



FCC PART 90 MEASUREMENT AND TEST REPORT

For

PROMETHEUS GROUP LLC

PO BOX 130100 BIRMINGHAM, ALABAMA 35213-0100 USA

FCC ID: 2ALGTBTC-4G-RLDC

Report Type: Original Report	Product Type: Trail Camera
Report Number:	<u>RTZ201211002-00C</u>
Report Date:	<u>2021-02-08</u>
Reviewed By:	Allen. Qiao  RF Supervisor
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.12, Pulong East 1 st Road, Tangxia Town, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	Trail Camera
EUT Model:	BTC-4G-RLDC
Operation Frequency:	LTE Band 14: 788-798MHz(TX); 758-768MHz(RX)
Antenna Gain:	LTE Band 14: 0.6dBi*
Modulation Type:	QPSK, 16QAM
Rated Input Voltage:	DC12V from battery
Serial Number:	RTZ201211002-RF-S2
EUT Received Date:	2021.01.09
EUT Received Status:	Good

Objective

This test report is in accordance with Part 2-Subpart J and Subpart 90 of the Federal Communication 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 90.

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

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

Measurement Uncertainty

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

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

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.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 LTE Band 14, test was performed with channels as below table:

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
LTE Band 14	5	790.5	793	795.5
LTE Band 14	10	/	793	/

Note: The equipment is Control station.

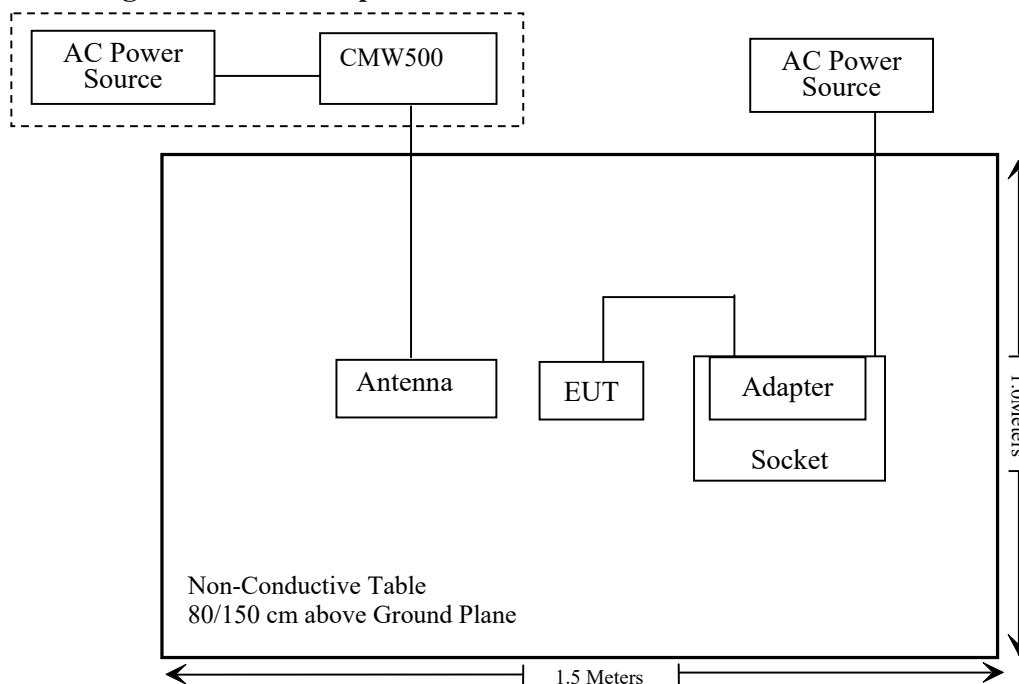
Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Wideband Radio Communication Tester	CMW500	147473
Un-Known	Adapter	HL-120/2000-QC6S-EE	Un-Known
Un-Known	ANTENNA	Un-Known	Un-Known

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

Rules	Description of Test	Result
FCC §1.1307 (b) (1) & §2.1091	Maximum Permissible exposure (MPE)	Compliance
FCC §2.1047	Modulation Characteristics	Not Applicable
FCC §2.1046; §90.542 (a) (6)	RF Output Power	Compliance
FCC §2.1049	Occupied Bandwidth	Compliance
FCC §2.1051, §90.543 (e)	Spurious Emissions at Antenna Terminal	Compliance
FCC §2.1053; §90.543 (e)	Field Strength of Spurious Radiation	Compliance
FCC §90.543 (e)	Out of band emission, Band Edge	Compliance
FCC§ 2.1055; §90.213	Frequency stability	Compliance

FCC §1.1307 (b) (1) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)
Applicable Standard

According to subpart 1.1307 (b)(1), 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

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

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = 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)

For worst case:

Mode	Frequency (MHz)	Antenna Gain		Tune up conducted power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
WCDMA B2	1850-1910	1.3	1.35	24.0	251.19	20	0.067	1
WCDMA B4	1710-1755	1.3	1.35	24.0	251.19	20	0.067	1
WCDMA B5	824-849	0.6	1.15	24.0	251.19	20	0.057	0.549
LTE B2	1850-1910	1.3	1.35	22.5	177.83	20	0.048	1
LTE B4	1710-1755	1.3	1.35	22.5	177.83	20	0.048	1
LTE B5	824-849	0.6	1.15	23.5	223.87	20	0.051	0.549
LTE B12	699-716	0.35	1.08	23.5	223.87	20	0.048	0.466
LTE B13	777-787	0.35	1.08	23.5	223.87	20	0.048	0.518
LTE B14	788-798	0.6	1.15	23.5	223.87	20	0.051	0.525
LTE B66	1710-1780	1.3	1.35	22.5	177.83	20	0.048	1
LTE B71	663-698	0.19	1.04	22.5	177.83	20	0.037	0.442

Note 1: The tune up conducted power was declared by the applicant.

Note 2: The information for other bands except LTE B14, please refer to Report No. RTZ201211002-00B.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 90 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC § 2.1046, § 90.542 (a)(6) - RF OUTPUT POWER

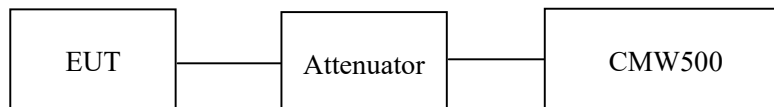
Applicable Standard

According to §90.542(a) (6), Control stations and mobile stations transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 30 watts ERP.

Test Procedure

Conducted method:

The RF output of the transmitter was connected to the CMW500 through sufficient attenuation.



Radiated method:

ANSI C63.26-2015 Section 5.5.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Wideband Radio Communication Tester	CMW500	147473	2020-09-23	2021-09-22
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	N/A
E-Microwave	Blocking Control	EMDCB-000 36	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5R N-6	OE01203239	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:	23.7 °C
Relative Humidity:	52%
ATM Pressure:	101.3kPa
Tester:	Michael Zhang
Test Date:	2021-01-09

EUT operation mode: Transmitting

Test Result: Compliance

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.43	22.46	22.47	20.38	20.41	20.42
		RB1#12	22.42	22.09	22.21	20.37	20.04	20.16
		RB1#24	22.86	22.35	22.17	20.81	20.30	20.12
		RB12#0	22.65	22.49	22.85	20.60	20.44	20.80
		RB12#6	22.09	22.86	22.21	20.04	20.81	20.16
		RB12#11	22.40	22.10	22.14	20.35	20.05	20.09
		RB25#0	22.45	22.03	22.30	20.40	19.98	20.25
	16QAM	RB1#0	22.56	22.53	22.00	20.51	20.48	19.95
		RB1#12	22.46	22.73	22.50	20.41	20.68	20.45
		RB1#24	22.30	22.70	22.86	20.25	20.65	20.81
		RB12#0	22.27	22.13	22.97	20.22	20.08	20.92
		RB12#6	22.43	22.08	22.70	20.38	20.03	20.65
		RB12#11	22.34	22.21	22.18	20.29	20.16	20.13
		RB25#0	22.20	22.57	22.42	20.15	20.52	20.37
10.0	QPSK	RB1#0	/	22.55	/	/	20.50	/
		RB1#24	/	22.19	/	/	20.14	/
		RB1#49	/	22.10	/	/	20.05	/
		RB25#0	/	22.56	/	/	20.51	/
		RB25#12	/	22.61	/	/	20.56	/
		RB25#24	/	22.24	/	/	20.19	/
		RB50#0	/	22.30	/	/	20.25	/
	16QAM	RB1#0	/	22.85	/	/	20.80	/
		RB1#24	/	22.32	/	/	20.27	/
		RB1#49	/	22.30	/	/	20.25	/
		RB25#0	/	22.24	/	/	20.19	/
		RB25#12	/	22.39	/	/	20.34	/
		RB25#24	/	22.25	/	/	20.20	/
		RB50#0	/	22.52	/	/	20.47	/

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable loss(dB)
 For Band14: Antenna Gain =0.6dBi = -1.55dBd (0dBd=2.15dBi)
 For 600-1000MHz, Cable Loss=0.5dB*(provided by the applicant)
 Limit: ERP ≤ 44.77dBm

Peak-to-average ratio (PAR)**10MHz bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.15	4.95	4.85	13	Pass
QPSK (50RB Size)	5.19	5.28	5.68	13	Pass
16QAM (1RB Size)	5.09	5.15	5.46	13	Pass
16QAM (50RB Size)	6.44	6.44	6.47	13	Pass

FCC §2.1049 - OCCUPIED BANDWIDTH

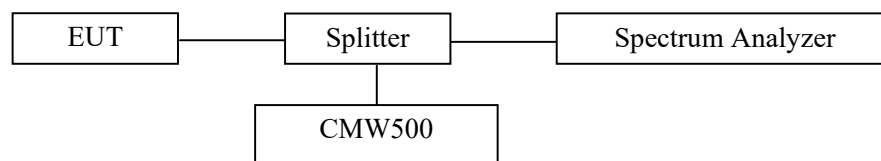
Applicable Standard

FCC §2.1049.

Test Procedure

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

The 26 dB & 99% bandwidth was recorded.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2020-07-07	2021-07-07
R&S	Wideband Radio Communication Tester	CMW500	147473	2020-09-23	2021-09-22
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	N/A
E-Microwave	Blocking Control	EMDCB-000 36	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5R N-6	OE01203239	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	N/A

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

Test Data

Environmental Conditions

Temperature:	23.7 °C
Relative Humidity:	52%
ATM Pressure:	101.3kPa
Tester:	Michael Zhang
Test Date:	2021-01-14

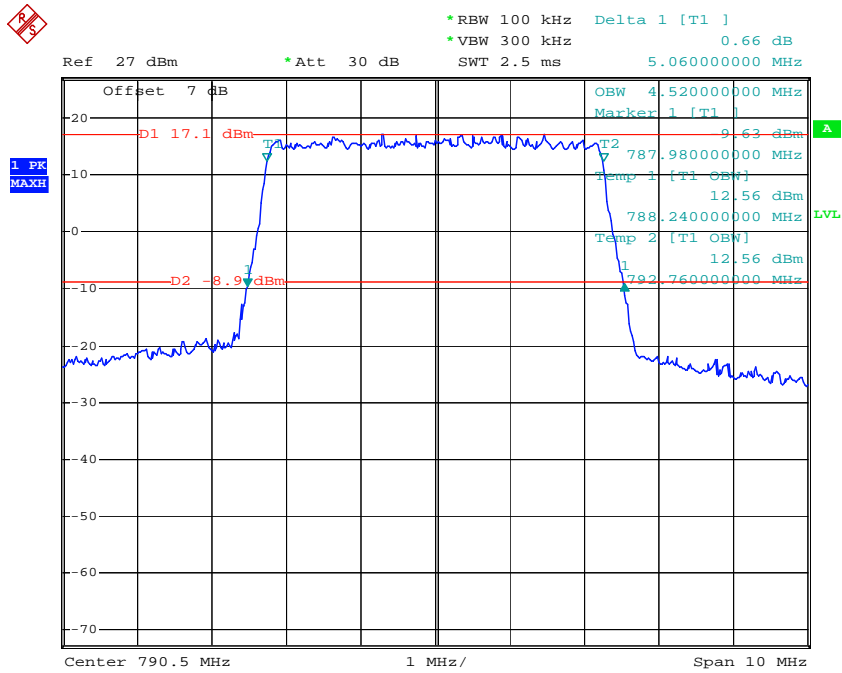
Test Mode: Transmitting

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

LTE Band 14

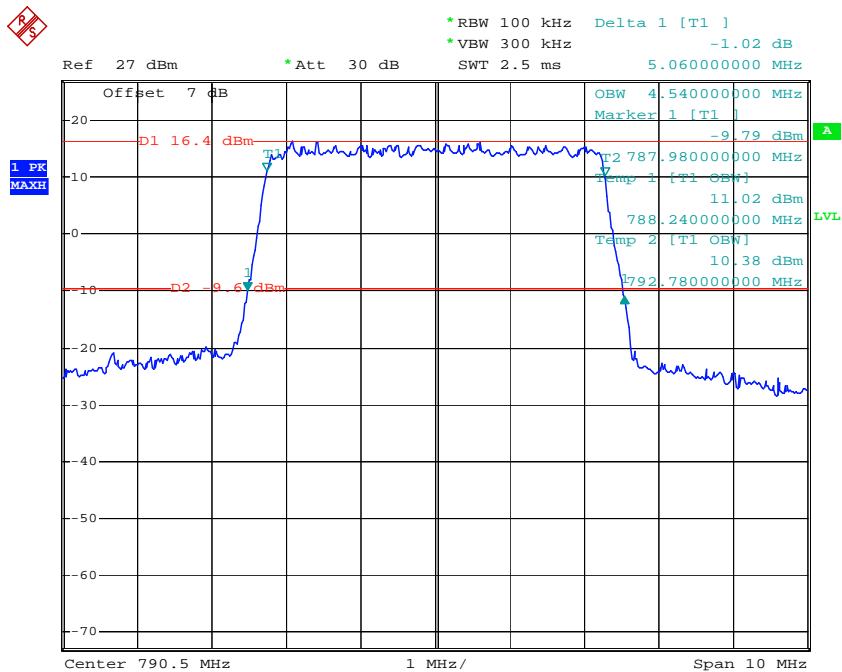
Bandwidth (MHz)	Modulation	Channel	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
5	QPSK	Low	4.52	5.06
		Middle	4.54	5.04
		High	4.52	5.00
	16QAM	Low	4.54	5.06
		Middle	4.52	5.02
		High	4.56	5.06
10	QPSK	Low	/	/
		Middle	8.96	9.68
		High	/	/
	16QAM	Low	/	/
		Middle	8.96	9.68
		High	/	/

QPSK (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



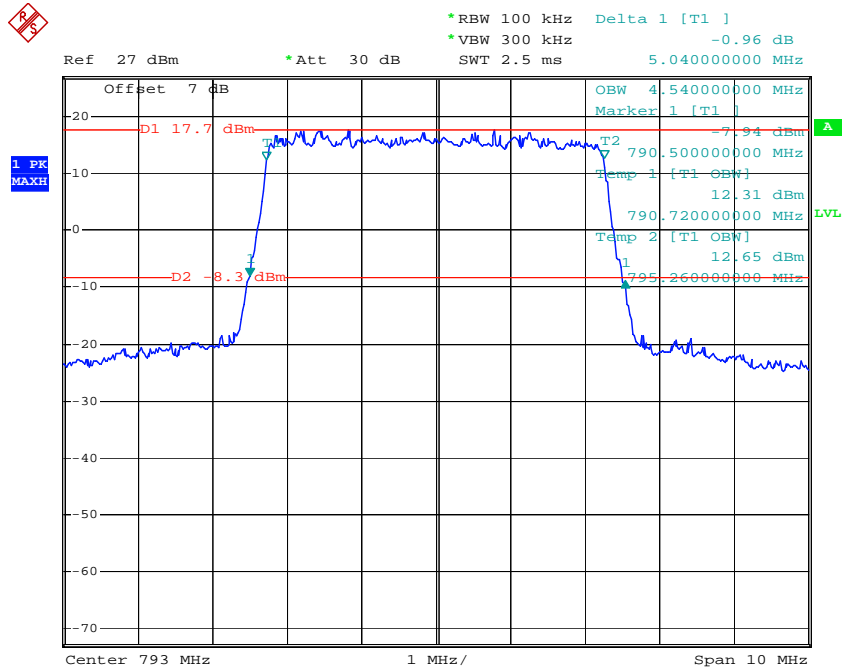
Date: 14.JAN.2021 13:21:35

16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Low channel



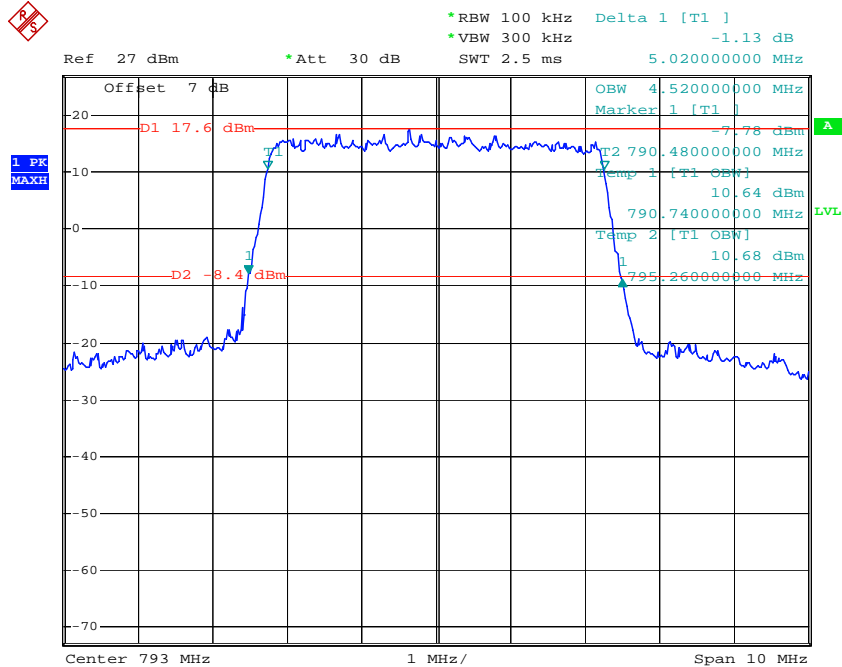
Date: 14.JAN.2021 13:23:08

QPSK (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



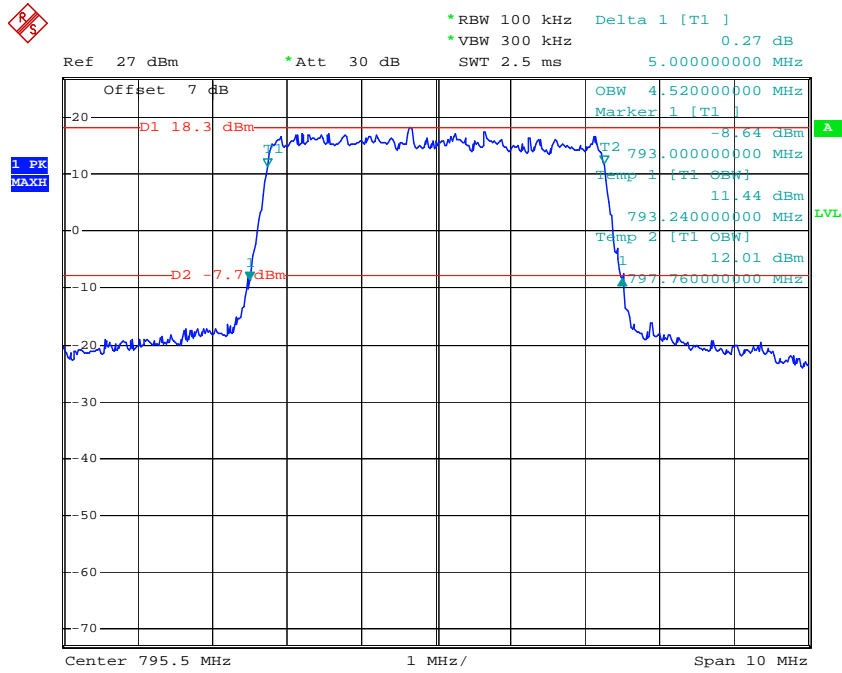
Date: 14.JAN.2021 13:20:29

16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, Middle channel



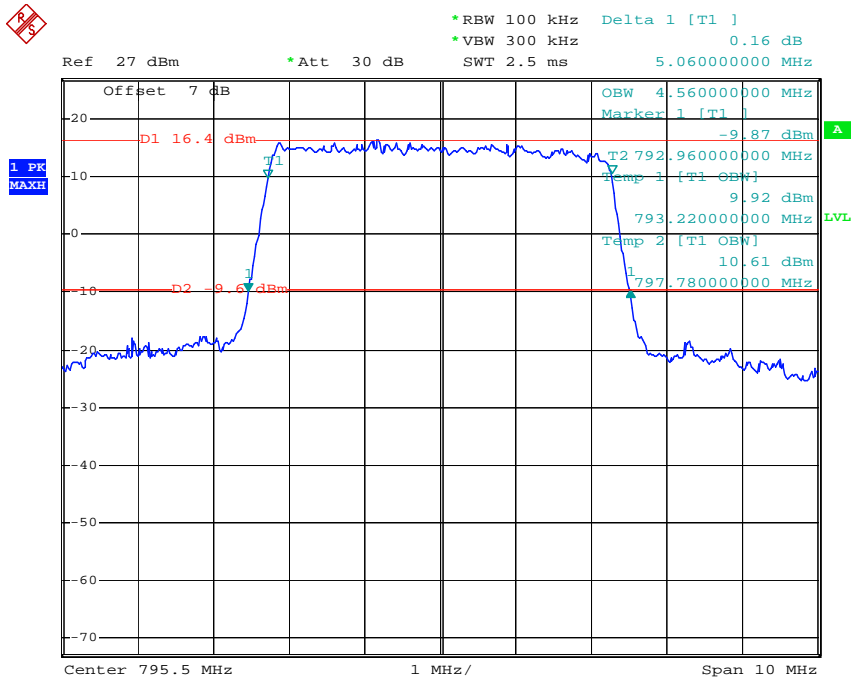
Date: 14.JAN.2021 13:19:30

QPSK (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



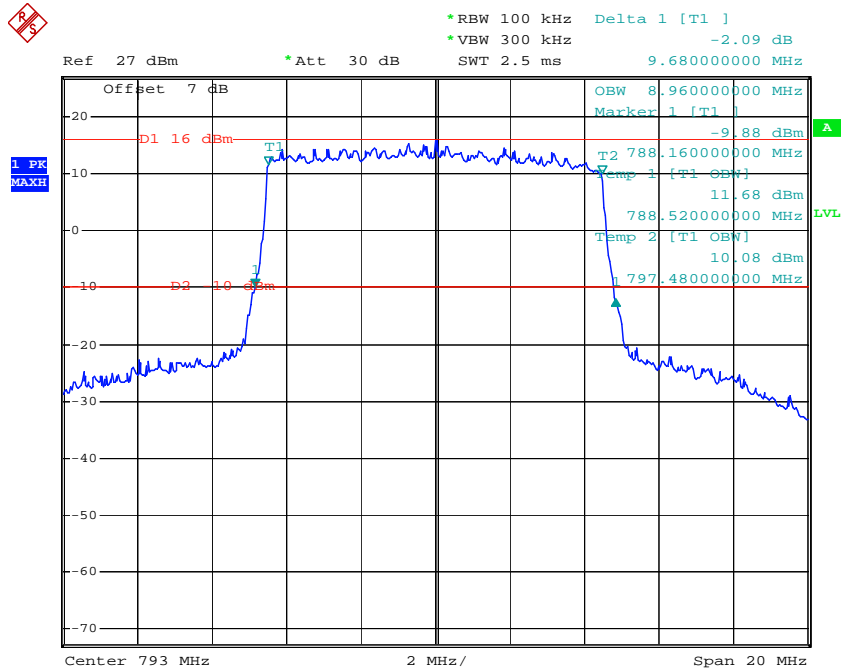
Date: 14.JAN.2021 13:26:26

16-QAM (5.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth, High channel



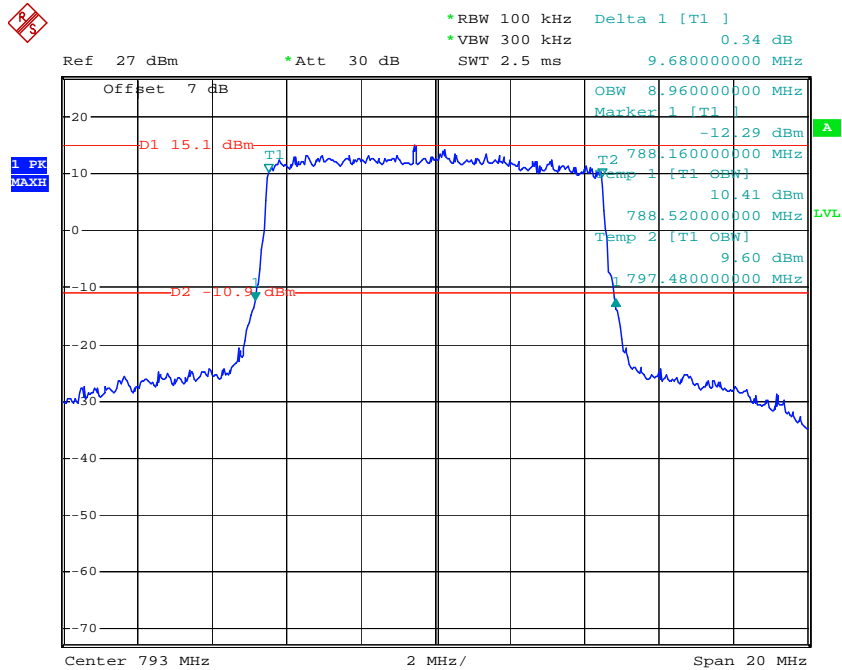
Date: 14.JAN.2021 13:25:11

QPSK (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth



Date: 14.JAN.2021 13:17:44

16-QAM (10.0 MHz) - 26 dB Bandwidth & 99% Occupied Bandwidth



Date: 14.JAN.2021 13:16:12

FCC §2.1051; §90.543 (e) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

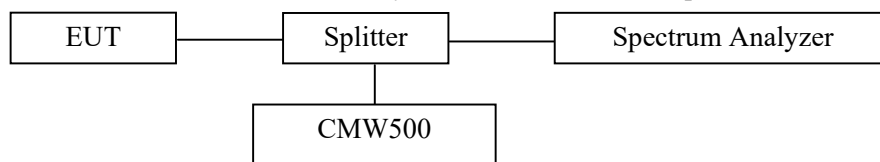
Applicable Standard

FCC §2.1051, §90.543(e).

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
R&S	Wideband Radio Communication Tester	CMW500	147473	2020-09-23	2021-09-22
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	N/A

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

Test Data

Environmental Conditions

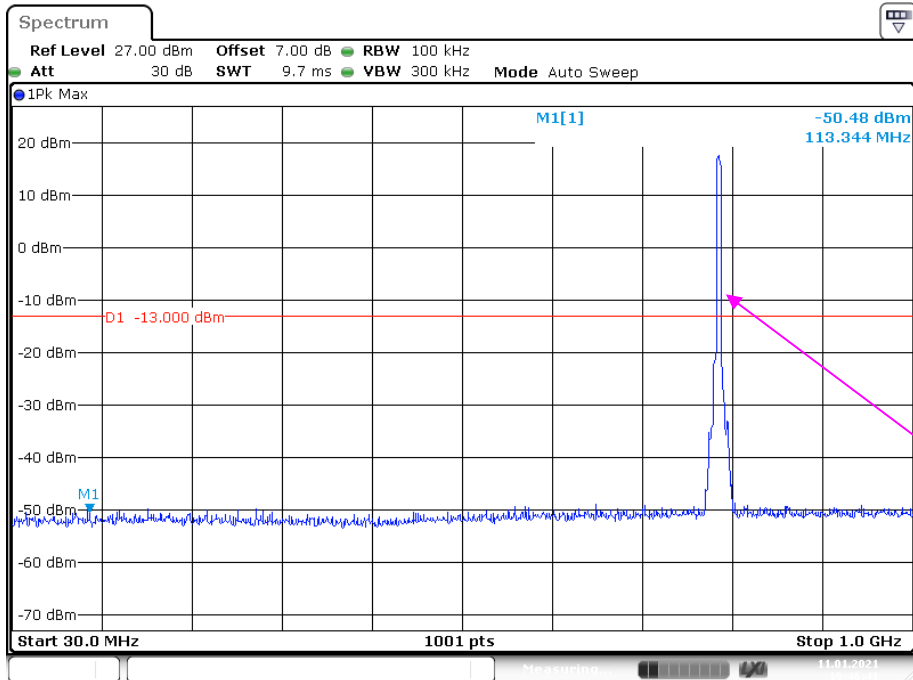
Temperature:	23.5 - 23.9 °C
Relative Humidity:	51 - 53%
ATM Pressure:	101.1 - 101.3kPa
Tester:	Michael Zhang
Test Date:	2021-01-11 to 2021-01-18

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

LTE Band 14

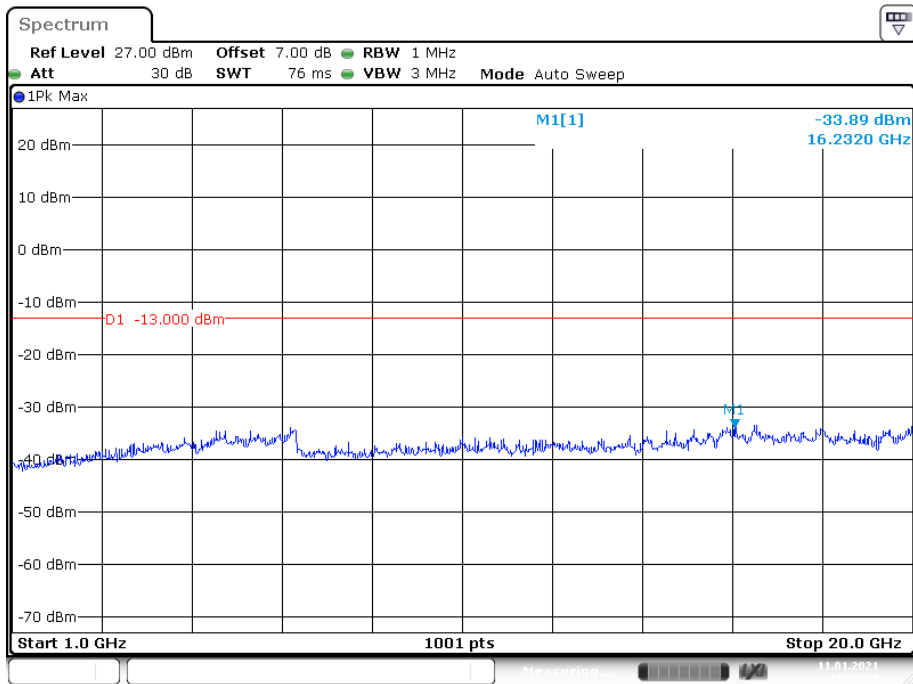
Note: The result for band 1559-1610MHz refer to additional test.

30 MHz - 1 GHz (5.0 MHz, Low channel)

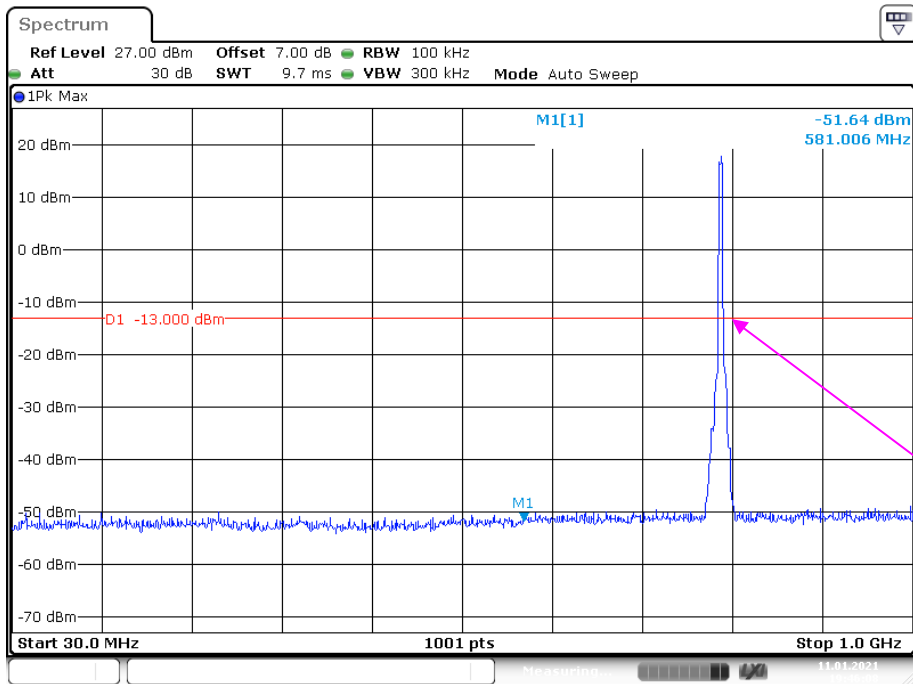


Fundamental test

1 GHz - 20 GHz (5.0 MHz, Low channel)

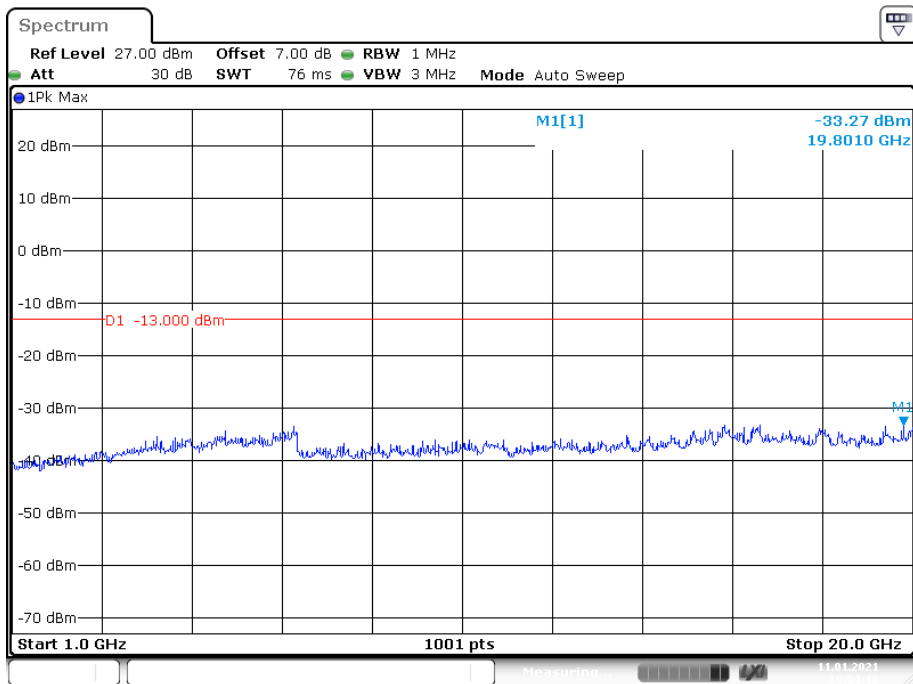


30 MHz - 1 GHz (5.0 MHz, Middle channel)



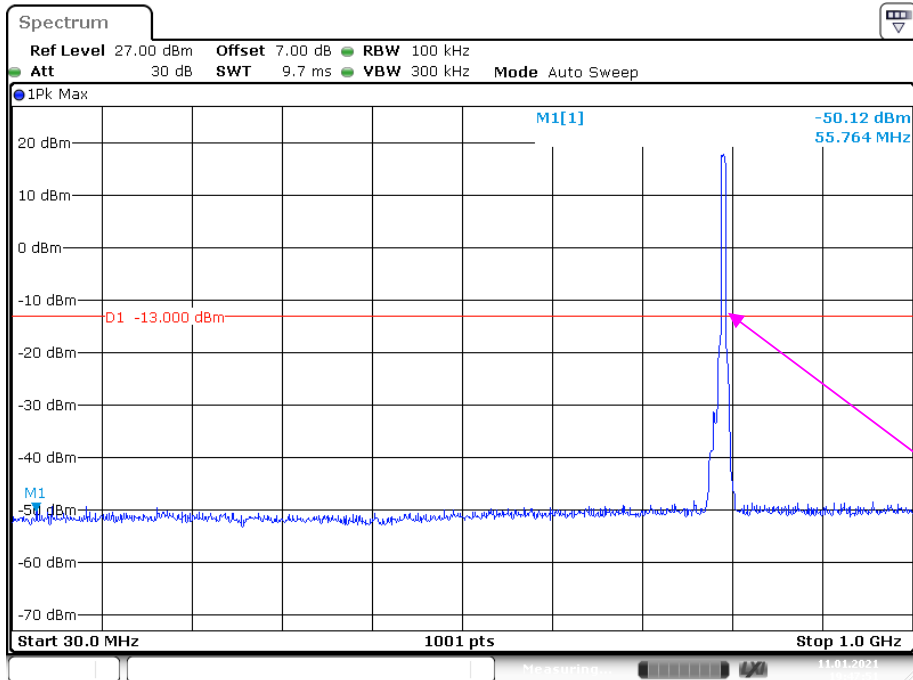
Date: 11.JAN.2021 19:46:08

1 GHz - 20 GHz (5.0 MHz, Middle channel)



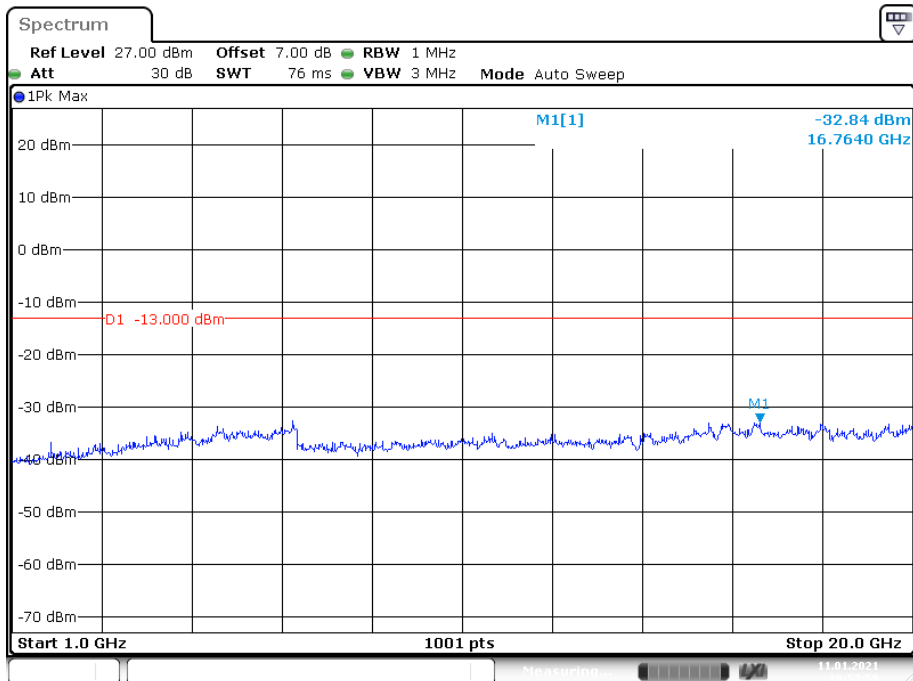
Date: 11.JAN.2021 19:54:18

30 MHz - 1 GHz (5.0 MHz, High channel)

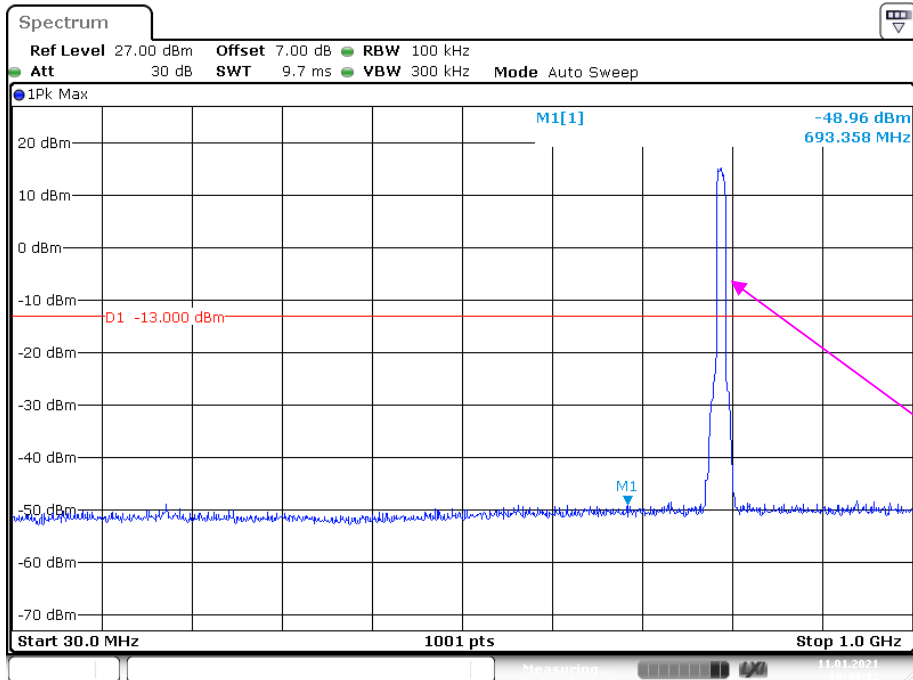


Fundamental test

1 GHz - 20GHz (5.0 MHz, High channel)

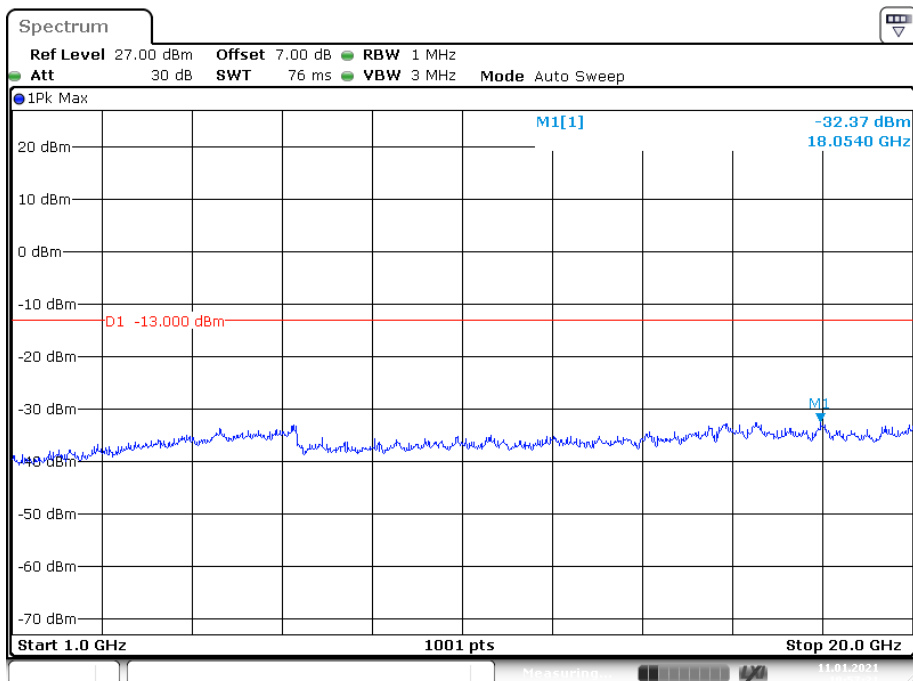


30 MHz - 1 GHz (10.0 MHz)



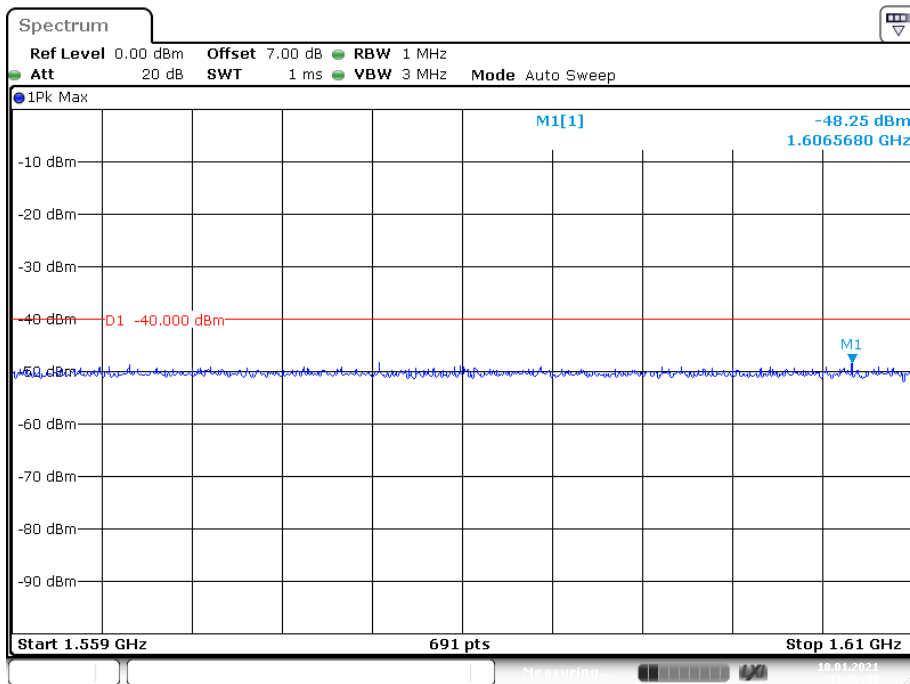
Fundamental test

1 GHz - 20 GHz (10.0 MHz)



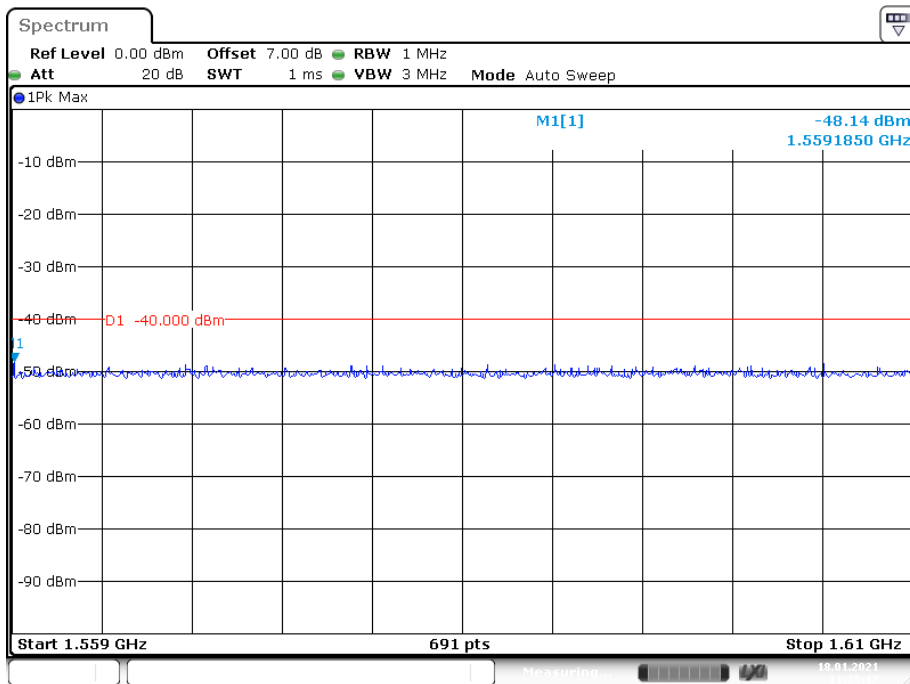
LTE Band 14 – additional

1559MHz – 1610MHz (5.0 MHz, Low channel)



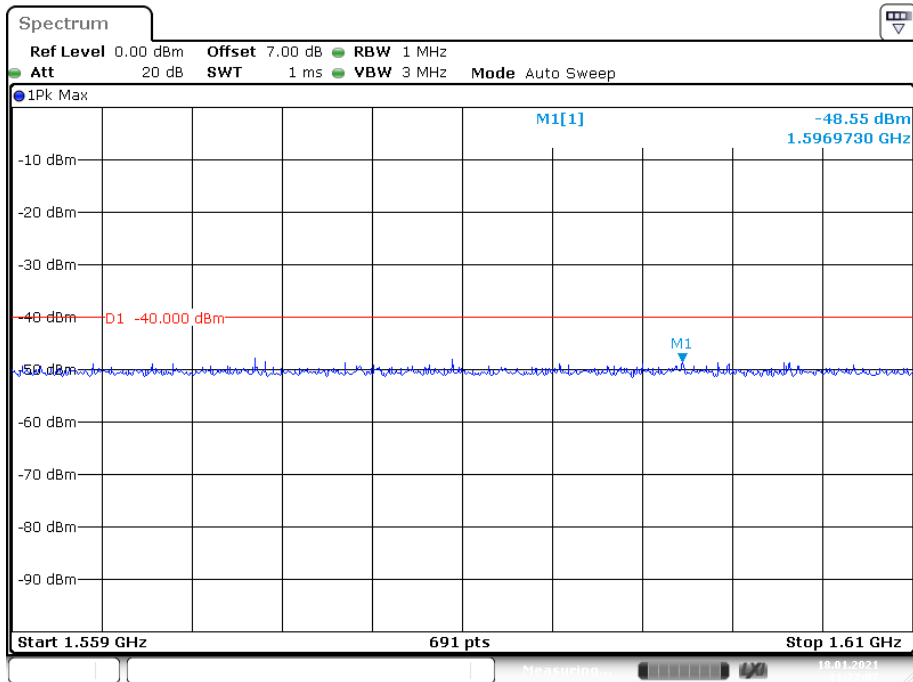
Date: 18.JAN.2021 11:26:40

1559MHz – 1610MHz (5.0 MHz, Middle channel)



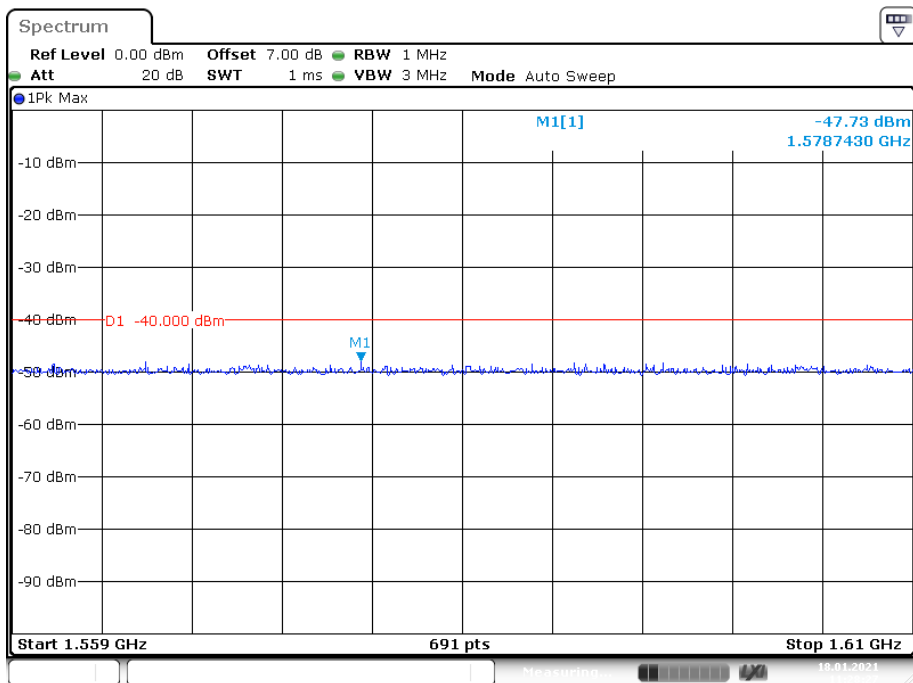
Date: 18.JAN.2021 11:25:17

1559MHz – 1610MHz (5.0 MHz, High channel)



Date: 18.JAN.2021 11:27:08

1559MHz – 1610MHz (10.0 MHz)



Date: 18.JAN.2021 11:28:27

FCC §2.1053, §90.543 (e) – FIELD STRENGTH SPURIOUS RADIATED

Applicable Standard

FCC § 2.1053, §90.543 (e);

Test Procedure

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

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

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

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

Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log₁₀ (power out in Watts)

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB3	A060611-2	2020-08-25	2023-08-25
R&S	EMI Test Receiver	ESCI	100224	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2020-09-24	2021-09-24
Sonoma	Amplifier	310N	185914	2020-10-13	2021-10-13
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
Agilent	Spectrum Analyzer	E4440A	SG43360054	2020-07-07	2021-07-07
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-02	2020-06-27	2021-06-27
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2020-09-05	2021-09-05
Agilent	Signal Generator	E8247C	MY43321350	2020-12-10	2021-12-10
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2020-09-05	2021-09-05
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
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**

Test Items	Radiation
Temperature:	23.5 °C
Relative Humidity:	35%
ATM Pressure:	102.5kPa
Tester:	Michael Zhang
Test Date:	2021.01.22

Test Result: Compliance.

EUT Operation Mode: Transmitting

Pre-scan with all the bandwidth, and worst case as below:

30MHz – 10GHz:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
LTE Band 14_5MHz_QPSK_low channel 790.5MHz								
1581.00	H	41.04	-63.64	9.99	0.81	-54.46	-40.00	14.46
1581.00	V	40.98	-64.20	9.99	0.81	-55.02	-40.00	15.02
2371.50	H	38.01	-64.36	11.99	1.27	-53.64	-13.00	40.64
2371.50	V	37.56	-64.93	11.99	1.27	-54.21	-13.00	41.21
299.66	H	47.55	-61.10	0.00	0.31	-61.41	-13.00	48.41
59.10	V	56.95	-47.45	-10.71	0.17	-58.33	-13.00	45.33
LTE Band 14_5MHz_QPSK_Middle channel 793MHz								
1586.00	H	41.51	-63.16	10.02	0.77	-53.91	-40.00	13.91
1586.00	V	42.80	-62.40	10.02	0.77	-53.15	-40.00	13.15
2379.00	H	38.69	-63.70	12.07	1.28	-52.91	-13.00	39.91
2379.00	V	38.51	-64.02	12.07	1.28	-53.23	-13.00	40.23
800.18	H	39.73	-58.79	0.00	0.49	-59.28	-13.00	46.28
299.66	V	46.35	-60.65	0.00	0.31	-60.96	-13.00	47.96
LTE Band 14_5MHz_QPSK_High channel 795.5MHz								
1591.00	H	42.35	-62.31	10.05	0.74	-53.00	-40.00	13.00
1591.00	V	42.00	-63.21	10.05	0.74	-53.90	-40.00	13.90
2386.50	H	38.65	-63.77	12.15	1.28	-52.90	-13.00	39.90
2386.50	V	38.26	-64.32	12.15	1.28	-53.45	-13.00	40.45
800.18	H	39.39	-59.13	0.00	0.49	-59.62	-13.00	46.62
49.40	V	50.68	-44.13	-15.49	0.19	-59.81	-13.00	46.81

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level

FCC §90.543 (e) – OUT OF BAND EMISSION, BAND EDGES

Applicable Standard

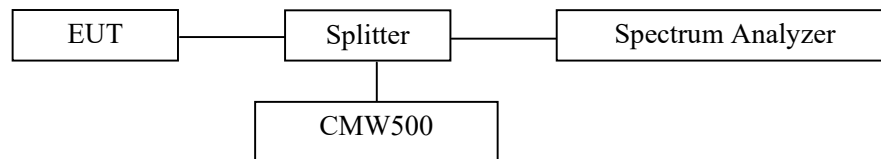
According to FCC §90.543 (e), For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations.
- (2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
- (3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.

Test Procedure

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

The center of the spectrum analyzer was set to block edge frequency.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2021-01-09	2022-01-09
R&S	Spectrum Analyzer	FSP 38	100478	2020-07-07	2021-07-07
R&S	Wideband Radio Communication Tester	CMW500	147473	2020-09-23	2021-09-22
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	N/A
E-Microwave	Blocking Control	EMDCB-000 36	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5R N-6	OE01203239	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	N/A

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

Test Data

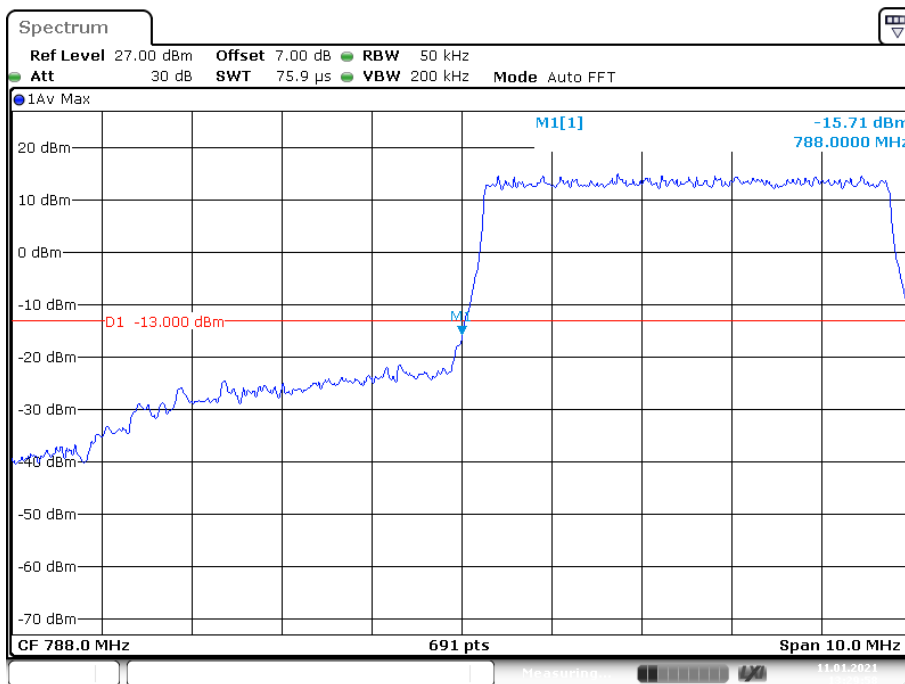
Environmental Conditions

Temperature:	23.5 - 23.9 °C
Relative Humidity:	51 - 53%
ATM Pressure:	101.1 - 101.3kPa
Tester:	Michael Zhang
Test Date:	2021-01-09 to 2021-01-18

Test Mode: Transmitting

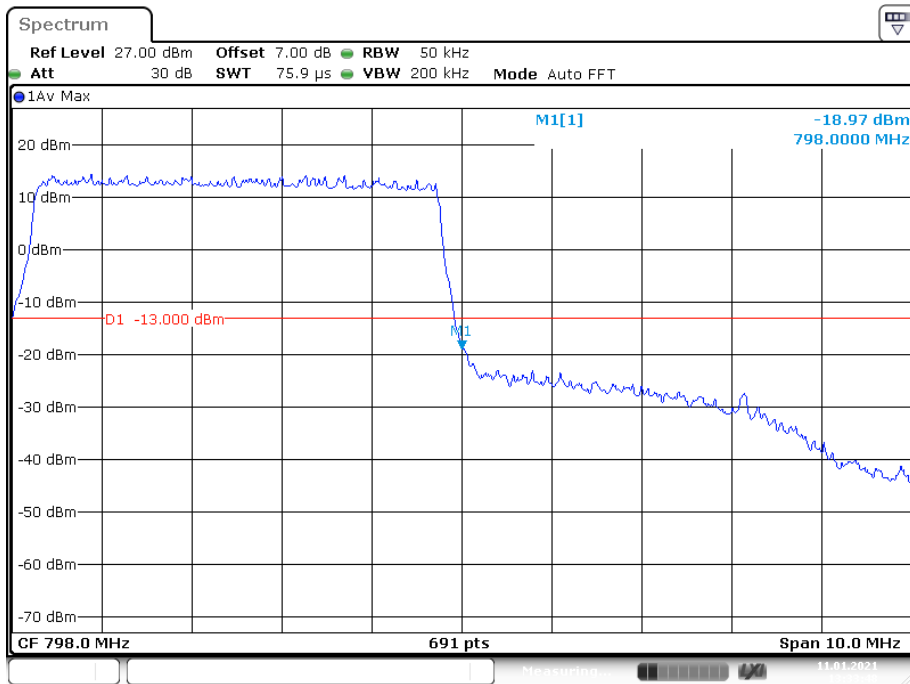
Test Result: Compliance. Please refer to the following plots.

QPSK (5.0 MHz, FULL RB) - Left Band Edge

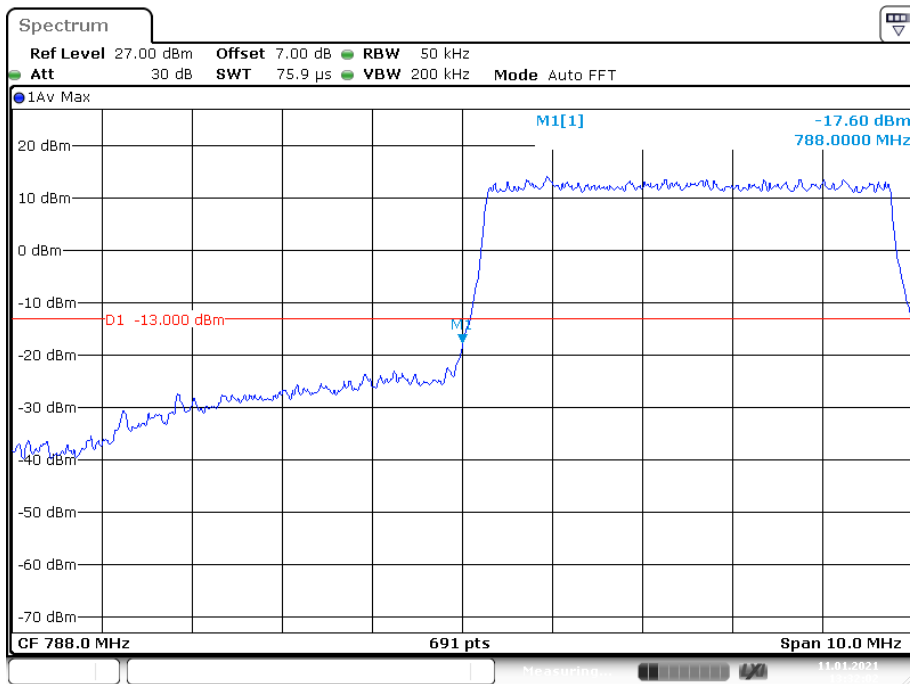


Date: 11.JAN.2021 13:29:58

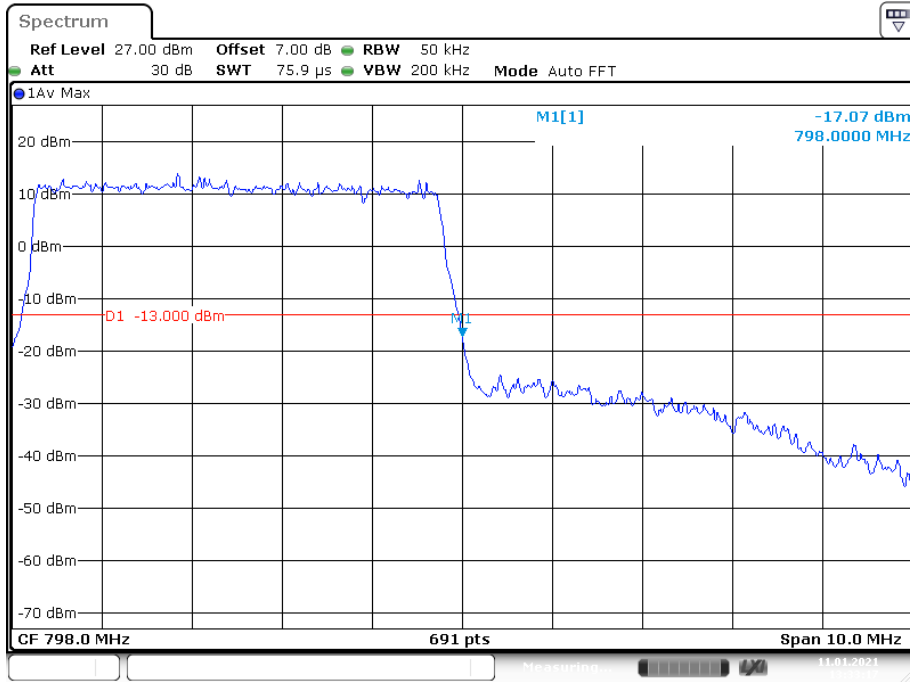
QPSK (5.0 MHz, FULL RB) - Right Band Edge



16-QAM (5.0 MHz, FULL RB) - Left Band Edge

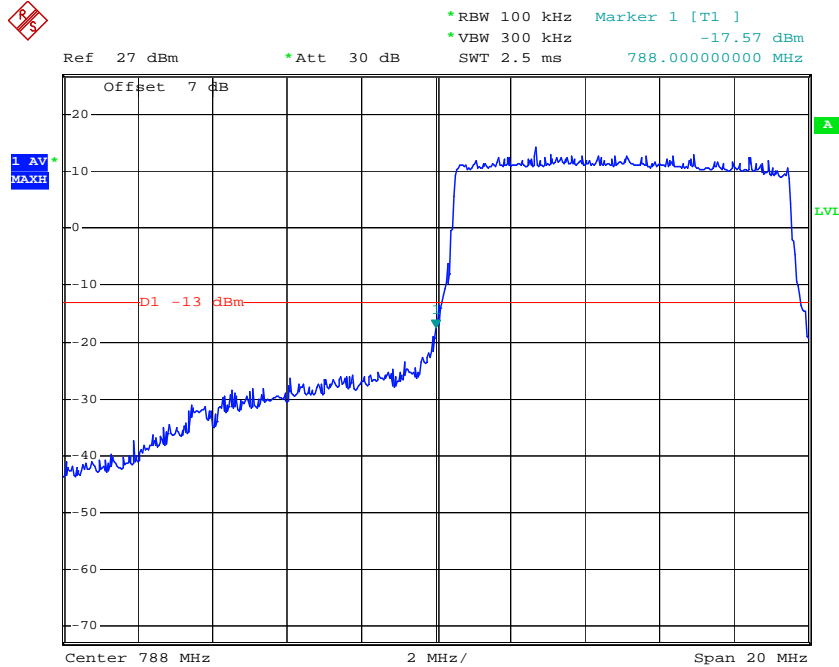


16-QAM (5.0 MHz, FULL RB) - Right Band Edge



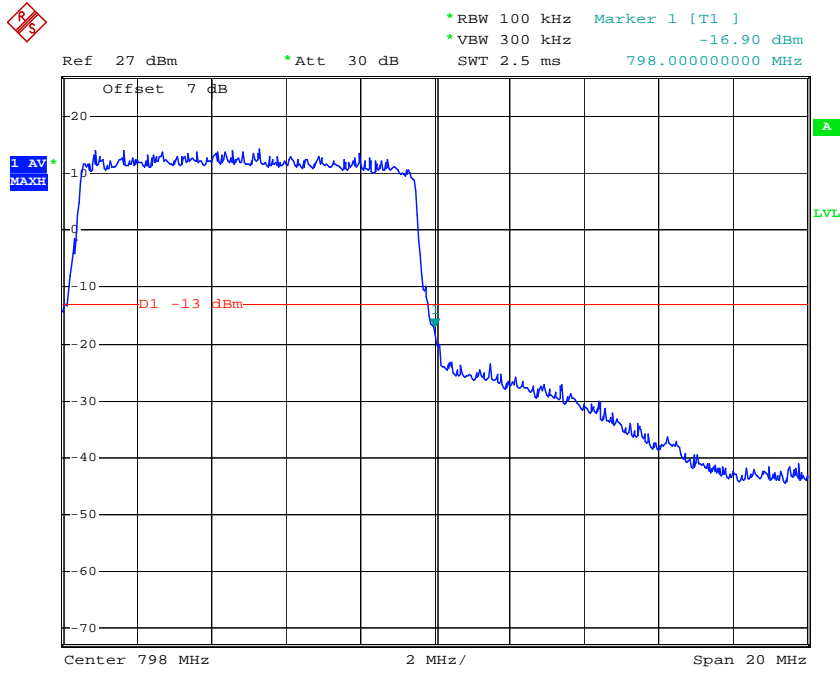
Date: 11.JAN.2021 13:33:17

QPSK (10.0 MHz, FULL RB) - Left Band Edge



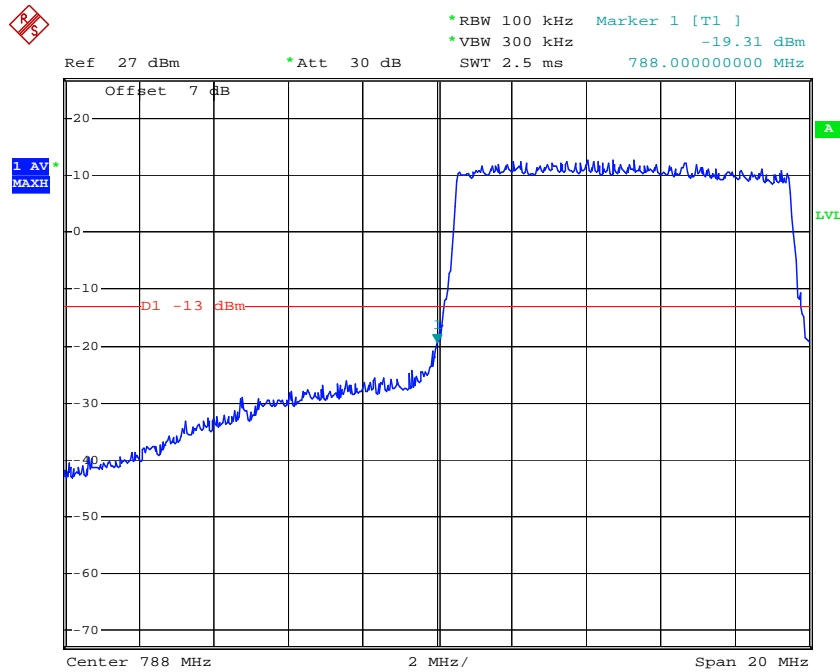
Date: 9.JAN.2021 13:32:49

QPSK (10.0 MHz, FULL RB) - Right Band Edge



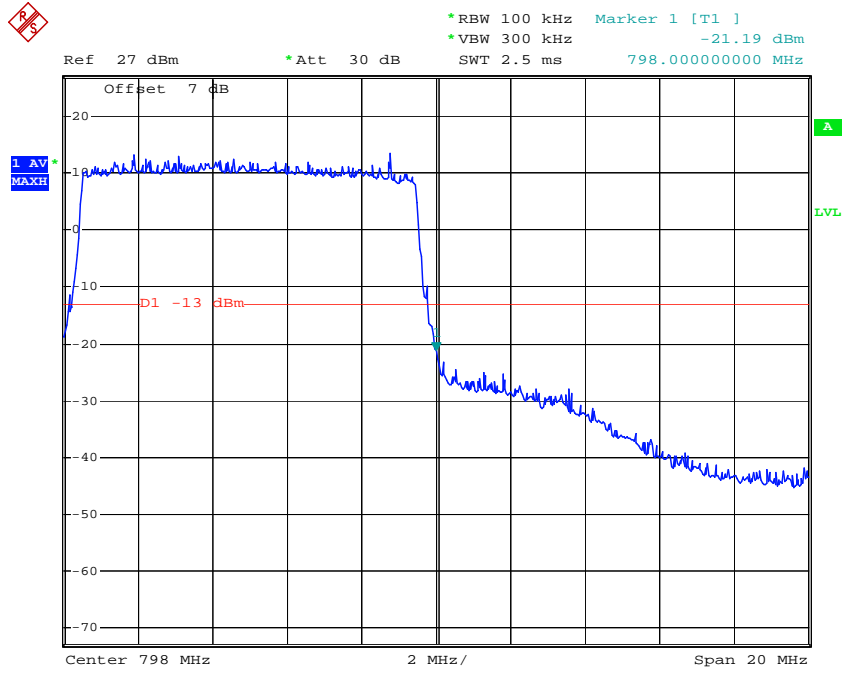
Date: 9.JAN.2021 13:29:36

16-QAM (10.0 MHz, FULL RB) - Left Band Edge



Date: 9.JAN.2021 13:32:11

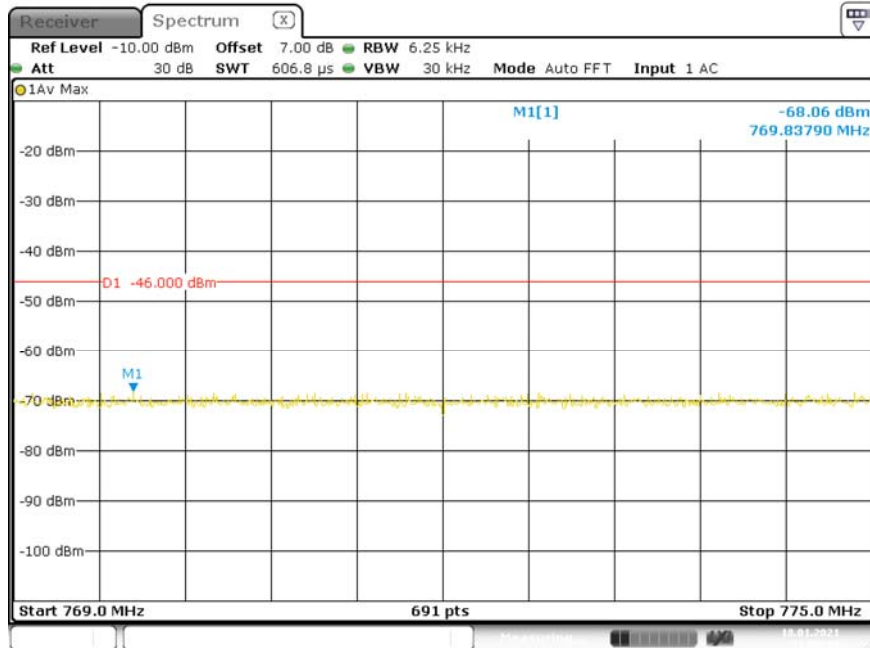
16-QAM (10.0 MHz, FULL RB) - Right Band Edge



Date: 9.JAN.2021 13:30:40

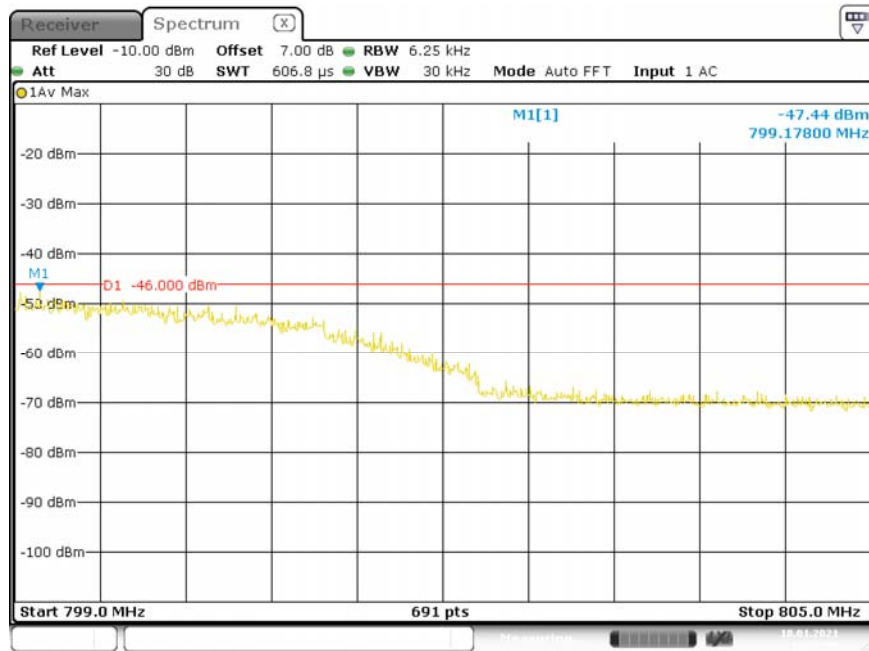
Additional:

QPSK (5.0 MHz, FULL RB) - Left Band Edge

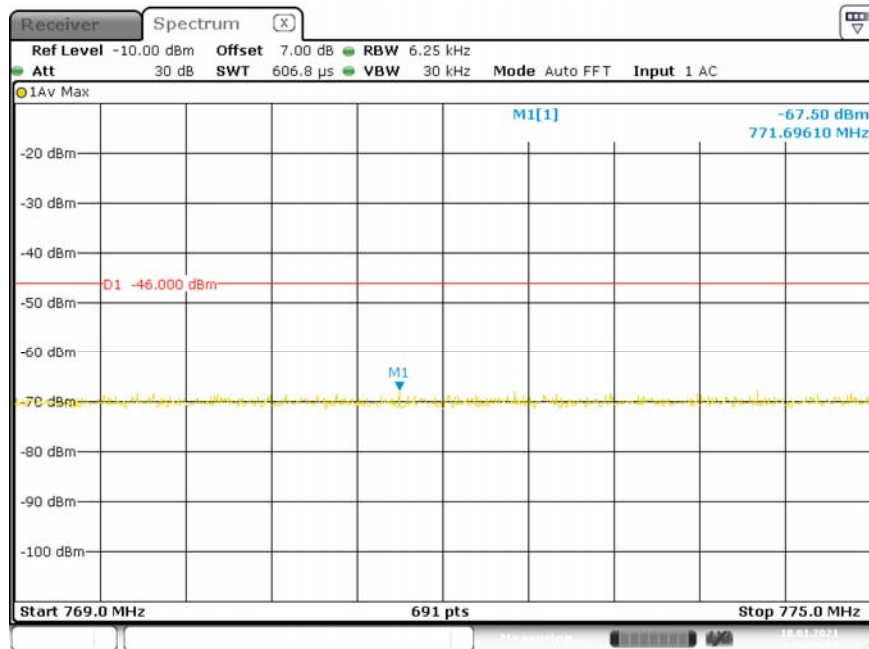


Date: 18.JAN.2021 11:59:34

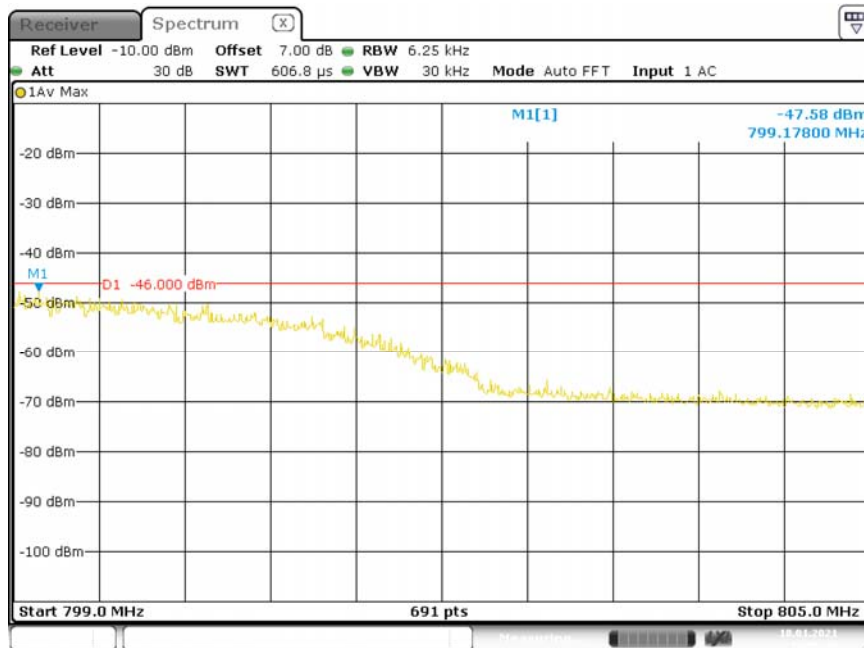
QPSK (5.0 MHz, FULL RB) - Right Band Edge



16-QAM (5.0 MHz, FULL RB) - Left Band Edge

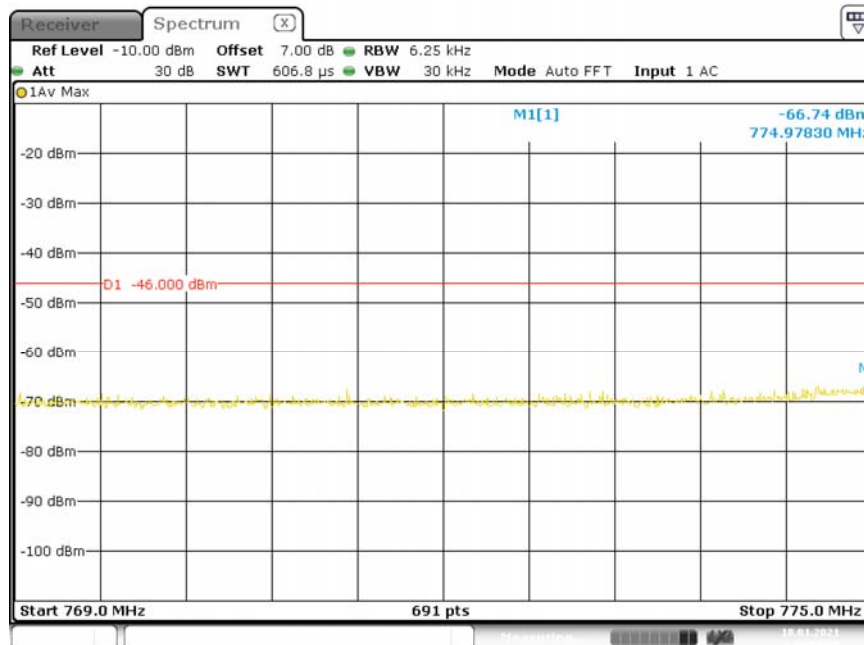


16-QAM (5.0 MHz, FULL RB) - Right Band Edge



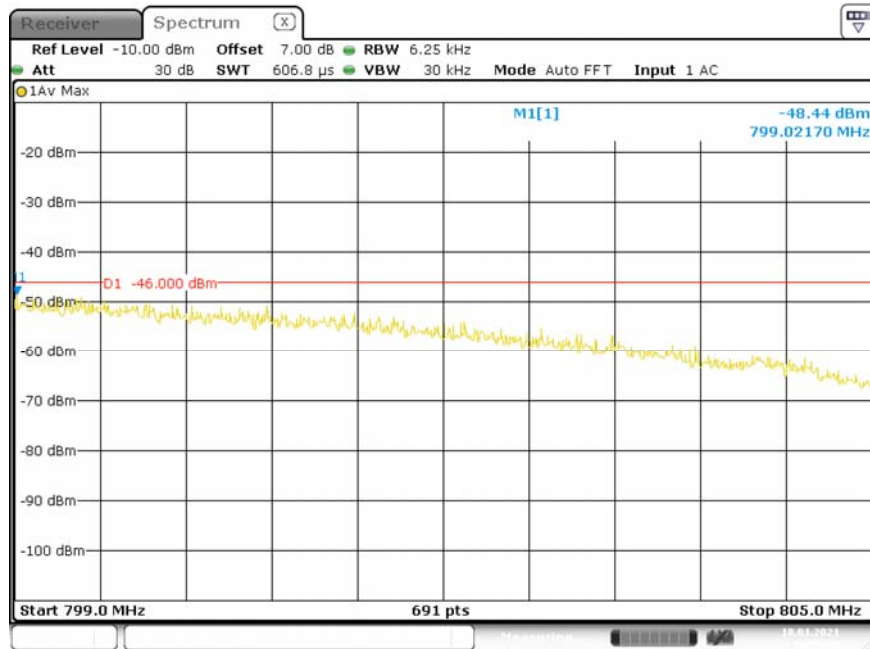
Date: 18.JAN.2021 12:06:46

QPSK (10.0 MHz, FULL RB) - Left Band Edge

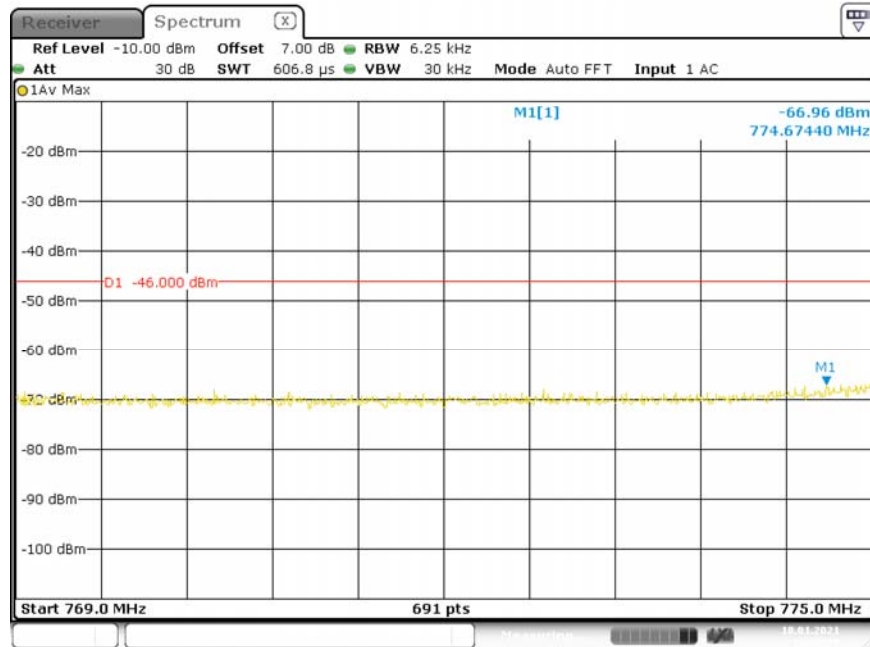


Date: 18.JAN.2021 12:01:38

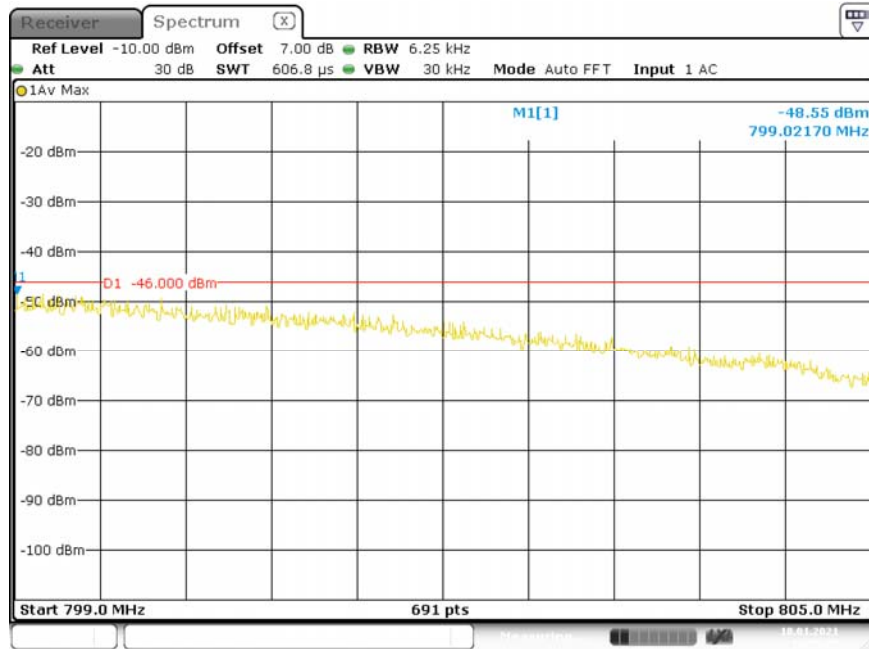
QPSK (10.0 MHz, FULL RB) - Right Band Edge



16-QAM (10.0 MHz, FULL RB) - Left Band Edge



16-QAM (10.0 MHz, FULL RB) - Right Band Edge



FCC §2.1055, §90.213 - FREQUENCY STABILITY

Applicable Standard

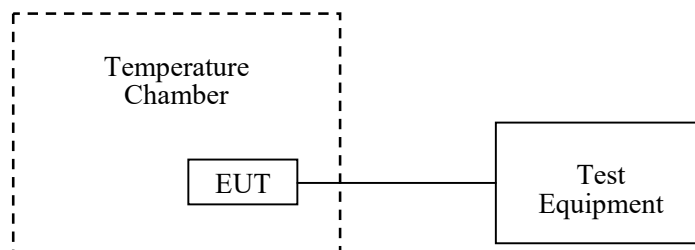
FCC § 2.1055; §90.213

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set from 85% to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2021-01-09	2022-01-09
Unknown	Coaxial Cable	C-SJ00-0010	C0010/04	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201048	Each time	N/A
E-Microwave	Coaxial Attenuators	EMCA10-5RN-6	OE01203239	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	147473	2020-09-23	2021-09-22
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2020-03-10	2021-03-09
UNI-T	Multimeter	UT39A	M130199938	2020-07-24	2021-07-24
Pro instrument	DC Power Supply	pps3300	3300012	N/A	N/A

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

Test Data**Environmental Conditions**

Temperature:	23.5~23.7 °C
Relative Humidity:	36~41%
ATM Pressure:	102.3~102.4kPa
Tester:	Michael Zhang
Test Date:	2021-01-18

Test Result: Compliance.

LTE Band 14:

QPSK:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	12	788.0933	797.8178	788	798
-20		788.0935	797.8169	788	798
-10		788.0957	797.8174	788	798
0		788.0930	797.8136	788	798
10		788.0957	797.8157	788	798
20		788.0942	797.8132	788	798
30		788.0960	797.8147	788	798
40		788.0947	797.8132	788	798
50		788.0961	797.8169	788	798
20	V min.= 10.8	788.0924	797.8180	788	798
	V max.= 13.2	788.0904	797.8164	788	798

16QAM:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	12	788.0954	797.8898	788	798
-20		788.0985	797.8801	788	798
-10		788.0951	797.8805	788	798
0		788.0936	797.5871	788	798
10		788.0969	797.8851	788	798
20		788.0961	797.8827	788	798
30		788.0966	797.8850	788	798
40		788.0957	797.8923	788	798
50		788.0903	797.8989	788	798
20	V min.= 10.8	788.0953	797.8946	788	798
	V max.= 13.2	788.0922	797.8954	788	798

Note: The fundamental emissions stay within the authorized bands of operation based on the frequency deviation measured is small, the extreme voltage was declared by applicant.

******* END OF REPORT *******