



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

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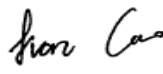
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		Mobile Phone
EUT Model:		ASTRO 5X
Operation modes:		GSM Voice, GPRS/EDGE Data, WCDMA(R99 (Voice+Data), HSDPA,HSUPA Data) FDD-LTE
Antenna Gain ▲:		GSM850/WCDMA B5/LTE B5:0.42 dBi(-1.73 dBd) PCS1900/WCDMA B2/LTE B2: -0.98 dBi LTE B4:-0.98 dBi LTE B7: 0.87 dBi
Modulation Type:		GMSK,8PSK, BPSK, QPSK, 16QAM
Rated Input Voltage:		DC 3.7V from battery or DC 5V from Adapter
Adapter Information	Model:	ASTRO 5X
	Input:	100-240Vac 50/60Hz 0.5A
	Output:	5.0Vdc1000mA
Serial Number:		DG1210804-32645E -RF-S1
EUT Received Date:		2021.8.5
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 27 of 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.

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.12, Pulong East 1st Road, Tangxia Town, 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/EDGE850	0.25	824.2	836.6	848.8
GSM/GPRS/EDGE1900	0.25	1850.2	1880	1909.8
WCDMA Band 2	4.2	1852.4	1880	1907.6
WCDMA Band 5	4.2	826.4	836.6	846.6
LTE Band 2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855	1880	1905
	15	1857.5	1880	1902.5
	20	1860	1880	1900
LTE Band 4	1.4	1710.7	1732.5	1754.3
	3	1711.5	1732.5	1753.5
	5	1712.5	1732.5	1752.5
	10	1715	1732.5	1750
	15	1717.5	1732.5	1747.5
	20	1720	1732.5	1745
LTE Band 5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829	836.5	844
LTE Band 7	5	2502.5	2535	2567.5
	10	2505	2535	2565
	15	2507.5	2535	2562.5
	20	2510	2535	2560

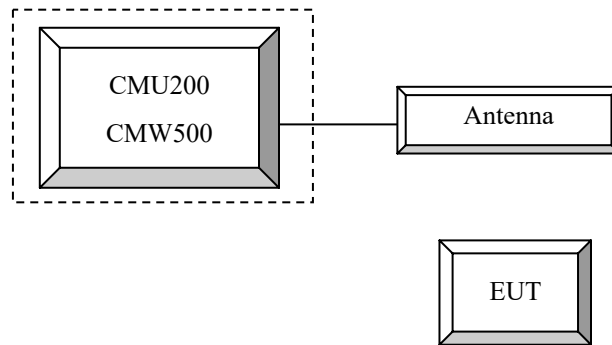
Equipment Modifications

No modification was made to the EUT.

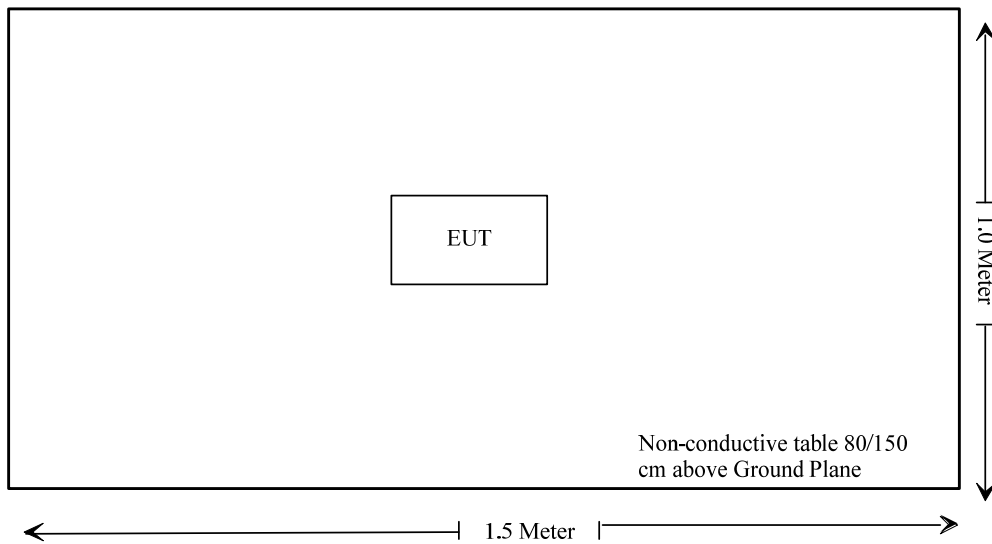
Support Equipment List and Details

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: DG1210804-32645E-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 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 Δ_{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
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010012	Each time	N/A
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
Unknown	Attenuator	UNAT-3+	15529	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	106 891	2020-09-23	2021-09-22
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:	28.2°C
Relative Humidity:	56 %
ATM Pressure:	100.3kPa
Tester:	Lay Lei
Test Date:	2021.08.19

Test Result: Compliance

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

Band	Channel No.	Conducted Peak Output Power (dBm)								
		GSM	GPRS 1TX Slot	GPRS 2TX Slots	GPRS 3TX Slots	GPRS 4TX Slots	EGPRS 1TX Slot	EGPRS 2TX Slots	EGPRS 3TX Slots	EGPRS 4TX Slots
Cellular	128	32.68	32.58	30.67	28.73	26.68	26.85	24.84	22.96	21.21
	190	32.92	32.69	30.82	28.59	26.63	26.47	24.87	22.83	21.18
	251	32.85	32.47	30.74	28.62	26.81	26.38	24.75	22.63	20.91
PCS	512	30.21	30.51	28.75	26.73	24.78	25.89	24.53	22.91	20.86
	661	30.16	30.42	28.62	26.84	24.68	26.13	24.62	22.74	20.93
	810	30.27	30.65	28.48	26.77	24.83	26.08	24.83	22.88	20.91

ERP/EIRP:

Band	Mode	Channel	Conducted Power (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
Cellular	GSM	Low	32.68	-1.73	0.2	30.75	38.45
		Middle	32.92	-1.73	0.2	30.99	38.45
		High	32.85	-1.73	0.2	30.92	38.45
	EDGE	Low	26.85	-1.73	0.2	24.92	38.45
		Middle	26.47	-1.73	0.2	24.54	38.45
		High	26.38	-1.73	0.2	24.45	38.45
PCS	GSM	Low	30.21	-0.98	0.4	28.83	33
		Middle	30.16	-0.98	0.4	28.78	33
		High	30.27	-0.98	0.4	28.89	33
	EDGE	Low	25.89	-0.98	0.4	24.51	33
		Middle	26.13	-0.98	0.4	24.75	33
		High	26.08	-0.98	0.4	24.7	33

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 + Antenna Gain – Cable Loss
- 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	22.87	3.01	22.67	3.04	22.38	2.93
HSDPA	1	22.34	3.19	22.69	3.71	22.67	4.03
	2	22.58	3.25	22.45	3.55	22.46	3.56
	3	21.87	3.56	22.74	3.48	22.41	3.64
	4	22.47	3.87	22.48	3.64	22.83	3.72
HSUPA	1	21.59	3.74	22.91	3.91	21.96	3.88
	2	22.38	3.25	22.37	3.28	21.87	3.21
	3	22.67	3.61	22.65	3.64	22.53	3.15
	4	22.64	3.85	22.71	3.89	21.47	3.08
	5	22.51	3.47	22.84	3.92	22.68	4.02
DC-HSDPA	1	21.47	3.69	22.62	3.47	22.47	3.67
	2	22.38	3.41	21.87	3.68	21.61	3.55
	3	22.64	3.28	21.96	3.16	22.37	3.42
	4	22.87	3.46	22.75	3.89	22.56	3.87
HSPA+ (16QAM)	1	21.03	2.98	21.24	3.05	21.28	3.12

EIRP:

Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
Low	22.87	-0.98	0.4	21.49	33
Middle	22.91	-0.98	0.4	21.53	33
High	22.83	-0.98	0.4	21.45	33

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	21.87	3.07	22.15	3.01	22.64	3.07
HSDPA	1	22.26	4.14	22.47	3.13	22.47	4.35
	2	21.96	3.56	22.76	3.04	22.18	3.47
	3	21.47	3.47	21.54	3.27	21.95	3.88
	4	21.63	4.08	22.37	3.09	22.34	4.21
HSUPA	1	22.87	4.23	22.68	3.45	22.58	4.09
	2	22.49	4.12	22.19	3.64	22.61	3.82
	3	22.58	3.89	22.47	3.59	22.29	3.96
	4	21.89	3.64	21.64	3.45	21.76	4.12
	5	21.78	3.75	21.47	3.67	21.98	3.72
DC-HSDPA	1	22.38	4.03	21.98	3.07	22.74	3.64
	2	22.43	3.89	22.78	3.28	21.38	3.82
	3	22.71	3.16	21.98	3.21	21.69	3.29
	4	22.31	3.52	22.76	3.87	22.35	4.01
HSPA+ (16QAM)	1	21.23	2.98	21.12	2.67	21.25	3.02

ERP:

Channel	Conducted Power (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
Low	22.87	-1.73	0.2	20.94	38.45
Middle	22.78	-1.73	0.2	20.85	38.45
High	22.74	-1.73	0.2	20.81	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	22.97	22.86	22.93
		RB1#3	23.02	22.89	22.93
		RB1#5	23.06	22.93	23.00
		RB3#0	23.27	23.06	23.13
		RB3#3	23.26	23.00	23.19
		RB6#0	22.19	22.02	22.09
	16QAM	RB1#0	21.89	22.52	21.84
		RB1#3	21.92	22.54	21.85
		RB1#5	21.94	22.53	21.87
		RB3#0	22.30	22.01	22.17
		RB3#3	22.27	22.00	22.12
		RB6#0	21.49	21.17	21.24
3MHz	QPSK	RB1#0	23.12	22.90	22.93
		RB1#8	23.10	22.97	22.97
		RB1#14	22.89	22.93	23.03
		RB6#0	22.14	22.09	22.04
		RB6#9	21.98	22.03	22.10
		RB15#0	22.12	21.96	22.09
	16QAM	RB1#0	22.35	22.53	21.85
		RB1#8	22.35	22.56	21.81
		RB1#14	22.22	22.53	21.90
		RB6#0	21.34	21.23	21.29
		RB6#9	21.28	21.22	21.21
		RB15#0	21.31	21.11	21.09
5MHz	QPSK	RB1#0	23.09	23.07	22.98
		RB1#13	22.95	23.03	23.01
		RB1#24	22.92	23.12	23.10
		RB15#0	22.25	22.04	21.98
		RB15#10	22.10	22.05	21.96
		RB25#0	22.03	21.89	21.98
	16QAM	RB1#0	21.45	21.99	22.12
		RB1#13	21.23	21.10	22.15
		RB1#24	21.22	21.13	22.23
		RB15#0	21.26	21.04	20.97
		RB15#10	21.16	21.10	20.99
		RB25#0	21.13	21.11	21.08

10MHz	QPSK	RB1#0	23.13	23.07	22.99
		RB1#25	22.92	23.02	22.96
		RB1#49	22.96	23.08	23.07
		RB25#0	22.07	22.00	21.98
		RB25#25	21.99	21.97	22.11
		RB50#0	22.08	22.01	21.98
	16QAM	RB1#0	22.57	22.15	21.49
		RB1#25	22.40	22.17	21.48
		RB1#49	22.45	22.19	21.58
		RB25#0	21.16	21.17	21.17
		RB25#25	21.14	21.16	21.25
		RB50#0	21.06	21.12	21.08
15MHz	QPSK	RB1#0	23.08	22.86	22.94
		RB1#38	22.92	22.89	22.92
		RB1#74	22.95	22.95	23.05
		RB36#0	21.95	22.01	22.01
		RB36#39	21.96	21.99	22.07
		RB75#0	22.03	21.98	22.01
	16QAM	RB1#0	22.56	22.15	22.73
		RB1#38	22.37	22.14	22.77
		RB1#74	22.42	22.18	22.80
		RB36#0	21.02	21.14	21.09
		RB36#39	21.11	21.20	21.14
		RB75#0	21.14	21.19	21.08
20MHz	QPSK	RB1#0	23.30	23.00	23.01
		RB1#50	23.10	23.06	23.12
		RB1#99	23.18	23.07	23.27
		RB50#0	21.96	22.09	22.01
		RB50#50	21.99	21.96	22.02
		RB100#0	21.99	22.13	22.01
	16QAM	RB1#0	22.21	21.98	22.74
		RB1#50	22.11	22.09	22.70
		RB1#99	22.11	22.11	22.78
		RB50#0	21.12	21.09	21.04
		RB50#50	21.14	21.19	21.08
		RB100#0	21.18	21.10	21.14

PAR:

Test Modulation		Channel Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.64	4.67	4.09	13.00
	100 RB		5.25	5.16	4.55	13.00
16QAM	1 RB	20 MHz	5.68	5.65	8.61	13.00
	100 RB		6.20	6.00	5.54	13.00

EIRP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
1.4MHz	QPSK	Low	23.27	-0.98	0.4	21.89	33.00
		Middle	23.06	-0.98	0.4	21.68	33.00
		High	23.19	-0.98	0.4	21.81	33.00
	16QAM	Low	22.3	-0.98	0.4	20.92	33.00
		Middle	22.54	-0.98	0.4	21.16	33.00
		High	22.17	-0.98	0.4	20.79	33.00
3MHz	QPSK	Low	23.12	-0.98	0.4	21.74	33.00
		Middle	22.97	-0.98	0.4	21.59	33.00
		High	23.03	-0.98	0.4	21.65	33.00
	16QAM	Low	22.35	-0.98	0.4	20.97	33.00
		Middle	22.56	-0.98	0.4	21.18	33.00
		High	21.9	-0.98	0.4	20.52	33.00
5MHz	QPSK	Low	23.09	-0.98	0.4	21.71	33.00
		Middle	23.12	-0.98	0.4	21.74	33.00
		High	23.1	-0.98	0.4	21.72	33.00
	16QAM	Low	21.45	-0.98	0.4	20.07	33.00
		Middle	21.99	-0.98	0.4	20.61	33.00
		High	22.23	-0.98	0.4	20.85	33.00
10MHz	QPSK	Low	23.13	-0.98	0.4	21.75	33.00
		Middle	23.08	-0.98	0.4	21.7	33.00
		High	23.07	-0.98	0.4	21.69	33.00
	16QAM	Low	22.57	-0.98	0.4	21.19	33.00
		Middle	22.19	-0.98	0.4	20.81	33.00
		High	21.58	-0.98	0.4	20.2	33.00
15MHz	QPSK	Low	23.08	-0.98	0.4	21.7	33.00
		Middle	22.95	-0.98	0.4	21.57	33.00
		High	23.05	-0.98	0.4	21.67	33.00
	16QAM	Low	22.56	-0.98	0.4	21.18	33.00
		Middle	22.18	-0.98	0.4	20.8	33.00
		High	22.8	-0.98	0.4	21.42	33.00
20MHz	QPSK	Low	23.3	-0.98	0.4	21.92	33.00
		Middle	23.07	-0.98	0.4	21.69	33.00
		High	23.27	-0.98	0.4	21.89	33.00
	16QAM	Low	22.21	-0.98	0.4	20.83	33.00
		Middle	22.11	-0.98	0.4	20.73	33.00
		High	22.78	-0.98	0.4	21.4	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	23.17	23.05	23.42
		RB1#3	23.16	23.00	23.38
		RB1#5	23.17	23.11	23.40
		RB3#0	23.26	23.23	23.33
		RB3#3	23.20	23.18	23.29
		RB6#0	22.07	22.12	22.20
	16QAM	RB1#0	22.27	21.88	23.28
		RB1#3	22.32	21.87	23.23
		RB1#5	22.31	21.96	23.27
		RB3#0	22.03	22.32	22.42
		RB3#3	22.04	22.26	22.42
		RB6#0	21.17	21.49	21.38
3MHz	QPSK	RB1#0	23.01	23.07	23.34
		RB1#8	23.09	23.16	23.33
		RB1#14	23.09	23.15	23.33
		RB6#0	22.02	22.21	22.20
		RB6#9	22.16	22.20	22.25
		RB15#0	22.17	22.13	22.33
	16QAM	RB1#0	22.32	22.94	22.35
		RB1#8	22.35	22.93	22.33
		RB1#14	22.34	22.92	22.34
		RB6#0	21.28	21.31	21.60
		RB6#9	21.29	21.32	21.64
		RB15#0	21.21	21.23	21.42
5MHz	QPSK	RB1#0	23.08	23.25	23.05
		RB1#13	23.17	23.22	23.06
		RB1#24	23.08	23.26	23.11
		RB15#0	22.20	22.17	22.18
		RB15#10	22.16	22.17	22.32
		RB25#0	22.19	22.15	22.35
	16QAM	RB1#0	21.30	22.35	21.82
		RB1#13	21.32	22.33	21.81
		RB1#24	21.36	22.38	21.88
		RB15#0	21.29	21.13	21.29
		RB15#10	21.25	21.11	21.39
		RB25#0	21.30	21.26	21.23
10MHz	QPSK	RB1#0	23.01	23.21	23.34
		RB1#25	22.99	23.20	23.45
		RB1#49	23.04	23.22	23.44
		RB25#0	22.09	22.12	22.24
		RB25#25	22.06	22.20	22.16
		RB50#0	22.07	22.21	22.38
	16QAM	RB1#0	22.32	22.34	21.78
		RB1#25	22.36	22.31	21.84
		RB1#49	22.35	22.34	21.85
		RB25#0	21.19	21.33	21.35
		RB25#25	21.28	21.34	21.52
		RB50#0	21.26	21.33	21.46

15MHz	QPSK	RB1#0	23.03	23.22	23.32
		RB1#38	23.04	23.18	23.34
		RB1#74	23.14	23.27	23.37
		RB36#0	22.11	22.20	22.23
		RB36#39	22.11	22.14	22.13
		RB75#0	22.17	22.19	22.10
	16QAM	RB1#0	22.30	22.30	22.54
		RB1#38	22.30	22.29	22.59
		RB1#74	22.36	22.42	22.61
		RB36#0	21.31	21.28	21.32
		RB36#39	21.29	21.29	21.42
		RB75#0	21.34	21.31	21.32
20MHz	QPSK	RB1#0	23.22	23.15	23.27
		RB1#50	23.21	23.10	23.31
		RB1#99	23.28	23.27	23.37
		RB50#0	22.15	22.14	22.26
		RB50#50	22.22	22.15	22.21
		RB100#0	22.14	22.15	22.26
		RB1#0	22.08	22.61	22.81
	16QAM	RB1#50	22.12	22.56	22.82
		RB1#99	22.17	22.67	22.93
		RB50#0	21.29	21.33	21.14
		RB50#50	21.36	21.41	21.44
		RB100#0	21.23	21.22	21.37

PAR:

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	5.33	5.57	5.57	13
	100 RB		5.42	5.33	5.48	13
16QAM	1 RB	20 MHz	8.70	8.49	8.49	13
	100 RB		6.43	6.35	6.46	13

EIRP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
1.4MHz	QPSK	Low	23.26	-0.98	0.4	21.88	30.00
		Middle	23.23	-0.98	0.4	21.85	30.00
		High	23.42	-0.98	0.4	22.04	30.00
	16QAM	Low	22.32	-0.98	0.4	20.94	30.00
		Middle	22.32	-0.98	0.4	20.94	30.00
		High	23.28	-0.98	0.4	21.9	30.00
3MHz	QPSK	Low	23.09	-0.98	0.4	21.71	30.00
		Middle	23.16	-0.98	0.4	21.78	30.00
		High	23.34	-0.98	0.4	21.96	30.00
	16QAM	Low	22.35	-0.98	0.4	20.97	30.00
		Middle	22.94	-0.98	0.4	21.56	30.00
		High	22.35	-0.98	0.4	20.97	30.00
5MHz	QPSK	Low	23.17	-0.98	0.4	21.79	30.00
		Middle	23.26	-0.98	0.4	21.88	30.00
		High	23.11	-0.98	0.4	21.73	30.00
	16QAM	Low	21.36	-0.98	0.4	19.98	30.00
		Middle	22.38	-0.98	0.4	21	30.00
		High	21.88	-0.98	0.4	20.5	30.00
10MHz	QPSK	Low	23.04	-0.98	0.4	21.66	30.00
		Middle	23.22	-0.98	0.4	21.84	30.00
		High	23.45	-0.98	0.4	22.07	30.00
	16QAM	Low	22.36	-0.98	0.4	20.98	30.00
		Middle	22.34	-0.98	0.4	20.96	30.00
		High	21.85	-0.98	0.4	20.47	30.00
15MHz	QPSK	Low	23.14	-0.98	0.4	21.76	30.00
		Middle	23.27	-0.98	0.4	21.89	30.00
		High	23.37	-0.98	0.4	21.99	30.00
	16QAM	Low	22.36	-0.98	0.4	20.98	30.00
		Middle	22.42	-0.98	0.4	21.04	30.00
		High	22.61	-0.98	0.4	21.23	30.00
20MHz	QPSK	Low	23.28	-0.98	0.4	21.9	30.00
		Middle	23.27	-0.98	0.4	21.89	30.00
		High	23.37	-0.98	0.4	21.99	30.00
	16QAM	Low	22.17	-0.98	0.4	20.79	30.00
		Middle	22.67	-0.98	0.4	21.29	30.00
		High	22.93	-0.98	0.4	21.55	30.00

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	23.56	23.41	23.38
		RB1#3	23.58	23.54	23.50
		RB1#5	23.60	23.59	23.52
		RB3#0	23.64	23.68	23.41
		RB3#3	23.71	23.71	23.53
		RB6#0	22.71	22.52	22.46
	16QAM	RB1#0	23.21	23.20	23.23
		RB1#3	23.15	23.12	22.91
		RB1#5	23.18	23.08	22.85
		RB3#0	22.78	22.36	22.81
		RB3#3	22.80	22.33	22.44
		RB6#0	22.01	21.61	21.69
3MHz	QPSK	RB1#0	23.54	23.44	23.34
		RB1#8	23.41	23.57	23.39
		RB1#14	23.43	23.56	23.48
		RB6#0	22.63	22.59	22.73
		RB6#9	22.50	22.49	22.38
		RB15#0	22.66	22.46	22.67
	16QAM	RB1#0	23.00	23.22	22.41
		RB1#8	22.94	23.12	22.41
		RB1#14	22.83	23.09	22.04
		RB6#0	21.73	21.86	21.98
		RB6#9	21.83	21.65	21.65
		RB15#0	21.83	21.61	21.82
5MHz	QPSK	RB1#0	23.58	23.54	23.32
		RB1#13	23.43	23.69	23.29
		RB1#24	23.53	23.61	23.39
		RB15#0	22.65	22.54	22.56
		RB15#10	22.50	21.96	22.80
		RB25#0	22.54	22.46	22.69
	16QAM	RB1#0	21.85	22.17	21.49
		RB1#13	21.67	22.11	21.92
		RB1#24	21.61	22.11	21.55
		RB15#0	21.83	21.95	21.80
		RB15#10	21.92	21.64	21.81
		RB25#0	22.04	21.63	21.86
10MHz	QPSK	RB1#0	23.62	23.55	23.39
		RB1#25	23.49	23.70	23.59
		RB1#49	23.59	23.71	23.51
		RB25#0	22.54	22.53	22.54
		RB25#25	22.78	22.58	22.74
		RB50#0	22.39	22.51	22.54
	16QAM	RB1#0	23.02	22.96	22.03
		RB1#25	22.87	22.72	21.97
		RB1#49	22.81	22.82	21.89
		RB25#0	21.87	22.00	21.92
		RB25#25	21.83	21.59	21.93
		RB50#0	21.66	21.70	21.51

PAR:

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	4.99	5.19	4.87	13
	50 RB		5.39	8.52	5.19	13
16QAM	1 RB	10 MHz	8.52	8.64	8.67	13
	50 RB		6.35	6.23	6.14	13

ERP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
1.4MHz	QPSK	Low	23.71	-1.73	0.2	21.78	38.45
		Middle	23.71	-1.73	0.2	21.78	38.45
		High	23.53	-1.73	0.2	21.6	38.45
	16QAM	Low	23.21	-1.73	0.2	21.28	38.45
		Middle	23.2	-1.73	0.2	21.27	38.45
		High	23.23	-1.73	0.2	21.3	38.45
3MHz	QPSK	Low	23.54	-1.73	0.2	21.61	38.45
		Middle	23.57	-1.73	0.2	21.64	38.45
		High	23.48	-1.73	0.2	21.55	38.45
	16QAM	Low	23	-1.73	0.2	21.07	38.45
		Middle	23.22	-1.73	0.2	21.29	38.45
		High	22.41	-1.73	0.2	20.48	38.45
5MHz	QPSK	Low	23.58	-1.73	0.2	21.65	38.45
		Middle	23.69	-1.73	0.2	21.76	38.45
		High	23.39	-1.73	0.2	21.46	38.45
	16QAM	Low	22.04	-1.73	0.2	20.11	38.45
		Middle	22.17	-1.73	0.2	20.24	38.45
		High	21.92	-1.73	0.2	19.99	38.45
10MHz	QPSK	Low	23.62	-1.73	0.2	21.69	38.45
		Middle	23.71	-1.73	0.2	21.78	38.45
		High	23.59	-1.73	0.2	21.66	38.45
	16QAM	Low	23.02	-1.73	0.2	21.09	38.45
		Middle	22.96	-1.73	0.2	21.03	38.45
		High	22.03	-1.73	0.2	20.1	38.45

LTE Band 7

Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	RB1#0	21.34	22.14	22.35
		RB1#13	21.96	22.75	22.83
		RB1#24	21.73	22.39	22.40
		RB15#0	21.22	21.81	21.94
		RB15#10	21.40	21.93	21.99
		RB25#0	21.29	21.84	21.91
	16QAM	RB1#0	20.96	21.38	21.49
		RB1#13	21.60	22.00	22.01
		RB1#24	21.30	21.66	21.61
		RB15#0	20.20	20.82	20.94
		RB15#10	20.39	20.95	21.02
		RB25#0	20.28	20.85	20.96
10 MHz	QPSK	RB1#0	21.72	22.28	22.40
		RB1#25	22.27	22.79	22.70
		RB1#49	22.43	23.18	22.94
		RB25#0	21.58	21.80	21.78
		RB25#25	21.99	22.32	22.15
		RB50#0	21.82	22.07	21.96
	16QAM	RB1#0	21.54	21.53	21.46
		RB1#25	22.07	22.07	21.78
		RB1#49	22.19	22.50	22.07
		RB25#0	20.56	20.85	20.88
		RB25#25	21.04	21.39	21.26
		RB50#0	20.79	21.12	21.03
15 MHz	QPSK	RB1#0	21.91	22.40	22.58
		RB1#38	22.23	22.75	22.65
		RB1#74	22.06	23.01	22.69
		RB36#0	21.69	21.82	22.06
		RB36#39	21.75	22.26	22.16
		RB75#0	21.72	21.72	22.08
	16QAM	RB1#0	21.75	22.12	22.00
		RB1#38	22.04	22.48	22.05
		RB1#74	21.84	22.73	22.10
		RB36#0	20.69	20.94	21.13
		RB36#39	20.79	21.41	21.12
		RB75#0	20.75	21.18	21.08
20MHz	QPSK	RB1#0	21.79	21.31	21.98
		RB1#50	21.93	21.76	21.38
		RB1#99	22.14	22.61	22.20
		RB50#0	21.25	20.79	21.17
		RB50#50	21.40	21.47	21.38
		RB100#0	21.23	21.05	21.24
	16QAM	RB1#0	21.14	20.76	21.88
		RB1#50	21.35	21.01	21.33
		RB1#99	21.50	21.89	22.09
		RB50#0	18.34	19.51	20.23
		RB50#50	18.78	20.46	20.41
		RB100#0	19.05	20.01	20.31

PAR:

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1RB	20MHz	4.06	4.67	3.57	13
	100RB		4.35	5.04	4.46	13
16QAM	1RB	20MHz	8.43	8.38	8.55	13
	100RB		5.36	6.14	8.67	13

EIRP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
5MHz	QPSK	Low	21.96	0.87	0.5	22.33	33.00
		Middle	22.75	0.87	0.5	23.12	33.00
		High	22.83	0.87	0.5	23.2	33.00
	16QAM	Low	21.6	0.87	0.5	21.97	33.00
		Middle	22	0.87	0.5	22.37	33.00
		High	22.01	0.87	0.5	22.38	33.00
10MHz	QPSK	Low	22.43	0.87	0.5	22.8	33.00
		Middle	23.18	0.87	0.5	23.55	33.00
		High	22.94	0.87	0.5	23.31	33.00
	16QAM	Low	22.19	0.87	0.5	22.56	33.00
		Middle	22.5	0.87	0.5	22.87	33.00
		High	22.07	0.87	0.5	22.44	33.00
15MHz	QPSK	Low	22.23	0.87	0.5	22.6	33.00
		Middle	23.01	0.87	0.5	23.38	33.00
		High	22.69	0.87	0.5	23.06	33.00
	16QAM	Low	22.04	0.87	0.5	22.41	33.00
		Middle	22.73	0.87	0.5	23.1	33.00
		High	22.1	0.87	0.5	22.47	33.00
20MHz	QPSK	Low	22.14	0.87	0.5	22.51	33.00
		Middle	22.61	0.87	0.5	22.98	33.00
		High	22.2	0.87	0.5	22.57	33.00
	16QAM	Low	21.5	0.87	0.5	21.87	33.00
		Middle	21.89	0.87	0.5	22.26	33.00
		High	22.09	0.87	0.5	22.46	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 + Antenna Gain – Cable Loss
- 3) Antenna gain(dBd)= Antenna gain(dBi)-2.15

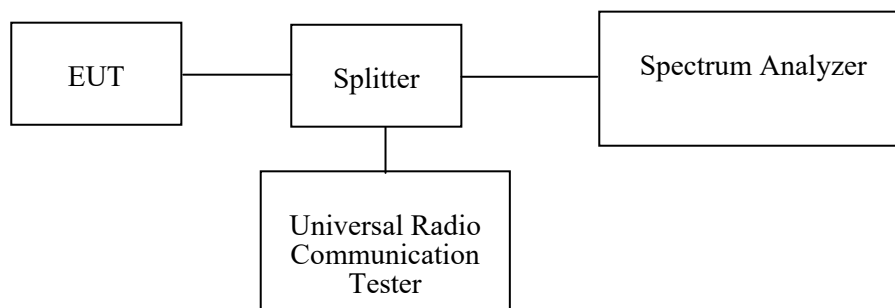
FCC §2.1049, §22.917, §22.905 & §24.238 & §27.53- OCCUPIED BANDWIDTH**Applicable Standard**

FCC §2.1049, §22.917, §22.905, §24.238, §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	2021/7/22	2022/7/21
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010012	Each time	N/A
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	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:	27.2°C ~28.2°C
Relative Humidity:	51 %~56 %
ATM Pressure:	100.1kPa~100.3kPa
Tester:	Lay Lei
Test Date:	2021.08.17~2021.08.19

Test Mode: Transmitting

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

GSM:

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	0.246	0.246	0.246	0.318	0.318	0.320
	EDGE	0.246	0.250	0.25	0.318	0.323	0.323
PCS	GSM	0.248	0.248	0.248	0.318	0.325	0.320
	EDGE	0.246	0.246	0.244	0.315	0.315	0.312

WCDMA:

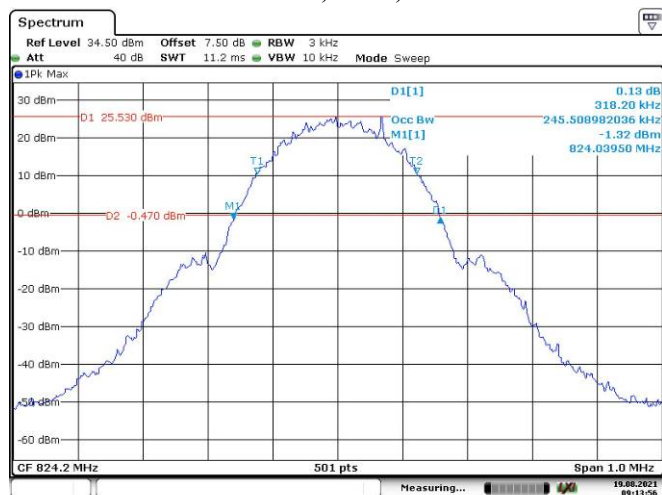
Band	Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
		Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
Cellular	Rel 99	4.172	4.172	4.152	4.712	4.712	4.703
	HSDPA	4.152	4.152	4.172	4.710	4.706	4.706
	HSUPA	4.192	4.152	4.172	4.721	4.706	4.715
PCS	Rel 99	4.152	4.152	4.172	4.701	4.717	4.712
	HSDPA	4.152	4.152	4.172	4.706	4.712	4.712
	HSUPA	4.152	4.152	4.152	4.712	4.721	4.701

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	1.102	1.096	1.102	1.254	1.254	1.266
		16QAM	1.102	1.102	1.090	1.260	1.260	1.248
	3 MHz	QPSK	2.695	2.695	2.695	3.000	3.000	3.024
		16QAM	2.695	2.683	2.695	3.024	3.000	3.024
	5 MHz	QPSK	4.531	4.511	4.511	5.000	5.020	4.980
		16QAM	4.511	4.531	4.531	5.000	5.020	5.000
	10 MHz	QPSK	8.942	8.942	8.981	9.760	9.760	9.760
		16QAM	8.942	8.942	8.981	9.760	9.840	9.880
	15 MHz	QPSK	13.533	13.473	13.473	14.820	14.760	14.820
		16QAM	13.533	13.533	13.533	14.760	14.760	14.760
	20 MHz	QPSK	18.044	17.964	17.964	19.440	19.680	19.680
		16QAM	17.964	18.044	17.884	19.680	19.600	19.440
LTE Band 4	1.4 MHz	QPSK	1.102	1.096	1.102	1.254	1.260	1.254
		16QAM	1.102	1.108	1.102	1.254	1.266	1.260
	3 MHz	QPSK	2.695	2.695	2.683	2.988	3.000	3.024
		16QAM	2.695	2.683	2.695	3.012	3.000	3.024
	5 MHz	QPSK	4.511	4.491	4.511	5.000	5.000	5.000
		16QAM	4.551	4.531	4.491	5.020	5.000	5.000
	10 MHz	QPSK	8.942	8.942	8.942	9.760	9.720	9.760
		16QAM	8.942	8.981	8.942	9.760	9.800	9.840
	15 MHz	QPSK	13.533	13.533	13.473	15.060	15.000	15.060
		16QAM	13.533	13.533	13.533	15.000	15.120	15.000
	20 MHz	QPSK	17.964	17.964	17.964	19.760	19.520	19.760
		16QAM	18.044	17.964	17.964	19.680	19.760	19.600

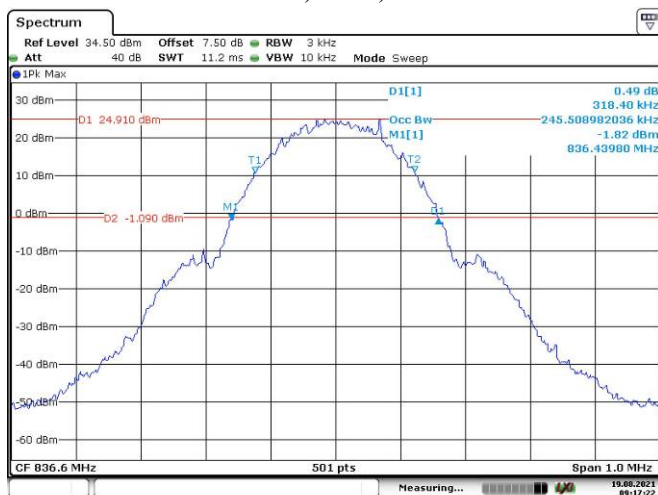
Band	Bandwidth (MHz)	Modulation mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
			Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
LTE Band 5	1.4 MHz	QPSK	1.102	1.102	1.102	1.254	1.254	1.260
		16QAM	1.102	1.096	1.102	1.260	1.254	1.254
	3 MHz	QPSK	2.695	2.695	2.683	2.988	3.012	3.024
		16QAM	2.695	2.683	2.695	3.012	3.000	3.012
	5 MHz	QPSK	4.531	4.511	4.511	4.980	5.000	4.980
		16QAM	4.511	4.531	4.531	5.020	5.020	5.020
	10 MHz	QPSK	8.981	8.942	8.942	9.760	9.760	9.760
		16QAM	8.981	8.981	8.942	9.680	9.760	9.840
LTE Band 7	5 MHz	QPSK	4.531	4.511	4.511	5.000	5.000	5.000
		16QAM	4.531	4.531	4.531	5.020	5.020	5.020
	10 MHz	QPSK	8.981	8.942	8.942	9.800	9.720	9.800
		16QAM	8.942	8.981	8.942	9.800	9.800	9.880
	15 MHz	QPSK	13.473	13.473	13.533	15.120	15.000	15.180
		16QAM	13.473	13.533	13.593	15.060	15.120	15.180
	20 MHz	QPSK	17.964	17.964	18.044	19.600	19.600	19.920
		16QAM	17.964	17.964	17.964	19.840	19.760	19.840

Cellular 850 Band, GSM, Low Channel



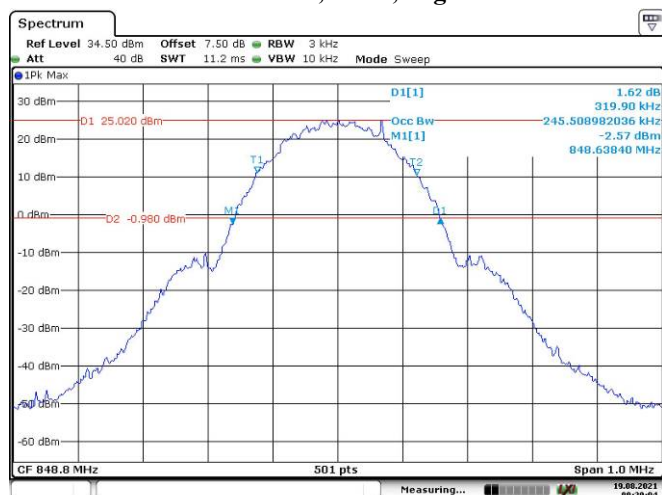
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Cellular 850 Band, GSM, Middle Channel



Date: 19.AUG.2021 09:17:22

Cellular 850 Band, GSM, High Channel



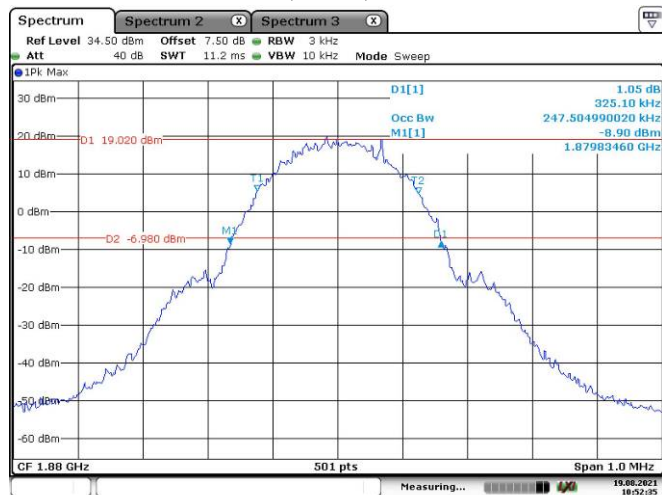
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PCS 1900 Band, GSM, Low Channel



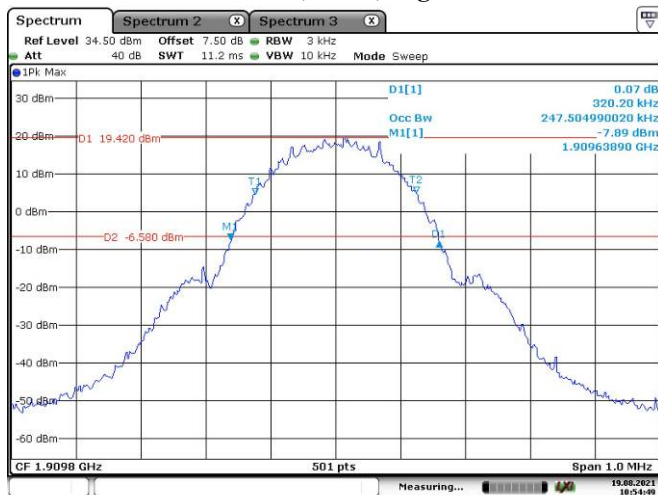
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PCS 1900 Band, GSM, Middle Channel



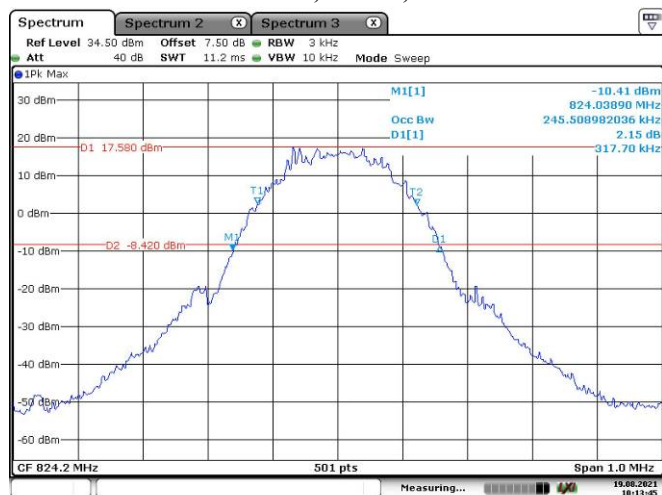
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PCS 1900 Band, GSM, High Channel



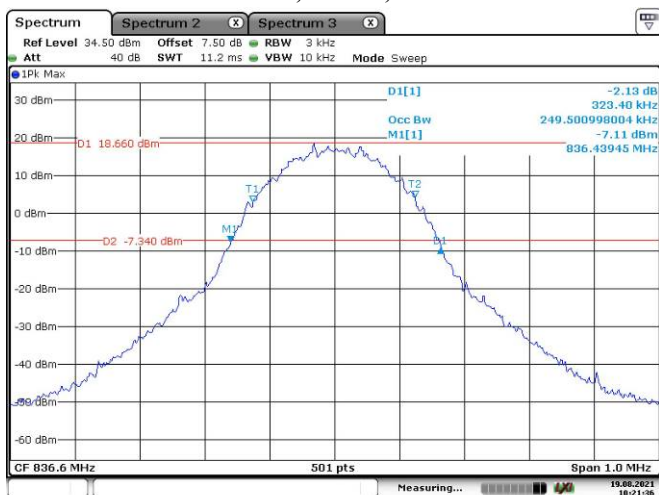
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Cellular 850 Band, EDGE, Low Channel



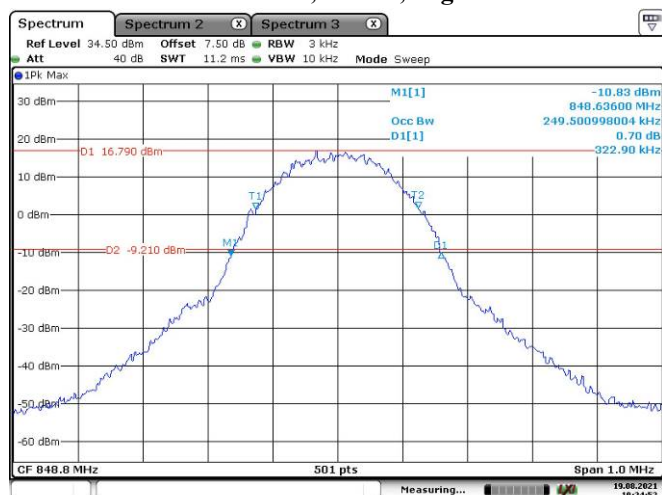
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Cellular 850 Band, EDGE, Middle Channel



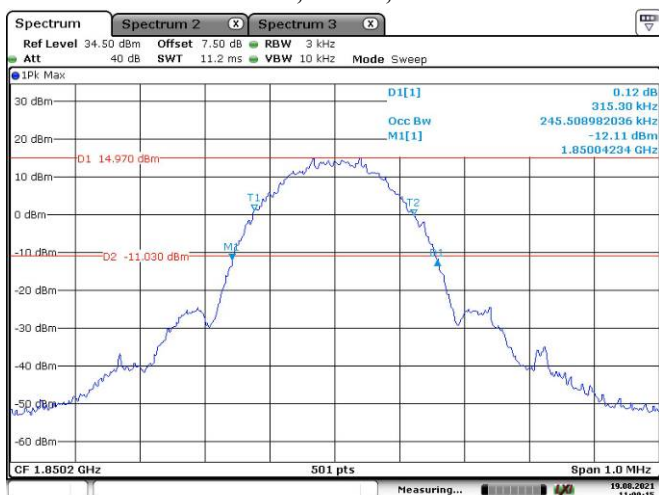
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Cellular 850 Band, EDGE, High Channel



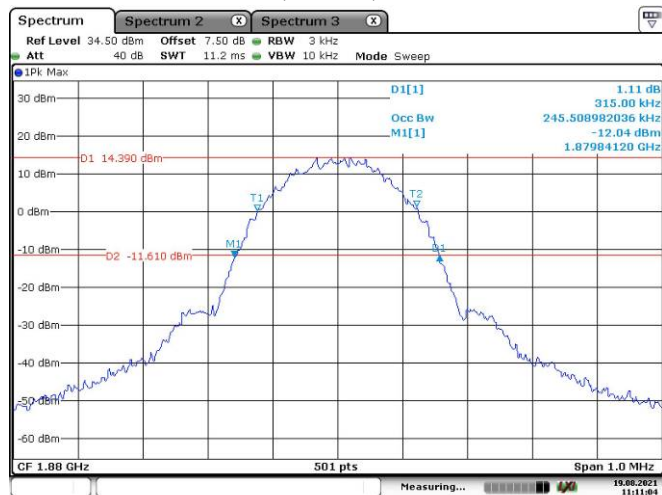
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PCS 1900 Band, EDGE, Low Channel



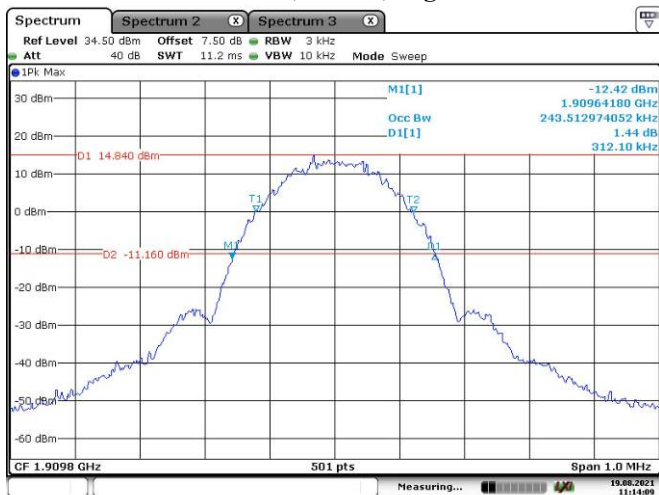
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PCS 1900 Band, EDGE, Middle Channel



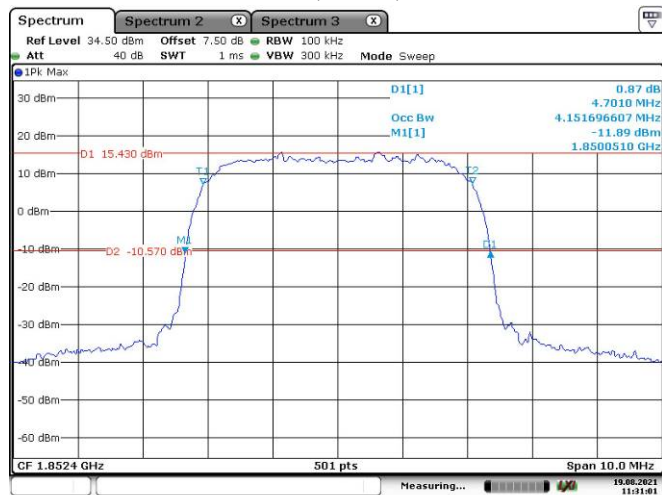
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PCS 1900 Band, EDGE, High Channel



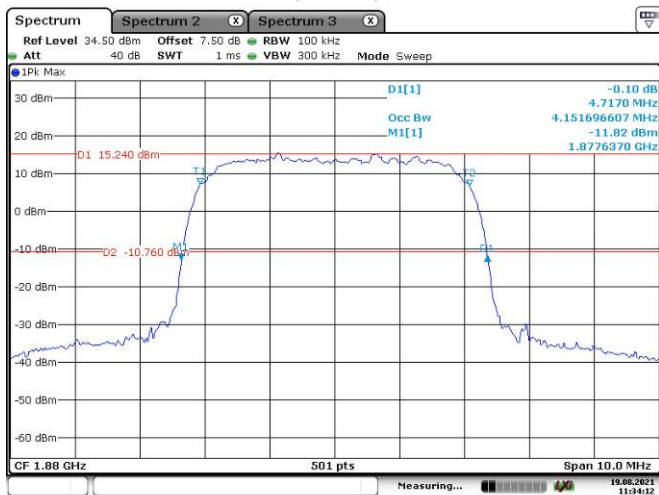
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WCDMA Band II, Rel99, Low Channel



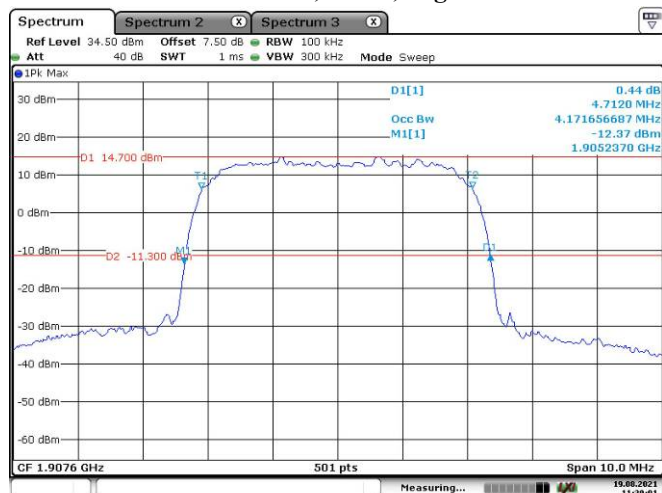
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WCDMA Band II, Rel99, Middle Channel



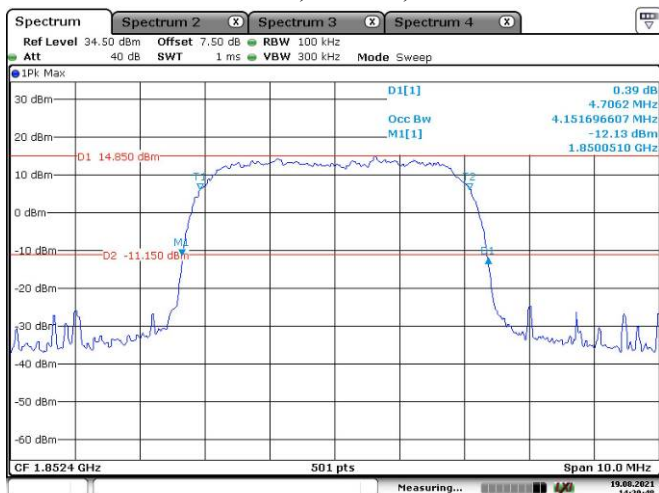
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WCDMA Band II, Rel99, High Channel



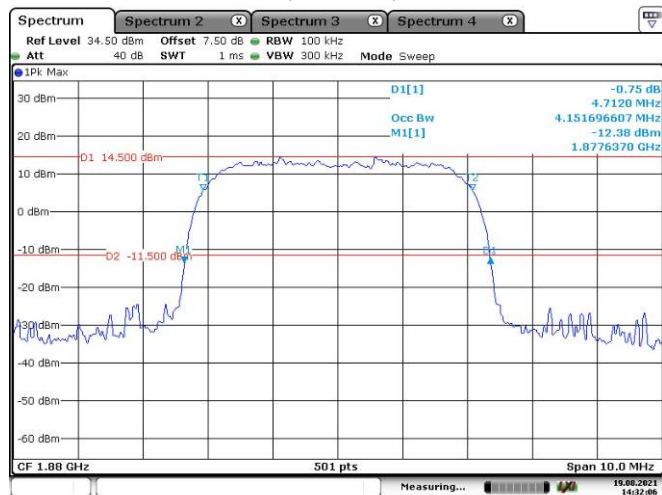
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WCDMA Band II, HSDPA, Low Channel



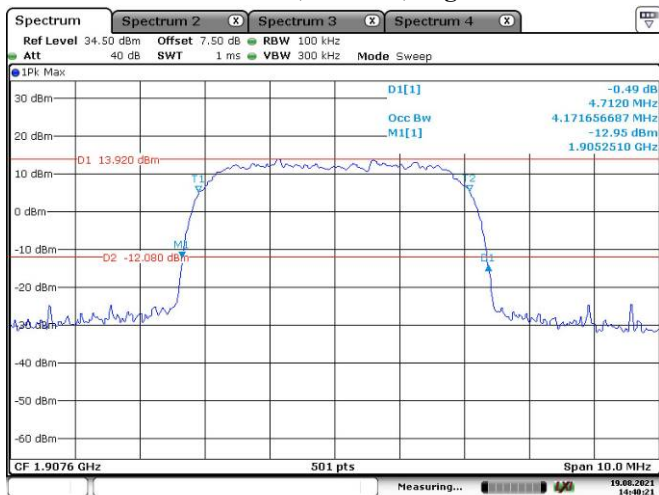
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WCDMA Band II, HSDPA, Middle Channel



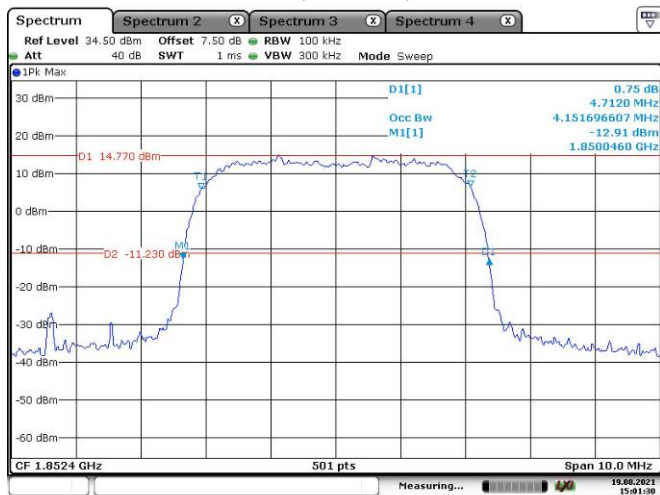
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WCDMA Band II, HSDPA, High Channel



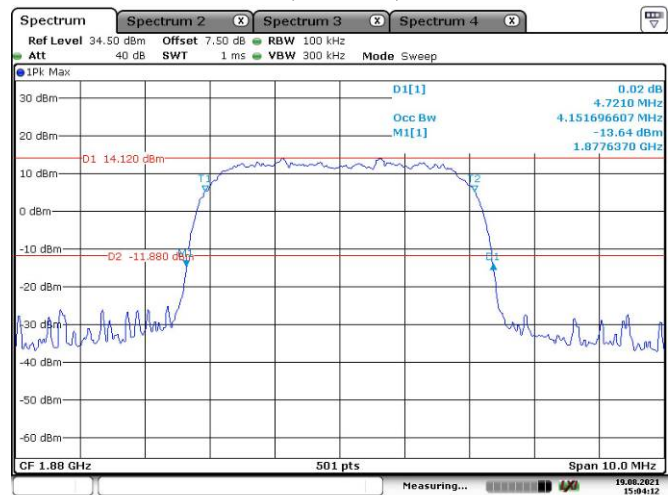
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WCDMA Band II, HSUPA, Low Channel



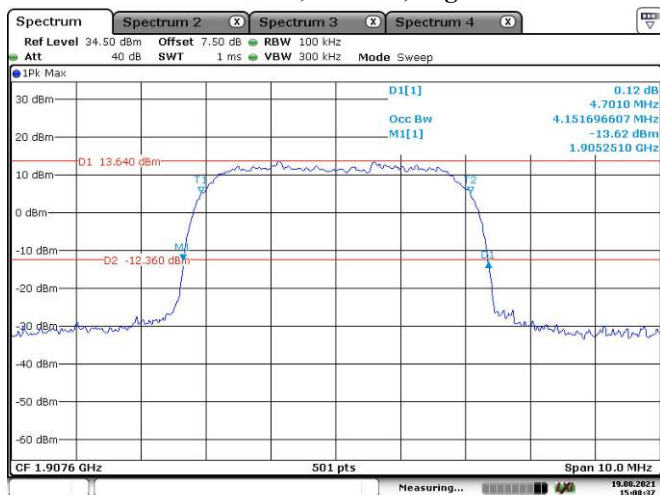
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WCDMA Band II, HSUPA, Middle Channel



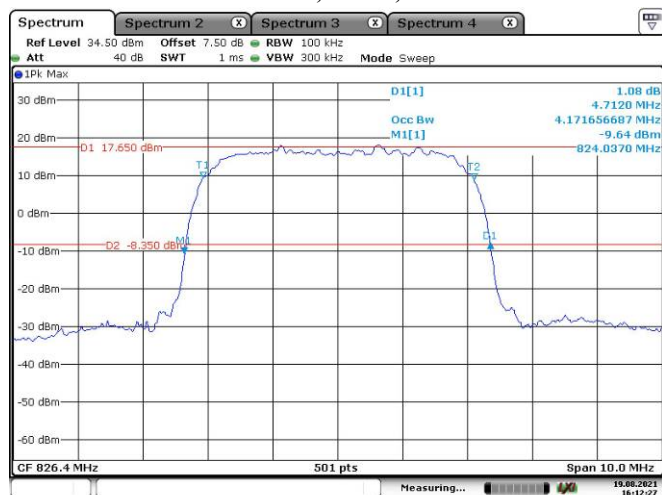
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WCDMA Band II, HSUPA, High Channel



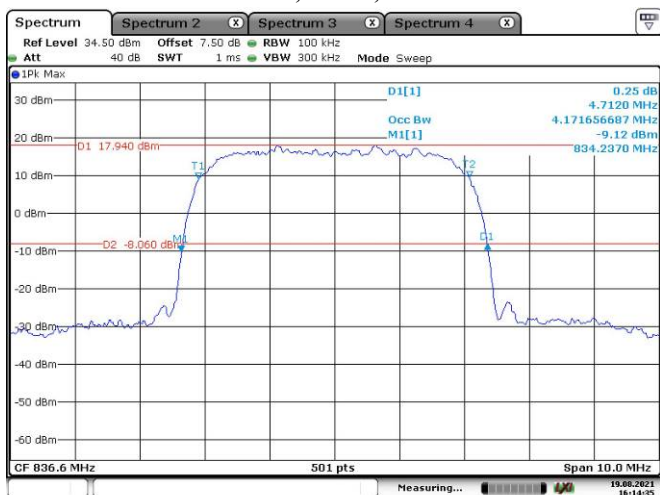
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WCDMA Band V, Rel99, Low Channel



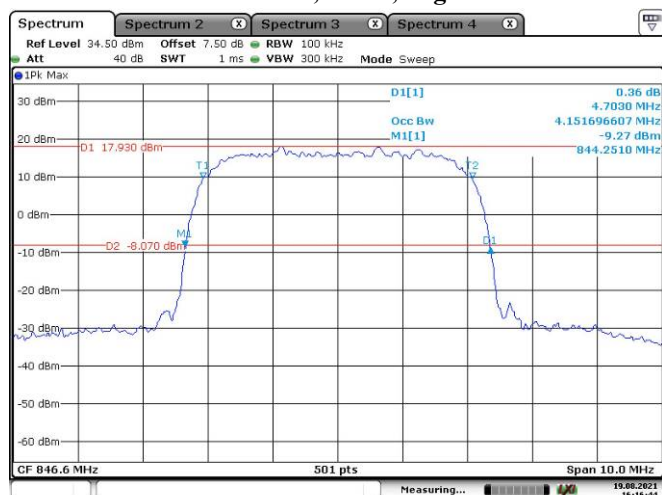
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WCDMA Band V, Rel99, Middle Channel



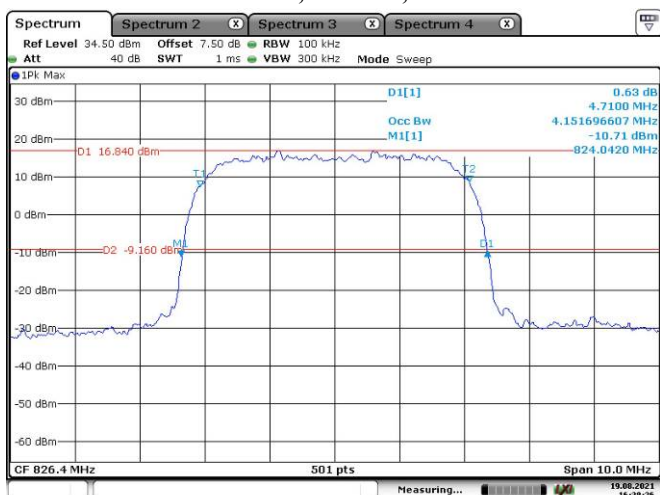
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WCDMA Band V, Rel99, High Channel



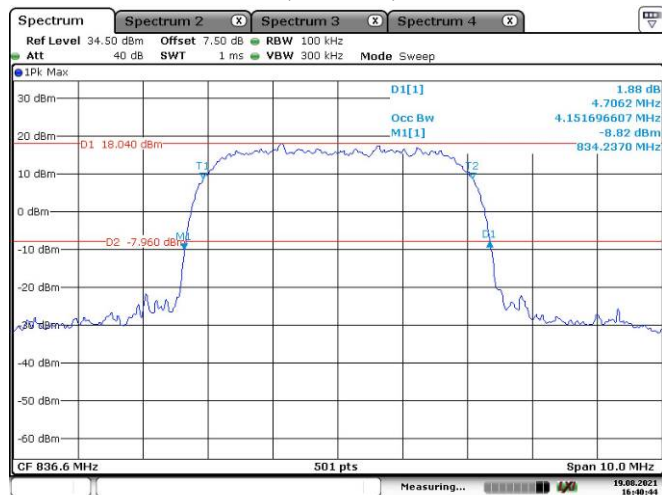
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WCDMA Band V, HSDPA, Low Channel



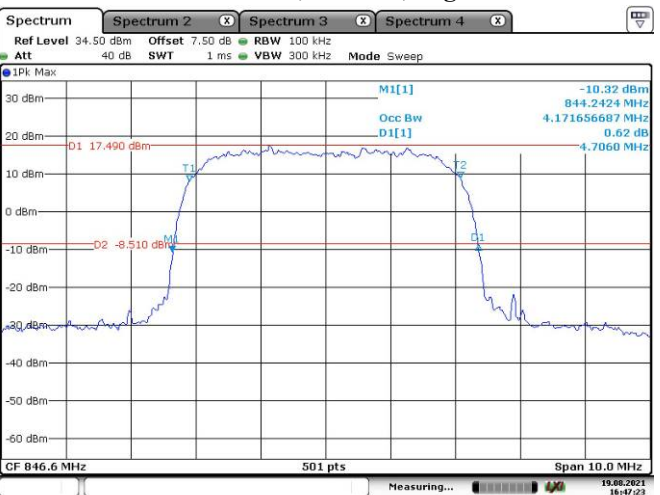
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WCDMA Band V, HSDPA, Middle Channel



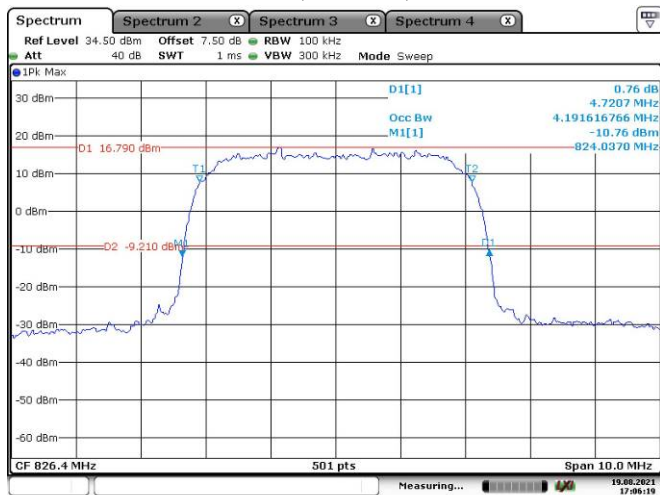
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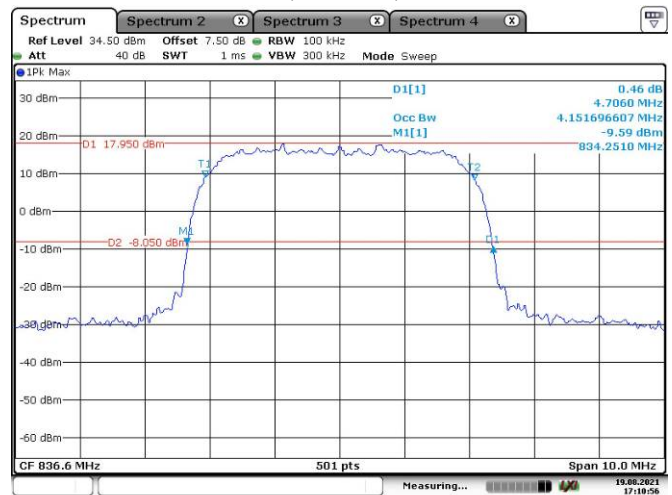
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WCDMA Band V, HSUPA, Low Channel



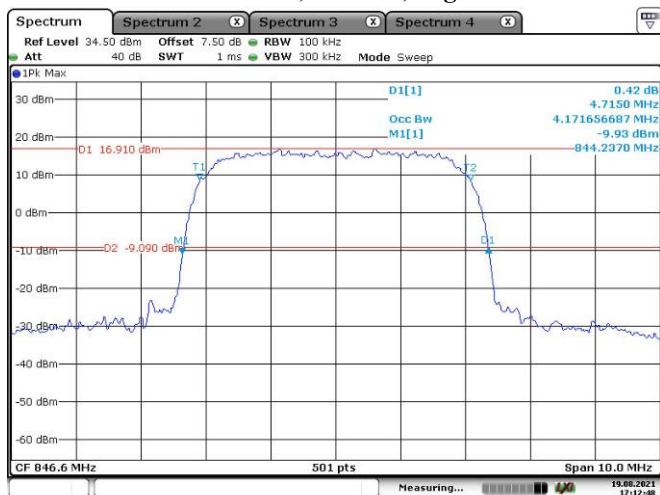
Date: 19.AUG.2021 17:06:19

WCDMA Band V, HSUPA, Middle Channel



Date: 19.AUG.2021 17:10:57

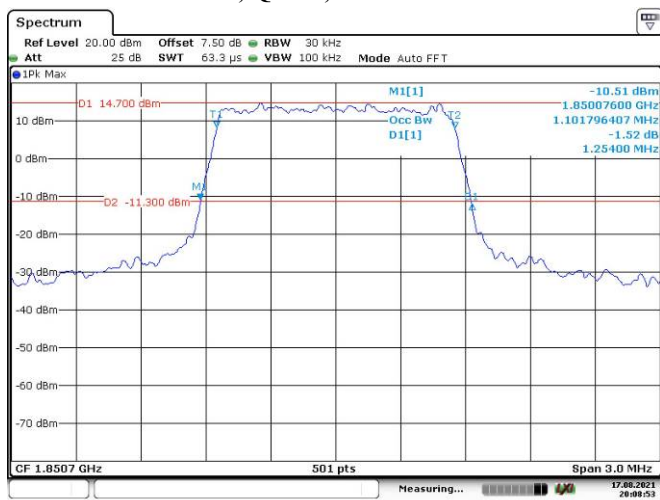
WCDMA Band V, HSUPA, High Channel



Date: 19.AUG.2021 17:12:49

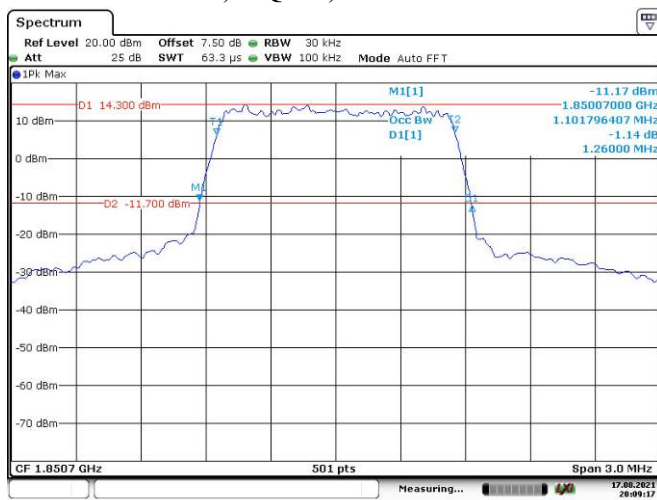
LTE Band 2

1.4M, QPSK, Low Channel



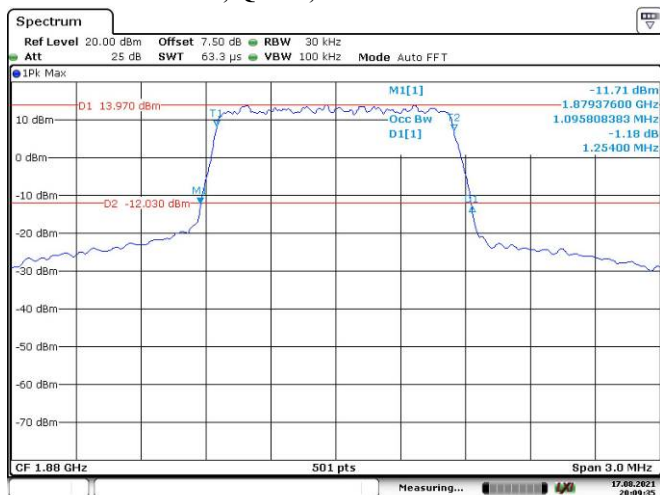
Date: 17.AUG.2021 20:08:54

1.4M, 16QAM, Low Channel



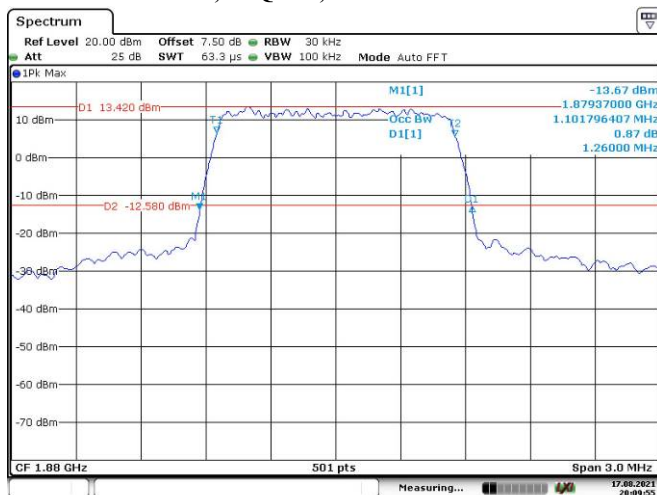
Date: 17.AUG.2021 20:09:18

1.4M, QPSK, Middle Channel



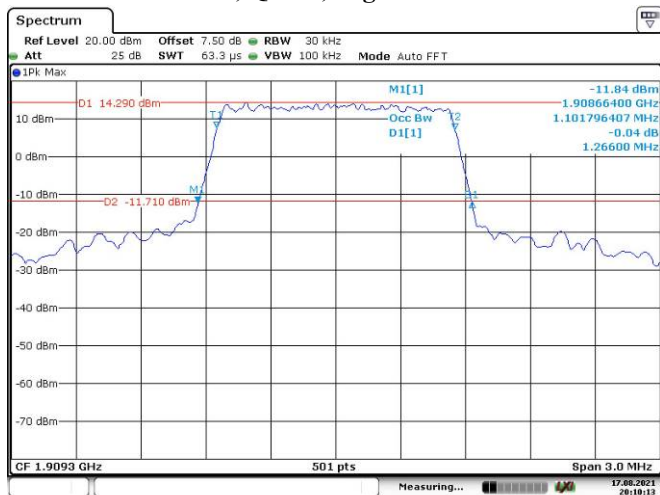
Date: 17.AUG.2021 20:09:36

1.4M, 16QAM, Middle Channel



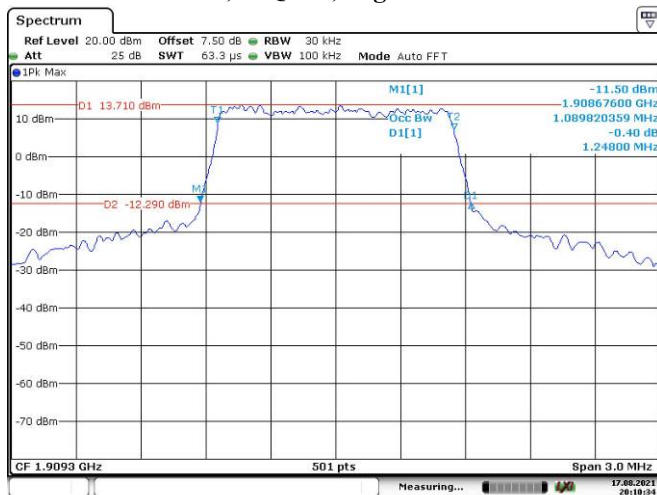
Date: 17.AUG.2021 20:09:56

1.4M, QPSK, High Channel



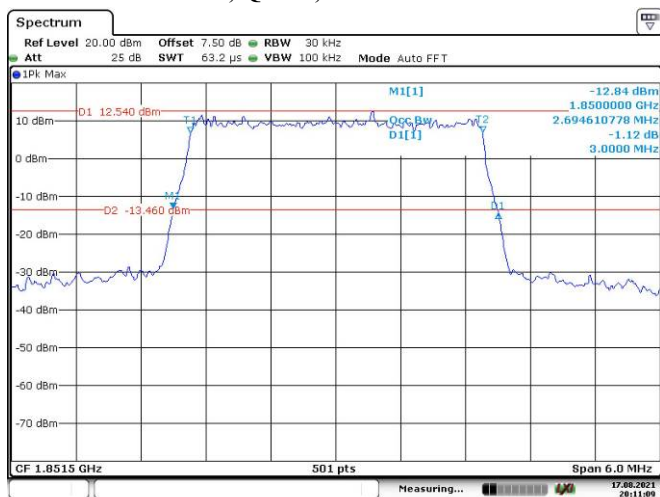
Date: 17.AUG.2021 20:10:14

1.4M, 16QAM, High Channel



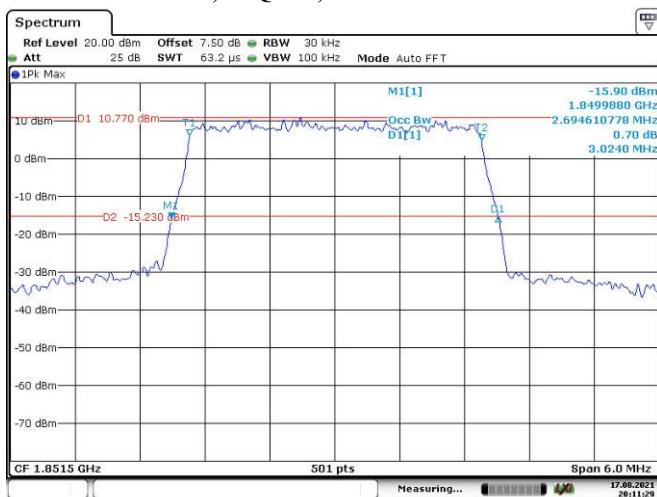
Date: 17.AUG.2021 20:10:34

3M, QPSK, Low Channel



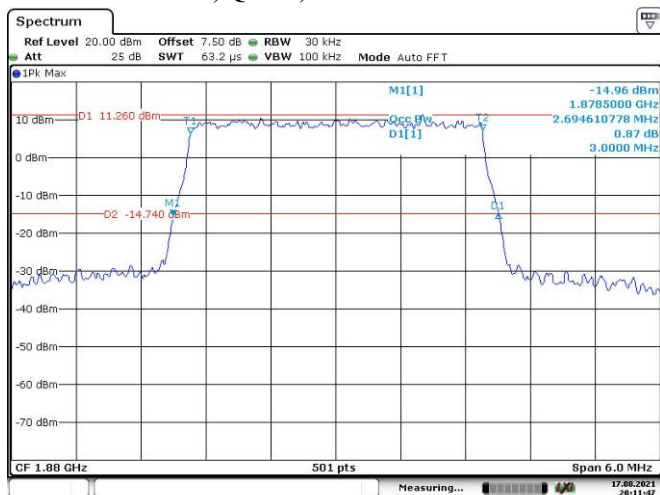
Date: 17.AUG.2021 20:11:09

3M, 16QAM, Low Channel



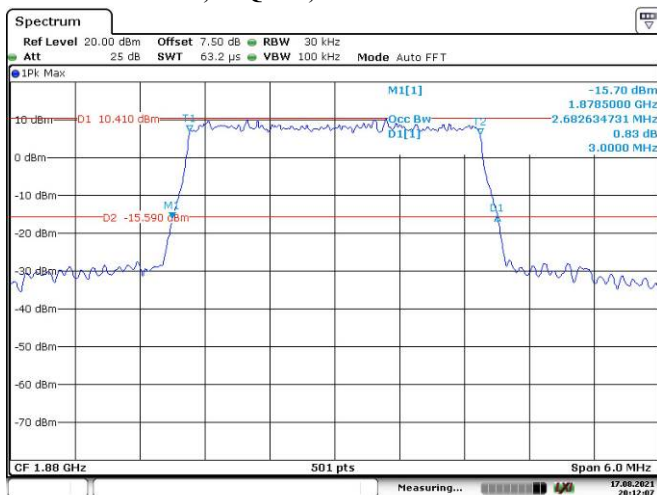
Date: 17.AUG.2021 20:11:29

3M, QPSK, Middle Channel



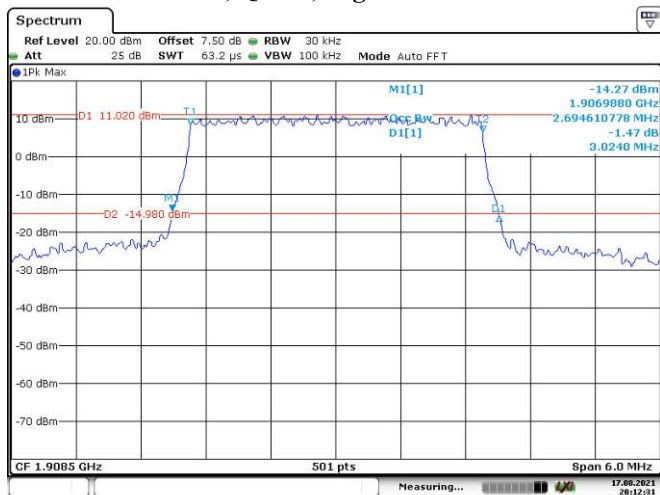
Date: 17.AUG.2021 20:11:47

3M, 16QAM, Middle Channel



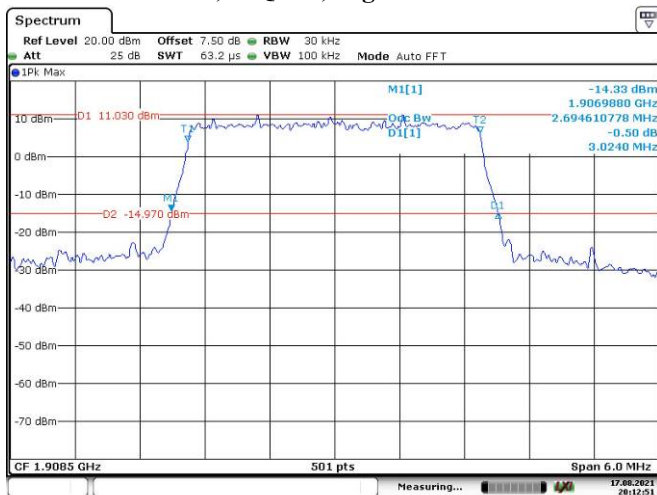
Date: 17.AUG.2021 20:12:07

3M, QPSK, High Channel



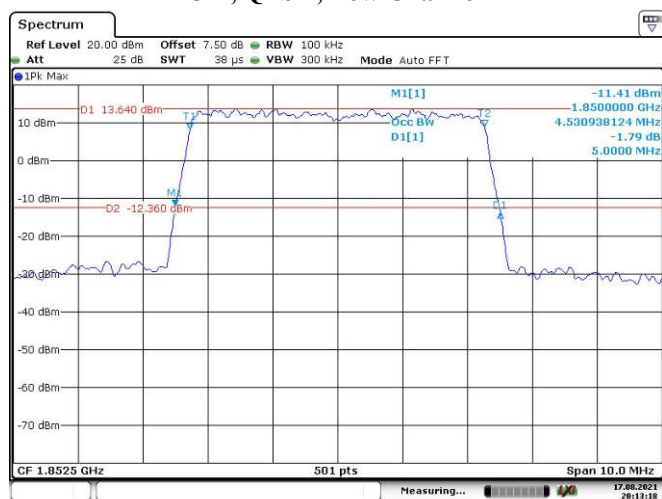
Date: 17.AUG.2021 20:12:31

3M, 16QAM, High Channel



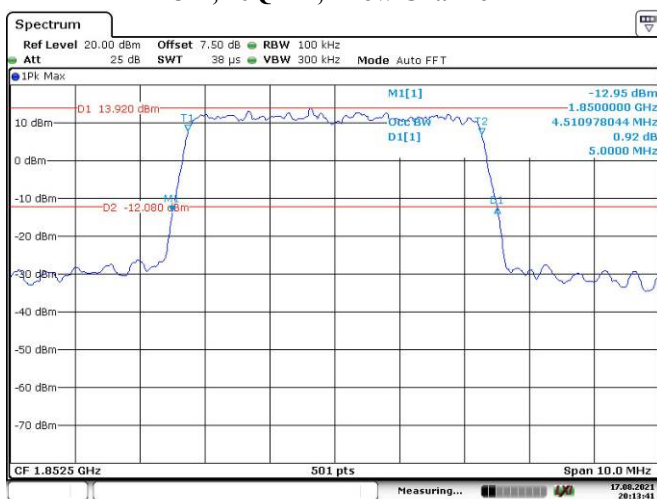
Date: 17.AUG.2021 20:12:52

5M, QPSK, Low Channel



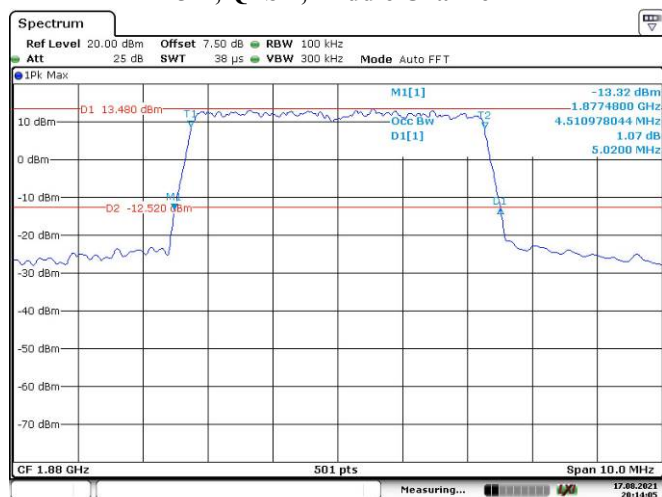
Date: 17.AUG.2021 20:13:19

5M, 16QAM, Low Channel



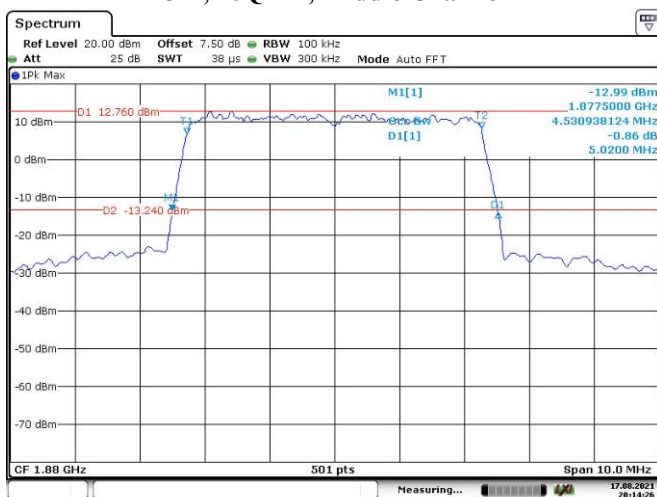
Date: 17.AUG.2021 20:13:42

5M, QPSK, Middle Channel



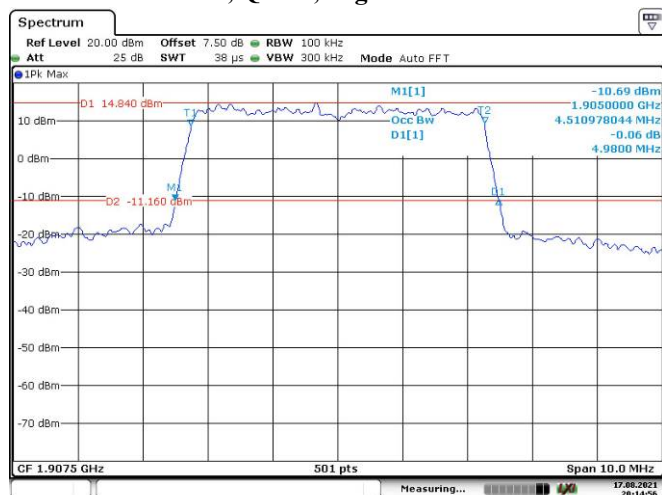
Date: 17.AUG.2021 20:14:06

5M, 16QAM, Middle Channel



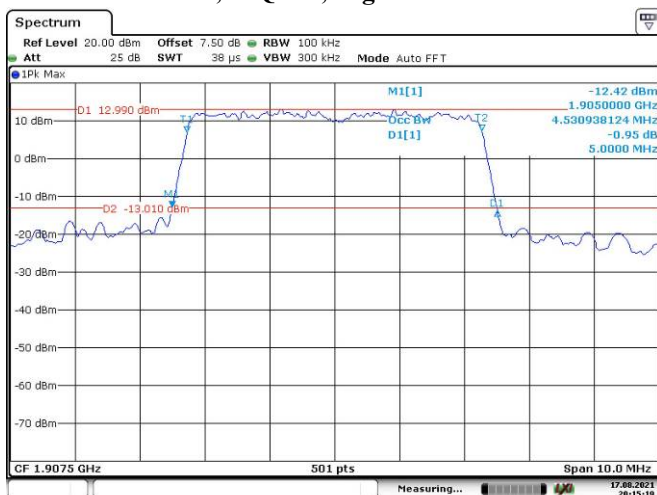
Date: 17.AUG.2021 20:14:26

5M, QPSK, High Channel



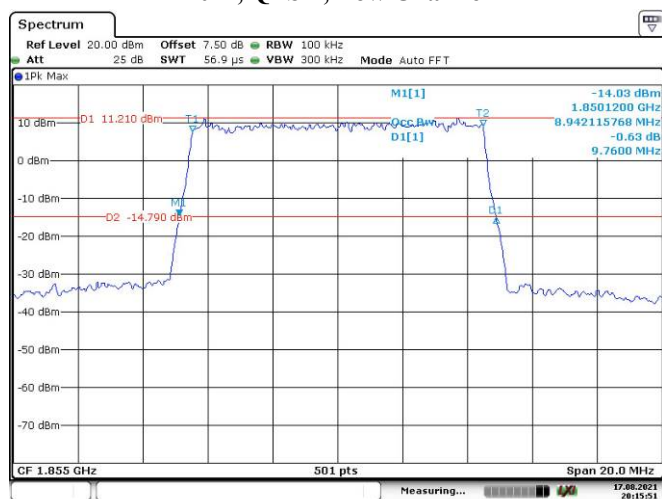
Date: 17.AUG.2021 20:14:56

5M, 16QAM, High Channel

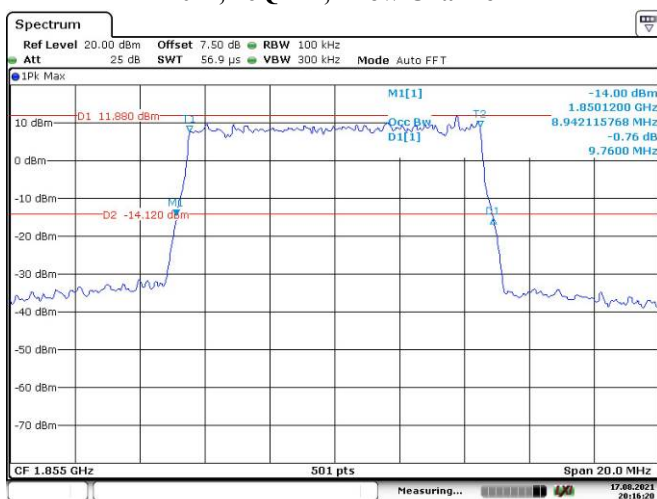


Date: 17.AUG.2021 20:15:19

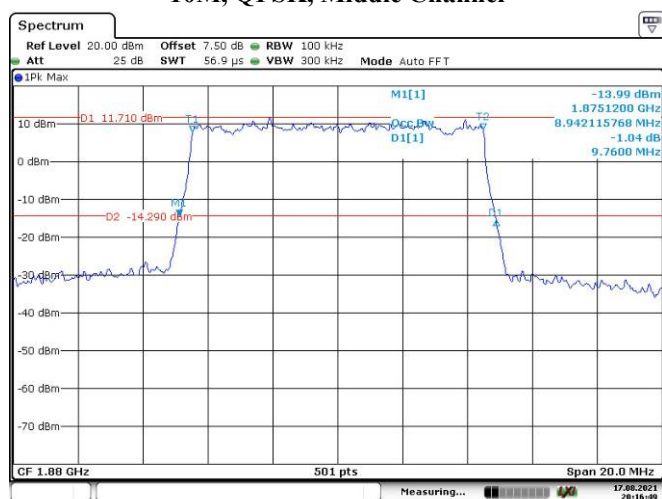
10M, QPSK, Low Channel



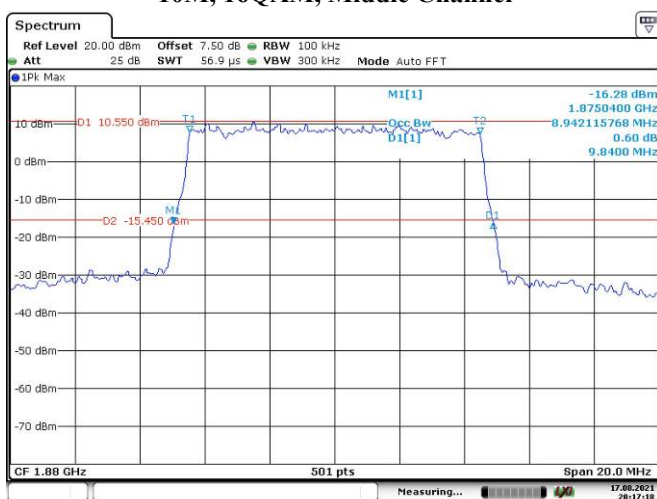
10M, 16QAM, Low Channel



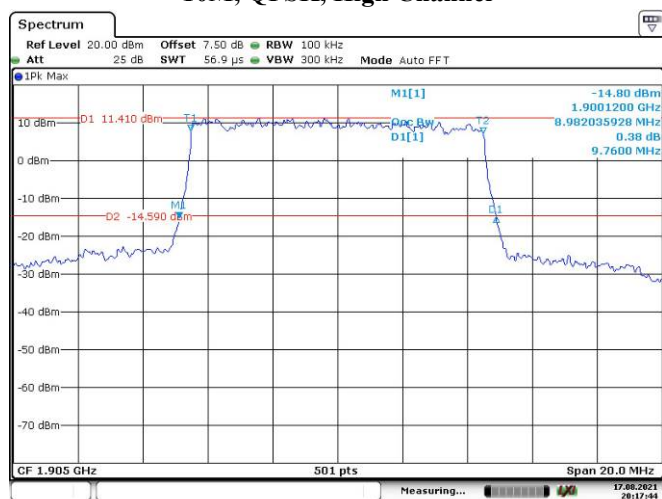
10M, QPSK, Middle Channel



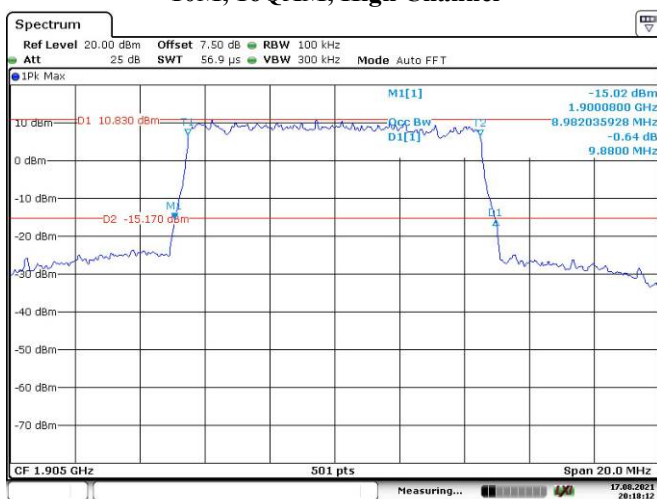
10M, 16QAM, Middle Channel



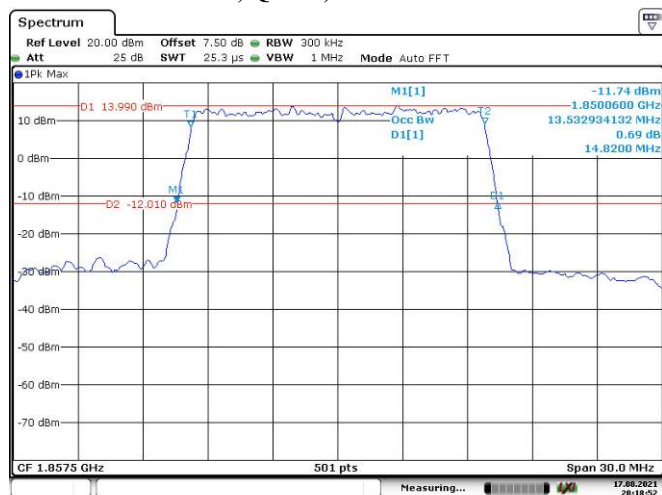
10M, QPSK, High Channel



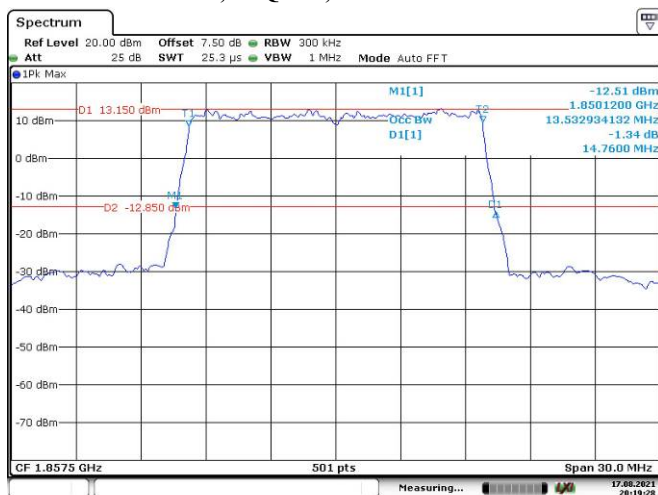
10M, 16QAM, High Channel



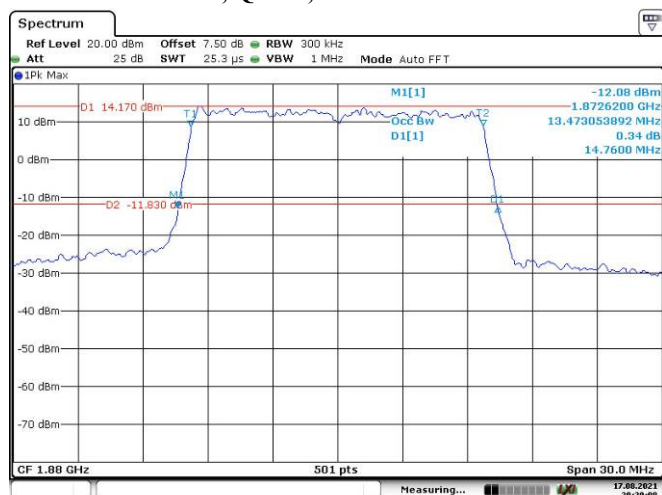
15M, QPSK, Low Channel



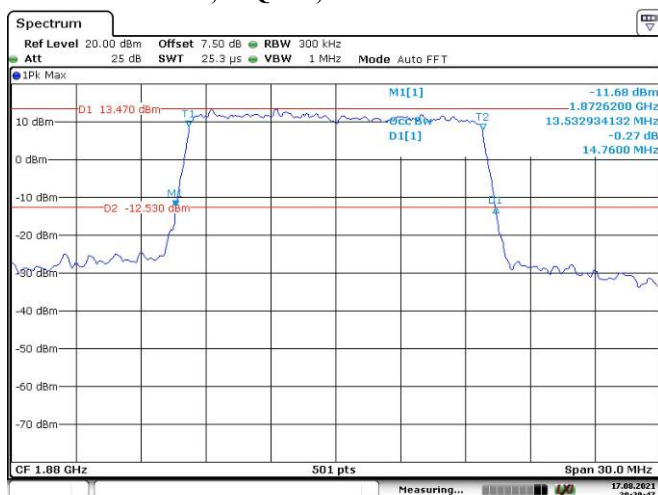
15M, 16QAM, Low Channel



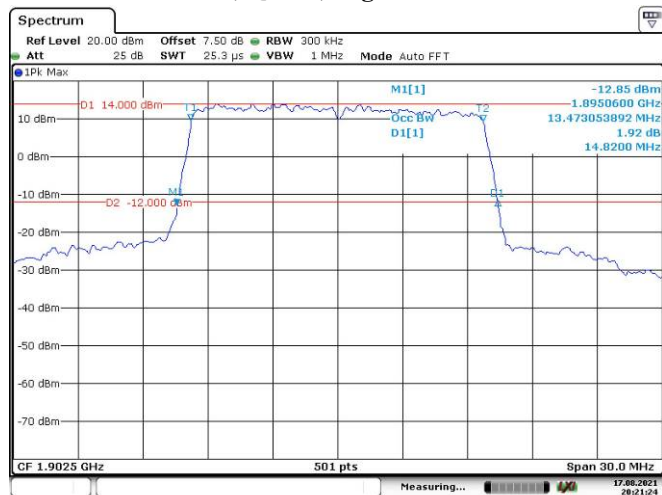
15M, QPSK, Middle Channel



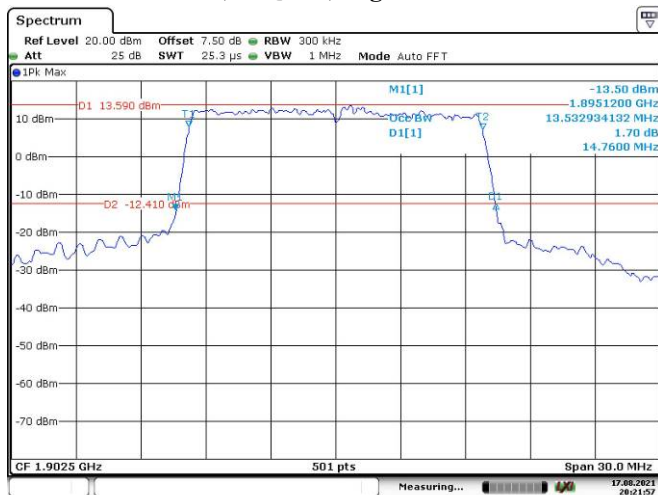
15M, 16QAM, Middle Channel



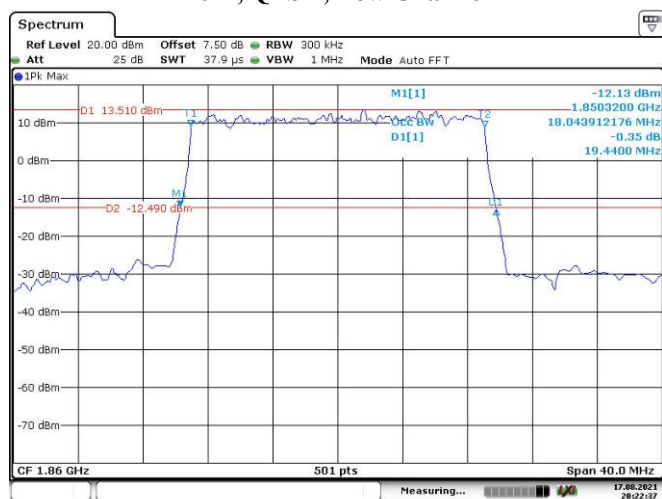
15M, QPSK, High Channel



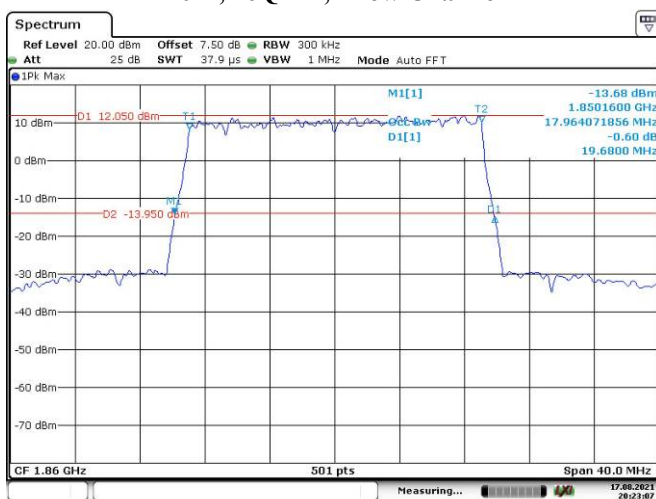
15M, 16QAM, High Channel



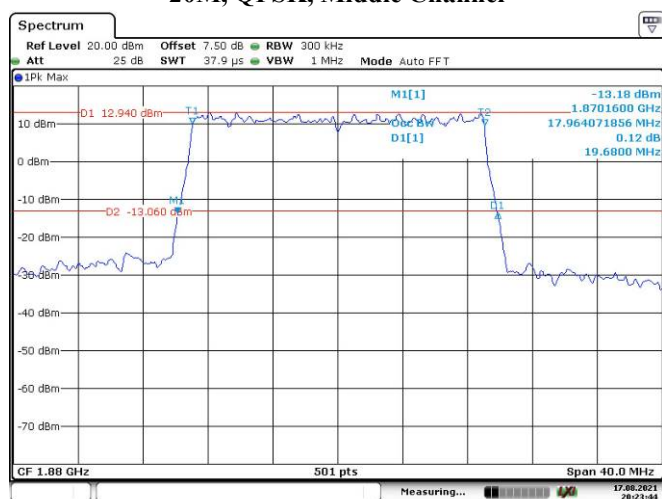
20M, QPSK, Low Channel



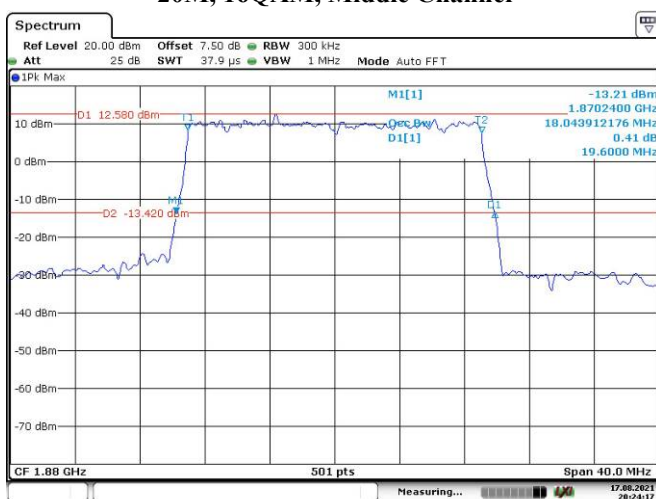
20M, 16QAM, Low Channel



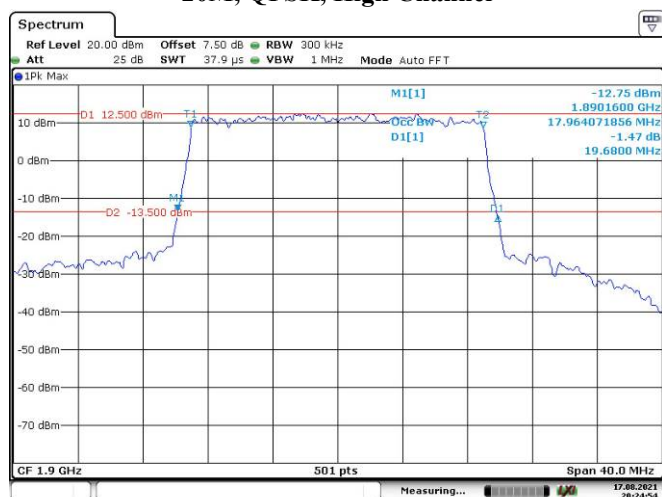
20M, QPSK, Middle Channel



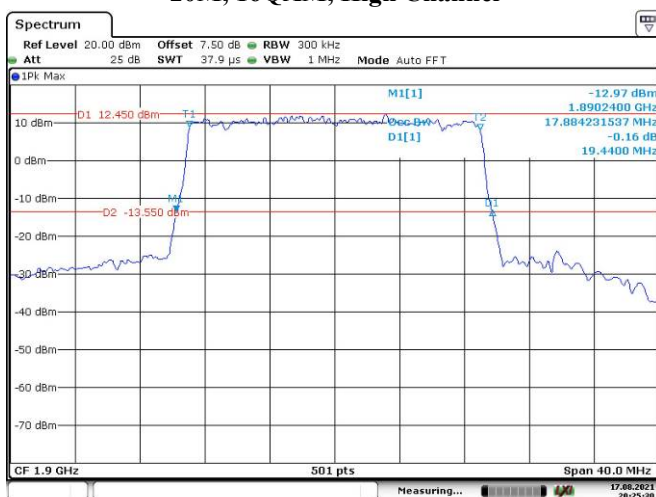
20M, 16QAM, Middle Channel

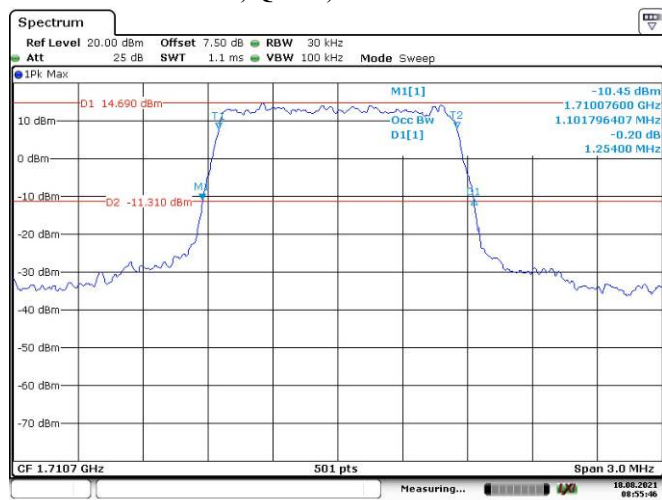


20M, QPSK, High Channel

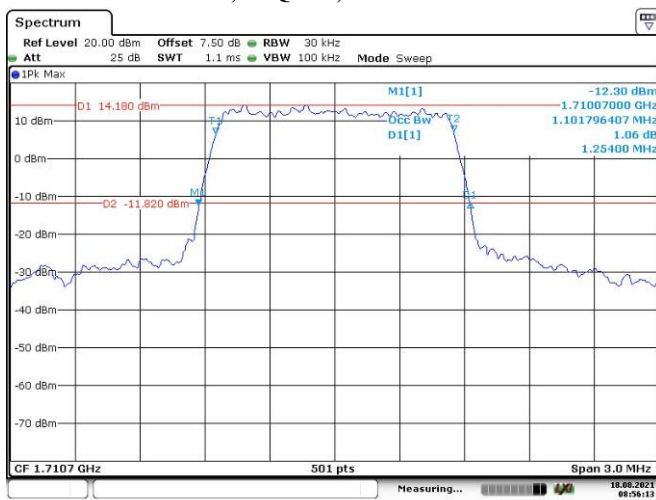


20M, 16QAM, High Channel

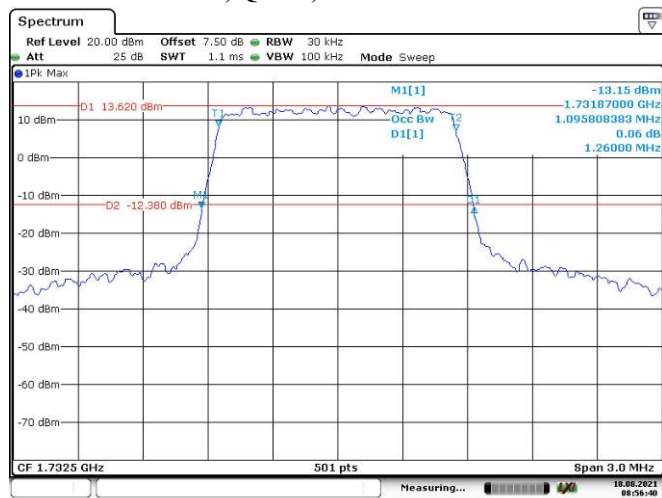


LTE Band 4:**1.4M, QPSK, Low Channel**

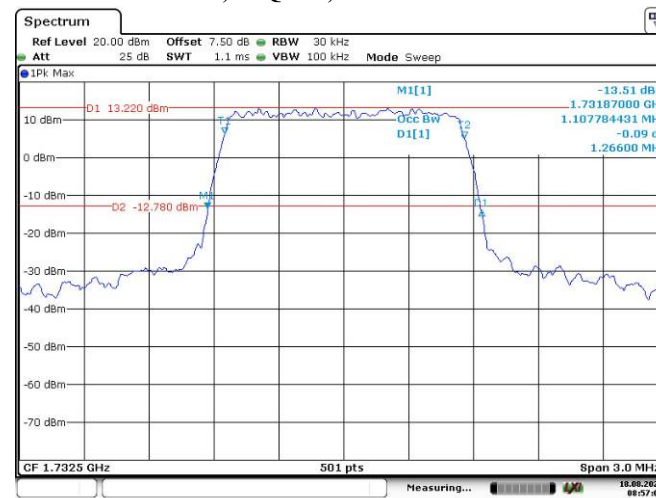
Date: 18.AUG.2021 08:55:46

1.4M, 16QAM, Low Channel

Date: 18.AUG.2021 08:56:13

1.4M, QPSK, Middle Channel

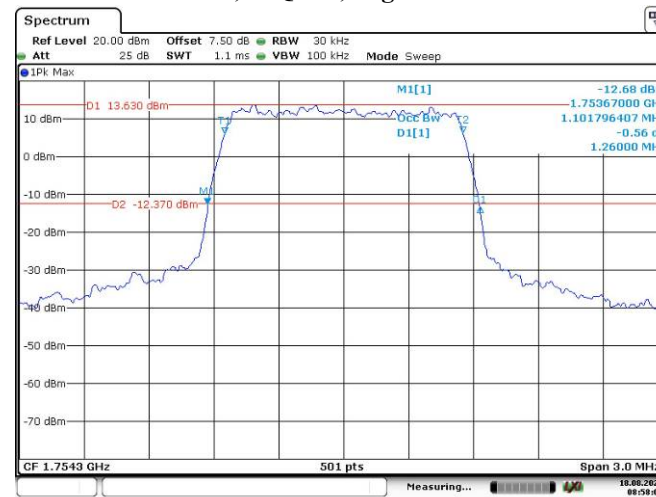
Date: 18.AUG.2021 08:56:40

1.4M, 16QAM, Middle Channel

Date: 18.AUG.2021 08:57:09

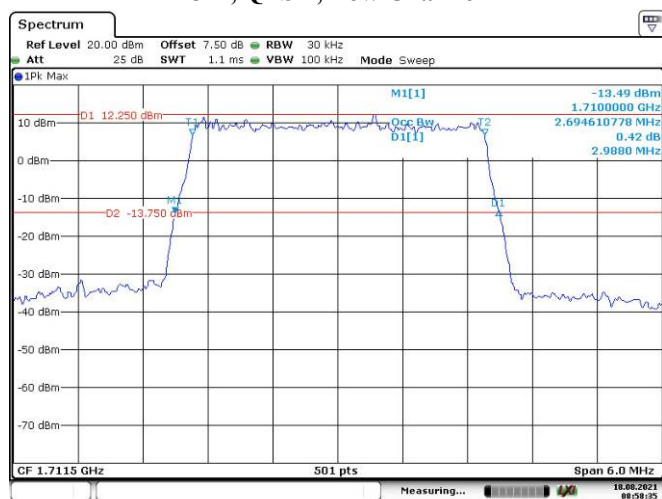
1.4M, QPSK, High Channel

Date: 18.AUG.2021 08:57:40

1.4M, 16QAM, High Channel

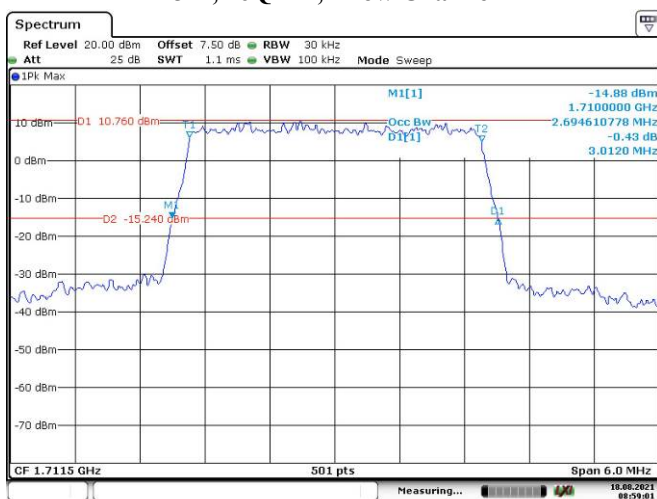
Date: 18.AUG.2021 08:58:03

3M, QPSK, Low Channel



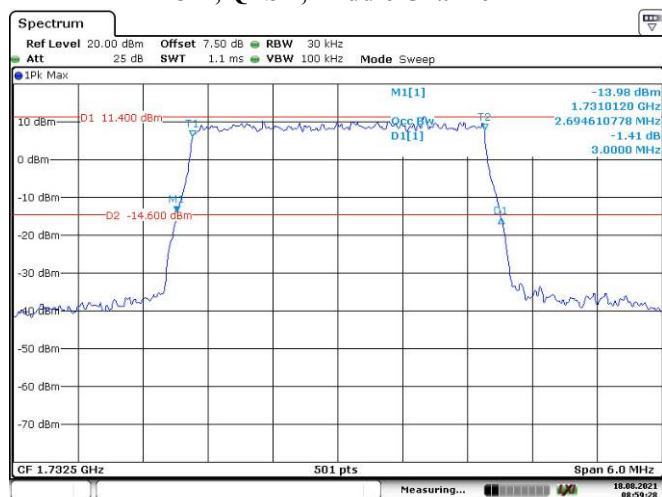
Date: 18.AUG.2021 08:58:36

3M, 16QAM, Low Channel



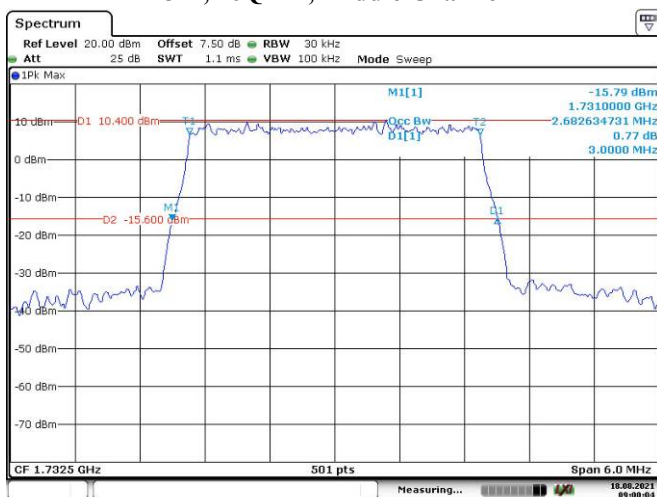
Date: 18.AUG.2021 08:59:02

3M, QPSK, Middle Channel



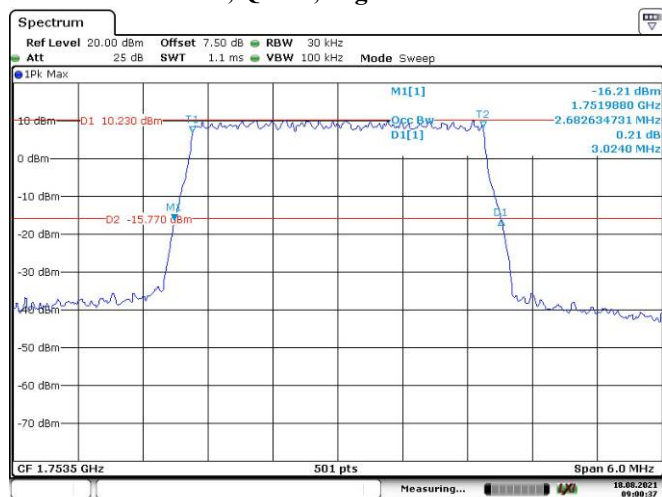
Date: 18.AUG.2021 08:59:29

3M, 16QAM, Middle Channel



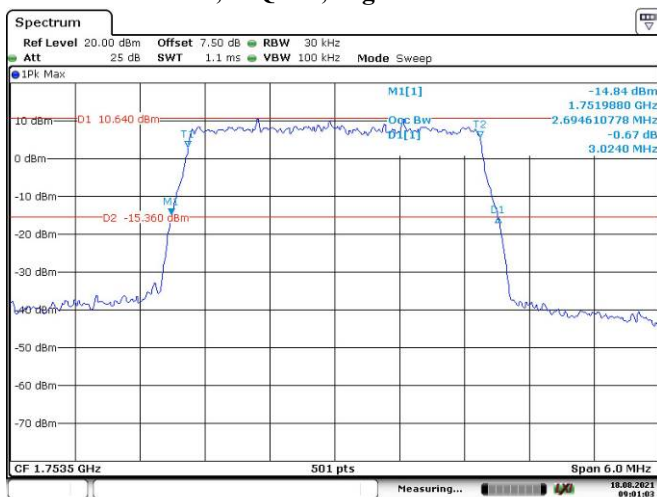
Date: 18.AUG.2021 09:00:04

3M, QPSK, High Channel



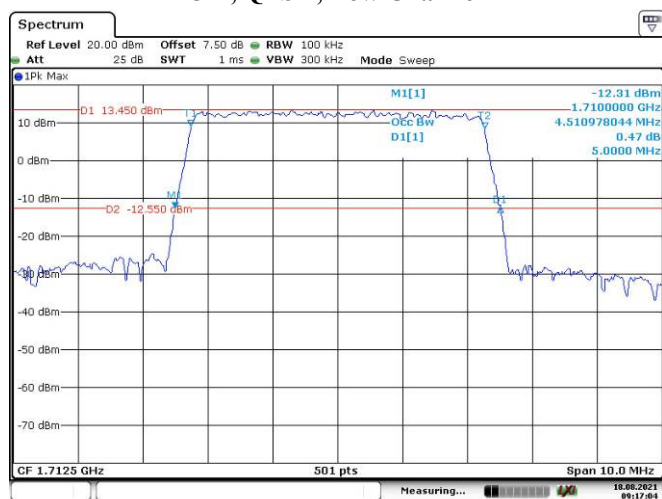
Date: 18.AUG.2021 09:00:37

3M, 16QAM, High Channel



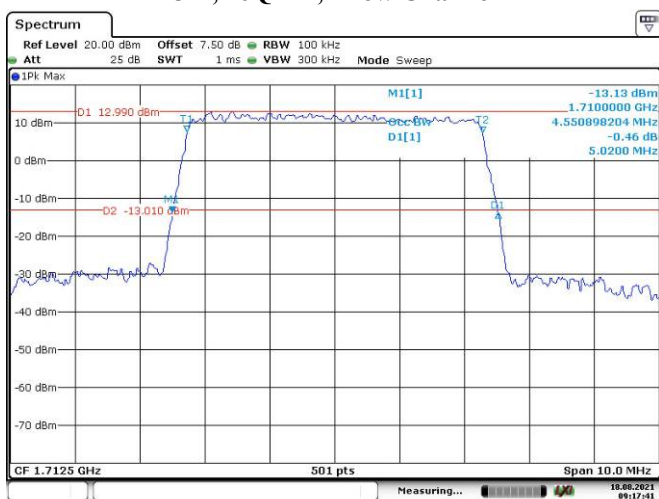
Date: 18.AUG.2021 09:01:04

5M, QPSK, Low Channel



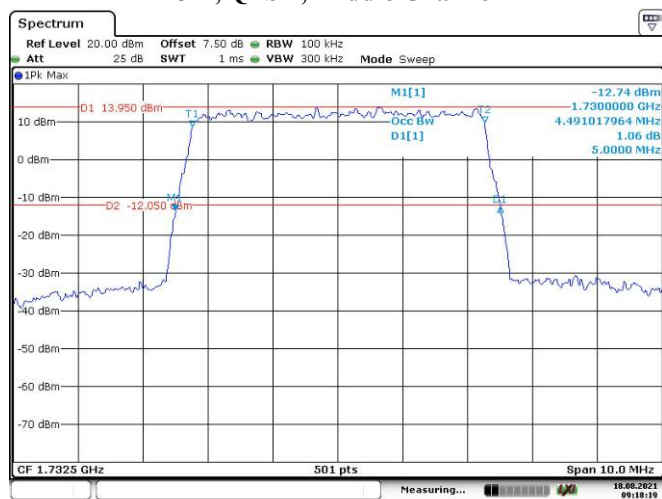
Date: 18.AUG.2021 09:17:04

5M, 16QAM, Low Channel



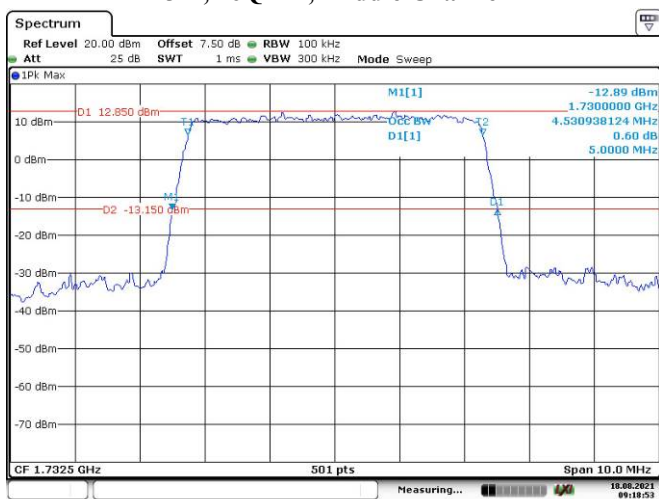
Date: 18.AUG.2021 09:17:41

5M, QPSK, Middle Channel



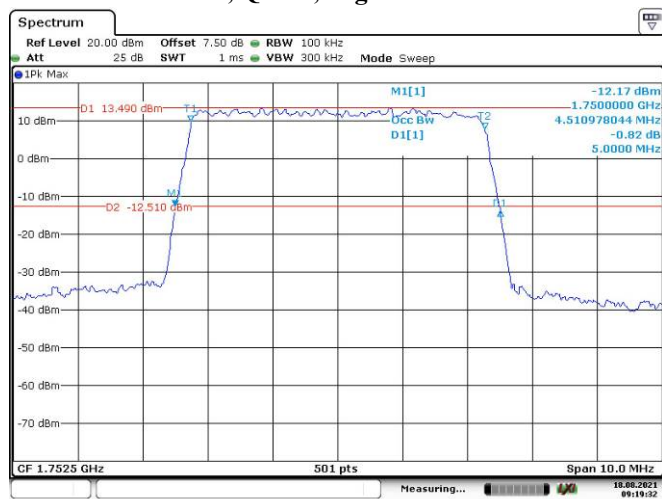
Date: 18.AUG.2021 09:18:20

5M, 16QAM, Middle Channel



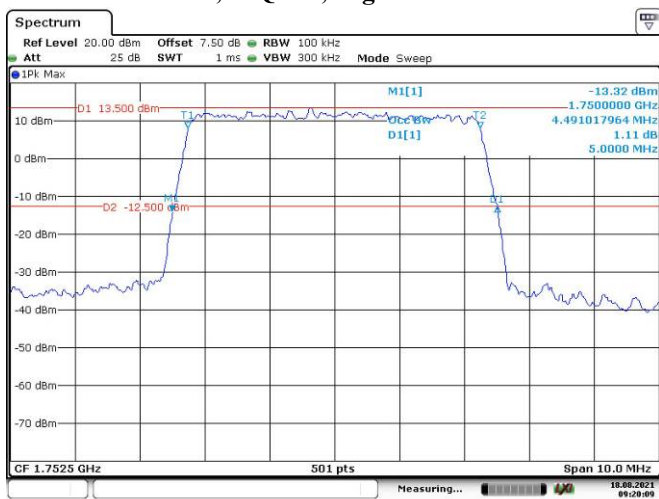
Date: 18.AUG.2021 09:18:54

5M, QPSK, High Channel



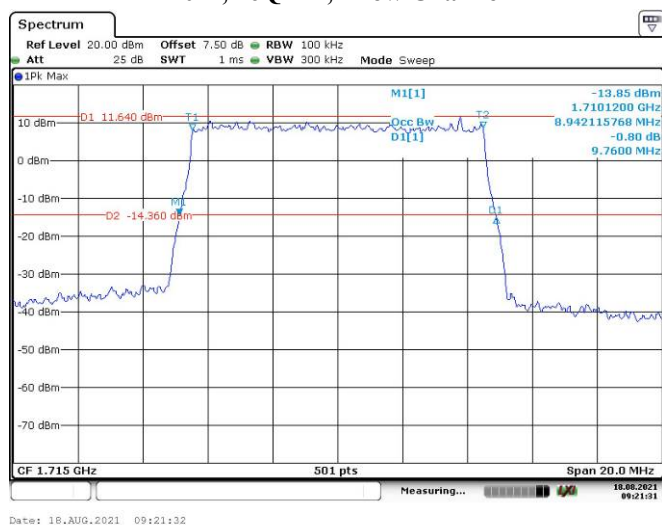
Date: 18.AUG.2021 09:19:32

5M, 16QAM, High Channel

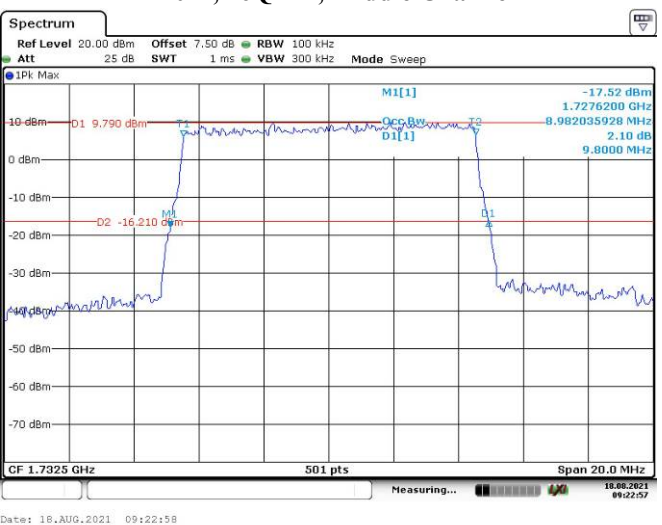


Date: 18.AUG.2021 09:20:10

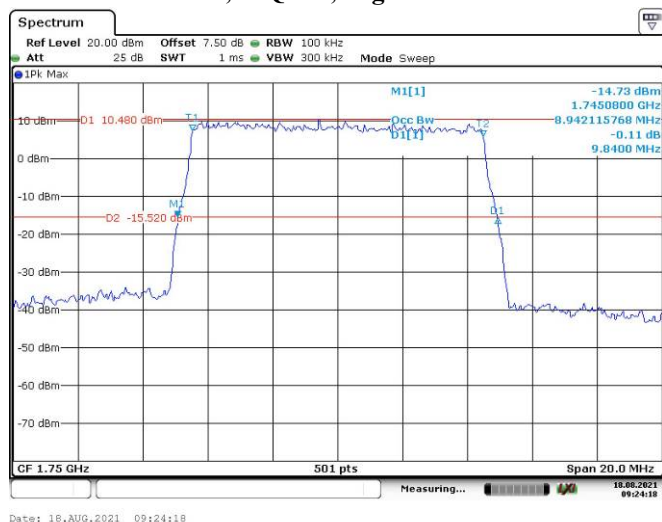
10M, 16QAM, Low Channel



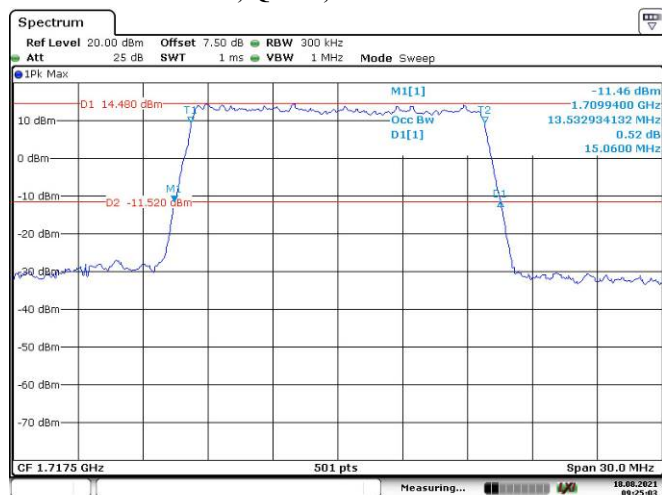
10M, 16QAM, Middle Channel



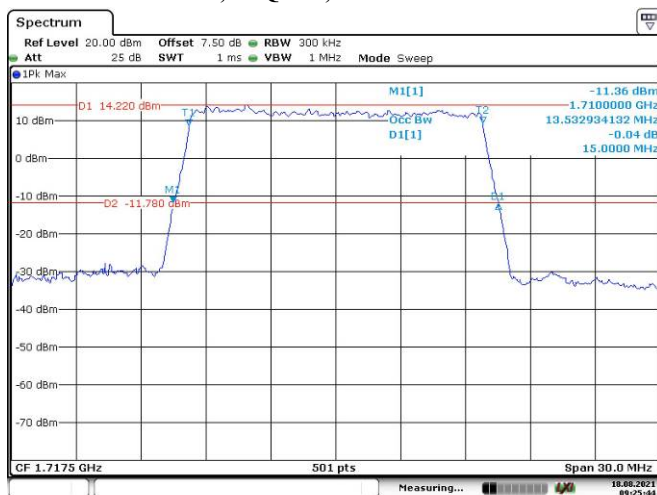
10M, 16QAM, High Channel



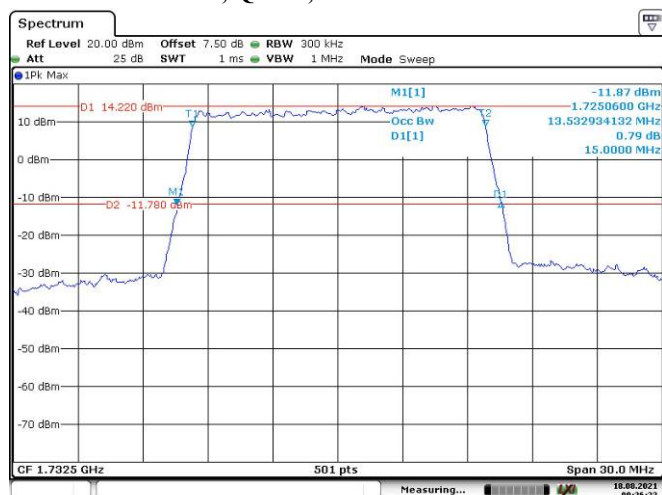
15M, QPSK, Low Channel



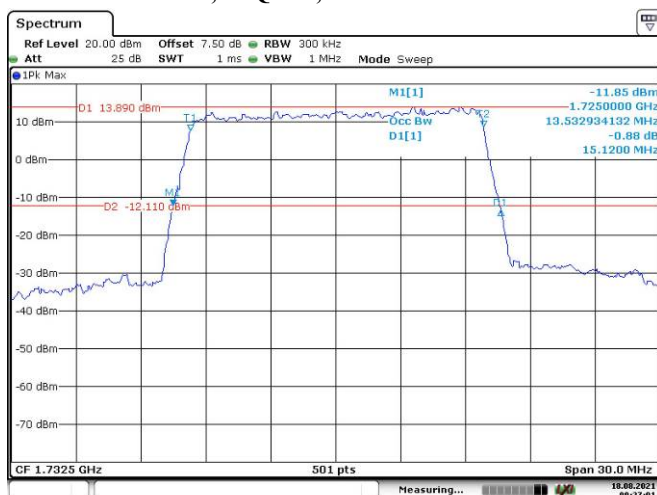
15M, 16QAM, Low Channel



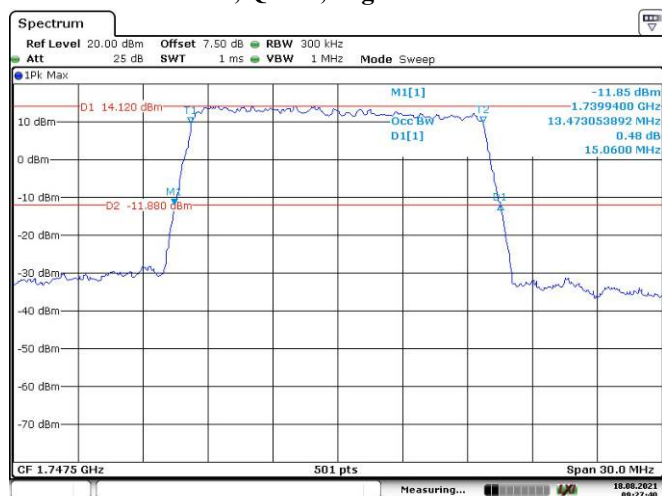
15M, QPSK, Middle Channel



15M, 16QAM, Middle Channel



15M, QPSK, High Channel



15M, 16QAM, High Channel

