

FCC PART 96 MEASUREMENT AND TEST REPORT

For

Green Packet Berhad, Taiwan

2F, NO.23, LANE 583 RUEIGUANG RD, NEIHU DISTRICT, Taipei City,
Taiwan

FCC ID: W9V-OAB48-GP

Report Type: Original Report	Product Type: LTE CPE
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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

Applicant	Green Packet Berhad, Taiwan
Product	LTE CPE
Tested Model	OA-B48
Voltage	DC 24V from PoE Adapter
Frequency Range	LTE Band 48: 3550 MHz-3700 MHz(Class B CBSD)
Antenna Gain	16dBi
Modulation Mode	BPSK, QPSK, 16QAM
Sample serial number	RDG201104005-RF-S1
Received date	2020.11.04
Sample/EUT Status	Good condition
Adapter information (Only charging)	Manufacturer: GOSPELL DIGITAL TECHNOLOGY CO.,LTD. Model: G0720-240-100 Input: 100-240Vac 50/60Hz 0.75A MAX Output: 24Vdc 1A

Note: EUT conformed to test requirements and all measurement and test data in this report was gathered from final production sample. It may have deviation from any other sample.

Objective

This report is prepared on behalf of **Green Packet Berhad, Taiwan** in accordance with Part 2 and Part 96 of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

FCC Part 15B JAB submissions with FCC ID: W9V-OAB48-GP

Measurement Uncertainty

	Item	Measurement Uncertainty
1	RF Frequency	$\pm 0.082 \times 10^{-6}$
2	RF output power, conducted	$\pm 0.65\text{dB}$
3	Occupied Bandwidth	$\pm 5\%$
4	Spurious emissions, radiated	$\pm 6\text{dB}$
5	Humidity	$\pm 5\%$
6	Temperature	$\pm 1^{\circ}\text{C}$
7	Voltage(DC)	$\pm 0.4\%$
8	Time	$\pm 2\%$

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

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 96.

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

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Chengdu).

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Chengdu) to collect test data is located No.5040, Huilongwan Plaza, No. 1, Shawan Road, Jinniu District, Chengdu, Sichuan, China.

Bay Area Compliance Laboratories Corp. (Chengdu) lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4324.01) and the FCC designation No. CN1186 under the FCC KDB 974614 D01. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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 LTE band 48, test was performed with channels as below table:

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
LTE Band 48	5	3552.5	3625	3697.5
	10	3555	3625	3695
	15	3557.5	3625	3692.5
	20	3560	3625	3690

The device employs 4 antennas, but only 1T4R was supports by the system, only Chain 0 and 1 support TX.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

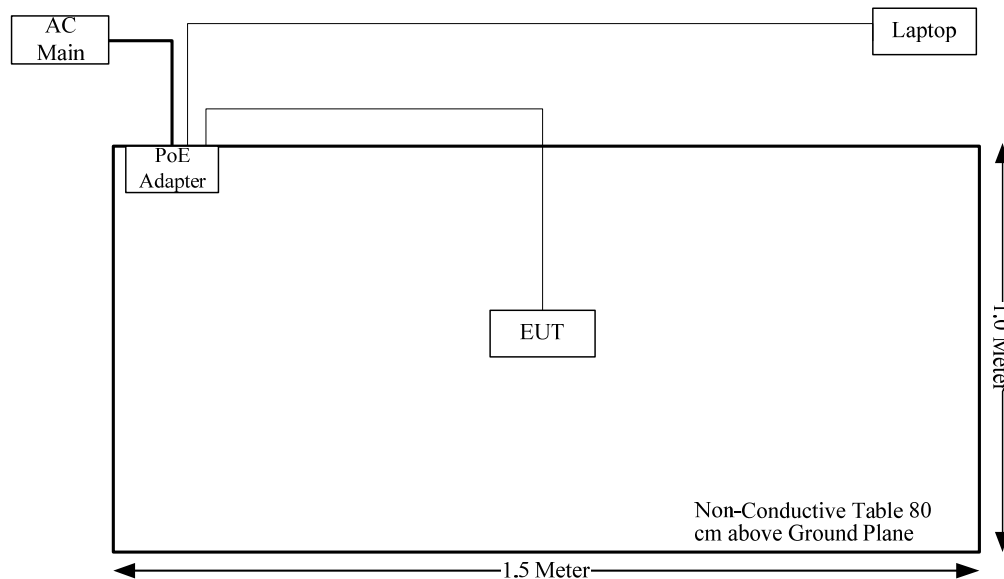
Manufacturer	Description	Model	Serial Number
DELL	Laptop	/	/
R&S	Wideband Radio Communication Tester	CMW500	/
Un-Known	ANTENNA	Un-Known	Un-Known

External I/O Cable

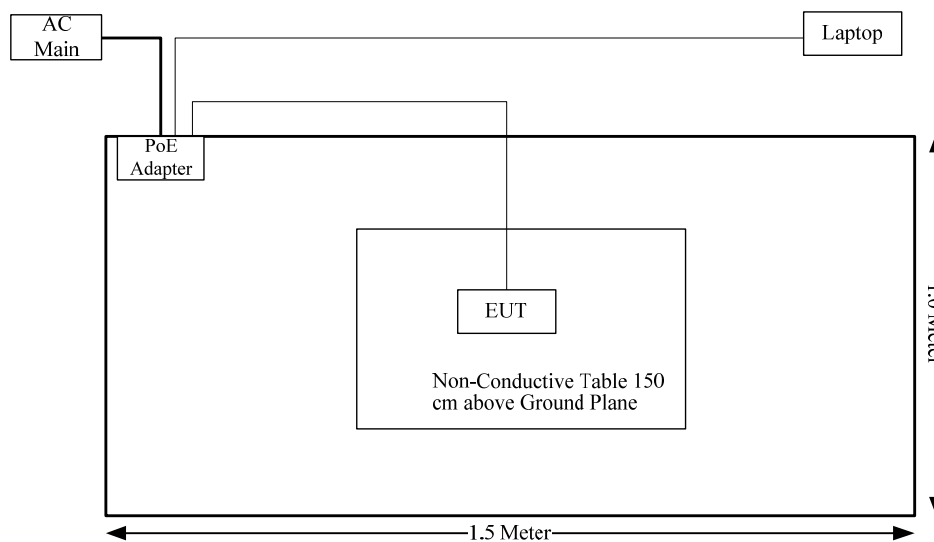
Cable Description	Length (m)	From	To
RJ45 Cable	1.0	PoE Apdater	EUT
RJ45 Cable	10	PoE Apdater	Laptop

Block Diagram of Test Setup

Radiation Emissions Below 1GHz:



Radiation Emissions Above 1GHz:



Test Equipments List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
SUNOL SCIENCES	Broadband Antenna	JB3	A121808	2019-12-10	2022-12-09
EMCT	Semi-Anechoic Chamber	966	001	2017-05-18	2022-05-17
SONOMA INSTRUMENT	Amplifier	310 N	186684	2020-08-10	2021-08-09
Rohde & Schwarz	EMI Test Receiver	ESR3	102456	2020-04-13	2021-04-12
INMET	Attenuator	18N-6dB	000186	2019-12-10	2022-12-09
Unknown	RF Cable (Below 1GHz)	L-E-005	000005	2020-09-04	2021-09-03
Unknown	RF Cable (Below 1GHz)	T-E128	000128	2020-10-16	2021-10-15
MICRO-COAX	RF Cable (Below 1GHz)	T-E237	233522-001	2020-07-17	2021-07-16
Rohde & Schwarz	Spectrum Analyzer	FSU26	200835	2020-04-13	2021-04-12
EMCO	Horn Antenna	3115	2192	2019-09-25	2021-09-24
EMCO	Horn Antenna	3115	6751	2019-09-02	2021-09-01
Mini-circuits	Pre-Amplifier	ZVA-183-S+	771001215	2020-09-20	2021-09-19
EM Electronics	Pre-Amplifier	EM18G40	060725	2020-07-23	2021-07-22
A.H. Systems, Inc	Horn Antenna	SAS-574	510	2019-09-02	2021-09-01
A.H. Systems, Inc	Horn Antenna	SAS-574	505	2019-09-02	2021-09-01
SUHNER+HUBER	RF Cable (Above 1GHz)	SUCOFLEX 104PE	93533/4PE	2020-05-18	2021-05-17
IW-MICROWAVE	RF Cable (Above 1GHz)	SPS-2301	111503	2020-08-31	2021-08-30
SUHNER+HUBER	RF Cable (Above 18GHz)	T-E222	2551/2	2020-07-18	2021-07-17
FLORIDA RF LABS	RF Cable (Above 18GHz)	T-E210	1042	2020-07-18	2021-07-17
Agilent	Signal Generator	N5182B	MY53051296	2020-03-10	2021-03-10

Manufacturer	Description	Model Number	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
R&S	Spectrum Analyzer	FSV40	175485	2020-05-11	2021-05-11
WEINSCHTEL ENGINEERING	Attenuator	1A 10dB	AA4135	Each time	N/A
BACL	High Temperature Test Chamber	BTH-150	30024	2020-04-15	2021-04-14
FLUKE	Multimeter	FLUKE 1587	27870099	2020-05-06	2021-05-06
Shenzhen Zhaoxin	DC Power Supply	RSN-305D	17R305D050045	N/A	N/A
R&S	Wideband Radio Communication Tester	CMW500	104788	2020-01-13	2021-01-13

Statement of Traceability: BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§2.1091	Maximum Permissible Exposure (MPE)	Compliance
§2.1046; §96.41	RF Output Power	Compliance
FCC§ 2.1047	Modulation Characteristics	Not Applicable
§2.1049; §96.41	Occupied Bandwidth & Emission Mask	Compliance
§2.1051; §96.41	Spurious Emission at Antenna Terminal	Compliance
§2.1053; §96.41	Spurious Radiated Emissions	Compliance
§2.1055; §96.41	Frequency Stability	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/cm²);

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);

Calculated Data:

Frequency (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	(numeric)	(dBm)	(mW)			
3550-3700	16	39.81	22	158.5	24.00	0.87	1.0

Result: The device meet FCC MPE at 24 cm distance

FCC §2.1046, §96.41 - RF OUTPUT POWER

Applicable Standard

According to FCC §96.41

(b) Power limits. Unless otherwise specified in this section, the maximum effective isotropic radiated power (EIRP) and maximum Power Spectral Density (PSD) of any CBSD and End User Device must comply with the limits shown in the table in this paragraph (b):

Device	Maximum EIRP (dBm/10 megahertz)	Maximum PSD (dBm/MHz)
End User Device	23	n/a
Category A CBSD	30	20
Category B CBSD ¹	47	37

¹Category B CBSDs will only be authorized for use after an ESC is approved and commercially deployed consistent with §§96.15 and 96.67.

(g) Power measurement. The peak-to-average power ratio (PAPR) of any CBSD transmitter output power must not exceed 13 dB. PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities or another Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

Test Procedure

Conducted RF Output Power:

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

Note:

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

Test Data

Environmental Conditions

Temperature:	23.9~25.4 °C
Relative Humidity:	35~42%
ATM Pressure:	102.4~102.5kPa

The testing was performed by Winfred Wang on 2020-12-01~2020-12-04.

Test Mode: Transmitting

Chain 0:

Total Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	17.70	18.16	17.78
		RB1#13	18.21	18.40	18.06
		RB1#24	17.77	18.07	17.59
		RB15#0	17.95	18.21	17.92
		RB15#10	18.02	18.17	17.80
		RB25#0	18.04	18.25	17.89
	16QAM	RB1#0	17.68	18.18	18.03
		RB1#13	18.24	18.46	18.31
		RB1#24	17.83	18.11	17.80
		RB15#0	17.88	18.26	17.97
		RB15#10	17.93	18.17	17.83
		RB25#0	18.06	18.30	17.93
10MHz	QPSK	RB1#0	17.76	18.21	17.90
		RB1#25	17.80	18.10	17.68
		RB1#49	18.08	18.37	18.24
		RB25#0	18.20	18.45	18.33
		RB25#25	18.01	18.62	18.16
		RB50#0	18.24	18.52	18.15
	16QAM	RB1#0	17.66	18.31	18.07
		RB1#25	17.72	18.18	17.87
		RB1#49	18.01	18.44	18.43
		RB25#0	18.22	18.48	18.33
		RB25#25	18.02	18.64	18.16
		RB50#0	18.22	18.55	18.16
15MHz	QPSK	RB1#0	17.69	18.42	18.24
		RB1#38	17.73	18.35	17.98
		RB1#74	17.95	18.50	18.04
		RB36#0	19.08	19.28	19.05
		RB36#39	19.05	19.46	19.11
		RB75#0	19.18	19.49	19.13
	16QAM	RB1#0	17.65	18.60	18.41
		RB1#38	17.64	18.54	18.16
		RB1#74	17.88	18.68	18.24
		RB36#0	19.03	19.28	19.04
		RB36#39	19.01	19.43	19.07
		RB75#0	19.21	19.47	19.19
20MHz	QPSK	RB1#0	17.68	18.36	18.03
		RB1#50	17.62	18.15	17.98
		RB1#99	17.96	18.24	18.06
		RB50#0	19.02	19.43	19.20
		RB50#50	19.02	19.49	18.98
		RB100#0	19.09	19.57	19.18
	16QAM	RB1#0	17.68	18.35	18.22
		RB1#50	17.66	18.16	18.18
		RB1#99	17.99	18.26	18.29
		RB50#0	19.01	19.49	19.25
		RB50#50	19.98	19.54	19.02
		RB100#0	19.12	19.57	19.20

EIRP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)
5MHz	QPSK	Low	18.21	16	0.8	33.41
		Middle	18.40	16	0.8	33.6
		High	18.06	16	0.8	33.26
	16QAM	Low	18.24	16	0.8	33.44
		Middle	18.46	16	0.8	33.66
		High	18.31	16	0.8	33.51
10MHz	QPSK	Low	18.24	16	0.8	33.44
		Middle	18.62	16	0.8	33.82
		High	18.33	16	0.8	33.53
	16QAM	Low	18.22	16	0.8	33.42
		Middle	18.64	16	0.8	33.84
		High	18.43	16	0.8	33.63
15MHz	QPSK	Low	19.18	16	0.8	34.38
		Middle	19.49	16	0.8	34.69
		High	19.13	16	0.8	34.33
	16QAM	Low	19.21	16	0.8	34.41
		Middle	19.47	16	0.8	34.67
		High	19.19	16	0.8	34.39
20MHz	QPSK	Low	19.09	16	0.8	34.29
		Middle	19.57	16	0.8	34.77
		High	19.20	16	0.8	34.4
	16QAM	Low	19.98	16	0.8	35.18
		Middle	19.57	16	0.8	34.77
		High	19.25	16	0.8	34.45

PAR:

Modulation	RB	Low channel (dB)	Middle channel (dB)	High channel (dB)	Limit (dB)
QPSK	N1#0	4.99	6.67	5.91	13
	RB100#0	5.88	5.74	5.39	
16QAM	N1#0	6.75	6.00	6.61	
	RB100#0	6.26	6.58	6.35	

Maximum EIRP(dBm/10MHz):

Channel Bandwidth	Modulation	Resource Block	Conducted Power (dBm/10MHz)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm/10MHz)	Limits (dBm/10MHz)
5MHz	QPSK	RB1	18.06	16	0.8	33.26	47
		RB15	12.56	16	0.8	27.76	47
		RB25	11.96	16	0.8	27.16	47
	16QAM	RB1	18.14	16	0.8	33.34	47
		RB15	13.91	16	0.8	29.11	47
		RB25	17.49	16	0.8	32.69	47
10MHz	QPSK	RB1	18.15	16	0.8	33.35	47
		RB25	18.14	16	0.8	33.34	47
		RB50	18.02	16	0.8	33.22	47
	16QAM	RB1	17.71	16	0.8	32.91	47
		RB25	18.22	16	0.8	33.42	47
		RB50	18.38	16	0.8	33.58	47
15MHz	QPSK	RB1	18.58	16	0.8	33.78	47
		RB36	18.72	16	0.8	33.92	47
		RB75	18.24	16	0.8	33.44	47
	16QAM	RB1	19.14	16	0.8	34.34	47
		RB36	18.68	16	0.8	33.88	47
		RB75	19.43	16	0.8	34.63	47
20MHz	QPSK	RB1	18.26	16	0.8	33.46	47
		RB50	19.11	16	0.8	34.31	47
		RB100	17.96	16	0.8	33.16	47
	16QAM	RB1	17.62	16	0.8	32.82	47
		RB50	17.62	16	0.8	32.82	47
		RB100	18.52	16	0.8	33.72	47

Note: the EIRP Total Power is less than limit of Maximum EIRP(dBm/10MHz), so the Maximum EIRP(dBm/10MHz) only verified the maximum power configuration for each bandwidth and RB setting.

Maximum PSD(dBm/MHz):

Channel Bandwidth	Modulation	Resource Block	Conducted Power (dBm/MHz)	Limits (dBm/MHz)
5MHz	QPSK	RB1	17.46	37
		RB15	10.58	37
		RB25	9.4	37
	16QAM	RB1	18.1	37
		RB15	11.6	37
		RB25	16.02	37
10MHz	QPSK	RB1	18.18	37
		RB25	16.02	37
		RB50	15.2	37
	16QAM	RB1	17.94	37
		RB25	17.47	37
		RB50	15.64	37
15MHz	QPSK	RB1	18.62	37
		RB36	17.09	37
		RB75	14.67	37
	16QAM	RB1	19.16	37
		RB36	15.64	37
		RB75	14.59	37
20MHz	QPSK	RB1	18.2	37
		RB50	16.5	37
		RB100	14.72	37
	16QAM	RB1	17.62	37
		RB50	15.39	37
		RB100	14.3	37

Note: the Total Conducted Power is less than limit of Maximum PSD(dBm/MHz), so the Maximum EIRP(dBm/MHz) only verified the maximum power configuration for each bandwidth and RB setting.

Chain 1:

Total Conducted Output Power:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	19.14	18.68	18.73
		RB1#13	19.21	19.01	18.76
		RB1#24	18.71	18.71	18.01
		RB15#0	18.68	18.87	18.59
		RB15#10	18.67	18.90	18.38
		RB25#0	18.61	18.93	18.76
	16QAM	RB1#0	18.85	18.93	18.80
		RB1#13	19.29	19.23	18.78
		RB1#24	18.65	18.94	18.08
		RB15#0	18.66	18.91	18.60
		RB15#10	18.56	18.91	18.40
		RB25#0	18.67	18.90	18.75
10MHz	QPSK	RB1#0	19.68	18.96	19.35
		RB1#25	18.24	18.99	19.30
		RB1#49	18.57	19.36	19.01
		RB25#0	18.49	19.13	19.30
		RB25#25	18.43	19.18	18.99
		RB50#0	18.46	19.15	19.02
	16QAM	RB1#0	18.52	19.16	19.35
		RB1#25	18.44	19.17	19.54
		RB1#49	18.74	19.54	19.14
		RB25#0	18.48	19.10	19.30
		RB25#25	18.41	19.16	18.91
		RB50#0	18.44	19.12	19.02
15MHz	QPSK	RB1#0	19.45	19.39	19.49
		RB1#38	18.88	19.51	19.61
		RB1#74	18.79	20.00	19.26
		RB36#0	19.56	20.11	20.72
		RB36#39	19.54	20.40	20.82
		RB75#0	19.60	20.27	21.26
	16QAM	RB1#0	19.44	19.55	19.70
		RB1#38	19.19	19.74	19.28
		RB1#74	18.98	20.03	19.47
		RB36#0	19.63	20.20	20.65
		RB36#39	19.57	20.44	20.87
		RB75#0	19.60	20.29	20.97
20MHz	QPSK	RB1#0	18.96	19.07	19.46
		RB1#50	18.68	19.19	18.78
		RB1#99	18.85	19.41	18.54
		RB50#0	19.76	20.15	20.48
		RB50#50	19.66	20.41	20.36
		RB100#0	19.62	20.35	21.10
	16QAM	RB1#0	19.08	19.12	19.56
		RB1#50	18.89	19.25	18.82
		RB1#99	19.03	19.48	18.63
		RB50#0	19.79	20.14	20.40
		RB50#50	19.63	20.39	20.57
		RB100#0	19.62	20.29	20.03

EIRP:

Channel Bandwidth	Modulation	Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)
5MHz	QPSK	Low	19.21	16	0.8	34.41
		Middle	19.01	16	0.8	34.21
		High	18.76	16	0.8	33.96
	16QAM	Low	19.29	16	0.8	34.49
		Middle	19.23	16	0.8	34.43
		High	18.8	16	0.8	34
10MHz	QPSK	Low	19.68	16	0.8	34.88
		Middle	19.36	16	0.8	34.56
		High	19.35	16	0.8	34.55
	16QAM	Low	18.57	16	0.8	33.77
		Middle	19.36	16	0.8	34.56
		High	19.35	16	0.8	34.55
15MHz	QPSK	Low	19.6	16	0.8	34.8
		Middle	20.4	16	0.8	35.6
		High	21.26	16	0.8	36.46
	16QAM	Low	19.63	16	0.8	34.83
		Middle	20.44	16	0.8	35.64
		High	20.97	16	0.8	36.17
20MHz	QPSK	Low	19.76	16	0.8	34.96
		Middle	20.41	16	0.8	35.61
		High	21.1	16	0.8	36.3
	16QAM	Low	19.79	16	0.8	34.99
		Middle	20.39	16	0.8	35.59
		High	20.57	16	0.8	35.77

PAR

Modulation	RB	Low channel (dB)	Middle channel (dB)	High channel (dB)	Limit (dB)
QPSK	N1#0	4.84	5.68	5.54	13
	RB100#0	5.39	5.74	5.16	
16QAM	N1#0	5.94	5.57	6.29	
	RB100#0	6.03	5.94	5.86	

Maximum EIRP(dBm/10MHz):

Channel Bandwidth	Modulation	Resource Block	Conducted Power (dBm/10MHz)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm/10MHz)	Limits (dBm/10MHz)
5MHz	QPSK	RB1	18.58	16	0.8	33.78	47
		RB15	18.54	16	0.8	33.74	47
		RB25	18.9	16	0.8	34.1	47
	16QAM	RB1	18.91	16	0.8	34.11	47
		RB15	18.66	16	0.8	33.86	47
		RB25	18.83	16	0.8	34.03	47
10MHz	QPSK	RB1	19.23	16	0.8	34.43	47
		RB25	18.71	16	0.8	33.91	47
		RB50	18.38	16	0.8	33.58	47
	16QAM	RB1	19.33	16	0.8	34.53	47
		RB25	19.2	16	0.8	34.4	47
		RB50	18.62	16	0.8	33.82	47
15MHz	QPSK	RB1	19.87	16	0.8	35.07	47
		RB36	20.38	16	0.8	35.58	47
		RB75	17.89	16	0.8	33.09	47
	16QAM	RB1	19.47	16	0.8	34.67	47
		RB36	20.29	16	0.8	35.49	47
		RB75	18.9	16	0.8	34.1	47
20MHz	QPSK	RB1	19.17	16	0.8	34.37	47
		RB50	20.24	16	0.8	35.44	47
		RB100	18.46	16	0.8	33.66	47
	16QAM	RB1	18.94	16	0.8	34.14	47
		RB50	20.32	16	0.8	35.52	47
		RB100	18.5	16	0.8	33.7	47

Note: the EIRP Total Power is less than limit of Maximum EIRP(dBm/10MHz), so the Maximum EIRP(dBm/10MHz) only verified the maximum power configuration for each bandwidth and RB setting.

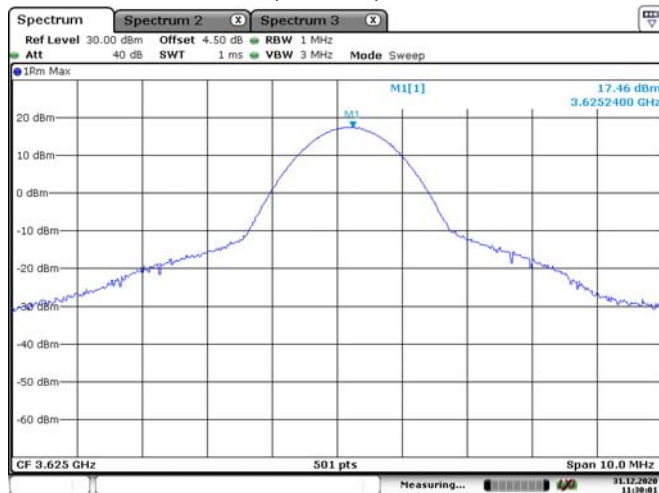
Maximum PSD(dBm/MHz):

Channel Bandwidth	Modulation	Resource Block	Conducted Power (dBm/MHz)	Limits (dBm/MHz)
5MHz	QPSK	RB1	18.57	37
		RB15	17.01	37
		RB25	17.13	37
	16QAM	RB1	18.89	37
		RB15	17	37
		RB25	16.58	37
10MHz	QPSK	RB1	19.14	37
		RB25	16.28	37
		RB50	15.64	37
	16QAM	RB1	19.25	37
		RB25	16.23	37
		RB50	15.34	37
15MHz	QPSK	RB1	19.81	37
		RB36	18.48	37
		RB75	14.53	37
	16QAM	RB1	19.18	37
		RB36	17.3	37
		RB75	14.77	37
20MHz	QPSK	RB1	19.04	37
		RB50	17.87	37
		RB100	14.27	37
	16QAM	RB1	18.91	37
		RB50	17.2	37
		RB100	13.8	37

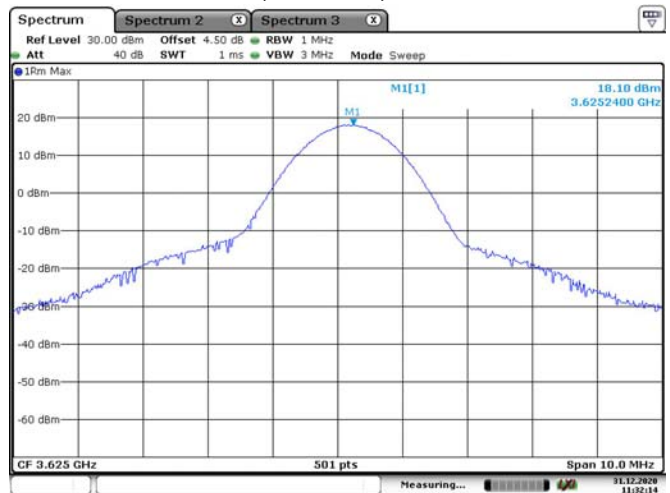
Note: the Total Conducted Power is less than limit of Maximum PSD(dBm/MHz), so the Maximum EIRP(dBm/MHz) only verified the maximum power configuration for each bandwidth and RB setting.

**Maximum Conducted Power(dBm/1MHz):
Chain 0:**

5M, QPSK,1RB



5M, 16QAM, 1RB



5M. QPSK. Half RB



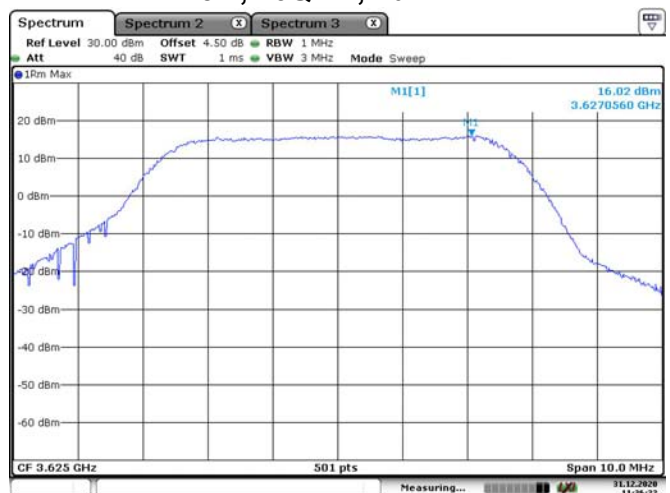
5M. 16QAM. Half RB



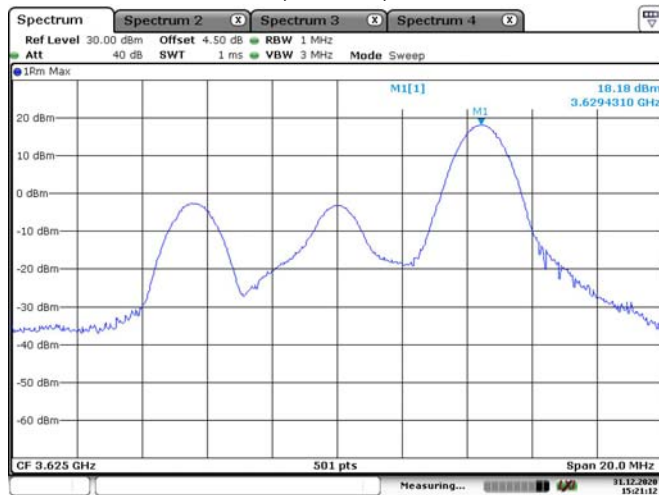
5M, QPSK, Full RB



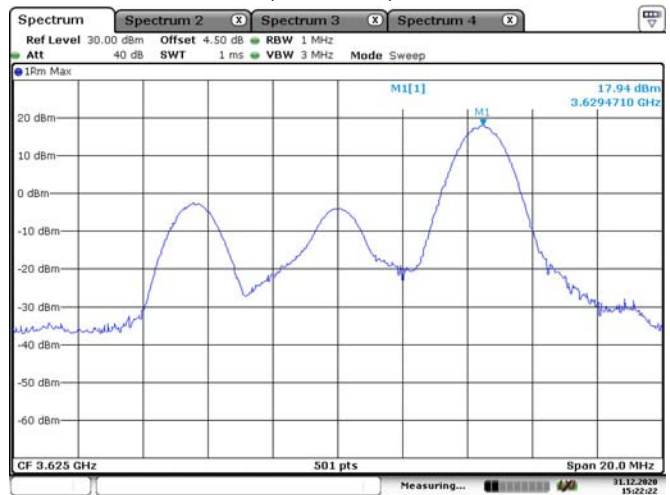
5M, 16QAM, Full RB



10M, QPSK, 1RB



10M, 16QAM, 1RB



10M, QPSK, Half RB



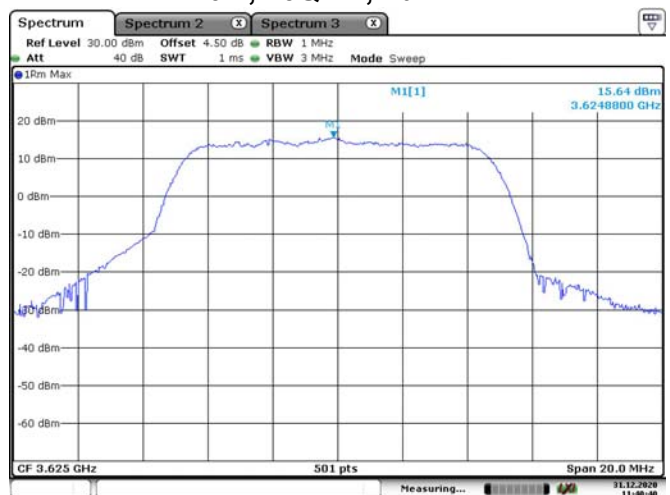
10M, 16QAM, Half RB



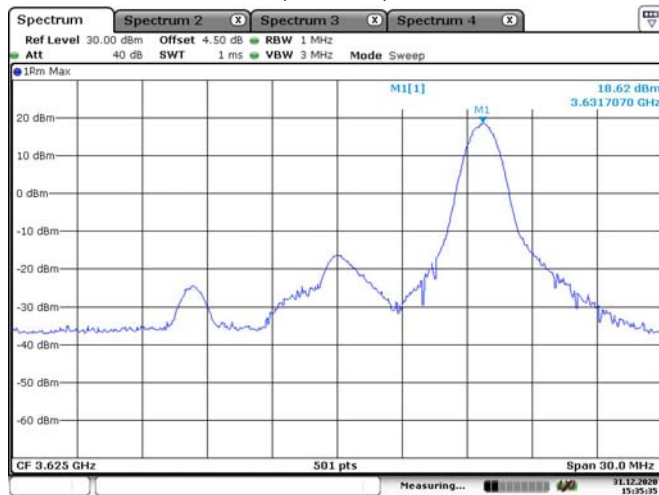
10M, QPSK, Full RB



10M, 16QAM, Full RB

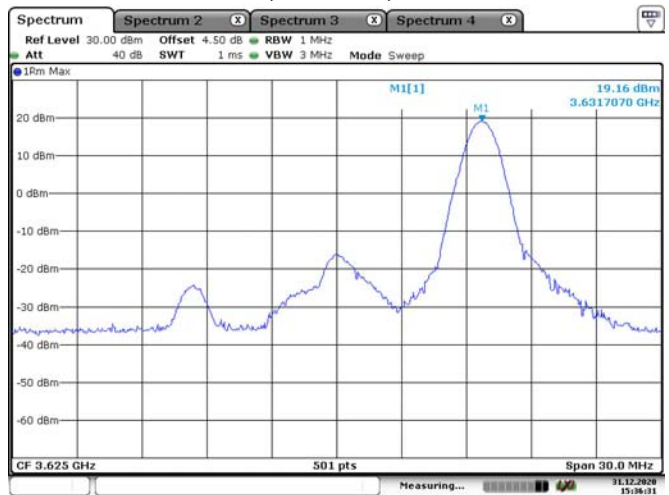


15M, QPSK, 1RB



Date: 31.DEC.2020 15:35:35

15M, 16QAM, 1RB



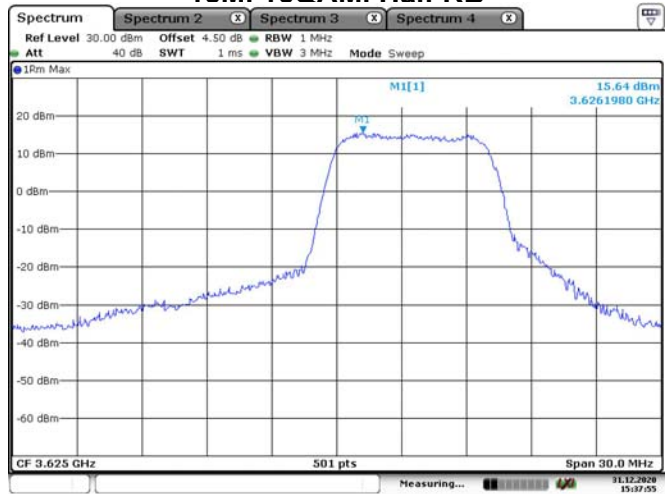
Date: 31.DEC.2020 15:36:32

15M. QPSK. Half RB



Date: 31.DEC.2020 15:39:10

15M. 16QAM. Half RB



Date: 31.DEC.2020 15:37:55

15M, QPSK, Full RB



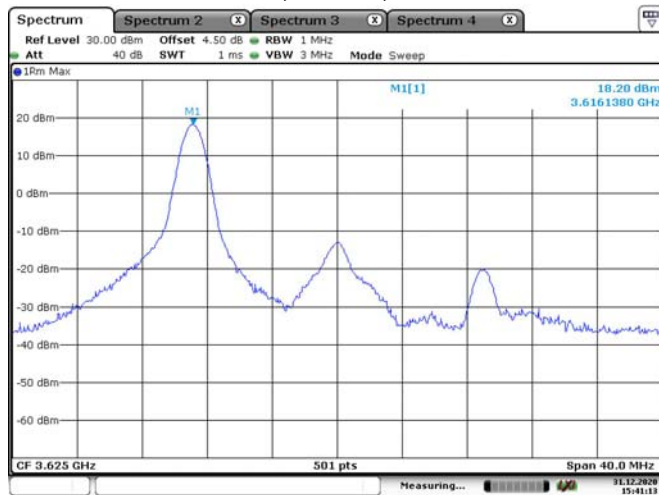
Date: 4.DEC.2020 09:12:09

15M, 16QAM, Full RB

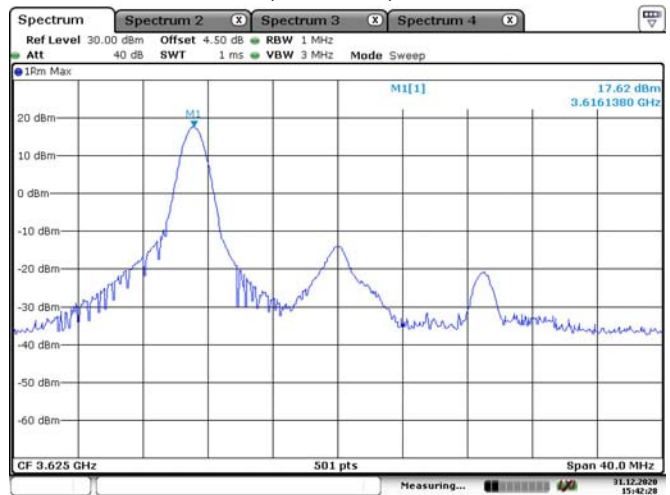


Date: 4.DEC.2020 09:09:48

20M, QPSK, 1RB



20M, 16QAM, 1RB



20M, QPSK, Half RB



20M, 16QAM, Half RB



20M, QPSK, Full RB



20M, 16QAM, Full RB

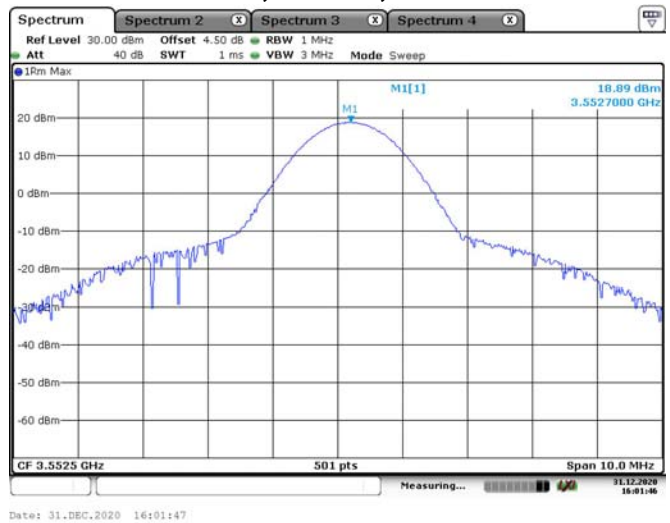


Chain 1:

5M, QPSK, 1RB



5M, 16QAM, 1RB



5M. QPSK. Half RB



5M. 16QAM. Half RB



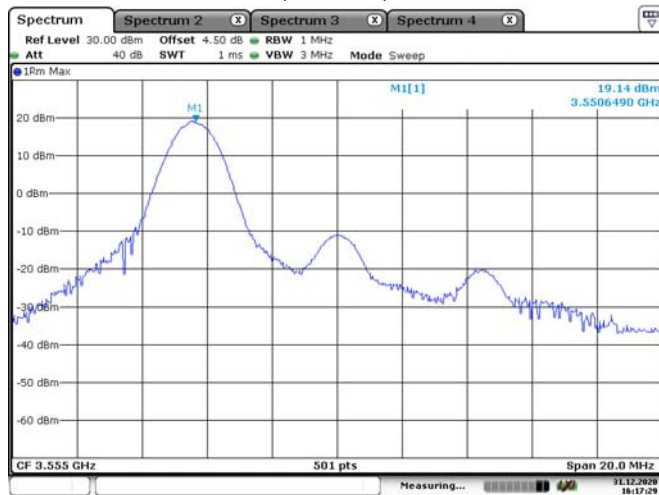
5M, QPSK, Full RB



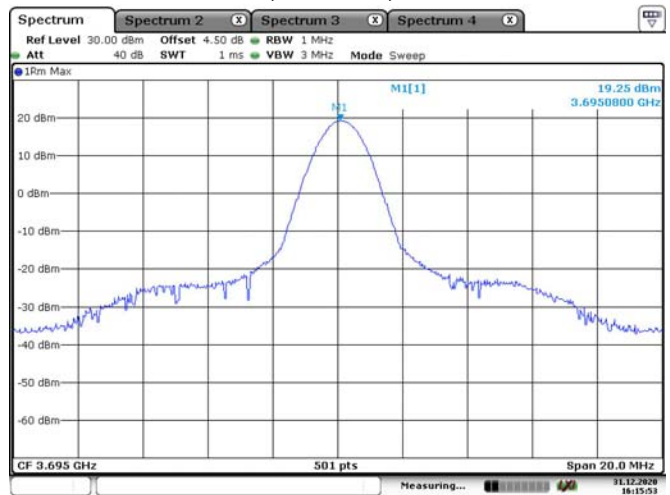
5M, 16QAM, Full RB



10M, QPSK, 1RB



10M, 16QAM, 1RB



10M, QPSK, Half RB



10M, 16QAM, Half RB



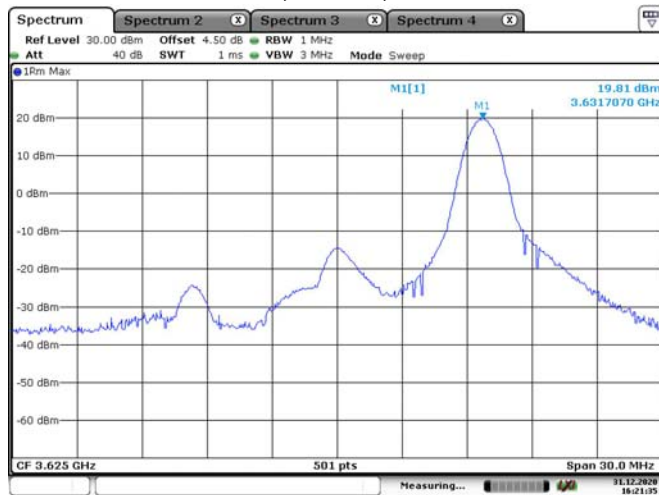
10M, QPSK, Full RB



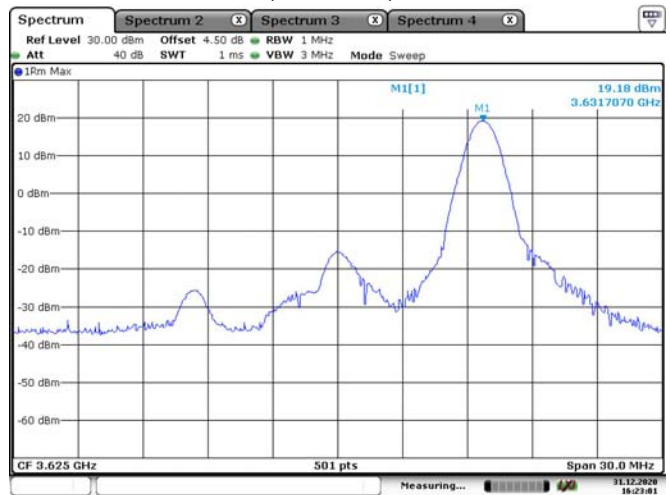
10M, 16QAM, Full RB



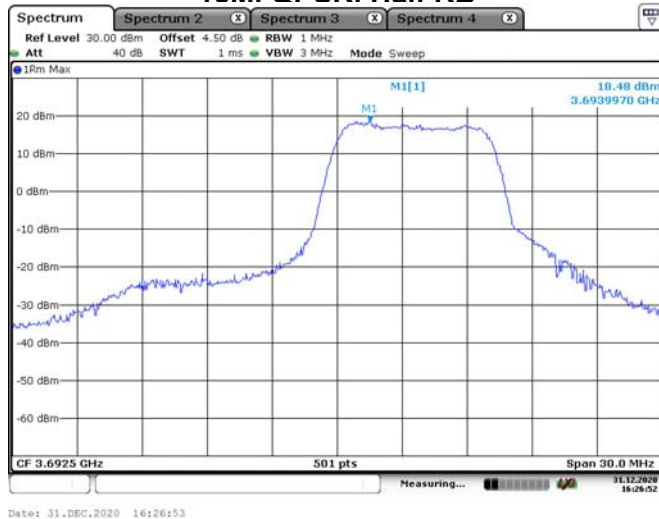
15M, QPSK, 1RB



15M, 16QAM, 1RB



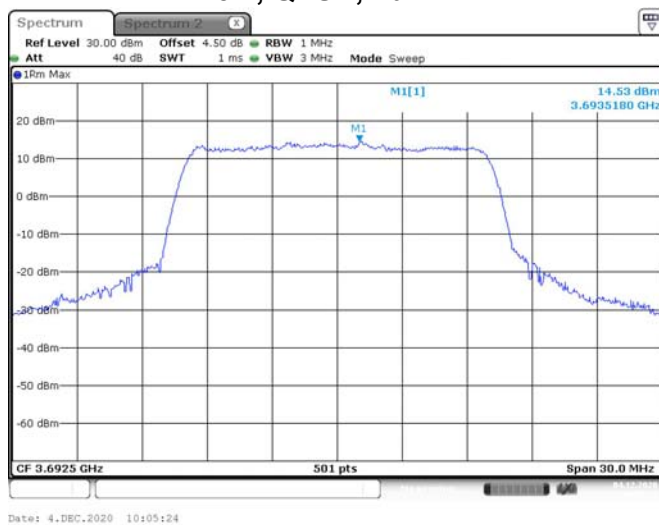
15M, QPSK, Half RB



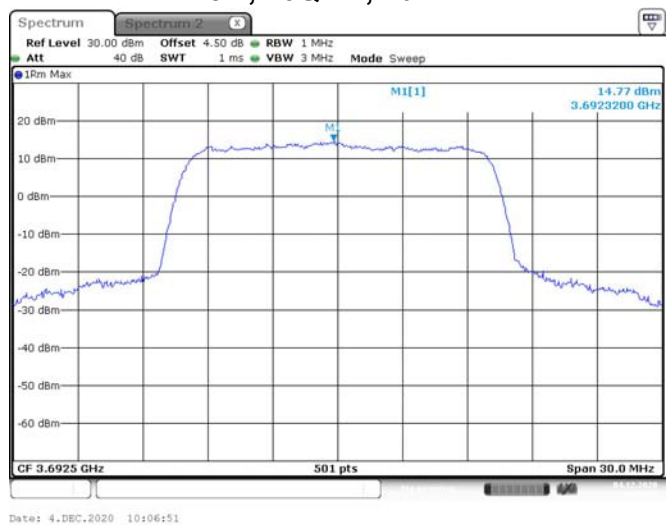
15M, 16QAM, Half RB



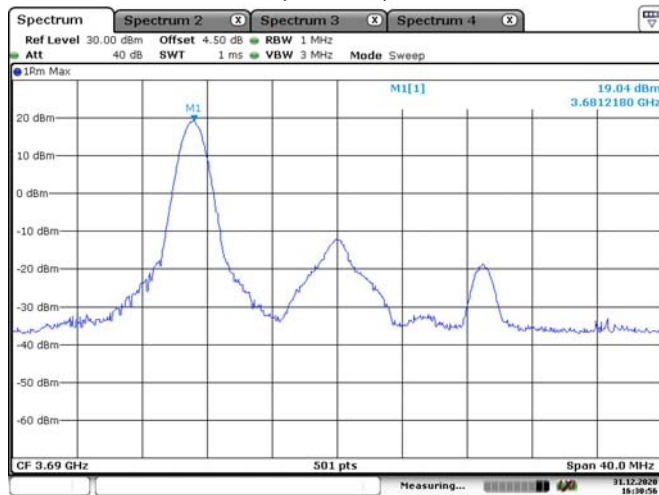
15M, QPSK, Full RB



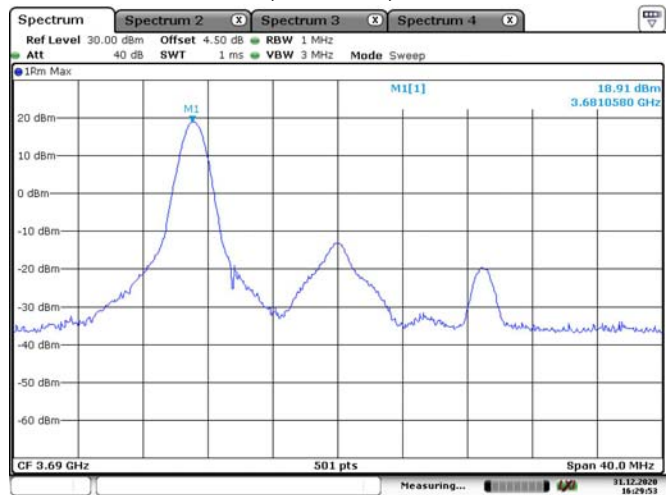
15M, 16QAM, Full RB



20M, QPSK, 1RB



20M, 16QAM, 1RB



20M, QPSK, Half RB



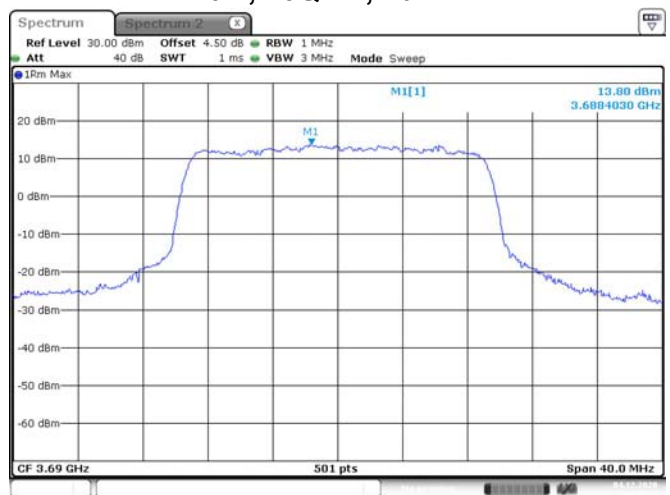
20M, 16QAM, Half RB



20M, QPSK, Full RB

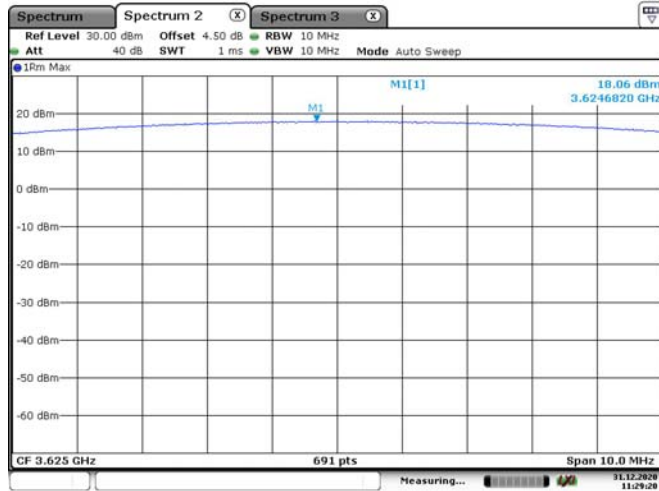


20M, 16QAM, Full RB

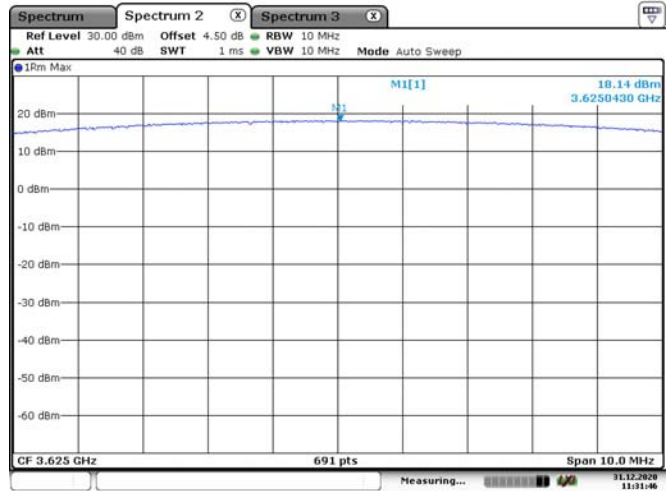


Maximum EIRP(dBm/10MHz):
Chain 0:

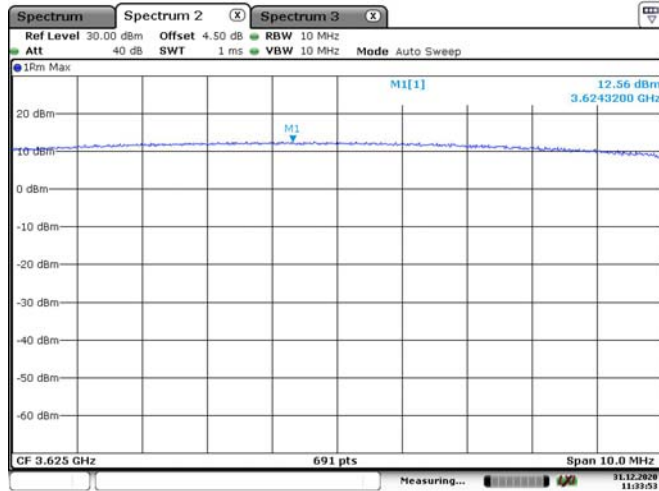
5M, QPSK, 1RB



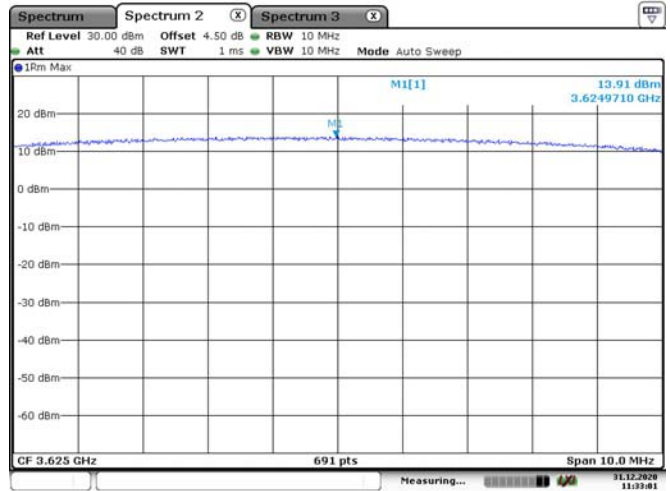
5M, 16QAM, 1RB



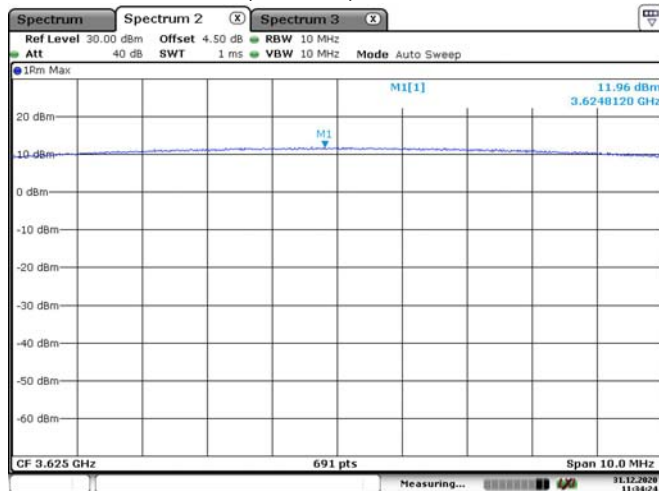
5M. QPSK. Half RB



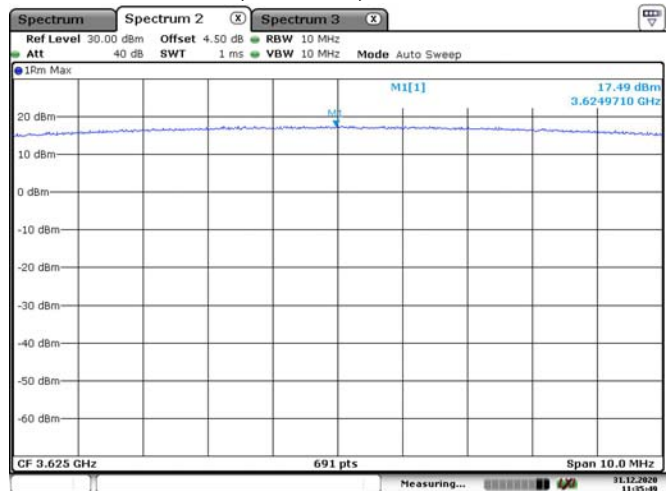
5M. 16QAM. Half RB



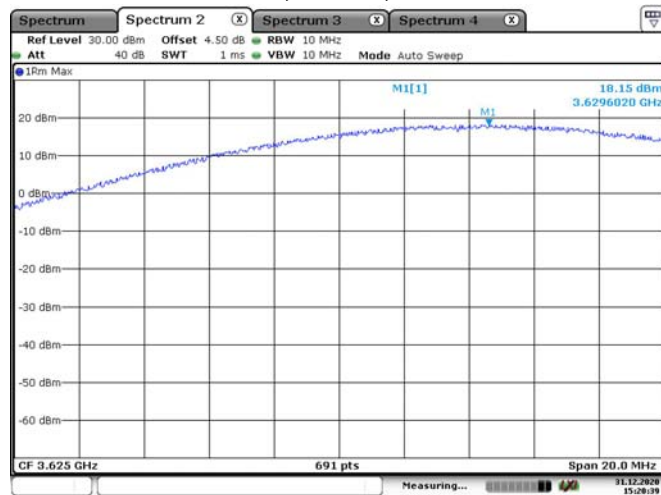
5M, QPSK, Full RB



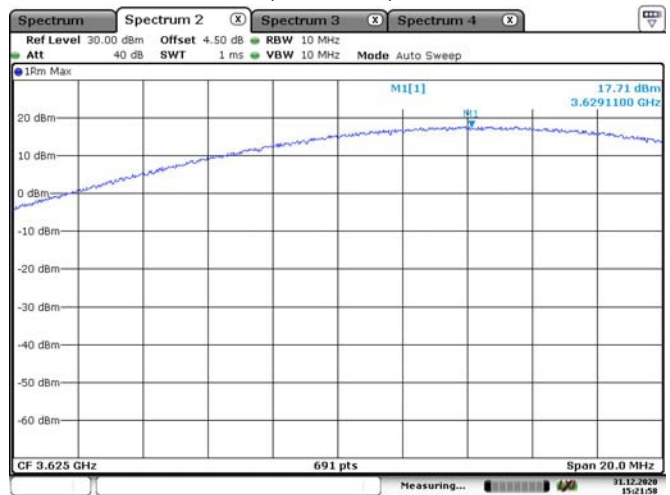
5M, 16QAM, Full RB



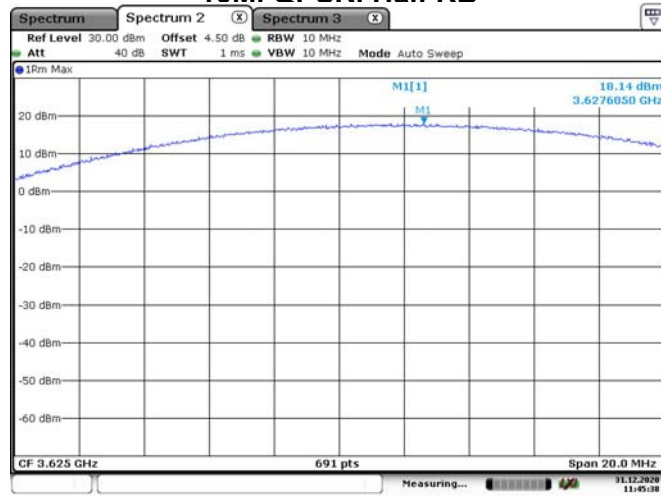
10M, QPSK, 1RB



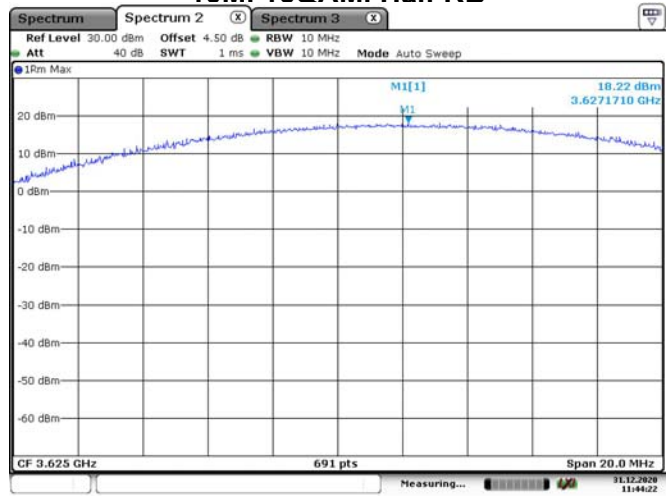
10M, 16QAM, 1RB



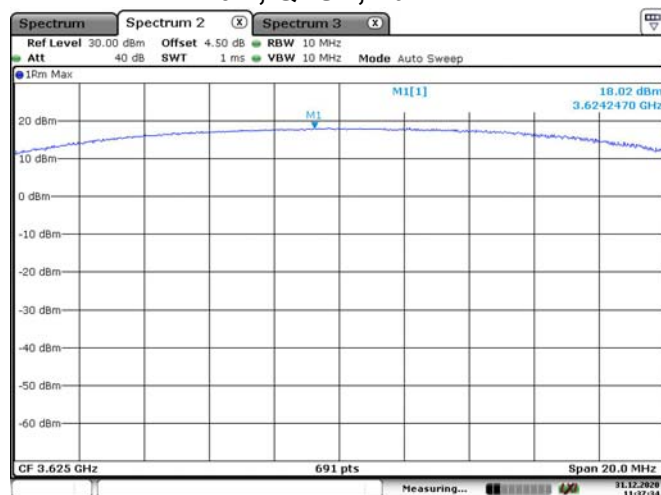
10M, QPSK, Half RB



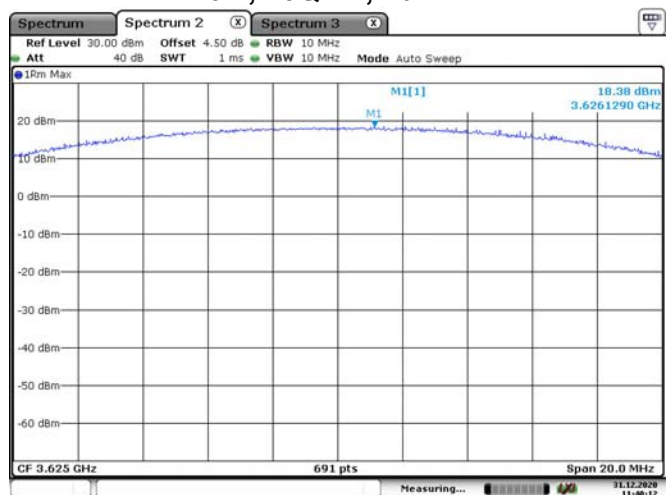
10M, 16QAM, Half RB



10M, QPSK, Full RB



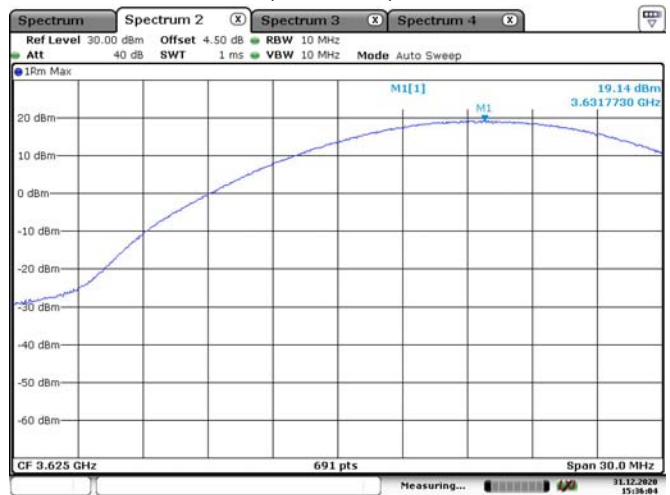
10M, 16QAM, Full RB



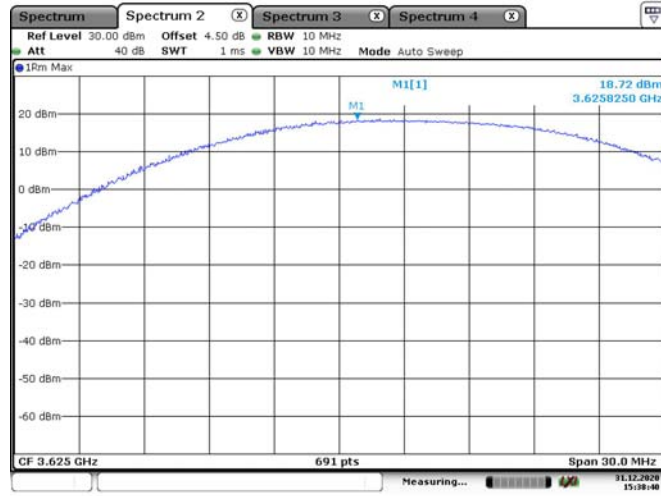
15M, QPSK, 1RB



15M, 16QAM, 1RB



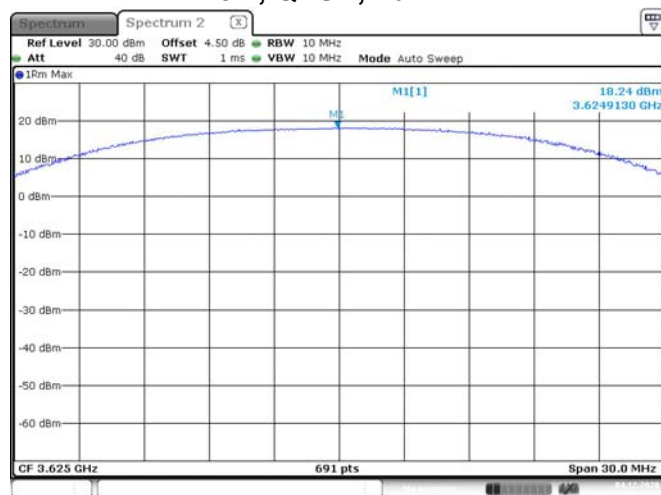
15M, QPSK, Half RB



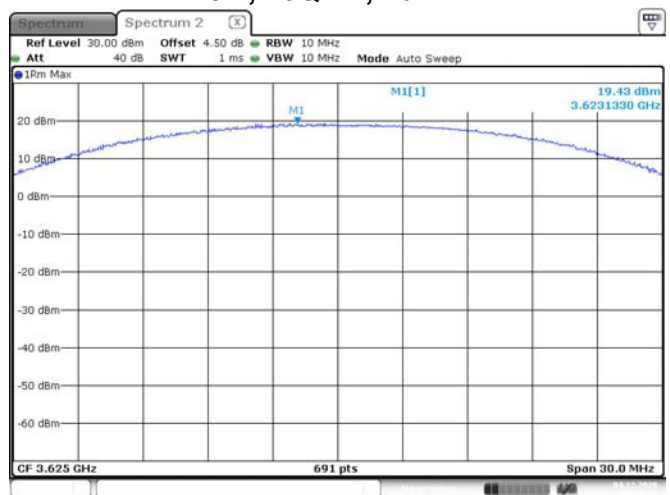
15M, 16QAM, Half RB



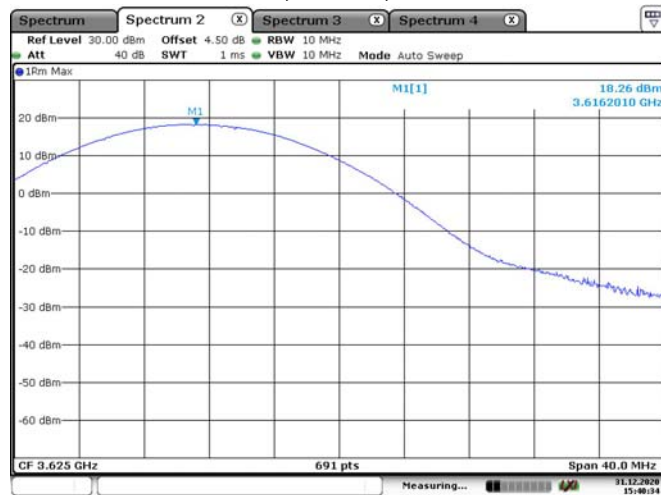
15M, QPSK, Full RB



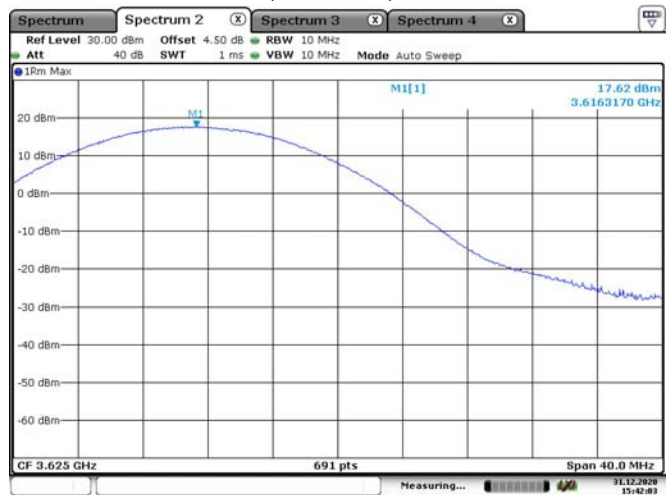
15M, 16QAM, Full RB



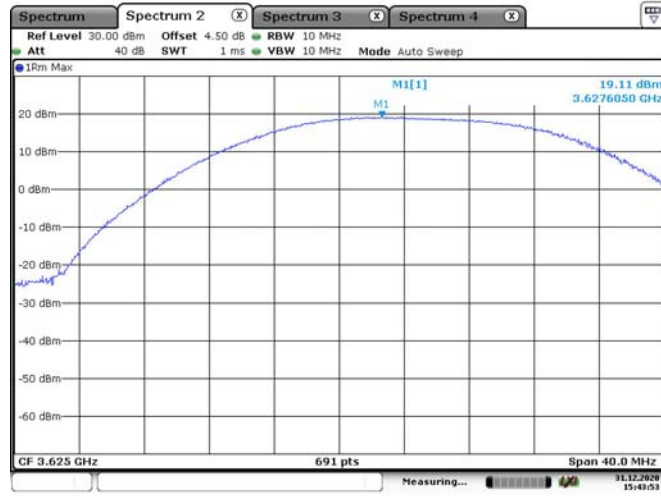
20M, QPSK, 1RB



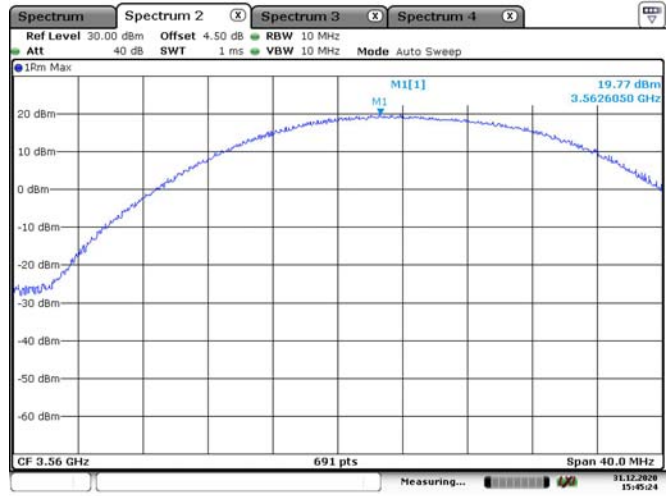
20M, 16QAM, 1RB



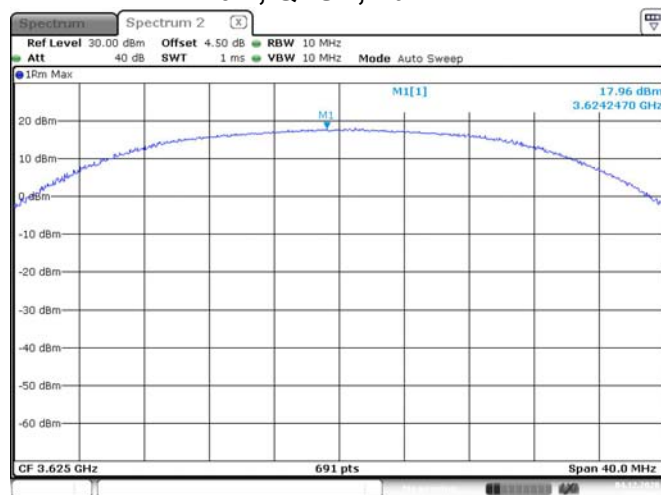
20M, QPSK, Half RB



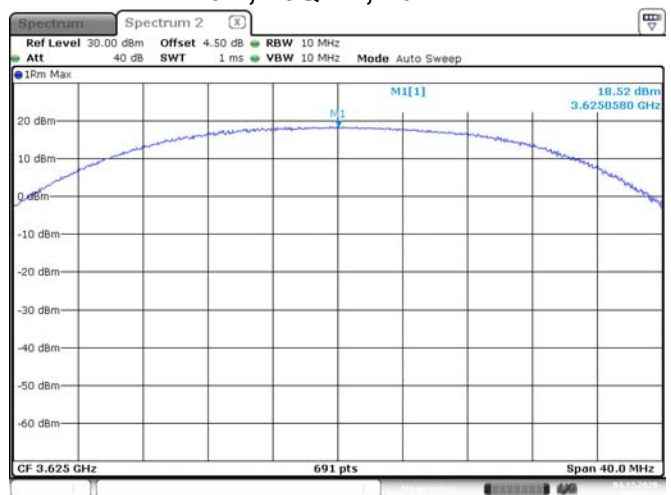
20M, 16QAM, Half RB



20M, QPSK, Full RB

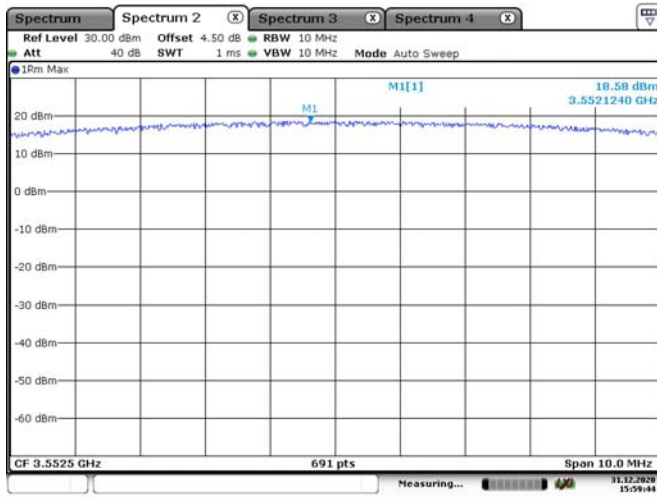


20M, 16QAM, Full RB

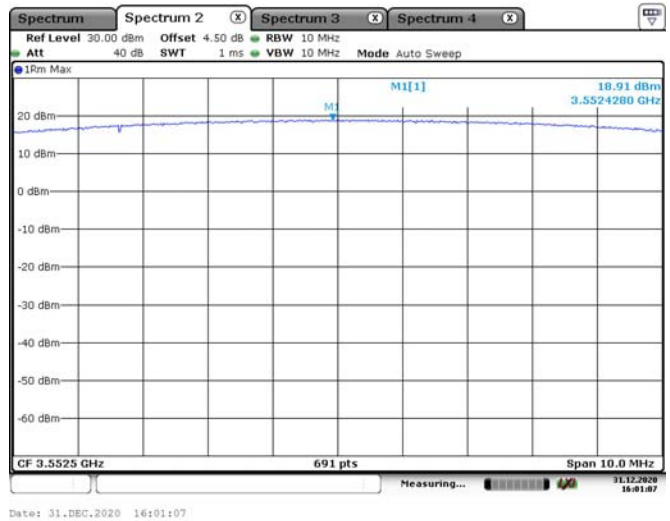


Chain 1:

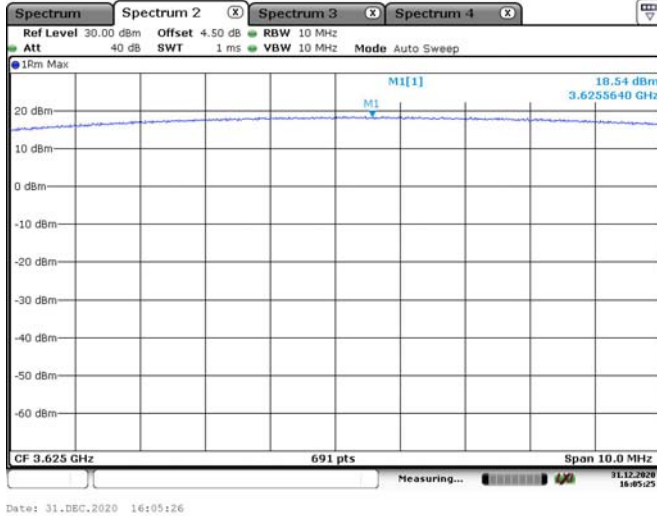
5M, QPSK, 1RB



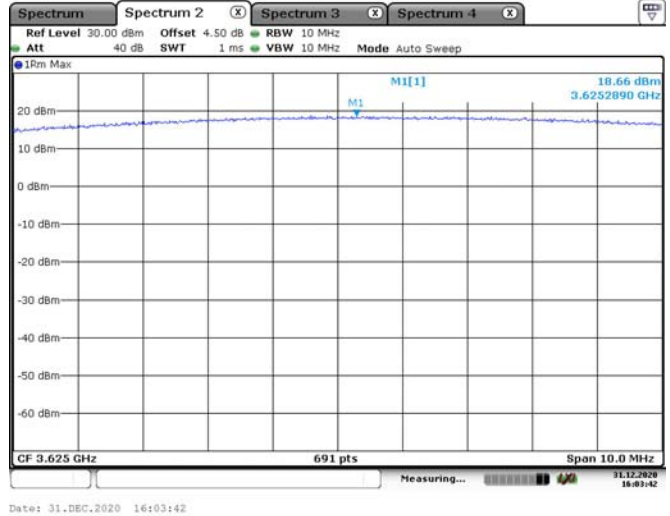
5M, 16QAM, 1RB



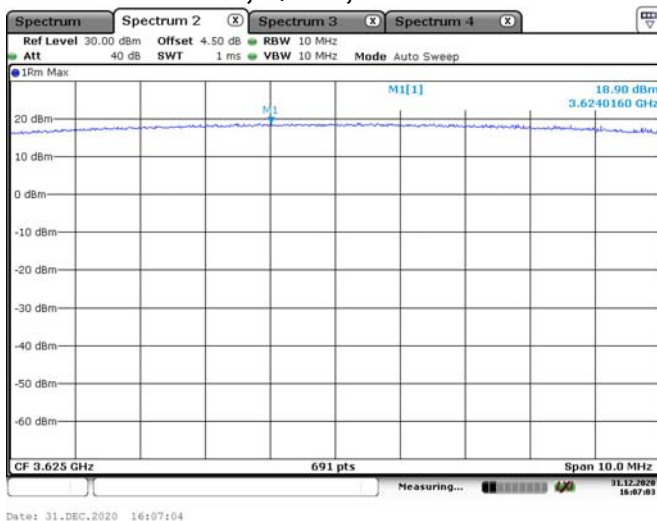
5M, QPSK, Half RB



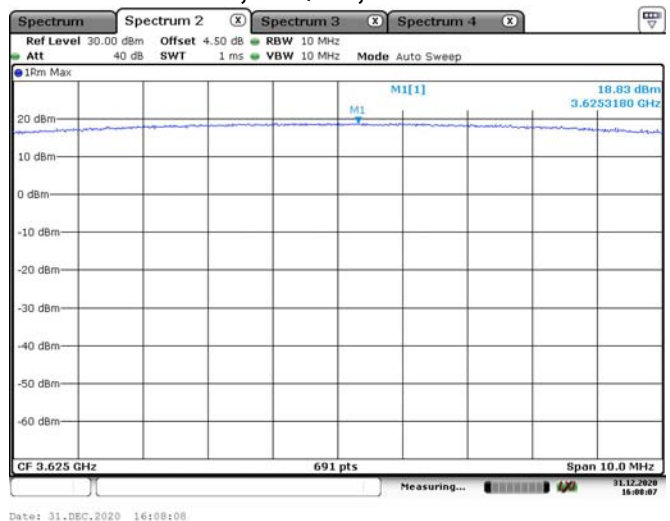
5M, 16QAM, Half RB



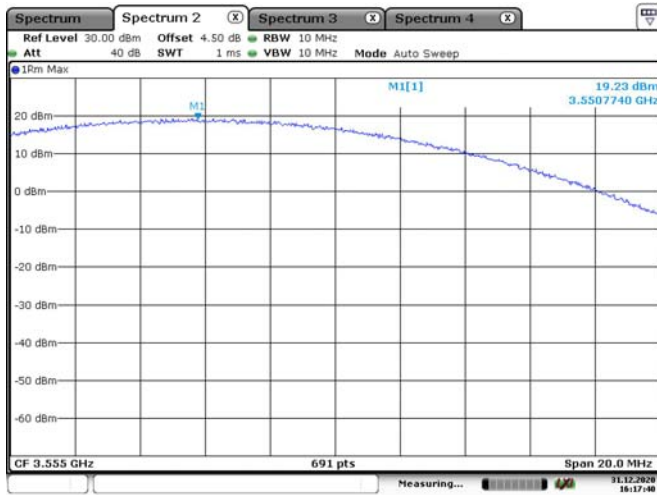
5M, QPSK, Full RB



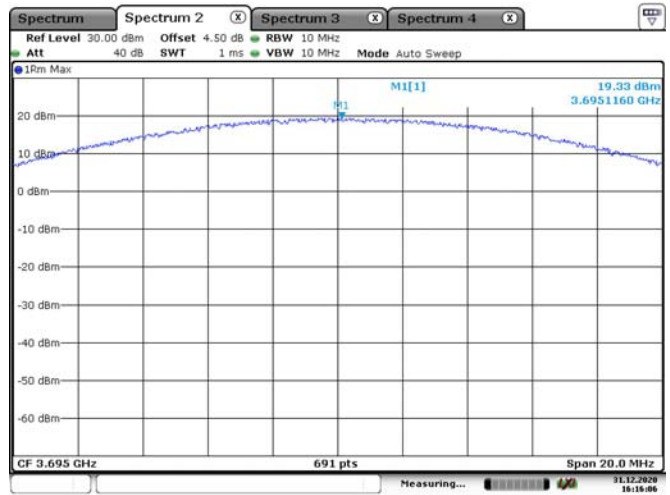
5M, 16QAM, Full RB



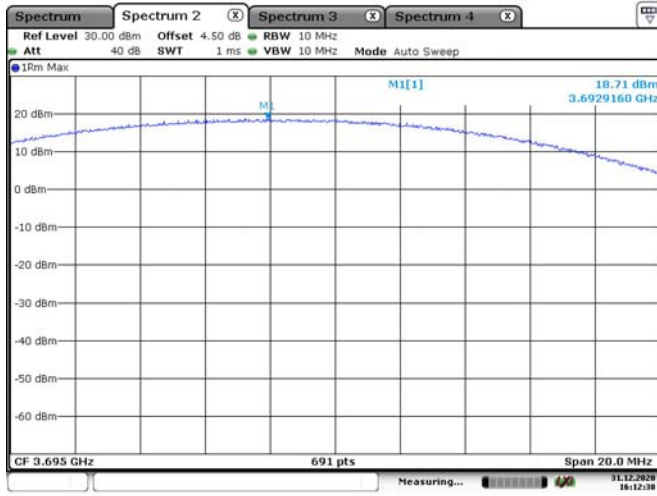
10M, QPSK, 1RB



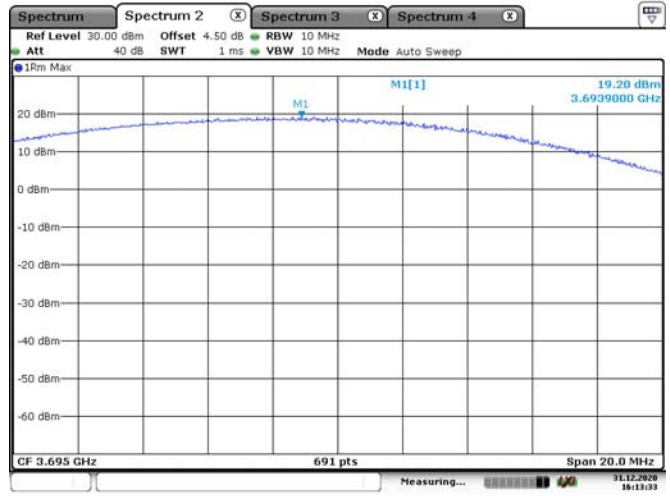
10M, 16QAM, 1RB



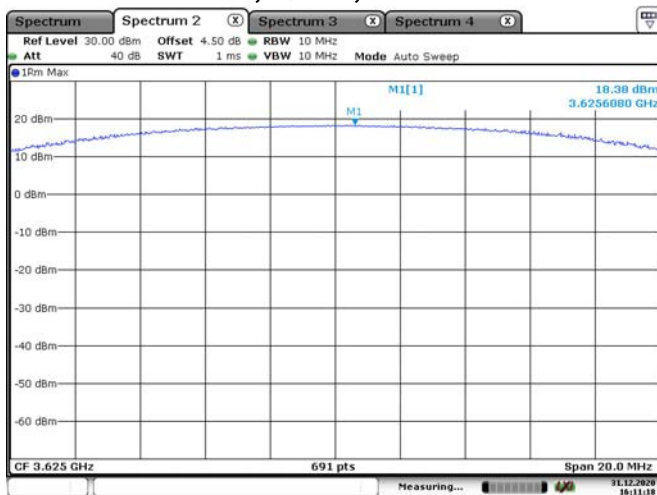
10M, QPSK, Half RB



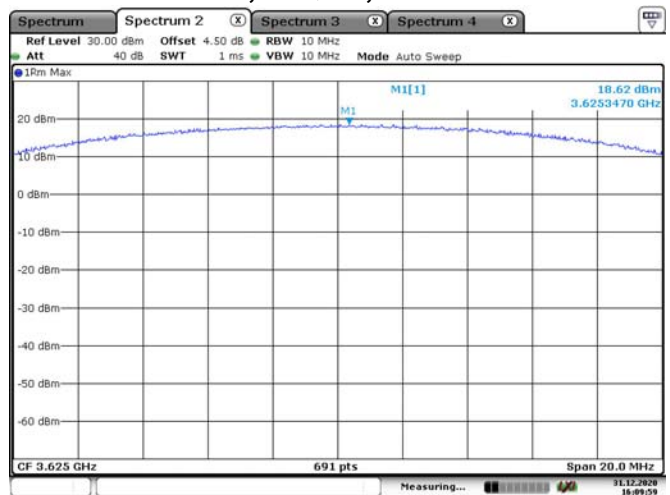
10M, 16QAM, Half RB



10M, QPSK, Full RB



10M, 16QAM, Full RB



15M, QPSK, 1RB



15M, 16QAM, 1RB



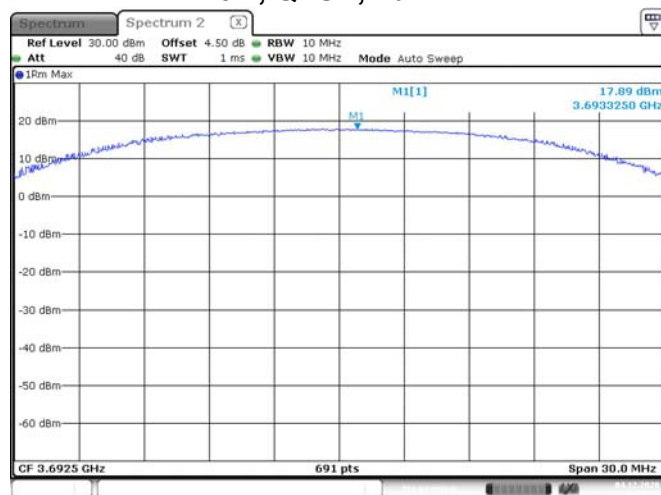
15M, QPSK, Half RB



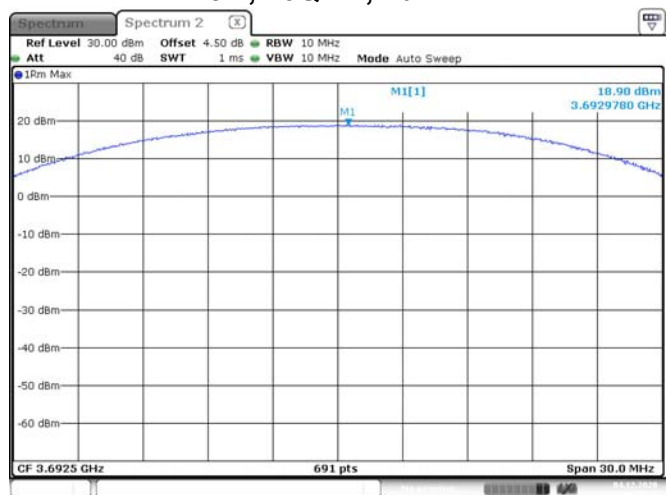
15M, 16QAM, Half RB



15M, QPSK, Full RB



15M, 16QAM, Full RB



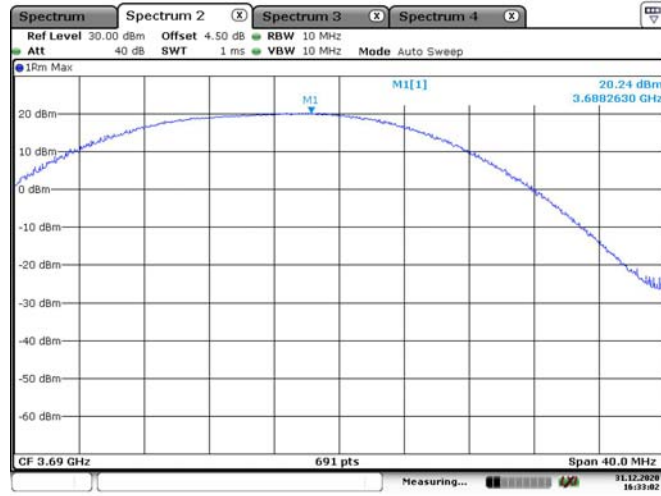
20M, QPSK, 1RB



20M, 16QAM, 1RB



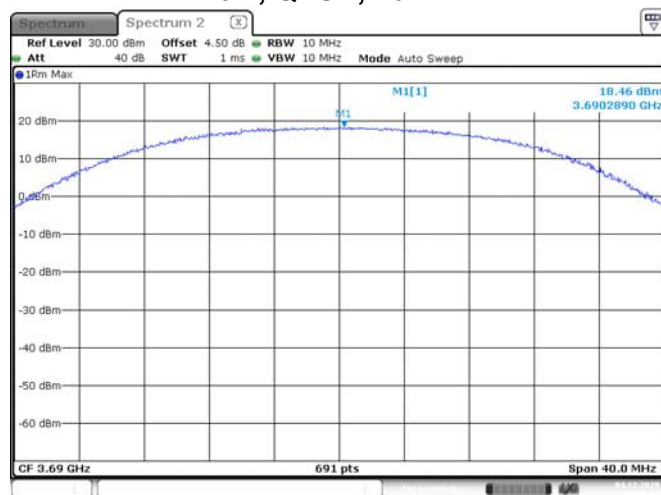
20M, QPSK, Half RB



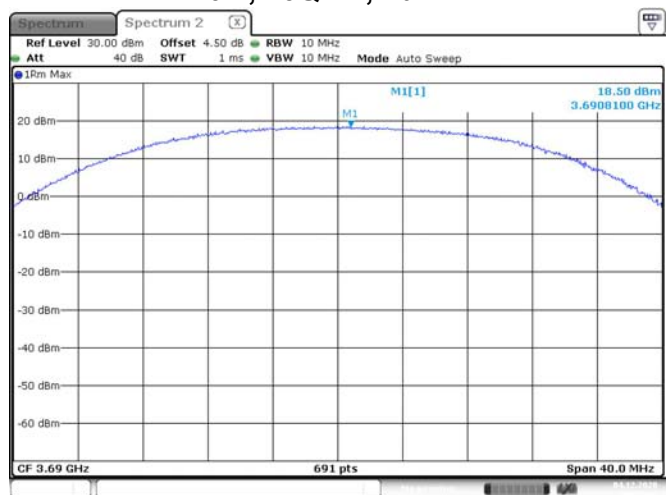
20M, 16QAM, Half RB



20M, QPSK, Full RB



20M, 16QAM, Full RB



FCC §2.1049,§96.41(e)(2)(3) - OCCUPIED BANDWIDTH

Applicable Standard

According to §96.41(e)(2)(3)

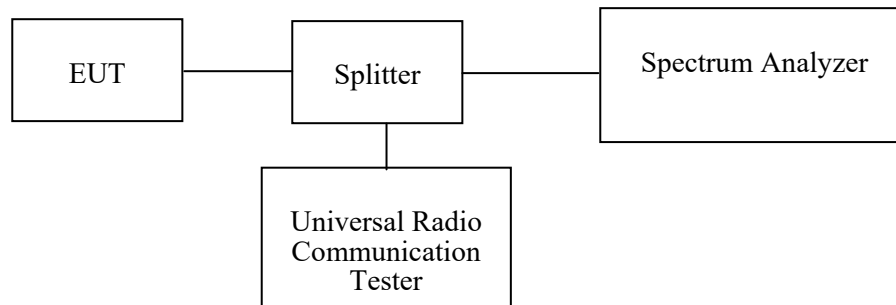
(2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz.

(3) Measurement procedure. (i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's authorized frequency channel, a resolution bandwidth of no less than one percent of the fundamental emission bandwidth may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full reference bandwidth (i.e., 1 MHz or 1 percent of emission bandwidth, as specified). The fundamental emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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 Data

Environmental Conditions

Temperature:	23.9~25.4 °C
Relative Humidity:	35~42%
ATM Pressure:	102.4~102.5kPa

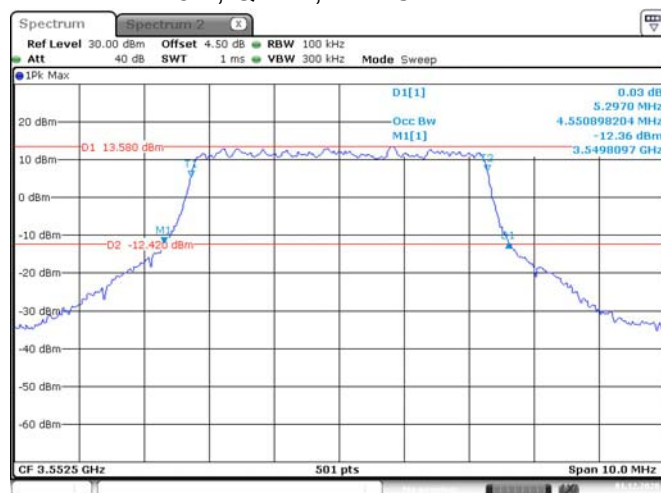
The testing was performed by Winfred Wang on 2020-12-01~2021-01-26.

Test Mode: Transmitting

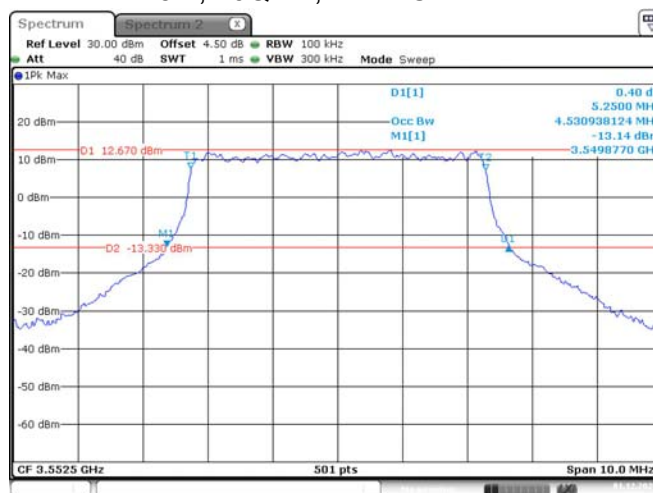
Antenna Chain	Bandwidth (MHz)	Modulation mode	Low Channel		Middle Channel		High Channel	
			99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
0	5 MHz	QPSK	4.551	5.297	4.551	5.326	4.531	5.312
		16QAM	4.531	5.250	4.531	5.314	4.531	5.294
	10 MHz	QPSK	8.982	9.886	8.982	8.942	8.942	9.775
		16QAM	8.982	9.684	9.864	9.698	8.942	9.644
	15 MHz	QPSK	13.473	14.790	13.473	14.980	13.533	15.030
		16QAM	13.533	14.937	13.533	15.007	13.533	15.073
1	5 MHz	QPSK	17.964	19.302	17.964	19.070	17.964	19.119
		16QAM	17.964	19.302	17.884	19.288	17.964	19.279
	10 MHz	QPSK	4.551	5.404	4.531	5.375	4.531	5.169
		16QAM	4.531	5.297	4.531	5.317	4.531	5.305
	15 MHz	QPSK	8.982	9.940	8.942	9.951	8.942	9.720
		16QAM	8.942	9.691	8.942	9.738	8.942	9.662
	20 MHz	QPSK	13.473	14.867	13.473	15.030	13.413	14.780
		16QAM	13.593	14.780	13.533	14.970	13.533	15.020
	20 MHz	QPSK	17.884	19.280	17.964	19.208	17.964	19.221
		16QAM	17.964	19.280	17.884	19.208	17.884	19.257

Chain 0:

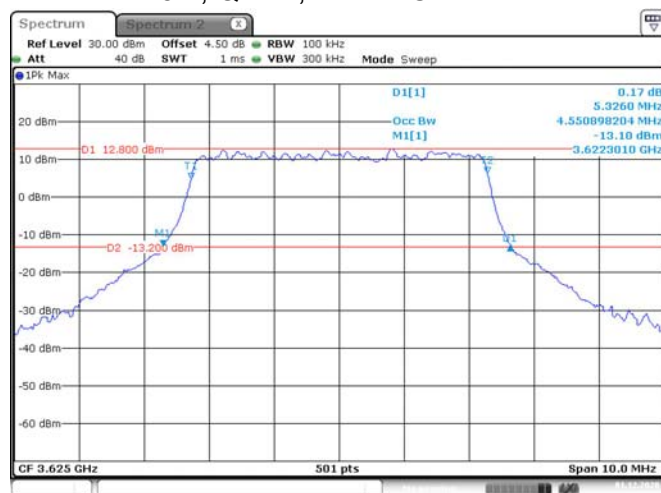
5M, QPSK, Low Channel



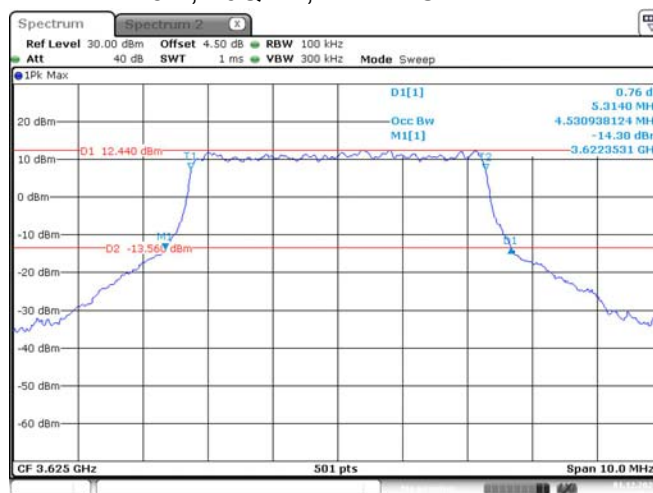
5M, 16QAM, Low Channel



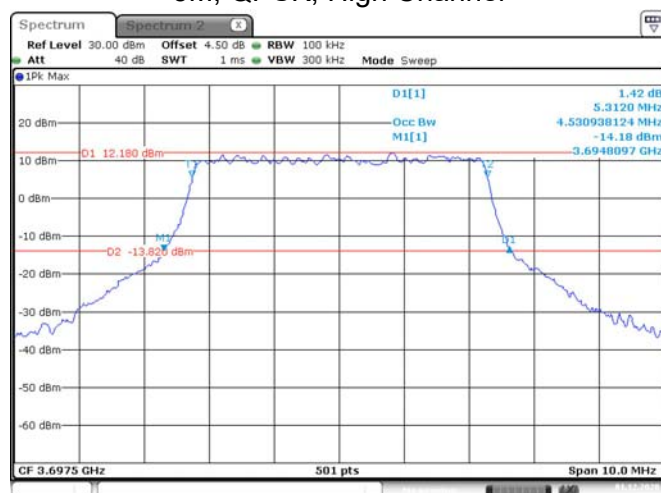
5M, QPSK, Middle Channel



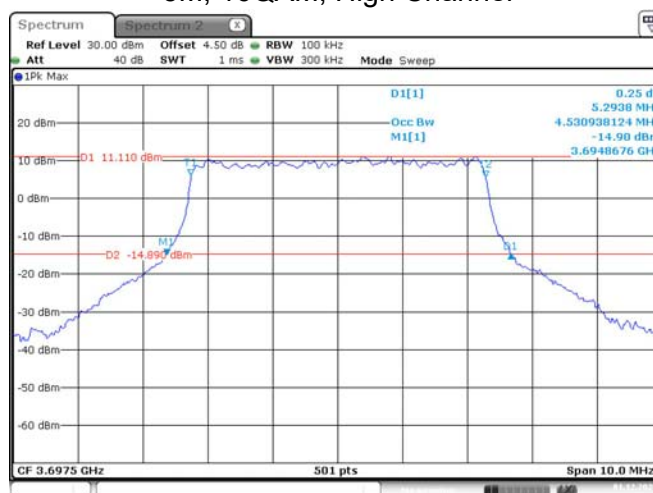
5M, 16QAM, Middle Channel



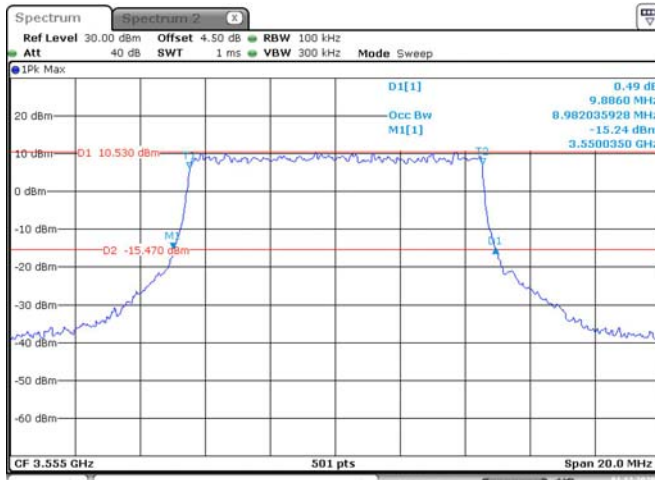
5M, QPSK, High Channel



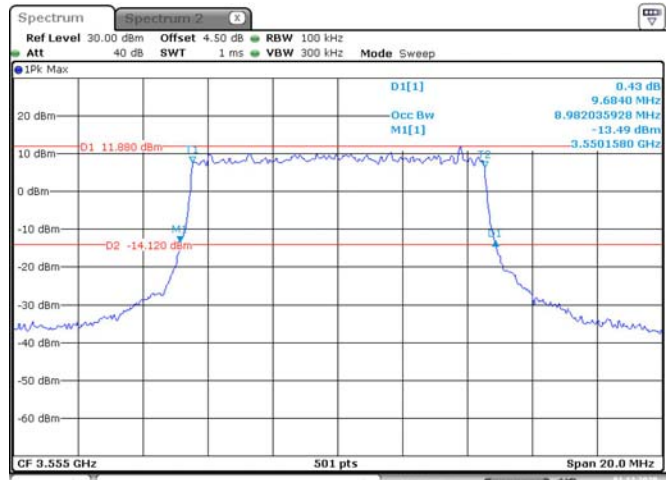
5M, 16QAM, High Channel



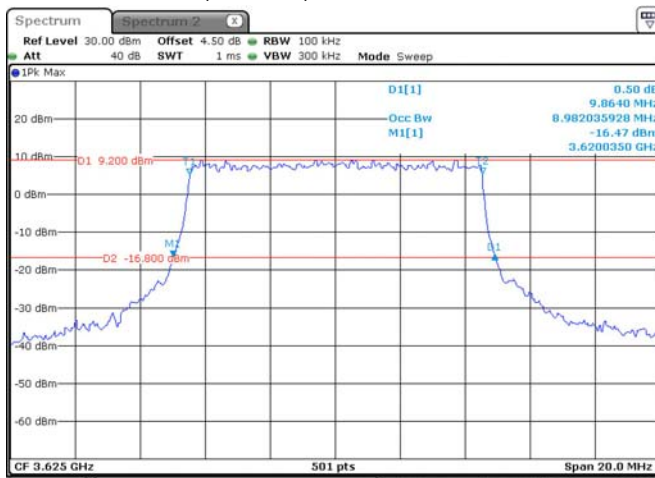
10M, QPSK, Low Channel



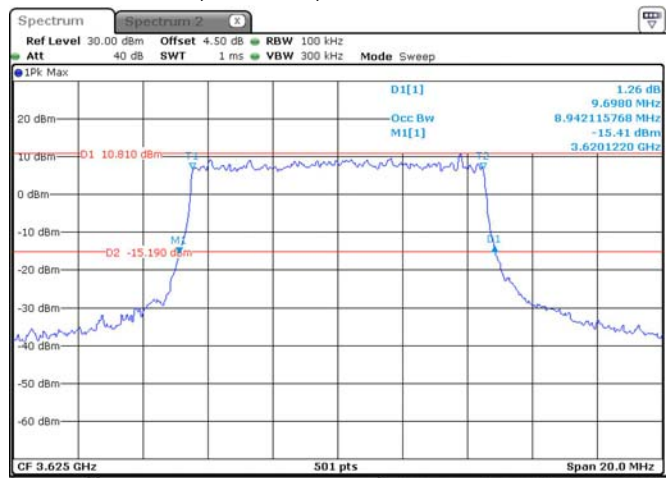
10M, 16QAM, Low Channel



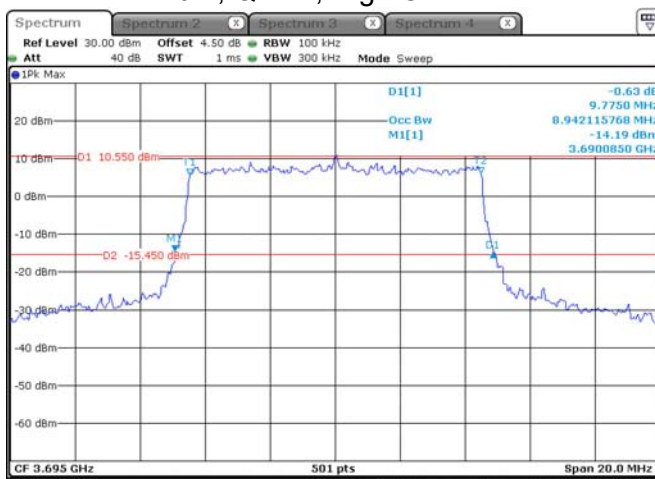
10M, QPSK, Middle Channel



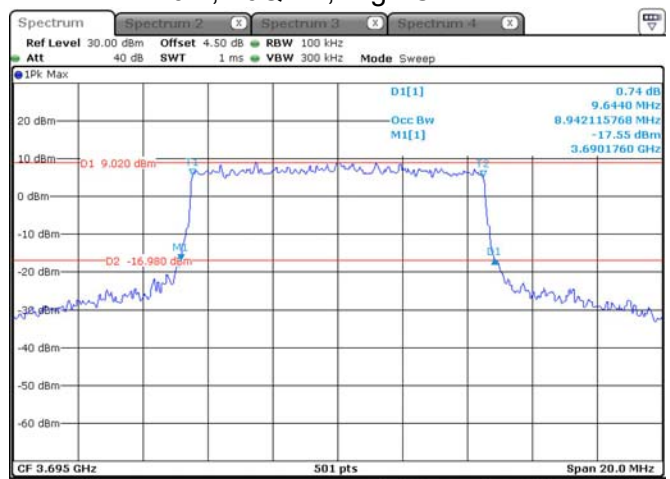
10M, 16QAM, Middle Channel



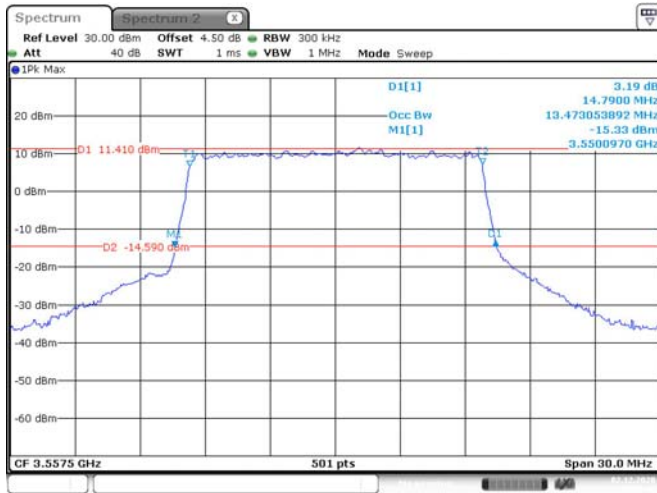
10M, QPSK, High Channel



10M, 16QAM, High Channel

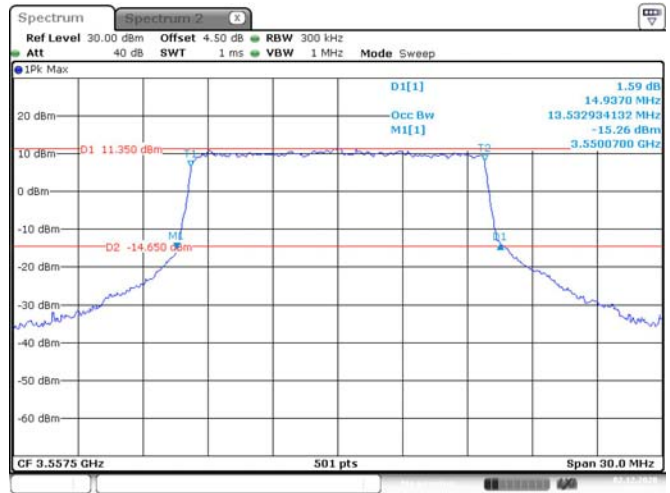


15M, QPSK, Low Channel



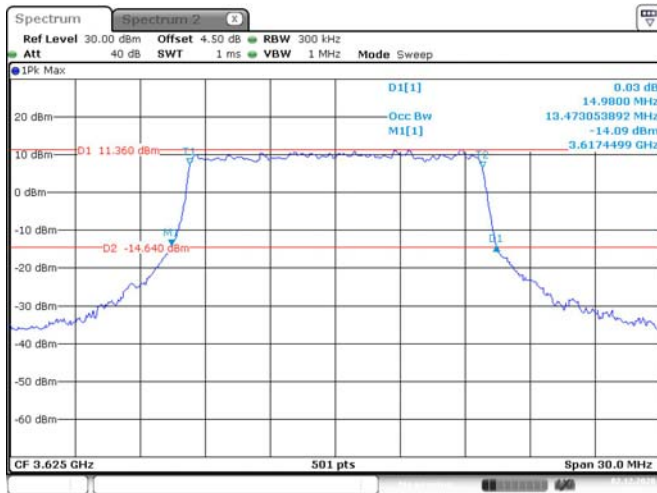
Date: 2, DEC. 2020 19:04:47

15M, 16QAM, Low Channel



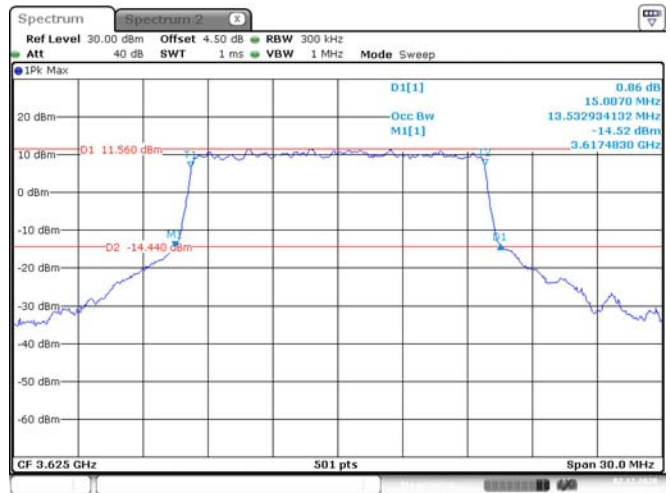
Date: 2, DEC. 2020 19:06:25

15M, QPSK, Middle Channel



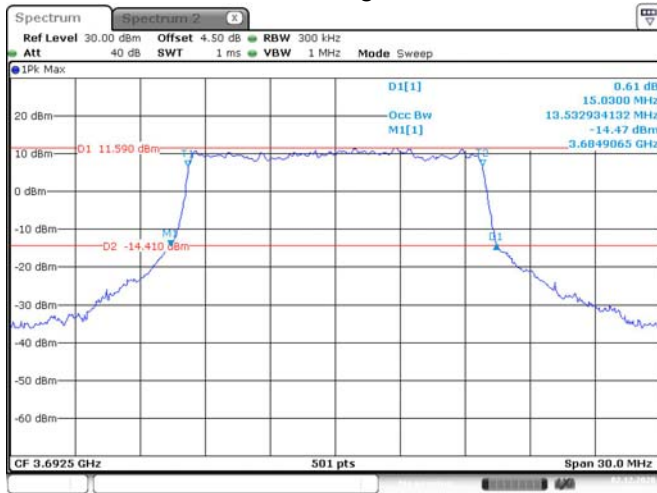
Date: 2, DEC. 2020 19:01:24

15M, 16QAM, Middle Channel



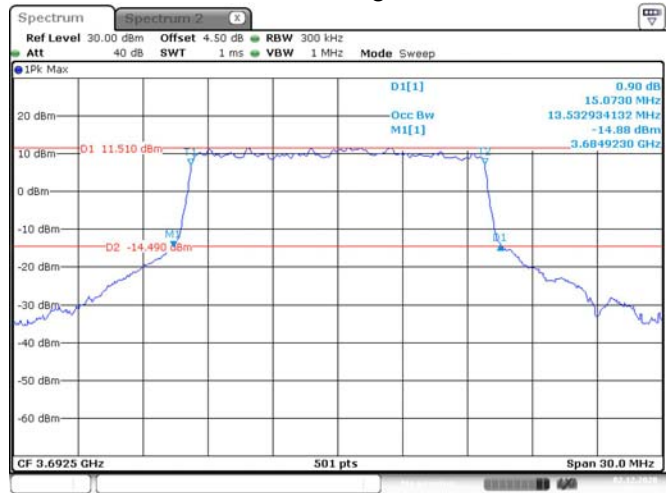
Date: 2, DEC. 2020 19:00:20

15M, QPSK, High Channel



Date: 2, DEC. 2020 19:33:25

15M, 16QAM, High Channel



Date: 2, DEC. 2020 19:31:38