TESTING LABORATORY
CERTIFICATE #4820.01

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

For

Shenzhen Neoway Technology Co., Ltd.

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FCC ID: PJ7-N58-LA

Report Type:	**Product Type:**
Original Report	LTE Module

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	LTE Module
EUT Model:	N58-LA
Operation modes:	GSM Voice, GPRS Data, FDD-LTE,TDD-LTE
Operation Frequency:	GSM 850: 824-849 MHz(TX); 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX); 1930-1990 MHz(RX) 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) LTE Band 38: 2570-2620 MHz(TX&RX) LTE Band 40 Lower: 2305-2315 MHz(TX&RX) LTE Band 40 Upper: 2350-2360 MHz(TX&RX) LTE Band 41: 2535-2655 MHz(TX&RX) LTE Band 66: 1710-1780 MHz(TX), 2110-2180 MHz(RX)
Modulation Type:	GMSK, QPSK
Rated Input Voltage:	DC 3.8V
Serial Number:	RDG210318001-RF -S1
EUT Received Date:	2021.03.19
EUT Received Status:	Good

Objective

This report is prepared on behalf of ***Shenzhen Neoway Technology Co., Ltd.*** 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	±5 %
RF output power, conducted	±0.61dB
Unwanted Emissions, radiated	30MHz ~ 1GHz:5.85 dB 1G~26.5GHz: 5.23 dB
Unwanted Emissions, conducted	±1.5 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%

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

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.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, and LTE band 2/4/5/7/38/40/41/66, the LTE FDD and TDD only support QPSK modulation. test was performed with channels as below table:

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSM/GPRS 850	0.25	824.2	836.6	848.8
GSM/GPRS 1900	0.25	1850.2	1880	1909.8
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
LTE Band 38	5	2572.5	2595	2617.5
	10	2575	2595	2615
	15	2577.5	2595	2612.5
	20	2580	2595	2610
LTE Band 40 Lower 2305-2315MHz	5	2307.5	2310	2312.5
	10	/	2310	/
LTE Band 40 Upper 2350-2360MHz	5	2352.5	2355	2357.5
	10	/	2355	/
LTE Band 41	5	2537.5	2595	2652.5
	10	2540	2595	2650
	15	2542.5	2595	2647.5
	20	2545	2595	2645
LTE Band 66	1.4	1710.7	1745	1779.3
	3	1711.5	1745	1778.5
	5	1712.5	1745	1777.5
	10	1715	1745	1775
	15	1717.5	1745	1772.5
	20	1720	1745	1770

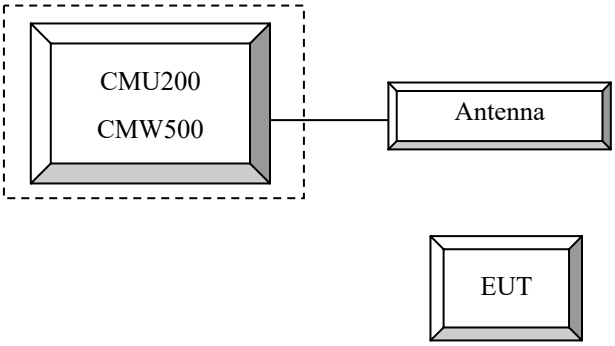
Equipment Modifications

No modification was made to the EUT.

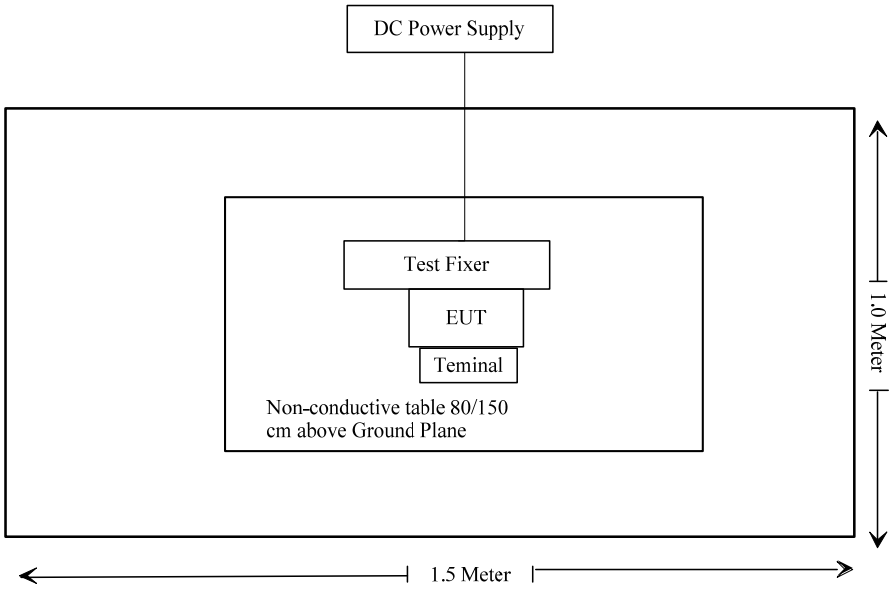
Support Equipment List and Details

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

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

Rules	Description of Test	Result
FCC§1.1310, §2.1091	Maximum Permissible Exposure (MPE)	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 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*($180/f^2$)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculation formula:

Prediction of power density at the distance of the applicable MPE limit
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Maximum Antenna Gain per MPE Calculation:

Mode	Frequency (MHz)	Conducted output power including Tune-up Tolerance		Evaluation Distance (cm)	MPE Limit (mW/cm^2)	Maximum Antenna Gain (dBi)
		(dBm)	(mW)			
GSM850	824-849	32	1584.89	20.00	0.55	2.41
PCS1900	1850-1910	29	794.33	20.00	1.00	8.01
LTE Band 2	1850-1910	24	251.19	20.00	1.00	13.01
LTE Band 4	1710-1755	24	251.19	20.00	1.00	13.01
LTE Band 5	824-849	24	251.19	20.00	0.55	10.41
LTE Band 7	2500-2570	24	251.19	20.00	1.00	13.01
LTE Band 38	2570-2620	24	251.19	20.00	1.00	13.01
LTE Band 40	2305-2315 & 2350-2360	24	251.19	20.00	1.00	13.01
LTE Band 41	2535-2655	24	251.19	20.00	1.00	13.01
LTE Band 66	1710-1780	24	251.19	20.00	1.00	13.01

Maximum Antenna Gain per ERP/EIRP Calculation:

Mode	Frequency (MHz)	Conducted output power including Tune-up Tolerance (dBm)	ERP/EIRP Limit (dBm)	Maximum Antenna Gain (dBi/dBd)
GSM850	824-849	32	38.45	6.45
PCS1900	1850-1910	29	33	4
LTE Band 2	1850-1910	24	33	9
LTE Band 4	1710-1755	24	30	6
LTE Band 5	824-849	24	38.45	14.45
LTE Band 7	2500-2570	24	33	9
LTE Band 38	2570-2620	24	33	9
LTE Band 40	2305-2315 & 2350-2360	24	24	0
LTE Band 41	2535-2655	24	33	9
LTE Band 66	1710-1780	24	30	6

Therefore:

The maximum Antenna gain:

Mode	Frequency (MHz)	Maximum Antenna Gain (dBi/dBd)
GSM850/ LTE Band 5	824-849	2.41
PCS1900/ LTE Band 2	1850-1910	4
LTE Band 4/66	1710-1780	6
LTE Band 7	2500-2570	9
LTE Band 38	2570-2620	9
LTE Band 40	2305-2315 & 2350-2360	0
LTE Band 41	2535-2655	9

Note: Antenna gain listed is dBd for operation below 1 GHz and dBi for operation above 1 GHz.

This device is to be used in mobile or fixed applications only. Antenna gain including cable loss must not exceed above value for the purpose of satisfying the requirements of 2.1043 and 2.1091. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operated in conjunction with any antenna or transmitter not described under this FCC ID. The final product operating with this transmitter must include operating instructions and antenna installation instructions, for end-users and installers to satisfy RF exposure compliance requirements. Compliance of this device in all final product configurations is the responsibility of the Grantee. Installation of this device into specific final products may require the submission of a Class II permissive change application containing data pertinent to RF Exposure, spurious emissions, ERP/EIRP, and host/module authentication, or new application if appropriate. Installation of this device into specific final products may require the submission of a Class II permissive change application containing data pertinent to RF Exposure, spurious emissions, ERP/EIRP, and host/module authentication, or new application if appropriate.

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

LTE (FDD):

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

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

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

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

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

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

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

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

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

LTE(TDD):

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

Calculated Duty Cycle = Extended cyclic prefix in uplink x (T_s) x # of S + # of U

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:
Calculated Duty Cycle = 5120 x [1/(15000 x 2048)] x 2 + 6 ms = 63.33%
where
T_s = 1/(15000 x 2048) seconds

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2020-07-07	2021-07-07
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010012	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	2020-09-12	2021-09-12
R&S	Wideband Radio Communication Tester	CMW500	147473	2020-09-23	2021-09-22

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

Test Data

Environmental Conditions

Temperature:	23.6~26.7 °C
Relative Humidity:	52~67 %
ATM Pressure:	100.8~101.9kPa
Tester:	Theshy Xie
Test Date:	2021.04.03~2021.04.20

Test Result: Compliance

GSM/GPRS

Conducted Output Power:

Band	Channel No.	Conducted Peak Output Power (dBm)				
		GSM	GPRS 1 uplink slot	GPRS 2 uplink slot	GPRS 3 uplink slot	GPRS 4 uplink slot
Cellular	128	31.76	31.52	29.39	27.10	25.06
	190	31.83	31.61	29.45	27.28	25.10
	251	31.87	31.65	29.49	27.30	25.26
PCS	512	27.84	27.62	25.63	23.29	20.49
	661	28.24	28.04	25.97	23.94	20.88
	810	28.43	28.23	26.27	24.24	22.15

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	22.33	23.01	22.36
		RB1#3	22.88	22.84	21.83
		RB1#5	22.36	22.98	22.20
		RB3#0	22.78	22.71	21.79
		RB3#3	21.91	22.16	21.69
		RB6#0	22.05	21.95	21.01
3MHz	QPSK	RB1#0	22.87	23.41	22.68
		RB1#8	22.83	22.86	21.88
		RB1#14	22.92	23.24	23.31
		RB6#0	22.80	22.59	21.92
		RB6#9	22.15	22.60	21.11
		RB15#0	22.26	21.89	21.28
5MHz	QPSK	RB1#0	22.09	22.97	22.10
		RB1#13	23.05	23.06	22.03
		RB1#24	22.81	22.75	22.53
		RB15#0	22.97	22.72	21.93
		RB15#10	22.18	22.32	21.58
		RB25#0	22.74	22.22	21.54
10MHz	QPSK	RB1#0	22.98	23.18	23.32
		RB1#25	23.15	23.22	22.19
		RB1#49	23.13	22.96	23.02
		RB25#0	22.77	23.11	22.02
		RB25#25	23.27	22.83	23.05
		RB50#0	22.80	22.86	21.86
15MHz	QPSK	RB1#0	22.57	23.13	22.68
		RB1#38	23.14	23.32	22.15
		RB1#74	22.75	22.86	22.80
		RB36#0	22.84	22.57	22.08
		RB36#39	22.87	22.83	21.61
		RB75#0	22.87	22.54	21.83
20MHz	QPSK	RB1#0	22.21	23.29	22.90
		RB1#50	23,02	23.79	21.98
		RB1#99	22.67	23.05	22.84
		RB50#0	22.76	22.87	22.01
		RB50#50	22.40	23.17	22.26
		RB100#0	23.04	24.01	21.80

PAR:

Test Modulation		Channel Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit (dB)
QPSK	1 RB	20 MHz	8.26	3,16	4.17	13 .00
	100 RB		5.36	4,41	4.49	13.00

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	23.58	23.35	23.19
		RB1#3	23.10	23.08	21.82
		RB1#5	23.70	23.39	23.18
		RB3#0	23.14	23.09	23.93
		RB3#3	22.71	23.46	22.67
		RB6#0	23.14	23.16	22.02
3MHz	QPSK	RB1#0	23.26	23.54	22.96
		RB1#8	23.06	23.03	21.95
		RB1#14	23.52	23.67	23.34
		RB6#0	23.15	22.97	21.92
		RB6#9	22,44	23.78	22.33
		RB15#0	23.14	23.16	22.05
5MHz	QPSK	RB1#0	23.40	23.02	22.44
		RB1#13	23.16	23.11	21.97
		RB1#24	22.62	23.01	23.35
		RB15#0	23.31	23.10	21.94
		RB15#10	22.40	23.07	22.56
		RB25#0	23.19	23.18	22.05
10MHz	QPSK	RB1#0	23.41	23.26	23.04
		RB1#25	23.40	22.61	22.13
		RB1#49	23.28	23.30	23.17
		RB25#0	23.13	23.01	22.12
		RB25#25	23.57	23.34	23.29
		RB50#0	23.08	23.13	22.15
15MHz	QPSK	RB1#0	23.50	23.19	23.60
		RB1#38	23.73	23.94	22.09
		RB1#74	23.17	23.17	22.38
		RB36#0	22.83	22.86	22.10
		RB36#39	22.89	23.13	22.96
		RB75#0	23.80	23.23	22.06
20MHz	QPSK	RB1#0	23.50	23.54	24.31
		RB1#50	23.12	25.06	21.85
		RB1#99	22.43	23.38	22.56
		RB50#0	23.26	23.25	21.95
		RB50#50	24.03	23.53	23.07
		RB100#0	24.15	23.73	22.29

PAR:

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.49	5.33	5.28	13
	100 RB		4.96	5.56	5.28	13

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	23.06	22.59	23.04
		RB1#3	22.78	22.99	22.85
		RB1#5	22.57	23.46	23.08
		RB3#0	23.23	23.30	23.23
		RB3#3	23.04	23.46	23.19
		RB6#0	22.70	23.55	23.49
3MHz	QPSK	RB1#0	23.21	23.45	22.92
		RB1#8	22.70	23.47	23.38
		RB1#14	23.10	23.47	23.24
		RB6#0	22.96	22.68	22.66
		RB6#9	22.64	23.48	22.97
		RB15#0	23.55	23.38	22.75
5MHz	QPSK	RB1#0	23.36	23.46	22.74
		RB1#13	23.54	23.02	23.53
		RB1#24	22.58	22.56	22.94
		RB15#0	22.91	22.76	23.56
		RB15#10	23.51	22.95	23.06
		RB25#0	23.37	23.06	22.56
10MHz	QPSK	RB1#0	23.71	22.69	22.72
		RB1#25	23.35	22.99	22.93
		RB1#49	23.44	23.46	22.75
		RB25#0	23.14	22.85	22.60
		RB25#25	23.16	23.52	23.09
		RB50#0	23.39	22.69	23.14

PAR:

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	3.57	5.8	4.70	13
	50 RB		5.22	5.3	4.87	13

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	23.02	22.96	23.24
		RB1#13	22.80	22.86	23.37
		RB1#24	23.19	22.64	23.17
		RB15#0	23.22	23.50	23.56
		RB15#10	23.52	23.10	22.76
		RB25#0	22.87	23.18	23.53
10 MHz	QPSK	RB1#0	23.04	22.61	23.41
		RB1#25	22.87	23.10	23.06
		RB1#49	22.81	23.16	23.55
		RB25#0	22.84	22.77	23.26
		RB25#25	22.93	23.05	23.51
		RB50#0	23.02	23.03	23.25
15 MHz	QPSK	RB1#0	22.68	23.21	22.61
		RB1#38	22.66	23.00	23.33
		RB1#74	23.10	22.82	23.31
		RB36#0	22.86	23.37	23.44
		RB36#39	23.04	22.77	22.86
		RB75#0	23.31	23.23	23.49
20MHz	QPSK	RB1#0	22.91	22.69	22.83
		RB1#50	23.06	23.44	23.41
		RB1#99	23.26	23.13	23.11
		RB50#0	23.30	23.52	23.02
		RB50#50	23.15	23.33	22.96
		RB100#0	22.89	22.83	23.40

PAR:

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	3.51	4.41	4.90	13
	100 RB		4.29	4.7	4.81	13

LTE Band 38

Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	RB1#0	22.48	22.92	22.76
		RB1#13	22.58	22.78	23.18
		RB1#24	22.81	22.88	23.39
		RB15#0	22.90	22.83	23.39
		RB15#10	23.46	23.22	22.97
		RB25#0	23.43	22.74	23.34
10 MHz	QPSK	RB1#0	23.44	23.50	23.21
		RB1#25	22.72	22.69	22.91
		RB1#49	22.83	22.58	22.92
		RB25#0	23.07	23.01	22.74
		RB25#25	22.90	23.43	23.55
		RB50#0	23.50	23.29	23.50
15 MHz	QPSK	RB1#0	23.31	23.32	23.48
		RB1#38	23.31	23.31	22.92
		RB1#74	23.16	23.18	22.66
		RB36#0	22.69	22.68	23.31
		RB36#39	22.99	22.69	23.23
		RB75#0	23.29	22.65	22.65
20MHz	QPSK	RB1#0	23.37	22.60	23.23
		RB1#50	23.21	23.34	22.71
		RB1#99	23.56	22.59	23.25
		RB50#0	22.57	23.35	23.27
		RB50#50	23.04	23.42	23.22
		RB100#0	22.78	23.14	22.76

PAR:

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	8.49	8.58	8.52	13
	100 RB		8.55	8.52	8.58	13

LTE Band 40 Lower

Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	RB1#0	23.52	23.30	22.58
		RB1#13	22.60	23.06	23.03
		RB1#24	23.40	23.27	23.51
		RB15#0	22.92	23.46	23.46
		RB15#10	23.51	22.75	23.39
		RB25#0	23.16	22.72	23.07
10 MHz	QPSK	RB1#0	/	22.94	/
		RB1#25	/	23.36	/
		RB1#49	/	23.49	/
		RB25#0	/	22.69	/
		RB25#25	/	23.38	/
		RB50#0	/	23.25	/

Note: the device is a mobile station. For 5MHz mode, the channel power is equal to the test result in dBm/5MHz. For 10MHz mode, the PSD as below:

Channel Bandwidth	Modulation	Resource Block & RB offset	Middle Channel (dBm/5MHz)
10MHz	QPSK	RB1#0	22.78
		RB1#25	23.12
		RB1#49	23.24
		RB25#0	22.44
		RB25#25	23.21
		RB50#0	19.98

Duty Cycle

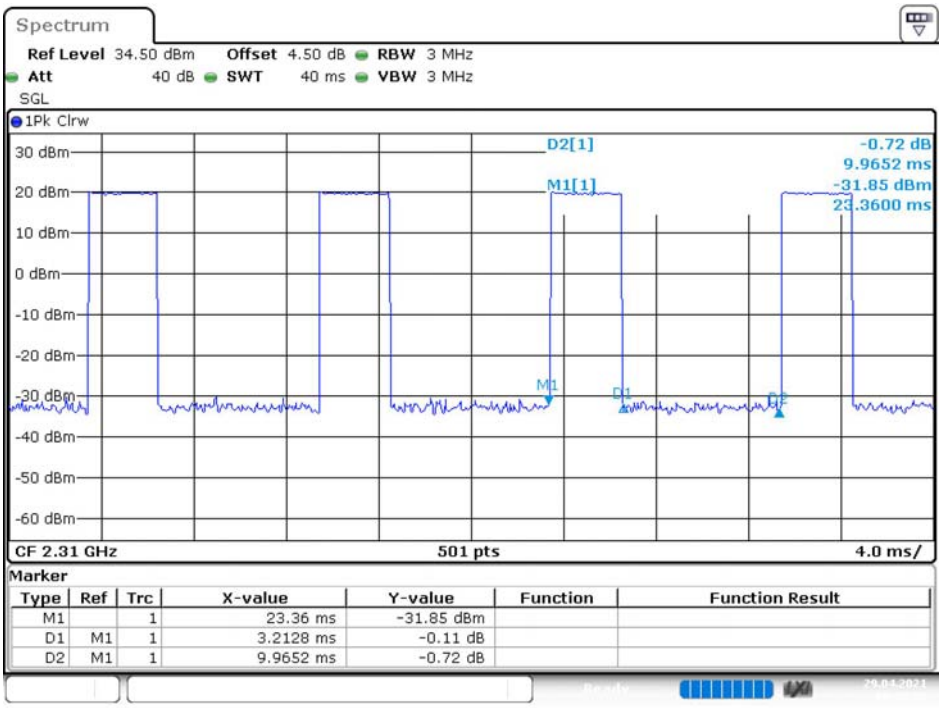
Test Modulation	Test Bandwidth	Ton (ms)	Total (ms)	Duty Cycle (%)	Limit (%)
QPSK	5M	3.21	9.97	32.20	38
	10M	3.20	10.03	31.90	

Note: EUT setup is as following:

Uplink Downlink configuration	Subframe number									
	0	1	2	3	4	5	6	7	8	9
3	D	S	U	U	U	D	D	D	D	D

Duty Cycle:

QPSK, 5MHz



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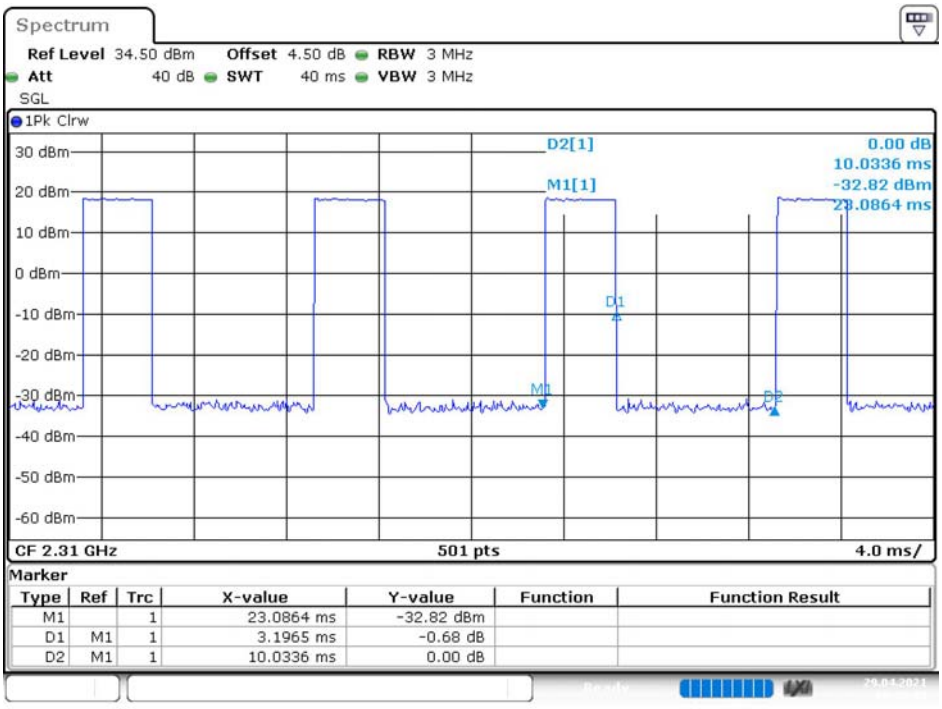
QPSK, 10MHz



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LTE Band 40 Upper

Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	RB1#0	22.06	22.60	23.39
		RB1#13	23.29	22.80	22.78
		RB1#24	23.04	23.55	22.92
		RB15#0	23.10	22.79	22.59
		RB15#10	22.94	22.73	22.98
		RB25#0	22.64	23.04	23.00
10 MHz	QPSK	RB1#0	/	22.60	/
		RB1#25	/	23.22	/
		RB1#49	/	23.55	/
		RB25#0	/	22.68	/
		RB25#25	/	23.41	/
		RB50#0	/	23.04	/

Note: the device is a mobile station. For 5MHz mode, the channel power is equal to the test result in dBm/5MHz. For 10MHz mode, the PSD as below:

Channel Bandwidth	Modulation	Resource Block & RB offset	Middle Channel (dBm/5MHz)
10MHz	QPSK	RB1#0	22.32
		RB1#25	22.10
		RB1#49	23.25
		RB25#0	22.32
		RB25#25	23.23
		RB50#0	19.98

Duty Cycle

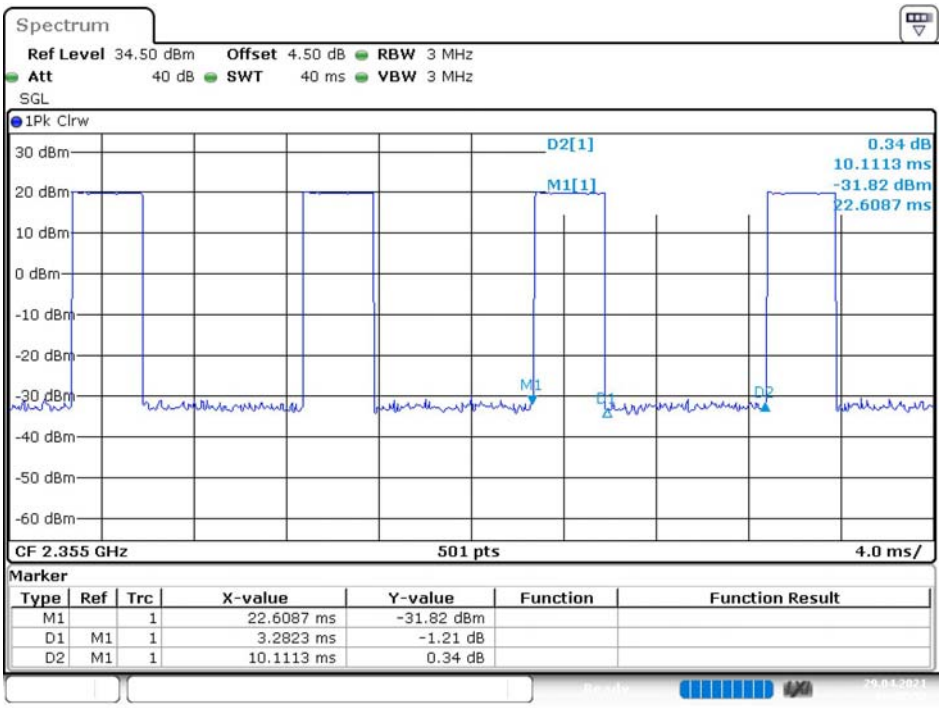
Test Modulation	Test Bandwidth	Ton (ms)	Total (ms)	Duty Cycle (%)	Limit (%)
QPSK	5M	3.28	10.11	32.44	38
	10M	3.21	9.98	32.16	

Note: EUT setup is as following:

Uplink Downlink configuration	Subframe number									
	0	1	2	3	4	5	6	7	8	9
3	D	S	U	U	U	D	D	D	D	D

Duty Cycle:

QPSK, 5MHz



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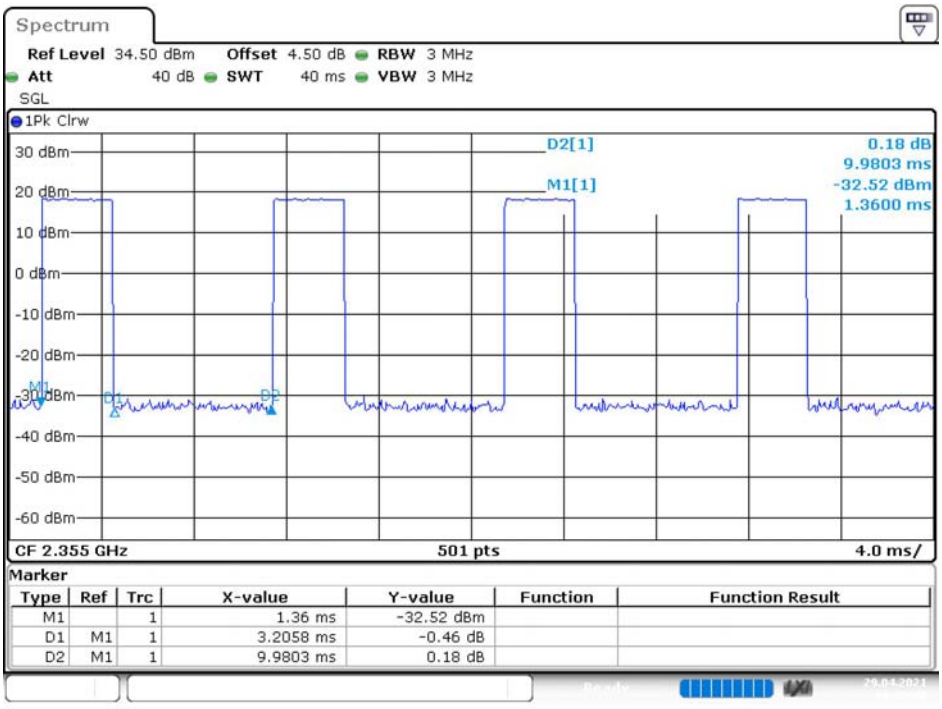
QPSK, 10MHz



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LTE Band 41

Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5 MHz	QPSK	RB1#0	21.84	23.28	22.84
		RB1#13	23.05	22.73	22.58
		RB1#24	22.93	22.71	22.99
		RB15#0	22.71	23.27	23.09
		RB15#10	22.70	23.01	23.43
		RB25#0	22.97	23.23	23.40
10 MHz	QPSK	RB1#0	23.49	22.57	22.75
		RB1#25	22.84	23.21	23.55
		RB1#49	23.18	23.33	23.53
		RB25#0	23.28	23.07	23.23
		RB25#25	23.50	22.72	23.35
		RB50#0	22.83	22.87	23.45
15 MHz	QPSK	RB1#0	23.54	22.75	22.98
		RB1#38	23.40	23.39	22.82
		RB1#74	23.31	22.80	23.50
		RB36#0	23.09	23.07	22.71
		RB36#39	23.42	22.87	22.92
		RB75#0	23.34	23.33	22.97
20MHz	QPSK	RB1#0	23.48	22.93	23.32
		RB1#50	23.35	23.11	23.54
		RB1#99	22.73	22.72	23.18
		RB50#0	22.90	23.39	22.66
		RB50#50	22.73	23.42	22.59
		RB100#0	22.87	23.02	22.87

PAR:

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	8.64	7.86	6.29	13
	100 RB		8.93	7.83	8.69	13

LTE Band 66

Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	23.55	22.58	23.41
		RB1#3	23.10	22.57	22.60
		RB1#5	22.94	22.85	23.22
		RB3#0	23.48	23.10	23.14
		RB3#3	23.10	22.99	22.99
		RB6#0	23.21	22.88	23.22
3MHz	QPSK	RB1#0	23.27	22.88	22.88
		RB1#8	22.76	22.92	23.42
		RB1#14	23.45	22.85	23.36
		RB6#0	23.07	22.70	22.82
		RB6#9	22.81	22.78	22.81
		RB15#0	23.16	22.93	22.83
5MHz	QPSK	RB1#0	23.73	23.55	22.92
		RB1#13	22.61	23.07	23.00
		RB1#24	23.30	23.30	23.46
		RB15#0	23.01	23.33	23.54
		RB15#10	23.11	23.53	23.01
		RB25#0	23.42	23.01	23.02
10MHz	QPSK	RB1#0	23.60	22.93	23.04
		RB1#25	22.72	23.10	22.97
		RB1#49	23.03	22.86	23.33
		RB25#0	22.76	23.19	22.74
		RB25#25	23.04	22.80	22.74
		RB50#0	23.50	23.01	23.51
15MHz	QPSK	RB1#0	24.02	23.11	23.17
		RB1#38	23.35	22.66	22.94
		RB1#74	23.53	23.54	23.41
		RB36#0	23.26	23.03	23.27
		RB36#39	22.88	22.94	22.96
		RB75#0	22.58	23.42	23.00
20MHz	QPSK	RB1#0	23.16	23.48	22.70
		RB1#50	23.23	23.19	23.21
		RB1#99	22.73	22.99	22.82
		RB50#0	22.64	23.50	23.56
		RB50#50	22.90	23.37	23.19
		RB100#0	22.77	23.27	22.66

PAR:

Test Modulation		Channel Bandwidth	Low Channel (dB)	Middle Channel (dB)	High Channel (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.70	5.19	5.22	13 .00
	100 RB		4.84	5.54	5.13	13.00

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

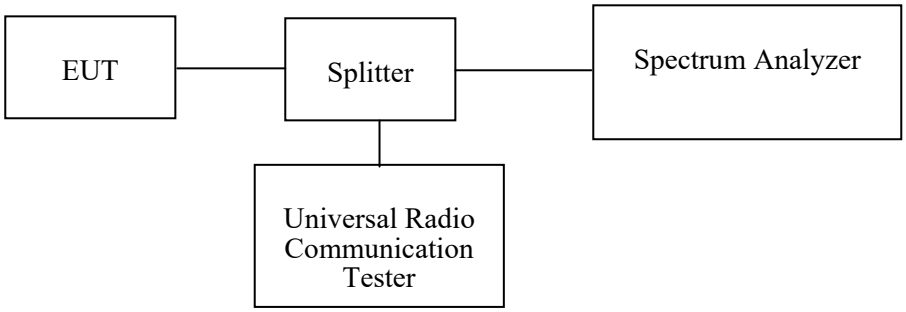
Applicable Standard

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	2021-01-09	2022-01-09
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010012	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	N/A
Unknown	Attenuator	UNAT-3+	15529	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:	23.6~26.2 °C
Relative Humidity:	54~67 %
ATM Pressure:	100.8~101.9kPa
Tester:	Theshy Xie
Test Date:	2021-04.03~2021.04.13

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

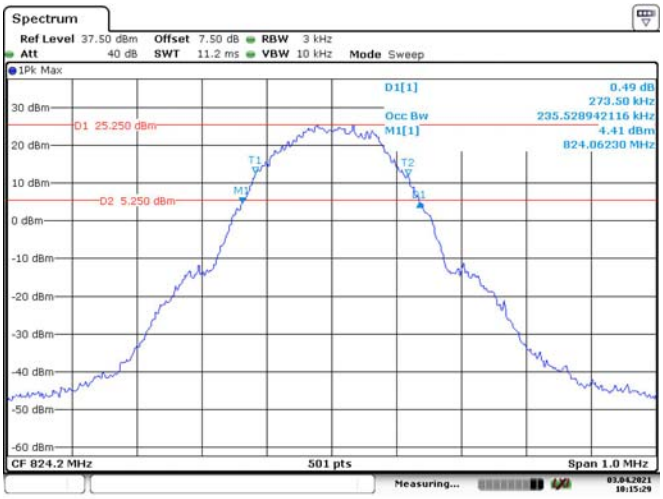
GSM:

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	GMSK	0.236	0.238	0.234	0.274	0.275	0.268
PCS	GMSK	0.236	0.236	0.236	0.272	0.275	0.275

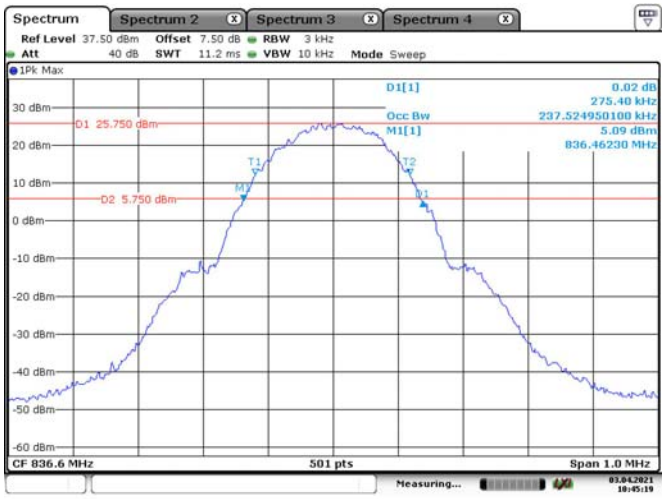
LTE Bands:

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	1.102	1.096	1.482	1.512	1.482
	3 MHz	QPSK	2.671	2.683	2.683	3.048	3.072	3.096
	5 MHz	QPSK	4.511	4.491	4.491	5.100	5.140	5.080
	10 MHz	QPSK	8.942	8.942	8.901	9.56	9.56	9.48
	15 MHz	QPSK	13.593	13.533	13.473	16.680	17.100	16.500
	20 MHz	QPSK	17.964	17.96	17.88	20.04	20.72	20.64
LTE Band 4	1.4 MHz	QPSK	1.096	1.102	1.102	1.458	1.482	1.470
	3 MHz	QPSK	2.695	2.671	2.683	3.036	3.06	3.108
	5 MHz	QPSK	4.511	4.491	4.471	5.080	5.120	5.100
	10 MHz	QPSK	8.901	8.901	8.901	9.6	9.56	9.56
	15 MHz	QPSK	13.533	13.533	13.593	16.320	16.980	16.860
	20 MHz	QPSK	17.884	18.04	18.04	20.64	21.04	21.28
LTE Band 5	1.4 MHz	QPSK	1.102	1.102	1.102	1.446	1.458	1.494
	3 MHz	QPSK	2.683	2.671	2.683	3.036	3.06	3.108
	5 MHz	QPSK	4.511	4.491	4.491	5.100	5.120	5.100
	10 MHz	QPSK	8.901	8.901	8.901	9.6	9.52	9.56
LTE Band 7	5 MHz	QPSK	4.511	4.511	4.471	5.160	5.140	5.120
	10 MHz	QPSK	8.901	8.901	8.901	9.64	9.56	9.52
	15 MHz	QPSK	13.593	13.533	13.533	16.560	16.440	16.680
	20 MHz	QPSK	17.964	17.884	17.964	21.12	20.72	20.88
LTE Band 38	5 MHz	QPSK	4.471	4.511	4.471	5.060	4.980	5.020
	10 MHz	QPSK	8.901	8.942	8.942	9.52	9.56	9.6
	15 MHz	QPSK	13.593	13.533	13.533	16.740	16.620	17.280
	20 MHz	QPSK	17.964	17.964	18.044	21.04	20.4	20.96
LTE Band 40 Lower	5 MHz	QPSK	4.501	4.515	4.515	5.195	5.557	5.195
	10 MHz	QPSK	/	8.982	/	/	9.749	/
LTE Band 40 Upper	5 MHz	QPSK	4.511	4.531	4.511	5.220	5.467	5.319
	10 MHz	QPSK	/	8.942	/	/	9.740	/
LTE Band 41	5 MHz	QPSK	4.491	4.491	4.471	5.040	5.020	5.060
	10 MHz	QPSK	8.901	8.942	8.942	9.56	9.56	9.6
	15 MHz	QPSK	13.593	13.593	13.533	16.560	16.860	16.800
	20 MHz	QPSK	17.964	18.044	17.964	20.88	20.88	20.96
LTE Band 66	1.4 MHz	QPSK	1.096	1.102	1.102	1.470	1.452	1.464
	3 MHz	QPSK	2.695	2.683	2.683	3.084	3.084	3.084
	5 MHz	QPSK	4.491	4.491	4.491	5.080	5.100	5.040
	10 MHz	QPSK	8.901	8.901	8.942	9.6	9.52	9.56
	15 MHz	QPSK	13.533	13.533	13.593	16.440	16.740	16.920
	20 MHz	QPSK	17.88	17.96	18.04	20.48	20.96	21.36

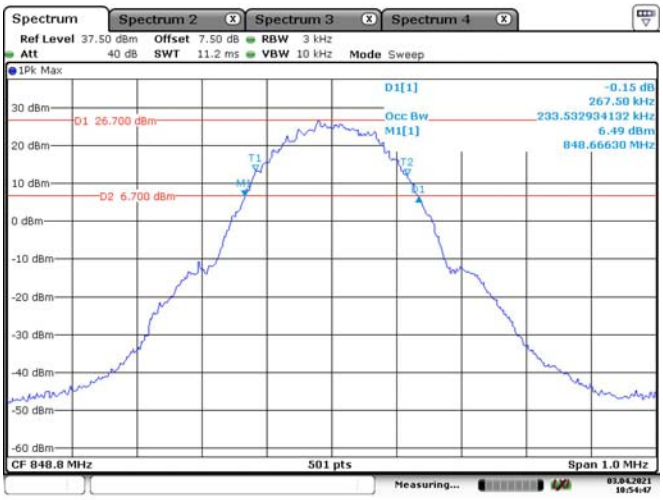
Cellular 850 Band, GSM, Low Channel



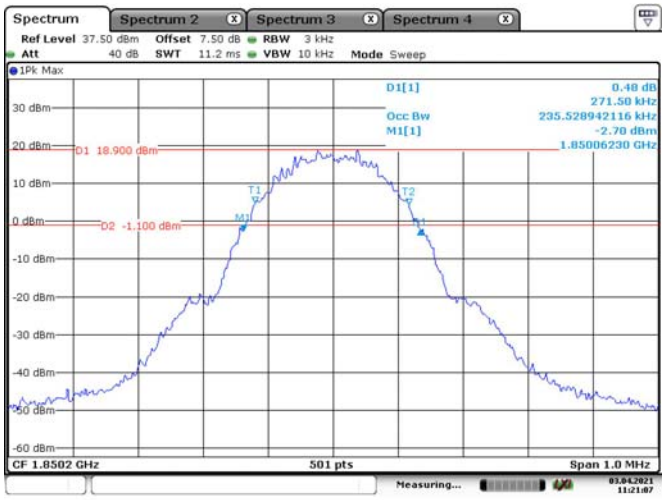
Cellular 850 Band, GSM, Middle Channel



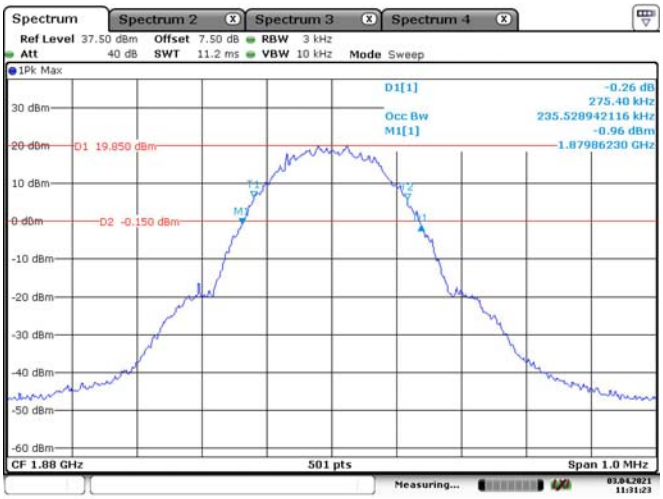
Cellular 850 Band, GMSK, High Channel



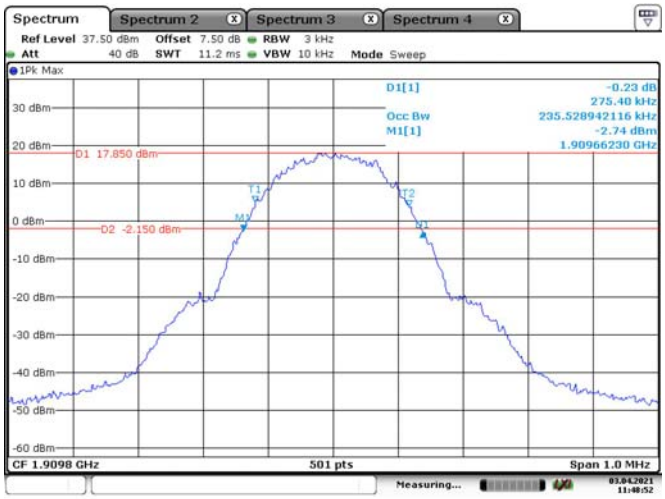
PCS 1900 Band, GSM, Low Channel



PCS 1900 Band, GSM, Middle Channel

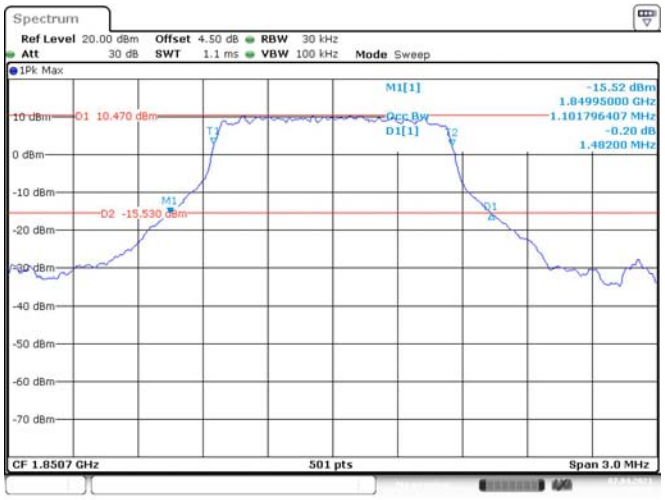


PCS 1900 Band, GSM, High Channel

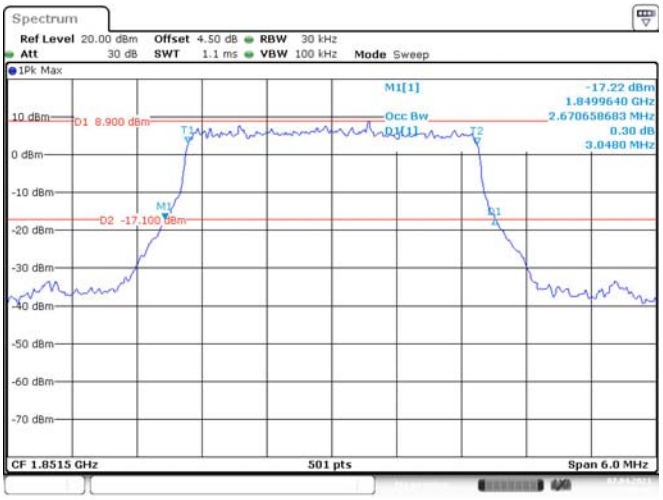


LTE Band 2

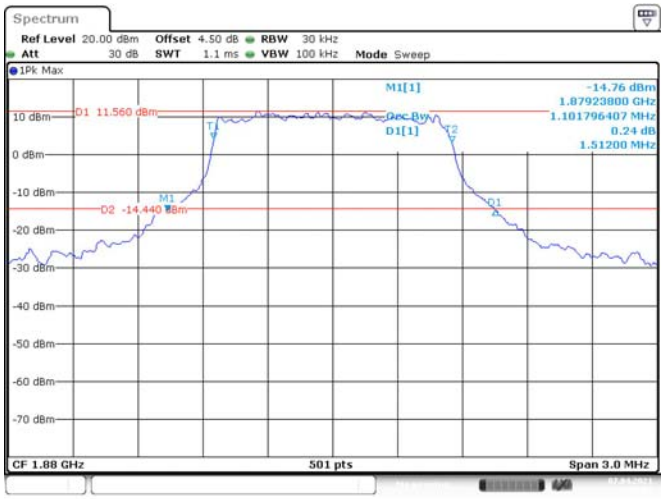
1.4M, QPSK, Low Channel



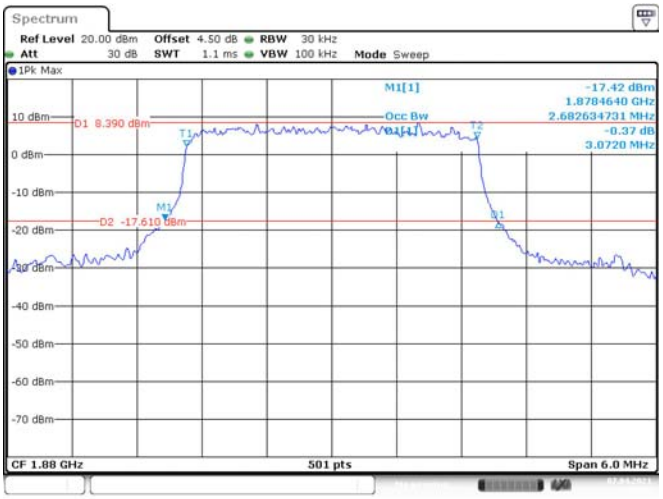
3M, QPSK, Low Channel



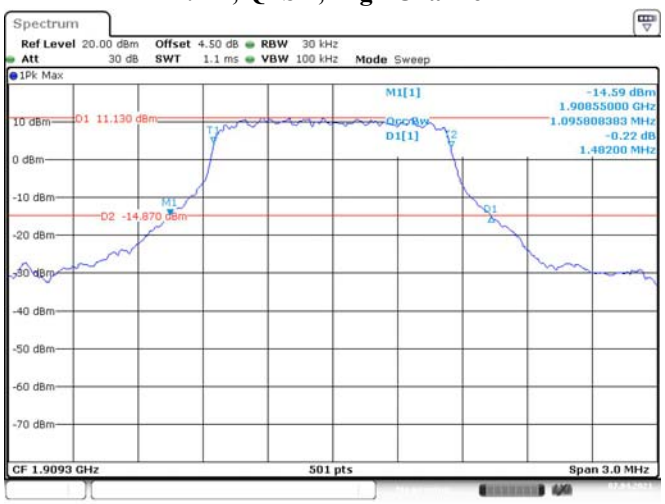
1.4M, QPSK, Middle Channel



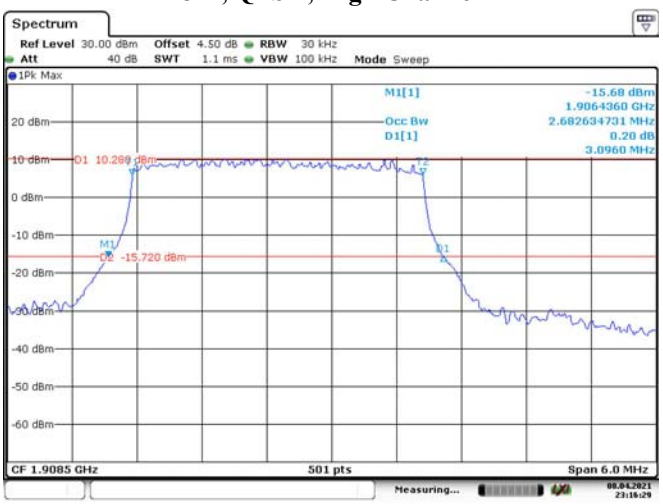
3M, QPSK, Middle Channel



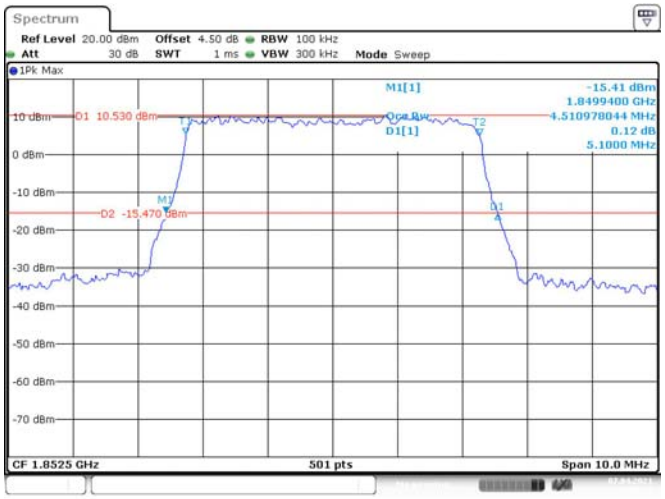
1.4M, QPSK, High Channel



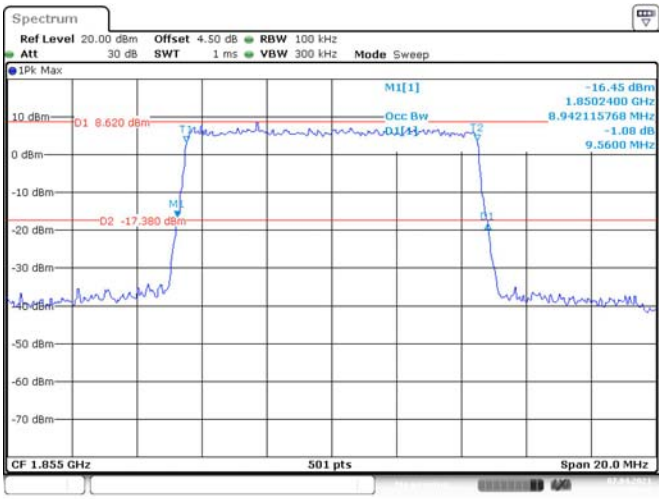
3M, QPSK, High Channel



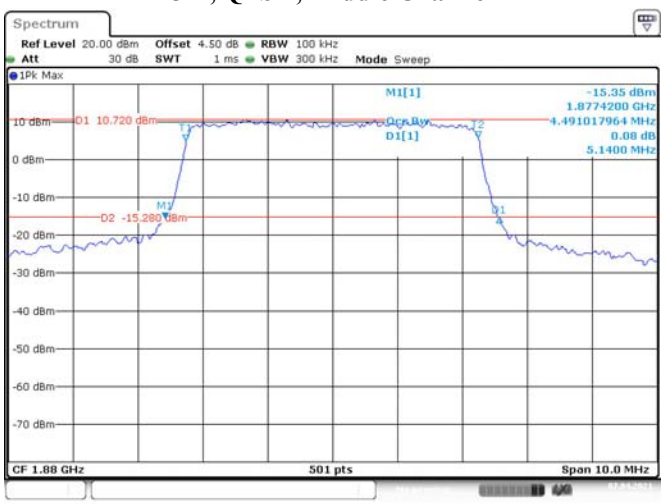
5M, QPSK, Low Channel



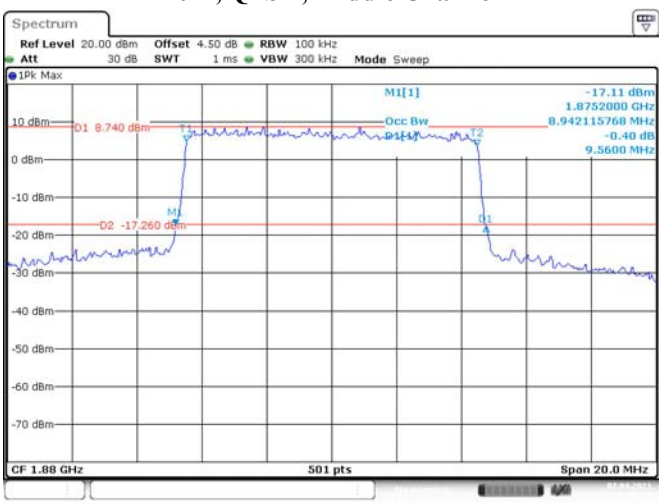
10M, QPSK, Low Channel



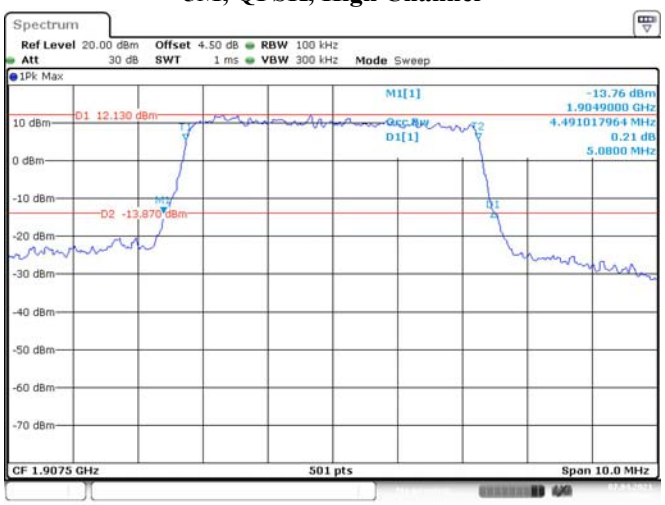
5M, QPSK, Middle Channel



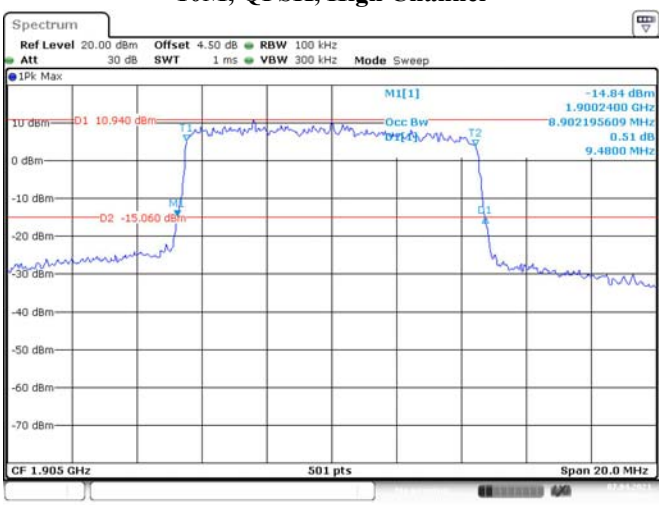
10M, QPSK, Middle Channel



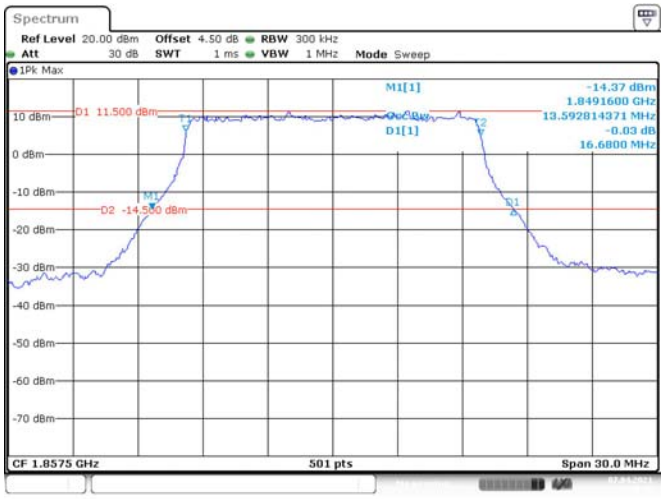
5M, QPSK, High Channel



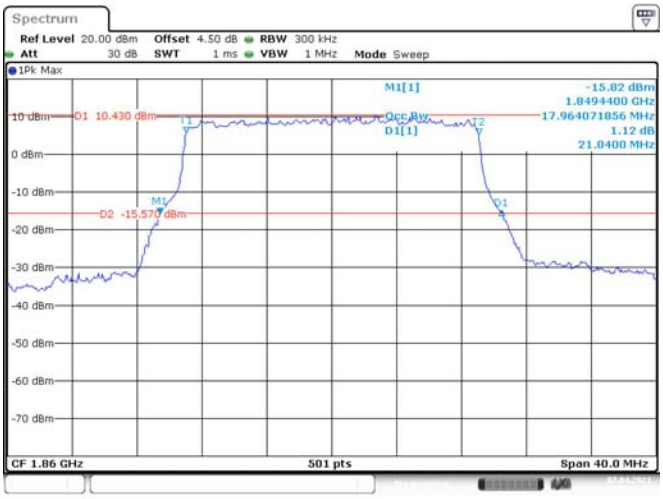
10M, QPSK, High Channel



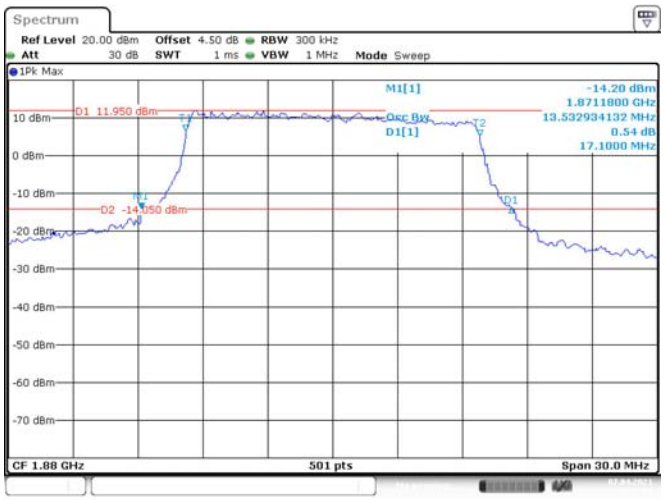
15M, QPSK, Low Channel



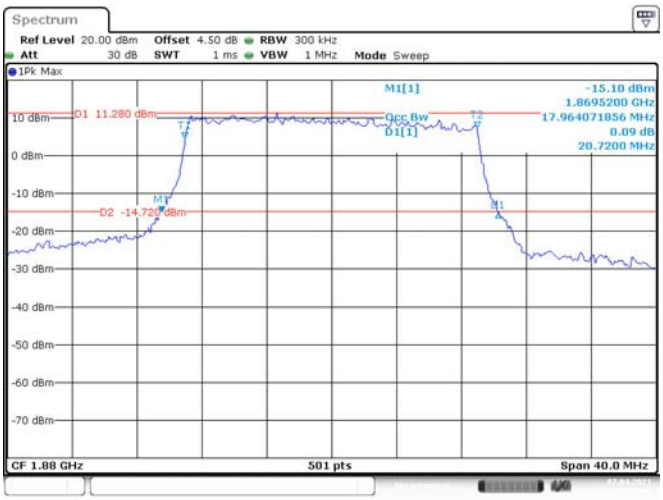
20M, QPSK, Low Channel



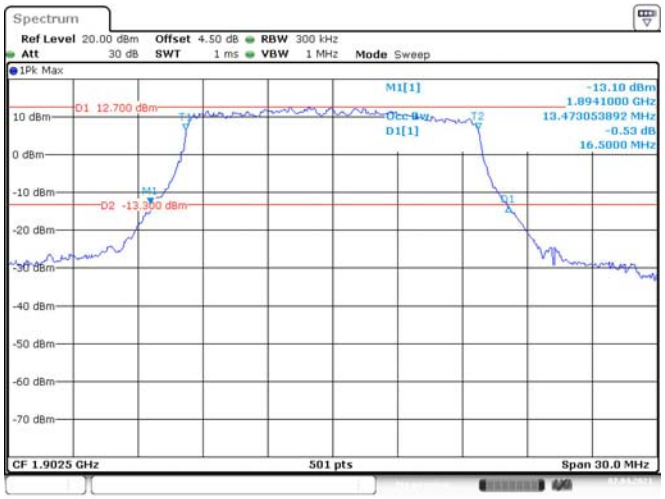
15M, QPSK, Middle Channel



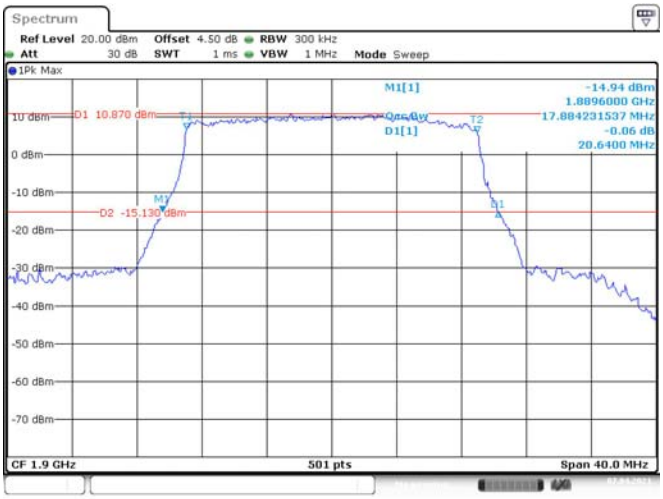
20M, QPSK, Middle Channel



15M, QPSK, High Channel

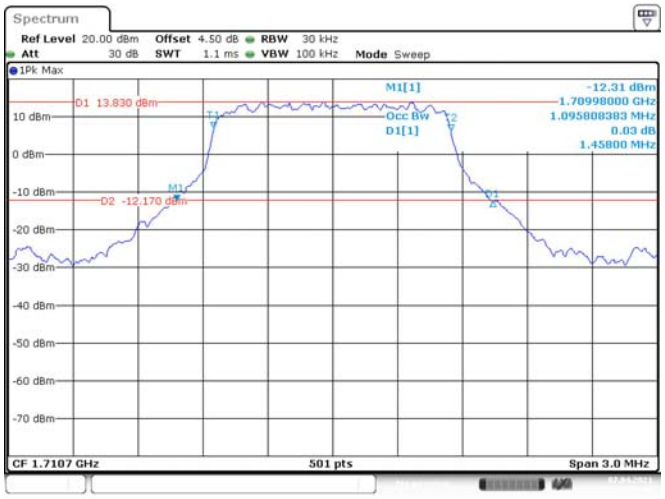


20M, QPSK, High Channel

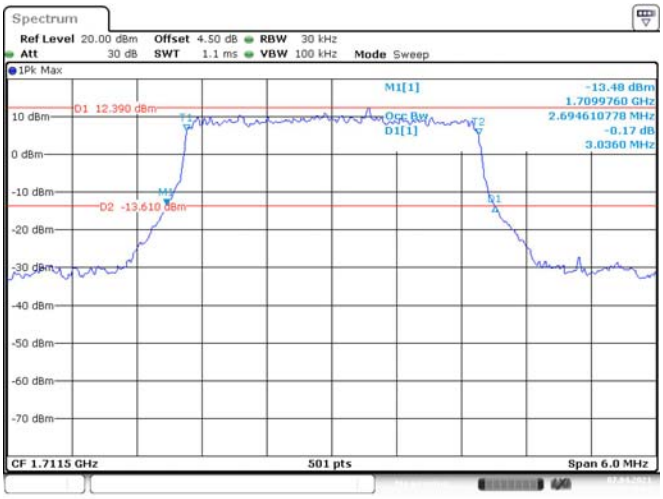


LTE Band 4:

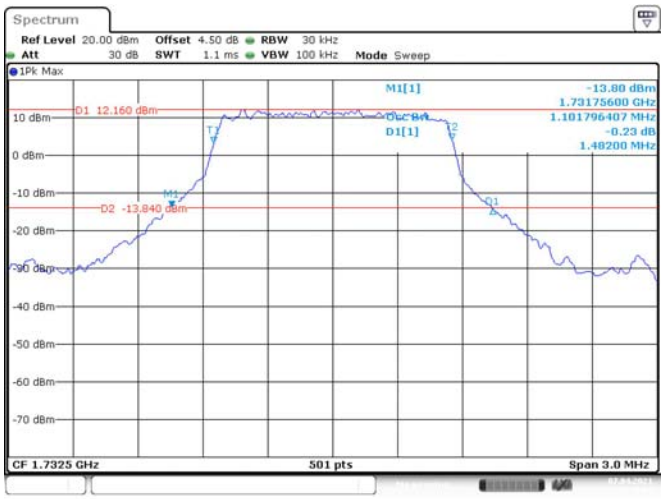
1.4M, QPSK, Low Channel



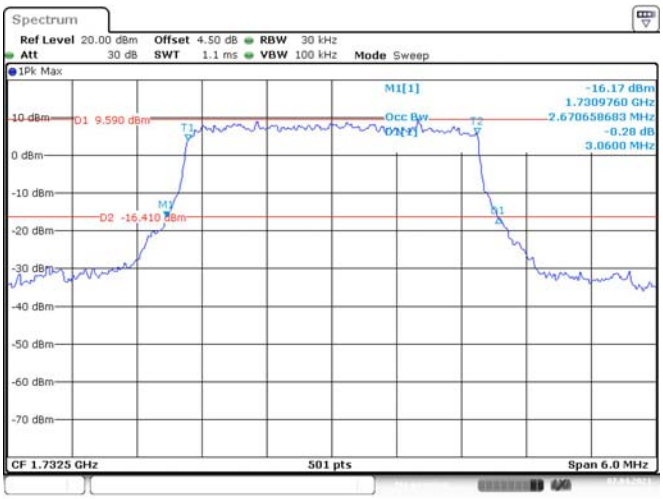
3M, QPSK, Low Channel



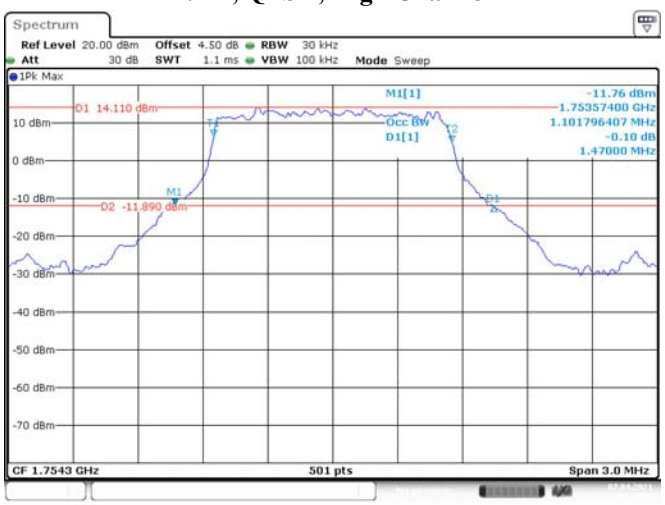
1.4M, QPSK, Middle Channel



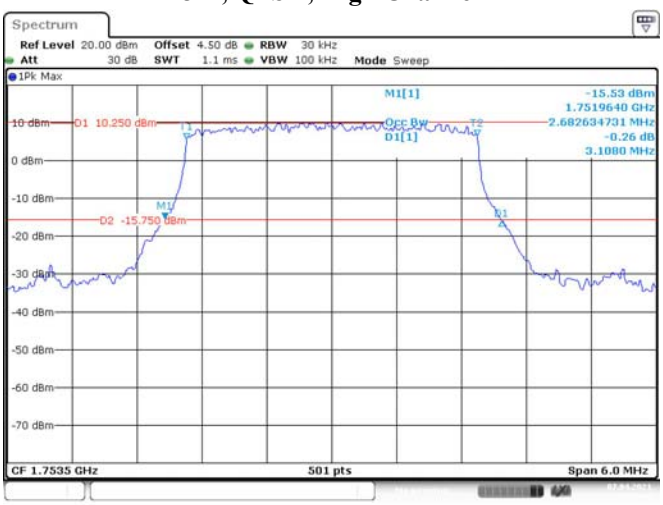
3M, QPSK, Middle Channel



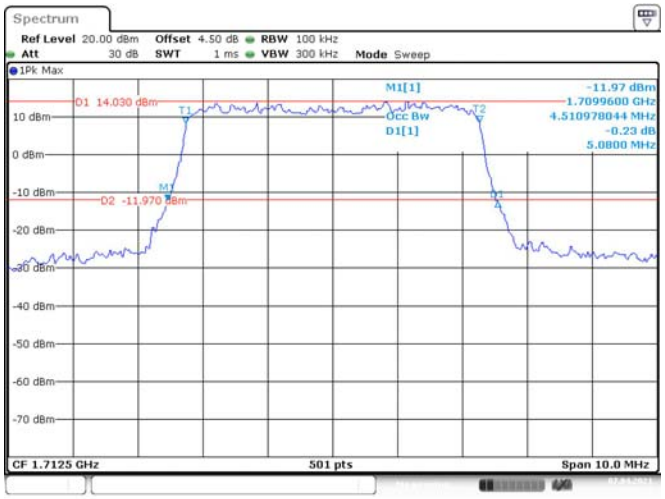
1.4M, QPSK, High Channel



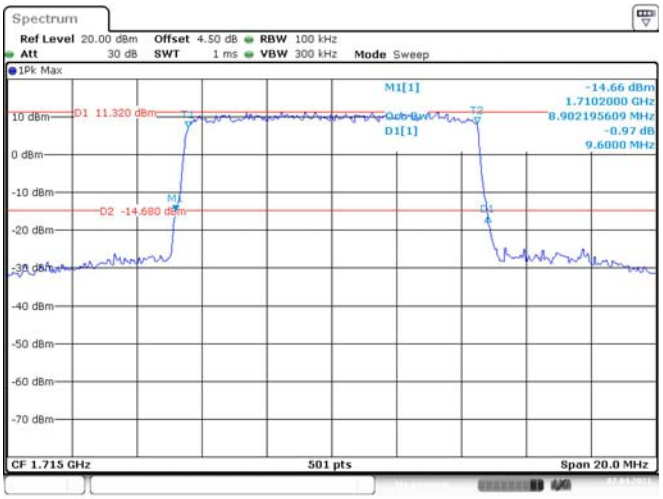
3M, QPSK, High Channel



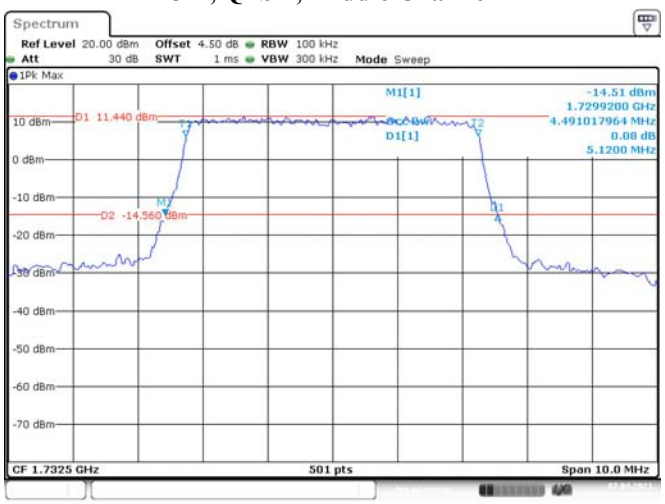
5M, QPSK, Low Channel



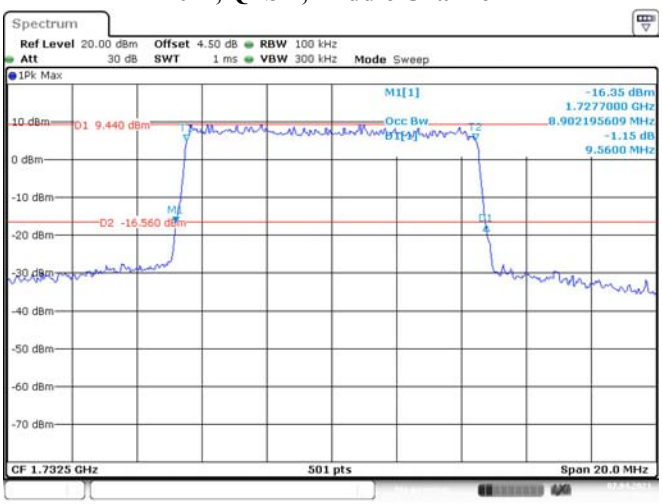
10M, QPSK, Low Channel



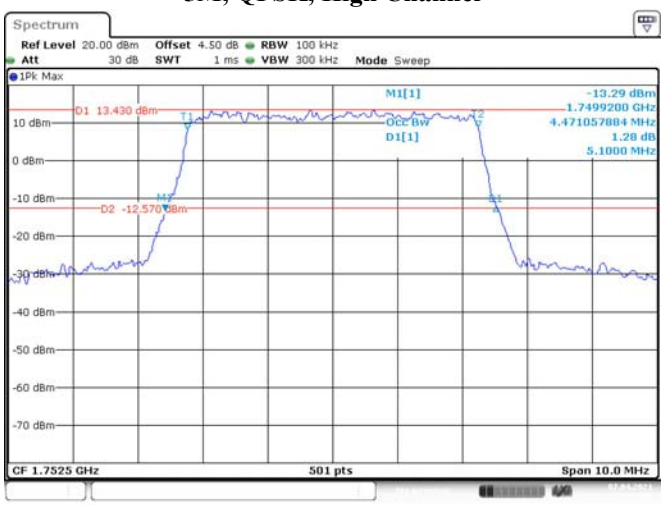
5M, QPSK, Middle Channel



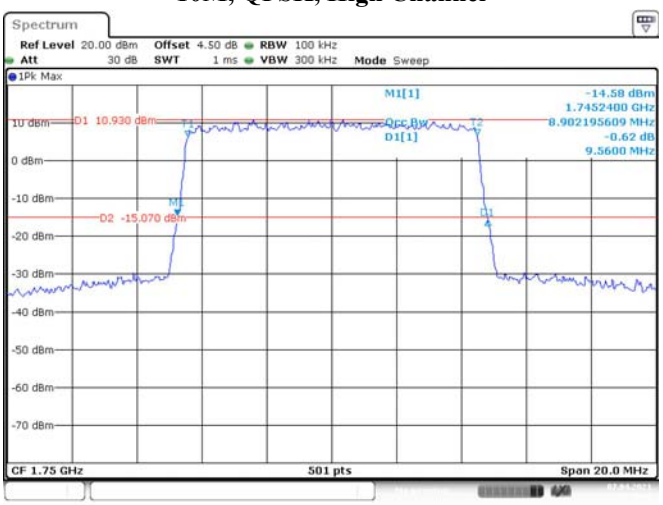
10M, QPSK, Middle Channel



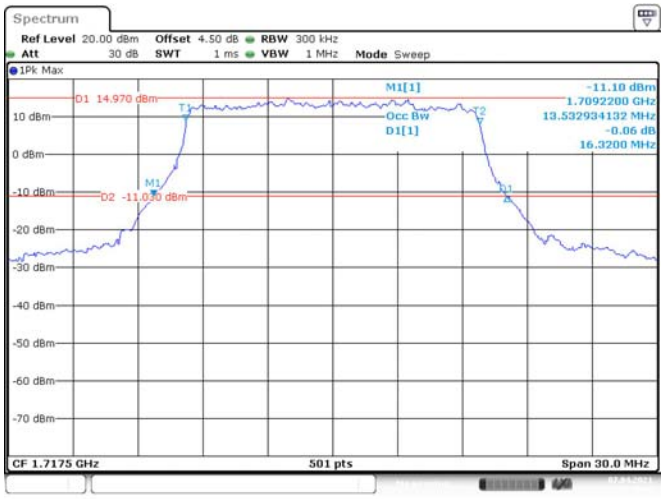
5M, QPSK, High Channel



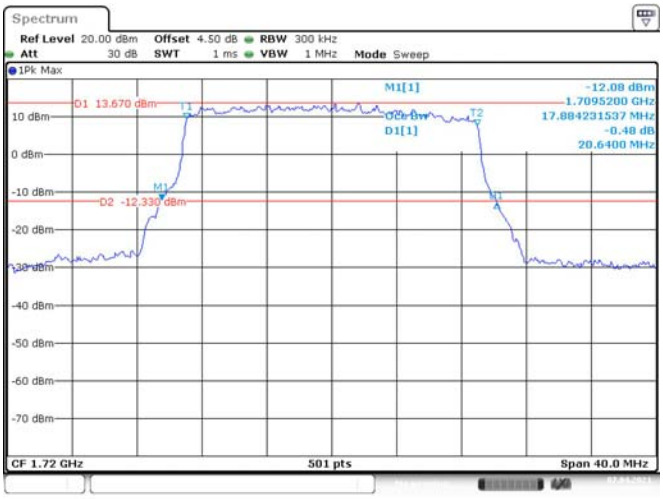
10M, QPSK, High Channel



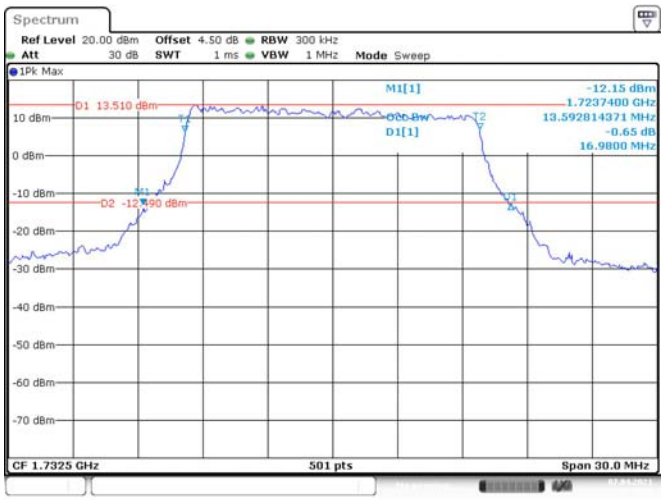
15M, QPSK, Low Channel



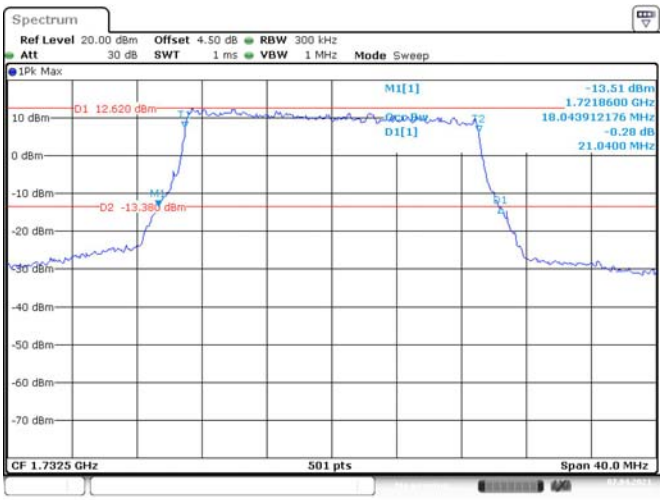
20M, QPSK, Low Channel



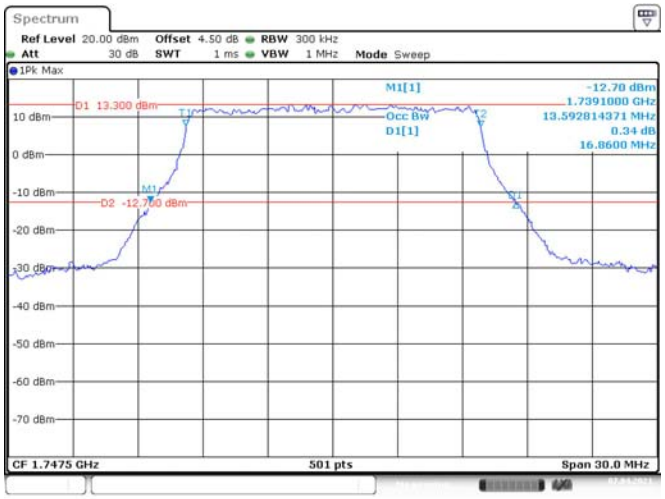
15M, QPSK, Middle Channel



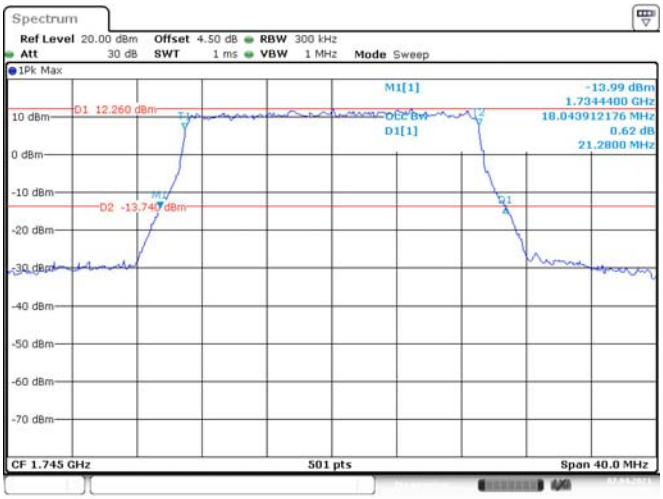
20M, QPSK, Middle Channel



15M, QPSK, High Channel

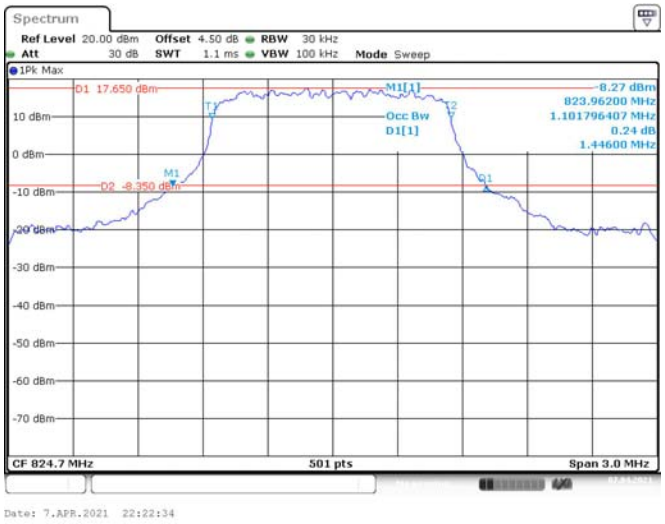


20M, QPSK, High Channel

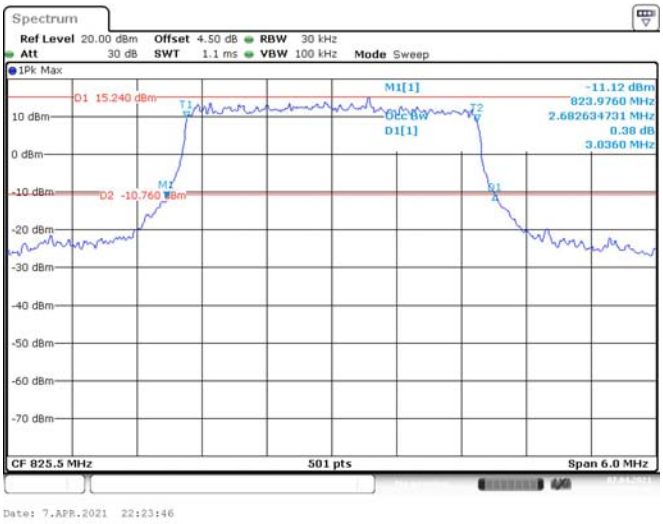


LTE Band 5:

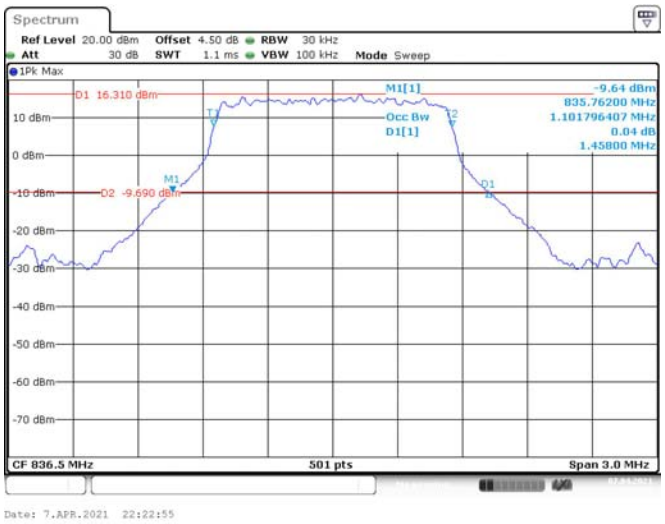
1.4M, QPSK, Low Channel



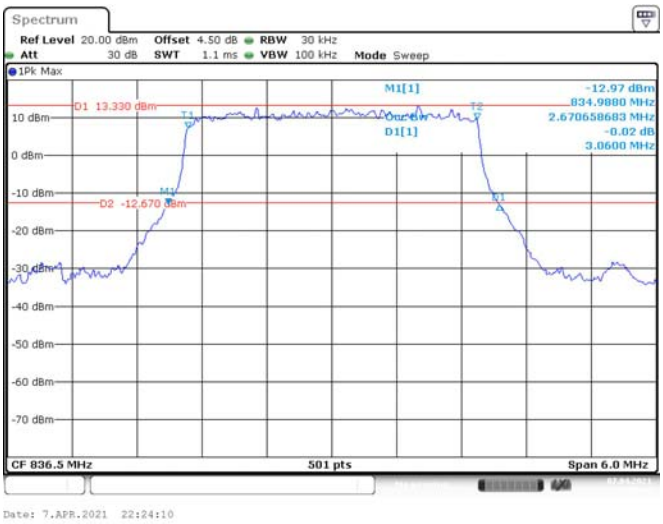
3M, QPSK, Low Channel



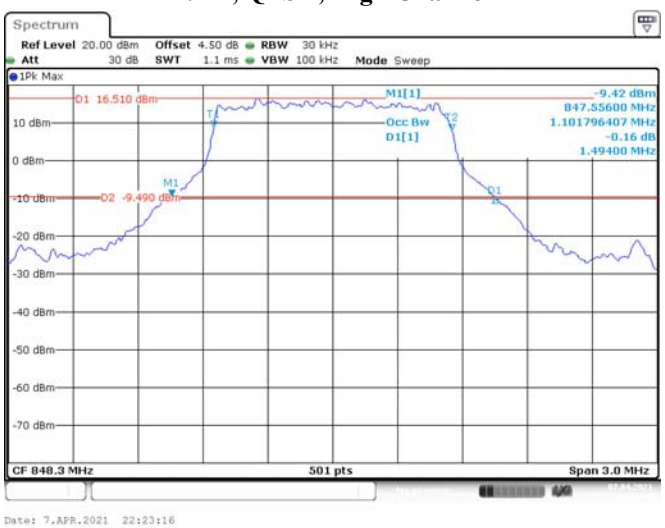
1.4M, QPSK, Middle Channel



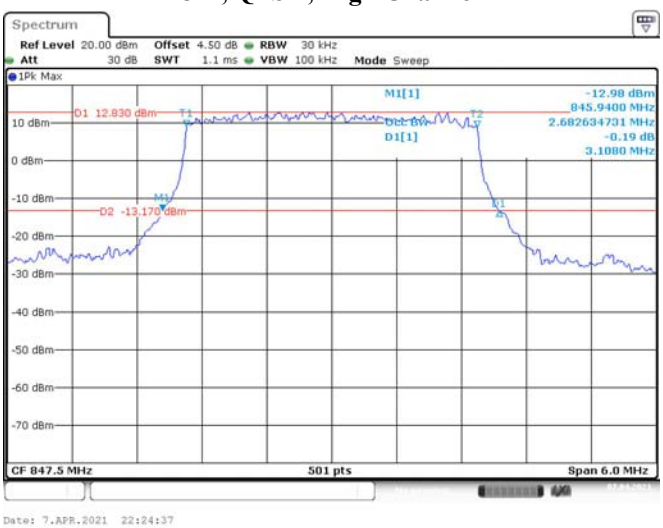
3M, QPSK, Middle Channel



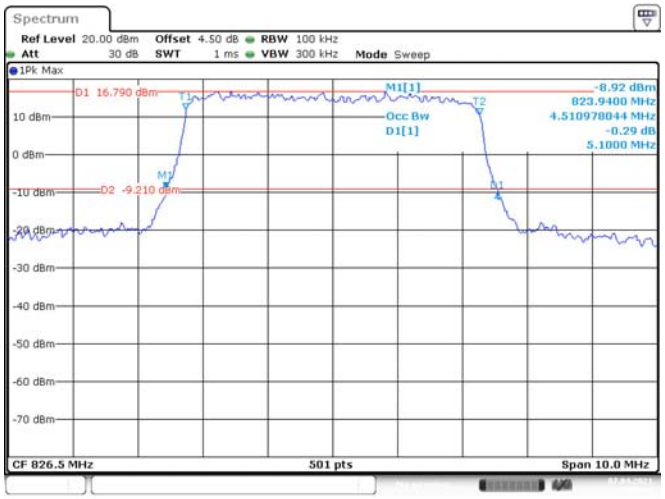
1.4M, QPSK, High Channel



3M, QPSK, High Channel

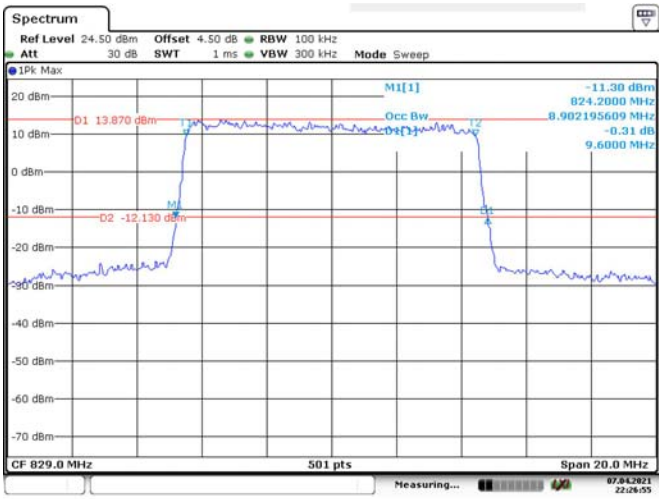


5M, QPSK, Low Channel



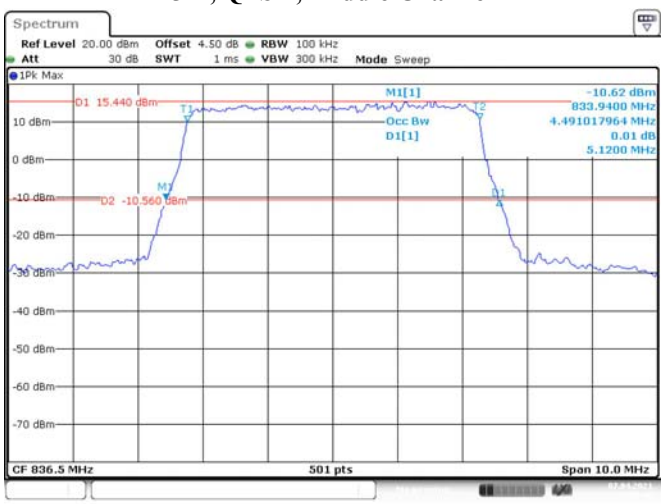
Date: 7.APR.2021 22:25:16

10M, QPSK, Low Channel



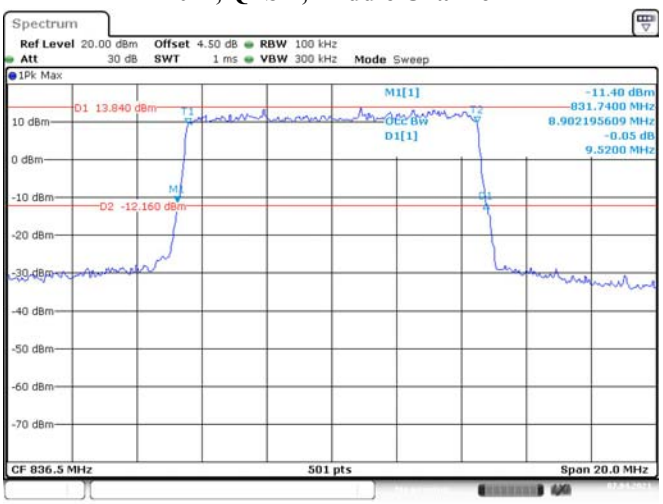
Date: 7.APR.2021 22:26:55

5M, QPSK, Middle Channel



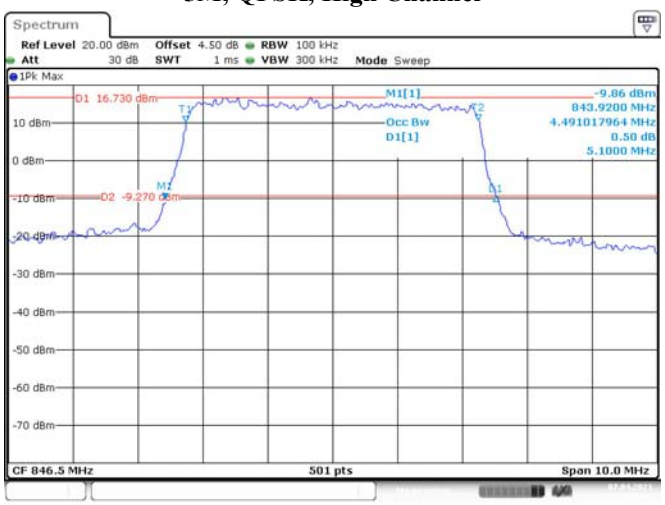
Date: 7.APR.2021 22:25:46

10M, QPSK, Middle Channel



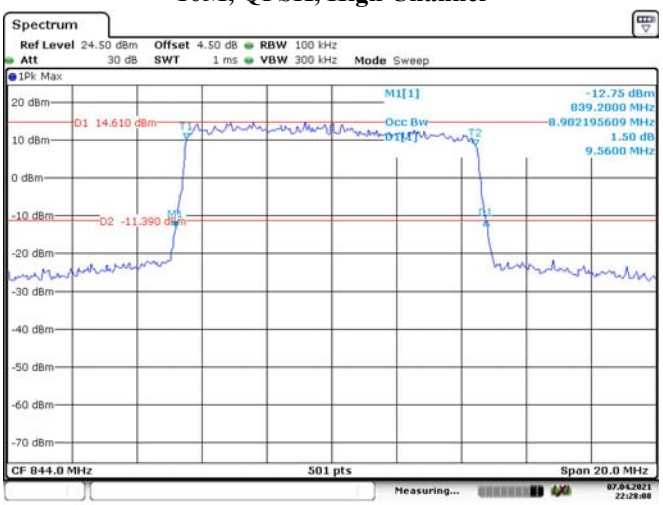
Date: 7.APR.2021 22:27:27

5M, QPSK, High Channel



Date: 7.APR.2021 22:26:19

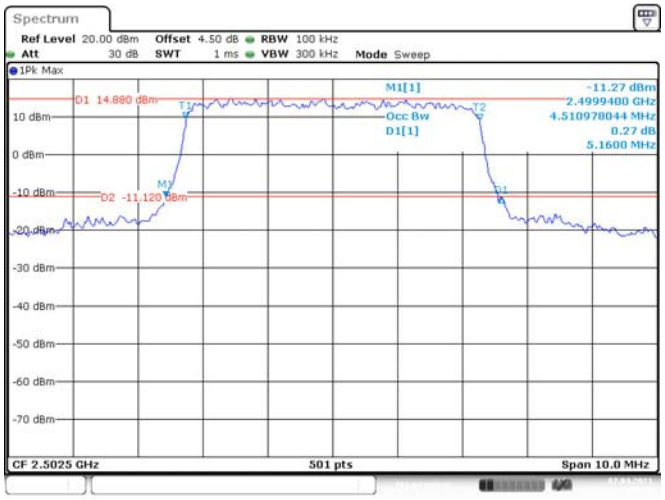
10M, QPSK, High Channel



Date: 7.APR.2021 22:28:09

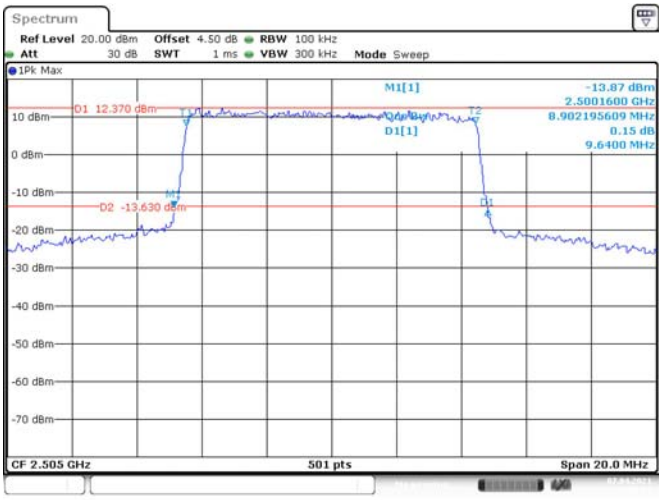
LTE Band 7:

5M, QPSK, Low Channel



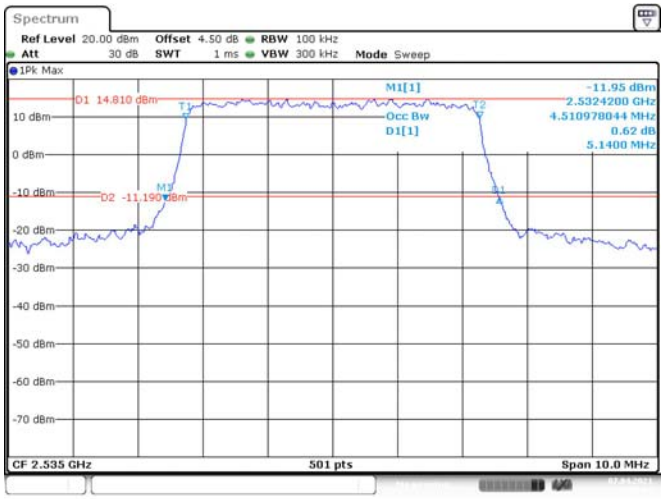
Date: 7.APR.2021 22:28:38

10M, QPSK, Low Channel



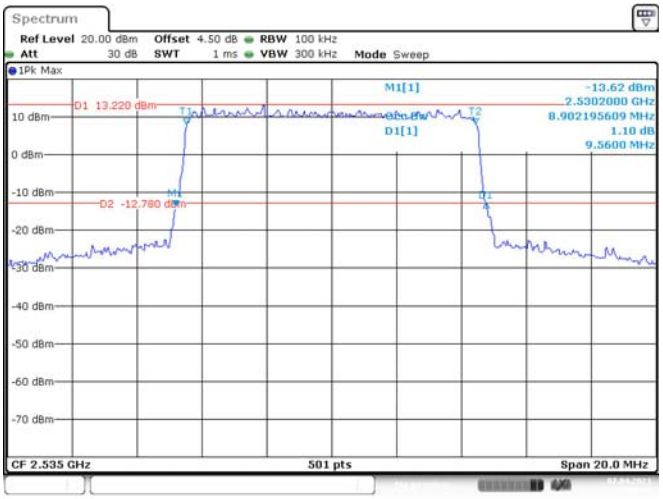
Date: 7.APR.2021 22:30:06

5M, QPSK, Middle Channel



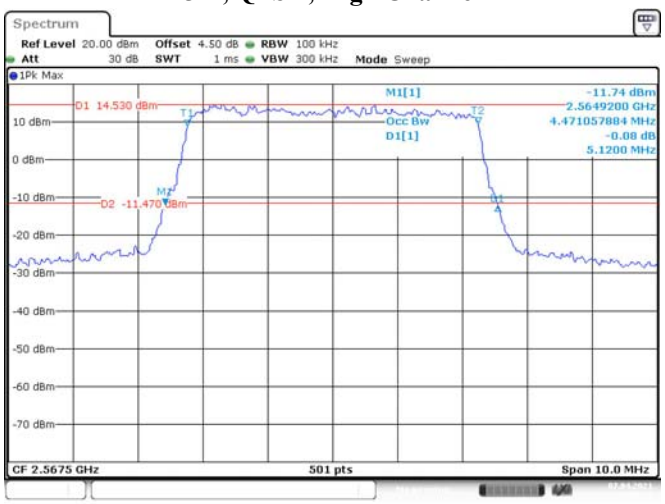
Date: 7.APR.2021 22:29:05

10M, QPSK, Middle Channel



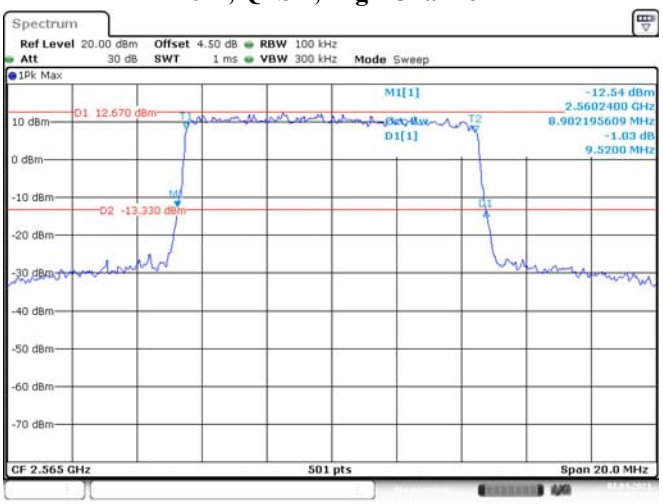
Date: 7.APR.2021 22:30:41

5M, QPSK, High Channel



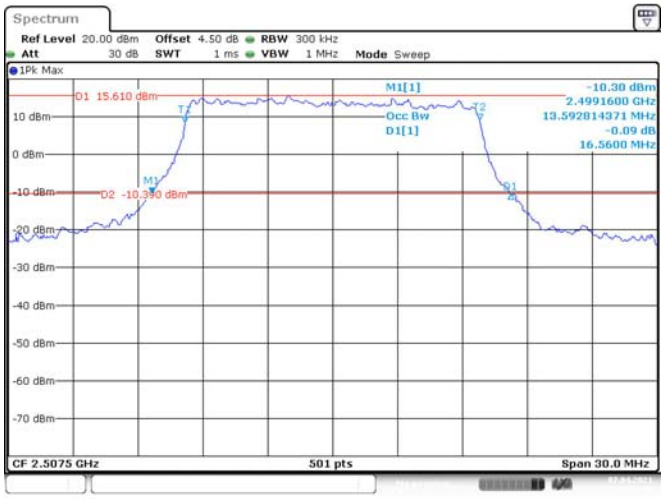
Date: 7.APR.2021 22:29:31

10M, QPSK, High Channel

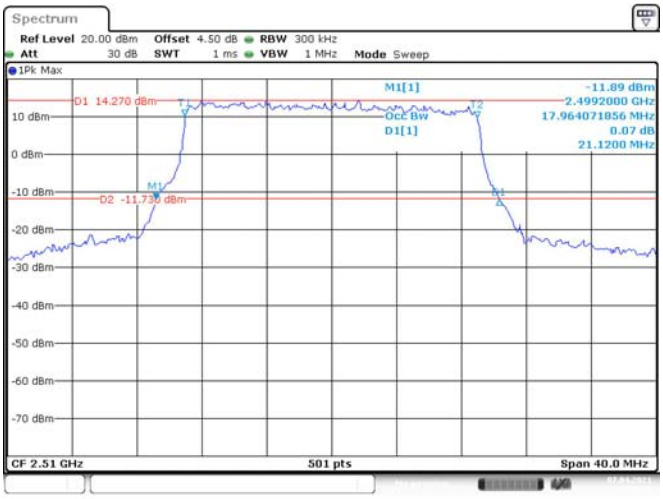


Date: 7.APR.2021 22:31:16

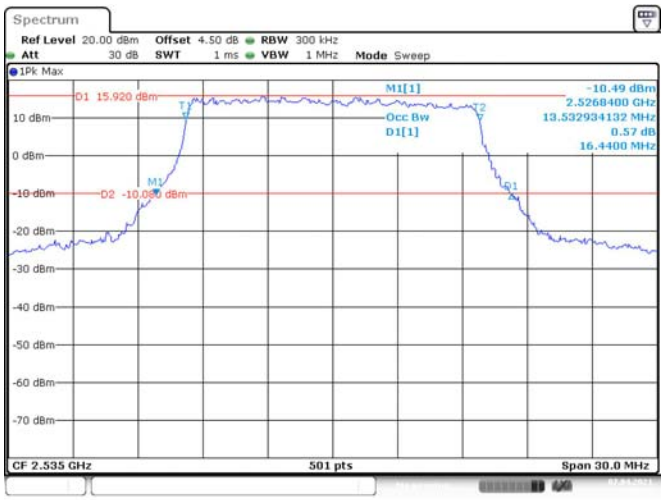
15M, QPSK, Low Channel



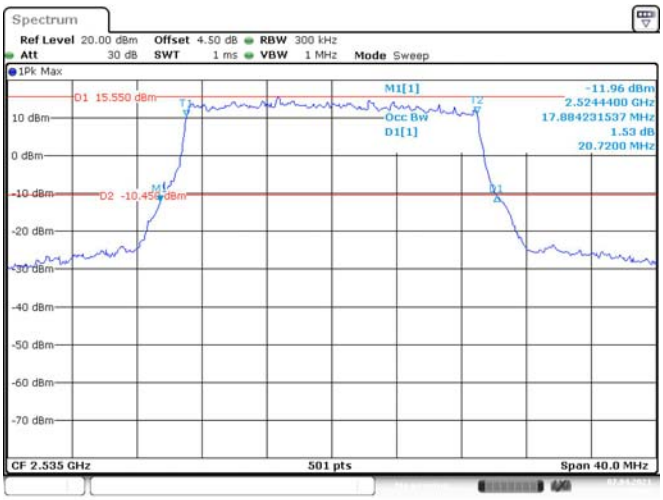
20M, QPSK, Low Channel



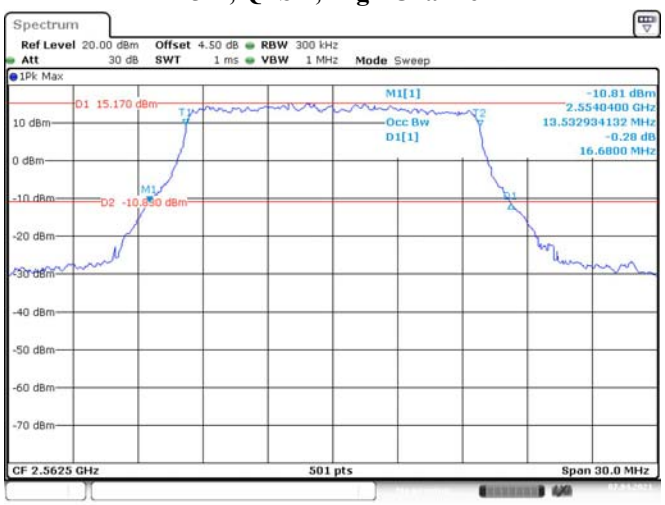
15M, QPSK, Middle Channel



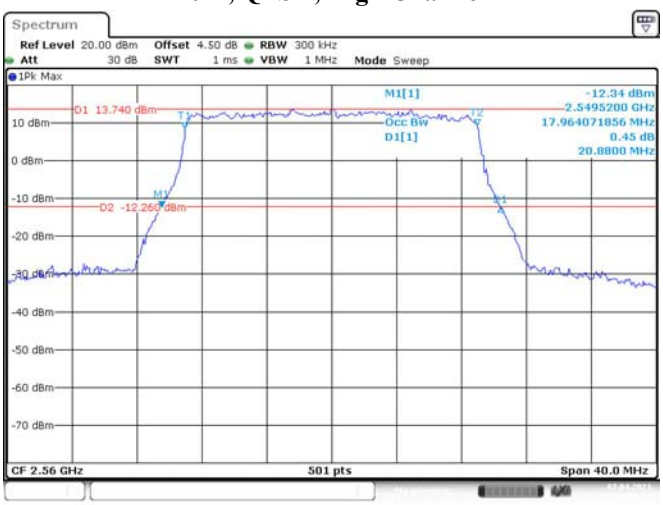
20M, QPSK, Middle Channel



15M, QPSK, High Channel

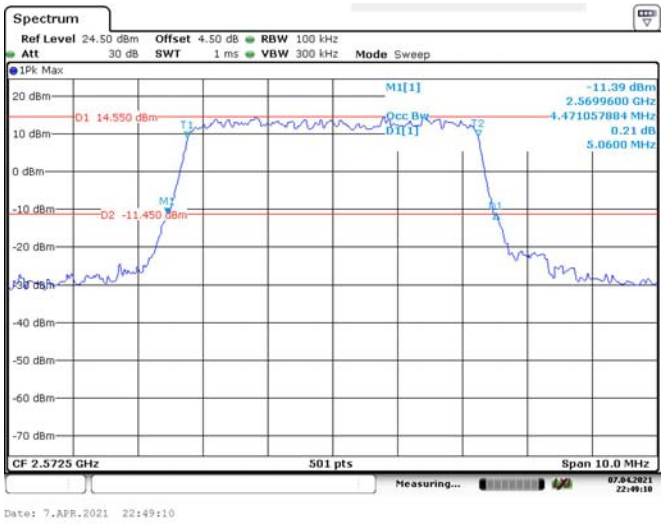


20M, QPSK, High Channel

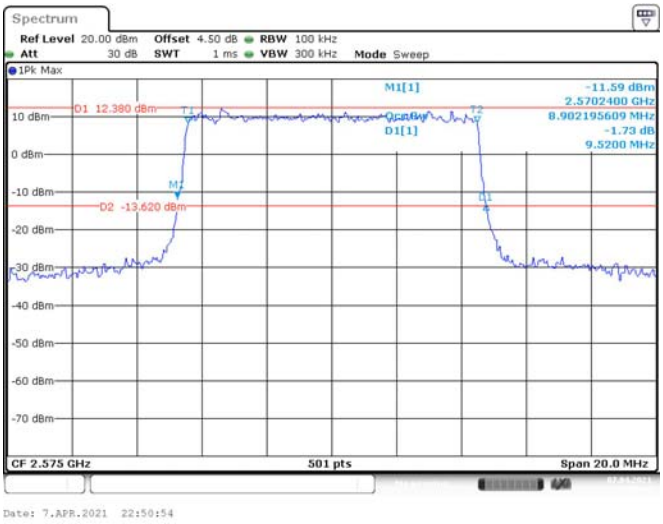


LTE Band 38:

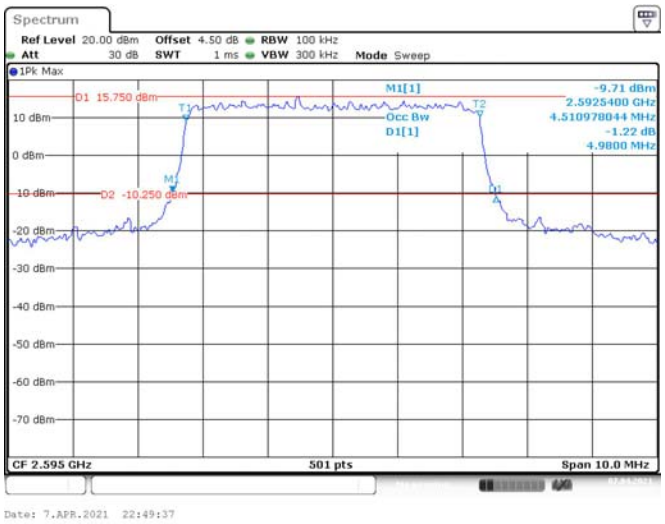
5M, QPSK, Low Channel



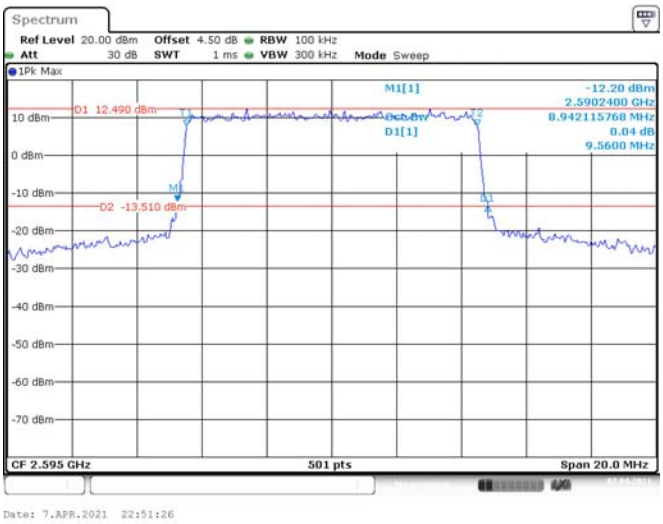
10M, QPSK, Low Channel



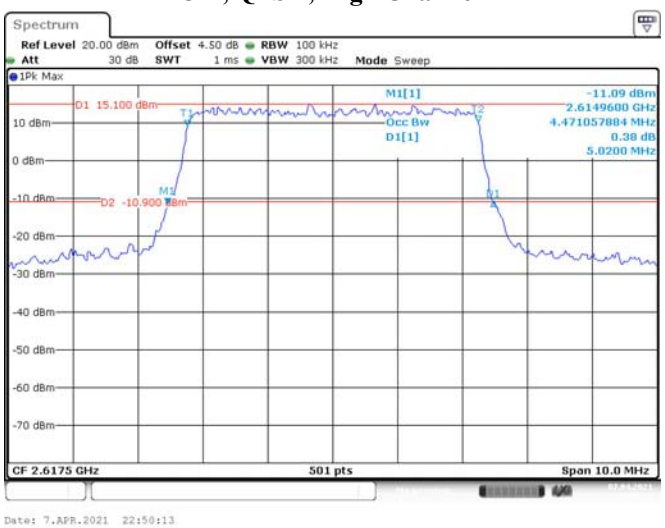
5M, QPSK, Middle Channel



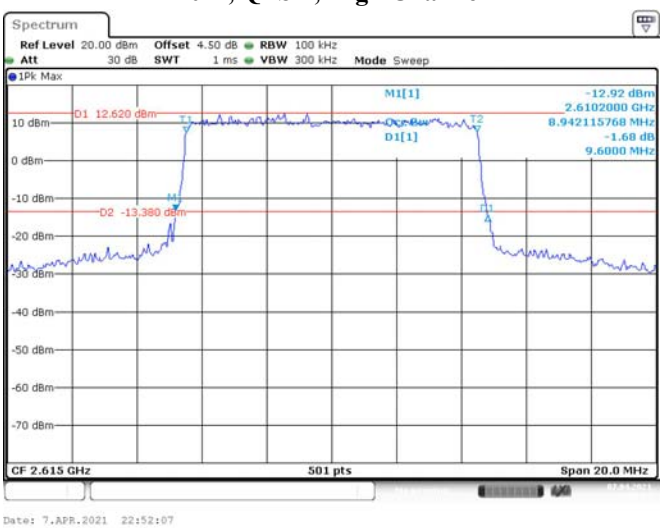
10M, QPSK, Middle Channel



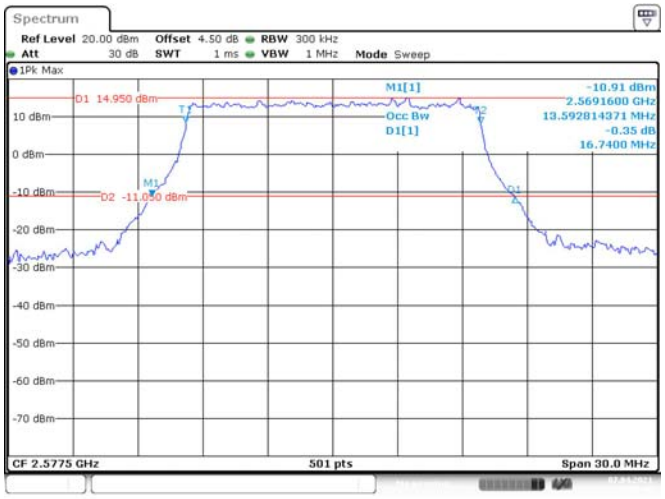
5M, QPSK, High Channel



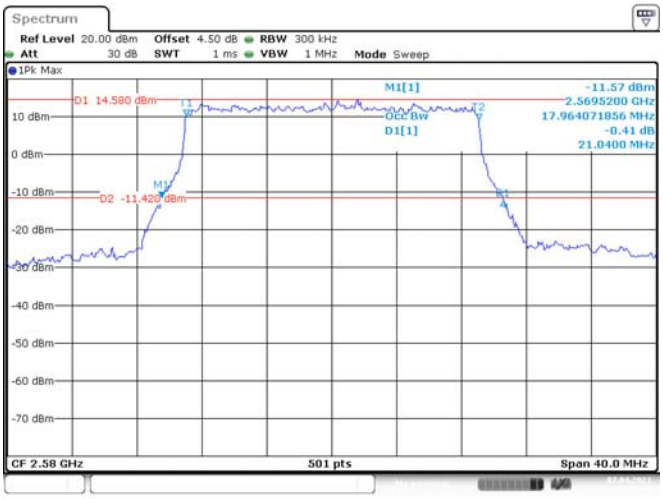
10M, QPSK, High Channel



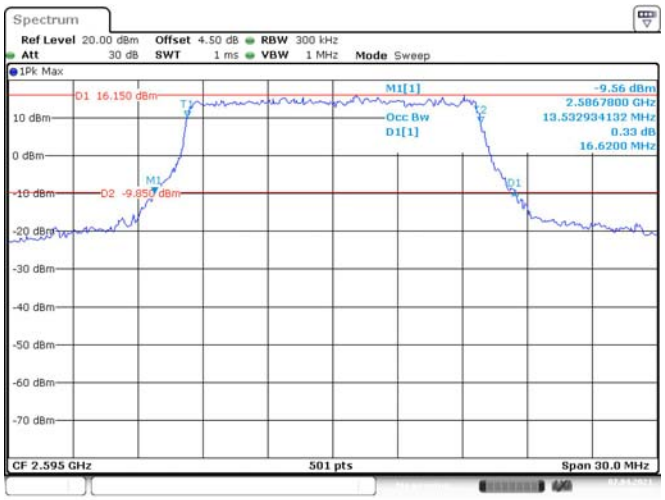
15M, QPSK, Low Channel



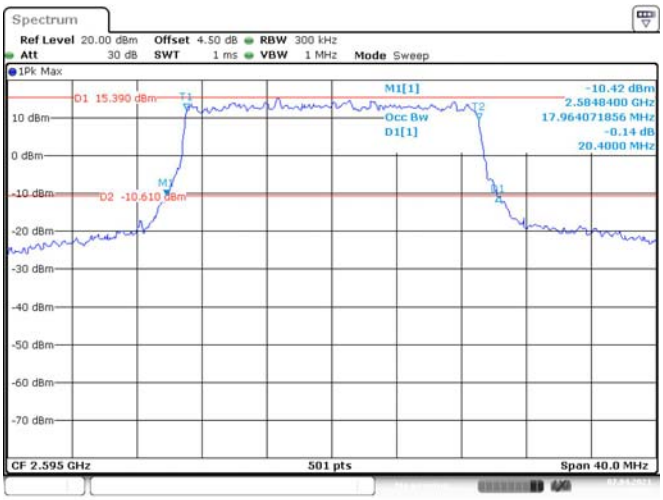
20M, QPSK, Low Channel



15M, QPSK, Middle Channel

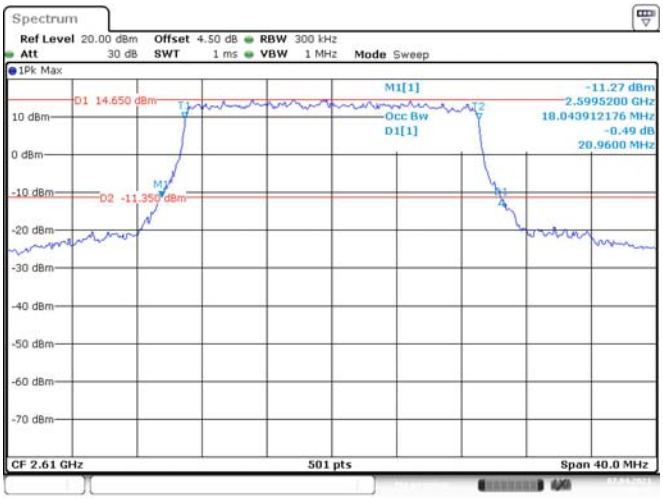


20M, QPSK, Middle Channel



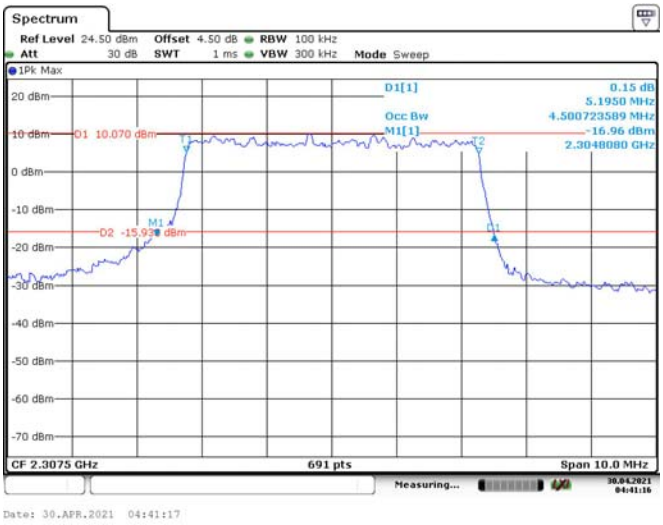
15M, QPSK, High Channel

20M, QPSK, High Channel

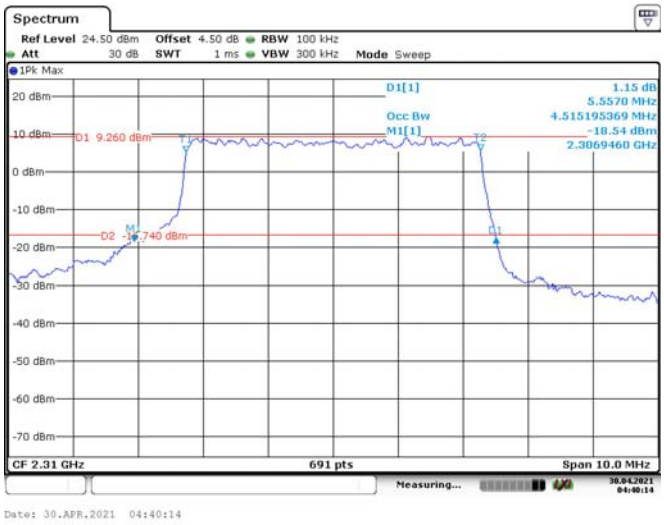


LTE Band 40 Lower:

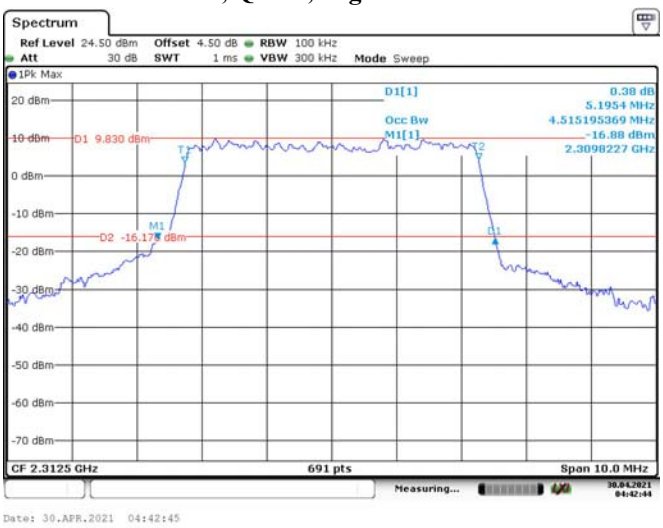
5M, QPSK, Low Channel



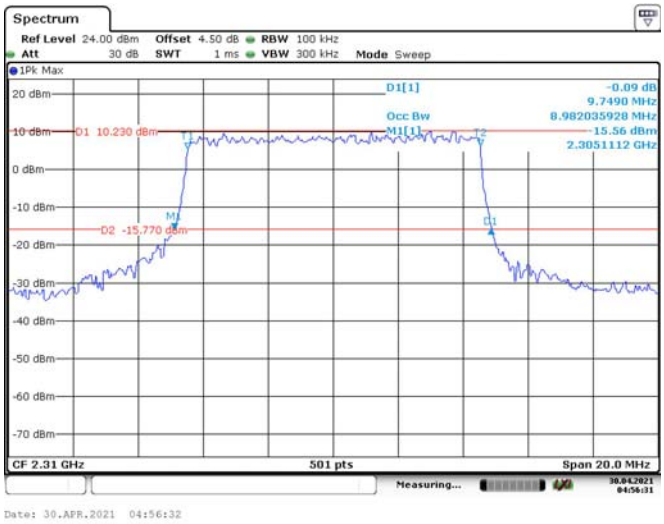
5M, QPSK, Middle Channel



5M, QPSK, High Channel

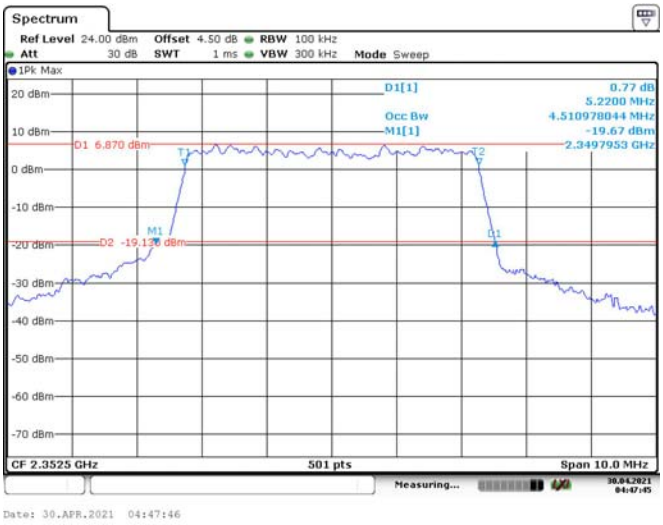


10M, QPSK, Middle Channel

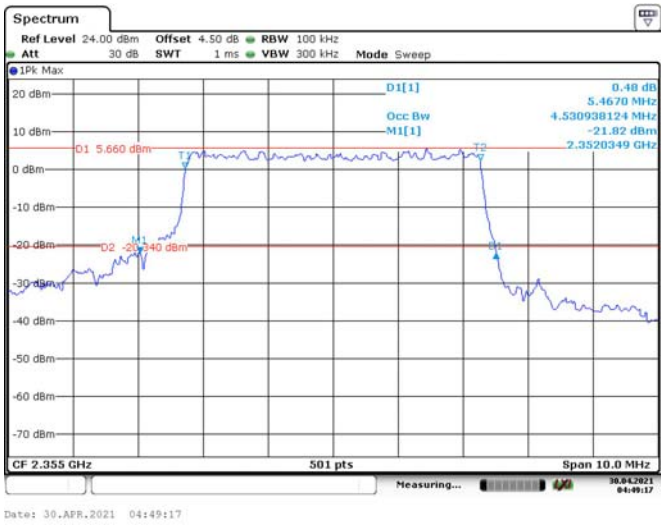


LTE Band 40 Upper:

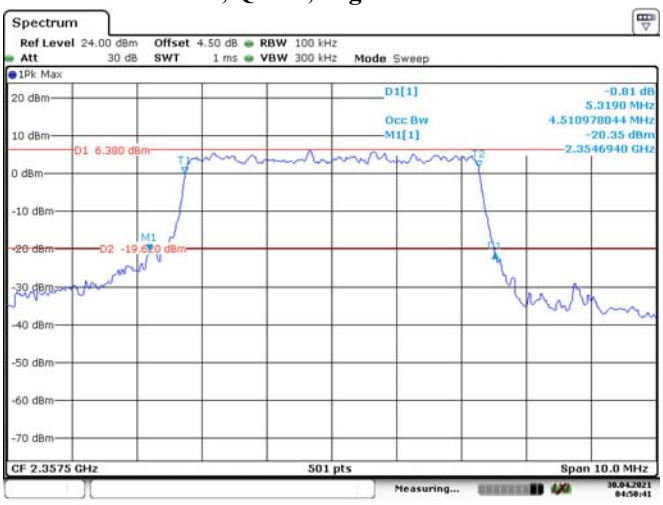
5M, QPSK, Low Channel



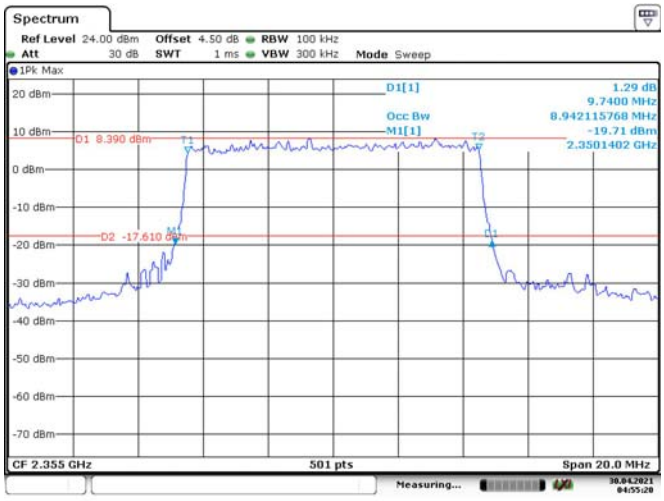
5M, QPSK, Middle Channel



5M, QPSK, High Channel

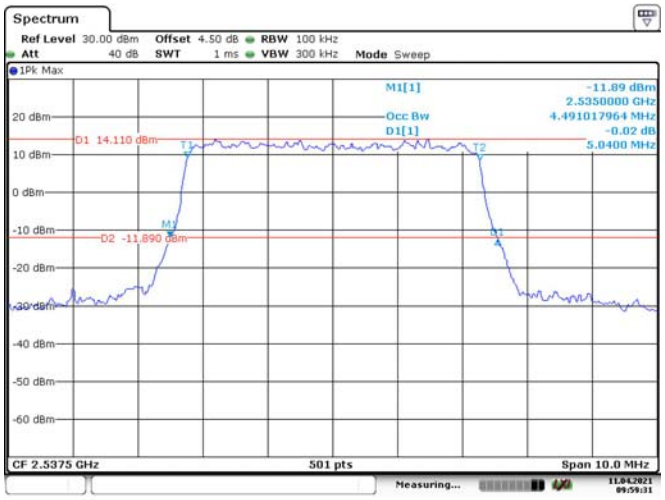


10M, QPSK, Middle Channel



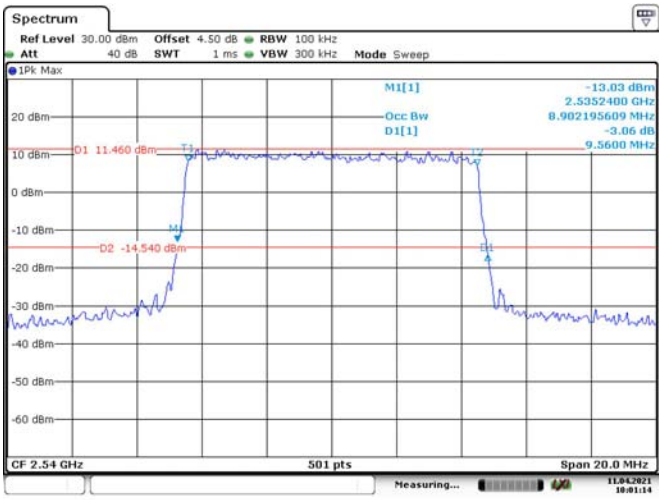
LTE Band 41:

5M, QPSK, Low Channel



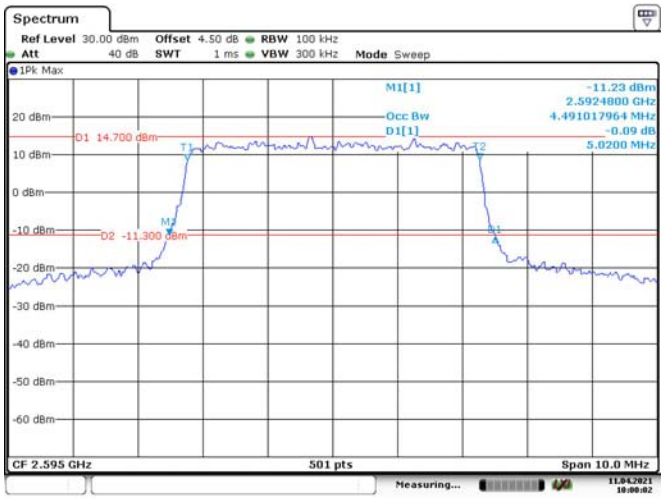
Date: 11.APR.2021 09:59:32

10M, QPSK, Low Channel



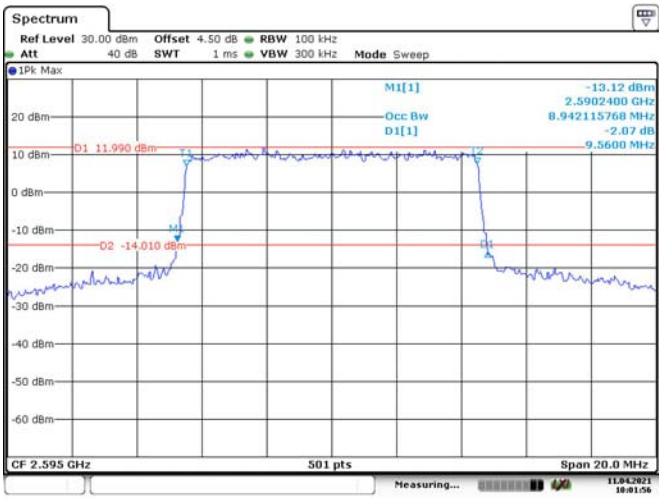
Date: 11.APR.2021 10:01:15

5M, QPSK, Middle Channel



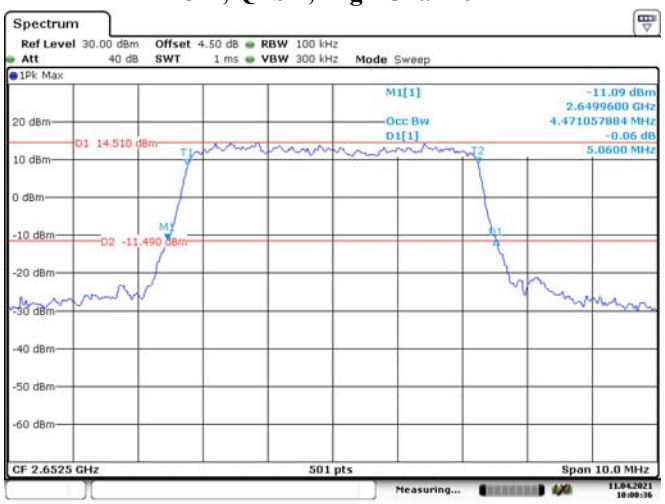
Date: 11.APR.2021 10:00:03

10M, QPSK, Middle Channel



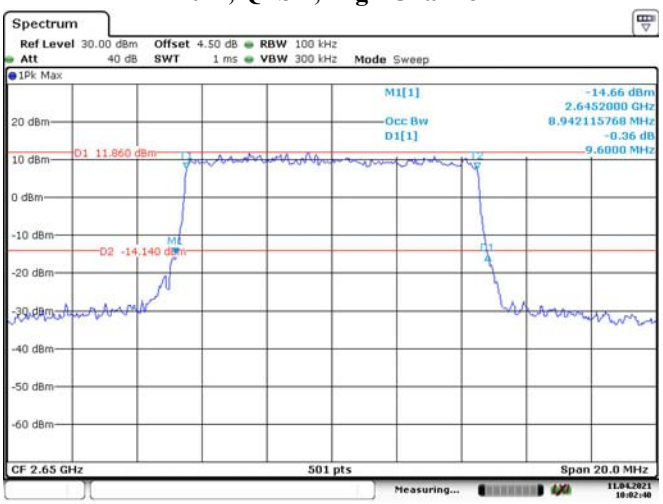
Date: 11.APR.2021 10:01:57

5M, QPSK, High Channel



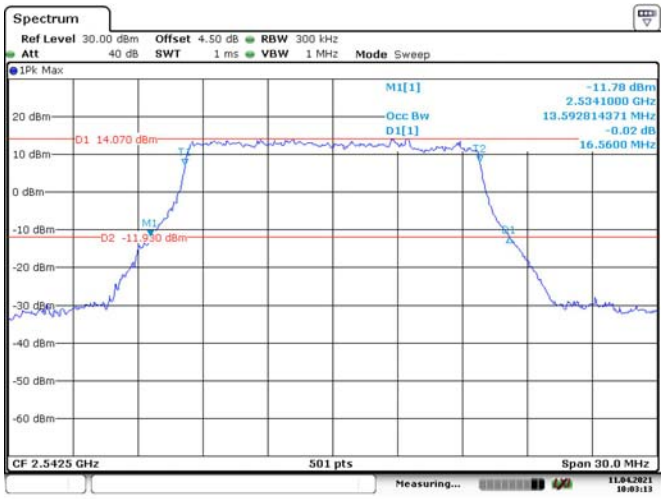
Date: 11.APR.2021 10:00:37

10M, QPSK, High Channel

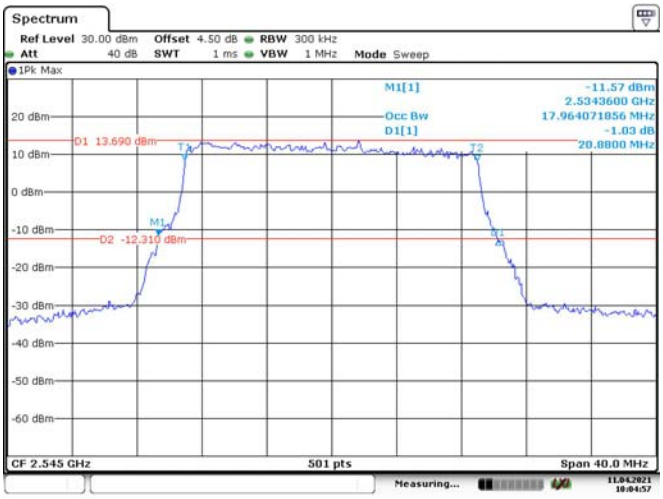


Date: 11.APR.2021 10:02:41

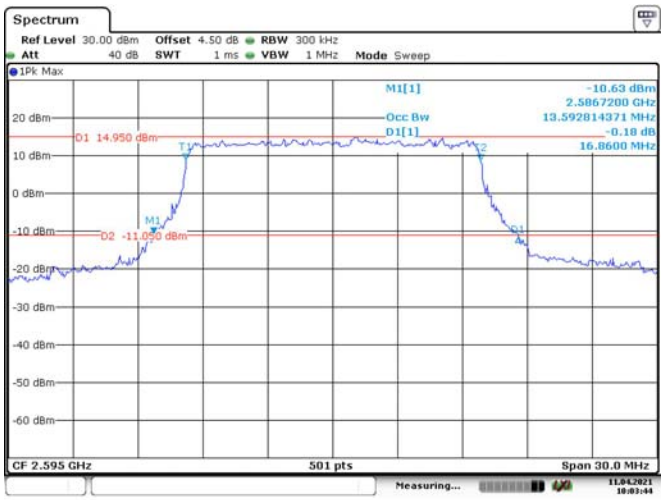
15M, QPSK, Low Channel



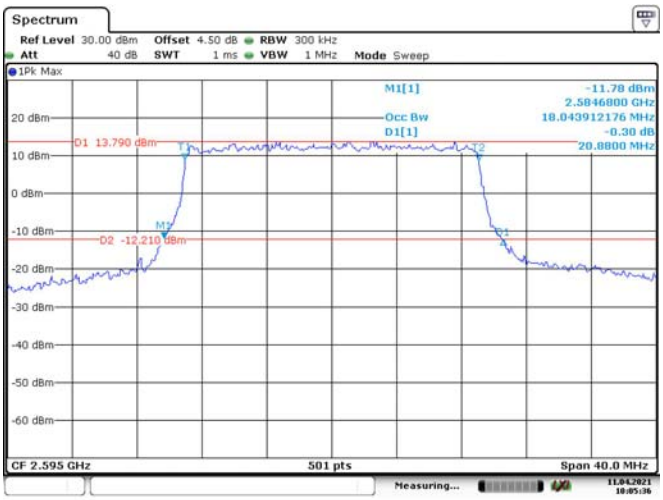
20M, QPSK, Low Channel



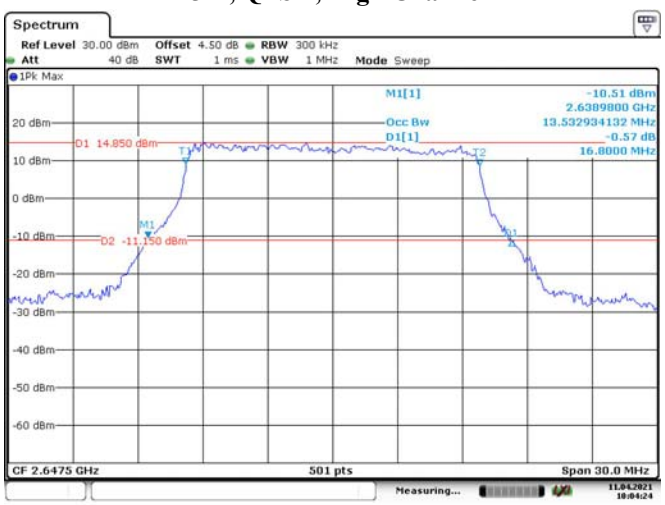
15M, QPSK, Middle Channel



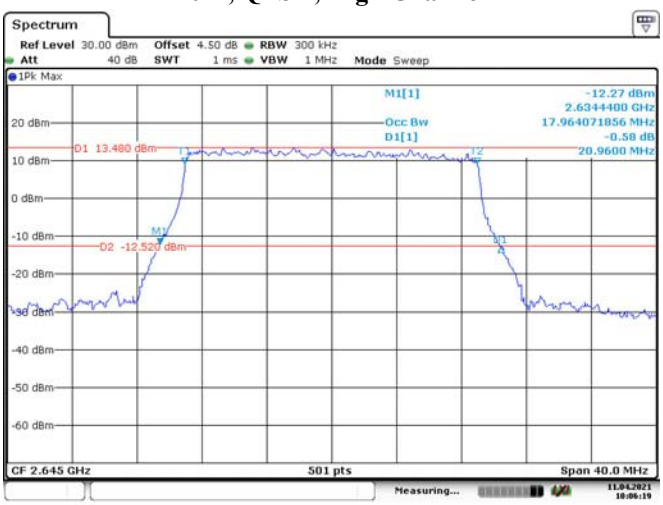
20M, QPSK, Middle Channel



15M, QPSK, High Channel

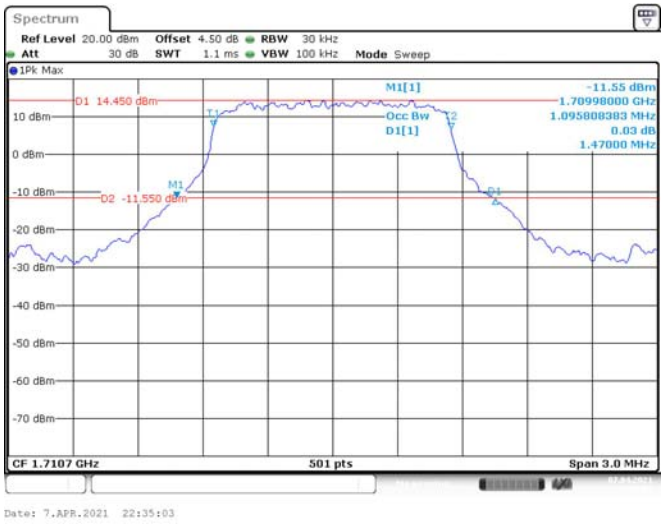


20M, QPSK, High Channel

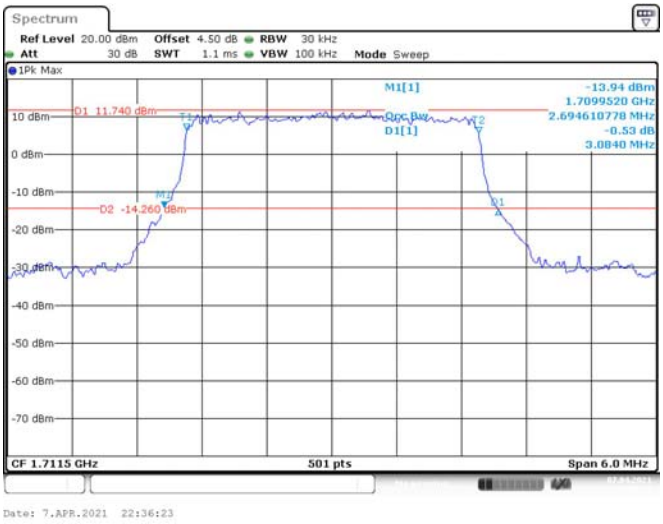


LTE Band 66

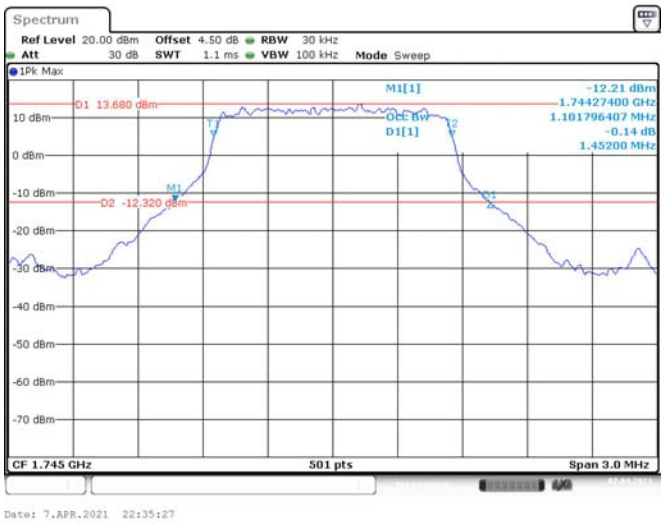
1.4M, QPSK, Low Channel



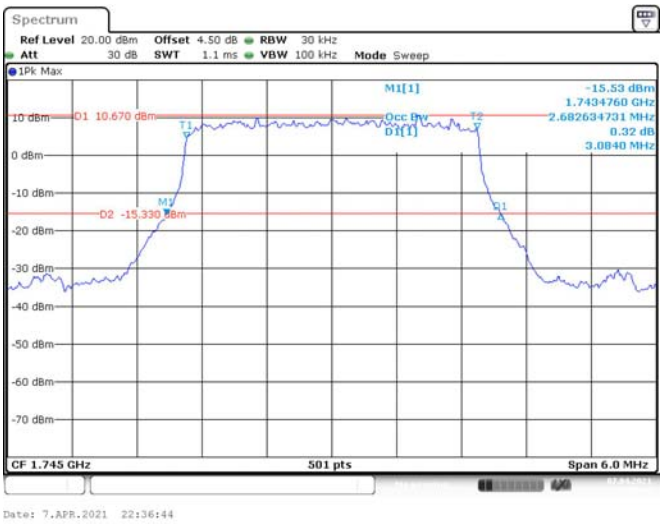
3M, QPSK, Low Channel



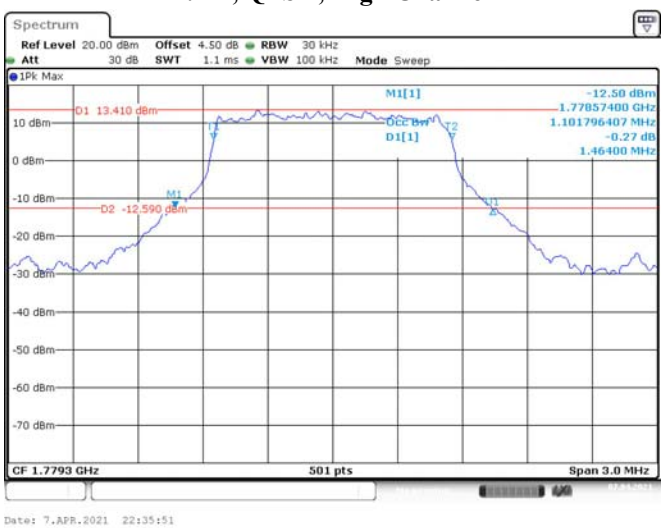
1.4M, QPSK, Middle Channel



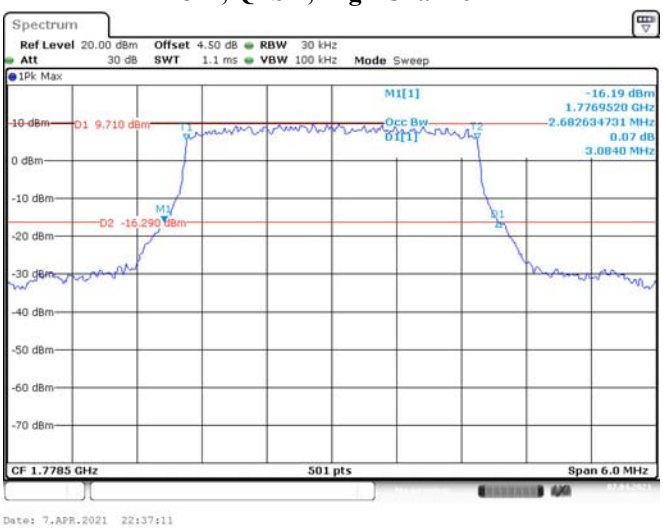
3M, QPSK, Middle Channel



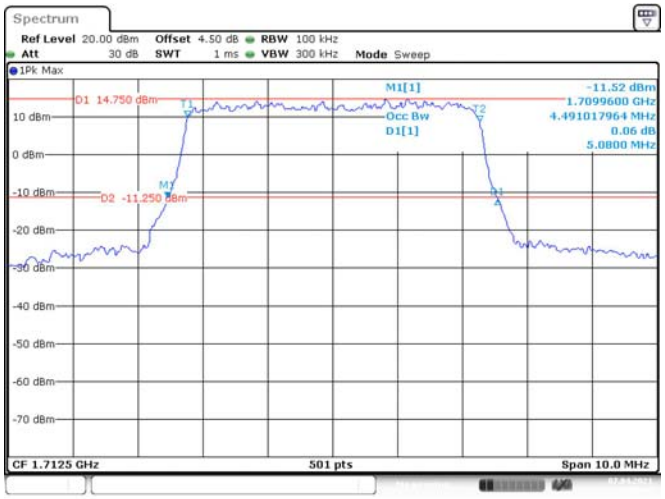
1.4M, QPSK, High Channel



3M, QPSK, High Channel

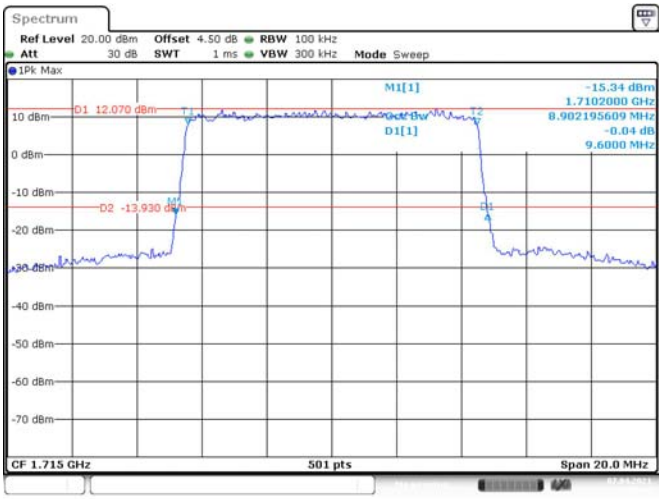


5M, QPSK, Low Channel



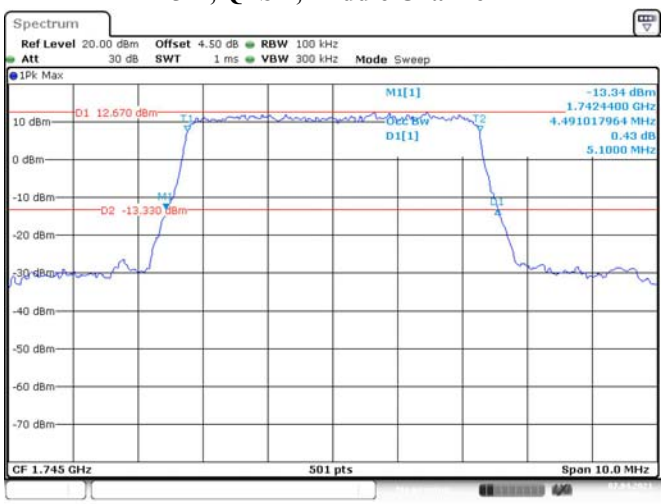
Date: 7.APR.2021 22:37:47

10M, QPSK, Low Channel



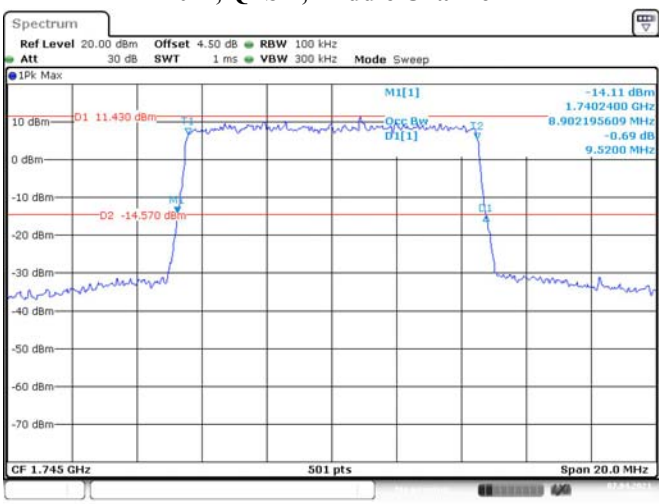
Date: 7.APR.2021 22:39:19

5M, QPSK, Middle Channel



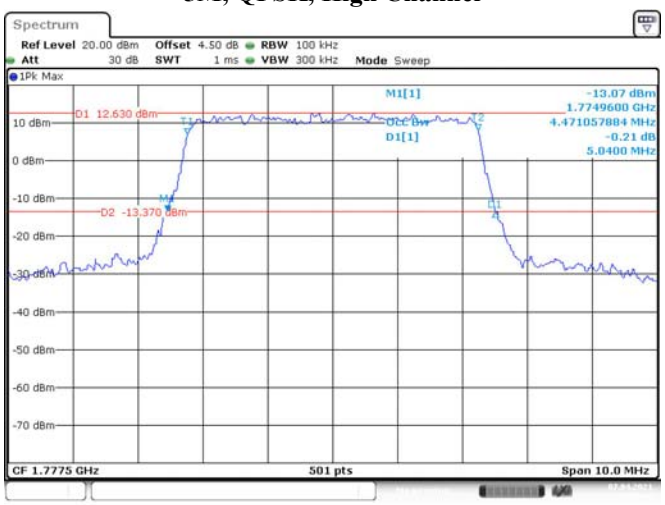
Date: 7.APR.2021 22:38:14

10M, QPSK, Middle Channel



Date: 7.APR.2021 22:39:51

5M, QPSK, High Channel



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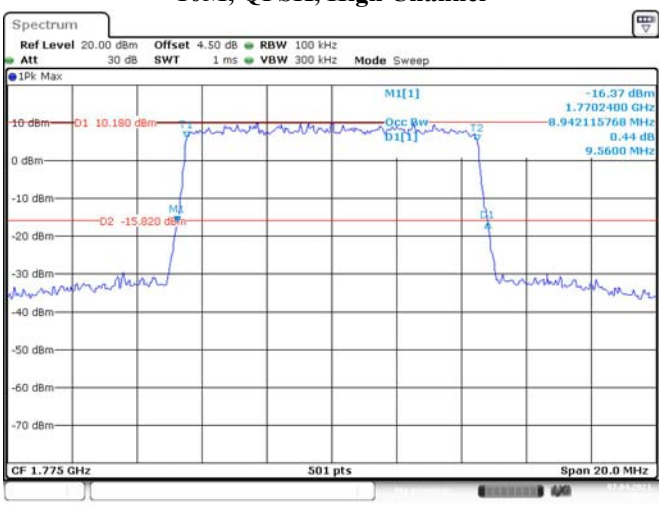
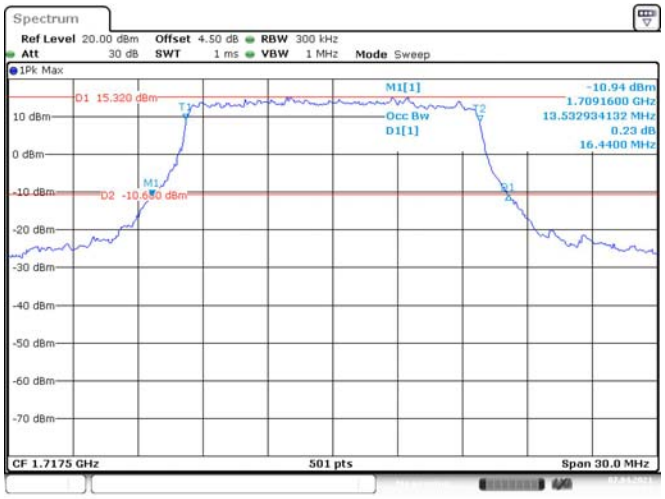
10M, QPSK, High Channel



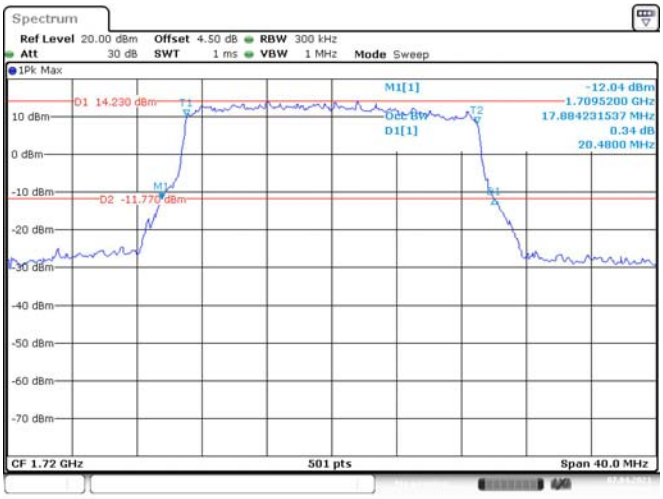
Date: 7.APR.2021 22:40:29

15M, QPSK, Low Channel



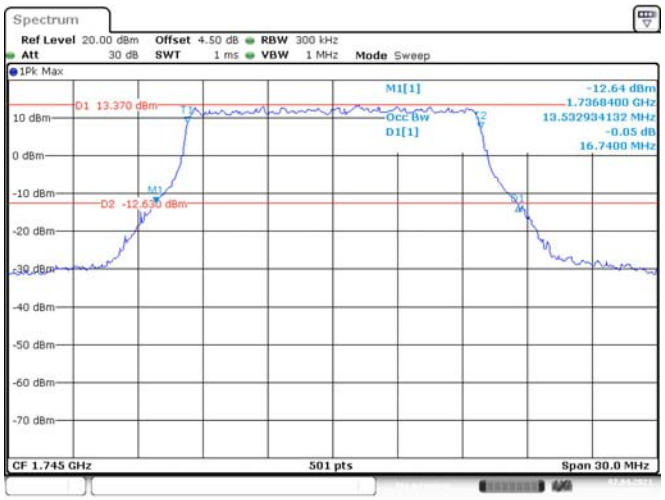
Date: 7.APR.2021 22:41:05

20M, QPSK, Low Channel



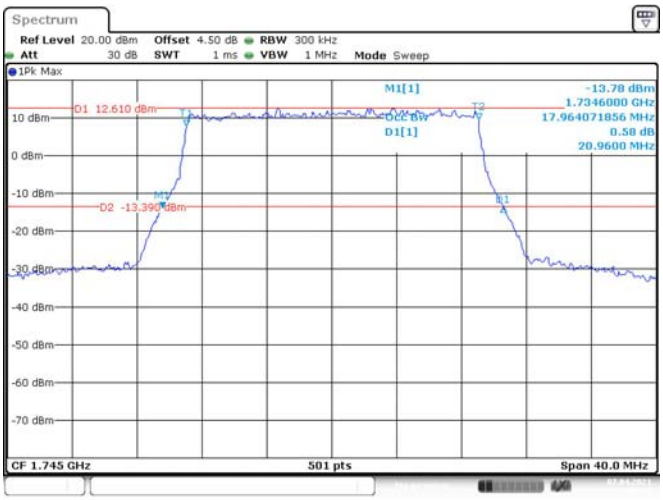
Date: 7.APR.2021 22:42:41

15M, QPSK, Middle Channel



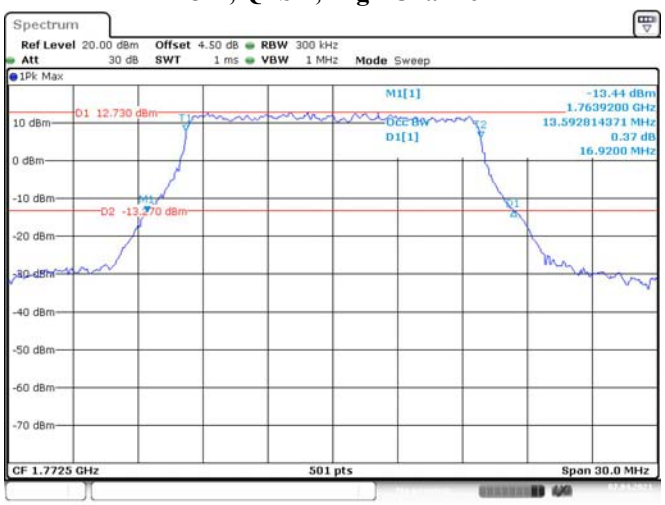
Date: 7.APR.2021 22:41:35

20M, QPSK, Middle Channel



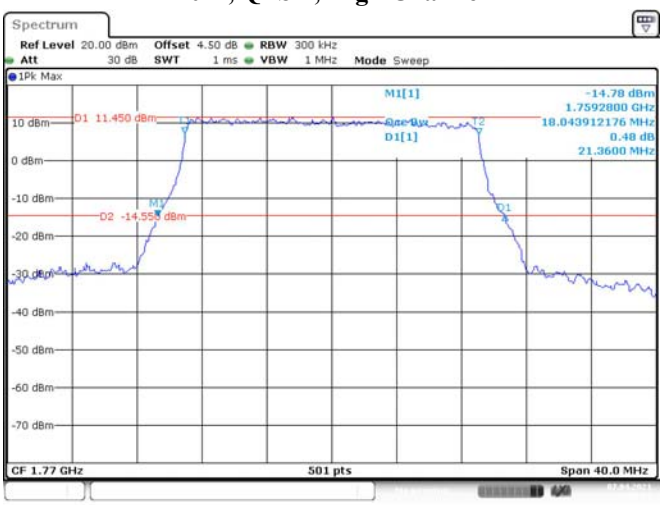
Date: 7.APR.2021 22:43:15

15M, QPSK, High Channel



Date: 7.APR.2021 22:42:09

20M, QPSK, High Channel



Date: 7.APR.2021 22:43:51

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

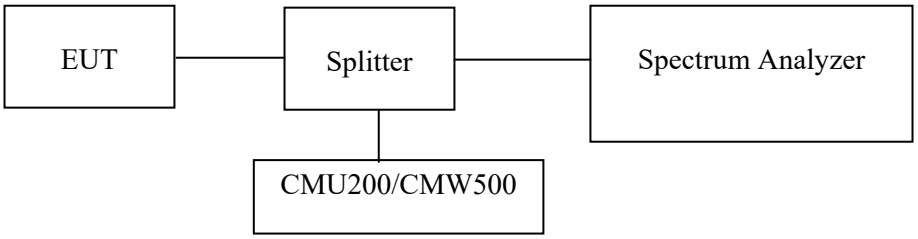
Applicable Standard

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

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

Test Procedure

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2021-01-09	2022-01-09
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010012	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	Each time	N/A
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	N/A

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

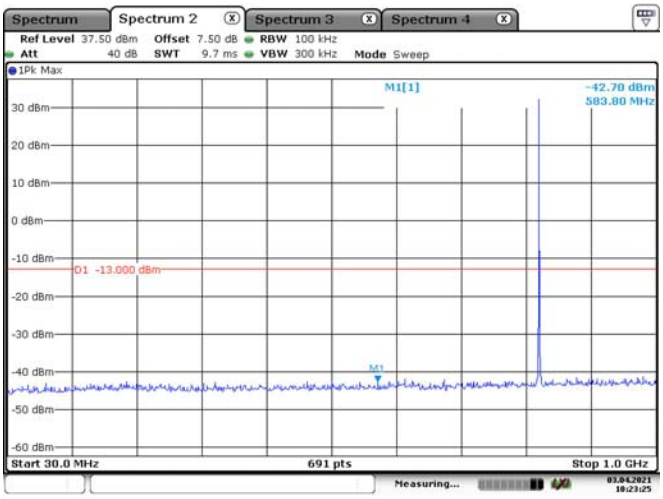
Test Data

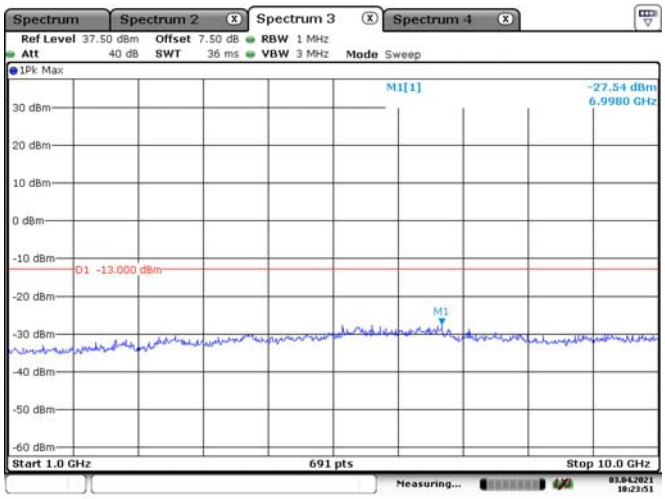
Environmental Conditions

Temperature:	23.6~26.2 °C
Relative Humidity:	54~67 %
ATM Pressure:	100.8~101.9kPa
Tester:	Theshy Xie
Test Date:	2021-04.03~2021.04.13

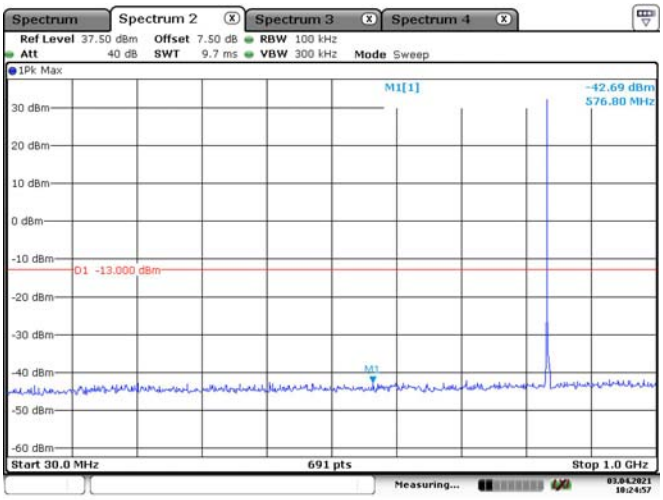
Test Result: Compliance. Please refer to the following plots.

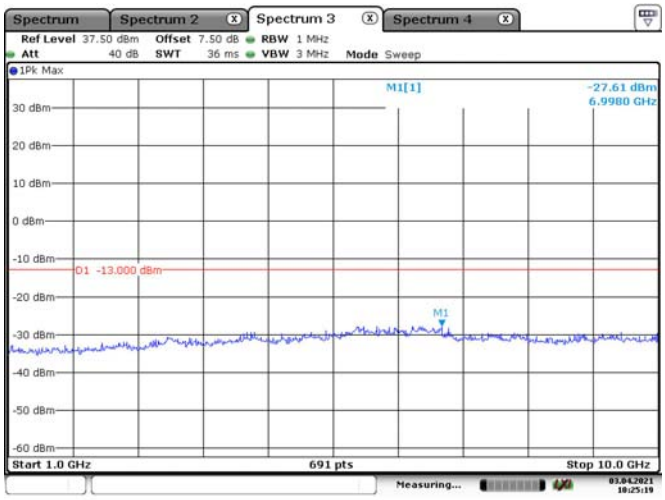
GSM 850, Low Channel





GSM 850, Middle Channel





GSM 850, High Channel