TESTING LABORATORY
CERTIFICATE #4820.01

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

For

Shenzhen Inrico Electronics Co.,Ltd

3/F, Building No.118, High Tech Industrial Park, 72 Guowei Road, Luohu District, Shenzhen Chian

FCC ID:2AIV6-S200

Report Type:	**Product Type:**
Original Report	Intelligent Two Way Radio

Report Number:	RDG200511002-00A
Report Date:	2020-06-09
Reviewed By:	Ivan Cao Assistant manager
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		Intelligent Two Way Radio
EUT Model:		S200
Rated Input Voltage:		DC 3.8V from battery or DC 5V from adapter
Adapter Information:	**Model:**	HJ-0502000W2-US
	Input:	100-240V~50/60Hz 0.3A
	Output:	DC 5V 2000mA
Serial Number:		RDG200511002-RF-S1
EUT Received Date:		2020.05.14
EUT Received Status:		Good

Objective

This report is prepared on behalf of ***Shenzhen Inrico Electronics Co.,Ltd*** in accordance with: Part 2-Subpart J, Part 22-Subpart H, Part 24-Subpart E, Part 27 of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

No related submittal(s)/grant(s).

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

TIA-603-E-2016.

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℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test Facility

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

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

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

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "△ ". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA -603-E-2010.

The test items were performed with the EUT operating at testing mode. The device operates on GSM Band 850/1900MHz,WCDMA Band 2/5, and LTE band 2/4/5/12/13/17, test was performed with channels as below table:

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSM/GPRS/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 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 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

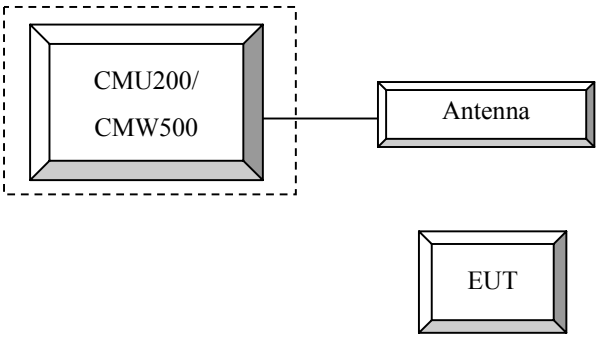
Equipment Modifications

No modification was made to the EUT.

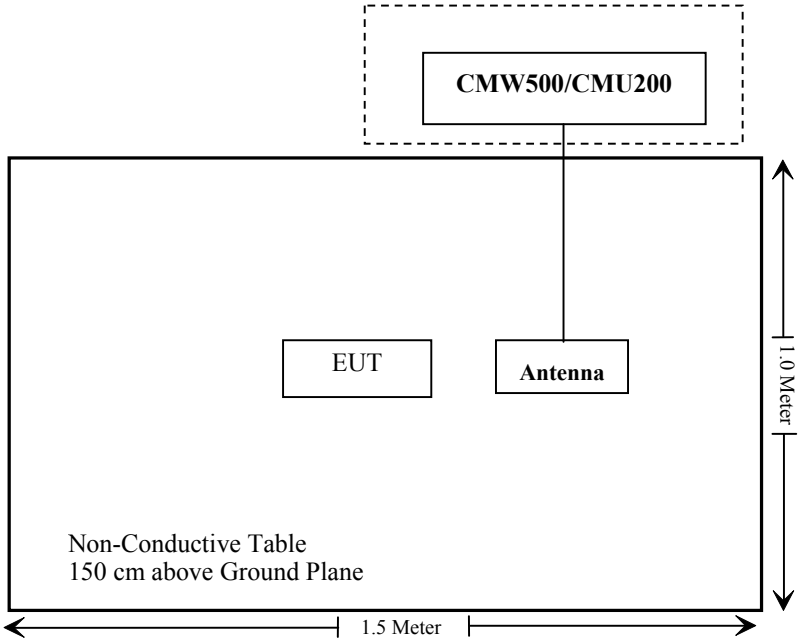
Support Equipment List and Details

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

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

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

FCC §1.1310 , §2.1093 - RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliant, please refer to the SAR report: RDG200511002-20.

FCC §2.1047 - MODULATION CHARACTERISTIC

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

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

Applicable Standard

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

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

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

According to §27.50

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

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

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

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

Test Procedure

GSM/GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/1900
Press Connection control to choose the different menus
Press RESET > choose all the reset all settings
Connection Press Signal Off to turn off the signal and change settings
Network Support > GSM + GPRS or GSM + EGSM
Main Service > Packet Data
Service selection > Test Mode A – Auto Slot Config. off
MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting
> Slot configuration > Uplink/Gamma
> 33 dBm for GPRS 850
> 30 dBm for GPRS 1900
> 27 dBm for EGPRS 850
> 26 dBm for EGPRS 1900
BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel
Frequency Offset > + 0 Hz
Mode > BCCH and TCH
BCCH Level > -85 dBm (May need to adjust if link is not stable)
BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off
P0 > 4 dB
Slot Config > Unchanged (if already set under MS signal)
TCH > choose desired test channel
Hopping > Off
Main Timeslot > 3
Network Coding Scheme > CS4 (GPRS) and MCS5 (EGPRS)

Bit Stream > 2E9-1 PSR Bit Stream
AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input
Connection Press Signal on to turn on the signal and change settings

WCDMA-Release 99

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

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

WCDMA HSDPA

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

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

WCDMA HSUPA

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

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

HSPA+

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

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

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c .

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.

Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

DC-HSDPA

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

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

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

Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.

Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.

LTE (FDD):

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

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

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

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

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

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

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

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

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

Radiated method:

TIA-603-E section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESR3	102453	2019-06-26	2020-06-26
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	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2020-05-06	2021-05-06
Agilent	Spectrum Analyzer	E4440A	SG43360054	2020-05-09	2021-05-09
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2019-09-05	2020-09-05
R&S	Universal Radio Communication Tester	CMU200	106 891	2019-12-14	2020-12-14
R&S	Wideband Radio Communication Tester	CMW500	147473	2019-08-03	2020-08-03
Agilent	Signal Generator	E8247C	MY43321350	2019-12-10	2020-12-10
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	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

Test Items:	Radiation Below 1GHz	Radiation Above 1GHz	Conducted Output Power
Temperature:	23.8°C	25°C	27.7 °C
Relative Humidity:	52%	47%	53 %
ATM Pressure:	100.7 kPa	100.7 kPa	100.1 kPa
Tester:	Joker Chen	FelixWang	Chris Mo
Test Date:	2020-05-15	2020-05-15	2020-05-18

Conducted Output Power

Cellular Band & PCS Band

Band	Channel No.	Conducted Peak Output Power (dBm)					Conducted Peak Output Power (dBm)			
		GSM	GPRS 1 TX Slot	GPRS 2 TX Slots	GPRS 3 TX Slots	GPRS 4 TX Slots	EDGE 1 uplink slot	EDGE 2 uplink slots	EDGE 3 uplink slots	EDGE 4 uplink slots
Cellular	128	31.30	31.26	30.66	29.04	28.05	26.02	25.09	23.29	22.30
	190	31.30	31.25	30.69	29.12	28.10	25.98	25.04	23.22	22.24
	251	31.30	31.21	30.74	29.14	28.24	26.03	25.08	23.21	22.27
PCS	512	28.60	28.51	27.84	26.19	25.18	25.14	24.34	22.48	21.43
	661	28.50	28.47	27.82	26.24	25.27	25.44	24.63	22.98	21.81
	810	28.50	28.47	27.85	26.33	25.38	25.19	24.41	22.87	21.72

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	23.38	2.47	22.76	2.85	23.86	2.18
HSDPA	1	22.31	3.04	21.73	4.42	22.75	3.97
	2	22.30	3.01	21.71	4.41	22.74	3.96
	3	22.28	3.02	21.69	4.46	22.73	3.95
	4	22.26	3.06	21.66	4.48	22.71	3.92
HSUPA	1	22.41	3.94	21.75	3.33	22.72	3.46
	2	22.38	3.96	21.73	3.32	22.69	3.41
	3	22.36	3.95	21.72	3.30	22.68	3.42
	4	22.35	3.94	21.70	3.31	22.65	3.48
	5	22.34	3.93	21.68	3.36	22.63	3.46
DC-HSDPA	1	22.31	3.85	21.63	3.35	22.58	3.47
	2	22.28	3.84	21.62	3.28	22.54	3.49
	3	22.25	3.82	21.60	3.26	22.53	3.45
	4	22.21	3.81	21.57	3.27	22.50	3.42
HSPA+ (16QAM)	1	22.20	3.80	21.52	3.25	22.46	3.37

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	21.92	3.14	21.38	2.95	22.21	3.21
HSDPA	1	20.74	3.56	20.37	3.85	21.09	3.30
	2	20.72	3.58	20.36	3.84	21.08	3.32
	3	20.71	3.57	20.34	3.82	21.06	3.35
	4	20.70	3.54	20.33	3.81	21.05	3.36
HSUPA	1	20.82	3.85	20.41	4.01	21.07	3.43
	2	20.81	3.84	20.38	4.03	21.05	3.42
	3	20.78	3.89	20.35	4.05	21.04	3.46
	4	20.77	3.87	20.32	4.02	21.06	3.41
	5	20.76	3.82	20.31	4.03	21.09	3.46
DC-HSDPA	1	20.65	3.81	20.28	3.98	21.07	3.42
	2	20.63	3.80	20.26	3.95	21.05	3.38
	3	20.61	3.74	20.24	3.97	21.06	3.37
	4	20.60	3.81	20.23	3.96	21.03	3.39
HSPA+ (16QAM)	1	20.55	3.83	20.20	3.92	21.01	3.35

LTE Band 2

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	21.55	22.43	22.45
		RB1#3	21.48	22.49	22.32
		RB1#5	21.54	22.45	22.40
		RB3#0	21.47	22.30	22.49
		RB3#3	21.48	22.29	22.44
		RB6#0	20.84	21.34	21.93
	16QAM	RB1#0	20.63	21.20	21.84
		RB1#3	20.61	21.26	21.72
		RB1#5	20.73	21.20	21.82
		RB3#0	20.63	21.33	21.69
		RB3#3	20.66	21.35	21.66
		RB6#0	19.93	20.25	21.18
3MHz	QPSK	RB1#0	21.41	22.40	22.62
		RB1#8	21.30	22.45	22.43
		RB1#14	21.26	22.41	22.33
		RB6#0	20.71	21.34	21.97
		RB6#9	20.75	21.35	21.89
		RB15#0	20.81	21.33	22.01
	16QAM	RB1#0	20.85	21.33	21.81
		RB1#8	20.81	21.36	21.68
		RB1#14	20.79	21.30	21.59
		RB6#0	19.93	20.28	21.11
		RB6#9	19.98	20.32	21.05
		RB15#0	20.00	20.28	21.24
5MHz	QPSK	RB1#0	21.33	22.52	22.56
		RB1#13	20.97	22.24	22.20
		RB1#24	21.09	22.45	22.21
		RB15#0	20.60	21.38	21.84
		RB15#10	20.49	21.37	21.75
		RB25#0	20.53	21.30	21.78
	16QAM	RB1#0	20.45	21.53	21.83
		RB1#13	20.08	21.49	21.50
		RB1#24	20.33	21.57	21.58
		RB15#0	19.75	20.35	20.99
		RB15#10	19.64	20.31	20.93
		RB25#0	19.74	20.32	20.99

10MHz	QPSK	RB1#0	21.02	21.81	21.77
		RB1#25	20.91	22.17	22.17
		RB1#49	20.65	22.20	21.89
		RB25#0	20.49	21.31	21.32
		RB25#25	20.24	21.46	21.61
		RB50#0	20.37	21.32	21.50
	16QAM	RB1#0	20.47	21.02	20.81
		RB1#25	20.41	21.40	21.29
		RB1#49	20.20	21.54	21.10
		RB25#0	19.65	20.34	20.50
		RB25#25	19.41	20.37	20.82
		RB50#0	19.54	20.36	20.68
15MHz	QPSK	RB1#0	21.13	21.68	21.81
		RB1#38	20.85	22.11	21.90
		RB1#74	20.80	22.23	21.99
		RB36#0	20.38	21.29	21.05
		RB36#39	20.14	21.66	21.45
		RB75#0	20.23	21.47	21.25
	16QAM	RB1#0	20.57	20.89	21.14
		RB1#38	20.34	21.39	21.24
		RB1#74	20.35	21.61	21.40
		RB36#0	19.53	20.40	20.18
		RB36#39	19.28	20.48	20.59
		RB75#0	19.43	20.46	20.40
20MHz	QPSK	RB1#0	21.07	21.43	22.10
		RB1#50	20.75	22.06	21.55
		RB1#99	20.95	22.01	21.89
		RB50#0	20.33	21.13	21.16
		RB50#50	20.10	21.52	21.31
		RB100#0	20.23	21.34	21.21
	16QAM	RB1#0	20.46	20.66	21.72
		RB1#50	20.16	21.33	21.20
		RB1#99	20.33	21.34	21.57
		RB50#0	19.46	20.24	20.28
		RB50#50	19.21	20.41	20.42
		RB100#0	19.40	20.37	20.39

LTE Band 4

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.15	22.51	23.76
		RB1#3	22.83	22.38	23.86
		RB1#5	22.81	22.40	23.76
		RB3#0	22.71	22.49	23.61
		RB3#3	22.74	22.41	23.61
		RB6#0	21.83	21.70	22.59
	16QAM	RB1#0	21.66	21.70	22.52
		RB1#3	21.78	21.60	22.61
		RB1#5	21.71	21.61	22.53
		RB3#0	21.82	21.51	22.53
		RB3#3	21.90	21.45	22.54
		RB6#0	20.70	20.76	21.76
3MHz	QPSK	RB1#0	22.93	22.57	24.14
		RB1#8	23.07	22.31	24.14
		RB1#14	23.11	22.38	24.07
		RB6#0	22.08	21.81	22.96
		RB6#9	22.16	21.67	22.95
		RB15#0	22.12	21.74	22.95
	16QAM	RB1#0	22.29	21.83	22.90
		RB1#8	22.39	21.58	22.86
		RB1#14	22.39	21.65	22.85
		RB6#0	20.98	20.93	21.84
		RB6#9	21.08	20.81	21.82
		RB15#0	21.05	20.80	21.98
5MHz	QPSK	RB1#0	23.03	22.47	24.17
		RB1#13	23.15	21.93	24.14
		RB1#24	23.21	22.18	24.07
		RB15#0	22.17	21.38	23.04
		RB15#10	22.25	21.27	22.98
		RB25#0	22.18	21.35	22.98
	16QAM	RB1#0	21.78	21.88	23.03
		RB1#13	22.02	21.35	22.99
		RB1#24	22.10	21.62	22.93
		RB15#0	21.10	20.50	22.03
		RB15#10	21.16	20.39	22.00
		RB25#0	21.13	20.51	21.98

10MHz	QPSK	RB1#0	23.00	22.18	23.25
		RB1#25	23.38	21.87	23.93
		RB1#49	23.15	21.72	23.98
		RB25#0	22.24	21.46	22.98
		RB25#25	22.49	21.19	22.97
		RB50#0	22.39	21.32	22.99
	16QAM	RB1#0	22.44	21.47	22.30
		RB1#25	22.65	21.19	22.91
		RB1#49	22.68	21.03	22.91
		RB25#0	21.19	20.60	22.08
		RB25#25	21.41	20.36	22.04
		RB50#0	21.27	20.48	22.02
15MHz	QPSK	RB1#0	23.19	22.64	22.63
		RB1#38	23.42	21.83	23.51
		RB1#74	22.62	22.06	24.09
		RB36#0	22.47	21.57	22.28
		RB36#39	22.49	21.20	23.10
		RB75#0	22.65	21.36	22.76
	16QAM	RB1#0	22.45	21.97	21.95
		RB1#38	22.78	21.14	22.87
		RB1#74	22.17	21.38	23.14
		RB36#0	21.29	20.70	21.37
		RB36#39	21.64	20.37	22.01
		RB75#0	21.48	20.53	21.88
20MHz	QPSK	RB1#0	23.23	22.99	22.12
		RB1#50	23.20	21.82	22.97
		RB1#99	21.89	22.31	23.95
		RB50#0	22.41	21.73	21.79
		RB50#50	21.99	21.25	23.02
		RB100#0	22.48	21.51	22.41
	16QAM	RB1#0	22.39	22.29	21.70
		RB1#50	22.68	21.11	22.56
		RB1#99	21.34	21.62	23.36
		RB50#0	21.28	20.87	20.88
		RB50#50	21.14	20.40	22.00
		RB100#0	21.47	20.66	21.57

LTE Band 5

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.90	23.01	22.70
		RB1#3	22.82	22.71	22.78
		RB1#5	23.01	22.77	22.56
		RB3#0	22.91	22.93	22.67
		RB3#3	22.94	22.75	22.66
		RB6#0	22.05	22.02	21.73
	16QAM	RB1#0	22.08	22.32	21.71
		RB1#3	22.05	22.03	21.78
		RB1#5	22.23	22.10	21.76
		RB3#0	22.25	22.09	21.75
		RB3#3	22.36	21.94	21.77
		RB6#0	21.25	21.19	20.73
3MHz	QPSK	RB1#0	23.15	23.23	22.67
		RB1#8	23.14	22.75	22.74
		RB1#14	23.29	22.48	22.57
		RB6#0	22.17	22.28	21.71
		RB6#9	22.42	21.80	22.48
		RB15#0	22.23	22.02	22.09
	16QAM	RB1#0	22.66	22.42	22.07
		RB1#8	22.75	22.05	22.07
		RB1#14	22.87	21.80	22.08
		RB6#0	21.37	21.25	21.06
		RB6#9	21.57	21.00	21.07
		RB15#0	21.47	21.16	21.20
5MHz	QPSK	RB1#0	22.75	23.22	23.02
		RB1#13	22.67	22.09	22.98
		RB1#24	23.14	22.16	22.83
		RB15#0	21.53	21.61	22.12
		RB15#10	21.91	21.16	22.09
		RB25#0	21.70	21.42	22.07
	16QAM	RB1#0	21.62	22.56	22.14
		RB1#13	21.67	21.53	22.05
		RB1#24	22.09	21.59	22.10
		RB15#0	20.72	20.76	21.20
		RB15#10	21.13	20.30	21.16
		RB25#0	20.92	20.59	21.20
10MHz	QPSK	RB1#0	22.72	23.11	22.16
		RB1#25	23.13	21.89	22.80
		RB1#49	22.87	21.77	22.40
		RB25#0	21.94	21.92	21.39
		RB25#25	22.29	20.81	21.90
		RB50#0	22.10	21.38	21.91
	16QAM	RB1#0	22.23	22.24	21.27
		RB1#25	22.67	21.20	21.91
		RB1#49	22.46	20.99	21.59
		RB25#0	21.15	21.03	20.64
		RB25#25	21.26	19.95	21.05
		RB50#0	21.16	20.51	21.03

LTE Band 12

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	23.49	22.94	22.87
		RB1#3	23.15	22.77	22.62
		RB1#5	23.24	22.78	22.63
		RB3#0	23.21	22.91	22.81
		RB3#3	23.18	22.82	22.69
		RB6#0	22.29	22.00	21.97
	16QAM	RB1#0	22.35	22.06	21.99
		RB1#3	22.23	21.95	21.97
		RB1#5	22.33	21.96	21.97
		RB3#0	22.35	22.21	21.83
		RB3#3	22.30	22.16	21.81
		RB6#0	21.36	21.17	21.00
3MHz	QPSK	RB1#0	23.22	23.06	23.03
		RB1#8	23.14	22.78	22.75
		RB1#14	23.23	22.52	22.53
		RB6#0	22.34	22.13	22.01
		RB6#9	22.44	21.78	21.89
		RB15#0	22.33	21.95	21.99
	16QAM	RB1#0	22.68	22.34	22.04
		RB1#8	22.69	22.06	21.88
		RB1#14	22.79	21.80	21.74
		RB6#0	21.51	21.31	21.00
		RB6#9	21.64	21.00	20.91
		RB15#0	21.54	21.08	21.06
5MHz	QPSK	RB1#0	22.98	23.30	22.83
		RB1#13	22.77	22.29	22.36
		RB1#24	23.23	22.41	22.37
		RB15#0	21.82	21.63	21.50
		RB15#10	22.02	21.27	21.49
		RB25#0	21.91	21.48	21.49
	16QAM	RB1#0	21.96	22.67	21.95
		RB1#13	21.78	21.68	21.53
		RB1#24	22.31	21.80	21.59
		RB15#0	20.98	20.76	20.63
		RB15#10	21.19	20.42	20.70
		RB25#0	21.10	20.67	20.64
10MHz	QPSK	RB1#0	23.05	23.41	22.88
		RB1#25	23.08	22.29	22.29
		RB1#49	22.11	22.25	22.11
		RB25#0	22.18	22.18	21.57
		RB25#25	21.74	21.30	21.47
		RB50#0	21.96	21.71	21.50
	16QAM	RB1#0	22.57	22.67	21.98
		RB1#25	22.68	21.57	21.44
		RB1#49	21.73	21.50	21.29
		RB25#0	21.38	21.31	20.83
		RB25#25	20.94	20.49	20.69
		RB50#0	21.12	20.90	20.66

LTE Band 13

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	22.45	22.48	22.47
		RB1#13	22.46	22.45	21.30
		RB1#24	22.42	21.82	20.97
		RB15#0	21.57	21.55	21.42
		RB15#10	21.50	21.51	20.33
		RB25#0	21.48	21.53	20.91
	16QAM	RB1#0	21.34	21.76	21.51
		RB1#13	21.39	21.72	20.54
		RB1#24	21.37	21.30	20.22
		RB15#0	20.68	20.54	20.34
		RB15#10	20.62	20.36	19.56
		RB25#0	20.65	20.40	20.14
10MHz	QPSK	RB1#0	/	22.44	/
		RB1#25	/	22.42	/
		RB1#49	/	20.64	/
		RB25#0	/	21.54	/
		RB25#25	/	20.82	/
		RB50#0	/	21.26	/
	16QAM	RB1#0	/	21.87	/
		RB1#25	/	21.87	/
		RB1#49	/	20.28	/
		RB25#0	/	20.61	/
		RB25#25	/	20.00	/
		RB50#0	/	20.28	/

LTE Band 17

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	24.20	23.59	23.12
		RB1#13	23.17	22.24	22.77
		RB1#24	22.80	23.06	22.52
		RB15#0	22.94	21.74	22.12
		RB15#10	22.18	21.47	21.79
		RB25#0	22.57	21.64	21.92
	16QAM	RB1#0	22.92	22.96	22.27
		RB1#13	22.20	21.61	21.97
		RB1#24	21.88	22.47	21.76
		RB15#0	22.08	20.86	21.28
		RB15#10	21.34	20.59	20.95
		RB25#0	21.77	20.82	21.10
10MHz	QPSK	RB1#0	24.27	23.76	23.53
		RB1#25	22.53	22.26	22.37
		RB1#49	22.72	22.32	22.18
		RB25#0	22.68	22.32	22.07
		RB25#25	21.60	21.67	21.74
		RB50#0	22.12	21.96	21.87
	16QAM	RB1#0	23.45	23.07	22.66
		RB1#25	22.11	21.51	21.48
		RB1#49	22.29	21.56	21.36
		RB25#0	21.85	21.47	21.29
		RB25#25	20.78	20.85	20.97
		RB50#0	21.27	21.11	21.05

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	2.64	3.16	3.12	13
	100 RB		5.04	5.04	5.08	13
16QAM	1 RB	20 MHz	3.64	4.00	4.24	13
	100 RB		5.84	5.96	5.96	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	3.32	3.24	3.68	13
	100 RB		5.00	5.20	5.28	13
16QAM	1 RB	20 MHz	4.48	4.28	4.52	13
	100 RB		5.96	6.04	6.24	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	4.32	4.12	4.64	13
	50 RB		5.60	5.72	5.64	13
16QAM	1 RB	10 MHz	5.44	5.12	5.72	13
	50 RB		6.44	6.56	6.48	13

PAR, LTE 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	4.36	3.36	3.96	13
	50 RB		5.36	5.56	5.64	13
16QAM	1 RB	10 MHz	5.52	4.44	4.96	13
	50 RB		6.16	6.36	6.52	13

PAR, LTE Band 13

Test Modulation		Channel Bandwidth	Middle Channel (dB)	Limit (dB)
QPSK	1 RB	10 MHz	3.60	13
	50 RB		5.36	13
16QAM	1 RB	10 MHz	4.72	13
	50 RB		6.20	13

PAR, LTE 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	3.04	3.20	3.60	13
	50 RB		5.68	5.72	5.72	13
16QAM	1 RB	10 MHz	4.28	4.24	4.64	13
	50 RB		6.48	6.52	6.52	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	93.18	18.26	0.00	0.97	17.29	38.45	21.16
836.60	V	99.67	27.88	0.00	0.97	26.91	38.45	11.54
EDGE 850 Middle Channel								
836.60	H	88.66	13.74	0.00	0.97	12.77	38.45	25.68
836.60	V	94.16	22.37	0.00	0.97	21.40	38.45	17.05
WCDMA Band V Middle Channel								
836.60	H	79.77	4.85	0.00	0.97	3.88	38.45	34.57
836.60	V	89.45	17.66	0.00	0.97	16.69	38.45	21.76
GSM 1900 Middle Channel								
1880.00	H	91.61	19.00	11.66	2.66	28.00	33.00	5.00
1880.00	V	92.68	20.21	11.66	2.66	29.21	33.00	3.79
EDGE 1900 Middle Channel								
1880.00	H	89.68	17.07	11.66	2.66	26.07	33.00	6.93
1880.00	V	89.32	16.85	11.66	2.66	25.85	33.00	7.15
WCDMA Band II Middle Channel								
1880.00	H	87.98	15.37	11.66	2.66	24.37	33.00	8.63
1880.00	V	87.46	14.99	11.66	2.66	23.99	33.00	9.01

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

LTE Band 2

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1880.00	1.40	QPSK	H	81.38	8.77	11.66	2.66	17.77	33.00	15.23
1880.00			V	81.95	9.48	11.66	2.66	18.48	33.00	14.52
1880.00	3.00		H	81.02	8.41	11.66	2.66	17.41	33.00	15.59
1880.00			V	81.54	9.07	11.66	2.66	18.07	33.00	14.93
1880.00	5.00		H	81.21	8.60	11.66	2.66	17.60	33.00	15.40
1880.00			V	81.25	8.78	11.66	2.66	17.78	33.00	15.22
1880.00	10.00		H	81.40	8.79	11.66	2.66	17.79	33.00	15.21
1880.00			V	81.79	9.32	11.66	2.66	18.32	33.00	14.68
1880.00	15.00		H	81.42	8.81	11.66	2.66	17.81	33.00	15.19
1880.00			V	81.73	9.26	11.66	2.66	18.26	33.00	14.74
1880.00	20.00		H	81.09	8.48	11.66	2.66	17.48	33.00	15.52
1880.00			V	81.68	9.21	11.66	2.66	18.21	33.00	14.79
1880.00	1.40	16QAM	H	81.91	9.30	11.66	2.66	18.30	33.00	14.70
1880.00			V	80.50	8.03	11.66	2.66	17.03	33.00	15.97
1880.00	3.00		H	80.98	8.37	11.66	2.66	17.37	33.00	15.63
1880.00			V	80.26	7.79	11.66	2.66	16.79	33.00	16.21
1880.00	5.00		H	81.50	8.89	11.66	2.66	17.89	33.00	15.11
1880.00			V	79.88	7.41	11.66	2.66	16.41	33.00	16.59
1880.00	10.00		H	80.05	7.44	11.66	2.66	16.44	33.00	16.56
1880.00			V	79.30	6.83	11.66	2.66	15.83	33.00	17.17
1880.00	15.00		H	81.11	8.50	11.66	2.66	17.50	33.00	15.50
1880.00			V	81.27	8.80	11.66	2.66	17.80	33.00	15.20
1880.00	20.00		H	81.64	9.03	11.66	2.66	18.03	33.00	14.97
1880.00			V	81.19	8.72	11.66	2.66	17.72	33.00	15.28

LTE Band 4

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1732.50	1.40	QPSK	H	85.08	11.03	10.90	2.51	19.42	30.00	10.58
1732.50			V	83.61	9.24	10.90	2.51	17.63	30.00	12.37
1732.50	3.00		H	84.97	10.92	10.90	2.51	19.31	30.00	10.69
1732.50			V	83.52	9.15	10.90	2.51	17.54	30.00	12.46
1732.50	5.00		H	84.61	10.56	10.90	2.51	18.95	30.00	11.05
1732.50			V	83.20	8.83	10.90	2.51	17.22	30.00	12.78
1732.50	10.00		H	83.74	9.69	10.90	2.51	18.08	30.00	11.92
1732.50			V	82.32	7.95	10.90	2.51	16.34	30.00	13.66
1732.50	15.00		H	83.42	9.37	10.90	2.51	17.76	30.00	12.24
1732.50			V	82.02	7.65	10.90	2.51	16.04	30.00	13.96
1732.50	20.00		H	83.71	9.66	10.90	2.51	18.05	30.00	11.95
1732.50			V	82.32	7.95	10.90	2.51	16.34	30.00	13.66
1732.50	1.40	16QAM	H	84.21	10.16	10.90	2.51	18.55	30.00	11.45
1732.50			V	83.12	8.75	10.90	2.51	17.14	30.00	12.86
1732.50	3.00		H	84.10	10.05	10.90	2.51	18.44	30.00	11.56
1732.50			V	83.05	8.68	10.90	2.51	17.07	30.00	12.93
1732.50	5.00		H	83.61	9.56	10.90	2.51	17.95	30.00	12.05
1732.50			V	82.58	8.21	10.90	2.51	16.60	30.00	13.40
1732.50	10.00		H	82.68	8.63	10.90	2.51	17.02	30.00	12.98
1732.50			V	83.53	9.16	10.90	2.51	17.55	30.00	12.45
1732.50	15.00		H	82.52	8.47	10.90	2.51	16.86	30.00	13.14
1732.50			V	83.48	9.11	10.90	2.51	17.50	30.00	12.50
1732.50	20.00		H	82.83	8.78	10.90	2.51	17.17	30.00	12.83
1732.50			V	82.75	8.38	10.90	2.51	16.77	30.00	13.23

LTE Band 5

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
836.50	1.40	QPSK	H	83.39	8.46	0.00	0.97	7.49	38.45	30.96
836.50			V	92.97	21.18	0.00	0.97	20.21	38.45	18.24
836.50	3.00		H	82.60	7.67	0.00	0.97	6.70	38.45	31.75
836.50			V	92.18	20.39	0.00	0.97	19.42	38.45	19.03
836.50	5.00		H	81.24	6.31	0.00	0.97	5.34	38.45	33.11
836.50			V	90.82	19.03	0.00	0.97	18.06	38.45	20.39
836.50	10.00		H	82.08	7.15	0.00	0.97	6.18	38.45	32.27
836.50			V	91.66	19.87	0.00	0.97	18.90	38.45	19.55
836.50	1.40	16QAM	H	83.78	8.85	0.00	0.97	7.88	38.45	30.57
836.50			V	93.36	21.57	0.00	0.97	20.60	38.45	17.85
836.50	3.00		H	82.17	7.24	0.00	0.97	6.27	38.45	32.18
836.50			V	91.75	19.96	0.00	0.97	18.99	38.45	19.46
836.50	5.00		H	81.26	6.33	0.00	0.97	5.36	38.45	33.09
836.50			V	90.84	19.05	0.00	0.97	18.08	38.45	20.37
836.50	10.00		H	82.00	7.07	0.00	0.97	6.10	38.45	32.35
836.50			V	91.58	19.79	0.00	0.97	18.82	38.45	19.63

LTE Band 12

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
707.50	1.40	QPSK	H	84.96	8.10	0.00	0.94	7.16	34.77	27.61
707.50			V	94.40	19.98	0.00	0.94	19.04	34.77	15.73
707.50	3.00		H	83.72	6.86	0.00	0.94	5.92	34.77	28.85
707.50			V	93.16	18.74	0.00	0.94	17.80	34.77	16.97
707.50	5.00		H	82.61	5.75	0.00	0.94	4.81	34.77	29.96
707.50			V	92.05	17.63	0.00	0.94	16.69	34.77	18.08
707.50	10.00		H	82.16	5.30	0.00	0.94	4.36	34.77	30.41
707.50			V	91.60	17.18	0.00	0.94	16.24	34.77	18.53
707.50	1.40	16QAM	H	84.42	7.56	0.00	0.94	6.62	34.77	28.15
707.50			V	93.86	19.44	0.00	0.94	18.50	34.77	16.27
707.50	3.00		H	82.94	6.08	0.00	0.94	5.14	34.77	29.63
707.50			V	92.38	17.96	0.00	0.94	17.02	34.77	17.75
707.50	5.00		H	82.42	5.56	0.00	0.94	4.62	34.77	30.15
707.50			V	91.86	17.44	0.00	0.94	16.50	34.77	18.27
707.50	10.00		H	82.52	5.66	0.00	0.94	4.72	34.77	30.05
707.50			V	91.96	17.54	0.00	0.94	16.60	34.77	18.17

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	5.00	QPSK	H	86.92	11.39	0.00	0.93	10.46	34.77	24.31
782.00			V	90.85	18.24	0.00	0.93	17.31	34.77	17.46
782.00	10.00		H	87.39	11.86	0.00	0.93	10.93	34.77	23.84
782.00			V	91.32	18.71	0.00	0.93	17.78	34.77	16.99
782.00	5.00	16QAM	H	87.55	12.02	0.00	0.93	11.09	34.77	23.68
782.00			V	91.48	18.87	0.00	0.93	17.94	34.77	16.83
782.00	10.00		H	87.66	12.13	0.00	0.93	11.20	34.77	23.57
782.00			V	91.59	18.98	0.00	0.93	18.05	34.77	16.72

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	5.00	QPSK	H	83.42	6.61	0.00	0.94	5.67	34.77	29.10
710.00			V	92.60	18.24	0.00	0.94	17.30	34.77	17.47
710.00	10.00		H	83.46	6.65	0.00	0.94	5.71	34.77	29.06
710.00			V	92.64	18.28	0.00	0.94	17.34	34.77	17.43
710.00	5.00	16QAM	H	83.55	6.74	0.00	0.94	5.80	34.77	28.97
710.00			V	92.73	18.37	0.00	0.94	17.43	34.77	17.34
710.00	10.00		H	83.50	6.69	0.00	0.94	5.75	34.77	29.02
710.00			V	92.68	18.32	0.00	0.94	17.38	34.77	17.39

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

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

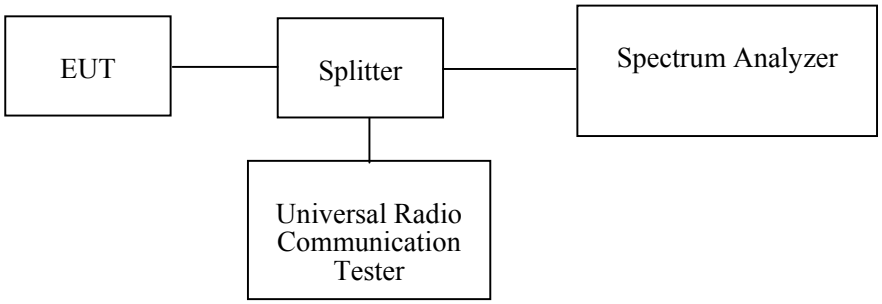
Applicable Standard

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

Test Procedure

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

The 26 dB & 99% bandwidth was recorded.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2020-05-09	2021-05-09
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	Each Time	/
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	/
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	Each Time	/
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each Time	/

*** 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:	26.1~26.9 °C
Relative Humidity:	55~67 %
ATM Pressure:	98.6~100 kPa
Tester:	Chris Mo
Test Date:	2020-05-19~2020-05-22

Test Mode: Transmitting

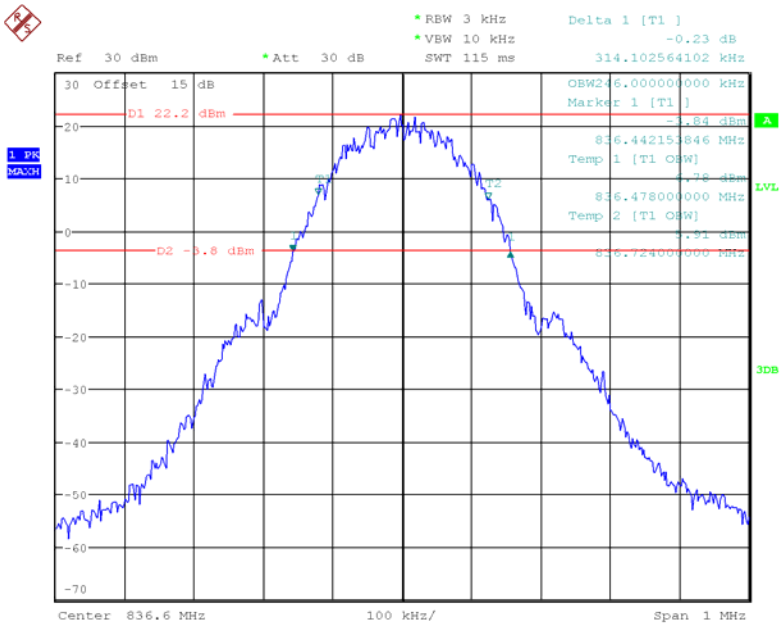
Test Result: Compliant. Please refer to the following table and plots.

Band	Test Channel	Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Cellular	M	GSM	0.246	0.314
		EDGE	0.250	0.323
PCS		GSM	0.250	0.315
		EDGE	0.256	0.329
WCDMA Band II		Rel 99	4.220	4.872
		HSDPA	4.240	4.897
		HSUPA	4.240	4.894
WCDMA Band V		Rel 99	4.220	4.901
		HSDPA	4.220	4.881
		HSUPA	4.220	4.873

Band	Bandwidth	Modulation	99% occupied bandwidth (MHz)	26 dB bandwidth (MHz)
LTE Band 2	1.4 MHz	QPSK	1.098	1.284
		16QAM	1.110	1.290
	3 MHz	QPSK	2.688	2.916
		16QAM	2.688	2.916
	5 MHz	QPSK	4.540	5.060
		16QAM	4.540	5.020
	10 MHz	QPSK	9.000	9.840
		16QAM	8.960	9.680
	15 MHz	QPSK	13.560	15.000
		16QAM	13.500	15.120
	20 MHz	QPSK	17.920	19.440
		16QAM	18.080	19.520
LTE Band 4	1.4 MHz	QPSK	1.098	1.308
		16QAM	1.104	1.290
	3 MHz	QPSK	2.688	2.940
		16QAM	2.688	2.952
	5 MHz	QPSK	4.540	5.020
		16QAM	4.540	4.980
	10 MHz	QPSK	9.000	9.800
		16QAM	9.000	9.720
	15 MHz	QPSK	13.560	14.940
		16QAM	13.620	14.940
	20 MHz	QPSK	18.000	19.360
		16QAM	18.080	19.360
LTE Band 5	1.4 MHz	QPSK	1.098	1.278
		16QAM	1.098	1.284
	3 MHz	QPSK	2.688	2.904
		16QAM	2.688	2.916
	5 MHz	QPSK	4.520	5.060
		16QAM	4.520	5.100
	10 MHz	QPSK	9.000	9.720
		16QAM	8.960	9.720

Band	Bandwidth	Modulation	99% occupied bandwidth (MHz)	26 dB bandwidth (MHz)
LTE Band 12	1.4 MHz	QPSK	1.098	1.290
		16QAM	1.104	1.284
	3 MHz	QPSK	2.688	2.916
		16QAM	2.700	2.940
	5 MHz	QPSK	4.540	5.040
		16QAM	4.520	5.060
	10 MHz	QPSK	9.000	9.680
		16QAM	9.000	9.680
LTE Band 13	5 MHz	QPSK	4.520	5.060
		16QAM	4.520	5.020
	10 MHz	QPSK	8.960	9.760
		16QAM	8.960	9.680
LTE Band 17	5 MHz	QPSK	4.560	5.060
		16QAM	4.520	5.060
	10 MHz	QPSK	9.040	9.920
		16QAM	9.040	9.640

GSM 850 Cellular Band



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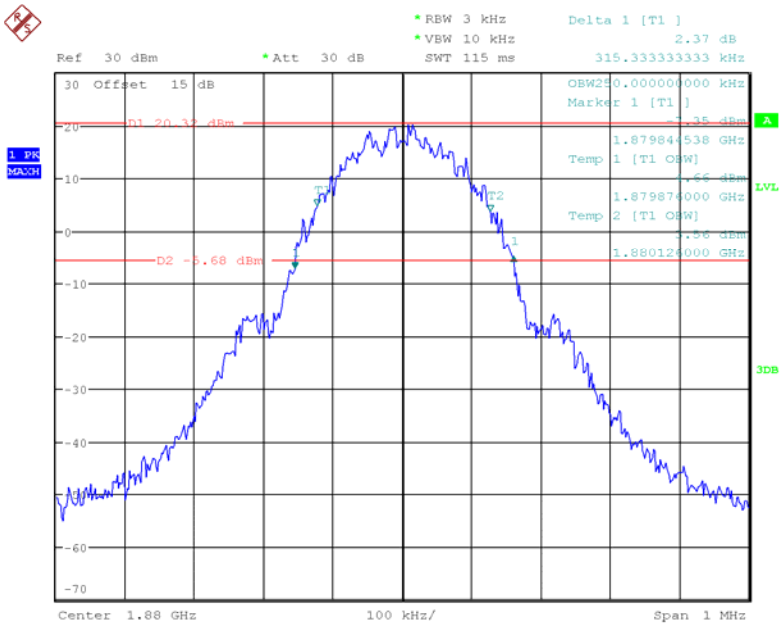
GSM1900 Cellular Band



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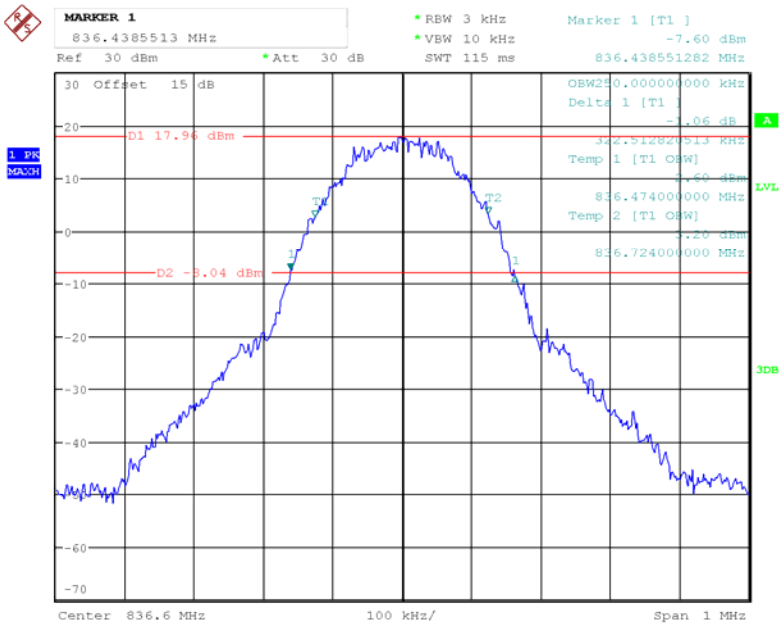
EDGE 850 Cellular Band



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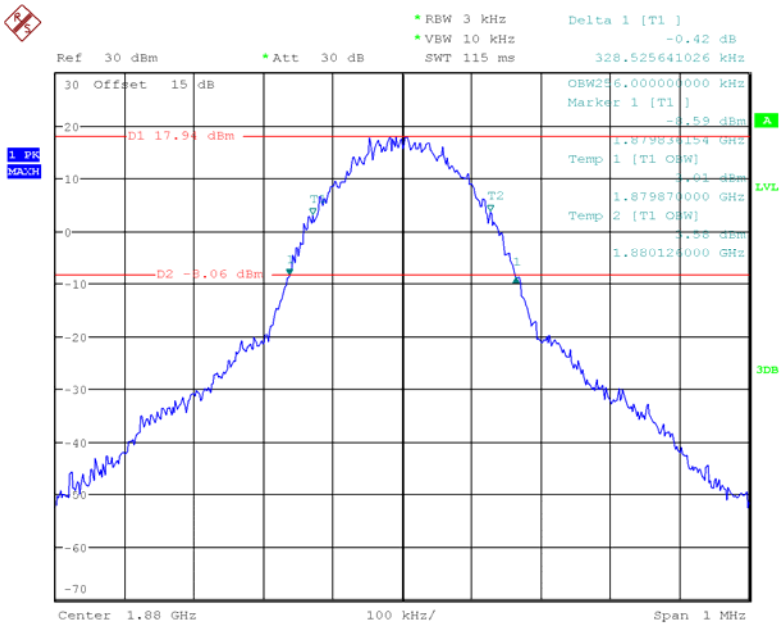
EDGE PCS1900 Cellular Band



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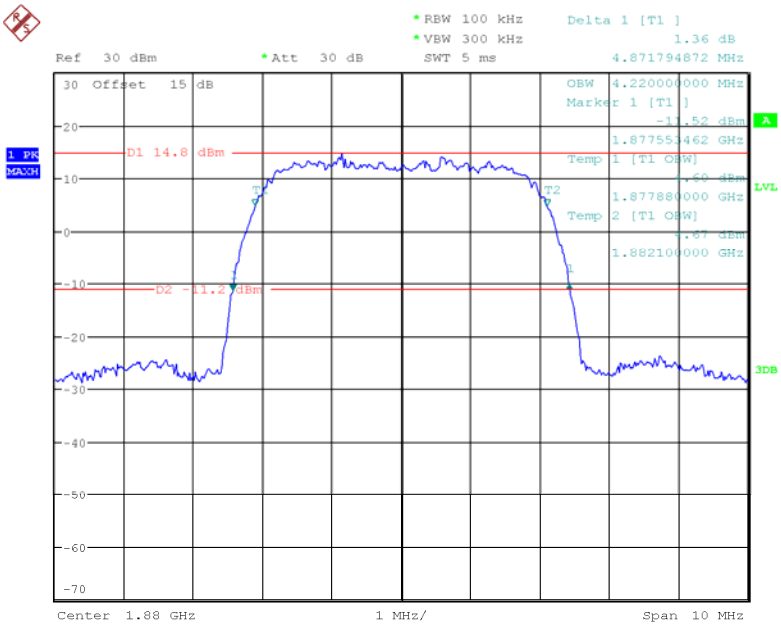
WCDMA Band II, Rel 99



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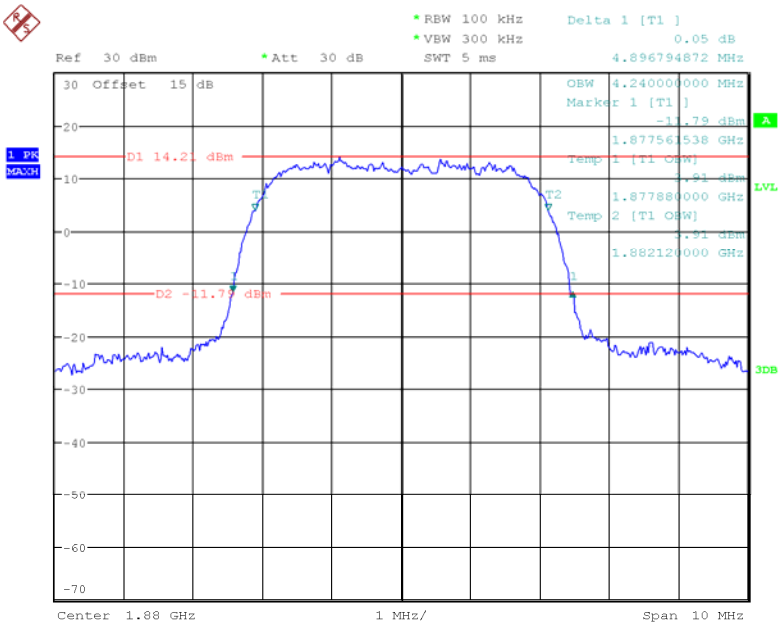

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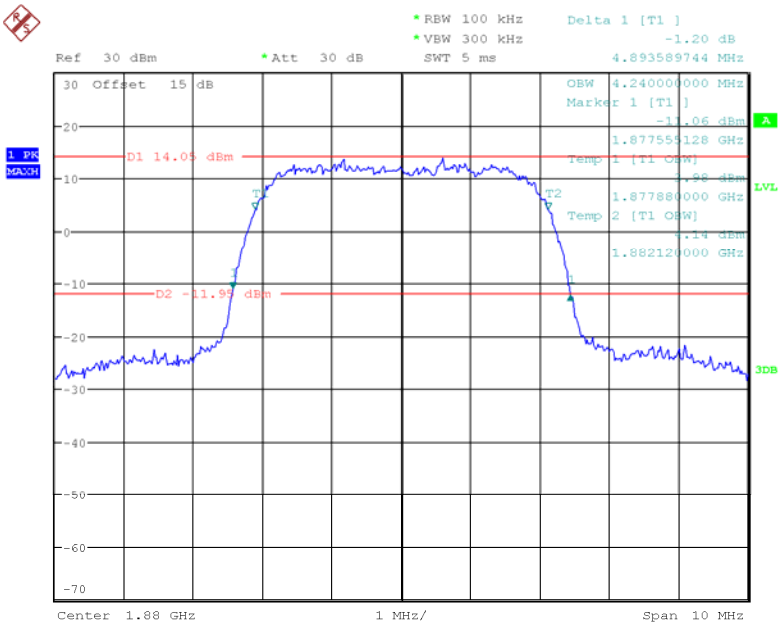

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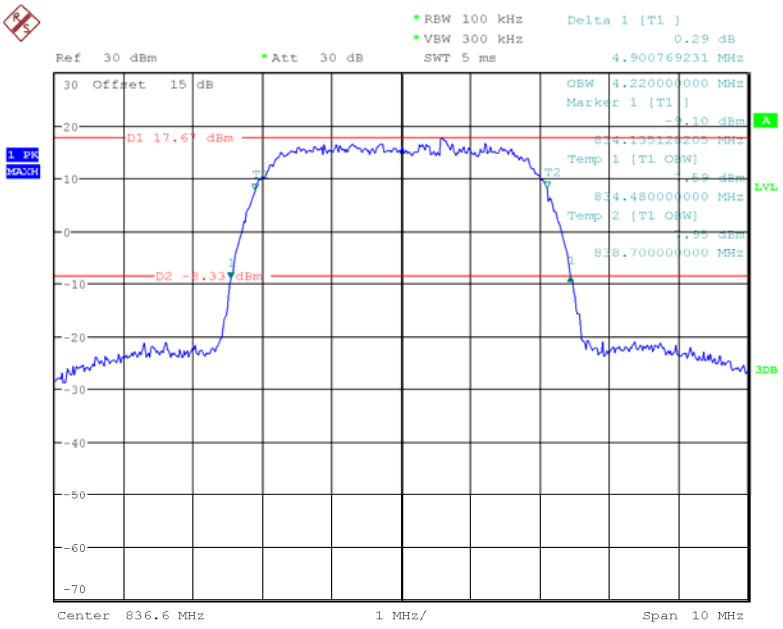
WCDMA Band V, Rel 99



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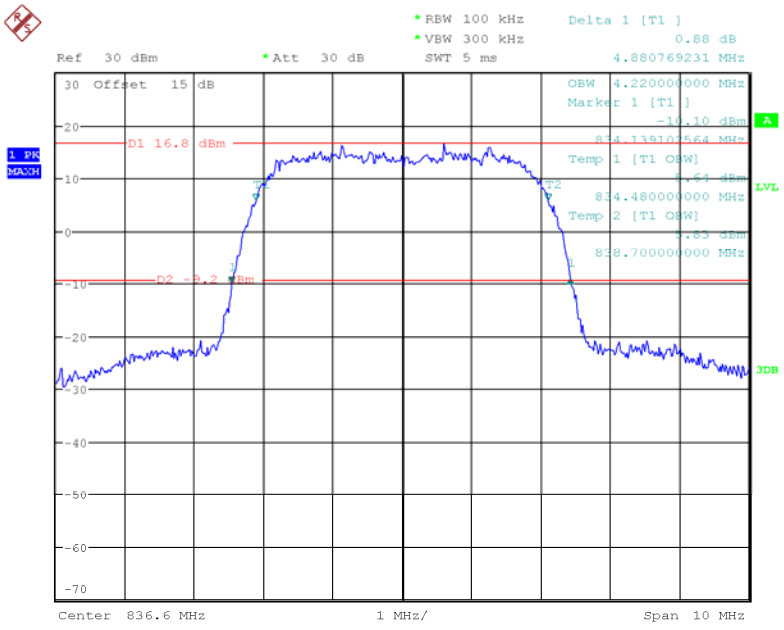

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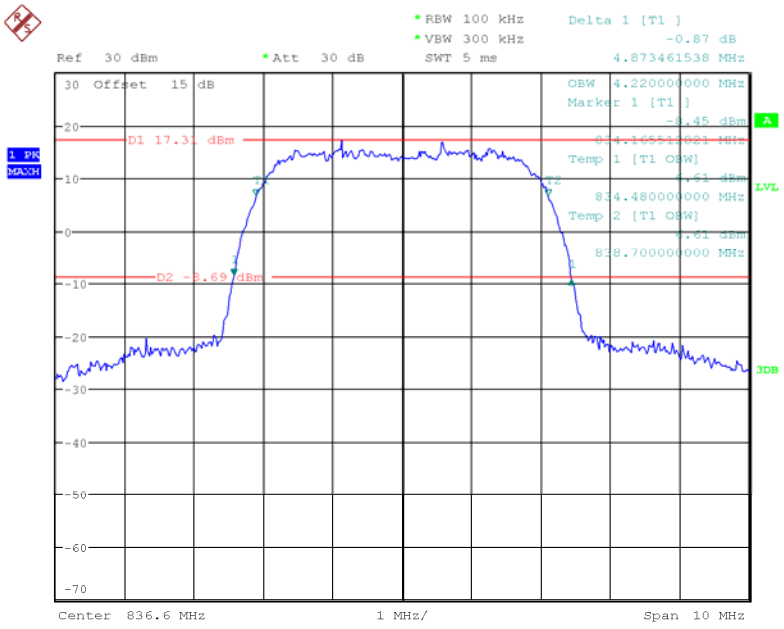

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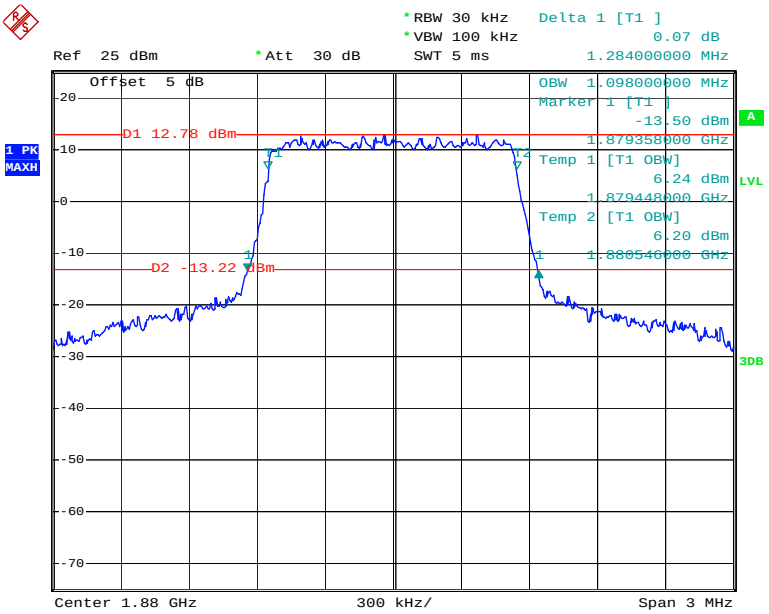
LTE Band 2

QPSK_1.4 MHz



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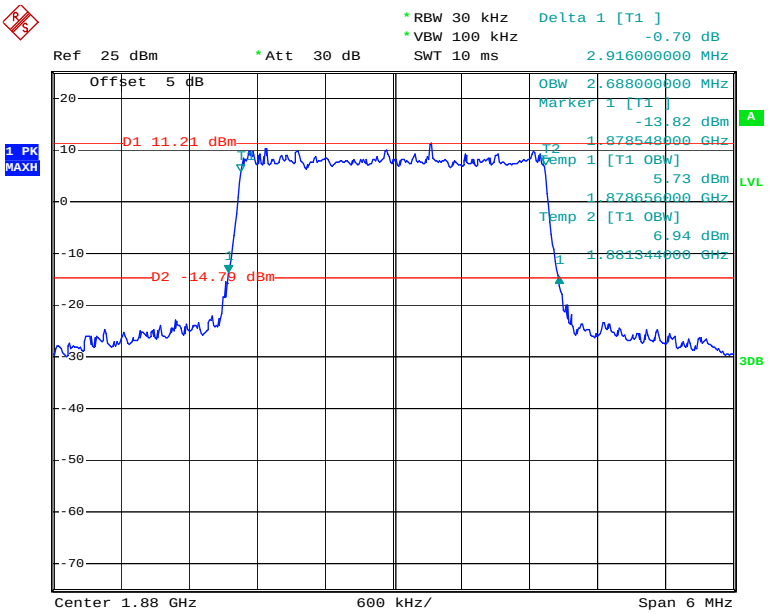
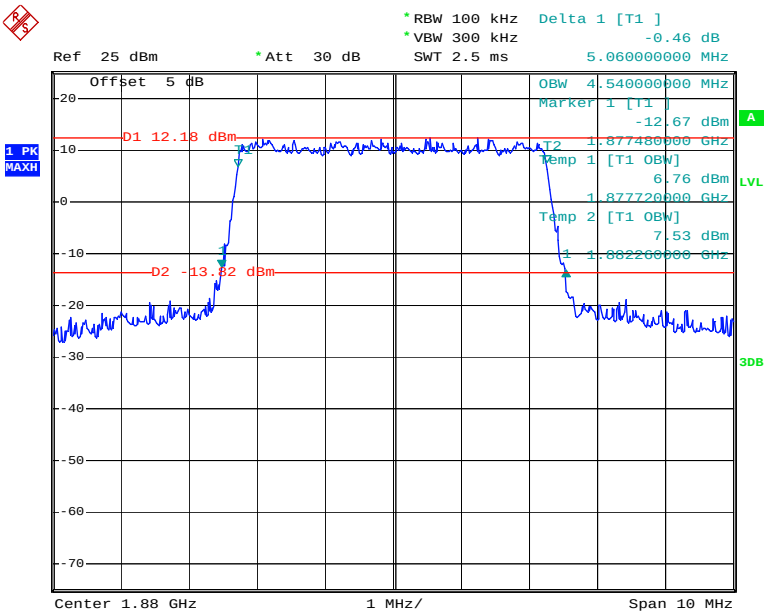
QPSK_3 MHz



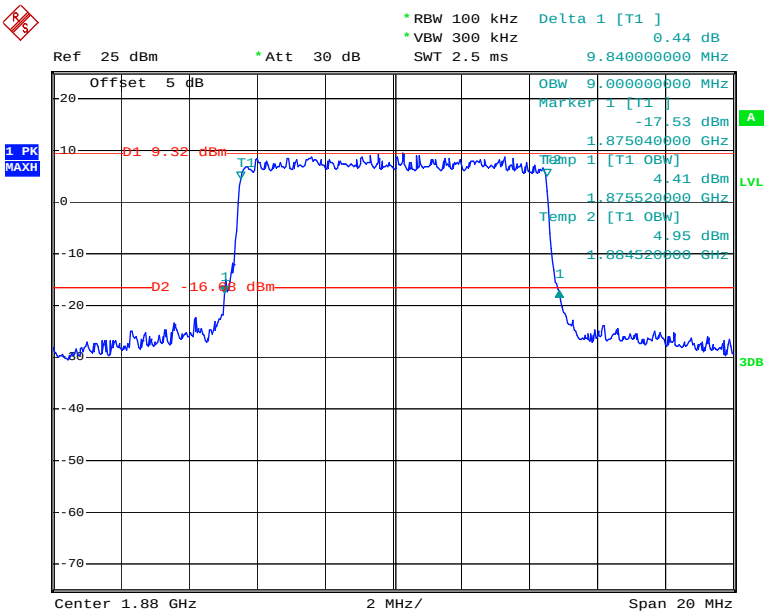
Date: 19.MAY.2020 10:11:25

QPSK_5 MHz



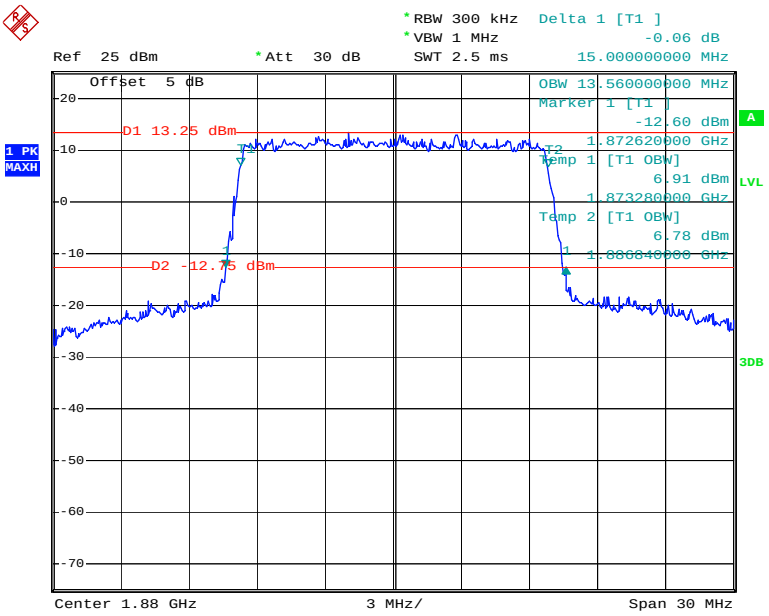
Date: 19.MAY.2020 10:12:09

QPSK_10 MHz



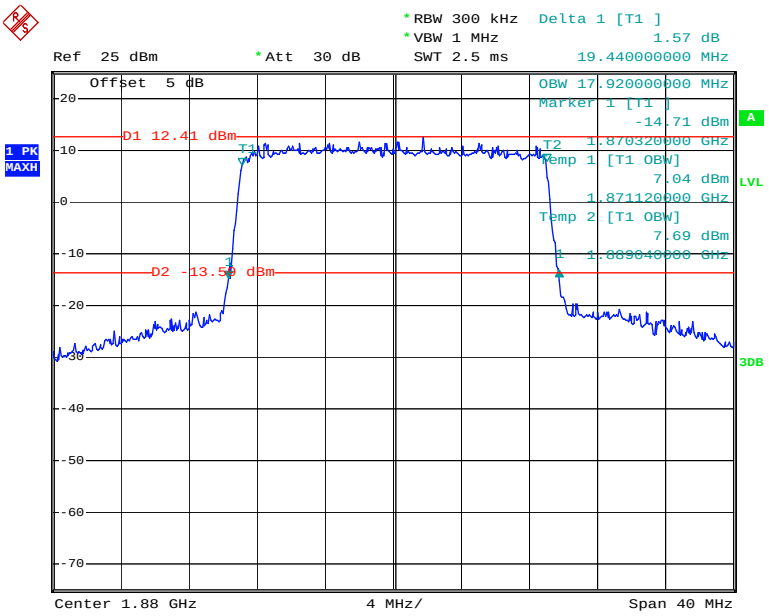
Date: 19.MAY.2020 10:12:52

QPSK_15 MHz



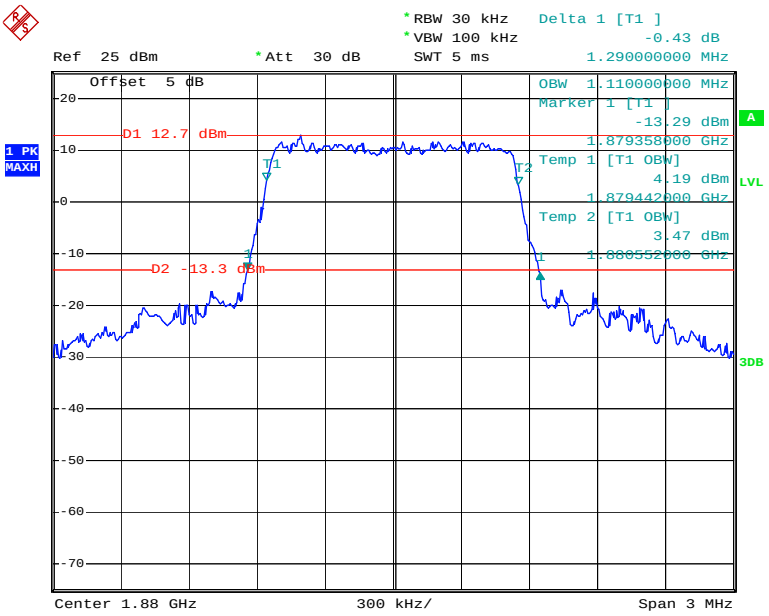
Date: 19.MAY.2020 10:13:45

QPSK_20 MHz



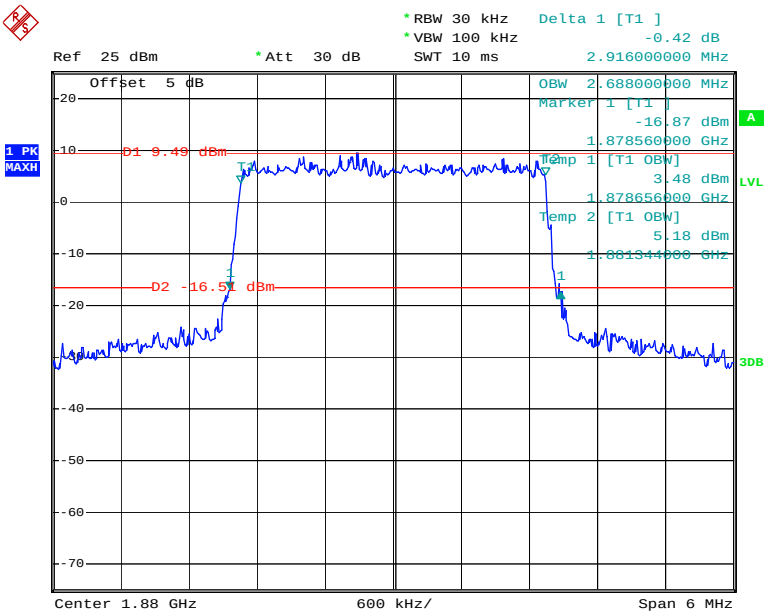
Date: 19.MAY.2020 10:14:35

16QAM_1.4 MHz



Date: 19.MAY.2020 10:10:33

16QAM_3 MHz



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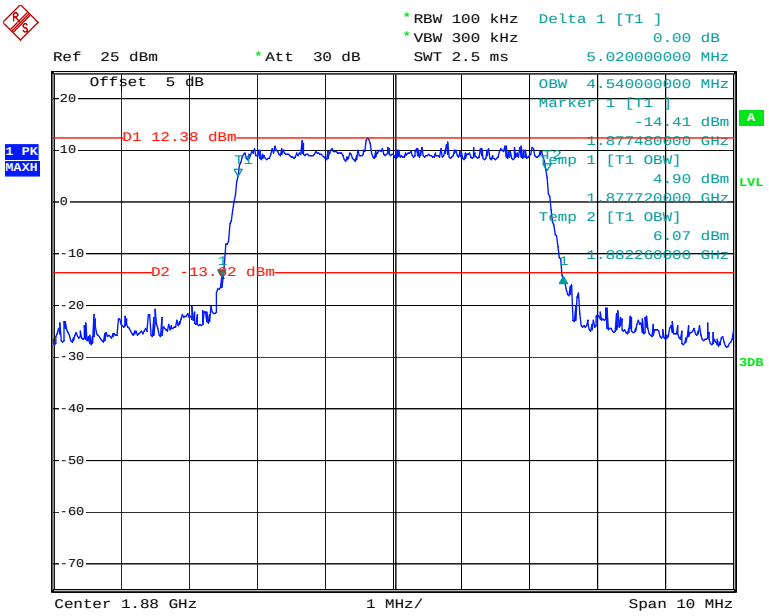
16QAM_5 MHz



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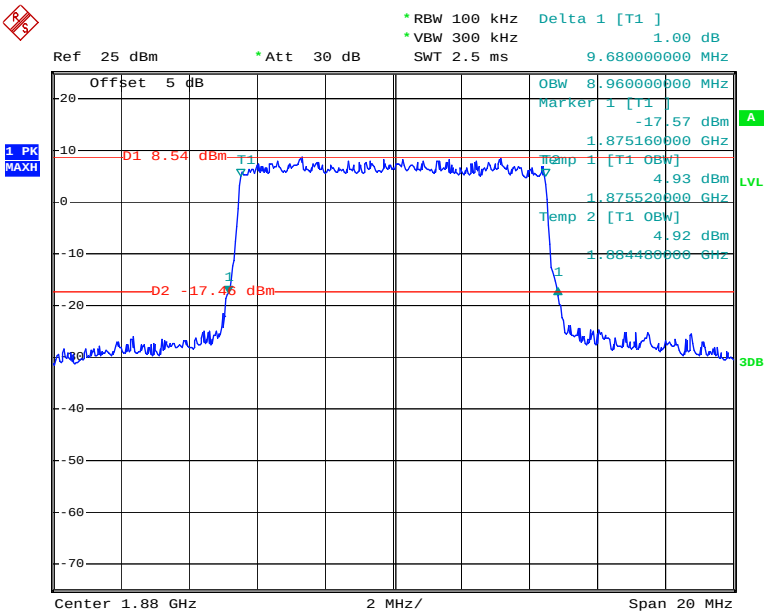
16QAM_10 MHz



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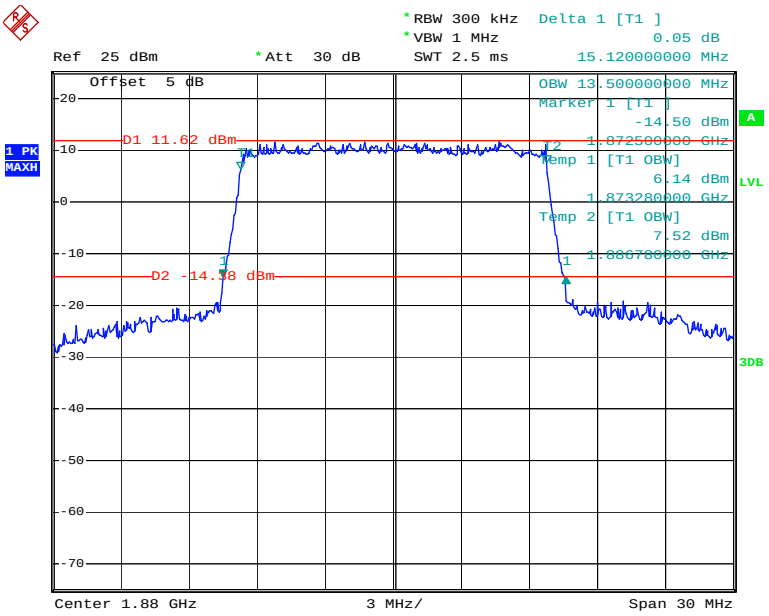
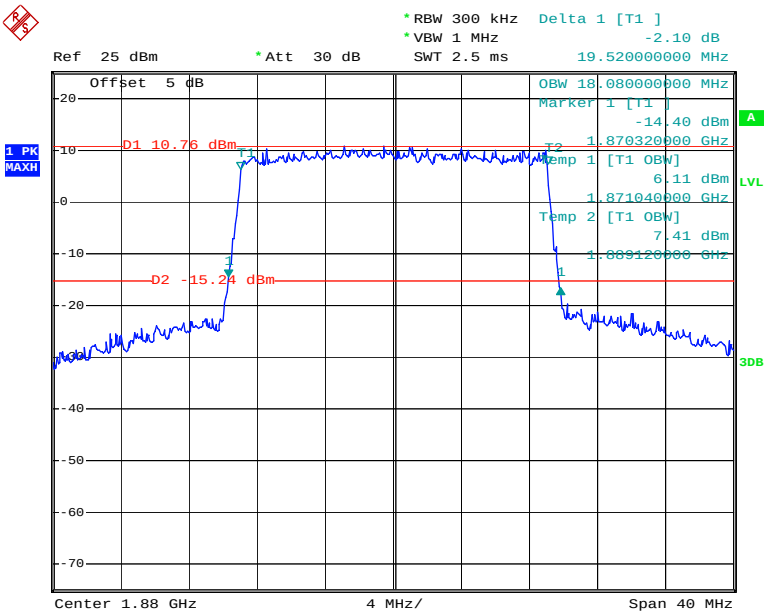
16QAM_15 MHz



Date: 19.MAY.2020 10:14:07

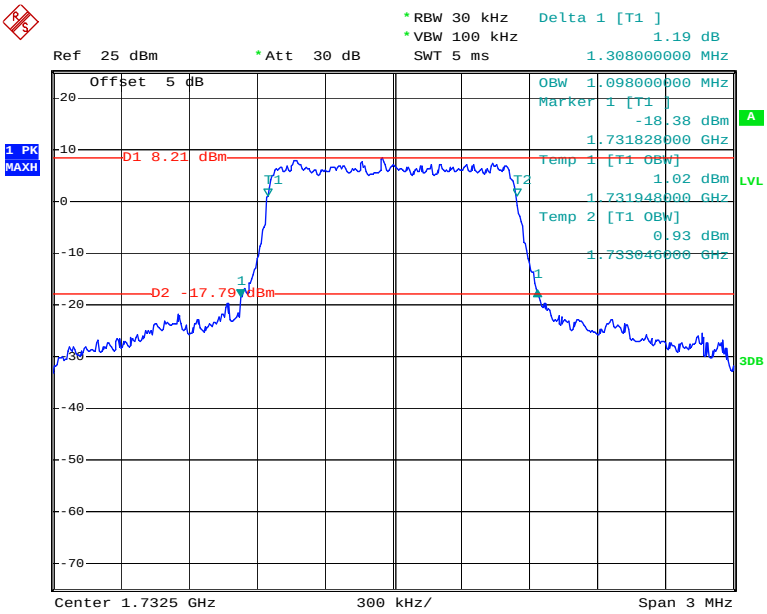
16QAM_20 MHz



Date: 19.MAY.2020 10:15:00

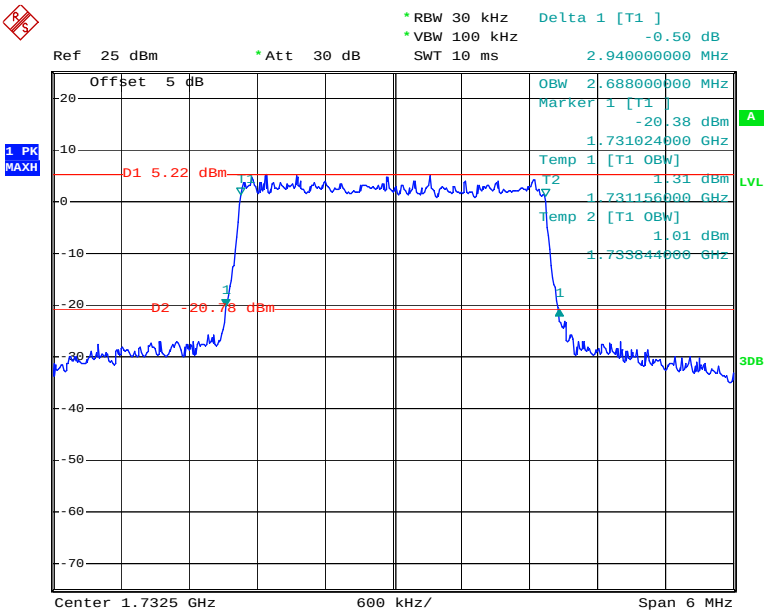
LTE Band 4

QPSK_1.4 MHz



Date: 19.MAY.2020 10:15:24

QPSK_3 MHz



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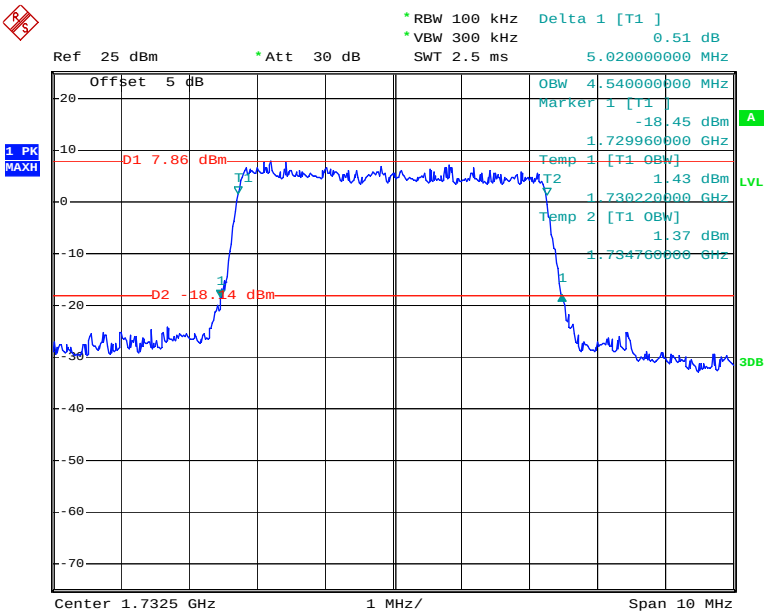
QPSK_5 MHz



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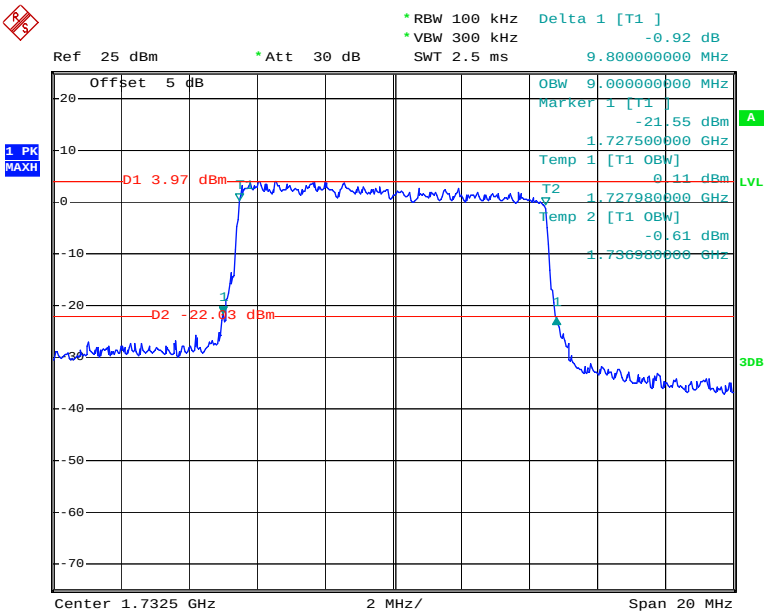
QPSK_10 MHz



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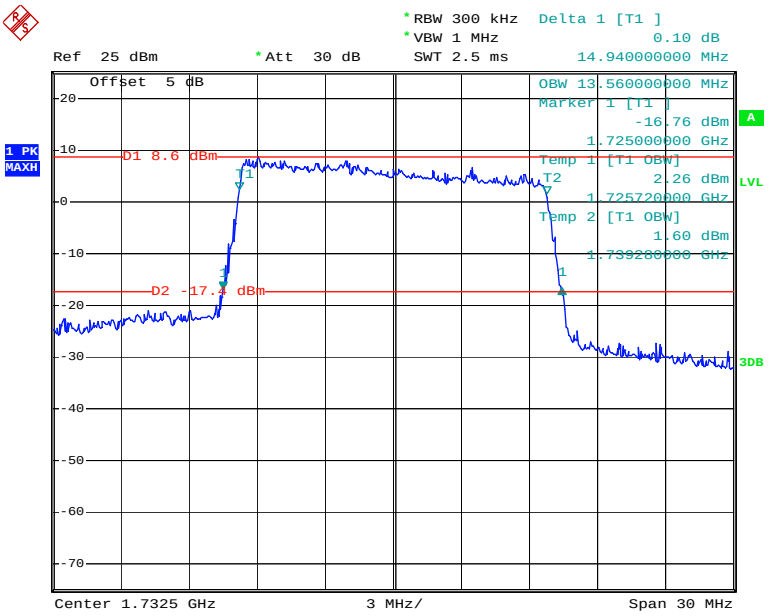
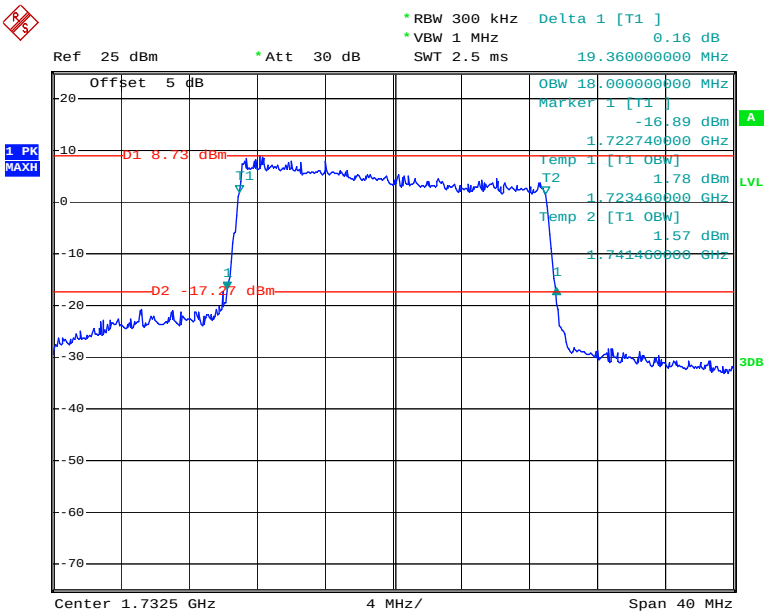
QPSK_15 MHz



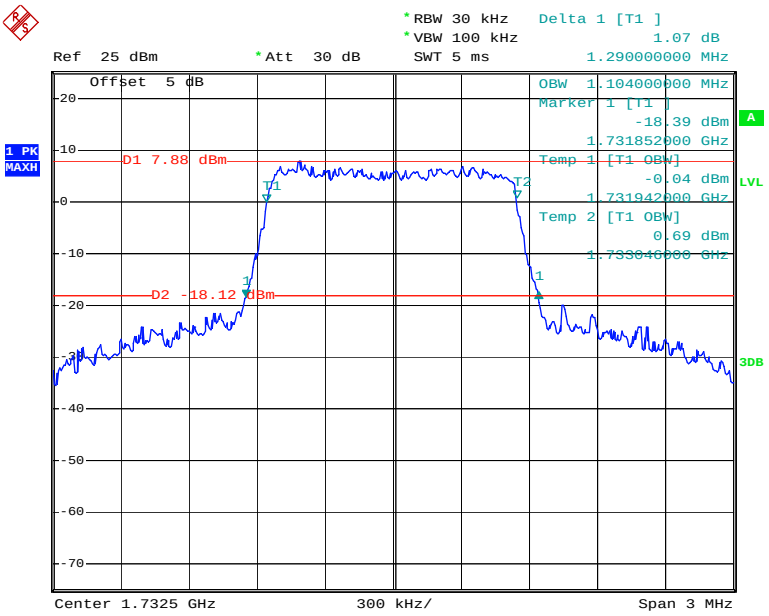
Date: 19.MAY.2020 10:18:28

QPSK_20 MHz



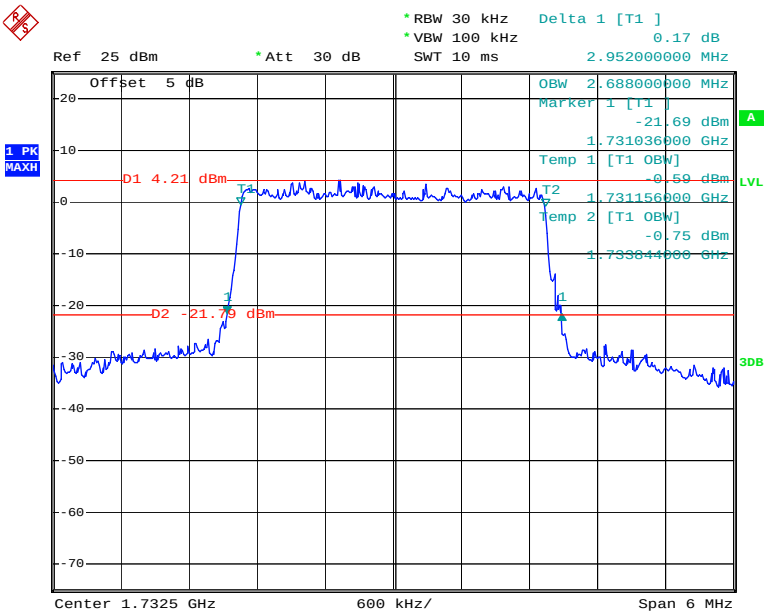
Date: 19.MAY.2020 10:19:20

16QAM_1.4 MHz



Date: 19.MAY.2020 10:15:45

16QAM_3 MHz



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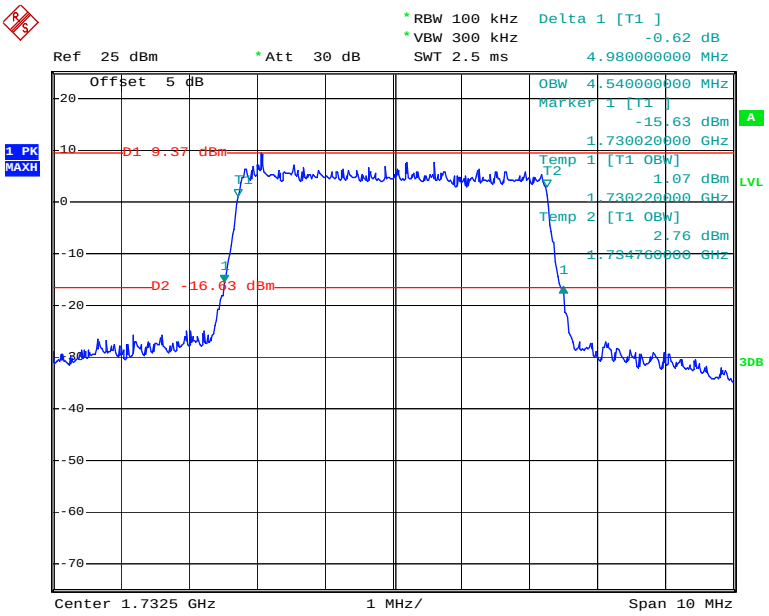
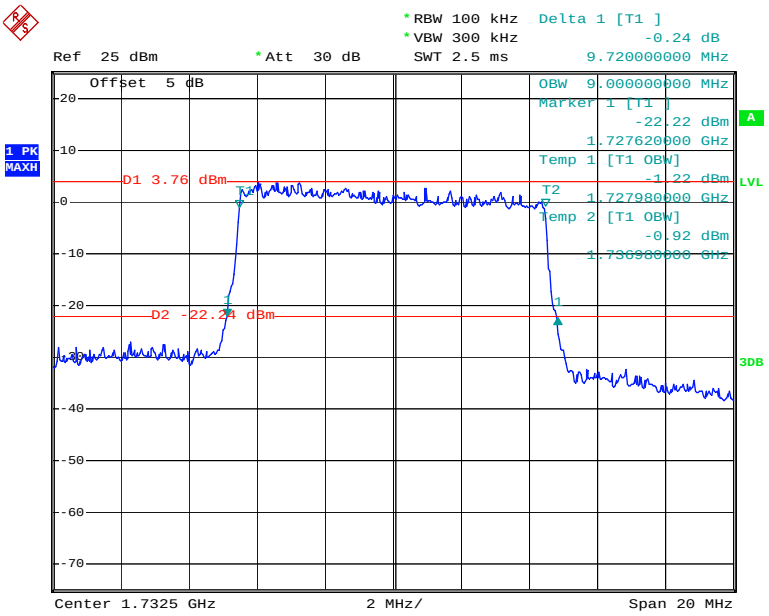
16QAM_5 MHz



Date: 19.MAY.2020 12:02:16

16QAM_10 MHz



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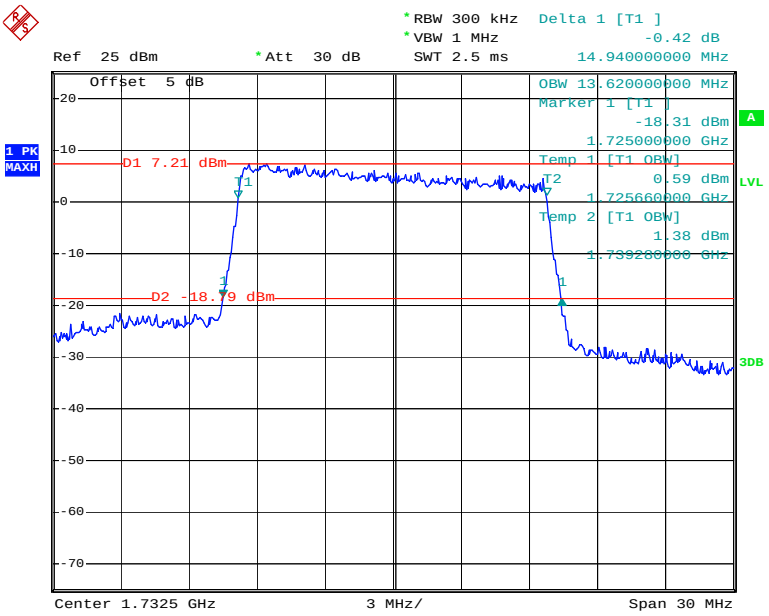
16QAM_15 MHz



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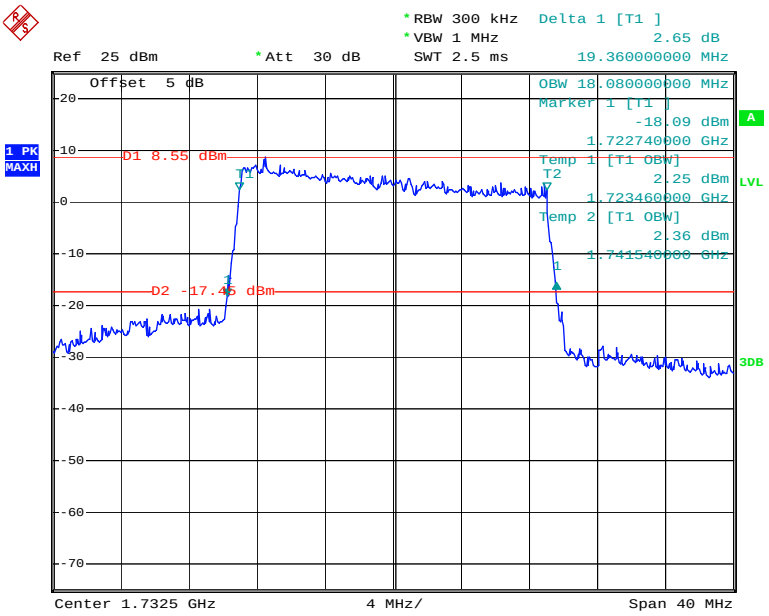
16QAM_20 MHz



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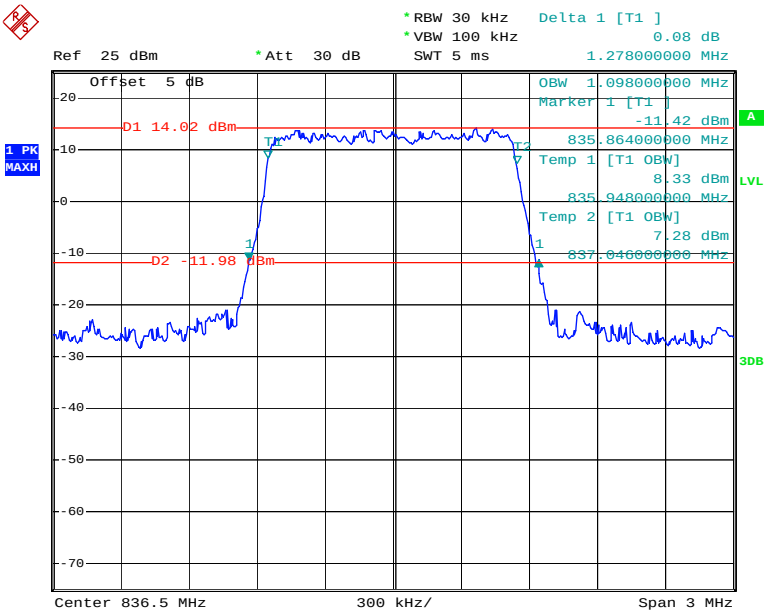
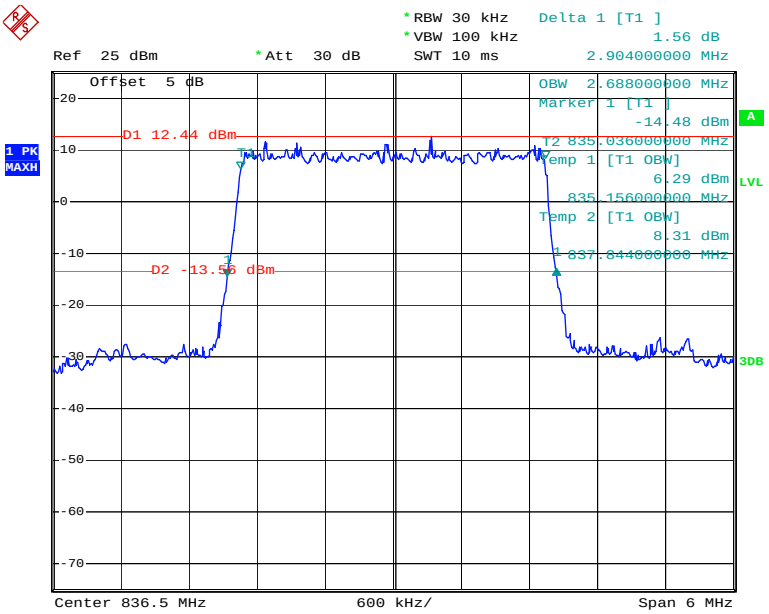
LTE Band 5:

QPSK_1.4 MHz



Date: 19.MAY.2020 10:20:07

QPSK_3 MHz



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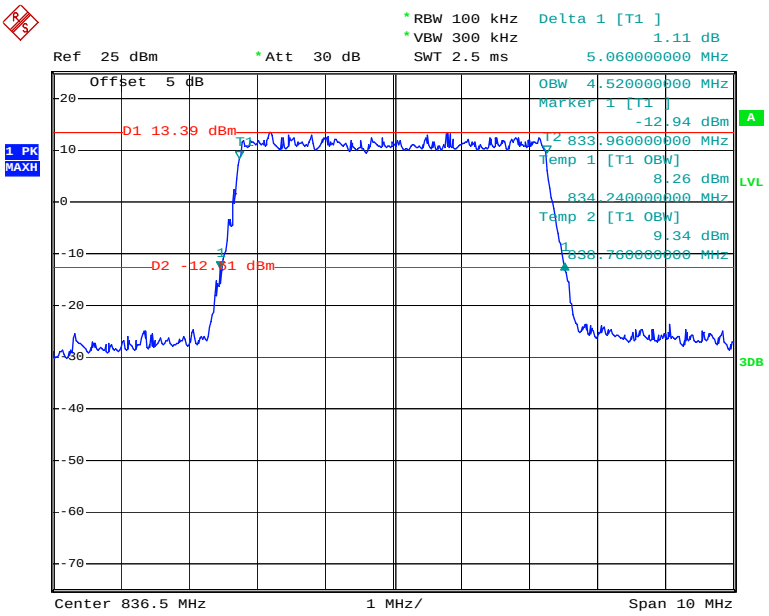
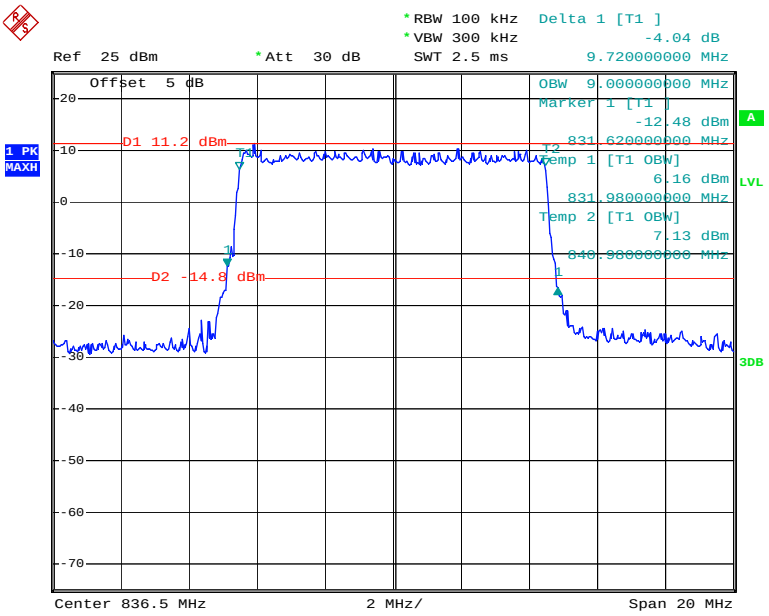
QPSK_5 MHz



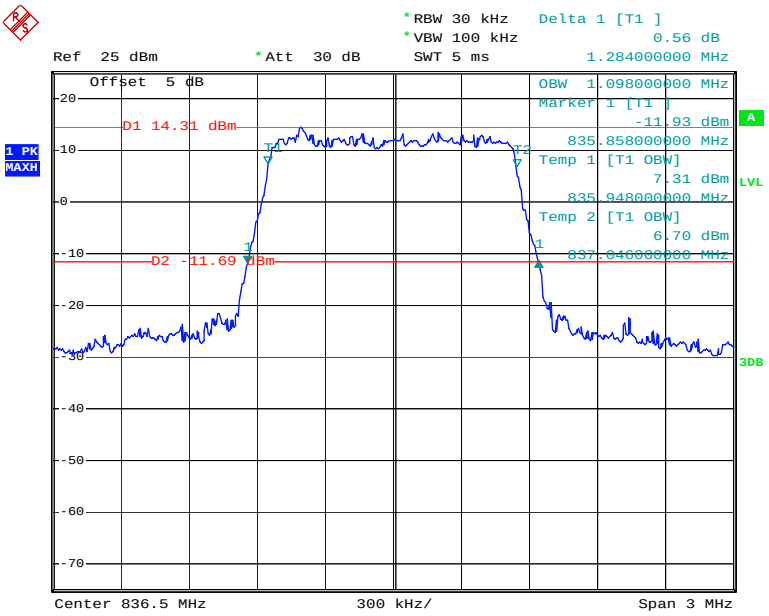
Date: 19.MAY.2020 10:21:39

QPSK_10 MHz



Date: 19.MAY.2020 10:22:28

16QAM_1.4 MHz



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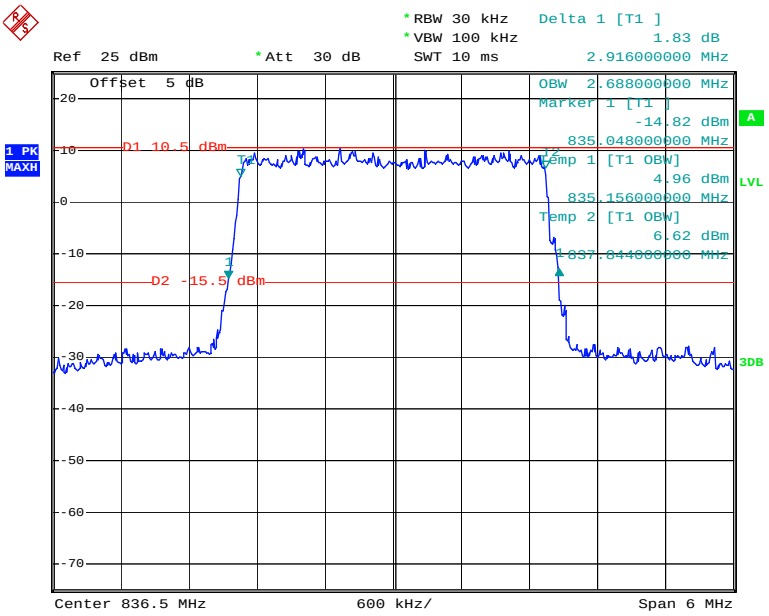
16QAM_3 MHz



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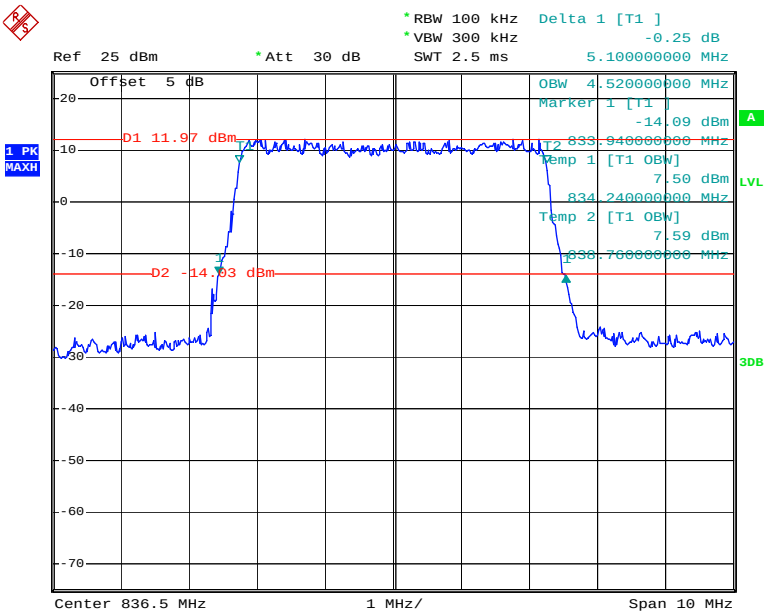
16QAM_5 MHz



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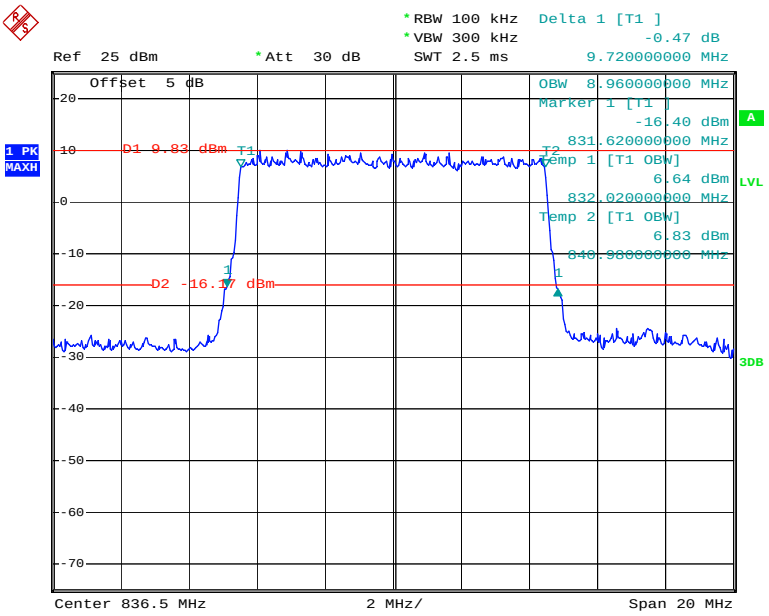
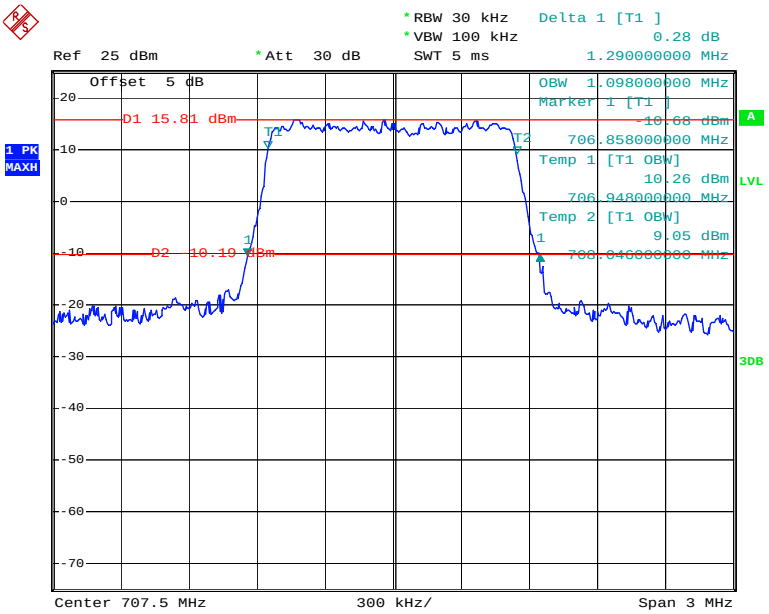
16QAM_10 MHz



Date: 19.MAY.2020 10:22:50

LTE Band 12:

QPSK_1.4 MHz



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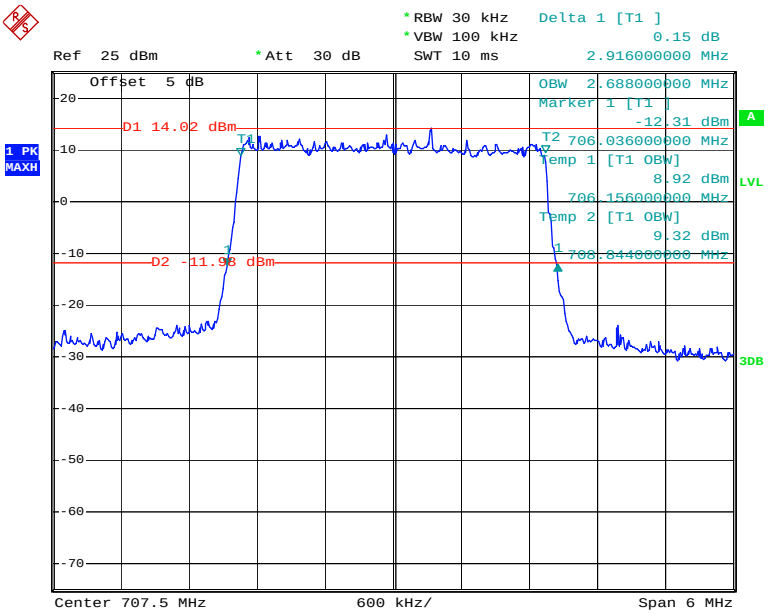
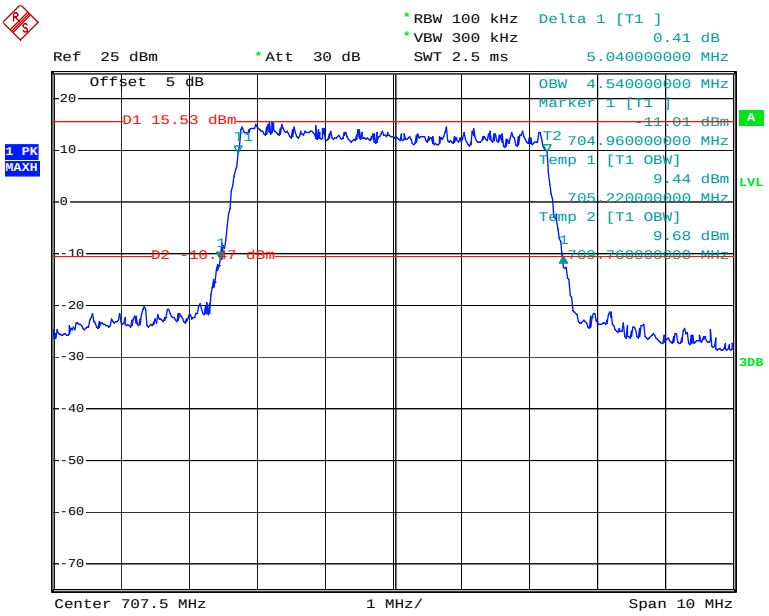
QPSK_3 MHz



Date: 19.MAY.2020 10:24:02

QPSK_5 MHz



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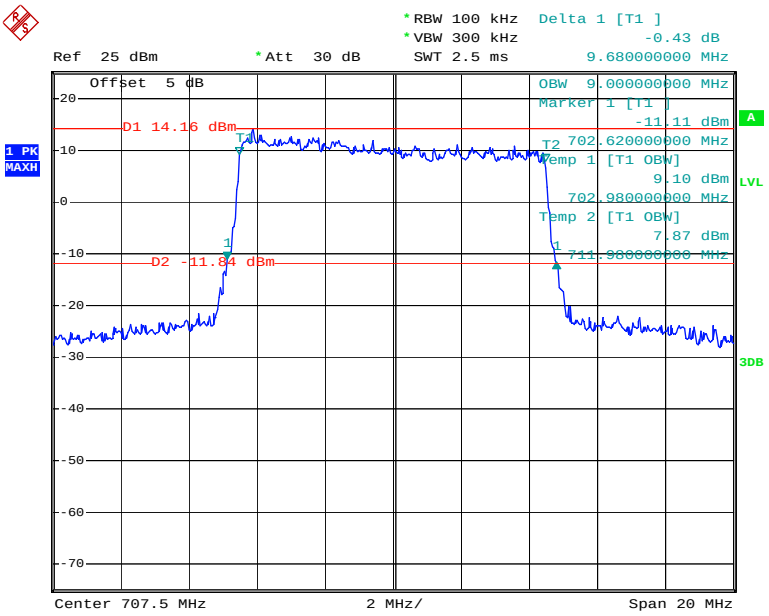
QPSK_10 MHz



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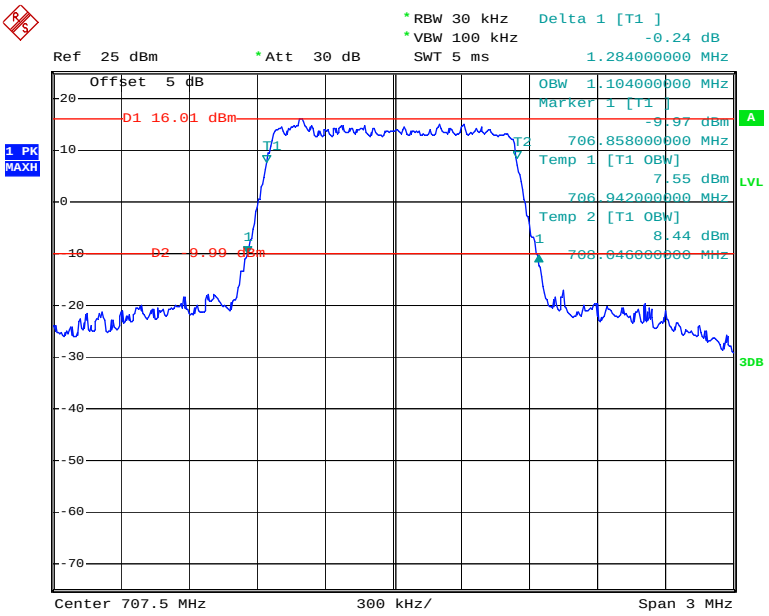
16QAM_1.4 MHz



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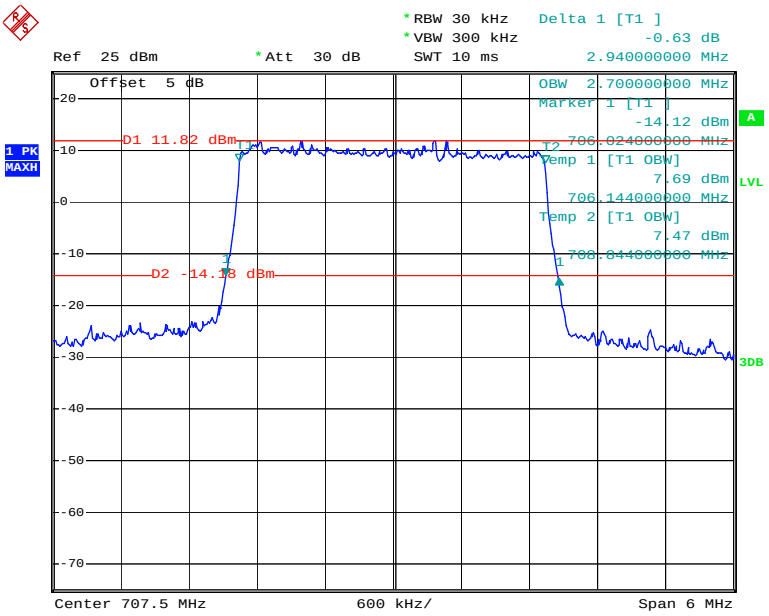
16QAM_3 MHz



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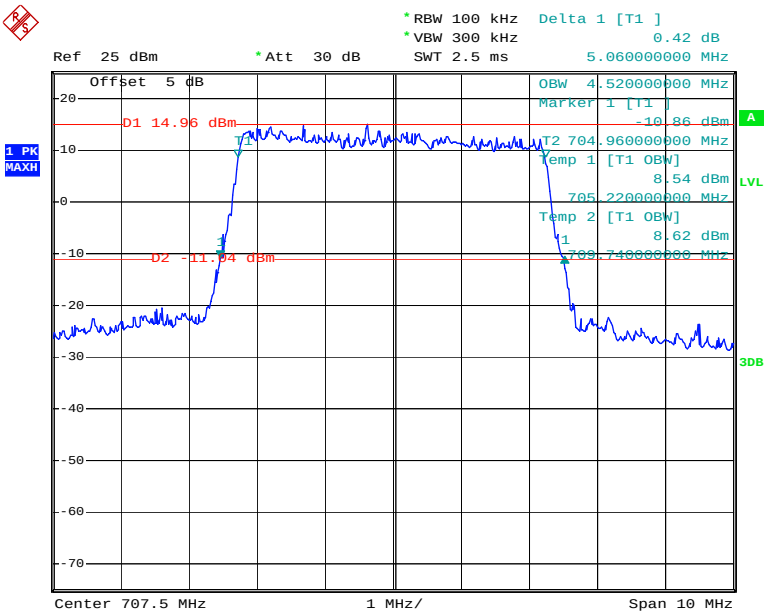
16QAM_5 MHz



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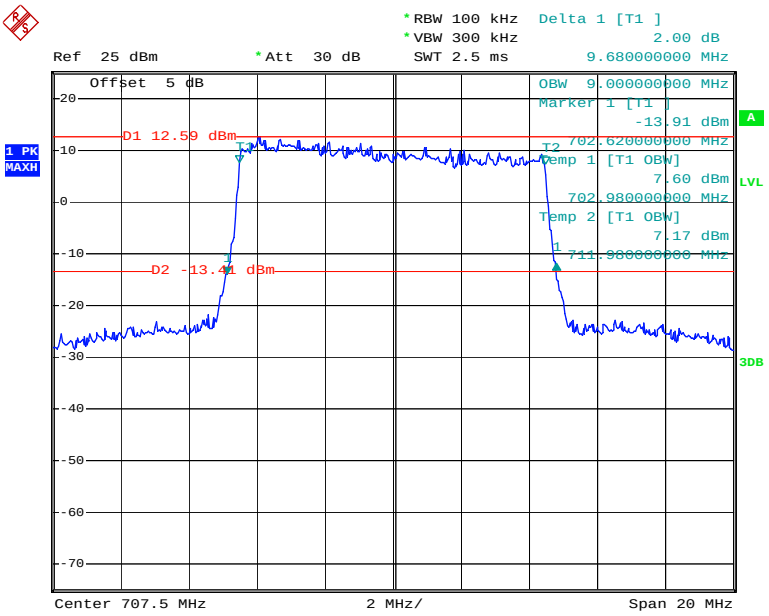
16QAM_10 MHz



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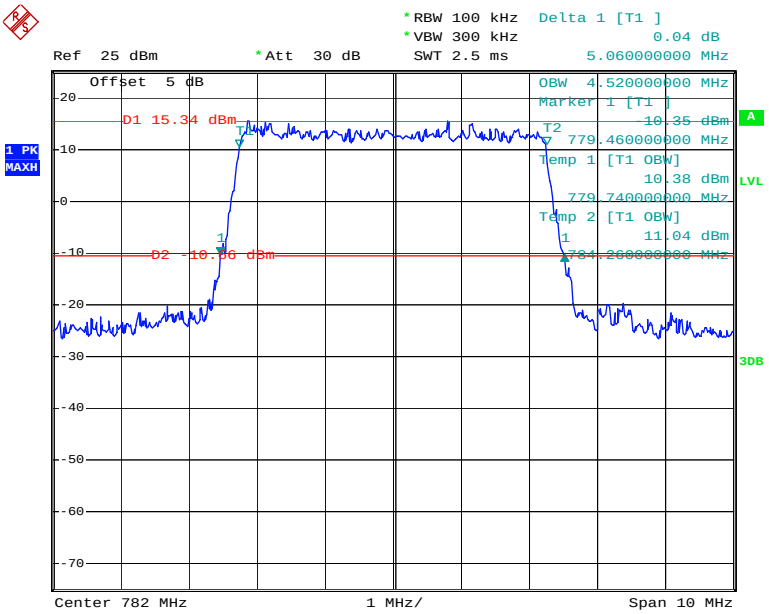
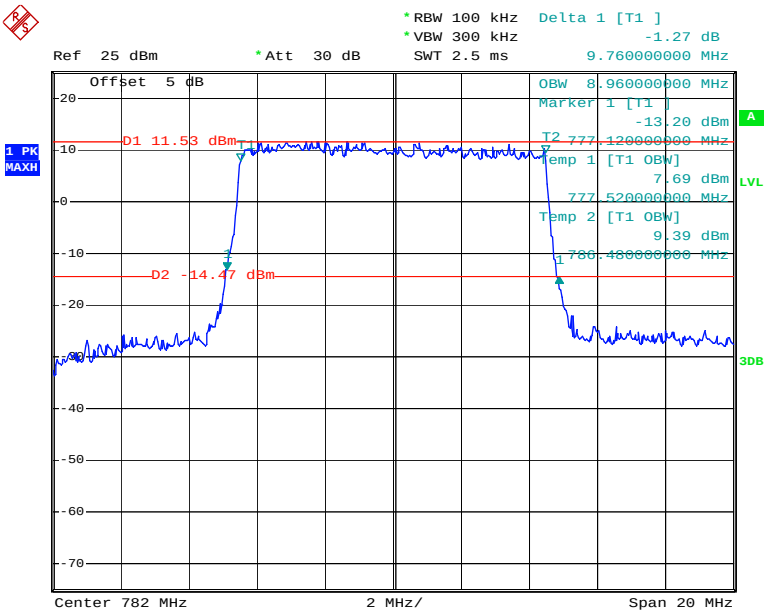
LTE Band 13:

QPSK_5 MHz



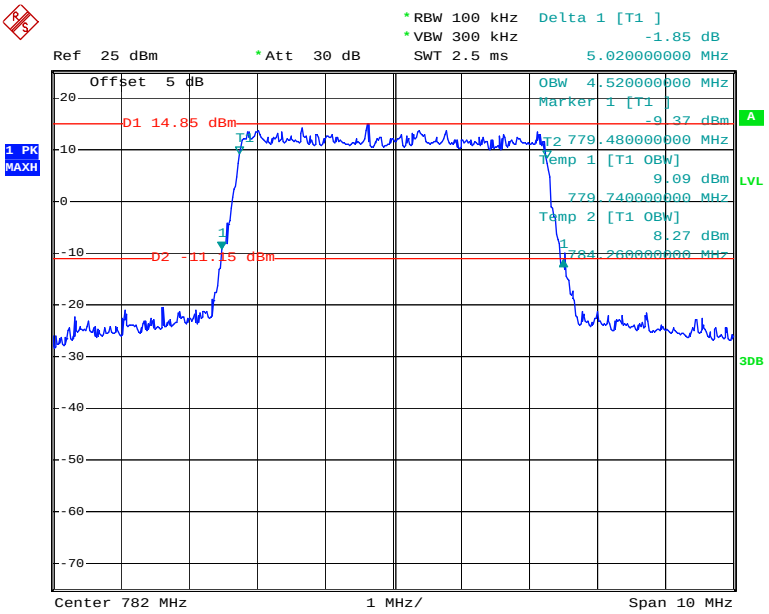
Date: 19.MAY.2020 10:26:18

QPSK_10 MHz



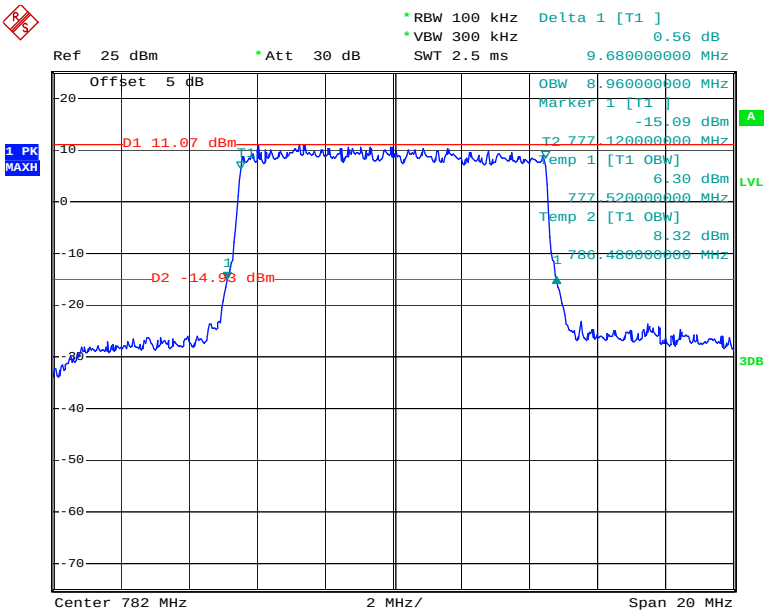
Date: 19.MAY.2020 10:27:04

16QAM_5 MHz



Date: 19.MAY.2020 10:26:39

16QAM_10MHz



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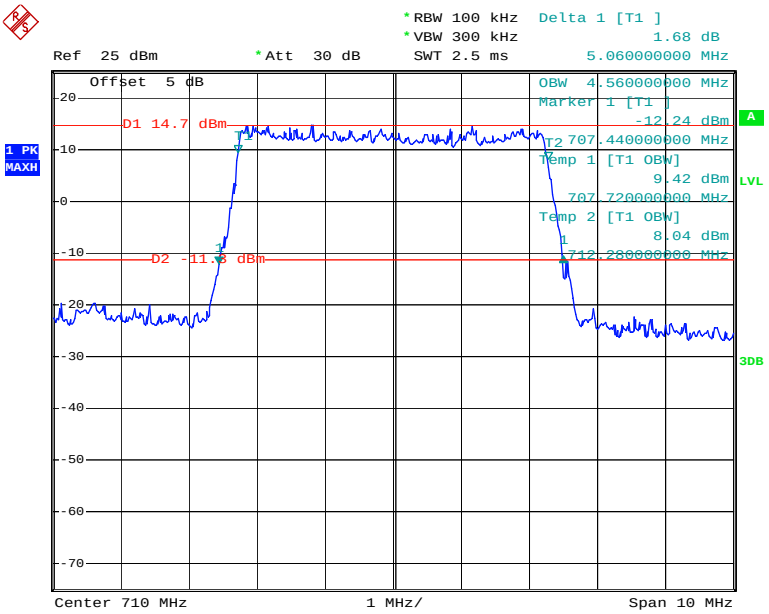
LTE Band 17:

QPSK_5 MHz



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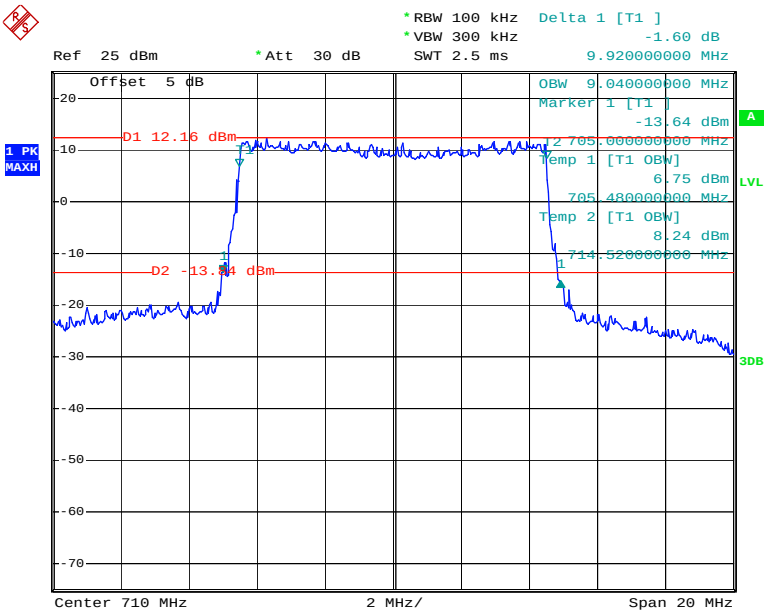
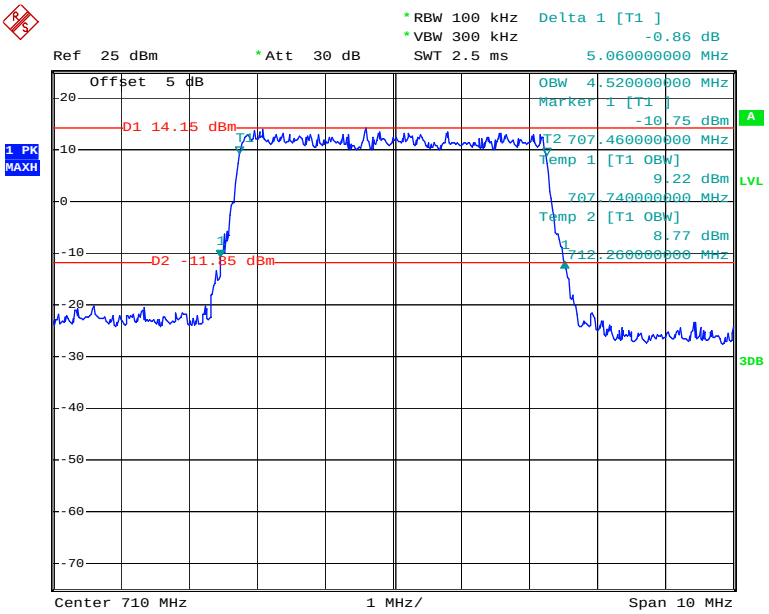
QPSK_10 MHz



Date: 19.MAY.2020 10:28:36

16QAM_5 MHz



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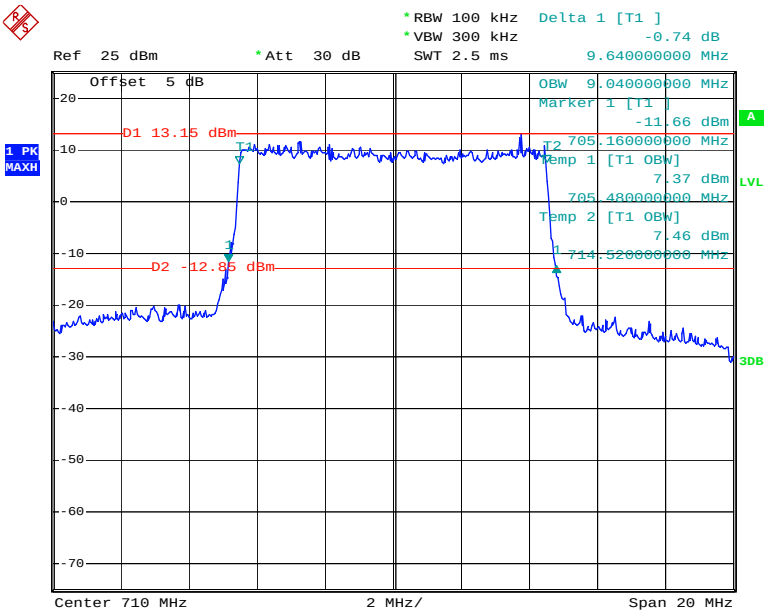
16QAM_10MHz



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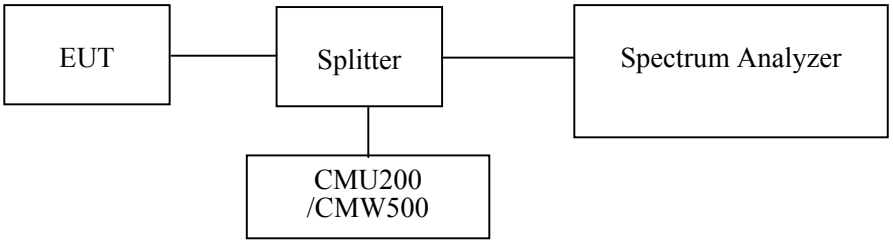
FCC §2.1051, §22.917(a) & §24.238(a) & §27.53- SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard

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

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2020-05-09	2021-05-09
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	Each Time	/
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	/
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	Each Time	/
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each Time	/

*** 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).

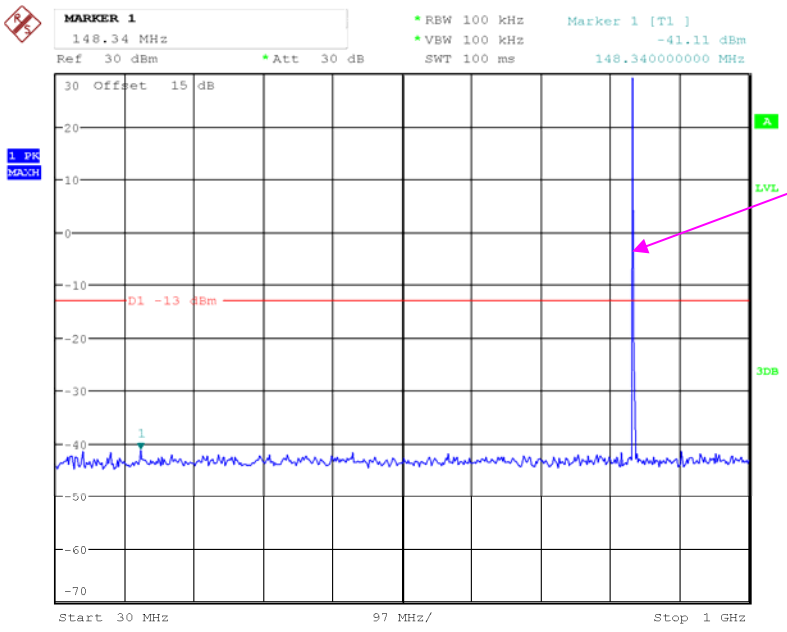
Test Data

Environmental Conditions

Temperature:	26.1~26.9°C
Relative Humidity:	59~67 %
ATM Pressure:	99.4~100 kPa
Tester:	Chris Mo
Test Date:	2020-05-20~2020-05-22

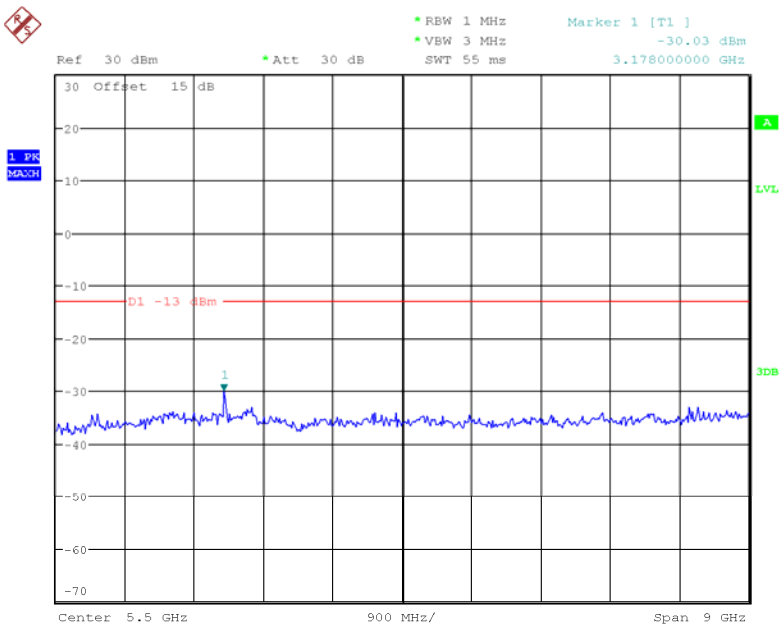
Please refer to the following plots.

GSM850_Middle Channel



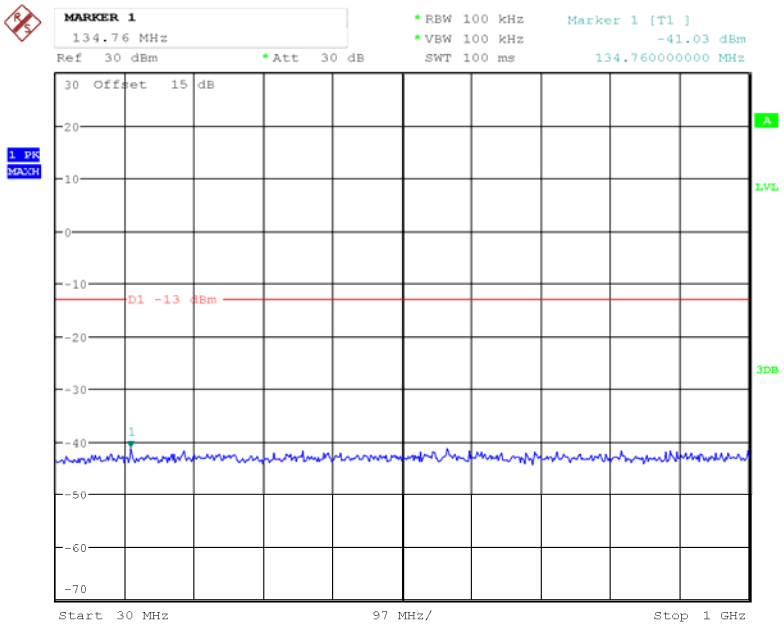
Fundamental

Date: 22.MAY.2020 17:45:09



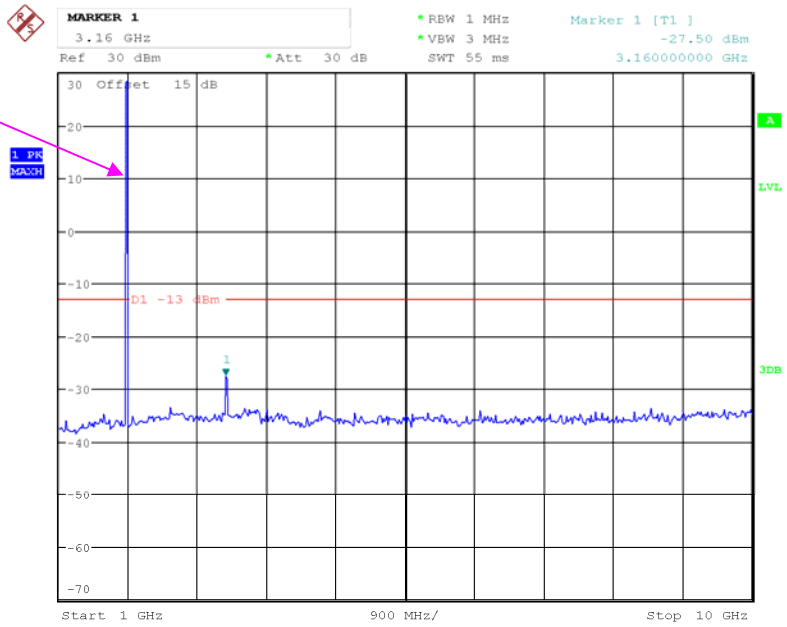
Date: 22.MAY.2020 17:44:32

PCS 1900_ Middle Channel

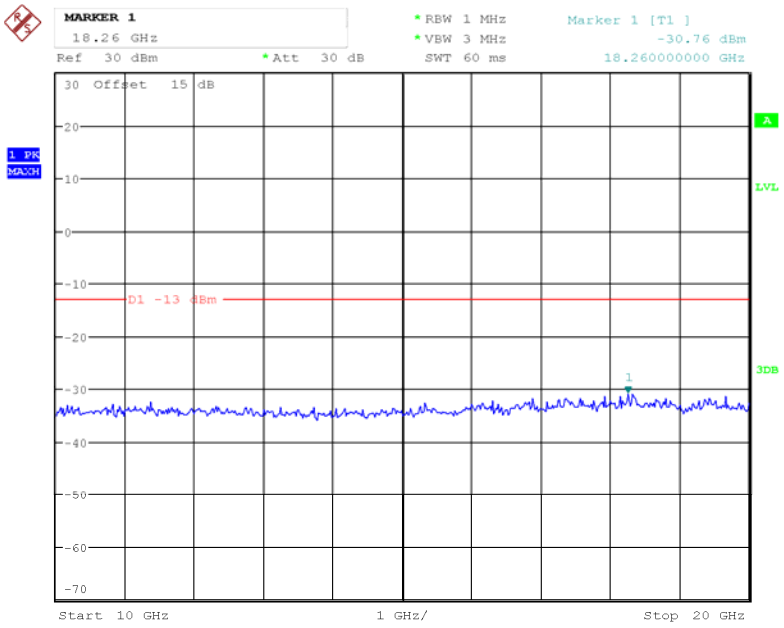


Date: 22.MAY.2020 16:46:32

Fundamental



Date: 22.MAY.2020 16:47:03



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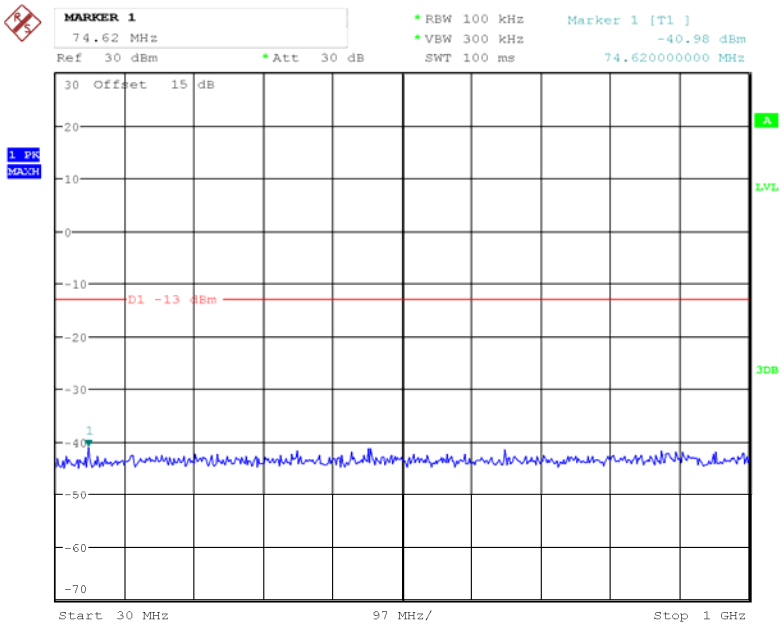
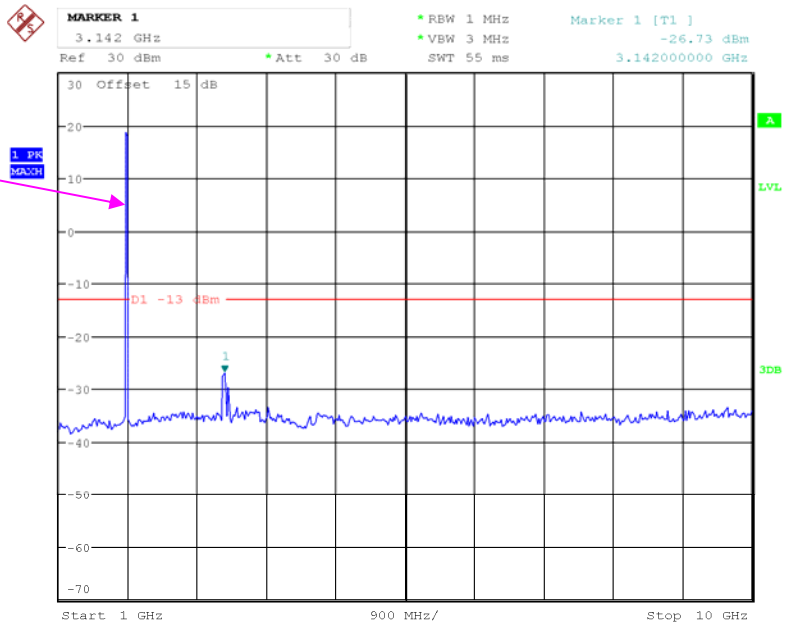
WCDMA Band II,Rel99



Date: 22.MAY.2020 19:17:57



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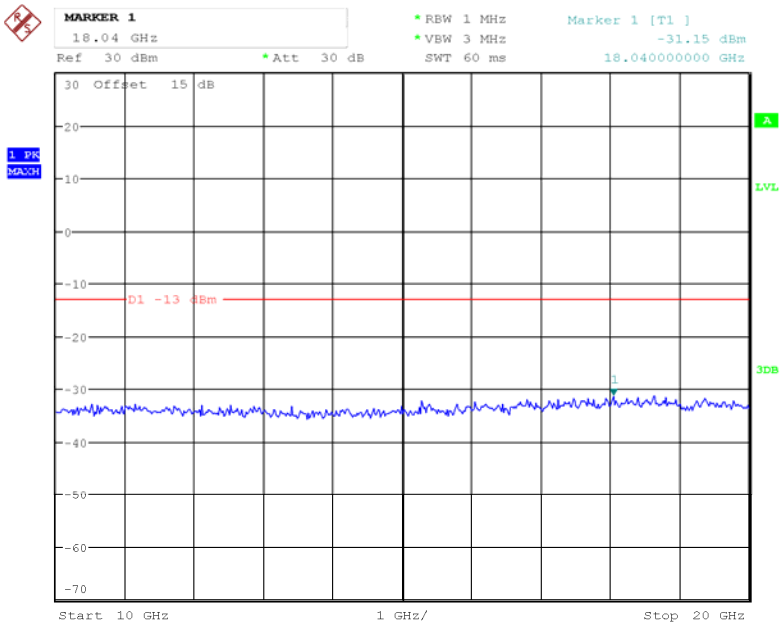
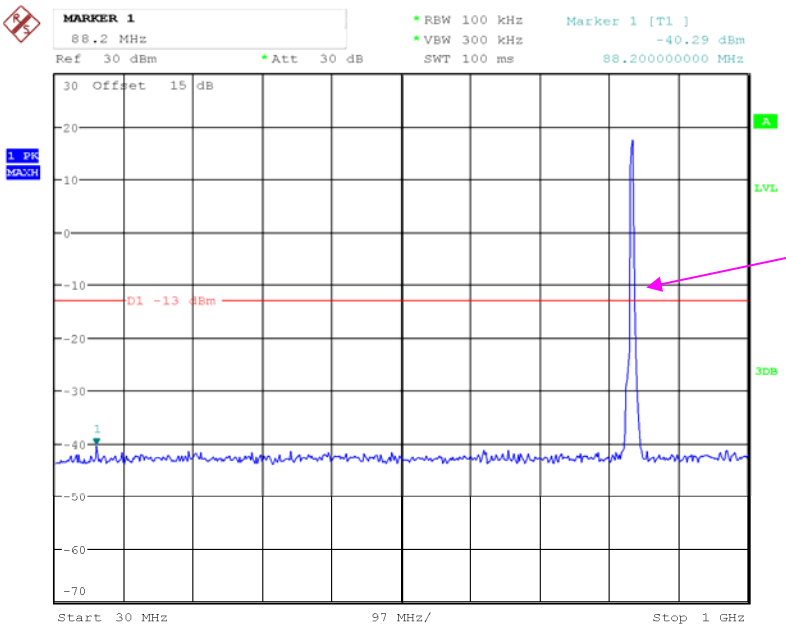


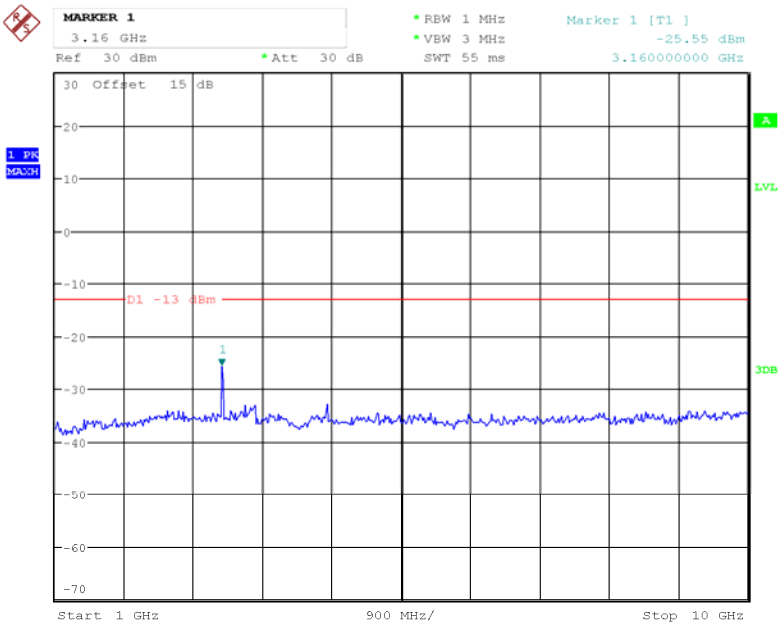
Date: 22.MAY.2020 19:17:09

WCDMA Band V,Rel99



Fundamental

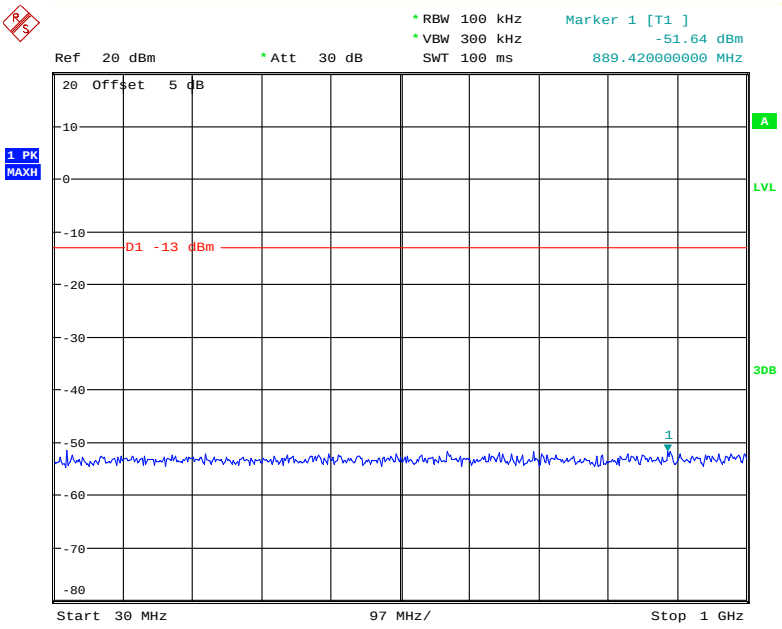
Date: 22.MAY.2020 19:16:00



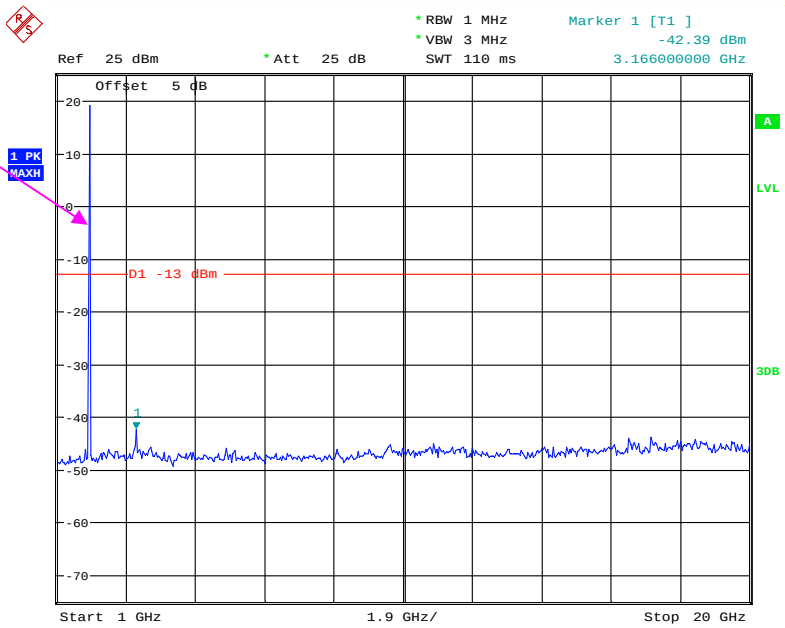
Date: 22.MAY.2020 19:16:28

LTE Band 2 (Middle Channel)

QPSK_1.4 MHz



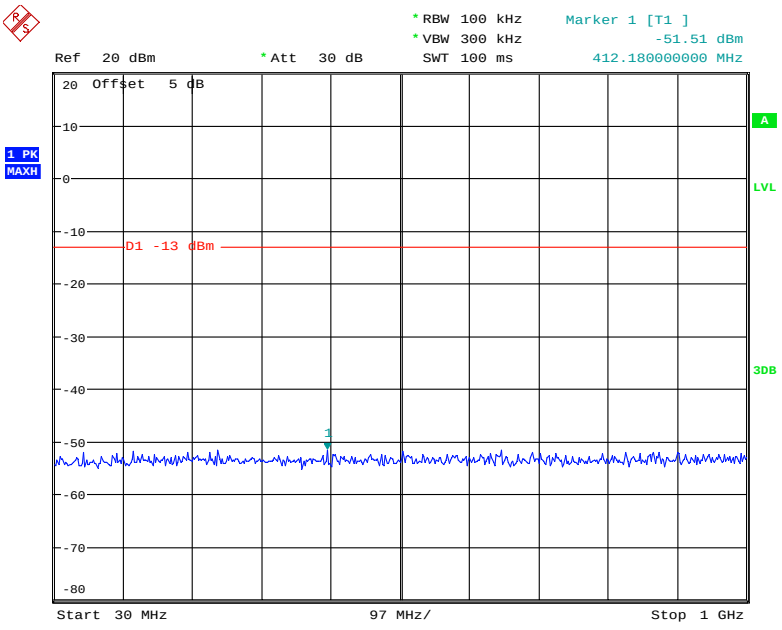
Date: 20.MAY.2020 10:17:49



Fundamental

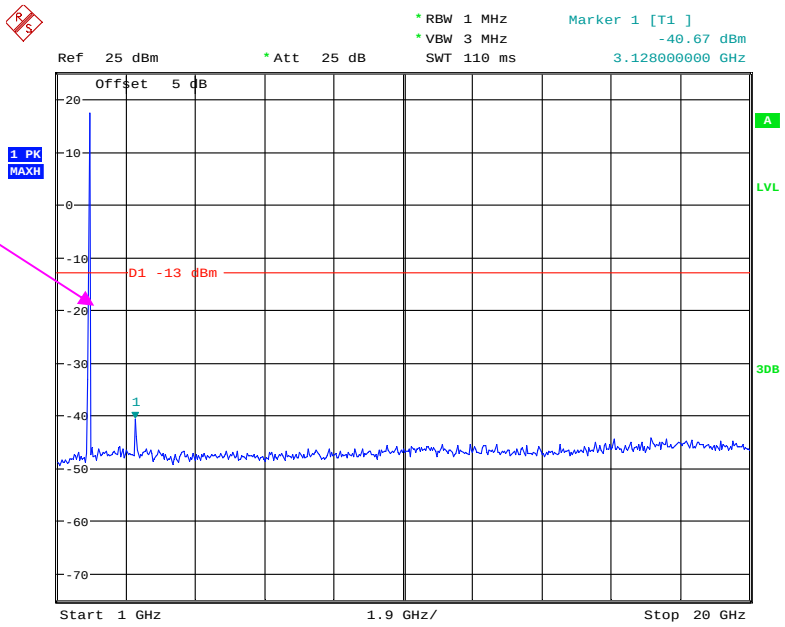
Date: 20.MAY.2020 10:18:01

QPSK_3 MHz



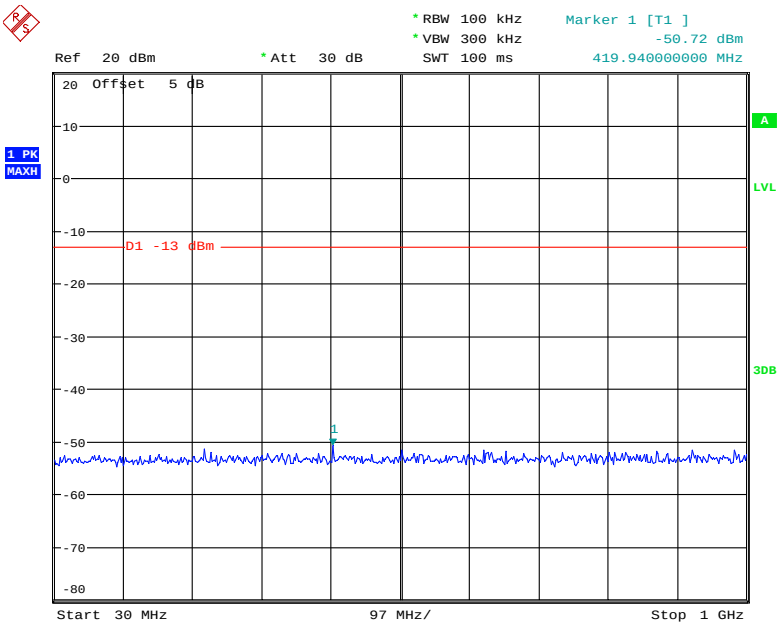
Date: 20.MAY.2020 10:18:20

Fundamental

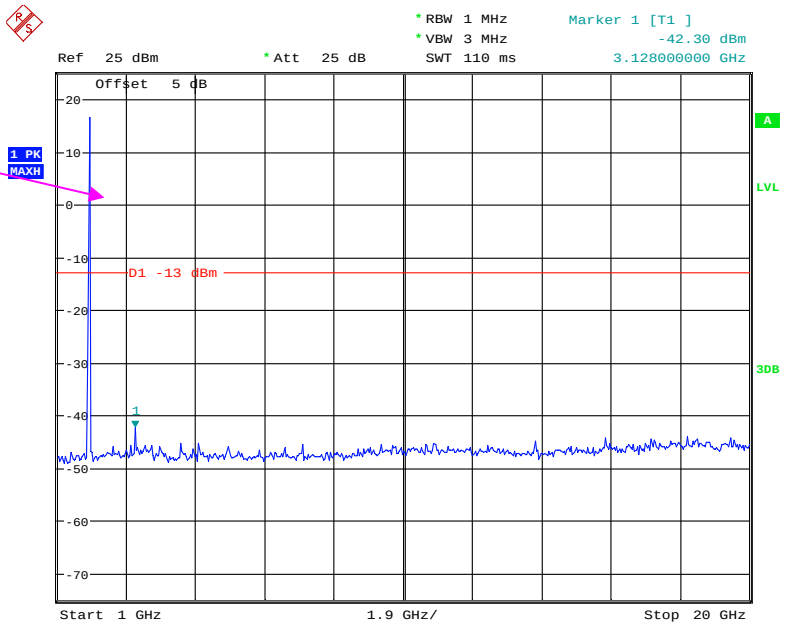


Date: 20.MAY.2020 10:18:32

QPSK_5 MHz



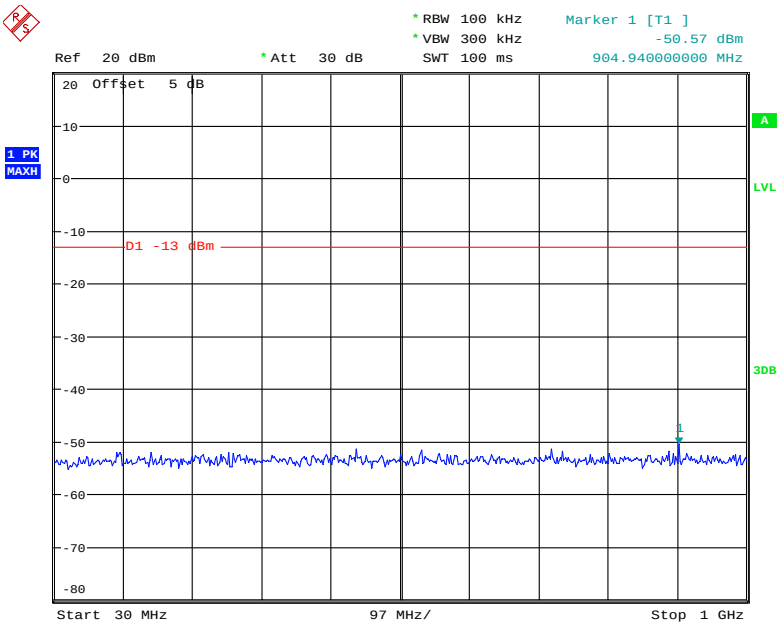
Date: 20.MAY.2020 10:18:54



Fundamental

Date: 20.MAY.2020 10:19:06

QPSK_10 MHz



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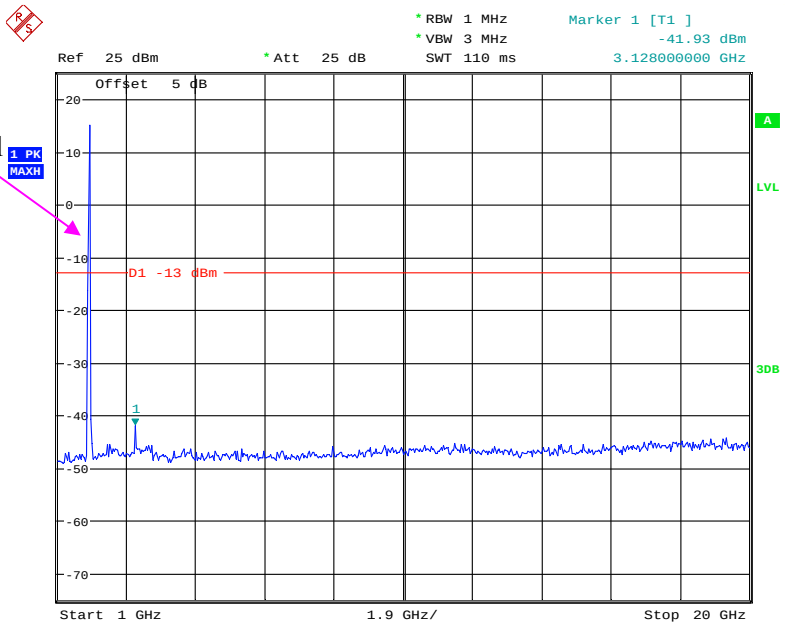
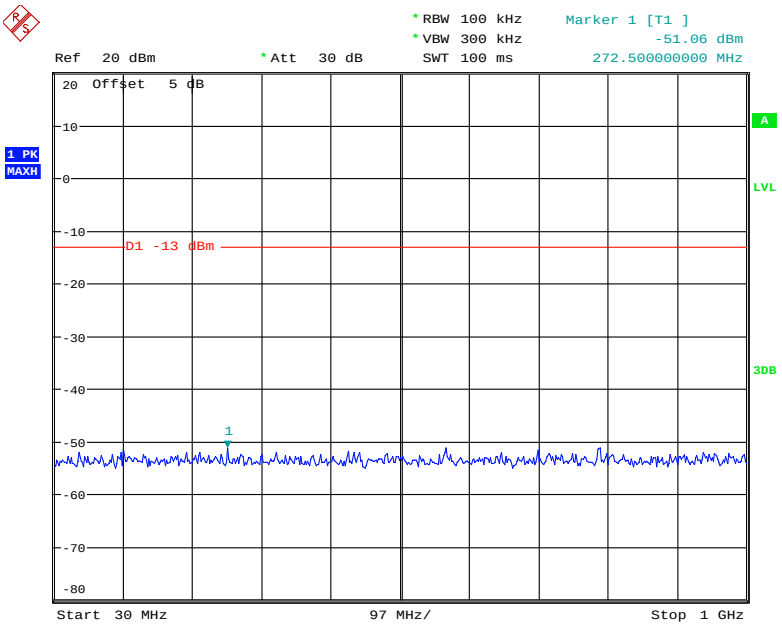
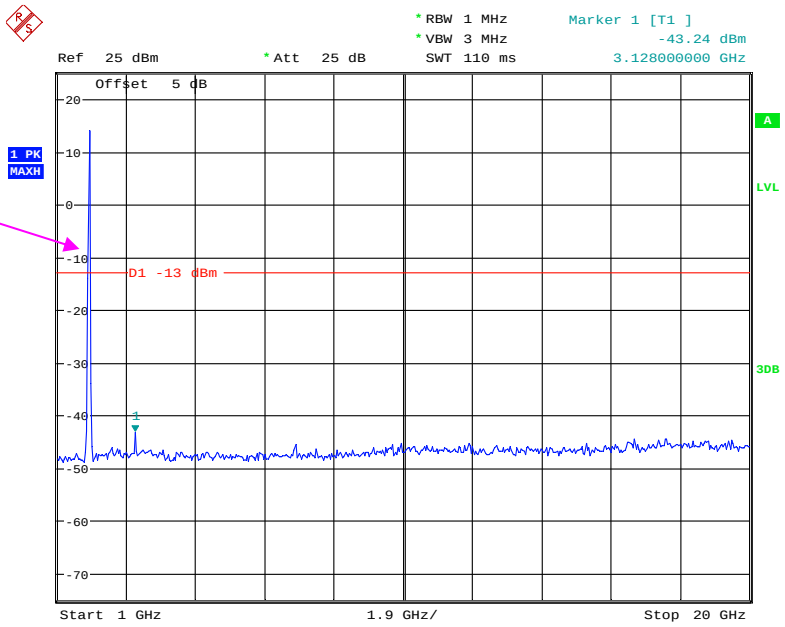


Date: 20.MAY.2020 10:19:38

QPSK_15 MHz



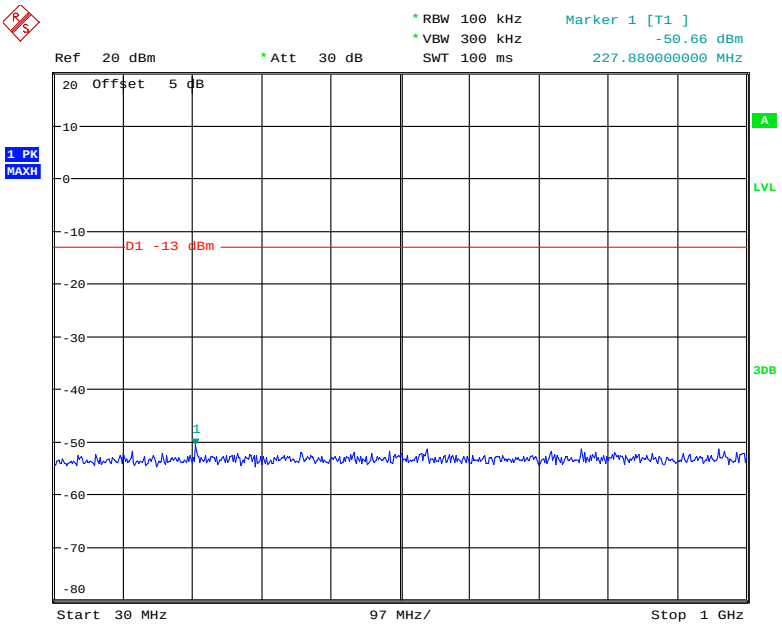
Date: 20.MAY.2020 10:20:01



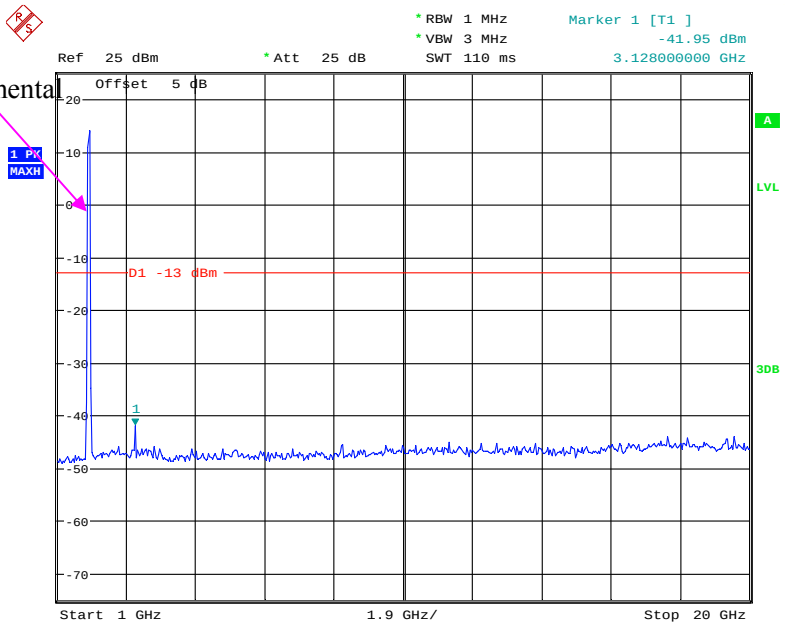
Fundamental

Date: 20.MAY.2020 10:20:13

QPSK_20 MHz



Date: 20.MAY.2020 10:20:39



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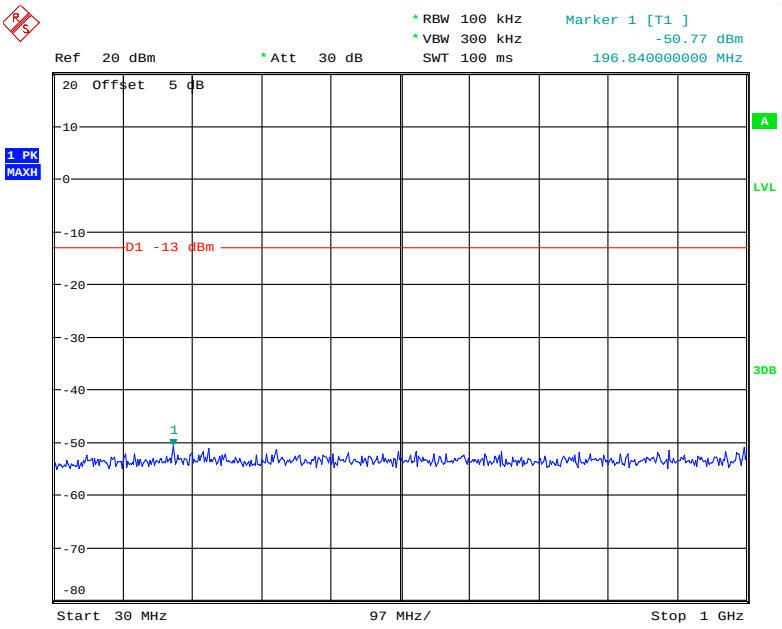
LTE Band 4 (Middle Channel)

QPSK_1.4 MHz



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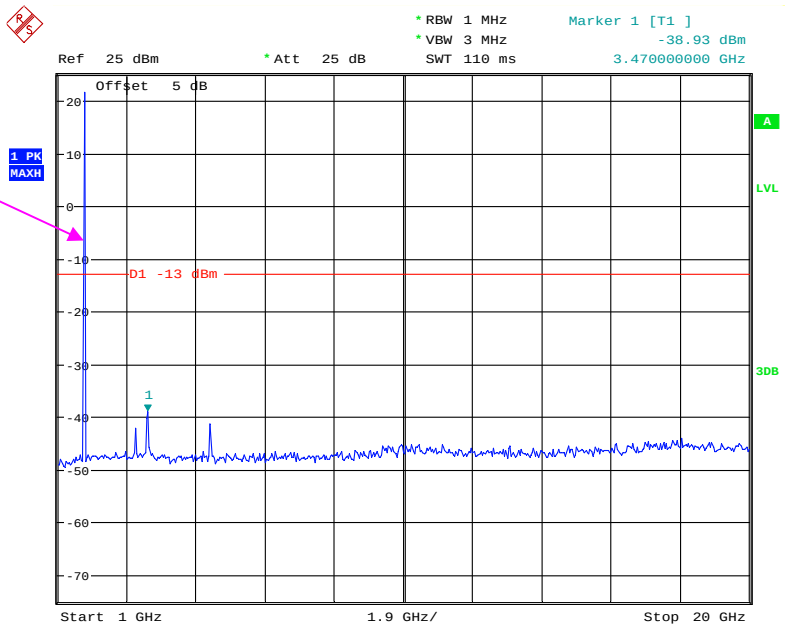
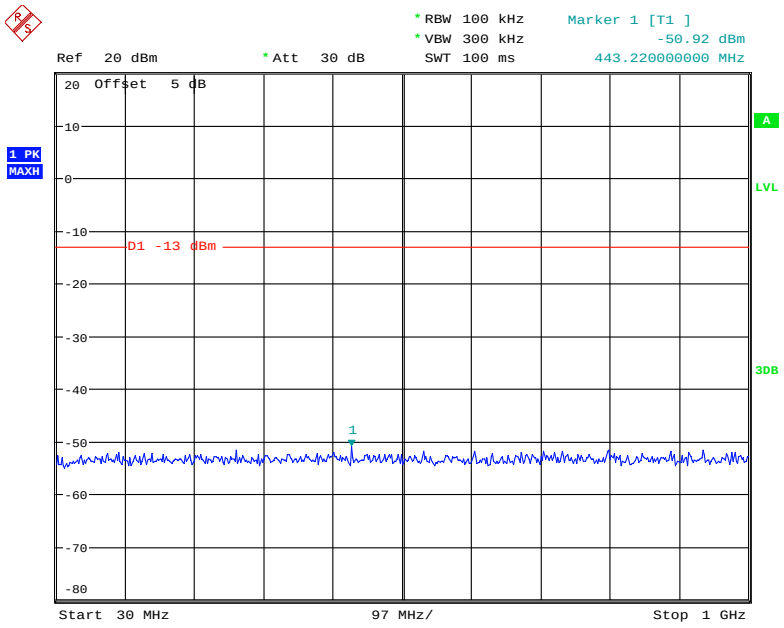


Fundamental

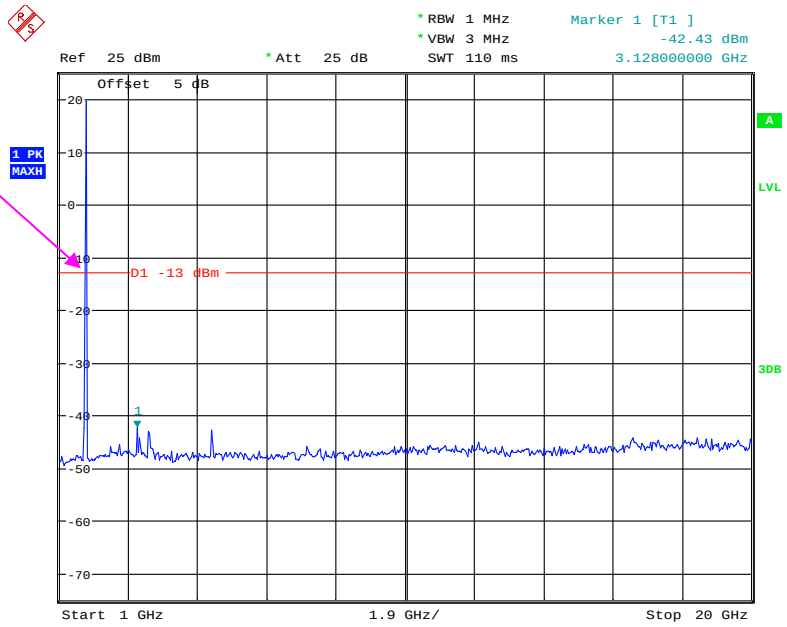
Date: 20.MAY.2020 10:21:22

QPSK_3 MHz



Date: 20.MAY.2020 10:21:44

Fundamental



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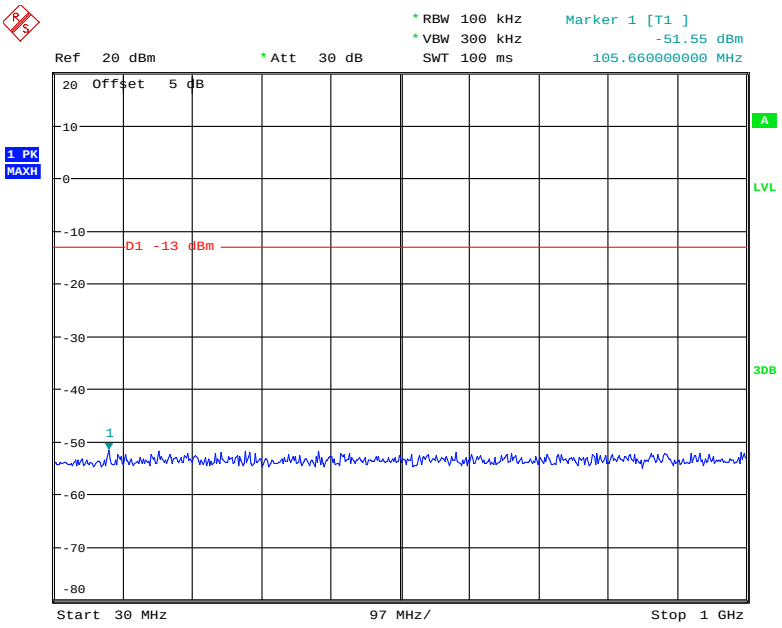
QPSK_5 MHz



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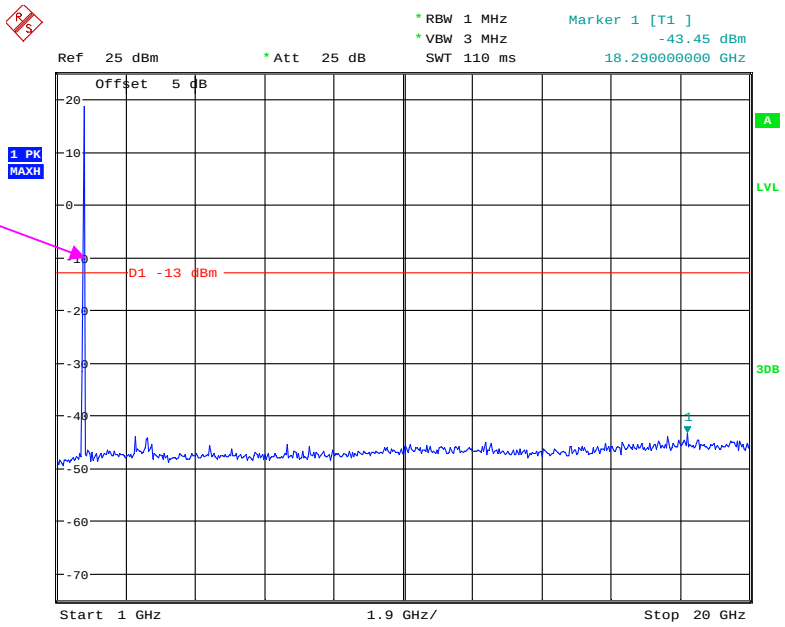
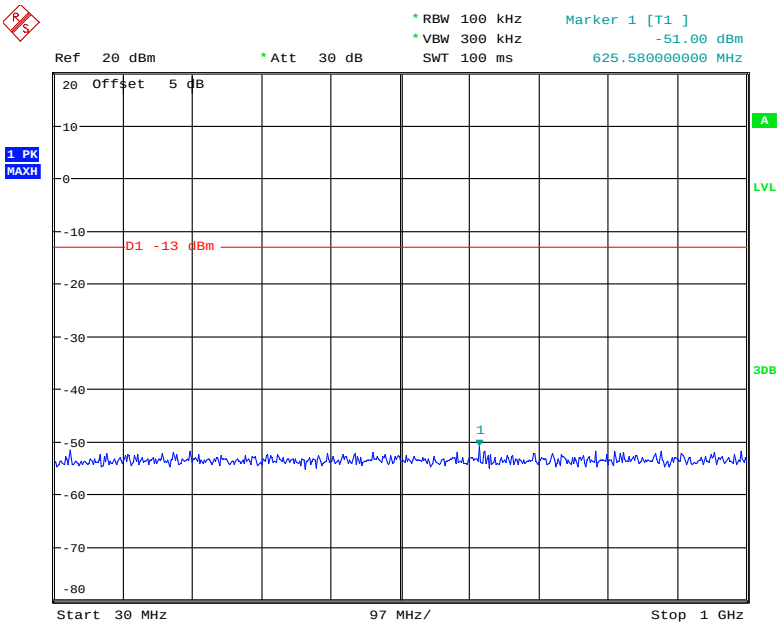


Fundamental

Date: 20.MAY.2020 10:22:27

QPSK_10 MHz



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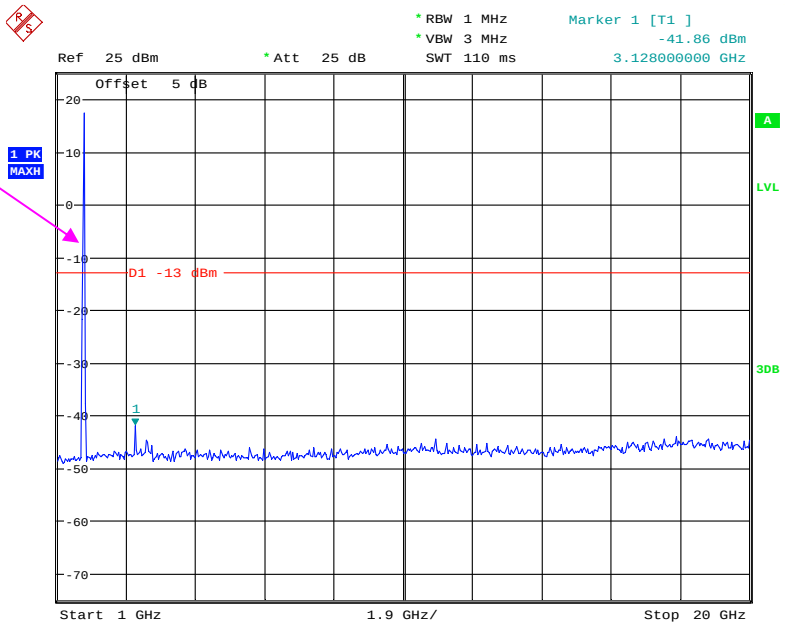
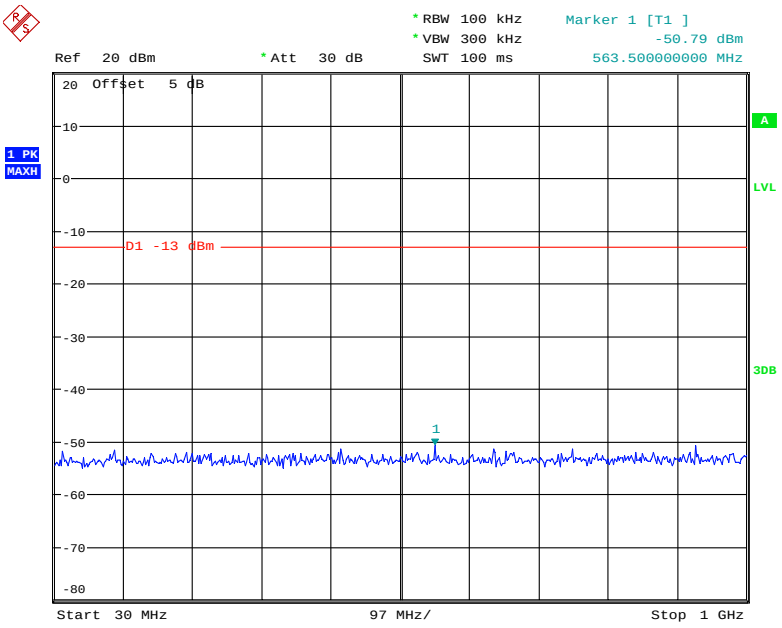


Fundamental

Date: 20.MAY.2020 10:23:00

QPSK_15 MHz



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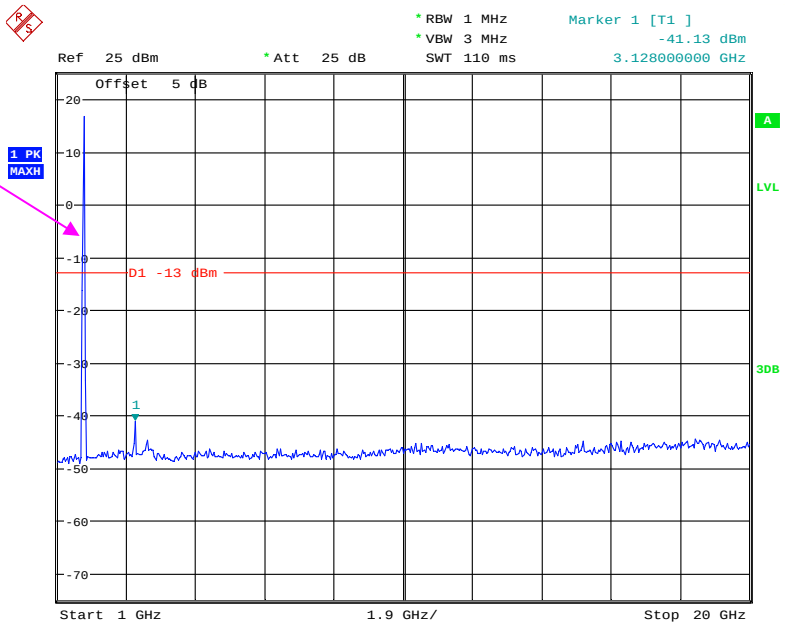
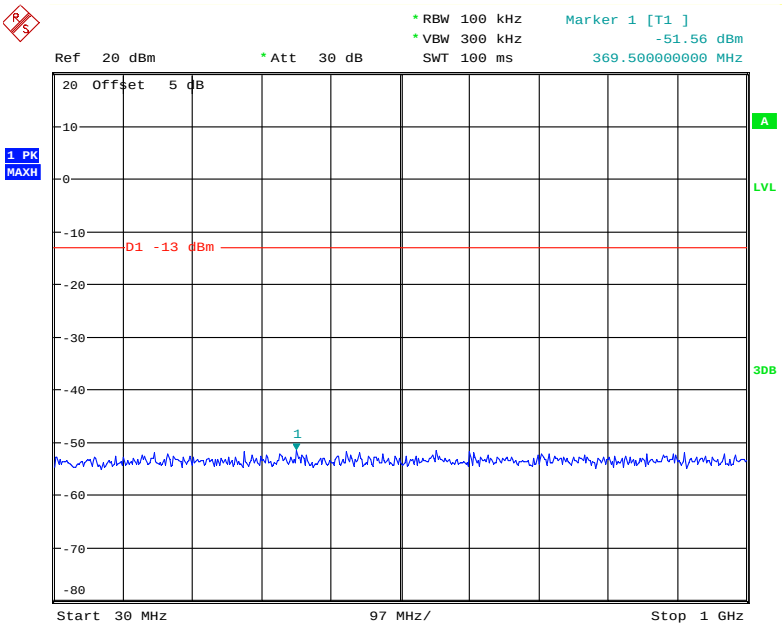


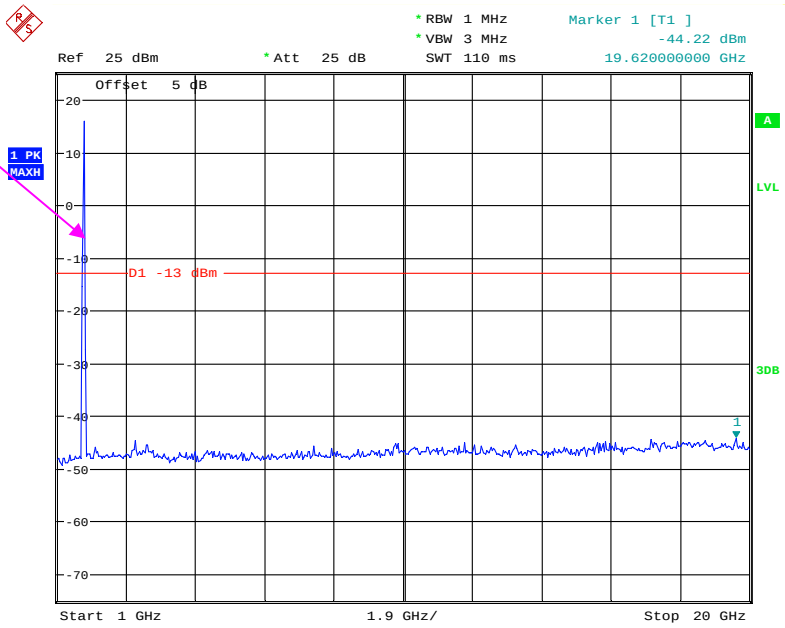
Fundamental

Date: 20.MAY.2020 10:23:34

QPSK_20 MHz



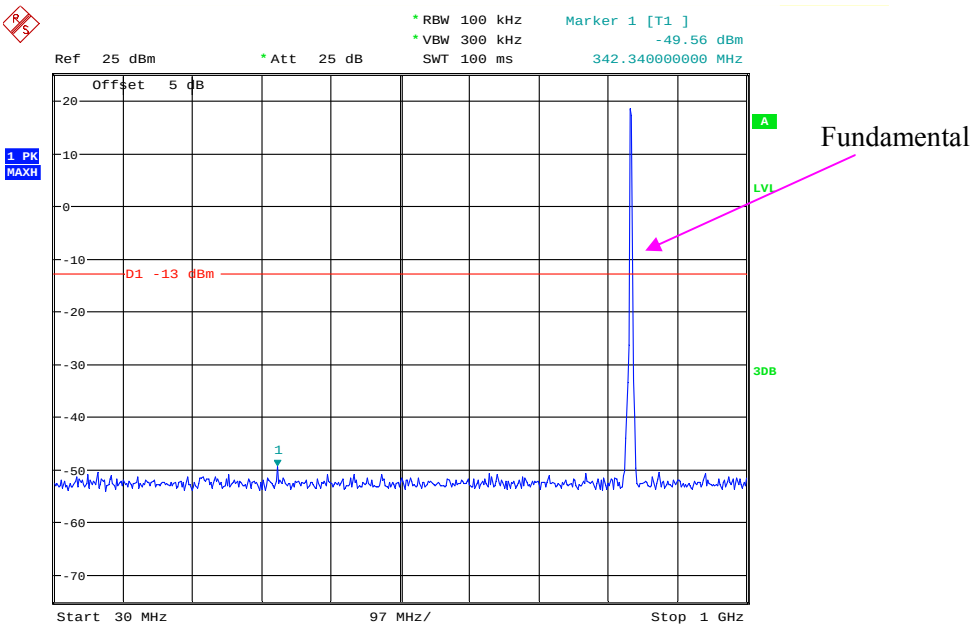
Date: 20.MAY.2020 10:23:57



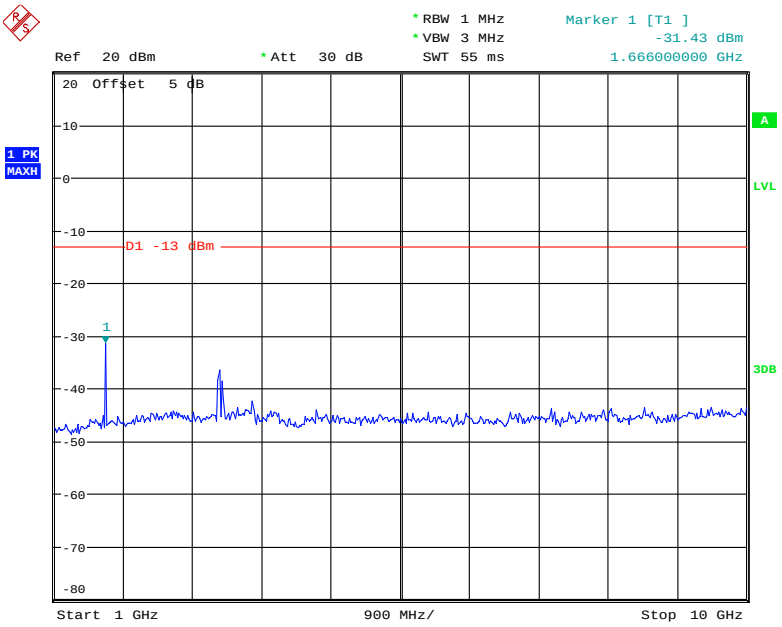
Date: 20.MAY.2020 10:24:09

LTE Band 5 (Middle Channel)

QPSK_1.4 MHz

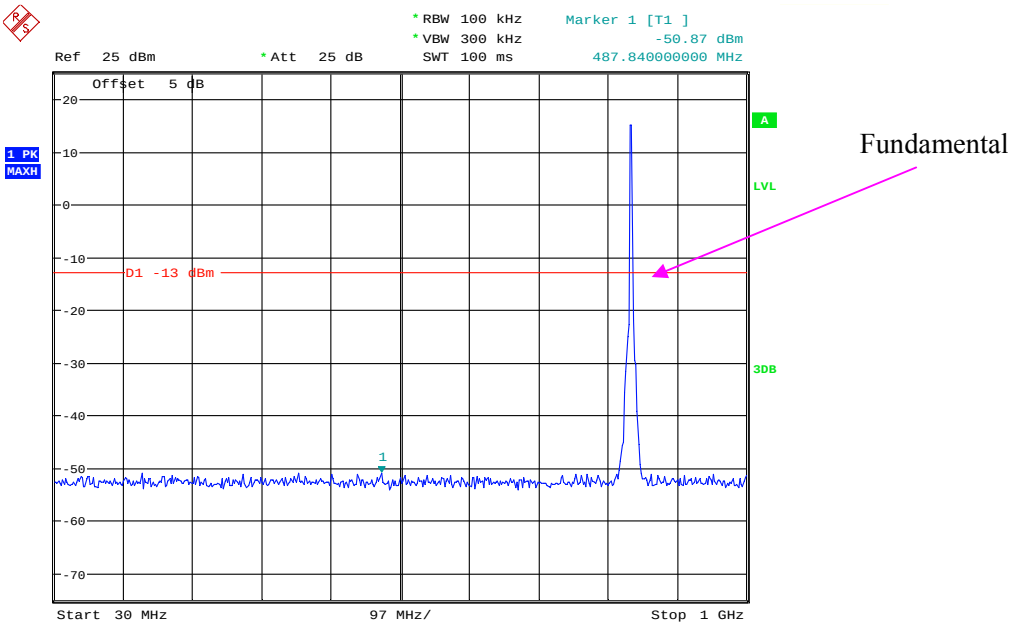


Date: 20.MAY.2020 10:24:28

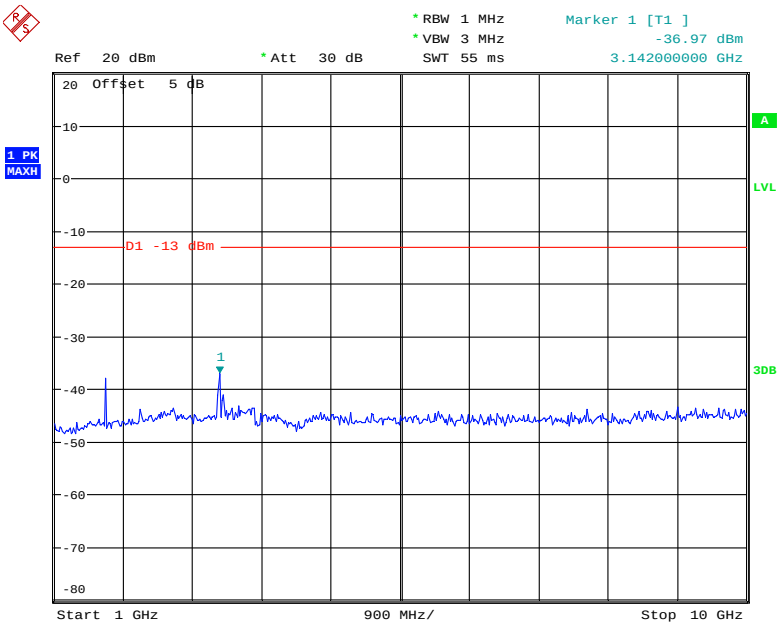


Date: 20.MAY.2020 10:24:40

QPSK_3 MHz

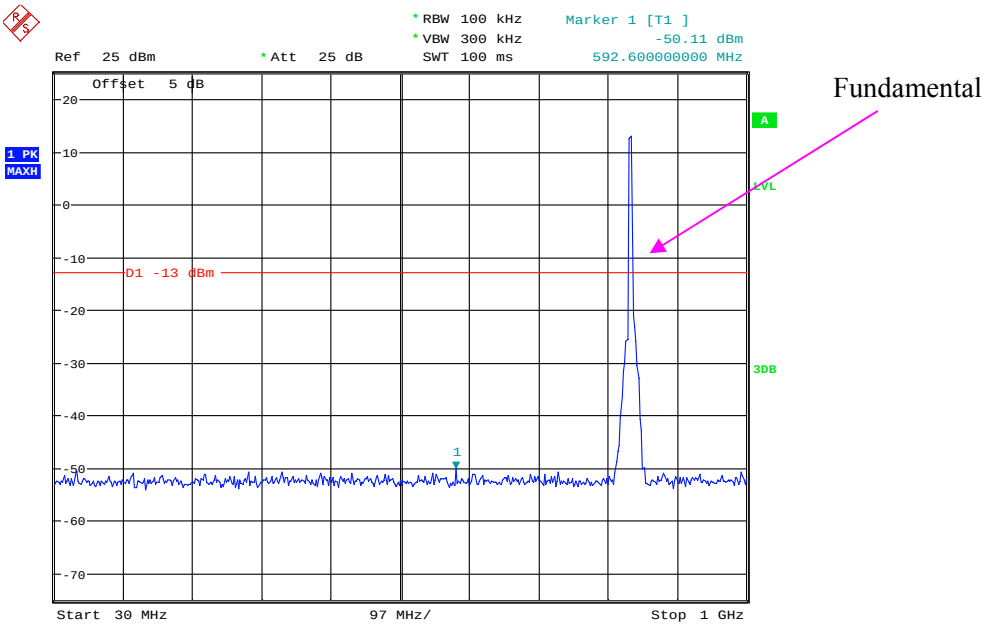


Date: 20.MAY.2020 10:24:59



Date: 20.MAY.2020 10:25:11

QPSK_5 MHz



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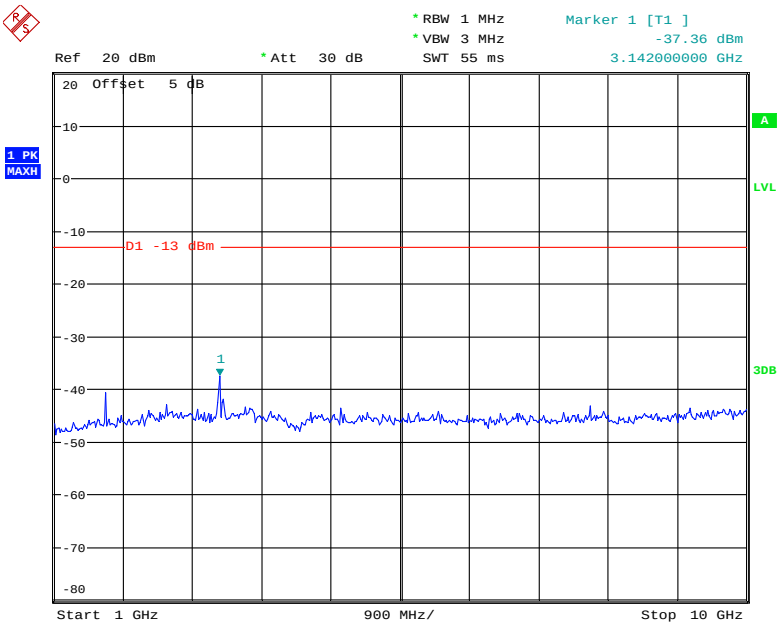

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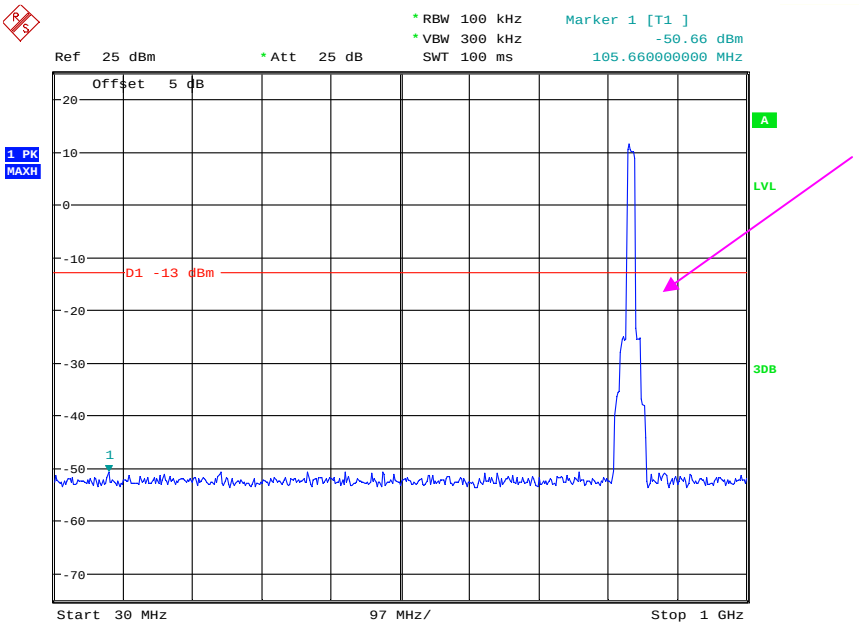
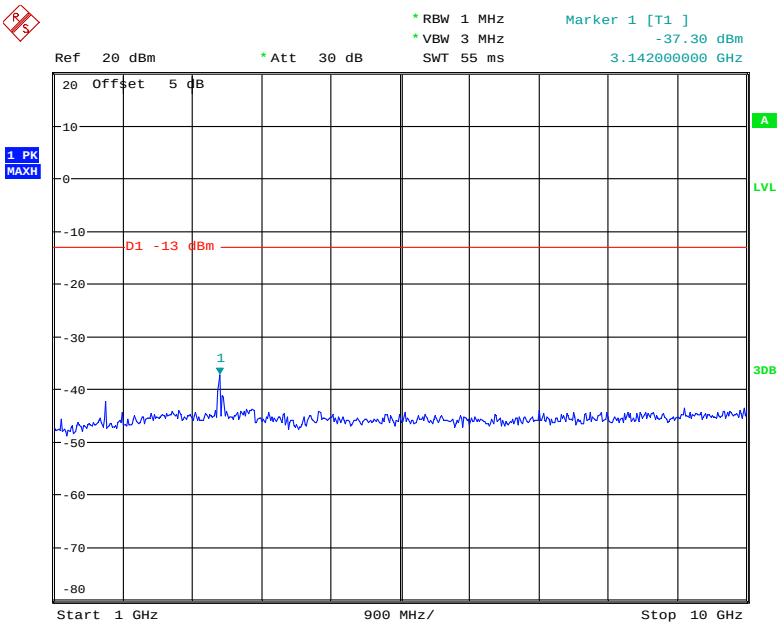
QPSK_10 MHz



Fundamental

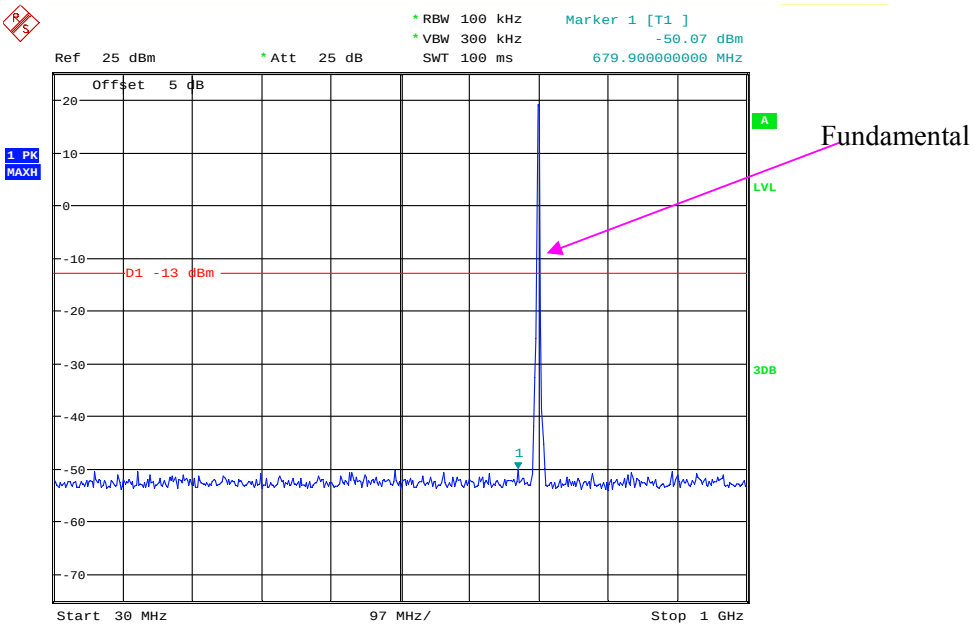
Date: 20.MAY.2020 10:26:09



Date: 20.MAY.2020 10:26:21

LTE Band 12 (Middle Channel)

QPSK_1.4 MHz



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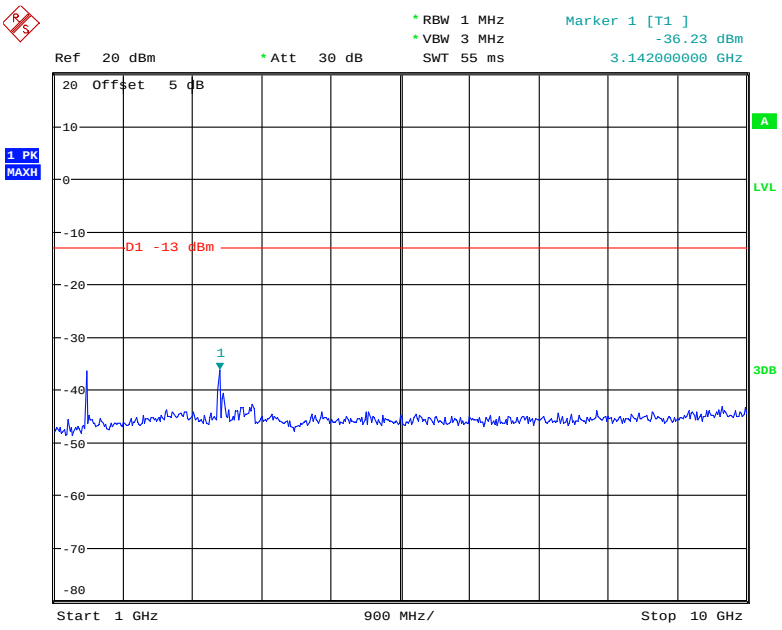

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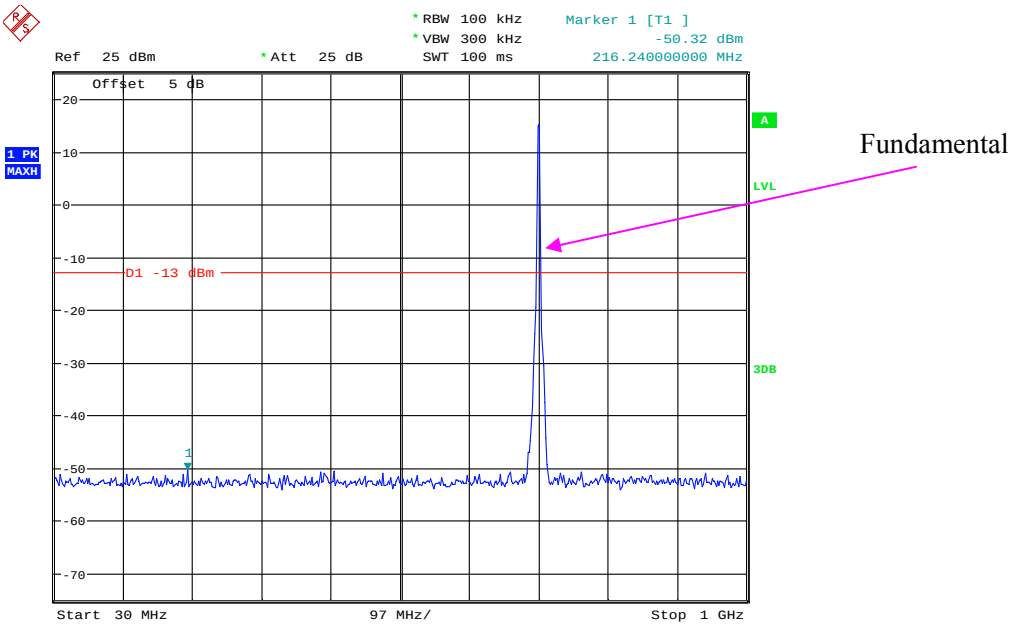
QPSK_3 MHz



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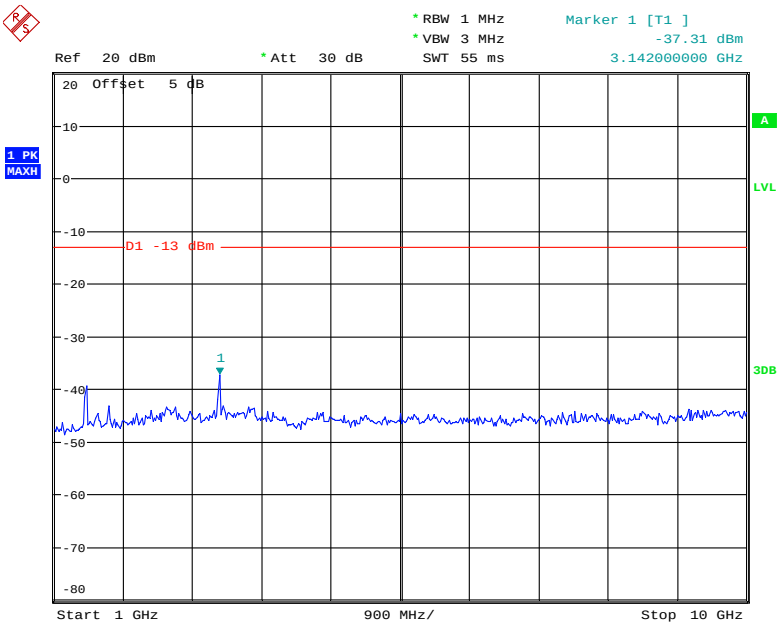

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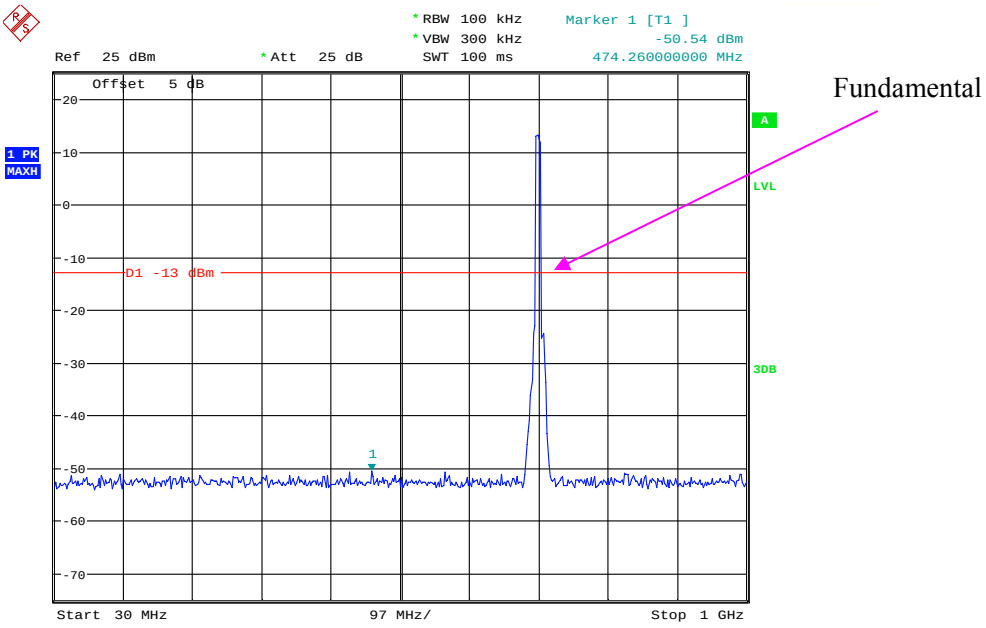
QPSK_5 MHz



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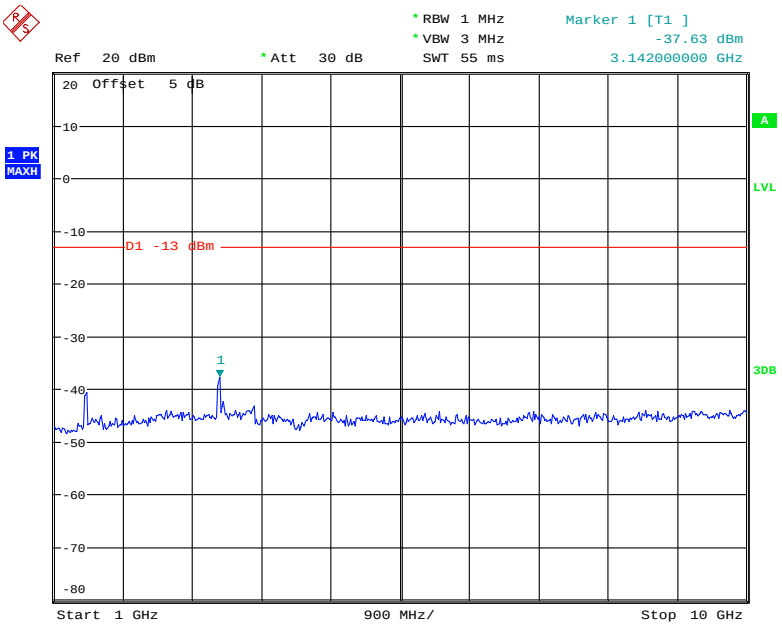
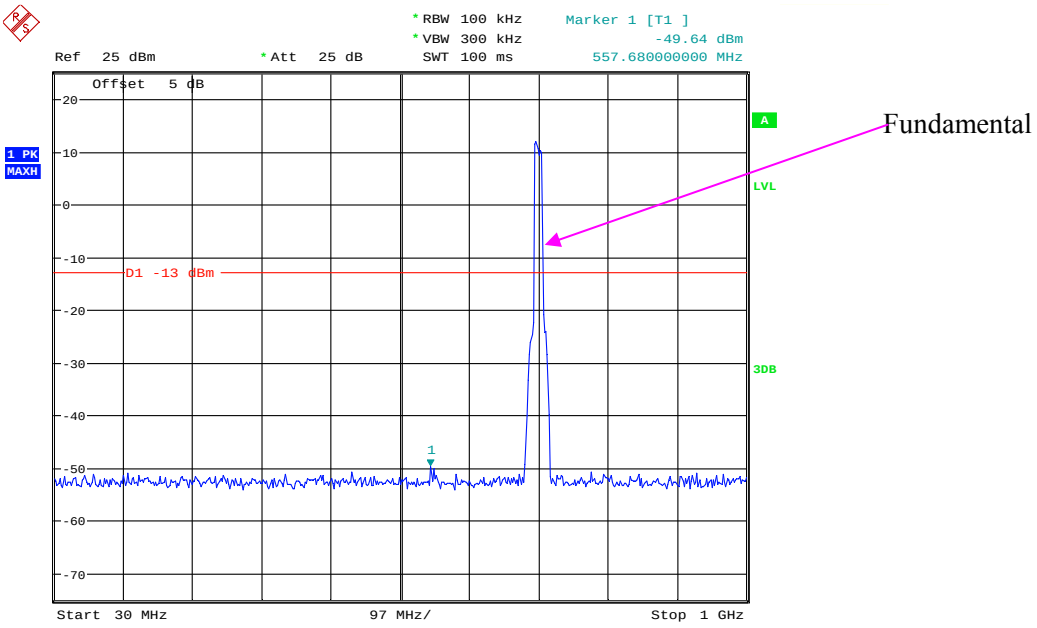
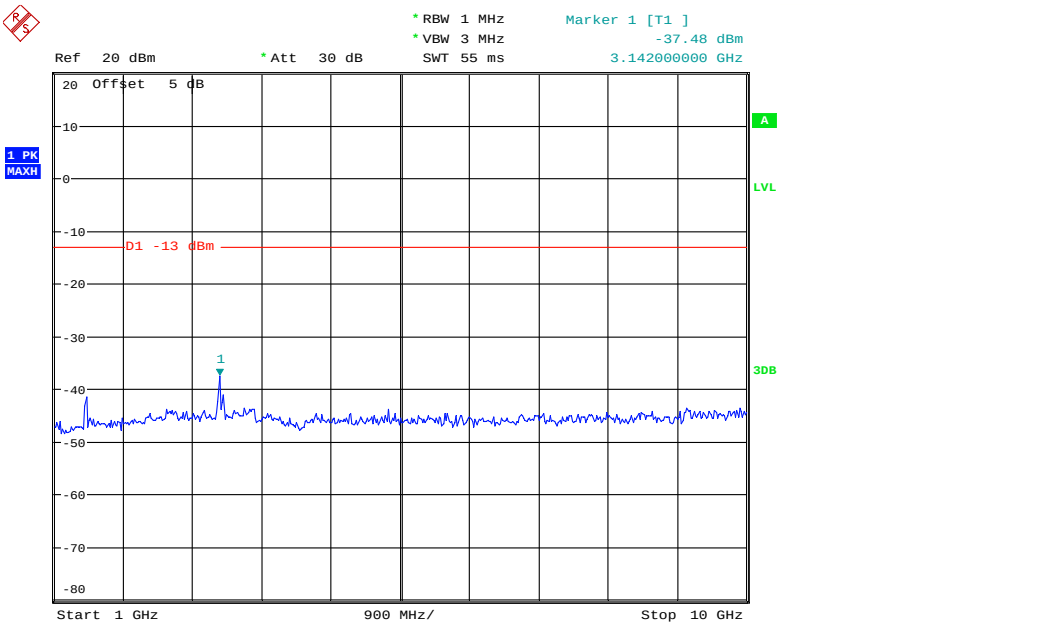


Date: 20.MAY.2020 10:27:54

QPSK_10 MHz



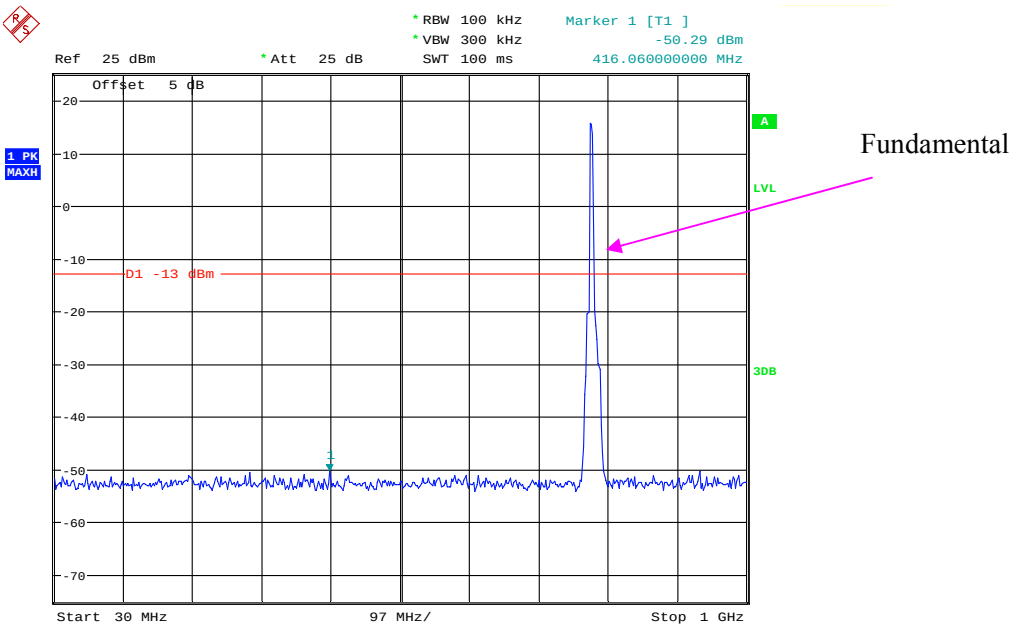
Date: 20.MAY.2020 10:28:14



Date: 20.MAY.2020 10:28:26

LTE Band 13 (Middle Channel)

QPSK_5 MHz



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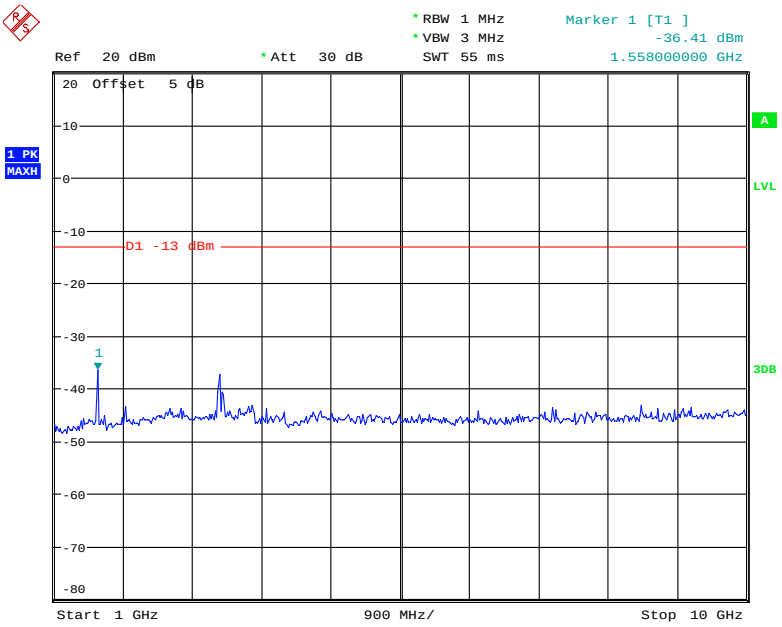
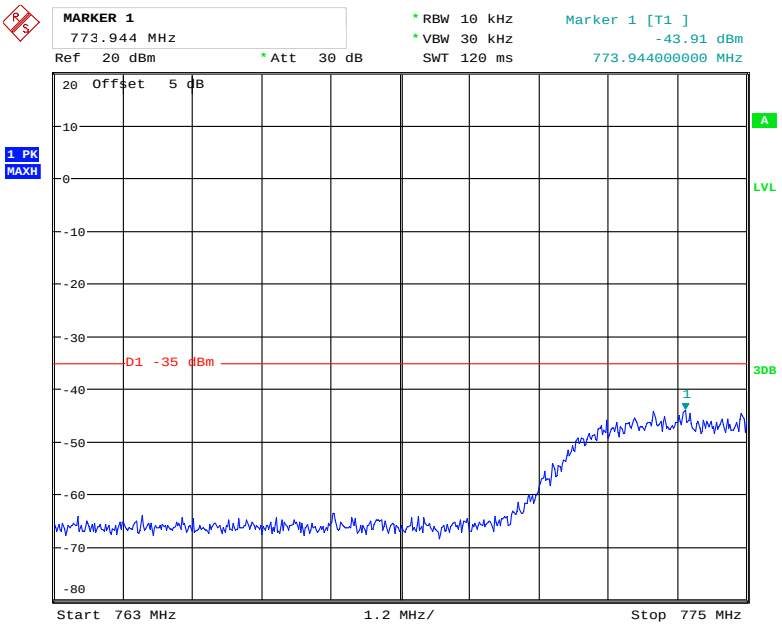


Date: 20.MAY.2020 10:28:57



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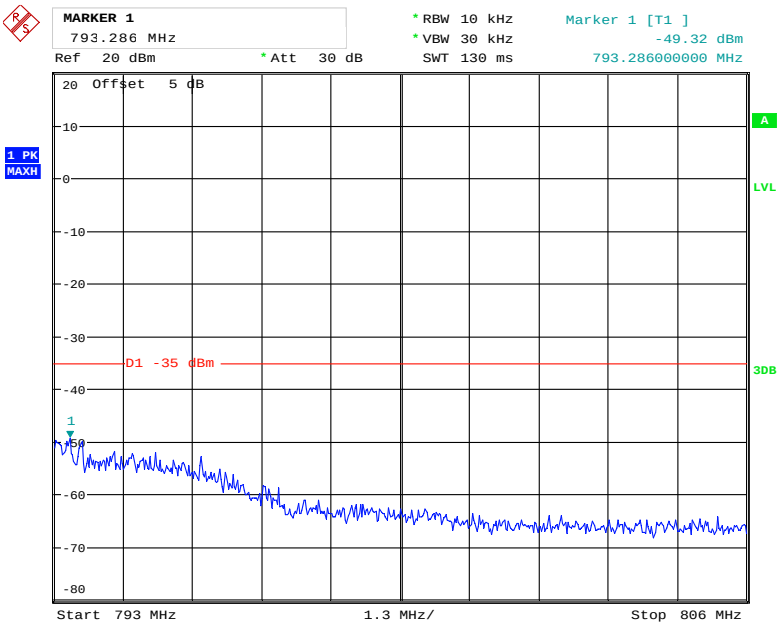

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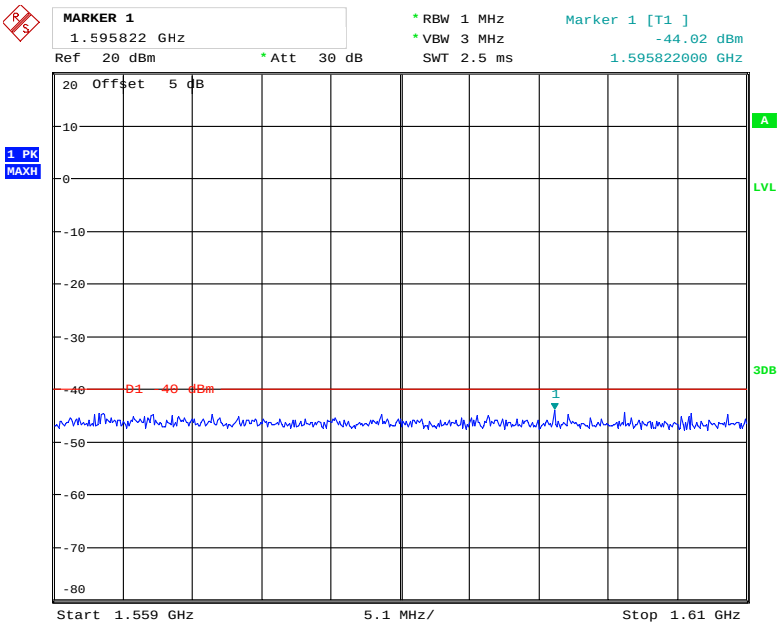
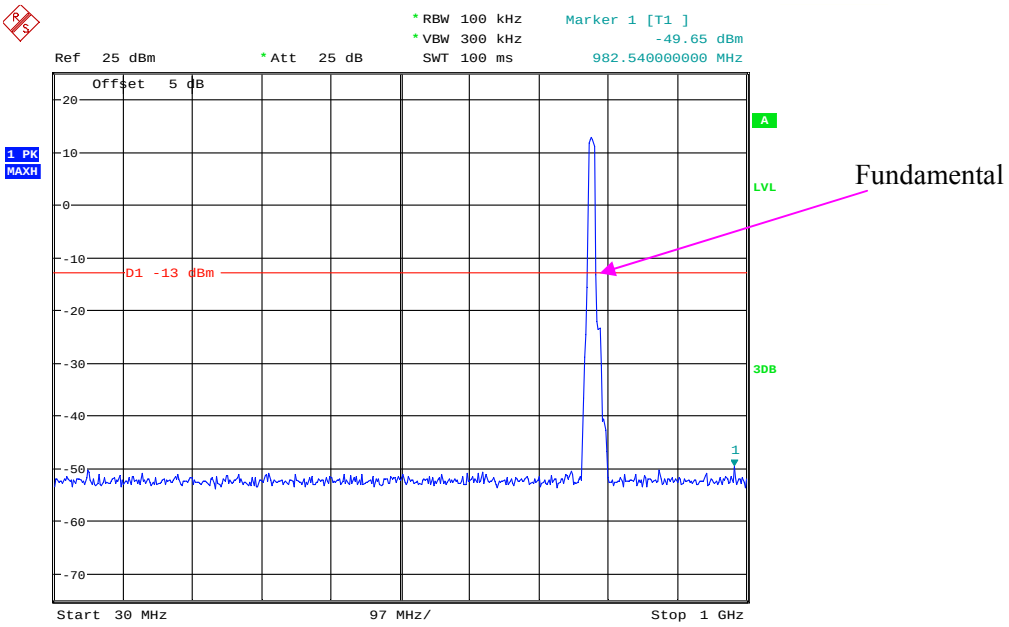


Date: 20.MAY.2020 10:44:31

QPSK_10 MHz



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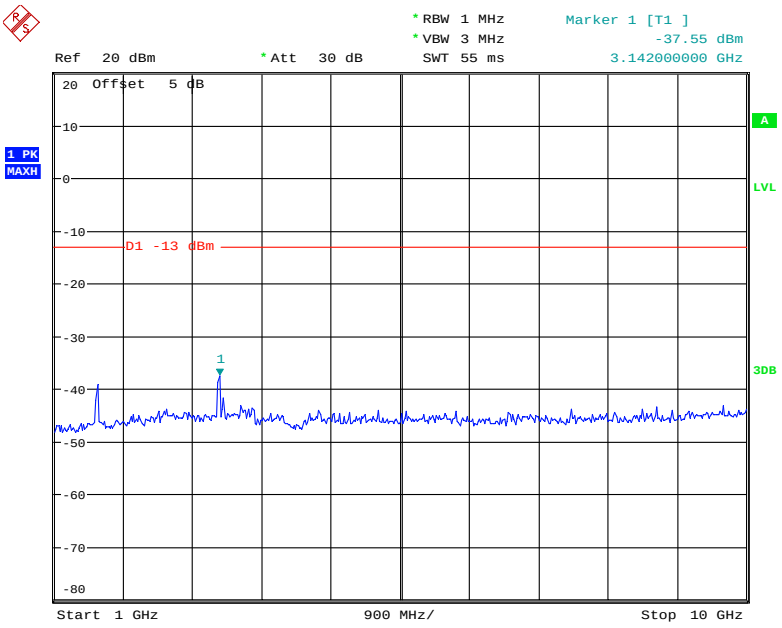

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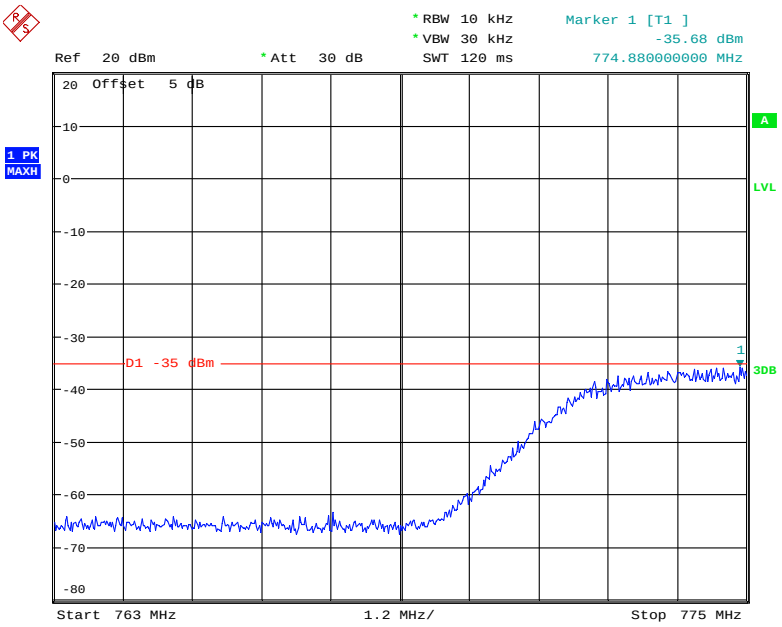
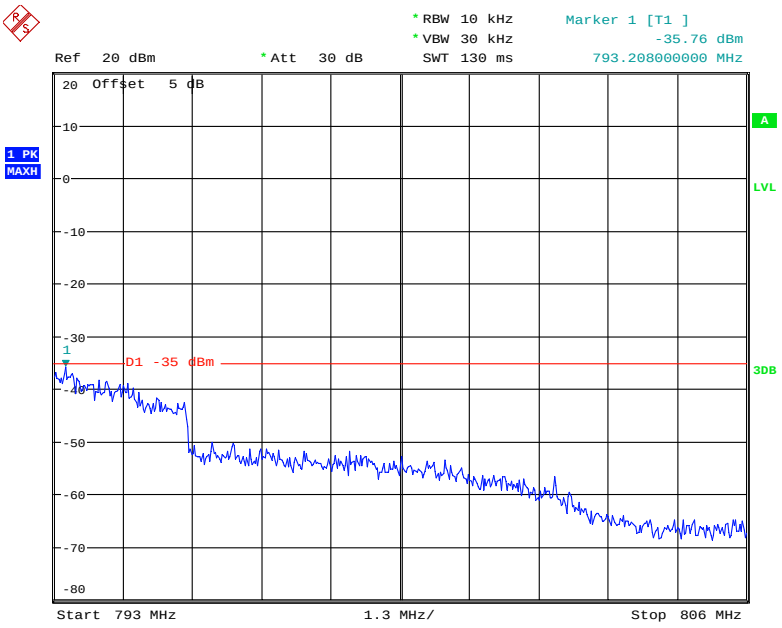
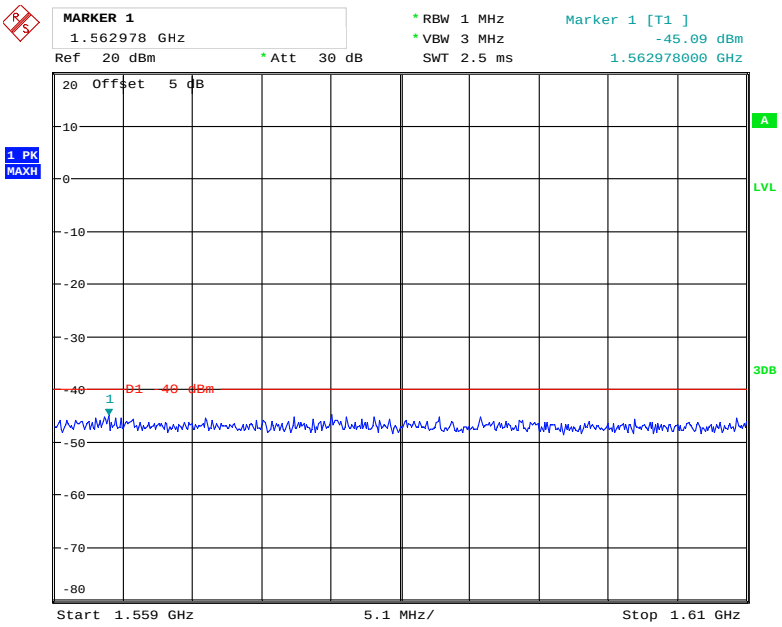


Date: 20.MAY.2020 10:54:08



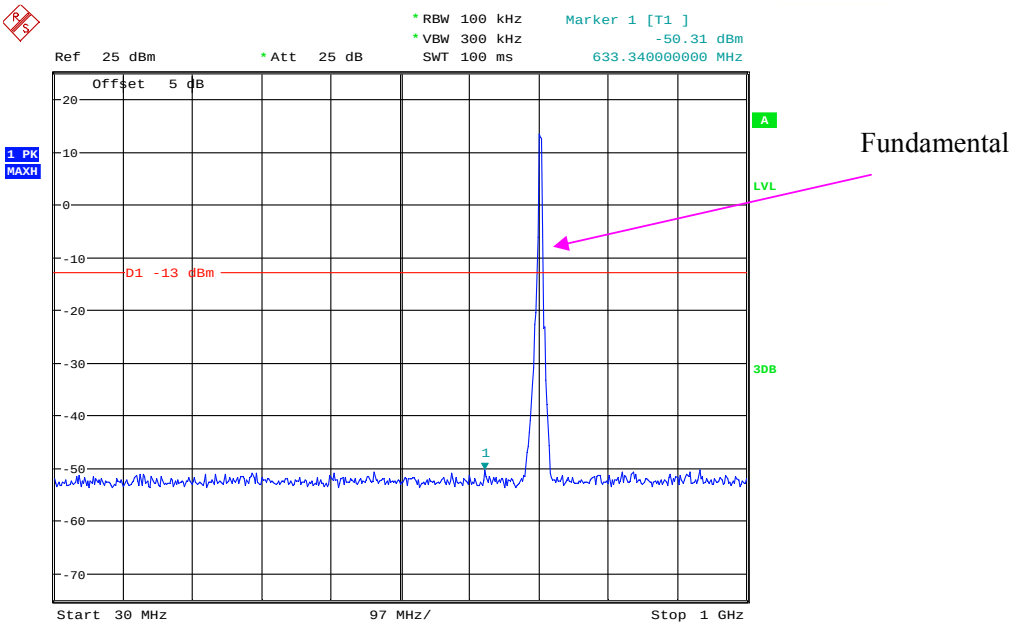
Date: 20.MAY.2020 10:54:42



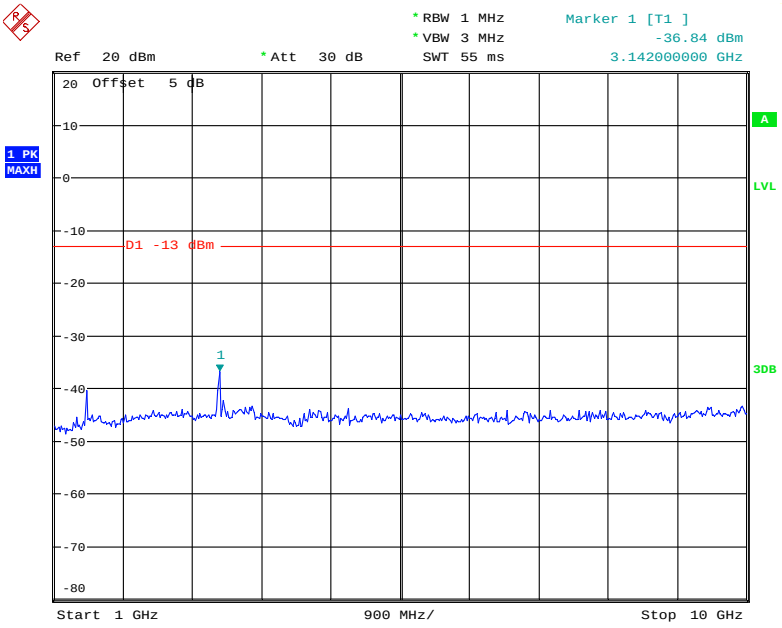
Date: 20.MAY.2020 10:46:10

LTE Band 17 (Middle Channel)

QPSK_5 MHz

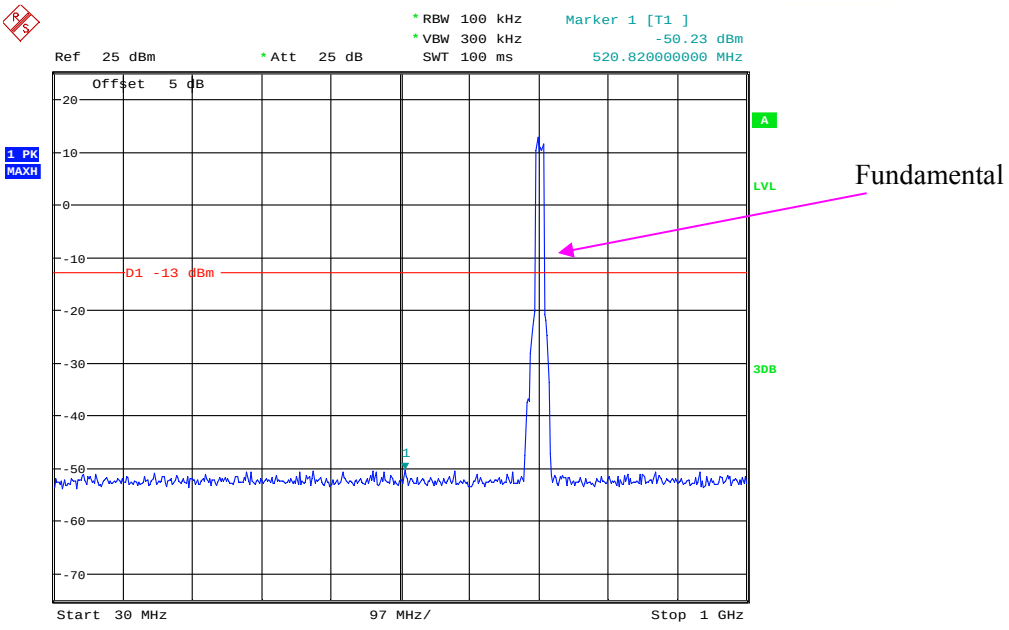


Date: 20.MAY.2020 10:29:55

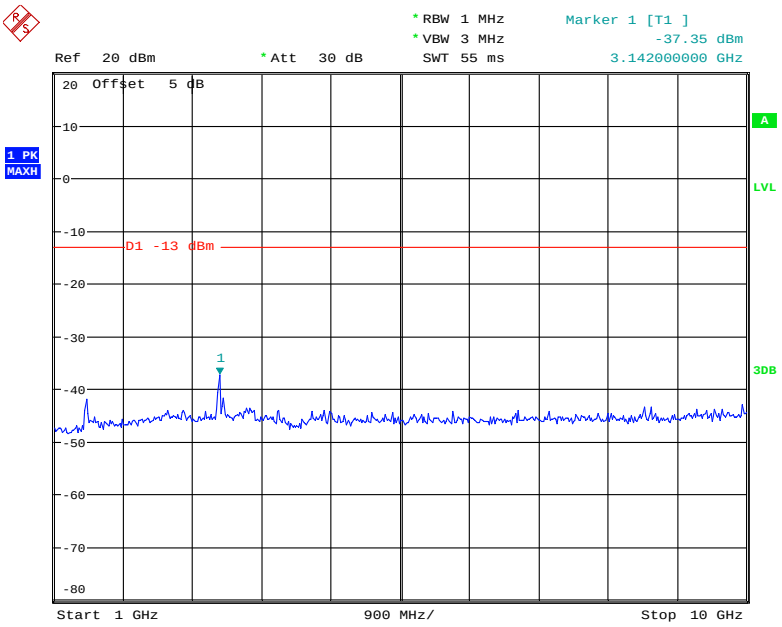


Date: 20.MAY.2020 10:30:10

QPSK_10 MHz



Date: 20.MAY.2020 10:30:34



Date: 20.MAY.2020 10:30:46

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

Applicable Standard

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

Test Procedure

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

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

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

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

Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESR3	102453	2019-06-26	2020-06-26
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	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2020-05-06	2021-05-06
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2019-09-05	2020-09-05
HP	Amplifier	8447D	2727A05902	2019-09-05	2020-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2020-05-09	2021-05-09
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2019-09-05	2020-09-05
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	2019-09-05	2020-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2019-06-27	2020-06-27
Agilent	Signal Generator	E8247C	MY43321350	2019-12-10	2020-12-10
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2019-11-18	2022-11-18
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-02 1304	2019-11-18	2022-11-18
Sinoscite	Band-stop filter	BSF1710-1785MN-0383-003	0383003	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF824-862MS-1438-001	1438001	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF1850-1910MS-0935V2	0935V2	2019-06-16	2020-06-16

*** 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:	23.8~25°C
Relative Humidity:	47~52 %
ATM Pressure:	100.7kPa
Tester:	Joker Chen, Felix Wang
Test Date:	2020-05-15

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)			
GSM850, Frequency:836.600 MHz								
1673.200	H	60.17	-43.77	10.6	0.73	-33.9	-13.0	20.9
1673.200	V	63.75	-40.79	10.6	0.73	-30.9	-13.0	17.9
2509.800	H	50.32	-52.59	13.1	1.25	-40.7	-13.0	27.7
2509.800	V	54.75	-48.19	13.1	1.25	-36.3	-13.0	23.3
3346.400	H	44.96	-54.72	13.8	1.61	-42.5	-13.0	29.5
3346.400	V	46.15	-53.57	13.8	1.61	-41.4	-13.0	28.4
700.300	H	41.62	-59.8	0.0	0.94	-60.7	-13.0	47.7
700.300	V	37.55	-66.35	0.0	0.94	-67.3	-13.0	54.3
WCDMA Band V R99,Frequency:836.600 MHz								
1673.200	H	36.74	-73.2	10.6	0.73	-63.3	-13.0	50.3
1673.200	V	34.03	-70.51	10.6	0.73	-60.6	-13.0	47.6
2509.800	H	42.44	-60.47	13.1	1.25	-48.6	-13.0	35.6
2509.800	V	44.48	-58.46	13.1	1.25	-46.6	-13.0	33.6
3346.400	H	38.12	-71.56	13.8	1.61	-59.3	-13.0	46.3
3346.400	V	38.88	-70.84	13.8	1.61	-58.6	-13.0	45.6
126.200	H	44.66	-59.54	0.0	0.32	-59.9	-13.0	46.9
176.700	V	39.92	-72.29	0.0	0.44	-72.7	-13.0	59.7

30 MHz-20 GHz:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM1900, Frequency:1880.000 MHz								
3760.000	H	59.09	-38.55	13.8	1.63	-26.4	-13.0	13.4
3760.000	V	57.49	-40.01	13.8	1.63	-27.9	-13.0	14.9
5640.000	H	47.49	-46.1	14.0	1.31	-33.4	-13.0	20.4
5640.000	V	46.43	-47.05	14.0	1.31	-34.3	-13.0	21.3
700.300	H	43.13	-58.29	0.0	0.94	-59.2	-13.0	46.2
700.300	V	38.20	-65.7	0.0	0.94	-66.6	-13.0	53.6
WCDMA Band II R99,Frequency: 1880.000 MHz								
3760.000	H	36.63	-61.01	13.8	1.63	-48.9	-13.0	35.9
3760.000	V	36.55	-66.95	13.8	1.63	-54.8	-13.0	41.8
5640.000	H	26.99	-66.6	14.0	1.31	-53.9	-13.0	40.9
5640.000	V	26.28	-67.2	14.0	1.31	-54.5	-13.0	41.5
126.200	H	45.94	-58.26	0.0	0.32	-58.6	-13.0	45.6
176.700	V	40.44	-71.77	0.0	0.44	-72.2	-13.0	59.2

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	46.74	-50.90	13.76	1.63	-38.77	-13.00	25.77
3760.00	V	43.45	-54.05	13.76	1.63	-41.92	-13.00	28.92
5640.00	H	43.50	-50.09	14.02	1.31	-37.38	-13.00	24.38
5640.00	V	40.94	-52.54	14.02	1.31	-39.83	-13.00	26.83
374.60	H	40.04	-65.74	0.00	0.59	-66.33	-13.00	53.33
374.60	V	39.35	-69.28	0.00	0.59	-69.87	-13.00	56.87

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	48.42	-50.77	13.91	1.62	-38.48	-13.00	25.48
3465.00	V	48.83	-50.39	13.91	1.62	-38.10	-13.00	25.10
5197.50	H	42.18	-52.51	14.00	1.52	-40.03	-13.00	27.03
5197.50	V	39.76	-55.00	14.00	1.52	-42.52	-13.00	29.52
374.60	H	40.09	-65.69	0.00	0.59	-66.28	-13.00	53.28
374.60	V	41.53	-67.10	0.00	0.59	-67.69	-13.00	54.69

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	34.36	-69.58	10.61	0.73	-59.70	-13.00	46.70
1673.00	V	38.34	-66.20	10.61	0.73	-56.32	-13.00	43.32
2509.50	H	48.11	-54.80	13.11	1.25	-42.94	-13.00	29.94
2509.50	V	48.19	-54.75	13.11	1.25	-42.89	-13.00	29.89
3346.00	H	31.51	-68.17	13.83	1.61	-55.95	-13.00	42.95
3346.00	V	31.98	-67.74	13.83	1.61	-55.52	-13.00	42.52
374.60	H	37.45	-68.33	0.00	0.59	-68.92	-13.00	55.92
32.10	V	38.79	-34.15	-25.33	0.26	-59.74	-13.00	46.74

LTE Band 12 (30MHz-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)			
QPSK, Frequency: 707.500 MHz								
1415.00	H	36.94	-66.67	9.08	1.22	-58.81	-13.00	45.81
1415.00	V	40.30	-63.83	9.08	1.22	-55.97	-13.00	42.97
2122.50	H	45.28	-56.73	11.27	1.11	-46.57	-13.00	33.57
2122.50	V	45.14	-56.85	11.27	1.11	-46.69	-13.00	33.69
2830.00	H	32.37	-69.05	13.34	1.36	-57.07	-13.00	44.07
2830.00	V	36.54	-65.11	13.34	1.36	-53.13	-13.00	40.13
374.60	H	39.20	-66.58	0.00	0.59	-67.17	-13.00	54.17
374.60	V	41.77	-66.86	0.00	0.59	-67.45	-13.00	54.45

LTE Band 13 (30MHz-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)			
QPSK, Frequency: 782.000 MHz								
1564.00	H	37.61	-67.11	9.88	0.92	-58.15	-40.00	18.15
1564.00	V	39.18	-65.96	9.88	0.92	-57.00	-40.00	17
2346.00	H	58.30	-43.99	11.71	1.26	-33.54	-13.00	20.54
2346.00	V	54.19	-48.14	11.71	1.26	-37.69	-13.00	24.69
3128.00	H	31.17	-68.41	13.31	1.76	-56.86	-13.00	43.86
3128.00	V	32.01	-67.58	13.31	1.76	-56.03	-13.00	43.03
791.50	H	48.92	-49.97	0.00	0.93	-50.90	-13.00	37.90
791.50	V	52.68	-49.86	0.00	0.93	-50.79	-13.00	37.79

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	39.94	-63.74	9.10	1.23	-55.87	-13.00	42.87
1420.00	V	37.75	-66.43	9.10	1.23	-58.56	-13.00	45.56
2130.00	H	47.42	-54.58	11.22	1.11	-44.47	-13.00	31.47
2130.00	V	44.93	-57.04	11.22	1.11	-46.93	-13.00	33.93
2840.00	H	46.76	-54.56	13.42	1.36	-42.50	-13.00	29.50
2840.00	V	44.24	-57.32	13.42	1.36	-45.26	-13.00	32.26
828.00	H	42.18	-56.05	0.00	0.96	-57.01	-13.00	44.01
374.60	V	40.27	-68.36	0.00	0.59	-68.95	-13.00	55.95

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

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

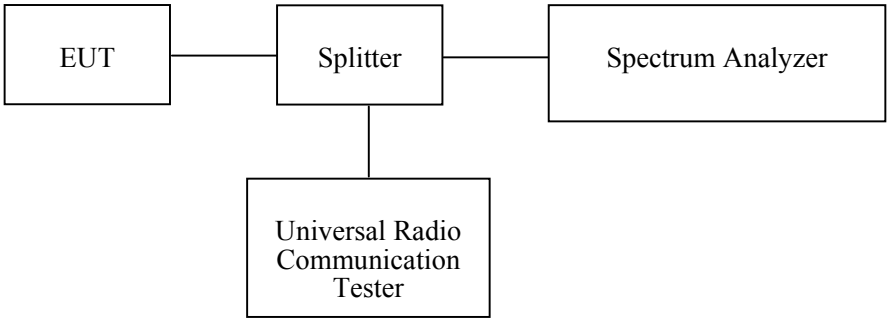
Applicable Standard

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

Test Procedure

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

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2020-05-09	2021-05-09
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	Each Time	/
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	/
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	Each Time	/
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each Time	/

*** 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).

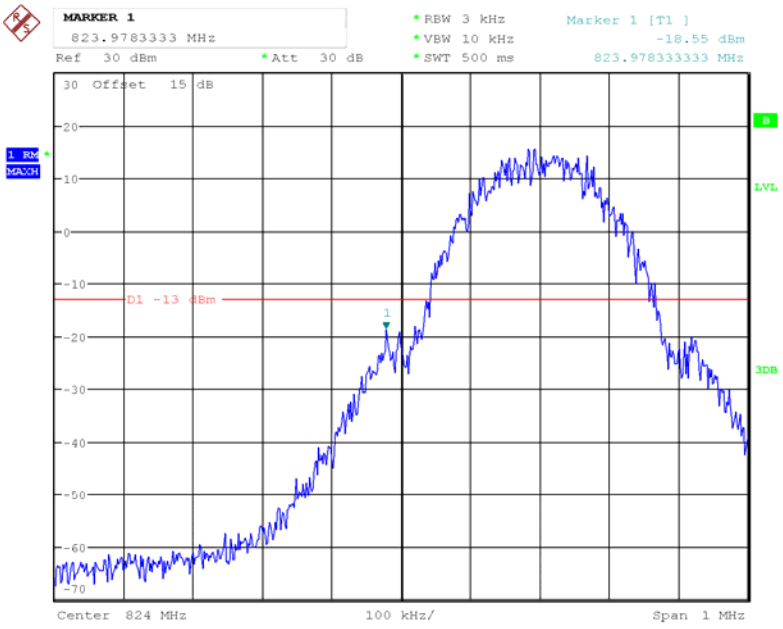
Test Data

Environmental Conditions

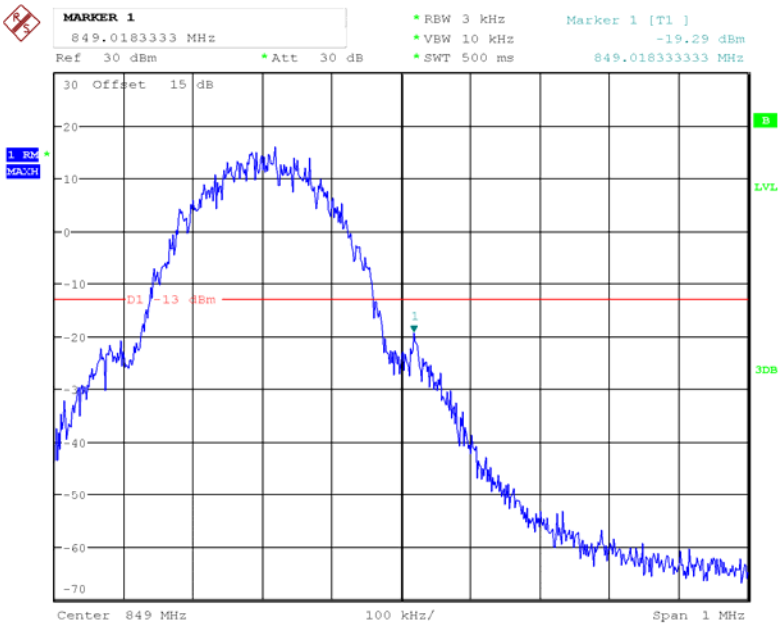
Temperature:	26.1~26.9°C
Relative Humidity:	55~67 %
ATM Pressure:	98.6~100kPa
Tester:	Chris Mo
Test Date:	2020-05-19~2020-05-22

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

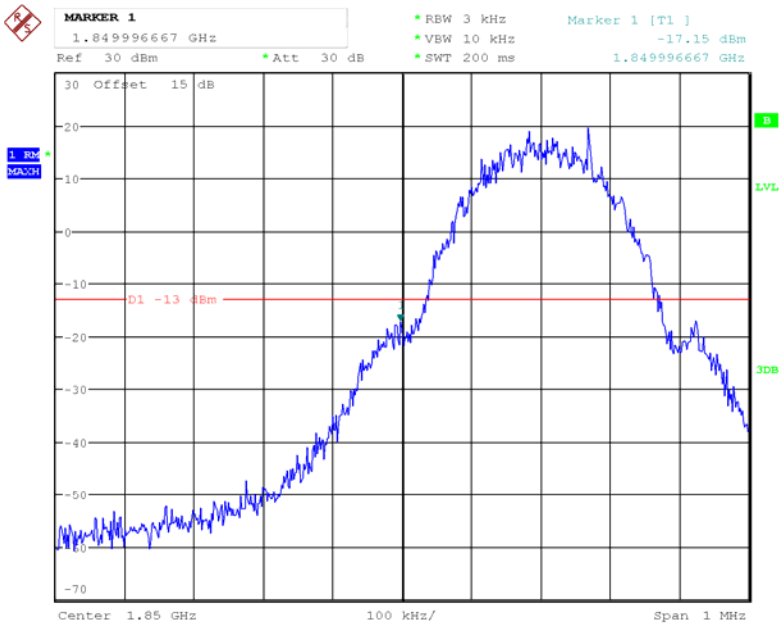
GSM 850, Left Band Edge



GSM 850, Right Band Edge

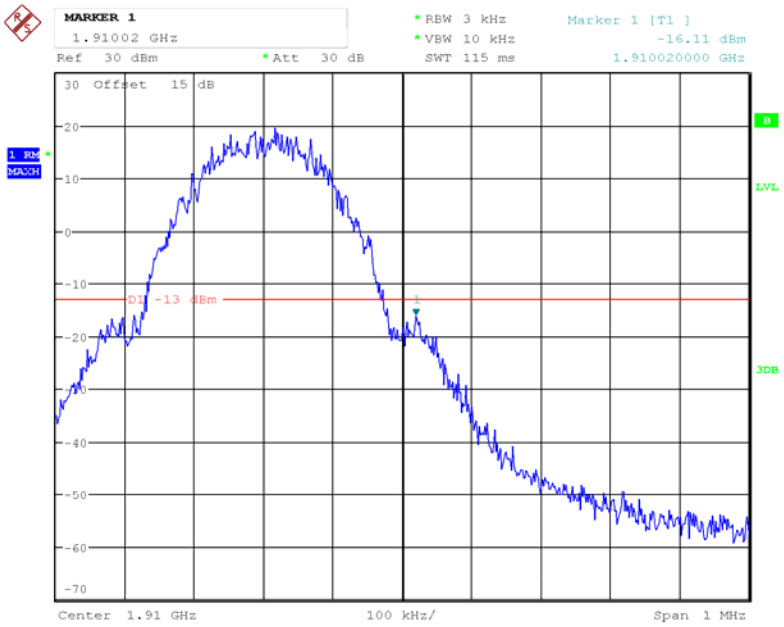


GSM 1900, Left Band Edge



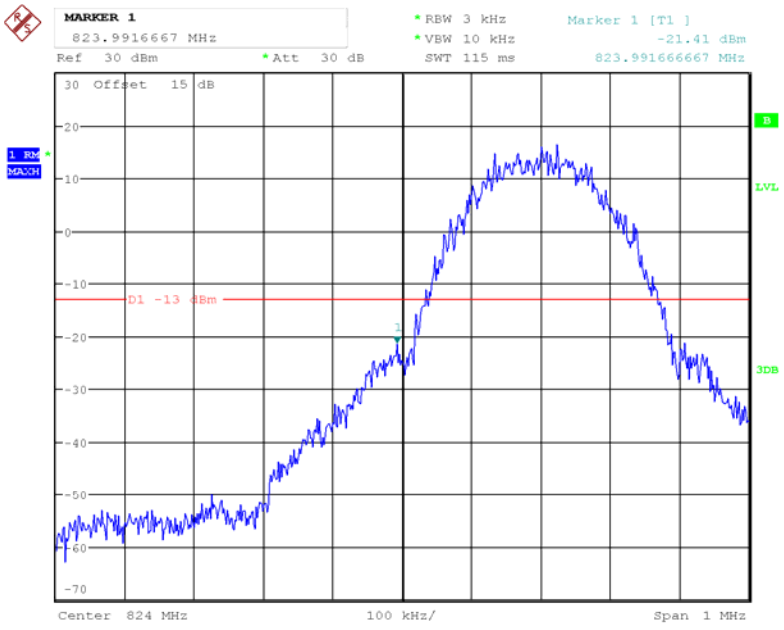
Date: 22.MAY.2020 16:40:37

GSM 1900, Right Band Edge



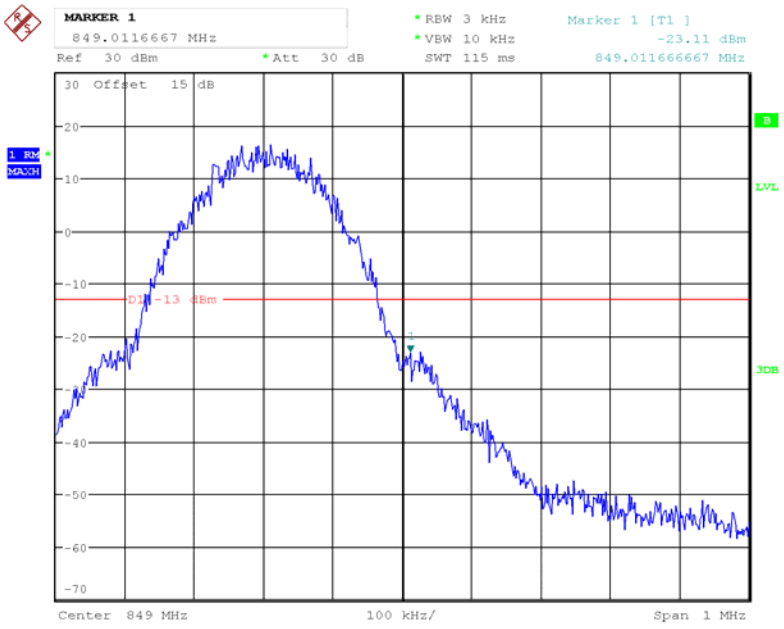
Date: 22.MAY.2020 16:39:39

EDGE 850, Left Band Edge



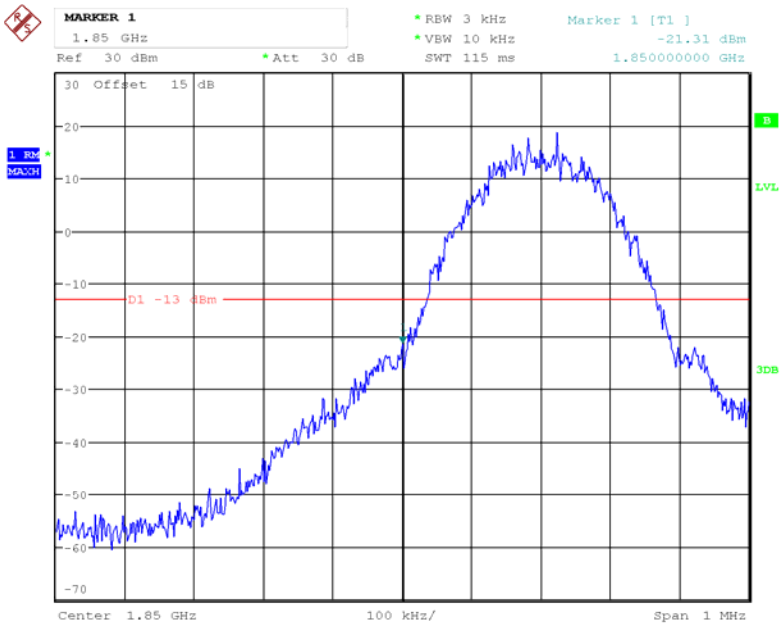
Date: 22.MAY.2020 18:06:45

EDGE 850, Right Band Edge



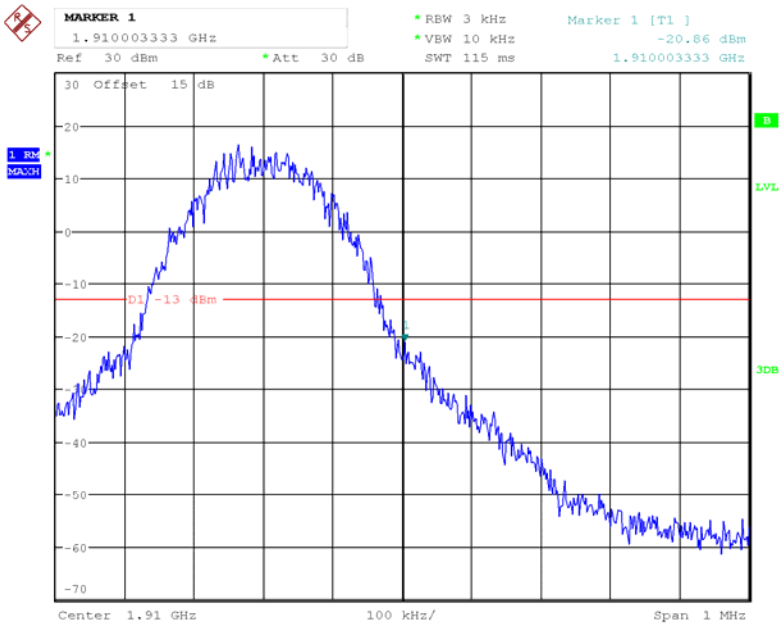
Date: 22.MAY.2020 18:06:08

EDGE 1900, Left Band Edge



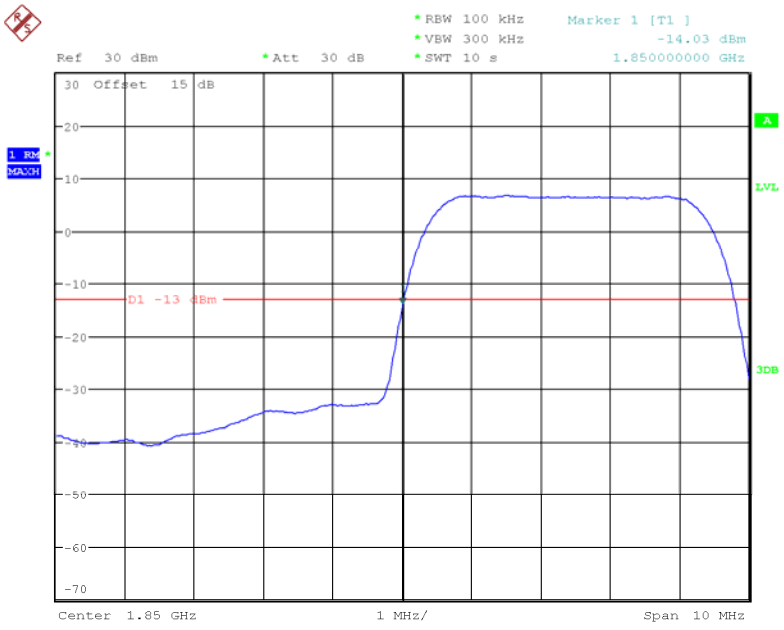
Date: 22.MAY.2020 16:37:09

EDGE 1900, Right Band Edge



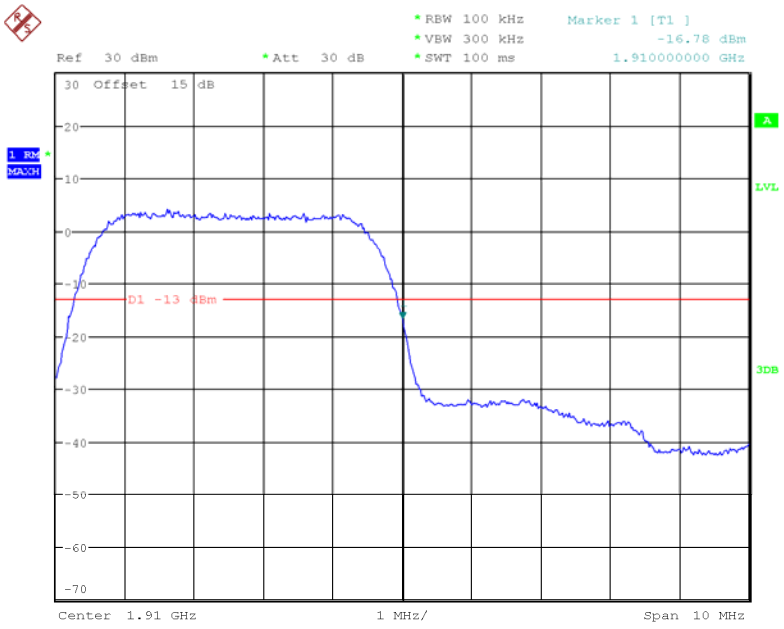
Date: 22.MAY.2020 16:37:41

WCDMA Band II Rel 99, Left Band Edge



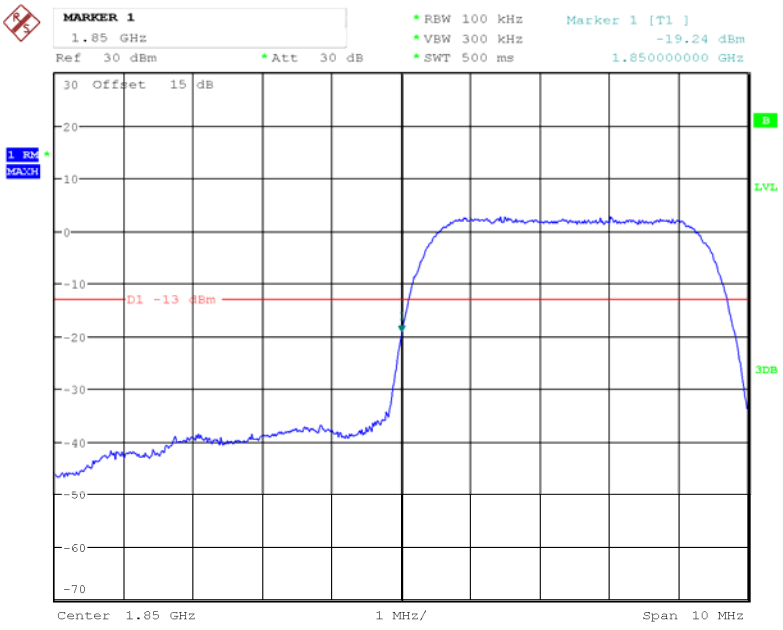
Date: 22.MAY.2020 19:01:44

WCDMA Band II Rel 99, Right Band Edge



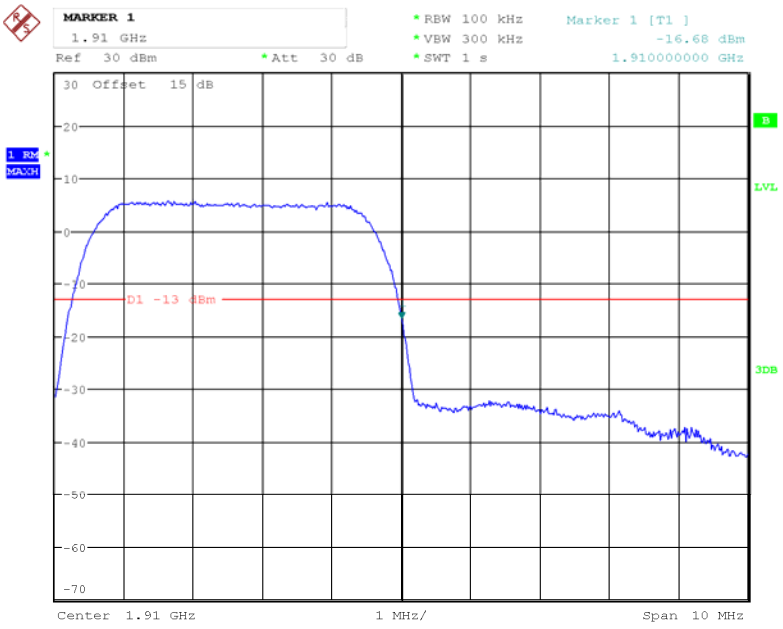
Date: 22.MAY.2020 19:04:16

WCDMA Band II HSDPA, Left Band Edge



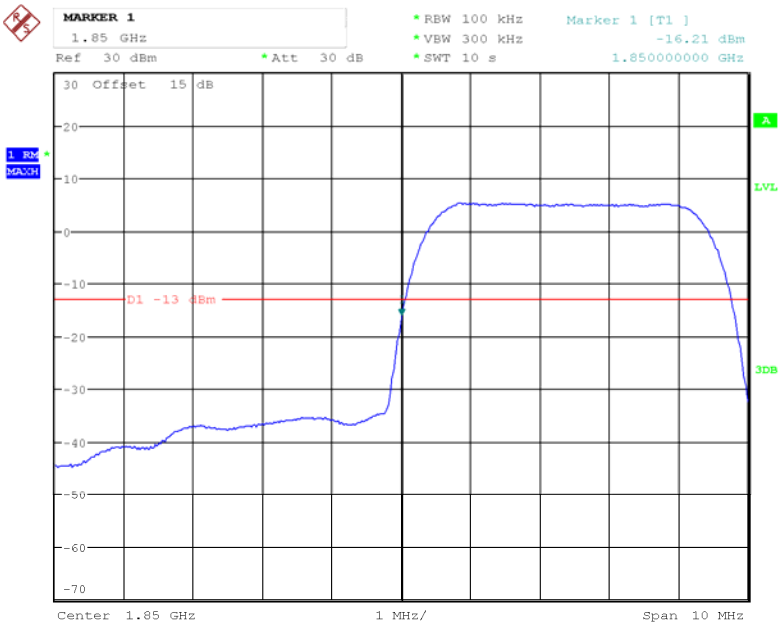
Date: 22.MAY.2020 18:34:54

WCDMA Band II HSDPA, Right Band Edge



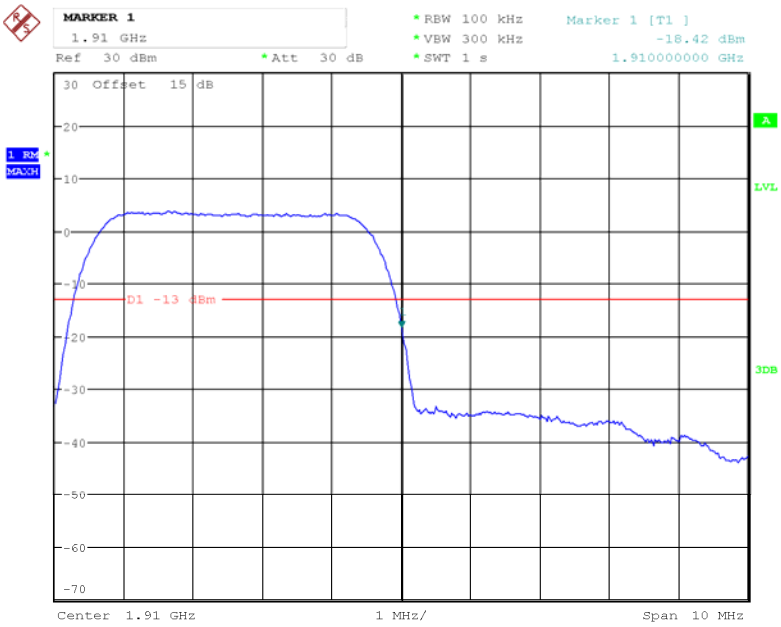
Date: 22.MAY.2020 18:35:38

WCDMA Band II HSUPA, Left Band Edge



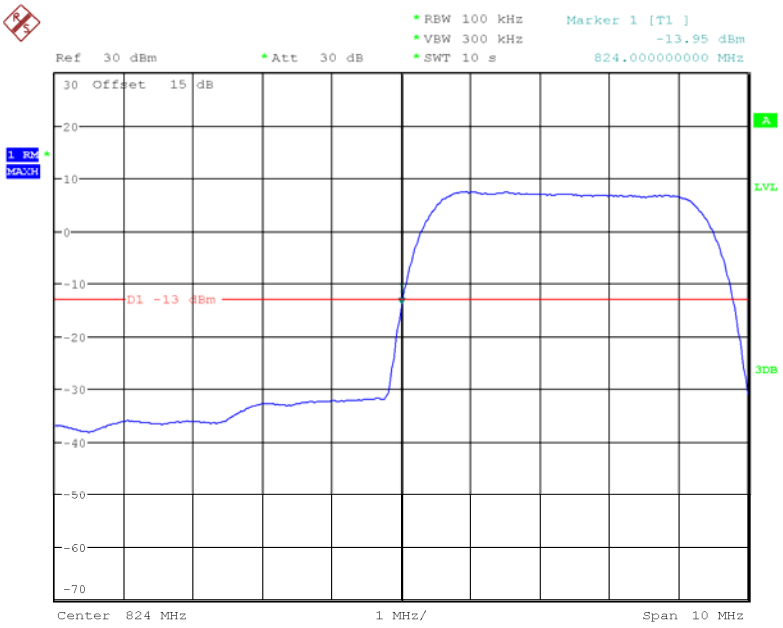
Date: 22.MAY.2020 18:59:11

WCDMA Band II HSUPA, Right Band Edge



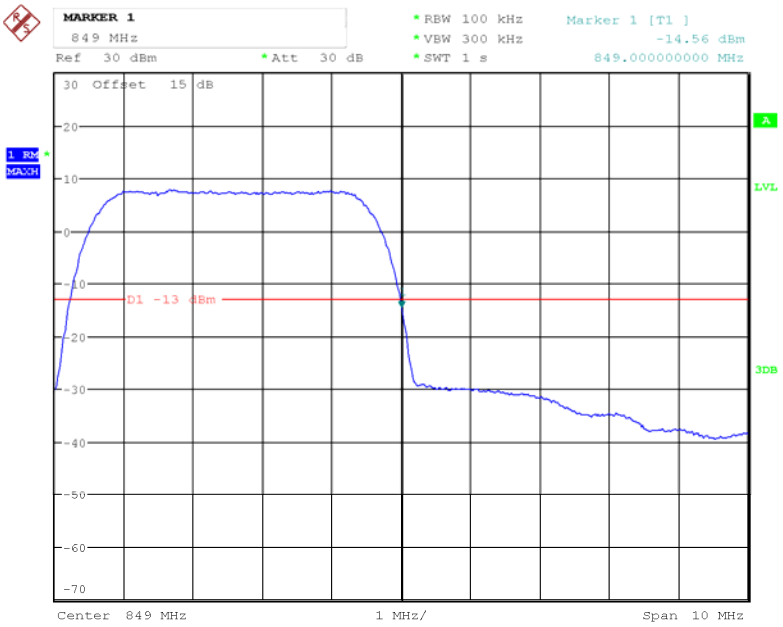
Date: 22.MAY.2020 18:58:09

WCDMA Band V Rel 99, Left Band Edge



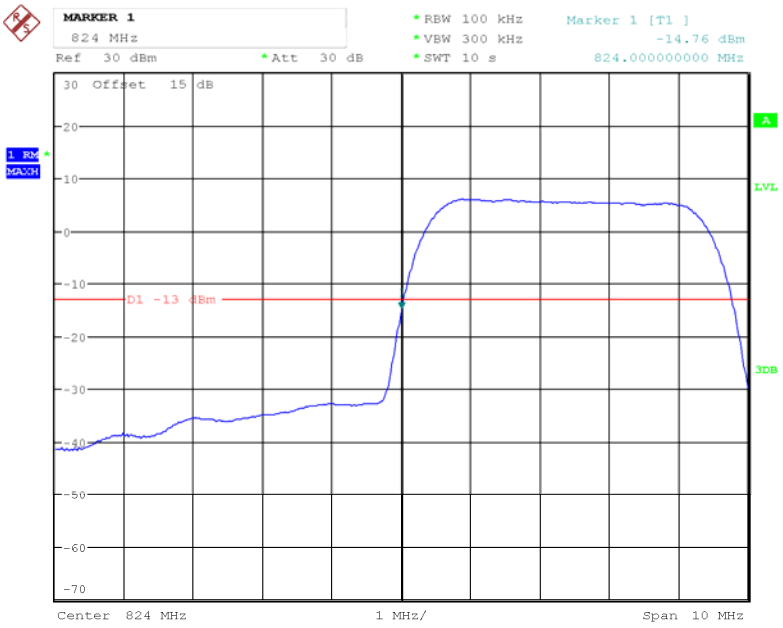
Date: 22.MAY.2020 19:13:48

WCDMA Band V Rel 99, Right Band Edge



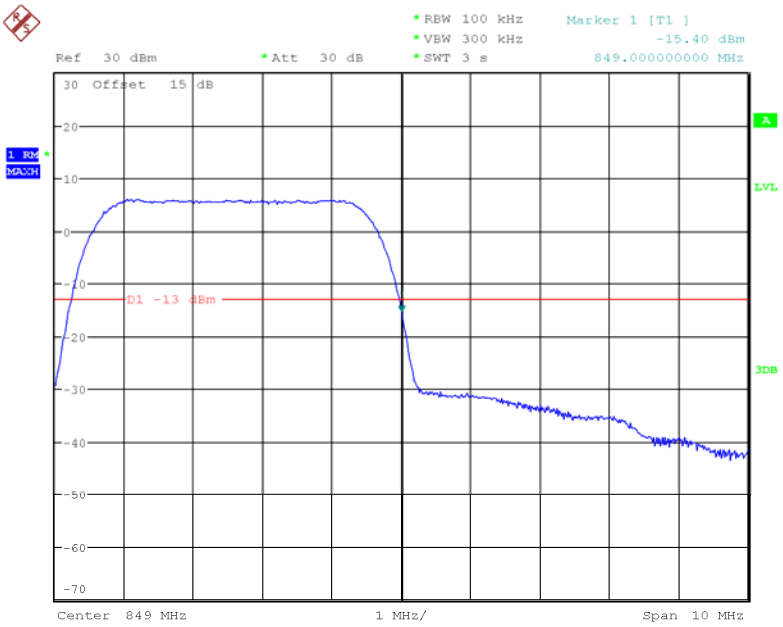
Date: 22.MAY.2020 19:13:01

WCDMA Band V HSDPA, Left Band Edge



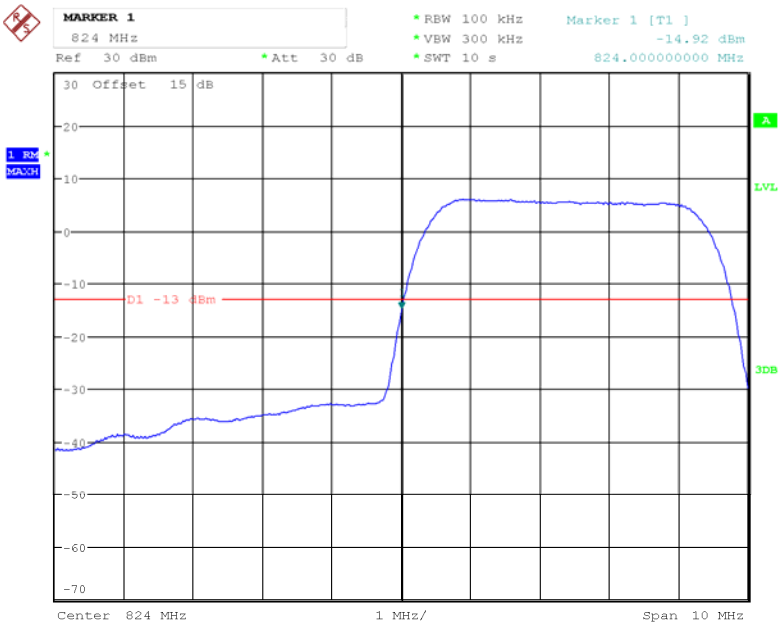
Date: 22.MAY.2020 18:44:11

WCDMA Band V HSDPA, Right Band Edge



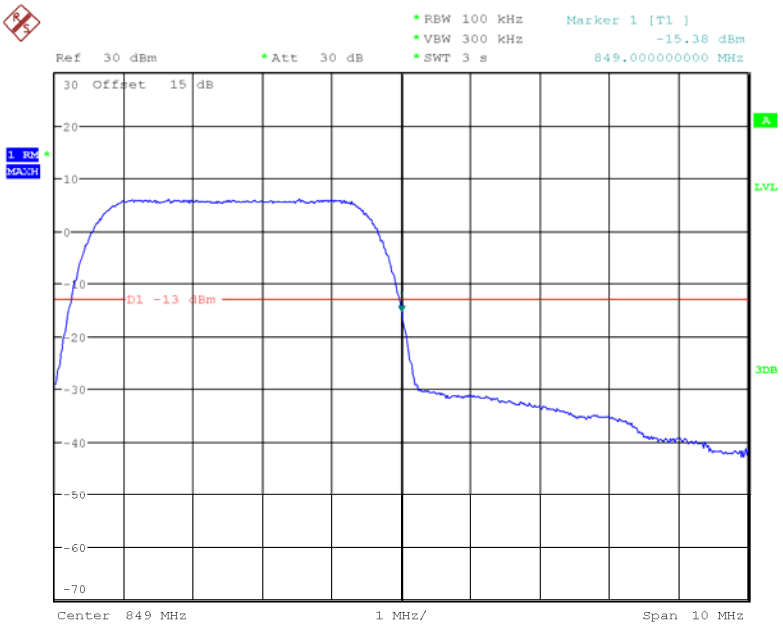
Date: 22.MAY.2020 18:45:07

WCDMA Band V HSUPA, Left Band Edge



Date: 22.MAY.2020 18:49:19

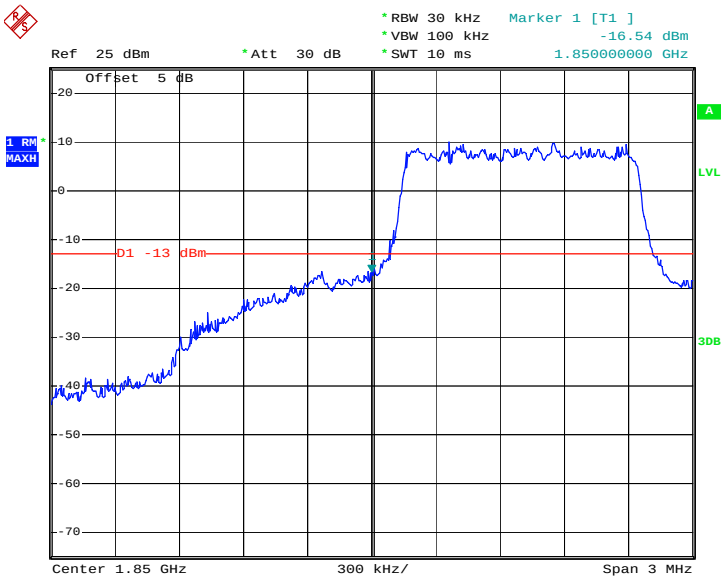
WCDMA Band V HSUPA, Right Band Edge



Date: 22.MAY.2020 18:46:45

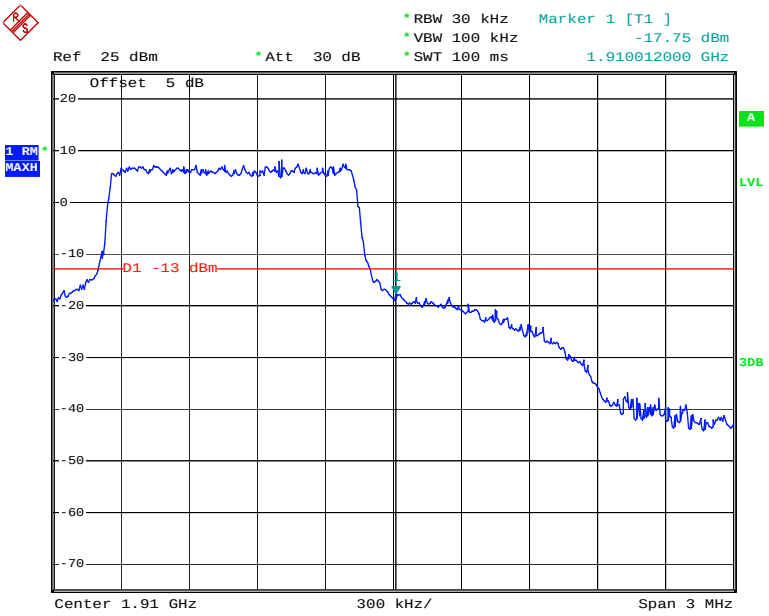
LTE Band 2

QPSK_1.4MHz_ 6 RB_ Left



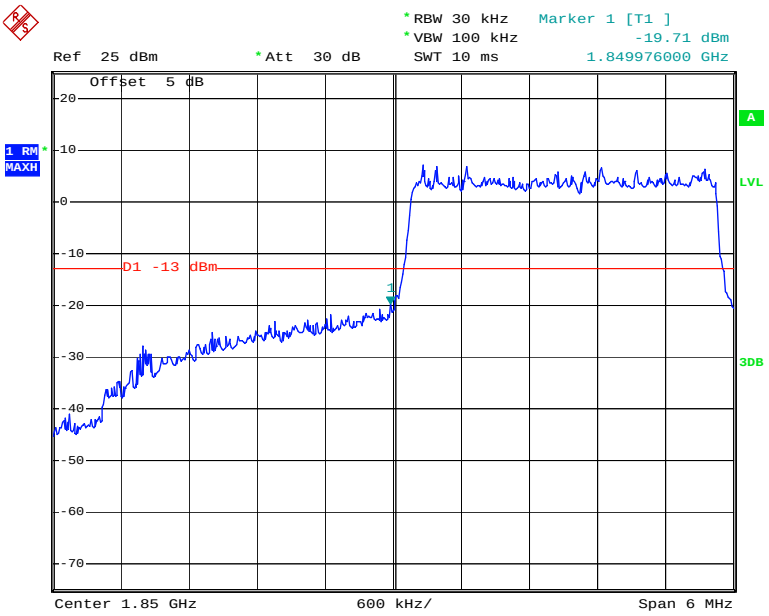
Date: 19.MAY.2020 10:59:19

QPSK_1.4MHz_ 6 RB_ Right



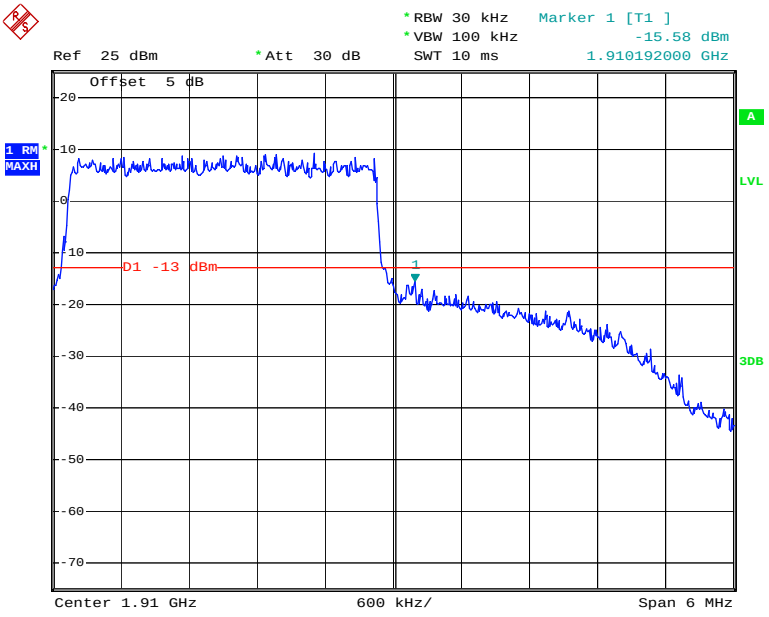
Date: 19.MAY.2020 11:00:10

QPSK_3MHz_ 15 RB_ Left



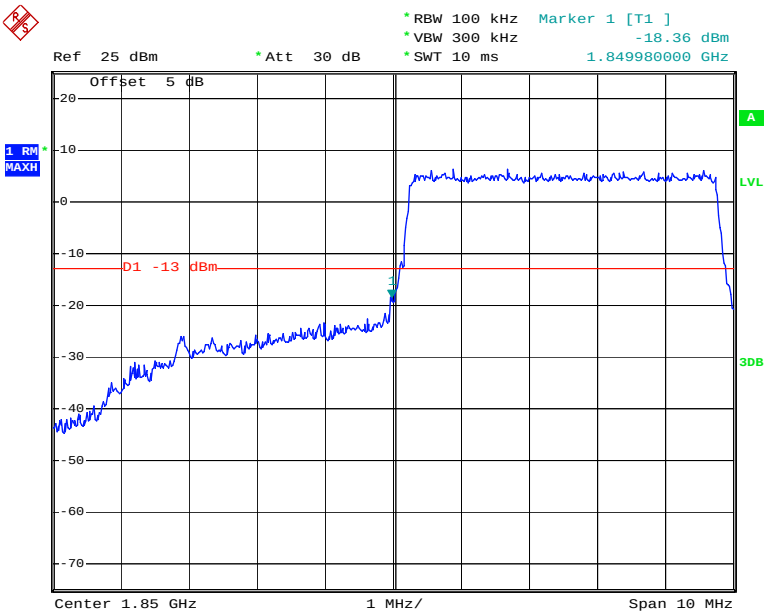
Date: 19.MAY.2020 11:00:58

QPSK_3MHz_ 15 RB_ Right



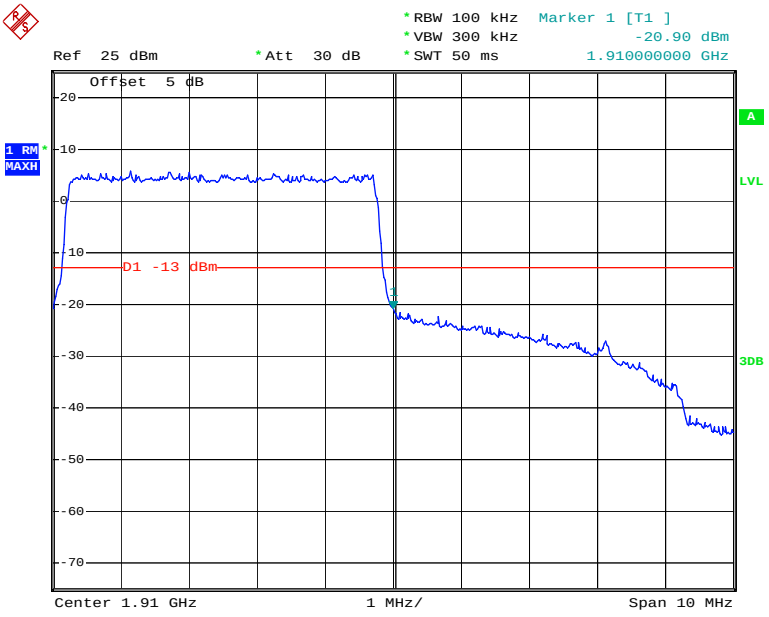
Date: 19.MAY.2020 11:01:33

QPSK_5MHz_ 25 RB_ Left



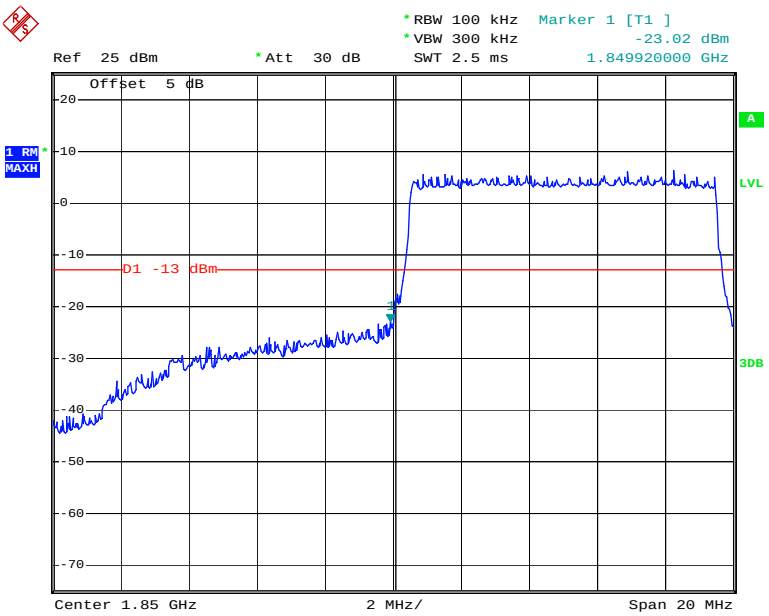
Date: 19.MAY.2020 11:02:29

QPSK_5MHz_ 25 RB_ Right



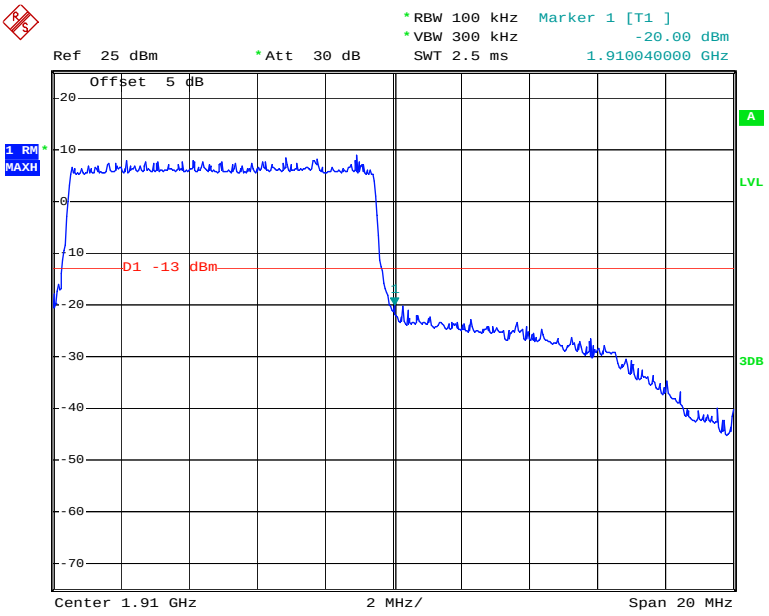
Date: 19.MAY.2020 11:03:14

QPSK_10MHz_ 50 RB_ Left



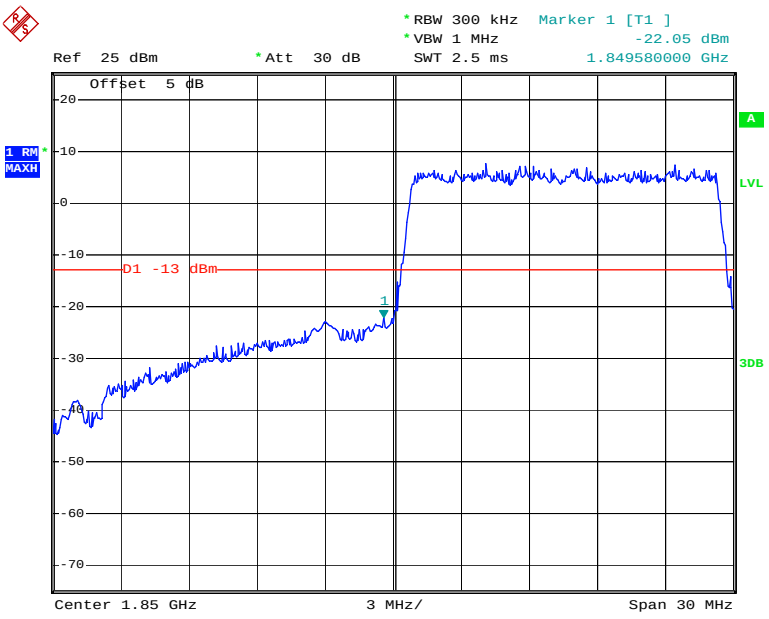
Date: 19.MAY.2020 11:04:05

QPSK_10MHz_ 50 RB_ Right



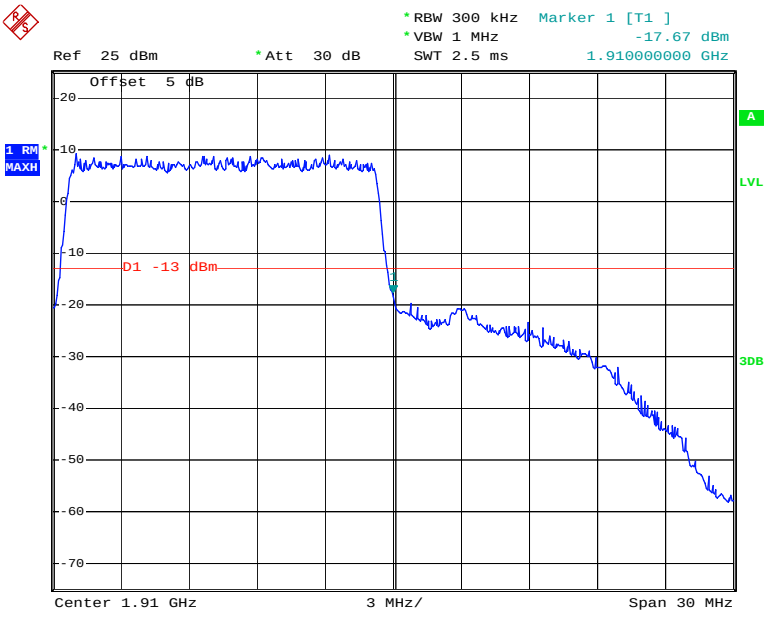
Date: 19.MAY.2020 11:04:47

QPSK_15MHz_ 75 RB_ Left



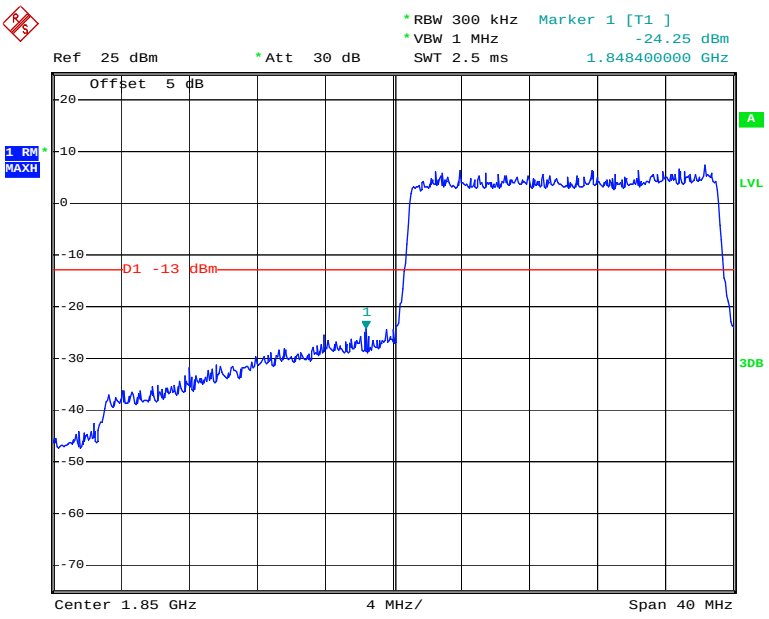
Date: 19.MAY.2020 11:05:28

QPSK_15MHz_ 75 RB_ Right



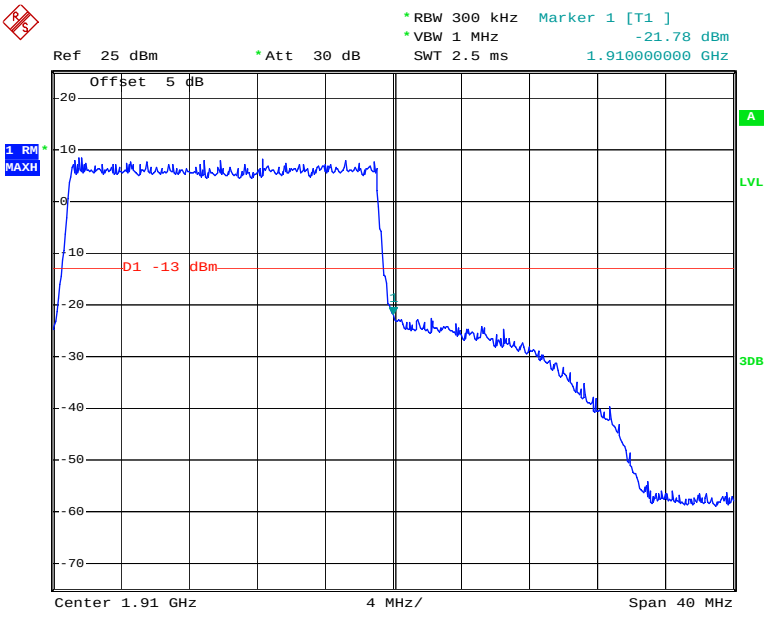
Date: 19.MAY.2020 11:06:13

QPSK_20MHz_ FULL RB_ Left



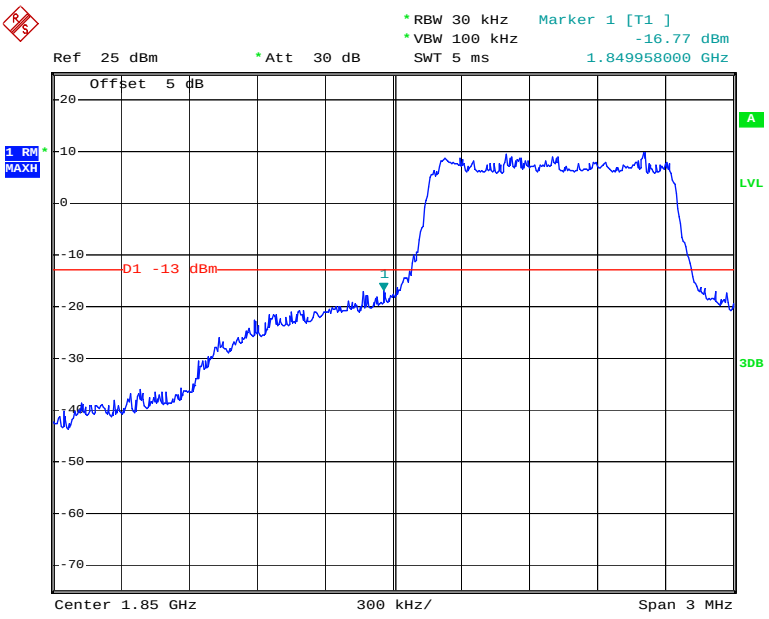
Date: 19.MAY.2020 11:06:57

QPSK_20MHz_ FULL RB_ Right



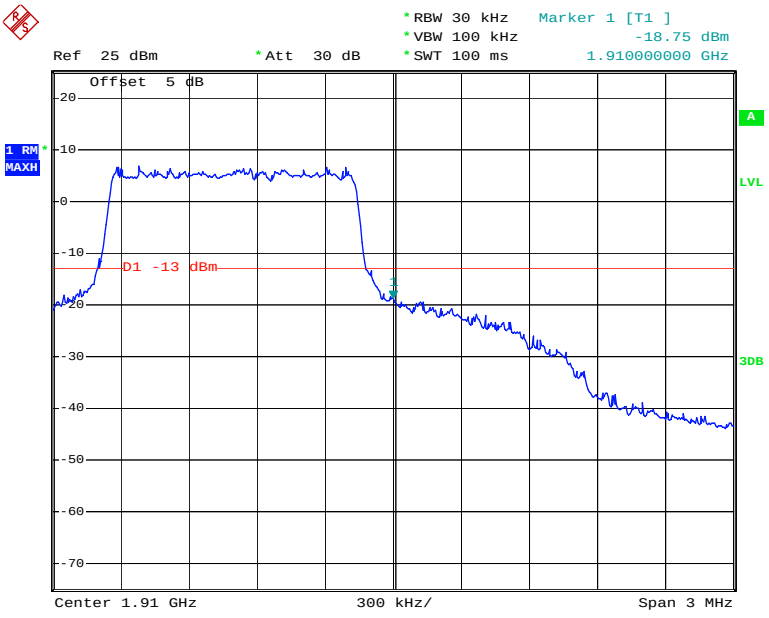
Date: 19.MAY.2020 11:07:42

16QAM_1.4MHz_ 6 RB_ Left



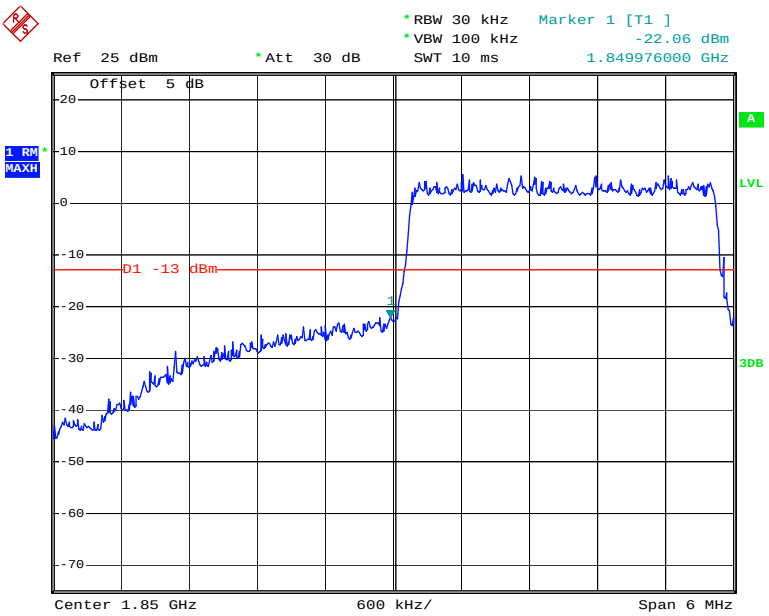
Date: 19.MAY.2020 10:59:36

16QAM_1.4MHz_ 6 RB_ Right



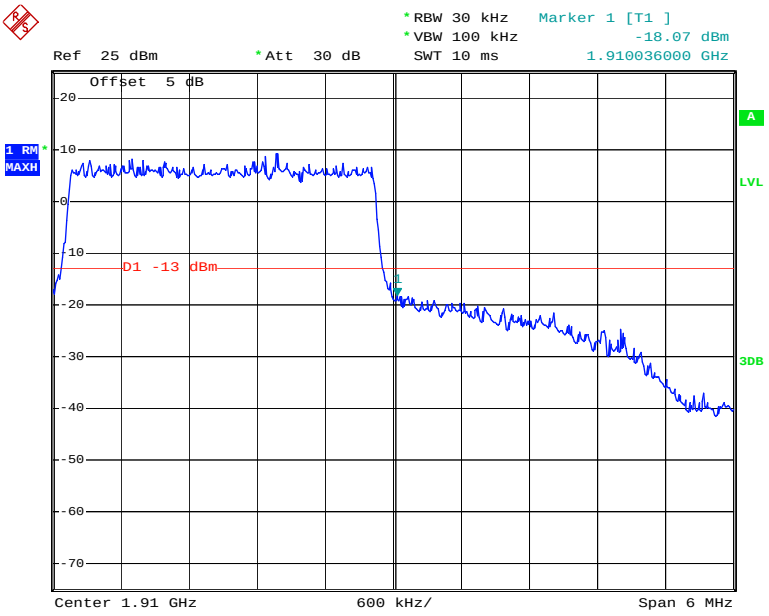
Date: 19.MAY.2020 11:00:38

16QAM_3MHz_ 15 RB_ Left



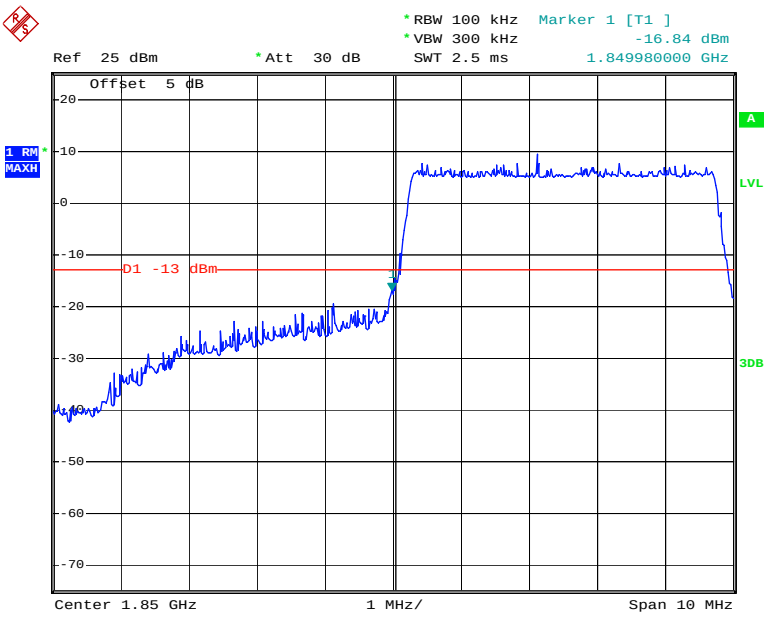
Date: 19.MAY.2020 11:01:15

16QAM_3MHz_ 15 RB_ Right



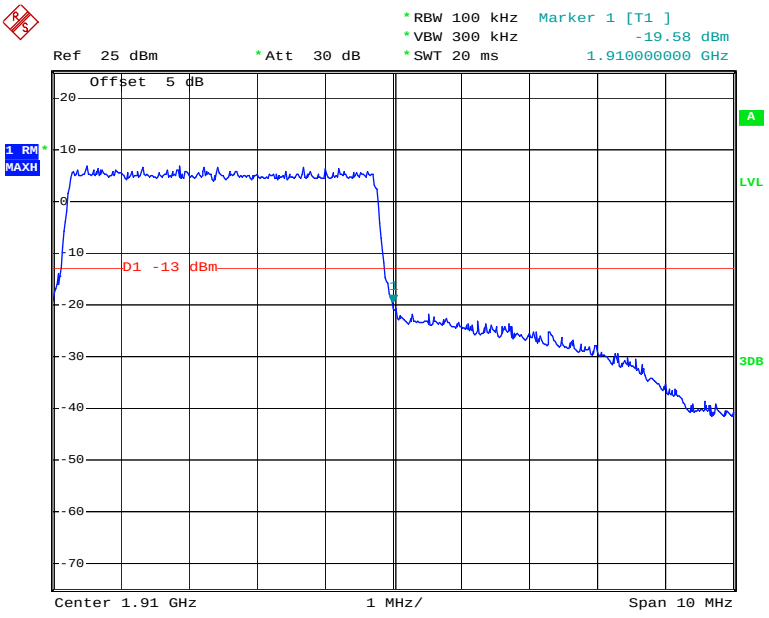
Date: 19.MAY.2020 11:01:54

16QAM_5MHz_ 25 RB_ Left



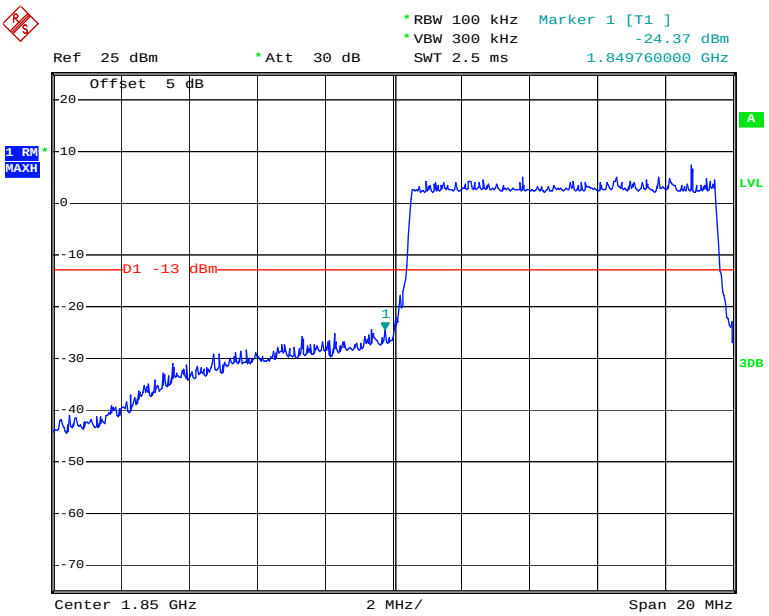
Date: 19.MAY.2020 11:02:46

16QAM_5MHz_ 25 RB_ Right



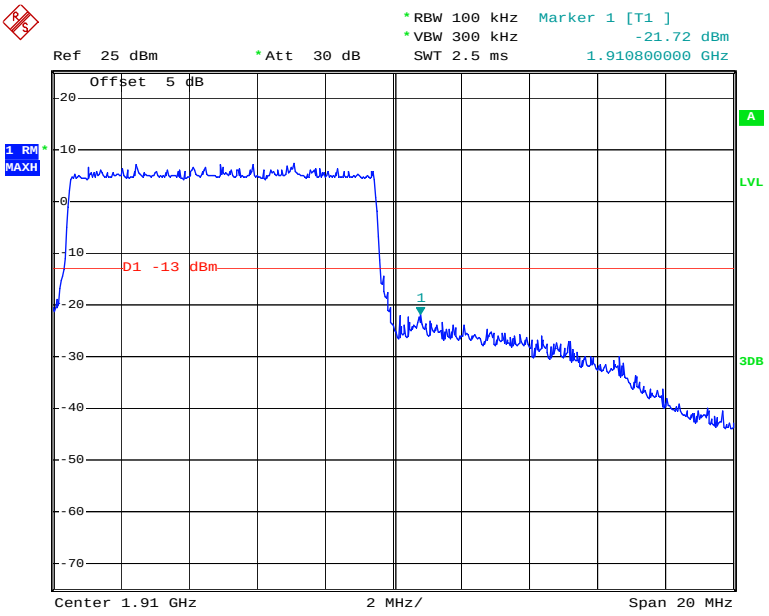
Date: 19.MAY.2020 11:03:44

16QAM_10MHz_ 50 RB_ Left



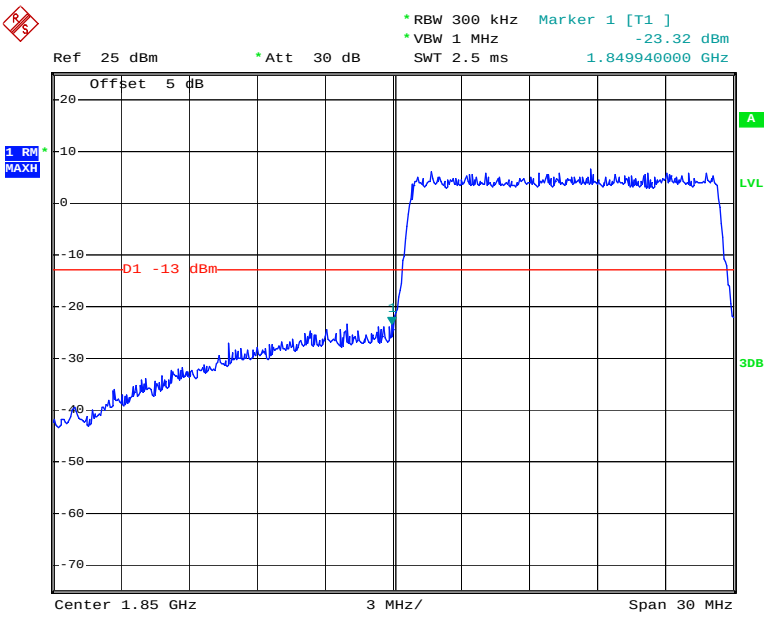
Date: 19.MAY.2020 11:04:23

16QAM_10MHz_ 50 RB_ Right



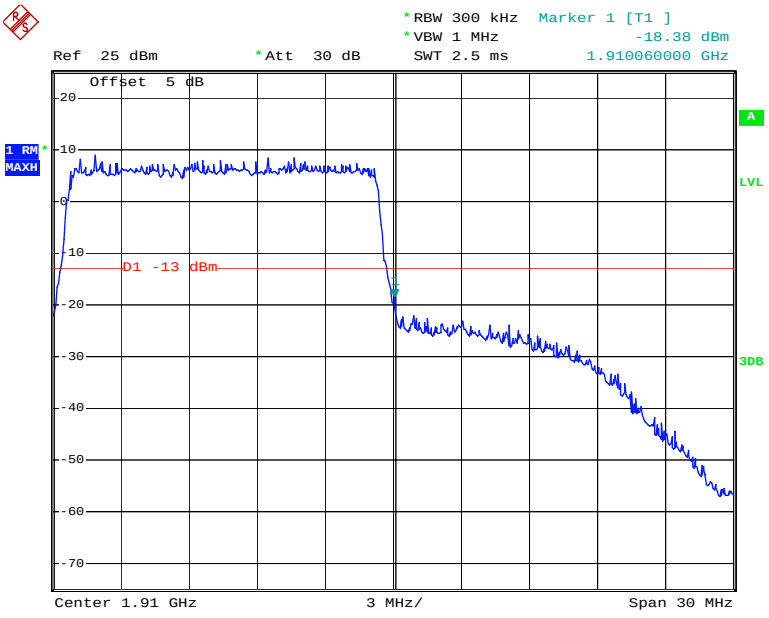
Date: 19.MAY.2020 11:05:05

16QAM_15MHz_ 75 RB_ Left



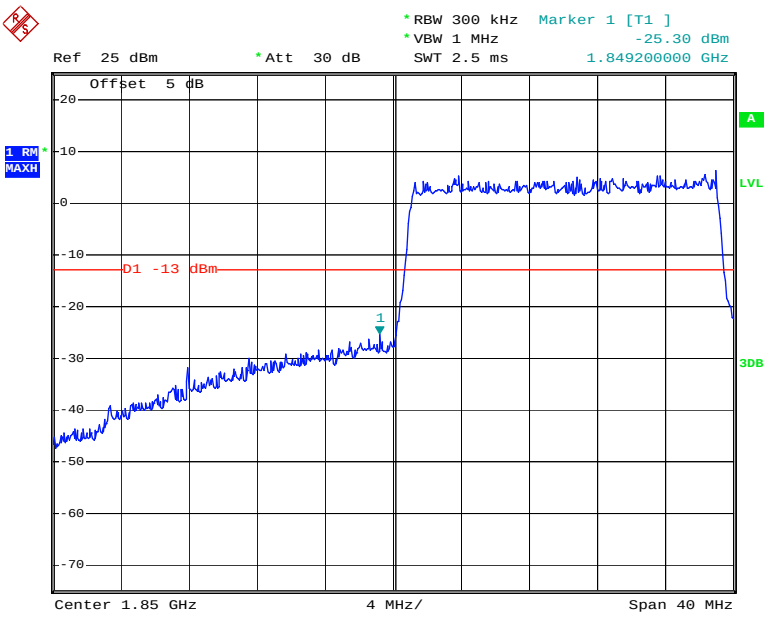
Date: 19.MAY.2020 11:05:52

16QAM_15MHz_ 75 RB_ Right



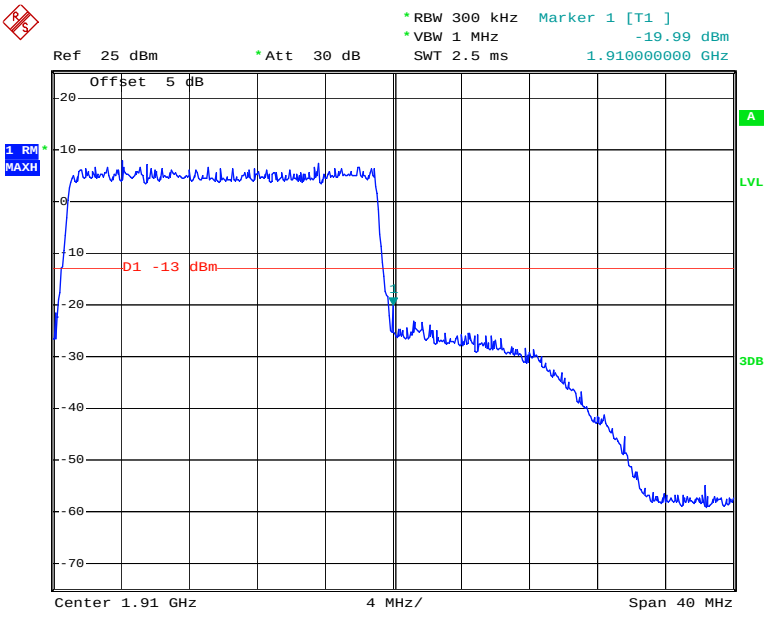
Date: 19.MAY.2020 11:06:33

16QAM_20MHz_ FULL RB_ Left



Date: 19.MAY.2020 11:07:18

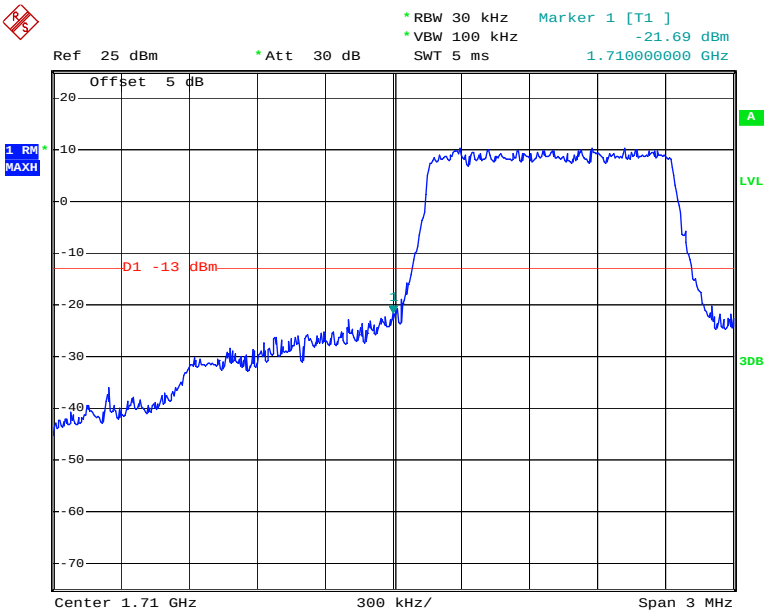
16QAM_20MHz_ FULL RB_ Right



Date: 19.MAY.2020 11:08:03

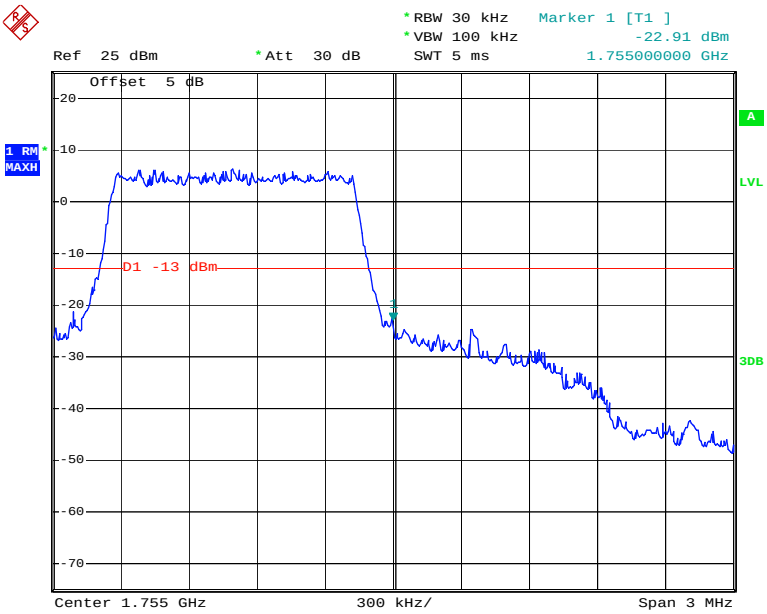
LTE Band 4

QPSK_1.4MHz_ 6 RB_ Left



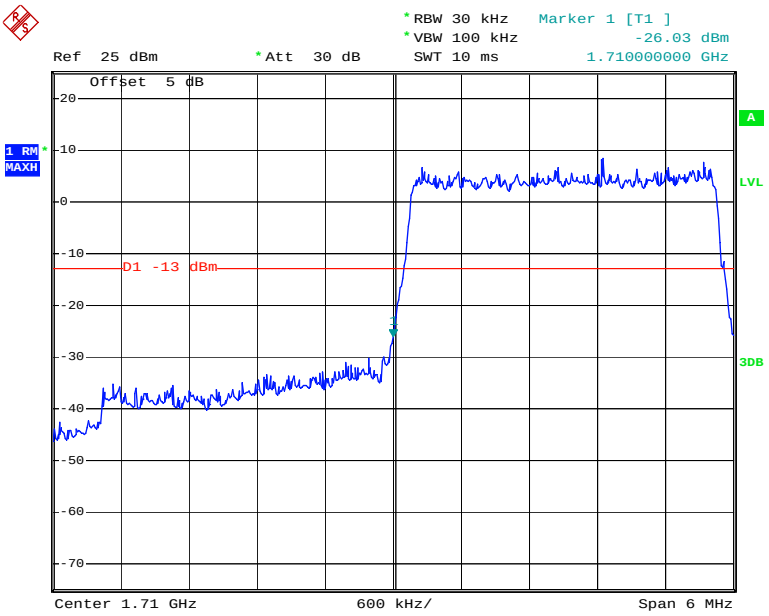
Date: 19.MAY.2020 11:08:26

QPSK_1.4MHz_ 6 RB_ Right



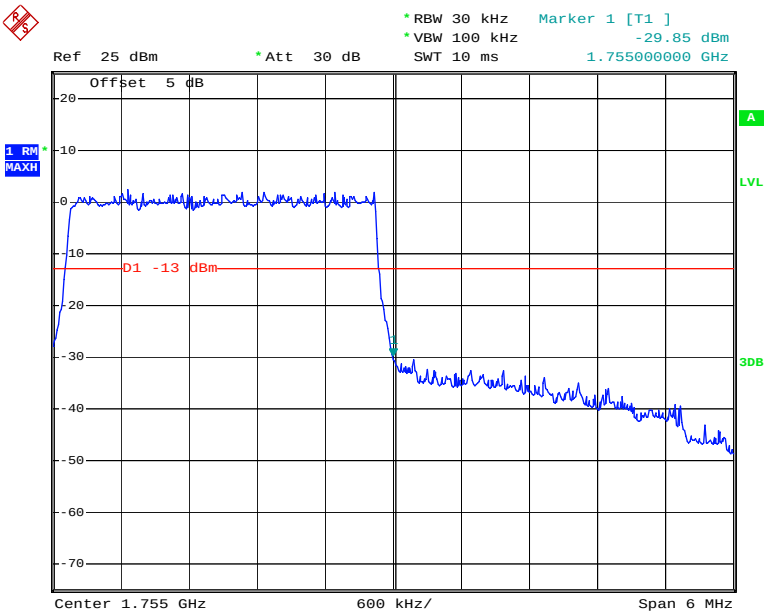
Date: 19.MAY.2020 11:09:07

QPSK_3MHz_ 15 RB_ Left



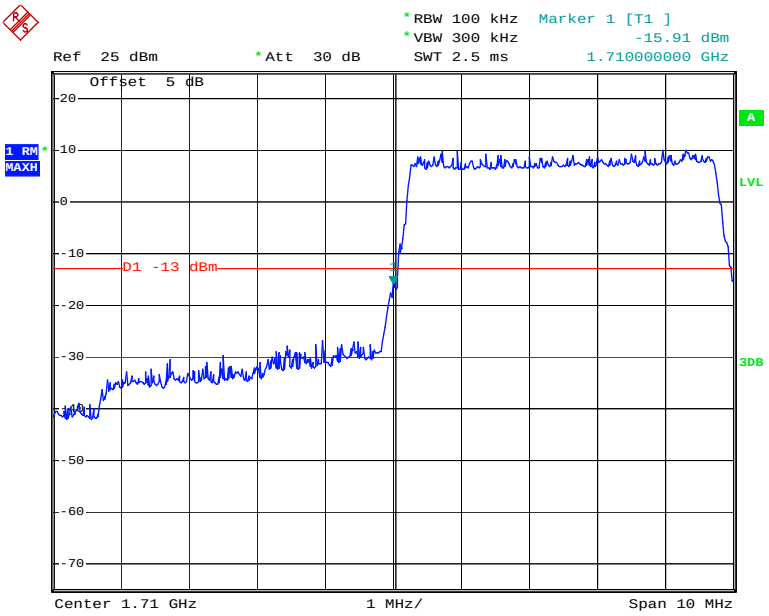
Date: 19.MAY.2020 11:09:47

QPSK_3MHz_ 15 RB_ Right



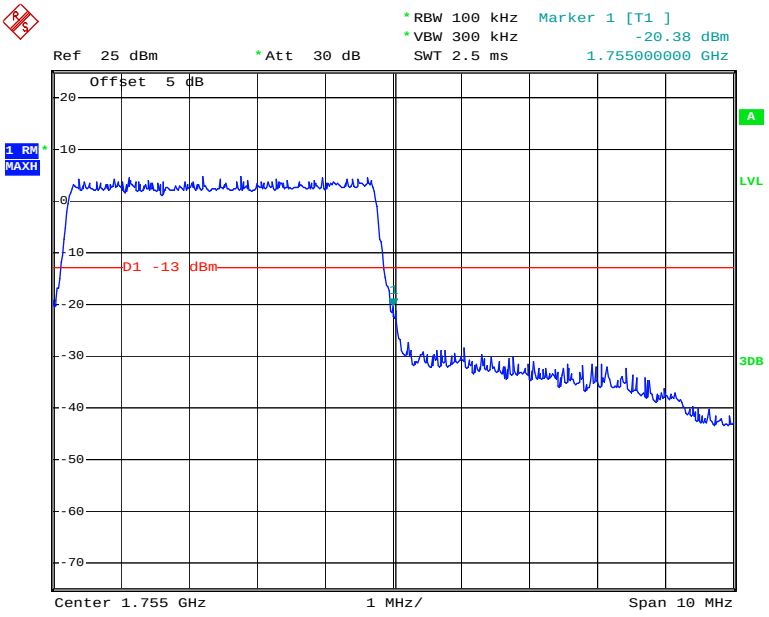
Date: 19.MAY.2020 11:10:28

QPSK_5MHz_ 25 RB_ Left



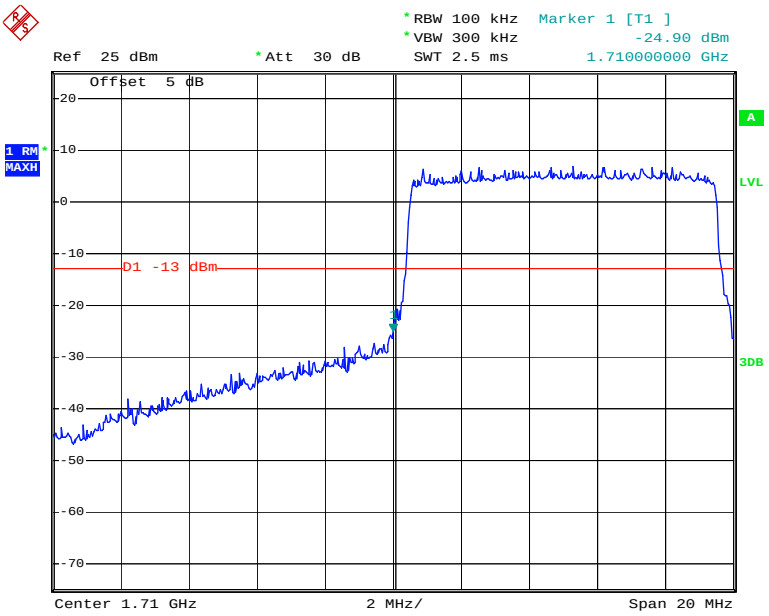
Date: 19.MAY.2020 11:11:12

QPSK_5MHz_ 25 RB_ Right



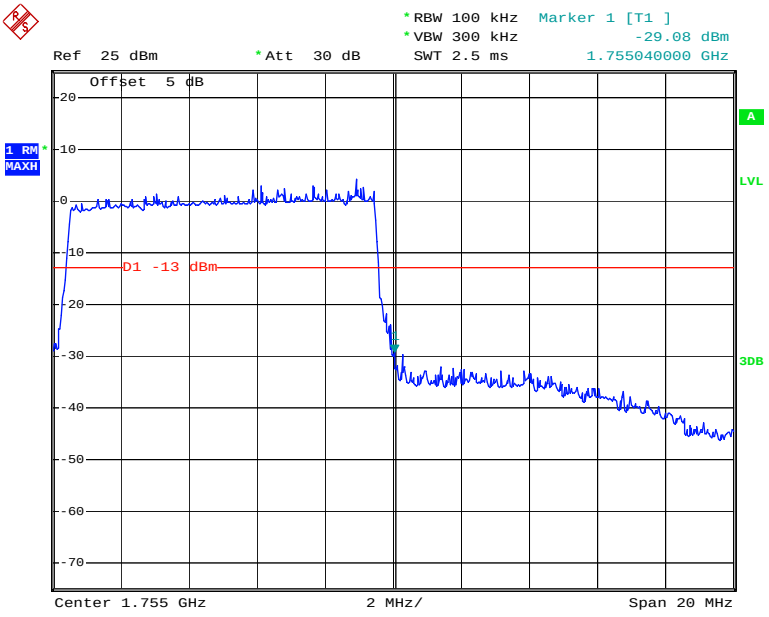
Date: 19.MAY.2020 11:11:53

QPSK_10MHz_ 50 RB_ Left



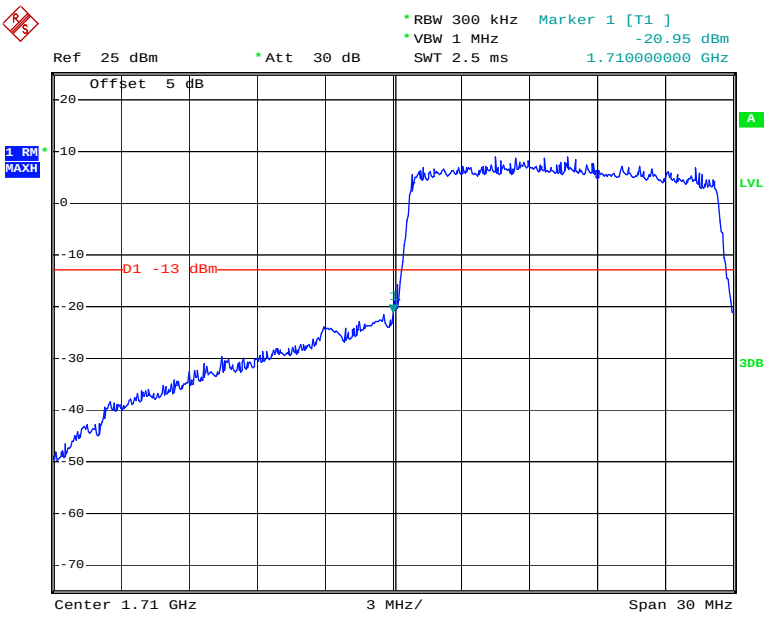
Date: 19.MAY.2020 11:12:34

QPSK_10MHz_ 50 RB_ Right



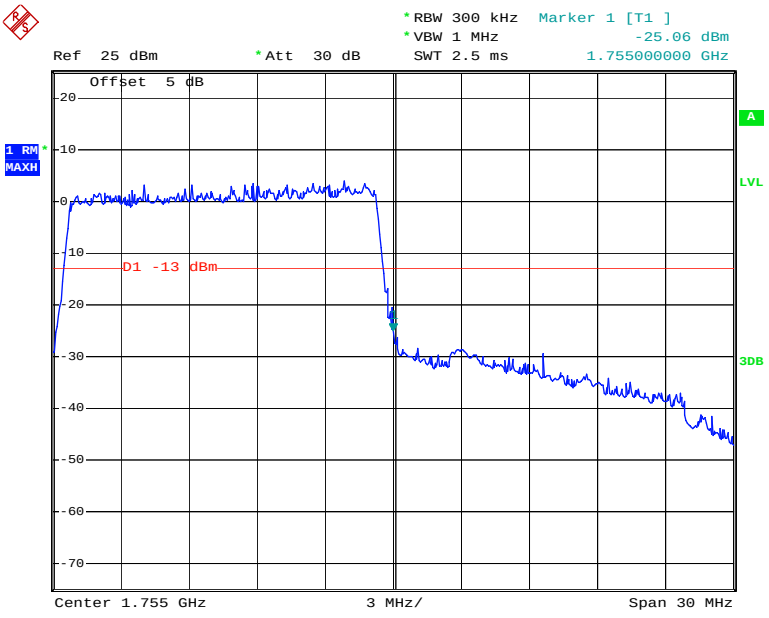
Date: 19.MAY.2020 11:13:12

QPSK_15MHz_ 75 RB_ Left



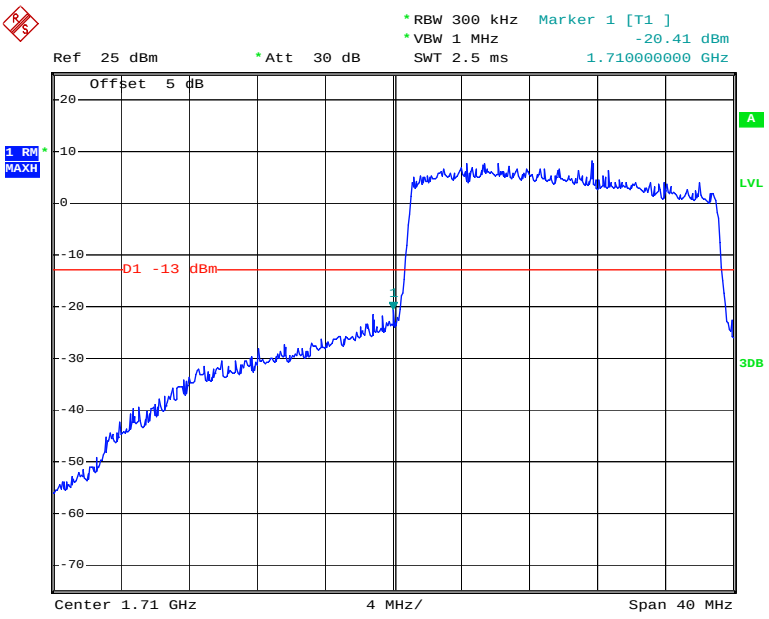
Date: 19.MAY.2020 11:13:57

QPSK_15MHz_ 75 RB_ Right



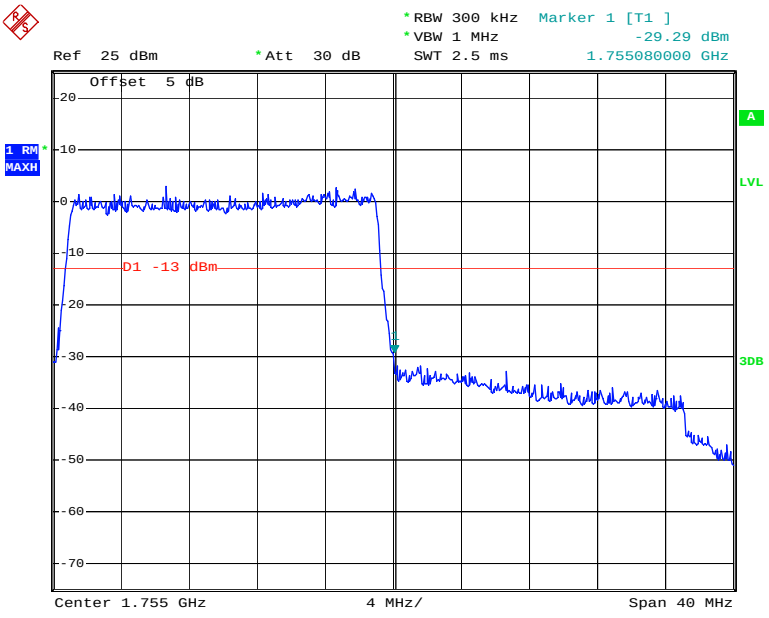
Date: 19.MAY.2020 11:14:38

QPSK_20MHz_ FULL RB_ Left



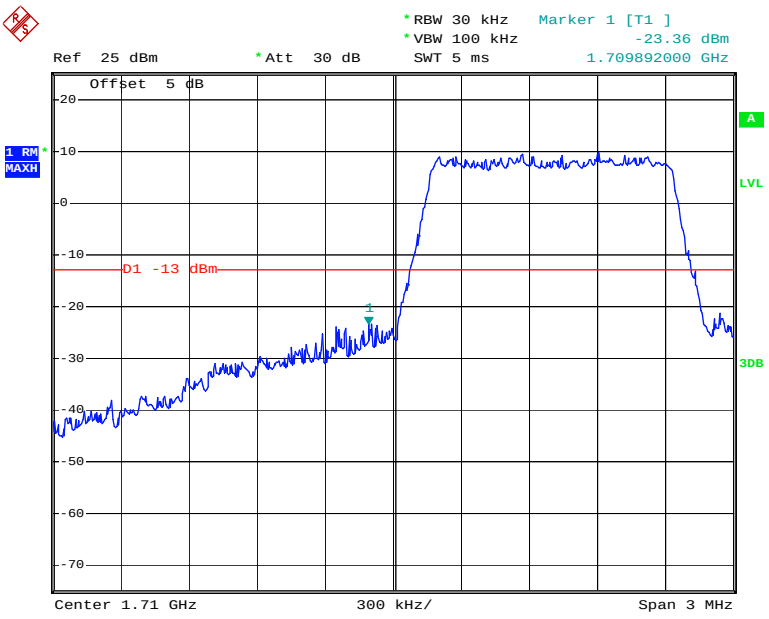
Date: 19.MAY.2020 11:15:22

QPSK_20MHz_ FULL RB_ Right



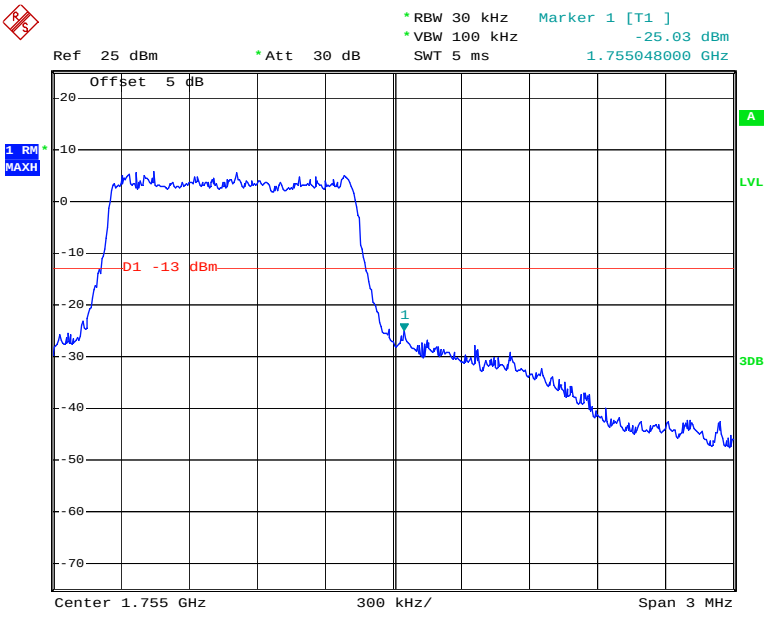
Date: 19.MAY.2020 11:16:07

16QAM_1.4MHz_ 6 RB_ Left



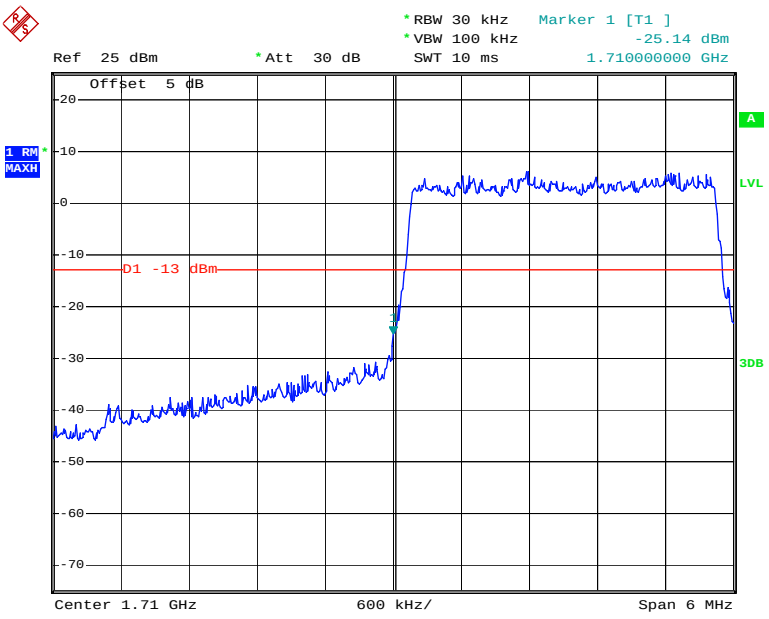
Date: 19.MAY.2020 11:08:46

16QAM_1.4MHz_ 6 RB_ Right



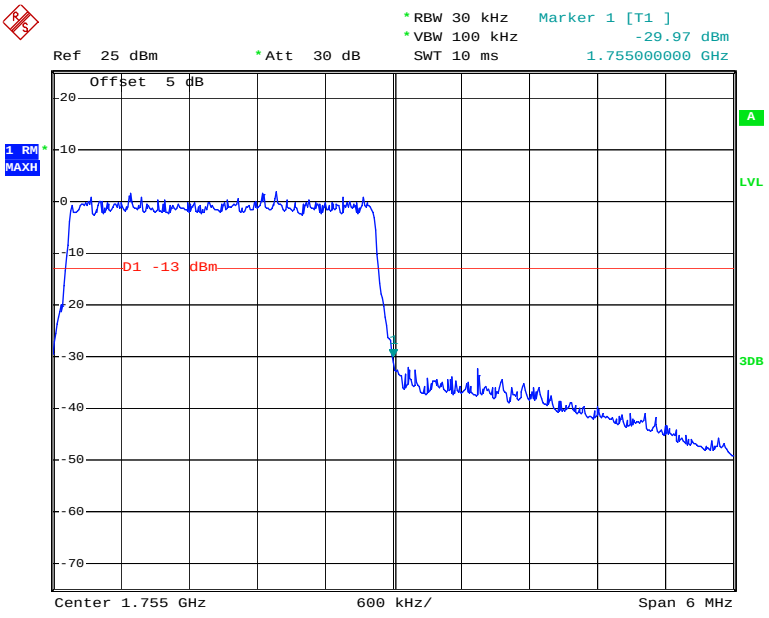
Date: 19.MAY.2020 11:09:27

16QAM_3MHz_ 15 RB_ Left



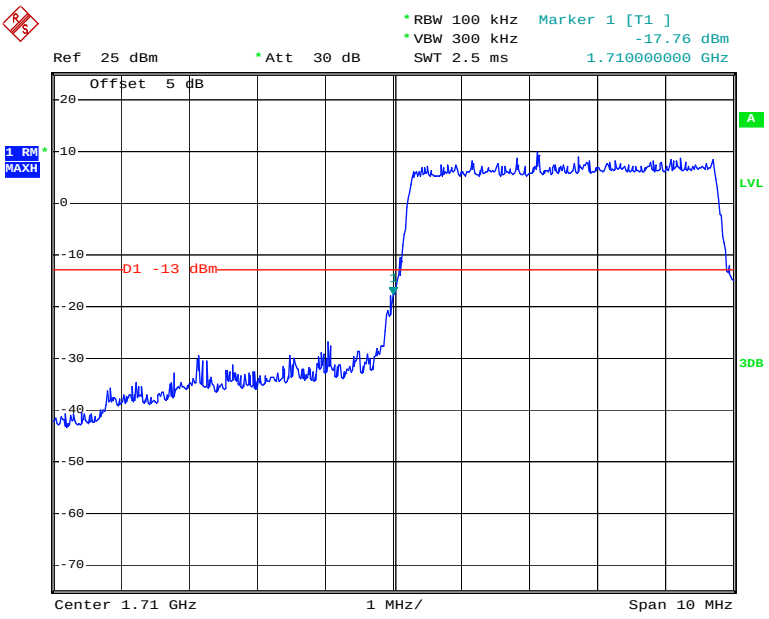
Date: 19.MAY.2020 11:10:07

16QAM_3MHz_ 15 RB_ Right



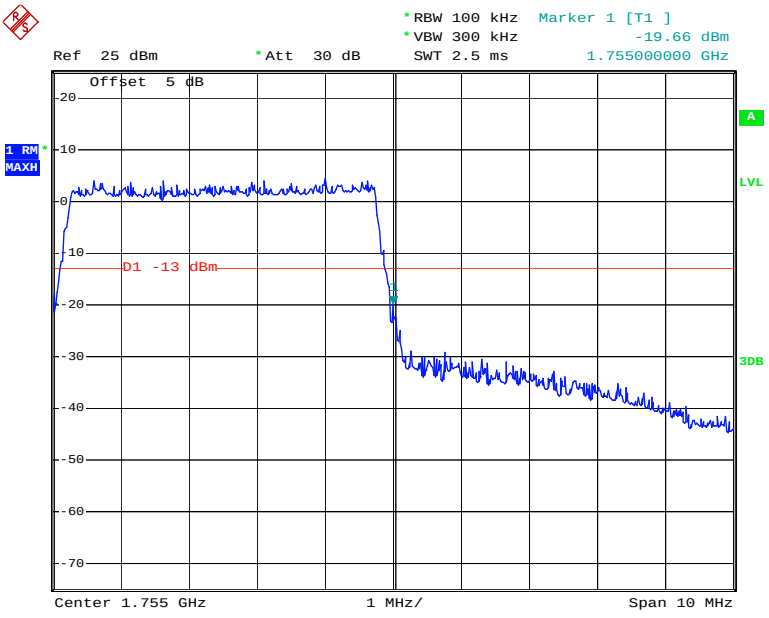
Date: 19.MAY.2020 11:10:48

16QAM_5MHz_ 25 RB_ Left



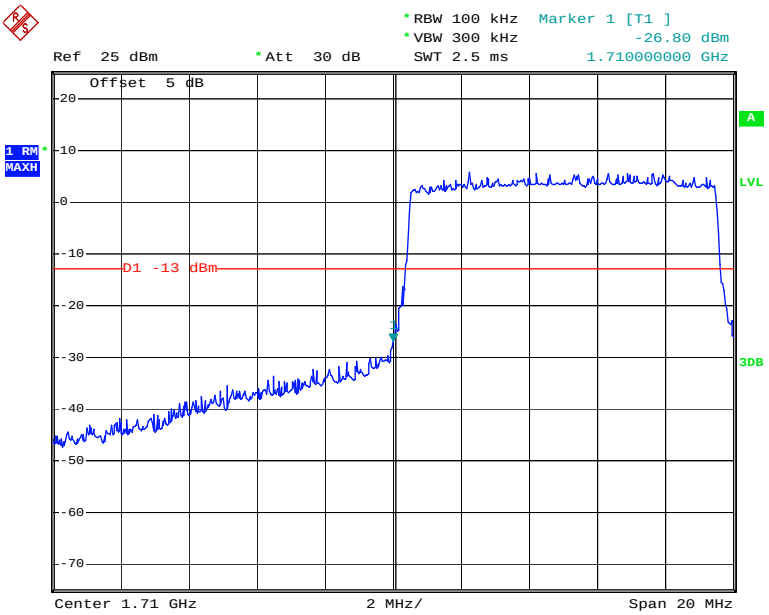
Date: 19.MAY.2020 11:11:32

16QAM_5MHz_ 25 RB_ Right



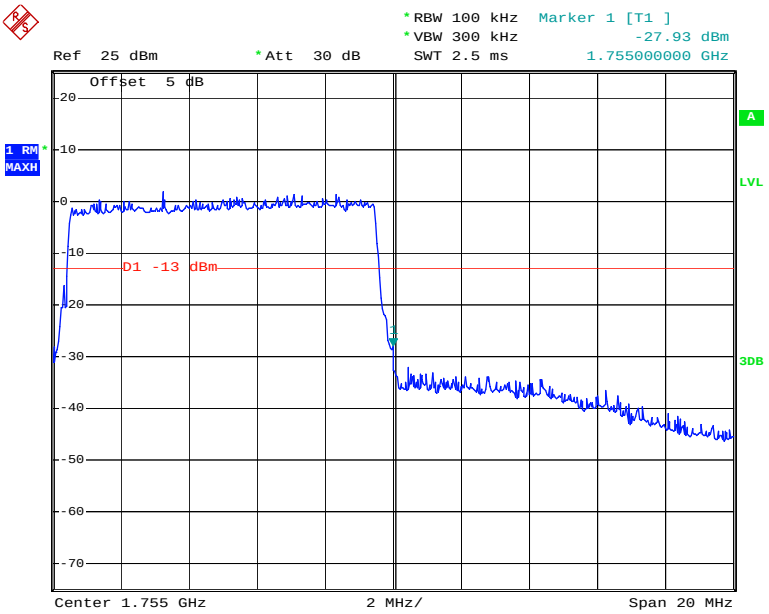
Date: 19.MAY.2020 11:12:13

16QAM_10MHz_ 50 RB_ Left



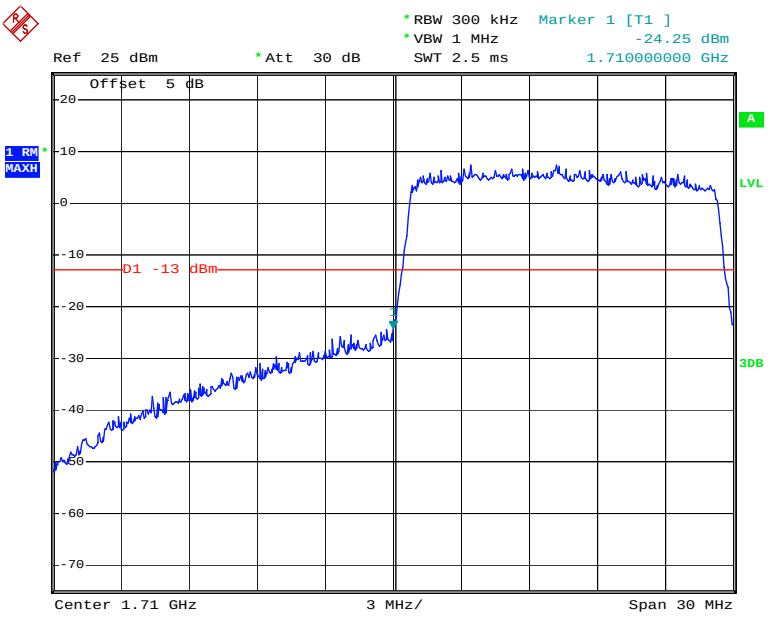
Date: 19.MAY.2020 11:12:53

16QAM_10MHz_ 50 RB_ Right



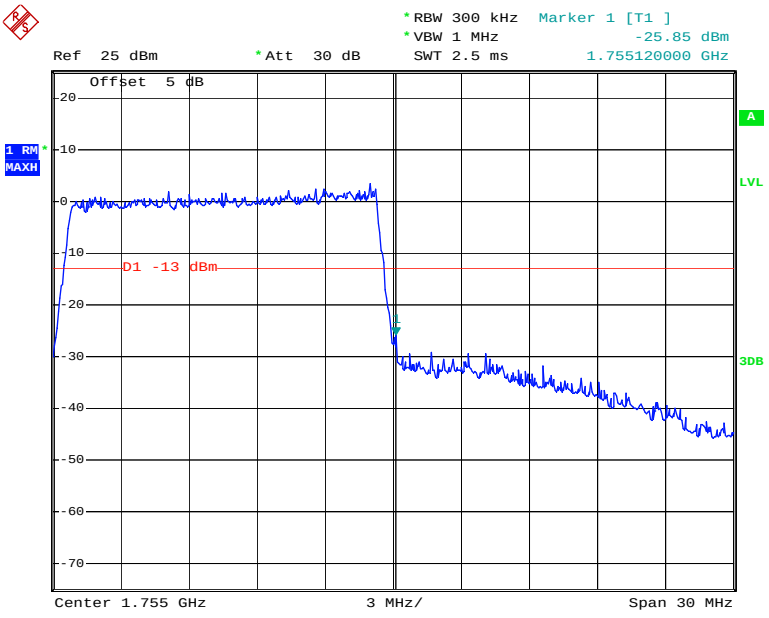
Date: 19.MAY.2020 11:13:33

16QAM_15MHz_ 75 RB_ Left



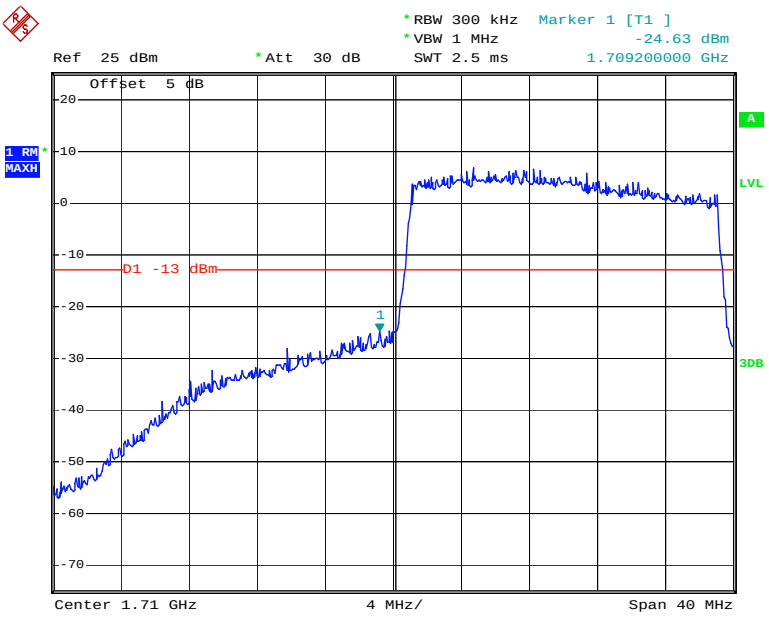
Date: 19.MAY.2020 11:14:17

16QAM_15MHz_ 75 RB_ Right



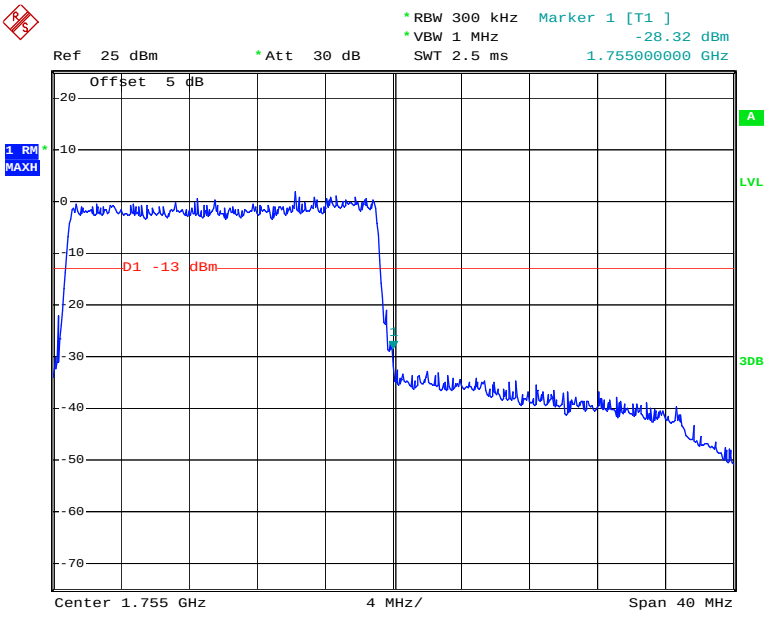
Date: 19.MAY.2020 11:14:59

16QAM_20MHz_ FULL RB_ Left



Date: 19.MAY.2020 11:15:46

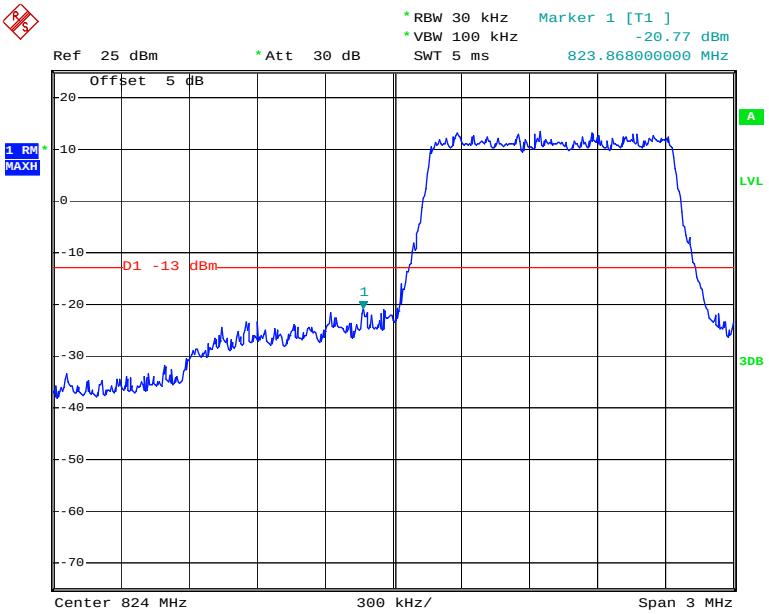
16QAM_20MHz_ FULL RB_ Right



Date: 19.MAY.2020 11:16:27

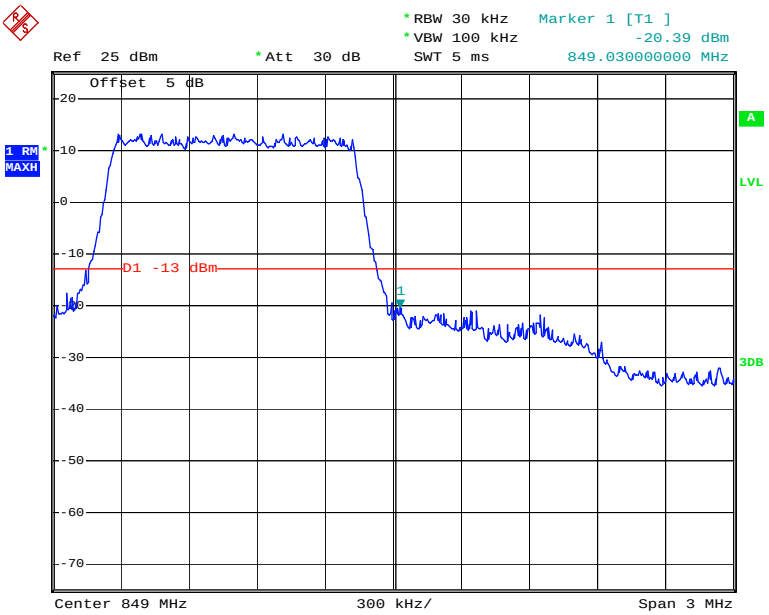
LTE Band 5

QPSK_1.4MHz_ 6 RB_ Left



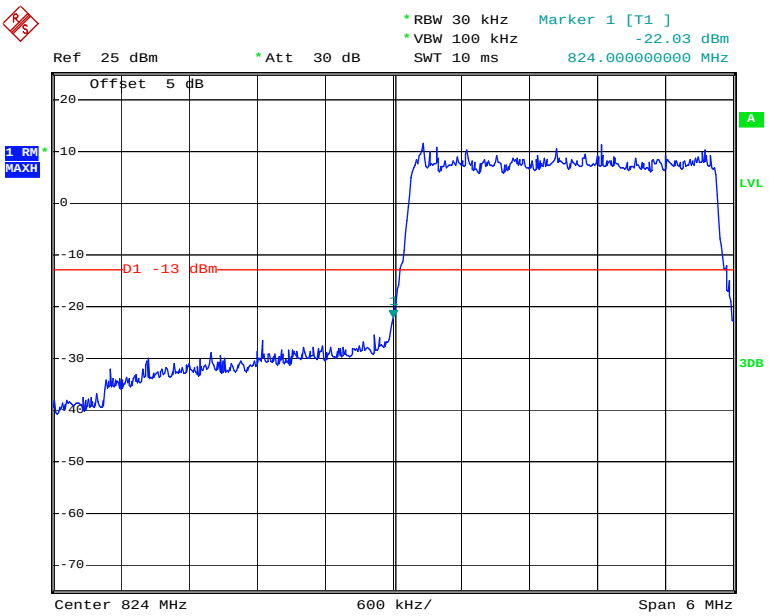
Date: 19.MAY.2020 11:16:47

QPSK_1.4MHz_ 6 RB_ Right



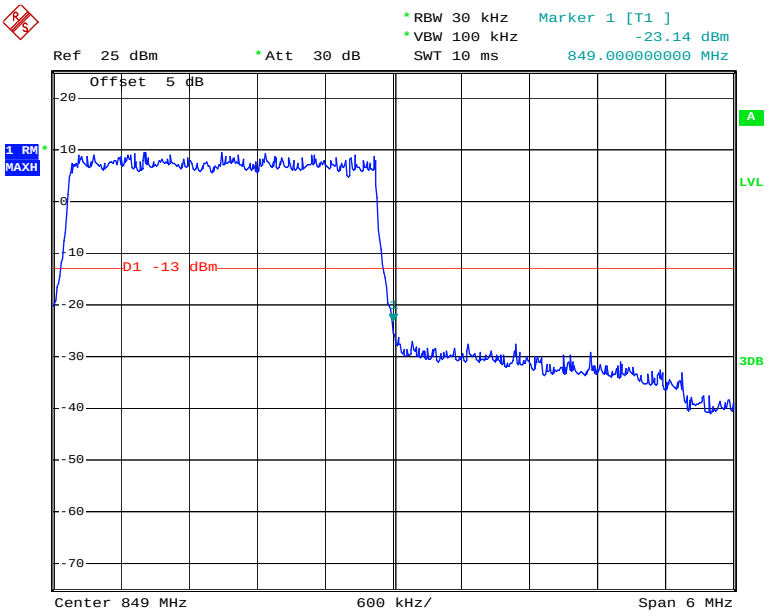
Date: 19.MAY.2020 11:17:29

QPSK_3MHz_ 15 RB_ Left



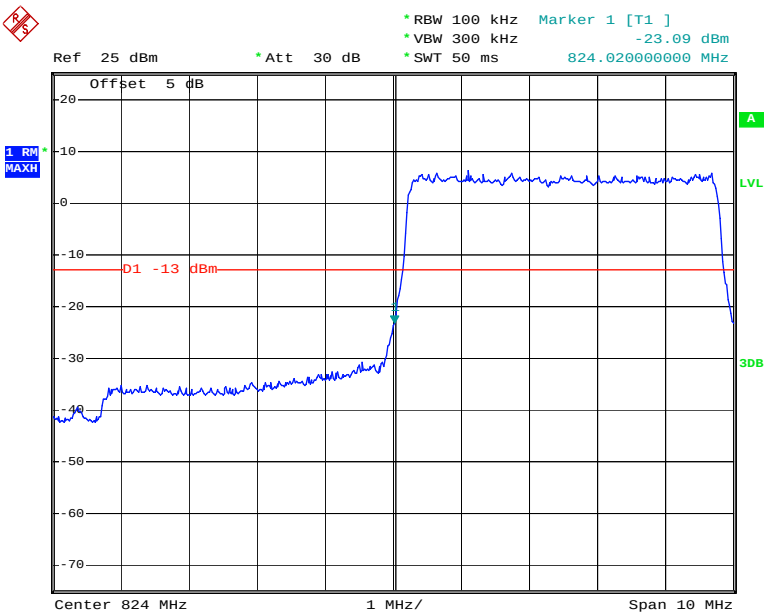
Date: 19.MAY.2020 11:18:12

QPSK_3MHz_ 15 RB_ Right



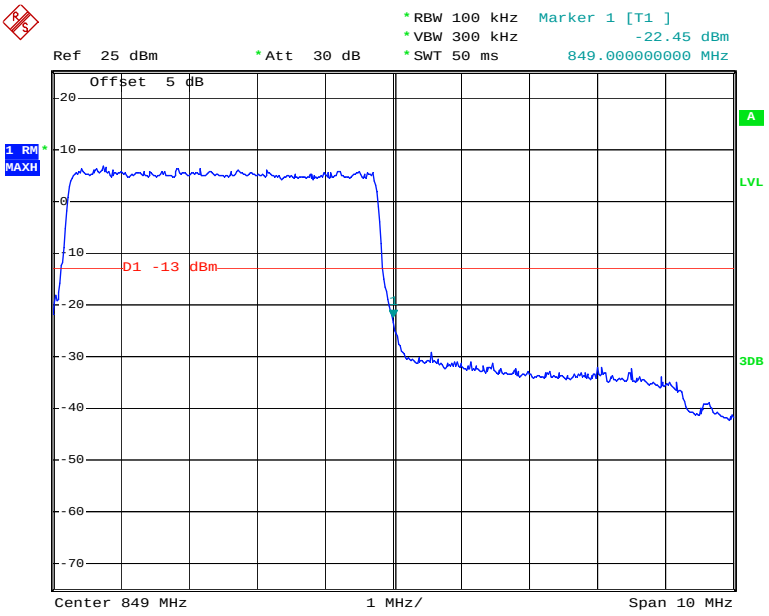
Date: 19.MAY.2020 11:18:53

QPSK_5MHz_ 25 RB_ Left



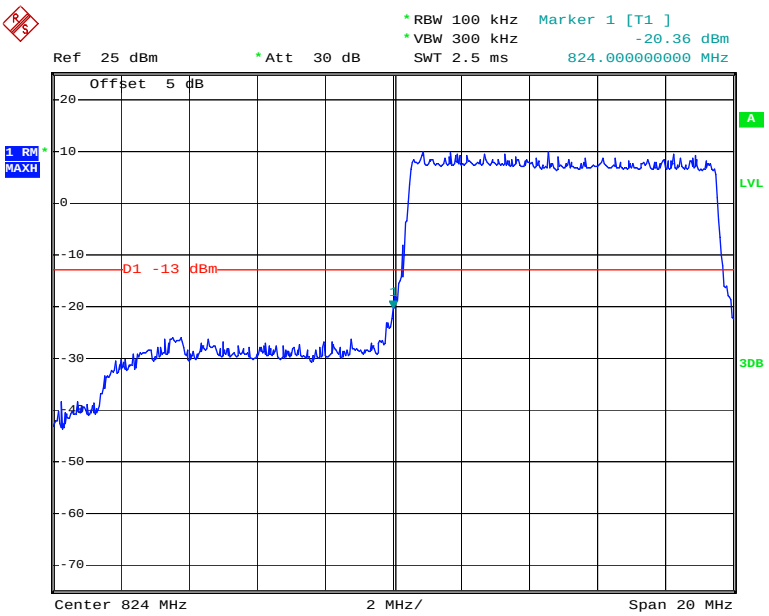
Date: 19.MAY.2020 11:53:52

QPSK_5MHz_ 25 RB_ Right



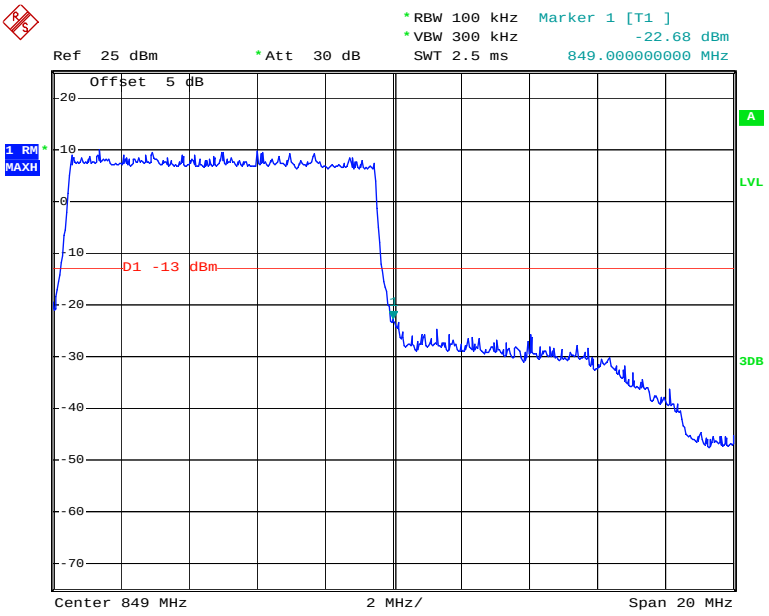
Date: 19.MAY.2020 11:56:00

QPSK_10MHz_ 50 RB_ Left



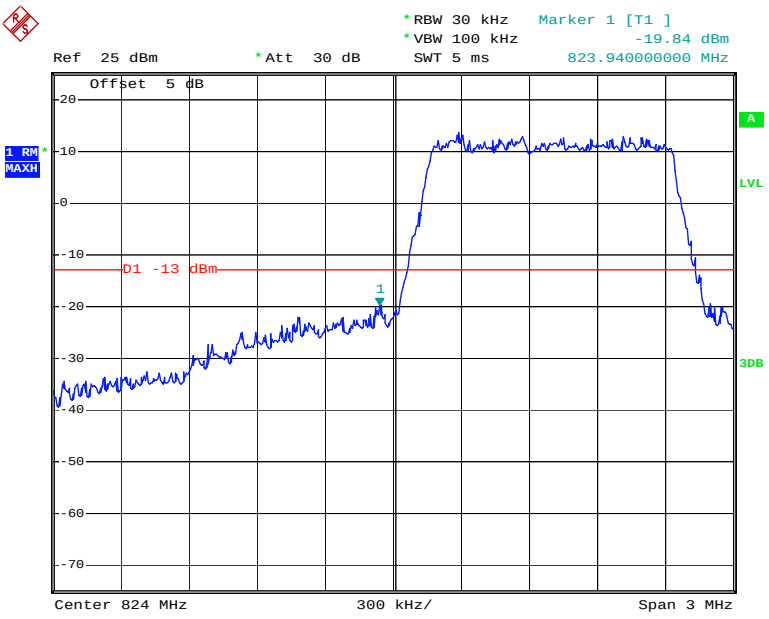
Date: 19.MAY.2020 11:20:55

QPSK_10MHz_ 50 RB_ Right



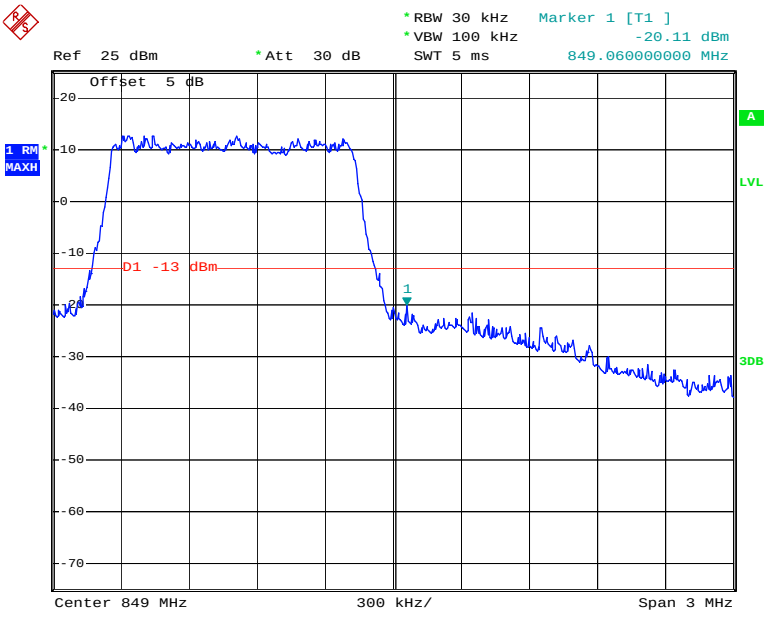
Date: 19.MAY.2020 11:21:36

16QAM_1.4MHz_ 6 RB_ Left



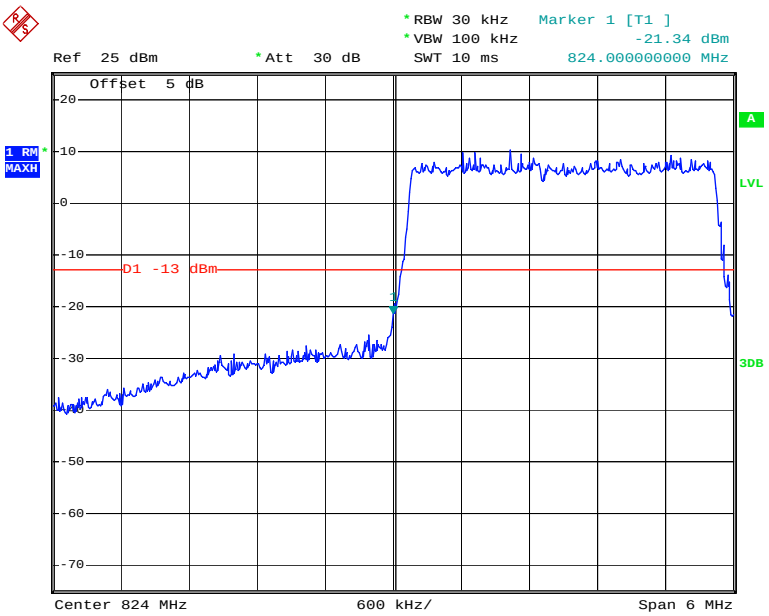
Date: 19.MAY.2020 11:17:08

16QAM_1.4MHz_ 6 RB_ Right



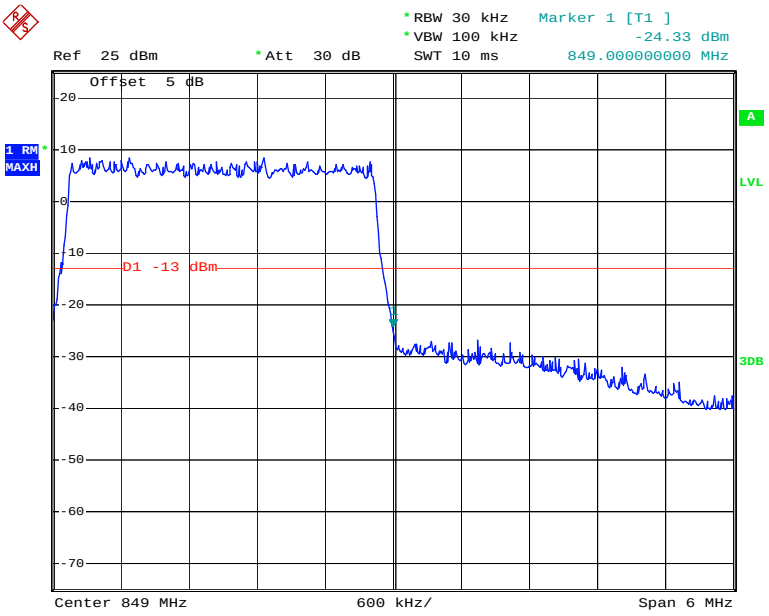
Date: 19.MAY.2020 11:17:49

16QAM_3MHz_ 15 RB_ Left



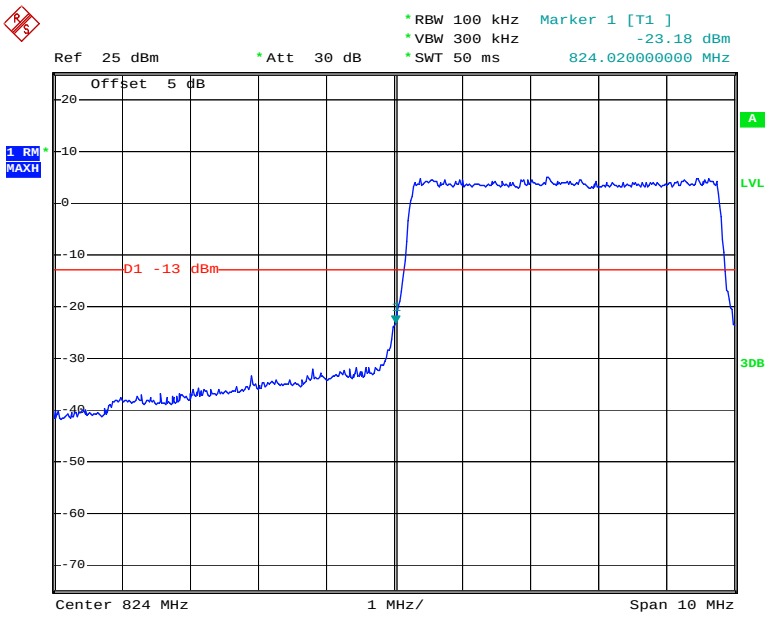
Date: 19.MAY.2020 11:18:32

16QAM_3MHz_ 15 RB_ Right



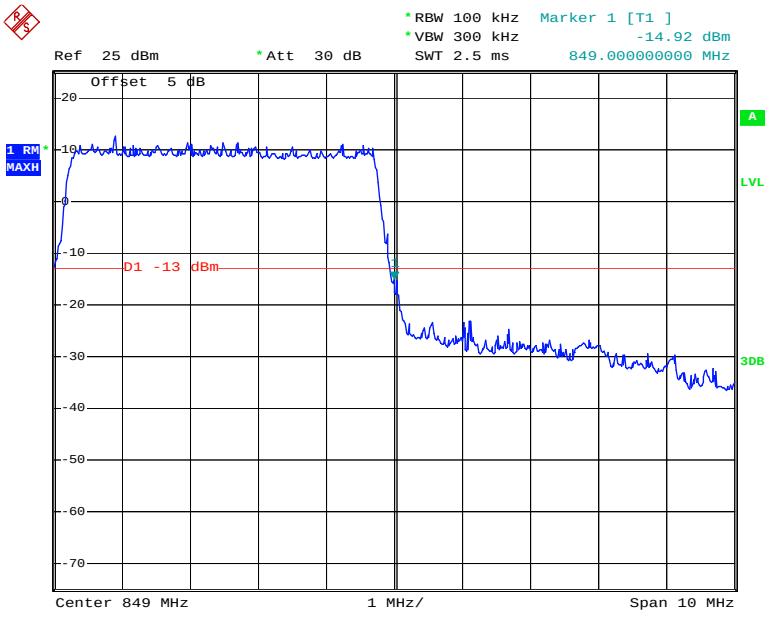
Date: 19.MAY.2020 11:19:13

16QAM_5MHz_ 25 RB_ Left



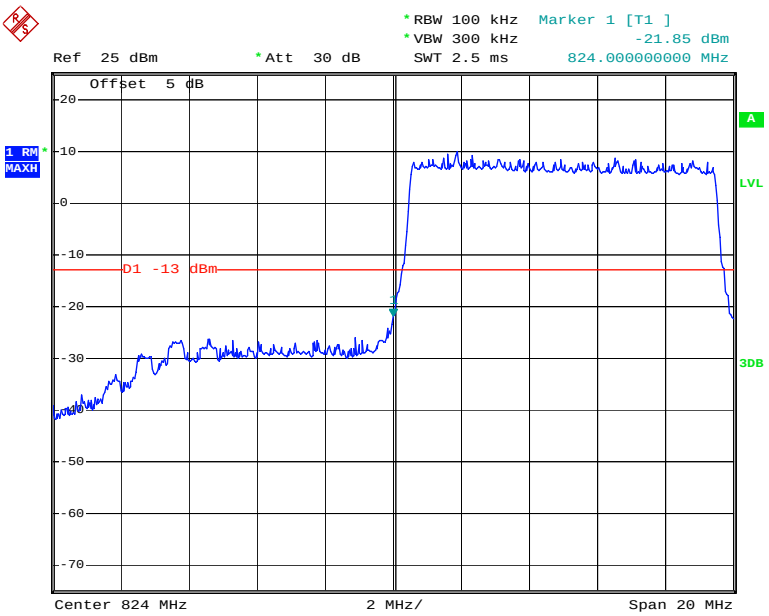
Date: 19.MAY.2020 11:54:41

16QAM_5MHz_ 25 RB_ Right



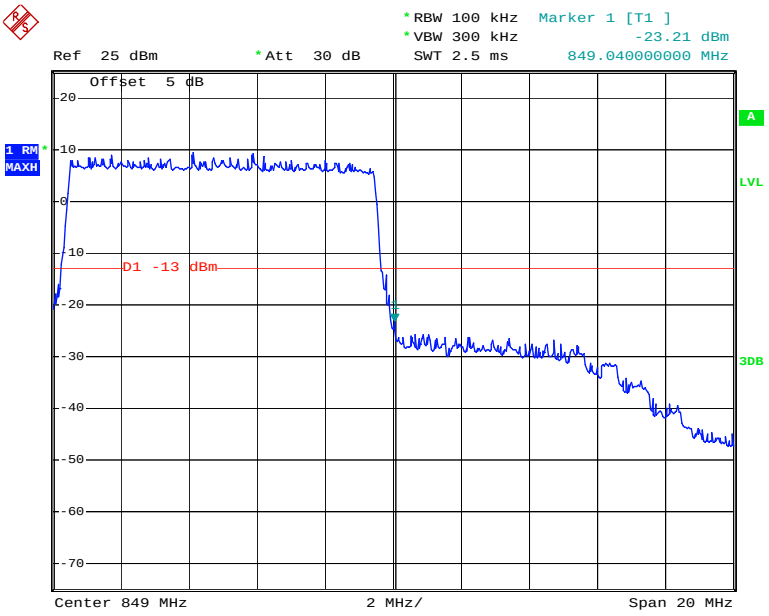
Date: 19.MAY.2020 11:20:32

16QAM_10MHz_ 50 RB_ Left



Date: 19.MAY.2020 11:21:17

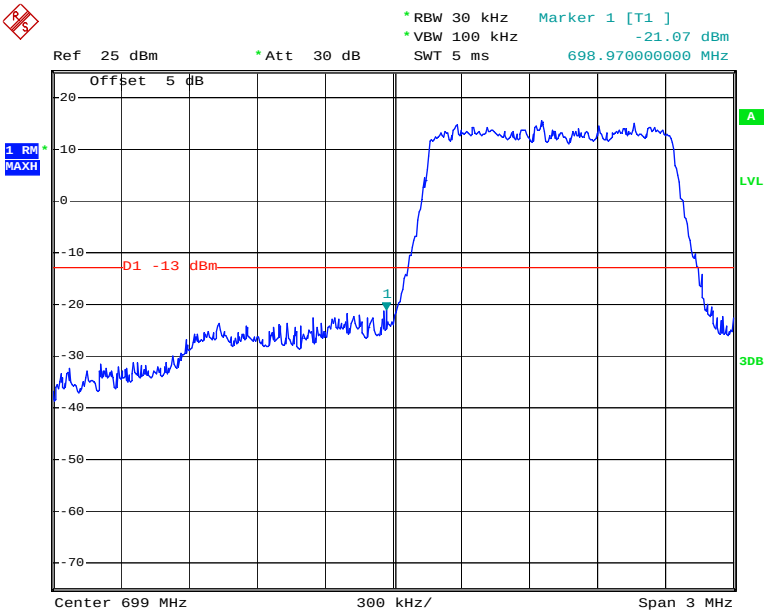
16QAM_10MHz_ 50 RB_ Right



Date: 19.MAY.2020 11:21:57

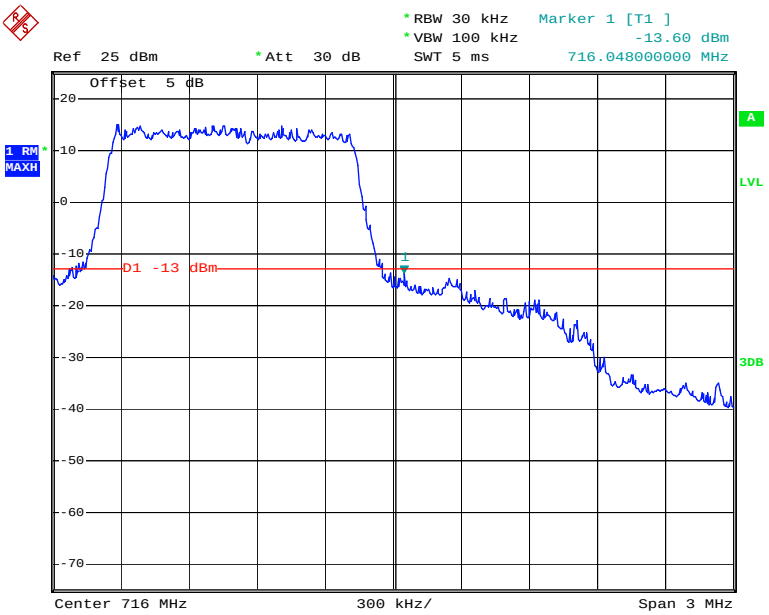
LTE Band 12

QPSK_1.4MHz_ 6 RB_ Left



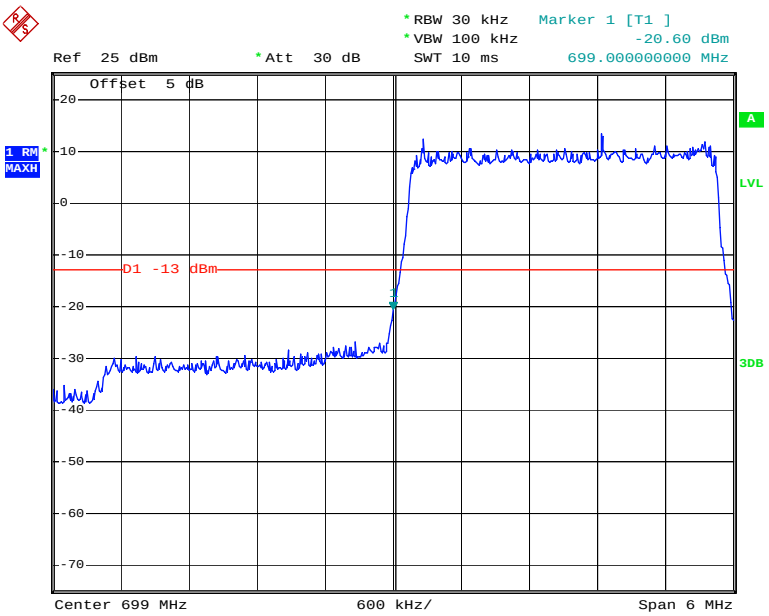
Date: 19.MAY.2020 11:22:17

QPSK_1.4MHz_ 6 RB_ Right



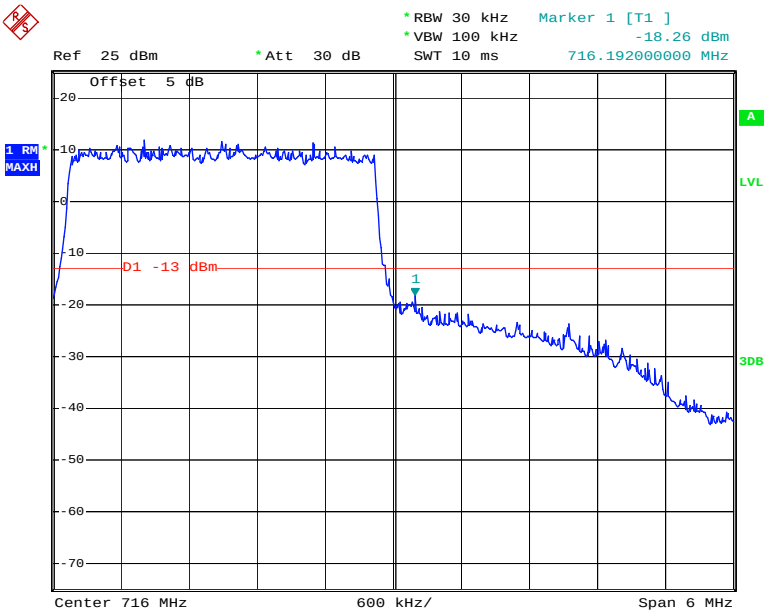
Date: 19.MAY.2020 11:22:55

QPSK_3MHz_ 15 RB_ Left



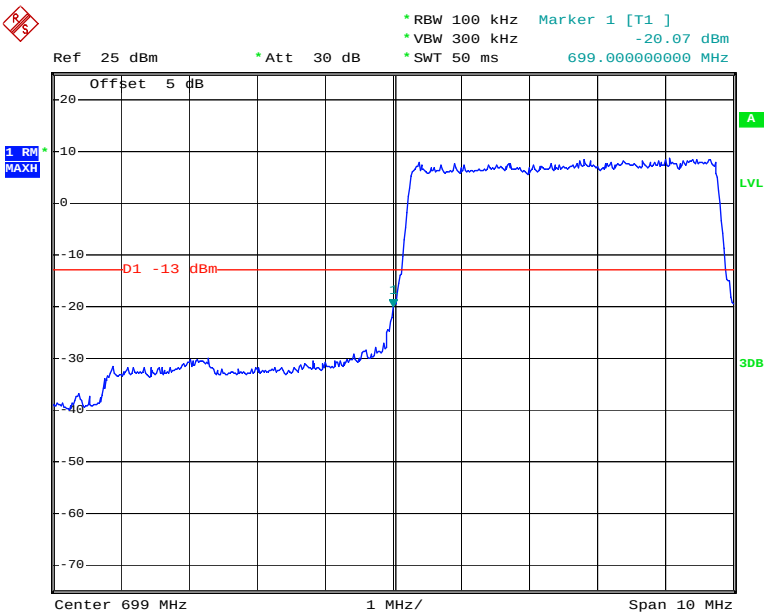
Date: 19.MAY.2020 11:23:55

QPSK_3MHz_ 15 RB_ Right



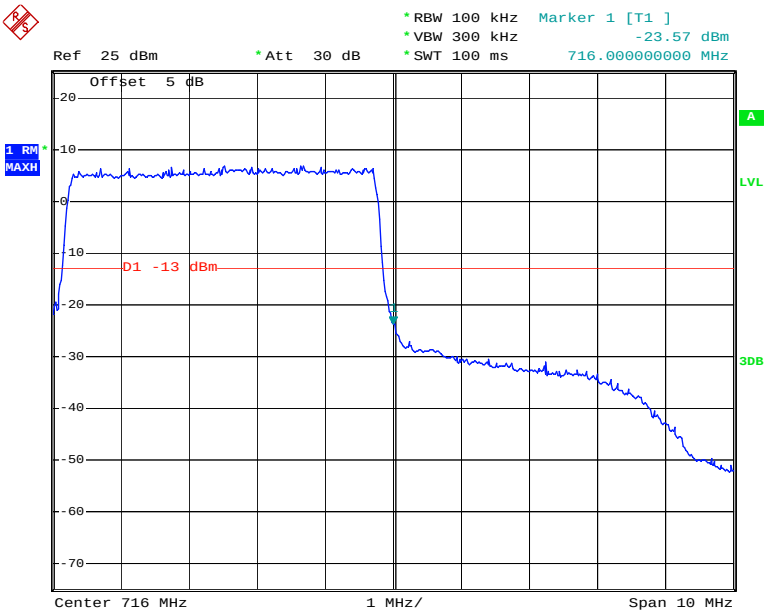
Date: 19.MAY.2020 11:24:33

QPSK_5MHz_ 25 RB_ Left



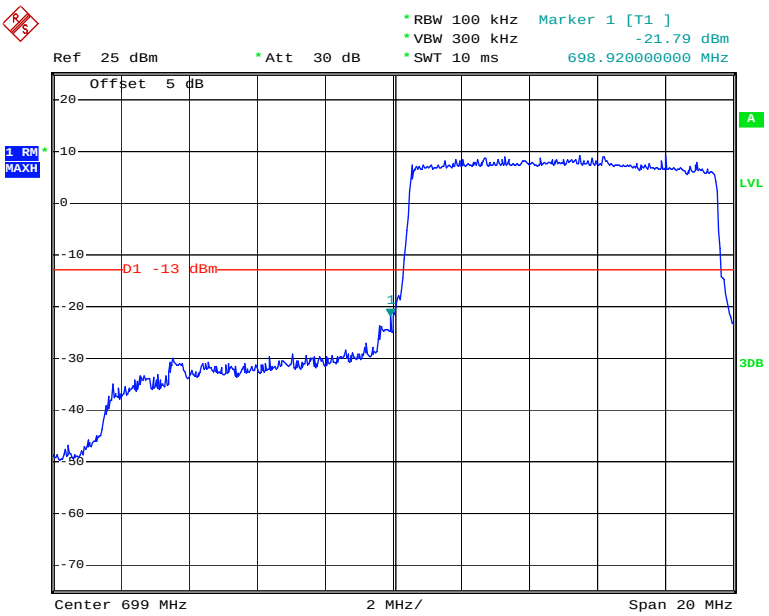
Date: 19.MAY.2020 11:25:25

QPSK_5MHz_ 25 RB_ Right



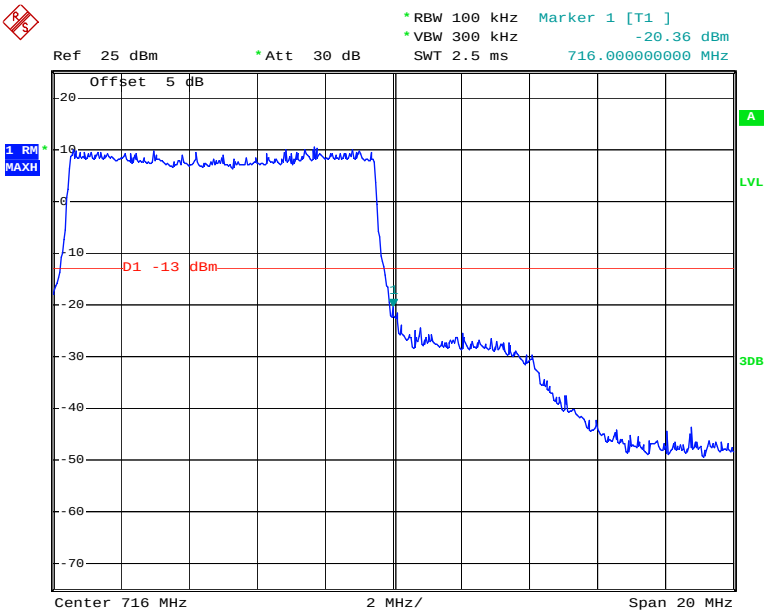
Date: 19.MAY.2020 11:26:26

QPSK_10MHz_ 50 RB_ Left



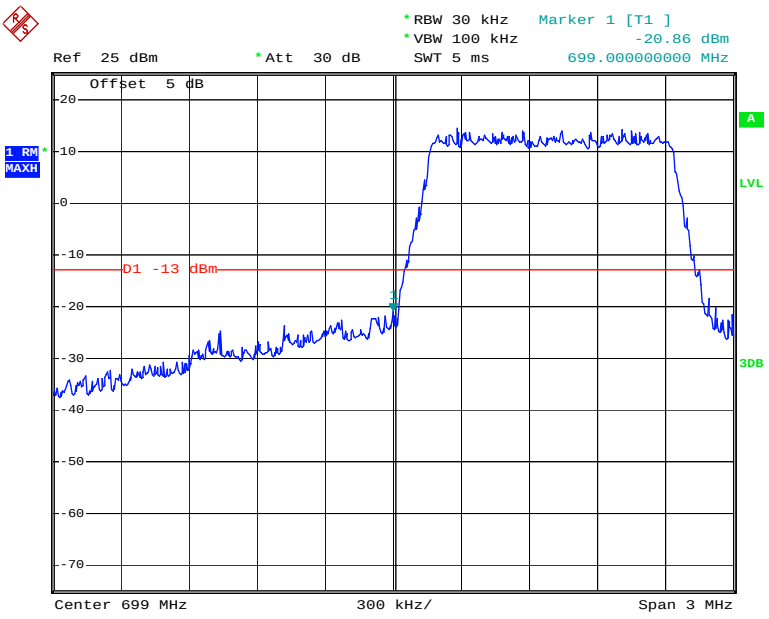
Date: 19.MAY.2020 11:27:47

QPSK_10MHz_ 50 RB_ Right



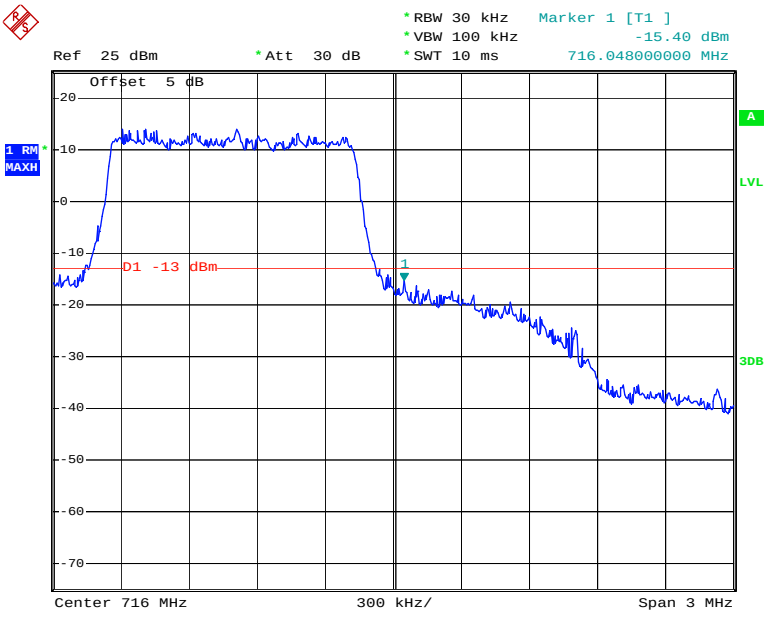
Date: 19.MAY.2020 11:28:24

16QAM_1.4MHz_ 6 RB_ Left



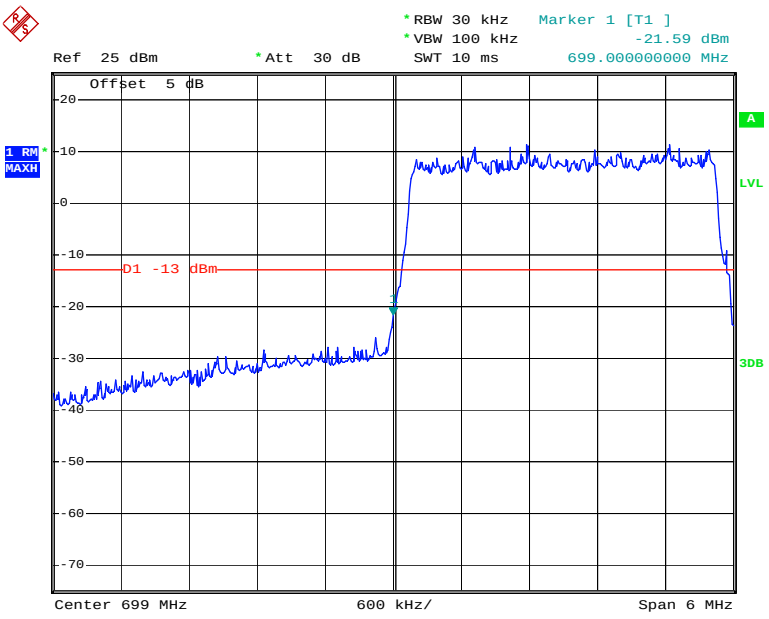
Date: 19.MAY.2020 11:22:37

16QAM_1.4MHz_ 6 RB_ Right



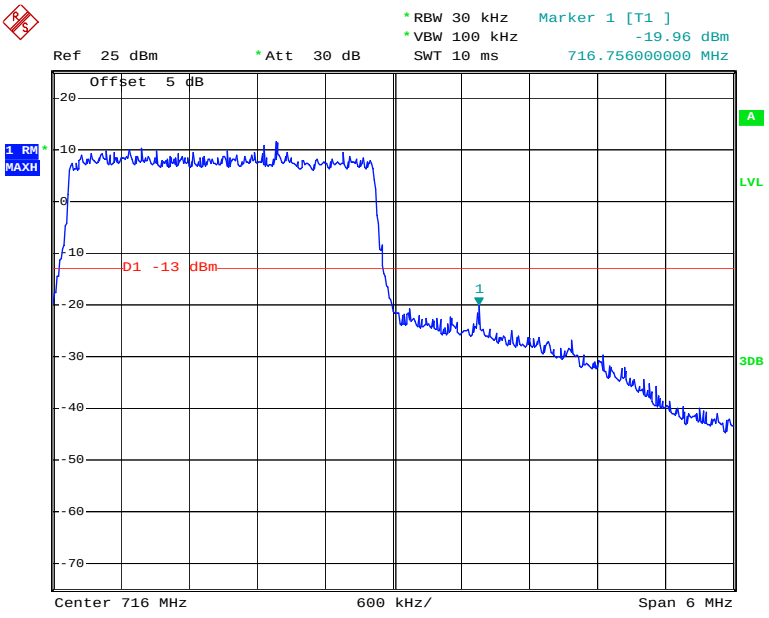
Date: 19.MAY.2020 11:23:31

16QAM_3MHz_ 15 RB_ Left



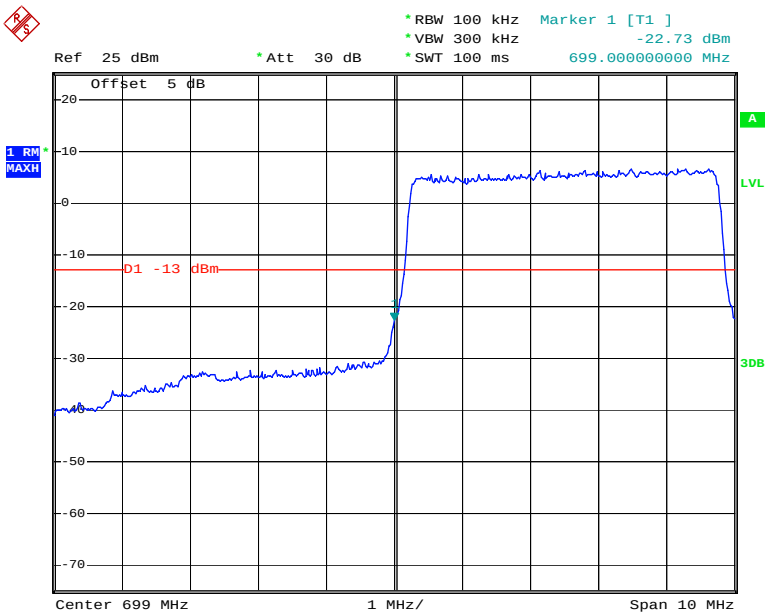
Date: 19.MAY.2020 11:24:12

16QAM_3MHz_ 15 RB_ Right



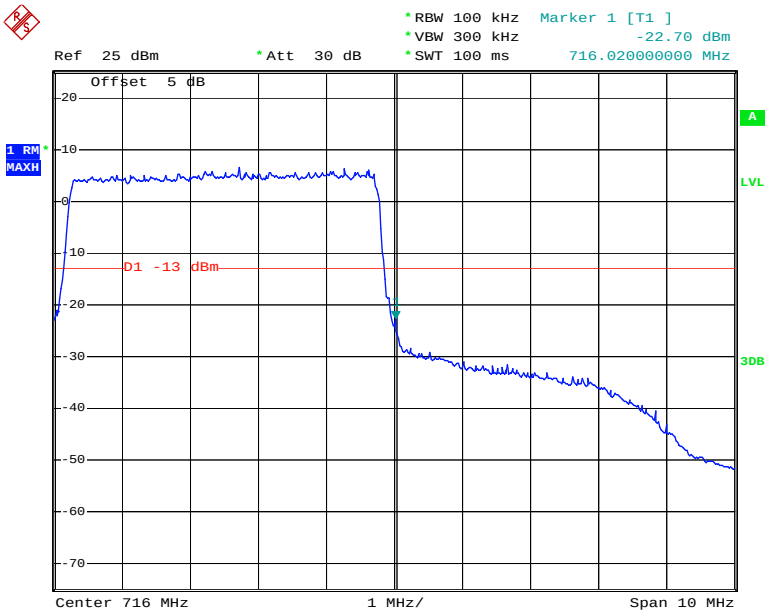
Date: 19.MAY.2020 11:24:49

16QAM_5MHz_ 25 RB_ Left



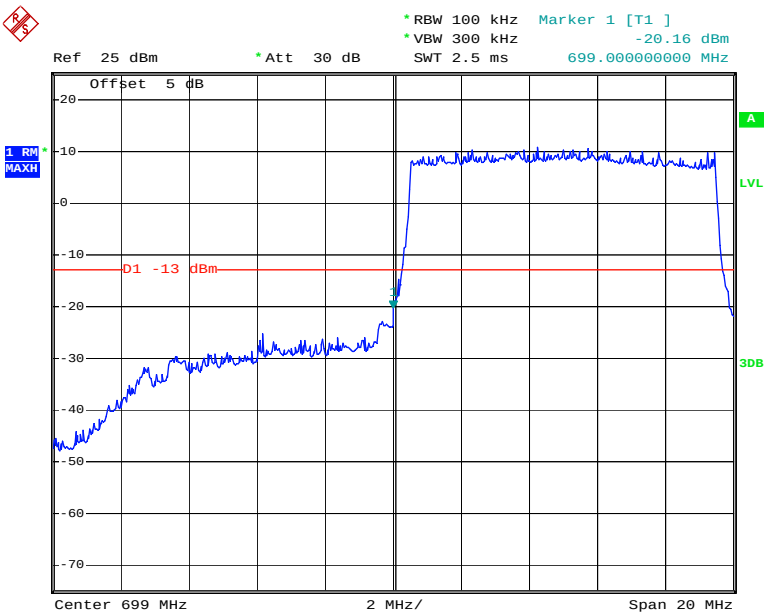
Date: 19.MAY.2020 11:25:56

16QAM_5MHz_ 25 RB_ Right



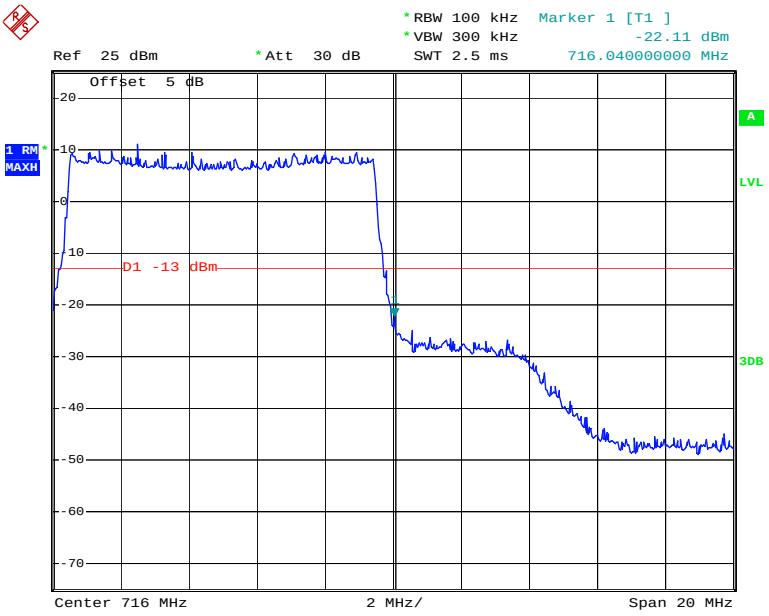
Date: 19.MAY.2020 11:27:04

16QAM_10MHz_ 50 RB_ Left



Date: 19.MAY.2020 11:28:05

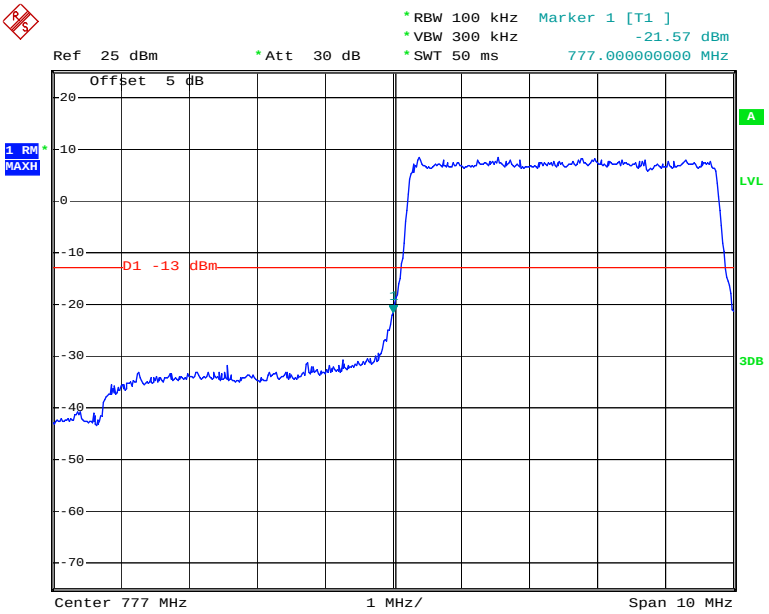
16QAM_10MHz_ 50 RB_ Right



Date: 19.MAY.2020 11:28:45

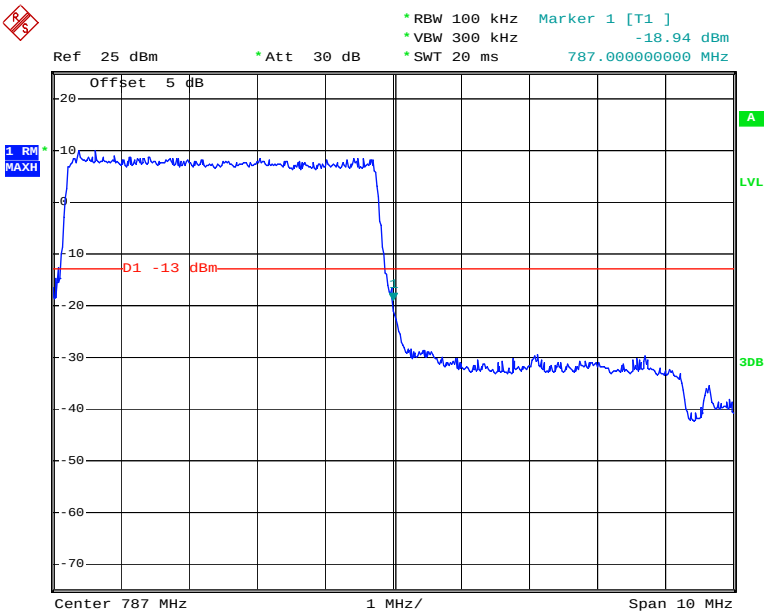
LTE Band 13

QPSK_5MHz_ 25 RB_ Left



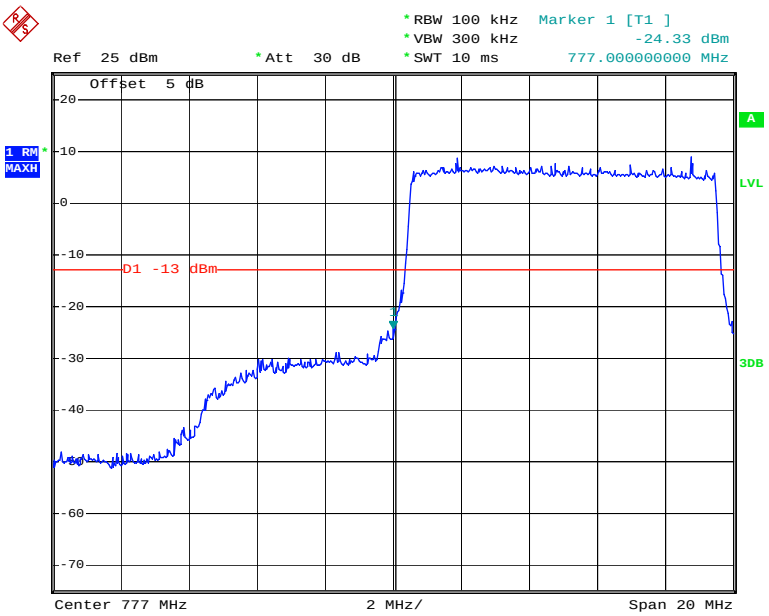
Date: 19.MAY.2020 11:29:26

QPSK_5MHz_ 25 RB_ Right



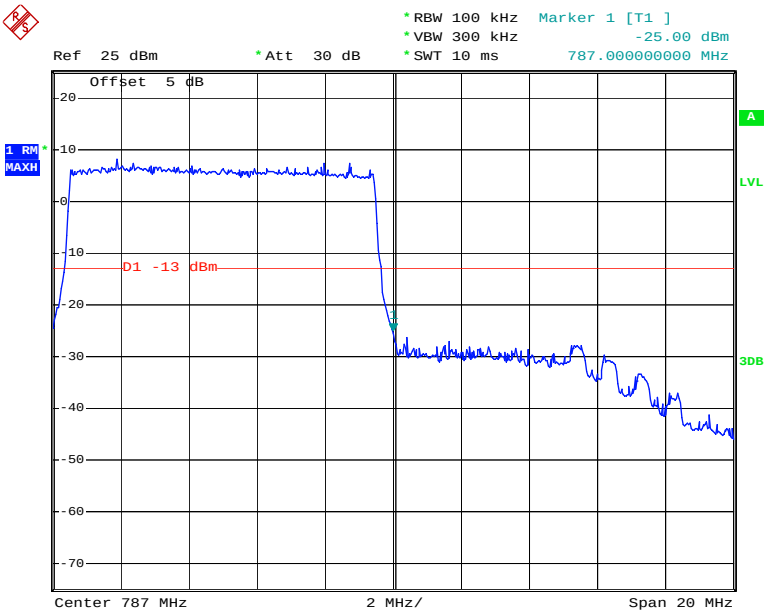
Date: 19.MAY.2020 11:30:37

QPSK_10MHz_ 50 RB_ Left



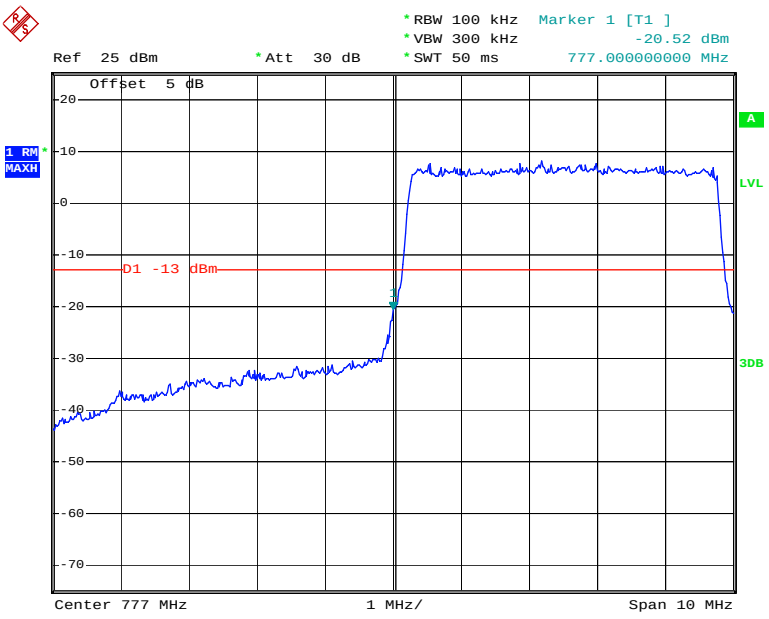
Date: 19.MAY.2020 11:36:14

QPSK_10MHz_ 50 RB_ Right



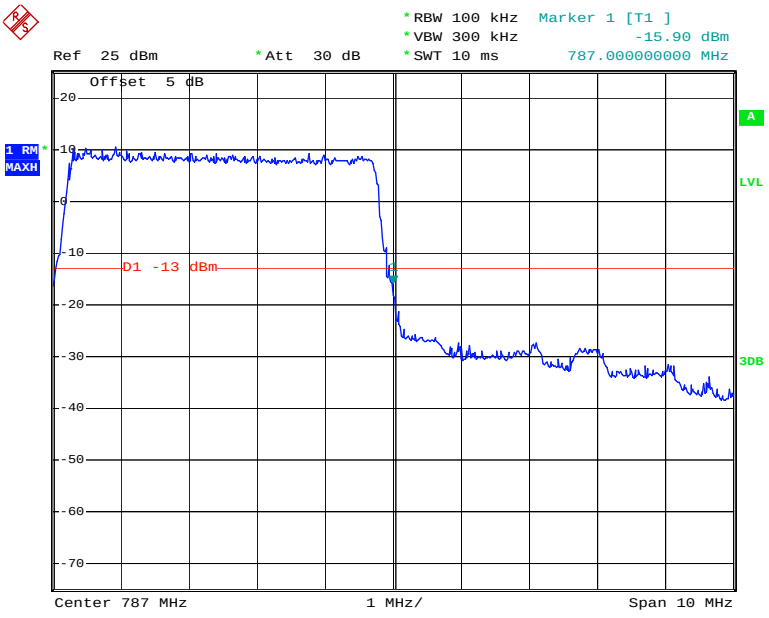
Date: 19.MAY.2020 11:35:53

16QAM_5MHz_ 25 RB_ Left



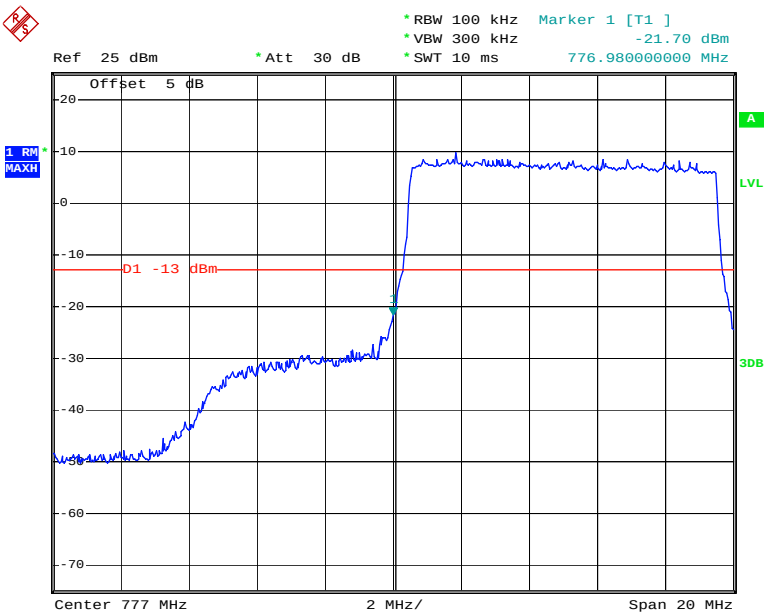
Date: 19.MAY.2020 11:29:59

16QAM_5MHz_ 25 RB_ Right



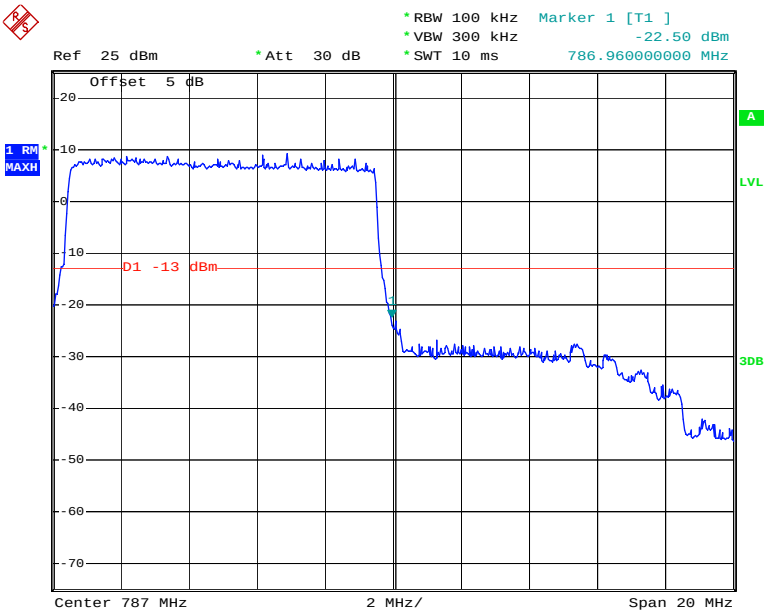
Date: 19.MAY.2020 11:31:04

16QAM_10MHz_ 50 RB_ Left



Date: 19.MAY.2020 11:33:57

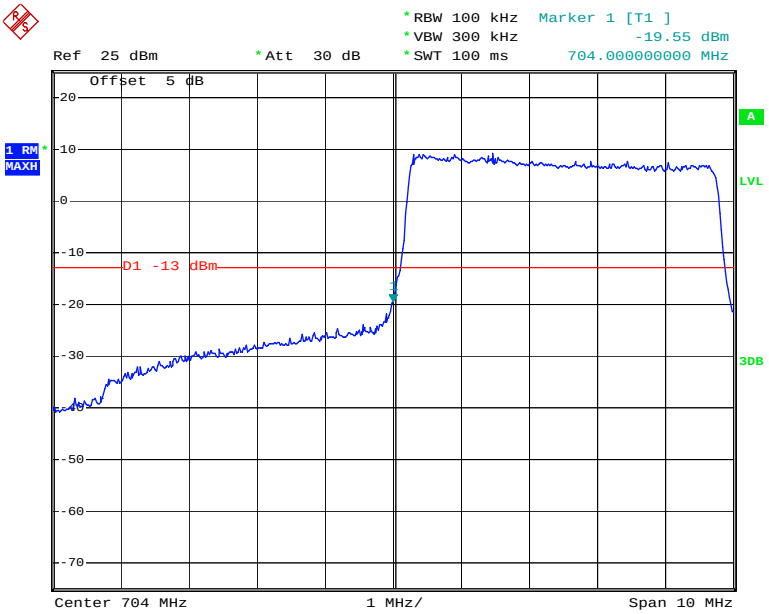
16QAM_10MHz_ 50 RB_ Right



Date: 19.MAY.2020 11:34:30

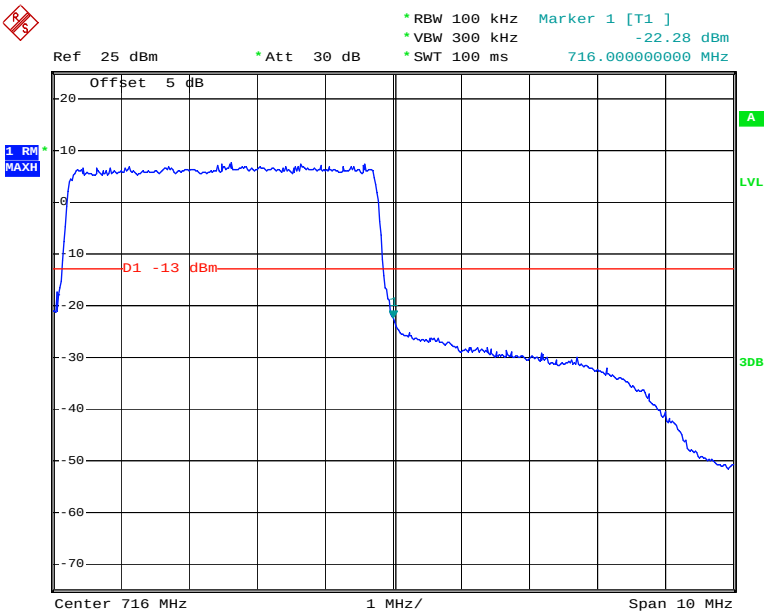
LTE Band 17

QPSK_5MHz_ 25 RB_ Left



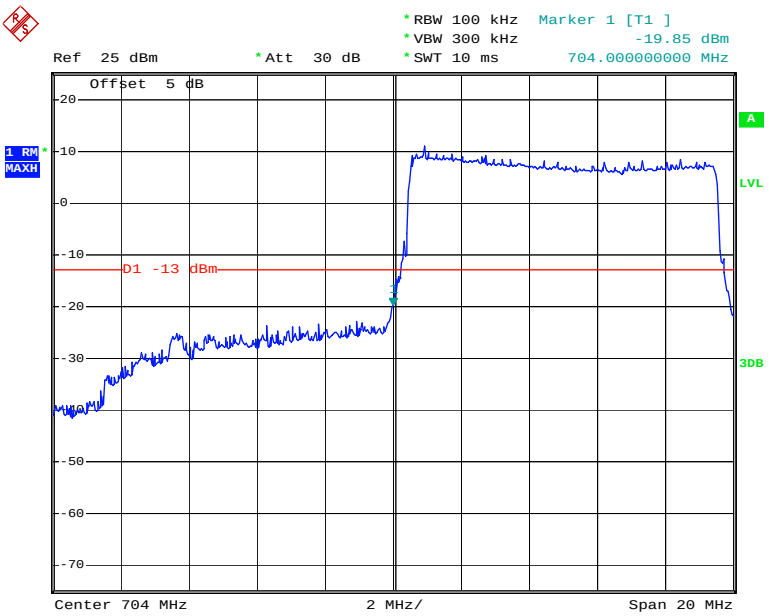
Date: 19.MAY.2020 11:41:09

QPSK_5MHz_ 25 RB_ Right



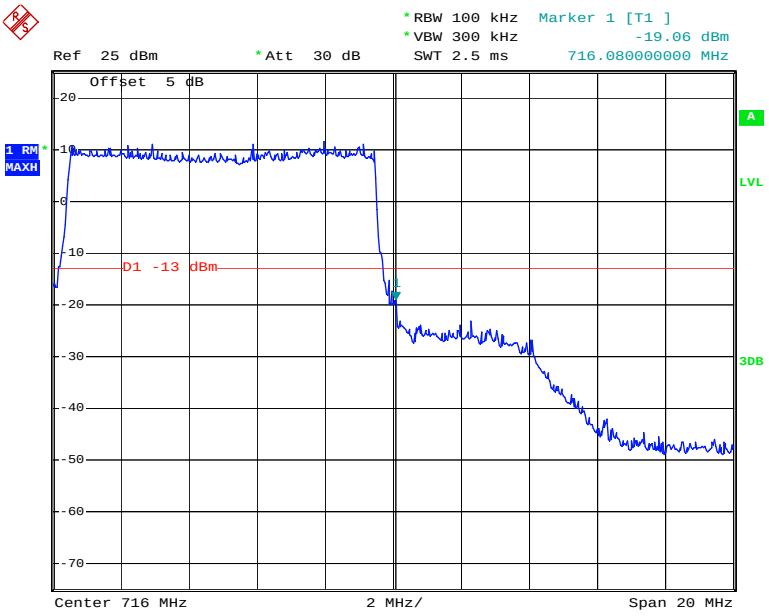
Date: 19.MAY.2020 11:42:00

QPSK_10MHz_ 50 RB_ Left



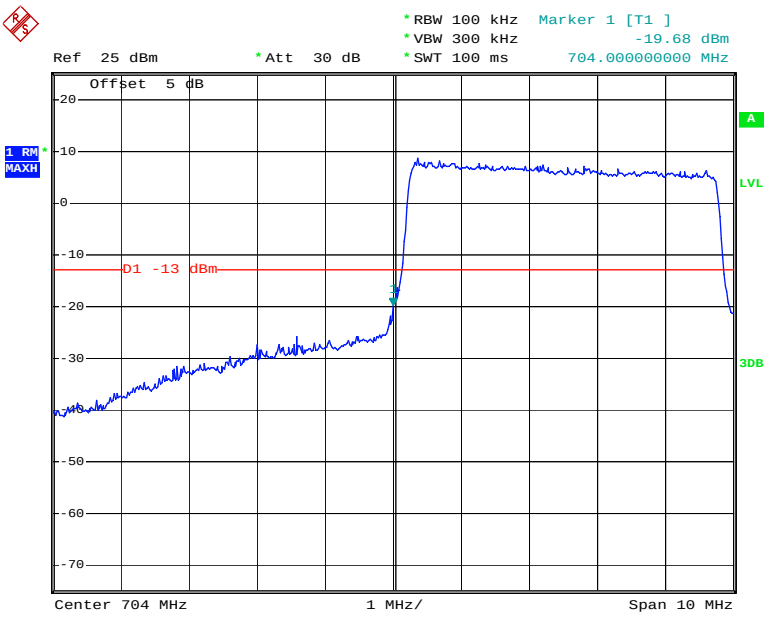
Date: 19.MAY.2020 11:43:03

QPSK_10MHz_ 50 RB_ Right



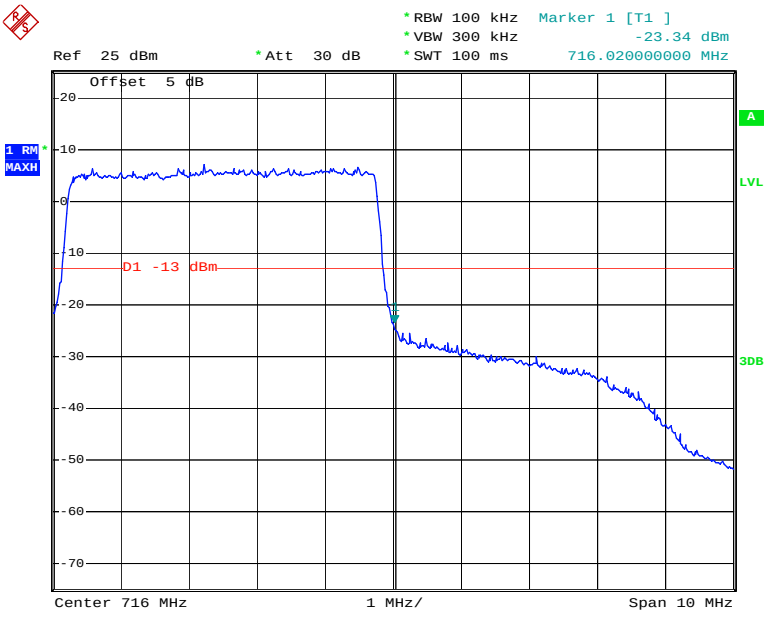
Date: 19.MAY.2020 11:43:43

16QAM_5MHz_ 25 RB_ Left



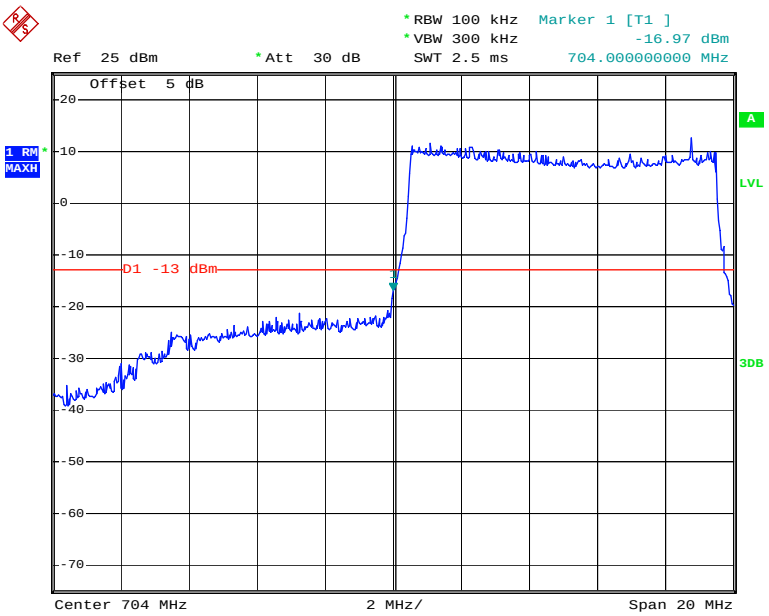
Date: 19.MAY.2020 11:41:33

16QAM_5MHz_ 25 RB_ Right



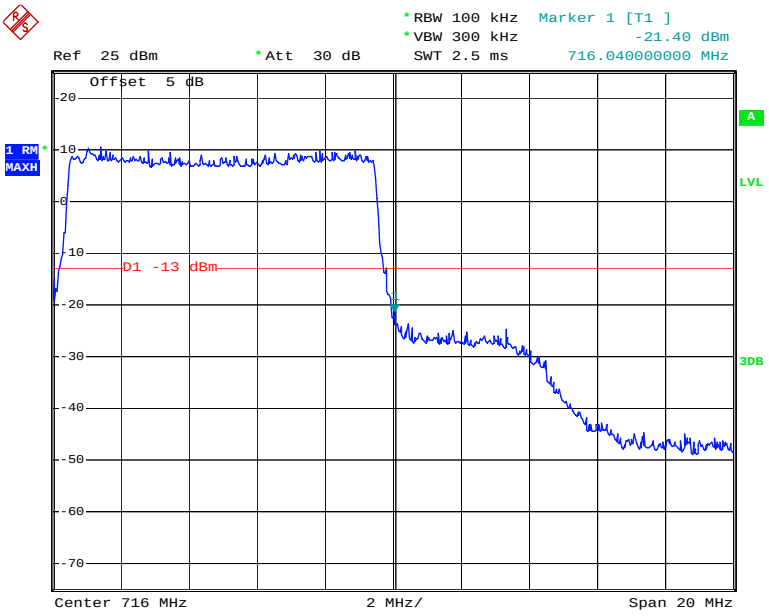
Date: 19.MAY.2020 11:42:26

16QAM_10MHz_ 50 RB_ Left



Date: 19.MAY.2020 11:43:24

16QAM_10MHz_ 50 RB_ Right



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

Applicable Standard

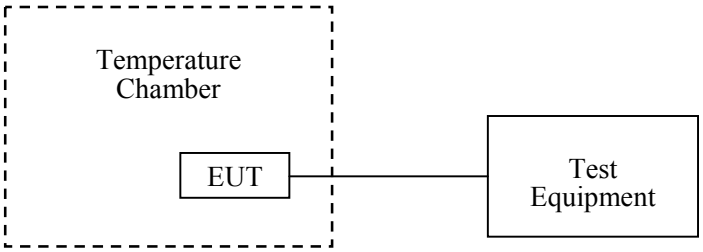
FCC § 2.1055 (a), § 2.1055 (d), §22.355, §24.235，§27.54, §90.213.

Test Procedure

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

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

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2020-05-09	2021-05-09
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	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
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	106 891	2019-09-12	2020-09-12
R&S	Wideband Radio Communication Tester	CMW500	147473	2019-08-03	2020-08-03
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2020-03-26	2021-03-26
UNI-T	Multimeter	UT39A	M130199938	2019-07-23	2020-07-23
Pro instrument	DC Power Supply	pps3300	3300012	N/A	N/A

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

Test Data

Environmental Conditions

Temperature:	26.1~26.9°C
Relative Humidity:	55~67 %
ATM Pressure:	98.6~100 kPa
Tester:	Chris Mo
Test Date:	2020-05-19~2020-05-22

GSM, Middle Channel, f_c = 836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.8	6	0.00717	2.5
-20		8	0.00956	
-10		9	0.01076	
0		11	0.01315	
10		15	0.01793	
20		7	0.00837	
30		9	0.01076	
40		8	0.00956	
50		2	0.00239	
20	3.6	6	0.00717	
20	4.3	4	0.00478	

EGPRS, Middle Channel, f_c = 836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.8	12	0.01434	2.5
-20		9	0.01076	
-10		4	0.00478	
0		2	0.00239	
10		5	0.00598	
20		6	0.00717	
30		7	0.00837	
40		4	0.00478	
50		3	0.00359	
20	3.6	2	0.00239	
20	4.3	5	0.00598	

GSM1900, Middle Channel, f_c = 1880.0 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	6	0.00319	Pass
-20		5	0.00266	
-10		8	0.00426	
0		4	0.00213	
10		10	0.00532	
20		9	0.00479	
30		11	0.00585	
40		8	0.00426	
50		5	0.00266	
20	3.6	6	0.00319	
20	4.3	9	0.00479	

EGPRS1900, Middle Channel, f_c = 1880.0 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
℃	V_{DC}	Hz	ppm	
-30	3.8	6	0.00319	Pass
-20		9	0.00479	
-10		7	0.00372	
0		5	0.00266	
10		9	0.00479	
20		11	0.00585	
30		12	0.00638	
40		10	0.00532	
50		6	0.00319	
20	3.6	3	0.00160	
20	4.3	1	0.00053	

WCDMA Band II: R99

Middle Channel, f_c = 1880.0 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
℃	V_{DC}	Hz	ppm	
-30	3.8	3	0.00160	Pass
-20		2	0.00106	
-10		8	0.00426	
0		4	0.00213	
10		2	0.00106	
20		3	0.00160	
30		4	0.00213	
40		6	0.00319	
50		11	0.00585	
20	3.6	10	0.00532	
20	4.3	2	0.00106	

WCDMA Band Ⅴ: R99

Middle Channel, f_c =836.6 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.8	13	0.01554	2.5
-20		14	0.01673	
-10		10	0.01195	
0		6	0.00717	
10		2	0.00239	
20		4	0.00478	
30		1	0.00120	
40		0	0.00000	
50		3	0.00359	
20	3.6	6	0.00717	
20	4.3	5	0.00598	

LTE Band 2:

QPSK, Channel Bandwidth:10MHz Middle Channel, f_c = 1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	-11.70	-0.0062	Pass
-20		-9.67	-0.0051	
-10		7.65	0.0041	
0		6.50	0.0035	
10		-7.83	-0.0042	
20		-6.15	-0.0033	
30		-7.20	-0.0038	
40		-7.12	-0.0038	
50		-9.06	-0.0048	
20	3.6	-8.02	-0.0043	
20	4.3	5.18	0.0028	

16QAM, Channel Bandwidth:10MHz Middle Channel, f_c =1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	-1.17	-0.0006	Pass
-20		6.08	0.0032	
-10		-8.80	-0.0047	
0		-9.10	-0.0048	
10		8.10	0.0043	
20		5.22	0.0028	
30		-6.96	-0.0037	
40		-5.51	-0.0029	
50		5.20	0.0028	
20	3.6	5.16	0.0027	
20	4.3	6.33	0.0034	

LTE Band 4:

QPSK, Channel Bandwidth:10MHz					
Temperature	**Voltage**	**Test Result (MHz)**		**Limit (MHz)**	
℃	**V_{DC}**	**F_L**	**F_H**	**F_L**	**F_H**
-30	3.8	1710.524772	1754.483421	1710	1755
-20		1710.524972	1754.482421	1710	1755
-10		1710.524272	1754.481821	1710	1755
0		1710.523872	1754.482121	1710	1755
10		1710.524327	1754.485312	1710	1755
20		1710.520000	1754.480000	1710	1755
30		1710.528072	1754.483321	1710	1755
40		1710.528672	1754.483421	1710	1755
50		1710.527972	1754.488521	1710	1755
20	3.6	1710.528272	1754.486402	1710	1755
20	4.3	1710.527772	1754.483533	1710	1755

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.8	1710.524517	1754.524526	1710	1755
-20		1710.528572	1754.524520	1710	1755
-10		1710.525072	1754.524510	1710	1755
0		1710.524572	1754.524508	1710	1755
10		1710.523872	1754.524502	1710	1755
20		1710.520000	1754.520000	1710	1755
30		1710.524667	1754.524507	1710	1755
40		1710.524667	1754.524516	1710	1755
50		1710.523446	1754.524511	1710	1755
20	3.6	1710.523446	1754.524501	1710	1755
20	4.3	1710.523447	1754.523449	1710	1755

LTE Band 5:

Middle Channel, f_c = 836.5 MHz, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.8	-0.39	-0.0005	2.5
-20		-5.46	-0.0065	
-10		8.16	0.0098	
0		-4.93	-0.0059	
10		-6.20	-0.0074	
20		-5.26	-0.0063	
30		5.76	0.0069	
40		4.35	0.0052	
50		-7.88	-0.0094	
20	3.6	3.27	0.0039	
20	4.3	6.52	0.0078	

Middle Channel, f_c = 836.5 MHz, Channel Bandwidth:10MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.8	1.52	0.0018	2.5
-20		2.63	0.0031	
-10		7.05	0.0084	
0		-9.55	-0.0114	
10		-10.19	-0.0122	
20		-2.24	-0.0027	
30		-0.54	-0.0006	
40		-4.98	-0.006	
50		-1.24	-0.0015	
20	3.6	8.62	0.0103	
20	4.3	6.05	0.0072	

LTE Band 12:

QPSK, Channel Bandwidth:10MHz					
Temperature	**Voltage**	**Test Result (MHz)**		**Limit (MHz)**	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.8	699.520770	715.480660	699	716
-20		699.520990	715.481430	699	716
-10		699.520660	715.481430	699	716
0		699.520880	715.481760	699	716
10		699.521210	715.482750	699	716
20		699.520000	715.480000	699	716
30		699.519890	715.479670	699	716
40		699.520660	715.479450	699	716
50		699.520440	715.479780	699	716
20	3.6	699.521320	715.479450	699	716
20	4.3	699.521320	715.479010	699	716

16QAM, Channel Bandwidth:10MHz					
Temperature	**Voltage**	**Test Result (MHz)**		**Limit (MHz)**	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.8	699.519450	715.520110	699	716
-20		699.520330	715.520770	699	716
-10		699.521100	715.520880	699	716
0		699.521870	715.521540	699	716
10		699.522530	715.521540	699	716
20		699.520000	715.520000	699	716
30		699.520880	715.519780	699	716
40		699.521870	715.520550	699	716
50		699.522200	715.520440	699	716
20	3.6	699.521760	715.520660	699	716
20	4.3	699.522420	715.520220	699	716

LTE Band 13:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.8	777.529700	786.480800	777	787
-20		777.528900	786.479800	777	787
-10		777.528600	786.479500	777	787
0		777.528300	786.478900	777	787
10		777.528300	786.478400	777	787
20		777.520000	786.480000	777	787
30		777.528300	786.480200	777	787
40		777.527400	786.479900	777	787
50		777.527000	786.479600	777	787
20	3.6	777.526200	786.479900	777	787
20	4.3	777.525800	786.480600	777	787

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.8	777.520880	786.479450	777	787
-20		777.521760	786.479010	777	787
-10		777.522200	786.478790	777	787
0		777.522420	786.479670	777	787
10		777.521870	786.480330	777	787
20		777.520000	786.480000	777	787
30		777.520220	786.479450	777	787
40		777.519670	786.480440	777	787
50		777.520220	786.480880	777	787
20	3.6	777.520880	786.481870	777	787
20	4.3	777.521650	786.482200	777	787

LTE Band 17:

QPSK, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.8	704.480110	715.480550	704	716
-20		704.479780	715.480110	704	716
-10		704.480220	715.480440	704	716
0		704.480440	715.480550	704	716
10		704.481430	715.480550	704	716
20		704.480000	715.480000	704	716
30		704.480770	715.479780	704	716
40		704.481650	715.480110	704	716
50		704.481650	715.480000	704	716
20	3.6	704.482200	715.480770	704	716
20	4.3	704.483080	715.481870	704	716

16QAM, Channel Bandwidth:10MHz					
Temperature	Voltage	Test Result (MHz)		Limit (MHz)	
℃	V_{DC}	F_L	F_H	F_L	F_H
-30	3.8	704.480330	715.479780	704	716
-20		704.480770	715.480880	704	716
-10		704.481540	715.481870	704	716
0		704.482420	715.481760	704	716
10		704.482970	715.481210	704	716
20		704.480000	715.480000	704	716
30		704.481100	715.479890	704	716
40		704.481760	715.480440	704	716
50		704.482090	715.480660	704	716
20	3.6	704.483190	715.480660	704	716
20	4.3	704.482640	715.480550	704	716

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

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