TESTING LABORATORY
CERTIFICATE #4820.01

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

For

MAXWEST COMMUNICATION LIMITED

ROOM 1802B FORTRESS TOWER, 250 KING'S ROAD, NORTH POINT, HONG KONG

FCC ID: 2ASP8ASTRO4PRO

Report Type:	**Product Type:**
Original Report	PHONE

Report Number:	RDG200918004-00D
Report Date:	2020-11-11
Reviewed By:	Ivan Cao Assistant Manager
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		PHONE
EUT Model:		ASTRO 4 PRO
Operation modes:		GSM Voice, GPRS/EDGE Data, WCDMA(R99 (Voice+Data), HSDPA,HSUPA,DC-HSDPA, HSPA+) FDD-LTE
Operation Frequency:		GSM 850: 824-849 MHz(TX); 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 5: 824-849 MHz(TX); 869-894 MHz(RX) LTE Band 2:1850-1910 MHz(TX), 1930-1990 MHz(RX) LTE Band 4:1710-1755 MHz(TX), 2110-2155 MHz(RX) LTE Band 5: 824-849 MHz(TX); 869-894 MHz(RX) LTE Band 7:2500-2570 MHz(TX), 2620-2690 MHz(RX)
Modulation Type:		GMSK, 8PSK, BPSK, QPSK, 16QAM
Antenna Gain△:		1.21 dBi(GSM850/WCDMA/LTE B5) 0.85 dBi(PCS1900/WCDMA/LTE B2) 1.23 dBi(LTE B4) 1.36 dBi(LTE B7)
Rated Input Voltage:		DC 3.8V from battery or DC 5V from Adapter
Adapter Information	**Model:**	AsTro 4 PRO
	Input:	AC 100-240V,50/60 Hz, 0.5A
	Output:	DC 5.0V, 0.5A
Serial Number:		RDG200918004-RF-S1
EUT Received Date:		2020.09.19
EUT Received Status:		Good

Objective

This report is prepared on behalf of ***MAXWEST COMMUNICATION LIMITED*** in accordance with: Part 2-Subpart J, Part 22-Subpart H, Part 24-Subpart E, Part 27of the Federal Communications Commission's rules.

The objective is to determine compliance with FCC Rules for output power, modulation characteristic, occupied bandwidth, spurious emissions at antenna terminal, spurious radiated emission, frequency stability and band edge.

Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: 2ASP8ASTRO4PRO
FCC Part 15C DSS submissions with FCC ID: 2ASP8ASTRO4PRO

Test Methodology

All tests and measurements indicated in this document were performed in accordance with:

the Code of federal Regulations Title 47, Part 2, Part 22H, Part 24E, Part 27.

ANSI C63.26-2015, American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Dongguan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

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 ANSI C63.26-2015.

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 2/4/5/7, test was performed with channels as below table:

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSM/GPRS 850/EDGE	0.25	824.2	836.6	848.8
GSM/GPRS 1900/EDGE	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 7	5	2502.5	2535	2567.5
	10	2505	2535	2565
	15	2507.5	2535	2562.5
	20	2510	2535	2560

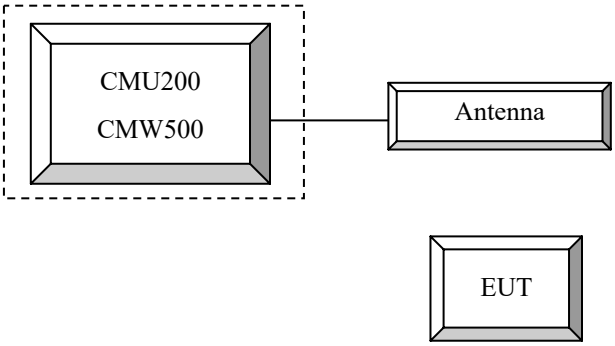
Equipment Modifications

No modification was made to the EUT.

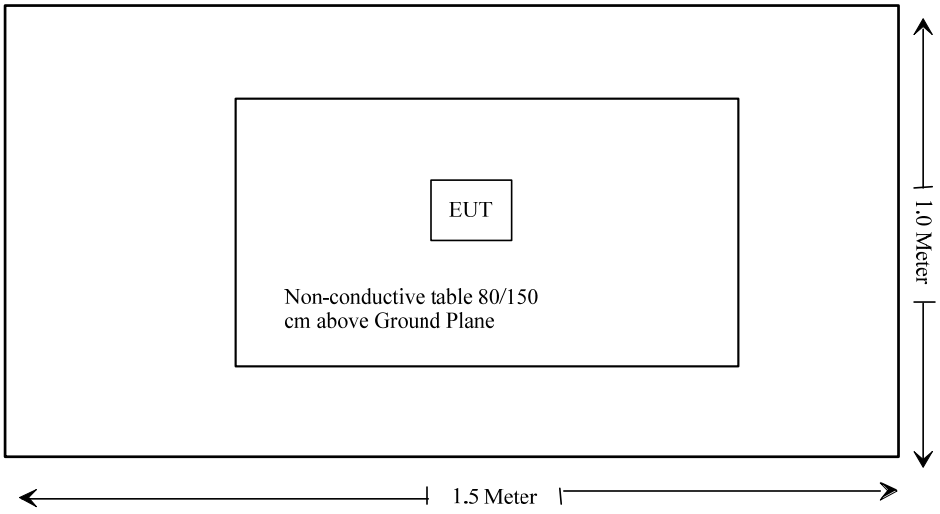
Support Equipment List and Details

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

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

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

Compliance, please refer to the SAR report: RDG200918004-20A.

FCC §2.1047 - MODULATION CHARACTERISTIC

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

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

Applicable Standard

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

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

According to §24.232 (d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

According to §27.50

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

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

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

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

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

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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
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
R&S	Universal Radio Communication Tester	CMU200	110 822	2020-09-12	2021-09-12
R&S	Wideband Radio Communication Tester	CMW500	147473	2020-09-12	2021-09-12

**** 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:	Conducted Output Power
Temperature:	26.9 °C
Relative Humidity:	45%
ATM Pressure:	100.8kPa
Tester:	Janes Chen
Test Date:	2020-10-19

Test Result: Compliance

GSM/GPRS/EDGE

Conducted Peak Output Power:

Band	Channel No.	Conducted Peak Output Power (dBm)								
		GSM	GPRS 1 TX Slot	GPRS 2 TX Slots	GPRS 3 TX Slots	GPRS 4 TX Slots	EGPRS 1 TX Slot	EGPRS 2 TX Slots	EGPRS 3 TX Slots	EGPRS 4 TX Slots
Cellular	128	32.1	32.82	30.92	28.82	28.23	27.23	26.14	24.34	22.88
	190	32.8	32.83	31.37	29.33	28.46	27.37	26.29	24.48	23.17
	251	33.1	33.23	31.12	29.24	28.42	27.32	26.35	24.56	23.23
PCS	512	28.3	27.06	24.93	24.78	22.63	23.48	22.18	22.01	22.99
	661	28.7	27.33	25.07	24.95	22.82	23.86	22.33	22.23	23.31
	810	27.8	27.28	24.06	23.88	22.57	22.81	21.41	21.39	22.56

ERP/EIRP:

Band	Mode	Channel	Conducted Power (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
Cellular	GSM	Low	32.82	-0.94	0.2	31.68	38.45
		Middle	32.83	-0.94	0.2	31.69	38.45
		High	33.23	-0.94	0.2	32.09	38.45
	EDGE	Low	27.23	-0.94	0.2	26.09	38.45
		Middle	27.37	-0.94	0.2	26.23	38.45
		High	27.32	-0.94	0.2	26.18	38.45
PCS	GSM	Low	28.3	0.85	0.4	28.75	33.00
		Middle	28.7	0.85	0.4	29.15	33.00
		High	27.8	0.85	0.4	28.25	33.00
	EDGE	Low	23.48	0.85	0.4	23.93	33.00
		Middle	23.86	0.85	0.4	24.31	33.00
		High	22.81	0.85	0.4	23.26	33.00

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) Result = Conducted Power - Cable loss + Antenna Gain
3) Antenna gain(dBd)= Antenna gain(dBi)-2.15

WCDMA Band 2

Conducted Output Power and PAR:

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	23.06	4.13	23.11	4.2	22.51	5.42
HSDPA	1	22.58	3.17	22.61	3.17	22.31	3.08
	2	22.82	3.95	23.11	4.21	22.49	5.15
	3	22.91	4.41	23.07	4.22	22.51	5.5
	4	23.06	4.28	23.05	4.25	22.51	5.44
HSUPA	1	22.15	4.81	21.32	5.93	21.01	6.09
	2	22	4.61	21.25	5.75	20.95	6.49
	3	21.91	5.13	21.57	5.84	20.99	6.24
	4	22.15	5.26	21.48	5.92	21.41	6.09
	5	22	4.83	21.04	5.97	20.96	5.95
HSPA+ (16QAM)	1	21.97	4.89	21.28	5.92	21.05	6.03

EIRP:

Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
Low	23.06	0.85	0.4	23.51	33.00
Middle	23.11	0.85	0.4	23.56	33.00
High	22.51	0.85	0.4	22.96	33.00

WCDMA Band 5

Conducted Output Power and PAR:

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	23.05	3.27	23.26	3.37	23.44	3.37
HSDPA	1	22.33	4.26	21.88	5.38	22.38	5.26
	2	22.73	4.38	22	5.58	22.38	5.44
	3	22.53	4.38	22.06	5.14	22.28	5.21
	4	22.67	4.38	21.79	5.67	22.36	5.54
HSUPA	1	22.75	4.97	22.23	5.61	22.52	5.61
	2	22.9	5.02	22.08	5.56	22.79	5.66
	3	22.57	4.97	22.07	5.69	22.56	5.7
	4	22.84	5.1	22	5.91	22.84	5.76
	5	22.15	5.25	22.2	5.66	22.44	5.52
HSPA+ (16QAM)	1	22.17	5.38	21.87	5.74	22.11	5.84

ERP:

Channel	Conducted Power (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
Low	23.05	-0.94	0.2	21.91	38.45
Middle	23.26	-0.94	0.2	22.12	38.45
High	23.44	-0.94	0.2	22.3	38.45

LTE Band 2

Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.45	22.08	21.78
		RB1#3	22.41	22.00	21.92
		RB1#5	22.39	22.20	21.86
		RB3#0	22.59	22.21	22.02
		RB3#3	22.63	22.34	21.99
		RB6#0	21.66	21.27	20.98
	16QAM	RB1#0	21.50	21.89	20.80
		RB1#3	21.67	21.89	20.93
		RB1#5	22.45	21.87	20.89
		RB3#0	21.78	21.31	21.20
		RB3#3	21.77	21.38	21.14
		RB6#0	21.06	20.54	20.33
3MHz	QPSK	RB1#0	22.43	22.12	21.90
		RB1#8	22.31	22.14	21.93
		RB1#14	22.37	22.11	21.95
		RB6#0	21.55	21.30	20.98
		RB6#9	21.56	21.27	21.02
		RB15#0	21.61	21.20	20.98
	16QAM	RB1#0	21.99	21.84	20.94
		RB1#8	21.97	21.91	20.95
		RB1#14	21.94	21.90	20.99
		RB6#0	20.92	20.52	20.36
		RB6#9	20.94	20.51	20.33
		RB15#0	20.89	20.37	20.23
5MHz	QPSK	RB1#0	22.52	22.33	21.98
		RB1#13	22.50	22.36	21.95
		RB1#24	22.50	22.44	21.93
		RB15#0	21.65	21.15	21.04
		RB15#10	21.59	21.14	20.91
		RB25#0	21.53	21.22	21.04
	16QAM	RB1#0	20.93	21.55	20.79
		RB1#13	20.92	21.58	20.76
		RB1#24	20.87	21.61	20.76
		RB15#0	20.94	20.28	20.23
		RB15#10	20.83	20.33	20.22
		RB25#0	20.94	20.39	20.15
10MHz	QPSK	RB1#0	22.52	22.39	22.03
		RB1#25	22.43	22.38	22.02
		RB1#49	22.43	22.37	22.01
		RB25#0	21.59	21.29	21.04
		RB25#25	21.56	21.15	20.97
		RB50#0	21.49	21.17	20.99
	16QAM	RB1#0	22.04	21.62	20.56
		RB1#25	21.89	21.50	20.53
		RB1#49	21.89	21.49	20.54
		RB25#0	20.84	20.57	20.38
		RB25#25	20.77	20.56	20.33
		RB50#0	20.77	20.54	20.23

15MHz	QPSK	RB1#0	22.48	22.38	21.93
		RB1#38	22.34	22.29	21.96
		RB1#74	22.27	22.24	21.88
		RB36#0	21.59	21.19	21.09
		RB36#39	21.50	21.23	20.92
		RB75#0	21.46	21.32	21.07
	16QAM	RB1#0	22.15	21.53	21.49
		RB1#38	22.02	21.47	21.51
		RB1#74	21.93	21.52	21.45
		RB36#0	20.74	20.64	20.21
		RB36#39	20.71	20.57	20.21
		RB75#0	20.71	20.51	20.30
20MHz	QPSK	RB1#0	22.68	22.26	22.12
		RB1#50	22.54	22.20	22.18
		RB1#99	22.61	22.19	22.10
		RB50#0	21.53	21.23	20.99
		RB50#50	21.43	21.23	20.93
		RB100#0	21.36	21.28	21.04
	16QAM	RB1#0	21.95	22.25	21.30
		RB1#50	21.69	22.15	21.17
		RB1#99	21.74	21.99	21.12
		RB50#0	20.82	20.55	20.31
		RB50#50	20.72	20.38	20.23
		RB100#0	20.72	20.52	20.24

PAR:

Test Modulation		Channel Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit (dB)
QPSK	1 RB	20 MHz	5.00	5.87	4.55	13
	100 RB		5.54	5.61	5.58	13
16QAM	1 RB	20 MHz	5.99	6.96	5.71	13
	100 RB		6.41	6.31	6.38	13

EIRP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
1.4MHz	QPSK	Low	22.63	0.85	0.4	23.08	33.00
		Middle	22.34	0.85	0.4	22.79	33.00
		High	22.02	0.85	0.4	22.47	33.00
	16QAM	Low	22.45	0.85	0.4	22.9	33.00
		Middle	21.89	0.85	0.4	22.34	33.00
		High	21.20	0.85	0.4	21.65	33.00
3MHz	QPSK	Low	22.43	0.85	0.4	22.88	33.00
		Middle	22.14	0.85	0.4	22.59	33.00
		High	21.95	0.85	0.4	22.4	33.00
	16QAM	Low	21.99	0.85	0.4	22.44	33.00
		Middle	21.91	0.85	0.4	22.36	33.00
		High	20.99	0.85	0.4	21.44	33.00
5MHz	QPSK	Low	22.52	0.85	0.4	22.97	33.00
		Middle	22.44	0.85	0.4	22.89	33.00
		High	21.98	0.85	0.4	22.43	33.00
	16QAM	Low	20.94	0.85	0.4	21.39	33.00
		Middle	21.61	0.85	0.4	22.06	33.00
		High	20.79	0.85	0.4	21.24	33.00
10MHz	QPSK	Low	22.52	0.85	0.4	22.97	33.00
		Middle	22.39	0.85	0.4	22.84	33.00
		High	22.03	0.85	0.4	22.48	33.00
	16QAM	Low	22.04	0.85	0.4	22.49	33.00
		Middle	21.62	0.85	0.4	22.07	33.00
		High	20.56	0.85	0.4	21.01	33.00
15MHz	QPSK	Low	22.48	0.85	0.4	22.93	33.00
		Middle	22.38	0.85	0.4	22.83	33.00
		High	21.96	0.85	0.4	22.41	33.00
	16QAM	Low	22.15	0.85	0.4	22.6	33.00
		Middle	21.53	0.85	0.4	21.98	33.00
		High	21.51	0.85	0.4	21.96	33.00
20MHz	QPSK	Low	22.68	0.85	0.4	23.13	33.00
		Middle	22.26	0.85	0.4	22.71	33.00
		High	22.18	0.85	0.4	22.63	33.00
	16QAM	Low	21.95	0.85	0.4	22.4	33.00
		Middle	22.25	0.85	0.4	22.7	33.00
		High	21.30	0.85	0.4	21.75	33.00

LTE Band 4

Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	23.98	24.19	24.50
		RB1#3	23.90	24.22	24.54
		RB1#5	23.92	24.32	24.46
		RB3#0	24.04	24.31	24.32
		RB3#3	24.03	24.34	24.36
		RB6#0	23.03	23.44	23.28
	16QAM	RB1#0	24.01	24.15	23.43
		RB1#3	23.99	24.17	23.48
		RB1#5	24.02	24.16	23.45
		RB3#0	23.24	23.32	23.49
		RB3#3	23.26	23.37	23.44
		RB6#0	22.44	22.56	22.84
3MHz	QPSK	RB1#0	23.84	24.28	23.98
		RB1#8	23.93	24.38	24.03
		RB1#14	23.90	24.20	24.07
		RB6#0	23.01	23.34	22.75
		RB6#9	23.03	23.32	22.69
		RB15#0	23.05	23.34	22.88
	16QAM	RB1#0	23.62	24.15	23.06
		RB1#8	23.51	24.19	22.96
		RB1#14	23.56	24.20	23.01
		RB6#0	22.16	22.56	22.30
		RB6#9	22.18	22.10	22.31
		RB15#0	22.39	22.00	22.13
5MHz	QPSK	RB1#0	23.50	23.87	23.70
		RB1#13	23.54	23.85	23.70
		RB1#24	23.50	23.97	23.69
		RB15#0	22.54	22.78	22.71
		RB15#10	22.58	22.76	22.75
		RB25#0	22.51	22.80	22.73
	16QAM	RB1#0	21.75	23.09	22.42
		RB1#13	21.85	23.07	22.47
		RB1#24	21.87	23.15	22.45
		RB15#0	21.86	21.83	22.05
		RB15#10	21.87	21.84	22.02
		RB25#0	21.86	22.01	21.88
10MHz	QPSK	RB1#0	23.37	23.83	23.93
		RB1#25	23.44	23.85	23.88
		RB1#49	23.53	23.97	23.91
		RB25#0	22.47	22.82	22.81
		RB25#25	22.52	22.82	22.72
		RB50#0	22.51	22.85	22.81
	16QAM	RB1#0	22.89	22.98	22.45
		RB1#25	23.07	23.04	22.38
		RB1#49	23.07	23.10	22.47
		RB25#0	21.76	22.13	22.13
		RB25#25	21.89	22.08	22.10
		RB50#0	21.91	22.10	22.03

15MHz	QPSK	RB1#0	23.33	23.88	23.88
		RB1#38	23.38	23.95	23.93
		RB1#74	23.58	23.93	23.91
		RB36#0	22.61	22.82	22.81
		RB36#39	22.73	22.82	22.82
		RB75#0	22.69	22.78	22.81
	16QAM	RB1#0	22.94	22.91	23.40
		RB1#38	23.12	23.03	23.20
		RB1#74	23.22	23.09	23.23
		RB36#0	21.87	22.06	21.99
		RB36#39	21.98	22.12	22.07
		RB75#0	21.96	22.01	22.02
20MHz	QPSK	RB1#0	23.01	23.11	23.24
		RB1#50	23.21	23.13	23.32
		RB1#99	23.34	23.32	23.38
		RB50#0	22.00	22.27	22.26
		RB50#50	22.15	22.31	22.29
		RB100#0	22.09	22.30	22.26
	16QAM	RB1#0	22.25	22.71	22.86
		RB1#50	22.49	22.73	22.92
		RB1#99	22.56	22.82	23.06
		RB50#0	21.29	21.63	21.51
		RB50#50	21.48	21.67	21.44
		RB100#0	21.33	21.54	21.57

PAR, Band 4

Test Modulation		Channel Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.90	5.10	5.00	13
	100 RB		5.74	5.64	5.71	13
16QAM	1 RB	20 MHz	6.19	6.44	6.03	13
	100 RB		6.60	6.44	6.63	13

EIRP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
1.4MHz	QPSK	Low	24.04	1.23	0.4	24.87	30
		Middle	24.34	1.23	0.4	25.17	30
		High	24.54	1.23	0.4	25.37	30
	16QAM	Low	24.02	1.23	0.4	24.85	30
		Middle	24.17	1.23	0.4	25	30
		High	23.49	1.23	0.4	24.32	30
3MHz	QPSK	Low	23.93	1.23	0.4	24.76	30
		Middle	24.38	1.23	0.4	25.21	30
		High	24.07	1.23	0.4	24.9	30
	16QAM	Low	23.62	1.23	0.4	24.45	30
		Middle	24.20	1.23	0.4	25.03	30
		High	23.06	1.23	0.4	23.89	30
5MHz	QPSK	Low	23.54	1.23	0.4	24.37	30
		Middle	23.97	1.23	0.4	24.8	30
		High	23.70	1.23	0.4	24.53	30
	16QAM	Low	21.87	1.23	0.4	22.7	30
		Middle	23.15	1.23	0.4	23.98	30
		High	22.47	1.23	0.4	23.3	30
10MHz	QPSK	Low	23.53	1.23	0.4	24.36	30
		Middle	23.97	1.23	0.4	24.8	30
		High	23.93	1.23	0.4	24.76	30
	16QAM	Low	23.07	1.23	0.4	23.9	30
		Middle	23.10	1.23	0.4	23.93	30
		High	22.47	1.23	0.4	23.3	30
15MHz	QPSK	Low	23.58	1.23	0.4	24.41	30
		Middle	23.95	1.23	0.4	24.78	30
		High	23.93	1.23	0.4	24.76	30
	16QAM	Low	23.22	1.23	0.4	24.05	30
		Middle	23.09	1.23	0.4	23.92	30
		High	23.40	1.23	0.4	24.23	30
20MHz	QPSK	Low	23.34	1.23	0.4	24.17	30
		Middle	23.32	1.23	0.4	24.15	30
		High	23.38	1.23	0.4	24.21	30
	16QAM	Low	22.56	1.23	0.4	23.39	30
		Middle	22.82	1.23	0.4	23.65	30
		High	23.06	1.23	0.4	23.89	30

LTE Band 5

Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.63	23.37	23.88
		RB1#3	23.06	23.43	23.90
		RB1#5	23.09	23.48	23.94
		RB3#0	23.19	23.60	23.80
		RB3#3	23.25	23.56	23.80
		RB6#0	22.23	22.53	22.77
	16QAM	RB1#0	21.86	23.26	22.32
		RB1#3	21.87	23.23	22.36
		RB1#5	21.89	23.32	22.37
		RB3#0	22.20	22.40	22.54
		RB3#3	22.25	22.49	22.54
		RB6#0	21.42	21.76	21.91
3MHz	QPSK	RB1#0	23.03	23.44	23.84
		RB1#8	23.05	23.54	23.83
		RB1#14	23.10	23.56	23.89
		RB6#0	22.16	22.50	22.80
		RB6#9	22.22	22.53	22.90
		RB15#0	22.26	22.58	22.82
	16QAM	RB1#0	22.27	23.22	22.43
		RB1#8	22.24	23.27	22.39
		RB1#14	22.30	23.26	22.54
		RB6#0	21.24	21.50	21.99
		RB6#9	21.37	21.83	22.08
		RB15#0	21.22	21.67	21.74
5MHz	QPSK	RB1#0	23.04	23.45	23.68
		RB1#13	23.14	23.61	23.72
		RB1#24	23.28	23.60	23.77
		RB15#0	22.28	22.57	22.79
		RB15#10	22.34	22.45	22.79
		RB25#0	22.29	22.45	22.81
	16QAM	RB1#0	21.42	22.62	22.34
		RB1#13	21.46	22.60	22.51
		RB1#24	21.48	22.74	22.54
		RB15#0	21.26	21.37	21.82
		RB15#10	21.32	21.55	21.82
		RB25#0	21.33	21.72	21.70
10MHz	QPSK	RB1#0	23.13	23.45	23.51
		RB1#25	23.33	23.74	23.66
		RB1#49	23.41	23.83	23.84
		RB25#0	22.30	22.45	22.67
		RB25#25	22.39	22.73	22.77
		RB50#0	22.23	22.50	22.77
	16QAM	RB1#0	22.58	22.50	22.07
		RB1#25	22.64	22.72	22.25
		RB1#49	22.84	22.87	22.39
		RB25#0	21.28	21.65	21.85
		RB25#25	21.61	21.88	21.96
		RB50#0	21.37	21.77	21.77

PAR:

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	5.10	5.29	5.26	13
	50 RB		5.64	5.64	5.64	13
16QAM	1 RB	10 MHz	5.71	6.19	6.63	13
	50 RB		6.51	6.47	6.38	13

ERP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
1.4MHz	QPSK	Low	23.25	-0.94	0.2	22.11	38.45
		Middle	23.60	-0.94	0.2	22.46	38.45
		High	23.94	-0.94	0.2	22.8	38.45
	16QAM	Low	22.25	-0.94	0.2	21.11	38.45
		Middle	23.32	-0.94	0.2	22.18	38.45
		High	22.54	-0.94	0.2	21.4	38.45
3MHz	QPSK	Low	23.10	-0.94	0.2	21.96	38.45
		Middle	23.56	-0.94	0.2	22.42	38.45
		High	23.89	-0.94	0.2	22.75	38.45
	16QAM	Low	22.30	-0.94	0.2	21.16	38.45
		Middle	23.27	-0.94	0.2	22.13	38.45
		High	22.54	-0.94	0.2	21.4	38.45
5MHz	QPSK	Low	23.28	-0.94	0.2	22.14	38.45
		Middle	23.61	-0.94	0.2	22.47	38.45
		High	23.77	-0.94	0.2	22.63	38.45
	16QAM	Low	21.48	-0.94	0.2	20.34	38.45
		Middle	22.74	-0.94	0.2	21.6	38.45
		High	22.54	-0.94	0.2	21.4	38.45
10MHz	QPSK	Low	23.41	-0.94	0.2	22.27	38.45
		Middle	23.83	-0.94	0.2	22.69	38.45
		High	23.84	-0.94	0.2	22.7	38.45
	16QAM	Low	22.84	-0.94	0.2	21.7	38.45
		Middle	22.87	-0.94	0.2	21.73	38.45
		High	22.39	-0.94	0.2	21.25	38.45

LTE Band 7

Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	21.59	21.63	21.08
		RB1#13	21.57	21.64	21.10
		RB1#24	21.58	21.55	21.12
		RB15#0	20.69	20.58	20.18
		RB15#10	20.68	20.45	20.23
		RB25#0	20.64	20.48	20.24
	16QAM	RB1#0	20.14	20.73	19.85
		RB1#13	20.11	20.68	20.39
		RB1#24	20.16	20.59	20.46
		RB15#0	19.89	19.71	19.88
		RB15#10	19.90	19.56	19.89
		RB25#0	19.99	19.76	19.81
10MHz	QPSK	RB1#0	22.05	24.75	21.20
		RB1#25	22.05	25.15	21.18
		RB1#49	22.08	24.65	21.24
		RB25#0	21.20	23.42	20.23
		RB25#25	21.20	23.62	20.28
		RB50#0	16.16	23.54	20.27
	16QAM	RB1#0	18.19	21.92	19.70
		RB1#25	15.51	22.16	19.73
		RB1#49	17.59	20.93	19.74
		RB25#0	15.41	19.79	19.46
		RB25#25	15.24	19.70	19.51
		RB50#0	15.37	19.71	19.41
15MHz	QPSK	RB1#0	21.55	22.19	21.65
		RB1#38	21.50	21.99	21.68
		RB1#74	21.63	21.86	21.74
		RB36#0	20.68	21.21	20.54
		RB36#39	20.73	20.97	20.62
		RB75#0	20.72	21.08	20.70
	16QAM	RB1#0	21.03	21.59	21.11
		RB1#38	21.03	21.40	21.18
		RB1#74	21.16	21.32	21.17
		RB36#0	19.82	20.42	19.84
		RB36#39	19.96	20.23	19.91
		RB75#0	20.35	20.20	19.85
20MHz	QPSK	RB1#0	22.25	22.74	22.34
		RB1#50	22.72	22.54	22.34
		RB1#99	22.83	22.27	22.34
		RB50#0	21.66	21.68	21.08
		RB50#50	21.66	21.46	21.25
		RB100#0	21.70	21.47	21.20
	16QAM	RB1#0	21.74	22.39	21.92
		RB1#50	21.71	22.18	21.94
		RB1#99	21.92	21.92	21.91
		RB50#0	20.90	21.01	20.28
		RB50#50	21.02	20.83	20.38
		RB100#0	20.88	20.58	20.39

PAR:

Test Modulation		Channel Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit (dB)
QPSK	1 RB	20 MHz	3.75	4.55	4.26	13
	100 RB		5.16	5.29	5.06	13
16QAM	1 RB	20 MHz	4.71	5.38	5.13	13
	100 RB		5.90	6.15	5.83	13

EIRP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
5MHz	QPSK	Low	21.59	1.36	0.4	22.55	33.00
		Middle	21.64	1.36	0.4	22.6	33.00
		High	21.12	1.36	0.4	22.08	33.00
	16QAM	Low	20.16	1.36	0.4	21.12	33.00
		Middle	20.73	1.36	0.4	21.69	33.00
		High	20.46	1.36	0.4	21.42	33.00
10MHz	QPSK	Low	22.08	1.36	0.4	23.04	33.00
		Middle	25.15	1.36	0.4	26.11	33.00
		High	21.24	1.36	0.4	22.2	33.00
	16QAM	Low	18.19	1.36	0.4	19.15	33.00
		Middle	22.16	1.36	0.4	23.12	33.00
		High	19.74	1.36	0.4	20.7	33.00
15MHz	QPSK	Low	21.63	1.36	0.4	22.59	33.00
		Middle	22.19	1.36	0.4	23.15	33.00
		High	21.74	1.36	0.4	22.7	33.00
	16QAM	Low	21.16	1.36	0.4	22.12	33.00
		Middle	21.59	1.36	0.4	22.55	33.00
		High	21.18	1.36	0.4	22.14	33.00
20MHz	QPSK	Low	22.83	1.36	0.4	23.79	33.00
		Middle	22.74	1.36	0.4	23.7	33.00
		High	22.34	1.36	0.4	23.3	33.00
	16QAM	Low	21.92	1.36	0.4	22.88	33.00
		Middle	22.39	1.36	0.4	23.35	33.00
		High	21.94	1.36	0.4	22.9	33.00

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) Result = Conducted Power - Cable loss + Antenna Gain
3) Antenna gain(dBd)= Antenna gain(dBi)-2.15

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

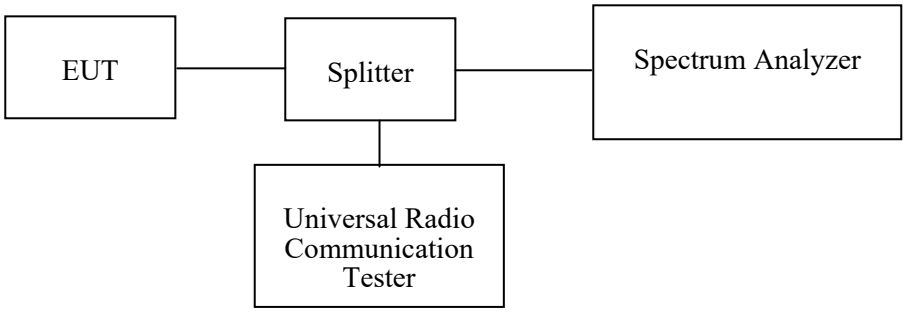
Applicable Standard

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

Test Procedure

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

The 26 dB & 99% bandwidth was recorded.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2020-07-07	2021-07-07
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	Two-way Spliter	ODP-1-6-2S	OE0120142	Each time	N/A

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

Test Data

Environmental Conditions

Temperature:	25.6~26.7 °C
Relative Humidity:	37~49%
ATM Pressure:	101.1 ~101.3kPa
Tester:	James Chen
Test Date:	2020-11-03~2020-11-06

Test Mode: Transmitting

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

GSM&EDGE:

Band	Operation Mode	99% Occupied Bandwidth (kHz)			26 dB Occupied Bandwidth (kHz)		
		Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
Cellular	GSM	244.00	244.00	244.00	304.49	306.09	306.09
	EGPRS	245.19	248.40	243.59	323.72	321.15	318.91
PCS	GSM	245.19	245.19	246.79	309.29	312.18	307.37
	EGPRS	245.19	245.19	245.19	315.38	317.31	318.91

WCDMA:

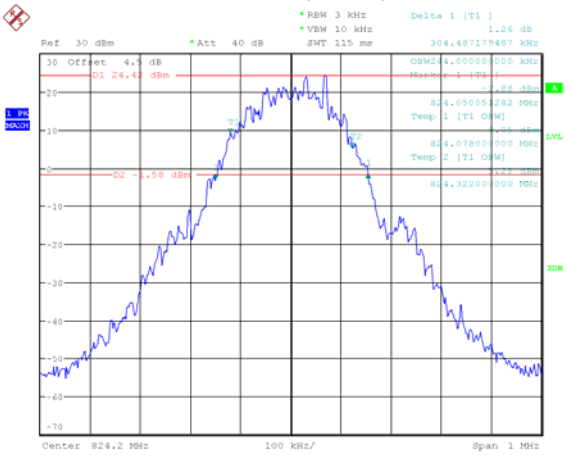
Band	Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
		Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
PCS	Rel 99	4.15	4.15	4.17	4.71	4.71	4.91
	HSDPA	4.17	4.17	4.17	4.73	4.71	4.71
	HSUPA	4.15	4.15	4.17	4.96	4.70	4.72
Cellular	Rel 99	4.15	4.17	4.17	4.71	4.70	4.71
	HSDPA	4.15	4.17	4.17	4.68	4.69	4.72
	HSUPA	4.15	4.15	4.17	4.71	4.70	4.69

LTE Bands:

Band	Bandwidth (MHz)	Modulation mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
			Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
LTE Band 2	1.4 MHz	QPSK	1.104	1.104	1.104	1.332	1.338	1.356
		16QAM	1.098	1.104	1.098	1.302	1.302	1.284
	3 MHz	QPSK	2.712	2.700	2.700	3.000	3.012	3.024
		16QAM	2.700	2.700	2.700	3.084	3.024	3.072
	5 MHz	QPSK	4.540	4.560	4.540	5.220	5.300	5.500
		16QAM	4.560	4.540	4.560	5.520	5.400	5.480
	10 MHz	QPSK	8.960	9.000	8.960	9.800	9.840	9.840
		16QAM	8.960	8.960	8.960	9.760	9.800	9.920
	15 MHz	QPSK	13.500	13.620	13.560	15.360	15.660	15.420
		16QAM	13.560	13.560	13.680	15.300	15.240	15.420
	20 MHz	QPSK	18.000	18.080	18.000	19.840	19.920	19.920
		16QAM	18.000	18.080	18.080	19.840	19.920	20.000
LTE Band 4	1.4 MHz	QPSK	1.110	1.104	1.110	1.314	1.290	1.320
		16QAM	1.098	1.110	1.098	1.296	1.296	1.284
	3 MHz	QPSK	2.712	2.700	2.712	3.036	3.012	3.048
		16QAM	2.700	2.700	2.700	3.096	3.024	3.108
	5 MHz	QPSK	4.540	4.560	4.540	5.260	5.260	5.340
		16QAM	4.540	4.540	4.560	5.340	5.300	5.440
	10 MHz	QPSK	8.960	9.000	8.960	9.840	9.760	9.880
		16QAM	9.000	9.000	8.960	9.840	9.760	9.920
	15 MHz	QPSK	13.560	13.560	13.560	15.600	15.120	15.540
		16QAM	13.680	13.560	13.680	15.420	15.180	15.480
	20 MHz	QPSK	18.080	17.920	18.000	19.840	19.600	20.080
		16QAM	18.080	18.000	18.080	19.680	19.920	20.160

Band	Bandwidth (MHz)	Modulation mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
			Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
LTE Band 5	1.4 MHz	QPSK	1.110	1.110	1.110	1.338	1.284	1.314
		16QAM	1.098	1.110	1.098	1.308	1.278	1.320
	3 MHz	QPSK	2.688	2.700	2.700	3.036	3.012	3.024
		16QAM	2.700	2.700	2.700	3.060	3.012	3.084
	5 MHz	QPSK	4.540	4.560	4.540	5.280	5.400	5.320
		16QAM	4.560	4.540	4.580	5.280	5.300	5.400
	10 MHz	QPSK	8.960	9.000	8.960	9.760	9.800	9.680
		16QAM	8.960	8.960	8.960	9.880	9.720	9.880
LTE Band 7	5 MHz	QPSK	4.520	4.560	4.520	5.200	5.320	5.260
		16QAM	4.560	4.540	4.560	5.460	5.360	5.480
	10 MHz	QPSK	8.960	8.960	8.960	9.880	9.840	9.880
		16QAM	8.960	8.960	8.960	9.880	9.840	9.840
	15 MHz	QPSK	13.500	13.560	13.560	15.180	15.600	14.940
		16QAM	13.620	13.560	13.560	15.420	15.120	15.360
	20 MHz	QPSK	18.000	18.000	18.000	20.000	19.760	20.000
		16QAM	18.000	18.080	18.000	20.080	20.080	19.760

Cellular 850 Band, GSM, Low Channel



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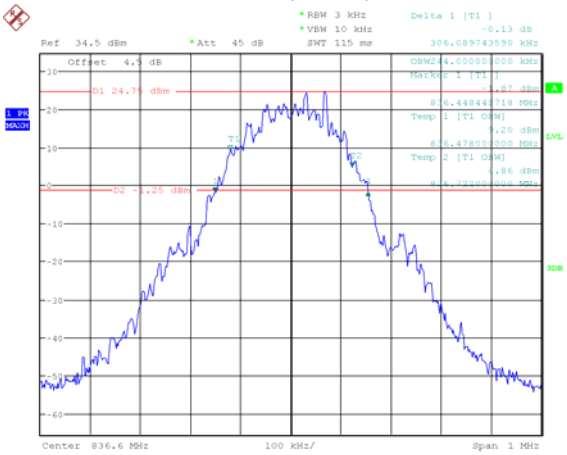
Cellular 850 Band, GSM, Middle Channel



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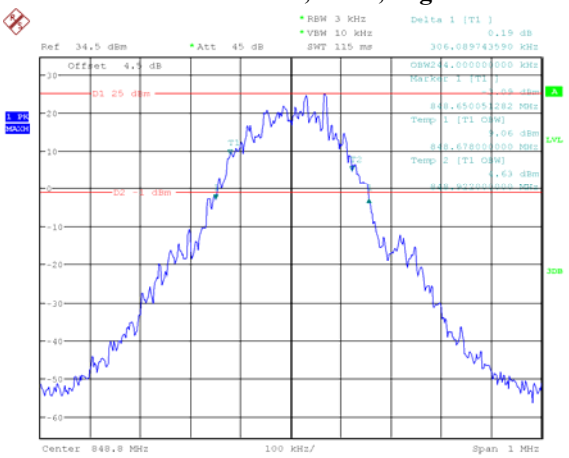
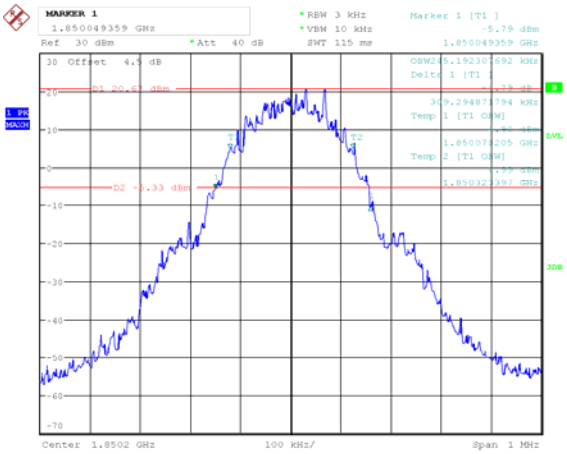
Cellular 850 Band, GSM, High Channel



Date: 6.NOV.2020 23:20:57

PCS 1900 Band, GSM, Low Channel



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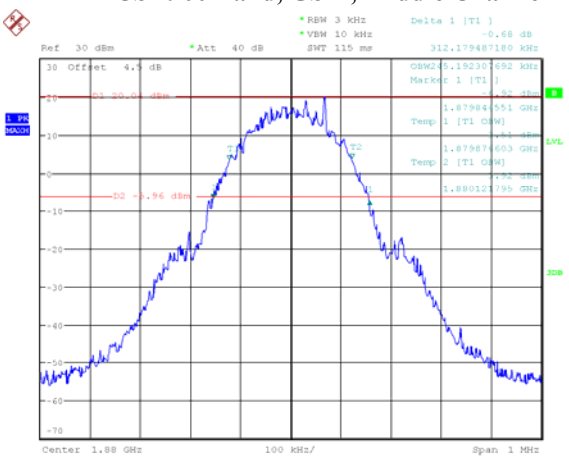
PCS 1900 Band, GSM, Middle Channel



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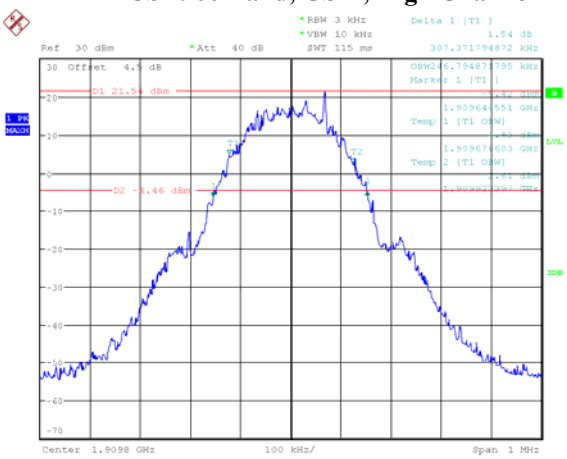
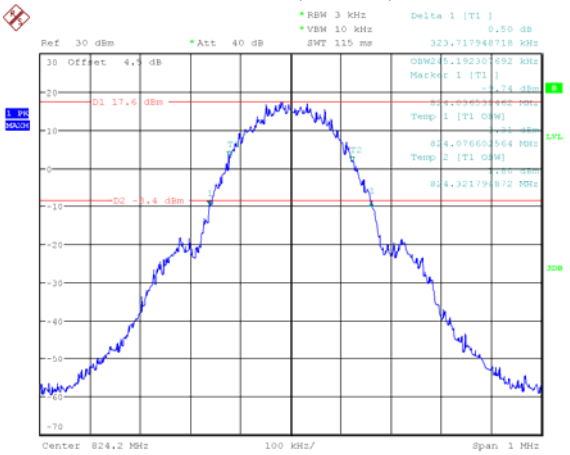
PCS 1900 Band, GSM, High Channel



Date: 8.NOV.2020 10:25:57

Cellular 850 Band, EDGE, Low Channel



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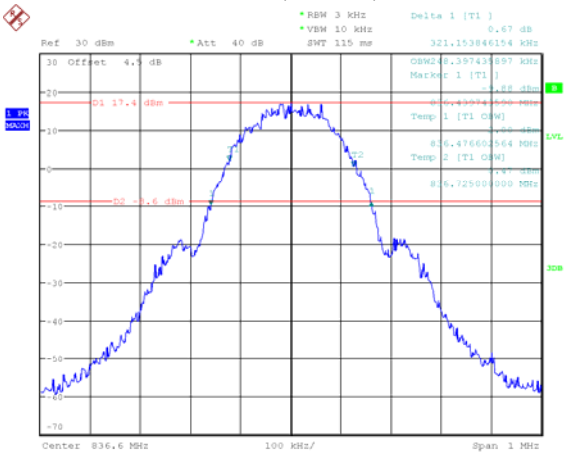
Cellular 850 Band, EDGE, Middle Channel



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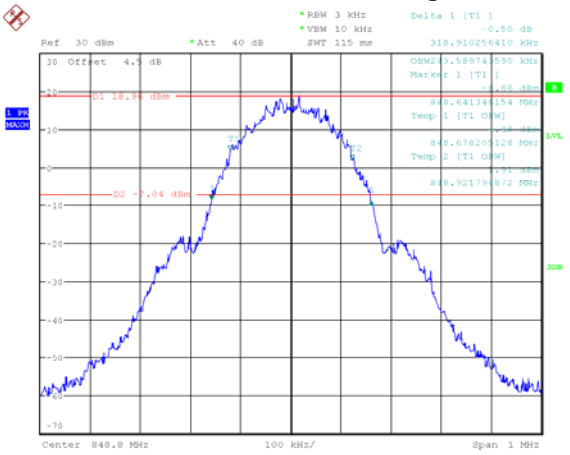
Cellular 850 Band, EDGE, High Channel



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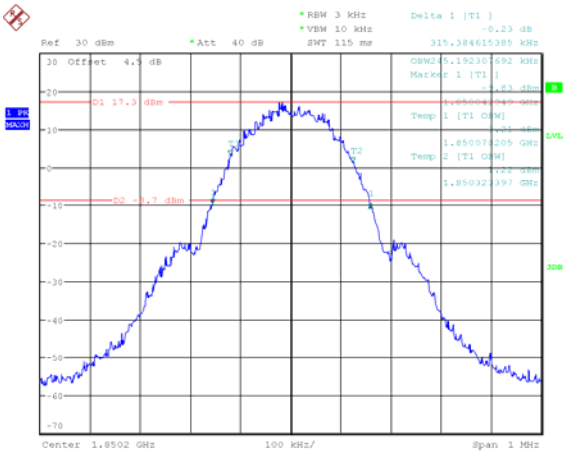
PCS 1900 Band, EDGE, Low Channel



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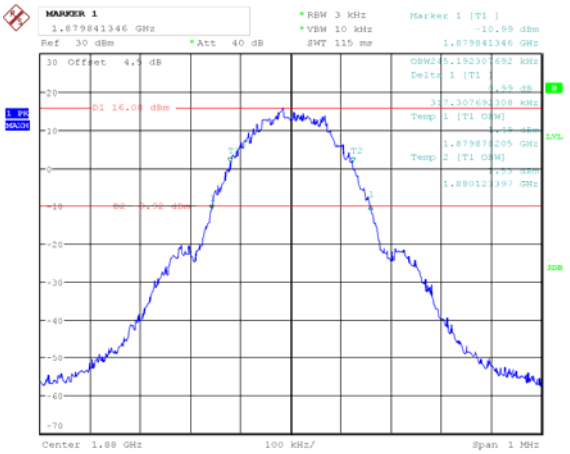
PCS 1900 Band, EDGE, Middle Channel



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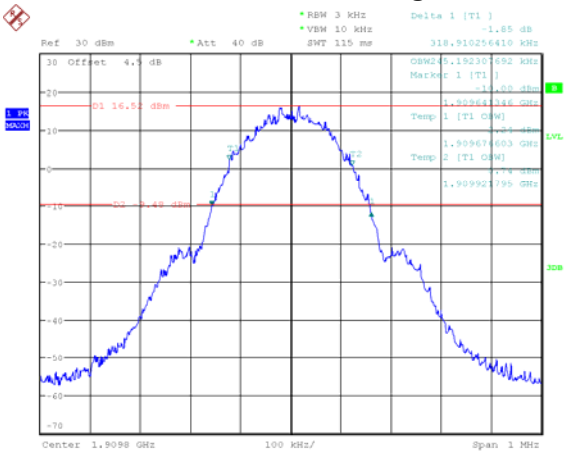
PCS 1900 Band, EDGE, High Channel



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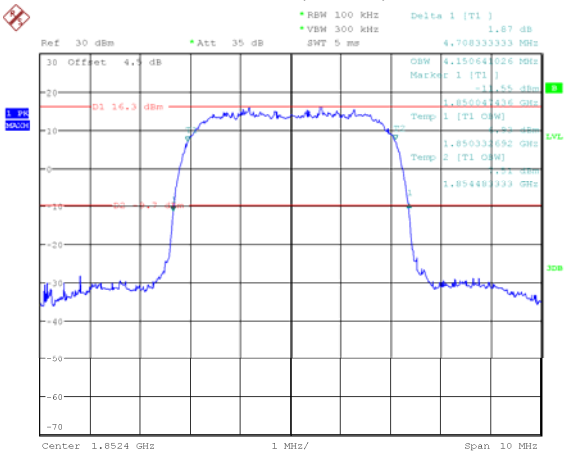
WCDMA Band II, Rel99, Low Channel



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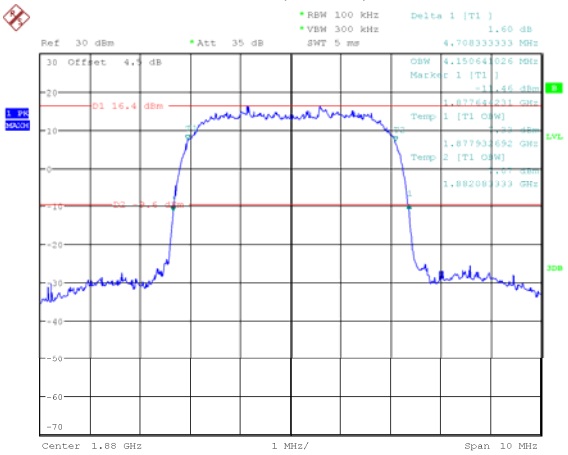
WCDMA Band II, Rel99, Middle Channel



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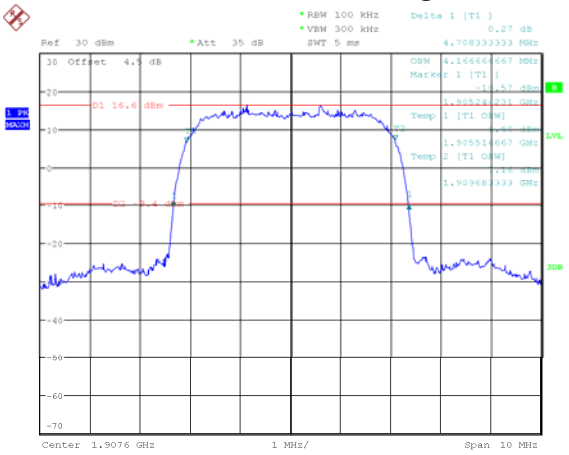
WCDMA Band II, Rel99, High Channel



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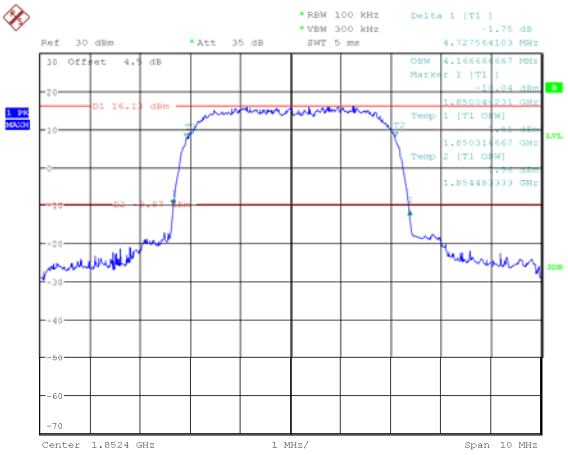
WCDMA Band II, HSDPA, Low Channel



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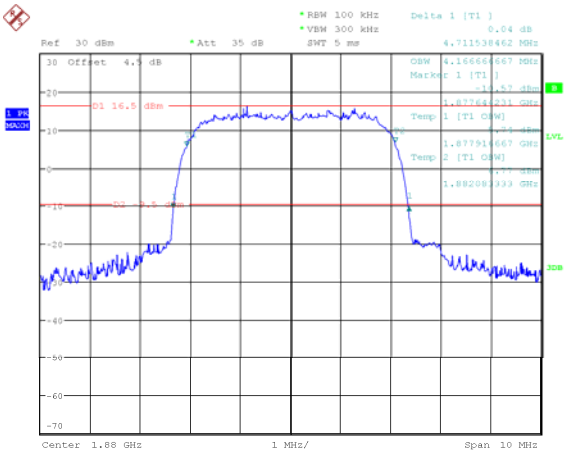
WCDMA Band II, HSDPA, Middle Channel



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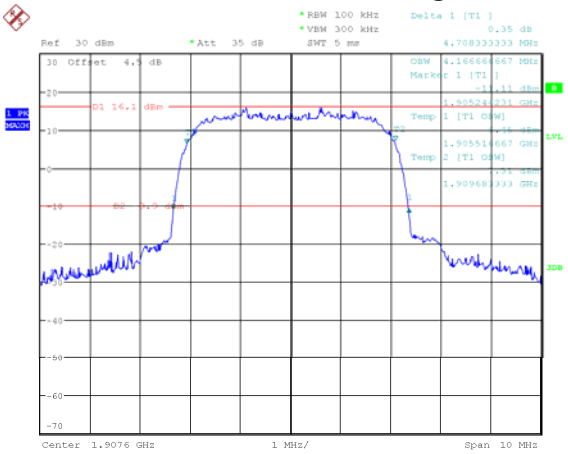
WCDMA Band II, HSDPA, High Channel



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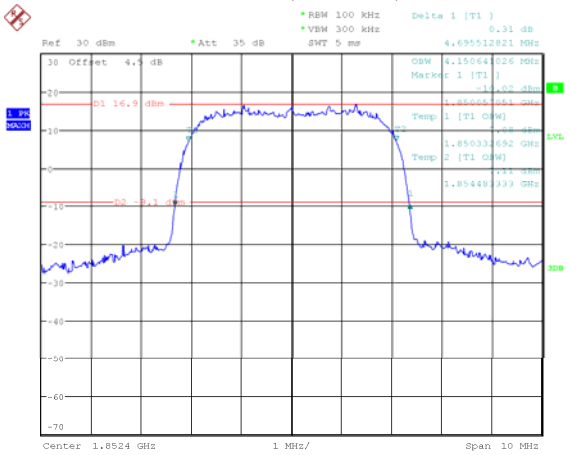
WCDMA Band II, HSUPA, Low Channel



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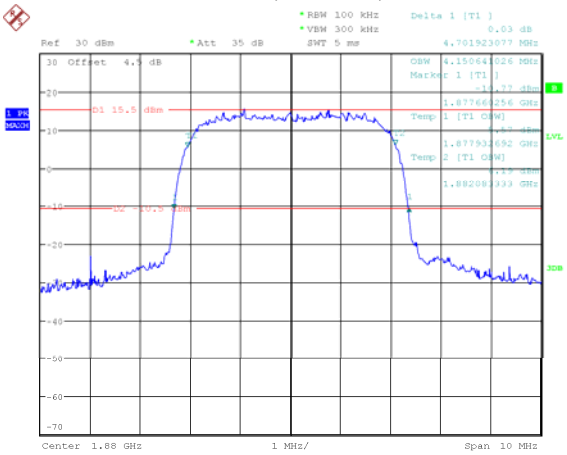

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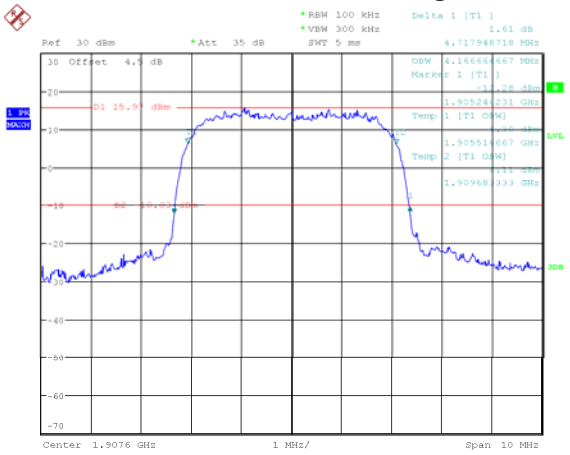
WCDMA Band II, HSUPA, High Channel



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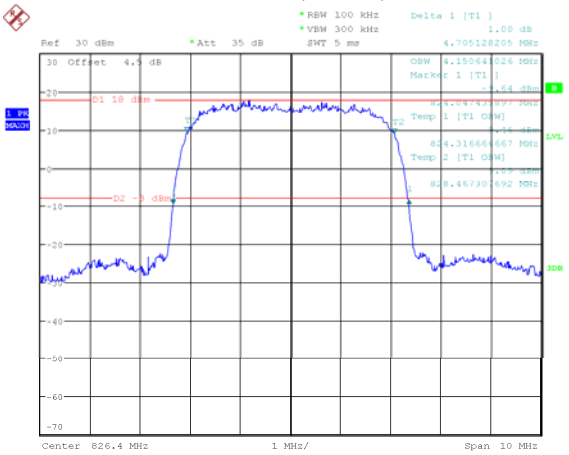
WCDMA Band V, Rel99, Low Channel



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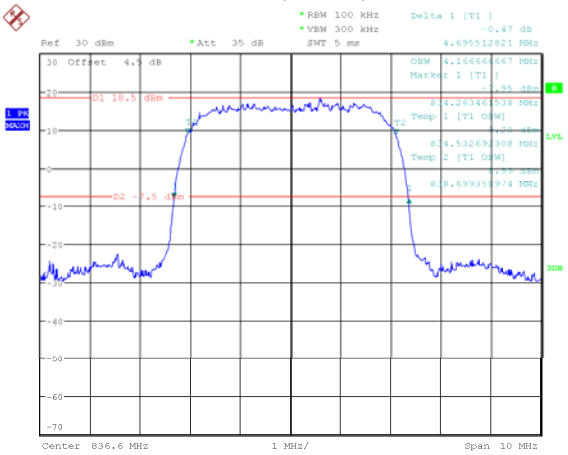
WCDMA Band V, Rel99, Middle Channel



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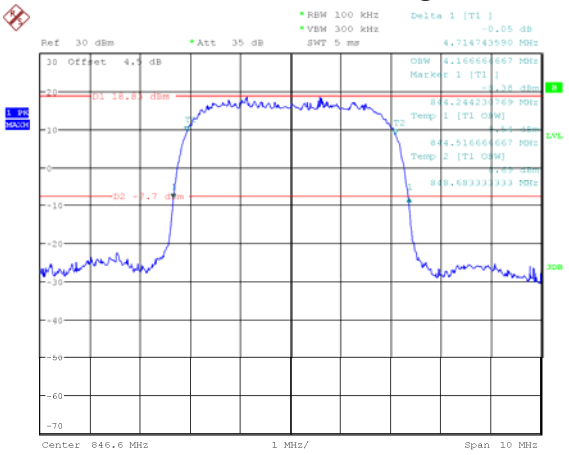
WCDMA Band V, Rel99, High Channel



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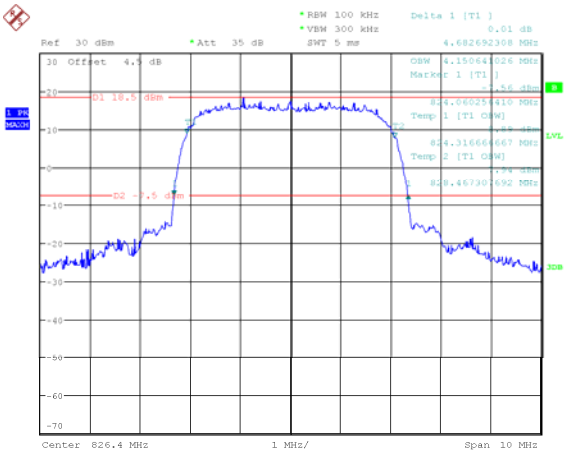
WCDMA Band V, HSDPA, Low Channel



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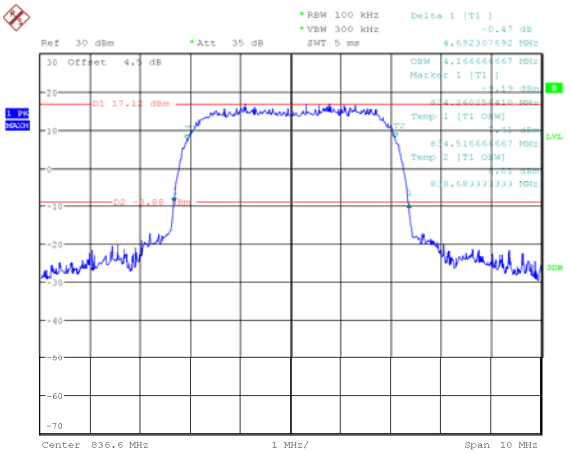
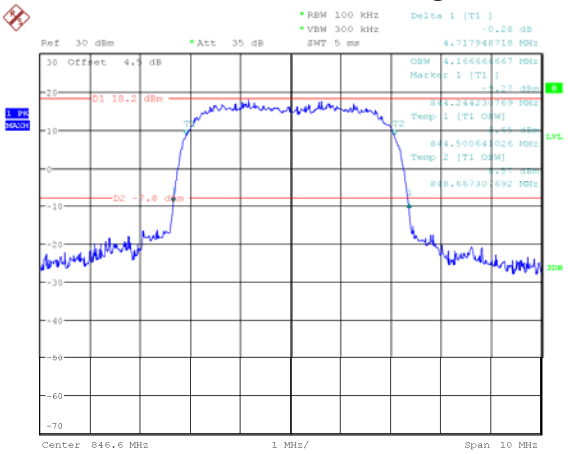
WCDMA Band V, HSDPA, Middle Channel



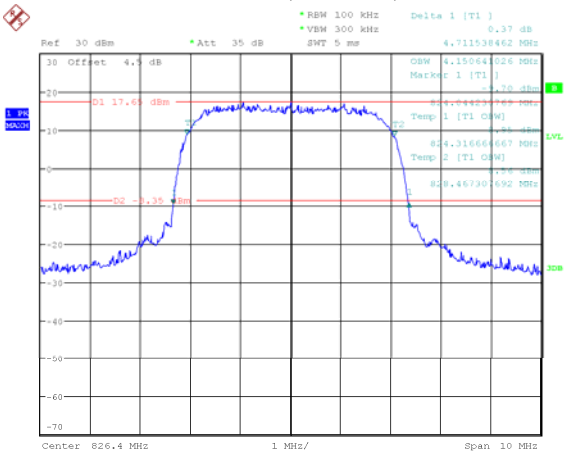
Date: 6.NOV.2020 21:28:38

WCDMA Band V, HSDPA, High Channel



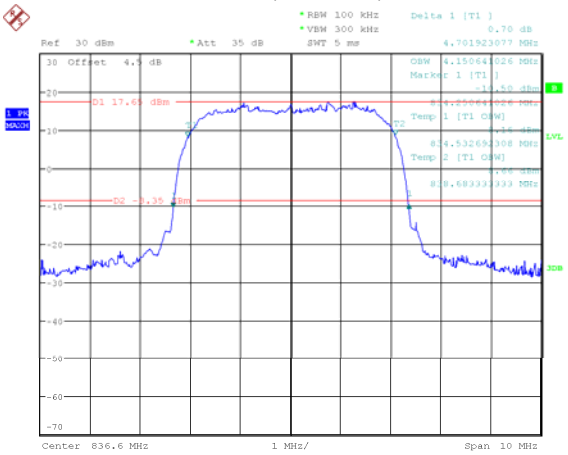
Date: 6.NOV.2020 21:30:35

WCDMA Band V, HSUPA, Low Channel



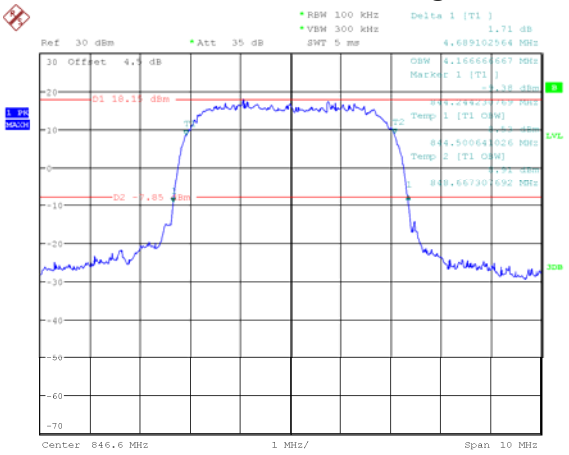
Date: 6.NOV.2020 21:55:27

WCDMA Band V, HSUPA, Middle Channel



Date: 6.NOV.2020 21:53:58

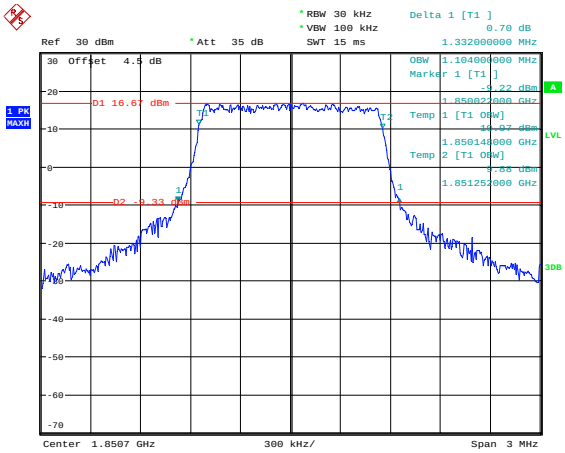
WCDMA Band V, HSUPA, High Channel



Date: 6.NOV.2020 21:48:44

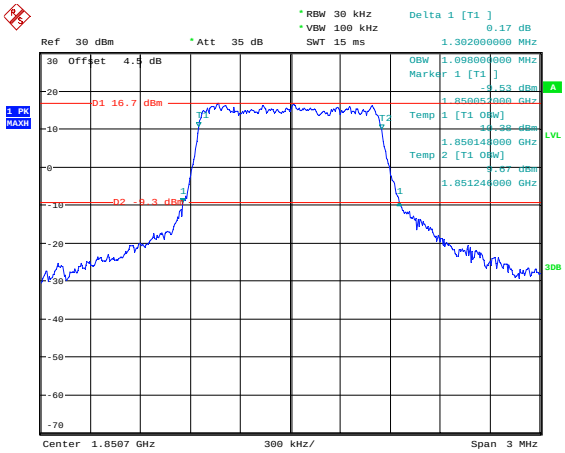
LTE Band 2

1.4M, QPSK, Low Channel



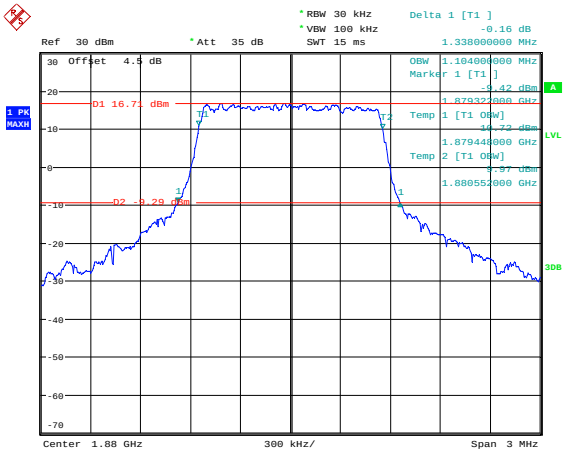
Date: 3.NOV.2020 18:48:57

1.4M, 16QAM, Low Channel



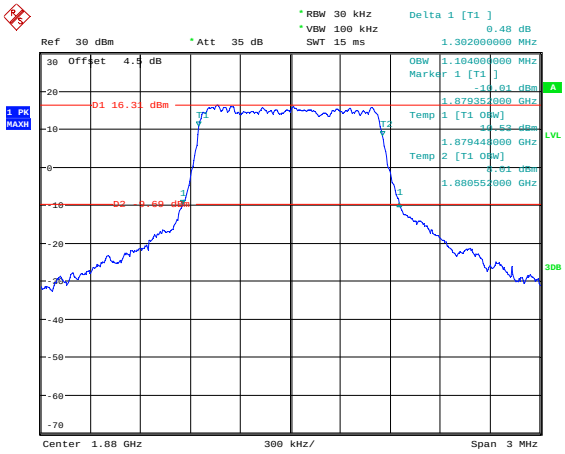
Date: 3.NOV.2020 18:49:25

1.4M, QPSK, Middle Channel



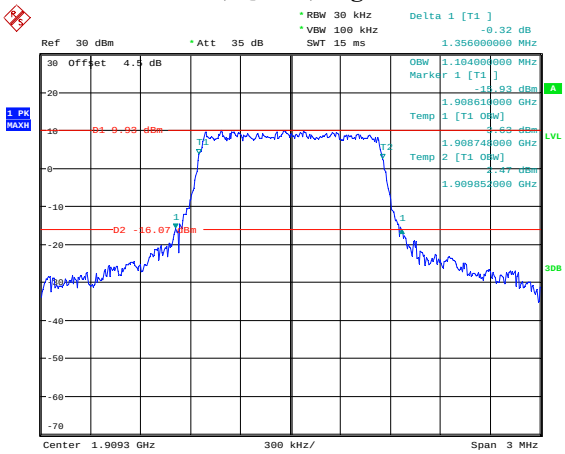
Date: 3.NOV.2020 21:44:29

1.4M, 16QAM, Middle Channel



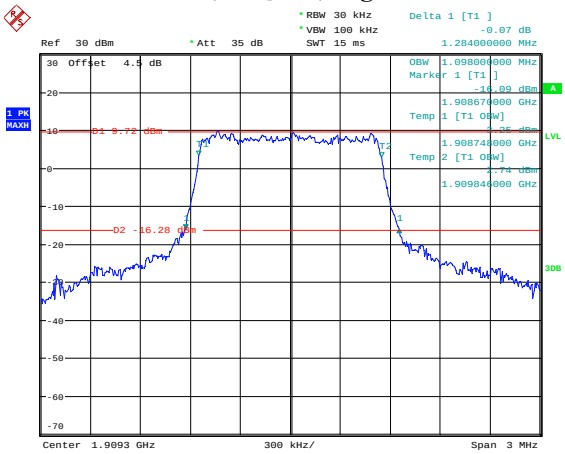
Date: 3.NOV.2020 21:45:21

1.4M, QPSK, High Channel



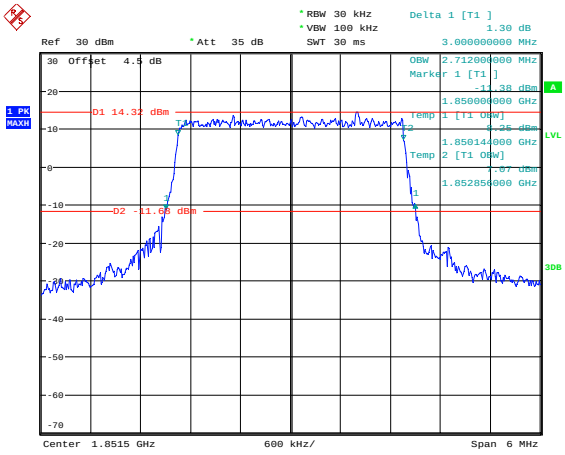
Date: 5.NOV.2020 23:35:00

1.4M, 16QAM, High Channel



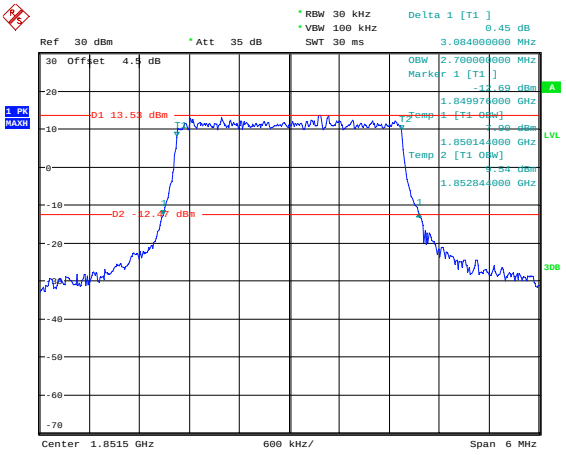
Date: 5.NOV.2020 23:35:23

3M, QPSK, Low Channel



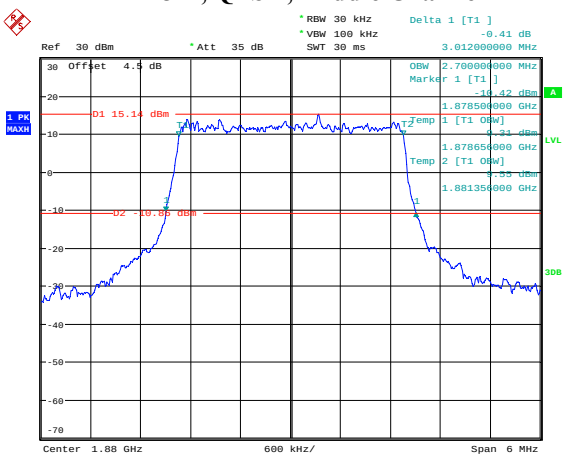
Date: 3.NOV.2020 18:55:43

3M, 16QAM, Low Channel



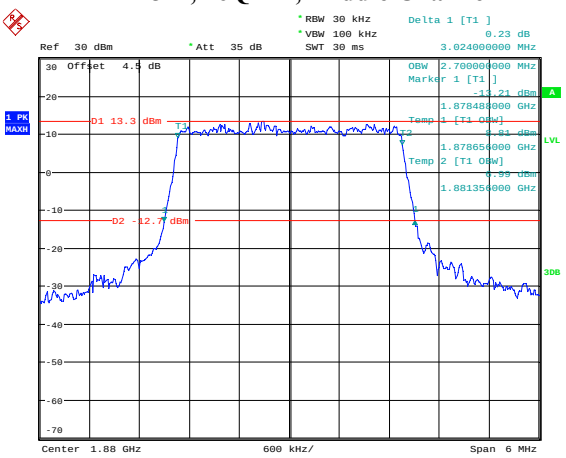
Date: 3.NOV.2020 18:56:08

3M, QPSK, Middle Channel



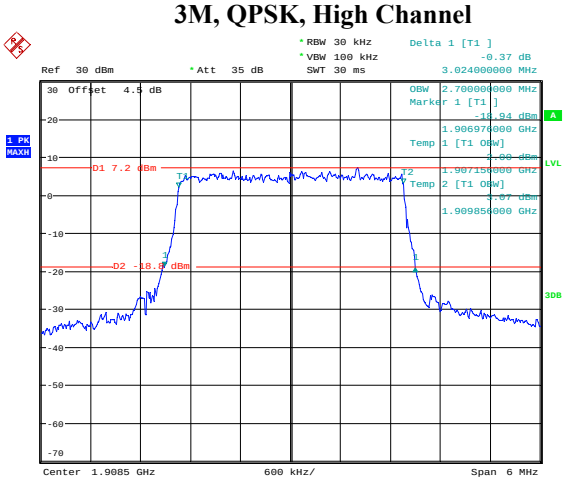
Date: 3.NOV.2020 21:45:58

3M, 16QAM, Middle Channel



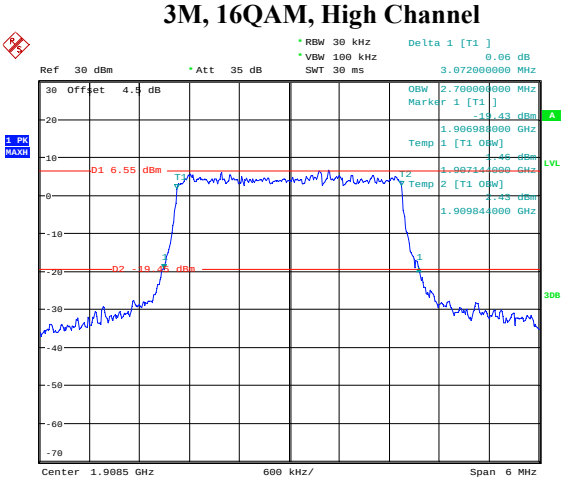
Date: 3.NOV.2020 21:46:25

3M, QPSK, High Channel



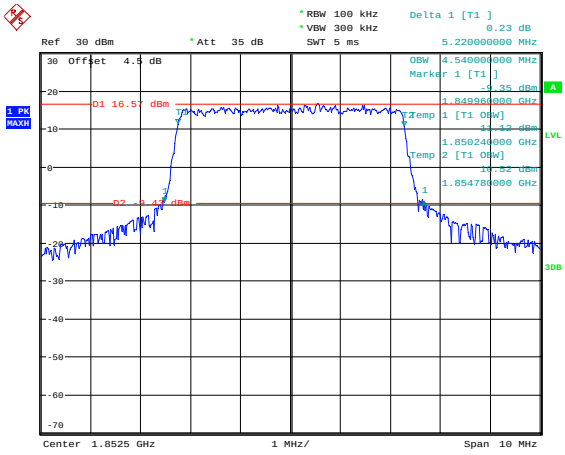
Date: 5.NOV.2020 23:37:07

3M, 16QAM, High Channel



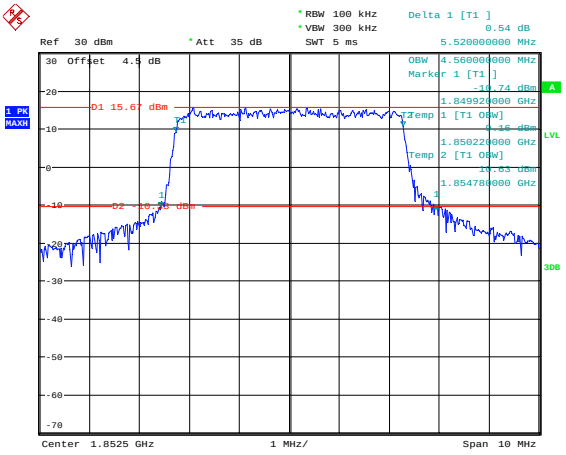
Date: 5.NOV.2020 23:37:42

5M, QPSK, Low Channel



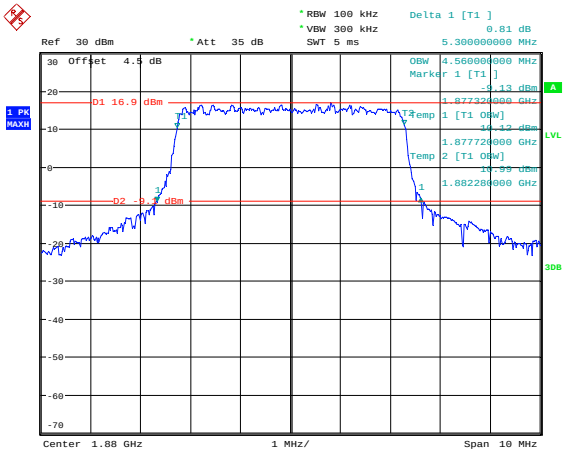
Date: 3.NOV.2020 18:58:44

5M, 16QAM, Low Channel



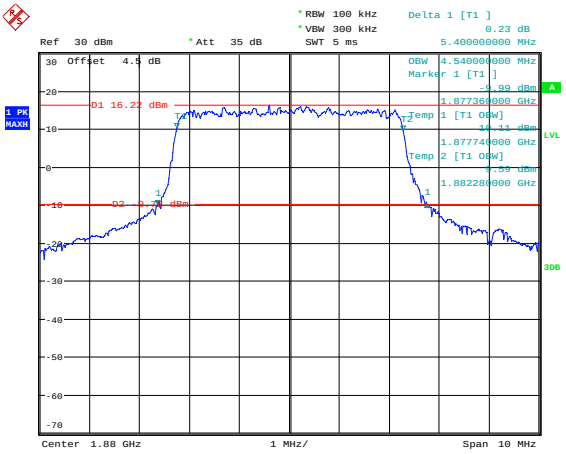
Date: 3.NOV.2020 18:59:16

5M, QPSK, Middle Channel



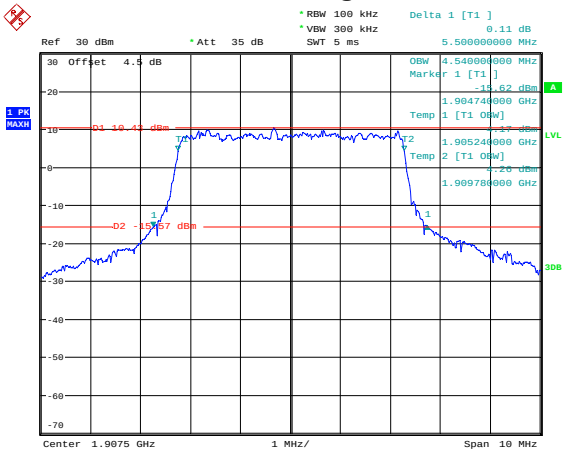
Date: 3.NOV.2020 21:47:03

5M, 16QAM, Middle Channel



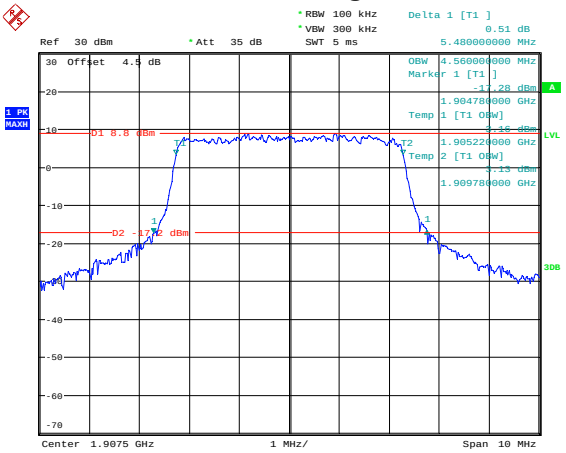
Date: 3.NOV.2020 21:47:49

5M, QPSK, High Channel



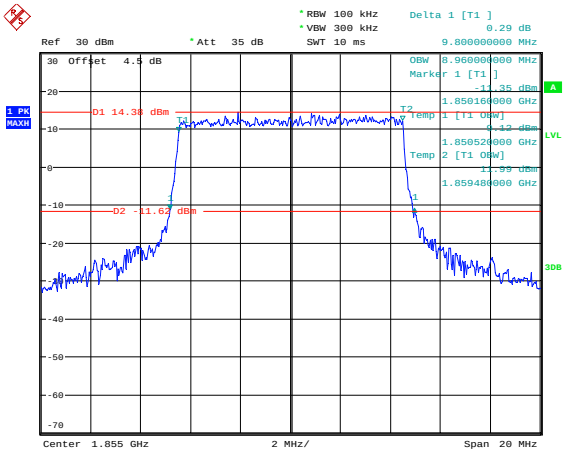
Date: 5.NOV.2020 23:40:10

5M, 16QAM, High Channel

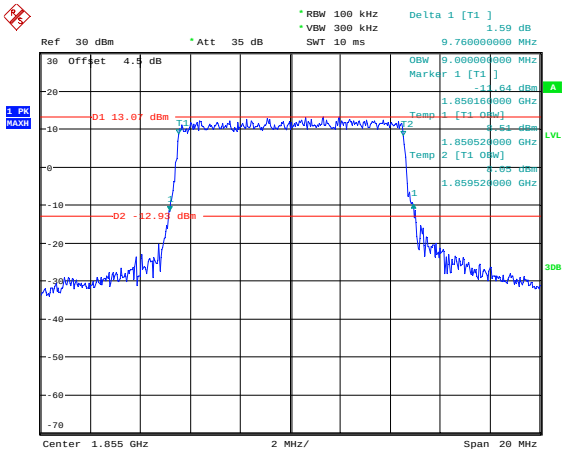


Date: 5.NOV.2020 23:41:27

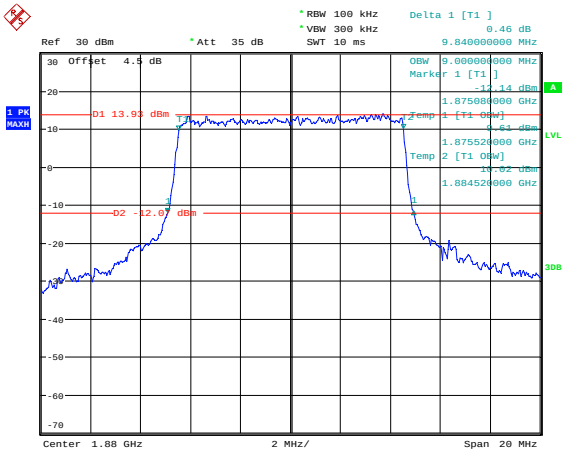
10M, QPSK, Low Channel



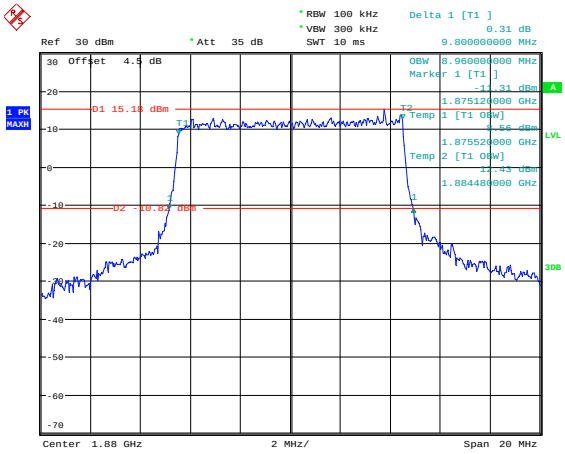
10M, 16QAM, Low Channel



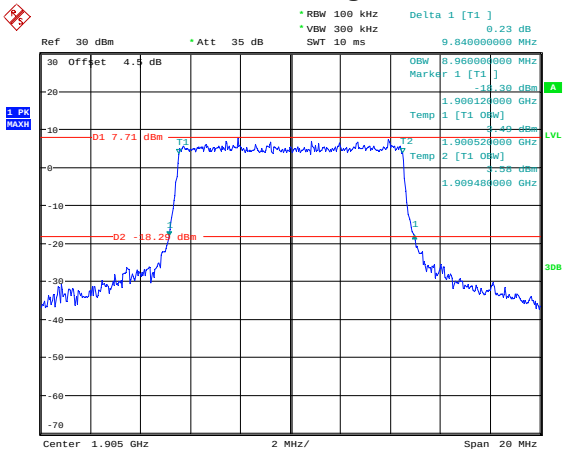
10M, QPSK, Middle Channel



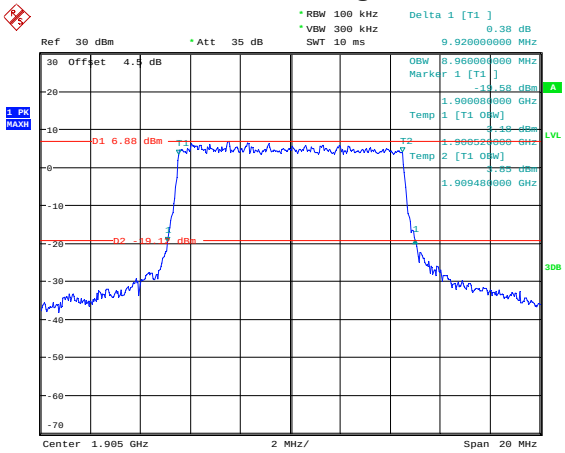
10M, 16QAM, Middle Channel



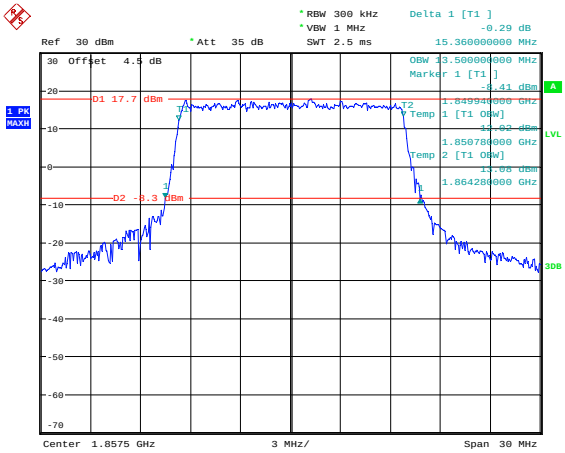
10M, QPSK, High Channel



10M, 16QAM, High Channel

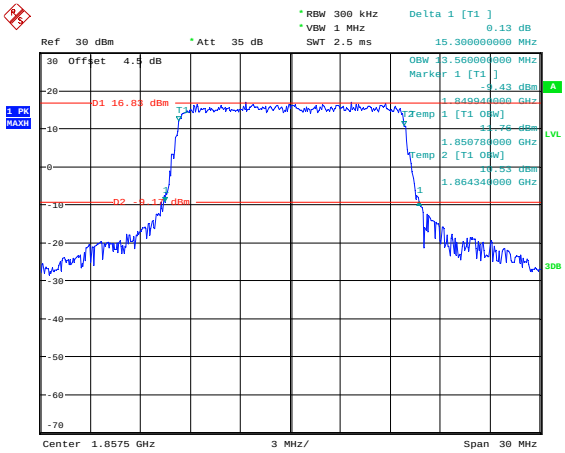


15M, QPSK, Low Channel



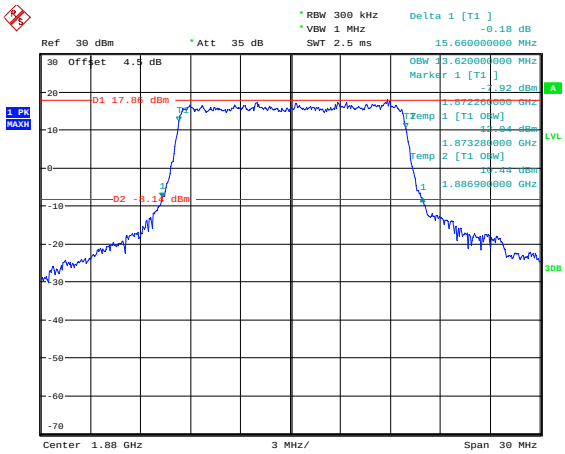
Date: 3.NOV.2020 19:15:17

15M, 16QAM, Low Channel



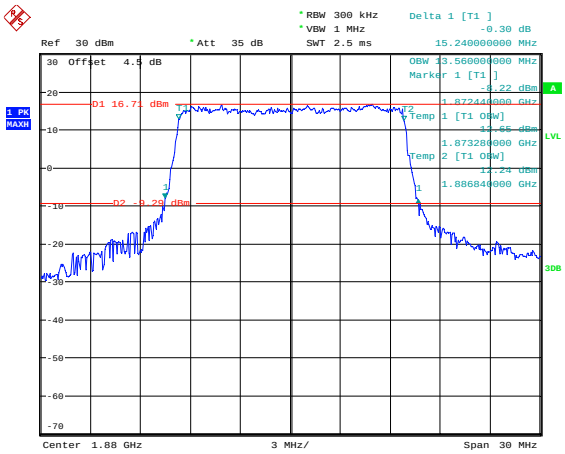
Date: 3.NOV.2020 19:16:02

15M, QPSK, Middle Channel



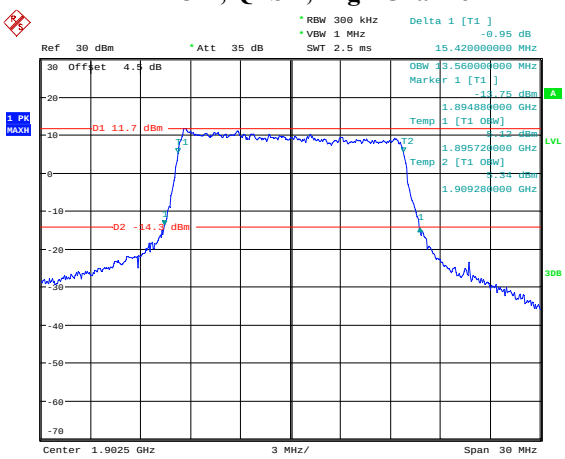
Date: 3.NOV.2020 21:50:33

15M, 16QAM, Middle Channel



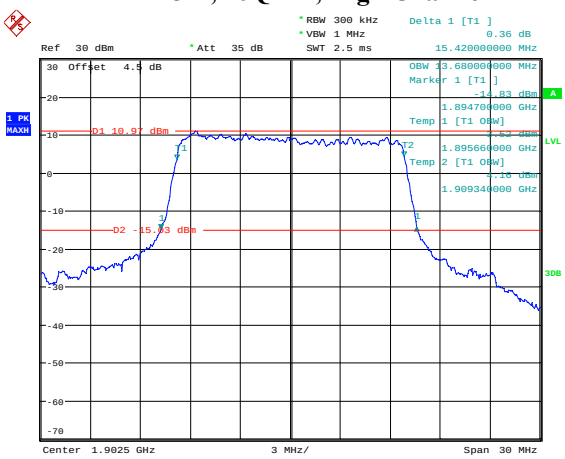
Date: 3.NOV.2020 21:51:34

15M, QPSK, High Channel



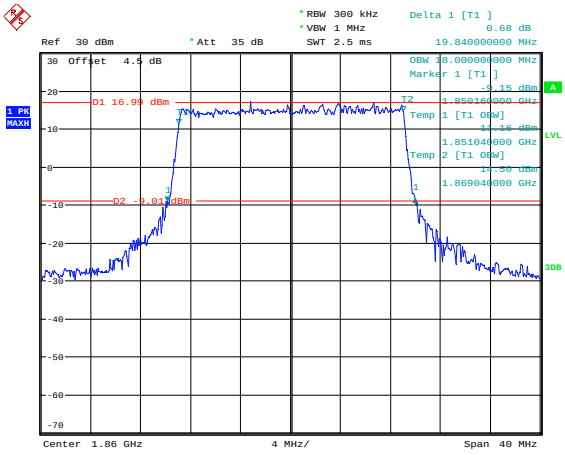
Date: 5.NOV.2020 23:46:13

15M, 16QAM, High Channel



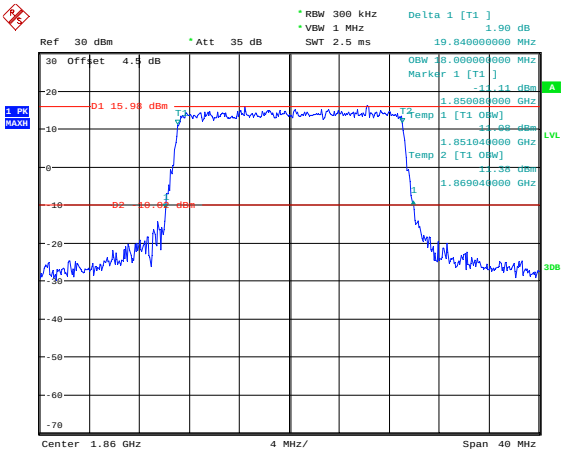
Date: 5.NOV.2020 23:48:46

20M, QPSK, Low Channel



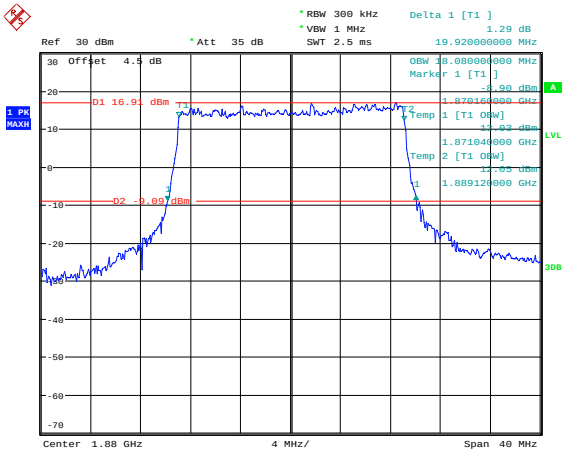
Date: 3.NOV.2020 19:21:30

20M, 16QAM, Low Channel



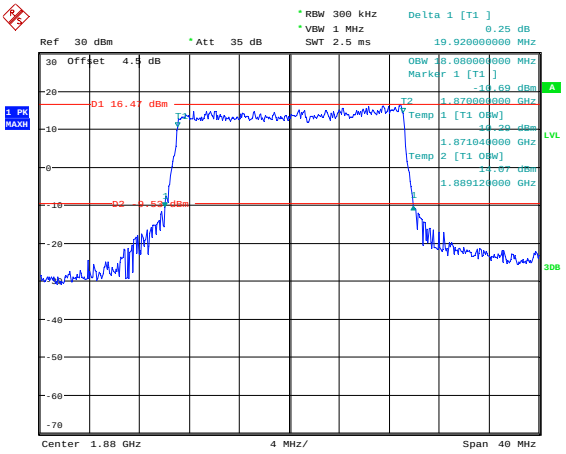
Date: 3.NOV.2020 19:22:00

20M, QPSK, Middle Channel



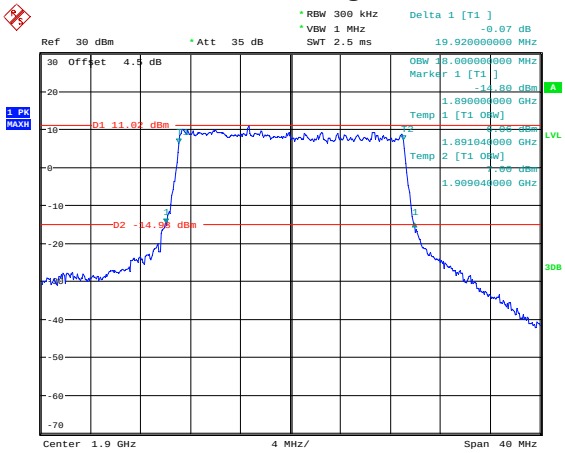
Date: 3.NOV.2020 21:52:28

20M, 16QAM, Middle Channel



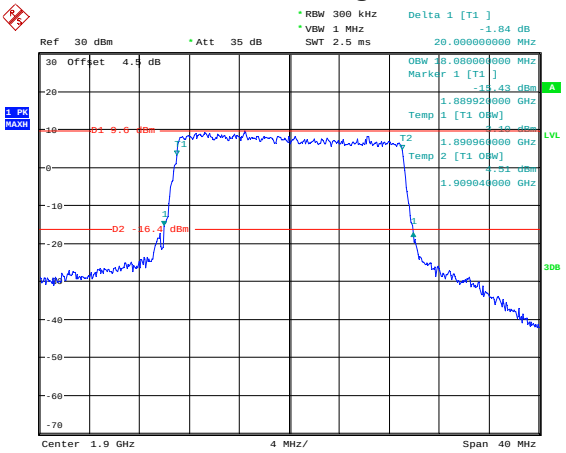
Date: 3.NOV.2020 21:53:02

20M, QPSK, High Channel



Date: 5.NOV.2020 23:50:36

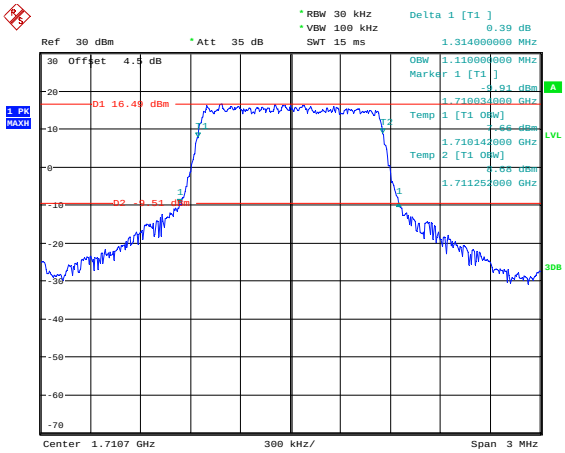
20M, 16QAM, High Channel



Date: 5.NOV.2020 23:51:42

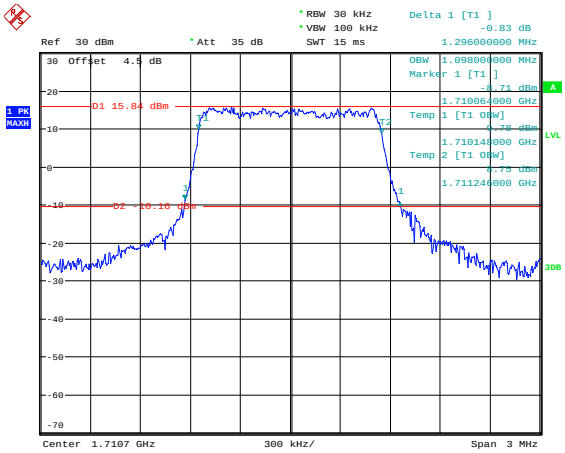
LTE Band 4:

1.4M, QPSK, Low Channel



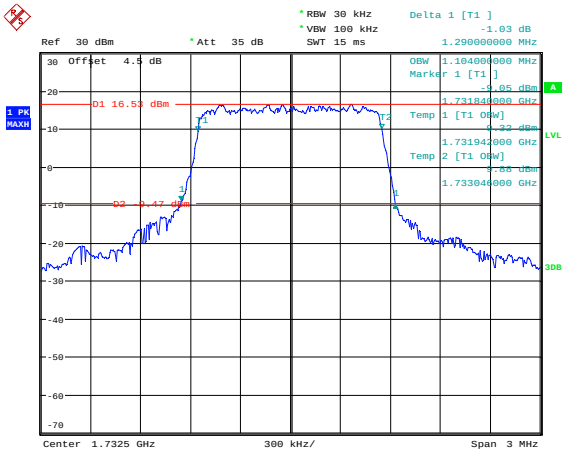
Date: 3.NOV.2020 20:29:34

1.4M, 16QAM, Low Channel



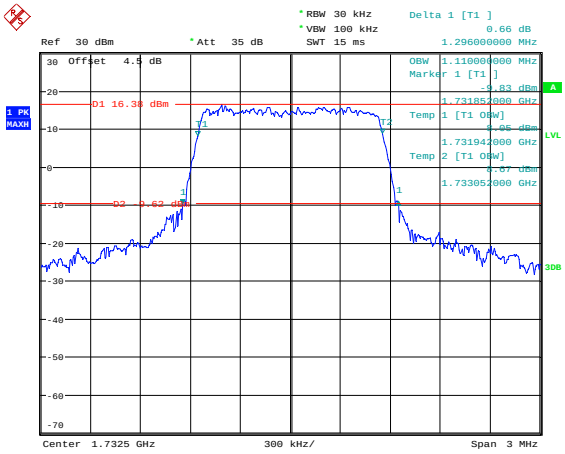
Date: 3.NOV.2020 20:29:55

1.4M, QPSK, Middle Channel



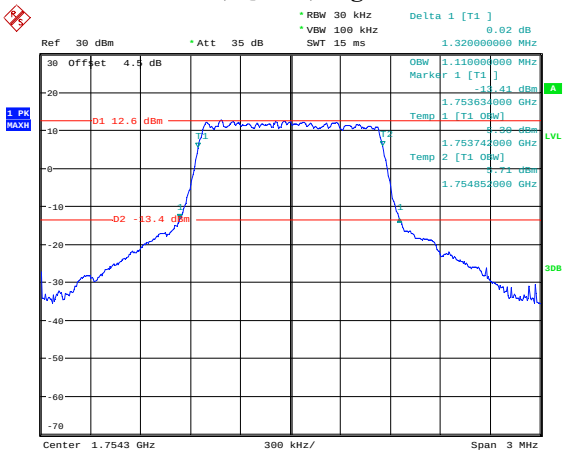
Date: 3.NOV.2020 21:53:34

1.4M, 16QAM, Middle Channel



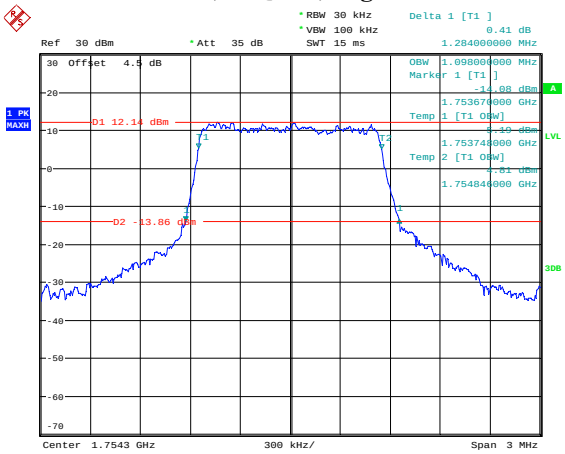
Date: 3.NOV.2020 21:54:03

1.4M, QPSK, High Channel



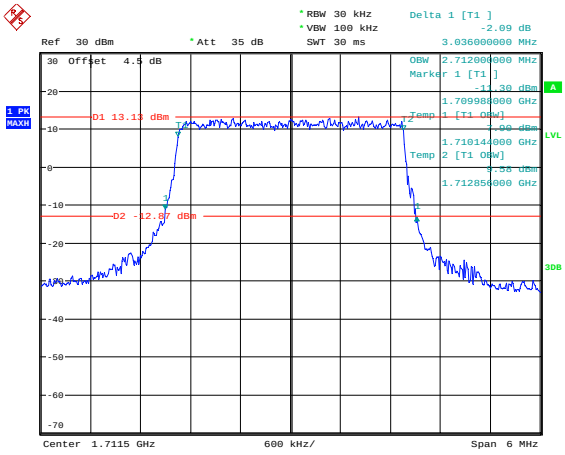
Date: 5.NOV.2020 23:53:33

1.4M, 16QAM, High Channel



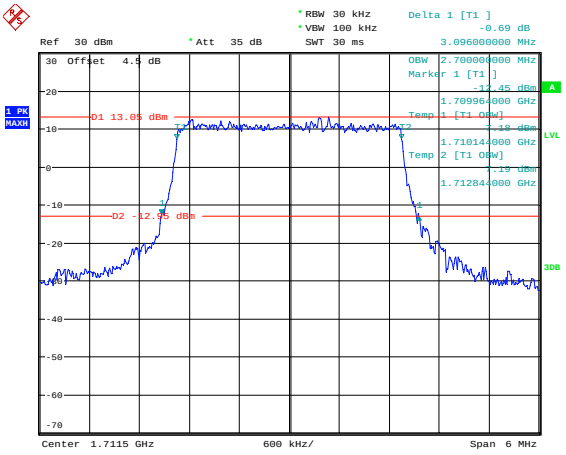
Date: 5.NOV.2020 23:54:03

3M, QPSK, Low Channel



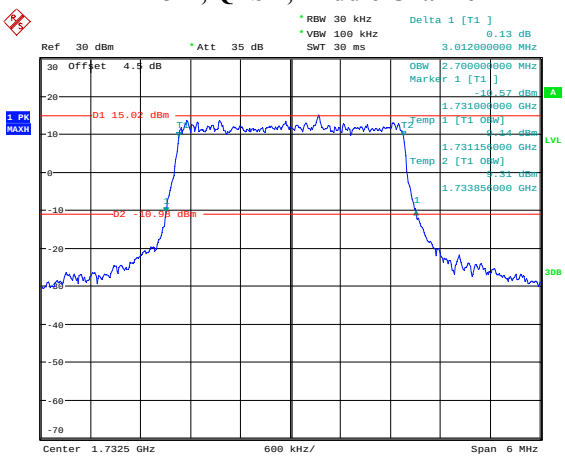
Date: 3.NOV.2020 20:34:35

3M, 16QAM, Low Channel



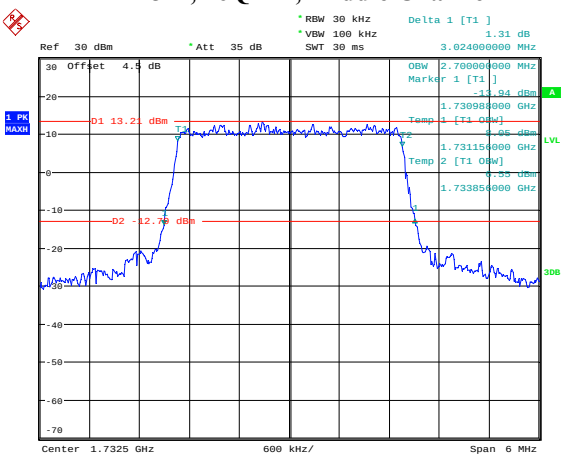
Date: 3.NOV.2020 20:35:00

3M, QPSK, Middle Channel



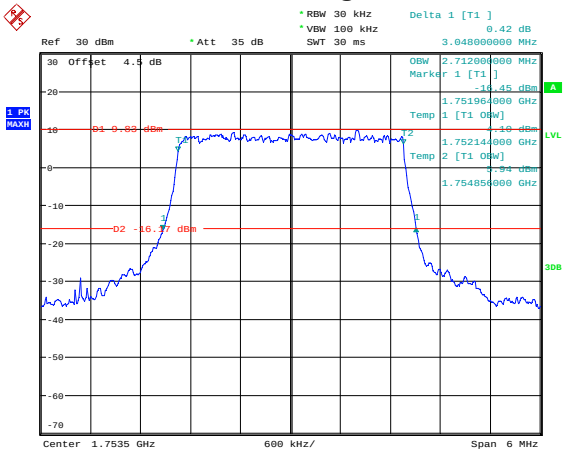
Date: 3.NOV.2020 21:54:36

3M, 16QAM, Middle Channel



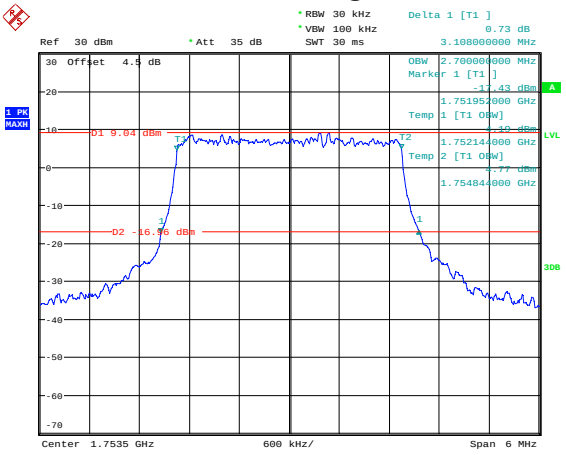
Date: 3.NOV.2020 21:54:57

3M, QPSK, High Channel



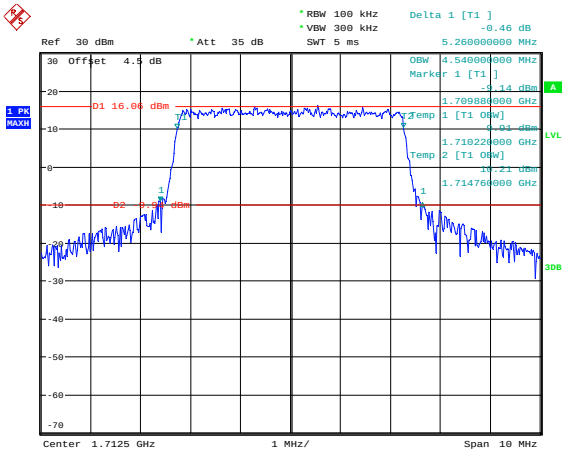
Date: 5.NOV.2020 23:56:04

3M, 16QAM, High Channel



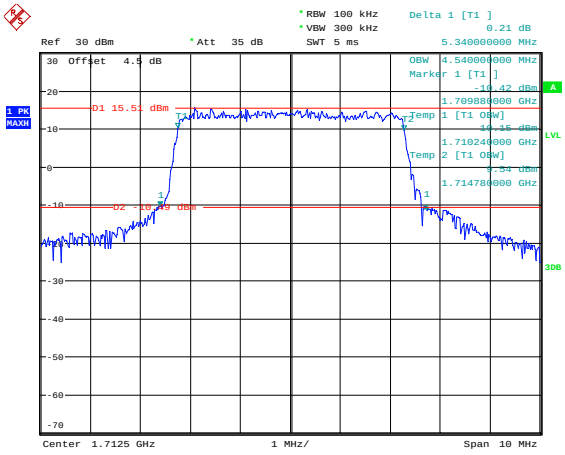
Date: 5.NOV.2020 23:57:18

5M, QPSK, Low Channel



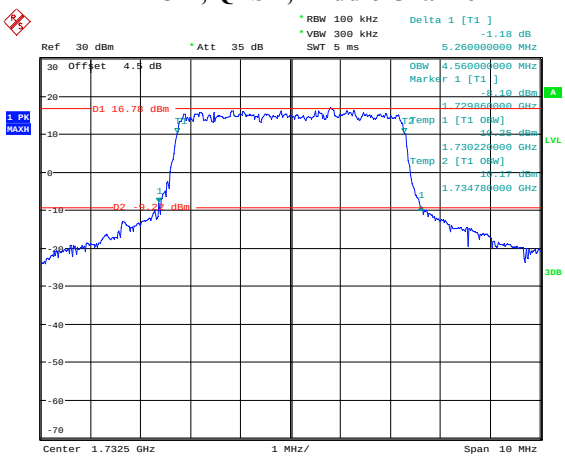
Date: 3.NOV.2020 20:37:03

5M, 16QAM, Low Channel



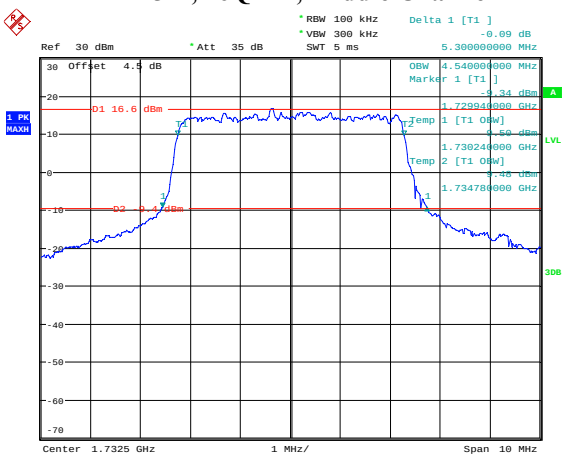
Date: 3.NOV.2020 20:37:34

5M, QPSK, Middle Channel



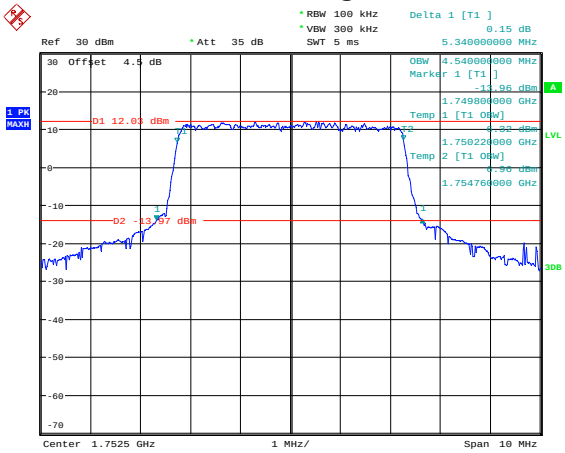
Date: 3.NOV.2020 21:55:40

5M, 16QAM, Middle Channel



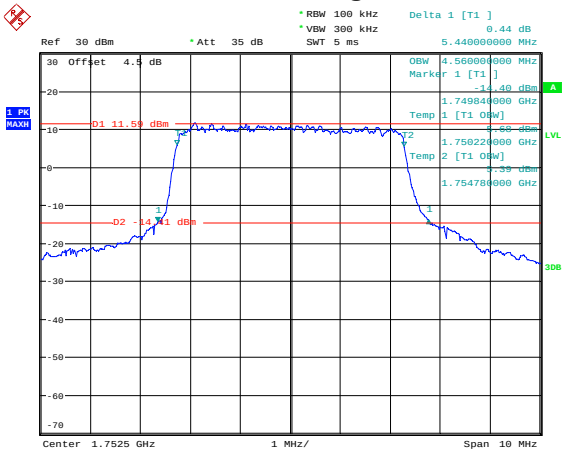
Date: 3.NOV.2020 21:56:47

5M, QPSK, High Channel



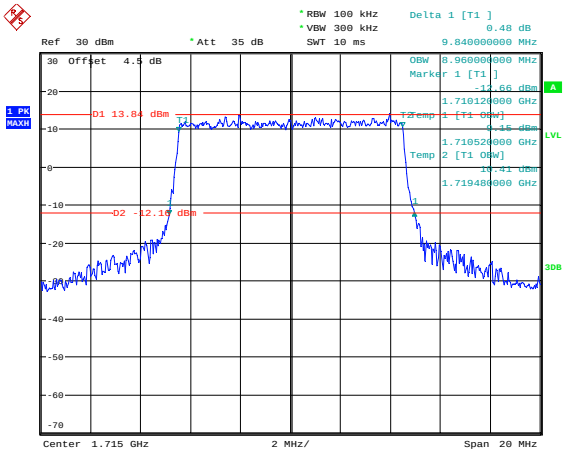
Date: 5.NOV.2020 23:59:29

5M, 16QAM, High Channel



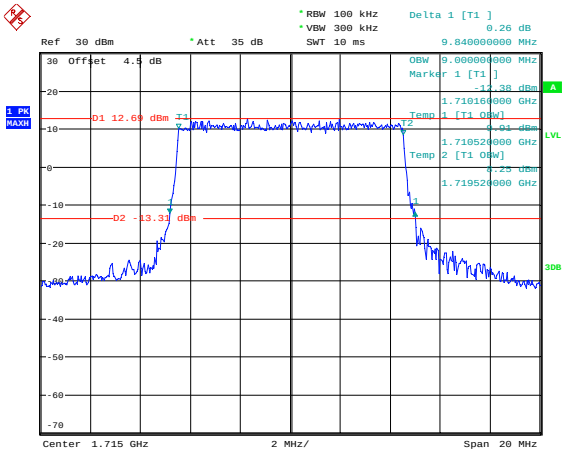
Date: 6.NOV.2020 00:00:47

10M, QPSK, Low Channel



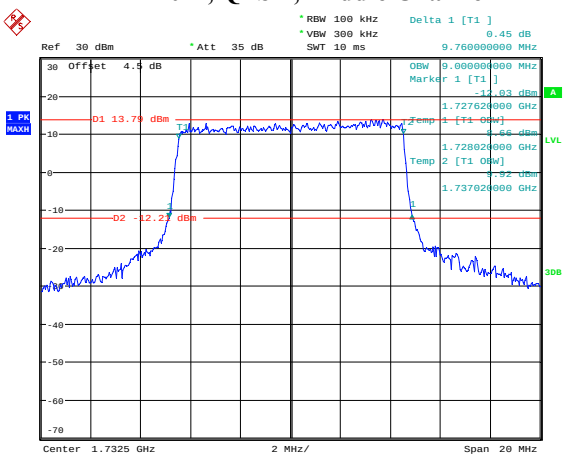
Date: 3.NOV.2020 20:41:09

10M, 16QAM, Low Channel



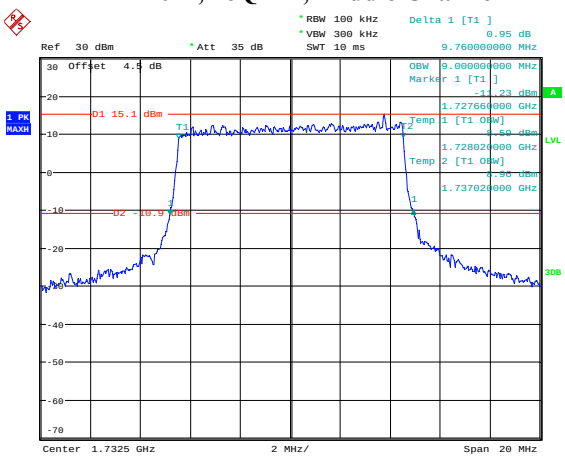
Date: 3.NOV.2020 20:41:31

10M, QPSK, Middle Channel



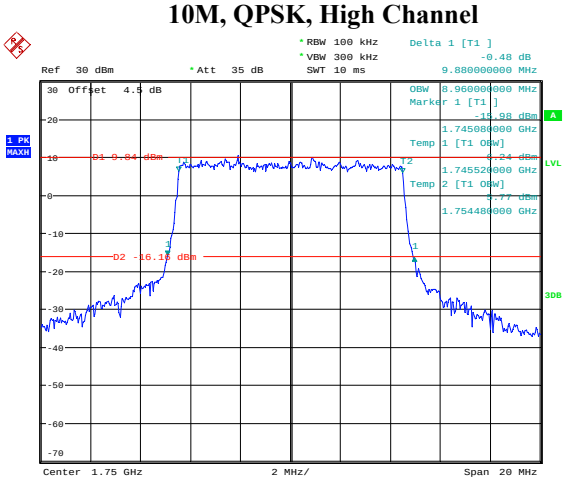
Date: 3.NOV.2020 21:57:22

10M, 16QAM, Middle Channel



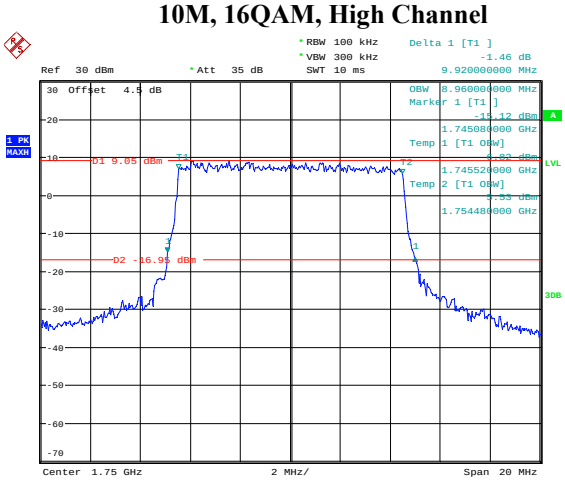
Date: 3.NOV.2020 21:57:59

10M, QPSK, High Channel



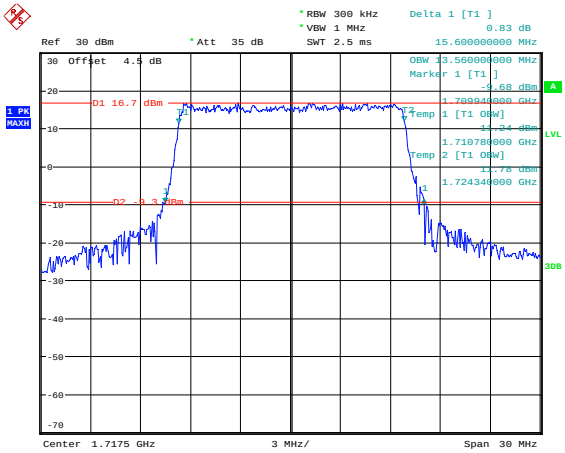
Date: 6.NOV.2020 00:02:28

10M, 16QAM, High Channel



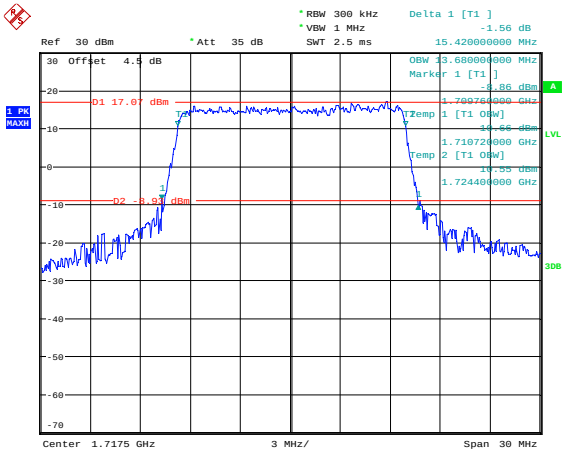
Date: 6.NOV.2020 00:03:21

15M, QPSK, Low Channel



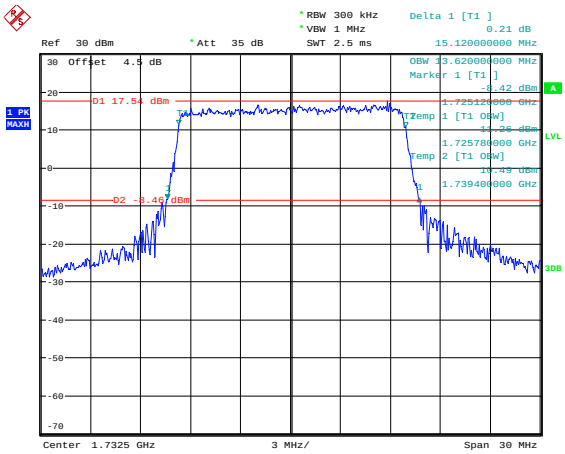
Date: 3.NOV.2020 20:44:25

15M, 16QAM, Low Channel



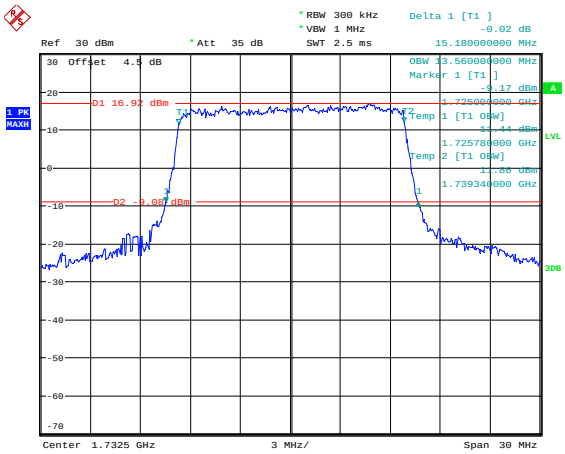
Date: 3.NOV.2020 20:45:06

15M, QPSK, Middle Channel



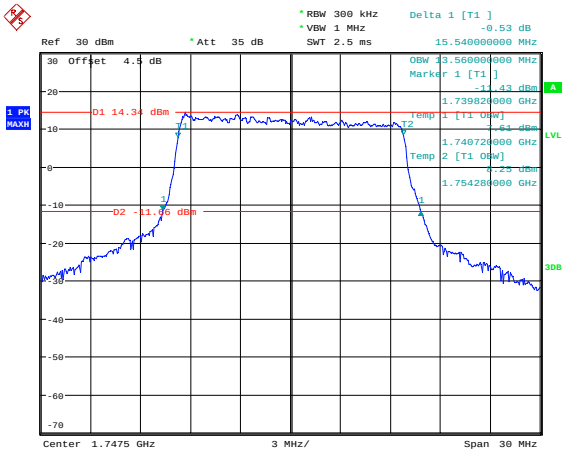
Date: 3.NOV.2020 21:58:28

15M, 16QAM, Middle Channel



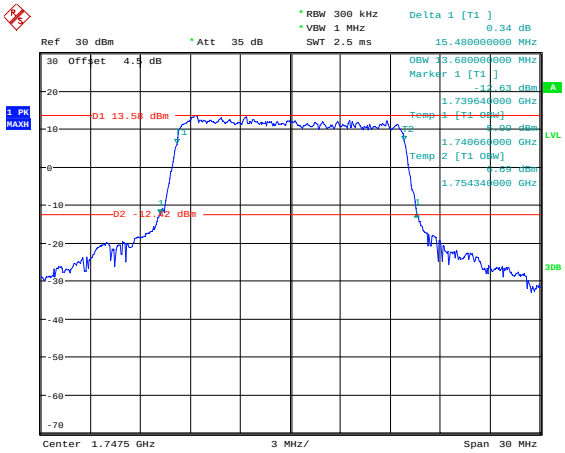
Date: 3.NOV.2020 21:59:13

15M, QPSK, High Channel



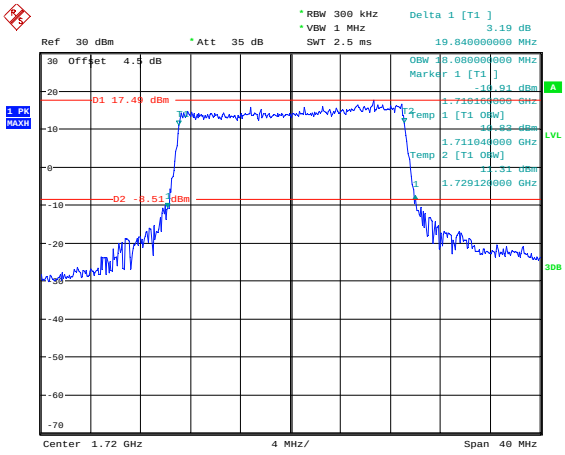
Date: 6.NOV.2020 00:05:30

15M, 16QAM, High Channel



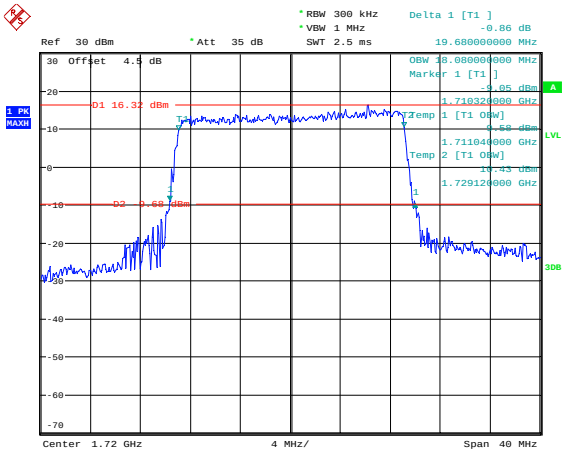
Date: 6.NOV.2020 00:07:01

20M, QPSK, Low Channel



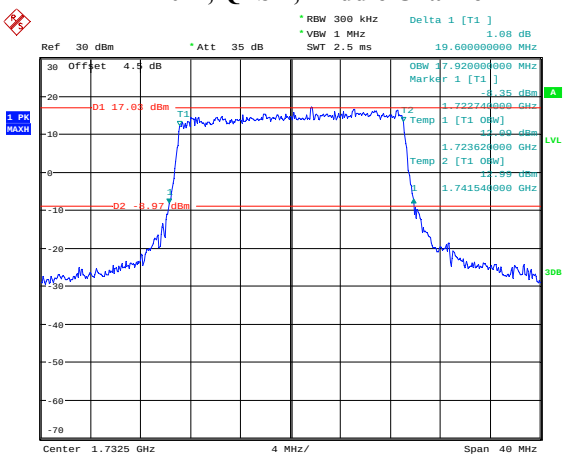
Date: 3.NOV.2020 20:49:05

20M, 16QAM, Low Channel



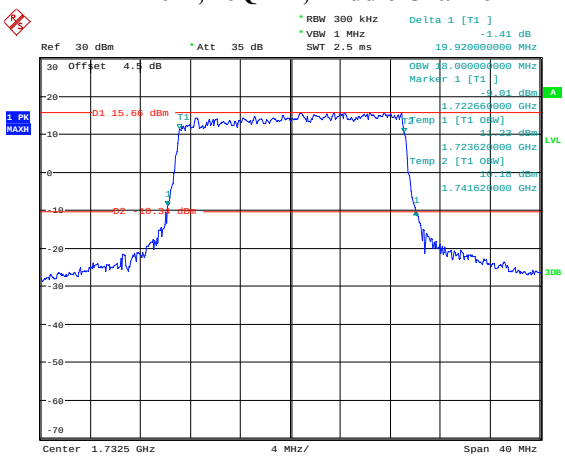
Date: 3.NOV.2020 20:49:31

20M, QPSK, Middle Channel



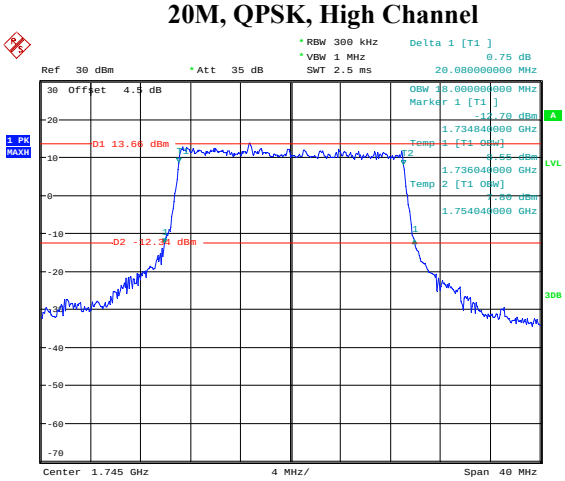
Date: 3.NOV.2020 22:00:01

20M, 16QAM, Middle Channel



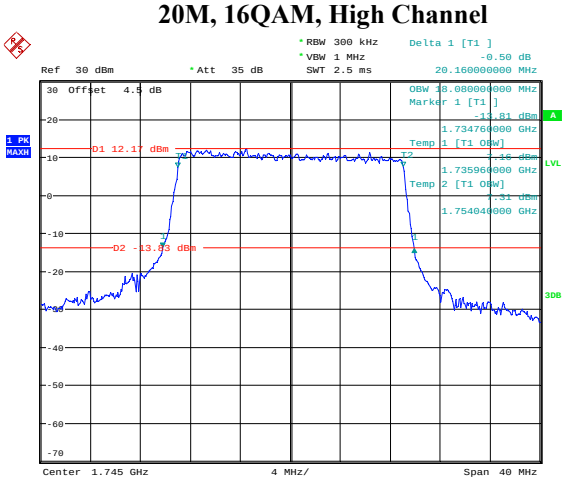
Date: 3.NOV.2020 22:01:04

20M, QPSK, High Channel



Date: 6.NOV.2020 00:08:46

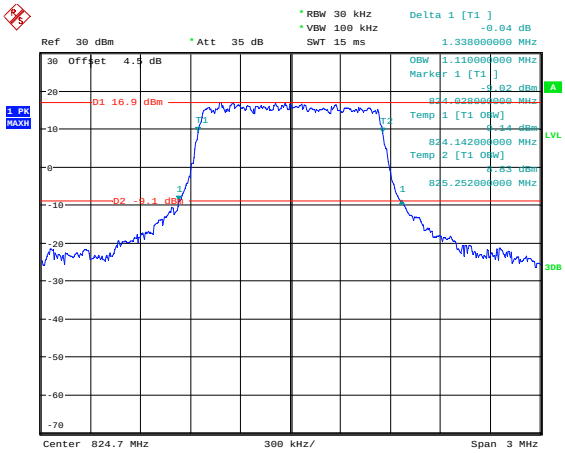
20M, 16QAM, High Channel



Date: 6.NOV.2020 00:10:02

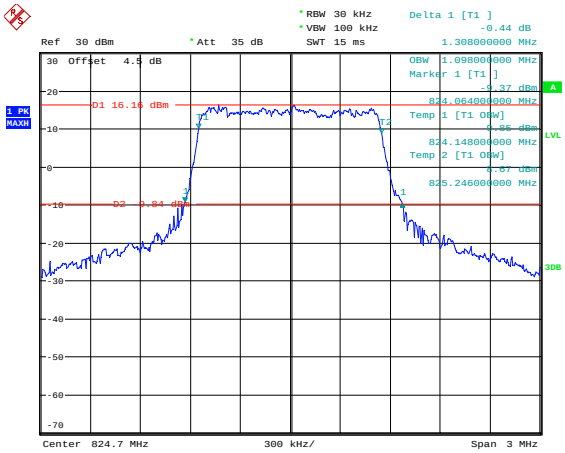
LTE Band 5:

1.4M, QPSK, Low Channel



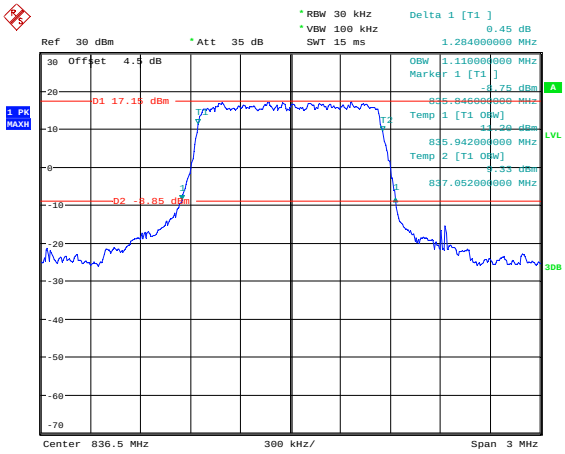
Date: 3.NOV.2020 20:55:05

1.4M, 16QAM, Low Channel



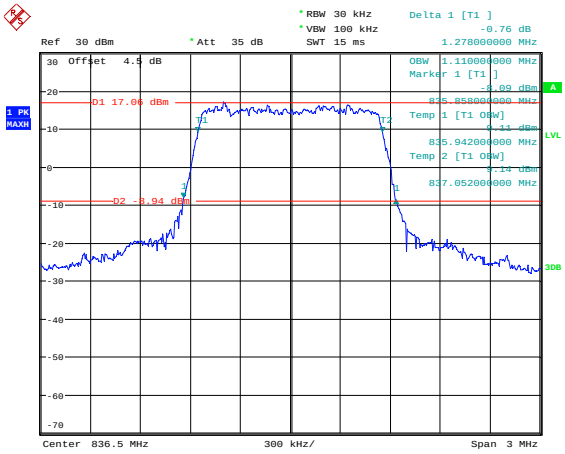
Date: 3.NOV.2020 20:55:27

1.4M, QPSK, Middle Channel



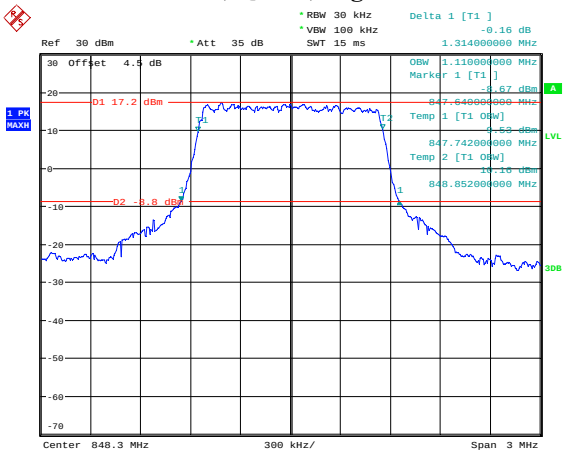
Date: 3.NOV.2020 22:01:56

1.4M, 16QAM, Middle Channel



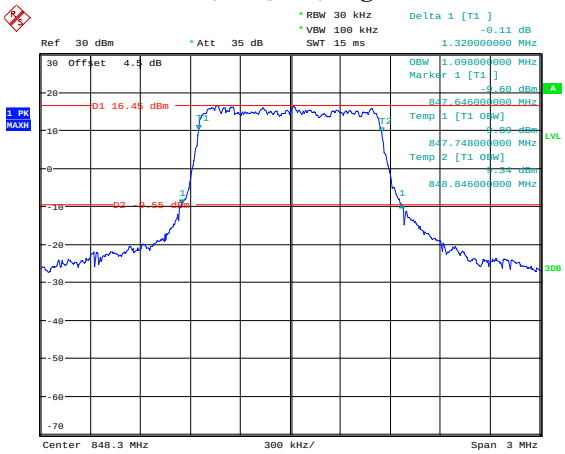
Date: 3.NOV.2020 22:02:25

1.4M, QPSK, High Channel



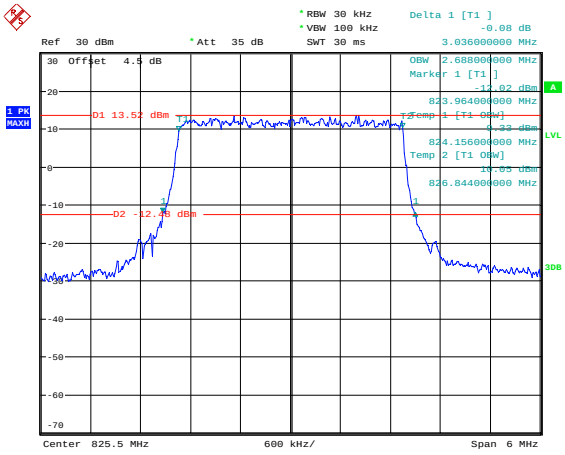
Date: 6.NOV.2020 00:11:19

1.4M, 16QAM, High Channel



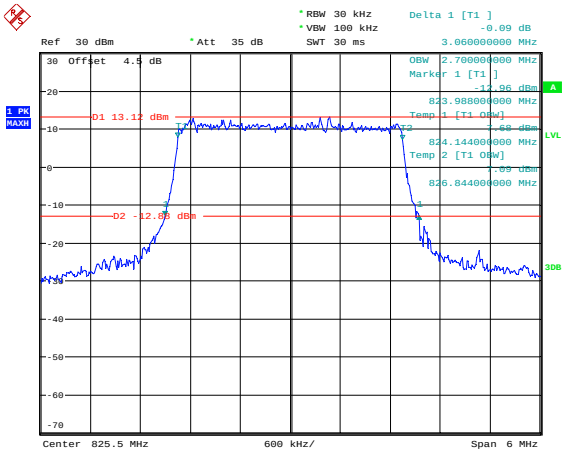
Date: 6.NOV.2020 00:11:53

3M, QPSK, Low Channel



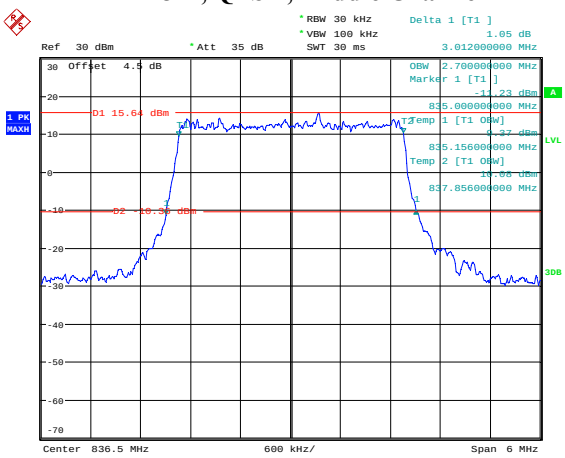
Date: 3.NOV.2020 20:59:09

3M, 16QAM, Low Channel



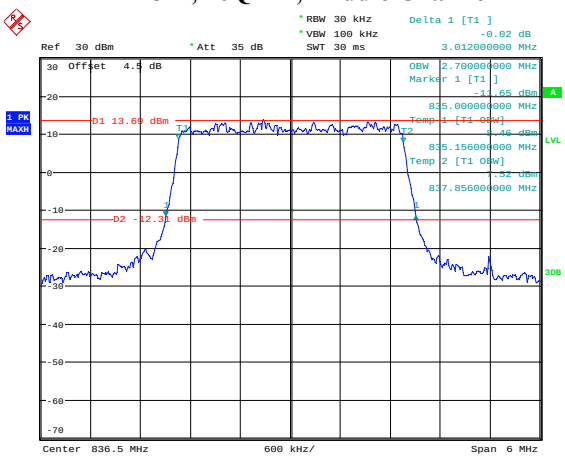
Date: 3.NOV.2020 20:59:30

3M, QPSK, Middle Channel



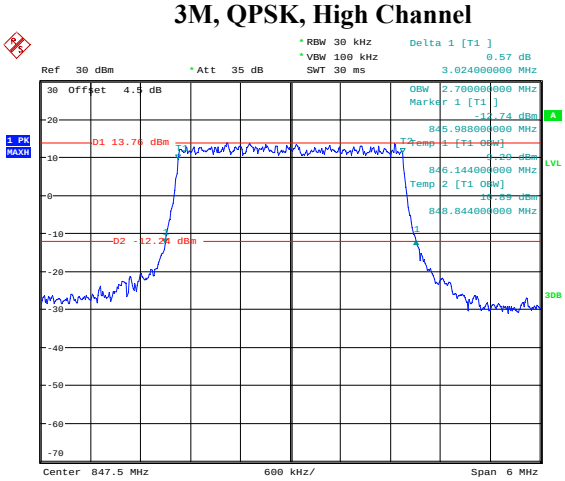
Date: 3.NOV.2020 22:03:21

3M, 16QAM, Middle Channel



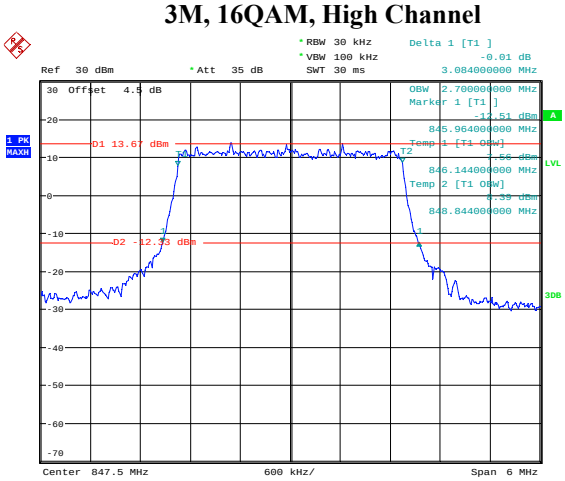
Date: 3.NOV.2020 22:04:11

3M, QPSK, High Channel



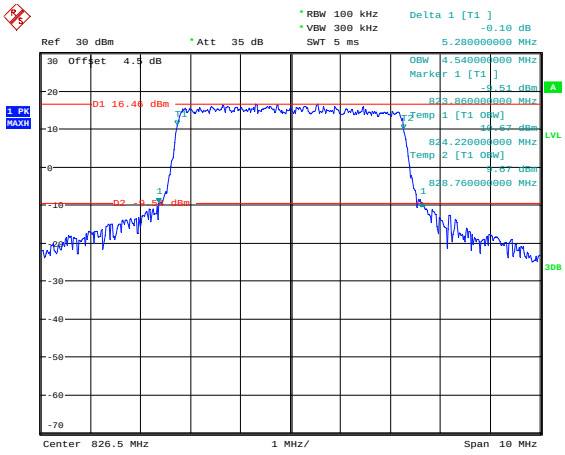
Date: 6.NOV.2020 00:13:23

3M, 16QAM, High Channel



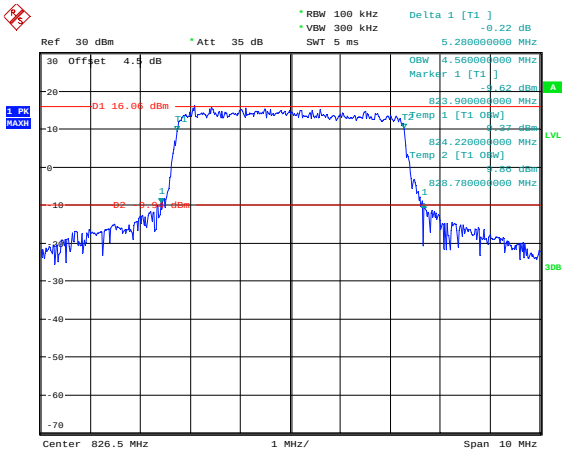
Date: 6.NOV.2020 00:13:58

5M, QPSK, Low Channel



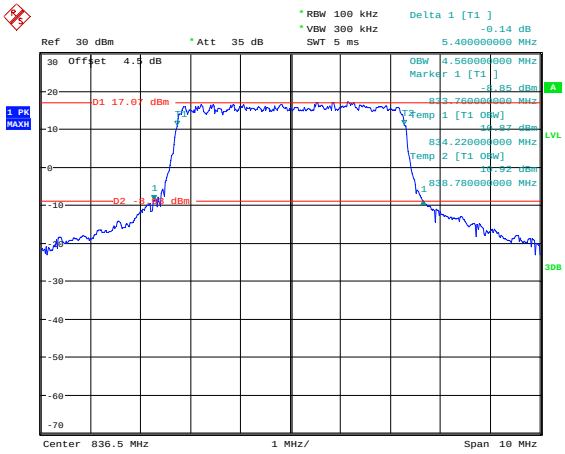
Date: 3.NOV.2020 21:01:22

5M, 16QAM, Low Channel



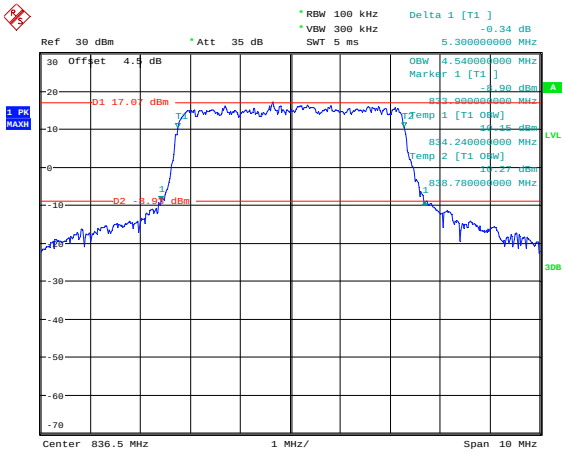
Date: 3.NOV.2020 21:01:49

5M, QPSK, Middle Channel



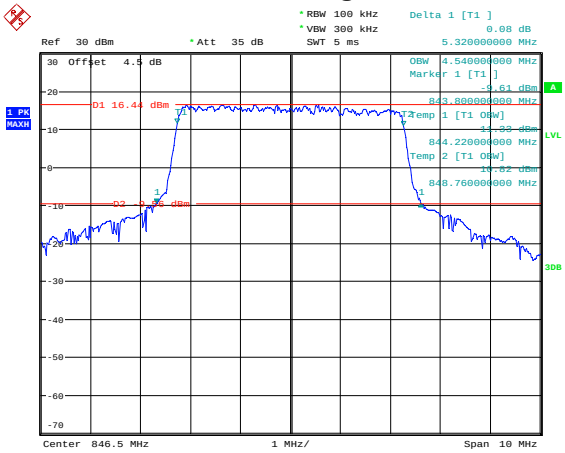
Date: 3.NOV.2020 22:06:03

5M, 16QAM, Middle Channel



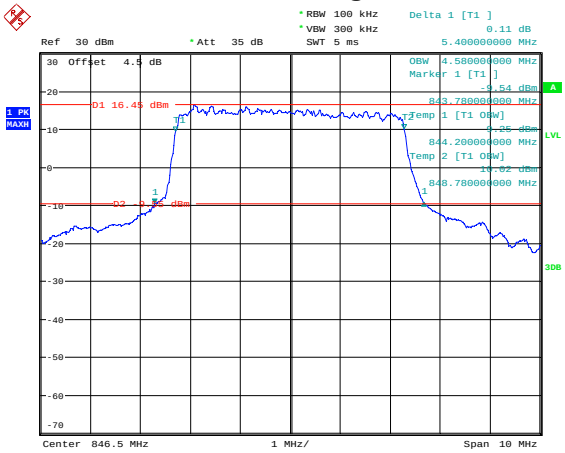
Date: 3.NOV.2020 22:07:33

5M, QPSK, High Channel



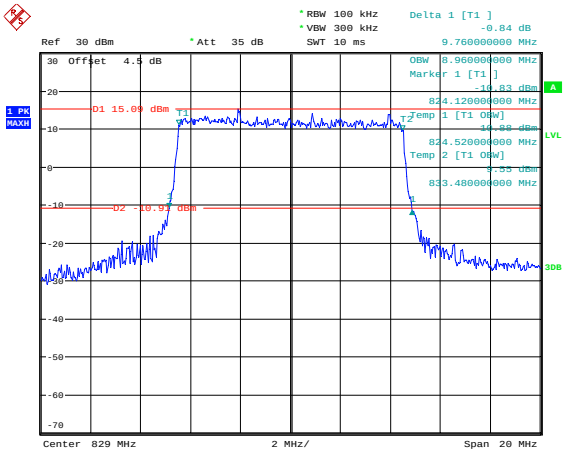
Date: 6.NOV.2020 00:15:36

5M, 16QAM, High Channel



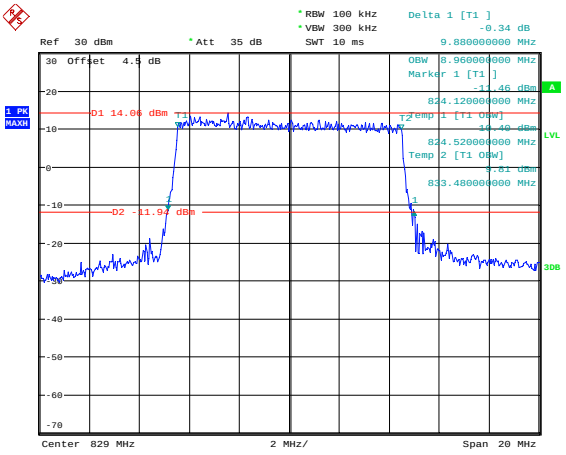
Date: 6.NOV.2020 00:17:32

10M, QPSK, Low Channel



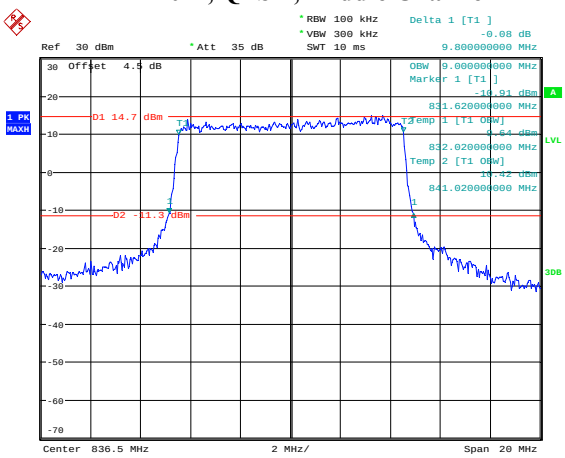
Date: 3.NOV.2020 21:05:30

10M, 16QAM, Low Channel



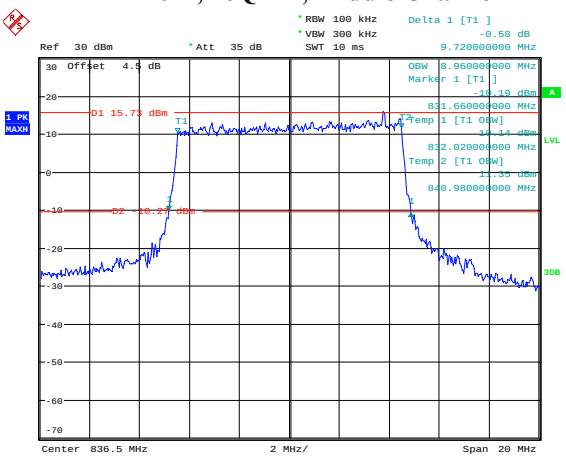
Date: 3.NOV.2020 21:05:56

10M, QPSK, Middle Channel



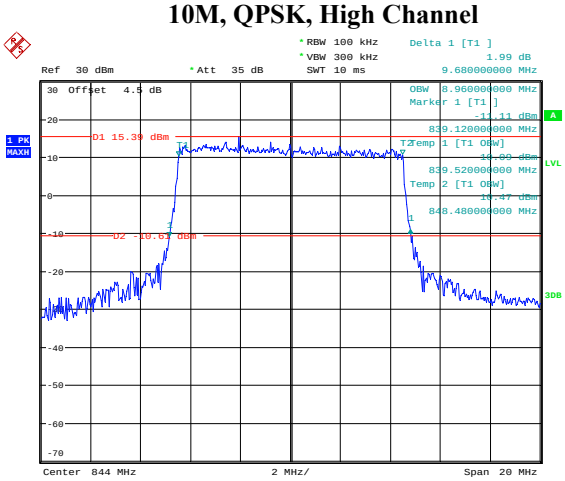
Date: 3.NOV.2020 22:08:37

10M, 16QAM, Middle Channel



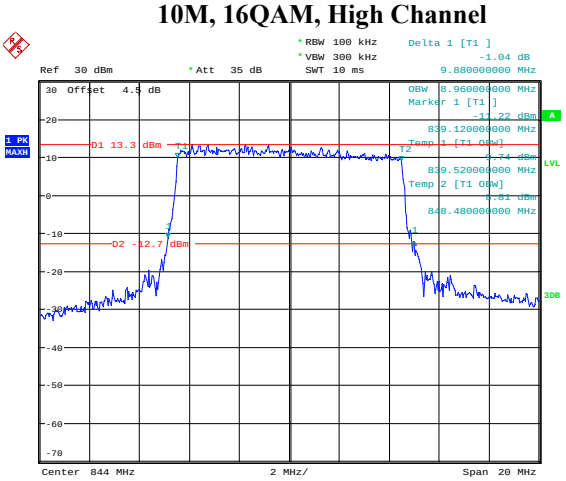
Date: 3.NOV.2020 22:09:20

10M, QPSK, High Channel



Date: 6.NOV.2020 00:18:44

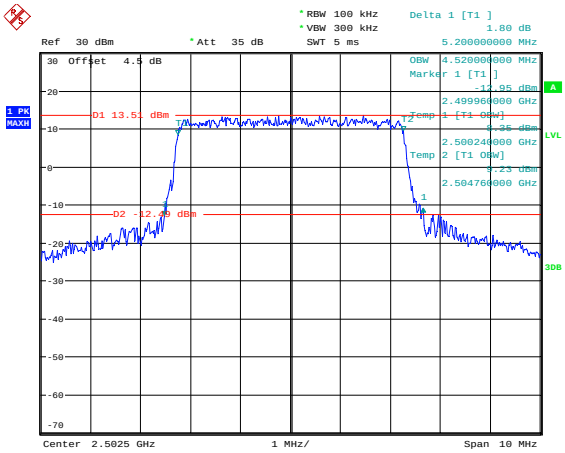
10M, 16QAM, High Channel



Date: 6.NOV.2020 00:19:20

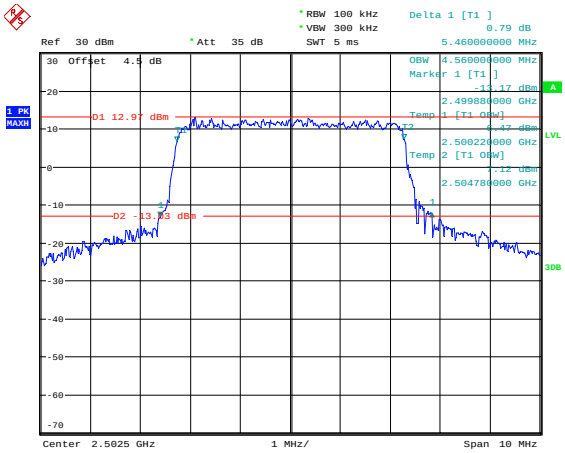
LTE Band 7:

5M, QPSK, Low Channel



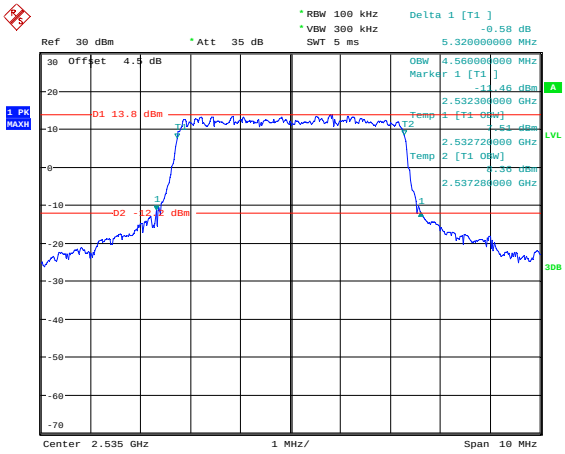
Date: 3.NOV.2020 21:08:56

5M, 16QAM, Low Channel



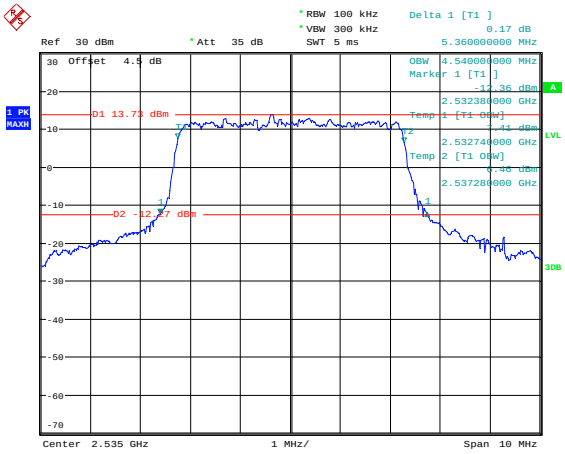
Date: 3.NOV.2020 21:09:29

5M, QPSK, Middle Channel



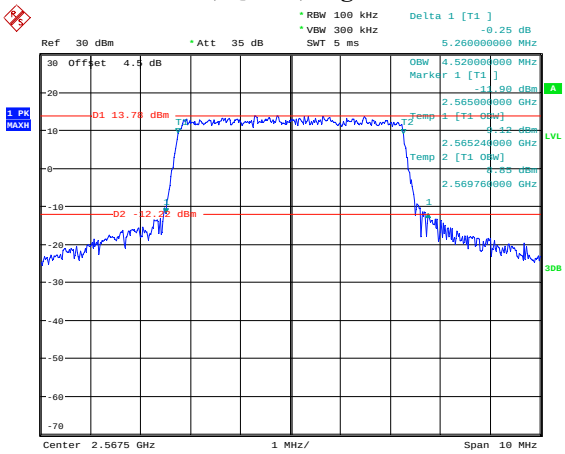
Date: 3.NOV.2020 22:10:35

5M, 16QAM, Middle Channel



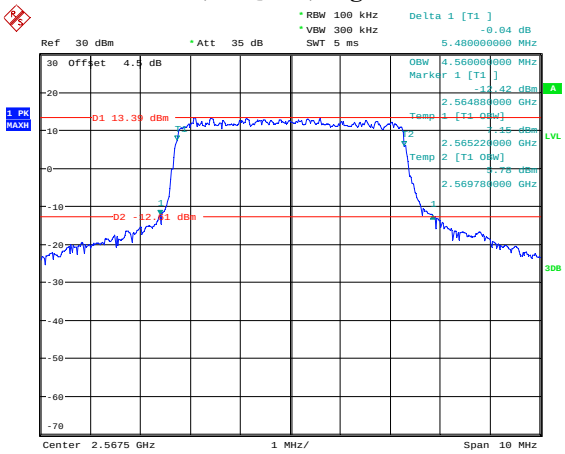
Date: 3.NOV.2020 22:12:02

5M, QPSK, High Channel



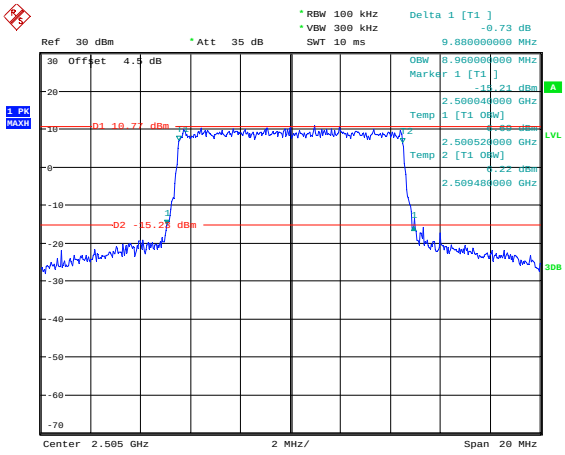
Date: 6.NOV.2020 00:20:44

5M, 16QAM, High Channel



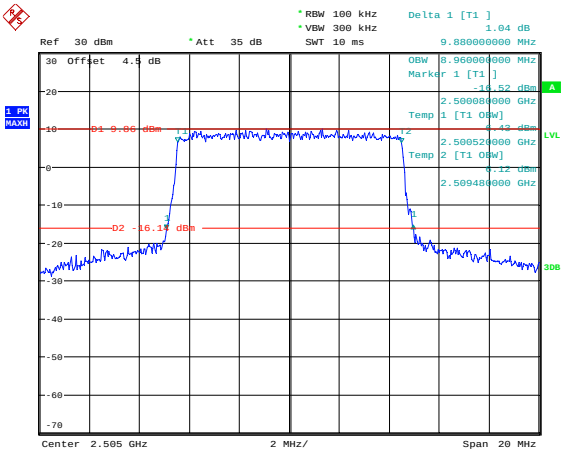
Date: 6.NOV.2020 00:21:53

10M, QPSK, Low Channel



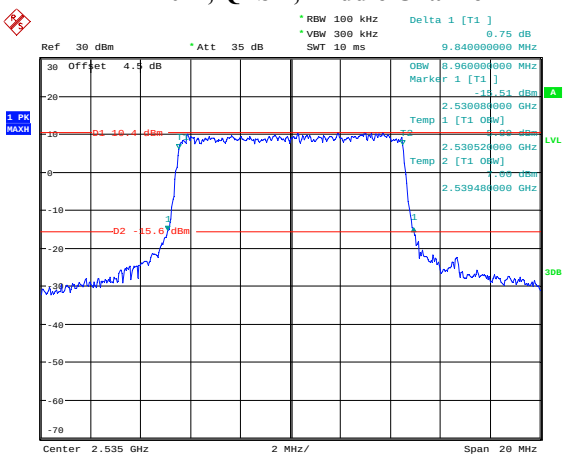
Date: 3.NOV.2020 21:13:31

10M, 16QAM, Low Channel



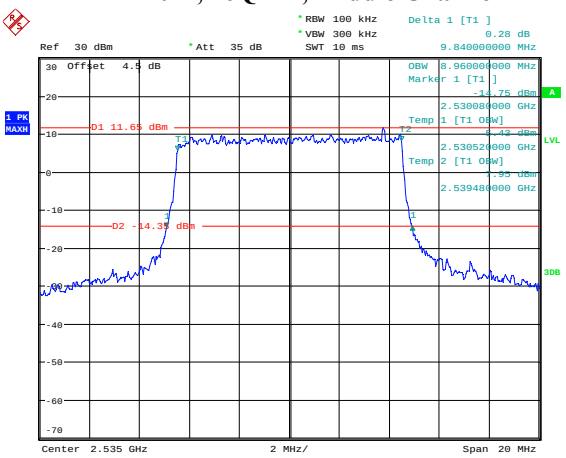
Date: 3.NOV.2020 21:13:54

10M, QPSK, Middle Channel



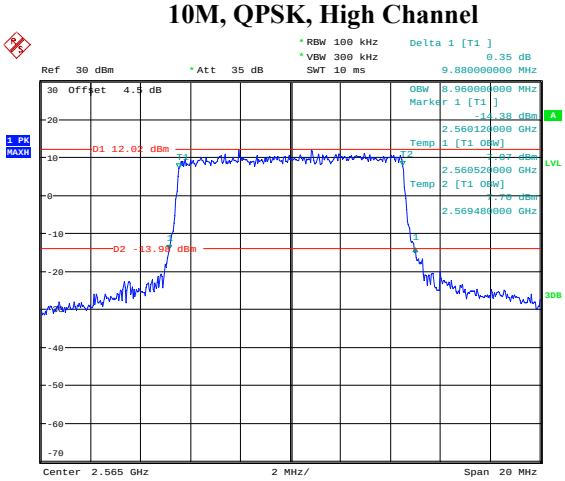
Date: 3.NOV.2020 22:12:54

10M, 16QAM, Middle Channel



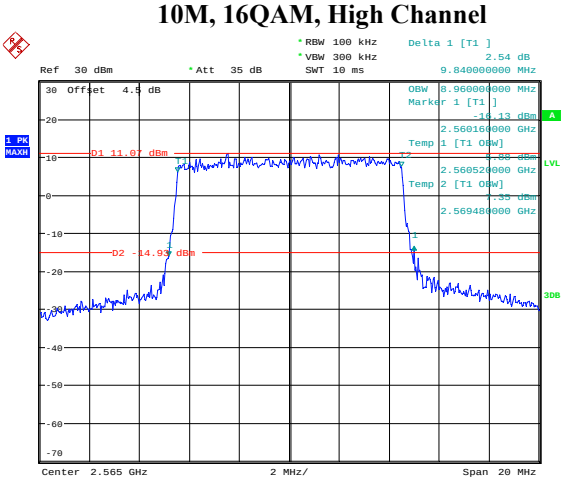
Date: 3.NOV.2020 22:13:50

10M, QPSK, High Channel



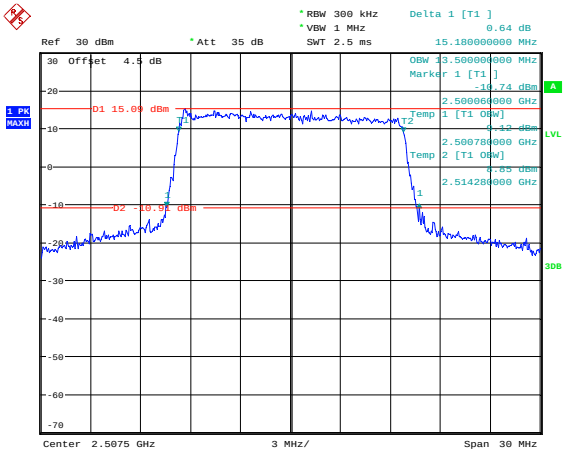
Date: 6.NOV.2020 00:23:05

10M, 16QAM, High Channel



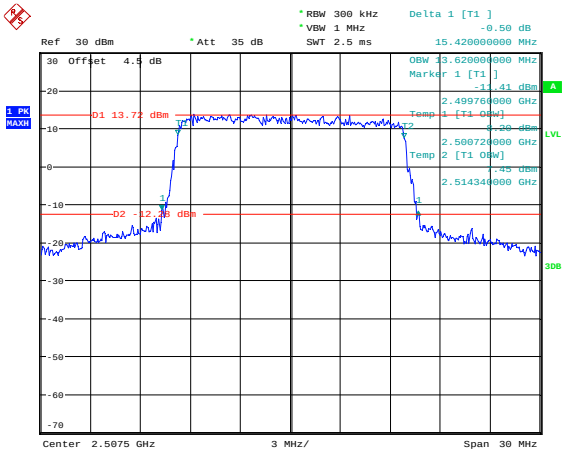
Date: 6.NOV.2020 00:23:24

15M, QPSK, Low Channel



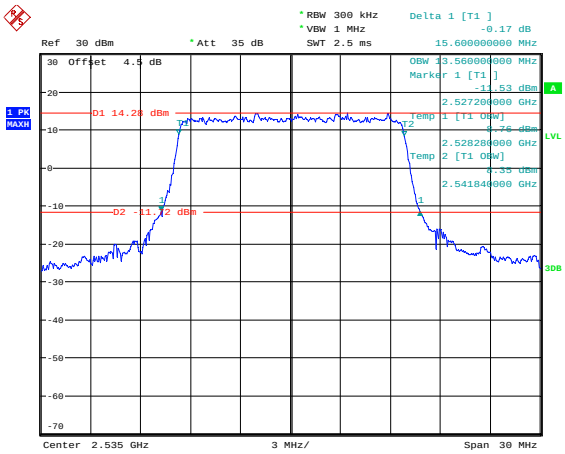
Date: 3.NOV.2020 21:16:19

15M, 16QAM, Low Channel



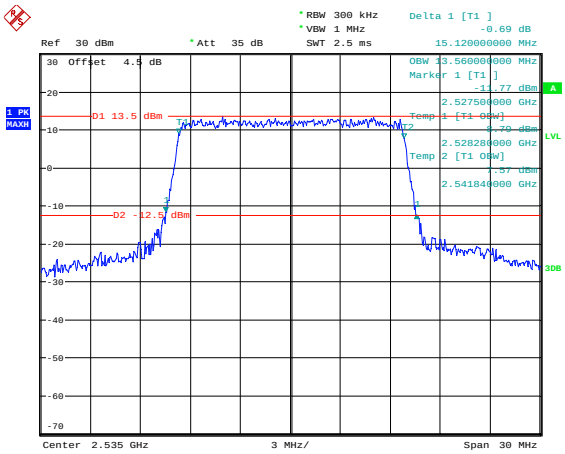
Date: 3.NOV.2020 21:16:48

15M, QPSK, Middle Channel



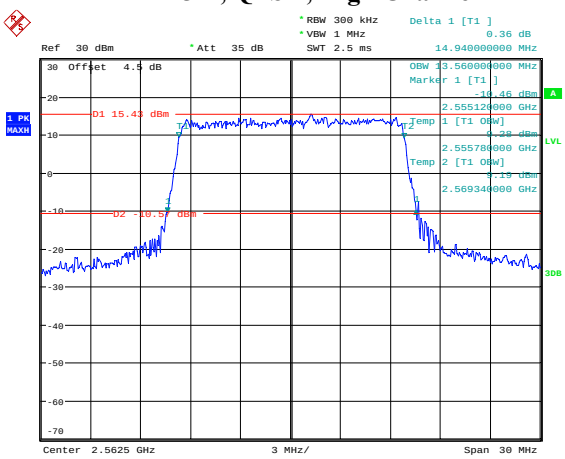
Date: 3.NOV.2020 22:15:02

15M, 16QAM, Middle Channel



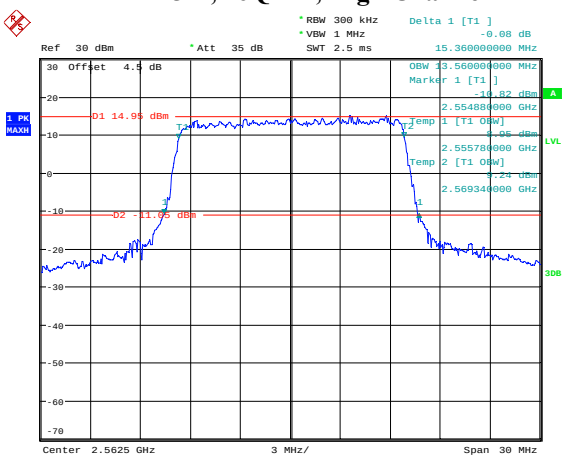
Date: 3.NOV.2020 22:15:30

15M, QPSK, High Channel



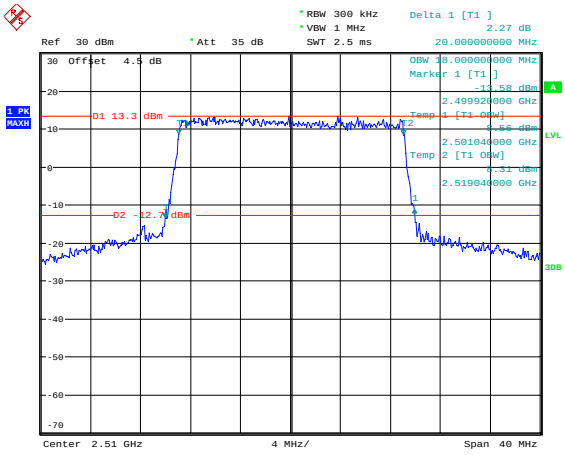
Date: 6.NOV.2020 00:24:42

15M, 16QAM, High Channel

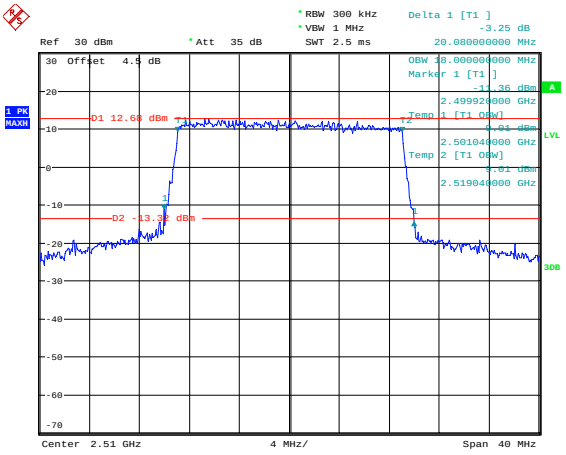


Date: 6.NOV.2020 00:25:55

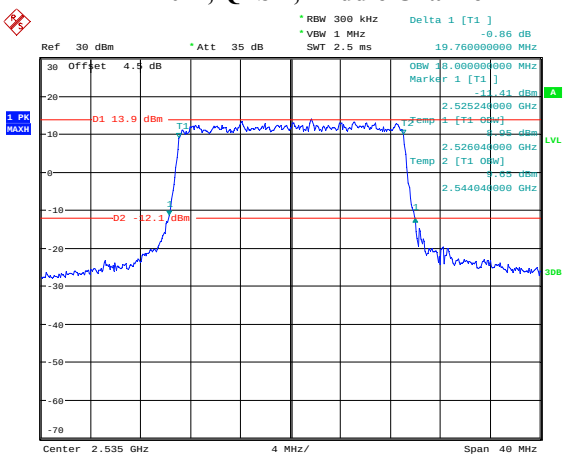
20M, QPSK, Low Channel



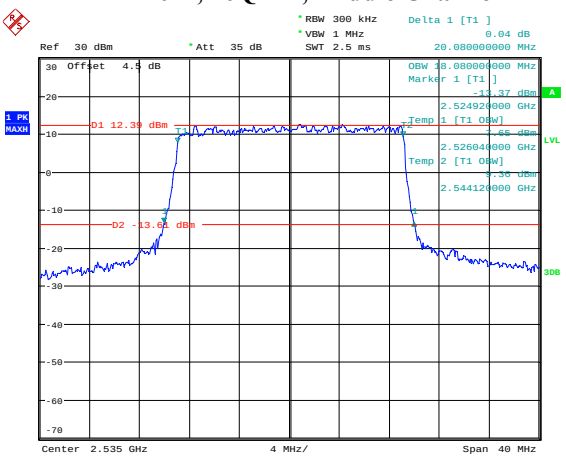
20M, 16QAM, Low Channel



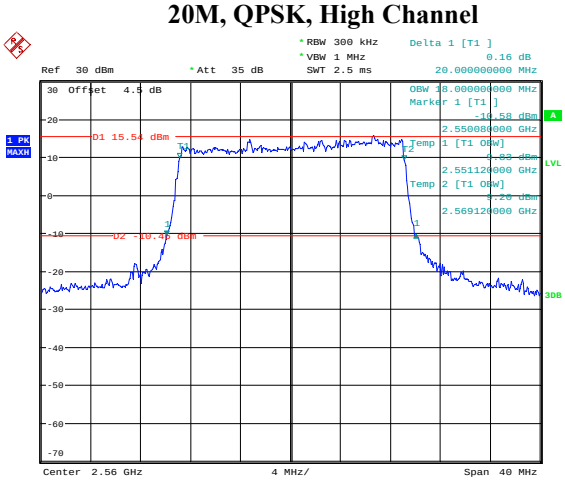
20M, QPSK, Middle Channel



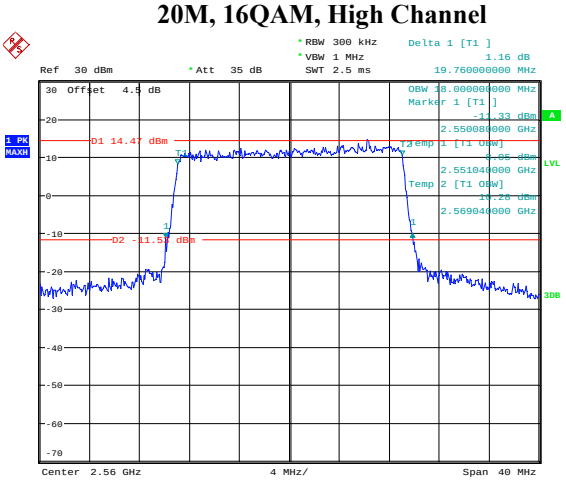
20M, 16QAM, Middle Channel



20M, QPSK, High Channel



20M, 16QAM, High Channel



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

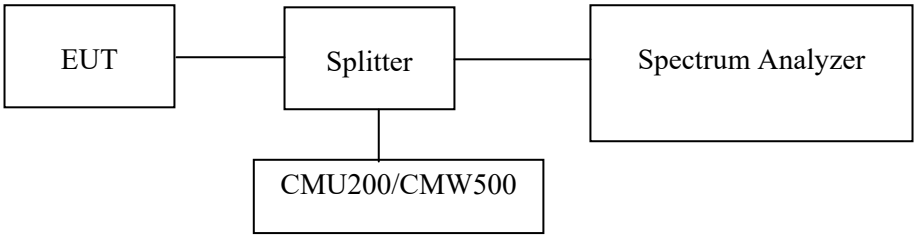
Applicable Standard

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

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

Test Procedure

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2020-07-07	2021-07-07
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	Two-way Spliter	ODP-1-6-2S	OE0120142	Each time	N/A

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

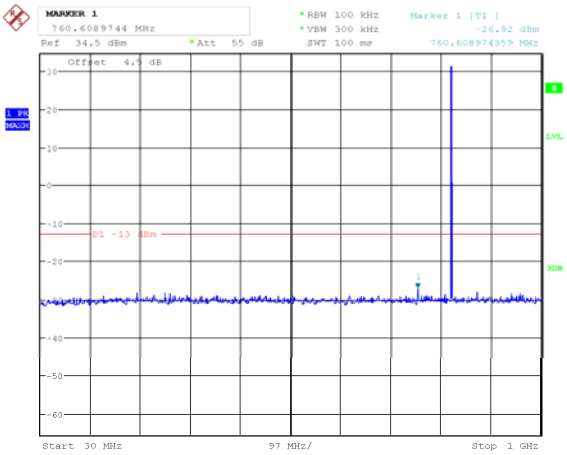
Test Data

Environmental Conditions

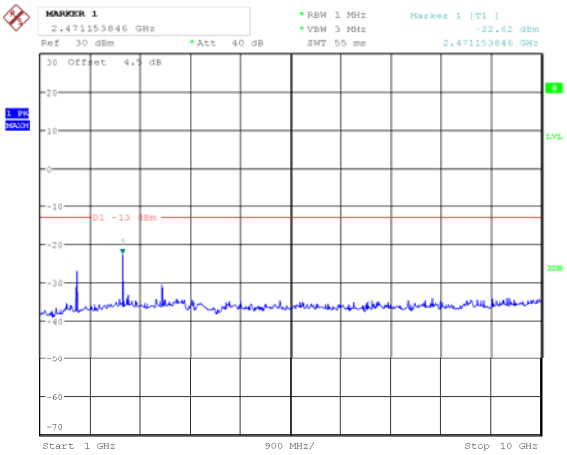
Temperature:	25.6~26.7 °C
Relative Humidity:	37~49%
ATM Pressure:	101.1 ~101.3kPa
Tester:	James Chen
Test Date:	2020-11-03~2020-11-06

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

GSM 850, Low Channel

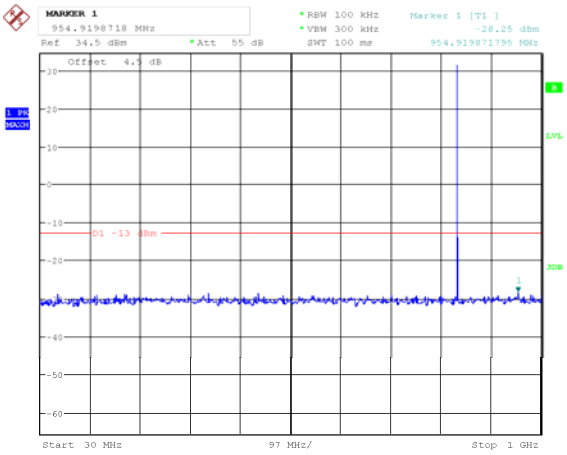


Date: 6.NOV.2020 23:14:12

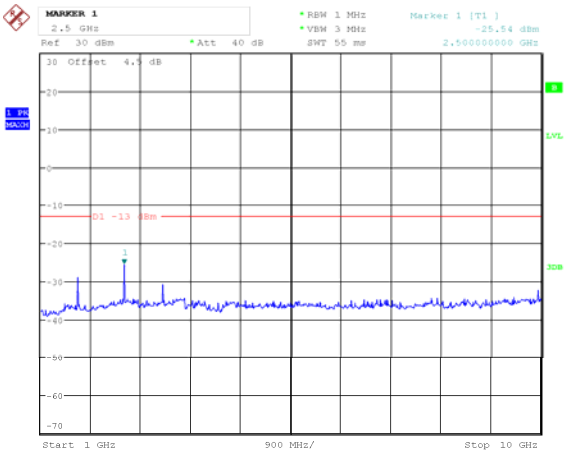


Date: 6.NOV.2020 23:14:54

GSM 850, Middle Channel

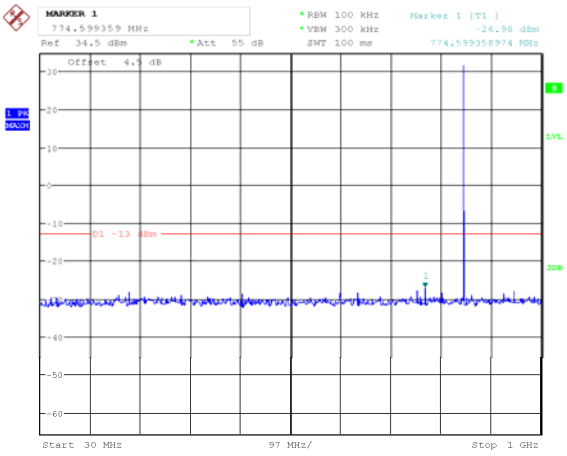


Date: 6.NOV.2020 23:16:18

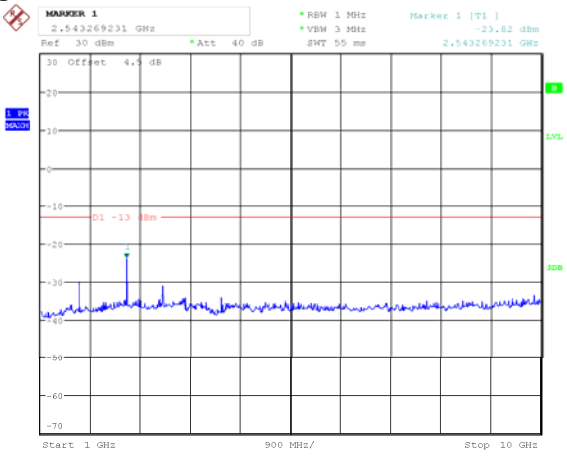


Date: 6.NOV.2020 23:15:39

GSM 850, High Channel

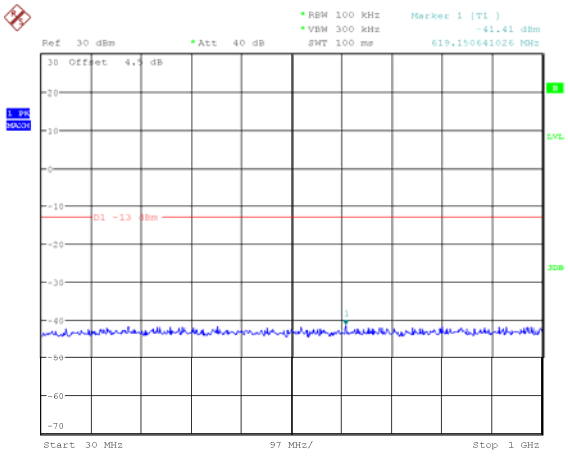


Date: 6.NOV.2020 23:17:08

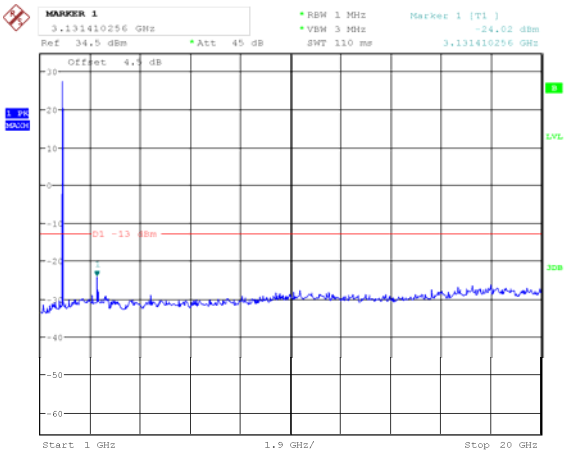


Date: 6.NOV.2020 23:18:01

PCS 1900, Low Channel

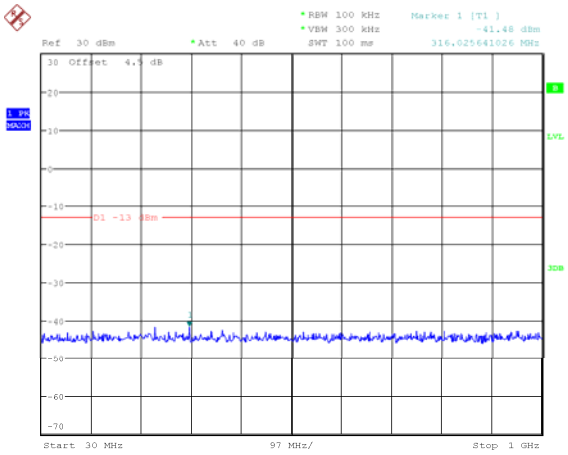


Date: 8.NOV.2020 10:38:13

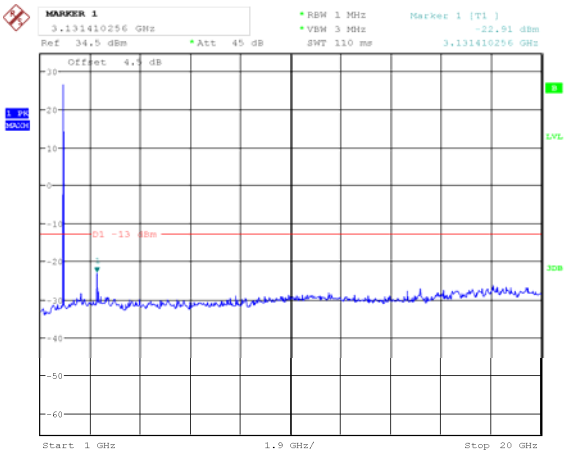


Date: 8.NOV.2020 10:40:51

PCS 1900, Middle Channel

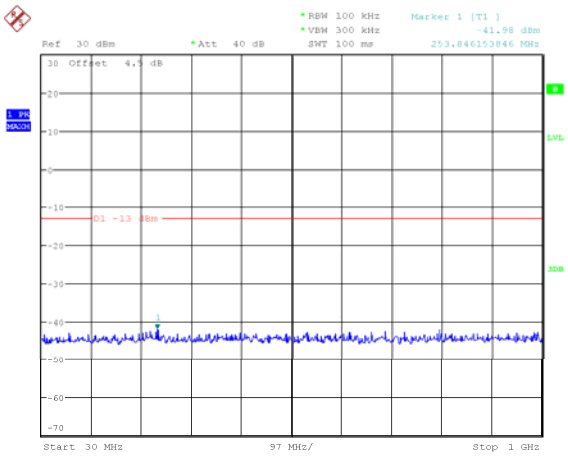


Date: 8.NOV.2020 10:38:31

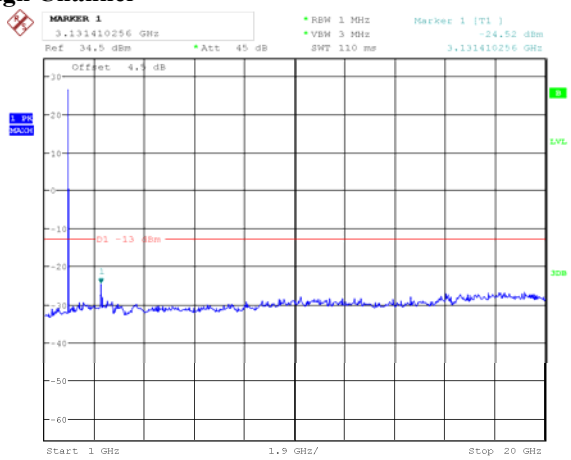


Date: 8.NOV.2020 10:40:15

PCS 1900, High Channel

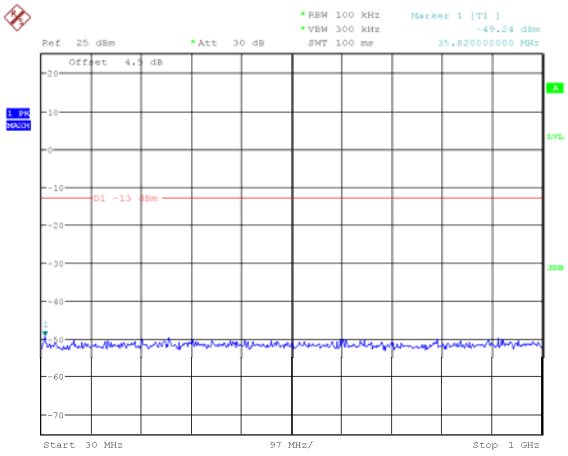


Date: 8.NOV.2020 10:38:49

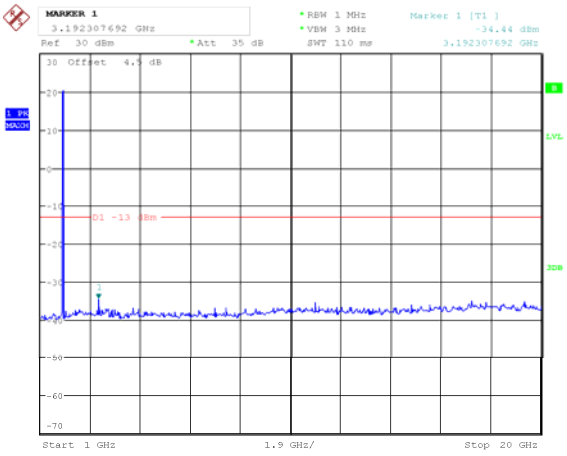


Date: 8.NOV.2020 10:39:44

WCDMA Band II, R99, Low Channel

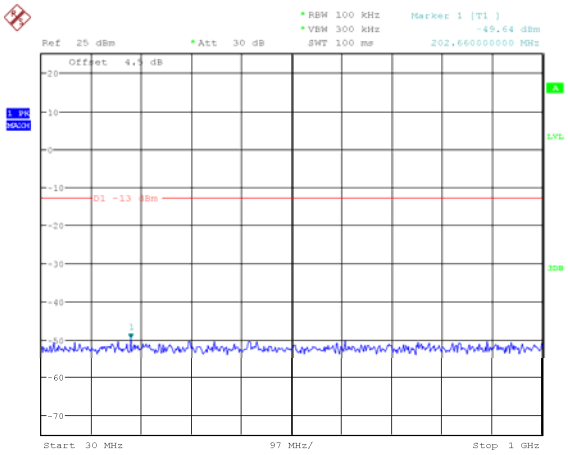


Date: 6.NOV.2020 20:43:23

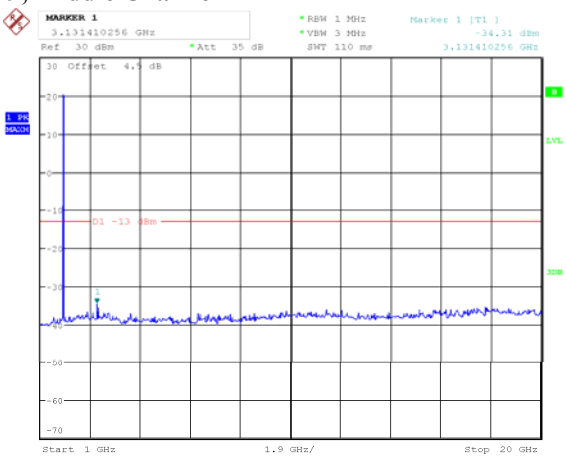


Date: 6.NOV.2020 20:44:16

WCDMA Band II, R99, Middle Channel

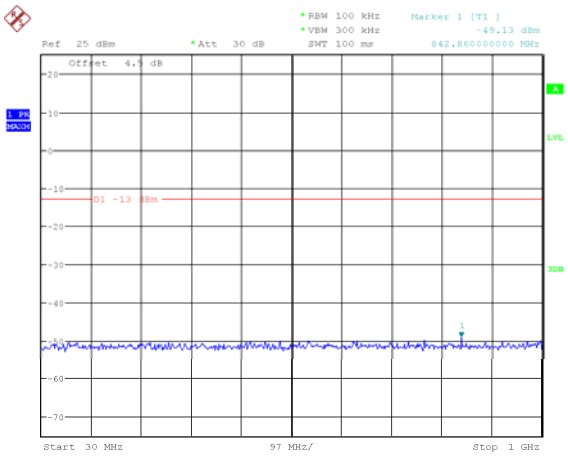


Date: 6.NOV.2020 20:44:43

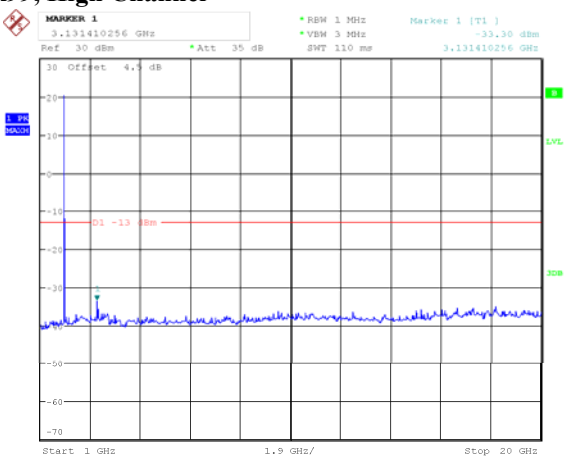


Date: 6.NOV.2020 20:45:11

WCDMA Band II, R99, High Channel

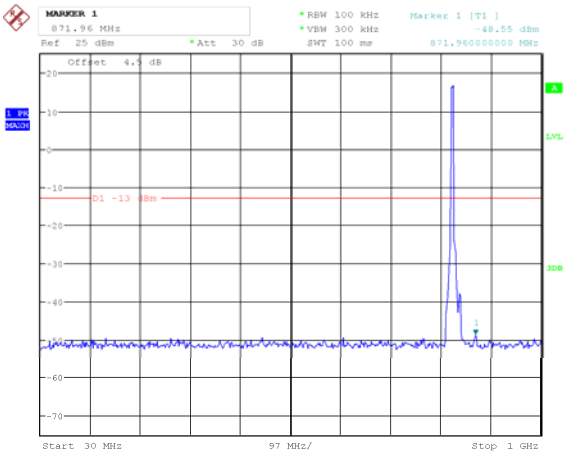


Date: 6.NOV.2020 20:45:38

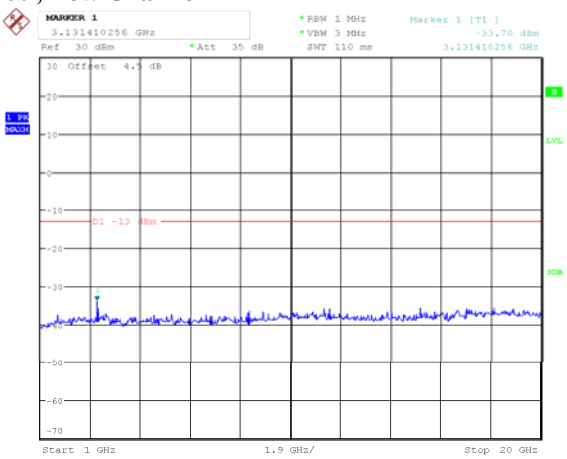


Date: 6.NOV.2020 20:46:01

WCDMA Band V, R99, Low Channel

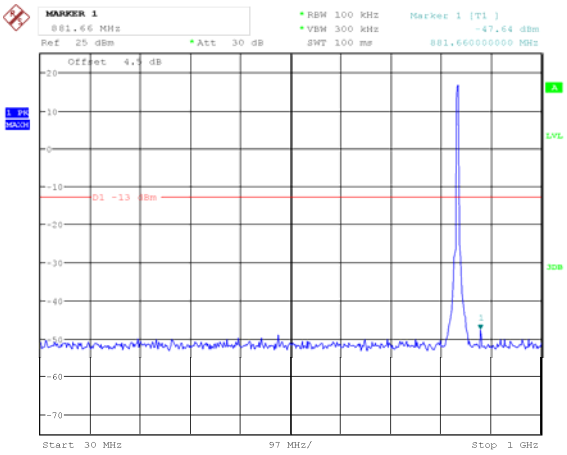


Date: 6.NOV.2020 20:47:21

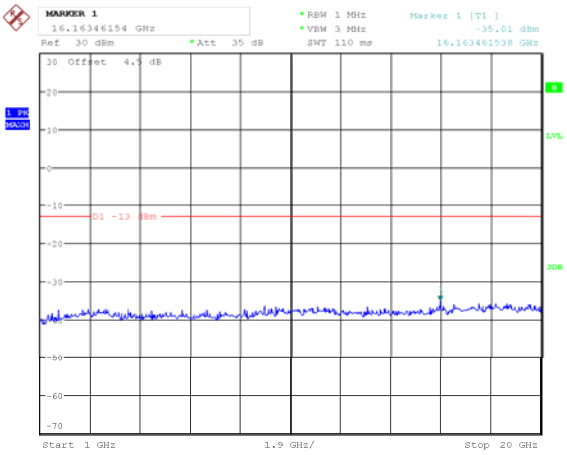


Date: 6.NOV.2020 20:47:44

WCDMA Band V, R99, Middle Channel

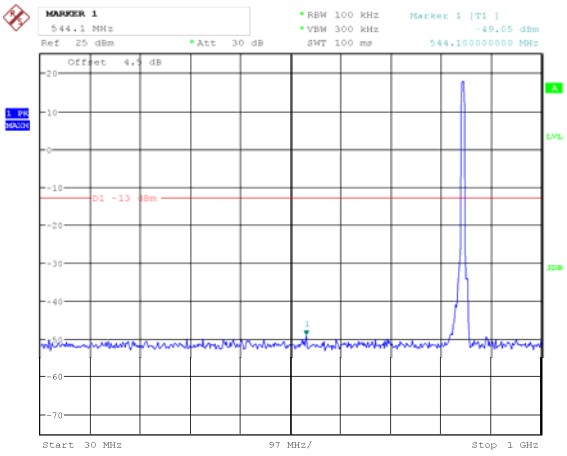


Date: 6.NOV.2020 20:48:13

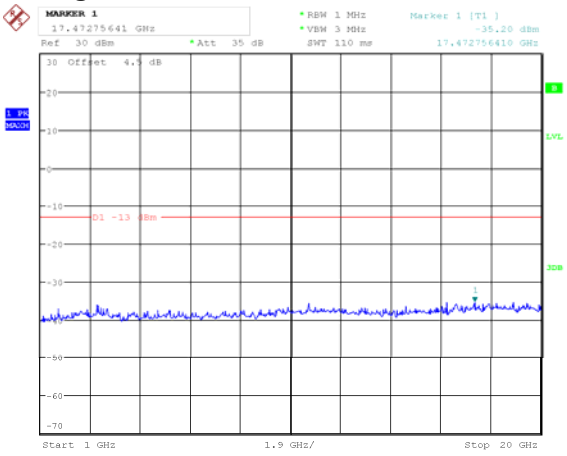


Date: 6.NOV.2020 20:48:35

WCDMA Band V, R99, High Channel



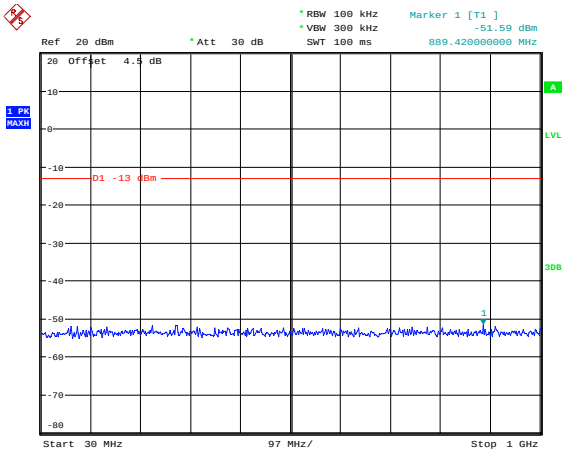
Date: 6.NOV.2020 20:49:22



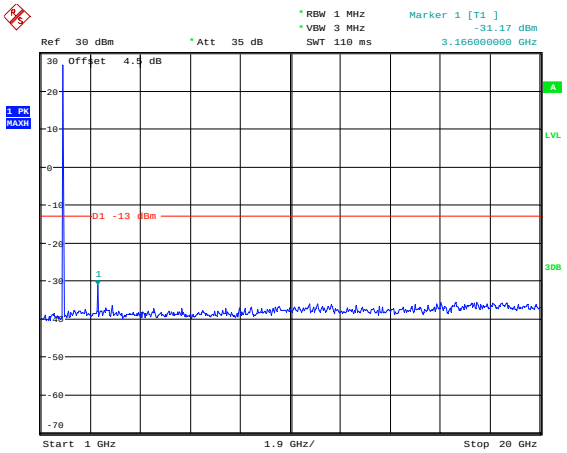
Date: 6.NOV.2020 20:49:51

LTE Band 2:

1.4M, QPSK, Low Channel

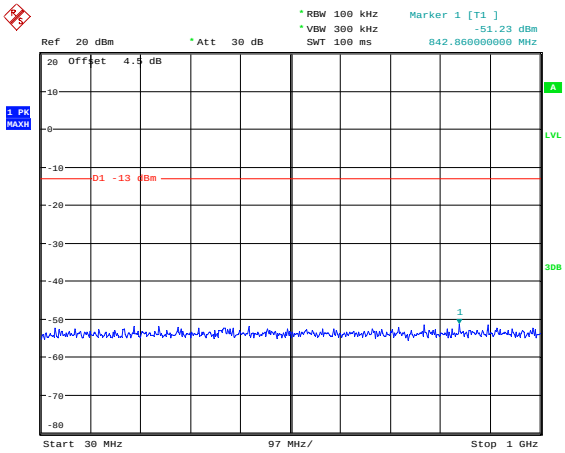


Date: 3.NOV.2020 18:51:24

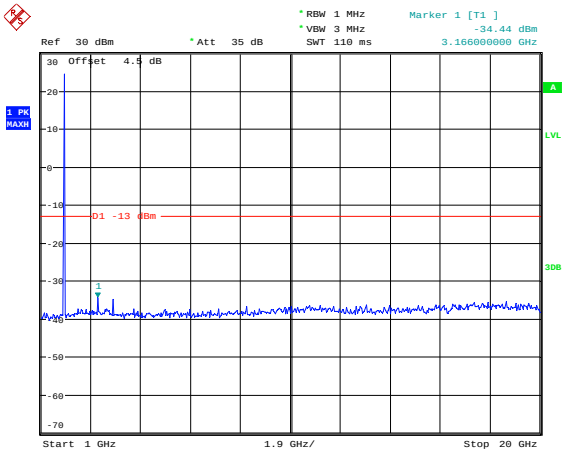


Date: 3.NOV.2020 18:51:36

1.4M, QPSK, Middle Channel

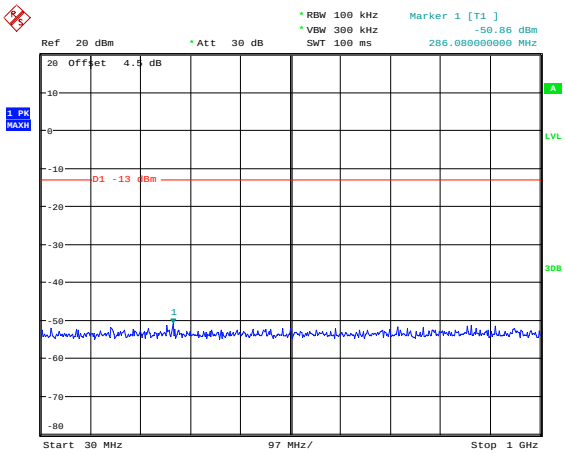


Date: 3.NOV.2020 17:28:40

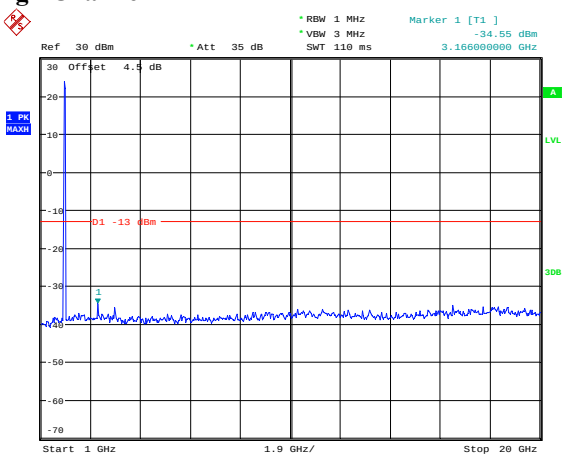


Date: 3.NOV.2020 17:28:52

1.4M, QPSK, High Channel

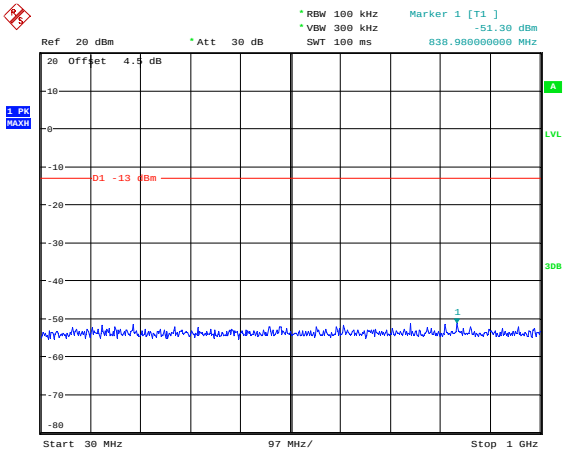


Date: 6.NOV.2020 17:34:02

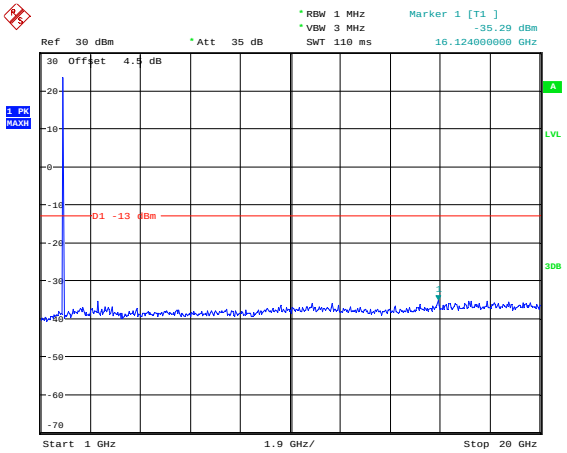


Date: 6.NOV.2020 17:34:14

3M, QPSK, Low Channel

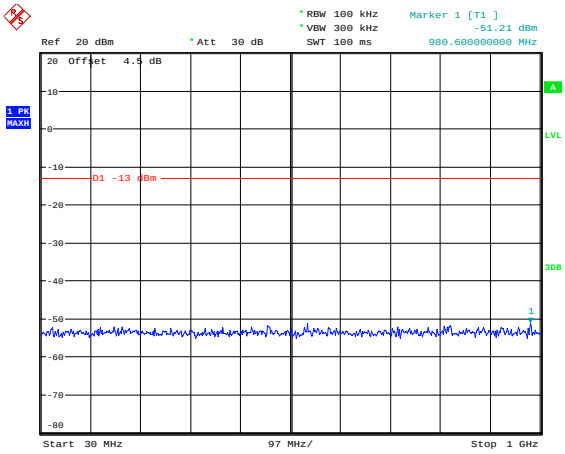


Date: 3.NOV.2020 19:02:53

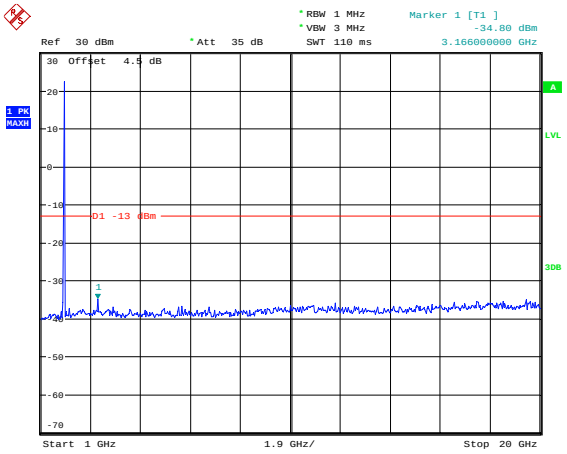


Date: 3.NOV.2020 19:03:05

3M, QPSK, Middle Channel

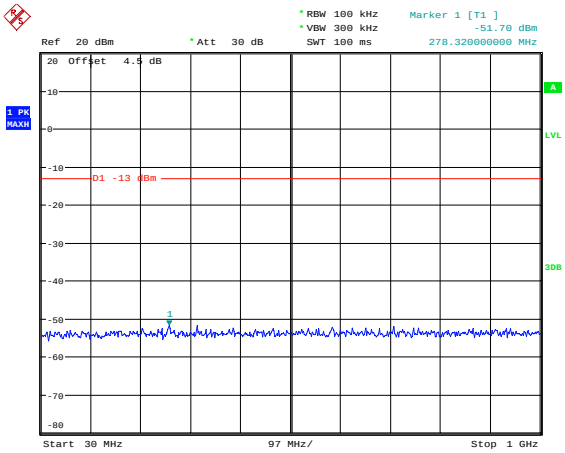


Date: 3.NOV.2020 17:29:15

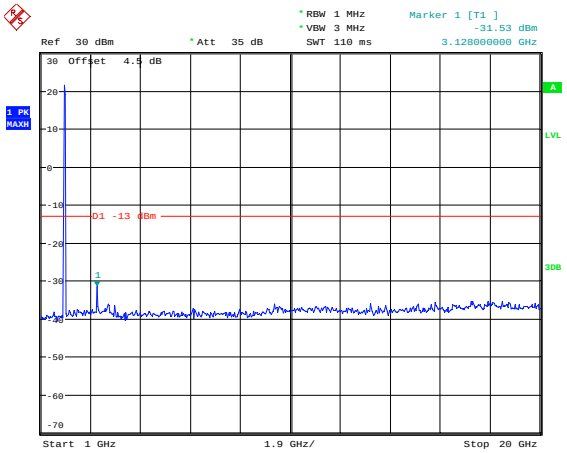


Date: 3.NOV.2020 17:29:26

3M, QPSK, High Channel

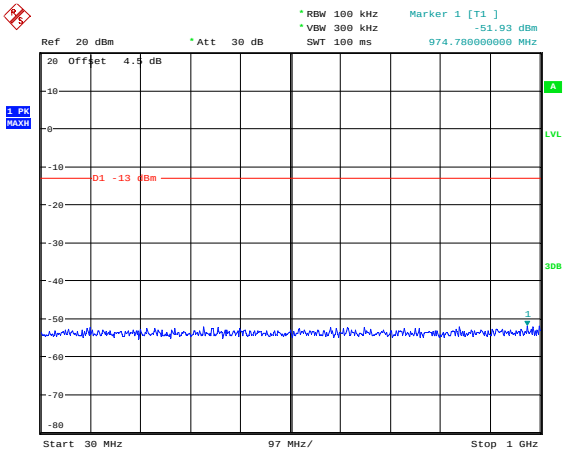


Date: 6.NOV.2020 17:36:35

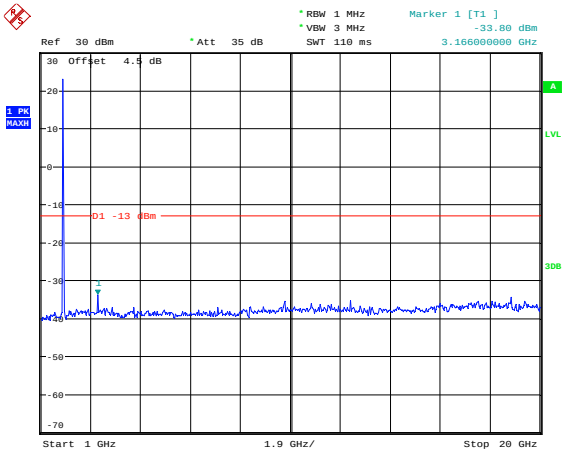


Date: 6.NOV.2020 17:36:47

5M, QPSK, Low Channel

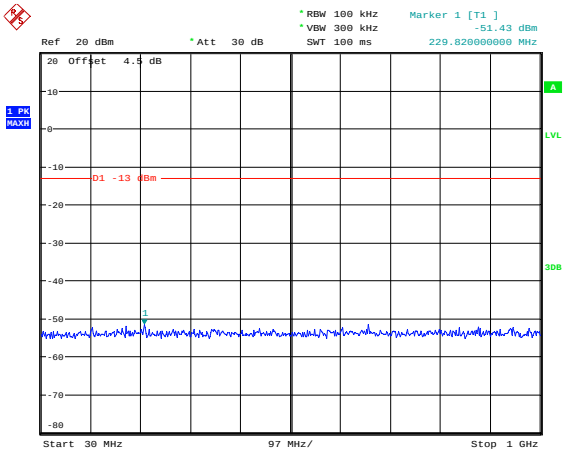


Date: 3.NOV.2020 19:00:35

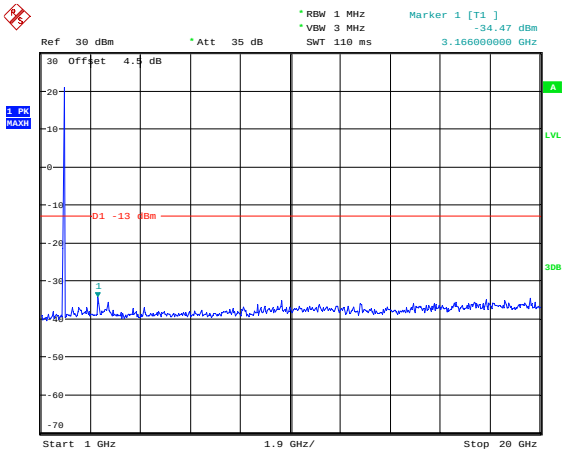


Date: 3.NOV.2020 19:00:47

5M, QPSK, Middle Channel

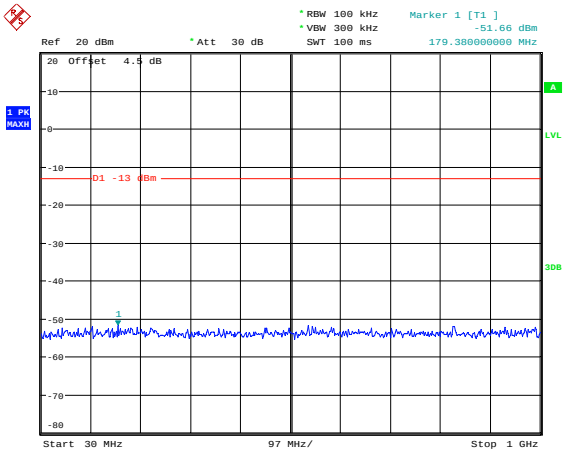


Date: 3.NOV.2020 17:29:47

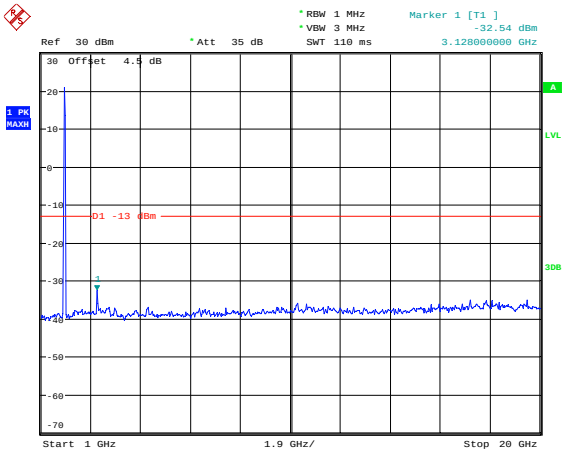


Date: 3.NOV.2020 17:29:58

5M, QPSK, High Channel

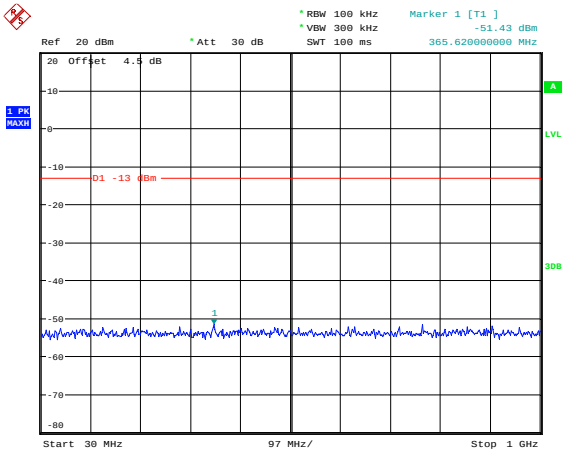


Date: 6.NOV.2020 17:43:03

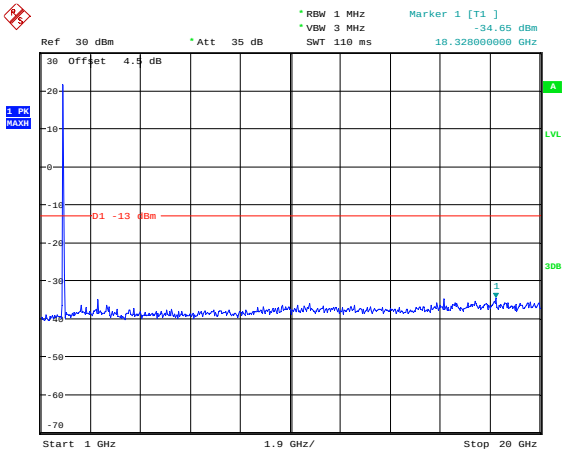


Date: 6.NOV.2020 17:43:15

10M, QPSK, Low Channel

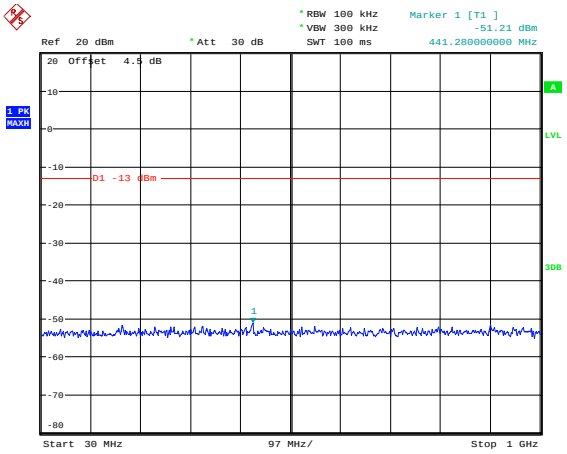


Date: 3.NOV.2020 19:12:47

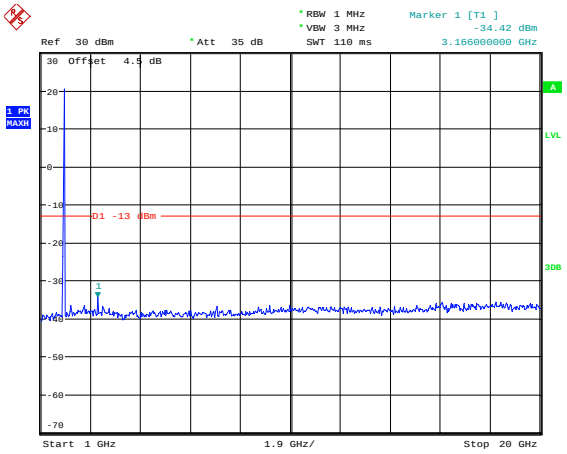


Date: 3.NOV.2020 19:12:58

10M, QPSK, Middle Channel

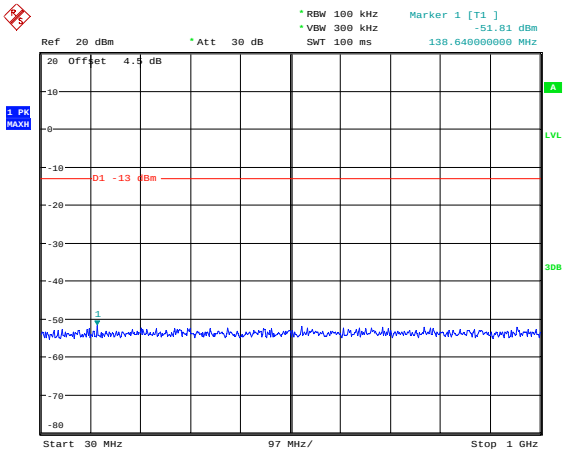


Date: 3.NOV.2020 17:30:22

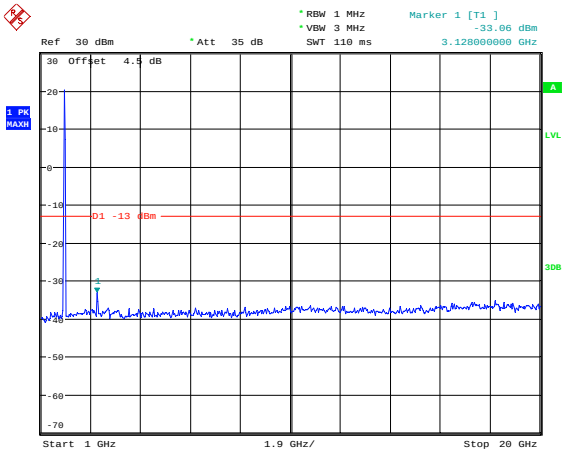


Date: 3.NOV.2020 17:30:34

10M, QPSK, High Channel

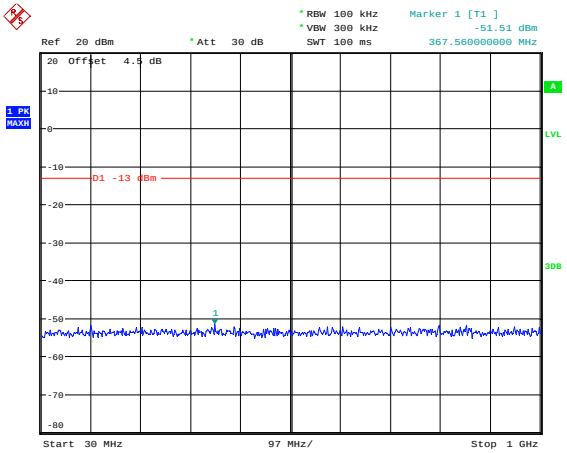


Date: 6.NOV.2020 17:44:21

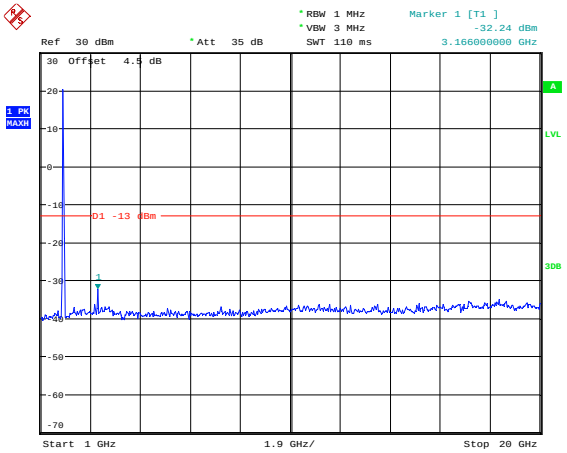


Date: 6.NOV.2020 17:44:33

15M, QPSK, Low Channel

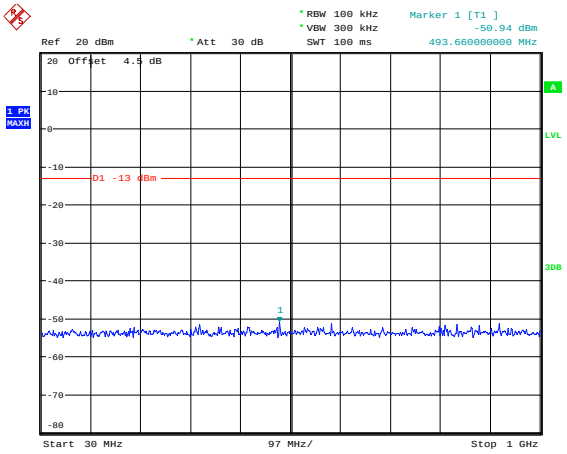


Date: 3.NOV.2020 19:19:28

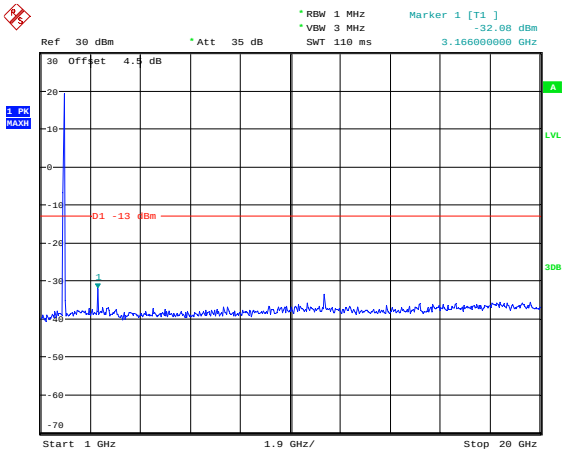


Date: 3.NOV.2020 19:19:40

15M, QPSK, Middle Channel

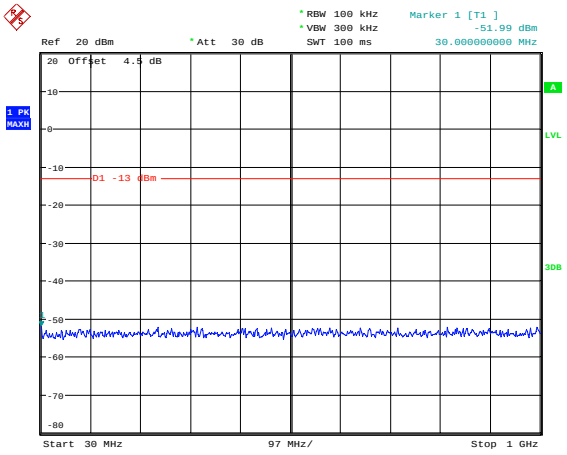


Date: 3.NOV.2020 17:31:01



Date: 3.NOV.2020 17:31:12

15M, QPSK, High Channel



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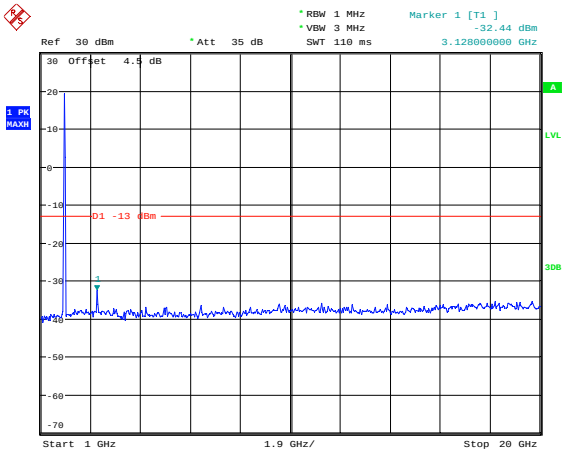
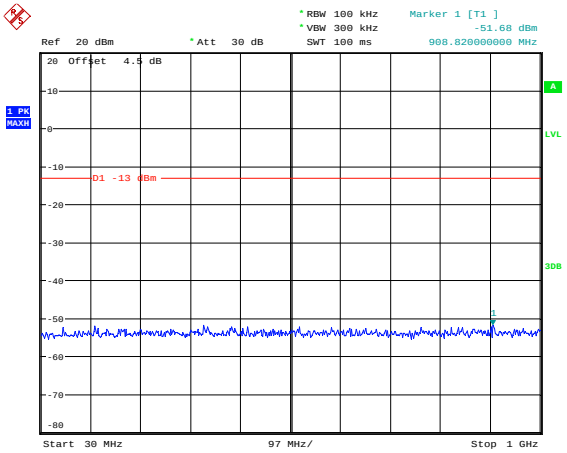
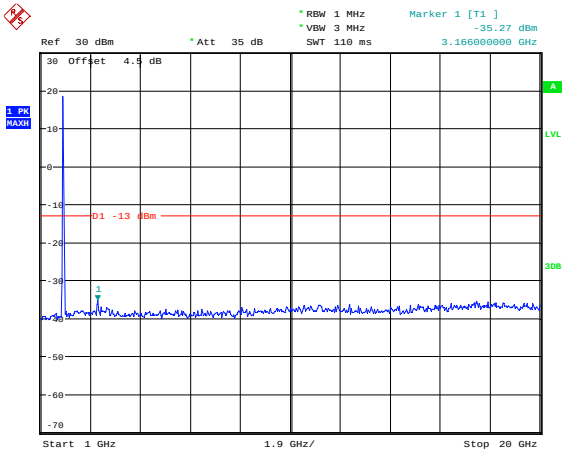


Date: 6.NOV.2020 17:45:56

20M, QPSK, Low Channel

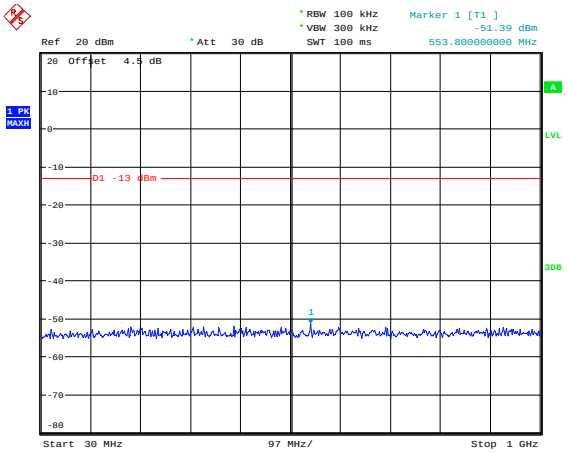


Date: 3.NOV.2020 19:23:04

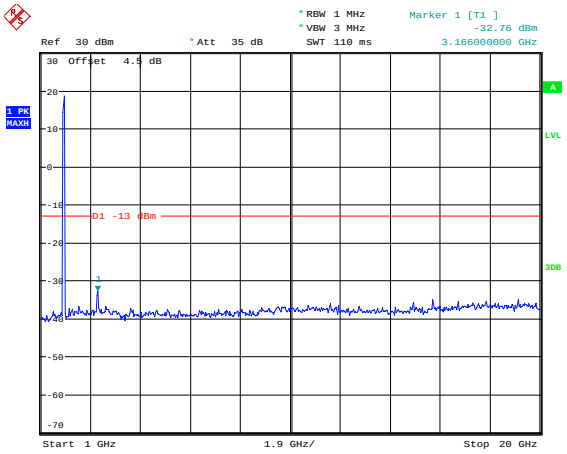


Date: 3.NOV.2020 19:23:15

20M, QPSK, Middle Channel

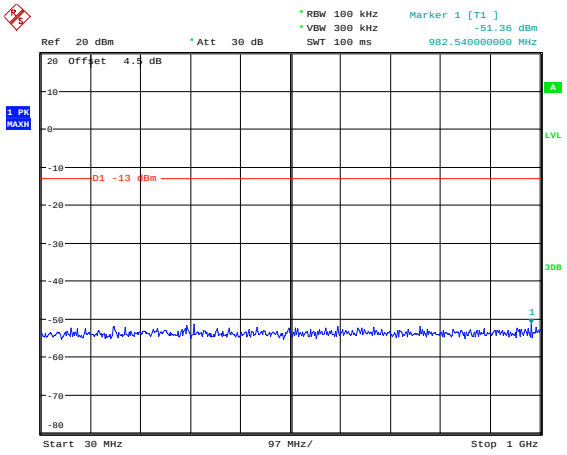


Date: 3.NOV.2020 17:31:37

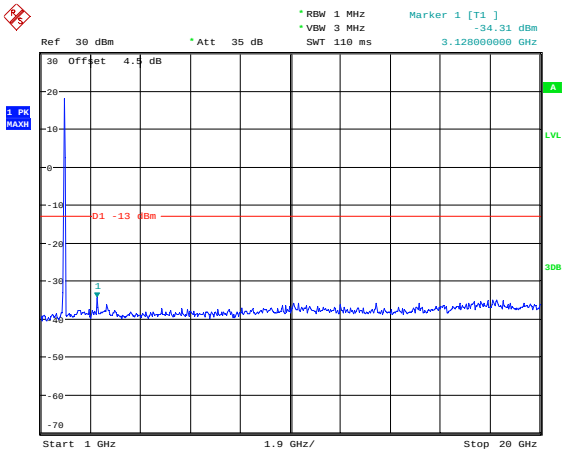


Date: 3.NOV.2020 17:31:48

20M, QPSK, High Channel



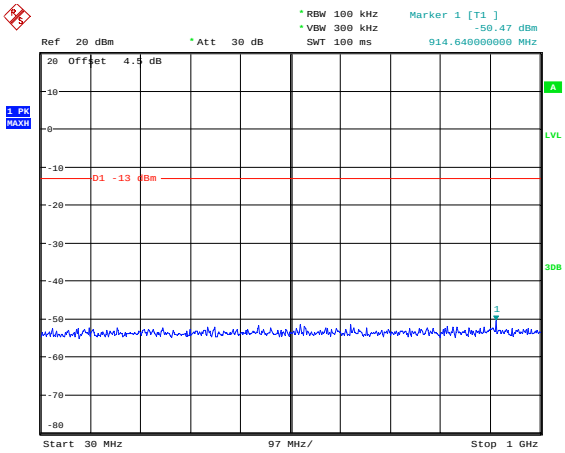
Date: 6.NOV.2020 17:50:54



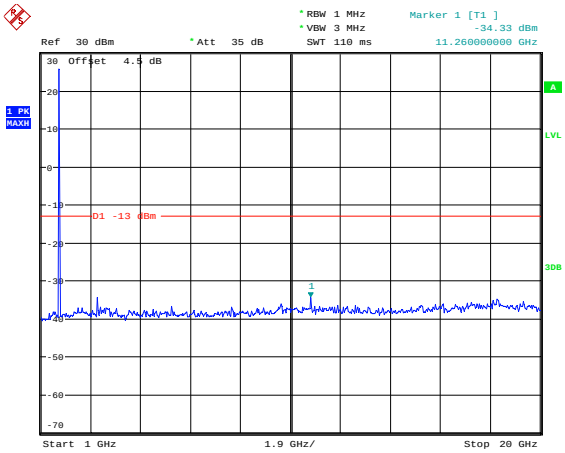
Date: 6.NOV.2020 17:51:06

LTE Band 4:

1.4M, QPSK, Low Channel

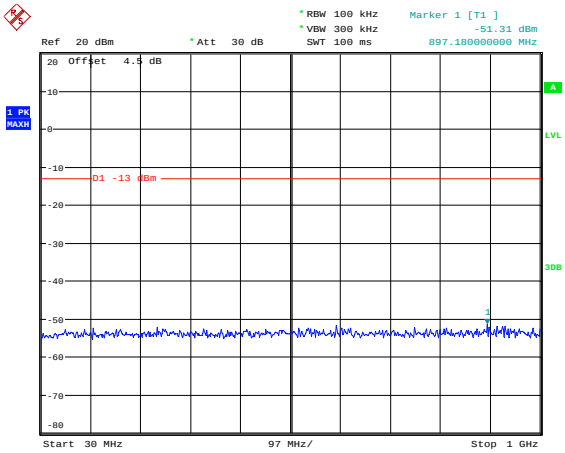


Date: 3.NOV.2020 20:31:30

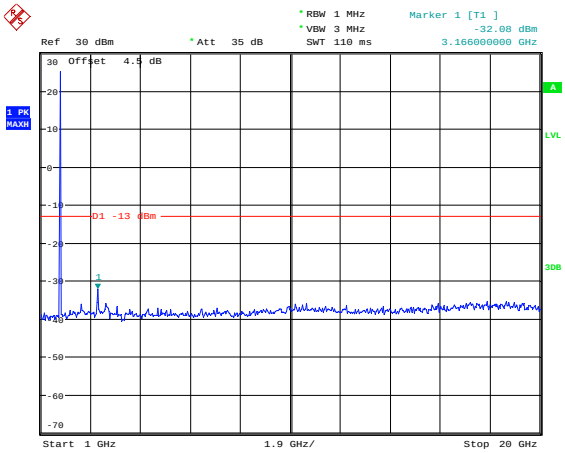


Date: 3.NOV.2020 20:31:42

1.4M, QPSK, Middle Channel

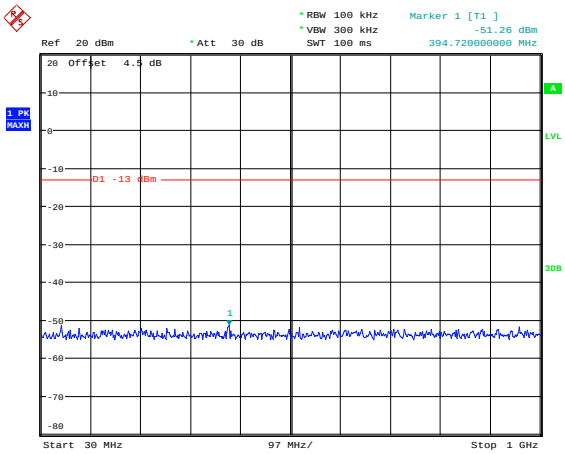


Date: 3.NOV.2020 17:32:07

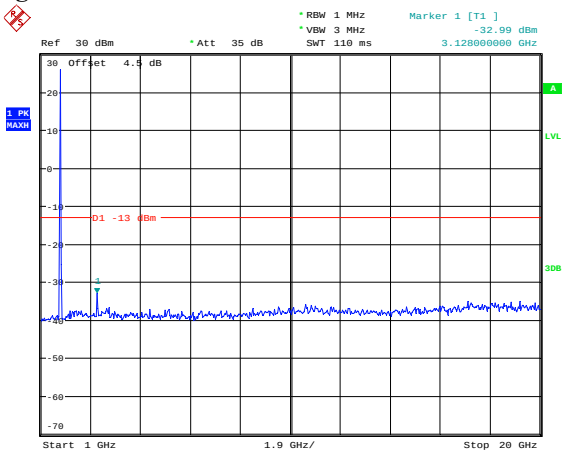


Date: 3.NOV.2020 17:32:19

1.4M, QPSK, High Channel

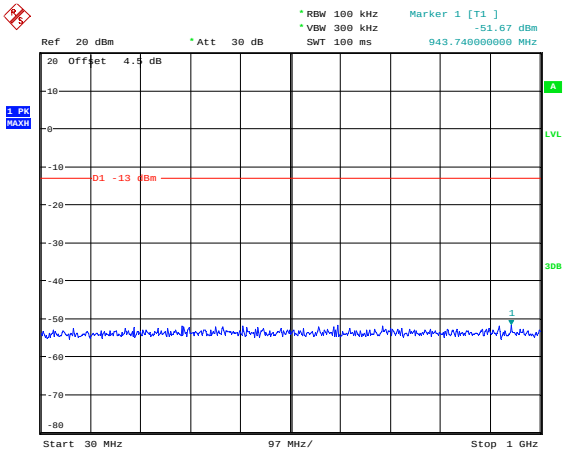


Date: 6.NOV.2020 17:52:28

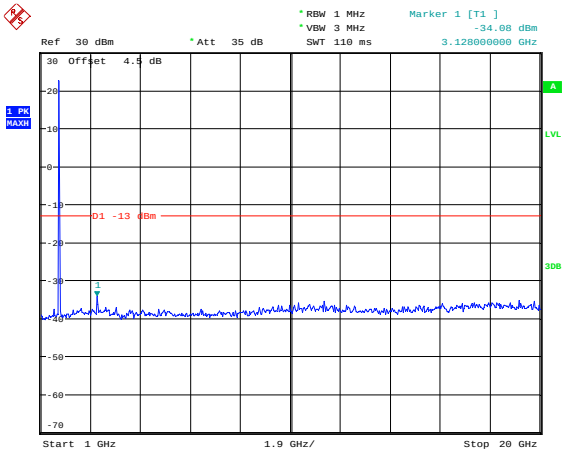


Date: 6.NOV.2020 17:52:40

3M, QPSK, Low Channel

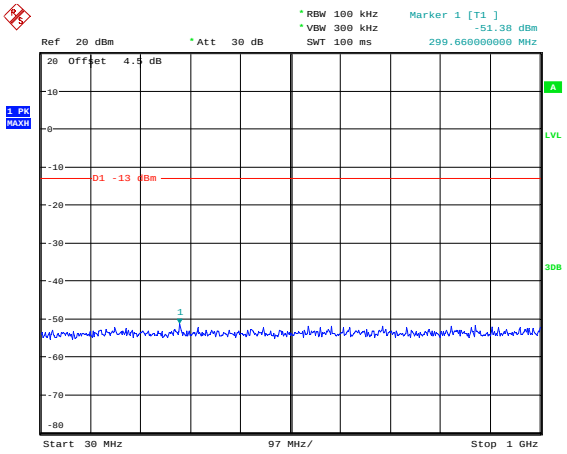


Date: 3.NOV.2020 20:32:59

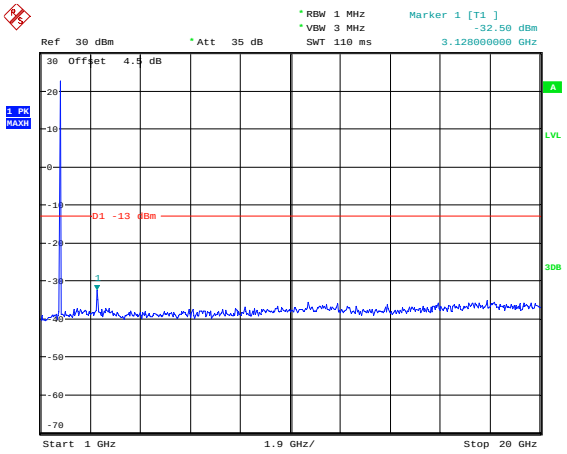


Date: 3.NOV.2020 20:33:11

3M, QPSK, Middle Channel

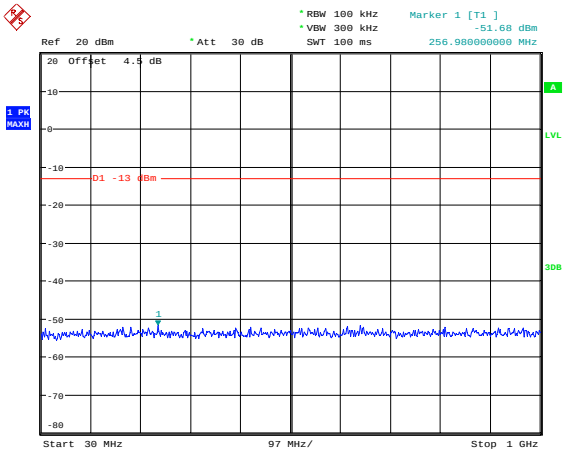


Date: 3.NOV.2020 17:32:38



Date: 3.NOV.2020 17:32:50

3M, QPSK, High Channel



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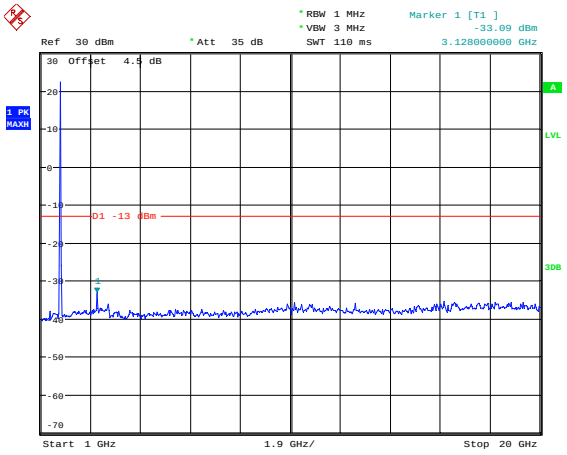
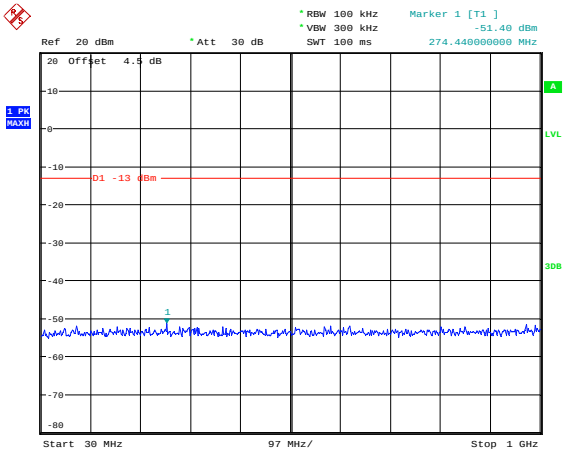
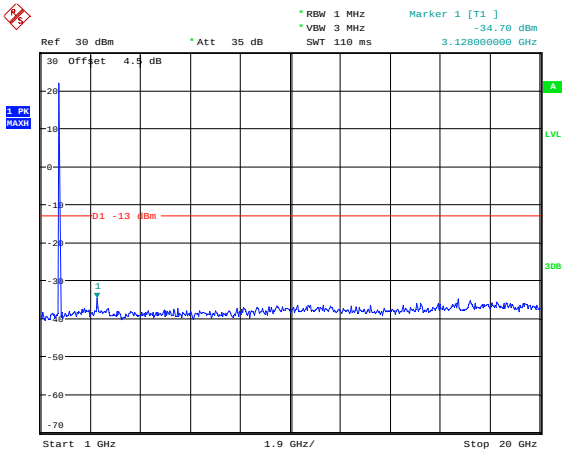


Date: 6.NOV.2020 17:55:08

5M, QPSK, Low Channel

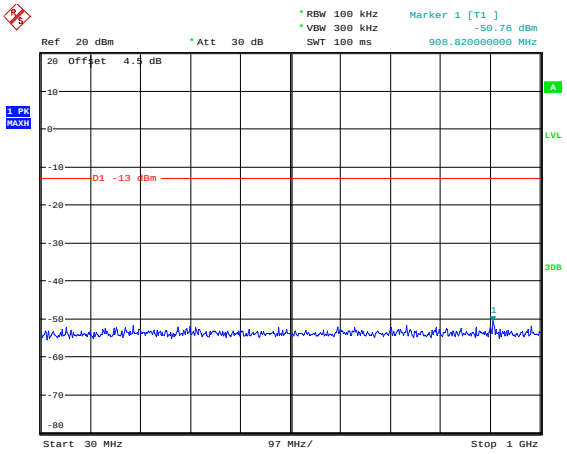


Date: 3.NOV.2020 20:38:26

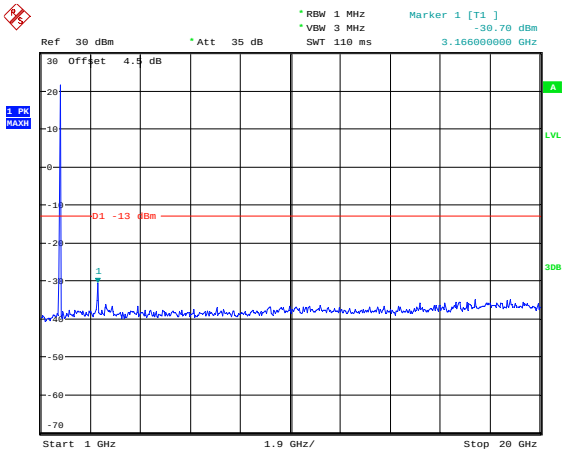


Date: 3.NOV.2020 20:38:38

5M, QPSK, Middle Channel

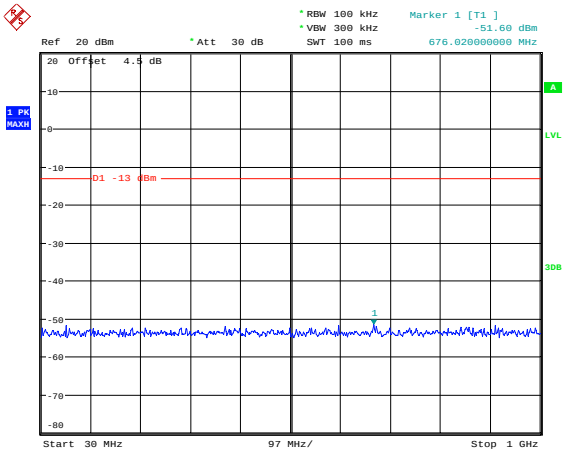


Date: 3.NOV.2020 17:33:10

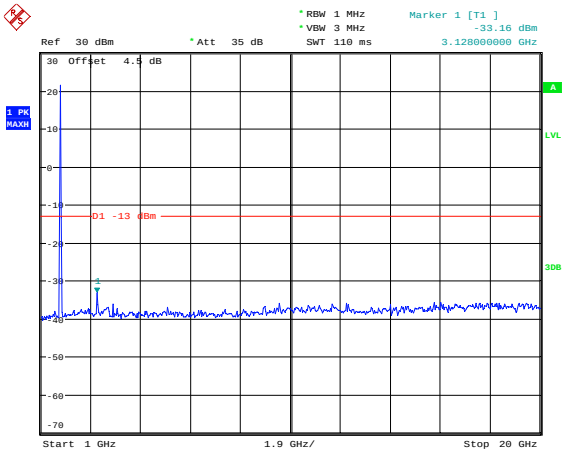


Date: 3.NOV.2020 17:33:22

5M, QPSK, High Channel

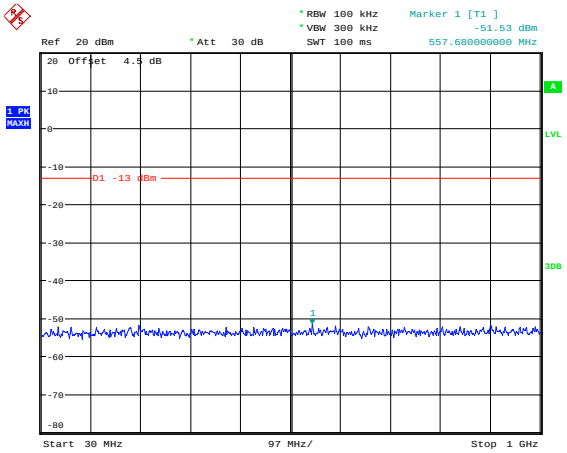


Date: 6.NOV.2020 17:56:27

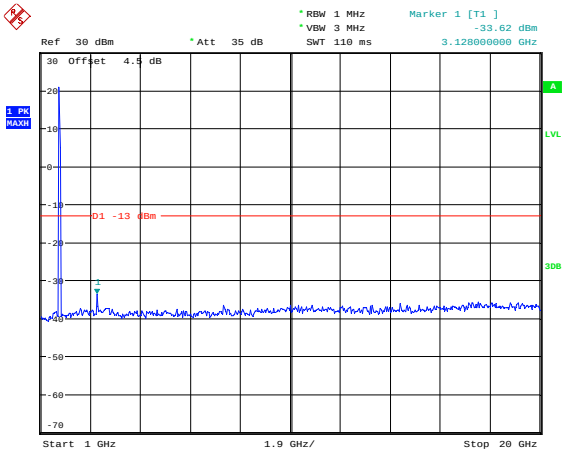


Date: 6.NOV.2020 17:56:39

10M, QPSK, Low Channel

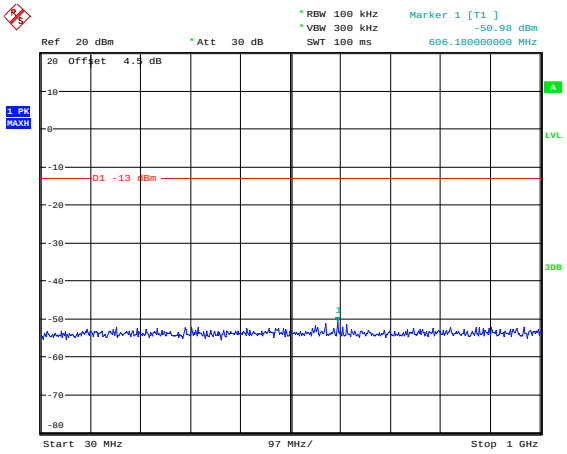


Date: 3.NOV.2020 20:42:36

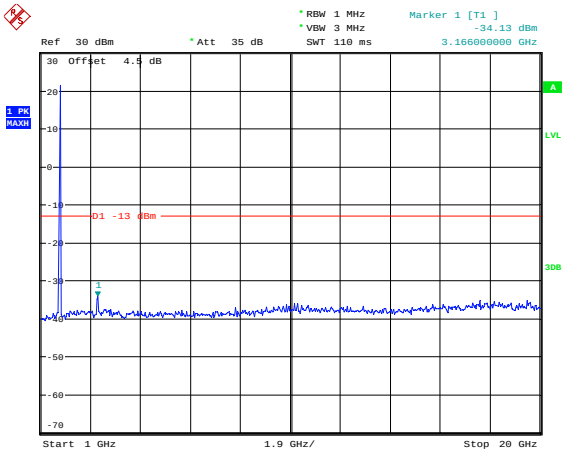


Date: 3.NOV.2020 20:42:47

10M, QPSK, Middle Channel

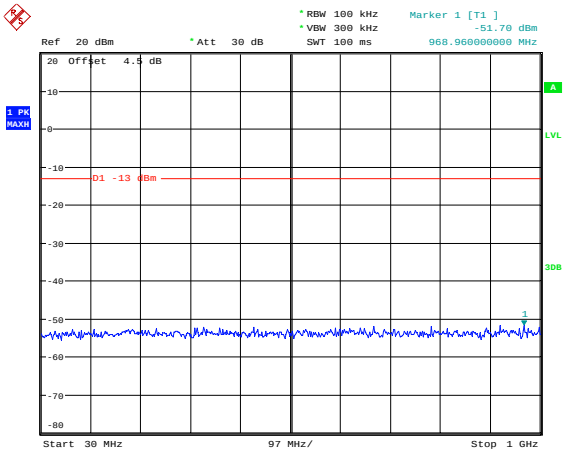


Date: 3.NOV.2020 17:33:42

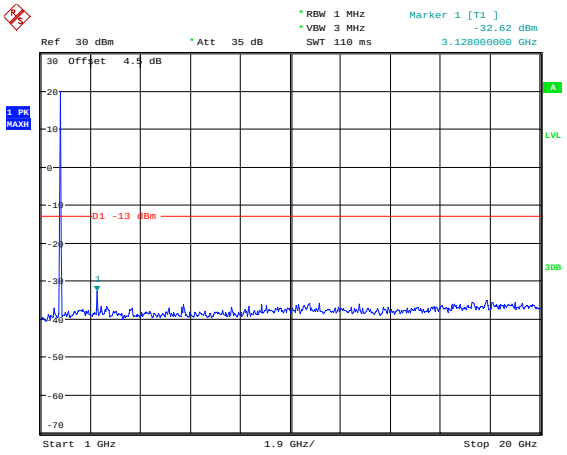


Date: 3.NOV.2020 17:33:54

10M, QPSK, High Channel

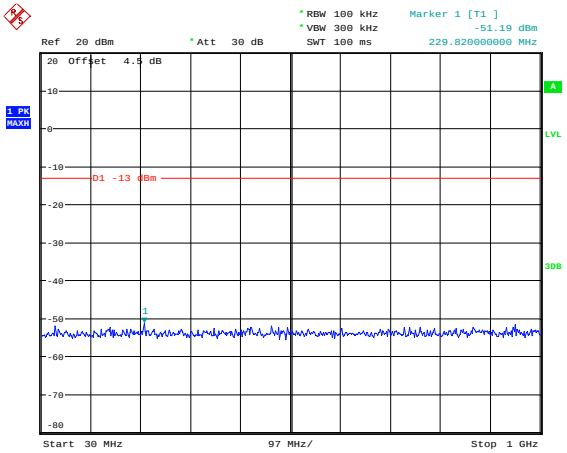


Date: 6.NOV.2020 17:57:59

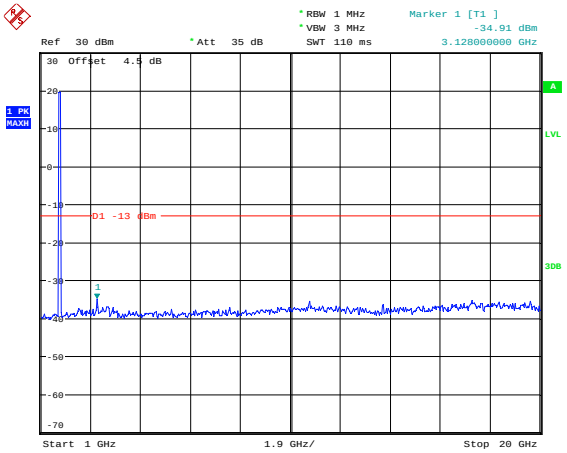


Date: 6.NOV.2020 17:58:10

15M, QPSK, Low Channel

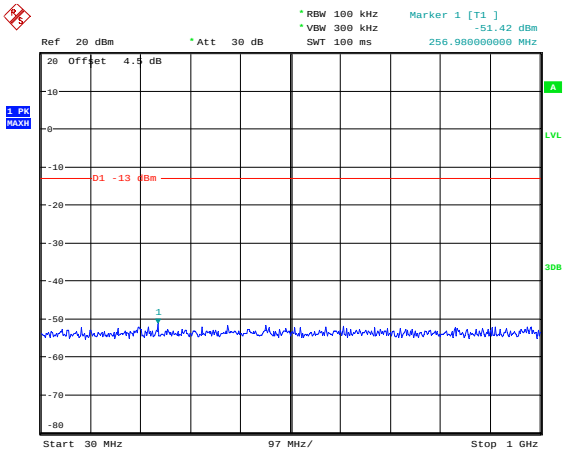


Date: 3.NOV.2020 20:46:11

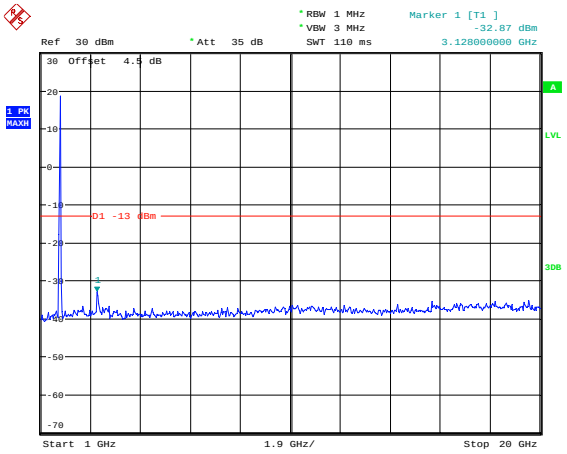


Date: 3.NOV.2020 20:46:23

15M, QPSK, Middle Channel

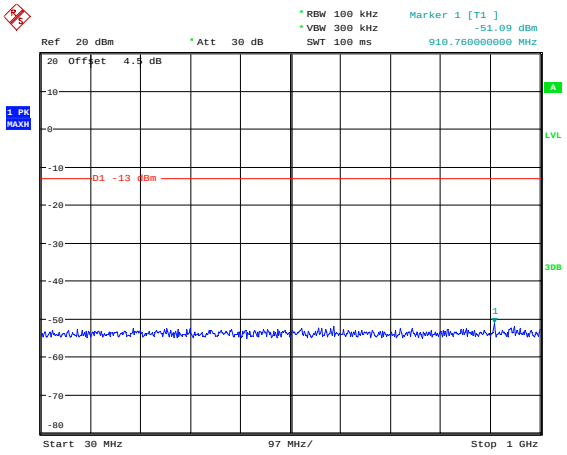


Date: 3.NOV.2020 17:34:18

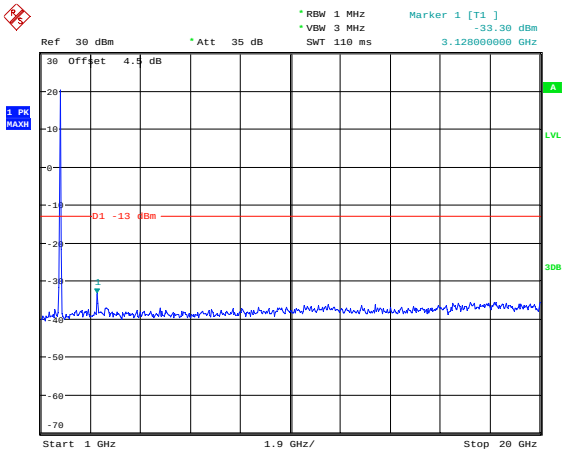


Date: 3.NOV.2020 17:34:29

15M, QPSK, High Channel

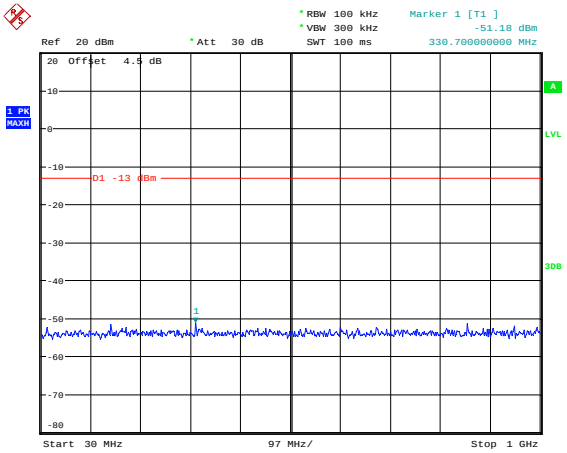


Date: 6.NOV.2020 17:59:24

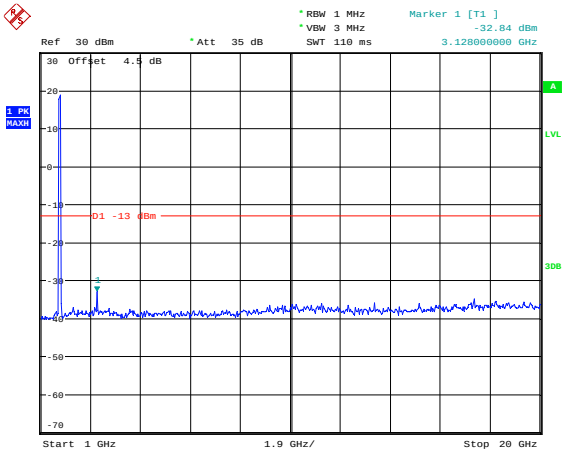


Date: 6.NOV.2020 17:59:35

20M, QPSK, Low Channel

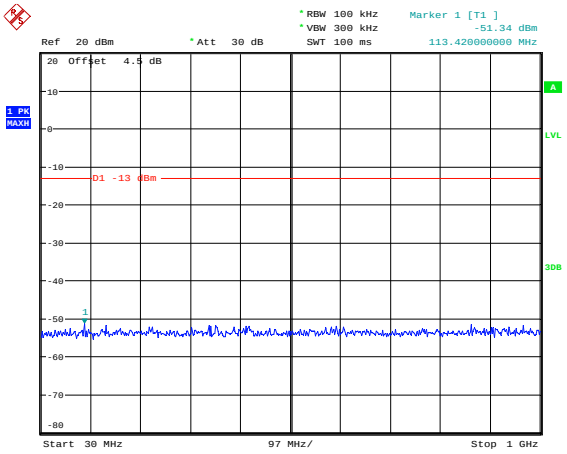


Date: 3.NOV.2020 20:47:37



Date: 3.NOV.2020 20:47:49

20M, QPSK, Middle Channel



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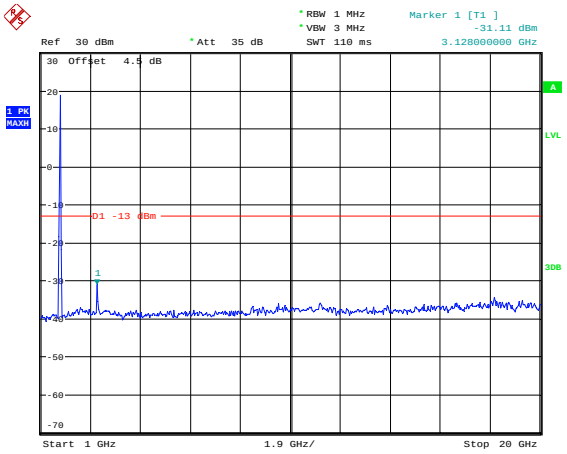
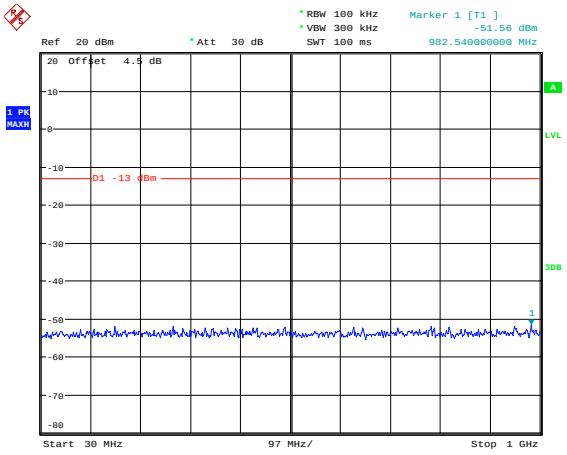
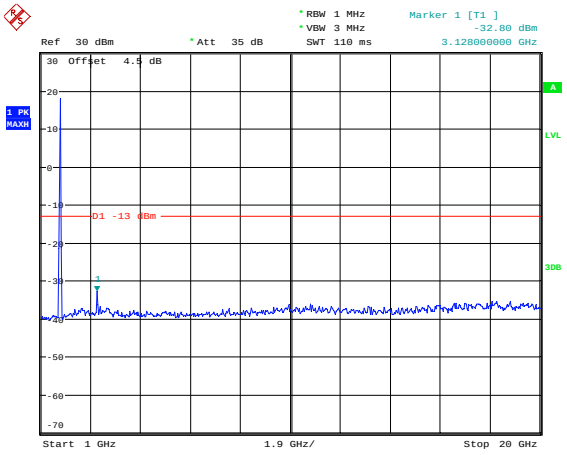


Date: 3.NOV.2020 17:35:08

20M, QPSK, High Channel



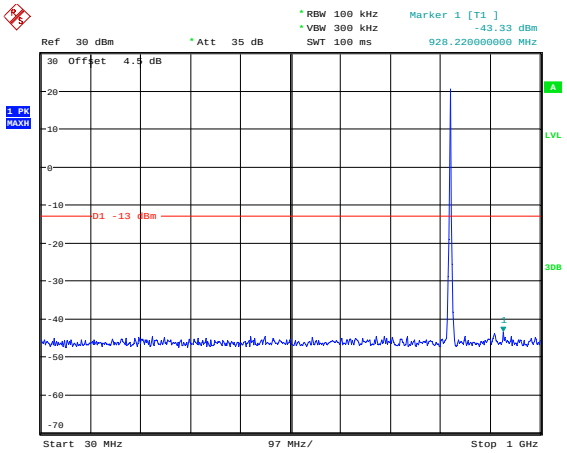
Date: 6.NOV.2020 18:00:55



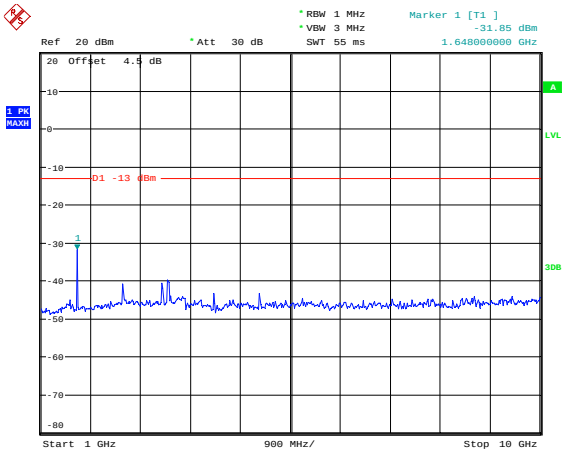
Date: 6.NOV.2020 18:01:07

LTE Band 5:

1.4M, QPSK, Low Channel



Date: 3.NOV.2020 20:56:22



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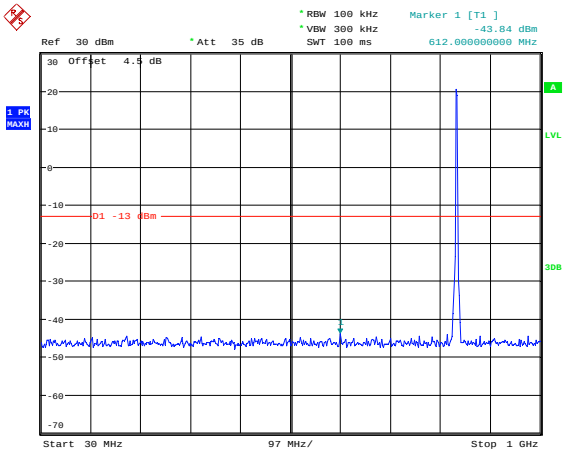
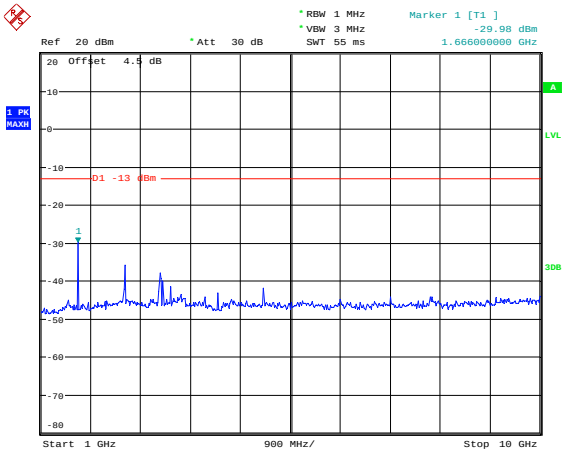
1.4M, QPSK, Middle Channel

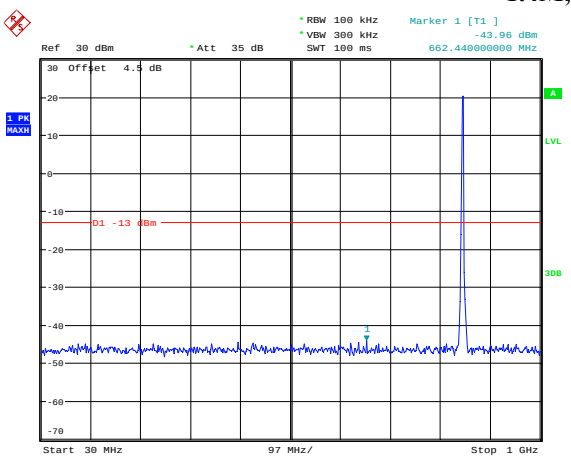


Date: 3.NOV.2020 17:35:30

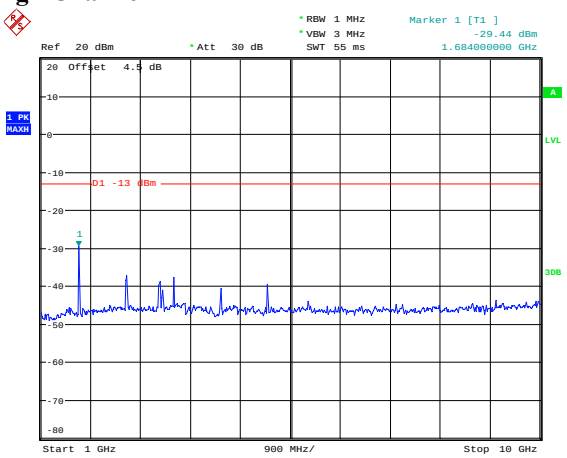


Date: 3.NOV.2020 17:35:42

1.4M, QPSK, High Channel

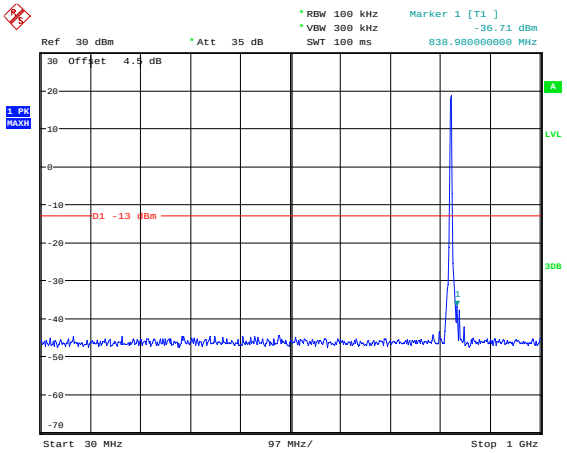


Date: 6.NOV.2020 18:02:26

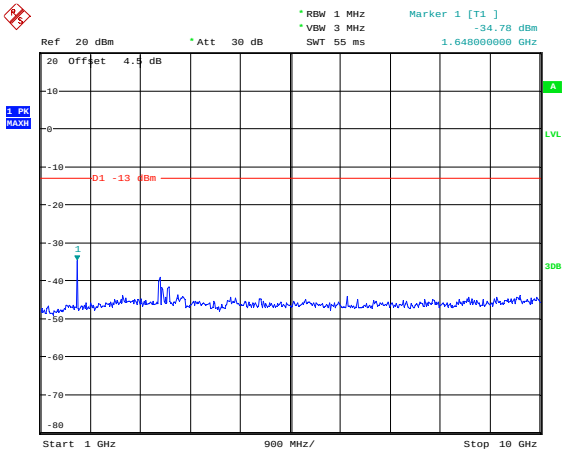


Date: 6.NOV.2020 18:02:38

3M, QPSK, Low Channel

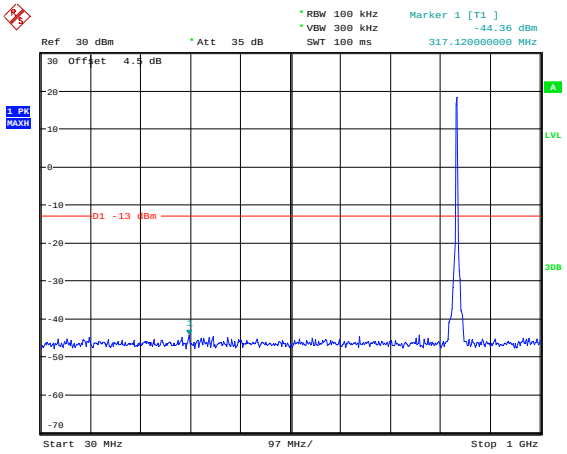


Date: 3.NOV.2020 20:58:00

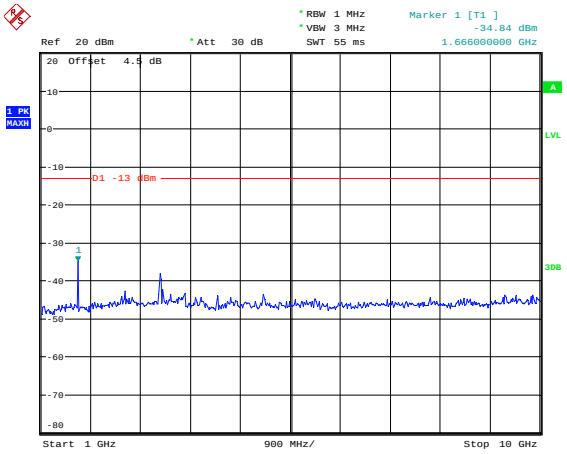


Date: 3.NOV.2020 20:58:12

3M, QPSK, Middle Channel

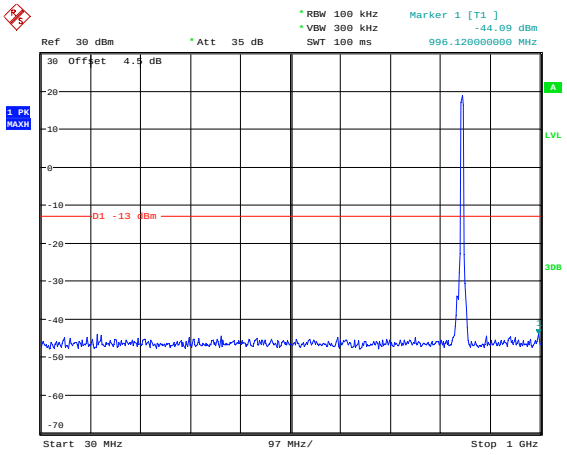


Date: 3.NOV.2020 17:36:01

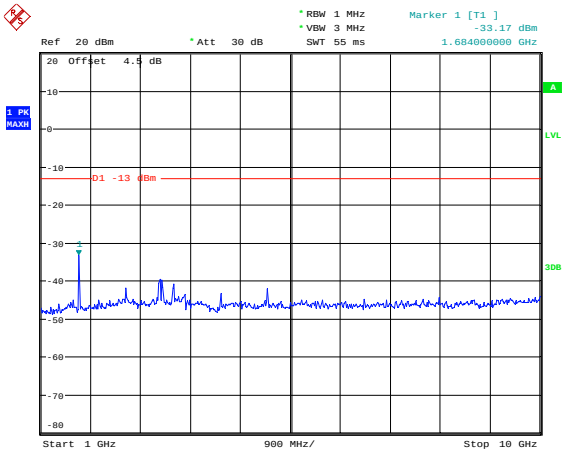


Date: 3.NOV.2020 17:36:13

3M, QPSK, High Channel

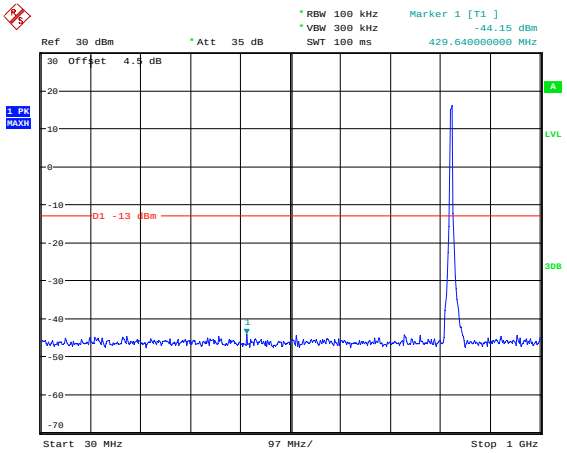


Date: 6.NOV.2020 18:03:54

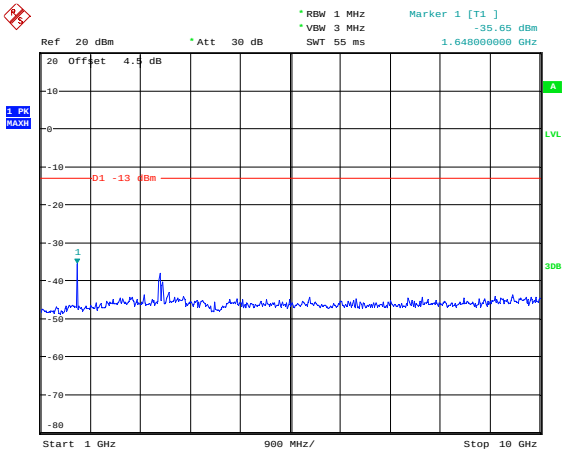


Date: 6.NOV.2020 18:04:06

5M, QPSK, Low Channel

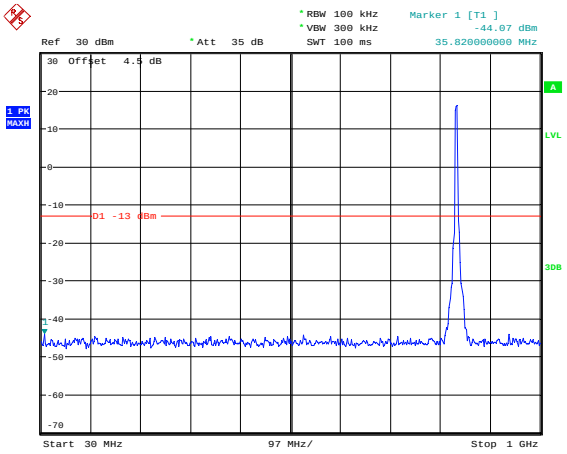


Date: 3.NOV.2020 21:02:45

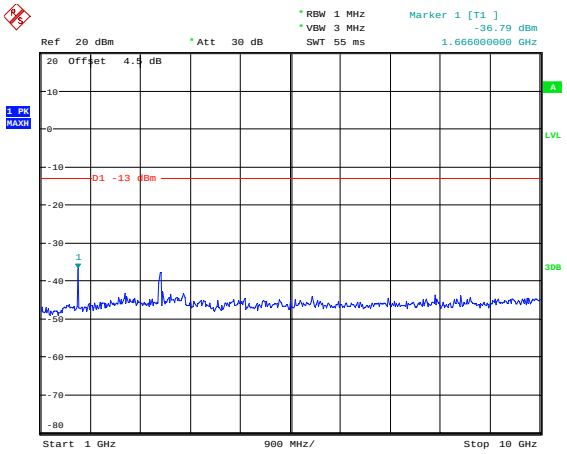


Date: 3.NOV.2020 21:02:57

5M, QPSK, Middle Channel

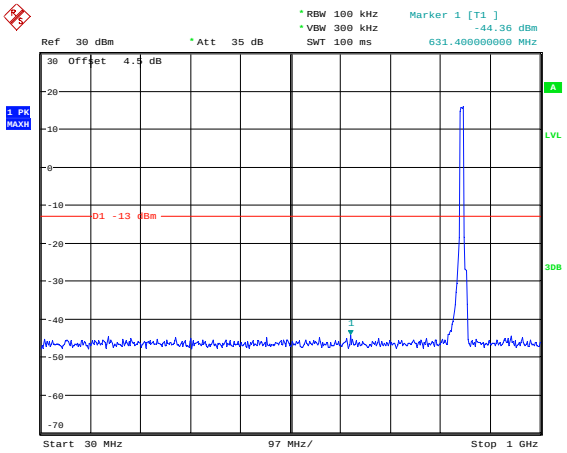


Date: 3.NOV.2020 17:36:36

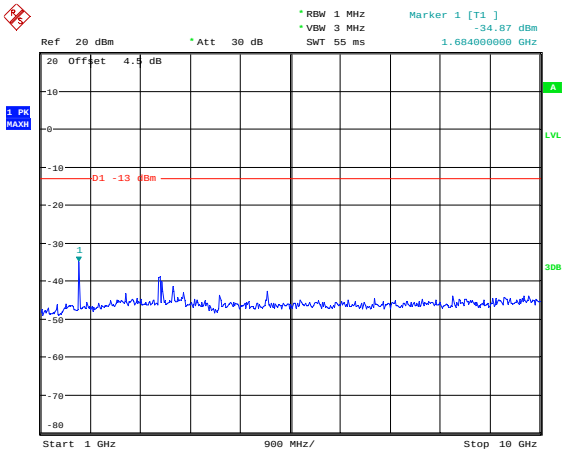


Date: 3.NOV.2020 17:36:48

5M, QPSK, High Channel

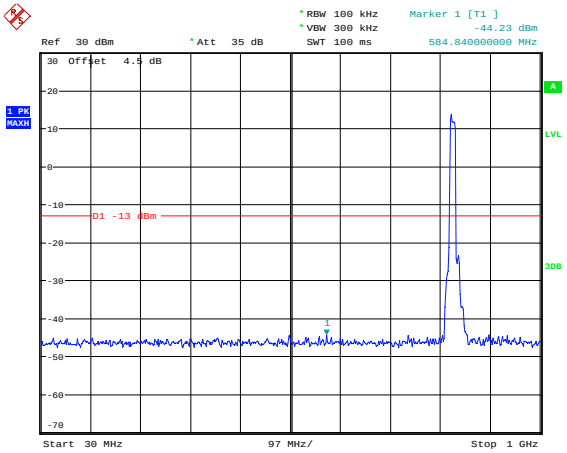


Date: 6.NOV.2020 18:05:22

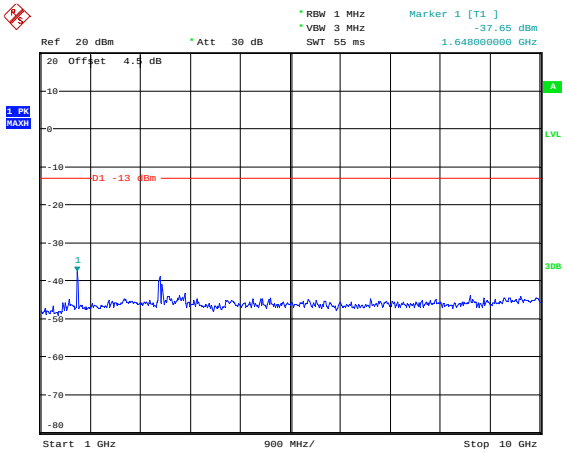


Date: 6.NOV.2020 18:05:34

10M, QPSK, Low Channel

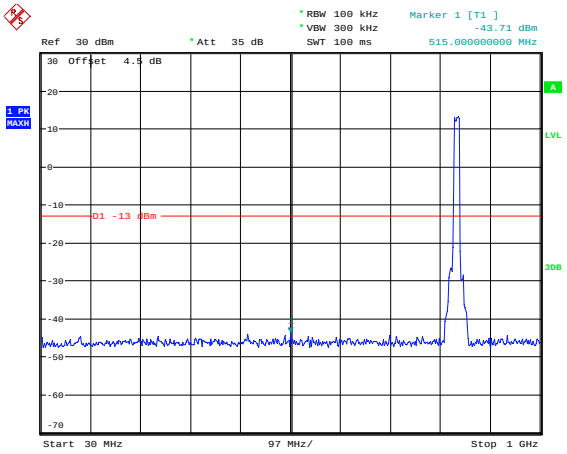


Date: 3.NOV.2020 21:04:14

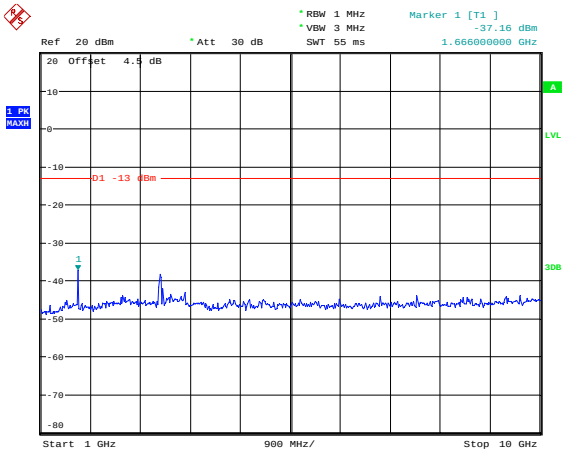


Date: 3.NOV.2020 21:04:26

10M, QPSK, Middle Channel

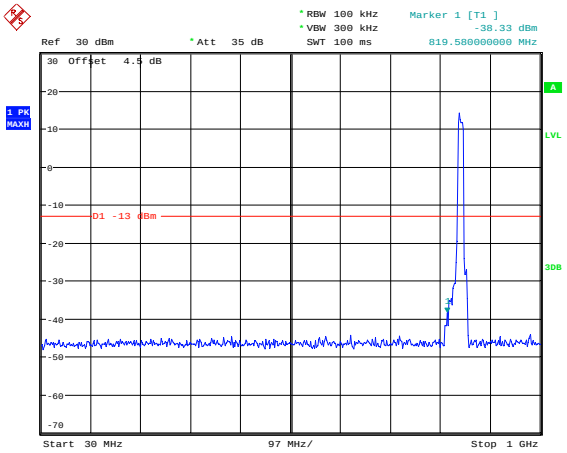


Date: 3.NOV.2020 17:37:11



Date: 3.NOV.2020 17:37:23

10M, QPSK, High Channel



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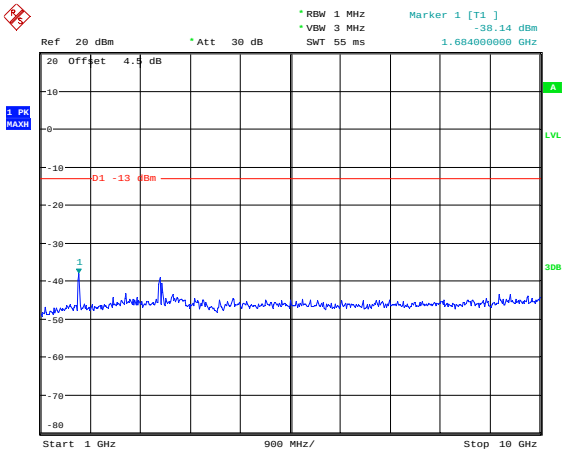
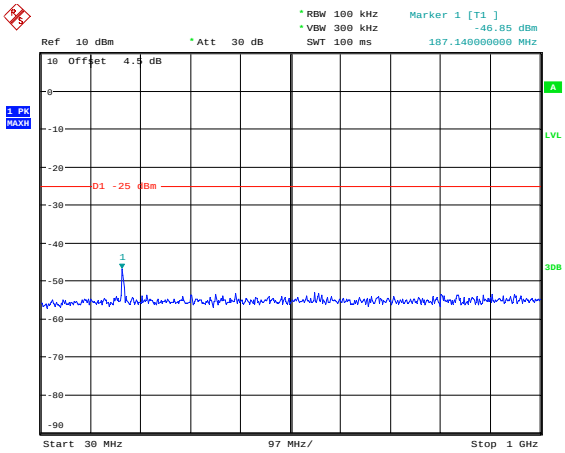


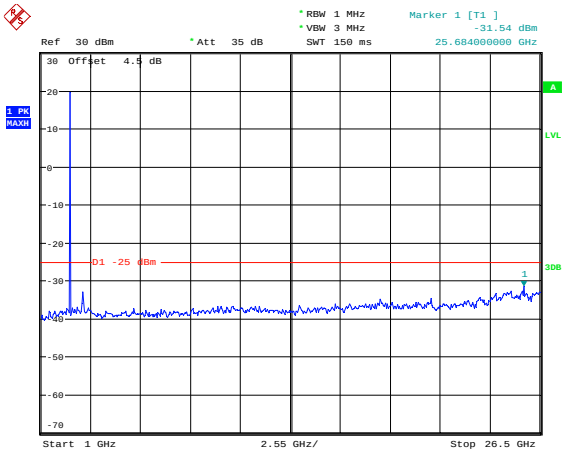
Date: 6.NOV.2020 18:07:02

LTE Band 7:

5M, QPSK, Low Channel

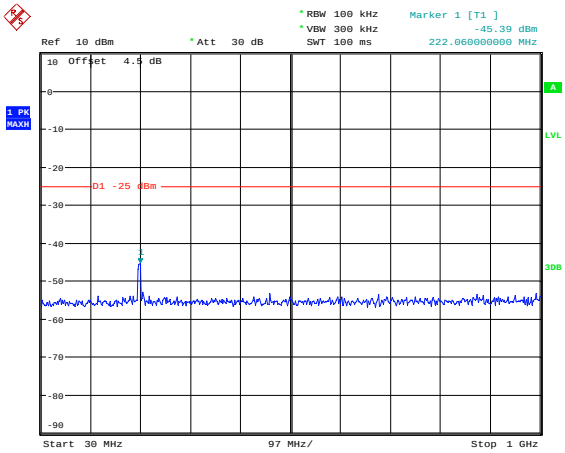


Date: 3.NOV.2020 21:10:28

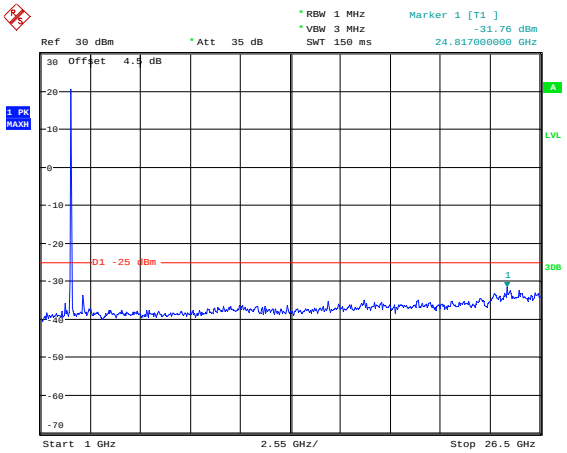


Date: 3.NOV.2020 21:10:40

5M, QPSK, Middle Channel

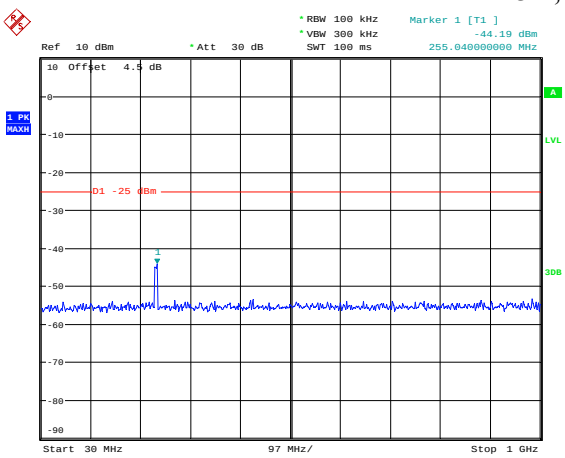


Date: 3.NOV.2020 17:37:43

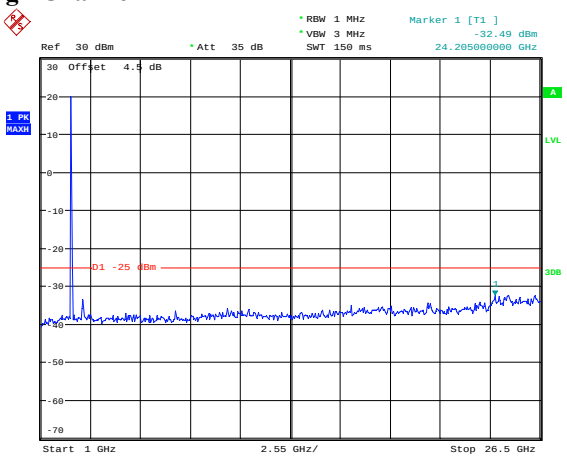


Date: 3.NOV.2020 17:37:55

5M, QPSK, High Channel

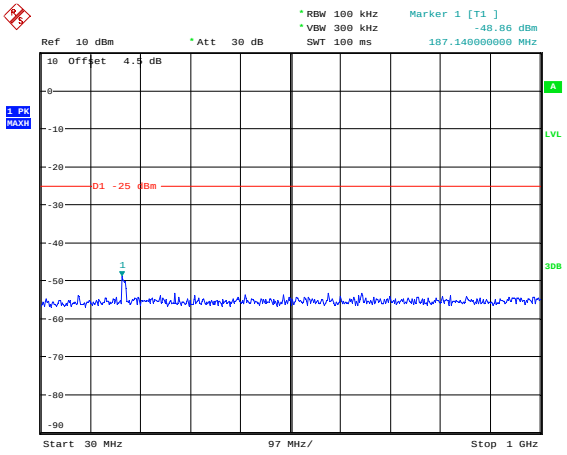


Date: 6.NOV.2020 18:08:14

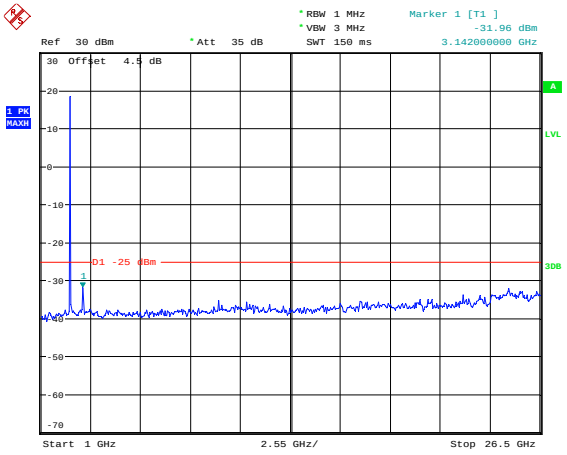


Date: 6.NOV.2020 18:08:26

10M, QPSK, Low Channel

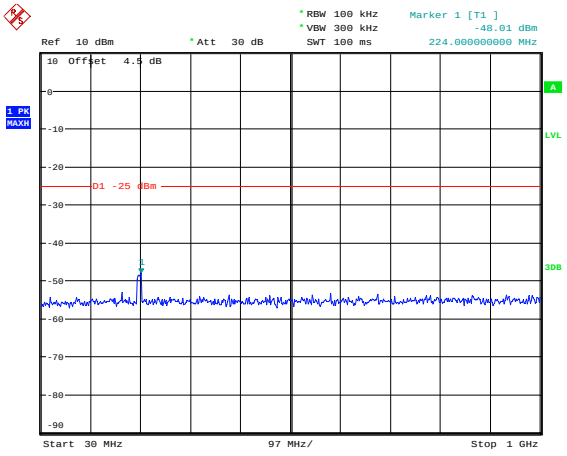


Date: 3.NOV.2020 21:11:45

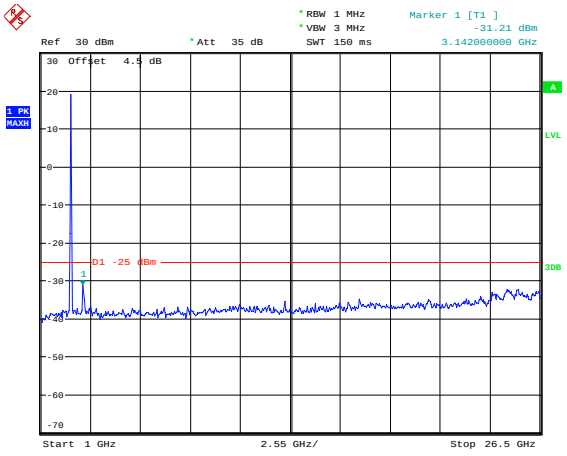


Date: 3.NOV.2020 21:11:56

10M, QPSK, Middle Channel

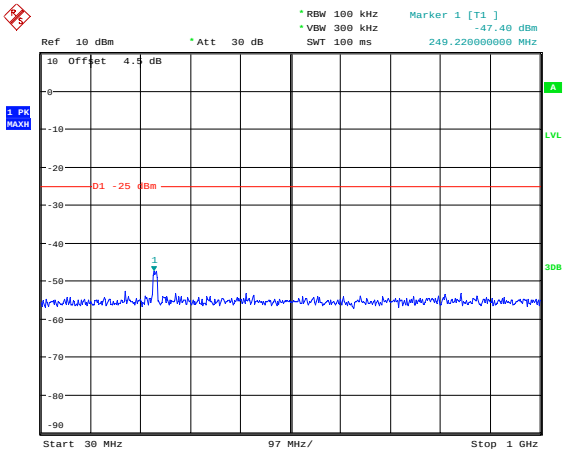


Date: 3.NOV.2020 17:38:15

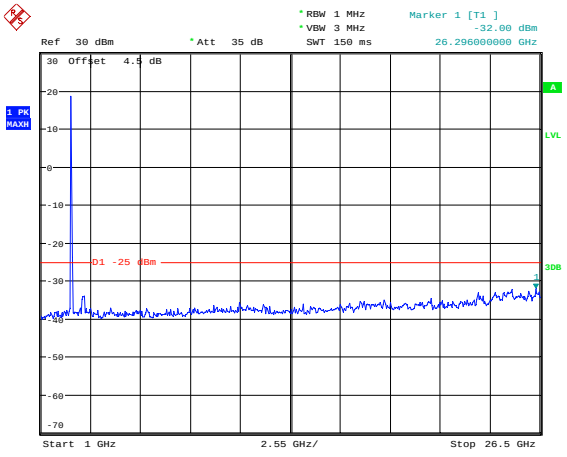


Date: 3.NOV.2020 17:38:27

10M, QPSK, High Channel

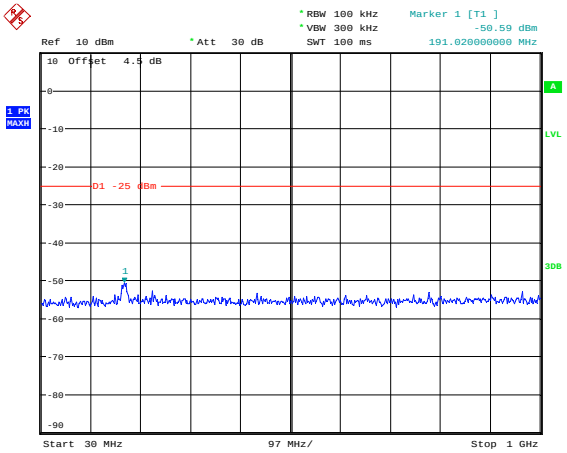


Date: 6.NOV.2020 18:09:39

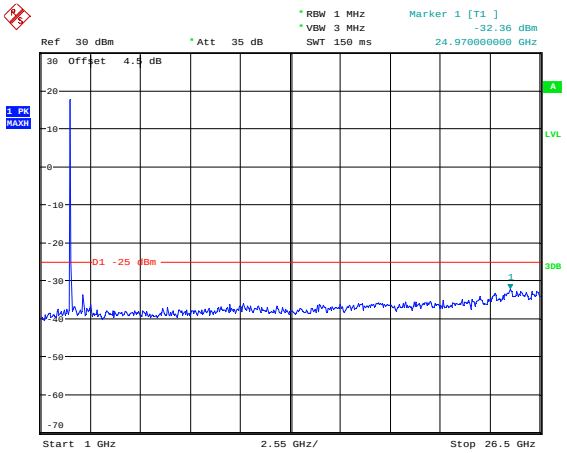


Date: 6.NOV.2020 18:09:51

15M, QPSK, Low Channel

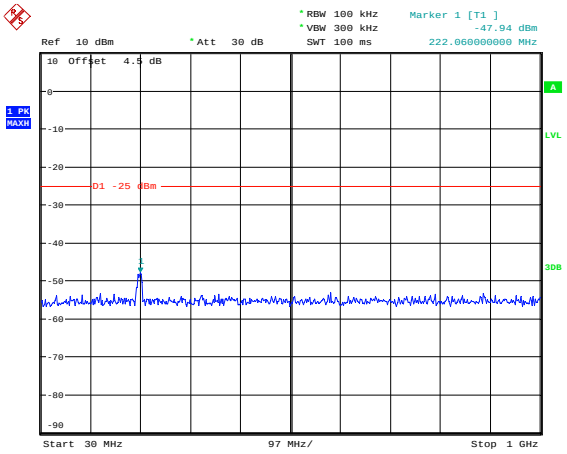


Date: 3.NOV.2020 21:18:27



Date: 3.NOV.2020 21:18:39

15M, QPSK, Middle Channel



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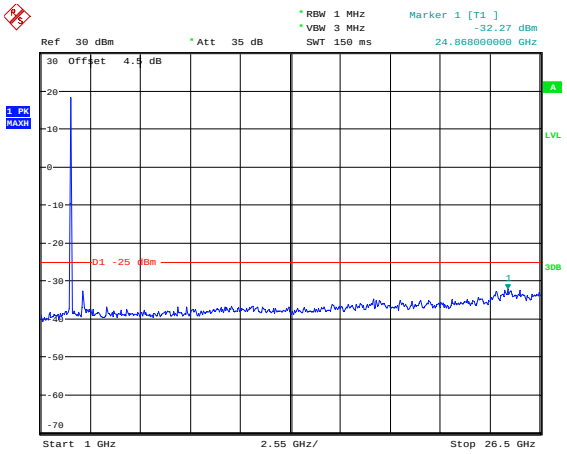
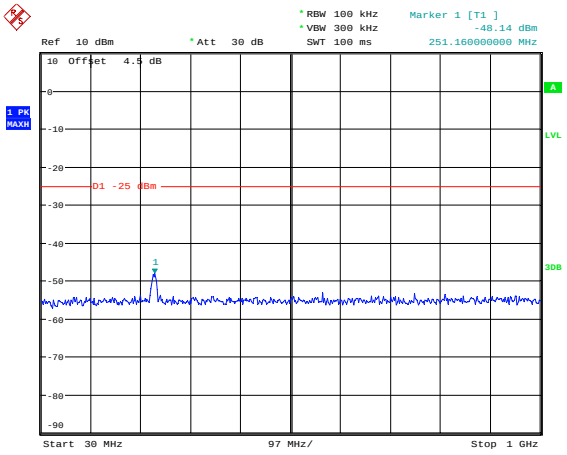
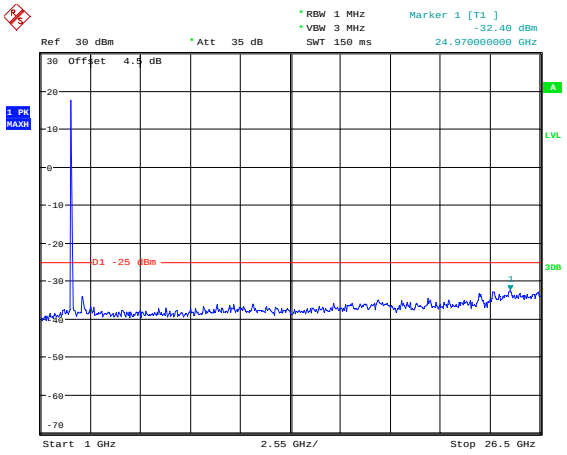


Date: 3.NOV.2020 17:39:02

15M, QPSK, High Channel

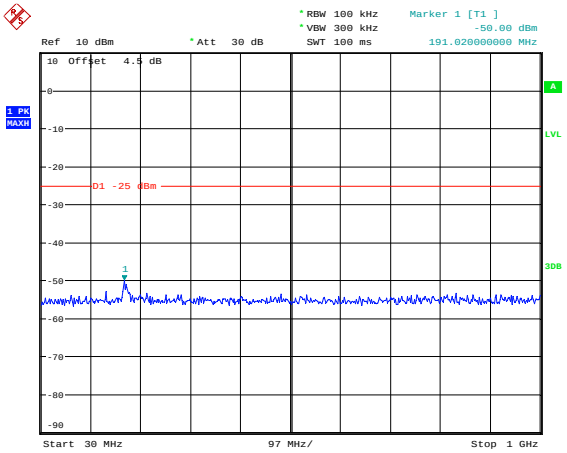


Date: 6.NOV.2020 18:11:14



Date: 6.NOV.2020 18:11:26

20M, QPSK, Low Channel



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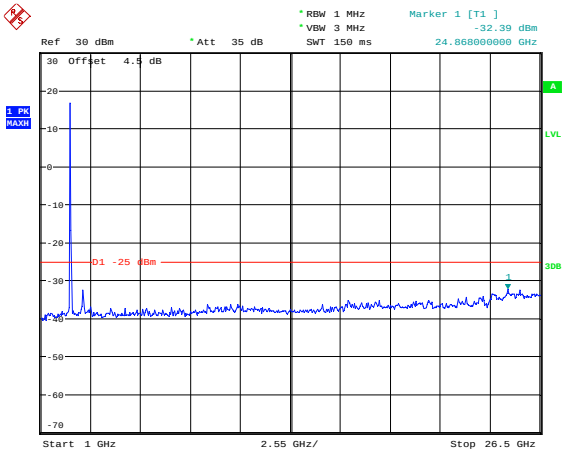
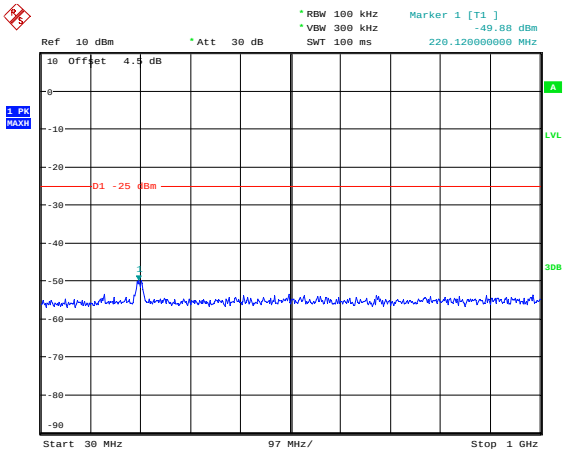


Date: 3.NOV.2020 21:20:15

20M, QPSK, Middle Channel



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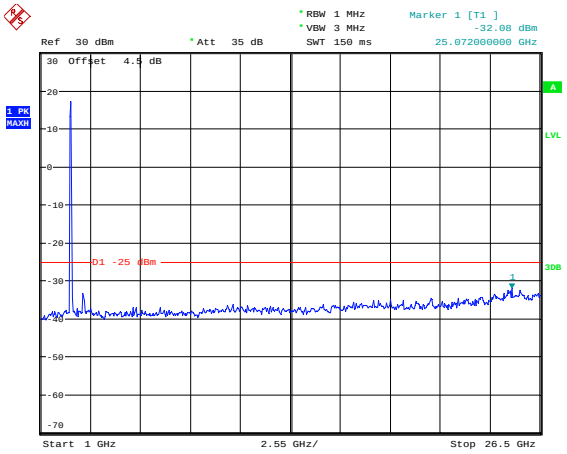
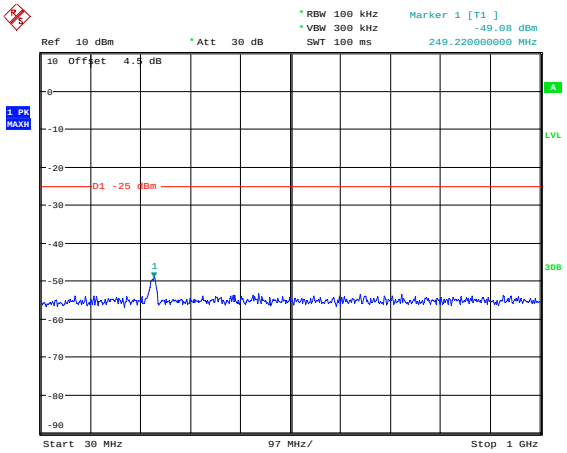


Date: 3.NOV.2020 17:39:38

20M, QPSK, High Channel



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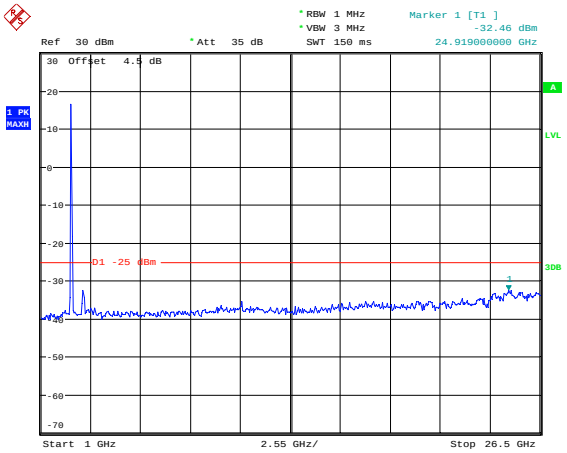


Date: 6.NOV.2020 18:12:57

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
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
R&S	EMI Test Receiver	ESR3	102453	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2020-05-06	2021-05-06
HP	Amplifier	8447D	2727A05902	2020-09-05	2021-09-05
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2020-09-05	2021-09-05
Agilent	Signal Generator	E8247C	MY43321350	2019-12-10	2020-12-10
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Agilent	Spectrum Analyzer	E4440A	SG43360054	2020-07-07	2021-07-07
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2020-06-27	2021-06-27
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2017-12-06	2020-12-05
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-02 1304	2017-12-06	2020-12-05
Sinoscite	Band-stop filter	BSF1850-1910MS-0935V2	0935V2	2020-06-16	2021-06-16
Sinoscite	Band-stop filter	BSF2500-2750MS-1439-001	1437001	2020-06-16	2021-06-16
Micro-tronics	High Pass Filter	HPM50111	S/N-G217	2020-06-16	2021-06-16
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2020-09-05	2021-09-05
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2020-09-05	2021-09-05

*** 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
Temperature:	29 °C	24°C
Relative Humidity:	45 %	31%
ATM Pressure:	100.5kPa	100.8kPa
Tester:	Michael Zhang	Felix Wang
Test Date:	2020-10-03	2020-10-12

Test Result: Compliance.

EUT Operation Mode: Transmitting

Cellular Band (PART 22H)

30 MHz-10 GHz:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM850 Frequency:824.2MHz								
1648.40	H	48.25	-55.93	10.44	0.71	-46.20	-13.00	33.20
1648.40	V	47.01	-57.77	10.44	0.71	-48.04	-13.00	35.04
2472.60	H	56.95	-45.83	12.88	1.25	-34.20	-13.00	21.20
2472.60	V	50.82	-52.01	12.88	1.25	-40.38	-13.00	27.38
3296.80	H	39.64	-60.14	13.60	1.59	-48.13	-13.00	35.13
3296.80	V	40.40	-59.39	13.60	1.59	-47.38	-13.00	34.38
877.78	H	55.64	-40.61	0.00	0.51	-41.12	-13.00	28.12
383.08	V	61.12	-43.49	0.00	0.37	-43.86	-13.00	30.86
GSM850 Frequency:836.6MHz								
1673.20	H	47.12	-56.82	10.61	0.73	-46.94	-13.00	33.94
1673.20	V	45.36	-59.18	10.61	0.73	-49.30	-13.00	36.30
2509.80	H	51.90	-51.01	13.11	1.25	-39.15	-13.00	26.15
2509.80	V	52.57	-50.37	13.11	1.25	-38.51	-13.00	25.51
3346.40	H	39.06	-60.62	13.83	1.61	-48.40	-13.00	35.40
3346.40	V	42.48	-57.24	13.83	1.61	-45.02	-13.00	32.02
877.76	H	55.96	-40.29	0.00	0.51	-40.80	-13.00	27.80
383.04	V	60.08	-44.54	0.00	0.37	-44.91	-13.00	31.91
GSM850 Frequency:848.8MHz								
1697.60	H	47.53	-56.17	10.78	0.75	-46.14	-13.00	33.14
1697.60	V	45.25	-59.05	10.78	0.75	-49.02	-13.00	36.02
2546.40	H	53.32	-49.63	13.15	1.27	-37.75	-13.00	24.75
2546.40	V	49.12	-53.97	13.15	1.27	-42.09	-13.00	29.09
3395.20	H	41.18	-58.34	14.08	1.64	-45.90	-13.00	32.90
3395.20	V	41.13	-58.49	14.08	1.64	-46.05	-13.00	33.05
877.78	H	56.21	-40.04	0.00	0.51	-40.55	-13.00	27.55
383.12	V	61.34	-43.27	0.00	0.37	-43.64	-13.00	30.64

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)			
WCDMA Band 5 Frequency:826.4 MHz								
1652.80	H	40.33	-63.80	10.47	0.72	-54.05	-13.00	41.05
1652.80	V	41.47	-63.26	10.47	0.72	-53.51	-13.00	40.51
2479.20	H	47.95	-54.86	12.93	1.25	-43.18	-13.00	30.18
2479.20	V	42.81	-60.04	12.93	1.25	-48.36	-13.00	35.36
3305.60	H	41.80	-58.00	13.63	1.59	-45.96	-13.00	32.96
3305.60	V	42.42	-57.39	13.63	1.59	-45.35	-13.00	32.35
877.00	H	58.33	-37.94	0.00	0.51	-38.45	-13.00	25.45
387.56	V	64.95	-39.54	0.00	0.37	-39.91	-13.00	26.91
WCDMA Band 5 Frequency:836.6MHz								
1673.20	H	46.18	-57.76	10.61	0.73	-47.88	-13.00	34.88
1673.20	V	47.49	-57.05	10.61	0.73	-47.17	-13.00	34.17
2509.80	H	44.29	-58.62	13.11	1.25	-46.76	-13.00	33.76
2509.80	V	43.34	-59.60	13.11	1.25	-47.74	-13.00	34.74
3346.40	H	39.97	-59.71	13.83	1.61	-47.49	-13.00	34.49
3346.40	V	41.17	-58.55	13.83	1.61	-46.33	-13.00	33.33
877.95	H	59.36	-36.89	0.00	0.51	-37.40	-13.00	24.40
386.77	V	65.89	-38.62	0.00	0.37	-38.99	-13.00	25.99
WCDMA Band 5 Frequency:846.6MHz								
1693.20	H	43.96	-59.79	10.75	0.75	-49.79	-13.00	36.79
1693.20	V	43.16	-61.19	10.75	0.75	-51.19	-13.00	38.19
2539.80	H	41.95	-60.99	13.14	1.27	-49.12	-13.00	36.12
2539.80	V	43.87	-59.19	13.14	1.27	-47.32	-13.00	34.32
3386.40	H	37.62	-61.93	14.03	1.63	-49.53	-13.00	36.53
3386.40	V	38.76	-60.88	14.03	1.63	-48.48	-13.00	35.48
879.56	H	59.00	-37.20	0.00	0.51	-37.71	-13.00	24.71
386.59	V	68.95	-35.56	0.00	0.37	-35.93	-13.00	22.93

PCS Band (PART 24E)

30 MHz-20 GHz:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM1900 Frequency:1850.2MHz								
3700.40	H	43.06	-54.93	14.00	1.83	-42.76	-13.00	29.76
3700.40	V	41.89	-56.08	14.00	1.83	-43.91	-13.00	30.91
5550.60	H	49.93	-44.04	13.95	1.27	-31.36	-13.00	18.36
5550.60	V	46.97	-46.85	13.95	1.27	-34.17	-13.00	21.17
877.69	H	58.62	-37.63	0.00	0.51	-38.14	-13.00	25.14
384.02	V	62.03	-42.56	0.00	0.37	-42.93	-13.00	29.93
GSM 1900 Frequency:1880MHz								
3760.00	H	41.80	-55.84	13.76	1.63	-43.71	-13.00	30.71
3760.00	V	40.74	-56.76	13.76	1.63	-44.63	-13.00	31.63
5640.00	H	51.07	-42.52	14.02	1.31	-29.81	-13.00	16.81
5640.00	V	48.34	-45.14	14.02	1.31	-32.43	-13.00	19.43
876.59	H	59.02	-37.27	0.00	0.51	-37.78	-13.00	24.78
384.29	V	62.24	-42.34	0.00	0.37	-42.71	-13.00	29.71
GSM 1900 Frequency:1909.8MHz								
3819.60	H	41.44	-55.81	13.56	1.50	-43.75	-13.00	30.75
3819.60	V	42.07	-55.00	13.56	1.50	-42.94	-13.00	29.94
5729.40	H	52.57	-41.14	13.96	1.31	-28.49	-13.00	15.49
5729.40	V	49.23	-44.45	13.96	1.31	-31.80	-13.00	18.80
878.39	H	59.26	-36.97	0.00	0.51	-37.48	-13.00	24.48
384.65	V	63.00	-41.57	0.00	0.37	-41.94	-13.00	28.94

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)			
WCDMA Band II, Frequency:1852.4 MHz								
3704.80	H	37.99	-59.97	13.98	1.81	-47.80	-13.00	34.80
3704.80	V	40.82	-57.11	13.98	1.81	-44.94	-13.00	31.94
5557.20	H	39.18	-54.71	13.97	1.27	-42.01	-13.00	29.01
5557.20	V	39.97	-53.77	13.97	1.27	-41.07	-13.00	28.07
876.98	H	60.23	-36.04	0.00	0.51	-36.55	-13.00	23.55
384.66	V	62.56	-42.01	0.00	0.37	-42.38	-13.00	29.38
WCDMA Band II, Frequency:1880 MHz								
3760.00	H	37.60	-60.04	13.76	1.63	-47.91	-13.00	34.91
3760.00	V	37.91	-59.59	13.76	1.63	-47.46	-13.00	34.46
5640.00	H	37.83	-55.76	14.02	1.31	-43.05	-13.00	30.05
5640.00	V	36.85	-56.63	14.02	1.31	-43.92	-13.00	30.92
876.21	H	59.65	-36.65	0.00	0.51	-37.16	-13.00	24.16
386.95	V	64.23	-40.27	0.00	0.37	-40.64	-13.00	27.64
WCDMA Band II, Frequency:1907.6MHz								
3815.20	H	37.14	-60.14	13.57	1.50	-48.07	-13.00	35.07
3815.20	V	37.65	-59.45	13.57	1.50	-47.38	-13.00	34.38
5722.80	H	39.25	-54.51	13.95	1.32	-41.88	-13.00	28.88
5722.80	V	38.05	-55.67	13.95	1.32	-43.04	-13.00	30.04
876.29	H	57.56	-38.73	0.00	0.51	-39.24	-13.00	26.24
386.46	V	65.02	-39.50	0.00	0.37	-39.87	-13.00	26.87

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 (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:1850.7 MHz								
3701.40	H	39.81	-58.17	13.99	1.83	-46.01	-13.00	33.01
3701.40	V	42.33	-55.63	13.99	1.83	-43.47	-13.00	30.47
5552.10	H	38.00	-55.95	13.96	1.27	-43.26	-13.00	30.26
5552.10	V	39.99	-53.81	13.96	1.27	-41.12	-13.00	28.12
86.29	H	82.69	-27.01	0.00	0.19	-27.20	-13.00	14.20
82.38	V	86.10	-19.44	0.00	0.18	-19.62	-13.00	6.62
QPSK,Frequency:1880 MHz								
3760.00	H	38.35	-59.29	13.76	1.63	-47.16	-13.00	34.16
3760.00	V	38.69	-58.81	13.76	1.63	-46.68	-13.00	33.68
5640.00	H	36.49	-57.10	14.02	1.31	-44.39	-13.00	31.39
5640.00	V	37.57	-55.91	14.02	1.31	-43.20	-13.00	30.20
86.33	H	81.36	-28.35	0.00	0.19	-28.54	-13.00	15.54
82.38	V	85.62	-19.92	0.00	0.18	-20.10	-13.00	7.10
QPSK,Frequency:1909.3 MHz								
3818.60	H	38.72	-58.54	13.56	1.50	-46.48	-13.00	33.48
3818.60	V	39.60	-57.47	13.56	1.50	-45.41	-13.00	32.41
5727.90	H	43.03	-50.69	13.96	1.31	-38.04	-13.00	25.04
5727.90	V	39.50	-54.19	13.96	1.31	-41.54	-13.00	28.54
86.26	H	80.26	-29.43	0.00	0.19	-29.62	-13.00	16.62
82.55	V	84.69	-20.89	0.00	0.18	-21.07	-13.00	8.07

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:1710.7 MHz								
3421.40	H	40.27	-59.13	14.04	1.63	-46.72	-13.00	33.72
3421.40	V	43.27	-56.21	14.04	1.63	-43.80	-13.00	30.80
5132.10	H	44.81	-49.87	13.93	1.37	-37.31	-13.00	24.31
5132.10	V	43.57	-51.02	13.93	1.37	-38.46	-13.00	25.46
86.23	H	81.26	-28.42	0.00	0.19	-28.61	-13.00	15.61
82.69	V	85.69	-19.92	0.00	0.18	-20.10	-13.00	7.10
QPSK,Frequency:1732.5 MHz								
3465.00	H	40.81	-58.38	13.91	1.62	-46.09	-13.00	33.09
3465.00	V	44.05	-55.17	13.91	1.62	-42.88	-13.00	29.88
5197.50	H	43.43	-51.26	14.00	1.52	-38.78	-13.00	25.78
5197.50	V	45.61	-49.15	14.00	1.52	-36.67	-13.00	23.67
86.95	H	82.03	-27.91	0.00	0.19	-28.10	-13.00	15.10
82.55	V	86.00	-19.58	0.00	0.18	-19.76	-13.00	6.76
QPSK,Frequency:1754.3 MHz								
3508.60	H	37.22	-61.79	13.83	1.60	-49.56	-13.00	36.56
3508.60	V	42.67	-56.34	13.83	1.60	-44.11	-13.00	31.11
5262.90	H	35.91	-59.18	14.19	1.29	-46.28	-13.00	33.28
5262.90	V	45.57	-49.60	14.19	1.29	-36.70	-13.00	23.70
86.29	H	83.69	-26.01	0.00	0.19	-26.20	-13.00	13.20
82.19	V	85.55	-19.95	0.00	0.18	-20.13	-13.00	7.13

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: 824.7 MHz								
1649.40	H	43.27	-60.90	10.45	0.71	-51.16	-13.00	38.16
1649.40	V	42.75	-62.02	10.45	0.71	-52.28	-13.00	39.28
2474.10	H	57.27	-45.52	12.89	1.25	-33.88	-13.00	20.88
2474.10	V	47.45	-55.39	12.89	1.25	-43.75	-13.00	30.75
3298.80	H	42.63	-57.18	13.60	1.59	-45.17	-13.00	32.17
3298.80	V	46.89	-52.92	13.60	1.59	-40.91	-13.00	27.91
86.98	H	80.26	-29.69	0.00	0.19	-29.88	-13.00	16.88
82.65	V	86.33	-19.27	0.00	0.18	-19.45	-13.00	6.45
QPSK, Frequency: 836.5 MHz								
1673.00	H	49.94	-54.00	10.61	0.73	-44.12	-13.00	31.12
1673.00	V	48.01	-56.53	10.61	0.73	-46.65	-13.00	33.65
2509.50	H	51.45	-51.46	13.11	1.25	-39.60	-13.00	26.60
2509.50	V	46.21	-56.73	13.11	1.25	-44.87	-13.00	31.87
3346.00	H	42.60	-57.08	13.83	1.61	-44.86	-13.00	31.86
3346.00	V	43.20	-56.52	13.83	1.61	-44.30	-13.00	31.30
86.36	H	81.56	-28.17	0.00	0.19	-28.36	-13.00	15.36
82.95	V	84.55	-21.11	0.00	0.18	-21.29	-13.00	8.29
QPSK, Frequency: 848.3 MHz								
1696.60	H	43.84	-59.87	10.78	0.75	-49.84	-13.00	36.84
1696.60	V	43.43	-60.88	10.78	0.75	-50.85	-13.00	37.85
2544.90	H	51.36	-51.59	13.14	1.27	-39.72	-13.00	26.72
2544.90	V	47.53	-55.55	13.14	1.27	-43.68	-13.00	30.68
3393.20	H	38.79	-60.74	14.07	1.64	-48.31	-13.00	35.31
3393.20	V	41.03	-58.59	14.07	1.64	-46.16	-13.00	33.16
86.99	H	80.65	-29.30	0.00	0.19	-29.49	-13.00	16.49
83.00	V	85.69	-19.98	0.00	0.18	-20.16	-13.00	7.16

LTE Band 7(30MHz-26.5GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 2502.5 MHz								
5005.00	H	40.93	-55.14	14.00	1.43	-42.57	-25.00	17.57
5005.00	V	39.61	-56.22	14.00	1.43	-43.65	-25.00	18.65
7507.50	H	37.99	-50.65	13.20	1.33	-38.78	-25.00	13.78
7507.50	V	38.04	-51.08	13.20	1.33	-39.21	-25.00	14.21
86.98	H	75.60	-34.35	0.00	0.19	-34.54	-25.00	9.54
83.82	V	69.08	-36.77	0.00	0.18	-36.95	-25.00	11.95
QPSK, Frequency:2535 MHz								
5070.00	H	41.84	-53.27	13.93	1.34	-40.68	-25.00	15.68
5070.00	V	39.96	-54.96	13.93	1.34	-42.37	-25.00	17.37
7605.00	H	38.46	-50.42	13.21	1.40	-38.61	-25.00	13.61
7605.00	V	36.05	-53.23	13.21	1.40	-41.42	-25.00	16.42
86.34	H	74.89	-34.83	0.00	0.19	-35.02	-25.00	10.02
83.69	V	70.36	-35.46	0.00	0.18	-35.64	-25.00	10.64
QPSK, Frequency: 2567.5MHz								
5135.00	H	39.65	-55.03	13.94	1.38	-42.47	-25.00	17.47
5135.00	V	38.43	-56.16	13.94	1.38	-43.60	-25.00	18.60
7702.50	H	46.06	-43.06	13.40	1.47	-31.13	-25.00	6.13
7702.50	V	37.70	-51.74	13.40	1.47	-39.81	-25.00	14.81
86.59	H	75.66	-34.15	0.00	0.19	-34.34	-25.00	9.34
83.22	V	72.69	-33.03	0.00	0.18	-33.21	-25.00	8.21

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

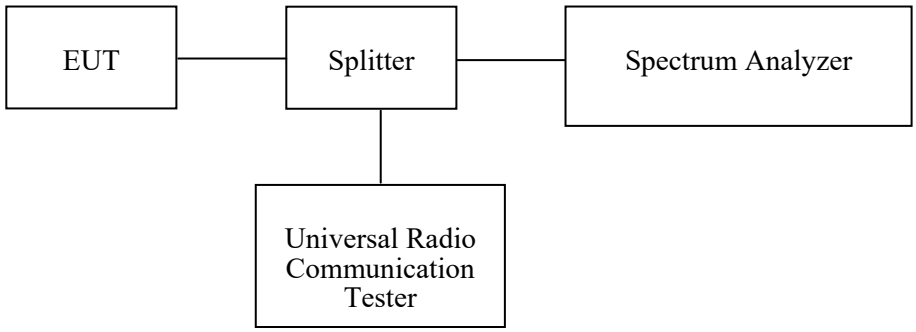
Applicable Standard

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	FSV40	101474	2020-07-07	2021-07-07
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	2020-05-06	2021-05-06
R&S	Universal Radio Communication Tester	CMU200	110 822	2020-09-12	2021-09-12
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2020-03-10	2021-03-09

*** 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

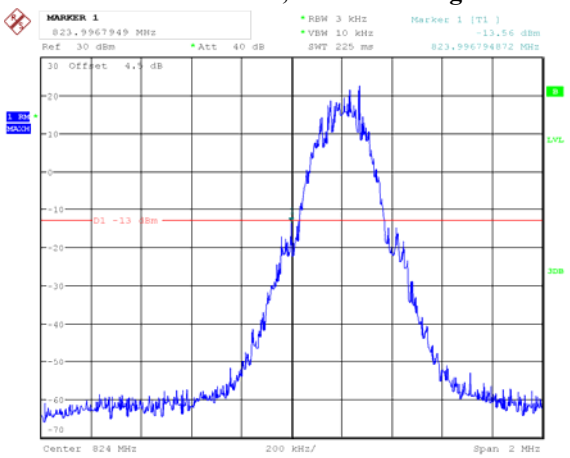
Environmental Conditions

Temperature:	25.6~26.7 °C
Relative Humidity:	37~49%
ATM Pressure:	101.1 ~101.3kPa
Tester:	James Chen
Test Date:	2020-11-03~2020-11-06

Test Mode: Transmitting

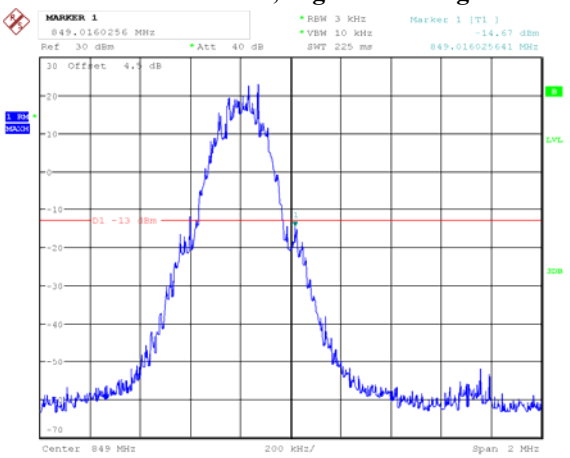
Test Result: Compliance. Please refer to the following plots.

GSM 850, Left Band Edge



Date: 6.NOV.2020 23:12:16

GSM 850, Right Band Edge



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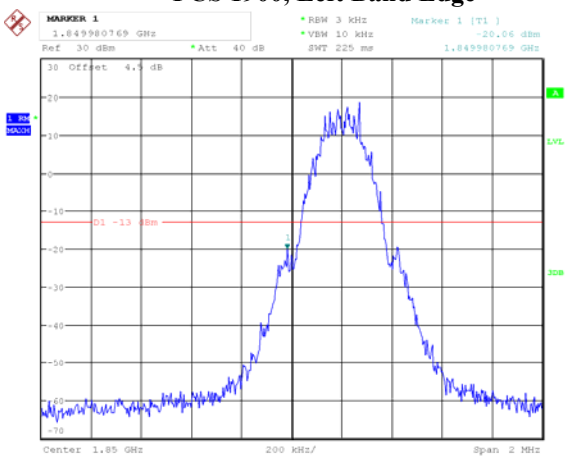
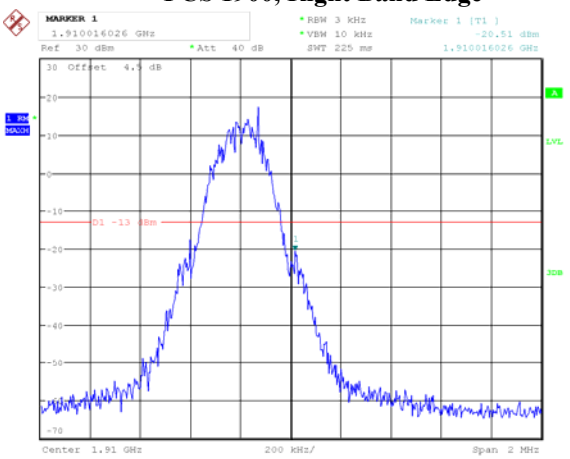
PCS 1900, Left Band Edge



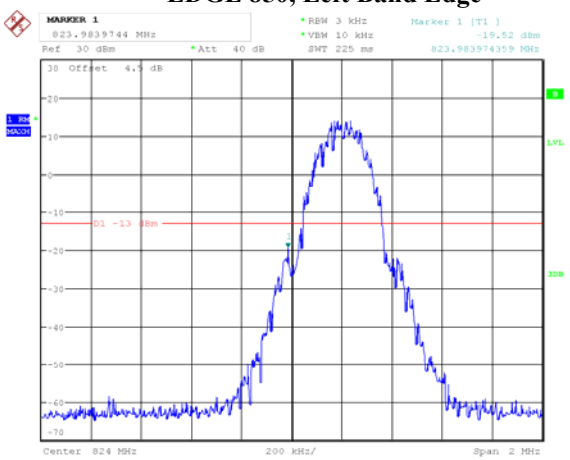
Date: 8.NOV.2020 10:17:44

PCS 1900, Right Band Edge



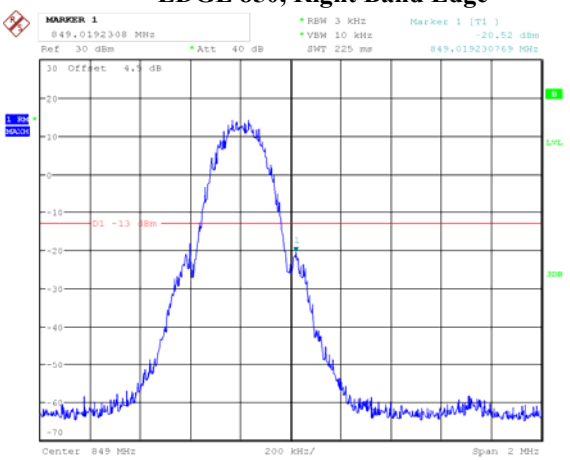
Date: 8.NOV.2020 10:26:53

EDGE 850, Left Band Edge



Date: 6.NOV.2020 23:28:49

EDGE 850, Right Band Edge



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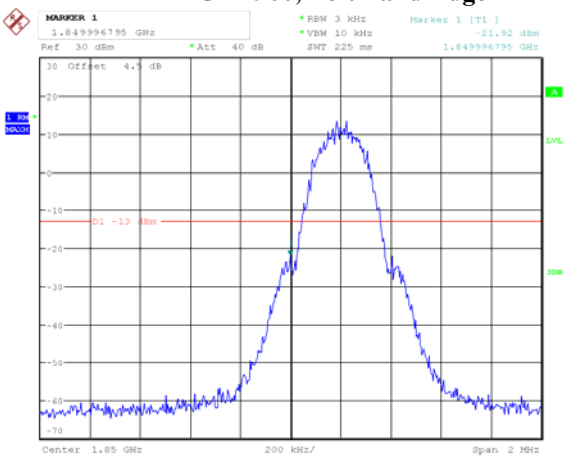
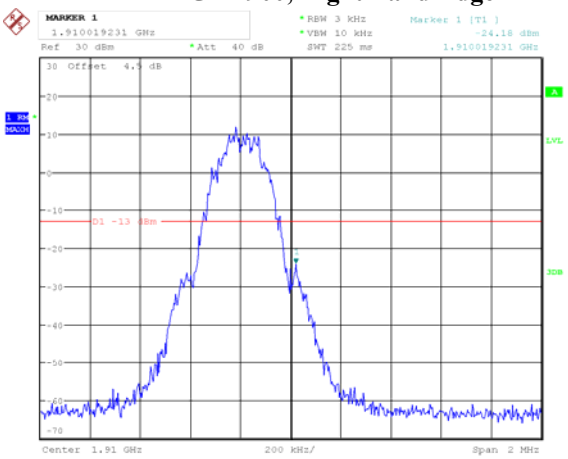
EDGE 1900, Left Band Edge



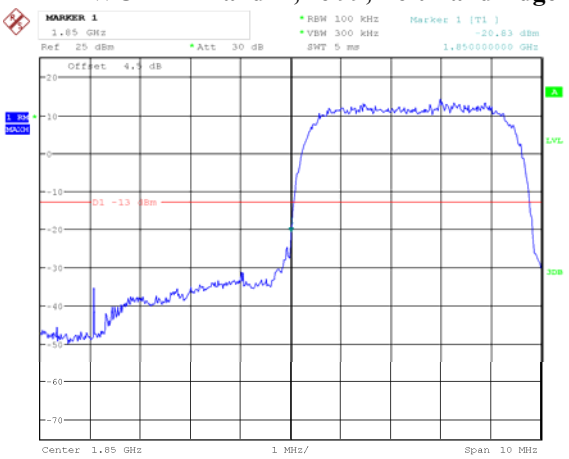
Date: 8.NOV.2020 10:43:59

EDGE 1900, Right Band Edge



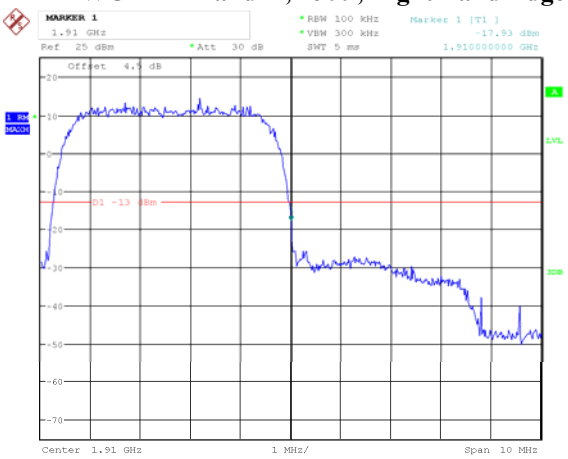
Date: 8.NOV.2020 10:55:11

WCDMA Band II,Rel99, Left Band Edge



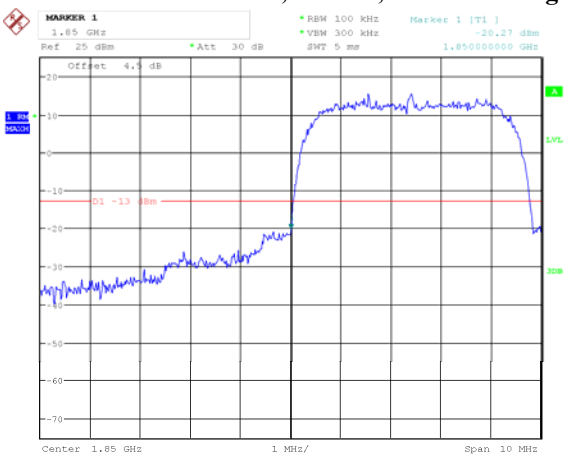
Date: 6.NOV.2020 20:14:05

WCDMA Band II,Rel99, Right Band Edge



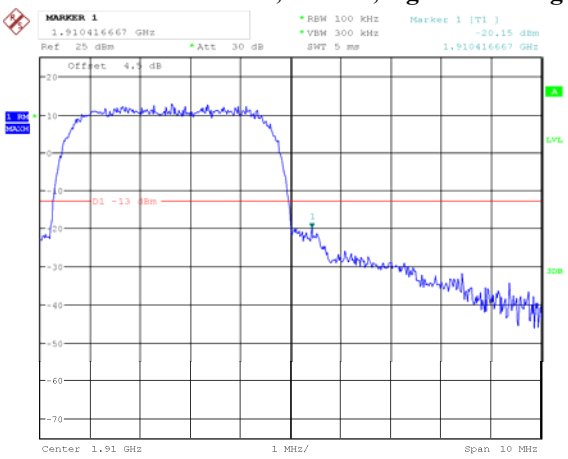
Date: 6.NOV.2020 20:32:32

WCDMA Band II,HSDPA, Left Band Edge



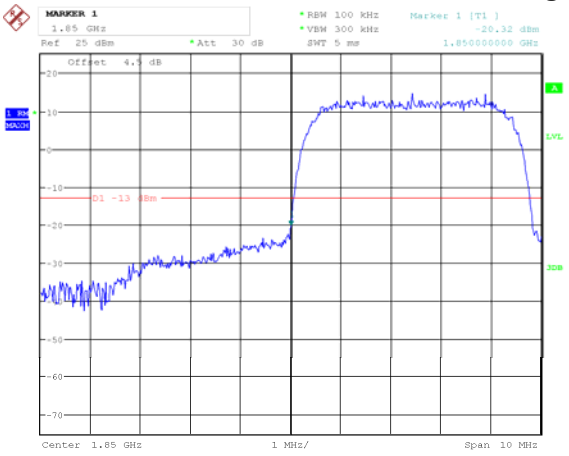
Date: 6.NOV.2020 21:00:41

WCDMA Band II,HSDPA,Right Band Edge



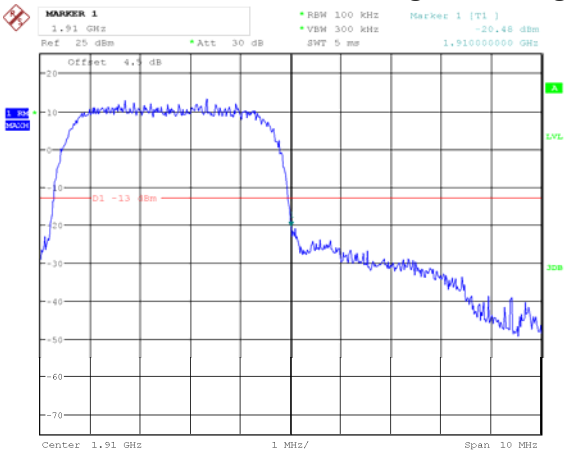
Date: 6.NOV.2020 21:01:44

WCDMA Band II,HSUPA, Left Band Edge



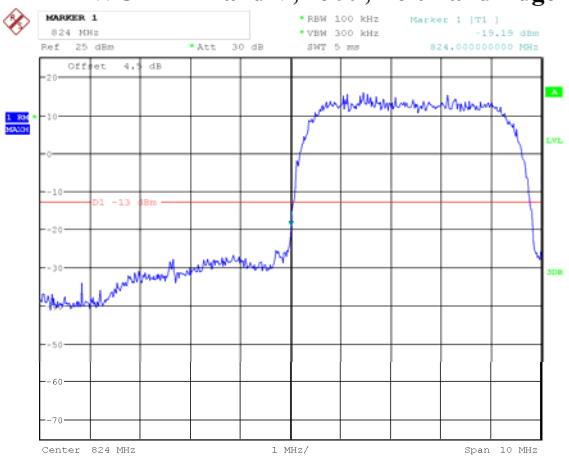
Date: 6.NOV.2020 21:32:55

WCDMA Band II,HSUPA, Right Band Edge



Date: 6.NOV.2020 21:33:34

WCDMA Band V,Rel99, Left Band Edge



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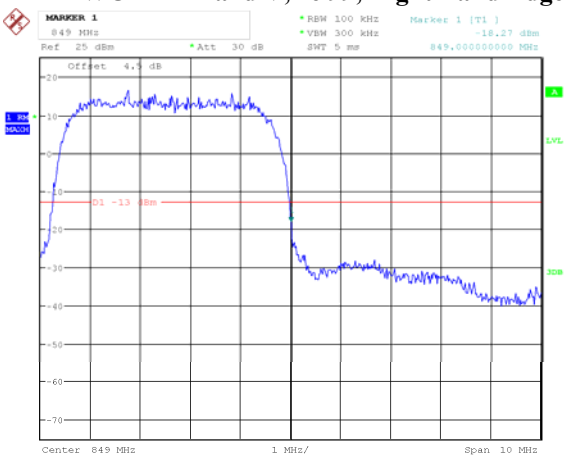

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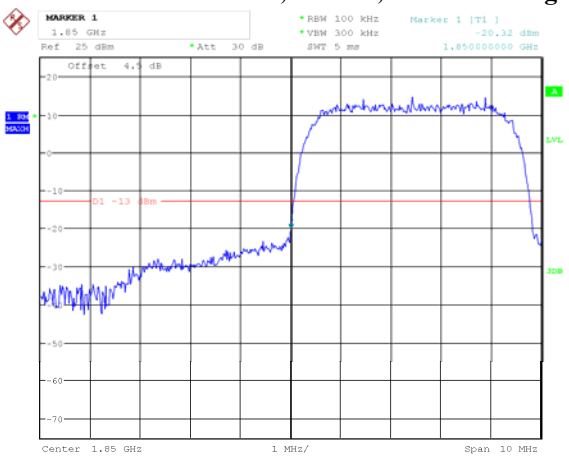

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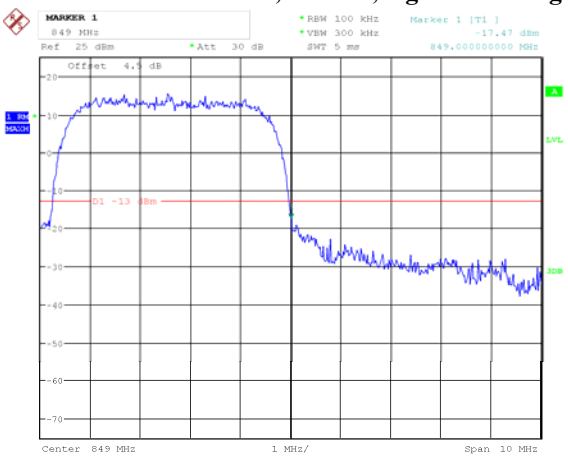
WCDMA Band V,HSDPA,Right Band Edge



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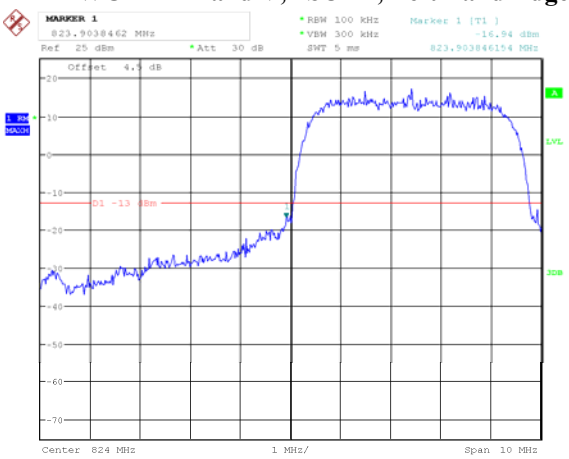
WCDMA Band V,HSUPA, Left Band Edge



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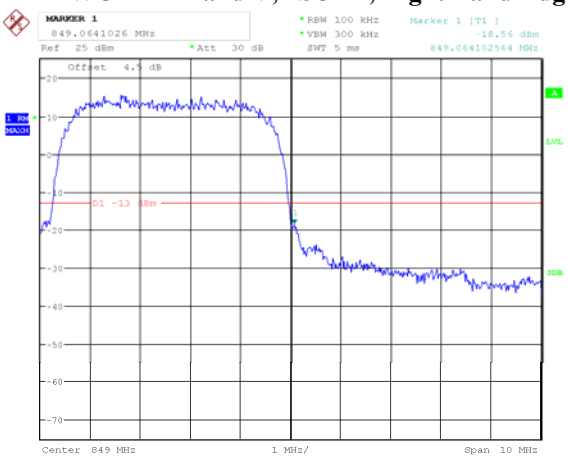
WCDMA Band V,HSUPA, Right Band Edge



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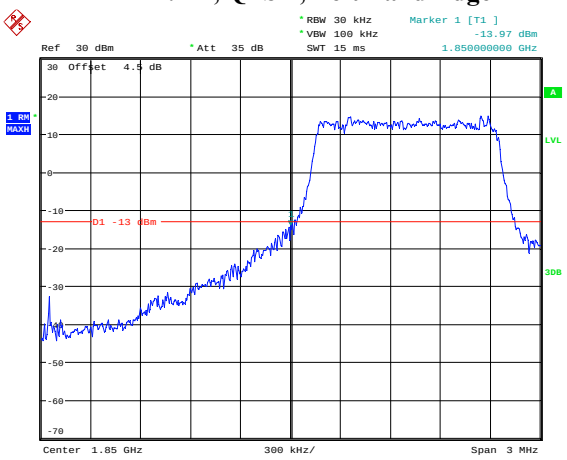
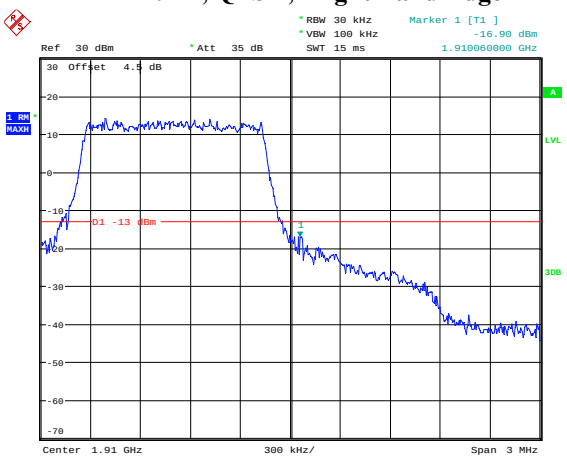
LTE Band 2:

1.4M, QPSK, Left Band Edge



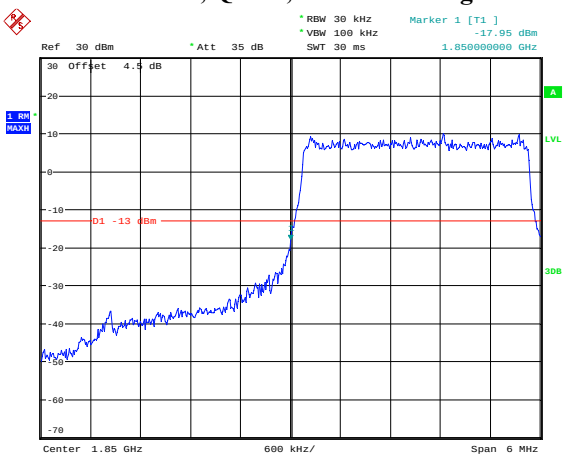
Date: 3.NOV.2020 17:47:31

1.4M, QPSK, Right Band Edge



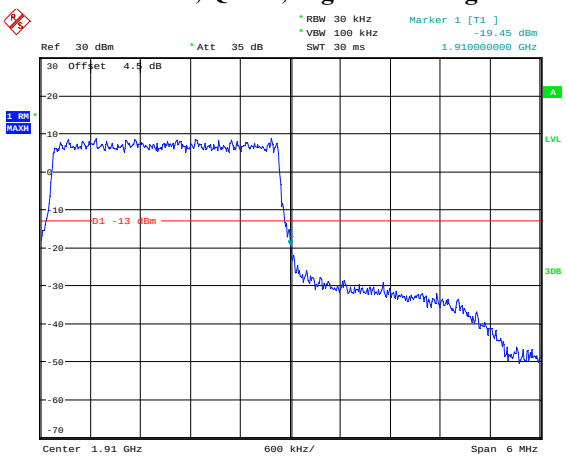
Date: 3.NOV.2020 17:48:18

3M, QPSK, Left Band Edge



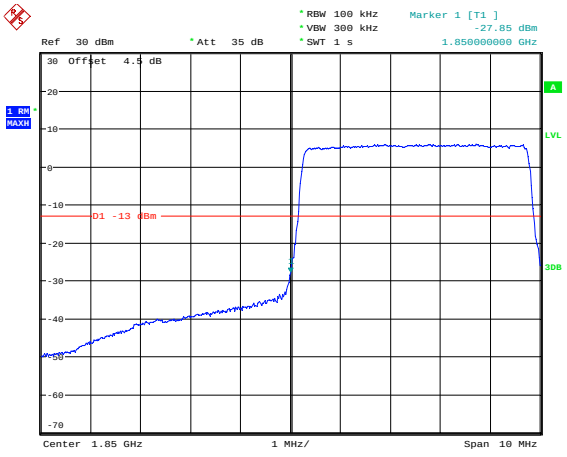
Date: 3.NOV.2020 17:48:58

3M, QPSK, Right Band Edge



Date: 3.NOV.2020 17:49:36

5M, QPSK, Left Band Edge



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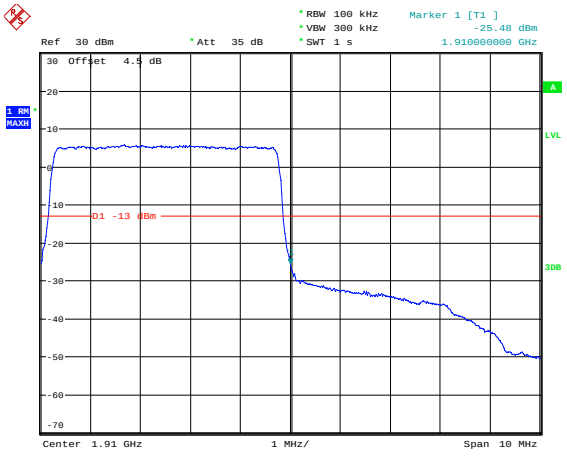
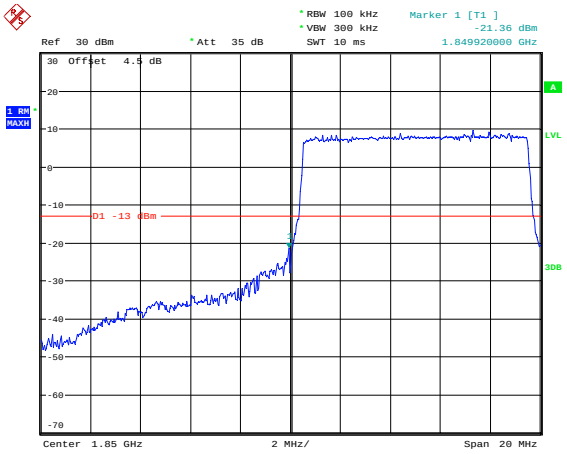
5M, QPSK, Right Band Edge



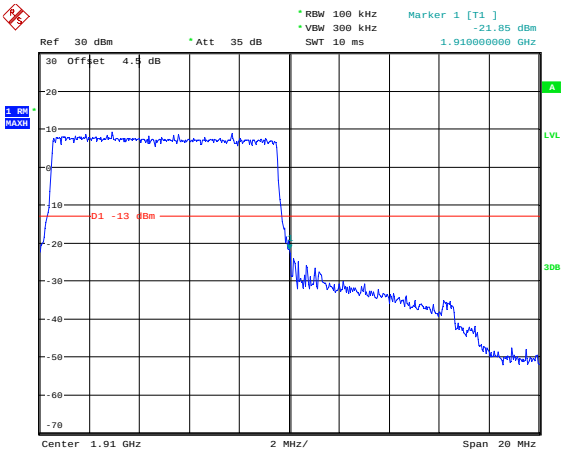
Date: 3.NOV.2020 17:55:23

10M, QPSK, Left Band Edge



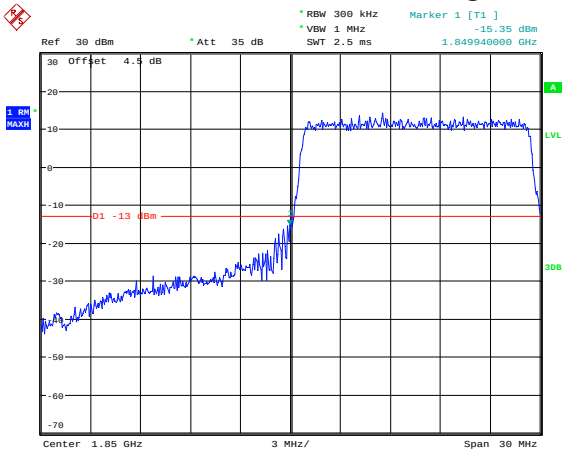
Date: 3.NOV.2020 17:56:19

10M, QPSK, Right Band Edge



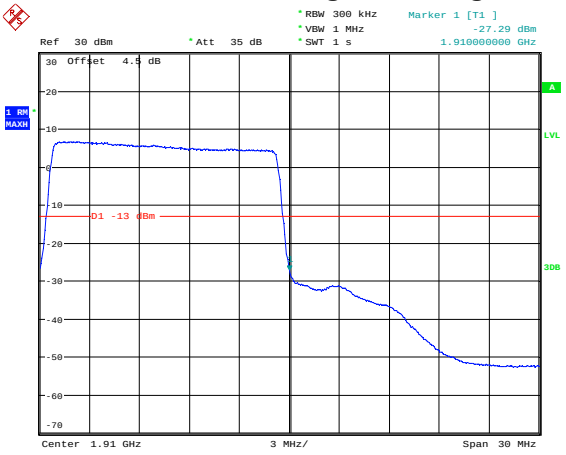
Date: 3.NOV.2020 17:56:55

15M, QPSK, Left Band Edge



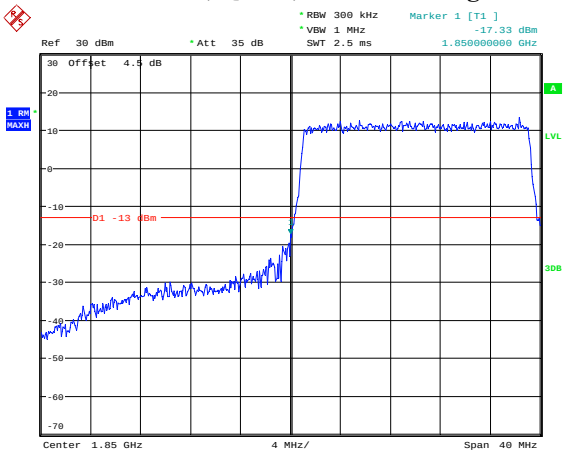
Date: 3.NOV.2020 17:57:37

15M, QPSK, Right Band Edge



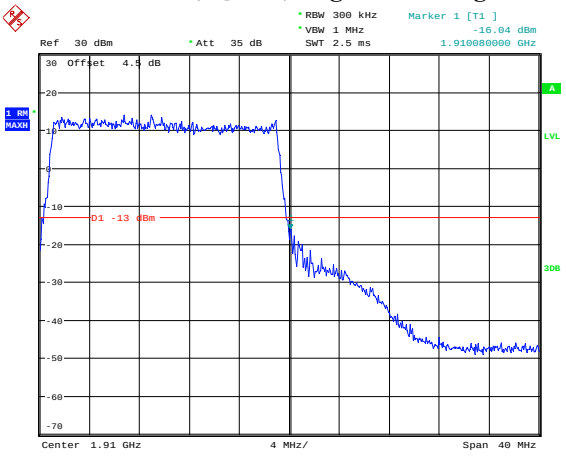
Date: 3.NOV.2020 17:58:32

20M, QPSK, Left Band Edge



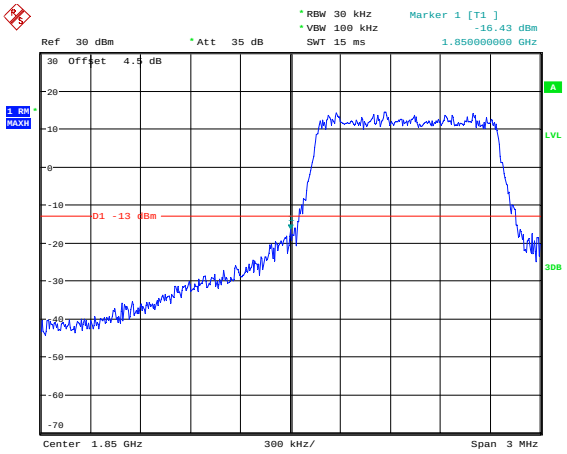
Date: 3.NOV.2020 17:59:33

20M, QPSK, Right Band Edge



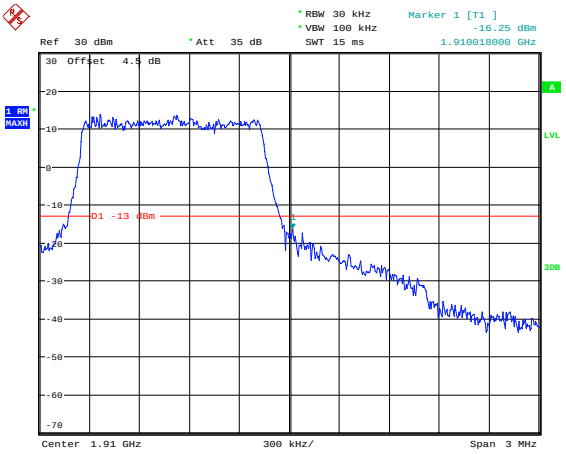
Date: 3.NOV.2020 18:00:16

1.4M, 16QAM, Left Band Edge



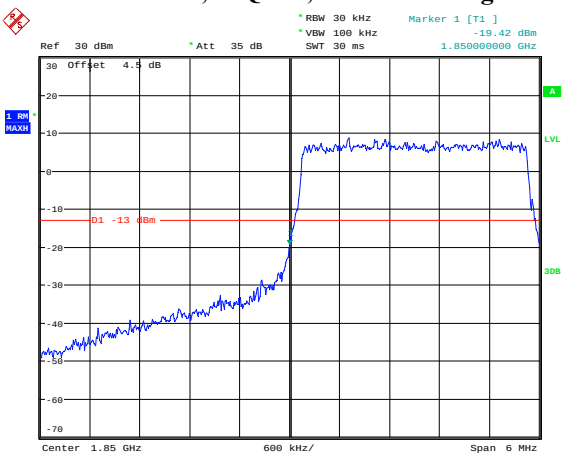
Date: 3.NOV.2020 17:47:51

1.4M, 16QAM, Right Band Edge



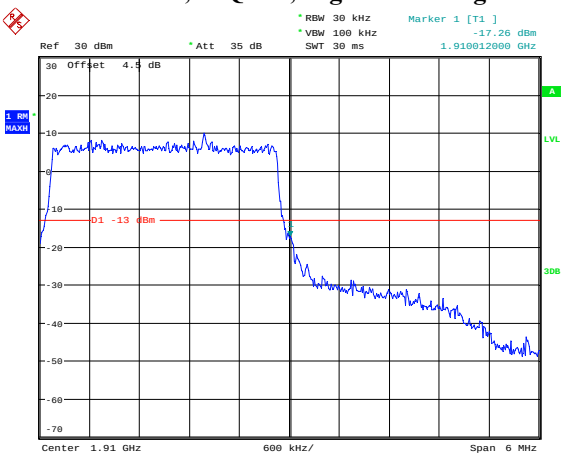
Date: 3.NOV.2020 17:48:38

3M, 16QAM, Left Band Edge



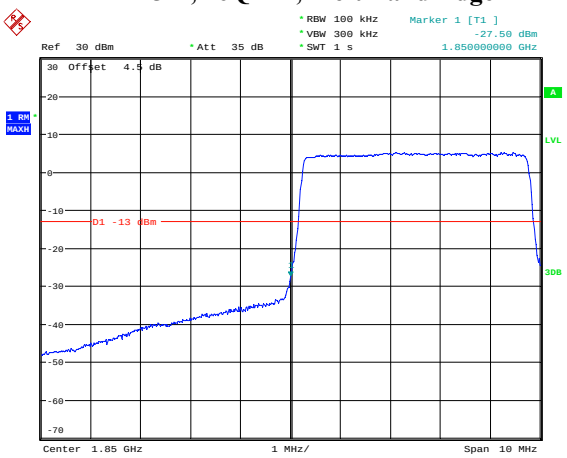
Date: 3.NOV.2020 17:49:15

3M, 16QAM, Right Band Edge



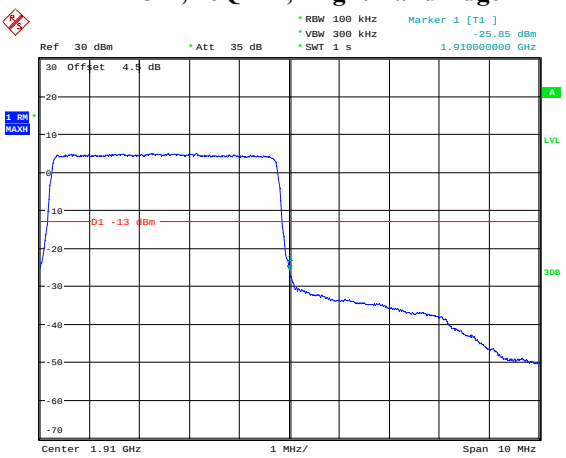
Date: 3.NOV.2020 17:49:56

5M, 16QAM, Left Band Edge



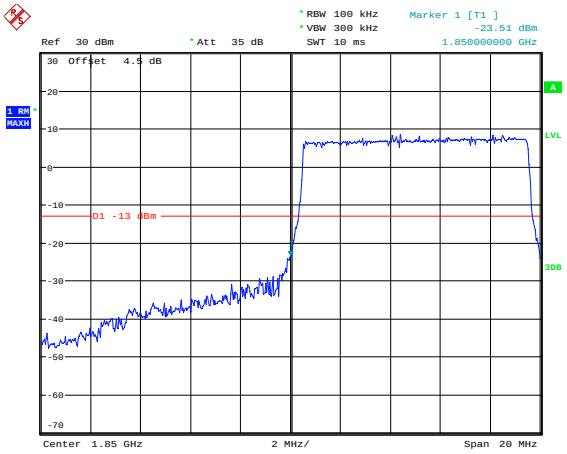
Date: 3.NOV.2020 17:54:55

5M, 16QAM, Right Band Edge



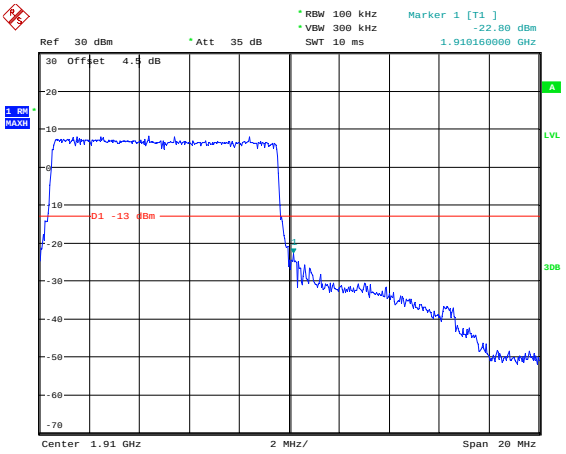
Date: 3.NOV.2020 17:55:55

10M, 16QAM, Left Band Edge



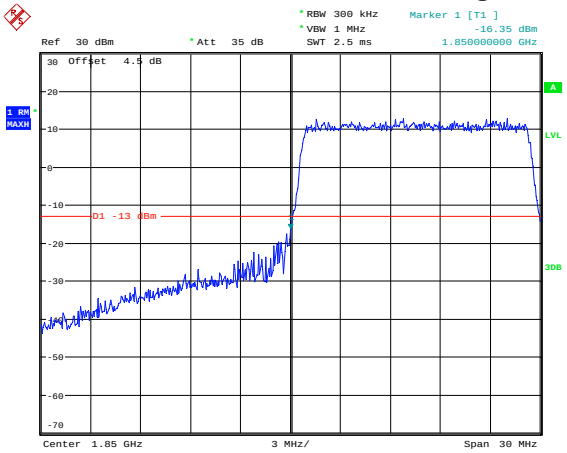
Date: 3.NOV.2020 17:56:37

10M, 16QAM, Right Band Edge



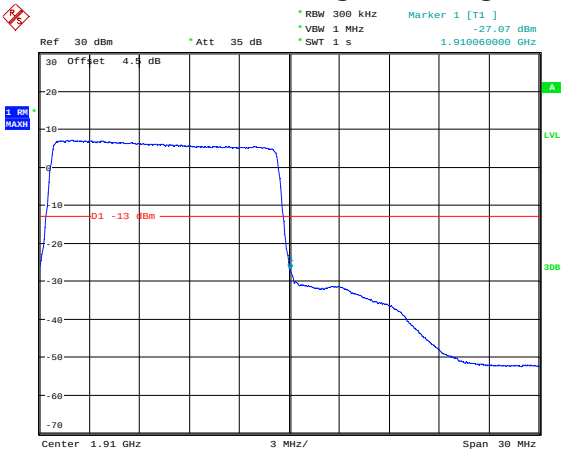
Date: 3.NOV.2020 17:57:13

15M, 16QAM, Left Band Edge



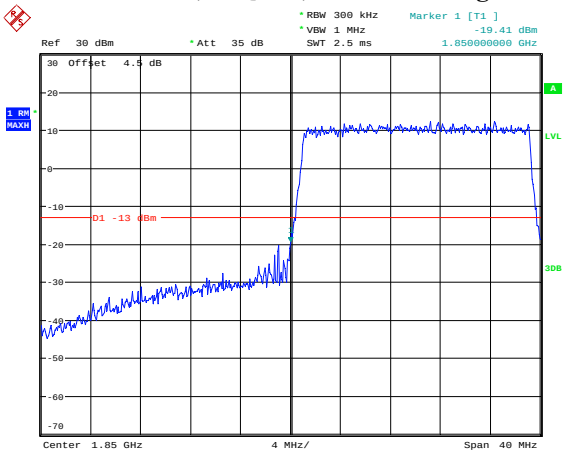
Date: 3.NOV.2020 17:58:02

15M, 16QAM, Right Band Edge



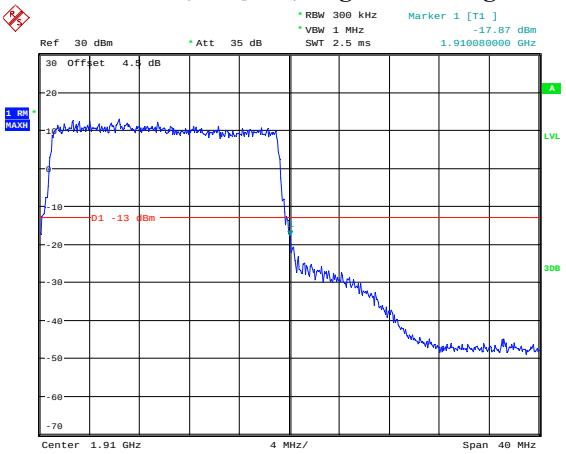
Date: 3.NOV.2020 17:59:05

20M, 16QAM, Left Band Edge



Date: 3.NOV.2020 17:59:54

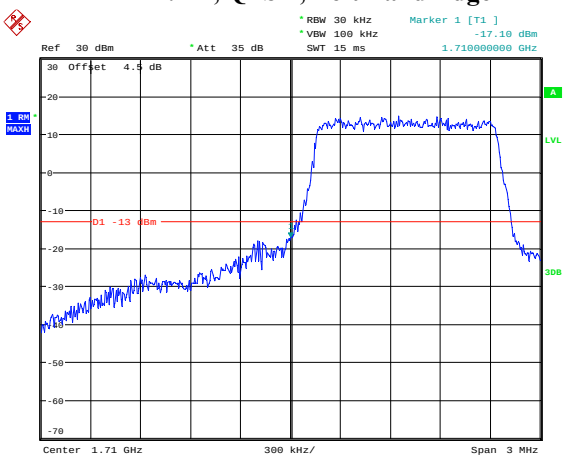
20M, 16QAM, Right Band Edge



Date: 3.NOV.2020 18:00:38

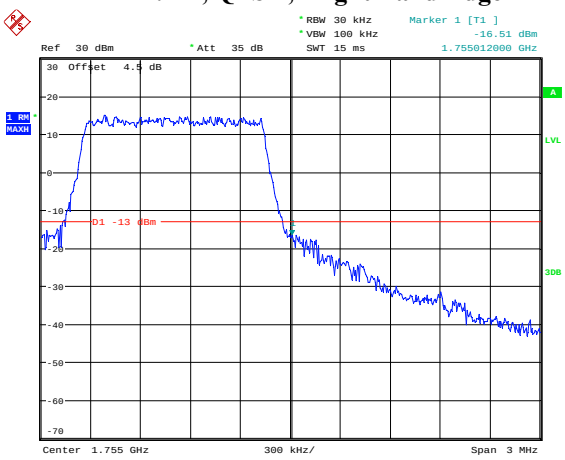
LTE Band 4:

1.4M, QPSK, Left Band Edge



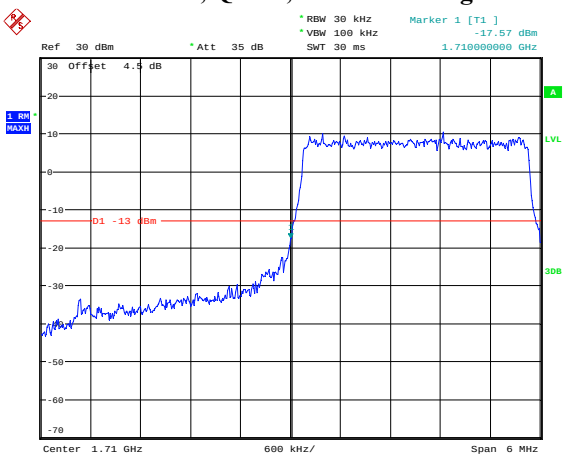
Date: 3.NOV.2020 18:01:01

1.4M, QPSK, Right Band Edge



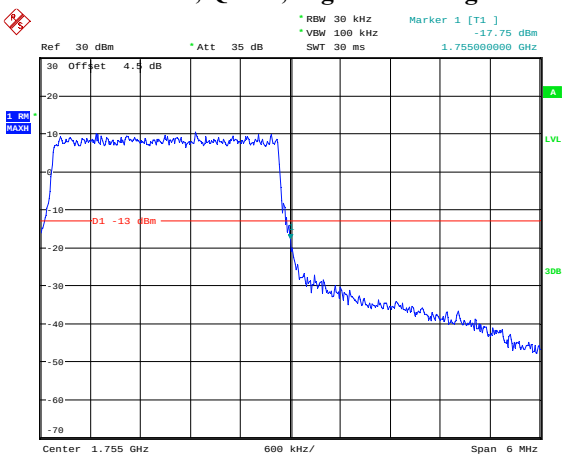
Date: 3.NOV.2020 18:01:48

3M, QPSK, Left Band Edge



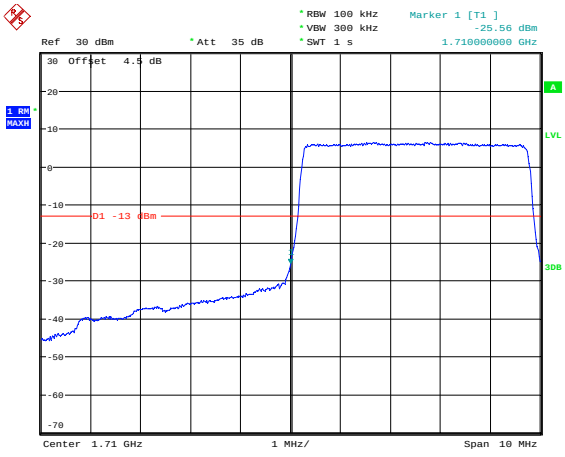
Date: 3.NOV.2020 18:02:29

3M, QPSK, Right Band Edge



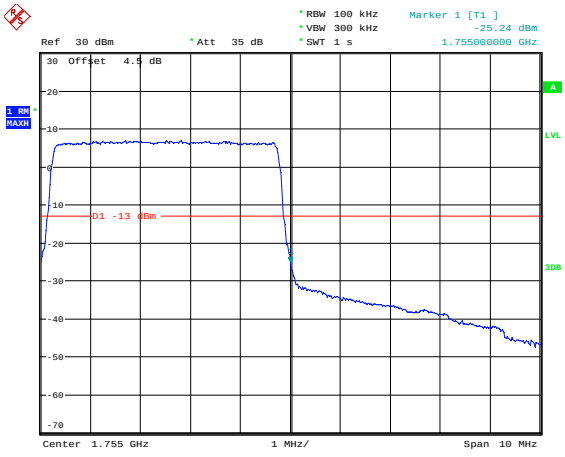
Date: 3.NOV.2020 18:03:03

5M, QPSK, Left Band Edge



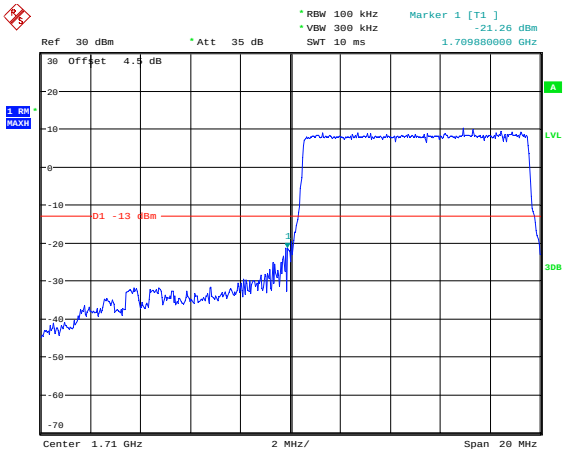
Date: 3.NOV.2020 18:03:54

5M, QPSK, Right Band Edge



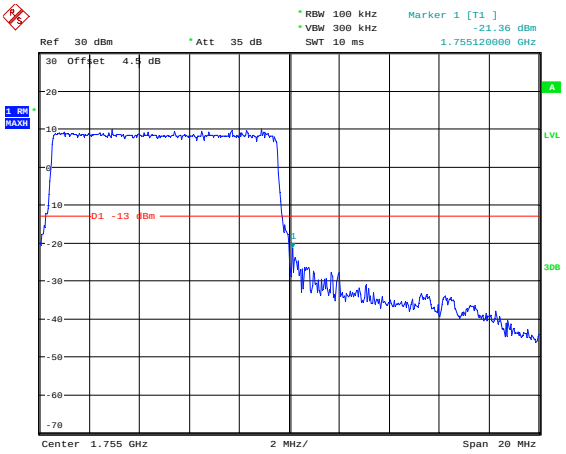
Date: 3.NOV.2020 18:04:50

10M, QPSK, Left Band Edge



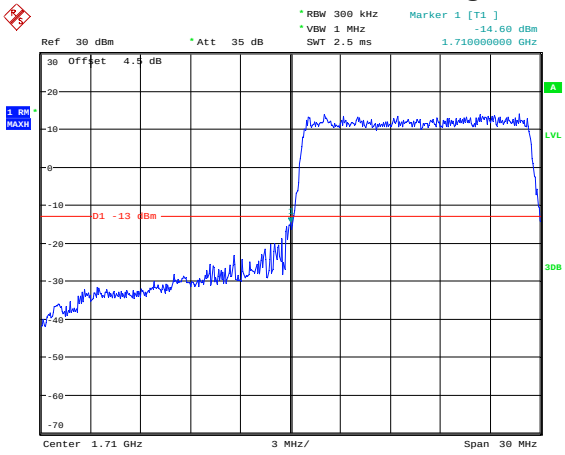
Date: 3.NOV.2020 18:05:42

10M, QPSK, Right Band Edge



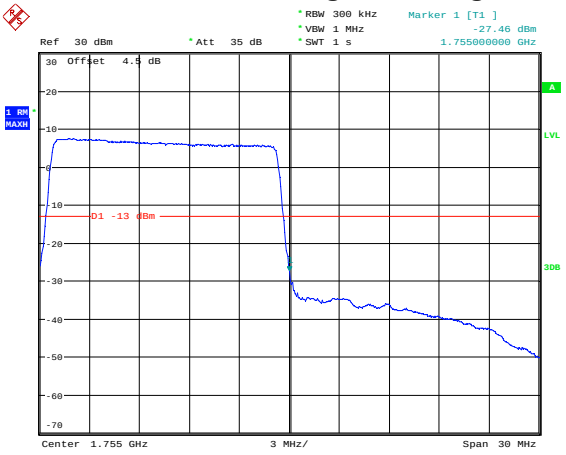
Date: 3.NOV.2020 18:06:21

15M, QPSK, Left Band Edge



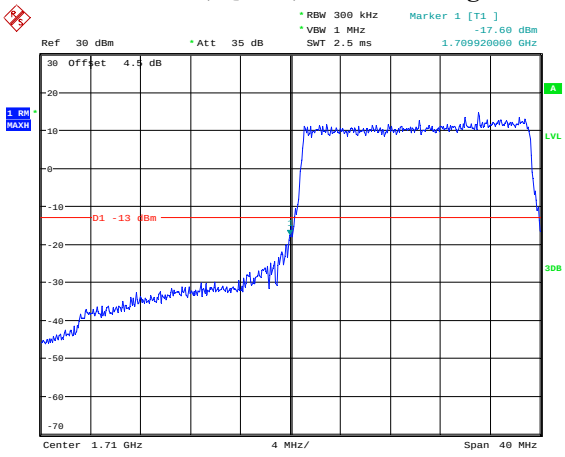
Date: 3.NOV.2020 18:08:27

15M, QPSK, Right Band Edge



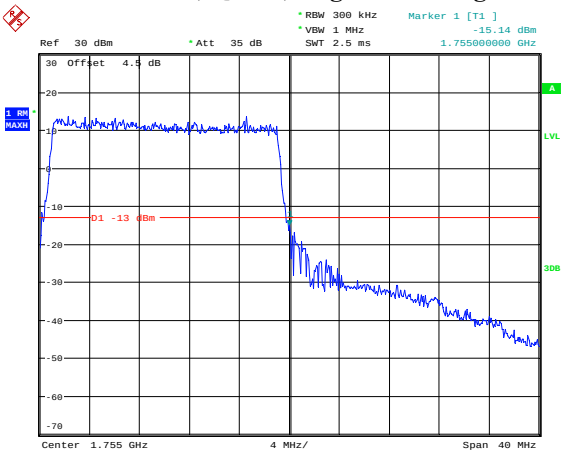
Date: 3.NOV.2020 18:09:31

20M, QPSK, Left Band Edge



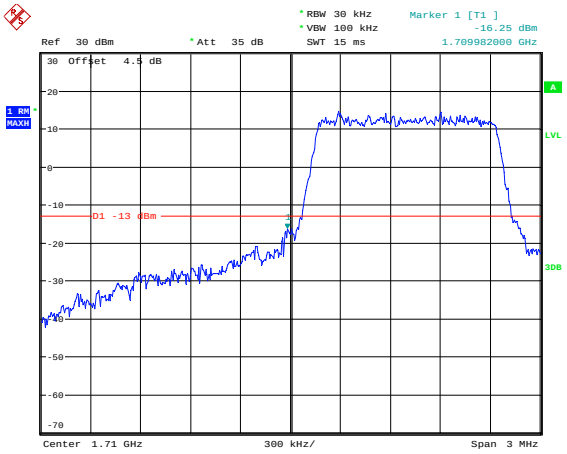
Date: 3.NOV.2020 18:11:32

20M, QPSK, Right Band Edge



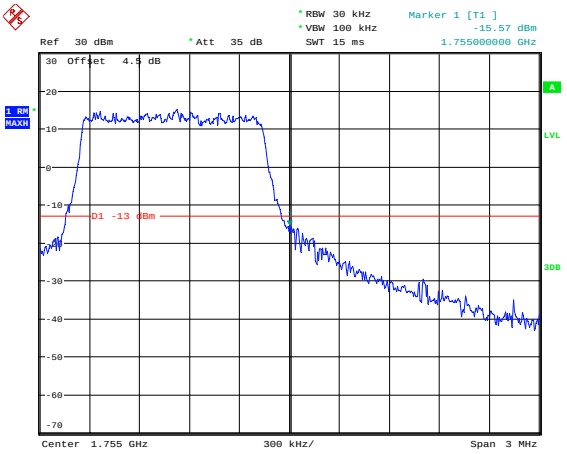
Date: 3.NOV.2020 18:12:15

1.4M, 16QAM, Left Band Edge



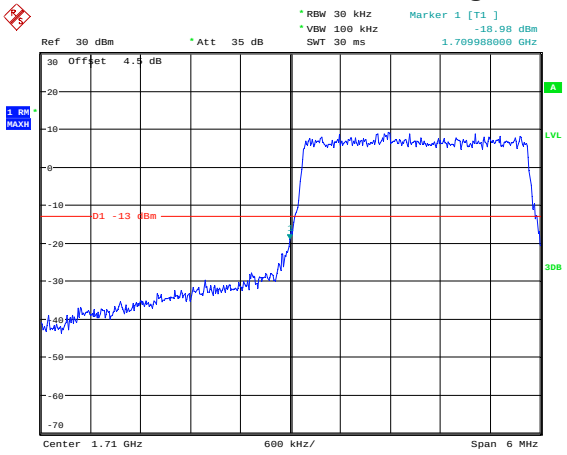
Date: 3.NOV.2020 18:01:24

1.4M, 16QAM, Right Band Edge



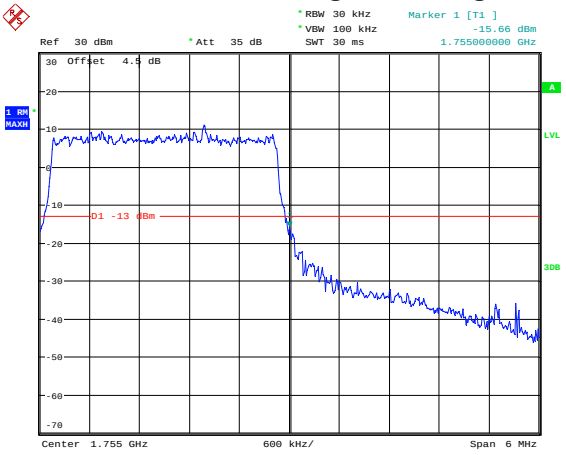
Date: 3.NOV.2020 18:02:08

3M, 16QAM, Left Band Edge



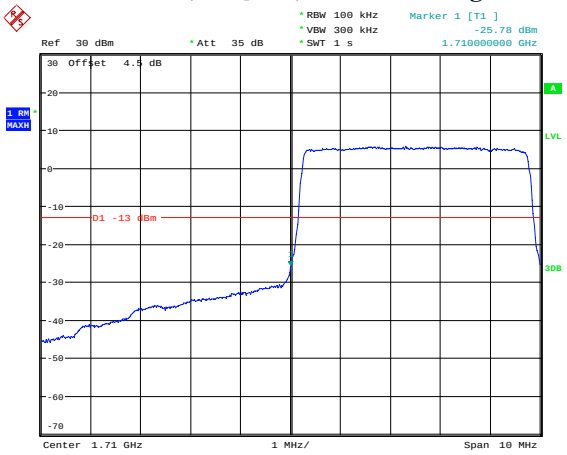
Date: 3.NOV.2020 18:02:46

3M, 16QAM, Right Band Edge



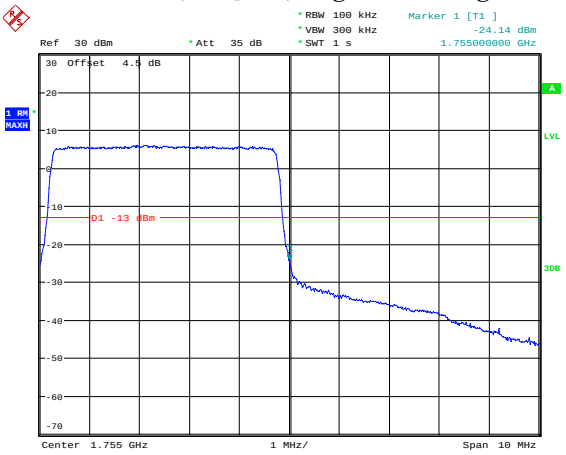
Date: 3.NOV.2020 18:03:20

5M, 16QAM, Left Band Edge



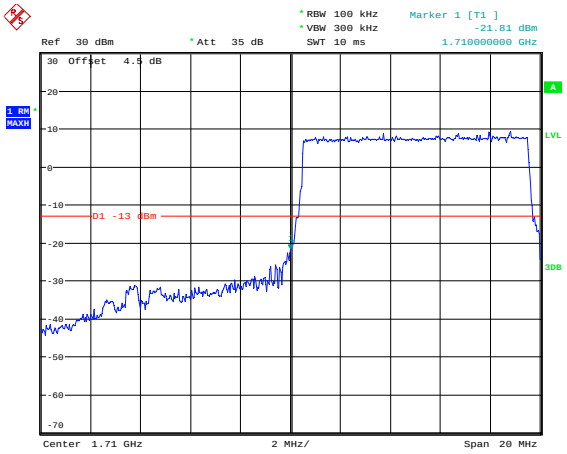
Date: 3.NOV.2020 18:04:21

5M, 16QAM, Right Band Edge



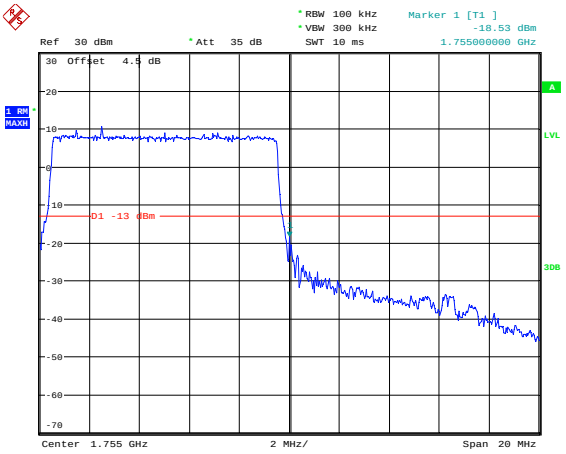
Date: 3.NOV.2020 18:05:20

10M, 16QAM, Left Band Edge



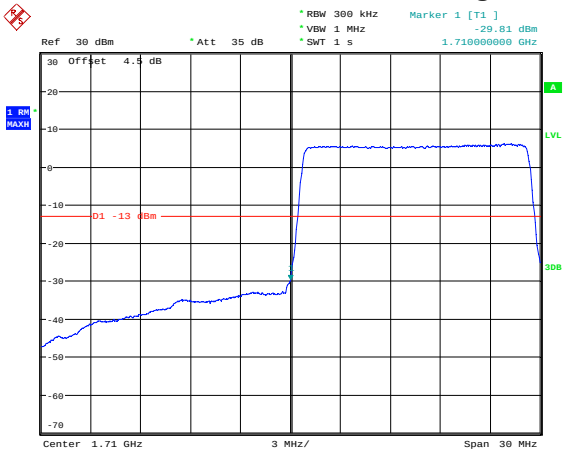
Date: 3.NOV.2020 18:06:03

10M, 16QAM, Right Band Edge



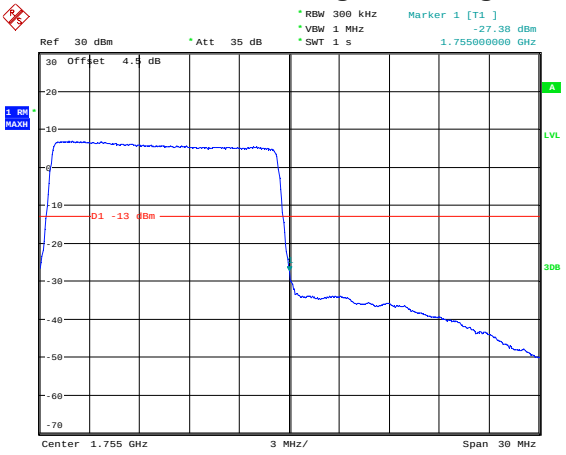
Date: 3.NOV.2020 18:06:39

15M, 16QAM, Left Band Edge



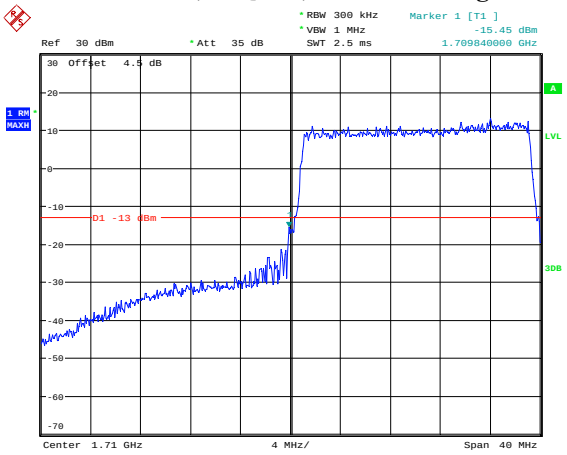
Date: 3.NOV.2020 18:08:58

15M, 16QAM, Right Band Edge



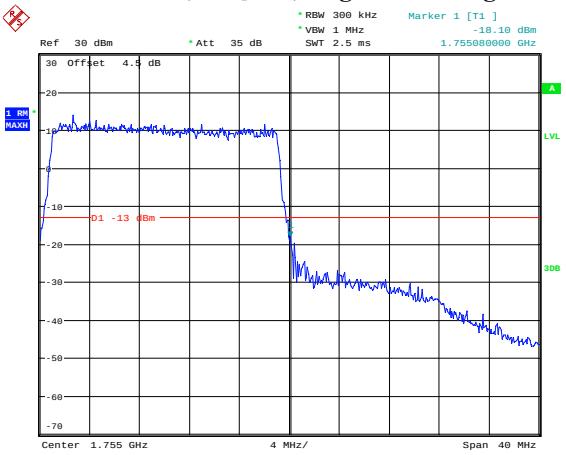
Date: 3.NOV.2020 18:11:04

20M, 16QAM, Left Band Edge



Date: 3.NOV.2020 18:11:53

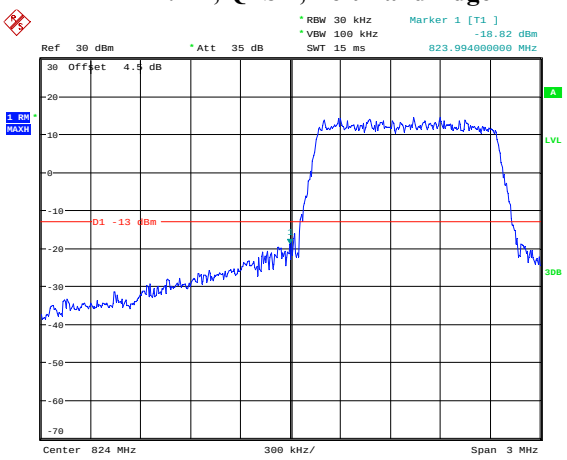
20M, 16QAM, Right Band Edge



Date: 3.NOV.2020 18:12:37

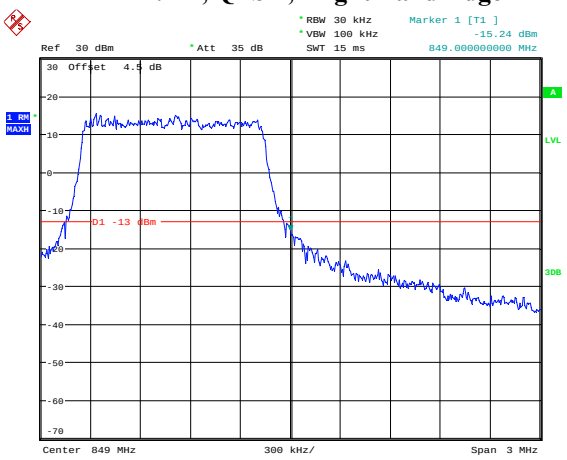
LTE Band 5:

1.4M, QPSK, Left Band Edge



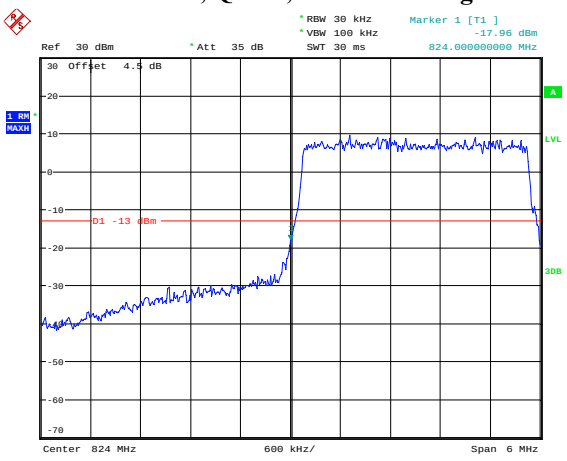
Date: 3.NOV.2020 18:13:14

1.4M, QPSK, Right Band Edge



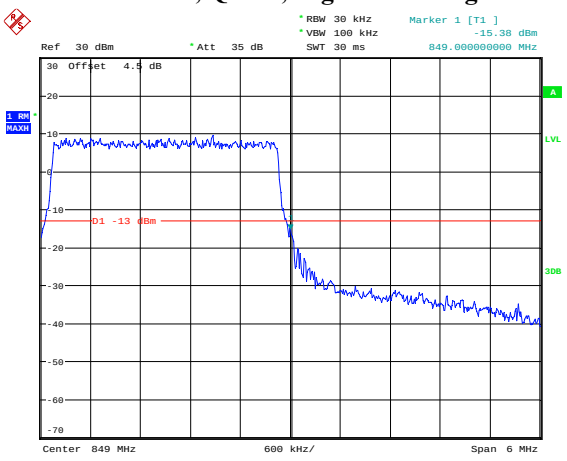
Date: 3.NOV.2020 18:14:01

3M, QPSK, Left Band Edge



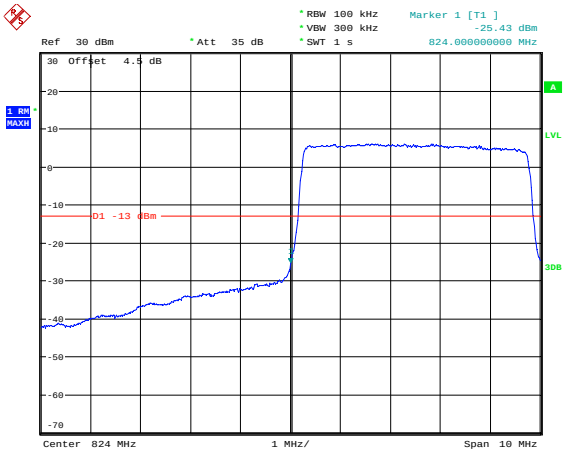
Date: 3.NOV.2020 18:14:37

3M, QPSK, Right Band Edge



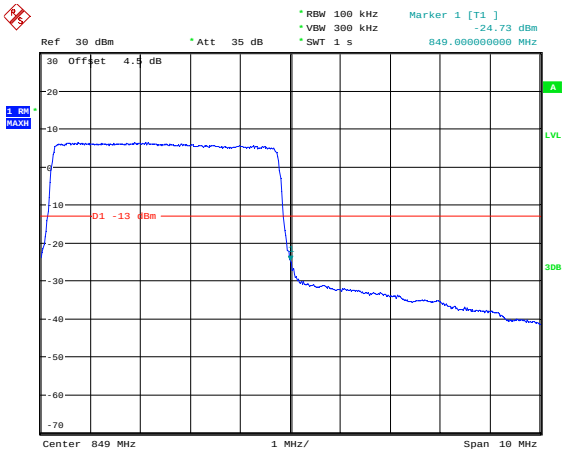
Date: 3.NOV.2020 18:15:12

5M, QPSK, Left Band Edge



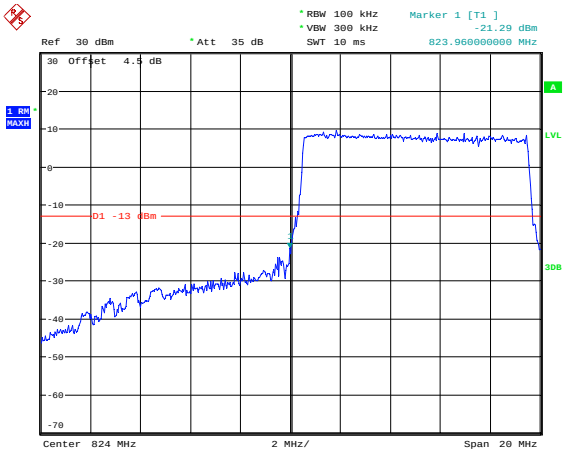
Date: 3.NOV.2020 18:16:12

5M, QPSK, Right Band Edge



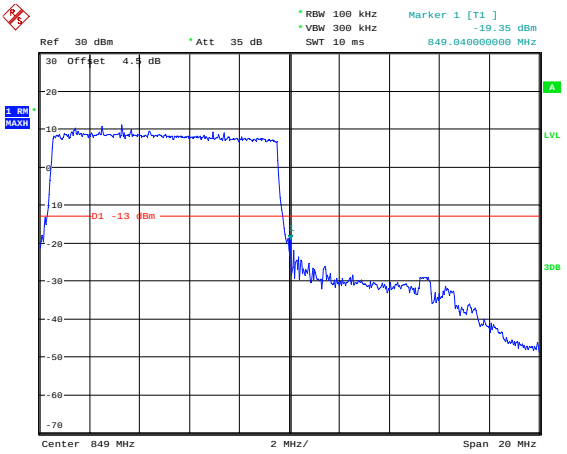
Date: 3.NOV.2020 18:17:08

10M, QPSK, Left Band Edge



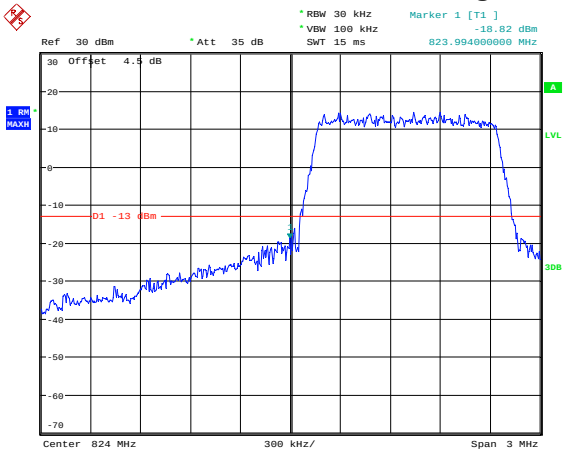
Date: 3.NOV.2020 18:17:47

10M, QPSK, Right Band Edge



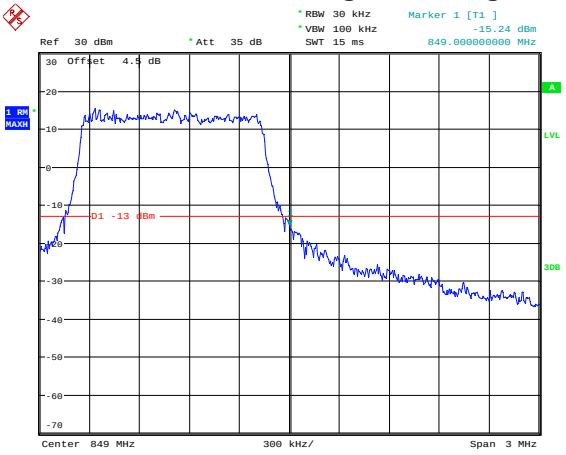
Date: 3.NOV.2020 18:18:30

1.4M, 16QAM, Left Band Edge



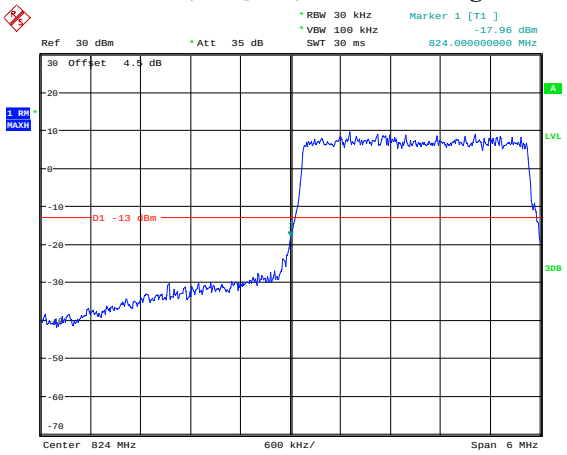
Date: 3.NOV.2020 18:13:14

1.4M, 16QAM, Right Band Edge



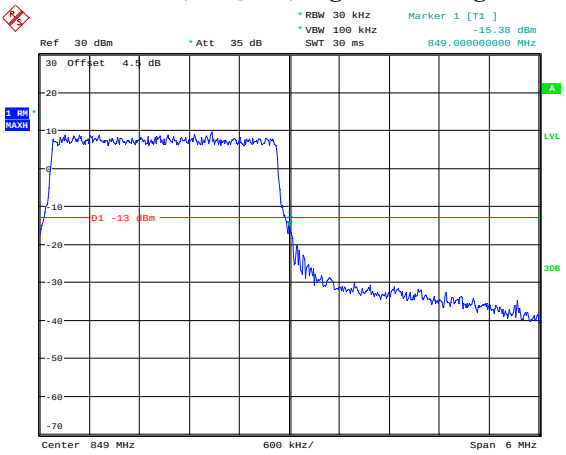
Date: 3.NOV.2020 18:14:01

3M, 16QAM, Left Band Edge



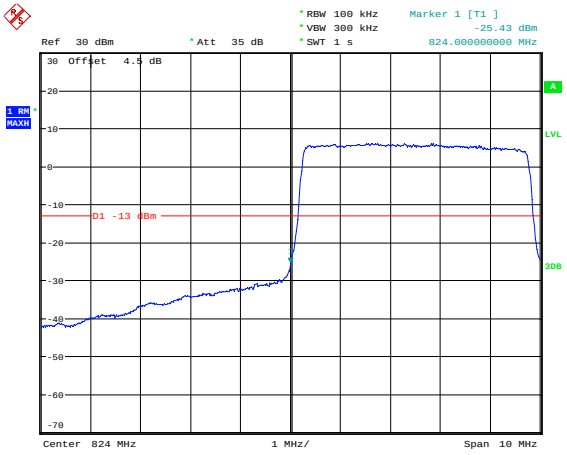
Date: 3.NOV.2020 18:14:37

3M, 16QAM, Right Band Edge

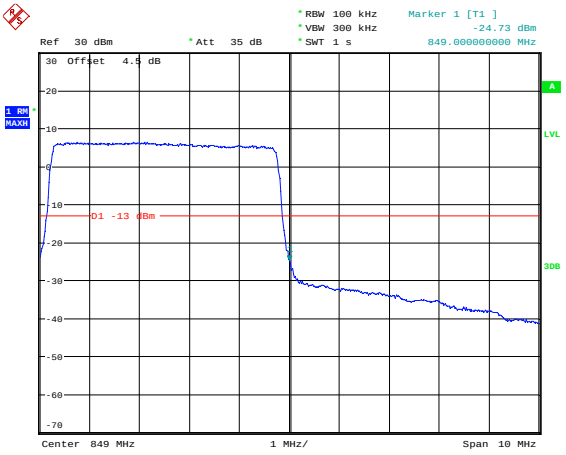


Date: 3.NOV.2020 18:15:12

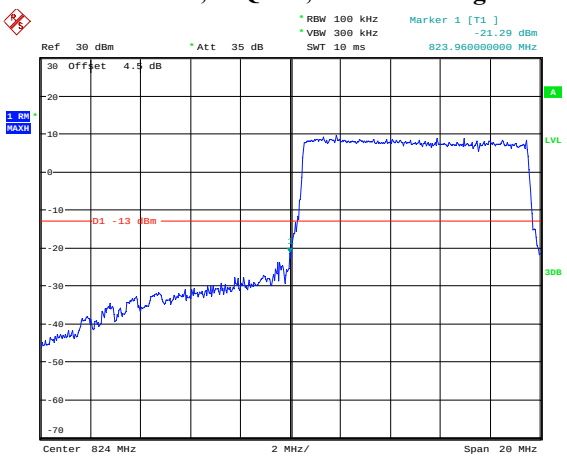
5M, 16QAM, Left Band Edge



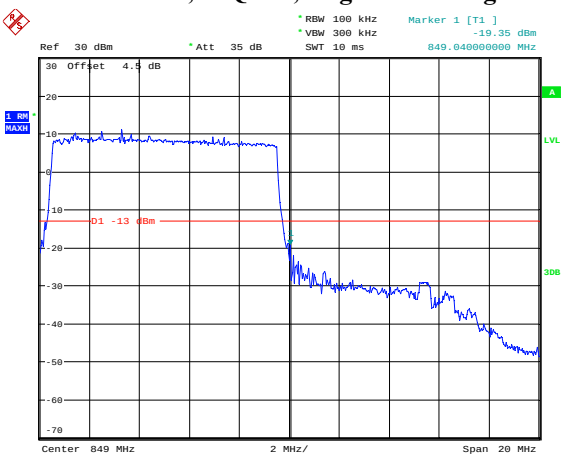
5M, 16QAM, Right Band Edge



10M, 16QAM, Left Band Edge

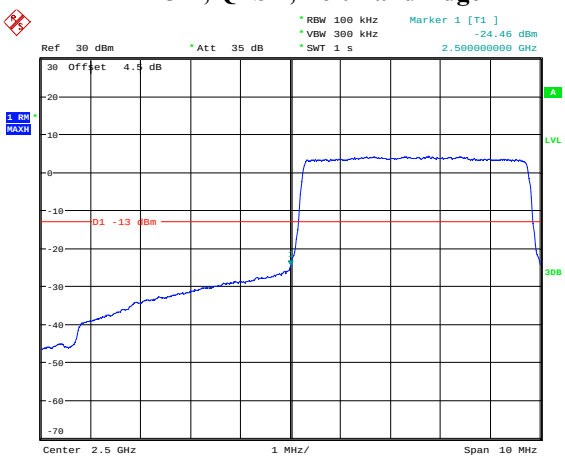


10M, 16QAM, Right Band Edge



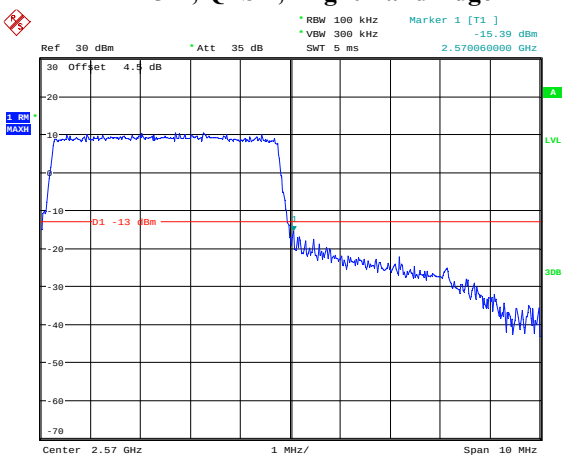
LTE Band 7:

5M, QPSK, Left Band Edge



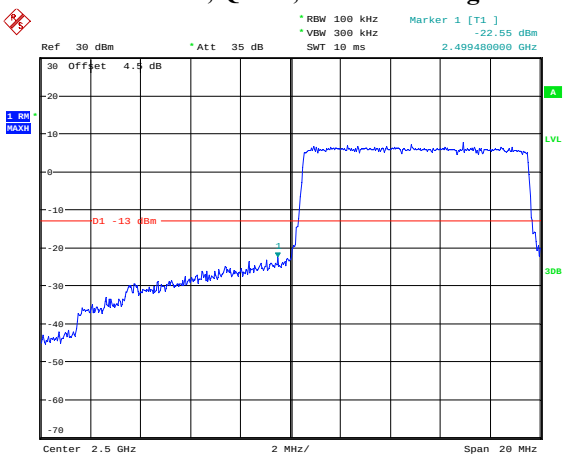
Date: 3.NOV.2020 18:19:02

5M, QPSK, Right Band Edge



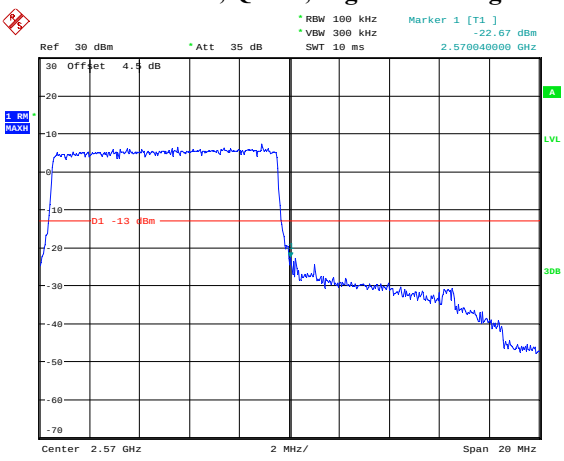
Date: 3.NOV.2020 18:19:47

10M, QPSK, Left Band Edge



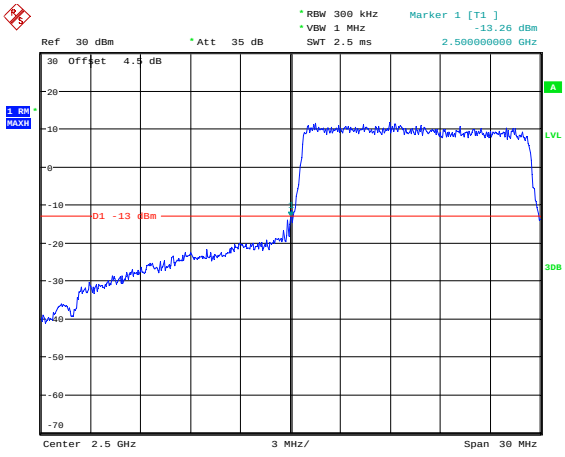
Date: 3.NOV.2020 18:20:40

10M, QPSK, Right Band Edge



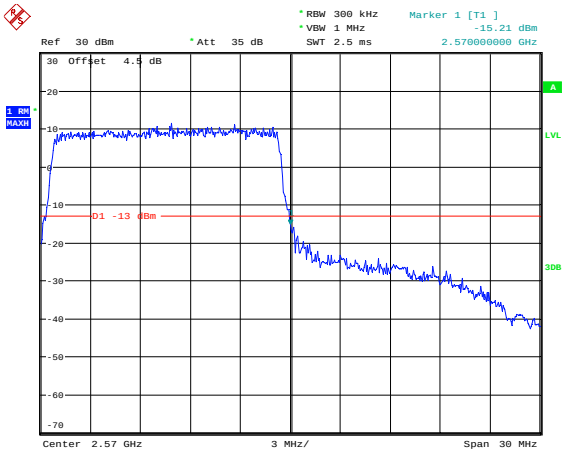
Date: 3.NOV.2020 18:21:17

15M, QPSK, Left Band Edge



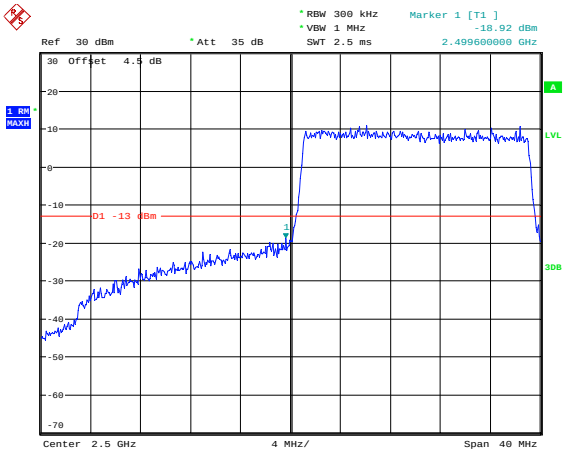
Date: 3.NOV.2020 18:22:03

15M, QPSK, Right Band Edge



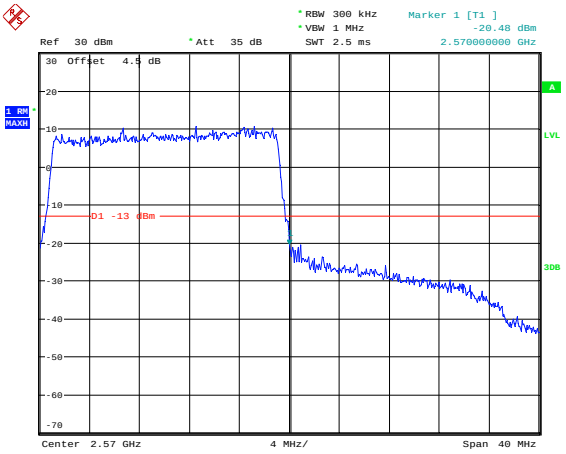
Date: 3.NOV.2020 18:22:50

20M, QPSK, Left Band Edge



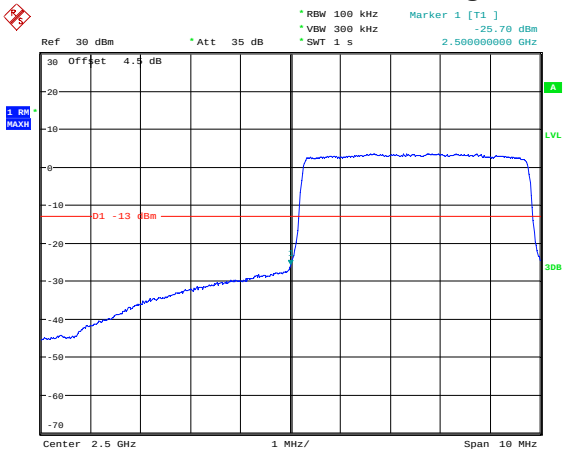
Date: 3.NOV.2020 18:23:37

20M, QPSK, Right Band Edge



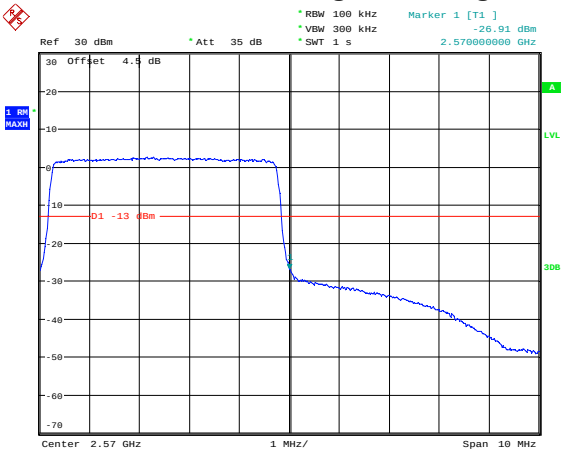
Date: 3.NOV.2020 18:24:24

5M, 16QAM, Left Band Edge



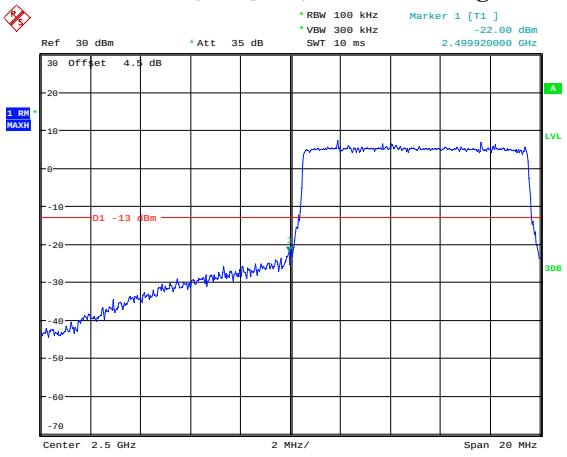
Date: 3.NOV.2020 18:19:29

5M, 16QAM, Right Band Edge



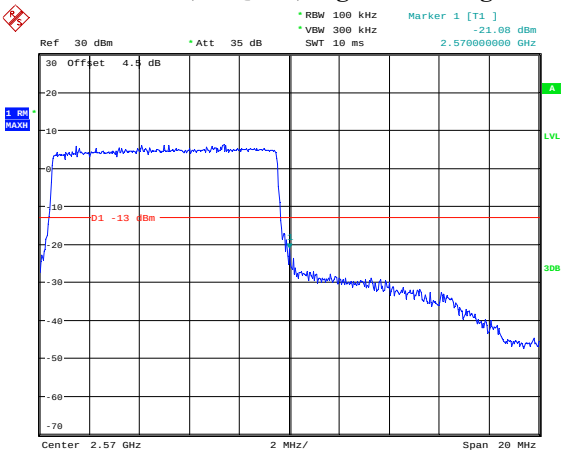
Date: 3.NOV.2020 18:20:19

10M, 16QAM, Left Band Edge



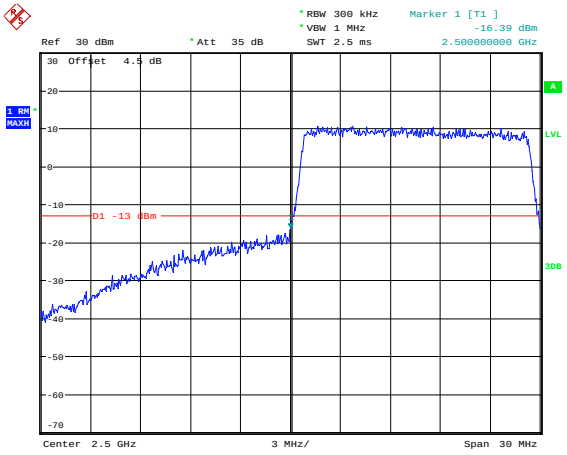
Date: 3.NOV.2020 18:20:58

10M, 16QAM, Right Band Edge



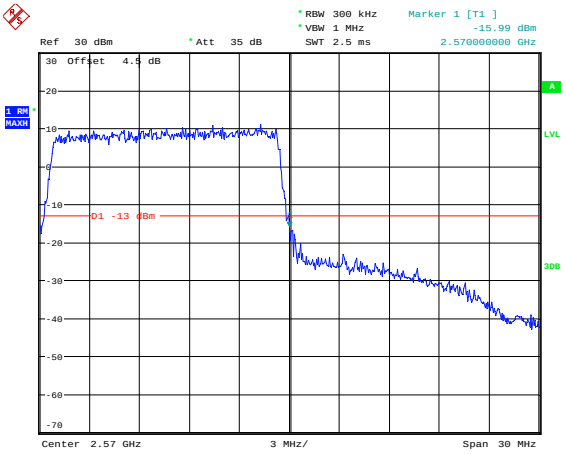
Date: 3.NOV.2020 18:21:38

15M, 16QAM, Left Band Edge



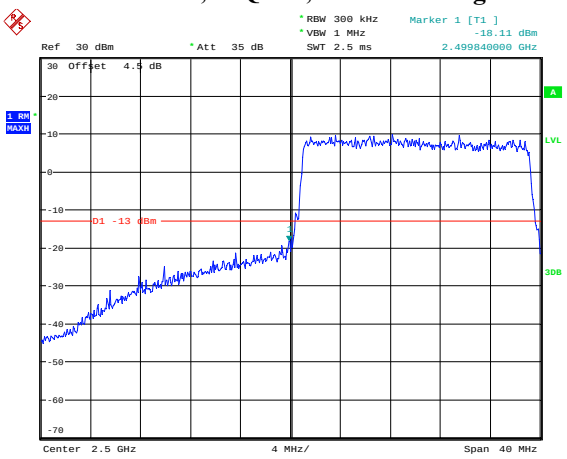
Date: 3.NOV.2020 18:22:27

15M, 16QAM, Right Band Edge



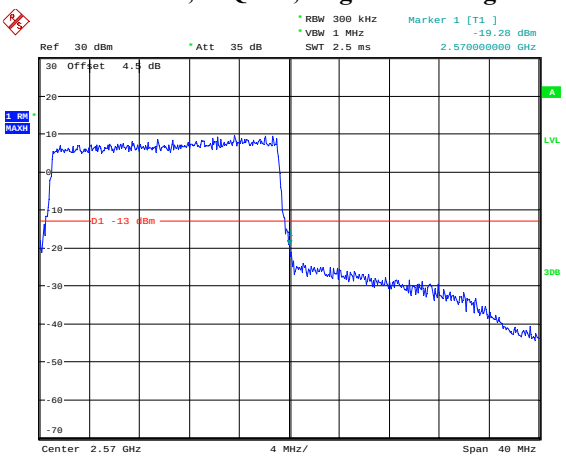
Date: 3.NOV.2020 18:23:12

20M, 16QAM, Left Band Edge



Date: 3.NOV.2020 18:23:58

20M, 16QAM, Right Band Edge



Date: 3.NOV.2020 18:24:45

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

Applicable Standard

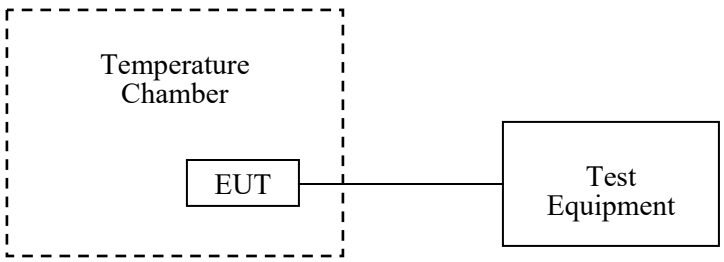
FCC § 2.1055 (a), § 2.1055 (d), §22.355, §24.235, §27.54

Test Procedure

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

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

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2020-07-07	2021-07-07
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	2020-05-06	2021-05-06
R&S	Universal Radio Communication Tester	CMU200	110 822	2020-09-12	2021-09-12
R&S	Wideband Radio Communication Tester	CMW500	149216	2020-09-12	2021-09-12
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2020-03-10	2021-03-09
UNI-T	Multimeter	UT39A	M130199938	2020-07-24	2021-07-24
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:	25.6~26.7 °C
Relative Humidity:	37~49%
ATM Pressure:	101.1 ~101.3kPa
Tester:	James Chen
Test Date:	2020-11-03~2020-11-06

Test Result: Compliance.

Cellular Band

GMSK, Middle Channel, f_c = 836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.8	13	0.015539087	2.5
-20		17	0.020320344	
-10		16	0.01912503	
0		15	0.017929716	
10		15	0.017929716	
20		15	0.017929716	
30		15	0.017929716	
40		14	0.016734401	
50		15	0.017929716	
20	3.6	14	0.016734401	
20	4.35	14	0.016734401	

8PSK, Middle Channel, f_c = 836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.8	-20	-0.02391	2.5
-20		-18	-0.02152	
-10		-17	-0.02032	
0		-17	-0.02032	
10		-17	-0.02032	
20		-17	-0.02032	
30		-17	-0.02032	
40		-17	-0.02032	
50		-15	-0.01793	
20	3.6	-21	-0.0251	
20	4.35	-17	-0.02032	

PCS Band

GMSK, Middle Channel, f_c = 1880.0 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Results**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	13	0.006915	Pass
-20		18	0.009574	
-10		13	0.006915	
0		26	0.01383	
10		13	0.006915	
20		25	0.013298	
30		22	0.011702	
40		24	0.012766	
50		28	0.014894	
20	3.6	23	0.012234	
20	4.35	17	0.009043	

8PSK, Middle Channel, f_c = 1880.0 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
℃	V_{DC}	Hz	ppm	
-30	3.8	23	0.012234	Pass
-20		20	0.010638	
-10		20	0.010638	
0		20	0.010638	
10		20	0.010638	
20		20	0.010638	
30		20	0.010638	
40		18	0.009574	
50		18	0.009574	
20	3.6	20	0.010638	
20	4.35	20	0.010638	

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	-12	-0.006382979	Pass
-20		-11	-0.005851064	
-10		-10	-0.005319149	
0		-10	-0.005319149	
10		-10	-0.005319149	
20		-10	-0.005319149	
30		-15	-0.007978723	
40		-10	-0.005319149	
50		-13	-0.006914894	
20	3.6	-10	-0.005319149	
20	4.35	-10	-0.005319149	

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	-17	-0.020320344	2.5
-20		-18	-0.021515659	
-10		-17	-0.020320344	
0		-13	-0.015539087	
10		-13	-0.015539087	
20		-13	-0.015539087	
30		-13	-0.015539087	
40		-13	-0.015539087	
50		-15	-0.017929716	
20	3.6	-13	-0.015539087	
20	4.35	-13	-0.015539087	

LTE Band 2:

QPSK, Channel Bandwidth:10MHz Low Channel, f_c = 1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	-23.29	-0.0124	Pass
-20		-6.90	-0.0037	
-10		8.33	0.0044	
0		-9.74	-0.0052	
10		7.08	0.0038	
20		-6.41	-0.0034	
30		5.64	0.003	
40		8.00	0.0043	
50		-9.03	-0.0048	
20	3.6	7.28	0.0039	
20	4.35	-5.08	-0.0027	

16QAM, Channel Bandwidth:10MHz Low Channel, f_c =1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	21.56	0.0115	Pass
-20		5.82	0.0031	
-10		8.85	0.0047	
0		7.75	0.0041	
10		5.63	0.003	
20		-6.92	-0.0037	
30		-8.31	-0.0044	
40		-6.90	-0.0037	
50		9.27	0.0049	
20	3.6	-6.90	-0.0037	
20	4.35	-6.14	-0.0033	

LTE Band 4

QPSK, Channel Bandwidth:10MHz					
Power Supplied	**Temperature**	**F_L**	**Limit**	**F_H**	**Limit**
Vdc	**℃**	**MHz**	**MHz**	**MHz**	**MHz**
3.8	-30	1710.520000	1710	1754.460000	1755
	-20	1710.720000		1754.480000	
	-10	1710.120000		1754.430000	
	0	1710.520000		1754.580000	
	10	1710.480000		1754.540000	
	20	1710.520000		1754.480000	
	30	1710.520000		1754.480000	
	40	1710.360000		1754.480000	
	50	1710.520000		1754.480000	
4.35	20	1710.620000		1754.480000	
3.6	20	1710.460000		1754.830000	

16QAM, Channel Bandwidth:10MHz					
Power Supplied	**Temperature**	**F_L**	**Limit**	**F_H**	**Limit**
Vdc	**℃**	**MHz**	**MHz**	**MHz**	**MHz**
3.8	-30	1710.600000	1710	1754.440000	1755
	-20	1710.400000		1754.130000	
	-10	1710.610000		1754.510000	
	0	1710.680000		1754.480000	
	10	1710.320000		1754.660000	
	20	1710.160000		1754.480000	
	30	1710.200000		1754.480000	
	40	1710.360000		1754.430000	
	50	1710.120000		1754.120000	
4.35	20	1710.500000		1754.480000	
3.6	20	1710.620000		1754.480000	

LTE Band 5:

QPSK, Channel Bandwidth:10MHz Low Channel, f_c = 836.5 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit (ppm)**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	-16.74	-0.02	2.5
-20		-9.82	-0.0117	
-10		-8.82	-0.0105	
0		-8.13	-0.0097	
10		-6.13	-0.0073	
20		-5.10	-0.0061	
30		-8.16	-0.0098	
40		9.17	0.011	
50		7.98	0.0095	
20	3.6	-5.83	-0.007	
20	4.35	5.06	0.006	

16QAM, Channel Bandwidth:10MHz Low Channel, f_c =836.5 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit (ppm)**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	15.51	0.0185	2.5
-20		-7.10	-0.0085	
-10		-8.06	-0.0096	
0		5.46	0.0065	
10		-6.26	-0.0075	
20		-7.37	-0.0088	
30		8.31	0.0099	
40		-8.91	-0.0107	
50		6.81	0.0081	
20	3.6	9.48	0.0113	
20	4.35	-8.89	-0.0106	

LTE Band 7

QPSK, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	℃	MHz	MHz	MHz	MHz
3.8	-30	2500.070000	2500	2569.640000	2570
	-20	2500.550000		2569.660000	
	-10	2500.520000		2569.510000	
	0	2500.450000		2569.430000	
	10	2500.460000		2569.460000	
	20	2500.520000		2569.480000	
	30	2500.120000		2569.080000	
	40	2500.670000		2569.440000	
	50	2500.280000		2569.230000	
3.6	20	2500.680000		2569.480000	
4.35	20	2500.610000		2569.330000	

16QAM, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	℃	MHz	MHz	MHz	MHz
3.8	-30	2500.800000	2500	2569.400000	2570
	-20	2500.520000		2569.520000	
	-10	2500.520000		2569.400000	
	0	2500.620000		2569.750000	
	10	2500.430000		2569.450000	
	20	2500.520000		2569.480000	
	30	2501.120000		2569.400000	
	40	2500.200000		2569.570000	
	50	2500.670000		2569.390000	
3.6	20	2500.340000		2569.750000	
4.35	20	2500.670000		2569.250000	

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 *******