



TESTING LABORATORY
CERTIFICATE #4820.01



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

For

Shenzhen Inrico Electronics Co.,Ltd

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FCC ID: 2AIV6-T310

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		Smart Phone
EUT Model:		T310
Operation modes:		GSM Voice, GPRS/EDGE Data, WCDMA(R99 (Voice+Data), HSDPA,HSUPA,DC-HSDPA, HSPA+) FDD-LTE,TDD-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 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 12: 699-716 MHz(TX), 729-746 MHz(RX) LTE Band 17: 704-716 MHz(TX), 734-746 MHz(RX)
Modulation Type:		GMSK, 8PSK, BPSK, QPSK, 16QAM
Antenna Gain▲:		GSM850/WCDMA B5: -0.3 dBi(-2.45dBd) PCS1900/LTE B2: 0.5 dBi LTE B4: 0.5 dBi LTE B12/17: -0.3 dBi(-2.45dBd)
Rated Input Voltage:		DC 3.7V from battery or DC 5V from Adapter
Serial Number:		RDG200812009-RF-S1
Adapter Information	Model:	HJ-0501000E1
	Input:	AC 100-240V,50/60 Hz, 0.2A
	Output:	DC 5.0V, 1A
EUT Received Date:		2020.08.14
EUT Received Status:		Good

Objective

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

No related submittal.

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	$\pm 5\%$
RF output power, conducted	$\pm 0.61\text{ dB}$
Unwanted Emissions, radiated	30MHz ~ 1GHz: 5.85 dB 1G~26.5GHz: 5.23 dB
Unwanted Emissions, conducted	$\pm 1.5\text{ dB}$
Temperature	$\pm 1^\circ\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 0.4\%$
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 5, and LTE band 2/4/12/17, test was performed with channels as below table:

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSM/GPRS/EDGE 850	0.25	824.2	836.6	848.8
GSM/GPRS/EDGE 1900	0.25	1850.2	1880	1909.8
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 12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704	707.5	711
LTE Band 17	5	706.5	710	713.5
	10	709	710	711

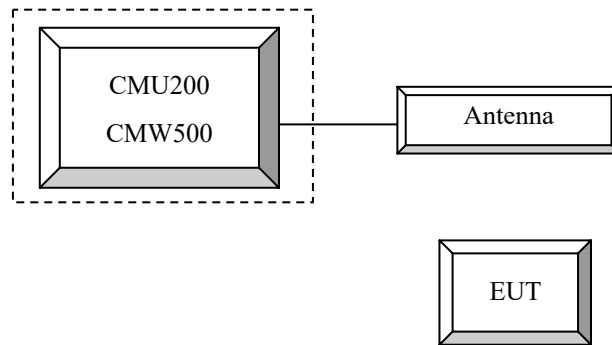
Equipment Modifications

No modification was made to the EUT.

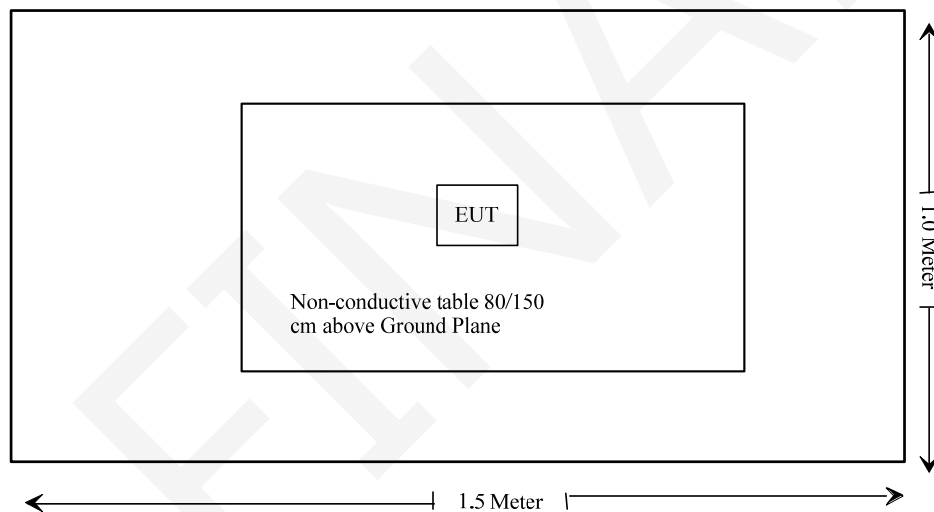
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester	CMU200	106 891
R&S	Wideband Radio Communication Tester	CMW500	147473
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: RDG200812009-20.

FINAL

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.

FINAL

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
	β_c / β_d	8/15

WCDMA HSDPA

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

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subset	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	β_d (SF)	64			
	β_c / β_d	2/15	12/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
	MPR(dB)	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	$A_{hs} = \beta_{hs} / \beta_c$	30/15			

WCDMA HSUPA

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

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subset	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/15	0
	β_{ec}	209/225	12/15	30/15	2/15	5/15
	β_c/β_d	11/15	6/15	15/9	2/15	-
	β_{hs}	22/15	12/15	30/15	4/15	5/15
	CM(dB)	1.0	3.0	2.0	3.0	1.0
	MPR(dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback	4ms				
	CQI Repetition Factor	2				
	$A_{hs}=\beta_{hs}/\beta_c$	30/15				
HSUPA Specific Settings	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_FCI	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E 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_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.

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

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

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

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

DC-HSDPA

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

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

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

LTE (FDD):

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

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

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

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

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

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

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

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A
R&S	Spectrum Analyzer	FSP 38	100478	2020-07-07	2021-07-07
R&S	Spectrum Analyzer	FSU 26	200256	2020-07-07	2021-07-07
R&S	Universal Radio Communication Tester	CMU200	106 891	2020-09-12	2021-09-12
R&S	Wideband Radio Communication Tester	CMW500	149216	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**

Temperature:	26 ~26.9°C
Relative Humidity:	52~58%
ATM Pressure:	100.9~101kPa
Tester:	Taylor Li
Test Date:	2020-10-10~2020-10-11

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	32.7	32.73	31.93	30.06	28.89	25.54	23.75	21.98	20.28
	190	32.7	32.8	31.96	30.07	28.86	25.28	24.19	22.23	20.96
	251	32.7	32.81	31.98	30.07	28.84	25.32	24.2	22.34	21.54
PCS	512	28.4	28.42	27.65	25.91	24.93	24.8	23.75	21.56	20.09
	661	28.6	28.62	27.84	26.16	25.16	23.9	22.75	20.6	19.14
	810	28.9	28.87	28.12	26.36	25.32	24.25	23.1	20.92	19.45

ERP/EIRP:

Band	Mode	Channel	Conducted Power (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
Cellular	GSM	Low	32.73	-2.45	0.2	30.08	38.45
		Middle	32.8	-2.45	0.2	30.15	38.45
		High	32.81	-2.45	0.2	30.16	38.45
	EDGE	Low	25.54	-2.45	0.2	22.89	38.45
		Middle	25.28	-2.45	0.2	22.63	38.45
		High	25.32	-2.45	0.2	22.67	38.45
PCS	GSM	Low	28.42	0.5	0.4	28.52	33.00
		Middle	28.62	0.5	0.4	28.72	33.00
		High	28.9	0.5	0.4	29	33.00
	EDGE	Low	24.8	0.5	0.4	24.9	33.00
		Middle	23.9	0.5	0.4	24	33.00
		High	24.25	0.5	0.4	24.35	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 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	22.54	3.08	22.45	5.9	22.49	6.57
HSDPA	1	21.93	3.11	21.98	5.87	21.98	3.27
	2	21.18	3.27	20.72	4.24	21.1	4.6
	3	21.26	3.07	20.89	4.08	21.05	4.39
	4	21.29	3.54	20.74	4.25	20.99	4.21
HSUPA	1	21.57	3.08	21.54	5.71	21.86	3.3
	2	20.59	3.8	20.68	3.07	20.48	3.83
	3	20.36	3.27	20.47	3.43	20.74	4.27
	4	20.55	3.55	20.39	3.04	20.46	4.2
	5	20.61	3.81	20.72	3.25	20.39	4.42
DC-HSDPA	1	20.76	5.41	20.84	5.12	20.82	5.89
	2	20.32	5.34	20.36	4.98	20.84	6.38
	3	20.35	5.73	20.65	5.29	20.33	6.04
	4	20.69	5.56	20.84	5.16	20.76	6.22
HSPA+ (16QAM)	1	20.64	5.69	20.76	5.26	20.76	6.41

ERP:

Channel	Conducted Power (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
Low	22.54	-2.45	0.2	19.89	38.45
Middle	22.45	-2.45	0.2	19.8	38.45
High	22.49	-2.45	0.2	19.84	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	22.69	21.46	20.55
		RB1#3	22.81	21.59	20.62
		RB1#5	22.75	21.58	20.47
		RB3#0	22.56	21.51	20.88
		RB3#3	22.54	21.40	20.75
		RB6#0	21.61	20.45	19.83
	16QAM	RB1#0	21.61	20.60	20.09
		RB1#3	21.72	20.73	20.28
		RB1#5	21.53	20.54	20.16
		RB3#0	21.52	20.50	20.26
		RB3#3	21.49	20.29	19.83
		RB6#0	20.11	19.62	18.68
3MHz	QPSK	RB1#0	22.47	21.46	20.69
		RB1#8	22.59	21.27	20.59
		RB1#14	22.56	21.40	20.78
		RB6#0	21.54	20.51	19.89
		RB6#9	21.49	20.34	19.72
		RB15#0	21.57	20.49	19.86
	16QAM	RB1#0	21.85	20.97	19.76
		RB1#8	21.73	20.57	19.38
		RB1#14	21.61	20.58	19.62
		RB6#0	20.67	19.51	18.66
		RB6#9	20.63	19.45	18.62
		RB15#0	20.51	19.51	18.92
5MHz	QPSK	RB1#0	22.56	21.30	20.81
		RB1#13	22.48	21.33	20.68
		RB1#24	22.21	21.47	20.59
		RB15#0	21.69	20.52	19.87
		RB15#10	21.41	20.42	19.70
		RB25#0	21.50	20.45	19.84
	16QAM	RB1#0	21.17	20.68	19.64
		RB1#13	20.81	20.66	19.47
		RB1#24	20.85	20.78	19.52
		RB15#0	20.67	19.36	18.87
		RB15#10	20.29	19.17	18.65
		RB25#0	20.43	19.23	18.65

10MHz	QPSK	RB1#0	22.42	20.45	20.65
		RB1#25	22.41	20.54	20.78
		RB1#49	22.17	20.62	20.46
		RB25#0	21.61	19.60	19.83
		RB25#25	21.40	19.61	19.77
		RB50#0	19.44	19.62	19.90
	16QAM	RB1#0	19.67	19.74	19.80
		RB1#25	19.92	20.49	19.94
		RB1#49	19.60	19.98	19.48
		RB25#0	18.28	18.74	18.80
		RB25#25	18.27	18.48	18.58
		RB50#0	18.33	18.53	18.76
15MHz	QPSK	RB1#0	20.25	20.55	20.57
		RB1#38	20.33	20.51	20.67
		RB1#74	20.42	20.84	20.12
		RB36#0	19.41	19.65	19.87
		RB36#39	19.48	19.68	19.88
		RB75#0	19.54	19.63	19.61
	16QAM	RB1#0	19.89	20.15	19.48
		RB1#38	19.78	19.96	19.99
		RB1#74	19.65	20.53	19.53
		RB36#0	18.55	18.67	18.51
		RB36#39	18.42	18.63	18.69
		RB75#0	18.48	18.67	18.56
20MHz	QPSK	RB1#0	20.02	20.66	20.65
		RB1#50	20.56	21.18	21.04
		RB1#99	20.21	20.80	20.19
		RB50#0	19.50	19.58	19.81
		RB50#50	19.41	19.71	19.88
		RB100#0	19.50	19.53	19.58
	16QAM	RB1#0	19.82	19.34	20.20
		RB1#50	19.89	19.76	20.90
		RB1#99	20.05	19.64	19.88
		RB50#0	18.40	18.46	18.47
		RB50#50	18.32	18.56	18.68
		RB100#0	18.48	18.52	18.61

PAR:

Test Modulation		Channel Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.65	4.52	4.52	13.00
	100 RB		5.29	5.32	5.16	13.00
16QAM	1 RB	20 MHz	5.54	5.45	5.29	13.00
	100 RB		6.31	6.31	6.12	13.00

EIRP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
1.4MHz	QPSK	Low	22.81	0.5	0.4	22.91	33.00
		Middle	21.59	0.5	0.4	21.69	33.00
		High	20.88	0.5	0.4	20.98	33.00
	16QAM	Low	21.72	0.5	0.4	21.82	33.00
		Middle	20.73	0.5	0.4	20.83	33.00
		High	20.28	0.5	0.4	20.38	33.00
3MHz	QPSK	Low	22.59	0.5	0.4	22.69	33.00
		Middle	21.46	0.5	0.4	21.56	33.00
		High	20.78	0.5	0.4	20.88	33.00
	16QAM	Low	21.85	0.5	0.4	21.95	33.00
		Middle	20.97	0.5	0.4	21.07	33.00
		High	19.76	0.5	0.4	19.86	33.00
5MHz	QPSK	Low	22.56	0.5	0.4	22.66	33.00
		Middle	21.47	0.5	0.4	21.57	33.00
		High	20.81	0.5	0.4	20.91	33.00
	16QAM	Low	21.17	0.5	0.4	21.27	33.00
		Middle	20.78	0.5	0.4	20.88	33.00
		High	19.64	0.5	0.4	19.74	33.00
10MHz	QPSK	Low	22.42	0.5	0.4	22.52	33.00
		Middle	20.62	0.5	0.4	20.72	33.00
		High	20.78	0.5	0.4	20.88	33.00
	16QAM	Low	19.92	0.5	0.4	20.02	33.00
		Middle	20.49	0.5	0.4	20.59	33.00
		High	19.94	0.5	0.4	20.04	33.00
15MHz	QPSK	Low	20.42	0.5	0.4	20.52	33.00
		Middle	20.84	0.5	0.4	20.94	33.00
		High	20.67	0.5	0.4	20.77	33.00
	16QAM	Low	19.89	0.5	0.4	19.99	33.00
		Middle	20.53	0.5	0.4	20.63	33.00
		High	19.99	0.5	0.4	20.09	33.00
20MHz	QPSK	Low	20.56	0.5	0.4	20.66	33.00
		Middle	21.18	0.5	0.4	21.28	33.00
		High	21.04	0.5	0.4	21.14	33.00
	16QAM	Low	20.05	0.5	0.4	20.15	33.00
		Middle	19.76	0.5	0.4	19.86	33.00
		High	20.9	0.5	0.4	21	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	23.72	23.47	23.10
		RB1#3	23.80	23.62	23.01
		RB1#5	23.98	23.58	22.96
		RB3#0	24.06	23.53	23.07
		RB3#3	23.93	23.47	23.03
		RB6#0	22.82	22.46	22.12
	16QAM	RB1#0	22.95	22.45	22.22
		RB1#3	22.97	22.71	22.86
		RB1#5	22.95	22.70	22.41
		RB3#0	22.97	22.46	22.34
		RB3#3	23.22	22.39	22.27
		RB6#0	21.71	21.44	21.02
3MHz	QPSK	RB1#0	23.70	23.46	22.89
		RB1#8	23.78	23.50	22.93
		RB1#14	23.76	23.42	22.98
		RB6#0	22.97	22.35	21.99
		RB6#9	22.88	22.44	22.10
		RB15#0	22.95	22.49	22.02
	16QAM	RB1#0	22.97	22.82	22.10
		RB1#8	22.88	22.60	22.31
		RB1#14	23.02	22.60	22.32
		RB6#0	21.79	21.34	21.04
		RB6#9	21.68	21.52	21.11
		RB15#0	21.83	21.38	20.82
5MHz	QPSK	RB1#0	23.81	23.42	22.87
		RB1#13	23.80	23.43	23.09
		RB1#24	23.89	23.41	23.25
		RB15#0	22.88	22.53	22.17
		RB15#10	22.84	22.44	22.23
		RB25#0	22.86	22.36	22.28
	16QAM	RB1#0	22.98	21.94	22.52
		RB1#13	22.69	21.94	22.50
		RB1#24	22.55	21.93	22.54
		RB15#0	21.83	21.21	20.99
		RB15#10	21.79	21.45	20.95
		RB25#0	21.83	21.37	21.02
10MHz	QPSK	RB1#0	23.82	23.62	23.36
		RB1#25	23.99	23.41	23.29
		RB1#49	23.76	23.37	23.20
		RB25#0	23.00	22.49	22.29
		RB25#25	22.80	22.45	22.14
		RB50#0	22.89	22.45	22.21
	16QAM	RB1#0	22.88	23.04	22.83
		RB1#25	23.07	23.34	22.55
		RB1#49	22.27	22.52	22.83
		RB25#0	22.01	21.48	21.32
		RB25#25	21.75	21.37	21.26
		RB50#0	21.74	21.33	21.22

15MHz	QPSK	RB1#0	23.73	23.61	23.32
		RB1#38	23.80	23.43	23.22
		RB1#74	23.46	23.37	23.07
		RB36#0	22.93	22.59	22.37
		RB36#39	22.77	22.43	22.14
		RB75#0	22.82	22.50	22.33
	16QAM	RB1#0	22.98	23.02	23.21
		RB1#38	23.03	22.60	23.28
		RB1#74	22.48	22.74	22.79
		RB36#0	21.78	21.44	21.40
		RB36#39	21.71	21.30	21.32
		RB75#0	21.82	21.33	21.23
20MHz	QPSK	RB1#0	23.80	23.95	20.79
		RB1#50	23.88	24.09	21.17
		RB1#99	23.50	23.64	20.85
		RB50#0	22.99	22.56	20.18
		RB50#50	22.90	22.51	20.10
		RB100#0	22.90	22.58	20.22
	16QAM	RB1#0	23.46	22.62	20.73
		RB1#50	23.69	22.63	21.11
		RB1#99	23.30	20.14	21.22
		RB50#0	22.06	18.48	18.93
		RB50#50	21.78	18.81	19.02
		RB100#0	21.76	18.60	19.03

PAR:

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.04	4.81	4.49	13
	100 RB		5.22	5.26	5.35	13
16QAM	1 RB	20 MHz	4.81	5.80	5.48	13
	100 RB		6.15	6.31	6.28	13

EIRP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
1.4MHz	QPSK	Low	24.06	0.5	0.4	24.16	30.00
		Middle	23.62	0.5	0.4	23.72	30.00
		High	23.1	0.5	0.4	23.2	30.00
	16QAM	Low	23.22	0.5	0.4	23.32	30.00
		Middle	22.71	0.5	0.4	22.81	30.00
		High	22.86	0.5	0.4	22.96	30.00
3MHz	QPSK	Low	23.78	0.5	0.4	23.88	30.00
		Middle	23.5	0.5	0.4	23.6	30.00
		High	22.98	0.5	0.4	23.08	30.00
	16QAM	Low	23.02	0.5	0.4	23.12	30.00
		Middle	22.82	0.5	0.4	22.92	30.00
		High	22.32	0.5	0.4	22.42	30.00
5MHz	QPSK	Low	23.89	0.5	0.4	23.99	30.00
		Middle	23.43	0.5	0.4	23.53	30.00
		High	23.25	0.5	0.4	23.35	30.00
	16QAM	Low	22.98	0.5	0.4	23.08	30.00
		Middle	21.94	0.5	0.4	22.04	30.00
		High	22.54	0.5	0.4	22.64	30.00
10MHz	QPSK	Low	23.99	0.5	0.4	24.09	30.00
		Middle	23.62	0.5	0.4	23.72	30.00
		High	23.36	0.5	0.4	23.46	30.00
	16QAM	Low	23.07	0.5	0.4	23.17	30.00
		Middle	23.34	0.5	0.4	23.44	30.00
		High	22.83	0.5	0.4	22.93	30.00
15MHz	QPSK	Low	23.8	0.5	0.4	23.9	30.00
		Middle	23.61	0.5	0.4	23.71	30.00
		High	23.32	0.5	0.4	23.42	30.00
	16QAM	Low	23.03	0.5	0.4	23.13	30.00
		Middle	23.02	0.5	0.4	23.12	30.00
		High	23.28	0.5	0.4	23.38	30.00
20MHz	QPSK	Low	23.88	0.5	0.4	23.98	30.00
		Middle	24.09	0.5	0.4	24.19	30.00
		High	21.17	0.5	0.4	21.27	30.00
	16QAM	Low	23.69	0.5	0.4	23.79	30.00
		Middle	22.63	0.5	0.4	22.73	30.00
		High	21.22	0.5	0.4	21.32	30.00

LTE Band 12

Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.27	23.12	21.97
		RB1#3	22.46	23.05	21.87
		RB1#5	22.78	23.07	21.68
		RB3#0	22.37	21.93	21.95
		RB3#3	22.63	22.01	21.92
		RB6#0	21.66	21.01	20.91
	16QAM	RB1#0	21.55	21.01	21.55
		RB1#3	21.71	21.21	21.80
		RB1#5	21.63	21.07	21.69
		RB3#0	21.82	20.83	21.26
		RB3#3	22.01	20.99	21.24
		RB6#0	20.52	19.90	19.92
3MHz	QPSK	RB1#0	21.28	21.58	21.58
		RB1#8	21.50	21.43	21.48
		RB1#14	21.56	21.35	21.56
		RB6#0	20.55	20.57	20.77
		RB6#9	20.49	20.60	20.74
		RB15#0	20.72	20.58	20.78
	16QAM	RB1#0	20.42	20.95	20.64
		RB1#8	20.45	21.42	20.64
		RB1#14	20.46	20.97	20.66
		RB6#0	19.21	19.55	19.80
		RB6#9	19.41	19.57	19.75
		RB15#0	19.21	19.43	20.03
5MHz	QPSK	RB1#0	21.50	21.38	21.91
		RB1#13	21.24	21.70	21.75
		RB1#24	21.32	21.54	21.74
		RB15#0	20.40	20.54	21.03
		RB15#10	20.28	20.61	20.88
		RB25#0	20.33	20.80	20.94
	16QAM	RB1#0	19.75	20.97	20.78
		RB1#13	19.79	21.01	20.79
		RB1#24	19.85	20.94	20.67
		RB15#0	19.19	19.57	19.87
		RB15#10	19.43	19.79	19.80
		RB25#0	19.42	19.66	19.86
10MHz	QPSK	RB1#0	21.41	21.57	21.70
		RB1#25	21.92	21.95	22.21
		RB1#49	21.91	21.80	21.85
		RB25#0	20.58	20.76	21.01
		RB25#25	20.90	20.89	20.95
		RB50#0	20.76	20.84	21.09
	16QAM	RB1#0	20.88	21.23	20.82
		RB1#25	21.14	21.37	21.04
		RB1#49	21.32	21.56	20.67
		RB25#0	19.66	19.76	20.14
		RB25#25	19.76	19.76	20.27
		RB50#0	19.56	19.78	20.04

PAR, Band 12

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	3.62	4.94	4.58	13
	50 RB		5.35	5.45	5.42	13
16QAM	1 RB	10 MHz	4.39	5.87	5.58	13
	50 RB		6.38	6.41	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	22.78	-2.45	0.2	20.13	34.77
		Middle	23.12	-2.45	0.2	20.47	34.77
		High	21.97	-2.45	0.2	19.32	34.77
	16QAM	Low	22.01	-2.45	0.2	19.36	34.77
		Middle	21.21	-2.45	0.2	18.56	34.77
		High	21.8	-2.45	0.2	19.15	34.77
3MHz	QPSK	Low	21.56	-2.45	0.2	18.91	34.77
		Middle	21.58	-2.45	0.2	18.93	34.77
		High	21.58	-2.45	0.2	18.93	34.77
	16QAM	Low	20.46	-2.45	0.2	17.81	34.77
		Middle	21.42	-2.45	0.2	18.77	34.77
		High	20.66	-2.45	0.2	18.01	34.77
5MHz	QPSK	Low	21.5	-2.45	0.2	18.85	34.77
		Middle	21.7	-2.45	0.2	19.05	34.77
		High	21.91	-2.45	0.2	19.26	34.77
	16QAM	Low	19.85	-2.45	0.2	17.2	34.77
		Middle	21.01	-2.45	0.2	18.36	34.77
		High	20.79	-2.45	0.2	18.14	34.77
10MHz	QPSK	Low	21.92	-2.45	0.2	19.27	34.77
		Middle	21.95	-2.45	0.2	19.3	34.77
		High	22.21	-2.45	0.2	19.56	34.77
	16QAM	Low	21.32	-2.45	0.2	18.67	34.77
		Middle	21.56	-2.45	0.2	18.91	34.77
		High	21.04	-2.45	0.2	18.39	34.77

LTE Band 17**Conducted Output Power:**

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	RB1#0	21.68	21.71	22.00
		RB1#13	21.88	21.97	21.98
		RB1#24	21.89	21.80	21.72
		RB15#0	20.94	20.90	21.01
		RB15#10	21.06	20.95	21.01
		RB25#0	20.86	20.92	21.04
	16QAM	RB1#0	20.25	21.21	21.08
		RB1#13	20.21	21.52	20.81
		RB1#24	20.24	21.35	20.79
		RB15#0	19.80	19.71	20.00
		RB15#10	19.87	19.78	19.93
		RB25#0	20.00	19.66	20.10
10 MHz	QPSK	RB1#0	21.96	21.64	21.87
		RB1#25	22.30	22.10	22.18
		RB1#49	22.41	21.78	21.82
		RB25#0	21.11	20.96	20.97
		RB25#25	21.15	20.96	20.94
		RB50#0	21.07	20.86	20.92
	16QAM	RB1#0	21.16	20.98	20.80
		RB1#25	21.86	21.76	21.02
		RB1#49	21.34	21.39	20.91
		RB25#0	19.97	19.92	20.03
		RB25#25	20.01	20.04	20.23
		RB50#0	19.77	19.78	19.78

PAR:

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	4.94	4.84	4.55	13
	50 RB		5.51	5.42	5.38	13
16QAM	1 RB	10 MHz	5.96	5.90	5.64	13
	50 RB		6.44	6.38	6.41	13

ERP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
5MHz	QPSK	Low	21.89	-2.45	0.2	19.24	34.77
		Middle	21.97	-2.45	0.2	19.32	34.77
		High	22	-2.45	0.2	19.35	34.77
	16QAM	Low	20.25	-2.45	0.2	17.6	34.77
		Middle	21.52	-2.45	0.2	18.87	34.77
		High	21.08	-2.45	0.2	18.43	34.77
10MHz	QPSK	Low	22.41	-2.45	0.2	19.76	34.77
		Middle	22.1	-2.45	0.2	19.45	34.77
		High	22.18	-2.45	0.2	19.53	34.77
	16QAM	Low	21.86	-2.45	0.2	19.21	34.77
		Middle	21.76	-2.45	0.2	19.11	34.77
		High	21.02	-2.45	0.2	18.37	34.77

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

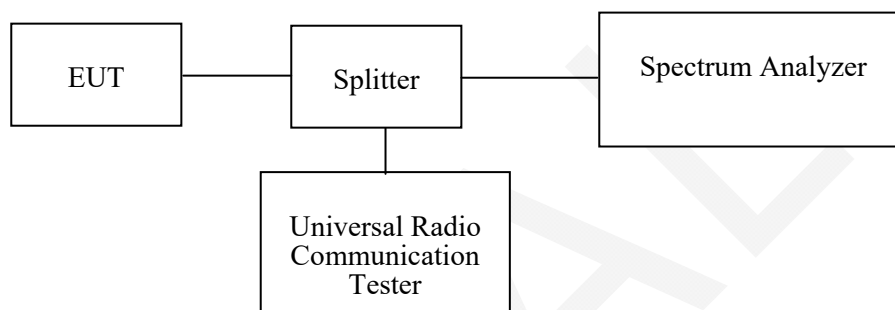
FCC §2.1049, §22.917, §22.905 & §24.238 & §27.53- OCCUPIED BANDWIDTH**Applicable Standard**

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
R&S	Spectrum Analyzer	FSU 26	200256	2020-01-04	2021-01-04
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	N/A

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

Test Data**Environmental Conditions**

Temperature:	26 ~26.9°C
Relative Humidity:	52~58%
ATM Pressure:	100.8~101.6kPa
Tester:	Taylor Li
Test Date:	2020-10-10~2020-12-16

Test Mode: Transmitting

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

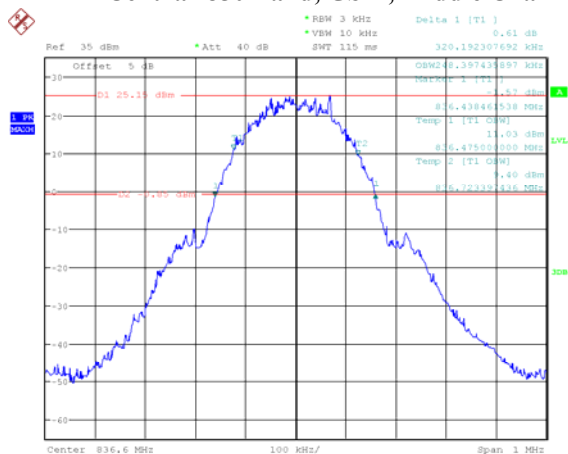
Band	Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
		Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
GSM 850	GSM	0.245	0.248	0.247	0.319	0.320	0.317
	EDGE	0.252	0.25	0.253	0.313	0.327	0.321
PCS 1900	GSM	0.244	0.244	0.244	0.319	0.325	0.33
	EDGE	0.248	0.255	0.253	0.33	0.320	0.323
WCDMA Band V	Rel 99	4.183	4.183	4.151	4.747	4.744	4.744
	HSDPA	4.215	4.167	4.167	4.792	4.750	4.708
	HSUPA	4.183	4.183	4.183	4.758	4.760	4.728

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	1.098	1.104	1.296	1.302	1.314
		16QAM	1.104	1.104	1.098	1.308	1.320	1.302
	3 MHz	QPSK	2.700	2.712	2.700	2.928	2.940	2.952
		16QAM	2.688	2.700	2.700	2.952	2.952	2.952
	5 MHz	QPSK	4.520	4.520	4.520	5.040	5.040	4.960
		16QAM	4.520	4.540	4.520	4.980	5.060	5.020
	10 MHz	QPSK	8.960	8.960	8.920	9.720	9.720	9.600
		16QAM	8.960	8.960	8.920	9.640	9.560	9.720
	15 MHz	QPSK	13.500	13.440	13.380	14.820	14.760	14.760
		16QAM	13.500	13.500	13.440	14.820	14.880	14.700
	20 MHz	QPSK	17.920	17.840	17.840	19.440	19.360	19.280
		16QAM	17.920	17.840	17.840	19.280	19.600	19.280
LTE Band 4	1.4 MHz	QPSK	1.104	1.098	1.104	1.308	1.302	1.314
		16QAM	1.104	1.104	1.098	1.302	1.314	1.308
	3 MHz	QPSK	2.700	2.700	2.700	2.964	2.916	2.952
		16QAM	2.688	2.688	2.700	2.952	2.964	2.952
	5 MHz	QPSK	4.520	4.520	4.520	5.000	5.040	5.060
		16QAM	4.520	4.520	4.540	5.020	4.980	5.020
	10 MHz	QPSK	8.960	8.920	8.960	9.720	9.680	9.680
		16QAM	8.960	8.960	8.960	9.640	9.680	9.720
	15 MHz	QPSK	13.500	13.500	13.440	14.820	14.820	14.700
		16QAM	13.500	13.560	13.500	14.820	14.760	14.760
	20 MHz	QPSK	17.920	17.920	17.840	19.200	19.440	19.440
		16QAM	18.000	17.920	17.920	19.520	19.520	19.520

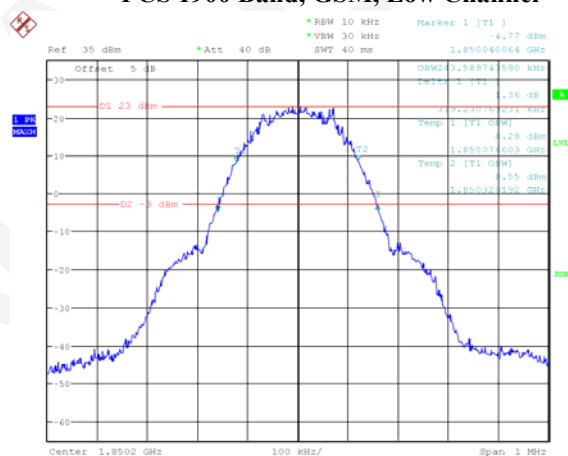
Band	Bandwidth (MHz)	Modulation mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
			Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
LTE Band 12	1.4 MHz	QPSK	1.104	1.098	1.110	1.320	1.314	1.284
		16QAM	1.104	1.104	1.098	1.308	1.296	1.314
	3 MHz	QPSK	2.700	2.688	2.688	2.928	2.952	2.964
		16QAM	2.688	2.688	2.688	2.964	2.964	2.964
	5 MHz	QPSK	4.520	4.520	4.520	5.040	5.000	5.000
		16QAM	4.520	4.520	4.520	4.960	5.080	5.020
	10 MHz	QPSK	8.960	8.960	8.960	9.760	9.640	9.640
		16QAM	8.960	8.960	8.960	9.680	9.720	9.640
LTE Band 17	5 MHz	QPSK	4.540	4.500	4.520	5.000	4.980	5.000
		16QAM	4.500	4.540	4.520	5.000	5.040	5.040
	10 MHz	QPSK	8.960	8.920	8.960	9.680	9.680	9.640
		16QAM	8.960	8.960	8.920	9.680	9.680	9.640

Cellular 850 Band, GSM, Middle Channel



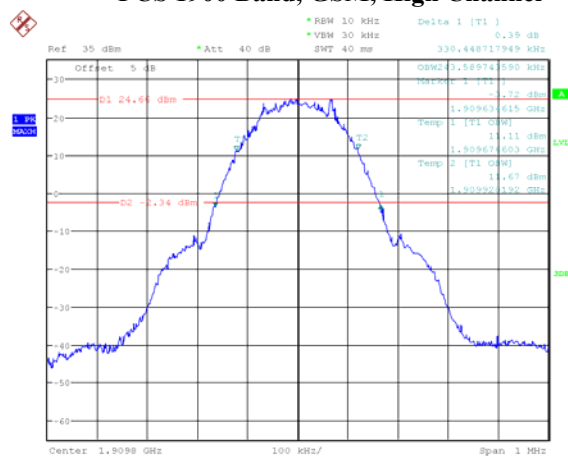
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PCS 1900 Band, GSM, Low Channel



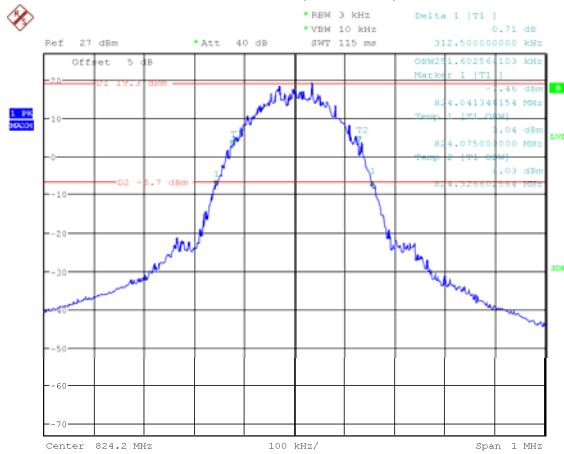
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PCS 1900 Band, GSM, High Channel



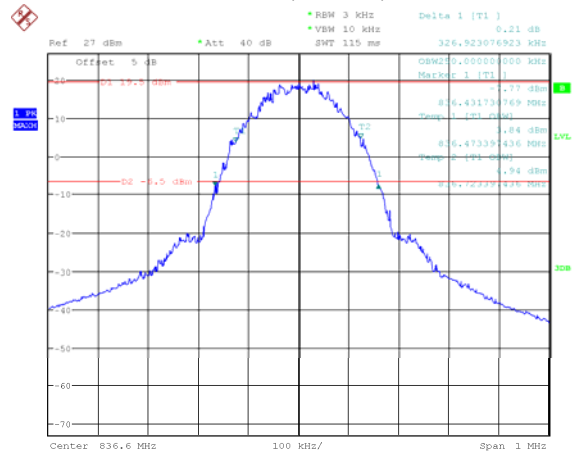
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Cellular 850 Band, EDGE, Low Channel



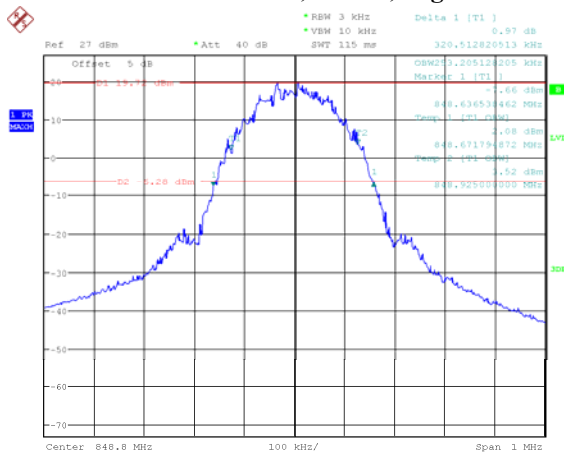
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Cellular 850 Band, EDGE, Middle Channel



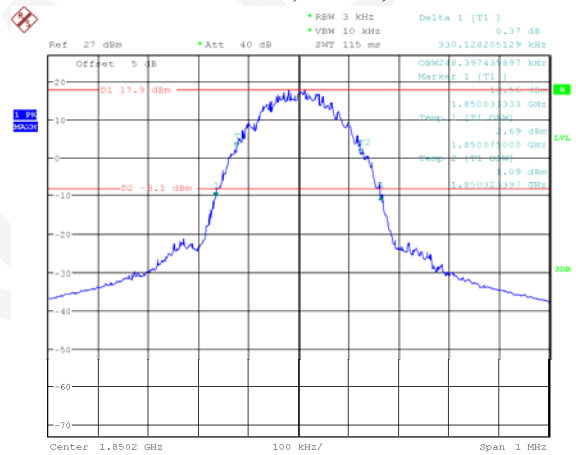
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Cellular 850 Band, EDGE, High Channel



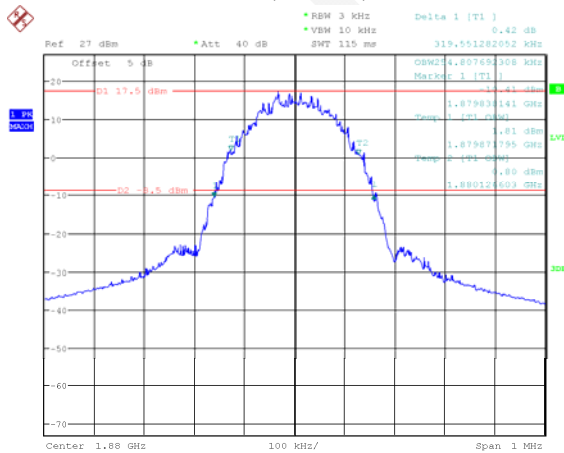
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PCS 1900 Band, EDGE, Low Channel



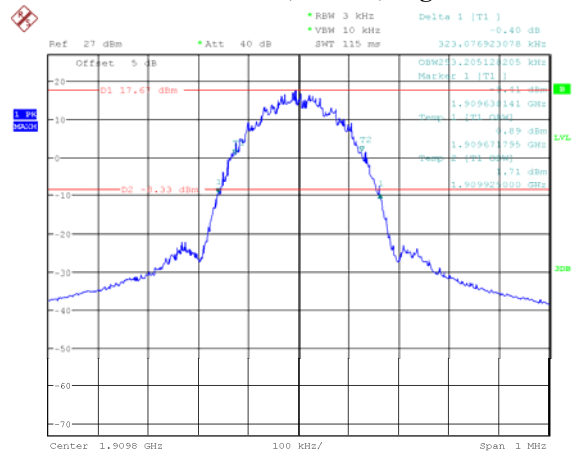
Date: 11.NOV.2020 18:37:47

PCS 1900 Band, EDGE, Middle Channel



Date: 11.NOV.2020 18:41:20

PCS 1900 Band, EDGE, High Channel



Date: 11.NOV.2020 18:43:35

Date: 12.OCT.2020 11:44:41

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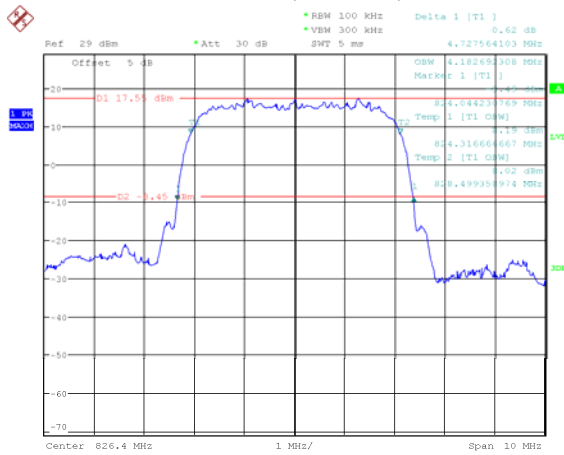
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Date: 12.OCT.2020 13:49:46

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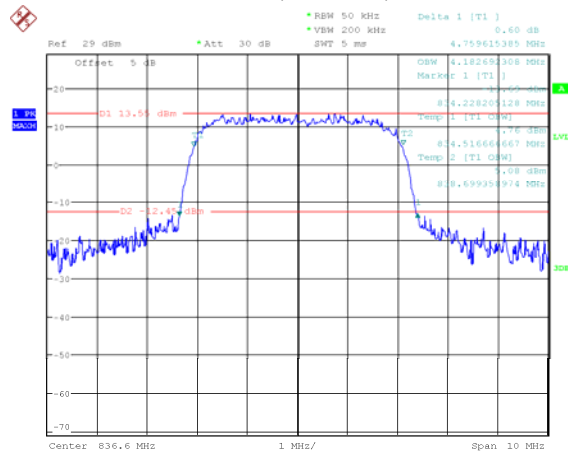
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WCDMA Band V, HSUPA, Low Channel



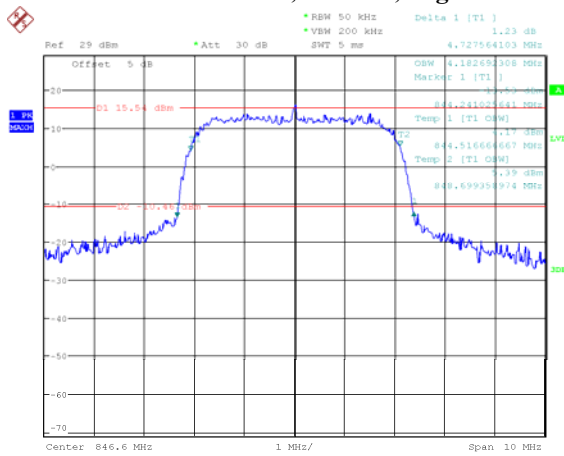
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WCDMA Band V, HSUPA, Middle Channel



Date: 12.OCT.2020 15:25:25

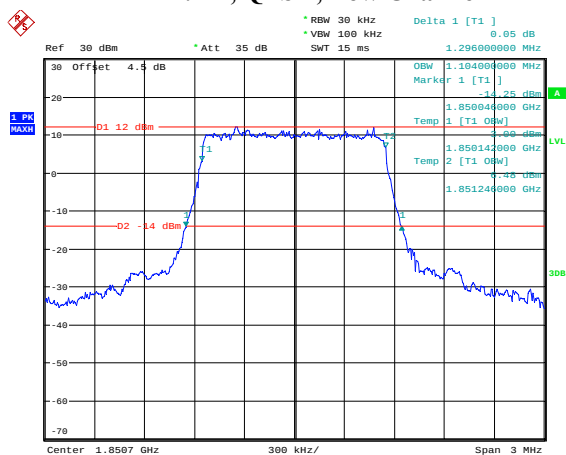
WCDMA Band V, HSUPA, High Channel



Date: 12.OCT.2020 15:37:32

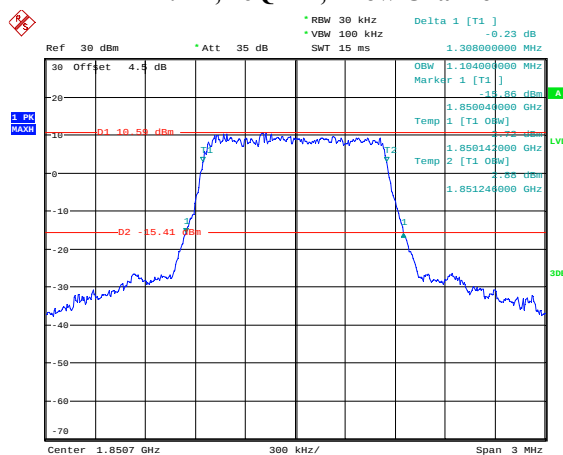
LTE Band 2

1.4M, QPSK, Low Channel



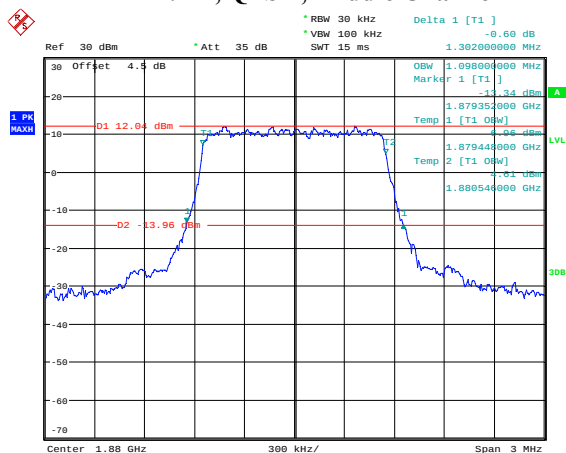
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1.4M, 16QAM, Low Channel



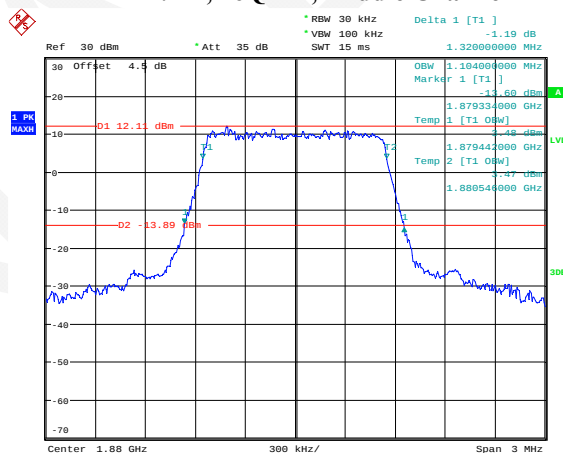
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1.4M, QPSK, Middle Channel



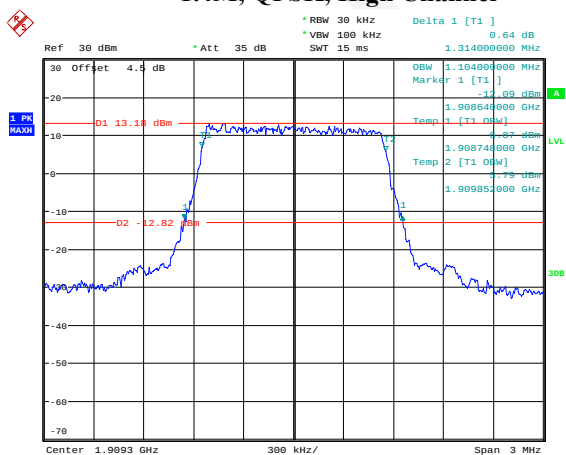
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1.4M, 16QAM, Middle Channel



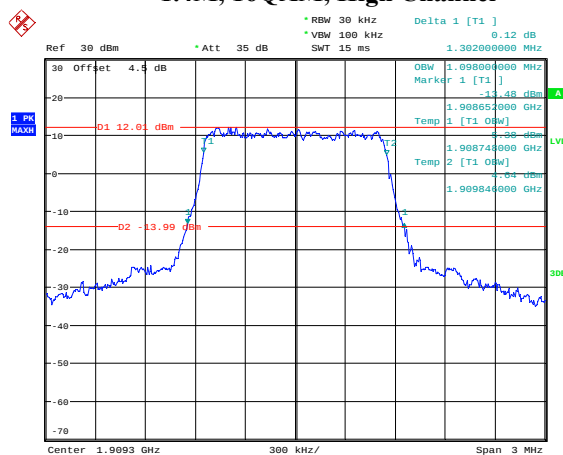
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1.4M, QPSK, High Channel



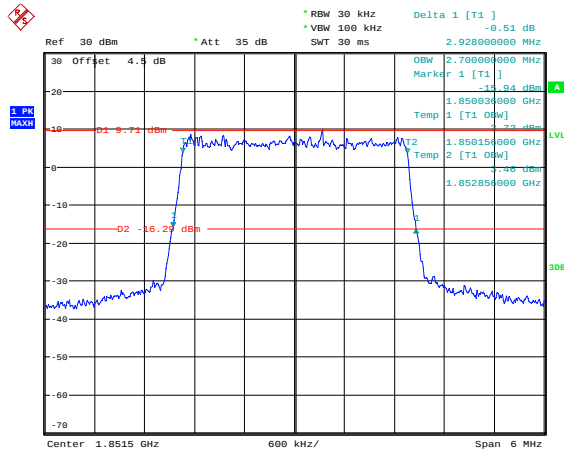
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1.4M, 16QAM, High Channel



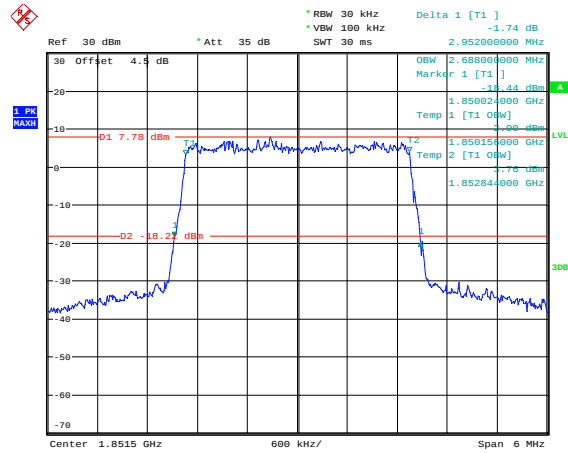
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3M, QPSK, Low Channel



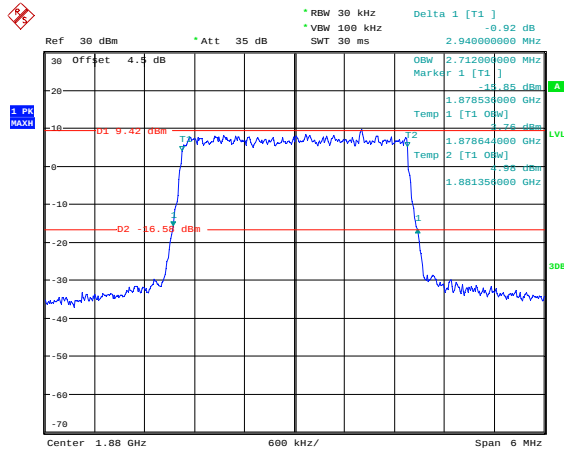
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3M, 16QAM, Low Channel



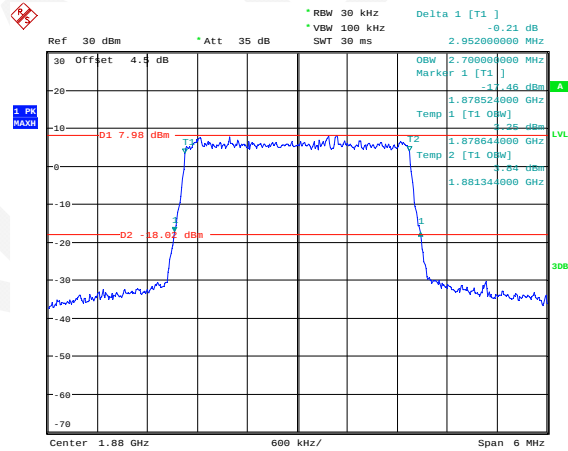
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3M, QPSK, Middle Channel



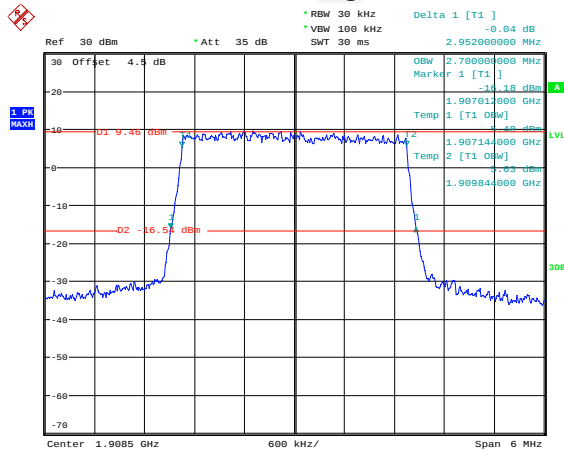
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3M, 16QAM, Middle Channel



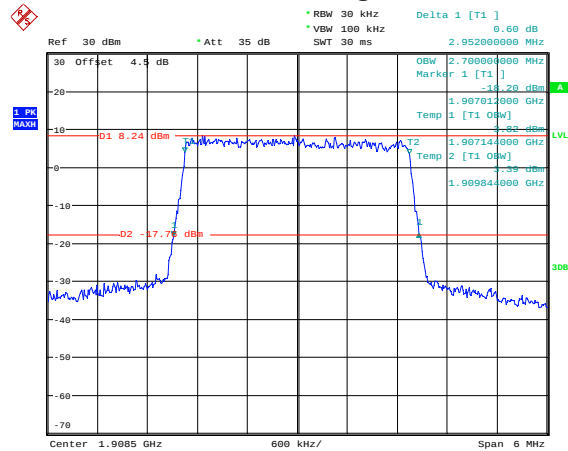
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3M, QPSK, High Channel



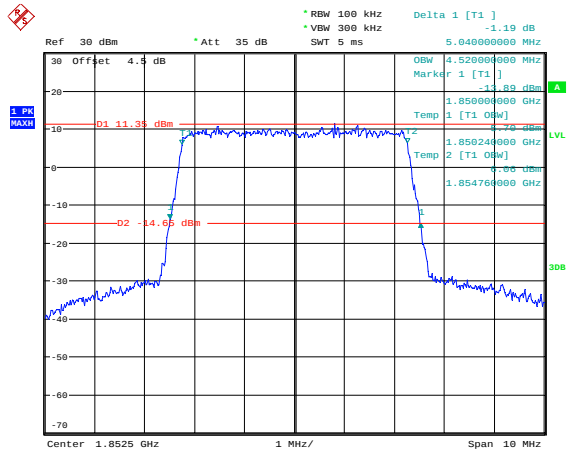
Date: 16.DEC.2020 00:29:33

3M, 16QAM, High Channel



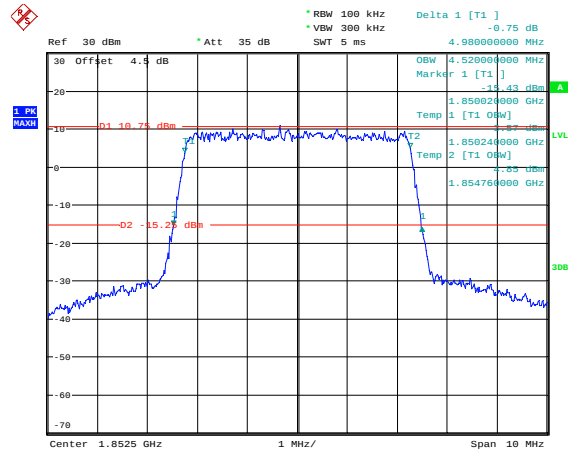
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5M, QPSK, Low Channel



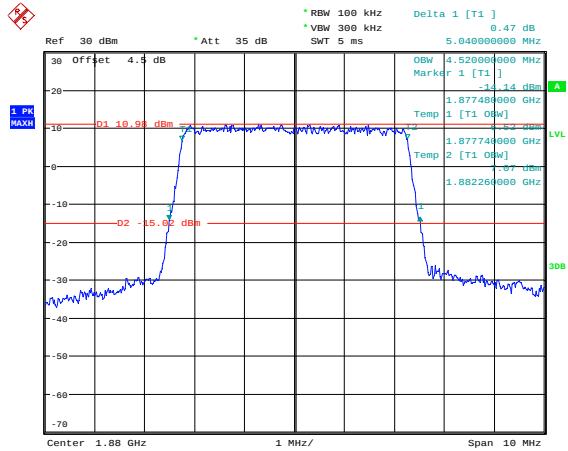
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5M, 16QAM, Low Channel



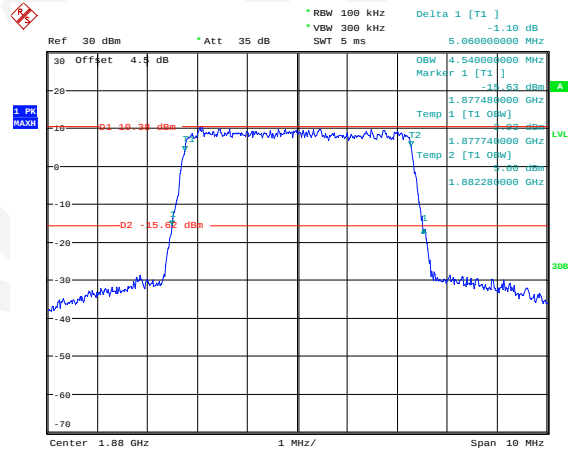
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5M, QPSK, Middle Channel



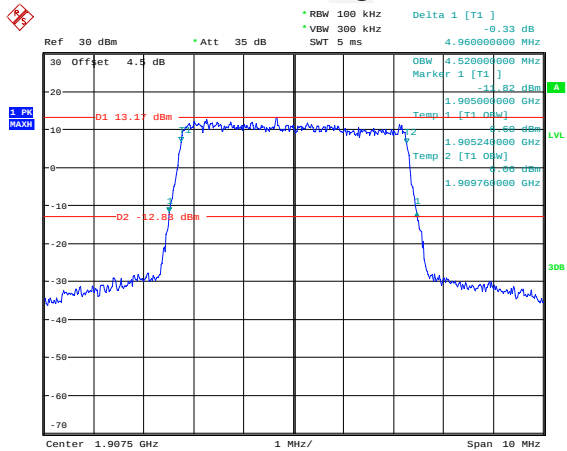
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5M, 16QAM, Middle Channel



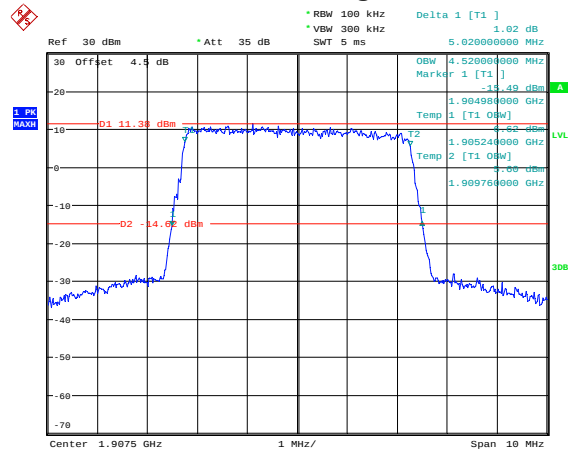
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5M, QPSK, High Channel



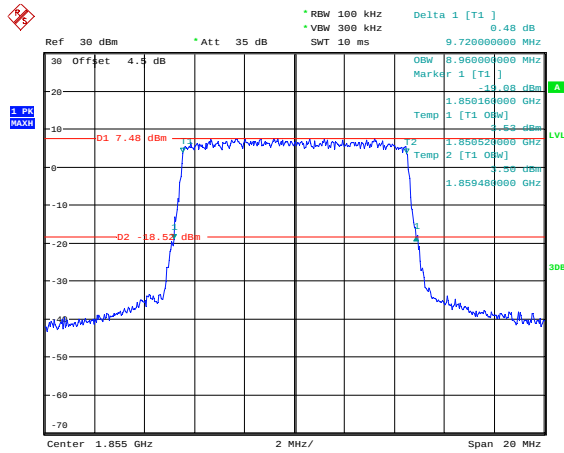
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5M, 16QAM, High Channel



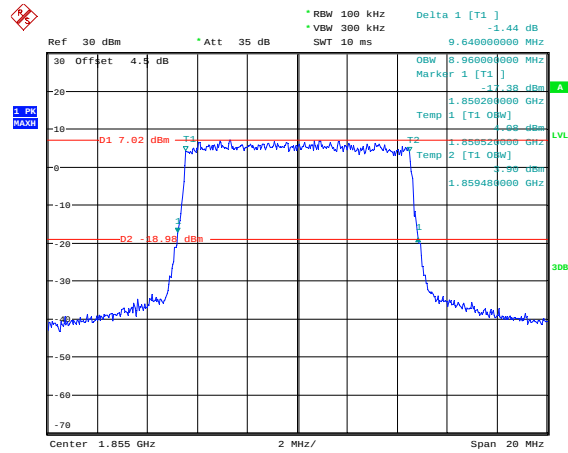
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10M, QPSK, Low Channel



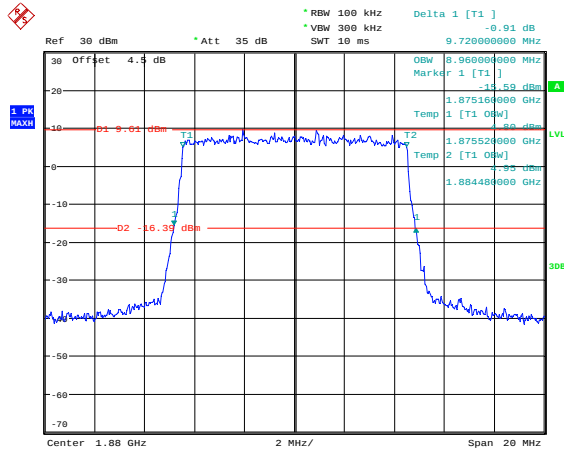
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10M, 16QAM, Low Channel



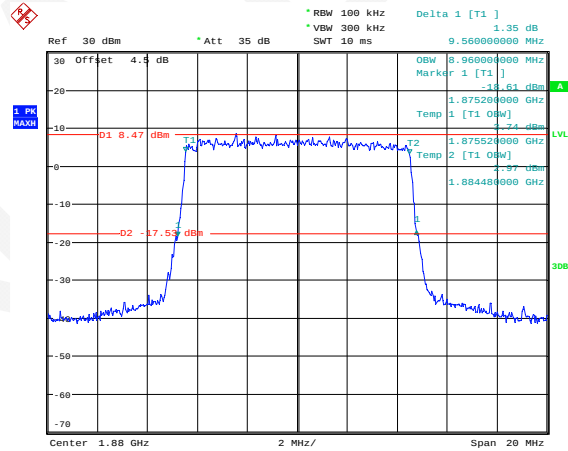
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10M, QPSK, Middle Channel



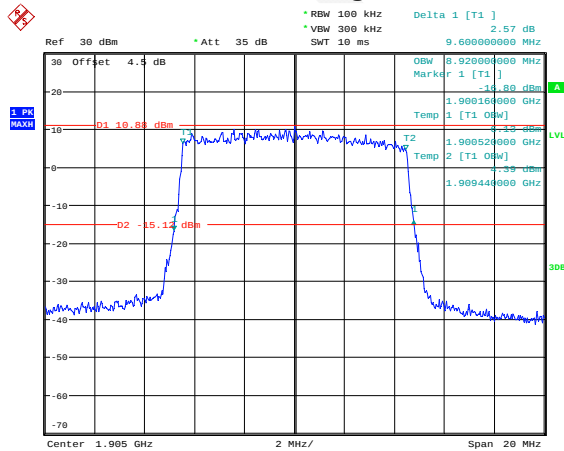
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10M, 16QAM, Middle Channel



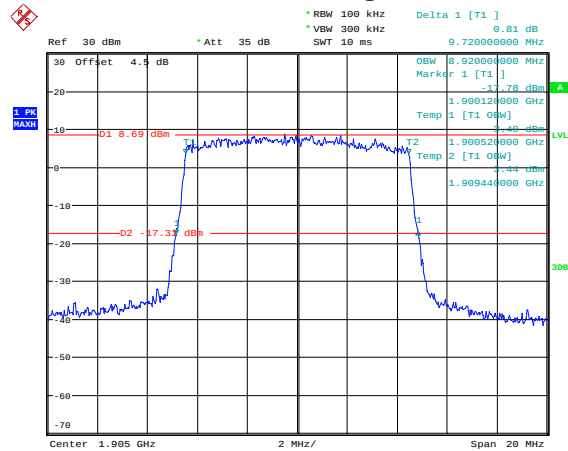
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10M, QPSK, High Channel



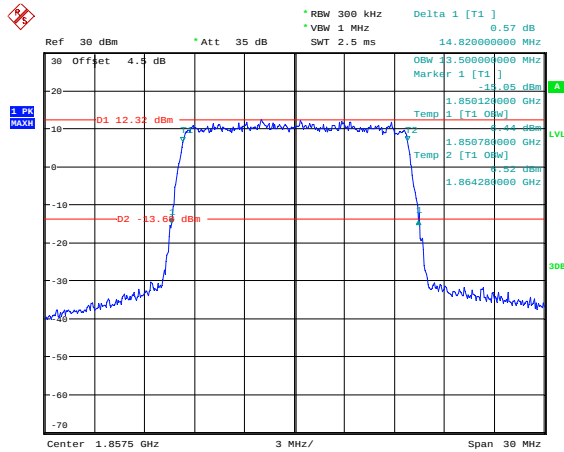
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10M, 16QAM, High Channel



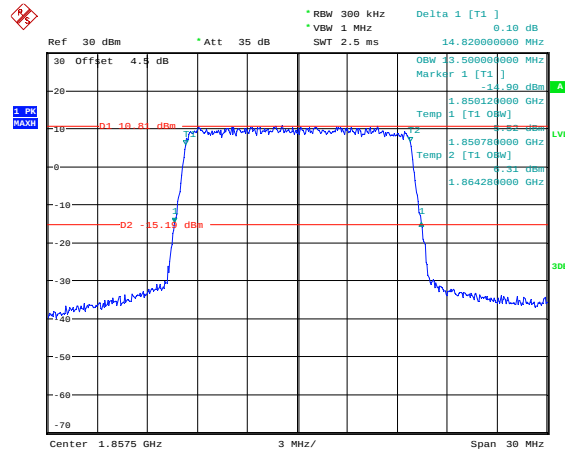
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15M, QPSK, Low Channel



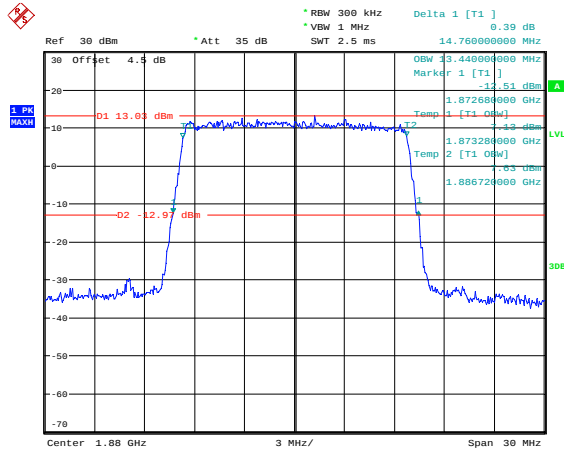
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15M, 16QAM, Low Channel



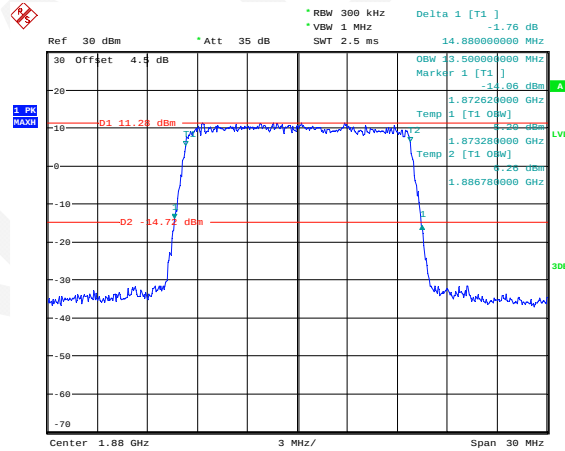
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15M, QPSK, Middle Channel



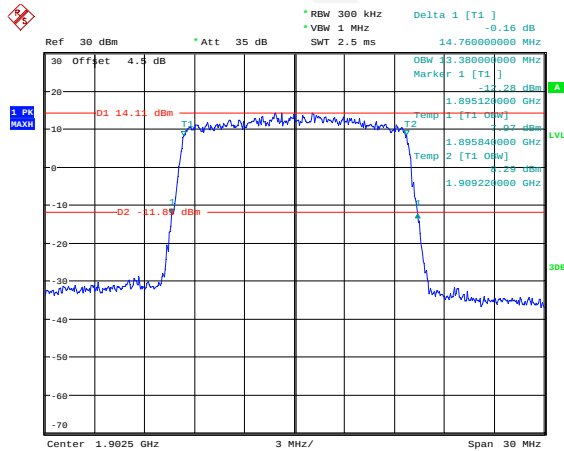
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15M, 16QAM, Middle Channel



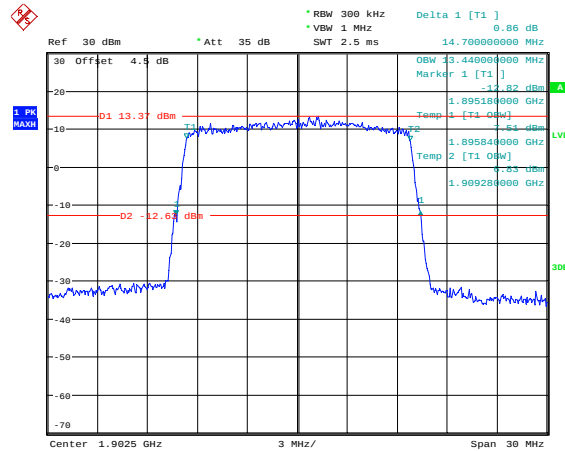
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15M, QPSK, High Channel



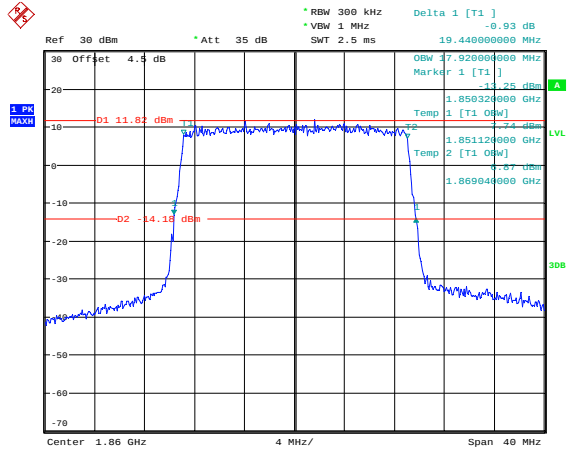
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15M, 16QAM, High Channel



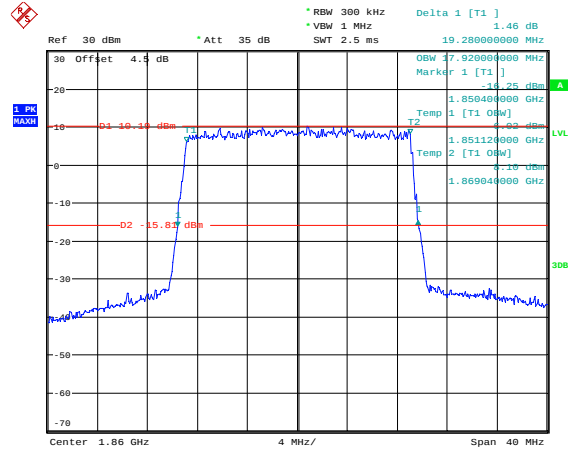
Date: 16.DEC.2020 00:37:35

20M, QPSK, Low Channel



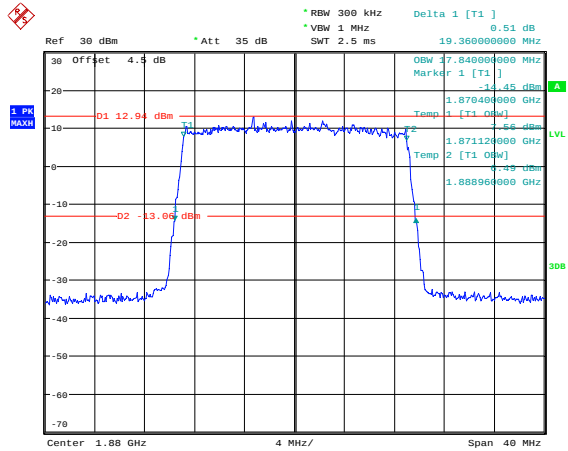
Date: 16.DEC.2020 00:38:14

20M, 16QAM, Low Channel



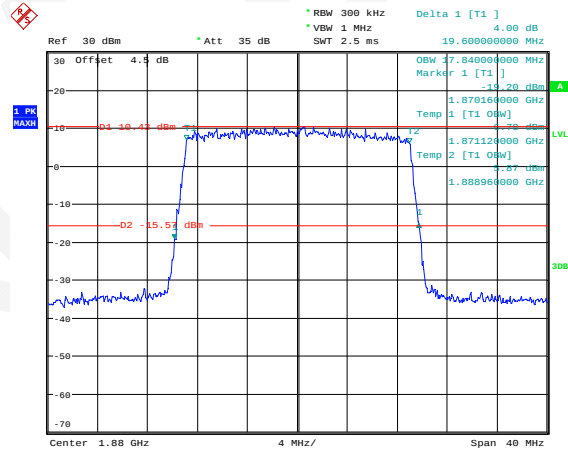
Date: 16.DEC.2020 00:38:39

20M, QPSK, Middle Channel



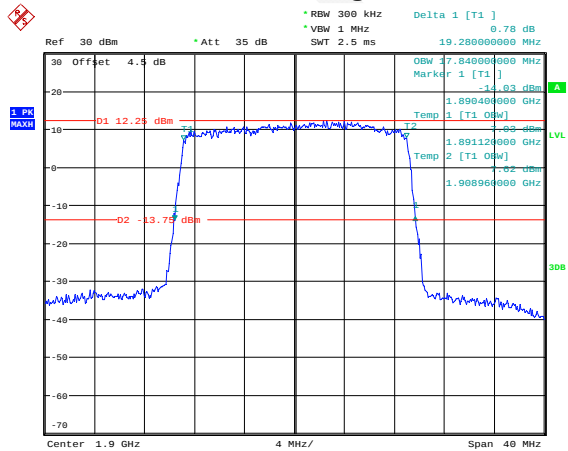
Date: 16.DEC.2020 00:39:06

20M, 16QAM, Middle Channel



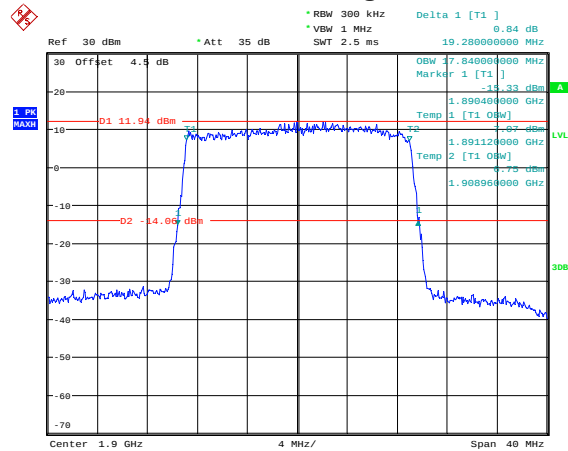
Date: 16.DEC.2020 00:39:28

20M, QPSK, High Channel



Date: 16.DEC.2020 00:39:59

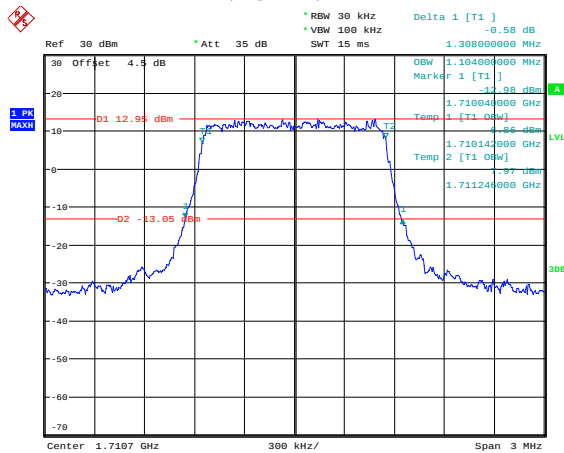
20M, 16QAM, High Channel



Date: 16.DEC.2020 00:40:16

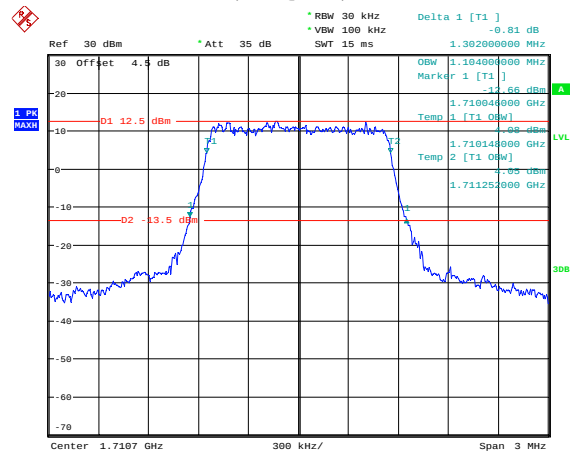
LTE Band 4:

1.4M, QPSK, Low Channel



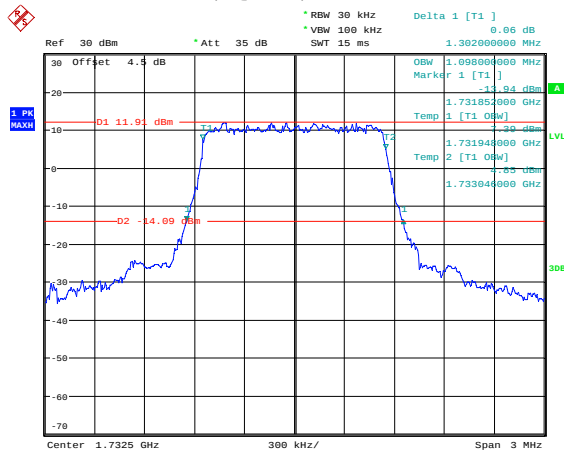
Date: 16.DEC.2020 00:41:06

1.4M, 16QAM, Low Channel



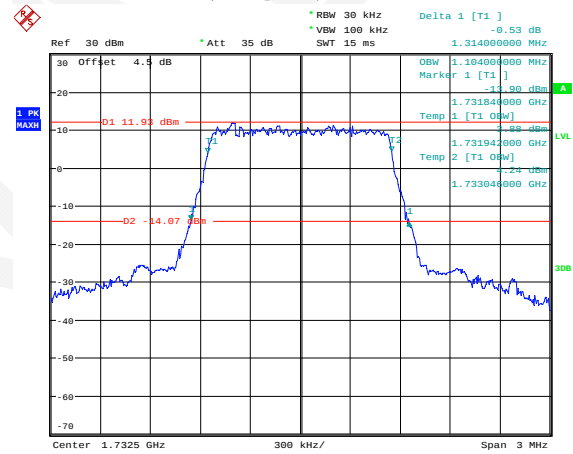
Date: 16.DEC.2020 00:41:32

1.4M, QPSK, Middle Channel



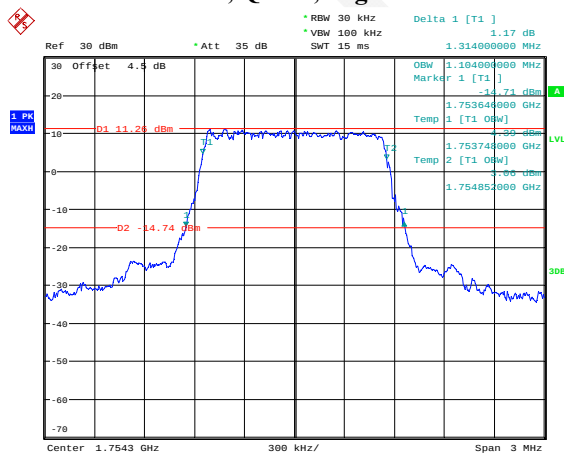
Date: 16.DEC.2020 00:41:51

1.4M, 16QAM, Middle Channel



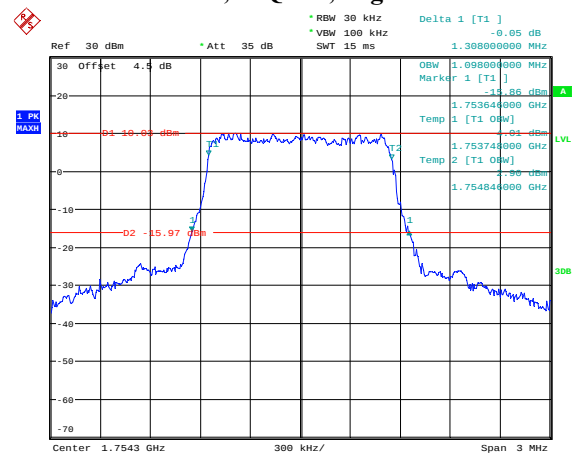
Date: 16.DEC.2020 00:42:14

1.4M, QPSK, High Channel



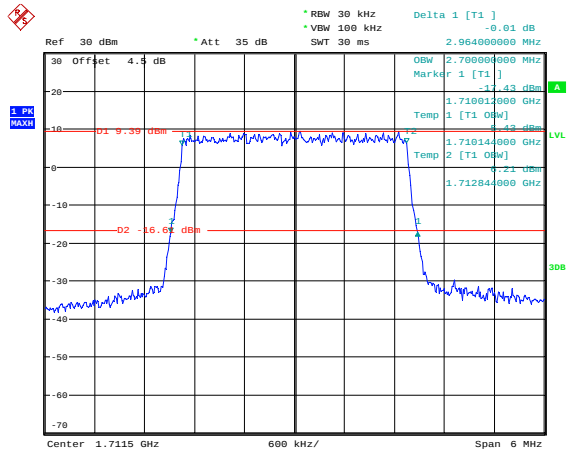
Date: 16.DEC.2020 00:42:37

1.4M, 16QAM, High Channel



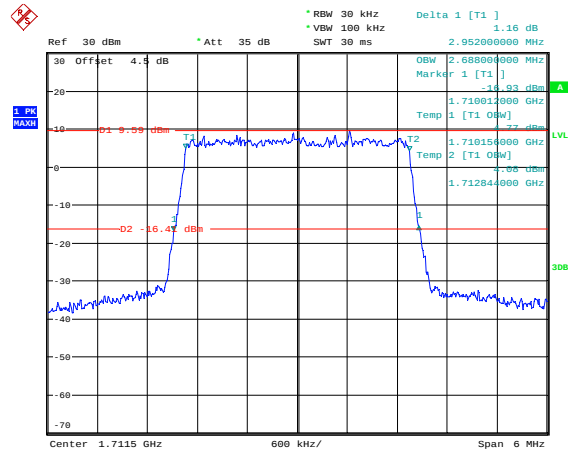
Date: 16.DEC.2020 00:42:55

3M, QPSK, Low Channel



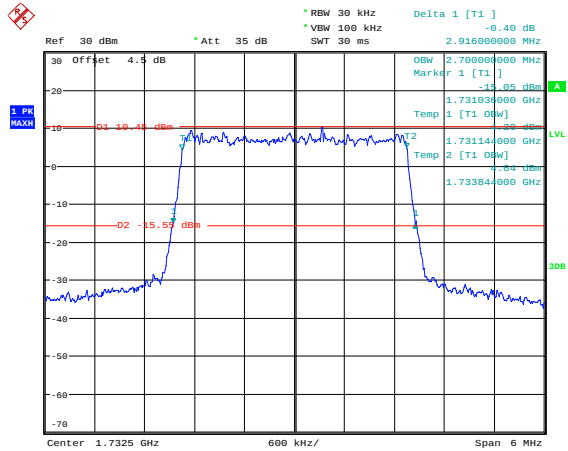
Date: 16.DEC.2020 00:43:55

3M, 16QAM, Low Channel



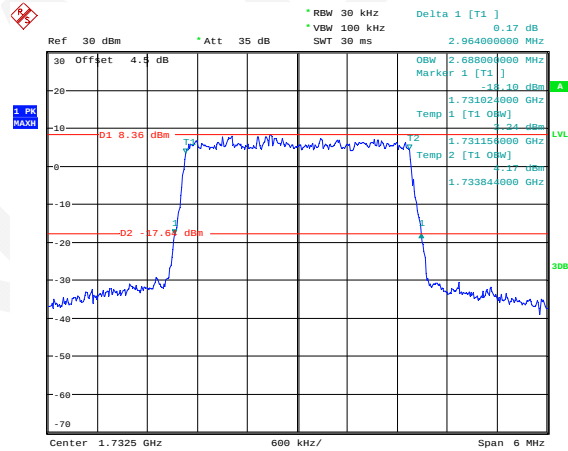
Date: 16.DEC.2020 00:44:17

3M, QPSK, Middle Channel



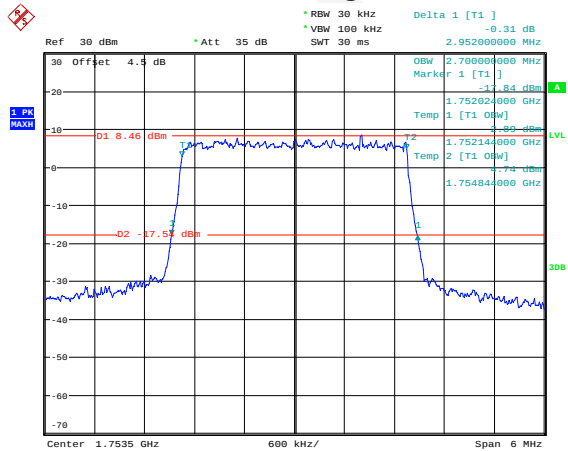
Date: 16.DEC.2020 00:44:40

3M, 16QAM, Middle Channel



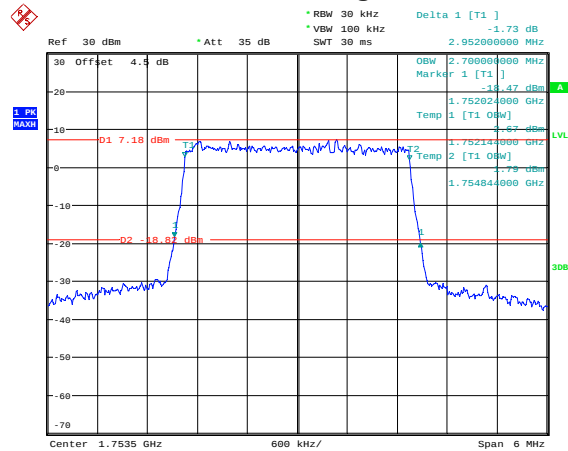
Date: 16.DEC.2020 00:44:59

3M, QPSK, High Channel



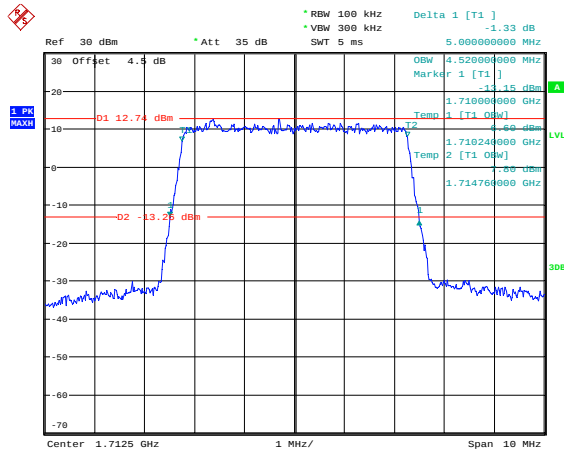
Date: 16.DEC.2020 00:45:22

3M, 16QAM, High Channel



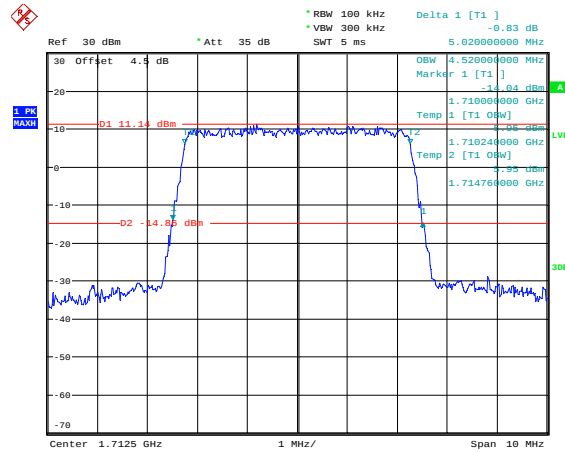
Date: 16.DEC.2020 00:45:44

5M, QPSK, Low Channel



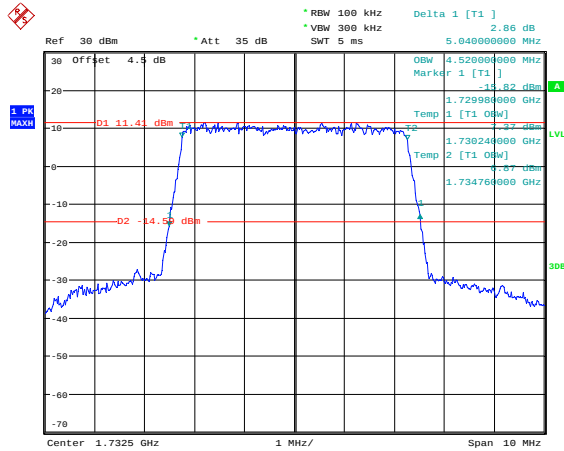
Date: 16.DEC.2020 00:46:32

5M, 16QAM, Low Channel



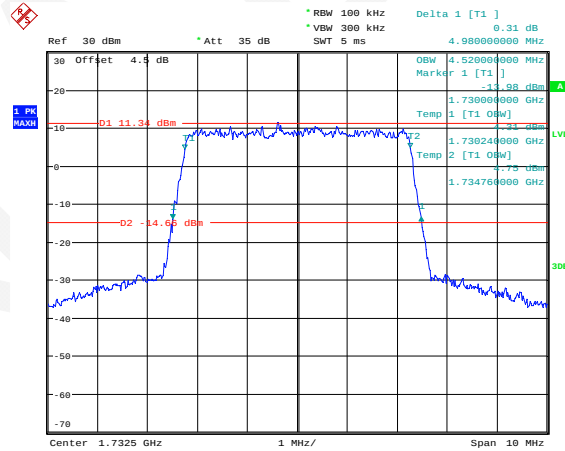
Date: 16.DEC.2020 00:46:54

5M, QPSK, Middle Channel



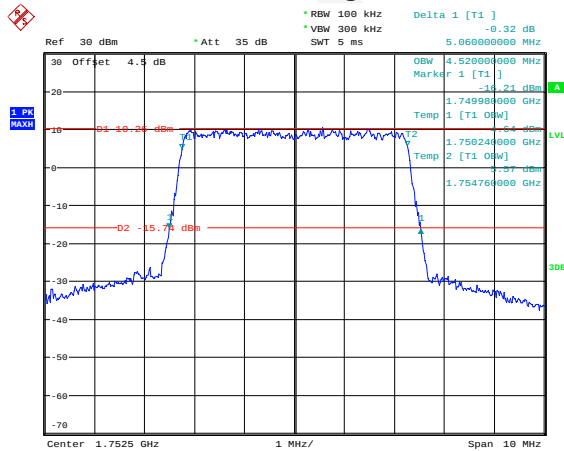
Date: 16.DEC.2020 00:47:17

5M, 16QAM, Middle Channel



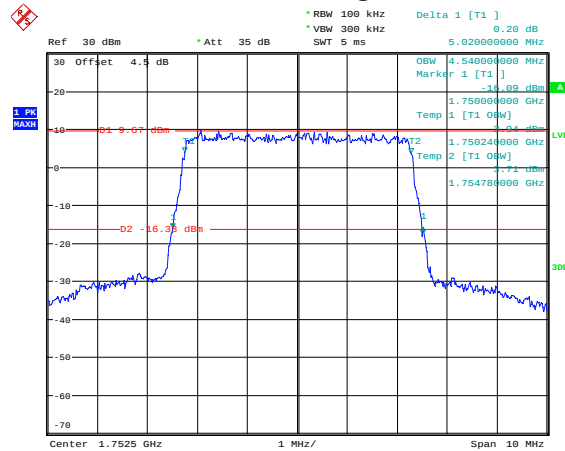
Date: 16.DEC.2020 00:47:39

5M, QPSK, High Channel



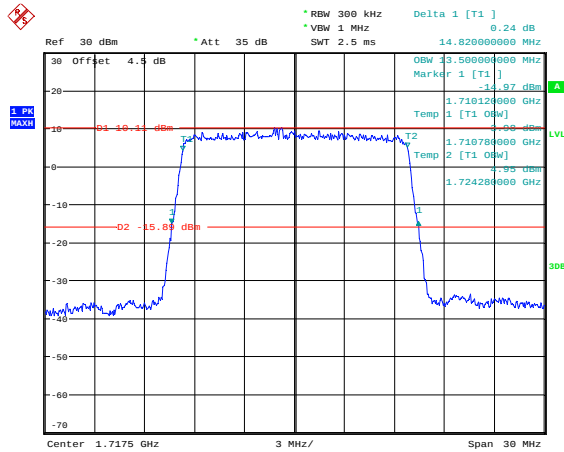
Date: 16.DEC.2020 00:48:03

5M, 16QAM, High Channel



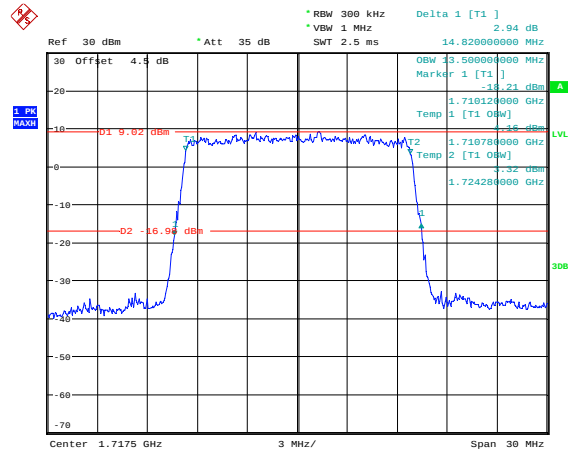
Date: 16.DEC.2020 00:48:25

15M, QPSK, Low Channel



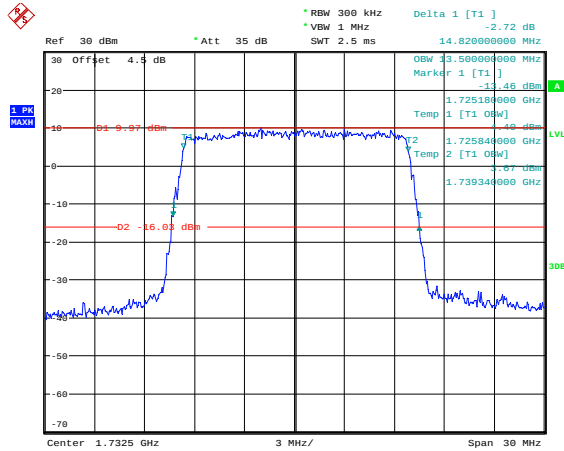
Date: 16.DEC.2020 16:38:33

15M, 16QAM, Low Channel



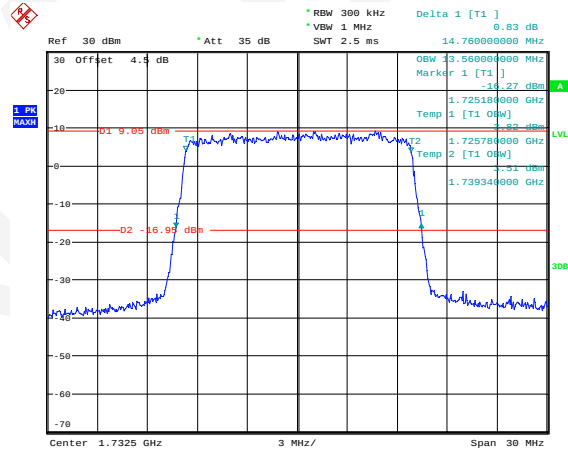
Date: 16.DEC.2020 16:38:59

15M, QPSK, Middle Channel



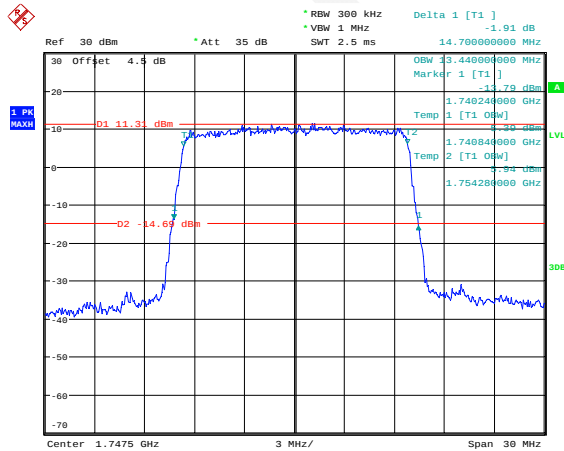
Date: 16.DEC.2020 16:39:26

15M, 16QAM, Middle Channel



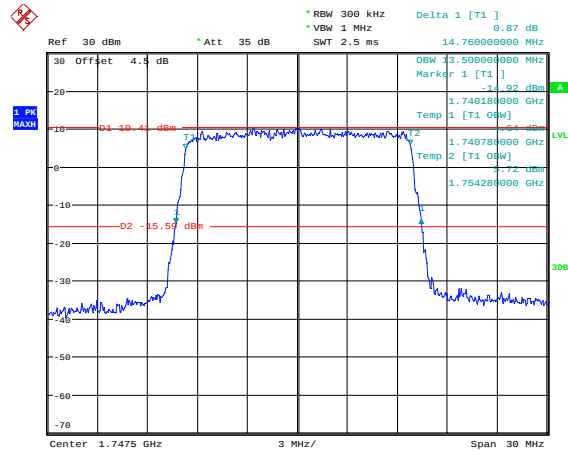
Date: 16.DEC.2020 16:39:51

15M, QPSK, High Channel



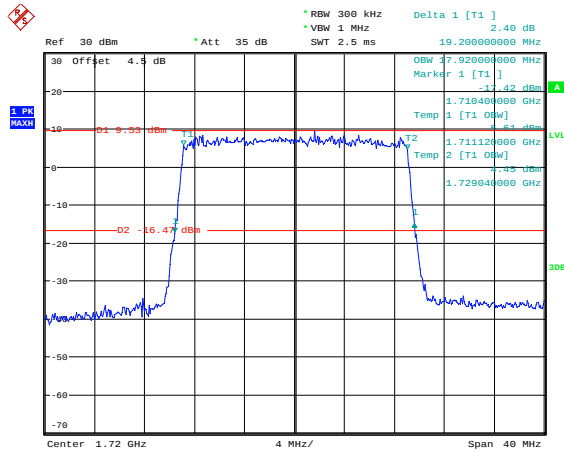
Date: 16.DEC.2020 16:40:17

15M, 16QAM, High Channel



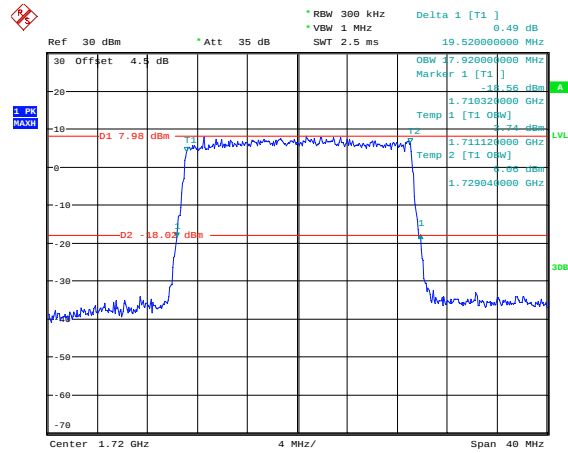
Date: 16.DEC.2020 16:40:43

20M, QPSK, Low Channel



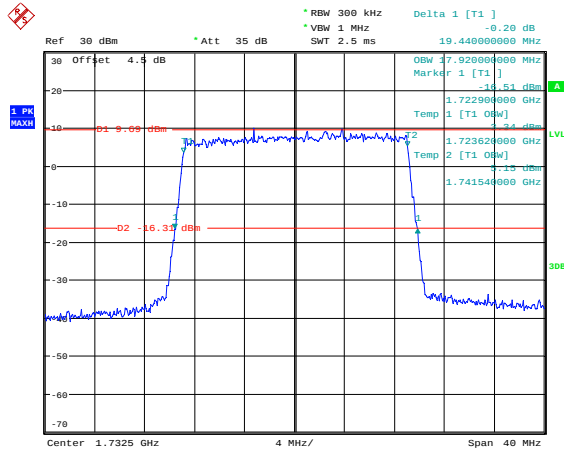
Date: 16.DEC.2020 16:41:08

20M, 16QAM, Low Channel



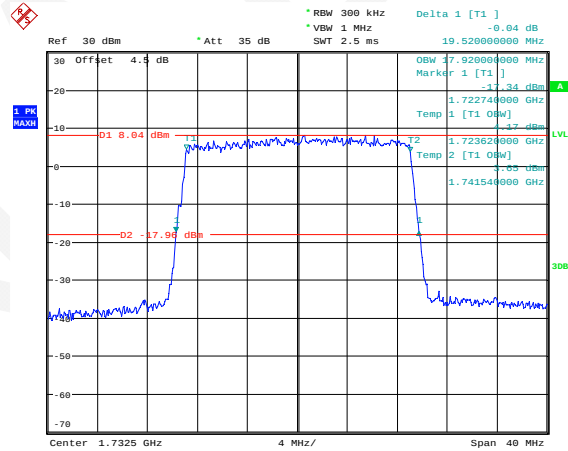
Date: 16.DEC.2020 16:41:37

20M, QPSK, Middle Channel



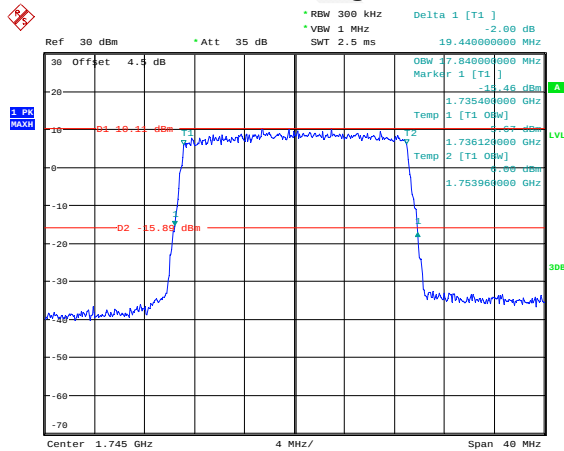
Date: 16.DEC.2020 16:42:04

20M, 16QAM, Middle Channel



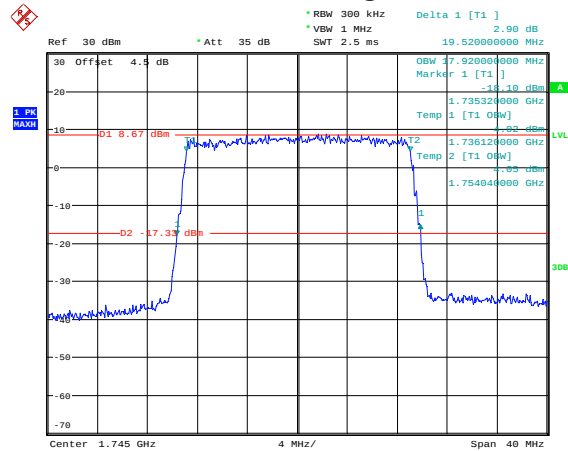
Date: 16.DEC.2020 16:42:29

20M, QPSK, High Channel



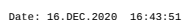
Date: 16.DEC.2020 16:42:52

20M, 16QAM, High Channel



Date: 16.DEC.2020 16:43:14

1.4M, QPSK, Low Channel



Date: 16.DEC.2020 16:44:14

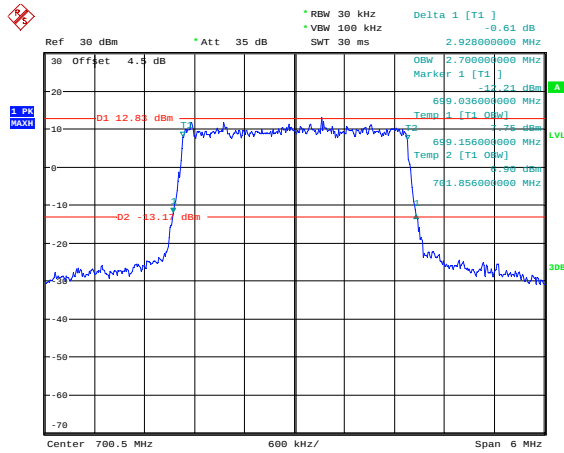
Date: 16.DEC.2020 16:44:33

Date: 16.DEC.2020 16:44:52

Date: 16.DEC.2020 16:45:12

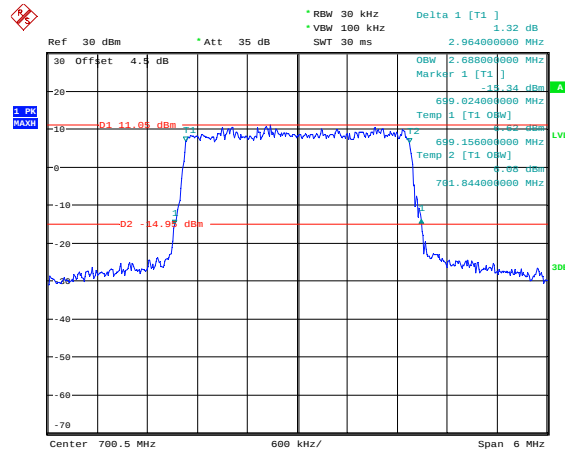
Date: 16.DEC.2020 16:45:34

3M, QPSK, Low Channel



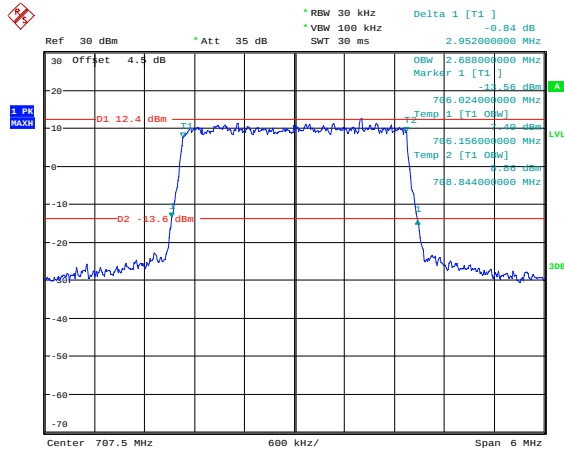
Date: 16.DEC.2020 16:45:56

3M, 16QAM, Low Channel



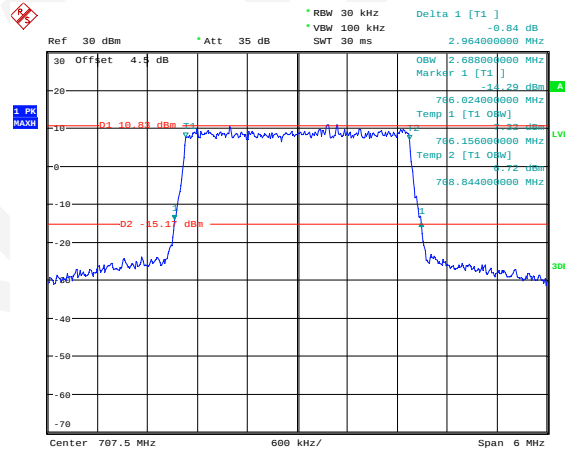
Date: 16.DEC.2020 16:46:18

3M, QPSK, Middle Channel



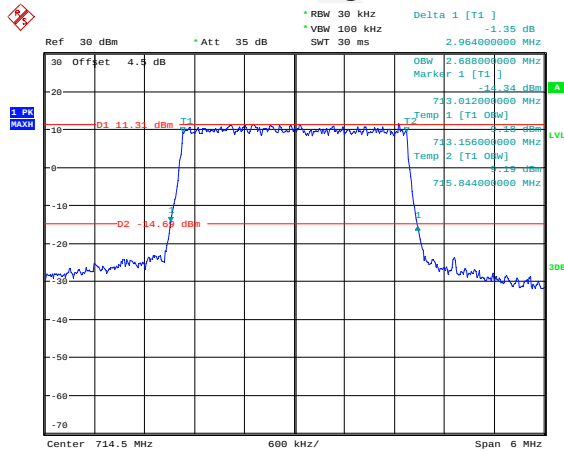
Date: 16.DEC.2020 16:46:41

3M, 16QAM, Middle Channel



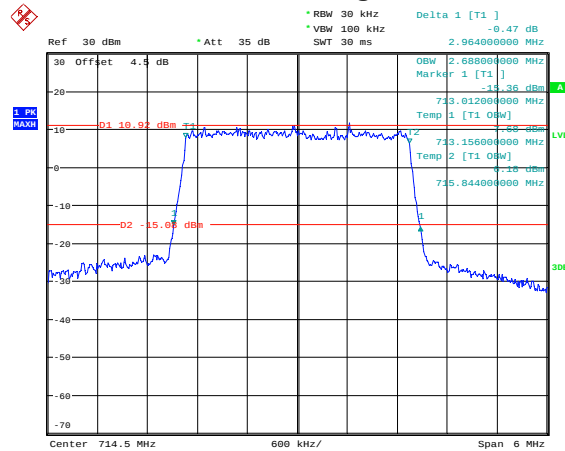
Date: 16.DEC.2020 16:47:03

3M, QPSK, High Channel



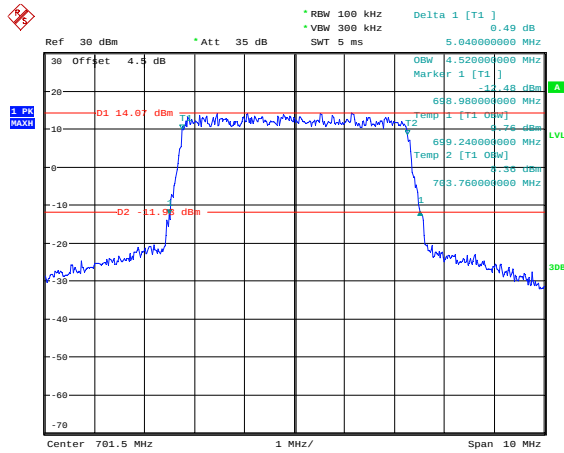
Date: 16.DEC.2020 16:47:26

3M, 16QAM, High Channel



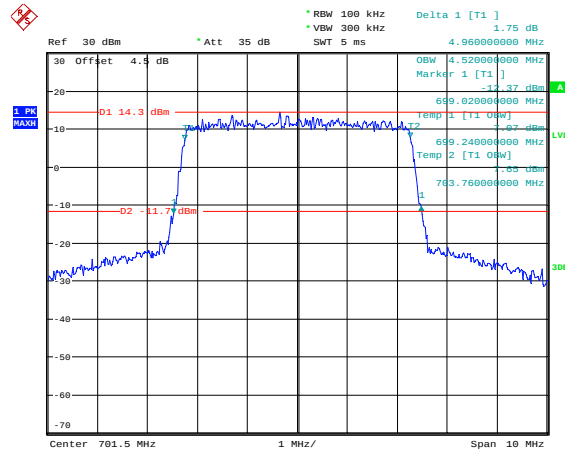
Date: 16.DEC.2020 16:47:45

5M, QPSK, Low Channel



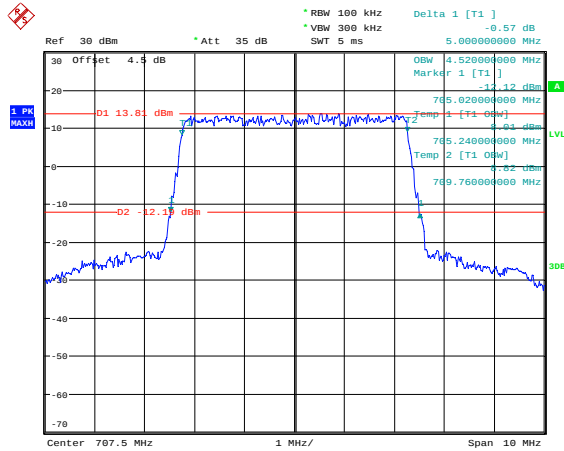
Date: 16.DEC.2020 16:48:10

5M, 16QAM, Low Channel



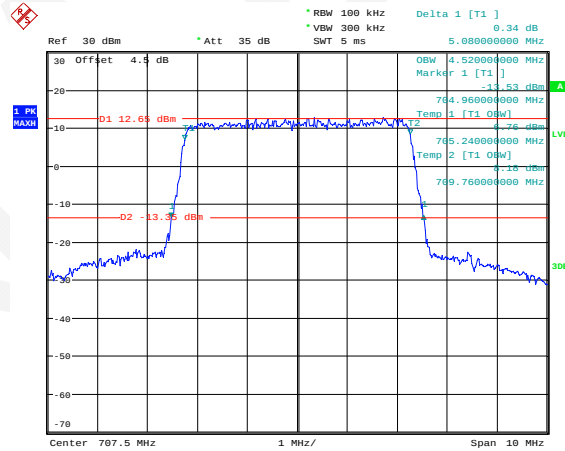
Date: 16.DEC.2020 16:48:33

5M, QPSK, Middle Channel



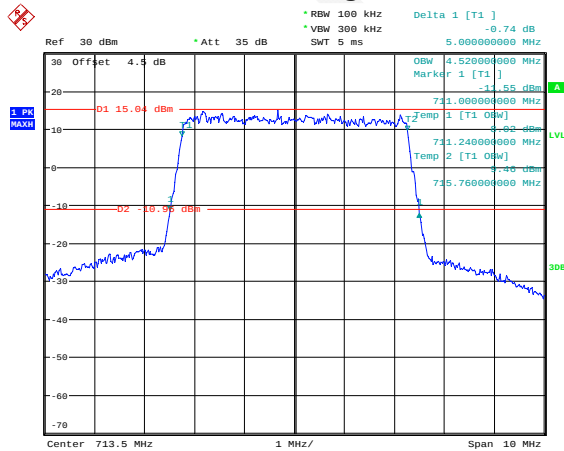
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5M, 16QAM, Middle Channel



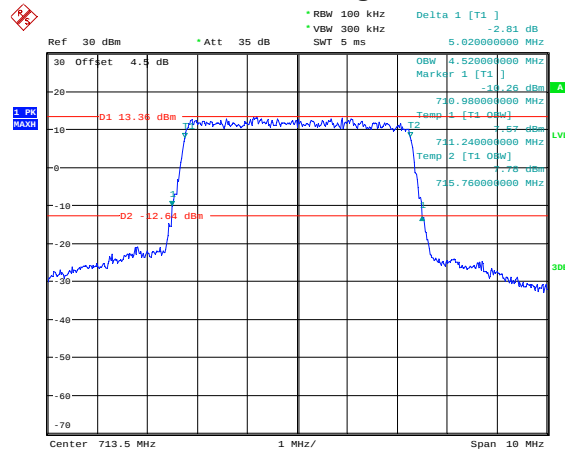
Date: 16.DEC.2020 16:49:18

5M, QPSK, High Channel



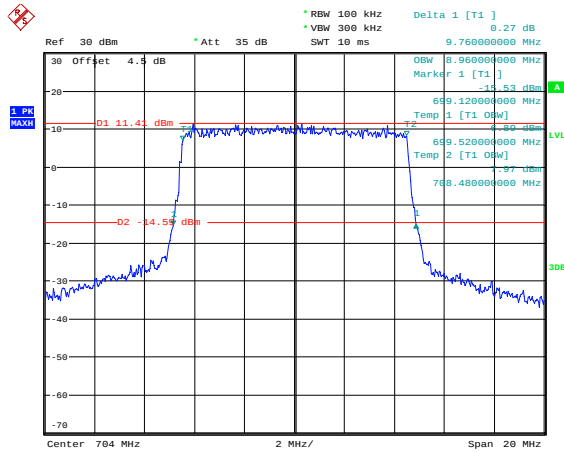
Date: 16.DEC.2020 16:49:41

5M, 16QAM, High Channel



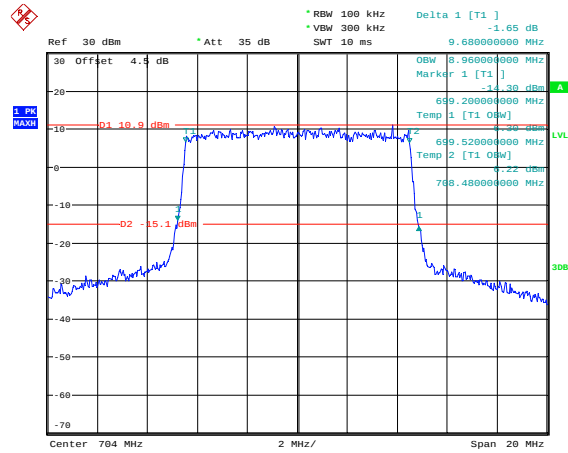
Date: 16.DEC.2020 16:50:04

10M, QPSK, Low Channel



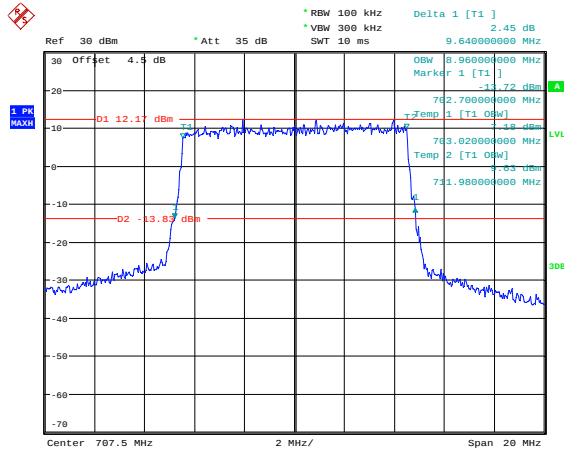
Date: 16.DEC.2020 16:50:31

10M, 16QAM, Low Channel



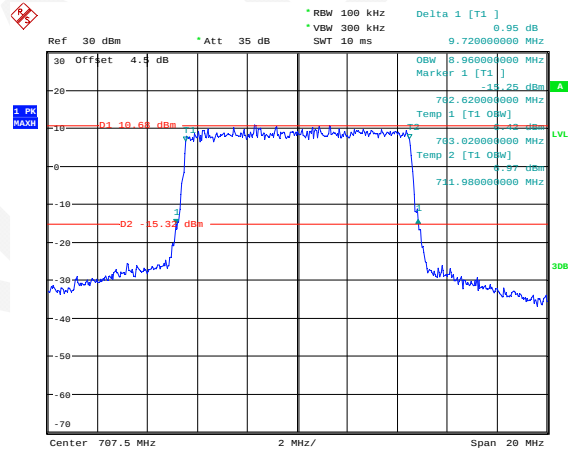
Date: 16.DEC.2020 16:50:54

10M, QPSK, Middle Channel



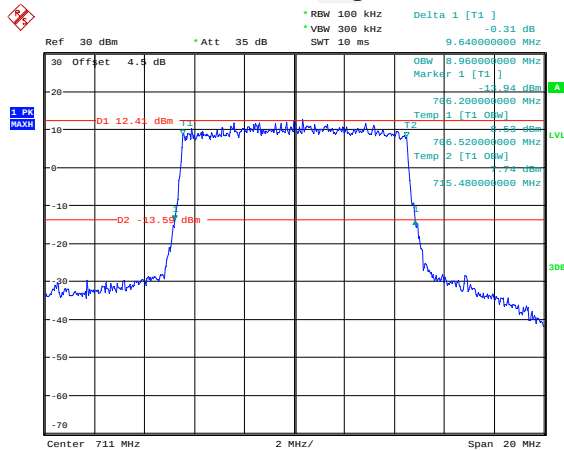
Date: 16.DEC.2020 16:51:18

10M, 16QAM, Middle Channel



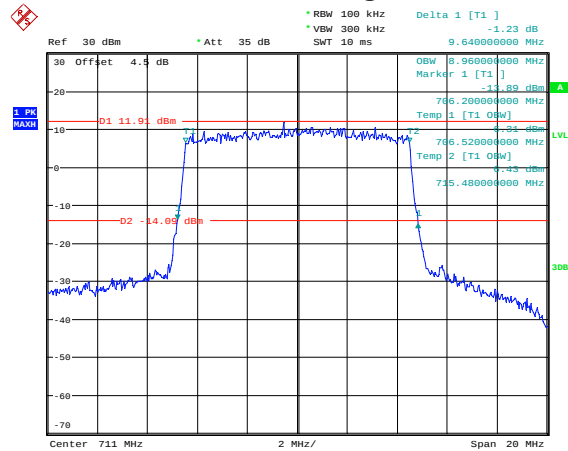
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10M, QPSK, High Channel

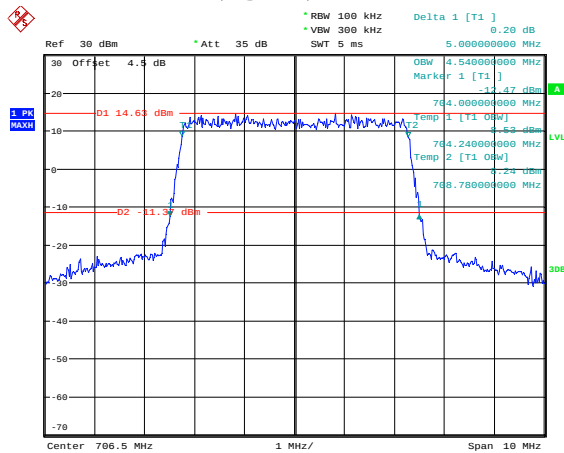


Date: 16.DEC.2020 16:52:06

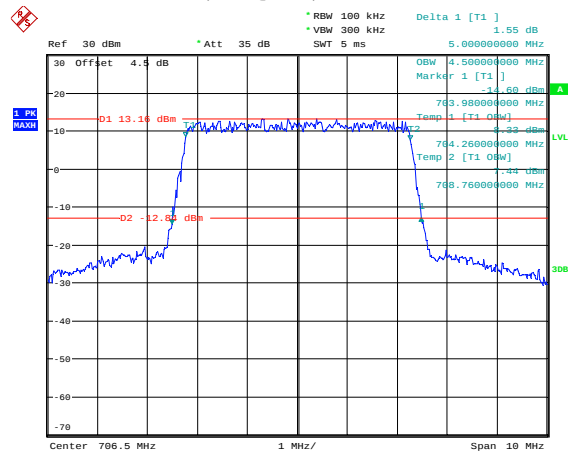
10M, 16QAM, High Channel



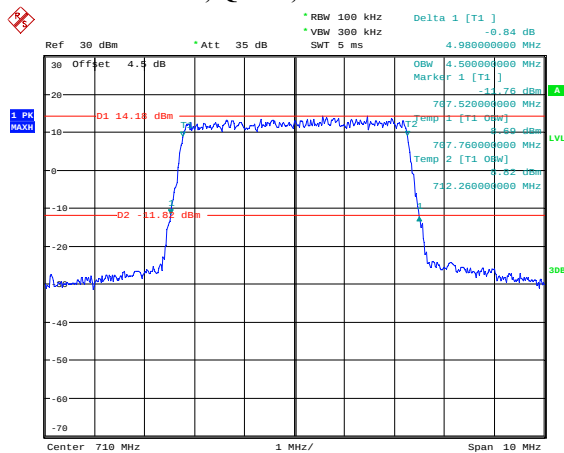
Date: 16.DEC.2020 16:52:29

LTE Band 17:**5M, QPSK, Low Channel**

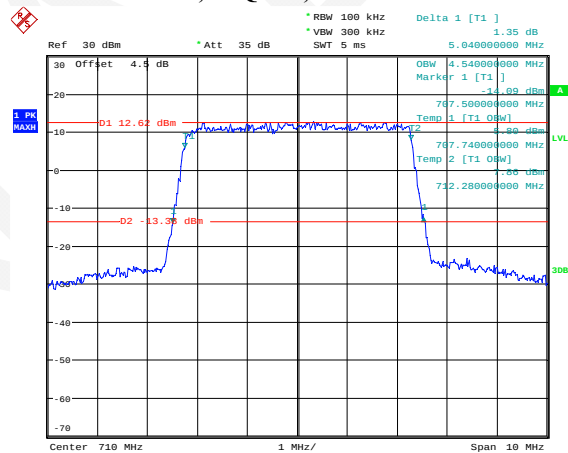
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5M, 16QAM, Low Channel

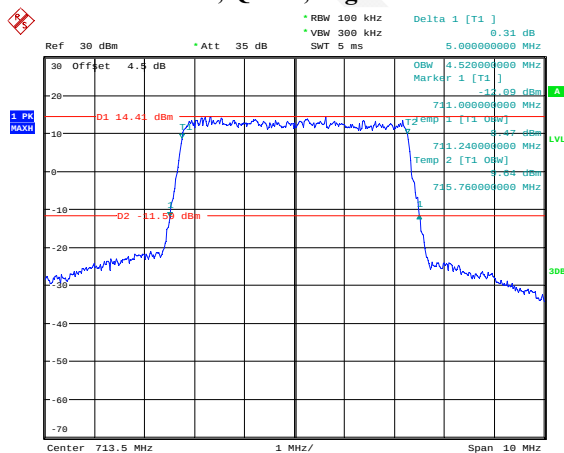
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5M, QPSK, Middle Channel

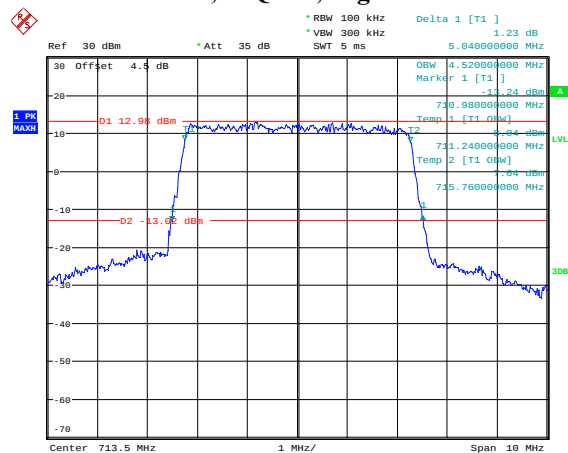
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5M, 16QAM, Middle Channel

Date: 16.DEC.2020 16:54:07

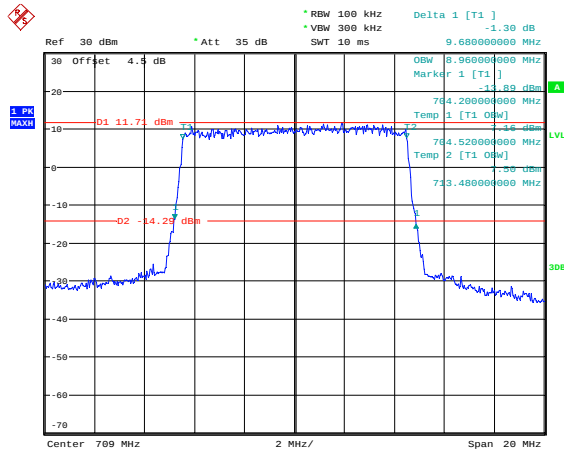
5M, QPSK, High Channel

Date: 16.DEC.2020 16:54:30

5M, 16QAM, High Channel

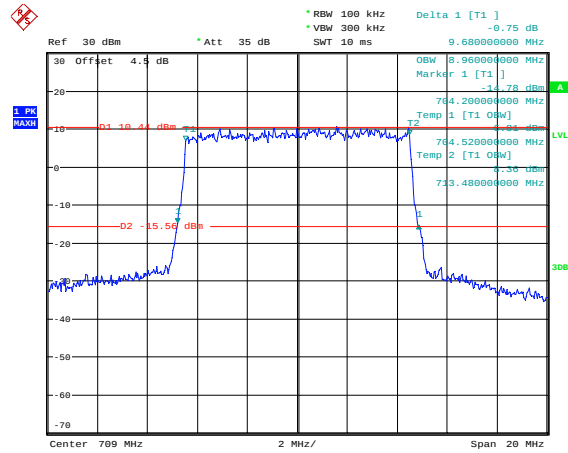
Date: 16.DEC.2020 16:54:53

10M, QPSK, Low Channel



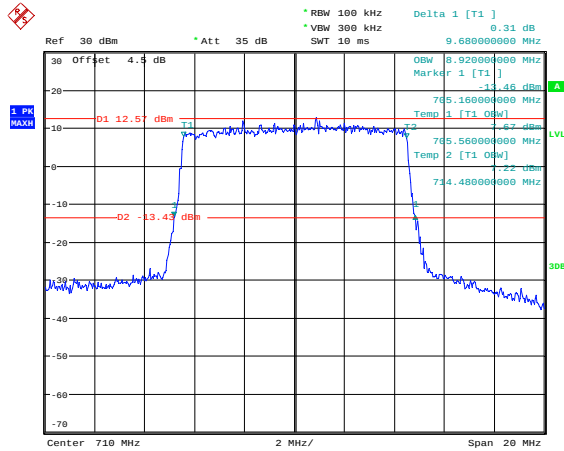
Date: 16.DEC.2020 16:55:20

10M, 16QAM, Low Channel



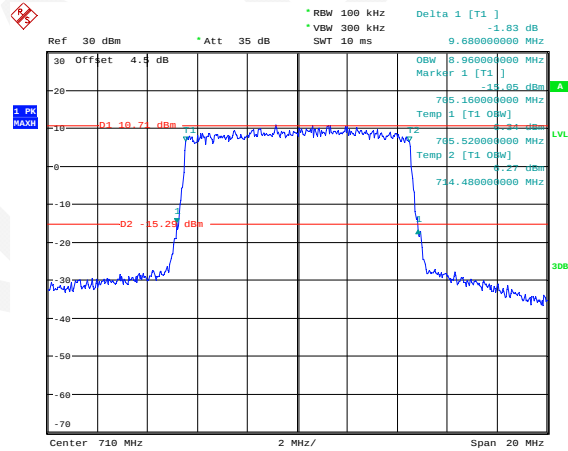
Date: 16.DEC.2020 16:55:43

10M, QPSK, Middle Channel



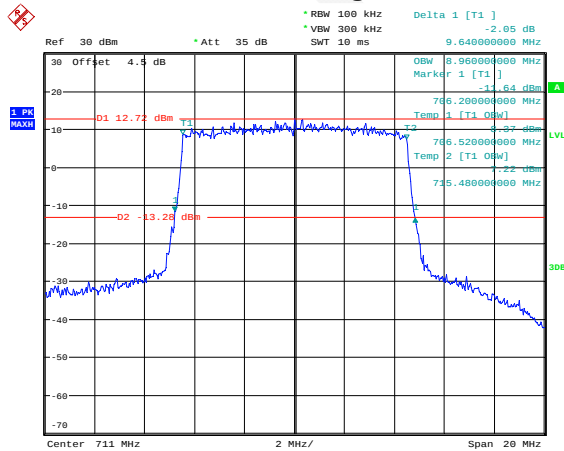
Date: 16.DEC.2020 16:56:07

10M, 16QAM, Middle Channel



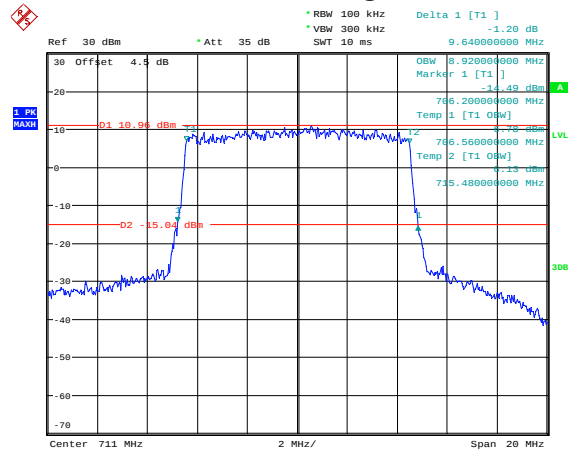
Date: 16.DEC.2020 16:56:35

10M, QPSK, High Channel



Date: 16.DEC.2020 16:57:07

10M, 16QAM, High Channel



Date: 16.DEC.2020 16:57:30

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

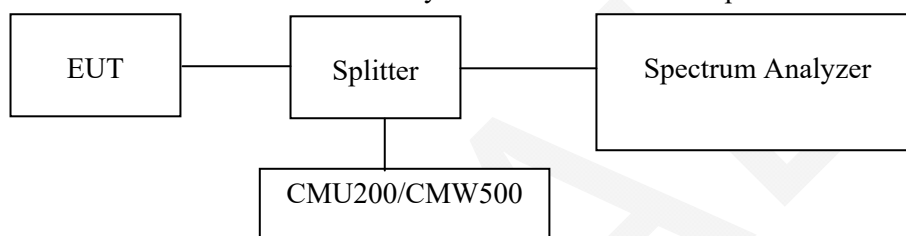
Applicable Standard

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
R&S	Spectrum Analyzer	FSU 26	200256	2020-01-04	2021-01-04
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	N/A

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

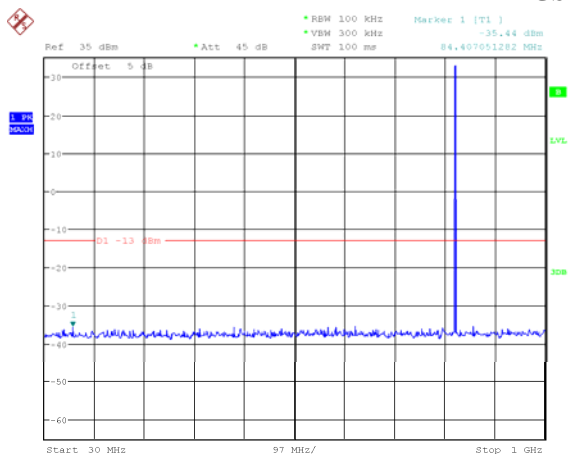
Test Data

Environmental Conditions

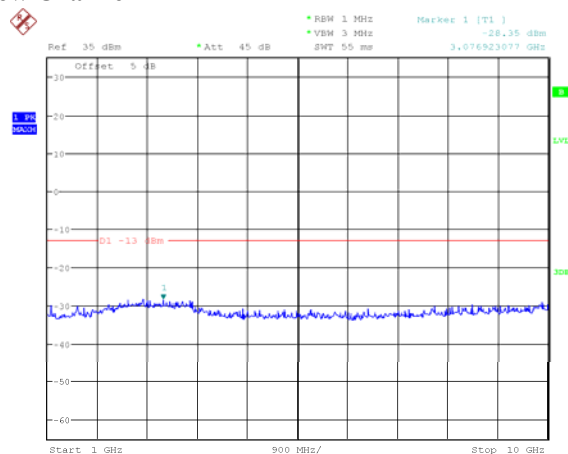
Temperature:	26 ~26.9°C
Relative Humidity:	52~58%
ATM Pressure:	100.8~101.6kPa
Tester:	Taylor Li
Test Date:	2020-10-10~2020-12-16

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

GSM 850, Low Channel

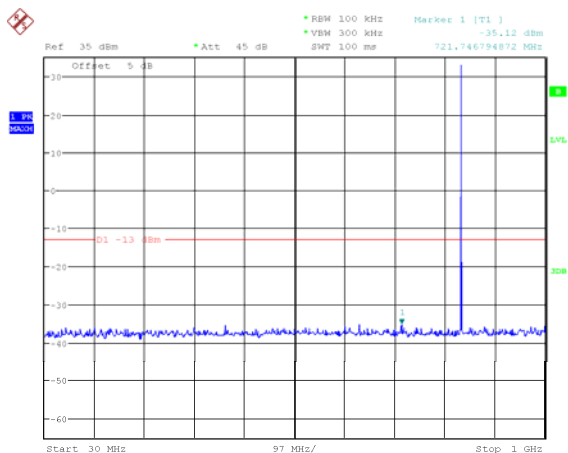


Date: 10.OCT.2020 15:05:23

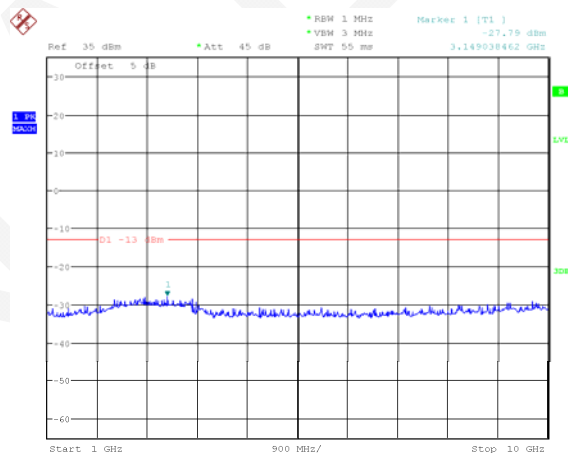


Date: 10.OCT.2020 15:08:20

GSM 850, Middle Channel

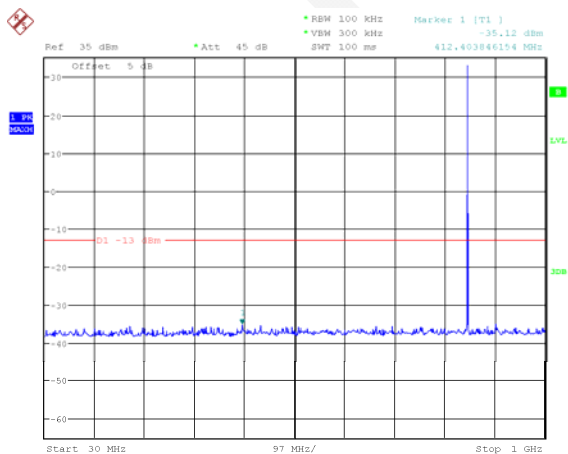


Date: 10.OCT.2020 15:04:55

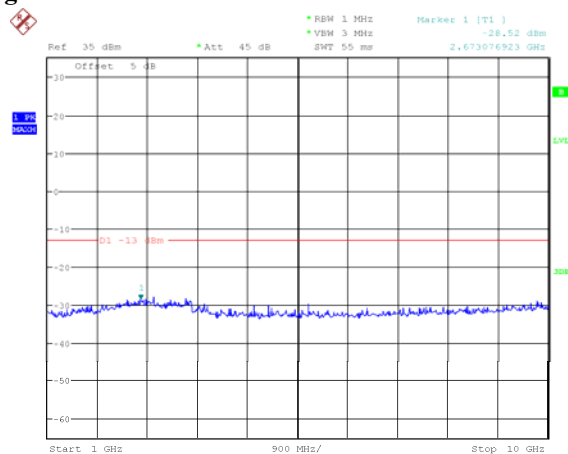


Date: 10.OCT.2020 15:08:49

GSM 850, High Channel

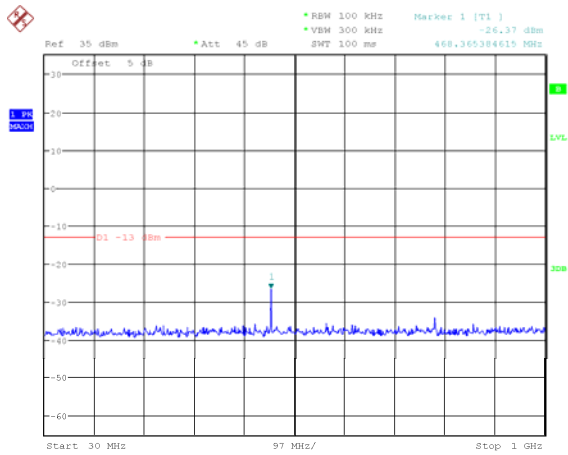


Date: 10.OCT.2020 15:06:18

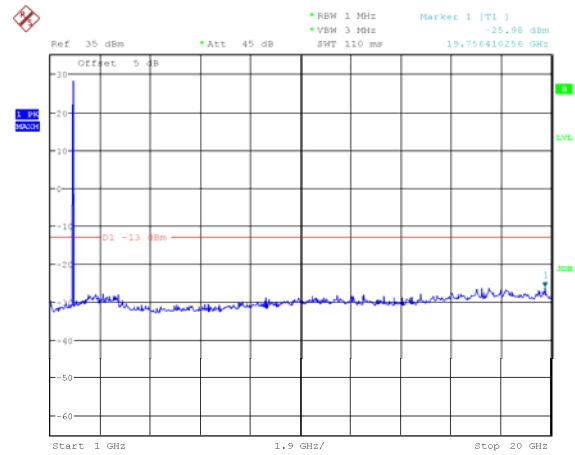


Date: 10.OCT.2020 15:09:14

PCS 1900, Low Channel

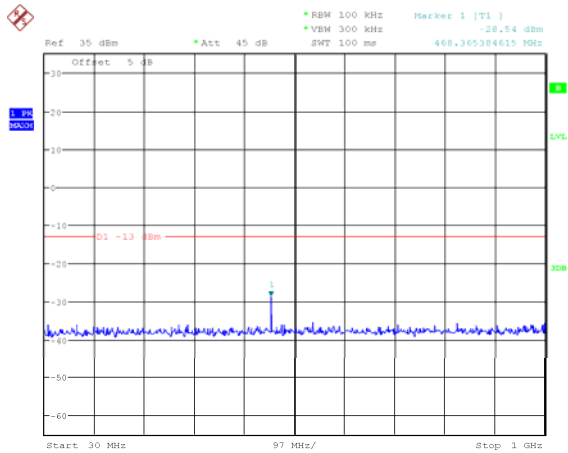


Date: 10.OCT.2020 14:15:21

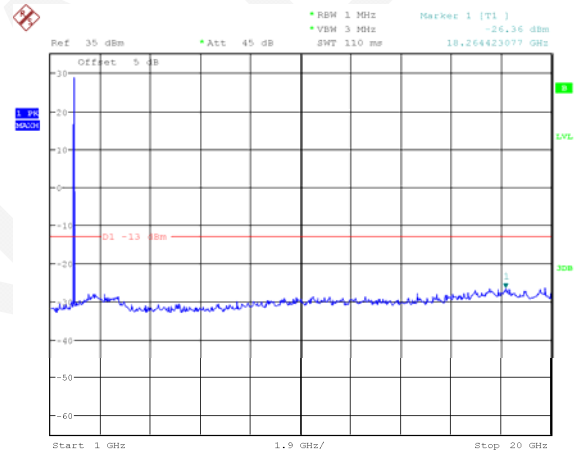


Date: 10.OCT.2020 14:10:40

PCS 1900, Middle Channel

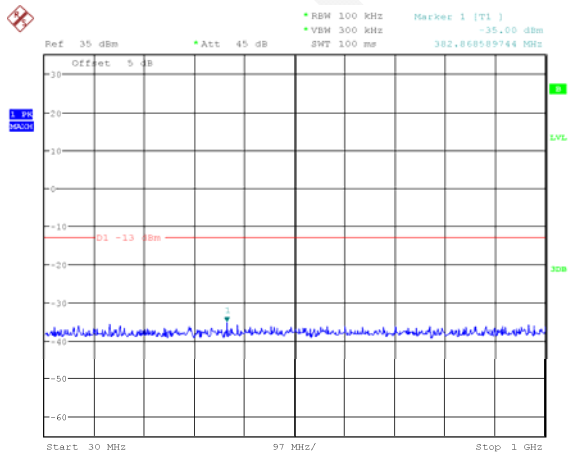


Date: 10.OCT.2020 14:15:54

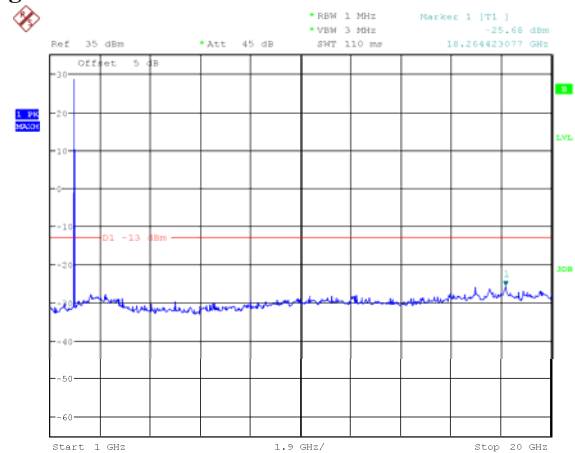


Date: 10.OCT.2020 14:11:20

PCS 1900, High Channel

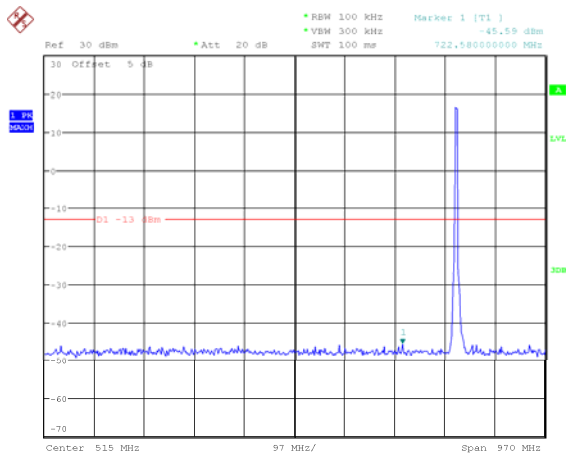


Date: 10.OCT.2020 14:16:23

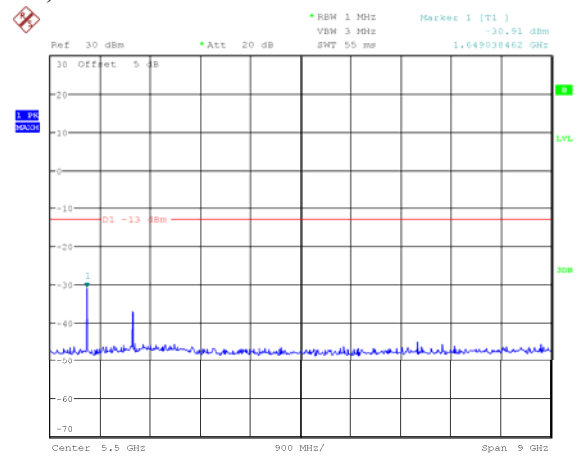


Date: 10.OCT.2020 14:12:03

WCDMA Band V, R99, Low Channel

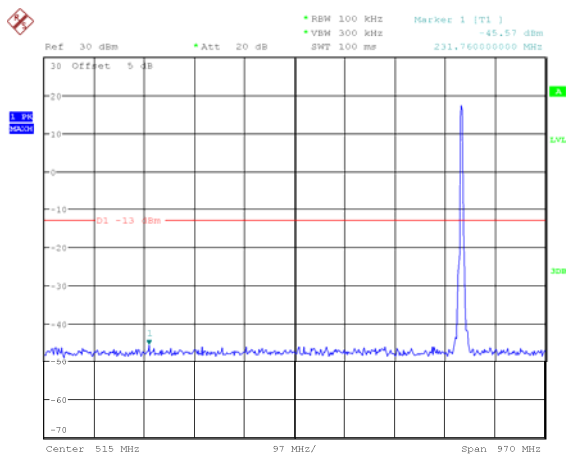


Date: 12.OCT.2020 11:31:53

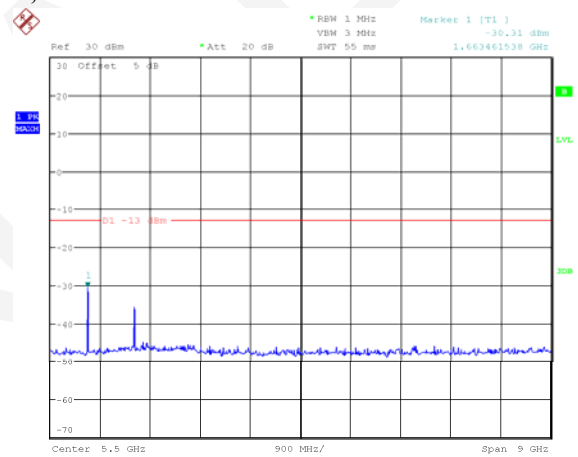


Date: 12.OCT.2020 11:32:17

WCDMA Band V, R99, Middle Channel

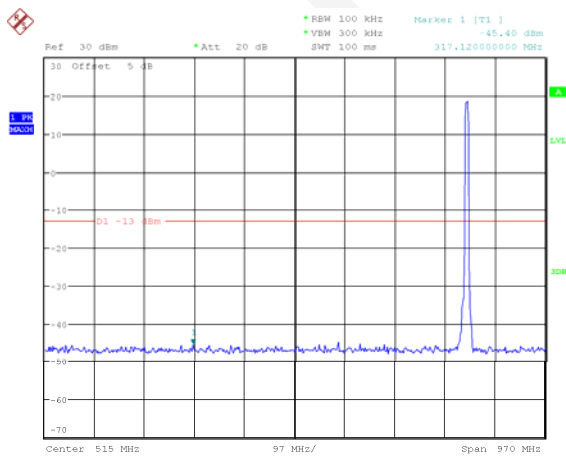


Date: 12.OCT.2020 11:33:07

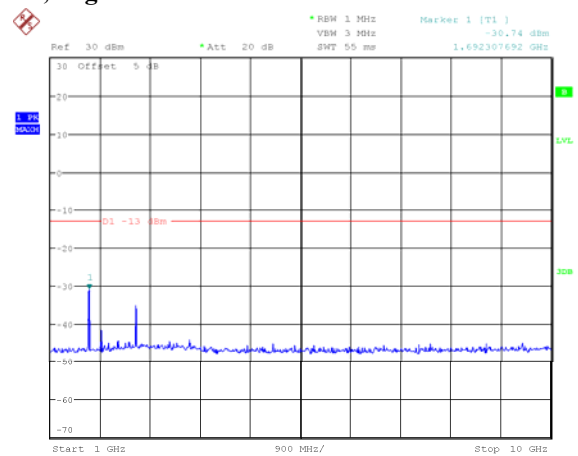


Date: 12.OCT.2020 11:33:26

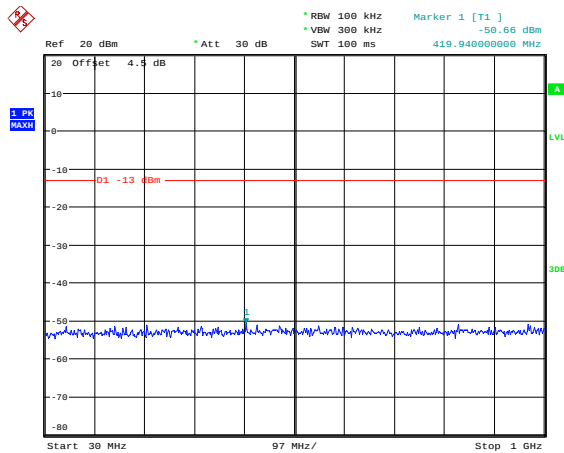
WCDMA Band V, R99, High Channel



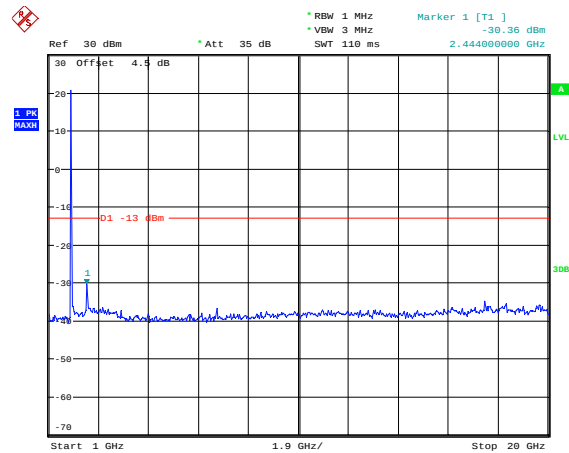
Date: 12.OCT.2020 11:28:33



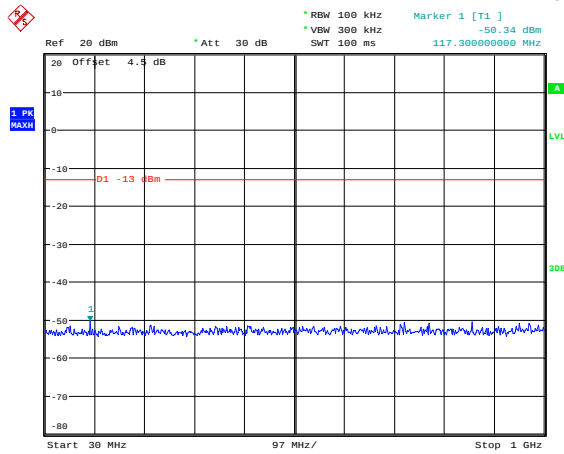
Date: 12.OCT.2020 11:31:03

LTE Band 2:**1.4M, QPSK, Low Channel**

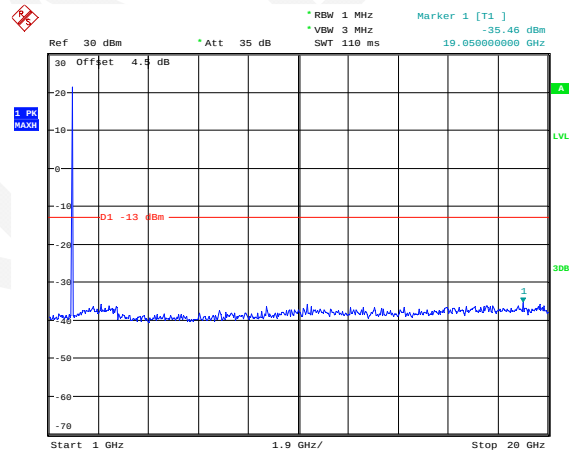
Date: 15.DEC.2020 23:06:05



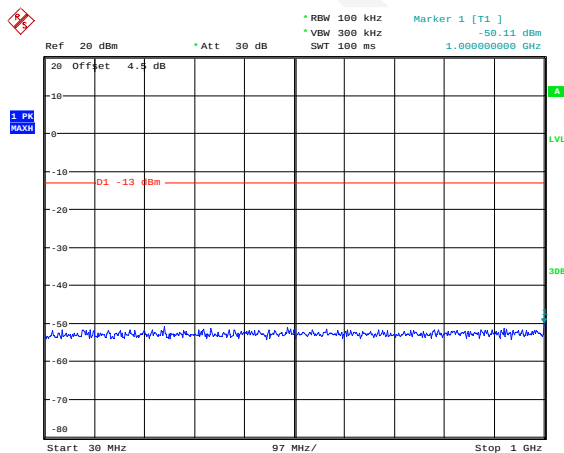
Date: 15.DEC.2020 23:06:18

1.4M, QPSK, Middle Channel

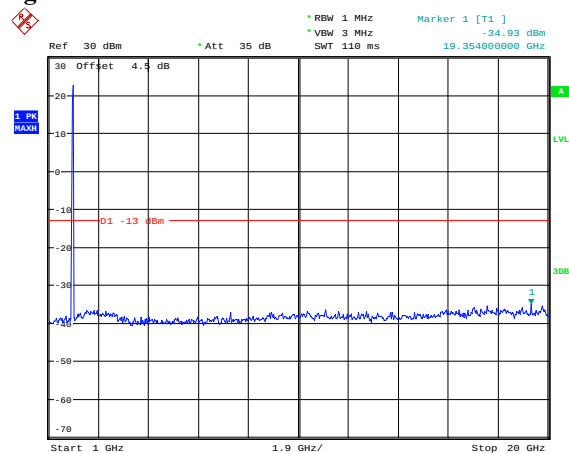
Date: 15.DEC.2020 23:06:36



Date: 15.DEC.2020 23:06:48

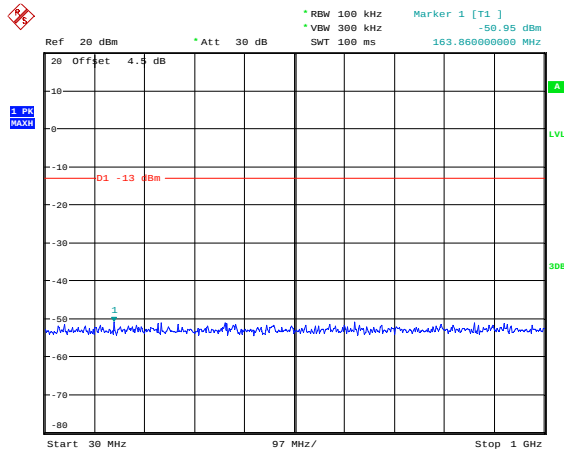
1.4M, QPSK, High Channel

Date: 15.DEC.2020 23:07:10

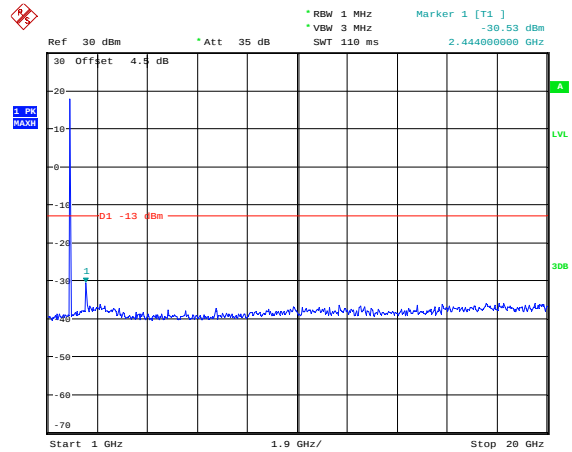


Date: 15.DEC.2020 23:07:22

3M, QPSK, Low Channel

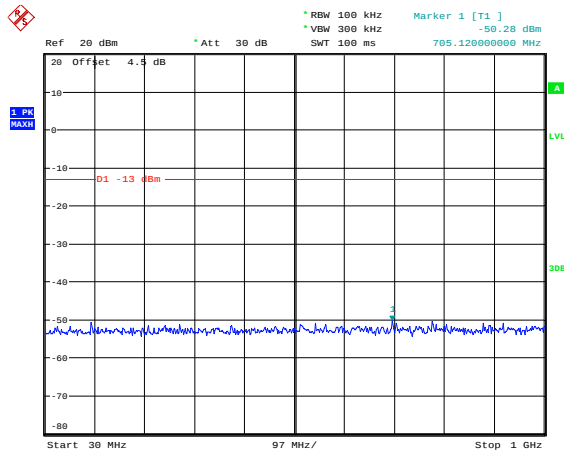


Date: 15.DEC.2020 23:08:00

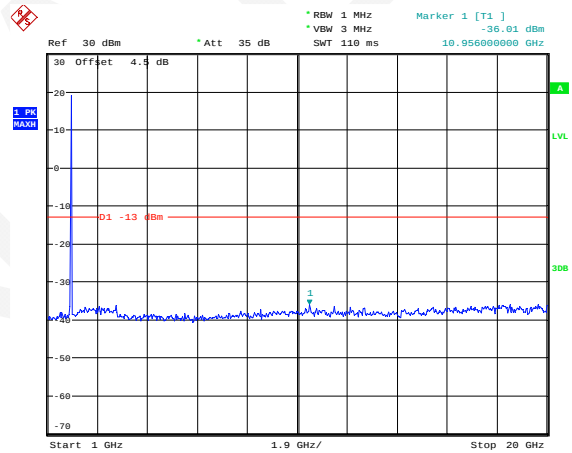


Date: 15.DEC.2020 23:08:13

3M, QPSK, Middle Channel

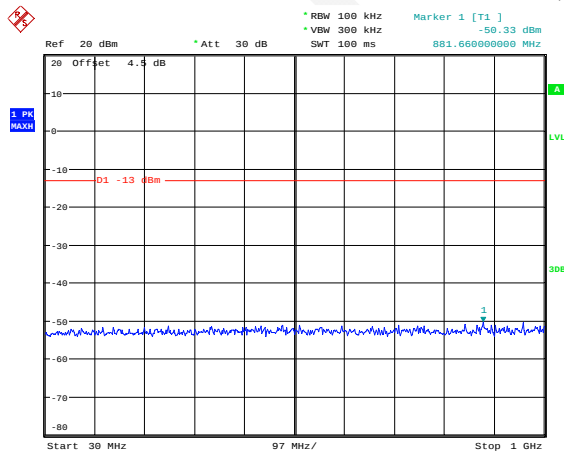


Date: 15.DEC.2020 23:08:35

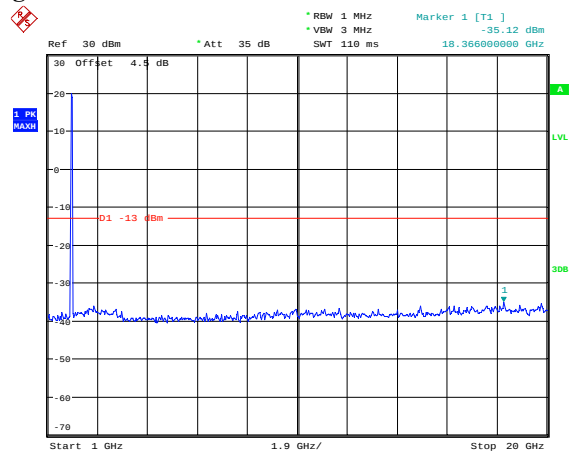


Date: 15.DEC.2020 23:08:47

3M, QPSK, High Channel

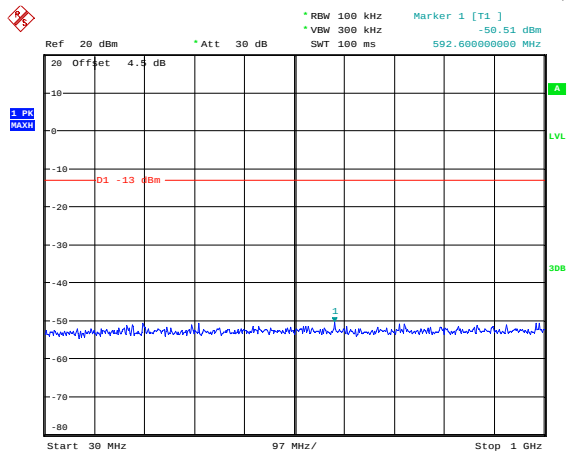


Date: 15.DEC.2020 23:09:09

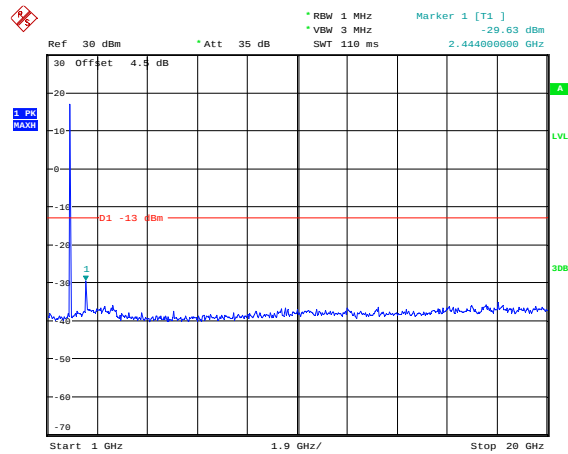


Date: 15.DEC.2020 23:09:21

5M, QPSK, Low Channel

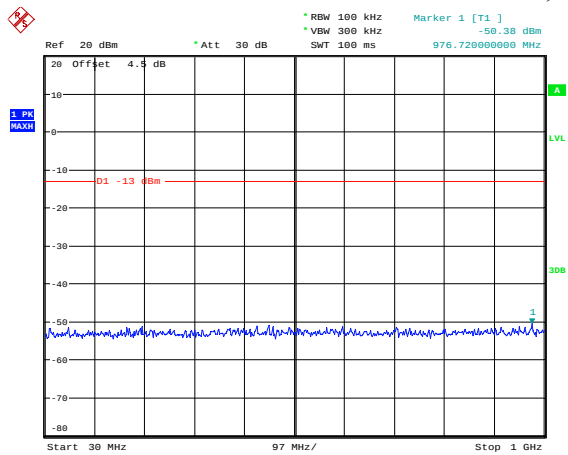


Date: 15.DEC.2020 23:10:03

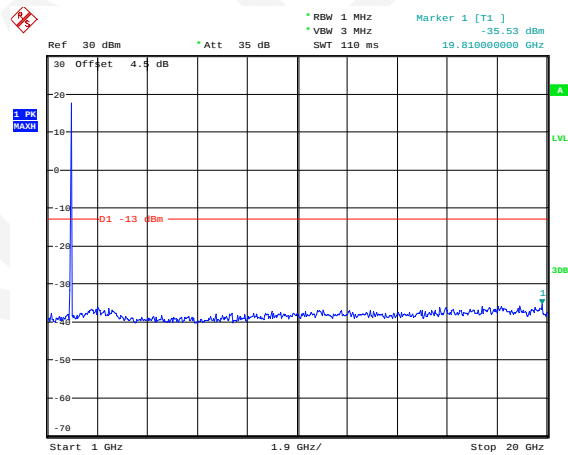


Date: 15.DEC.2020 23:10:19

5M, QPSK, Middle Channel

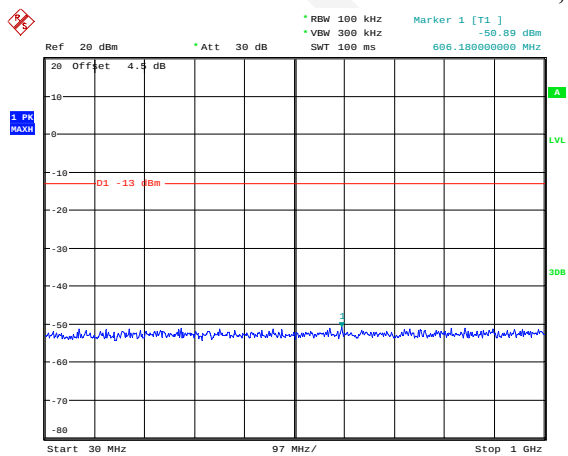


Date: 15.DEC.2020 23:10:37

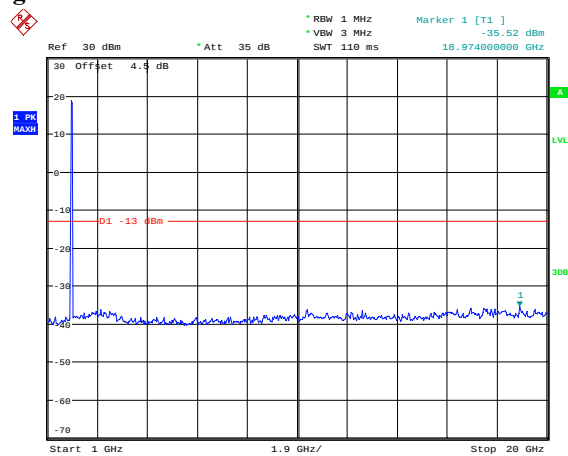


Date: 15.DEC.2020 23:10:50

5M, QPSK, High Channel

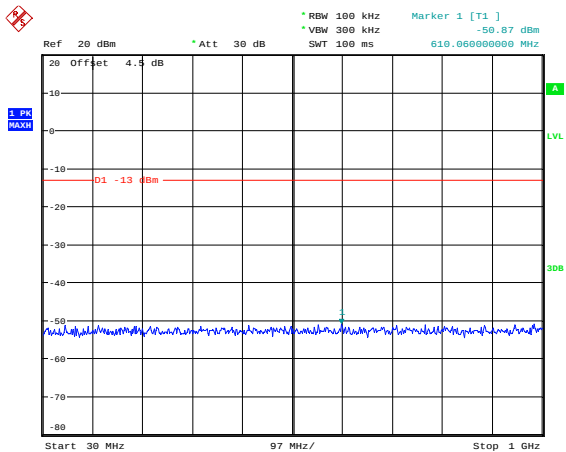


Date: 15.DEC.2020 23:11:11

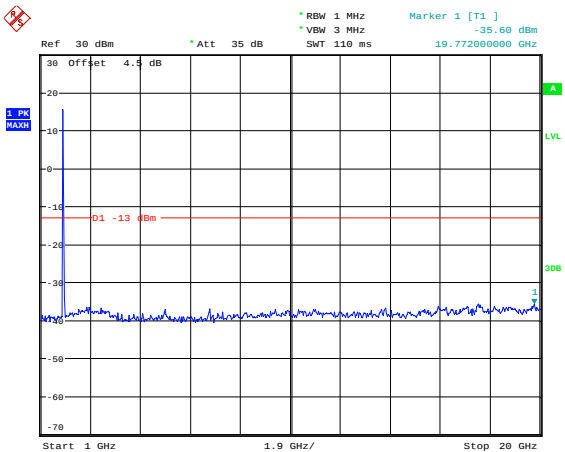


Date: 15.DEC.2020 23:11:24

10M, QPSK, Low Channel

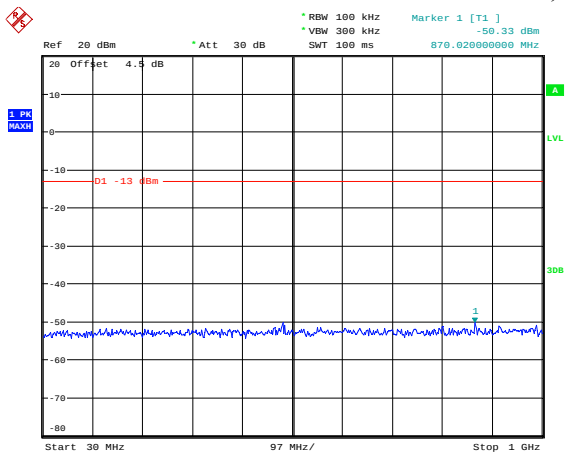


Date: 15.DEC.2020 23:12:06

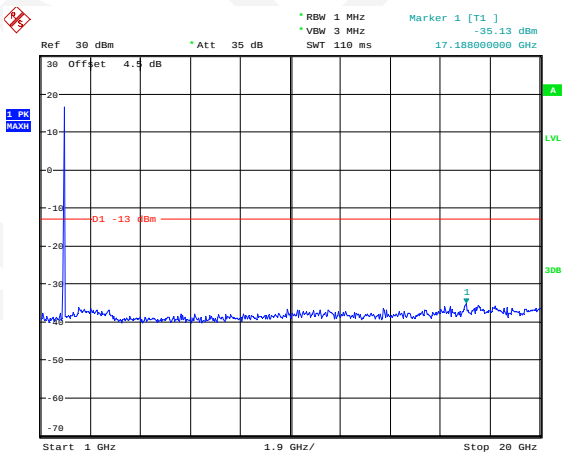


Date: 15.DEC.2020 23:12:19

10M, QPSK, Middle Channel

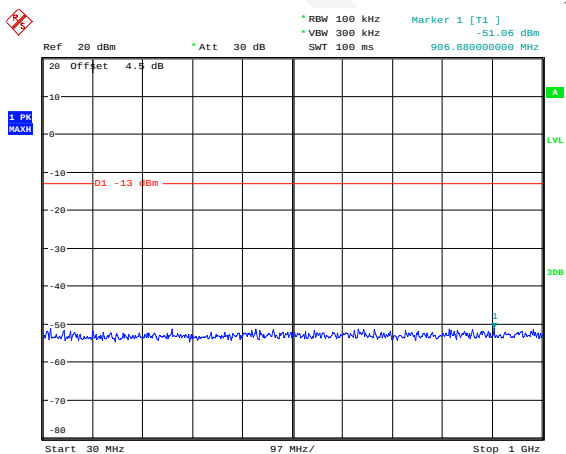


Date: 15.DEC.2020 23:12:42

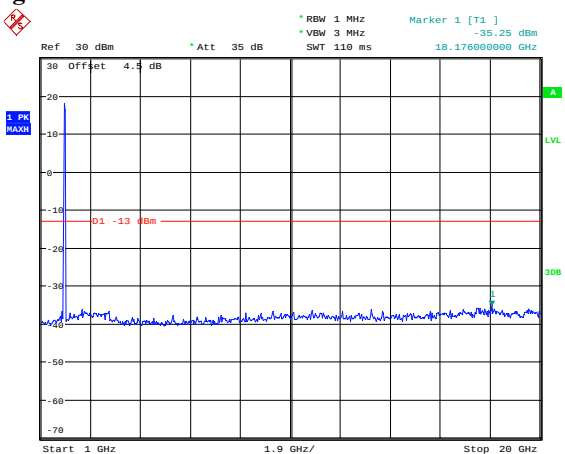


Date: 15.DEC.2020 23:12:54

10M, QPSK, High Channel

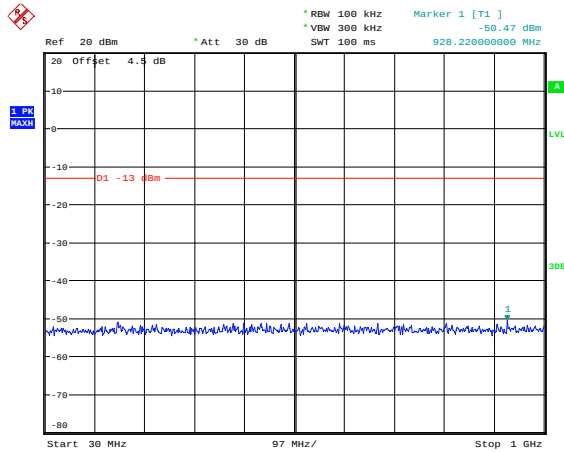


Date: 15.DEC.2020 23:13:13

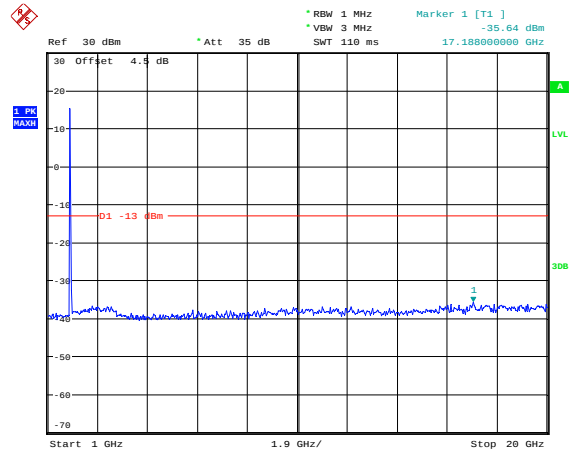


Date: 15.DEC.2020 23:13:26

15M, QPSK, Low Channel

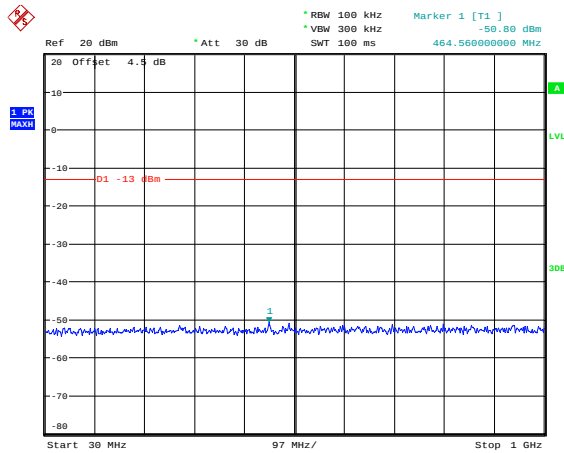


Date: 15.DEC.2020 23:16:12

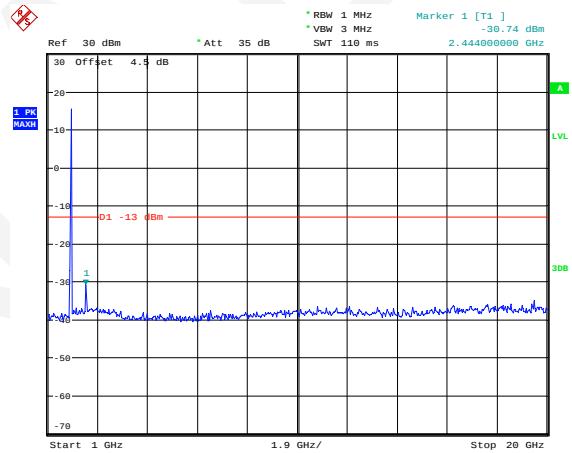


Date: 15.DEC.2020 23:16:24

15M, QPSK, Middle Channel

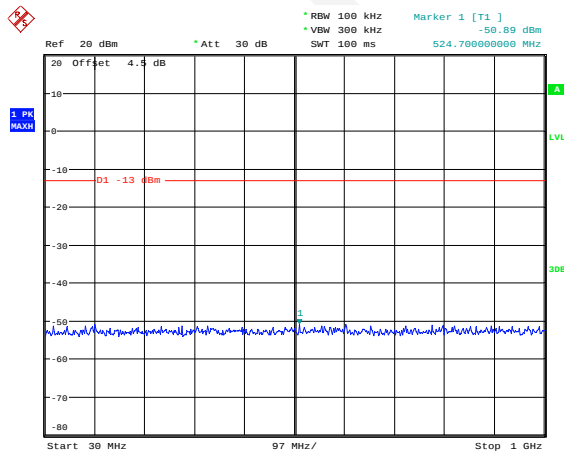


Date: 15.DEC.2020 23:16:49

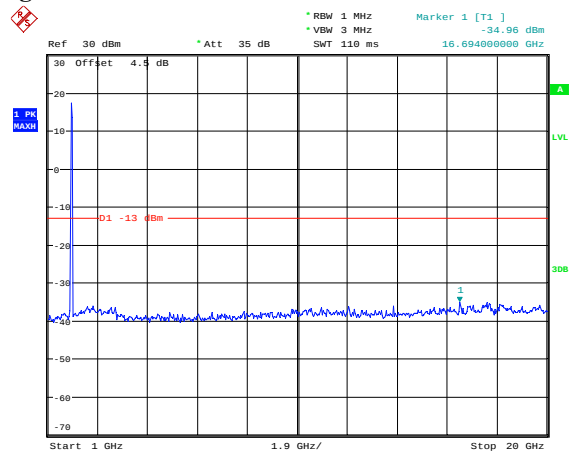


Date: 15.DEC.2020 23:17:02

15M, QPSK, High Channel

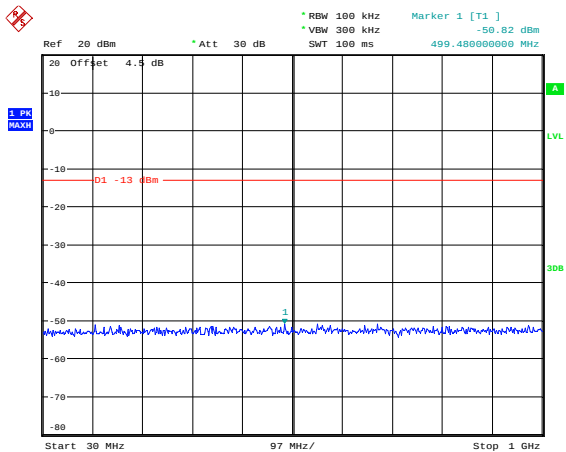


Date: 15.DEC.2020 23:17:27

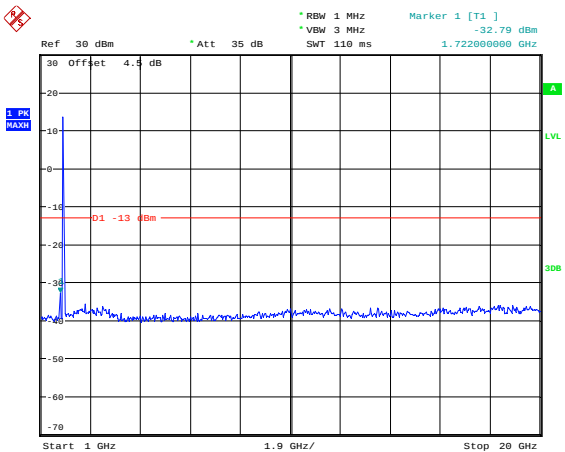


Date: 15.DEC.2020 23:17:43

20M, QPSK, Low Channel

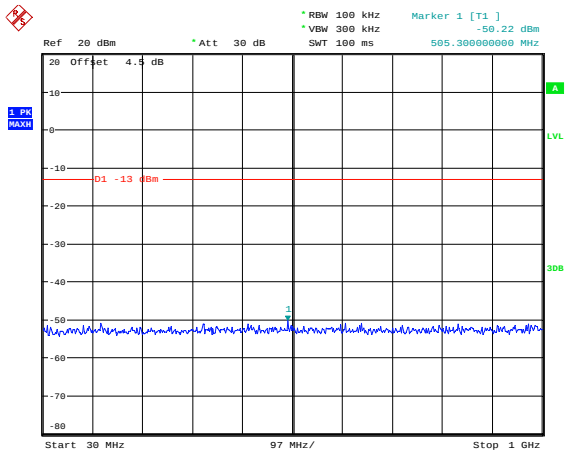


Date: 15.DEC.2020 23:18:28

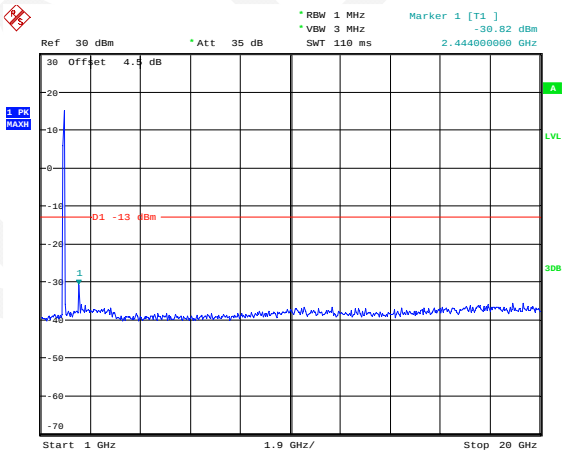


Date: 15.DEC.2020 23:18:41

20M, QPSK, Middle Channel

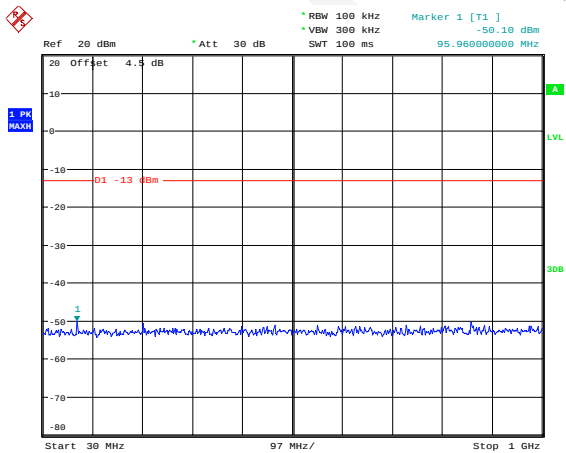


Date: 15.DEC.2020 23:19:05

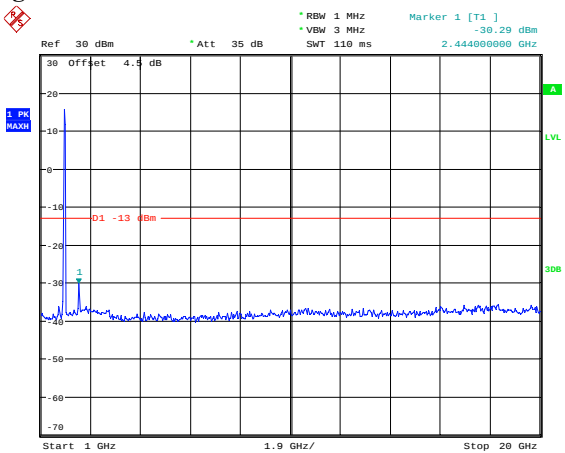


Date: 15.DEC.2020 23:19:18

20M, QPSK, High Channel



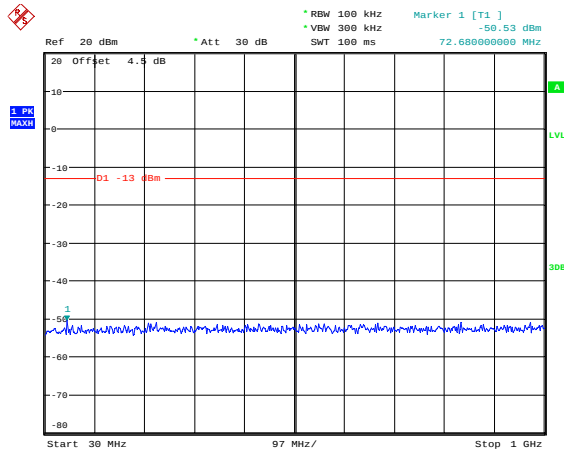
Date: 15.DEC.2020 23:19:43



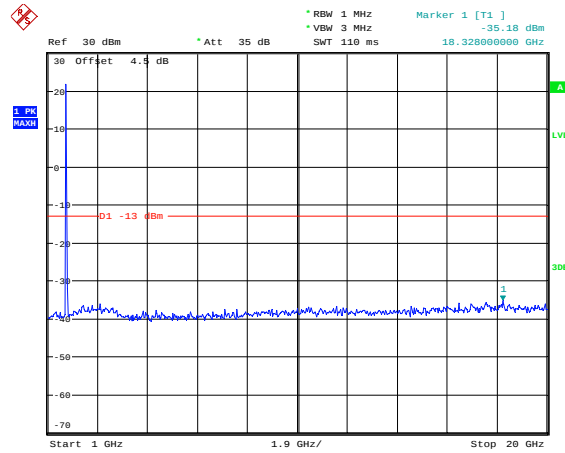
Date: 15.DEC.2020 23:19:59

LTE Band 4:

1.4M, QPSK, Low Channel

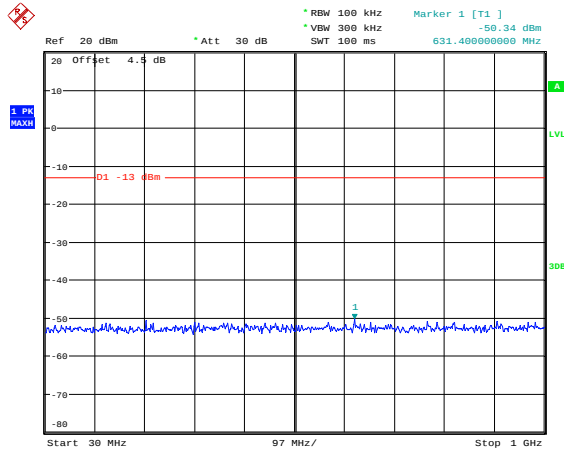


Date: 15.DEC.2020 23:20:48

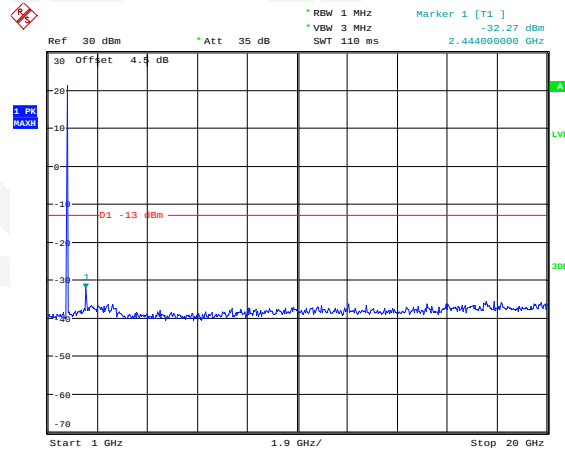


Date: 15.DEC.2020 23:21:01

1.4M, QPSK, Middle Channel

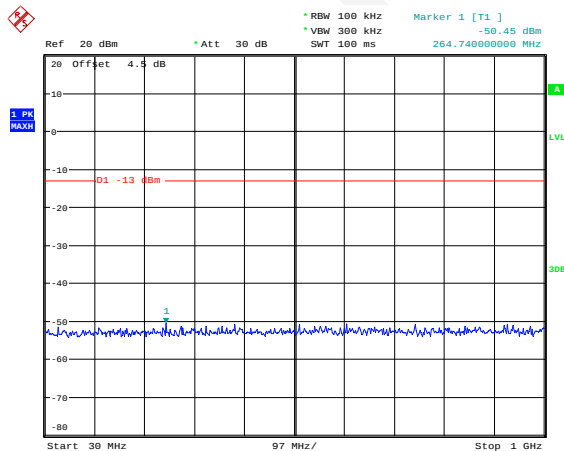


Date: 15.DEC.2020 23:21:22

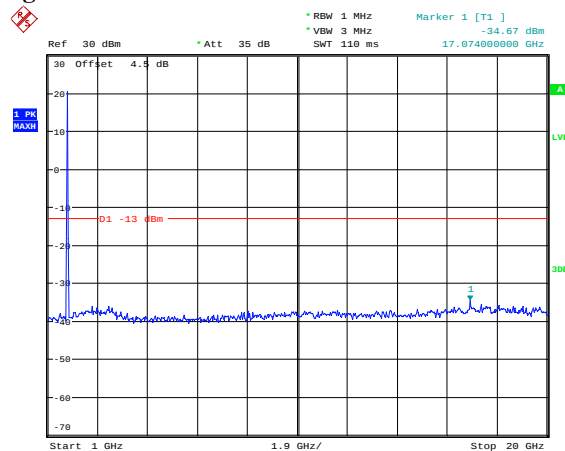


Date: 15.DEC.2020 23:21:35

1.4M, QPSK, High Channel

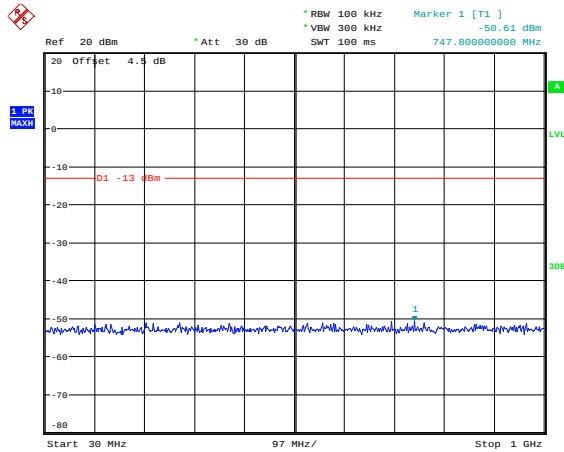


Date: 15.DEC.2020 23:21:57

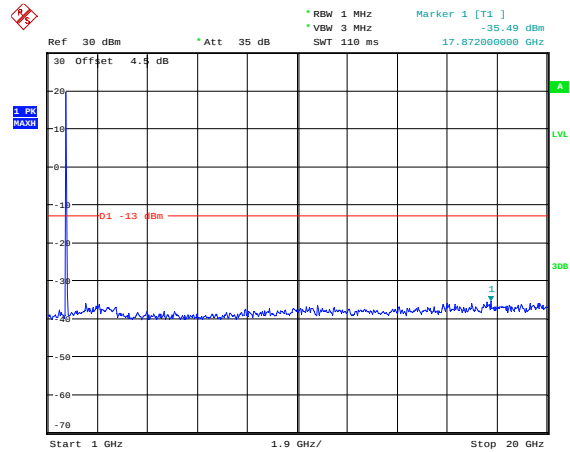


Date: 15.DEC.2020 23:22:09

3M, QPSK, Low Channel

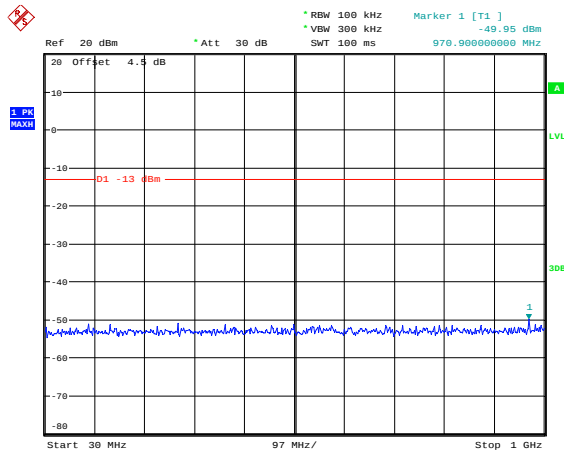


Date: 15.DEC.2020 23:22:58

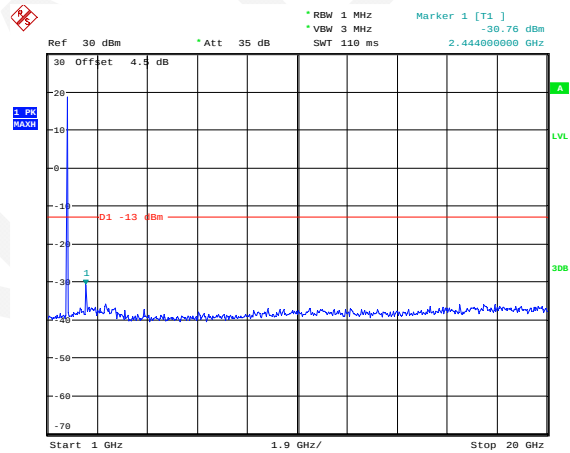


Date: 15.DEC.2020 23:23:11

3M, QPSK, Middle Channel

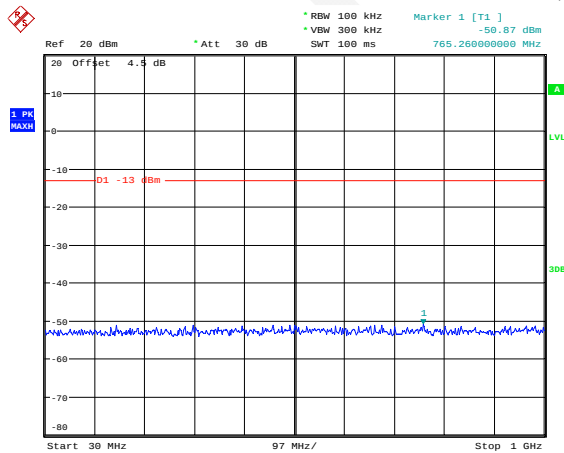


Date: 15.DEC.2020 23:23:28

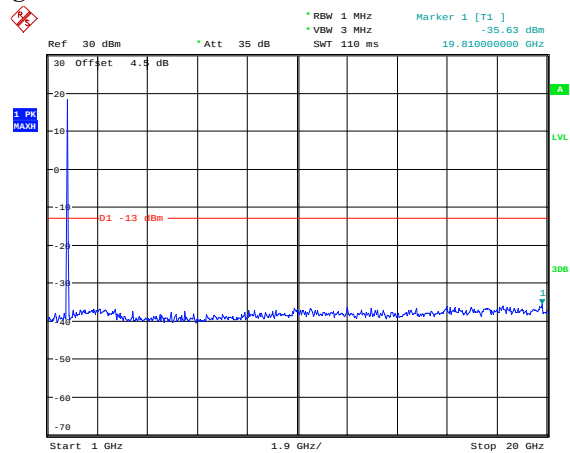


Date: 15.DEC.2020 23:23:41

3M, QPSK, High Channel

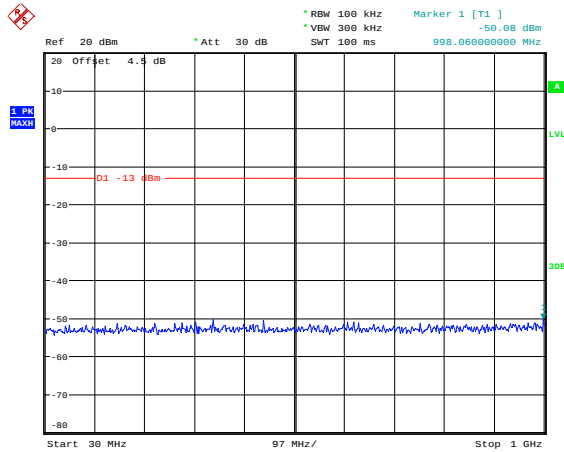


Date: 15.DEC.2020 23:24:03

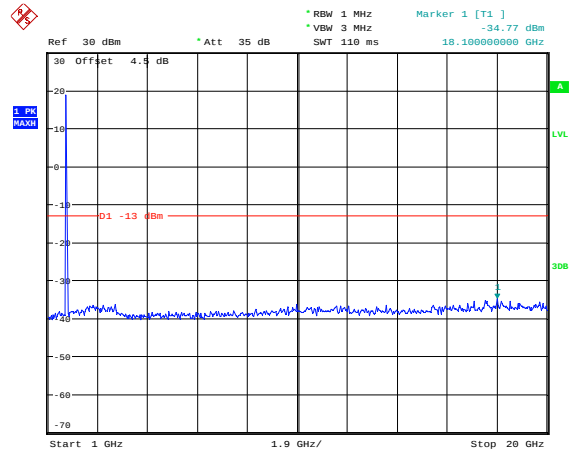


Date: 15.DEC.2020 23:24:15

5M, QPSK, Low Channel

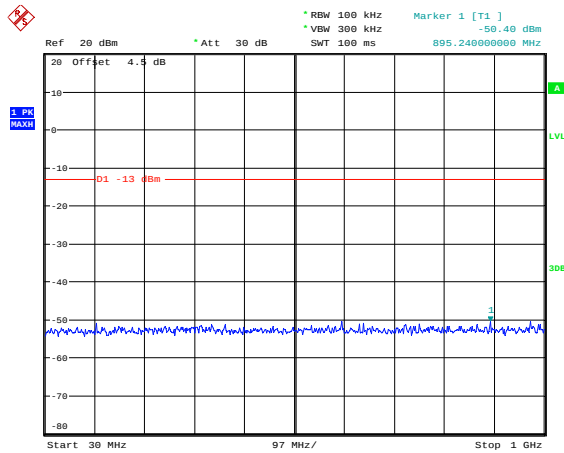


Date: 15.DEC.2020 23:25:03

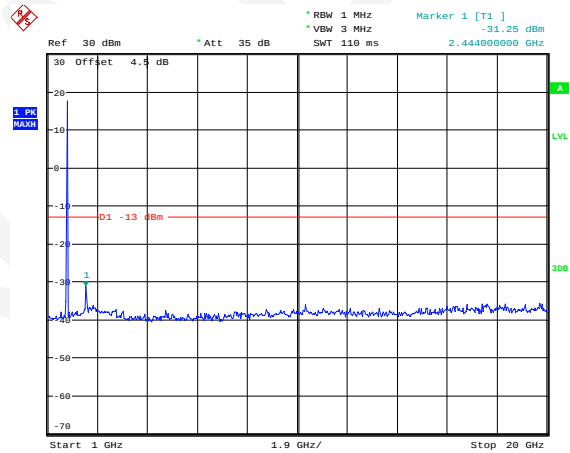


Date: 15.DEC.2020 23:25:19

5M, QPSK, Middle Channel

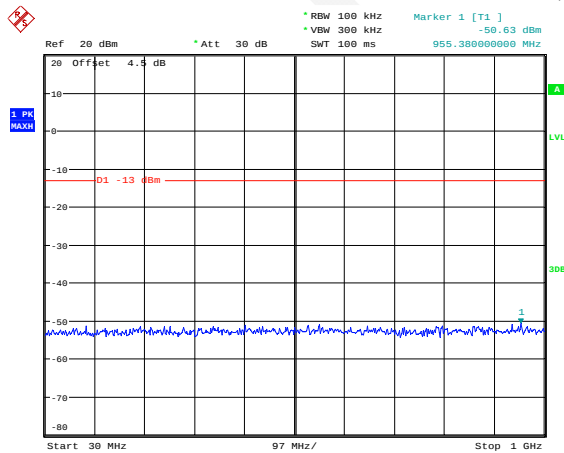


Date: 15.DEC.2020 23:25:41

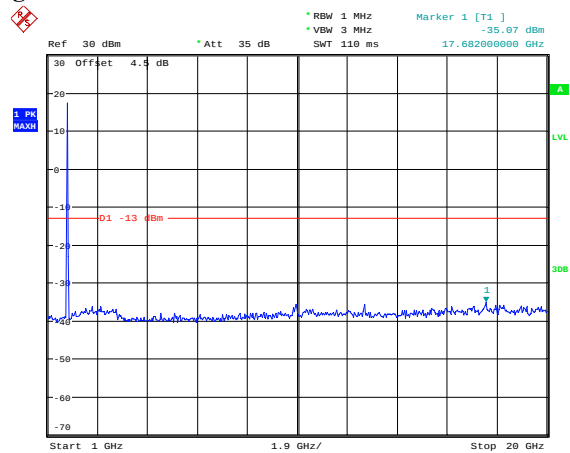


Date: 15.DEC.2020 23:25:54

5M, QPSK, High Channel

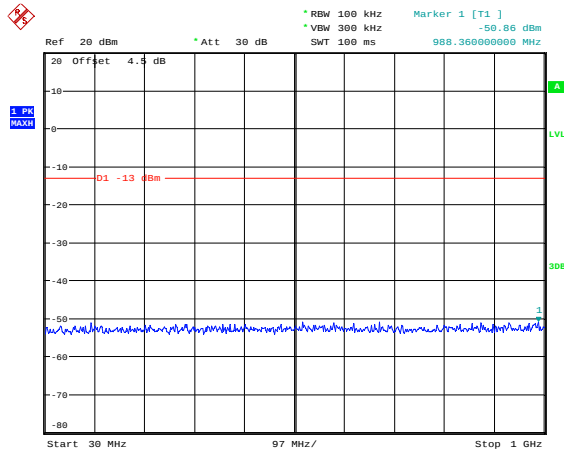


Date: 15.DEC.2020 23:26:15

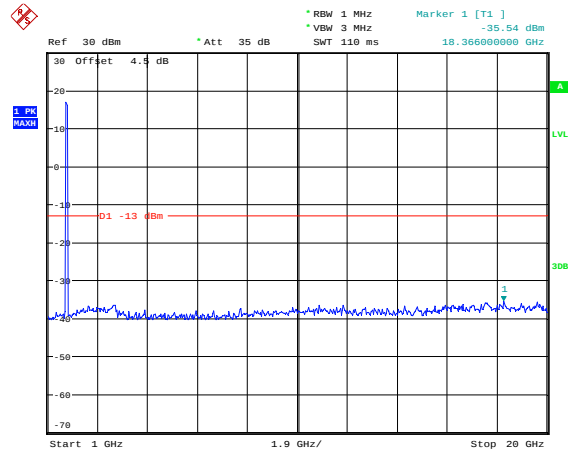


Date: 15.DEC.2020 23:26:28

10M, QPSK, Low Channel

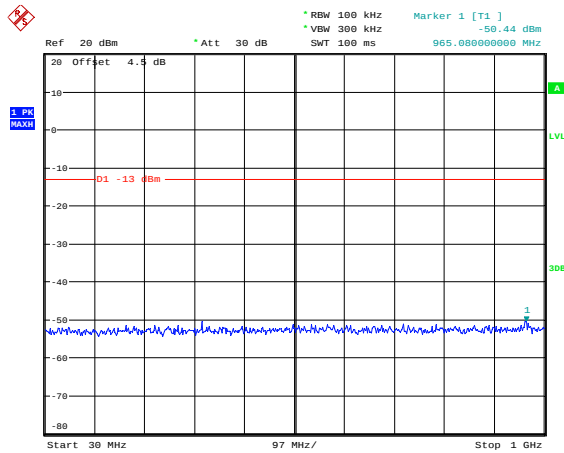


Date: 15.DEC.2020 23:27:16

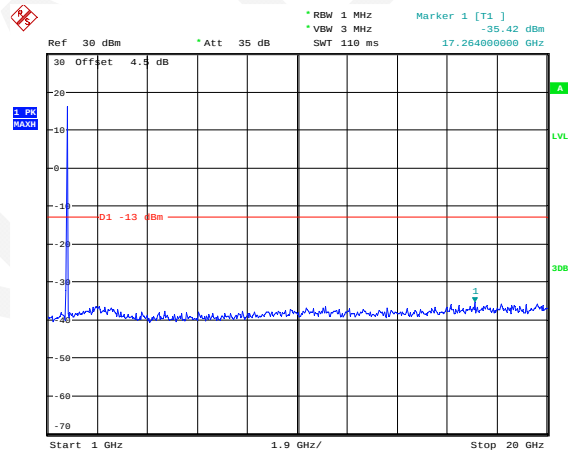


Date: 15.DEC.2020 23:27:28

10M, QPSK, Middle Channel

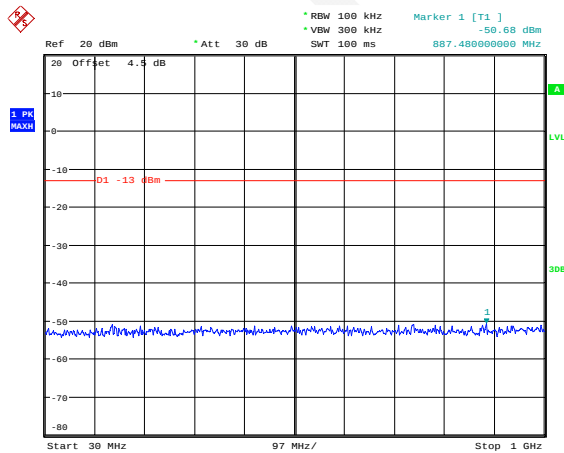


Date: 15.DEC.2020 23:27:51

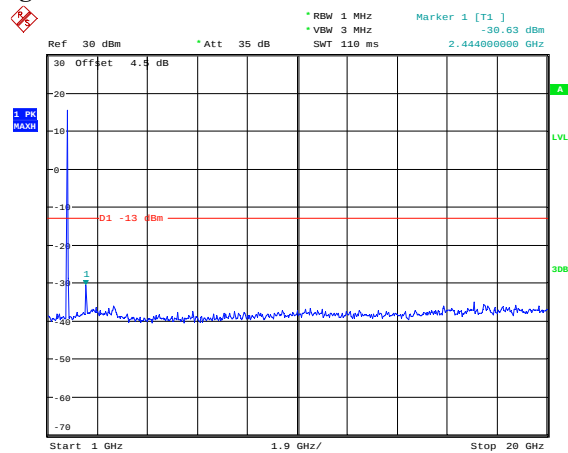


Date: 15.DEC.2020 23:28:04

10M, QPSK, High Channel

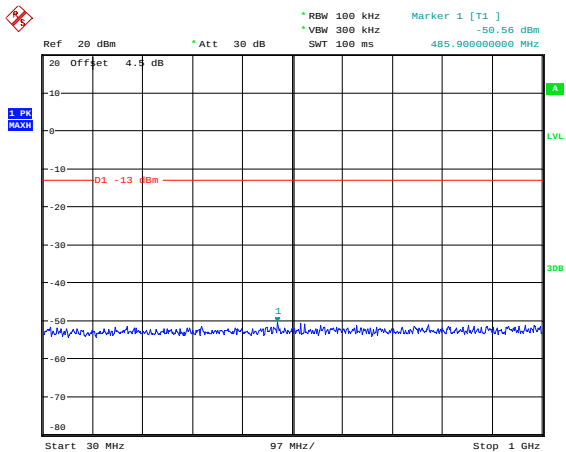


Date: 15.DEC.2020 23:28:26

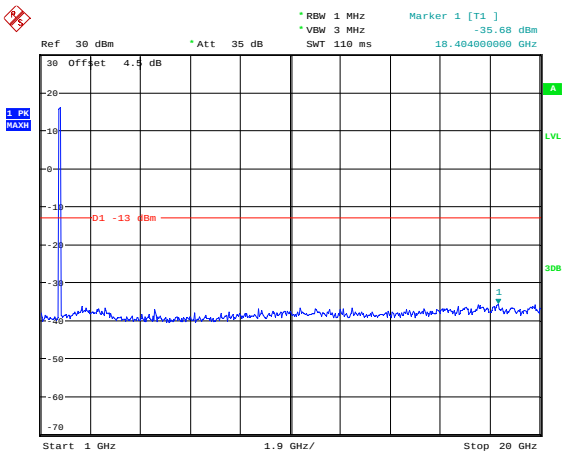


Date: 15.DEC.2020 23:28:39

15M, QPSK, Low Channel

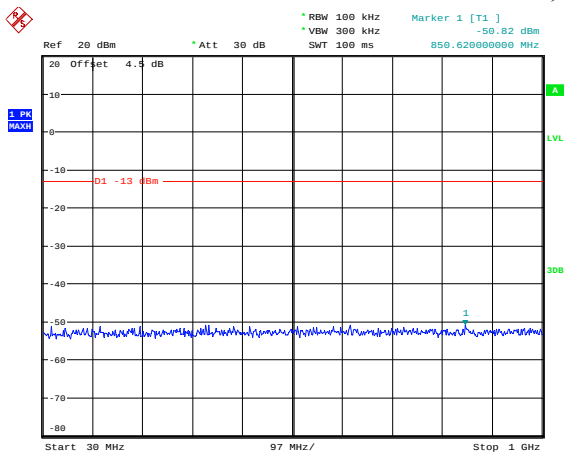


Date: 15.DEC.2020 23:29:29

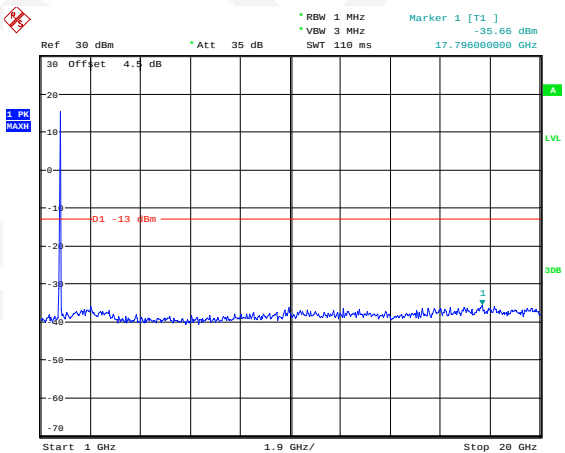


Date: 15.DEC.2020 23:29:42

15M, QPSK, Middle Channel

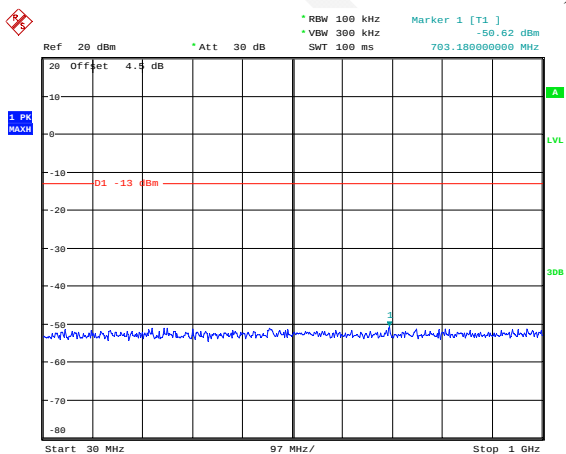


Date: 15.DEC.2020 23:30:07

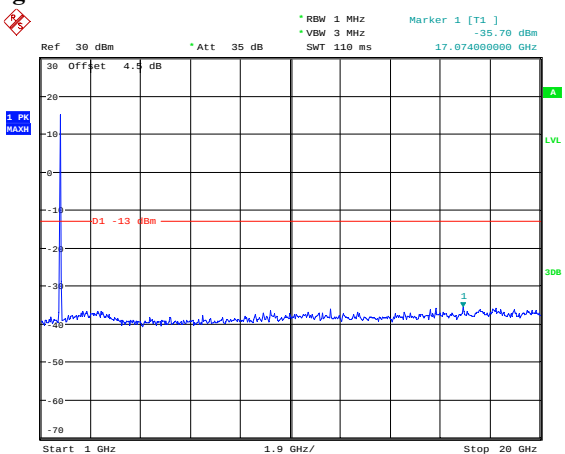


Date: 15.DEC.2020 23:30:19

15M, QPSK, High Channel

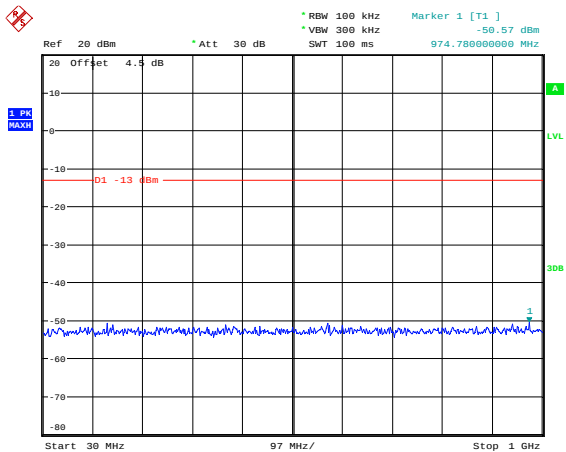


Date: 15.DEC.2020 23:30:44

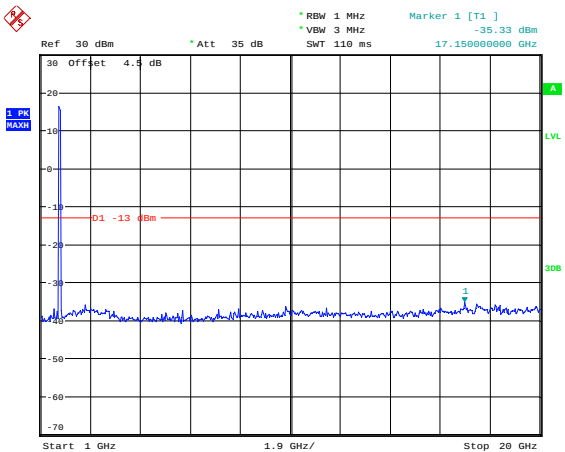


Date: 15.DEC.2020 23:30:57

20M, QPSK, Low Channel

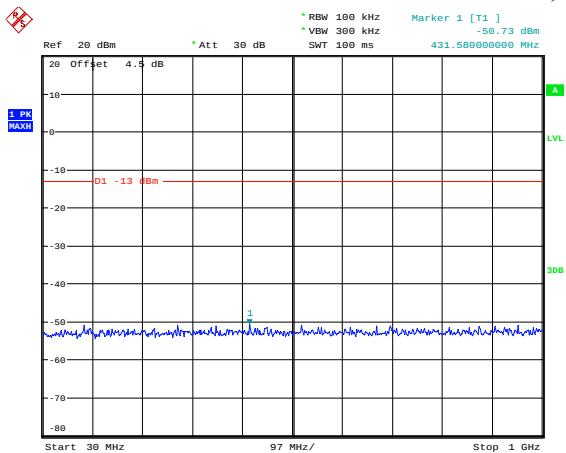


Date: 15.DEC.2020 23:31:24

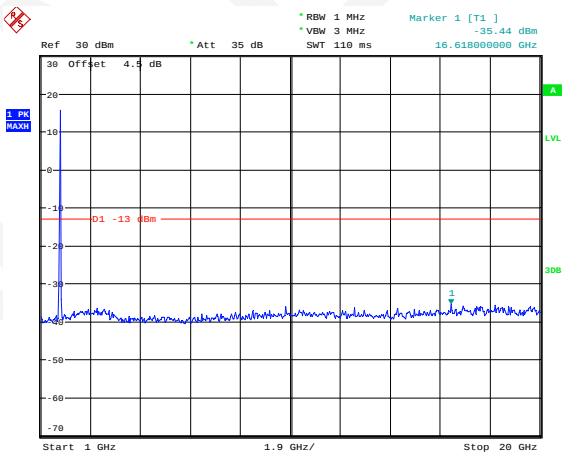


Date: 15.DEC.2020 23:31:37

20M, QPSK, Middle Channel

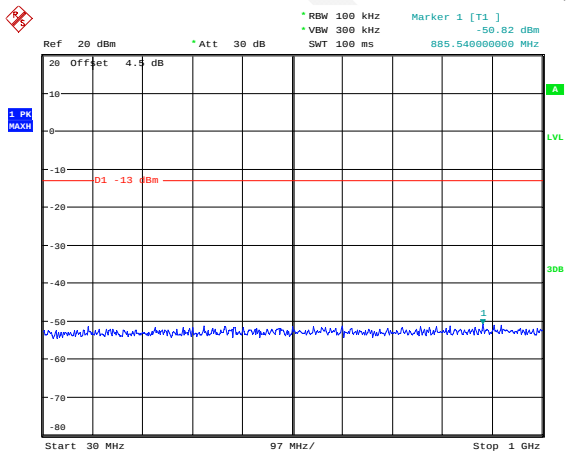


Date: 15.DEC.2020 23:32:02

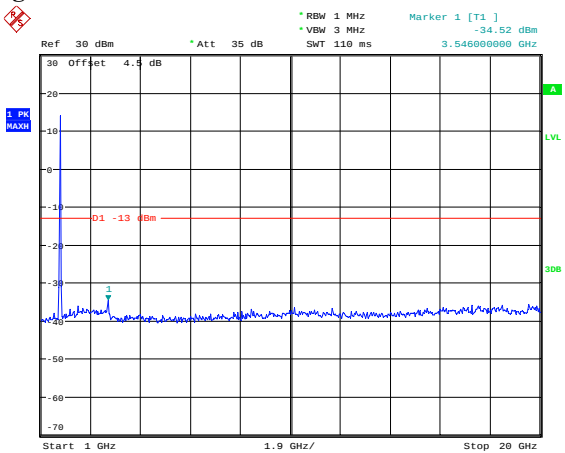


Date: 15.DEC.2020 23:32:15

20M, QPSK, High Channel



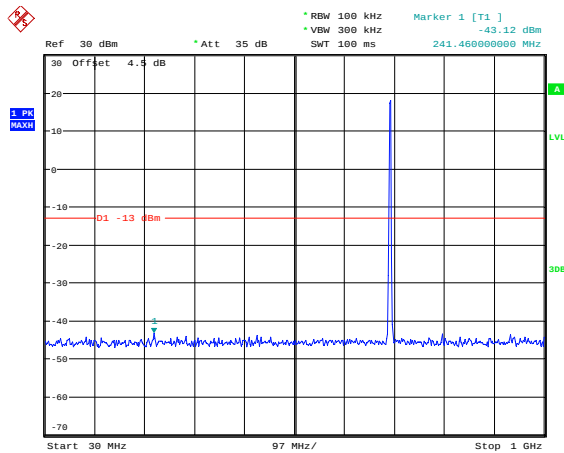
Date: 15.DEC.2020 23:32:36



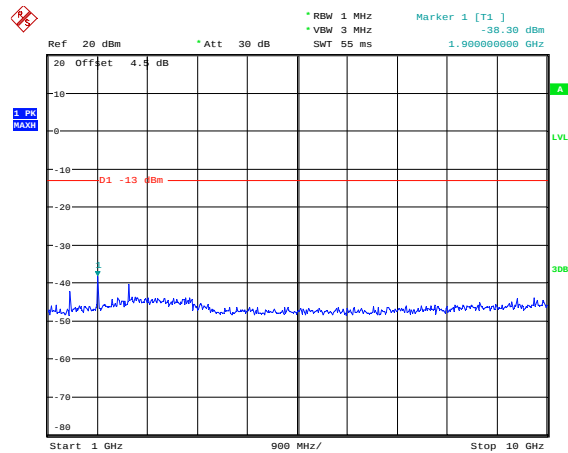
Date: 15.DEC.2020 23:32:48

LTE Band 12:

1.4M, QPSK, Low Channel

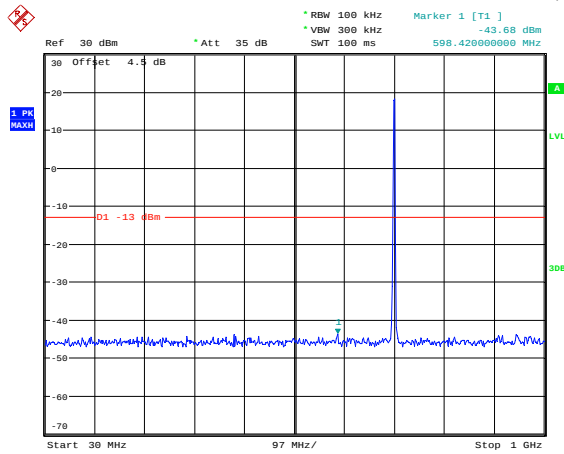


Date: 15.DEC.2020 23:33:58

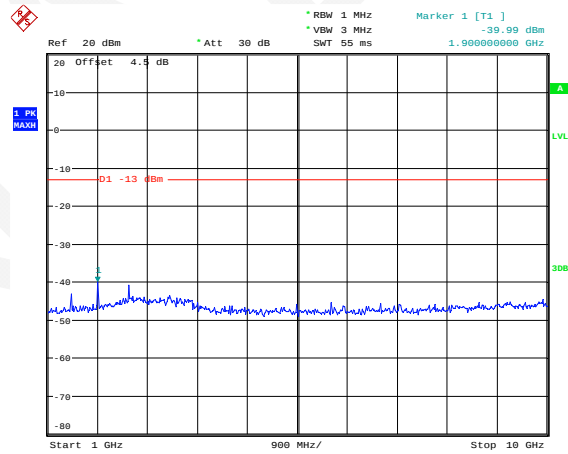


Date: 15.DEC.2020 23:34:14

1.4M, QPSK, Middle Channel

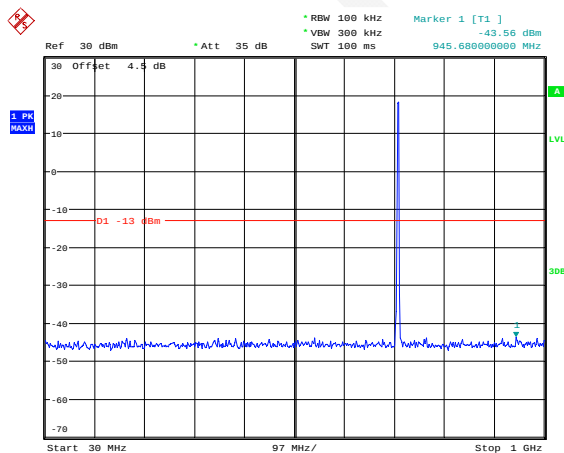


Date: 15.DEC.2020 23:34:32

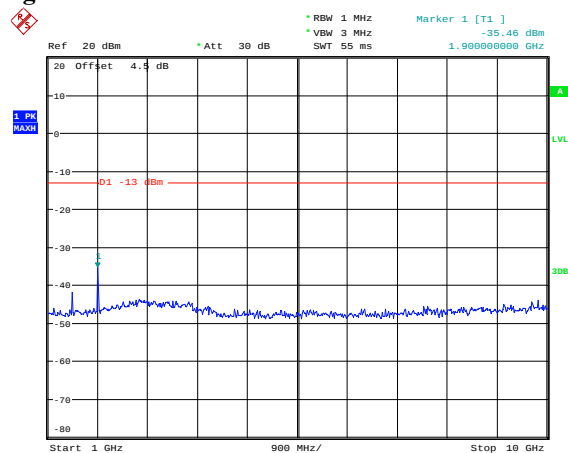


Date: 15.DEC.2020 23:34:45

1.4M, QPSK, High Channel

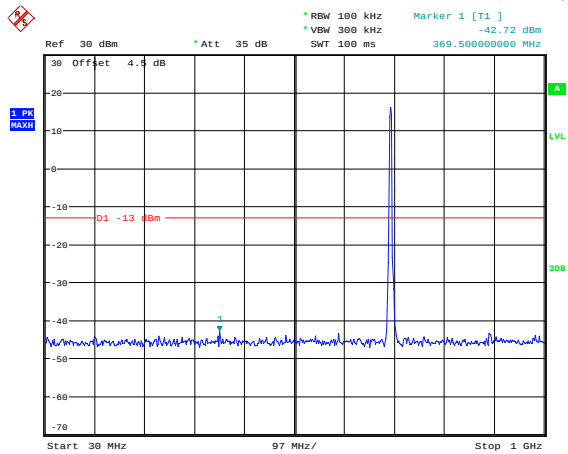


Date: 15.DEC.2020 23:35:06

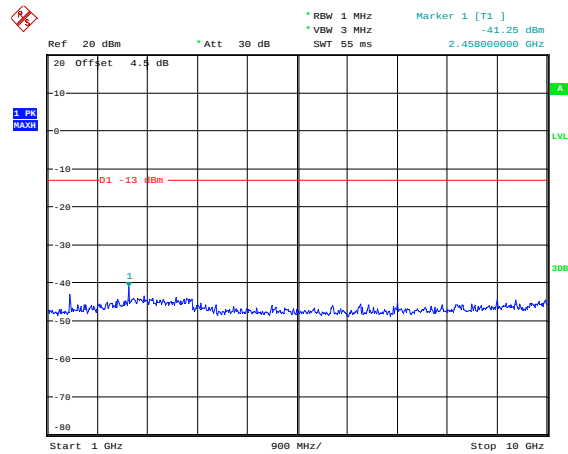


Date: 15.DEC.2020 23:35:19

3M, QPSK, Low Channel

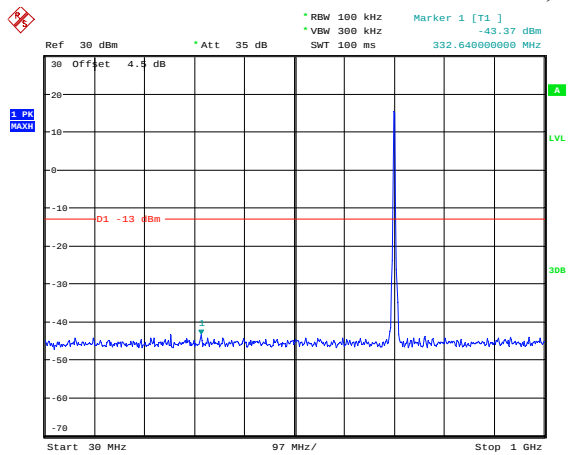


Date: 15.DEC.2020 23:35:43

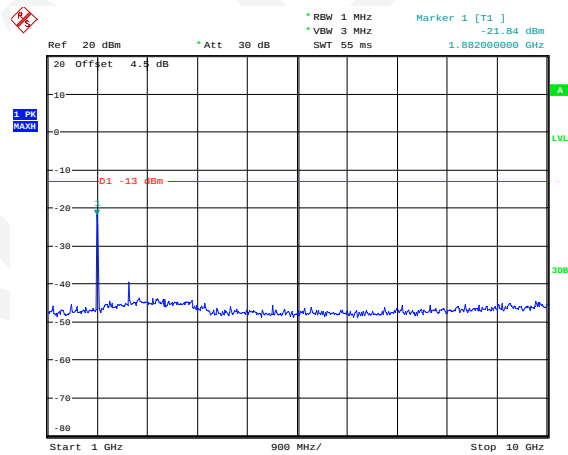


Date: 15.DEC.2020 23:35:56

3M, QPSK, Middle Channel

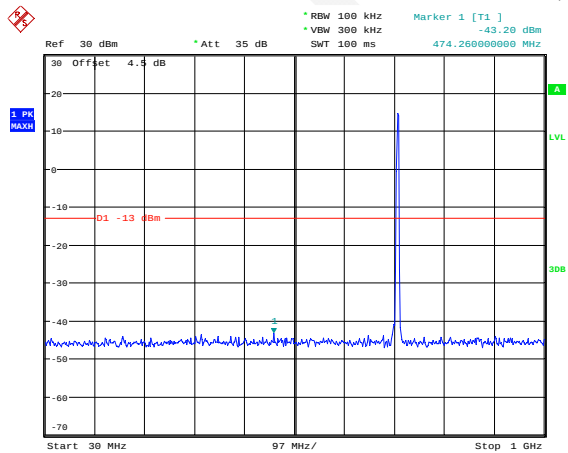


Date: 15.DEC.2020 23:36:17

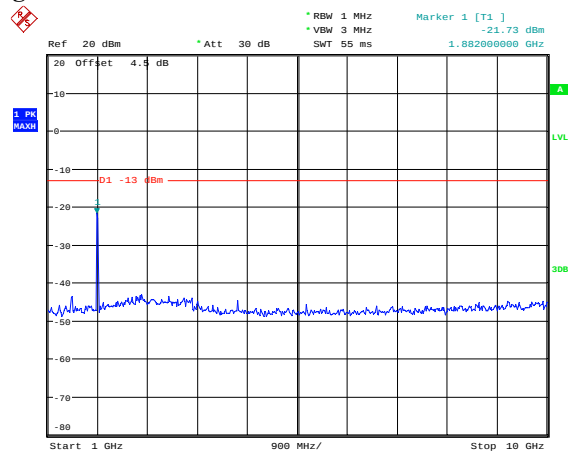


Date: 15.DEC.2020 23:36:30

3M, QPSK, High Channel

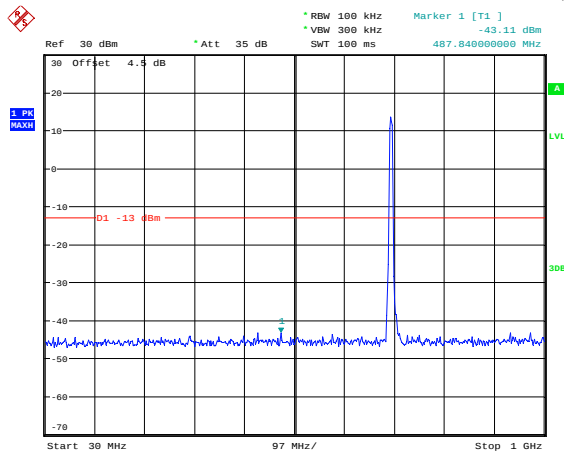


Date: 15.DEC.2020 23:36:51

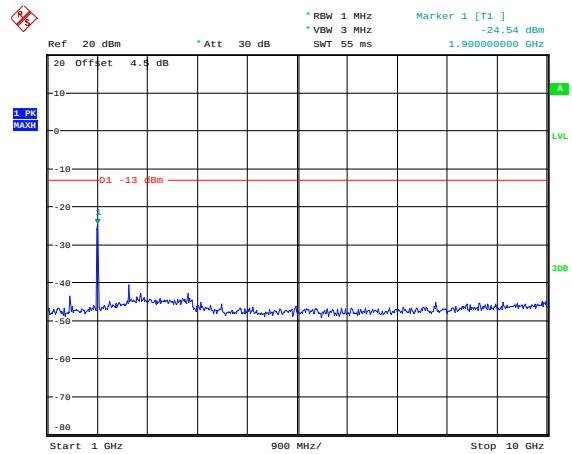


Date: 15.DEC.2020 23:37:04

5M, QPSK, Low Channel

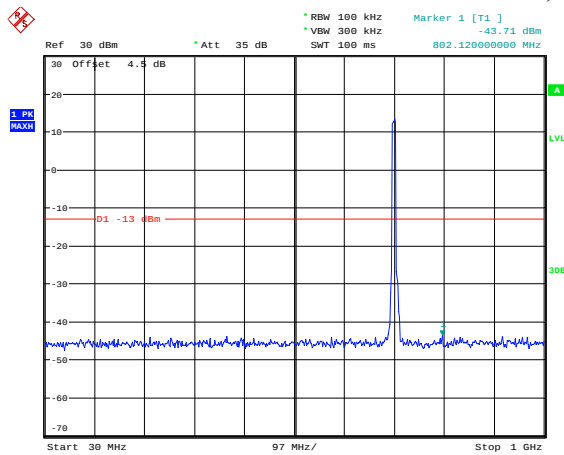


Date: 15.DEC.2020 23:37:29

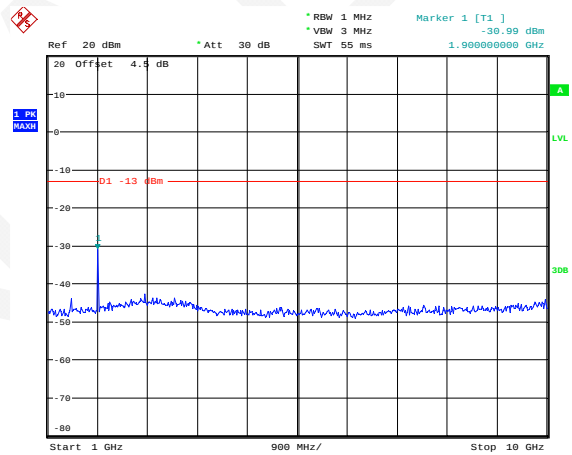


Date: 15.DEC.2020 23:37:41

5M, QPSK, Middle Channel

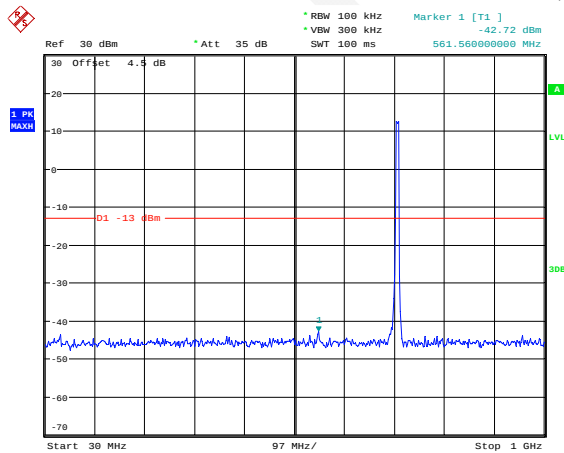


Date: 15.DEC.2020 23:38:03

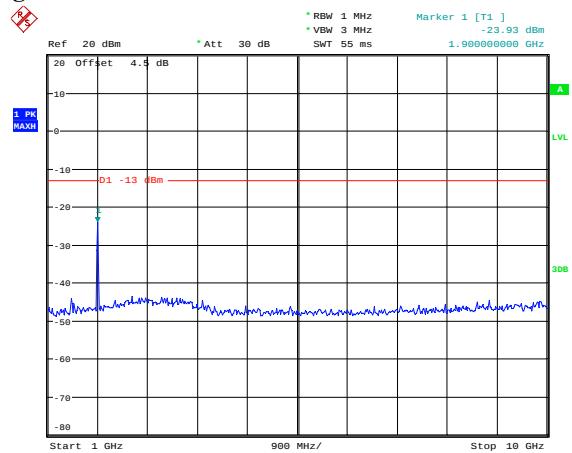


Date: 15.DEC.2020 23:38:15

5M, QPSK, High Channel

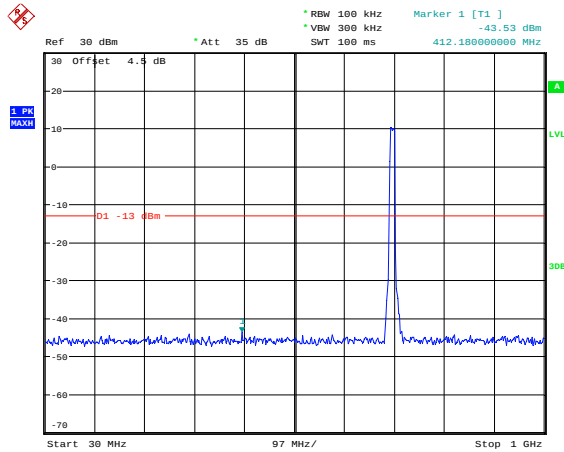


Date: 15.DEC.2020 23:38:33

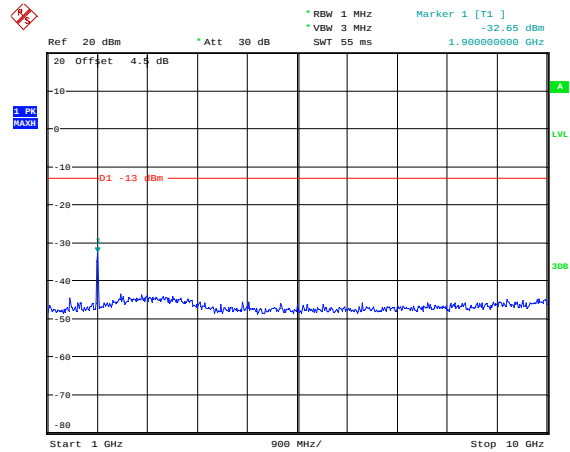


Date: 15.DEC.2020 23:38:46

10M, QPSK, Low Channel

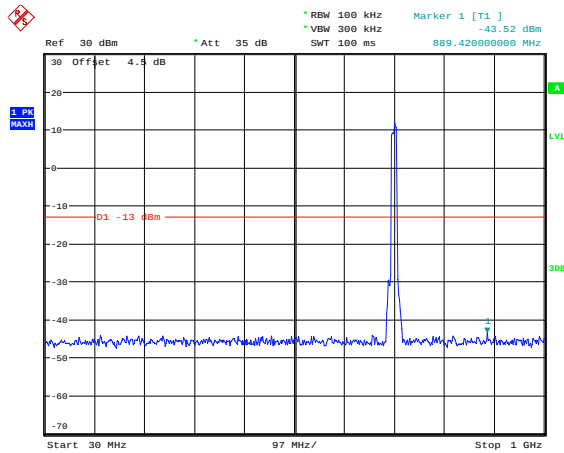


Date: 15.DEC.2020 23:39:08

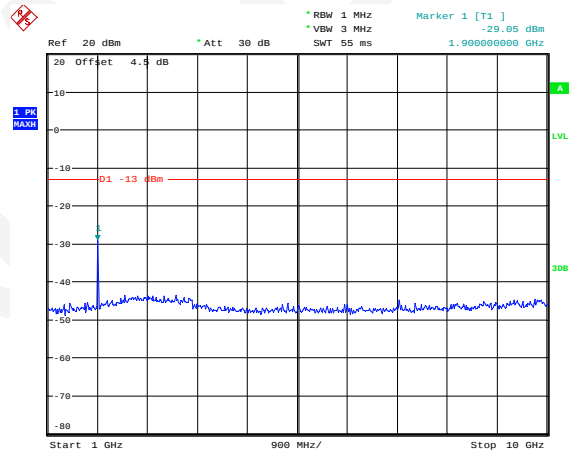


Date: 15.DEC.2020 23:39:21

10M, QPSK, Middle Channel

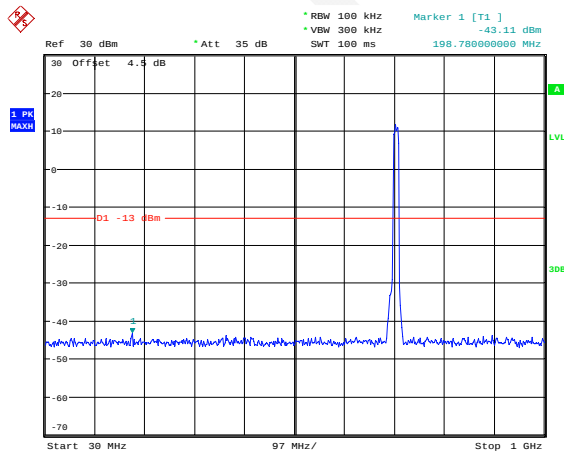


Date: 15.DEC.2020 23:39:40

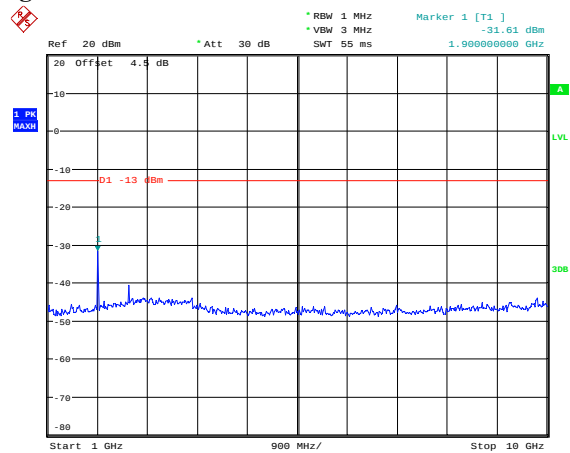


Date: 15.DEC.2020 23:39:56

10M, QPSK, High Channel



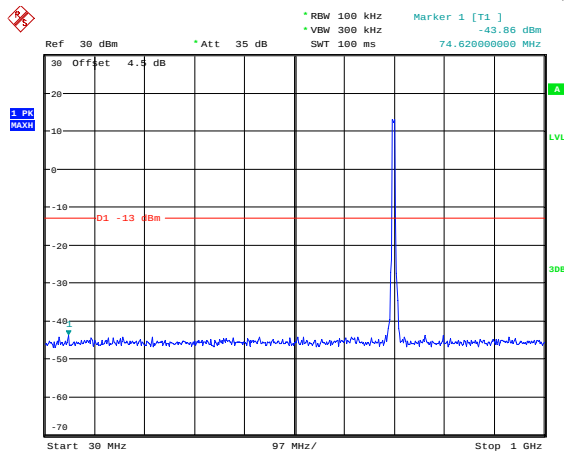
Date: 15.DEC.2020 23:40:18



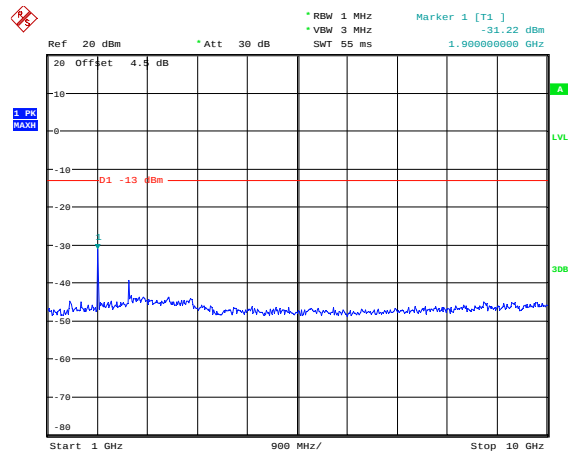
Date: 15.DEC.2020 23:40:31

LTE Band17:

5M, QPSK, Low Channel

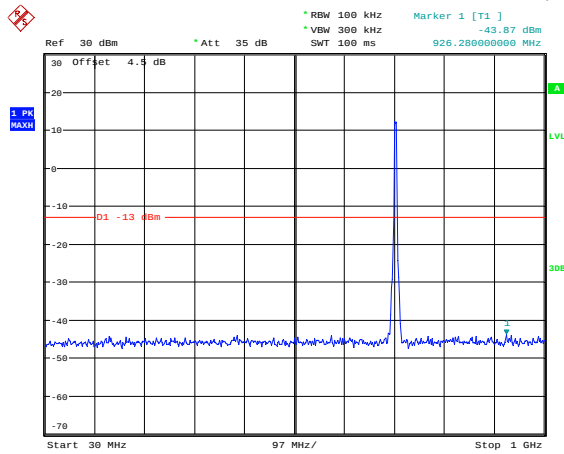


Date: 15.DEC.2020 23:40:56

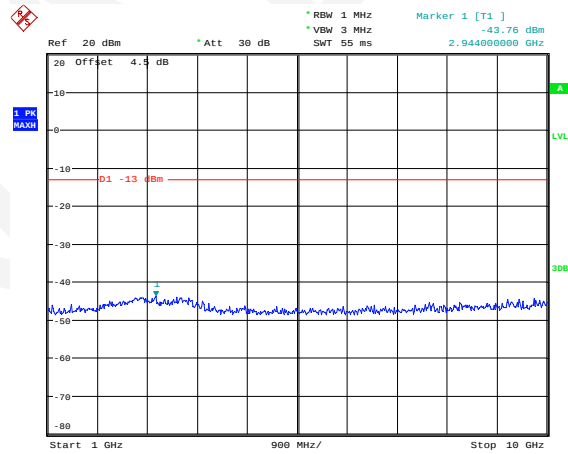


Date: 15.DEC.2020 23:41:09

5M, QPSK, Middle Channel

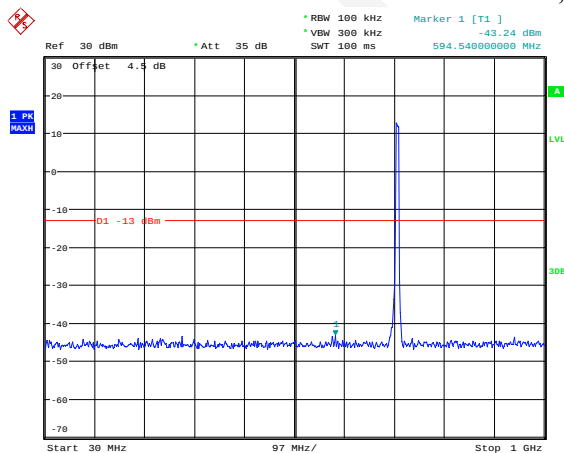


Date: 15.DEC.2020 23:41:27

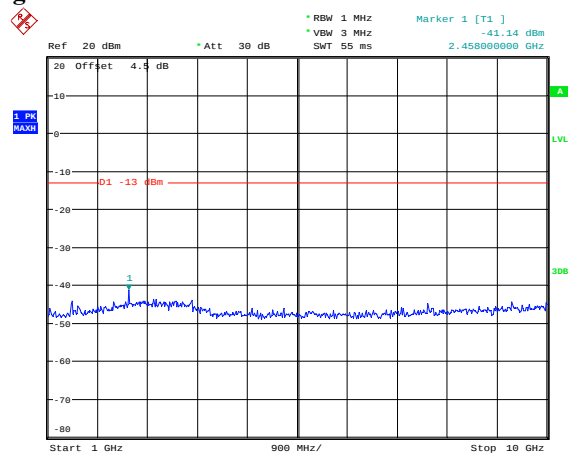


Date: 15.DEC.2020 23:41:39

5M, QPSK, High Channel

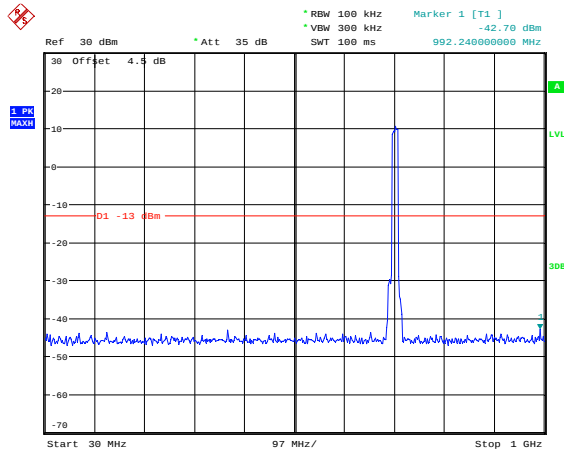


Date: 15.DEC.2020 23:42:01

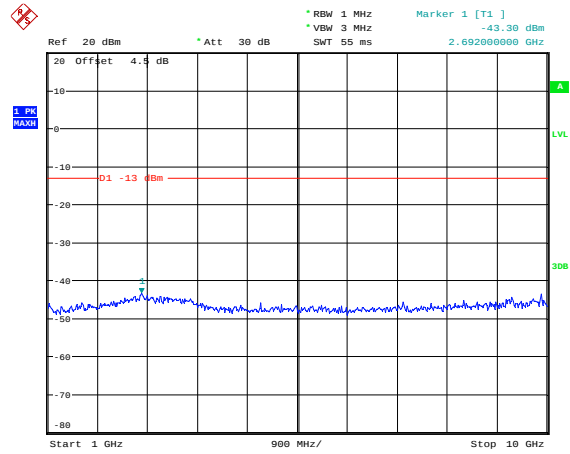


Date: 15.DEC.2020 23:42:14

10M, QPSK, Low Channel

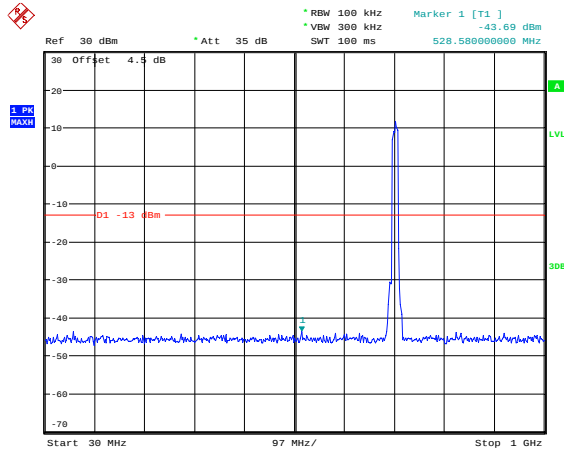


Date: 15.DEC.2020 23:42:42

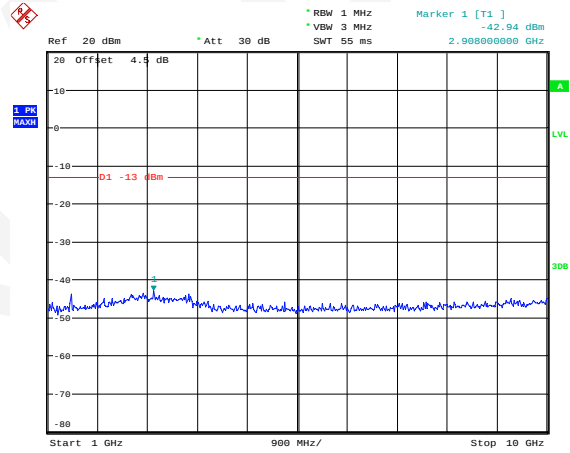


Date: 15.DEC.2020 23:42:55

10M, QPSK, Middle Channel

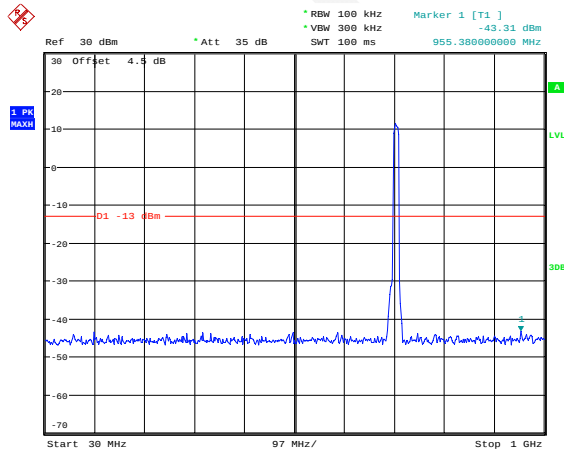


Date: 15.DEC.2020 23:43:18

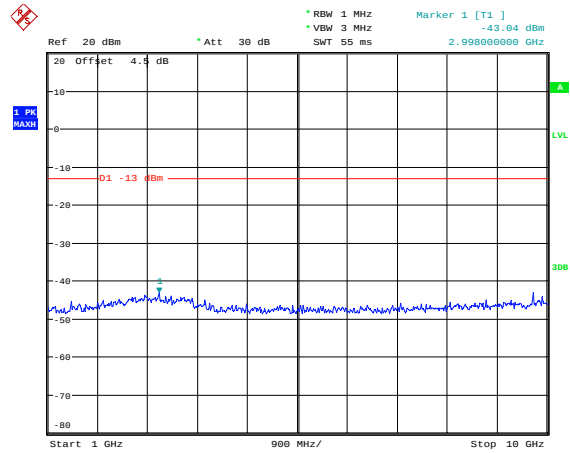


Date: 15.DEC.2020 23:43:30

10M, QPSK, High Channel



Date: 15.DEC.2020 23:43:53



Date: 15.DEC.2020 23:44:06

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

Applicable Standard

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

Test Procedure

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

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

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

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

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
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
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2017-12-06	2020-12-05
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2017-12-06	2020-12-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2020-07-07	2021-07-07
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-02	2020-06-27	2021-06-27
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2020-09-05	2021-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2020-06-27	2021-06-27
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
Agilent	Signal Generator	E8247C	MY43321350	2019-12-10	2020-12-10
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2020-09-05	2021-09-05
EMCO	Adjustable Dipole Antenna	3121C	9109-753	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**

Test Items	Radiation Below 1GHz	Radiation Above 1GHz
Temperature:	24.4°C	24.4°C
Relative Humidity:	45%	45%
ATM Pressure:	100.5kPa	100.5kPa
Tester:	Michael Zhang	Felix Wang
Test Date:	2020-10-30	2020-10-30

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	60.41	-43.77	10.44	0.71	-34.04	-13.00	21.04
1648.40	V	61.32	-43.46	10.44	0.71	-33.73	-13.00	20.73
2472.60	H	50.36	-52.42	12.88	1.25	-40.79	-13.00	27.79
2472.60	V	51.80	-51.03	12.88	1.25	-39.40	-13.00	26.40
3296.80	H	36.30	-63.48	13.60	1.59	-51.47	-13.00	38.47
3296.80	V	36.72	-63.07	13.60	1.59	-51.06	-13.00	38.06
173.56	H	52.70	-58.38	0.00	0.24	-58.62	-13.00	45.62
90.14	V	53.90	-53.28	0.00	0.19	-53.47	-13.00	40.47
GSM850 Frequency:836.6MHz								
1673.20	H	61.80	-42.14	10.61	0.73	-32.26	-13.00	19.26
1673.20	V	60.60	-43.94	10.61	0.73	-34.06	-13.00	21.06
2509.80	H	47.24	-55.67	13.11	1.25	-43.81	-13.00	30.81
2509.80	V	53.07	-49.87	13.11	1.25	-38.01	-13.00	25.01
3346.40	H	37.04	-62.64	13.83	1.61	-50.42	-13.00	37.42
3346.40	V	36.38	-63.34	13.83	1.61	-51.12	-13.00	38.12
174.65	H	52.30	-58.81	0.00	0.24	-59.05	-13.00	46.05
90.26	V	56.90	-50.28	0.00	0.19	-50.47	-13.00	37.47
GSM850 Frequency:848.8MHz								
1697.60	H	59.78	-43.92	10.78	0.75	-33.89	-13.00	20.89
1697.60	V	61.74	-42.56	10.78	0.75	-32.53	-13.00	19.53
2546.40	H	51.82	-51.13	13.15	1.27	-39.25	-13.00	26.25
2546.40	V	51.78	-51.31	13.15	1.27	-39.43	-13.00	26.43
3395.20	H	36.42	-63.10	14.08	1.64	-50.66	-13.00	37.66
3395.20	V	36.67	-62.95	14.08	1.64	-50.51	-13.00	37.51
175.69	H	52.98	-58.15	0.00	0.24	-58.39	-13.00	45.39
90.26	V	54.69	-52.49	0.00	0.19	-52.68	-13.00	39.68

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	42.74	-61.39	10.47	0.72	-51.64	-13.00	38.64
1652.80	V	44.00	-60.73	10.47	0.72	-50.98	-13.00	37.98
2479.20	H	37.82	-64.99	12.93	1.25	-53.31	-13.00	40.31
2479.20	V	36.80	-66.05	12.93	1.25	-54.37	-13.00	41.37
3305.60	H	38.00	-61.80	13.63	1.59	-49.76	-13.00	36.76
3305.60	V	37.49	-62.32	13.63	1.59	-50.28	-13.00	37.28
175.89	H	53.69	-57.44	0.00	0.24	-57.68	-13.00	44.68
80.44	V	52.00	-53.12	0.00	0.18	-53.30	-13.00	40.30
WCDMA Band 5 Frequency:836.6MHz								
1673.20	H	41.62	-62.32	10.61	0.73	-52.44	-13.00	39.44
1673.20	V	42.64	-61.90	10.61	0.73	-52.02	-13.00	39.02
2509.80	H	41.99	-60.92	13.11	1.25	-49.06	-13.00	36.06
2509.80	V	40.75	-62.19	13.11	1.25	-50.33	-13.00	37.33
3346.40	H	37.23	-62.45	13.83	1.61	-50.23	-13.00	37.23
3346.40	V	37.12	-62.60	13.83	1.61	-50.38	-13.00	37.38
178.95	H	54.00	-57.20	0.00	0.24	-57.44	-13.00	44.44
80.69	V	56.99	-48.19	0.00	0.18	-48.37	-13.00	35.37
WCDMA Band 5 Frequency:846.6MHz								
1693.20	H	41.63	-62.12	10.75	0.75	-52.12	-13.00	39.12
1693.20	V	42.84	-61.51	10.75	0.75	-51.51	-13.00	38.51
2539.80	H	37.59	-65.35	13.14	1.27	-53.48	-13.00	40.48
2539.80	V	37.61	-65.45	13.14	1.27	-53.58	-13.00	40.58
3386.40	H	37.23	-62.32	14.03	1.63	-49.92	-13.00	36.92
3386.40	V	37.08	-62.56	14.03	1.63	-50.16	-13.00	37.16
177.69	H	52.67	-58.50	0.00	0.24	-58.74	-13.00	45.74
81.96	V	53.96	-51.49	0.00	0.18	-51.67	-13.00	38.67

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	63.26	-34.73	14.00	1.83	-22.56	-13.00	9.56
3700.40	V	63.60	-34.37	14.00	1.83	-22.20	-13.00	9.20
5550.60	H	54.77	-39.20	13.95	1.27	-26.52	-13.00	13.52
5550.60	V	52.30	-41.52	13.95	1.27	-28.84	-13.00	15.84
174.63	H	51.23	-59.88	0.00	0.24	-60.12	-13.00	47.12
90.63	V	53.69	-53.51	0.00	0.18	-53.69	-13.00	40.69
GSM 1900 Frequency:1880MHz								
3760.00	H	60.64	-37.00	13.76	1.63	-24.87	-13.00	11.87
3760.00	V	61.67	-35.83	13.76	1.63	-23.70	-13.00	10.70
5640.00	H	51.62	-41.97	14.02	1.31	-29.26	-13.00	16.26
5640.00	V	48.33	-45.15	14.02	1.31	-32.44	-13.00	19.44
174.65	H	50.36	-60.75	0.00	0.24	-60.99	-13.00	47.99
90.33	V	54.63	-52.56	0.00	0.19	-52.75	-13.00	39.75
GSM 1900 Frequency:1909.8MHz								
3819.60	H	55.70	-41.55	13.56	1.50	-29.49	-13.00	16.49
3819.60	V	58.24	-38.83	13.56	1.50	-26.77	-13.00	13.77
5640.00	H	35.29	-58.30	14.02	1.31	-45.59	-13.00	32.59
5640.00	V	34.86	-58.62	14.02	1.31	-45.91	-13.00	32.91
176.90	H	51.36	-59.79	0.00	0.24	-60.03	-13.00	47.03
90.65	V	53.99	-53.21	0.00	0.18	-53.39	-13.00	40.39

LTE Band 2 (30MHz-20GHz):

E1E Band 2 (50MHz-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								
3421.40	H	41.01	-58.39	14.04	1.63	-45.98	-13.00	32.98
3421.40	V	41.32	-58.16	14.04	1.63	-45.75	-13.00	32.75
5132.10	H	40.01	-54.66	13.93	1.37	-42.10	-13.00	29.10
5132.10	V	40.32	-54.27	13.93	1.37	-41.71	-13.00	28.71
360.14	H	63.10	-43.24	0.00	0.57	-43.81	-13.00	30.81
201.31	V	61.01	-49.52	0.00	0.49	-50.01	-13.00	37.01
QPSK, Frequency: 1880 MHz								
3465.00	H	41.01	-58.18	13.91	1.62	-45.89	-13.00	32.89
3465.00	V	41.32	-57.90	13.91	1.62	-45.61	-13.00	32.61
5197.50	H	40.12	-54.57	14.00	1.52	-42.09	-13.00	29.09
5197.50	V	40.21	-54.55	14.00	1.52	-42.07	-13.00	29.07
360.14	H	61.01	-45.32	0.00	0.57	-45.89	-13.00	32.89
201.14	V	62.31	-48.21	0.00	0.49	-48.70	-13.00	35.70
QPSK, Frequency: 1909.3 MHz								
3818.60	H	41.80	-55.46	13.56	1.50	-43.40	-13.00	30.40
3818.60	V	41.20	-55.87	13.56	1.50	-43.81	-13.00	30.81
5727.90	H	39.10	-54.62	13.96	1.31	-41.97	-13.00	28.97
5727.90	V	40.24	-53.45	13.96	1.31	-40.80	-13.00	27.80
360.12	H	62.14	-44.20	0.00	0.57	-44.77	-13.00	31.77
201.00	V	60.14	-50.37	0.00	0.49	-50.86	-13.00	37.86

LTE Band 4 (30MHz-20GHz):

EPE Band 4 (36MHz - 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	41.01	-58.39	14.04	1.63	-45.98	-13.00	32.98
3421.40	V	41.32	-58.16	14.04	1.63	-45.75	-13.00	32.75
5132.10	H	40.01	-54.66	13.93	1.37	-42.10	-13.00	29.10
5132.10	V	40.32	-54.27	13.93	1.37	-41.71	-13.00	28.71
360.14	H	63.10	-43.24	0.00	0.57	-43.81	-13.00	30.81
201.31	V	61.01	-49.52	0.00	0.49	-50.01	-13.00	37.01
QPSK, Frequency: 1732.5 MHz								
3465.00	H	41.01	-58.18	13.91	1.62	-45.89	-13.00	32.89
3465.00	V	41.32	-57.90	13.91	1.62	-45.61	-13.00	32.61
5197.50	H	40.12	-54.57	14.00	1.52	-42.09	-13.00	29.09
5197.50	V	40.21	-54.55	14.00	1.52	-42.07	-13.00	29.07
360.14	H	61.01	-45.32	0.00	0.57	-45.89	-13.00	32.89
201.14	V	62.31	-48.21	0.00	0.49	-48.70	-13.00	35.70
QPSK, Frequency: 1754.3 MHz								
3508.60	H	40.12	-58.89	13.83	1.60	-46.66	-13.00	33.66
3508.60	V	41.32	-57.69	13.83	1.60	-45.46	-13.00	32.46
5262.90	H	41.03	-54.06	14.19	1.29	-41.16	-13.00	28.16
5262.90	V	41.23	-53.94	14.19	1.29	-41.04	-13.00	28.04
364.10	H	62.30	-43.88	0.00	0.58	-44.46	-13.00	31.46
201.41	V	61.23	-49.30	0.00	0.49	-49.79	-13.00	36.79

LTE Band 12(30MHz-10GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 699.7 MHz								
1399.40	H	41.23	-62.16	9.00	1.20	-54.36	-13.00	41.36
1399.40	V	41.21	-62.78	9.00	1.20	-54.98	-13.00	41.98
2099.10	H	40.17	-61.90	11.41	1.10	-51.59	-13.00	38.59
2099.10	V	40.25	-61.82	11.41	1.10	-51.51	-13.00	38.51
201.10	H	54.70	-53.95	0.00	0.49	-54.44	-13.00	41.44
78.87	V	60.70	-56.76	-0.56	0.36	-57.68	-13.00	44.68
1399.40	H	41.23	-62.16	9.00	1.20	-54.36	-13.00	41.36
1399.40	V	41.21	-62.78	9.00	1.20	-54.98	-13.00	41.98
QPSK, Frequency: 707.5 MHz								
1399.40	H	41.23	-62.16	9.00	1.20	-54.36	-13.00	41.36
1399.40	V	41.21	-62.78	9.00	1.20	-54.98	-13.00	41.98
2099.10	H	40.17	-61.90	11.41	1.10	-51.59	-13.00	38.59
2099.10	V	40.25	-61.82	11.41	1.10	-51.51	-13.00	38.51
201.10	H	54.70	-53.95	0.00	0.49	-54.44	-13.00	41.44
78.87	V	60.70	-56.76	-0.56	0.36	-57.68	-13.00	44.68
1399.40	H	41.23	-62.16	9.00	1.20	-54.36	-13.00	41.36
1399.40	V	41.21	-62.78	9.00	1.20	-54.98	-13.00	41.98
QPSK, Frequency: 715.3 MHz								
1430.60	H	40.33	-63.51	9.15	1.25	-55.61	-13.00	42.61
1430.60	V	40.30	-63.98	9.15	1.25	-56.08	-13.00	43.08
2145.90	H	42.10	-59.86	11.12	1.12	-49.86	-13.00	36.86
2145.90	V	43.00	-58.92	11.12	1.12	-48.92	-13.00	35.92
201.80	H	55.50	-53.16	0.00	0.49	-53.65	-13.00	40.65
81.80	V	60.87	-56.16	0.00	0.38	-56.54	-13.00	43.54
1430.60	H	40.33	-63.51	9.15	1.25	-55.61	-13.00	42.61
1430.60	V	40.30	-63.98	9.15	1.25	-56.08	-13.00	43.08

LTE Band 17(30MHz-10GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 706.5 MHz								
1413.00	H	41.55	-62.03	9.07	1.22	-54.18	-13.00	41.18
1413.00	V	41.50	-62.61	9.07	1.22	-54.76	-13.00	41.76
2119.50	H	43.40	-58.62	11.28	1.11	-48.45	-13.00	35.45
2119.50	V	42.10	-59.90	11.28	1.11	-49.73	-13.00	36.73
200.80	H	56.70	-51.95	0.00	0.49	-52.44	-13.00	39.44
88.70	V	60.14	-53.42	0.00	0.36	-53.78	-13.00	40.78
QPSK, Frequency:710 MHz								
1420.00	H	41.01	-62.67	9.10	1.23	-54.80	-13.00	41.80
1420.00	V	40.50	-63.68	9.10	1.23	-55.81	-13.00	42.81
2130.00	H	41.10	-60.90	11.22	1.11	-50.79	-13.00	37.79
2130.00	V	40.40	-61.57	11.22	1.11	-51.46	-13.00	38.46
210.00	H	55.60	-53.16	0.00	0.49	-53.65	-13.00	40.65
108.87	V	56.87	-55.02	0.00	0.28	-55.30	-13.00	42.30
QPSK, Frequency: 713.5 MHz								
1427.00	H	42.10	-61.68	9.14	1.24	-53.78	-13.00	40.78
1427.00	V	41.01	-63.24	9.14	1.24	-55.34	-13.00	42.34
2140.50	H	43.10	-58.87	11.16	1.12	-48.83	-13.00	35.83
2140.50	V	43.40	-58.53	11.16	1.12	-48.49	-13.00	35.49
210.01	H	56.50	-52.26	0.00	0.49	-52.75	-13.00	39.75
100.80	V	61.07	-51.82	0.00	0.26	-52.08	-13.00	39.08

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

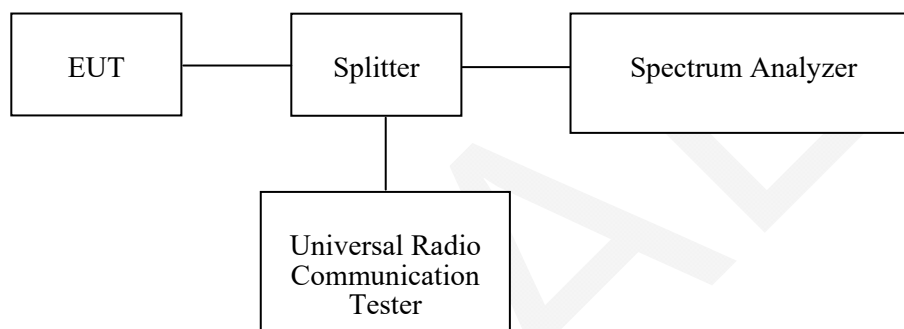
Applicable Standard

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	FSP 38	100478	2020-07-07	2021-07-07
R&S	Spectrum Analyzer	FSU 26	200256	2020-01-04	2021-01-04
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	N/A

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

Test Data

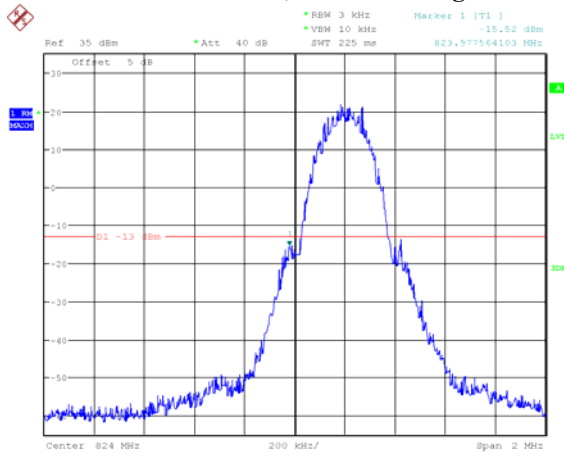
Environmental Conditions

Temperature:	26 ~26.9°C
Relative Humidity:	52~58%
ATM Pressure:	100.9~101kPa
Tester:	Taylor Li
Test Date:	2020-10-09~2020-12-16

Test Mode: Transmitting

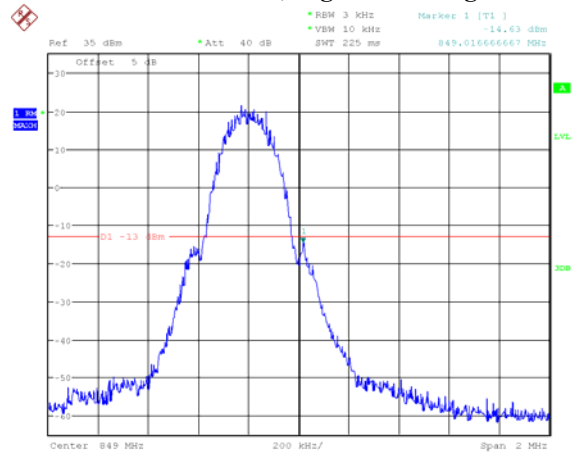
Test Result: Compliance. Please refer to the following plots.

GSM 850, Left Band Edge



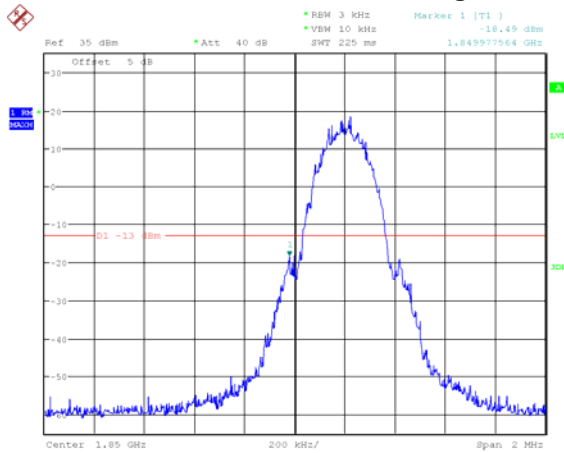
Date: 10.OCT.2020 14:03:39

GSM 850, Right Band Edge



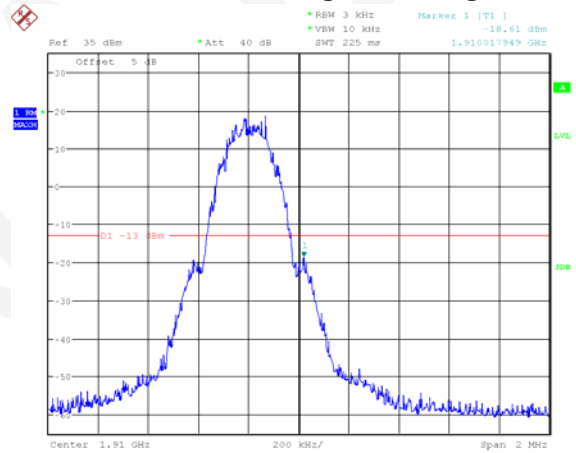
Date: 10.OCT.2020 14:02:07

PCS 1900, Left Band Edge



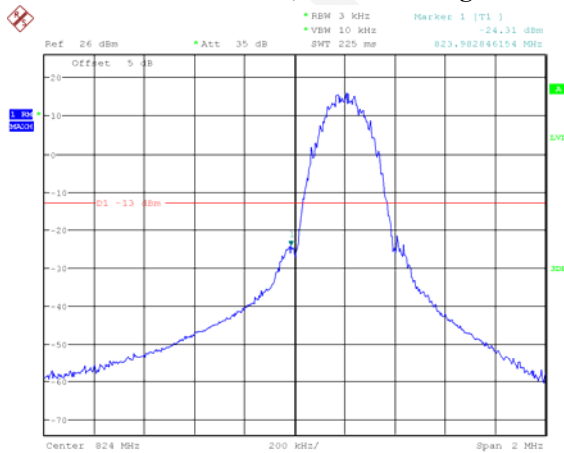
Date: 10.OCT.2020 14:19:07

PCS 1900, Right Band Edge



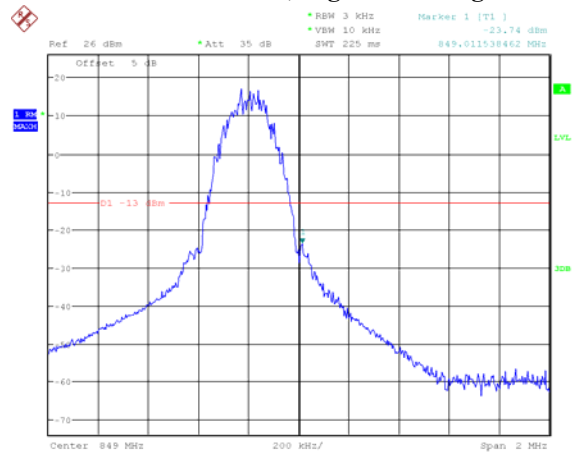
Date: 10.OCT.2020 14:20:25

EDGE 850, Left Band Edge

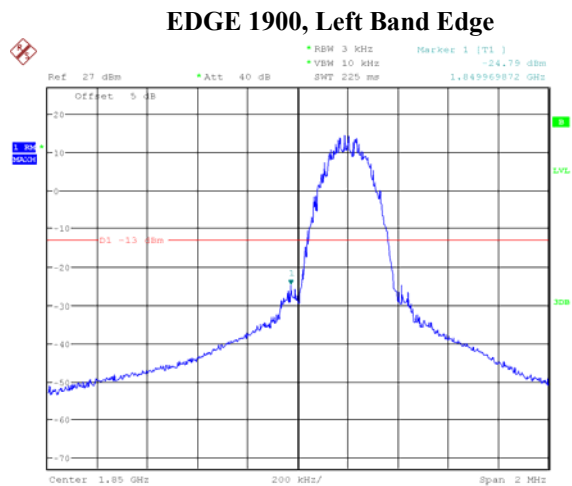


Date: 11.NOV.2020 18:20:40

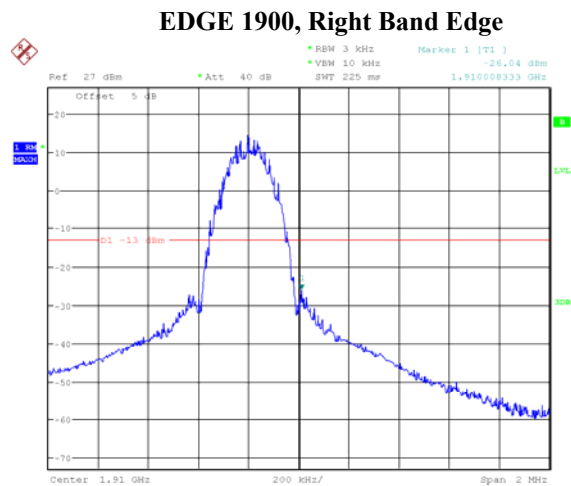
EDGE 850, Right Band Edge



Date: 11.NOV.2020 18:21:31

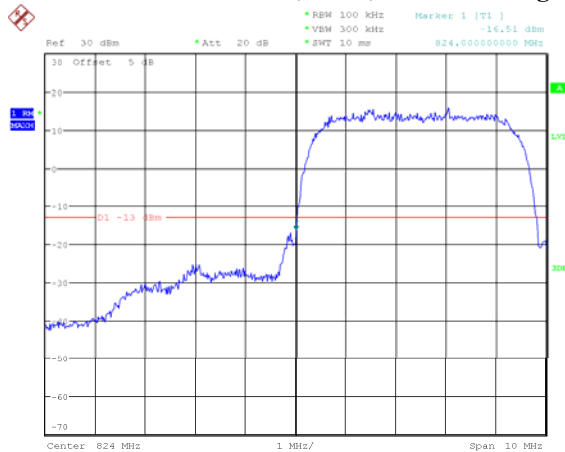


Date: 11.NOV.2020 18:45:53



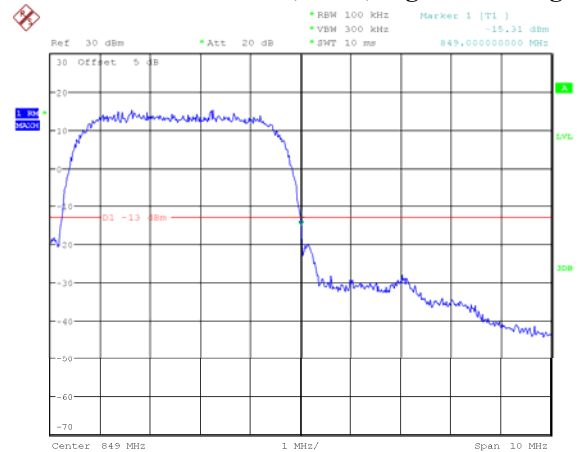
Date: 11.NOV.2020 18:46:29

WCDMA Band V,Rel99, Left Band Edge



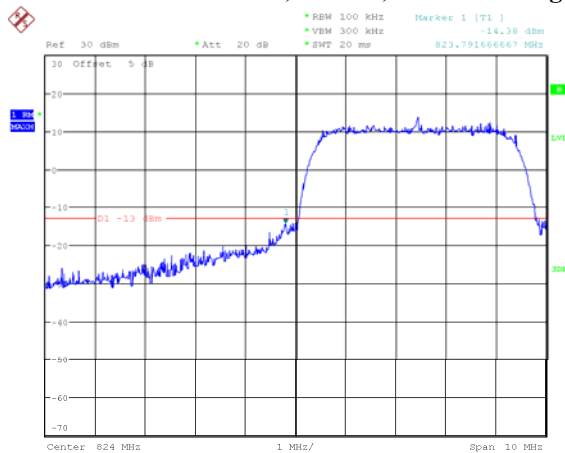
Date: 12.OCT.2020 11:20:22

WCDMA Band V,Rel99, Right Band Edge



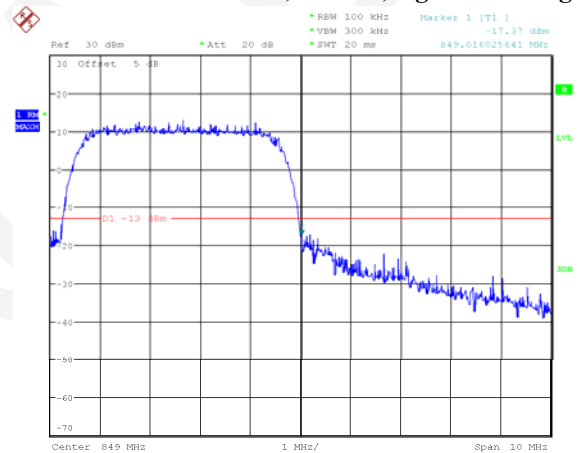
Date: 12.OCT.2020 11:23:49

WCDMA Band V,HSDPA, Left Band Edge



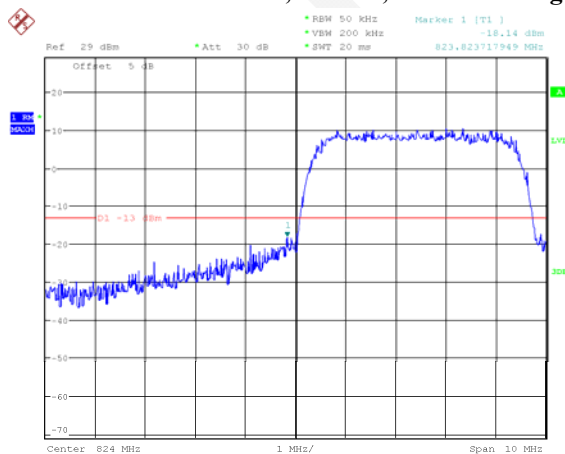
Date: 12.OCT.2020 13:59:56

WCDMA Band V,HSDPA,Right Band Edge



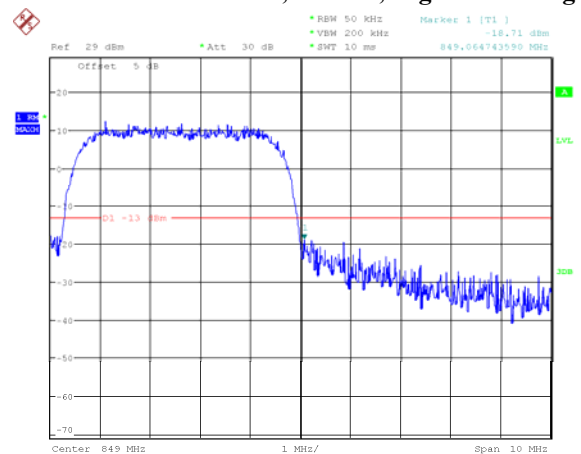
Date: 12.OCT.2020 14:06:21

WCDMA Band V,HSUPA, Left Band Edge



Date: 12.OCT.2020 15:44:20

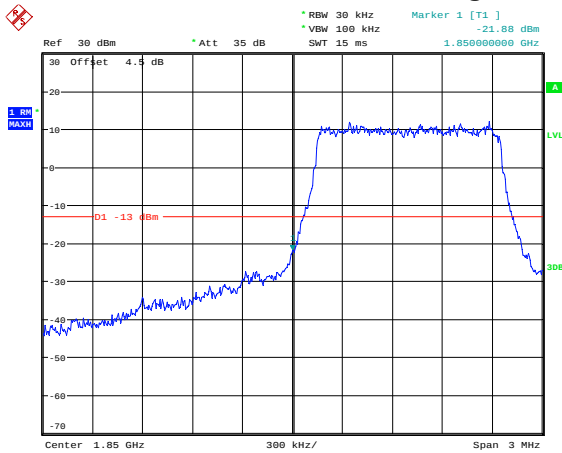
WCDMA Band V,HSUPA, Right Band Edge



Date: 12.OCT.2020 15:40:16

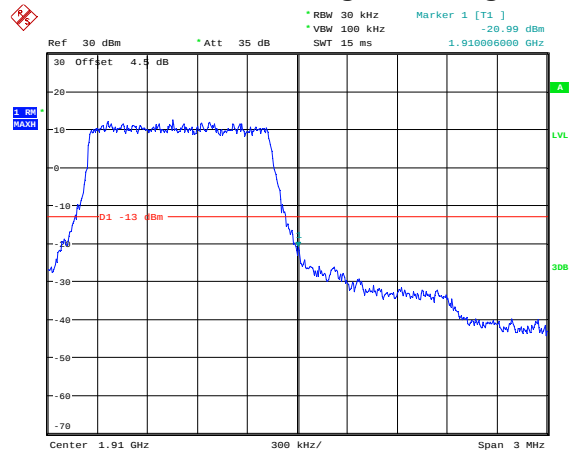
LTE Band 2:

1.4M, QPSK, Left Band Edge



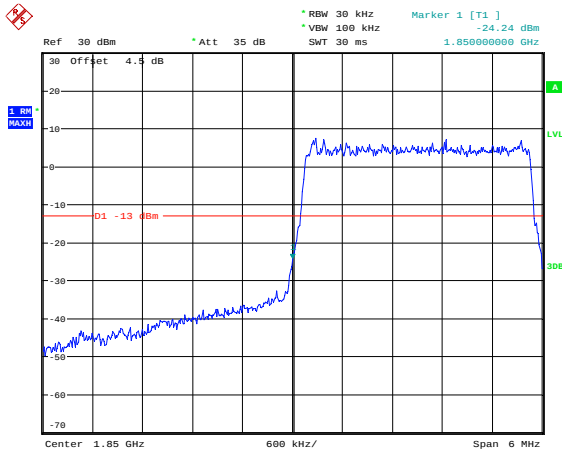
Date: 16.DEC.2020 16:58:27

1.4M, QPSK, Right Band Edge



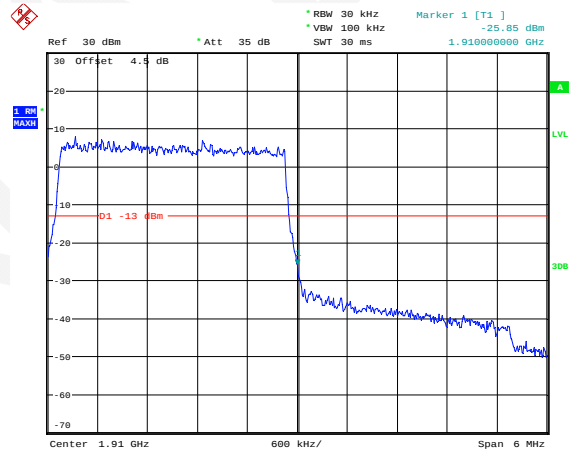
Date: 16.DEC.2020 16:59:07

3M, QPSK, Left Band Edge



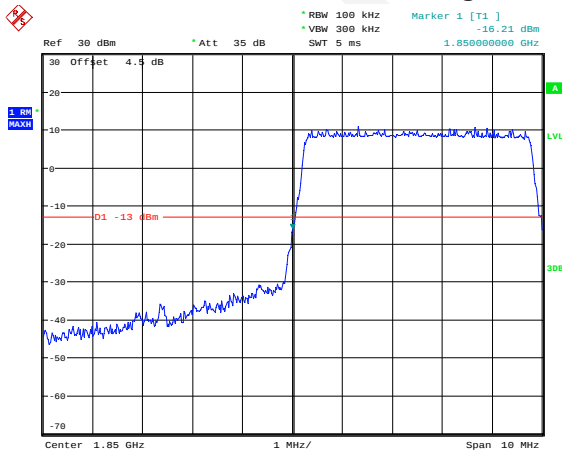
Date: 16.DEC.2020 17:00:05

3M, QPSK, Right Band Edge



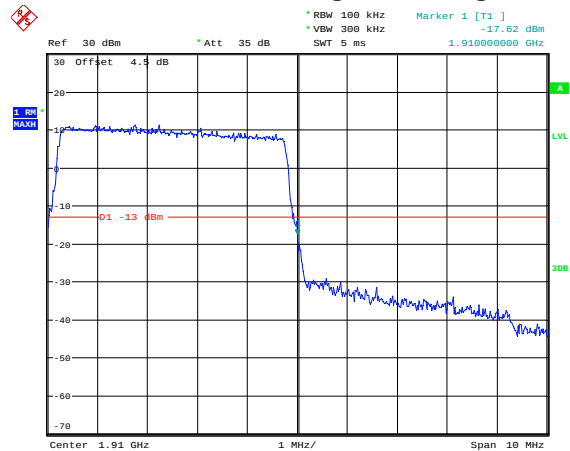
Date: 16.DEC.2020 17:00:41

5M, QPSK, Left Band Edge



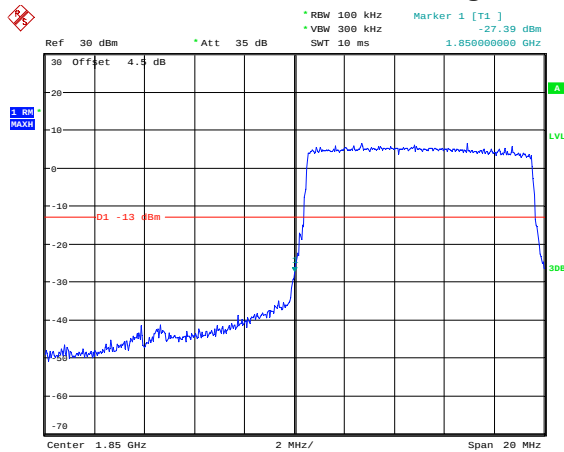
Date: 16.DEC.2020 17:02:57

5M, QPSK, Right Band Edge



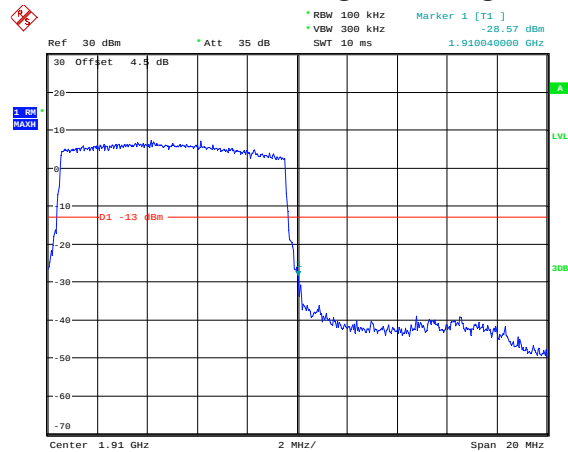
Date: 16.DEC.2020 17:03:37

10M, QPSK, Left Band Edge



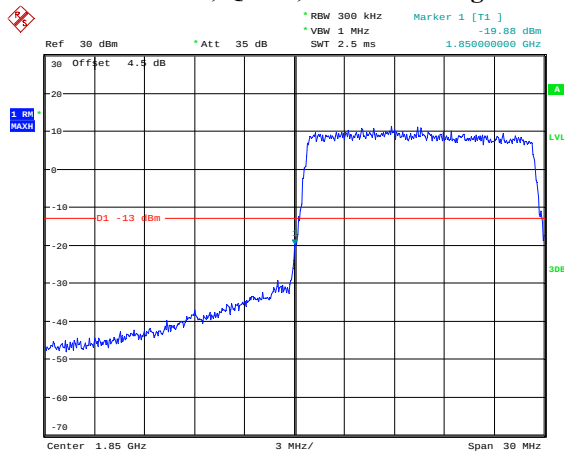
Date: 16.DEC.2020 17:04:30

10M, QPSK, Right Band Edge



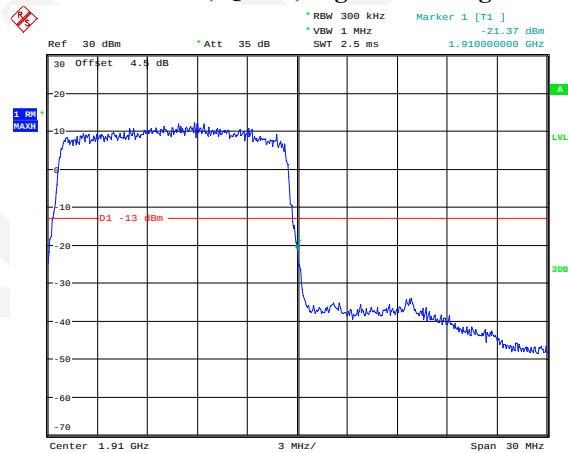
Date: 16.DEC.2020 17:05:12

15M, QPSK, Left Band Edge



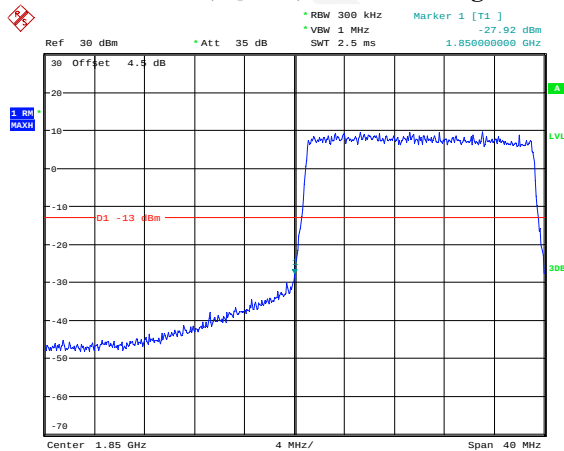
Date: 16.DEC.2020 17:06:08

15M, QPSK, Right Band Edge



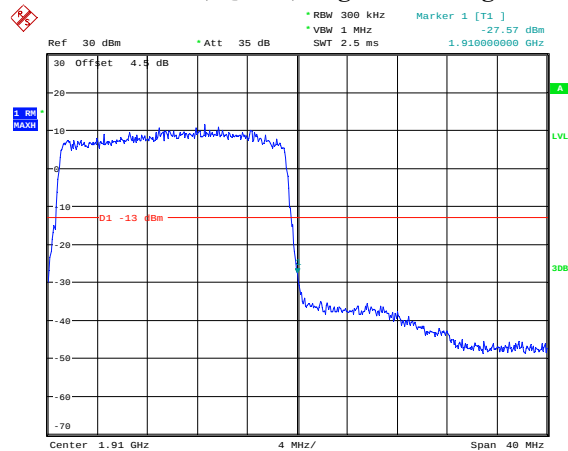
Date: 16.DEC.2020 17:06:54

20M, QPSK, Left Band Edge



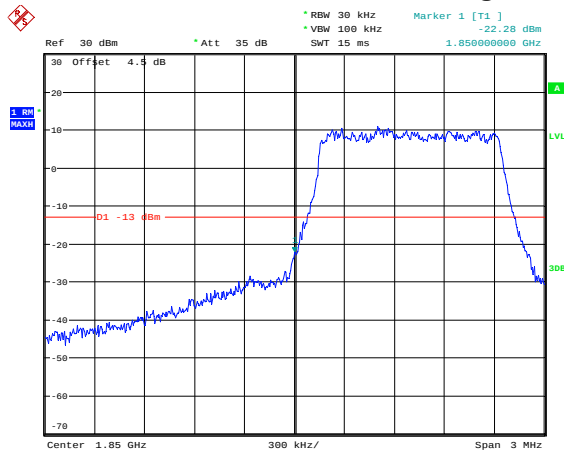
Date: 16.DEC.2020 17:07:52

20M, QPSK, Right Band Edge



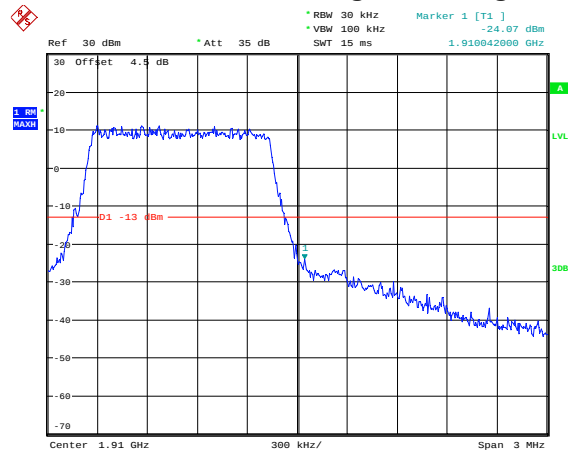
Date: 16.DEC.2020 17:08:35

1.4M, 16QAM, Left Band Edge



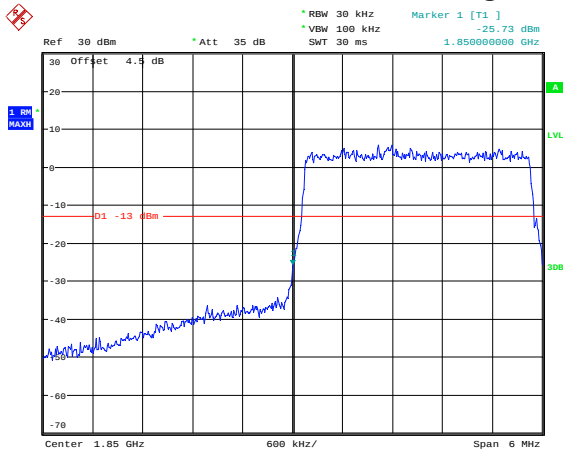
Date: 16.DEC.2020 16:58:44

1.4M, 16QAM, Right Band Edge



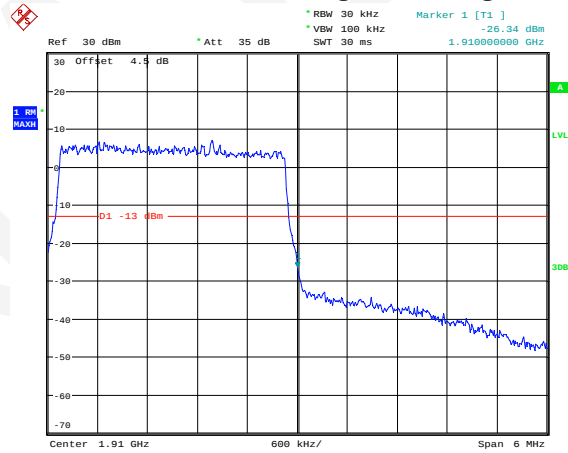
Date: 16.DEC.2020 16:59:30

3M, 16QAM, Left Band Edge



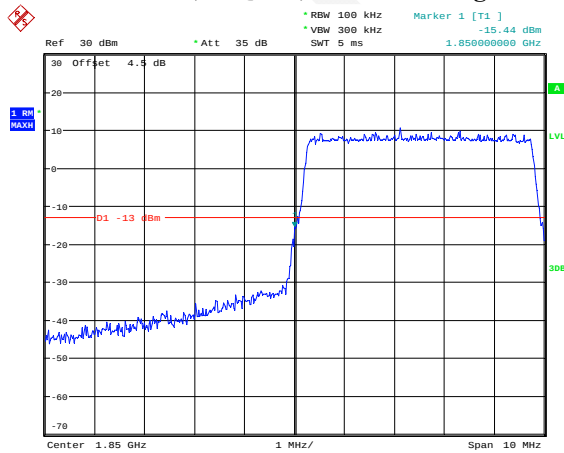
Date: 16.DEC.2020 17:00:23

3M, 16QAM, Right Band Edge



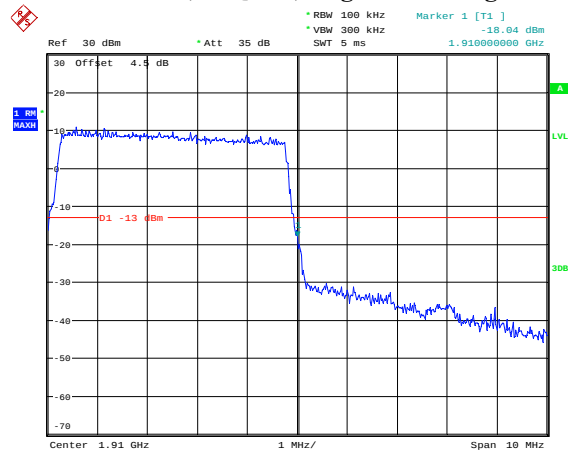
Date: 16.DEC.2020 17:02:21

5M, 16QAM, Left Band Edge



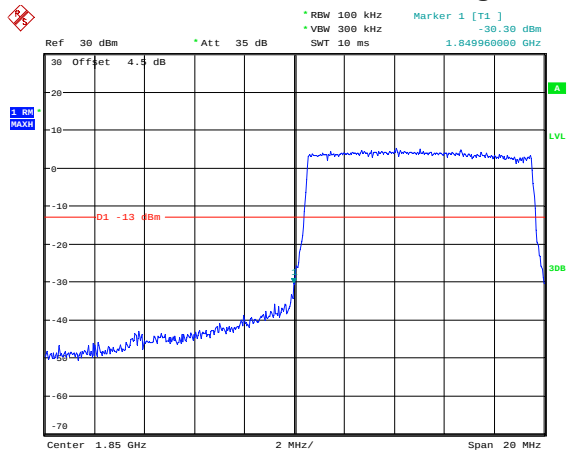
Date: 16.DEC.2020 17:03:15

5M, 16QAM, Right Band Edge



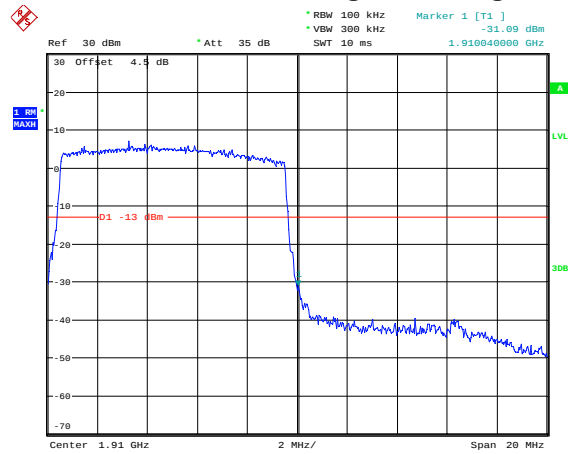
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10M, 16QAM, Left Band Edge



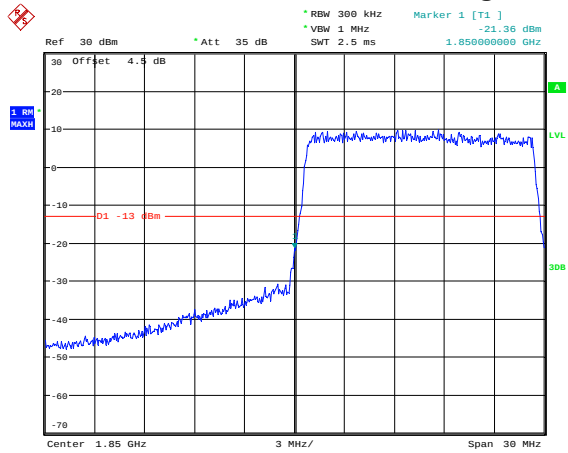
Date: 16.DEC.2020 17:04:49

10M, 16QAM, Right Band Edge



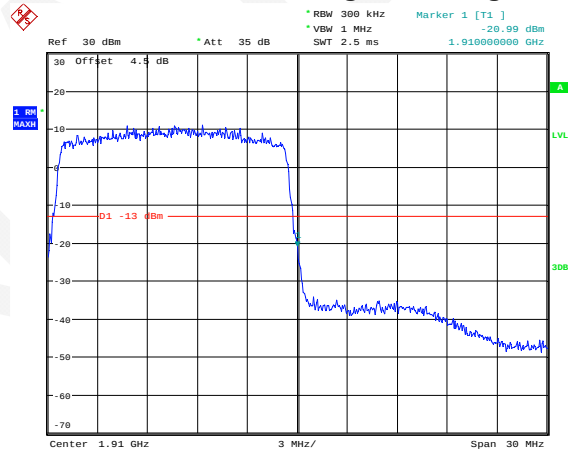
Date: 16.DEC.2020 17:05:34

15M, 16QAM, Left Band Edge



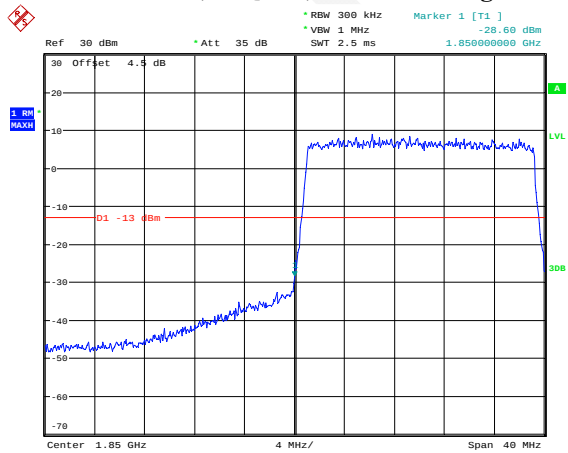
Date: 16.DEC.2020 17:06:32

15M, 16QAM, Right Band Edge



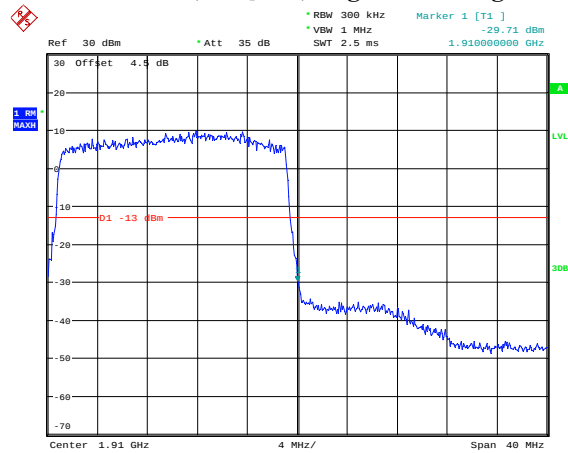
Date: 16.DEC.2020 17:07:15

20M, 16QAM, Left Band Edge



Date: 16.DEC.2020 17:08:13

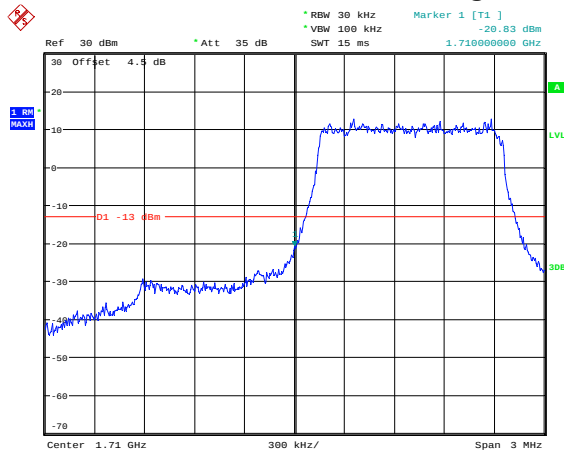
20M, 16QAM, Right Band Edge



Date: 16.DEC.2020 17:08:56

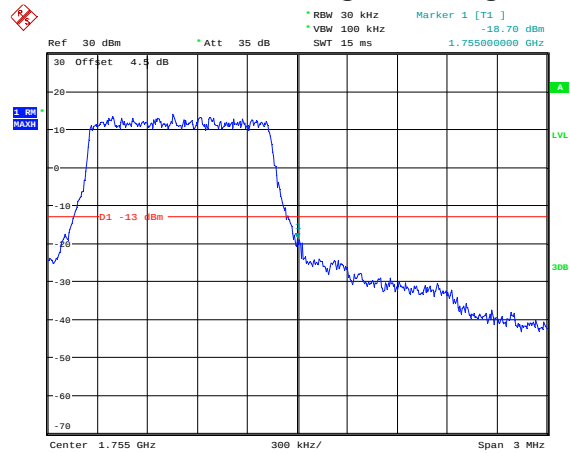
LTE Band 4:

1.4M, QPSK, Left Band Edge



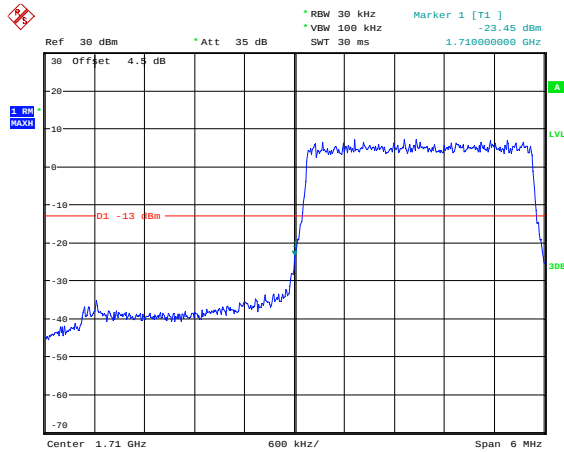
Date: 16.DEC.2020 17:09:44

1.4M, QPSK, Right Band Edge



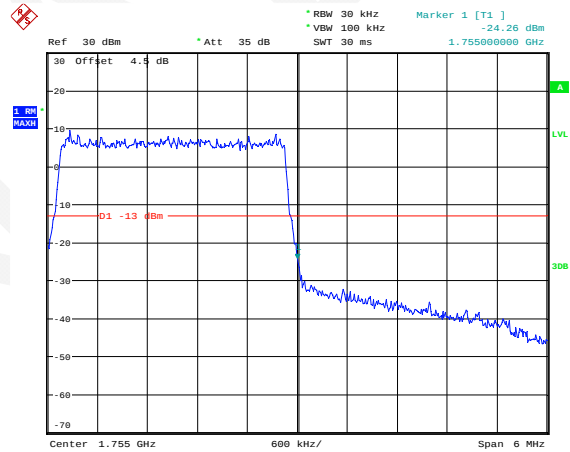
Date: 16.DEC.2020 17:10:31

3M, QPSK, Left Band Edge



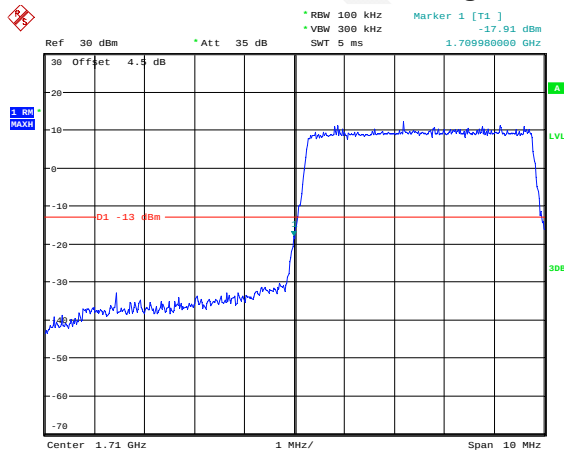
Date: 16.DEC.2020 17:11:38

3M, QPSK, Right Band Edge



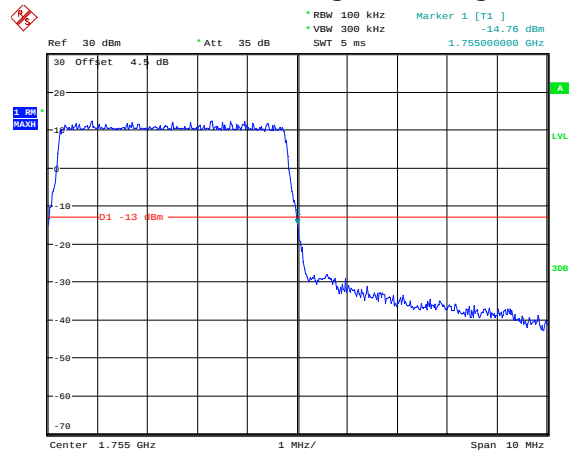
Date: 16.DEC.2020 17:12:13

5M, QPSK, Left Band Edge



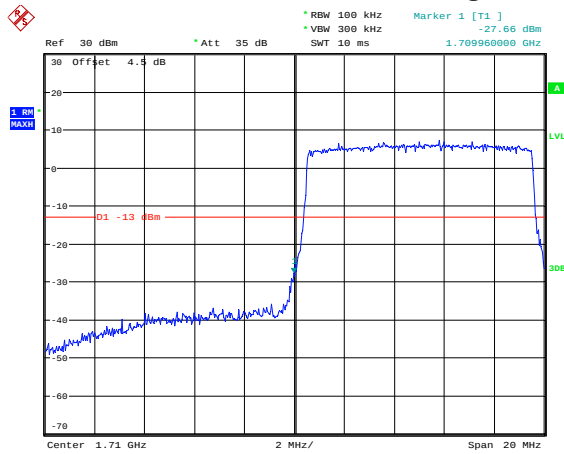
Date: 16.DEC.2020 17:13:18

5M, QPSK, Right Band Edge



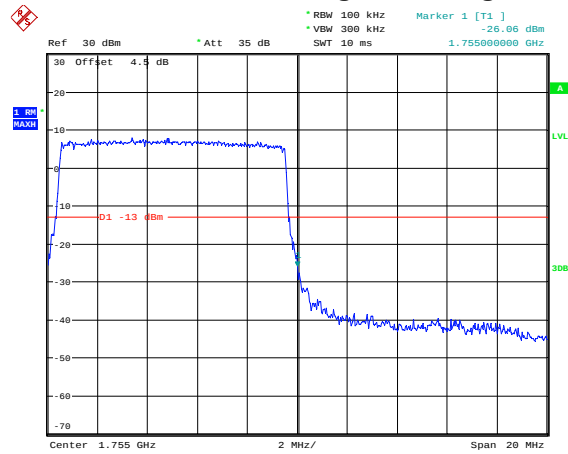
Date: 16.DEC.2020 17:14:09

10M, QPSK, Left Band Edge



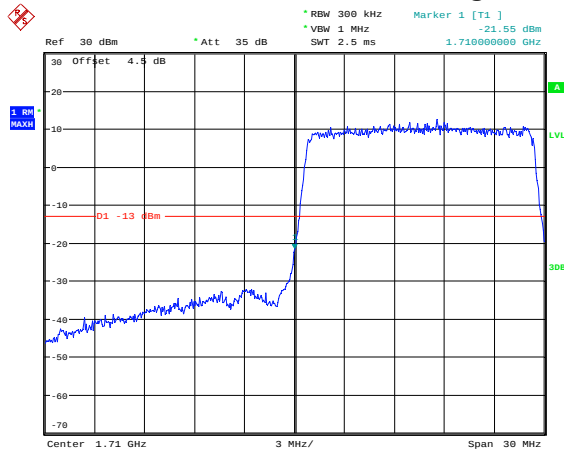
Date: 16.DEC.2020 17:15:14

10M, QPSK, Right Band Edge



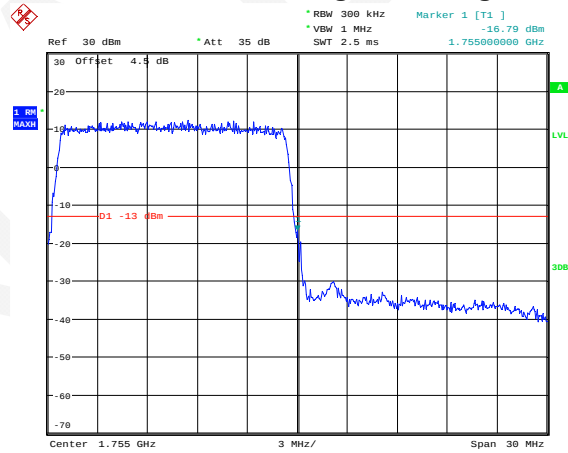
Date: 16.DEC.2020 17:15:52

15M, QPSK, Left Band Edge



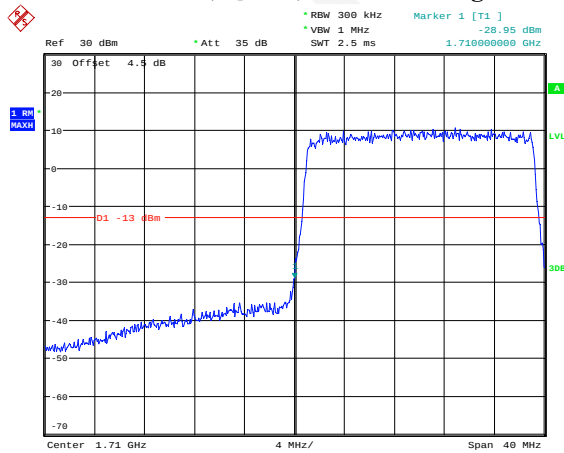
Date: 16.DEC.2020 17:17:03

15M, QPSK, Right Band Edge



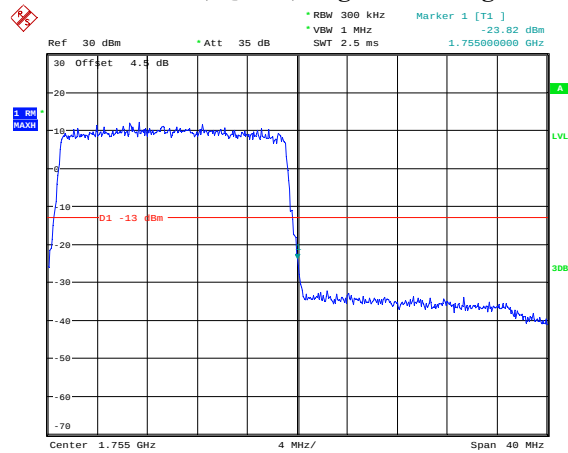
Date: 16.DEC.2020 17:17:45

20M, QPSK, Left Band Edge



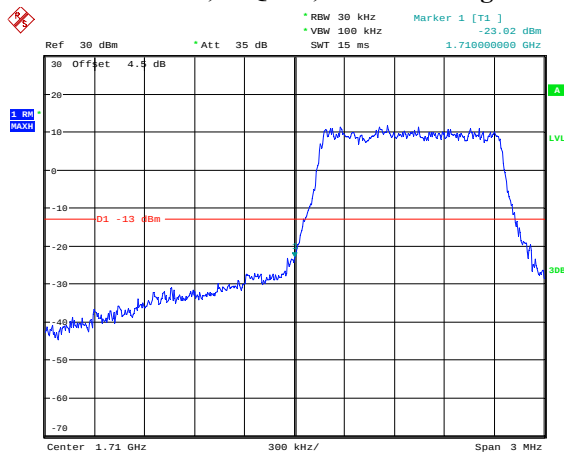
Date: 16.DEC.2020 17:18:33

20M, QPSK, Right Band Edge



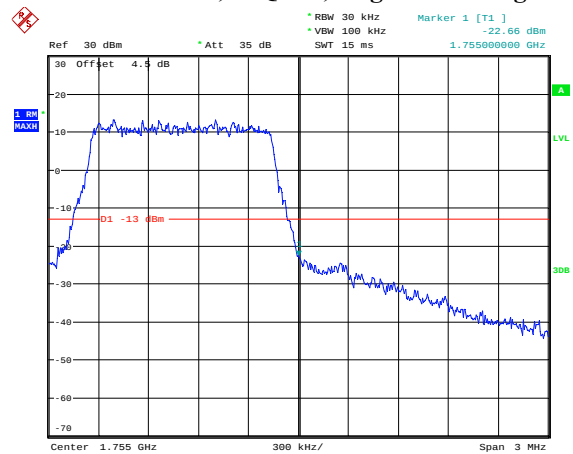
Date: 16.DEC.2020 17:19:23

1.4M, 16QAM, Left Band Edge



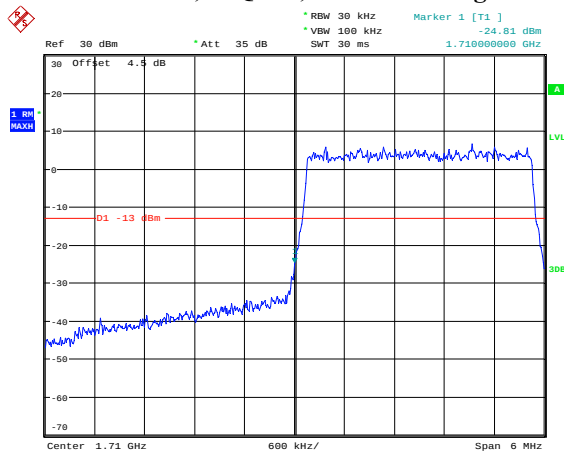
Date: 16.DEC.2020 17:10:08

1.4M, 16QAM, Right Band Edge



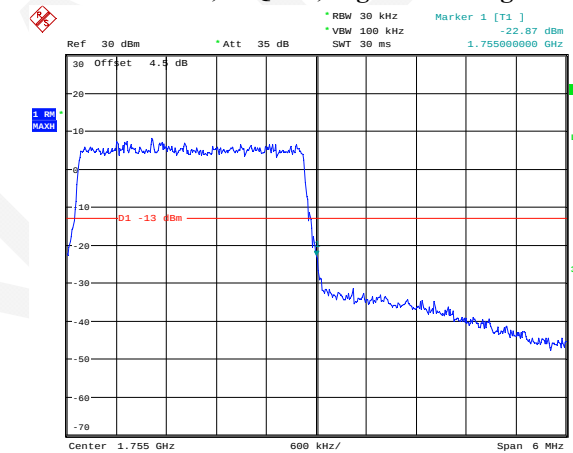
Date: 16.DEC.2020 17:10:52

3M, 16QAM, Left Band Edge



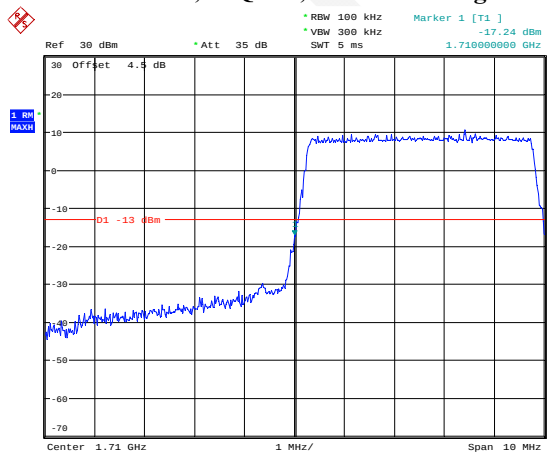
Date: 16.DEC.2020 17:11:55

3M, 16QAM, Right Band Edge



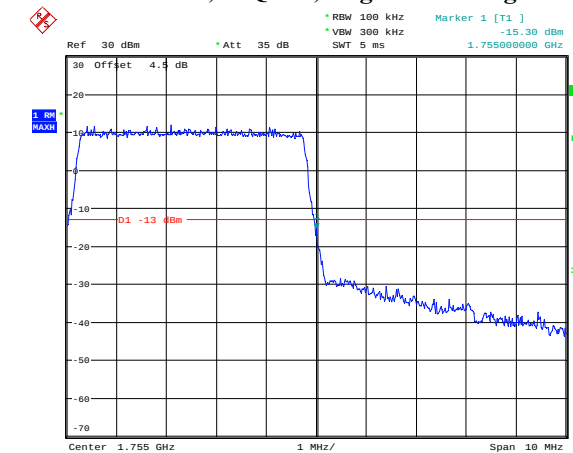
Date: 16.DEC.2020 17:12:31

5M, 16QAM, Left Band Edge



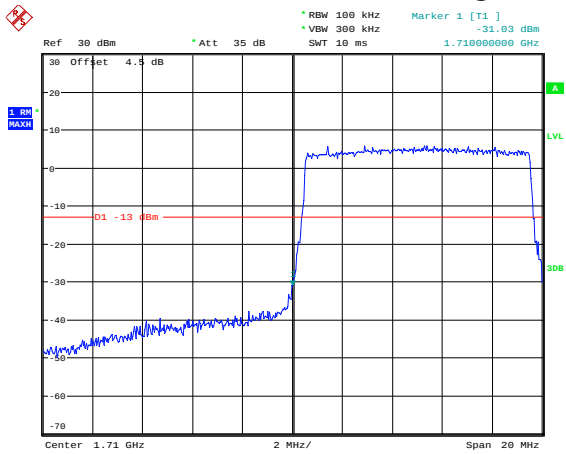
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5M, 16QAM, Right Band Edge



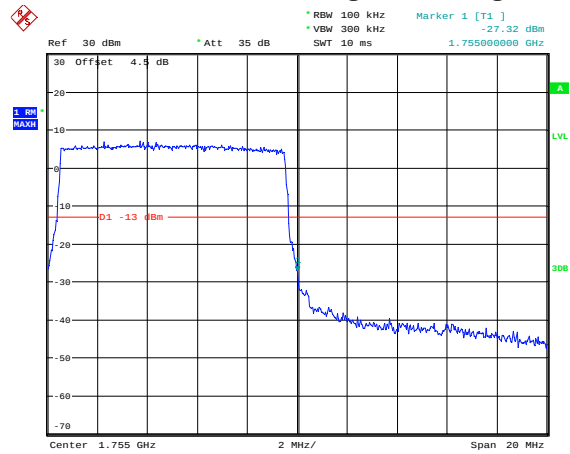
Date: 16.DEC.2020 17:14:30

10M, 16QAM, Left Band Edge



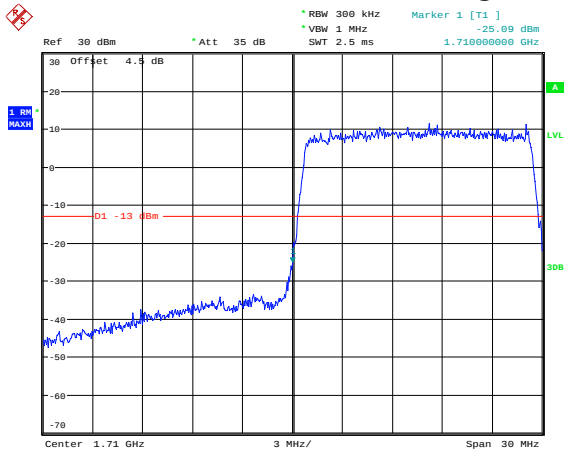
Date: 16.DEC.2020 17:15:33

10M, 16QAM, Right Band Edge



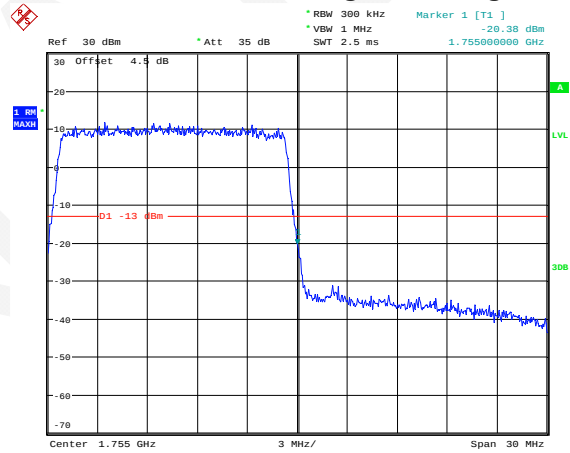
Date: 16.DEC.2020 17:16:11

15M, 16QAM, Left Band Edge



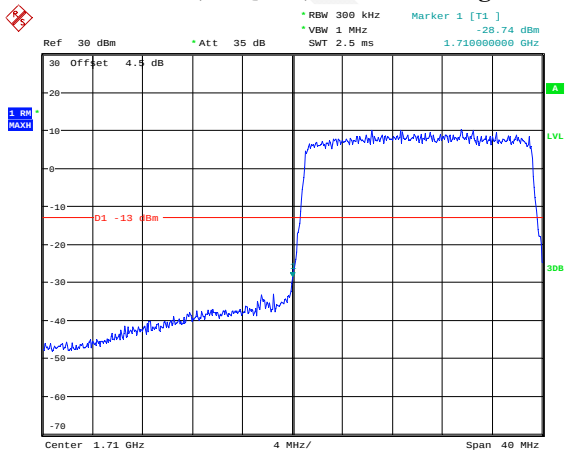
Date: 16.DEC.2020 17:17:23

15M, 16QAM, Right Band Edge



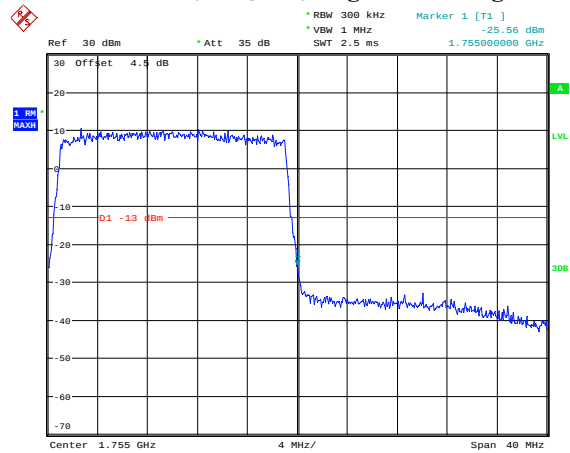
Date: 16.DEC.2020 17:18:09

20M, 16QAM, Left Band Edge



Date: 16.DEC.2020 17:18:57

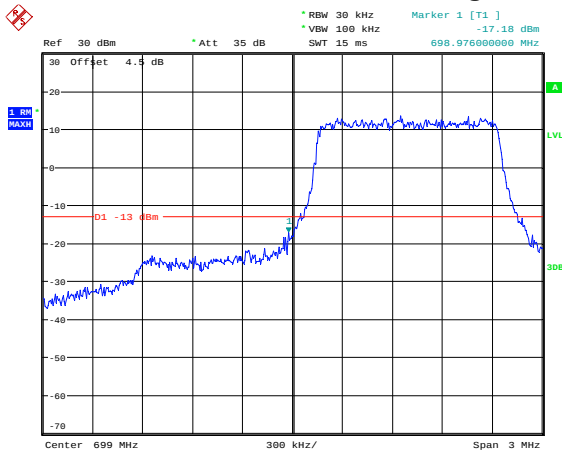
20M, 16QAM, Right Band Edge



Date: 16.DEC.2020 17:19:47

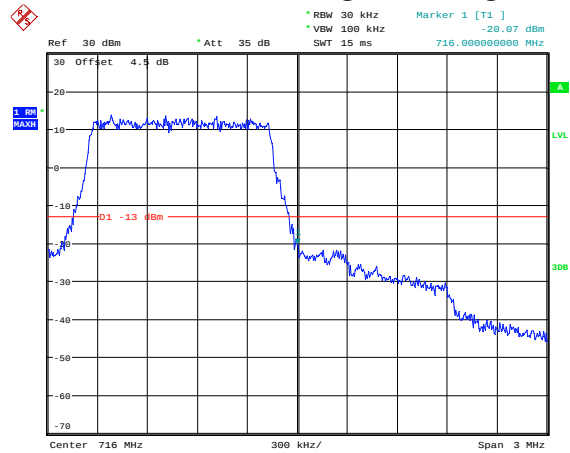
LTE Band 12:

1.4M, QPSK, Left Band Edge



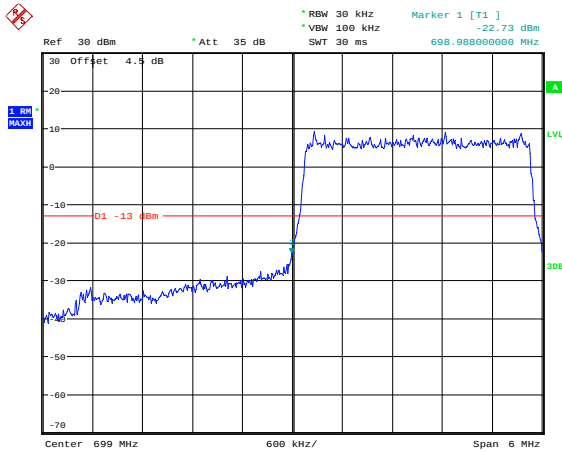
Date: 16.DEC.2020 17:20:23

1.4M, QPSK, Right Band Edge



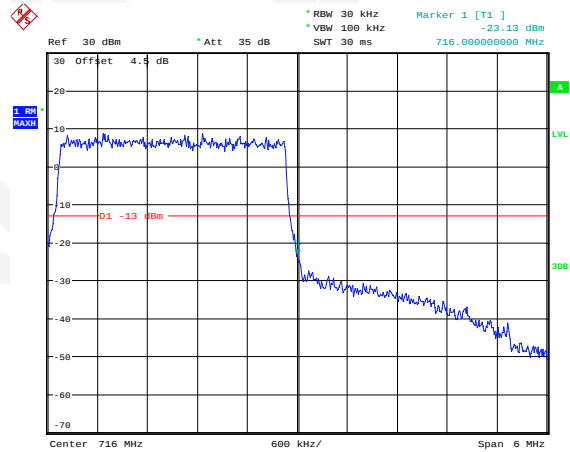
Date: 16.DEC.2020 17:21:06

3M, QPSK, Left Band Edge



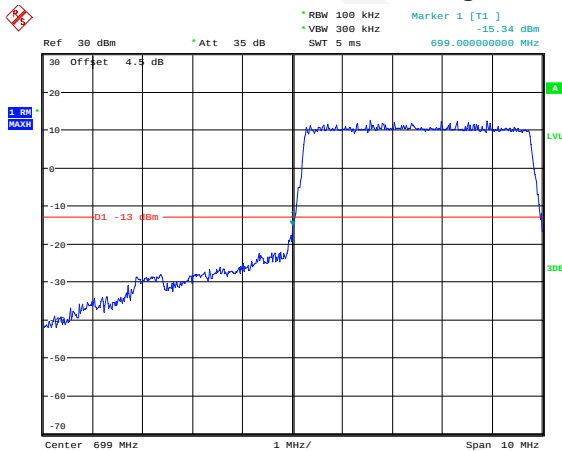
Date: 16.DEC.2020 17:21:52

3M, QPSK, Right Band Edge



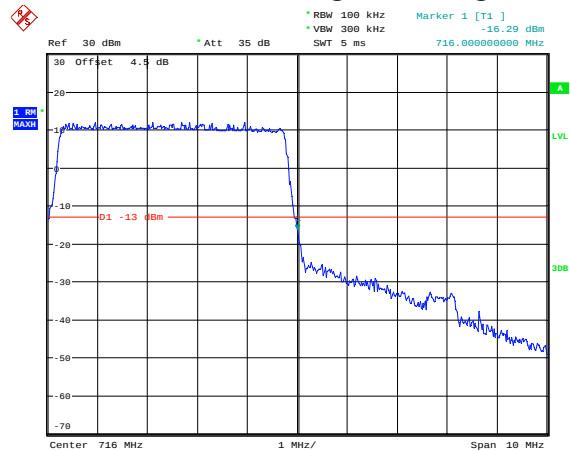
Date: 16.DEC.2020 17:22:32

5M, QPSK, Left Band Edge



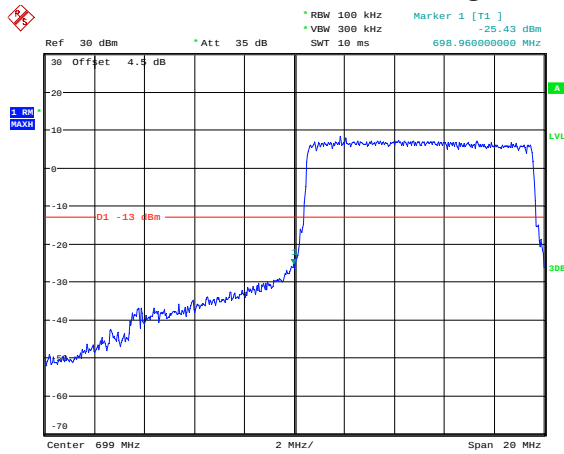
Date: 16.DEC.2020 17:23:15

5M, QPSK, Right Band Edge



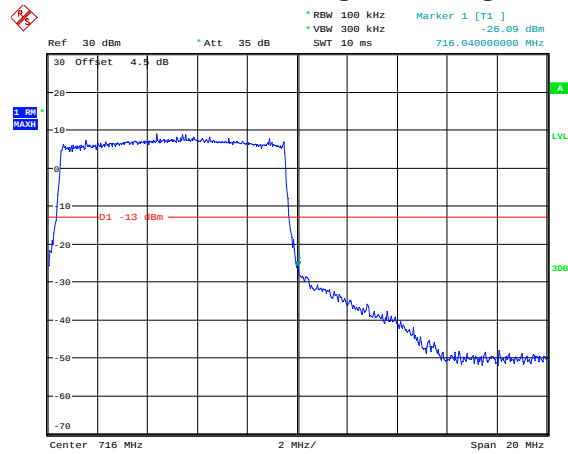
Date: 16.DEC.2020 17:23:54

10M, QPSK, Left Band Edge



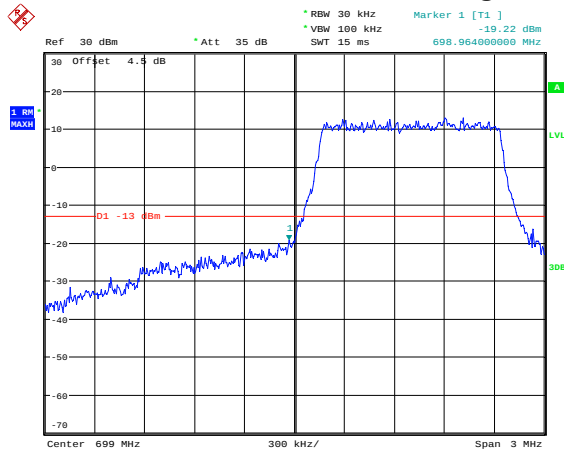
Date: 16.DEC.2020 17:24:34

10M, QPSK, Right Band Edge



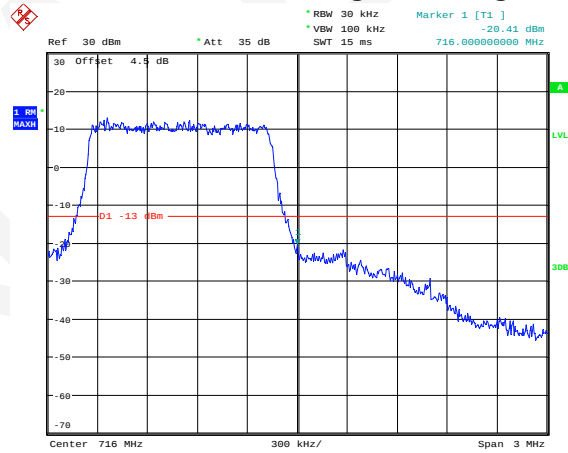
Date: 16.DEC.2020 17:25:16

1.4M, 16QAM, Left Band Edge



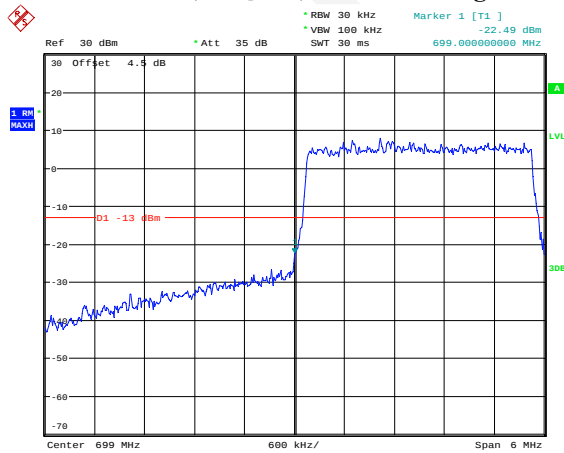
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1.4M, 16QAM, Right Band Edge



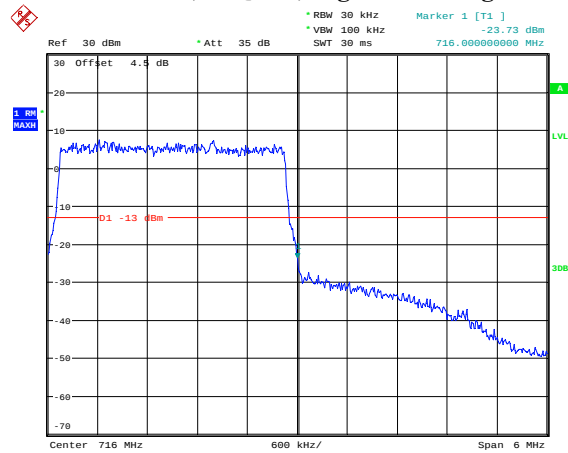
Date: 16.DEC.2020 17:21:27

3M, 16QAM, Left Band Edge



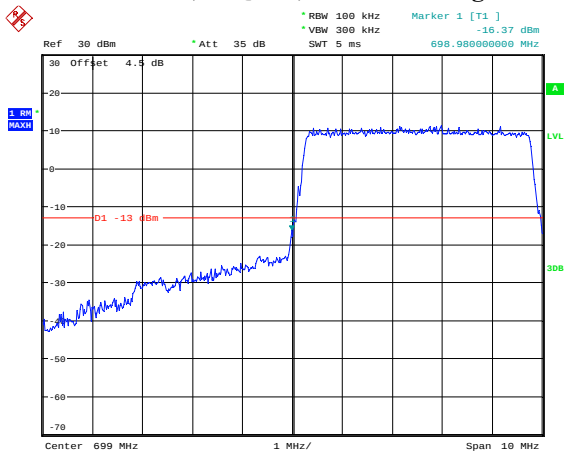
Date: 16.DEC.2020 17:22:13

3M, 16QAM, Right Band Edge



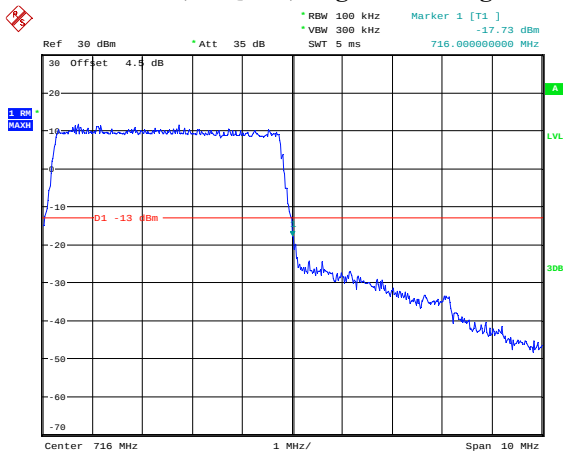
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5M, 16QAM, Left Band Edge



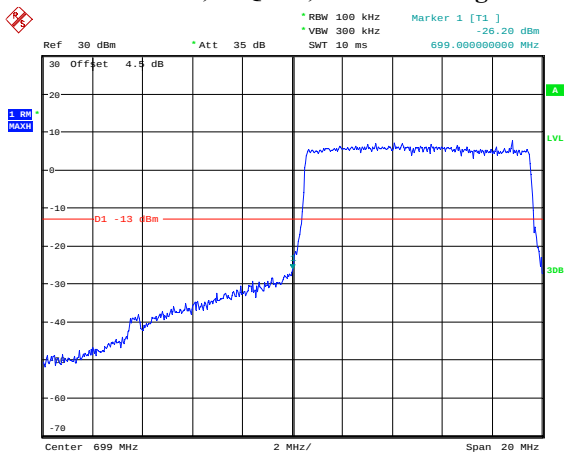
Date: 16.DEC.2020 17:23:36

5M, 16QAM, Right Band Edge



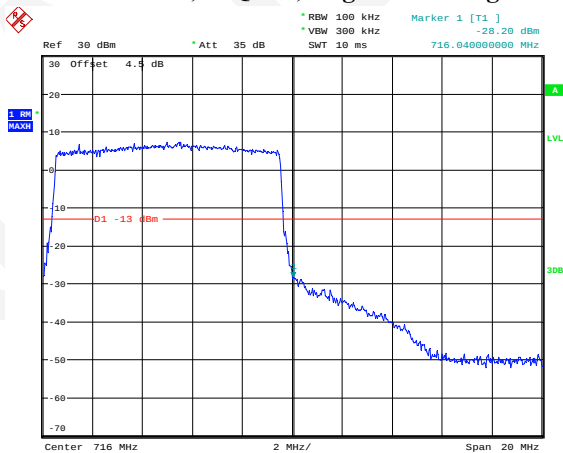
Date: 16.DEC.2020 17:24:11

10M, 16QAM, Left Band Edge



Date: 16.DEC.2020 17:24:56

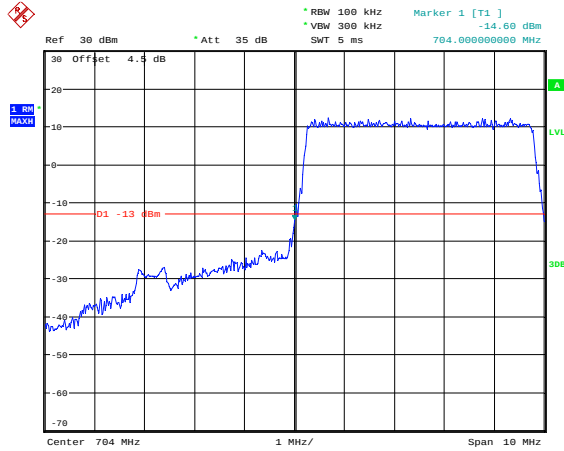
10M, 16QAM, Right Band Edge



Date: 16.DEC.2020 17:25:34

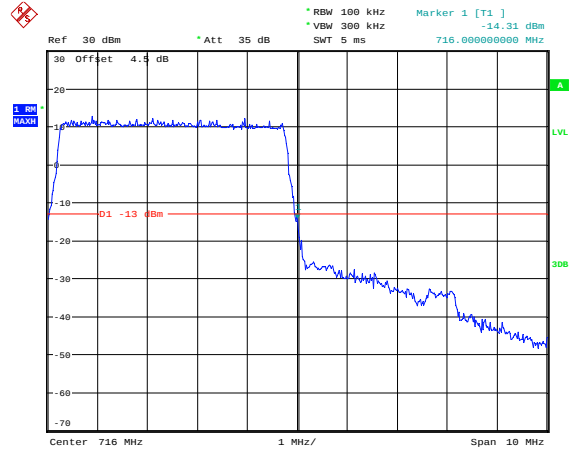
LTE Band 17:

5M, QPSK, Left Band Edge



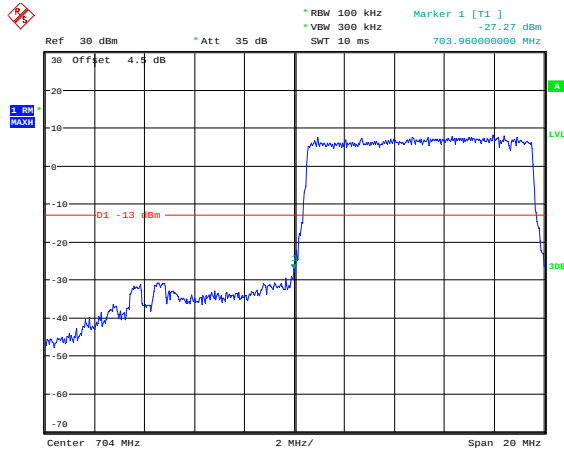
Date: 16.DEC.2020 17:26:00

5M, QPSK, Right Band Edge



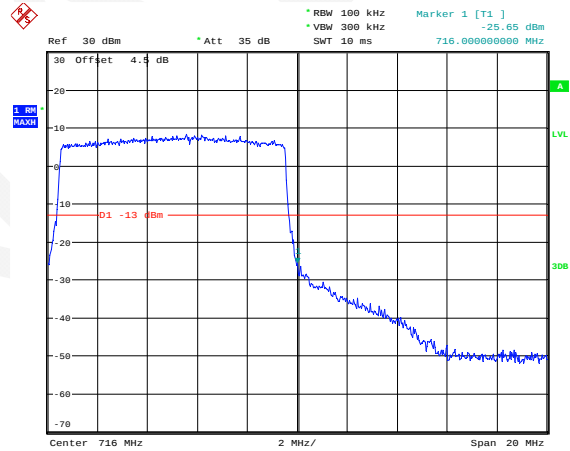
Date: 16.DEC.2020 17:26:39

10M, QPSK, Left Band Edge



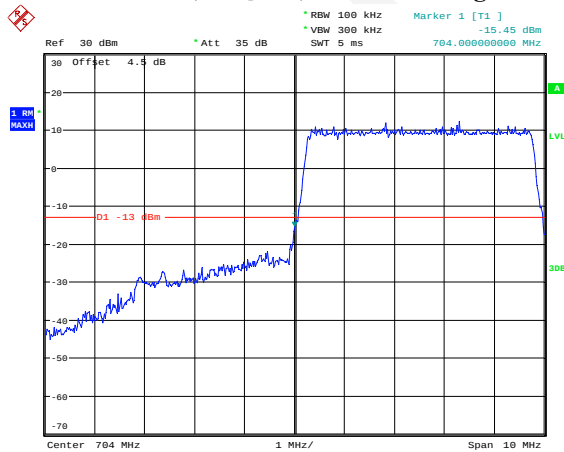
Date: 16.DEC.2020 17:27:22

10M, QPSK, Right Band Edge



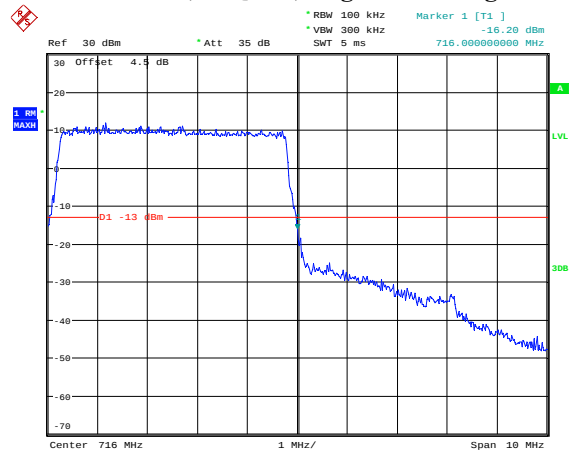
Date: 16.DEC.2020 17:28:00

5M, 16QAM, Left Band Edge

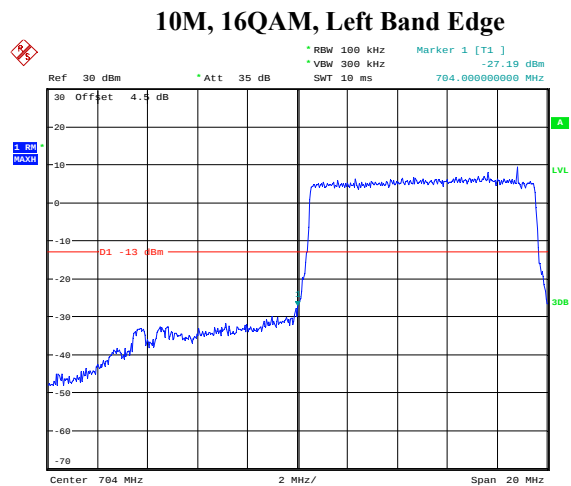


Date: 16.DEC.2020 17:26:21

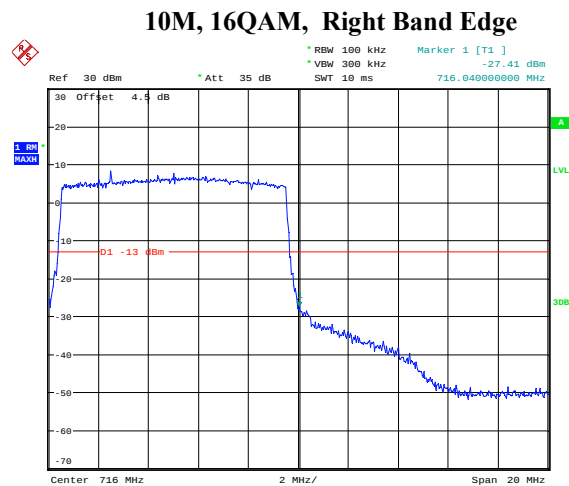
5M, 16QAM, Right Band Edge



Date: 16.DEC.2020 17:26:57



Date: 16.DEC.2020 17:27:41



Date: 16.DEC.2020 17:28:19

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

Applicable Standard

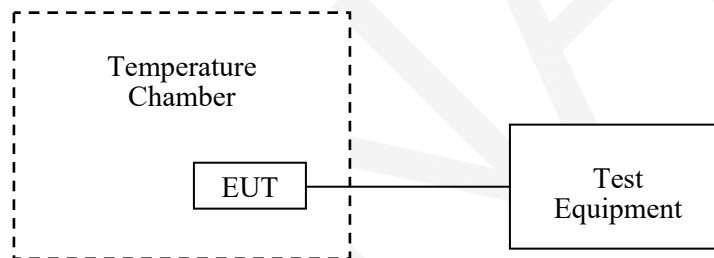
FCC § 2.1055 (a), § 2.1055 (d), §22.355, §24.235, §27.54

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	FSP 38	100478	2020-07-07	2021-07-07
R&S	Spectrum Analyzer	FSU 26	200256	2020-01-04	2021-01-04
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	106 891	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:	26 ~26.9°C
Relative Humidity:	52~58%
ATM Pressure:	100.8~101.6kPa
Tester:	Taylor Li
Test Date:	2020-10-10~2020-12-16

Test Result: Compliance.

Cellular Band

GMSK, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.7	2	0.00239	2.5
-20		-1	0.00000	
-10		3	0.00359	
0		-12	-0.01434	
10		7	0.00717	
20		-3	0.00239	
30		4	0.00478	
40		10	0.01195	
50		7	0.00837	
20	3.5	-8	-0.00359	2.5
20	4.2	-13	-0.01554	

8PSK, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.7	11	0.00359	2.5
-20		3	0.00000	
-10		-5	0.00837	
0		7	0.00956	
10		8	-0.00120	
20		9	-0.00598	
30		-5	-0.00837	
40		-7	0.00837	
50		7	0.01315	
20	3.5	11	0.01195	2.5
20	4.2	-11	0.00359	

PCS Band

GMSK, Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
°C	V _{DC}	Hz	ppm	
-30	3.7	-13	-0.00691	Pass
-20		11	0.00585	
-10		6	0.00266	
0		1	0.00106	
10		-1	-0.00053	
20		13	0.00106	
30		-2	-0.00106	
40		0	0.00000	
50		-9	-0.00372	
20	3.5	-8	-0.00426	Pass
20	4.2	2	0.00053	

8PSK, Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Results
°C	V _{DC}	Hz	ppm	
-30	3.7	-4	-0.00213	Pass
-20		6	-0.00160	
-10		1	0.00053	
0		-2	0.00000	
10		-9	-0.00479	
20		6	0.00319	
30		-11	-0.00266	
40		9	0.00479	
50		9	0.00372	
20	3.5	11	0.00585	
20	4.2	-7	0.00319	

WCDMA Band V: R99

Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.7	-6	0.00717	2.5
-20		-2	-0.00239	
-10		-3	-0.00598	
0		-4	0.00120	
10		-4	0.00239	
20		1	0.01195	
30		2	0.00837	
40		3	0.01315	
50		-1	0.00598	
25	3.5	-3	0.00956	
25	4.2	-2	0.00717	

LTE Band 2:

QPSK, Channel Bandwidth:10MHz				
Middle Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.7	-3.49	-0.0019	Pass
-20		-9.97	-0.0053	
-10		-6.13	-0.0033	
0		6.17	0.0033	
10		7.92	0.0042	
20		6.46	0.0034	
30		-6.52	-0.0035	
40		7.18	0.0038	
50		-9.69	-0.0052	
20	3.5	-8.17	-0.0043	
20	4.2	-7.05	-0.0038	

16QAM, Channel Bandwidth:10MHz				
Middle Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V_{DC}	Hz	ppm	
-30	3.7	-4.86	-0.0026	Pass
-20		-6.68	-0.0036	
-10		9.77	0.0052	
0		-7.62	-0.0041	
10		-9.91	-0.0053	
20		-9.82	-0.0052	
30		-6.68	-0.0036	
40		-8.85	-0.0047	
50		5.67	0.003	
20	3.5	6.05	0.0032	
20	4.2	7.52	0.004	

LTE Band 4

QPSK, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	°C	MHz	MHz	MHz	MHz
3.7	-30	1710.580000	1710	1754.488000	1755
	-20	1710.580000		1754.483000	
	-10	1710.583000		1754.500000	
	0	1710.548000		1754.448000	
	10	1710.579000		1754.494000	
	20	1710.560000		1754.480000	
	30	1710.577000		1754.488000	
	40	1710.579000		1754.456000	
	50	1710.600000		1754.513000	
3.5	20	1710.570000		1754.476000	
4.2	20	1710.603000		1754.516000	

16-QAM, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	°C	MHz	MHz	MHz	MHz
3.7	-30	1710.572000	1710	1754.476000	1755
	-20	1710.572000		1754.510000	
	-10	1710.602000		1754.474000	
	0	1710.563000		1754.507000	
	10	1710.551000		1754.485000	
	20	1710.560000		1754.480000	
	30	1710.564000		1754.512000	
	40	1710.572000		1754.512000	
	50	1710.566000		1754.481000	
3.5	20	1710.564000		1754.486000	
4.2	20	1710.599000		1754.504000	

LTE Band 12

QPSK, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	°C	MHz	MHz	MHz	MHz
3.7	-30	699.505000	699	715.480000	716
	-20	699.544000		715.494000	
	-10	699.505000		715.515000	
	0	699.545000		715.494000	
	10	699.466000		715.476000	
	20	699.520000		715.480000	
	30	699.505000		715.471000	
	40	699.549000		715.489000	
	50	699.473000		715.480000	
3.5	20	699.526000		715.462000	
4.2	20	699.460000		715.506000	

16-QAM, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	°C	MHz	MHz	MHz	MHz
3.7	-30	699.516000	699	715.473000	716
	-20	699.540000		715.456000	
	-10	699.531000		715.473000	
	0	699.564000		715.453000	
	10	699.515000		715.480000	
	20	699.520000		715.480000	
	30	699.484000		715.467000	
	40	699.552000		715.466000	
	50	699.516000		715.472000	
3.5	20	699.568000		715.456000	
4.2	20	699.499000		715.468000	

LTE Band 17

QPSK, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	°C	MHz	MHz	MHz	MHz
3.7	-30	704.516000	704	715.495000	716
	-20	704.526000		715.500000	
	-10	704.492000		715.493000	
	0	704.526000		715.518000	
	10	704.536000		715.473000	
	20	704.520000		715.480000	
	30	704.516000		715.491000	
	40	704.481000		715.509000	
	50	704.516000		715.522000	
3.5	20	704.512000		715.516000	
4.2	20	704.480000		715.492000	

16-QAM, Channel Bandwidth:10MHz					
Power Supplied	Temperature	F_L	Limit	F_H	Limit
Vdc	°C	MHz	MHz	MHz	MHz
3.7	-30	704.532000	704	715.440000	716
	-20	704.524000		715.484000	
	-10	704.532000		715.395000	
	0	704.528000		715.496000	
	10	704.548000		715.507000	
	20	704.520000		715.480000	
	30	704.538000		715.442000	
	40	704.533000		715.484000	
	50	704.516000		715.476000	
3.5	20	704.524000		715.519000	
4.2	20	704.524000		715.404000	

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 *******