



TESTING LABORATORY
CERTIFICATE #4820.01



FCC PART 22H, PART 24E
FCC PART 27
MEASUREMENT AND TEST REPORT
For
MAXWEST INTERNATIONAL LIMITED.

No.1,Longgang Road,Buji, Longgang,Shenzhen,China

FCC ID: 2AEN3GRAVITY55GO

Report Type: Original Report	Product Type: Mobile Phone
Report Number: RDG181210002-00D	
Report Date: 2019-01-31	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		Mobile Phone
EUT Model:		Gravity 55 GO
Rated Input Voltage:		DC3.7V from Battery or DC5V from adapter
Adapter Information	Model:	XCM23-U05100XYF
	Input:	AC 100-240V, 50/60Hz, 0.3A
	Output:	DC5V, 1A
External Dimension:		151mm(L)*71.7mm(W)*8.9mm(H)
Serial Number:		181210002
EUT Received Date:		2018-12-12

Objective

This report is prepared on behalf of **MAXWEST INTERNATIONAL LIMITED.** in accordance with: Part 2-Subpart J, Part 22-Subpart H, and Part 24-Subpart E Part 27 of the Federal Communication Commissions 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 15C DTS submissions with FCC ID: 2AEN3GRAVITY55GO.
FCC Part 15C DSS submissions with FCC ID: 2AEN3GRAVITY55GO.

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).

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Unwanted Emissions, radiated	30MHz ~ 1GHz: 5.85 dB 1G~26.5GHz: 5.23 dB
Unwanted Emissions, conducted	±1.5 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%

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 Industry Area, Tangxia, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier : CN0022.

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. The device supports GSM/GPRS/EDGE 850/1900 band,WCDMA/HSUPA/HPDPA Band 2 and band 5, LTE band 2, 4, 5, 7,12 and 17.

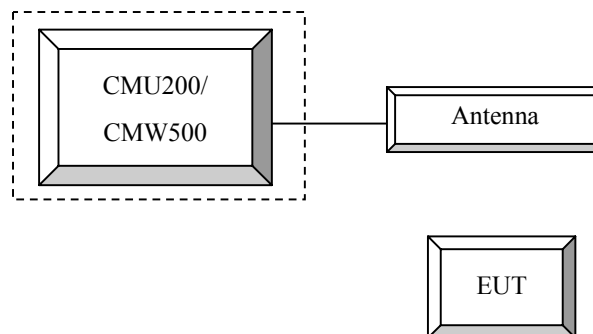
Equipment Modifications

No modification was made to the EUT.

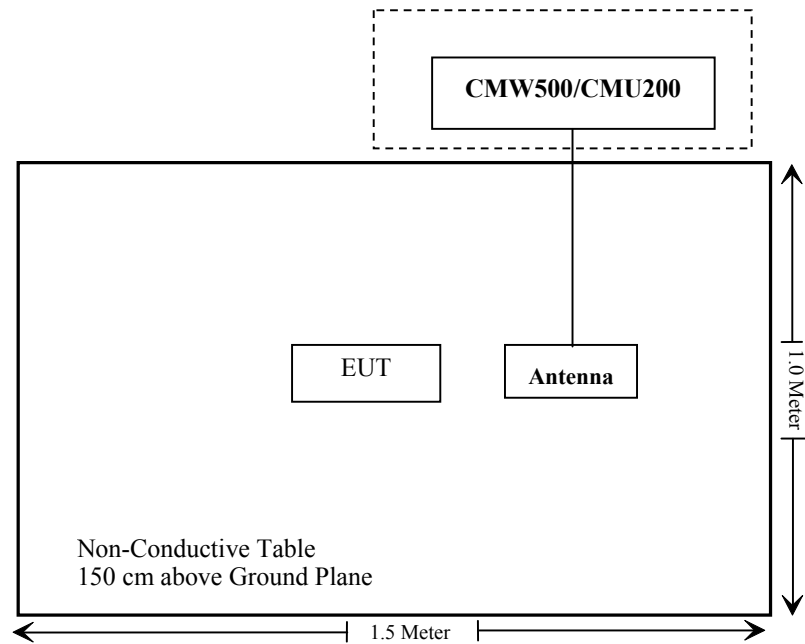
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester	CMU200	106 891
R&S	Wideband Radio Communication Tester	CMW500	147473
Un-known	ANTENNA	/	/

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	Field Strength of Spurious Radiation	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: RDG181210002-20A.

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 §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.

According to §27.50

(b)(10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

(c) (10) Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

(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.

(h),(2) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

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 Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input

Connection Press Signal on to turn on the signal and change settings

WCDMA-Release 99

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

WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	β_c / β_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	HSDPA	HSDPA	HSDPA
	Subset	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	β_d (SF)	64			
	β_c / β_d	2/15	12/15	15/8	15/4
	β_{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 outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subset	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/15	0
	β_{ec}	209/225	12/15	30/15	2/15	5/15
	β_c/β_d	11/15	6/15	15/9	2/15	-
	β_{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
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				
HSUPA Specific Settings	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_FCI	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 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 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 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27

HSPA+

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

Sub-test	β_c (Note 3)	β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105
Note 1: Δ_{ACK}, Δ_{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 β_c is set to 1 and $\beta_d = 0$ by default. Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value. Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.											

DC-HSDPA

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

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

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table. Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

LTE (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
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 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 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

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

Radiated method:

ANSI/TIA-603-D section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100035	2018-08-03	2019-08-03
Sunol Sciences	Antenna	JB3	A060611-3	2017-07-21	2019-07-21
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2018-09-24	2019-09-24
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2018-09-05	2019-09-05
R&S	Spectrum Analyzer	FSP 38	100478	2018-12-10	2019-12-10
TDK RF	Horn Antenna	HRN-0118	130 084	2016-01-05	2019-01-04
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
MICRO-COAX	Coaxial Cable	UFA147-1-2362-100100	64639 231029-001	2018-02-24	2019-02-28
Agilent	Signal Generator	E8247C	MY43321350	2018-12-10	2019-12-10
R&S	Universal Radio Communication Tester	CMU200	106 891	2018-12-14	2019-12-14
R&S	Wideband Radio Communication Tester	CMW500	147473	2018-08-03	2019-08-03

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

Test Data**Environmental Conditions**

Temperature:	19.6~21.3°C
Relative Humidity:	31~52 %
ATM Pressure:	99.7~99.8 kPa

* The testing was performed by Sunny Cen, Neil Liao, Tiago Huang and Vern Shen on 2018-12-17~2018-12-18.

Conducted Output Power**Cellular Band & PCS Band**

Band	Channel No.	Conducted 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	31.6	31.56	29.88	28.36	26.47	24.27	24.12	23.46	21.56
	190	32	31.98	29.92	28.42	26.52	24.36	24.24	23.34	21.34
	251	31.9	31.87	29.92	28.41	26.57	24.35	24.25	23.33	21.36
PCS	512	28.8	28.78	27.34	26.15	24.26	25.18	25.57	24.88	23.42
	661	29.1	29.15	27.45	26.21	24.31	24.75	25.14	24.52	23.51
	810	29.6	29.64	27.34	25.99	24.15	24.48	24.77	23.32	22.18

WCDMA Band II

Mode	3GPP Sub Test	Low Channel		Middle Channel		High Channel	
		Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)
Rel 99	1	22.98	2.96	22.98	2.76	23.11	3.00
HSDPA	1	20.98	3.48	21.23	3.44	21.23	3.72
	2	20.56	4.52	21.03	4.31	21.05	4.35
	3	20.43	4.61	20.69	4.54	20.74	4.58
	4	20.32	4.59	20.39	4.49	20.63	4.88
HSUPA	1	21.09	4.52	21.89	4.08	21.59	3.72
	2	20.84	4.48	20.63	4.42	20.84	4.57
	3	20.56	4.35	20.79	4.33	20.64	4.57
	4	20.45	4.87	20.51	4.87	20.24	4.90
	5	20.41	4.78	20.22	4.62	20.38	4.79

WCDMA Band V

Mode	3GPP Sub Test	Low Channel		Middle Channel		High Channel	
		Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)
Rel 99	1	23.24	2.88	23.18	3.00	23.13	2.92
HSDPA	1	22.25	3.04	22.41	3.84	22.29	3.76
	2	21.16	4.52	21.21	4.44	21.24	4.46
	3	21.49	4.49	21.22	4.78	21.56	4.84
	4	20.79	4.84	20.97	4.81	20.90	4.86
HSUPA	1	22.45	3.72	22.56	3.36	22.54	4.16
	2	21.95	4.40	21.98	4.62	21.80	4.31
	3	21.36	4.57	21.32	4.49	21.42	4.27
	4	21.05	4.86	20.83	4.80	21.04	4.89
	5	20.68	4.60	20.66	4.80	20.63	4.52

LTE Band 2

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	21.81	22.18	20.60
		RB1#3	21.81	22.25	20.42
		RB1#5	21.47	21.94	20.00
		RB3#0	21.74	22.27	20.47
		RB3#3	21.61	22.13	20.16
		RB6#0	20.69	21.20	19.26
	16QAM	RB1#0	20.66	21.19	19.54
		RB1#3	20.77	21.28	19.46
		RB1#5	20.48	20.98	19.07
		RB3#0	20.86	21.49	19.45
		RB3#3	20.72	21.36	19.18
		RB6#0	19.83	20.29	18.36
3MHz	QPSK	RB1#0	21.51	22.29	22.23
		RB1#8	21.33	22.15	21.43
		RB1#14	20.98	21.82	20.60
		RB6#0	20.59	21.34	20.84
		RB6#9	20.28	21.87	19.87
		RB15#0	20.47	22.01	20.38
	16QAM	RB1#0	21.20	22.54	21.09
		RB1#8	21.06	22.46	20.37
		RB1#14	20.70	22.04	19.60
		RB6#0	19.88	21.07	19.81
		RB6#9	19.57	20.72	18.88
		RB15#0	19.78	20.92	19.30
5MHz	QPSK	RB1#0	21.60	22.29	22.43
		RB1#13	21.66	22.51	21.72
		RB1#24	20.68	21.52	19.99
		RB15#0	20.72	21.54	21.14
		RB15#10	20.37	21.21	20.14
		RB25#0	20.50	21.34	20.60
	16QAM	RB1#0	20.49	21.58	21.38
		RB1#13	20.57	21.81	20.69
		RB1#24	19.61	20.83	19.00
		RB15#0	19.94	20.57	20.15
		RB15#10	19.58	20.24	19.17
		RB25#0	19.73	20.38	19.66

10MHz	QPSK	RB1#0	21.99	22.32	22.42
		RB1#25	21.47	22.29	22.73
		RB1#49	21.18	21.37	20.48
		RB25#0	20.83	21.56	21.89
		RB25#25	20.39	21.00	20.82
		RB50#0	20.59	21.30	21.40
	16QAM	RB1#0	21.50	21.53	21.36
		RB1#25	21.03	21.45	21.68
		RB1#49	20.80	20.53	19.46
		RB25#0	19.76	20.61	20.98
		RB25#25	19.35	20.05	19.94
		RB50#0	19.52	20.34	20.45
15MHz	QPSK	RB1#0	21.75	22.19	20.74
		RB1#38	20.87	22.06	22.34
		RB1#74	20.94	20.25	19.43
		RB36#0	20.41	21.51	20.71
		RB36#39	19.97	20.33	20.48
		RB75#0	20.17	21.00	20.64
	16QAM	RB1#0	21.31	21.42	20.11
		RB1#38	20.50	21.26	21.71
		RB1#74	20.60	19.43	18.86
		RB36#0	19.37	20.60	19.71
		RB36#39	18.96	19.42	19.49
		RB75#0	19.16	20.09	19.66
20MHz	QPSK	RB1#0	21.99	22.21	20.81
		RB1#50	21.15	21.97	21.85
		RB1#99	22.62	20.84	20.38
		RB50#0	20.26	21.32	20.01
		RB50#50	20.87	20.29	20.97
		RB100#0	20.55	20.86	20.53
	16QAM	RB1#0	21.18	21.49	20.37
		RB1#50	20.40	21.23	21.42
		RB1#99	21.97	20.12	20.02
		RB50#0	19.31	20.42	19.02
		RB50#50	19.92	19.38	20.01
		RB100#0	19.63	19.96	19.58

LTE Band 4

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.86	22.93	22.64
		RB1#3	22.84	22.95	22.60
		RB1#5	23.00	22.92	22.58
		RB3#0	22.91	22.86	22.55
		RB3#3	22.96	22.80	22.57
		RB6#0	22.01	21.92	21.52
	16QAM	RB1#0	22.18	21.89	22.60
		RB1#3	22.21	21.86	22.51
		RB1#5	22.82	21.89	22.53
		RB3#0	21.95	22.12	21.86
		RB3#3	22.00	22.04	21.83
		RB6#0	21.27	21.25	20.82
3MHz	QPSK	RB1#0	22.75	22.66	22.59
		RB1#8	22.76	22.66	22.59
		RB1#14	22.71	22.66	22.47
		RB6#0	22.02	21.95	21.68
		RB6#9	22.02	21.87	21.66
		RB15#0	21.94	21.83	21.72
	16QAM	RB1#0	22.54	22.46	21.42
		RB1#8	22.52	22.38	21.38
		RB1#14	22.48	22.41	21.35
		RB6#0	21.07	21.22	20.92
		RB6#9	21.03	21.20	20.88
		RB15#0	21.22	21.03	20.83
5MHz	QPSK	RB1#0	22.80	22.79	22.61
		RB1#13	22.74	22.75	22.56
		RB1#24	22.68	22.80	22.54
		RB15#0	22.08	21.95	21.77
		RB15#10	22.08	21.95	21.74
		RB25#0	22.00	21.85	21.73
	16QAM	RB1#0	21.74	21.20	21.59
		RB1#13	21.79	21.17	21.60
		RB1#24	21.77	21.23	21.54
		RB15#0	21.27	21.17	20.71
		RB15#10	21.18	21.11	20.72
		RB25#0	21.06	21.17	20.84

10MHz	QPSK	RB1#0	22.76	22.86	22.70
		RB1#25	22.70	22.72	22.61
		RB1#49	22.82	22.77	22.57
		RB25#0	21.91	21.94	21.63
		RB25#25	21.98	21.94	21.75
		RB50#0	22.03	21.89	21.72
	16QAM	RB1#0	22.53	22.68	21.38
		RB1#25	22.52	22.63	21.36
		RB1#49	22.55	22.71	21.36
		RB25#0	21.12	21.12	20.99
		RB25#25	21.13	21.22	20.98
		RB50#0	21.12	21.07	20.87
15MHz	QPSK	RB1#0	22.76	22.79	22.73
		RB1#38	22.79	22.80	22.68
		RB1#74	22.84	22.87	22.62
		RB36#0	21.97	21.95	21.71
		RB36#39	22.01	21.89	21.77
		RB75#0	21.94	21.92	21.71
	16QAM	RB1#0	22.34	22.64	22.21
		RB1#38	22.29	22.60	22.09
		RB1#74	22.32	22.72	21.88
		RB36#0	21.19	21.10	21.03
		RB36#39	21.36	21.11	21.01
		RB75#0	21.25	21.05	20.88
20MHz	QPSK	RB1#0	22.99	22.83	22.85
		RB1#50	23.09	22.79	22.74
		RB1#99	23.11	23.15	22.69
		RB50#0	21.88	22.02	21.78
		RB50#50	22.05	21.85	21.82
		RB100#0	22.06	21.89	21.80
	16QAM	RB1#0	22.06	22.18	22.82
		RB1#50	22.12	22.08	22.39
		RB1#99	22.09	22.17	22.43
		RB50#0	21.18	21.17	20.91
		RB50#50	21.29	21.04	20.87
		RB100#0	21.18	21.02	21.01

LTE Band 5

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	23.30	23.04	22.98
		RB1#3	23.32	23.12	23.04
		RB1#5	23.33	23.08	23.06
		RB3#0	23.24	23.33	23.07
		RB3#3	23.30	23.34	23.17
		RB6#0	22.22	22.29	22.17
	16QAM	RB1#0	22.75	22.94	21.99
		RB1#3	22.76	22.93	21.96
		RB1#5	22.77	22.94	22.09
		RB3#0	22.37	22.15	22.27
		RB3#3	22.44	22.19	22.37
3MHz	QPSK	RB1#0	23.06	23.07	22.98
		RB1#8	23.08	23.12	23.03
		RB1#14	23.03	23.10	23.07
		RB6#0	22.25	22.28	22.12
		RB6#9	22.26	22.24	22.25
		RB15#0	22.31	22.21	22.17
	16QAM	RB1#0	22.38	22.46	22.04
		RB1#8	22.36	22.45	22.01
		RB1#14	22.39	22.44	22.06
		RB6#0	21.47	21.51	21.25
		RB6#9	21.44	21.45	21.26
5MHz	QPSK	RB1#0	23.20	23.24	23.06
		RB1#13	23.19	23.20	23.06
		RB1#24	23.06	23.18	23.16
		RB15#0	22.26	22.24	22.24
		RB15#10	22.23	22.27	22.12
	16QAM	RB25#0	22.26	22.21	22.14
		RB1#0	21.50	22.42	21.77
		RB1#13	21.56	22.32	21.83
		RB1#24	21.50	22.13	21.93
		RB15#0	21.56	21.26	21.32
10MHz	QPSK	RB15#10	21.43	21.25	21.29
		RB25#0	21.49	21.28	21.21
		RB1#0	23.10	23.11	23.12
		RB1#25	23.04	23.20	23.13
		RB1#49	23.21	23.22	23.07
		RB25#0	22.32	22.24	22.27
	16QAM	RB25#25	22.20	22.18	22.24
		RB50#0	22.31	22.21	22.19
		RB1#0	22.60	22.26	21.67
		RB1#25	22.57	22.41	21.66
		RB1#49	22.70	22.39	21.73
		RB25#0	21.36	21.44	21.39
		RB25#25	21.35	21.39	21.33
		RB50#0	21.32	21.40	21.36

LTE Band 7

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	21.56	22.59	22.19
		RB1#13	21.25	22.61	22.18
		RB1#24	20.17	22.37	22.24
		RB15#0	21.21	21.50	21.20
		RB15#10	20.71	21.31	21.26
		RB25#0	20.85	21.30	21.28
	16QAM	RB1#0	20.97	22.27	21.65
		RB1#13	20.88	22.20	21.66
		RB1#24	19.90	22.30	21.83
		RB15#0	20.95	20.81	20.53
		RB15#10	20.69	20.85	20.63
		RB25#0	20.87	21.05	20.79
10MHz	QPSK	RB1#0	21.24	22.46	22.13
		RB1#25	20.28	22.43	21.99
		RB1#49	20.11	22.61	22.21
		RB25#0	20.61	21.32	21.34
		RB25#25	20.16	21.39	21.37
		RB50#0	20.34	21.35	21.31
	16QAM	RB1#0	21.39	22.08	22.06
		RB1#25	20.76	21.90	21.98
		RB1#49	21.21	22.01	22.05
		RB25#0	20.80	21.10	20.69
		RB25#25	20.83	21.09	20.63
		RB50#0	20.91	21.04	20.70
15MHz	QPSK	RB1#0	21.25	22.30	22.31
		RB1#38	20.07	22.14	22.44
		RB1#74	20.49	21.81	22.65
		RB36#0	20.55	21.39	21.20
		RB36#39	20.24	21.42	21.31
		RB75#0	20.34	21.39	21.28
	16QAM	RB1#0	21.51	23.35	22.59
		RB1#38	20.57	23.19	22.39
		RB1#74	21.07	21.98	22.53
		RB36#0	20.49	20.92	20.72
		RB36#39	20.25	20.86	20.84
		RB75#0	20.33	20.94	20.66
20MHz	QPSK	RB1#0	20.44	23.10	22.56
		RB1#50	20.36	23.13	23.21
		RB1#99	22.56	23.17	23.25
		RB50#0	19.93	22.11	21.91
		RB50#50	19.99	21.99	21.91
		RB100#0	19.89	22.09	22.00
	16QAM	RB1#0	20.47	23.50	23.12
		RB1#50	19.65	22.66	23.28
		RB1#99	20.61	22.62	23.23
		RB50#0	21.08	22.10	21.92
		RB50#50	21.78	22.12	21.87
		RB100#0	21.49	21.56	21.54

LTE Band 12

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.94	23.20	23.13
		RB1#3	22.95	23.29	23.14
		RB1#5	23.01	23.37	23.24
		RB3#0	23.08	23.22	23.13
		RB3#3	23.05	23.24	23.22
		RB6#0	22.17	22.33	22.21
	16QAM	RB1#0	22.72	22.15	22.37
		RB1#3	22.75	22.27	22.39
		RB1#5	22.74	22.24	22.36
		RB3#0	22.13	22.15	22.11
		RB3#3	22.15	22.16	22.15
3MHz	QPSK	RB1#0	22.86	23.09	23.26
		RB1#8	22.97	23.12	23.25
		RB1#14	23.04	23.12	23.31
		RB6#0	22.06	22.12	22.22
		RB6#9	22.13	22.35	22.34
		RB15#0	22.21	22.33	22.36
	16QAM	RB1#0	22.21	22.81	21.93
		RB1#8	22.23	22.89	21.86
		RB1#14	22.32	22.88	21.96
		RB6#0	21.14	21.22	21.43
		RB6#9	21.14	21.23	21.40
5MHz	QPSK	RB1#0	22.87	23.14	23.17
		RB1#13	23.08	23.25	23.13
		RB1#24	23.02	23.19	23.14
		RB15#0	22.25	22.13	22.34
		RB15#10	22.19	22.25	22.37
		RB25#0	22.28	22.27	22.30
	16QAM	RB1#0	21.38	22.13	21.93
		RB1#13	21.39	22.30	21.89
		RB1#24	21.32	22.18	21.88
		RB15#0	21.24	21.11	21.37
		RB15#10	21.29	21.19	21.22
10MHz	QPSK	RB25#0	21.37	21.28	21.18
		RB1#0	22.92	23.07	23.38
		RB1#25	23.01	23.18	23.30
		RB1#49	23.27	23.16	23.52
		RB25#0	22.25	22.20	22.38
	16QAM	RB25#25	22.30	22.29	22.34
		RB50#0	22.28	22.33	22.20
		RB1#0	22.22	22.45	21.76
		RB1#25	22.21	22.56	21.79
		RB1#49	22.40	23.12	21.91
	QPSK	RB25#0	21.23	21.29	21.38
		RB25#25	21.29	21.39	21.39
		RB50#0	21.29	21.38	21.34

LTE Band 17

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	23.12	23.08	23.27
		RB1#13	23.18	23.03	23.20
		RB1#24	23.23	23.14	23.22
		RB15#0	22.22	22.25	22.28
		RB15#10	22.29	22.26	22.29
		RB25#0	22.27	22.20	22.33
	16QAM	RB1#0	22.25	21.80	21.39
		RB1#13	22.19	21.72	21.44
		RB1#24	22.34	21.90	21.49
		RB15#0	21.13	21.40	21.35
		RB15#10	21.24	21.29	21.28
		RB25#0	21.26	21.23	21.41
10MHz	QPSK	RB1#0	23.04	23.09	23.31
		RB1#25	23.20	23.04	23.33
		RB1#49	23.24	23.13	23.44
		RB25#0	22.25	22.23	22.33
		RB25#25	22.26	22.38	22.21
		RB50#0	22.21	22.32	22.23
	16QAM	RB1#0	22.19	22.94	21.75
		RB1#25	22.35	23.08	21.82
		RB1#49	22.37	23.07	21.91
		RB25#0	21.24	21.30	21.39
		RB25#25	21.37	21.38	21.37
		RB50#0	21.37	21.29	21.37

PAR, Band 2

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	5.80	4.28	4.92	13
	100 RB		6.32	6.16	6.48	13
16QAM	1 RB	20 MHz	6.04	5.16	5.68	13
	100 RB		7.12	7.00	7.20	13

PAR, Band 4

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.24	4.32	4.80	13
	100 RB		6.40	6.12	6.32	13
16QAM	1 RB	20 MHz	5.16	5.44	5.32	13
	100 RB		7.16	7.04	7.12	13

PAR, Band 5

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	3.88	4.28	3.96	13
	50 RB		5.16	5.28	5.24	13
16QAM	1 RB	10 MHz	5.24	5.36	4.96	13
	50 RB		6.12	6.20	6.12	13

PAR, Band 7

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	5.92	4.16	4.04	13
	100 RB		6.20	6.12	6.36	13
16QAM	1 RB	20 MHz	5.88	5.04	4.76	13
	100 RB		7.24	7.08	7.12	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	4.64	4.48	4.16	13
	50 RB		5.52	5.40	5.20	13
16QAM	1 RB	10 MHz	5.52	5.48	4.56	13
	50 RB		6.40	6.36	6.16	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	4.24	4.24	4.20	13
	50 RB		5.20	5.24	5.36	13
16QAM	1 RB	10 MHz	5.48	4.72	5.54	13
	50 RB		6.28	6.08	6.24	13

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

ERP & EIRP**Part 22H**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM 850 Middle Channel								
836.60	H	89.03	14.80	0.00	0.50	14.30	38.45	24.15
836.60	V	99.61	28.35	0.00	0.50	27.85	38.45	10.60
EDGE 850 Middle Channel								
836.60	H	83.64	9.41	0.00	0.50	8.91	38.45	29.54
836.60	V	94.15	22.89	0.00	0.50	22.39	38.45	16.06
WCDMA Band V Middle Channel								
836.60	H	81.59	7.36	0.00	0.50	6.86	38.45	31.59
836.60	V	95.52	24.26	0.00	0.50	23.76	38.45	14.69

Part 24E

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
PCS 1900 Middle Channel								
1880.00	H	94.22	19.44	11.14	1.56	29.02	33.00	3.98
1880.00	V	94.16	19.19	11.14	1.56	28.77	33.00	4.23
EDGE 1900 Middle Channel								
1880.00	H	90.03	15.25	11.14	1.56	24.83	33.00	8.17
1880.00	V	89.91	14.94	11.14	1.56	24.52	33.00	8.48
WCDMA Band II Middle Channel								
1880.00	H	87.43	12.65	11.14	1.56	22.23	33.00	10.77
1880.00	V	86.76	11.79	11.14	1.56	21.37	33.00	11.63

Note:

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

LTE Band 2

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1880.00	1.40	QPSK	H	87.94	13.16	11.14	1.56	22.74	33.00	10.26
1880.00			V	85.71	10.74	11.14	1.56	20.32	33.00	12.68
1880.00	3.00		H	87.87	13.09	11.14	1.56	22.67	33.00	10.33
1880.00			V	86.10	11.13	11.14	1.56	20.71	33.00	12.29
1880.00	5.00		H	87.79	13.01	11.14	1.56	22.59	33.00	10.41
1880.00			V	85.83	10.86	11.14	1.56	20.44	33.00	12.56
1880.00	10.00		H	86.90	12.12	11.14	1.56	21.70	33.00	11.30
1880.00			V	85.18	10.21	11.14	1.56	19.79	33.00	13.21
1880.00	15.00		H	87.87	13.09	11.14	1.56	22.67	33.00	10.33
1880.00			V	86.10	11.13	11.14	1.56	20.71	33.00	12.29
1880.00	20.00		H	89.66	14.88	11.14	1.56	24.46	33.00	8.54
1880.00			V	87.97	13.00	11.14	1.56	22.58	33.00	10.42
1880.00	1.40	16QAM	H	88.09	13.31	11.14	1.56	22.89	33.00	10.11
1880.00			V	86.66	11.69	11.14	1.56	21.27	33.00	11.73
1880.00	3.00		H	88.08	13.30	11.14	1.56	22.88	33.00	10.12
1880.00			V	86.82	11.85	11.14	1.56	21.43	33.00	11.57
1880.00	5.00		H	88.06	13.28	11.14	1.56	22.86	33.00	10.14
1880.00			V	86.59	11.62	11.14	1.56	21.20	33.00	11.80
1880.00	10.00		H	87.51	12.73	11.14	1.56	22.31	33.00	10.69
1880.00			V	85.92	10.95	11.14	1.56	20.53	33.00	12.47
1880.00	15.00		H	87.66	12.88	11.14	1.56	22.46	33.00	10.54
1880.00			V	87.97	13.00	11.14	1.56	22.58	33.00	10.42
1880.00	20.00		H	88.40	13.62	11.14	1.56	23.20	33.00	9.80
1880.00			V	87.63	12.66	11.14	1.56	22.24	33.00	10.76

LTE Band 4

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1732.50	1.40	QPSK	H	87.29	12.08	10.70	1.52	21.26	30.00	8.74
1732.50			V	85.46	9.95	10.70	1.52	19.13	30.00	10.87
1732.50	3.00		H	86.67	11.46	10.70	1.52	20.64	30.00	9.36
1732.50			V	85.43	9.92	10.70	1.52	19.10	30.00	10.90
1732.50	5.00		H	86.29	11.08	10.70	1.52	20.26	30.00	9.74
1732.50			V	84.79	9.28	10.70	1.52	18.46	30.00	11.54
1732.50	10.00		H	85.16	9.95	10.70	1.52	19.13	30.00	10.87
1732.50			V	84.08	8.57	10.70	1.52	17.75	30.00	12.25
1732.50	15.00		H	87.93	12.72	10.70	1.52	21.90	30.00	8.10
1732.50			V	85.98	10.47	10.70	1.52	19.65	30.00	10.35
1732.50	20.00		H	87.93	12.72	10.70	1.52	21.90	30.00	8.10
1732.50			V	85.98	10.47	10.70	1.52	19.65	30.00	10.35
1732.50	1.40	16QAM	H	86.25	11.04	10.70	1.52	20.22	30.00	9.78
1732.50			V	85.10	9.59	10.70	1.52	18.77	30.00	11.23
1732.50	3.00		H	87.20	11.99	10.70	1.52	21.17	30.00	8.83
1732.50			V	85.45	9.94	10.70	1.52	19.12	30.00	10.88
1732.50	5.00		H	87.11	11.90	10.70	1.52	21.08	30.00	8.92
1732.50			V	85.62	10.11	10.70	1.52	19.29	30.00	10.71
1732.50	10.00		H	85.95	10.74	10.70	1.52	19.92	30.00	10.08
1732.50			V	84.70	9.19	10.70	1.52	18.37	30.00	11.63
1732.50	15.00		H	85.95	10.74	10.70	1.52	19.92	30.00	10.08
1732.50			V	84.70	9.19	10.70	1.52	18.37	30.00	11.63
1732.50	20.00		H	88.38	13.17	10.70	1.52	22.35	30.00	7.65
1732.50			V	86.92	11.41	10.70	1.52	20.59	30.00	9.41

LTE Band 5

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
836.50	1.40	QPSK	H	86.96	12.73	0.00	0.50	12.23	38.45	26.22
836.50			V	94.54	23.28	0.00	0.50	22.78	38.45	15.67
836.50	3.00		H	86.17	11.94	0.00	0.50	11.44	38.45	27.01
836.50			V	93.83	22.57	0.00	0.50	22.07	38.45	16.38
836.50	5.00		H	85.48	11.25	0.00	0.50	10.75	38.45	27.70
836.50			V	94.39	23.13	0.00	0.50	22.63	38.45	15.82
836.50	10.00		H	85.74	11.51	0.00	0.50	11.01	38.45	27.44
836.50			V	93.64	22.38	0.00	0.50	21.88	38.45	16.57
836.50	1.40	16QAM	H	86.73	12.50	0.00	0.50	12.00	38.45	26.45
836.50			V	94.08	22.82	0.00	0.50	22.32	38.45	16.13
836.50	3.00		H	86.02	11.79	0.00	0.50	11.29	38.45	27.16
836.50			V	93.65	22.39	0.00	0.50	21.89	38.45	16.56
836.50	5.00		H	85.32	11.09	0.00	0.50	10.59	38.45	27.86
836.50			V	94.14	22.88	0.00	0.50	22.38	38.45	16.07
836.50	10.00		H	85.58	11.35	0.00	0.50	10.85	38.45	27.60
836.50			V	93.35	22.09	0.00	0.50	21.59	38.45	16.86

LTE Band 7

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2535.00	5.00	QPSK	H	86.03	12.94	12.21	1.79	23.36	33.00	9.64
2535.00			V	80.64	7.26	12.21	1.79	17.68	33.00	15.32
2535.00	10.00		H	86.03	12.94	12.21	1.79	23.36	33.00	9.64
2535.00			V	79.28	5.90	12.21	1.79	16.32	33.00	16.68
2535.00	15.00		H	85.28	12.19	12.21	1.79	22.61	33.00	10.39
2535.00			V	80.52	7.14	12.21	1.79	17.56	33.00	15.44
2535.00	20.00		H	85.18	12.09	12.21	1.79	22.51	33.00	10.49
2535.00			V	80.72	7.34	12.21	1.79	17.76	33.00	15.24
2535.00	5.00	16QAM	H	86.15	13.06	12.21	1.79	23.48	33.00	9.52
2535.00			V	81.11	7.73	12.21	1.79	18.15	33.00	14.85
2535.00	10.00		H	86.15	13.06	12.21	1.79	23.48	33.00	9.52
2535.00			V	80.41	7.03	12.21	1.79	17.45	33.00	15.55
2535.00	15.00		H	85.58	12.49	12.21	1.79	22.91	33.00	10.09
2535.00			V	80.98	7.60	12.21	1.79	18.02	33.00	14.98
2535.00	20.00		H	85.84	12.75	12.21	1.79	23.17	33.00	9.83
2535.00			V	81.70	8.32	12.21	1.79	18.74	33.00	14.26

LTE Band 12

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
707.50	1.40	QPSK	H	80.98	5.05	0.00	0.39	4.66	34.77	30.11
707.50			V	90.76	17.73	0.00	0.39	17.34	34.77	17.43
707.50	3.00		H	80.63	4.70	0.00	0.39	4.31	34.77	30.46
707.50			V	90.61	17.58	0.00	0.39	17.19	34.77	17.58
707.50	5.00		H	80.64	4.71	0.00	0.39	4.32	34.77	30.45
707.50			V	90.72	17.69	0.00	0.39	17.30	34.77	17.47
707.50	10.00		H	81.34	5.41	0.00	0.39	5.02	34.77	29.75
707.50			V	91.26	18.23	0.00	0.39	17.84	34.77	16.93
707.50	1.40	16QAM	H	79.94	4.01	0.00	0.39	3.62	34.77	31.15
707.50			V	90.45	17.42	0.00	0.39	17.03	34.77	17.74
707.50	3.00		H	81.15	5.22	0.00	0.39	4.83	34.77	29.94
707.50			V	91.14	18.11	0.00	0.39	17.72	34.77	17.05
707.50	5.00		H	80.87	4.94	0.00	0.39	4.55	34.77	30.22
707.50			V	90.98	17.95	0.00	0.39	17.56	34.77	17.21
707.50	10.00		H	81.35	5.42	0.00	0.39	5.03	34.77	29.74
707.50			V	91.46	18.43	0.00	0.39	18.04	34.77	16.73

LTE Band 17

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
710.00	5	QPSK	H	82.23	6.33	0.00	0.39	5.94	34.77	28.83
710.00			V	91.26	18.26	0.00	0.39	17.87	34.77	16.90
710.00	10		H	82.34	6.44	0.00	0.39	6.05	34.77	28.72
710.00			V	91.35	18.35	0.00	0.39	17.96	34.77	16.81
710.00	5	16QAM	H	82.69	6.79	0.00	0.39	6.40	34.77	28.37
710.00			V	91.33	18.33	0.00	0.39	17.94	34.77	16.83
710.00	10		H	82.79	6.89	0.00	0.39	6.50	34.77	28.27
710.00			V	91.58	18.58	0.00	0.39	18.19	34.77	16.58

Note:

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

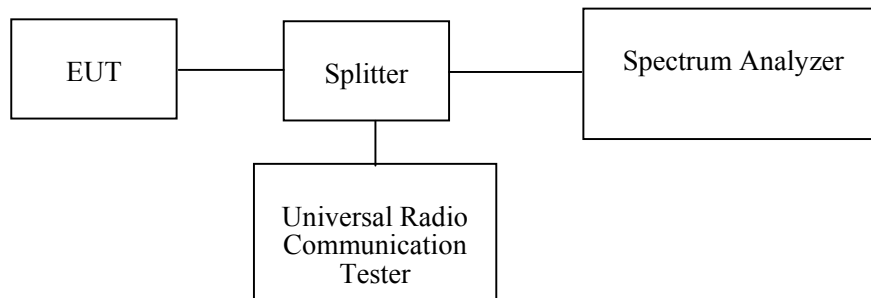
FCC §2.1049, §22.917, §22.905 & §24.238 & §27.53- OCCUPIED BANDWIDTH**Applicable Standard**

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	2018-08-03	2019-08-03
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005012	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	N/A

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

Test Data**Environmental Conditions**

Temperature:	24.5~25.5°C
Relative Humidity:	41~49 %
ATM Pressure:	99.7~100.6 kPa

The testing was performed by Tiago Huang from 2018-12-19 to 2019-01-31.

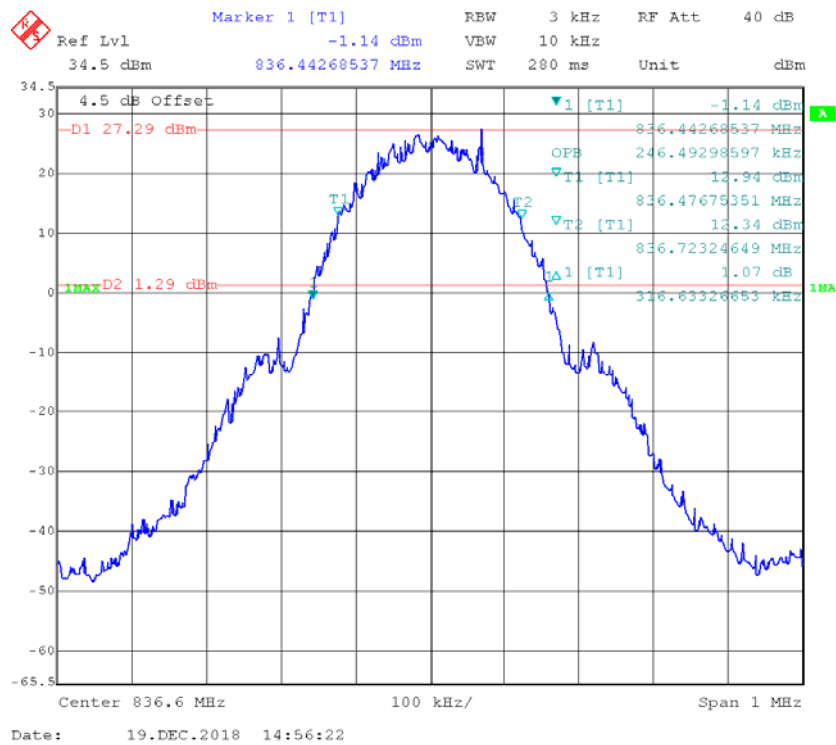
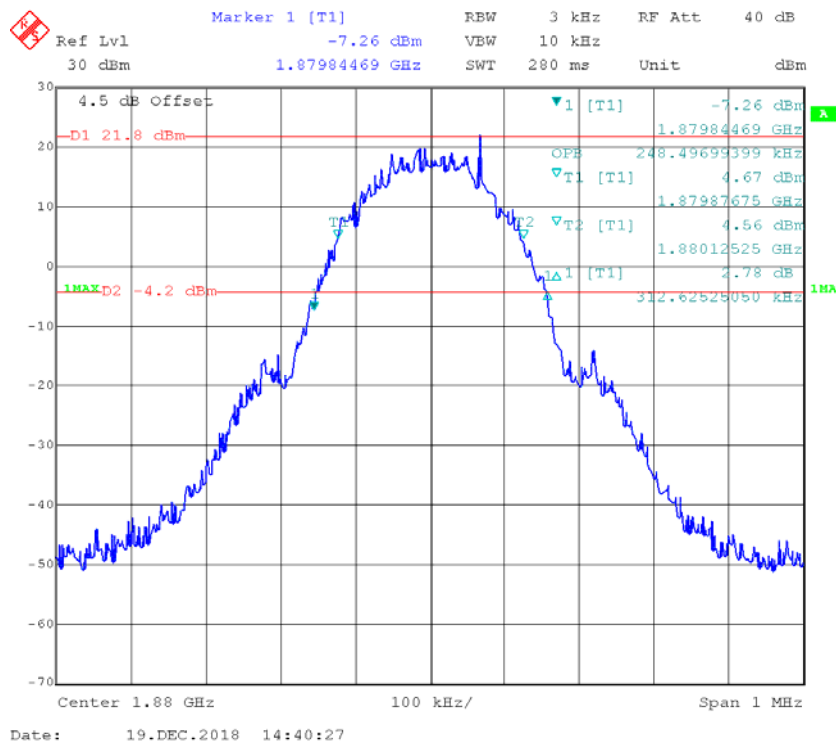
Test Mode: Transmitting

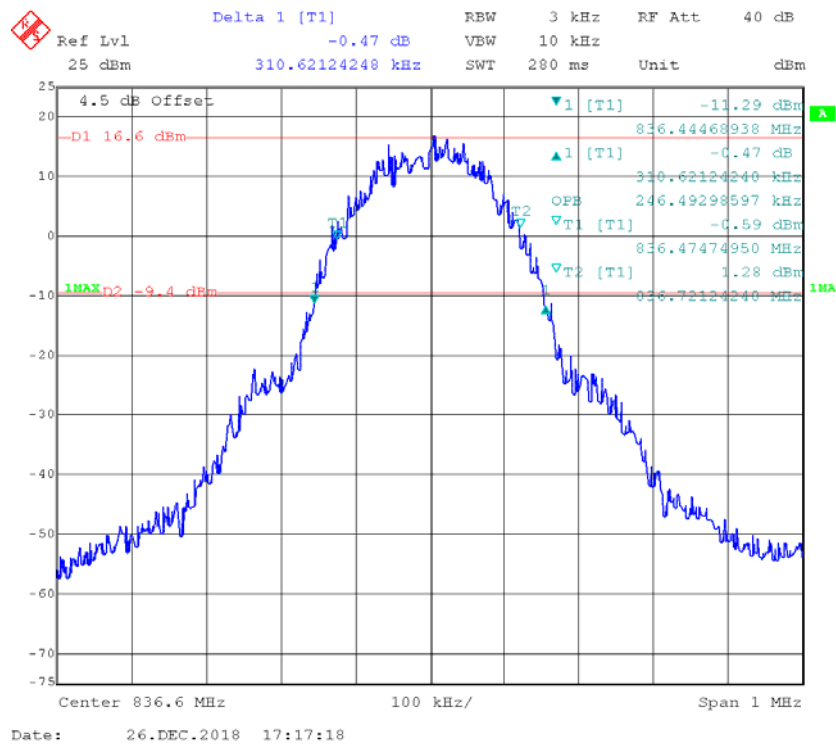
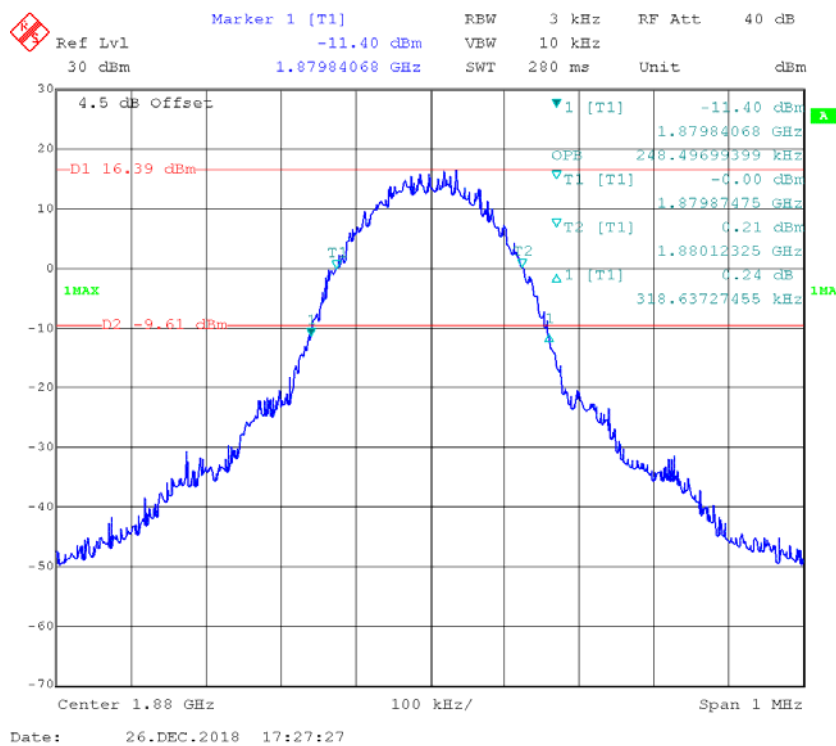
Test Result: Compliant. Please refer to the following table and plots.

Band	Test Channel	Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Cellular	M	GSM	0.246	0.316
PCS		EDGE	0.246	0.311
		PCS	0.248	0.313
		EDGE	0.248	0.319
		WCDMA Band II	Rel 99	4.168
HSDPA			4.168	4.689
HSUPA			4.148	4.649
WCDMA Band V		Rel 99	4.168	4.669
		HSDPA	4.148	4.709
		HSUPA	4.168	4.709

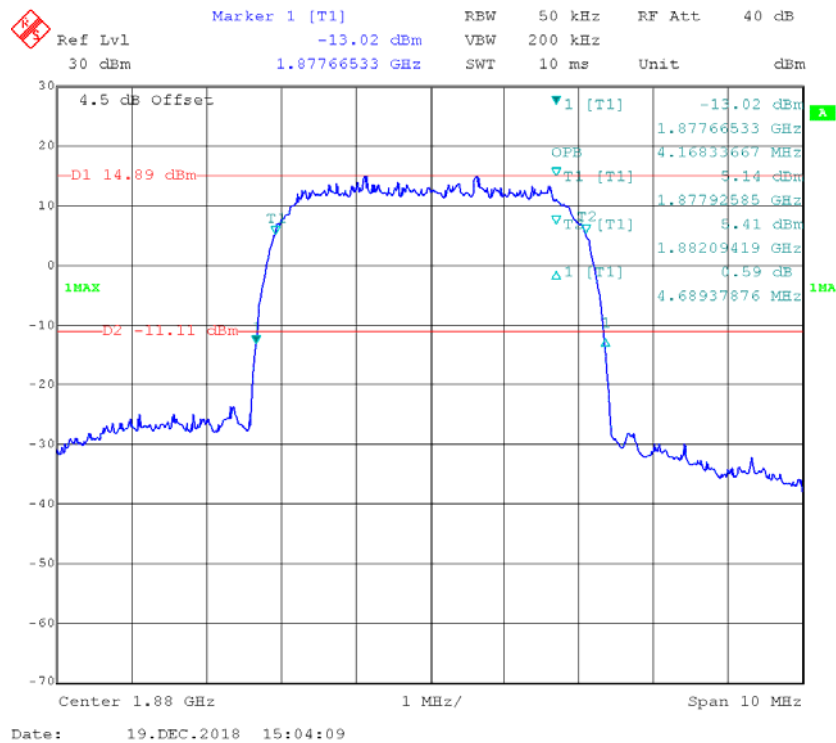
Band	Bandwidth	Modulation	99% occupied bandwidth (MHz)	26 dB bandwidth (MHz)
LTE Band 2	1.4 MHz	QPSK	1.100	1.305
		16QAM	1.106	1.401
	3 MHz	QPSK	2.705	3.018
		16QAM	2.705	3.042
	5 MHz	QPSK	4.549	5.351
		16QAM	4.529	5.291
	10 MHz	QPSK	8.978	9.860
		16QAM	8.978	9.820
	15 MHz	QPSK	13.527	15.271
		16QAM	13.467	15.090
LTE Band 4	1.4 MHz	QPSK	1.100	1.323
		16QAM	1.118	1.299
	3 MHz	QPSK	2.705	3.018
		16QAM	2.693	3.066
	5 MHz	QPSK	4.569	5.371
		16QAM	4.549	5.271
	10 MHz	QPSK	8.978	9.940
		16QAM	8.978	9.820
	15 MHz	QPSK	13.527	15.451
		16QAM	13.527	14.970
LTE Band 5	1.4 MHz	QPSK	1.112	1.407
		16QAM	1.112	1.287
	3 MHz	QPSK	2.705	3.018
		16QAM	2.705	3.030
	5 MHz	QPSK	4.549	5.371
		16QAM	4.549	5.230
	10 MHz	QPSK	8.978	9.820
		16QAM	8.978	9.900

Band	Bandwidth	Modulation	99% occupied bandwidth (MHz)	26 dB bandwidth (MHz)
LTE Band 7	5 MHz	QPSK	4.569	5.291
		16QAM	4.549	5.271
	10 MHz	QPSK	8.978	9.900
		16QAM	8.978	9.900
	15 MHz	QPSK	13.527	15.511
		16QAM	13.527	15.090
	20 MHz	QPSK	17.956	19.639
		16QAM	17.956	20.040
LTE Band 12	1.4 MHz	QPSK	1.106	1.311
		16QAM	1.112	1.317
	3 MHz	QPSK	2.693	3.018
		16QAM	2.693	3.066
	5 MHz	QPSK	4.569	5.451
		16QAM	4.549	5.431
	10 MHz	QPSK	8.978	9.780
		16QAM	8.978	9.860
LTE Band 17	5 MHz	QPSK	4.549	5.251
		16QAM	4.549	5.210
	10 MHz	QPSK	8.938	9.699
		16QAM	8.938	9.860

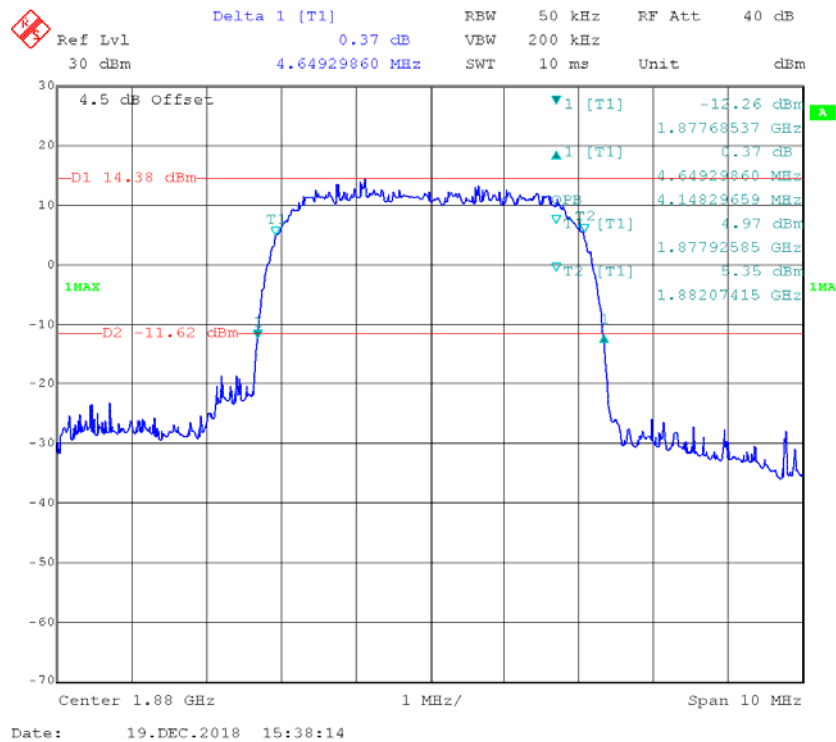
GSM 850 Cellular Band**GSM PCS1900 Cellular Band**

EDGE 850 Cellular Band**EDGE PCS1900 Cellular Band**

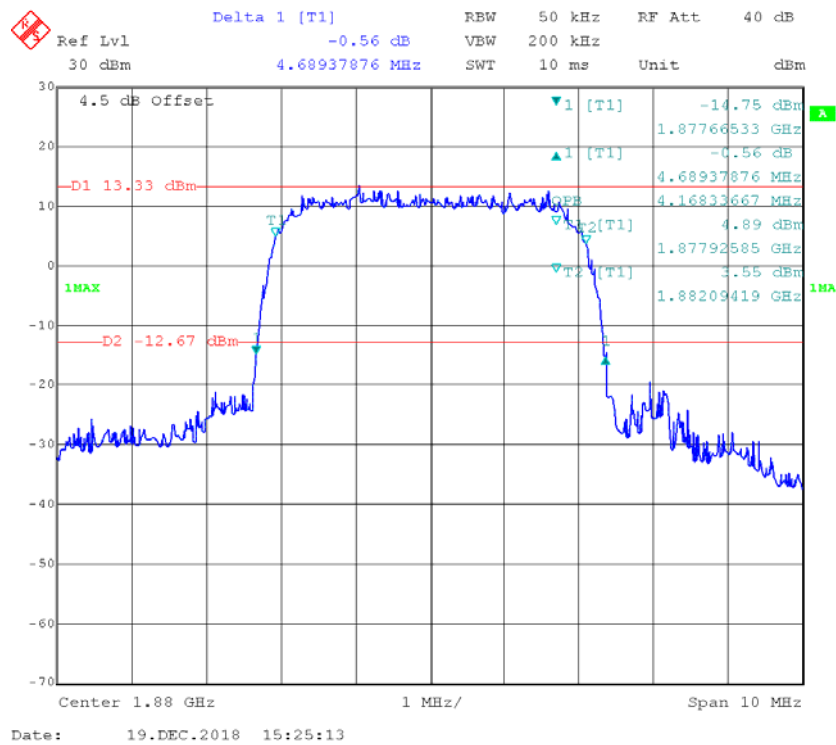
WCDMA Band II, Rel 99



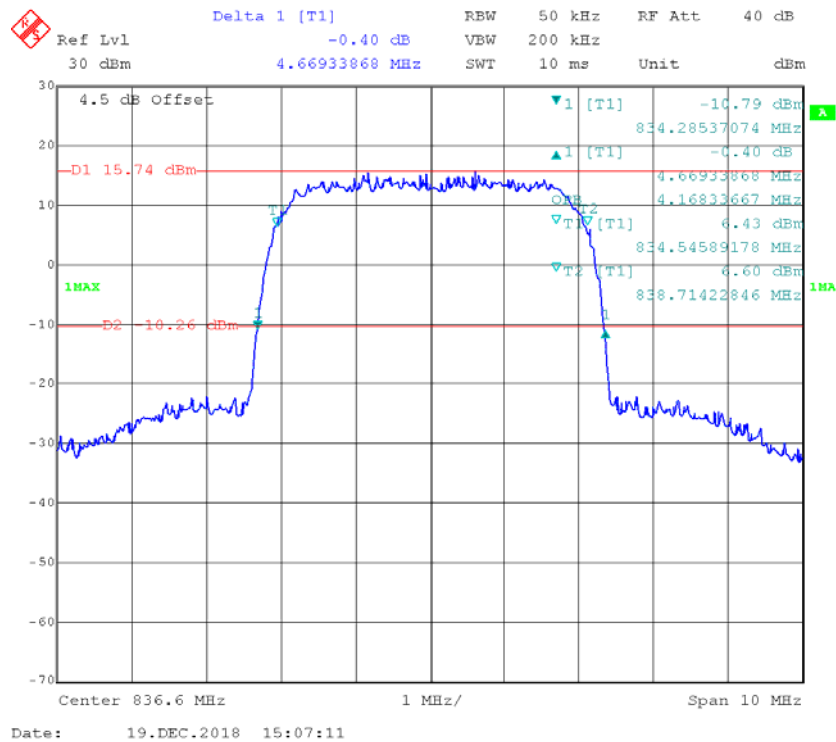
WCDMA Band II, HSUPA



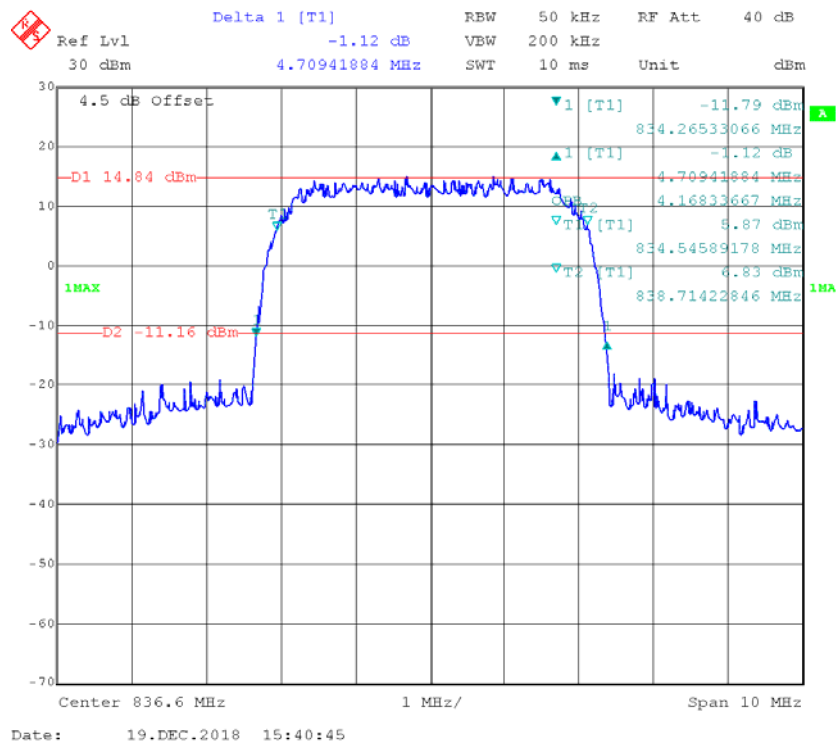
WCDMA Band II, HSDPA



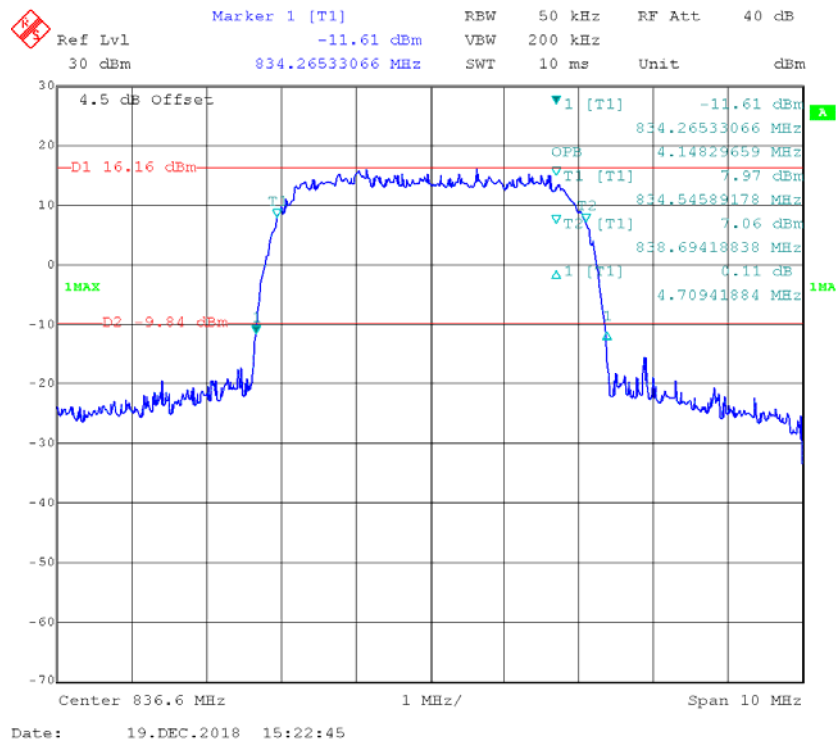
WCDMA Band V, Rel 99



WCDMA Band V, HSUPA

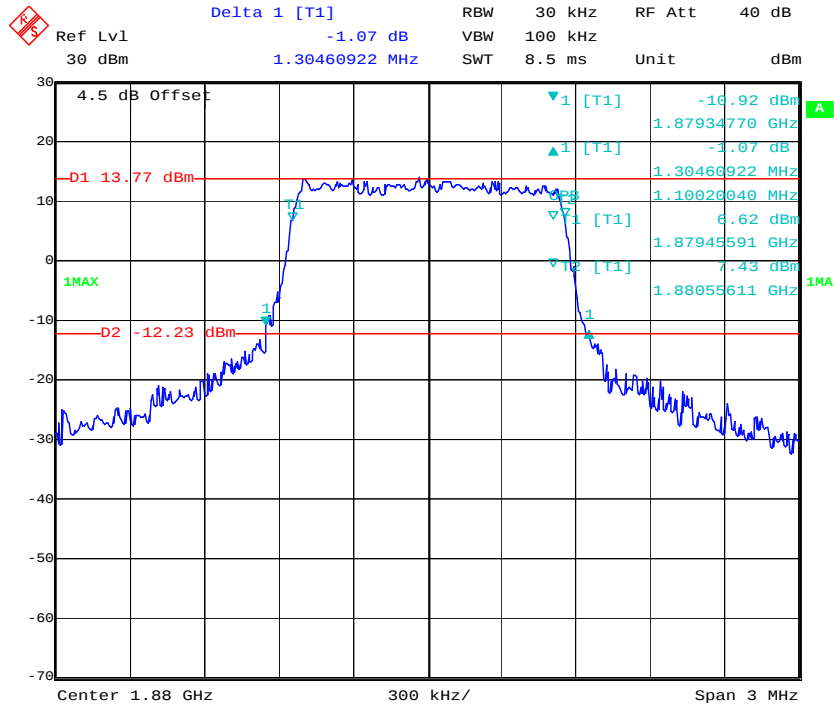


WCDMA Band V, HSDPA



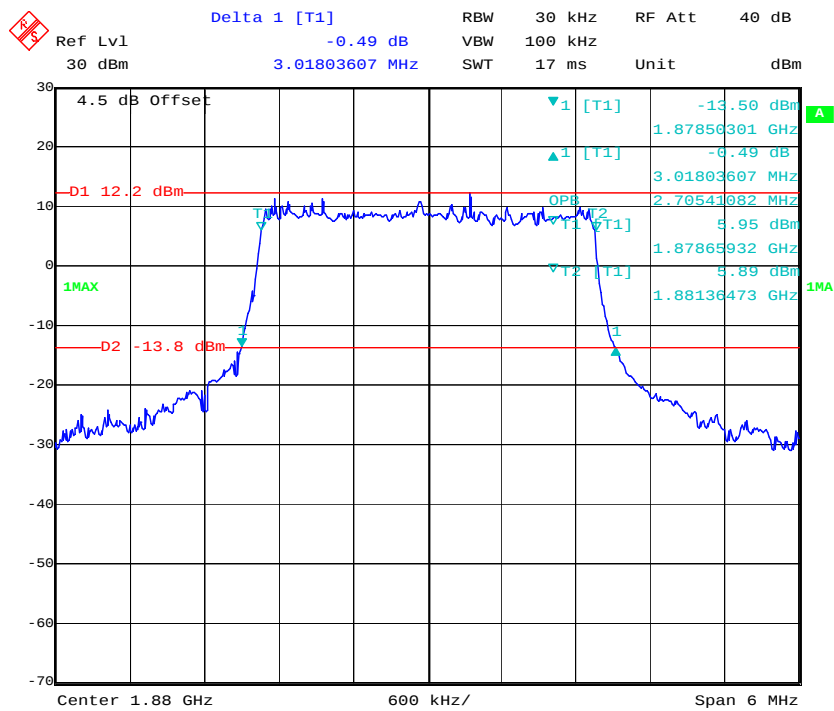
LTE Band 2

QPSK_1.4 MHz



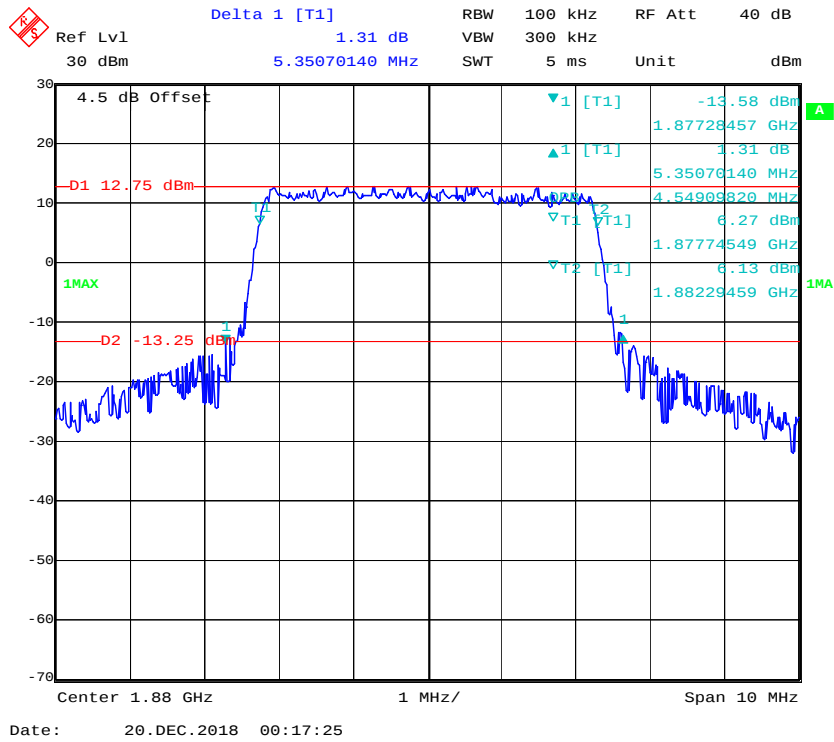
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QPSK_3 MHz

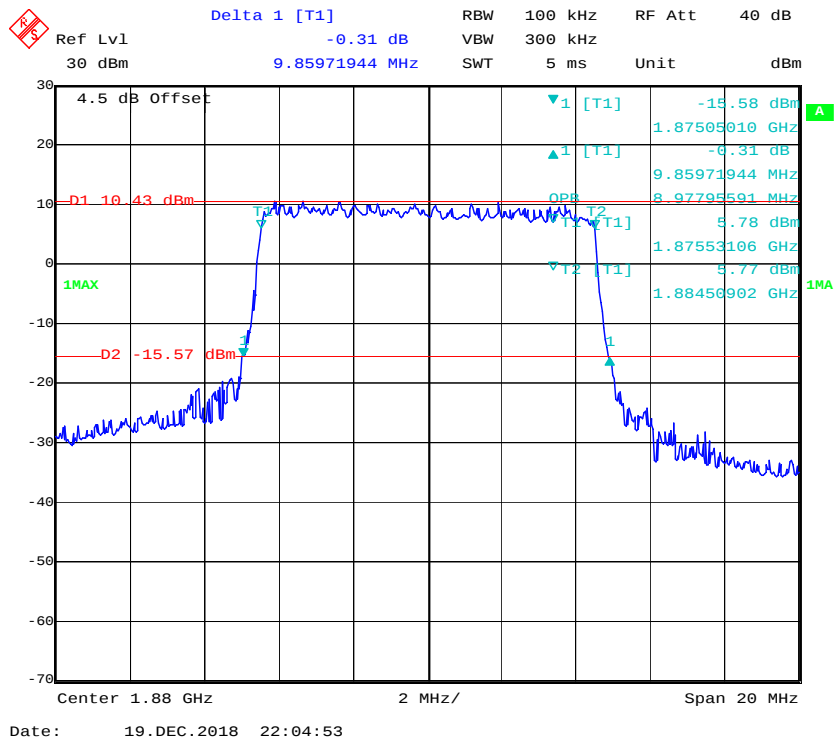


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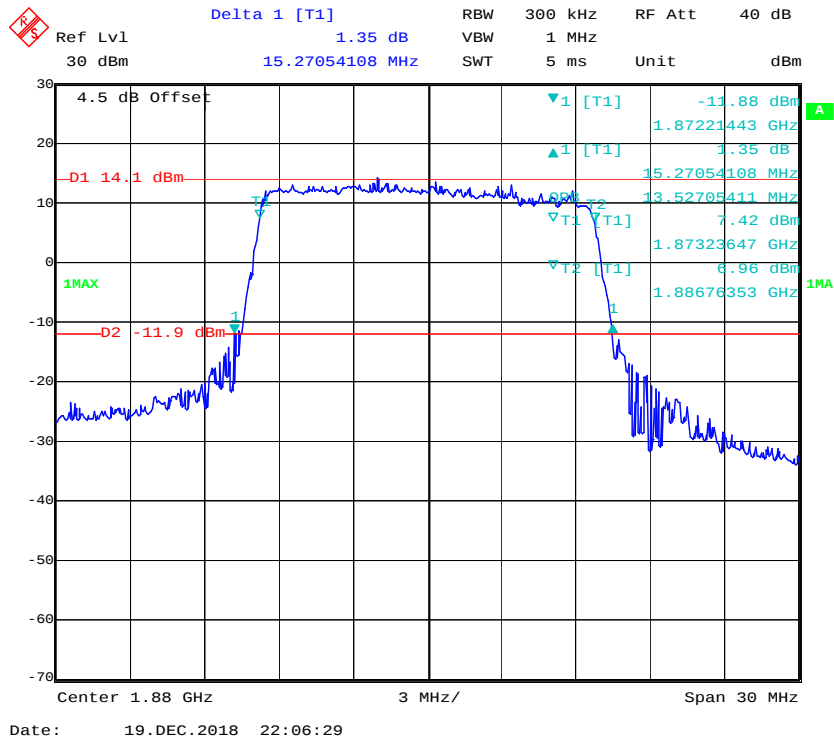
QPSK_5 MHz



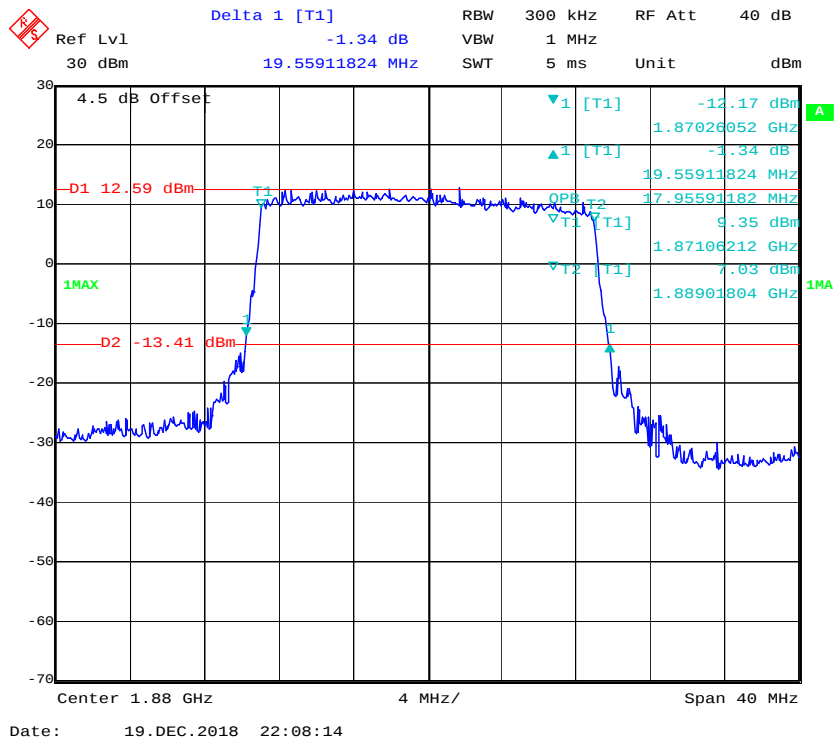
QPSK_10 MHz



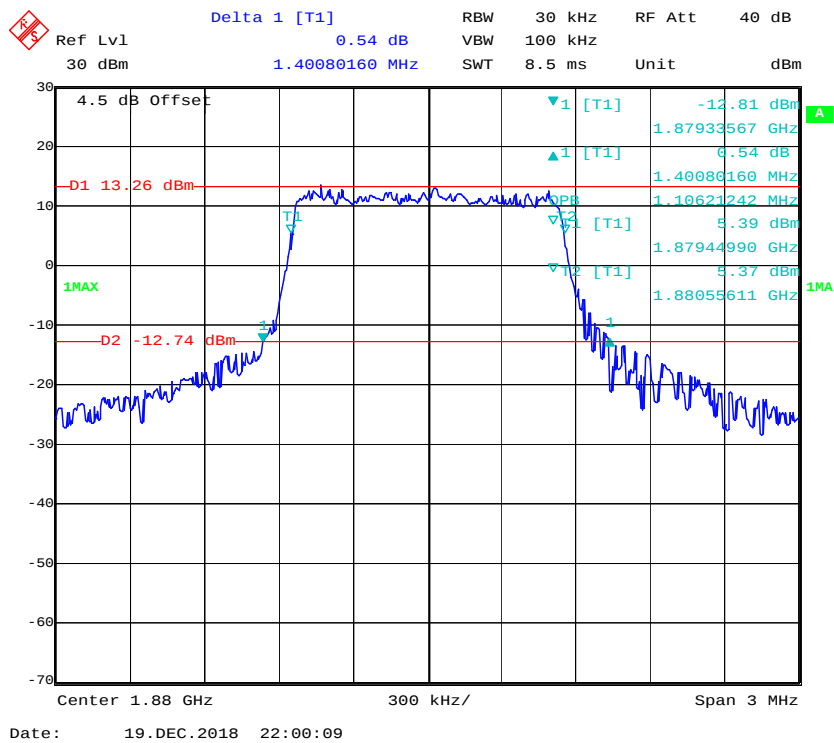
QPSK_15 MHz



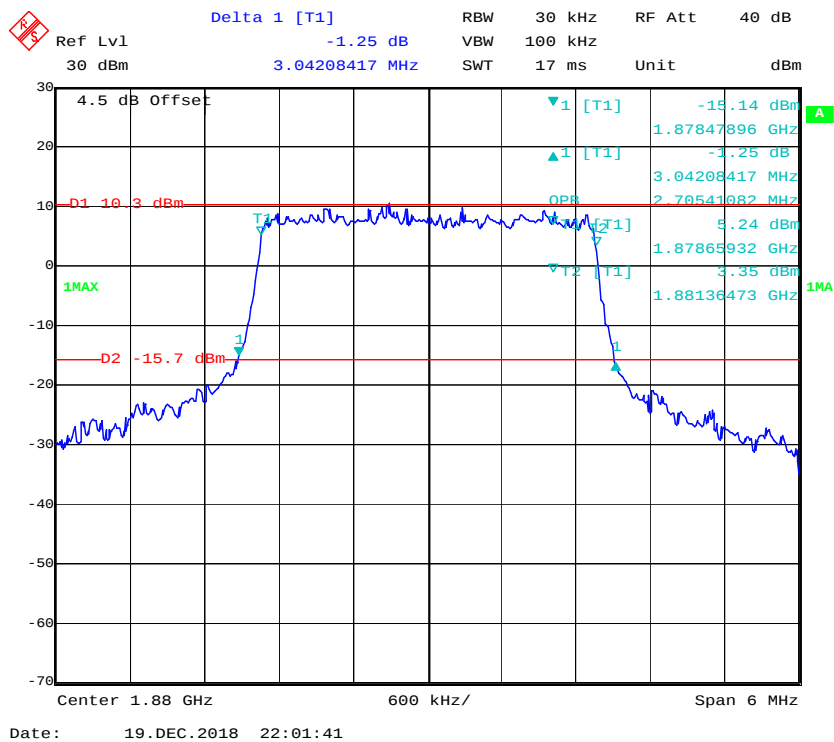
QPSK_20 MHz



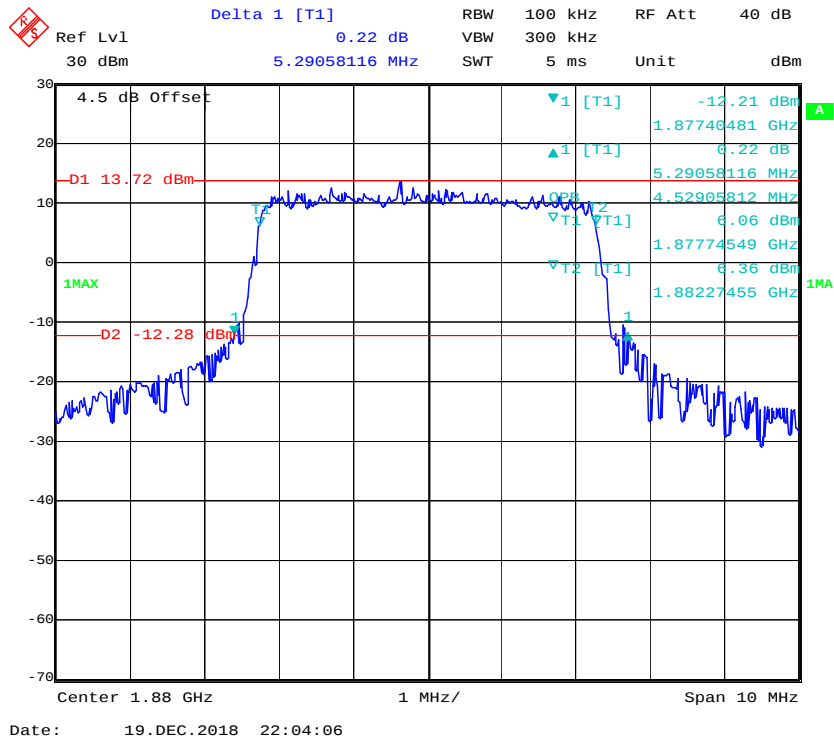
16QAM_1.4 MHz



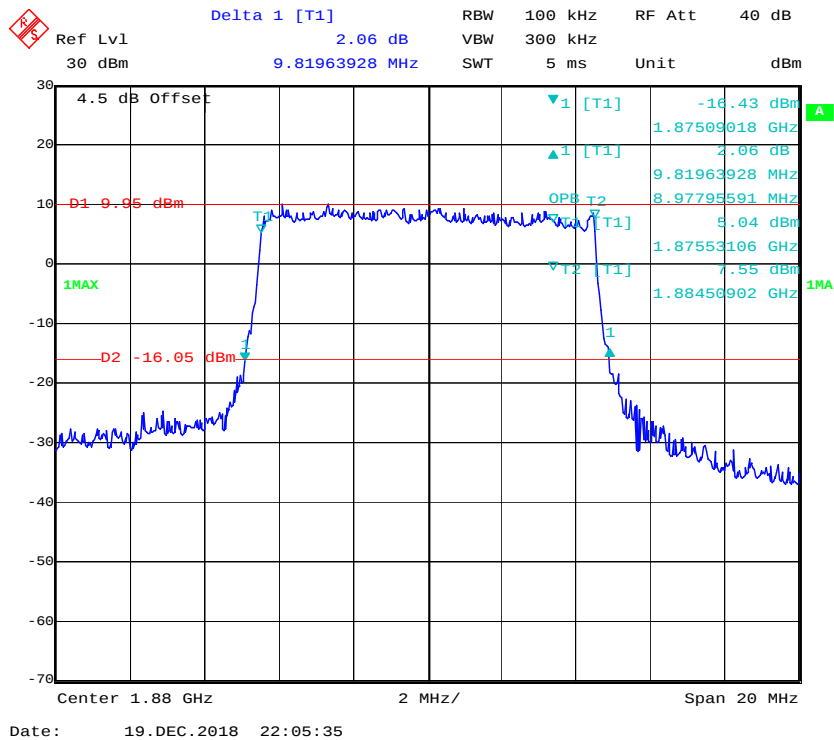
16QAM_3 MHz



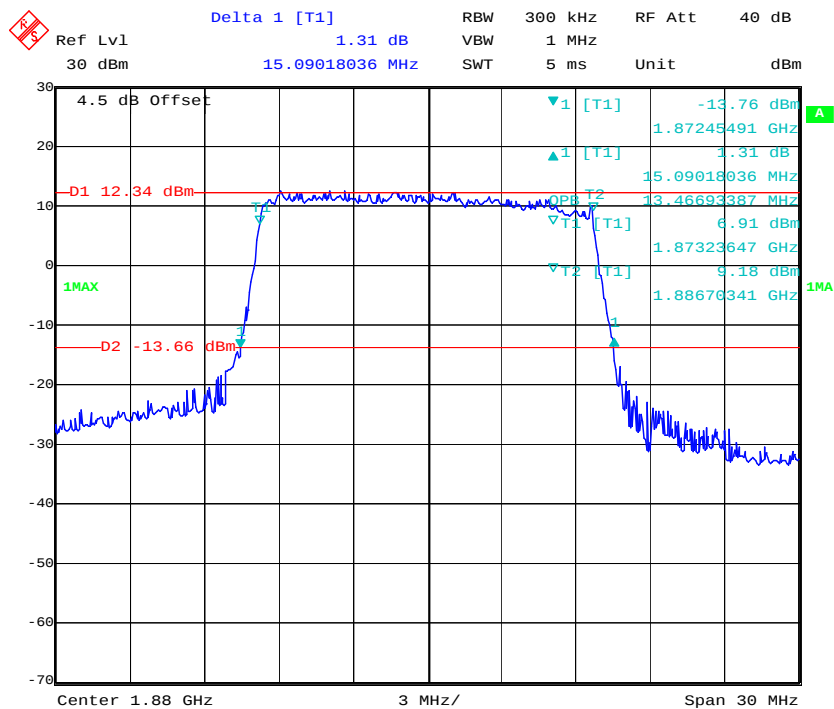
16QAM_5 MHz



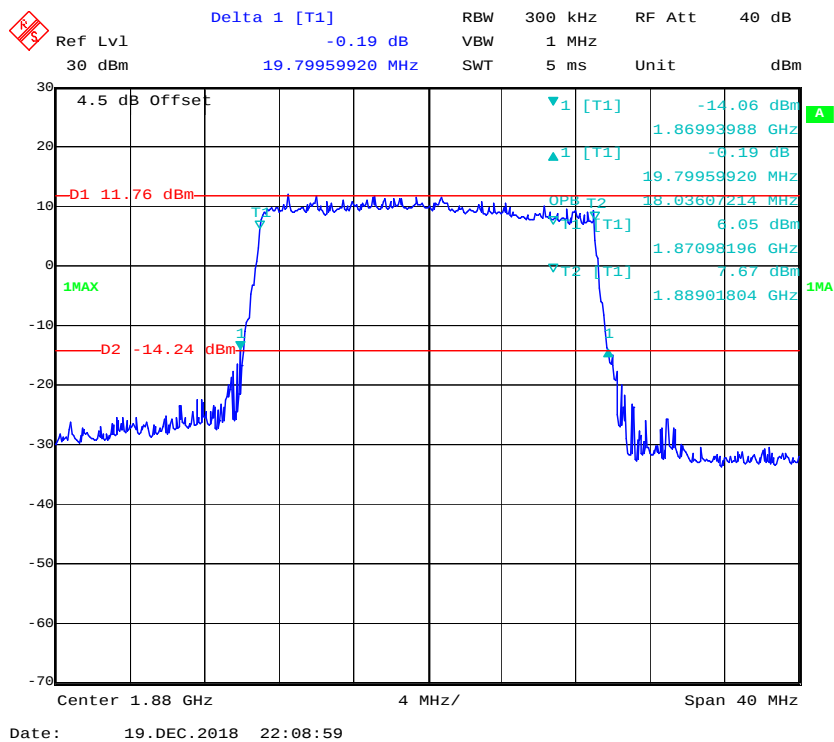
16QAM_10 MHz



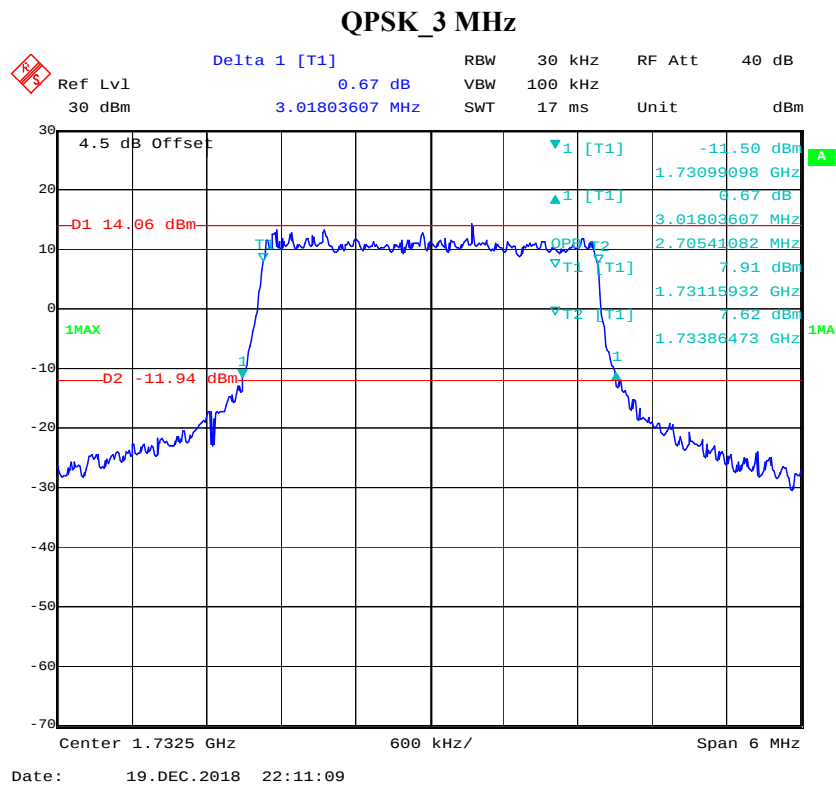
16QAM_15 MHz



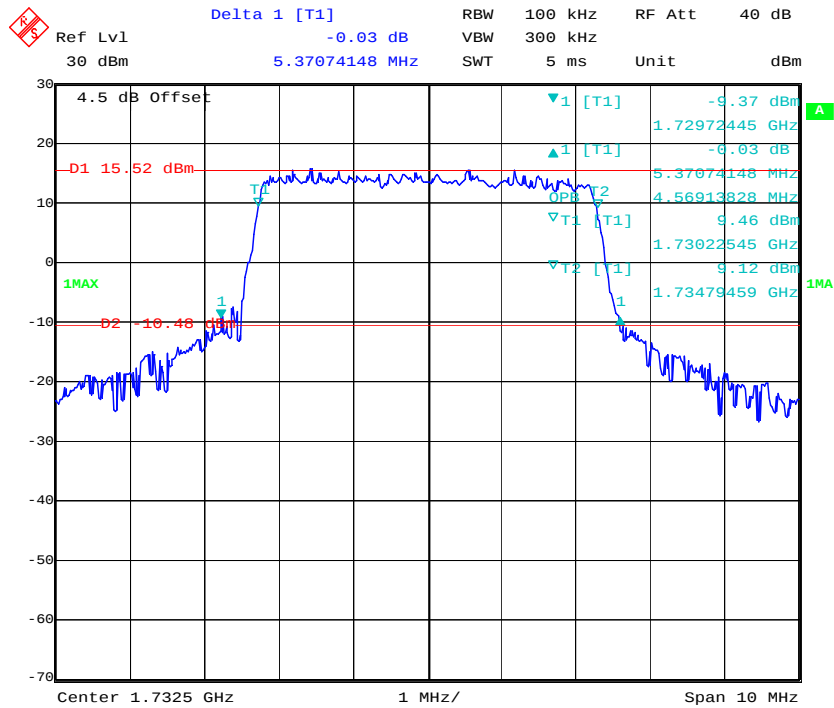
16QAM_20 MHz



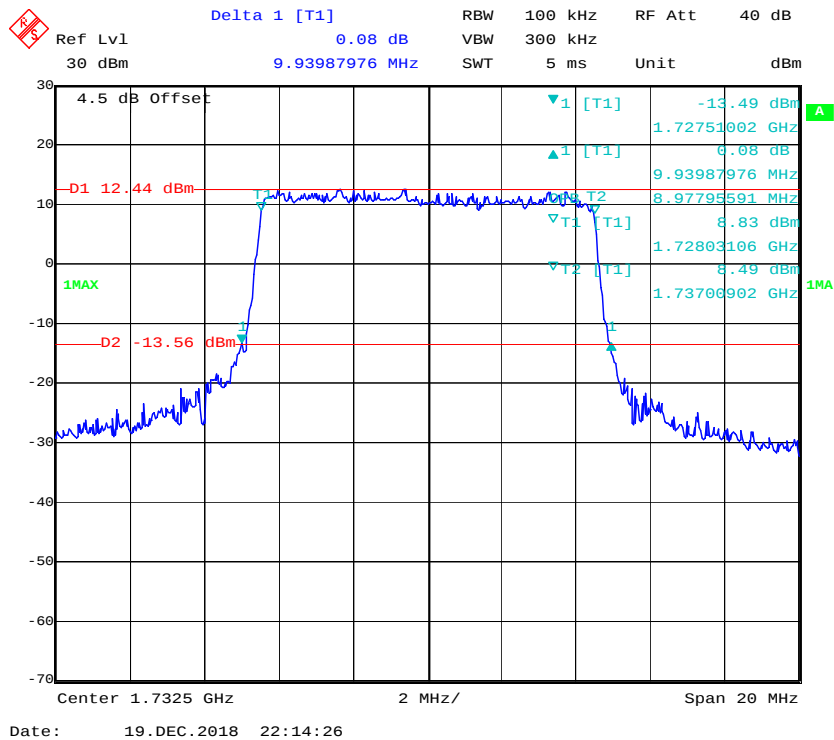
QPSK_1.4 MHz



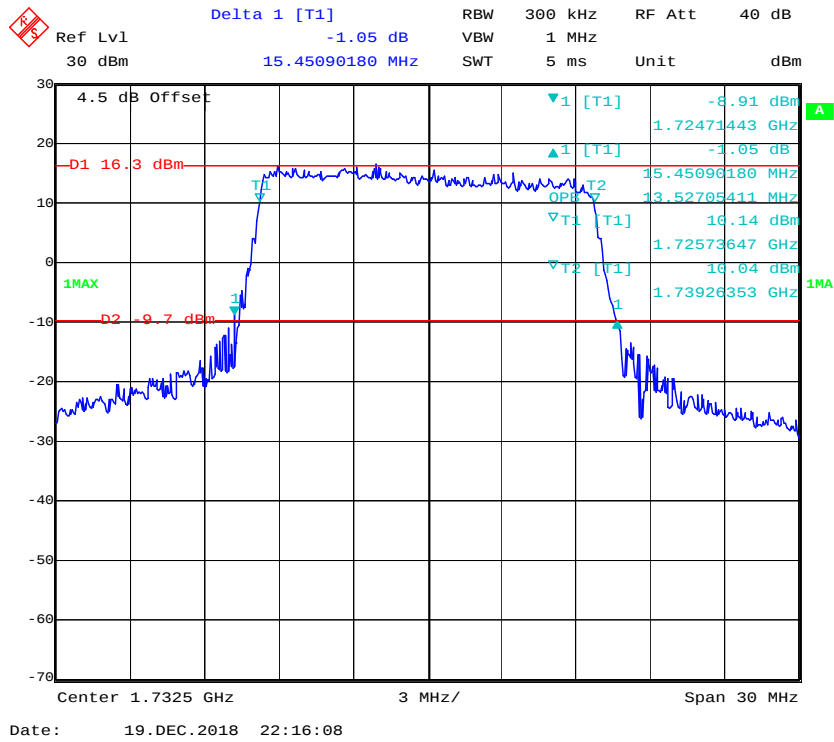
QPSK_5 MHz



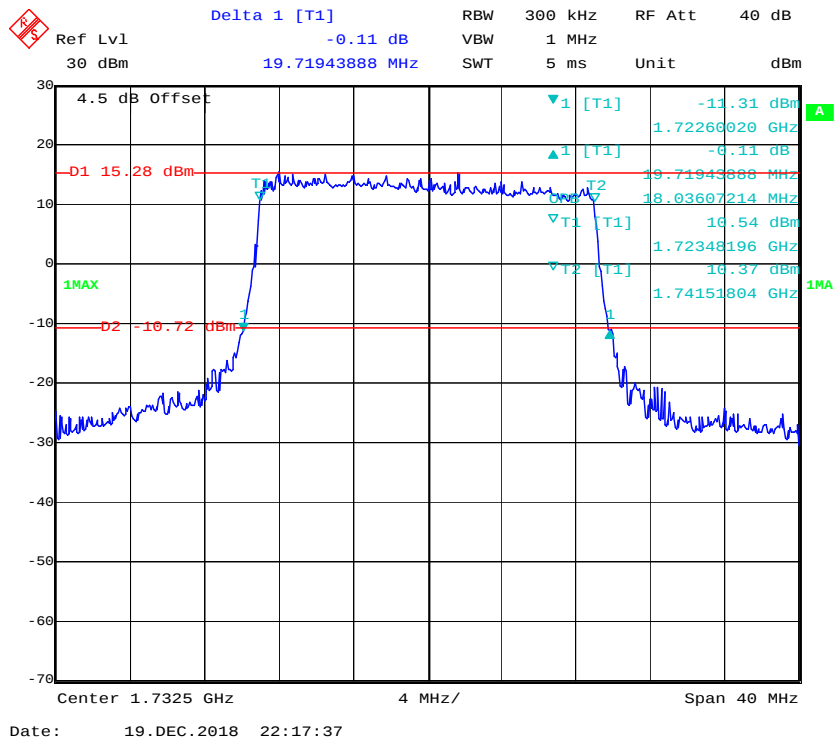
QPSK_10 MHz



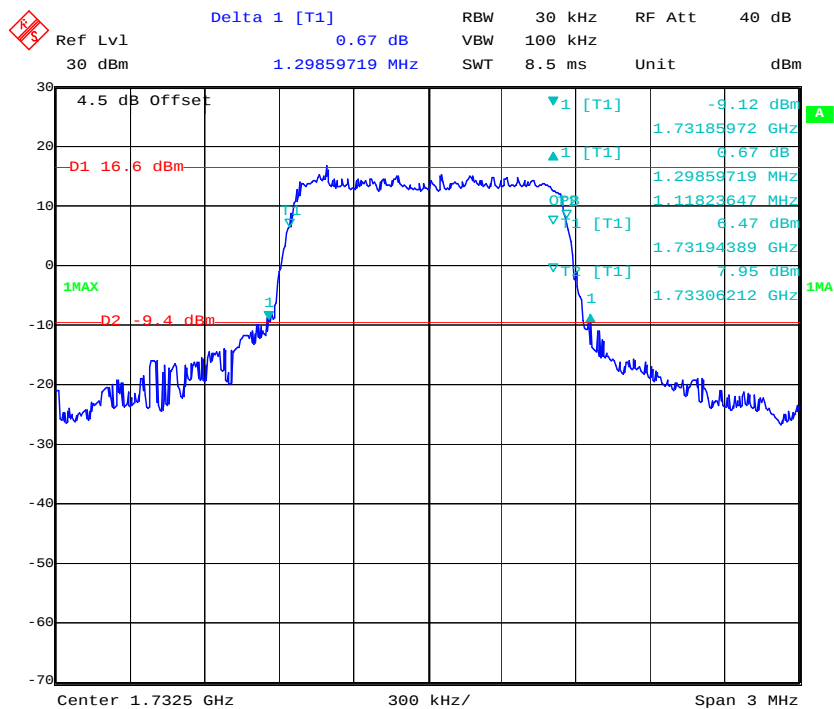
QPSK_15 MHz



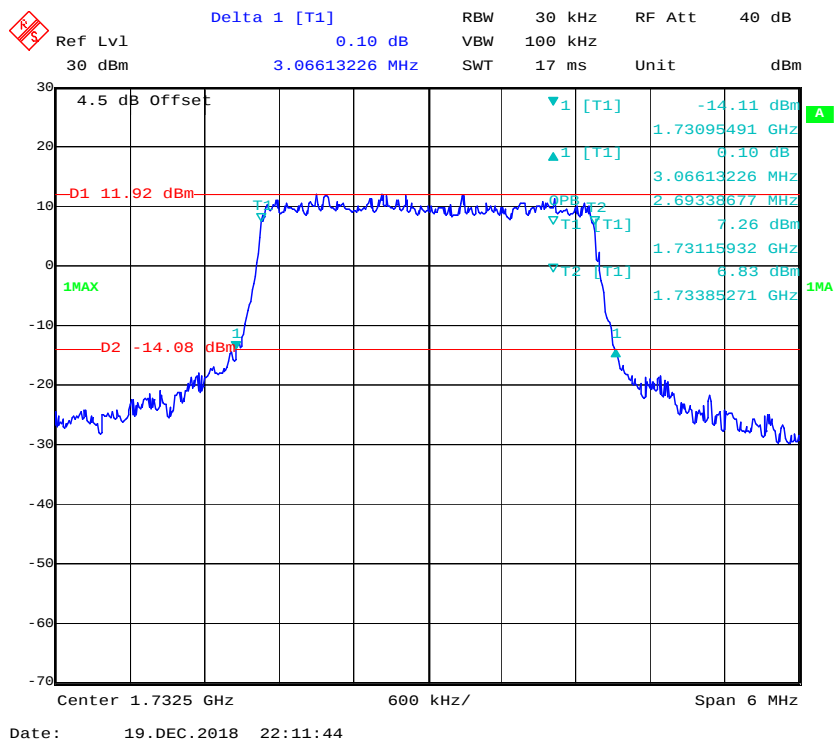
QPSK_20 MHz



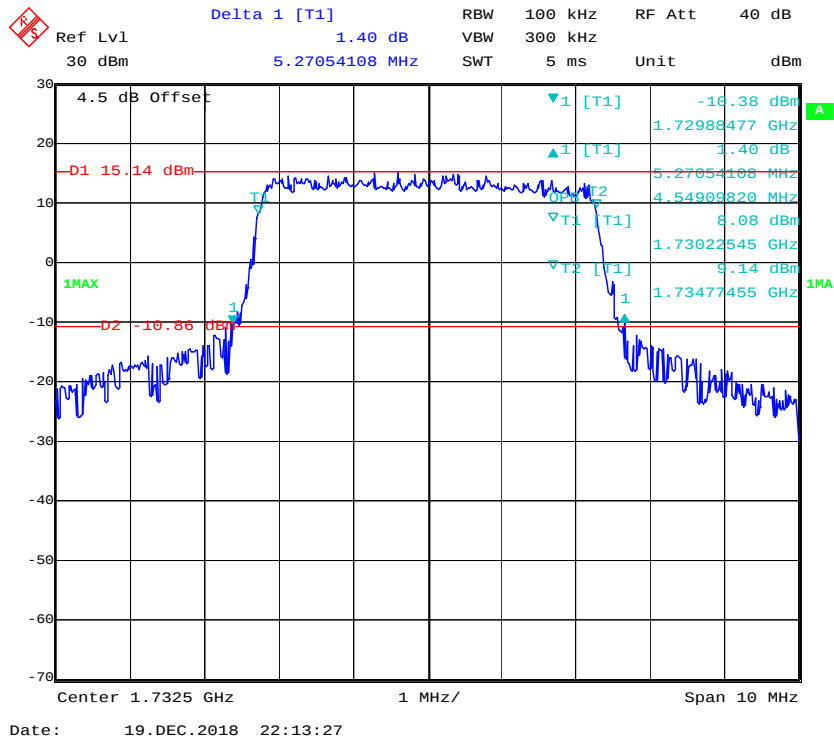
16QAM_1.4 MHz



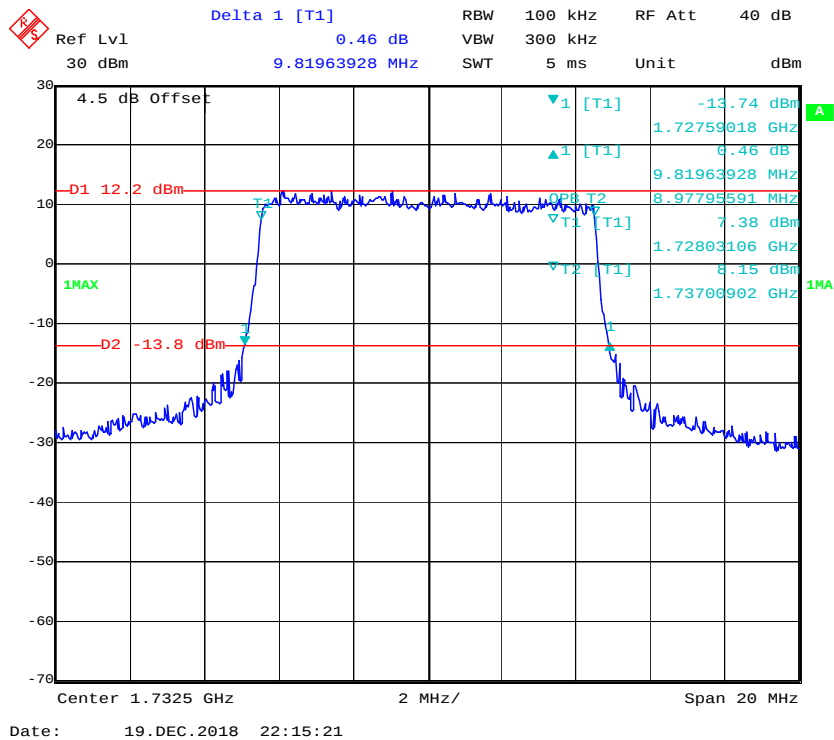
16QAM_3 MHz



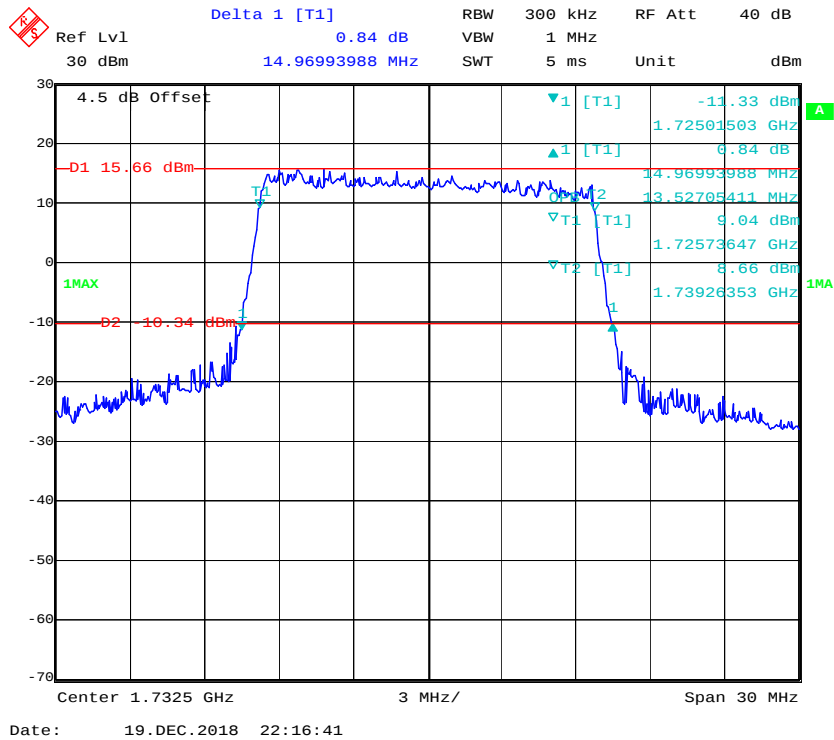
16QAM_5 MHz



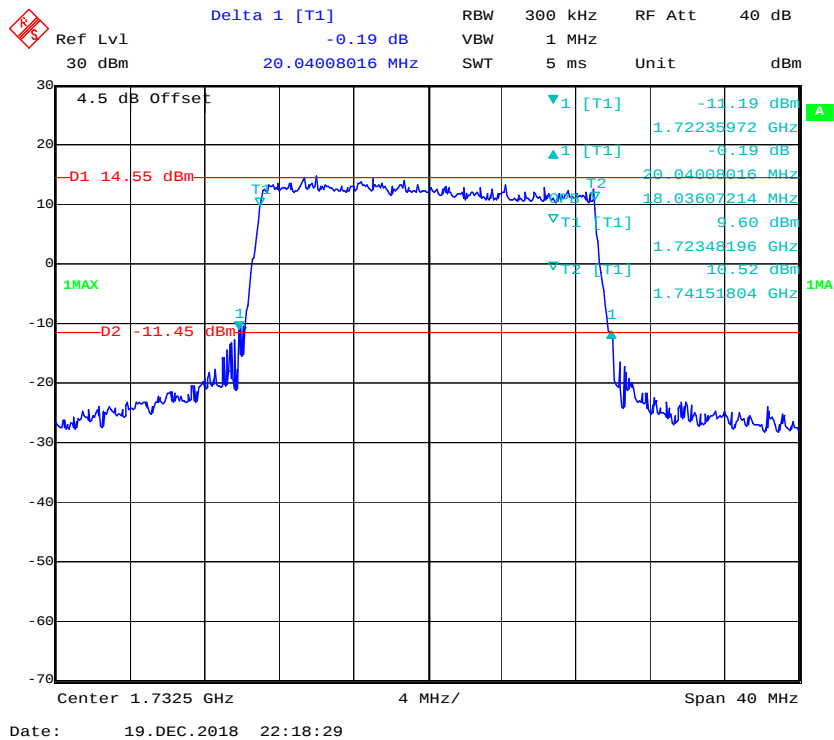
16QAM_10 MHz



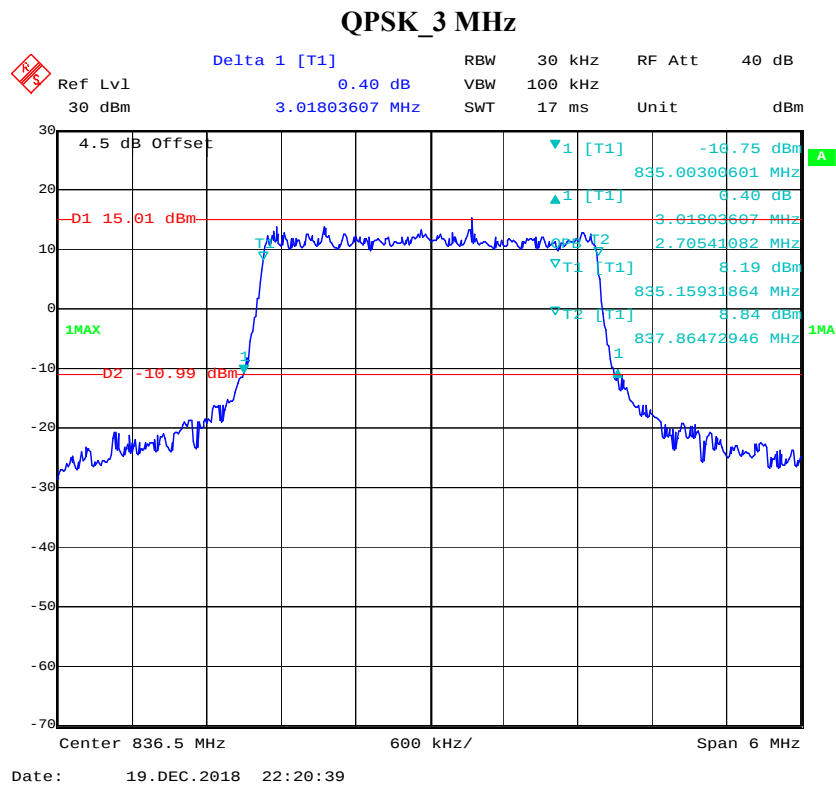
16QAM_15 MHz



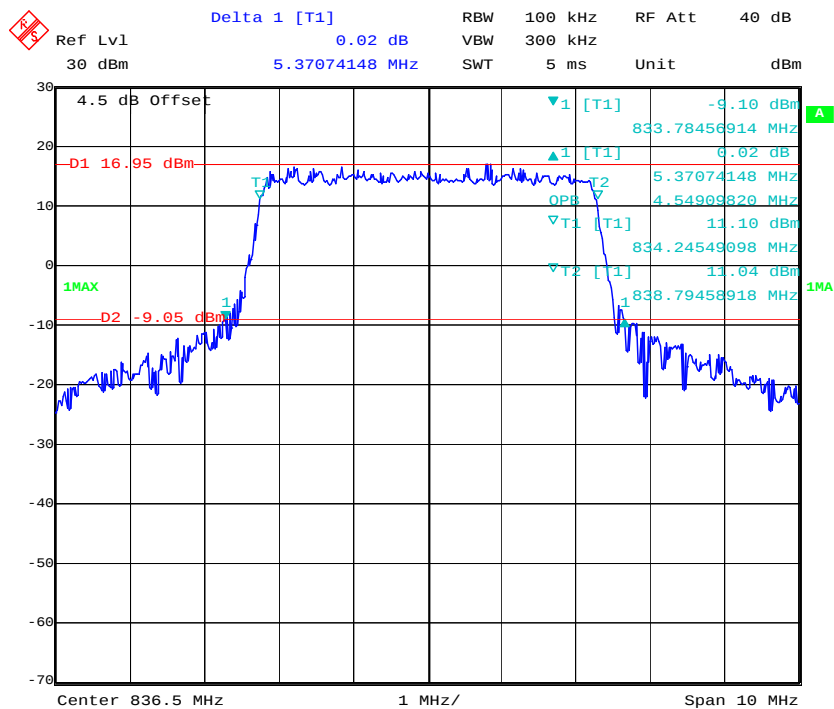
16QAM_20 MHz



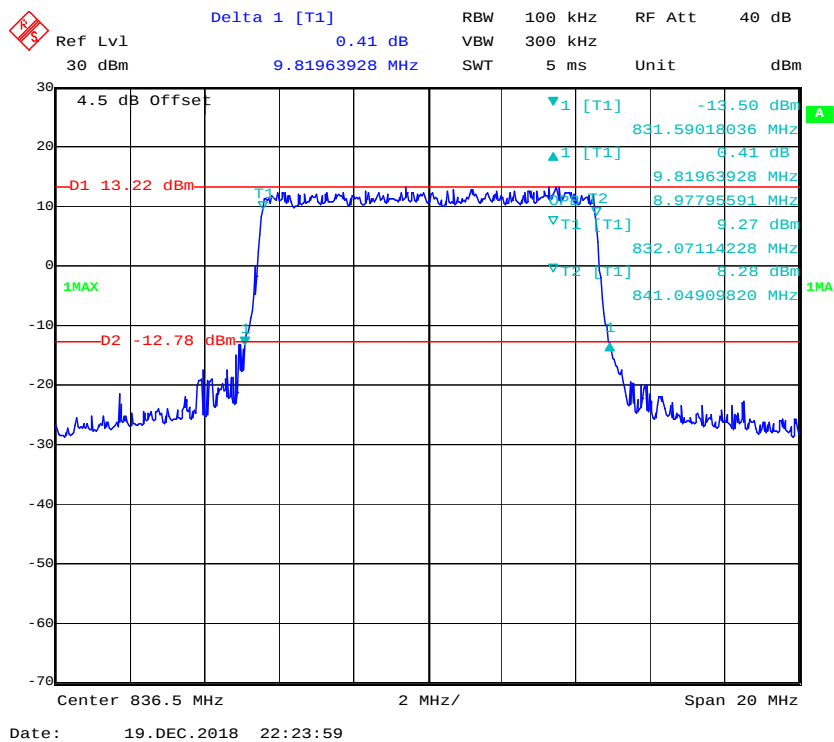
QPSK_1.4 MHz



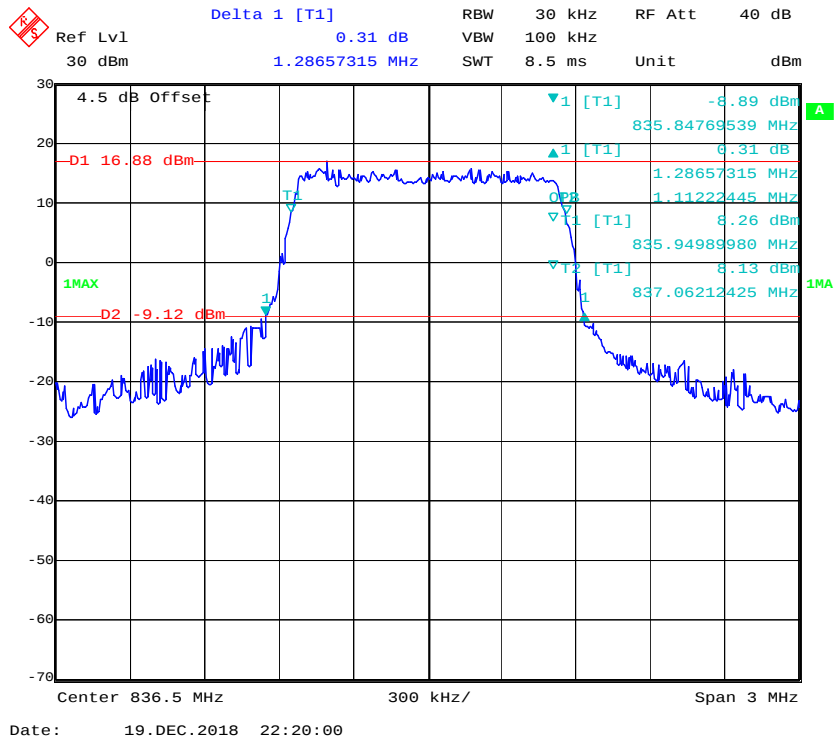
QPSK_5 MHz



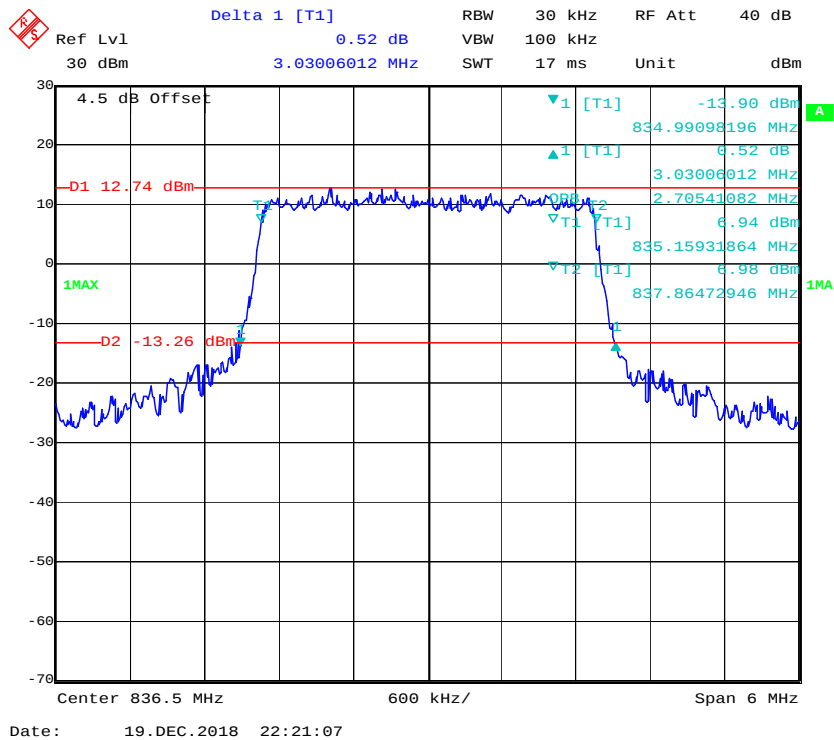
QPSK_10 MHz



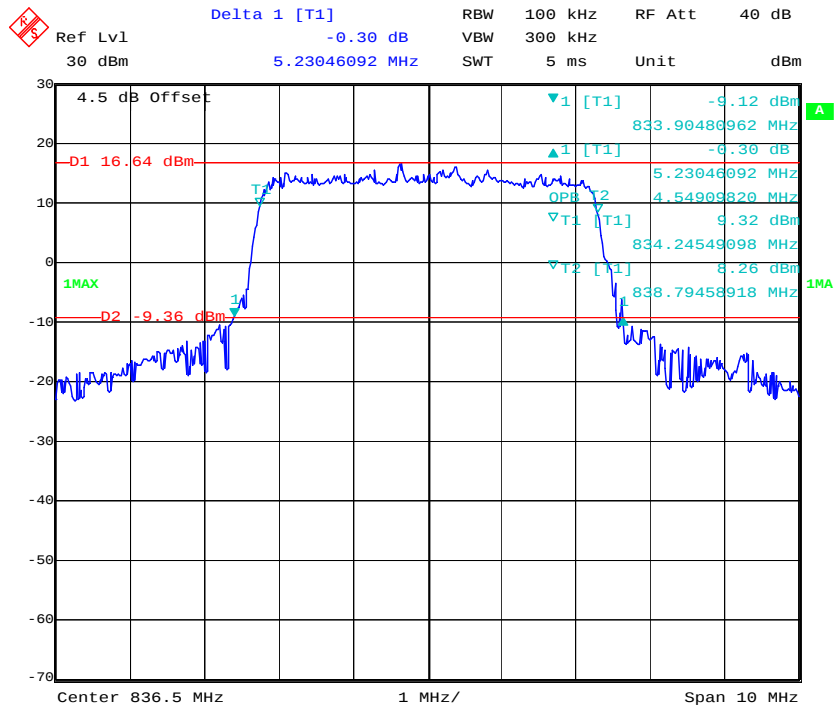
16QAM_1.4 MHz



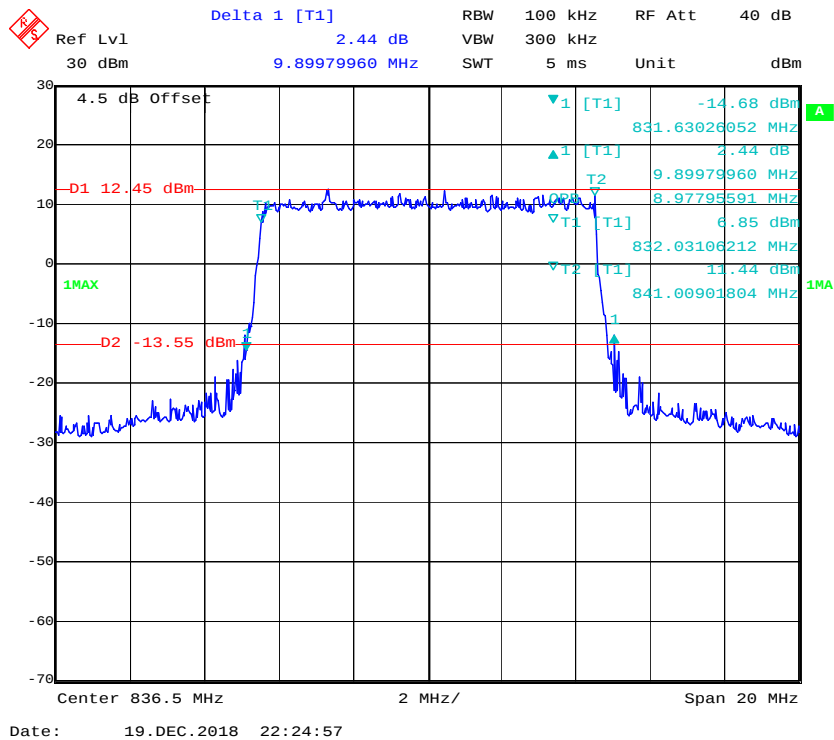
16QAM_3 MHz



16QAM_5 MHz

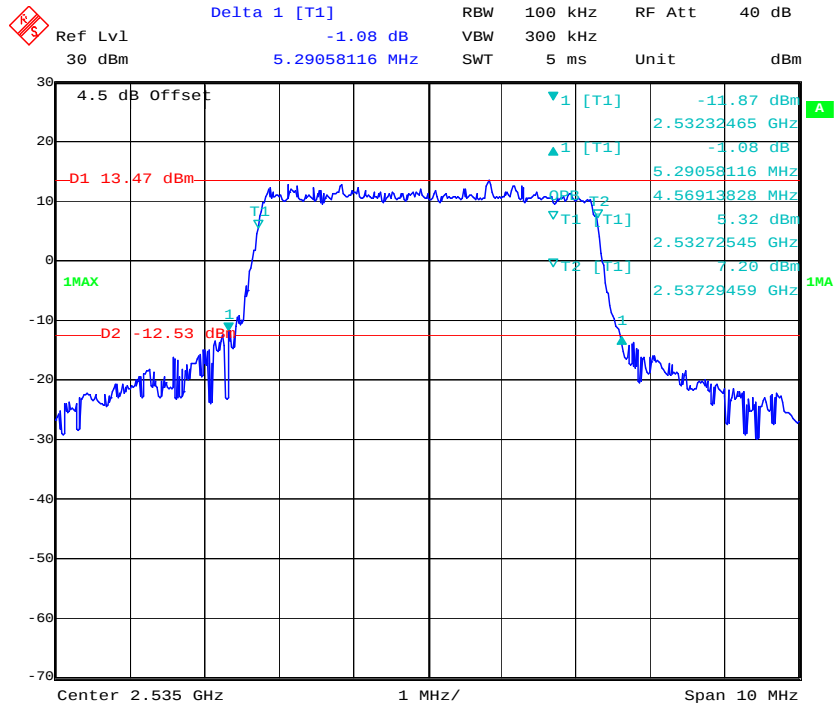


16QAM_10 MHz



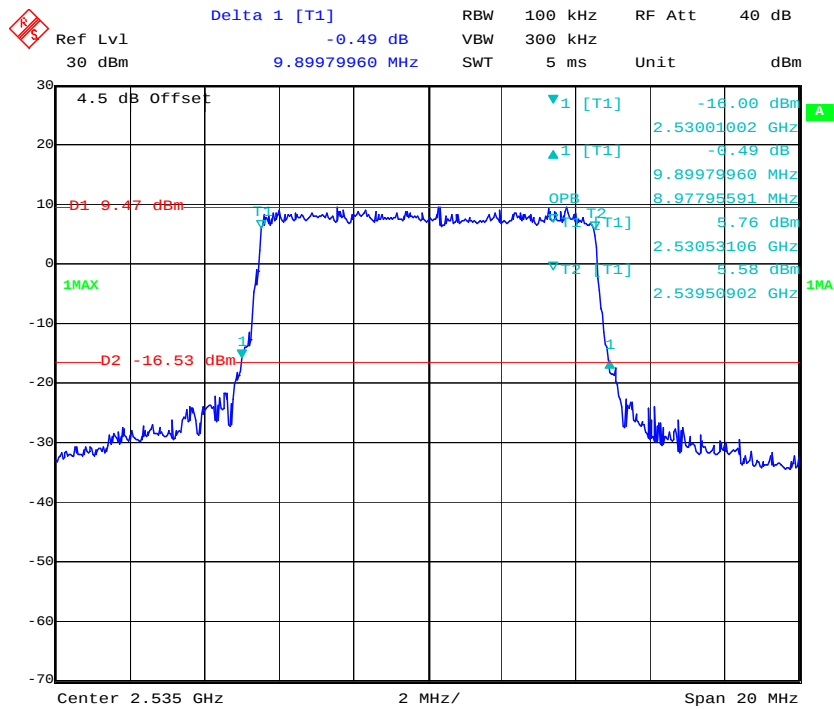
LTE Band 7:

QPSK_5 MHz



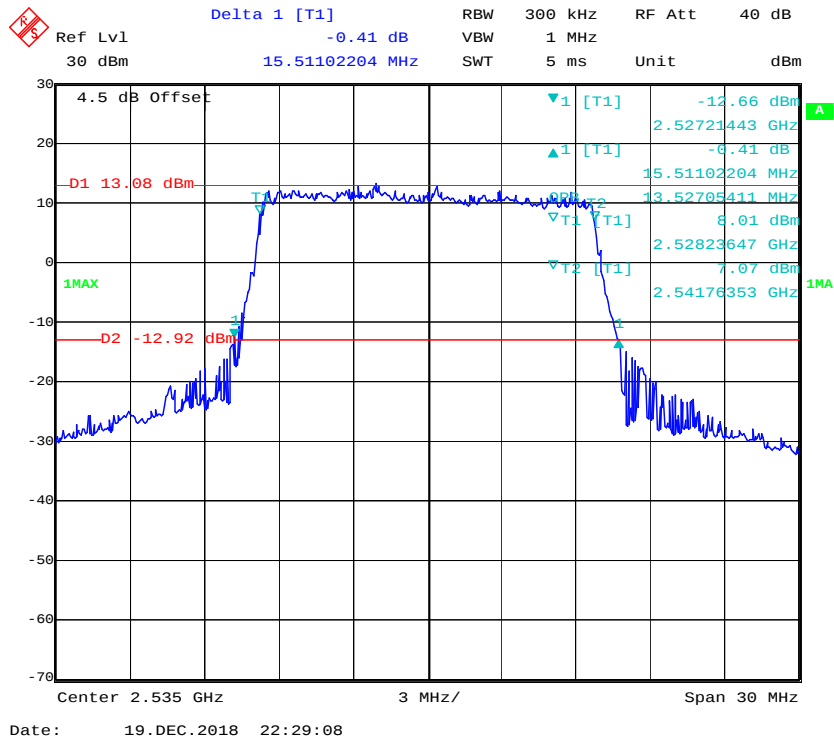
Date: 19.DEC.2018 22:26:09

QPSK_10 MHz

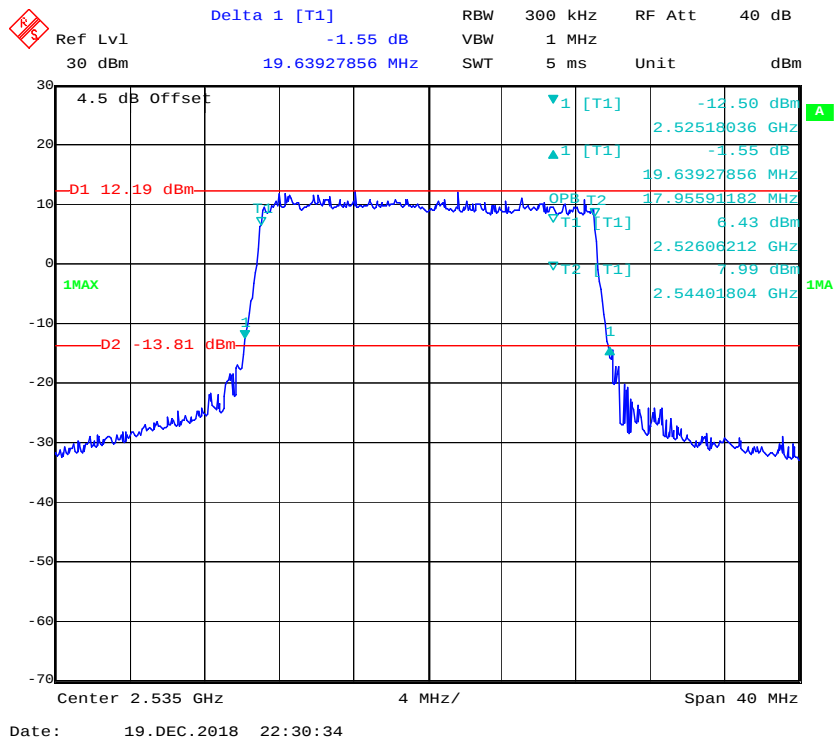


Date: 19.DEC.2018 22:27:53

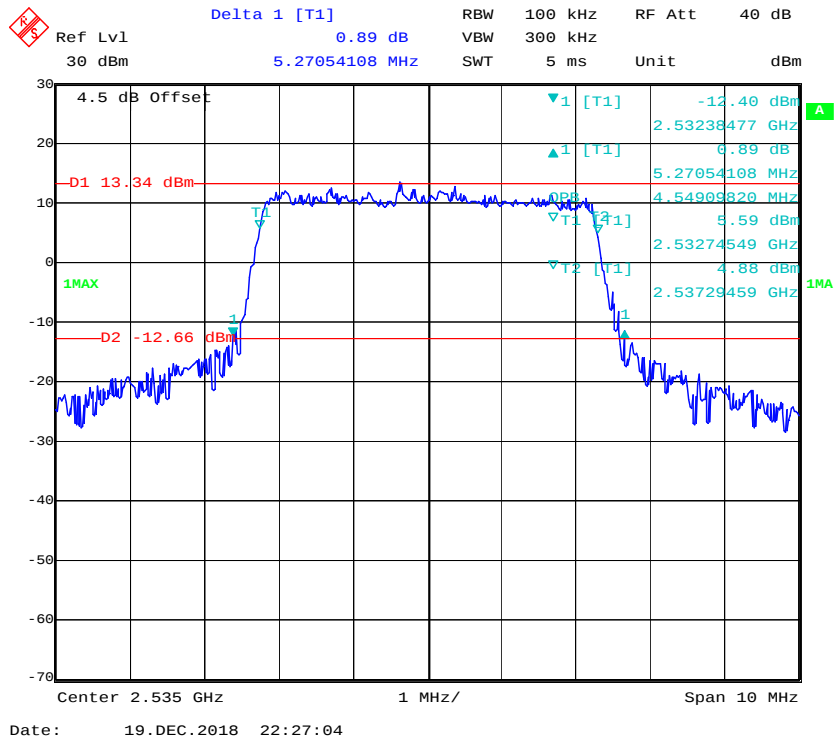
QPSK_15 MHz



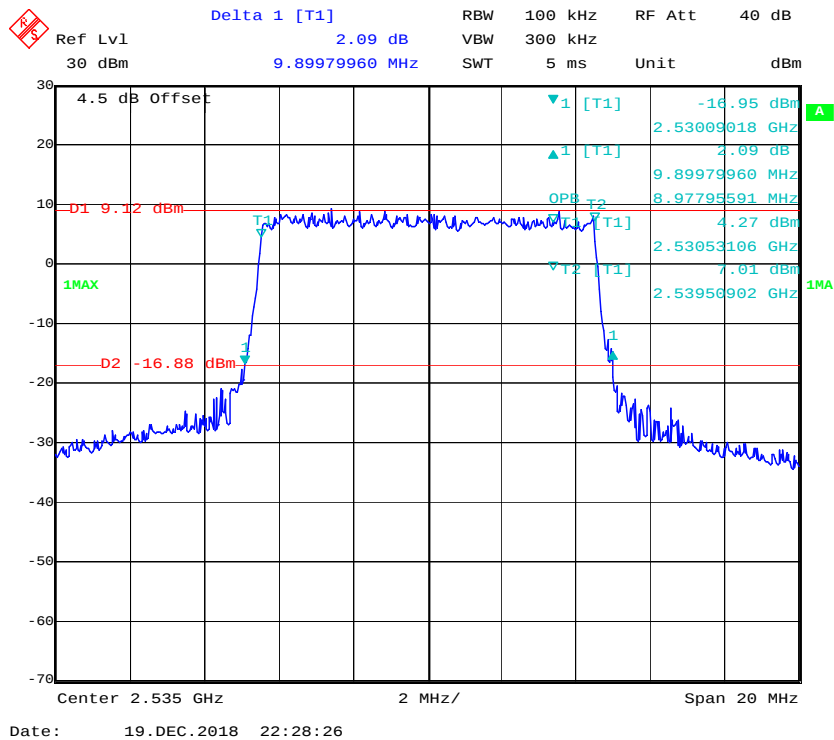
QPSK_20 MHz



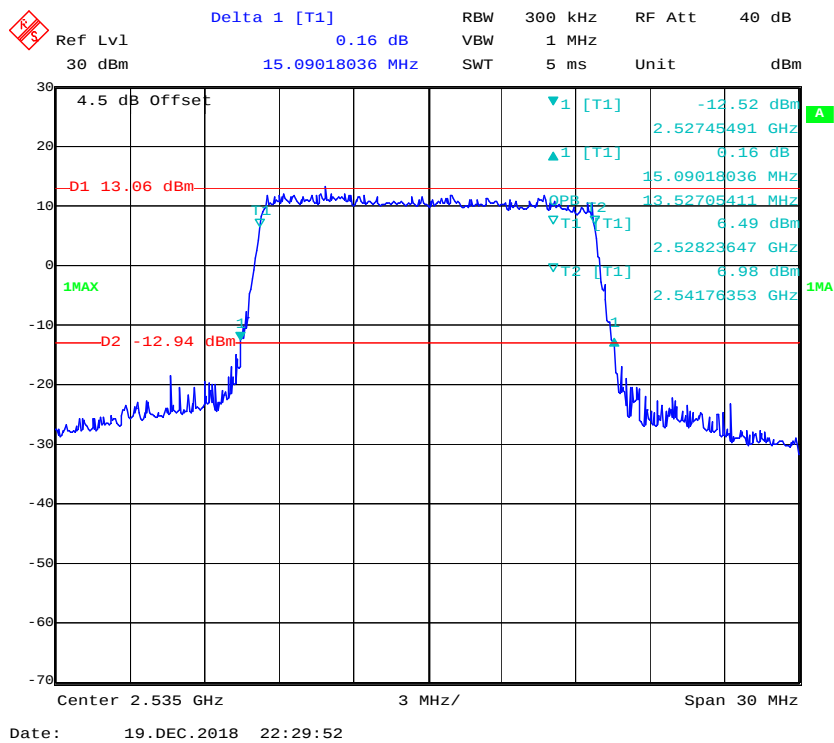
16QAM_5 MHz



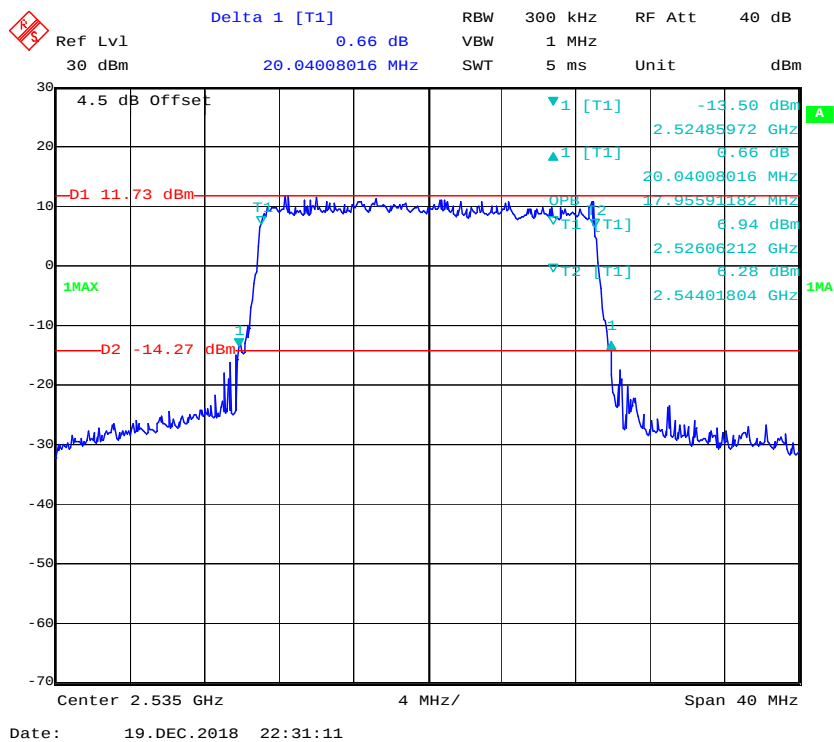
16QAM_10 MHz



16QAM_15 MHz

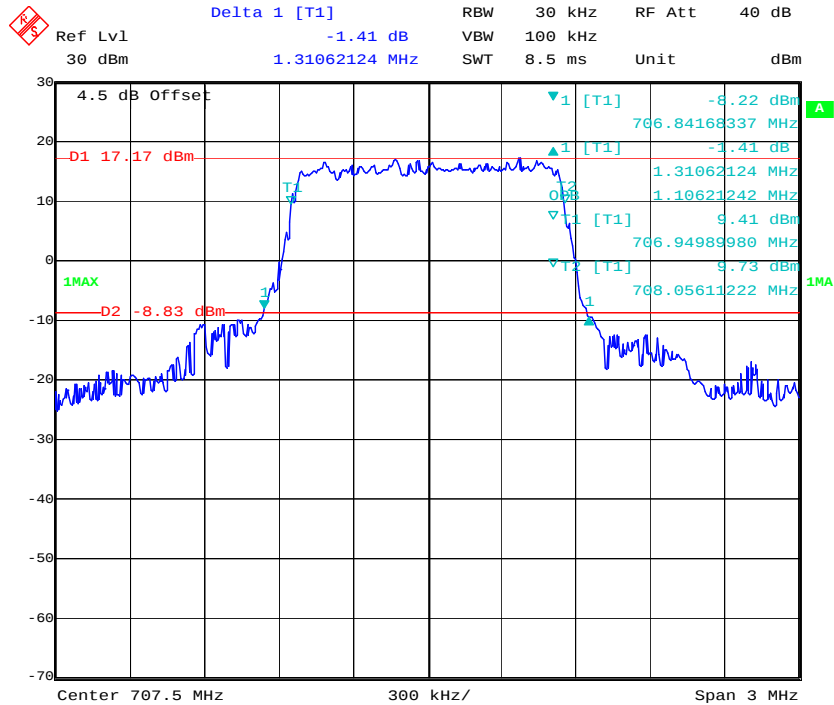


16QAM_20 MHz



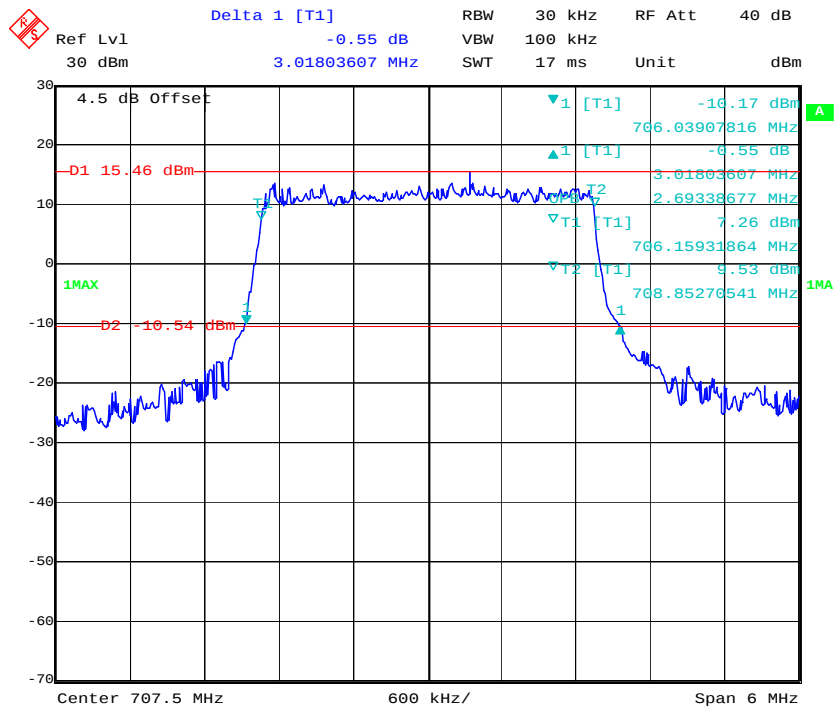
LTE Band 12:

QPSK_1.4 MHz



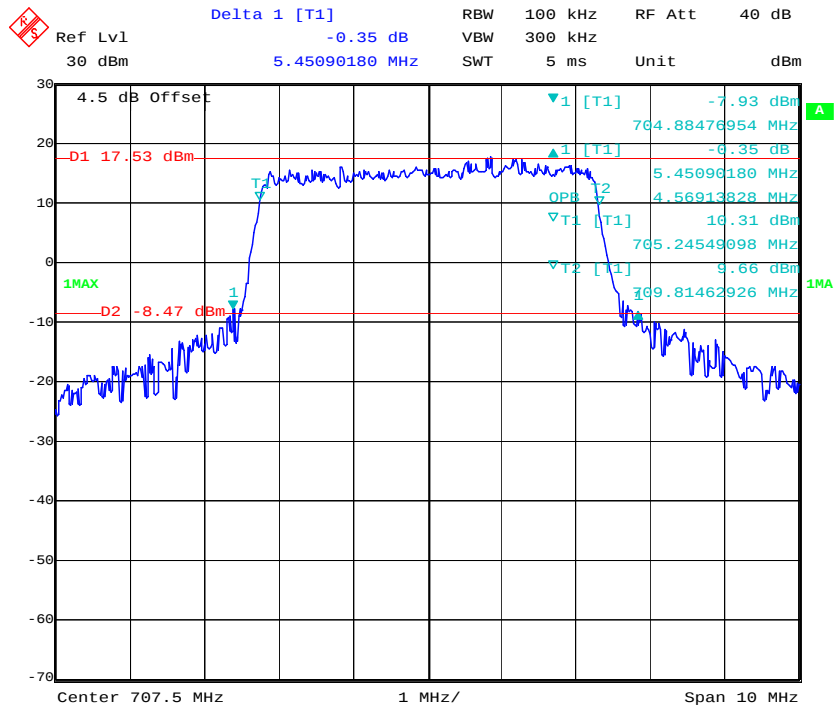
Date: 19.DEC.2018 22:32:02

QPSK_3 MHz



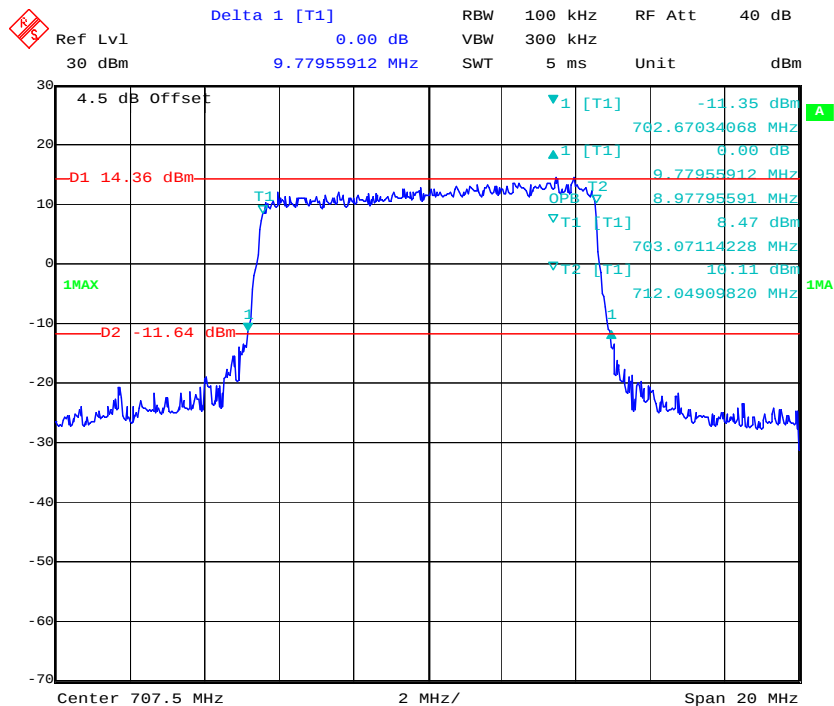
Date: 19.DEC.2018 22:33:19

QPSK_5 MHz



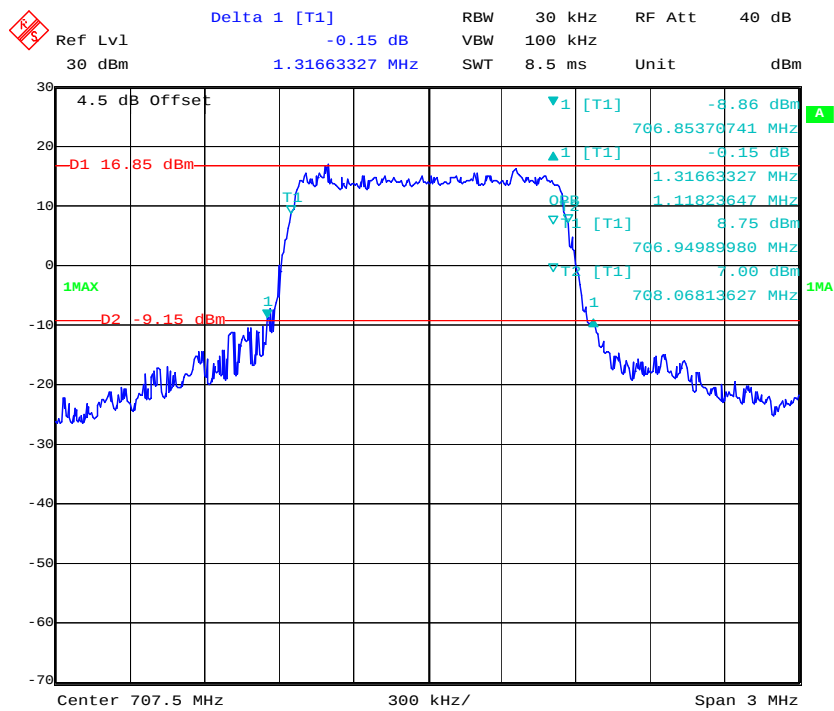
Date: 19.DEC.2018 22:34:50

QPSK_10 MHz

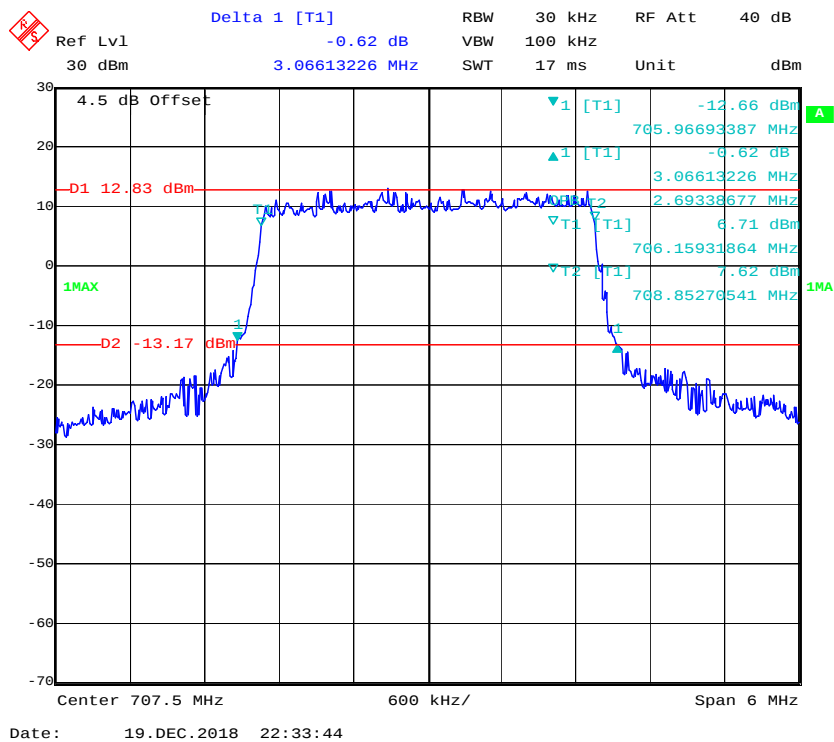


Date: 19.DEC.2018 22:36:28

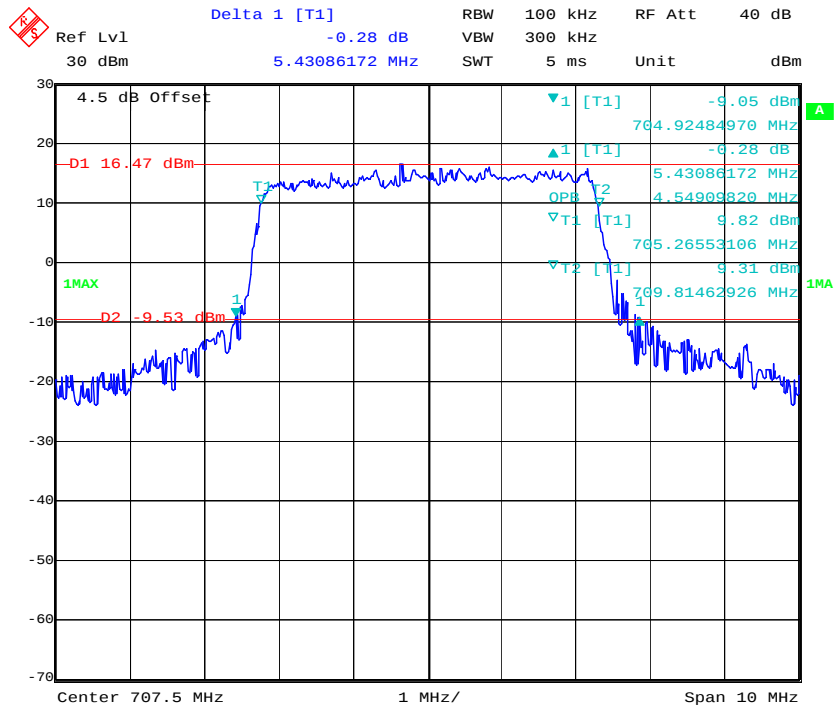
16QAM_1.4 MHz



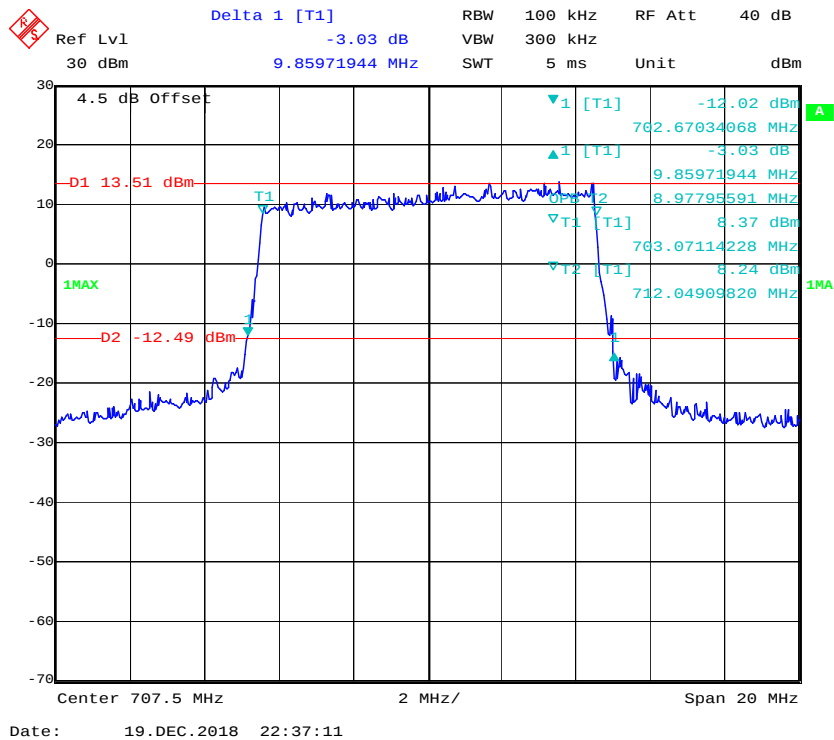
16QAM_3 MHz

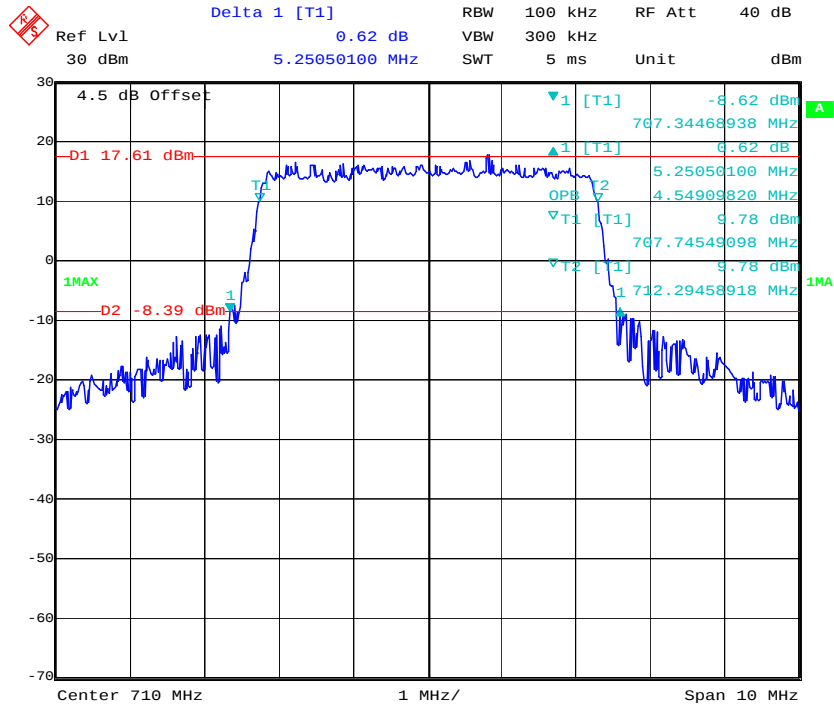


16QAM_5 MHz

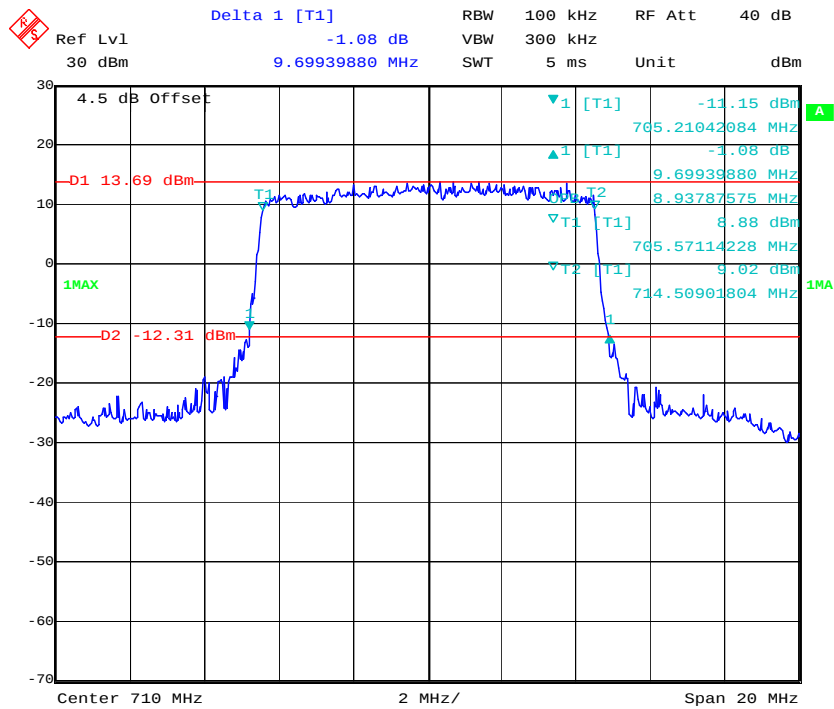


16QAM_10 MHz



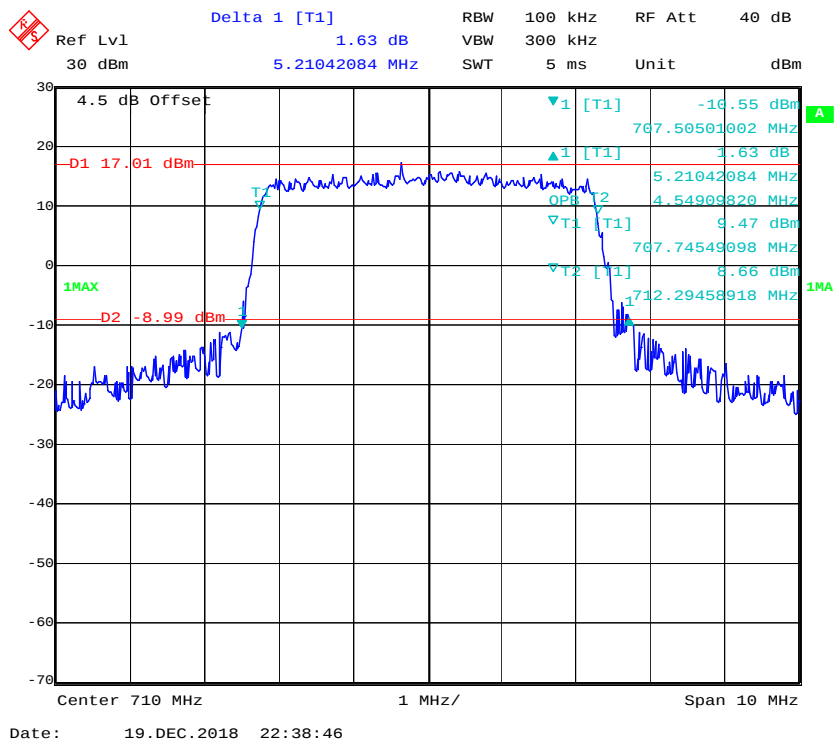
LTE Band 17:**QPSK_5 MHz**

Date: 19.DEC.2018 22:38:02

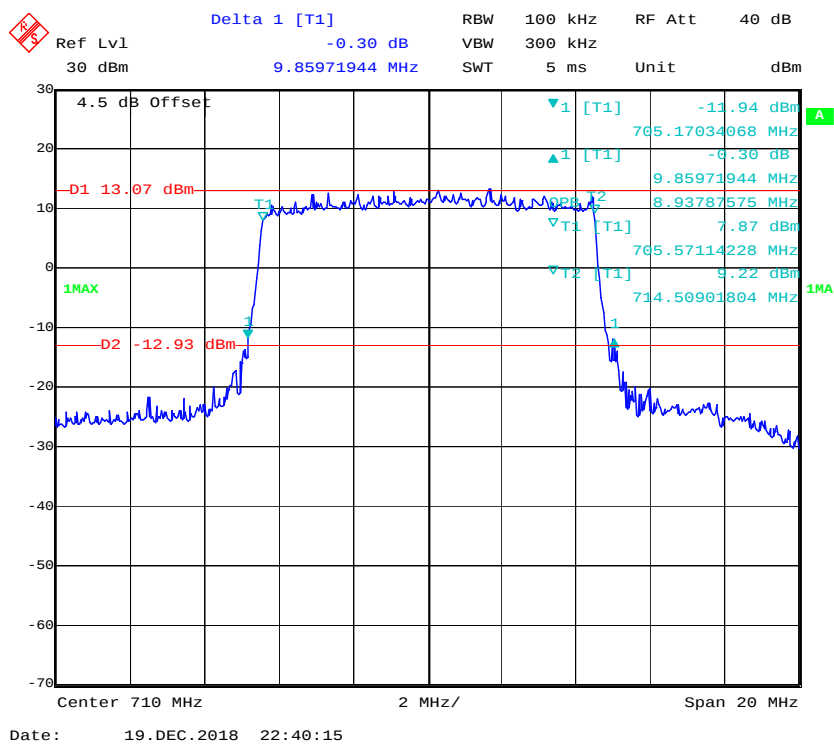
QPSK_10 MHz

Date: 19.DEC.2018 22:39:35

16QAM_5 MHz



16QAM_10 MHz



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

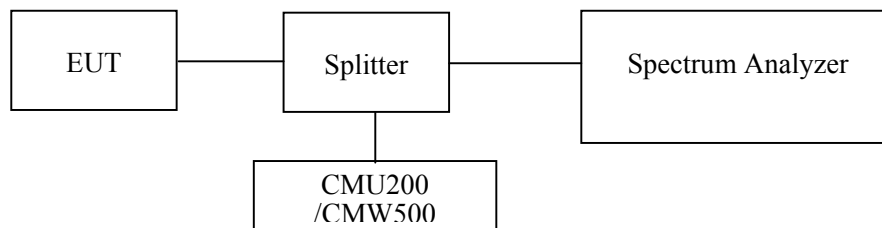
Applicable Standard

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 10th harmonic.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2018-08-03	2019-08-03
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005012	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	N/A

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

Test Data

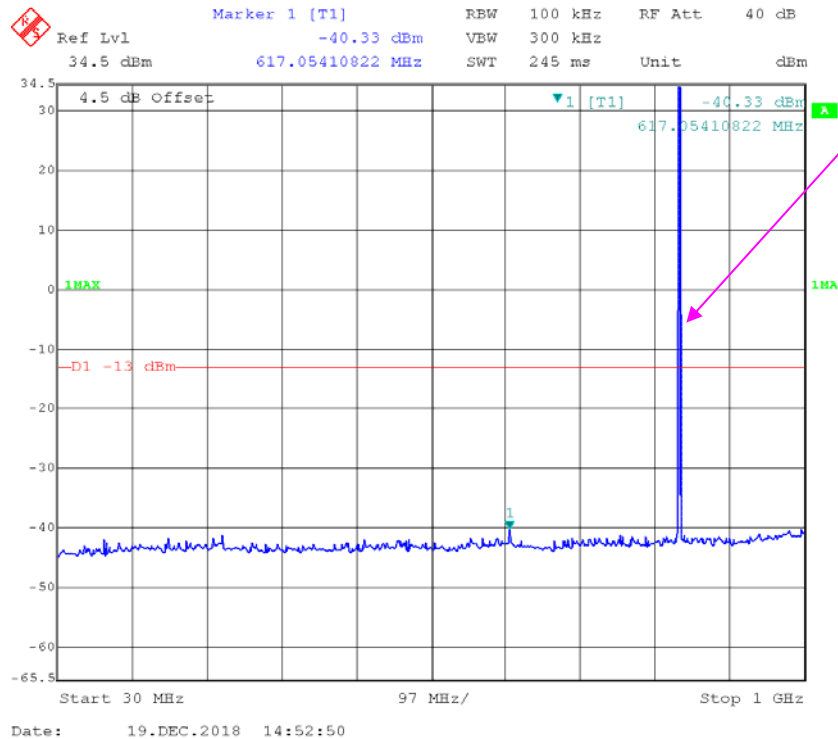
Environmental Conditions

Temperature:	24.5~25.2°C
Relative Humidity:	41~49 %
ATM Pressure:	99.7~99.8 kPa

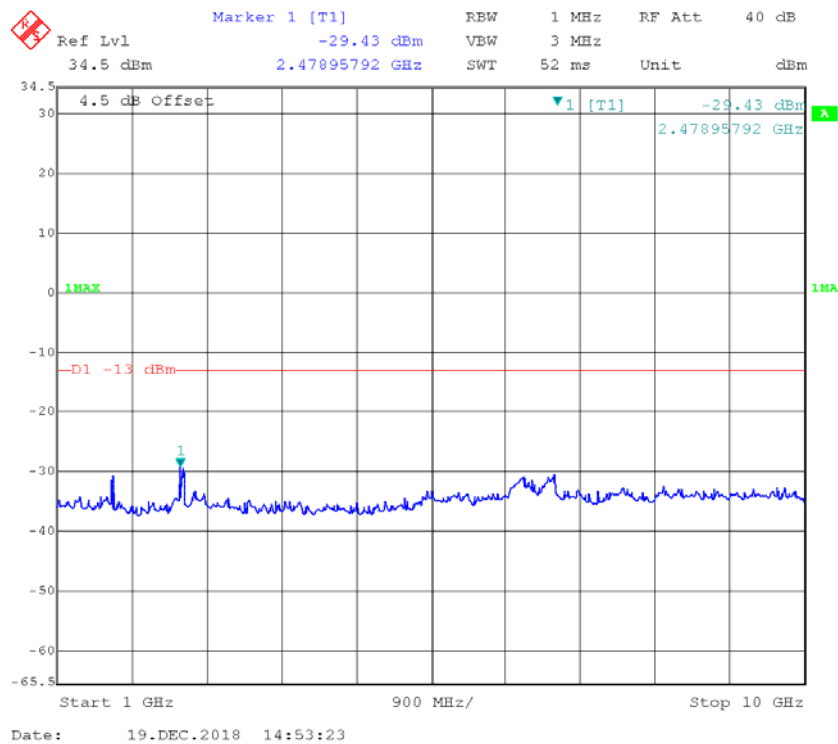
The testing was performed by Tiago Huang from 2018-12-19 to 2018-12-20.

Please refer to the following plots.

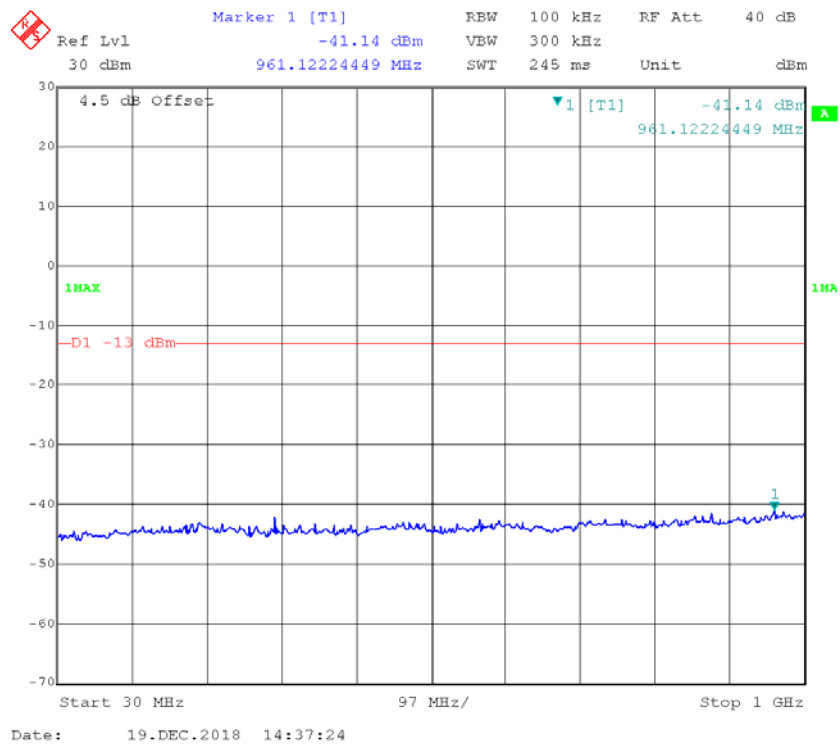
GSM850_Middle Channel



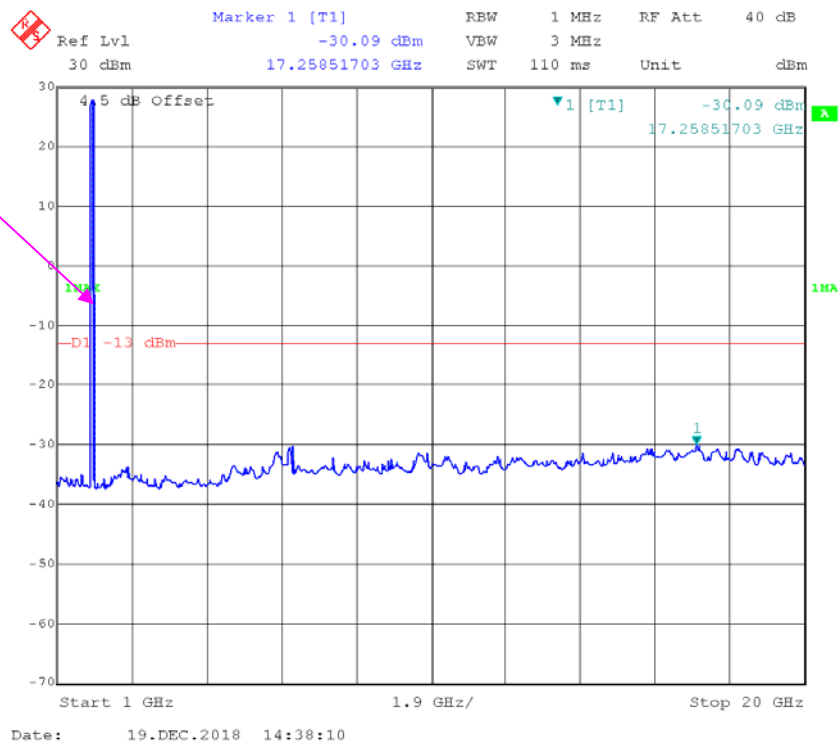
Fundamental



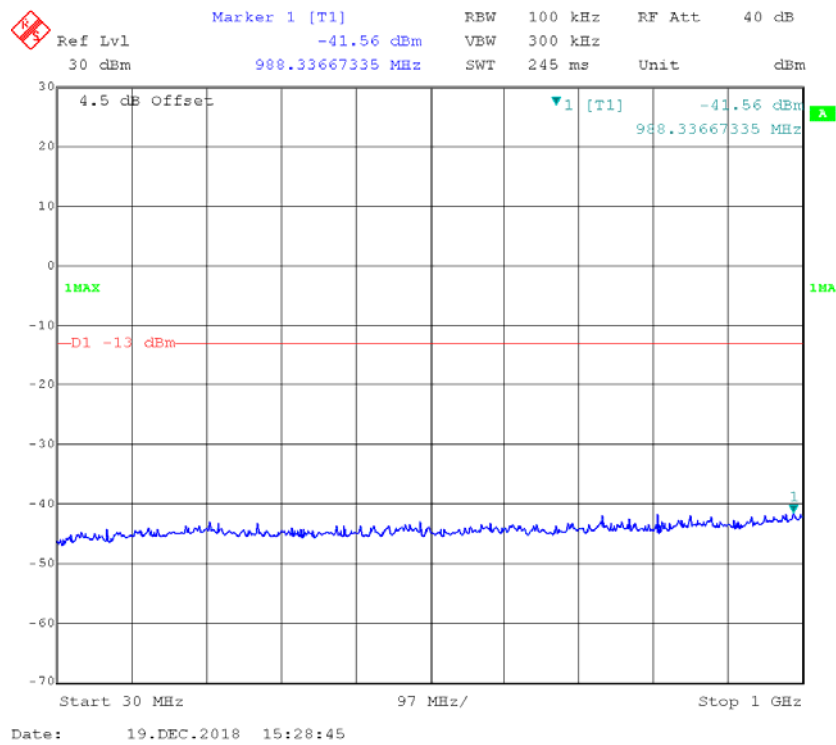
PCS 1900_ Middle Channel



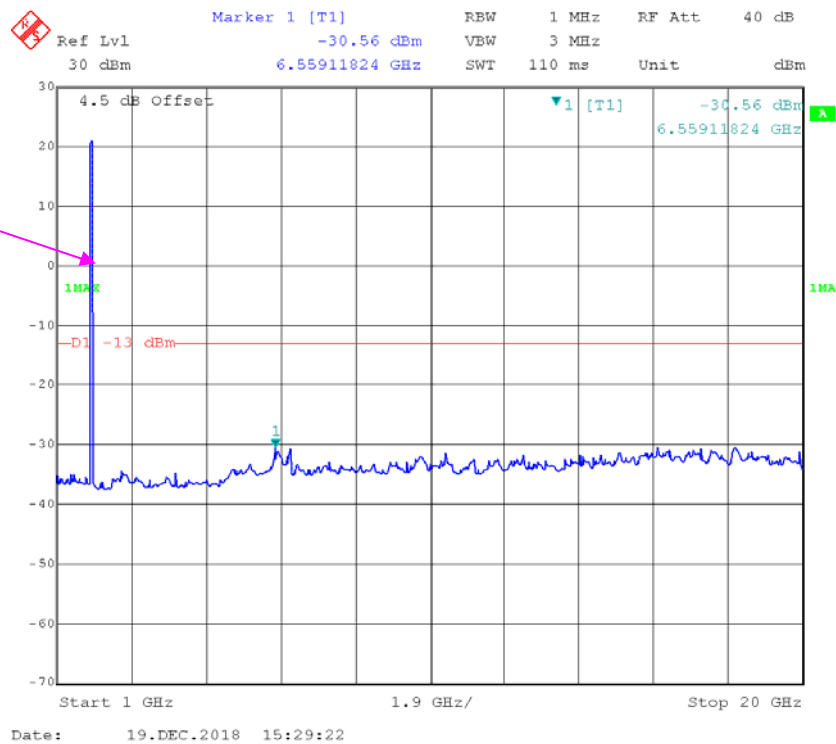
Fundamental



WCDMA Band II, Rel99

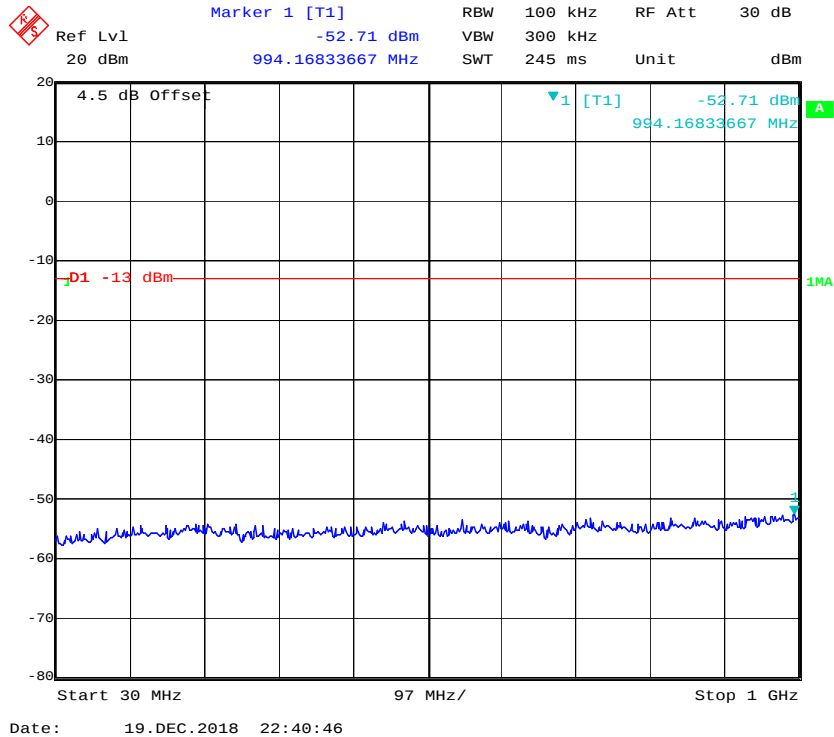


Fundamental

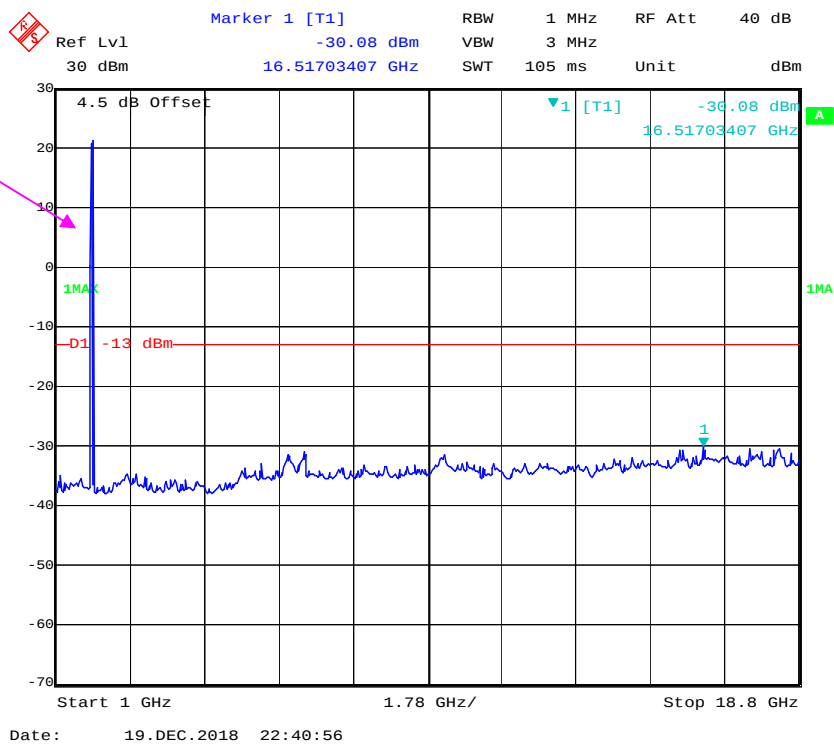


LTE Band 2 (Middle Channel)

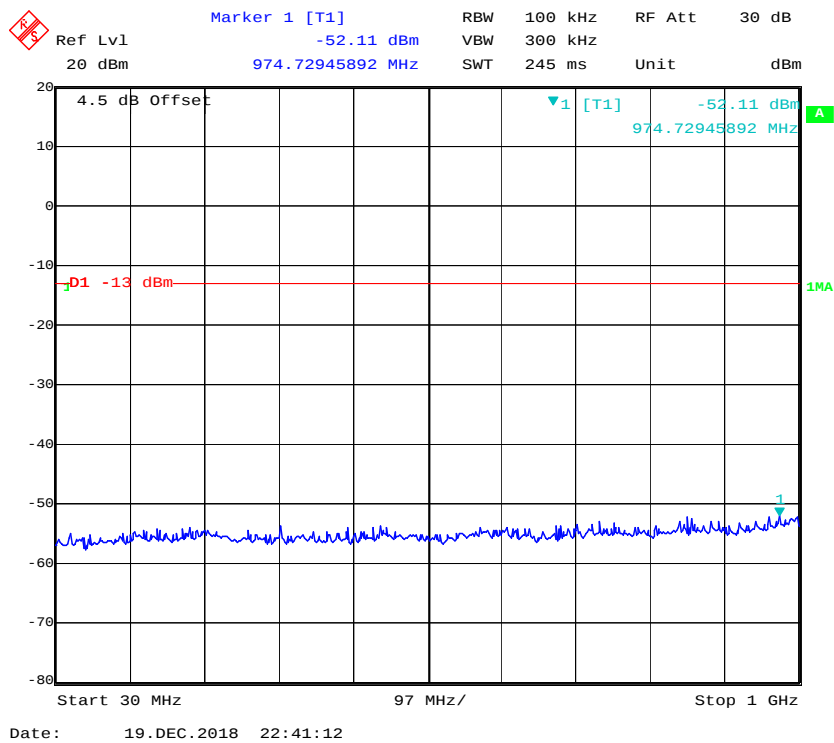
QPSK_1.4 MHz



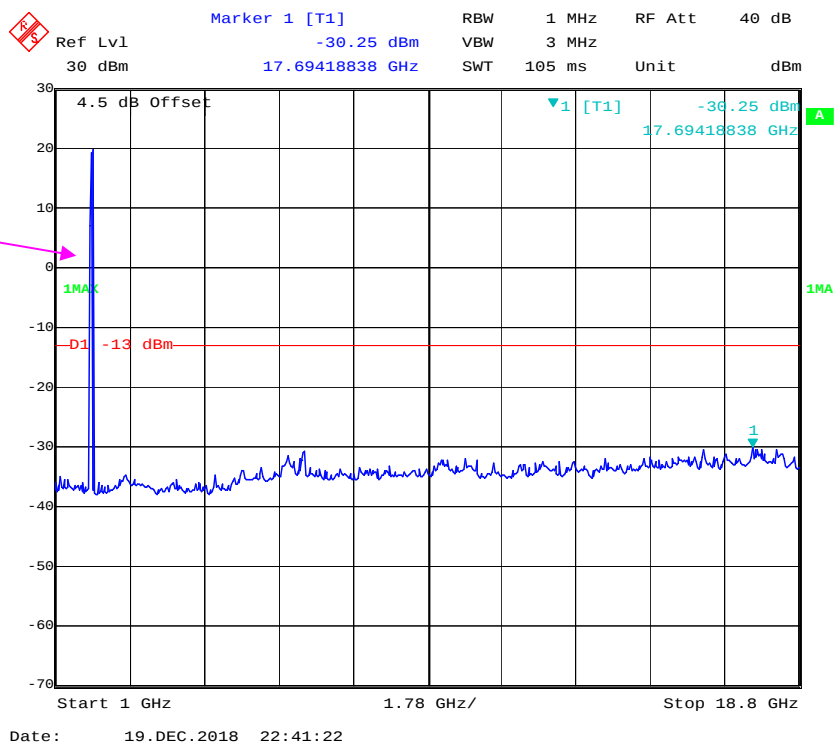
Fundamental



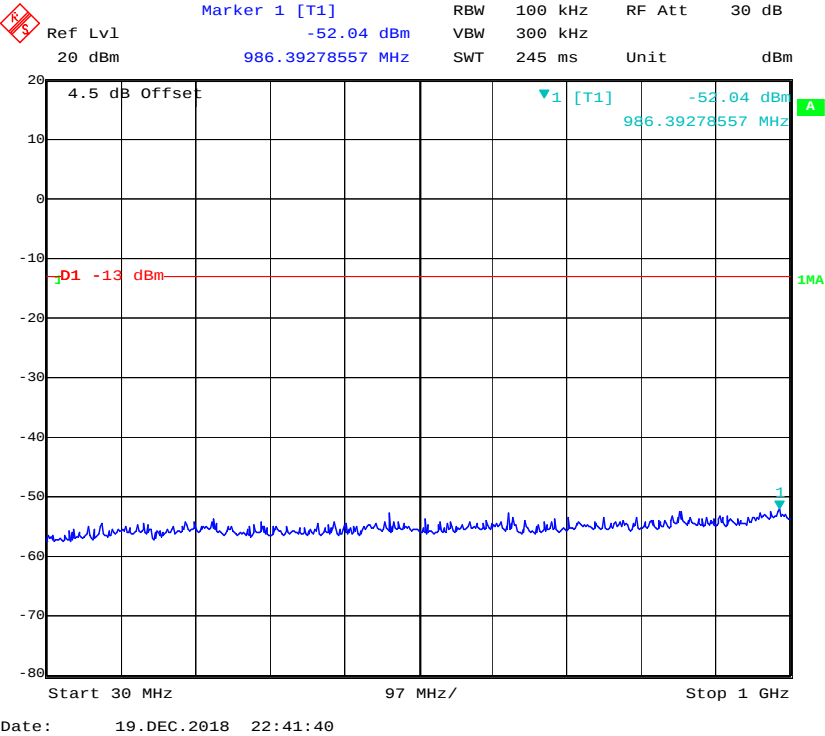
QPSK_3 MHz



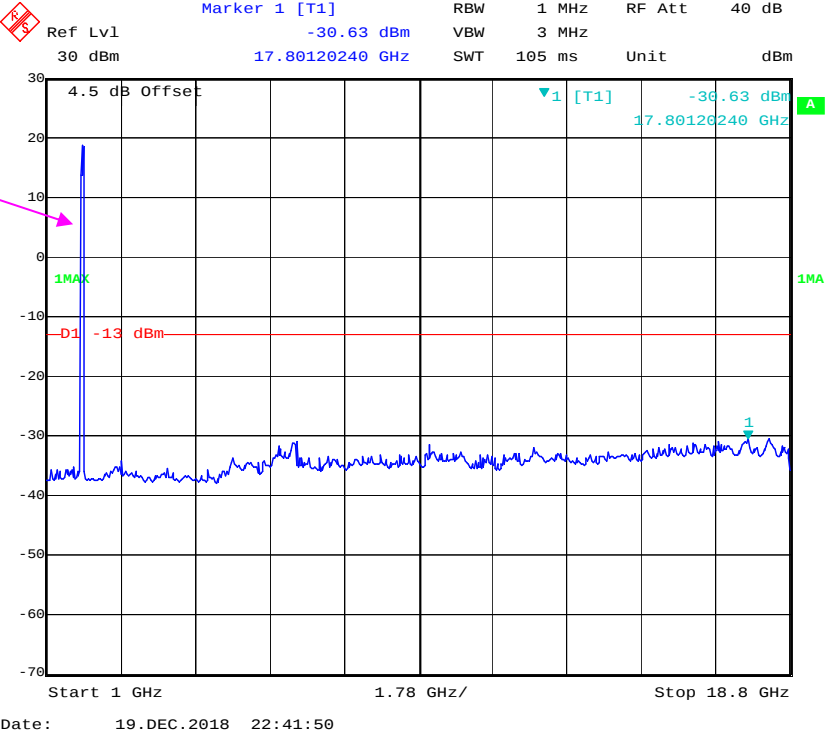
Fundamental



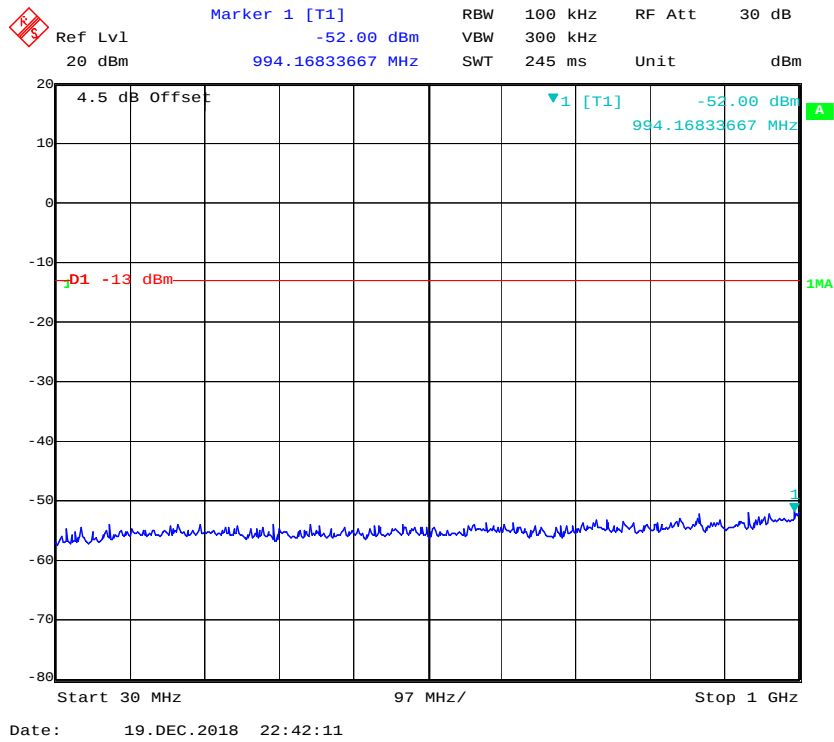
QPSK_5 MHz



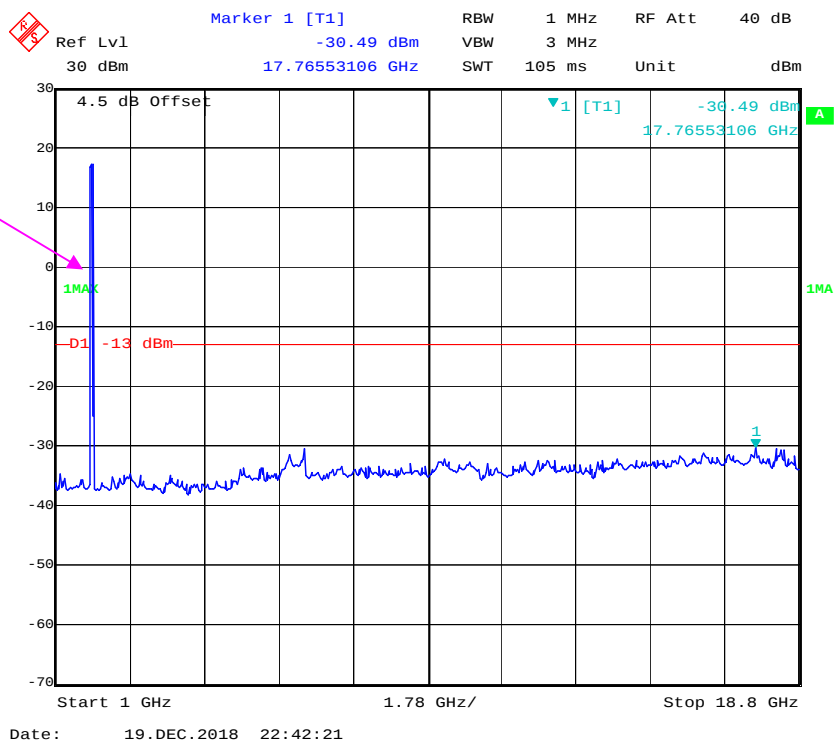
Fundamental



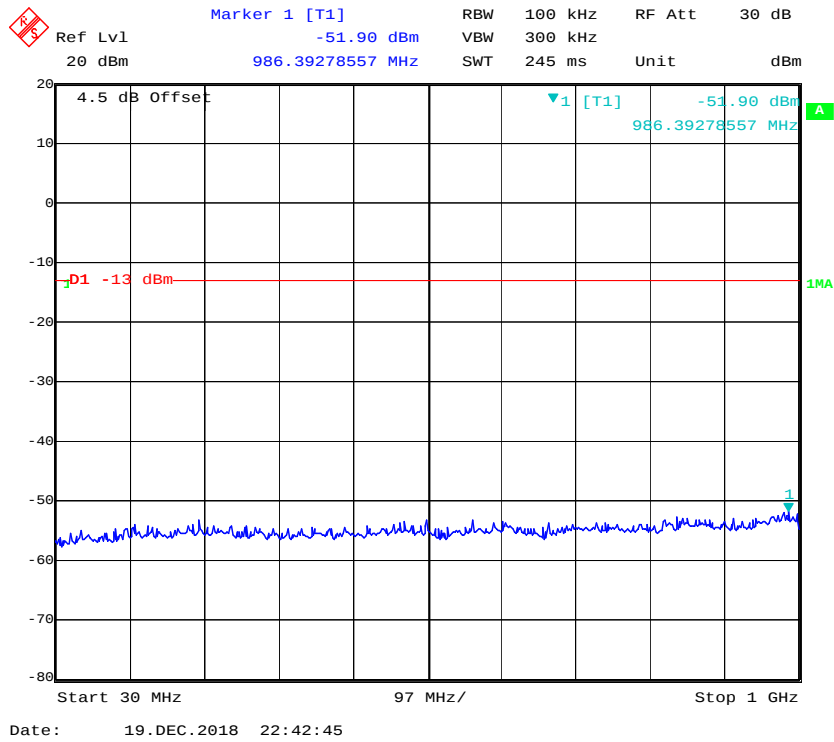
QPSK_10 MHz



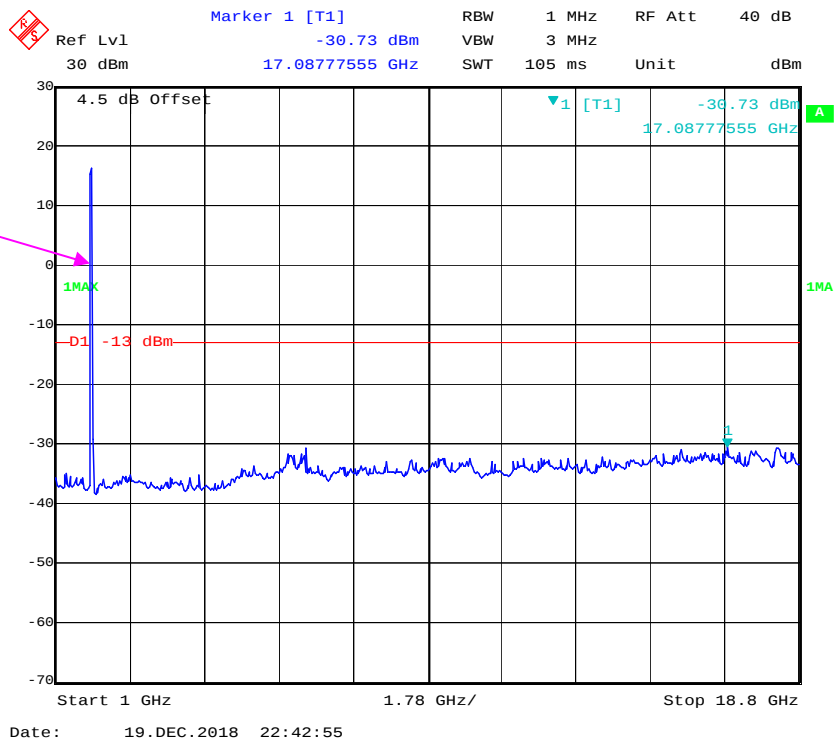
Fundamental



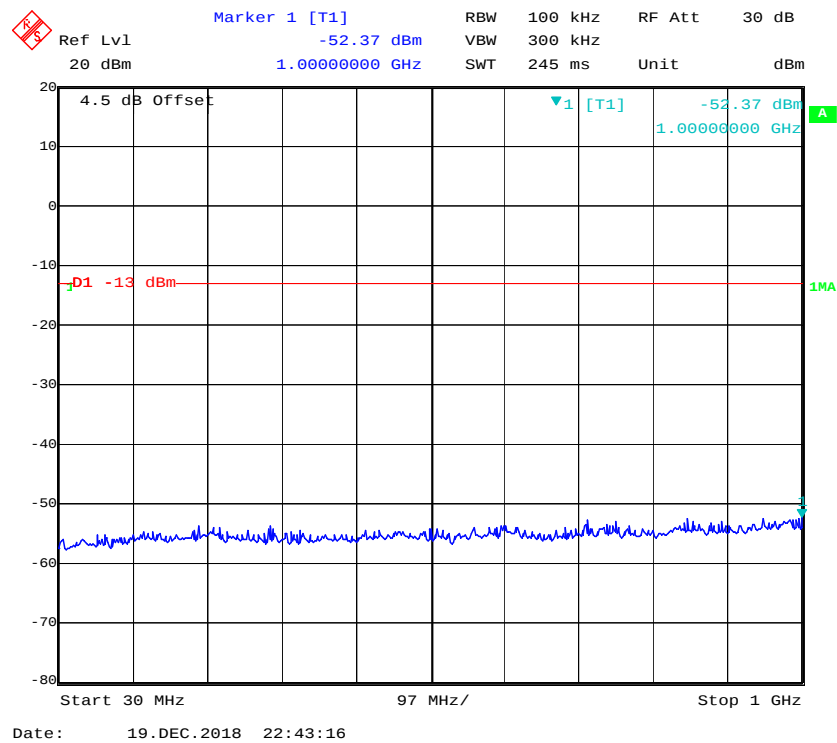
QPSK_15 MHz



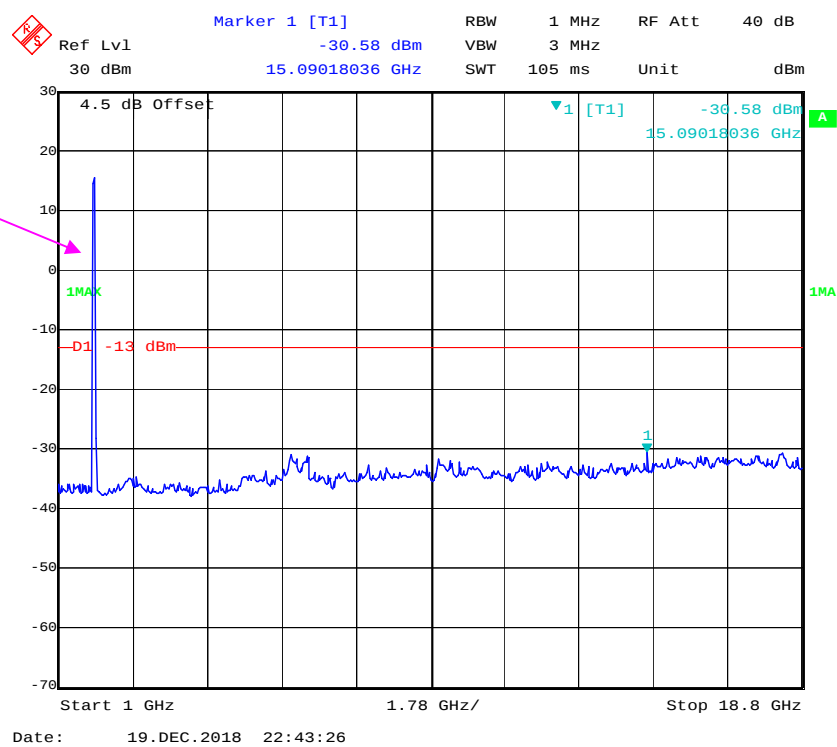
Fundamental



QPSK_20 MHz

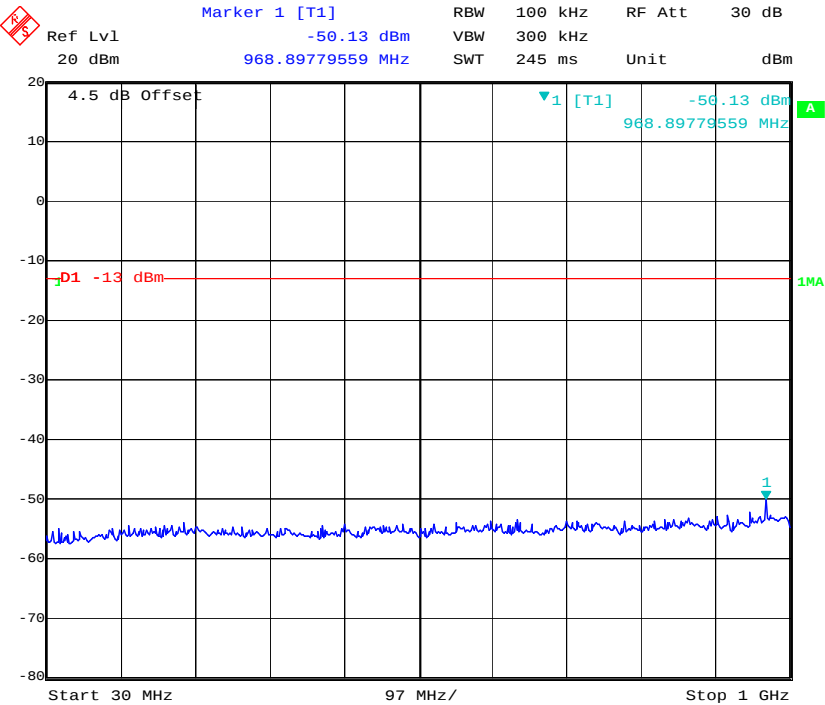


Fundamental



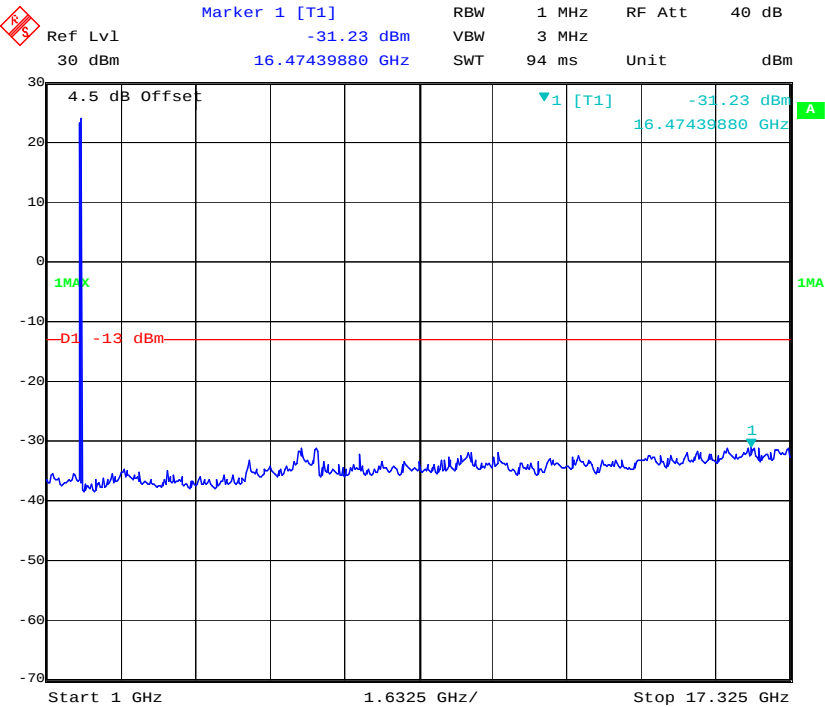
LTE Band 4 (Middle Channel)

QPSK_1.4 MHz



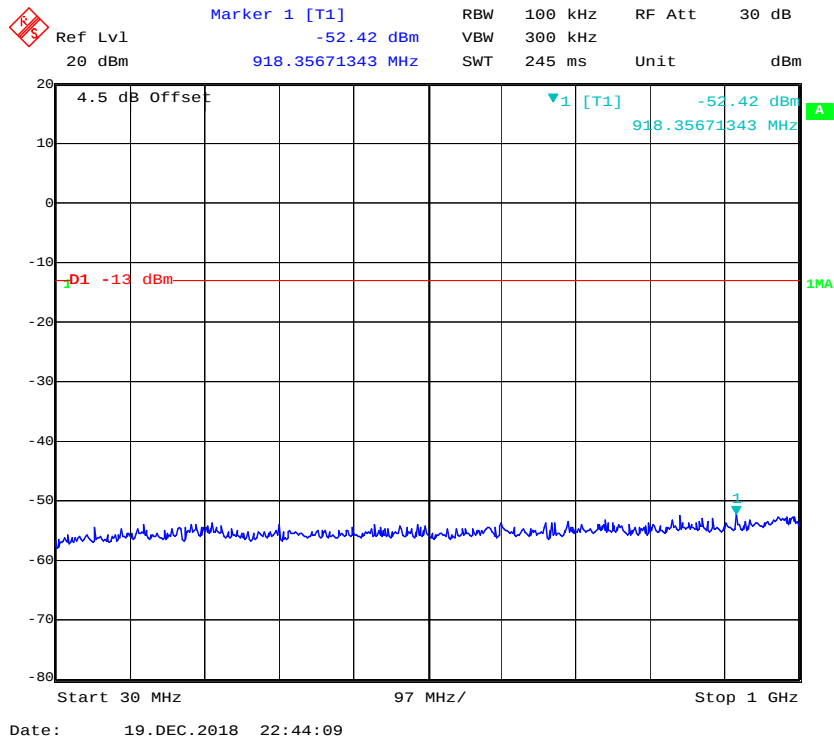
Date: 19.DEC.2018 22:43:42

Fundamental

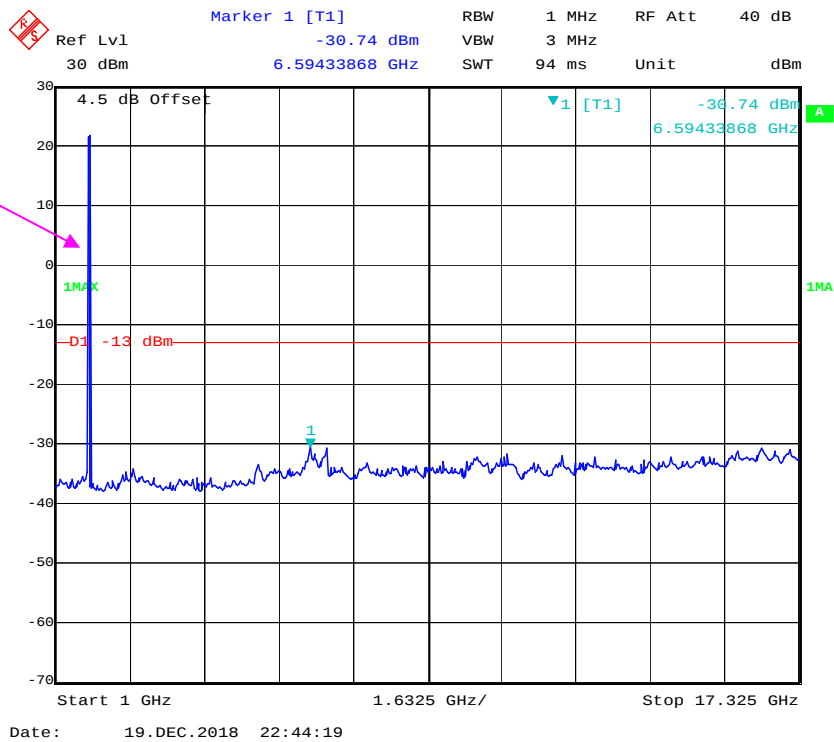


Date: 19.DEC.2018 22:43:52

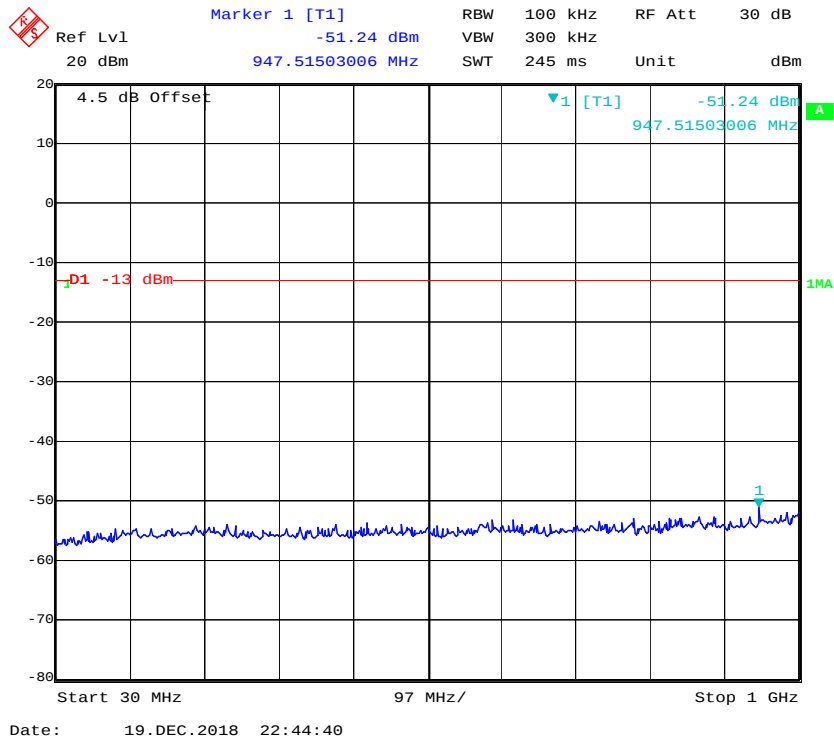
QPSK_3 MHz



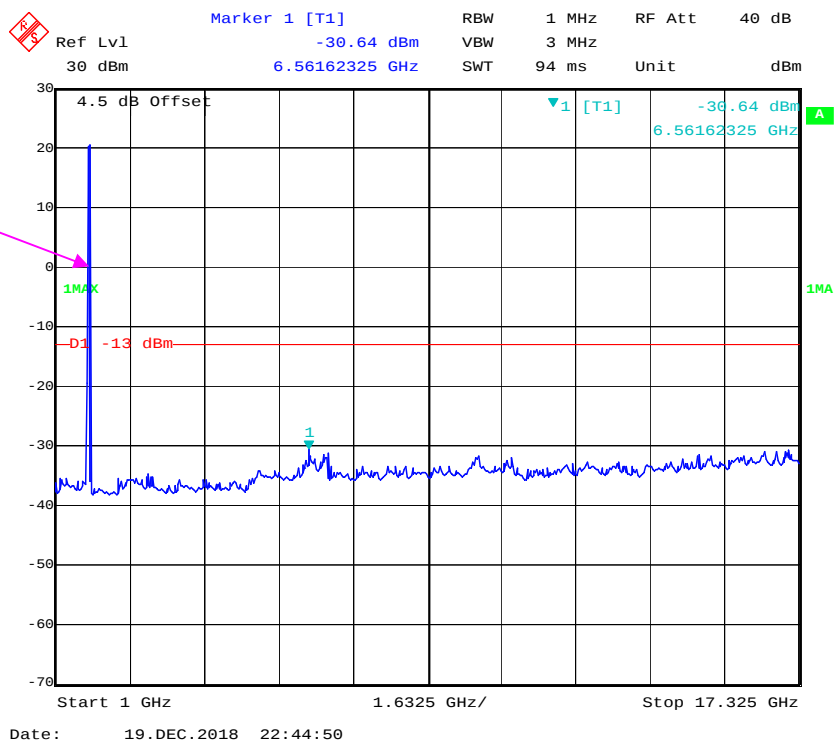
Fundamental



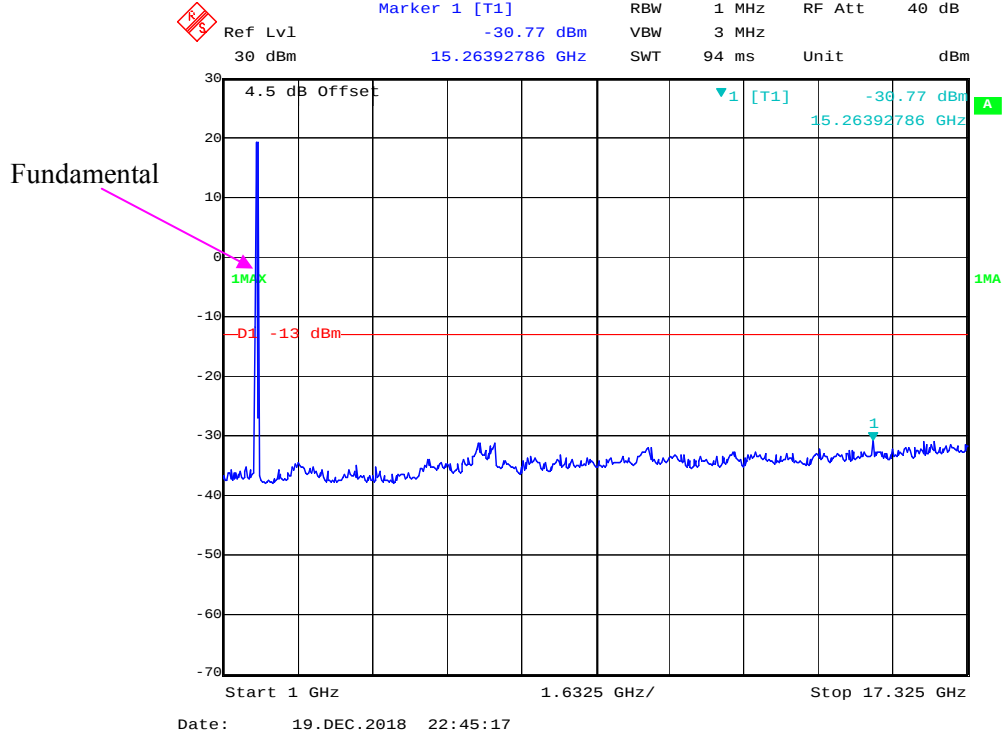
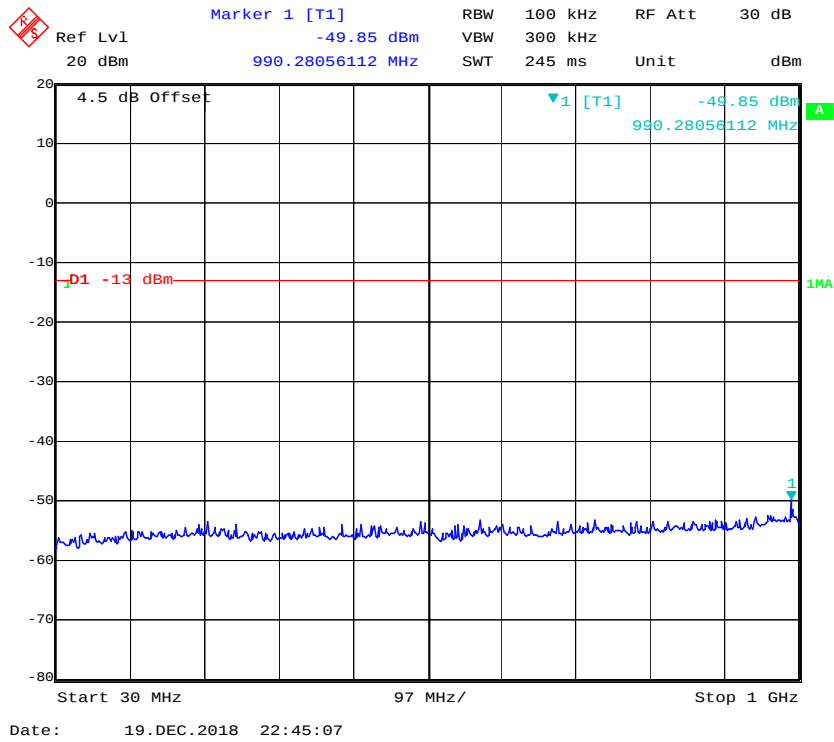
QPSK_5 MHz



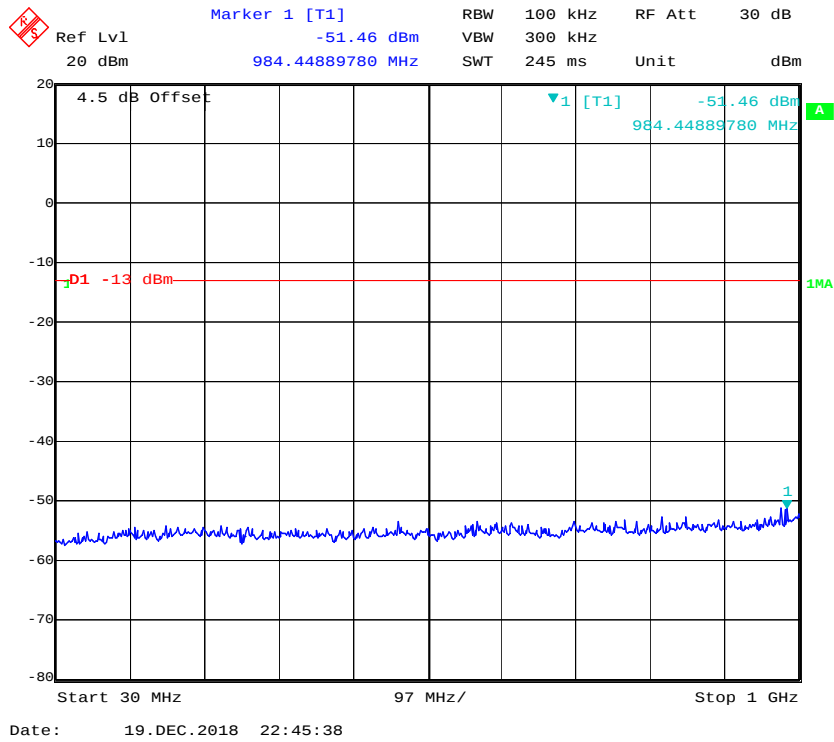
Fundamental



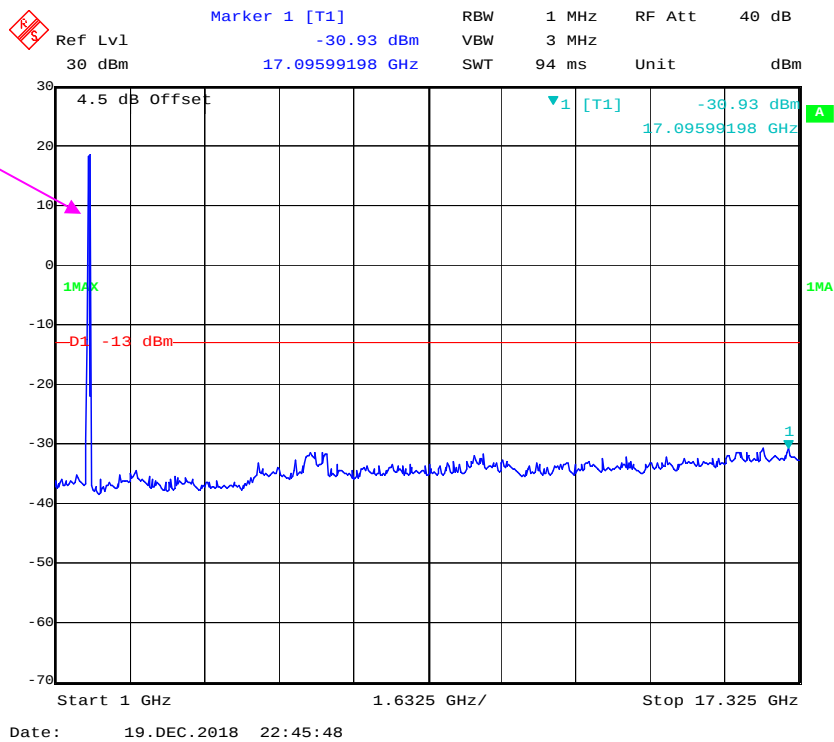
QPSK_10 MHz



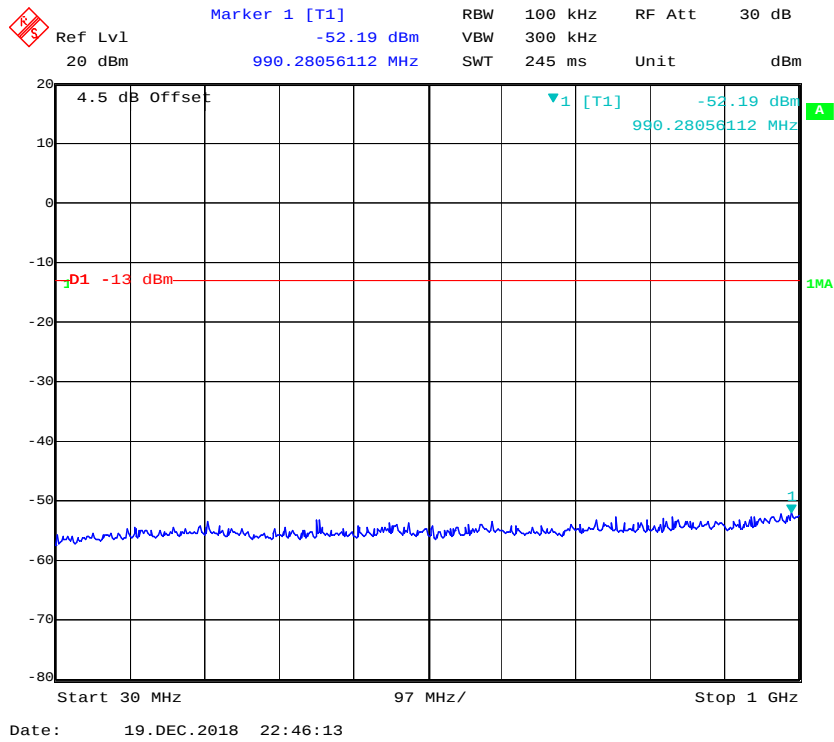
QPSK_15 MHz



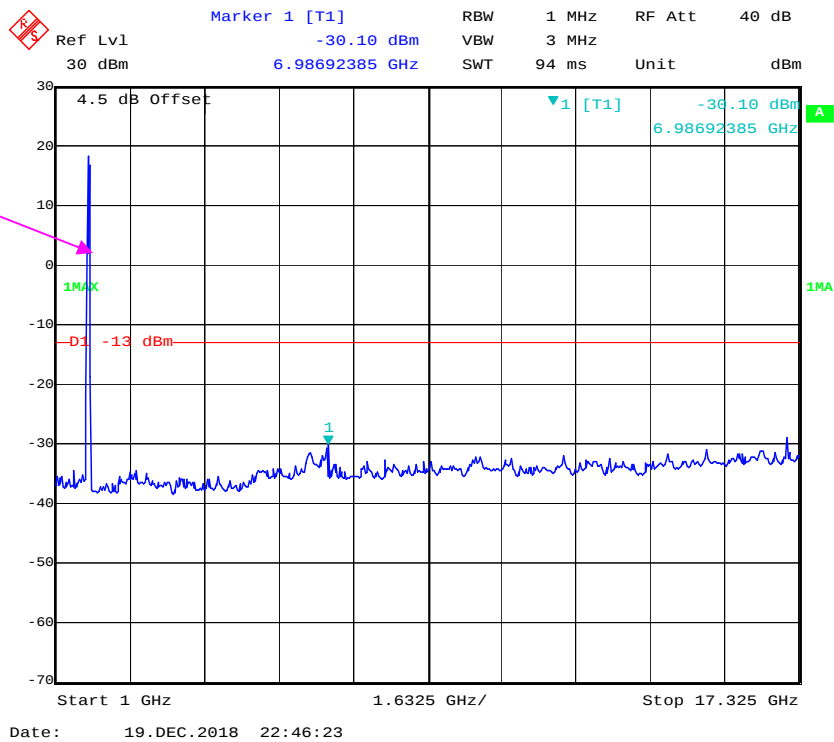
Fundamental



QPSK_20 MHz

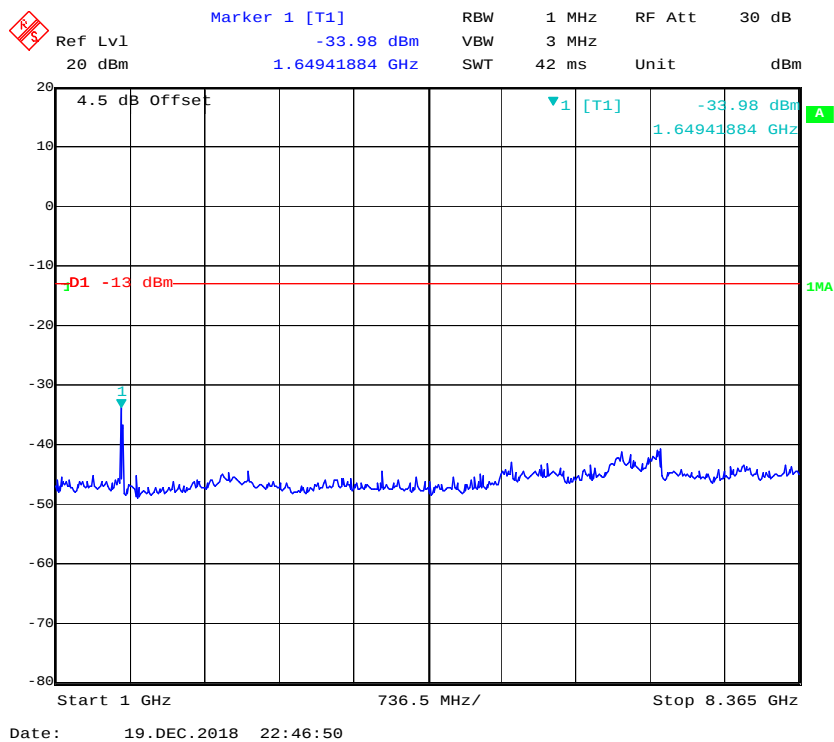
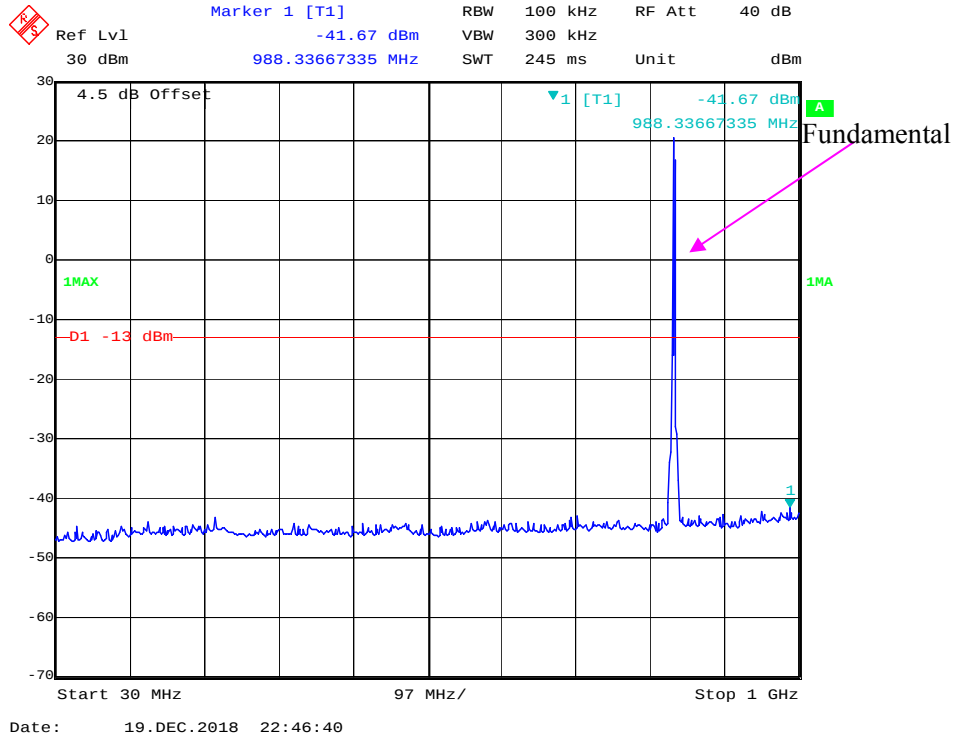


Fundamental

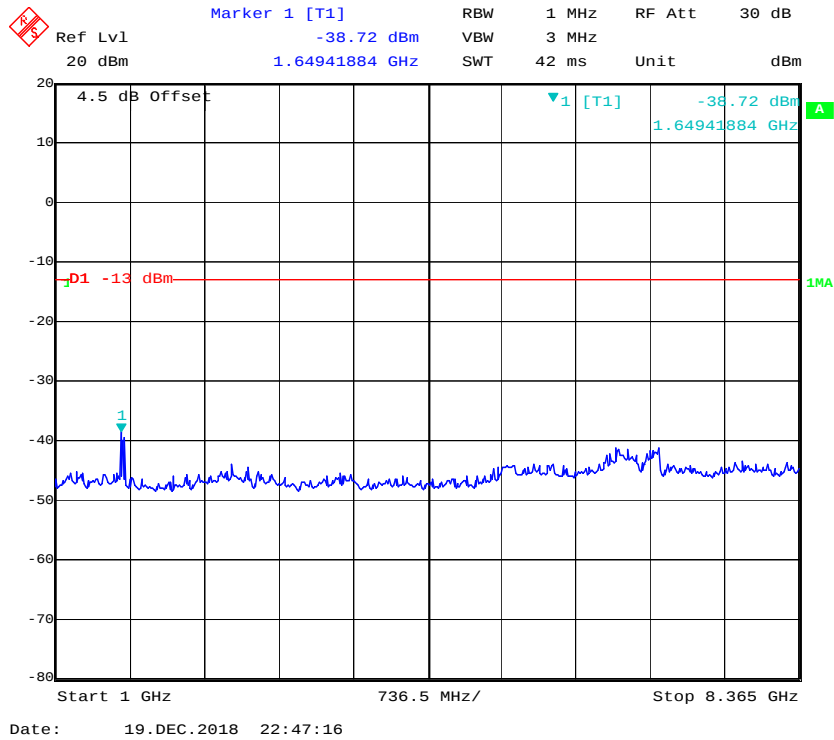
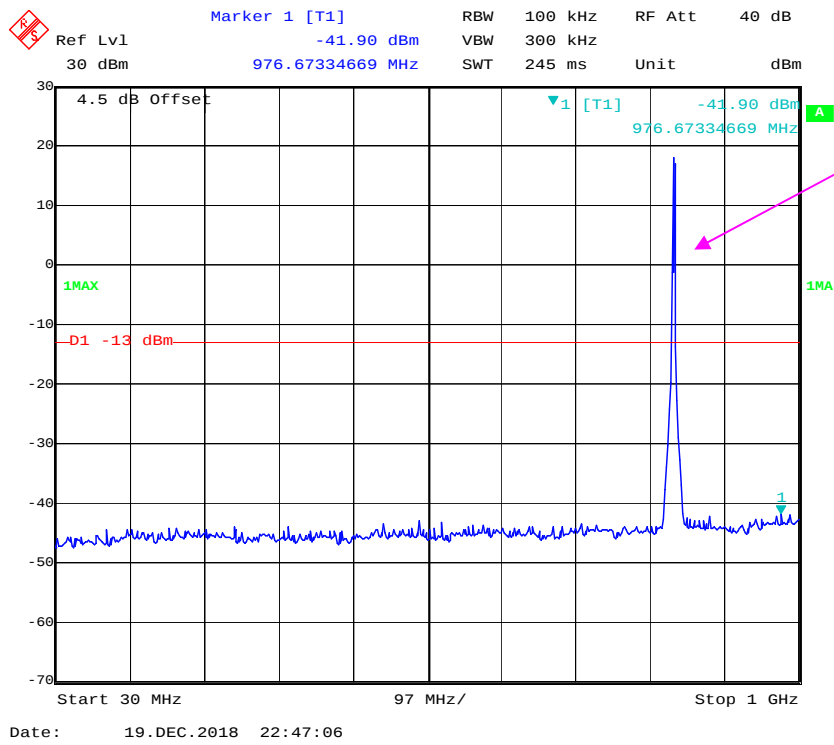


LTE Band 5 (Middle Channel)

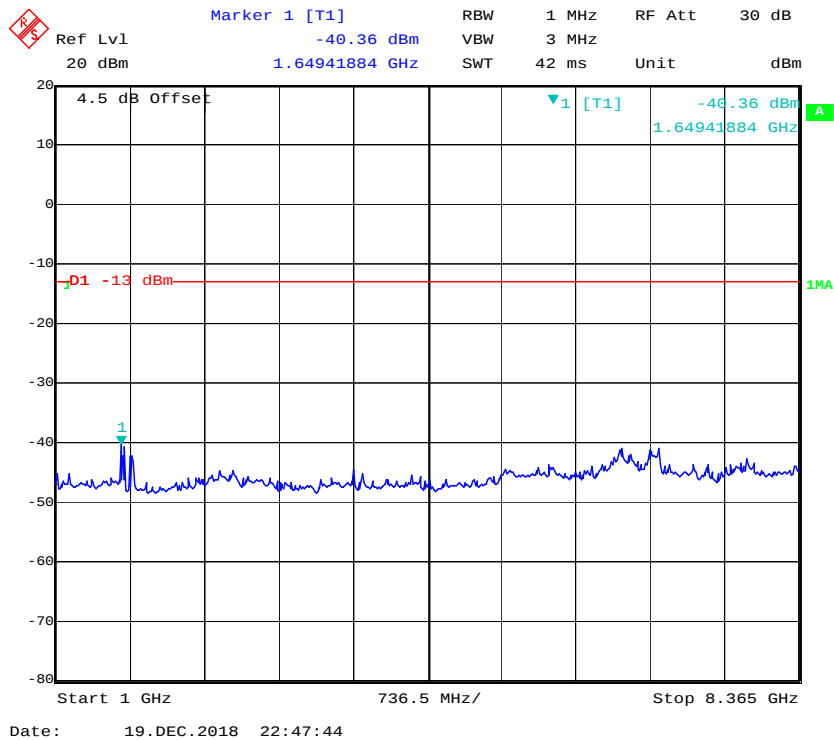
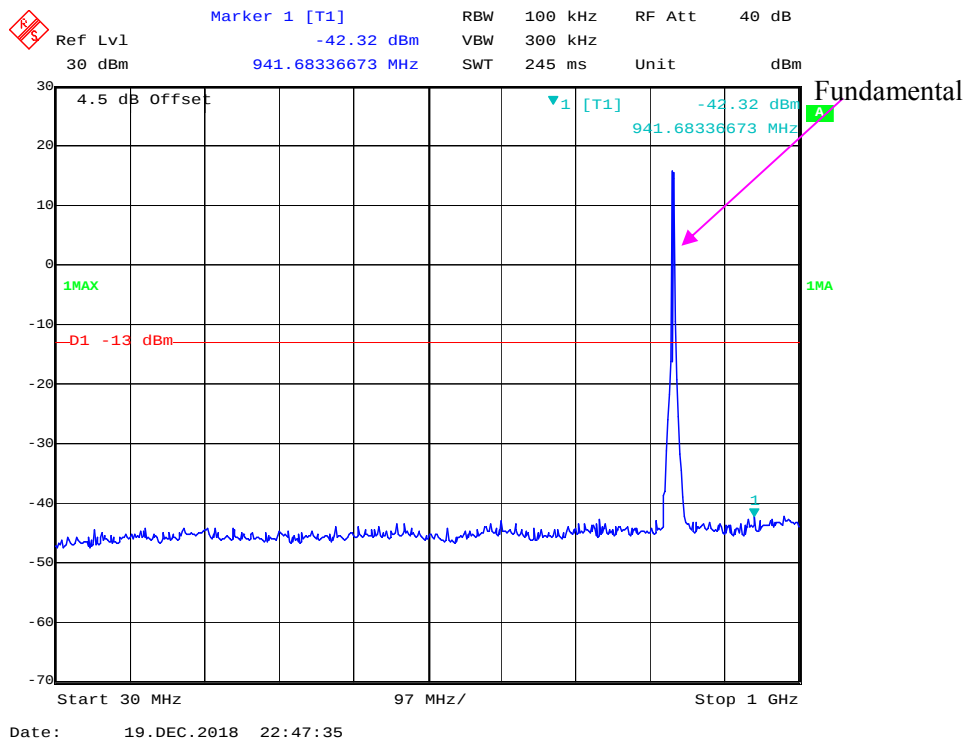
QPSK_1.4 MHz



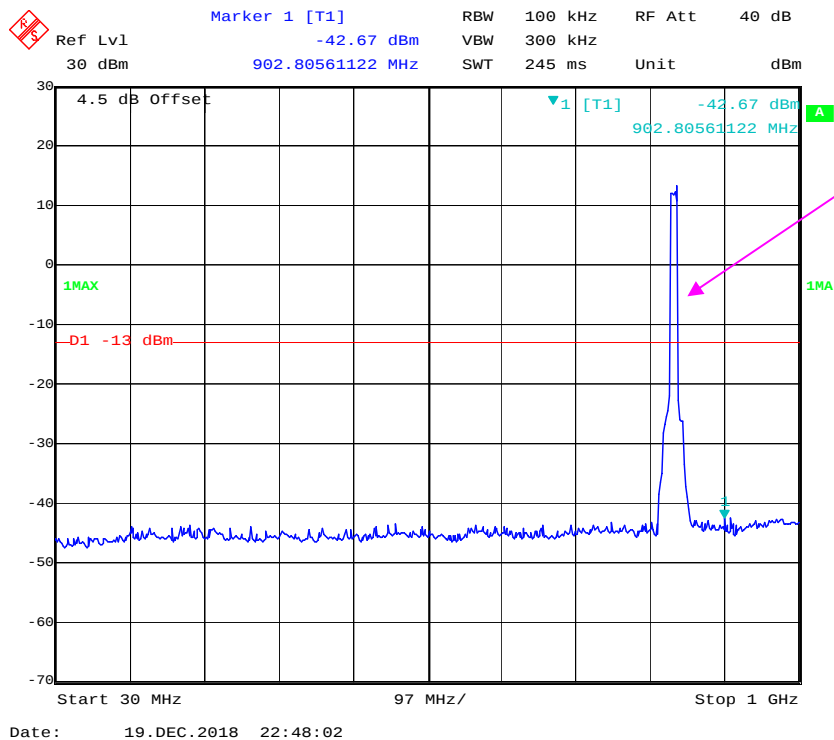
QPSK_3 MHz



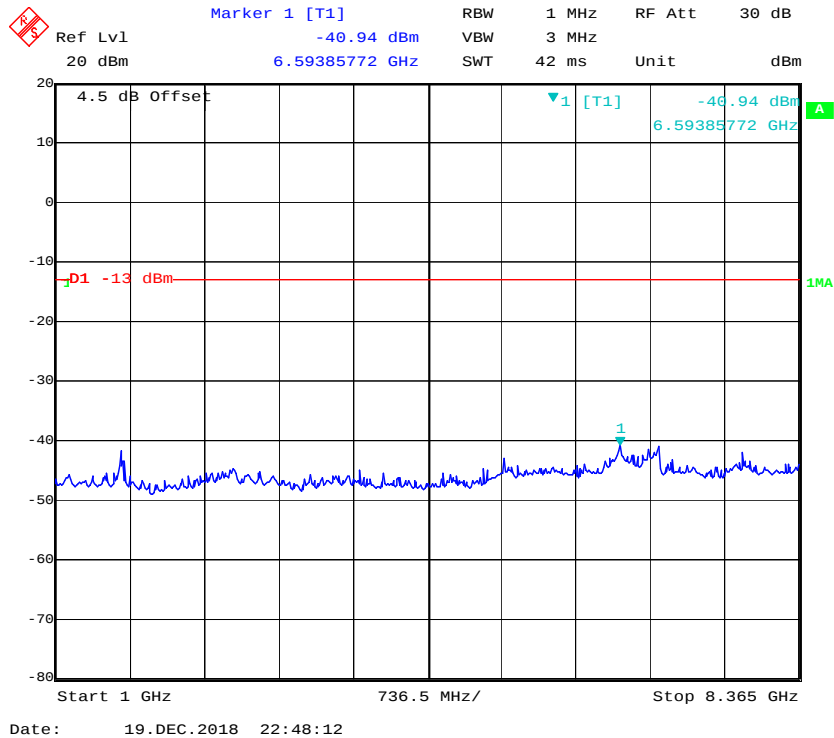
QPSK_5 MHz



QPSK_10 MHz

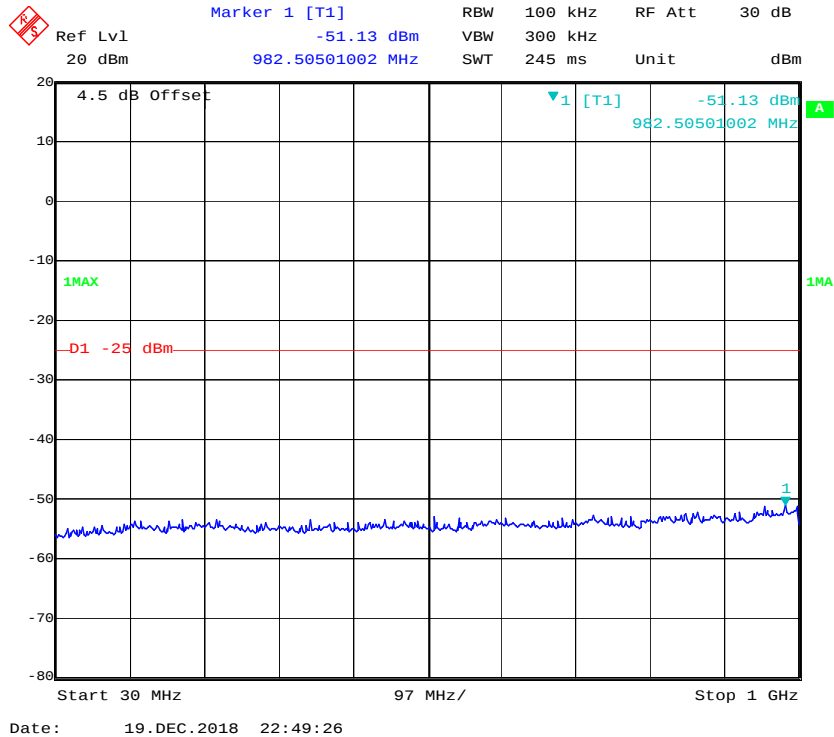


Fundamental

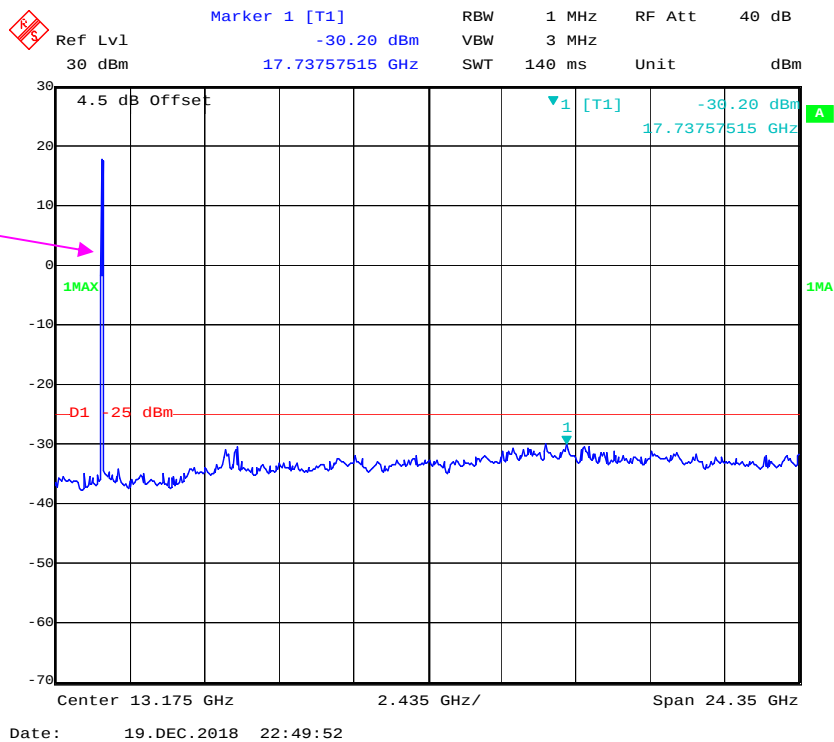


LTE Band 7 (Middle Channel)

QPSK_5 MHz



Fundamental



Ref Lvl: 20 dBm
 Marker 1 [T1]: -56.92 dBm
 RBW: 100 kHz
 VBW: 300 kHz
 SWT: 245 ms
 RF Att: 30 dB
 Unit: dBm

4.5 dB Offset
 968.89779559 MHz
 1MAX
 D1 -25 dBm
 1

Start 30 MHz
 97 MHz/
 Stop 1 GHz

Date: 19.DEC.2018 22:50:33

Marker 1 [T1]
 -29.77 dBm
 18.22555110 GHz

RBW 1 MHz
 VBW 3 MHz
 SWT 140 ms
 RF Att 40 dB
 Unit dBm

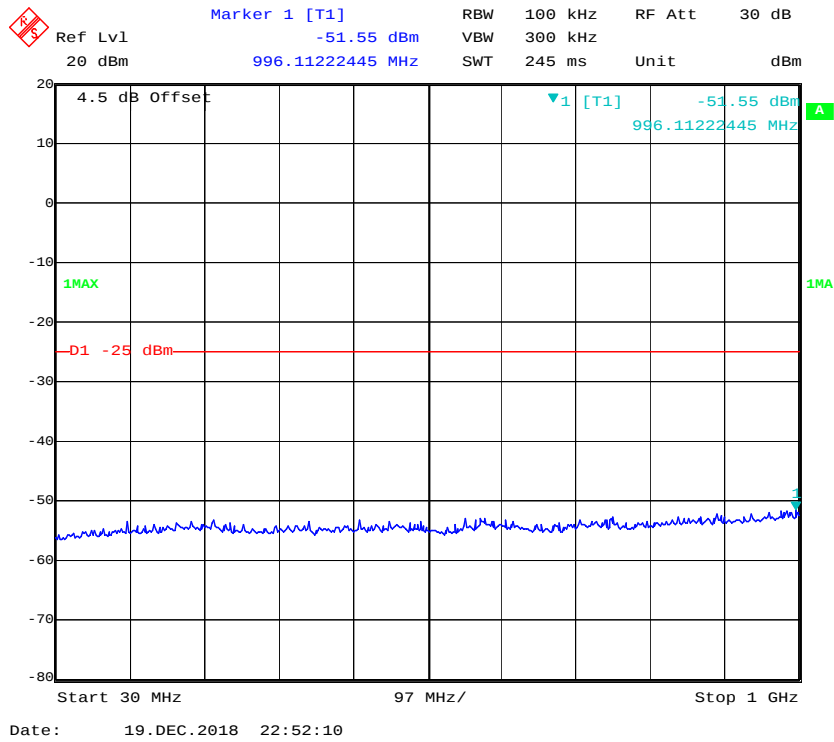
Ref Lvl 30 dBm
 4.5 dB Offset

1MAX
 -25 dBm
 1 [T1]

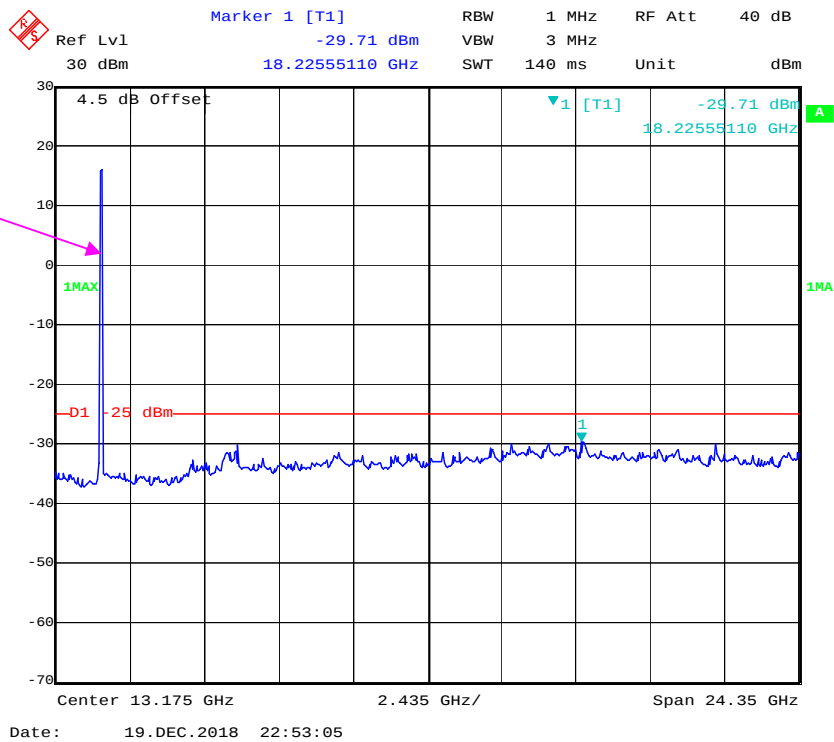
Center 13.175 GHz
 2.435 GHz/
 Span 24.35 GHz

Date: 19.DEC.2018 22:51:08

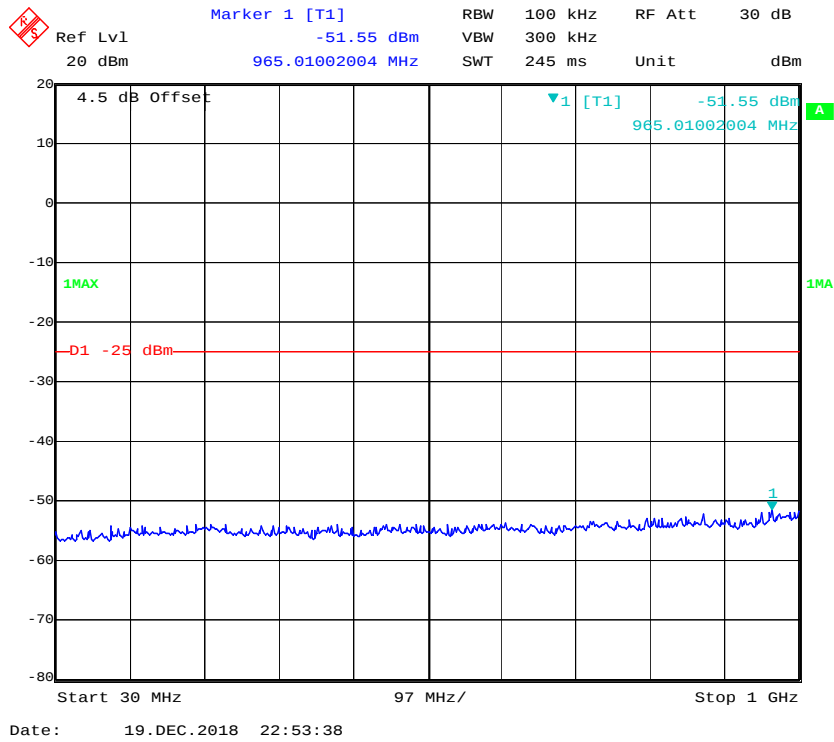
QPSK_15 MHz



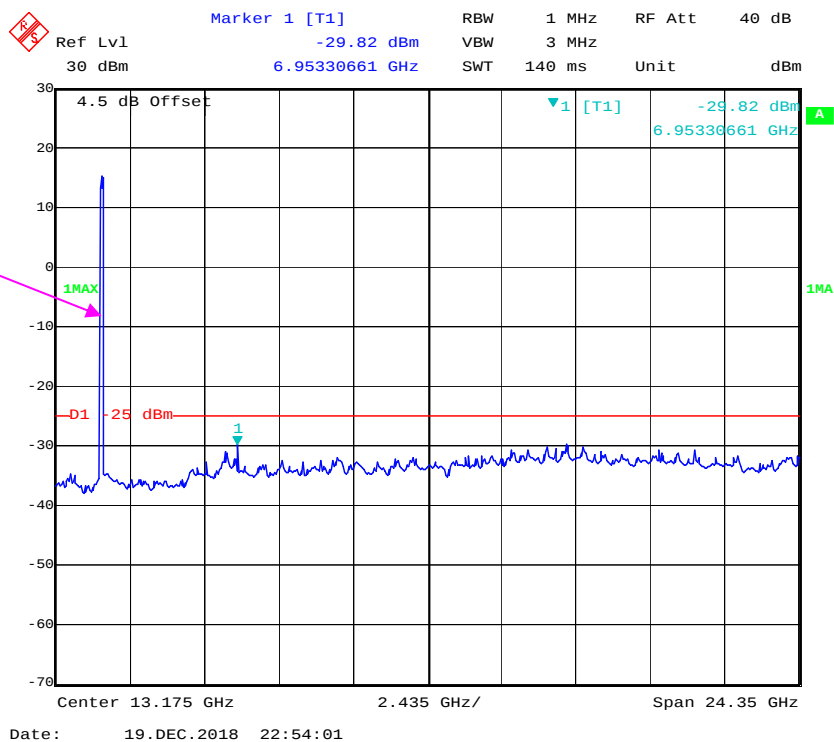
Fundamental



QPSK_20 MHz

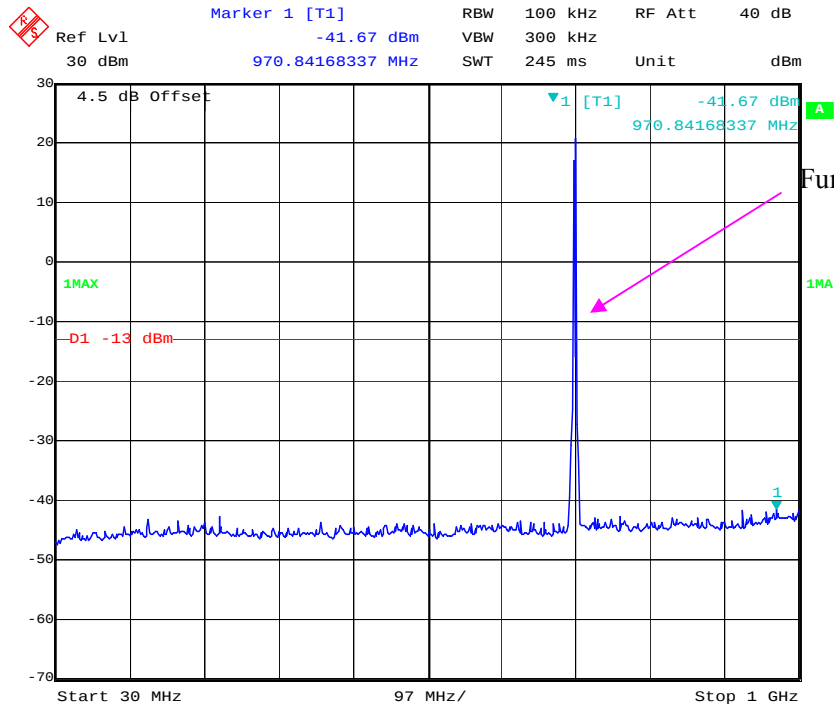


Fundamental



LTE Band 12 (Middle Channel)

QPSK_1.4 MHz

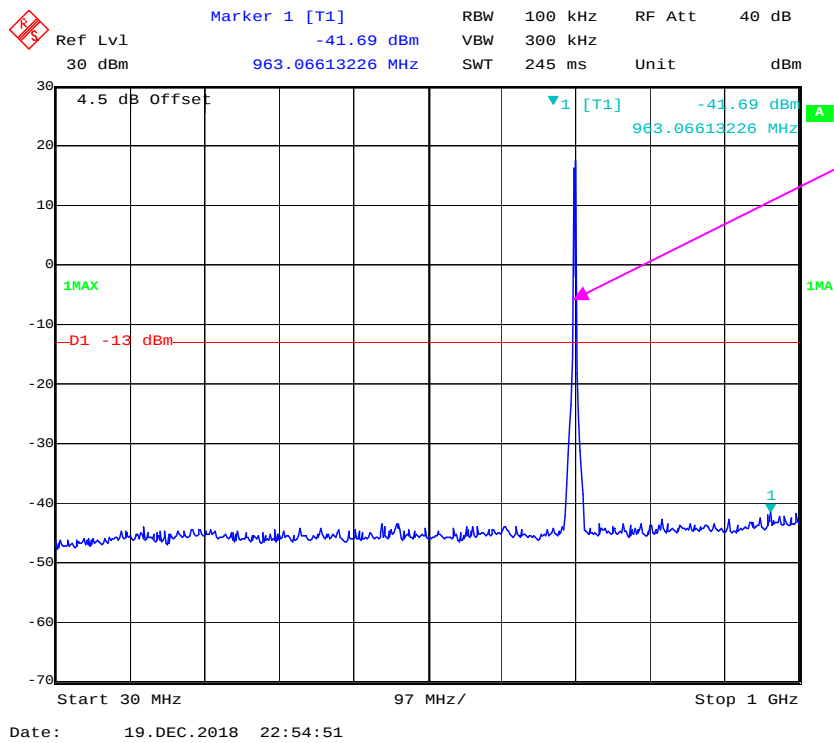


Date: 19.DEC.2018 22:54:21

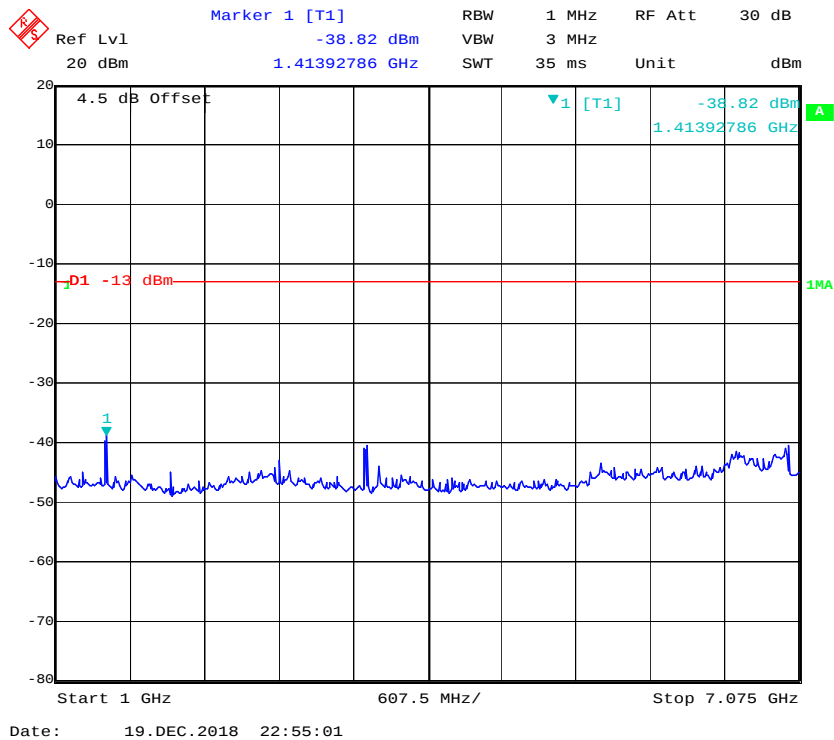


Date: 19.DEC.2018 22:54:34

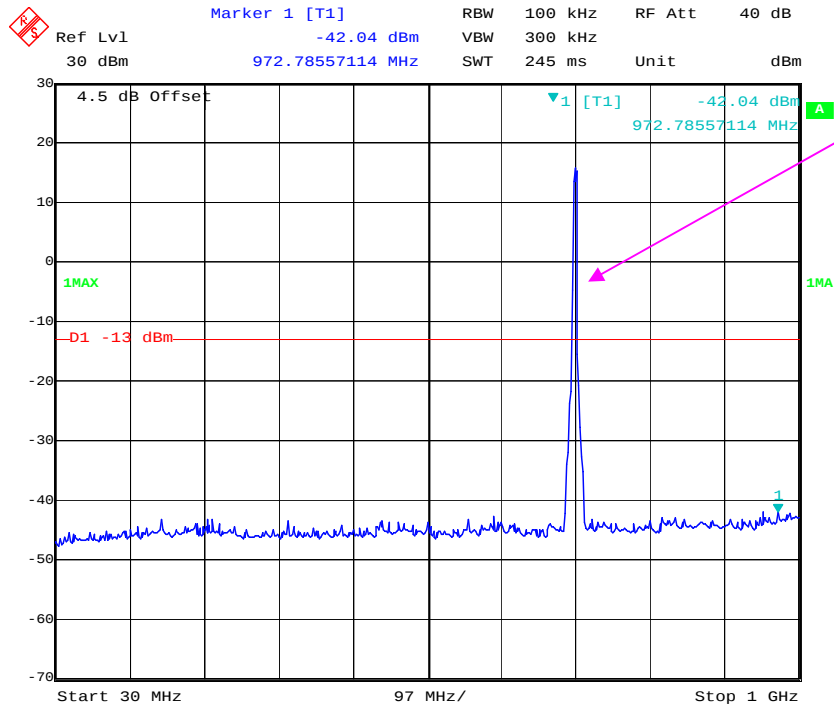
QPSK_3 MHz



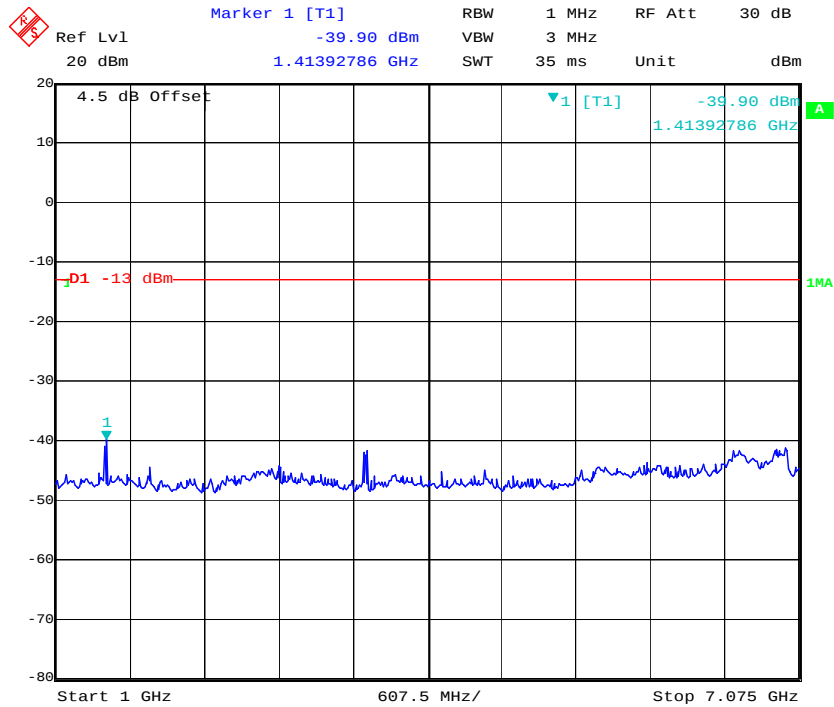
Fundamental



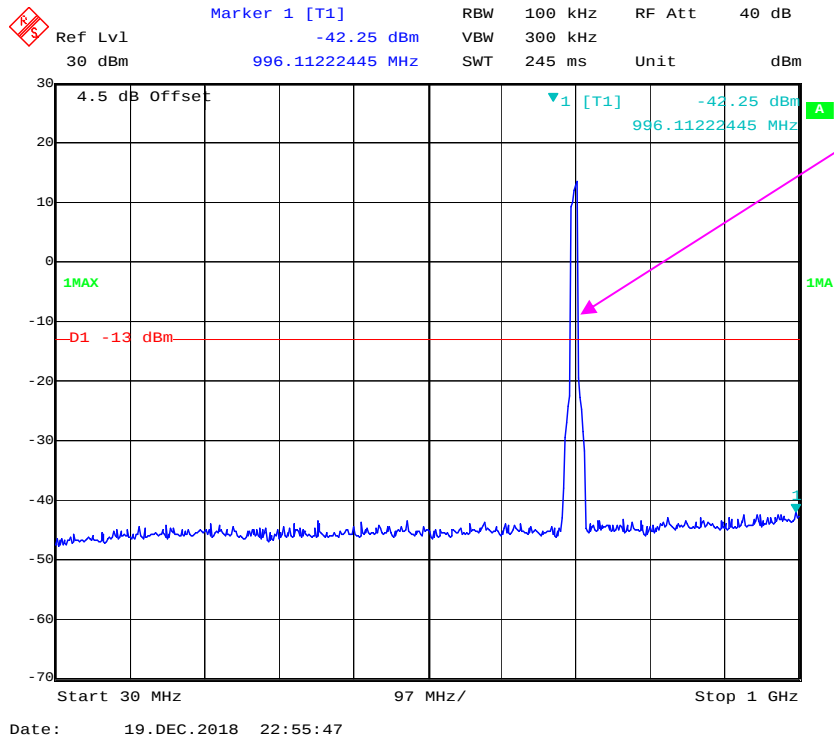
QPSK_5 MHz



Fundamental

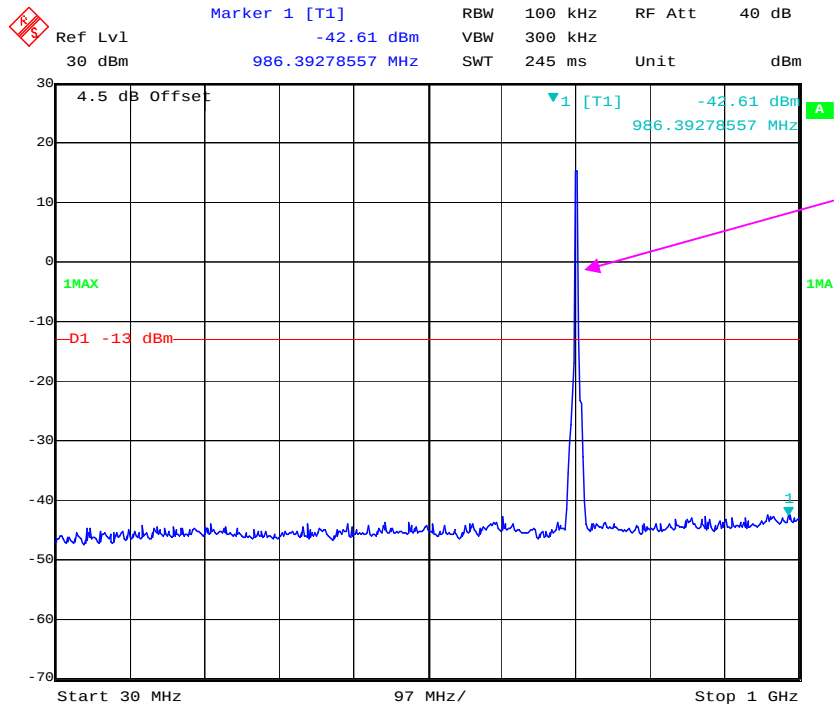


QPSK_10 MHz

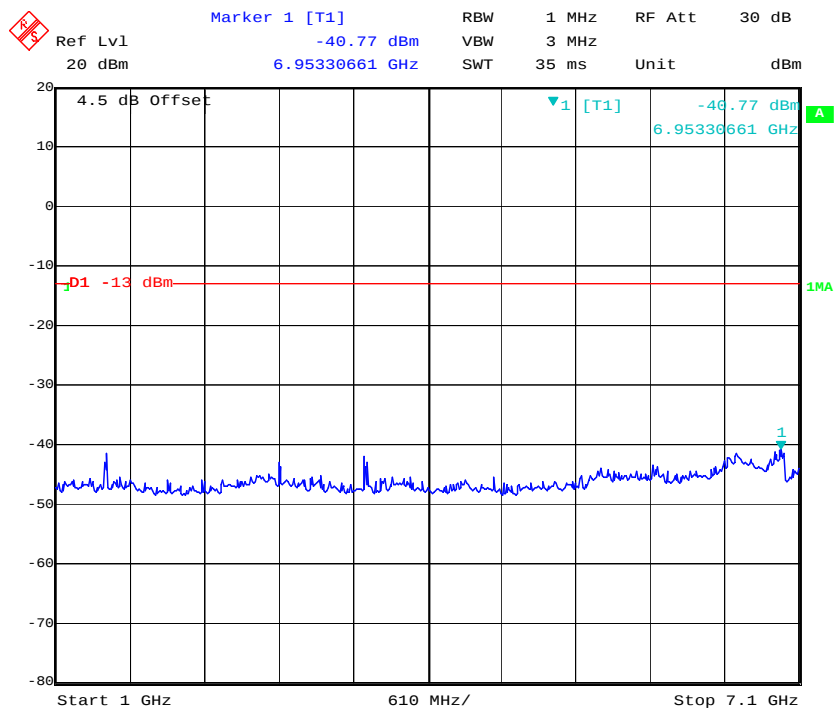


LTE Band 17 (Middle Channel)

QPSK_5 MHz

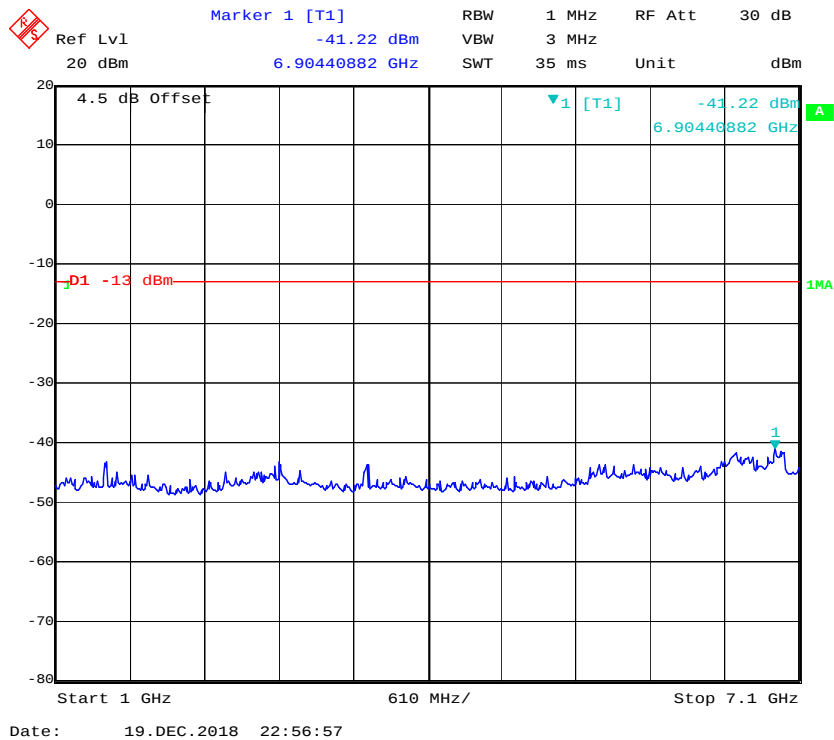
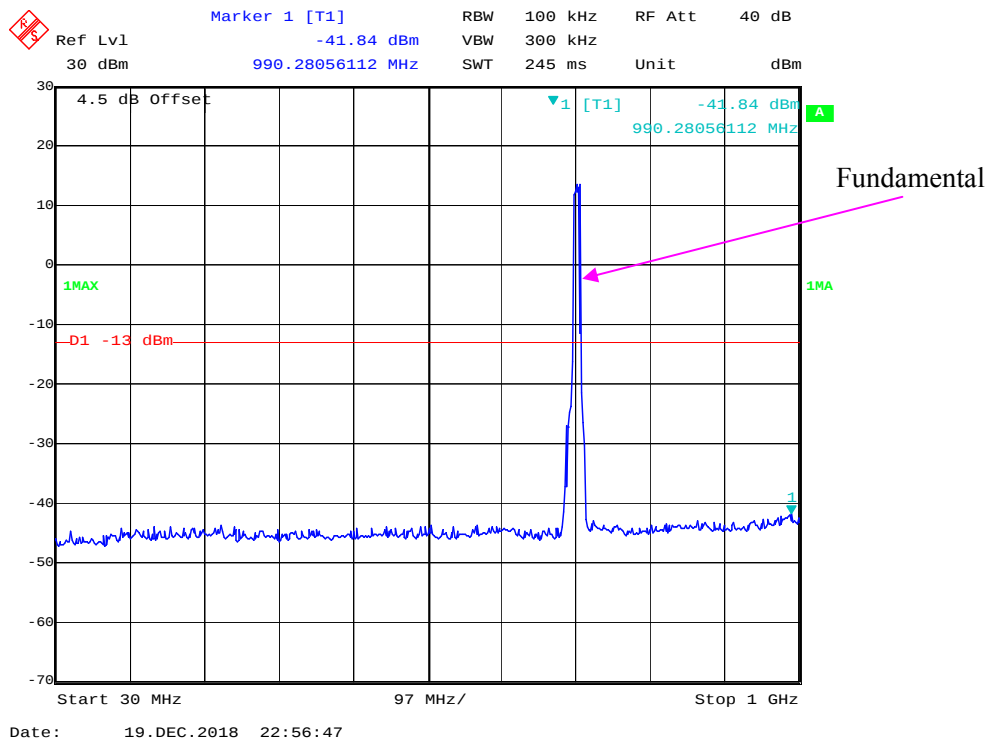


Date: 19.DEC.2018 22:56:17



Date: 19.DEC.2018 22:56:27

QPSK_10 MHz



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

Applicable Standard

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

Test Procedure

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

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

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

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

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100035	2018-08-03	2019-08-03
Sunol Sciences	Antenna	JB3	A060611-3	2017-07-21	2019-07-21
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2018-09-24	2019-09-24
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2018-09-05	2019-09-05
Sonoma	Amplifier	310N	185914	2018-10-13	2019-10-13
R&S	Spectrum Analyzer	FSP 38	100478	2018-12-10	2019-12-10
TDK RF	Horn Antenna	HRN-0118	130 084	2016-01-05	2019-01-04
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
MICRO-COAX	Coaxial Cable	UFA147-1-2362-100100	64639 231029-001	2018-02-24	2019-02-28
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2018-09-05	2019-09-05
Agilent	Signal Generator	E8247C	MY43321350	2018-12-10	2019-12-10
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2018-06-27	2019-06-27
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2016-11-18	2019-11-18
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2016-11-18	2019-11-18
Sinoscite	Band-stop filter	BSF1850-1910MS-0935V2	0935V2	2018-06-16	2019-06-16
Sinoscite	Band-stop filter	BSF1710-1785MN-0383-003	0383003	2018-06-16	2019-06-16
Sinoscite	Band-stop filter	BSF824-862MS-1438-001	1438001	2018-06-16	2019-06-16
Sinoscite	Band-stop filter	BSF2500-2750MS-1439-001	1437001	2018-06-16	2019-06-16

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

Test Data**Environmental Conditions**

Temperature:	19.7~21.1°C
Relative Humidity:	31~53 %
ATM Pressure:	99.7~99.8 kPa

* The testing was performed by Sunny Cen, Neil Liao, Tiago Huang and Vern Shen on 2018-12-17~2018-12-19.

EUT Operation Mode: Transmitting

Cellular Band (PART 22H)**30 MHz-10 GHz:**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM850, Frequency:836.600 MHz								
1673.200	H	52.50	-51.88	10.5	1.27	-42.6	-13.0	29.6
1673.200	V	53.53	-50.78	10.5	1.27	-41.5	-13.0	28.5
2509.800	H	43.58	-59.19	12.2	1.25	-48.2	-13.0	35.2
2509.800	V	40.12	-64.04	12.2	1.25	-53.1	-13.0	40.1
3346.400	H	40.05	-61.14	12.3	1.58	-50.5	-13.0	37.5
3346.400	V	40.72	-59.4	12.3	1.58	-48.7	-13.0	35.7
326.000	H	46.52	-61.65	0.0	0.33	-62.0	-13.0	49.0
326.000	V	47.98	-58.27	0.0	0.33	-58.6	-13.0	45.6
WCDMA Band V R99,Frequency:836.600 MHz								
1673.200	H	40.03	-64.35	10.5	1.27	-55.1	-13.0	42.1
1673.200	V	37.80	-66.51	10.5	1.27	-57.3	-13.0	44.3
2509.800	H	42.31	-60.46	12.2	1.25	-49.5	-13.0	36.5
2509.800	V	38.18	-65.98	12.2	1.25	-55.0	-13.0	42.0
3346.400	H	37.22	-63.97	12.3	1.58	-53.3	-13.0	40.3
3346.400	V	37.36	-62.76	12.3	1.58	-52.1	-13.0	39.1
497.000	H	44.51	-60.94	0.0	0.35	-61.3	-25.0	36.3
497.000	V	48.73	-54.03	0.0	0.35	-54.4	-25.0	29.4

PCS Band (PART 24E)**30 MHz-20 GHz:**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM1900, Frequency:1880.000 MHz								
3760.000	H	47.84	-52.37	12.3	1.53	-41.7	-13.0	28.7
3760.000	V	46.24	-53.67	12.3	1.53	-43.0	-13.0	30.0
5640.000	H	38.22	-57.08	13.0	1.28	-45.4	-13.0	32.4
5640.000	V	38.27	-57.34	13.0	1.28	-45.6	-13.0	32.6
546.000	H	44.15	-59.89	0.0	0.35	-60.2	-13.0	47.2
546.000	V	46.98	-54.49	0.0	0.35	-54.8	-13.0	41.8
WCDMA Band II R99,Frequency: 1880.000 MHz								
3760.000	H	42.46	-57.75	12.3	1.53	-47.0	-13.0	34.0
3760.000	V	41.40	-58.51	12.3	1.53	-47.8	-13.0	34.8
5640.000	H	35.83	-59.47	13.0	1.28	-47.8	-13.0	34.8
5640.000	V	34.91	-60.7	13.0	1.28	-49.0	-13.0	36.0
387.000	H	43.15	-63.88	0.0	0.37	-64.3	-13.0	51.3
387.000	V	46.59	-57.91	0.0	0.37	-58.3	-13.0	45.3

LTE Band 2 (30MHz-20GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK,Frequency:1880.000 MHz								
3760.00	H	41.70	-58.51	12.25	1.53	-47.79	-13.00	34.79
3760.00	V	41.86	-58.05	12.25	1.53	-47.33	-13.00	34.33
5640.00	H	38.74	-56.56	13.00	1.28	-44.84	-13.00	31.84
5640.00	V	38.51	-57.10	13.00	1.28	-45.38	-13.00	32.38
478.00	H	45.79	-59.92	0.00	0.36	-60.28	-13.00	47.28
478.00	V	47.68	-55.35	0.00	0.36	-55.71	-13.00	42.71

LTE Band 4 (30MHz-20GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK,Frequency:1732.500 MHz								
3465.00	H	40.60	-60.37	12.21	1.60	-49.76	-13.00	36.76
3465.00	V	44.90	-54.66	12.21	1.60	-44.05	-13.00	31.05
5197.50	H	38.97	-57.11	12.92	1.36	-45.55	-13.00	32.55
5197.50	V	38.98	-57.07	12.92	1.36	-45.51	-13.00	32.51
349.00	H	45.58	-62.16	0.00	0.34	-62.50	-13.00	49.50
349.00	V	48.26	-57.33	0.00	0.34	-57.67	-13.00	44.67

LTE Band 5 (30MHz-10GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 836.500 MHz								
1673.00	H	50.59	-53.79	10.52	1.27	-44.54	-13.00	31.54
1673.00	V	44.63	-59.68	10.52	1.27	-50.43	-13.00	37.43
2509.50	H	45.51	-57.26	12.20	1.24	-46.30	-13.00	33.30
2509.50	V	42.41	-61.75	12.20	1.24	-50.79	-13.00	37.79
3346.00	H	42.30	-58.89	12.26	1.58	-48.21	-13.00	35.21
3346.00	V	41.21	-58.91	12.26	1.58	-48.23	-13.00	35.23
436.00	H	45.58	-60.71	0.00	0.37	-61.08	-13.00	48.08
436.00	V	49.78	-53.84	0.00	0.37	-54.21	-13.00	41.21

LTE Band 7 (30MHz-26.5GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK,Frequency: 2535.000 MHz								
5070.00	H	47.04	-49.27	12.97	1.41	-37.71	-25.00	12.71
5070.00	V	47.41	-48.67	12.97	1.41	-37.11	-25.00	12.11
7605.00	H	47.97	-43.41	12.84	1.40	-31.97	-25.00	6.97
7605.00	V	47.78	-44.27	12.84	1.40	-32.83	-25.00	7.83
215.00	H	43.69	-66.25	0.00	0.21	-66.46	-25.00	41.46
215.00	V	45.22	-61.71	0.00	0.21	-61.92	-25.00	36.92

LTE Band 12 (30MHz-10GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 707.500 MHz								
1415.00	H	38.65	-65.24	9.64	1.25	-56.85	-13.00	43.85
1415.00	V	40.07	-63.88	9.64	1.25	-55.49	-13.00	42.49
2122.50	H	38.36	-65.37	11.67	1.16	-54.86	-13.00	41.86
2122.50	V	38.60	-65.44	11.67	1.16	-54.93	-13.00	41.93
2830.00	H	58.33	-43.83	12.33	1.41	-32.91	-13.00	19.91
2830.00	V	49.87	-52.70	12.33	1.41	-41.78	-13.00	28.78
3537.50	H	53.78	-47.02	12.21	1.60	-36.41	-13.00	23.41
3537.50	V	53.03	-46.44	12.21	1.60	-35.83	-13.00	22.83
297.00	H	46.52	-62.17	0.00	0.31	-62.48	-13.00	49.48
297.00	V	48.53	-58.52	0.00	0.31	-58.83	-13.00	45.83

LTE Band 17 (30MHz-10GHz)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK,Frequency:710.000 MHz								
1420.00	H	38.38	-65.55	9.66	1.25	-57.14	-13.00	44.14
1420.00	V	39.42	-64.57	9.66	1.25	-56.16	-13.00	43.16
2130.00	H	38.36	-65.36	11.68	1.16	-54.84	-13.00	41.84
2130.00	V	38.99	-65.05	11.68	1.16	-54.53	-13.00	41.53
2840.00	H	45.48	-56.66	12.34	1.42	-45.74	-13.00	32.74
2840.00	V	44.80	-57.72	12.34	1.42	-46.80	-13.00	33.80
634.00	H	44.39	-57.52	0.00	0.37	-57.89	-13.00	44.89
634.00	V	47.84	-51.33	0.00	0.37	-51.70	-13.00	38.70

Note:

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

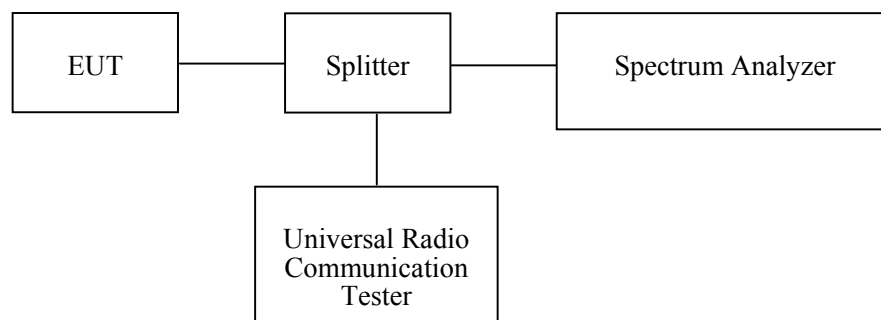
FCC §22.917(a) & §24.238(a) & §27.53 - BAND EDGES**Applicable Standard**

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

Test Procedure

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

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

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2018-08-03	2019-08-03
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005012	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	N/A

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

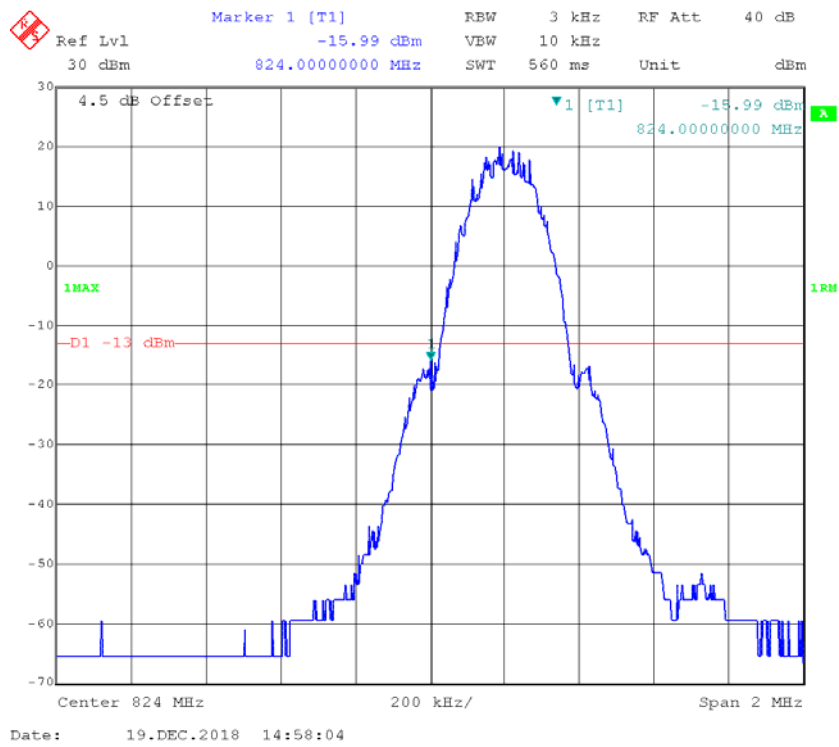
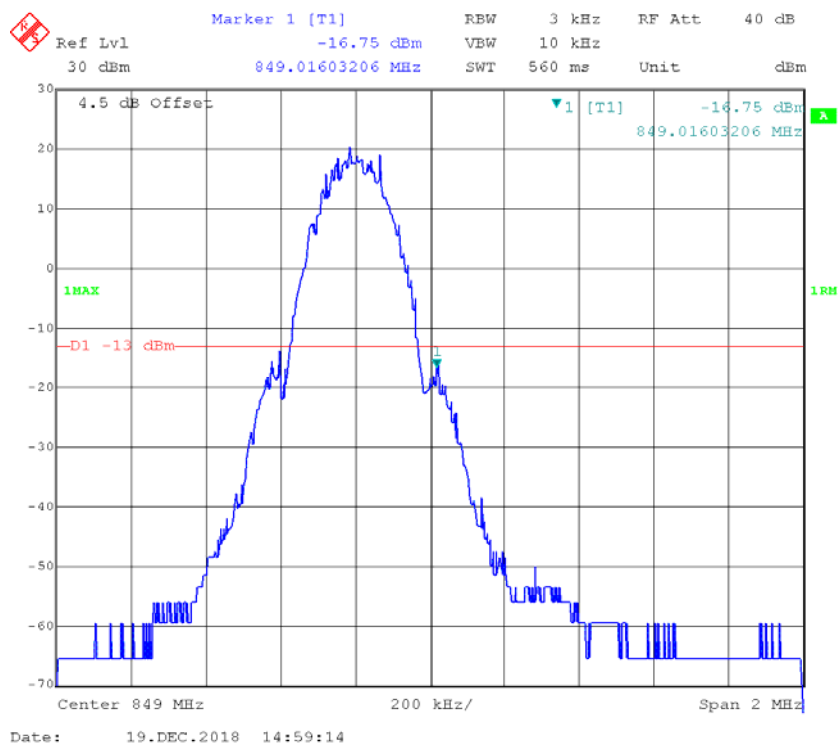
Test Data**Environmental Conditions**

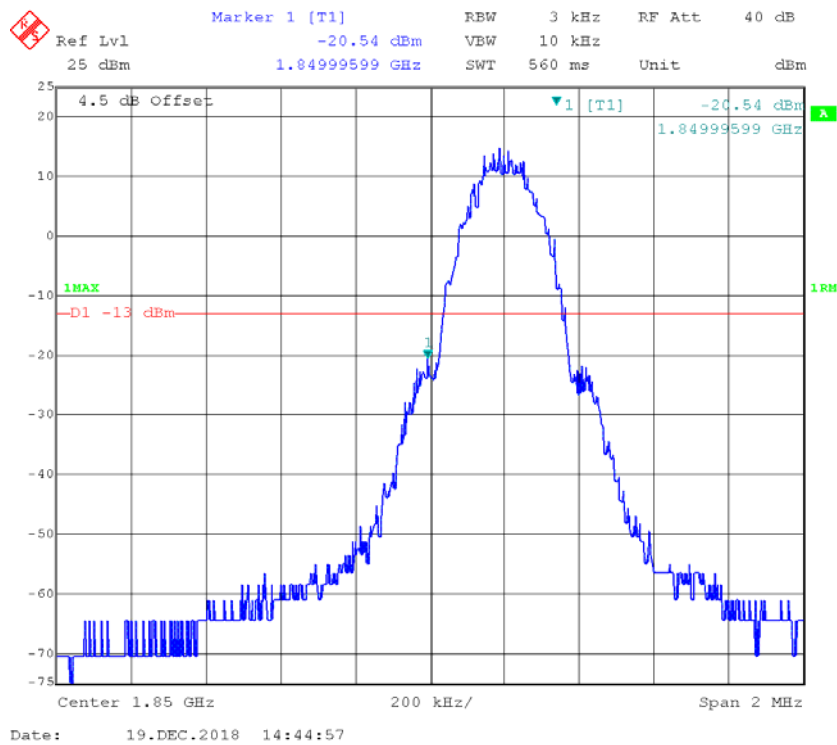
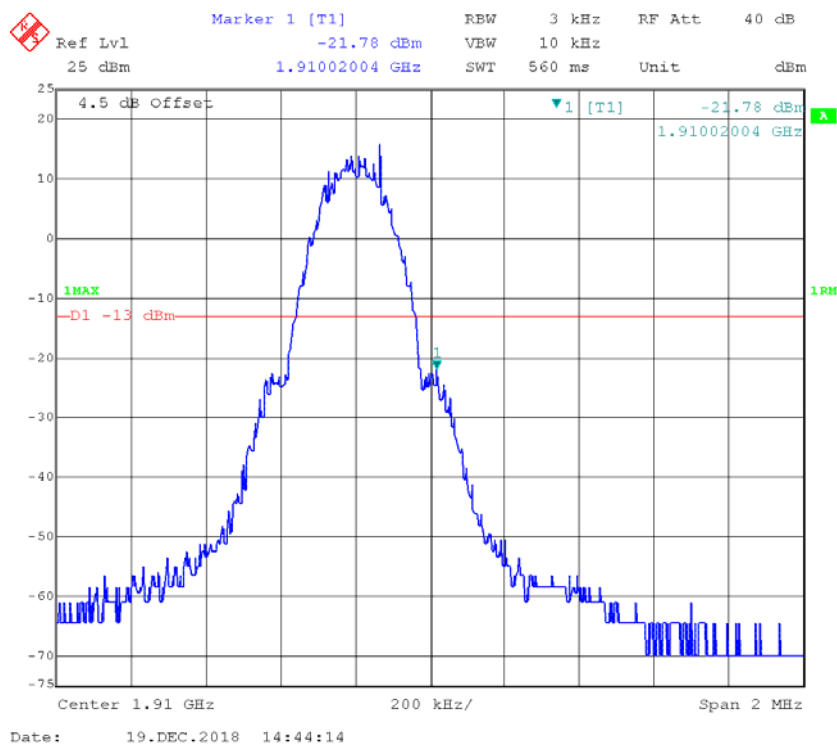
Temperature:	24.5~24.9°C
Relative Humidity:	41~46 %
ATM Pressure:	99.7~100.5 kPa

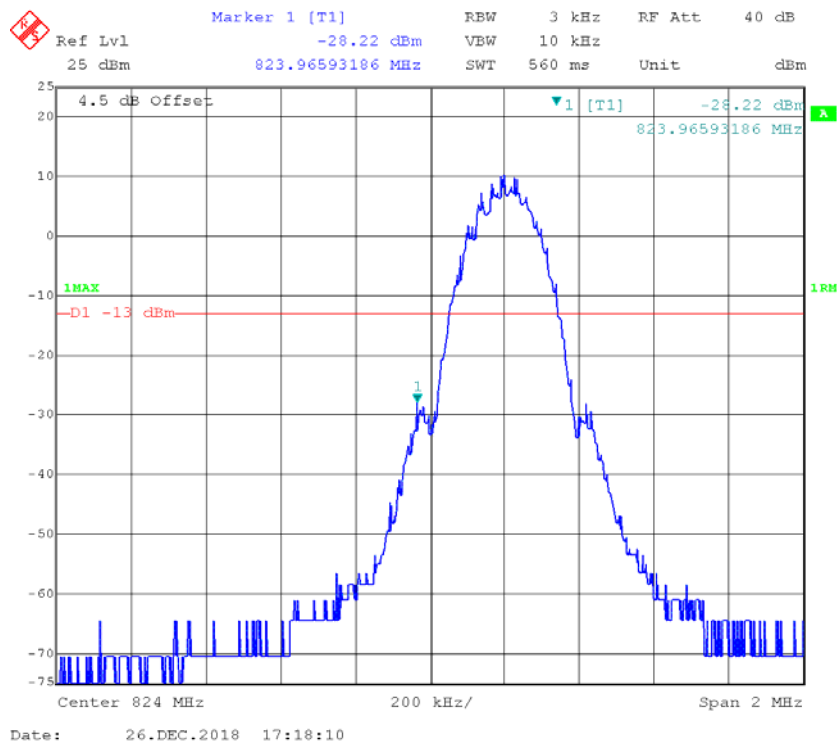
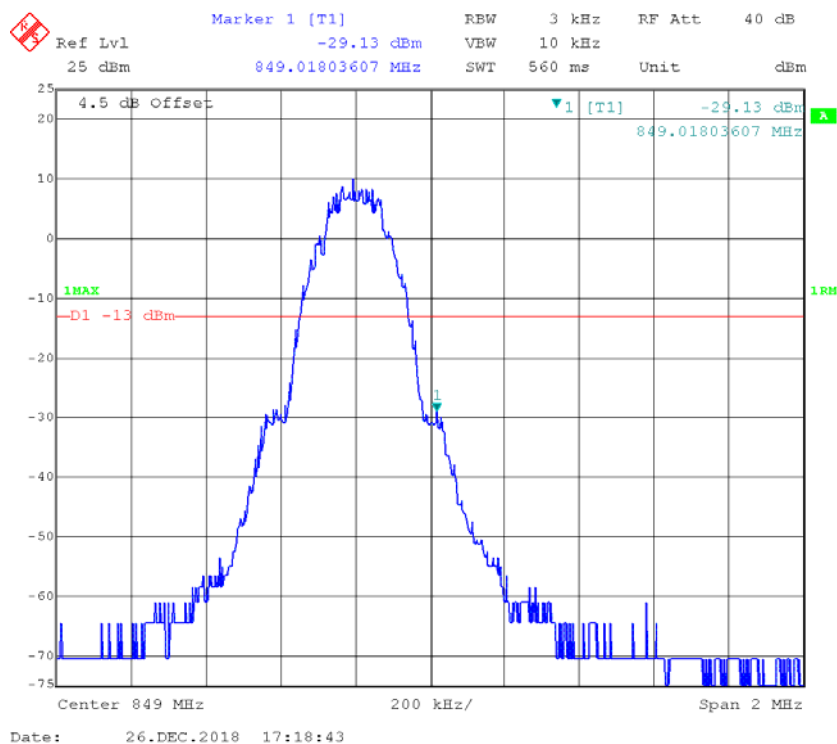
The testing was performed by Tiago Huang from 2018-12-19 to 2018-12-26.

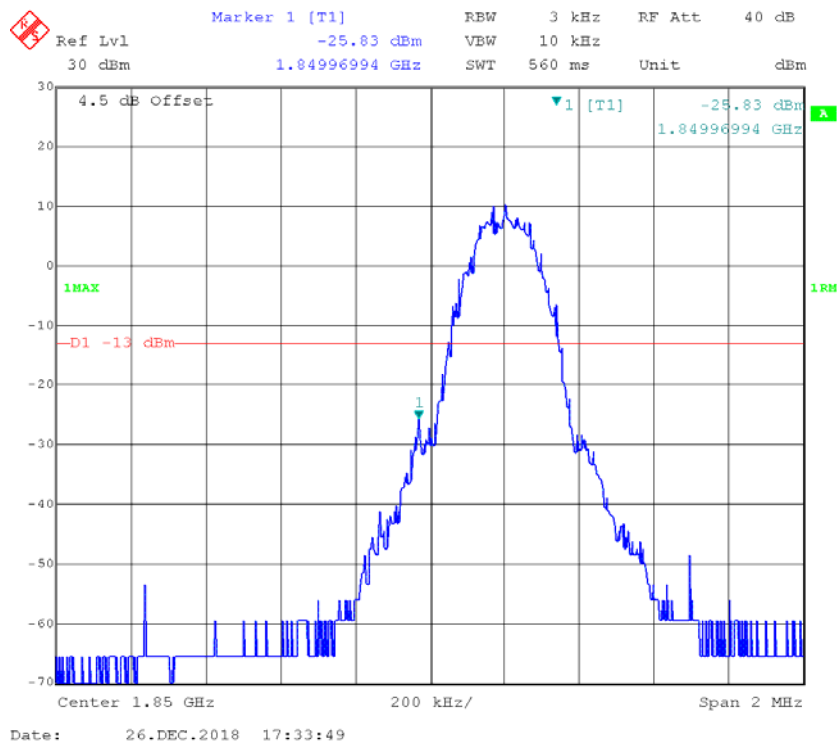
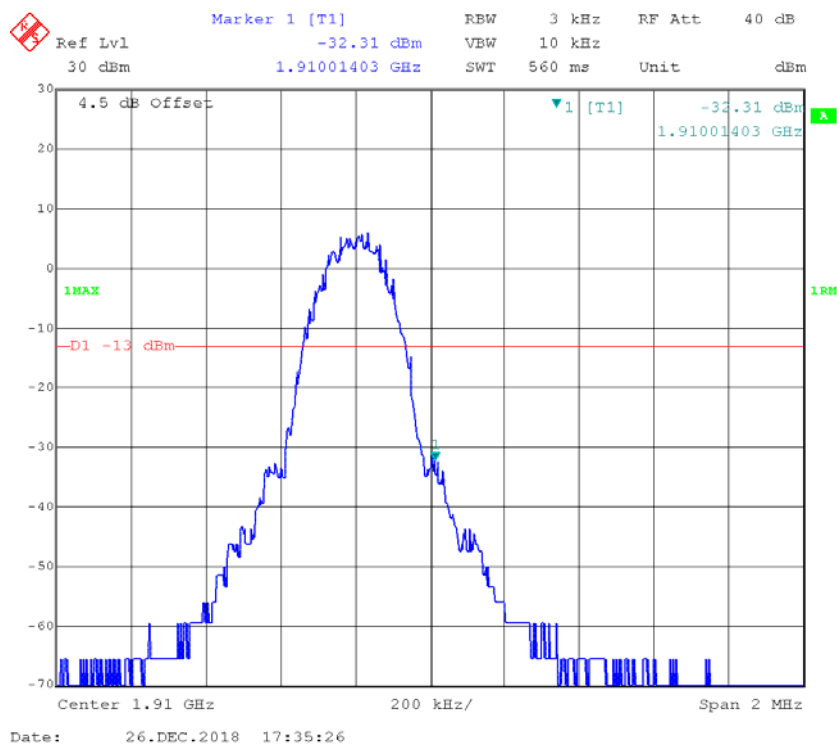
Test Mode: Transmitting

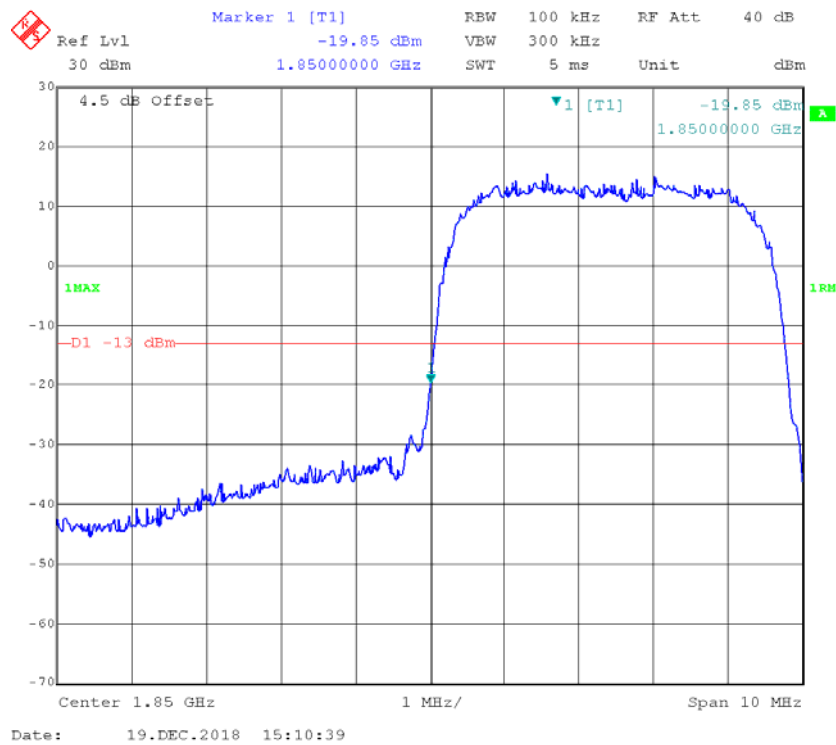
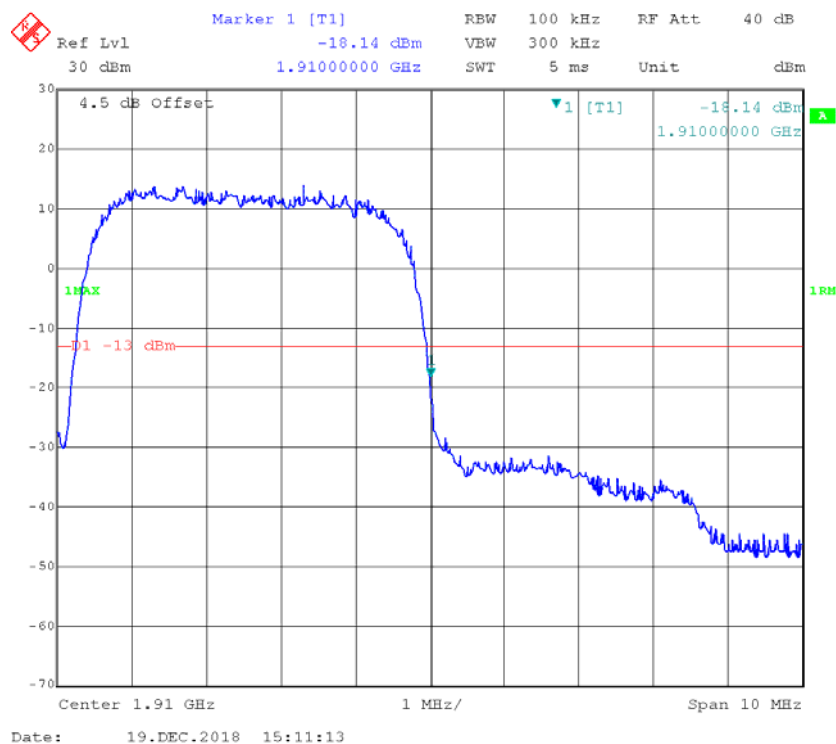
Test Result: Compliant. Please refer to the following plots.

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

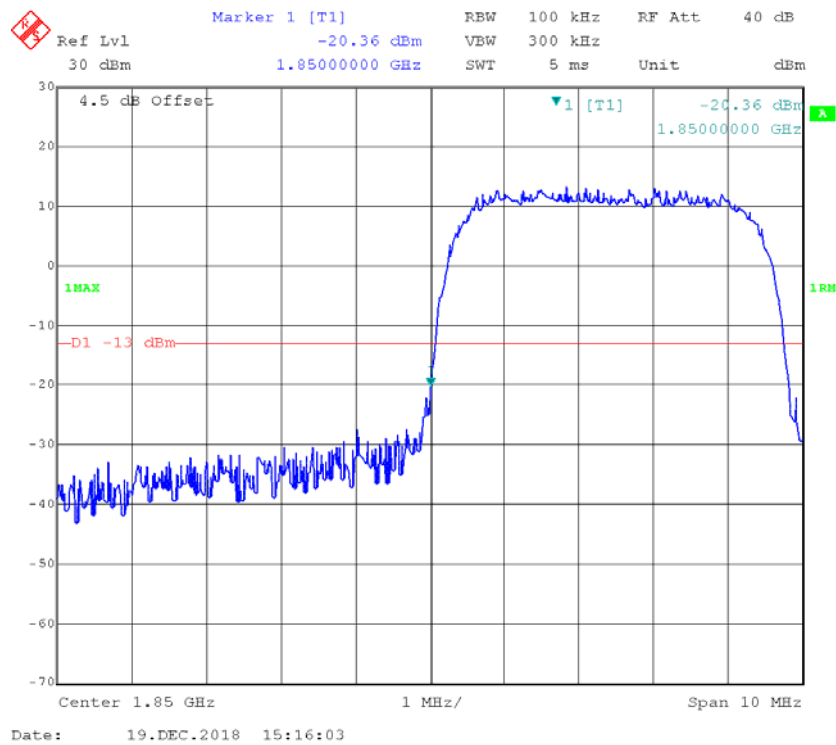
GSM 1900, Left Band Edge**GSM 1900, Right Band Edge**

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

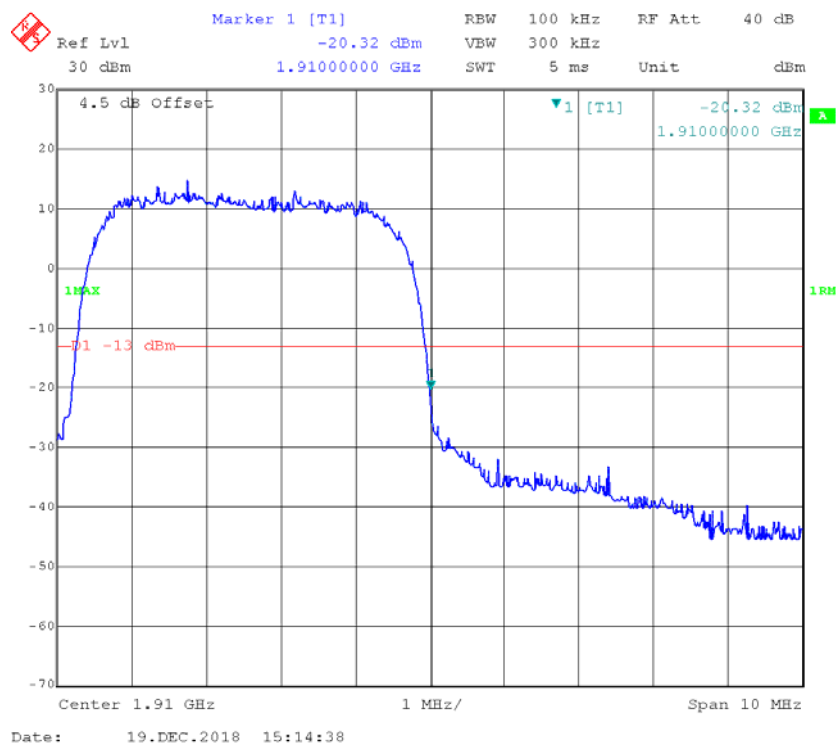
EDGE 1900, Left Band Edge**EDGE 1900, Right Band Edge**

WCDMA Band II Rel 99, Left Band Edge**WCDMA Band II Rel 99, Right Band Edge**

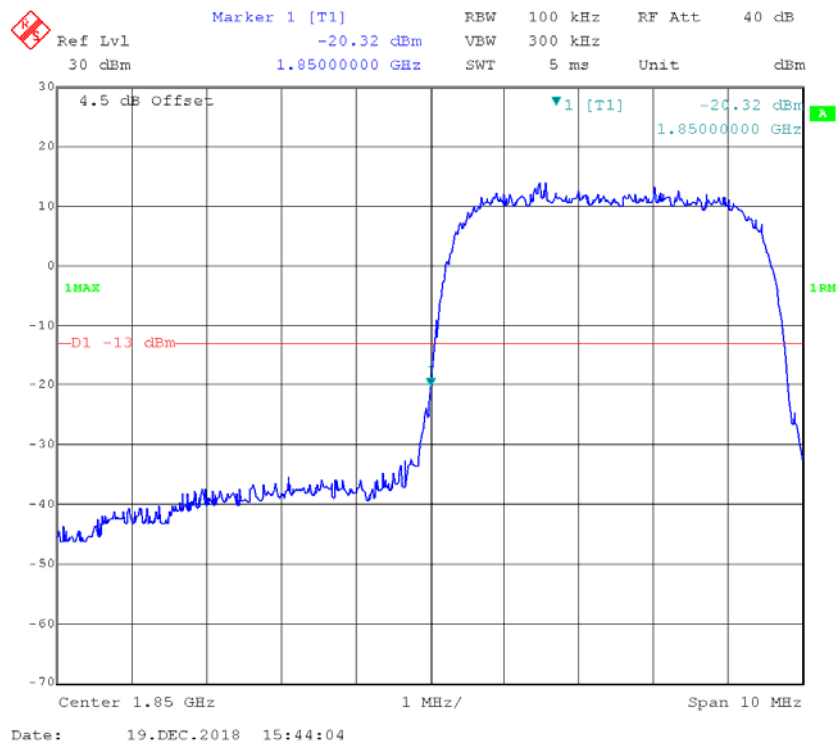
WCDMA Band II HSDPA, Left Band Edge



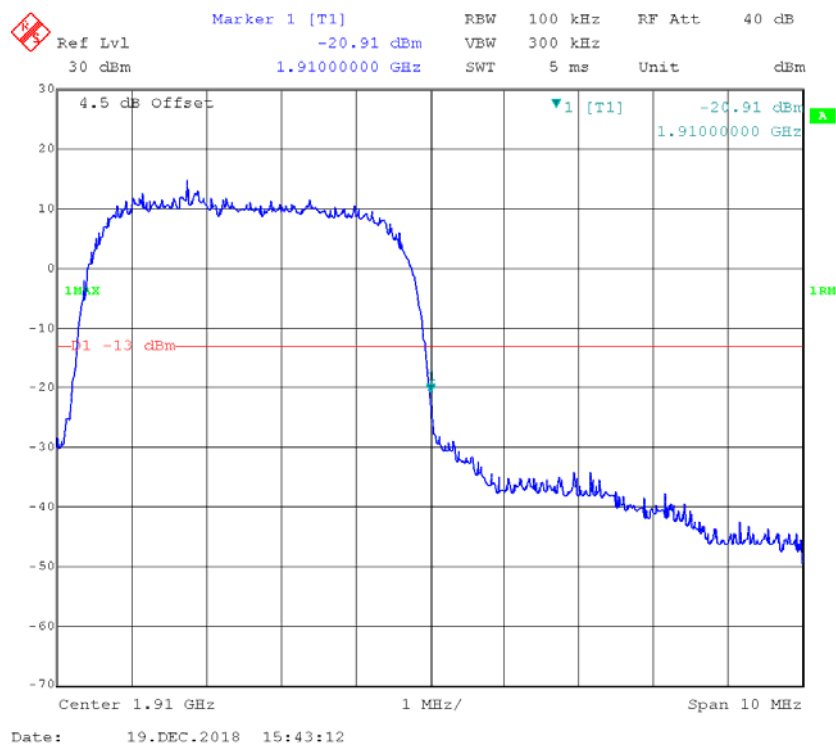
WCDMA Band II HSDPA, Right Band Edge



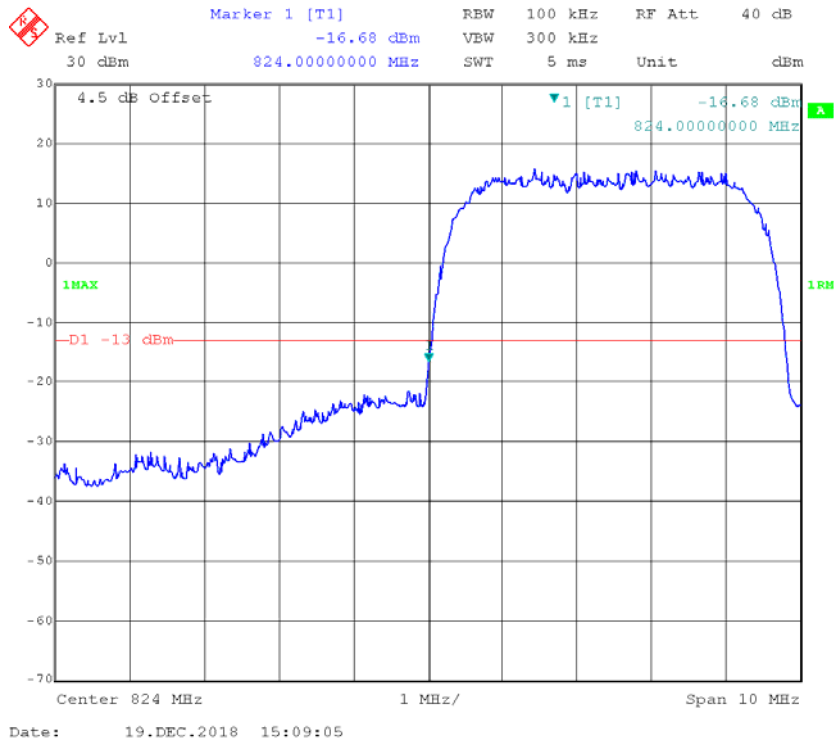
WCDMA Band II HSUPA, Left Band Edge



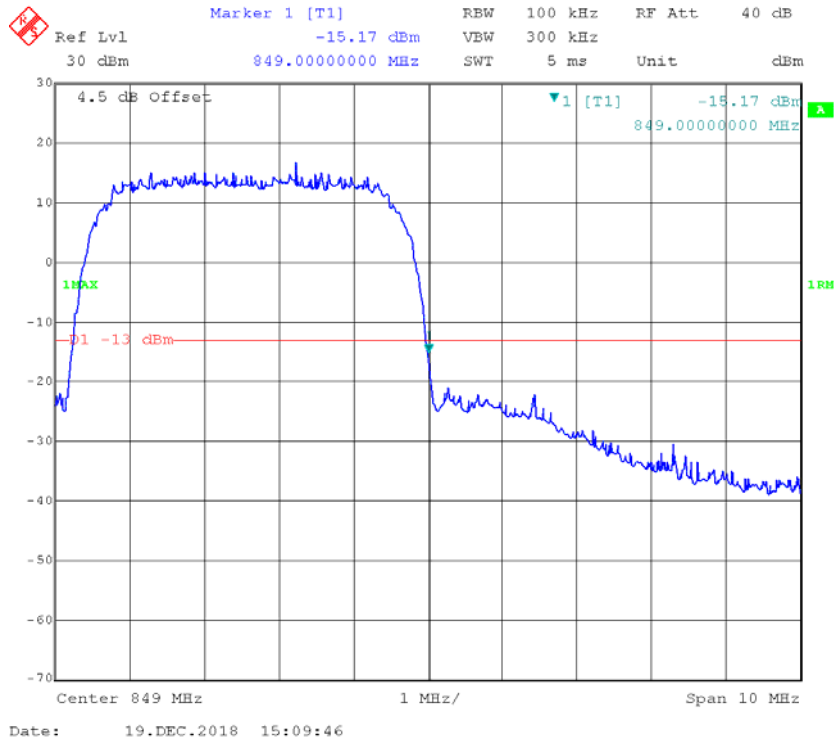
WCDMA Band II HSUPA, Right Band Edge



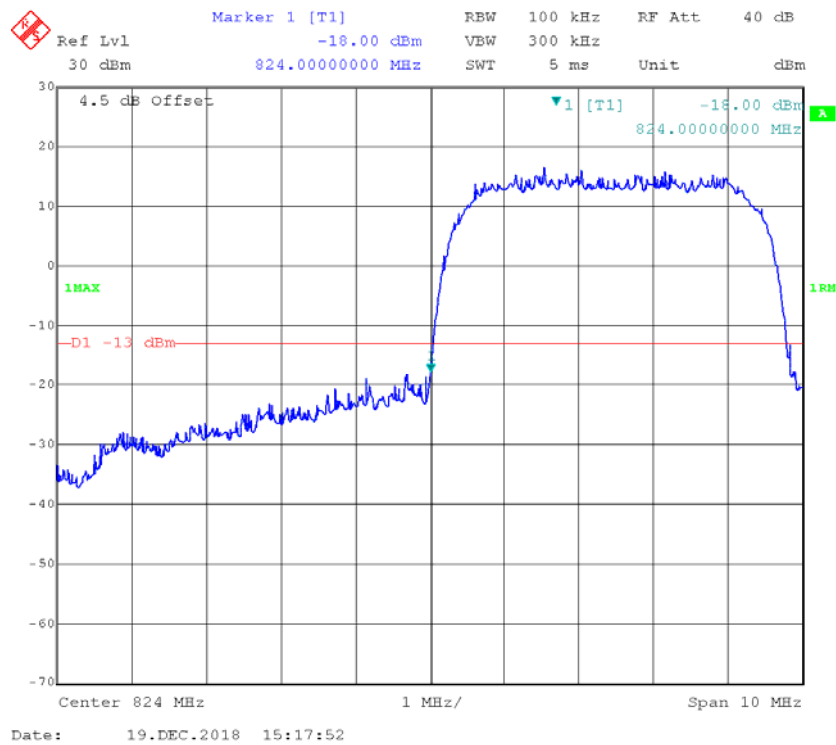
WCDMA Band V Rel 99, Left Band Edge



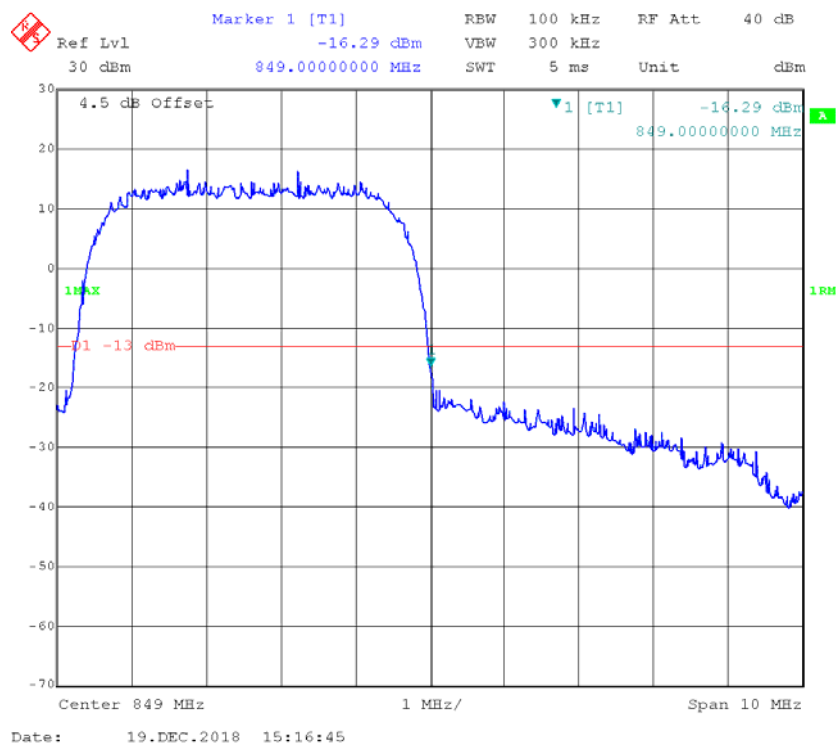
WCDMA Band V Rel 99, Right Band Edge



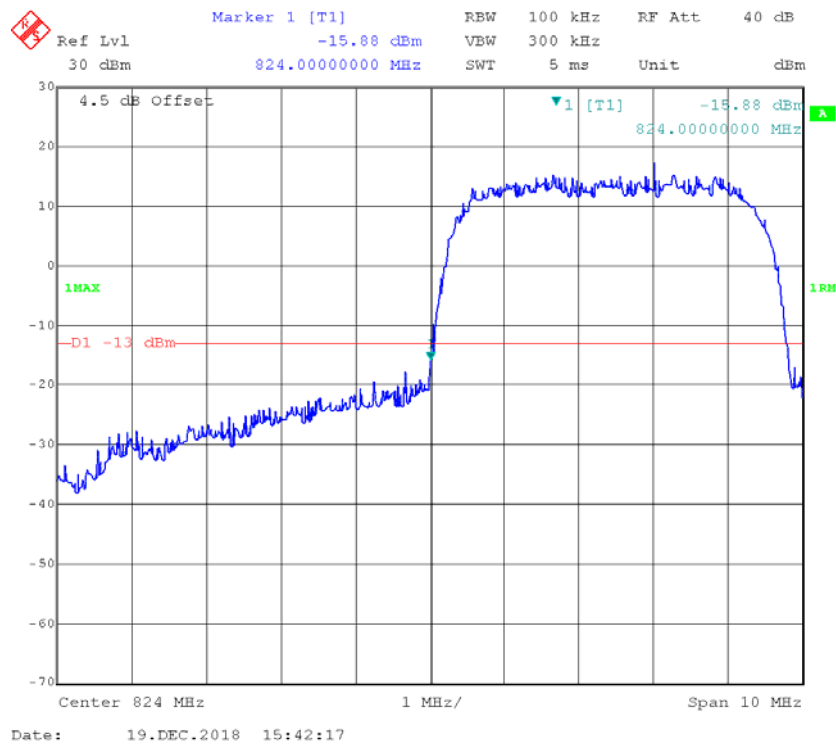
WCDMA Band V HSDPA, Left Band Edge



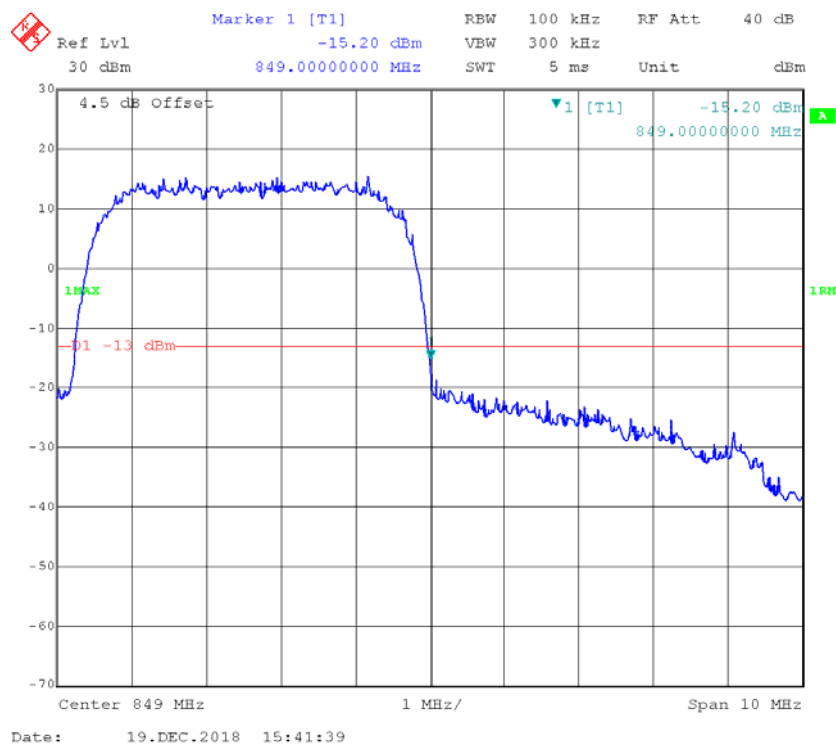
WCDMA Band V HSDPA, Right Band Edge



WCDMA Band V HSUPA, Left Band Edge

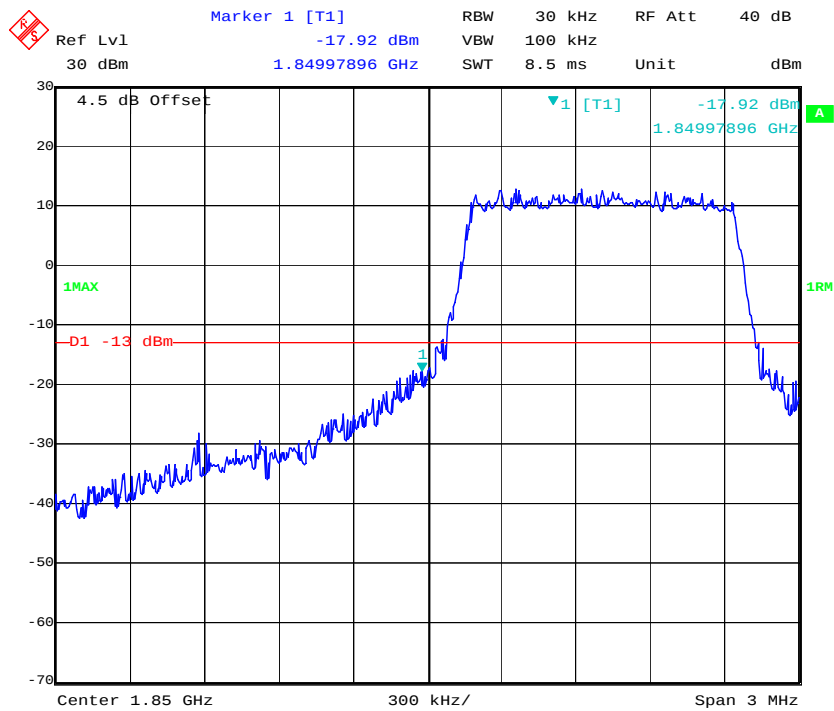


WCDMA Band V HSUPA, Right Band Edge



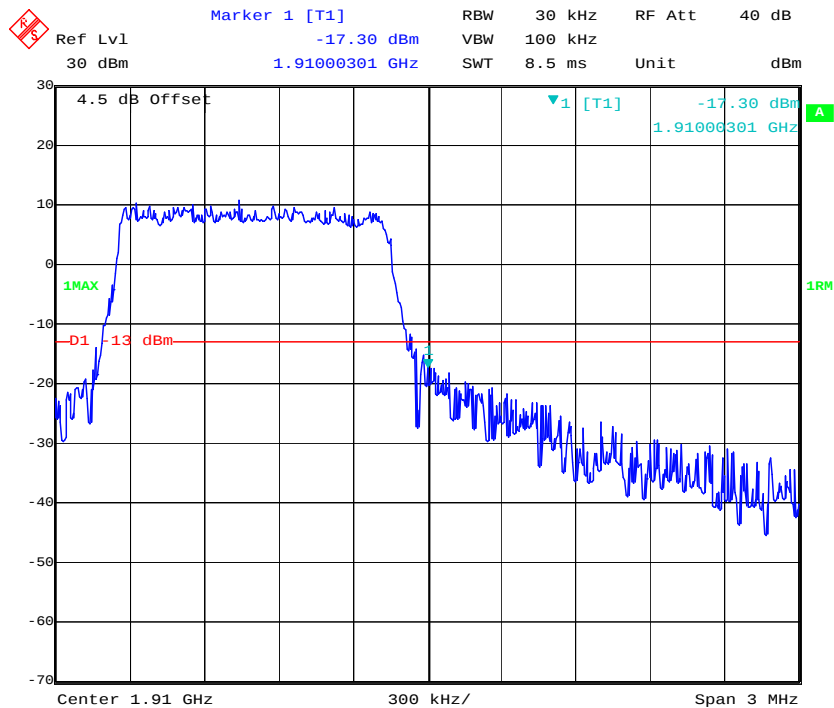
LTE Band 2

QPSK_1.4MHz_6 RB_ Left



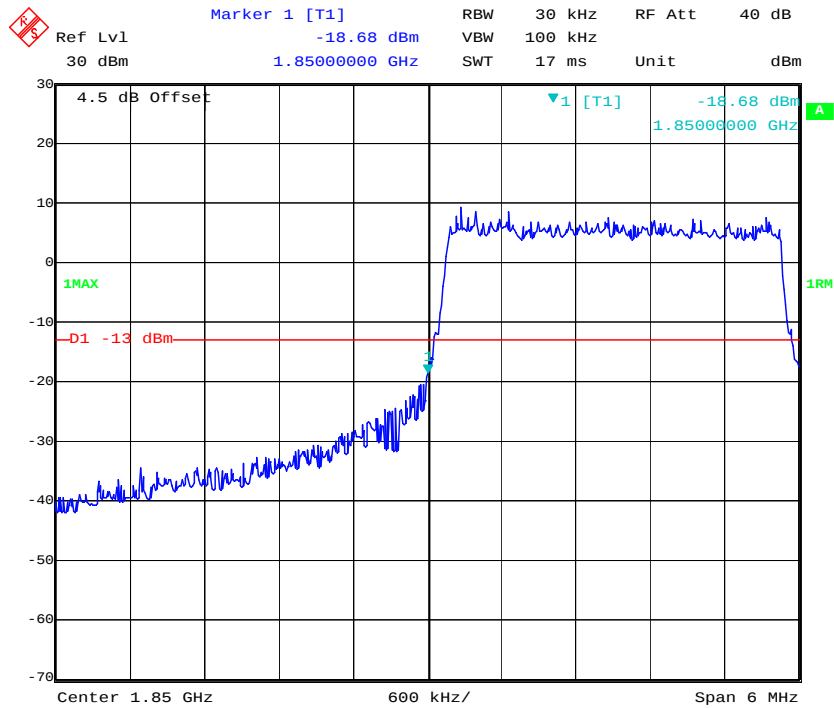
Date: 19.DEC.2018 22:57:44

QPSK_1.4MHz_6 RB_ Right

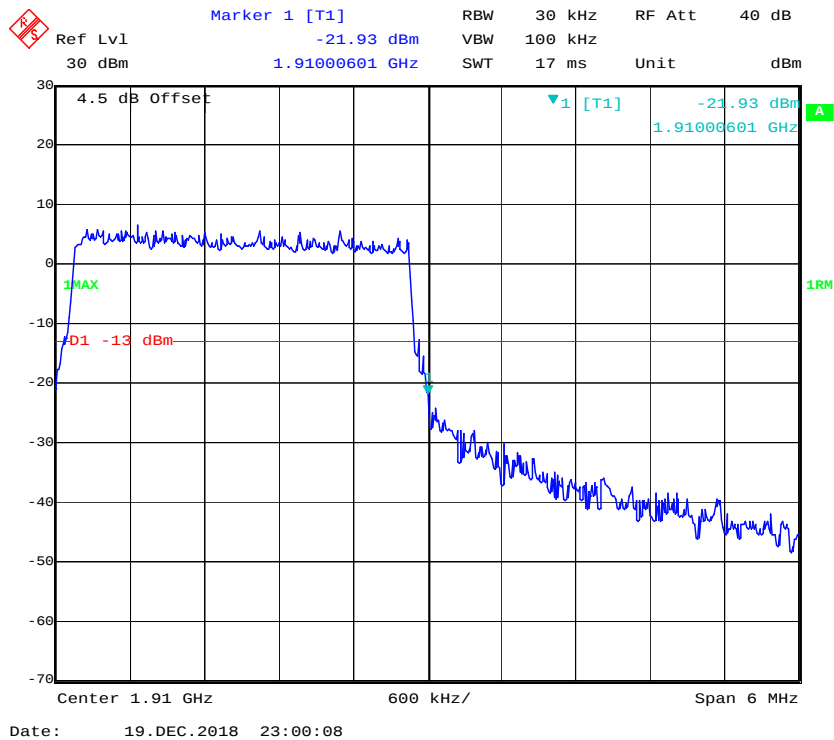


Date: 19.DEC.2018 22:58:29

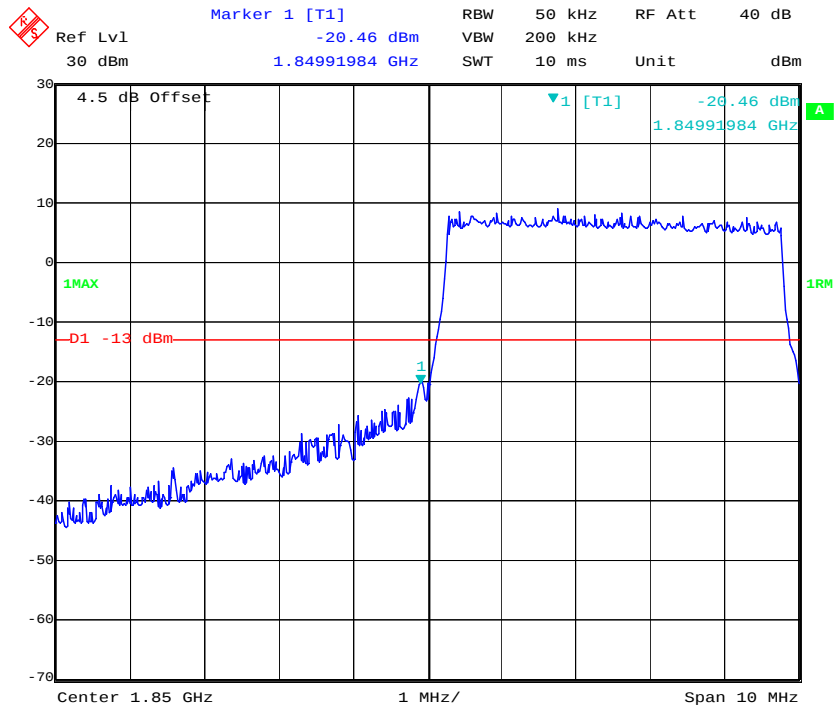
QPSK_3MHz_15 RB_Left



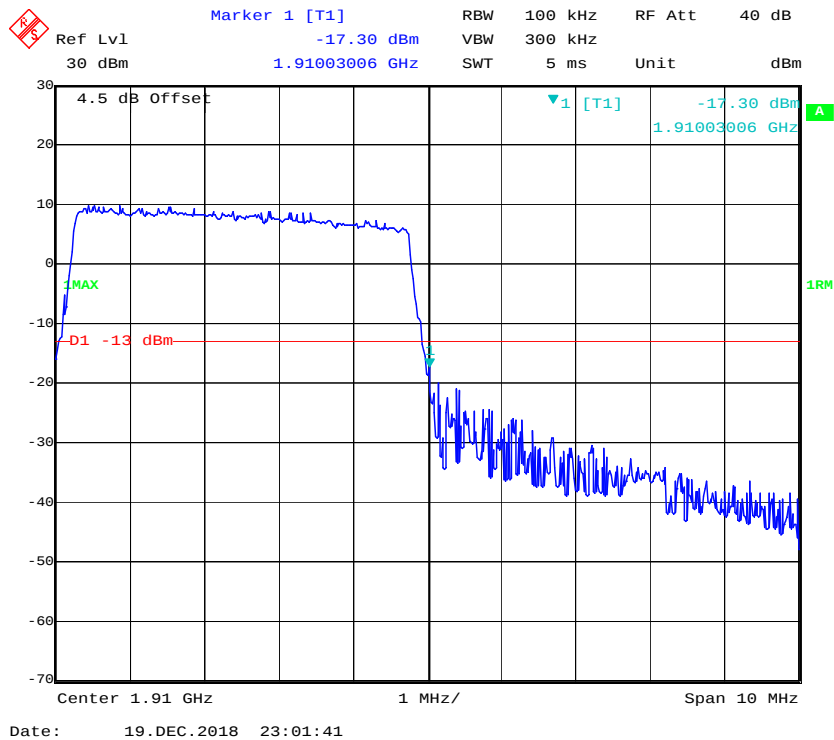
QPSK_3MHz_15 RB_Right



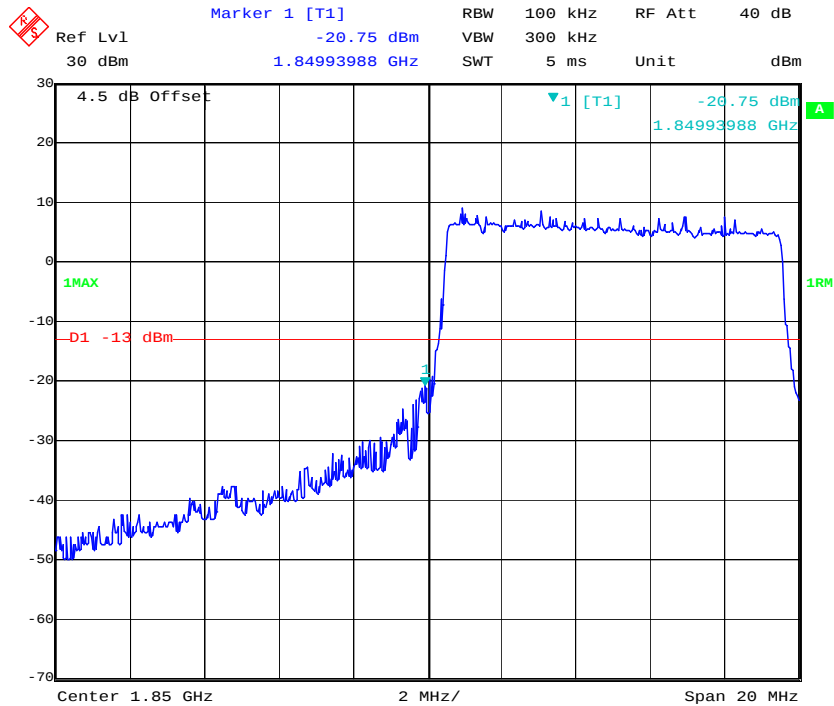
QPSK_5MHz_25 RB_Left



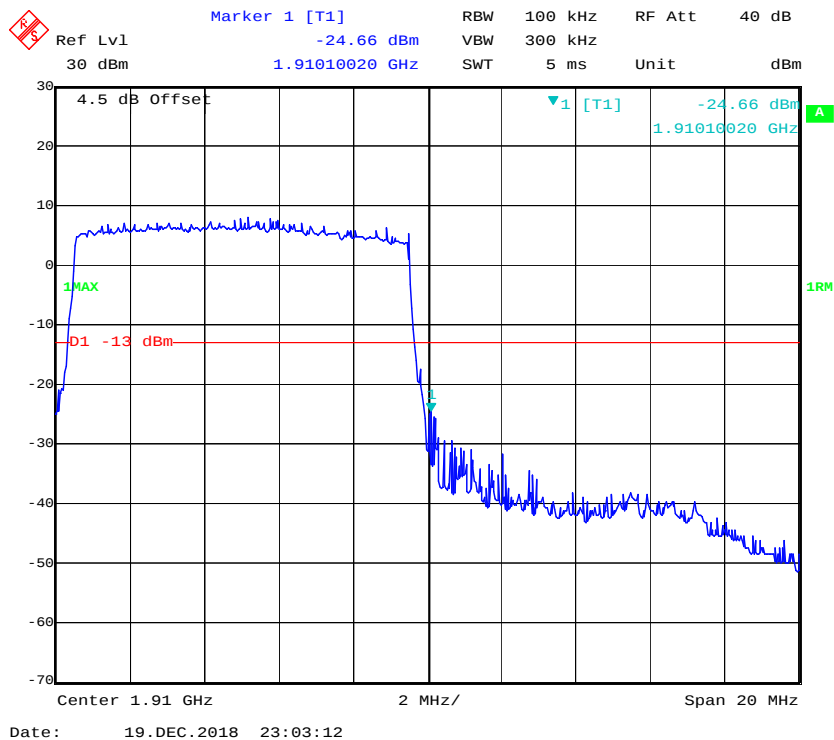
QPSK_5MHz_25 RB_Right



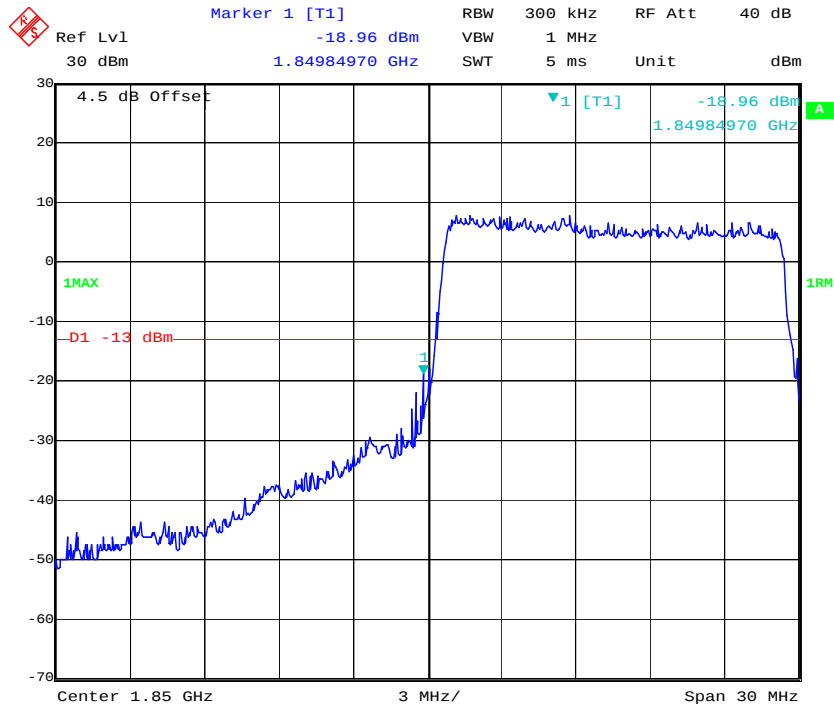
QPSK_10MHz_50 RB_Left



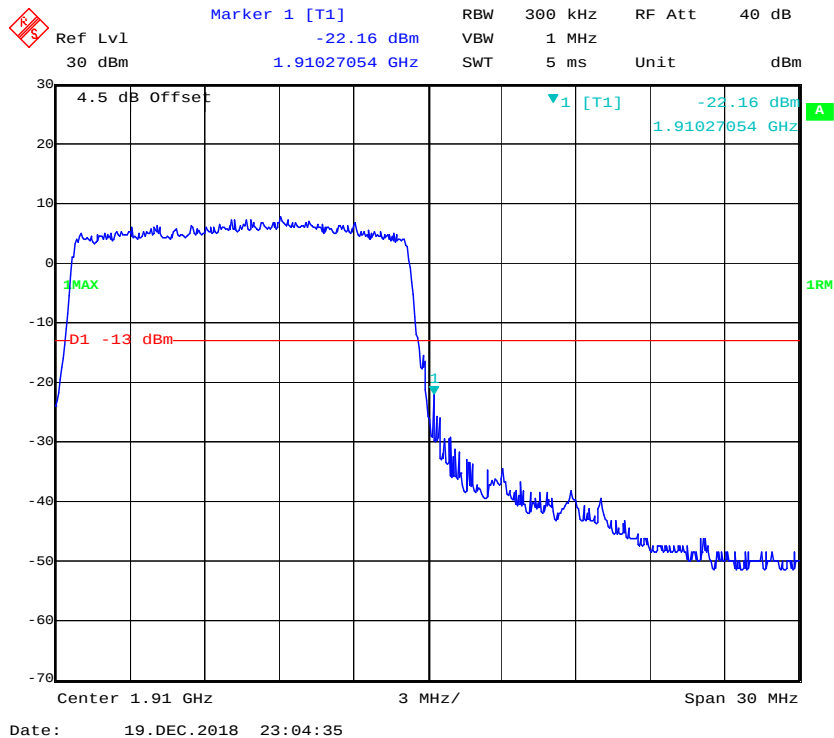
QPSK_10MHz_50 RB_Right



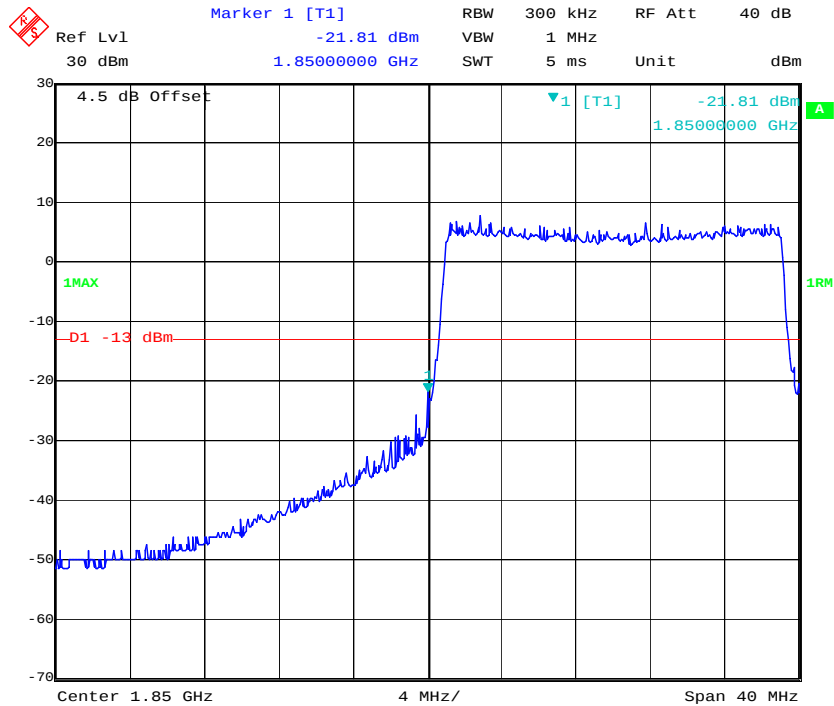
QPSK_15MHz_ 75 RB_ Left



QPSK_15MHz_ 75 RB_ Right



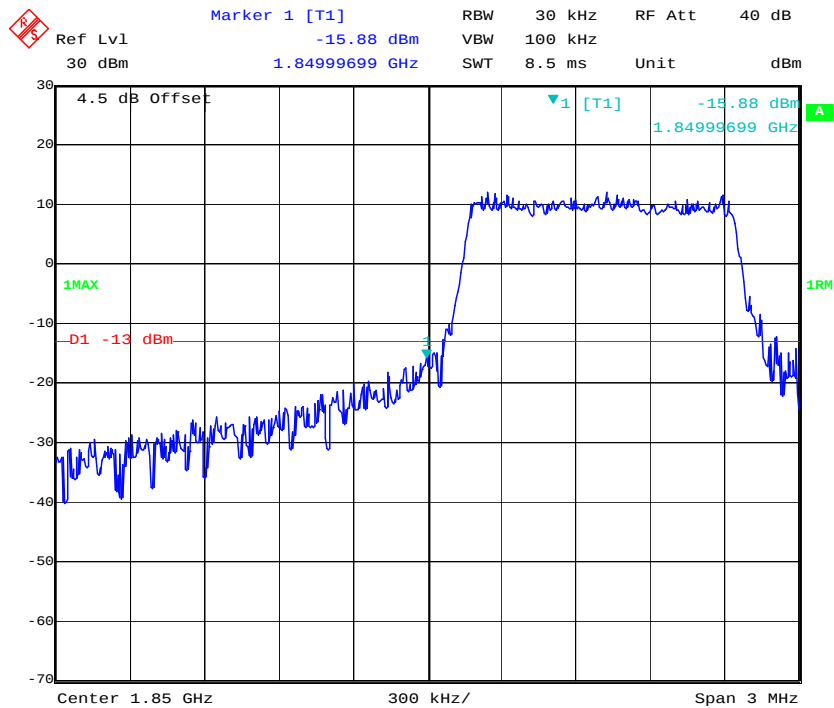
QPSK_20MHz_FULL RB_Left



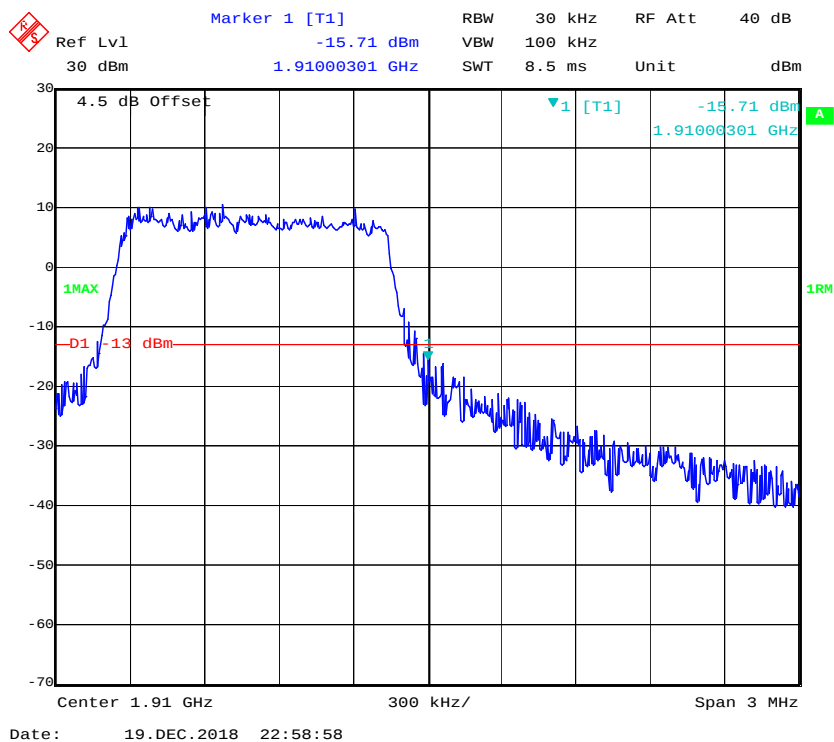
QPSK_20MHz_FULL RB_Right



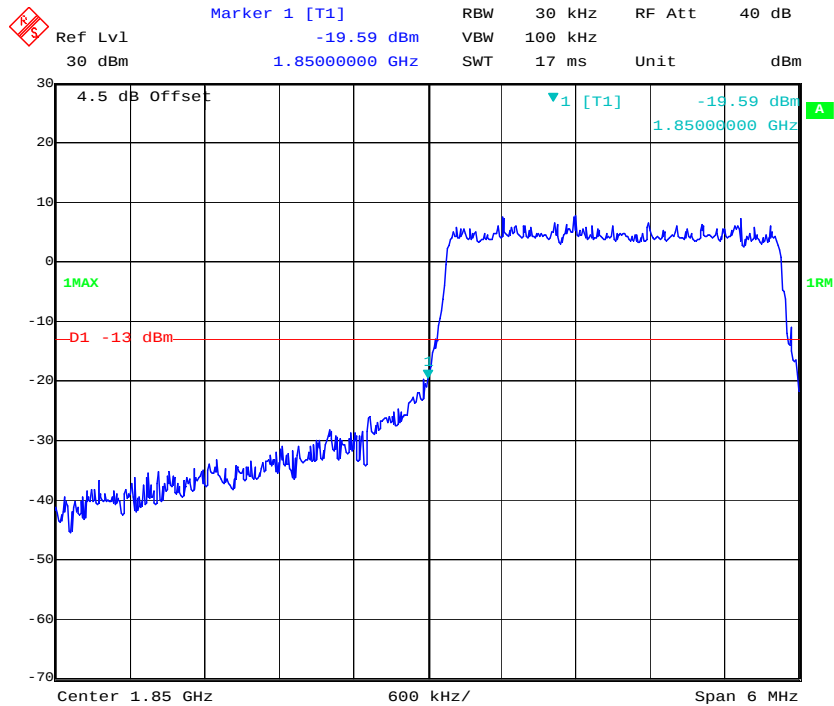
16QAM_1.4MHz_6 RB_ Left



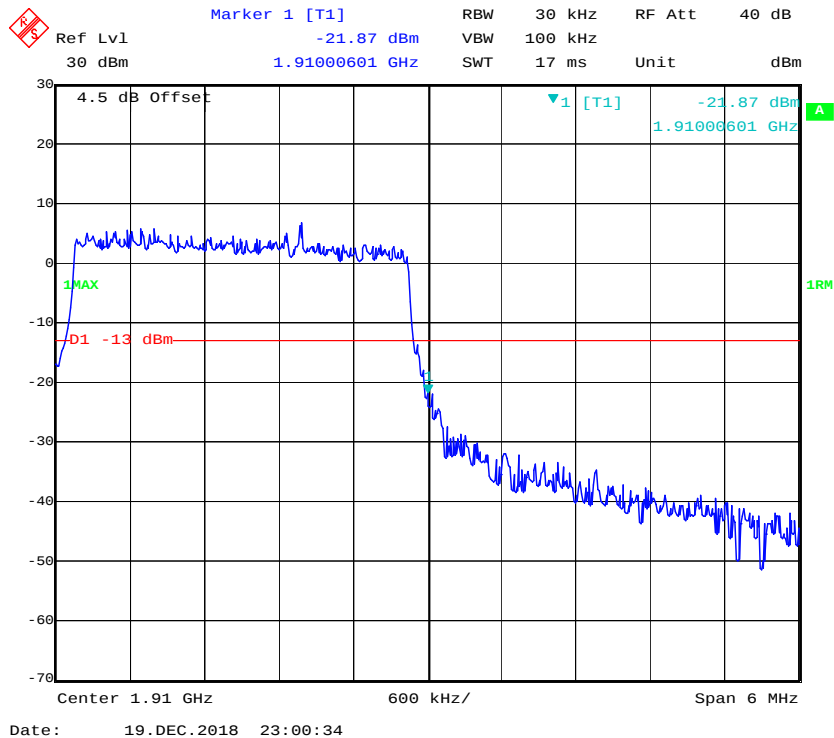
16QAM_1.4MHz_6 RB_ Right



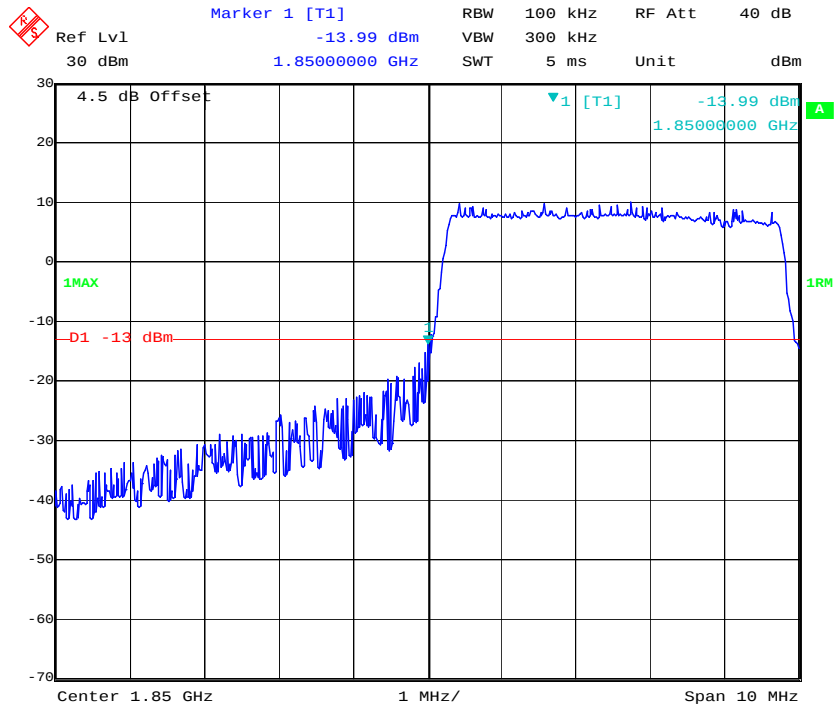
16QAM_3MHz_15 RB_ Left



16QAM_3MHz_15 RB_ Right



16QAM_5MHz_25 RB_ Left



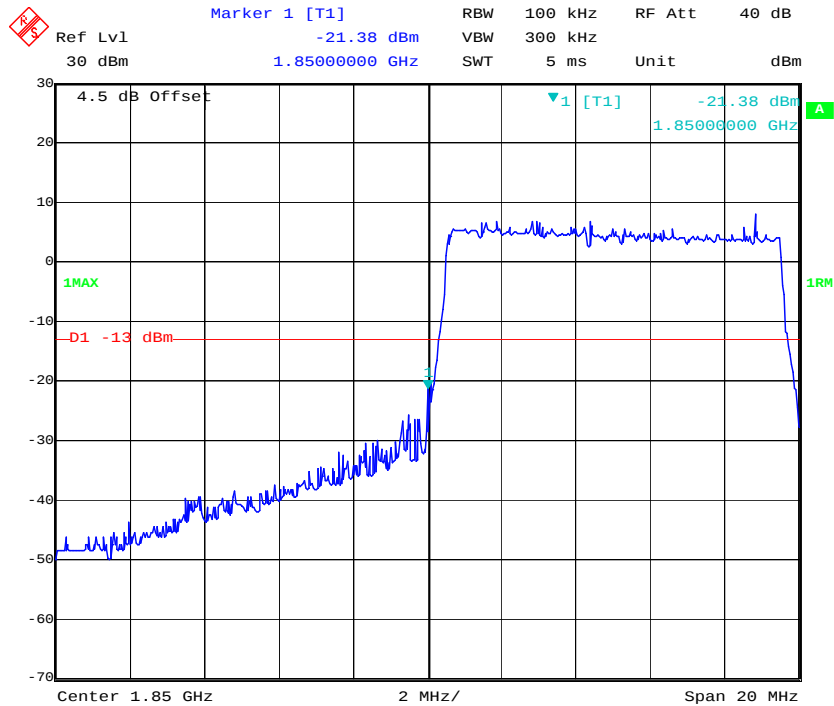
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16QAM_5MHz_25 RB_ Right

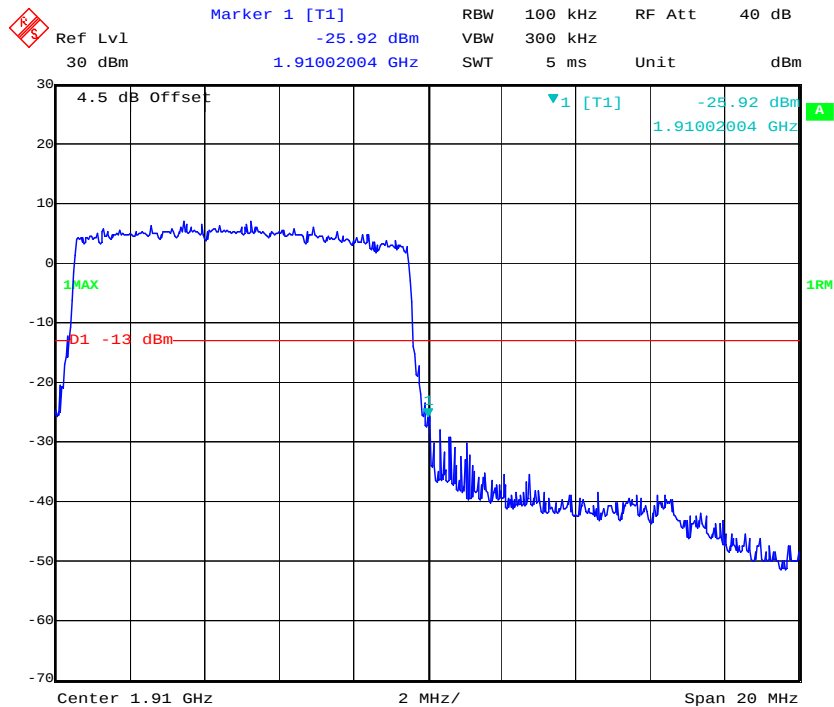


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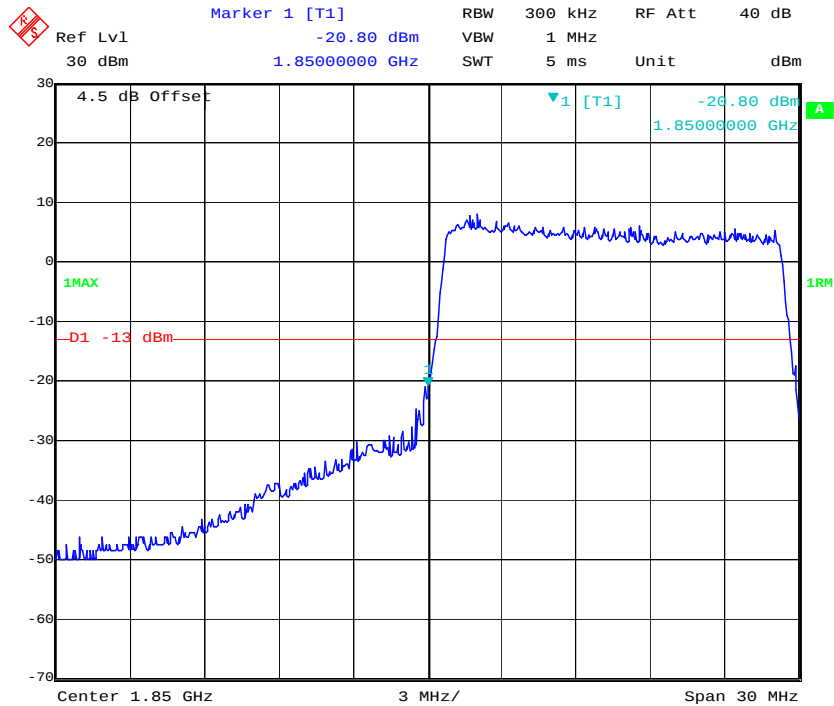
16QAM_10MHz_ 50 RB_ Left



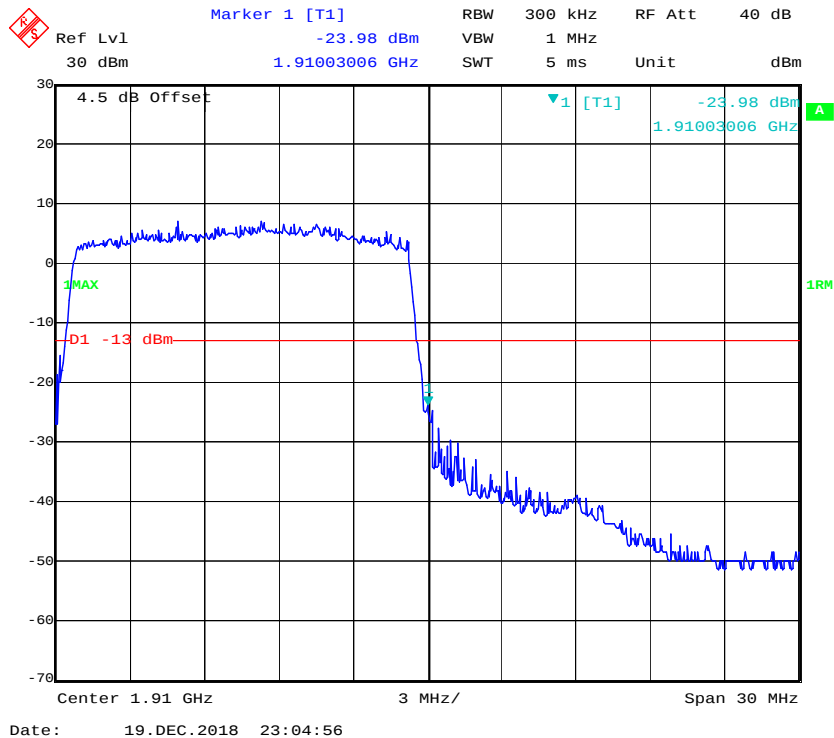
16QAM_10MHz_ 50 RB_ Right



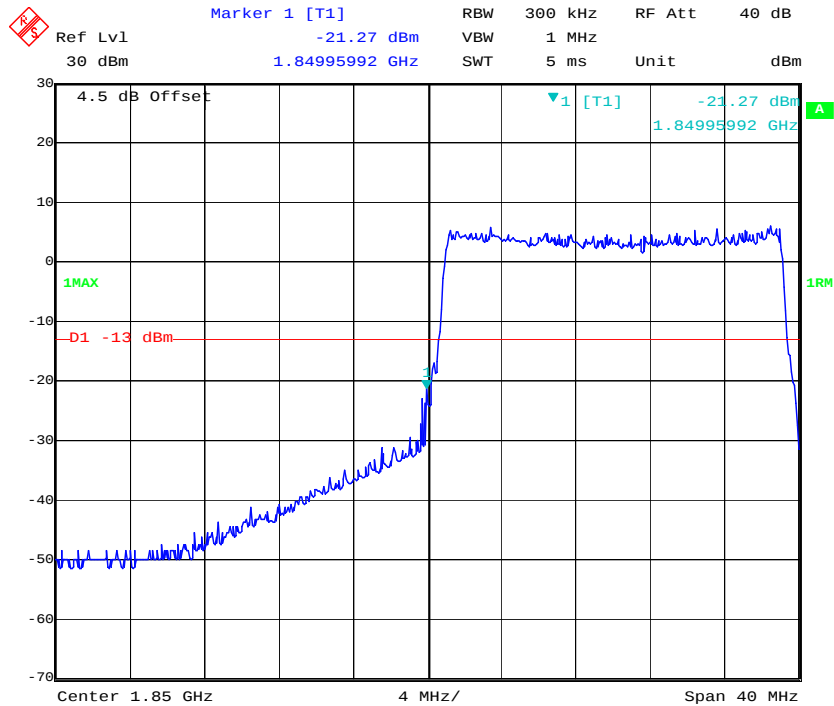
16QAM_15MHz_ 75 RB_ Left



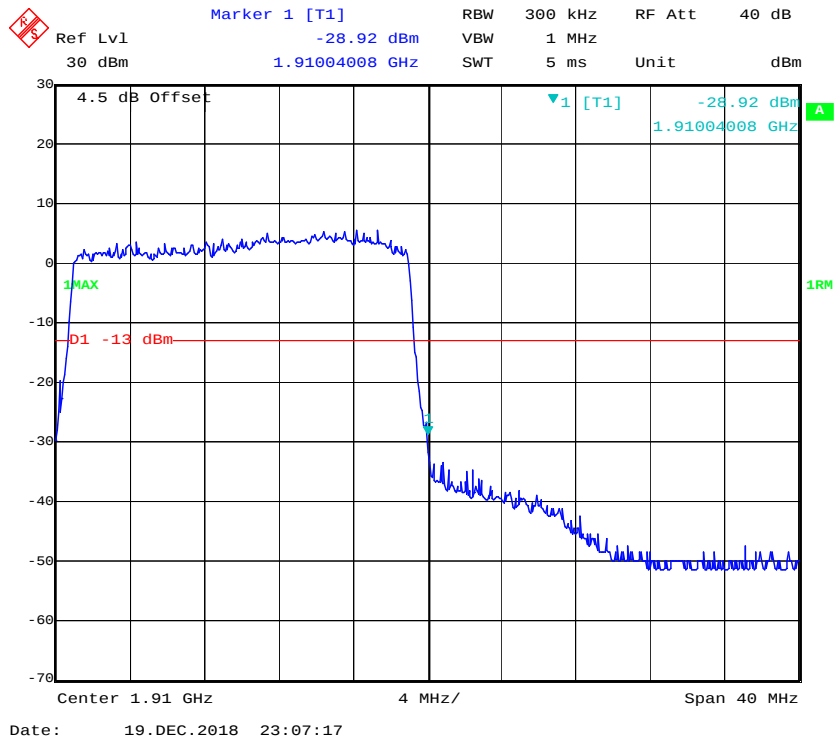
16QAM_15MHz_ 75 RB_ Right



16QAM_20MHz_ FULL RB_ Left

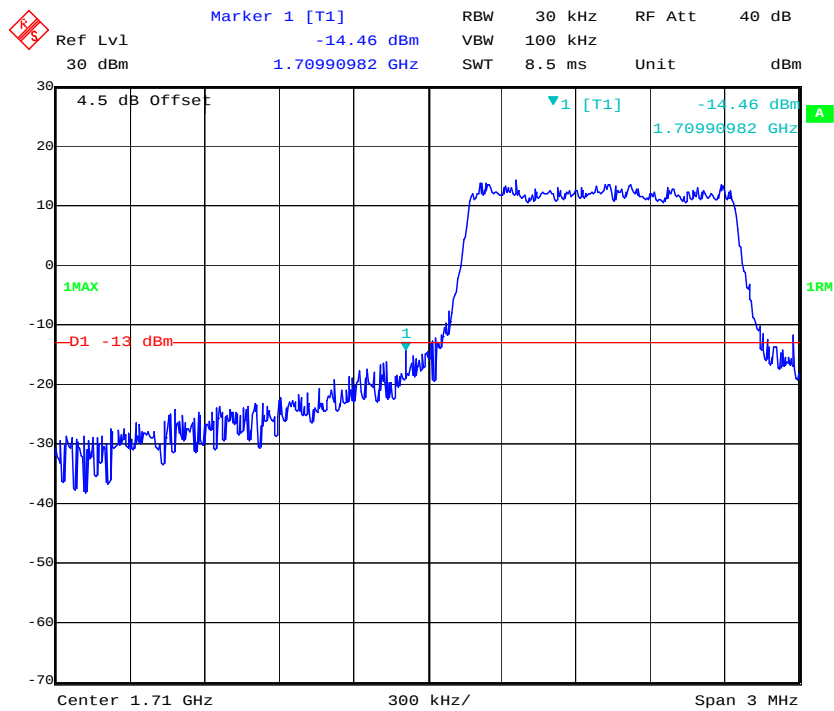


16QAM_20MHz_ FULL RB_ Right



LTE Band 4

QPSK_1.4MHz_6 RB_ Left



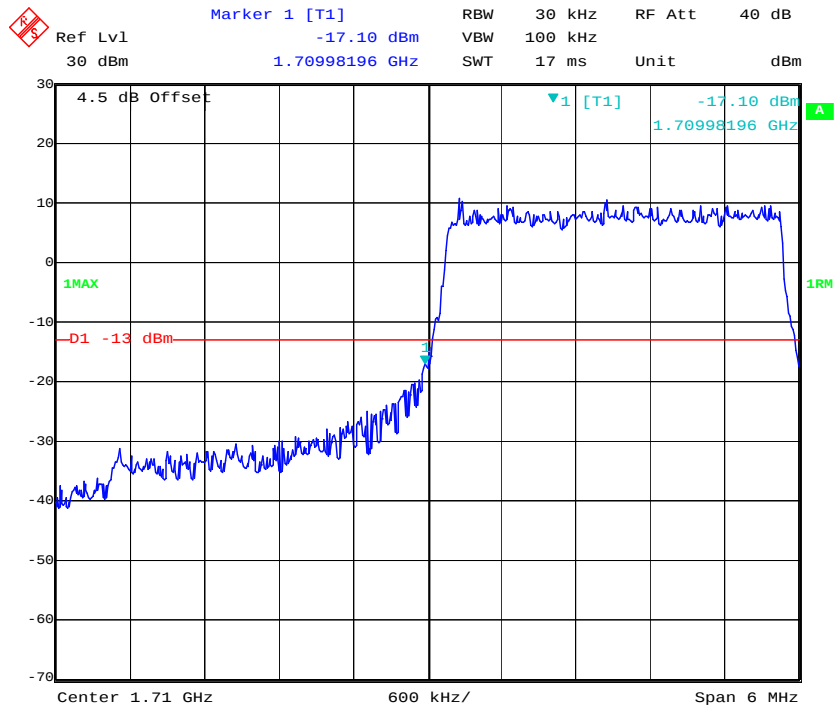
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QPSK_1.4MHz_6 RB_ Right

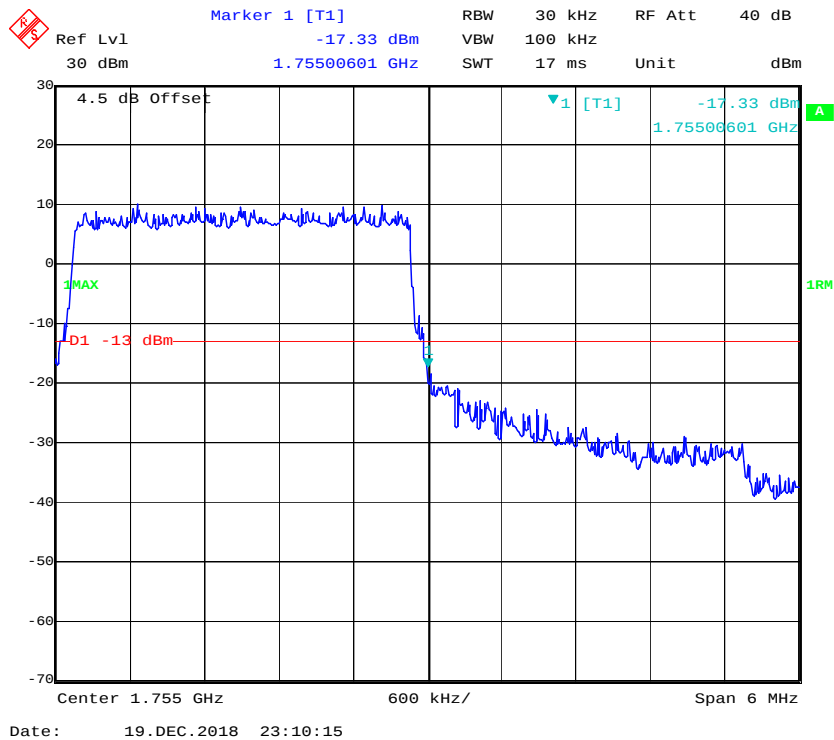


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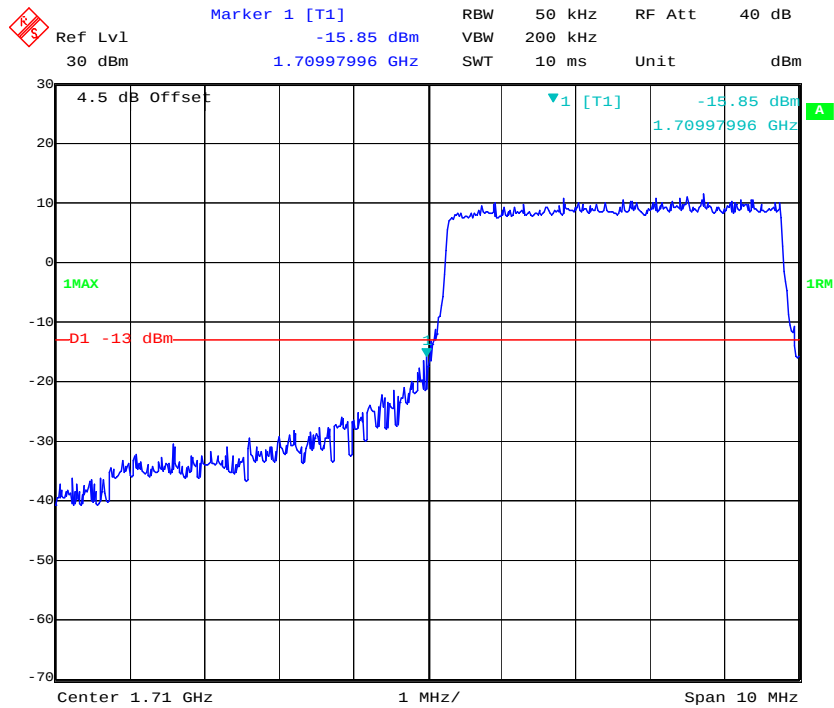
QPSK_3MHz_15 RB_Left



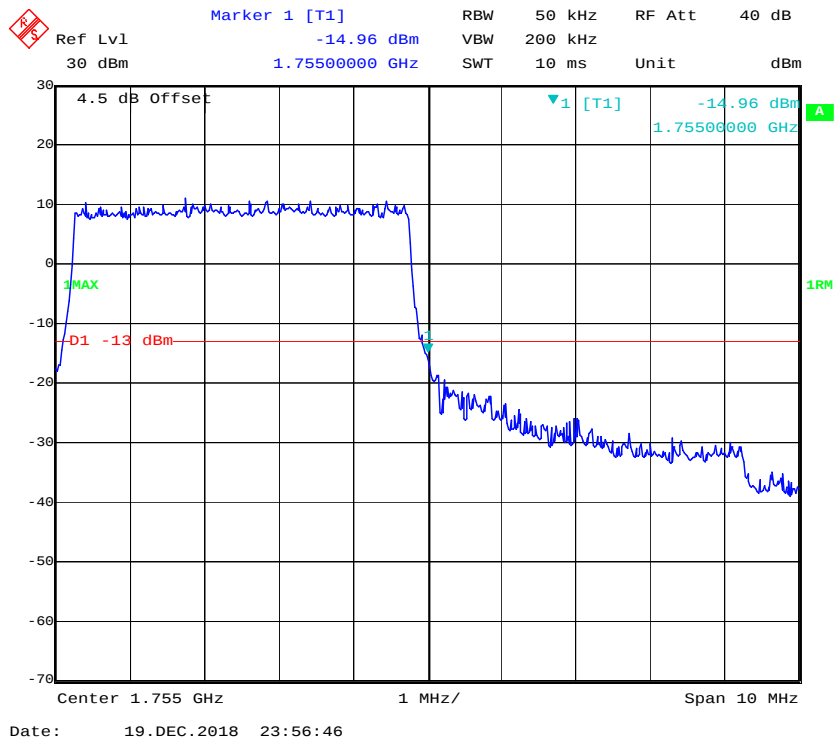
QPSK_3MHz_15 RB_Right



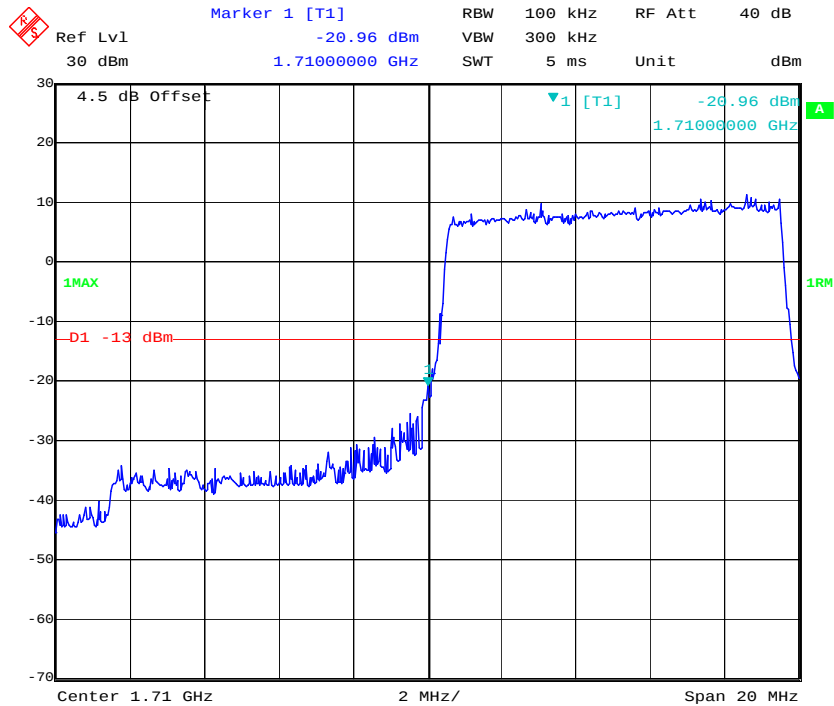
QPSK_5MHz_25 RB_Left



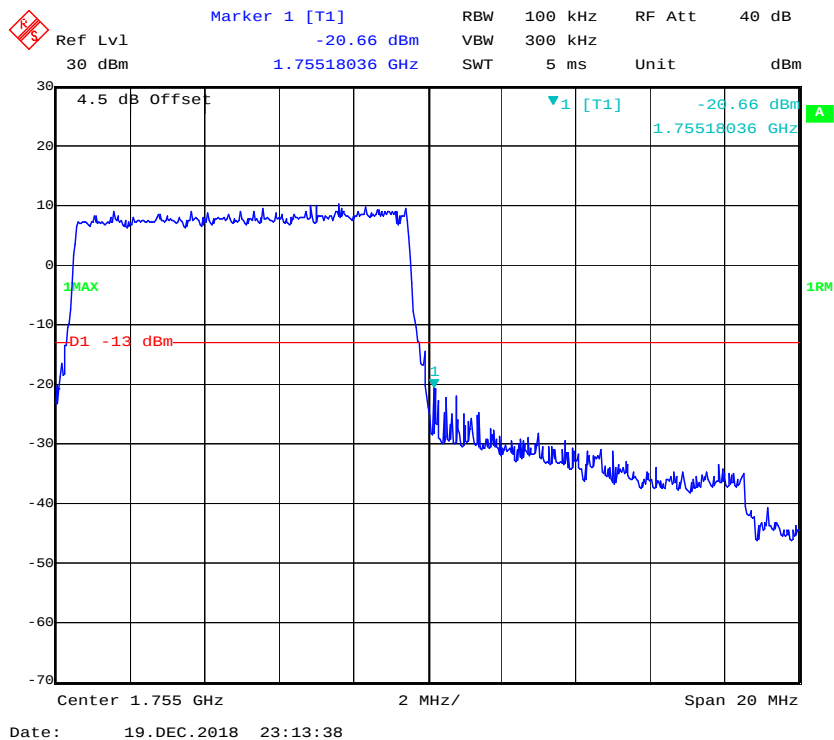
QPSK_5MHz_25 RB_Right



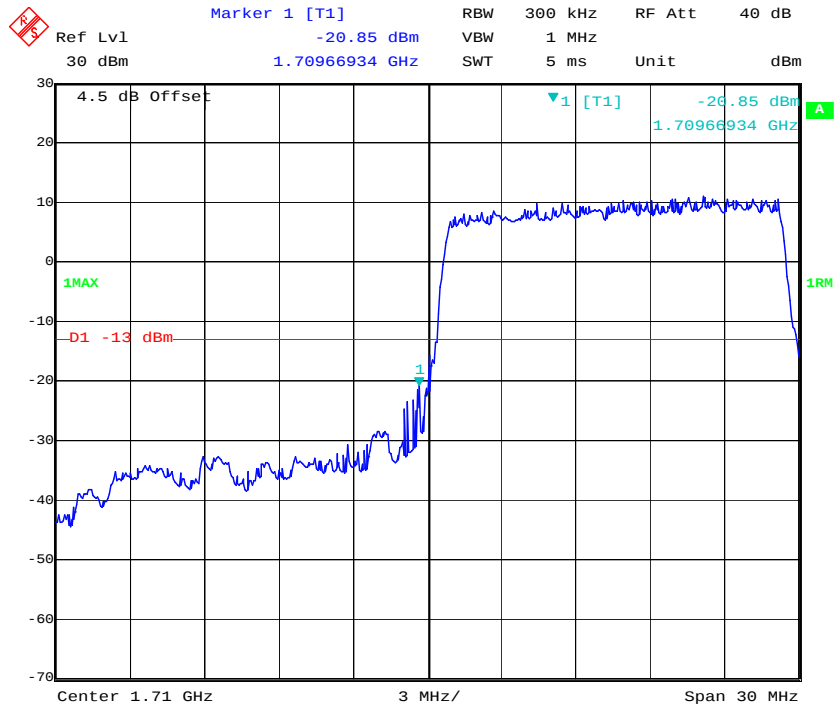
QPSK_10MHz_50 RB_ Left



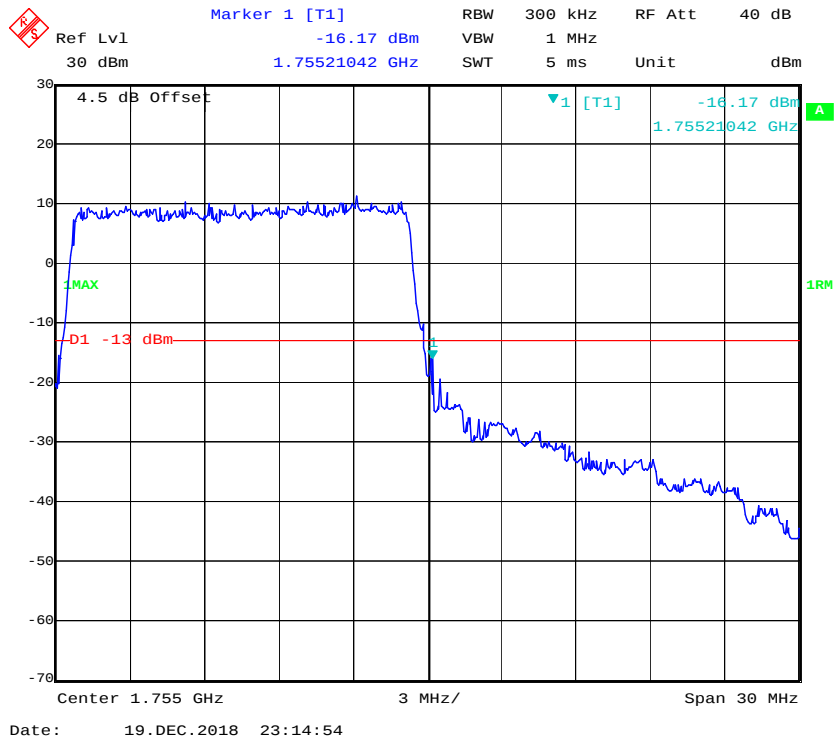
QPSK_10MHz_50 RB_ Right



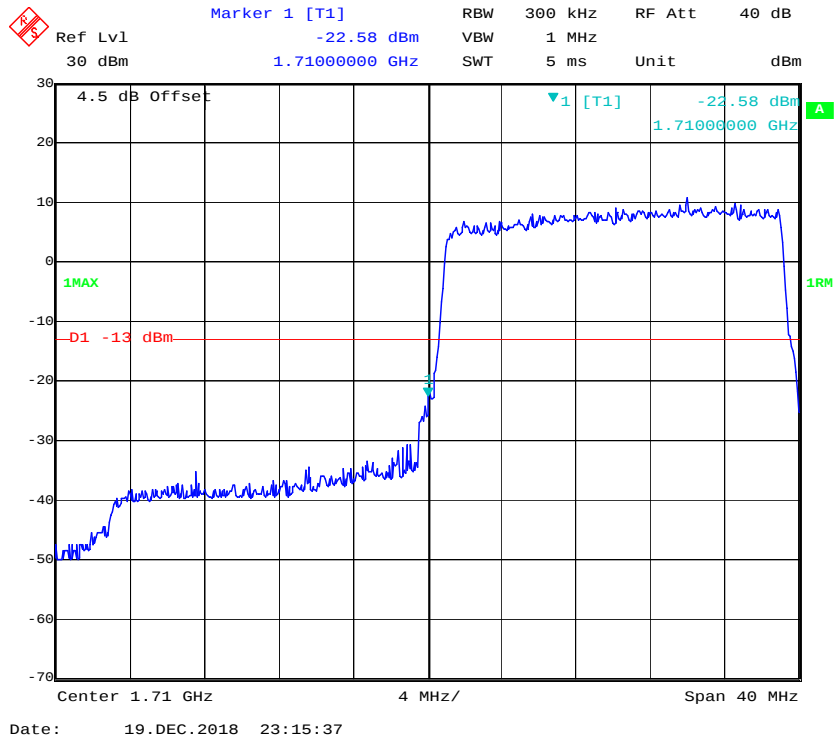
QPSK_15MHz_ 75 RB_ Left



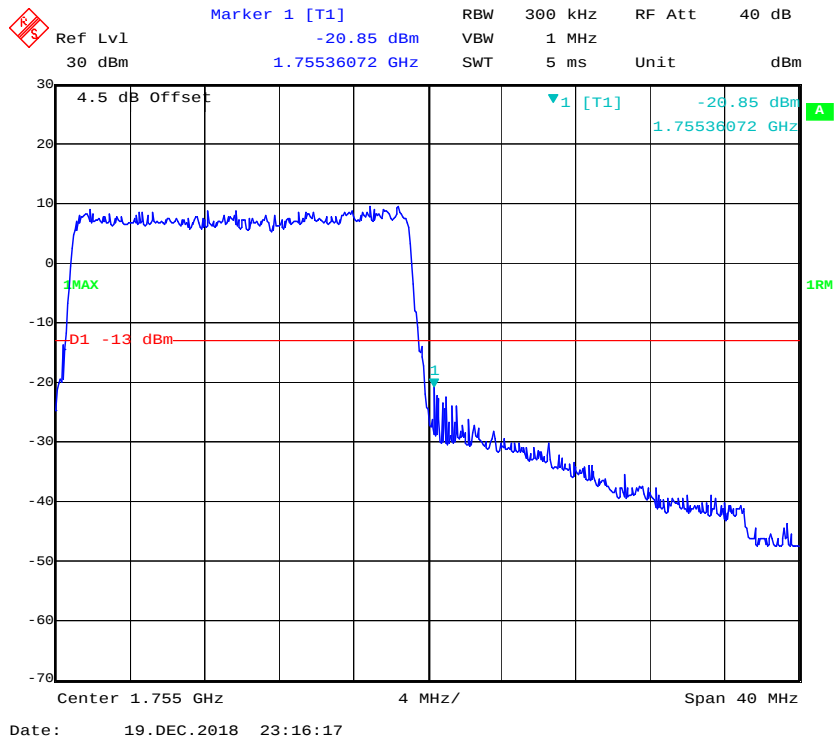
QPSK_15MHz_ 75 RB_ Right



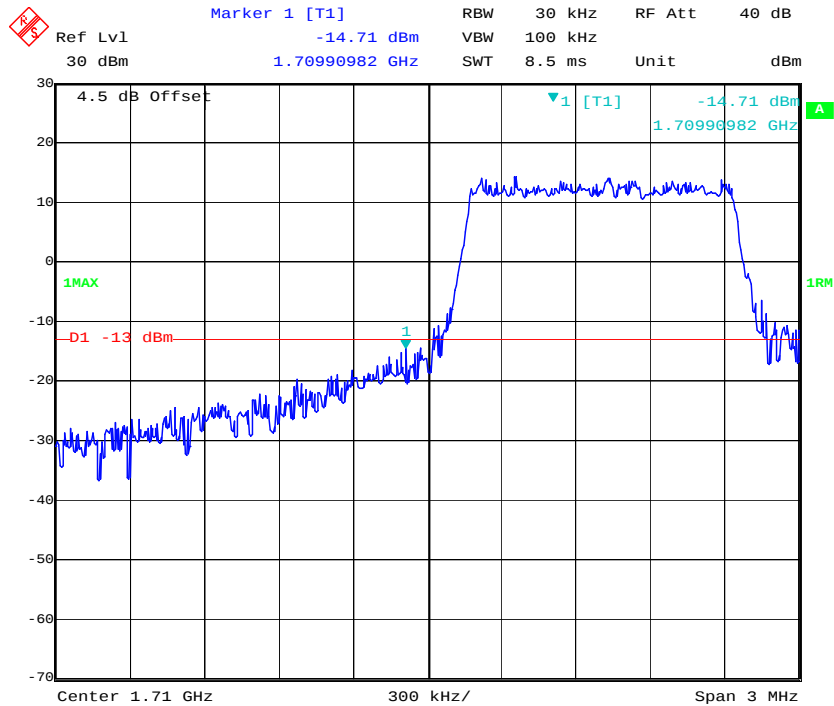
QPSK_20MHz_FULL RB_Left



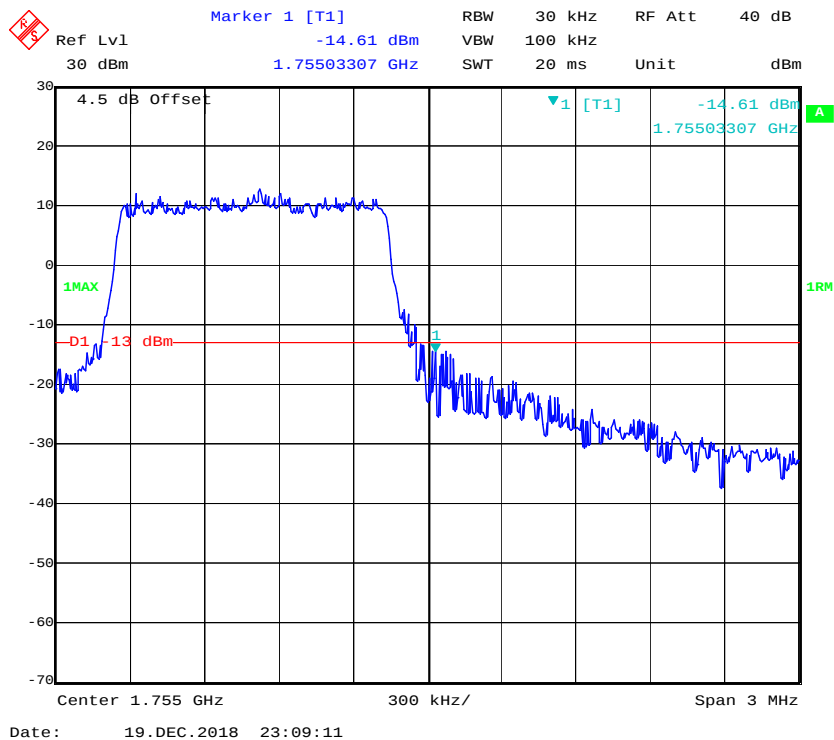
QPSK_20MHz_FULL RB_Right



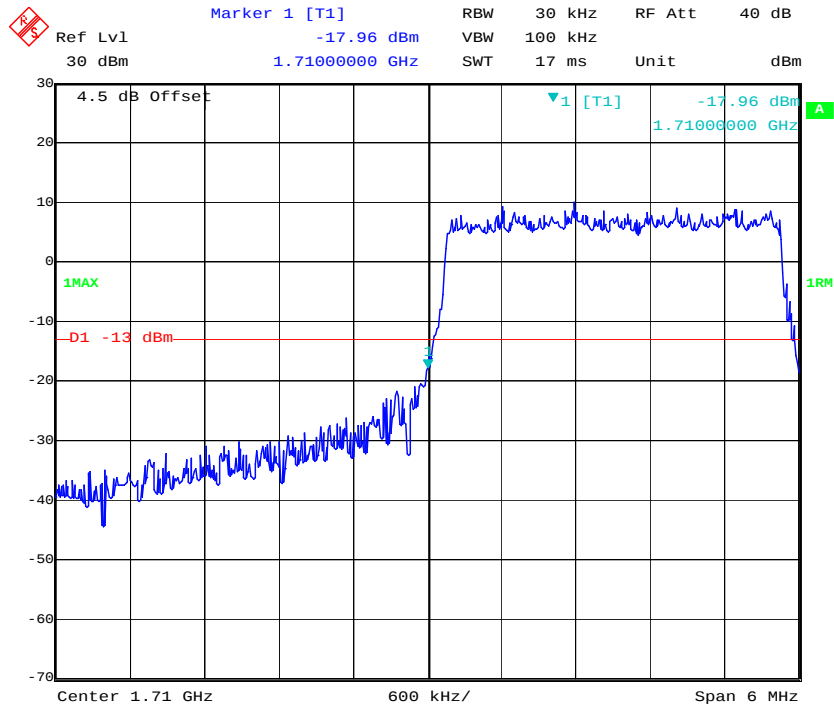
16QAM_1.4MHz_6 RB_ Left



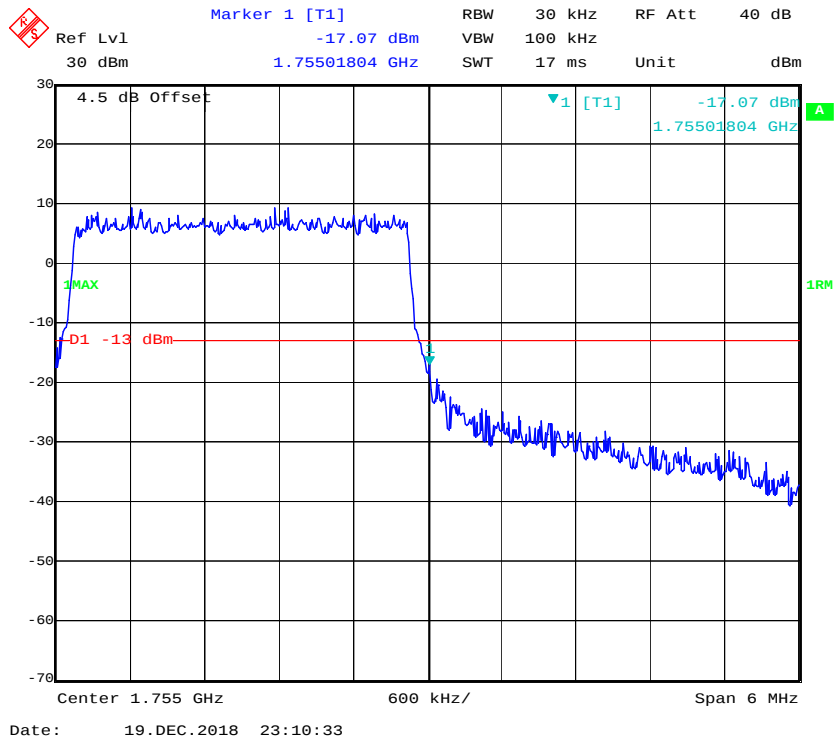
16QAM_1.4MHz_6 RB_ Right



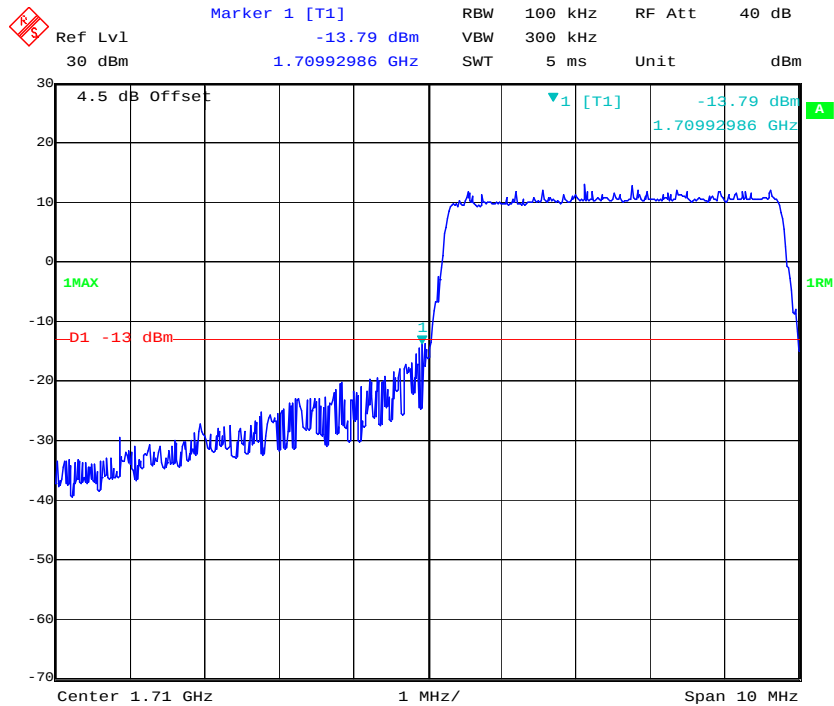
16QAM_3MHz_ 15 RB_ Left



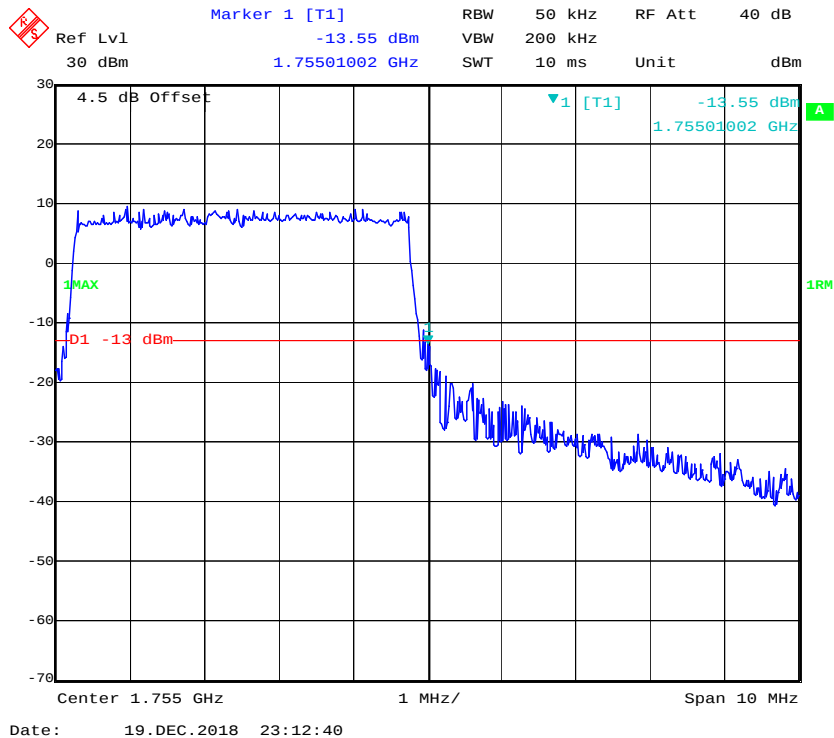
16QAM_3MHz_ 15 RB_ Right



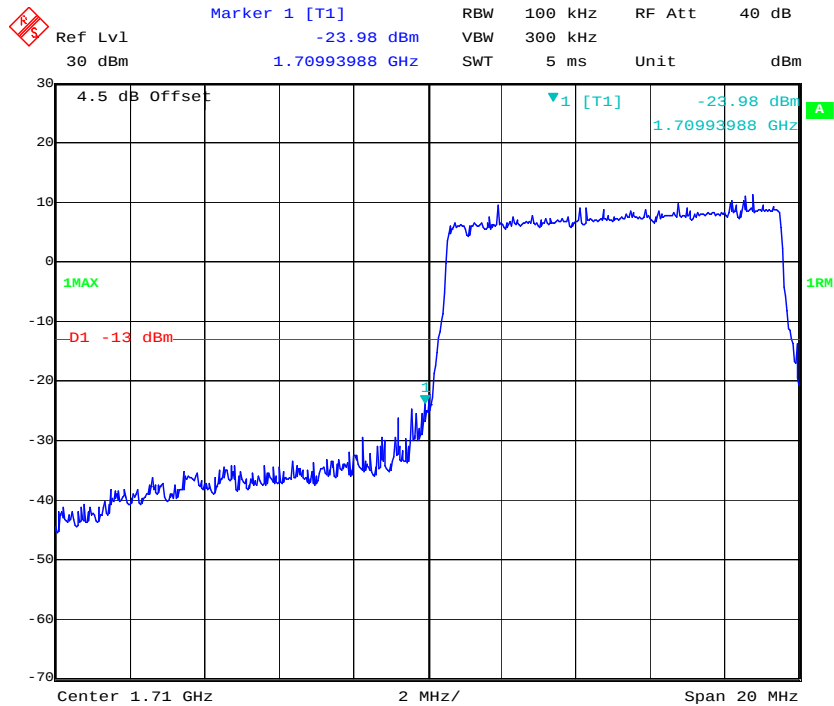
16QAM_5MHz_25 RB_ Left



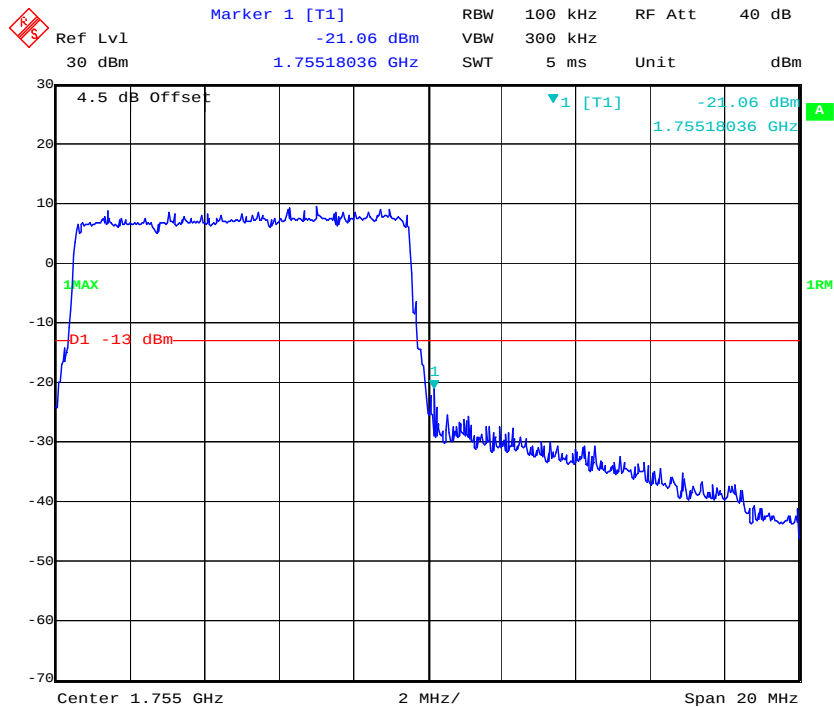
16QAM_5MHz_25 RB_ Right



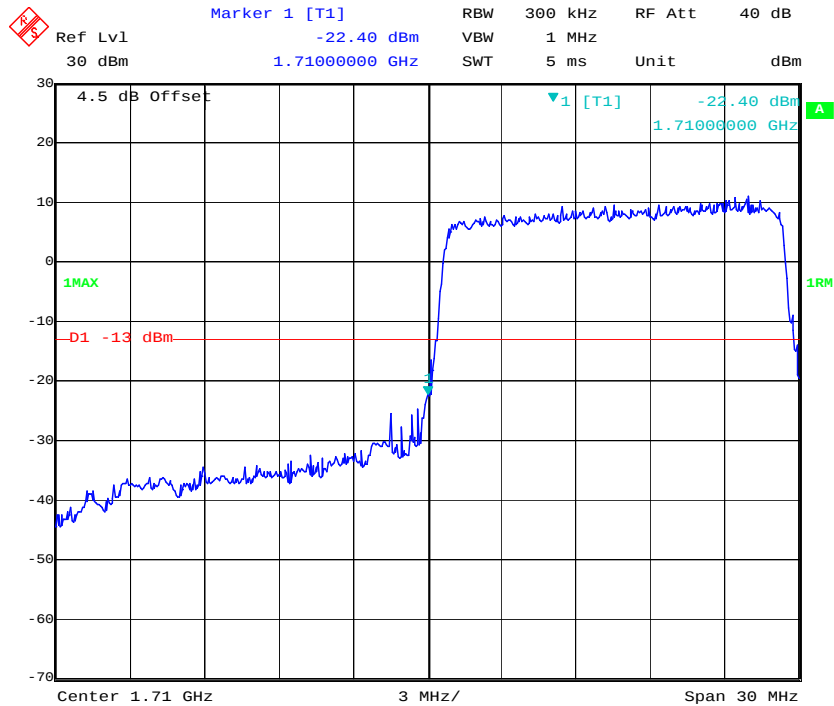
16QAM_10MHz_ 50 RB_ Left



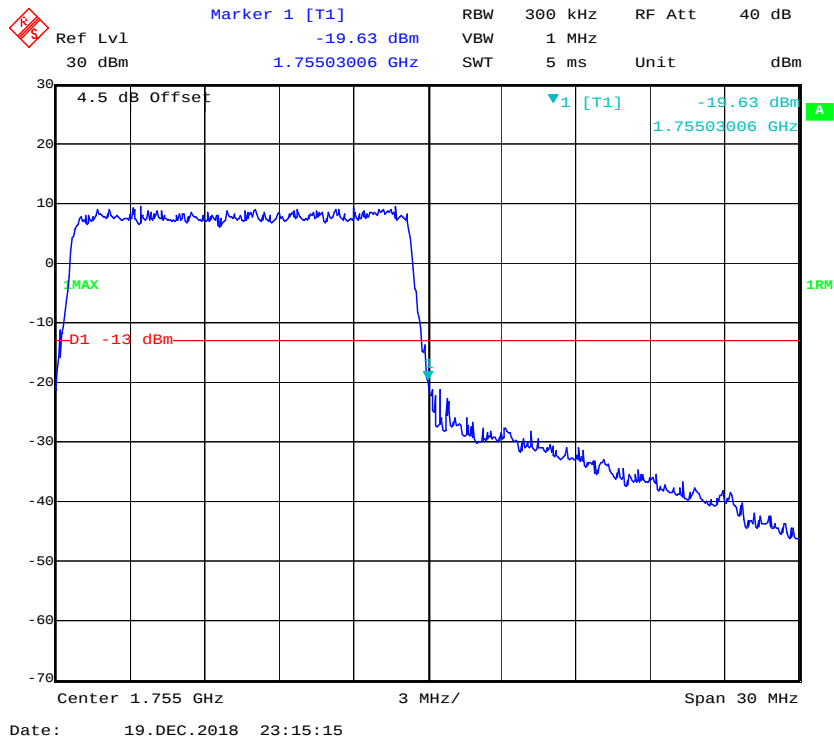
16QAM_10MHz_ 50 RB_ Right



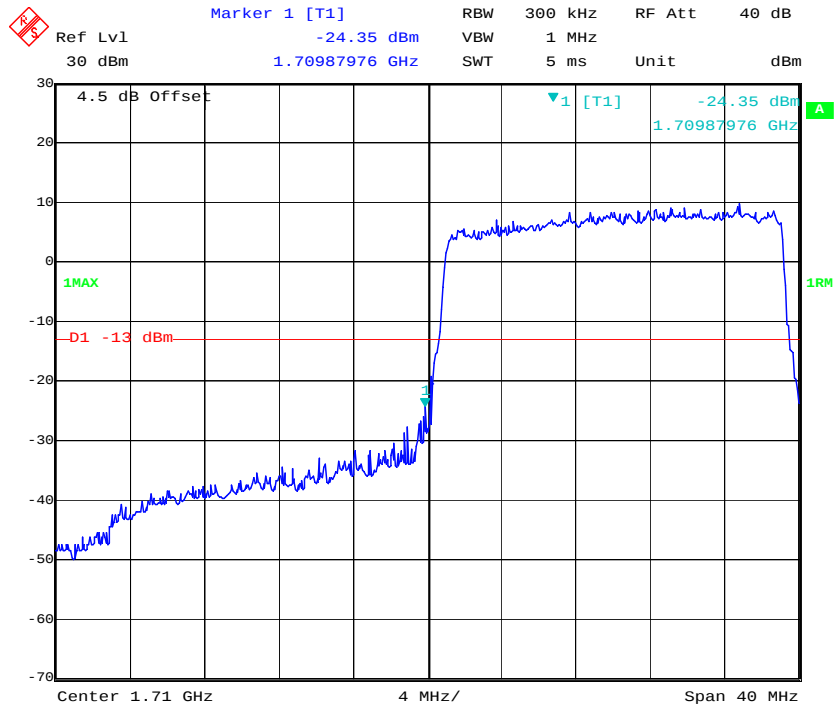
16QAM_15MHz_ 75 RB_ Left



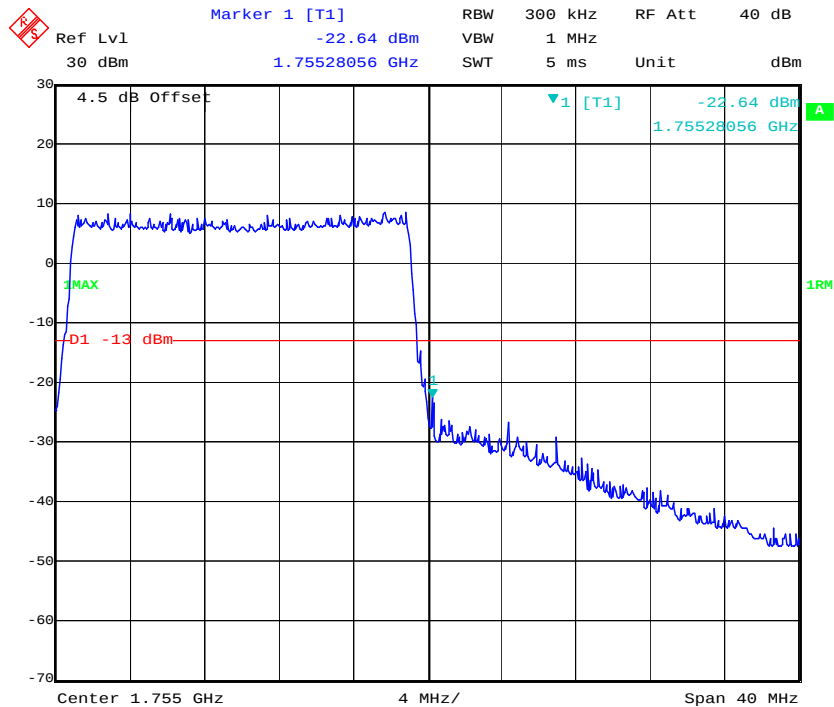
16QAM_15MHz_ 75 RB_ Right



16QAM_20MHz_ FULL RB_ Left

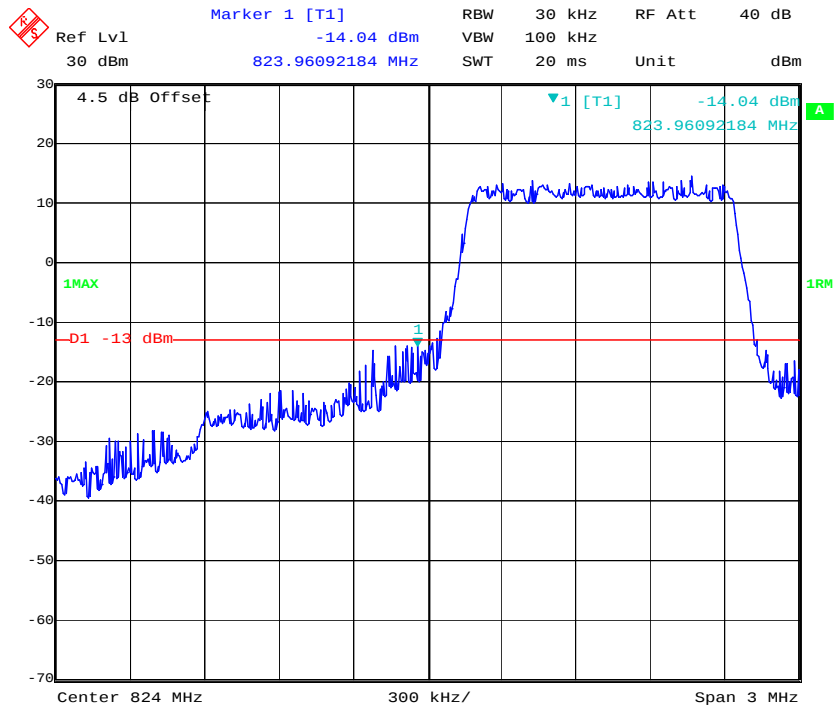


16QAM_20MHz_ FULL RB_ Right



LTE Band 5

QPSK_1.4MHz_ 6 RB_ Left



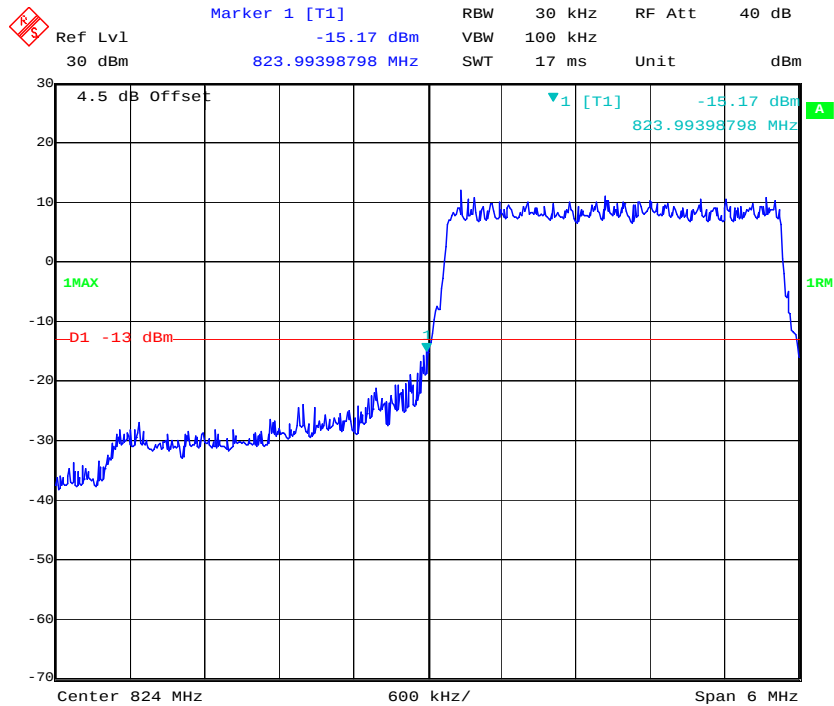
Date: 19.DEC.2018 23:17:24

QPSK_1.4MHz_ 6 RB_ Right

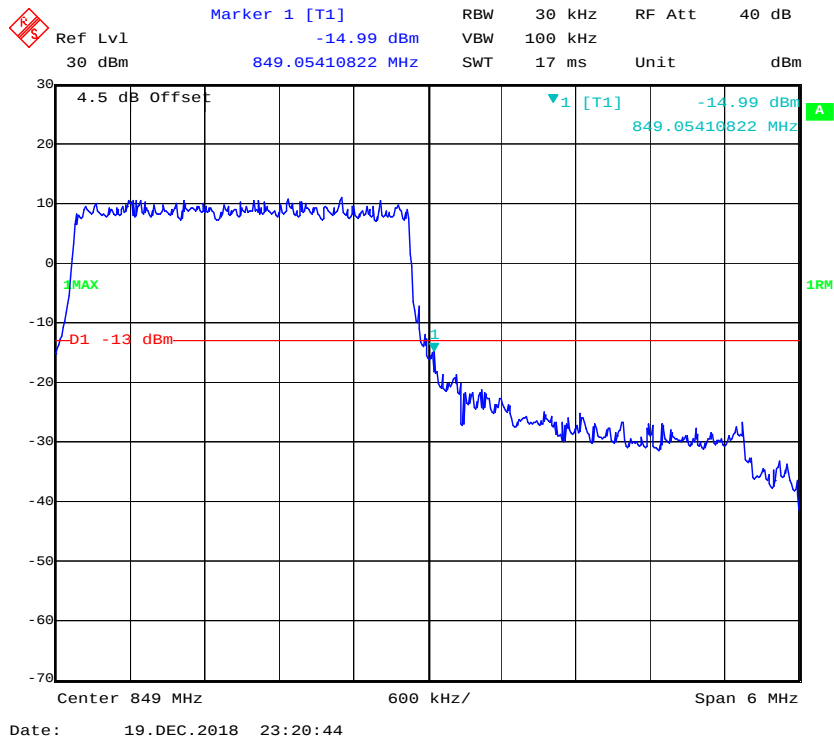


Date: 19.DEC.2018 23:18:35

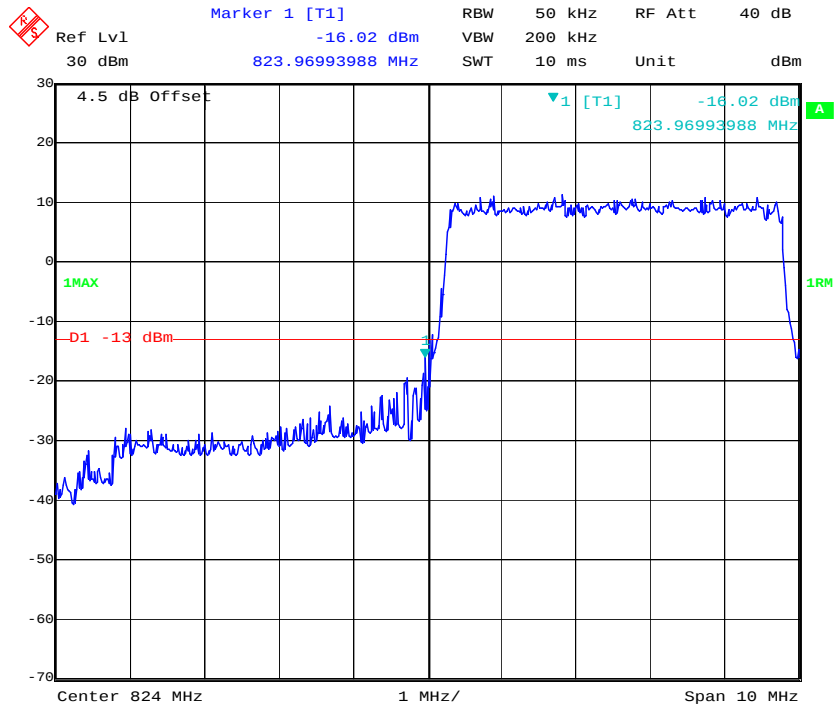
QPSK_3MHz_15 RB_Left



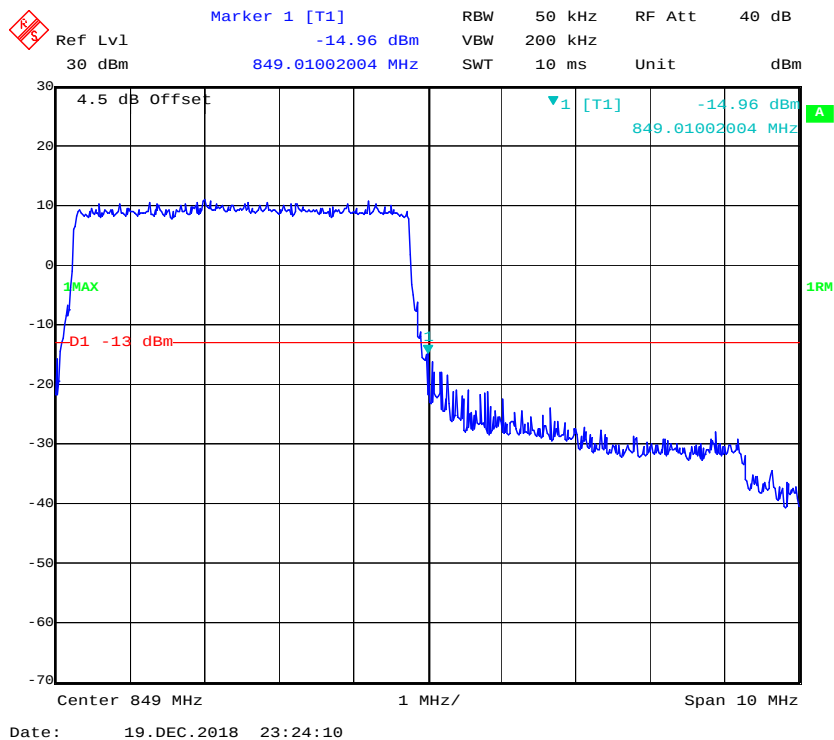
QPSK_3MHz_15 RB_Right



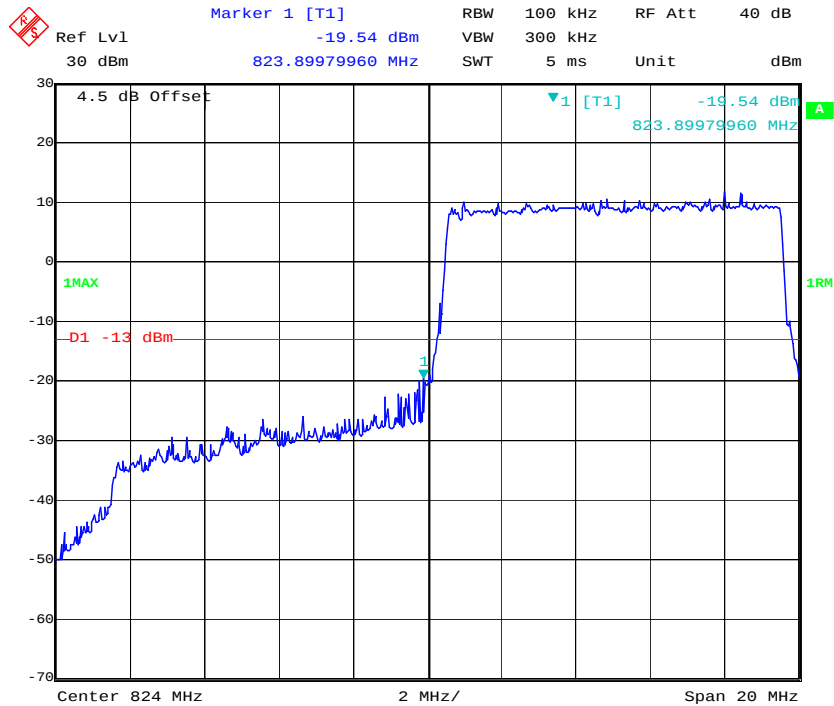
QPSK_5MHz_25 RB_ Left



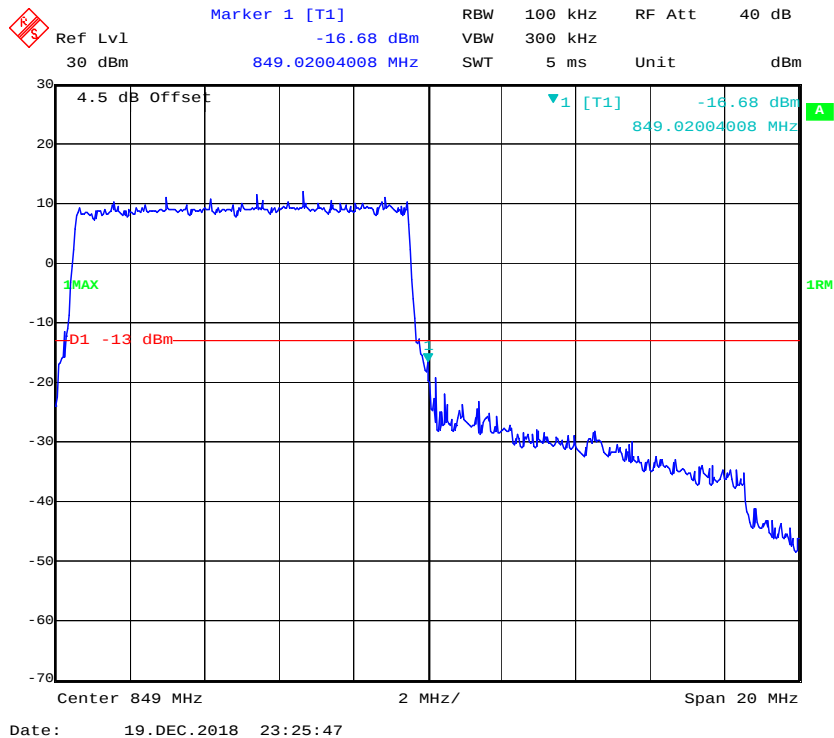
QPSK_5MHz_25 RB_ Right



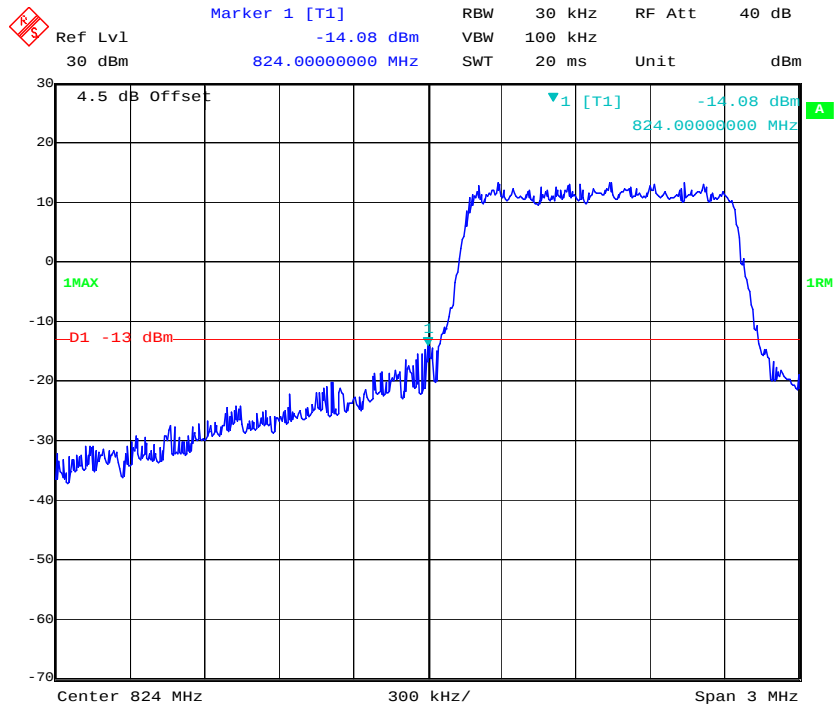
QPSK_10MHz_50 RB_Left



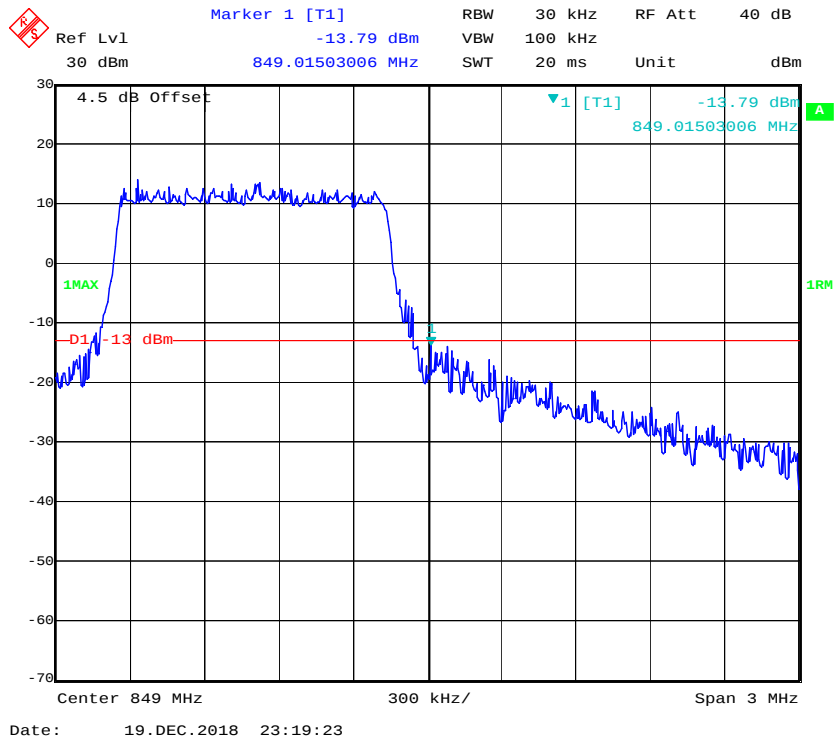
QPSK_10MHz_50 RB_Right



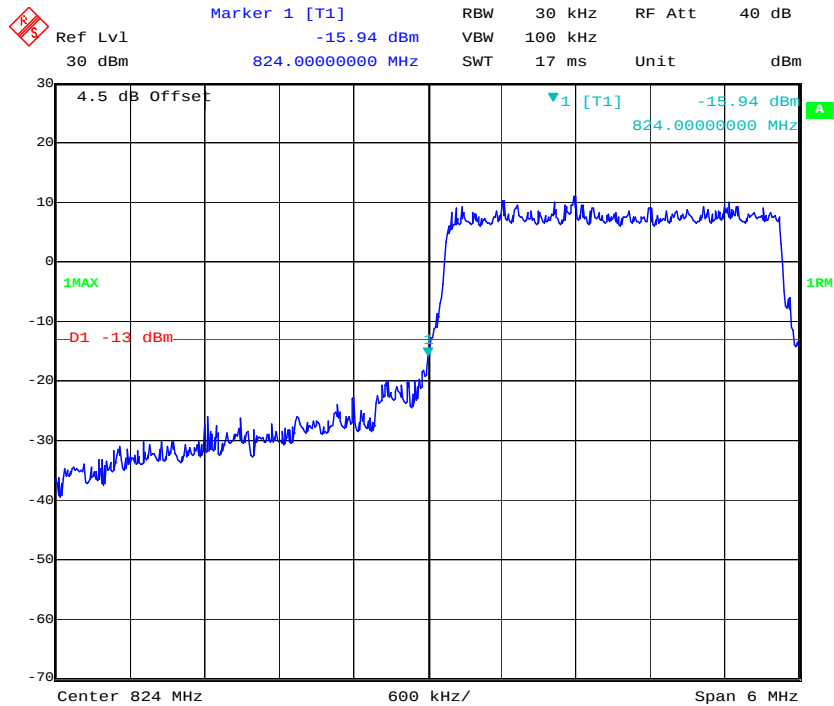
16QAM_1.4MHz_6 RB_ Left



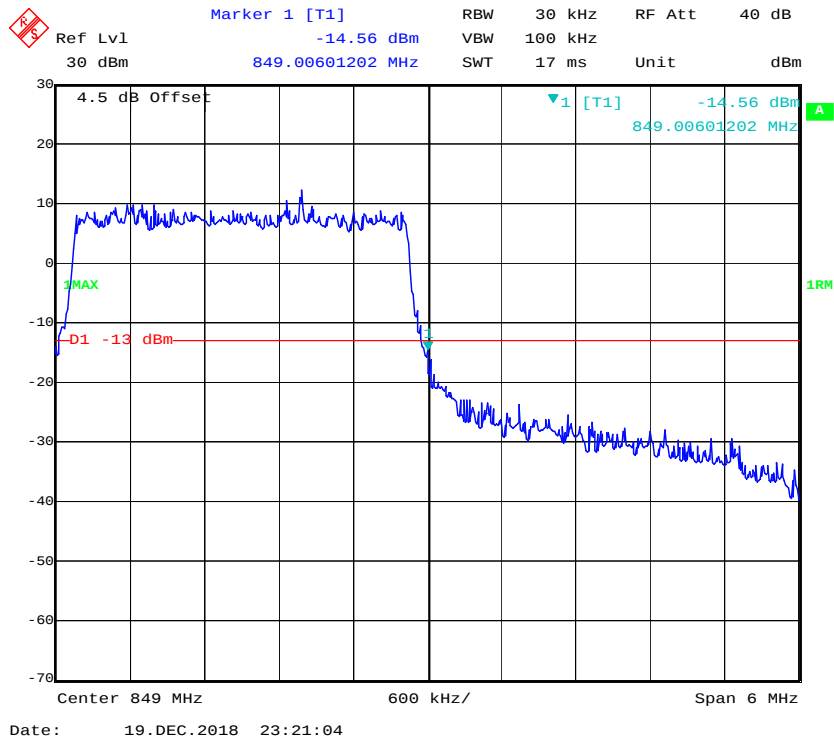
16QAM_1.4MHz_6 RB_ Right



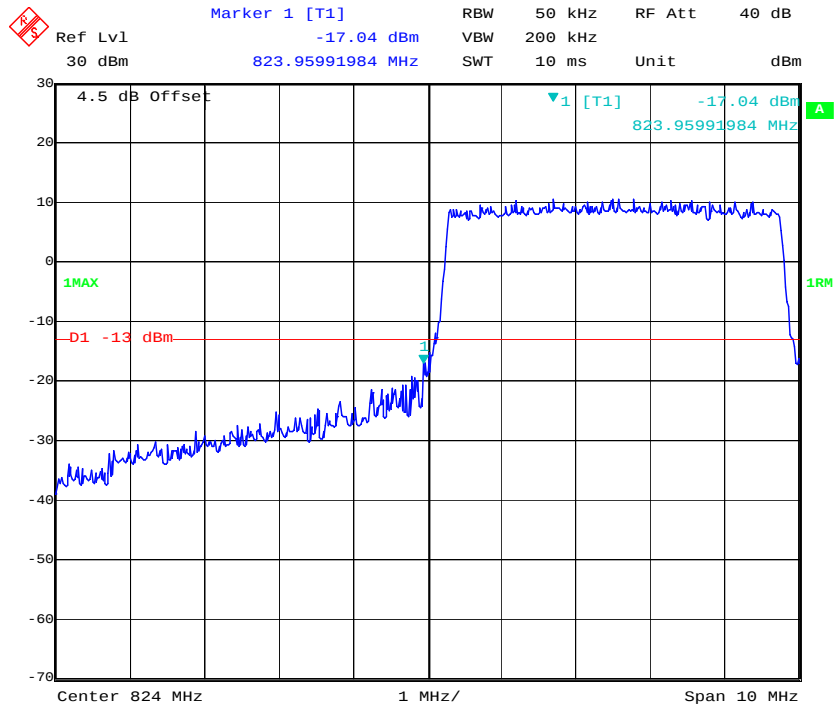
16QAM_3MHz_15 RB_ Left



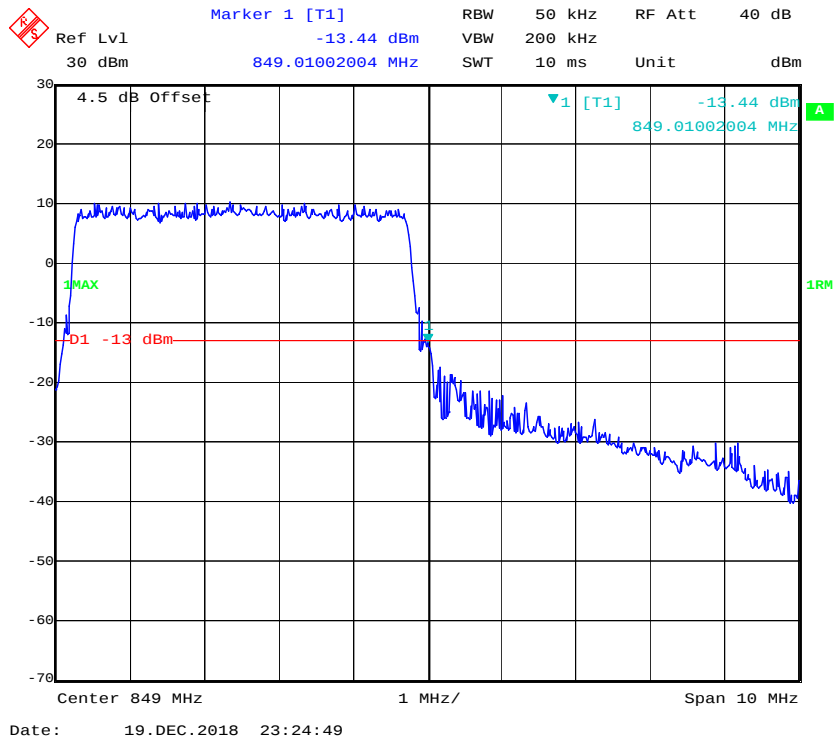
16QAM_3MHz_15 RB_ Right



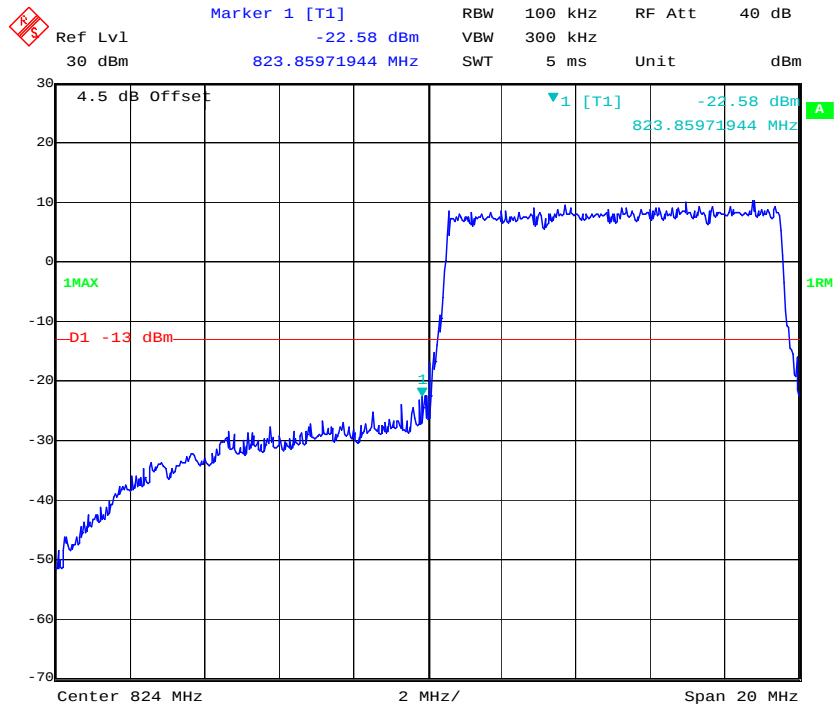
16QAM_5MHz_25 RB_Left



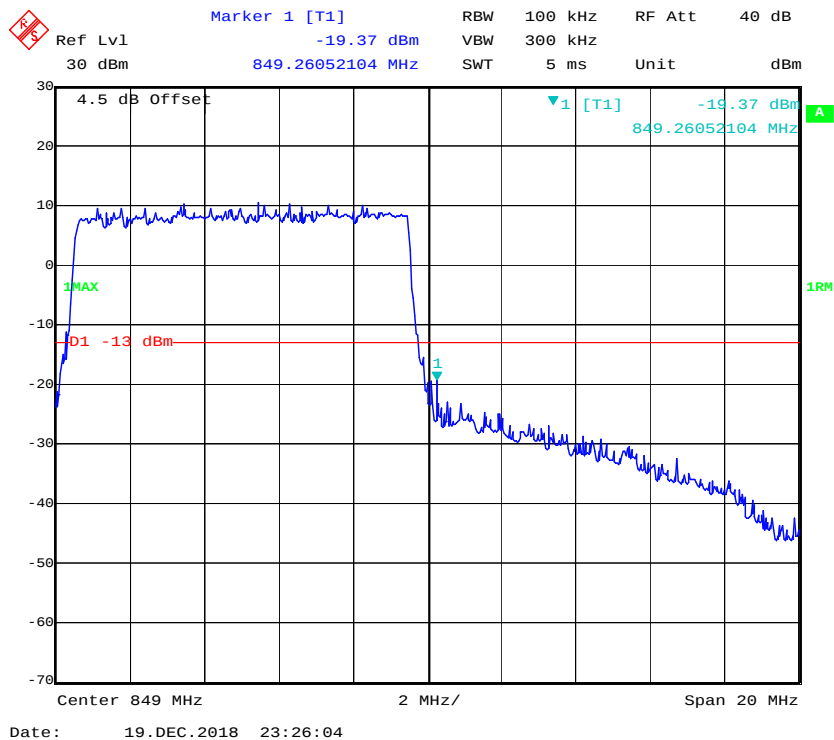
16QAM_5MHz_25 RB_Right



16QAM_10MHz_ 50 RB_ Left

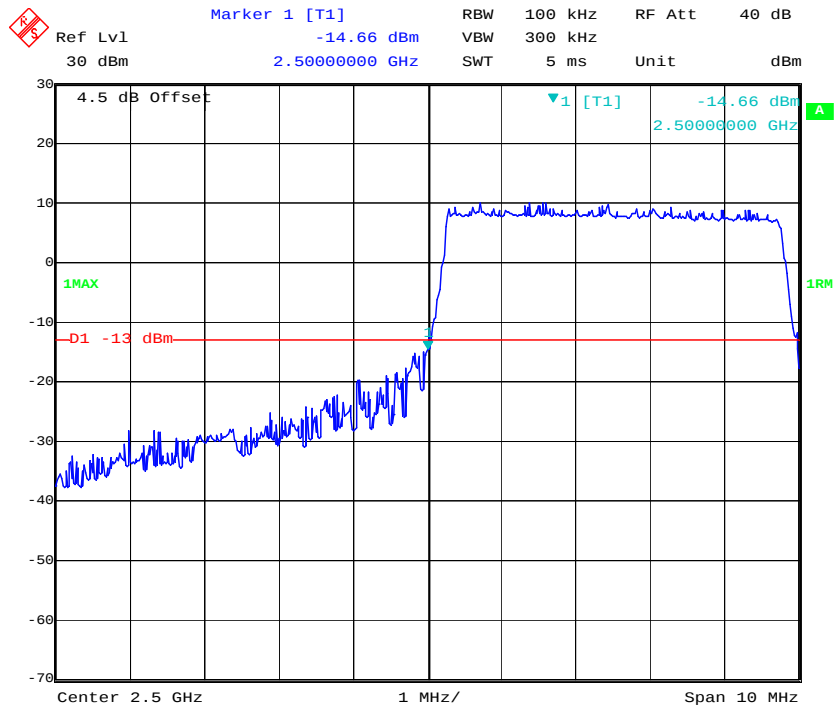


16QAM_10MHz_ 50 RB_ Right

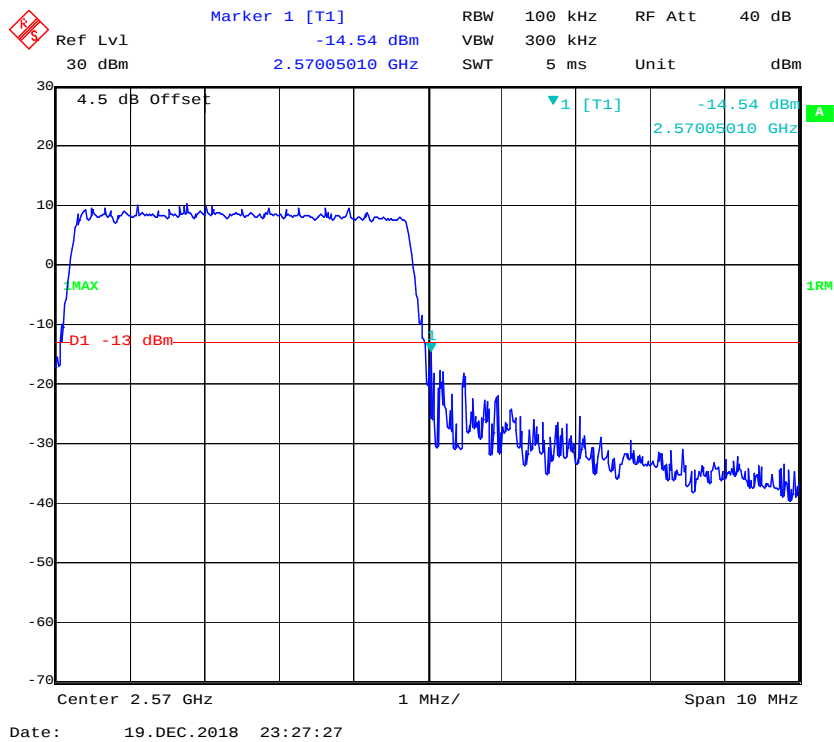


LTE Band 7

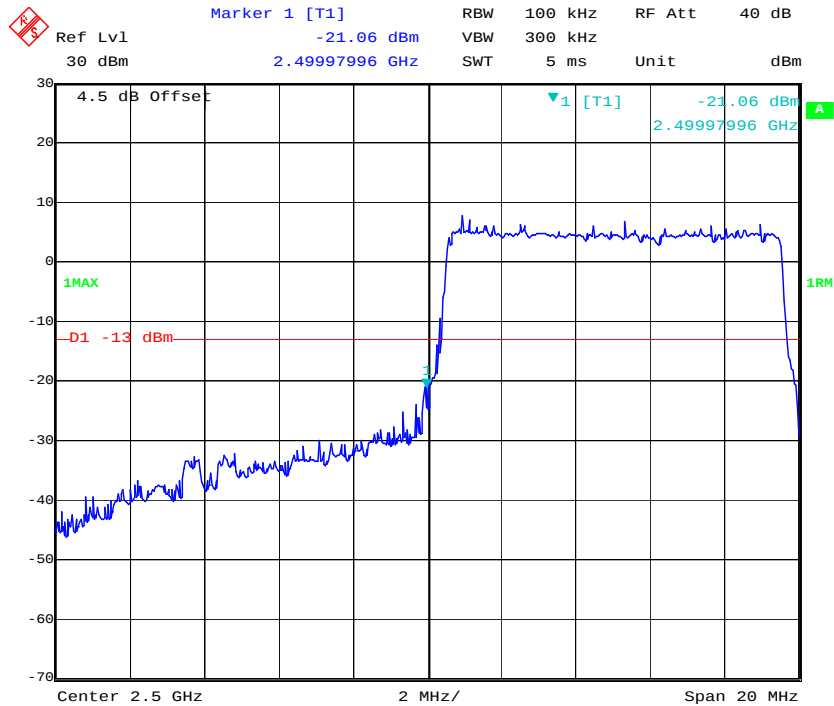
QPSK_5MHz_25 RB_ Left



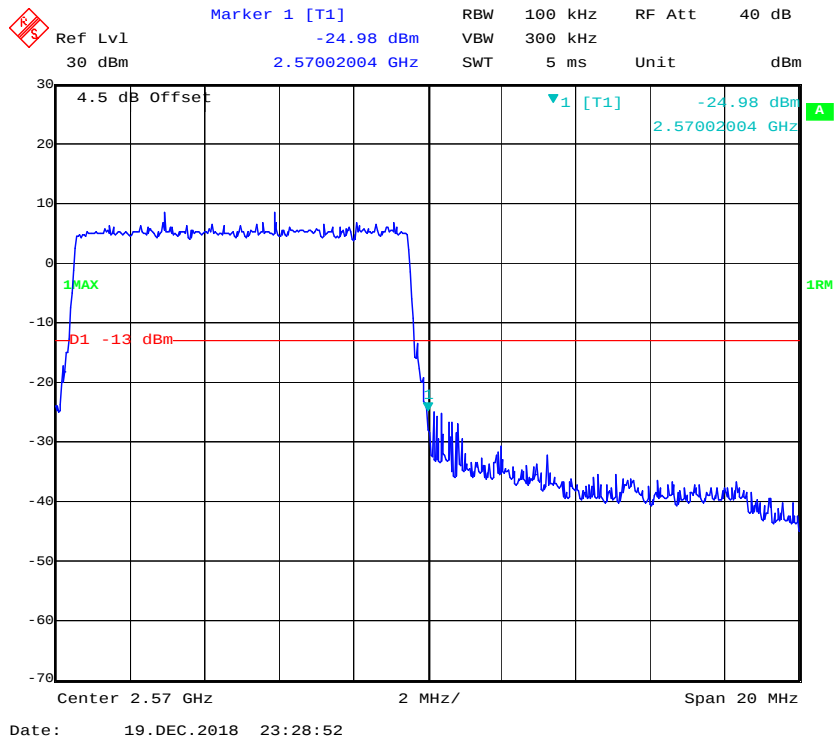
QPSK_5MHz_25 RB_ Right



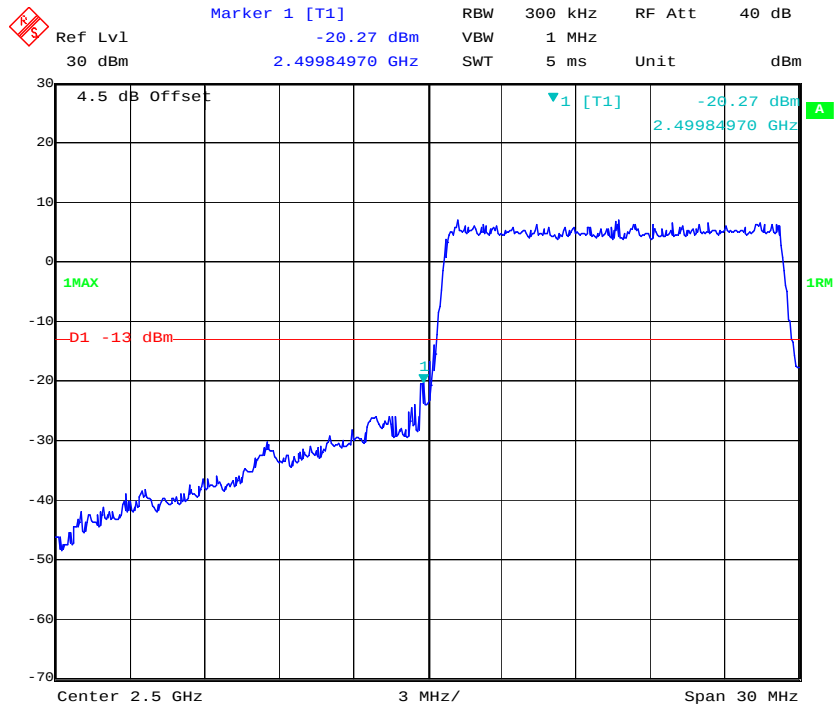
QPSK_10MHz_50 RB_ Left



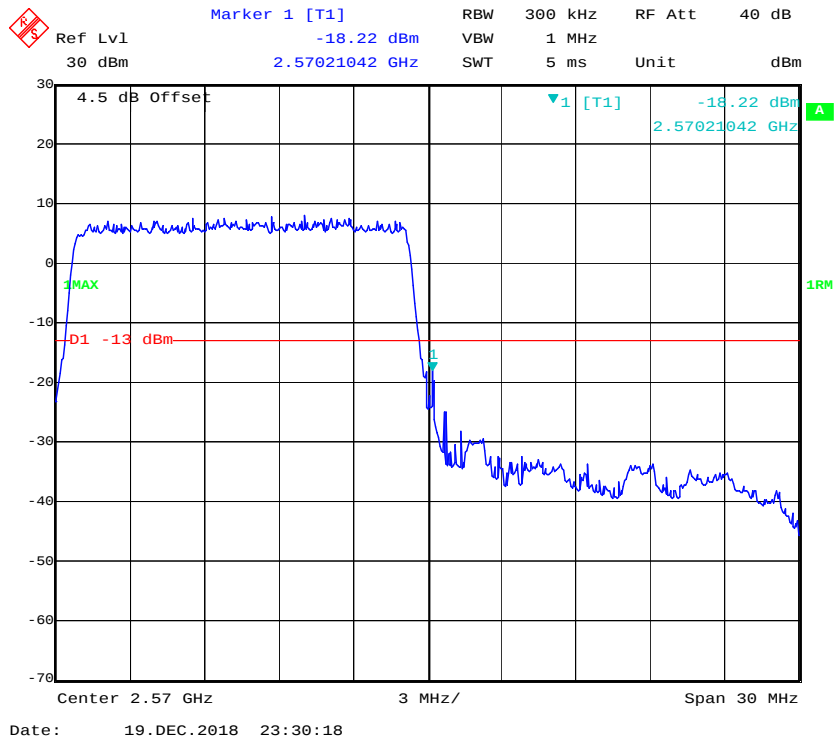
QPSK_10MHz_50 RB_ Right



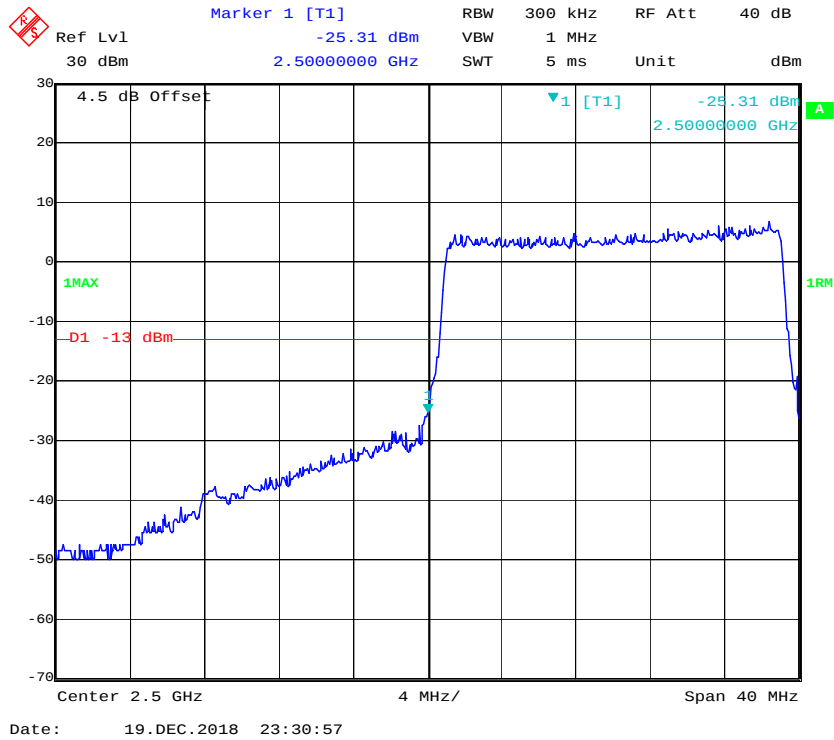
QPSK_15MHz_75 RB_Left



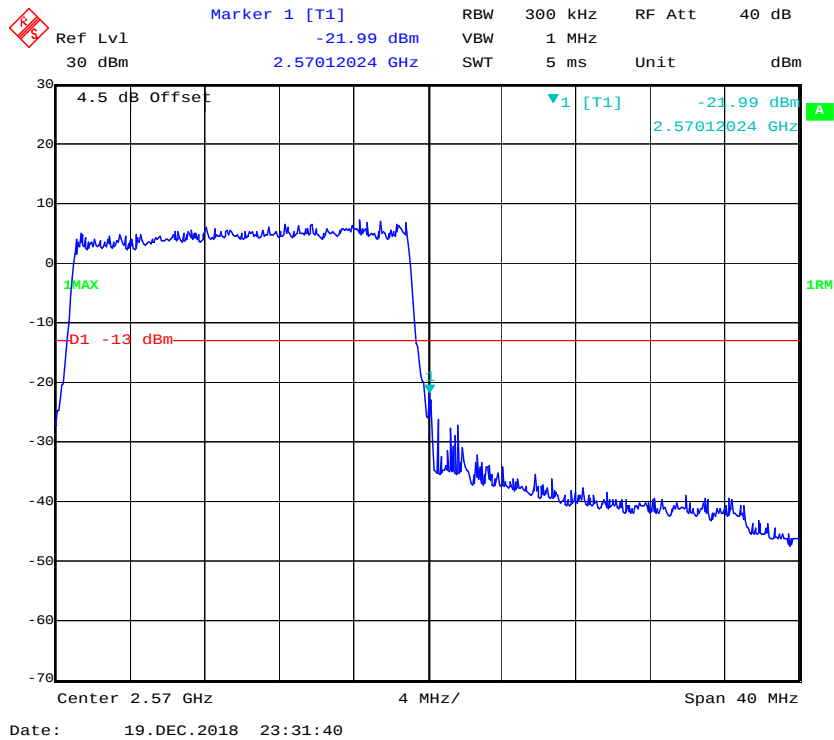
QPSK_15MHz_75 RB_Right



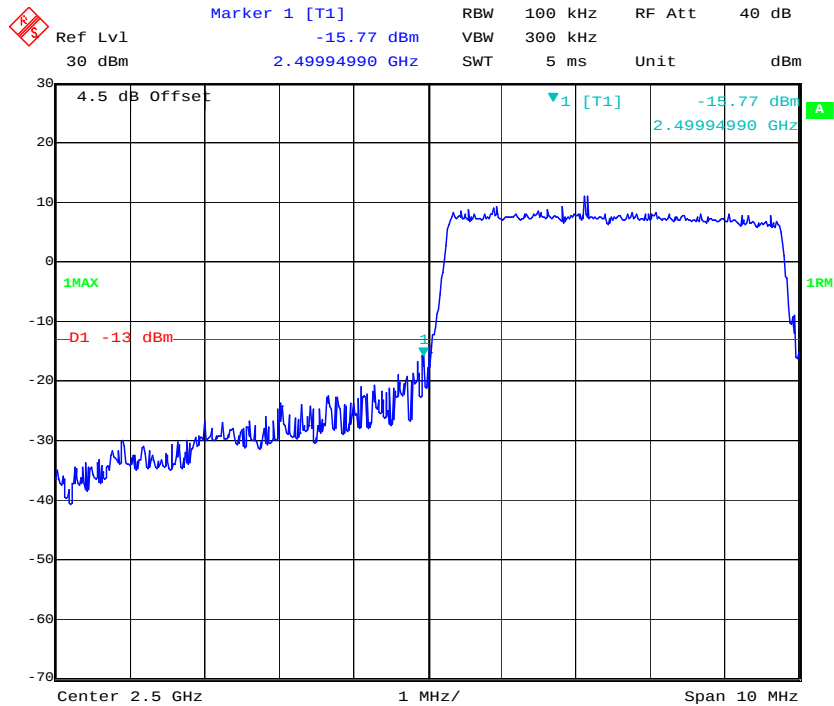
QPSK_20MHz_FULL RB_Left



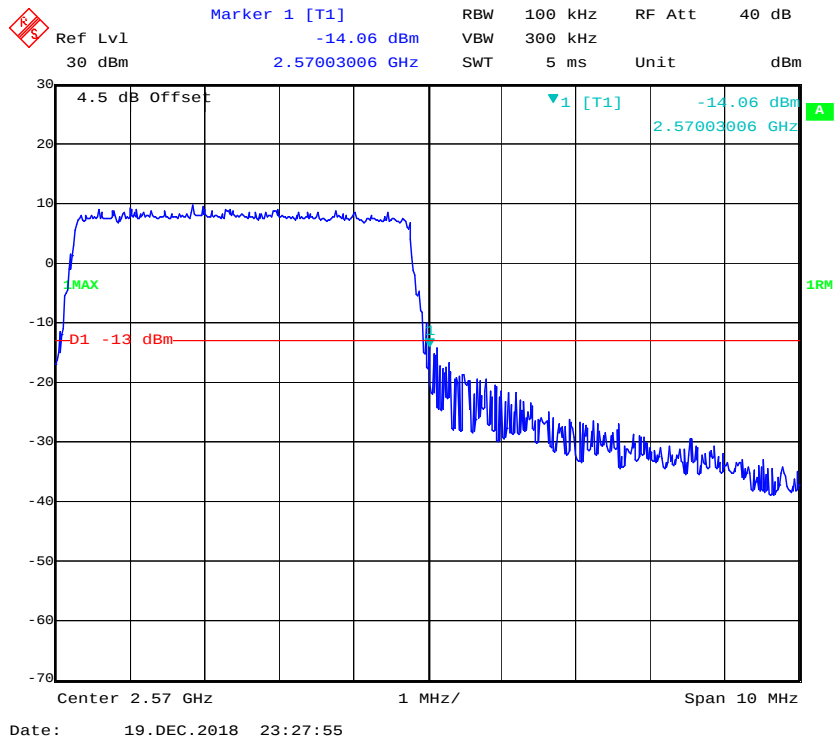
QPSK_20MHz_FULL RB_Right



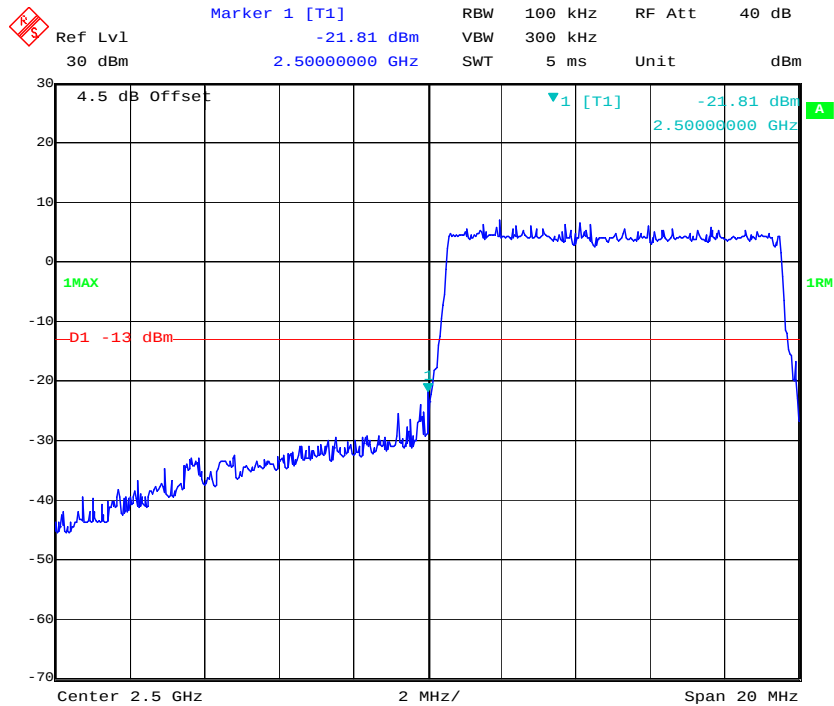
16QAM_5MHz_25 RB_ Left



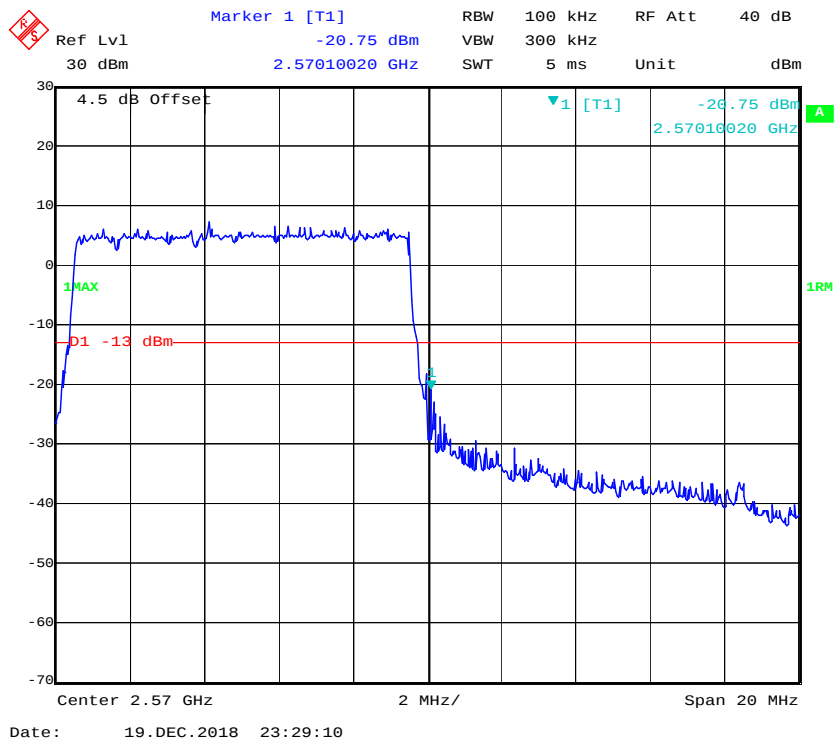
16QAM_5MHz_25 RB_ Right



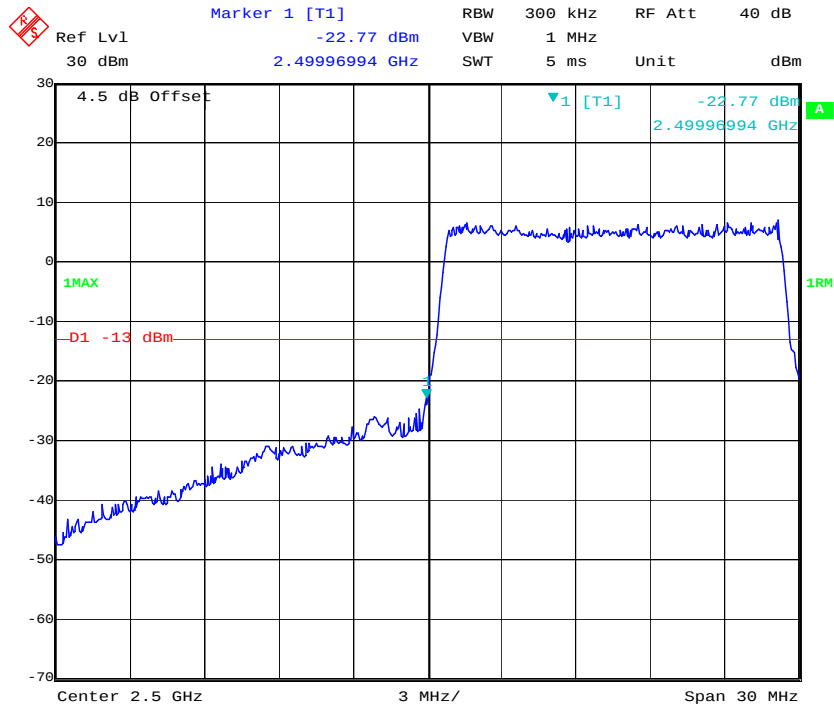
16QAM_10MHz_ 50 RB_ Left



16QAM_10MHz_ 50 RB_ Right

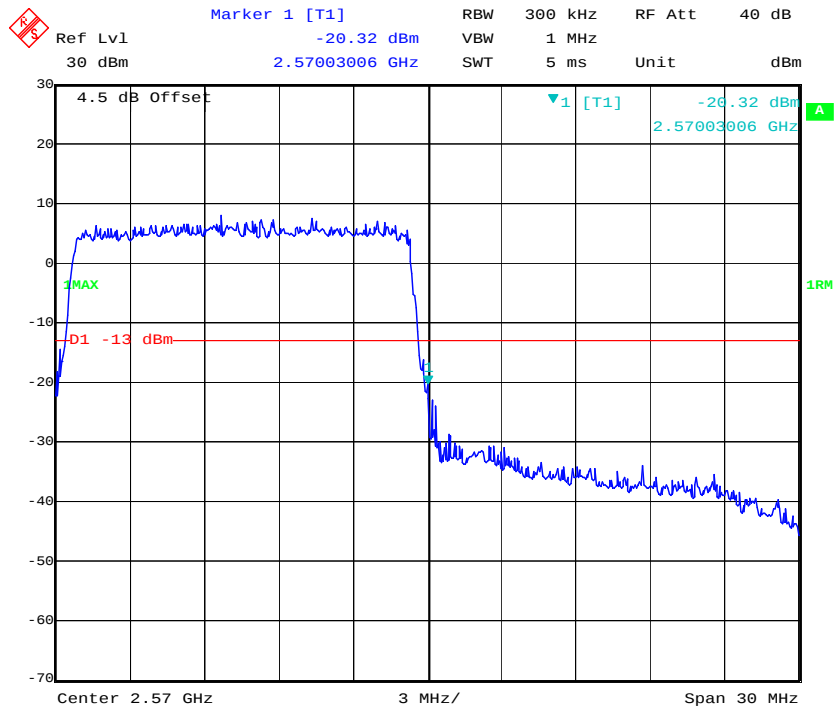


16QAM_15MHz_ 75 RB_ Left



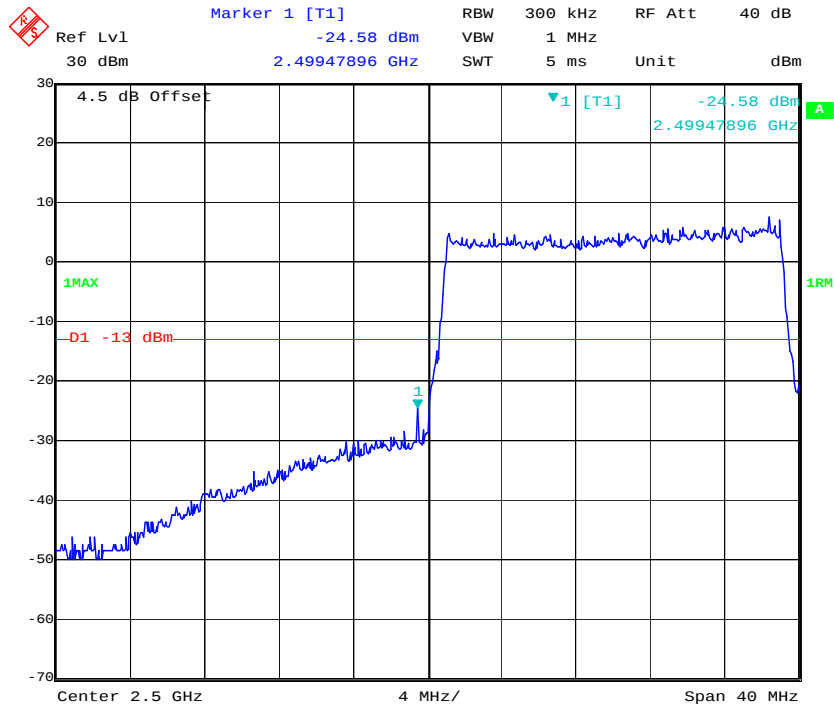
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16QAM_15MHz_ 75 RB_ Right

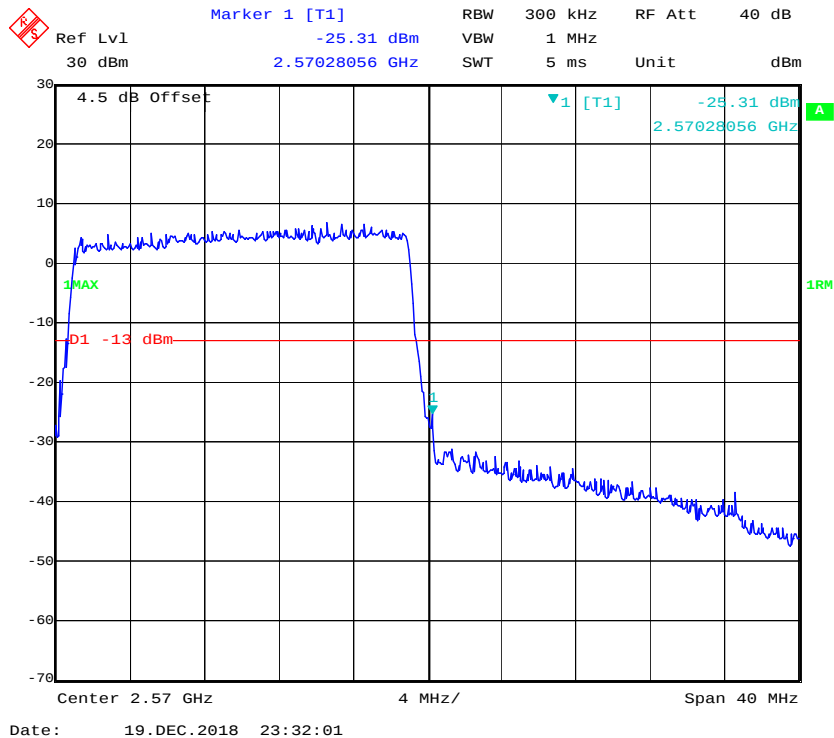


Date: 19.DEC.2018 23:30:36

16QAM_20MHz_ FULL RB_ Left

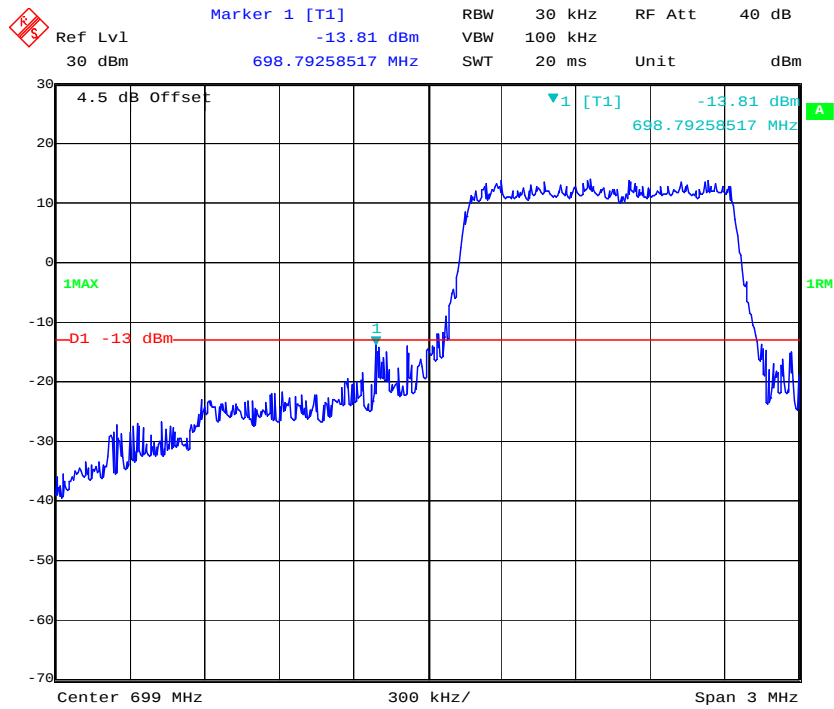


16QAM_20MHz_ FULL RB_ Right

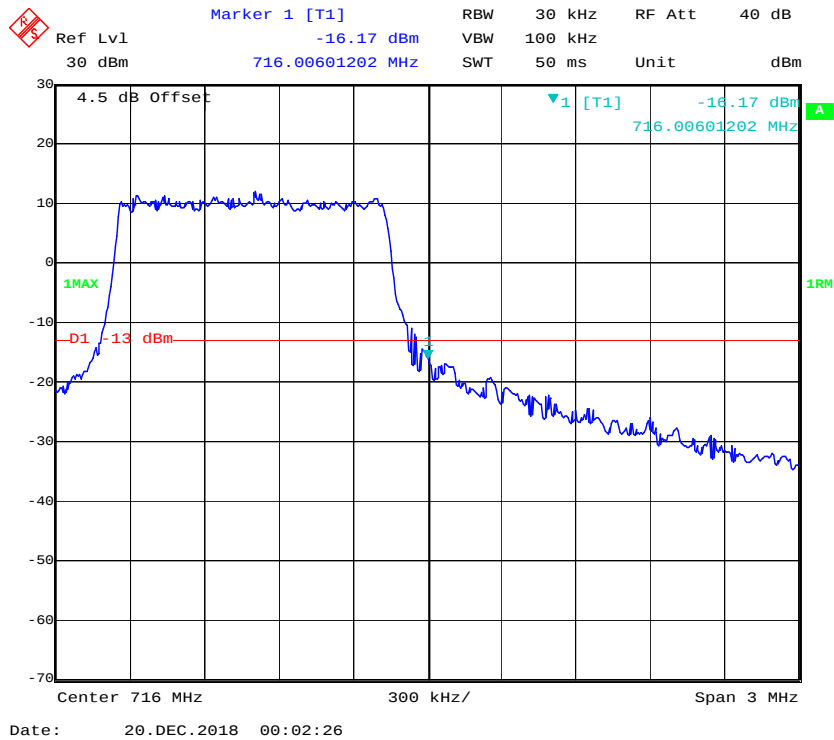


LTE Band 12

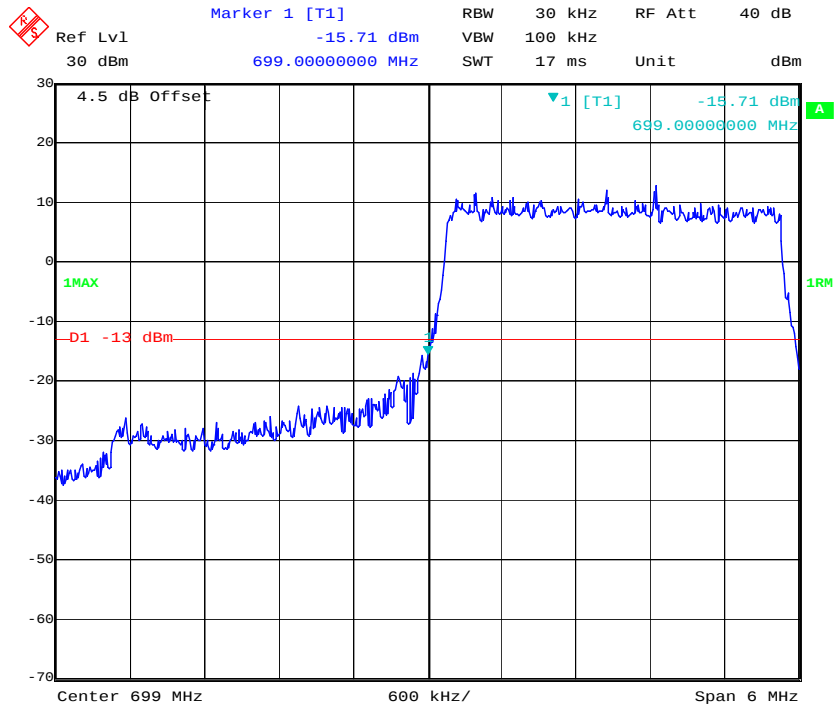
QPSK_1.4MHz_6 RB_ Left



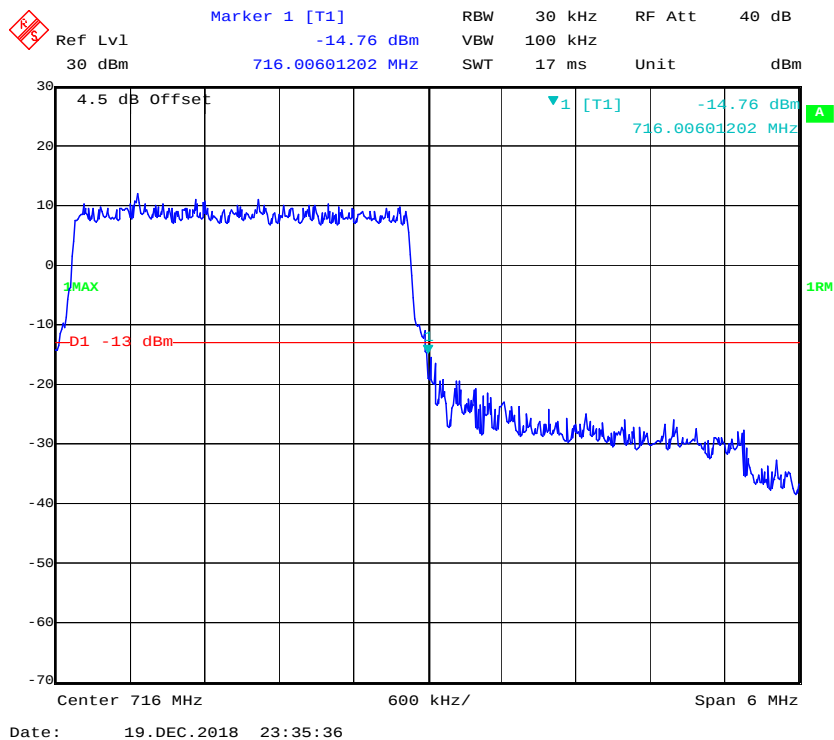
QPSK_1.4MHz_6 RB_ Right



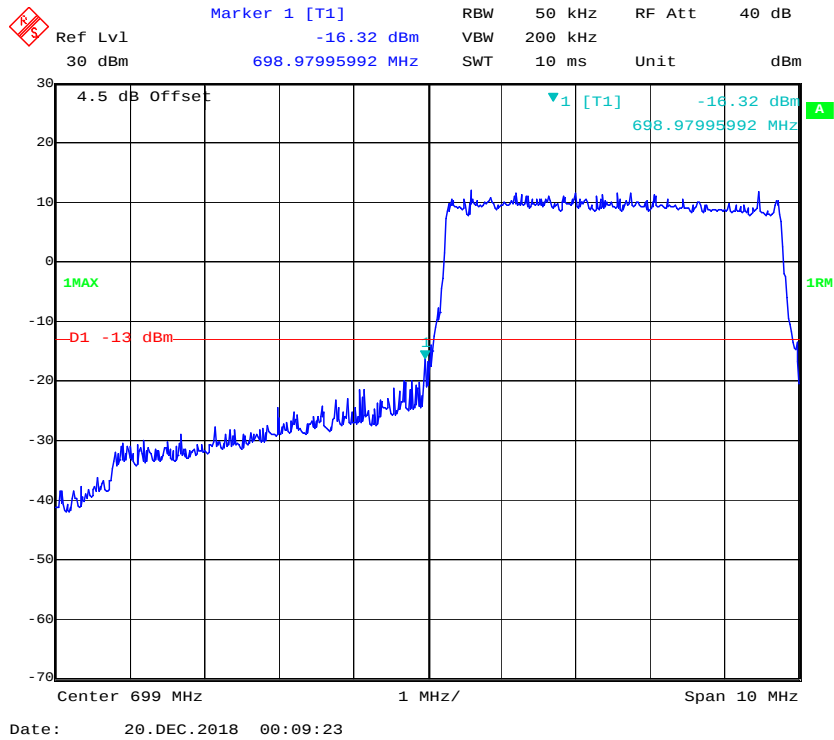
QPSK_3MHz_15 RB_ Left



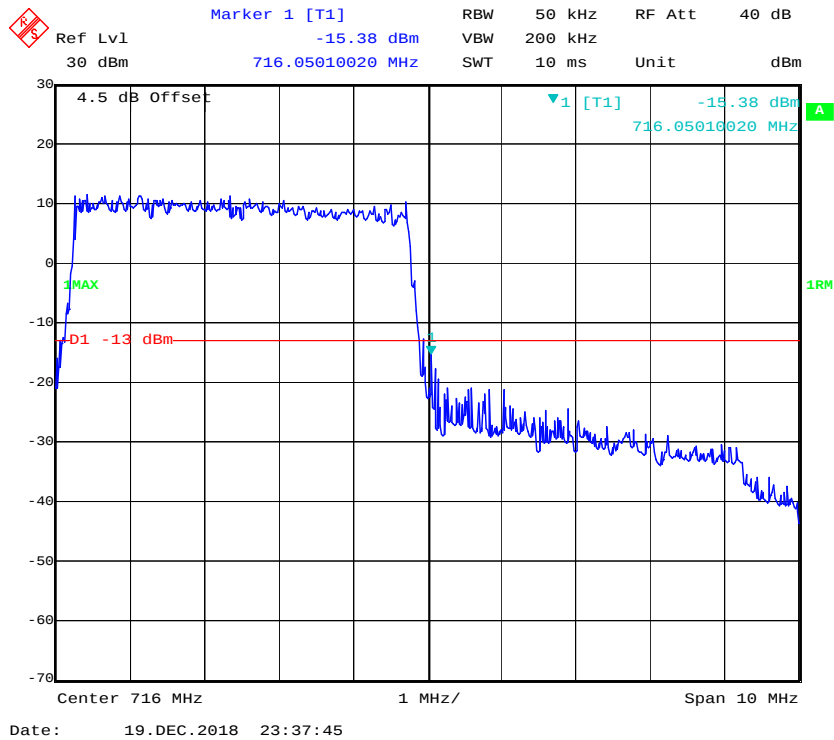
QPSK_3MHz_15 RB_ Right



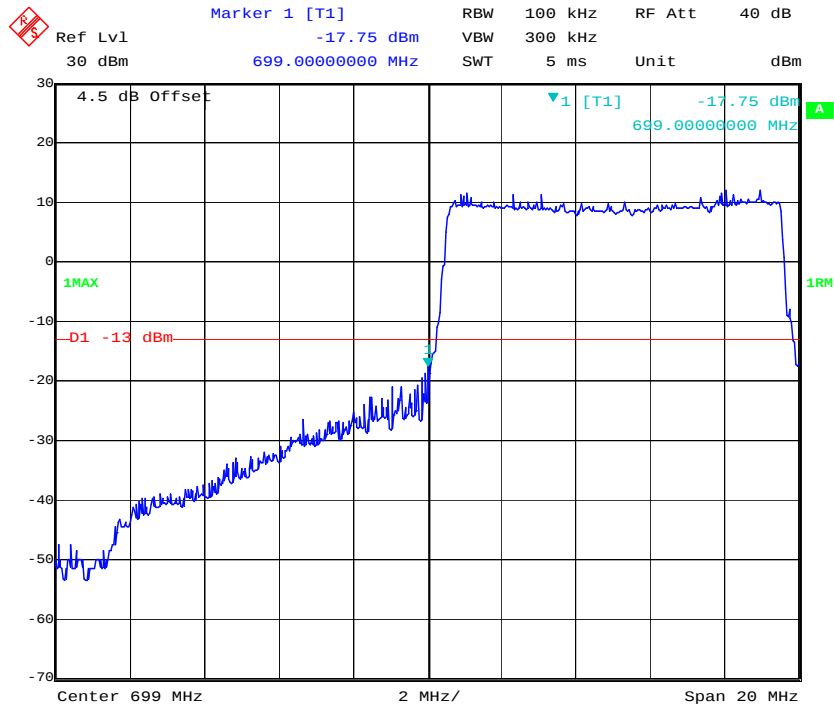
QPSK_5MHz_25 RB_ Left



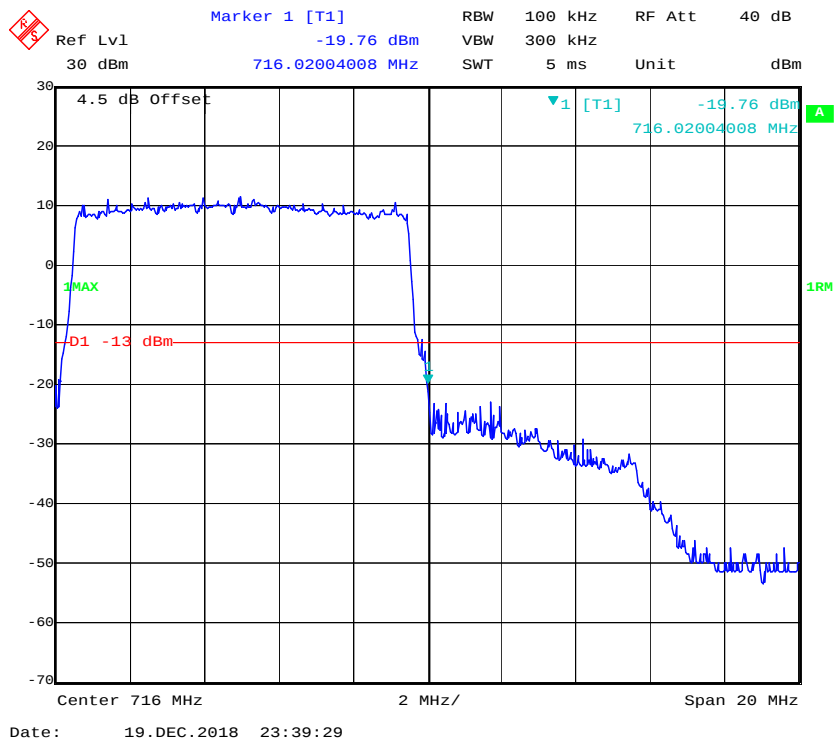
QPSK_5MHz_25 RB_ Right



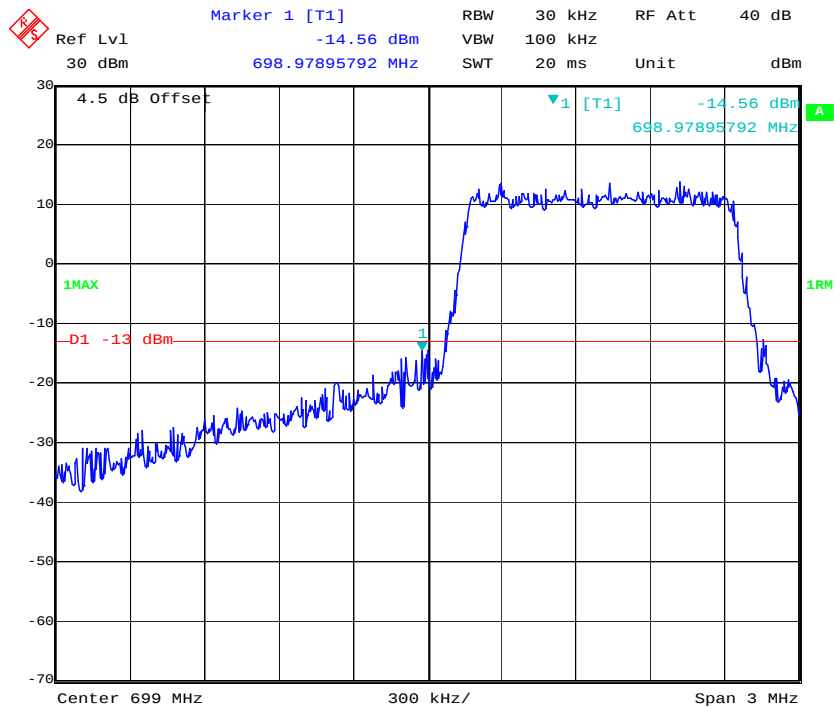
QPSK_10MHz_50 RB_ Left



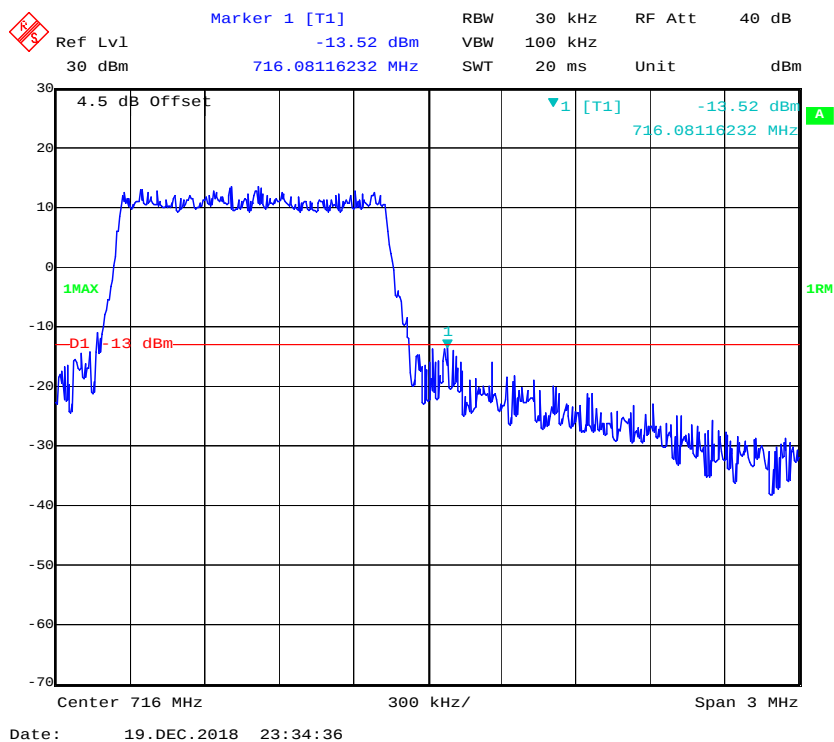
QPSK_10MHz_50 RB_ Right



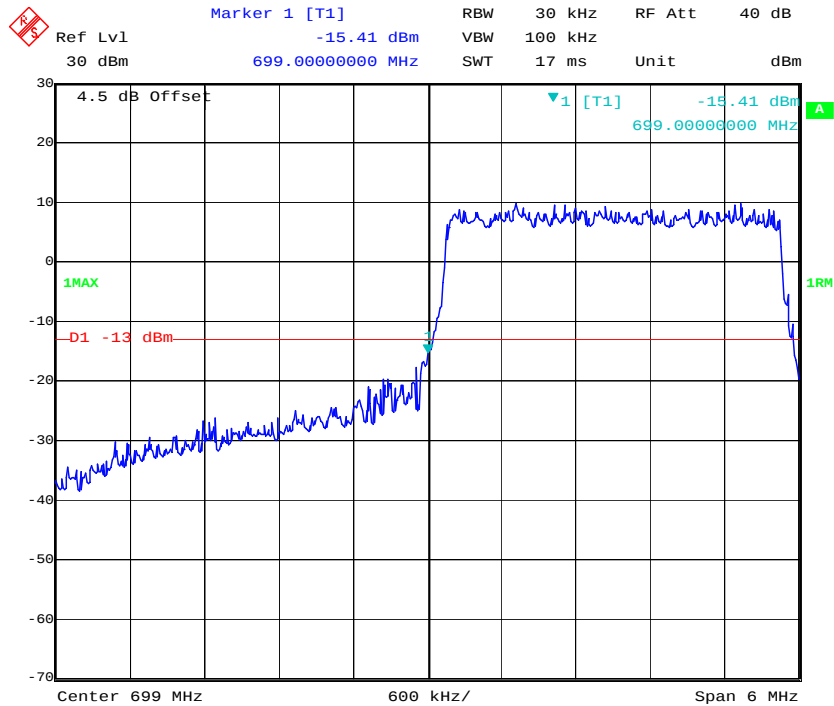
16QAM_1.4MHz_6 RB_ Left



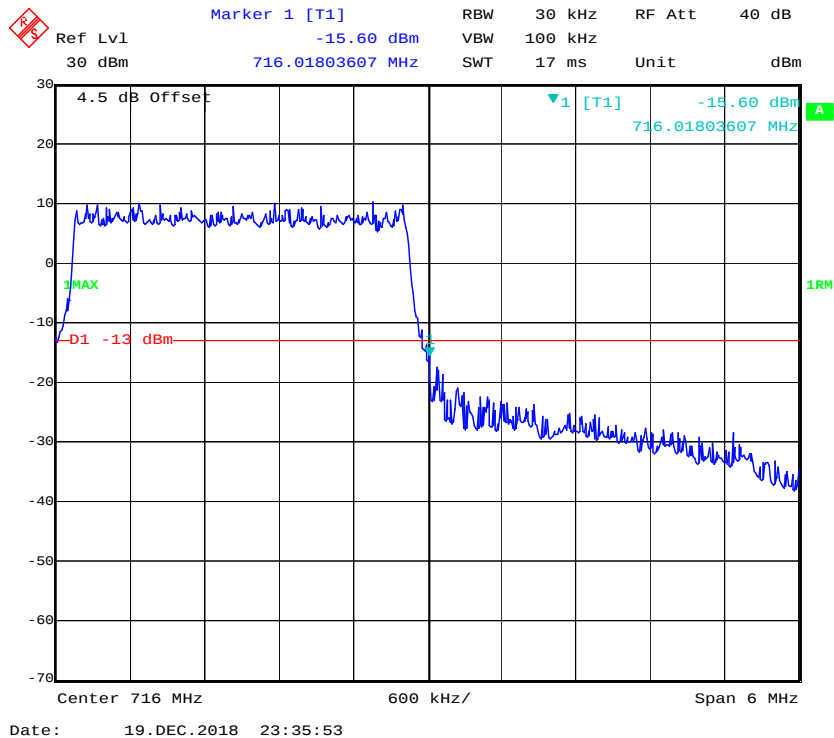
16QAM_1.4MHz_6 RB_ Right



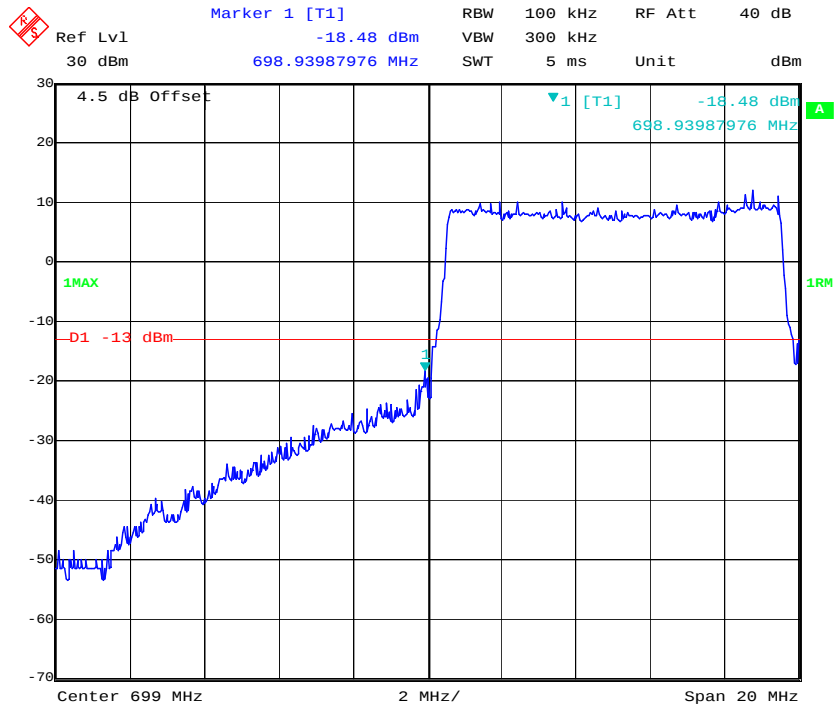
16QAM_3MHz_15 RB_ Left



16QAM_3MHz_15 RB_ Right



16QAM_10MHz_ 50 RB_ Left



Date: 19.DEC.2018 23:39:10

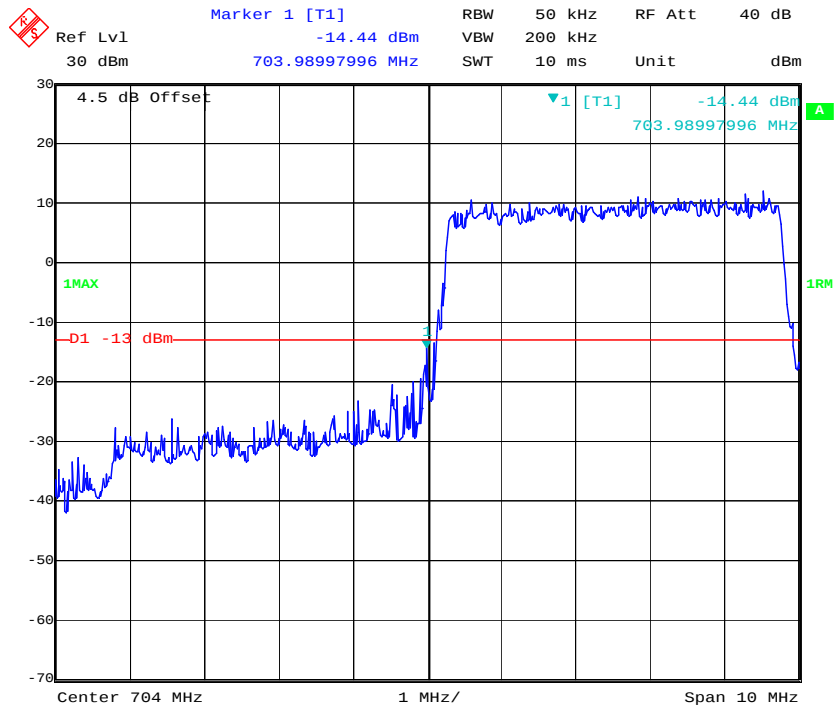
16QAM_10MHz_ 50 RB_ Right



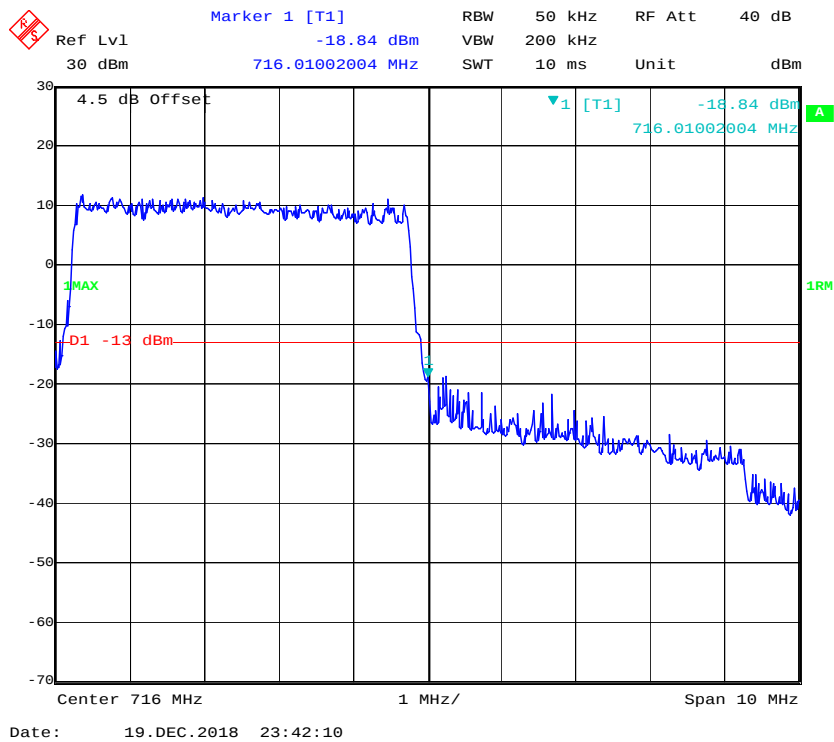
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LTE Band 17

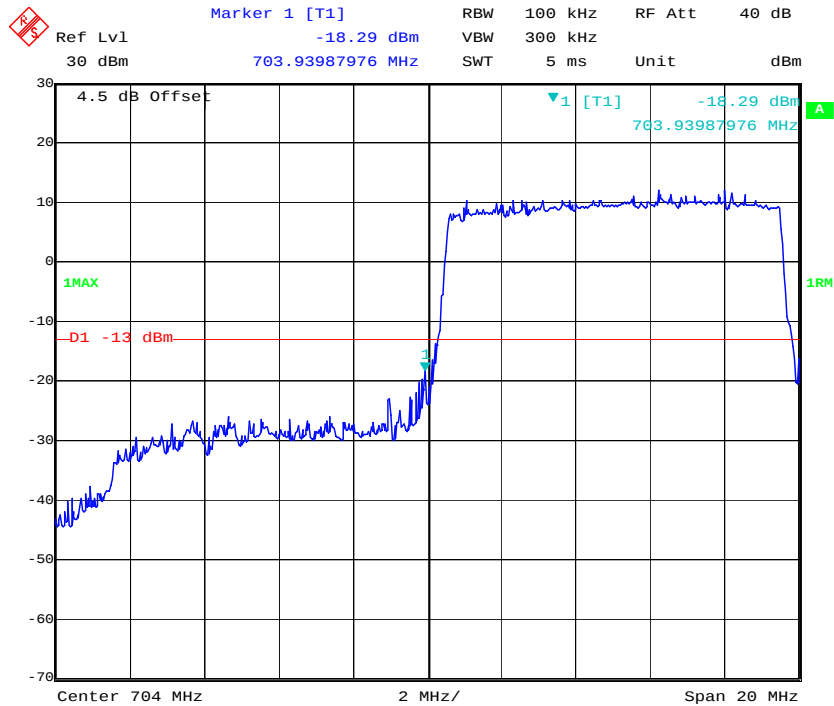
QPSK_5MHz_25 RB_ Left



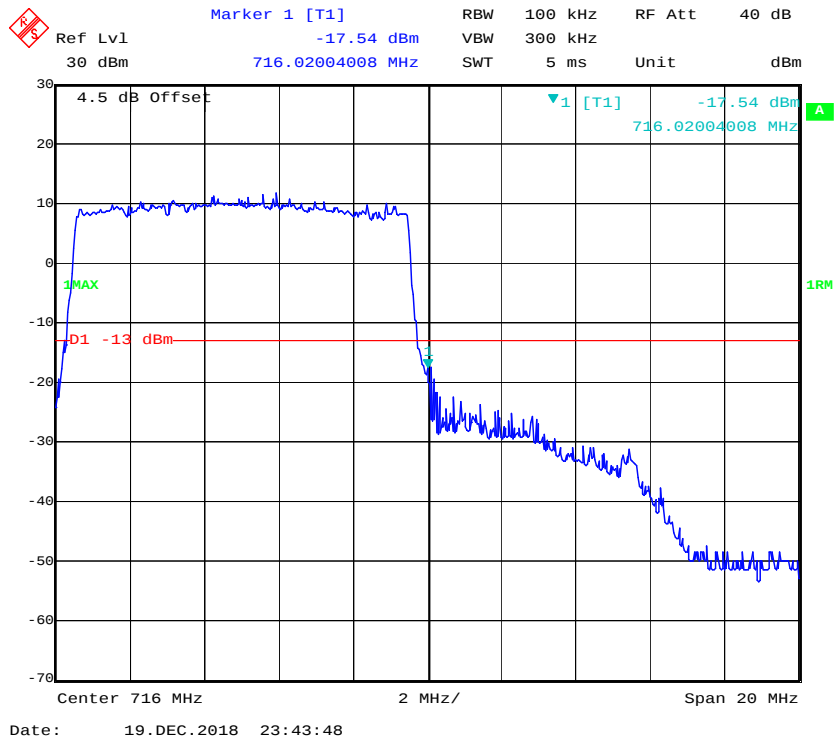
QPSK_5MHz_25 RB_ Right



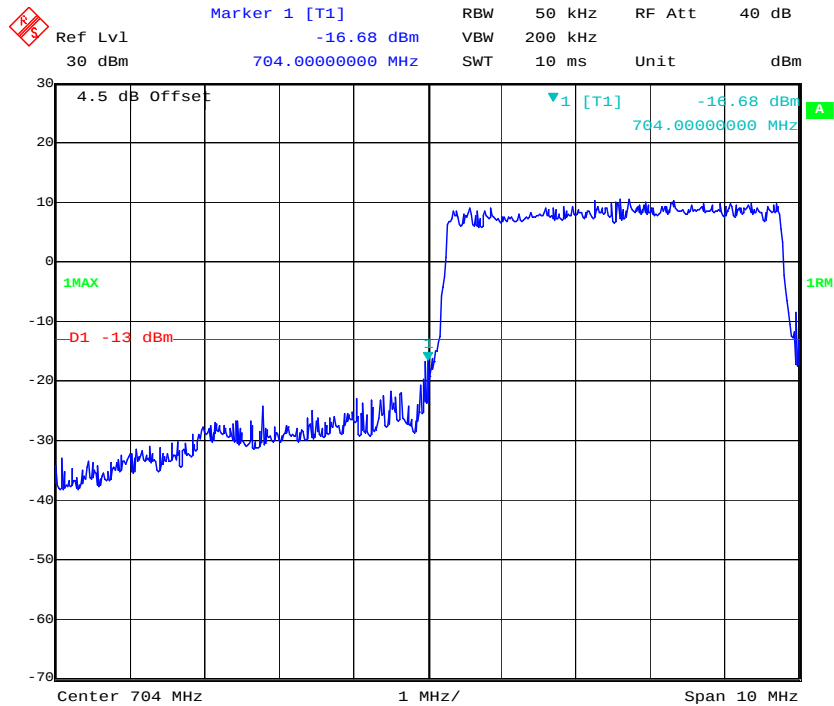
QPSK_10MHz_50 RB_Left



QPSK_10MHz_50 RB_Right

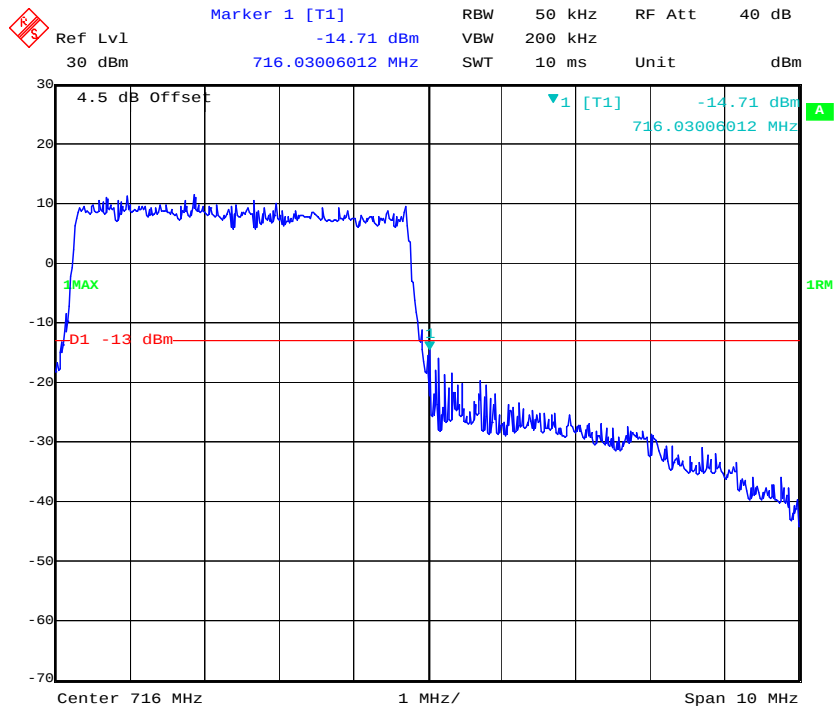


16QAM_5MHz_25 RB_ Left



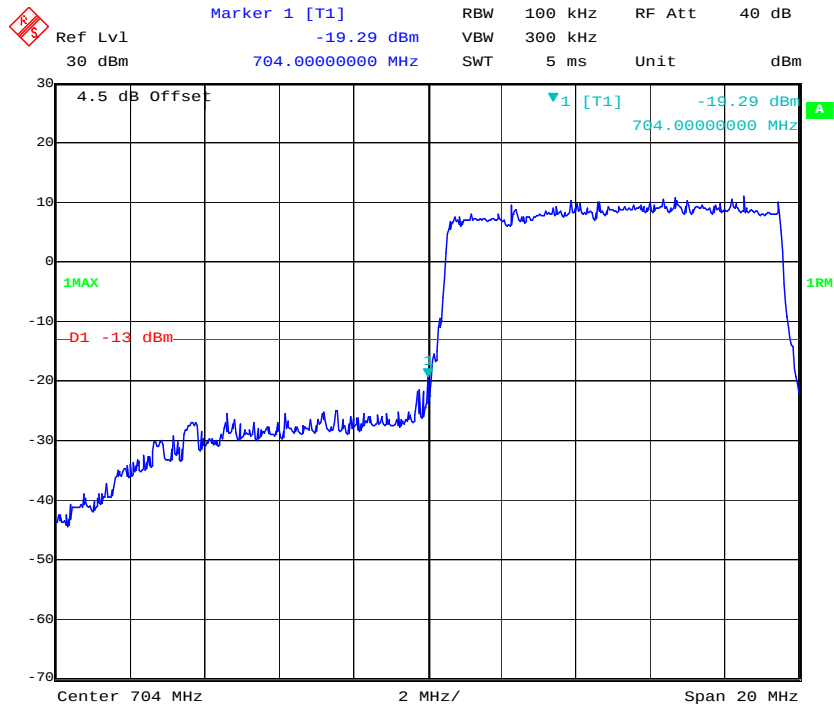
Date: 19.DEC.2018 23:41:11

16QAM_5MHz_25 RB_ Right



Date: 19.DEC.2018 23:42:50

16QAM_10MHz_ 50 RB_ Left



Date: 19.DEC.2018 23:43:30

16QAM_10MHz_ 50 RB_ Right



Date: 19.DEC.2018 23:44:06

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

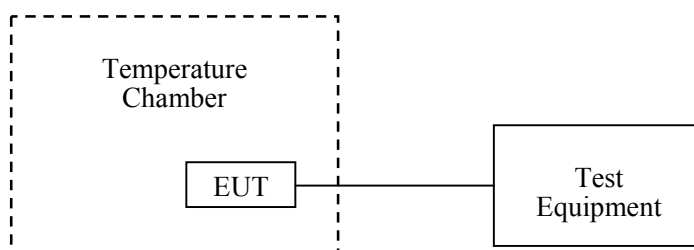
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

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

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

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	147473	2018-08-03	2019-08-03
R&S	Universal Radio Communication Tester	CMU200	110 822	2018-12-14	2019-12-14
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2018-03-26	2019-03-26
UNI-T	Multimeter	UT39A	M130199938	2018-07-24	2019-07-24
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2018-08-03	2019-08-03
Pro instrument	DC Power Supply	pps3300	3300012	N/A	N/A

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

Test Data**Environmental Conditions**

Temperature:	23.9~24.2°C
Relative Humidity:	34~36 %
ATM Pressure:	99.7~99.8 kPa

The testing was performed by Tiago Huang from 2018-12-17 to 2018-12-18.

Cellular Band (Part 22H)

GMSK, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.7	-6	-0.00717	2.5
-20		2	0.00239	
-10		-11	-0.01315	
0		-1	-0.00120	
10		-12	-0.01434	
20		3	0.00359	
30		-6	-0.00717	
40		-7	-0.00837	
50		4	0.00478	
20	3.5	7	0.00837	
20	4.2	-12	-0.01434	

8PSK, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.7	5	0.00598	2.5
-20		4	0.00478	
-10		3	0.00359	
0		1	0.00120	
10		0	0.00000	
20		-3	-0.00359	
30		-9	-0.01076	
40		6	0.00717	
50		8	0.00956	
20	3.5	0	0.00000	
20	4.2	6	0.00717	

PCS Band (Part 24E)

GMSK, Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
°C	V_{DC}	Hz	ppm	
-30	3.7	-9	-0.00479	Pass
-20		1	0.00053	
-10		1	0.00053	
0		9	0.00479	
10		-2	-0.00106	
20		-13	-0.00691	
30		-3	-0.00160	
40		-11	-0.00585	
50		0	0.00000	
20	3.5	5	0.00266	
20	4.2	-7	-0.00372	

8PSK, Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
°C	V_{DC}	Hz	ppm	
-30	3.7	0	0.00000	Pass
-20		11	0.00585	
-10		5	0.00266	
0		-10	-0.00532	
10		13	0.00691	
20		-10	-0.00532	
30		8	0.00426	
40		-4	-0.00213	
50		3	0.00160	
20	3.5	21	0.01117	
20	4.2	21	0.01117	

WCDMA Band II: R99

Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
°C	V _{DC}	Hz	ppm	
-30	3.7	-1	-0.00053	Pass
-20		-3	-0.00160	
-10		-6	-0.00319	
0		-9	-0.00479	
10		4	0.00213	
20		7	0.00372	
30		-11	-0.00585	
40		-10	-0.00532	
50		11	0.00585	
20	3.5	6	0.00319	
20	4.2	-11	-0.00585	

WCDMA Band V: R99

Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.7	8	0.00956	2.5
-20		7	0.00837	
-10		10	0.01195	
0		10	0.01195	
10		-9	-0.01076	
20		9	0.01076	
30		-11	-0.01315	
40		-12	-0.01434	
50		10	0.01195	
20	3.5	-6	-0.00717	
20	4.2	-10	-0.01195	

LTE Band 2:

QPSK, Channel Bandwidth:10MHz Middle Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.7	-20.56	-0.01094	Pass
-20		-11.09	-0.00590	
-10		-9.22	-0.00490	
0		0.28	0.00015	
10		-7.28	-0.00387	
20		-15.86	-0.00844	
30		-4.11	-0.00219	
40		13.66	0.00727	
50		-9.79	-0.00521	
20	3.5	-11.44	-0.00609	
20	4.2	-18.50	-0.00984	

16QAM, Channel Bandwidth:10MHz Middle Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.7	-14.94	-0.0080	Pass
-20		13.05	0.0069	
-10		-12.84	-0.0068	
0		-1.68	-0.0009	
10		-21.78	-0.0116	
20		9.39	0.0050	
30		5.69	0.0030	
40		-9.61	-0.0051	
50		1.62	0.0009	
20	3.5	6.16	0.0033	
20	4.2	-15.02	-0.0080	

LTE Band 4:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.7	1710.571110	1754.549180	1710	1755
-20		1710.571130	1754.549240	1710	1755
-10		1710.571230	1754.548960	1710	1755
0		1710.571190	1754.548990	1710	1755
10		1710.571310	1754.549080	1710	1755
20		1710.571140	1754.549100	1710	1755
30		1710.570960	1754.548940	1710	1755
40		1710.571040	1754.549210	1710	1755
50		1710.571060	1754.549070	1710	1755
20	3.5	1710.570920	1754.549230	1710	1755
20	4.2	1710.570940	1754.549140	1710	1755

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.7	1710.571200	1754.549050	1710	1755
-20		1710.571170	1754.549020	1710	1755
-10		1710.571120	1754.548910	1710	1755
0		1710.571030	1754.549160	1710	1755
10		1710.571250	1754.549020	1710	1755
20		1710.571140	1754.549100	1710	1755
30		1710.570940	1754.549230	1710	1755
40		1710.571000	1754.549030	1710	1755
50		1710.571160	1754.549090	1710	1755
20	3.5	1710.570940	1754.548890	1710	1755
20	4.2	1710.571260	1754.549120	1710	1755

LTE Band 5:

Middle Channel, $f_c = 836.5$ MHz, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.7	-11.07	-0.01323	2.5
-20		9.25	0.01106	
-10		11.89	0.01421	
0		-0.31	-0.00037	
10		4.35	0.00520	
20		10.04	0.01200	
30		4.68	0.00559	
40		-15.49	-0.01852	
50		7.44	0.00889	
20	3.5	1.01	0.00121	
20	4.2	-10.36	-0.01238	

Middle Channel, $f_c = 836.5$ MHz, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.7	6.84	0.00818	2.5
-20		-3.53	-0.00422	
-10		-17.21	-0.02057	
0		10.83	0.01295	
10		-18.87	-0.02256	
20		2.25	0.00269	
30		-13.65	-0.01632	
40		-9.26	-0.01107	
50		-6.28	-0.00751	
20	3.5	-10.58	-0.01265	
20	4.2	6.51	0.00778	

LTE Band 7:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.7	2500.531220	2569.508810	2500	2570
-20		2500.531170	2569.509100	2500	2570
-10		2500.531100	2569.508990	2500	2570
0		2500.530870	2569.509050	2500	2570
10		2500.531090	2569.509040	2500	2570
20		2500.531060	2569.509020	2500	2570
30		2500.531100	2569.508960	2500	2570
40		2500.531210	2569.508980	2500	2570
50		2500.530910	2569.508810	2500	2570
20	3.5	2500.530990	2569.509190	2500	2570
20	4.2	2500.530840	2569.509080	2500	2570

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.7	2500.530930	2569.509080	2500	2570
-20		2500.531000	2569.508930	2500	2570
-10		2500.530940	2569.509130	2500	2570
0		2500.531170	2569.508980	2500	2570
10		2500.530960	2569.508880	2500	2570
20		2500.531060	2569.509020	2500	2570
30		2500.530990	2569.509140	2500	2570
40		2500.531190	2569.508870	2500	2570
50		2500.531170	2569.509050	2500	2570
20	3.5	2500.530970	2569.509060	2500	2570
20	4.2	2500.531020	2569.509140	2500	2570

LTE Band 12:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.7	699.531132	715.509159	699	716
-20		699.531189	715.508839	699	716
-10		699.531161	715.508959	699	716
0		699.531151	715.508996	699	716
10		699.531190	715.509153	699	716
20		699.531062	715.509018	699	716
30		699.530937	715.509086	699	716
40		699.530919	715.508832	699	716
50		699.531118	715.509078	699	716
20	3.5	699.531131	715.509156	699	716
20	4.2	699.531092	715.508856	699	716

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.7	699.531120	715.508855	699	716
-20		699.531225	715.508989	699	716
-10		699.530904	715.508855	699	716
0		699.530923	715.509110	699	716
10		699.531194	715.509025	699	716
20		699.531062	715.509018	699	716
30		699.530936	715.509140	699	716
40		699.530879	715.509001	699	716
50		699.531142	715.509031	699	716
20	3.5	699.531192	715.508959	699	716
20	4.2	699.531051	715.509033	699	716

LTE Band 17:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.7	704.571223	715.508831	704	716
-20		704.571179	715.509063	704	716
-10		704.571167	715.509038	704	716
0		704.571193	715.508957	704	716
10		704.571079	715.508921	704	716
20		704.571142	715.509018	704	716
30		704.571303	715.509059	704	716
40		704.571131	715.509103	704	716
50		704.571006	715.509102	704	716
20	3.5	704.571256	715.508831	704	716
20	4.2	704.571254	715.508972	704	716

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.7	704.571256	715.508925	704	716
-20		704.571117	715.509140	704	716
-10		704.571174	715.509011	704	716
0		704.571208	715.508843	704	716
10		704.571169	715.509091	704	716
20		704.571142	715.509018	704	716
30		704.571049	715.509031	704	716
40		704.571163	715.508968	704	716
50		704.570961	715.509126	704	716
20	3.5	704.571055	715.509034	704	716
20	4.2	704.571042	715.508829	704	716

Note: The fundamental emissions stay within the authorized bands of operation based on the frequency deviation measured is small, the extreme voltage was declared by applicant.

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