



中认信通
CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



TEST REPORT

Applicant: Autel Robotics Co., Ltd.

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FCC ID: 2AGNTMDX240958A

IC: 20910-MDX240958A

HVIN: MDX

FVIN: 1.3.24.0

Product Name: EVO Max

Standard(s): 47 CFR Part 15, Subpart E(15.407)

RSS-247 Issue 2, February 2017

RSS-Gen, Issue 5, February 2021 Amendment 2

ANSI C63.10-2013

KDB 789033 D02 General U-NII Test Procedures New Rules v02r01

The above equipment has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

Report Number: CR221151897-00D

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Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang 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. : 442868, the FCC Designation No. : CN1314.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0123.

Declarations

China Certification ICT Co., Ltd (Dongguan) 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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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR221151897-00D	Original Report	2023/3/9

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	EVO Max
EUT Model:	MDX
Operation Frequency:	5150-5250 MHz band(For FCC Only): SRD 1.4MHz:5154-5246 MHz SRD 10MHz: 5157-5243MHz SRD 20MHz: 5167-5233MHz 5725-5850 MHz band(For FCC&ISED): SRD 1.4MHz: 5728-5847 MHz SRD 10MHz: 5733-5842 MHz SRD 20MHz: 5738-5839 MHz
Maximum Average Output Power (Conducted):	5150-5250 MHz band: 20.01 dBm 5725-5850 MHz band: 24.90 dBm
Modulation Type:	QPSK ,16QAM
Rated Input Voltage:	DC 14.88V from Battery
Serial Number:	1QAT-13
EUT Received Date:	2022/11/09
EUT Received Status:	Good
Note: 5150-5250 MHz was disabled by software by manufacturer in Canada market, please refer to the attention letter for more detail.	

1.1.2 Operation Frequency Detail: For SRD-5.2GHz band(FCC Only): 1.4MHz Bandwidth Mode:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5154	48	5201
2	5155	49	5202
3	5156
...
...	...	92	5245
46	5199	93	5246
47	5200	/	/
Per section 15.31(m), the below frequencies were performed the test as below:			
Test Channel		Frequency (MHz)	
Lowest		5154	
Middle		5201	
Highest		5246	

10MHz Bandwidth Mode:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5157	45	5201
2	5158	46	5202
3	5159
...
...	...	86	5242
43	5199	87	5243
44	5200	/	/

Per section 15.31(m), the below frequencies were performed the test as below:

Test Channel	Frequency (MHz)
Lowest	5157
Middle	5201
Highest	5243

20MHz Bandwidth Mode:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5167	35	5201
2	5168	36	5202
3	5169
...
...	...	66	5232
33	5199	67	5233
34	5200	/	/

Per section 15.31(m), the below frequencies were performed the test as below:

Test Channel	Frequency (MHz)
Lowest	5167
Middle	5201
Highest	5233

For SRD-5.8GHz band(FCC& ISSED):**1.4MHz Bandwidth Mode:**

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5728	61	5788
2	5729	62	5789
3	5730
...
...	...	118	5845
59	5786	119	5846
60	5787	120	5847

Per section 15.31(m)/RSS-Gen, the below frequencies were performed the test as below:

Test Channel	Frequency (MHz)
Lowest	5728
Middle	5789
Highest	5847

For SRD-5.8GHz band 10MHz Bandwidth Mode:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5733	56	5788
2	5734	57	5789
3	5735
...
...	...	108	5840
54	5786	109	5841
55	5787	110	5842

Per section 15.31(m)/RSS-Gen, the below frequencies were performed the test as below:

Test Channel	Frequency (MHz)
Lowest	5733
Middle	5789
Highest	5842

For SRD-5.8GHz band 20MHz Bandwidth Mode:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5738	52	5789
2	5739	53	5790
3	5740
...
...	...	100	5837
50	5787	101	5838
51	5788	102	5839

Per section 15.31(m)/RSS-Gen, the below frequencies were performed the test as below:

Test Channel	Frequency (MHz)
Lowest	5738
Middle	5790
Highest	5839

1.1.3 Antenna Information Detail▲:

Antenna Chain	Manufacturer	Antenna Type	input impedance (Ohm)	Frequency Range	Antenna Gain
0 (Tx&Rx)	Autel Robotics Co., Ltd.	PCB	50	902-928 MHz	0.3 dBi
				2400-2483.5 MHz	1.7 dBi
				5150-5250 MHz	-1.6 dBi
				5725-5850 MHz	0.8 dBi
1 (Rx Only)		PCB	50	902-928 MHz	1.1 dBi
				2400-2483.5 MHz	1.5 dBi
				5150-5250 MHz	4.2 dBi
				5725-5850 MHz	3.3 dBi
2 (Tx&Rx)		PCB	50	902-928 MHz	-0.8 dBi
				2400-2483.5 MHz	1.9 dBi
				5150-5250 MHz	0.7 dBi
				5725-5850 MHz	0.9 dBi
3 (Rx Only)		PCB	50	902-928 MHz	1.8 dBi
				2400-2483.5 MHz	1.2 dBi
				5150-5250 MHz	3.0 dBi
				5725-5850 MHz	3.9 dBi

The Method of §15.203 Compliance:

☒ Antenna must be permanently attached to the unit.

☐ Antenna must use a unique type of connector to attach to the EUT.

☐ Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

1.1.4 Accessory Information:

Accessory Description	Manufacturer	Model
Adapter	Shenzhen Esun Power Technology Co.,Ltd	MDX120W

1.2 Description of Test Configuration

1.2.1 EUT Operation Condition:

EUT Operation Mode:			The system was configured for testing in Engineering Mode, which was provided by the manufacturer. The device only supports MIMO mode 2Tx4Rx.		
Equipment Modifications:			No		
EUT Exercise Software:			RRTL6.0.0_VCOM		
The software was provided by manufacturer. The maximum power was configured as below, that was provided by the manufacturer ▲:					
5150-5250 MHz Band: QPSK					
Test Modes	Test Channels	Test Frequency (MHz)	Data rate	Power Level Setting	
				Chain 0	Chain 2
1.4M	Lowest	5154	6Mbps	65	77
	Middle	5201	6Mbps	67	80
	Highest	5246	6Mbps	67	83
10M	Lowest	5157	MCS8	45	60
	Middle	5201	MCS8	45	60
	Highest	5243	MCS8	45	60
20M	Lowest	5167	MCS8	45	60
	Highest	5201	MCS8	45	62
	Middle	5233	MCS8	45	62
5725-5850 MHz Band: QPSK					
Test Modes	Test Channels	Test Frequency (MHz)	Data rate	Power Level Setting	
				Chain 0	Chain 2
1.4M	Lowest	5728	6Mbps	35	40
	Middle	5789	6Mbps	35	40
	Highest	5847	6Mbps	35	40
10M	Lowest	5733	MCS8	35	40
	Middle	5789	MCS8	35	40
	Highest	5842	MCS8	35	40
20M	Lowest	5738	MCS8	35	40
	Highest	5790	MCS8	35	40
	Middle	5839	MCS8	35	40
5150-5250 MHz Band: 16QAM					
Test Modes	Test Channels	Test Frequency (MHz)	Data rate	Power Level Setting	
				Chain 0	Chain 2
1.4M	Lowest	5154	6Mbps	65	80
	Middle	5201	6Mbps	69	83
	Highest	5246	6Mbps	69	83
10M	Lowest	5157	MCS8	45	60
	Middle	5201	MCS8	45	60
	Highest	5243	MCS8	45	60
20M	Lowest	5167	MCS8	45	60
	Highest	5201	MCS8	45	62
	Middle	5233	MCS8	45	62

5725-5850 MHz Band: 16QAM

Test Modes	Test Channels	Test Frequency (MHz)	Data rate	Power Level Setting	
				Chain 0	Chain 2
1.4M	Lowest	5728	6Mbps	45	50
	Middle	5789	6Mbps	45	50
	Highest	5847	6Mbps	45	50
10M	Lowest	5733	MCS8	35	40
	Middle	5789	MCS8	35	40
	Highest	5842	MCS8	35	40
20M	Lowest	5738	MCS8	35	40
	Highest	5790	MCS8	35	40
	Middle	5839	MCS8	35	40

1.2.2 Support Equipment List and Details

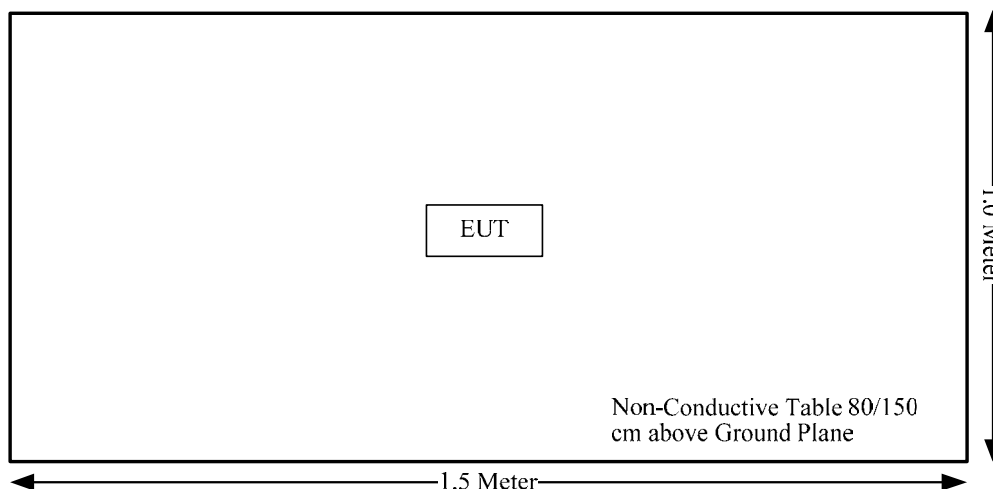
Manufacturer	Description	Model	Serial Number
/	/	/	/

1.2.3 Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
/	/	/	/	/	/

1.2.4 Block Diagram of Test Setup

Spurious Emissions:



1.3 Measurement Uncertainty

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.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	30M~200MHz: 4.15 dB, 200M~1GHz: 5.61 dB, 1G~6GHz: 5.14 dB, 6G~18GHz: 5.93 dB, 18G~26.5G: 5.47 dB, 26.5G~40G: 5.63 dB
Unwanted Emissions, conducted	±1.26 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

2. SUMMARY OF TEST RESULTS

Standard(s) Section	Test Items	Result
§15.207(a) RSS-Gen Clause 8.8	AC line conducted emissions	Not Applicable
FCC§15.205& §15.209 &§15.407(b) RSS-247 Clause 6.2	Undesirable Emission& Restricted Bands	Compliant
RSS-247 Clause 6.2.1.2	26dB attenuated below the channel power	Not Applicable
FCC§15.407(a) (e) RSS-247 Clause 6.2 RSS-Gen Clause 6.7	Emission Bandwidth	Compliant
FCC§15.407(a) RSS-247 Clause 6.2	Conducted Transmitter Output Power	Compliant
FCC§15.407 (a) RSS-247 Clause 6.2	Power Spectral Density	Compliant
§15.203 RSS-GEN Clause 6.8	Antenna Requirement	Compliant
RSS-247 Clause 6.4	Additional requirements	Compliant

3. REQUIREMENTS AND TEST PROCEDURES

3.1 AC Line Conducted Emissions

3.1.1 Applicable Standard

FCC§15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μ V within the frequency band 535-1705 kHz, as measured using a 50 μ H/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

RSS-Gen Clause 8.8

Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in table 4, as measured using a 50 μ H / 50 Ω line impedance stabilization network. This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.

For an EUT that connects to the AC power lines indirectly, through another device, the requirement for compliance with the limits in table 4 shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at the

boundary between the frequency ranges. The device used to power the EUT shall be representative of typical applications.

Table 4 – AC power-line conducted emissions limits

Frequency (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 ¹	56 to 46 ¹
0.5 – 5	56	46
5 – 30	60	50

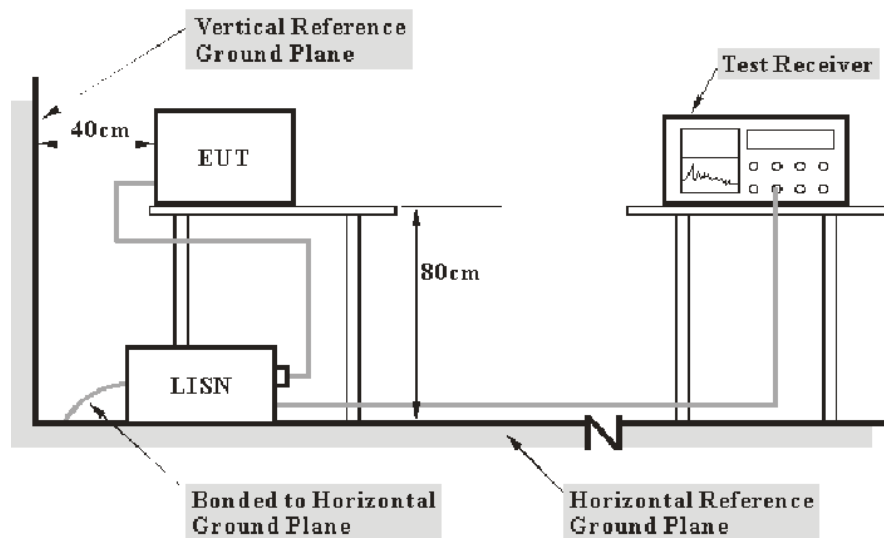
Note 1: The level decreases linearly with the logarithm of the frequency.

For an EUT with a permanent or detachable antenna operating between 150 kHz and 30 MHz, the AC power-line conducted emissions must be measured using the following configurations:

(a) Perform the AC power-line conducted emissions test with the antenna connected to determine compliance with the limits of table 4 outside the transmitter's fundamental emission band.

(b) Retest with a dummy load instead of the antenna to determine compliance with the limits of table 4 within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network that simulates the antenna in the fundamental frequency band.

3.1.2 EUT Setup



Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207,RSS-Gen limits.

The spacing between the peripherals was 10 cm.

The adapter or EUT was connected to the main LISN with a 120 V/60 Hz AC power source.

3.1.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

3.1.4 Test Procedure

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase (“hot”) line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

3.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = attenuation caused by cable loss + voltage division factor of AMN

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

3.2 Radiation Spurious Emissions

3.2.1 Applicable Standard

FCC §15.407 (b);

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of - 27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of - 27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of - 27 dBm/MHz.

(4) For transmitters operating solely in the 5.725-5.850 GHz band:

(i) All emissions shall be limited to a level of - 27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in § 15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in § 15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

(8) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(9) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in § 15.207.

(10) The provisions of § 15.205 apply to intentional radiators operating under this section.

(11) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

(c) The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

RSS-247 Clause 6.2

Frequency band 5150-5250 MHz

6.2.1.2 Unwanted emission limits

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

Frequency band 5725-5850 MHz

6.2.4.2 Unwanted emission limits

Devices operating in the band 5725-5850 MHz with antenna gain greater than 10 dBi can have unwanted emissions that comply with either the limits in this section or in section 5.5 until six (6) months after the publication date of this standard for certification. Certified devices that do not comply with emission limits in this section shall not be manufactured, imported, distributed, leased, offered for sale or sold after April 1, 2018.

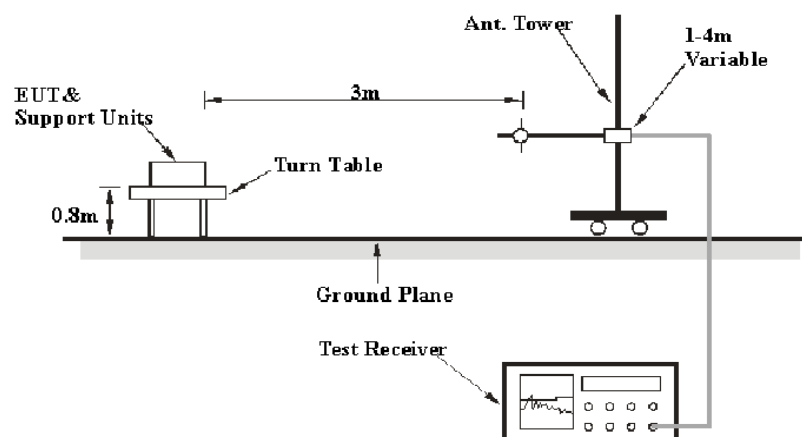
Devices operating in the band 5725-5850 MHz with antenna gain of 10 dBi or less can have unwanted emissions that comply with either the limits in this section or in section 5.5 until April 1, 2018 for certification. Certified devices that do not comply with emission limits in this section shall not be manufactured, imported, distributed, leased, offered for sale or sold after April 1, 2020.

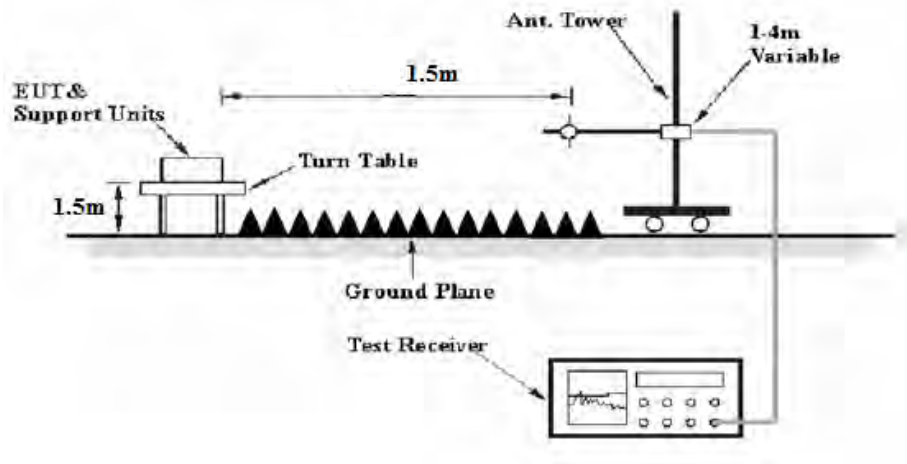
Devices operating in the band 5725-5850 MHz shall have e.i.r.p. of unwanted emissions comply with the following:

- 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;
- 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;
- 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and
- 27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

3.2.2 EUT Setup

Below 1GHz:



1-40 GHz:

The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was FCC 15.209, FCC 15.407, RSS-247, RSS-Gen limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

3.2.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

30-1000MHz:

Detector	RBW	Video B/W	IF B/W
QP	120 kHz	300 kHz	120kHz

1GHz- 40GHz:

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
AV	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Note: T is minimum transmission duration

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

3.2.4 Test Procedure

During the radiated emission test, the adapter was connected to the first AC floor outlet.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz, peak and Average detection modes for frequencies above 1GHz.

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, emission shall be computed as: $E [dB\mu V/m] = EIRP[dBm] + 95.2$, for $d = 3$ meters.

According to C63.10, the above 1G test result shall be extrapolated to the specified distance using an extrapolation Factor of 20dB/decade from 3m to 1.5m

Distance extrapolation Factor = $20 \log (\text{specific distance } [3m] / \text{test distance } [1.5m])$ dB = 6.02 dB

All emissions under the average limit and under the noise floor have not recorded in the report.

3.2.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Factor = Antenna Factor + Cable Loss - Amplifier Gain

For 30MHz-1GHz:

Result = Reading + Factor

For 1GHz-40GHz

Result = Reading + Factor - Distance extrapolation Factor

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

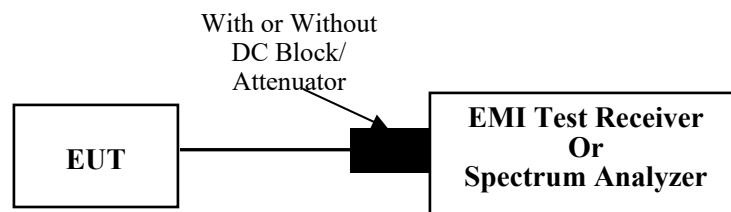
3.3 26dB attenuated below the channel power:

3.3.1 Applicable Standard

RSS-247 Clause 6.2.1.2

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

3.3.2 EUT Setup



3.3.3 Test Procedure

- Set RBW = 1%~5% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = peak.
- Trace mode = max hold
- Measure the emission attenuated below the channel power

3.4 Emission Bandwidth:

3.4.1 Applicable Standard

FCC §15.407 (a),(h)

(h)(2) Radar Detection Function of Dynamic Frequency Selection (DFS). U-NII devices operating with any part of its 26 dB emission bandwidth in the 5.25-5.35 GHz and 5.47-5.725 GHz bands shall employ a DFS radar detection mechanism to detect the presence of radar systems and to avoid co-channel operation with radar systems.

FCC §15.407 (e)

Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

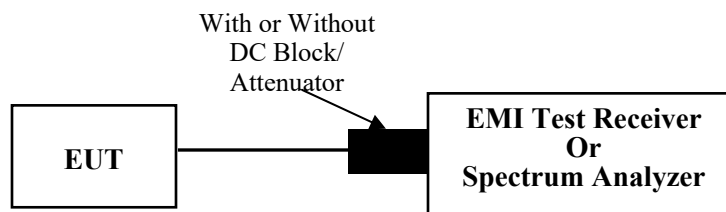
RSS-247 Clause 6.2.1.2

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

RSS-247 Clause 6.2.4.1

For equipment operating in the band 5725-5850 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.

3.4.2 EUT Setup



3.4.3 Test Procedure

26dB Emission Bandwidth:

According to ANSI C63.10-2013 Section 12.4.1

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = peak.
- Trace mode = max hold
- Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

99% Occupied Bandwidth:

According to ANSI C63.10-2013 Section 12.4.2&6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

The following procedure shall be used for measuring 99% power bandwidth:

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.5.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

6 dB emission bandwidth:

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) ≥ 3 RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described in this section. For devices that use channel aggregation refer to III.A and III.C for determining emission bandwidth.

3.5 Maximum conducted output power:

3.5.1 Applicable Standard

FCC §15.407(a) (1)(i)

For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

FCC §15.407(a) (3)(i)

For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

RSS-247 Clause 6.2.1.1

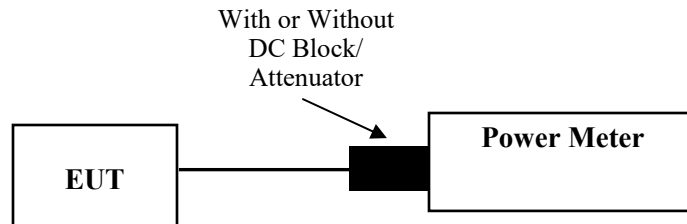
For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10 \log_{10} B$, dBm, whichever is less stringent. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

For other devices, the maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

RSS-247 Clause 6.2.4.1

The maximum conducted output power shall not exceed 1 W. The output power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

3.5.2 EUT Setup



3.5.3 Test Procedure

According to ANSI C63.10-2013 Section 12.3.3.2

Method PM-G is measurement using a gated RF average power meter. Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Because the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

3.6 Maximum power spectral density:

3.6.1 Applicable Standard

FCC §15.407(a) (1)(i)

For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

FCC §15.407(a) (3)(i)

For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

RSS-247 Clause 6.2.1.1

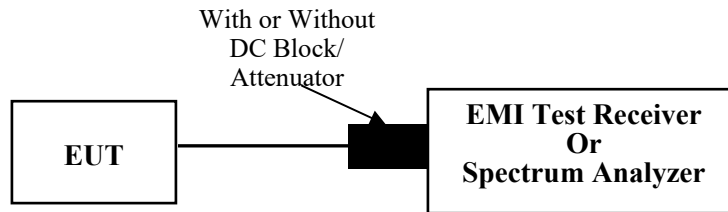
For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10 \log_{10} B$, dBm, whichever is less stringent. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

For other devices, the maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

RSS-247 Clause 6.2.4.1

The maximum conducted output power shall not exceed 1 W. The output power spectral density shall not exceed 30 dBm in any 500 kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications and multiple collocated transmitters transmitting the same information.

3.6.2 EUT Setup



3.6.3 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Method SA-3 (power averaging (rms) detection with max hold):

(i) Set span to encompass the entire EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set sweep trigger to “free run.”

(iii) Set RBW = 1 MHz.

(iv) Set VBW ≥ 3 MHz

(v) Number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$. (This ensures that bin-to-bin spacing is $\leq \text{RBW}/2$, so that narrowband signals are not lost between frequency bins.)

(vi) Sweep time $\leq (\text{number of points in sweep}) \times T$, where T is defined in II.B.1.a).

Note: If this results in a sweep time less than the auto sweep time of the analyzer, Method SA-3 Alternative shall not be used. (The purpose of this step is to ensure that averaging time in each bin is less than or equal to the minimum time of a transmission.)

(vii) Detector = power averaging (rms).

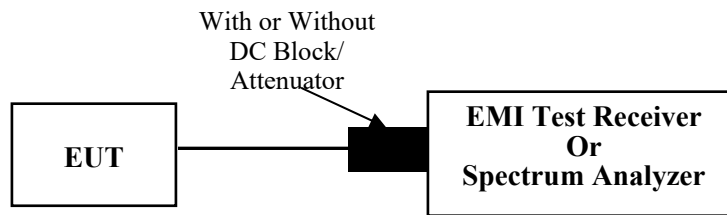
(viii) Trace mode = max hold.

(ix) Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

For devices operating in the band 5.725–5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used.

3.7 Duty Cycle:

3.7.1 EUT Setup



3.7.2 Test Procedure

According to ANSI C63.10-2013 Section 12.2

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:

- 1) Set the center frequency of the instrument to the center frequency of the transmission.
- 2) Set $RBW \geq OBW$ if possible; otherwise, set RBW to the largest available value.
- 3) Set $VBW \geq RBW$. Set detector = peak or average.
- 4) The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if $T \leq 16.7 \mu s$.)

3.8 Antenna Requirement

3.8.1 Applicable Standard

FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

RSS-GEN Clause 6.8

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

3.8.2 Judgment

Result: Compliant. Please refer to the Antenna Information detail in Section 1.

3.9 Additional requirement

3.9.1 Applicable Standard

According to RSS-247 Clause 6.4 Additional requirement

The following requirements shall apply:

- a) The device shall automatically discontinue transmission in cases of absence of information to transmit, or operational failure. A description on how this is done shall accompany the application for equipment certification. Note that this is not intended to prohibit transmission of control or signalling information or the use of repetitive codes where required by the technology.
- b) All LE-LAN devices must contain security features to protect against modification of software by unauthorized parties.

Manufacturers must implement security features in any digitally modulated devices capable of operating in any of the frequency ranges within the 5 GHz band, so that third parties are not able to reprogram the device to operate outside the parameters for which the device was certified. The software must prevent the user from operating the transmitter with operating frequencies, output power, modulation types or other radio frequency parameters outside those that were approved for the device. Manufacturers may use various means, including the use of a private network that allows only authenticated users to download software, electronic signatures in software or coding in hardware that is decoded by software to verify that new software can be legally loaded into a device to meet these requirements and must describe the methods in their application for equipment certification.

Manufacturers must take steps to ensure that DFS functionality cannot be disabled by the operator of the LE-LAN device.

- c) The user manual for LE-LAN devices shall contain instructions related to the restrictions mentioned in the above sections, namely that:
 - i. the device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;⁴
 - ii. for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;
 - iii. for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits as appropriate; and
 - iv. where applicable, antenna type(s), antenna models(s), and worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in section 6.2.2.3 shall be clearly indicated.

3.9.2 Judgment

RSS-247 Clause 6.4 a):

The device shall automatically discontinue transmission in cases of absence of information to transmit, or operational failure. Please refer to the declaration

RSS-247 Clause 6.4 b):

The devices must contain security features to protect against modification of software by unauthorized parties. Please refer to the declaration

RSS-247 Clause 6.4 c):

i). The device not operates on 5150-5250MHz in Canada market.

ii). The device not operates on 5250-5350MHz/5470-5725MHz.

iii). The antenna is not detachable, and all the EIPR compliance with RSS-247 requirement. Please refer to the conducted output power test result.

iv). Not Applicable.

4. Test DATA AND RESULTS

4.1 AC Line Conducted Emissions

Not Applicable, the device was powered by battery when operating

4.2 Radiation Spurious Emissions

Serial Number:	1QAT-13	Test Date:	2023/1/13~2023/2/3
Test Site:	966-1,966-2	Test Mode:	Transmitting
Tester:	Carl Xue,coco Tian	Test Result:	Pass

Environmental Conditions:					
Temperature: (°C)	22.1~23.9	Relative Humidity: (%)	63~64	ATM Pressure: (kPa)	100.5~101.3

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2020/10/19	2023/10/18
R&S	EMI Test Receiver	ESR3	102724	2022/07/15	2023/07/14
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2022/07/17	2023/07/16
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2022/07/17	2023/07/16
Sonoma	Amplifier	310N	186165	2022/07/17	2023/07/16
Audix	Test Software	E3	201021 (V9)	N/A	N/A
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020/10/13	2023/10/12
R&S	Spectrum Analyzer	FSV40	101591	2022/07/15	2023/07/14
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2022/08/07	2023/08/06
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2022/08/07	2023/08/06
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2022/11/09	2023/11/08
PASTERNAK	Horn Antenna	PE9852/2F-20	112002	2021/02/05	2024/02/04
AH	Preamplifier	PAM-1840VH	190	2022/11/09	2023/11/08
MICRO-COAX	Coaxial Cable	UFB142A-1-2362-200200	235772-001	2022/08/07	2023/08/06
E-Microwave	Band Rejection Filter	5150-5850MHz	OE01902423	2022/08/07	2023/08/06
Mini Circuits	High Pass Filter	VHF-6010+	31119	2022/08/07	2023/08/06
PASTERNAK	Horn Antenna	PE9850/2F-20	072001	2021/02/05	2024/02/04

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

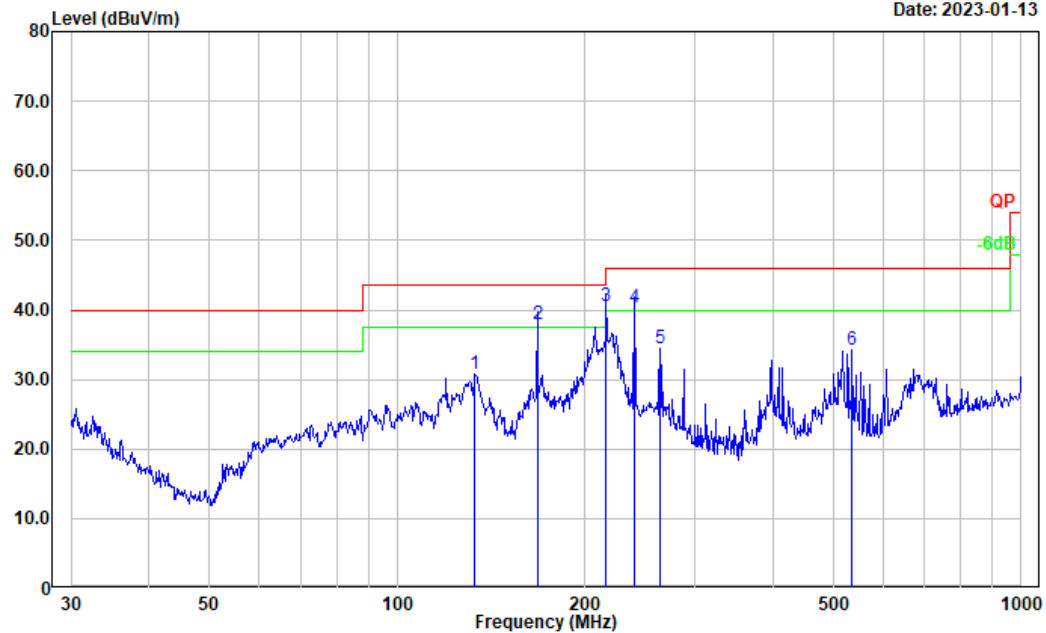
Test Data:

Please refer to the below table and plots.

1) 30MHz-1GHz(1.4MHz QPSK Middle channel was the worst)

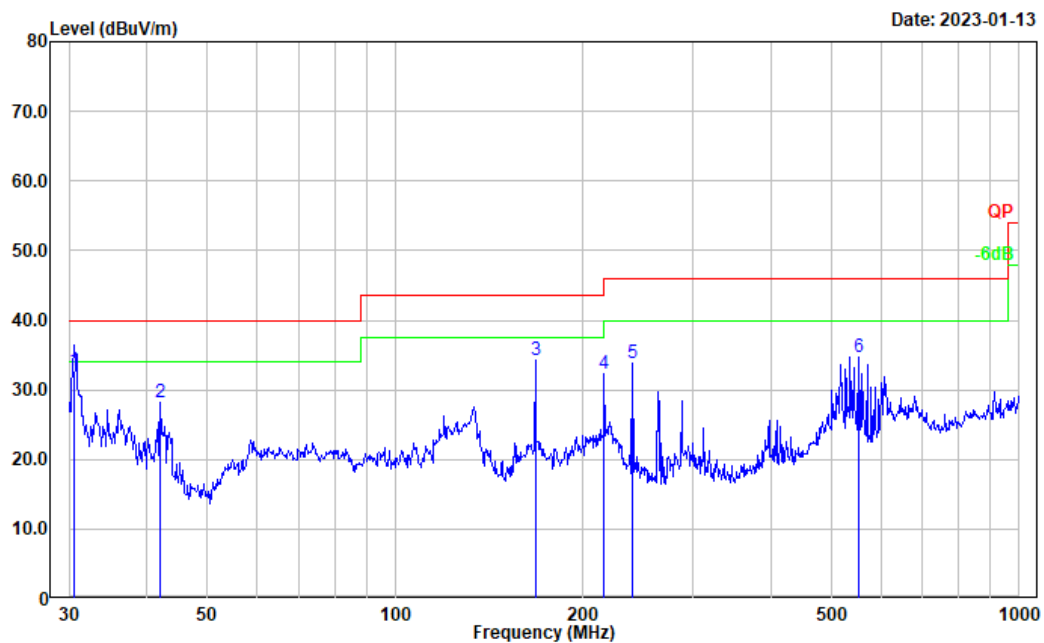
Test Mode: Transmitting
Polarization: horizontal
Note:

Date: 2023-01-13



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	133.151	42.30	-11.52	30.78	43.50	12.72	Peak
2	167.824	50.74	-12.73	38.01	43.50	5.49	QP
3	216.024	53.14	-12.65	40.49	46.00	5.51	QP
4	239.987	53.26	-13.02	40.24	46.00	5.76	QP
5	263.819	46.69	-12.31	34.38	46.00	11.62	Peak
6	535.707	40.30	-6.01	34.29	46.00	11.71	Peak

Test Mode: Transmitting
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.638	36.74	-4.09	32.65	40.00	7.35	QP
2	42.007	40.61	-12.45	28.16	40.00	11.84	Peak
3	167.824	47.03	-12.73	34.30	43.50	9.20	Peak
4	216.024	44.91	-12.65	32.26	46.00	13.74	Peak
5	239.987	46.79	-13.02	33.77	46.00	12.23	Peak
6	552.883	40.45	-5.71	34.74	46.00	11.26	Peak

2) 1GHz-40GHz:**5150-5250MHz****1.4M, QPSK:**

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 5154MHz							
5154.000	85.12	PK	H	38.64	117.74	N/A	N/A
5154.000	80.05	AV	H	38.64	112.67	N/A	N/A
5154.000	78.58	PK	V	38.64	111.20	N/A	N/A
5154.000	73.16	AV	V	38.64	105.78	N/A	N/A
5150.000	30.97	PK	H	38.64	63.59	74.00	10.41
5150.000	18.14	AV	H	38.64	50.76	54.00	3.24
10308.000	33.64	PK	H	19.20	46.82	68.20	21.38
15462.000	34.26	PK	H	22.57	50.81	74.00	23.19
15462.000	21.34	AV	H	22.57	37.89	54.00	16.11
Middle Channel: 5201 MHz							
5201.000	86.82	PK	H	38.70	119.50	N/A	N/A
5201.000	81.08	AV	H	38.70	113.76	N/A	N/A
5201.000	79.67	PK	V	38.70	112.35	N/A	N/A
5201.000	74.34	AV	V	38.70	107.02	N/A	N/A
10402.000	33.66	PK	H	19.15	46.79	68.20	21.41
15603.000	33.79	PK	H	22.41	50.18	74.00	23.82
15603.000	20.64	AV	H	22.41	37.03	54.00	16.97
High Channel: 5246 MHz							
5246.000	88.25	PK	H	38.87	121.10	N/A	N/A
5246.000	82.90	AV	H	38.87	115.75	N/A	N/A
5246.000	81.46	PK	V	38.87	114.31	N/A	N/A
5246.000	76.25	AV	V	38.87	109.10	N/A	N/A
5350.000	29.71	PK	H	39.03	62.72	74.00	11.28
5350.000	16.59	AV	H	39.03	49.60	54.00	4.40
10492.000	34.46	PK	H	18.82	47.26	68.20	20.94
15738.000	33.16	PK	H	22.27	49.41	74.00	24.59
15738.000	20.33	AV	H	22.27	36.58	54.00	17.42

16QAM:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 5154MHz							
5154.000	85.24	PK	H	38.64	117.86	N/A	N/A
5154.000	79.31	AV	H	38.64	111.93	N/A	N/A
5154.000	79.47	PK	V	38.64	112.09	N/A	N/A
5154.000	73.01	AV	V	38.64	105.63	N/A	N/A
5150.000	31.26	PK	H	38.64	63.88	74.00	10.12
5150.000	18.14	AV	H	38.64	50.76	54.00	3.24
10308.000	34.56	PK	H	19.20	47.74	68.20	20.46
15462.000	33.49	PK	H	22.57	50.04	74.00	23.96
15462.000	20.76	AV	H	22.57	37.31	54.00	16.69
Middle Channel: 5201 MHz							
5201.000	86.84	PK	H	38.70	119.52	N/A	N/A
5201.000	80.67	AV	H	38.70	113.35	N/A	N/A
5201.000	80.77	PK	V	38.70	113.45	N/A	N/A
5201.000	74.34	AV	V	38.70	107.02	N/A	N/A
10402.000	34.31	PK	H	19.15	47.44	68.20	20.76
15603.000	33.80	PK	H	22.41	50.19	74.00	23.81
15603.000	20.96	AV	H	22.41	37.35	54.00	16.65
High Channel: 5246 MHz							
5246.000	87.21	PK	H	38.87	120.06	N/A	N/A
5246.000	80.86	AV	H	38.87	113.71	N/A	N/A
5246.000	81.64	PK	V	38.87	114.49	N/A	N/A
5246.000	75.34	AV	V	38.87	108.19	N/A	N/A
5350.000	29.56	PK	H	39.03	62.57	74.00	11.43
5350.000	16.58	AV	H	39.03	49.59	54.00	4.41
10492.000	34.59	PK	H	18.82	47.39	68.20	20.81
15738.000	33.76	PK	H	22.27	50.01	74.00	23.99
15738.000	20.58	AV	H	22.27	36.83	54.00	17.17

10M,QPSK:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 5157MHz							
5157.000	77.34	PK	V	38.65	109.97	N/A	N/A
5157.000	67.64	AV	V	38.65	100.27	N/A	N/A
5157.000	80.00	PK	H	38.65	112.63	N/A	N/A
5157.000	69.83	AV	H	38.65	102.46	N/A	N/A
5150.000	34.17	PK	H	38.64	66.79	74.00	7.21
5150.000	20.77	AV	H	38.64	53.39	54.00	0.61
10314.000	34.26	PK	H	19.19	47.43	68.20	20.77
15471.000	35.26	PK	H	22.54	51.78	74.00	22.22
15471.000	22.34	AV	H	22.54	38.86	54.00	15.14
Middle Channel: 5201 MHz							
5201.000	78.61	PK	V	38.70	111.29	N/A	N/A
5201.000	68.94	AV	V	38.70	101.62	N/A	N/A
5201.000	81.79	PK	H	38.70	114.47	N/A	N/A
5201.000	71.38	AV	H	38.70	104.06	N/A	N/A
10402.000	34.76	PK	H	19.15	47.89	68.20	20.31
15603.000	35.26	PK	H	22.41	51.65	74.00	22.35
15603.000	22.31	AV	H	22.41	38.70	54.00	15.30
High Channel: 5243 MHz							
5243.000	80.89	PK	V	38.86	113.73	N/A	N/A
5243.000	71.02	AV	V	38.86	103.86	N/A	N/A
5243.000	87.85	PK	H	38.86	120.69	N/A	N/A
5243.000	77.21	AV	H	38.86	110.05	N/A	N/A
5350.000	29.47	PK	H	39.03	62.48	74.00	11.52
5350.000	16.58	AV	H	39.03	49.59	54.00	4.41
10486.000	34.26	PK	H	18.84	47.08	68.20	21.12
15729.000	34.58	PK	H	22.27	50.83	74.00	23.17
15729.000	21.64	AV	H	22.27	37.89	54.00	16.11

16QAM:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 5157MHz							
5157.000	77.64	PK	H	38.65	110.27	N/A	N/A
5157.000	67.49	AV	H	38.65	100.12	N/A	N/A
5157.000	80.35	PK	V	38.65	112.98	N/A	N/A
5157.000	70.29	AV	V	38.65	102.92	N/A	N/A
5150.000	32.56	PK	V	38.64	65.18	74.00	8.82
5150.000	19.40	AV	V	38.64	52.02	54.00	1.98
10314.000	34.56	PK	V	19.19	47.73	68.20	20.47
15471.000	33.47	PK	V	22.54	49.99	74.00	24.01
15471.000	20.31	AV	V	22.54	36.83	54.00	17.17
Middle Channel: 5201 MHz							
5201.000	78.42	PK	H	38.70	111.10	N/A	N/A
5201.000	68.34	AV	H	38.70	101.02	N/A	N/A
5201.000	81.45	PK	V	38.70	114.13	N/A	N/A
5201.000	71.31	AV	V	38.70	103.99	N/A	N/A
10402.000	34.64	PK	V	19.15	47.77	68.20	20.43
15603.000	34.57	PK	V	22.41	50.96	74.00	23.04
15603.000	21.64	AV	V	22.41	38.03	54.00	15.97
High Channel: 5243 MHz							
5243.000	79.13	PK	H	38.86	111.97	N/A	N/A
5243.000	69.32	AV	H	38.86	102.16	N/A	N/A
5243.000	82.82	PK	V	38.86	115.66	N/A	N/A
5243.000	72.95	AV	V	38.86	105.79	N/A	N/A
5350.000	29.23	PK	V	39.03	62.24	74.00	11.76
5350.000	16.59	AV	V	39.03	49.60	54.00	4.40
10486.000	34.67	PK	V	18.84	47.49	68.20	20.71
15729.000	34.76	PK	V	22.27	51.01	74.00	22.99
15729.000	21.64	AV	V	22.27	37.89	54.00	16.11

20M,QPSK:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 5167 MHz							
5167.000	75.40	PK	V	38.66	108.04	N/A	N/A
5167.000	65.57	AV	V	38.66	98.21	N/A	N/A
5167.000	80.88	PK	H	38.66	113.52	N/A	N/A
5167.000	70.69	AV	H	38.66	103.33	N/A	N/A
5150.000	30.80	PK	H	38.64	63.42	74.00	10.58
5150.000	17.30	AV	H	38.64	49.92	54.00	4.08
10334.000	34.56	PK	H	19.19	47.73	68.20	20.47
15501.000	33.64	PK	H	22.46	50.08	74.00	23.92
15501.000	20.37	AV	H	22.46	36.81	54.00	17.19
Middle Channel: 5201 MHz							
5201.000	76.75	PK	V	38.70	109.43	N/A	N/A
5201.000	66.84	AV	V	38.70	99.52	N/A	N/A
5201.000	82.81	PK	H	38.70	115.49	N/A	N/A
5201.000	72.25	AV	H	38.70	104.93	N/A	N/A
10402.000	35.26	PK	H	19.15	48.39	68.20	19.81
15603.000	34.26	PK	H	22.41	50.65	74.00	23.35
15603.000	21.45	AV	H	22.41	37.84	54.00	16.16
High Channel: 5233 MHz							
5233.000	76.39	PK	V	38.83	109.20	N/A	N/A
5233.000	65.71	AV	V	38.83	98.52	N/A	N/A
5233.000	82.62	PK	H	38.83	115.43	N/A	N/A
5233.000	72.56	AV	H	38.83	105.37	N/A	N/A
5350.000	30.52	PK	H	39.03	63.53	74.00	10.47
5350.000	16.55	AV	H	39.03	49.56	54.00	4.44
10466.000	34.76	PK	H	18.92	47.66	68.20	20.54
15699.000	33.64	PK	H	22.28	49.90	74.00	24.10
15699.000	20.37	AV	H	22.28	36.63	54.00	17.37

16QAM:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 5167 MHz							
5167.000	75.34	PK	V	38.66	107.98	N/A	N/A
5167.000	65.46	AV	V	38.66	98.10	N/A	N/A
5167.000	80.03	PK	H	38.66	112.67	N/A	N/A
5167.000	69.89	AV	H	38.66	102.53	N/A	N/A
5150.000	30.26	PK	H	38.64	62.88	74.00	11.12
5150.000	16.92	AV	H	38.64	49.54	54.00	4.46
10334.000	33.16	PK	H	19.19	46.33	68.20	21.87
15501.000	24.02	PK	H	22.46	40.46	74.00	33.54
15501.000	21.26	AV	H	22.46	37.70	54.00	16.30
Middle Channel: 5201 MHz							
5201.000	76.61	PK	V	38.70	109.29	N/A	N/A
5201.000	66.64	AV	V	38.70	99.32	N/A	N/A
5201.000	81.89	PK	H	38.70	114.57	N/A	N/A
5201.000	74.57	AV	H	38.70	107.25	N/A	N/A
10402.000	32.64	PK	H	19.15	45.77	68.20	22.43
15603.000	33.47	PK	H	22.41	49.86	74.00	24.14
15603.000	20.34	AV	H	22.41	36.73	54.00	17.27
High Channel: 5233 MHz							
5233.000	76.05	PK	V	38.83	108.86	N/A	N/A
5233.000	64.33	AV	V	38.83	97.14	N/A	N/A
5233.000	80.64	PK	H	38.83	113.45	N/A	N/A
5233.000	70.38	AV	H	38.83	103.19	N/A	N/A
5350.000	30.28	PK	H	39.03	63.29	74.00	10.71
5350.000	16.34	AV	H	39.03	49.35	54.00	4.65
10466.000	33.13	PK	H	18.92	46.03	68.20	22.17
15699.000	34.26	PK	H	22.28	50.52	74.00	23.48
15699.000	21.30	AV	H	22.28	37.56	54.00	16.44

5725-5850MHz:**QPSK 1.4M:**

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 5728MHz							
5728.000	88.56	PK	H	39.48	122.02	N/A	N/A
5728.000	81.34	AV	H	39.48	114.80	N/A	N/A
5728.000	86.25	PK	V	39.48	119.71	N/A	N/A
5728.000	79.31	AV	V	39.48	112.77	N/A	N/A
5725.000	40.23	PK	H	39.48	73.69	122.20	48.51
5720.000	30.75	PK	H	39.49	64.22	110.80	46.58
5700.000	27.96	PK	H	39.51	61.45	105.20	43.75
5650.000	29.86	PK	H	39.49	63.33	68.20	4.87
11456.000	33.76	PK	H	20.77	48.51	74.00	25.49
11456.000	20.94	AV	H	20.77	35.69	54.00	18.31
17184.000	33.67	PK	H	26.50	54.15	68.20	14.05
Middle Channel: 5789 MHz							
5789.000	86.57	PK	H	39.43	119.98	N/A	N/A
5789.000	80.79	AV	H	39.43	114.20	N/A	N/A
5789.000	84.08	PK	V	39.43	117.49	N/A	N/A
5789.000	78.46	AV	V	39.43	111.87	N/A	N/A
11578.000	33.49	PK	H	20.85	48.32	74.00	25.68
11578.000	20.34	AV	H	20.85	35.17	54.00	18.83
17367.000	33.67	PK	H	27.87	55.52	68.20	12.68
High Channel: 5847 MHz							
5847.000	90.72	PK	H	39.49	124.19	N/A	N/A
5847.000	84.71	AV	H	39.49	118.18	N/A	N/A
5847.000	87.94	PK	V	39.49	121.41	N/A	N/A
5847.000	81.83	AV	V	39.49	115.30	N/A	N/A
5850.000	48.53	PK	H	39.49	82.00	122.20	40.20
5855.000	32.34	PK	H	39.51	65.83	110.80	44.97
5875.000	31.87	PK	H	39.60	65.45	105.20	39.75
5925.000	31.54	PK	H	39.68	65.20	68.20	3.00
11694.000	33.58	PK	H	21.20	48.76	74.00	25.24
11694.000	20.69	AV	H	21.20	35.87	54.00	18.13
17541.000	33.86	PK	H	29.07	56.91	68.20	11.29

16QAM:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 5728MHz							
5728.000	89.37	PK	H	39.48	122.83	N/A	N/A
5728.000	83.68	AV	H	39.48	117.14	N/A	N/A
5728.000	85.70	PK	V	39.48	119.16	N/A	N/A
5728.000	79.52	AV	V	39.48	112.98	N/A	N/A
5725.000	47.99	PK	H	39.48	81.45	122.20	40.75
5720.000	32.44	PK	H	39.49	65.91	110.80	44.89
5700.000	29.09	PK	H	39.51	62.58	105.20	42.62
5650.000	29.44	PK	H	39.49	62.91	68.20	5.29
11456.000	33.64	PK	H	20.77	48.39	74.00	25.61
11456.000	20.53	AV	H	20.77	35.28	54.00	18.72
17184.000	34.12	PK	H	26.50	54.60	68.20	13.60
Middle Channel: 5789 MHz							
5789.000	86.49	PK	H	39.43	119.90	N/A	N/A
5789.000	80.94	AV	H	39.43	114.35	N/A	N/A
5789.000	84.36	PK	V	39.43	117.77	N/A	N/A
5789.000	78.73	AV	V	39.43	112.14	N/A	N/A
11578.000	33.76	PK	H	20.85	48.59	74.00	25.41
11578.000	20.68	AV	H	20.85	35.51	54.00	18.49
17367.000	33.47	PK	H	27.87	55.32	68.20	12.88
High Channel: 5847 MHz							
5847.000	84.88	PK	H	39.49	118.35	N/A	N/A
5847.000	77.42	AV	H	39.49	110.89	N/A	N/A
5847.000	82.72	PK	V	39.49	116.19	N/A	N/A
5847.000	75.90	AV	V	39.49	109.37	N/A	N/A
5850.000	45.82	PK	H	39.49	79.29	122.20	42.91
5855.000	30.96	PK	H	39.51	64.45	110.80	46.35
5875.000	29.31	PK	H	39.60	62.89	105.20	42.31
5925.000	29.56	PK	H	39.68	63.22	68.20	4.98
11694.000	34.67	PK	H	21.20	49.85	74.00	24.15
11694.000	21.81	AV	H	21.20	36.99	54.00	17.01
17541.000	33.96	PK	H	29.07	57.01	68.20	11.19

10M, QPSK:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 5733MHz							
5733.000	80.60	PK	V	39.47	114.05	N/A	N/A
5733.000	70.69	AV	V	39.47	104.14	N/A	N/A
5733.000	86.37	PK	H	39.47	119.82	N/A	N/A
5733.000	76.51	AV	H	39.47	109.96	N/A	N/A
5725.000	53.64	PK	H	39.48	87.10	122.20	35.10
5720.000	47.69	PK	H	39.49	81.16	110.80	29.64
5700.000	31.26	PK	H	39.51	64.75	105.20	40.45
5650.000	30.75	PK	H	39.49	64.22	68.20	3.98
11466.000	34.26	PK	H	20.74	48.98	74.00	25.02
11466.000	21.24	AV	H	20.74	35.96	54.00	18.04
17199.000	34.14	PK	H	26.56	54.68	68.20	13.52
Middle Channel: 5789 MHz							
5789.000	79.95	PK	V	39.43	113.36	N/A	N/A
5789.000	70.03	AV	V	39.43	103.44	N/A	N/A
5789.000	86.42	PK	H	39.43	119.83	N/A	N/A
5789.000	76.65	AV	H	39.43	110.06	N/A	N/A
11578.000	34.27	PK	H	20.85	49.10	74.00	24.90
11578.000	21.47	AV	H	20.85	36.30	54.00	17.70
17367.000	33.14	PK	H	27.87	54.99	68.20	13.21
High Channel: 5842 MHz							
5842.000	78.80	PK	V	39.48	112.26	N/A	N/A
5842.000	68.79	AV	V	39.48	102.25	N/A	N/A
5842.000	85.78	PK	H	39.48	119.24	N/A	N/A
5842.000	76.64	AV	H	39.48	110.10	N/A	N/A
5850.000	48.72	PK	H	39.49	82.19	122.20	40.01
5855.000	46.38	PK	H	39.51	79.87	110.80	30.93
5875.000	32.02	PK	H	39.60	65.60	105.20	39.60
5925.000	31.75	PK	H	39.68	65.41	68.20	2.79
11684.000	34.33	PK	H	21.17	49.48	74.00	24.52
11684.000	21.37	AV	H	21.17	36.52	54.00	17.48
17526.000	33.27	PK	H	28.95	56.20	68.20	12.00

16QAM:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 5733MHz							
5733.000	80.56	PK	H	39.47	114.01	N/A	N/A
5733.000	70.95	AV	H	39.47	104.40	N/A	N/A
5733.000	86.41	PK	V	39.47	119.86	N/A	N/A
5733.000	74.17	AV	V	39.47	107.62	N/A	N/A
5725.000	51.00	PK	H	39.48	84.46	122.20	37.74
5720.000	47.41	PK	H	39.49	80.88	110.80	29.92
5700.000	31.35	PK	H	39.51	64.84	105.20	40.36
5650.000	30.28	PK	H	39.49	63.75	68.20	4.45
11466.000	34.61	PK	H	20.74	49.33	74.00	24.67
11466.000	21.58	AV	H	20.74	36.30	54.00	17.70
17199.000	20.94	PK	H	26.56	41.48	68.20	26.72
Middle Channel: 5789 MHz							
5789.000	79.83	PK	H	39.43	113.24	N/A	N/A
5789.000	69.59	AV	H	39.43	103.00	N/A	N/A
5789.000	86.57	PK	V	39.43	119.98	N/A	N/A
5789.000	76.72	AV	V	39.43	110.13	N/A	N/A
11578.000	34.26	PK	H	20.85	49.09	74.00	24.91
11578.000	21.53	AV	H	20.85	36.36	54.00	17.64
17367.000	34.11	PK	H	27.87	55.96	68.20	12.24
High Channel: 5842 MHz							
5842.000	74.78	PK	H	39.48	108.24	N/A	N/A
5842.000	65.30	AV	H	39.48	98.76	N/A	N/A
5842.000	85.97	PK	V	39.48	119.43	N/A	N/A
5842.000	76.21	AV	V	39.48	109.67	N/A	N/A
5850.000	45.14	PK	H	39.49	78.61	122.20	43.59
5855.000	46.19	PK	H	39.51	79.68	110.80	31.12
5875.000	21.74	PK	H	39.60	55.32	105.20	49.88
5925.000	31.55	PK	H	39.68	65.21	68.20	2.99
11684.000	34.27	PK	H	21.17	49.42	74.00	24.58
11684.000	21.52	AV	H	21.17	36.67	54.00	17.33
17526.000	33.69	PK	H	28.95	56.62	68.20	11.58

20M:

LOW:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 5738 MHz							
5738.000	80.14	PK	V	39.46	113.58	N/A	N/A
5738.000	68.76	AV	V	39.46	102.20	N/A	N/A
5738.000	83.20	PK	H	39.46	116.64	N/A	N/A
5738.000	72.40	AV	H	39.46	105.84	N/A	N/A
5725.000	49.97	PK	H	39.48	83.43	122.20	38.77
5720.000	48.96	PK	H	39.49	82.43	110.80	28.37
5700.000	32.77	PK	H	39.51	66.26	105.20	38.94
5650.000	29.98	PK	H	39.49	63.45	68.20	4.75
11476.000	35.28	PK	H	20.71	49.97	74.00	24.03
11476.000	22.31	AV	H	20.71	37.00	54.00	17.00
17214.000	33.64	PK	H	26.64	54.26	68.20	13.94
Middle Channel: 5790 MHz							
5790.000	77.84	PK	V	39.43	111.25	N/A	N/A
5790.000	66.76	AV	V	39.43	100.17	N/A	N/A
5790.000	83.25	PK	H	39.43	116.66	N/A	N/A
5790.000	72.31	AV	H	39.43	105.72	N/A	N/A
11580.000	34.26	PK	H	20.86	49.10	74.00	24.90
11580.000	21.70	AV	H	20.86	36.54	54.00	17.46
17370.000	33.58	PK	H	27.90	55.46	68.20	12.74
High Channel: 5839 MHz							
5839.000	76.99	PK	V	39.48	110.45	N/A	N/A
5839.000	66.62	AV	V	39.48	100.08	N/A	N/A
5839.000	83.21	PK	H	39.48	116.67	N/A	N/A
5839.000	72.22	AV	H	39.48	105.68	N/A	N/A
5850.000	51.96	PK	H	39.49	85.43	122.20	36.77
5855.000	49.70	PK	H	39.51	83.19	110.80	27.61
5875.000	34.74	PK	H	39.60	68.32	105.20	36.88
5925.000	31.50	PK	H	39.68	65.16	68.20	3.04
11678.000	34.33	PK	H	21.15	49.46	74.00	24.54
11678.000	21.41	AV	H	21.15	36.54	54.00	17.46
17517.000	34.56	PK	H	28.88	57.42	68.20	10.78

64QAM:

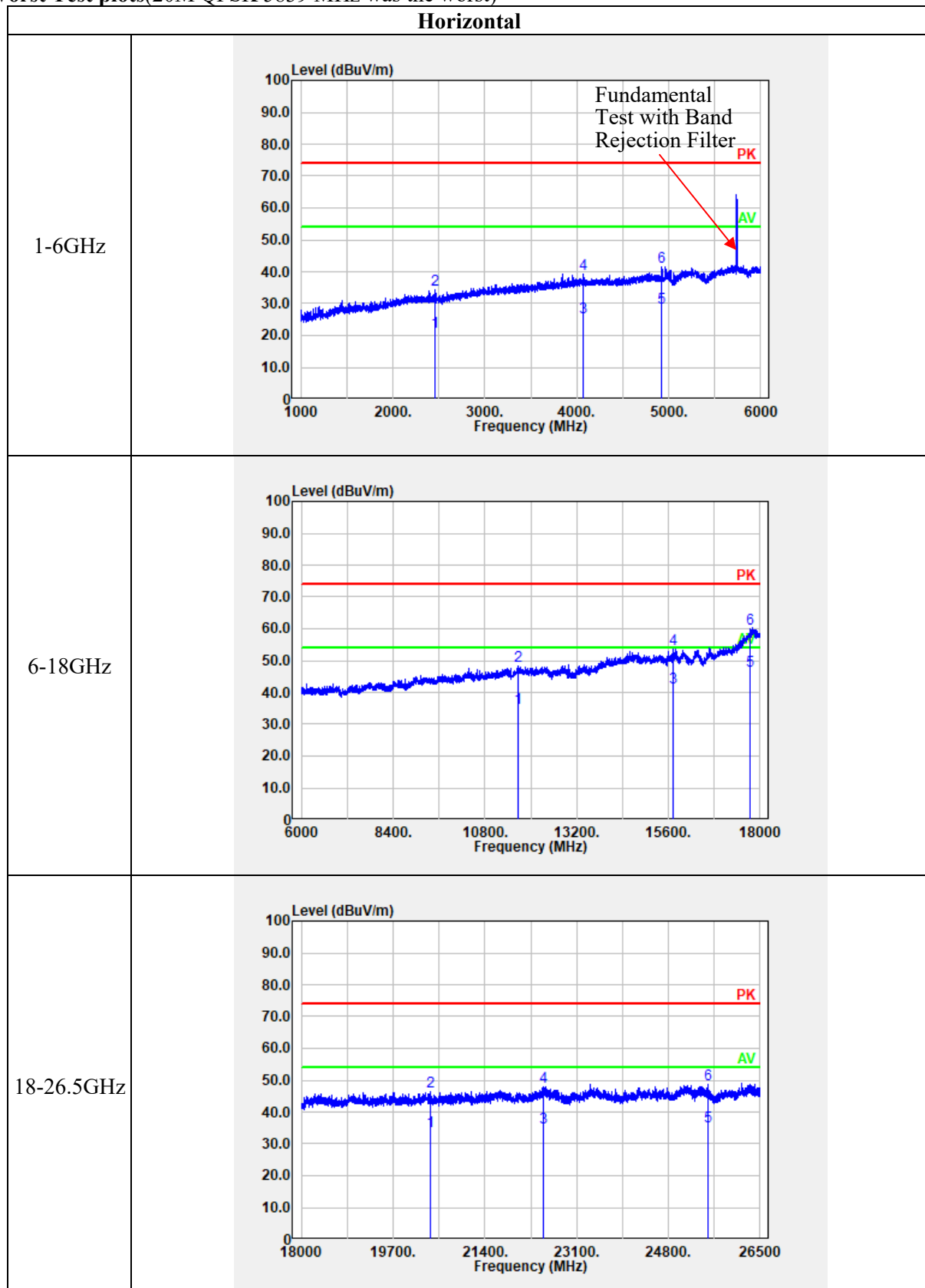
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 5738 MHz							
5738.000	80.31	PK	V	39.46	113.75	N/A	N/A
5738.000	69.15	AV	V	39.46	102.59	N/A	N/A
5738.000	84.33	PK	H	39.46	117.77	N/A	N/A
5738.000	72.07	AV	H	39.46	105.51	N/A	N/A
5725.000	51.46	PK	H	39.48	84.92	122.20	37.28
5720.000	47.35	PK	H	39.49	80.82	110.80	29.98
5700.000	33.72	PK	H	39.51	67.21	105.20	37.99
5650.000	30.23	PK	H	39.49	63.70	68.20	4.50
11476.000	32.16	PK	H	20.71	46.85	74.00	27.15
11476.000	19.37	AV	H	20.71	34.06	54.00	19.94
17214.000	33.56	PK	H	26.64	54.18	68.20	14.02
Middle Channel: 5790 MHz							
5790.000	78.06	PK	V	39.43	111.47	N/A	N/A
5790.000	66.86	AV	V	39.43	100.27	N/A	N/A
5790.000	84.61	PK	H	39.43	118.02	N/A	N/A
5790.000	72.43	AV	H	39.43	105.84	N/A	N/A
11580.000	34.76	PK	H	20.86	49.60	74.00	24.40
11580.000	19.84	AV	H	20.86	34.68	54.00	19.32
17370.000	33.46	PK	H	27.90	55.34	68.20	12.86
High Channel: 5839 MHz							
5839.000	76.91	PK	V	39.48	110.37	N/A	N/A
5839.000	66.55	AV	V	39.48	100.01	N/A	N/A
5839.000	84.11	PK	H	39.48	117.57	N/A	N/A
5839.000	72.36	AV	H	39.48	105.82	N/A	N/A
5850.000	50.85	PK	H	39.49	84.32	122.20	37.88
5855.000	47.10	PK	H	39.51	80.59	110.80	30.21
5875.000	35.69	PK	H	39.60	69.27	105.20	35.93
5925.000	31.46	PK	H	39.68	65.12	68.20	3.08
11678.000	32.64	PK	H	21.15	47.77	74.00	26.23
11678.000	19.68	AV	H	21.15	34.81	54.00	19.19
17517.000	33.56	PK	H	28.88	56.42	68.20	11.78

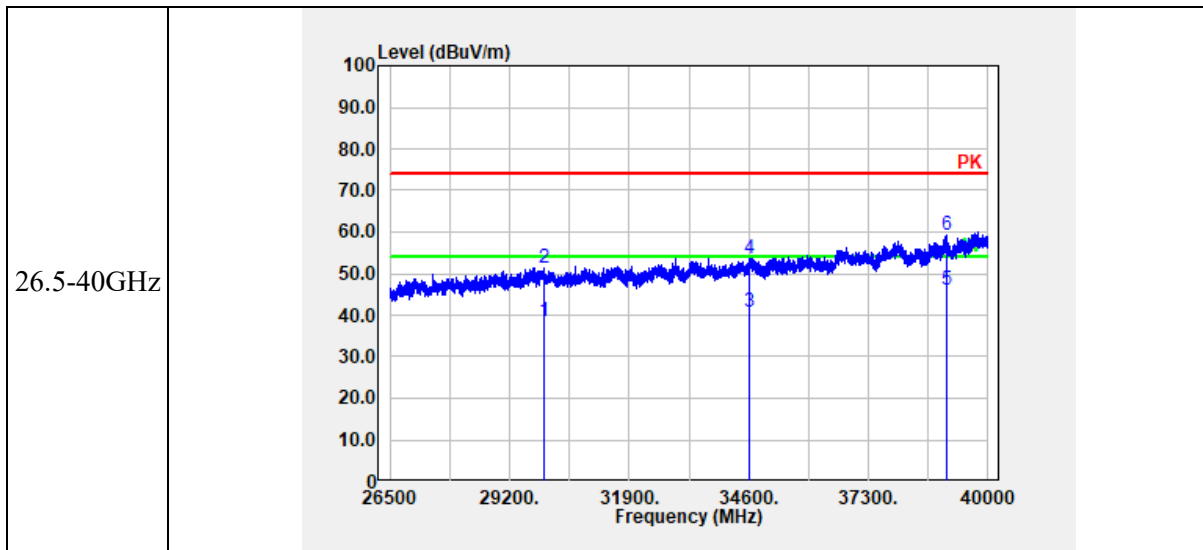
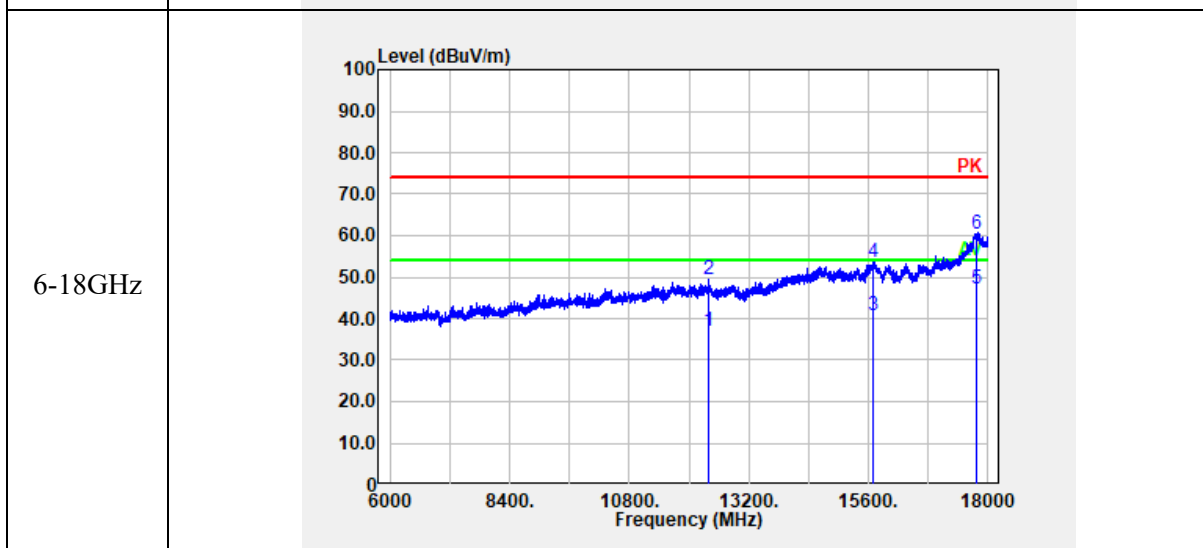
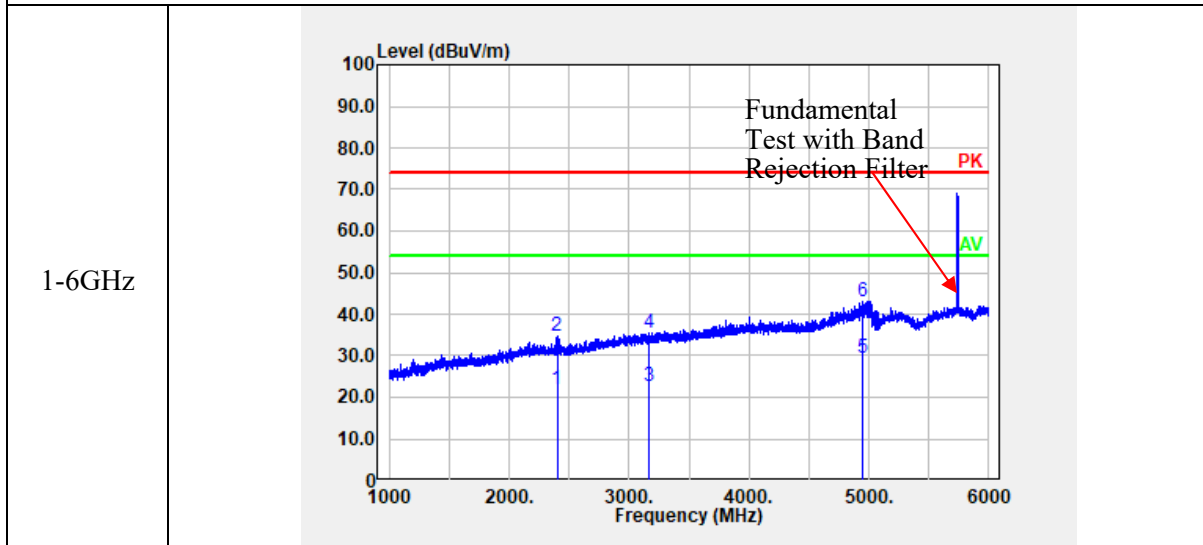
Note:

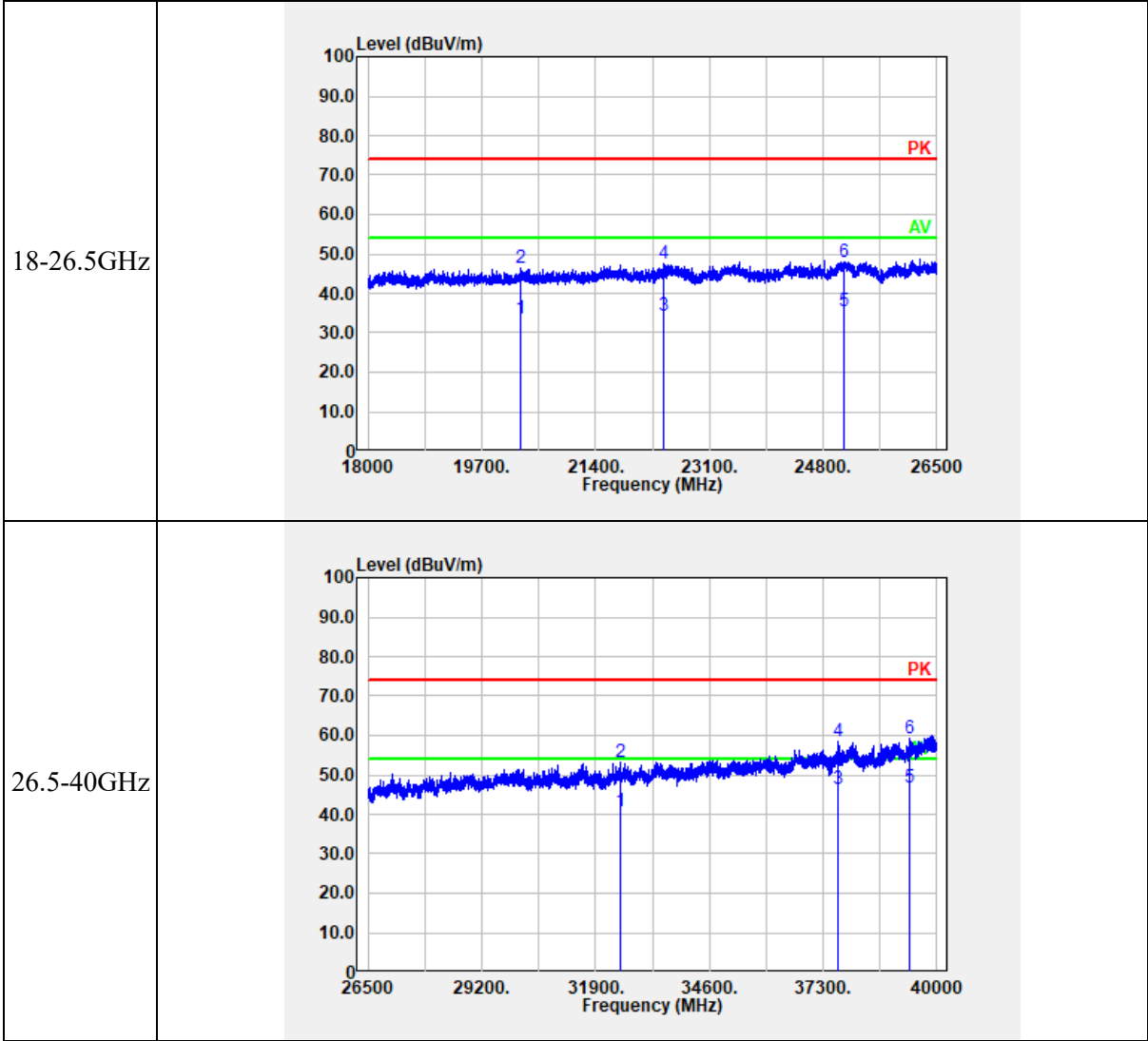
Result = Reading + Factor- Distance extrapolation Factor

For 1-40GHz:

Distance extrapolation Factor = $20 \log (\text{specific distance [3m]}/\text{test distance [1.5m]}) \text{ dB} = 6.02 \text{ dB}$

Worst Test plots(20M QPSK 5839 MHz was the worst)

**Vertical**



4.3 26dB attenuated below the channel power:

Not Applicable, 5150-5250 MHz was disabled in Canada Market.

4.4 Emission Bandwidth:

Serial Number:	1QAT-13	Test Date:	2023/2/8-2023/2/9
Test Site:	RF	Test Mode:	Transmitting
Tester:	Julie Tan	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	20.7-23.5	Relative Humidity: (%)	57-66	ATM Pressure: (kPa)	101.1-101.6
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2022/07/25	2023/07/24
Mini-Circuits	DC Block	BLK-18-S+	1554404	Each time	N/A
zhuoxiang	Coaxial Cable	SMA-178	211003	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

5150-5250 MHz:

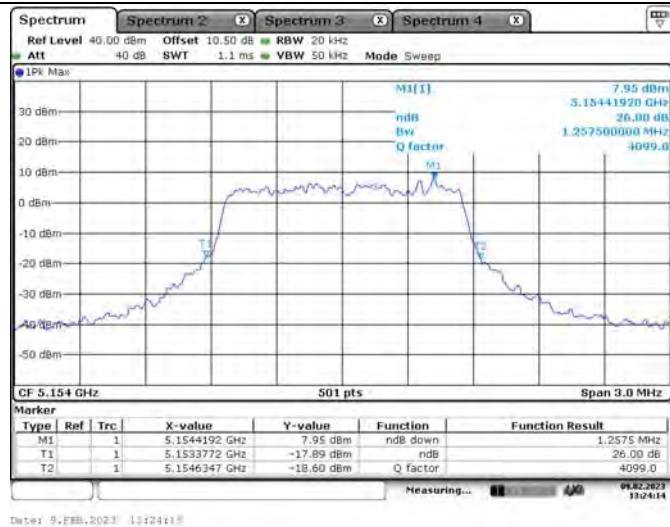
Test Modes	Modulation	Test Frequency (MHz)	26 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
1.4M	QPSK	5154	1.258	1.090
		5201	1.293	1.090
		5246	1.311	1.096
	16QAM	5154	1.234	1.09
		5201	1.264	1.09
		5246	1.305	1.09
10M	QPSK	5157	9.581	8.982
		5201	9.581	8.982
		5243	9.581	8.982
	16QAM	5157	9.581	8.982
		5201	9.581	8.982
		5243	9.581	8.982
20M	QPSK	5167	19.242	17.884
		5201	19.162	17.964
		5233	19.242	17.964
	16QAM	5167	19.242	17.964
		5201	19.242	17.964
		5233	19.242	17.964
Note: Test only was performed at Chain 0.The 99% Occupied Bandwidth have not fall into the band 5250-5350MHz, please refer to the test plots of 99% Occupied Bandwidth.				

5725-5850 MHz:

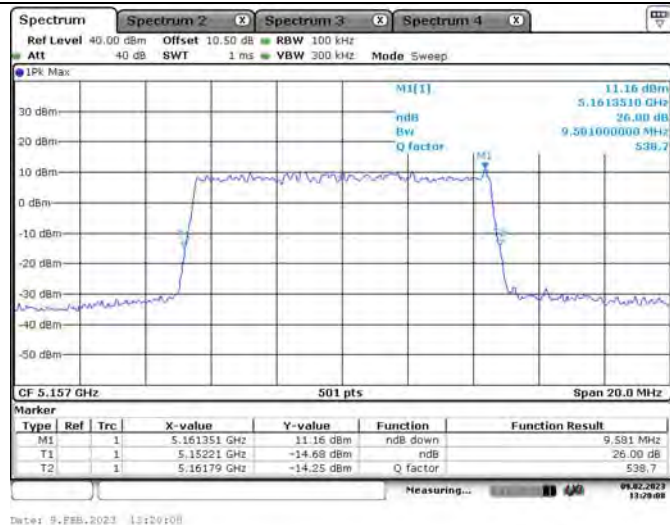
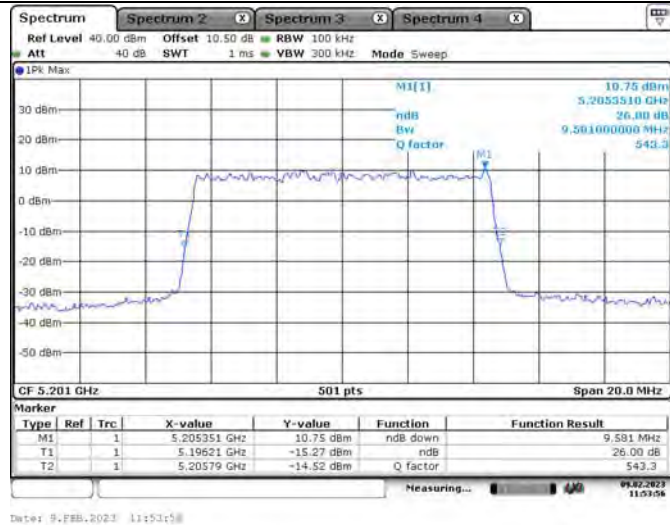
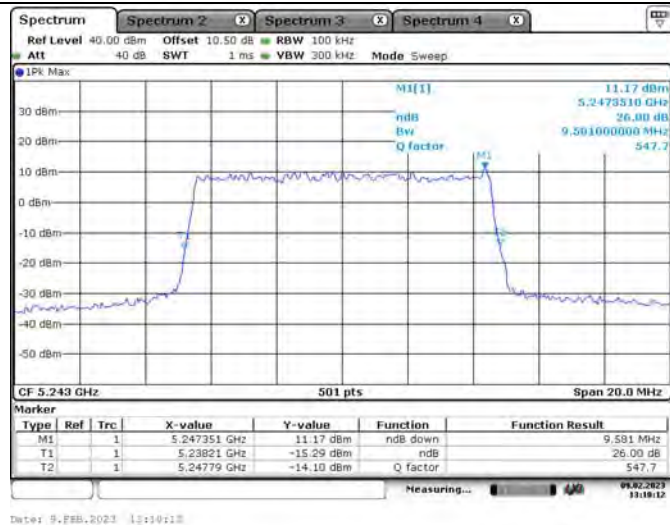
Test Modes	Modulation	Test Frequency (MHz)	6 dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
1.4M	QPSK	5728	1.15	1.102
		5789	1.15	1.102
		5847	1.15	1.108
	16QAM	5728	1.15	1.102
		5789	1.144	1.096
		5847	1.15	1.096
10M	QPSK	5733	9.022	8.982
		5789	9.022	8.982
		5842	9.022	8.982
	16QAM	5733	9.022	8.982
		5789	9.022	8.982
		5842	9.022	8.982
20M	QPSK	5738	18.044	17.964
		5790	18.044	17.964
		5839	18.044	17.964
	16QAM	5738	18.044	17.964
		5790	18.044	17.964
		5839	18.044	17.964
Note: 6dB Emission Bandwidth Limit: ≥ 0.5 MHz Test only was performed at Chain 0. The 99% Occupied Bandwidth have not fall into the band 5470-5725MHz, please refer to the test plots of 99% Occupied Bandwidth.				

5150-5250MHz:

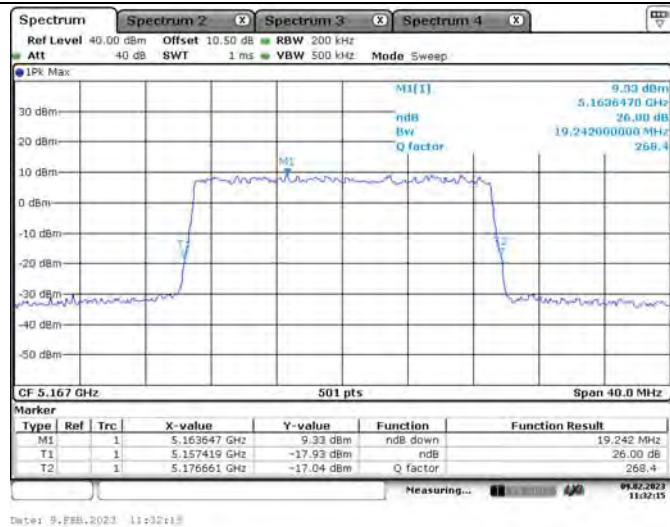
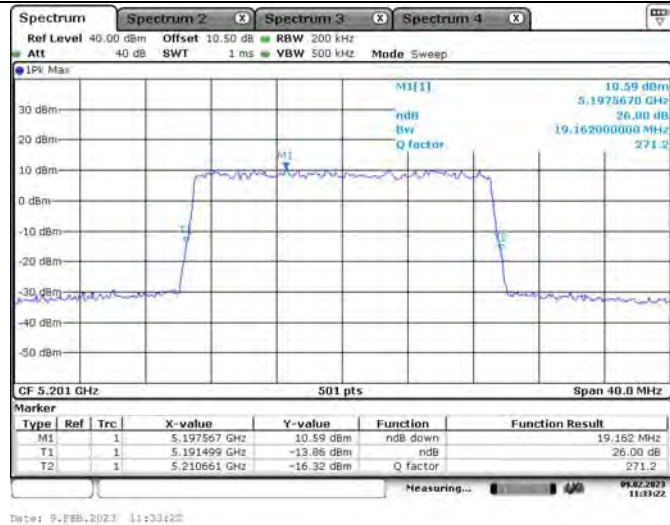
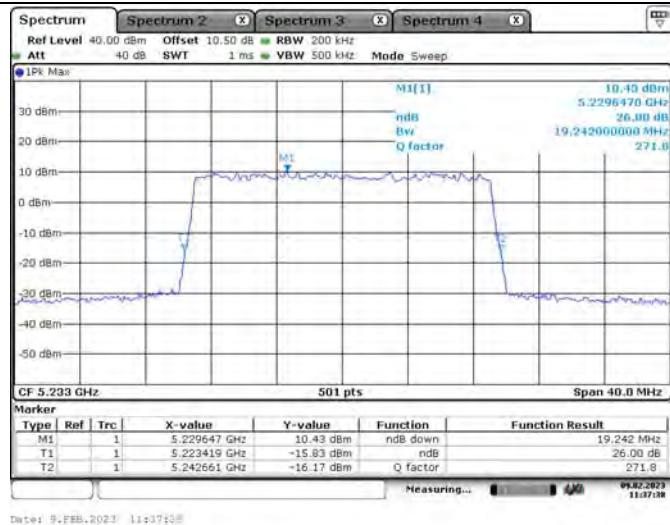
26dB Emission Bandwidth

QPSK, 1.4M
Lowest ChannelQPSK, 1.4M
Middle ChannelQPSK, 1.4M
Highest Channel

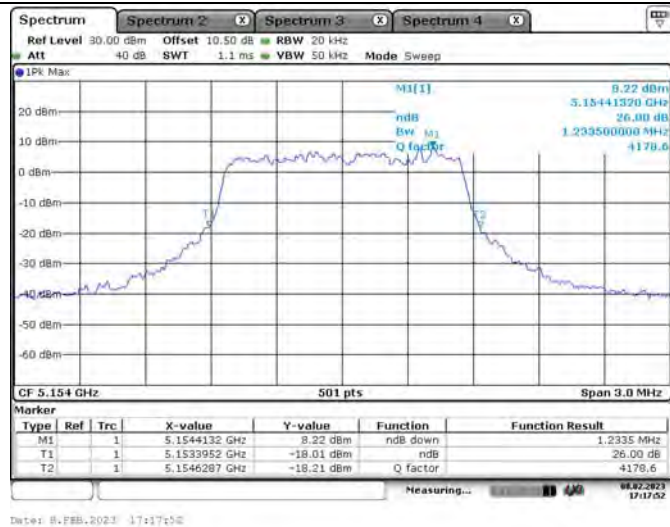
26dB Emission Bandwidth

QPSK,10M
Lowest ChannelQPSK,10M
Middle ChannelQPSK,10M
Highest Channel

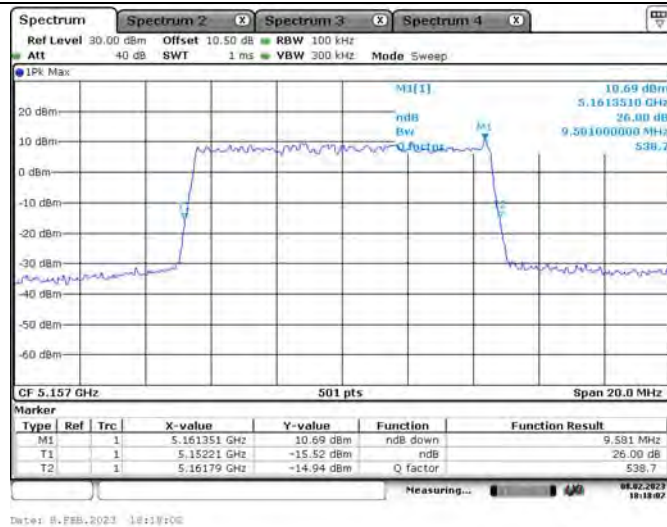
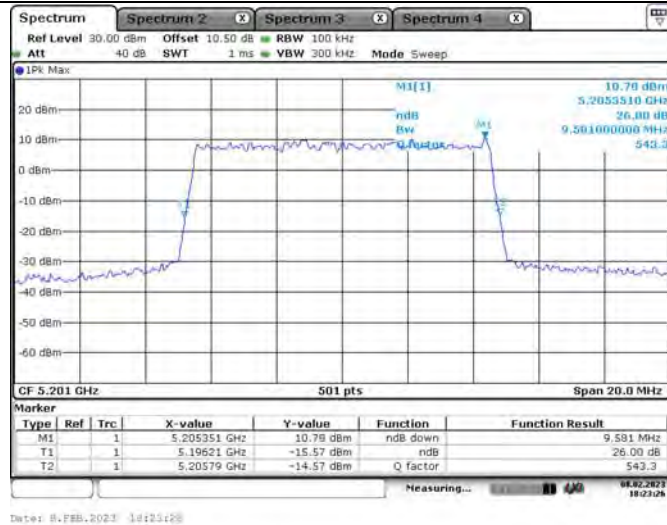
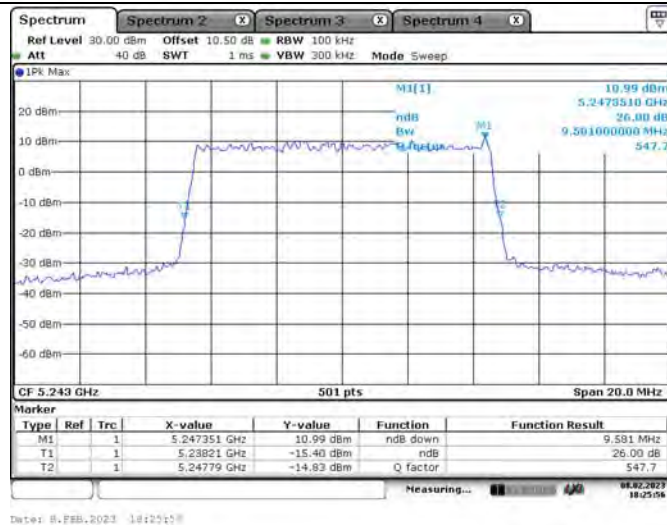
26dB Emission Bandwidth

QPSK,20M
Lowest ChannelQPSK,20M
Middle ChannelQPSK,20M
Highest Channel

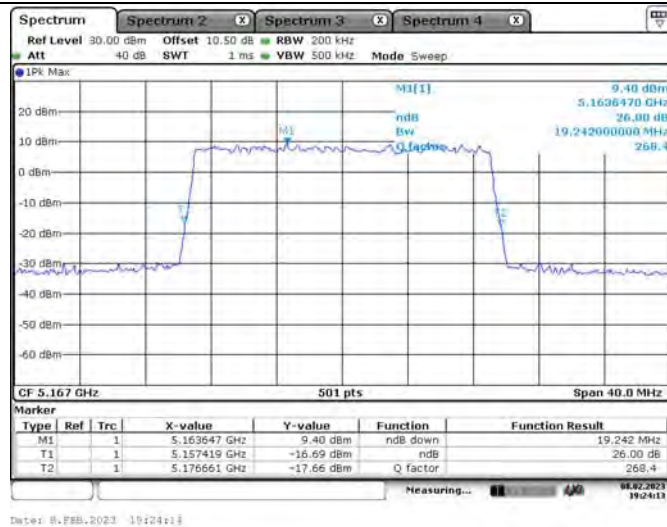
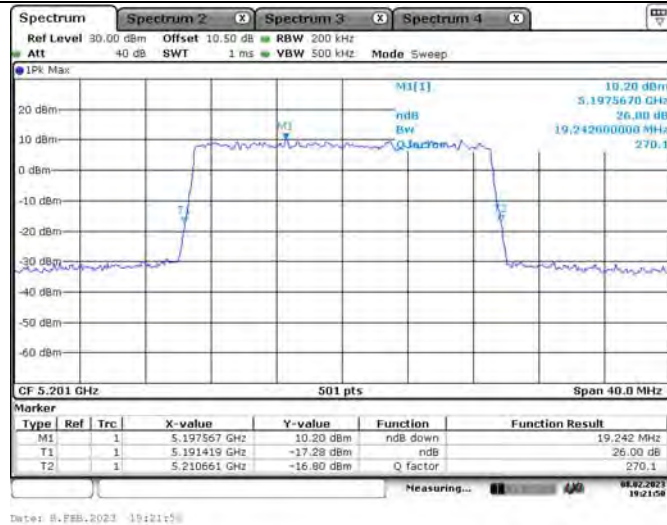
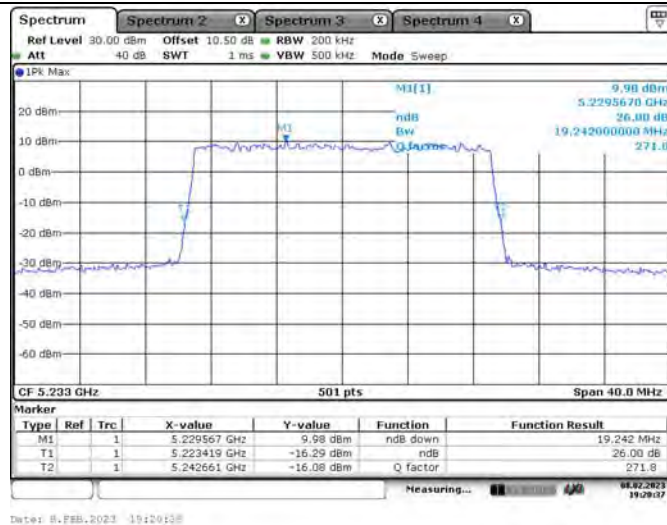
26dB Emission Bandwidth

16QAM,1.4M
Lowest Channel16QAM,1.4M
Middle Channel16QAM,1.4M
Highest Channel

26dB Emission Bandwidth

16QAM,10M
Lowest Channel16QAM,10M
Middle Channel16QAM,10M
Highest Channel

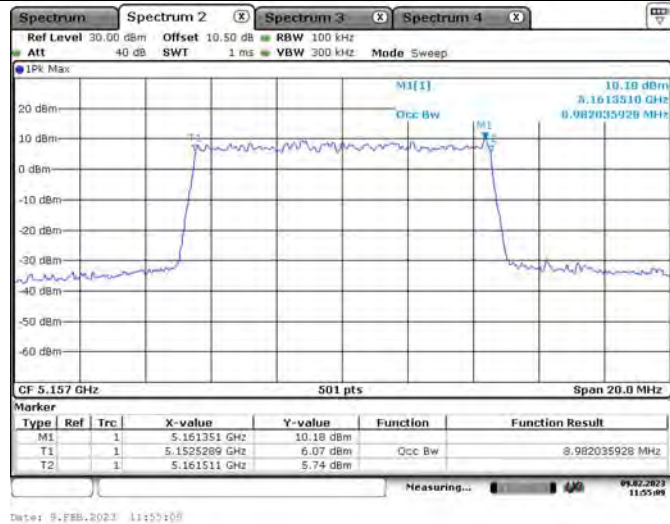
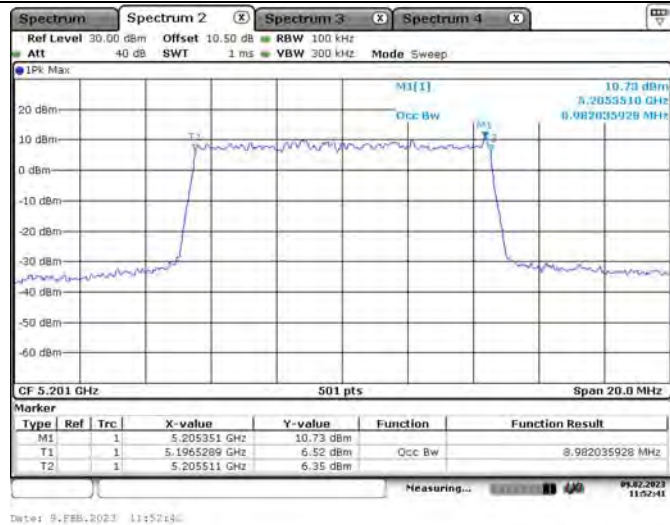
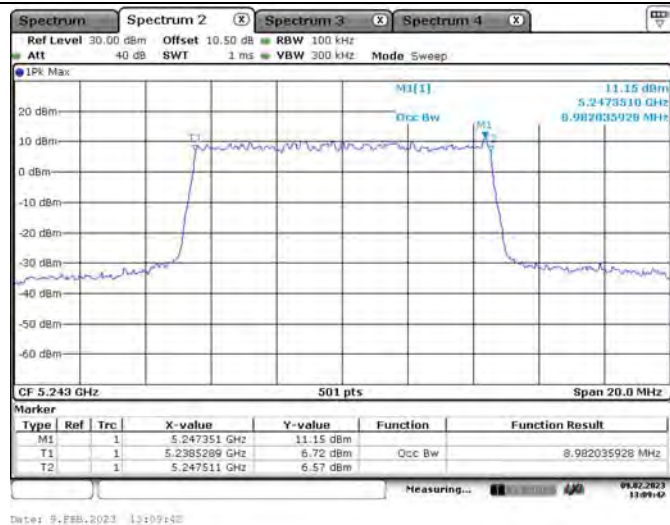
26dB Emission Bandwidth

16QAM,20M
Lowest Channel16QAM,20M
Middle Channel16QAM,20M
Highest Channel

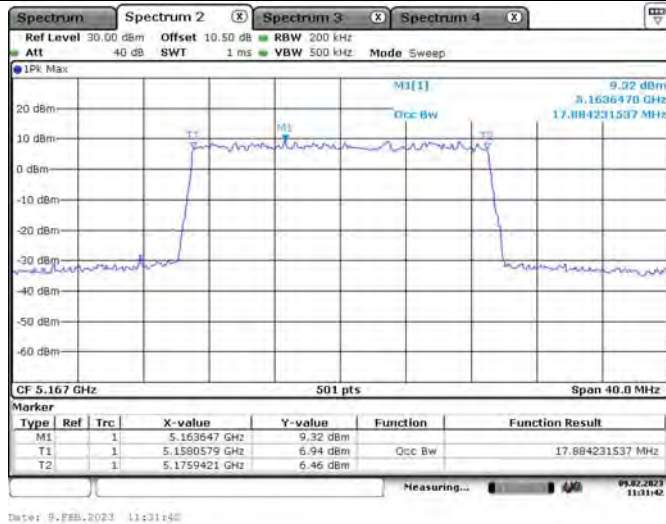
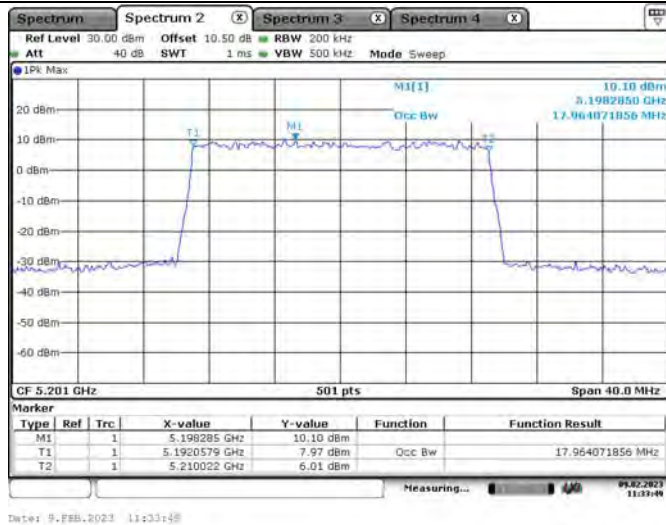
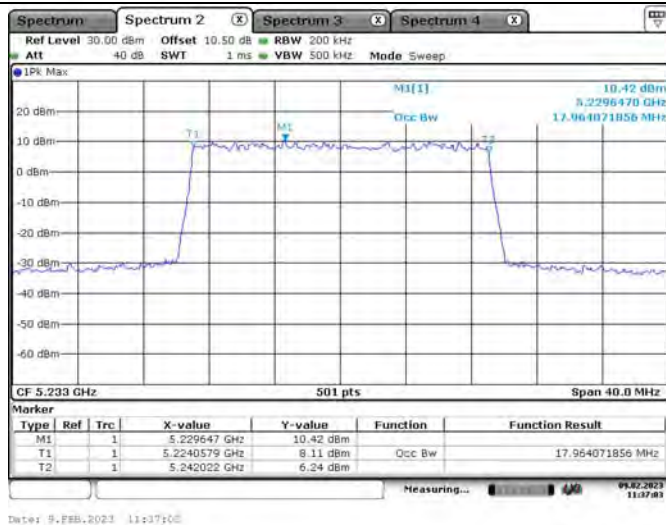
99% Emission Bandwidth-QPSK

QPSK, 1.4M
Lowest ChannelQPSK, 1.4M
Middle ChannelQPSK, 1.4M
Highest Channel

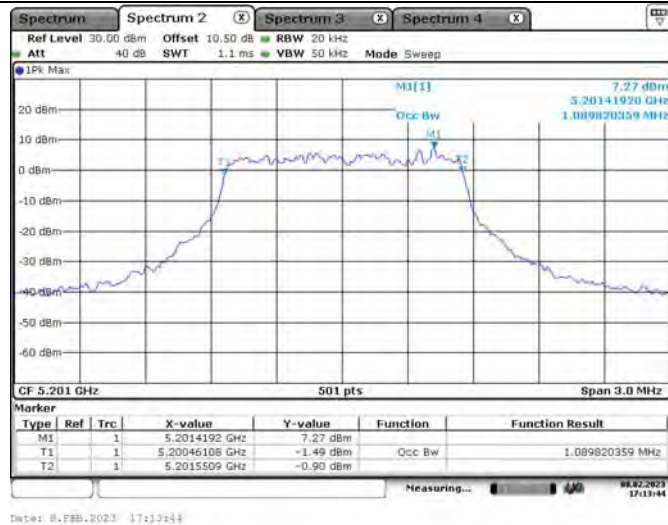
99% Emission Bandwidth

QPSK,10M
Lowest ChannelQPSK,10M
Middle ChannelQPSK,10M
Highest Channel

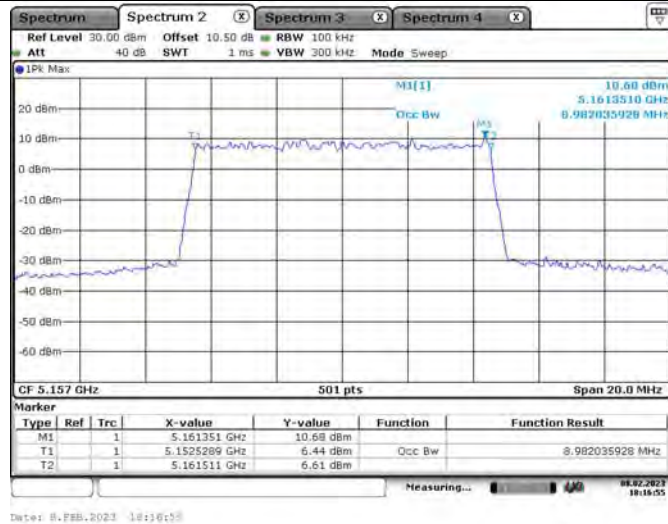
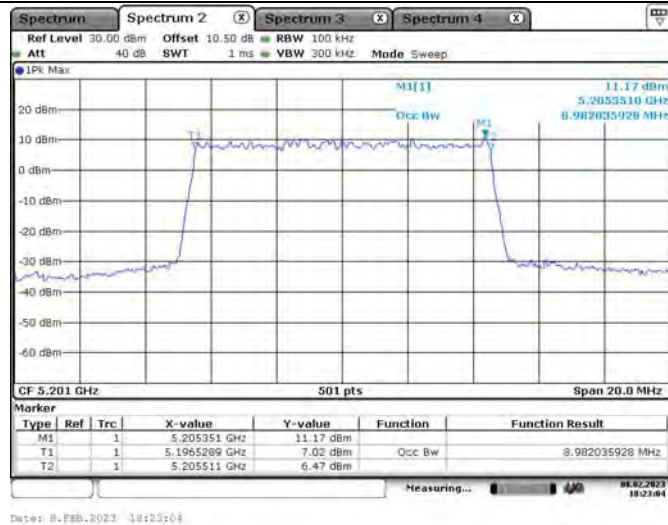
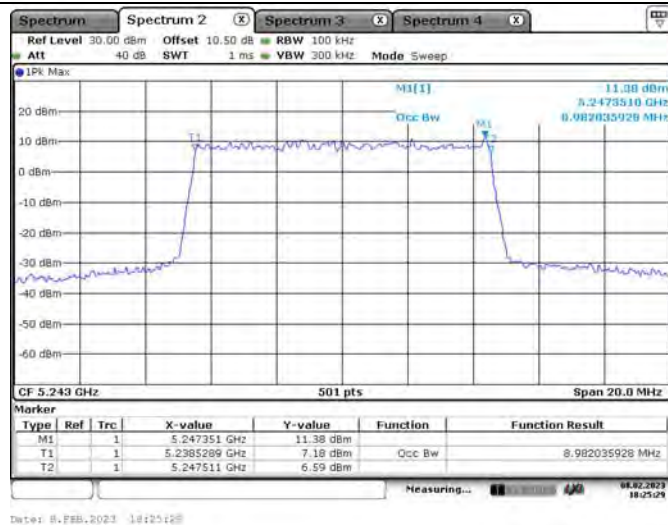
99% Emission Bandwidth

QPSK,20M
Lowest ChannelQPSK,20M
Middle ChannelQPSK,20M
Highest Channel

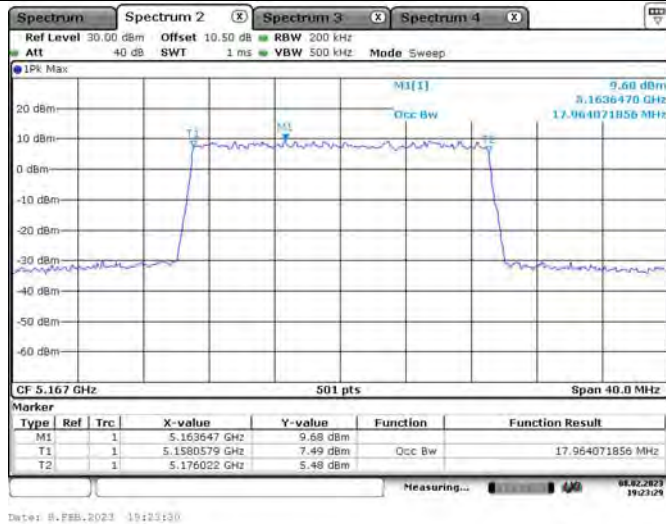
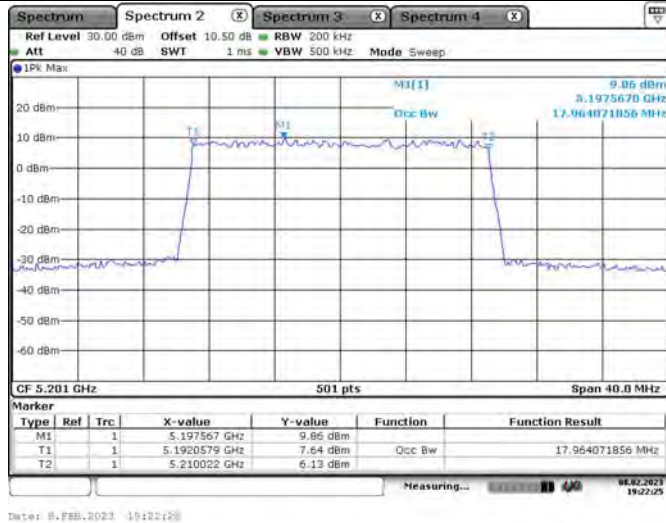
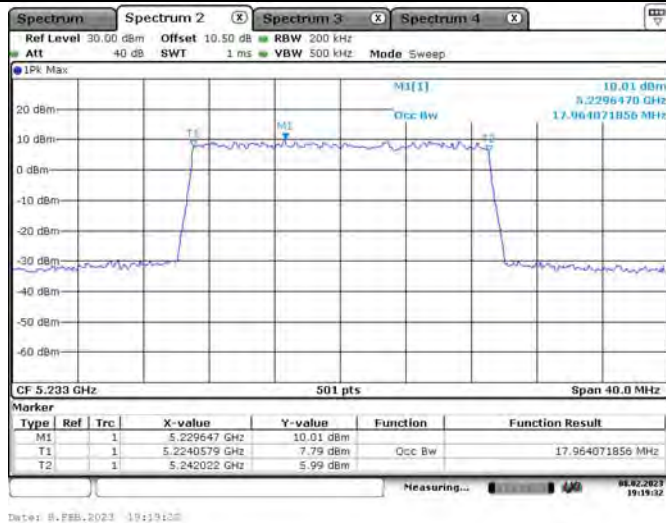
99% Emission Bandwidth-

16QAM, 1.4M
Lowest Channel16QAM, 1.4M
Middle Channel16QAM, 1.4M
Highest Channel

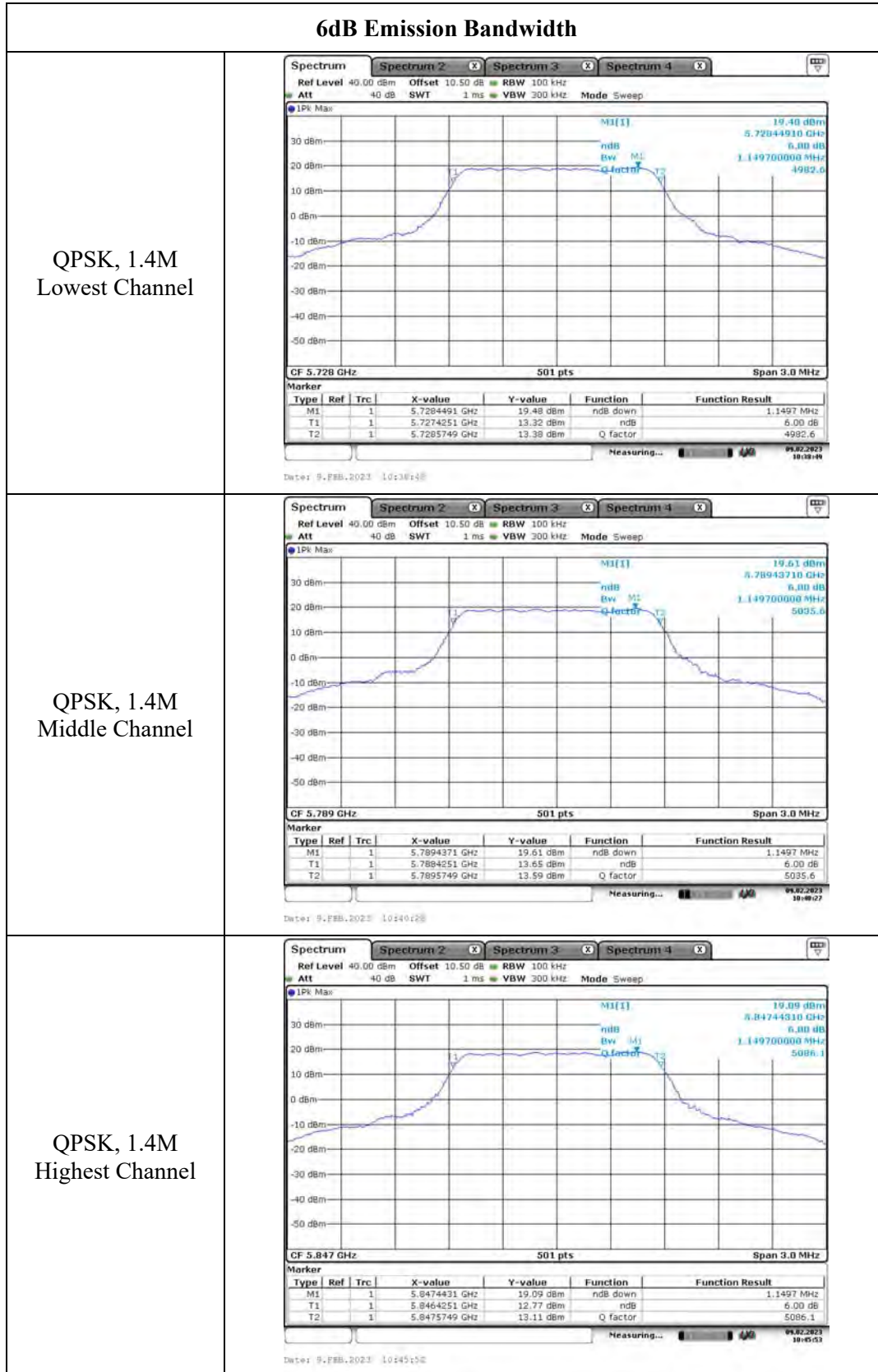
99% Emission Bandwidth

16QAM,10M
Lowest Channel16QAM,10M
Middle Channel16QAM,10M
Highest Channel

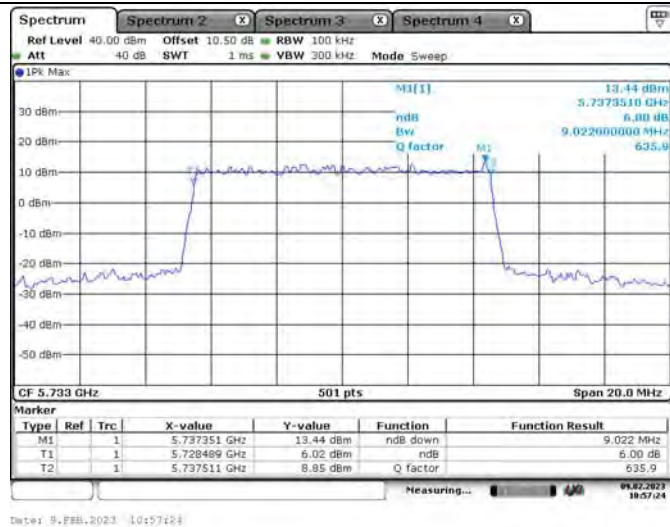
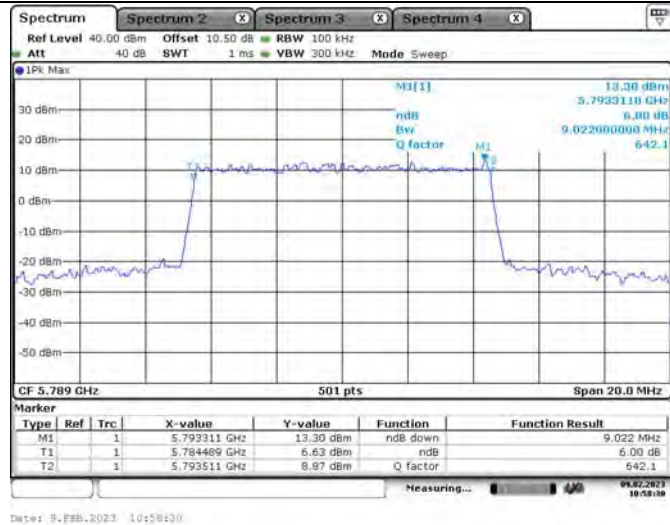
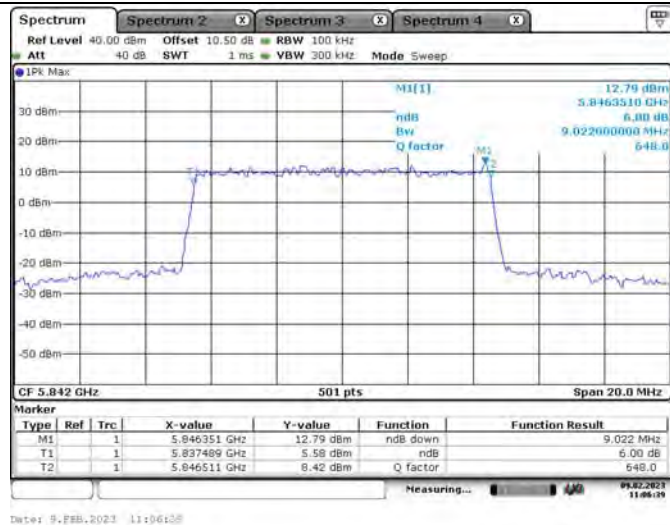
99% Emission Bandwidth

16QAM,20M
Lowest Channel16QAM,20M
Middle Channel16QAM,20M
Highest Channel

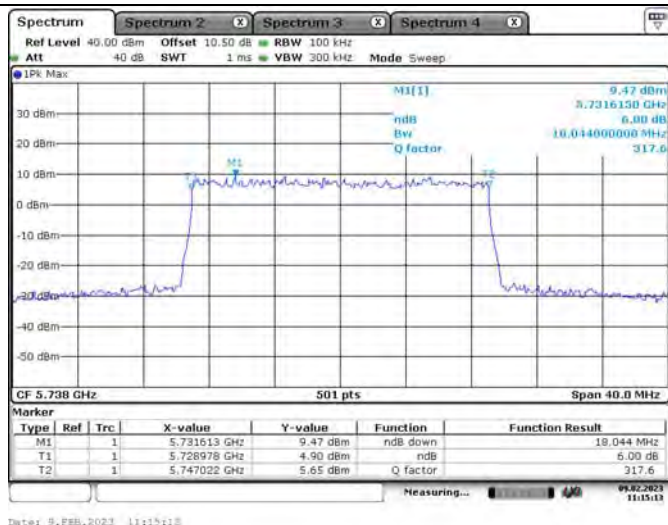
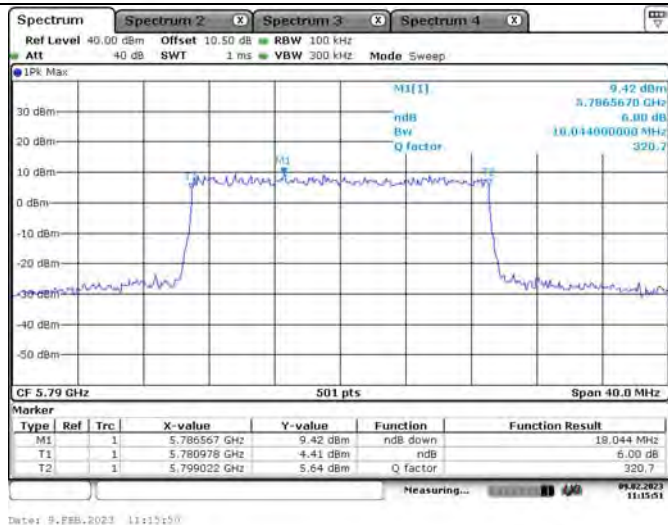
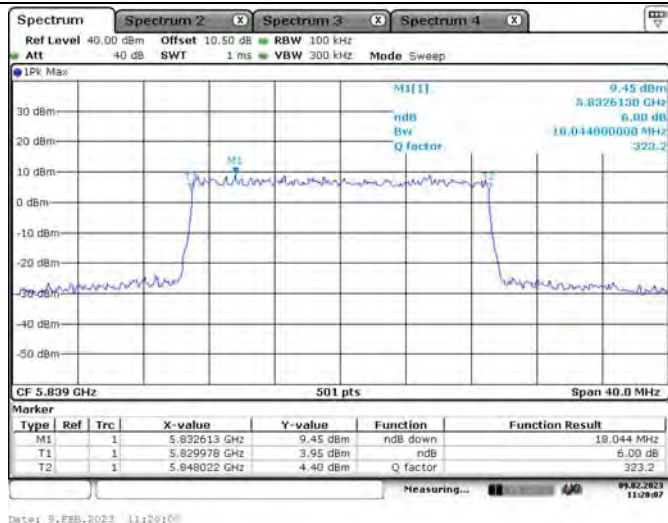
5725-5850MHz:



6dB Emission Bandwidth

QPSK, 10M
Lowest ChannelQPSK, 10M
Middle ChannelQPSK, 10M
Highest Channel

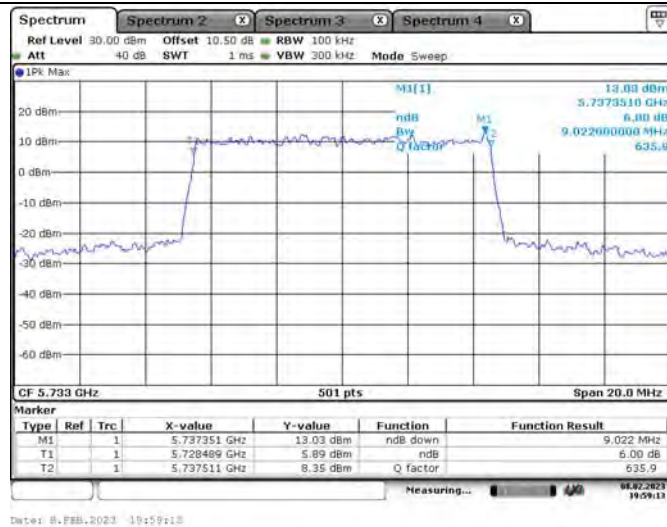
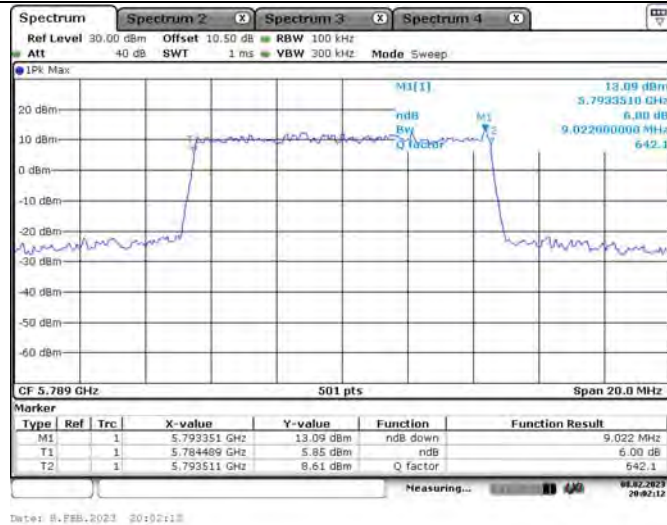
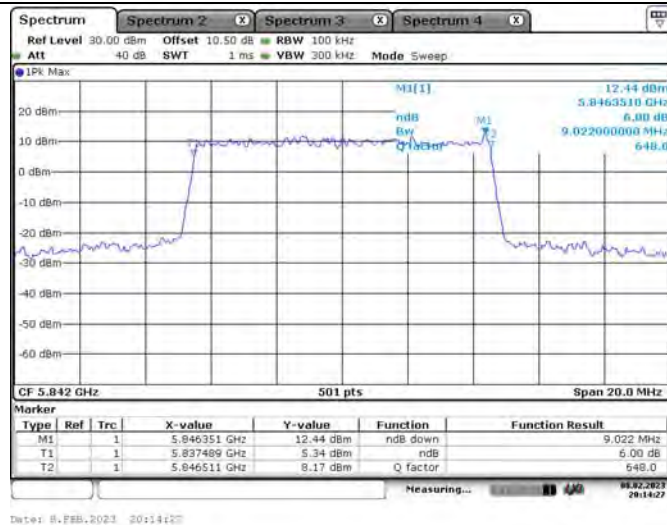
6dB Emission Bandwidth

QPSK, 20M
Lowest ChannelQPSK, 20M
Middle ChannelQPSK, 20M
Highest Channel

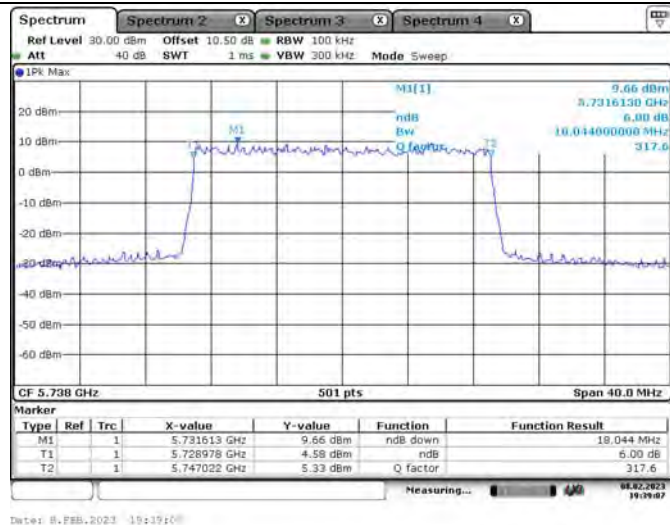
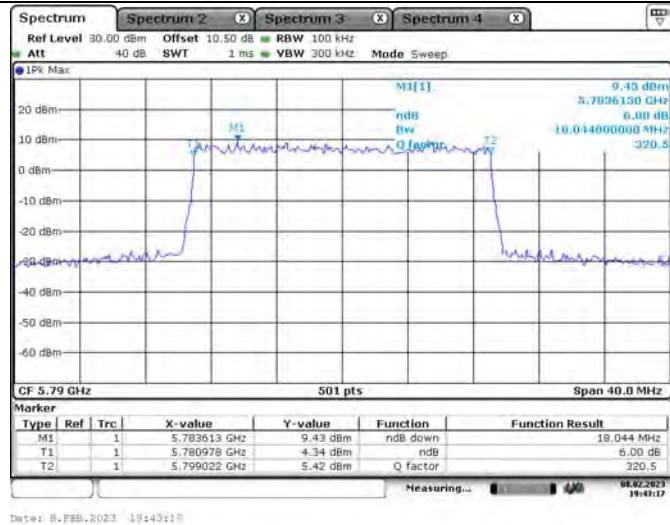
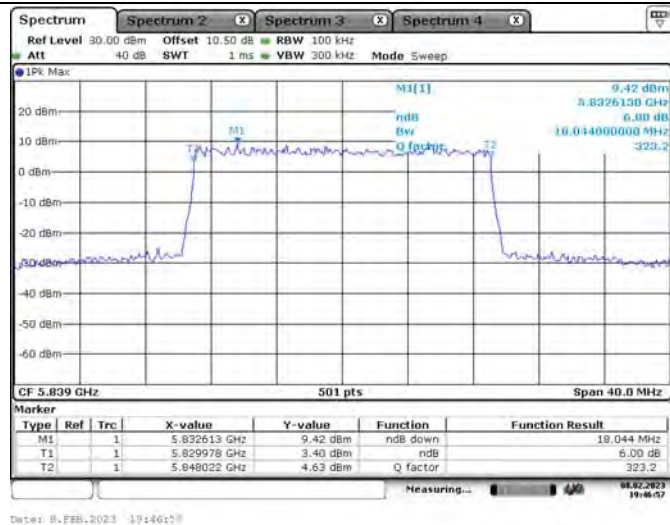
6dB Emission Bandwidth

16QAM, 1.4M
Lowest Channel16QAM, 1.4M
Middle Channel16QAM, 1.4M
Highest Channel

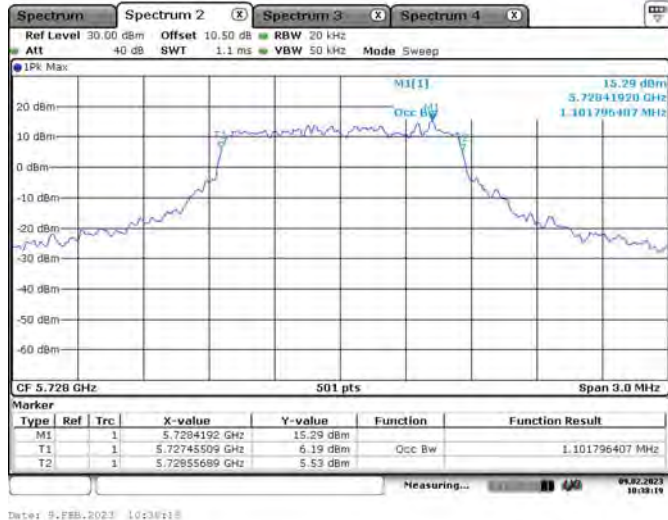
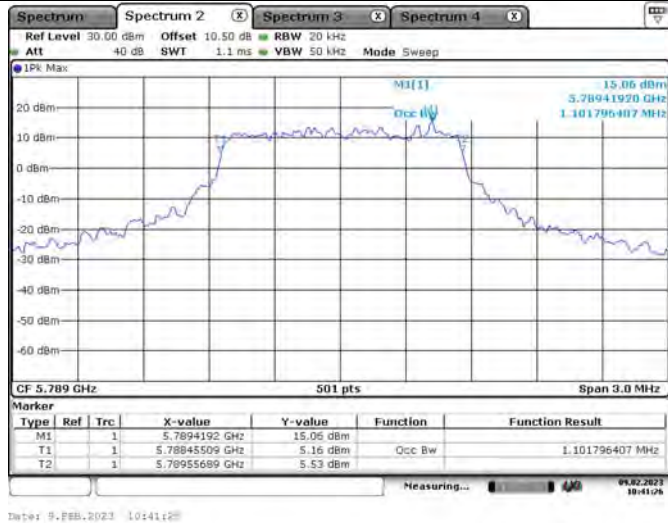
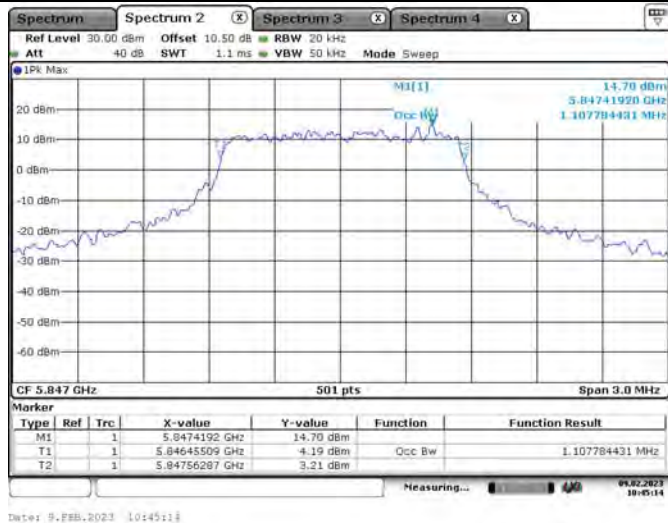
6dB Emission Bandwidth

16QAM,10M
Lowest Channel16QAM,10M
Middle Channel16QAM,10M
Highest Channel

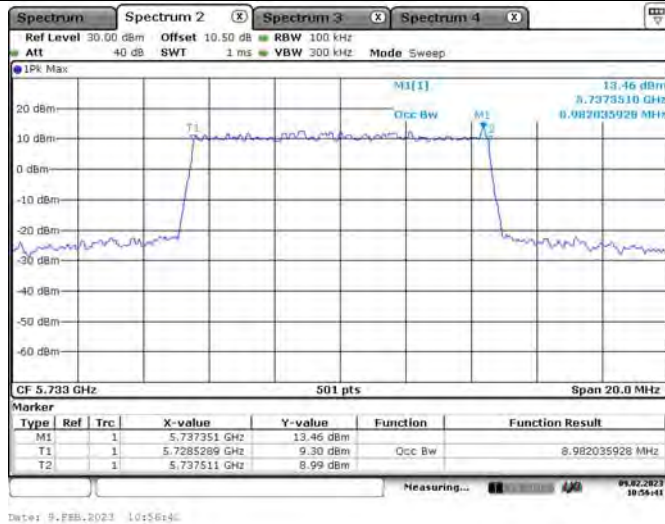
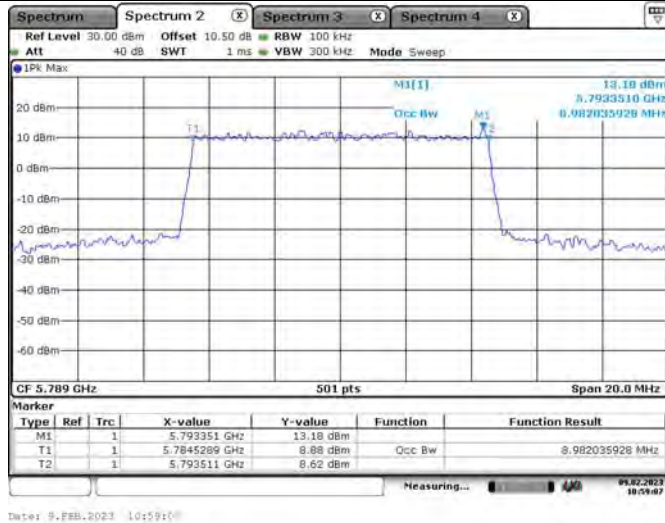
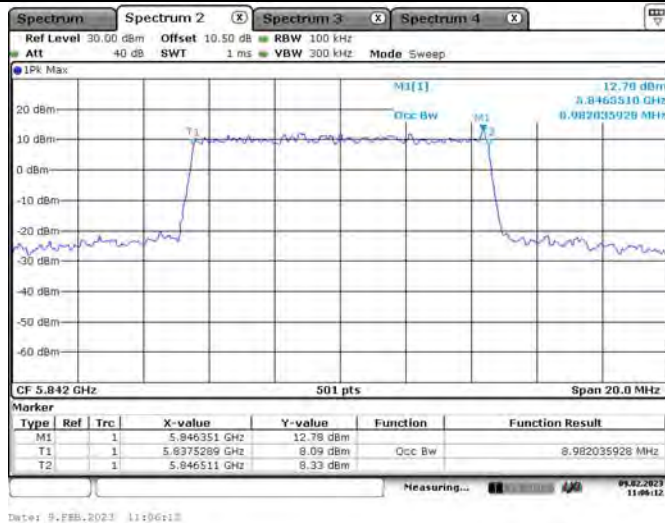
6dB Emission Bandwidth

16QAM,20M
Lowest Channel16QAM,20M
Middle Channel16QAM,20M
Highest Channel

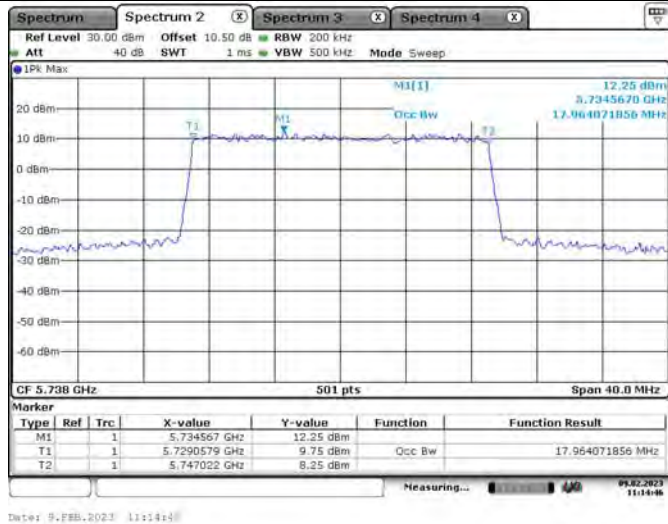
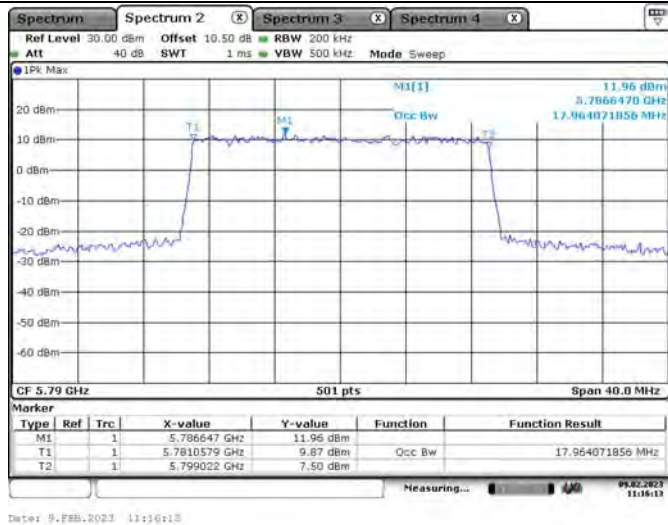
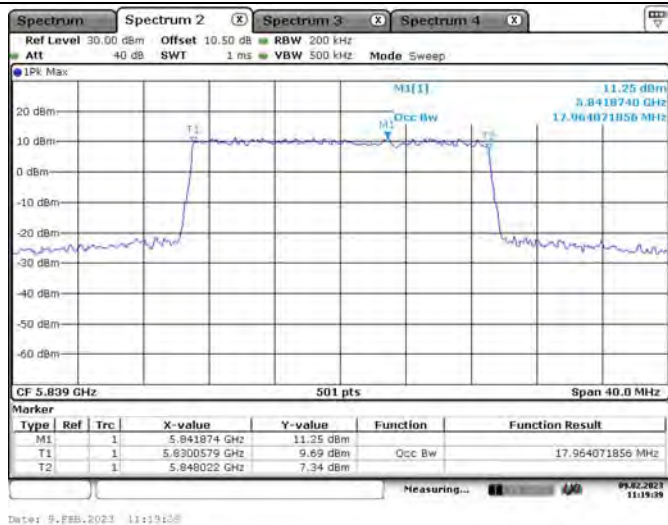
99% Emission Bandwidth

QPSK,1.4M
Lowest ChannelQPSK,1.4M
Middle ChannelQPSK,1.4M
Highest Channel

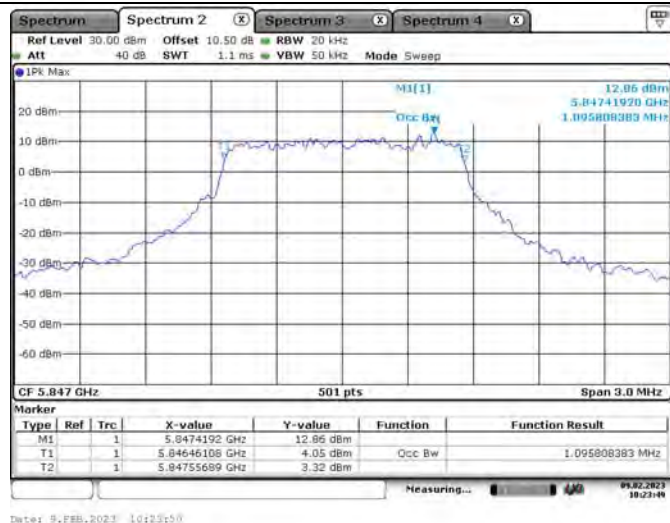
99% Emission Bandwidth

QPSK,10M
Lowest ChannelQPSK,10M
Middle ChannelQPSK,10M
Highest Channel

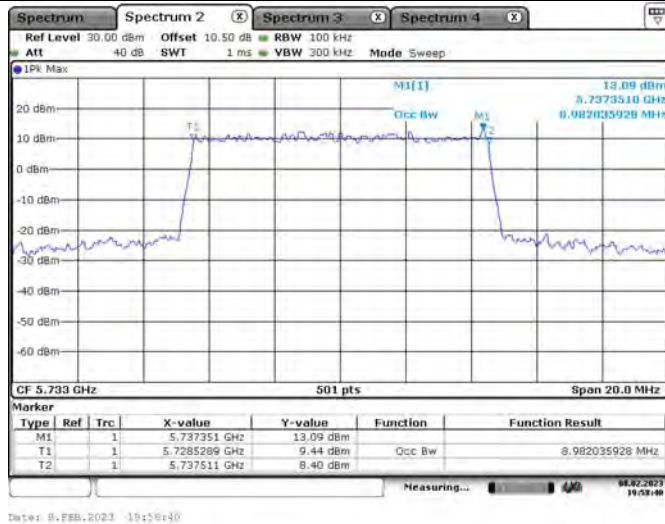
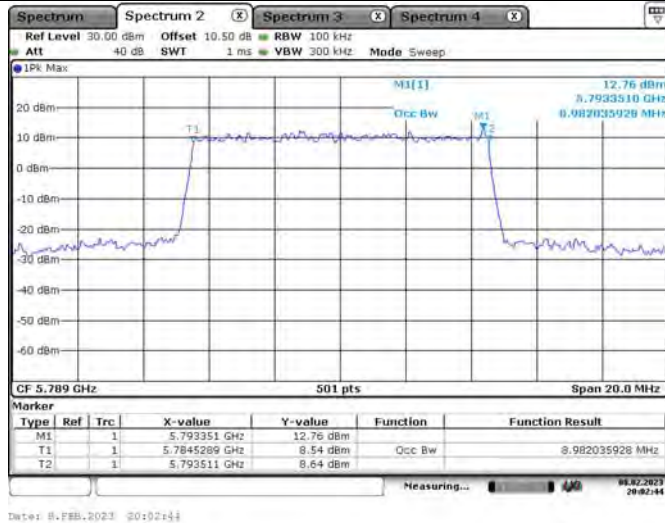
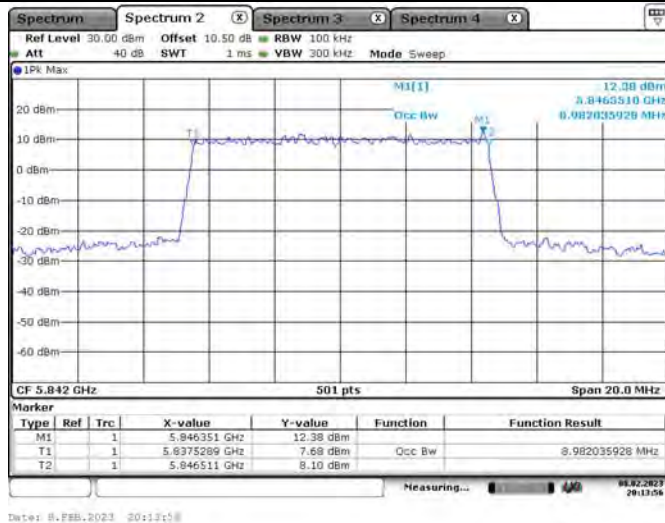
99% Emission Bandwidth

QPSK,20M
Lowest ChannelQPSK,20M
Middle ChannelQPSK,20M
Highest Channel

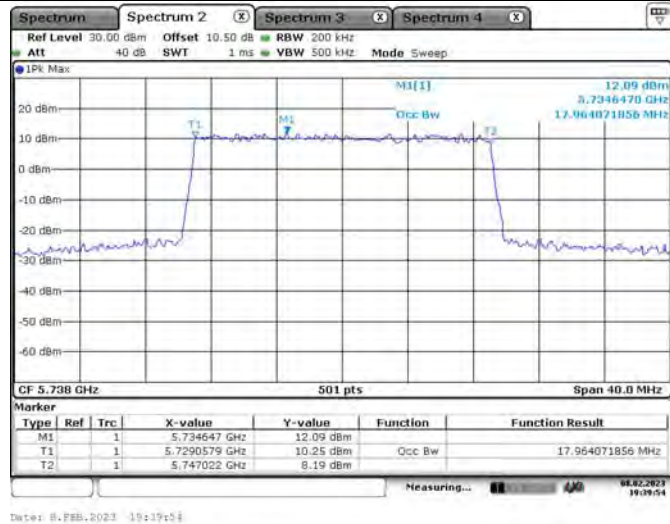
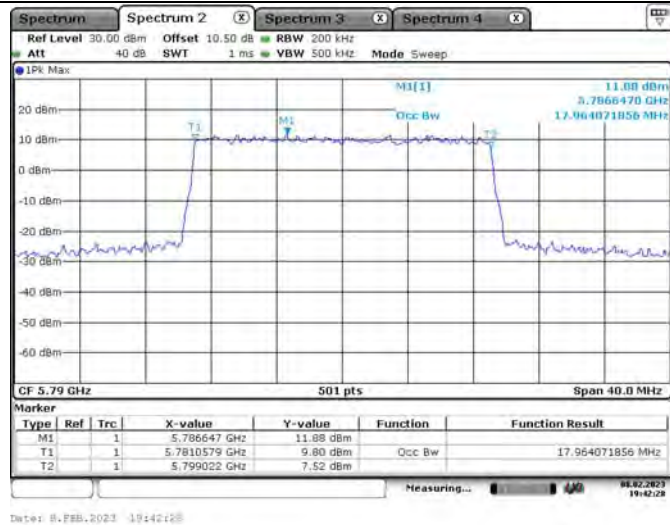
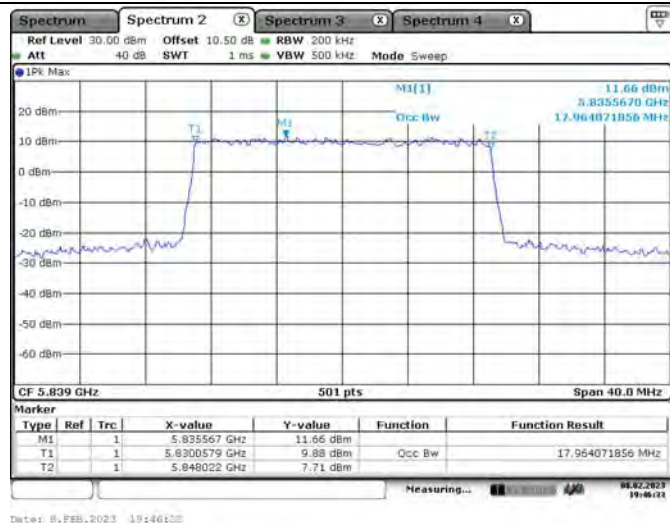
99% Emission Bandwidth

16QAM, 1.4M
Lowest Channel16QAM, 1.4M
Middle Channel16QAM, 1.4M
Highest Channel

99% Emission Bandwidth

16QAM,10M
Lowest Channel16QAM,10M
Middle Channel16QAM,10M
Highest Channel

99% Emission Bandwidth

16QAM,20M
Lowest Channel16QAM,20M
Middle Channel16QAM,20M
Highest Channel

4.5 Maximum Conducted Output Power:

Serial Number:	1QAT-13	Test Date:	2023/2/8-2023/2/9
Test Site:	RF	Test Mode:	Transmitting
Tester:	Julie Tan	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	20.7-23.5	Relative Humidity: (%)	57-66	ATM Pressure: (kPa)	101.1-101.6
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
zhuoxiang	Coaxial Cable	SMA-178	211003	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
Agilent	USB Wideband Power Sensor	U2021XA	MY54080015	2022/07/15	2023/07/14

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

5150-5250 MHz(Only for FCC):

Modulation	Test Modes	Test Frequency (MHz)	Max. Conducted Average Output Power (dBm)			
			Chain 0	Chain 2	Total	Limit
QPSK	1.4M	5154	14.65	14.74	17.71	30
		5201	14.73	14.85	17.80	30
		5246	15.22	14.98	18.11	30
	10M	5157	16.41	16.3	19.37	30
		5201	16.65	16.72	19.70	30
		5243	16.79	16.93	19.87	30
	20M	5167	16.39	16.88	19.65	30
		5201	16.73	16.96	19.86	30
		5233	16.82	17.06	19.95	30
	16QAM	1.4M	5154	14.78	14.62	17.71
5201			14.39	14.32	17.37	30
5246			14.23	14.15	17.20	30
10M		5157	16.45	17.07	19.78	30
		5201	16.64	17.11	19.89	30
		5243	16.73	17.25	20.01	30
20M		5167	16.48	16.36	19.43	30
		5201	16.61	16.76	19.70	30
		5233	16.72	17.08	19.91	30

Note:

The device is a master device when this modes operating.

The duty cycle factor has been calculated into the test data.

The Maximum antenna gain is 0.7dBi

The Maximum EIRP=20.71 dBm, meet the requirement of The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

5725-5850 MHz(For FCC&ISED C):

Modulation	Test Modes	Test Frequency (MHz)	Max. Conducted Average Output Power (dBm)			
			Chain 0	Chain 2	Total	Limit
QPSK	1.4M	5728	21.55	21.48	24.53	30
		5789	21.43	21.36	24.41	30
		5847	21.06	20.97	24.03	30
	10M	5733	21.71	21.64	24.69	30
		5789	21.58	21.47	24.54	30
		5842	21.3	21.18	24.25	30
	20M	5738	21.92	21.85	24.90	30
		5790	21.66	21.53	24.61	30
		5839	21.12	21.07	24.11	30
16QAM	1.4M	5728	21.65	21.54	24.61	30
		5789	21.37	21.25	24.32	30
		5847	21.02	20.86	23.95	30
	10M	5733	21.67	21.56	24.63	30
		5789	21.52	21.49	24.52	30
		5842	21.43	21.28	24.37	30
	20M	5738	21.76	21.68	24.73	30
		5790	21.57	21.44	24.52	30
		5839	21.04	20.96	24.01	30
Note: The duty cycle factor has been calculated into the test data. The Maximum antenna gain is 0.9dBi						

4.6 Maximum power spectral density:

Serial Number:	1QAT-13	Test Date:	2023/2/8-2023/3/9
Test Site:	RF	Test Mode:	Transmitting
Tester:	Julie Tan	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	20.7-23.5	Relative Humidity: (%)	57-66	ATM Pressure: (kPa)	101.1-101.8
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2022/07/25	2023/07/24
Mini-Circuits	DC Block	BLK-18-S+	1554404	Each time	N/A
zhuoxiang	Coaxial Cable	SMA-178	211003	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

5150-5250 MHz(Only for FCC):

Modulation	Test Modes	Test Frequency (MHz)	Maximum Power Spectral Density (dBm/MHz)			
			Chain 0	Chain 2	Total	Limit
QPSK	1.4M	5154	13.39	13.54	16.48	17
		5201	13.44	13.58	16.52	17
		5246	13.84	13.52	16.69	17
	10M	5157	6.11	6.36	9.25	17
		5201	6.34	6.79	9.58	17
		5243	6.56	7.00	9.80	17
	20M	5167	2.82	3.41	6.14	17
		5201	2.98	3.61	6.32	17
		5233	3.17	3.91	6.57	17
16QAM	1.4M	5154	13.58	13.35	16.48	17
		5201	13.17	13.44	16.32	17
		5246	13.32	13.31	16.33	17
	10M	5157	5.96	6.34	9.16	17
		5201	6.1	6.71	9.43	17
		5243	6.29	7.11	9.73	17
	20M	5167	2.80	3.31	6.07	17
		5201	2.82	3.68	6.28	17
		5233	3.21	3.84	6.55	17

Note:

The Maximum antenna gain is 0.7dBi

The device is a master device when this modes operating.

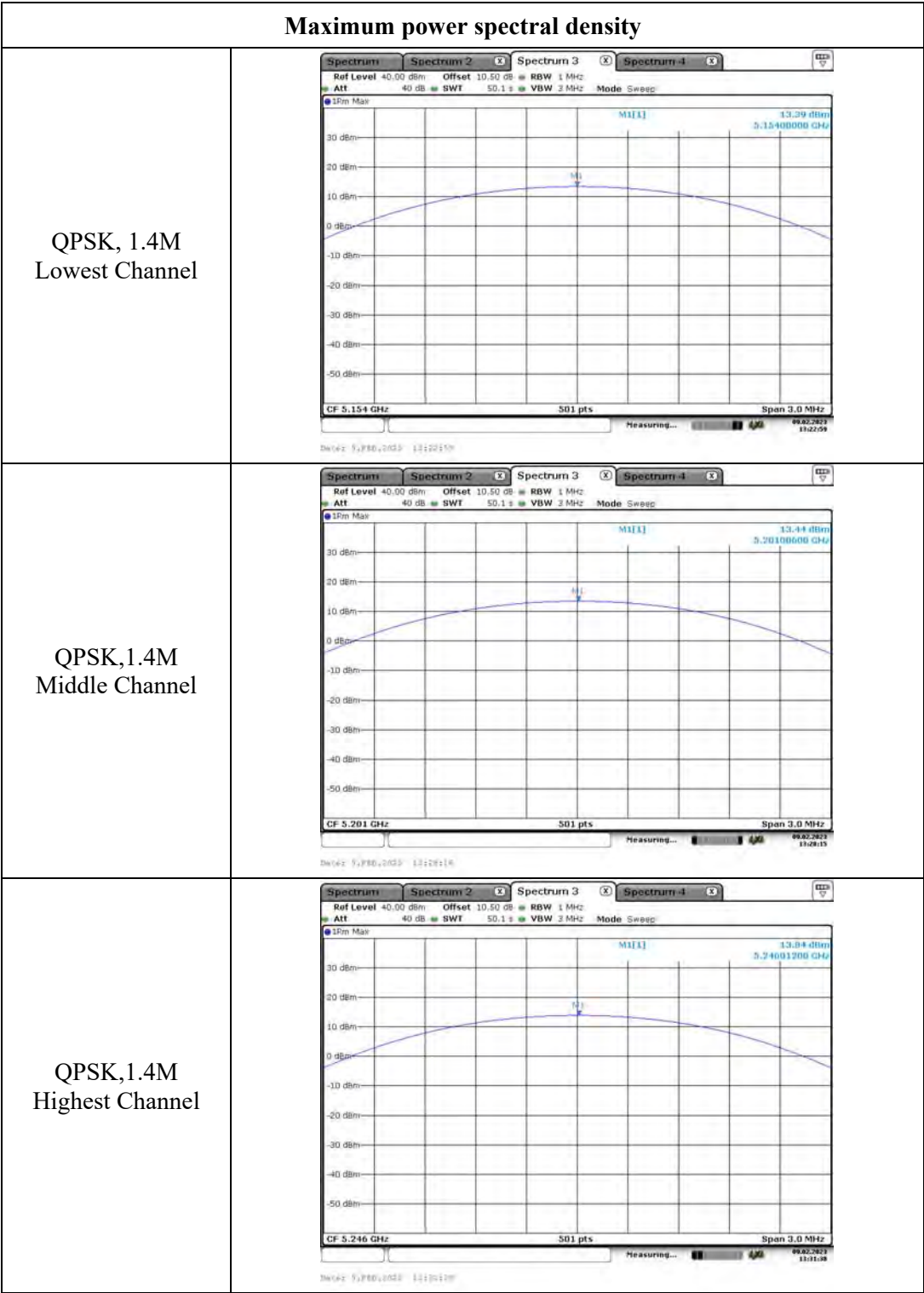
Method SA-3 in KDB 789033 D02 General UNII Test Procedures New Rules v02r01 was used for PSD test.

5725-5850 MHz(For FCC&ISED):

Modulation	Test Modes	Test Frequency (MHz)	Maximum Power Spectral Density (dBm/500kHz)			
			Chain 0	Chain 2	Total	Limit
QPSK	1.4M	5728	18.46	18.83	21.66	30
		5789	18.11	18.51	21.32	30
		5847	17.96	18.29	21.14	30
	10M	5733	9.82	9.52	12.68	30
		5789	9.48	9.2	12.35	30
		5842	9.34	9.04	12.20	30
	20M	5738	6.5	6.65	9.59	30
		5790	6.13	6.36	9.26	30
		5839	5.9	6	8.96	30
16QAM	1.4M	5728	16.34	16.61	19.49	30
		5789	16.21	16.27	19.25	30
		5847	16.16	16.13	19.16	30
	10M	5733	9.47	9.6	12.55	30
		5789	9.22	9.21	12.23	30
		5842	8.93	8.98	11.97	30
	20M	5738	6.4	6.59	9.51	30
		5790	6.19	6.28	9.25	30
		5839	6.07	6.06	9.08	30

Note:
The Maximum antenna gain is 0.9dBi
Method SA-3 in KDB 789033 D02 General UNII Test Procedures New Rules v02r01 was used for PSD test.

5150-5250MHz:
Chain 0



Maximum power spectral density

QPSK,10M
Lowest Channel



QPSK,10M
Middle Channel

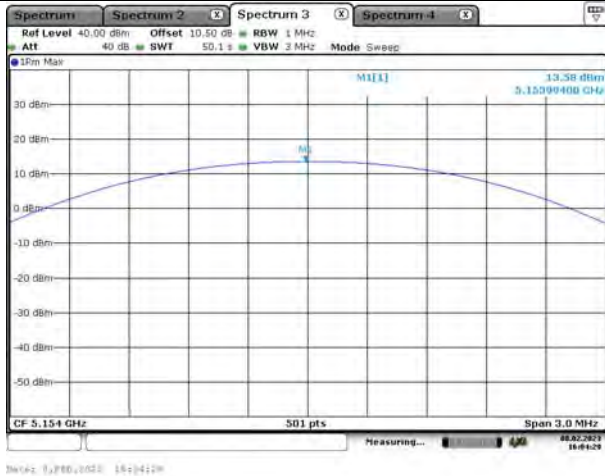
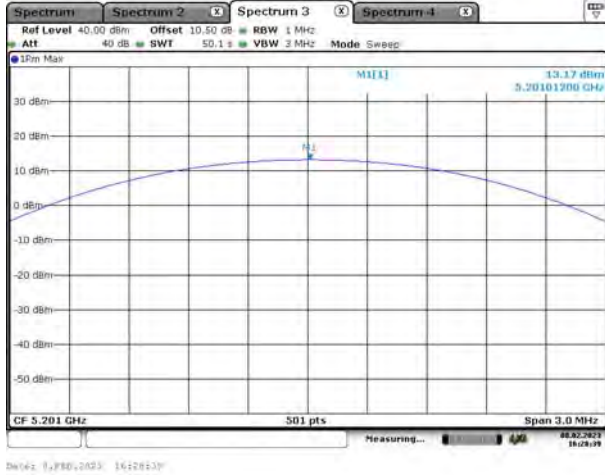
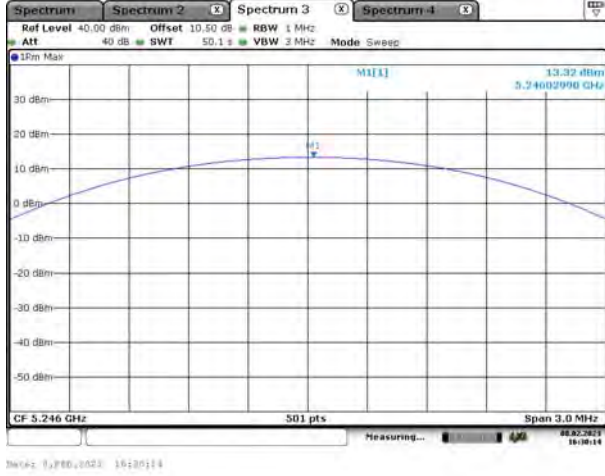


QPSK,10M
Highest Channel



Maximum power spectral density

QPSK,20M
Lowest ChannelQPSK,20M
Middle ChannelQPSK,20M
Highest Channel

Maximum power spectral density	
16QAM,1.4M Lowest Channel	
16QAM,1.4M Middle Channel	
16QAM,1.4M Highest Channel	

Maximum power spectral density

16QAM,10M
Lowest Channel



16QAM,10M
Middle Channel



16QAM,10M
Highest Channel

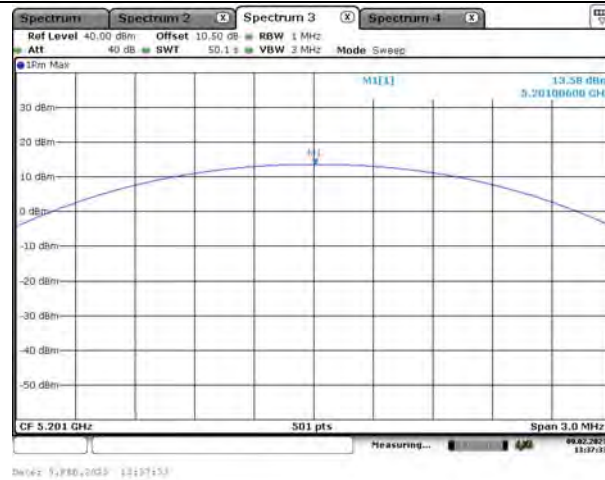
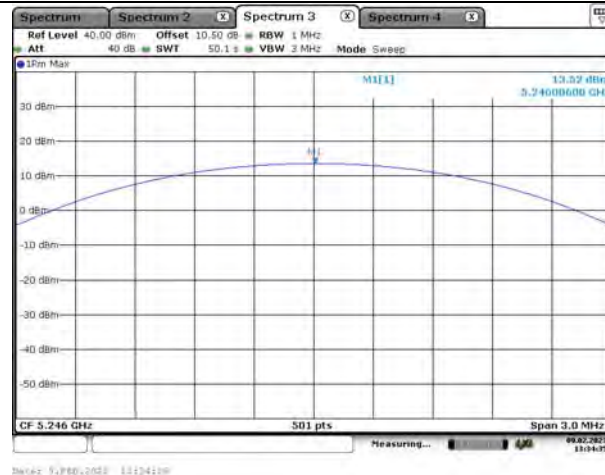


Maximum power spectral density

16QAM,20M
Lowest Channel16QAM, 20M
Middle Channel16QAM,20M
Highest Channel

Chain 2

Maximum power spectral density

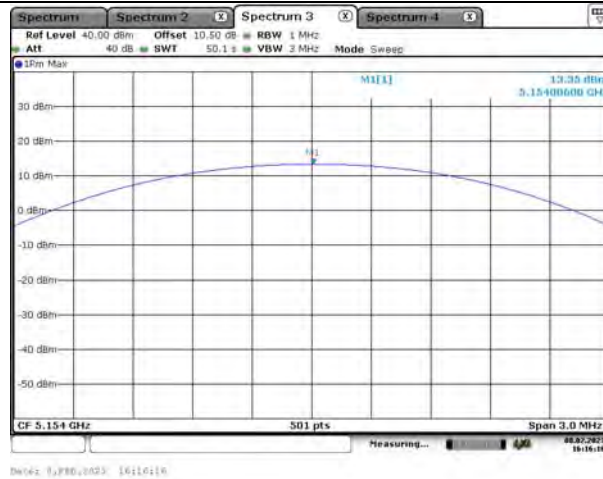
QPSK,1.4M
Lowest ChannelQPSK,1.4M
Middle ChannelQPSK,1.4M
Highest Channel

Maximum power spectral densityQPSK,10M
Lowest ChannelQPSK,10M
Middle ChannelQPSK,10M
Highest Channel

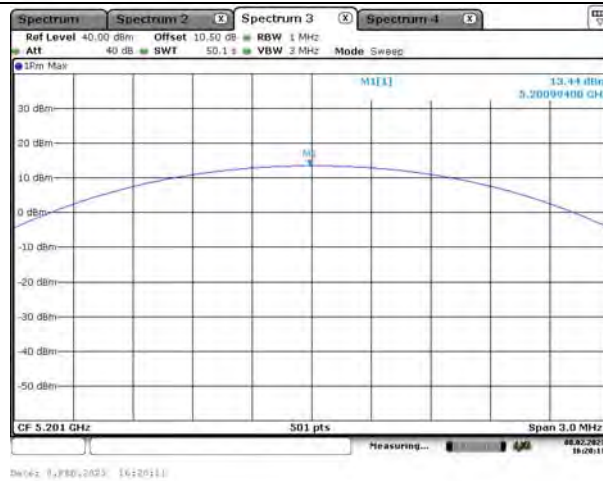
Maximum power spectral densityQPSK,20M
Lowest ChannelQPSK,20M
Middle ChannelQPSK,20M
Highest Channel

Maximum power spectral density

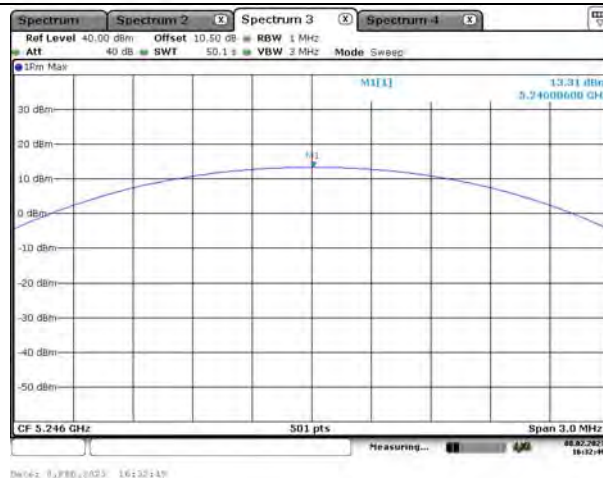
16QAM,1.4M
Lowest Channel



16QAM,1.4M
Middle Channel



16QAM,1.4M
Highest Channel



Maximum power spectral density

16QAM,10M
Lowest Channel



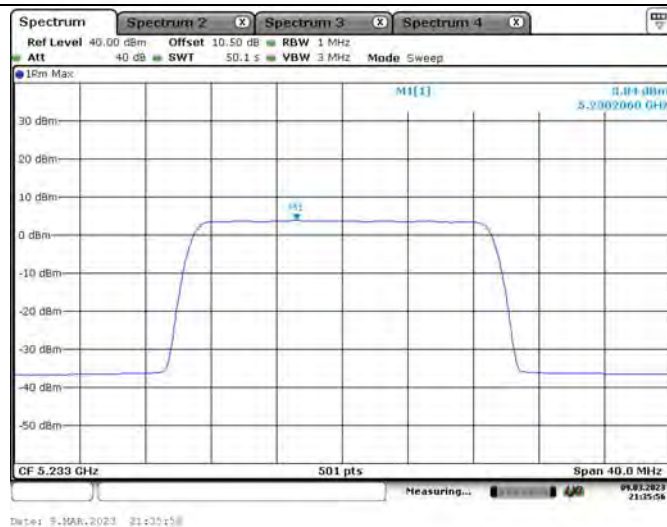
16QAM,10M
Middle Channel

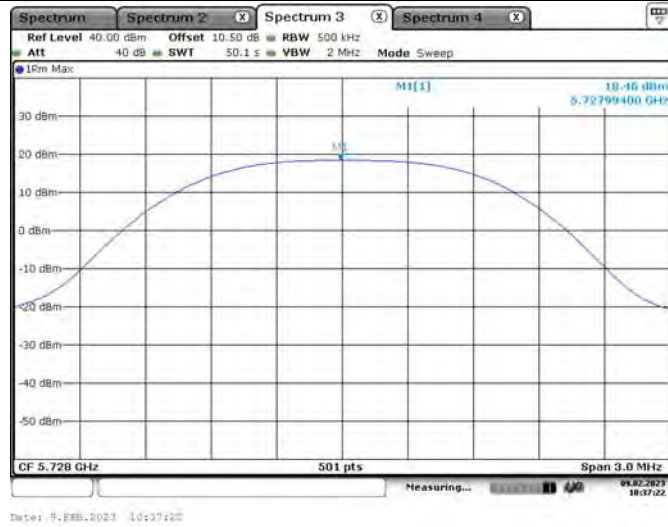
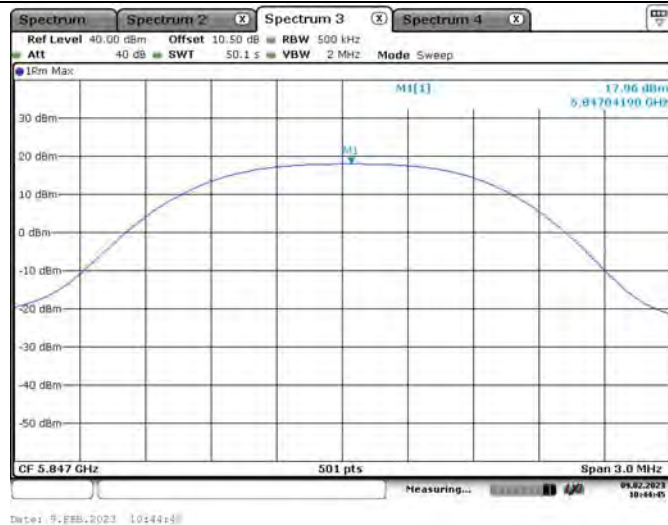


16QAM,10M
Highest Channel

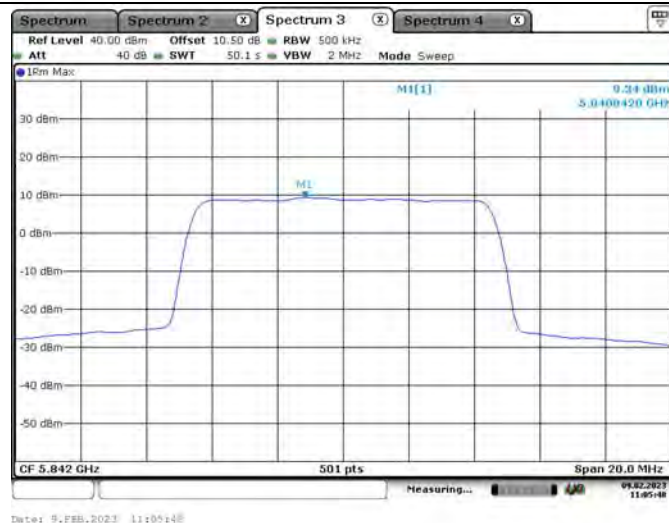


Maximum power spectral density

16QAM,20M
Lowest Channel16QAM,20M
Middle Channel16QAM,20M
Highest Channel

**5725-5850MHz:
Chain 0****Maximum power spectral density**QPSK, 1.4M
Lowest ChannelQPSK, 1.4M
Middle ChannelQPSK, 1.4M
Highest Channel

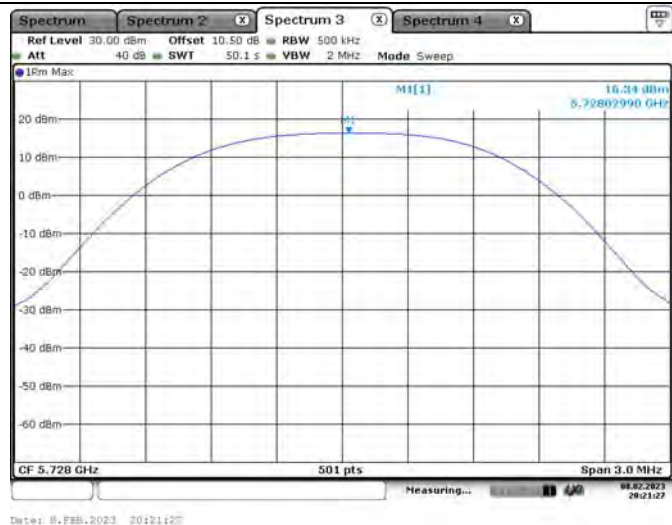
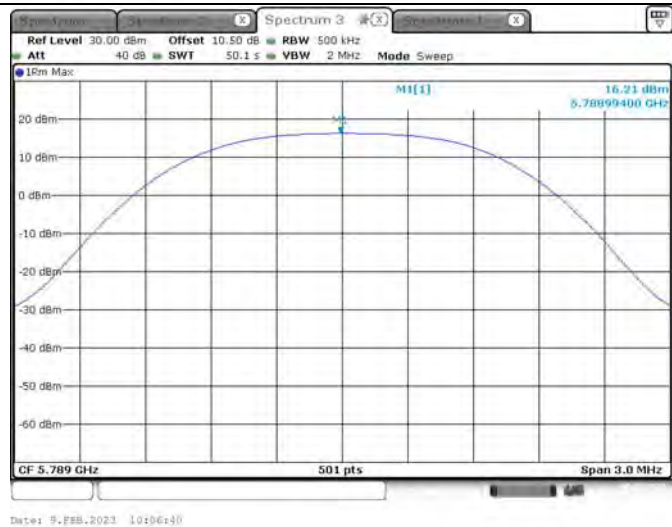
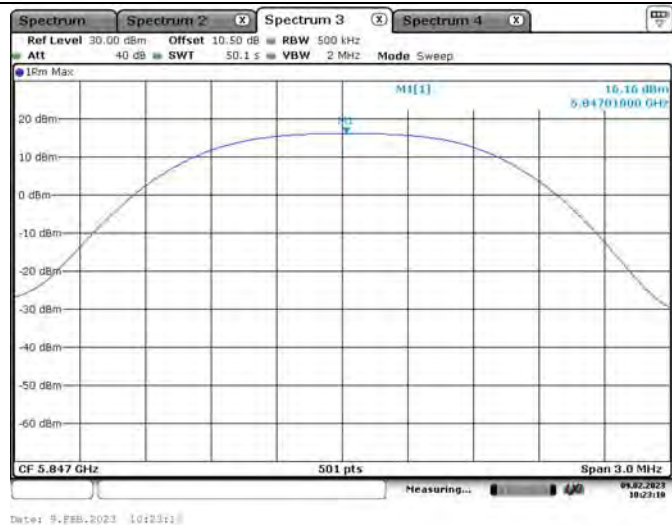
Maximum power spectral density

QPSK, 10M
Lowest ChannelQPSK, 10M
Middle ChannelQPSK, 10M
Highest Channel

Maximum power spectral density

QPSK, 20M
Lowest ChannelQPSK, 20M
Middle ChannelQPSK, 20M
Highest Channel

Maximum power spectral density

16QAM, 1.4M
Lowest Channel16QAM, 1.4M
Middle Channel16QAM, 1.4M
Highest Channel

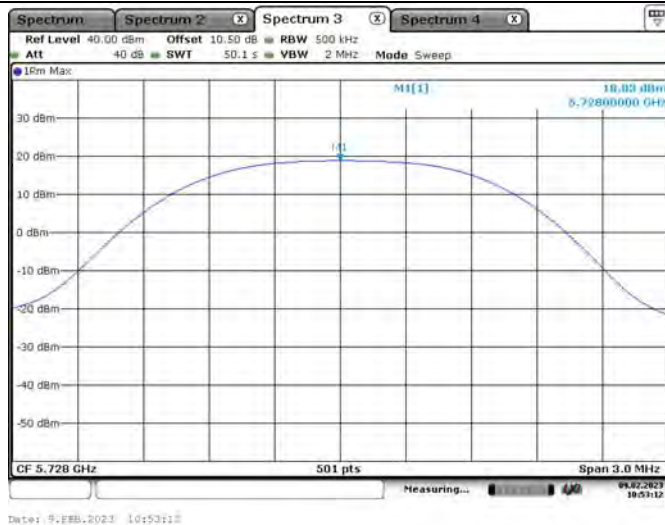
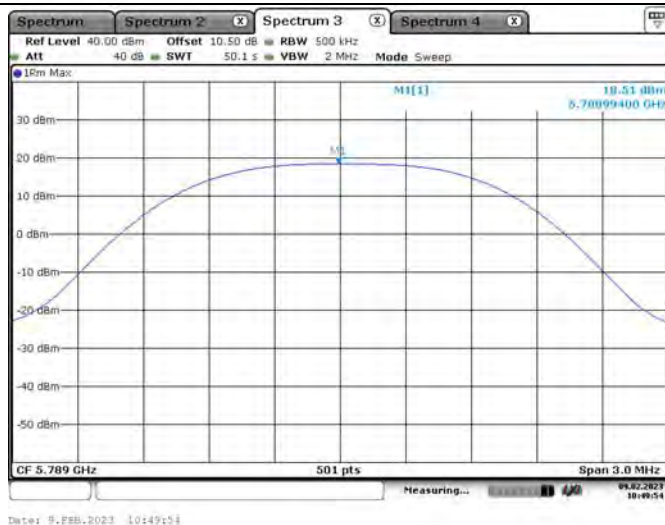
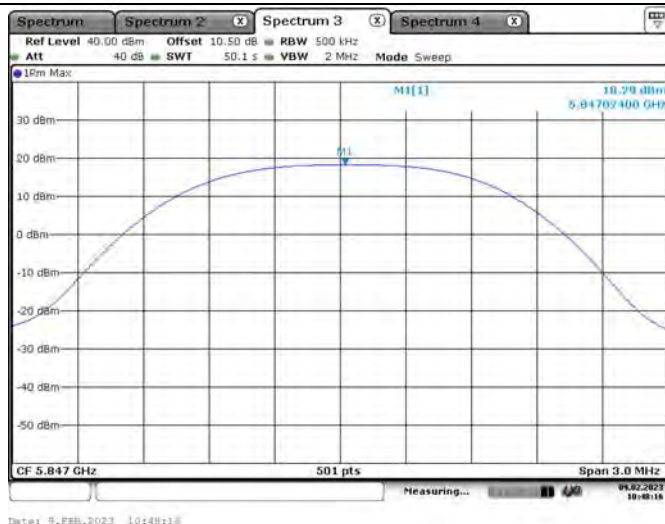
Maximum power spectral density

16QAM,10M
Lowest Channel16QAM,10M
Middle Channel16QAM,10M
Highest Channel

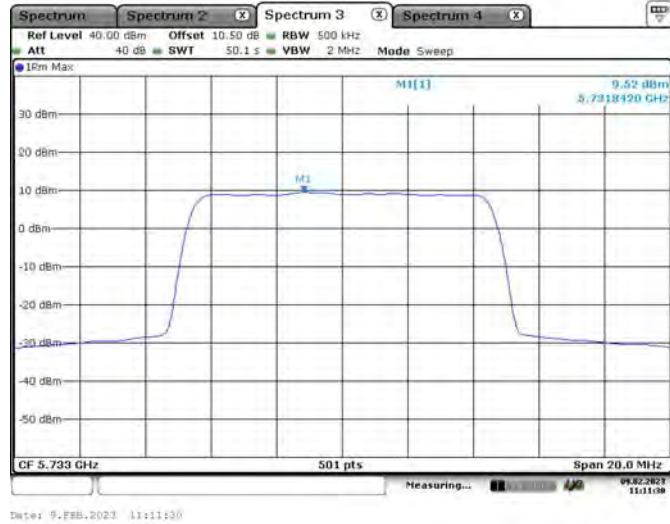
Maximum power spectral density	
16QAM,20M Lowest Channel	<p>Spectrum plot for the lowest channel (16QAM, 20M). The plot shows a signal centered at 5.738 GHz with a span of 40.0 MHz. The signal level is approximately 5.40 dBm. The plot includes a grid and various measurement parameters like Ref Level, Offset, RBW, and Span.</p>
16QAM,20M Middle Channel	<p>Spectrum plot for the middle channel (16QAM, 20M). The plot shows a signal centered at 5.79 GHz with a span of 40.0 MHz. The signal level is approximately 5.19 dBm. The plot includes a grid and various measurement parameters like Ref Level, Offset, RBW, and Span.</p>
16QAM,20M Highest Channel	<p>Spectrum plot for the highest channel (16QAM, 20M). The plot shows a signal centered at 5.839 GHz with a span of 40.0 MHz. The signal level is approximately 5.07 dBm. The plot includes a grid and various measurement parameters like Ref Level, Offset, RBW, and Span.</p>

Chain 2

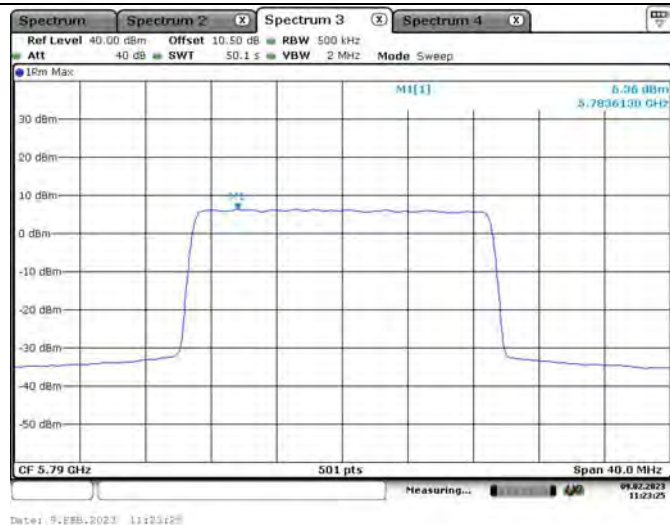
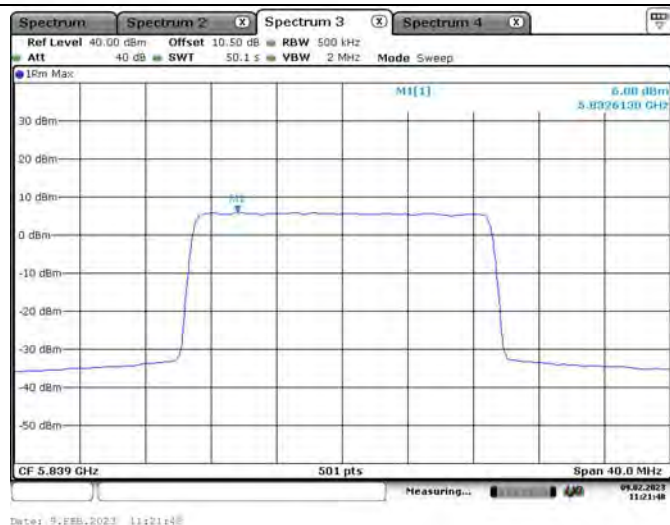
Maximum power spectral density

QPSK,1.4M
Lowest ChannelQPSK,1.4M
Middle ChannelQPSK,1.4M
Highest Channel

Maximum power spectral density

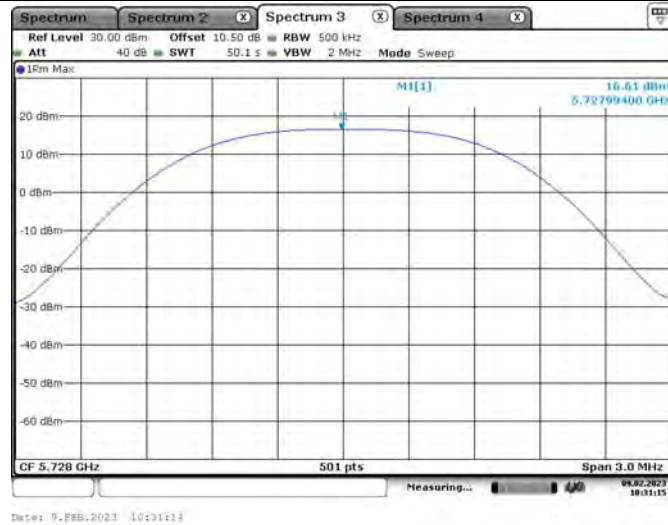
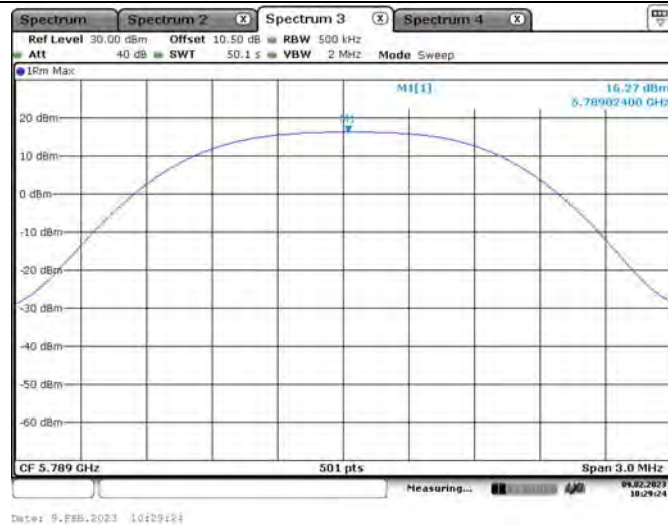
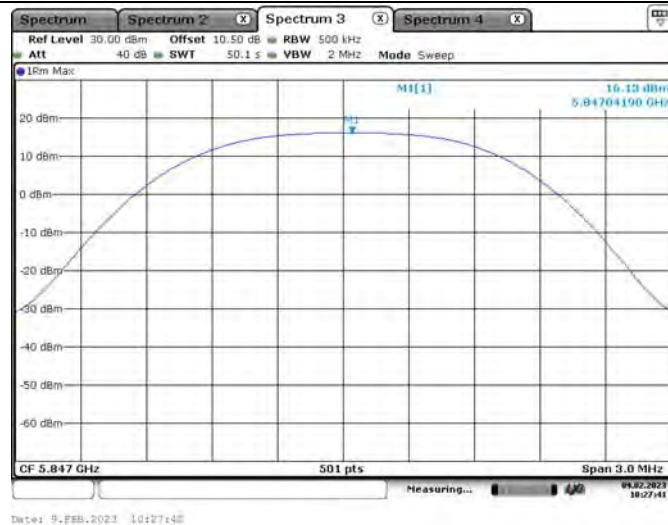
QPSK,10M
Lowest ChannelQPSK,10M
Middle ChannelQPSK,10M
Highest Channel

Maximum power spectral density

QPSK,20M
Lowest ChannelQPSK,20M
Middle ChannelQPSK,20M
Highest Channel

Chain 2

Maximum power spectral density

16QAM,1.4M
Lowest Channel16QAM,1.4M
Middle Channel16QAM,1.4M
Highest Channel

Maximum power spectral density

16QAM,10M
Lowest Channel16QAM,10M
Middle Channel16QAM,10M
Highest Channel

Maximum power spectral density

16QAM,20M
Lowest Channel16QAM,20M
Highest Channel16QAM,20M
Middle Channel

4.6 Duty Cycle:

Serial Number:	1QAT-13	Test Date:	2023/2/8-2023/2/9
Test Site:	RF	Test Mode:	Transmitting
Tester:	Julie Tan	Test Result:	N/A

Environmental Conditions:

Temperature: (°C)	20.7-23.5	Relative Humidity: (%)	57-66	ATM Pressure: (kPa)	101.1-101.6
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2022/07/25	2023/07/24
Mini-Circuits	DC Block	BLK-18-S+	1554404	Each time	N/A
zhuoxiang	Coaxial Cable	SMA-178	211003	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

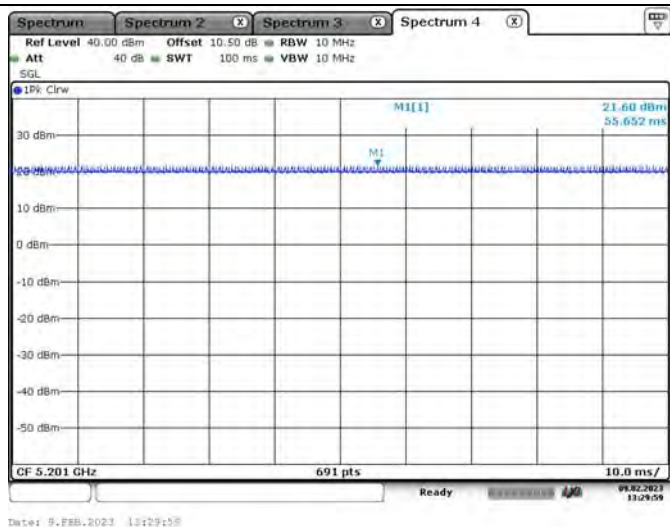
Test Data:

Test only was performed at chain 0.

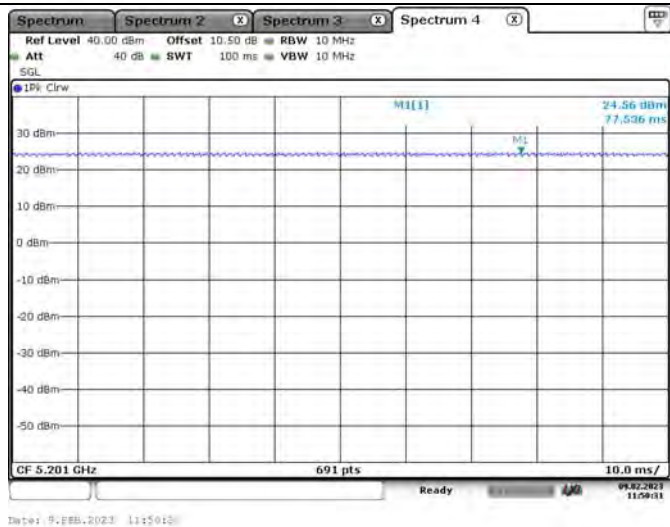
Modulation	Test Modes	Ton (ms)	Ton+off (ms)	Duty cycle (%)
QPSK	1.4M	100	100	100.00
	10M	100	100	100.00
	20M	100	100	100.00
16QAM	1.4M	100	100	100.00
	10M	100	100	100.00
	20M	100	100	100.00

Duty Cycle

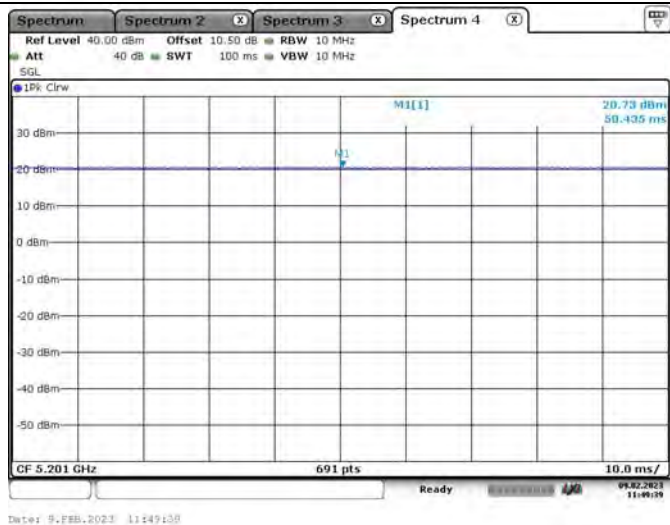
QPSK, 1.4M



QPSK, 10M

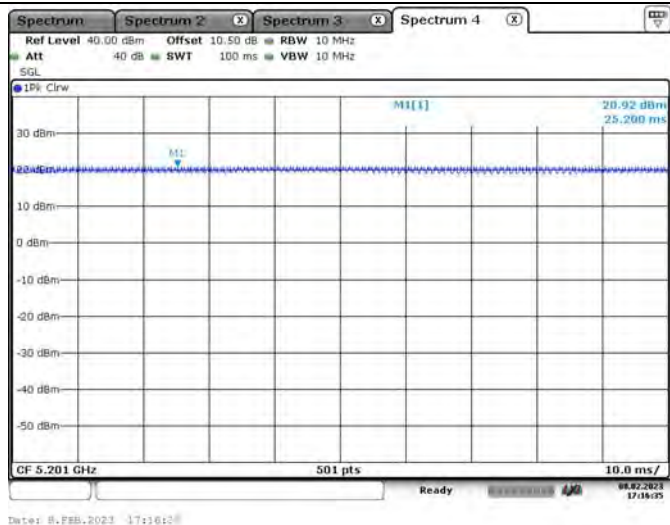


QPSK, 20M

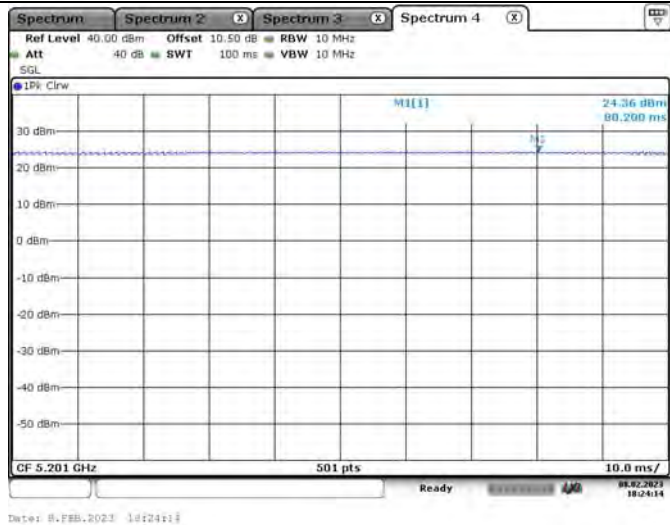


Duty Cycle-16QAM

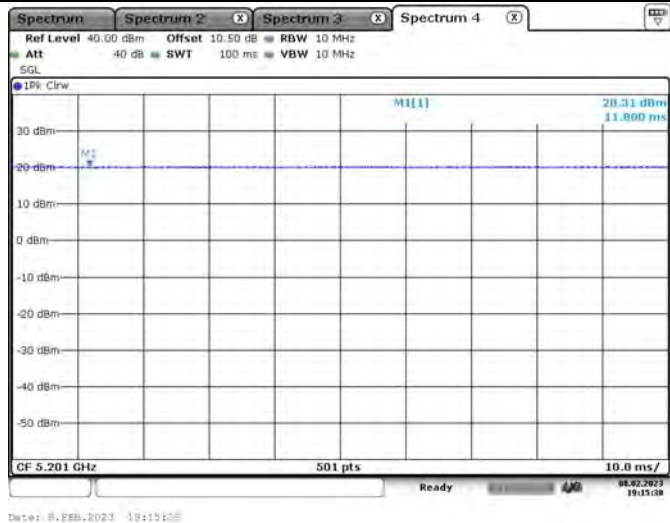
QPSK,1.4M



QPSK,10M



QPSK,20M



===== END OF REPORT =====