



TESTING LABORATORY
CERTIFICATE #4820.01



FCC PART 22H, PART 24E
FCC PART 27, PART 90
MEASUREMENT AND TEST REPORT

For

**HONGKONG UCLOUDLINK NETWORK
TECHNOLOGY LIMITED**

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FCC ID: 2AC88-GLMG18A01

Report Type: Original Report	Product Type: 4G Wireless Data Terminal
Report Number: RDG181012004-00B	
Report Date: 2018-11-24	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	4G Wireless Data Terminal
EUT Model:	GLMG18A01
FCC ID:	2AC88-GLMG18A01
Rated Input Voltage:	DC3.85V from Li-ion Rechargeable Battery or DC5V from USB port
External Dimension:	Length (136 mm)*Width (72.2 mm)*High (12 mm)
Serial Number:	181012004
EUT Received Date:	2018.10.15

Objective

This report is prepared on behalf of **HONGKONG UCLOUDLINK NETWORK TECHNOLOGY LIMITED** in accordance with: Part 2-Subpart J, Part 22-Subpart H, Part 24-Subpart E, Part 27 and part 90 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: 2AC88-GLMG18A01.
FCC Part 15C DSS submissions with FCC ID: 2AC88-GLMG18A01.
FCC Part 15B JBP submissions with FCC ID: 2AC88-GLMG18A01.

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
Part 90 –PRIVATE LAND MOBILE RADIO 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 test site has been approved by the FCC 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 test site has been registered with ISED Canada under ISED Canada Registration Number 3062D.

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 support GSM/GPRS/EDGE 850 band and 1900 band, WCDMA/HSUPA/HPDPA/HSPA+ Band 2, Band 4 and band 5, LTE band 2, 4, 5, 7, 12, 13, 17, 18, 19, 26, 38, 40 and 41. Test was performed with channels as below table:

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSMGPRS/EDGE850	0.25	824.2	836.6	848.8
GSM/GPRS/EDGE1900	0.25	1850.2	1880	1909.8
WCDMA Band 2	4.2	1852.4	1880	1907.6
WCDMA Band 4	4.2	1712.4	1732.6	1752.6
WCDMA Band 5	4.2	826.4	836.6	846.6
LTE Band 2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855	1880	1905
	15	1857.5	1880	1902.5
	20	1860	1880	1900
LTE Band 4	1.4	1710.7	1732.5	1754.3
	3	1711.5	1732.5	1753.5
	5	1712.5	1732.5	1752.5
	10	1715	1732.5	1750
	15	1717.5	1732.5	1747.5
	20	1720	1732.5	1745
LTE Band 5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829	836.5	844
LTE Band 7	5	2502.5	2535	2567.5
	10	2505	2535	2565
	15	2507.5	2535	2562.5
	20	2510	2535	2560
LTE Band 12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704	707.5	711
LTE Band 13	5	779.5	782	784.5
	10	/	782	/
LTE Band 17	5	706.5	710	713.5
	10	709	710	711
LTE Band 18	5	817.5	822.5	827.5
	10	820	822.5	825
	15	/	822.5	/
LTE Band 19	5	832.5	837.5	842.5
	10	835	837.5	840
	15	/	837.5	/

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
LTE Band 26	1.4	814.7	831.5	848.3
	3	815.5	831.5	847.5
	5	816.5	831.5	846.5
	10	819	831.5	844
	15	821.5	831.5	841.5
LTE Band 38	5	2572.5	2595	2617.5
	10	2575	2595	2615
	15	2577.5	2595	2612.5
	20	2580	2595	2610
LTE Band 40 2305-2315MHz	5	2307.5	2310	2312.5
	10	/	2310	/
LTE Band 40 2350-2360MHz	5	2352.5	2355	2357.5
	10	/	2355	/
LTE Band 41	5	2537.5	2595	2652.5
	10	2540	2595	2650
	15	2542.5	2595	2647.5
	20	2545	2595	2645

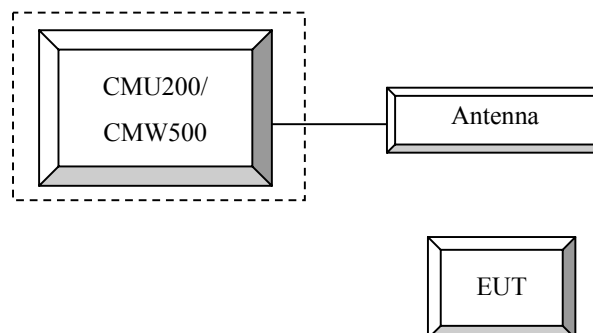
Equipment Modifications

No modification was made to the EUT.

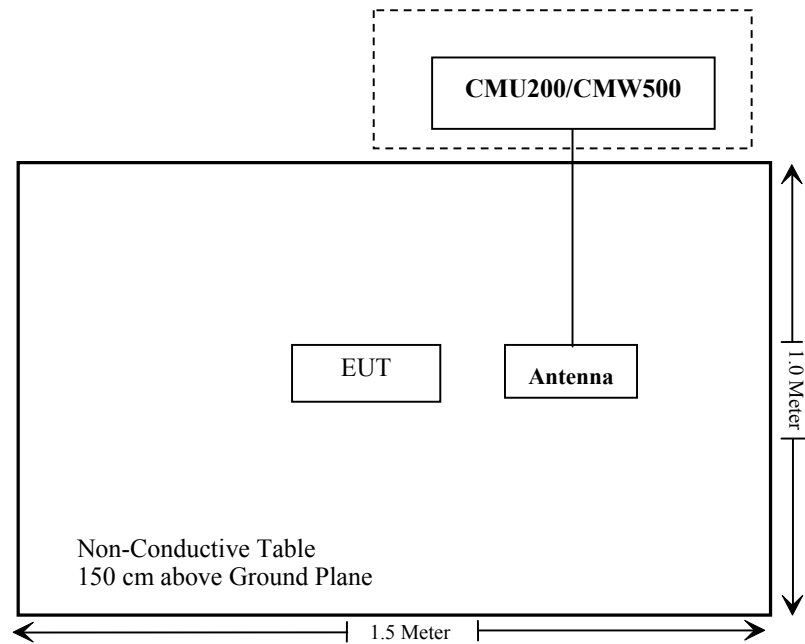
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester	CMU200	109038
R&S	Wideband Radio Communication Tester	CMW500	110479
N/A	ANTENNA	N/A	N/A

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310, §2.1093	RF Exposure	Compliance
§2.1046; § 22.913 (a); § 24.232 (c); §27.50;§90.635	RF Output Power	Compliance
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905 § 22.917; § 24.238; §27.53;§90.209	Occupied Bandwidth	Compliance
§ 2.1051, § 22.917 (a); § 24.238 (a); §27.53;§90.691	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053 § 22.917 (a); § 24.238 (a); §27.53;§90.691	Field Strength of Spurious Radiation	Compliance
§ 22.917 (a); § 24.238 (a); §27.53;§90.691	Out of band emission, Band Edge	Compliance
§ 2.1055 § 22.355; § 24.235; §27.54 §90.213	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

Compliance, please refer to the SAR report: RXZ181012004-23.

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 & §90.635 - 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

(a)(3) Mobile and portable stations. (i) For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

(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.

According to §90.635

(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

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.

LTE(TDD):

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$			$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

Calculated Duty Cycle = Extended cyclic prefix in uplink $\times (T_s) \times \#$ of S + $\#$ of U

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:

Calculated Duty Cycle = $5120 \times [1/(15000 \times 2048)] \times 2 + 6 \text{ ms} = 63.33\%$

where

$T_s = 1/(15000 \times 2048)$ seconds

Radiated method:

ANSI/TIA-603-D section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2017-12-11	2018-12-11
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2018-09-05	2019-09-05
TDK RF	Horn Antenna	HRN-0118	130 084	2016-01-05	2019-01-04
Agilent	Spectrum Analyzer	E4440A	SG43360054	2018-01-04	2019-01-04
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2018-09-05	2019-09-05
MICRO-COAX	Coaxial Cable	UFA147-1-2362-100100	64639 231029-001	2018-02-24	2019-02-28
R&S	Universal Radio Communication Tester	CMU200	110 822	2017-12-14	2018-12-14
R&S	Wideband Radio Communication Tester	CMW500	110479	2017-12-11	2018-12-11
Agilent	Signal Generator	E8247C	MY43321350	2017-12-11	2018-12-11

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

Test Data**Environmental Conditions**

Temperature:	27.5 ~28.7°C
Relative Humidity:	27 ~ 41 %
ATM Pressure:	100.6~101 kPa

* The testing was performed by Tyler Pan & Vern Shen from 2018-10-28~ 2018-11-02

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	31.50	31.56	29.75	28.32	26.61	25.19	25.11	24.32	23.69
	190	31.50	31.54	29.95	28.44	26.75	25.06	24.94	24.15	23.46
	251	31.60	31.63	29.87	28.45	26.94	24.95	24.85	24.29	23.57
PCS	512	29.70	29.77	28.02	26.54	24.57	24.29	24.03	23.91	23.14
	661	29.70	29.75	28.05	26.74	24.61	24.35	24.19	24.04	23.11
	810	29.60	29.65	28.03	26.69	24.79	24.12	23.97	23.85	22.97

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	22.03	4.46	21.35	3.88	21.79	3.53
HSDPA	1	20.85	4.62	20.15	4.68	20.36	4.68
	2	20.72	4.68	20.54	4.31	20.46	4.52
	3	20.81	4.40	20.86	4.89	20.60	4.81
	4	20.40	4.33	20.57	4.49	20.77	4.73
HSUPA	1	20.70	5.99	20.55	6.79	20.26	6.25
	2	20.48	5.65	20.67	6.01	20.57	6.08
	3	20.70	5.67	20.36	5.67	20.60	5.86
	4	20.87	6.00	20.42	5.84	20.89	5.79
	5	20.75	5.80	20.81	6.17	20.70	5.67
HSPA+	1	20.72	5.88	20.68	5.97	20.82	5.87

WCDMA Band IV

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	22.59	3.04	22.60	3.08	22.52	3.08
HSDPA	1	20.88	3.43	20.54	3.27	20.23	4.10
	2	20.68	3.73	20.46	3.89	20.87	4.10
	3	20.88	3.71	20.44	4.03	20.82	4.10
	4	20.62	4.03	20.67	3.61	20.84	3.67
	5	20.52	5.38	20.89	6.28	20.35	5.64
HSUPA	1	20.52	5.38	20.89	6.28	20.35	5.64
	2	20.87	5.15	20.63	6.13	20.45	5.62
	3	20.75	5.39	20.62	5.76	20.35	5.68
	4	20.76	5.24	20.85	6.09	20.37	5.42
	5	20.49	4.92	20.79	6.02	20.80	5.25
HSPA+	1	20.90	5.45	20.44	5.78	20.37	5.25

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	22.89	3.49	22.91	3.37	22.96	3.56
HSDPA	1	21.74	4.42	21.81	4.55	21.88	4.55
	2	20.68	4.27	20.42	4.24	20.70	4.60
	3	20.76	4.07	20.59	4.08	20.65	4.39
	4	20.79	4.54	20.44	4.25	20.59	4.21
HSUPA	1	21.58	5.77	21.88	5.38	21.95	6.38
	2	20.59	5.80	20.68	5.07	20.48	5.83
	3	20.36	5.27	20.47	5.43	20.74	6.27
	4	20.55	5.55	20.39	5.04	20.46	6.20
	5	20.61	5.81	20.72	5.25	20.39	6.42
HSPA+	1	20.64	5.69	20.76	5.26	20.76	6.41

LTE Band 2

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	21.70	22.35	21.34
		1#3	21.69	22.48	21.42
		1#5	21.38	22.22	21.10
		3#0	21.55	22.43	21.34
		3#3	21.48	22.35	21.22
		6#0	21.50	21.63	21.30
	16QAM	1#0	21.38	21.92	21.49
		1#3	21.42	21.93	21.62
		1#5	21.39	22.00	21.30
		3#0	21.64	21.70	21.37
		3#3	21.57	21.79	21.27
		6#0	21.00	20.80	20.92
3MHz	QPSK	1#0	21.21	22.25	21.30
		1#8	21.13	22.25	21.33
		1#14	20.94	21.95	20.97
		6#0	21.26	21.62	21.35
		6#9	21.11	21.73	21.19
		15#0	21.19	21.73	21.27
	16QAM	1#0	21.85	22.03	21.35
		1#8	21.84	22.00	21.41
		1#14	21.67	22.06	21.07
		6#0	20.65	20.82	21.16
		6#9	20.63	20.87	21.12
		15#0	20.74	20.85	20.89
5MHz	QPSK	1#0	20.87	21.85	20.96
		1#13	21.22	22.26	21.43
		1#24	20.55	21.40	20.61
		15#0	21.05	21.76	21.30
		15#10	20.96	21.74	21.18
		25#0	20.97	21.64	21.17
	16QAM	1#0	20.73	21.97	21.02
		1#13	20.81	21.90	21.50
		1#24	20.53	21.81	20.69
		15#0	20.71	20.66	20.76
		15#10	20.74	20.70	20.70
		25#0	20.75	20.77	20.94

10MHz	QPSK	1#0	20.78	21.95	20.57
		1#25	20.91	22.14	21.32
		1#49	21.31	21.73	21.22
		25#0	20.95	21.67	21.04
		25#25	21.25	21.64	21.46
		50#0	21.09	21.73	21.26
	16QAM	1#0	21.42	22.22	20.65
		1#25	21.66	22.20	21.19
		1#49	22.10	22.01	21.20
		25#0	20.77	20.91	21.05
		25#25	20.78	20.92	21.04
		50#0	20.76	20.87	20.95
15MHz	QPSK	1#0	20.77	21.93	20.45
		1#38	20.97	22.02	21.16
		1#74	21.30	20.98	20.94
		36#0	20.99	21.71	20.92
		36#39	21.37	21.65	21.38
		75#0	21.19	21.76	21.17
	16QAM	1#0	21.43	22.27	21.04
		1#38	21.74	22.30	21.76
		1#74	22.09	21.37	21.49
		36#0	20.86	20.86	20.92
		36#39	21.01	20.91	20.84
		75#0	20.94	20.89	20.93
20MHz	QPSK	1#0	20.84	22.38	20.88
		1#50	21.26	22.21	20.89
		1#99	22.49	21.89	21.98
		50#0	20.83	21.71	20.52
		50#50	21.75	21.81	21.40
		100#0	21.42	21.73	20.97
	16QAM	1#0	21.15	21.91	21.03
		1#50	21.66	21.87	21.10
		1#99	22.10	21.97	21.81
		50#0	20.83	20.79	20.64
		50#50	20.82	20.95	20.95
		100#0	20.81	20.90	20.87

LTE Band 4

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	23.05	22.82	22.99
		1#3	23.04	22.82	22.99
		1#5	23.03	22.80	23.02
		3#0	23.08	22.94	22.84
		3#3	23.10	22.85	22.88
		6#0	22.07	21.93	21.83
	16QAM	1#0	22.80	22.51	21.96
		1#3	22.82	22.47	21.91
		1#5	22.92	22.52	21.98
		3#0	22.15	21.83	21.84
		3#3	22.29	21.91	21.86
		6#0	21.43	21.20	21.19
3MHz	QPSK	1#0	22.98	22.80	23.04
		1#8	23.00	22.75	23.02
		1#14	22.92	22.79	23.06
		6#0	22.06	21.98	21.92
		6#7	21.98	22.04	21.84
		15#0	22.08	21.93	21.86
	16QAM	1#0	22.44	22.90	21.56
		1#8	22.43	22.92	21.51
		1#14	22.44	22.93	21.53
		6#0	21.39	21.07	21.01
		6#7	21.41	21.04	21.03
		15#0	21.25	21.14	20.95
5MHz	QPSK	1#0	23.04	23.06	22.68
		1#13	23.04	23.02	22.64
		1#24	23.03	22.99	22.69
		15#0	22.14	21.95	21.90
		15#10	22.07	21.93	21.95
		25#0	22.19	21.91	21.89
	16QAM	1#0	21.43	22.04	21.53
		1#13	21.43	22.04	21.49
		1#24	21.45	22.03	21.51
		15#0	21.36	20.97	21.02
		15#10	21.28	20.96	20.98
		25#0	21.35	21.06	20.88

10MHz	QPSK	1#0	23.04	22.93	22.89
		1#24	23.07	22.77	22.93
		1#49	23.06	22.86	22.96
		25#0	22.13	21.97	21.84
		25#25	22.05	21.89	21.92
		50#0	22.14	22.01	21.90
	16QAM	1#0	22.00	22.30	23.02
		1#24	21.97	22.24	22.96
		1#49	21.97	22.23	23.00
		25#0	21.40	21.12	21.04
		25#25	21.36	21.00	21.02
		50#0	21.23	21.10	20.99
15MHz	QPSK	1#0	22.96	22.93	22.88
		1#38	22.90	22.84	22.88
		1#74	22.96	22.86	22.93
		36#0	22.08	21.96	21.95
		36#39	22.03	21.95	22.01
		75#0	22.08	21.89	22.00
	16QAM	1#0	22.44	22.79	22.17
		1#38	22.39	22.76	22.13
		1#74	22.32	22.13	22.17
		36#0	21.30	21.15	21.05
		36#39	21.33	21.10	21.19
		75#0	21.22	21.13	21.02
20MHz	QPSK	1#0	22.99	23.17	22.86
		1#49	22.91	23.08	23.14
		1#99	23.02	23.11	23.21
		50#0	22.07	21.98	22.00
		50#50	22.03	21.86	21.88
		100#0	22.08	21.90	21.99
	16QAM	1#0	22.90	22.01	21.79
		1#49	22.78	21.83	21.80
		1#99	22.71	21.89	21.81
		50#0	21.24	21.17	21.00
		50#50	21.17	21.07	20.97
		100#0	21.25	21.10	21.04

LTE Band 5

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	23.40	23.25	23.24
		1#3	23.36	23.23	23.27
		1#5	23.34	23.30	23.25
		3#0	23.32	23.37	23.28
		3#3	23.22	23.30	23.33
		6#0	22.25	22.35	22.27
	16QAM	1#0	22.65	23.06	21.90
		1#3	22.68	22.99	21.76
		1#5	22.75	23.05	21.75
		3#0	22.32	22.20	22.35
		3#3	22.33	22.29	22.31
3MHz	QPSK	1#0	23.27	23.19	23.29
		1#8	23.24	23.20	23.28
		1#14	23.27	23.32	23.36
		6#0	22.21	22.35	22.28
		6#9	22.32	22.34	22.31
		15#0	22.21	22.22	22.25
	16QAM	1#0	22.43	23.04	21.90
		1#8	22.39	22.99	21.85
		1#14	22.55	23.04	21.77
		6#0	21.30	21.29	21.45
		6#9	21.29	21.45	21.34
5MHz	QPSK	1#0	23.20	23.29	23.34
		1#13	23.13	23.24	23.28
		1#24	23.24	23.37	23.34
		15#0	22.19	22.40	22.22
		15#0	22.19	22.27	22.37
		25#0	22.31	22.28	22.27
	16QAM	1#0	21.89	21.44	22.46
		1#13	21.88	21.44	22.22
		1#24	21.97	21.43	22.12
		15#0	21.33	21.42	21.17
		15#10	21.35	21.42	21.12
10MHz	QPSK	25#0	21.15	21.41	21.26
		1#0	23.18	23.13	23.46
		1#25	23.22	23.25	23.39
		1#49	23.35	23.37	23.47
		25#0	22.35	22.40	22.34
		25#25	22.30	22.28	22.44
	16QAM	50#0	22.36	22.41	22.24
		1#0	22.63	22.72	22.50
		1#25	22.58	22.65	22.54
		1#49	22.66	22.63	22.58
		25#0	21.33	21.42	21.42
		25#25	21.58	21.39	21.41
		50#0	21.37	21.39	21.44

LTE Band 7

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	1#0	22.04	22.15	22.64
		1#13	22.41	22.36	22.76
		1#24	22.01	21.81	22.03
		15#0	21.45	21.48	21.93
		15#10	21.50	21.47	21.90
		25#0	21.42	21.61	21.96
	16QAM	1#0	20.70	21.35	21.54
		1#13	20.73	21.39	21.60
		1#24	20.75	21.38	21.66
		15#0	20.53	20.48	21.06
		15#0	20.58	20.51	21.06
10MHz	QPSK	25#0	20.65	20.56	20.94
		1#0	21.95	22.30	22.82
		1#24	22.34	22.22	22.93
		1#49	22.43	22.25	22.48
		25#0	21.55	21.62	21.97
		25#25	21.40	21.58	22.08
	16QAM	50#0	21.40	21.61	21.86
		1#0	21.70	22.29	21.49
		1#24	21.72	22.36	21.45
		1#49	21.70	22.40	21.55
		25#0	20.52	20.69	21.01
		25#25	20.60	20.67	21.13
15MHz	QPSK	50#0	20.64	20.69	21.10
		1#0	22.05	22.22	22.41
		1#38	22.49	21.98	22.83
		1#74	22.55	21.70	22.16
		36#0	21.38	21.48	21.80
		36#39	21.40	21.45	21.87
	16QAM	75#0	21.27	21.41	21.80
		1#0	21.68	22.20	22.13
		1#38	21.59	22.26	22.16
		1#74	21.58	22.00	22.26
		36#0	20.42	20.46	20.86
		36#39	20.42	20.58	20.86
20MHz	QPSK	75#0	20.44	20.60	20.84
		1#0	22.05	22.45	22.04
		1#49	22.46	22.15	22.73
		1#99	22.28	22.33	22.69
		50#0	21.36	21.45	21.69
		50#50	21.35	21.51	21.78
	16QAM	100#0	21.31	21.52	21.83
		1#0	21.77	21.15	22.18
		1#49	21.84	21.19	21.91
		1#99	21.83	21.25	22.00
		50#0	20.35	20.56	20.76
		50#50	20.43	20.62	20.95
		100#0	20.51	20.57	20.84

LTE Band 12

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	23.87	23.79	23.80
		1#3	23.88	23.80	23.82
		1#5	23.83	23.85	23.84
		3#0	23.81	23.91	23.80
		3#3	23.82	23.82	23.80
		6#0	22.76	22.81	22.75
	16QAM	1#0	23.20	23.58	22.43
		1#3	23.21	23.60	22.32
		1#5	22.98	23.59	22.27
		3#0	22.68	22.63	22.59
		3#3	22.70	22.68	22.54
		6#0	21.84	21.80	21.89
3MHz	QPSK	1#0	23.82	23.84	23.89
		1#8	23.87	23.80	23.82
		1#14	23.92	23.82	23.89
		10#0	22.76	22.77	22.78
		10#5	22.84	22.74	22.83
		15#0	22.86	22.72	22.81
	16QAM	1#0	23.05	23.65	22.46
		1#8	23.09	23.32	22.39
		1#14	23.06	23.35	22.45
		10#0	21.83	21.94	22.02
		10#5	21.84	22.02	22.00
		15#0	21.86	21.87	21.77
5MHz	QPSK	1#0	23.65	23.77	23.67
		1#13	23.75	23.73	23.66
		1#24	23.66	23.81	23.75
		10#0	22.92	22.77	22.69
		10#15	22.86	22.71	22.81
		25#0	22.82	22.82	22.84
	16QAM	1#0	21.96	22.78	22.33
		1#13	22.00	22.65	22.41
		1#24	21.92	22.76	22.48
		10#0	21.95	21.66	21.66
		10#15	21.87	21.73	21.78
		25#0	21.95	21.79	21.81
10MHz	QPSK	1#0	23.67	23.69	23.88
		1#25	23.70	23.67	23.89
		1#49	23.79	23.69	24.02
		25#0	22.82	22.68	22.70
		25#25	22.91	22.80	22.90
		50#0	22.88	22.70	22.75
	16QAM	1#0	22.84	23.01	22.30
		1#25	22.90	23.07	22.37
		1#49	23.22	23.63	22.44
		25#0	21.80	21.82	21.88
		25#25	21.80	21.93	21.99
		50#0	21.74	21.87	21.89

LTE Band 13

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	1#0	23.10	23.22	23.18
		1#13	23.12	23.39	23.20
		1#24	23.23	23.42	23.20
		15#0	22.21	22.21	22.28
		15#10	22.33	22.39	22.32
		25#0	22.18	22.22	22.34
	16QAM	1#0	21.54	22.33	22.15
		1#13	21.51	22.31	22.12
		1#24	21.56	22.44	22.02
		15#0	21.29	21.20	21.27
		15#10	21.37	21.24	21.29
		25#0	21.35	21.30	21.38
10MHz	QPSK	1#0	23.05	22.27	22.42
		1#25	23.26	22.32	22.65
		1#49	23.25	22.54	22.30
		25#0	22.21	22.22	22.31
		25#25	22.32	22.66	22.39
		50#0	22.23	22.25	22.36
	16QAM	1#0	22.50	22.60	22.35
		1#25	22.65	22.46	22.60
		1#49	22.66	22.40	22.72
		25#0	21.44	22.42	22.77
		25#25	21.50	22.64	22.56
		50#0	21.30	22.78	22.60

LTE Band 17

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	1#0	23.81	23.76	23.71
		1#13	23.67	23.70	23.67
		1#24	23.74	23.70	23.66
		15#0	22.75	22.81	22.73
		15#10	22.80	22.80	22.85
		25#0	22.72	22.84	22.88
	16QAM	1#0	22.07	22.66	22.37
		1#13	22.04	22.77	22.42
		1#24	22.02	22.71	22.44
		15#0	21.83	21.70	21.73
		15#10	21.82	21.71	21.85
		25#0	21.94	21.85	21.74
10MHz	QPSK	1#0	23.65	23.64	23.86
		1#25	23.61	23.64	23.86
		1#49	23.82	23.68	23.93
		25#0	22.81	22.80	22.82
		25#25	22.93	22.72	22.85
		50#0	22.78	22.74	22.70
	16QAM	1#0	23.15	23.53	22.28
		1#25	23.19	23.63	22.33
		1#49	23.36	23.59	22.40
		25#0	21.74	21.80	21.83
		25#25	21.80	21.74	21.97
		50#0	21.76	21.88	21.88

LTE Band 18

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	1#0	23.63	23.48	23.24
		1#13	23.53	23.43	23.27
		1#24	23.50	23.51	23.23
		15#0	22.56	22.54	22.29
		15#10	22.42	22.34	22.46
		25#0	22.53	22.44	22.30
	16QAM	1#0	21.71	22.29	21.95
		1#13	21.68	22.32	21.96
		1#24	21.67	22.22	22.06
		15#0	21.65	21.33	21.44
		15#10	21.59	21.32	21.40
		25#0	21.69	21.42	21.23
10MHz	QPSK	1#0	23.52	23.47	23.41
		1#25	23.39	23.32	23.21
		1#49	23.25	23.31	23.22
		25#0	22.48	22.45	22.34
		25#25	22.42	22.45	22.33
		50#0	22.53	22.47	22.48
	16QAM	1#0	22.66	23.42	22.06
		1#25	22.54	23.35	21.98
		1#49	22.44	23.37	21.93
		25#0	21.53	21.47	21.68
		25#25	21.51	21.50	21.60
		50#0	21.60	21.55	21.51
15MHz	QPSK	1#0	\	22.58	\
		1#38	\	22.45	\
		1#74	\	22.60	\
		36#0	\	22.34	\
		36#39	\	22.80	\
		75#0	\	22.32	\
	16QAM	1#0	\	22.71	\
		1#38	\	22.47	\
		1#74	\	22.23	\
		36#0	\	22.80	\
		36#39	\	22.78	\
		75#0	\	22.63	\

LTE Band 19

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	1#0	23.27	23.35	23.22
		1#13	23.27	23.43	23.17
		1#24	23.34	23.41	23.20
		15#0	22.25	22.22	22.40
		15#10	22.31	22.25	22.28
		25#0	22.21	22.40	22.30
	16QAM	1#0	21.41	22.48	22.00
		1#13	21.41	22.47	21.94
		1#24	21.47	22.53	21.99
		15#0	21.41	21.28	21.34
		15#10	21.44	21.19	21.41
		25#0	21.46	21.37	21.26
10MHz	QPSK	1#0	23.21	23.18	23.26
		1#25	23.19	23.18	23.28
		1#49	23.28	23.25	23.32
		25#0	22.26	22.40	22.23
		25#25	22.33	22.44	22.38
		50#0	22.42	22.25	22.28
	16QAM	1#0	22.63	21.91	22.41
		1#25	22.65	21.97	22.68
		1#49	22.53	21.94	22.77
		25#0	21.45	21.43	21.40
		25#25	21.52	21.55	21.43
		50#0	21.38	21.39	21.33
15MHz	QPSK	1#0	\	22.72	\
		1#38	\	22.32	\
		1#74	\	22.74	\
		36#0	\	22.30	\
		36#39	\	22.48	\
		75#0	\	22.46	\
	16QAM	1#0	\	22.65	\
		1#38	\	22.51	\
		1#74	\	22.75	\
		36#0	\	22.25	\
		36#39	\	22.48	\
		75#0	\	22.70	\

LTE Band 26

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	23.78	23.28	23.35
		1#3	23.72	23.24	23.32
		1#5	23.68	23.32	23.27
		3#0	23.62	23.30	23.24
		3#3	23.70	23.34	23.29
		6#0	22.75	22.46	22.25
	16QAM	1#0	23.08	22.60	21.88
		1#3	23.08	22.60	21.82
		1#5	23.05	22.62	21.81
		3#0	22.88	22.39	22.34
		3#3	22.84	22.34	22.03
		6#0	21.97	21.39	21.44
3MHz	QPSK	1#0	23.64	23.22	23.41
		1#8	23.56	23.32	23.36
		1#14	23.62	23.37	23.27
		6#0	22.74	22.40	22.43
		6#9	22.70	22.44	22.28
		15#0	22.71	22.37	22.40
	16QAM	1#0	22.86	23.21	21.92
		1#8	22.76	23.26	21.87
		1#14	22.92	23.21	21.78
		6#0	21.67	21.50	21.60
		6#9	21.63	21.51	21.53
		15#0	21.69	21.41	21.33
5MHz	QPSK	1#0	23.81	23.37	23.35
		1#13	23.67	23.29	23.34
		1#24	23.67	23.39	23.25
		15#0	22.72	22.41	22.39
		15#10	22.52	22.45	22.34
		25#0	22.67	22.32	22.43
	16QAM	1#0	21.84	22.46	22.31
		1#13	21.89	22.49	22.29
		1#24	21.84	22.52	22.22
		15#0	21.61	21.26	21.34
		15#10	21.62	21.33	21.28
		25#0	21.76	21.40	21.44

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10MHz	QPSK	1#0	23.58	23.60	23.34
		1#25	23.48	23.53	23.37
		1#49	23.44	23.52	23.23
		25#0	22.52	22.31	22.51
		25#25	22.57	22.33	22.42
		50#0	22.54	22.37	22.50
	16QAM	1#0	22.97	22.59	22.52
		1#25	22.82	21.88	22.55
		1#49	22.76	21.97	22.39
		25#0	21.60	21.47	21.55
		25#25	21.50	21.52	21.47
		50#0	21.51	21.45	21.54
15MHz	QPSK	1#0	23.59	23.48	23.25
		1#38	23.41	23.45	23.37
		1#74	23.38	23.71	23.21
		36#0	22.66	22.47	22.43
		36#39	22.42	22.42	22.47
		75#0	22.65	22.46	22.52
	16QAM	1#0	22.75	23.21	22.75
		1#38	22.63	23.17	22.78
		1#74	22.70	23.30	22.69
		36#0	21.73	21.39	21.52
		36#39	21.48	21.53	21.53
		75#0	21.55	21.50	21.49

LTE Band 38

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	1#0	22.68	22.92	23.27
		1#13	22.63	22.93	23.13
		1#24	22.72	23.02	23.32
		15#0	21.45	22.12	22.24
		15#10	21.54	22.04	22.12
		25#0	21.75	22.07	22.18
	16QAM	1#0	21.66	22.17	22.38
		1#13	21.54	21.77	22.48
		1#24	21.89	22.34	22.44
		15#0	21.02	21.16	21.38
		15#10	20.99	21.18	21.38
		25#0	20.73	21.17	21.47
10MHz	QPSK	1#0	22.80	22.68	23.02
		1#25	22.88	22.82	22.99
		1#49	22.81	22.78	23.17
		25#0	21.85	21.88	22.24
		25#25	21.88	21.88	22.23
		50#0	21.71	21.91	22.21
	16QAM	1#0	22.17	22.23	22.06
		1#25	22.22	22.20	22.04
		1#49	22.31	22.14	22.15
		25#0	20.80	21.27	21.55
		25#25	20.86	21.28	21.54
		50#0	20.84	21.28	21.24
15MHz	QPSK	1#0	22.50	22.68	22.78
		1#38	22.56	22.82	22.95
		1#74	22.58	22.89	23.26
		36#0	21.55	21.83	22.15
		36#39	21.65	21.89	22.22
		75#0	21.70	21.85	22.13
	16QAM	1#0	22.23	22.06	21.66
		1#38	21.93	22.46	21.42
		1#74	22.47	22.20	21.59
		36#0	20.83	20.98	21.36
		36#39	20.94	21.03	21.40
		75#0	20.87	20.95	21.32
20MHz	QPSK	1#0	22.61	22.81	23.10
		1#50	22.68	22.86	23.11
		1#99	22.74	22.94	23.38
		50#0	21.73	22.04	22.05
		50#50	22.03	22.12	22.09
		100#0	21.84	22.09	22.28
	16QAM	1#0	21.77	21.66	22.53
		1#50	21.66	21.79	22.65
		1#99	22.05	21.90	22.78
		50#0	20.95	21.22	21.19
		50#50	21.15	21.18	21.28
		100#0	20.97	21.18	21.32

LTE Band 40(2305-2315MHz)

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm/5MHz)	Middle Channel (dBm/5MHz)	High Channel (dBm/5MHz)
5MHz	QPSK	1#0	19.72	20.69	21.53
		1#13	20.64	21.13	21.54
		1#24	20.83	20.51	21.55
		15#0	20.70	21.05	20.70
		15#10	20.72	21.00	20.61
		25#0	20.69	20.99	20.71
	16QAM	1#0	20.27	20.75	20.58
		1#13	20.34	21.20	20.11
		1#24	20.44	20.62	20.67
		15#0	19.66	20.30	19.78
		15#10	19.58	20.33	19.74
		25#0	19.72	20.36	19.75
10MHz	QPSK	1#0	/	19.45	/
		1#25	/	18.97	/
		1#49	/	18.99	/
		25#0	/	18.45	/
		25#25	/	18.21	/
		50#0	/	18.76	/
	16QAM	1#0	/	18.36	/
		1#25	/	18.67	/
		1#49	/	18.36	/
		25#0	/	18.14	/
		25#25	/	18.19	/
		50#0	/	18.27	/

Note: the device is a mobile station. For 5MHz mode, the channel power is equal to the test result in dBm/5MHz. For 10MHz mode, the channel power as below:

Channel Bandwidth	Modulation	Resource Block & RB offset	Middle Channel (dBm)
10MHz	QPSK	1#0	21.02
		1#25	21.11
		1#49	21.18
		25#0	20.91
		25#25	21.00
		50#0	20.96
	16QAM	1#0	20.89
		1#25	21.03
		1#49	21.12
		25#0	20.25
		25#25	20.35
		50#0	20.30

LTE Band 40(2350-2360MHz)

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm/5MHz)	Middle Channel (dBm/5MHz)	High Channel (dBm/5MHz)
5MHz	QPSK	1#0	20.83	21.26	21.49
		1#13	20.21	21.06	21.47
		1#24	20.69	20.76	21.46
		15#0	19.67	20.90	20.62
		15#10	19.38	21.02	20.61
		25#0	19.14	21.04	20.72
	16QAM	1#0	19.90	21.11	20.79
		1#13	19.25	20.99	20.70
		1#24	19.64	20.73	20.58
		15#0	19.08	19.99	19.80
		15#10	19.45	20.18	19.68
		25#0	19.19	20.39	19.71
10MHz	QPSK	1#0	/	19.41	/
		1#25	/	19.10	/
		1#49	/	19.21	/
		25#0	/	18.97	/
		25#25	/	19.04	/
		50#0	/	19.11	/
	16QAM	1#0	/	18.97	/
		1#25	/	18.75	/
		1#49	/	18.65	/
		25#0	/	18.05	/
		25#25	/	18.32	/
		50#0	/	18.22	/

Note: the device is a mobile station. For 5MHz mode, the channel power is equal to the test result in dBm/5MHz. For 10MHz mode, the channel power as below:

Channel Bandwidth	Modulation	Resource Block & RB offset	Middle Channel (dBm)
10MHz	QPSK	1#0	21.49
		1#25	20.98
		1#49	21.41
		25#0	20.97
		25#25	21.08
		50#0	21.10
	16QAM	1#0	20.51
		1#25	20.73
		1#49	20.56
		25#0	20.00
		25#25	20.22
		50#0	20.20

Duty cycle:**Band 40(2305-2315MHz)**

Test Modulation	Test Bandwidth	Ton (ms)	Total (ms)	Duty Cycle (%)	Limit (%)
QPSK	5M	3.397	10.192	33.33	38
	10M	3.397	10.256	33.12	
16-QAM	5M	3.077	10.000	30.77	
	10M	3.205	9.936	32.26	

Band 40(2350-2360MHz)

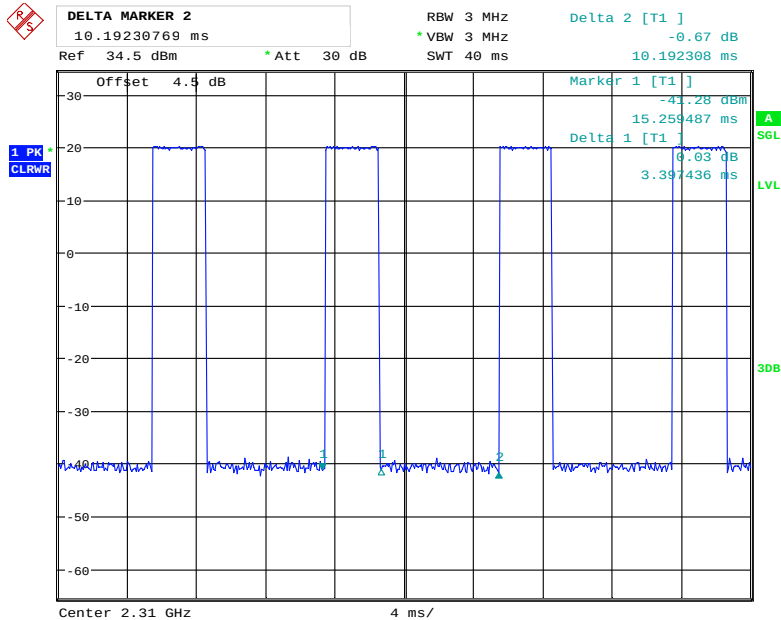
Test Modulation	Test Bandwidth	Ton (ms)	Total (ms)	Duty Cycle (%)	Limit (%)
QPSK	5M	3.269	10.192	32.07	38
	10M	3.397	10.256	33.12	
16-QAM	5M	3.397	10.192	33.33	
	10M	3.208	10.000	32.08	

Note: EUT setup is as following:

Uplink Downlink configuration	Subframe number									
	0	1	2	3	4	5	6	7	8	9
3	D	S	U	U	U	D	D	D	D	D

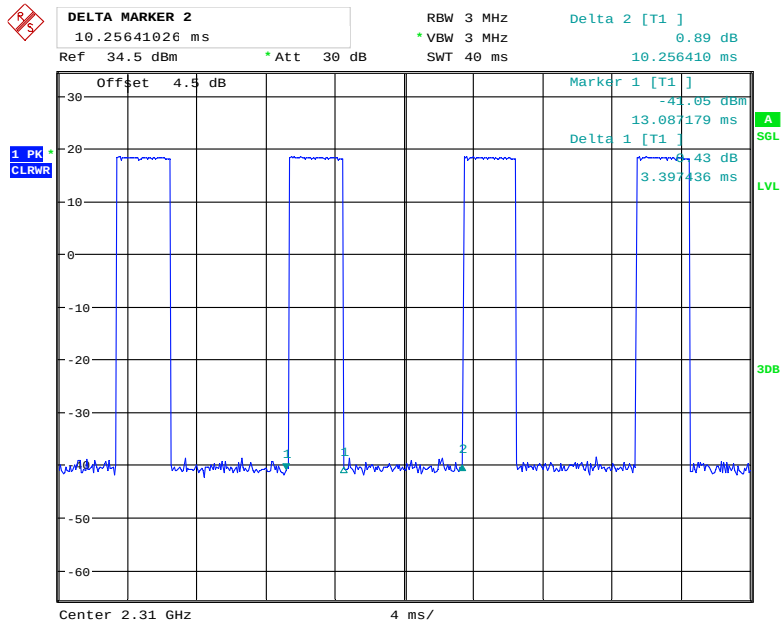
Duty cycle
2305-2315MHz:

QPSK, 5MHz



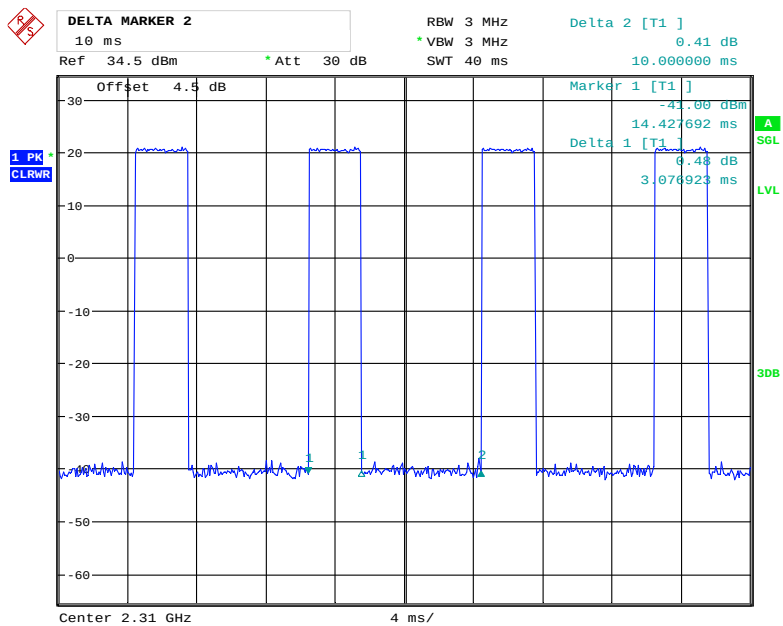
Date: 1.NOV.2018 15:14:40

QPSK, 10MHz



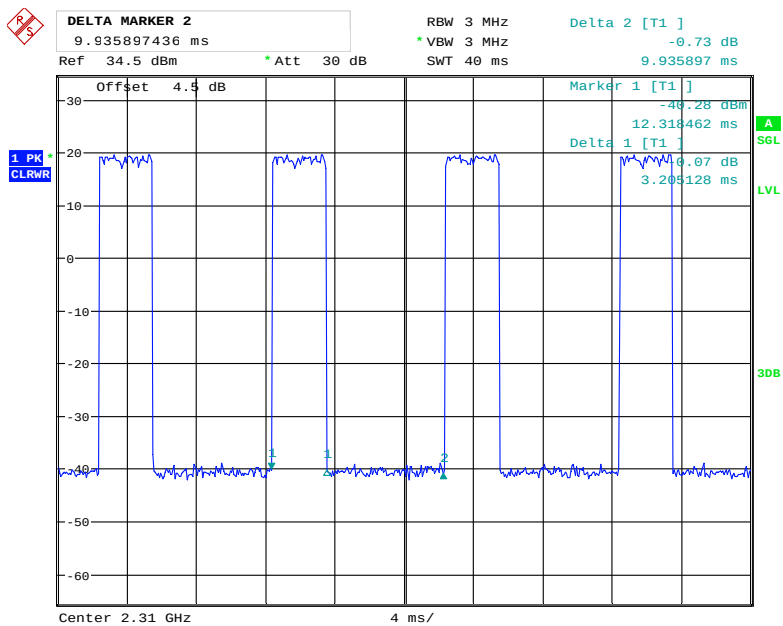
Date: 1.NOV.2018 15:15:36

16QAM, 5MHz



Date: 1.NOV.2018 15:14:04

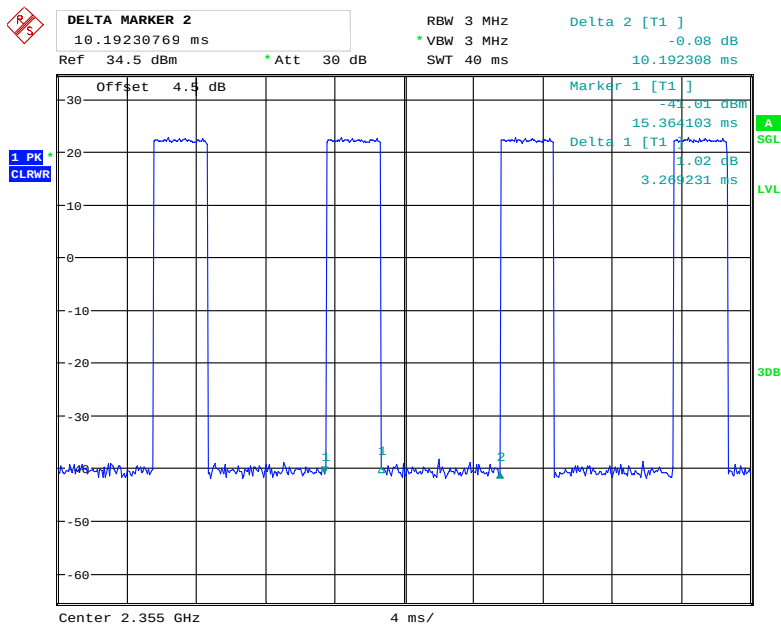
16QAM, 10MHz



Date: 1.NOV.2018 15:16:20

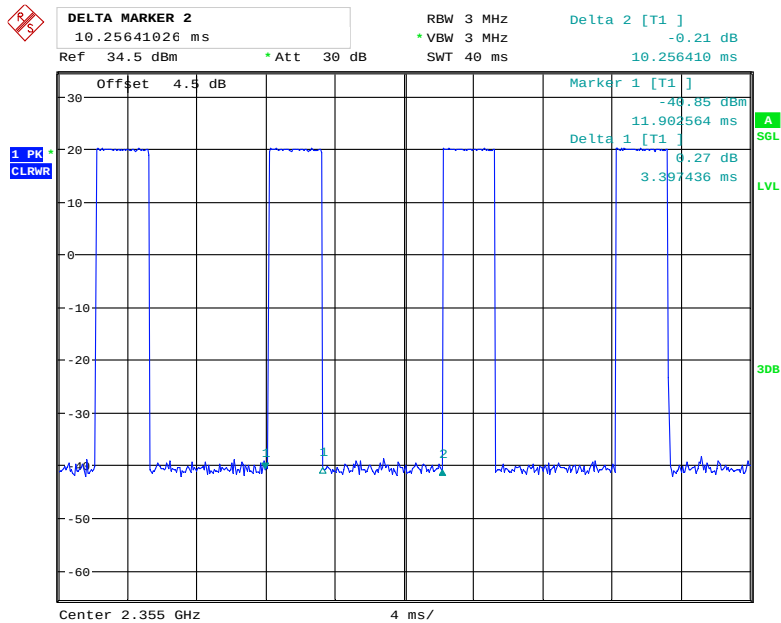
2350-2360MHz:

QPSK, 5MHz



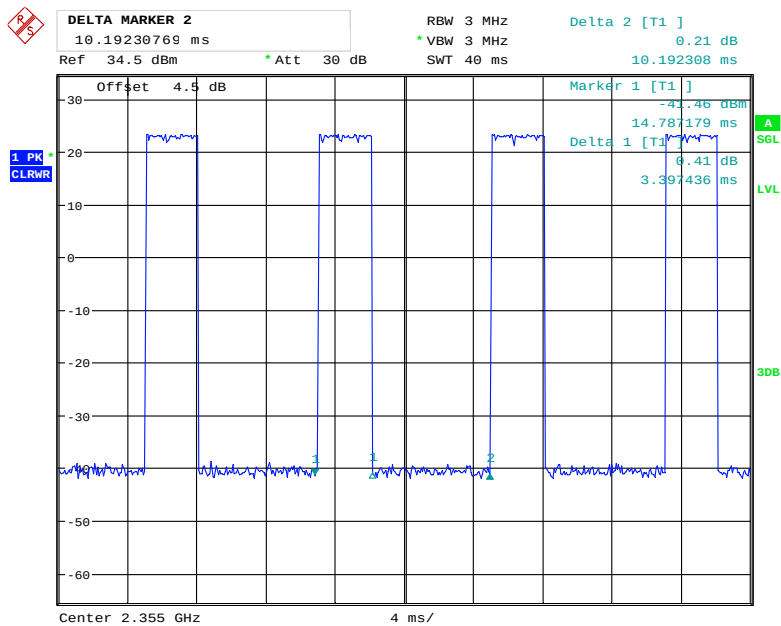
Date: 1.NOV.2018 15:12:19

QPSK, 10MHz



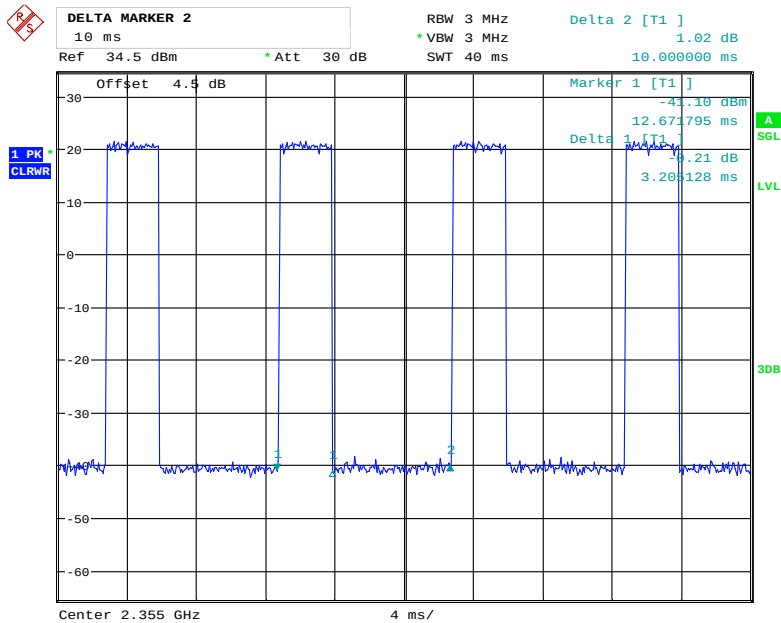
Date: 1.NOV.2018 15:10:44

16QAM, 5MHz



Date: 1.NOV.2018 15:12:49

16QAM, 10MHz



Date: 1.NOV.2018 15:10:00

LTE Band 41

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	1#0	23.21	23.24	23.17
		1#13	23.22	23.14	23.09
		1#24	23.25	22.80	23.19
		15#0	22.30	21.95	22.39
		15#10	22.32	21.98	22.37
		25#0	22.21	21.94	22.36
	16QAM	1#0	22.04	22.45	22.12
		1#13	22.24	22.43	22.19
		1#24	22.08	22.39	22.23
		15#0	21.42	21.08	21.54
		15#10	21.37	21.10	21.66
		25#0	21.44	21.09	21.20
10MHz	QPSK	1#0	21.45	22.01	21.35
		1#25	22.00	21.96	22.30
		1#49	22.12	22.08	22.41
		25#0	21.05	20.94	21.25
		25#25	20.95	21.07	21.32
		50#0	21.02	20.94	21.36
	16QAM	1#0	21.76	21.94	21.38
		1#25	21.76	22.00	21.37
		1#49	21.75	21.93	21.47
		25#0	20.15	20.20	20.30
		25#25	20.23	20.20	20.34
		50#0	20.18	20.07	20.44
15MHz	QPSK	1#0	22.04	21.89	22.25
		1#38	21.98	21.83	22.31
		1#74	22.07	21.93	22.34
		36#0	21.01	21.01	21.36
		36#39	20.97	21.01	21.41
		75#0	21.02	21.02	21.38
	16QAM	1#0	21.69	21.20	21.36
		1#38	21.63	21.17	21.38
		1#74	21.70	21.10	21.49
		36#0	20.09	20.02	20.41
		36#39	20.13	20.15	20.47
		75#0	20.10	20.12	20.42
20MHz	QPSK	1#0	22.25	22.24	21.98
		1#50	22.22	22.13	22.00
		1#99	22.27	22.10	22.19
		50#0	21.15	21.18	21.16
		50#50	21.29	21.17	21.33
		100#0	21.22	21.28	21.21
	16QAM	1#0	20.77	21.80	20.85
		1#50	20.75	21.78	20.86
		1#99	20.79	21.77	21.16
		50#0	20.40	20.30	20.44
		50#50	20.24	20.26	20.61
		100#0	20.03	20.38	20.42

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	5.61	5.87	6.28	13
	100 RB		7.15	6.47	6.44	13
16QAM	1 RB	20 MHz	5.64	5.90	6.15	13
	100 RB		7.08	7.24	7.37	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	4.90	5.26	5.10	13
	100 RB		6.38	6.41	6.47	13
16QAM	1 RB	20 MHz	5.46	6.03	5.71	13
	100 RB		7.18	7.18	7.15	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	6.54	5.96	6.15	13
	50 RB		6.09	5.93	5.99	13
16QAM	1 RB	10 MHz	7.24	6.41	7.15	13
	50 RB		7.02	6.70	6.76	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	4.87	4.36	3.49	13
	100 RB		6.54	6.38	6.35	13
16QAM	1 RB	20 MHz	5.10	4.29	4.55	13
	100 RB		7.08	7.05	7.15	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	4.39	4.90	5.10	13
	50 RB		5.61	5.74	5.61	13
16QAM	1 RB	10 MHz	5.54	5.87	6.03	13
	50 RB		6.51	6.51	6.54	13

PAR, Band 13

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	/	5.48	/	13
	50 RB		/	5.22	/	13
16QAM	1 RB	10 MHz	/	5.96	/	13
	50 RB		/	6.41	/	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	5.19	5.13	4.84	13
	50 RB		8.53	5.77	5.54	13
16QAM	1 RB	10 MHz	6.83	6.15	6.09	13
	50 RB		6.54	6.86	6.47	13

PAR, Band 18

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	15 MHz	/	6.41	/	13
	75 RB		/	5.74	/	13
16QAM	1 RB	15 MHz	/	7.63	/	13
	75 RB		/	6.83	/	13

PAR, Band 19

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	15 MHz	/	6.15	/	13
	75 RB		/	5.74	/	13
16QAM	1 RB	15 MHz	/	6.83	/	13
	75 RB		/	6.83	/	13

PAR, Band 26

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	6.38	6.51	6.25	13
	50 RB		5.64	5.90	5.71	13
16QAM	1 RB	10 MHz	7.69	6.83	6.89	13
	50 RB		6.67	6.89	6.76	13

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

ERP & EIRP

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	96.55	21.63	0.00	0.97	20.66	38.45	17.79
836.60	V	102.38	30.59	0.00	0.97	29.62	38.45	8.83
EDGE 850 Middle Channel								
836.60	H	90.24	15.32	0.00	0.97	14.35	33.00	18.65
836.60	V	95.13	23.34	0.00	0.97	22.37	33.00	10.63
WCDMA Band V Middle Channel								
836.60	H	84.56	9.64	0.00	0.97	8.67	38.45	29.78
836.60	V	90.05	18.26	0.00	0.97	17.29	38.45	21.16
GSM 1900 Middle Channel								
1880.00	H	83.74	11.13	11.66	2.66	20.13	33.00	12.87
1880.00	V	90.88	18.41	11.66	2.66	27.41	33.00	5.59
EDGE 1900 Middle Channel								
1880.00	H	79.25	9.64	11.66	2.66	18.64	33.00	14.36
1880.00	V	84.96	12.49	11.66	2.66	21.49	33.00	11.51
WCDMA Band II Middle Channel								
1880.00	H	76.27	3.66	11.66	2.66	12.66	33.00	20.34
1880.00	V	83.15	10.68	11.66	2.66	19.68	33.00	13.32
WCDMA Band IV Middle Channel								
1732.60	H	77.27	3.22	10.90	2.51	11.61	30.00	18.39
1732.60	V	84.83	10.46	10.90	2.51	18.85	30.00	11.15

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)			
1880.000	1.4	QPSK	H	87.62	15.01	11.66	2.66	24.01	33.00	8.99
1880.000			V	86.56	14.09	11.66	2.66	23.09	33.00	9.91
1880.000	3		H	87.61	15.00	11.66	2.66	24.00	33.00	9.00
1880.000			V	86.19	13.72	11.66	2.66	22.72	33.00	10.28
1880.000	5		H	87.15	14.54	11.66	2.66	23.54	33.00	9.46
1880.000			V	86.22	13.75	11.66	2.66	22.75	33.00	10.25
1880.000	10		H	86.88	14.27	11.66	2.66	23.27	33.00	9.73
1880.000			V	86.01	13.54	11.66	2.66	22.54	33.00	10.46
1880.000	15		H	86.36	13.75	11.66	2.66	22.75	33.00	10.25
1880.000			V	85.34	12.87	11.66	2.66	21.87	33.00	11.13
1880.000	20		H	86.25	13.64	11.66	2.66	22.64	33.00	10.36
1880.000			V	85.13	12.66	11.66	2.66	21.66	33.00	11.34
1880.000	1.4	16QAM	H	87.57	14.96	11.66	2.66	23.96	33.00	9.04
1880.000			V	86.40	13.93	11.66	2.66	22.93	33.00	10.07
1880.000	3		H	87.52	14.91	11.66	2.66	23.91	33.00	9.09
1880.000			V	86.28	13.81	11.66	2.66	22.81	33.00	10.19
1880.000	5		H	87.09	14.48	11.66	2.66	23.48	33.00	9.52
1880.000			V	86.10	13.63	11.66	2.66	22.63	33.00	10.37
1880.000	10		H	87.03	14.42	11.66	2.66	23.42	33.00	9.58
1880.000			V	85.70	13.23	11.66	2.66	22.23	33.00	10.77
1880.000	15		H	86.98	14.37	11.66	2.66	23.37	33.00	9.63
1880.000			V	85.71	13.24	11.66	2.66	22.24	33.00	10.76
1880.000	20		H	86.84	14.23	11.66	2.66	23.23	33.00	9.77
1880.000			V	85.66	13.19	11.66	2.66	22.19	33.00	10.81

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)			
1732.500	1.4	QPSK	H	88.80	14.75	10.90	2.51	23.14	30.00	6.86
1732.500			V	86.64	12.27	10.90	2.51	20.66	30.00	9.34
1732.500	3		H	88.63	14.58	10.90	2.51	22.97	30.00	7.03
1732.500			V	86.61	12.24	10.90	2.51	20.63	30.00	9.37
1732.500	5		H	88.71	14.66	10.90	2.51	23.05	30.00	6.95
1732.500			V	86.66	12.29	10.90	2.51	20.68	30.00	9.32
1732.500	10		H	88.76	14.71	10.90	2.51	23.10	30.00	6.90
1732.500			V	86.76	12.39	10.90	2.51	20.78	30.00	9.22
1732.500	15		H	88.68	14.63	10.90	2.51	23.02	30.00	6.98
1732.500			V	86.70	12.33	10.90	2.51	20.72	30.00	9.28
1732.500	20		H	88.51	14.46	10.90	2.51	22.85	30.00	7.15
1732.500			V	86.31	11.94	10.90	2.51	20.33	30.00	9.67
1732.500	1.4	16QAM	H	88.77	14.72	10.90	2.51	23.11	30.00	6.89
1732.500			V	86.53	12.16	10.90	2.51	20.55	30.00	9.45
1732.500	3		H	88.71	14.66	10.90	2.51	23.05	30.00	6.95
1732.500			V	86.65	12.28	10.90	2.51	20.67	30.00	9.33
1732.500	5		H	88.69	14.64	10.90	2.51	23.03	30.00	6.97
1732.500			V	86.47	12.10	10.90	2.51	20.49	30.00	9.51
1732.500	10		H	88.74	14.69	10.90	2.51	23.08	30.00	6.92
1732.500			V	86.52	12.15	10.90	2.51	20.54	30.00	9.46
1732.500	15		H	88.49	14.44	10.90	2.51	22.83	30.00	7.17
1732.500			V	86.30	11.93	10.90	2.51	20.32	30.00	9.68
1732.500	20		H	88.17	14.12	10.90	2.51	22.51	30.00	7.49
1732.500			V	85.97	11.60	10.90	2.51	19.99	30.00	10.01

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	1.4	QPSK	H	80.72	5.79	0.00	0.97	4.82	38.45	33.63
836.50			V	92.13	20.34	0.00	0.97	19.37	38.45	19.08
836.50	3		H	83.59	8.66	0.00	0.97	7.69	38.45	30.76
836.50			V	91.95	20.16	0.00	0.97	19.19	38.45	19.26
836.50	5		H	84.20	9.27	0.00	0.97	8.30	38.45	30.15
836.50			V	94.03	22.24	0.00	0.97	21.27	38.45	17.18
836.50	10		H	82.60	7.67	0.00	0.97	6.70	38.45	31.75
836.50			V	90.89	19.10	0.00	0.97	18.13	38.45	20.32
836.50	1.4	16QAM	H	80.88	5.95	0.00	0.97	4.98	38.45	33.47
836.50			V	92.44	20.65	0.00	0.97	19.68	38.45	18.77
836.50	3		H	83.19	8.26	0.00	0.97	7.29	38.45	31.16
836.50			V	92.11	20.32	0.00	0.97	19.35	38.45	19.10
836.50	5		H	84.44	9.51	0.00	0.97	8.54	38.45	29.91
836.50			V	94.16	22.37	0.00	0.97	21.40	38.45	17.05
836.50	10		H	82.91	7.98	0.00	0.97	7.01	38.45	31.44
836.50			V	92.10	20.31	0.00	0.97	19.34	38.45	19.11

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	QPSK	H	87.81	15.20	13.14	3.10	25.24	33.00	7.76
2535.00			V	80.48	9.33	13.14	3.10	19.37	33.00	13.63
2535.00	10		H	87.43	14.82	13.14	3.10	24.86	33.00	8.14
2535.00			V	80.87	9.72	13.14	3.10	19.76	33.00	13.24
2535.00	15		H	87.40	14.79	13.14	3.10	24.83	33.00	8.17
2535.00			V	80.73	9.58	13.14	3.10	19.62	33.00	13.38
2535.00	20		H	86.47	13.86	13.14	3.10	23.90	33.00	9.10
2535.00			V	79.72	8.57	13.14	3.10	18.61	33.00	14.39
2535.00	5	16QAM	H	87.42	14.81	13.14	3.10	24.85	33.00	8.15
2535.00			V	80.11	8.96	13.14	3.10	19.00	33.00	14.00
2535.00	10		H	87.09	14.48	13.14	3.10	24.52	33.00	8.48
2535.00			V	79.77	8.62	13.14	3.10	18.66	33.00	14.34
2535.00	15		H	86.89	14.28	13.14	3.10	24.32	33.00	8.68
2535.00			V	79.63	8.48	13.14	3.10	18.52	33.00	14.48
2535.00	20		H	86.30	13.69	13.14	3.10	23.73	33.00	9.27
2535.00			V	79.21	8.06	13.14	3.10	18.10	33.00	14.90

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	1.4	QPSK	H	81.26	4.40	0.00	0.94	3.46	34.77	31.31
707.50			V	91.16	16.74	0.00	0.94	15.80	34.77	18.97
707.50	3		H	81.07	4.21	0.00	0.94	3.27	34.77	31.50
707.50			V	91.15	16.73	0.00	0.94	15.79	34.77	18.98
707.50	5		H	81.13	4.27	0.00	0.94	3.33	34.77	31.44
707.50			V	91.08	16.66	0.00	0.94	15.72	34.77	19.05
707.50	10		H	81.01	4.15	0.00	0.94	3.21	34.77	31.56
707.50			V	91.00	16.58	0.00	0.94	15.64	34.77	19.13
707.50	1.4	16QAM	H	81.44	4.58	0.00	0.94	3.64	34.77	31.13
707.50			V	91.24	16.82	0.00	0.94	15.88	34.77	18.89
707.50	3		H	81.40	4.54	0.00	0.94	3.60	34.77	31.17
707.50			V	91.36	16.94	0.00	0.94	16.00	34.77	18.77
707.50	5		H	81.20	4.34	0.00	0.94	3.40	34.77	31.37
707.50			V	91.18	16.76	0.00	0.94	15.82	34.77	18.95
707.50	10		H	81.03	4.17	0.00	0.94	3.23	34.77	31.54
707.50			V	91.01	16.59	0.00	0.94	15.65	34.77	19.12

LTE Band 13

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)			
782.00	5	QPSK	H	82.24	6.71	0.00	0.93	5.78	34.77	28.99
782.00			V	91.52	18.91	0.00	0.93	17.98	34.77	16.79
782.00	10		H	80.75	5.22	0.00	0.93	4.29	34.77	30.48
782.00			V	90.68	18.07	0.00	0.93	17.14	34.77	17.63
782.00	5	16QAM	H	82.30	6.77	0.00	0.93	5.84	34.77	28.93
782.00			V	91.55	18.94	0.00	0.93	18.01	34.77	16.76
782.00	10		H	80.84	5.31	0.00	0.93	4.38	34.77	30.39
782.00			V	90.70	18.09	0.00	0.93	17.16	34.77	17.61

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	82.83	6.02	0.00	0.94	5.08	34.77	29.69
710.00			V	92.48	18.12	0.00	0.94	17.18	34.77	17.59
710.00	10		H	78.98	2.17	0.00	0.94	1.23	34.77	33.54
710.00			V	90.18	15.82	0.00	0.94	14.88	34.77	19.89
710.00	5	16QAM	H	83.01	6.20	0.00	0.94	5.26	34.77	29.51
710.00			V	92.50	18.14	0.00	0.94	17.20	34.77	17.57
710.00	10		H	79.38	2.57	0.00	0.94	1.63	34.77	33.14
710.00			V	90.55	16.19	0.00	0.94	15.25	34.77	19.52

LTE Band 18

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)			
822.50	5	QPSK	H	80.65	5.62	0.00	0.96	4.66	38.45	33.79
822.50			V	91.54	19.60	0.00	0.96	18.64	38.45	19.81
822.50	10		H	79.19	4.16	0.00	0.96	3.20	38.45	35.25
822.50			V	90.87	18.93	0.00	0.96	17.97	38.45	20.48
822.50	15		H	78.09	3.06	0.00	0.96	2.10	38.45	36.35
822.50			V	89.90	17.96	0.00	0.96	17.00	38.45	21.45
822.50	5	16QAM	H	80.89	5.86	0.00	0.96	4.90	38.45	33.55
822.50			V	91.76	19.82	0.00	0.96	18.86	38.45	19.59
822.50	10		H	79.58	4.55	0.00	0.96	3.59	38.45	34.86
822.50			V	90.90	18.96	0.00	0.96	18.00	38.45	20.45
822.50	15		H	78.15	3.12	0.00	0.96	2.16	38.45	36.29
822.50			V	89.94	18.00	0.00	0.96	17.04	38.45	21.41

LTE Band 19

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)			
837.50	5	QPSK	H	80.47	5.55	0.00	0.98	4.57	38.45	33.88
837.50			V	90.10	18.32	0.00	0.98	17.34	38.45	21.11
837.50	10		H	80.48	5.56	0.00	0.98	4.58	38.45	33.87
837.50			V	89.81	18.03	0.00	0.98	17.05	38.45	21.40
837.50	15		H	79.13	4.21	0.00	0.98	3.23	38.45	35.22
837.50			V	89.76	17.98	0.00	0.98	17.00	38.45	21.45
837.50	5	16QAM	H	80.55	5.63	0.00	0.98	4.65	38.45	33.80
837.50			V	90.20	18.42	0.00	0.98	17.44	38.45	21.01
837.50	10		H	80.50	5.58	0.00	0.98	4.60	38.45	33.85
837.50			V	89.83	18.05	0.00	0.98	17.07	38.45	21.38
837.50	15		H	79.77	4.85	0.00	0.98	3.87	38.45	34.58
837.50			V	89.77	17.99	0.00	0.98	17.01	38.45	21.44

LTE Band 26

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)			
831.50	1.4	QPSK	H	82.60	7.64	0.00	0.97	6.67	38.45	31.78
831.50			V	92.52	20.67	0.00	0.97	19.70	38.45	18.75
831.50	3		H	83.46	8.50	0.00	0.97	7.53	38.45	30.92
831.50			V	92.49	20.64	0.00	0.97	19.67	38.45	18.78
831.50	5		H	81.20	6.24	0.00	0.97	5.27	38.45	33.18
831.50			V	91.82	19.97	0.00	0.97	19.00	38.45	19.45
831.50	10		H	80.74	5.78	0.00	0.97	4.81	38.45	33.64
831.50			V	91.64	19.79	0.00	0.97	18.82	38.45	19.63
831.50	15		H	78.24	3.28	0.00	0.97	2.31	38.45	36.14
831.50			V	90.07	18.22	0.00	0.97	17.25	38.45	21.20
831.50	1.4	16QAM	H	82.90	7.94	0.00	0.97	6.97	38.45	31.48
831.50			V	93.23	21.38	0.00	0.97	20.41	38.45	18.04
831.50	3		H	83.50	8.54	0.00	0.97	7.57	38.45	30.88
831.50			V	92.50	20.65	0.00	0.97	19.68	38.45	18.77
831.50	5		H	81.54	6.58	0.00	0.97	5.61	38.45	32.84
831.50			V	92.31	20.46	0.00	0.97	19.49	38.45	18.96
831.50	10		H	81.08	6.12	0.00	0.97	5.15	38.45	33.30
831.50			V	91.88	20.03	0.00	0.97	19.06	38.45	19.39
831.50	15		H	78.34	3.38	0.00	0.97	2.41	38.45	36.04
831.50			V	90.11	18.26	0.00	0.97	17.29	38.45	21.16

LTE Band 38

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)			
2595.00	5	QPSK	H	87.38	15.15	13.20	3.10	25.25	33.00	7.75
2595.00			V	81.40	11.03	13.20	3.10	21.13	33.00	11.87
2595.00	10		H	87.09	14.86	13.20	3.10	24.96	33.00	8.04
2595.00			V	81.27	10.90	13.20	3.10	21.00	33.00	12.00
2595.00	15		H	86.85	14.62	13.20	3.10	24.72	33.00	8.28
2595.00			V	81.15	10.78	13.20	3.10	20.88	33.00	12.12
2595.00	20		H	86.54	14.31	13.20	3.10	24.41	33.00	8.59
2595.00			V	81.05	10.68	13.20	3.10	20.78	33.00	12.22
2595.00	5	16QAM	H	87.10	14.87	13.20	3.10	24.97	33.00	8.03
2595.00			V	81.22	10.85	13.20	3.10	20.95	33.00	12.05
2595.00	10		H	87.02	14.79	13.20	3.10	24.89	33.00	8.11
2595.00			V	81.32	10.95	13.20	3.10	21.05	33.00	11.95
2595.00	15		H	86.98	14.75	13.20	3.10	24.85	33.00	8.15
2595.00			V	81.10	10.73	13.20	3.10	20.83	33.00	12.17
2595.00	20		H	86.49	14.26	13.20	3.10	24.36	33.00	8.64
2595.00			V	81.02	10.65	13.20	3.10	20.75	33.00	12.25

LTE Band 40(2305-2315MHz)

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm/5MHz)	Limit (dBm/5MHz)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2310.00	5	QPSK	H	85.76	15.38	11.31	2.98	23.71	24.00	0.29
2310.00			V	79.10	9.40	11.31	2.98	17.73	24.00	6.27
2310.00	10		H	85.73	15.35	11.31	2.98	23.68	24.00	0.32
2310.00			V	79.21	9.51	11.31	2.98	17.84	24.00	6.16
2310.00	5	16QAM	H	85.57	15.19	11.31	2.98	23.52	24.00	0.48
2310.00			V	79.03	9.33	11.31	2.98	17.66	24.00	6.34
2310.00	10		H	85.38	15.00	11.31	2.98	23.33	24.00	0.67
2310.00			V	78.86	9.16	11.31	2.98	17.49	24.00	6.51

LTE Band 40(2350-2360MHz)

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm/5MHz)	Limit (dBm/5MHz)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2355.00	5	QPSK	H	83.22	12.43	11.81	3.05	21.19	24.00	2.81
2355.00			V	76.61	6.58	11.81	3.05	15.34	24.00	8.66
2355.00	10		H	83.14	12.35	11.81	3.05	21.11	24.00	2.89
2355.00			V	76.21	6.18	11.81	3.05	14.94	24.00	9.06
2355.00	5	16QAM	H	83.31	12.52	11.81	3.05	21.28	24.00	2.72
2355.00			V	76.99	6.96	11.81	3.05	15.72	24.00	8.28
2355.00	10		H	83.26	12.47	11.81	3.05	21.23	24.00	2.77
2355.00			V	76.74	6.71	11.81	3.05	15.47	24.00	8.53

LTE Band 41

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)			
2595.00	5	QPSK	H	88.37	16.14	13.20	3.10	26.24	33.00	6.76
2595.00			V	83.88	13.51	13.20	3.10	23.61	33.00	9.39
2595.00	10		H	88.26	16.03	13.20	3.10	26.13	33.00	6.87
2595.00			V	83.74	13.37	13.20	3.10	23.47	33.00	9.53
2595.00	15		H	87.29	15.06	13.20	3.10	25.16	33.00	7.84
2595.00			V	83.41	13.04	13.20	3.10	23.14	33.00	9.86
2595.00	20		H	87.19	14.96	13.20	3.10	25.06	33.00	7.94
2595.00			V	83.13	12.76	13.20	3.10	22.86	33.00	10.14
2595.00	5	16QAM	H	88.23	16.00	13.20	3.10	26.10	33.00	6.90
2595.00			V	83.85	13.48	13.20	3.10	23.58	33.00	9.42
2595.00	10		H	87.98	15.75	13.20	3.10	25.85	33.00	7.15
2595.00			V	83.55	13.18	13.20	3.10	23.28	33.00	9.72
2595.00	15		H	87.79	15.56	13.20	3.10	25.66	33.00	7.34
2595.00			V	83.58	13.21	13.20	3.10	23.31	33.00	9.69
2595.00	20		H	87.65	15.42	13.20	3.10	25.52	33.00	7.48
2595.00			V	83.26	12.89	13.20	3.10	22.99	33.00	10.01

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&§90.209- OCCUPIED BANDWIDTH

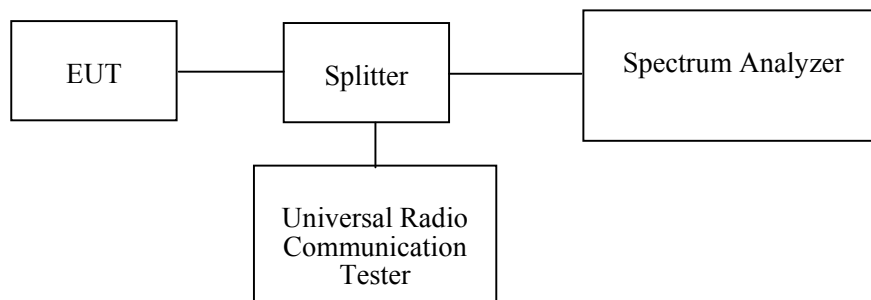
Applicable Standard

FCC §2.1049, §22.917, §22.905, §24.238, §27.53 and §90.209,

Test Procedure

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

The 26 dB & 99% bandwidth was recorded.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2018-01-04	2019-01-04
E-Microwave	attenuator	3dB-1	001	Each time	N/A
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:	26.5~28.3°C
Relative Humidity:	38~56 %
ATM Pressure:	99.7~101.2 kPa

The testing was performed by Elena Lei from 2018-11-02 to 2018-11-20.

Test Mode: Transmitting

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

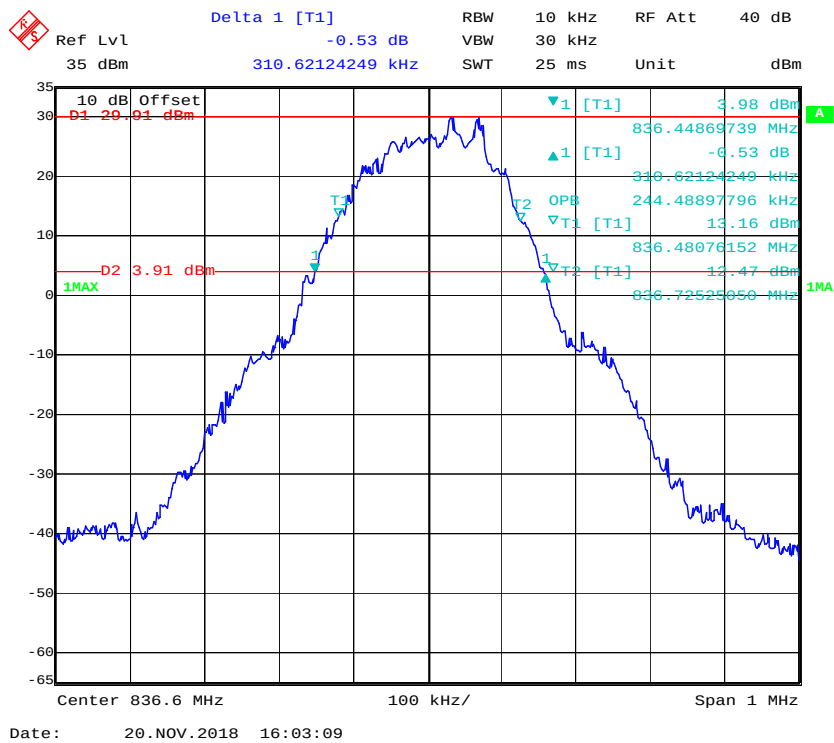
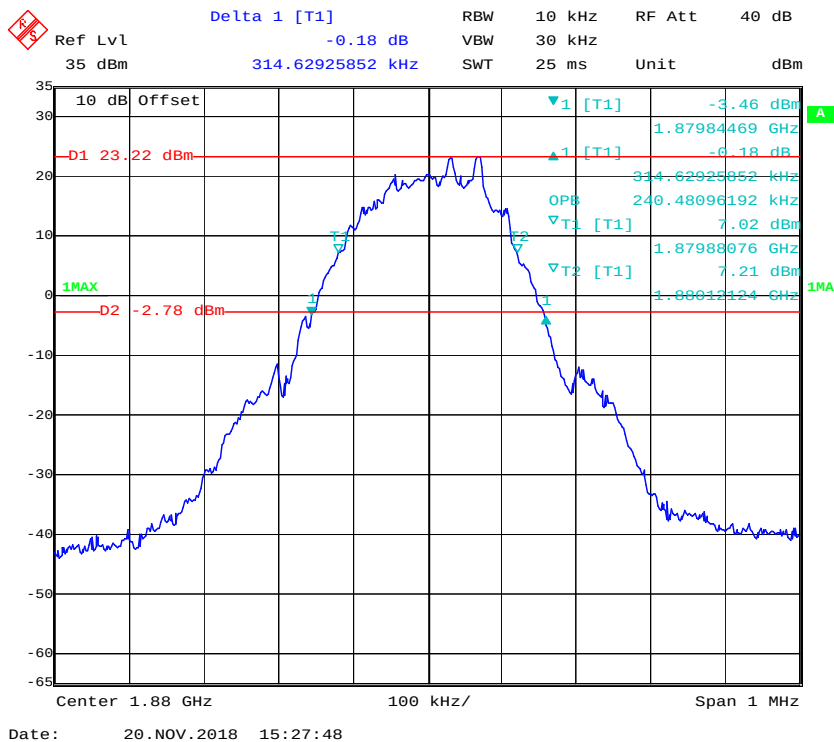
Band	Test Channel	Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Cellular	M	GSM	0.244	0.311
PCS		EDGE	0.244	0.317
		GSM	0.240	0.315
		EDGE	0.242	0.311
		WCDMA Band II	Rel 99	4.140
HSDPA			4.180	4.721
HSUPA			4.180	4.725
WCDMA Band IV		Rel 99	4.160	4.712
		HSDPA	4.160	4.724
		HSUPA	4.160	4.709
WCDMA Band V		Rel 99	4.140	4.694
		HSDPA	4.180	4.704
		HSUPA	4.160	4.709

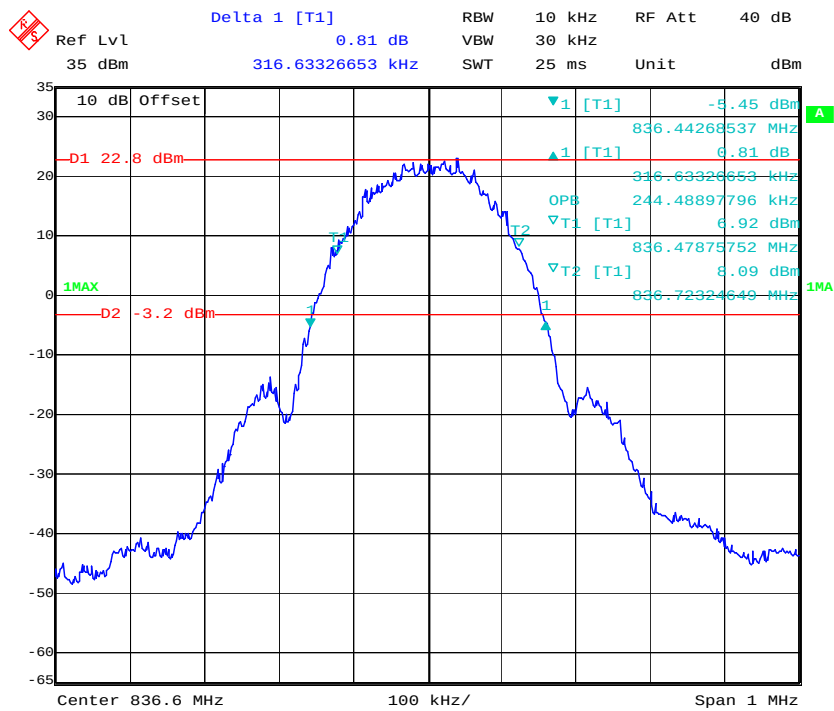
Band	Bandwidth	Modulation	99% occupied bandwidth (MHz)	26 dB bandwidth (MHz)
LTE Band 2	1.4 MHz	QPSK	1.116	1.299
		16QAM	1.116	1.509
	3 MHz	QPSK	2.724	3.006
		16QAM	2.700	3.102
	5 MHz	QPSK	4.560	5.451
		16QAM	4.540	2.291
	10 MHz	QPSK	9.000	9.860
		16QAM	9.000	10.100
	15 MHz	QPSK	13.560	15.391
		16QAM	13.560	15.090
	20 MHz	QPSK	18.080	19.960
		16QAM	18.080	20.040

Band	Bandwidth	Modulation	99% occupied bandwidth (MHz)	26 dB bandwidth (MHz)
LTE Band 4	1.4 MHz	QPSK	1.116	1.395
		16QAM	1.122	1.300
	3 MHz	QPSK	2.712	3.006
		16QAM	2.712	3.042
	5 MHz	QPSK	4.560	5.331
		16QAM	4.540	5.291
	10 MHz	QPSK	9.000	9.780
		16QAM	8.960	9.739
	15 MHz	QPSK	13.560	15.511
		16QAM	13.560	15.150
LTE Band 5	1.4 MHz	QPSK	1.110	1.353
		16QAM	1.122	1.323
	3 MHz	QPSK	2.700	2.982
		16QAM	2.700	2.994
	5 MHz	QPSK	4.520	5.230
		16QAM	4.520	5.312
	10 MHz	QPSK	9.000	9.860
		16QAM	8.920	9.699
LTE Band 7	5 MHz	QPSK	4.560	5.331
		16QAM	4.560	5.251
	10 MHz	QPSK	8.960	9.780
		16QAM	8.960	9.780
	15 MHz	QPSK	13.680	15.872
		16QAM	13.620	15.331
	20 MHz	QPSK	18.080	19.960
		16QAM	18.080	19.960
LTE Band 12	1.4 MHz	QPSK	1.110	1.329
		16QAM	1.122	1.317
	3 MHz	QPSK	2.710	3.006
		16QAM	2.712	2.994
	5 MHz	QPSK	4.560	5.411
		16QAM	4.520	4.990
	10 MHz	QPSK	9.000	9.820
		16QAM	8.920	9.659
LTE Band 13	5 MHz	QPSK	4.540	5.511
		16QAM	4.560	5.371
	10 MHz	QPSK	9.000	9.820
		16QAM	9.000	9.660

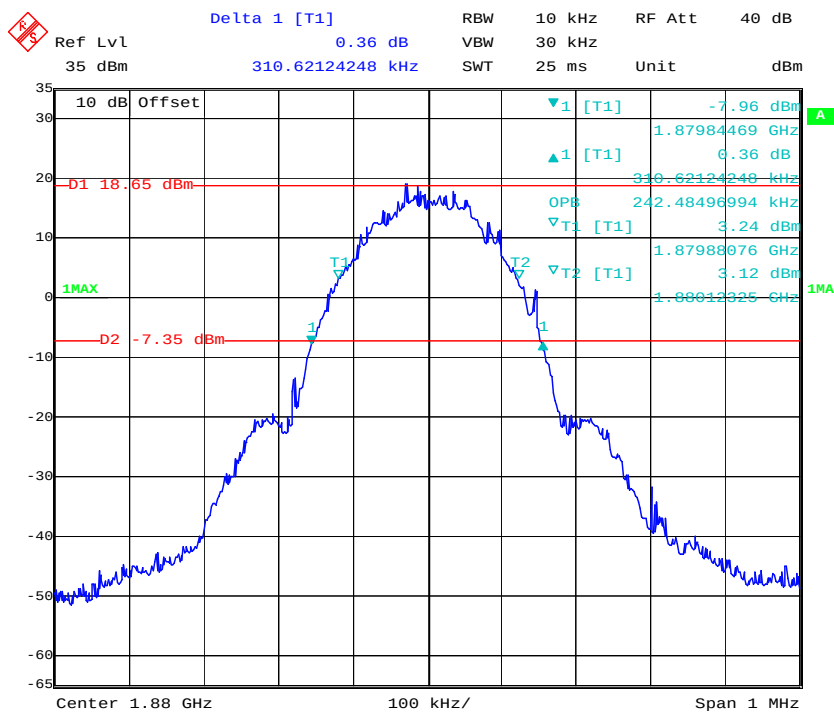
Band	Bandwidth	Modulation	99% occupied bandwidth (MHz)	26 dB bandwidth (MHz)
LTE Band 17	5 MHz	QPSK	4.560	5.311
		16QAM	4.540	5.230
	10 MHz	QPSK	9.000	9.739
		16QAM	8.960	9.659
LTE Band 18	5 MHz	QPSK	4.560	5.351
		16QAM	4.560	5.271
	10 MHz	QPSK	9.000	9.860
		16QAM	9.000	9.820
	15 MHz	QPSK	13.560	15.451
		16QAM	13.560	14.970
LTE Band 19	5 MHz	QPSK	4.540	5.311
		16QAM	4.520	5.230
	10 MHz	QPSK	9.000	9.860
		16QAM	9.000	9.780
	15 MHz	QPSK	13.560	15.271
		16QAM	13.500	14.970
LTE Band 26	1.4 MHz	QPSK	1.116	1.371
		16QAM	1.122	1.335
	3 MHz	QPSK	2.724	3.030
		16QAM	2.700	2.994
	5 MHz	QPSK	4.560	5.170
		16QAM	4.540	5.271
	10 MHz	QPSK	9.000	9.900
		16QAM	8.960	9.739
	15 MHz	QPSK	13.680	15.451
		16QAM	13.560	14.970
LTE Band 38	5 MHz	QPSK	4.520	5.311
		16QAM	4.520	5.230
	10 MHz	QPSK	9.000	9.739
		16QAM	9.000	9.780
	15 MHz	QPSK	13.680	17.014
		16QAM	13.620	15.812
	20 MHz	QPSK	18.000	19.639
		16QAM	18.000	19.960

Band	Bandwidth	Modulation	99% occupied bandwidth (MHz)	26 dB bandwidth (MHz)
LTE Band 40 (2305-2315MHz)	5 MHz	QPSK	4.540	5.703
		16QAM	4.520	5.313
	10 MHz	QPSK	9.000	9.852
		16QAM	8.960	9.812
LTE Band 40 (2350-2360MHz)	5 MHz	QPSK	4.540	5.350
		16QAM	4.540	5.421
	10 MHz	QPSK	9.000	10.045
		16QAM	8.960	9.820
LTE Band 41	5 MHz	QPSK	4.535	5.224
		16QAM	4.535	5.449
	10 MHz	QPSK	8.974	9.872
		16QAM	8.974	9.808
	15 MHz	QPSK	13.606	17.308
		16QAM	13.606	16.490
	20 MHz	QPSK	18.077	20.000
		16QAM	17.949	20.128

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

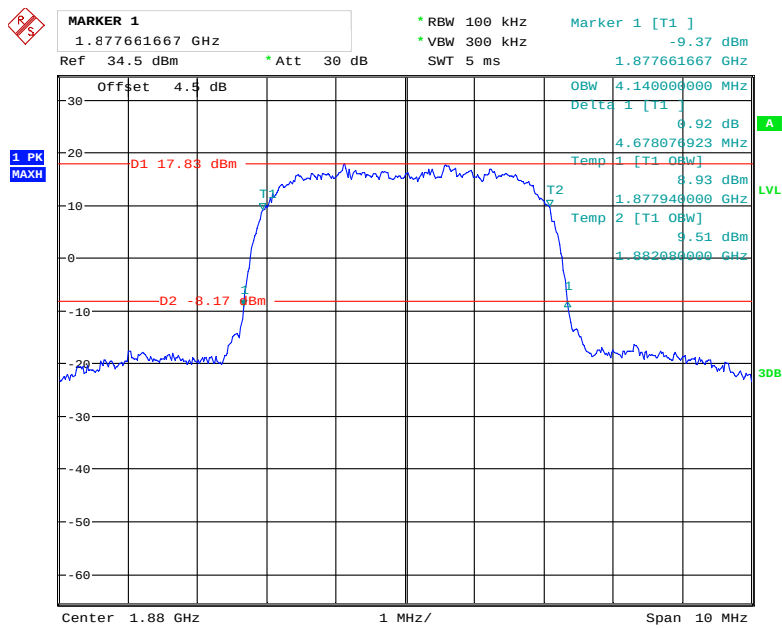
EDGE 850 Cellular Band

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EDGE PCS1900 Cellular Band

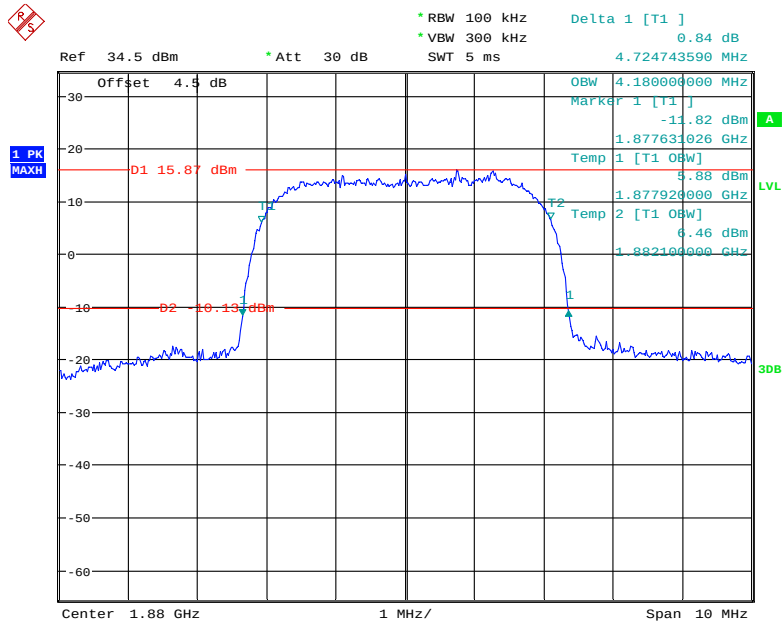
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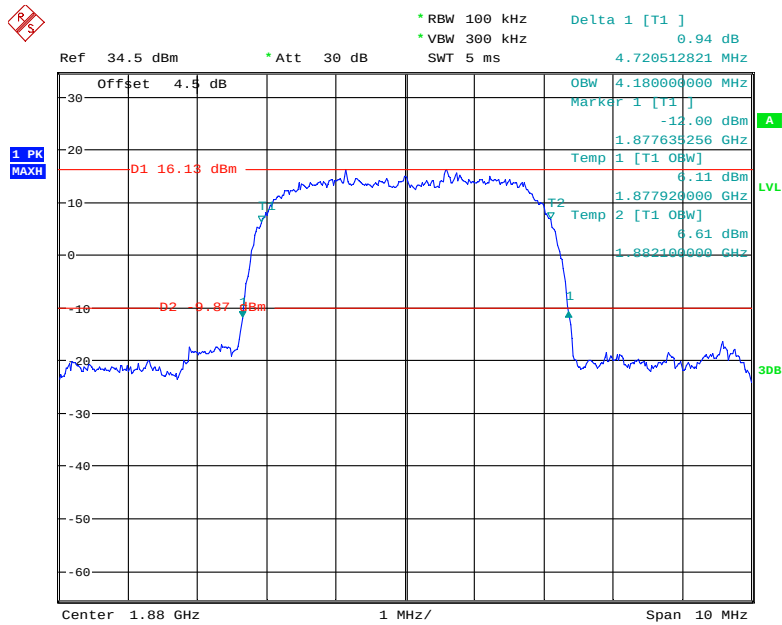
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WCDMA Band II, HSUPA



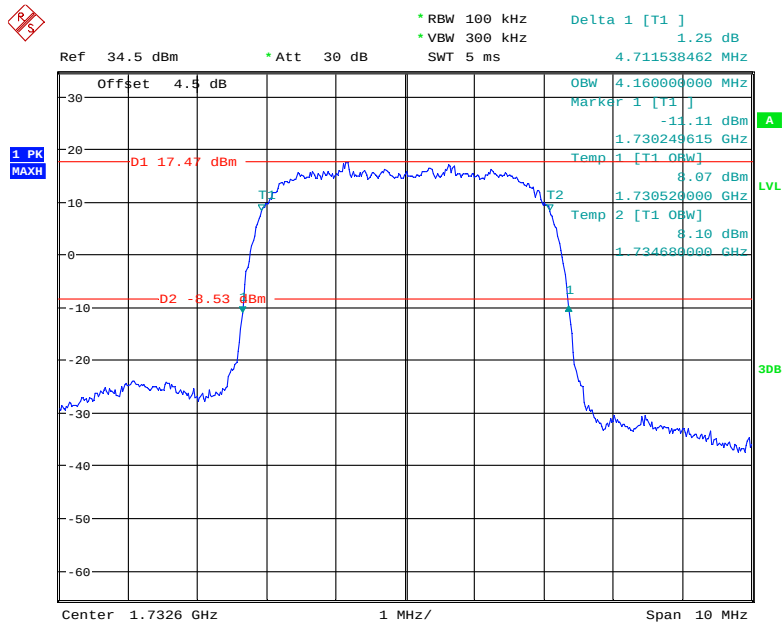
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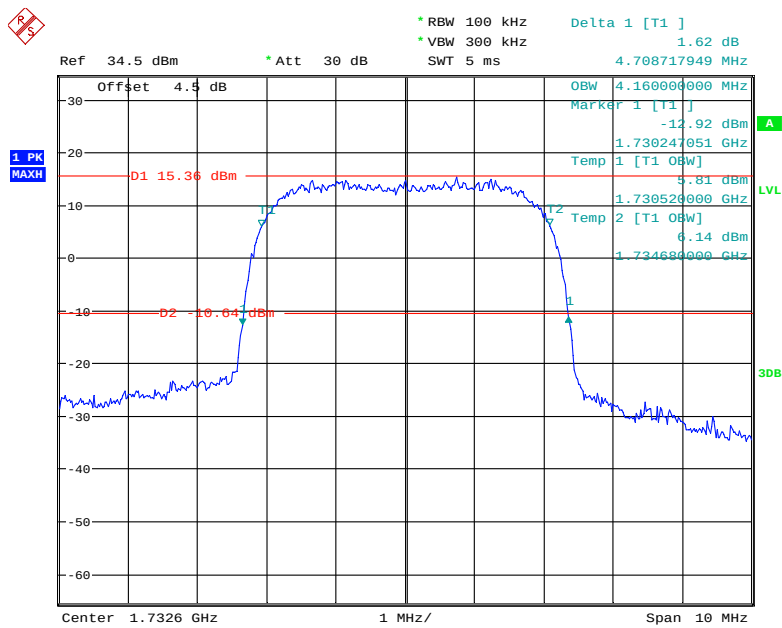
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WCDMA Band IV, Rel 99



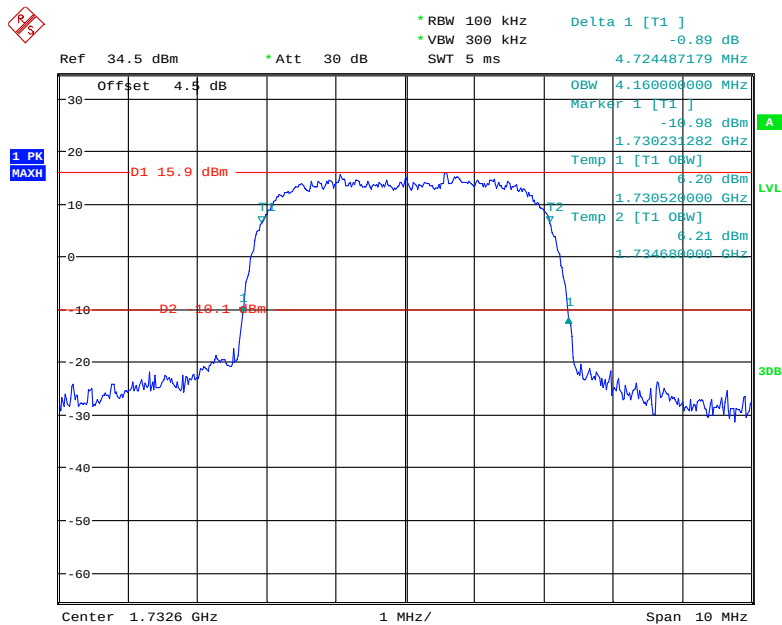
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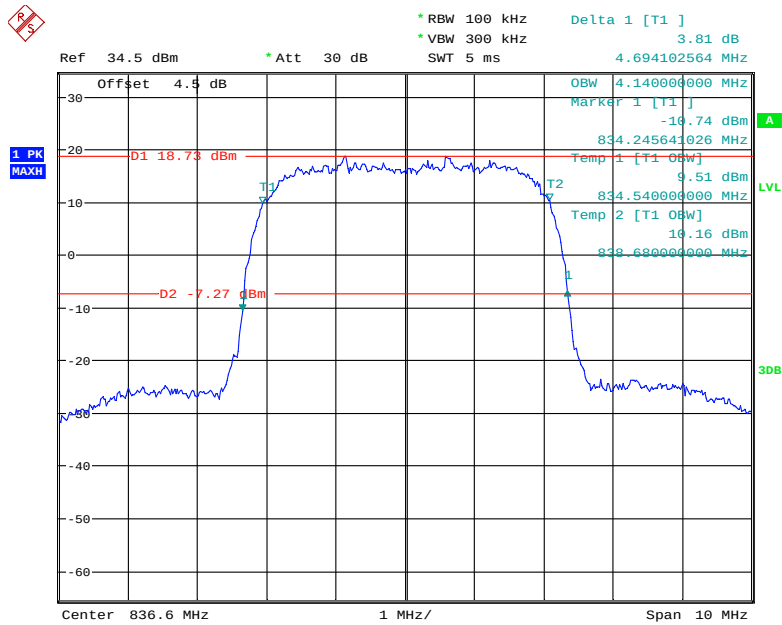
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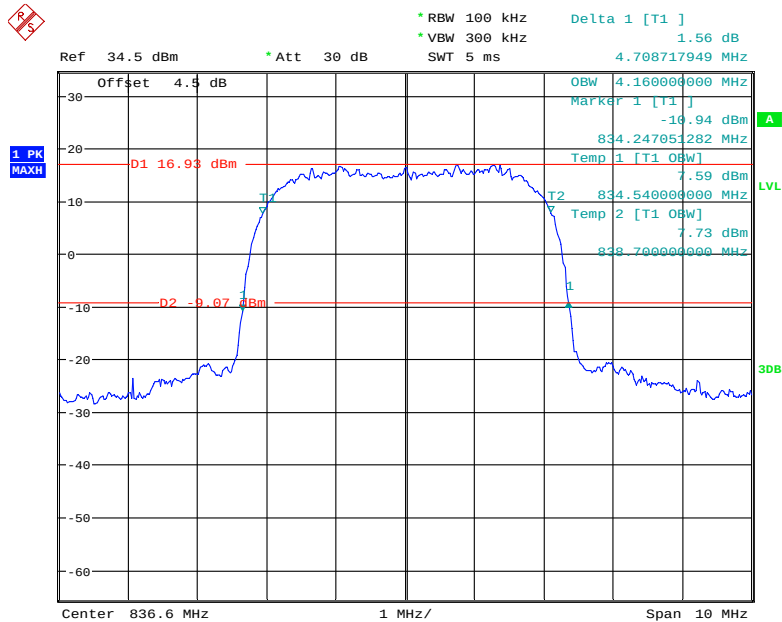
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WCDMA Band V, Rel 99



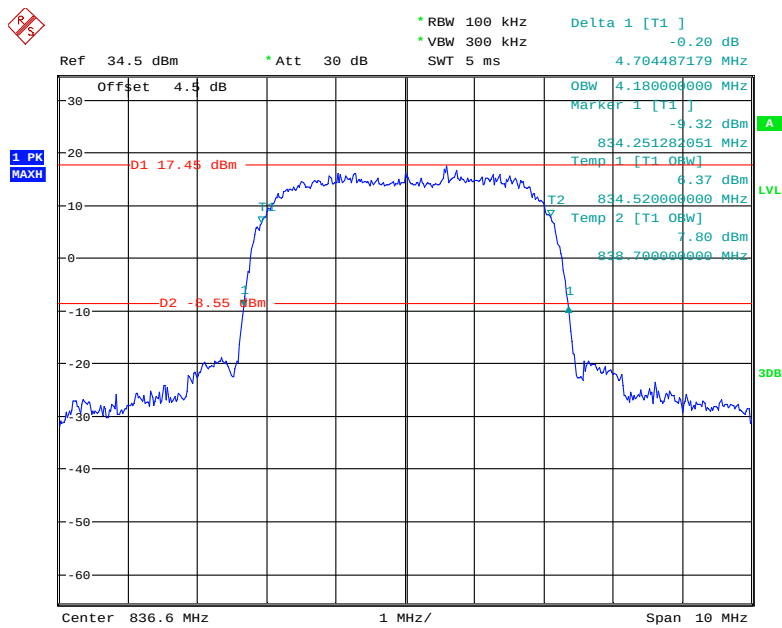
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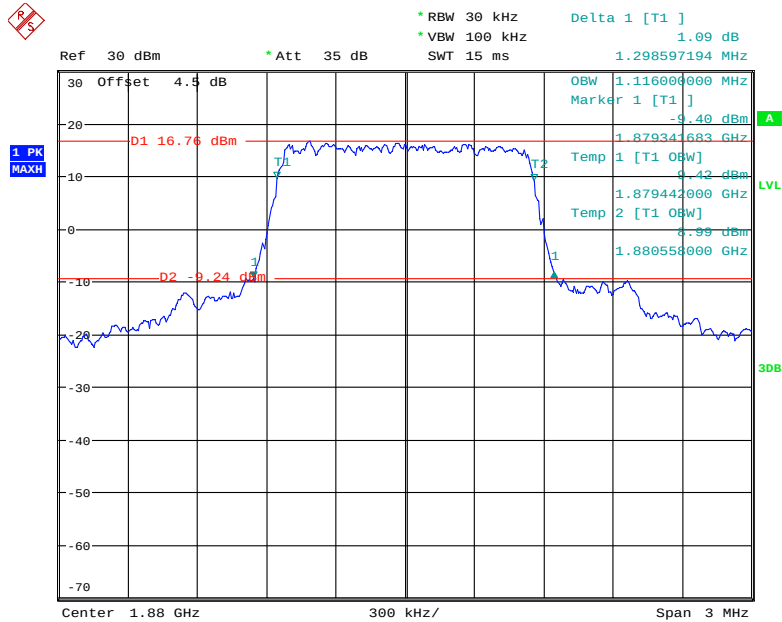
WCDMA Band V, HSDPA



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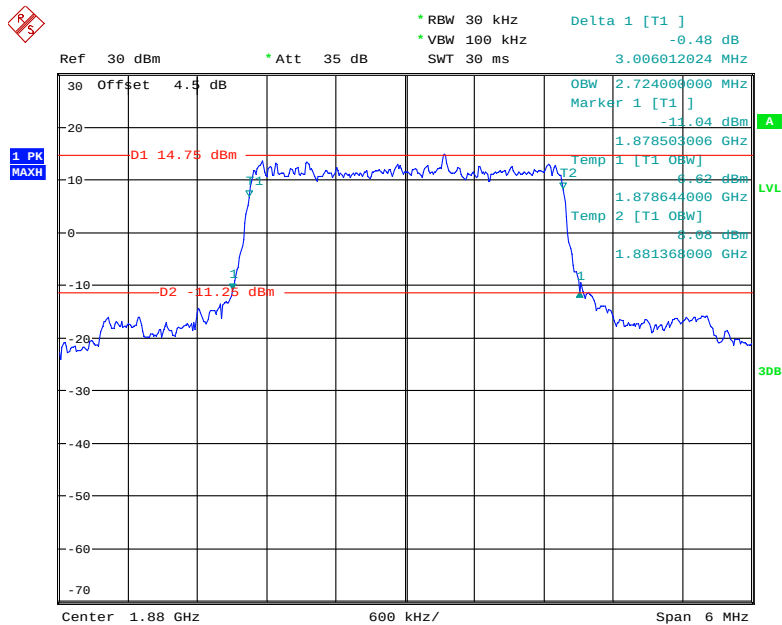
LTE Band 2

QPSK_1.4 MHz



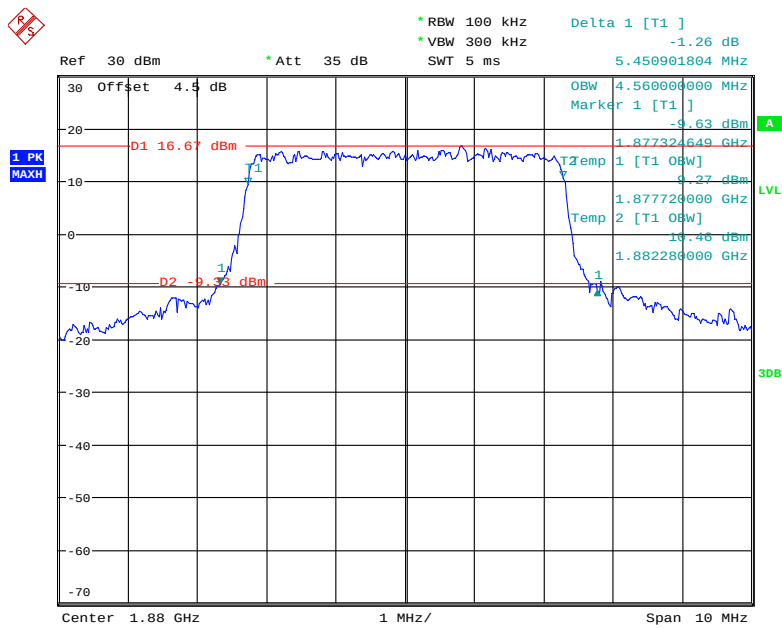
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QPSK_3 MHz



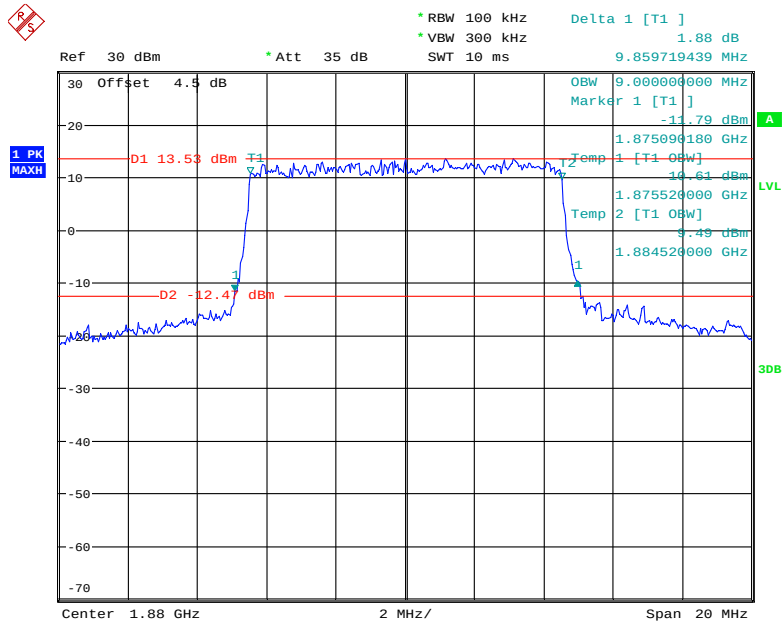
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QPSK_5 MHz



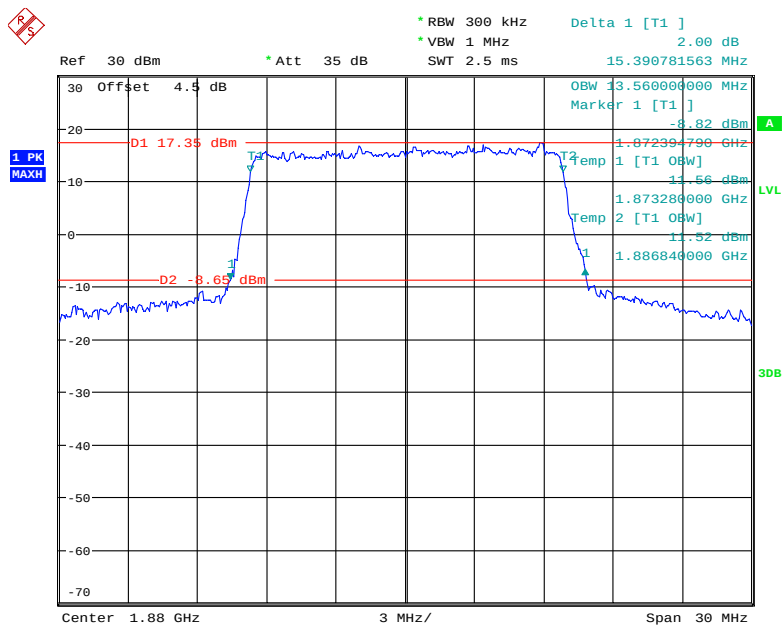
Date: 2.NOV.2018 08:42:54

QPSK_10 MHz



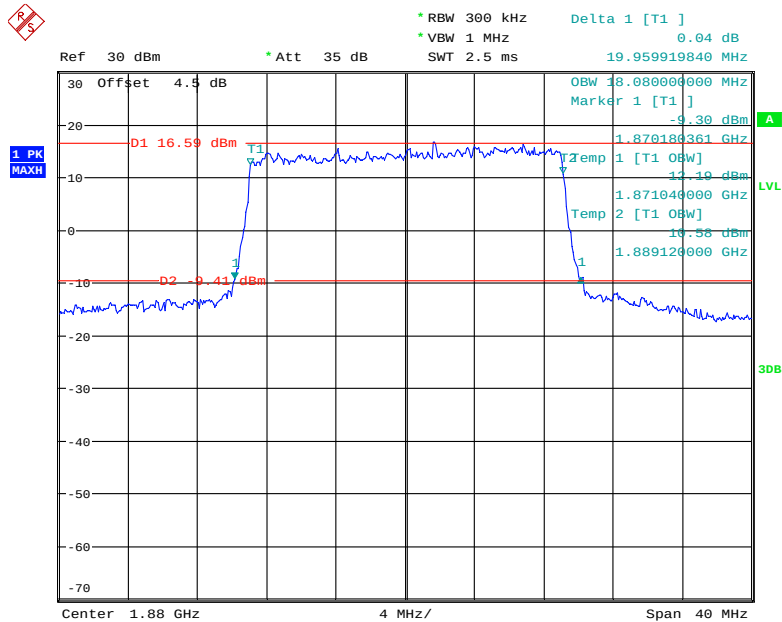
Date: 2.NOV.2018 08:45:19

QPSK_15 MHz



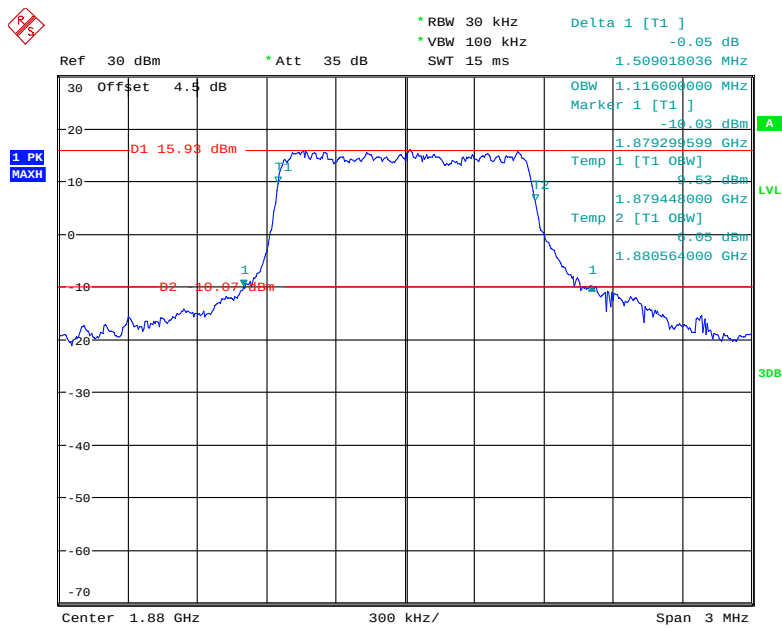
Date: 2.NOV.2018 08:46:49

QPSK_20 MHz



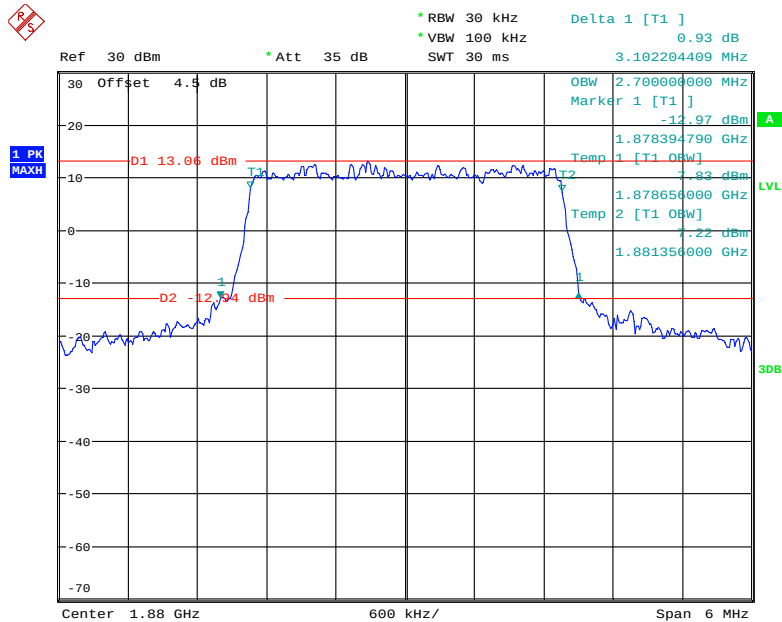
Date: 2.NOV.2018 08:48:33

16QAM_1.4 MHz



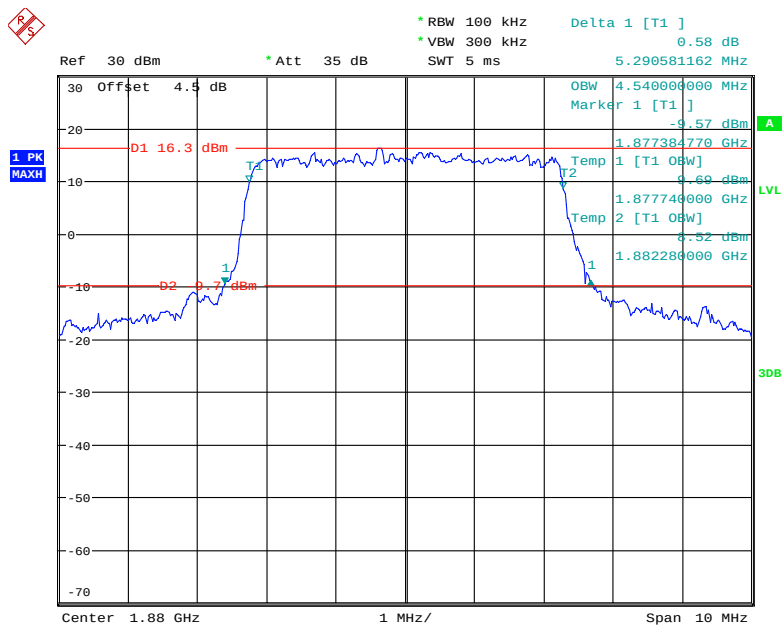
Date: 2.NOV.2018 08:39:42

16QAM_3 MHz



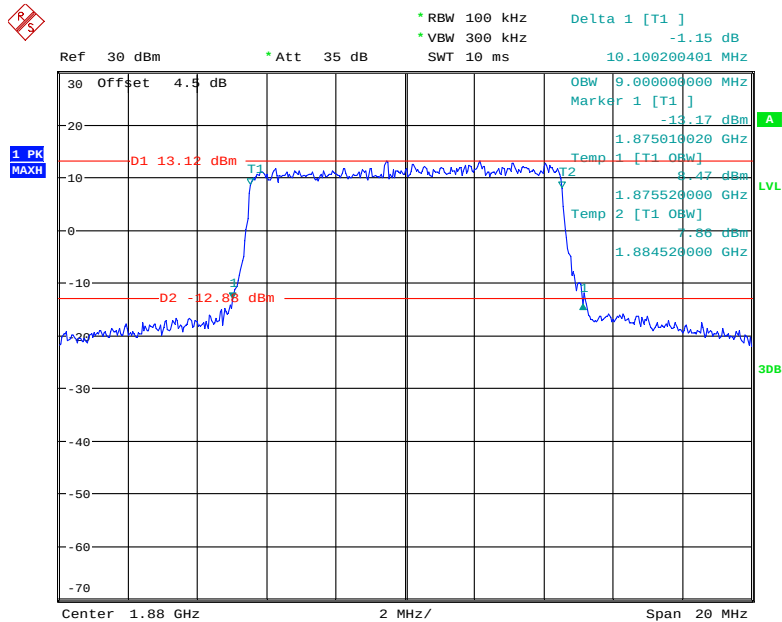
Date: 2.NOV.2018 08:42:00

16QAM_5 MHz



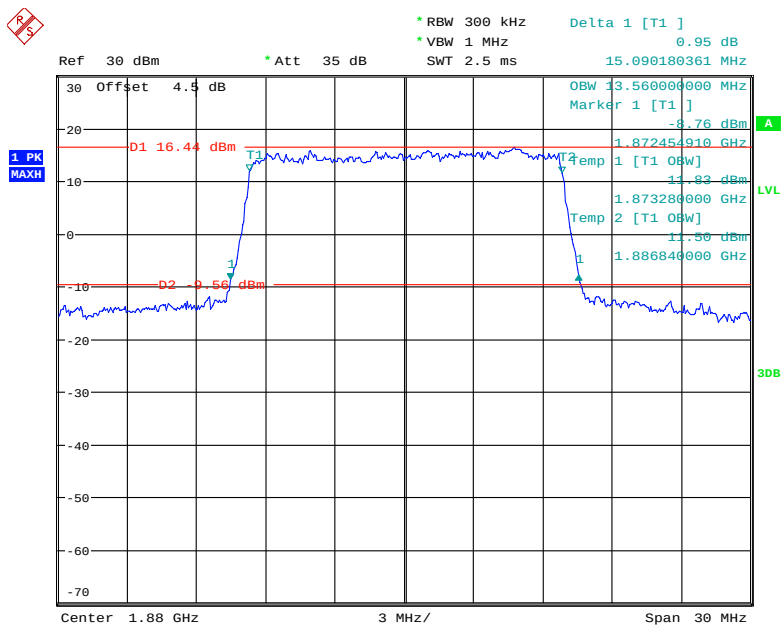
Date: 2.NOV.2018 08:43:44

16QAM_10 MHz



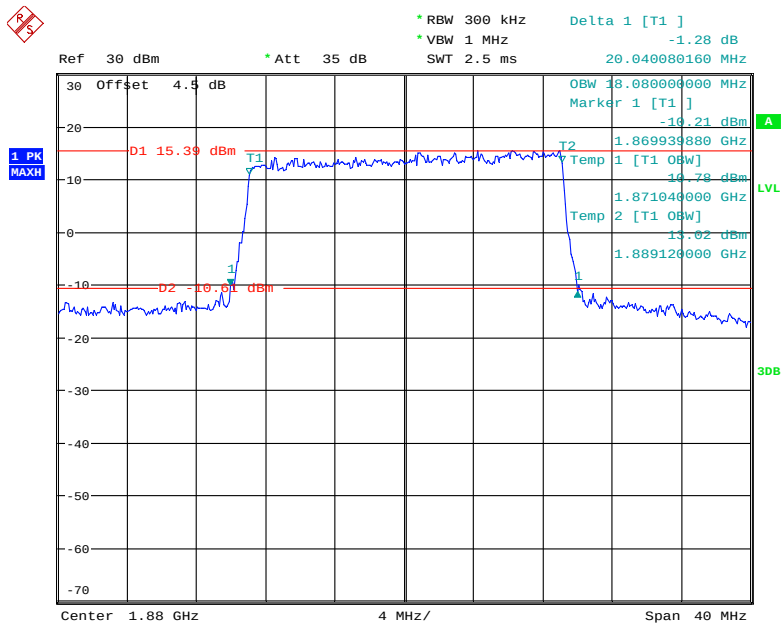
Date: 2.NOV.2018 08:45:51

16QAM_15 MHz



Date: 2.NOV.2018 08:47:39

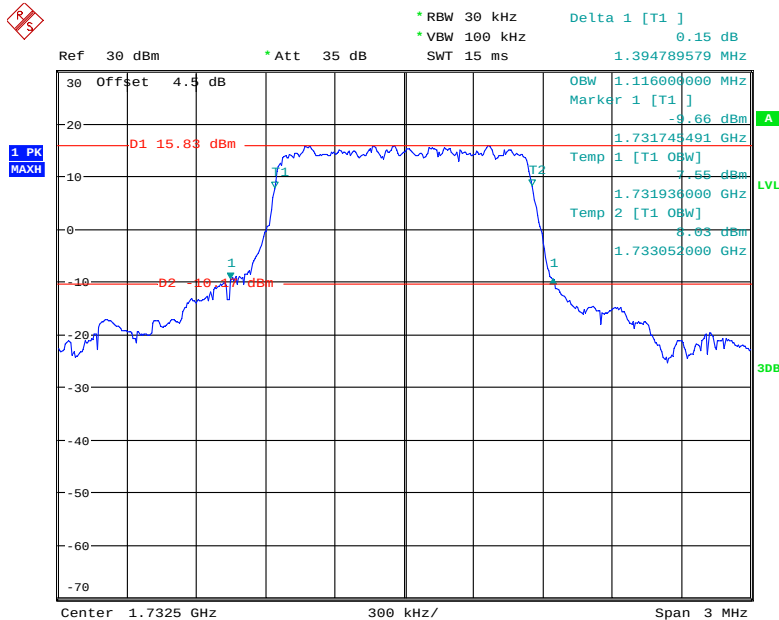
16QAM_20 MHz



Date: 2.NOV.2018 08:49:20

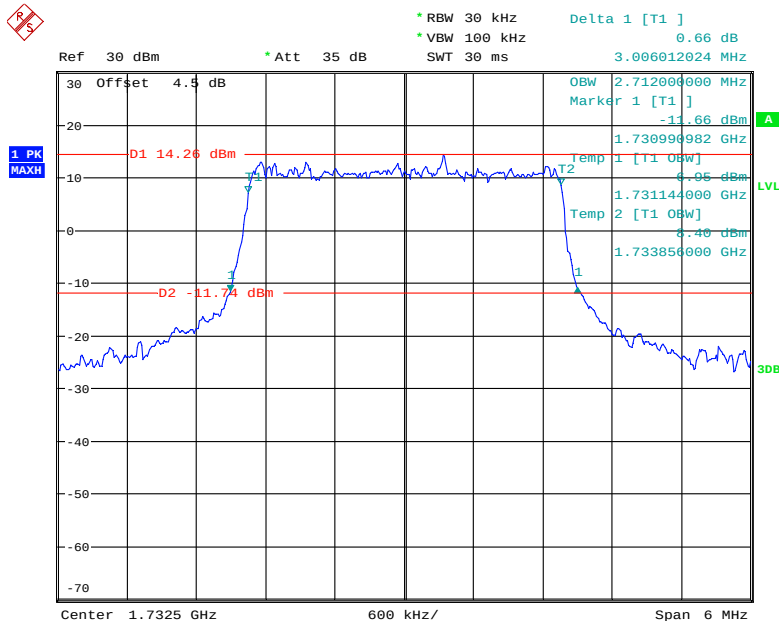
LTE Band 4:

QPSK_1.4 MHz



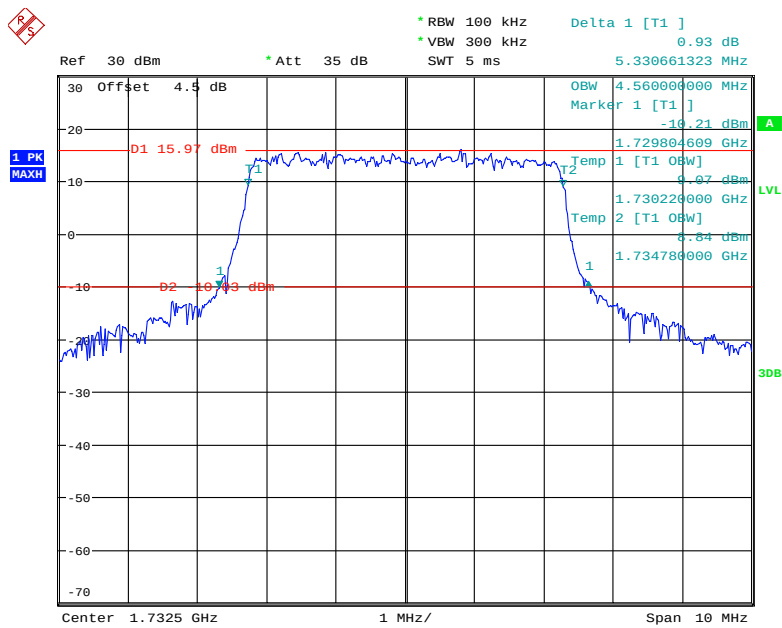
Date: 2.NOV.2018 08:50:00

QPSK_3 MHz



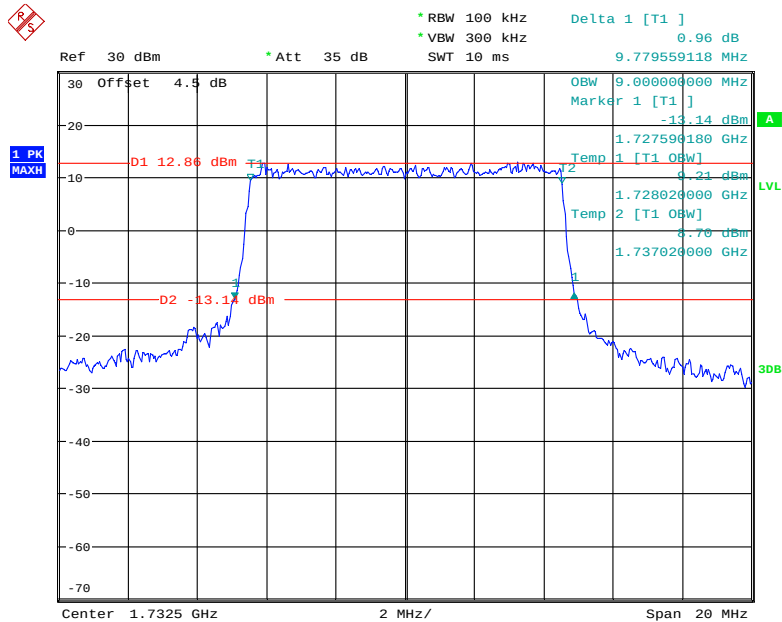
Date: 2.NOV.2018 08:51:03

QPSK_5 MHz



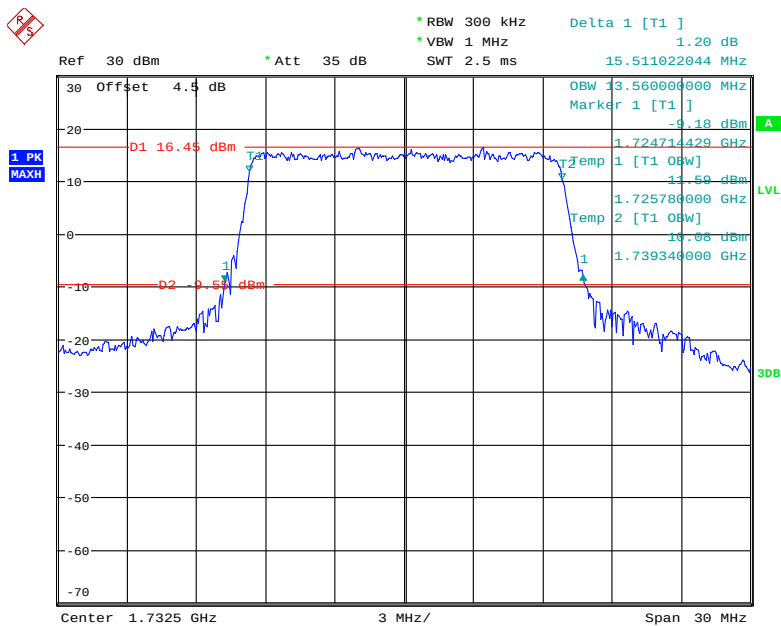
Date: 2.NOV.2018 08:52:06

QPSK_10 MHz



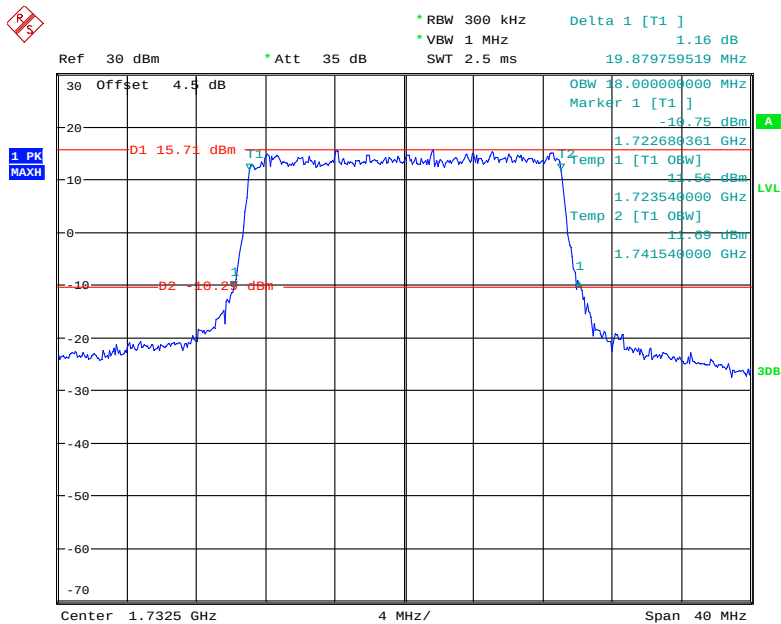
Date: 2.NOV.2018 08:53:32

QPSK_15 MHz



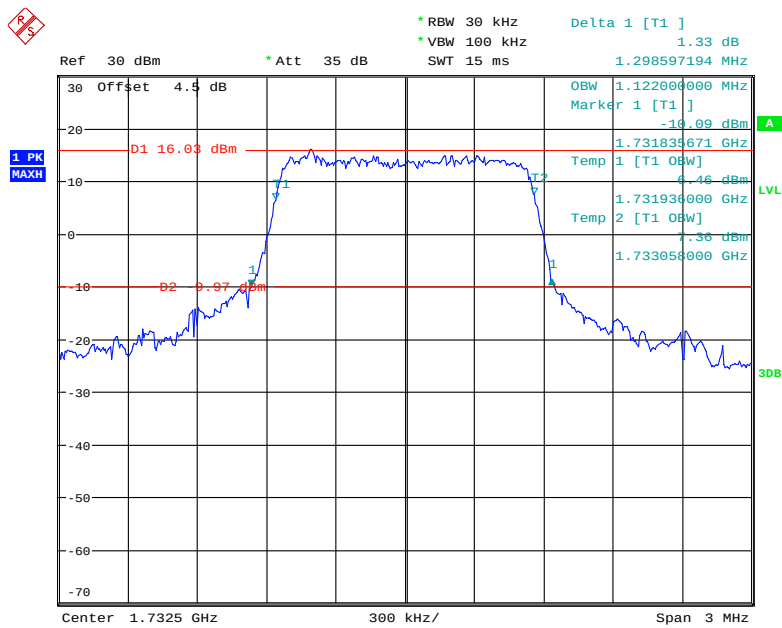
Date: 2.NOV.2018 08:55:02

QPSK_20 MHz



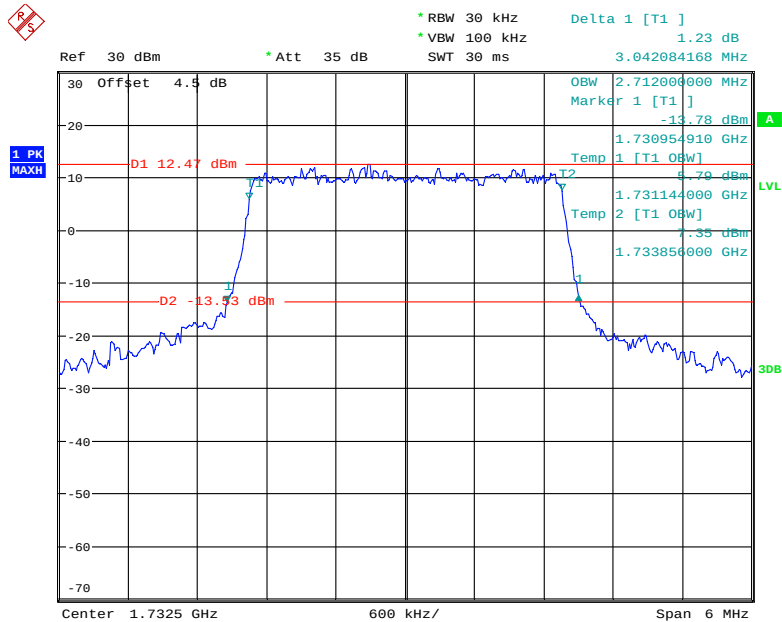
Date: 2.NOV.2018 08:56:35

16QAM_1.4 MHz



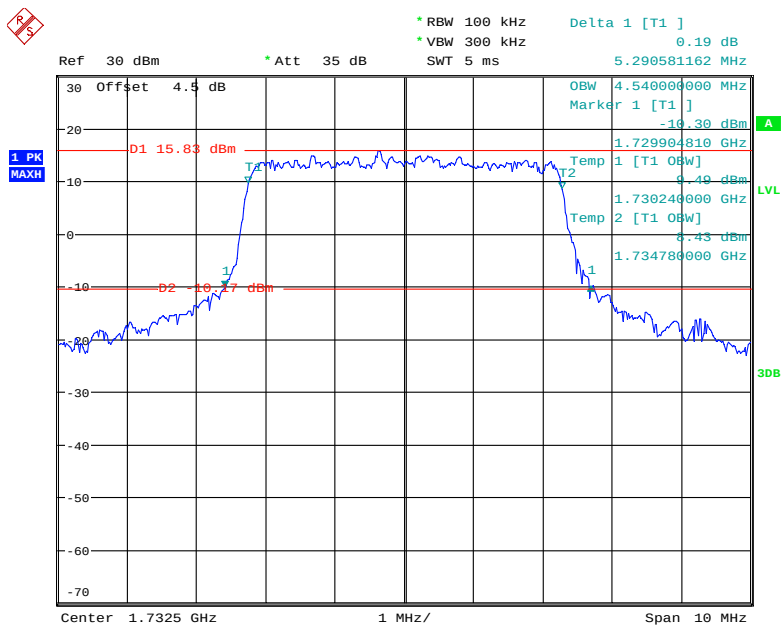
Date: 2.NOV.2018 08:50:28

16QAM_3 MHz



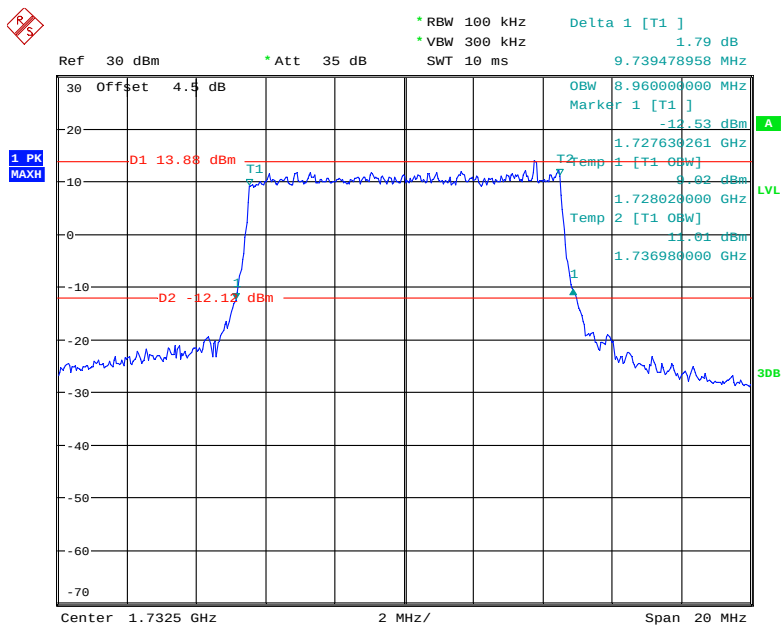
Date: 2.NOV.2018 08:51:30

16QAM_5 MHz



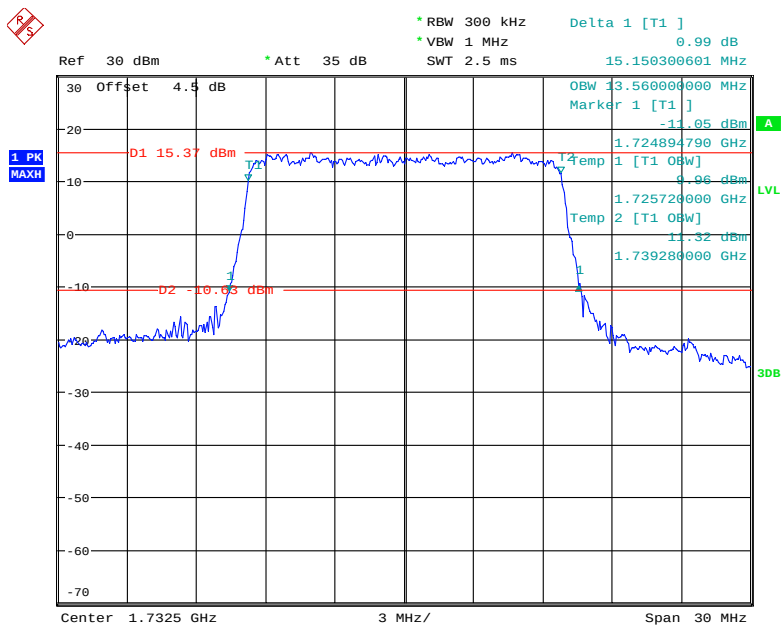
Date: 2.NOV.2018 08:52:49

16QAM_10 MHz



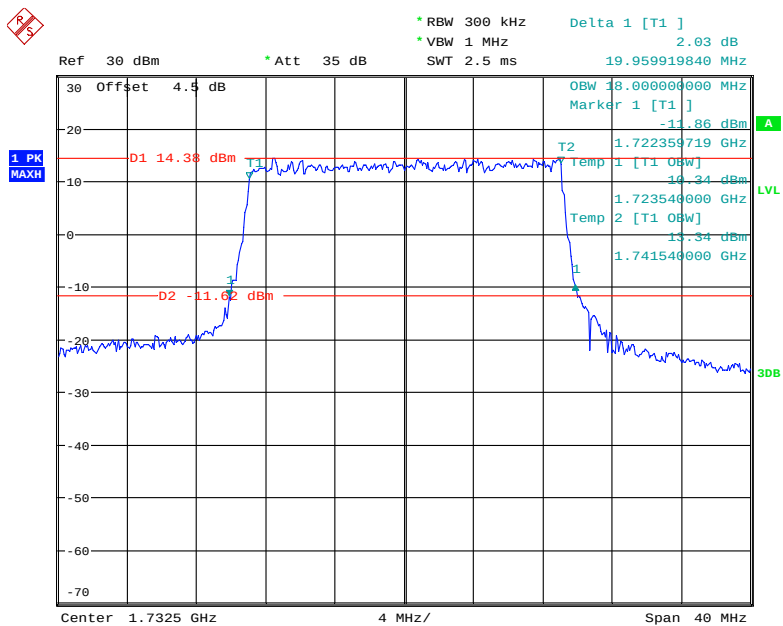
Date: 2.NOV.2018 08:54:12

16QAM_15 MHz



Date: 2.NOV.2018 08:55:48

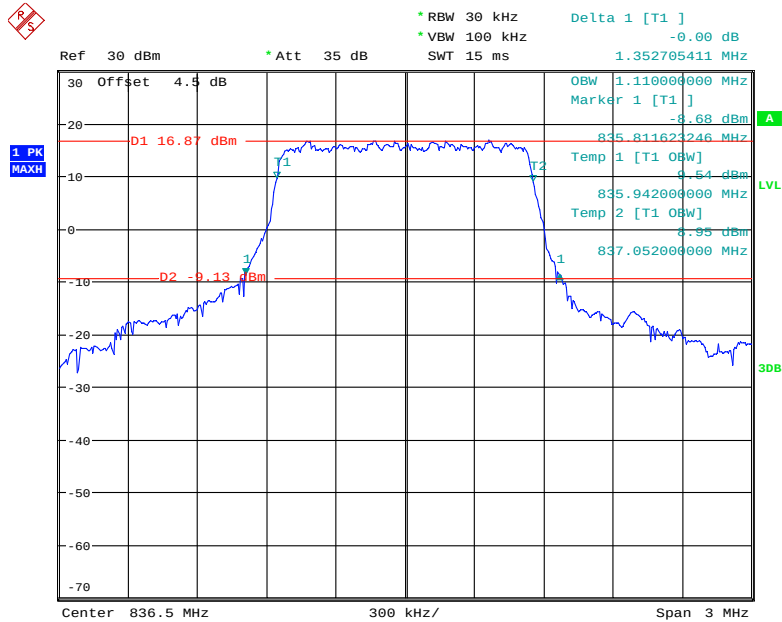
16QAM_20 MHz



Date: 2.NOV.2018 08:57:22

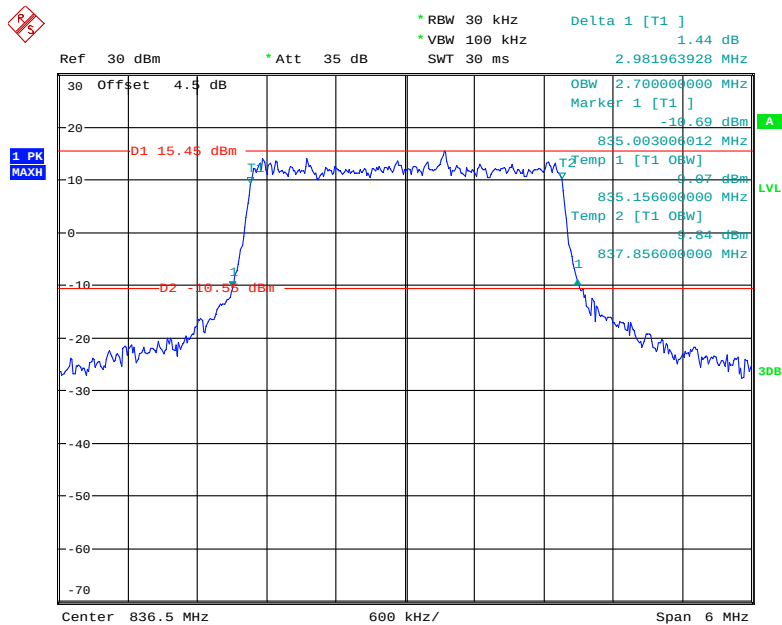
LTE Band 5:

QPSK_1.4 MHz



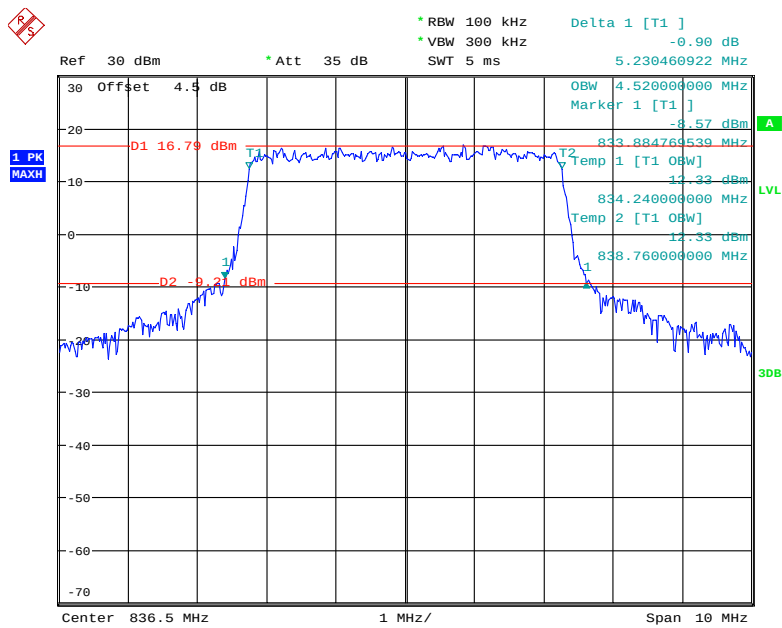
Date: 2.NOV.2018 08:58:08

QPSK_3 MHz



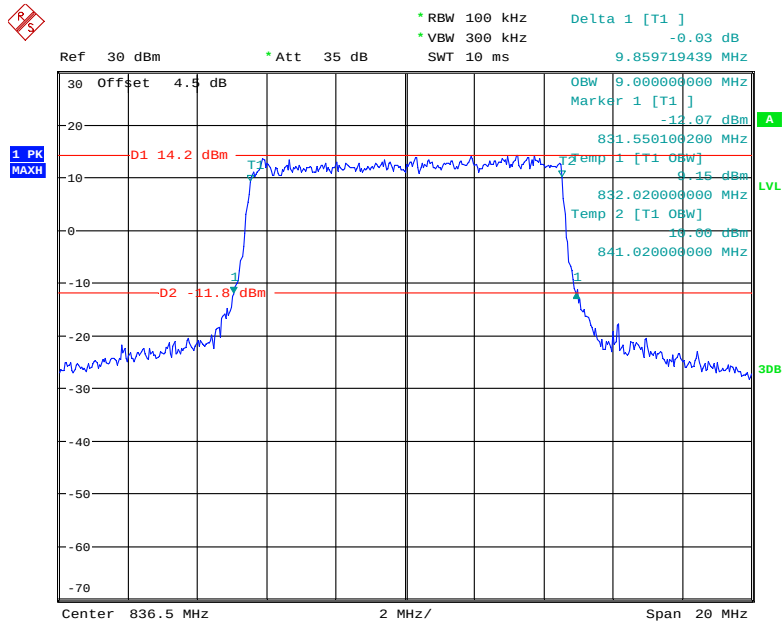
Date: 2.NOV.2018 08:59:24

QPSK_5 MHz



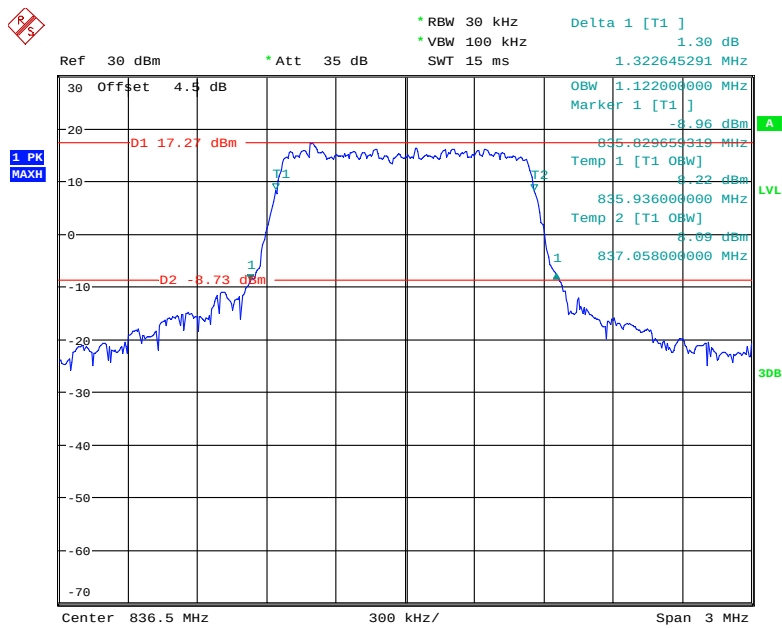
Date: 2.NOV.2018 09:00:57

QPSK_10 MHz



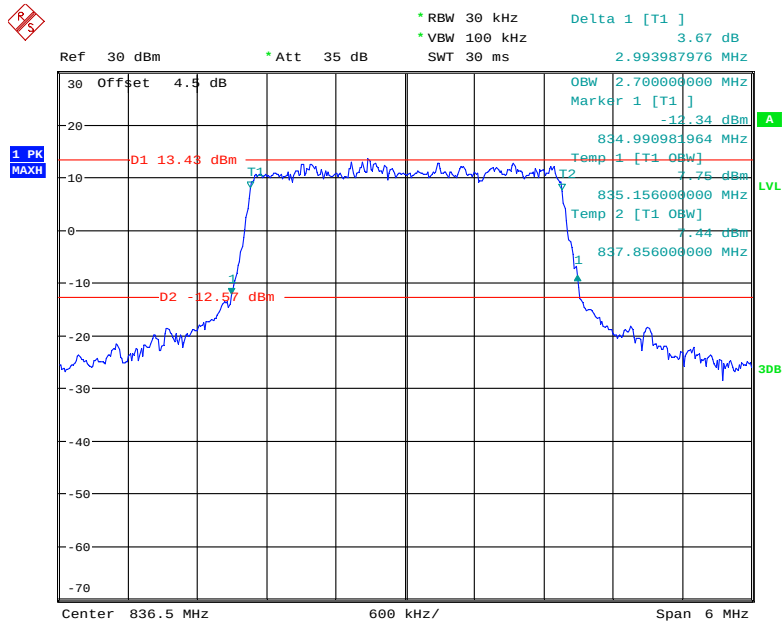
Date: 2.NOV.2018 09:02:55

16QAM_1.4 MHz



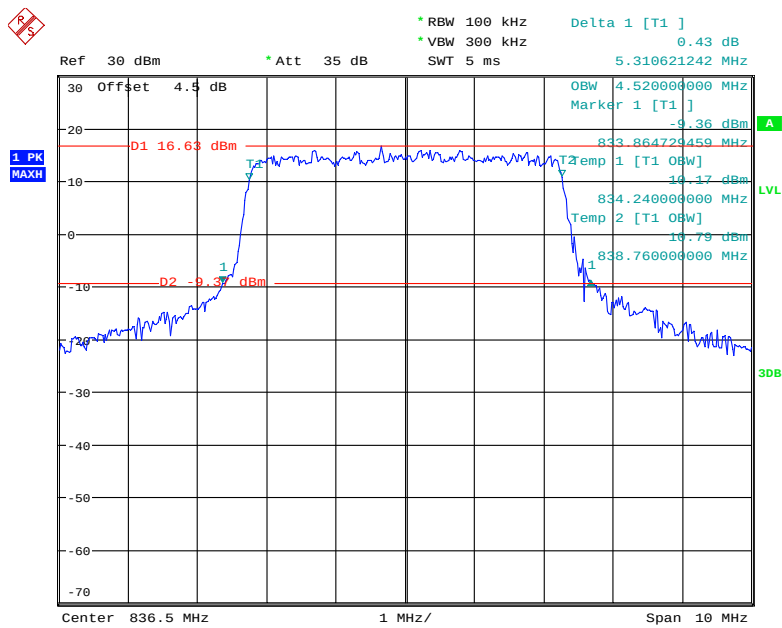
Date: 2.NOV.2018 08:58:54

16QAM_3 MHz



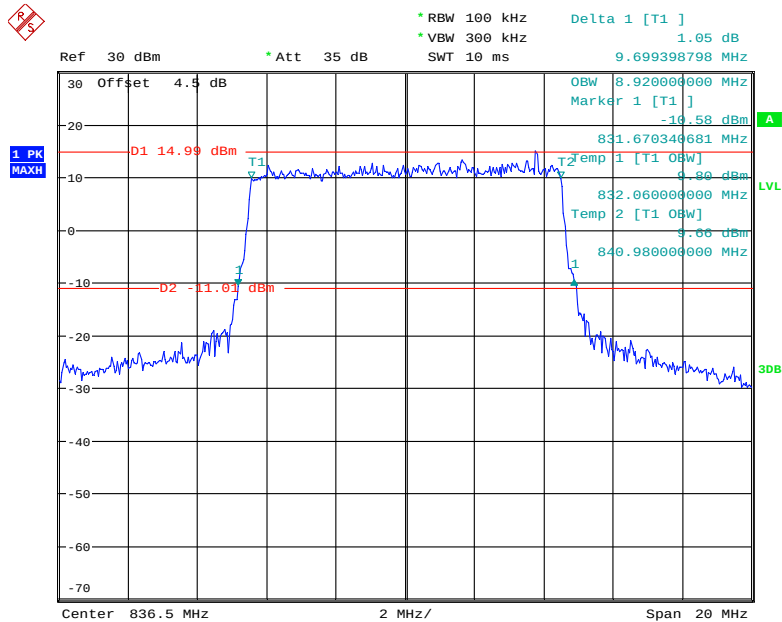
Date: 2.NOV.2018 08:59:56

16QAM_5 MHz



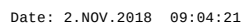
Date: 2.NOV.2018 09:02:05

16QAM_10 MHz



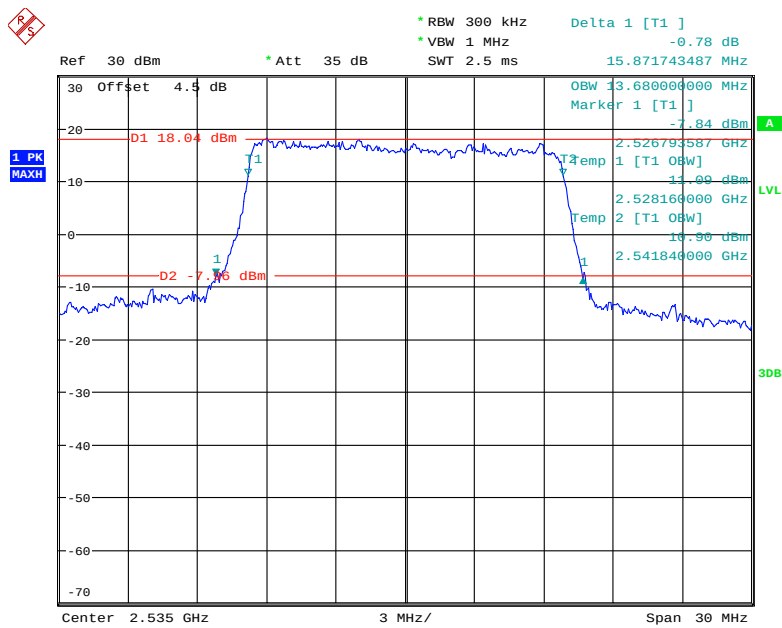
Date: 2.NOV.2018 09:03:31

QPSK_5 MHz



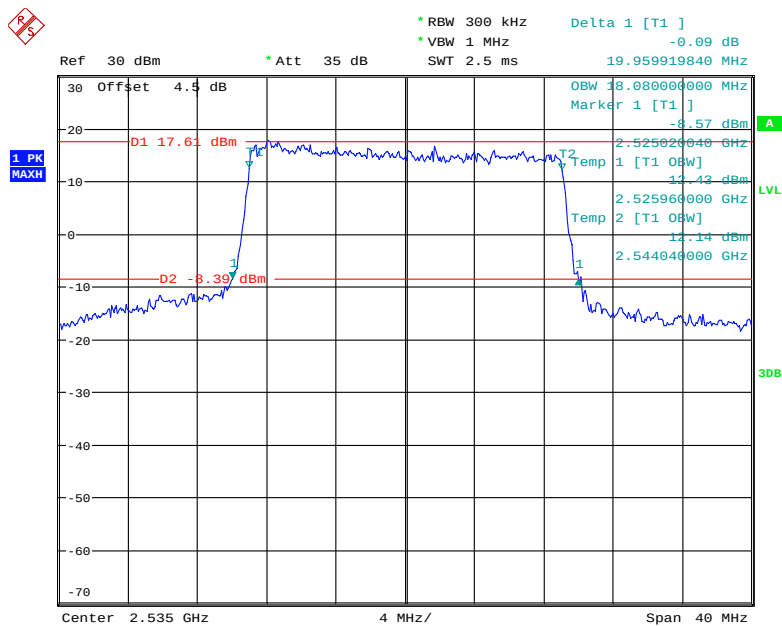
Date: 2.NOV.2018 09:05:51

QPSK_15 MHz



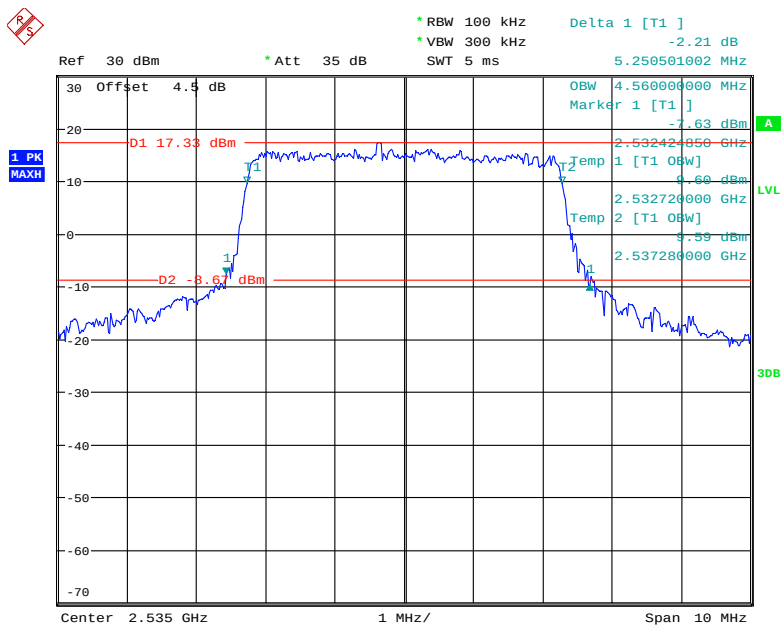
Date: 2.NOV.2018 09:07:32

QPSK_20 MHz



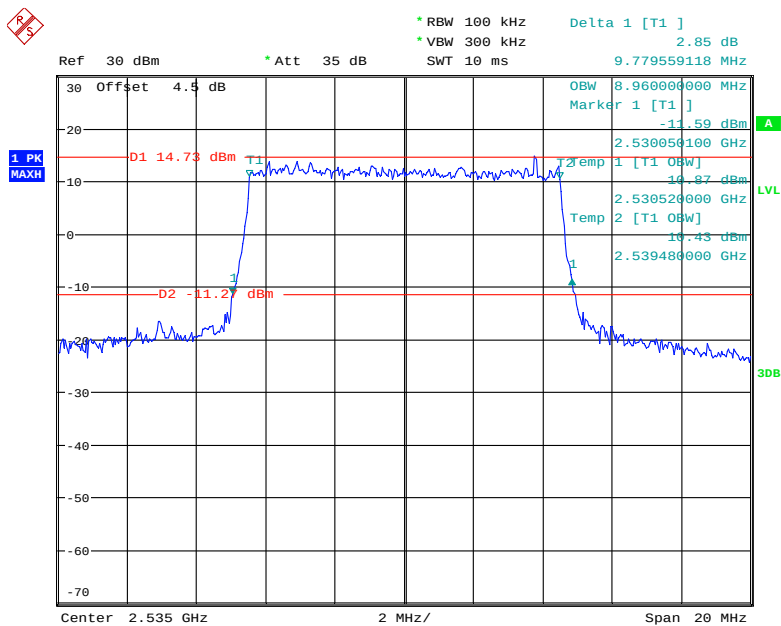
Date: 2.NOV.2018 09:09:13

16QAM_5 MHz



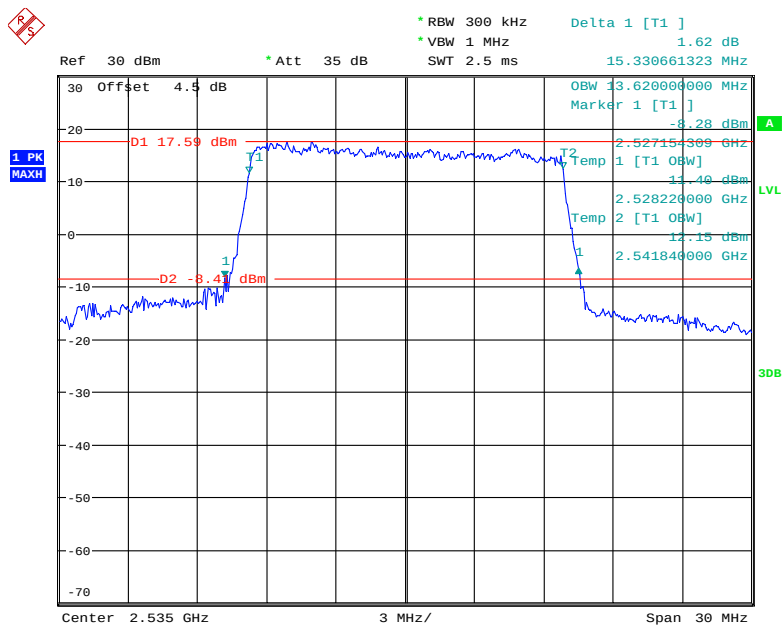
Date: 2.NOV.2018 09:05:12

16QAM_10 MHz



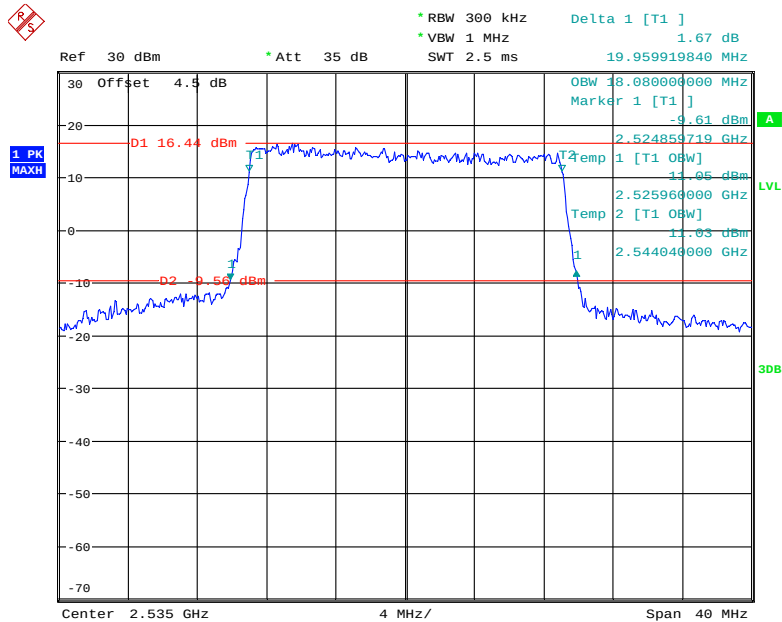
Date: 2.NOV.2018 09:06:27

16QAM_15 MHz

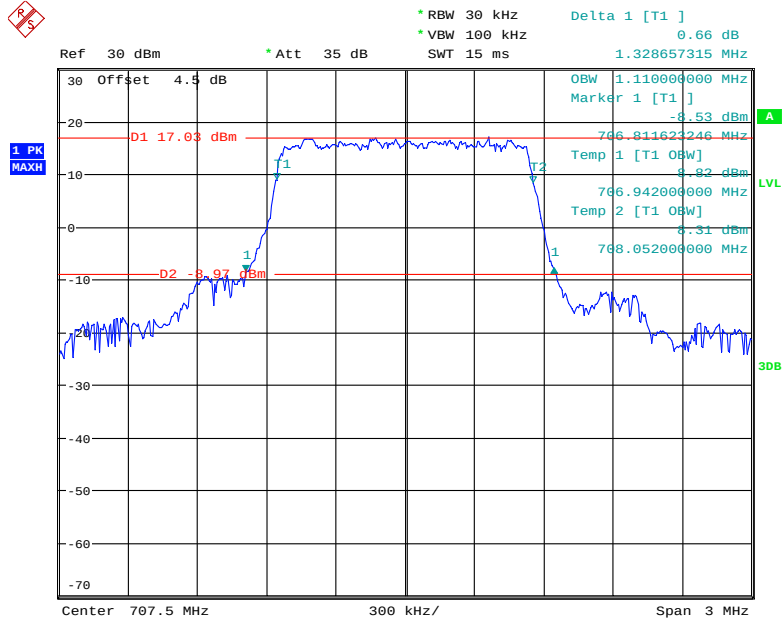


Date: 2.NOV.2018 09:08:15

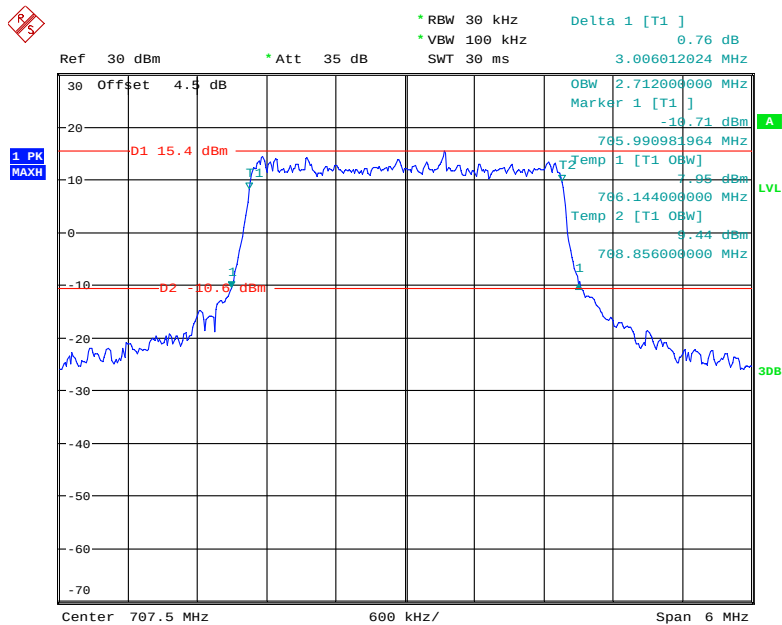
16QAM_20 MHz



Date: 2.NOV.2018 09:09:56

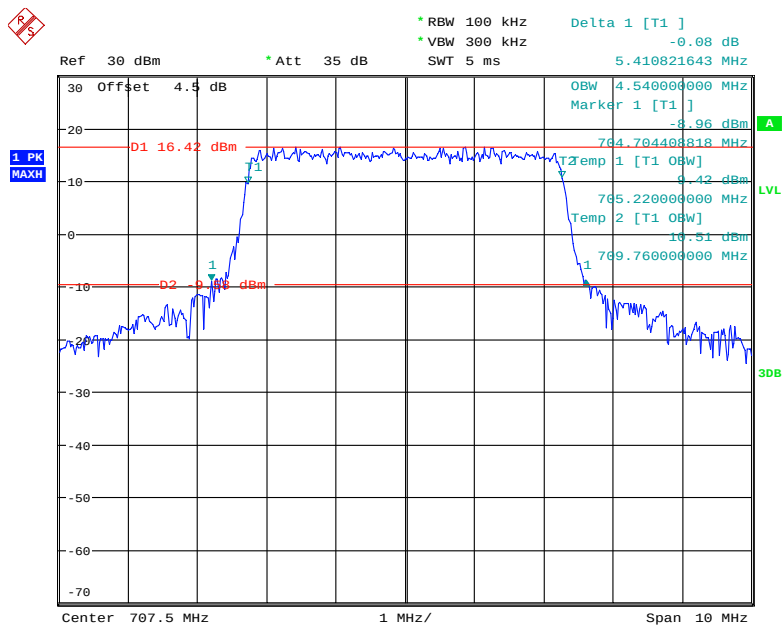
LTE Band 12:**QPSK_1.4 MHz**

Date: 2.NOV.2018 09:10:31

QPSK_3 MHz

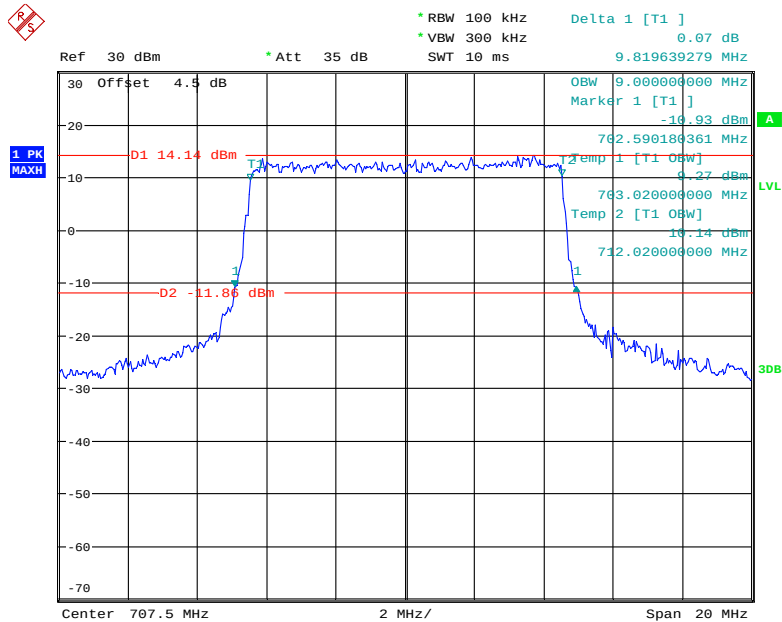
Date: 2.NOV.2018 09:11:44

QPSK_5 MHz



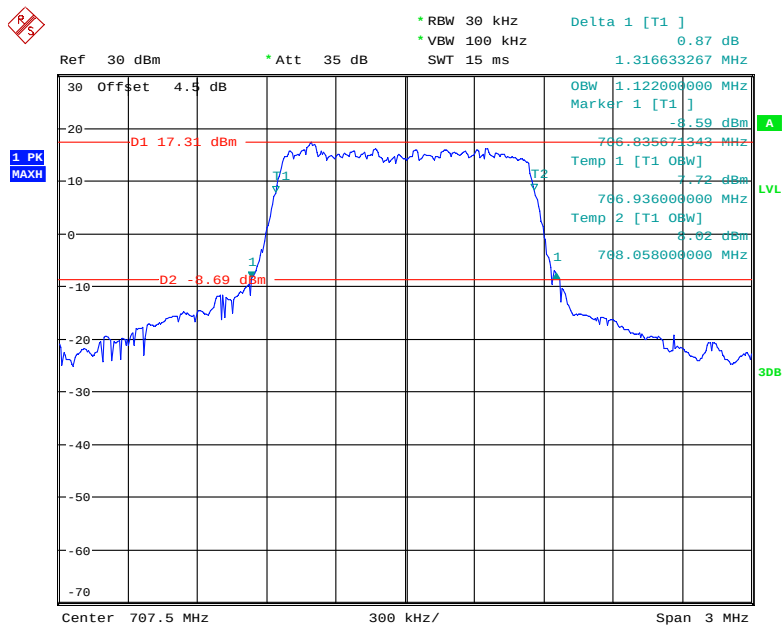
Date: 2.NOV.2018 09:12:51

QPSK_10 MHz



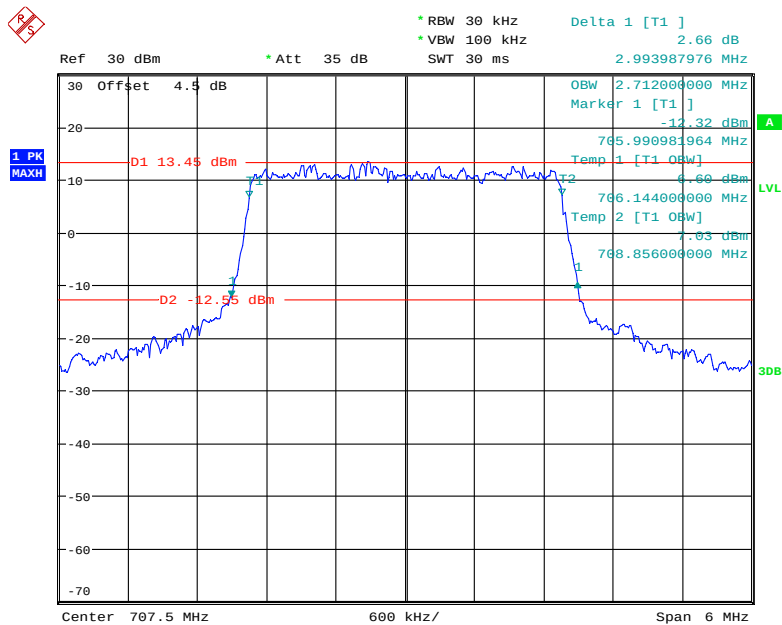
Date: 2.NOV.2018 09:26:14

16QAM_1.4 MHz



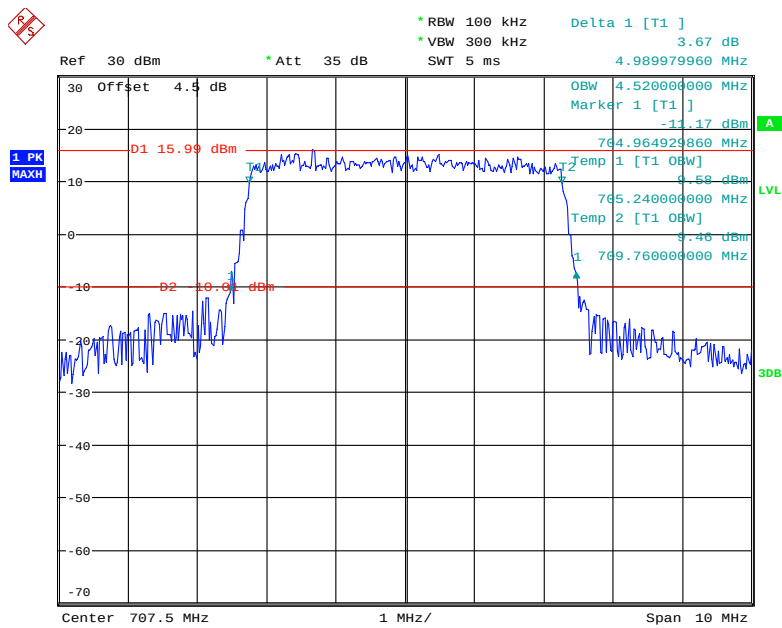
Date: 2.NOV.2018 09:11:06

16QAM_3 MHz



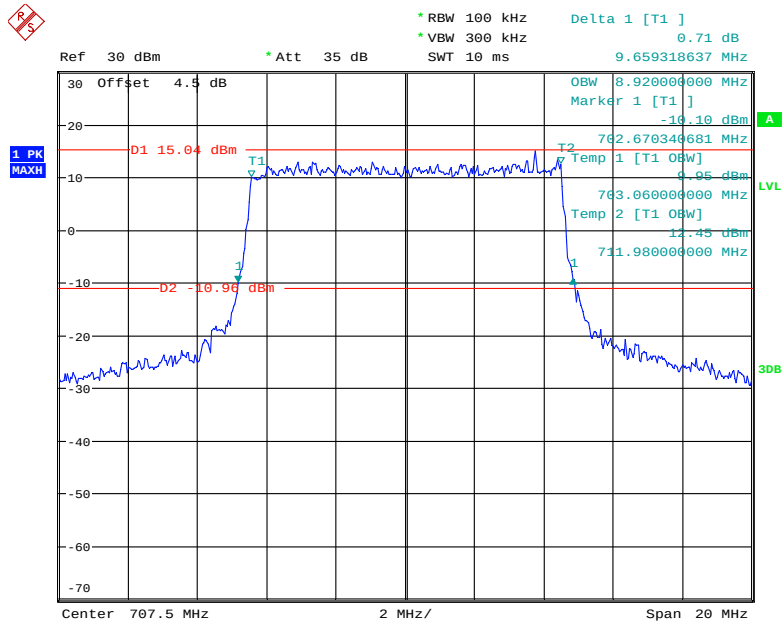
Date: 2.NOV.2018 09:12:11

16QAM_5 MHz

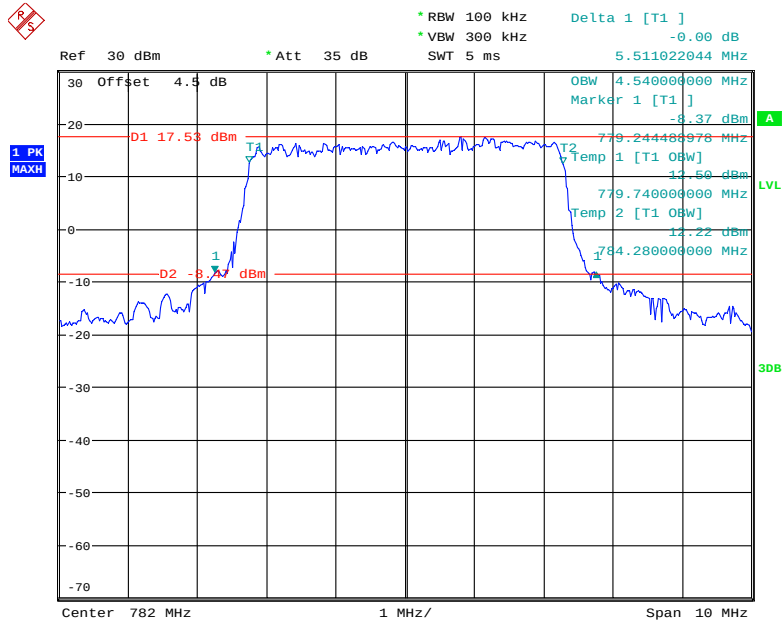


Date: 2.NOV.2018 09:25:28

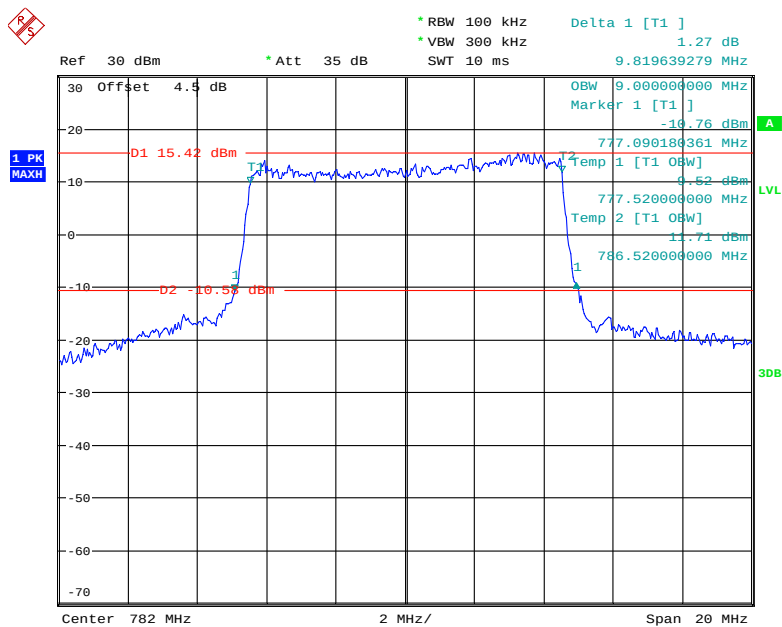
16QAM_10 MHz



Date: 2.NOV.2018 09:26:54

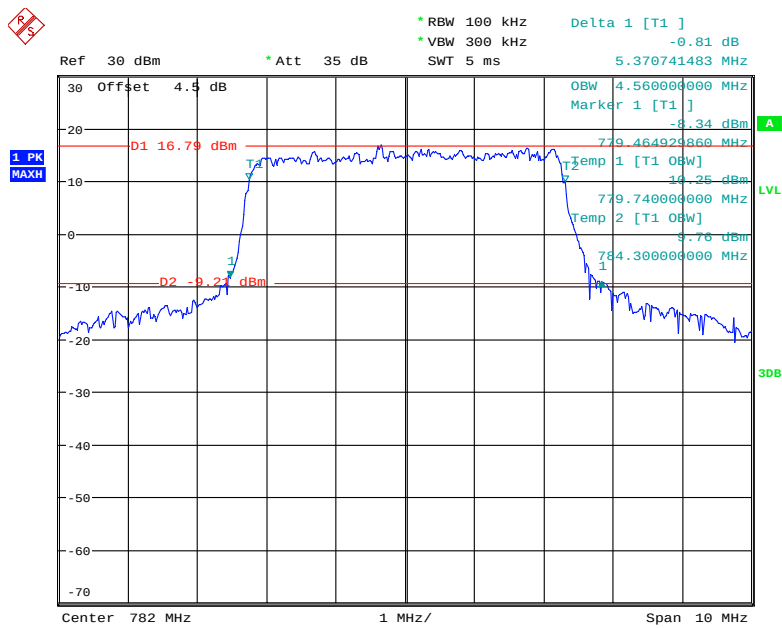
LTE Band 13:**QPSK_5 MHz**

Date: 2.NOV.2018 09:28:26

QPSK_10 MHz

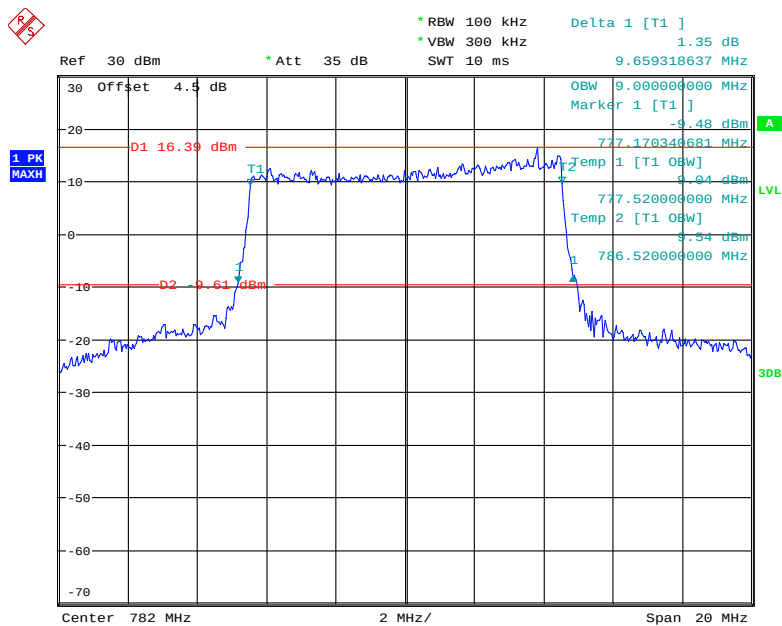
Date: 2.NOV.2018 09:29:59

16QAM_5 MHz

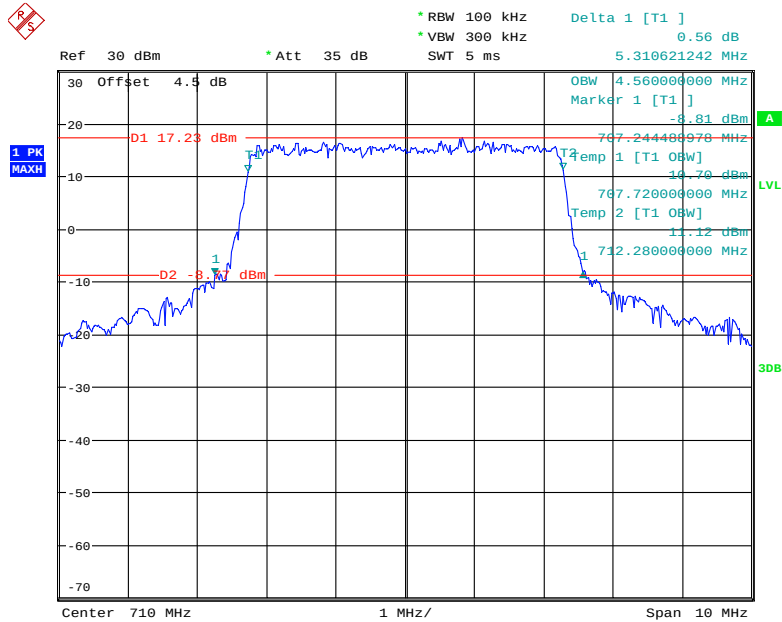


Date: 2.NOV.2018 09:29:20

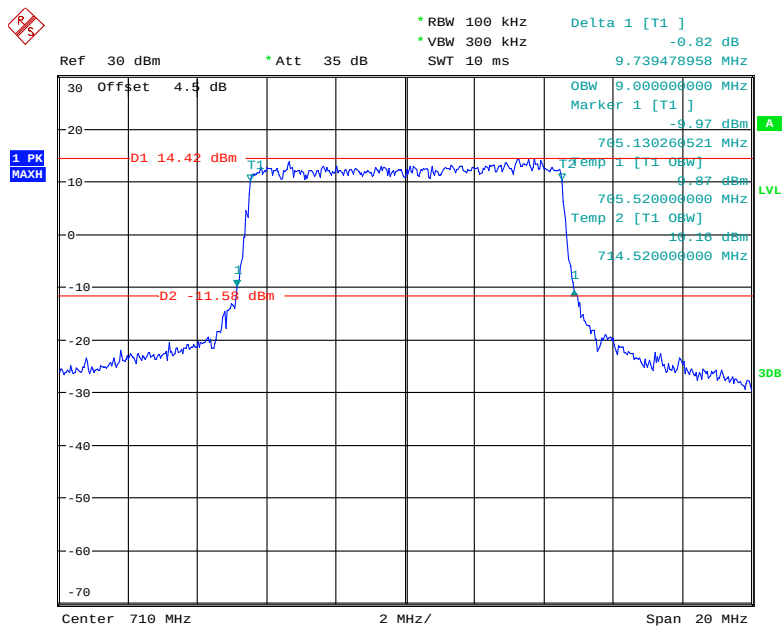
16QAM_10 MHz



Date: 2.NOV.2018 09:30:35

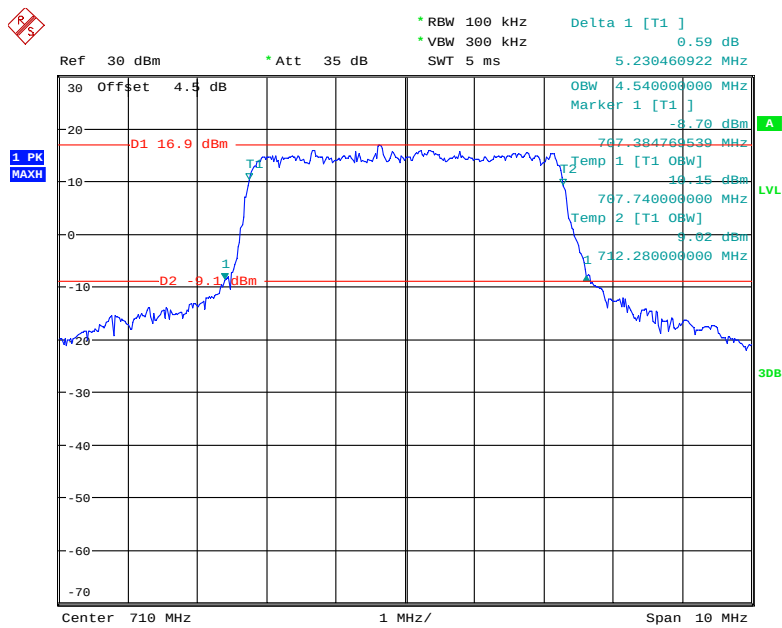
LTE Band 17:**QPSK_5 MHz**

Date: 2.NOV.2018 09:31:55

QPSK_10 MHz

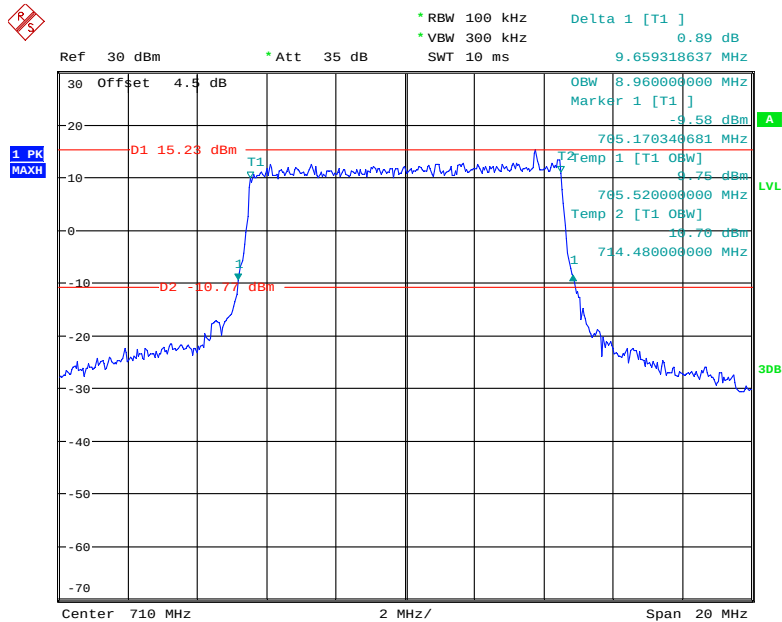
Date: 2.NOV.2018 09:33:32

16QAM_5 MHz

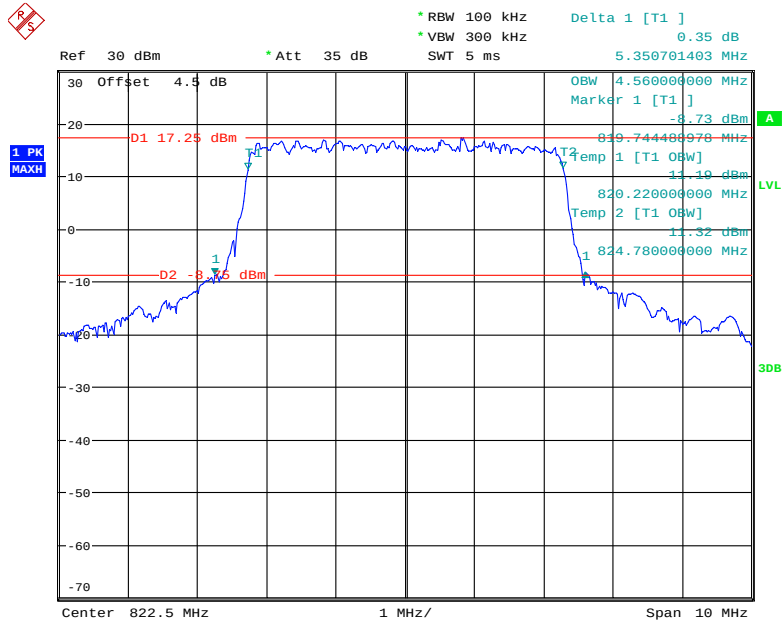


Date: 2.NOV.2018 09:32:53

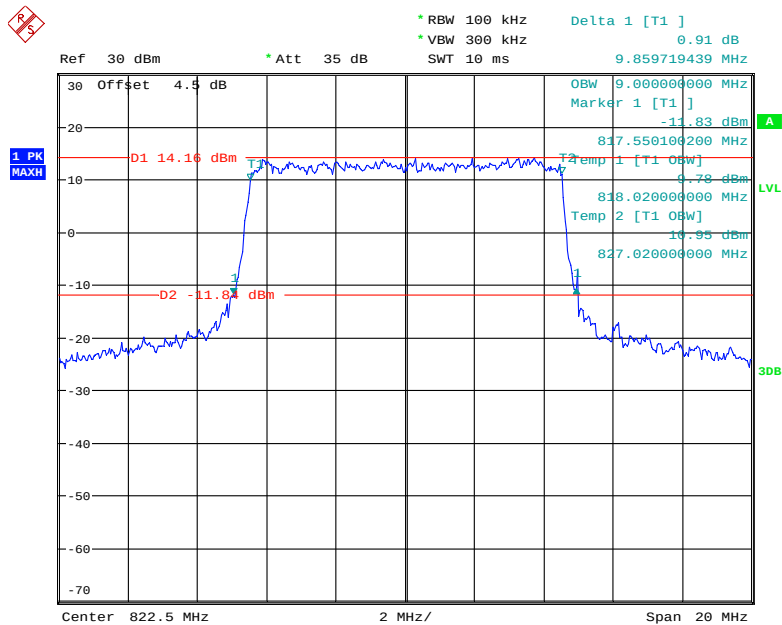
16QAM_10 MHz



Date: 2.NOV.2018 09:34:19

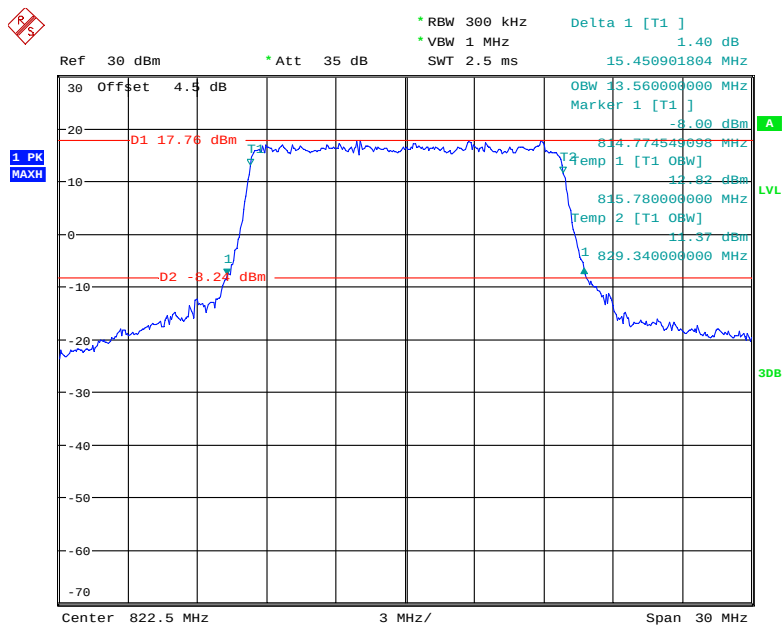
LTE Band 18:**QPSK_5 MHz**

Date: 2.NOV.2018 09:35:55

QPSK_10 MHz

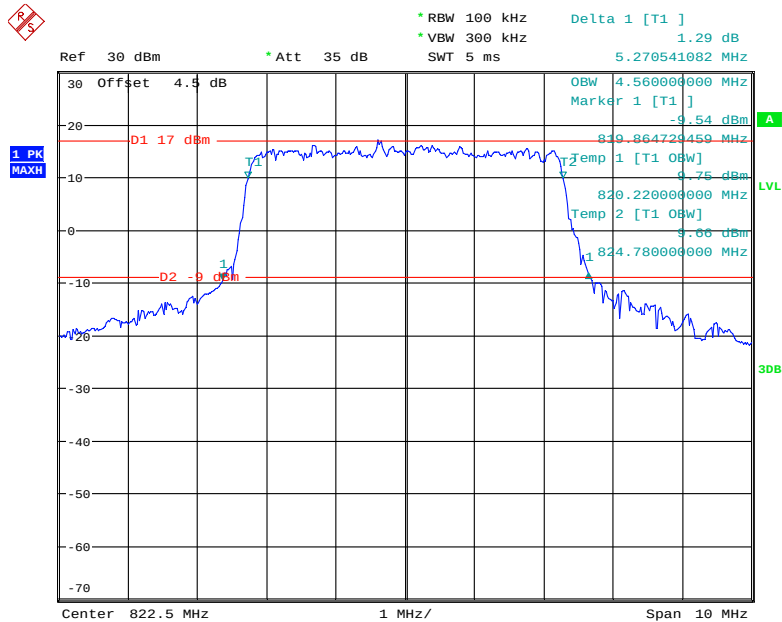
Date: 2.NOV.2018 09:37:40

QPSK_15 MHz



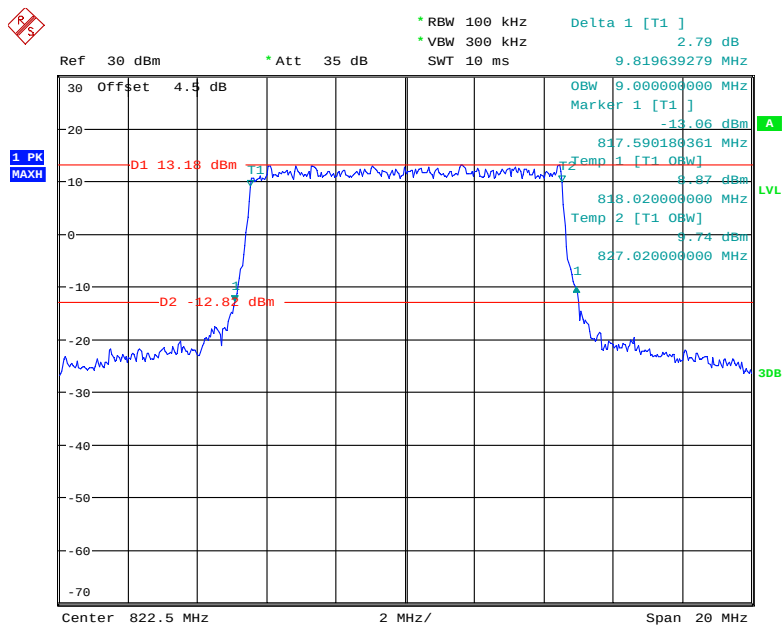
Date: 2.NOV.2018 09:39:23

16QAM_5 MHz



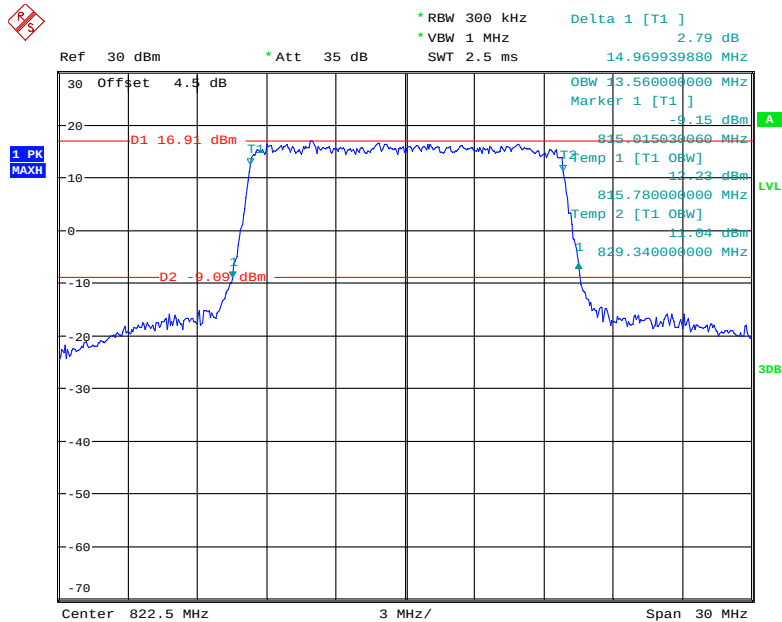
Date: 2.NOV.2018 09:36:57

16QAM_10 MHz

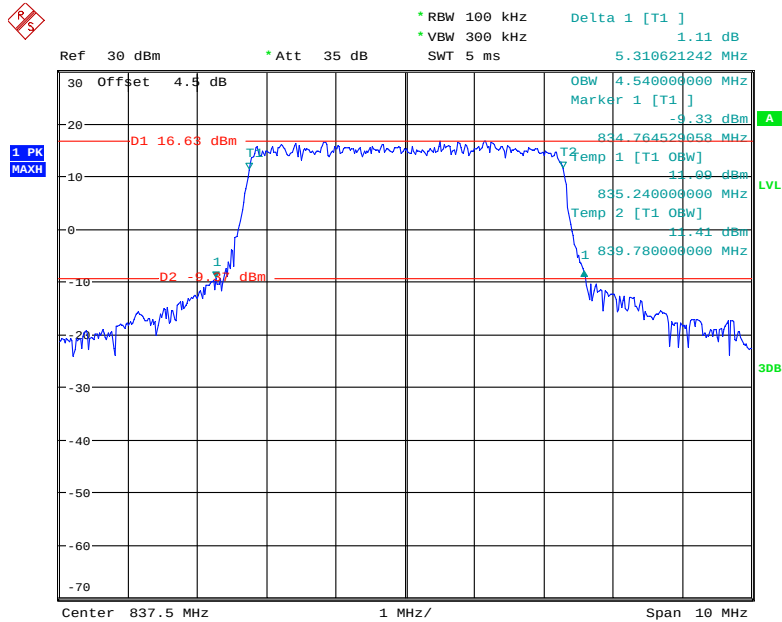


Date: 2.NOV.2018 09:38:23

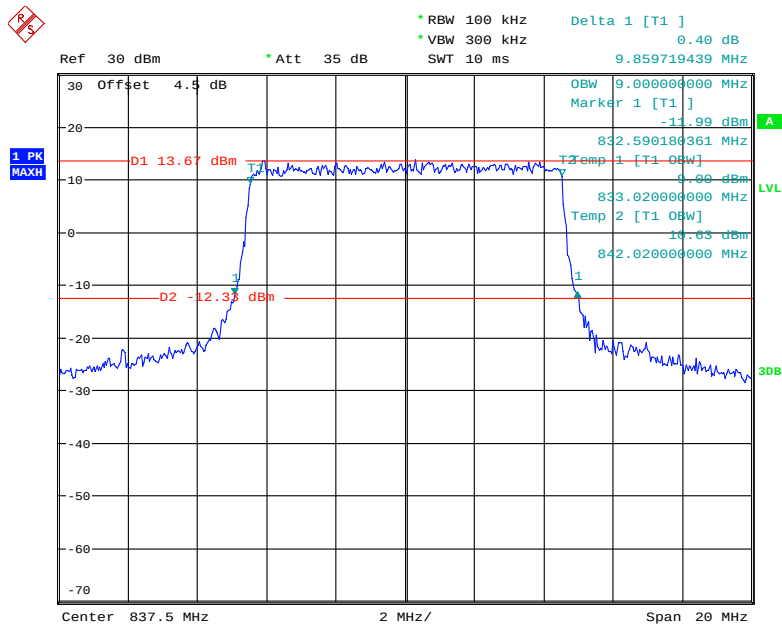
16QAM_15 MHz



Date: 2.NOV.2018 09:40:10

LTE Band 19:**QPSK_5 MHz**

Date: 2.NOV.2018 09:41:19

QPSK_10 MHz

Date: 2.NOV.2018 09:43:08

* RBW 300 kHz
 * VBW 1 MHz
 SWT 2.5 ms

Delta 1 [T1] 2.48 dB
 15.270541082 MHz

Ref 30 dBm
 Offset 4.5 dB
 Att 35 dB

1 PK
 MAXH

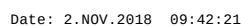
D1 17.54 dBm
 D2 -8.46 dBm

OBW 13.560000000 MHz
 Marker 1 [T1] -8.69 dBm
 829.694789579 MHz
 Temp 1 [T1 OBW] 17.08 dBm
 830.780000000 MHz
 Temp 2 [T1 OBW] 11.29 dBm
 844.340000000 MHz

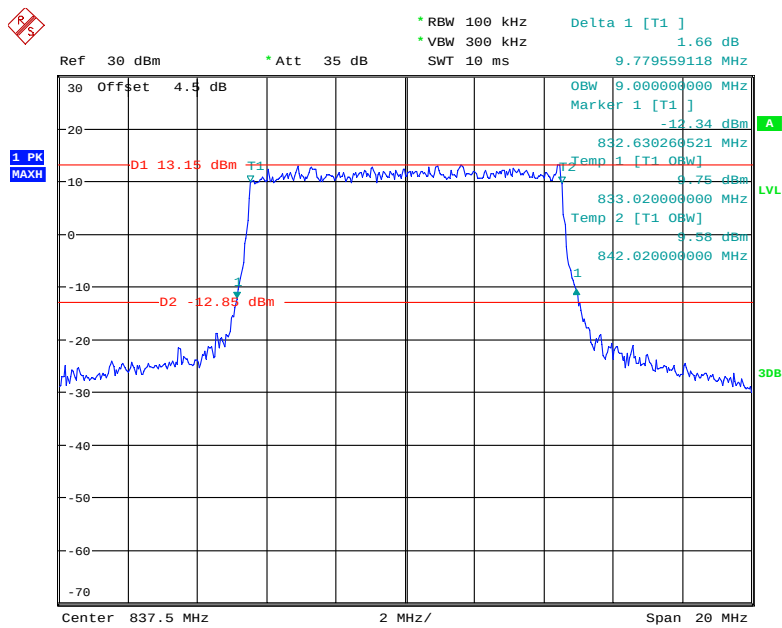
30 dBm
 30 dB
 20
 10
 0
 -10
 -20
 -30
 -40
 -50
 -60
 -70

Center 837.5 MHz
 3 MHz/
 Span 30 MHz

16QAM_5 MHz

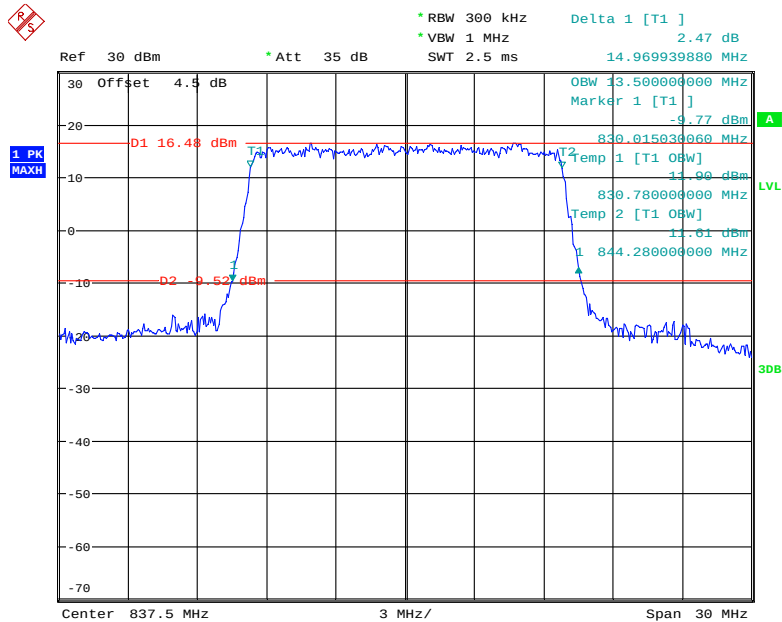


16QAM_10 MHz

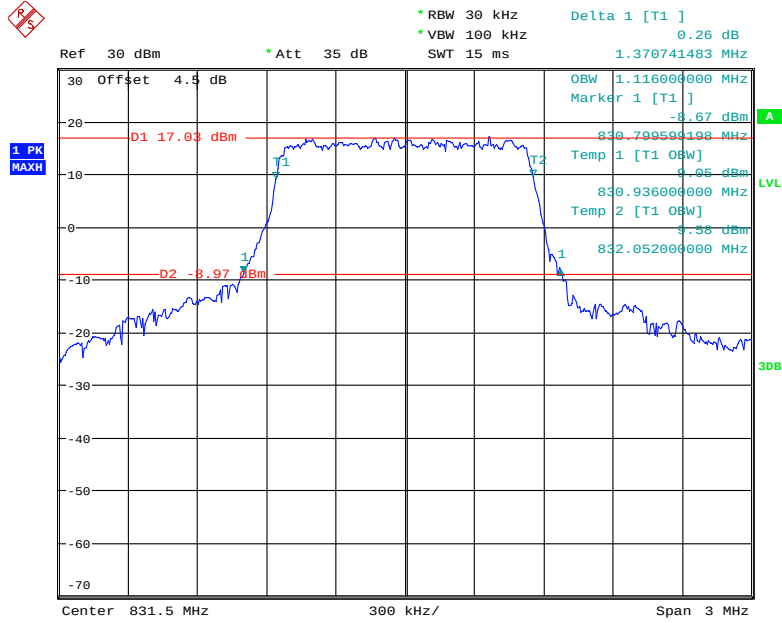


Date: 2.NOV.2018 09:43:51

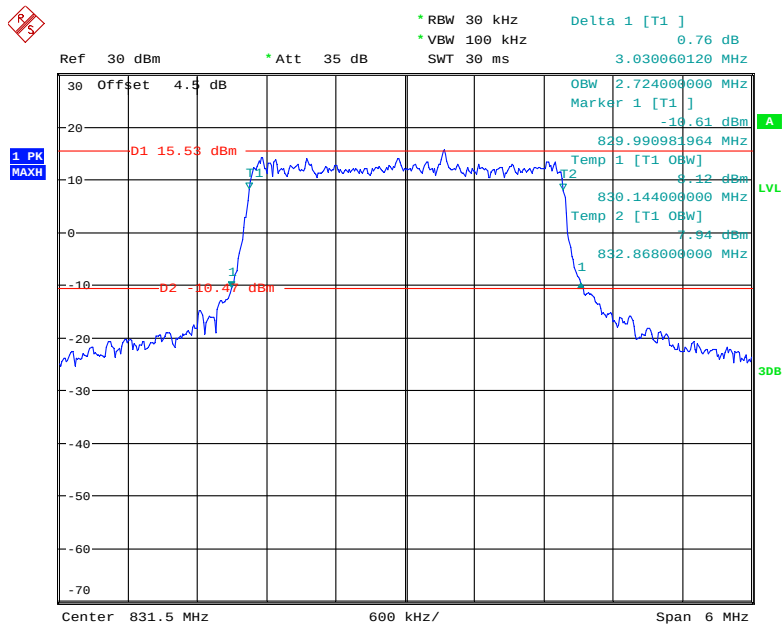
16QAM_15 MHz



Date: 2.NOV.2018 09:45:17

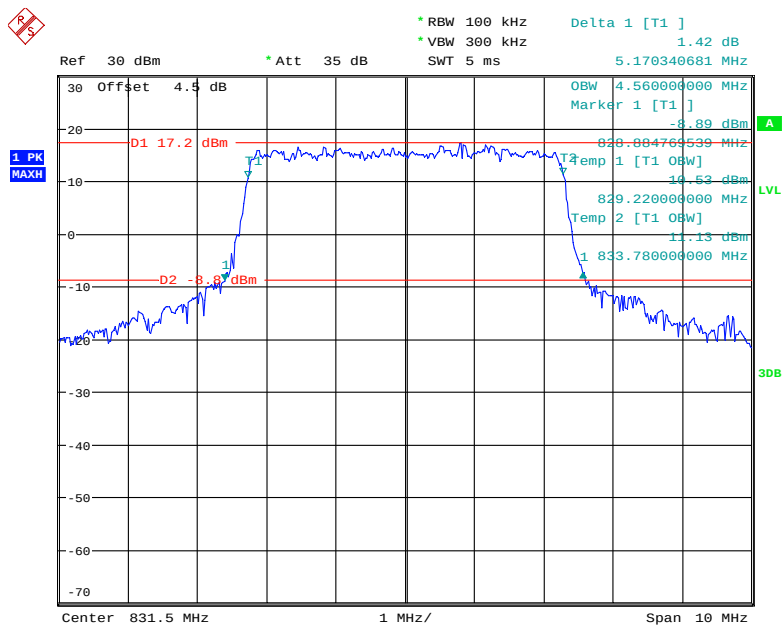
LTE Band 26:**QPSK_1.4 MHz**

Date: 2.NOV.2018 09:45:49

QPSK_3 MHz

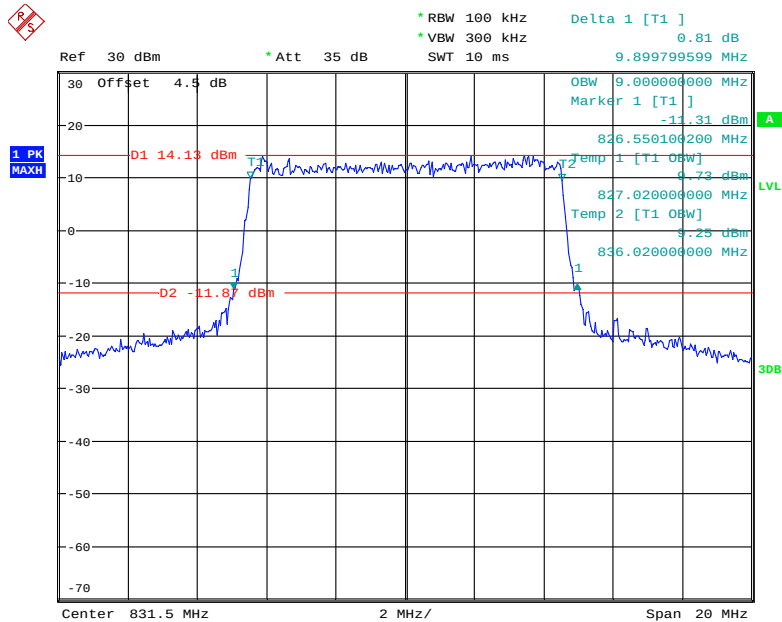
Date: 2.NOV.2018 09:46:58

QPSK_5 MHz



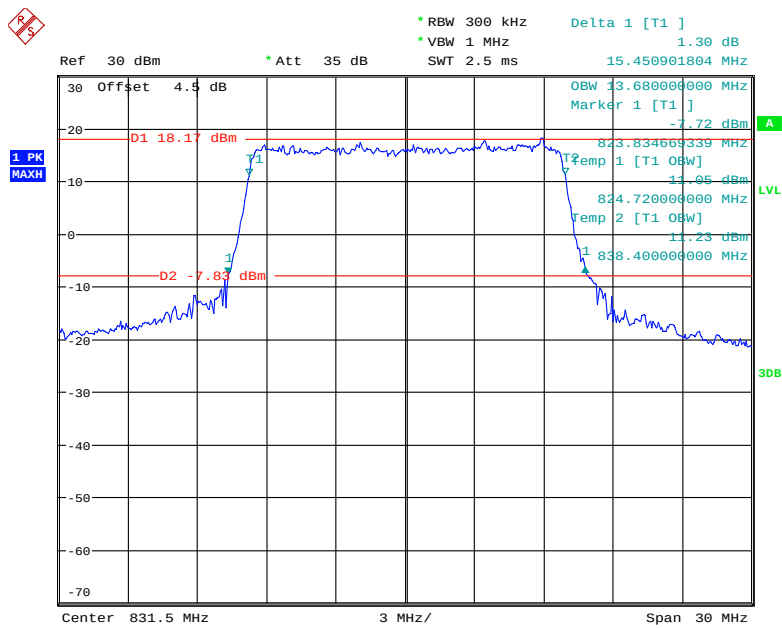
Date: 2.NOV.2018 09:48:31

QPSK_10 MHz



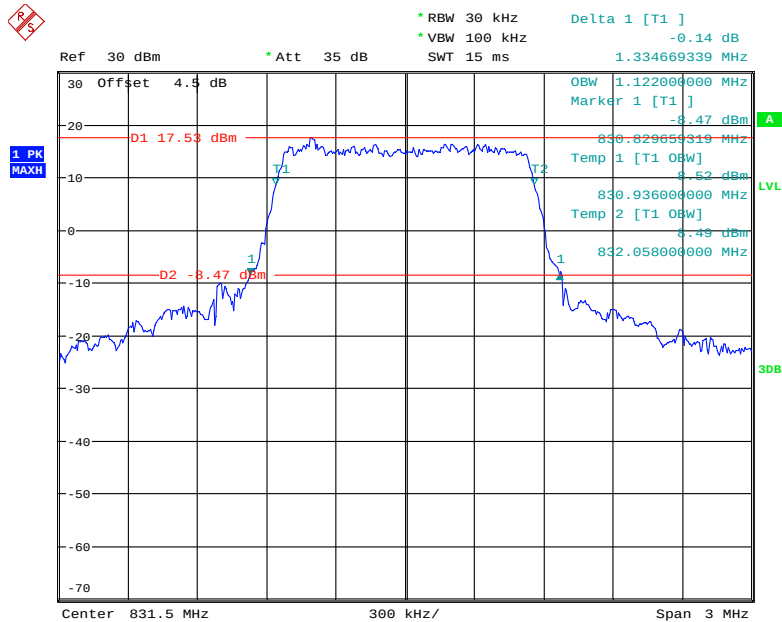
Date: 2.NOV.2018 09:49:53

QPSK_15 MHz



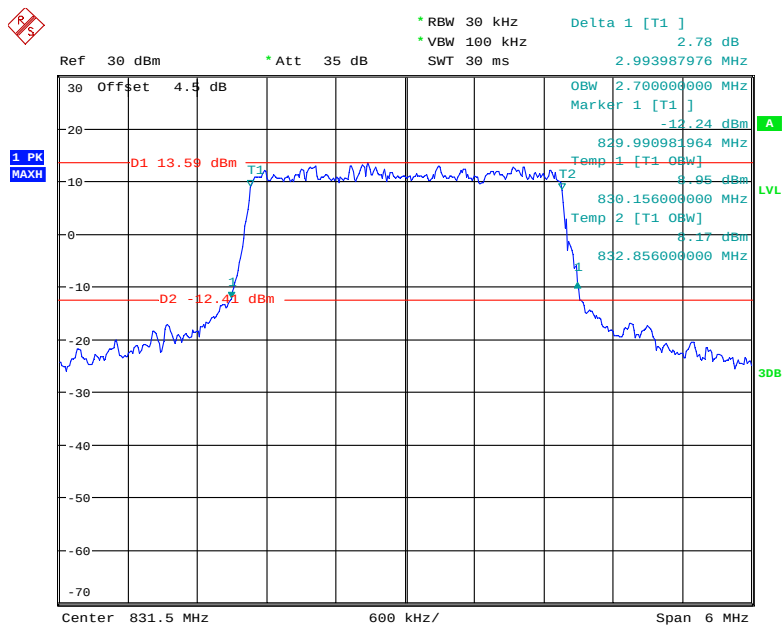
Date: 2.NOV.2018 09:51:50

16QAM_1.4 MHz



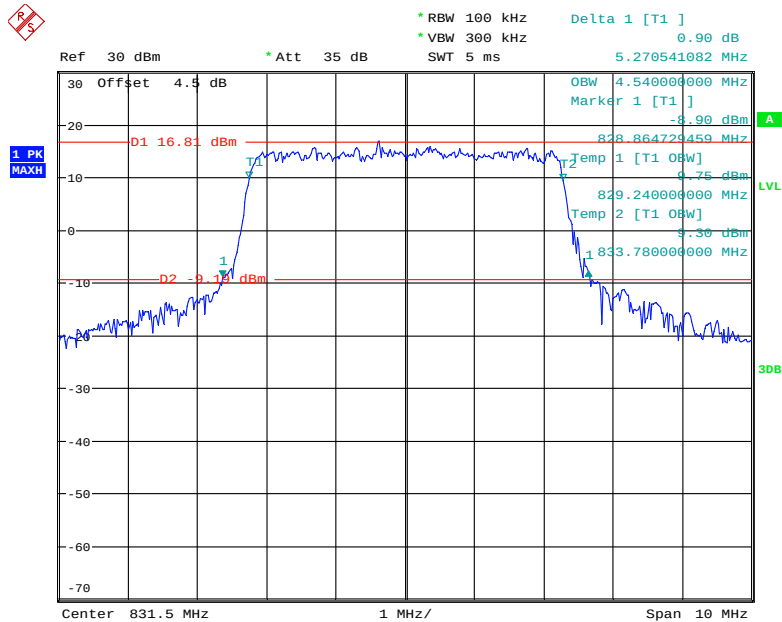
Date: 2.NOV.2018 09:46:24

16QAM_3 MHz



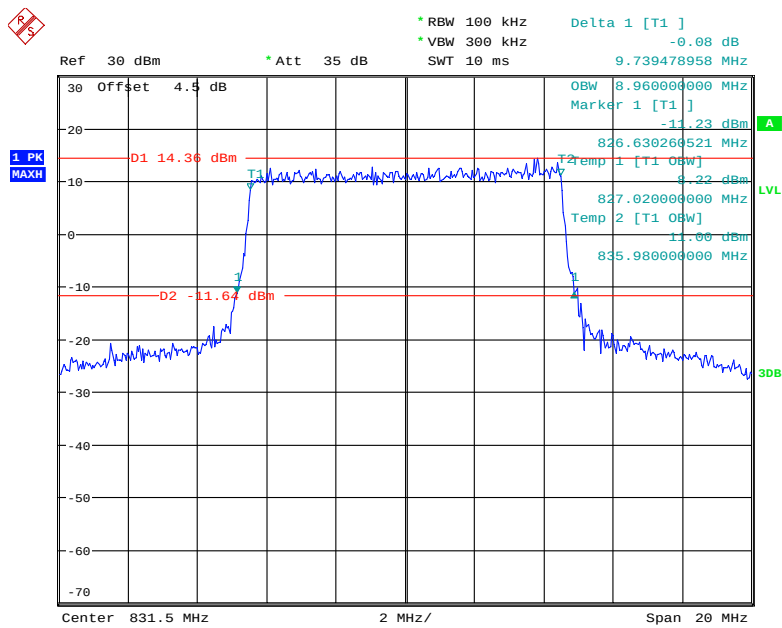
Date: 2.NOV.2018 09:47:33

16QAM_5 MHz



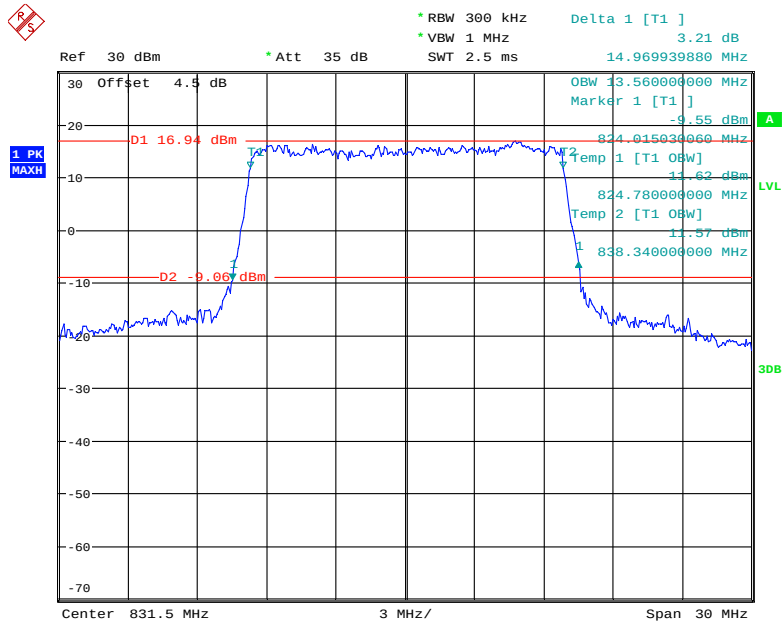
Date: 2.NOV.2018 09:49:14

16QAM_10 MHz



Date: 2.NOV.2018 09:50:52

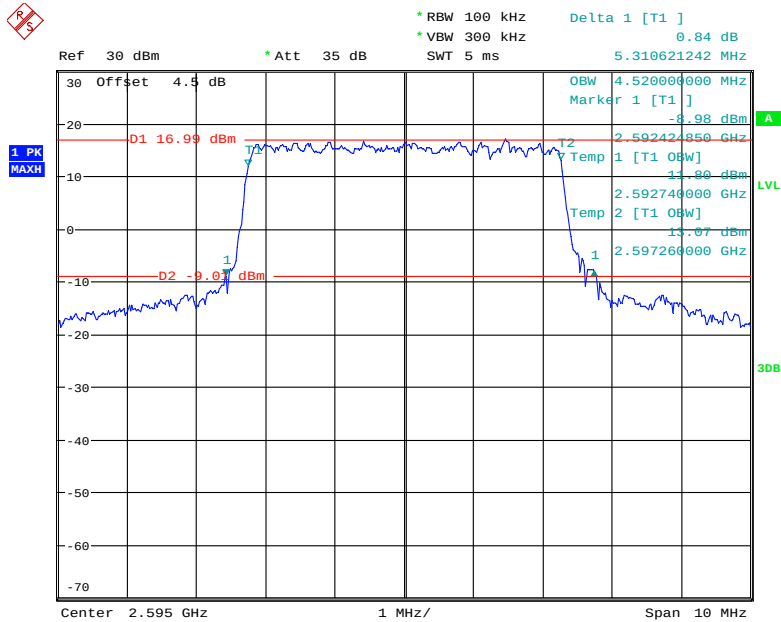
16QAM_15 MHz



Date: 2.NOV.2018 09:52:30

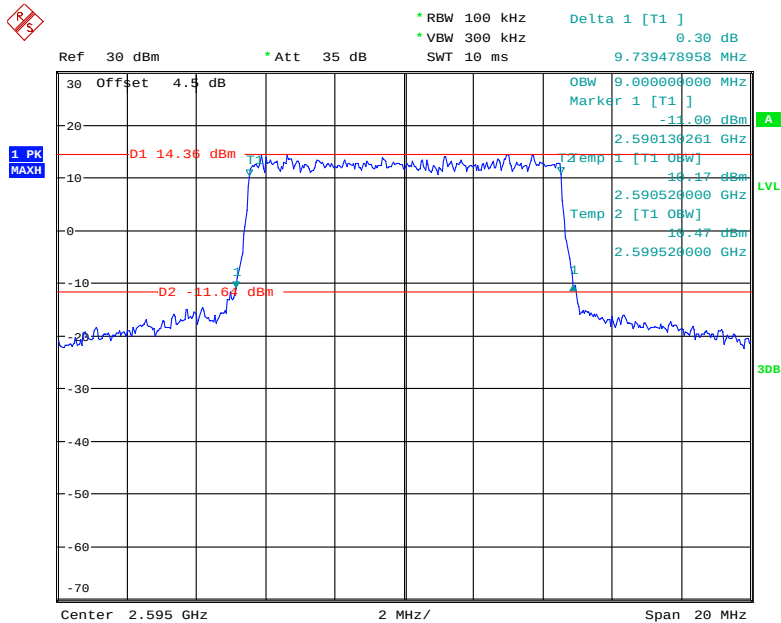
LTE Band 38:

QPSK_5 MHz



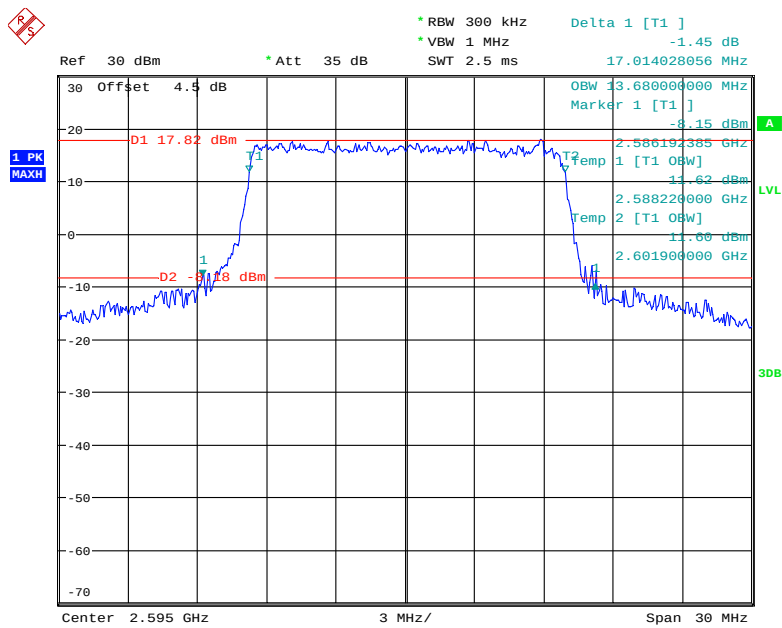
Date: 2.NOV.2018 09:53:35

QPSK_10 MHz



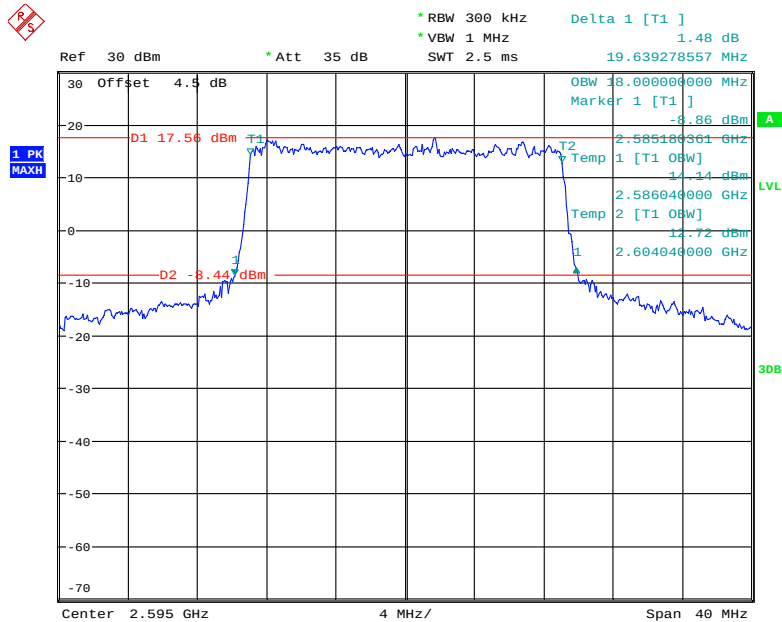
Date: 2.NOV.2018 09:55:22

QPSK_15 MHz



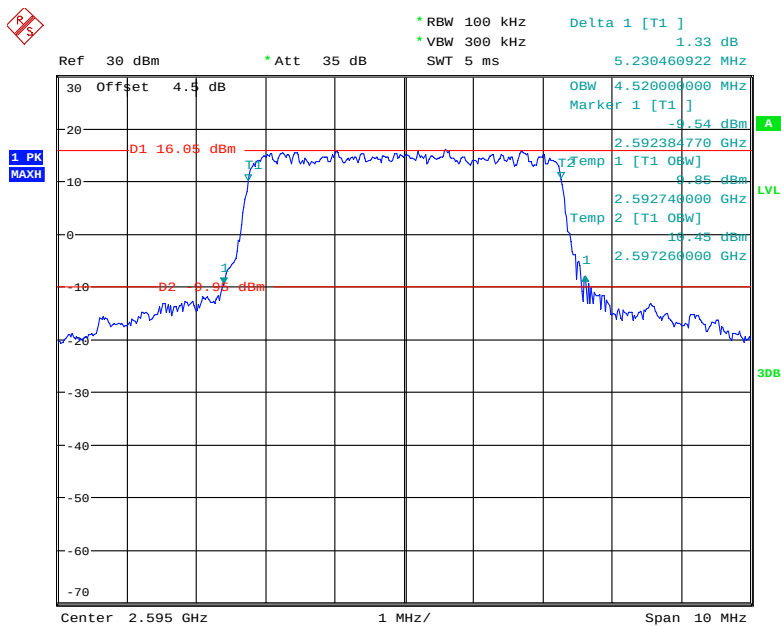
Date: 2.NOV.2018 09:57:02

QPSK_20 MHz



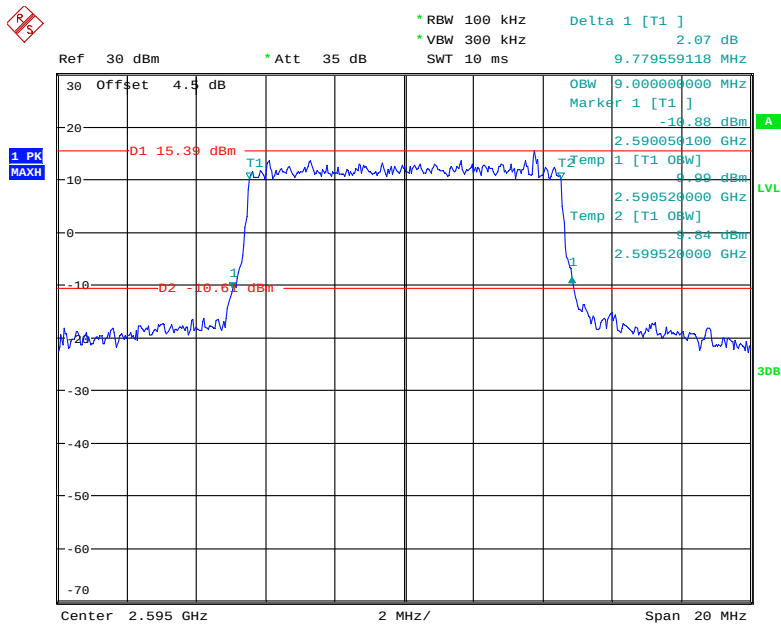
Date: 2.NOV.2018 09:59:00

16QAM_5 MHz



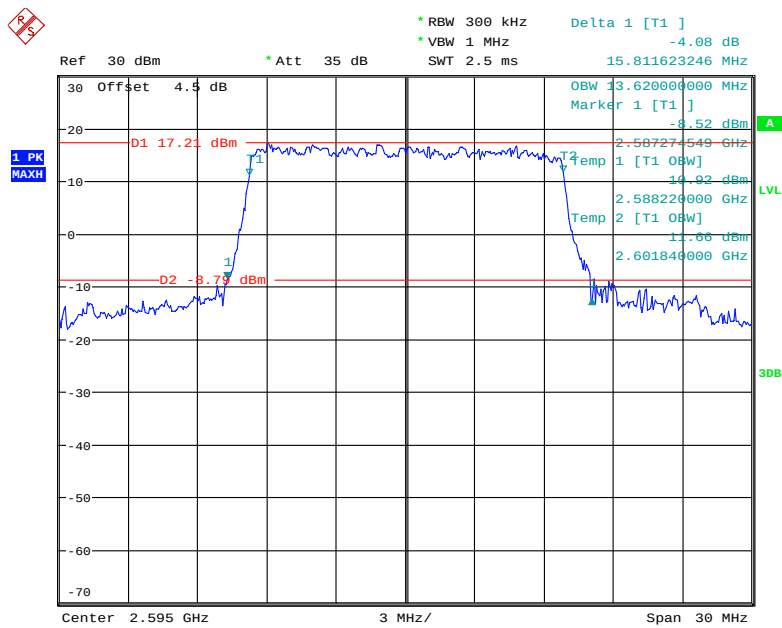
Date: 2.NOV.2018 09:54:33

16QAM_10 MHz



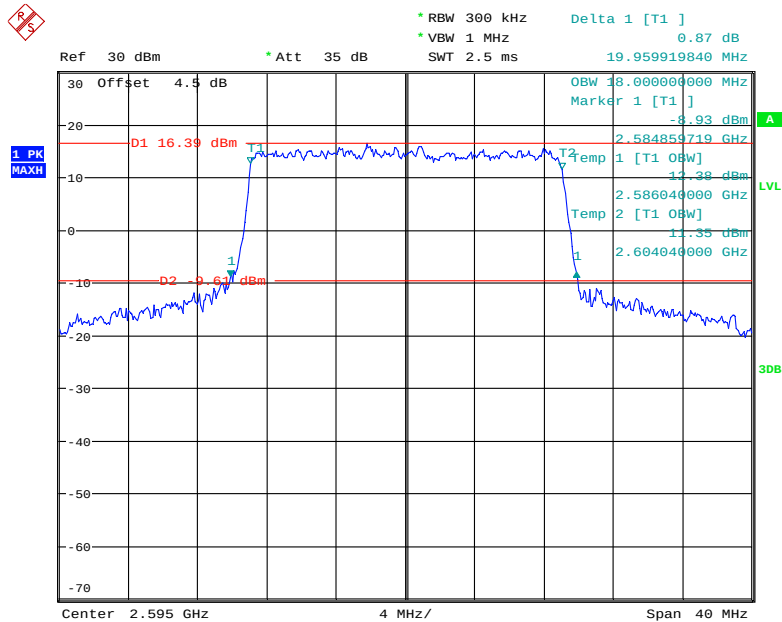
Date: 2.NOV.2018 09:56:05

16QAM_15 MHz



Date: 2.NOV.2018 09:57:56

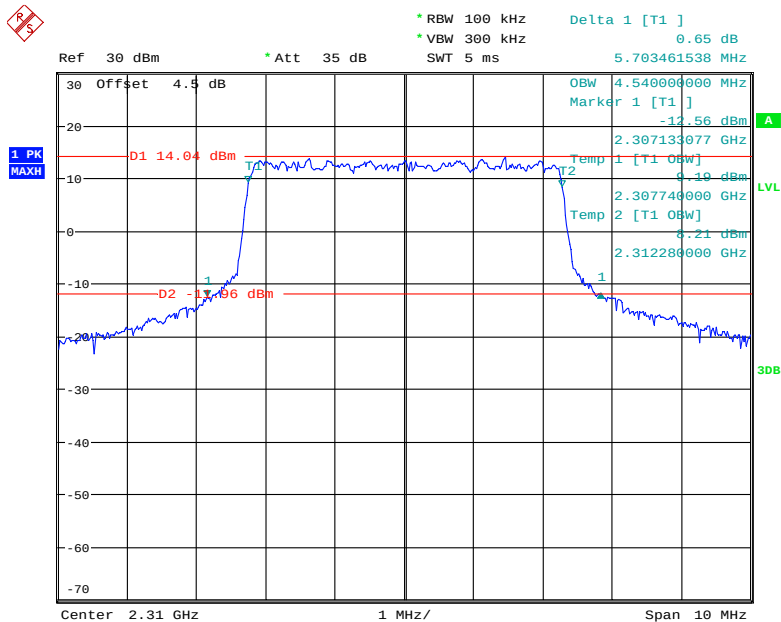
16QAM_20 MHz



Date: 2.NOV.2018 10:00:12

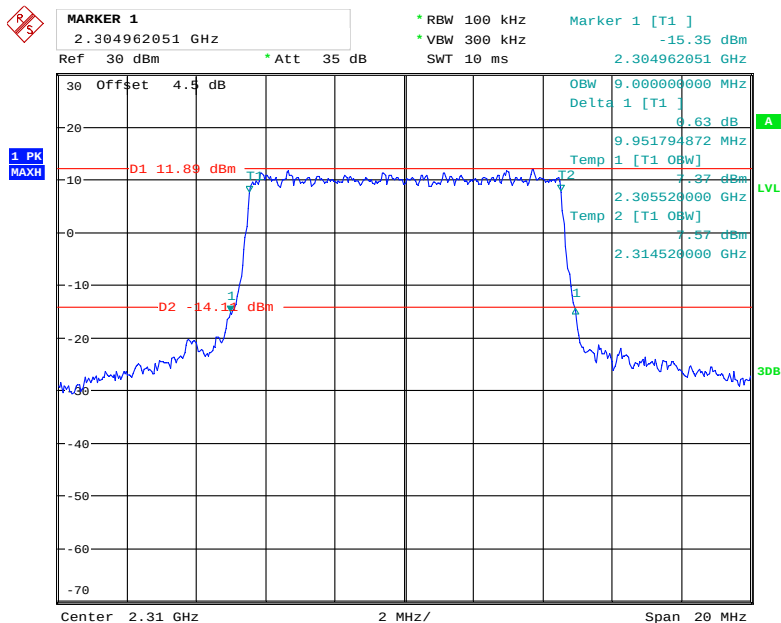
LTE Band 40(2305-2315MHz):

QPSK_5 MHz



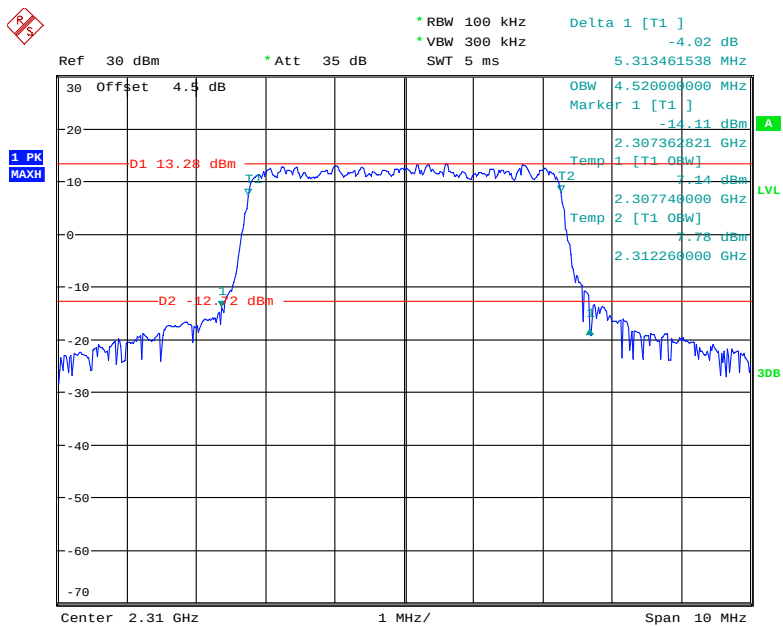
Date: 2.NOV.2018 10:39:57

QPSK_10 MHz



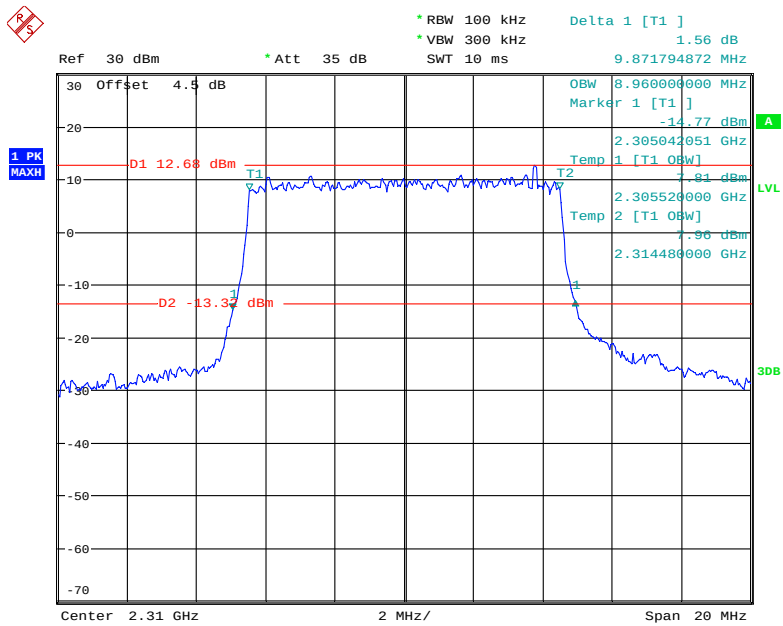
Date: 2.NOV.2018 10:32:17

16QAM_5 MHz



Date: 2.NOV.2018 10:41:42

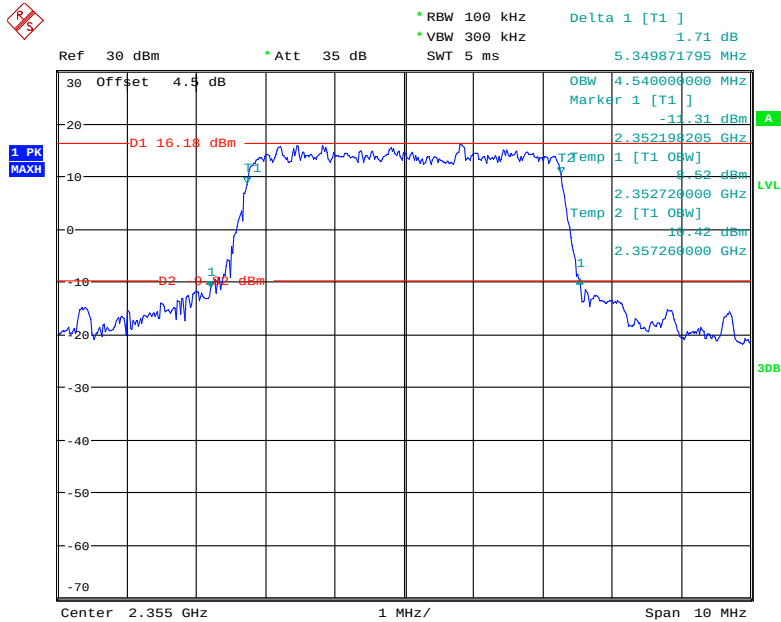
16QAM_10 MHz



Date: 2.NOV.2018 10:28:36

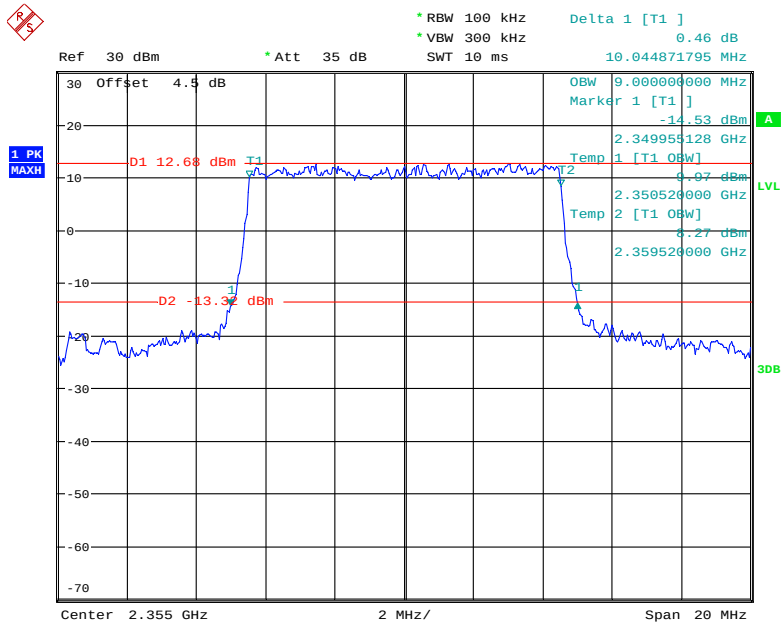
LTE Band 40(2350-2360MHz):

QPSK_5 MHz



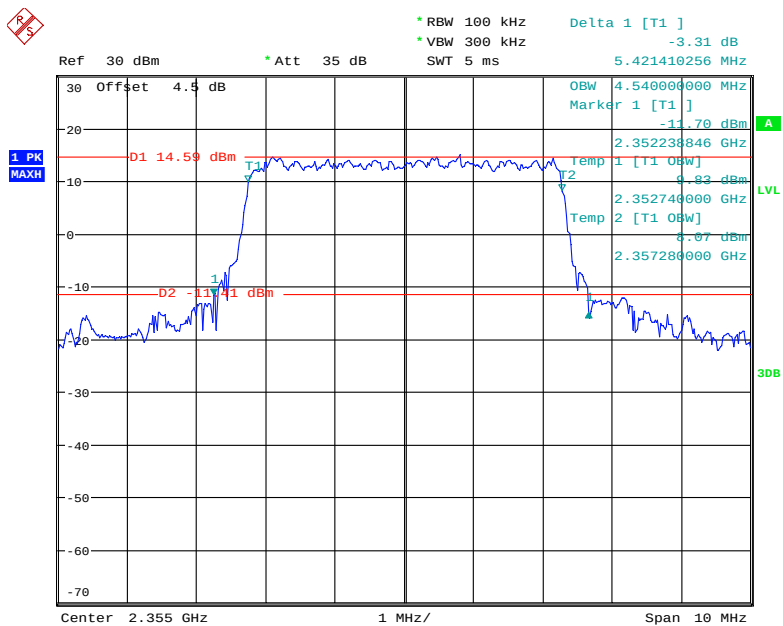
Date: 2.NOV.2018 10:38:08

QPSK_10 MHz



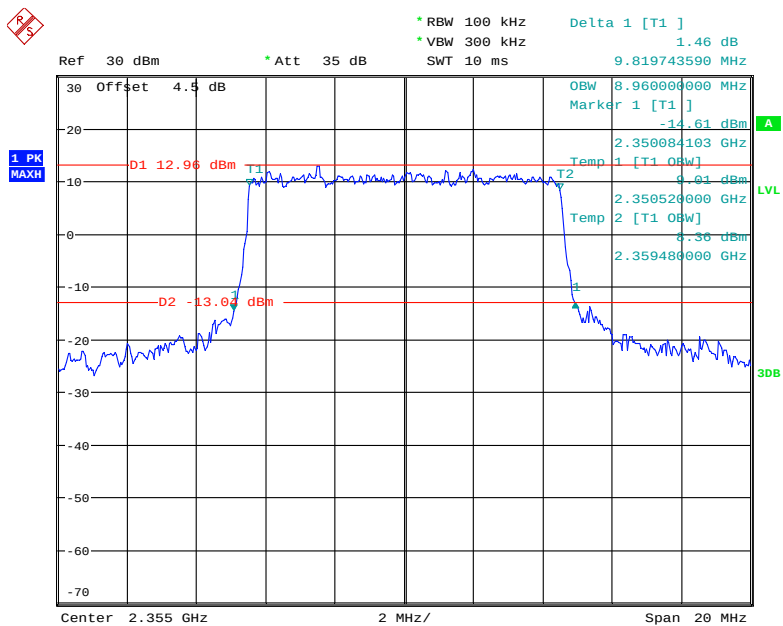
Date: 2.NOV.2018 10:34:11

16QAM_5 MHz

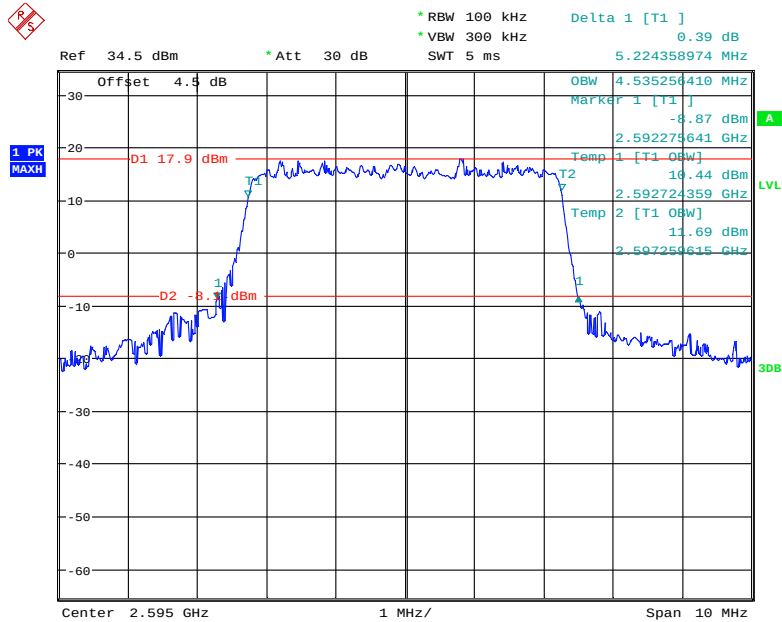


Date: 2.NOV.2018 10:37:00

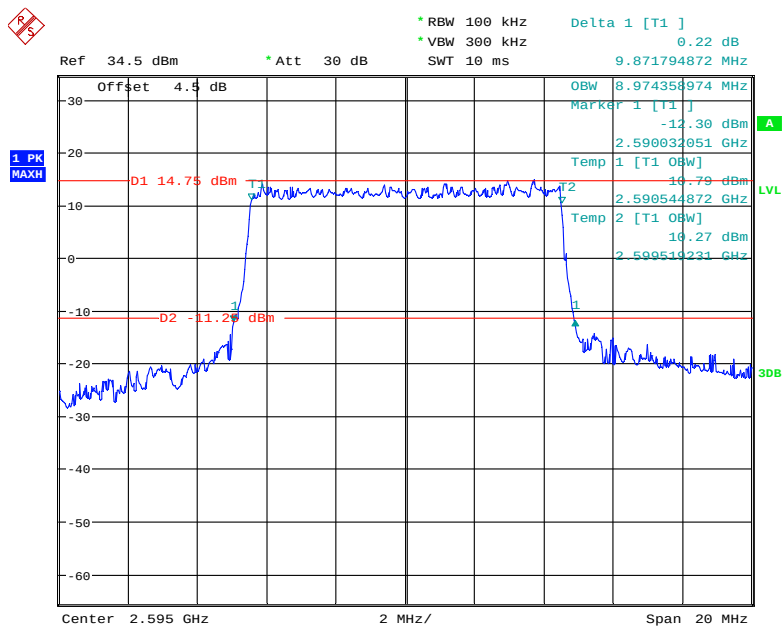
16QAM_10 MHz



Date: 2.NOV.2018 10:35:29

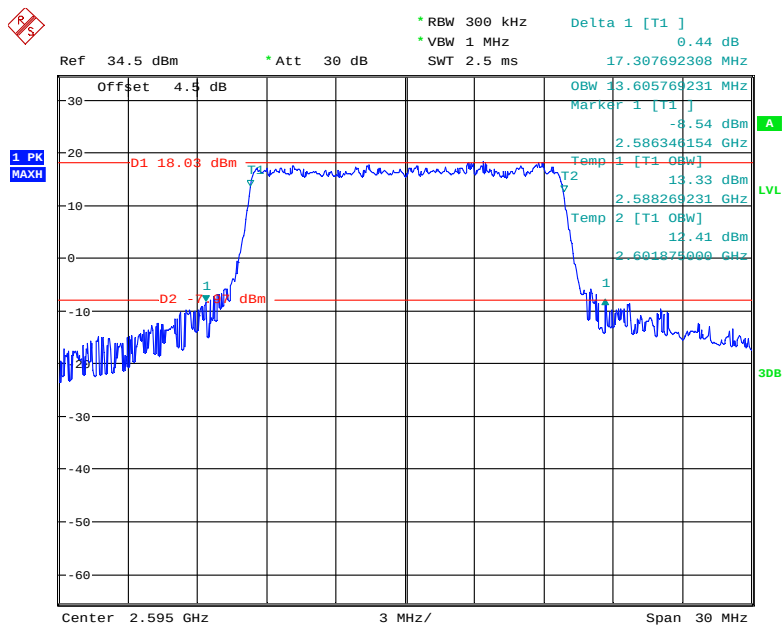
LTE Band 41:**QPSK_5 MHz**

Date: 17.NOV.2018 16:12:04

QPSK_10 MHz

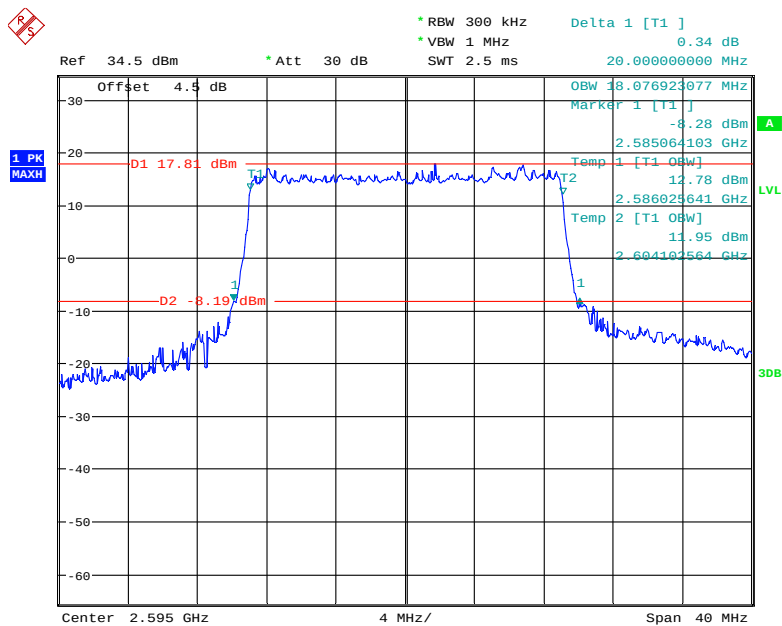
Date: 17.NOV.2018 16:10:27

QPSK_15 MHz



Date: 17.NOV.2018 16:08:31

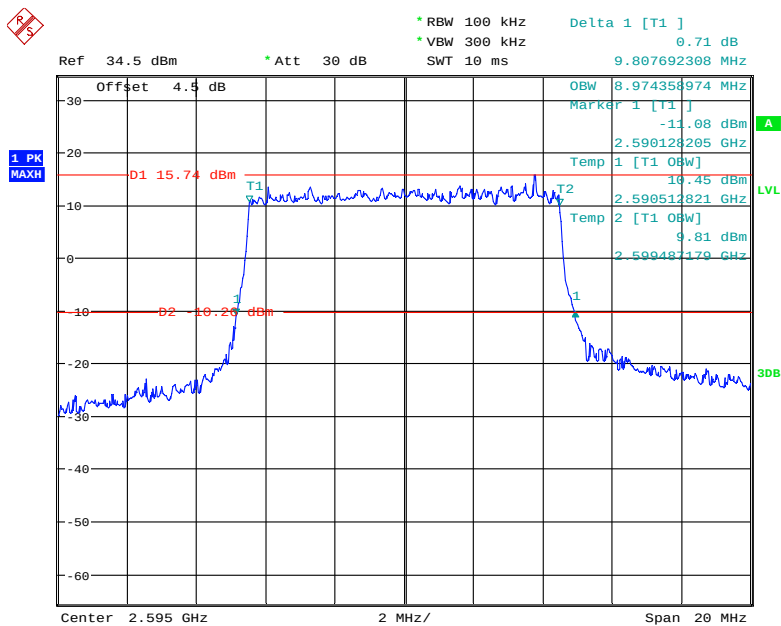
QPSK_20 MHz



Date: 17.NOV.2018 16:04:45

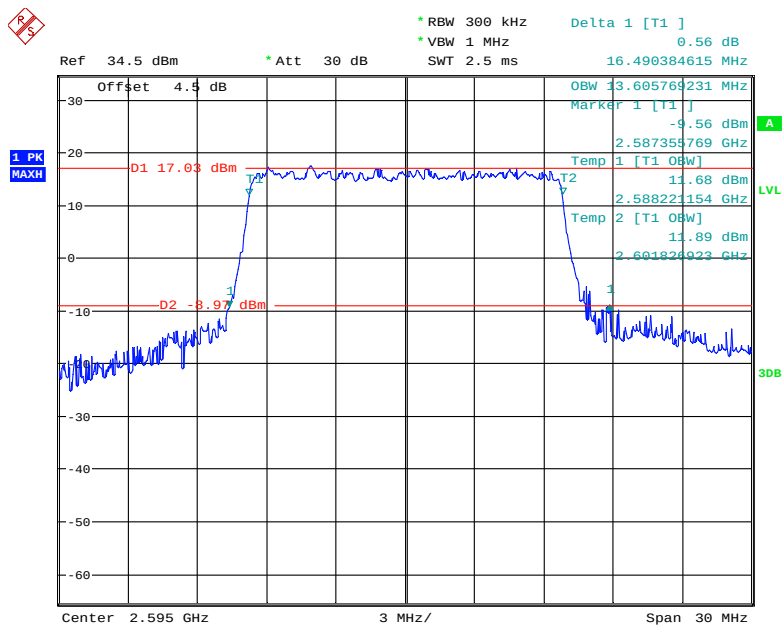
[illegible]

16QAM_10 MHz



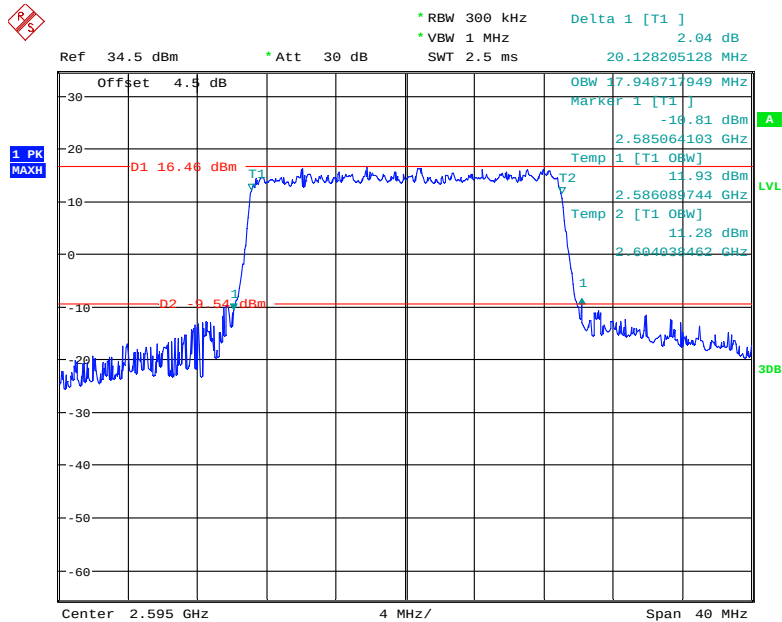
Page 116 of 321

16QAM_15 MHz



Date: 17.NOV.2018 16:07:19

16QAM_20 MHz



Date: 17.NOV.2018 16:05:50

FCC §2.1051, §22.917(a) & §24.238(a) & §27.53 & §90.691- SPURIOUS EMISSIONS AT ANTENNA TERMINALS

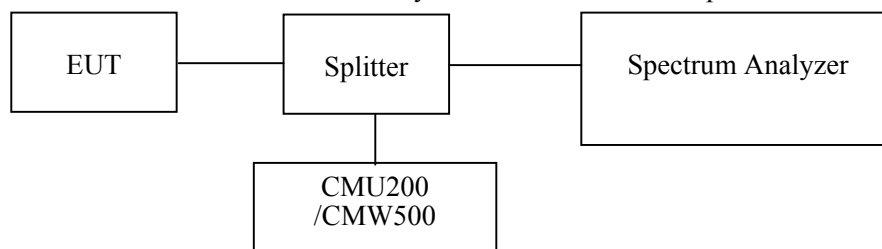
Applicable Standard

FCC §2.1051, §22.917(a) , §24.238(a),§27.53 and§90.691.

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
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	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	Each time	N/A
R&S	EMI Test Receiver	ESPI	100120	2017-12-11	2018-12-11
R&S	Spectrum Analyzer	FSU 26	200256	2018-01-04	2019-01-04
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2018-08-03	2019-08-03
Sinoscite	Band-stop filter	BSF2300-2400MS-0777-003	0777003	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).

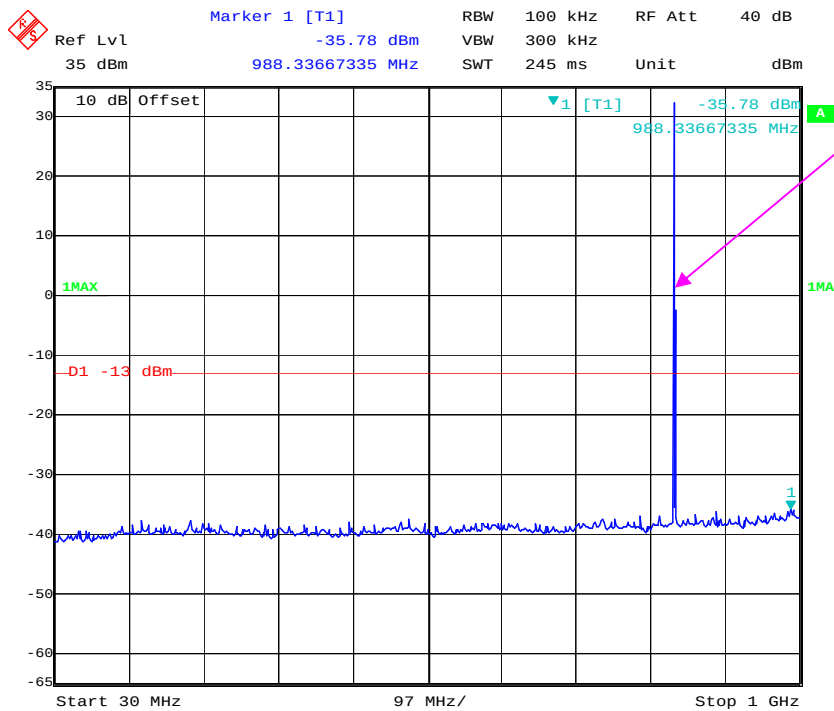
Test Data**Environmental Conditions**

Temperature:	26.5~28.7°C
Relative Humidity:	27 ~56 %
ATM Pressure:	99.7~101.2 kPa

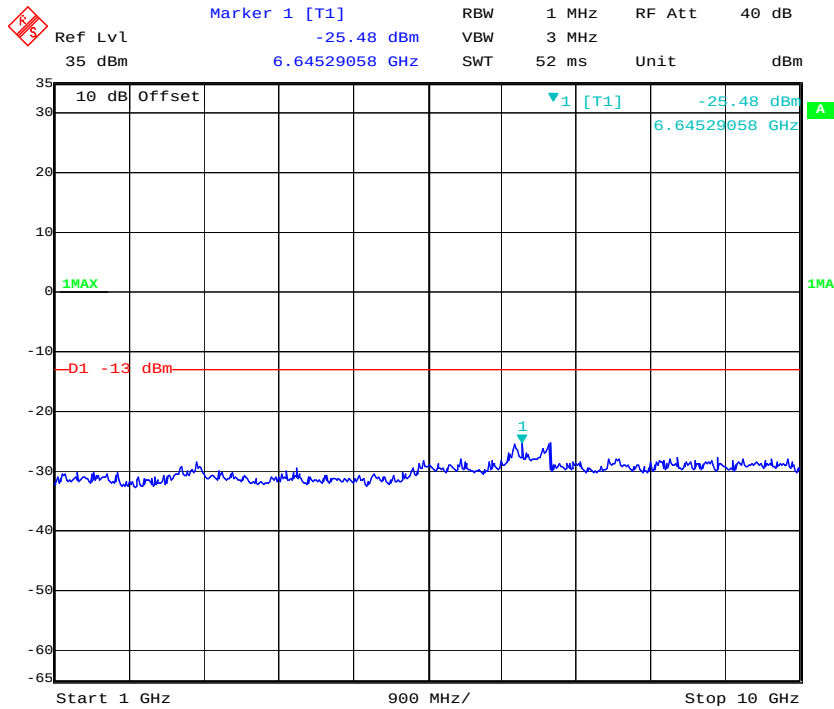
The testing was performed by Elena Lei from 2018-10-31 to 2018-11-24.

Please refer to the following plots.

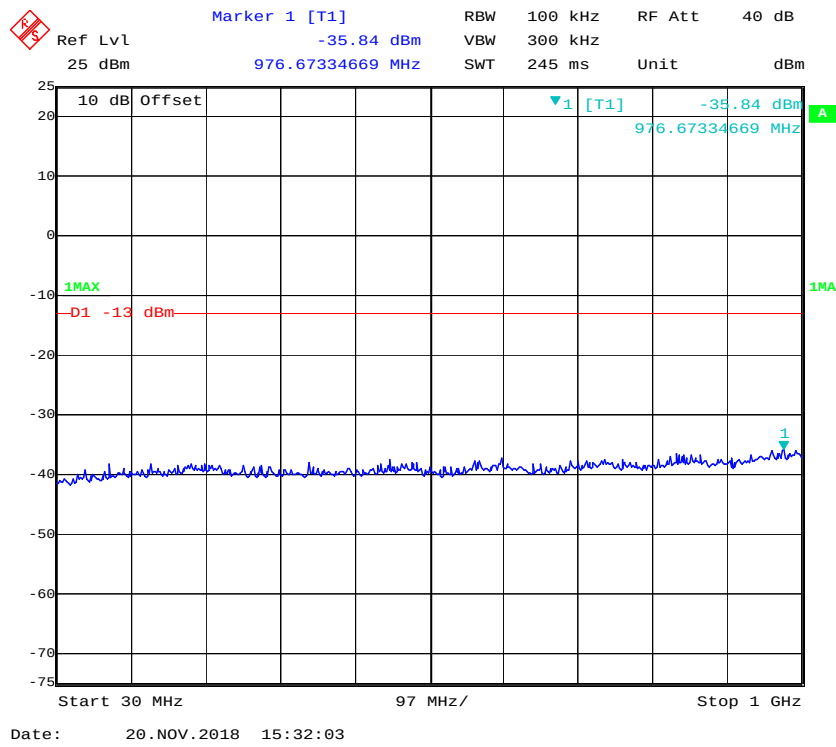
GSM850_Middle Channel



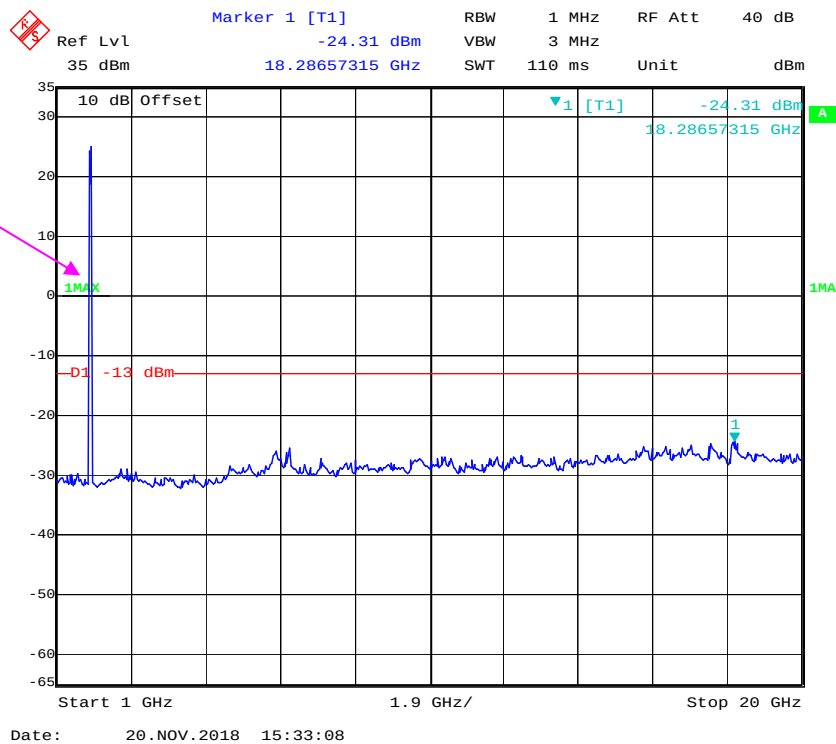
Fundamental



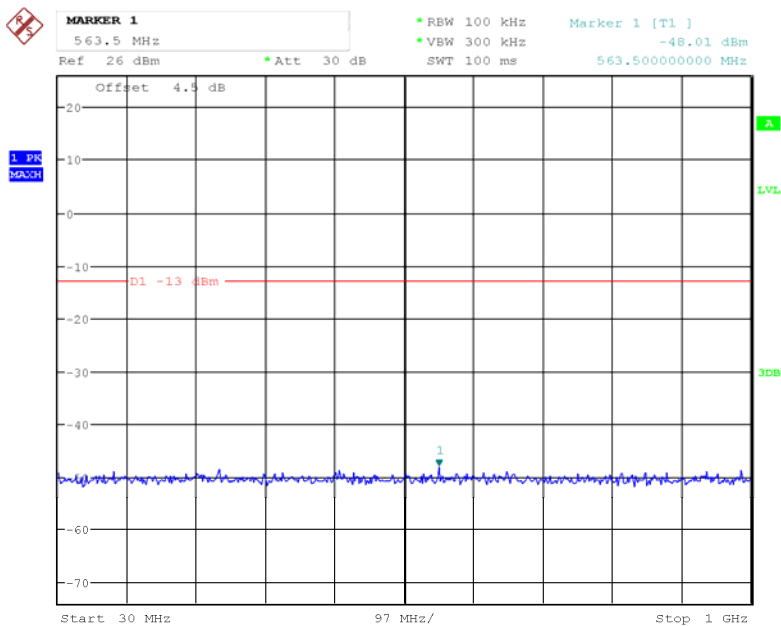
PCS 1900_ Middle Channel



Fundamental

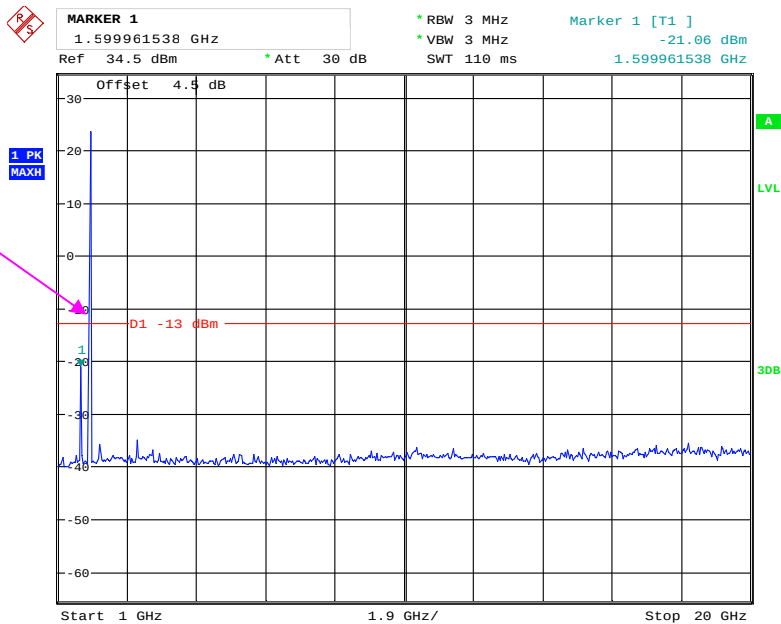


WCDMA Band II, Rel99



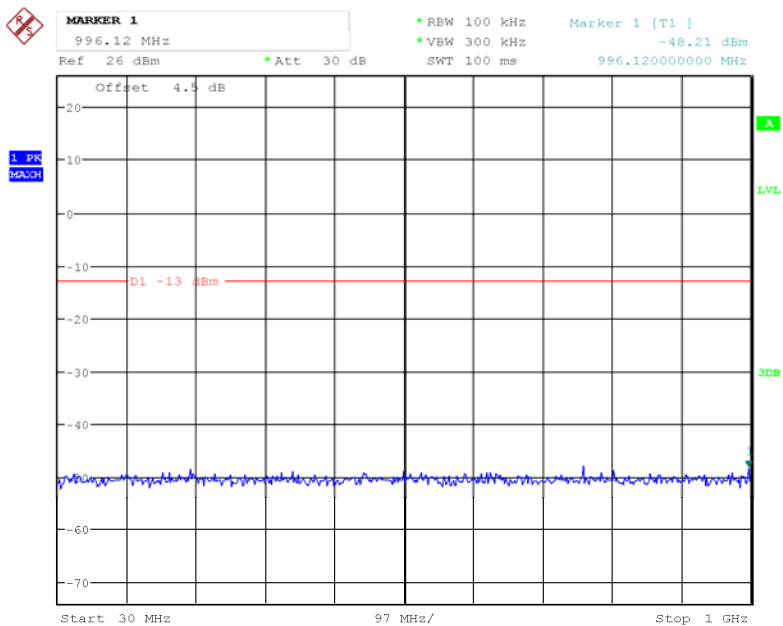
Date: 24.NOV.2018 09:47:32

Fundamental



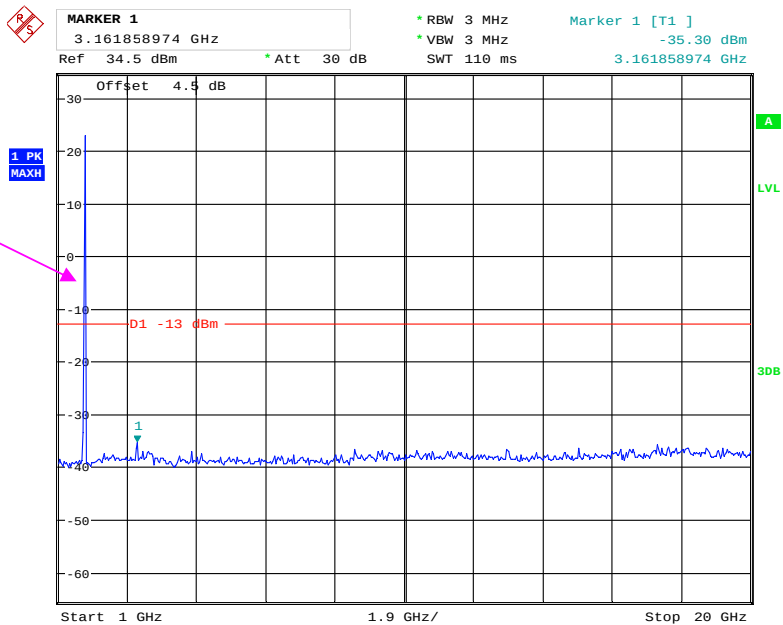
Date: 2.NOV.2018 15:06:38

WCDMA Band IV,Rel99



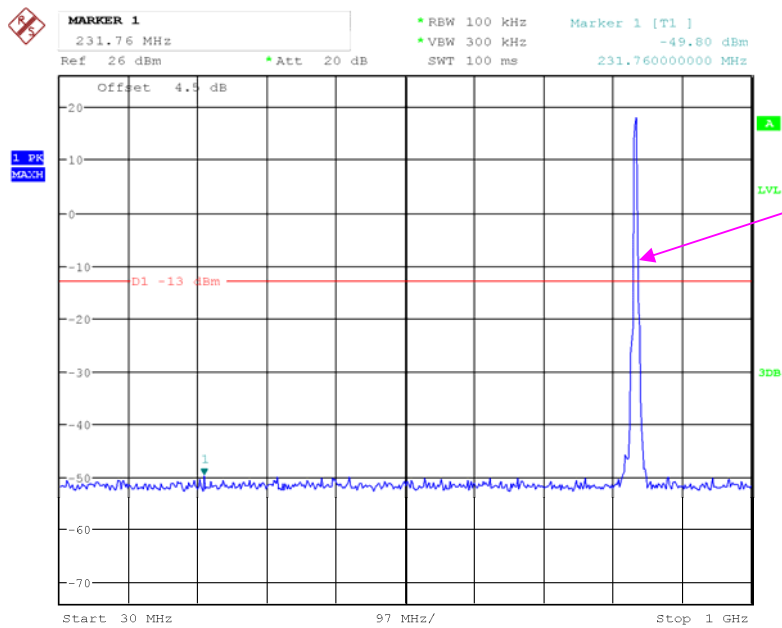
Date: 24.NOV.2018 09:47:51

Fundamental

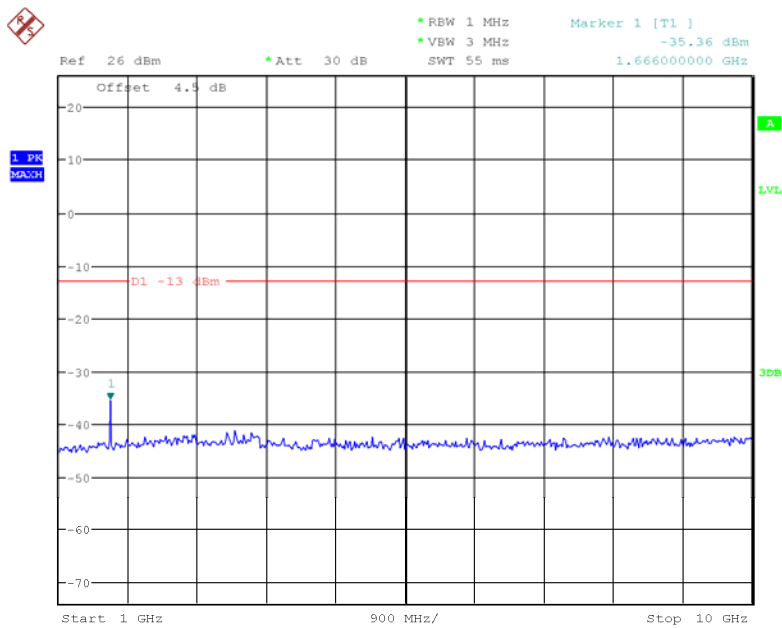


Date: 2.NOV.2018 15:50:46

WCDMA Band V, Rel99



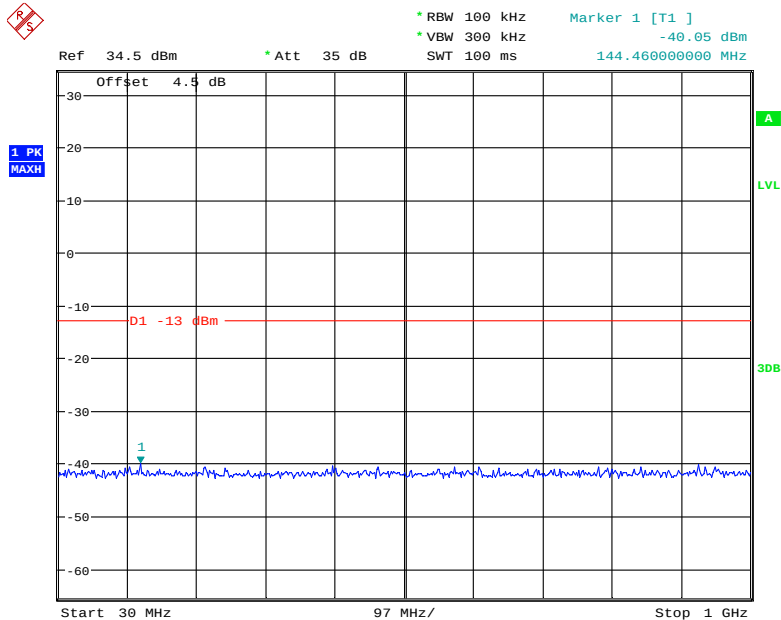
Date: 24.NOV.2018 09:44:37



Date: 24.NOV.2018 09:45:43

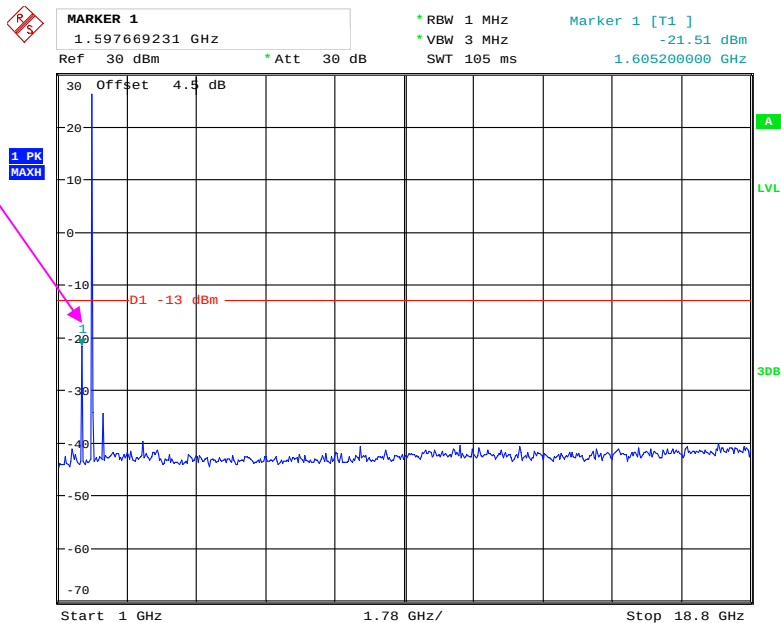
LTE Band 2 (Middle Channel)

QPSK_1.4 MHz



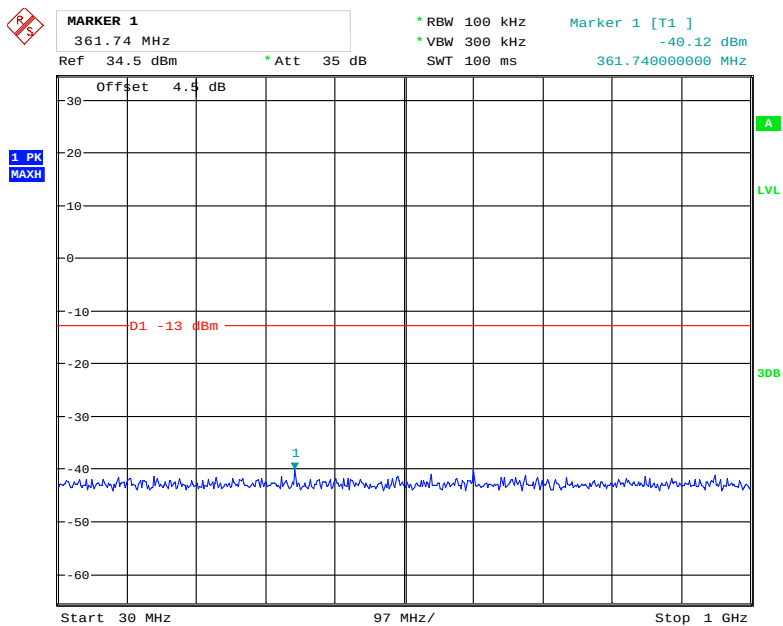
Date: 31.OCT.2018 11:37:44

Fundamental

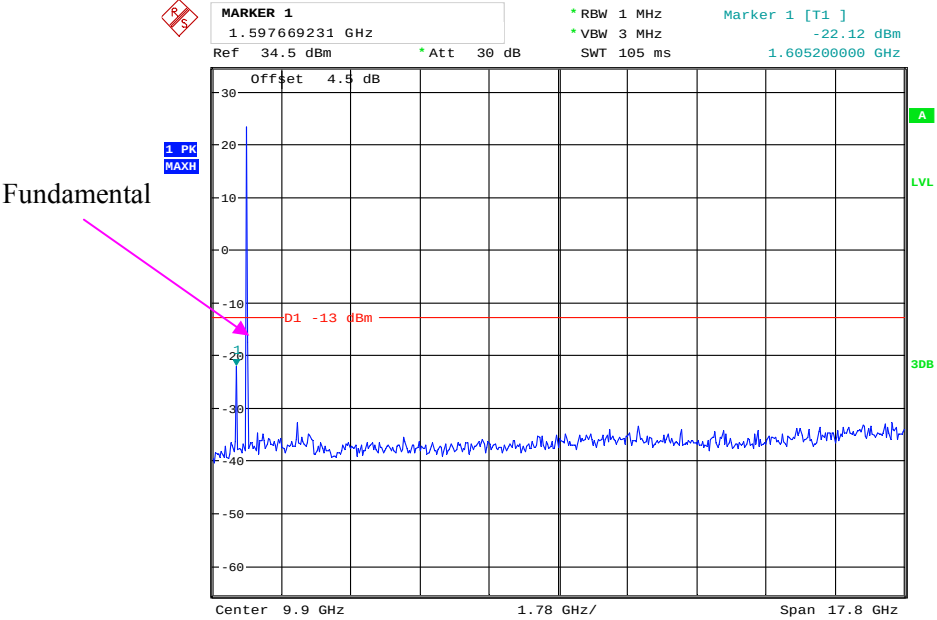


Date: 31.OCT.2018 10:32:25

QPSK_3 MHz

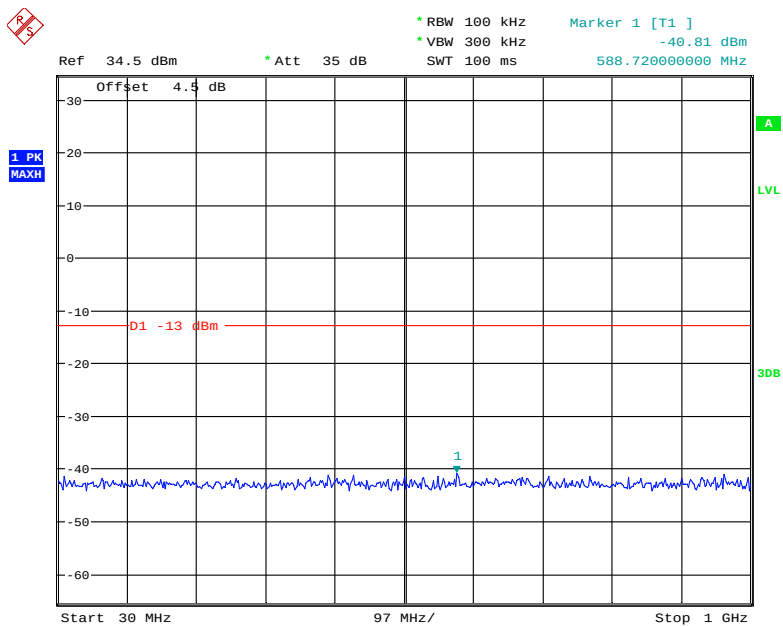


Date: 31.OCT.2018 11:31:01



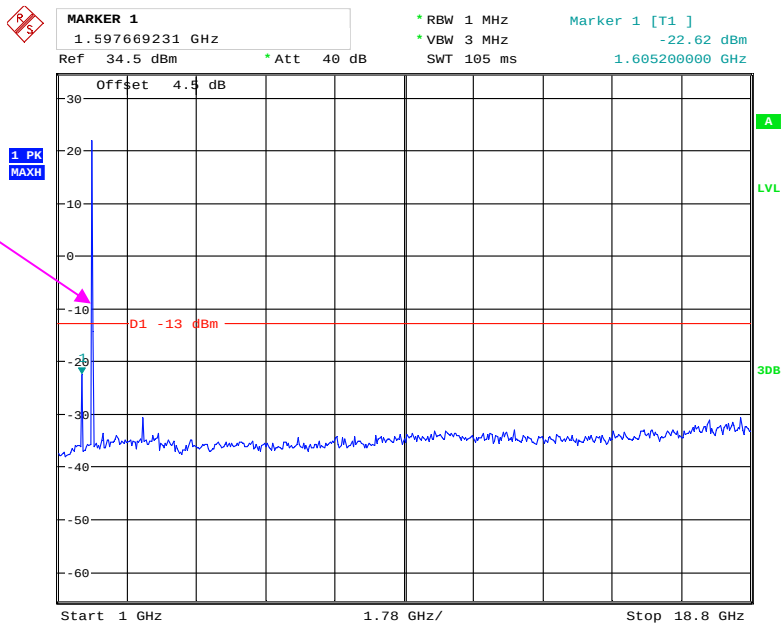
Date: 31.OCT.2018 10:33:27

QPSK_5 MHz



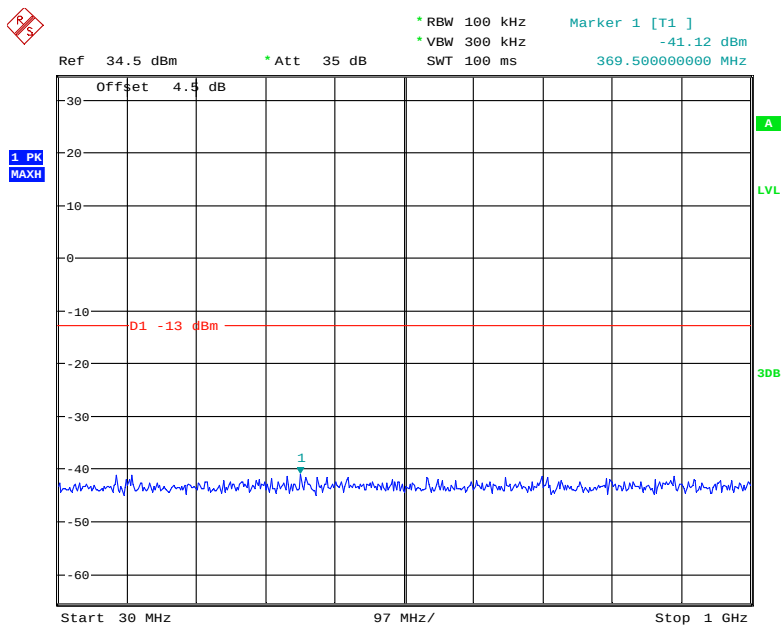
Date: 31.OCT.2018 11:31:22

Fundamental



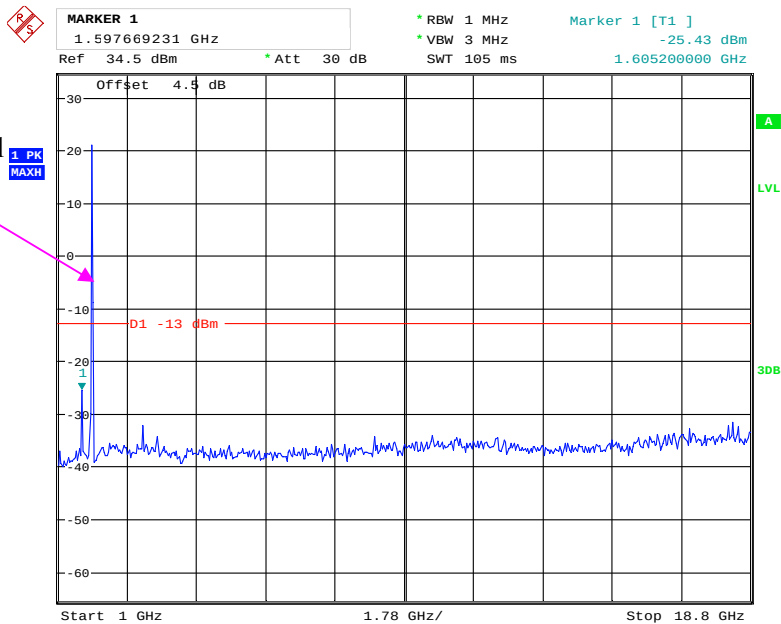
Date: 31.OCT.2018 10:34:21

QPSK_10 MHz



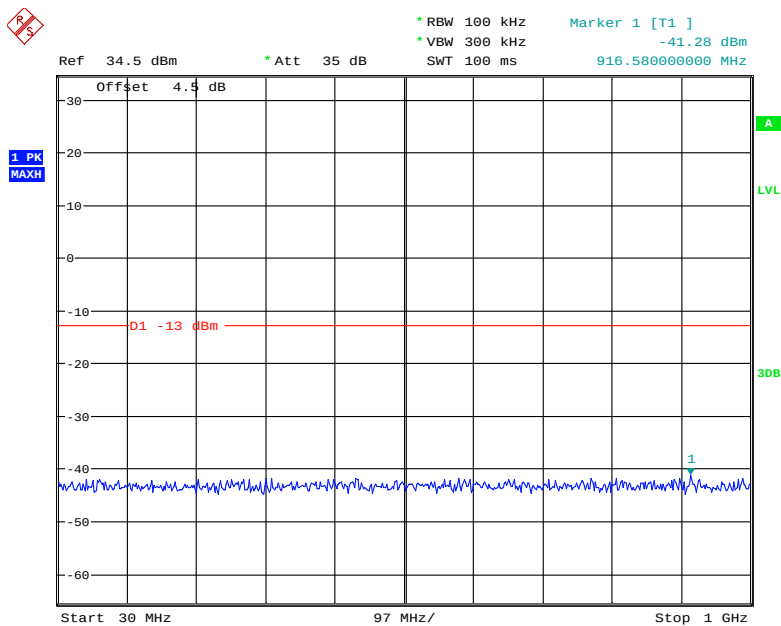
Date: 31.OCT.2018 11:31:43

Fundamental

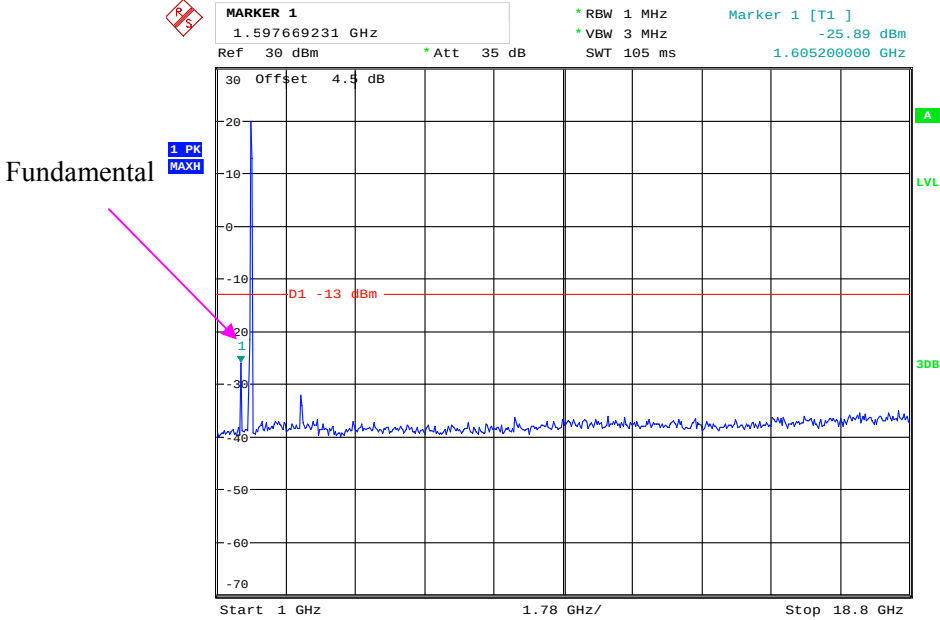


Date: 31.OCT.2018 10:35:12

QPSK_15 MHz

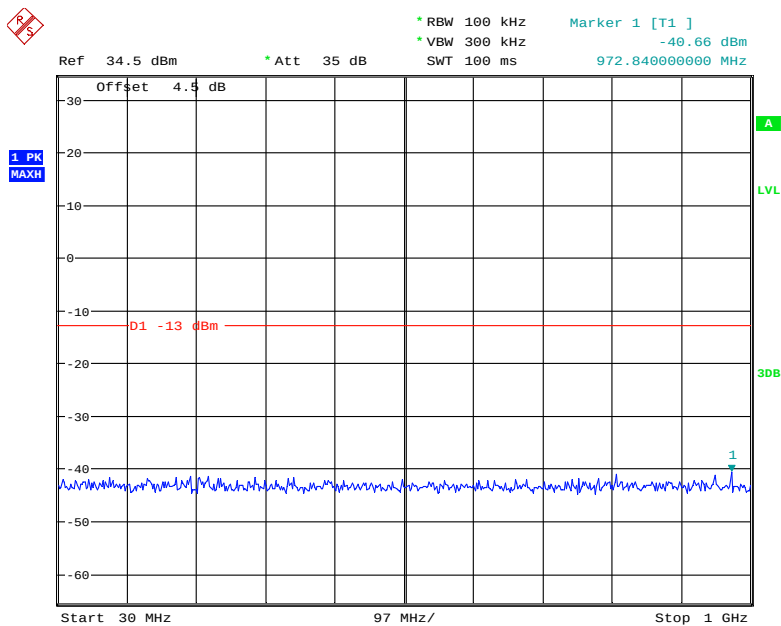


Date: 31.OCT.2018 11:32:07



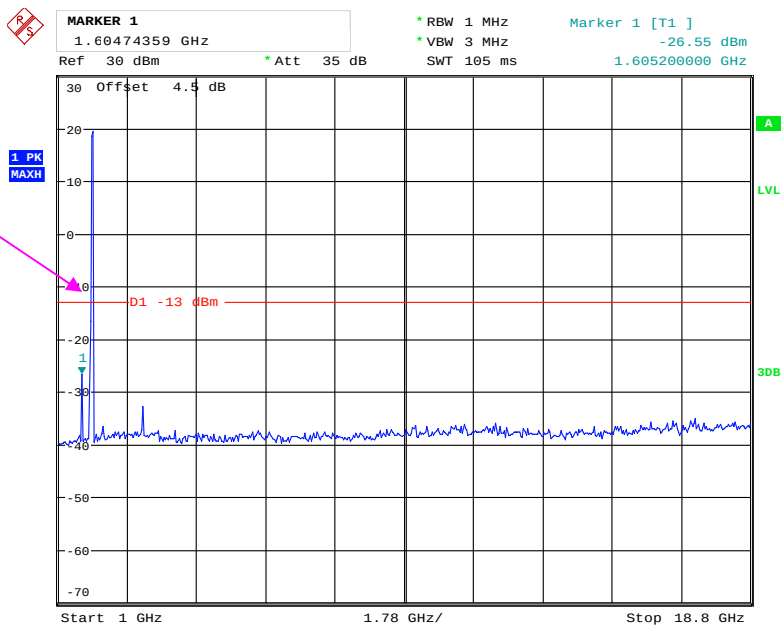
Date: 31.OCT.2018 10:37:03

QPSK_20 MHz



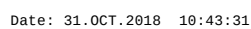
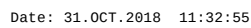
Date: 31.OCT.2018 11:32:30

Fundamental

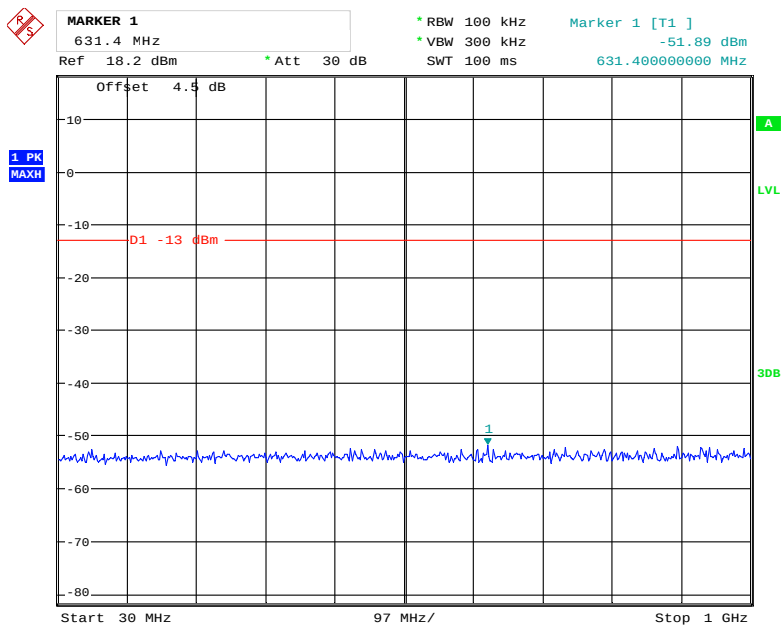


Date: 31.OCT.2018 10:37:50

QPSK_1.4 MHz

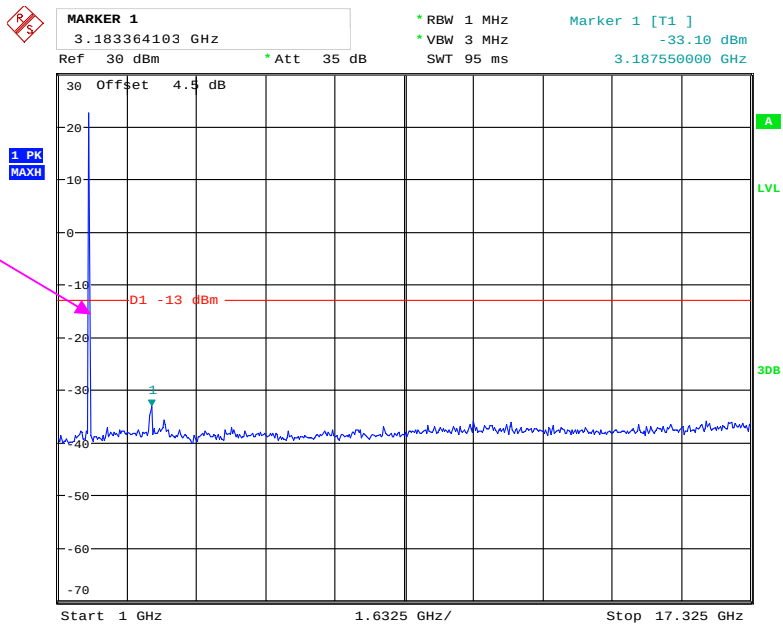


QPSK_3 MHz



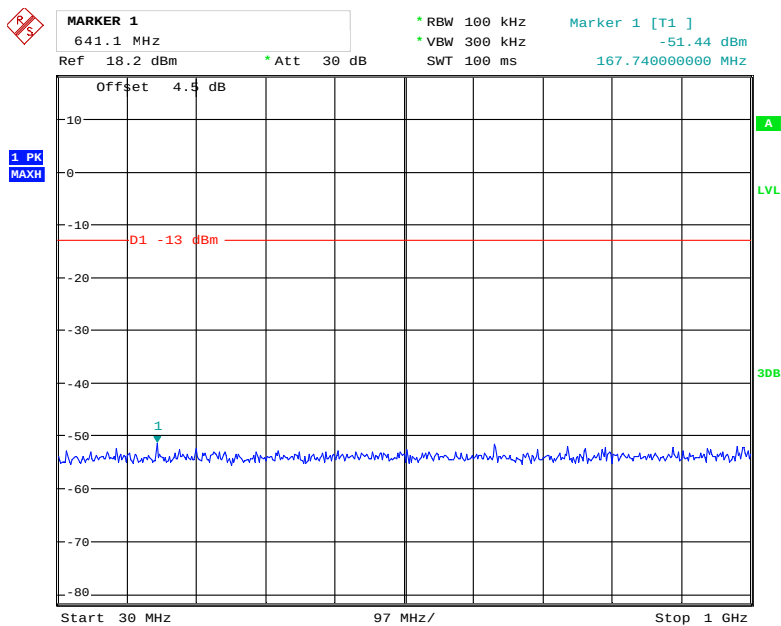
Date: 31.OCT.2018 10:44:23

Fundamental



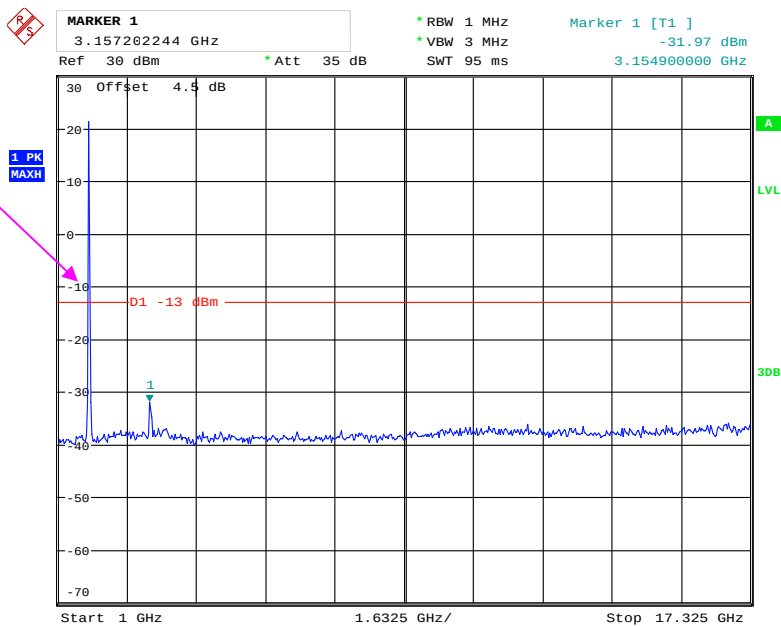
Date: 31.OCT.2018 10:44:45

QPSK_5 MHz



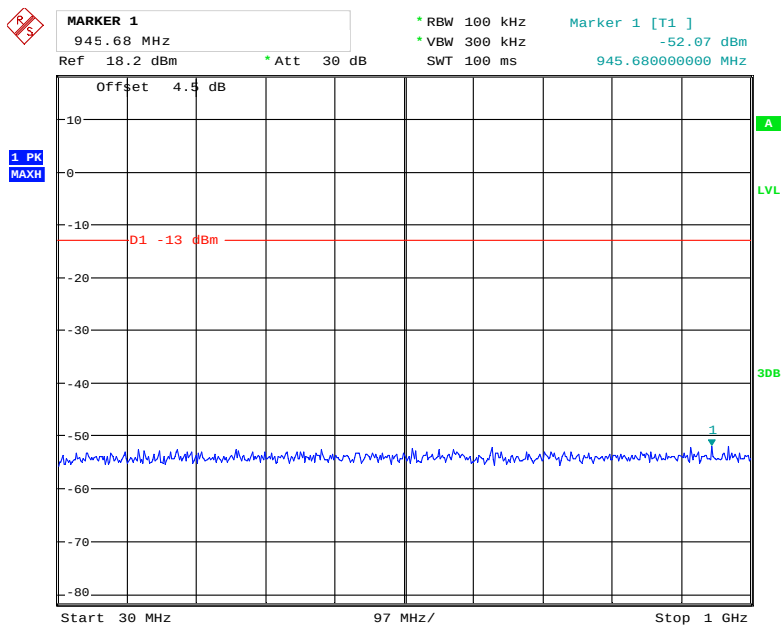
Date: 31.OCT.2018 10:45:12

Fundamental

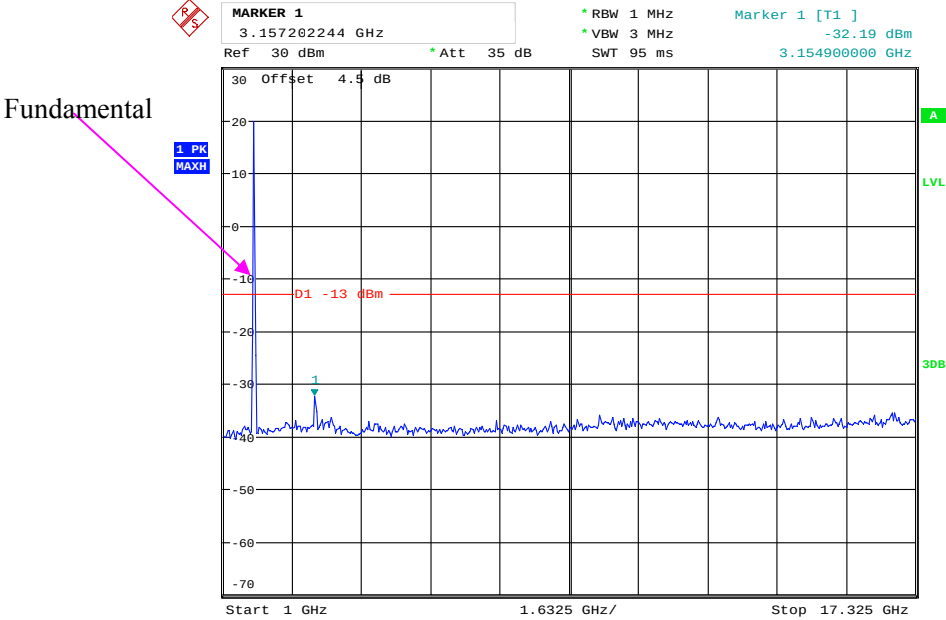


Date: 31.OCT.2018 10:45:32

QPSK_10 MHz



Date: 31.OCT.2018 10:47:00



Date: 31.OCT.2018 10:47:18

MARKER 1
483.96 MHz

Ref 18.2 dBm * Att 30 dB

* RBW 100 kHz
* VBW 300 kHz
SWT 100 ms

Marker 1 [T1]
-50.95 dBm
282.20000000 MHz

Offset 4.5 dB

1 PK
MAXH

D1 -13 dBm

1

Start 30 MHz 97 MHz/ Stop 1 GHz

MARKER 1
3.157262244 GHz

Ref 30 dBm * Att 35 dB

* RBW 1 MHz
* VBW 3 MHz
SWT 95 ms

Marker 1 [T1]
-33.63 dBm
3.154900000 GHz

30 Offset 4.5 dB

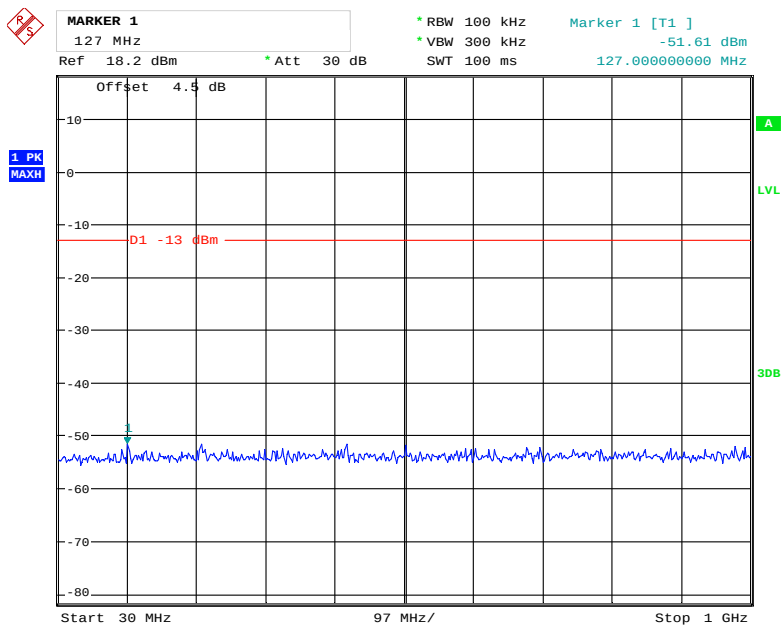
1 PK
MAXH

D1 -13 dBm

Start 1 GHz 1.6325 GHz/ Stop 17.325 GHz

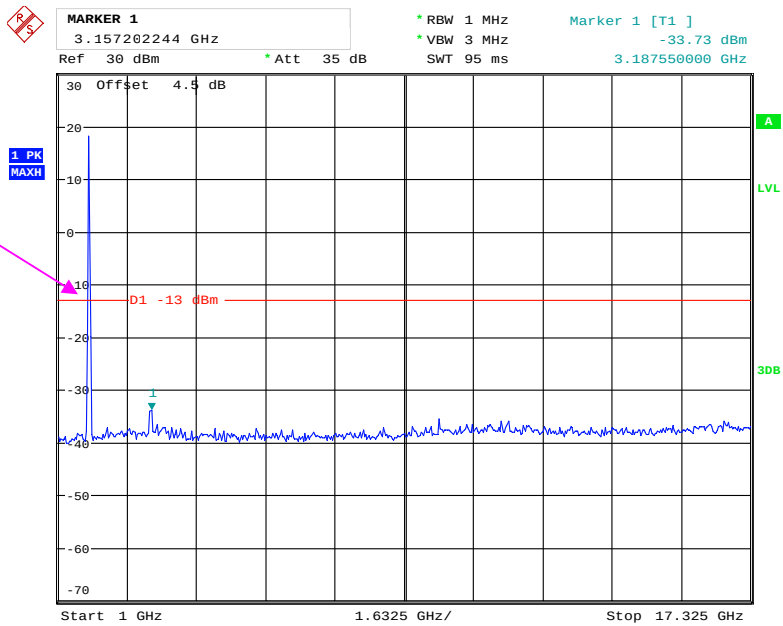
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QPSK_20 MHz



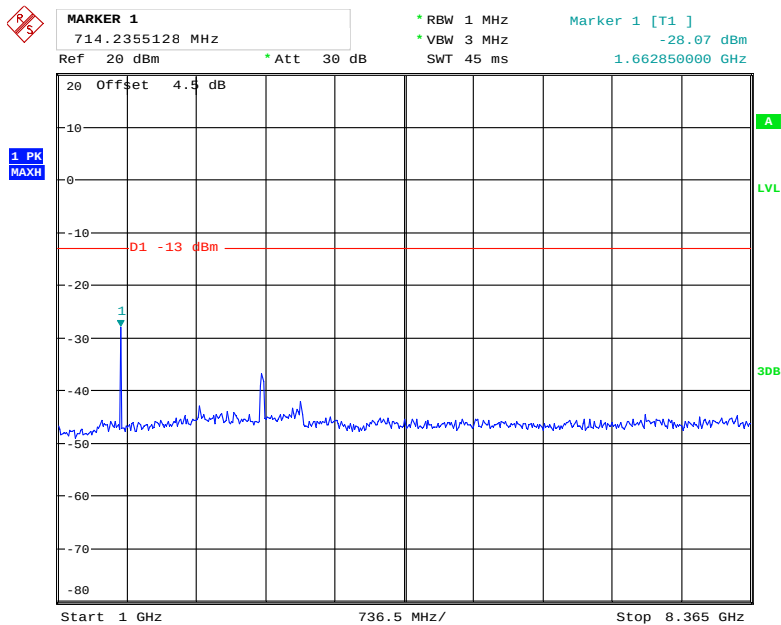
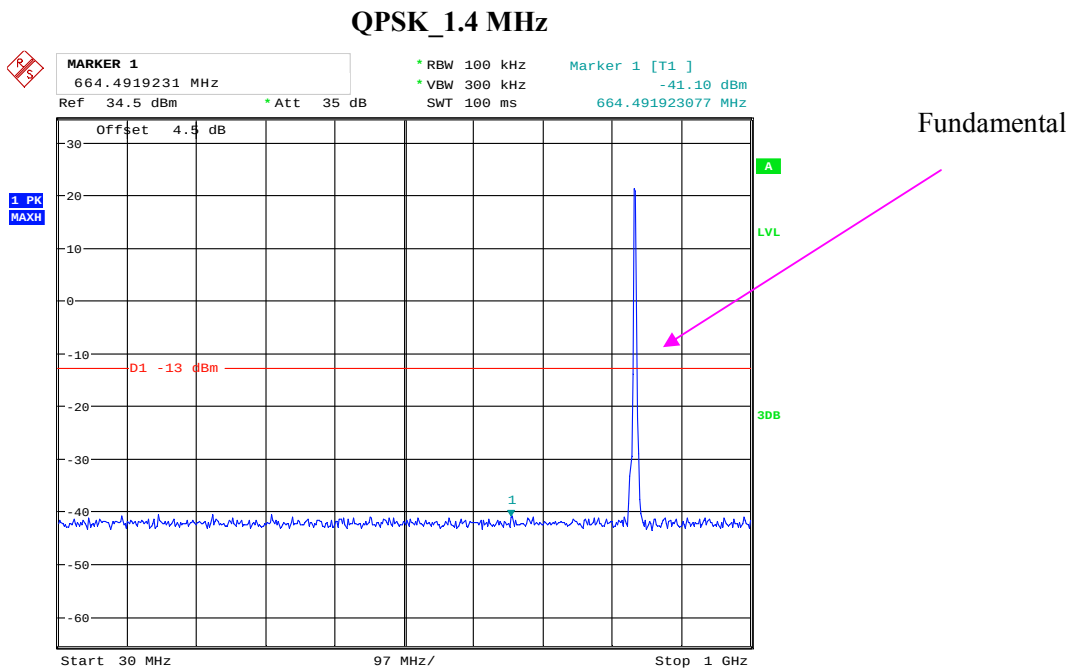
Date: 31.OCT.2018 10:48:48

Fundamental

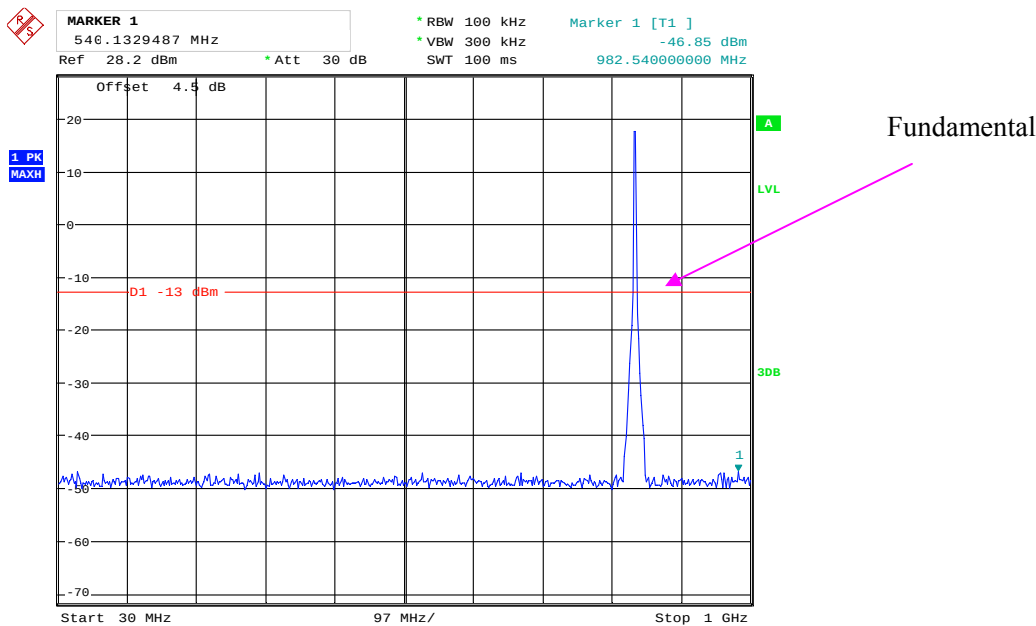


Date: 31.OCT.2018 10:49:04

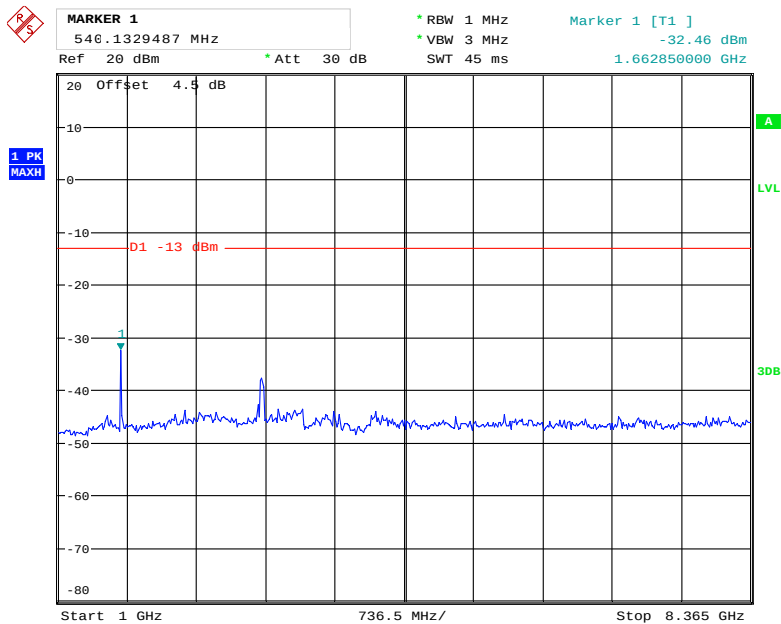
LTE Band 5 (Middle Channel)



QPSK_3 MHz

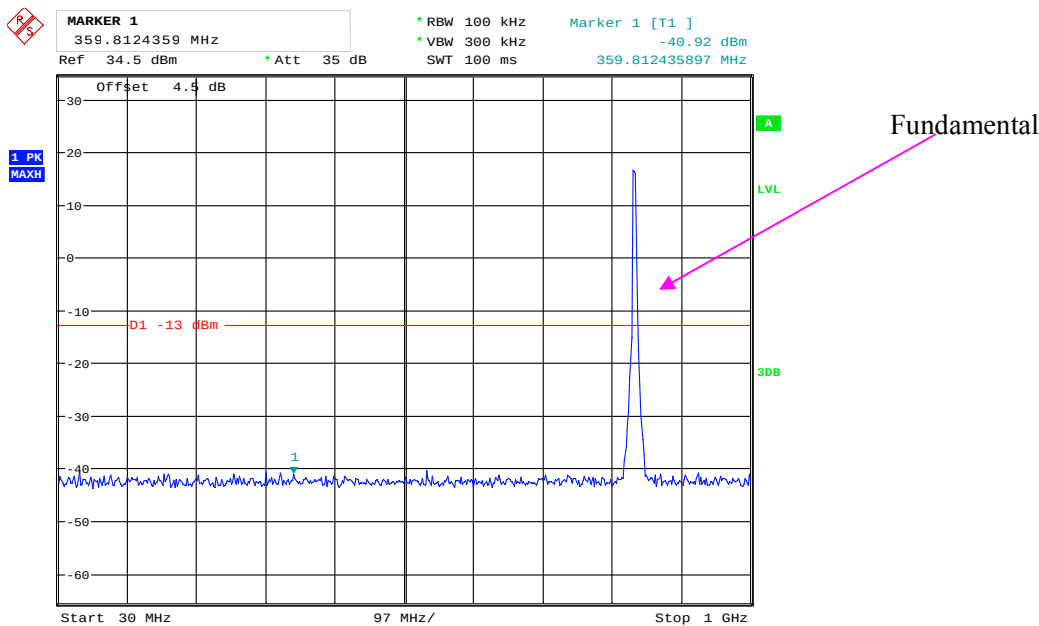


Date: 31.OCT.2018 10:50:40

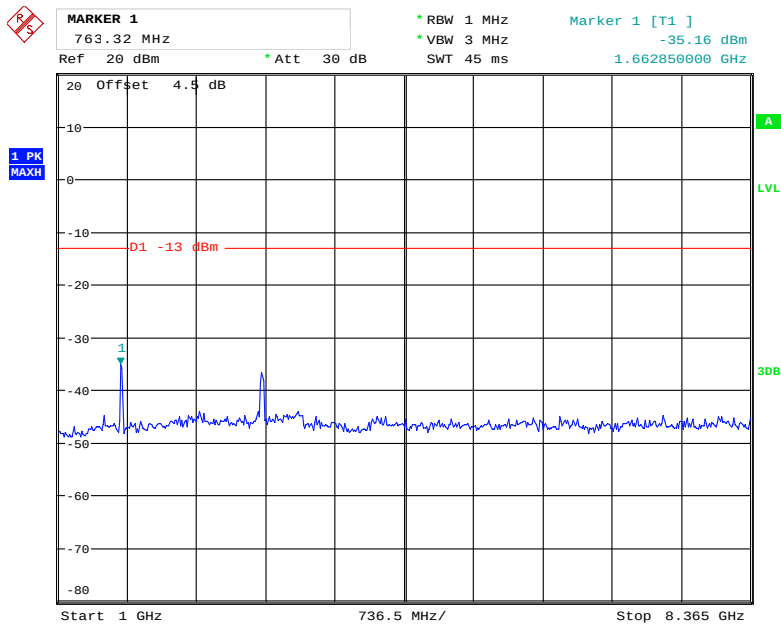


Date: 31.OCT.2018 10:50:56

QPSK_5 MHz

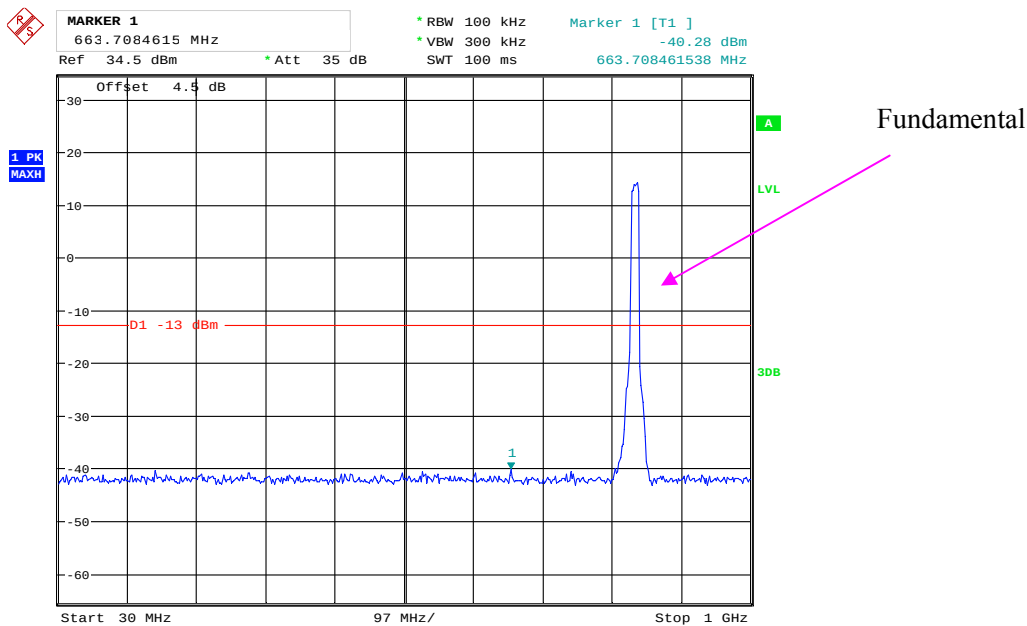


Date: 31.OCT.2018 11:41:59

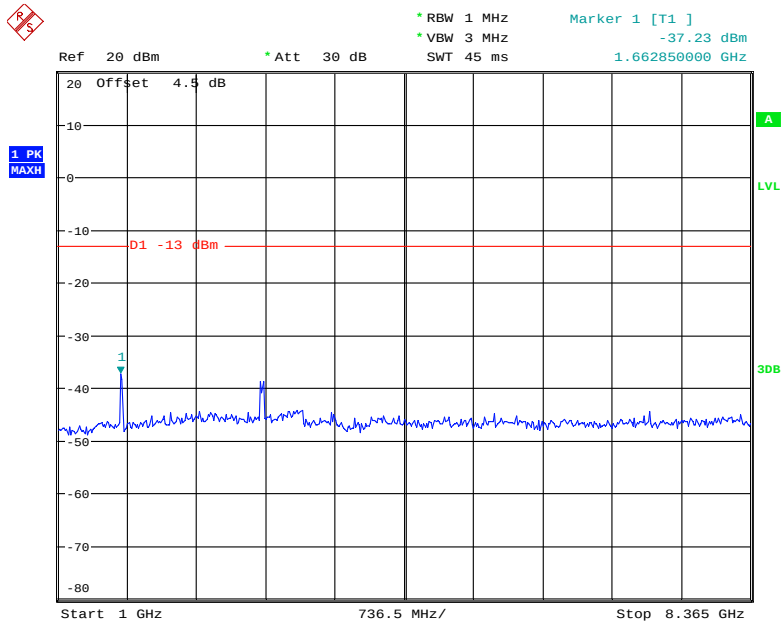


Date: 31.OCT.2018 10:51:49

QPSK_10 MHz



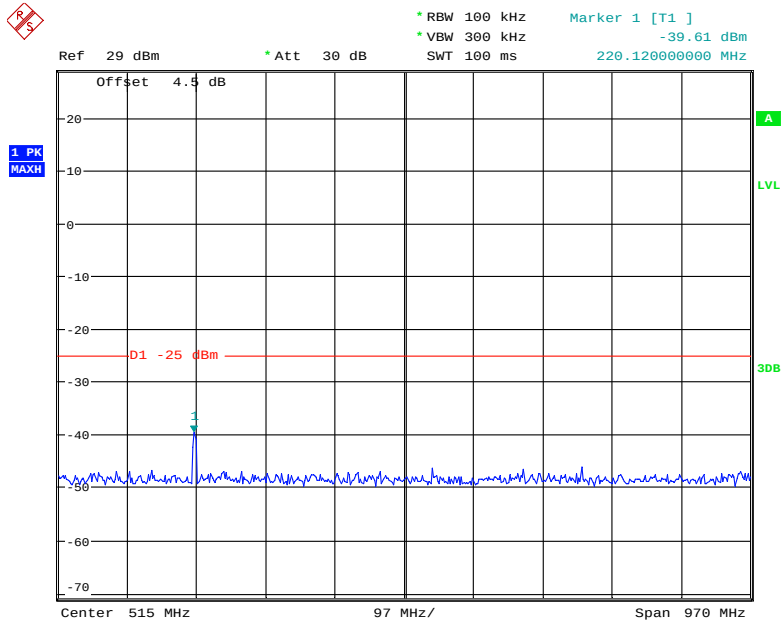
Date: 31.OCT.2018 11:43:47



Date: 31.OCT.2018 10:52:24

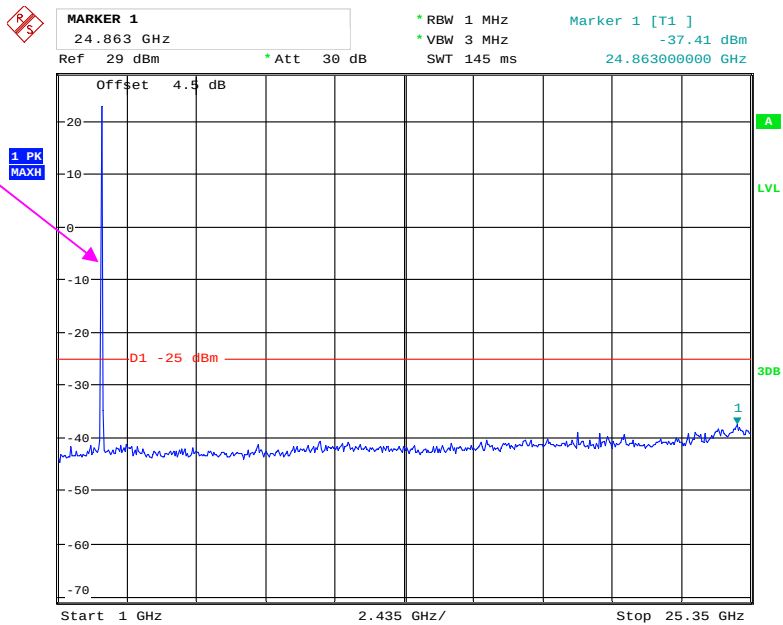
LTE Band 7 (Middle Channel)

QPSK_5 MHz



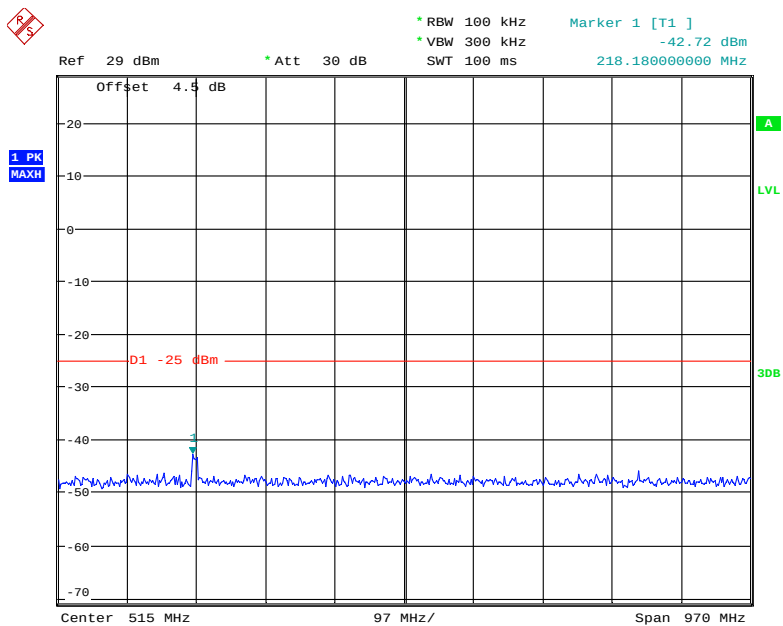
Date: 1.NOV.2018 08:54:09

Fundamental



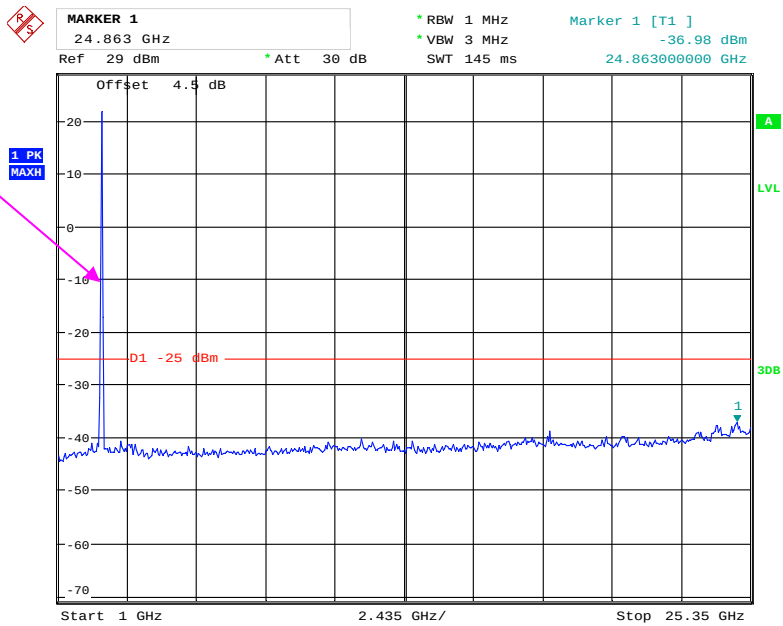
Date: 1.NOV.2018 08:57:19

QPSK_10 MHz



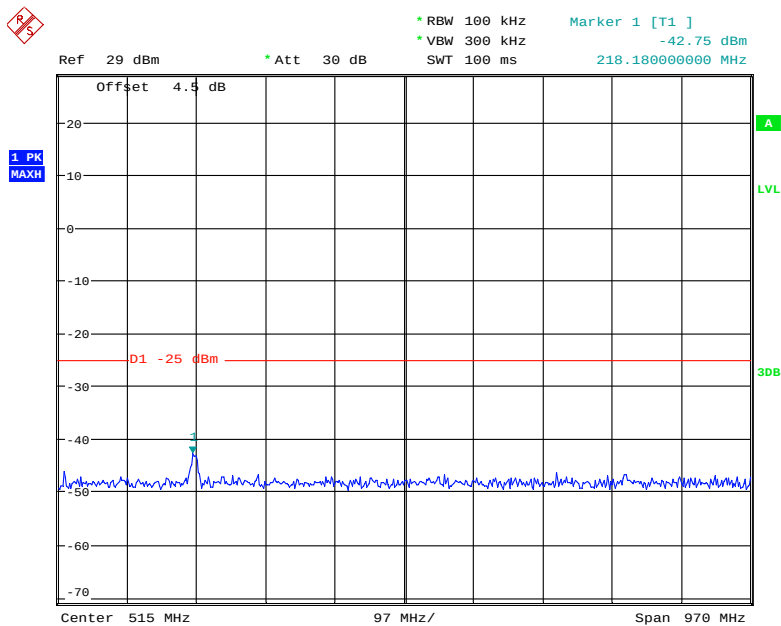
Date: 1.NOV.2018 08:53:42

Fundamental



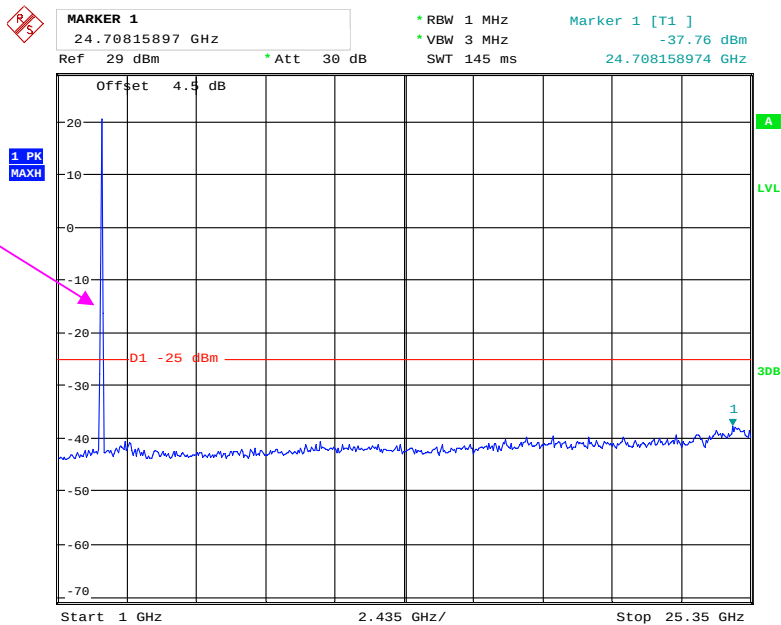
Date: 1.NOV.2018 08:56:48

QPSK_15 MHz



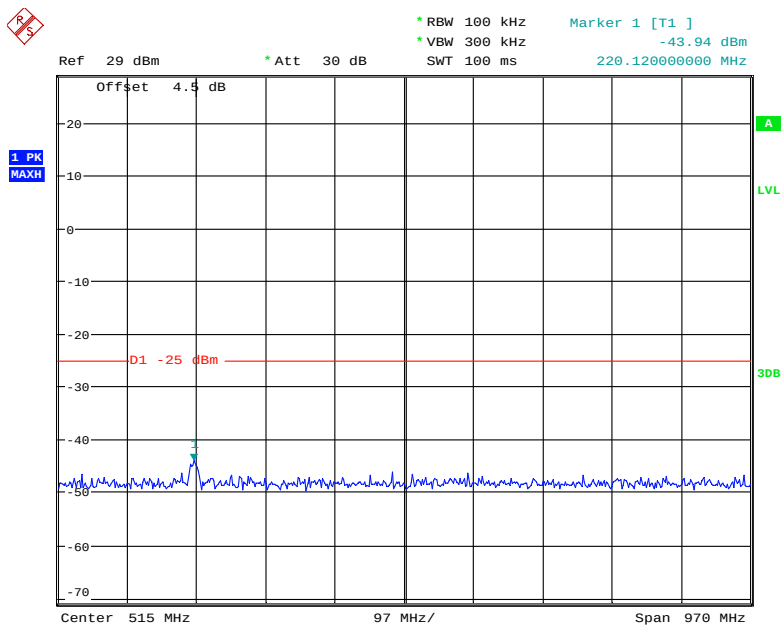
Date: 1.NOV.2018 08:54:30

Fundamental



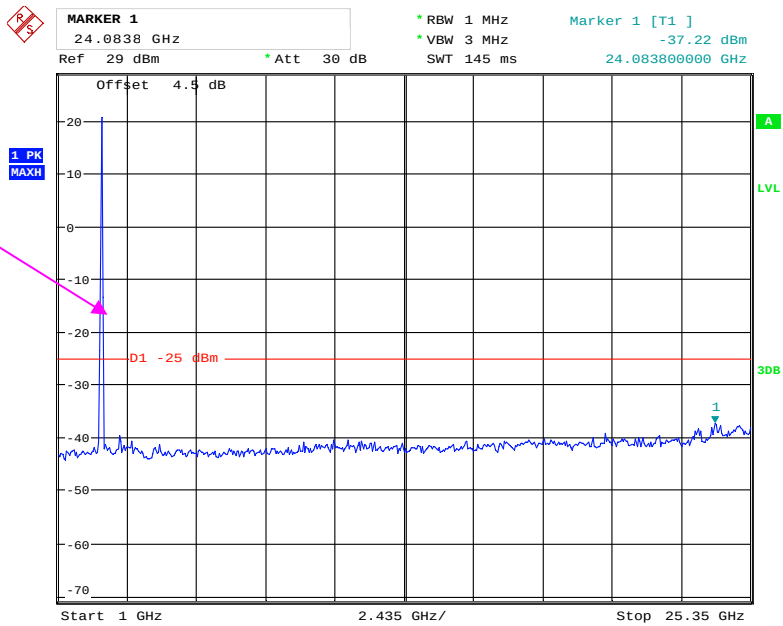
Date: 1.NOV.2018 08:56:11

QPSK_20 MHz



Date: 1.NOV.2018 08:54:48

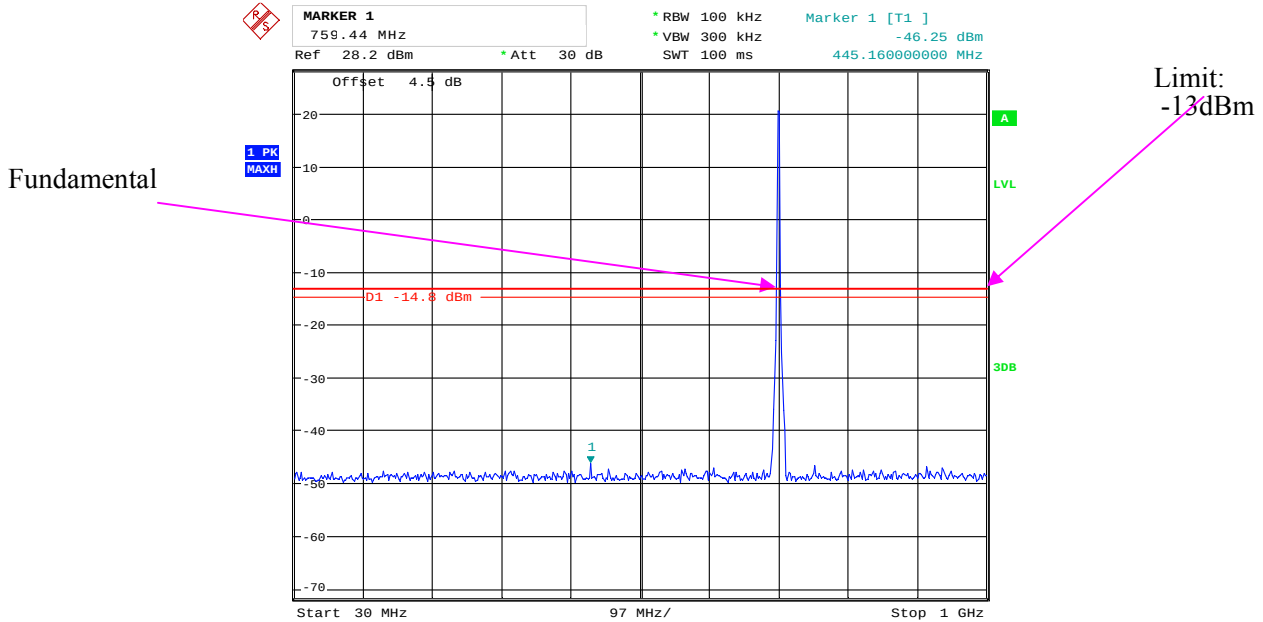
Fundamental



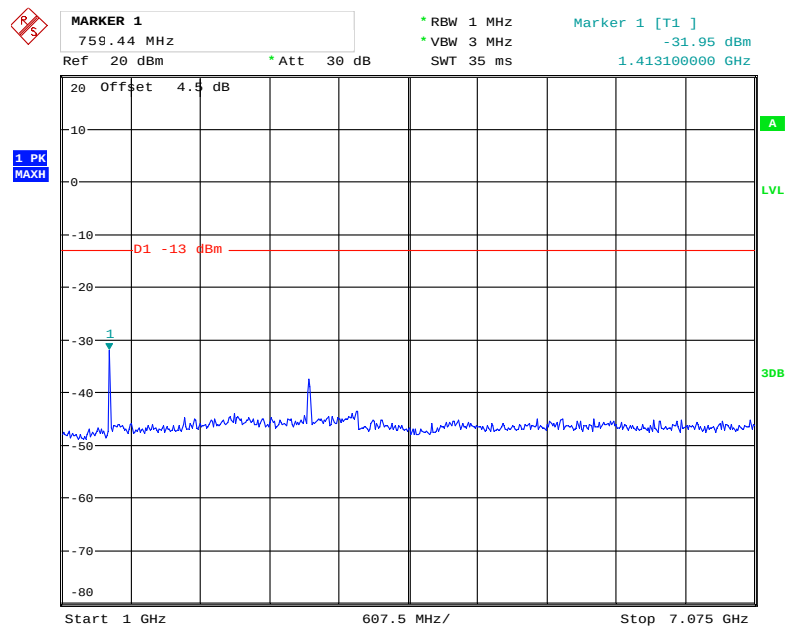
Date: 1.NOV.2018 08:55:47

LTE Band 12 (Middle Channel)

QPSK_1.4 MHz

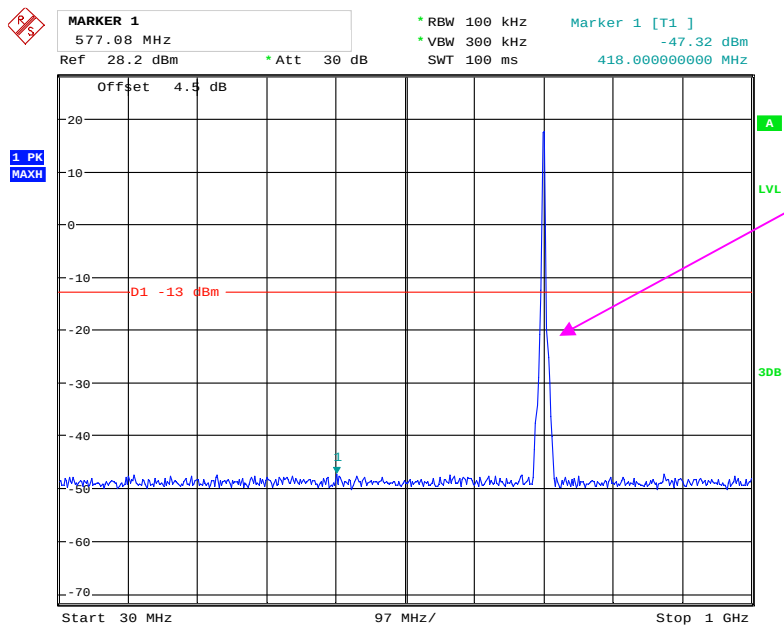


Date: 31.OCT.2018 10:57:46

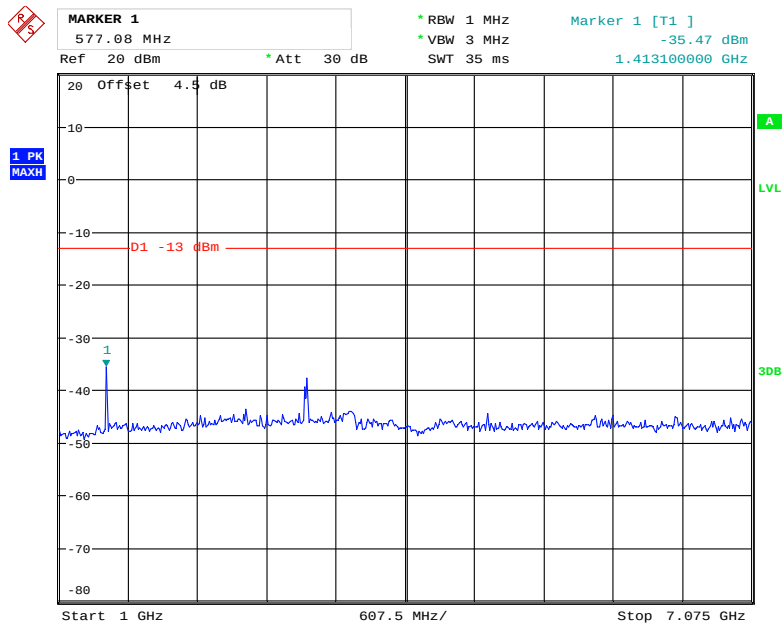


Date: 31.OCT.2018 10:58:02

QPSK_3 MHz

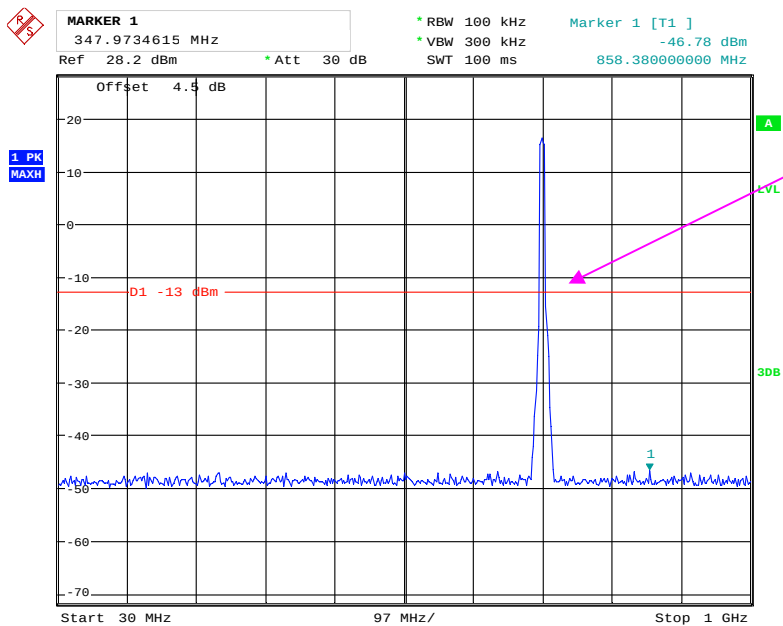


Date: 31.OCT.2018 10:58:59



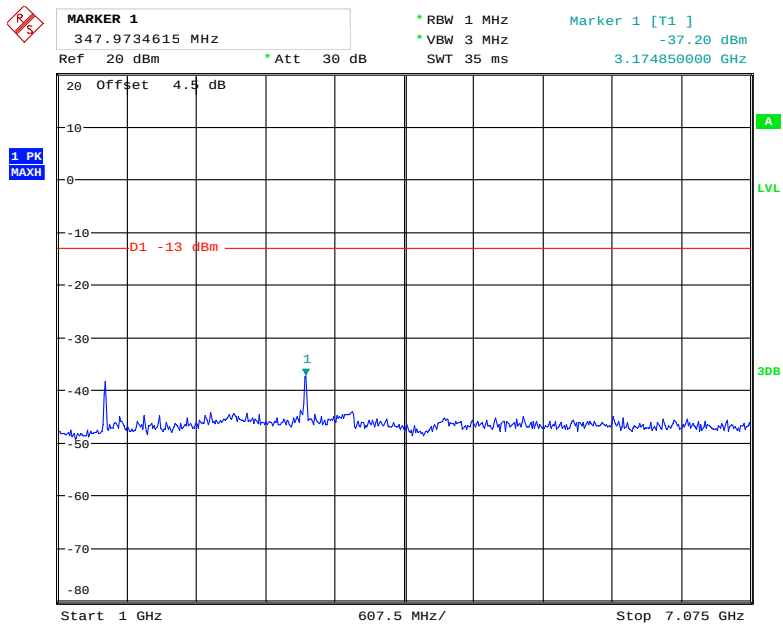
Date: 31.OCT.2018 10:59:11

QPSK_5 MHz



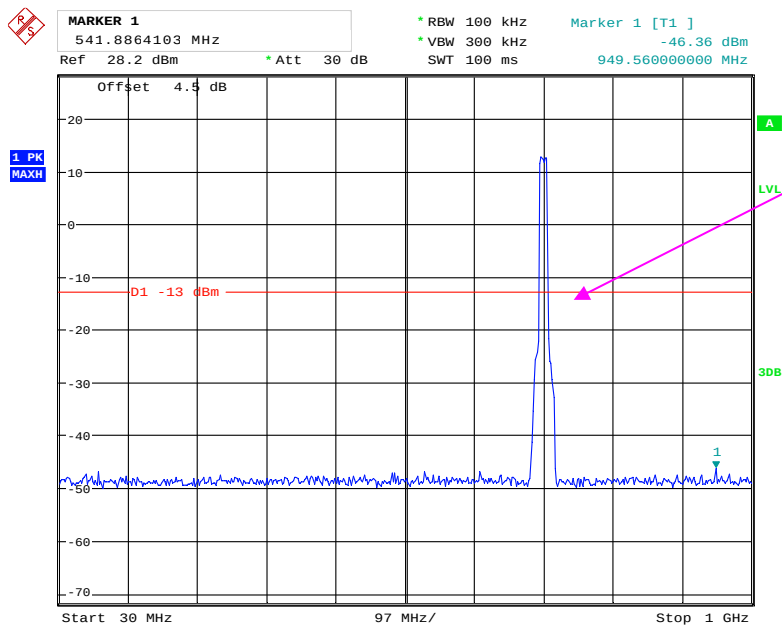
Fundamental

Date: 31.OCT.2018 10:59:51

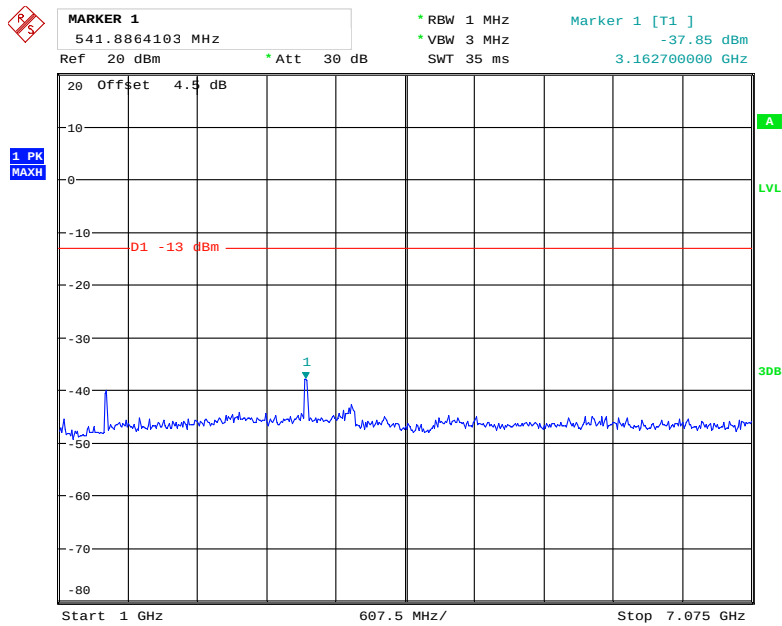


Date: 31.OCT.2018 11:00:04

QPSK_10 MHz



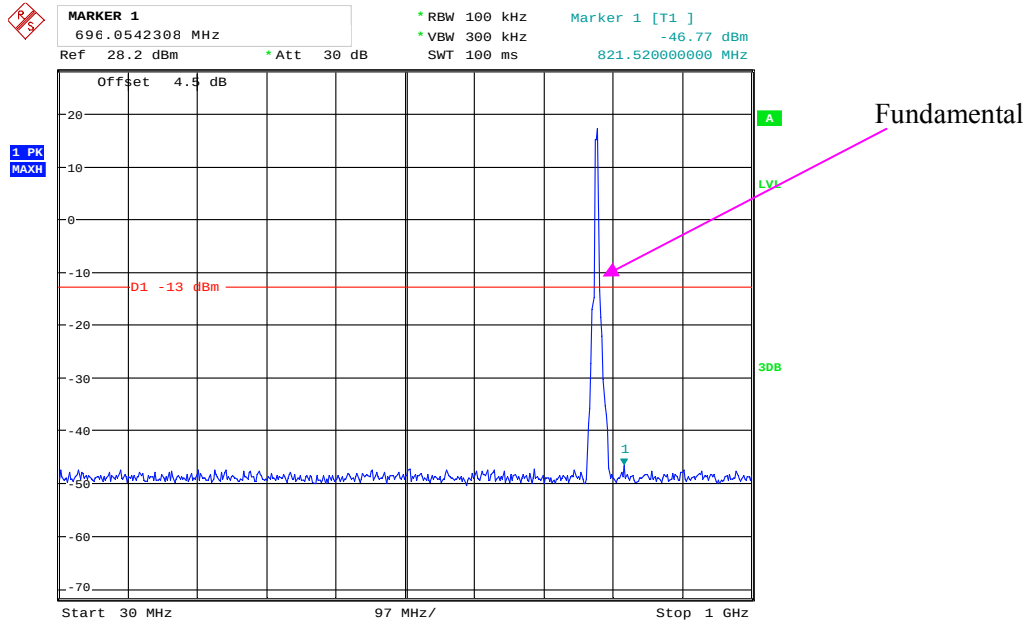
Date: 31.OCT.2018 11:00:45



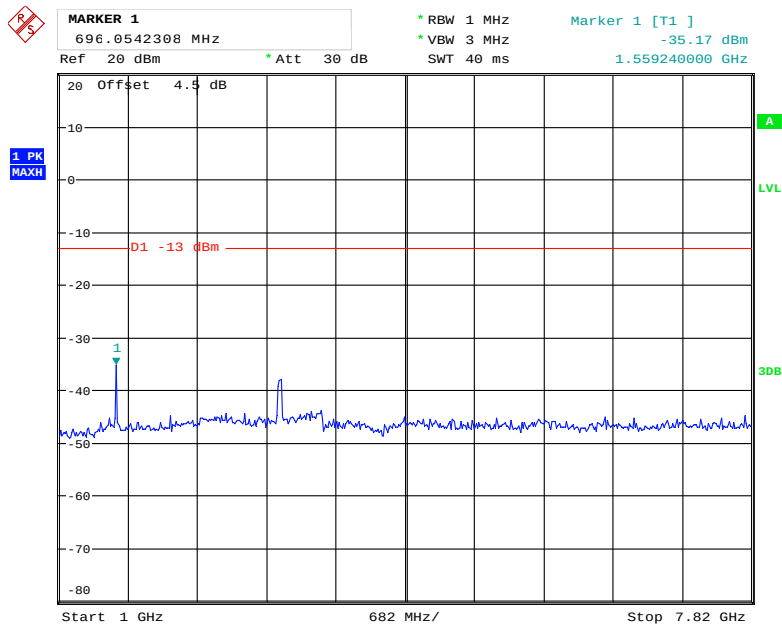
Date: 31.OCT.2018 11:01:00

LTE Band 13 (Middle Channel)

QPSK_5 MHz

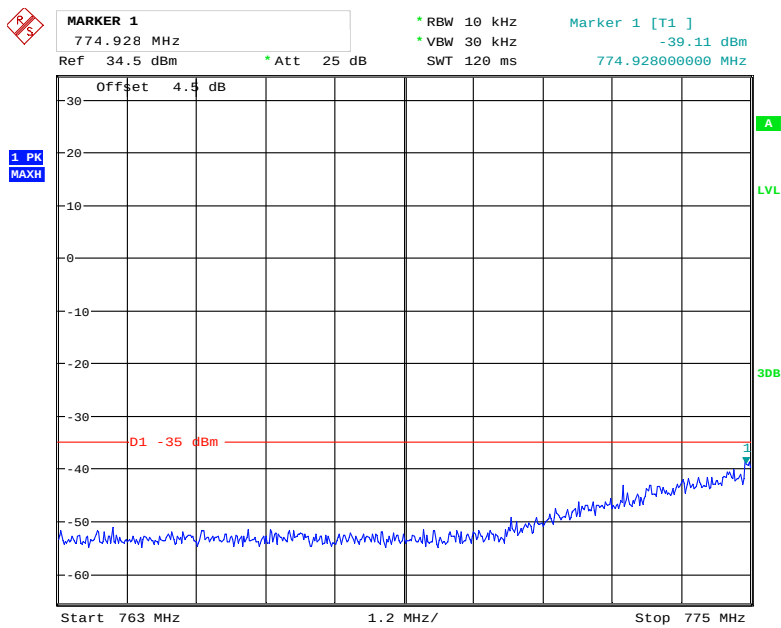


Date: 31.OCT.2018 11:01:33



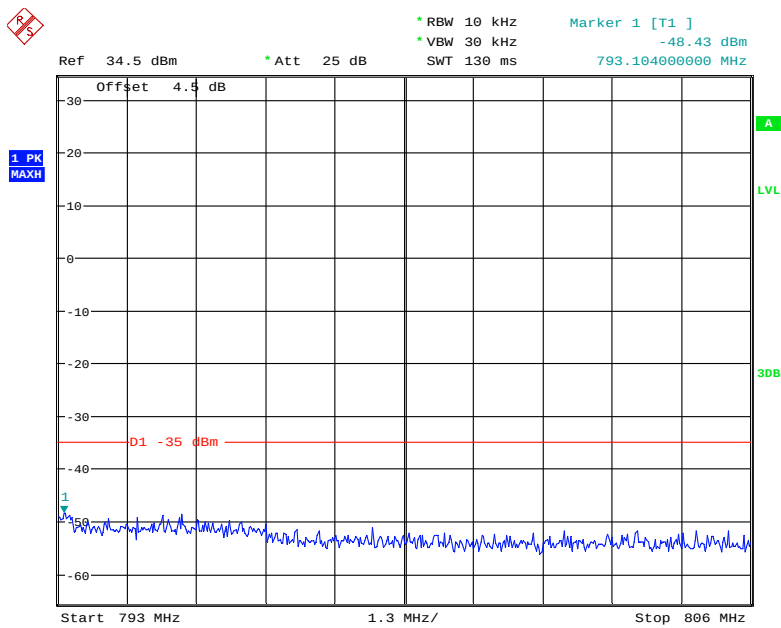
Date: 31.OCT.2018 11:01:45

763MHz-775MHz



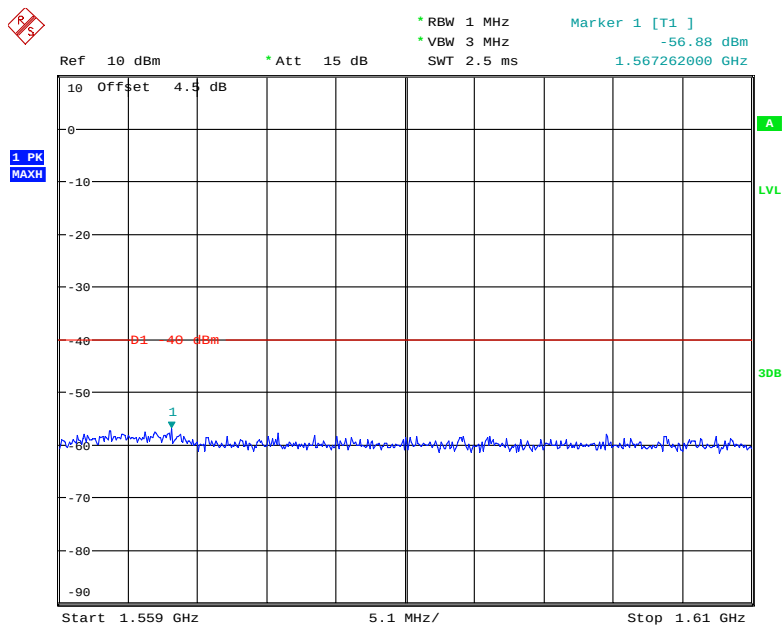
Date: 1.NOV.2018 14:23:52

793MHz-806MHz



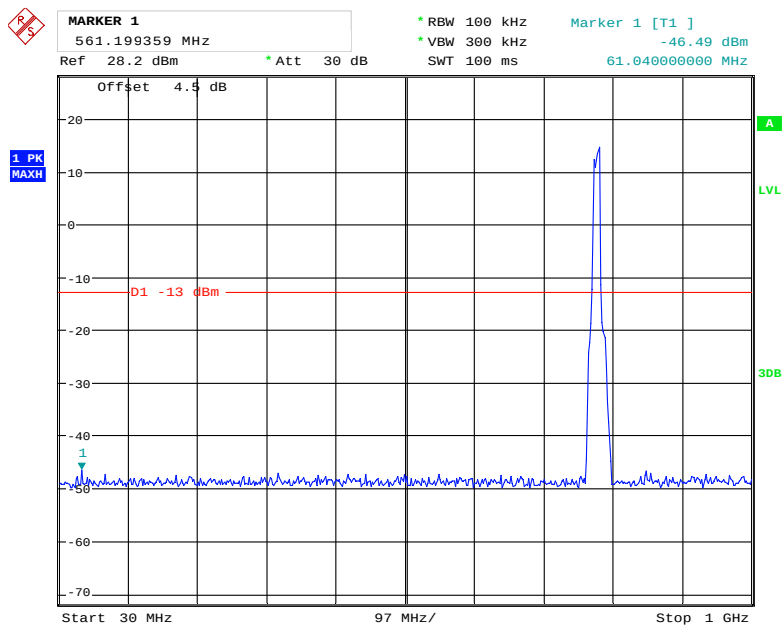
Date: 1.NOV.2018 14:25:18

1559MHz-1610MHz

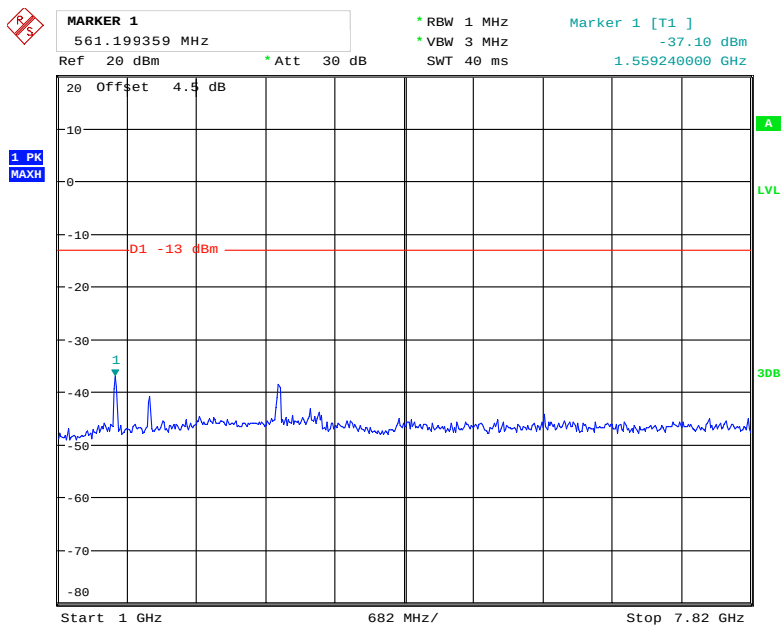


Date: 1.NOV.2018 14:52:16

QPSK_10 MHz

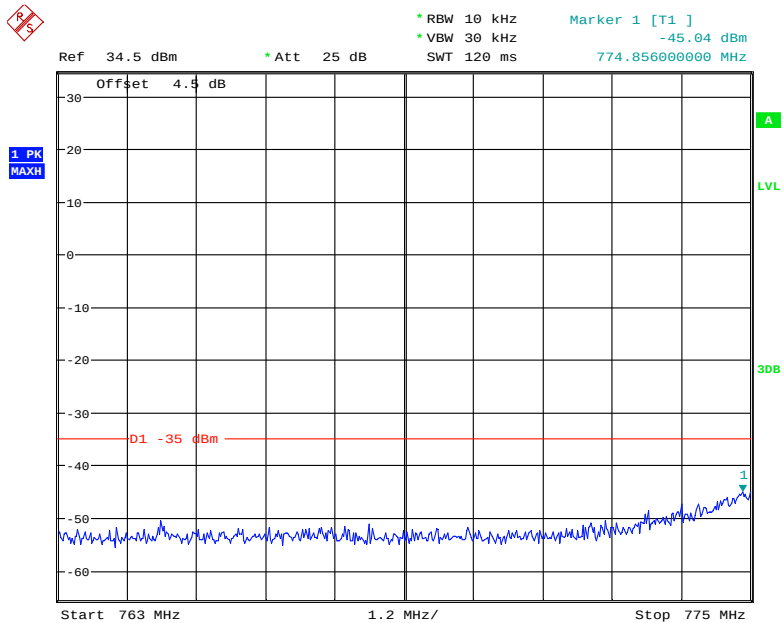


Date: 31.OCT.2018 11:02:19



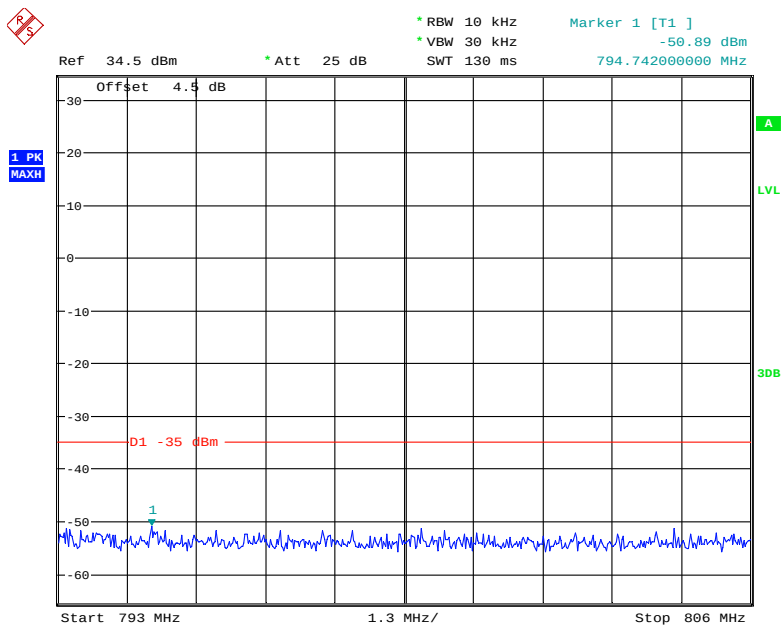
Date: 31.OCT.2018 11:02:31

763MHz-775MHz



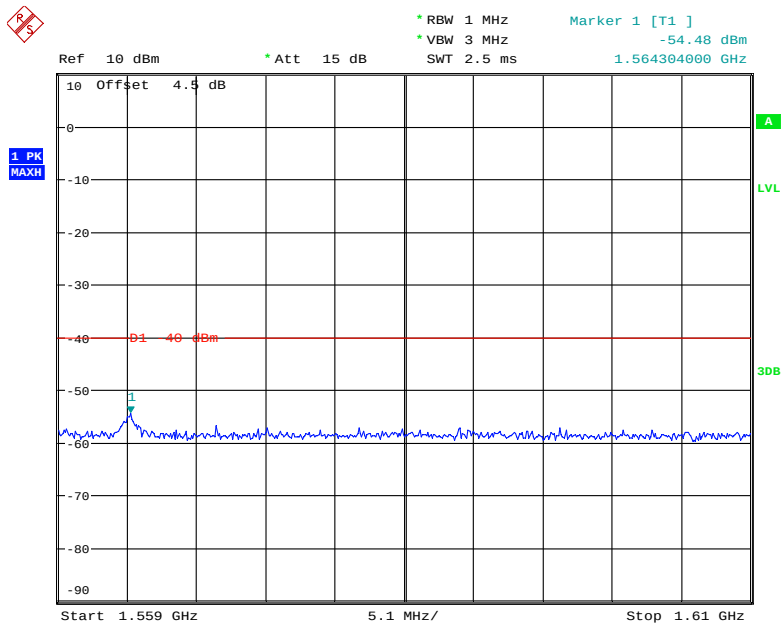
Date: 1.NOV.2018 14:24:23

793MHz-806MHz



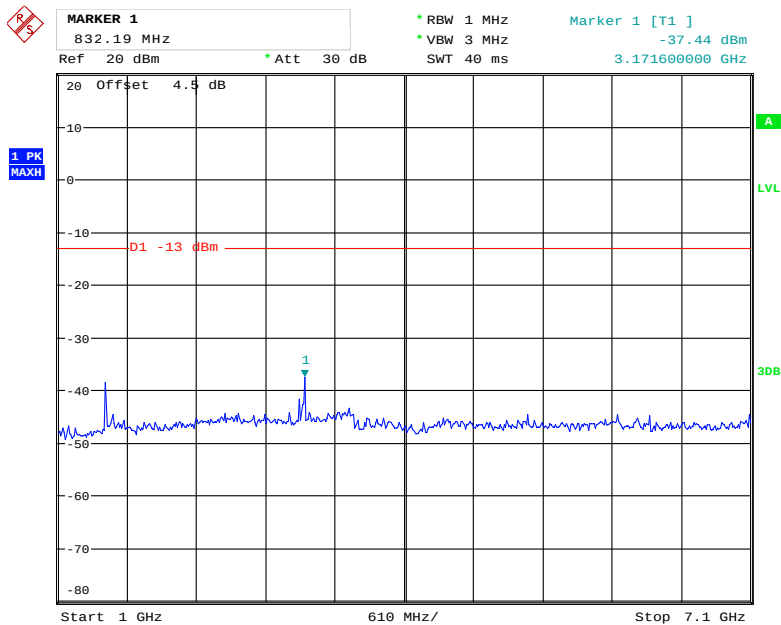
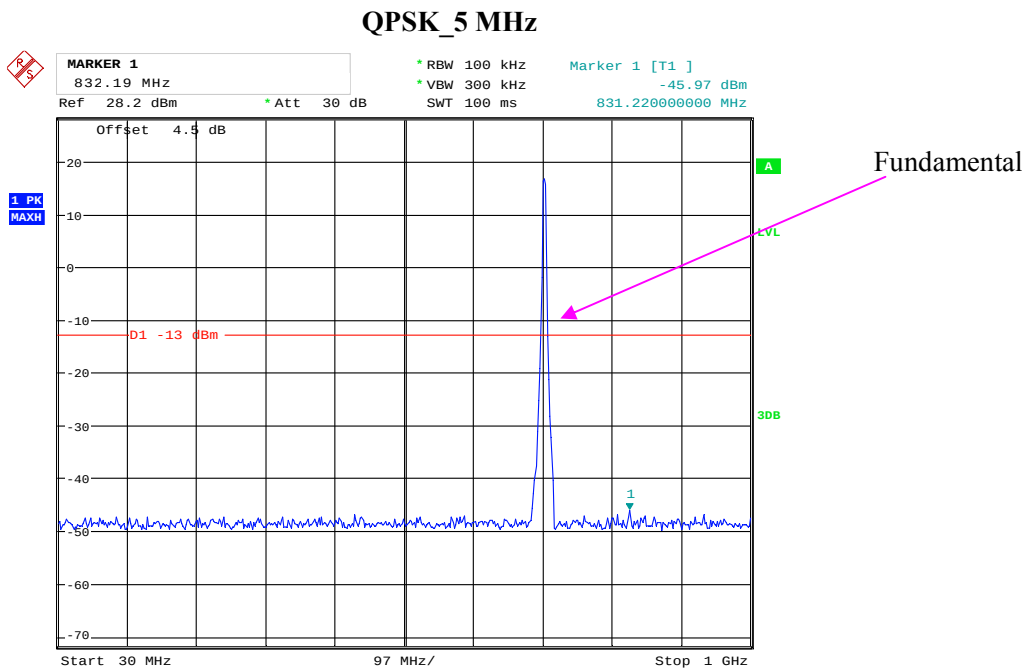
Date: 1.NOV.2018 14:25:02

QPSK_10 MHz (1559MHz-1610MHz)

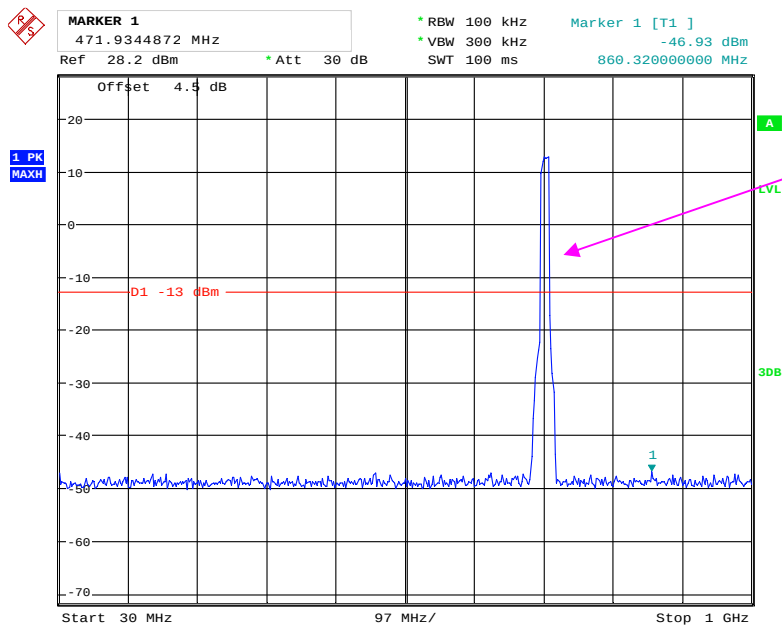


Date: 1.NOV.2018 14:44:08

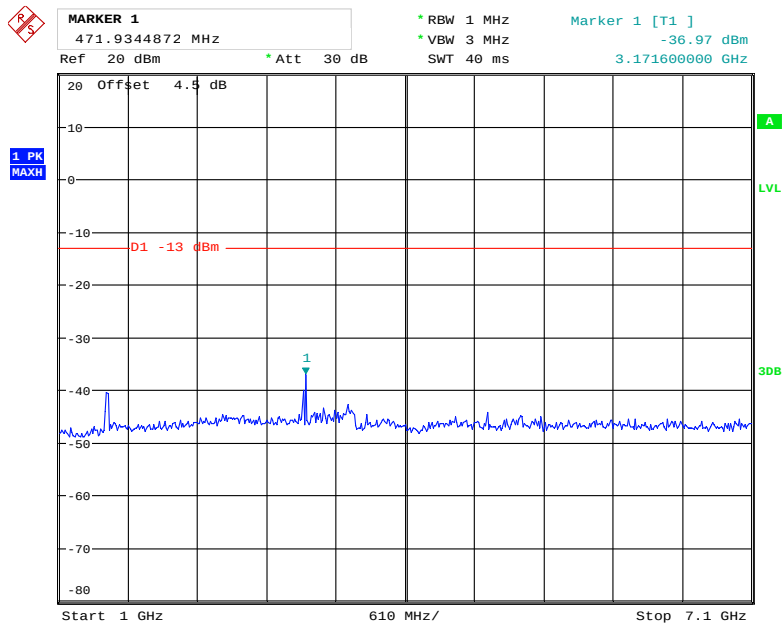
LTE Band 17 (Middle Channel)



QPSK_10 MHz

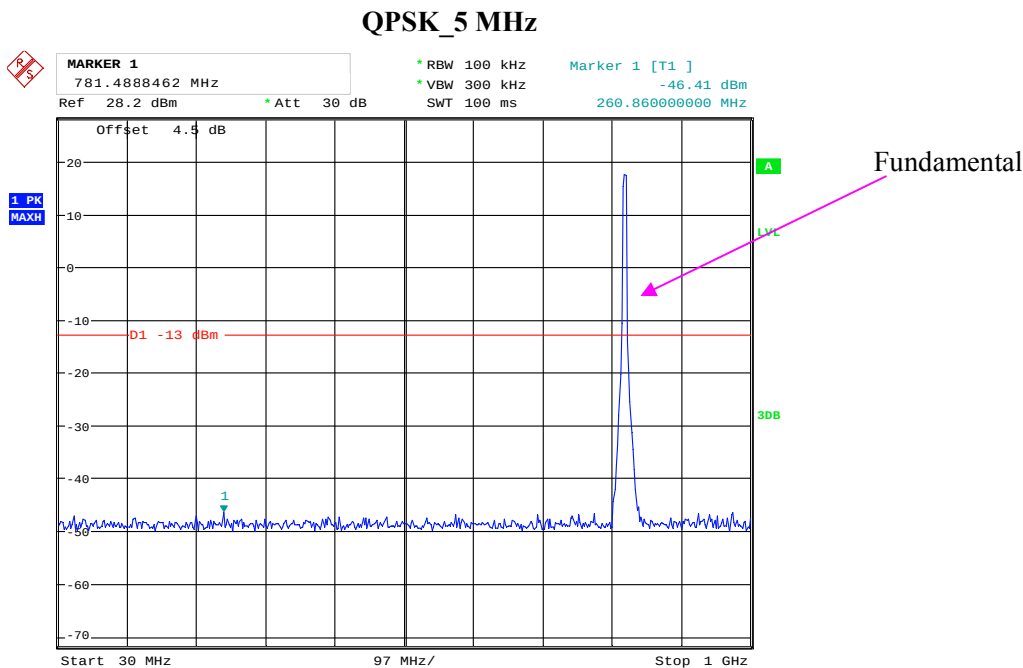


Date: 31.OCT.2018 11:04:07

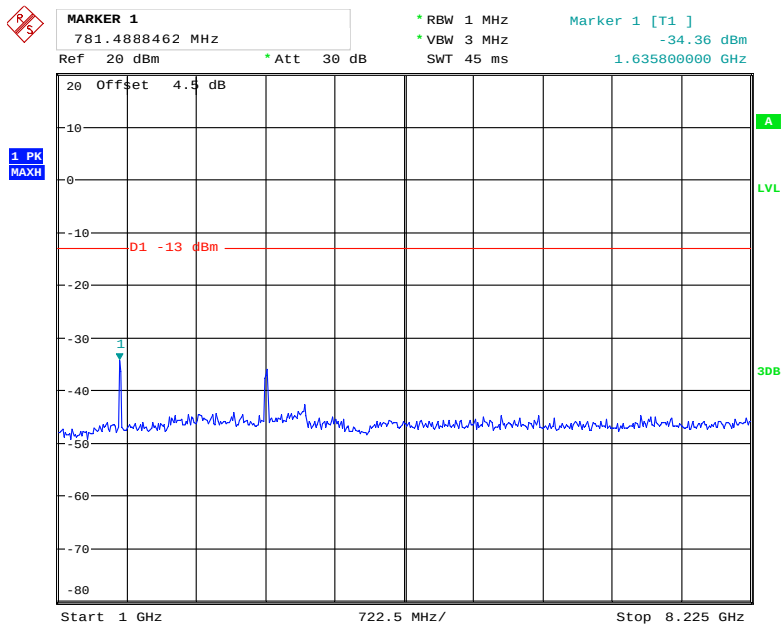


Date: 31.OCT.2018 11:04:20

LTE Band 18 (Middle Channel)

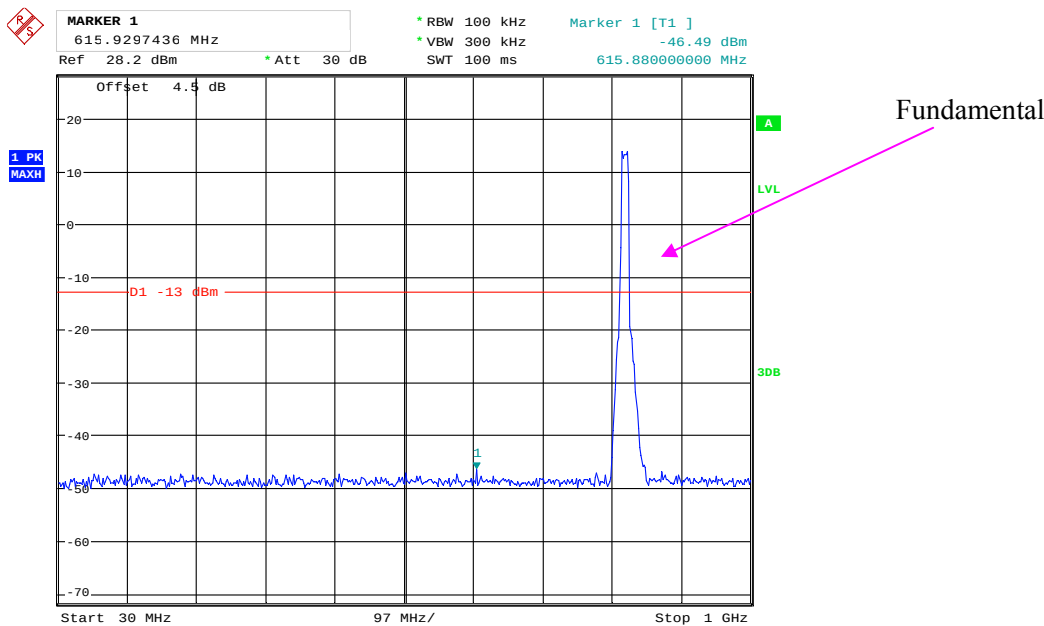


Date: 31.OCT.2018 11:04:56

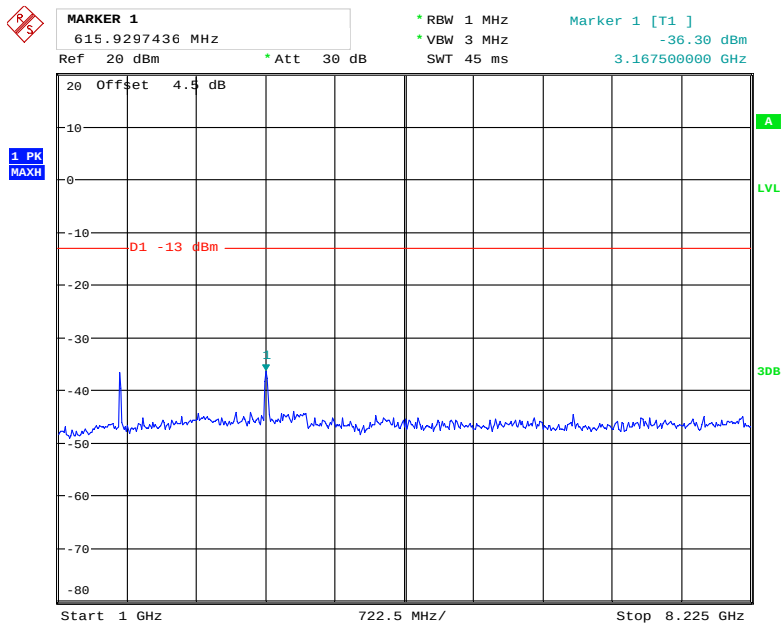


Date: 31.OCT.2018 11:05:09

QPSK_10 MHz

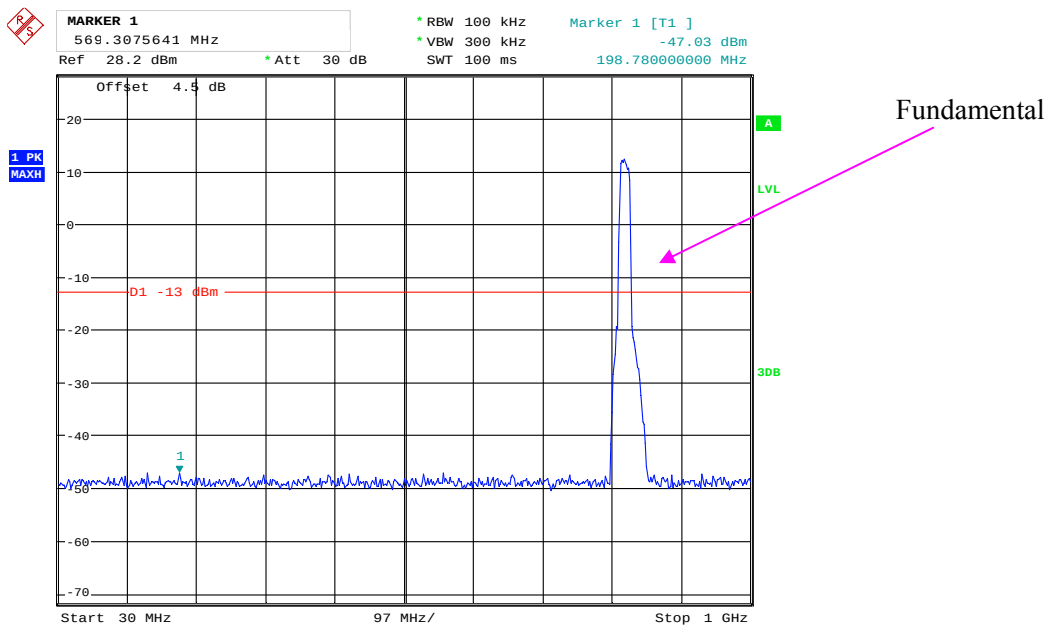


Date: 31.OCT.2018 11:05:43

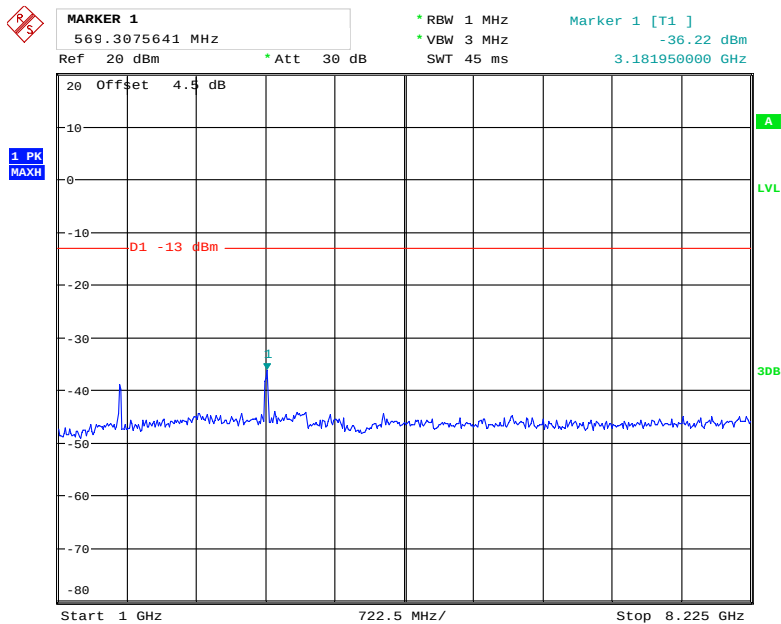


Date: 31.OCT.2018 11:05:56

QPSK_15 MHz



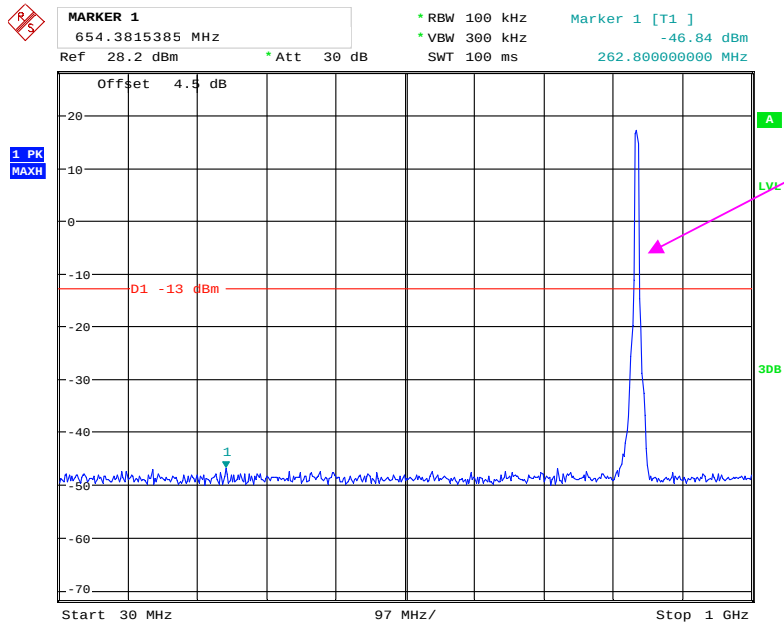
Date: 31.OCT.2018 11:06:31



Date: 31.OCT.2018 11:06:47

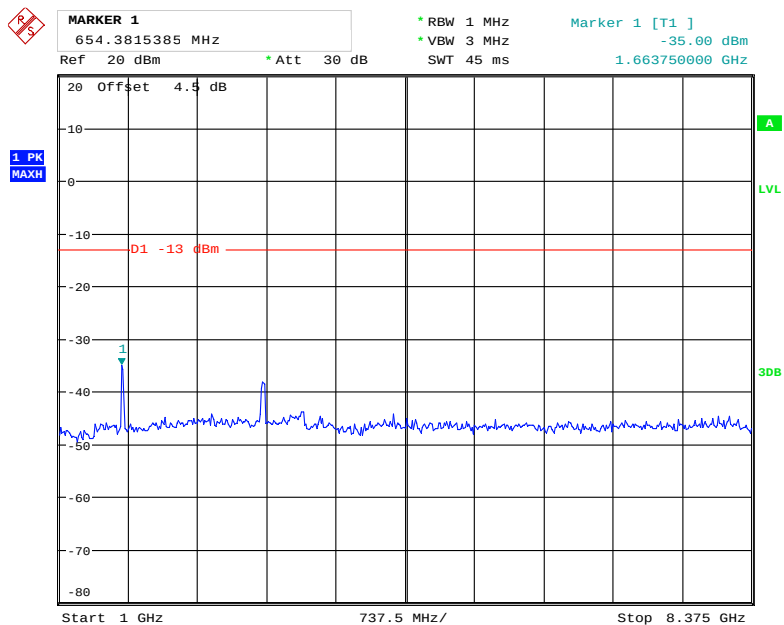
LTE Band 19 (Middle Channel)

QPSK_5 MHz



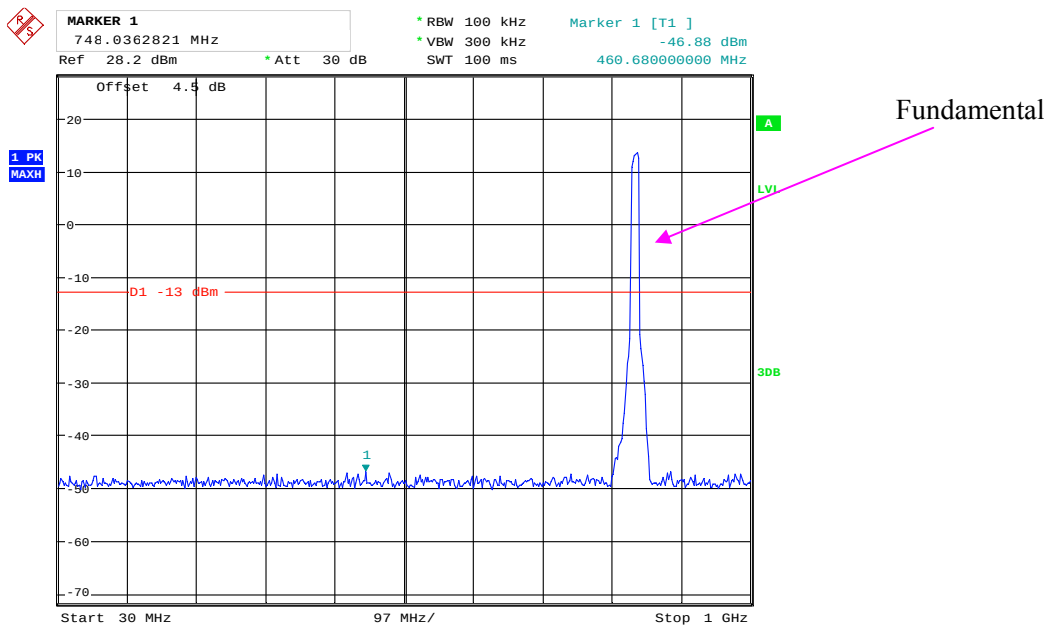
Fundamental

Date: 31.OCT.2018 11:08:45

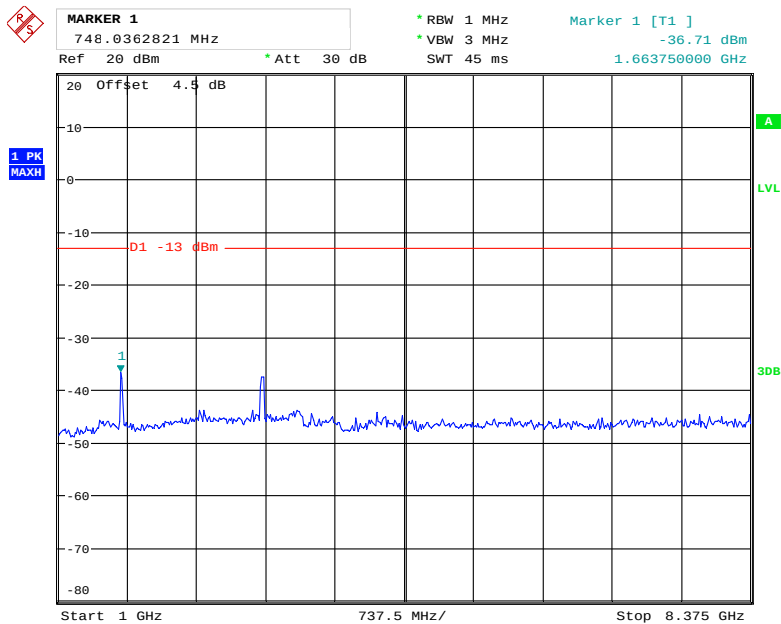


Date: 31.OCT.2018 11:08:58

QPSK_10 MHz

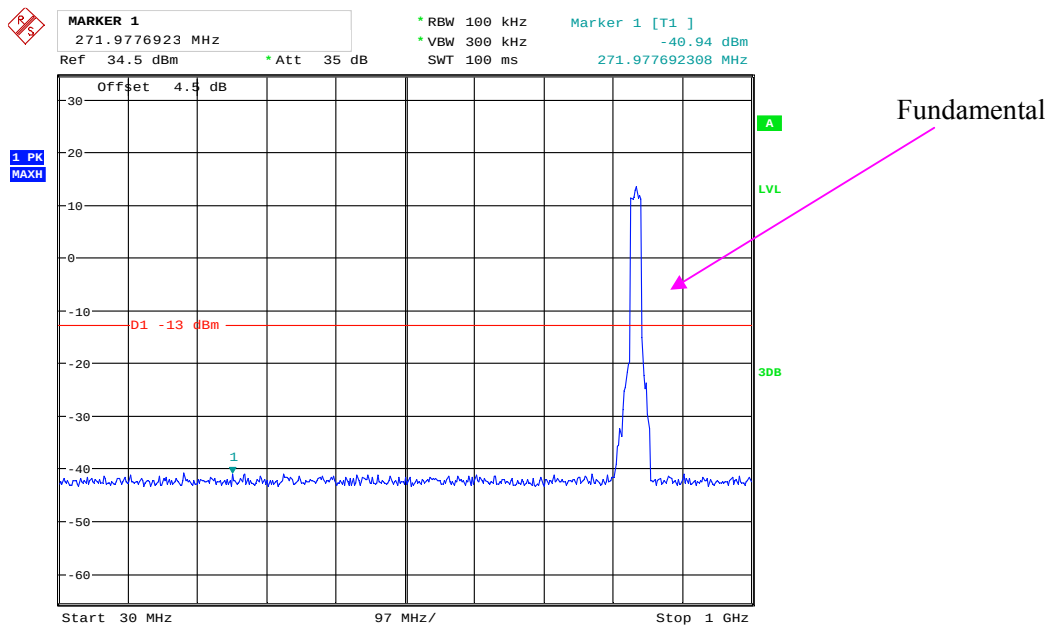


Date: 31.OCT.2018 11:09:35

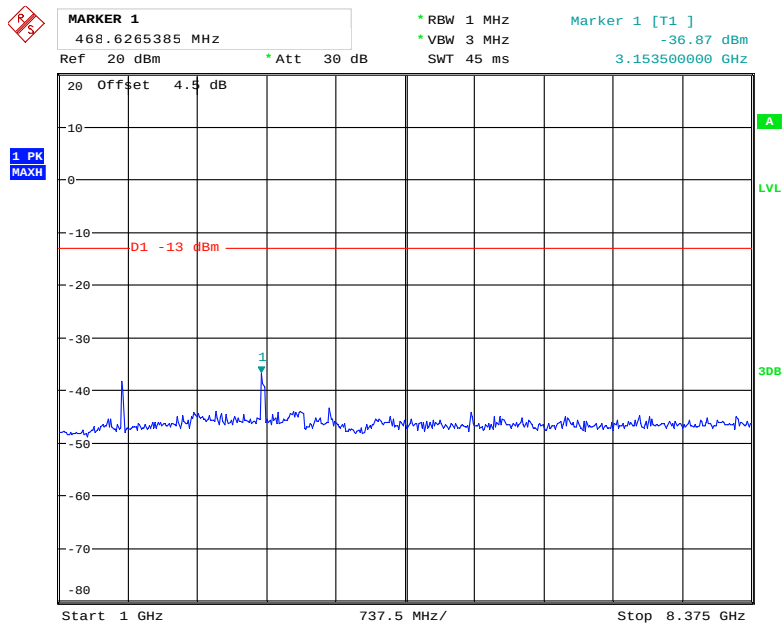


Date: 31.OCT.2018 11:09:51

QPSK_15 MHz



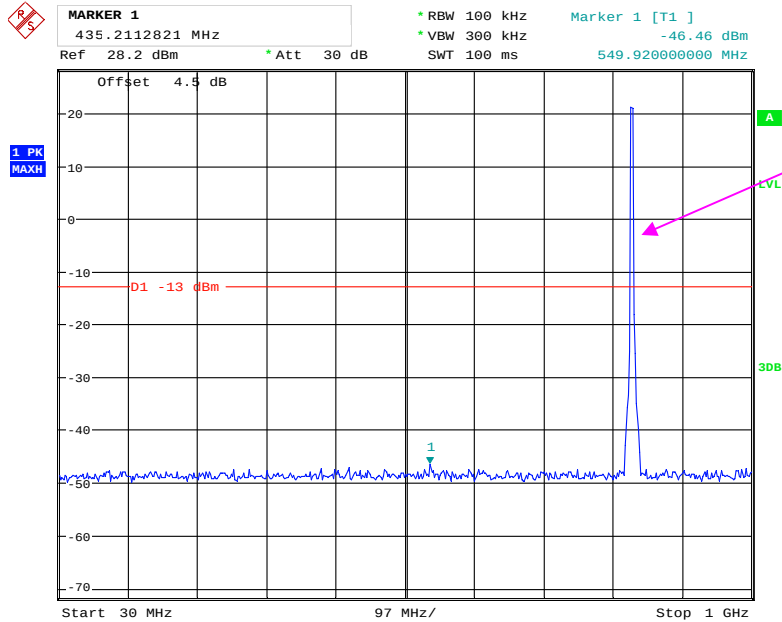
Date: 31.OCT.2018 11:45:42



Date: 31.OCT.2018 11:10:46

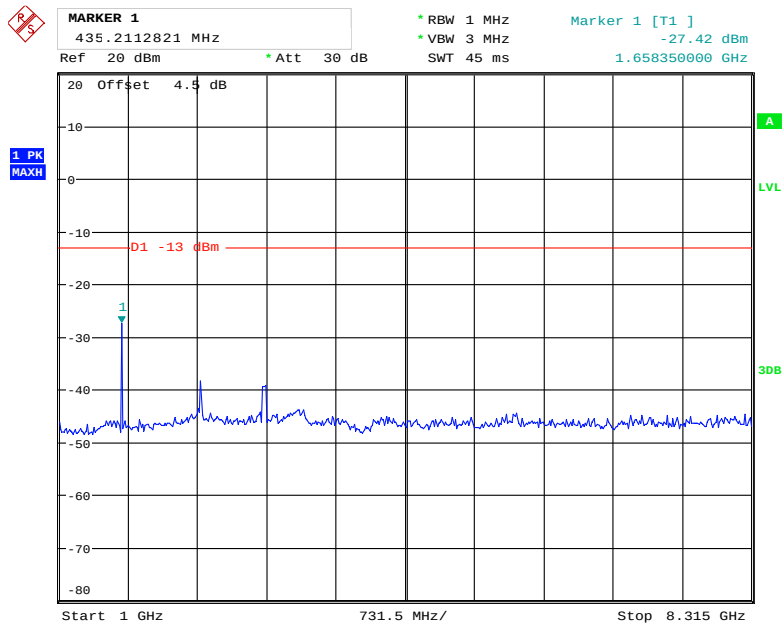
LTE Band 26 (Middle Channel)

QPSK_1.4 MHz



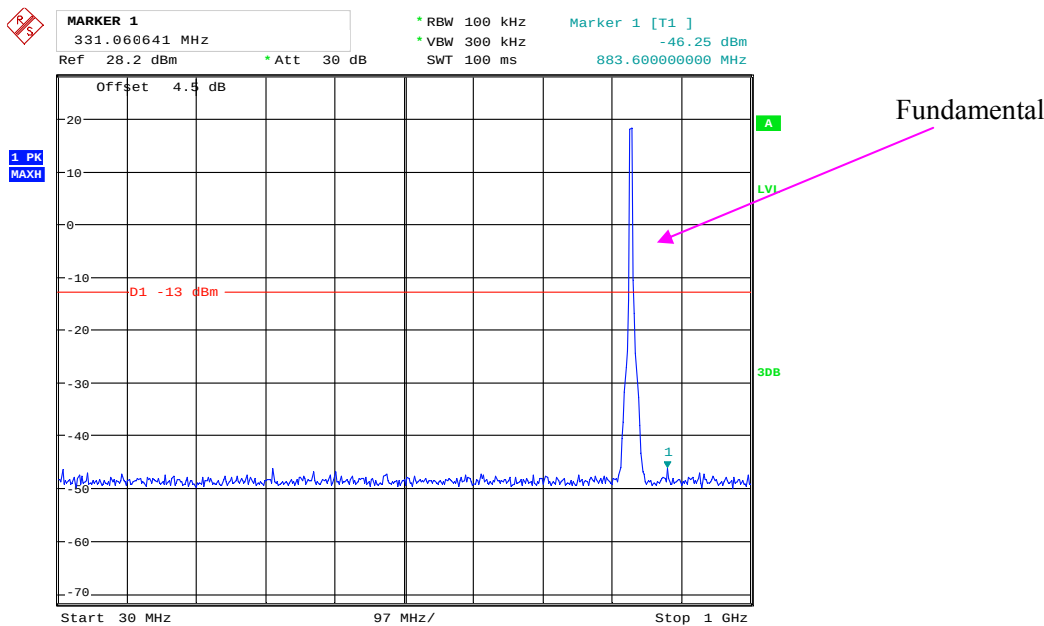
Fundamental

Date: 31.OCT.2018 11:11:25

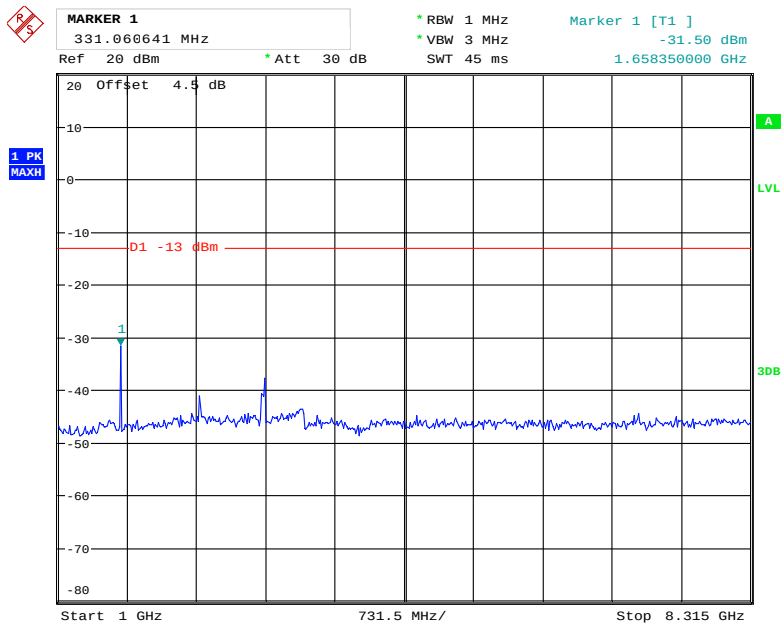


Date: 31.OCT.2018 11:11:41

QPSK_3 MHz

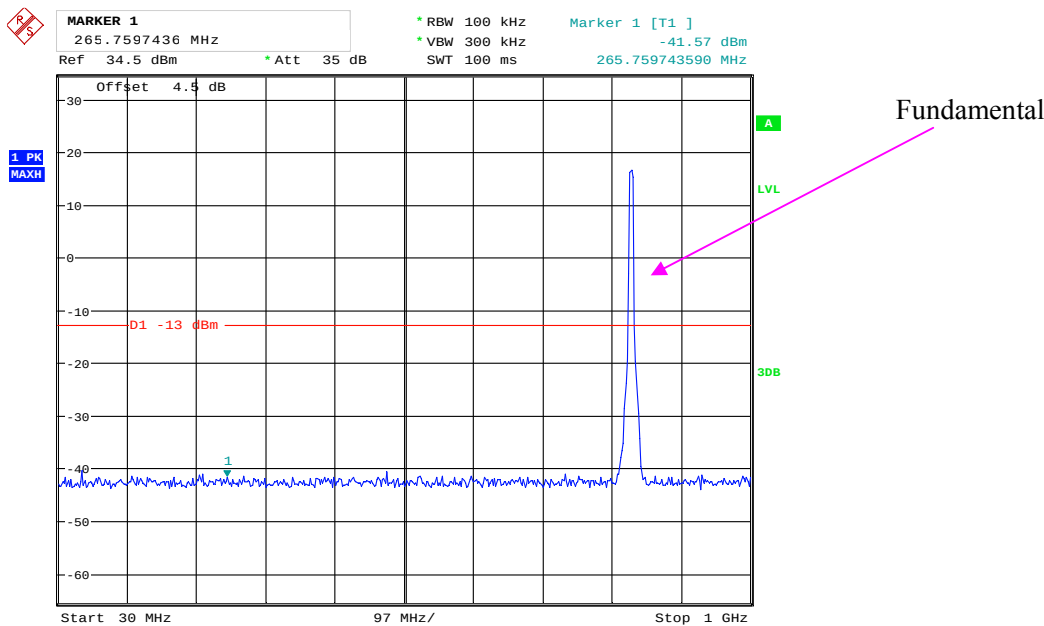


Date: 31.OCT.2018 11:12:19

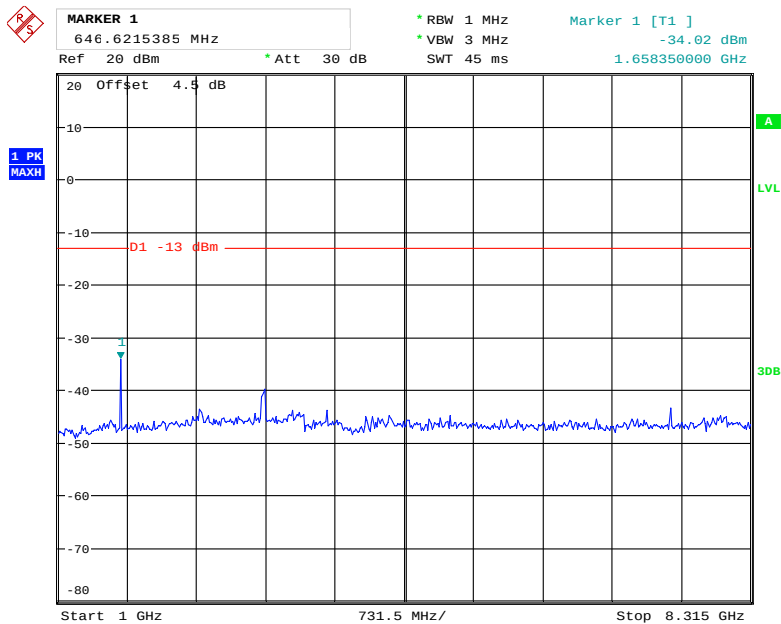


Date: 31.OCT.2018 11:12:34

QPSK_5 MHz

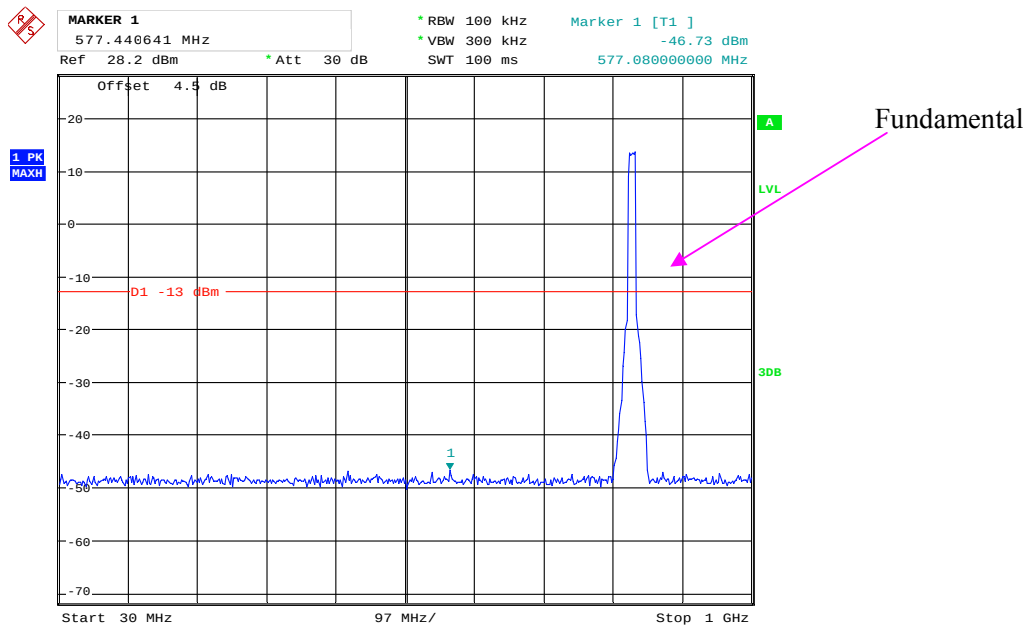


Date: 31.OCT.2018 11:46:45

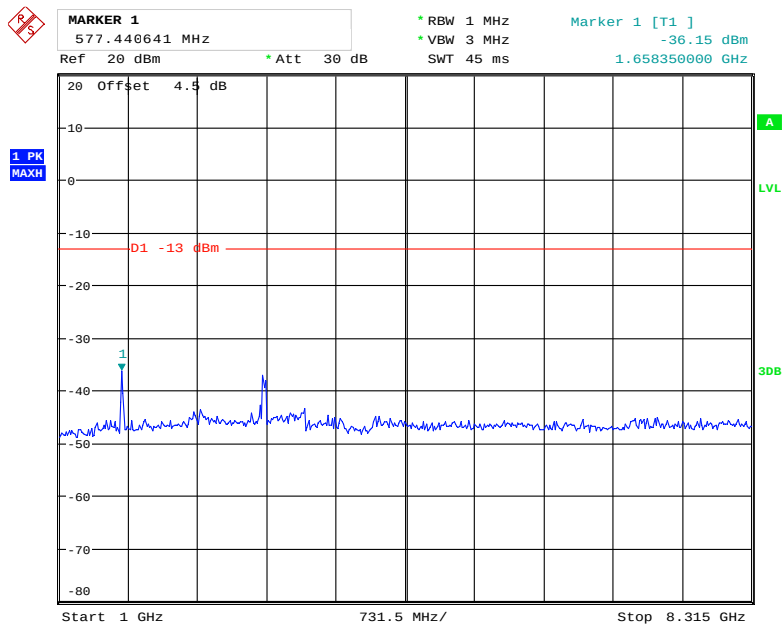


Date: 31.OCT.2018 11:13:29

QPSK_10 MHz

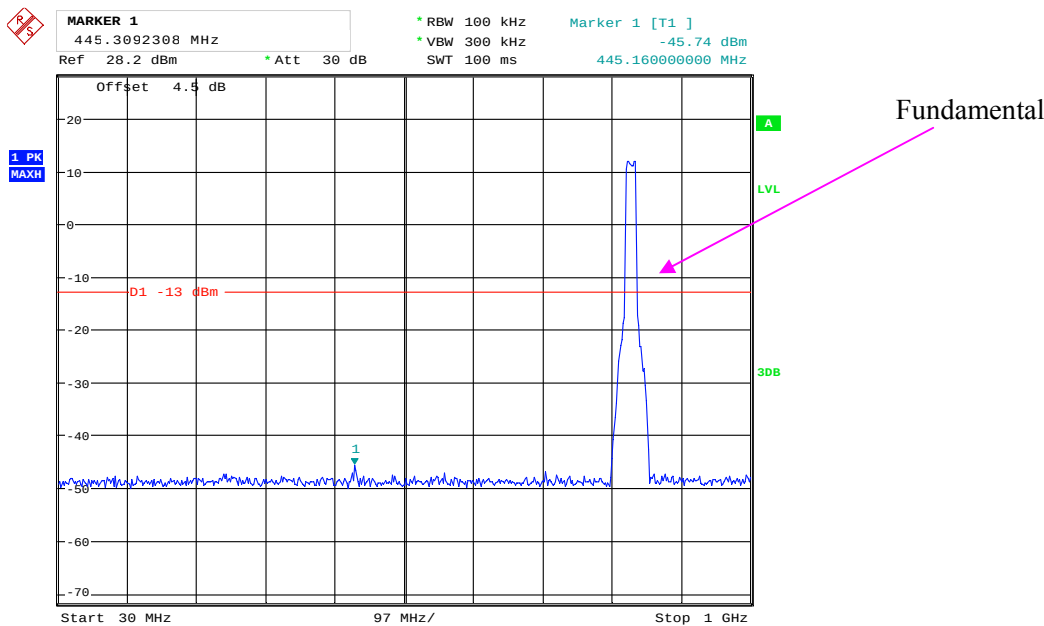


Date: 31.OCT.2018 11:14:07

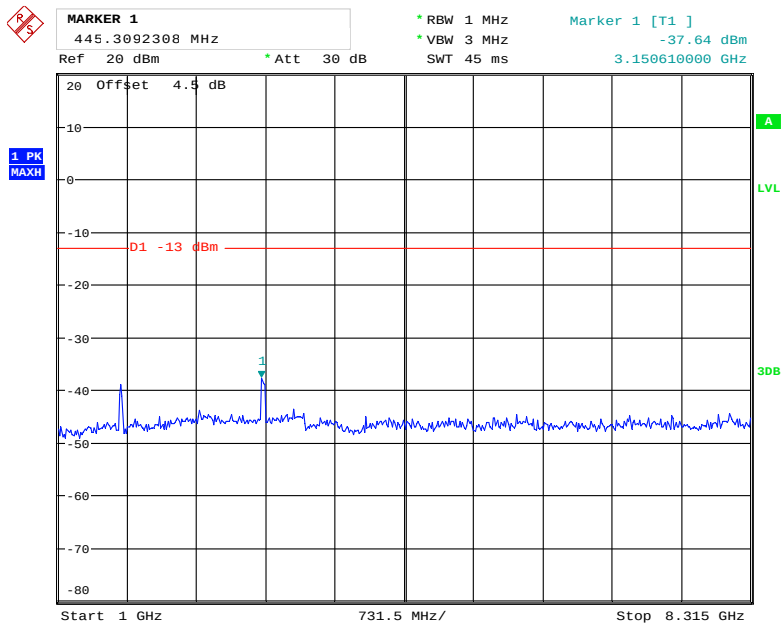


Date: 31.OCT.2018 11:14:20

QPSK_15 MHz



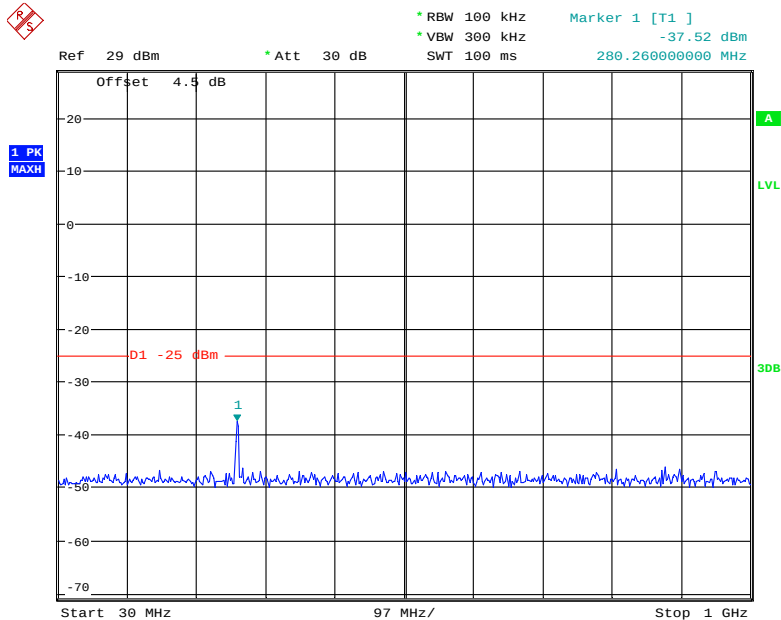
Date: 31.OCT.2018 11:15:00



Date: 31.OCT.2018 11:15:13

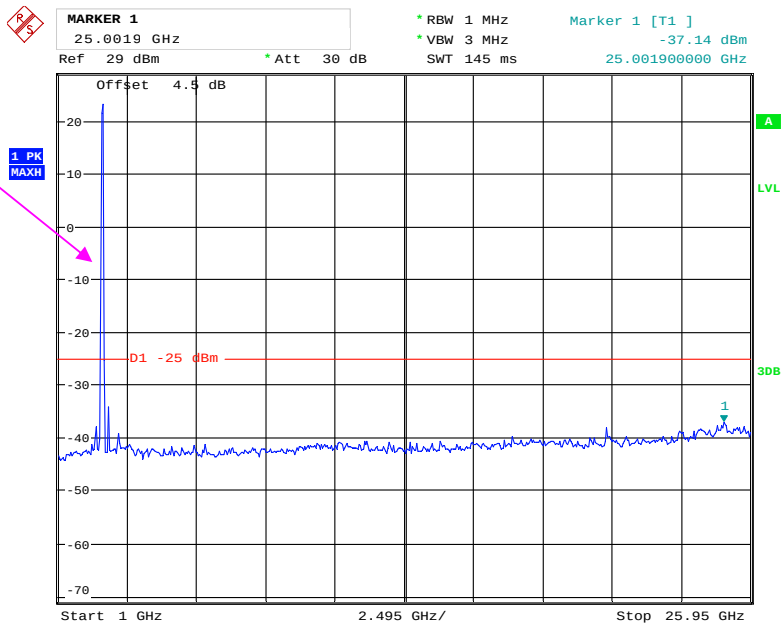
LTE Band 38 (Middle Channel)

QPSK_5 MHz



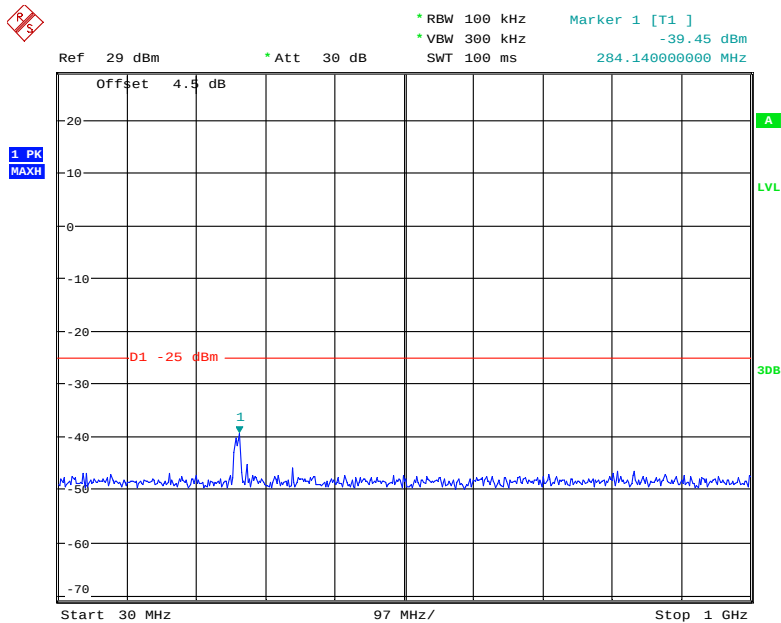
Date: 1.NOV.2018 09:08:47

Fundamental



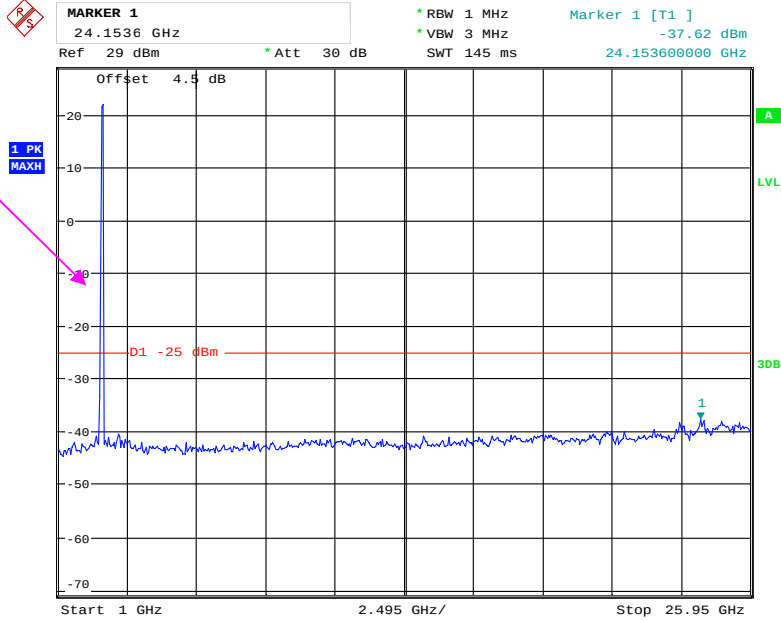
Date: 1.NOV.2018 09:06:18

QPSK_10 MHz



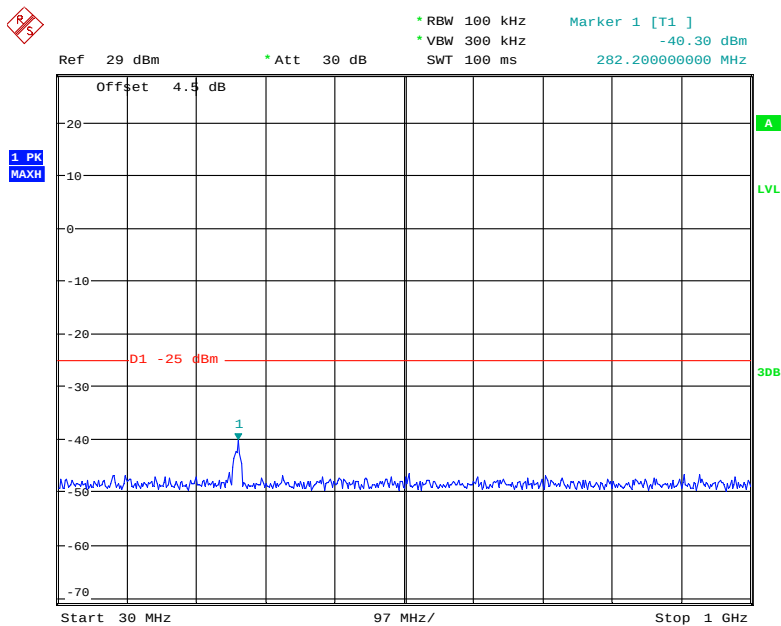
Date: 1.NOV.2018 09:08:33

Fundamental



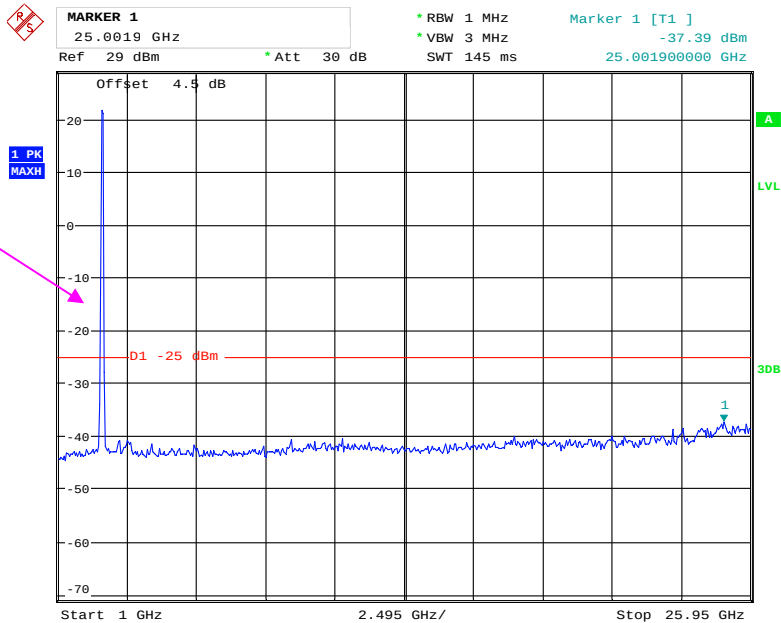
Date: 1.NOV.2018 09:06:40

QPSK_15 MHz



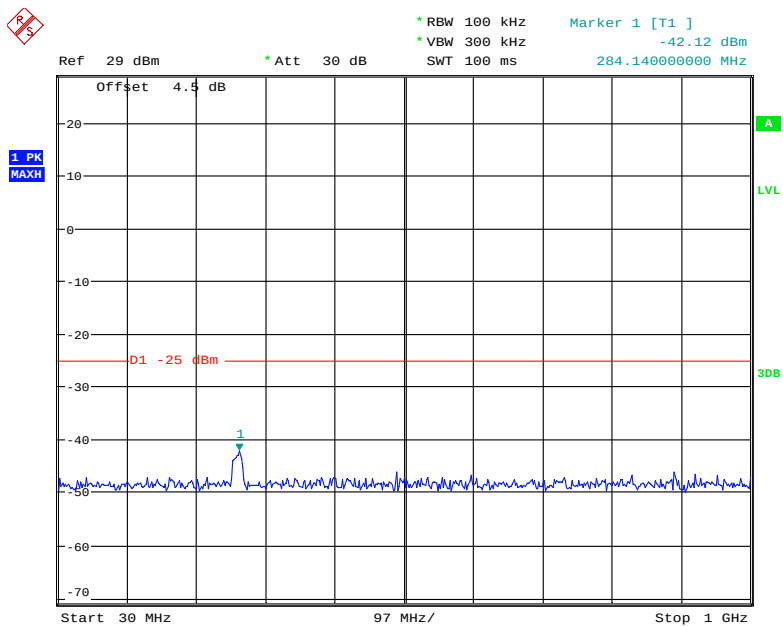
Date: 1.NOV.2018 09:08:22

Fundamental



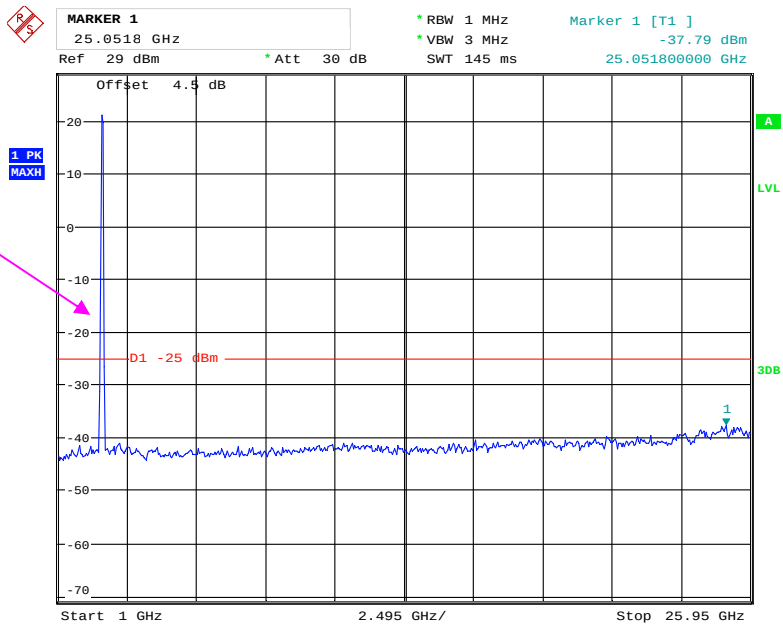
Date: 1.NOV.2018 09:06:57

QPSK_20 MHz



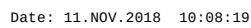
Date: 1.NOV.2018 09:08:11

Fundamental



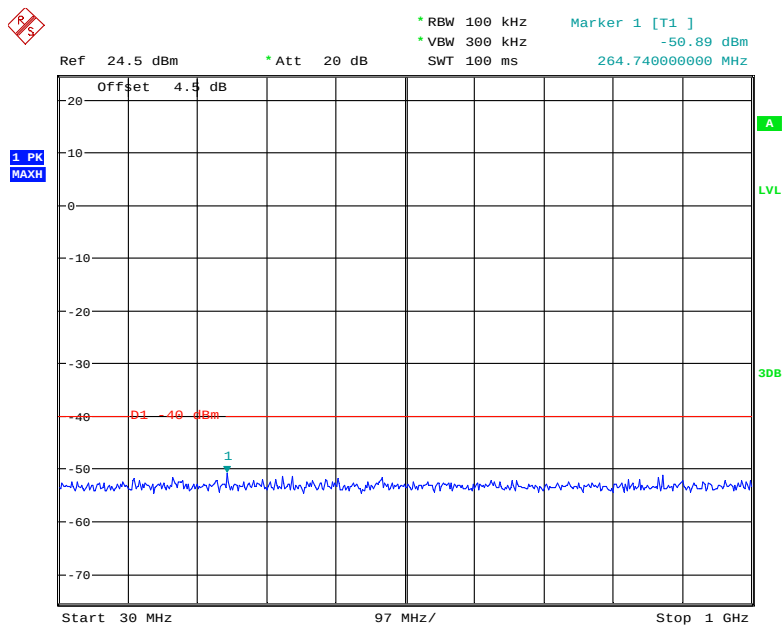
Date: 1.NOV.2018 09:07:22

QPSK_5 MHz



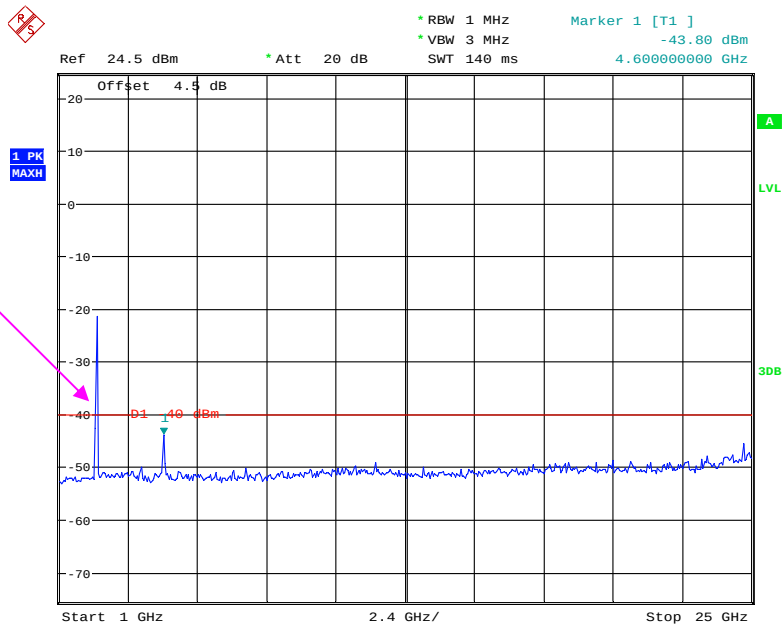
Date: 11.NOV.2018 10:47:11

QPSK_10 MHz



Date: 11.NOV.2018 10:48:13

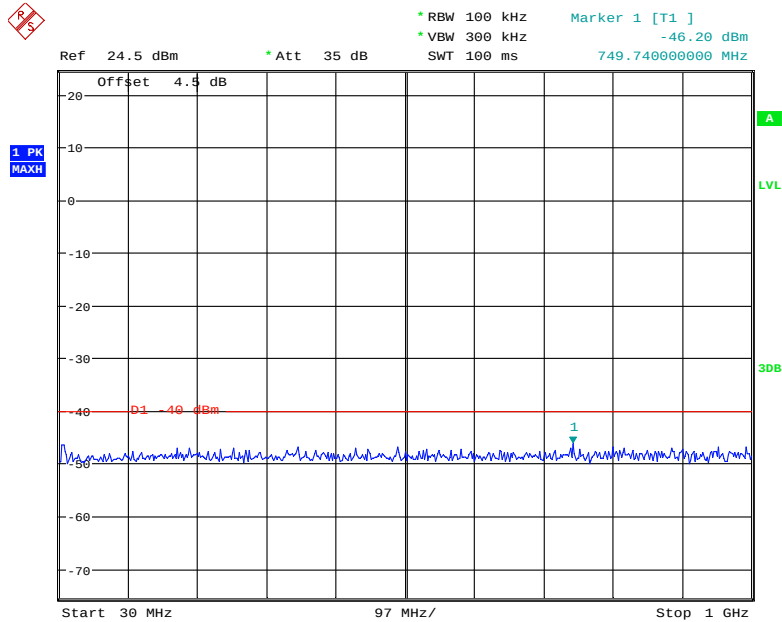
Fundamental test with Band reject Filter



Date: 11.NOV.2018 10:47:45

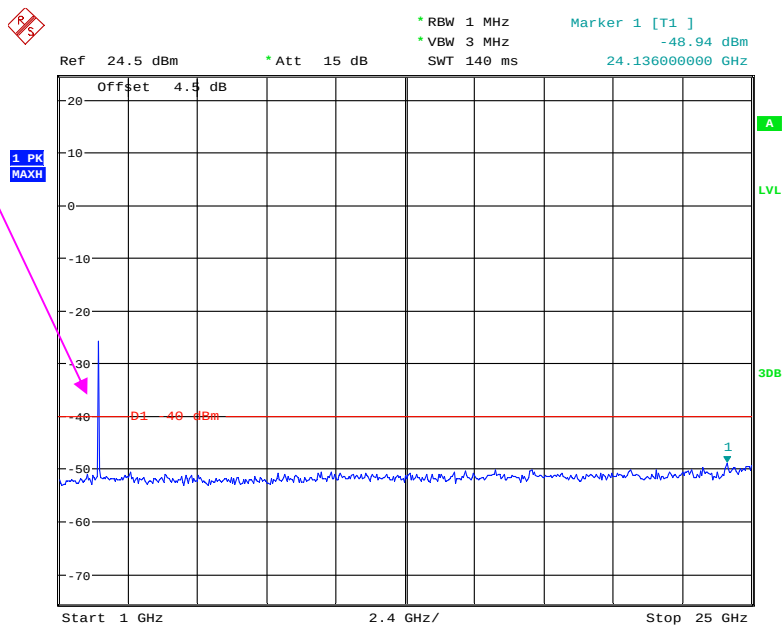
LTE Band 40 (2350-2360MHz Middle Channel)

QPSK_5 MHz



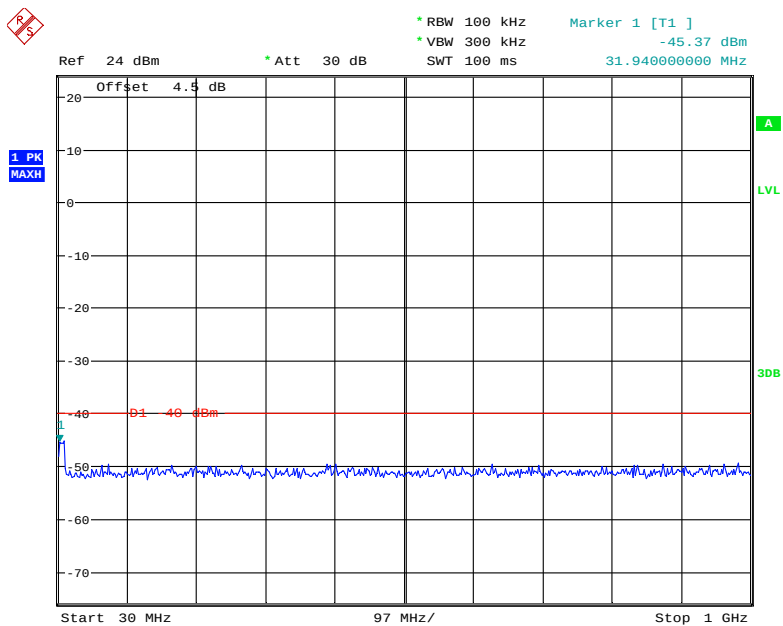
Date: 11.NOV.2018 10:07:26

Fundamental test with Band reject Filter



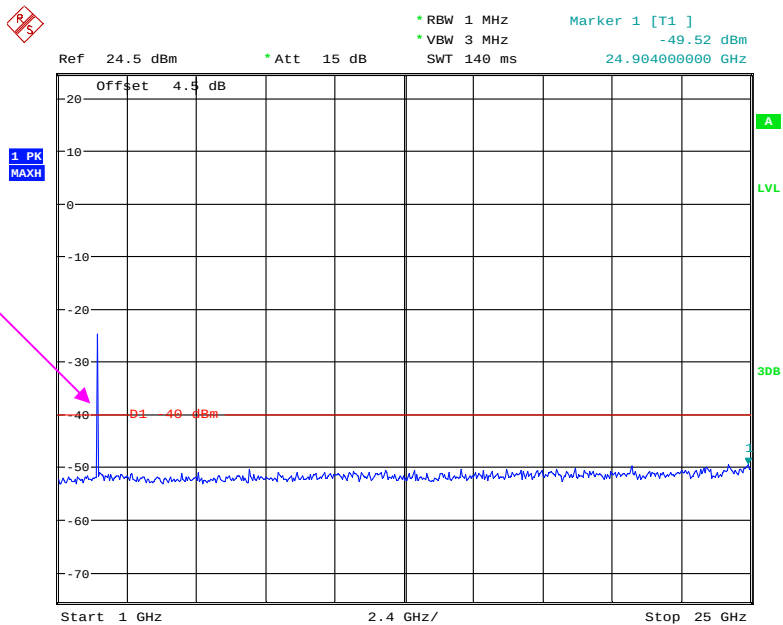
Date: 11.NOV.2018 10:46:03

QPSK_10 MHz



Date: 11.NOV.2018 10:04:22

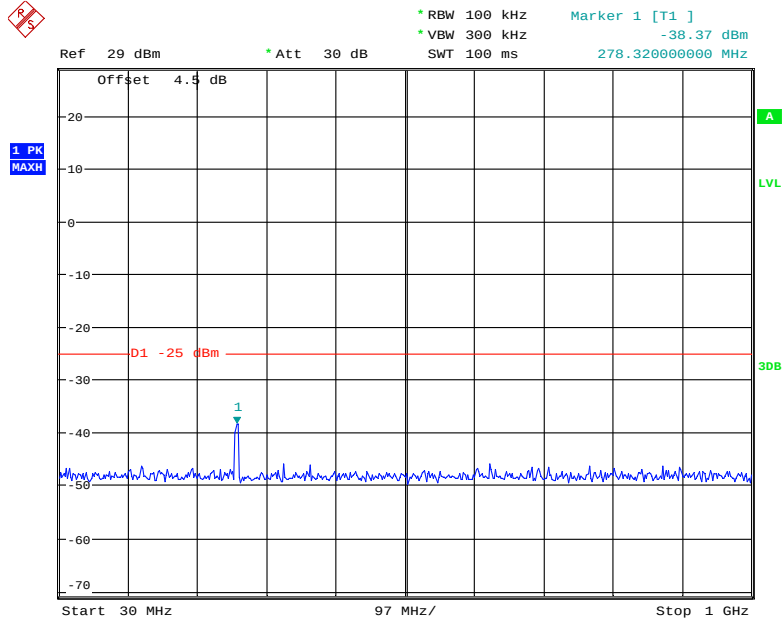
Fundamental
test with
Band reject
Filter



Date: 11.NOV.2018 10:45:20

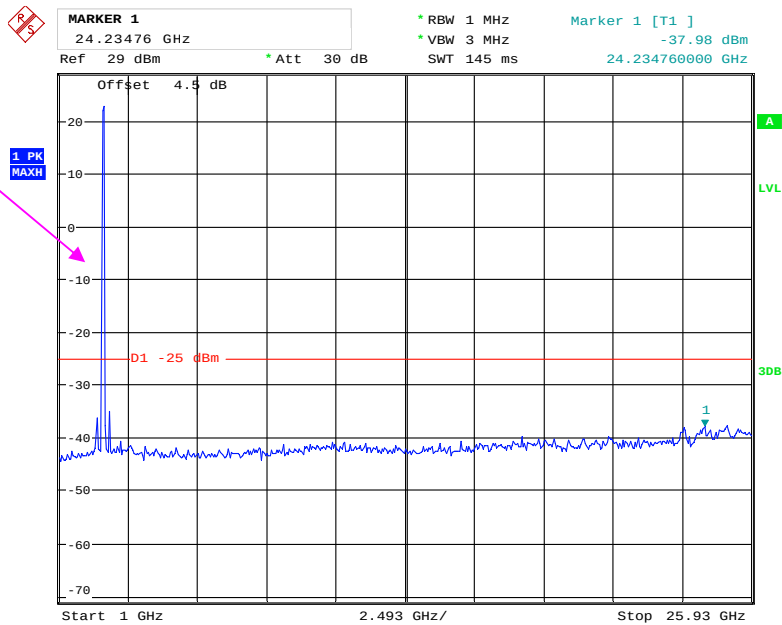
LTE Band 41 (Middle Channel)

QPSK_5 MHz



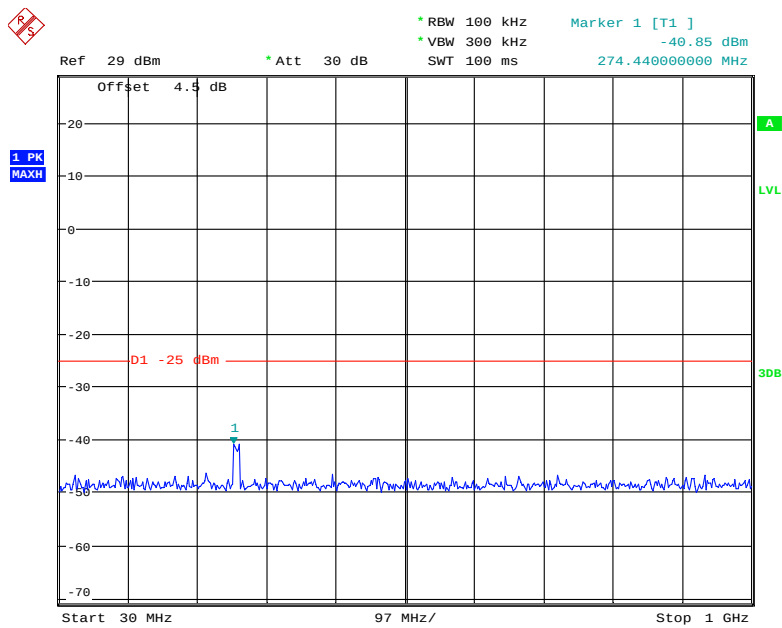
Date: 1.NOV.2018 09:09:31

Fundamental

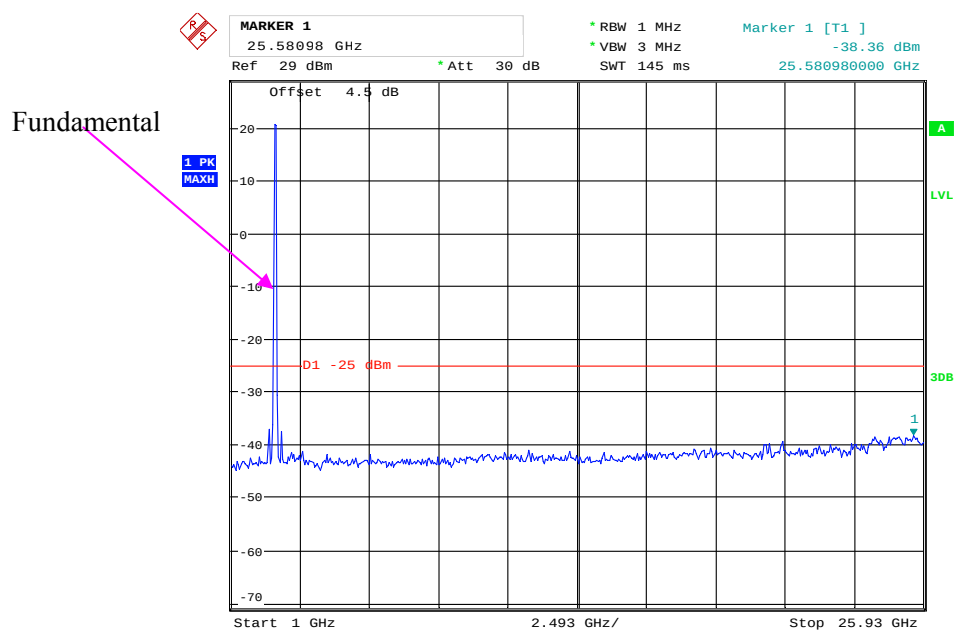


Date: 1.NOV.2018 09:12:40

QPSK_10 MHz

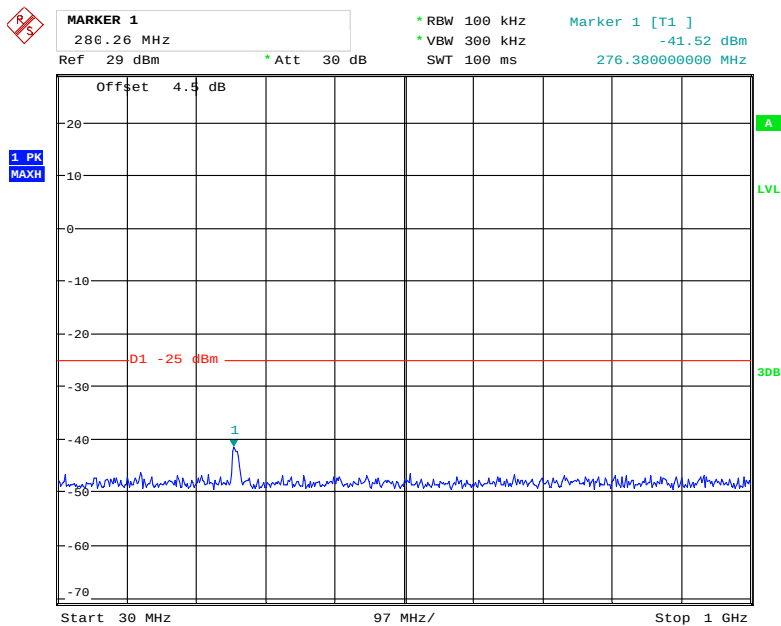


Date: 1.NOV.2018 09:09:43



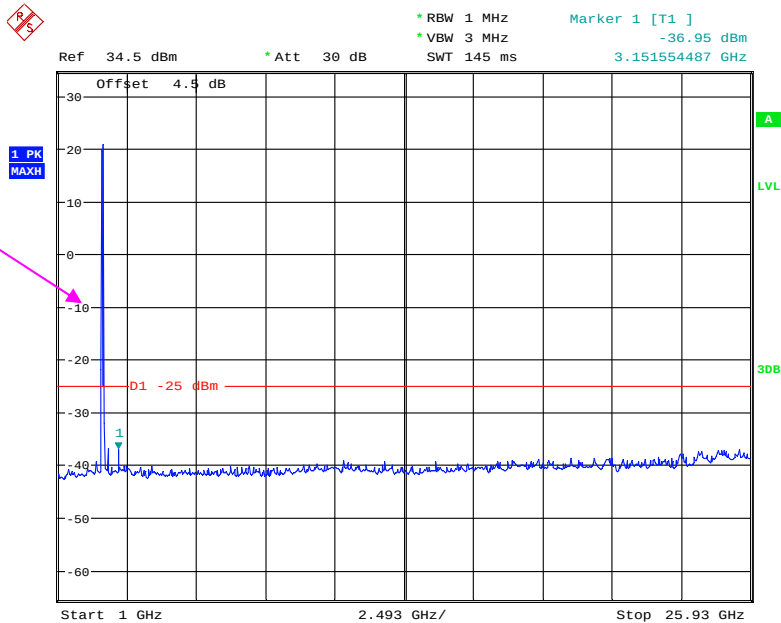
Date: 1.NOV.2018 09:12:09

QPSK_15 MHz



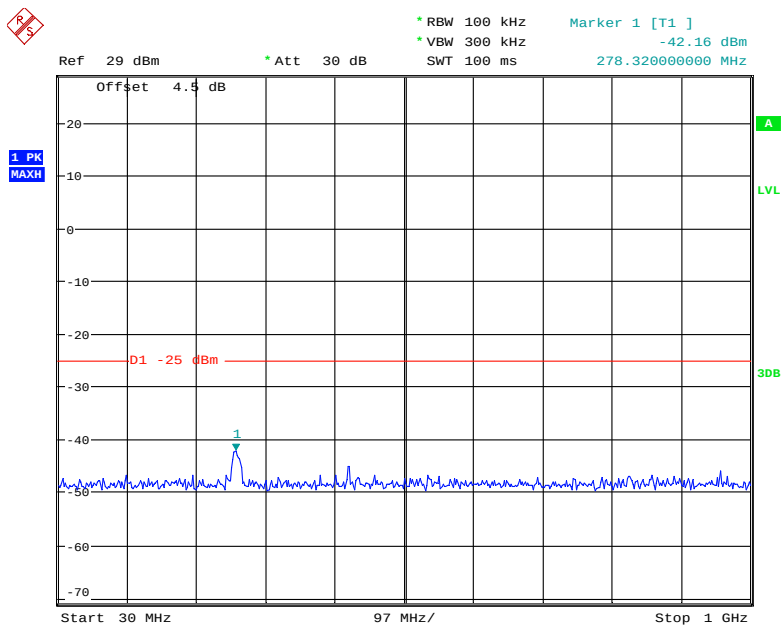
Date: 1.NOV.2018 09:09:59

Fundamental



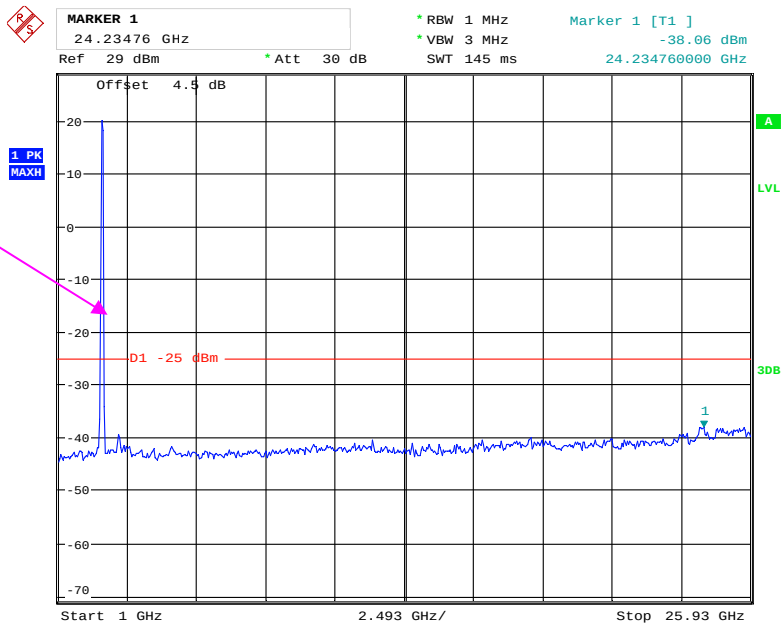
Date: 17.NOV.2018 16:15:21

QPSK_20 MHz



Date: 1.NOV.2018 09:10:13

Fundamental



Date: 1.NOV.2018 09:11:02

FCC §2.1053, §22.917 & §24.238 & §27.53&§90.691 - SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053, §22.917, § 24.238 and § 27.53&§90.691.

Test Procedure

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

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

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

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

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2017-12-11	2018-12-11
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2018-09-05	2019-09-05
HP	Amplifier	8447D	2727A05902	2018-09-05	2019-09-05
Agilent	Signal Generator	E8247C	MY43321350	2017-12-11	2018-12-11
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2016-11-18	2019-11-18
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-2823-02	1007726-01 1302	2016-11-18	2019-11-18
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2018-06-27	2019-06-27
R&S	Spectrum Analyzer	8564E	3943A01781	2018-01-04	2019-01-04
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2016-11-18	2019-11-18
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-01 1302	2016-11-18	2019-11-18
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2018-06-27	2019-06-27

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

Test Data**Environmental Conditions**

Temperature:	27 °C
Relative Humidity:	39 %
ATM Pressure:	100.7 kPa

* The testing was performed by Tyler Pan & Vern Shen on 2018-10-28

EUT Operation Mode: Transmitting

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)			
GPRS850, Frequency:836.600 MHz								
1673.200	H	45.38	-68.83	10.6	0.73	-59.0	-13.0	46.0
1673.200	V	45.96	-68.85	10.6	0.73	-59.0	-13.0	46.0
2509.800	H	45.87	-67.15	13.1	1.25	-55.3	-13.0	42.3
2509.800	V	46.55	-66.5	13.1	1.25	-54.6	-13.0	41.6
3346.400	H	45.72	-64.94	13.8	1.61	-52.7	-13.0	39.7
3346.400	V	46.87	-63.84	13.8	1.61	-51.6	-13.0	38.6
314.000	H	46.32	-61.78	0.0	0.53	-62.3	-13.0	49.3
314.000	V	47.55	-62.18	0.0	0.53	-62.7	-13.0	49.7
WCDMA Band V R99,Frequency:836.600 MHz								
1673.200	H	44.66	-69.55	10.6	0.73	-59.7	-13.0	46.7
1673.200	V	43.51	-71.3	10.6	0.73	-61.4	-13.0	48.4
2509.800	H	45.43	-67.59	13.1	1.25	-55.7	-13.0	42.7
2509.800	V	45.85	-67.2	13.1	1.25	-55.3	-13.0	42.3
3346.400	H	45.42	-65.24	13.8	1.61	-53.0	-13.0	40.0
3346.400	V	46.41	-64.3	13.8	1.61	-52.1	-13.0	39.1
328.000	H	47.58	-59.99	0.0	0.55	-60.5	-13.0	47.5
328.000	V	49.95	-59.52	0.0	0.55	-60.1	-13.0	47.1

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)			
GPRS1900, Frequency:1880.000 MHz								
3760.000	H	47.73	-61.07	13.8	1.63	-48.9	-13.0	35.9
3760.000	V	47.84	-60.83	13.8	1.63	-48.7	-13.0	35.7
5640.000	H	47.09	-58.94	14.0	1.31	-46.2	-13.0	33.2
5640.000	V	47.82	-58.09	14.0	1.31	-45.4	-13.0	32.4
267.000	H	43.69	-65.35	0.0	0.51	-65.9	-13.0	52.9
267.000	V	46.88	-64.87	0.0	0.51	-65.4	-13.0	52.4
WCDMA Band II, R99, Frequency:1880.000 MHz								
3760.000	H	46.99	-61.81	13.8	1.63	-49.7	-13.0	36.7
3760.000	V	46.62	-62.05	13.8	1.63	-49.9	-13.0	36.9
5640.000	H	54.07	-51.96	14.0	1.31	-39.3	-13.0	26.3
5640.000	V	56.31	-49.6	14.0	1.31	-36.9	-13.0	23.9
348.000	H	46.87	-59.93	0.0	0.56	-60.5	-13.0	47.5
348.000	V	48.92	-60.19	0.0	0.56	-60.8	-13.0	47.8
WCDMA Band IV, R99, Frequency: 1732.600 MHz								
3465.200	H	48.41	-61.83	13.9	1.62	-49.5	-13.0	36.5
3465.200	V	48.21	-62.07	13.9	1.62	-49.8	-13.0	36.8
5197.500	H	53.01	-53.41	14.0	1.52	-40.9	-13.0	27.9
5197.500	V	54.17	-52.32	14.0	1.52	-39.8	-13.0	26.8
312.400	H	47.37	-60.8	0.0	0.53	-61.3	-13.0	48.3
312.400	V	49.95	-59.81	0.0	0.53	-60.3	-13.0	47.3

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	48.74	-60.06	13.76	1.63	-47.93	-13.00	34.93
3760.00	V	48.12	-60.55	13.76	1.63	-48.42	-13.00	35.42
5640.00	H	55.13	-50.90	14.02	1.31	-38.19	-13.00	25.19
5640.00	V	52.44	-53.47	14.02	1.31	-40.76	-13.00	27.76
272.00	H	42.54	-66.44	0.00	0.51	-66.95	-13.00	53.95
272.00	V	46.37	-65.11	0.00	0.51	-65.62	-13.00	52.62

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	48.73	-61.51	13.91	1.62	-49.22	-13.00	36.22
3465.00	V	46.84	-63.44	13.91	1.62	-51.15	-13.00	38.15
5197.50	H	56.77	-49.65	14.00	1.52	-37.17	-13.00	24.17
5197.50	V	52.66	-53.83	14.00	1.52	-41.35	-13.00	28.35
357.00	H	43.63	-62.83	0.00	0.57	-63.40	-13.00	50.40
357.00	V	45.89	-63.06	0.00	0.57	-63.63	-13.00	50.63

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	46.52	-67.70	10.61	0.73	-57.82	-13.00	44.82
1673.00	V	46.12	-68.70	10.61	0.73	-58.82	-13.00	45.82
2509.50	H	50.22	-62.80	13.11	1.25	-50.94	-13.00	37.94
2509.50	V	53.39	-59.66	13.11	1.25	-47.80	-13.00	34.80
3346.00	H	46.33	-64.33	13.83	1.61	-52.11	-13.00	39.11
3346.00	V	45.87	-64.84	13.83	1.61	-52.62	-13.00	39.62
311.30	H	55.50	-52.71	0.00	0.53	-53.24	-13.00	40.24
301.60	V	61.56	-48.39	0.00	0.52	-48.91	-13.00	35.91

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	50.13	-56.67	13.93	1.34	-44.08	-25.00	19.08
5070.00	V	47.65	-58.96	13.93	1.34	-46.37	-25.00	21.37
7605.00	H	47.19	-53.17	13.21	1.40	-41.36	-25.00	16.36
7605.00	V	47.25	-53.51	13.21	1.40	-41.70	-25.00	16.70
436.00	H	45.22	-59.38	0.00	0.65	-60.03	-25.00	35.03
436.00	V	47.68	-60.16	0.00	0.65	-60.81	-25.00	35.81

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	45.86	-67.64	9.08	1.22	-59.78	-13.00	46.78
1415.00	V	45.39	-68.64	9.08	1.22	-60.78	-13.00	47.78
2122.50	H	48.57	-64.22	11.27	1.11	-54.06	-13.00	41.06
2122.50	V	47.95	-64.82	11.27	1.11	-54.66	-13.00	41.66
2830.00	H	45.37	-66.71	13.34	1.36	-54.73	-13.00	41.73
2830.00	V	45.70	-66.61	13.34	1.36	-54.63	-13.00	41.63
90.14	H	58.07	-52.41	0.00	0.36	-52.77	-13.00	39.77
140.54	V	62.35	-50.36	0.00	0.35	-50.71	-13.00	37.71

LTE Band 13 (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: 782.000 MHz								
1564.00	H	45.89	-69.05	9.88	0.92	-60.09	-13.00	47.09
1564.00	V	46.77	-68.59	9.88	0.92	-59.63	-13.00	46.63
2346.00	H	53.51	-58.87	11.71	1.26	-48.42	-13.00	35.42
2346.00	V	53.03	-59.39	11.71	1.26	-48.94	-13.00	35.94
3128.00	H	45.66	-64.99	13.31	1.76	-53.44	-13.00	40.44
3128.00	V	45.81	-64.86	13.31	1.76	-53.31	-13.00	40.31
580.96	H	56.21	-46.32	0.00	0.75	-47.07	-13.00	34.07
596.48	V	59.05	-46.41	0.00	0.76	-47.17	-13.00	34.17

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	45.71	-67.89	9.10	1.23	-60.02	-13.00	47.02
1420.00	V	45.60	-68.50	9.10	1.23	-60.63	-13.00	47.63
2130.00	H	48.61	-64.14	11.22	1.11	-54.03	-13.00	41.03
2130.00	V	48.24	-64.48	11.22	1.11	-54.37	-13.00	41.37
2840.00	H	45.31	-66.73	13.42	1.36	-54.67	-13.00	41.67
2840.00	V	45.47	-66.81	13.42	1.36	-54.75	-13.00	41.75
447.10	H	57.90	-46.64	0.00	0.66	-47.30	-13.00	34.30
519.85	V	56.97	-49.92	0.00	0.72	-50.64	-13.00	37.64

LTE Band 18 (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: 822.500 MHz								
1645.00	H	46.10	-68.34	10.42	0.71	-58.63	-13.00	45.63
1645.00	V	46.10	-68.94	10.42	0.71	-59.23	-13.00	46.23
2467.50	H	55.13	-57.74	12.84	1.26	-46.16	-13.00	33.16
2467.50	V	53.26	-59.68	12.84	1.26	-48.10	-13.00	35.10
3290.00	H	45.39	-65.31	13.60	1.59	-53.30	-13.00	40.30
3290.00	V	45.50	-65.20	13.60	1.59	-53.19	-13.00	40.19
344.25	H	56.63	-50.32	0.00	0.56	-50.88	-13.00	37.88
448.07	V	57.76	-49.97	0.00	0.66	-50.63	-13.00	37.63

LTE Band 19 (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:837.500 MHz								
1675.00	H	46.21	-67.99	10.63	0.73	-58.09	-13.00	45.09
1675.00	V	46.11	-68.69	10.63	0.73	-58.79	-13.00	45.79
2512.50	H	51.79	-61.24	13.11	1.25	-49.38	-13.00	36.38
2512.50	V	51.98	-61.08	13.11	1.25	-49.22	-13.00	36.22
3350.00	H	45.58	-65.07	13.85	1.62	-52.84	-13.00	39.84
3350.00	V	45.70	-65.00	13.85	1.62	-52.77	-13.00	39.77
641.10	H	57.11	-44.73	0.00	0.83	-45.56	-13.00	32.56
134.76	V	58.30	-53.84	0.00	0.34	-54.18	-13.00	41.18

LTE Band 26 (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:831.500 MHz								
1663.00	H	45.71	-68.59	10.54	0.72	-58.77	-13.00	45.77
1663.00	V	46.22	-68.68	10.54	0.72	-58.86	-13.00	45.86
2494.50	H	51.47	-61.51	13.06	1.24	-49.69	-13.00	36.69
2494.50	V	52.27	-60.72	13.06	1.24	-48.90	-13.00	35.90
3326.00	H	45.25	-65.47	13.73	1.60	-53.34	-13.00	40.34
3326.00	V	45.46	-65.29	13.73	1.60	-53.16	-13.00	40.16
288.69	H	50.69	-58.09	0.00	0.52	-58.61	-13.00	45.61
377.26	V	58.54	-50.04	0.00	0.59	-50.63	-13.00	37.63

LTE Band 38 (30MHz-26.5 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)			
QPSK,Frequency:2595.000 MHz								
5190.00	H	50.01	-56.41	13.99	1.51	-43.93	-25.00	18.93
5190.00	V	49.78	-56.69	13.99	1.51	-44.21	-25.00	19.21
7785.00	H	46.33	-54.11	13.32	1.53	-42.32	-25.00	17.32
7785.00	V	46.54	-54.15	13.32	1.53	-42.36	-25.00	17.36
383.08	H	57.31	-48.15	0.00	0.59	-48.74	-25.00	23.74
235.64	V	57.87	-54.16	0.00	0.50	-54.66	-25.00	29.66

LTE Band 40 (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:2310.000 MHz								
4620.00	H	51.85	-56.60	14.24	1.81	-44.17	-40.00	4.17
4620.00	V	49.96	-58.59	14.24	1.81	-46.16	-40.00	6.16
6930.00	H	48.61	-53.69	13.64	1.81	-41.86	-40.00	1.86
6930.00	V	46.77	-55.39	13.64	1.81	-43.56	-40.00	3.56
268.00	H	43.68	-65.34	0.00	0.51	-65.85	-40.00	25.85
268.00	V	47.58	-64.12	0.00	0.51	-64.63	-40.00	24.63
QPSK,Frequency:2355.000 MHz								
4710.00	H	53.12	-55.39	14.39	1.66	-42.66	-40.00	2.66
4710.00	V	47.04	-61.57	14.39	1.66	-48.84	-40.00	8.84
7065.00	H	48.94	-52.89	13.31	1.76	-41.34	-40.00	1.34
7065.00	V	45.67	-56.08	13.31	1.76	-44.53	-40.00	4.53
398.00	H	43.86	-61.03	0.00	0.61	-61.64	-40.00	21.64
398.00	V	47.98	-60.23	0.00	0.61	-60.84	-40.00	20.84

LTE Band 41 (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:2593.000 MHz								
5190.00	H	50.89	-55.52	13.99	1.50	-43.03	-25.00	18.03
5190.00	V	49.36	-57.10	13.99	1.50	-44.61	-25.00	19.61
7785.00	H	47.06	-53.37	13.32	1.53	-41.58	-25.00	16.58
7785.00	V	46.83	-53.86	13.32	1.53	-42.07	-25.00	17.07
358.00	H	43.63	-62.79	0.00	0.57	-63.36	-25.00	38.36
358.00	V	46.88	-62.05	0.00	0.57	-62.62	-25.00	37.62

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 & §90.691- BAND EDGES

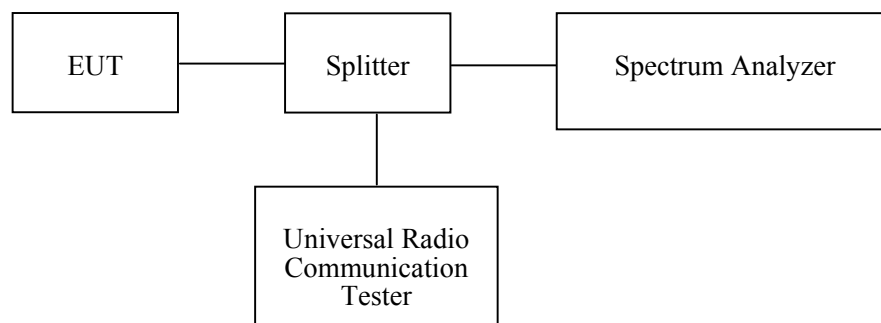
Applicable Standard

FCC § 2.1053, §22.917, § 24.238 and § 27.53& §90.691.

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
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	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	Each time	N/A
R&S	EMI Test Receiver	ESPI	100120	2017-12-11	2018-12-11
R&S	Spectrum Analyzer	FSU 26	200256	2018-01-04	2019-01-04
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	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**

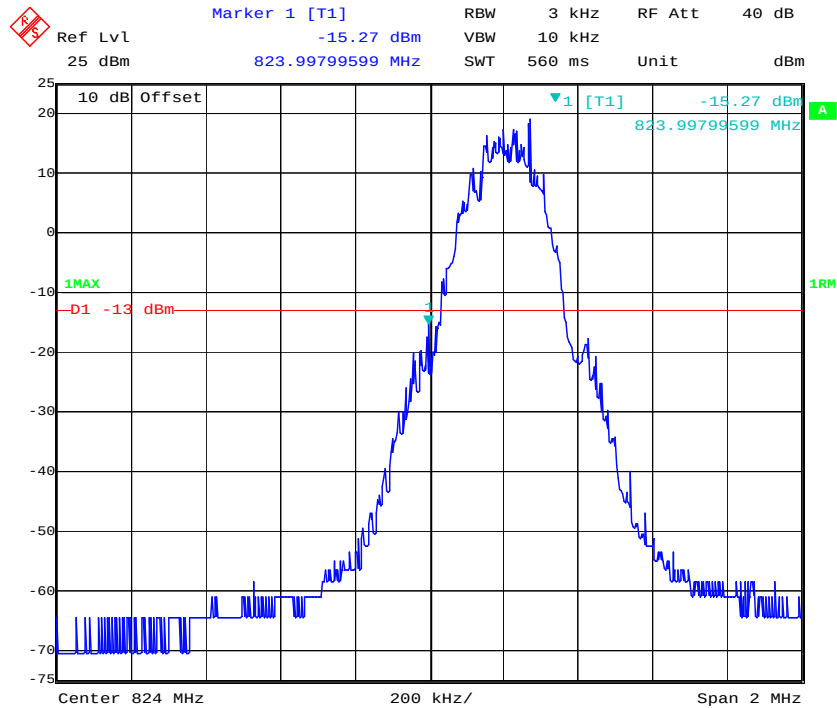
Temperature:	26.5~28.3°C
Relative Humidity:	38 ~56 %
ATM Pressure:	99.7~101.2 kPa

The testing was performed by Elena Lei from 2018-11-02 to 2018-11-20.

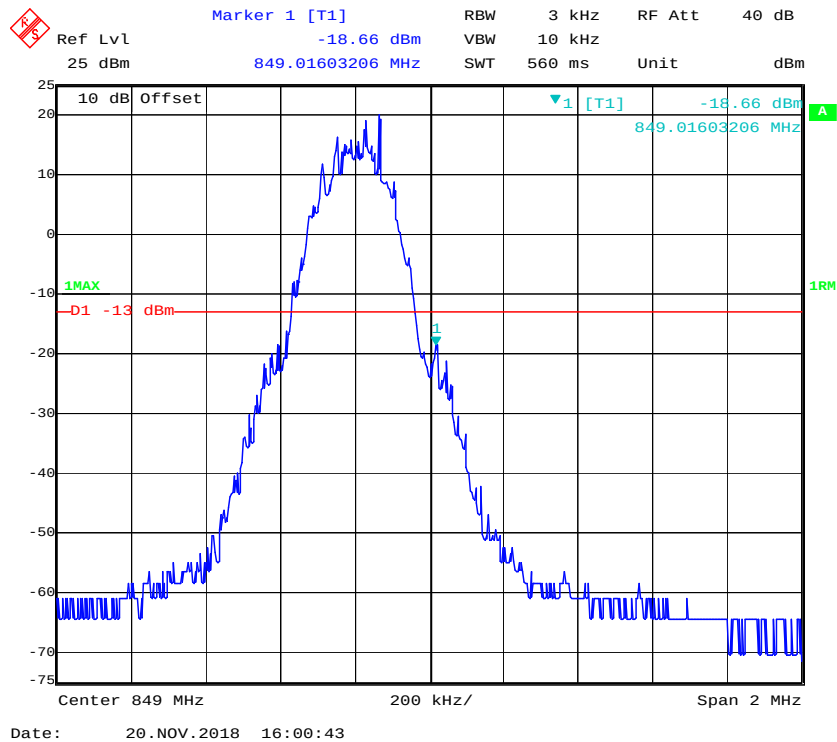
Test Mode: Transmitting

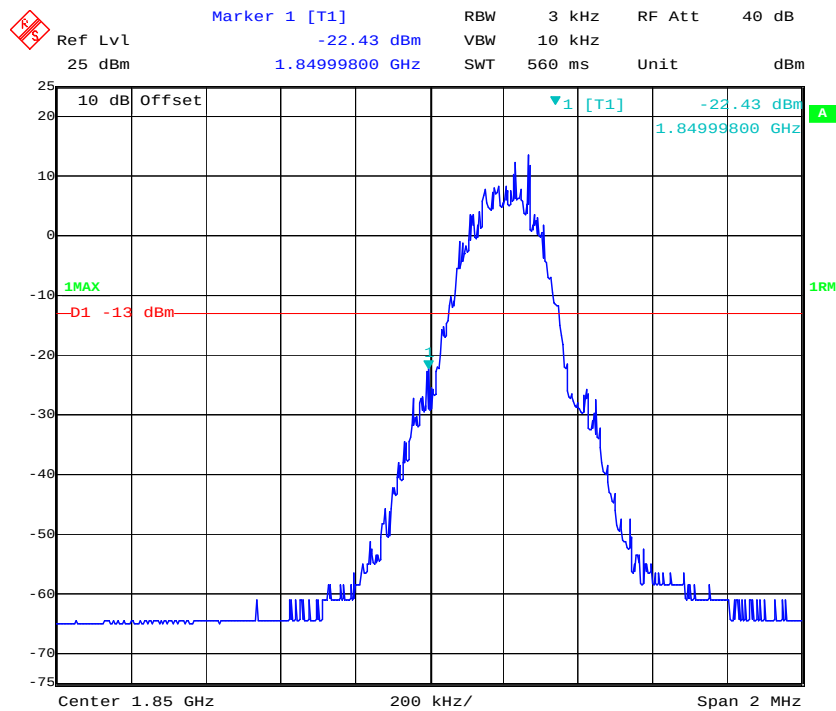
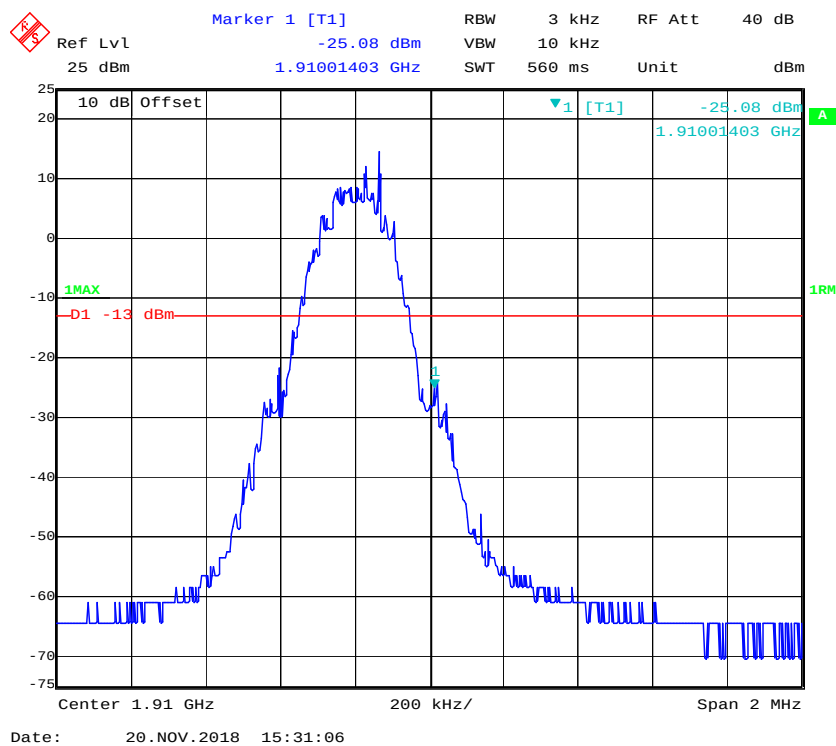
Test Result: Compliance. Please refer to the following plots.

GSM 850, Left Band Edge

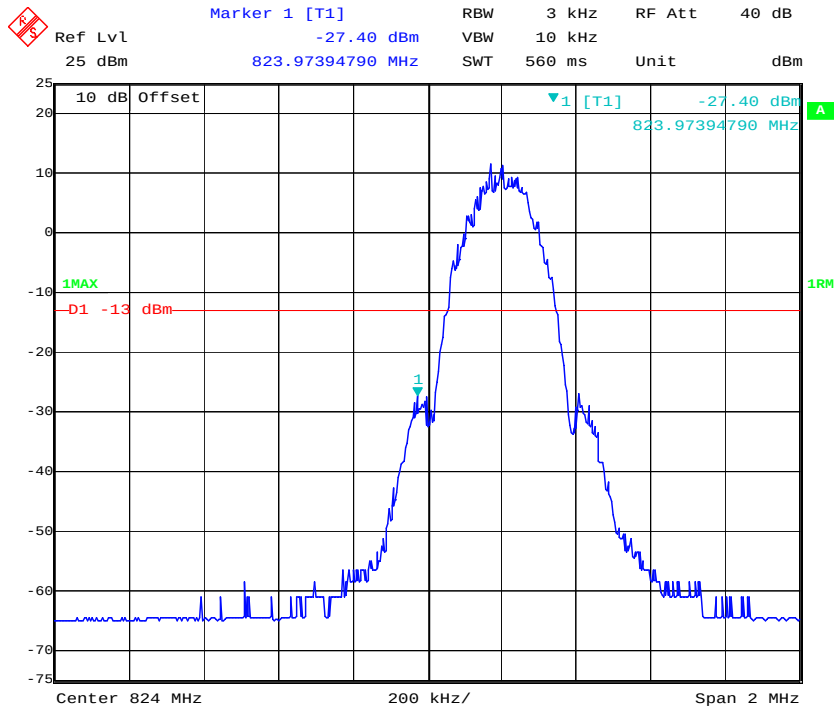


GSM 850, Right Band Edge

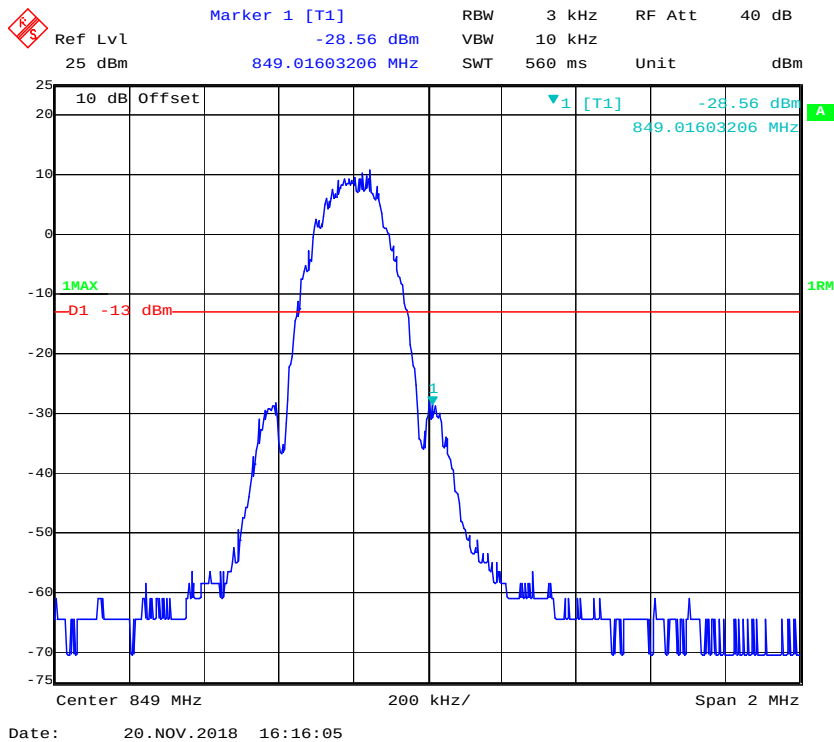


GSM 1900, Left Band Edge**GSM 1900, Right Band Edge**

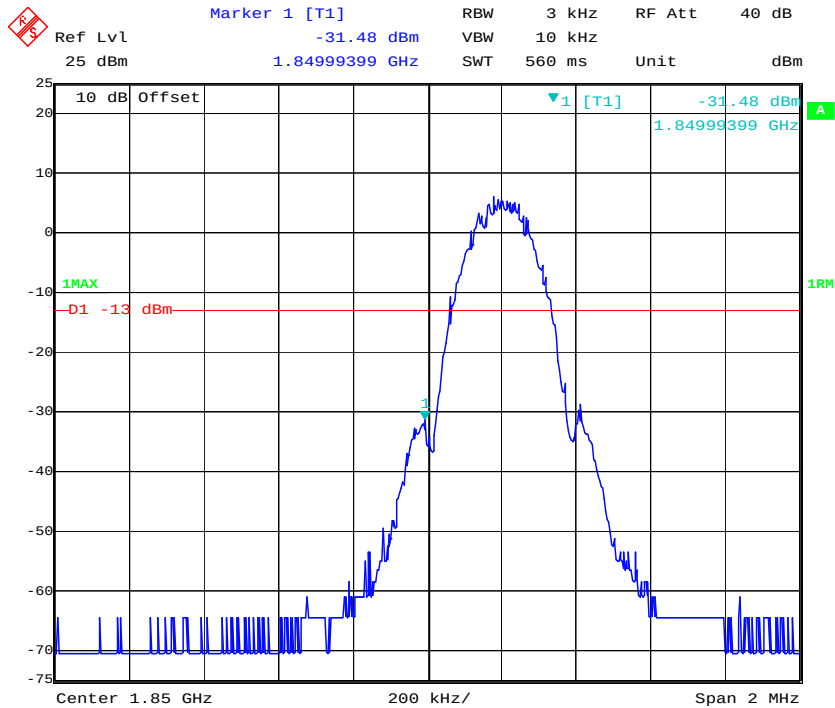
EDGE 850, Left Band Edge



EDGE 850, Right Band Edge

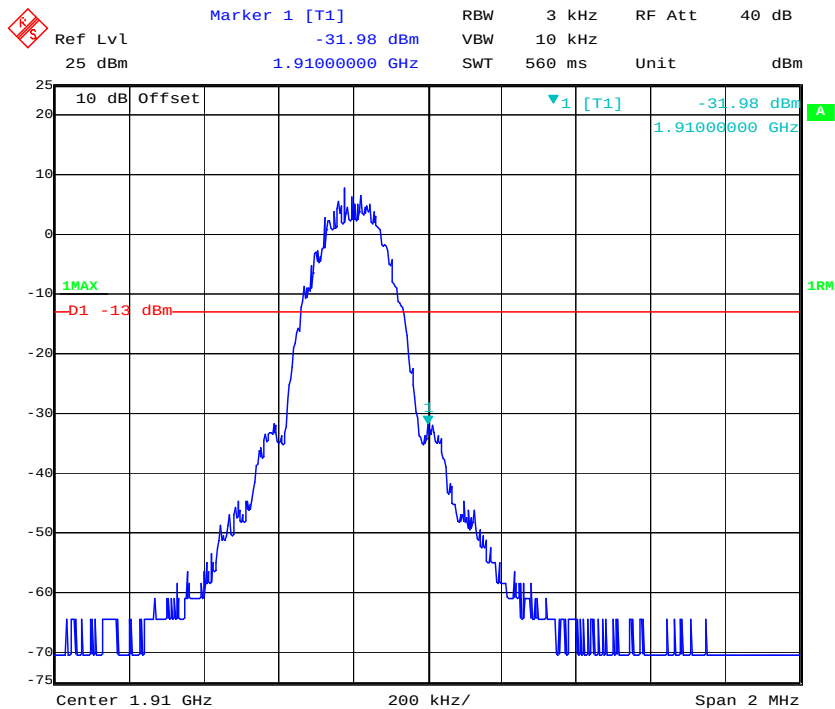


EDGE 1900, Left Band Edge



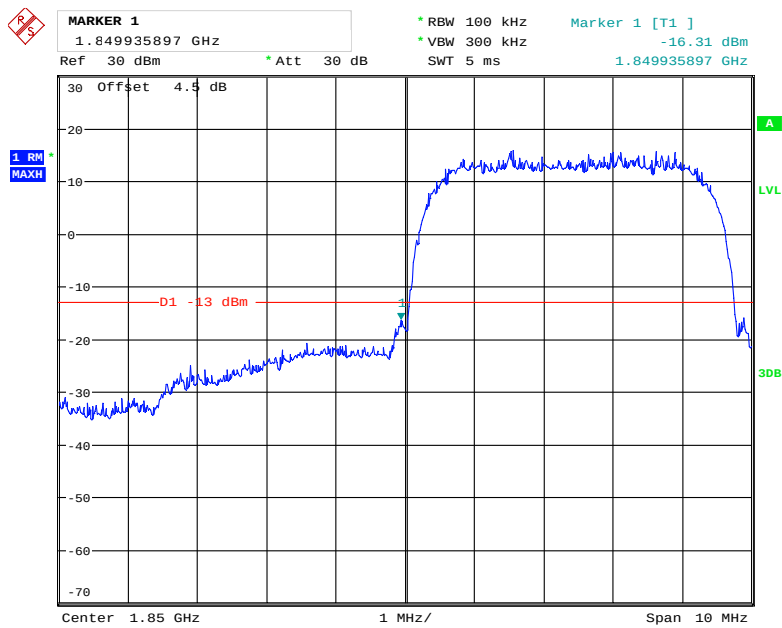
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EDGE 1900, Right Band Edge



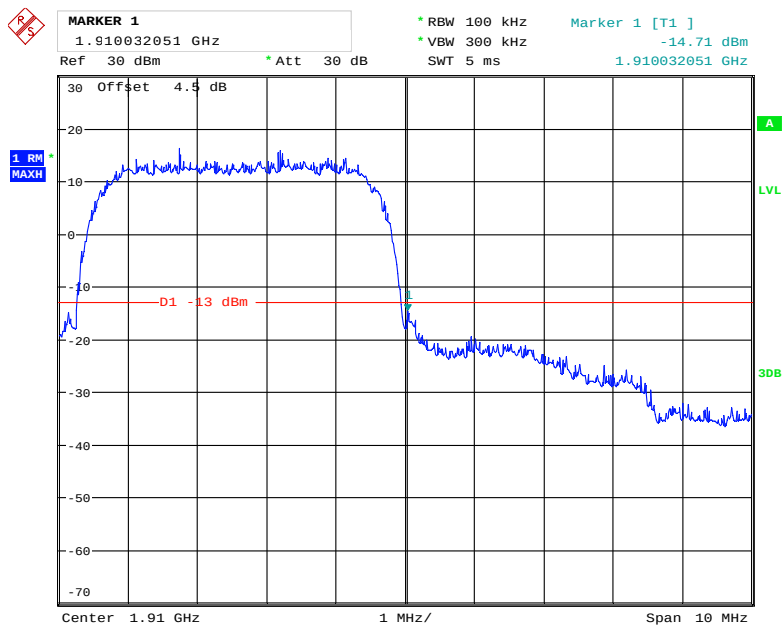
Date: 20.NOV.2018 15:54:01

WCDMA Band II Rel 99, Left Band Edge



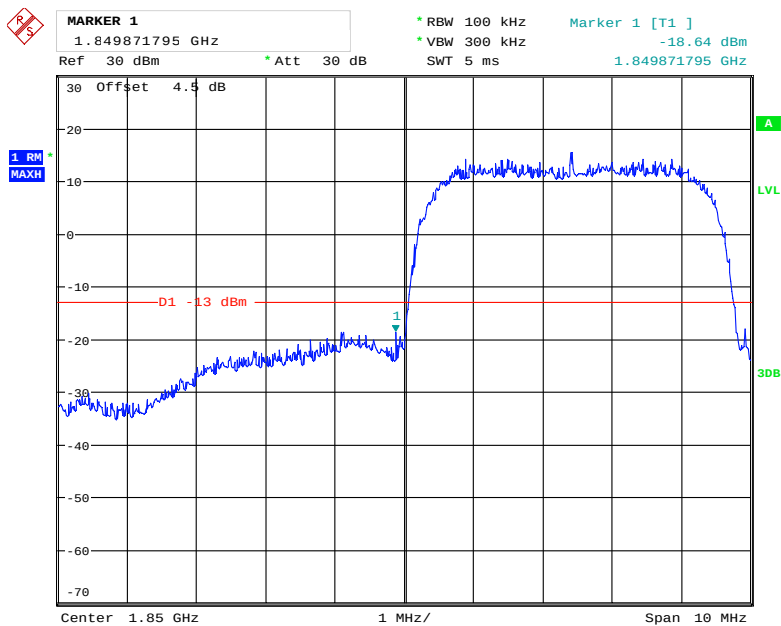
Date: 2.NOV.2018 16:31:01

WCDMA Band II Rel 99, Right Band Edge



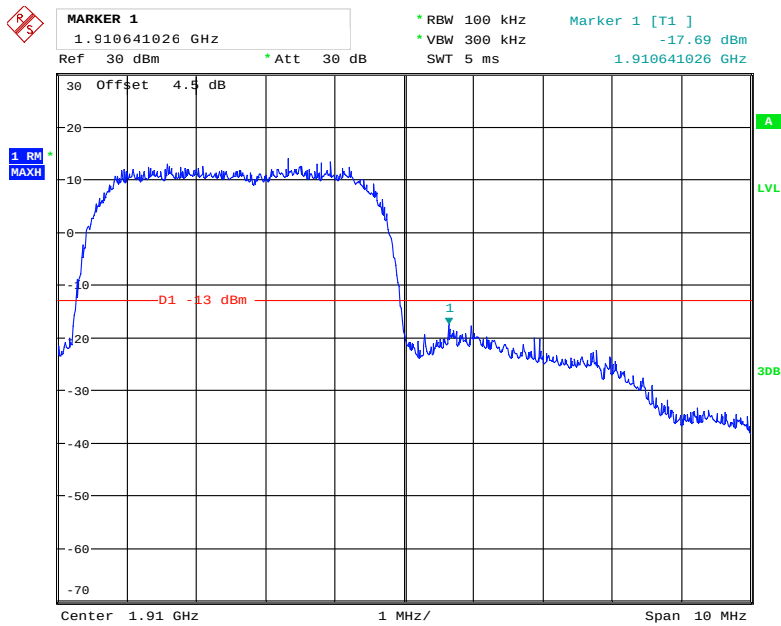
Date: 2.NOV.2018 16:27:38

WCDMA Band II HSUPA, Left Band Edge



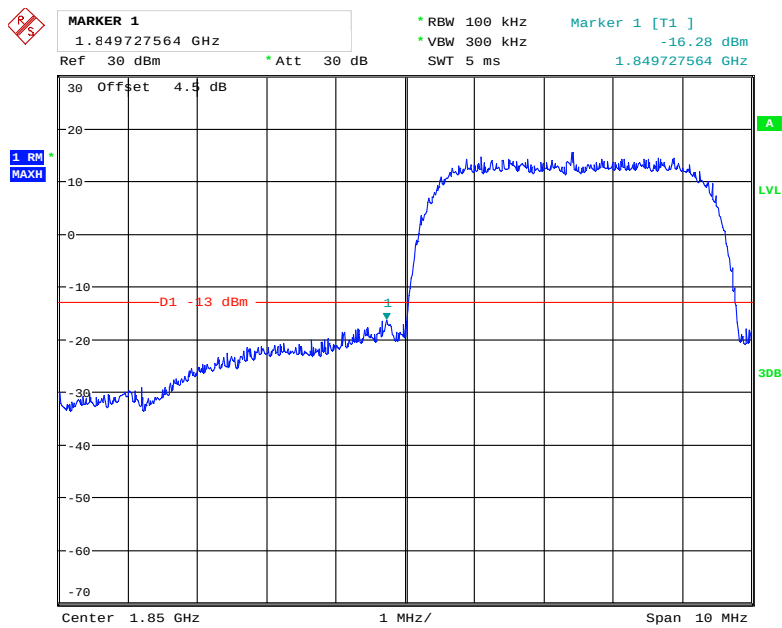
Date: 2.NOV.2018 16:29:48

WCDMA Band II HSUPA, Right Band Edge



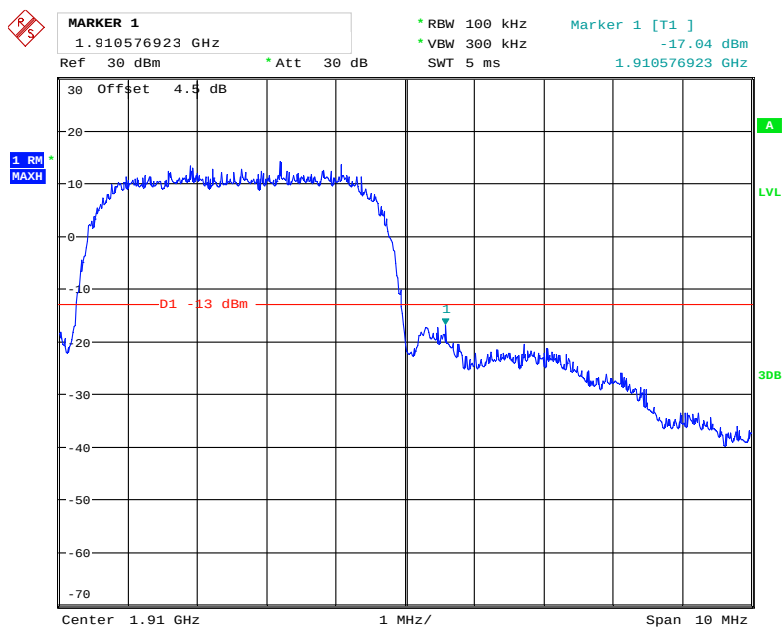
Date: 2.NOV.2018 16:29:07

WCDMA Band II HSDPA, Left Band Edge



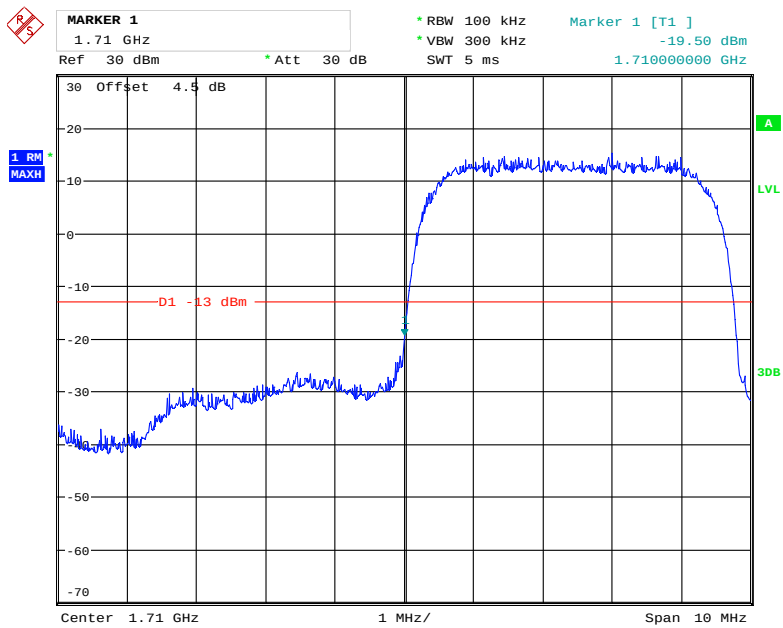
Date: 2.NOV.2018 16:30:37

WCDMA Band II HSDPA, Right Band Edge



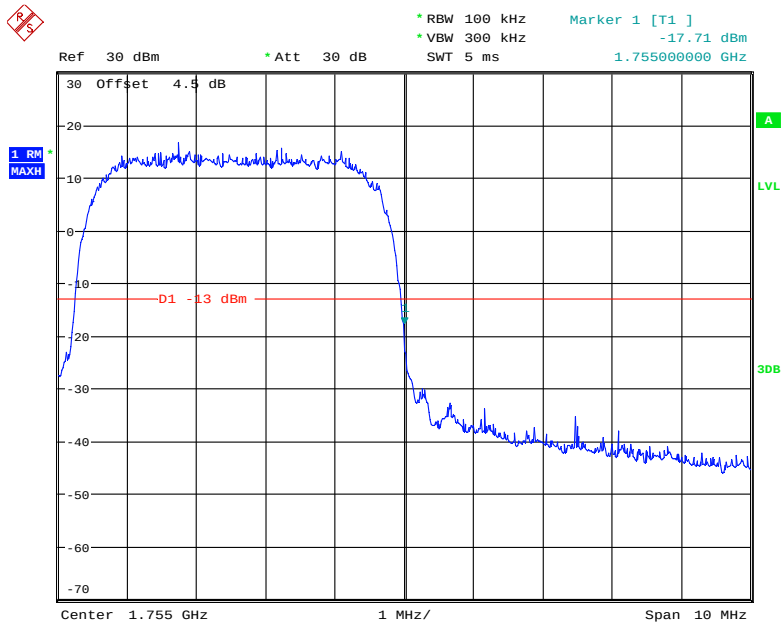
Date: 2.NOV.2018 16:28:22

WCDMA Band IV Rel 99, Left Band Edge



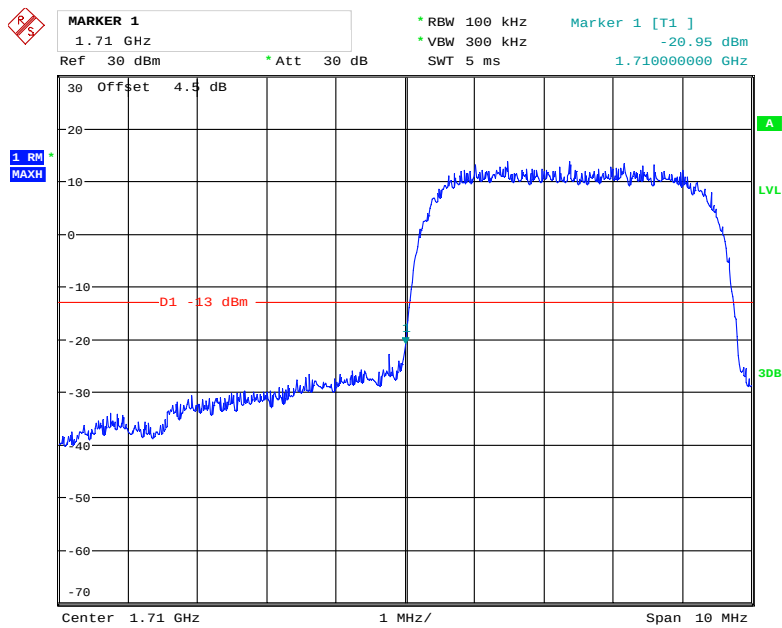
Date: 2.NOV.2018 16:36:28

WCDMA Band IV Rel 99, Right Band Edge



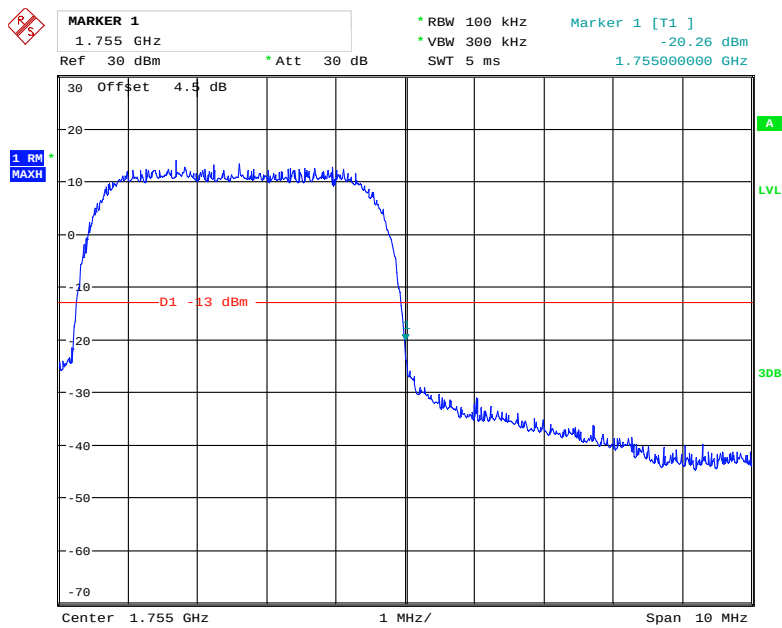
Date: 2.NOV.2018 16:26:57

WCDMA Band IV HSUPA, Left Band Edge



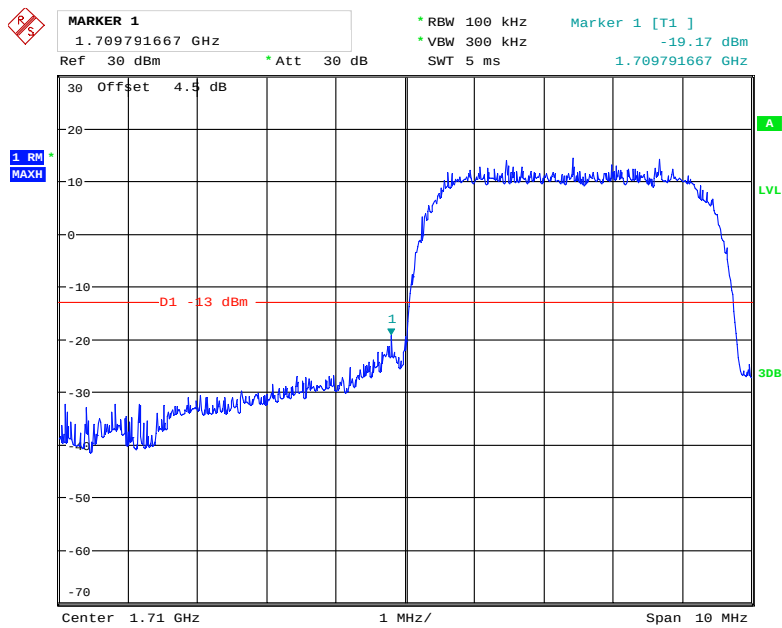
Date: 2.NOV.2018 16:17:49

WCDMA Band IV HSUPA, Right Band Edge



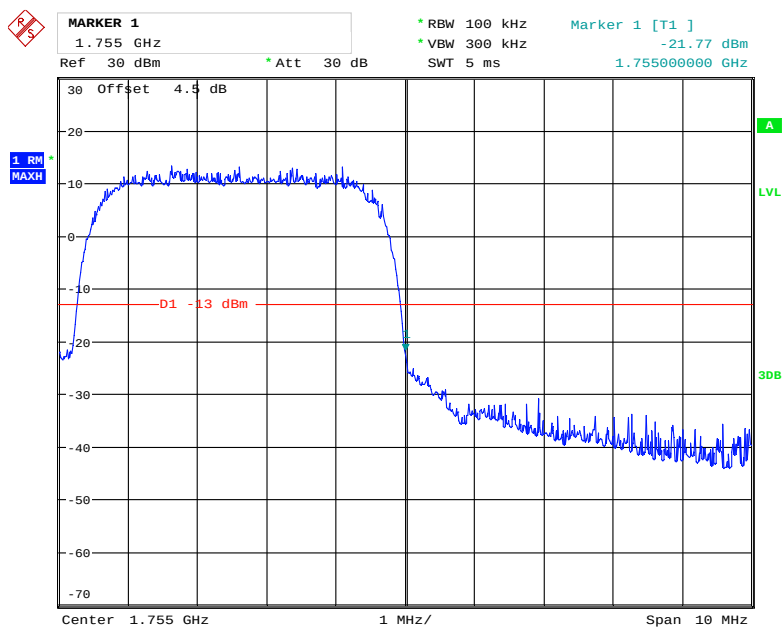
Date: 2.NOV.2018 16:17:10

WCDMA Band IV HSDPA, Left Band Edge



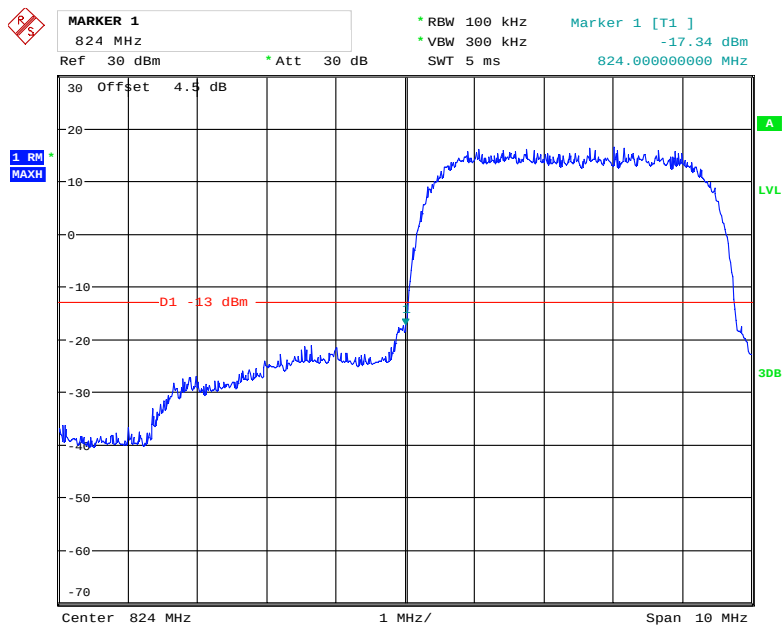
Date: 2.NOV.2018 16:18:32

WCDMA Band IV HSDPA, Right Band Edge



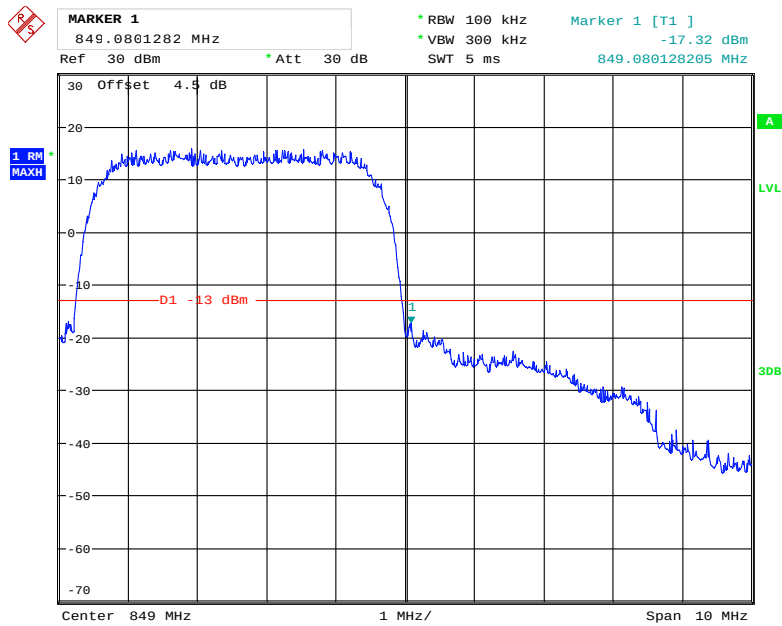
Date: 2.NOV.2018 16:19:39

WCDMA Band V Rel 99, Left Band Edge



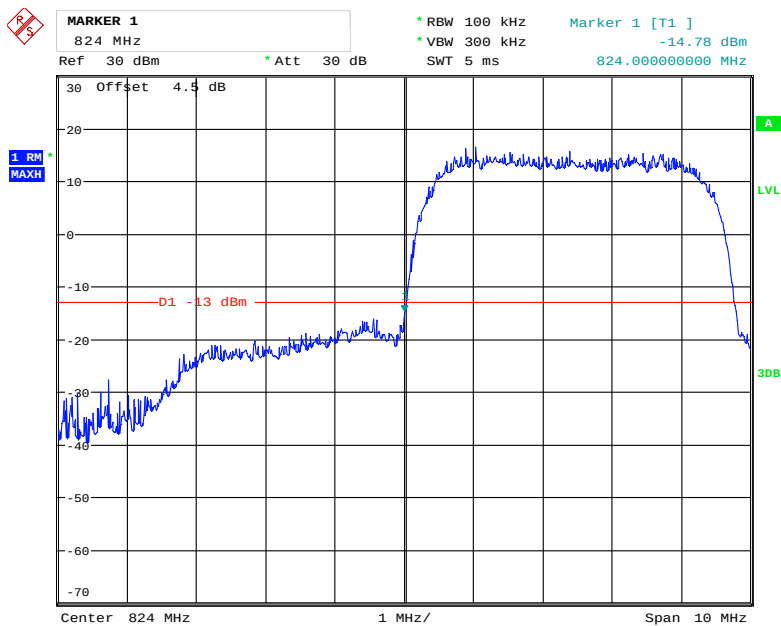
Date: 2.NOV.2018 16:14:26

WCDMA Band V Rel 99, Right Band Edge



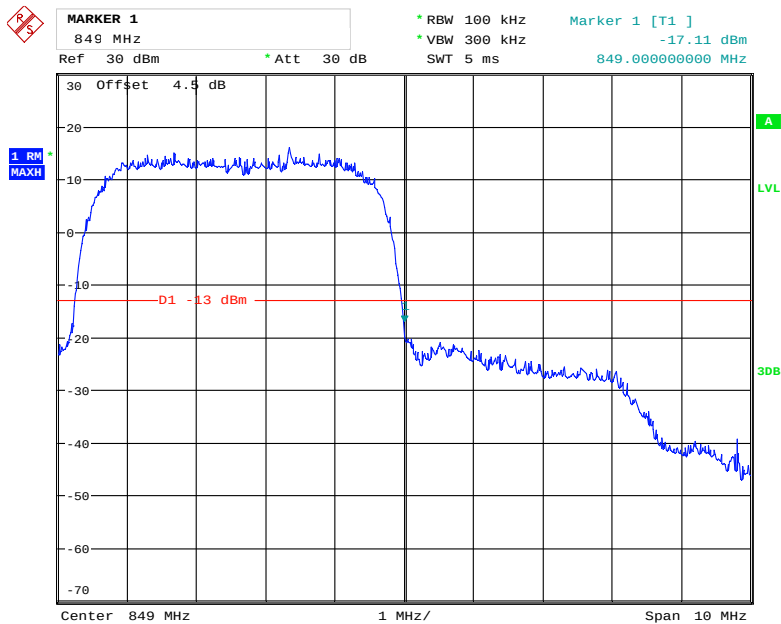
Date: 2.NOV.2018 16:13:55

WCDMA Band V HSUPA, Left Band Edge



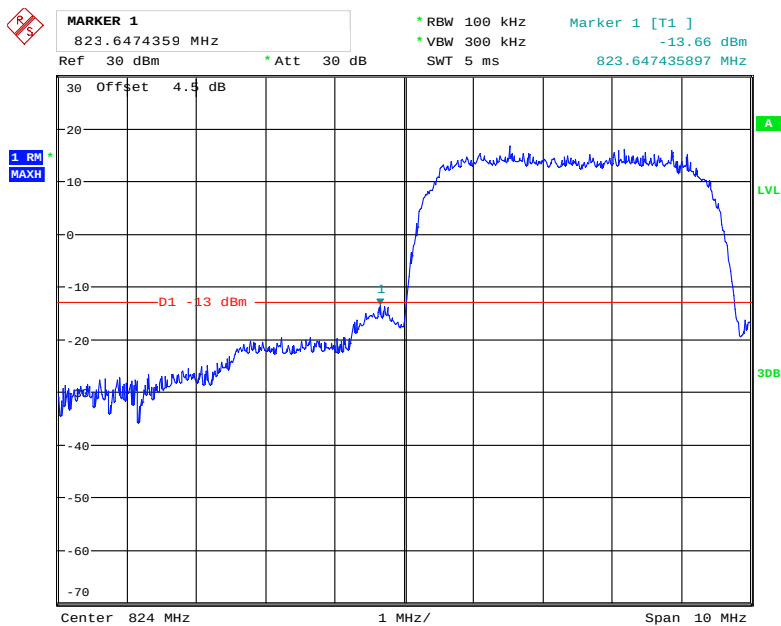
Date: 2.NOV.2018 16:16:22

WCDMA Band V HSUPA, Right Band Edge



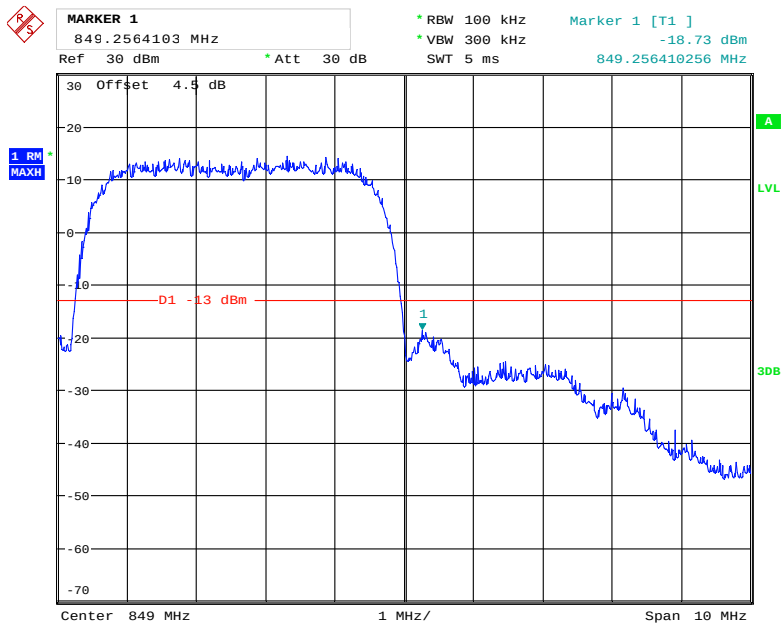
Date: 2.NOV.2018 16:12:28

WCDMA Band V HSDPA, Left Band Edge



Date: 2.NOV.2018 16:15:22

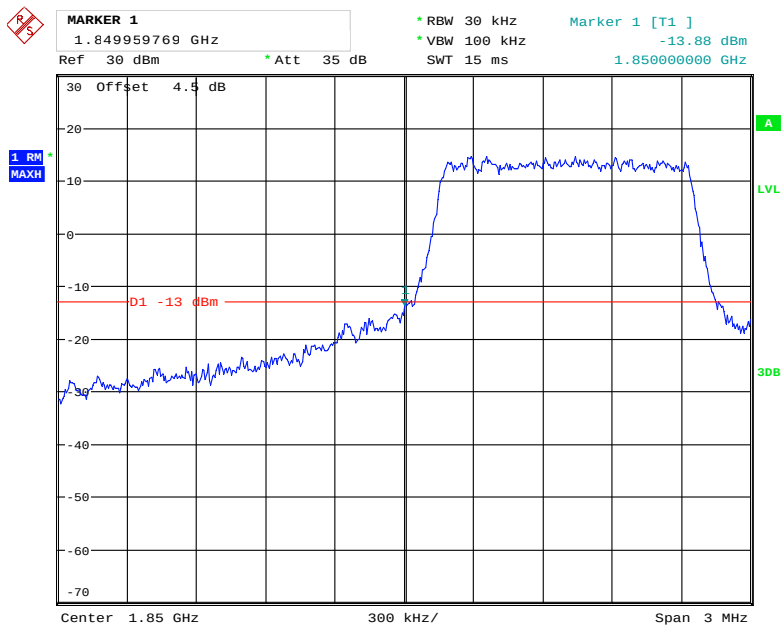
WCDMA Band V HSDPA, Right Band Edge



Date: 2.NOV.2018 16:13:21

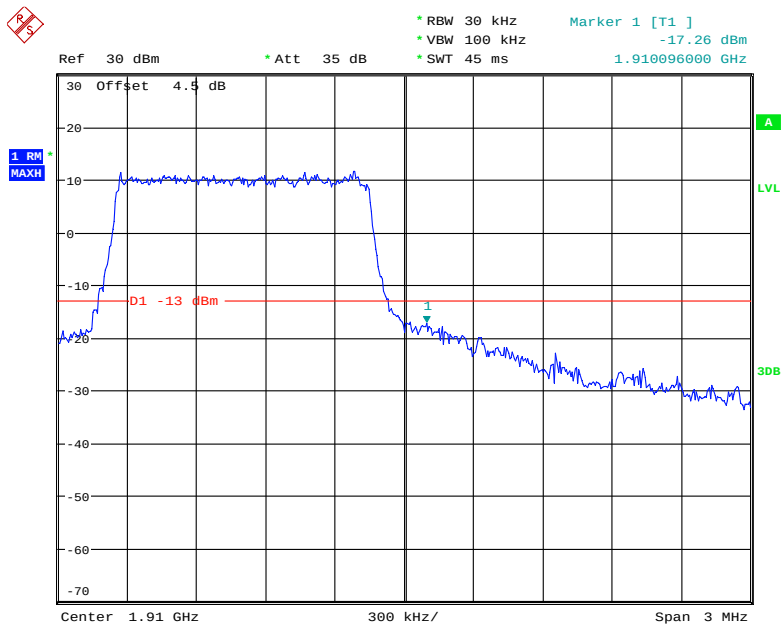
LTE Band 2

QPSK_1.4MHz_6 RB_ Left



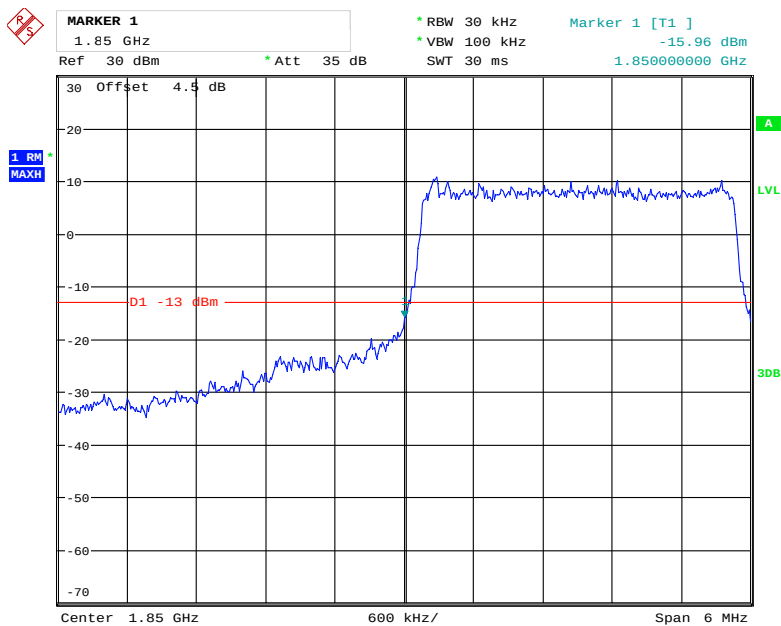
Date: 31.OCT.2018 13:11:07

QPSK_1.4MHz_6 RB_ Right



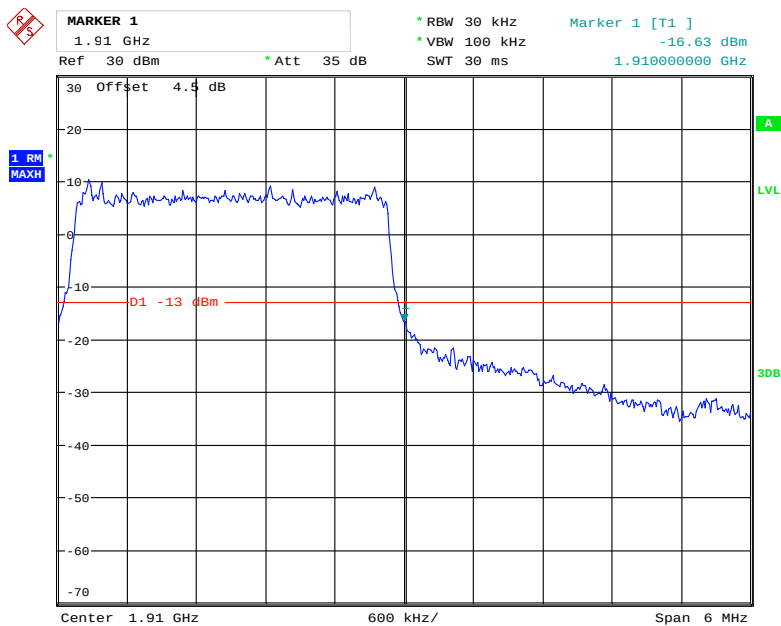
Date: 31.OCT.2018 13:21:22

QPSK_3MHz_15 RB_ Left

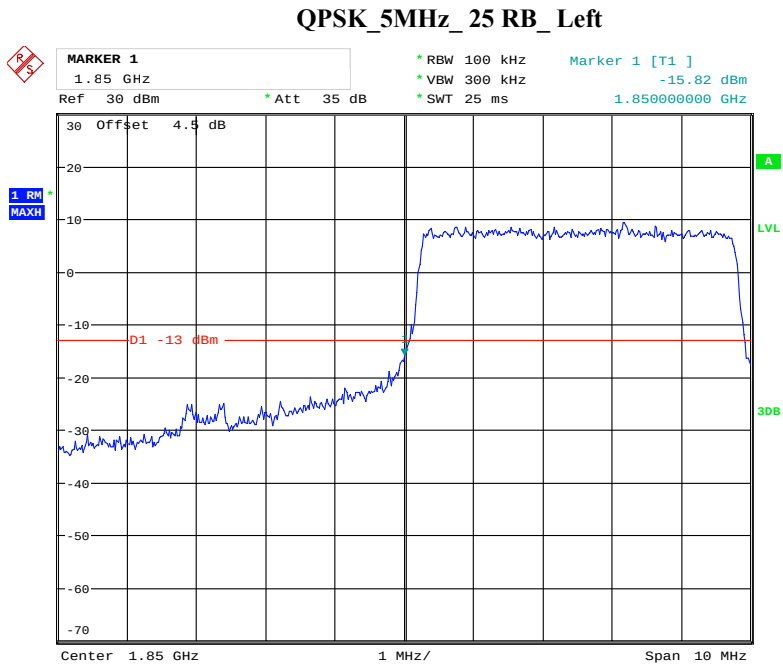


Date: 31.OCT.2018 13:29:14

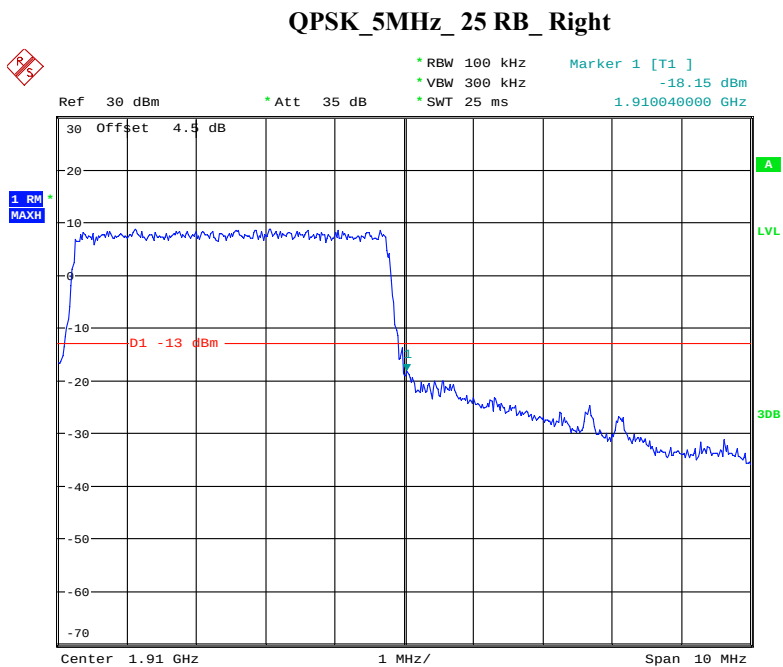
QPSK_3MHz_15 RB_ Right



Date: 31.OCT.2018 13:37:08

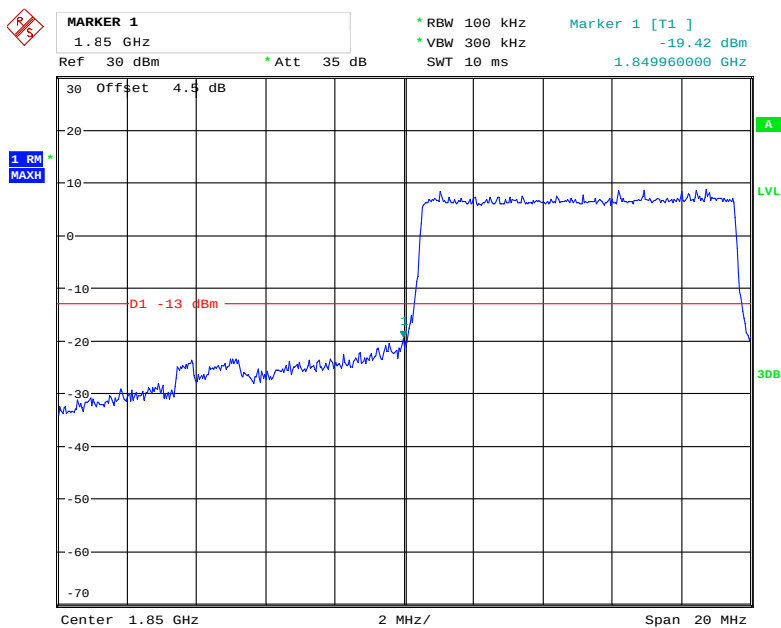


Date: 31.OCT.2018 13:38:56



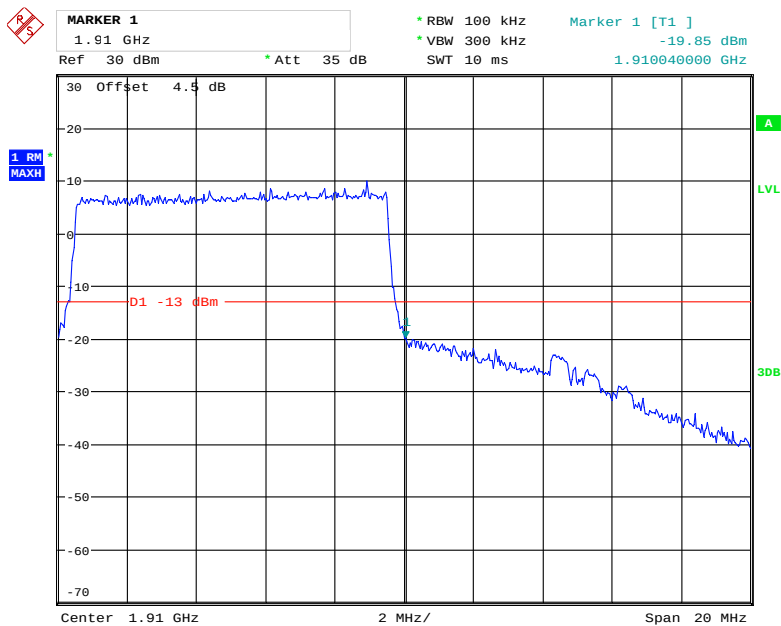
Date: 31.OCT.2018 13:41:02

QPSK_10MHz_50 RB_ Left

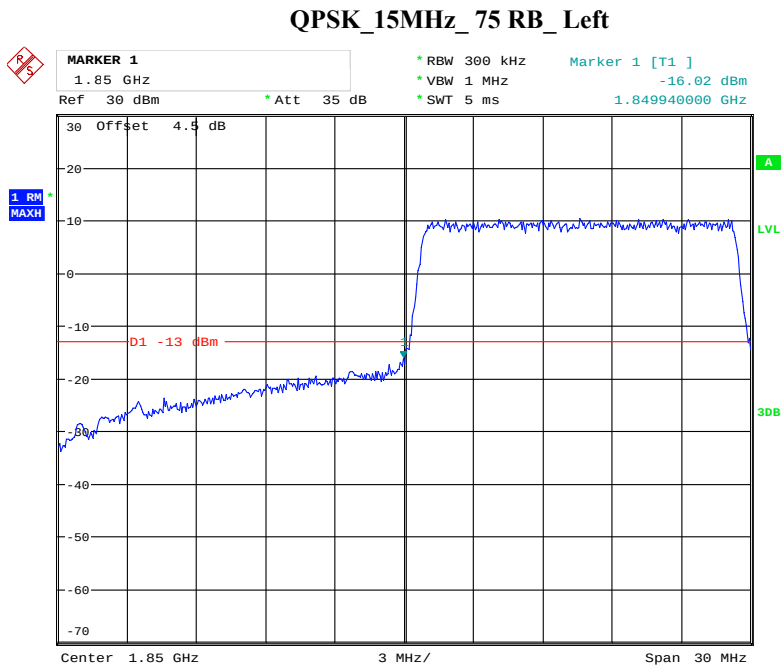


Date: 31.OCT.2018 13:42:47

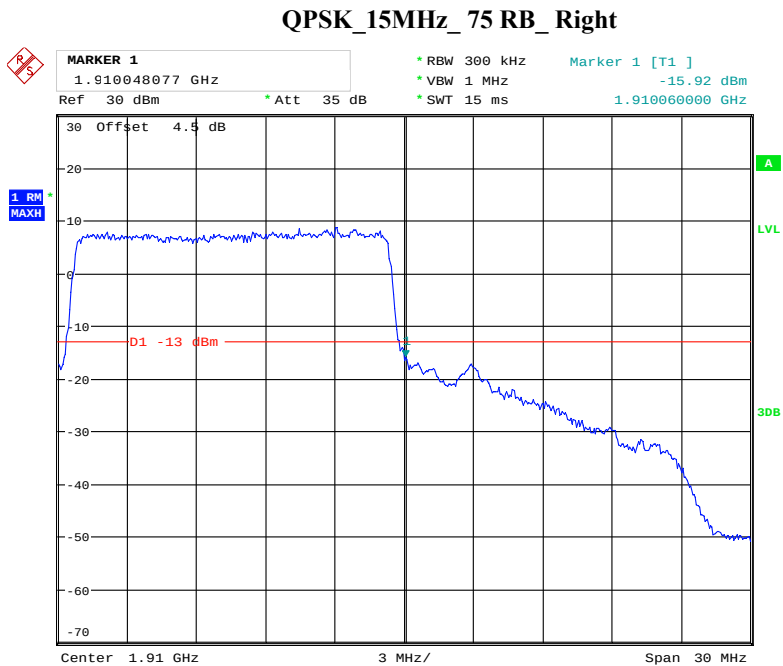
QPSK_10MHz_50 RB_ Right



Date: 31.OCT.2018 13:44:19

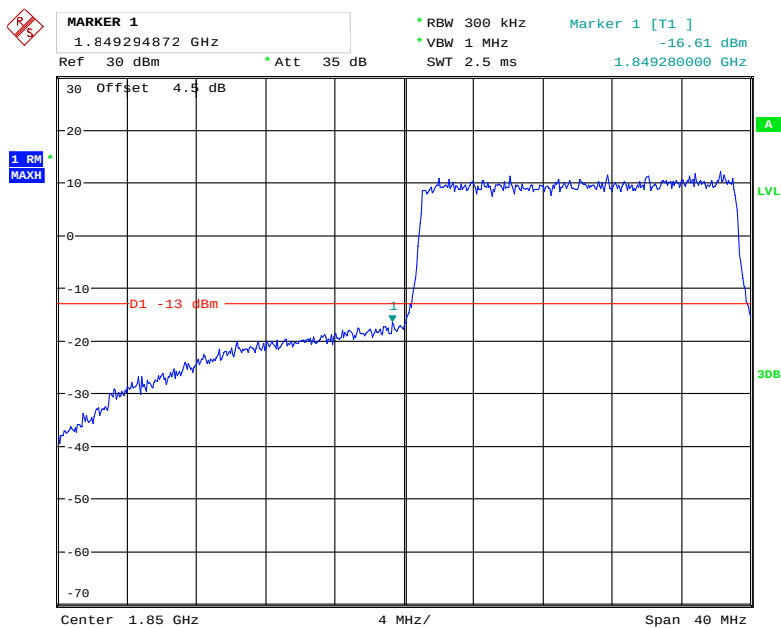


Date: 31.OCT.2018 13:46:11



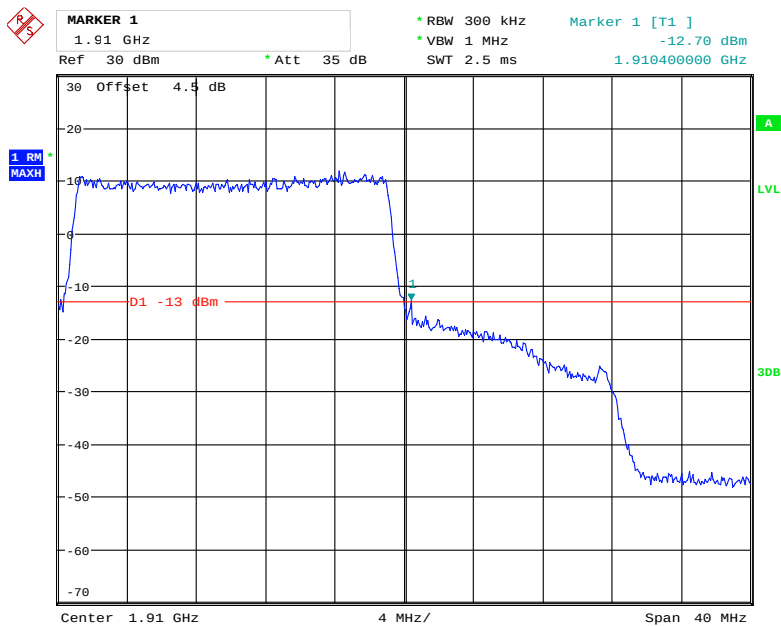
Date: 31.OCT.2018 13:47:48

QPSK_20MHz_FULL RB_Left

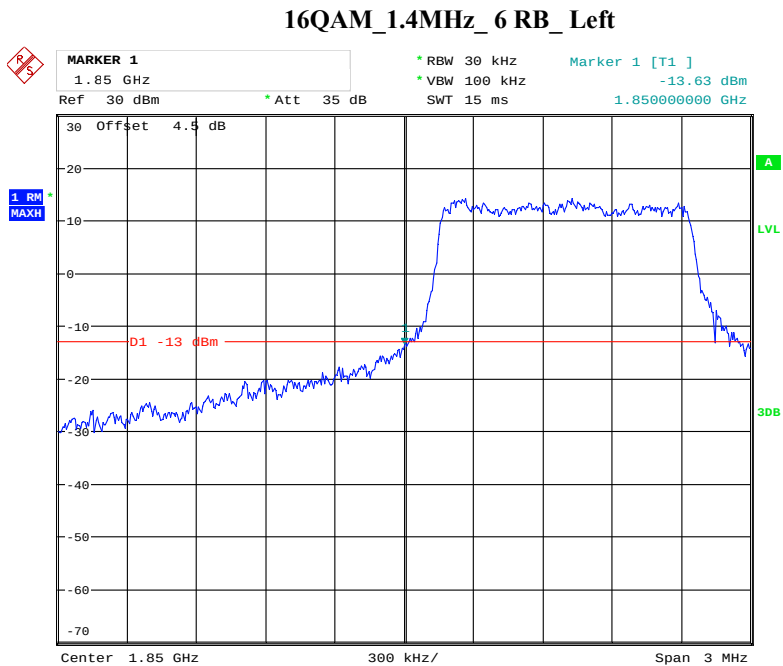


Date: 31.OCT.2018 13:50:14

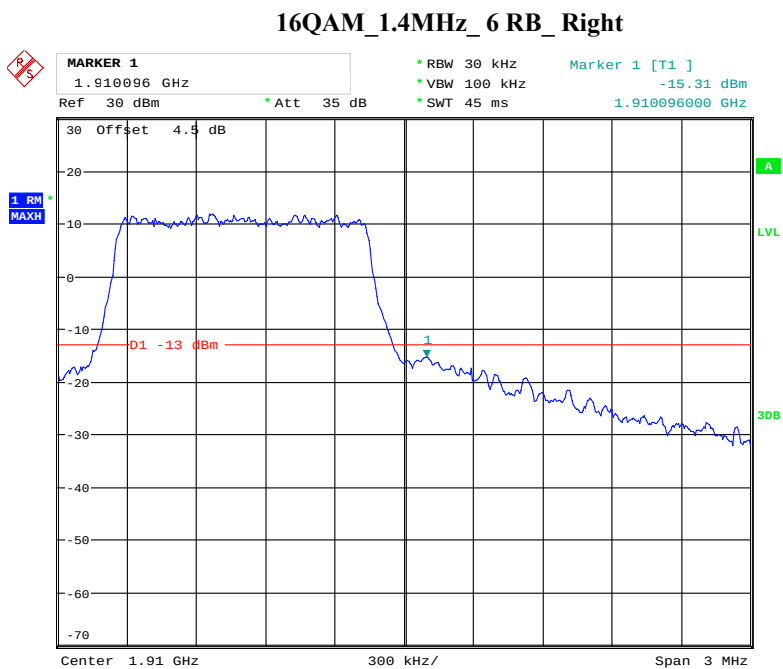
QPSK_20MHz_FULL RB_Right



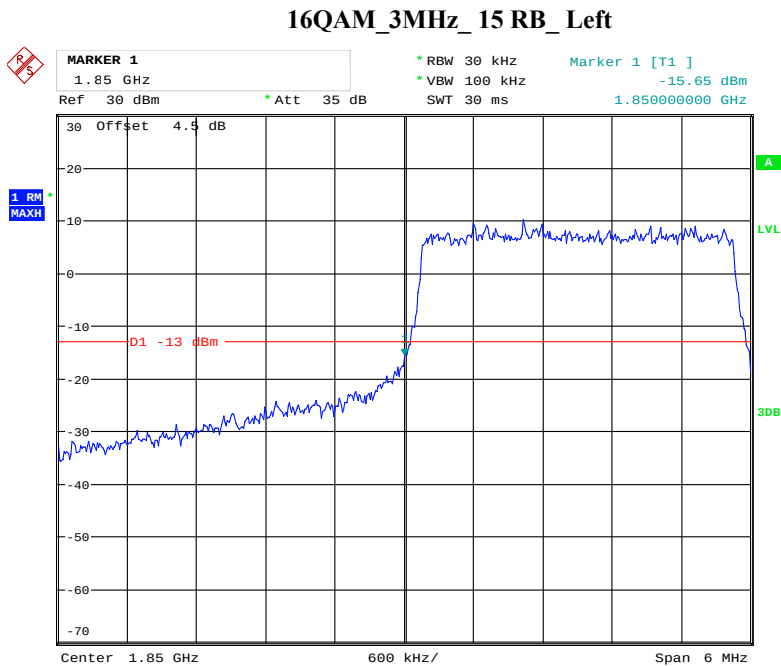
Date: 31.OCT.2018 13:52:00



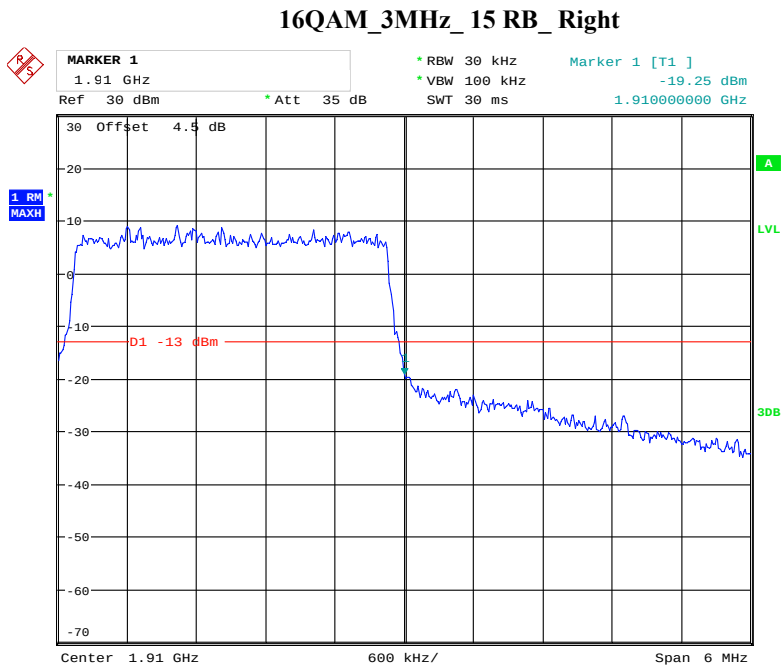
Date: 31.OCT.2018 13:11:57



Date: 31.OCT.2018 13:21:03

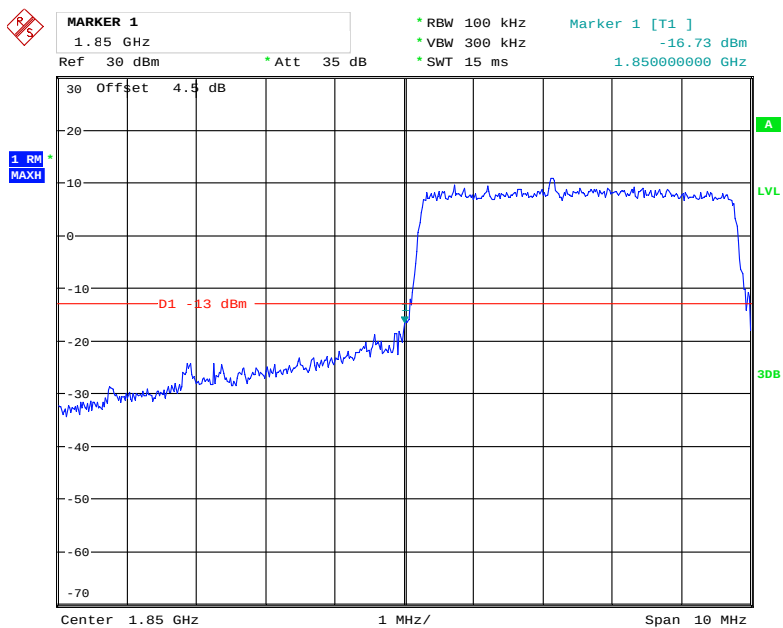


Date: 31.OCT.2018 13:36:25



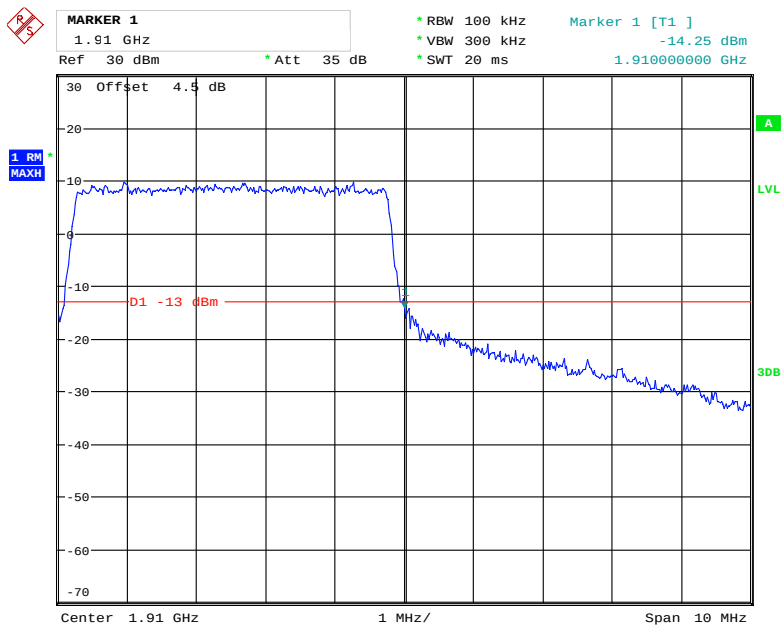
Date: 31.OCT.2018 13:37:51

16QAM_5MHz_25 RB_ Left

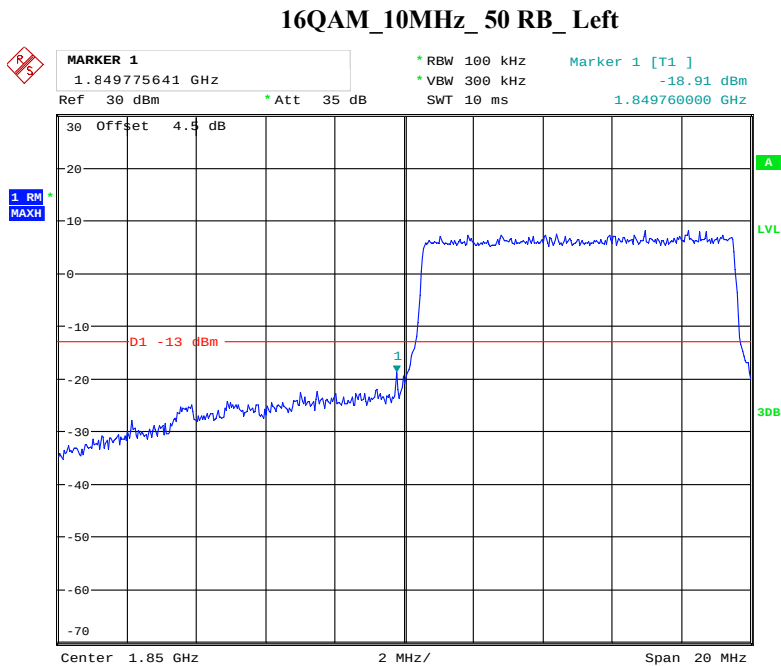


Date: 31.OCT.2018 13:39:48

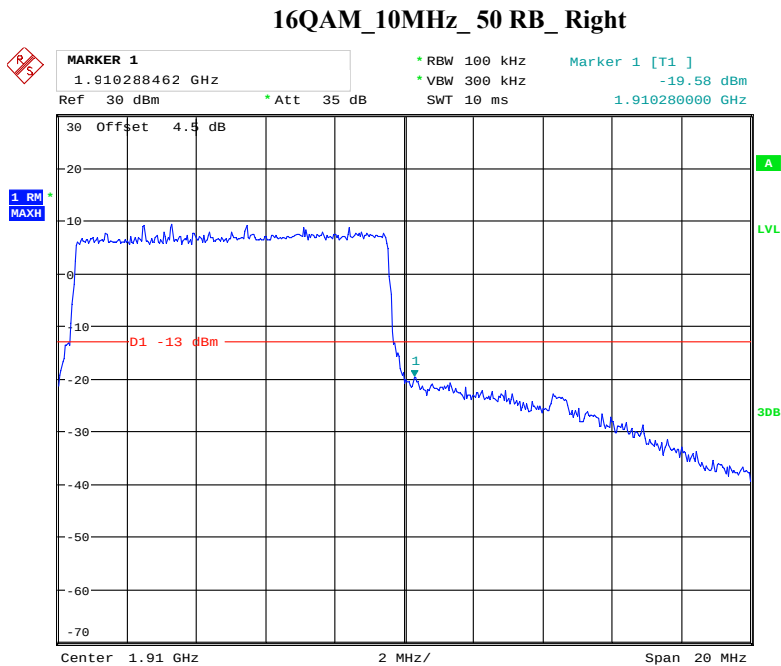
16QAM_5MHz_25 RB_ Right



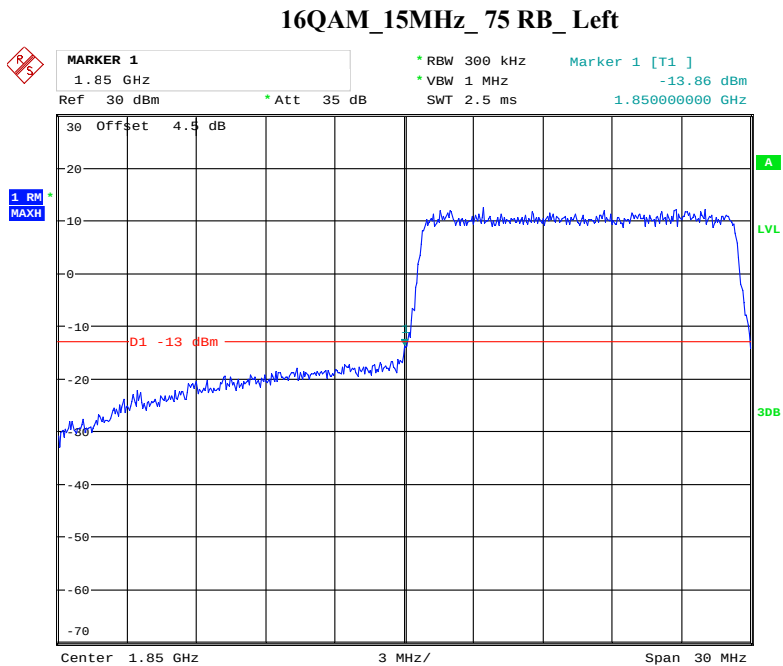
Date: 31.OCT.2018 13:42:00



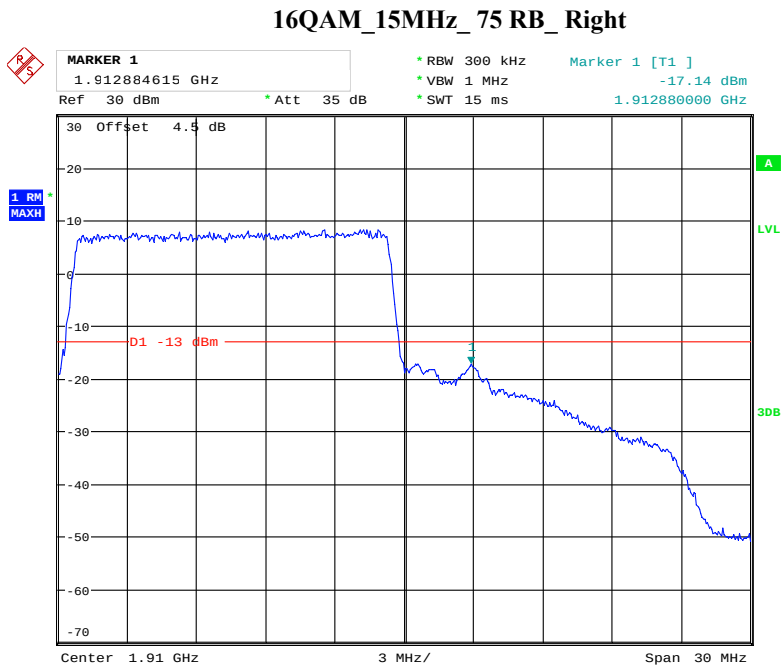
Date: 31.OCT.2018 13:43:33



Date: 31.OCT.2018 13:45:04

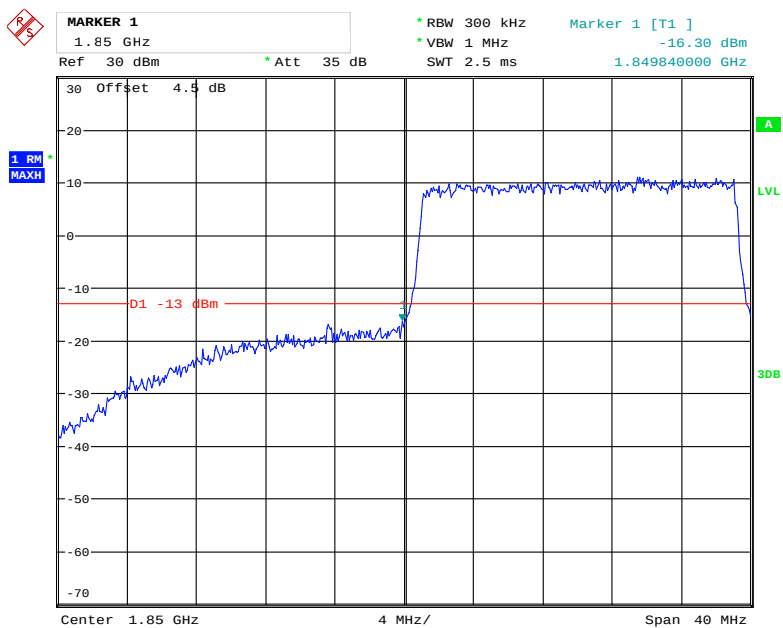


Date: 31.OCT.2018 13:46:56



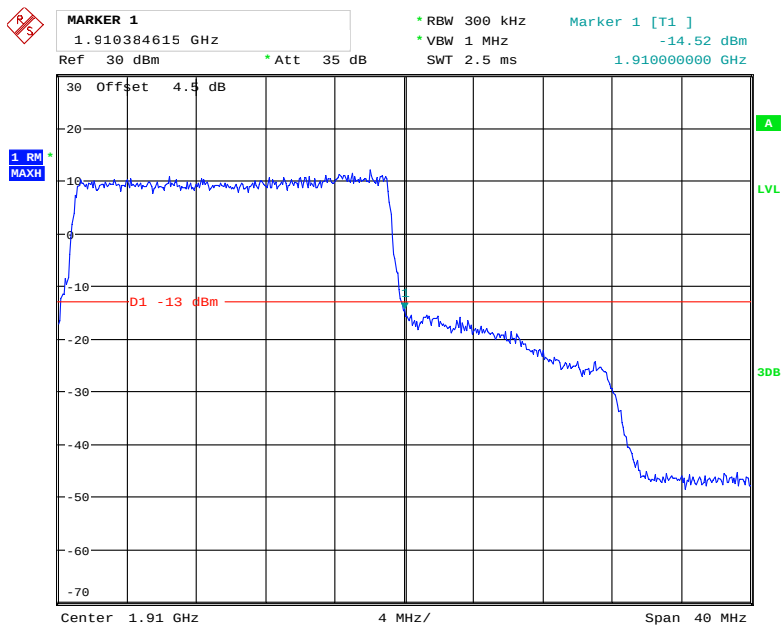
Date: 31.OCT.2018 13:49:17

16QAM_20MHz_ FULL RB_ Left



Date: 31.OCT.2018 13:51:03

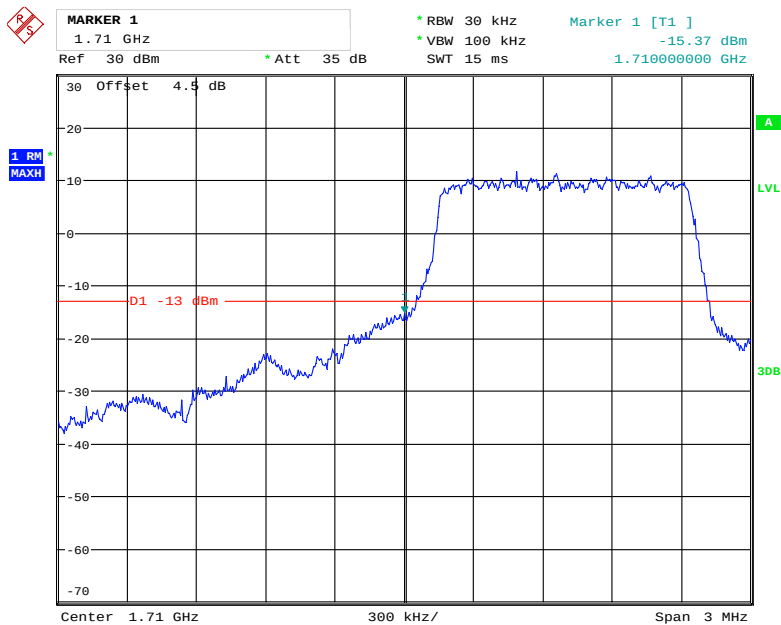
16QAM_20MHz_ FULL RB_ Right



Date: 31.OCT.2018 13:52:49

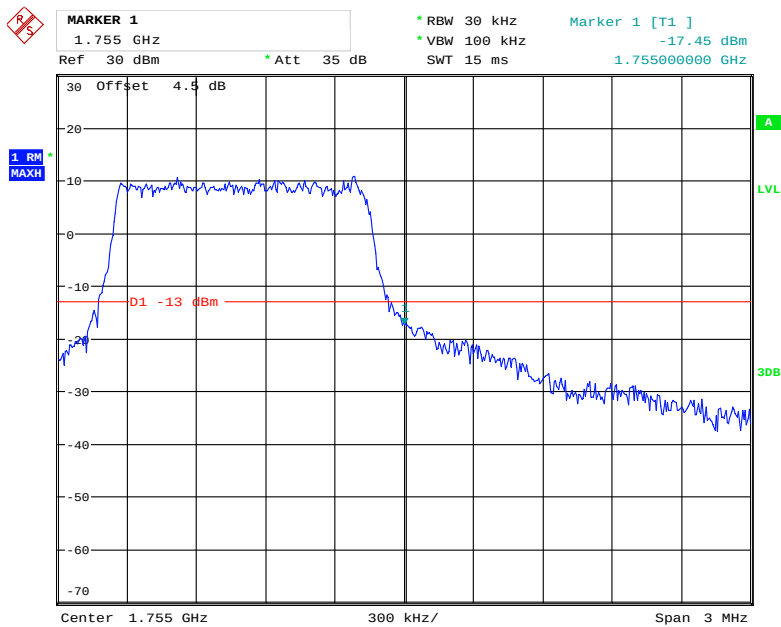
LTE Band 4

QPSK_1.4MHz_6 RB_ Left



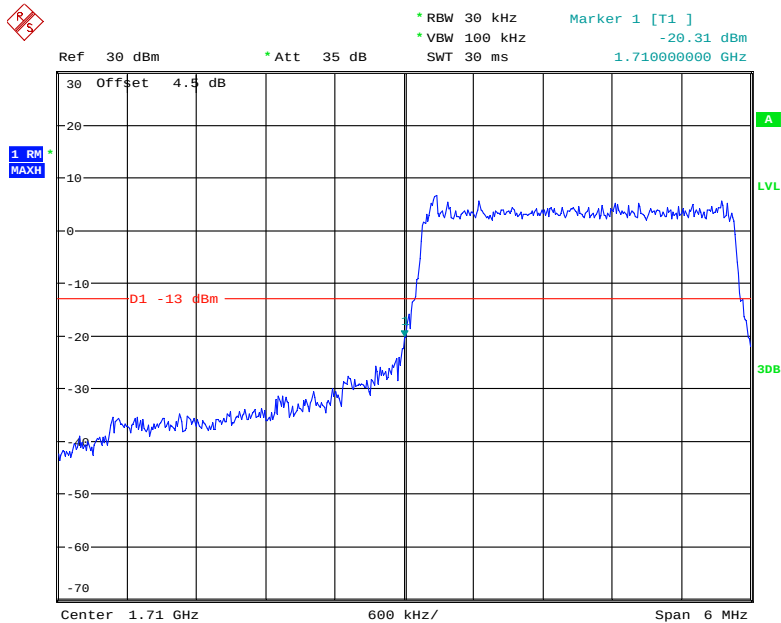
Date: 31.OCT.2018 13:57:41

QPSK_1.4MHz_6 RB_ Right



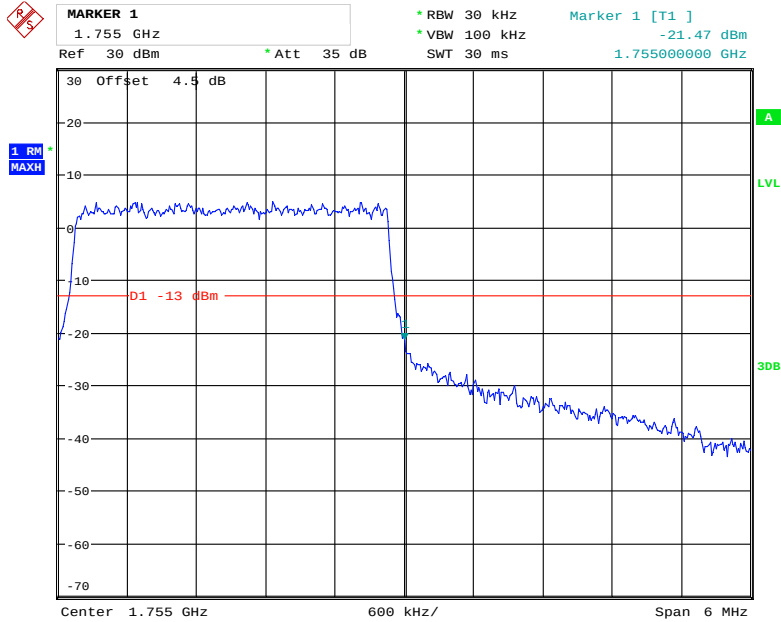
Date: 31.OCT.2018 14:16:13

QPSK_3MHz_15 RB_Left



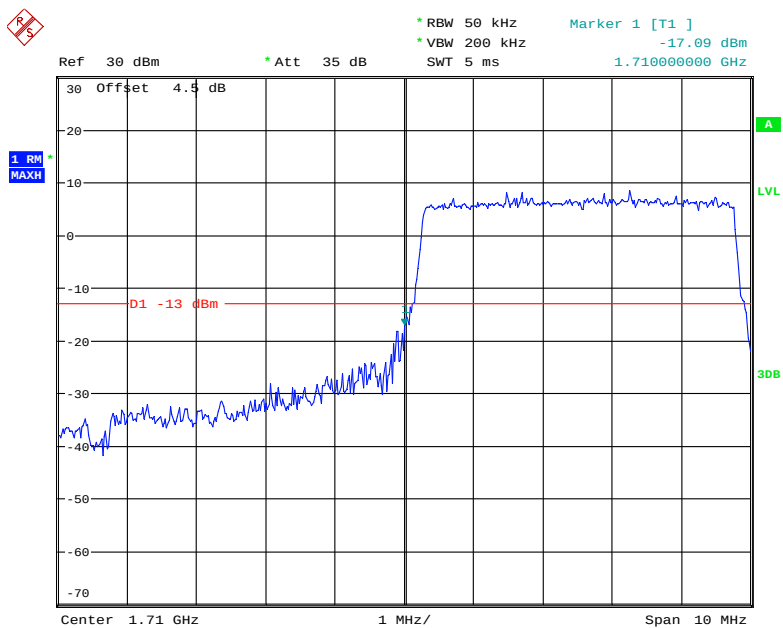
Date: 31.OCT.2018 14:00:36

QPSK_3MHz_15 RB_Right



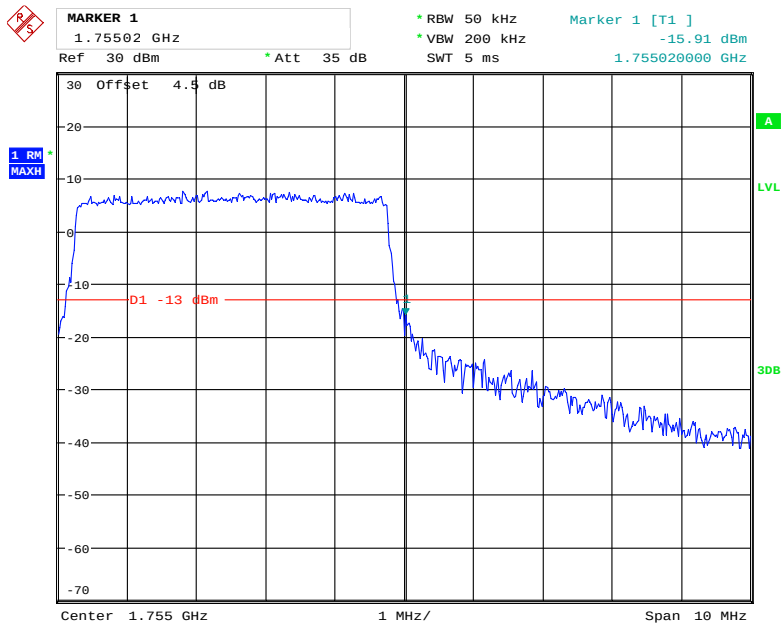
Date: 31.OCT.2018 14:14:02

QPSK_5MHz_25 RB_Left

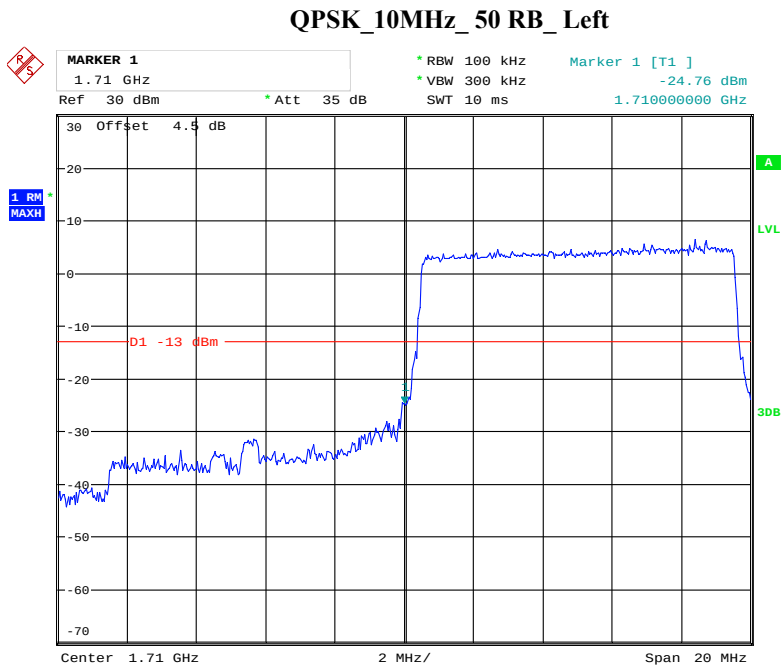


Date: 31.OCT.2018 14:01:56

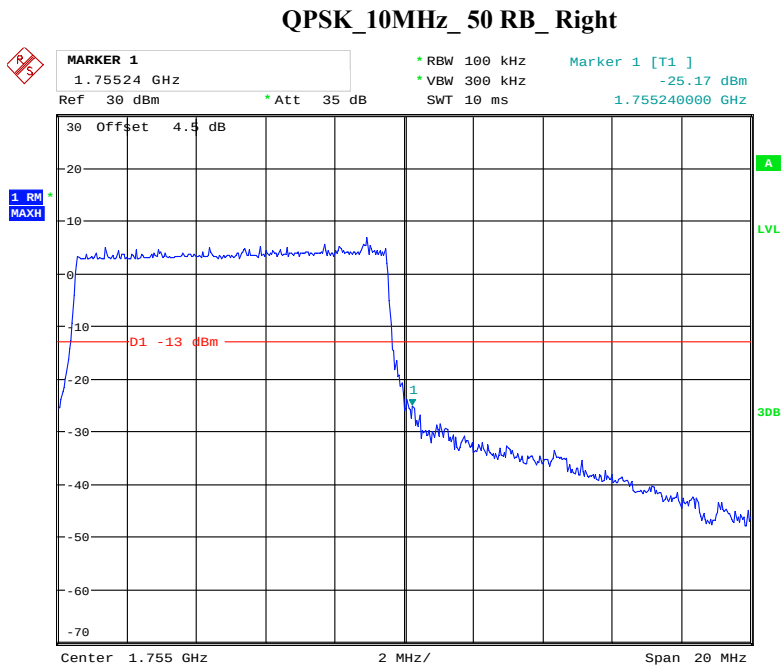
QPSK_5MHz_25 RB_Right



Date: 31.OCT.2018 14:12:36

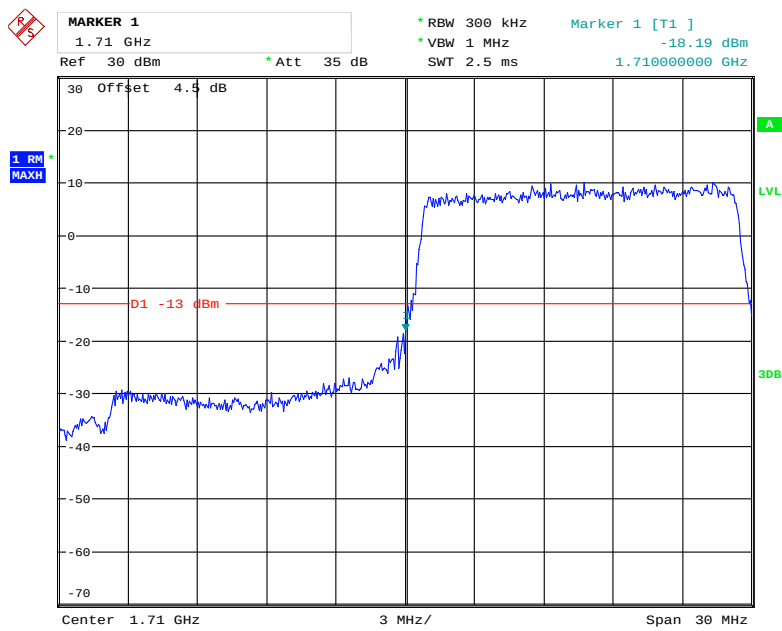


Date: 31.OCT.2018 14:03:08



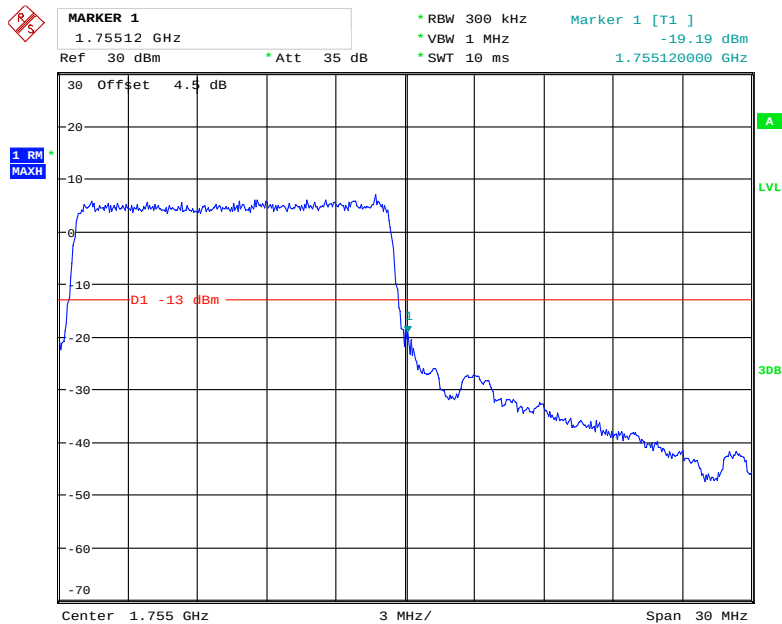
Date: 31.OCT.2018 14:10:45

QPSK_15MHz_75 RB_ Left



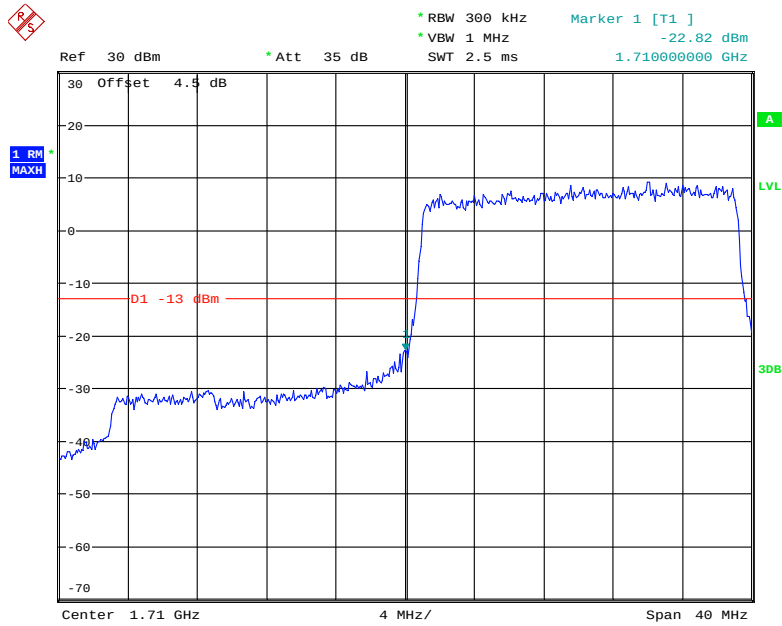
Date: 31.OCT.2018 14:04:41

QPSK_15MHz_75 RB_ Right



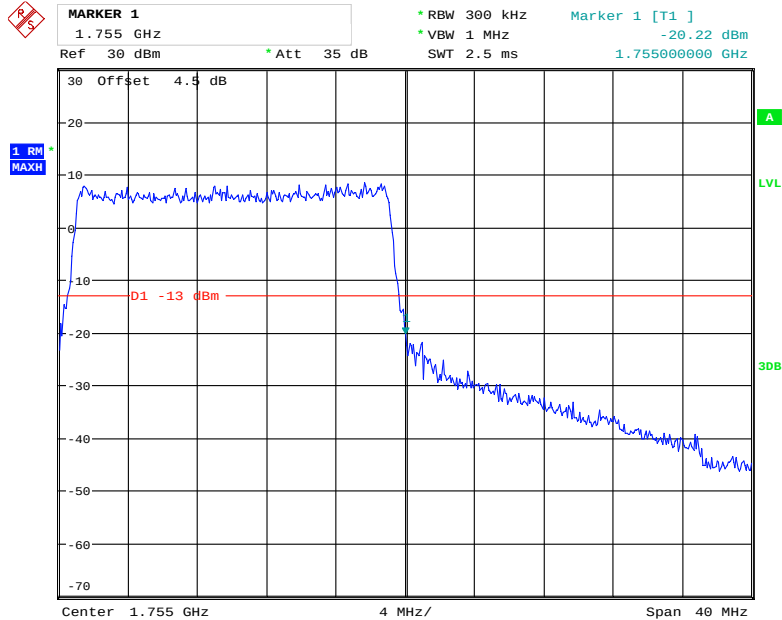
Date: 31.OCT.2018 14:09:29

QPSK_20MHz_FULL RB_Left

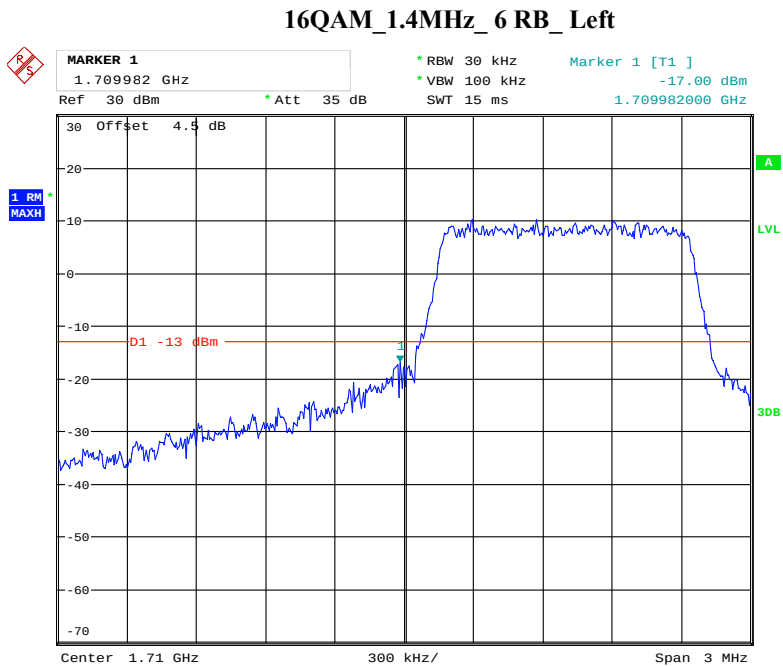


Date: 31.OCT.2018 14:06:47

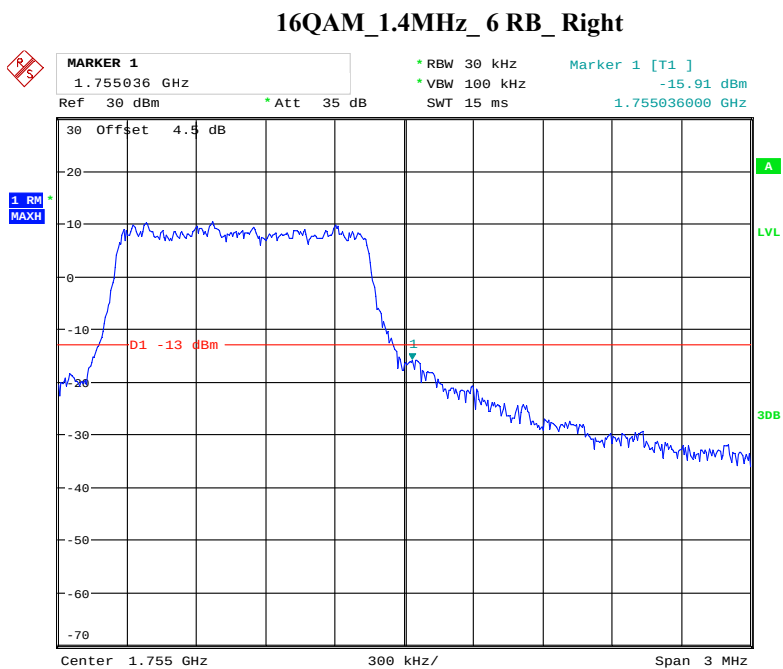
QPSK_20MHz_FULL RB_Right



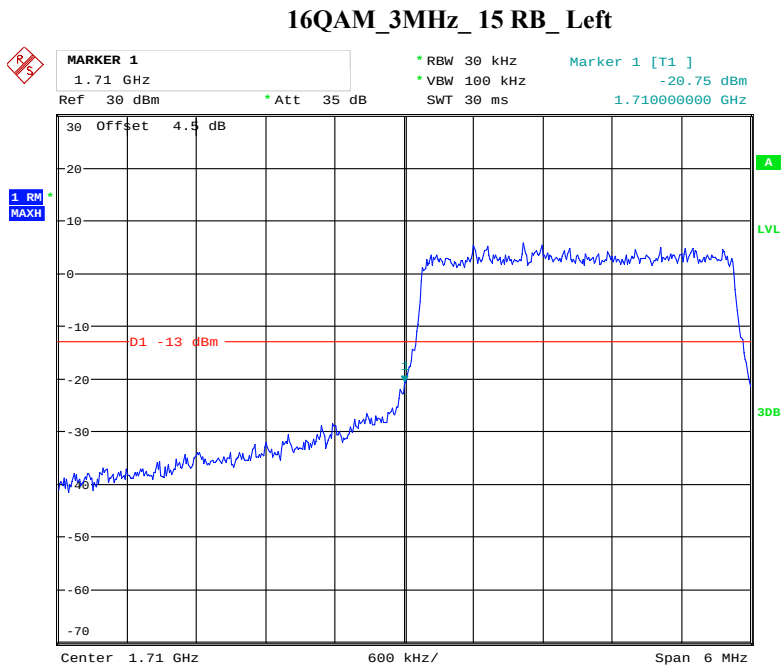
Date: 31.OCT.2018 14:07:39



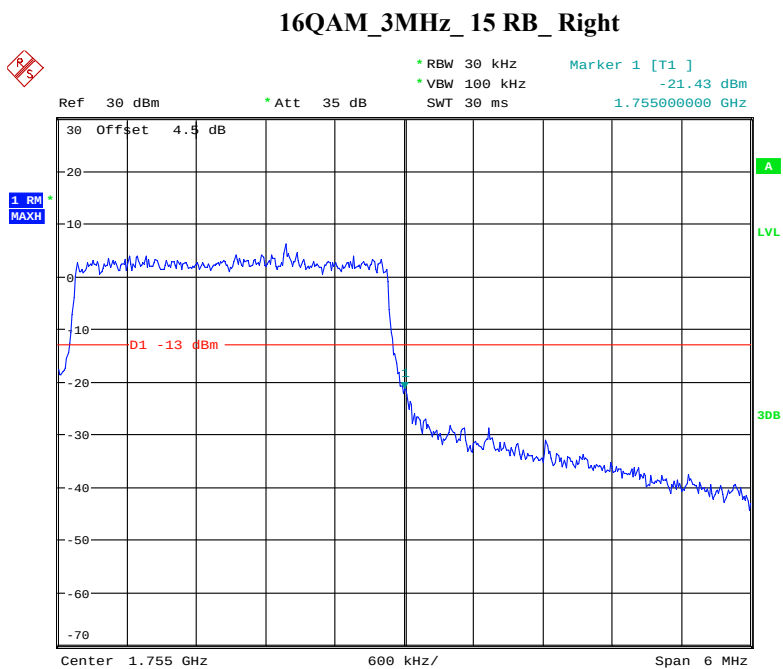
Date: 31.OCT.2018 13:58:24



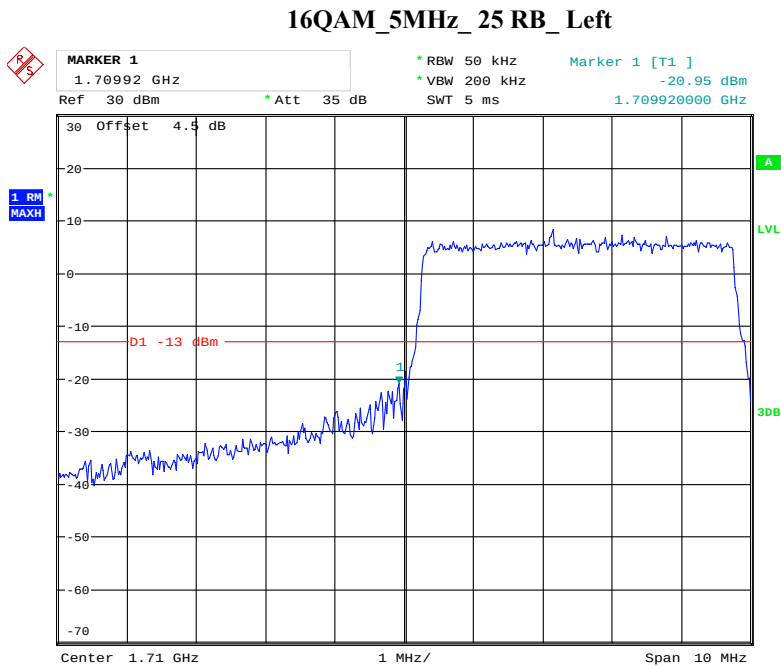
Date: 31.OCT.2018 14:15:44



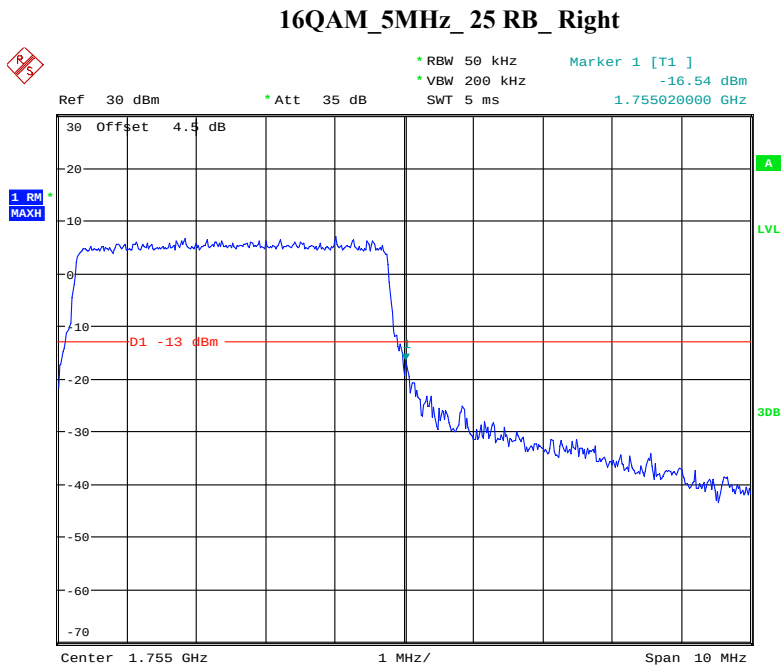
Date: 31.OCT.2018 14:00:13



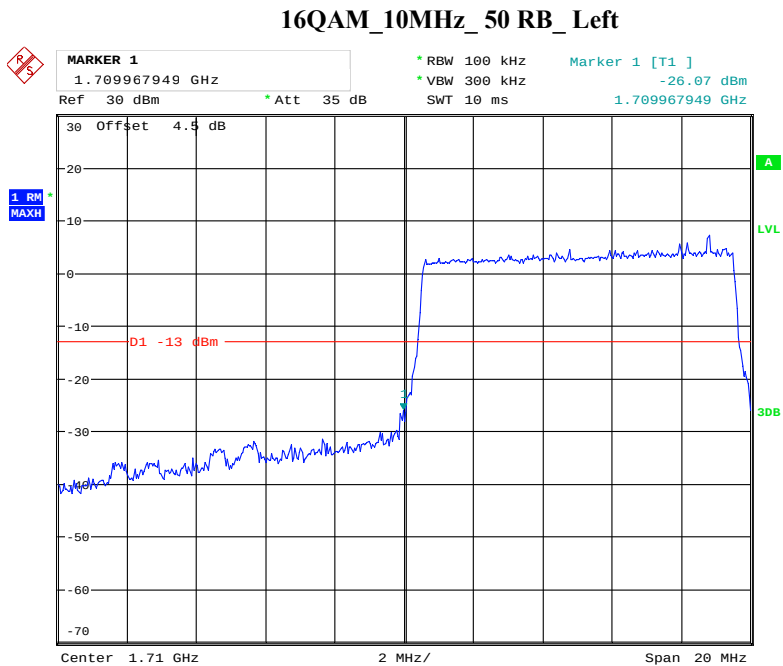
Date: 31.OCT.2018 14:14:29



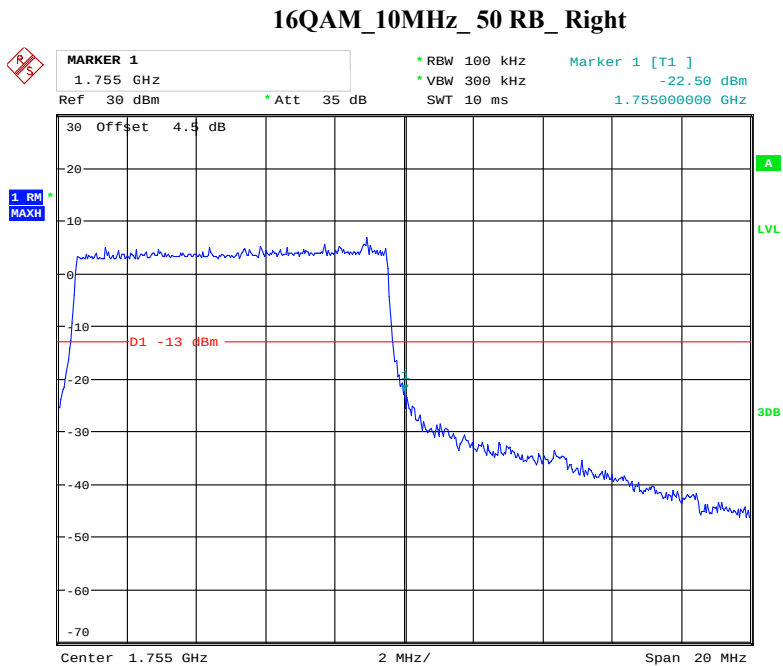
Date: 31.OCT.2018 14:18:03



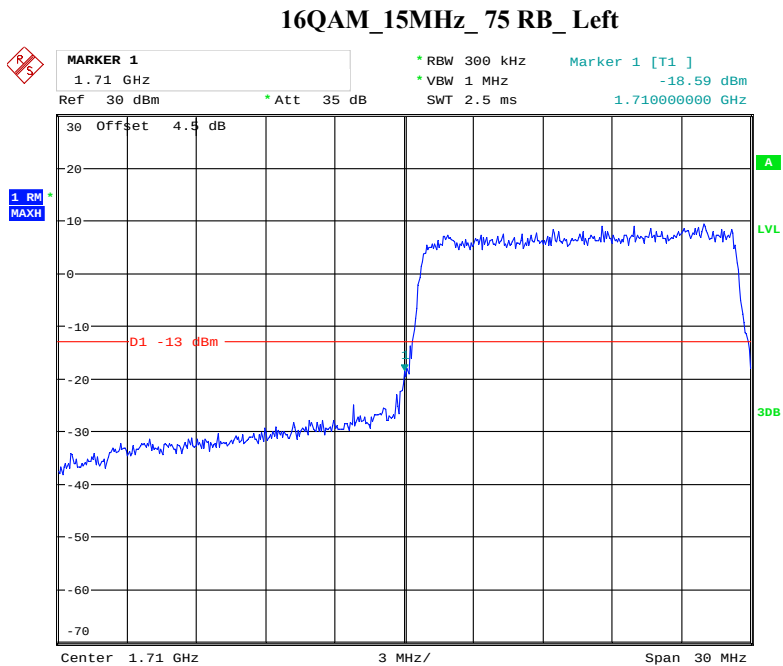
Date: 31.OCT.2018 14:13:15



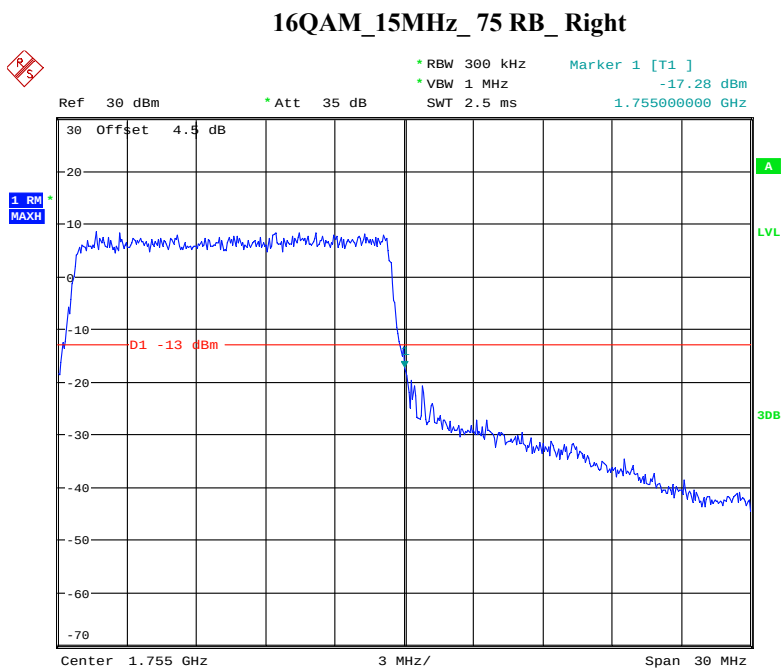
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Date: 31.OCT.2018 14:11:17

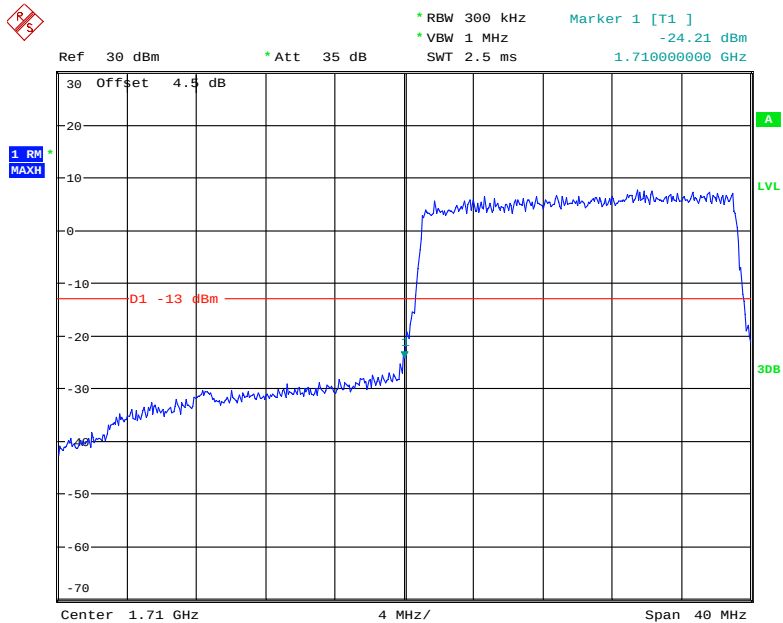


Date: 31.OCT.2018 14:05:48



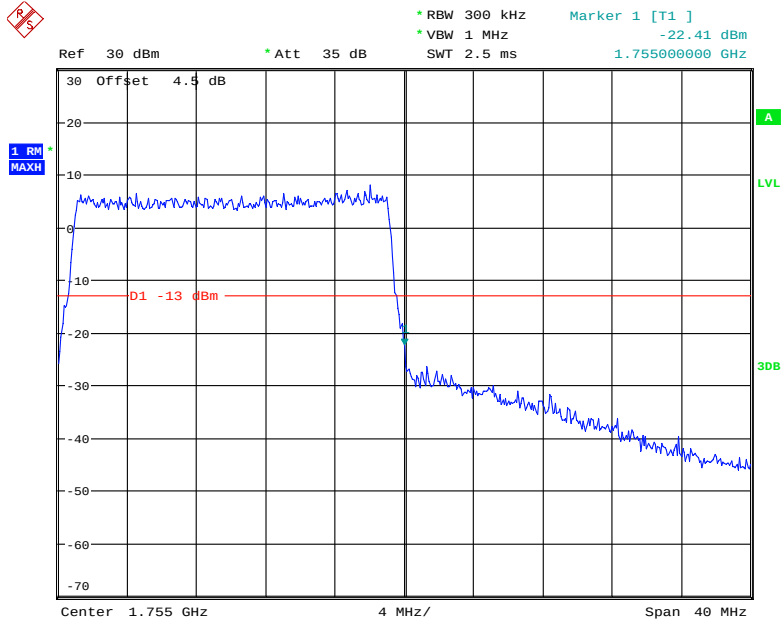
Date: 31.OCT.2018 14:08:43

16QAM_20MHz_FULL RB_Left



Date: 31.OCT.2018 14:06:17

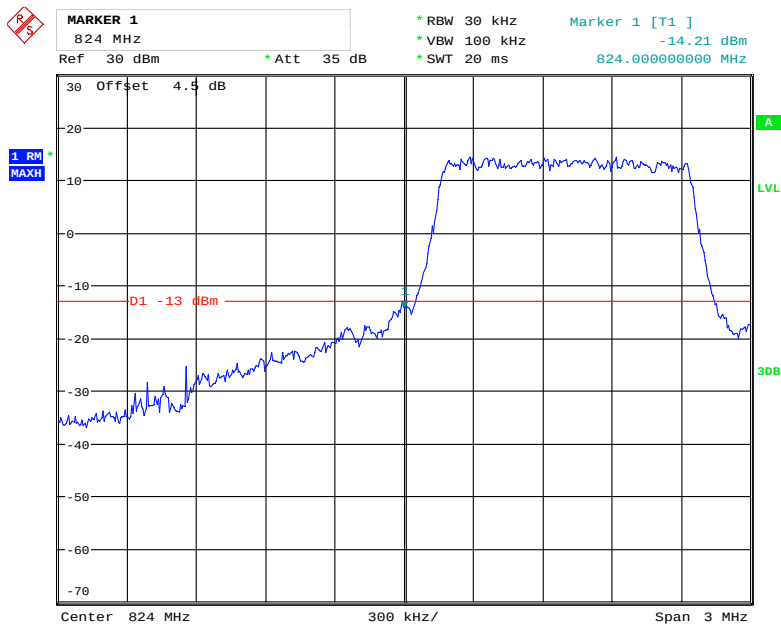
16QAM_20MHz_FULL RB_Right



Date: 31.OCT.2018 14:07:57

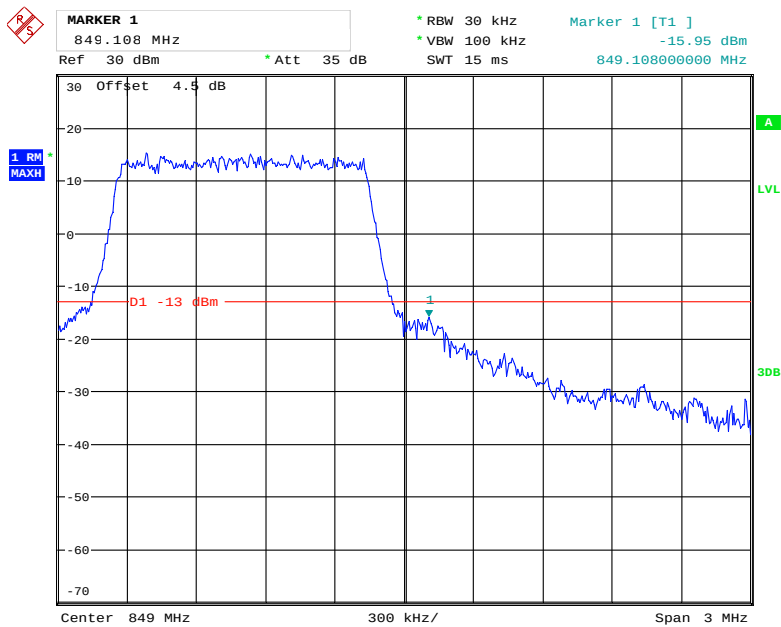
LTE Band 5

QPSK_1.4MHz_6 RB_ Left



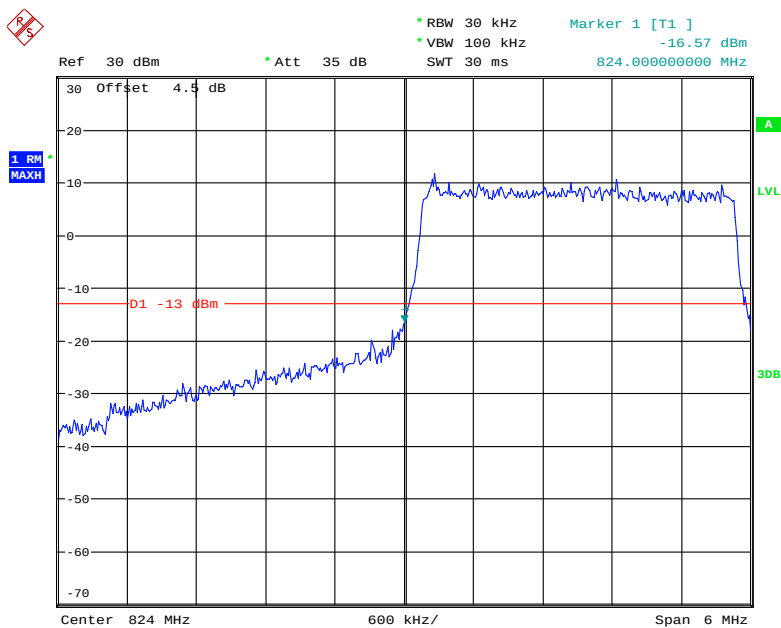
Date: 31.OCT.2018 14:21:14

QPSK_1.4MHz_6 RB_ Right



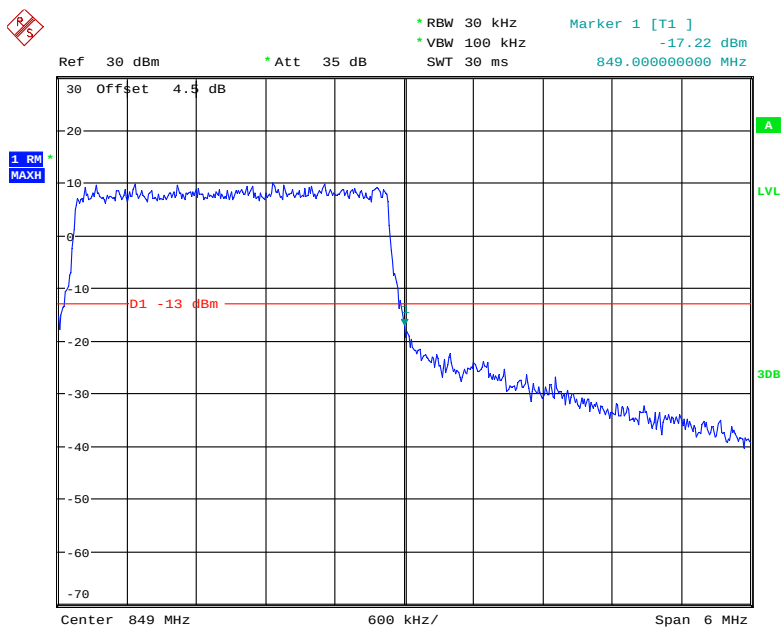
Date: 31.OCT.2018 14:33:21

QPSK_3MHz_15 RB_Left



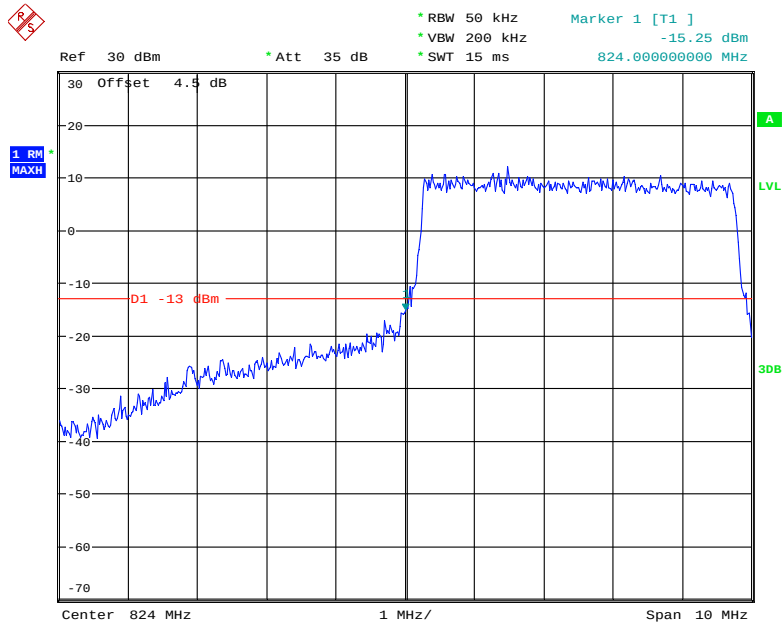
Date: 31.OCT.2018 14:23:29

QPSK_3MHz_15 RB_Right



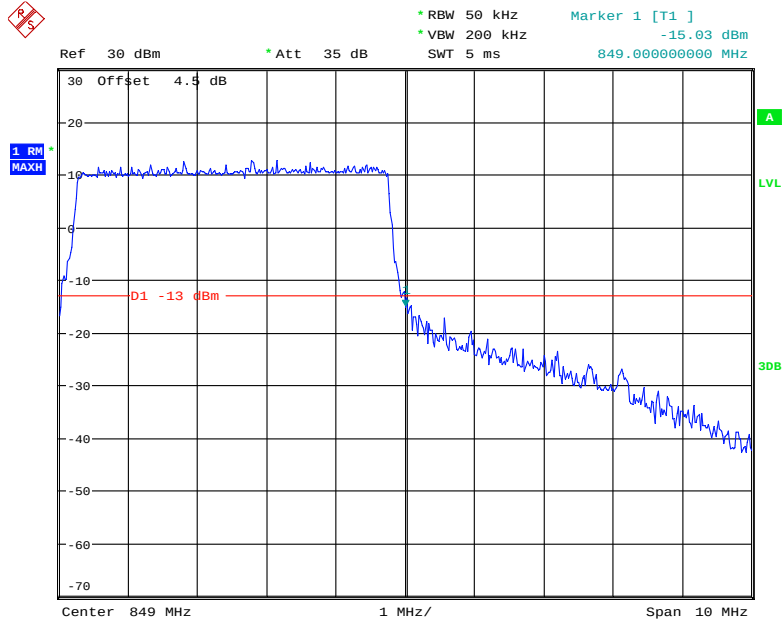
Date: 31.OCT.2018 14:31:05

QPSK_5MHz_25 RB_Left



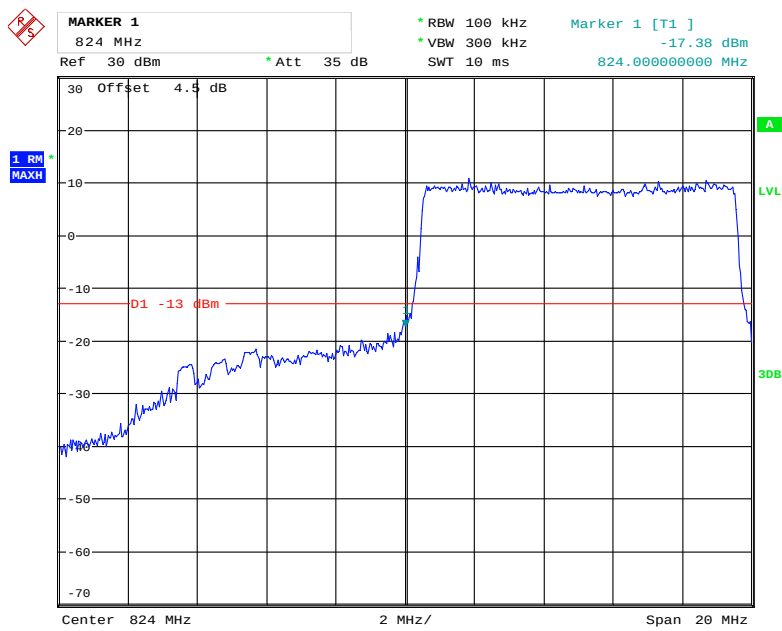
Date: 31.OCT.2018 14:25:07

QPSK_5MHz_25 RB_Right



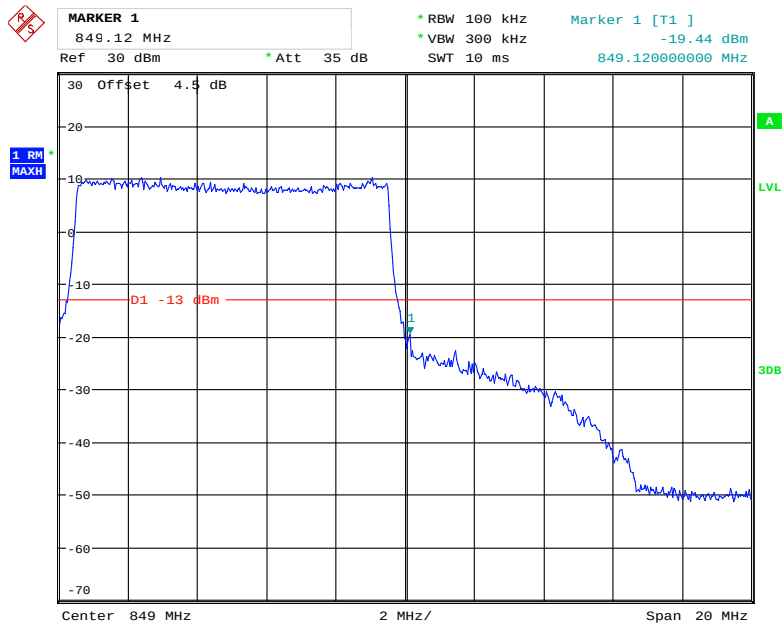
Date: 31.OCT.2018 14:29:44

QPSK_10MHz_50 RB_ Left

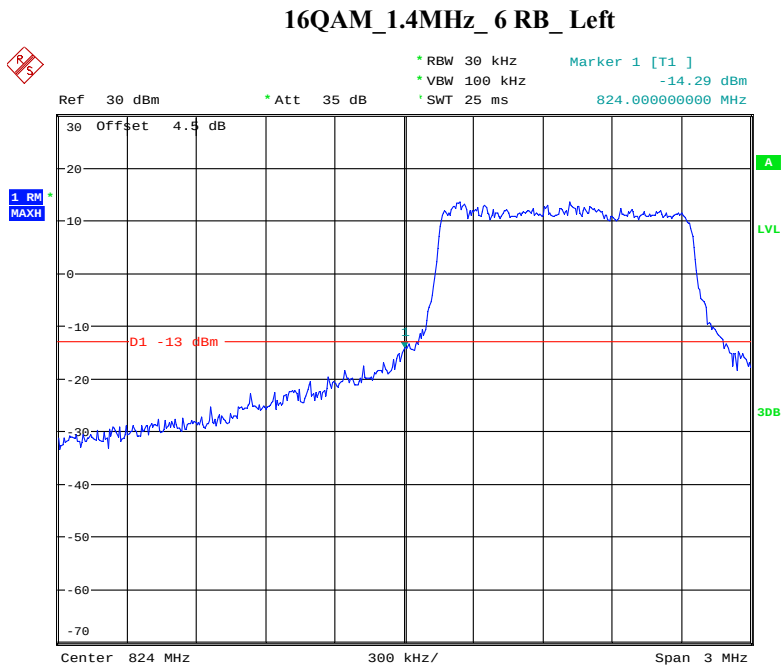


Date: 31.OCT.2018 14:27:15

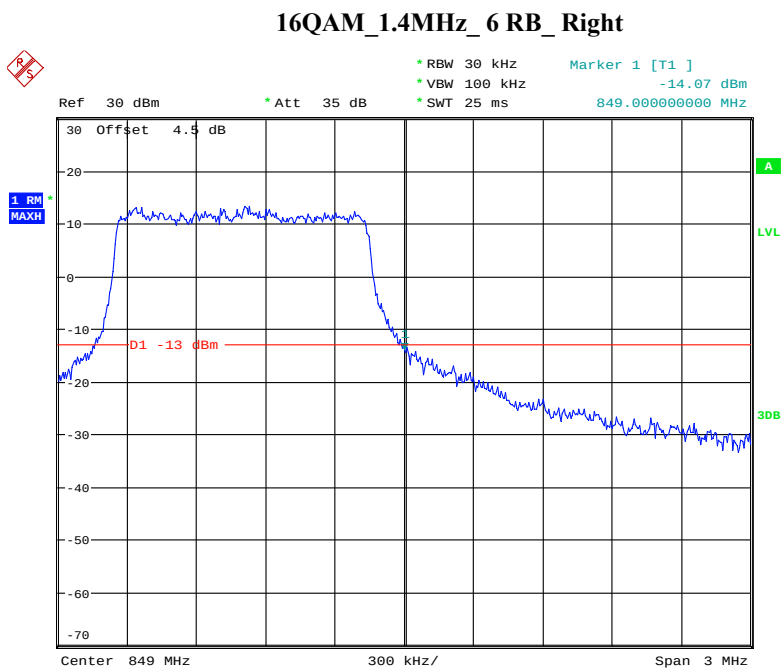
QPSK_10MHz_50 RB_ Right



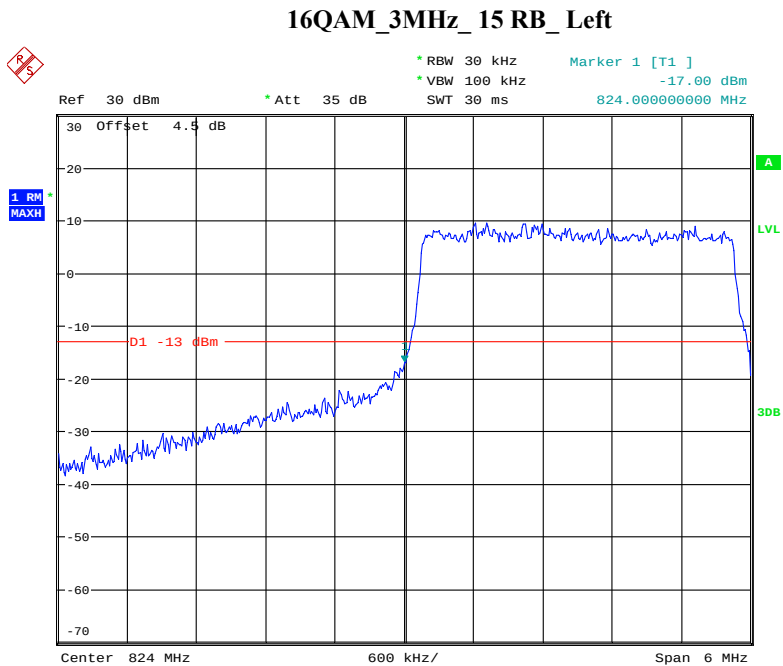
Date: 31.OCT.2018 14:28:14



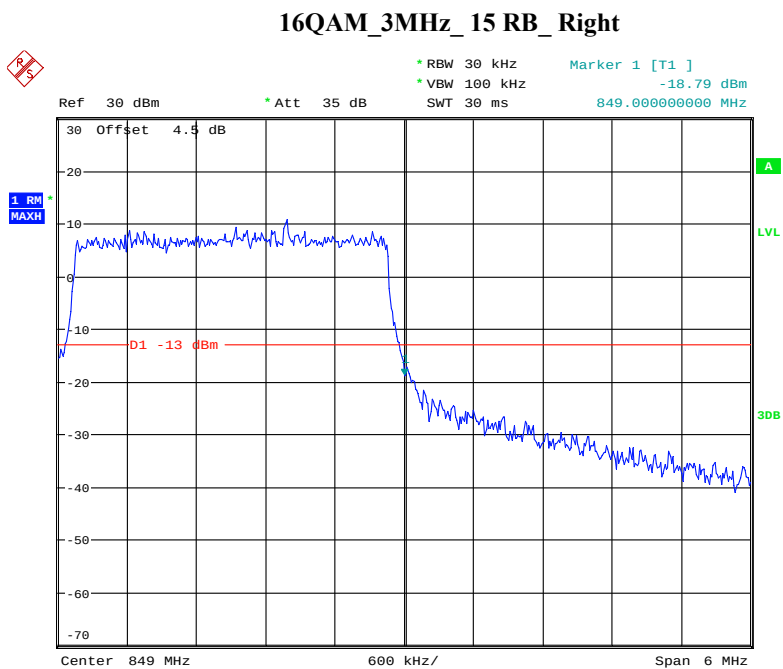
Date: 31.OCT.2018 14:22:24



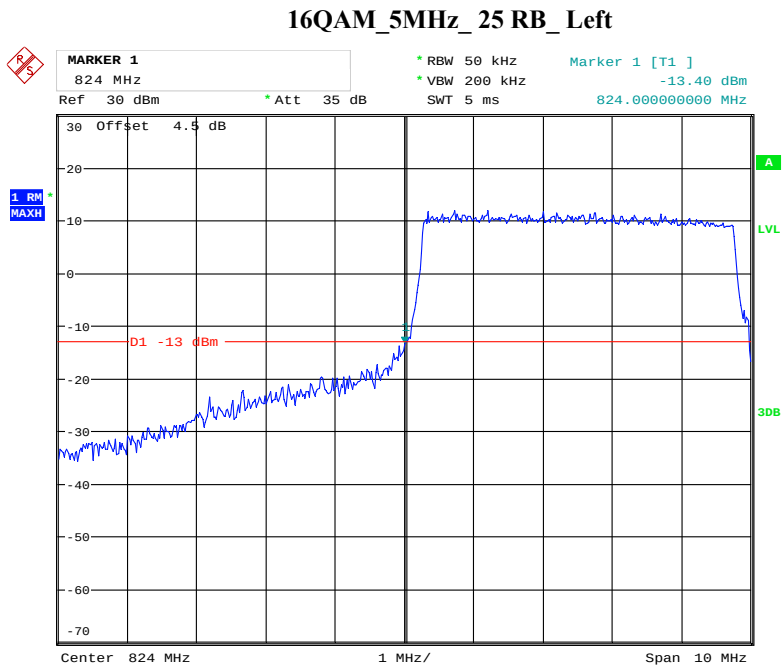
Date: 31.OCT.2018 14:32:30



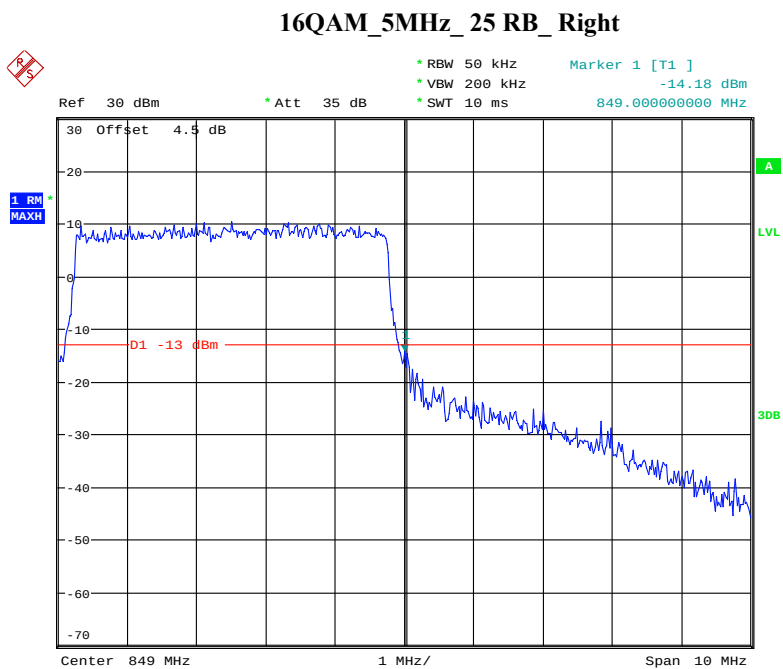
Date: 31.OCT.2018 14:23:12



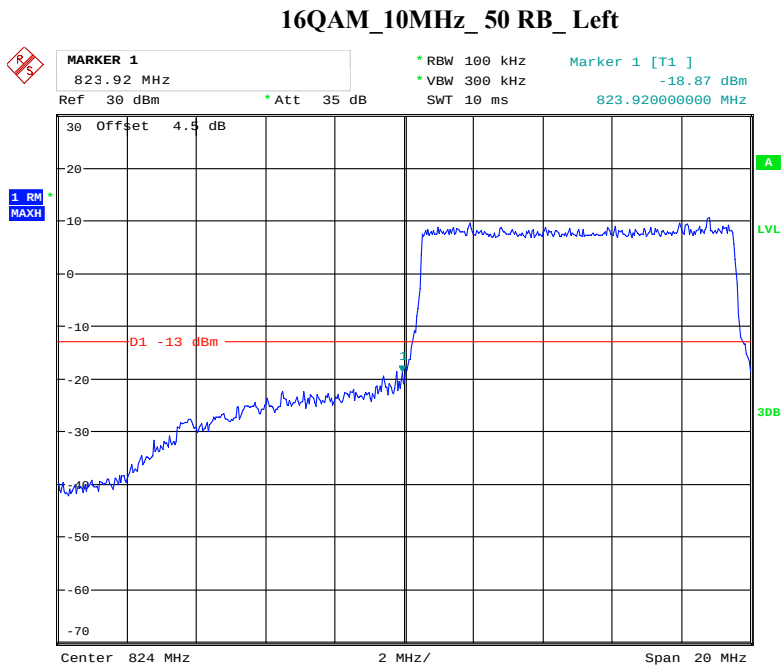
Date: 31.OCT.2018 14:31:22



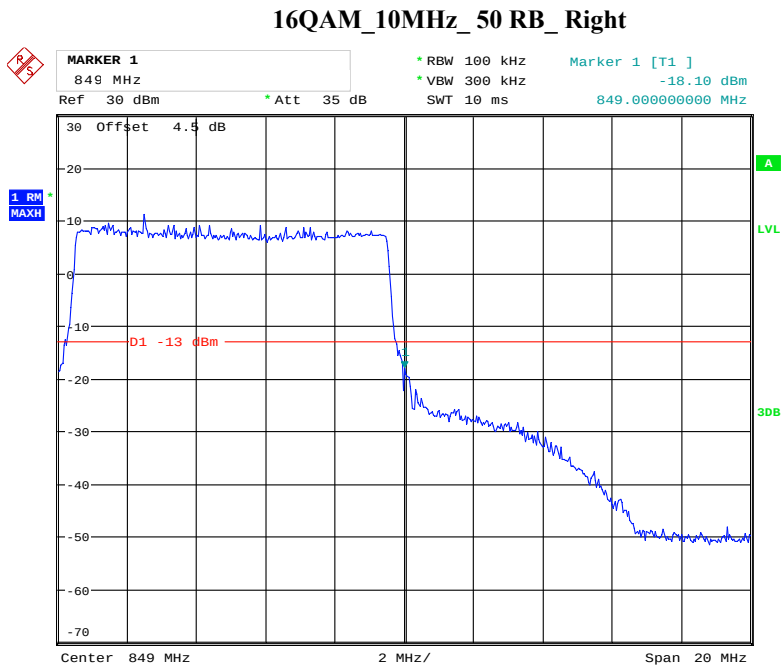
Date: 31.OCT.2018 14:24:39



Date: 31.OCT.2018 14:30:12



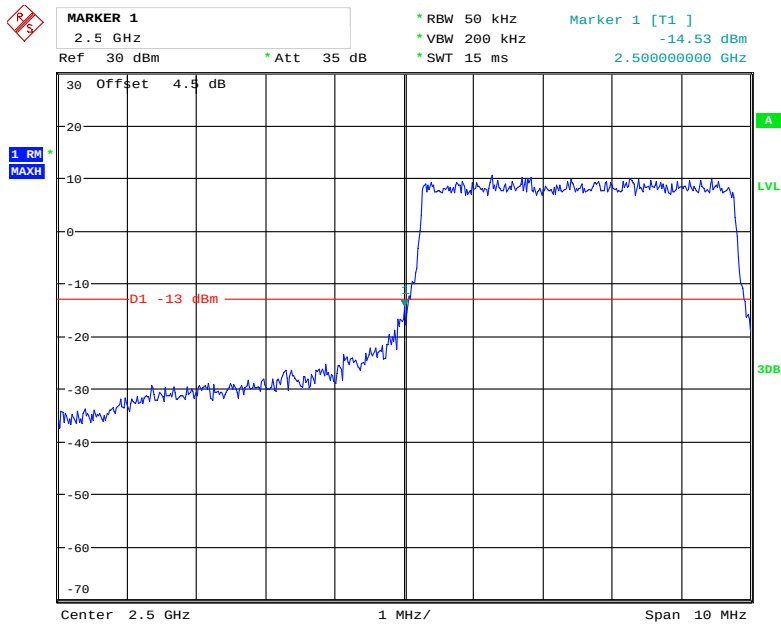
Date: 31.OCT.2018 14:26:29



Date: 31.OCT.2018 14:29:08

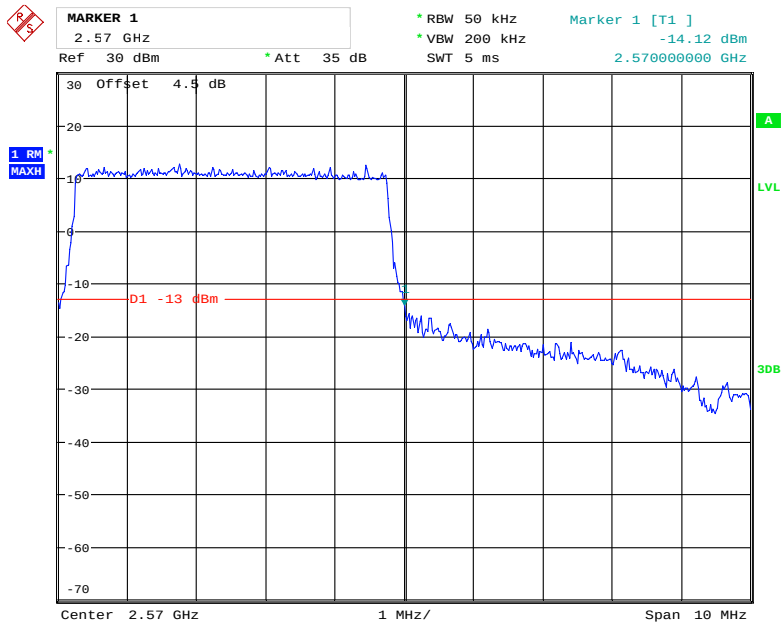
LTE Band 7

QPSK_5MHz_25 RB_ Left



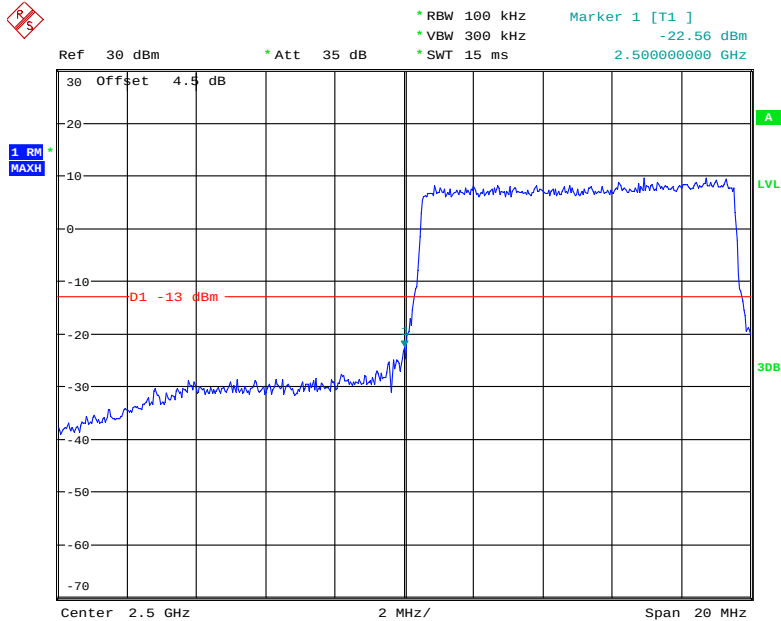
Date: 31.OCT.2018 14:38:15

QPSK_5MHz_25 RB_ Right



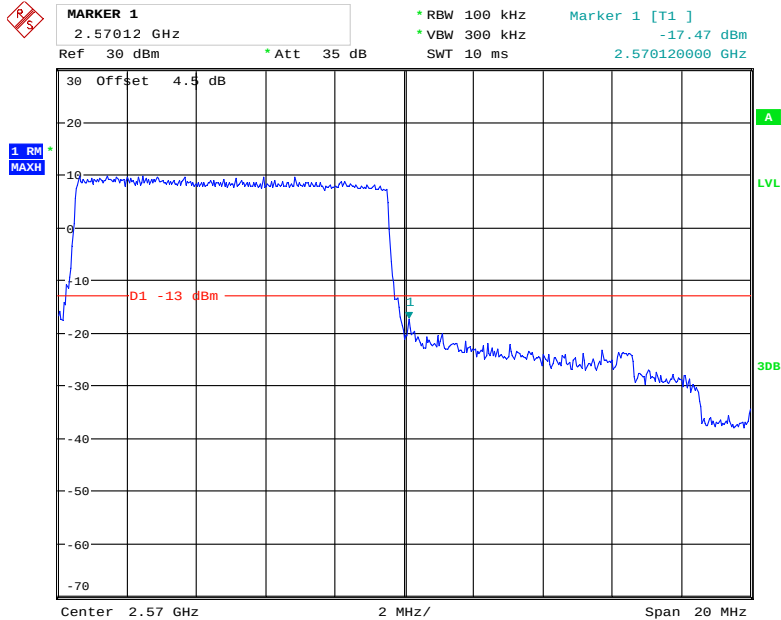
Date: 31.OCT.2018 14:47:14

QPSK_10MHz_50 RB_ Left

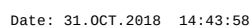
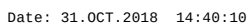


Date: 31.OCT.2018 14:39:20

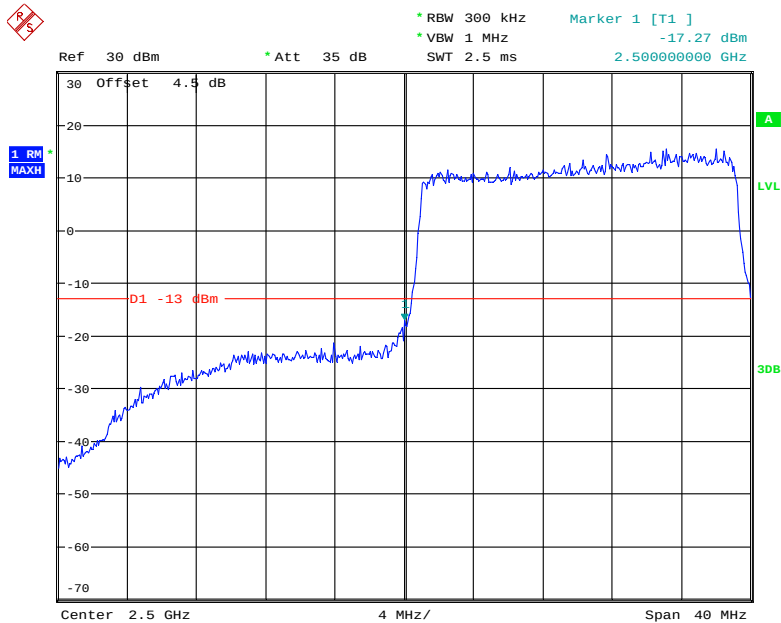
QPSK_10MHz_50 RB_ Right



Date: 31.OCT.2018 14:45:59

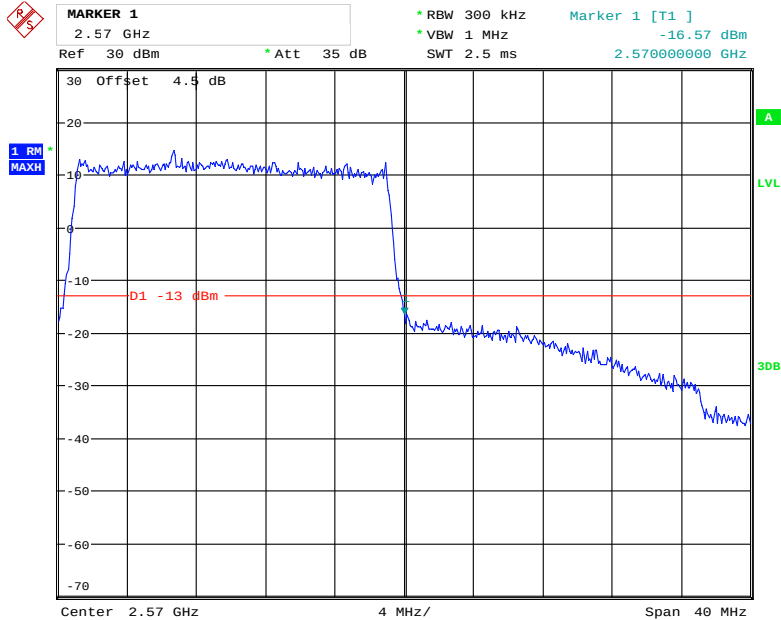


QPSK_20MHz_FULL RB_Left

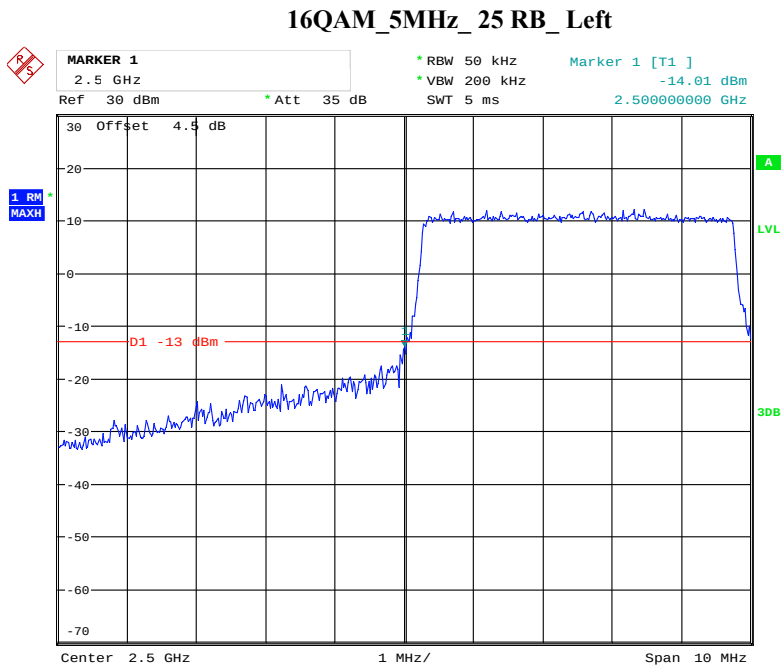


Date: 31.OCT.2018 14:41:57

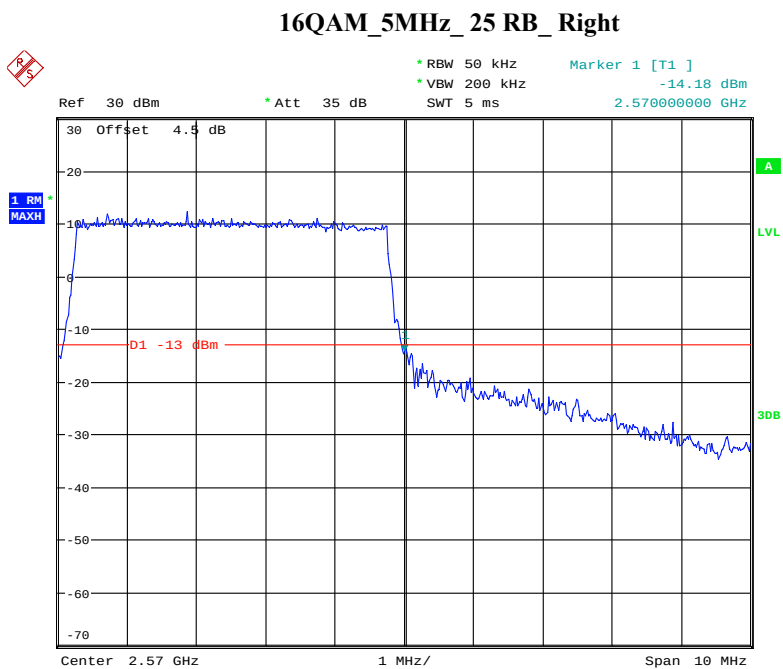
QPSK_20MHz_FULL RB_Right



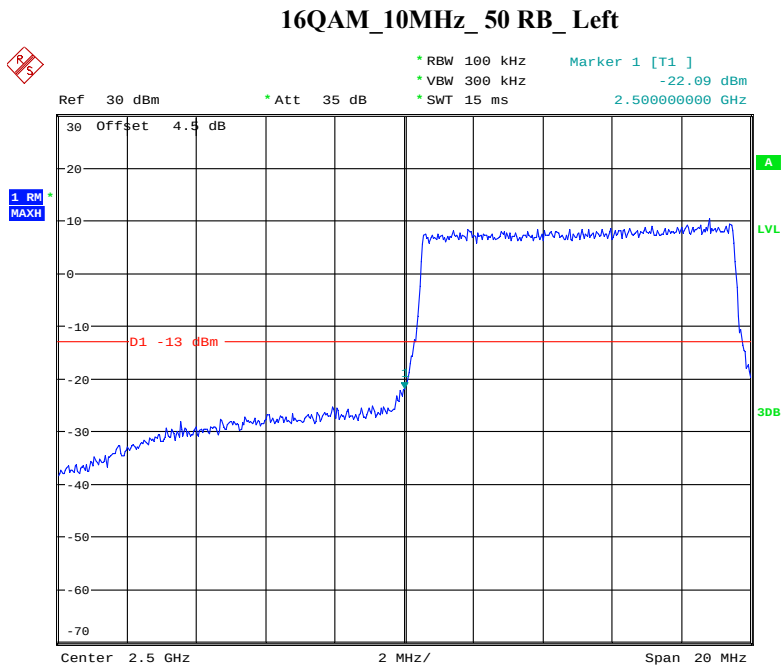
Date: 31.OCT.2018 14:42:43



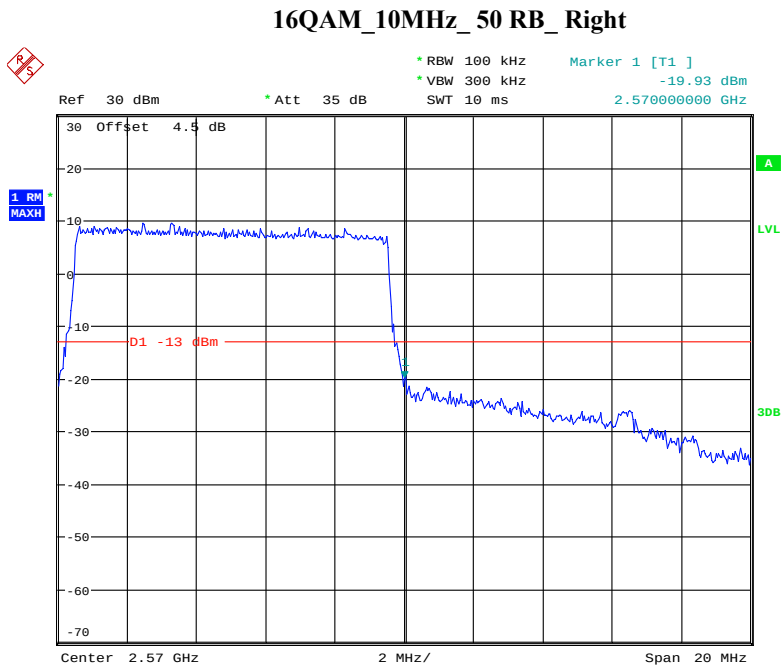
Date: 31.OCT.2018 14:36:58



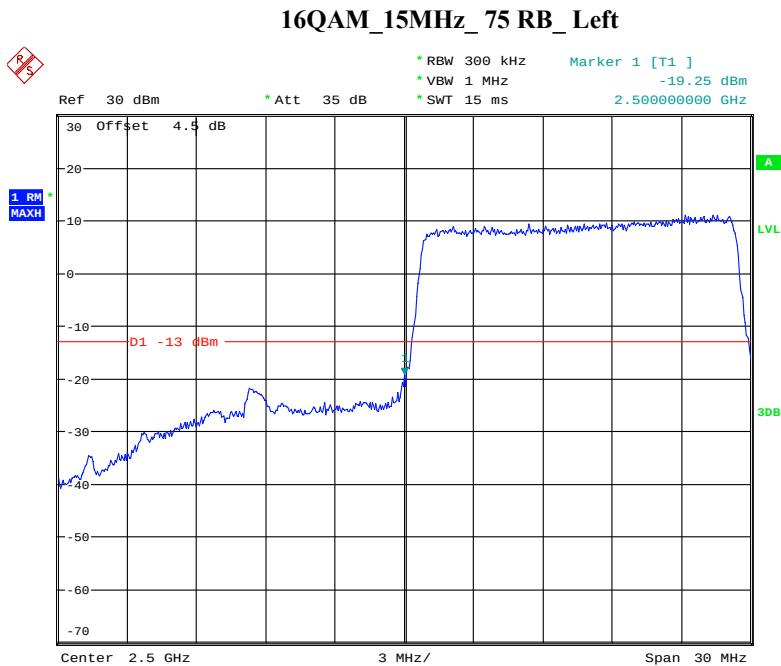
Date: 31.OCT.2018 14:47:48



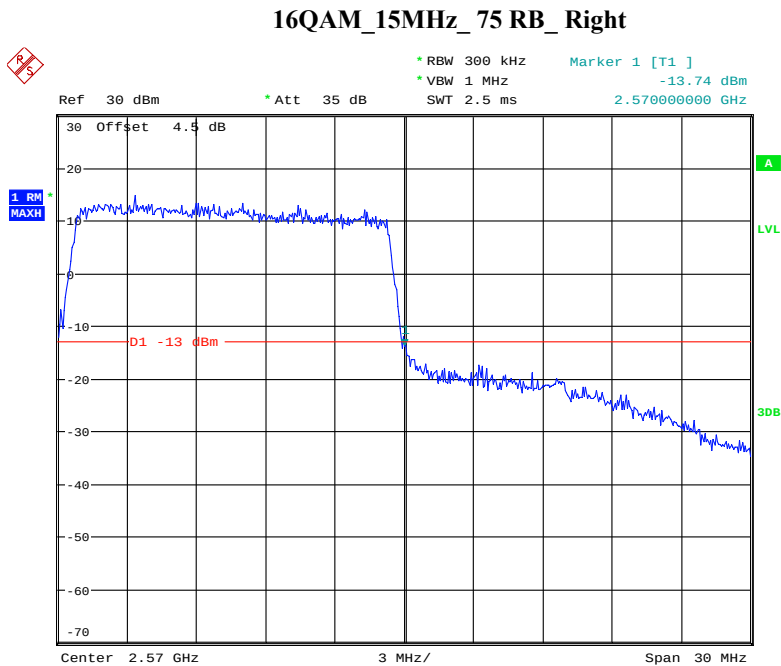
Date: 31.OCT.2018 14:39:02



Date: 31.OCT.2018 14:45:37

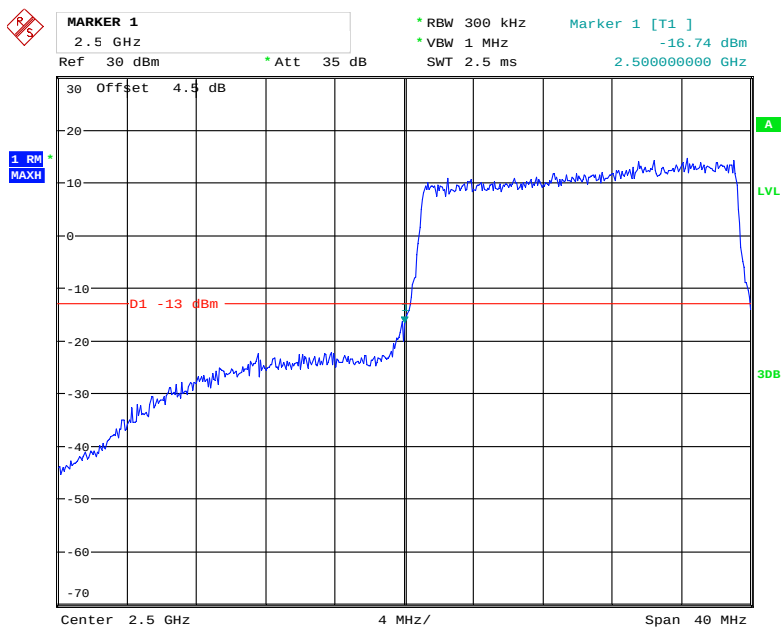


Date: 31.OCT.2018 14:40:33



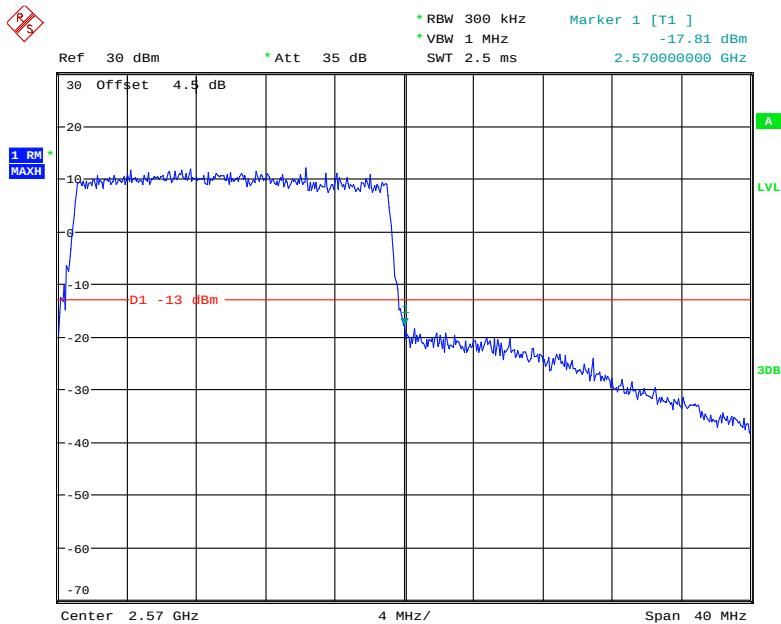
Date: 31.OCT.2018 14:43:34

16QAM_20MHz_ FULL RB_ Left



Date: 31.OCT.2018 14:41:34

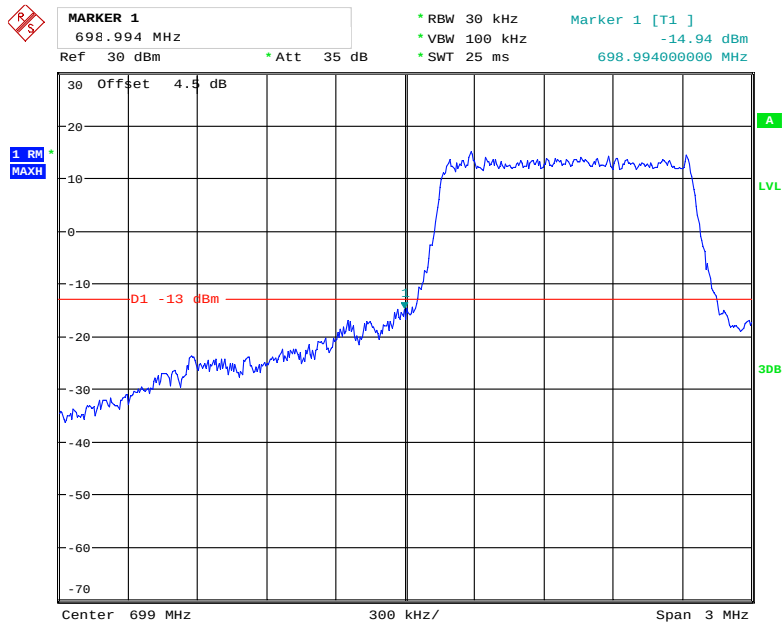
16QAM_20MHz_ FULL RB_ Right



Date: 31.OCT.2018 14:42:58

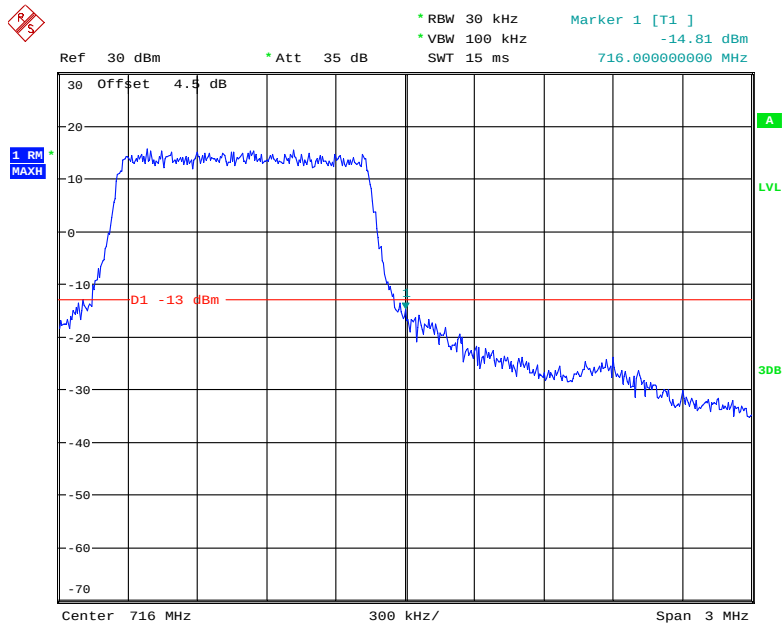
LTE Band 12

QPSK_1.4MHz_6 RB_ Left



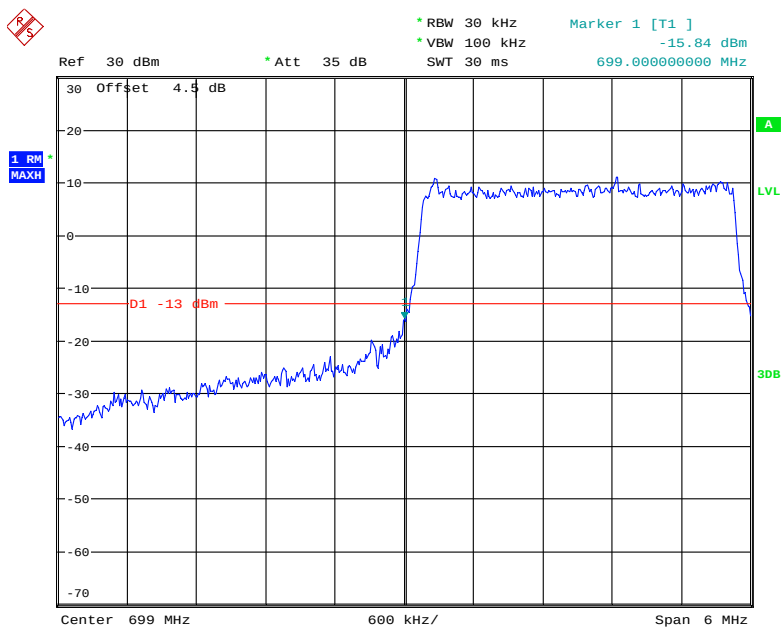
Date: 31.OCT.2018 14:50:56

QPSK_1.4MHz_6 RB_ Right



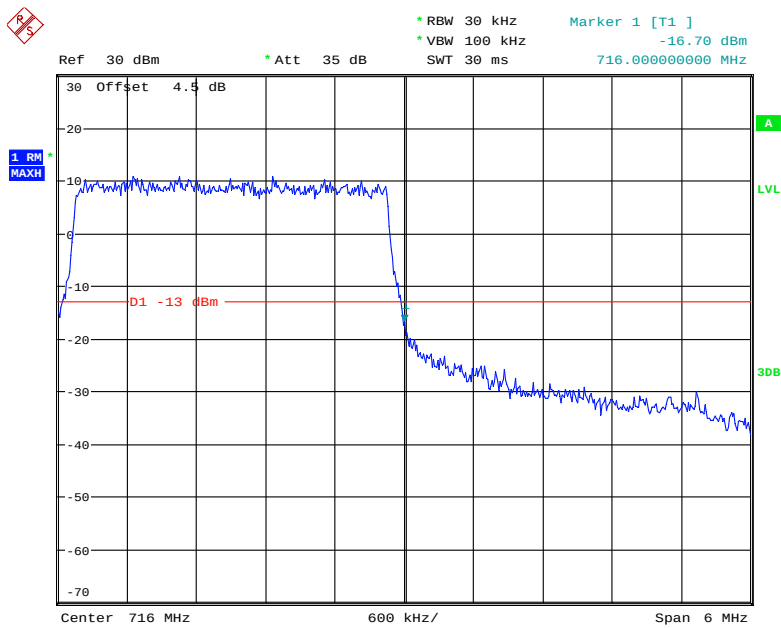
Date: 31.OCT.2018 15:03:25

QPSK_3MHz_15 RB_Left



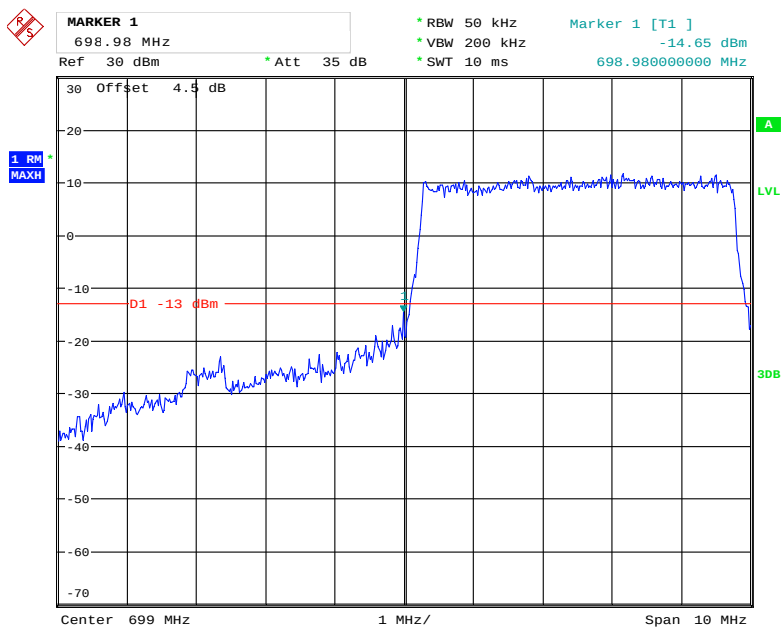
Date: 31.OCT.2018 14:52:25

QPSK_3MHz_15 RB_Right



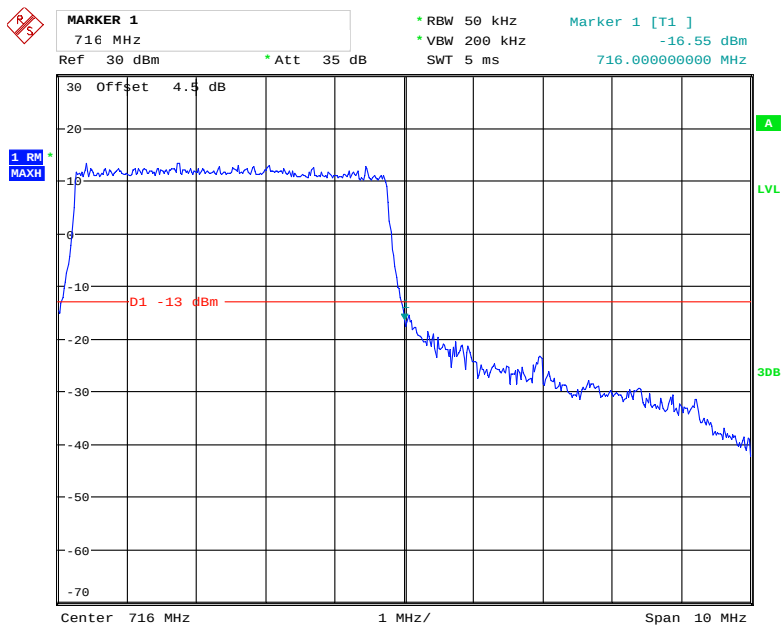
Date: 31.OCT.2018 15:00:59

QPSK_5MHz_25 RB_Left

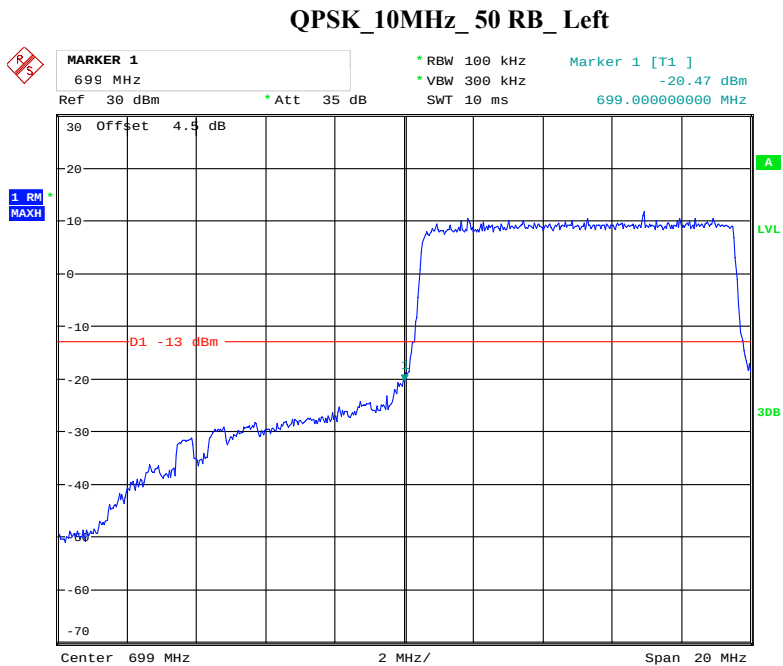


Date: 31.OCT.2018 14:54:08

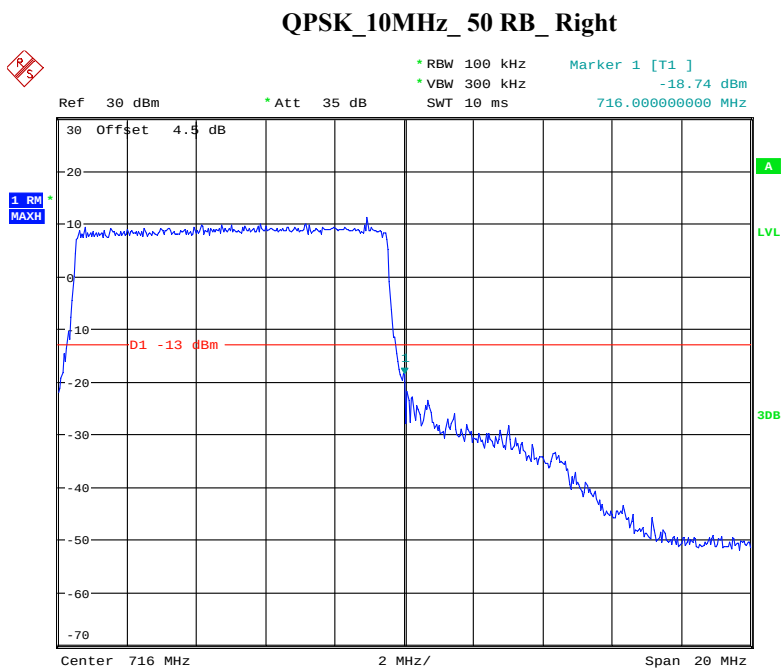
QPSK_5MHz_25 RB_Right



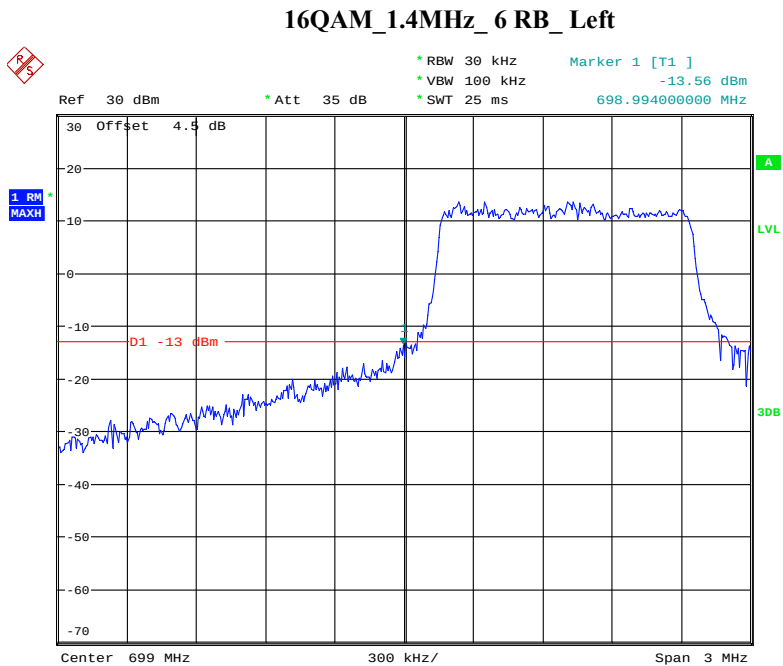
Date: 31.OCT.2018 14:59:25



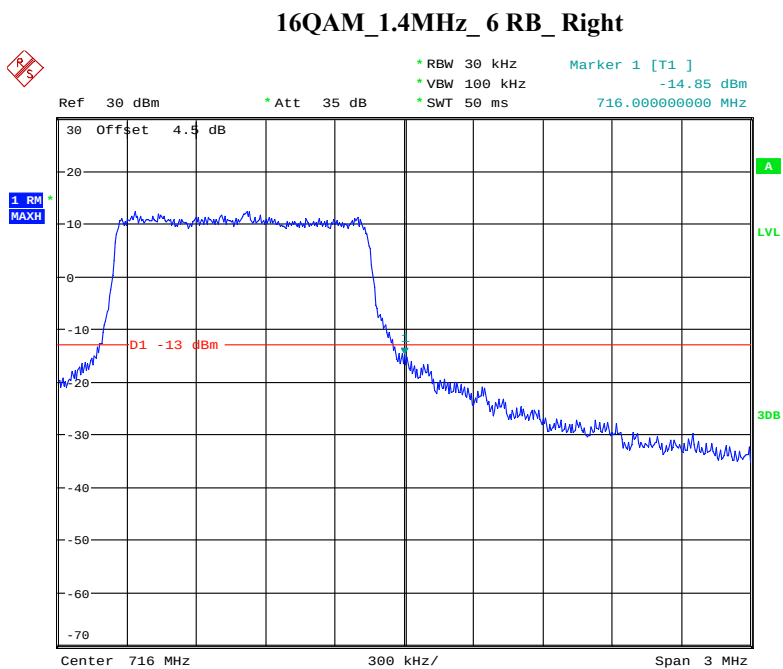
Date: 31.OCT.2018 14:55:14



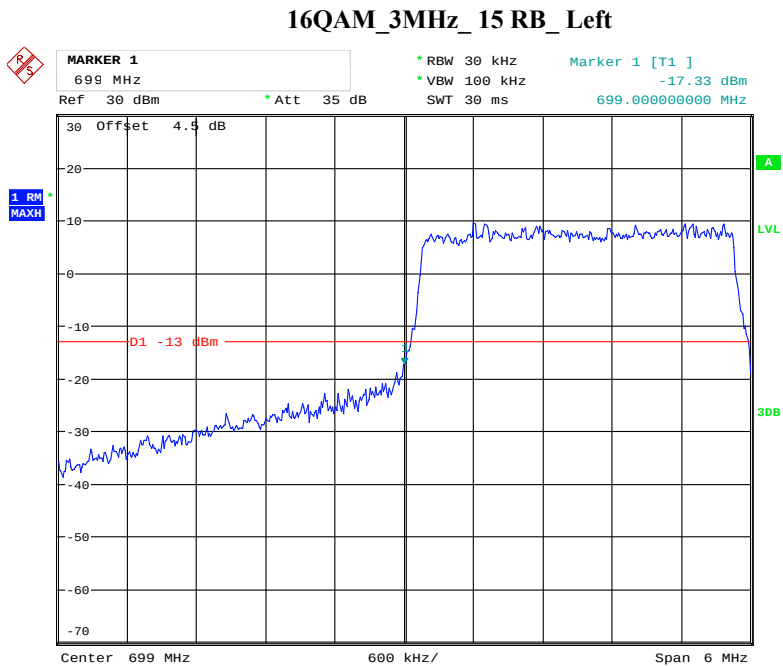
Date: 31.OCT.2018 14:58:15



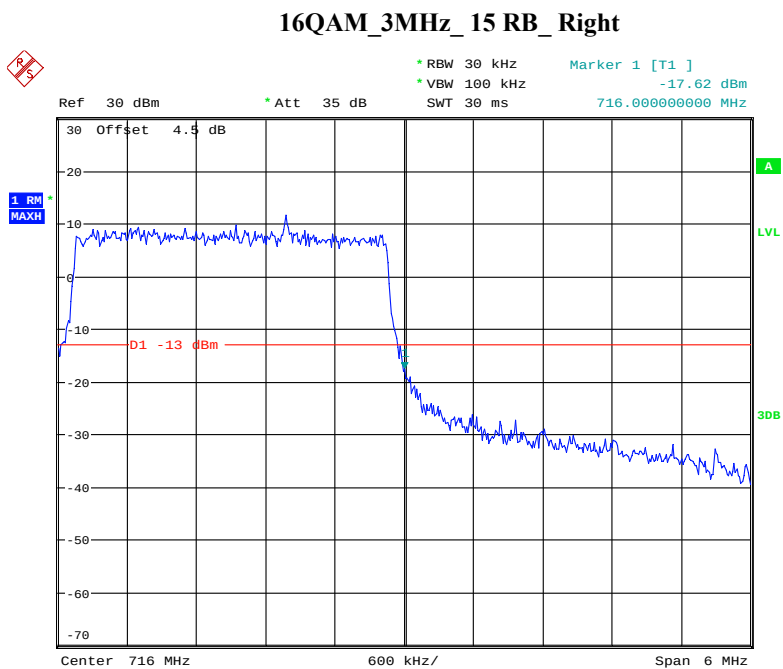
Date: 31.OCT.2018 14:51:20



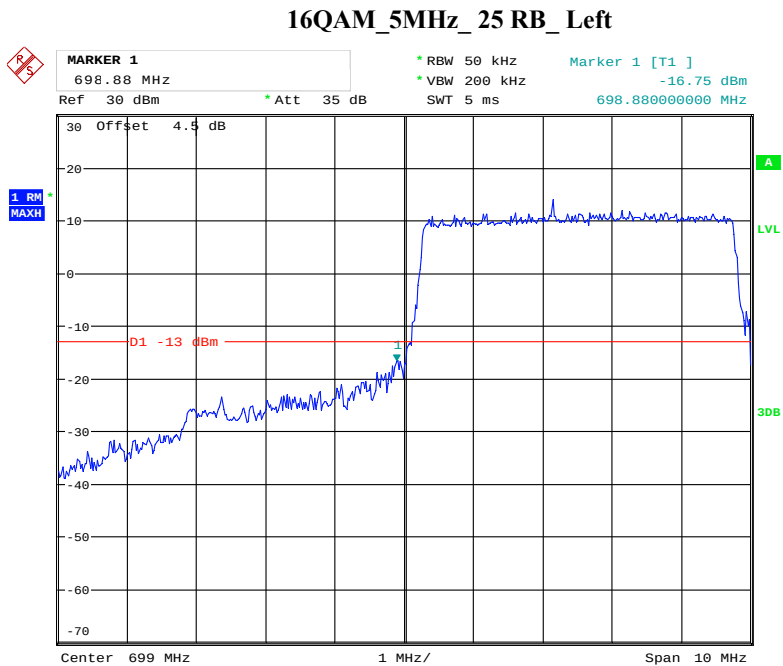
Date: 31.OCT.2018 15:02:32



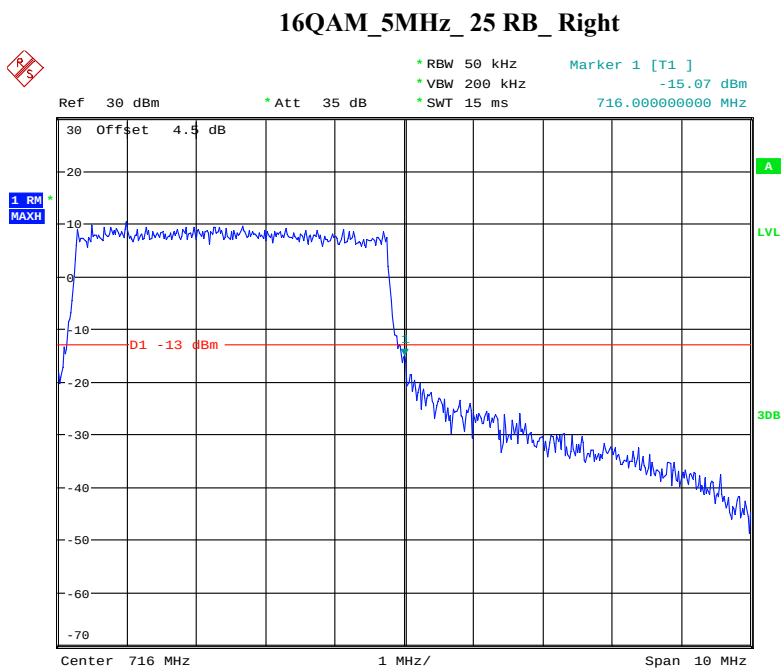
Date: 31.OCT.2018 14:51:58



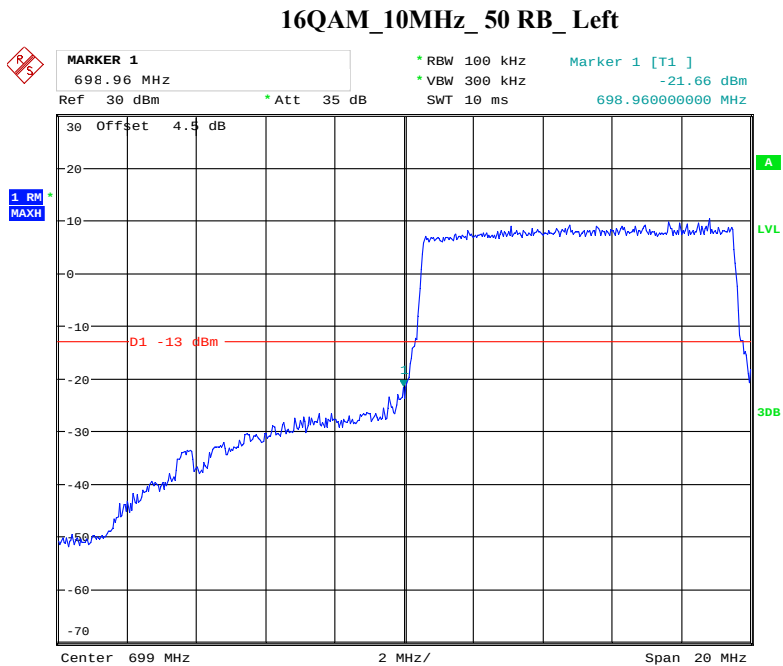
Date: 31.OCT.2018 15:01:16



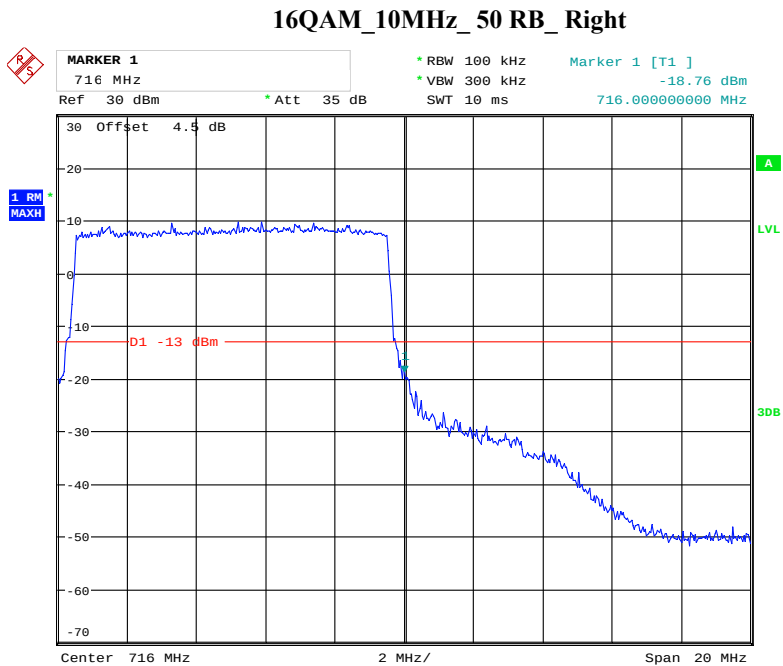
Date: 31.OCT.2018 14:53:23



Date: 31.OCT.2018 15:00:03



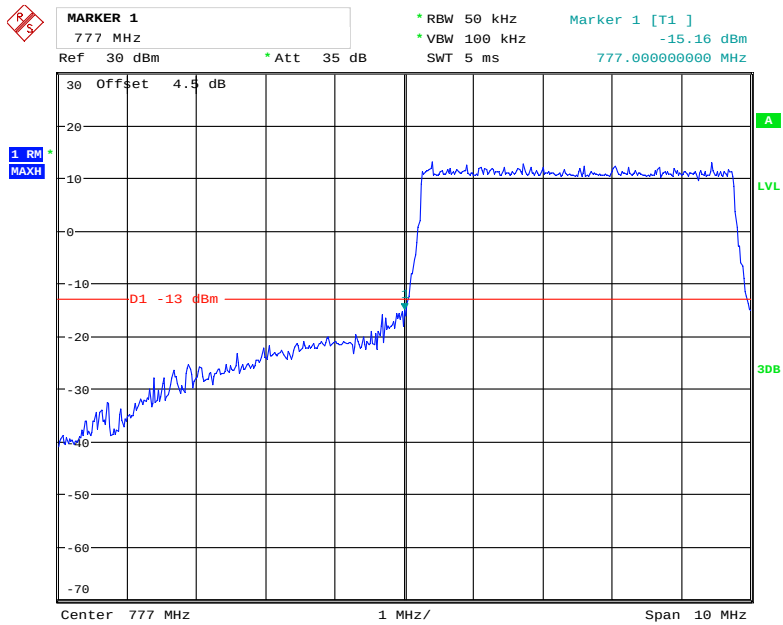
Date: 31.OCT.2018 14:55:45



Date: 31.OCT.2018 14:56:23

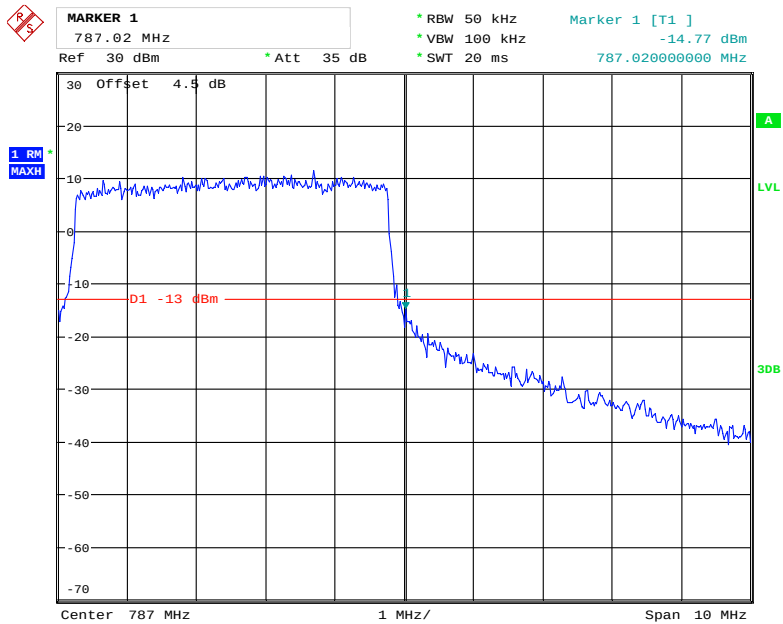
LTE Band 13

QPSK_5MHz_25 RB_ Left



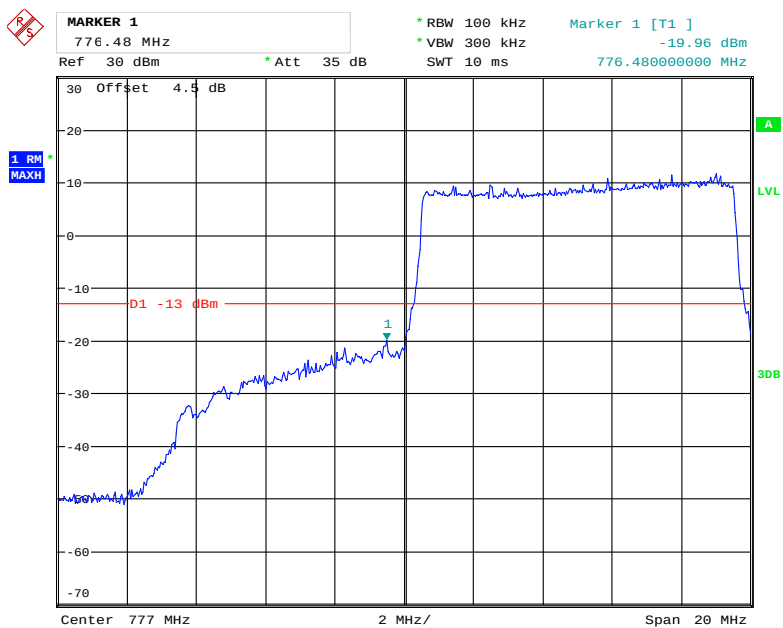
Date: 31.OCT.2018 15:07:08

QPSK_5MHz_25 RB_ Right



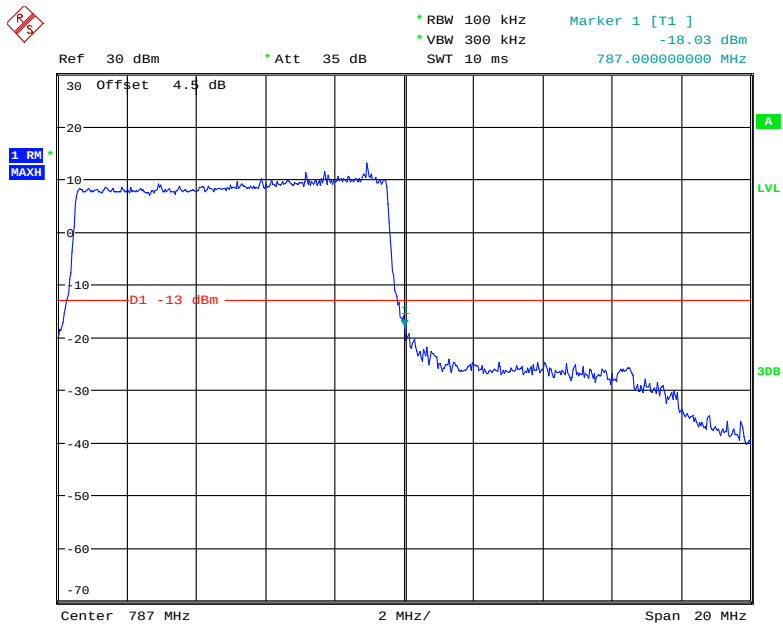
Date: 31.OCT.2018 15:09:35

QPSK_10MHz_50 RB Left

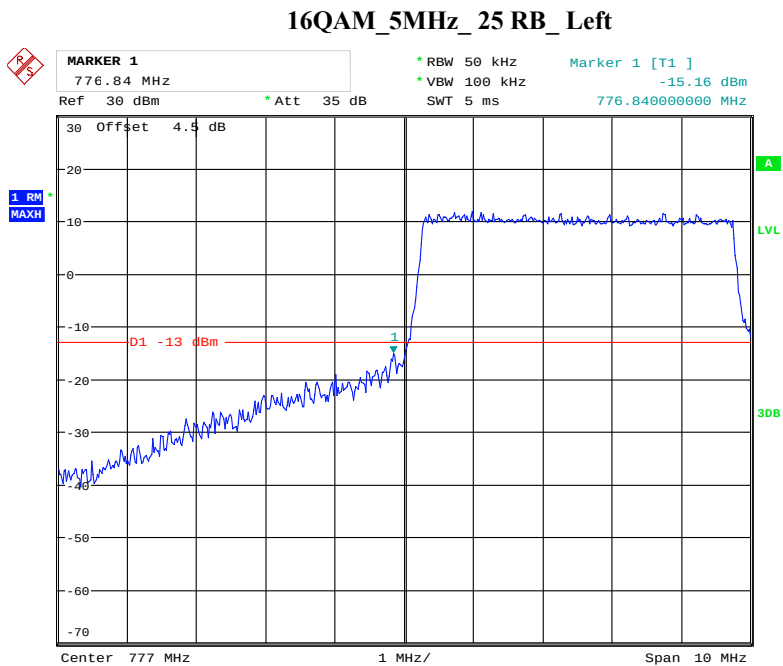


Date: 31.OCT.2018 15:22:33

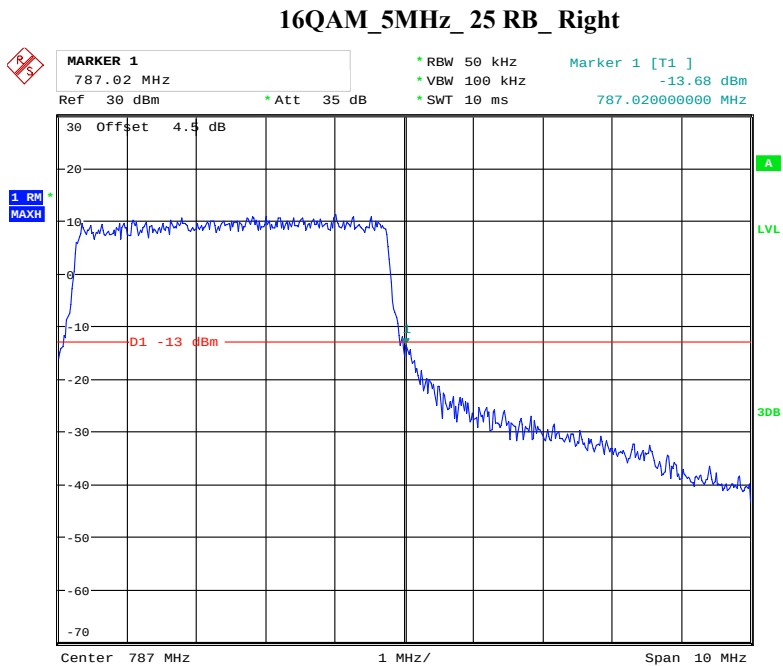
QPSK_10MHz_50 RB Right



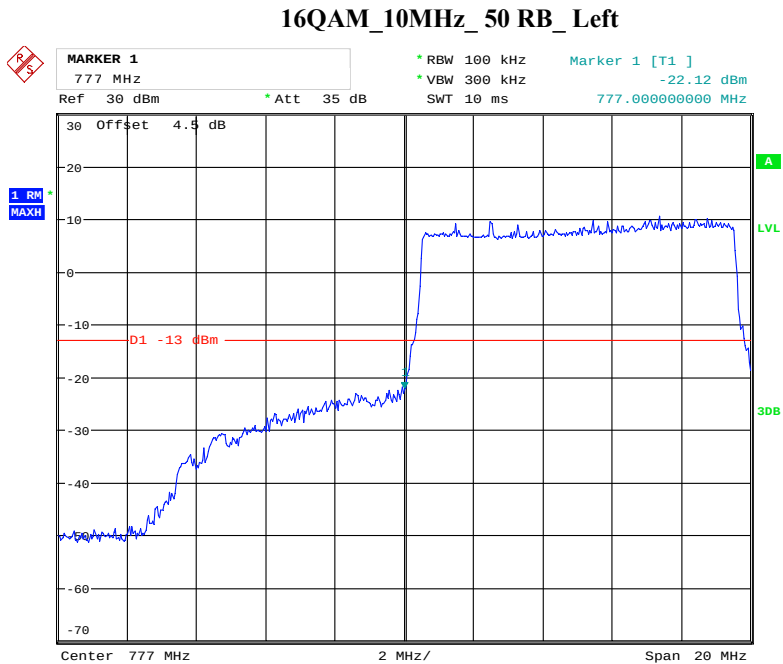
Date: 31.OCT.2018 15:11:20



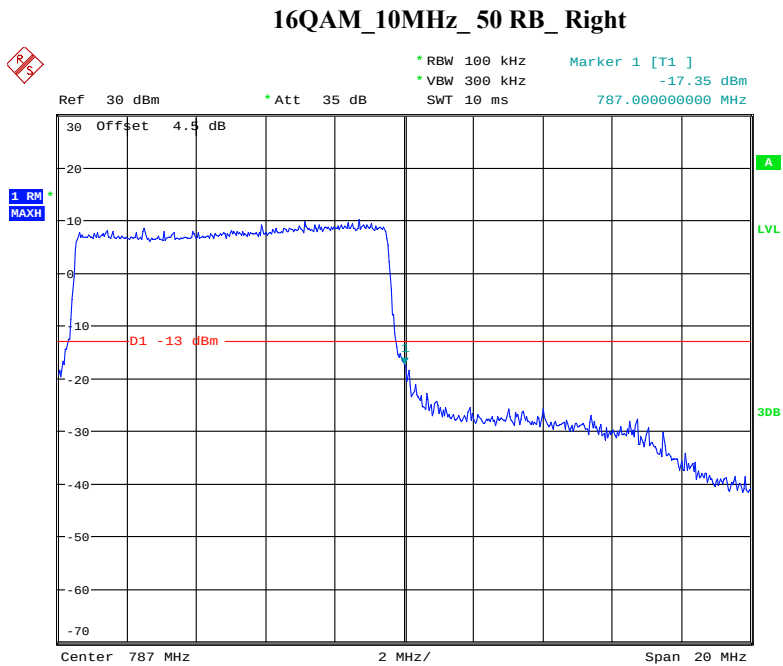
Date: 31.OCT.2018 15:06:30



Date: 31.OCT.2018 15:08:13



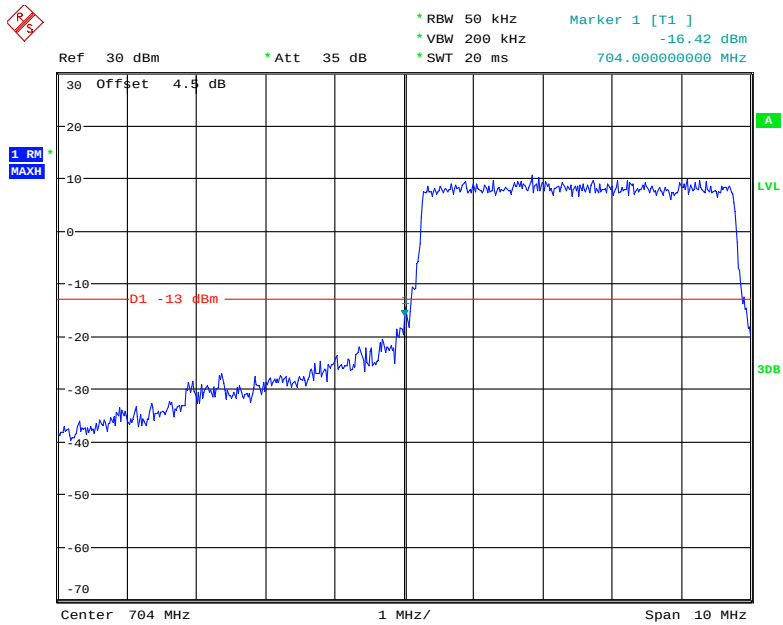
Date: 31.OCT.2018 15:22:08



Date: 31.OCT.2018 15:11:55

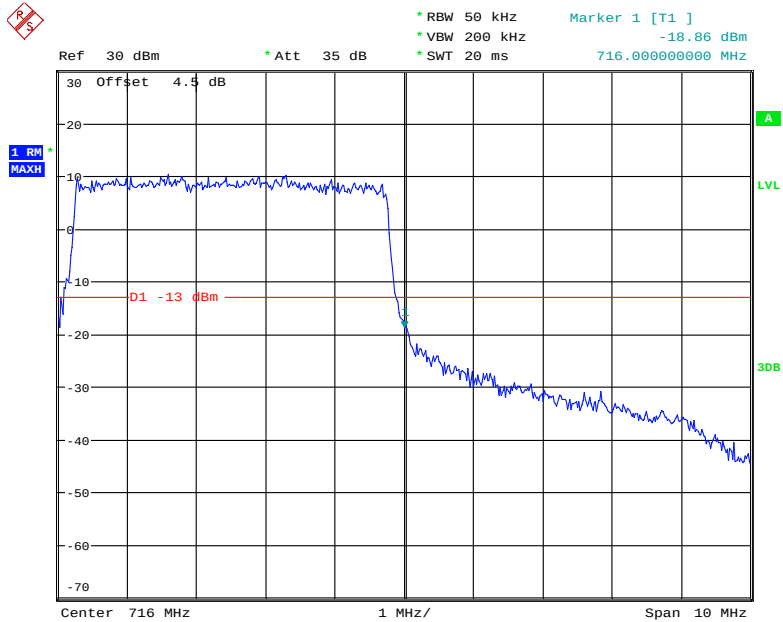
LTE Band 17

QPSK_5MHz_25 RB_ Left



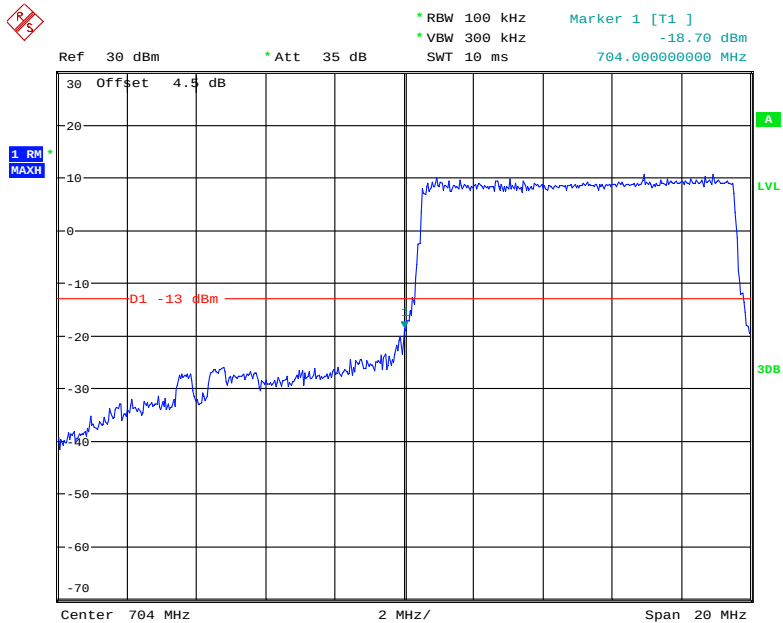
Date: 31.OCT.2018 15:27:00

QPSK_5MHz_25 RB_ Right



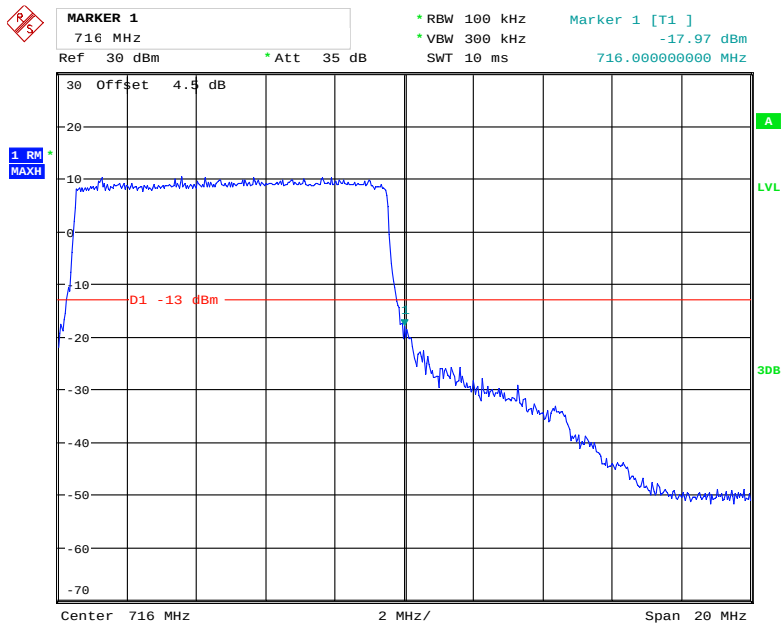
Date: 31.OCT.2018 15:28:30

QPSK_10MHz_50 RB_Left

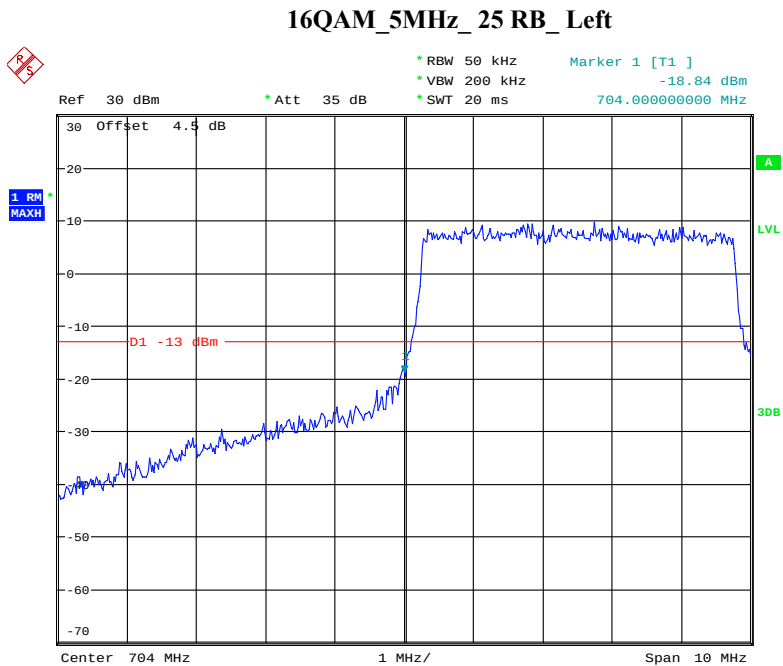


Date: 31.OCT.2018 15:25:24

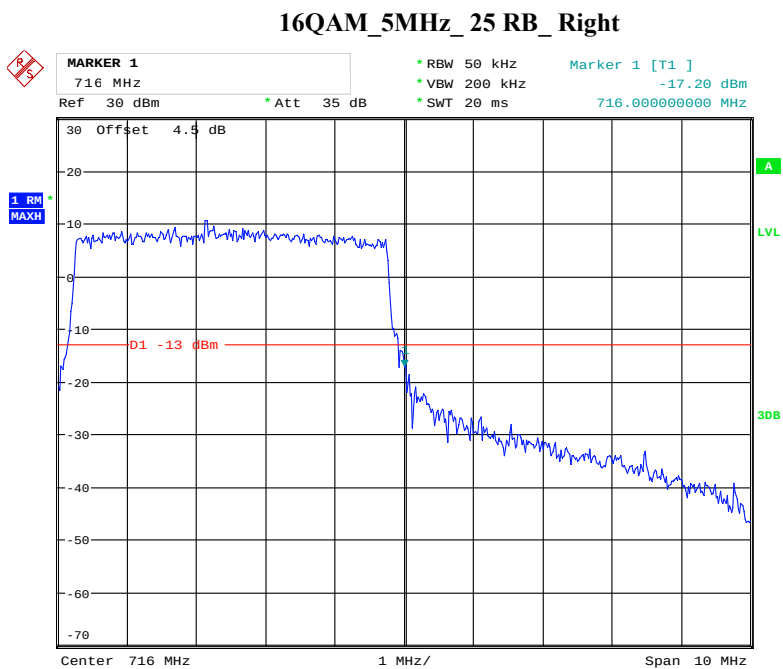
QPSK_10MHz_50 RB_Right



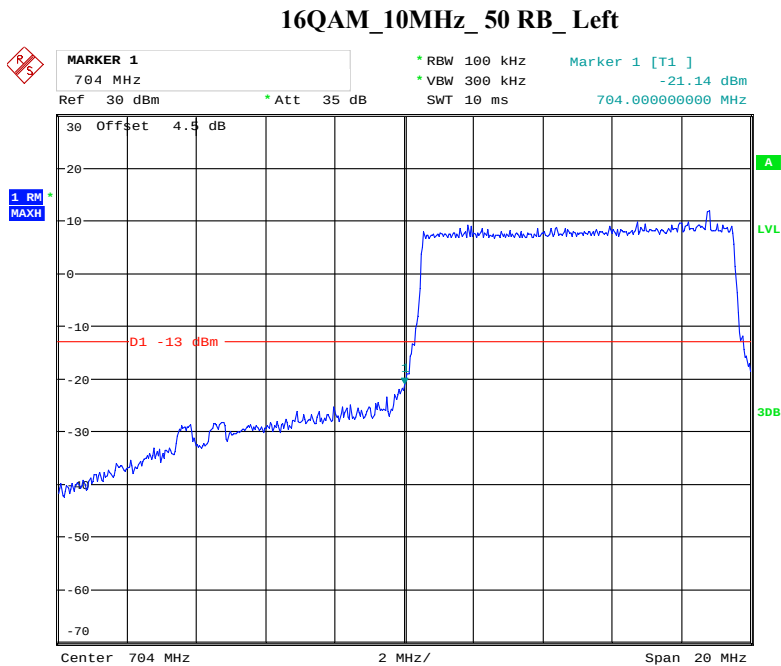
Date: 31.OCT.2018 15:23:26



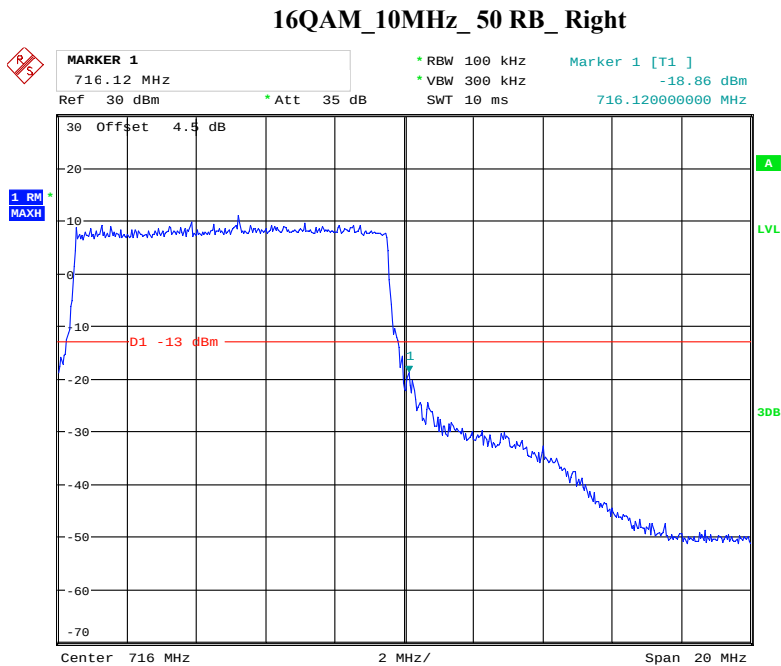
Date: 31.OCT.2018 15:27:43



Date: 31.OCT.2018 15:28:12



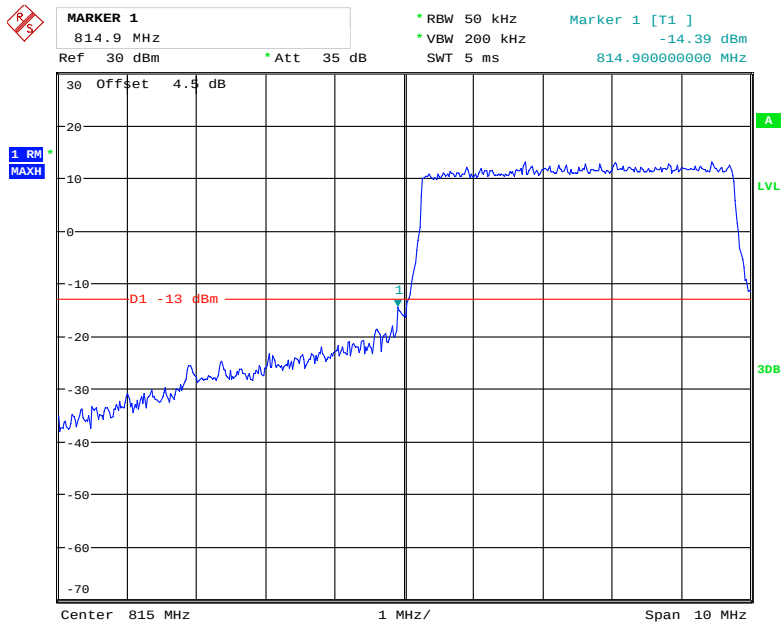
Date: 31.OCT.2018 15:24:59



Date: 31.OCT.2018 15:24:00

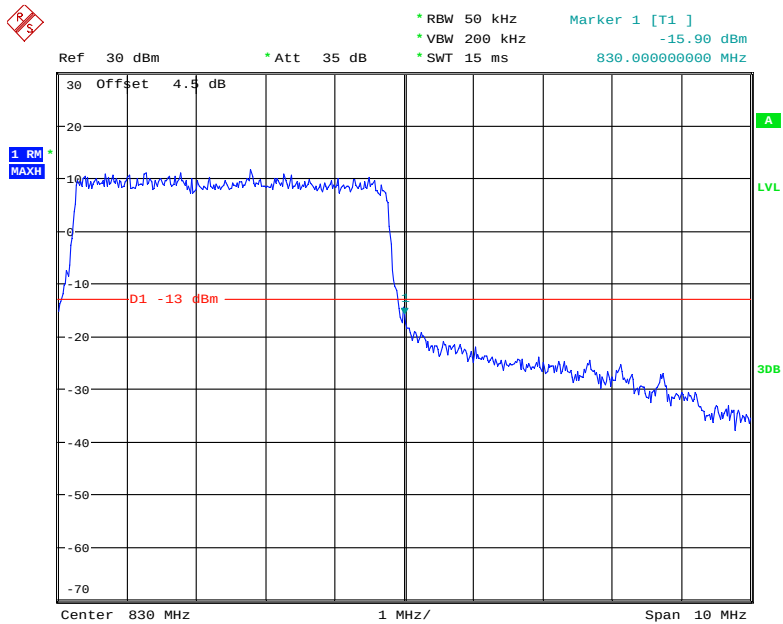
LTE Band 18

QPSK_5MHz_25 RB_ Left



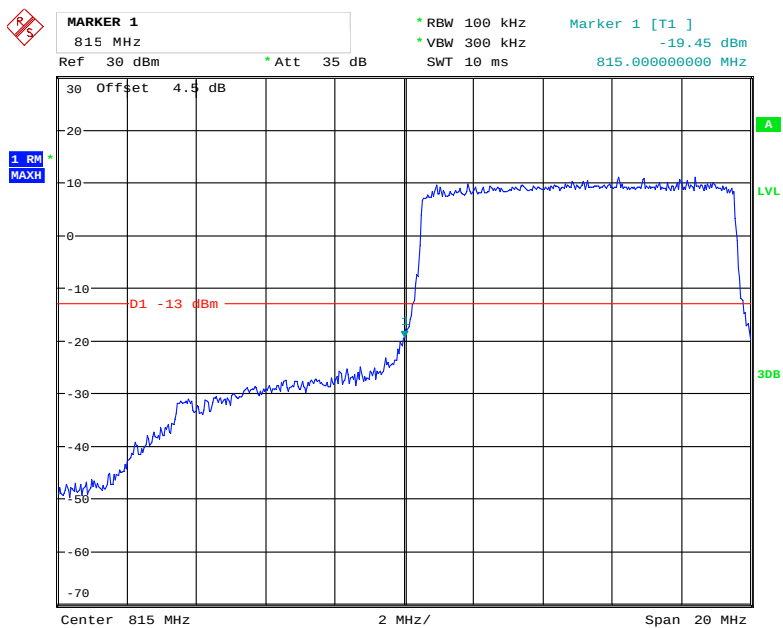
Date: 31.OCT.2018 15:33:07

QPSK_5MHz_25 RB_ Right



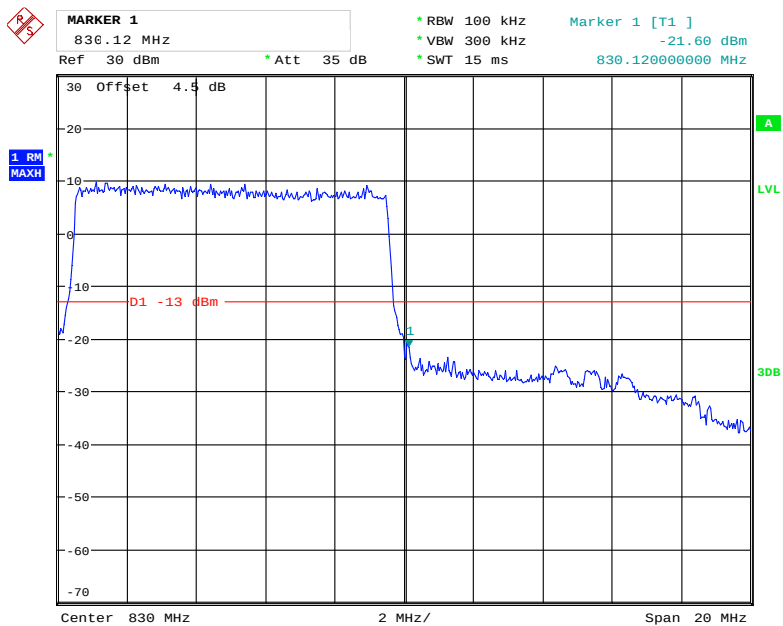
Date: 31.OCT.2018 15:37:09

QPSK_10MHz_50 RB_ Left



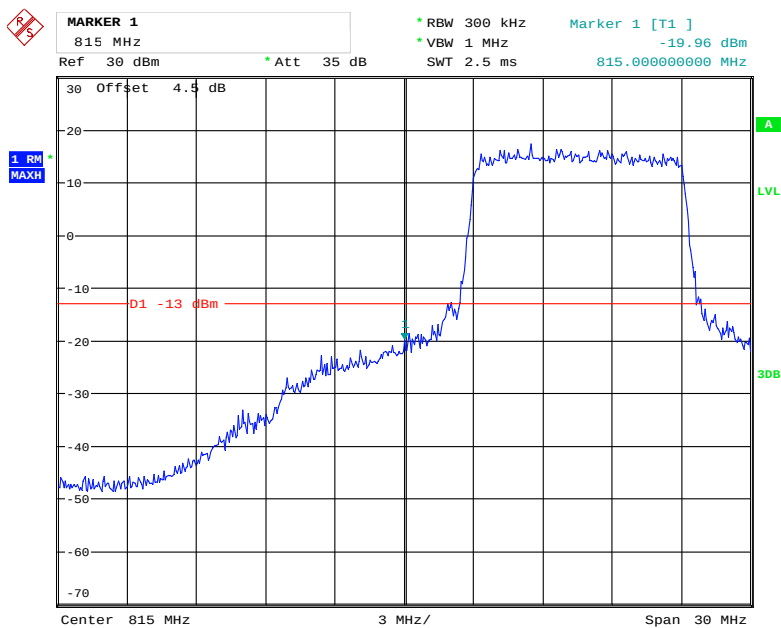
Date: 31.OCT.2018 15:41:43

QPSK_10MHz_50 RB_ Right



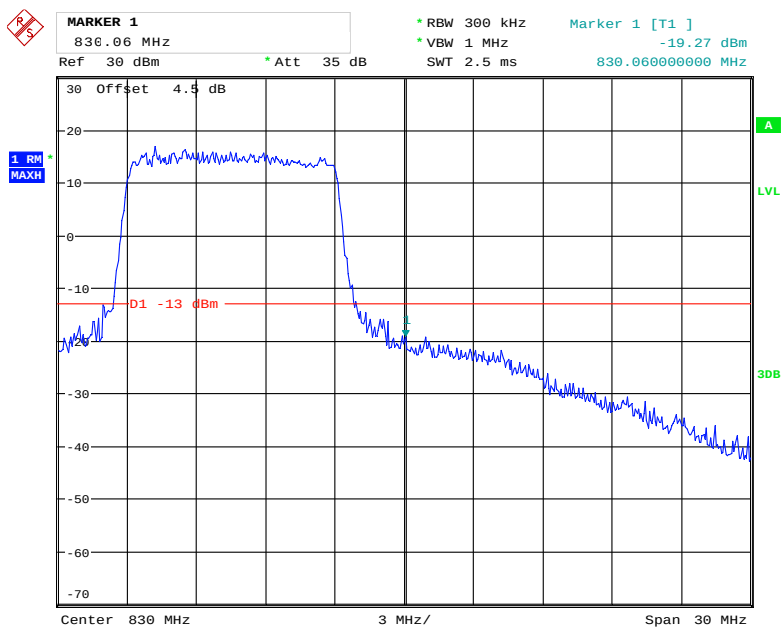
Date: 31.OCT.2018 15:38:32

QPSK_15MHz_75 RB

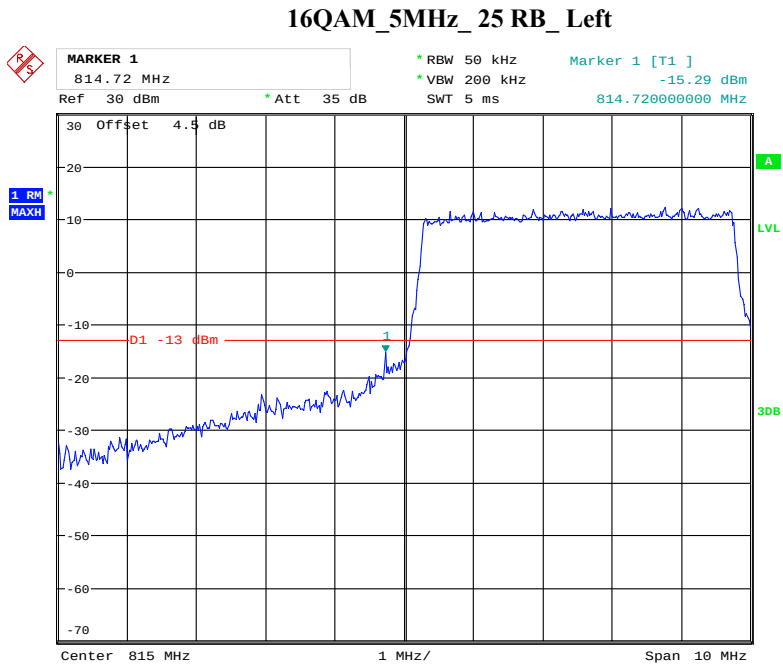


Date: 31.OCT.2018 15:43:01

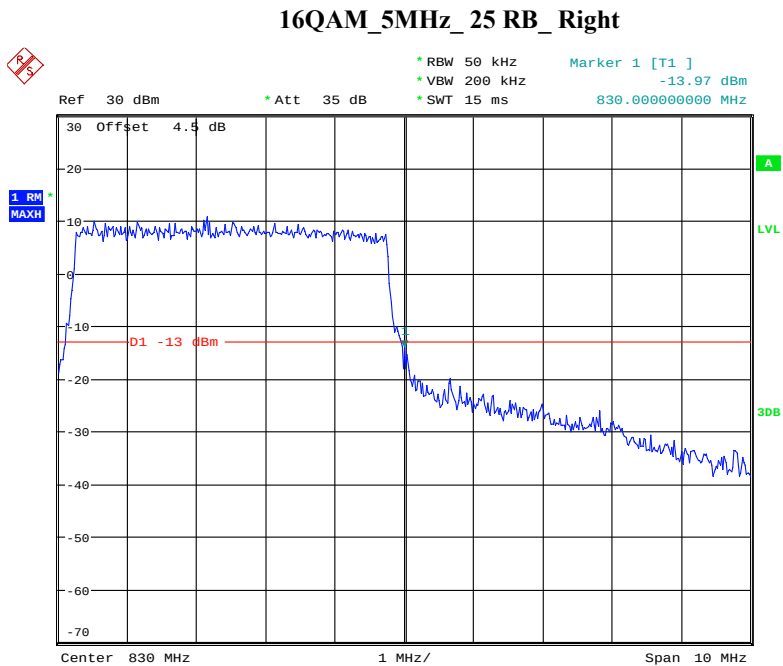
16QAM_5MHz_25 RB_Left



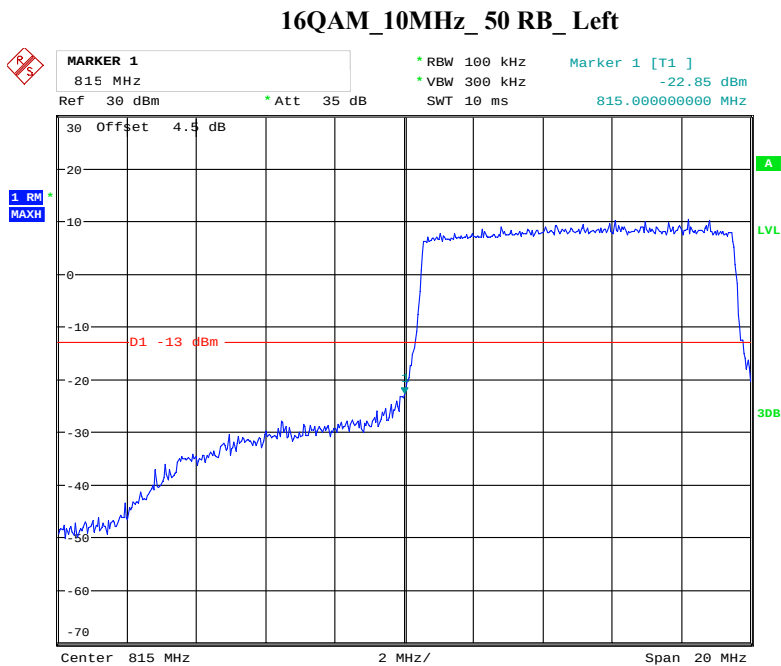
Date: 31.OCT.2018 15:47:37



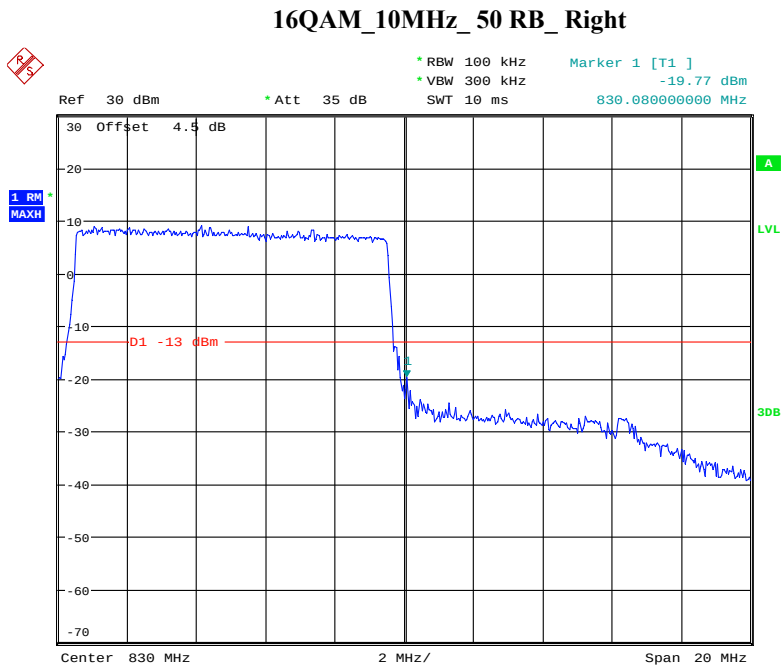
Date: 31.OCT.2018 15:34:37



Date: 31.OCT.2018 15:36:32



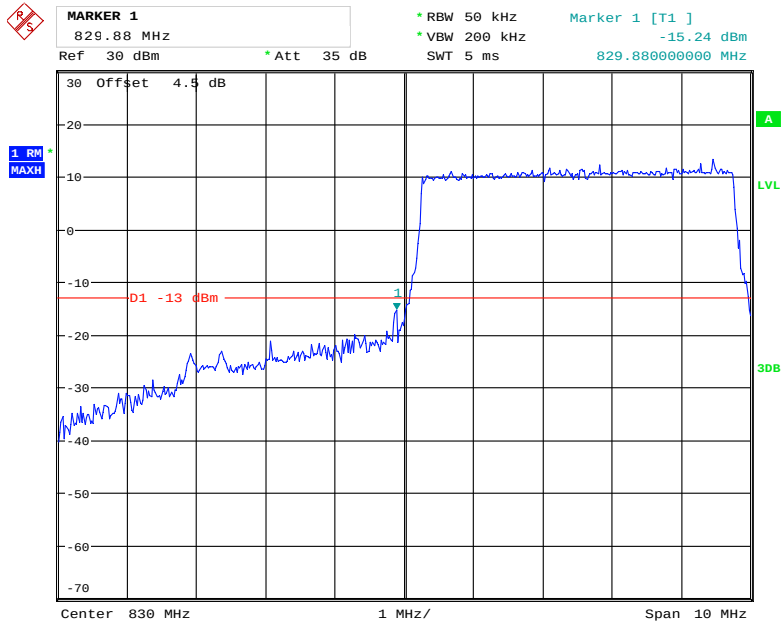
Date: 31.OCT.2018 15:40:53



Date: 31.OCT.2018 15:39:43

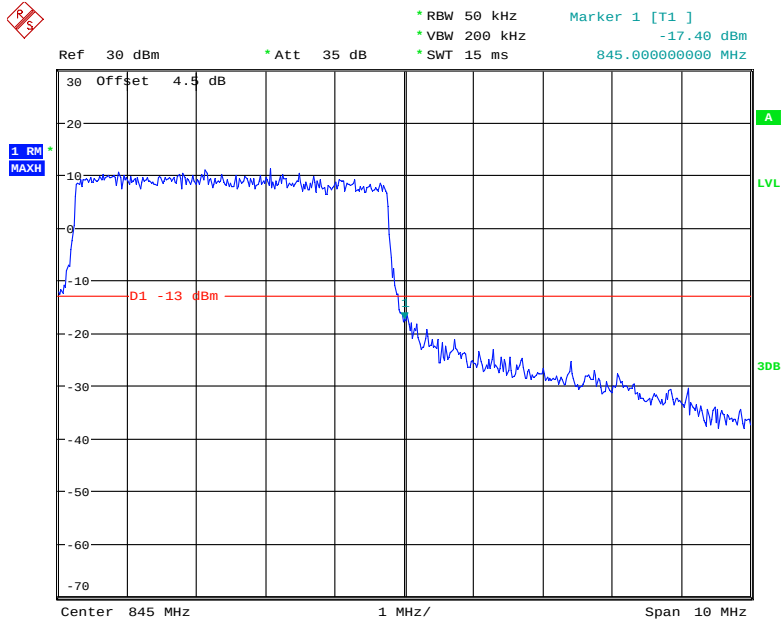
LTE Band 19

QPSK_5MHz_25 RB_ Left

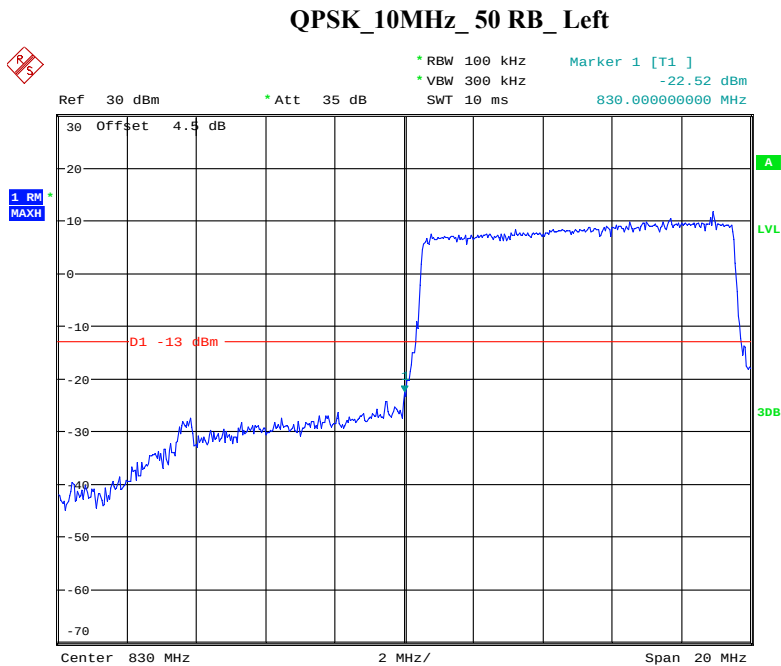


Date: 31.OCT.2018 16:08:48

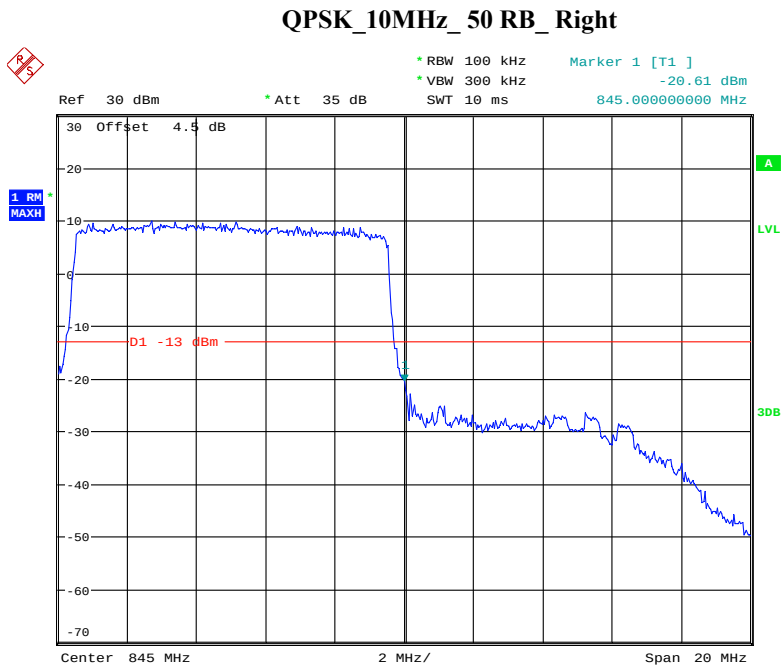
QPSK_5MHz_25 RB_ Right



Date: 31.OCT.2018 16:10:40

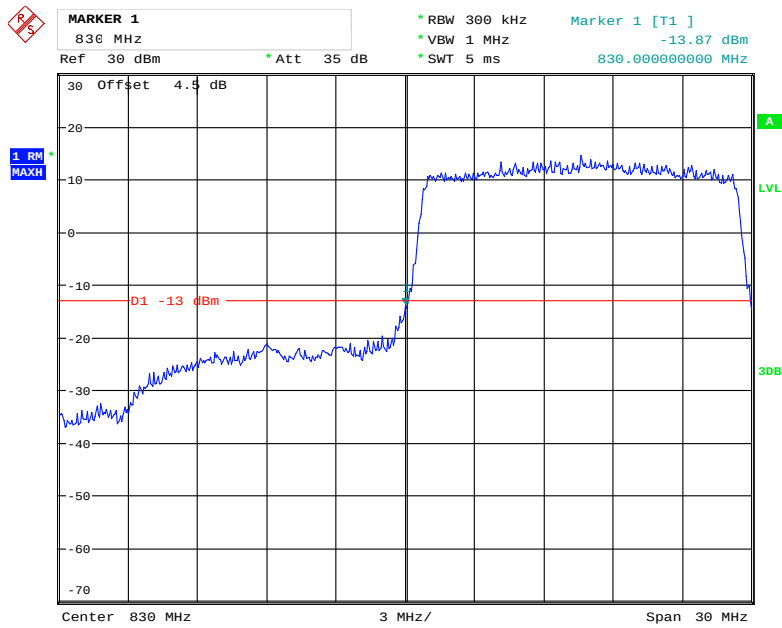


Date: 31.OCT.2018 16:07:15



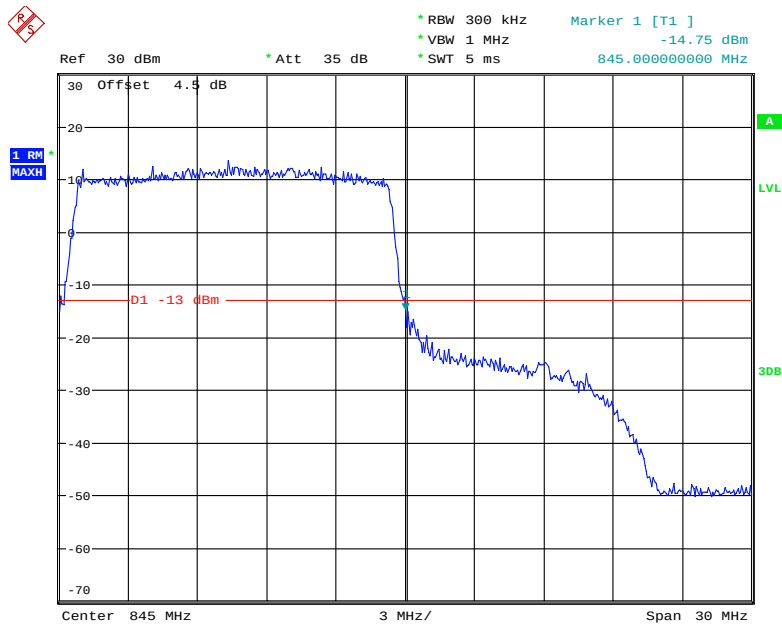
Date: 31.OCT.2018 16:06:00

QPSK_15MHz_75 RB_ Left

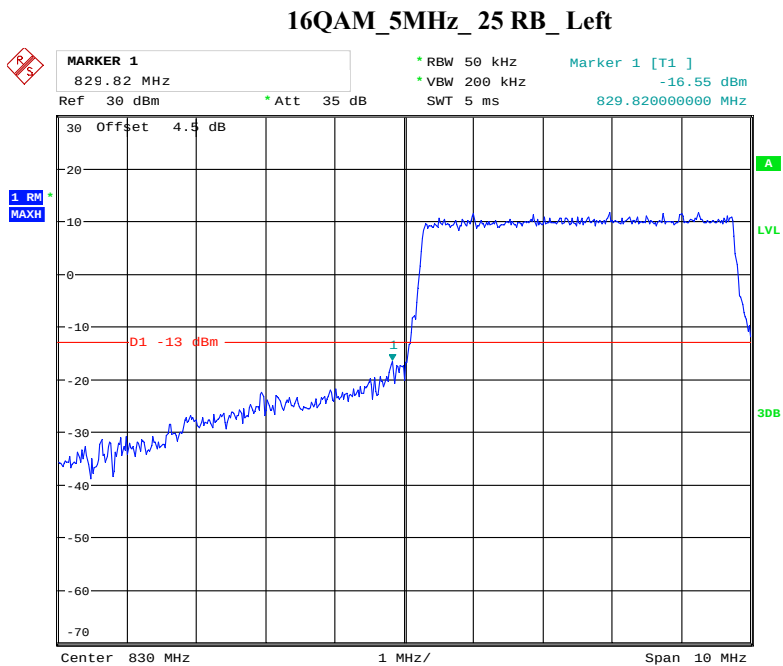


Date: 31.OCT.2018 16:02:21

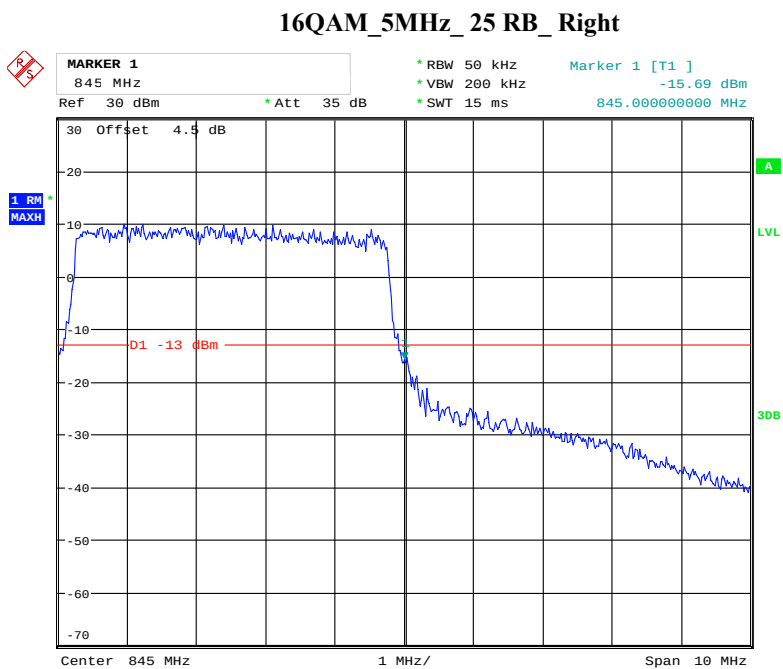
QPSK_15MHz_75 RB_ Right



Date: 31.OCT.2018 16:04:26

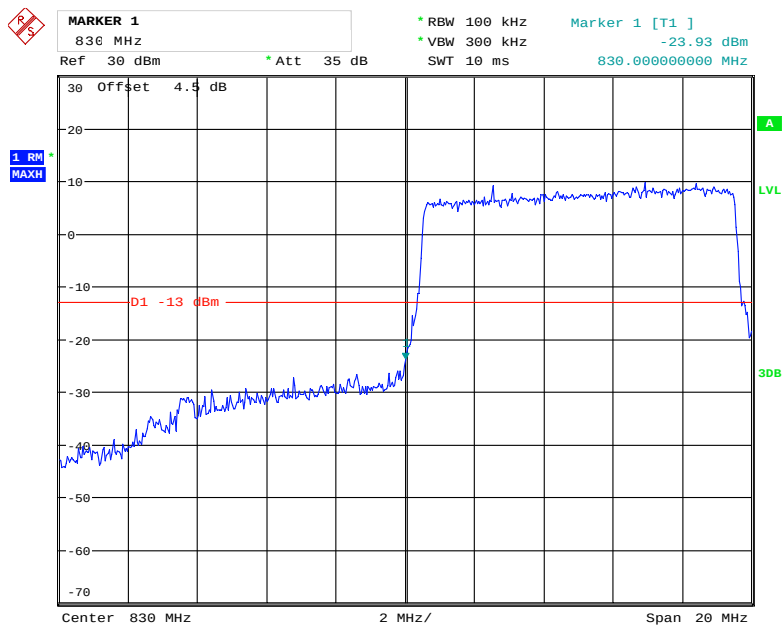


Date: 31.OCT.2018 16:09:23



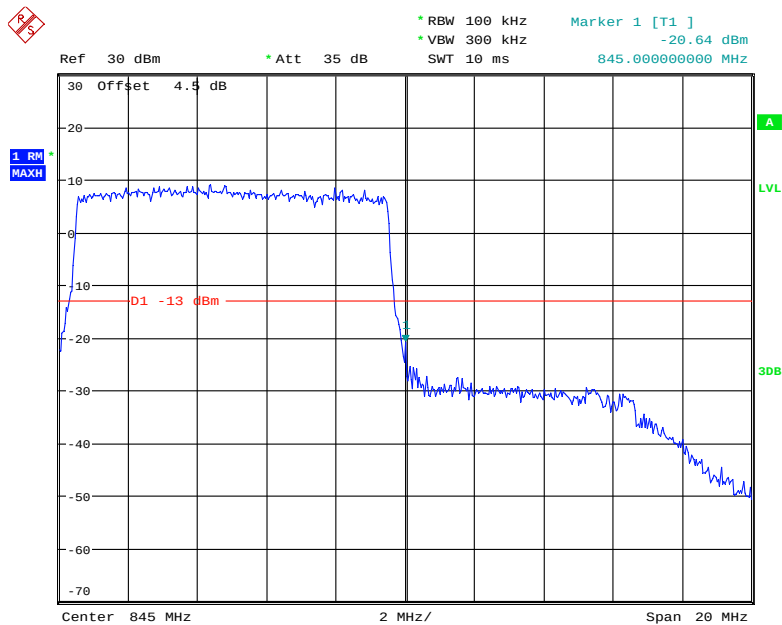
Date: 31.OCT.2018 16:10:12

16QAM_10MHz_50 RB_ Left

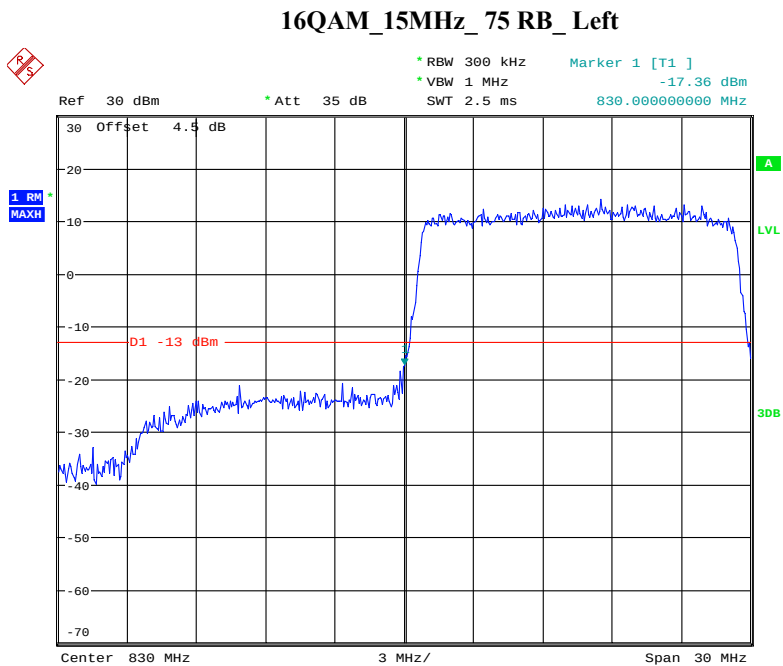


Date: 31.OCT.2018 16:06:54

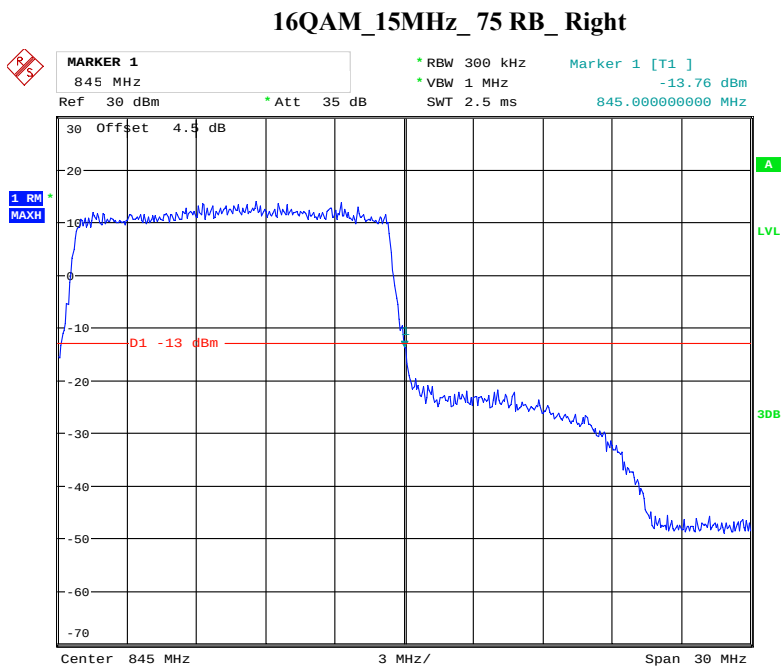
16QAM_10MHz_50 RB_ Right



Date: 31.OCT.2018 16:06:20



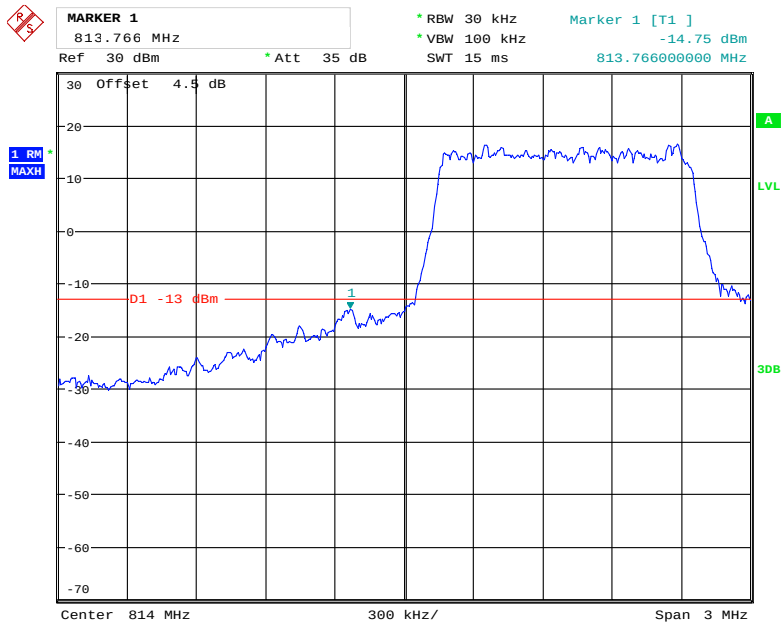
Date: 31.OCT.2018 16:02:58



Date: 31.OCT.2018 16:03:50

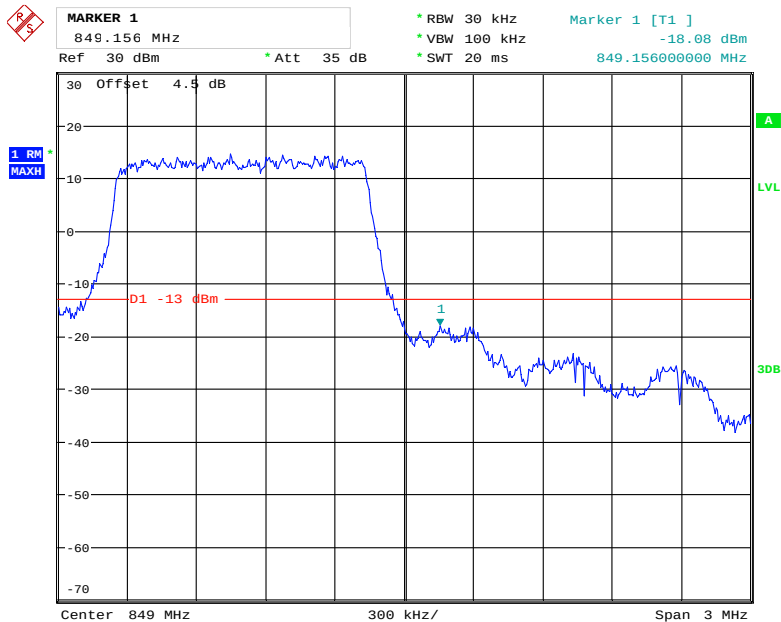
LTE Band 26

QPSK_1.4MHz_6 RB_ Left



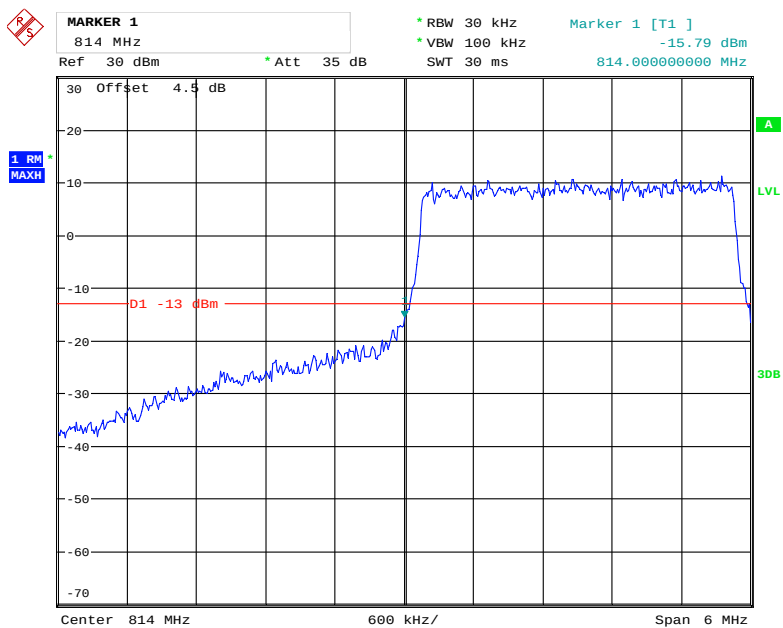
Date: 31.OCT.2018 16:12:50

QPSK_1.4MHz_6 RB_ Right



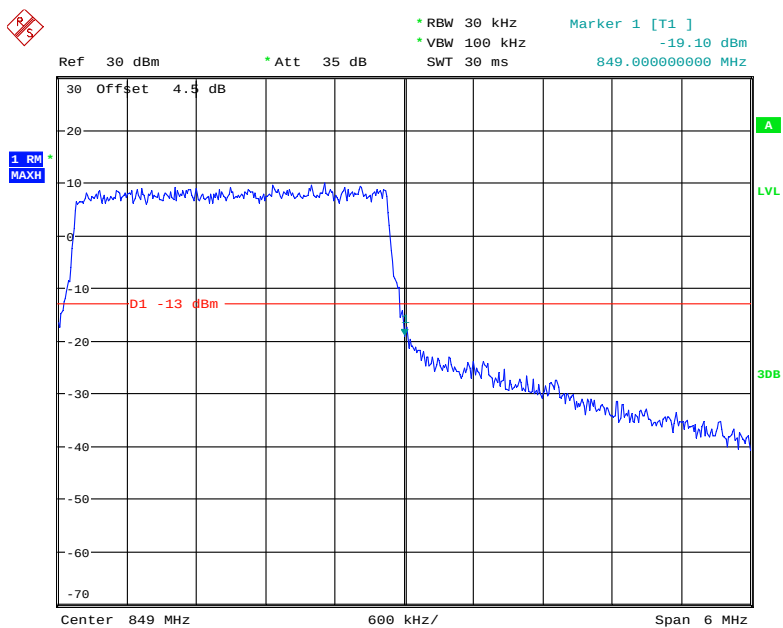
Date: 31.OCT.2018 16:15:24

QPSK_3MHz_15 RB_Left



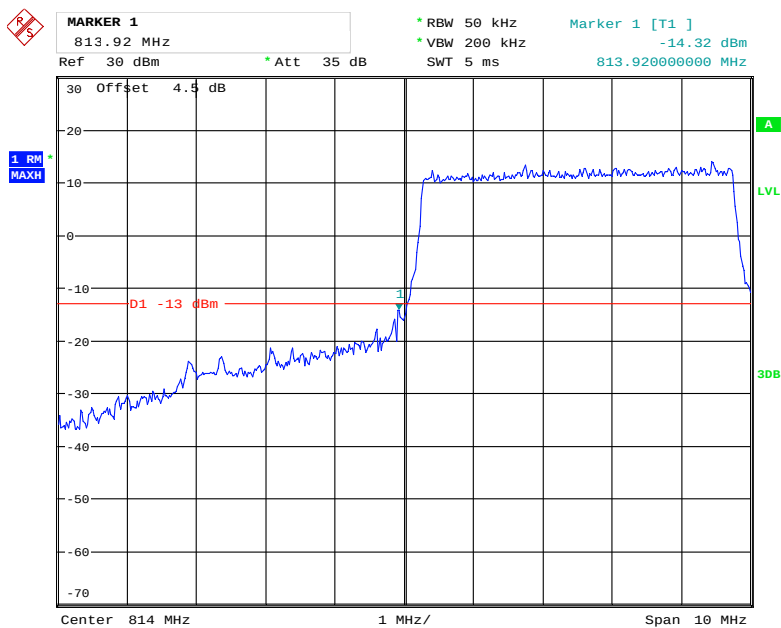
Date: 31.OCT.2018 16:27:06

QPSK_3MHz_15 RB_Right



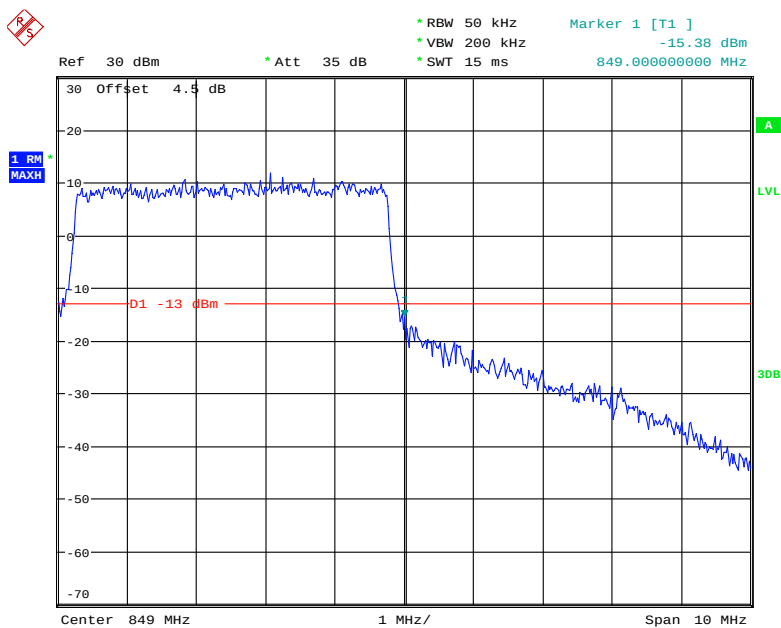
Date: 31.OCT.2018 16:26:39

QPSK_5MHz_25 RB_Left

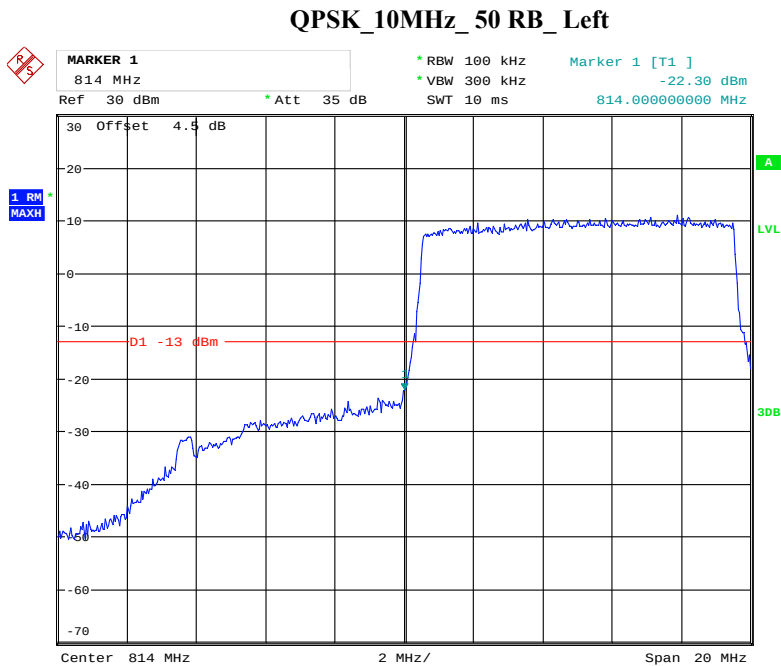


Date: 31.OCT.2018 16:28:46

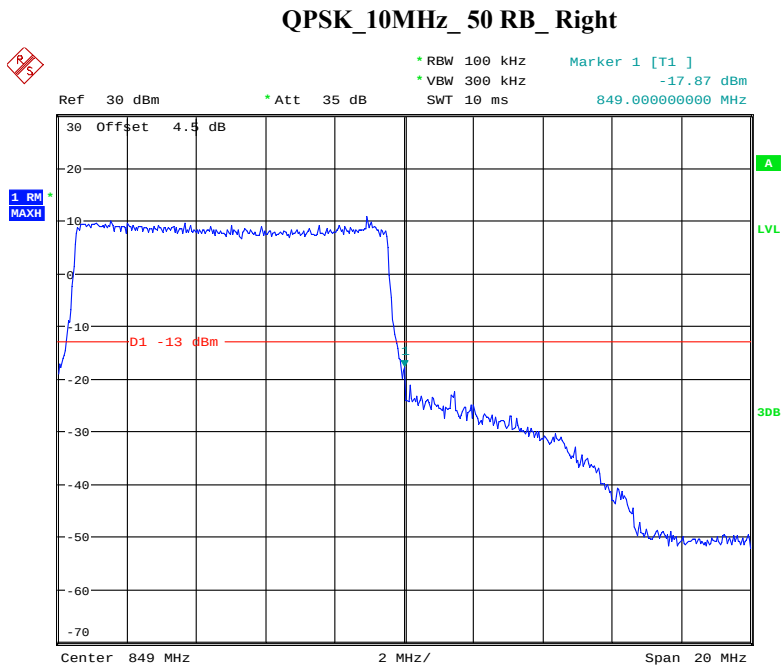
QPSK_5MHz_25 RB_Right



Date: 31.OCT.2018 16:31:58

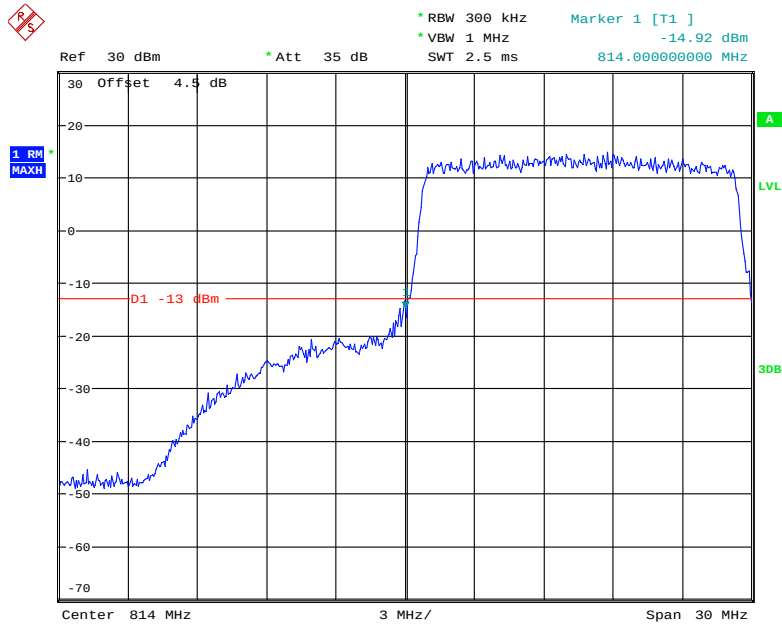


Date: 31.OCT.2018 16:34:56



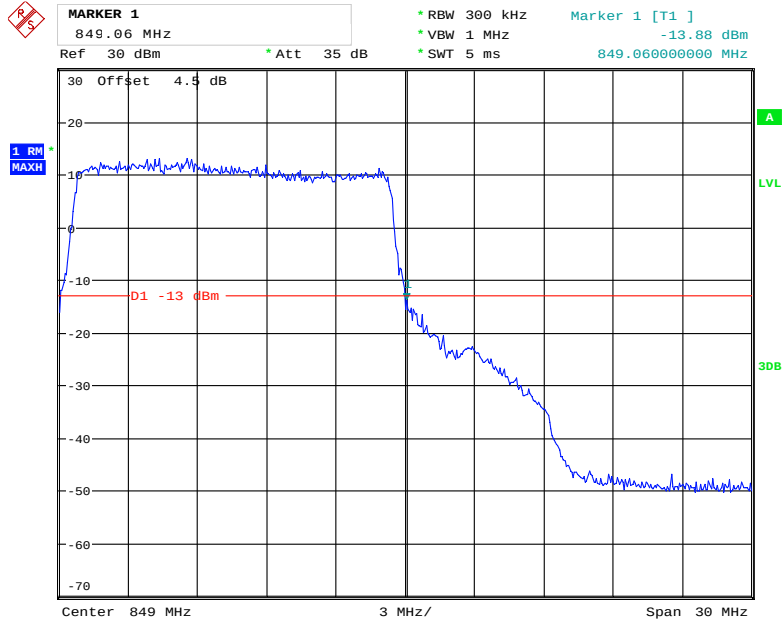
Date: 31.OCT.2018 16:32:53

QPSK_15MHz_75 RB_ Left

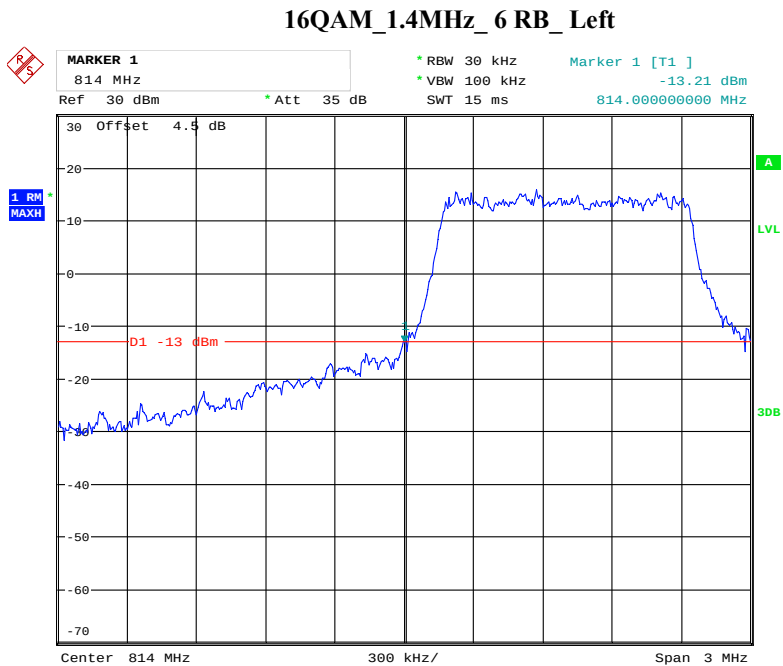


Date: 31.OCT.2018 16:35:44

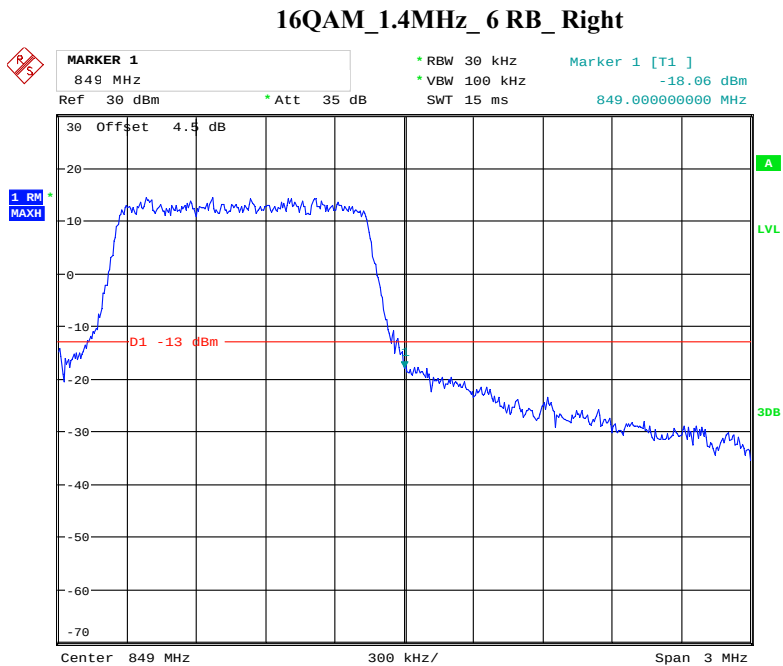
QPSK_15MHz_75 RB_ Right



Date: 31.OCT.2018 16:37:20

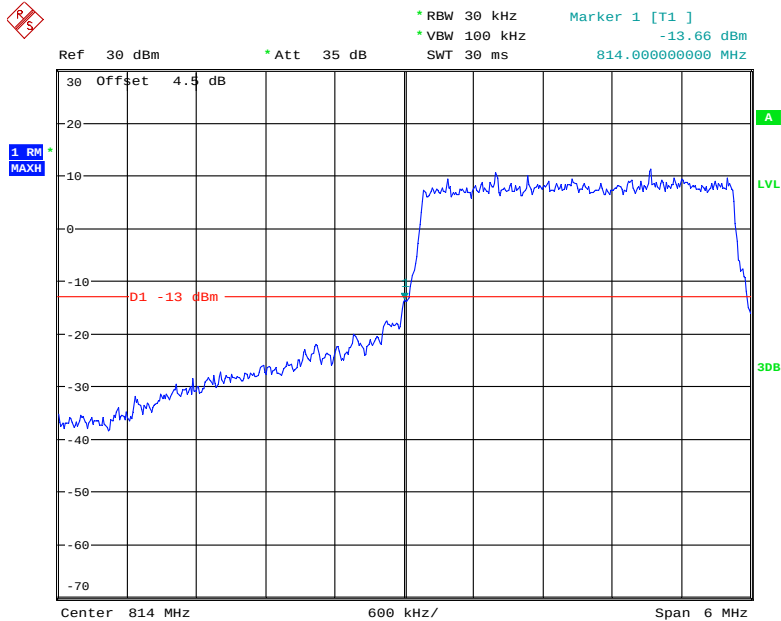


Date: 31.OCT.2018 16:13:23



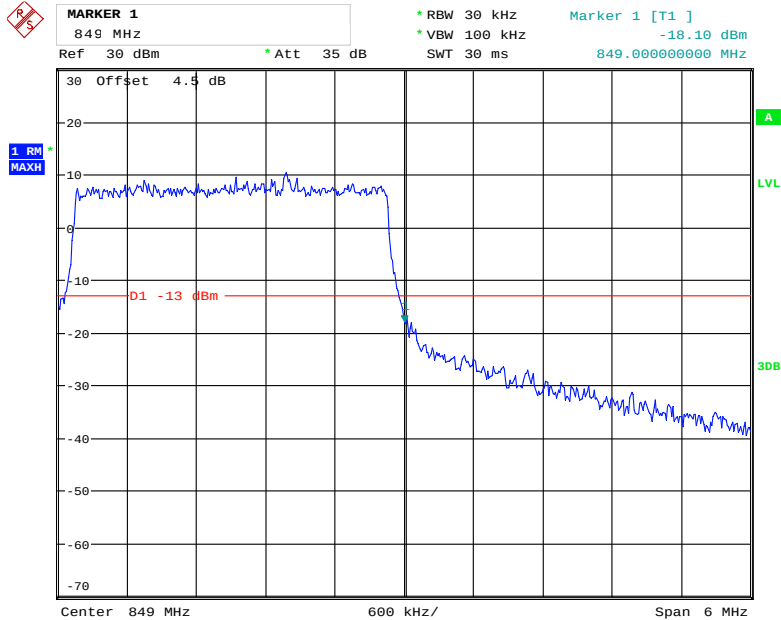
Date: 31.OCT.2018 16:14:38

16QAM_3MHz_15 RB_ Left



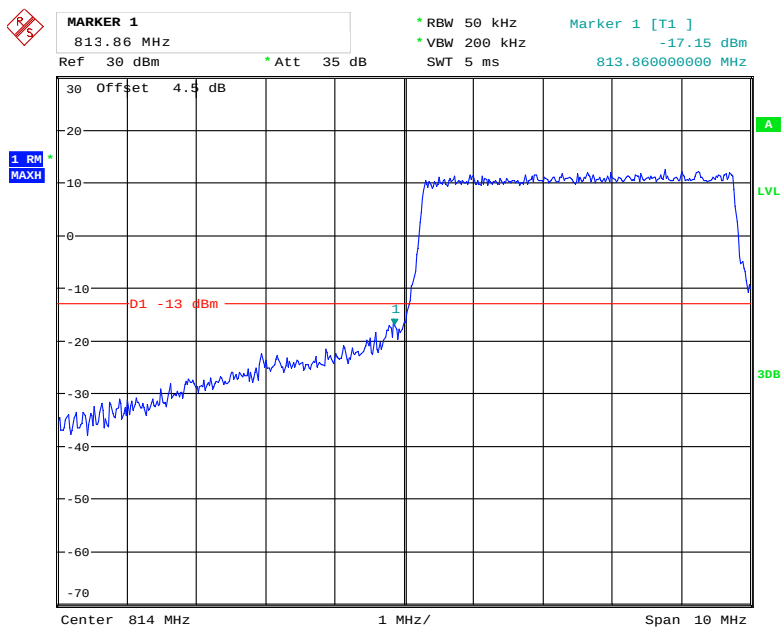
Date: 31.OCT.2018 16:27:33

16QAM_3MHz_15 RB_ Right



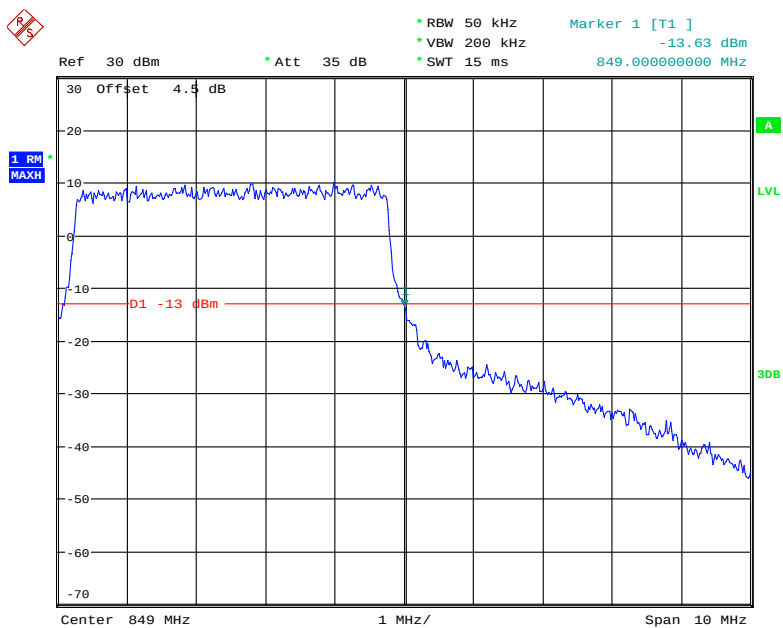
Date: 31.OCT.2018 16:26:21

16QAM_5MHz_25 RB_ Left

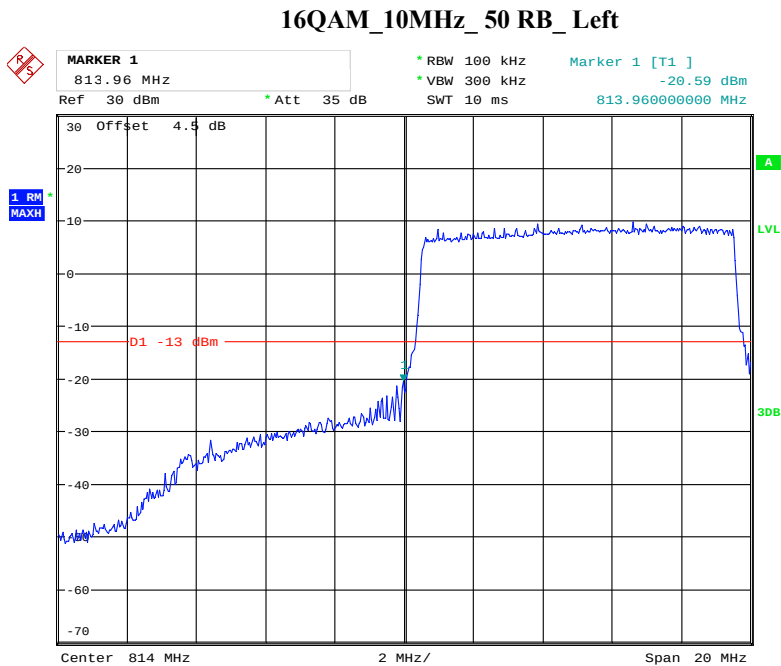


Date: 31.OCT.2018 16:29:17

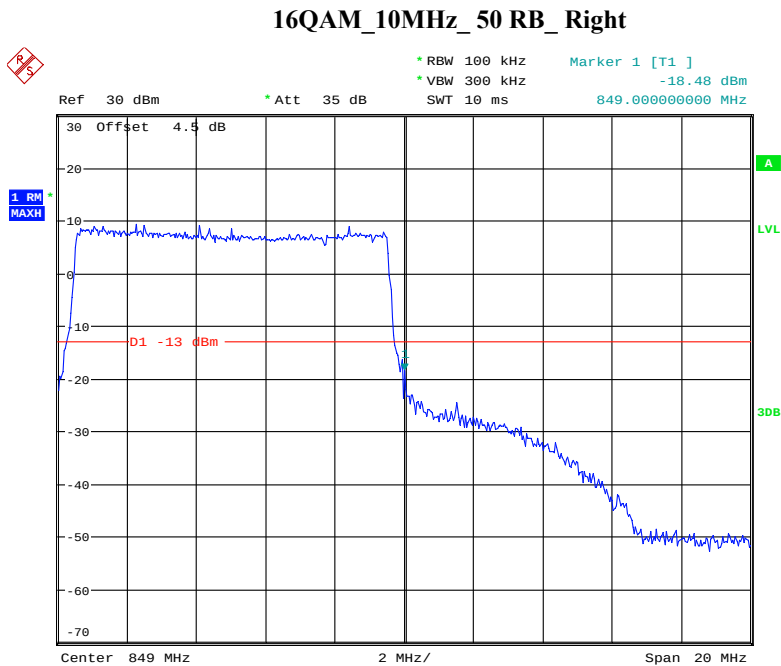
16QAM_5MHz_25 RB_ Right



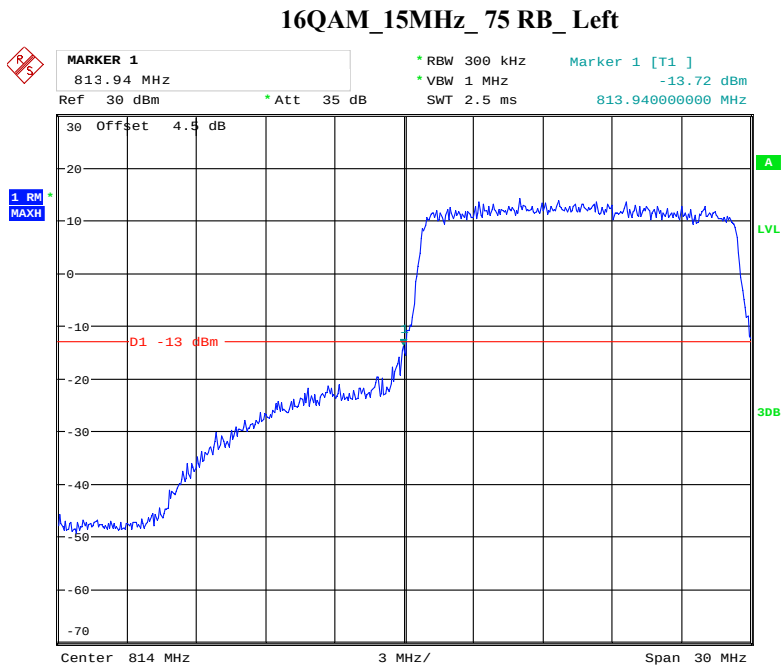
Date: 31.OCT.2018 16:31:26



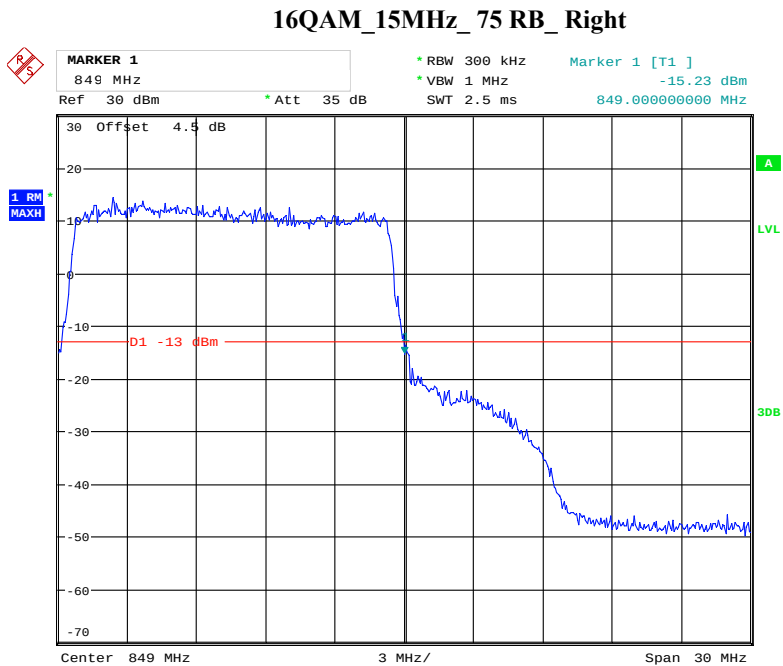
Date: 31.OCT.2018 16:34:10



Date: 31.OCT.2018 16:33:23



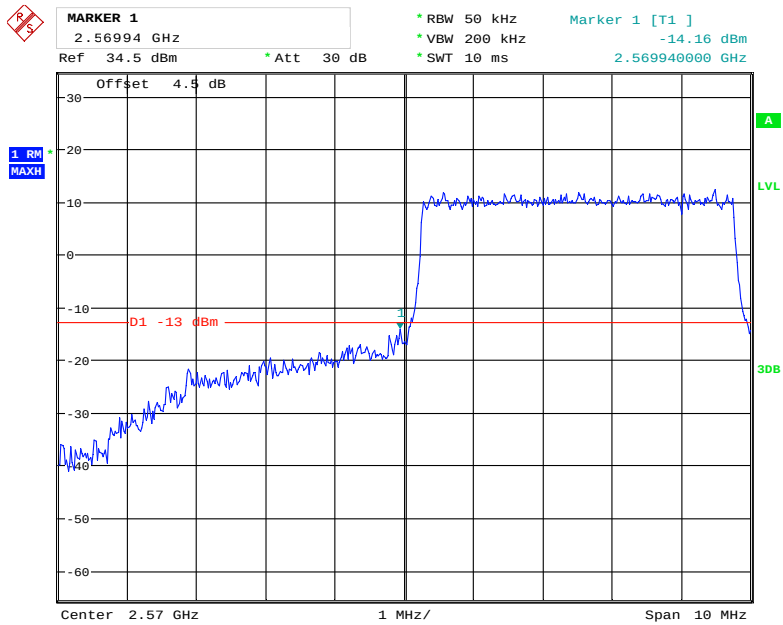
Date: 31.OCT.2018 16:36:09



Date: 31.OCT.2018 16:36:44

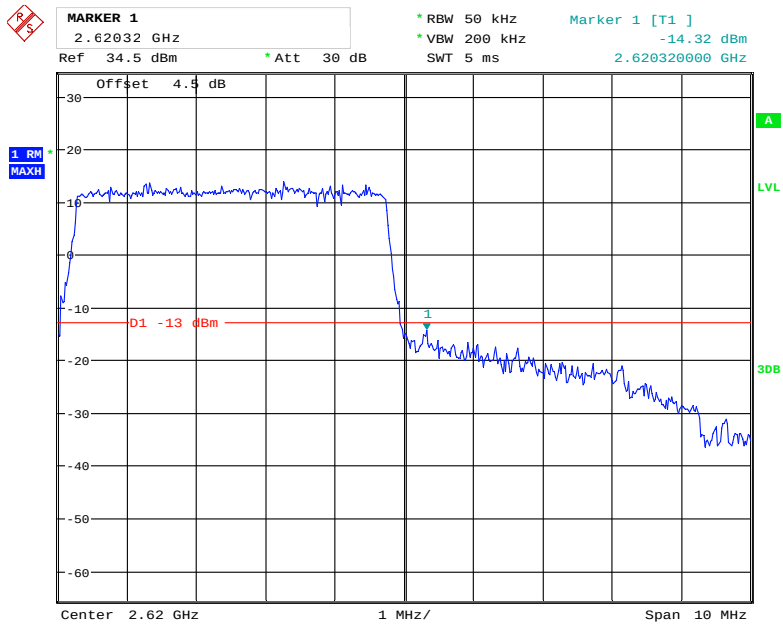
LTE Band 38

QPSK_5MHz_25 RB_ Left



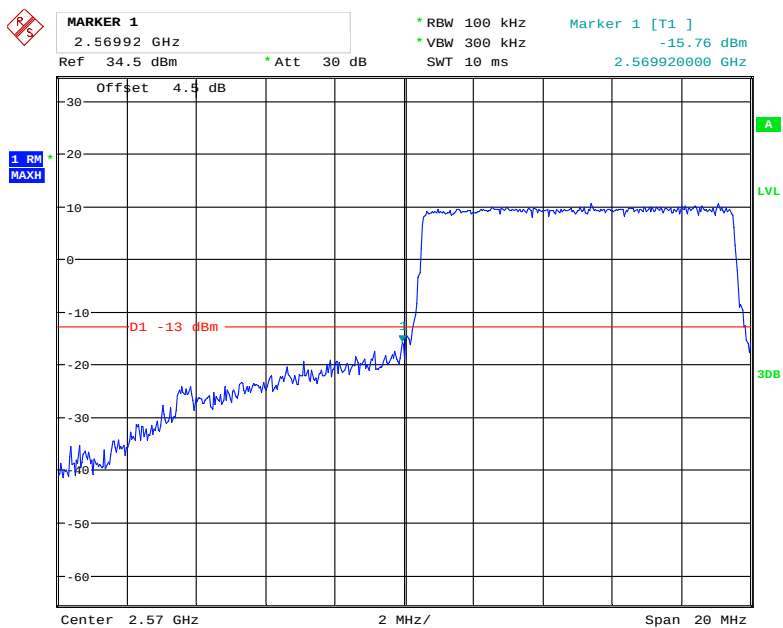
Date: 1.NOV.2018 11:39:12

QPSK_5MHz_25 RB_ Right



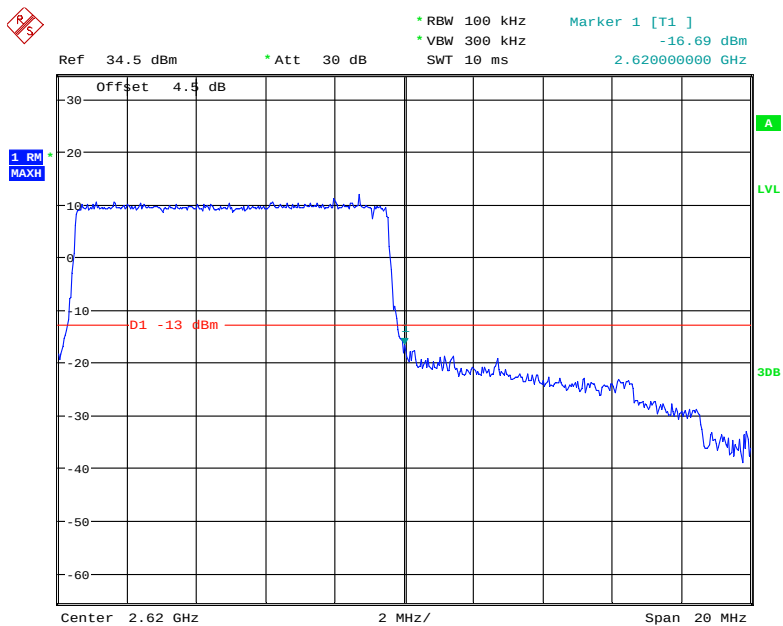
Date: 1.NOV.2018 11:36:32

QPSK_10MHz_50 RB_ Left



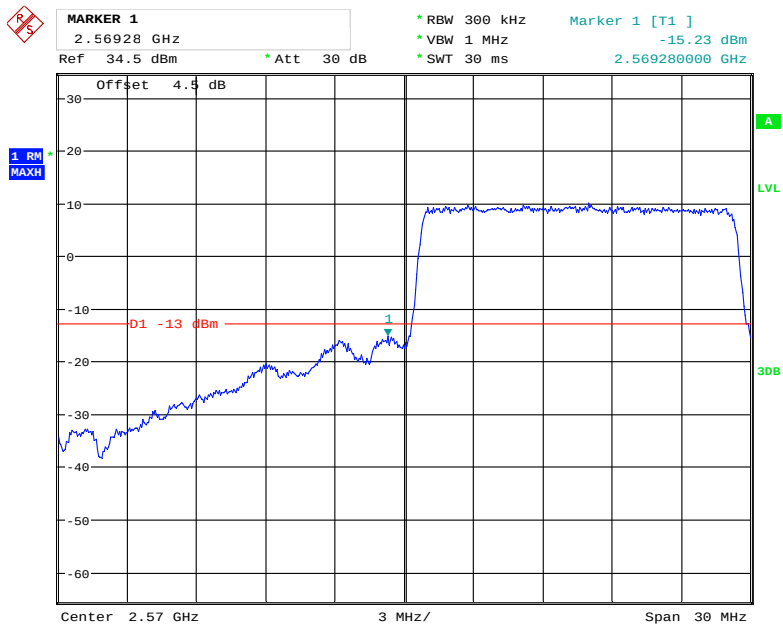
Date: 1.NOV.2018 11:29:36

QPSK_10MHz_50 RB_ Right



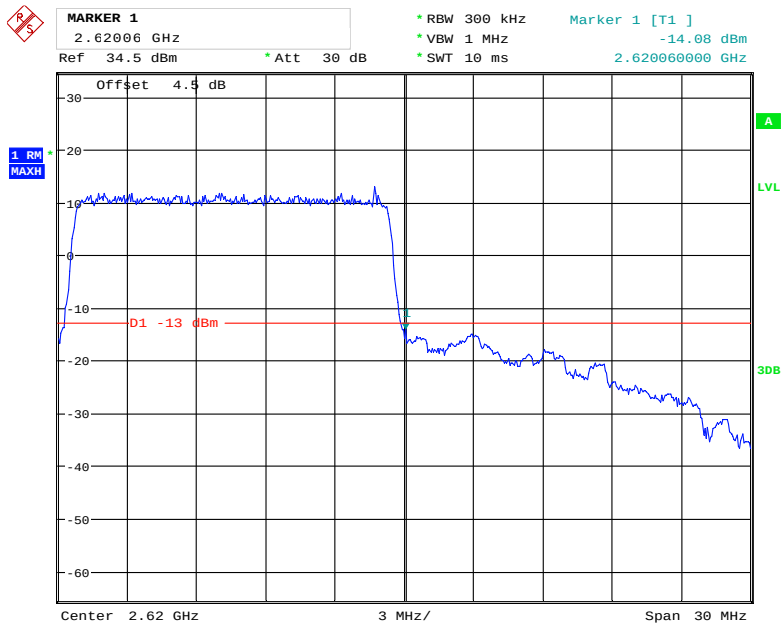
Date: 1.NOV.2018 11:28:05

QPSK_15MHz_ 75 RB_ Left



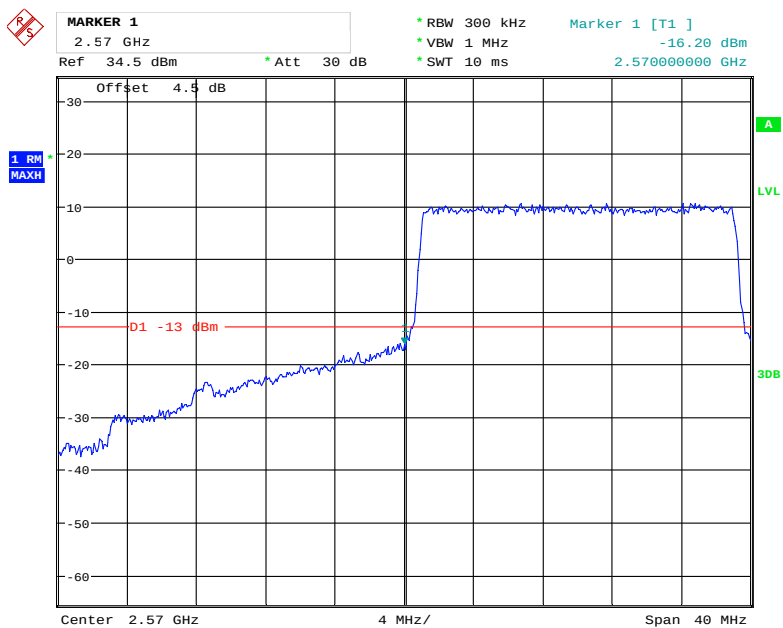
Date: 1.NOV.2018 11:30:31

QPSK_15MHz_ 75 RB_ Right



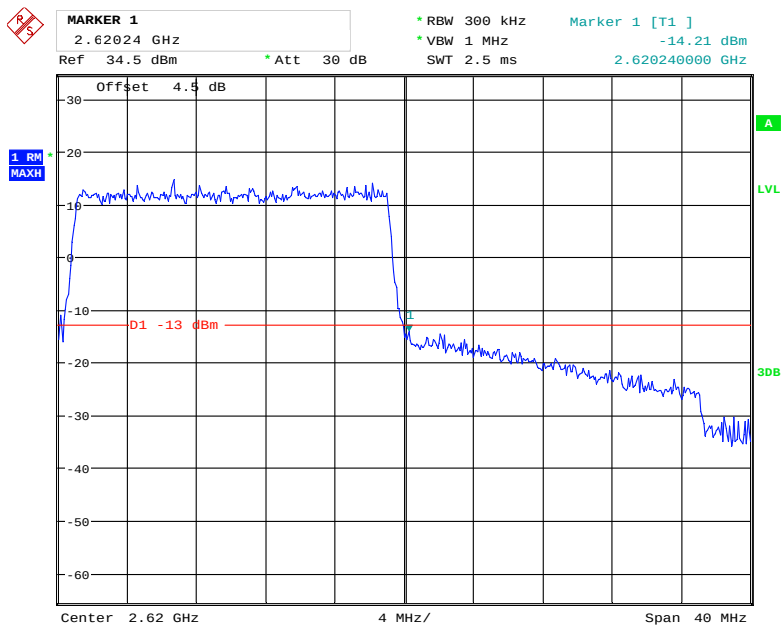
Date: 1.NOV.2018 11:35:42

QPSK_20MHz_FULL RB_Left

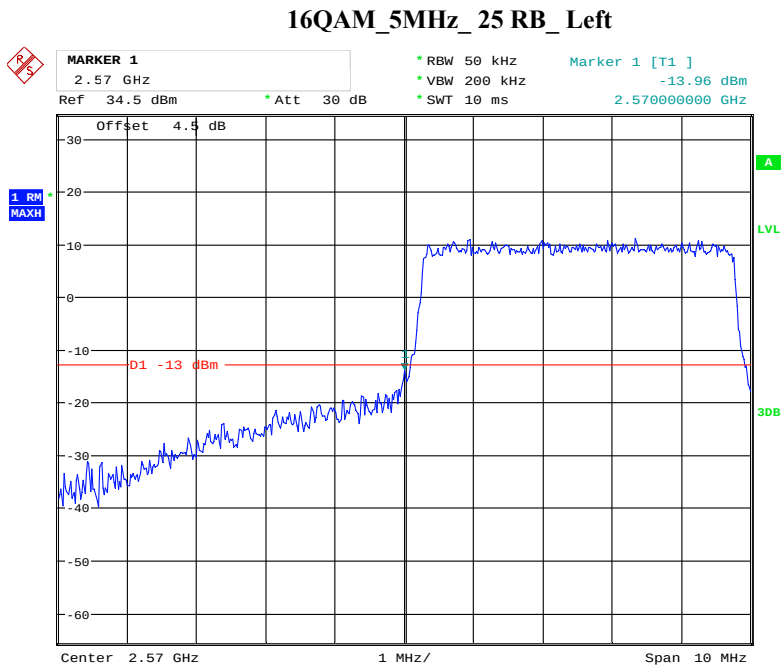


Date: 1.NOV.2018 11:32:33

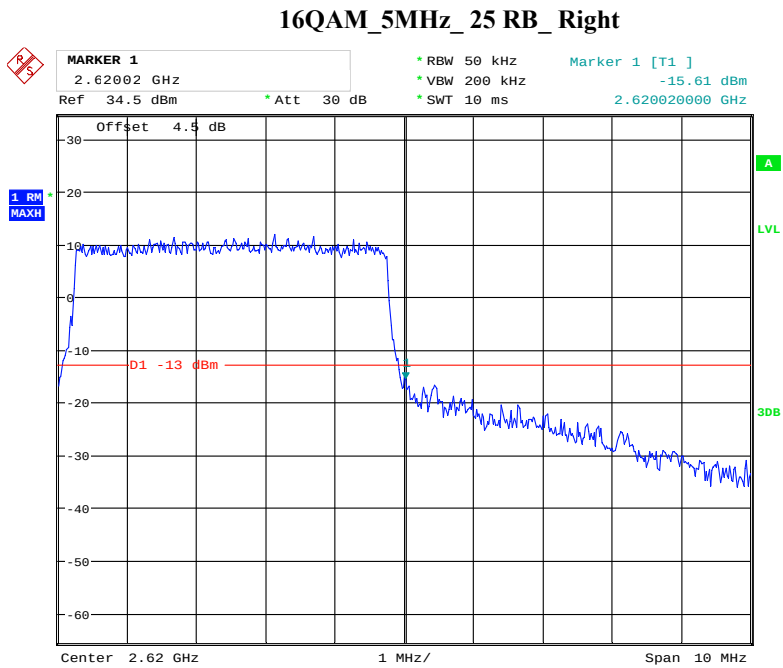
QPSK_20MHz_FULL RB_Right



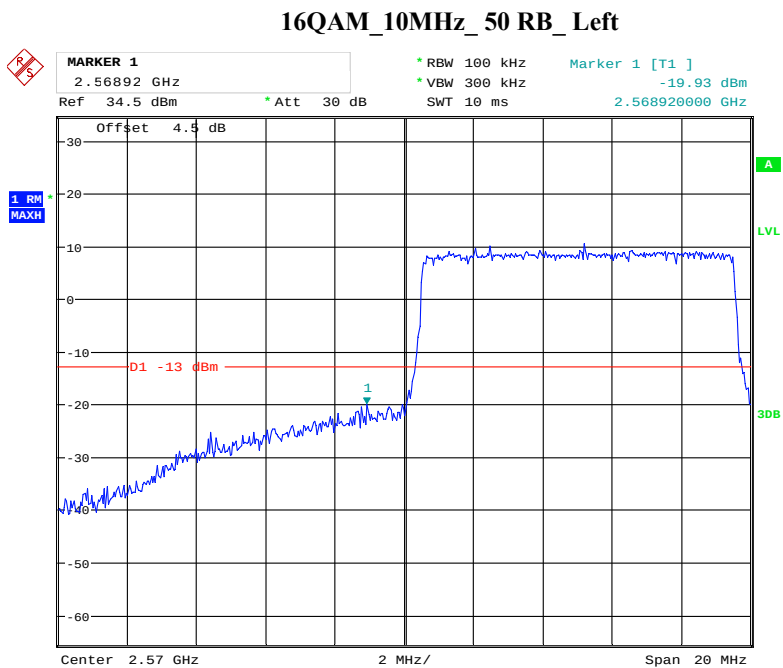
Date: 1.NOV.2018 11:34:24



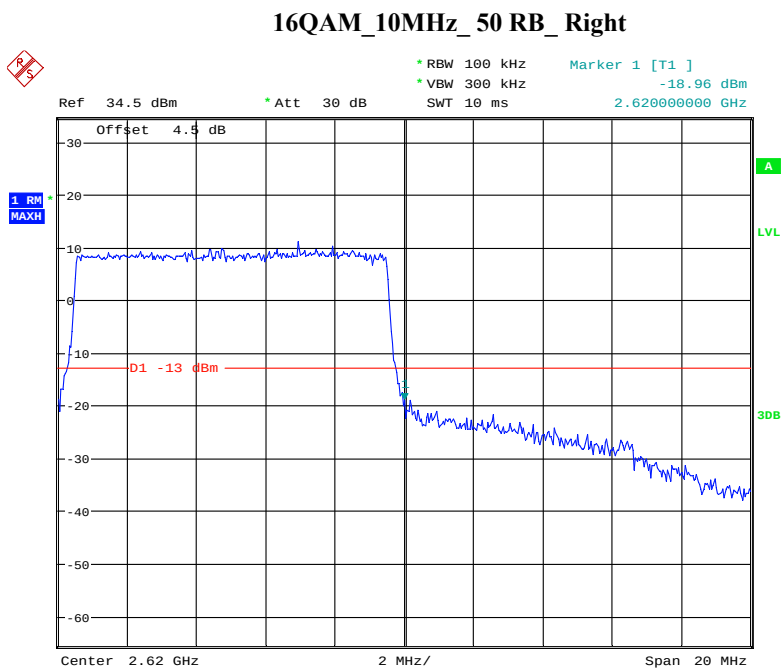
Date: 1.NOV.2018 11:38:48



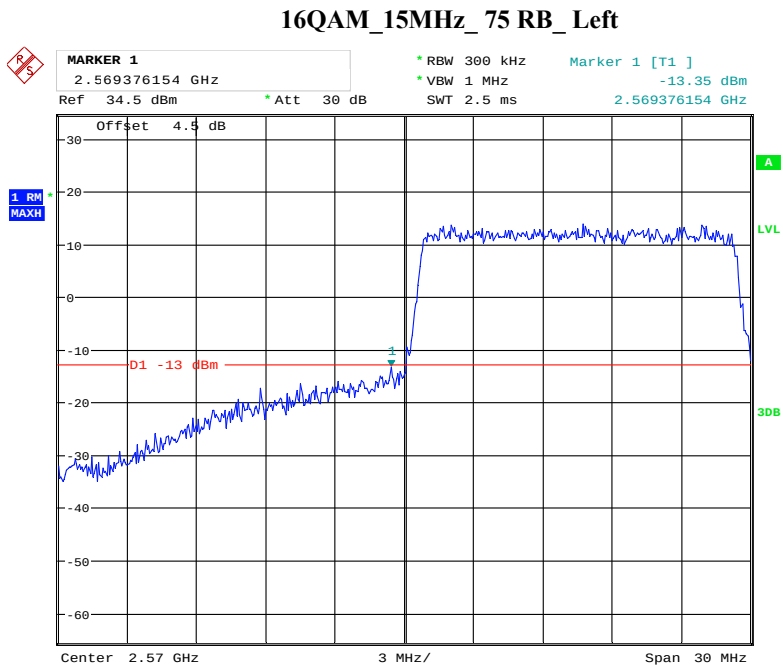
Date: 1.NOV.2018 11:37:14



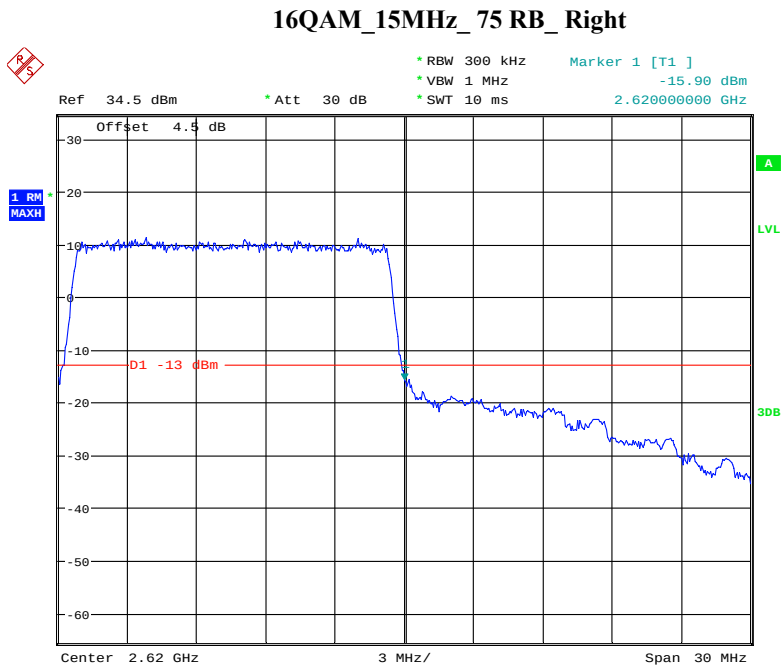
Date: 1.NOV.2018 11:29:03



Date: 1.NOV.2018 11:28:29

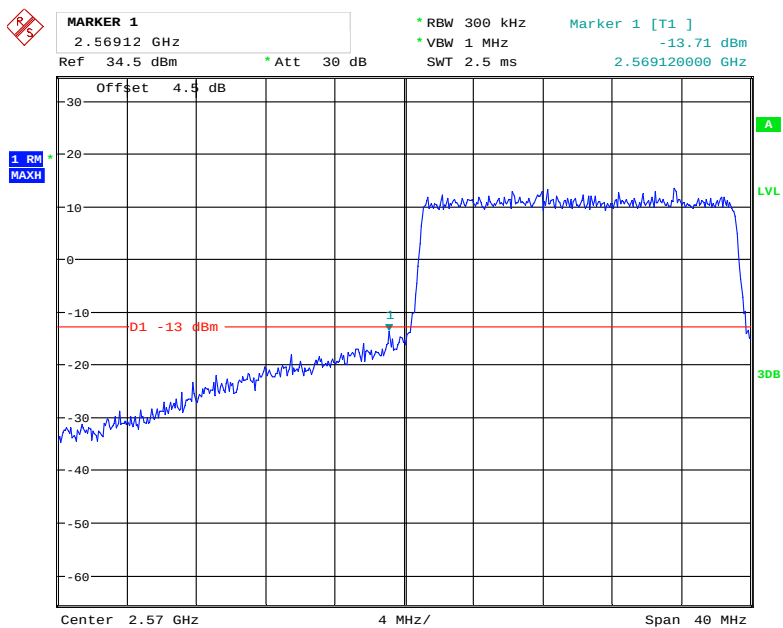


Date: 1.NOV.2018 11:31:10



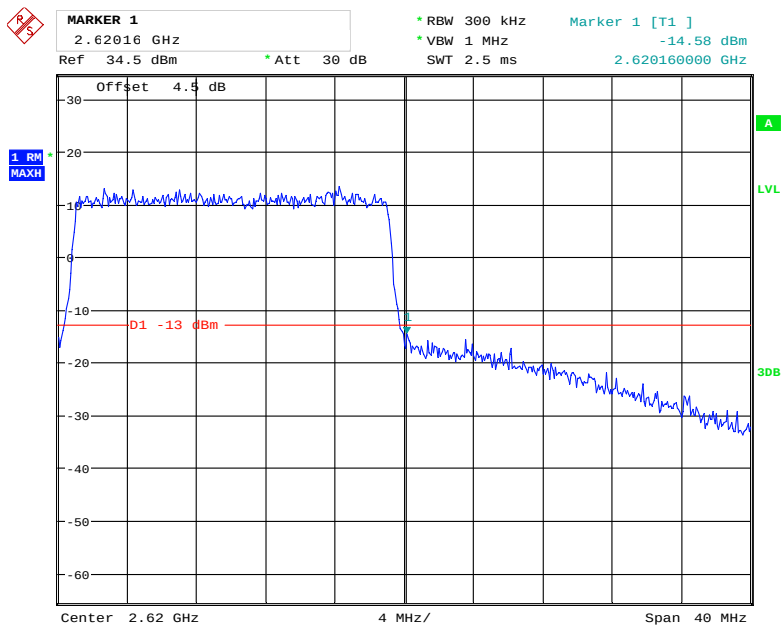
Date: 1.NOV.2018 11:35:18

16QAM_20MHz_ FULL RB_ Left



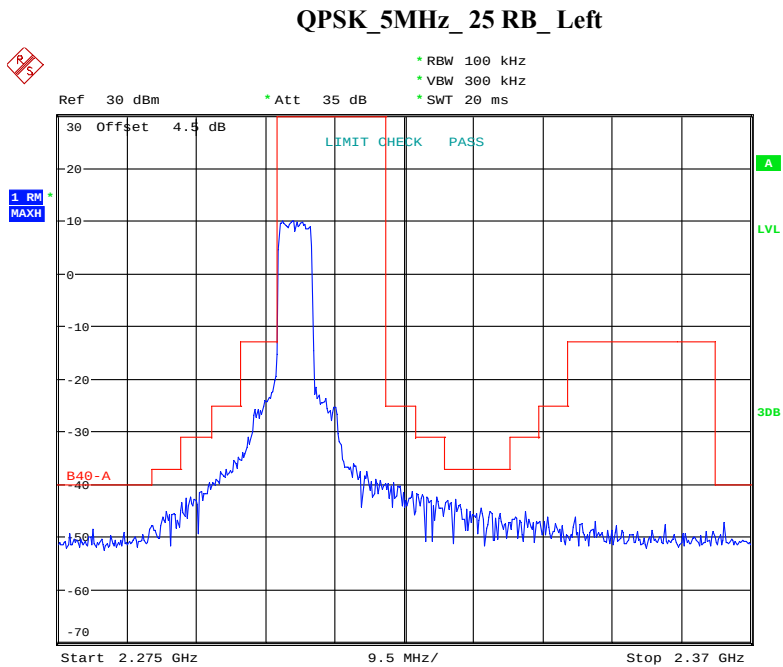
Date: 1.NOV.2018 11:33:14

16QAM_20MHz_ FULL RB_ Right

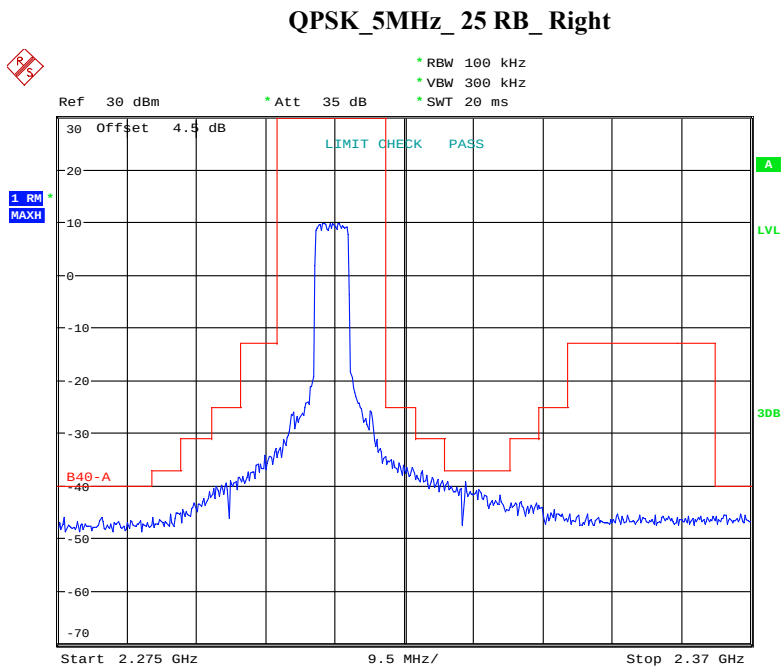


Date: 1.NOV.2018 11:34:01

LTE Band 40(2305-2315MHz)

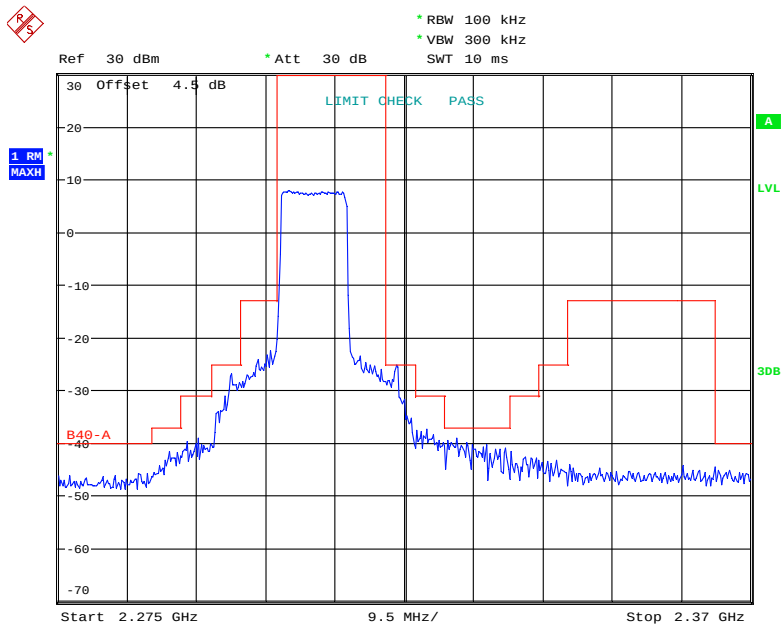


Date: 11.NOV.2018 11:37:16



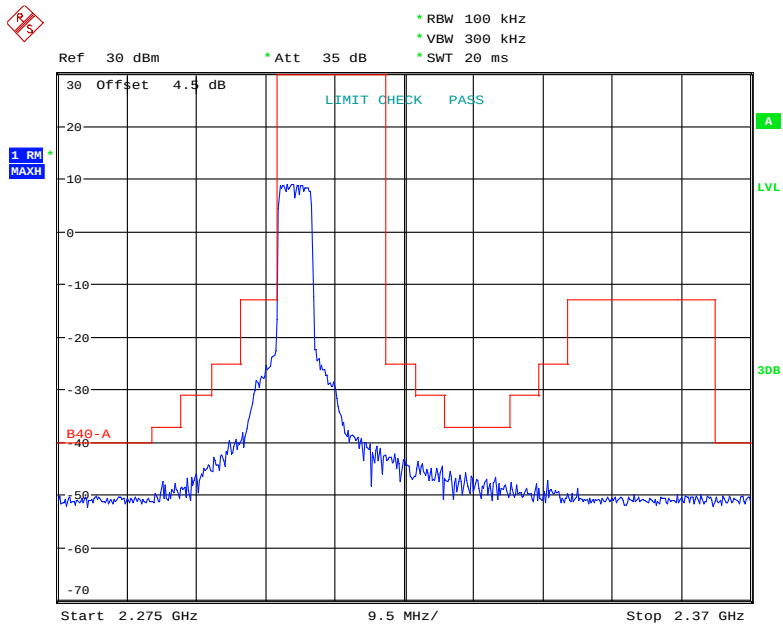
Date: 11.NOV.2018 11:36:27

QPSK_10MHz_50 RB

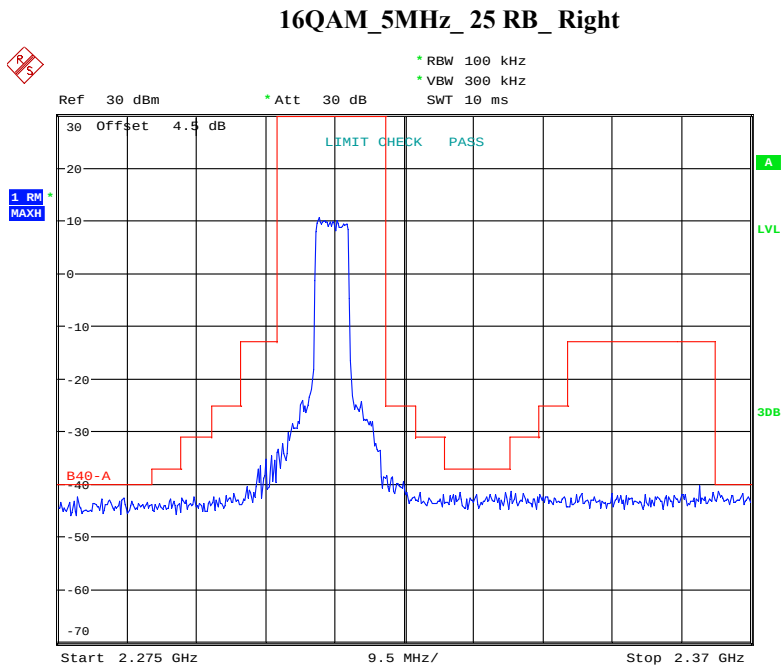


Date: 11.NOV.2018 11:31:27

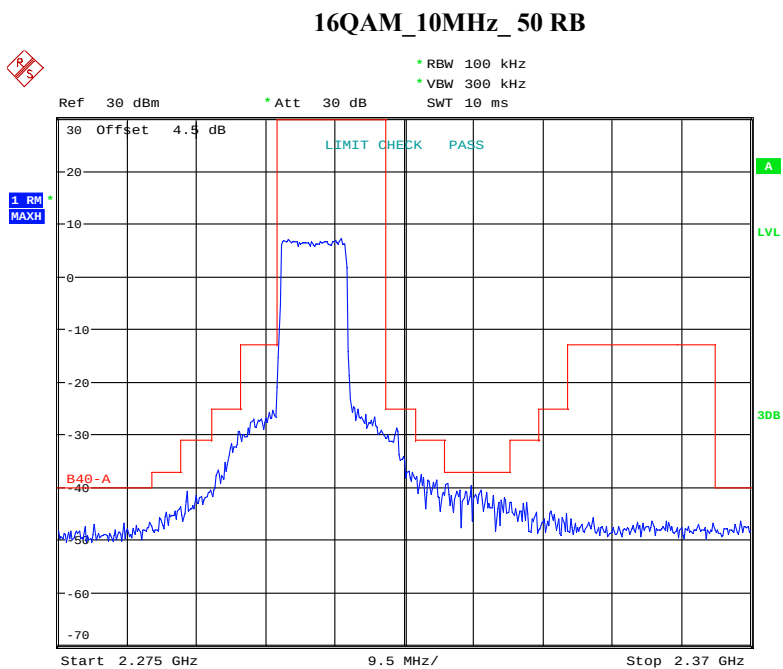
16QAM_5MHz_25 RB_Left



Date: 11.NOV.2018 11:37:53

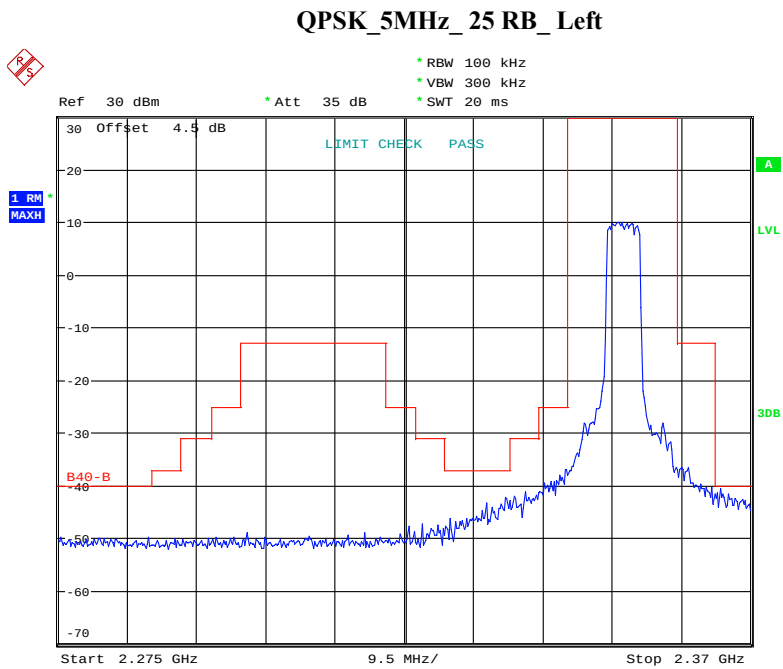


Date: 11.NOV.2018 11:33:13

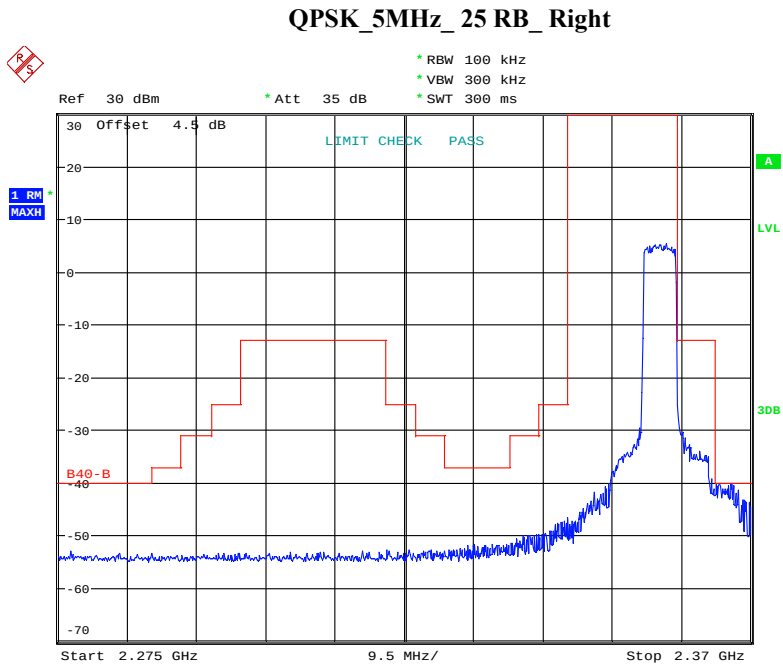


Date: 11.NOV.2018 11:32:10

LTE Band 40(2350-2360MHz)

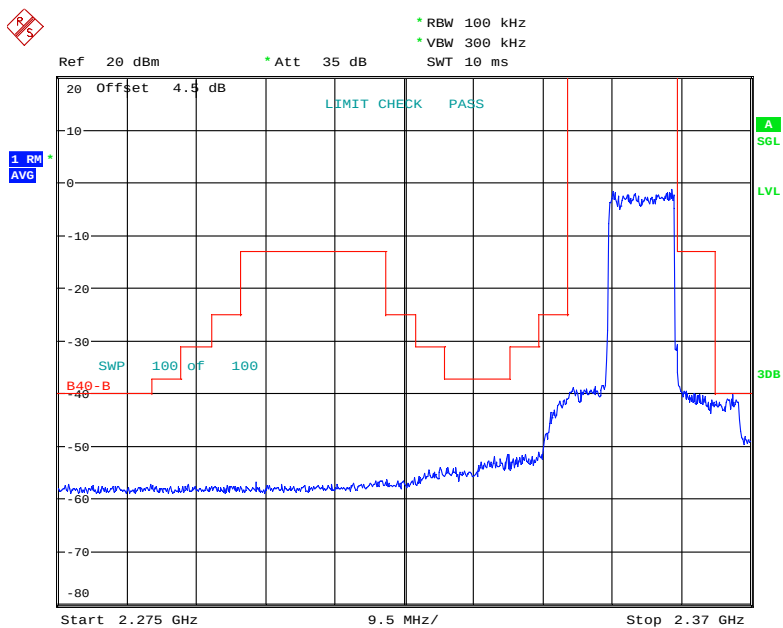


Date: 11.NOV.2018 11:40:16



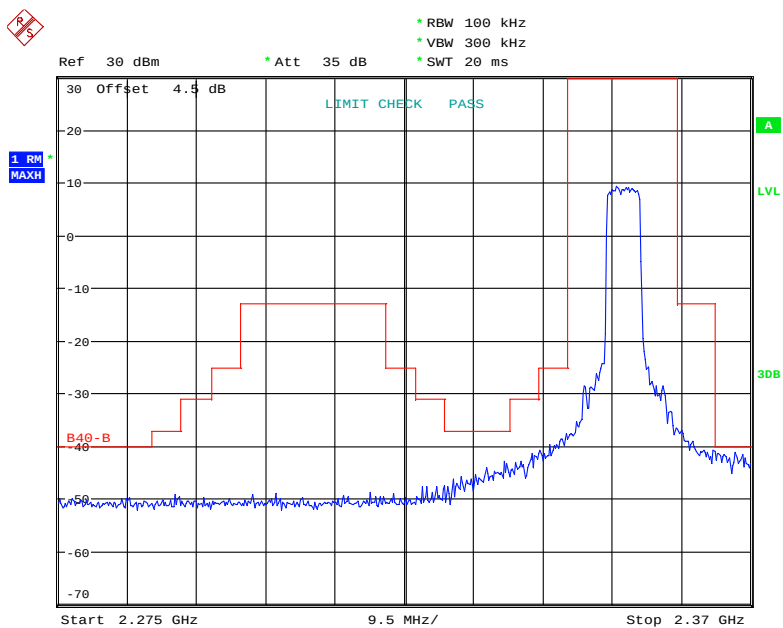
Date: 11.NOV.2018 11:54:29

QPSK_10MHz_50 RB

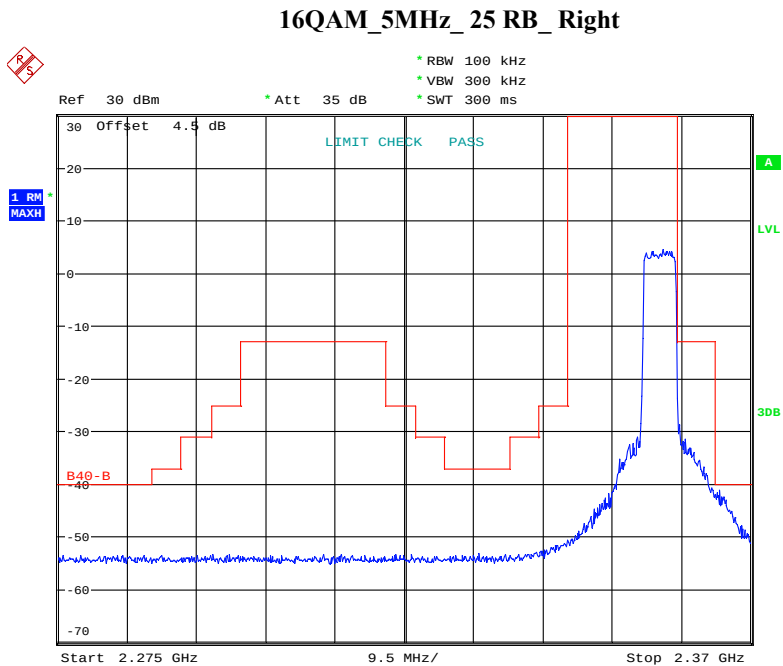


Date: 11.NOV.2018 13:07:51

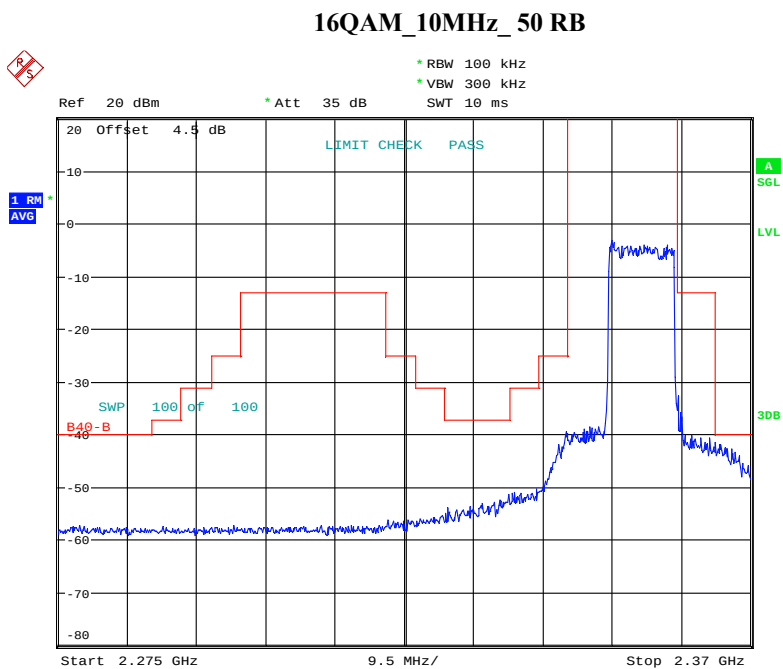
16QAM_5MHz_25 RB_Left



Date: 11.NOV.2018 11:39:42



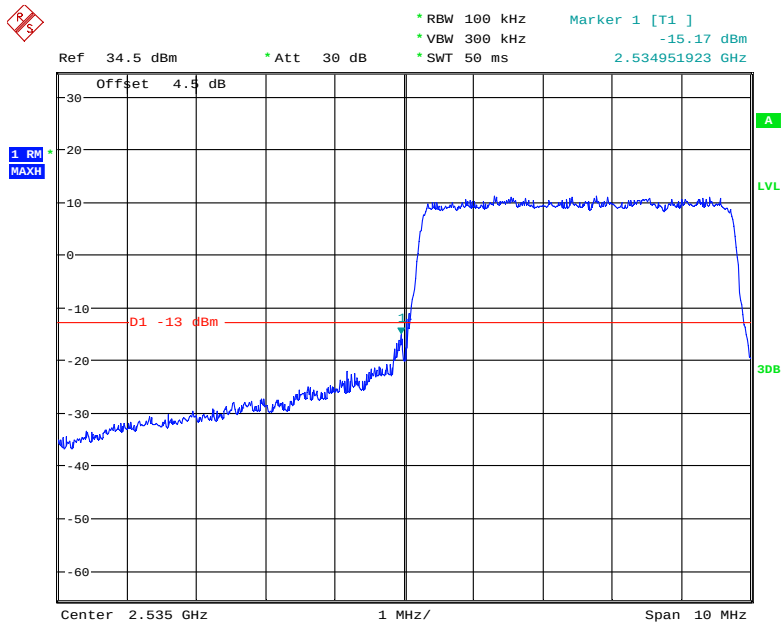
Date: 11.NOV.2018 11:51:49



Date: 11.NOV.2018 13:09:20

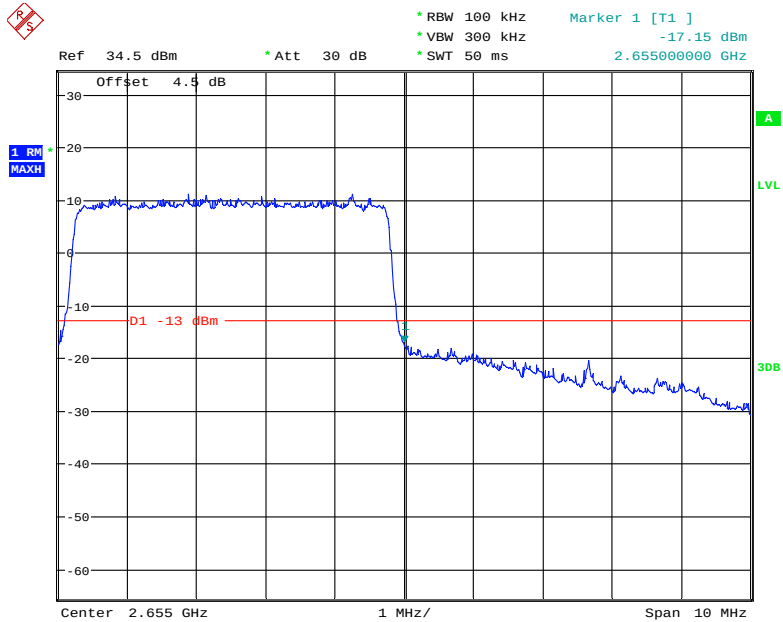
LTE Band 41

QPSK_5MHz_25 RB_ Left



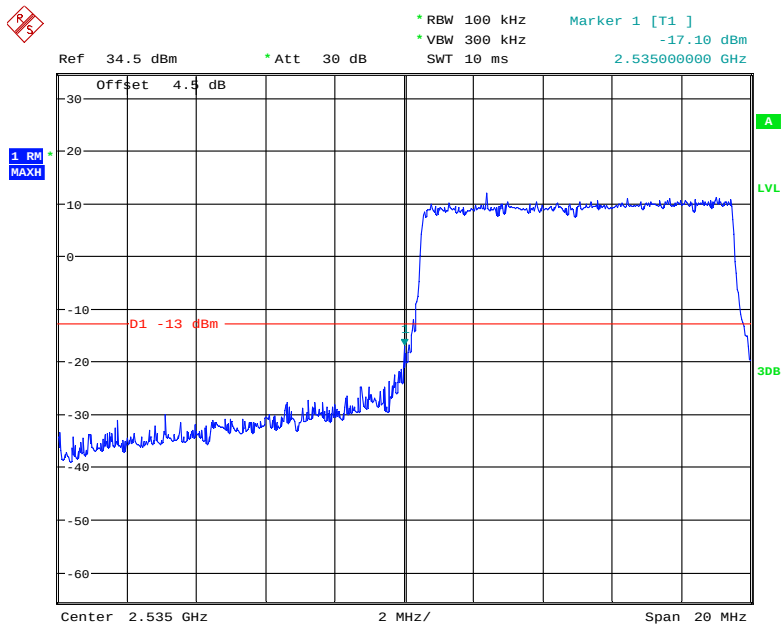
Date: 17.NOV.2018 15:30:35

QPSK_5MHz_25 RB_ Right



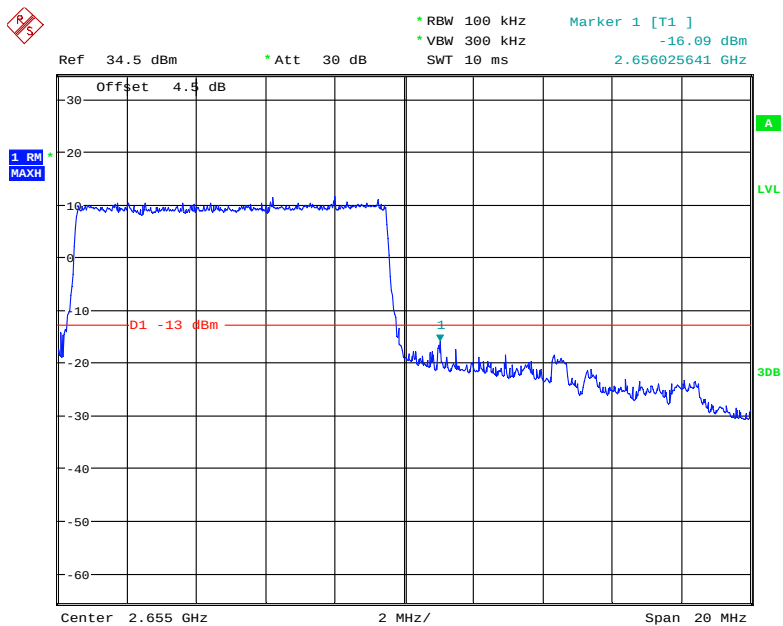
Date: 17.NOV.2018 15:29:41

QPSK_10MHz_50 RB_ Left

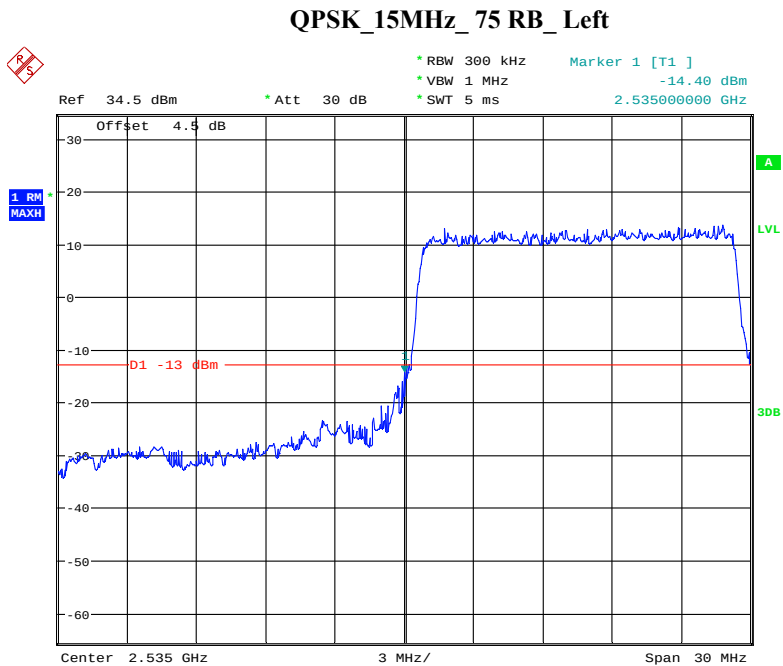


Date: 17.NOV.2018 15:37:28

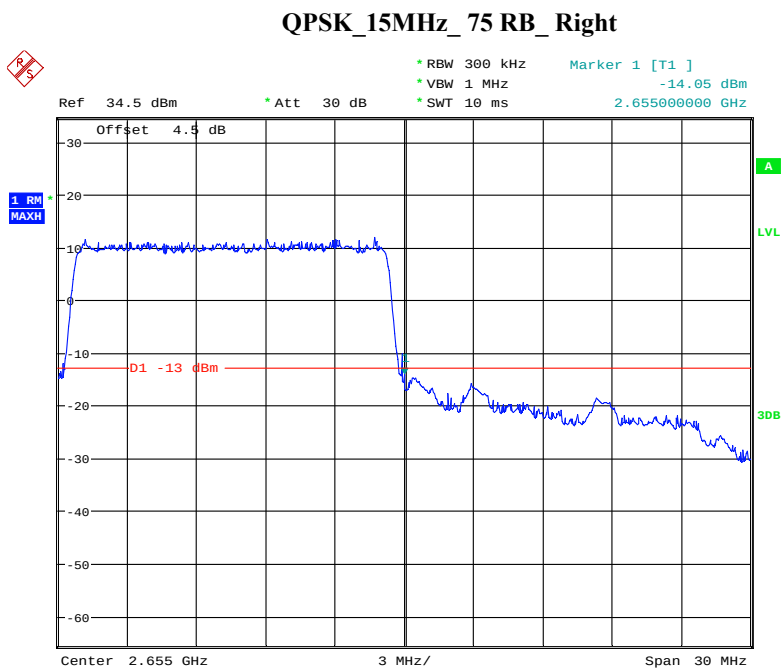
QPSK_10MHz_50 RB_ Right



Date: 17.NOV.2018 15:35:30

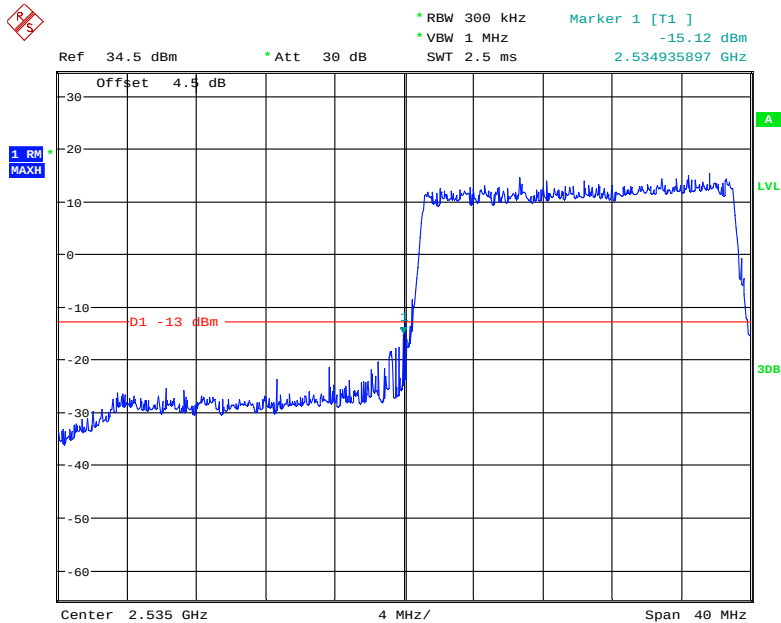


Date: 17.NOV.2018 15:41:26



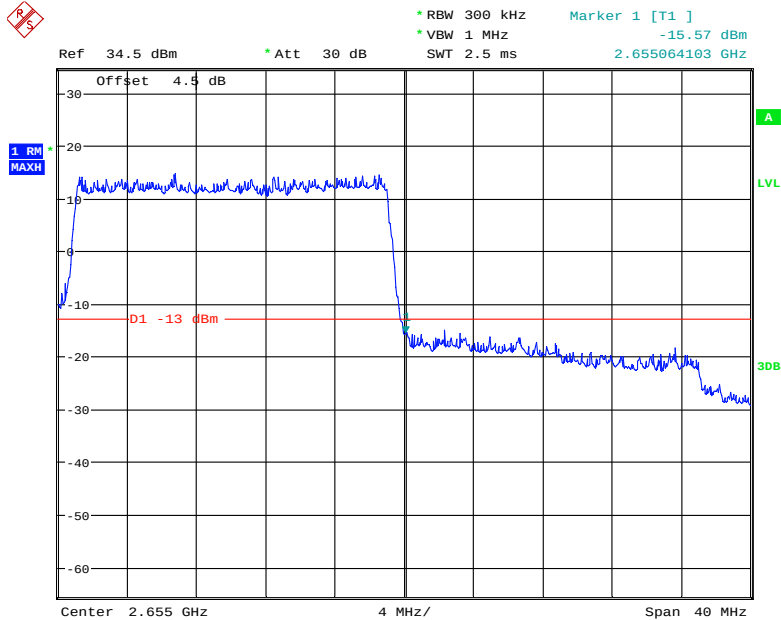
Date: 17.NOV.2018 15:44:57

QPSK_20MHz_FULL RB_Left



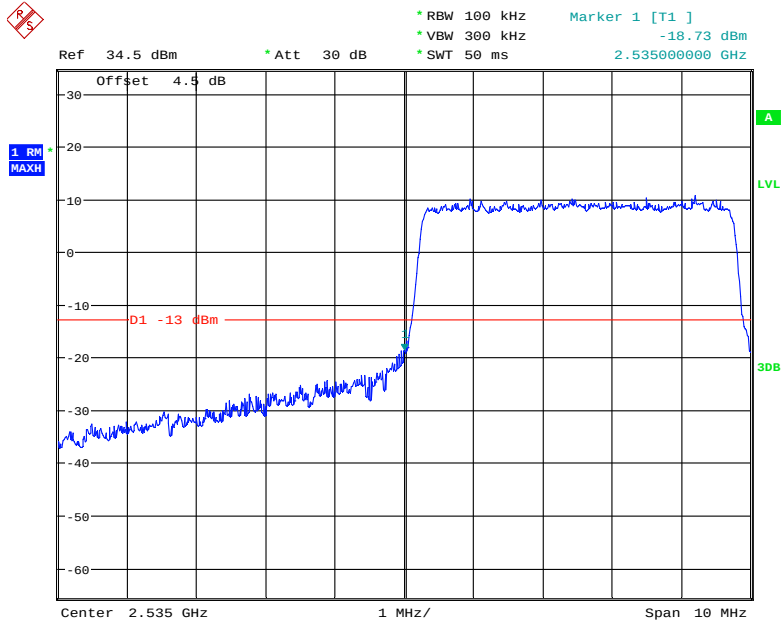
Date: 17.NOV.2018 15:53:21

QPSK_20MHz_FULL RB_Right



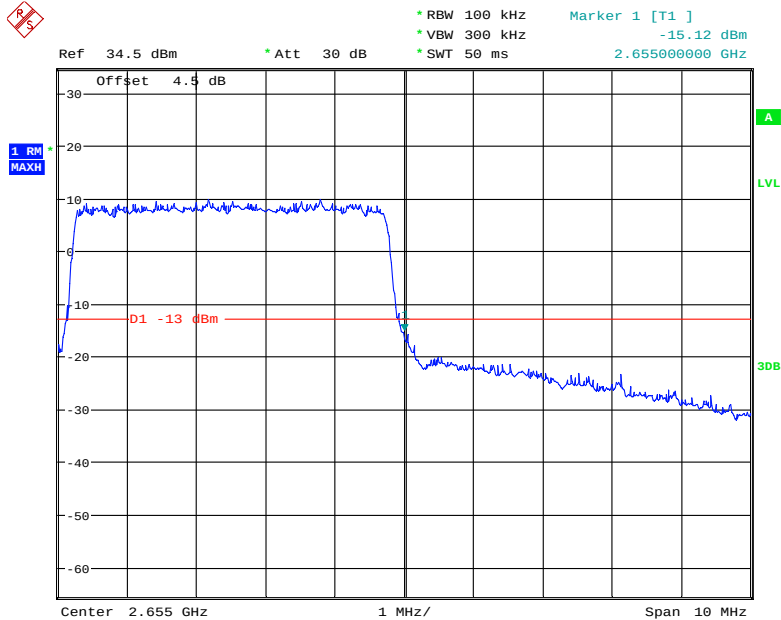
Date: 17.NOV.2018 15:48:00

16QAM_5MHz_25 RB_ Left

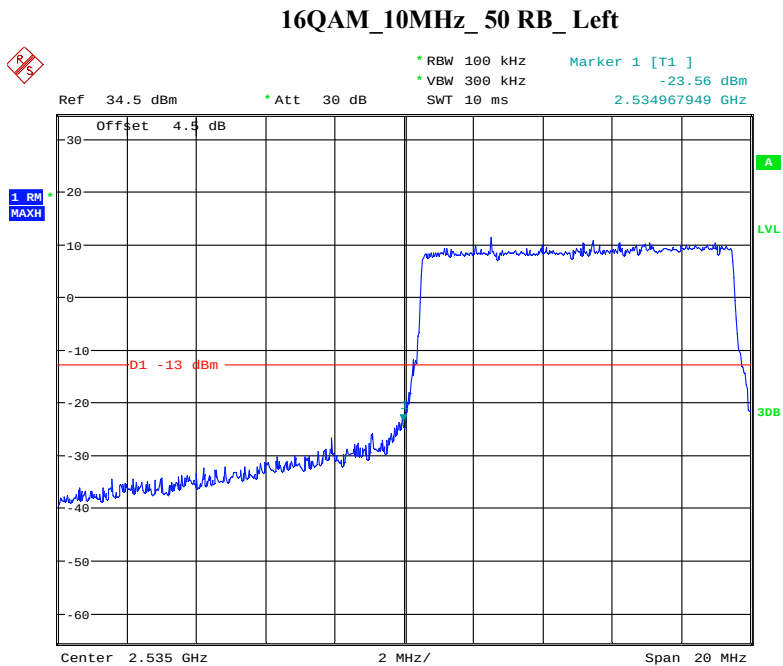


Date: 17.NOV.2018 15:34:03

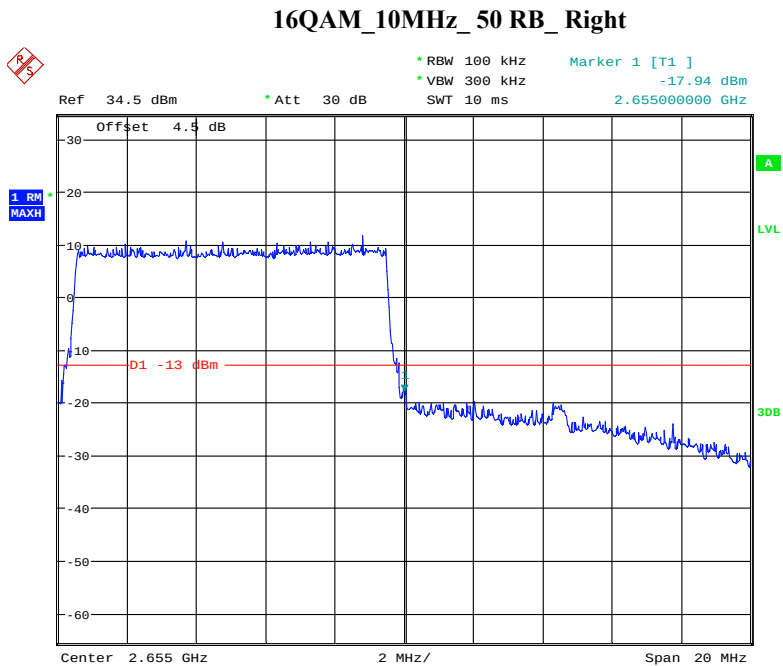
16QAM_5MHz_25 RB_ Right



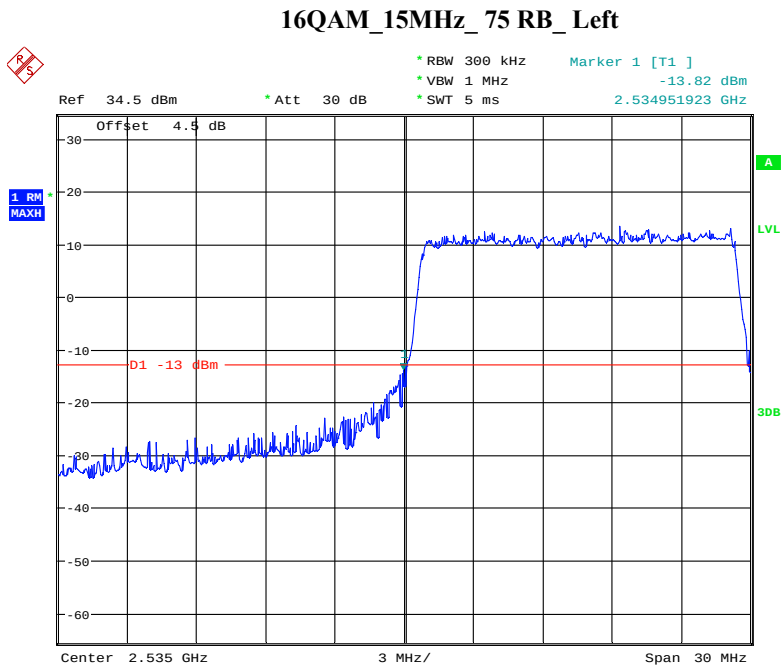
Date: 17.NOV.2018 15:34:30



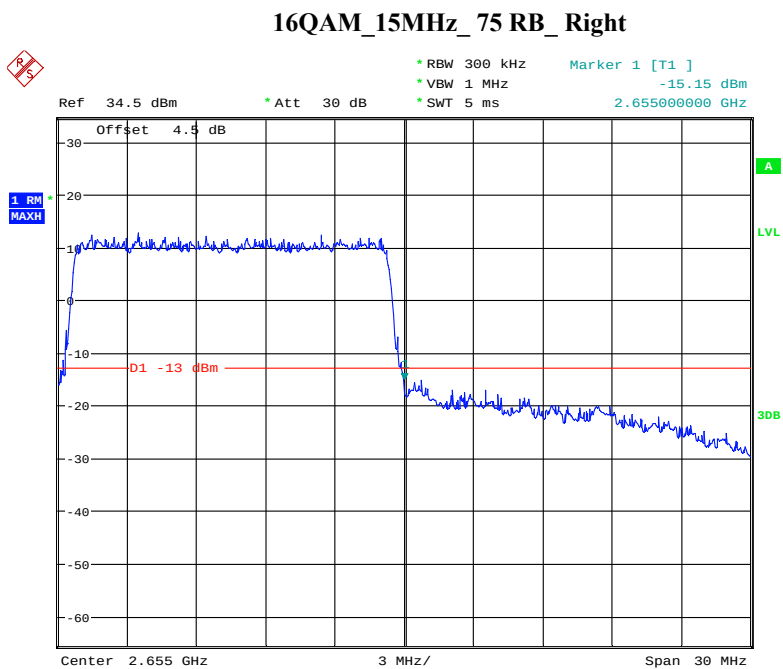
Date: 17.NOV.2018 15:36:58



Date: 17.NOV.2018 15:36:08

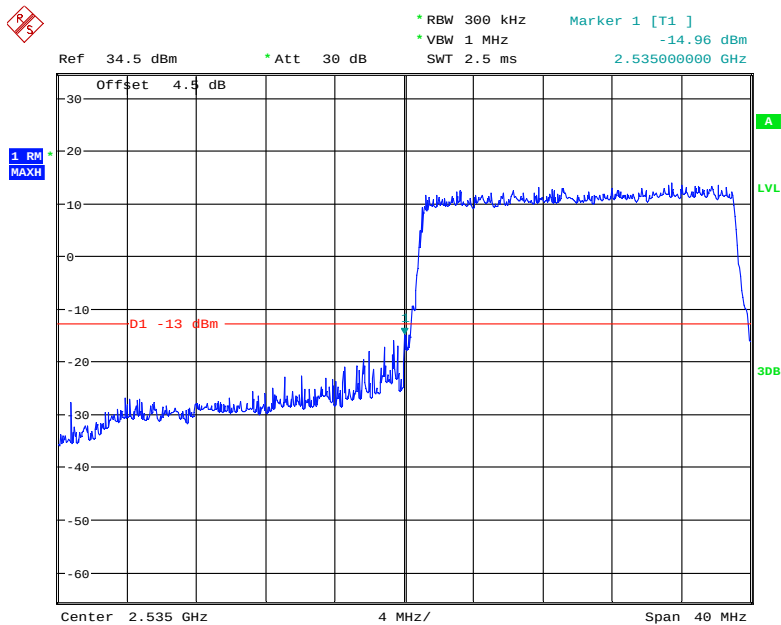


Date: 17.NOV.2018 15:42:10



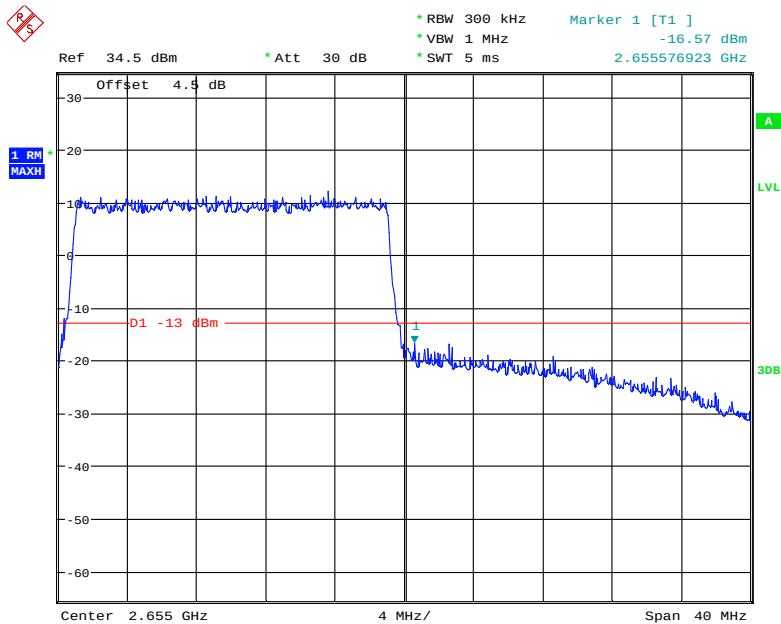
Date: 17.NOV.2018 15:43:10

16QAM_20MHz_FULL RB_Left



Date: 17.NOV.2018 15:51:56

16QAM_20MHz_FULL RB_Right



Date: 17.NOV.2018 15:48:55

FCC §2.1055, §22.355 & §24.235 & §27.54 & §90.213 - FREQUENCY STABILITY

Applicable Standard

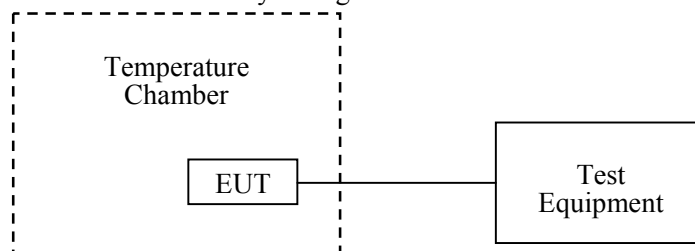
FCC § 2.1055 (a), § 2.1055 (d), §22.355, §24.235, §27.54 & §90.213

Test Procedure

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

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

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Universal Radio Communication Tester	CMU200	106 891	2017-12-14	2018-12-14
R&S	Wideband Radio Communication Tester	CMW500	110479	2017-12-11	2018-12-11
UNI-T	Multimeter	UT39A	M130199938	2018-07-24	2019-07-24
R&S	EMI Test Receiver	ESPI	100120	2017-12-11	2018-12-11
R&S	Spectrum Analyzer	FSU 26	200256	2018-01-04	2019-01-04
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2018-08-03	2019-08-03
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2018-03-26	2019-03-26
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	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	Each time	N/A
Pro instrument	DC Power Supply	pps3300	N/A	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:	26.5 ~ 29.9 °C
Relative Humidity:	47 ~ 70 %
ATM Pressure:	99.5~ 101.9 kPa

The testing was performed by Elena Lei from 2018-06-08 to 2018-07-26.

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	3.85	2	0.00239	2.5
-20		-1	-0.00120	
-10		3	0.00359	
0		-12	-0.01434	
10		7	0.00837	
20		-7	-0.00837	
30		4	0.00478	
40		10	0.01195	
50		7	0.00837	
20	4.4	-8	-0.00956	
20	3.4	-13	-0.01554	

8PSK, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.85	11	0.01315	2.5
-20		3	0.00359	
-10		-5	-0.00598	
0		7	0.00837	
10		8	0.00956	
20		9	0.01076	
30		-5	-0.00598	
40		-7	-0.00837	
50		7	0.00837	
20	4.4	11	0.01315	
20	3.4	-11	-0.01315	

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	3.85	-13	-0.00691	Pass
-20		11	0.00585	
-10		6	0.00319	
0		1	0.00053	
10		-1	-0.00053	
20		-6	-0.00319	
30		-2	-0.00106	
40		0	0.00000	
50		-9	-0.00479	
20	4.4	-8	-0.00426	
20	3.4	2	0.00106	

8PSK, Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
°C	V_{DC}	Hz	ppm	
-30	3.85	-4	-0.00213	Pass
-20		6	0.00319	
-10		1	0.00053	
0		-2	-0.00106	
10		-9	-0.00479	
20		-2	-0.00106	
30		-11	-0.00585	
40		9	0.00479	
50		9	0.00479	
20	4.4	11	0.00585	
20	3.4	-7	-0.00372	

WCDMA Band II: R99

Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
°C	V _{DC}	Hz	ppm	
-30	3.85	-1	-0.00053191	Pass
-20		-2	-0.00106383	
-10		-1	-0.00053191	
0		1	0.00053191	
10		3	0.00159574	
20		-2	-0.00106383	
30		2	0.00106383	
40		-4	-0.00212766	
50		-2	-0.00106383	
20	4.4	-3	-0.00159574	
20	3.4	-5	-0.00265957	

WCDMA Band IV: R99

Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V _{DC}	F _L	F _H	F _L	F _H
-30	3.85	1710.32	1754.66	1710	1755
-20		1710.32	1754.67	1710	1755
-10		1710.31	1754.67	1710	1755
0		1710.32	1754.67	1710	1755
10		1710.32	1754.67	1710	1755
20		1710.32	1754.67	1710	1755
30		1710.32	1754.66	1710	1755
40		1710.32	1754.67	1710	1755
50		1710.32	1754.67	1710	1755
20	4.4	1710.32	1754.67	1710	1755
20	3.4	1710.32	1754.67	1710	1755

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	3.85	-6	-0.00717189	2.5
-20		-2	-0.00239063	
-10		-3	-0.00358594	
0		-4	-0.00478126	
10		-4	-0.00478126	
20		1	0.00119531	
30		2	0.00239063	
40		3	0.00358594	
50		-1	-0.00119531	
25	4.4	-3	-0.00358594	
25	3.4	-2	-0.00239063	

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	3.85	-13.58	-0.00722	Pass
-20		-12.31	-0.00655	
-10		20.77	0.01105	
0		-3.54	-0.00188	
10		-16.26	-0.00865	
20		-2.87	-0.00153	
30		-7.54	-0.00401	
40		6.09	0.00324	
50		13.35	0.00710	
20	4.4	15.98	0.00850	
20	3.4	22.12	0.01177	

16QAM, Channel Bandwidth:10MHz Middle Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.85	14.63	0.0078	Pass
-20		-11.63	-0.0062	
-10		-8.29	-0.0044	
0		2.29	0.0012	
10		-18.91	-0.0101	
20		-11.16	-0.0059	
30		-7.16	-0.0038	
40		19.36	0.0103	
50		22.17	0.0118	
20	4.4	2.27	0.0012	
20	3.4	-12.27	-0.0065	

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	3.85	1710.320000	1754.370000	1710	1755
-20		1710.600000	1754.470000	1710	1755
-10		1710.660000	1754.340000	1710	1755
0		1710.310000	1754.580000	1710	1755
10		1710.520000	1754.360000	1710	1755
20		1710.520000	1754.480000	1710	1755
30		1710.480000	1754.440000	1710	1755
40		1710.410000	1754.250000	1710	1755
50		1710.560000	1754.570000	1710	1755
20	4.4	1710.300000	1754.500000	1710	1755
20	3.4	1710.570000	1754.390000	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	3.85	1710.640000	1754.530000	1710	1755
-20		1710.430000	1754.540000	1710	1755
-10		1710.460000	1754.560000	1710	1755
0		1710.430000	1754.280000	1710	1755
10		1710.670000	1754.530000	1710	1755
20		1710.520000	1754.480000	1710	1755
30		1710.500000	1754.480000	1710	1755
40		1710.440000	1754.380000	1710	1755
50		1710.440000	1754.300000	1710	1755
20	4.4	1710.640000	1754.600000	1710	1755
20	3.4	1710.430000	1754.550000	1710	1755

LTE Band 5:

QPSK, Channel Bandwidth:10MHz Middle Channel, $f_c = 836.5$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V_{DC}	Hz	ppm	ppm
-30	3.85	-20.86	-0.02494	2.5
-20		10.14	0.01212	
-10		-3.05	-0.00365	
0		14.42	0.01724	
10		23.61	0.02822	
20		-15.19	-0.01816	
30		16.95	0.02026	
40		2.63	0.00314	
50		10.29	0.01230	
20	4.4	-21.24	-0.02539	
20	3.4	7.58	0.00906	

16QAM, Channel Bandwidth:10MHz Middle Channel, $f_c = 836.5$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V_{DC}	Hz	ppm	ppm
-30	3.85	-13.02	-0.01556	2.5
-20		19.30	0.02307	
-10		5.00	0.00598	
0		23.88	0.02855	
10		11.20	0.01339	
20		17.39	0.02079	
30		7.94	0.00949	
40		-4.83	-0.00577	
50		-7.24	-0.00866	
20	4.4	-18.27	-0.02184	
20	3.4	4.47	0.00534	

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	3.85	2500.680000	2569.390000	2500	2570
-20		2500.450000	2569.350000	2500	2570
-10		2500.540000	2569.430000	2500	2570
0		2500.490000	2569.620000	2500	2570
10		2500.470000	2569.280000	2500	2570
20		2500.520000	2569.480000	2500	2570
30		2500.560000	2569.510000	2500	2570
40		2500.480000	2569.280000	2500	2570
50		2500.610000	2569.340000	2500	2570
20	4.4	2500.420000	2569.260000	2500	2570
20	3.4	2500.460000	2569.570000	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	3.85	2500.370000	2569.330000	2500	2570
-20		2500.390000	2569.510000	2500	2570
-10		2500.590000	2569.310000	2500	2570
0		2500.410000	2569.570000	2500	2570
10		2500.440000	2569.560000	2500	2570
20		2500.520000	2569.480000	2500	2570
30		2500.620000	2569.560000	2500	2570
40		2500.560000	2569.500000	2500	2570
50		2500.420000	2569.510000	2500	2570
20	4.4	2500.450000	2569.490000	2500	2570
20	3.4	2500.520000	2569.250000	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	3.85	699.390000	715.490000	699	716
-20		699.560000	715.570000	699	716
-10		699.420000	715.340000	699	716
0		699.570000	715.360000	699	716
10		699.590000	715.490000	699	716
20		699.560000	715.480000	699	716
30		699.490000	715.560000	699	716
40		699.370000	715.600000	699	716
50		699.630000	715.300000	699	716
20	4.4	699.510000	715.560000	699	716
20	3.4	699.620000	715.630000	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	3.85	699.680000	715.250000	699	716
-20		699.550000	715.330000	699	716
-10		699.430000	715.310000	699	716
0		699.440000	715.540000	699	716
10		699.520000	715.510000	699	716
20		699.560000	715.480000	699	716
30		699.540000	715.460000	699	716
40		699.440000	715.540000	699	716
50		699.640000	715.540000	699	716
20	4.4	699.430000	715.580000	699	716
20	3.4	699.490000	715.540000	699	716

LTE Band 13:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V _{DC}	F _L	F _H	F _L	F _H
-30	3.85	777.450000	786.400000	777	787
-20		777.580000	786.290000	777	787
-10		777.550000	786.310000	777	787
0		777.350000	786.320000	777	787
10		777.370000	786.480000	777	787
20		777.520000	786.520000	777	787
30		777.380000	786.480000	777	787
40		777.430000	786.450000	777	787
50		777.570000	786.420000	777	787
20	4.4	777.330000	786.340000	777	787
20	3.4	777.520000	786.420000	777	787

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V _{DC}	F _L	F _H	F _L	F _H
-30	3.85	777.470000	786.640000	777	787
-20		777.600000	786.430000	777	787
-10		777.410000	786.570000	777	787
0		777.390000	786.560000	777	787
10		777.470000	786.460000	777	787
20		777.520000	786.520000	777	787
30		777.630000	786.390000	777	787
40		777.290000	786.380000	777	787
50		777.310000	786.340000	777	787
20	4.4	777.360000	786.430000	777	787
20	3.4	777.300000	786.330000	777	787

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	3.85	704.380000	715.620000	704	716
-20		704.620000	715.560000	704	716
-10		704.640000	715.570000	704	716
0		704.590000	715.500000	704	716
10		704.520000	715.480000	704	716
20		704.520000	715.480000	704	716
30		704.640000	715.610000	704	716
40		704.370000	715.280000	704	716
50		704.310000	715.370000	704	716
20	4.4	704.330000	715.620000	704	716
20	3.4	704.330000	715.490000	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	3.85	704.470000	715.250000	704	716
-20		704.440000	715.320000	704	716
-10		704.430000	715.470000	704	716
0		704.450000	715.430000	704	716
10		704.600000	715.470000	704	716
20		704.520000	715.480000	704	716
30		704.500000	715.370000	704	716
40		704.290000	715.500000	704	716
50		704.410000	715.580000	704	716
20	4.4	704.630000	715.570000	704	716
20	3.4	704.410000	715.440000	704	716

LTE Band 18:

QPSK, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.85	6.90	0.00839	Pass
-20		13.55	0.01647	
-10		-18.02	-0.02191	
0		18.73	0.02277	
10		-7.80	-0.00948	
20		-8.27	-0.01005	
30		-21.41	-0.02603	
40		12.22	0.01486	
50		-6.88	-0.00836	
20	4.4	15.09	0.01835	
20	3.4	-6.43	-0.00782	

16QAM, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.85	23.32	0.02835	Pass
-20		-3.46	-0.00421	
-10		-11.33	-0.01378	
0		12.55	0.01526	
10		15.62	0.01899	
20		-12.96	-0.01576	
30		-22.63	-0.02751	
40		-6.14	-0.00747	
50		-8.50	-0.01033	
20	4.4	9.33	0.01134	
20	3.4	-17.25	-0.02097	

LTE Band 19:

QPSK, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.85	-8.25	-0.00985	Pass
-20		-21.84	-0.02608	
-10		9.60	0.01146	
0		-22.53	-0.02690	
10		20.70	0.02472	
20		-7.55	-0.00901	
30		21.32	0.02546	
40		2.85	0.00340	
50		16.70	0.01994	
20	4.4	-14.41	-0.01721	
20	3.4	-15.29	-0.01826	

16QAM, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.85	11.23	0.01341	Pass
-20		-22.08	-0.02636	
-10		-3.85	-0.00460	
0		-12.43	-0.01484	
10		18.08	0.02159	
20		-21.55	-0.02573	
30		-6.59	-0.00787	
40		-9.27	-0.01107	
50		-3.68	-0.00439	
20	4.4	8.62	0.01029	
20	3.4	-10.61	-0.01267	

LTE Band 26:

QPSK, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.85	-2.30	-0.00277	Pass
-20		16.99	0.02043	
-10		-3.50	-0.00421	
0		-18.53	-0.02229	
10		6.88	0.00827	
20		24.51	0.02948	
30		9.31	0.01120	
40		-0.57	-0.00069	
50		9.70	0.01167	
20	4.4	-1.51	-0.00182	
20	3.4	21.97	0.02642	

16QAM, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.85	-0.14	-0.00017	Pass
-20		-11.80	-0.01419	
-10		7.04	0.00847	
0		-4.98	-0.00599	
10		9.33	0.01122	
20		-1.65	-0.00198	
30		16.50	0.01984	
40		-19.84	-0.02386	
50		-2.34	-0.00281	
20	4.4	-0.58	-0.00070	
20	3.4	-18.04	-0.02170	

LTE Band 38:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2570.530000	2619.260000	2570	2620
-20		2570.610000	2619.310000	2570	2620
-10		2570.300000	2619.280000	2570	2620
0		2570.530000	2619.550000	2570	2620
10		2570.560000	2619.420000	2570	2620
20		2570.520000	2619.480000	2570	2620
30		2570.640000	2619.600000	2570	2620
40		2570.440000	2619.400000	2570	2620
50		2570.350000	2619.480000	2570	2620
20	4.4	2570.300000	2619.400000	2570	2620
20	3.4	2570.600000	2619.530000	2570	2620

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2570.430000	2619.480000	2570	2620
-20		2570.570000	2619.350000	2570	2620
-10		2570.580000	2619.600000	2570	2620
0		2570.300000	2619.450000	2570	2620
10		2570.490000	2619.340000	2570	2620
20		2570.520000	2619.480000	2570	2620
30		2570.350000	2619.560000	2570	2620
40		2570.580000	2619.350000	2570	2620
50		2570.360000	2619.310000	2570	2620
20	4.4	2570.640000	2619.430000	2570	2620
20	3.4	2570.440000	2619.500000	2570	2620

LTE Band 40(2305-2315MHz):

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2305.570320	2314.548450	2305	2315
-20		2305.570440	2314.548540	2305	2315
-10		2305.571050	2314.542230	2305	2315
0		2305.571540	2314.544830	2305	2315
10		2305.571470	2314.542110	2305	2315
20		2305.571340	2314.546100	2305	2315
30		2305.572230	2314.544330	2305	2315
40		2305.575060	2314.543450	2305	2315
50		2305.577330	2314.545470	2305	2315
20	4.4	2305.578040	2314.545490	2305	2315
20	3.4	2305.572090	2314.543420	2305	2315

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2305.573200	2314.543440	2305	2315
-20		2305.573260	2314.5453520	2305	2315
-10		2305.571020	2314.542410	2305	2315
0		2305.571320	2314.546470	2305	2315
10		2305.571320	2314.543220	2305	2315
20		2305.571540	2314.546100	2305	2315
30		2305.570320	2314.545180	2305	2315
40		2305.570150	2314.544340	2305	2315
50		2305.570560	2314.542260	2305	2315
20	4.4	2305.571320	2314.545400	2305	2315
20	3.4	2305.571220	2314.542340	2305	2315

LTE Band 40(2350-2360MHz):

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2350.530000	2359.610000	2350	2360
-20		2350.560000	2359.540000	2350	2360
-10		2350.290000	2359.660000	2350	2360
0		2350.570000	2359.590000	2350	2360
10		2350.350000	2359.310000	2350	2360
20		2350.520000	2359.520000	2350	2360
30		2350.620000	2359.600000	2350	2360
40		2350.340000	2359.410000	2350	2360
50		2350.320000	2359.470000	2350	2360
20	4.4	2350.550000	2359.350000	2350	2360
20	3.4	2350.370000	2359.340000	2350	2360

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2350.410000	2359.520000	2350	2360
-20		2350.580000	2359.450000	2350	2360
-10		2350.350000	2359.560000	2350	2360
0		2350.590000	2359.650000	2350	2360
10		2350.450000	2359.490000	2350	2360
20		2350.520000	2359.520000	2350	2360
30		2350.340000	2359.520000	2350	2360
40		2350.690000	2359.580000	2350	2360
50		2350.420000	2359.330000	2350	2360
20	4.4	2350.440000	2359.430000	2350	2360
20	3.4	2350.580000	2359.450000	2350	2360

LTE Band 41:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2435.513821	2654.485179	2435	2655
-20		2435.510821	2654.485179	2435	2655
-10		2435.516821	2654.485179	2435	2655
0		2435.510821	2654.490179	2435	2655
10		2435.511821	2654.489179	2435	2655
20		2435.512821	2654.487179	2435	2655
30		2435.517821	2654.487179	2435	2655
40		2435.515821	2654.484179	2435	2655
50		2435.513821	2654.483179	2435	2655
20	4.4	2435.512821	2654.484179	2435	2655
20	3.4	2435.508821	2654.485179	2435	2655

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
°C	V_{DC}	F_L	F_H	F_L	F_H
-30	3.85	2435.542872	2654.491179	2435	2655
-20		2435.546872	2654.490179	2435	2655
-10		2435.544872	2654.483179	2435	2655
0		2435.539872	2654.485179	2435	2655
10		2435.539872	2654.484179	2435	2655
20		2435.544872	2654.487179	2435	2655
30		2435.539872	2654.489179	2435	2655
40		2435.545872	2654.491179	2435	2655
50		2435.539872	2654.485179	2435	2655
20	4.4	2435.548872	2654.487179	2435	2655
20	3.4	2435.540872	2654.482179	2435	2655

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 *******