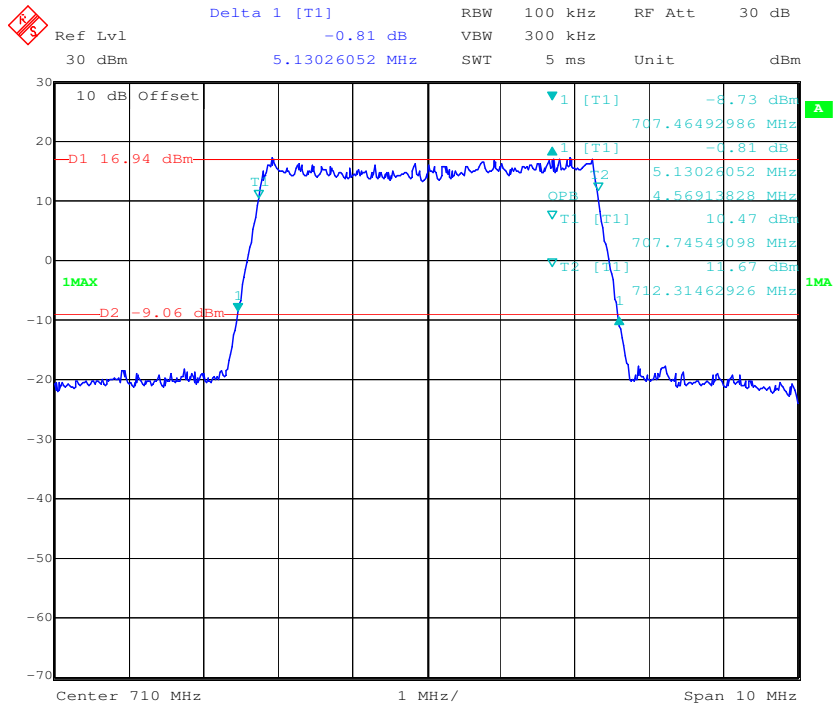
QPSK\_10 MHz



Date: 5.JAN.2017 01:21:25

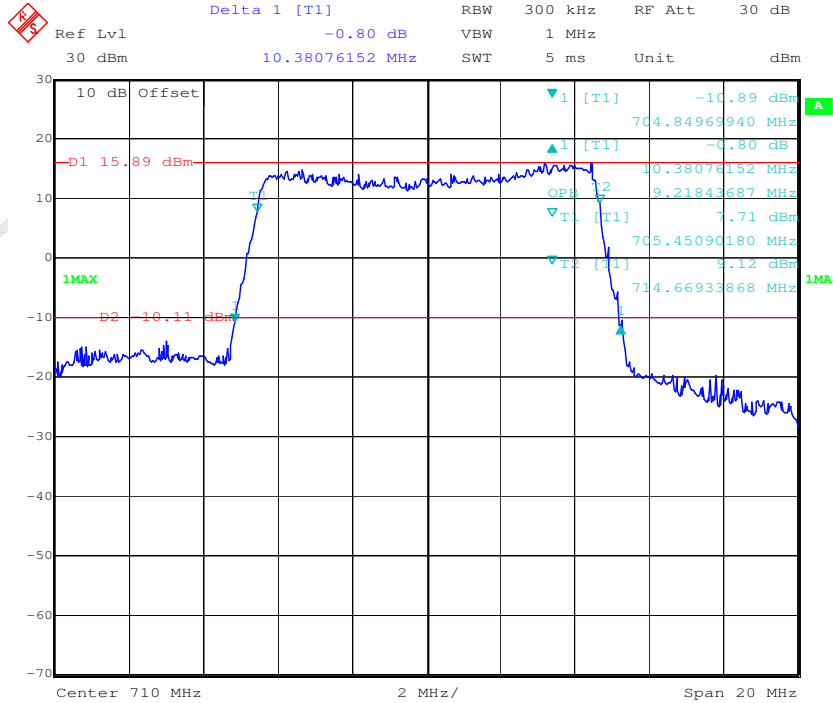


### 16QAM\_5 MHz



Date: 5.JAN.2017 01:18:19

### 16QAM\_10 MHz



Date: 5.JAN.2017 01:22:25

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

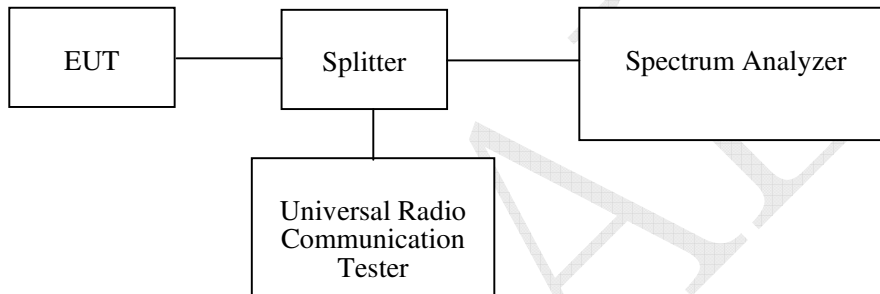
### Applicable Standard

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
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/
N/A	Two-way Splitter	N/A	OE0120121	Each Time	/

\* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

### Test Data

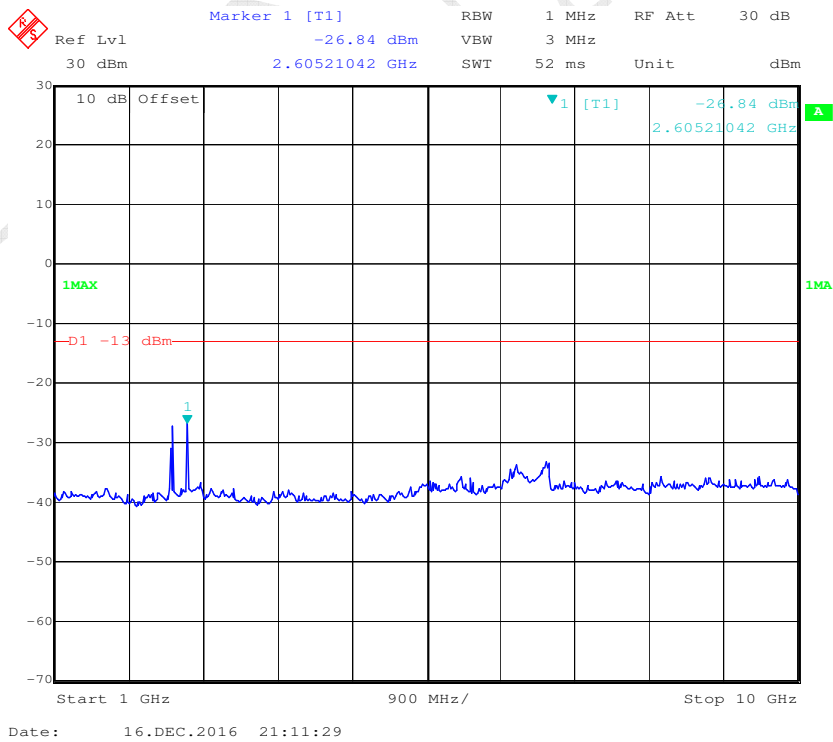
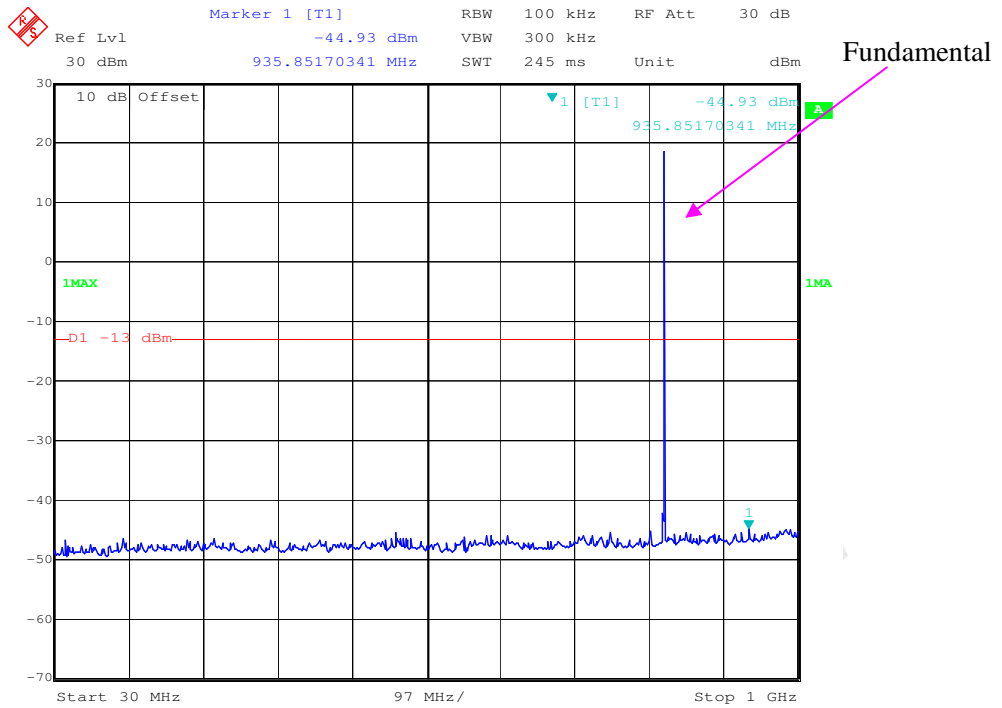
#### Environmental Conditions

<b>Temperature:</b>	23.2~28.8 °C
<b>Relative Humidity:</b>	31~52 %
<b>ATM Pressure:</b>	100.7~102.3 kPa

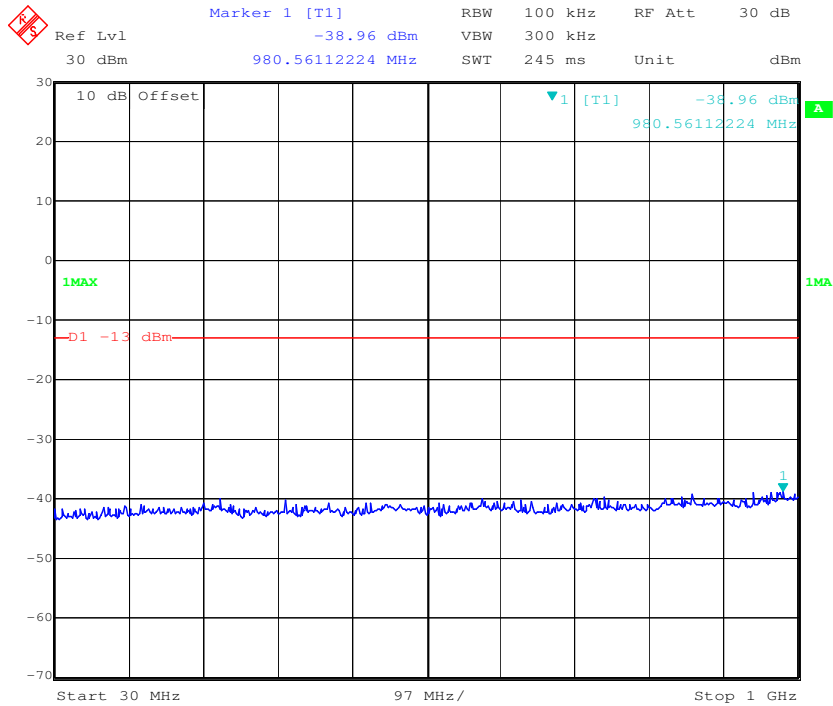
*The testing was performed by Tom Tang from 2016-12-16 to 2017-02-04.*

Please refer to the following plots.

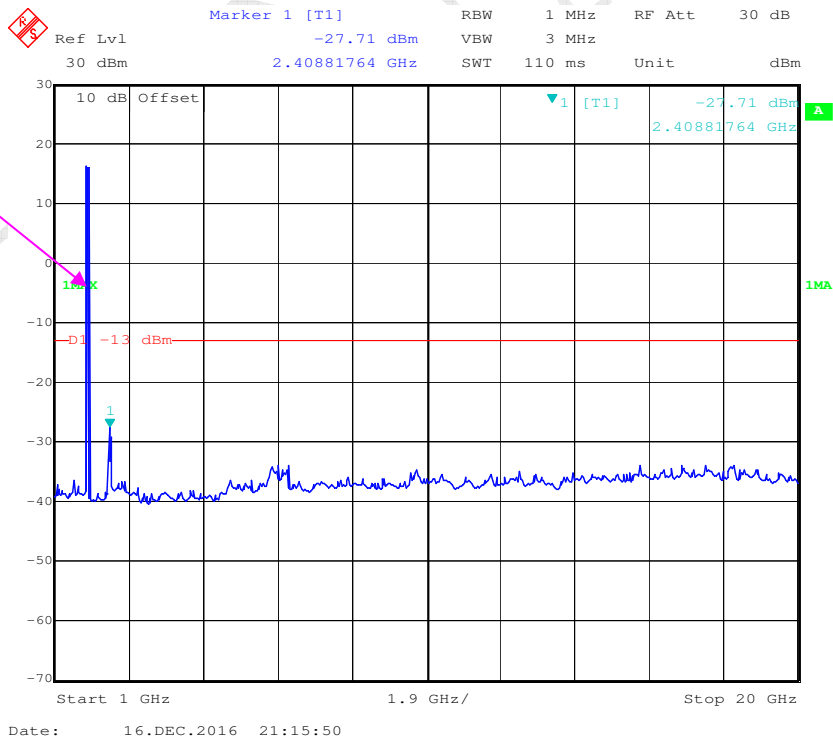
### GSM850\_Middle Channel



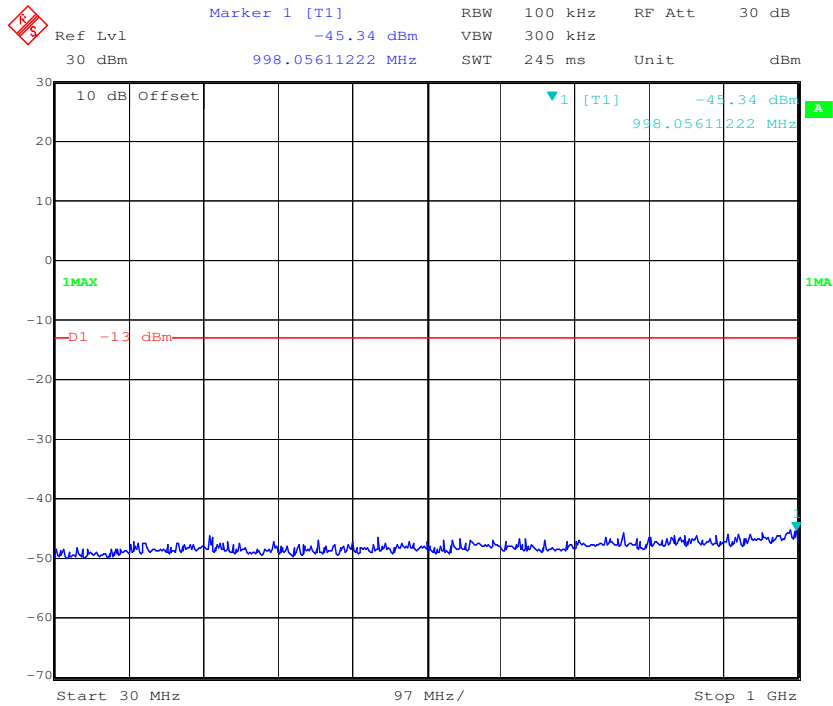
### PCS 1900\_ High Channel



Fundamental

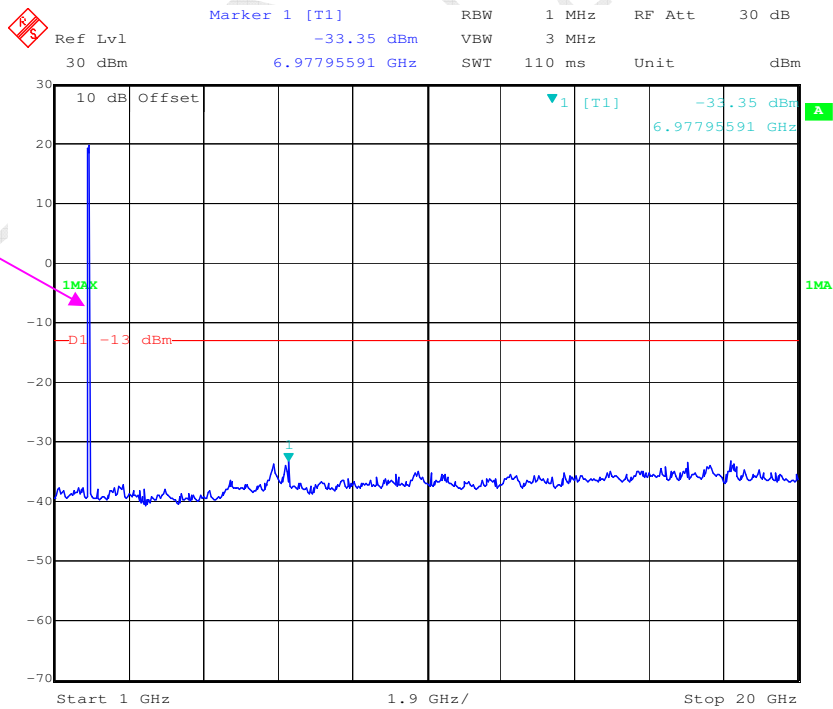


### REL99 Band II\_ Middle Channel



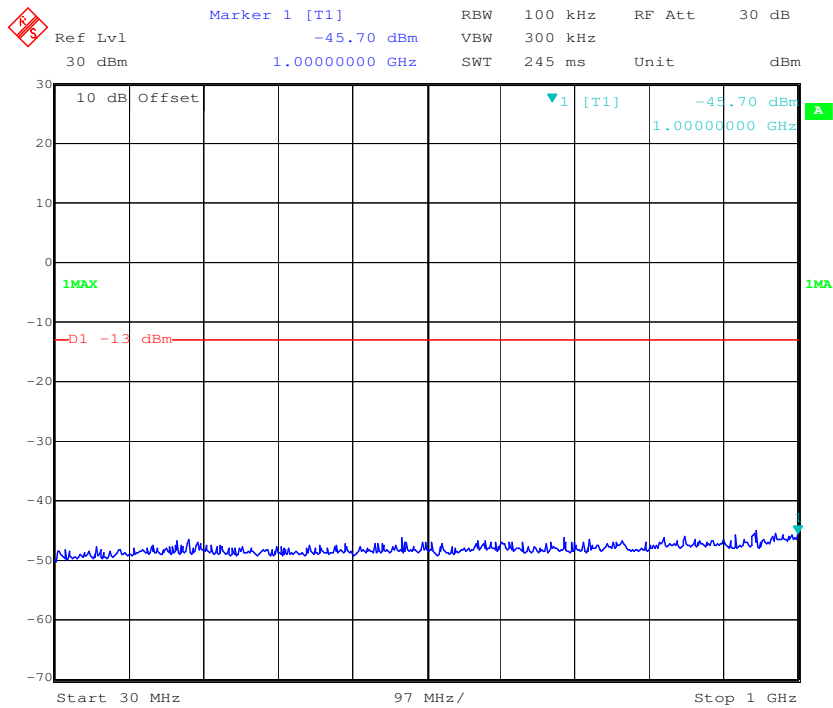
Date: 16.DEC.2016 21:50:47

Fundamental



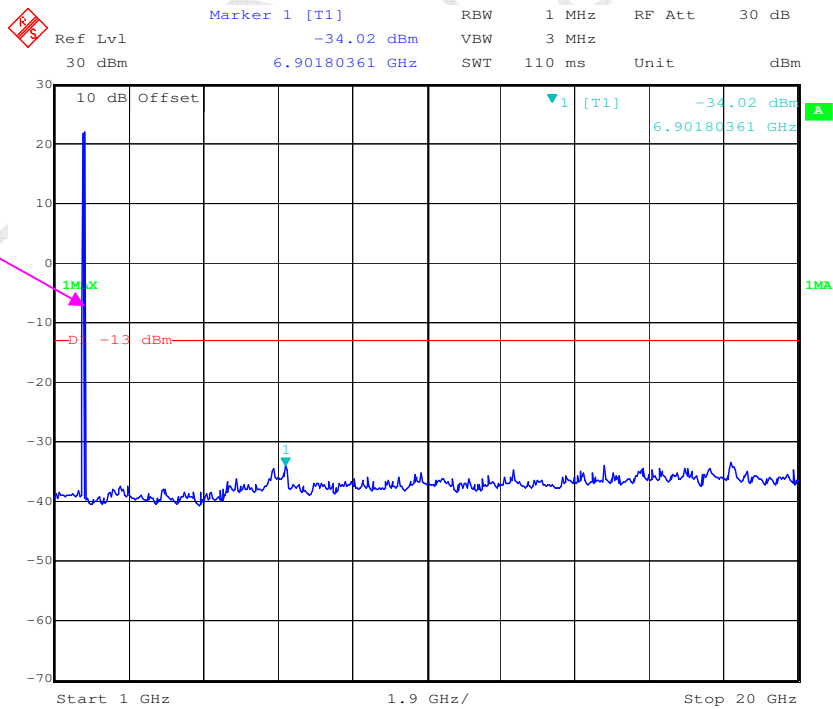
Date: 16.DEC.2016 21:51:35

### REL99 Band IV\_ Middle Channel



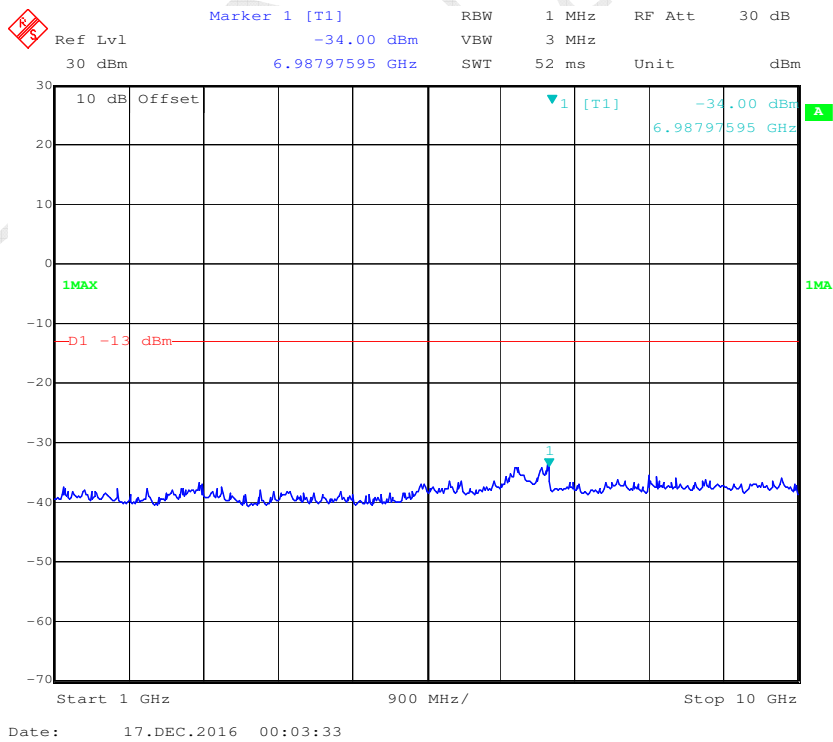
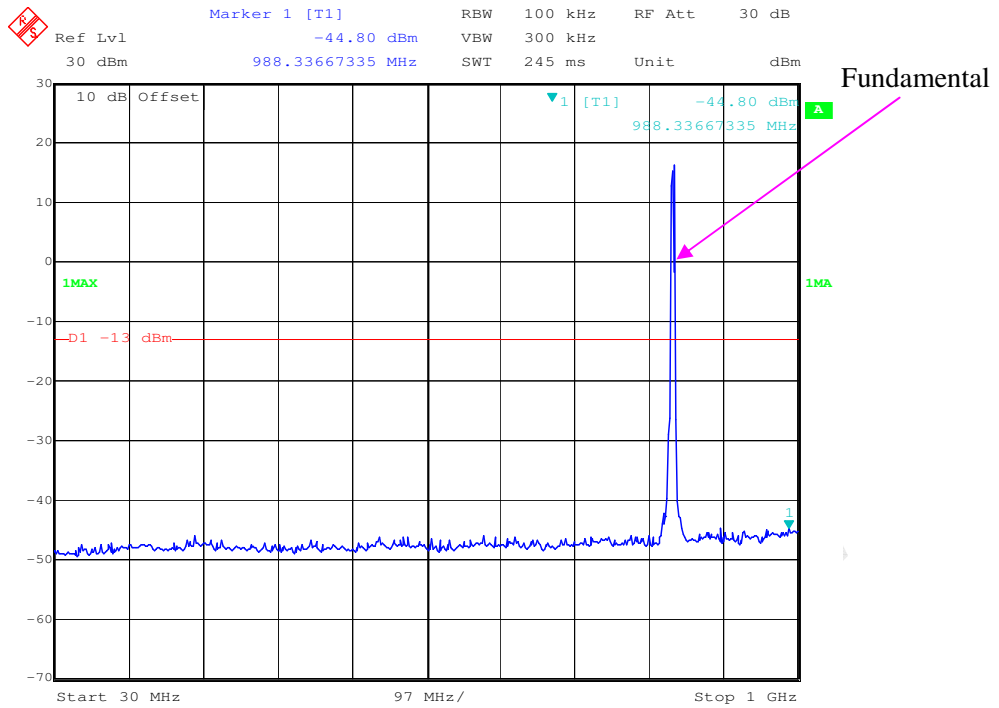
Date: 16.DEC.2016 23:39:15

Fundamental



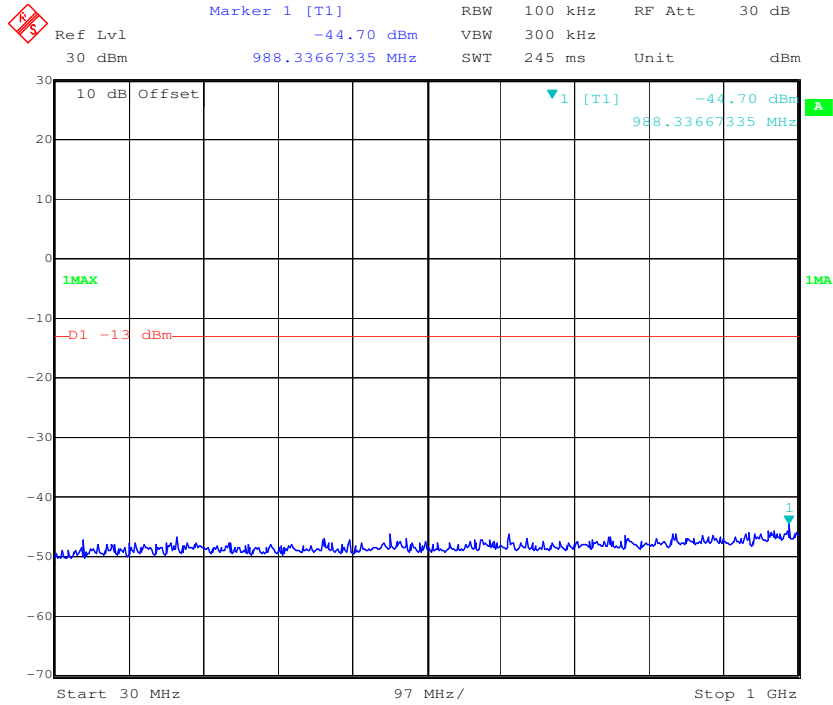
Date: 16.DEC.2016 23:39:41

### REL99 Band V\_ Middle Channel

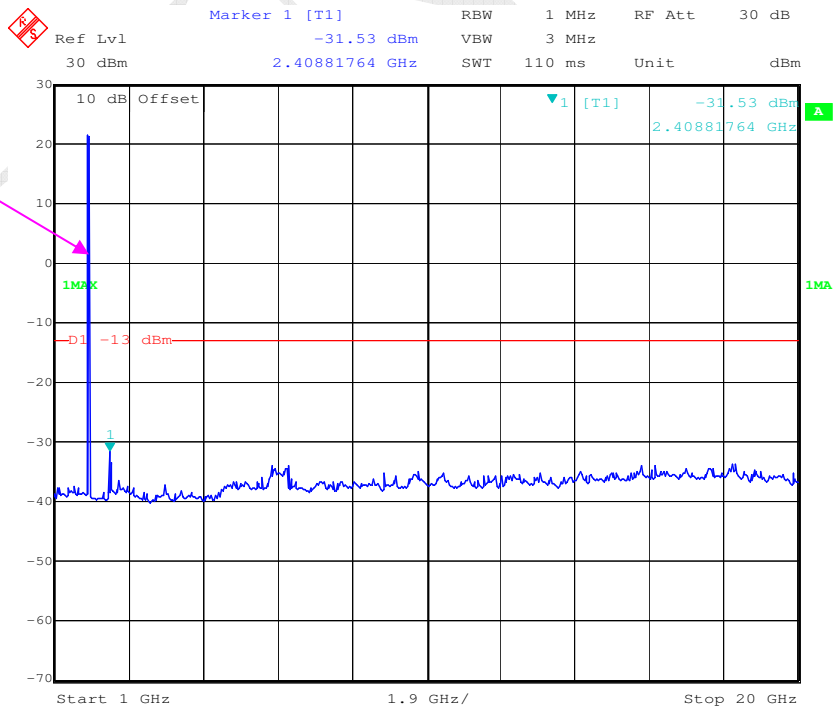


LTE Band II (Middle Channel)

QPSK\_1.4 MHz



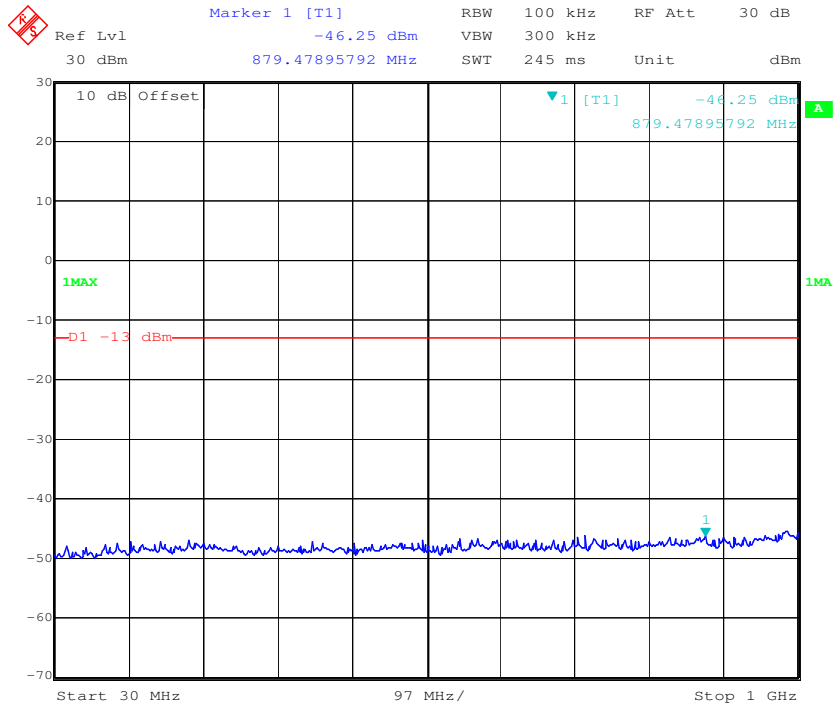
Date: 5.JAN.2017 01:41:06



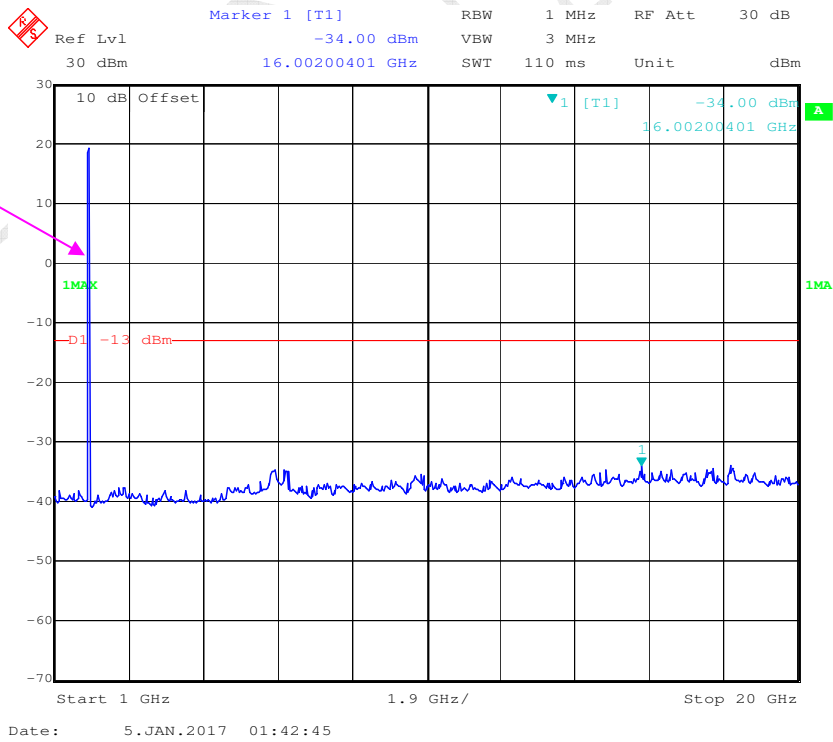
Fundamental



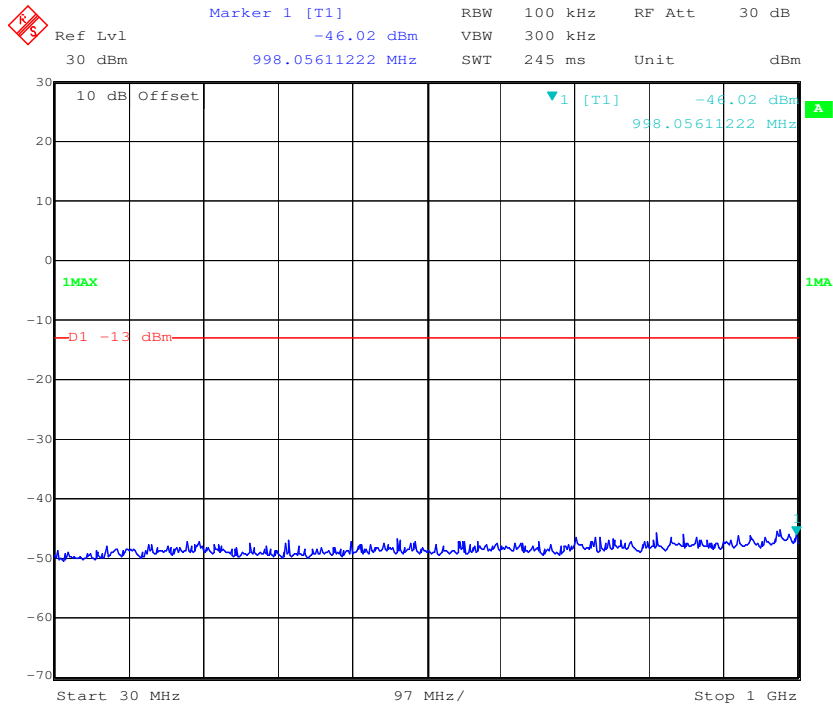
### QPSK\_3 MHz



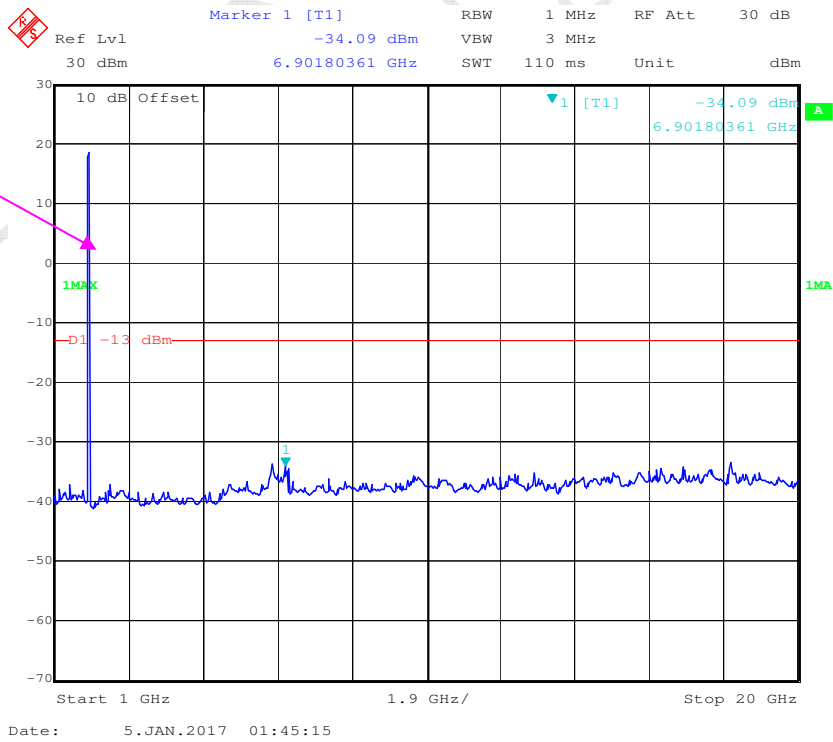
Fundamental



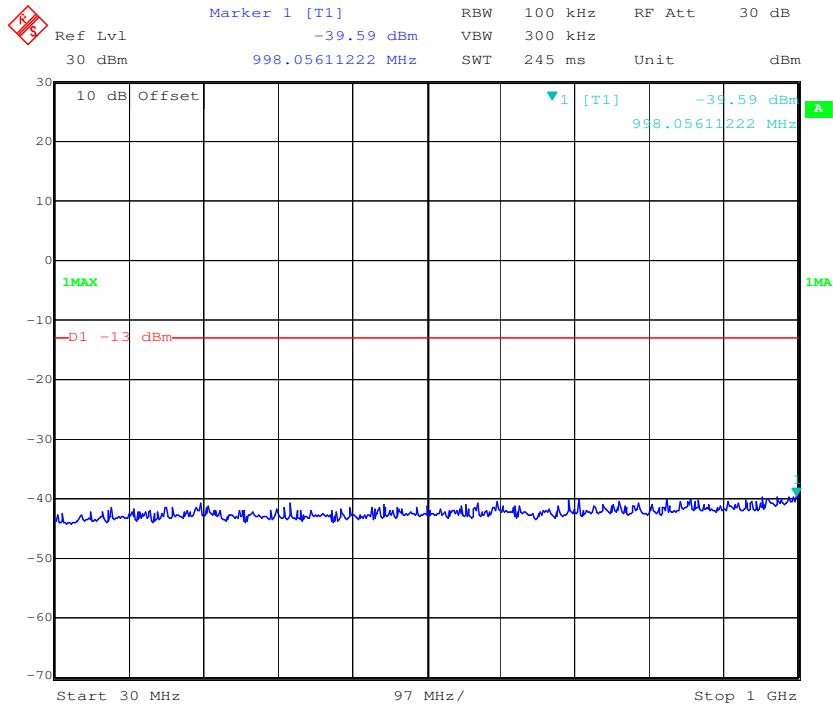
### QPSK\_5 MHz



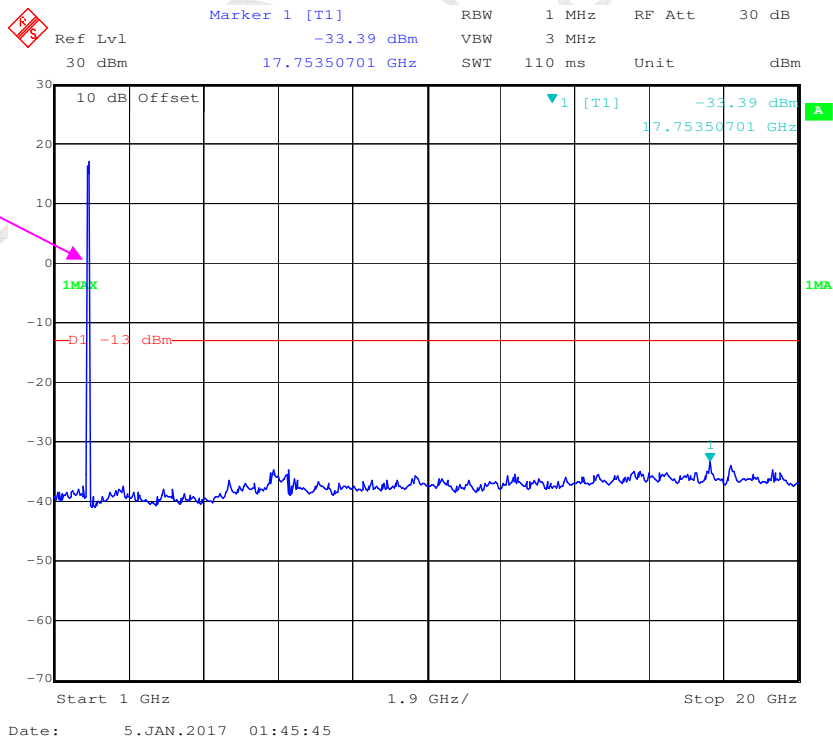
Fundamental



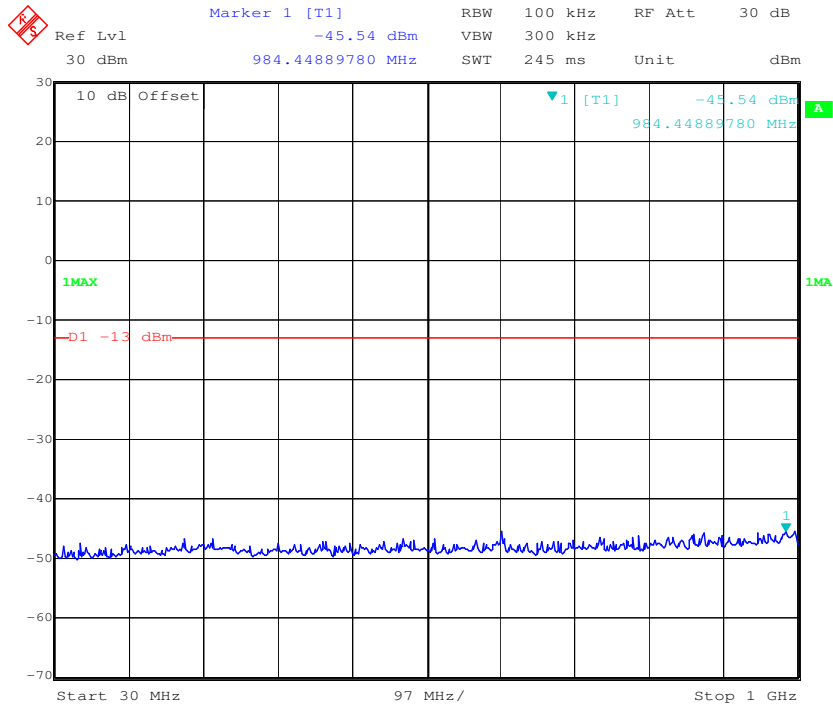
### QPSK\_10 MHz



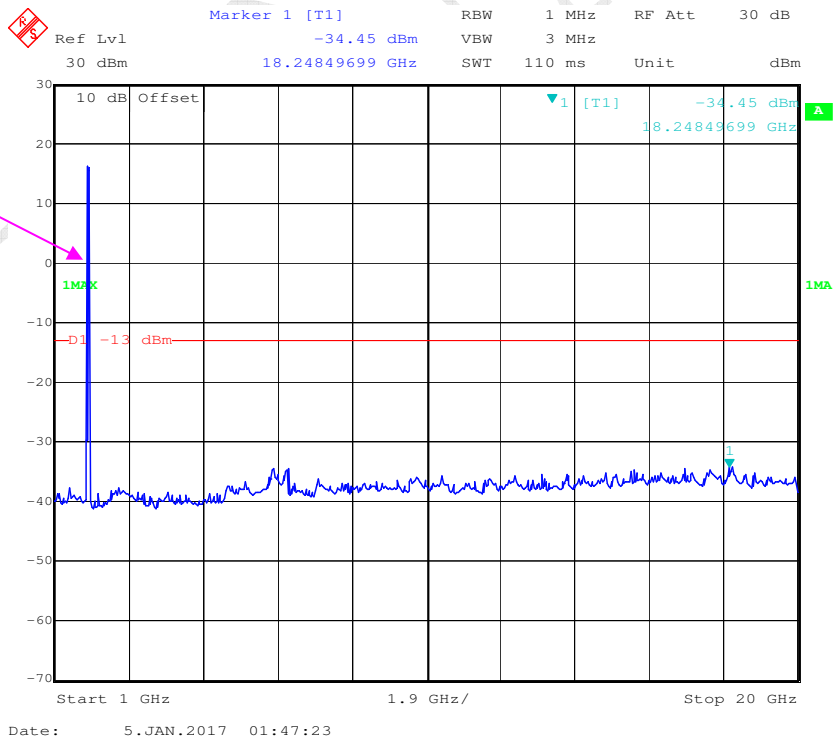
Fundamental



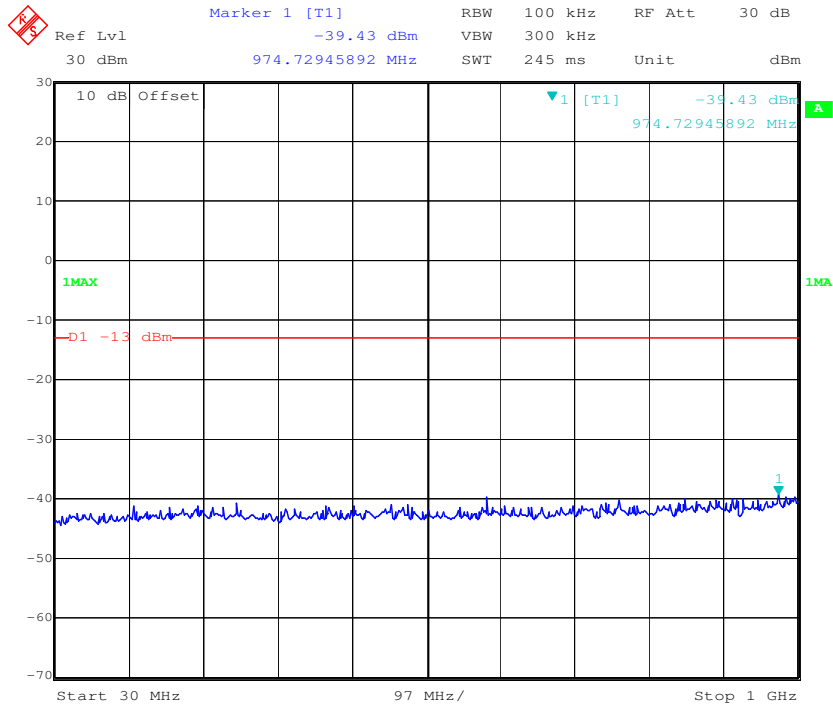
### QPSK\_15 MHz



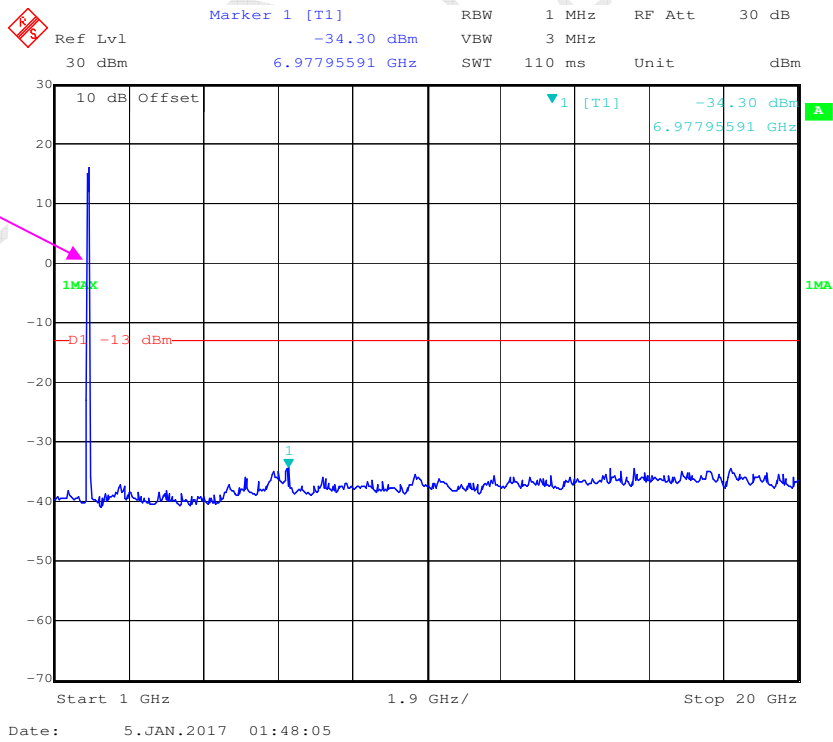
Fundamental



### QPSK\_20 MHz

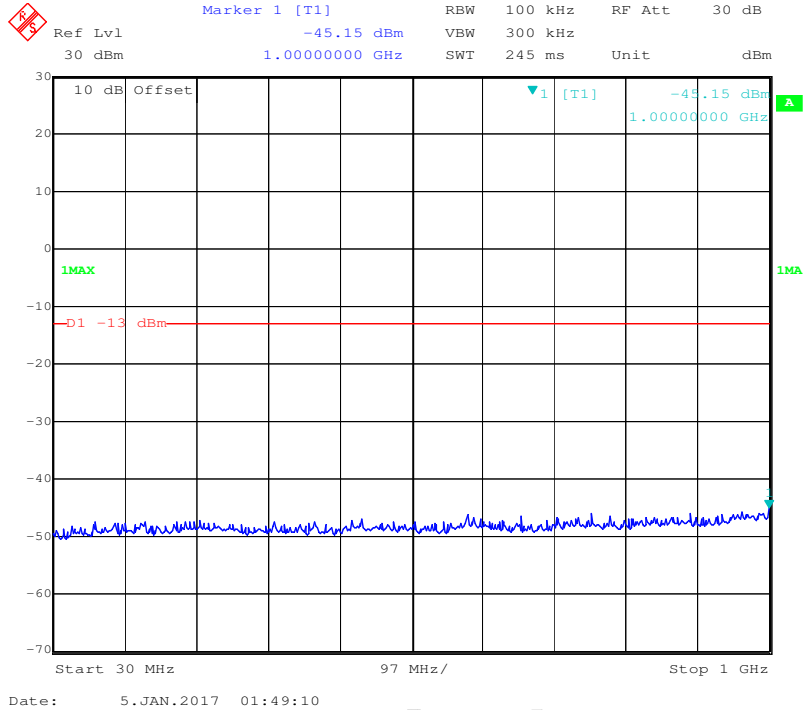


Fundamental

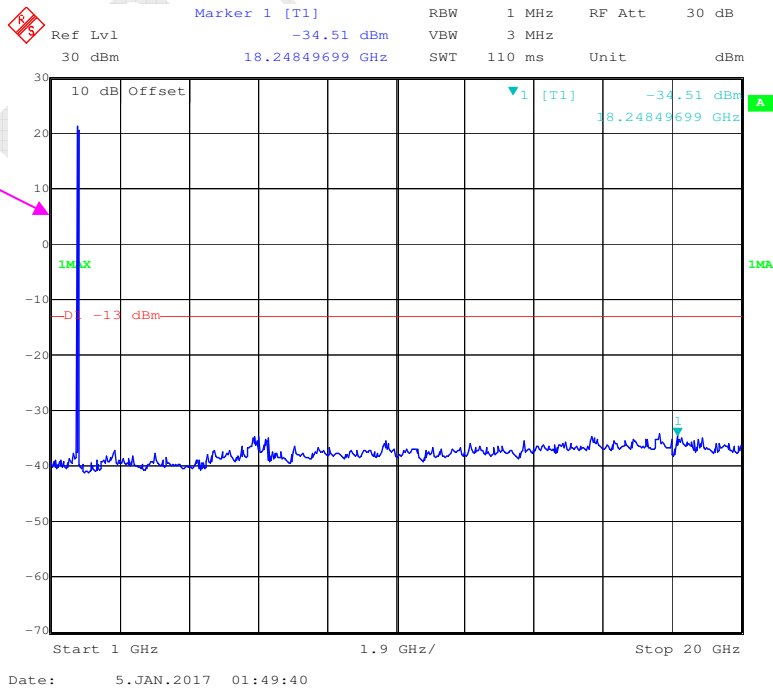


LTE Band IV (Middle Channel)

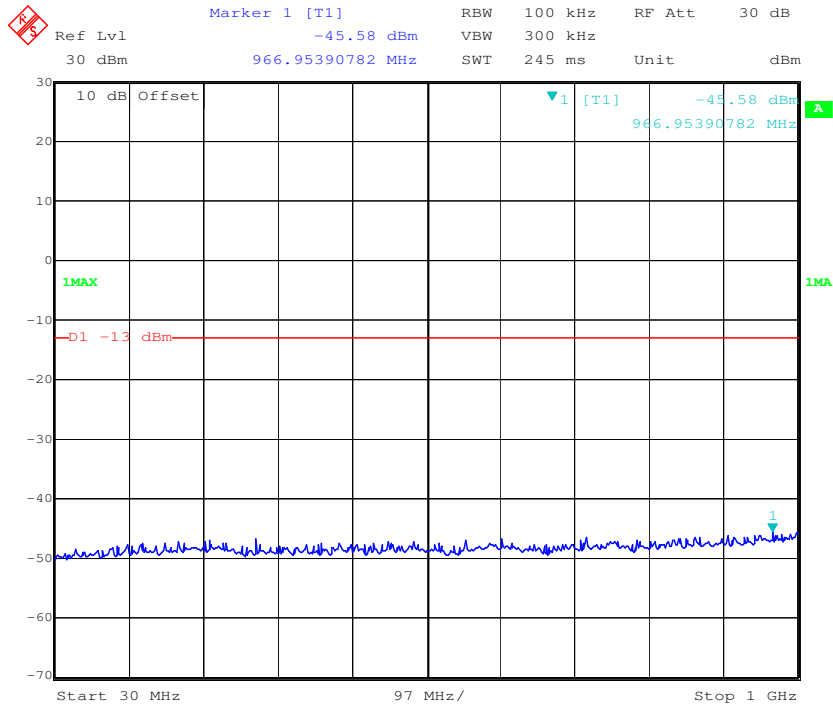
QPSK\_1.4 MHz



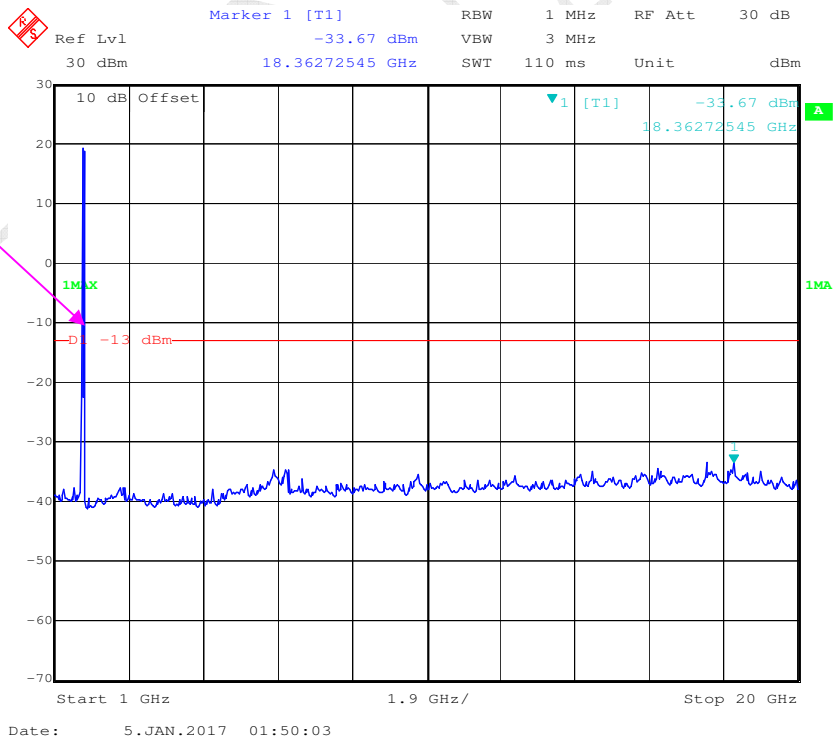
Fundamental



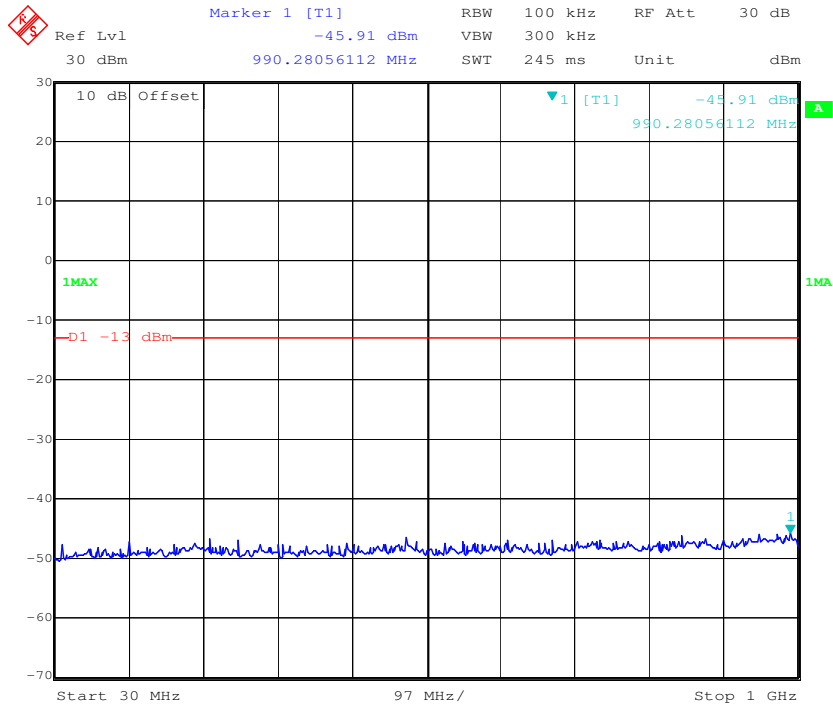
### QPSK\_3 MHz



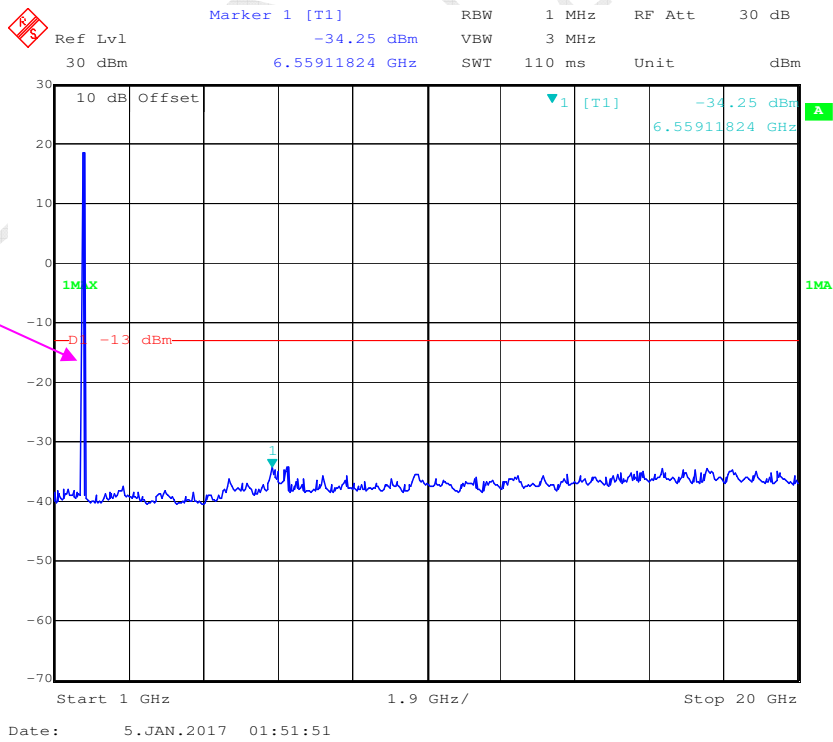
Fundamental



### QPSK\_5 MHz

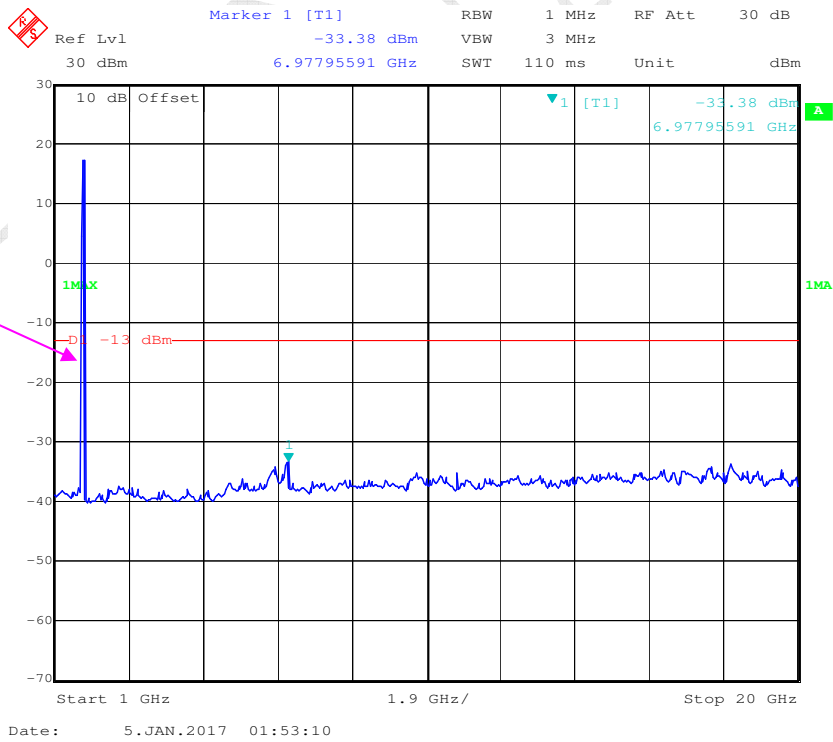
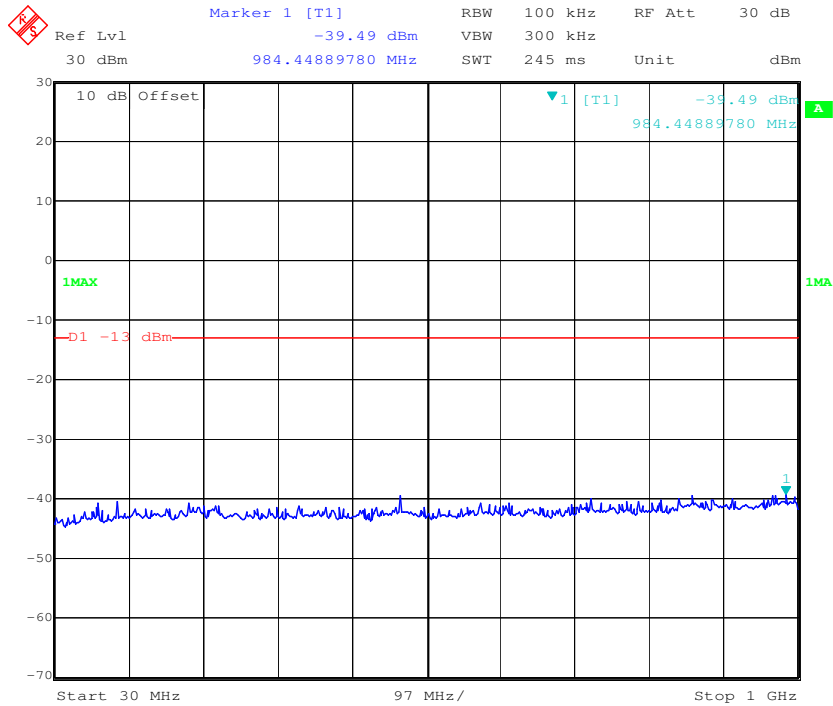


Fundamental





### QPSK\_10 MHz



### QPSK\_15 MHz

