



TESTING LABORATORY
CERTIFICATE #4820.01



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

For

MAXWEST COMMUNICATION LIMITED

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

FCC ID: 2ASP8ASTRO5PRO

Report Type: Original Report	Product Type: PHONE
Report Number: RDG200918005-00C	
Report Date: 2020-11-17	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		PHONE
EUT Model:		ASTRO 5 PRO
Operation modes:		GSM Voice, GPRS/EDGE Data, WCDMA(R99 (Voice+Data), HSDPA,HSUPA,DC-HSDPA, HSPA+) FDD-LTE
Operation Frequency:		GSM 850: 824-849 MHz(TX); 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 5: 824-849 MHz(TX); 869-894 MHz(RX) LTE Band 2:1850-1910 MHz(TX), 1930-1990 MHz(RX) LTE Band 4:1710-1755 MHz(TX), 2110-2155 MHz(RX) LTE Band 5: 824-849 MHz(TX); 869-894 MHz(RX) LTE Band 7:2500-2570 MHz(TX), 2620-2690 MHz(RX)
Modulation Type:		GMSK, 8PSK, BPSK, QPSK, 16QAM
Antenna Gain[△]:		0.8 dBi(GSM850/WCDMA/LTE B5) 0.7 dBi(PCS1900/WCDMA/LTE B2) 1.18 dBi(LTE B4) 1.23 dBi(LTE B7)
Rated Input Voltage:		DC 3.8V from battery or DC 5V from Adapter
Adapter Information	Model:	ASTRO 5 PRO
	Input:	AC 100-240V,50/60 Hz, 0.5A
	Output:	DC 5.0V, 1000mA
Serial Number:		RDG200918005-RF-S1
EUT Received Date:		2020.09.19
EUT Received Status:		Good

Objective

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

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

Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: 2ASP8ASTRO5PRO
FCC Part 15C DSS submissions with FCC ID: 2ASP8ASTRO5PRO

Test Methodology

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

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

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

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

Measurement Uncertainty

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

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

Test Facility

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

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

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

Declarations

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

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

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SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to ANSI C63.26-2015.

The test items were performed with the EUT operating at testing mode. The device operates on GSM Band 850/1900MHz, WCDMA Band 2/5, and LTE band 2/4/5/7, test was performed with channels as below table:

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSM/GPRS 850/EDGE	0.25	824.2	836.6	848.8
GSM/GPRS 1900/EDGE	0.25	1850.2	1880	1909.8
WCDMA Band 2	4.2	1852.4	1880	1907.6
WCDMA Band 5	4.2	826.4	836.6	846.6
LTE Band 2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855	1880	1905
	15	1857.5	1880	1902.5
	20	1860	1880	1900
LTE Band 4	1.4	1710.7	1732.5	1754.3
	3	1711.5	1732.5	1753.5
	5	1712.5	1732.5	1752.5
	10	1715	1732.5	1750
	15	1717.5	1732.5	1747.5
	20	1720	1732.5	1745
LTE Band 5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829	836.5	844
LTE Band 7	5	2502.5	2535	2567.5
	10	2505	2535	2565
	15	2507.5	2535	2562.5
	20	2510	2535	2560

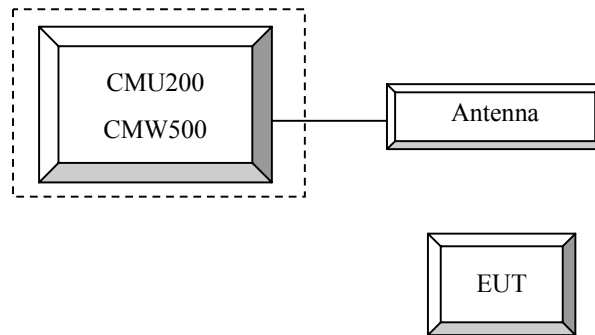
Equipment Modifications

No modification was made to the EUT.

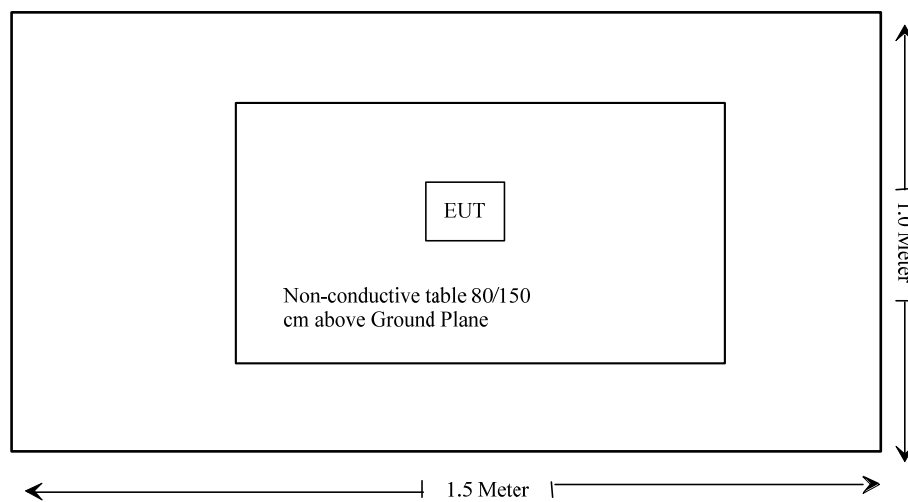
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	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: RDG200918005-20A.

FCC §2.1047 - MODULATION CHARACTERISTIC

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

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

Applicable Standard

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

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

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

According to §27.50

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

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

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

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

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

Test Procedure

GSM/GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/1900

Press Connection control to choose the different menus

Press RESET > choose all the reset all settings

Connection Press Signal Off to turn off the signal and change settings

Network Support > GSM + GPRS or GSM + EGSM

Main Service > Packet Data

Service selection > Test Mode A – Auto Slot Config. off

MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting

> Slot configuration > Uplink/Gamma

> 33 dBm for GPRS 850

> 30 dBm for GPRS 1900

> 27 dBm for EGPRS 850

> 26 dBm for EGPRS 1900

BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel

Frequency Offset > + 0 Hz

Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stable)

BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off

P0 > 4 dB

Slot Config > Unchanged (if already set under MS signal)

TCH > choose desired test channel

Hopping > Off

Main Timeslot > 3

Network Coding Scheme > CS4 (GPRS) and MCS5 (EGPRS)

Bit Stream > 2E9-1 PSR Bit Stream

AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input

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

WCDMA-Release 99

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

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

WCDMA HSDPA

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

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

WCDMA HSUPA

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

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

HSPA+

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

Sub-test	β_c (Note 3)	β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105

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

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

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

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

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

DC-HSDPA

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

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

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

LTE (FDD):

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

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

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

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

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

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

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

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Wideband Radio Communication Tester	CMW500	149216	2020-09-12	2021-09-12
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	110 822	2020-09-12	2021-09-12

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

Test Data**Environmental Conditions**

Test Items:	Conducted Output Power
Temperature:	26.9 °C
Relative Humidity:	45%
ATM Pressure:	100.8kPa
Tester:	Taylor Li
Test Date:	2020-10-19

Test Result: Compliance

GSM/GPRS/EDGE**Conducted Peak Output Power:**

Band	Channel No.	Conducted Peak Output Power (dBm)								
		GSM	GPRS 1 TX Slot	GPRS 2 TX Slots	GPRS 3 TX Slots	GPRS 4 TX Slots	EGPRS 1 TX Slot	EGPRS 2 TX Slots	EGPRS 3 TX Slots	EGPRS 4 TX Slots
Cellular	128	32	31.92	29.87	27.96	25.8	25.07	23.68	20.23	18.32
	190	32	31.89	29.84	27.94	25.81	25.5	23.9	20.8	18.77
	251	32.1	32.09	29.8	27.92	25.78	24.68	23.2	19.8	17.84
PCS	512	28.9	28.88	26.81	25.24	23.01	23.46	21.75	19.1	17.54
	661	29	29.05	26.68	25.1	22.87	24.07	22.31	19.93	18.54
	810	29	29.08	26.59	25	22.72	24.22	22.46	20.1	18.55

ERP/EIRP:

Band	Mode	Channel	Conducted Power (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
Cellular	GSM	Low	32	-1.35	0.2	30.45	38.45
		Middle	32	-1.35	0.2	30.45	38.45
		High	32.1	-1.35	0.2	30.55	38.45
	EDGE	Low	25.07	-1.35	0.2	23.52	38.45
		Middle	25.5	-1.35	0.2	23.95	38.45
		High	24.68	-1.35	0.2	23.13	38.45
PCS	GSM	Low	28.9	0.7	0.4	29.2	33.00
		Middle	29.05	0.7	0.4	29.35	33.00
		High	29.08	0.7	0.4	29.38	33.00
	EDGE	Low	23.46	0.7	0.4	23.76	33.00
		Middle	24.07	0.7	0.4	24.37	33.00
		High	24.22	0.7	0.4	24.52	33.00

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Result = Conducted Power - Cable loss + Antenna Gain
- 3) Antenna gain(dBd)= Antenna gain(dBi)-2.15

WCDMA Band 2**Conducted Output Power and PAR:**

Mode	3GPP Sub Test	Low Channel		Middle Channel		High Channel	
		Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)
Rel 99	1	21.42	3.13	21.44	3.04	21.85	2.87
HSDPA	1	20.01	3.07	20.68	3.83	20.61	2.99
	2	20.02	2.98	20.84	3.72	20.76	3.01
	3	20.06	3.02	21.11	3.88	20.85	3.00
	4	20.65	3.15	20.82	3.77	21.02	3.25
HSUPA	1	20.69	3.10	21.14	2.99	21.16	2.93
	2	20.73	3.25	20.92	3.00	20.82	3.23
	3	20.85	3.12	20.91	3.02	20.85	3.03
	4	20.62	3.05	20.97	3.19	21.14	3.11
HSPA+ (16QAM)	5	20.84	3.15	21.06	3.12	20.95	3.04
	1	20.97	6.13	20.93	6.22	21.07	6.12

EIRP:

Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
Low	21.42	0.7	0.4	21.72	33.00
Middle	21.44	0.7	0.4	21.74	33.00
High	21.85	0.7	0.4	22.15	33.00

WCDMA Band 5**Conducted Output Power and PAR:**

Mode	3GPP Sub Test	Low Channel		Middle Channel		High Channel	
		Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)
Rel 99	1	22.20	3.10	22.28	4.06	22.10	3.07
HSDPA	1	21.44	5.01	21.13	3.22	20.88	3.97
	2	20.68	4.27	20.42	3.24	20.70	3.82
	3	20.76	4.07	20.59	3.28	20.65	3.61
	4	20.79	4.54	20.44	3.45	20.59	3.43
HSUPA	1	21.64	3.10	21.56	3.25	21.36	3.22
	2	20.59	3.11	20.68	3.07	20.48	3.33
	3	20.36	3.27	20.47	3.43	20.74	3.27
	4	20.55	3.55	20.39	3.04	20.46	3.20
	5	20.61	3.81	20.72	3.25	20.39	3.42
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	22.2	-1.35	0.2	20.65	38.45
Middle	22.28	-1.35	0.2	20.73	38.45
High	22.1	-1.35	0.2	20.55	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	21.97	22.03	22.28
		RB1#3	22.03	22.05	22.29
		RB1#5	22.01	22.05	22.30
		RB3#0	22.03	22.31	22.45
		RB3#3	21.98	22.33	22.49
		RB6#0	21.09	21.31	21.38
	16QAM	RB1#0	20.62	21.92	21.25
		RB1#3	20.60	21.90	21.30
		RB1#5	20.59	21.88	21.30
		RB3#0	22.09	22.40	22.56
		RB3#3	22.04	22.30	22.54
		RB6#0	20.37	20.57	20.83
3MHz	QPSK	RB1#0	21.96	22.22	22.29
		RB1#8	22.01	22.07	22.33
		RB1#14	22.03	22.13	22.28
		RB6#0	21.03	21.33	21.47
		RB6#9	21.10	21.33	21.42
		RB15#0	21.06	21.31	21.37
	16QAM	RB1#0	21.51	21.87	21.33
		RB1#8	21.43	21.93	21.29
		RB1#14	21.43	21.93	21.27
		RB6#0	20.46	20.53	20.71
		RB6#9	20.53	20.59	20.75
		RB15#0	20.41	20.47	20.62
5MHz	QPSK	RB1#0	22.06	22.34	22.32
		RB1#13	22.00	22.48	22.29
		RB1#24	22.04	22.36	22.38
		RB15#0	21.14	21.19	21.45
		RB15#10	21.00	21.33	21.37
		RB25#0	21.24	21.23	21.50
	16QAM	RB1#0	20.45	21.75	21.31
		RB1#13	20.49	21.55	21.24
		RB1#24	20.41	21.58	21.33
		RB15#0	21.12	21.38	21.45
		RB15#10	21.12	21.34	21.36
		RB25#0	20.49	20.54	20.51
10MHz	QPSK	RB1#0	22.04	22.42	22.35
		RB1#25	22.03	22.36	22.41
		RB1#49	22.08	22.36	22.39
		RB25#0	21.16	21.19	21.40
		RB25#25	21.25	21.30	21.42
		RB50#0	21.10	21.23	21.41
	16QAM	RB1#0	21.63	21.49	20.89
		RB1#25	21.56	21.51	21.00
		RB1#49	21.61	21.47	20.92
		RB25#0	21.19	21.31	21.42
		RB25#25	21.27	21.20	21.41
		RB50#0	20.30	20.54	20.54

15MHz	QPSK	RB1#0	22.00	22.30	22.22
		RB1#38	22.08	22.31	22.23
		RB1#74	22.15	22.31	22.26
		RB36#0	21.14	21.16	21.38
		RB36#39	21.14	21.33	21.34
		RB75#0	21.24	21.28	21.33
	16QAM	RB1#0	21.69	21.41	21.85
		RB1#38	21.72	21.53	21.84
		RB1#74	21.77	21.54	21.84
		RB36#0	21.14	21.23	21.38
		RB36#39	21.16	21.16	21.33
20MHz	QPSK	RB75#0	20.31	20.53	20.63
		RB1#0	22.18	22.27	22.39
		RB1#50	22.32	22.25	22.44
		RB1#99	22.33	22.31	22.46
		RB50#0	21.21	21.26	21.40
		RB50#50	21.21	21.31	21.41
	16QAM	RB100#0	21.24	21.25	21.34
		RB1#0	21.59	21.35	22.11
		RB1#50	21.62	21.37	22.19
		RB1#99	21.62	21.35	22.20
		RB50#0	21.22	21.32	21.38
		RB50#50	21.32	21.32	21.41
		RB100#0	20.29	20.41	20.59

PAR:

Test Modulation		Channel Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.96	5.36	4.64	13
	100 RB		5.01	5.19	5.01	13
16QAM	1 RB	20 MHz	5.48	6.09	5.83	13
	100 RB		6.09	6.06	5.97	13

EIRP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
1.4MHz	QPSK	Low	22.03	0.7	0.4	22.33	33.00
		Middle	22.33	0.7	0.4	22.63	33.00
		High	22.49	0.7	0.4	22.79	33.00
	16QAM	Low	22.09	0.7	0.4	22.39	33.00
		Middle	22.40	0.7	0.4	22.7	33.00
		High	22.56	0.7	0.4	22.86	33.00
3MHz	QPSK	Low	22.03	0.7	0.4	22.33	33.00
		Middle	22.22	0.7	0.4	22.52	33.00
		High	22.33	0.7	0.4	22.63	33.00
	16QAM	Low	21.51	0.7	0.4	21.81	33.00
		Middle	21.93	0.7	0.4	22.23	33.00
		High	21.33	0.7	0.4	21.63	33.00
5MHz	QPSK	Low	22.06	0.7	0.4	22.36	33.00
		Middle	22.48	0.7	0.4	22.78	33.00
		High	22.38	0.7	0.4	22.68	33.00
	16QAM	Low	21.12	0.7	0.4	21.42	33.00
		Middle	21.75	0.7	0.4	22.05	33.00
		High	21.45	0.7	0.4	21.75	33.00
10MHz	QPSK	Low	22.08	0.7	0.4	22.38	33.00
		Middle	22.42	0.7	0.4	22.72	33.00
		High	22.41	0.7	0.4	22.71	33.00
	16QAM	Low	21.63	0.7	0.4	21.93	33.00
		Middle	21.51	0.7	0.4	21.81	33.00
		High	21.42	0.7	0.4	21.72	33.00
15MHz	QPSK	Low	22.15	0.7	0.4	22.45	33.00
		Middle	22.31	0.7	0.4	22.61	33.00
		High	22.26	0.7	0.4	22.56	33.00
	16QAM	Low	21.77	0.7	0.4	22.07	33.00
		Middle	21.54	0.7	0.4	21.84	33.00
		High	21.85	0.7	0.4	22.15	33.00
20MHz	QPSK	Low	22.33	0.7	0.4	22.63	33.00
		Middle	22.31	0.7	0.4	22.61	33.00
		High	22.46	0.7	0.4	22.76	33.00
	16QAM	Low	21.62	0.7	0.4	21.92	33.00
		Middle	21.37	0.7	0.4	21.67	33.00
		High	22.20	0.7	0.4	22.5	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	22.08	21.90	21.83
		RB1#3	22.04	21.79	21.86
		RB1#5	22.08	21.95	21.85
		RB3#0	22.15	22.08	22.21
		RB3#3	22.10	22.11	22.12
		RB6#0	21.14	21.05	21.10
	16QAM	RB1#0	22.03	20.85	21.85
		RB1#3	22.08	20.83	21.82
		RB1#5	22.09	20.87	21.81
		RB3#0	22.14	22.05	22.17
		RB3#3	22.15	22.08	22.09
		RB6#0	20.59	20.44	20.16
3MHz	QPSK	RB1#0	21.99	21.96	22.08
		RB1#8	22.01	21.94	22.14
		RB1#14	22.08	21.98	22.10
		RB6#0	21.10	21.06	20.97
		RB6#9	21.09	21.09	20.99
		RB15#0	21.04	21.03	20.87
	16QAM	RB1#0	21.67	21.95	21.11
		RB1#8	21.62	21.88	21.10
		RB1#14	21.64	21.94	21.08
		RB6#0	20.24	20.30	20.49
		RB6#9	20.21	20.31	20.49
		RB15#0	20.43	20.21	20.20
5MHz	QPSK	RB1#0	22.06	22.14	21.88
		RB1#13	22.09	22.03	21.81
		RB1#24	22.12	22.03	21.86
		RB15#0	21.12	20.95	20.96
		RB15#10	21.11	20.93	21.04
		RB25#0	21.18	20.94	21.02
	16QAM	RB1#0	20.32	21.36	20.61
		RB1#13	20.26	21.37	20.57
		RB1#24	20.29	21.33	20.61
		RB15#0	21.10	20.97	20.99
		RB15#10	21.13	20.94	21.05
		RB25#0	20.40	20.26	20.11
10MHz	QPSK	RB1#0	22.00	22.14	22.02
		RB1#25	21.91	22.10	22.08
		RB1#49	21.93	22.09	22.09
		RB25#0	21.12	20.98	20.96
		RB25#25	21.11	21.11	20.95
		RB50#0	21.05	21.04	20.94
	16QAM	RB1#0	21.46	21.24	20.51
		RB1#25	21.48	21.24	20.63
		RB1#49	21.41	21.23	20.54
		RB25#0	21.14	21.00	20.99
		RB25#25	21.12	20.94	20.97
		RB50#0	20.32	20.27	20.22

15MHz	QPSK	RB1#0	21.93	22.07	21.99
		RB1#38	21.90	22.12	22.04
		RB1#74	21.89	22.10	22.04
		RB36#0	21.10	20.93	20.98
		RB36#39	21.11	21.05	21.02
		RB75#0	21.08	21.04	21.07
	16QAM	RB1#0	21.49	21.20	21.55
		RB1#38	21.38	21.22	21.57
		RB1#74	21.41	21.21	21.39
		RB36#0	21.10	20.96	21.08
		RB36#39	21.10	21.07	20.95
		RB75#0	20.40	20.33	20.16
20MHz	QPSK	RB1#0	22.19	21.95	22.07
		RB1#50	22.21	22.02	22.13
		RB1#99	22.12	22.05	22.19
		RB50#0	21.06	21.17	21.02
		RB50#50	21.11	21.10	21.04
		RB100#0	21.09	21.04	21.06
	16QAM	RB1#0	21.57	21.66	21.73
		RB1#50	21.55	21.63	21.74
		RB1#99	21.54	21.57	21.77
		RB50#0	21.15	21.17	21.01
		RB50#50	21.04	21.03	21.09
		RB100#0	20.39	20.28	20.32

PAR, Band 4

Test Modulation		Channel Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.96	5.42	4.81	13
	100 RB		5.57	5.30	5.57	13
16QAM	1 RB	20 MHz	5.74	6.26	6.35	13
	100 RB		6.46	6.20	6.41	13

EIRP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
1.4MHz	QPSK	Low	22.15	1.18	0.4	22.93	30
		Middle	22.11	1.18	0.4	22.89	30
		High	22.21	1.18	0.4	22.99	30
	16QAM	Low	22.15	1.18	0.4	22.93	30
		Middle	22.08	1.18	0.4	22.86	30
		High	22.17	1.18	0.4	22.95	30
3MHz	QPSK	Low	22.08	1.18	0.4	22.86	30
		Middle	21.98	1.18	0.4	22.76	30
		High	22.14	1.18	0.4	22.92	30
	16QAM	Low	21.67	1.18	0.4	22.45	30
		Middle	21.95	1.18	0.4	22.73	30
		High	21.11	1.18	0.4	21.89	30
5MHz	QPSK	Low	22.12	1.18	0.4	22.9	30
		Middle	22.14	1.18	0.4	22.92	30
		High	21.88	1.18	0.4	22.66	30
	16QAM	Low	21.13	1.18	0.4	21.91	30
		Middle	21.37	1.18	0.4	22.15	30
		High	21.05	1.18	0.4	21.83	30
10MHz	QPSK	Low	22.00	1.18	0.4	22.78	30
		Middle	22.14	1.18	0.4	22.92	30
		High	22.09	1.18	0.4	22.87	30
	16QAM	Low	21.48	1.18	0.4	22.26	30
		Middle	21.24	1.18	0.4	22.02	30
		High	20.99	1.18	0.4	21.77	30
15MHz	QPSK	Low	21.93	1.18	0.4	22.71	30
		Middle	22.12	1.18	0.4	22.9	30
		High	22.04	1.18	0.4	22.82	30
	16QAM	Low	21.49	1.18	0.4	22.27	30
		Middle	21.22	1.18	0.4	22	30
		High	21.57	1.18	0.4	22.35	30
20MHz	QPSK	Low	22.21	1.18	0.4	22.99	30
		Middle	22.05	1.18	0.4	22.83	30
		High	22.19	1.18	0.4	22.97	30
	16QAM	Low	21.57	1.18	0.4	22.35	30
		Middle	21.66	1.18	0.4	22.44	30
		High	21.77	1.18	0.4	22.55	30

LTE Band 5

Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.52	22.69	22.82
		RB1#3	22.52	22.65	22.87
		RB1#5	22.51	22.63	22.79
		RB3#0	22.62	22.76	22.89
		RB3#3	22.56	22.75	22.83
		RB6#0	21.58	21.68	21.80
	16QAM	RB1#0	21.68	21.28	22.69
		RB1#3	21.65	21.33	22.63
		RB1#5	21.71	21.34	22.67
		RB3#0	22.57	22.78	22.92
		RB3#3	22.55	22.74	22.88
		RB6#0	20.75	21.06	20.88
3MHz	QPSK	RB1#0	22.45	22.70	22.76
		RB1#8	22.39	22.72	22.81
		RB1#14	22.44	22.67	22.75
		RB6#0	21.62	21.74	21.75
		RB6#9	21.55	21.69	21.74
		RB15#0	21.54	21.73	21.74
	16QAM	RB1#0	21.64	22.49	21.51
		RB1#8	21.58	22.38	21.45
		RB1#14	21.68	22.36	21.45
		RB6#0	20.85	20.72	20.98
		RB6#9	20.72	20.87	21.08
		RB15#0	20.78	20.85	20.79
5MHz	QPSK	RB1#0	22.40	22.71	22.61
		RB1#13	22.36	22.72	22.63
		RB1#24	22.45	22.73	22.65
		RB15#0	21.57	21.65	21.70
		RB15#10	21.55	21.59	21.66
		RB25#0	21.53	21.60	21.71
	16QAM	RB1#0	20.78	21.77	21.35
		RB1#13	20.75	21.71	21.32
		RB1#24	20.67	21.80	21.31
		RB15#0	21.61	21.60	21.65
		RB15#10	21.57	21.54	21.73
		RB25#0	20.82	20.80	20.59
10MHz	QPSK	RB1#0	22.49	22.74	22.64
		RB1#25	22.51	22.81	22.61
		RB1#49	22.50	22.84	22.70
		RB25#0	21.57	21.67	21.61
		RB25#25	21.60	21.67	21.70
		RB50#0	21.55	21.69	21.61
	16QAM	RB1#0	21.95	21.73	21.17
		RB1#25	21.91	21.82	21.04
		RB1#49	21.87	21.87	21.19
		RB25#0	21.51	21.72	21.60
		RB25#25	21.63	21.69	21.72
		RB50#0	20.56	20.90	20.66

PAR:

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	5.10	5.30	5.39	13
	50 RB		5.25	5.39	5.39	13
16QAM	1 RB	10 MHz	6.20	6.46	5.80	13
	50 RB		6.09	6.17	6.29	13

ERP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
1.4MHz	QPSK	Low	22.62	-1.35	0.2	21.07	38.45
		Middle	22.76	-1.35	0.2	21.21	38.45
		High	22.89	-1.35	0.2	21.34	38.45
	16QAM	Low	22.57	-1.35	0.2	21.02	38.45
		Middle	22.78	-1.35	0.2	21.23	38.45
		High	22.92	-1.35	0.2	21.37	38.45
3MHz	QPSK	Low	22.45	-1.35	0.2	20.9	38.45
		Middle	22.72	-1.35	0.2	21.17	38.45
		High	22.81	-1.35	0.2	21.26	38.45
	16QAM	Low	21.68	-1.35	0.2	20.13	38.45
		Middle	22.49	-1.35	0.2	20.94	38.45
		High	21.51	-1.35	0.2	19.96	38.45
5MHz	QPSK	Low	22.45	-1.35	0.2	20.9	38.45
		Middle	22.73	-1.35	0.2	21.18	38.45
		High	22.65	-1.35	0.2	21.1	38.45
	16QAM	Low	21.61	-1.35	0.2	20.06	38.45
		Middle	21.80	-1.35	0.2	20.25	38.45
		High	21.73	-1.35	0.2	20.18	38.45
10MHz	QPSK	Low	22.51	-1.35	0.2	20.96	38.45
		Middle	22.84	-1.35	0.2	21.29	38.45
		High	22.70	-1.35	0.2	21.15	38.45
	16QAM	Low	21.95	-1.35	0.2	20.4	38.45
		Middle	21.87	-1.35	0.2	20.32	38.45
		High	21.72	-1.35	0.2	20.17	38.45

LTE Band 7

Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	21.36	21.29	21.20
		RB1#13	21.32	21.34	21.18
		RB1#24	21.36	21.26	21.13
		RB15#0	20.39	20.32	20.27
		RB15#10	20.37	20.27	20.18
		RB25#0	20.33	20.27	20.19
	16QAM	RB1#0	19.77	20.35	19.82
		RB1#13	19.77	20.43	19.85
		RB1#24	19.75	20.35	19.91
		RB15#0	20.42	20.20	20.27
		RB15#10	20.39	20.33	20.17
		RB25#0	19.64	19.45	19.32
10MHz	QPSK	RB1#0	21.21	21.28	21.27
		RB1#25	21.19	21.29	21.22
		RB1#49	21.22	21.23	21.26
		RB25#0	20.41	20.26	20.30
		RB25#25	20.33	20.30	20.24
		RB50#0	20.35	20.23	20.29
	16QAM	RB1#0	20.66	20.50	19.77
		RB1#25	20.67	20.54	19.74
		RB1#49	20.49	20.51	19.76
		RB25#0	20.22	20.29	20.31
		RB25#25	20.36	20.33	20.24
		RB50#0	19.52	19.52	19.44
15MHz	QPSK	RB1#0	21.20	21.27	21.26
		RB1#38	21.19	21.21	21.28
		RB1#74	21.28	21.28	21.40
		RB36#0	20.32	20.19	20.29
		RB36#39	20.26	20.15	20.23
		RB75#0	20.25	20.29	20.21
	16QAM	RB1#0	20.69	20.63	20.73
		RB1#38	20.60	20.68	20.71
		RB1#74	20.68	20.73	20.78
		RB36#0	20.34	20.22	20.19
		RB36#39	20.26	20.24	20.23
		RB75#0	19.53	19.44	19.50
20MHz	QPSK	RB1#0	21.39	21.31	21.33
		RB1#50	21.36	21.26	21.36
		RB1#99	21.45	21.32	21.47
		RB50#0	20.36	20.32	20.28
		RB50#50	20.33	20.29	20.18
		RB100#0	20.35	20.29	20.33
	16QAM	RB1#0	20.31	20.89	21.14
		RB1#50	20.18	20.89	21.04
		RB1#99	20.18	20.97	21.03
		RB50#0	20.27	20.22	20.29
		RB50#50	20.35	20.27	20.19
		RB100#0	19.48	19.39	19.45

PAR:

Test Modulation		Channel Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit (dB)
QPSK	1 RB	20 MHz	3.54	4.26	4.43	13
	100 RB		4.46	4.70	4.75	13
16QAM	1 RB	20 MHz	4.41	5.33	5.28	13
	100 RB		5.28	5.65	5.62	13

EIRP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
5MHz	QPSK	Low	21.36	1.23	0.4	22.19	33.0
		Middle	21.34	1.23	0.4	22.17	33.0
		High	21.20	1.23	0.4	22.03	33.0
	16QAM	Low	20.42	1.23	0.4	21.25	33.0
		Middle	20.43	1.23	0.4	21.26	33.0
		High	20.27	1.23	0.4	21.1	33.0
10MHz	QPSK	Low	21.22	1.23	0.4	22.05	33.0
		Middle	21.29	1.23	0.4	22.12	33.0
		High	21.27	1.23	0.4	22.1	33.0
	16QAM	Low	20.67	1.23	0.4	21.5	33.0
		Middle	20.54	1.23	0.4	21.37	33.0
		High	20.31	1.23	0.4	21.14	33.0
15MHz	QPSK	Low	21.28	1.23	0.4	22.11	33.0
		Middle	21.28	1.23	0.4	22.11	33.0
		High	21.40	1.23	0.4	22.23	33.0
	16QAM	Low	20.69	1.23	0.4	21.52	33.0
		Middle	20.73	1.23	0.4	21.56	33.0
		High	20.78	1.23	0.4	21.61	33.0
20MHz	QPSK	Low	21.45	1.23	0.4	22.28	33.0
		Middle	21.32	1.23	0.4	22.15	33.0
		High	21.47	1.23	0.4	22.3	33.0
	16QAM	Low	20.35	1.23	0.4	21.18	33.0
		Middle	20.97	1.23	0.4	21.8	33.0
		High	21.14	1.23	0.4	21.97	33.0

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

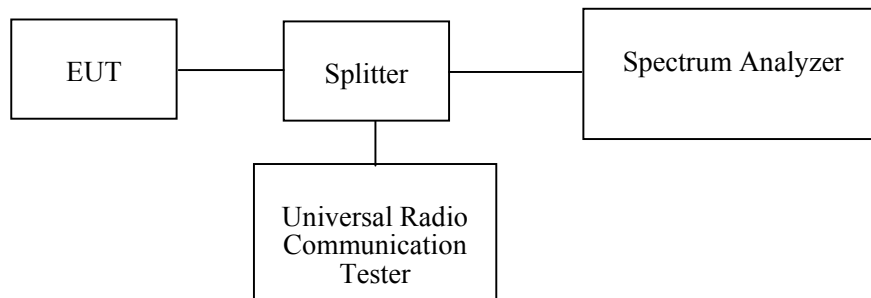
FCC §2.1049, §22.917, §22.905 & §24.238 & §27.53- OCCUPIED BANDWIDTH**Applicable Standard**

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	FSV40	101474	2020-07-07	2021-07-07
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2020-09-12	2021-09-12
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
E-Microwave	Two-way 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:	25.6~26.3 °C
Relative Humidity:	30~47%
ATM Pressure:	101 ~101.9kPa
Tester:	Tylor Li
Test Date:	2020-10-30~2020-11-03

Test Mode: Transmitting

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

GSM&EDGE:

Band	Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
		Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
Cellular	GSM	0.25	0.24	0.24	0.32	0.32	0.32
	EGPRS	0.24	0.24	0.24	0.32	0.32	0.32
PCS	GSM	0.24	0.24	0.25	0.31	0.32	0.31
	EGPRS	0.24	0.24	0.24	0.32	0.32	0.32

WCDMA:

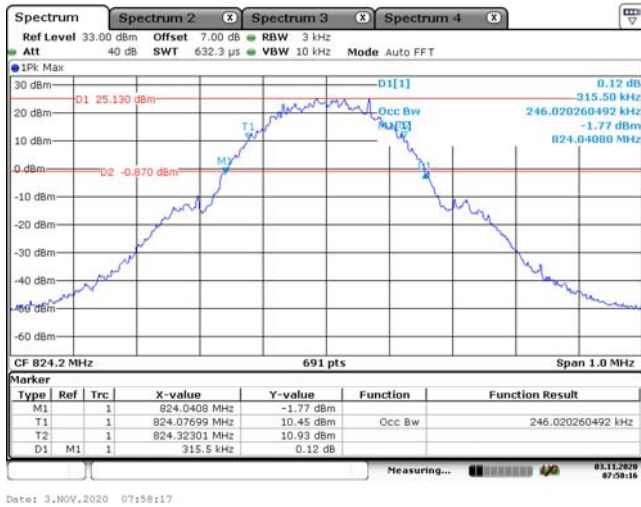
Band	Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
		Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
PCS	Rel 99	4.139	4.153	4.139	4.602	4.602	4.588
	HSDPA	4.153	4.153	4.153	4.616	4.588	4.588
	HSUPA	4.154	4.153	4.139	4.588	4.602	4.559
Cellular	Rel 99	4.153	4.139	4.139	4.616	4.602	4.588
	HSDPA	4.139	4.153	4.153	4.588	4.588	4.602
	HSUPA	4.153	4.153	4.139	4.602	4.588	4.588

LTE Bands:

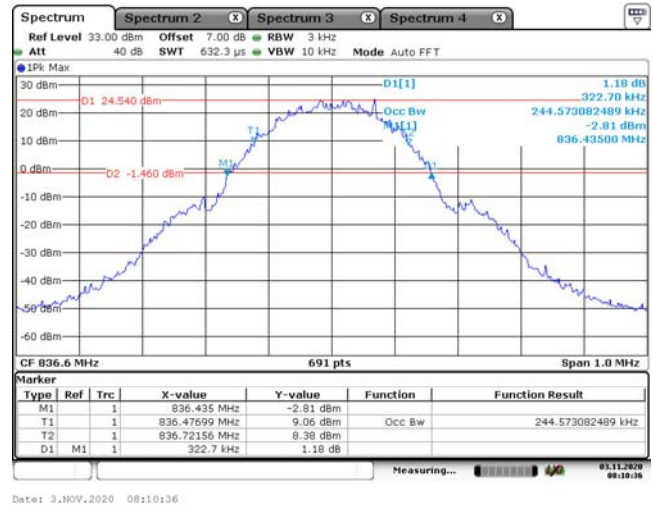
Band	Bandwidth (MHz)	Modulation mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
			Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
LTE Band 2	1.4 MHz	QPSK	1.108	1.102	1.108	1.320	1.314	1.338
		16QAM	1.102	1.096	1.102	1.308	1.296	1.302
	3 MHz	QPSK	2.695	2.695	2.695	3.024	3.012	3.024
		16QAM	2.707	2.695	2.695	3.060	3.012	3.048
	5 MHz	QPSK	4.531	4.531	4.511	5.360	5.100	5.140
		16QAM	4.551	4.531	4.531	5.420	5.360	5.380
	10 MHz	QPSK	8.942	8.942	8.942	10.000	9.800	9.760
		16QAM	8.982	8.942	8.942	10.160	9.800	9.840
	15 MHz	QPSK	13.533	13.473	13.533	15.900	14.820	15.480
		16QAM	13.533	13.533	13.533	15.000	14.820	15.360
	20 MHz	QPSK	17.964	18.044	17.964	20.240	19.840	20.000
		16QAM	17.964	18.044	18.044	20.080	20.000	20.000
LTE Band 4	1.4 MHz	QPSK	1.102	1.096	1.102	1.296	1.296	1.302
		16QAM	1.102	1.108	1.096	1.266	1.290	1.296
	3 MHz	QPSK	2.695	2.695	2.695	3.036	3.024	3.024
		16QAM	2.695	2.695	2.695	3.084	3.024	3.804
	5 MHz	QPSK	4.531	4.551	4.531	5.360	5.340	5.260
		16QAM	4.571	4.531	4.551	5.480	5.080	5.340
	10 MHz	QPSK	8.944	8.982	8.942	10.072	9.800	9.800
		16QAM	8.973	8.982	8.982	10.362	9.760	9.920
	15 MHz	QPSK	13.473	13.533	13.473	15.600	14.820	15.480
		16QAM	13.593	13.473	13.533	15.480	14.760	15.300
	20 MHz	QPSK	18.044	17.964	17.964	20.240	19.760	19.760
		16QAM	18.044	17.964	17.964	19.840	19.600	19.760

Band	Bandwidth (MHz)	Modulation mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
			Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
LTE Band 5	1.4 MHz	QPSK	1.102	1.096	1.102	1.308	1.296	1.314
		16QAM	1.102	1.102	1.096	1.302	1.278	1.314
	3 MHz	QPSK	2.695	2.695	2.695	3.024	3.012	3.024
		16QAM	2.683	2.695	2.695	3.060	3.024	3.048
	5 MHz	QPSK	4.511	4.551	4.511	5.180	5.460	5.200
		16QAM	4.551	4.531	4.551	5.340	5.260	5.340
LTE Band 7	10 MHz	QPSK	8.942	8.982	8.942	9.800	9.800	9.840
		16QAM	8.942	8.942	8.942	9.880	9.880	9.880
	5 MHz	QPSK	4.511	4.551	4.511	5.340	5.380	5.140
		16QAM	4.551	4.551	4.551	5.340	5.280	5.360
	10 MHz	QPSK	8.973	8.982	8.942	10.304	9.880	9.760
		16QAM	8.973	8.942	8.942	9.986	9.760	9.800
	15 MHz	QPSK	13.473	13.533	13.473	15.360	14.820	15.360
		16QAM	13.533	13.533	13.500	15.480	14.820	14.404
	20 MHz	QPSK	17.964	17.964	17.964	20.000	19.680	20.000
		16QAM	18.044	18.044	17.964	20.160	20.000	19.920

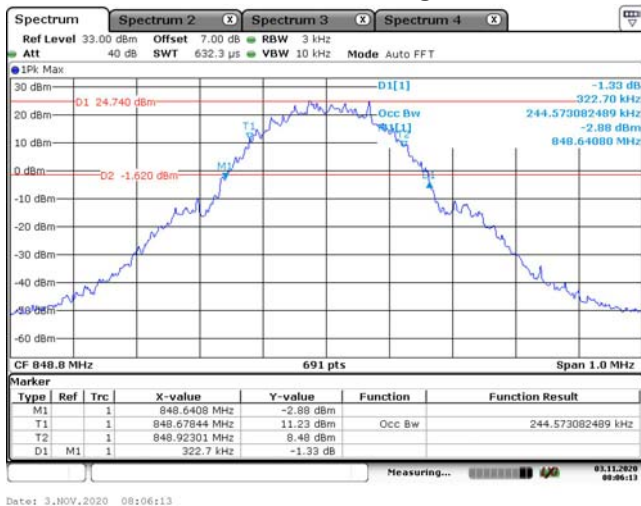
Cellular 850 Band, GSM, Low Channel



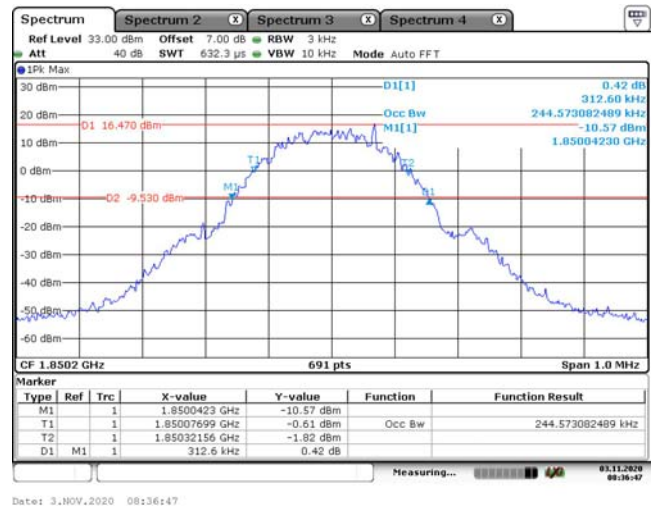
Cellular 850 Band, GSM, Middle Channel



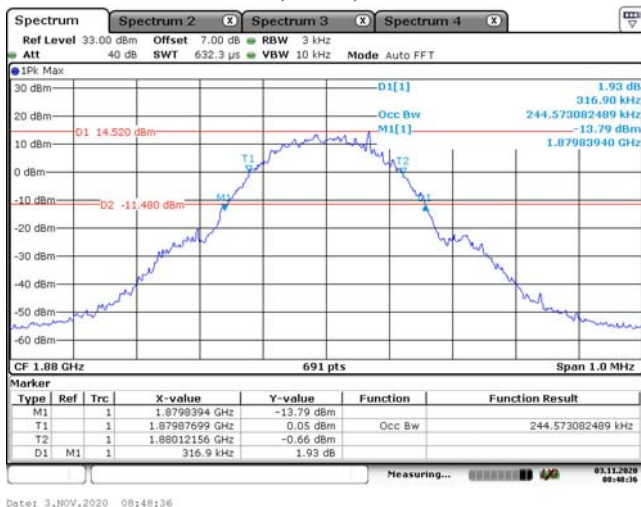
Cellular 850 Band, GSM, High Channel



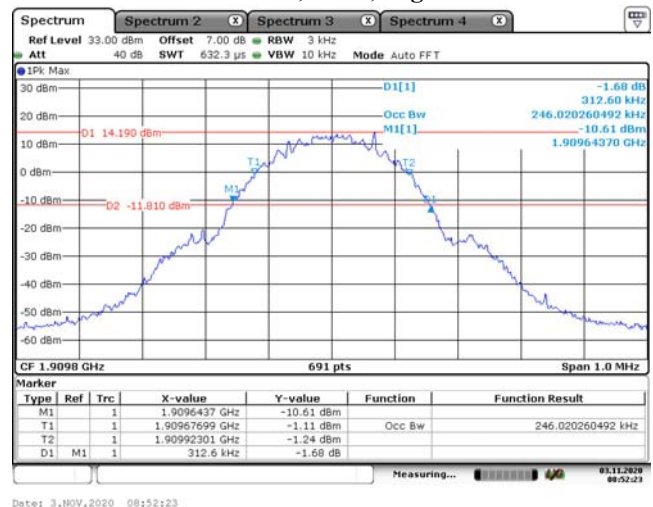
PCS 1900 Band, GSM, Low Channel



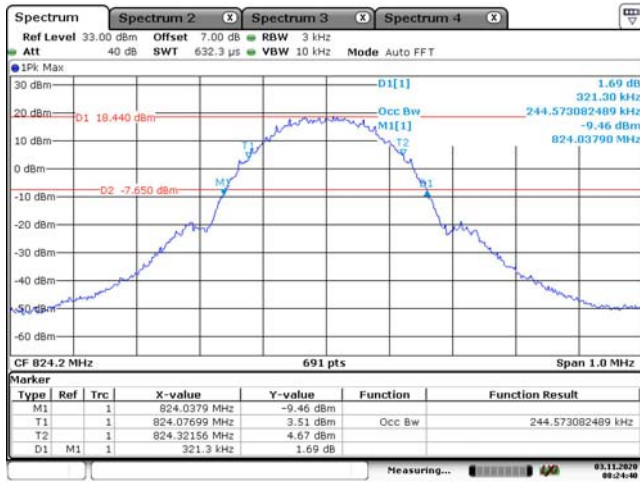
PCS 1900 Band, GSM, Middle Channel



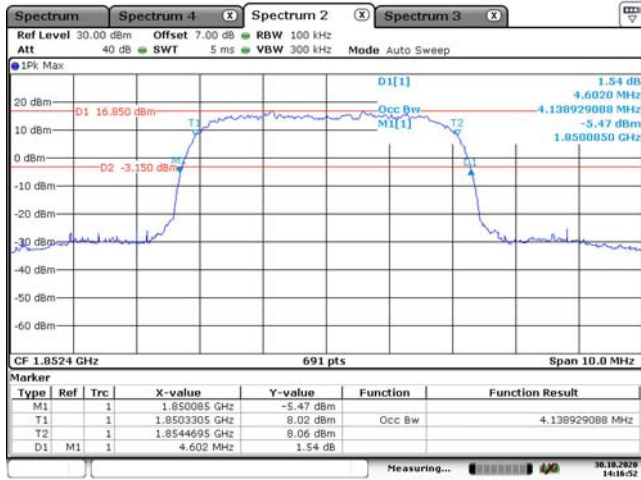
PCS 1900 Band, GSM, High Channel



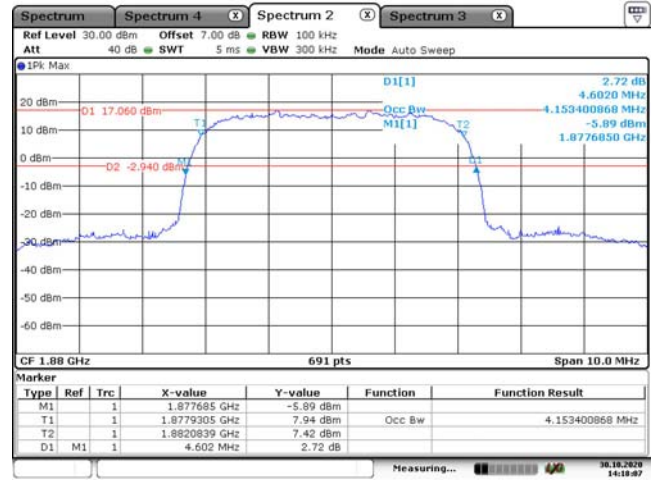
Cellular 850 Band, EDGE, Low Channel



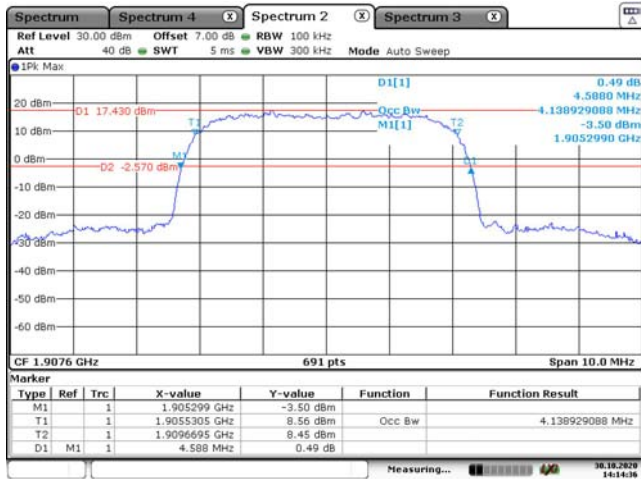
WCDMA Band II, Rel99, Low Channel



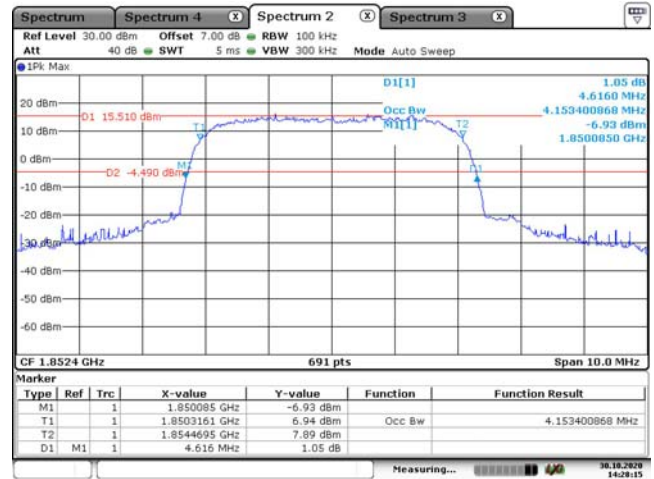
WCDMA Band II, Rel99, Middle Channel



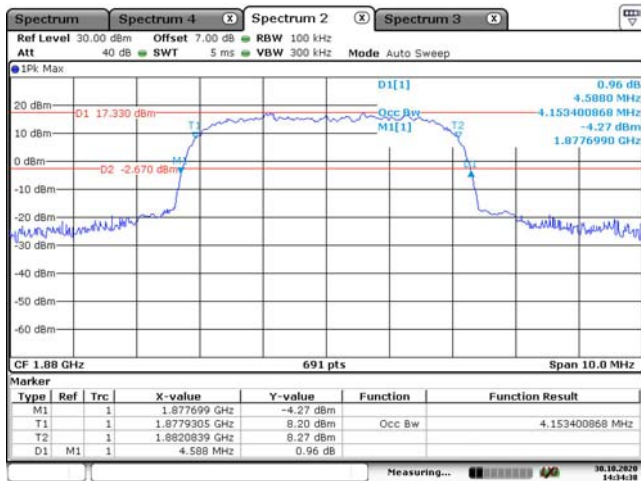
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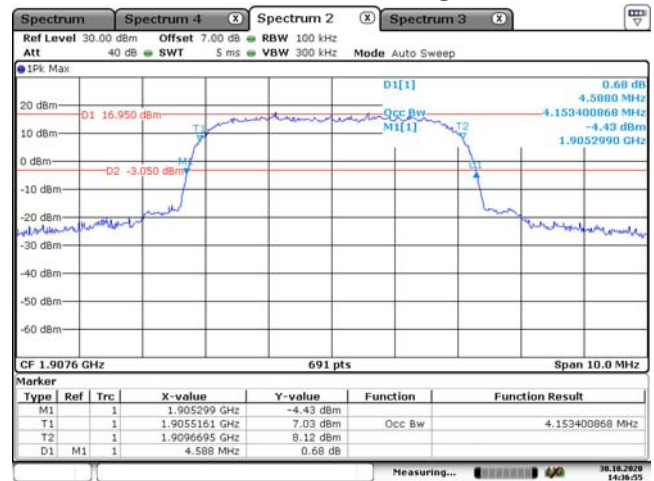
WCDMA Band II, HSDPA, Low Channel



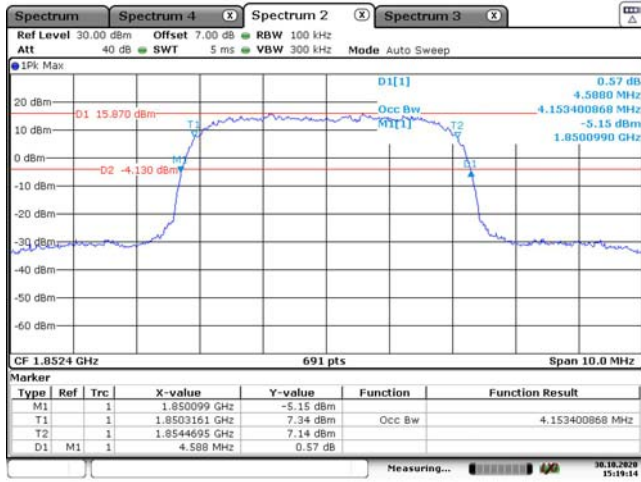
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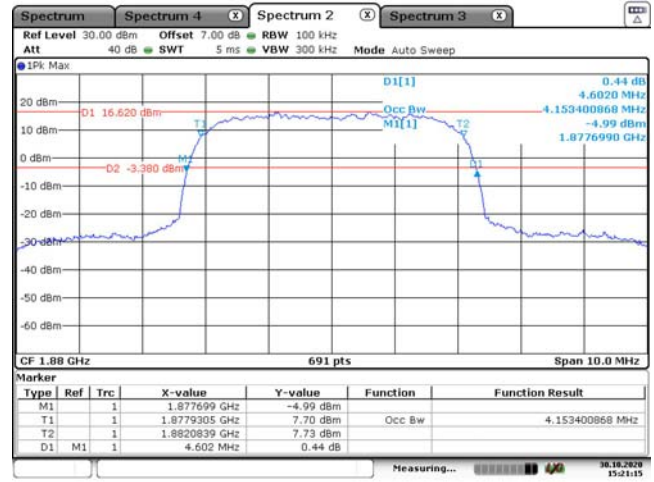


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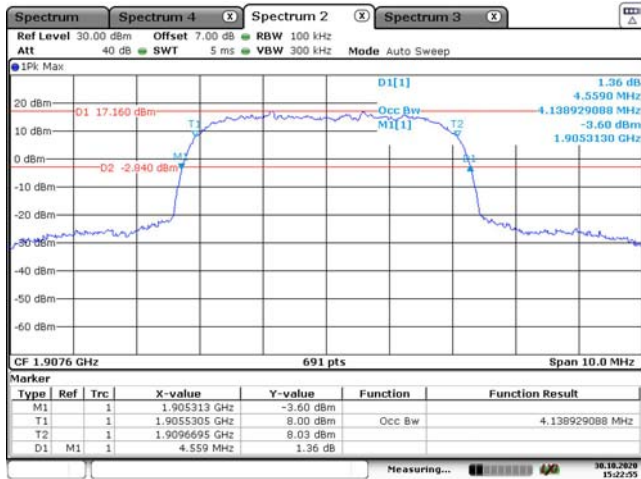
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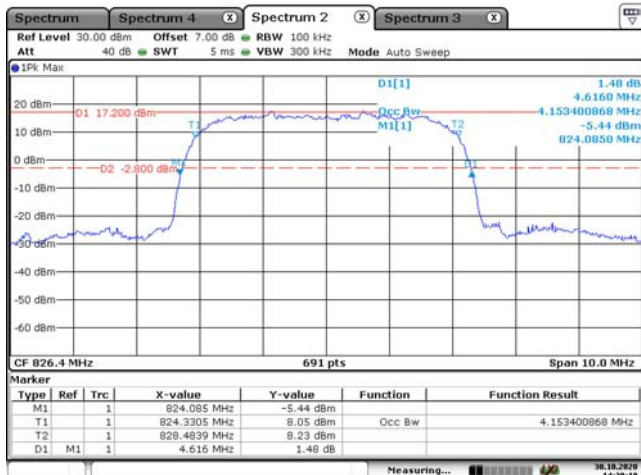
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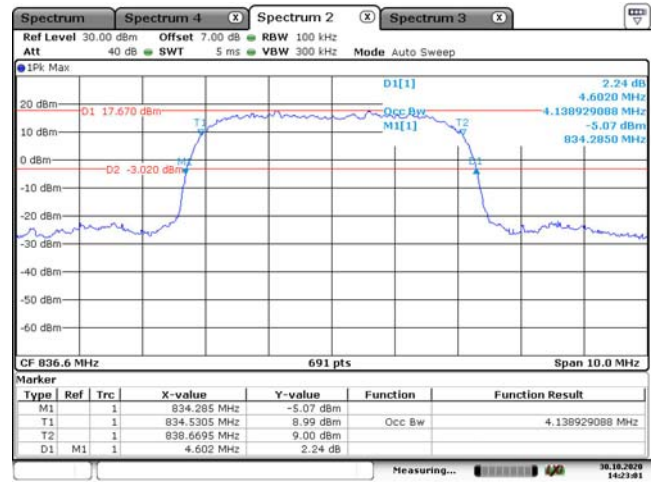


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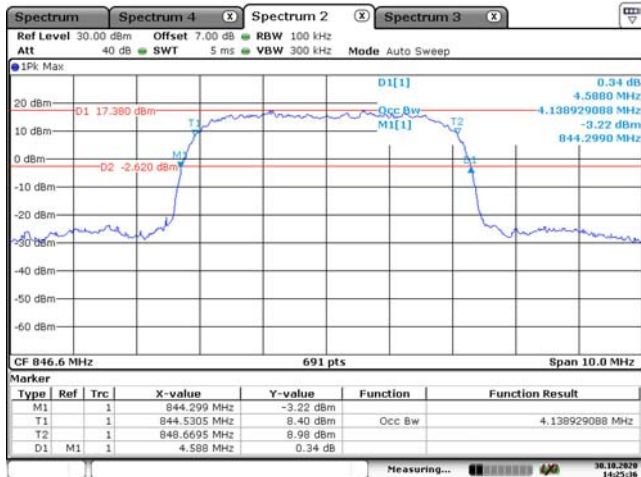
WCDMA Band V, Rel99, Low Channel



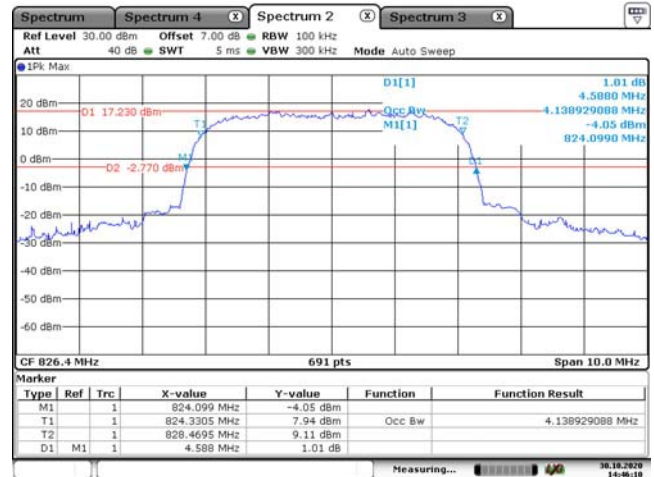
WCDMA Band V, Rel99, Middle Channel



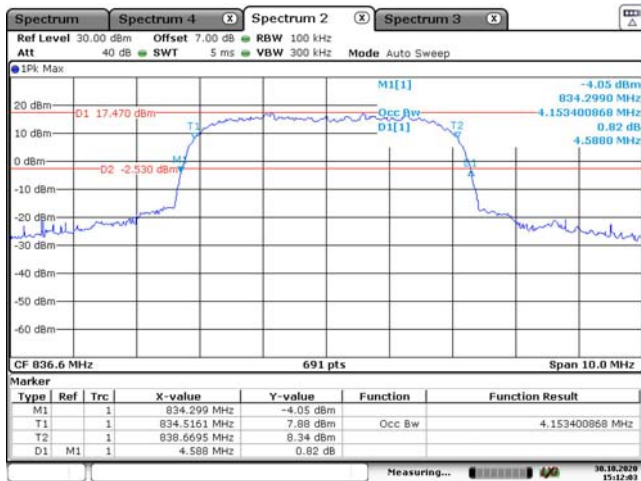
WCDMA Band V, Rel99, High Channel



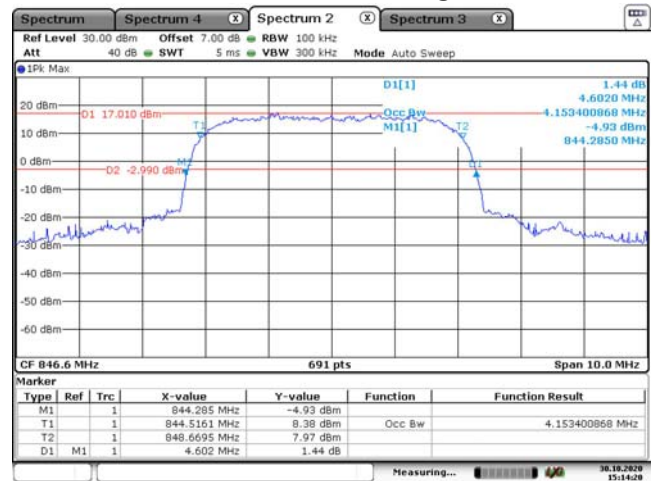
WCDMA Band V, HSDPA, Low Channel



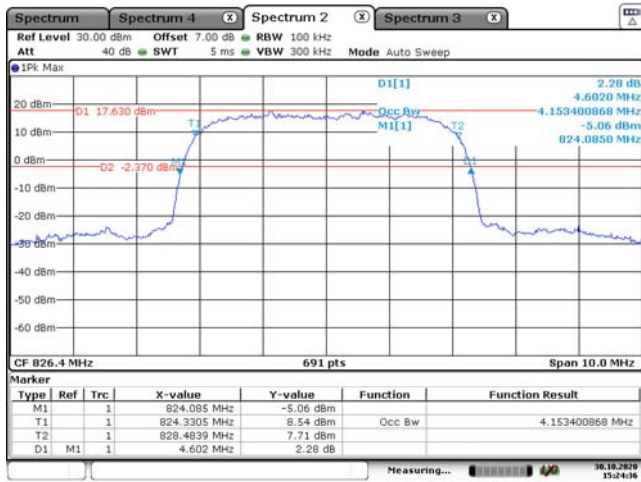
WCDMA Band V, HSDPA, Middle Channel



WCDMA Band V, HSDPA, High Channel

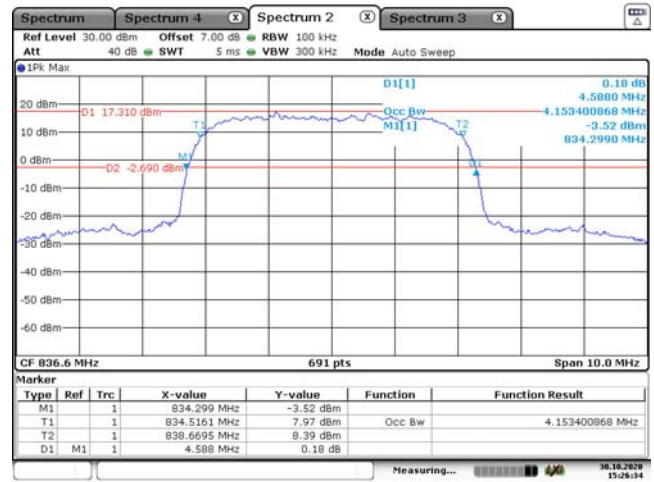


WCDMA Band V, HSUPA, Low Channel



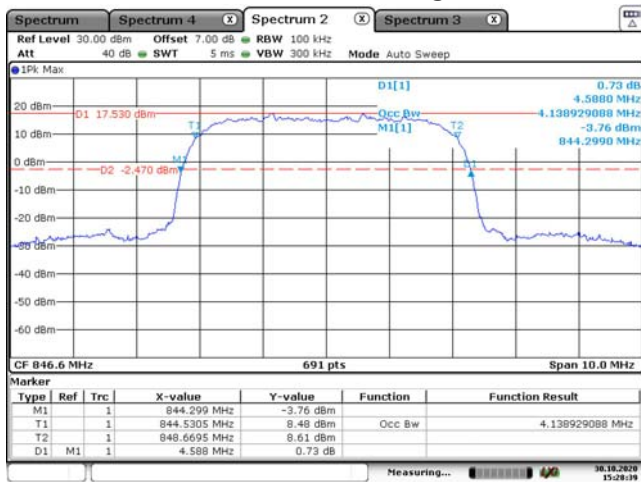
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WCDMA Band V, HSUPA, Middle Channel



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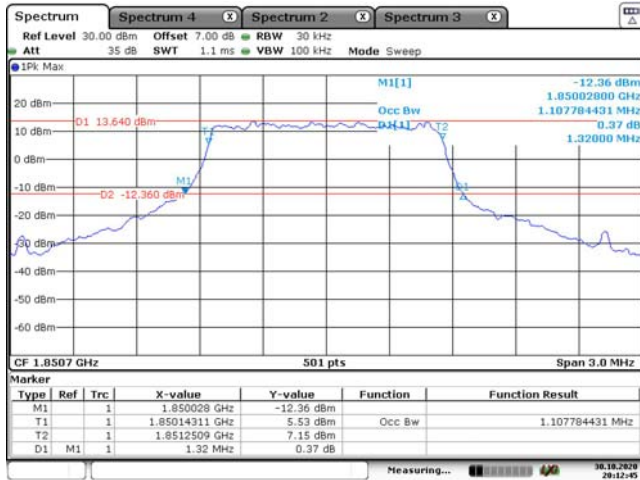
WCDMA Band V, HSUPA, High Channel



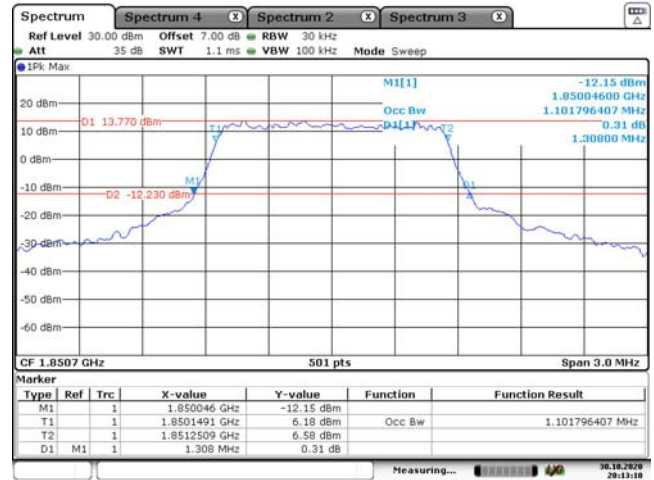
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LTE Band 2

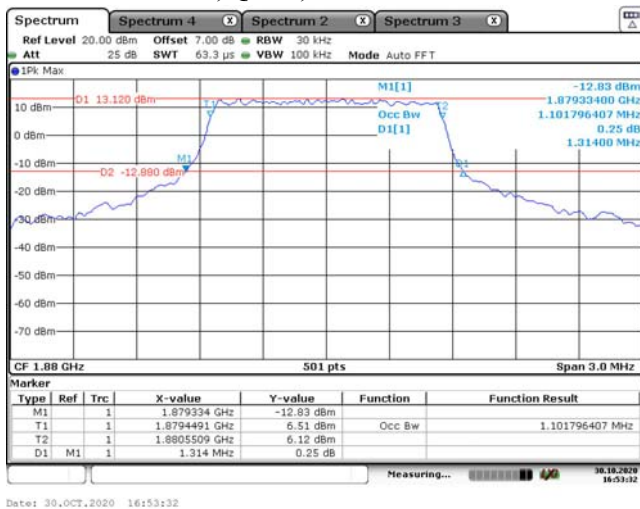
1.4M, QPSK, Low Channel



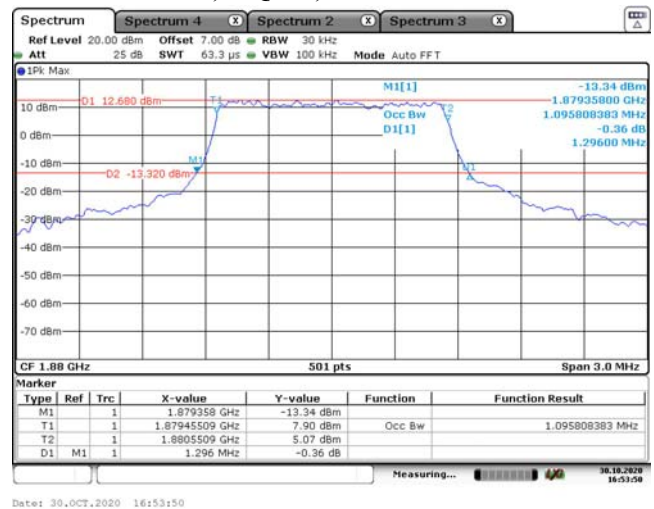
1.4M, 16QAM, Low Channel



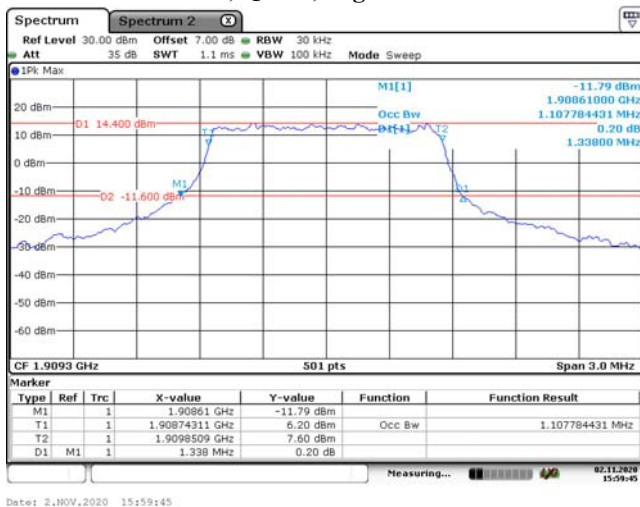
1.4M, QPSK, Middle Channel



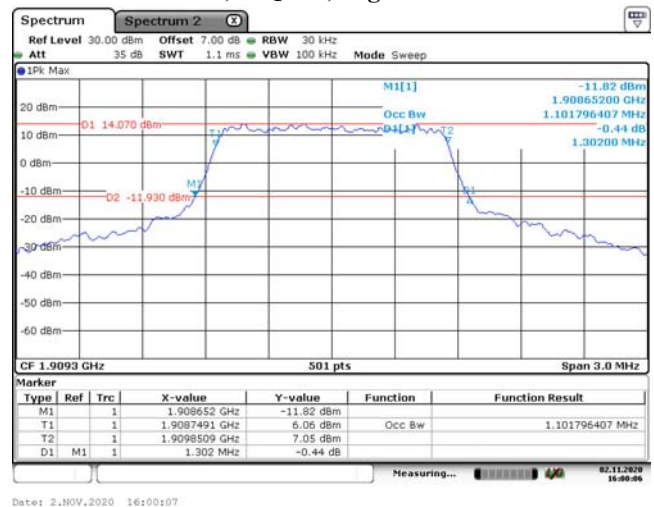
1.4M, 16QAM, Middle Channel



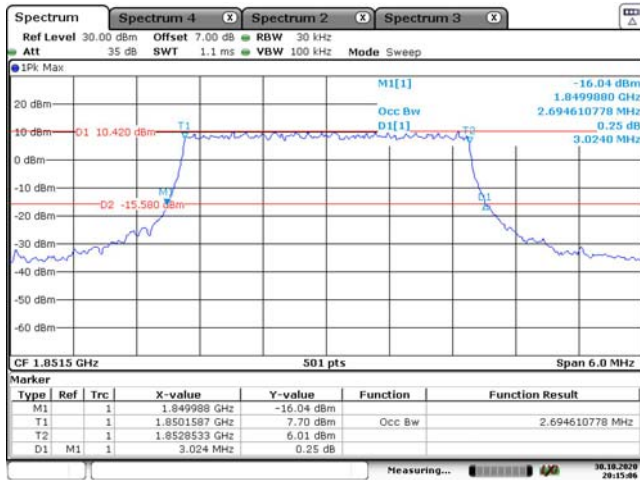
1.4M, QPSK, High Channel



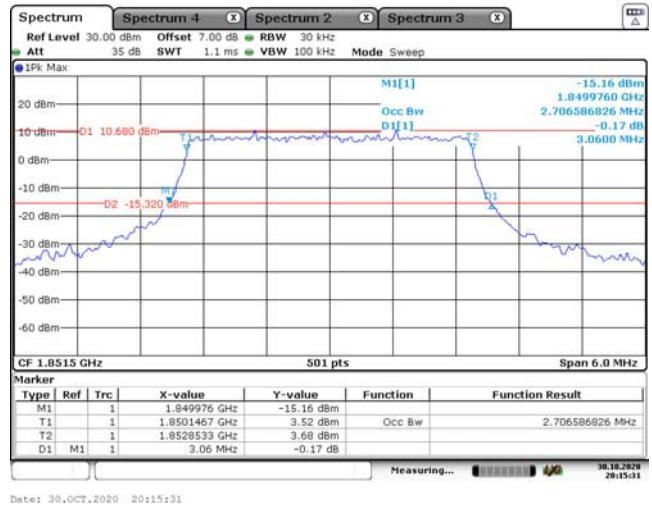
1.4M, 16QAM, High Channel



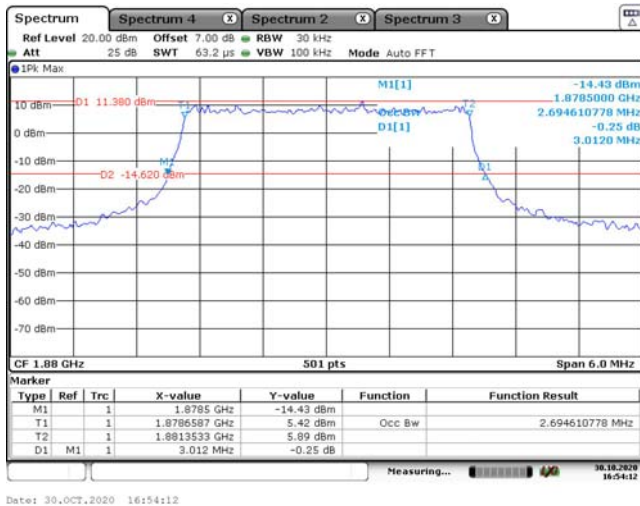
3M, QPSK, Low Channel



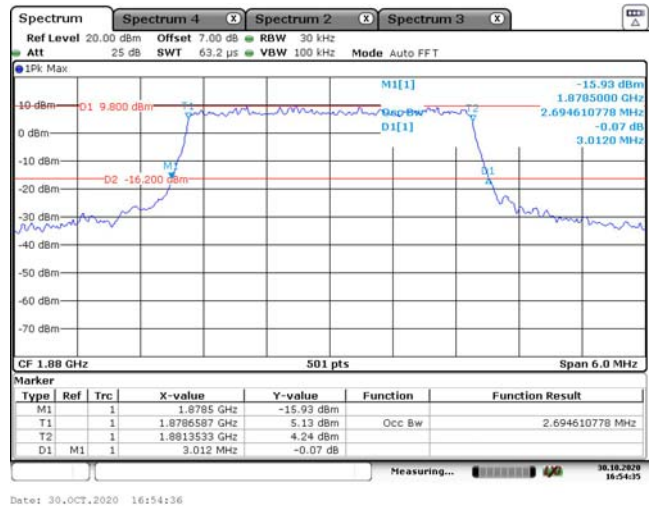
3M, 16QAM, Low Channel



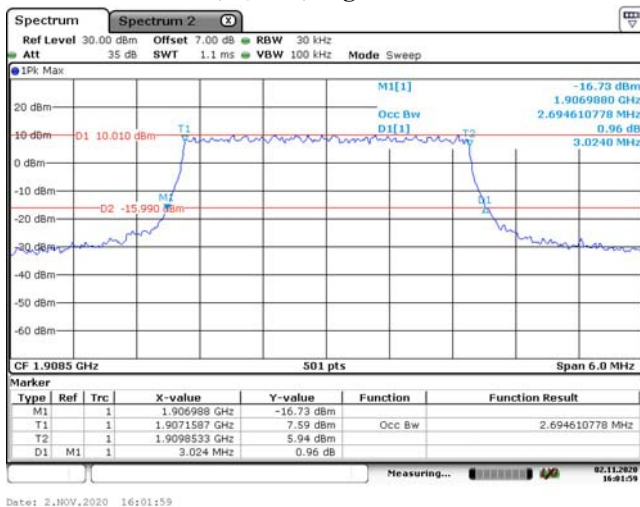
3M, QPSK, Middle Channel



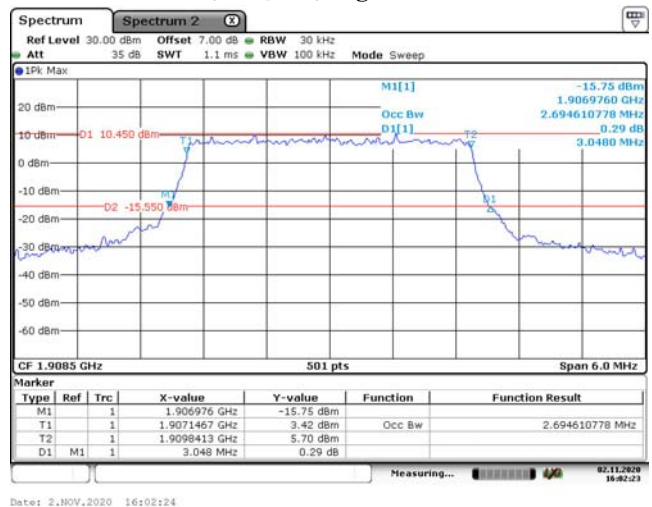
3M, 16QAM, Middle Channel



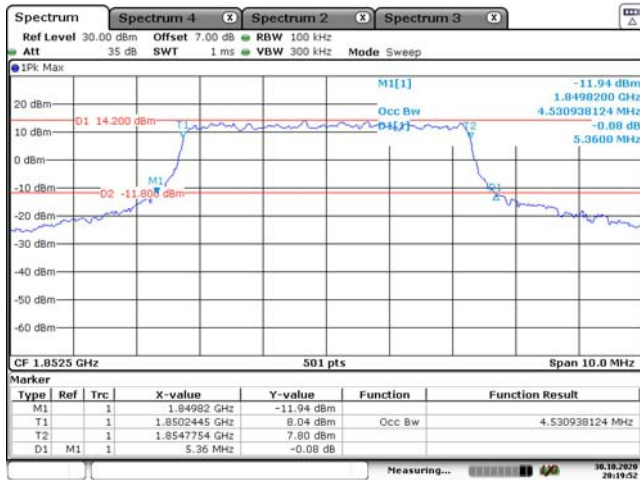
3M, QPSK, High Channel



3M, 16QAM, High Channel

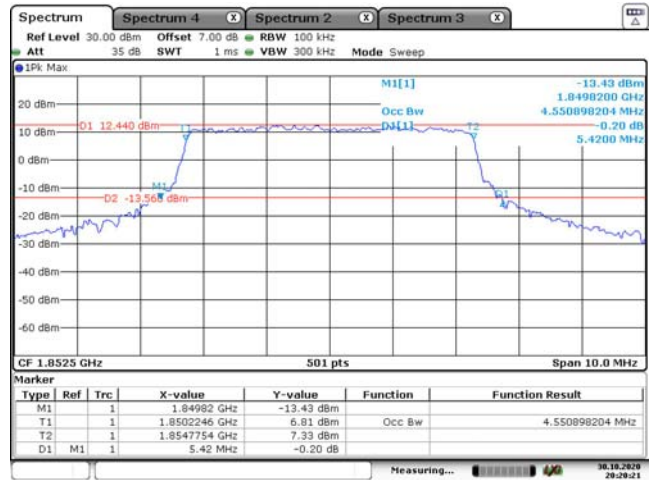


5M, QPSK, Low Channel



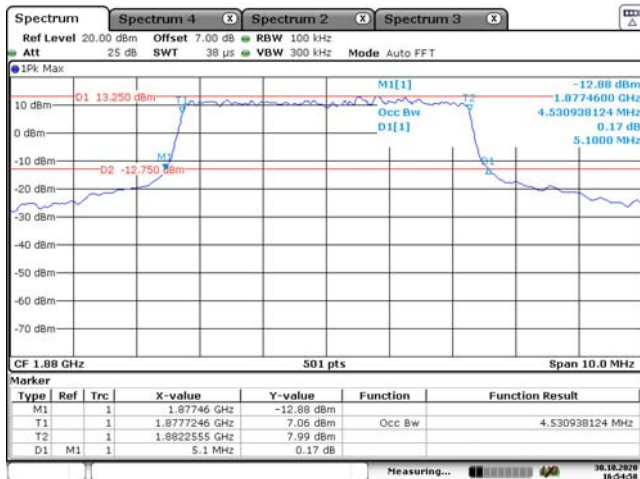
Date: 30.OCT.2020 20:19:52

5M, 16QAM, Low Channel



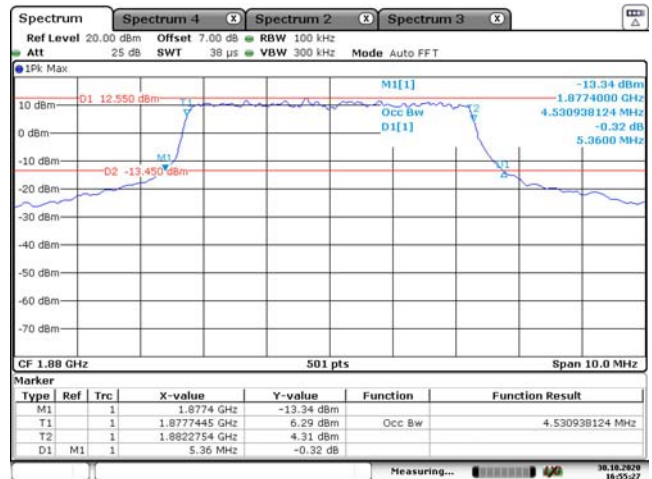
Date: 30.OCT.2020 20:20:21

5M, QPSK, Middle Channel



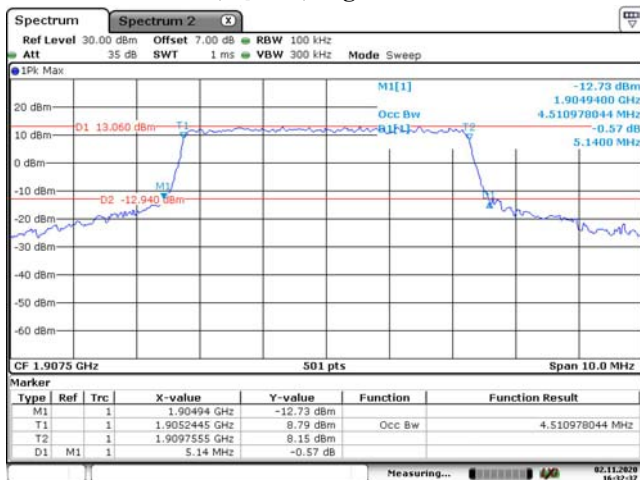
Date: 30.OCT.2020 16:54:58

5M, 16QAM, Middle Channel



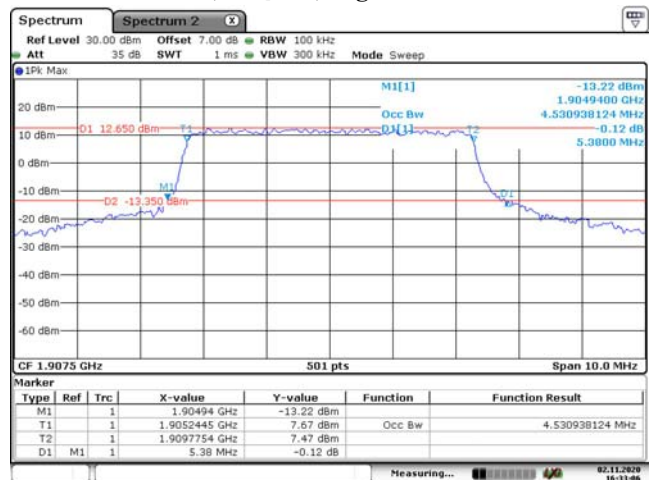
Date: 30.OCT.2020 16:55:27

5M, QPSK, High Channel



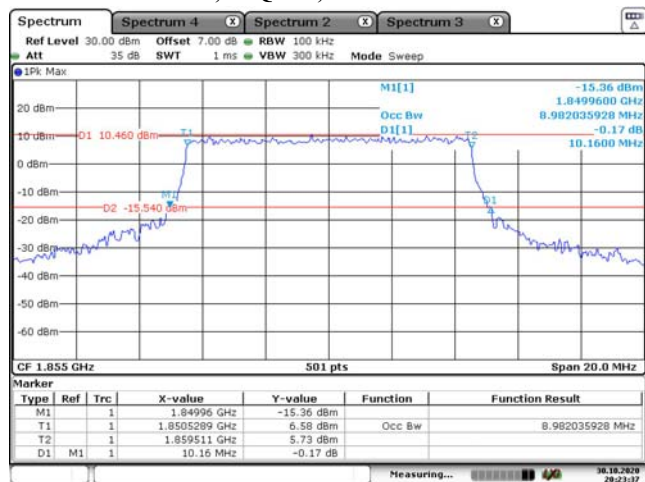
Date: 2.NOV.2020 16:32:37

5M, 16QAM, High Channel



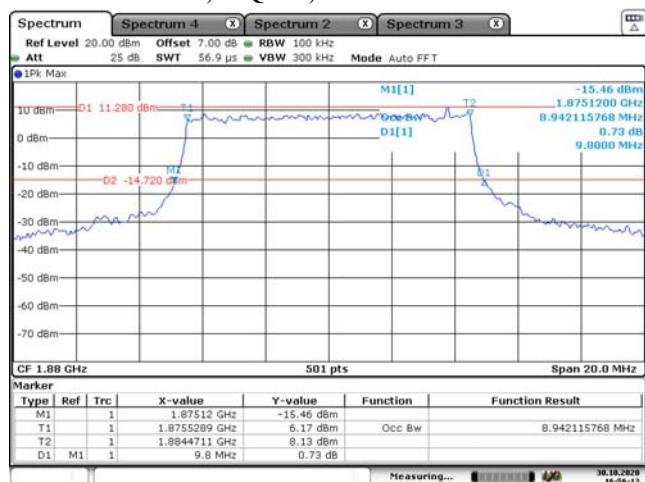
Date: 2.NOV.2020 16:33:06

10M, 16QAM, Low Channel



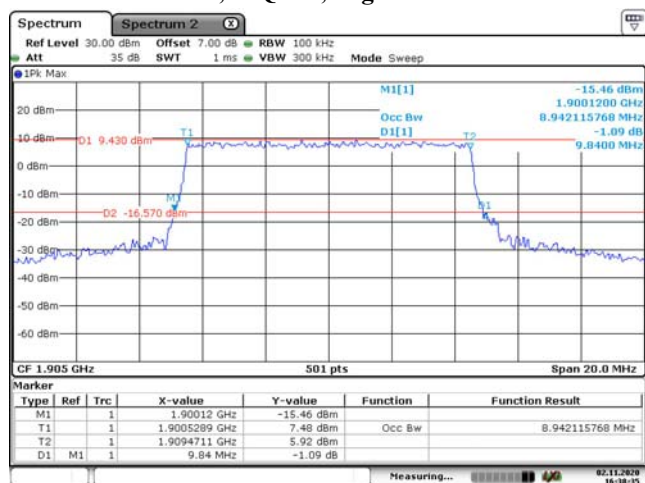
Date: 30.OCT.2020 20:23:38

10M, 16OAM, Middle Channel



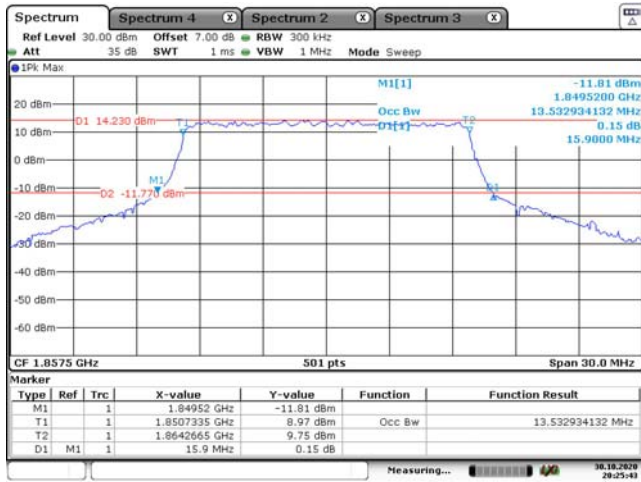
Date: 30.OCT.2020 16:56:12

10M, 16QAM, High Channel

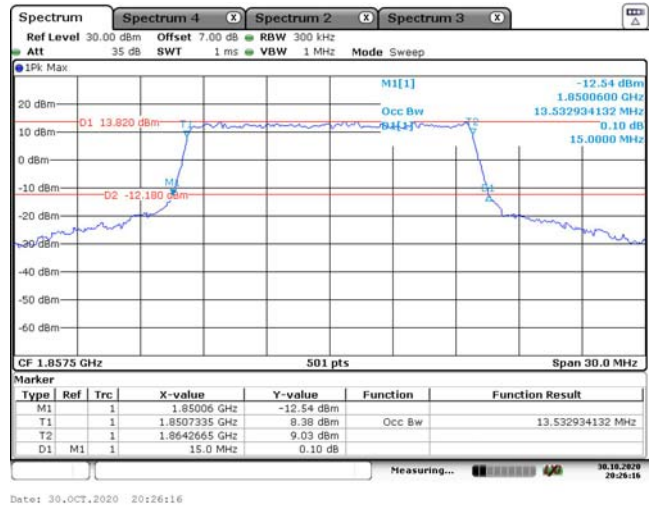


Date: 2.NOV.2020 16:38:35

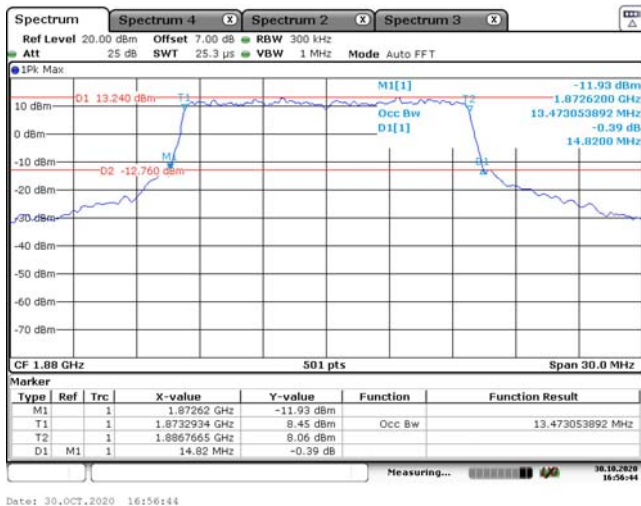
15M, QPSK, Low Channel



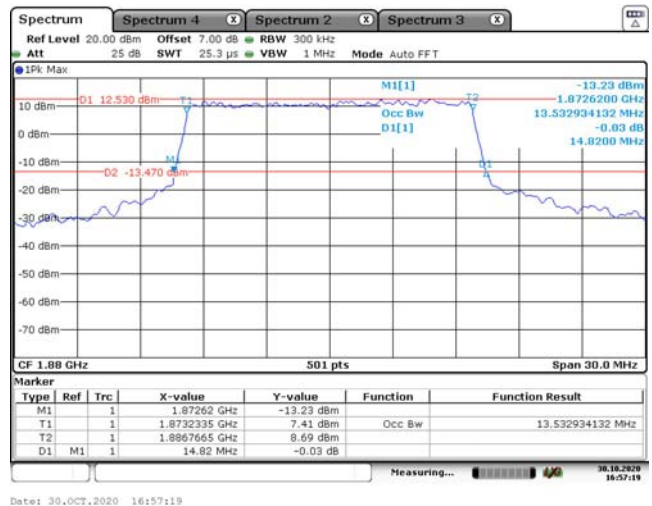
15M, 16QAM, Low Channel



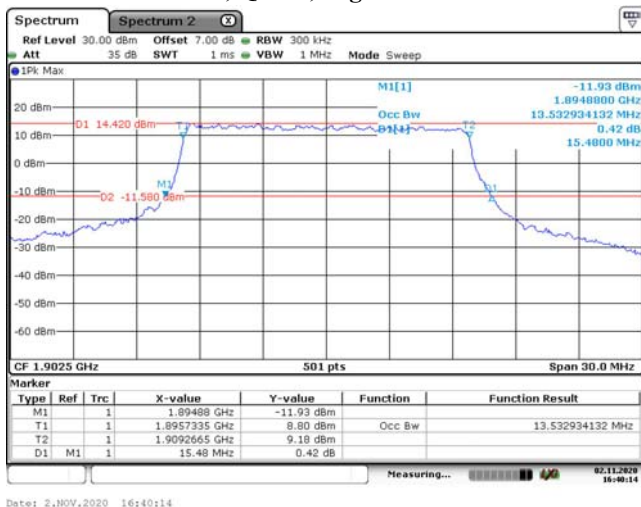
15M, QPSK, Middle Channel



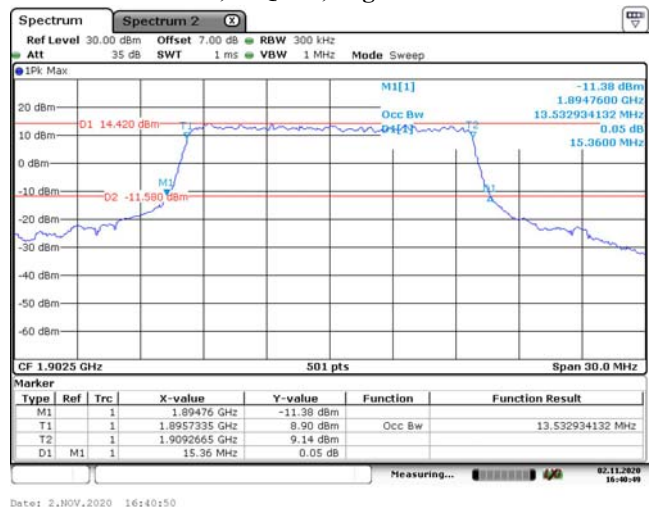
15M, 16QAM, Middle Channel



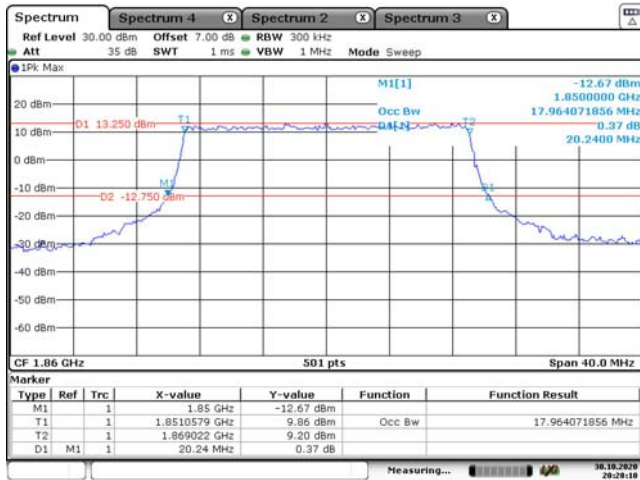
15M, QPSK, High Channel



15M, 16QAM, High Channel

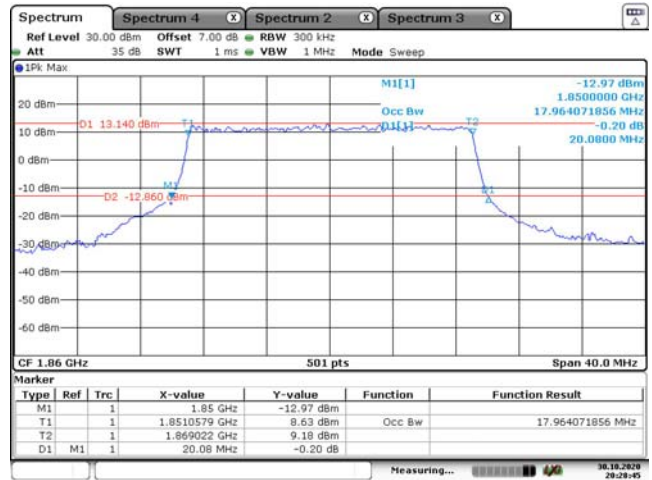


20M, QPSK, Low Channel



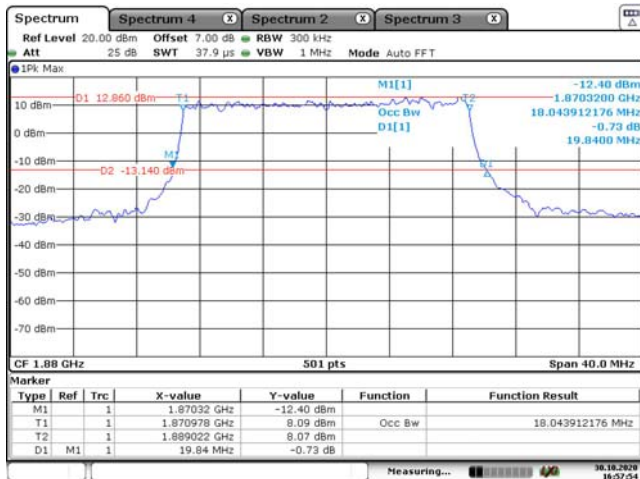
Date: 30.OCT.2020 20:28:10

20M, 16QAM, Low Channel



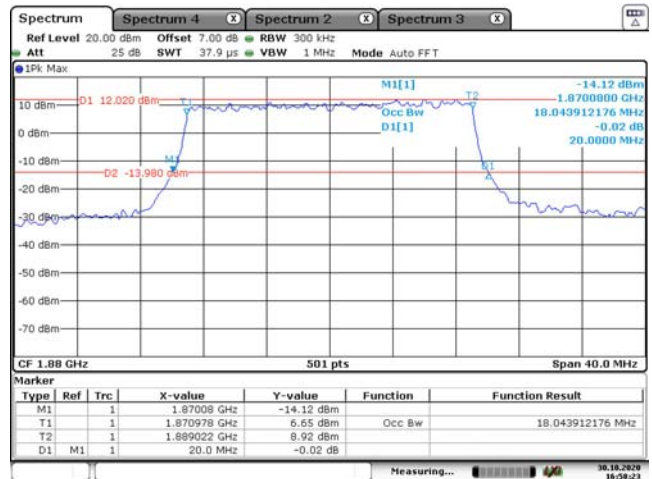
Date: 30.OCT.2020 20:28:45

20M, QPSK, Middle Channel



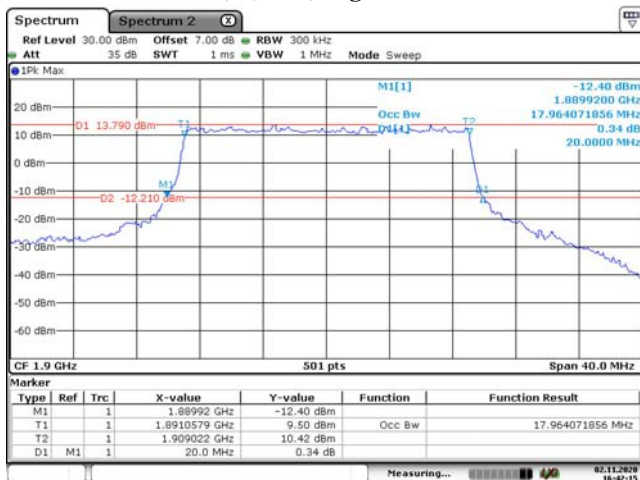
Date: 30.OCT.2020 16:57:54

20M, 16QAM, Middle Channel



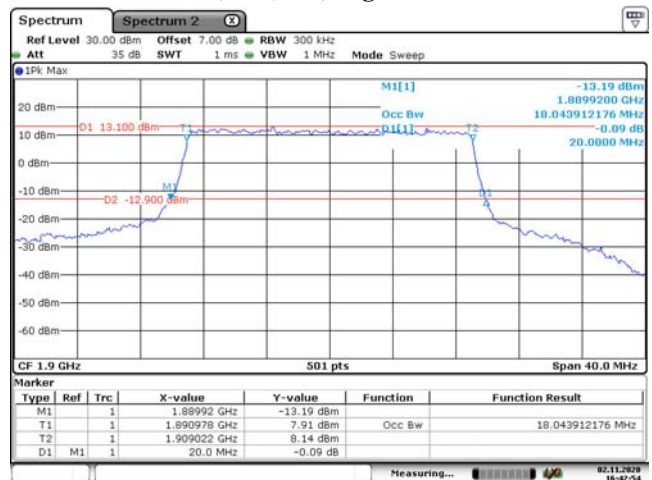
Date: 30.OCT.2020 16:58:23

20M, QPSK, High Channel



Date: 2.NOV.2020 16:42:16

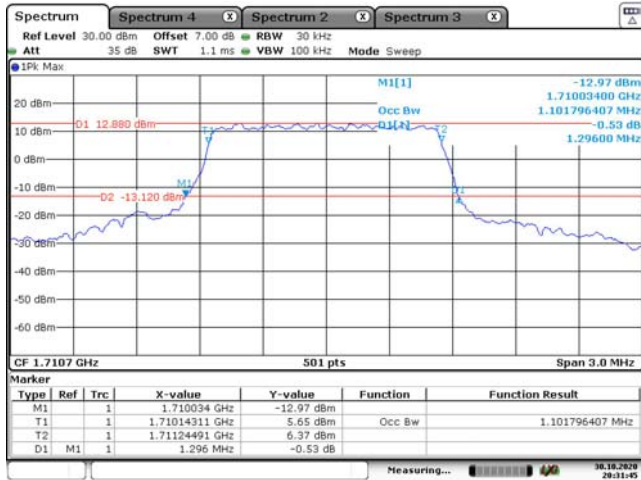
20M, 16QAM, High Channel



Date: 2.NOV.2020 16:42:54

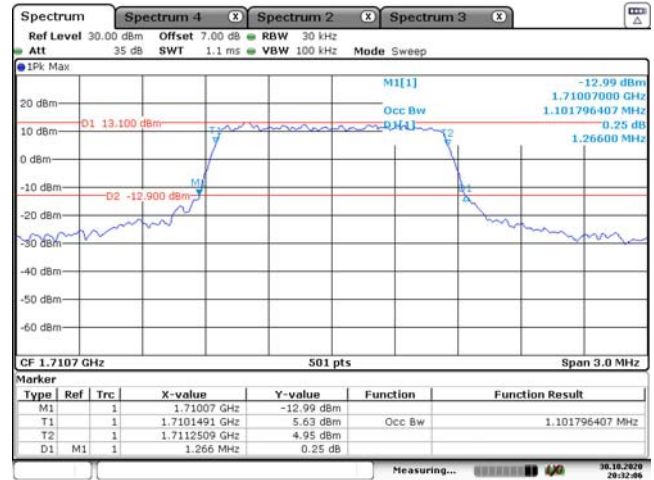
LTE Band 4:

1.4M, QPSK, Low Channel



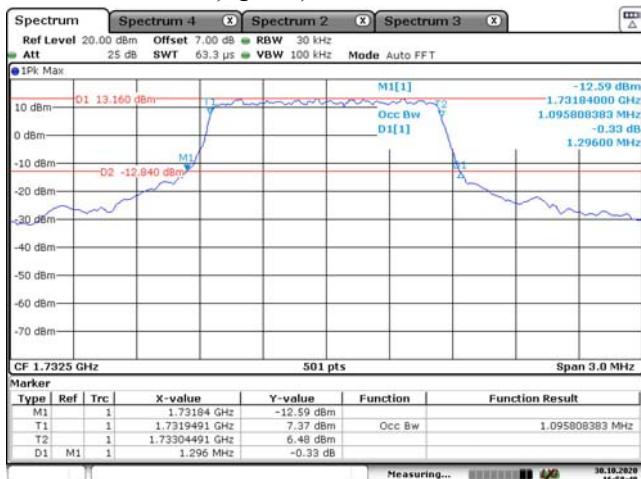
Date: 30.OCT.2020 20:31:45

1.4M, 16QAM, Low Channel



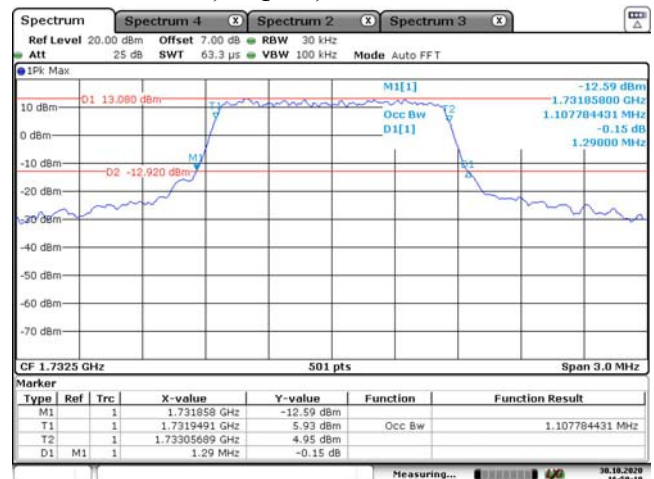
Date: 30.OCT.2020 20:32:07

1.4M, QPSK, Middle Channel



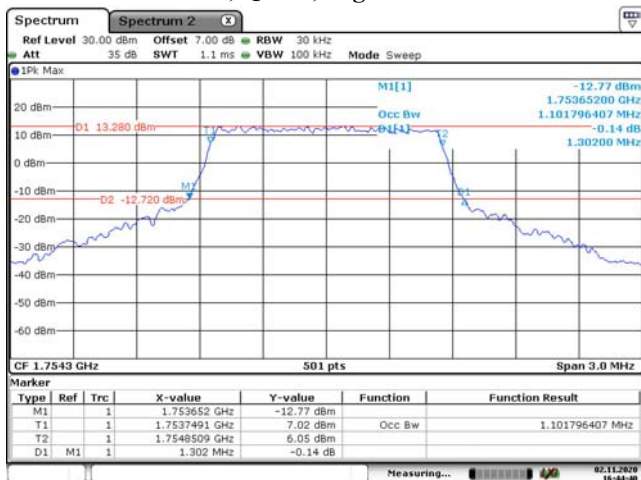
Date: 30.OCT.2020 16:58:48

1.4M, 16QAM, Middle Channel



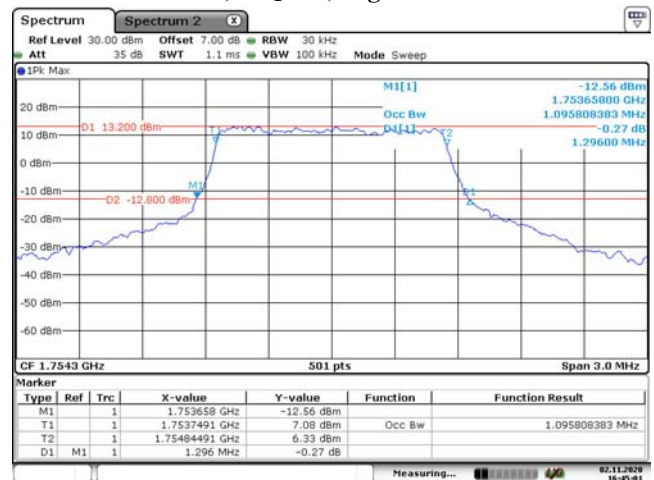
Date: 30.OCT.2020 16:59:10

1.4M, QPSK, High Channel



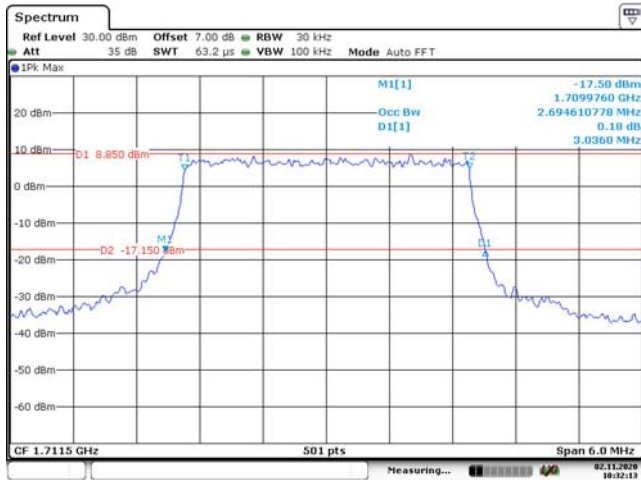
Date: 2.NOV.2020 16:44:40

1.4M, 16QAM, High Channel

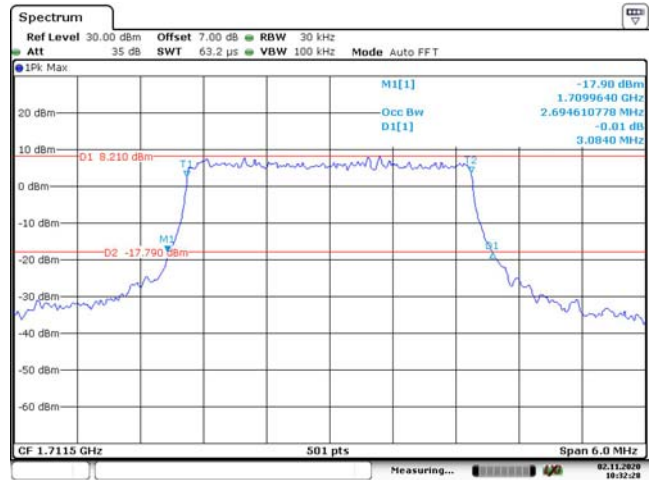


Date: 2.NOV.2020 16:45:02

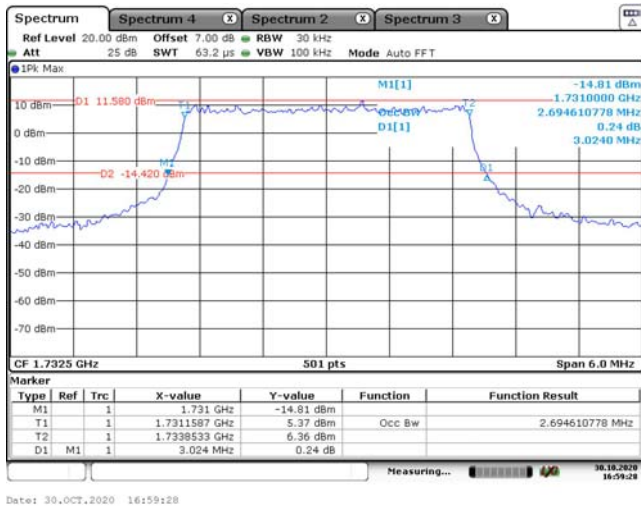
3M, QPSK, Low Channel



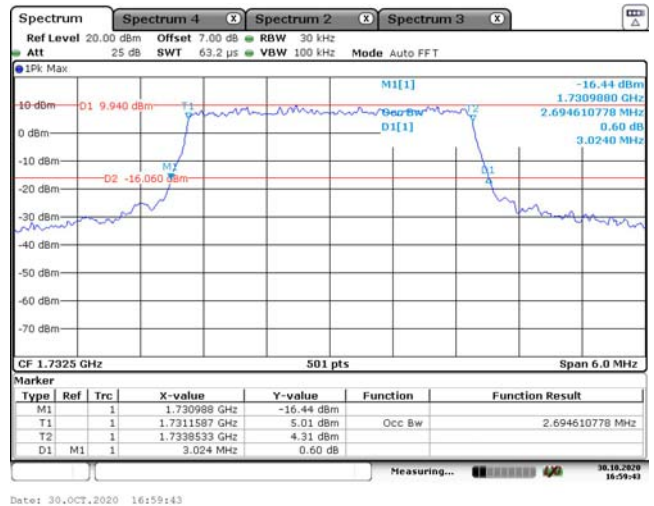
3M, 16QAM, Low Channel



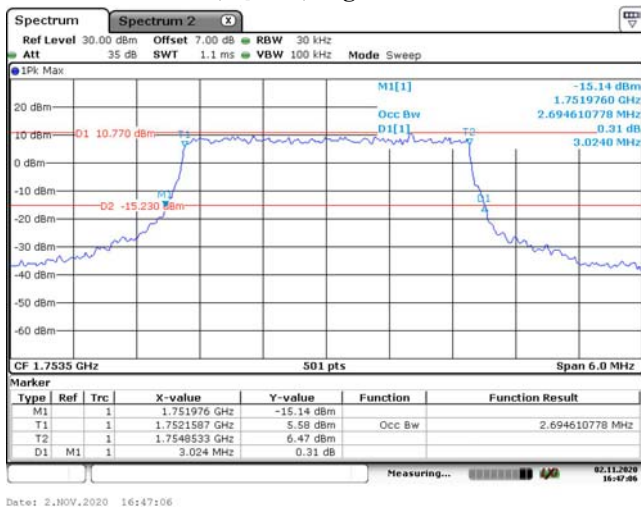
3M, QPSK, Middle Channel



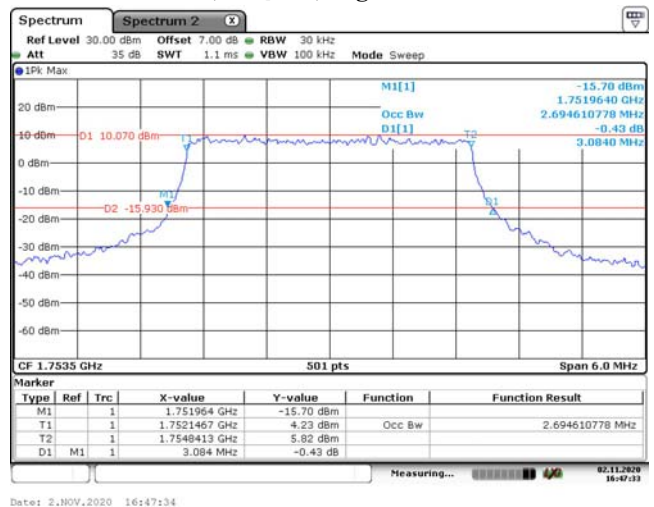
3M, 16QAM, Middle Channel



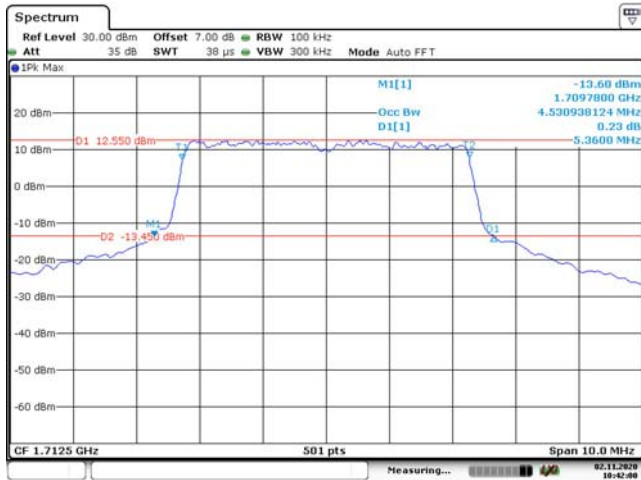
3M, QPSK, High Channel



3M, 16QAM, High Channel

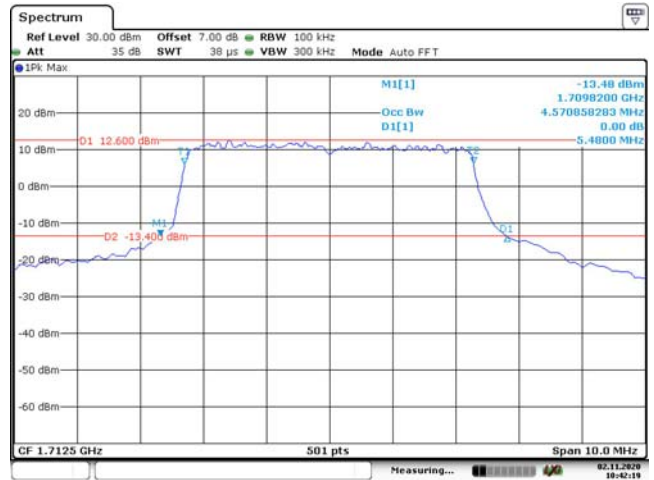


5M, QPSK, Low Channel



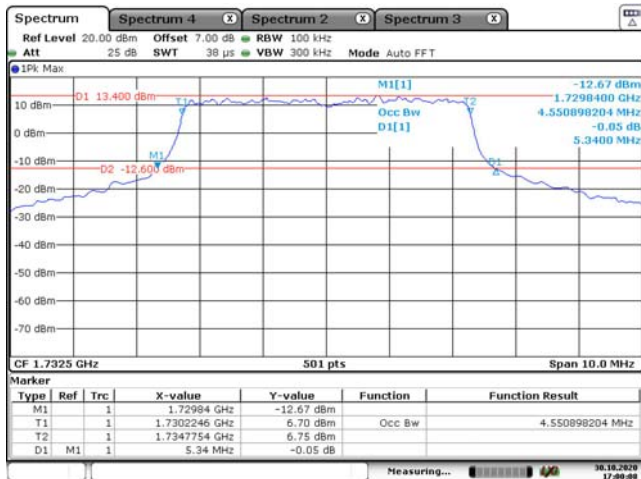
Date: 2,NOV,2020 10:42:00

5M, 16QAM, Low Channel



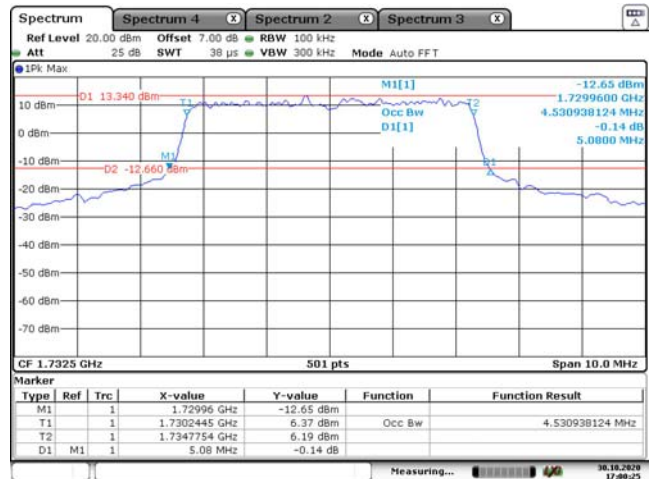
Date: 2,NOV,2020 10:42:20

5M, QPSK, Middle Channel



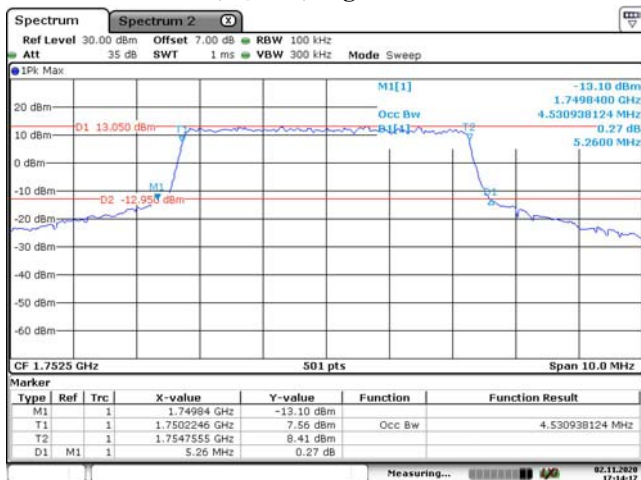
Date: 30,0CT,2020 17:00:09

5M, 16QAM, Middle Channel



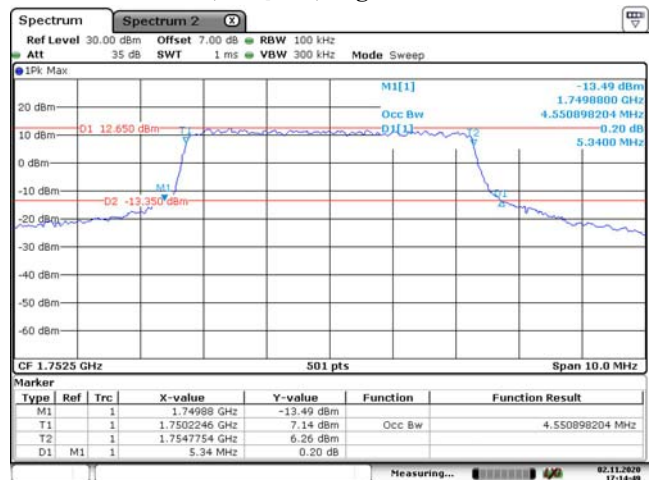
Date: 30,0CT,2020 17:00:25

5M, QPSK, High Channel



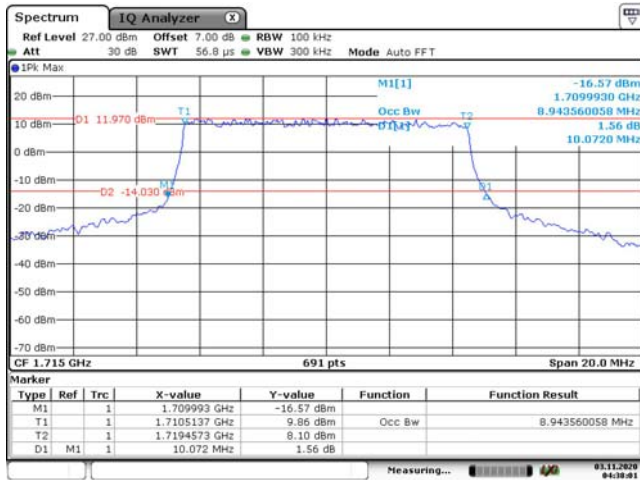
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5M, 16QAM, High Channel

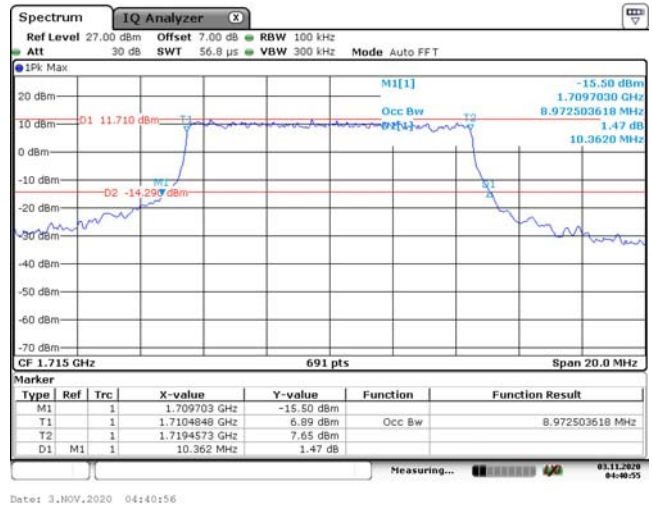


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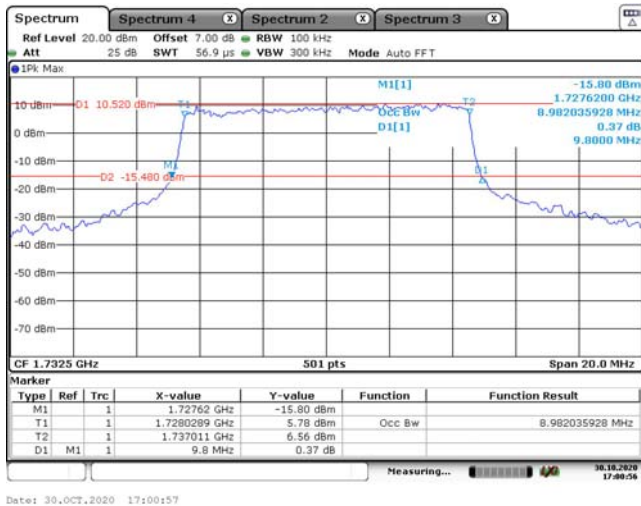
10M, QPSK, Low Channel



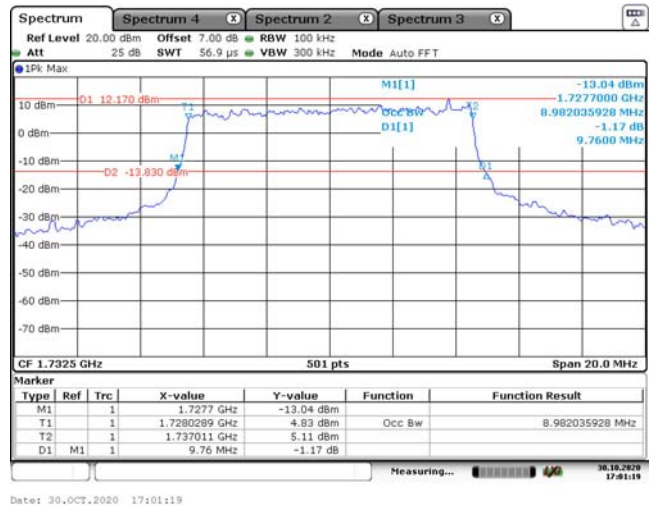
10M, 16QAM, Low Channel



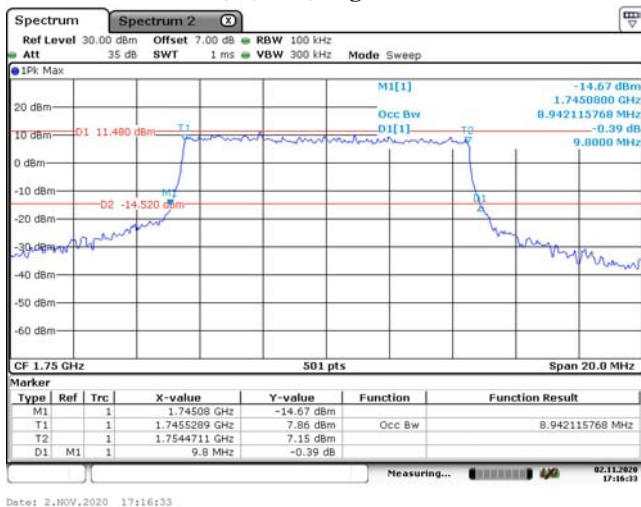
10M, QPSK, Middle Channel



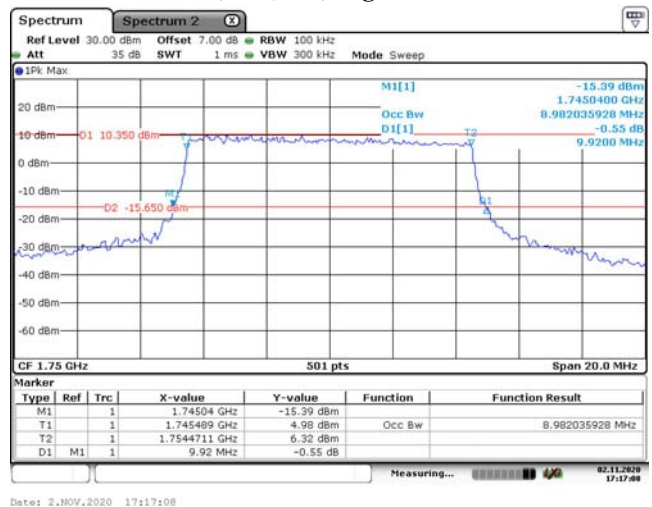
10M, 16QAM, Middle Channel



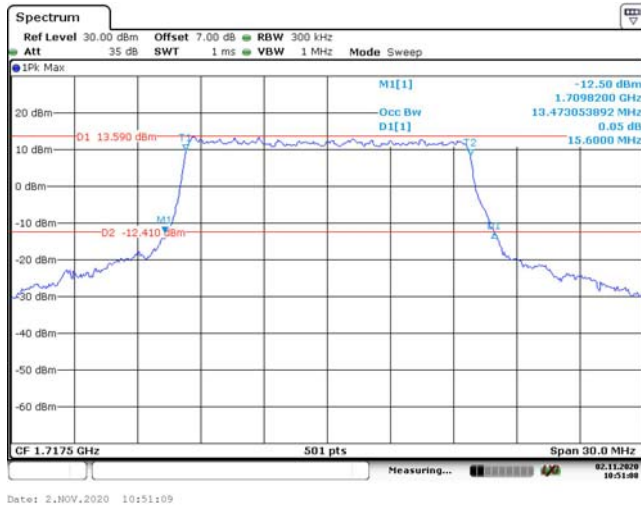
10M, QPSK, High Channel



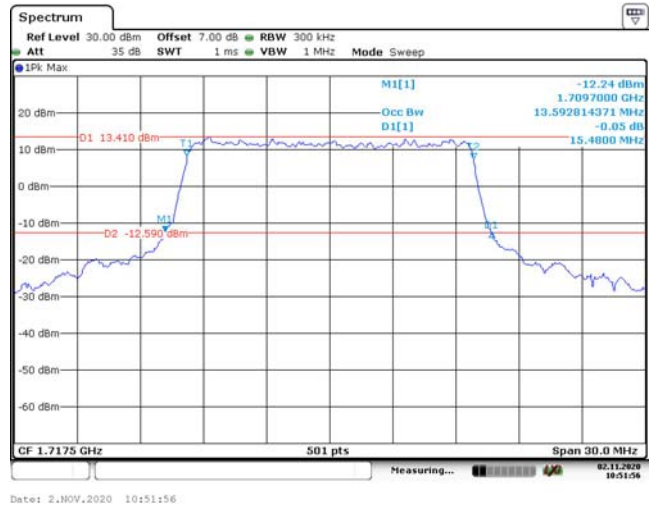
10M, 16QAM, High Channel



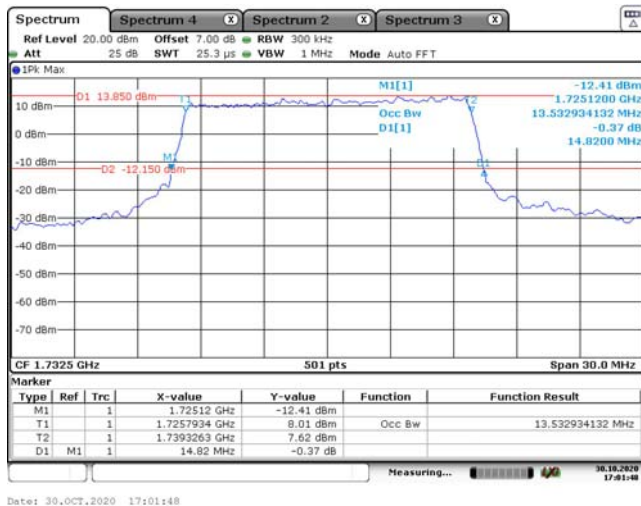
15M, QPSK, Low Channel



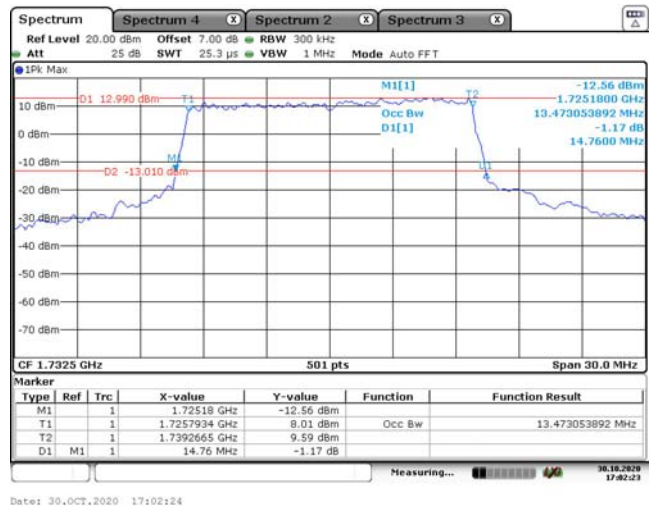
15M, 16QAM, Low Channel



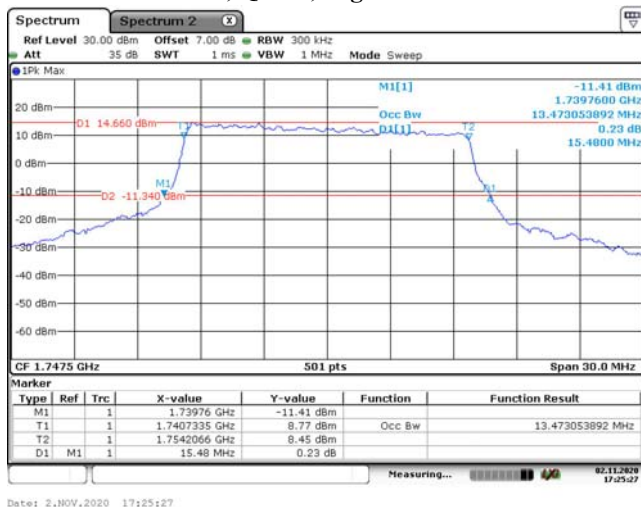
15M, QPSK, Middle Channel



15M, 16QAM, Middle Channel



15M, QPSK, High Channel



15M, 16QAM, High Channel

