



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



TEST REPORT

Applicant: JEM ACCESSORIES INC.

Address: 32 Brunswick Avenue, Edison, New Jersey, United States, 08817

FCC ID: 2AHAS-MLW71003

Product Name: WiFi 2M RGBIC LED STRIP LIGHT
WiFi 5M RGBIC LED STRIP LIGHT
WiFi 15M RGBIC LED STRIP LIGHT

Standard(s): 47 CFR Part 15, Subpart C(15.247)
ANSI C63.10-2013
KDB 558074 D01 15.247 Meas Guidance v05r02

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: CR230848226-00A

Date Of Issue: 2023/10/27

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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	CR230848226-00A	Original Report	2023/10/27

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	WiFi 2M RGBIC LED STRIP LIGHT WiFi 5M RGBIC LED STRIP LIGHT WiFi 15M RGBIC LED STRIP LIGHT
EUT Model:	MLW7-1003-ICM,MLB7-1003-ICM
Multiple Models:	MLW7-1001-ICM,MLB7-1001-ICM MLW7-1002-ICM,MLB7-1002-ICM
Operation Frequency:	2412-2462 MHz(802.11b/g/n ht20) 2422-2452 MHz(802.11n ht40)
Maximum Peak Output Power (Conducted):	24.44 dBm
Modulation Type:	802.11b:DSSS-DBPSK, DQPSK, CCK 802.11g/n:OFDM-BPSK, QPSK, 16QAM, 64QAM
Rated Input Voltage:	DC12V from adapter for model MLW7-1003-ICM, MLB7-1003-ICM DC5V from USB Port for model: MLW7-1002-ICM,MLB7-1002-ICM MLW7-1001-ICM,MLB7-1001-ICM
Serial Number:	2A3A-4 for RF 2A3Z-1(model MLW7-1001-ICM), 2A3Z-2(model MLW7-1002-ICM), 2A3Z-3(MLW7-1003-ICM) for CE&RE
EUT Received Date:	2023/9/7
EUT Received Status:	Good
Note: The Multiple models are electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer. The differences between models do not affect the Radiated Emission test above 1GHz and the RF Conducted Test, which were performed with model MLW7-1003-ICM.	

Operation Frequency Detail: For 802.11b/g/n ht20:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	/
Per section 15.31(m), the below frequencies were performed the test as below:			
Test Channel		Frequency (MHz)	
Lowest		2412	
Middle		2437	
Highest		2462	

For 802.11n ht40:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	7	2442
4	2427	8	2447
5	2432	9	2452
6	2437	/	/
Per section 15.31(m), the below frequencies were performed the test as below:			
Test Channel		Frequency (MHz)	
Lowest		2422	
Middle		2437	
Highest		2452	

Antenna Information Detail▲:

Antenna Type	input impedance (Ohm)	Frequency Range	Antenna Gain
PCB	50	2.4~2.5GHz	2.5dBi
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.			

Accessory Information:

Accessory Description	Manufacturer	Model	Parameters	Note:
Adapter	HAIHONG ELECTRONICS CO.,LTD	HH0024Z-120200-AU	Input:100-240V,50/60Hz 0.8A Max Output:12.0V, 2.0A	Just for model MLW7-1003-ICM, MLB7-1003-ICM

1.2 Description of Test Configuration**1.2.1 EUT Operation Condition:****For 802.11b/g/n:**

EUT Operation Mode:		The system was configured for testing in Engineering Mode, which was provided by the manufacturer.		
Equipment Modifications:		No		
EUT Exercise Software:		EspRFTestTool_v3.6_Manual.exe		
The software was provided by manufacturer. The maximum power was configured as below, that was provided by the manufacturer▲:				
Test Modes	Data Rate	Power Level Setting		
		Lowest Channel	Middle Channel	Highest Channel
802.11b	1Mbps	28	28	28
802.11g	6Mbps	23	23	23
802.11n ht20	MCS0	20	20	20
802.11n ht40	MCS0	25	25	25
The above are the worst-case data rates, which are determined for each mode based upon investigations by measuring the average power and PSD across all data rates, bandwidths, and modulations.				

1.2.2 Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Infinix	Adapter	U180XSA	Unknown
Unknown	Socket	Unknown	Unknown

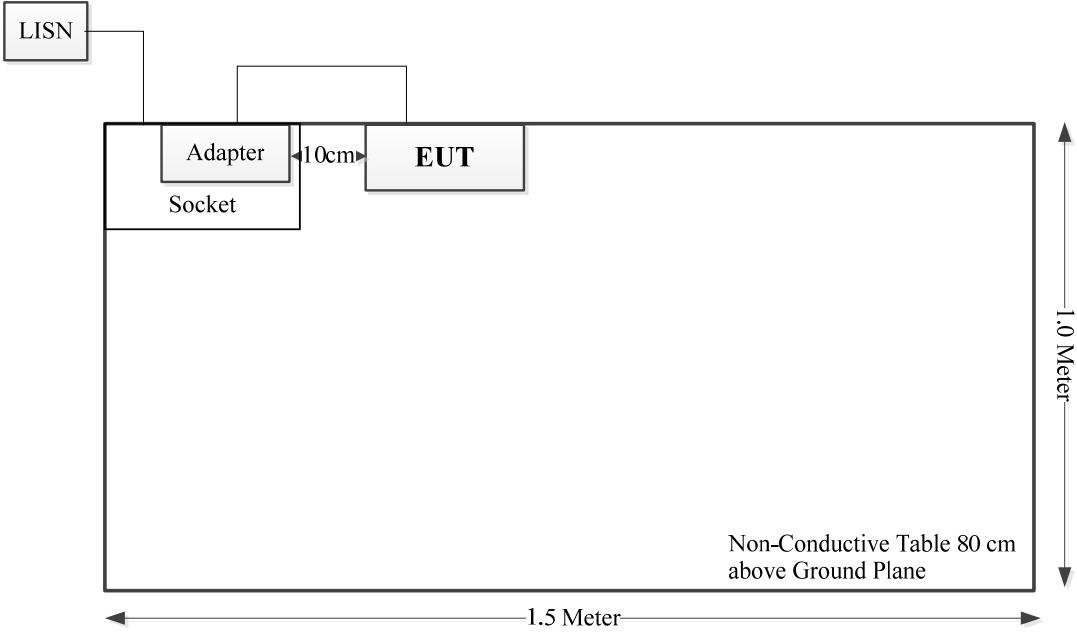
Note: support equipment adapter is just for model MLW7-1002-ICM, MLB7-1002-ICM; MLW7-1001-ICM, MLB7-1001-ICM

1.2.3 Support Cable List and Details

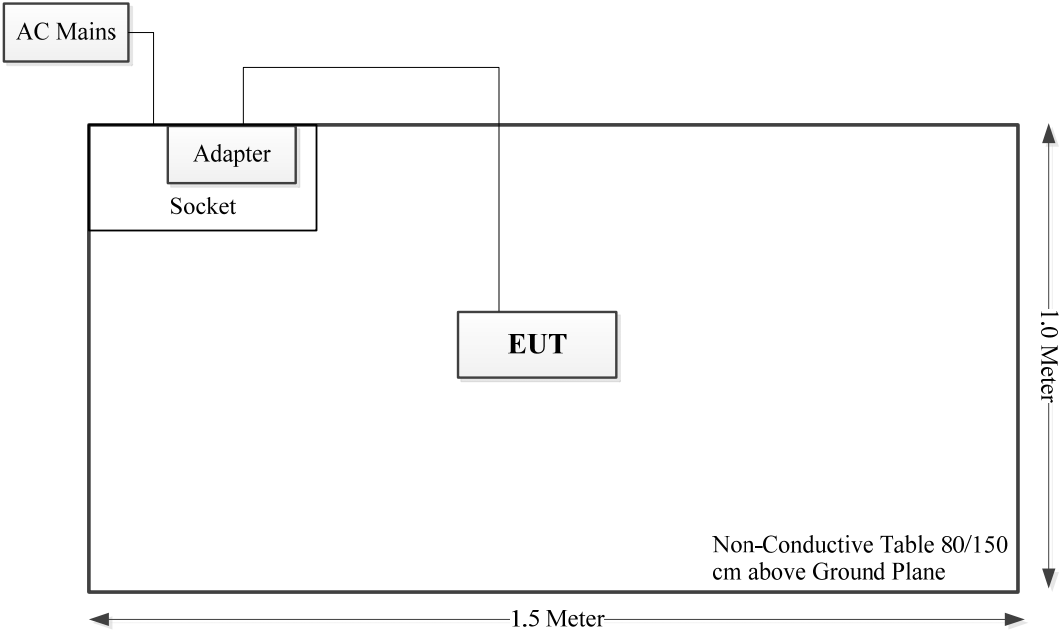
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Detachable DC cable	No	No	0.8	Adapter	EUT
Cable	No	No	1.2	Socket	LISN/AC Mains

1.2.4 Block Diagram of Test Setup

AC line conducted emissions:



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	$\pm 5\%$
RF output power, conducted	$\pm 0.61\text{dB}$
Power Spectral Density, conducted	$\pm 0.61\text{ dB}$
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	$\pm 1.26\text{ dB}$
Temperature	$\pm 1^\circ\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 0.4\%$
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)	AC Line Conducted Emissions	Compliant
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	Minimum 6 dB Bandwidth	Compliant
§15.247(b)(3)	Maximum Conducted Output Power	Compliant
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.203	Antenna Requirement	Compliant
FCC§15.247 (i) & §1.1307	RF Exposure Evaluation	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.

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 limits.

The spacing between the peripherals was 10 cm.

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

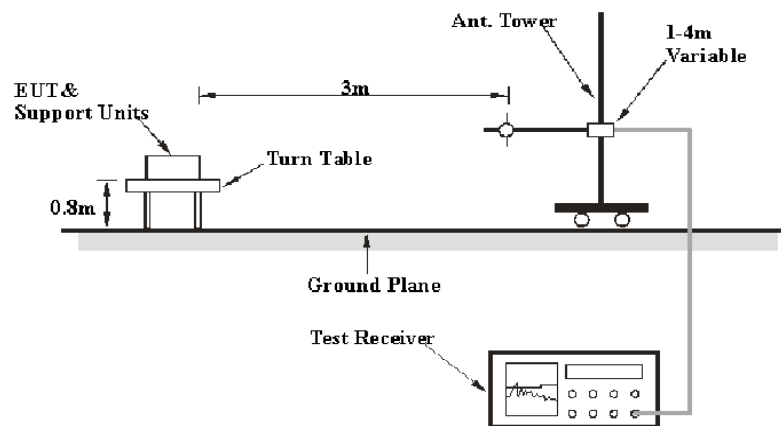
3.2.1 Applicable Standard

FCC §15.247 (d);

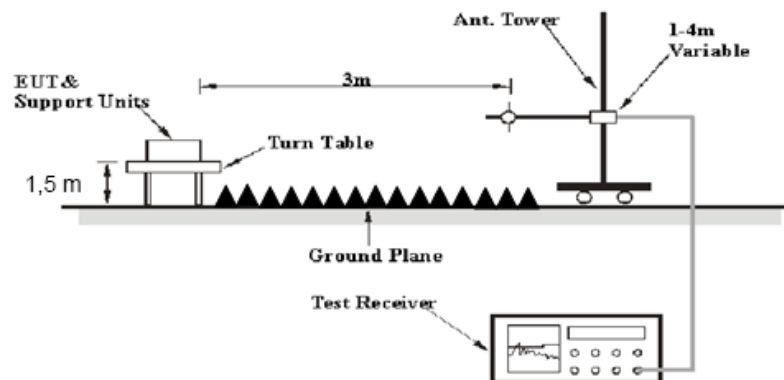
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

3.2.2 EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emissions were performed in the 3 meters distance, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 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 25 GHz.

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

30-1000MHz:

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

1GHz- 25GHz:

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
Ave.	>98%	1MHz	10 Hz
	<98%	1MHz	$\geq 1/T$

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

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

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

3.2.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = Antenna Factor + Cable Loss- Amplifier Gain

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

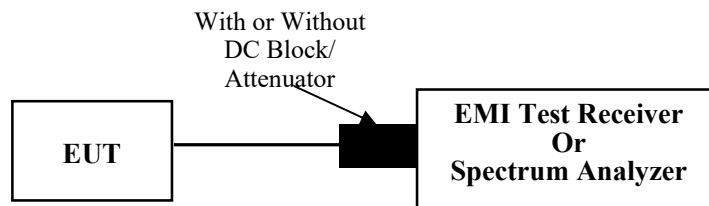
3.3 Minimum 6 dB Emission Bandwidth

3.3.1 Applicable Standard

FCC §15.247 (a)(2)

Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

3.3.2 EUT Setup



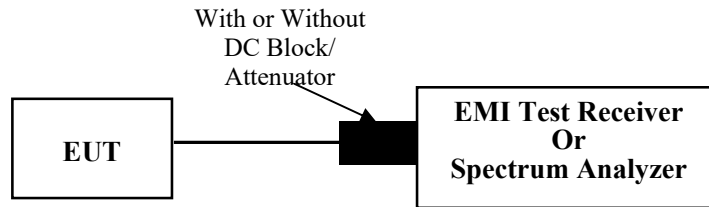
3.3.3 Test Procedure

According to ANSI C63.10-2013 Section 11.8

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times \text{RBW}$.
- 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.

3.4 99% Occupied Bandwidth

3.4.1 EUT Setup



3.4.2 Test Procedure

According to ANSI C63.10-2013 Section 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).

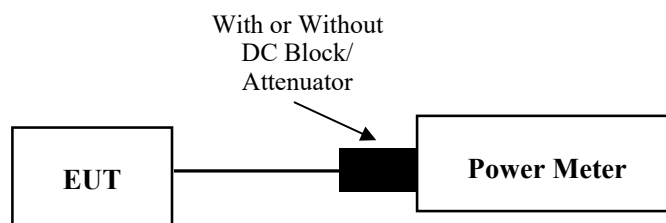
3.5 Maximum Conducted Output Power

3.5.1 Applicable Standard

FCC §15.247 (b)(3)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

3.5.2 EUT Setup



3.5.3 Test Procedure

For Peak Power

According to ANSI C63.10-2013 Section 11.9.1.3

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

For Average Power

According to ANSI C63.10-2013 Section 11.9.2.3.2

Method AVGPM-G is a measurement using a gated RF average power meter.

Alternatively, 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.

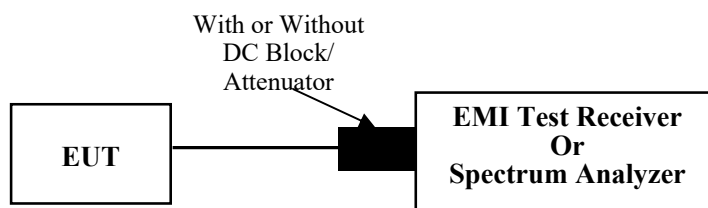
3.6 Maximum Power Spectral Density

3.6.1 Applicable Standard

FCC §15.247 (e)

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

3.6.2 EUT Setup



3.6.3 Test Procedure

According to ANSI C63.10-2013 Section 11.10.2

The following procedure shall be used if maximum peak conducted output power was used to determine compliance:

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.
- If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

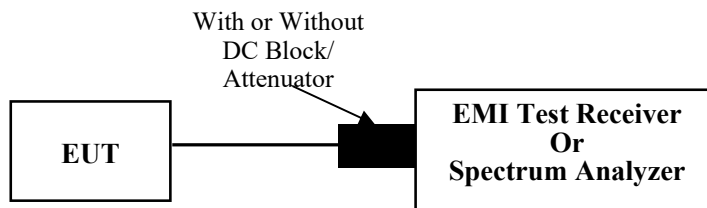
3.7 100 kHz Bandwidth of Frequency Band Edge

3.7.1 Applicable Standard

FCC §15.247 (d);

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

3.7.2 EUT Setup



3.7.3 Test Procedure

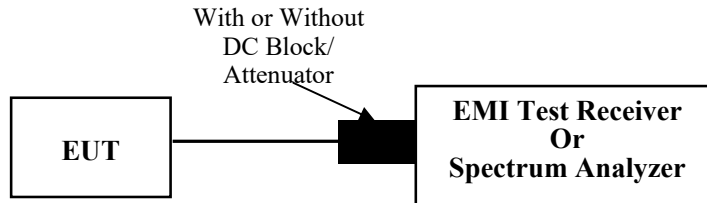
According to ANSI C63.10-2013 Section 11.11

- Set the center frequency and span to encompass frequency range to be measured.
- Set the RBW = 100 kHz.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

3.8 Duty Cycle

3.8.1 EUT Setup



3.8.2 Test Procedure

According to ANSI C63.10-2013 Section 11.6

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 $T \leq 16.7 \mu s$.)

3.9 Antenna Requirement

3.9.1 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.

3.9.2 Judgment

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

4. Test DATA AND RESULTS

4.1 AC Line Conducted Emissions

Serial Number:	2A3Z-1,2A3Z-2,2A3Z-3	Test Date:	2023/09/09
Test Site:	CE	Test Mode:	Transmitting(maximum output power mode 802.11 g middle channel)
Tester:	David Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.5	Relative Humidity: (%)	53	ATM Pressure: (kPa)	100.1
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101134	2023/03/31	2024/03/30
R&S	EMI Test Receiver	ESR3	102726	2023/03/31	2024/03/30
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2023/08/06	2024/08/05
Audix	Test Software	E3	190306 (V9)	N/A	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).*

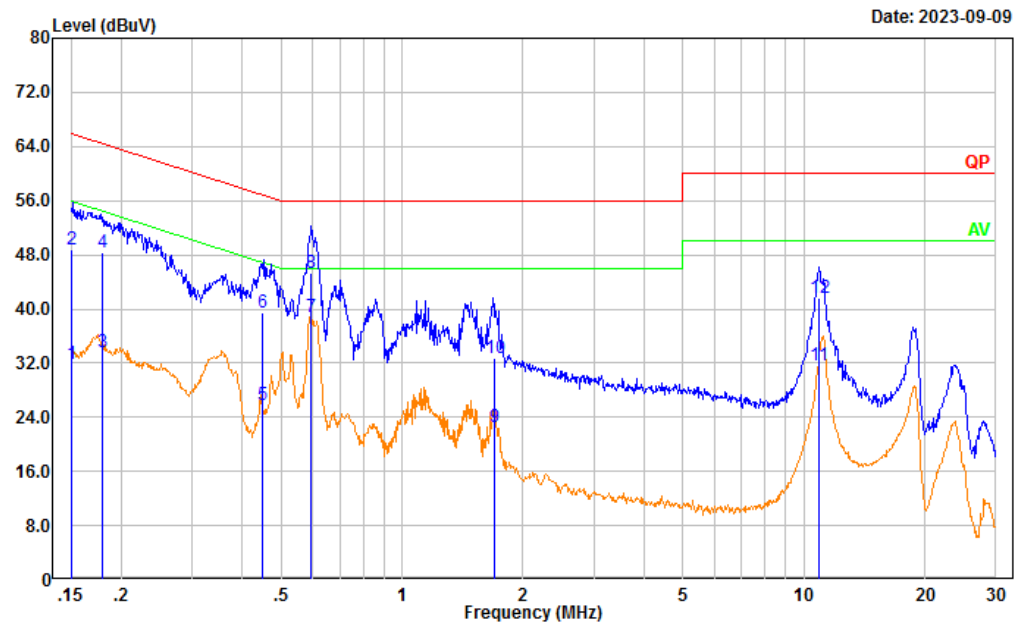
For model MLW7-1003-ICM (The length of lamp strip is 15m):

Project No.: CR230848226-RF

Tester: David Huang

Port: Line

Note:



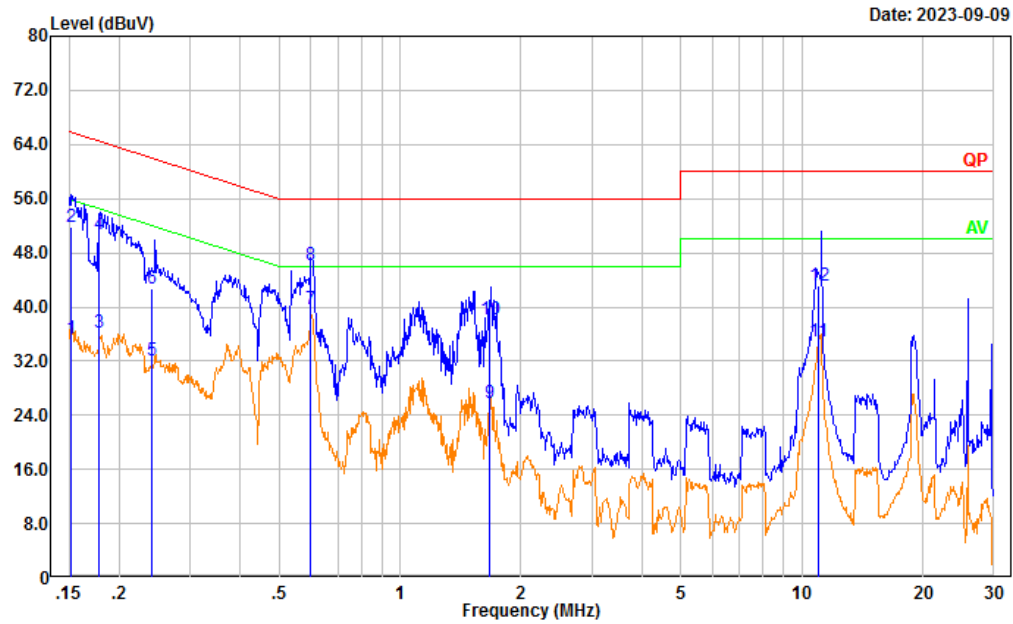
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.150	22.19	9.61	31.80	55.99	24.19	Average
2	0.150	39.20	9.61	48.81	65.99	17.18	QP
3	0.180	23.91	9.61	33.52	54.49	20.97	Average
4	0.180	38.70	9.61	48.31	64.49	16.18	QP
5	0.448	16.25	9.61	25.86	46.90	21.04	Average
6	0.448	29.77	9.61	39.38	56.90	17.52	QP
7	0.593	29.28	9.62	38.90	46.00	7.10	Average
8	0.593	35.72	9.62	45.34	56.00	10.66	QP
9	1.694	12.94	9.63	22.57	46.00	23.43	Average
10	1.694	23.07	9.63	32.70	56.00	23.30	QP
11	10.887	21.91	9.67	31.58	50.00	18.42	Average
12	10.887	31.86	9.67	41.53	60.00	18.47	QP

Project No.: CR230848226-RF

Tester: David Huang

Port: neutral

Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.152	25.67	9.61	35.28	55.89	20.61	Average
2	0.152	42.12	9.61	51.73	65.89	14.16	QP
3	0.178	26.55	9.61	36.16	54.57	18.41	Average
4	0.178	41.06	9.61	50.67	64.57	13.90	QP
5	0.241	22.37	9.61	31.98	52.06	20.08	Average
6	0.241	33.16	9.61	42.77	62.06	19.29	QP
7	0.597	30.01	9.62	39.63	46.00	6.37	Average
8	0.597	36.60	9.62	46.22	56.00	9.78	QP
9	1.674	16.17	9.63	25.80	46.00	20.20	Average
10	1.674	28.53	9.63	38.16	56.00	17.84	QP
11	10.955	25.15	9.67	34.82	50.00	15.18	Average
12	10.955	33.53	9.67	43.20	60.00	16.80	QP

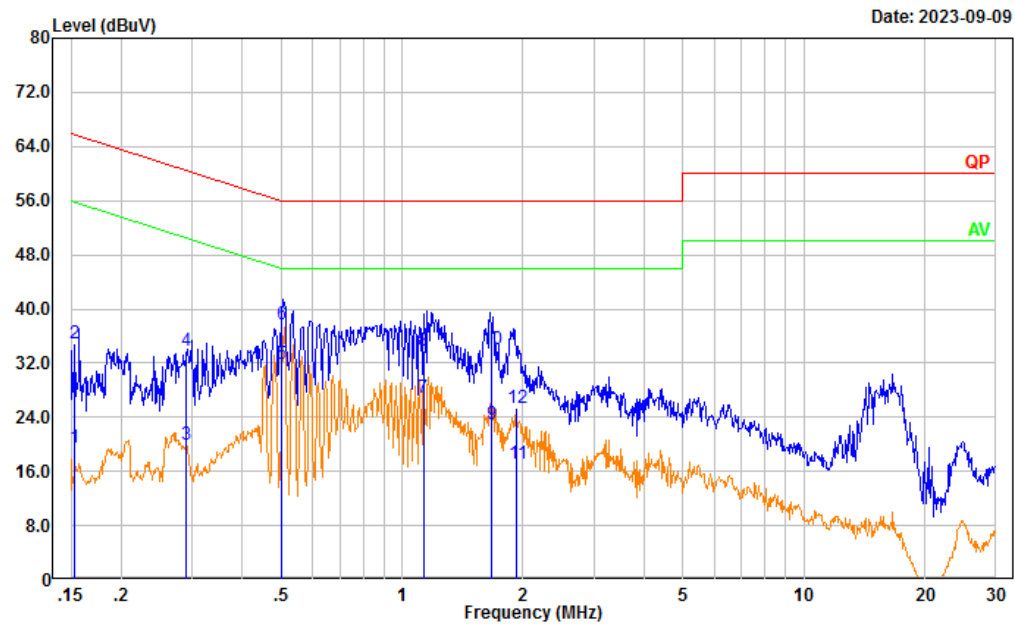
For model MLW7-1001-ICM (The length of lamp strip is 2m):

Project No.: CR230848226-RF

Tester: David Huang

Port: Line

Note:



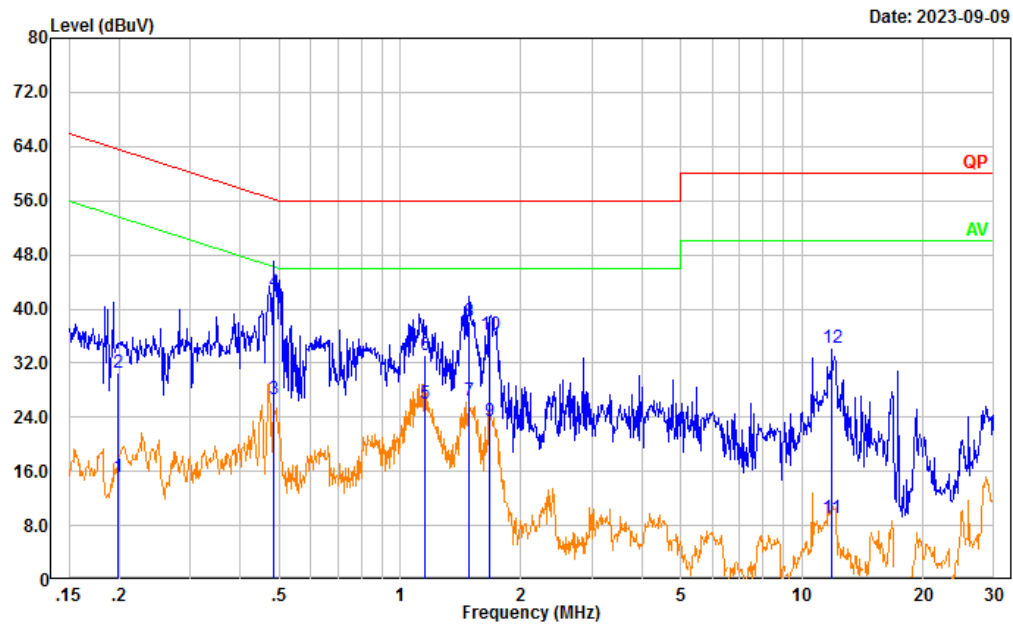
No.	Frequency (MHz)	Reading (dBUV)	Factor (dB)	Result (dBUV)	Limit (dBUV)	Margin (dB)	Detector
1	0.153	9.87	9.61	19.48	55.82	36.34	Average
2	0.153	25.38	9.61	34.99	65.82	30.83	QP
3	0.291	10.43	9.61	20.04	50.49	30.45	Average
4	0.291	24.17	9.61	33.78	60.49	26.71	QP
5	0.503	22.32	9.61	31.93	46.00	14.07	Average
6	0.503	28.01	9.61	37.62	56.00	18.38	QP
7	1.129	17.37	9.62	26.99	46.00	19.01	Average
8	1.129	24.11	9.62	33.73	56.00	22.27	QP
9	1.674	13.40	9.63	23.03	46.00	22.97	Average
10	1.674	24.31	9.63	33.94	56.00	22.06	QP
11	1.933	7.58	9.63	17.21	46.00	28.79	Average
12	1.933	15.68	9.63	25.31	56.00	30.69	QP

Project No.: CR230848226-RF

Tester: David Huang

Port: neutral

Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.199	5.49	9.61	15.10	53.66	38.56	Average
2	0.199	20.86	9.61	30.47	63.66	33.19	QP
3	0.485	17.09	9.61	26.70	46.25	19.55	Average
4	0.485	32.98	9.61	42.59	56.25	13.66	QP
5	1.152	16.41	9.62	26.03	46.00	19.97	Average
6	1.152	23.46	9.62	33.08	56.00	22.92	QP
7	1.481	16.90	9.62	26.52	46.00	19.48	Average
8	1.481	28.58	9.62	38.20	56.00	17.80	QP
9	1.675	13.87	9.63	23.50	46.00	22.50	Average
10	1.675	26.52	9.63	36.15	56.00	19.85	QP
11	11.854	-0.57	9.67	9.10	50.00	40.90	Average
12	11.854	24.60	9.67	34.27	60.00	25.73	QP

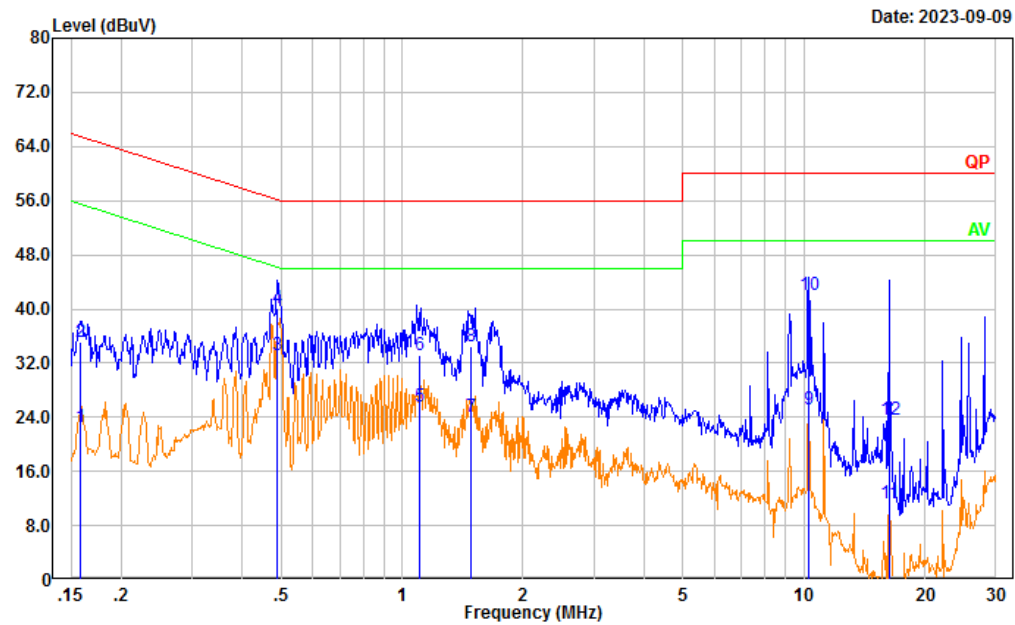
For model MLW7-1002-ICM (The length of lamp strip is 5 m):

Project No.: CR230848226-RF

Tester: David Huang

Port: Line

Note:



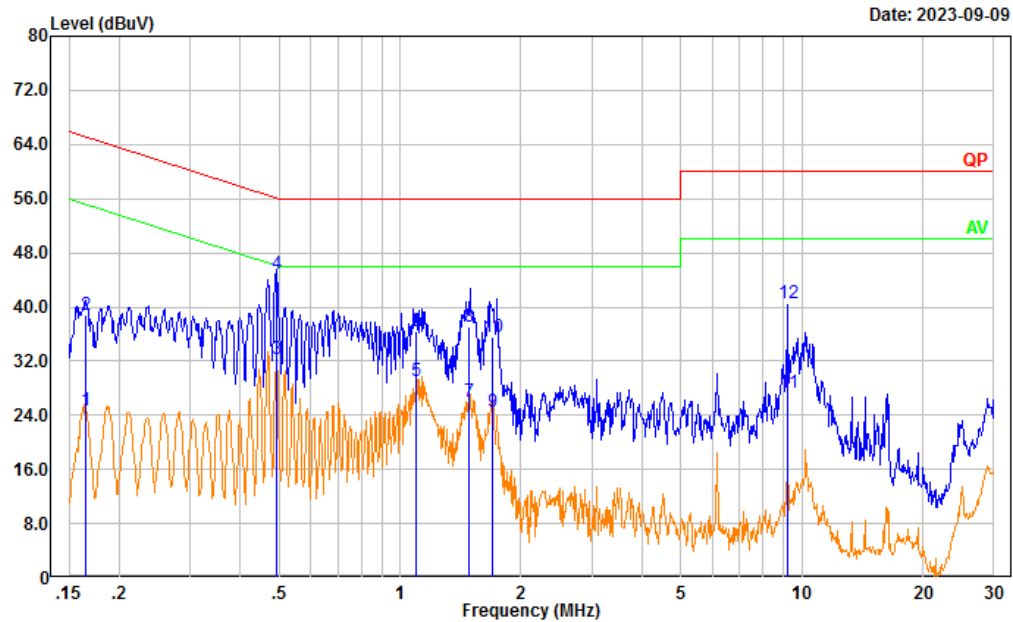
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.158	12.95	9.61	22.56	55.56	33.00	Average
2	0.158	25.62	9.61	35.23	65.56	30.33	QP
3	0.487	23.60	9.61	33.21	46.21	13.00	Average
4	0.487	30.60	9.61	40.21	56.21	16.00	QP
5	1.104	16.07	9.62	25.69	46.00	20.31	Average
6	1.104	23.60	9.62	33.22	56.00	22.78	QP
7	1.482	14.46	9.62	24.08	46.00	21.92	Average
8	1.482	24.91	9.62	34.53	56.00	21.47	QP
9	10.262	15.49	9.67	25.16	50.00	24.84	Average
10	10.262	32.39	9.67	42.06	60.00	17.94	QP
11	16.320	1.57	9.72	11.29	50.00	38.71	Average
12	16.320	13.99	9.72	23.71	60.00	36.29	QP

Project No.: CR230848226-RF

Tester: David Huang

Port: neutral

Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.165	15.17	9.61	24.78	55.22	30.44	Average
2	0.165	29.20	9.61	38.81	65.22	26.41	QP
3	0.492	22.76	9.61	32.37	46.14	13.77	Average
4	0.492	35.35	9.61	44.96	56.14	11.18	QP
5	1.097	19.43	9.62	29.05	46.00	16.95	Average
6	1.097	26.89	9.62	36.51	56.00	19.49	QP
7	1.481	16.42	9.62	26.04	46.00	19.96	Average
8	1.481	27.35	9.62	36.97	56.00	19.03	QP
9	1.698	14.90	9.63	24.53	46.00	21.47	Average
10	1.698	25.90	9.63	35.53	56.00	20.47	QP
11	9.241	17.56	9.67	27.23	50.00	22.77	Average
12	9.241	30.91	9.67	40.58	60.00	19.42	QP

4.2 Radiation Spurious Emissions

Serial Number:	2A3Z-1,2A3Z-2,2A3Z-3	Test Date:	30MHz-1GHz : 2023/9/11~2023/10/19 1-25GHz : 2023/9/18
Test Site:	966-1,966-2	Test Mode:	Transmitting
Tester:	Hugo Huo, Jeff Luo & Coco Tian	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25~25.6	Relative Humidity: (%)	60~63	ATM Pressure: (kPa)	100~100.1
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Test Equipment List and Details:

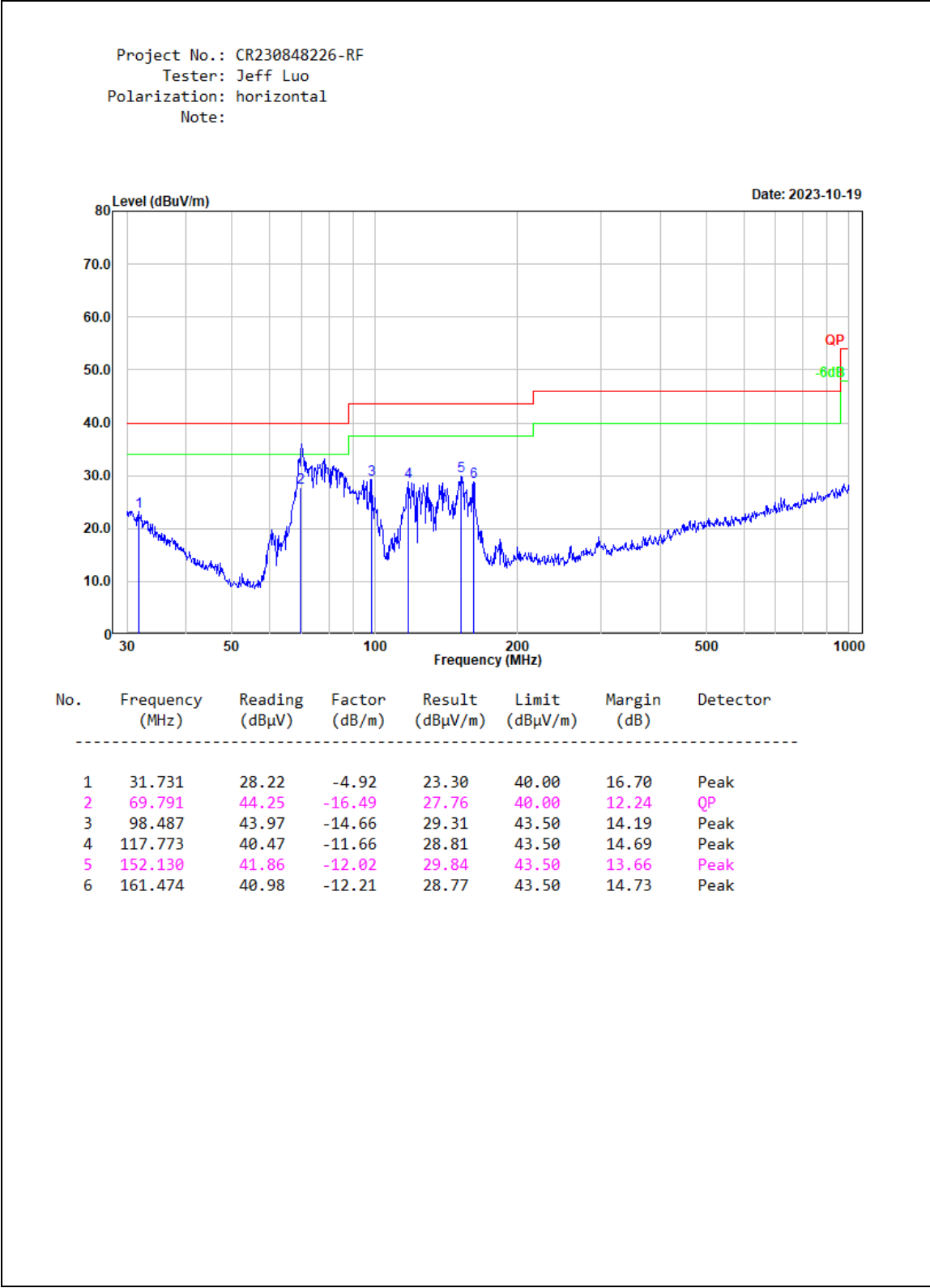
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
30MHz-1GHz					
Sunol Sciences	Antenna	JB6	A082520-5	2020/10/19	2023/10/18
Sunol Sciences	Antenna	JB6	A082520-5	2023/9/18	2026/9/17
R&S	EMI Test Receiver	ESR3	102724	2023/3/31	2024/3/30
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2023/7/16	2024/7/15
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2023/7/16	2024/7/15
Sonoma	Amplifier	310N	186165	2023/7/16	2024/7/15
Audix	Test Software	E3	201021 (V9)	N/A	N/A
1-25GHz					
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020/10/13	2023/10/12
R&S	Spectrum Analyzer	FSV40	101591	2023/3/31	2024/3/30
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2023/8/6	2024/8/5
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2023/8/6	2024/8/5
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2022/11/9	2023/11/8
Audix	Test Software	E3	201021 (V9)	N/A	N/A
PASTERNAK	Horn Antenna	PE9852/2F-20	112002	2021/2/5	2024/2/4
Quinstar	Preamplifier	QLW-18405536-JO	15964001005	2023/9/15	2024/9/14
MICRO-COAX	Coaxial Cable	UFB142A-1-2362-200200	235772-001	2023/8/6	2024/8/5
E-Microwave	Band Rejection Filter	2400-2483.5MHz	OE01902424	2023/8/6	2024/8/5

* 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).

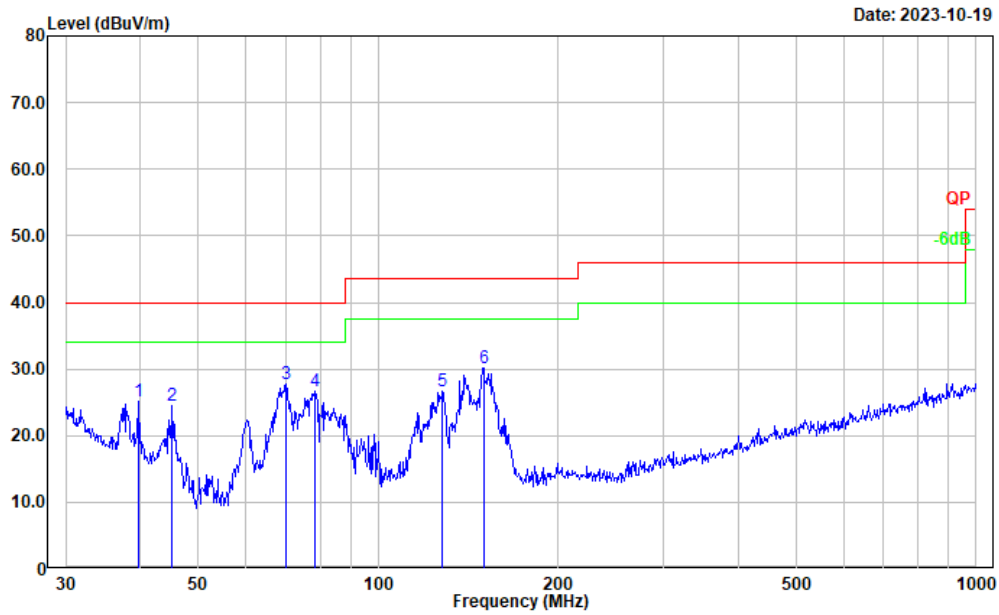
Test Data:

After pre-scan in the X, Y and Z axes of orientation, the worst case is below:

1) 30MHz-1GHz (802.11g mode maximum output power mode)
For model MLW7-1003-ICM (The length of lamp strip is 15m):
Low channel



Project No.: CR230848226-RF
Tester: Jeff Luo
Polarization: vertical
Note:

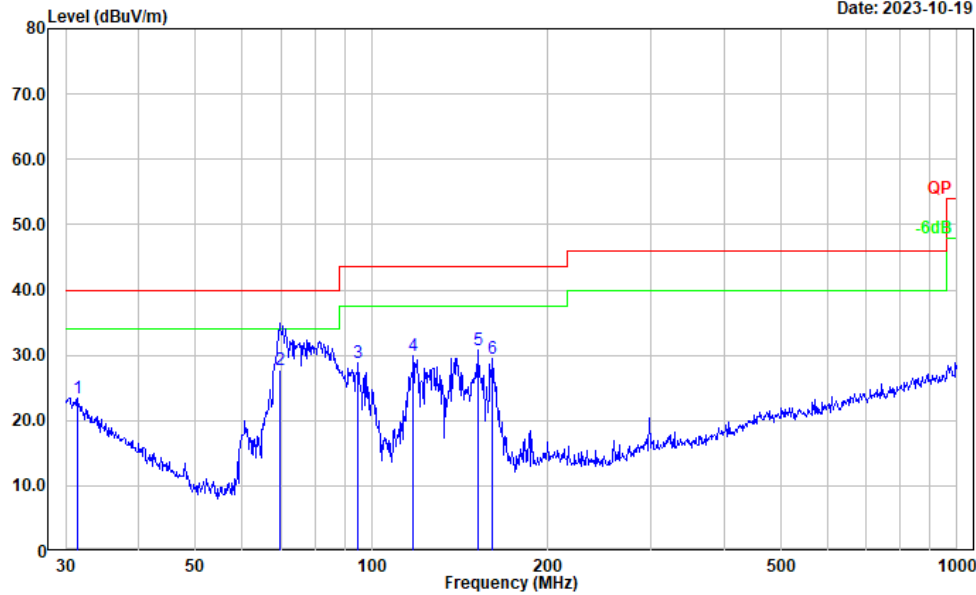


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	39.715	36.20	-11.09	25.11	40.00	14.89	Peak
2	45.217	38.91	-14.36	24.55	40.00	15.45	Peak
3	70.090	44.17	-16.47	27.70	40.00	12.30	Peak
4	78.413	43.91	-17.30	26.61	40.00	13.39	Peak
5	128.113	37.85	-11.26	26.59	43.50	16.91	Peak
6	150.011	42.12	-12.00	30.12	43.50	13.38	Peak

Middle channel

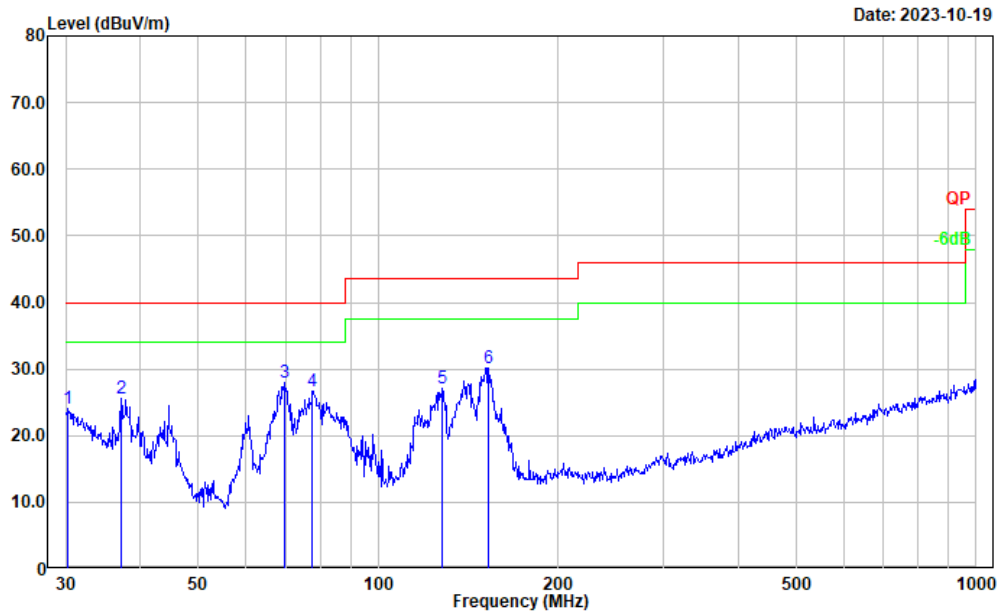
Project No.: CR230848226-RF
Tester: Jeff Luo
Polarization: horizontal
Note:

Date: 2023-10-19



No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Result (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	31.510	28.19	-4.75	23.44	40.00	16.56	Peak
2	69.884	44.32	-16.47	27.85	40.00	12.15	QP
3	94.760	44.46	-15.69	28.77	43.50	14.73	Peak
4	117.773	41.47	-11.66	29.81	43.50	13.69	Peak
5	151.597	42.73	-12.03	30.70	43.50	12.80	Peak
6	160.909	41.73	-12.15	29.58	43.50	13.92	Peak

Project No.: CR230848226-RF
Tester: Jeff Luo
Polarization: vertical
Note:

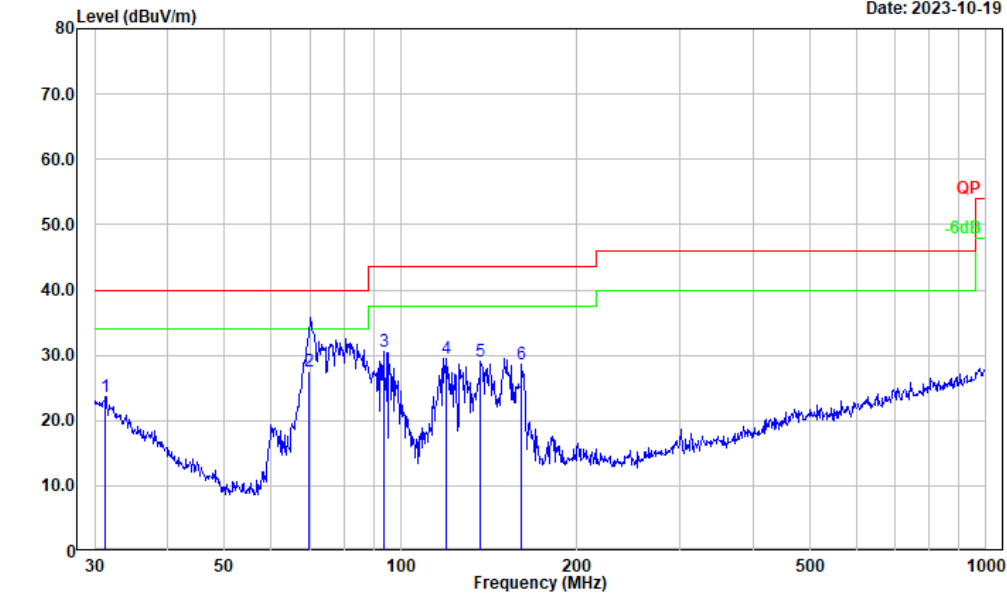


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.317	27.87	-3.85	24.02	40.00	15.98	Peak
2	37.155	34.73	-9.12	25.61	40.00	14.39	Peak
3	69.600	44.58	-16.52	28.06	40.00	11.94	Peak
4	77.593	43.93	-17.21	26.72	40.00	13.28	Peak
5	128.113	38.42	-11.26	27.16	43.50	16.34	Peak
6	153.200	42.26	-12.03	30.23	43.50	13.27	Peak

High channel

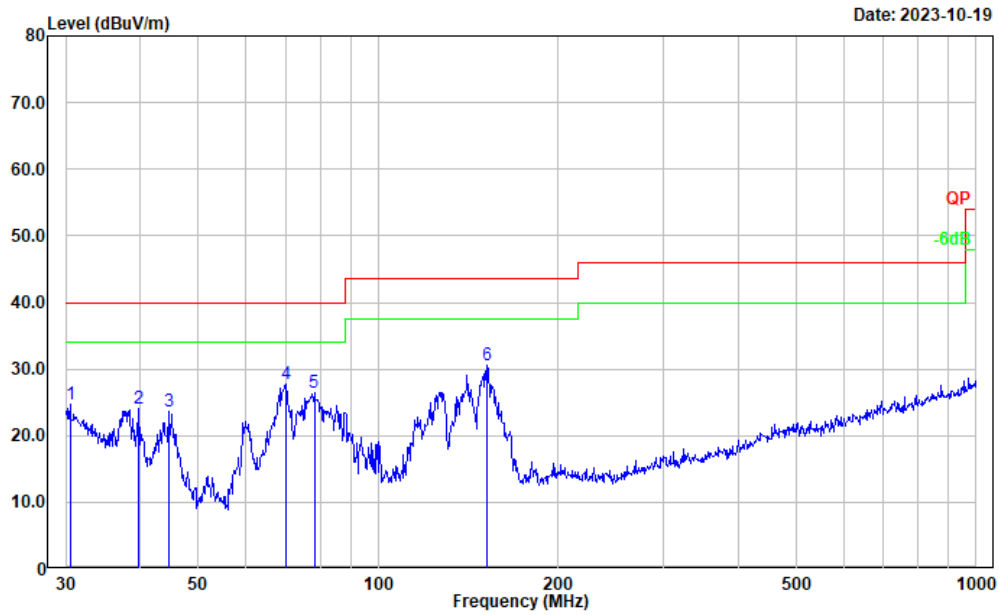
Project No.: CR230848226-RF
Tester: Jeff Luo
Polarization: horizontal
Note:

Date: 2023-10-19



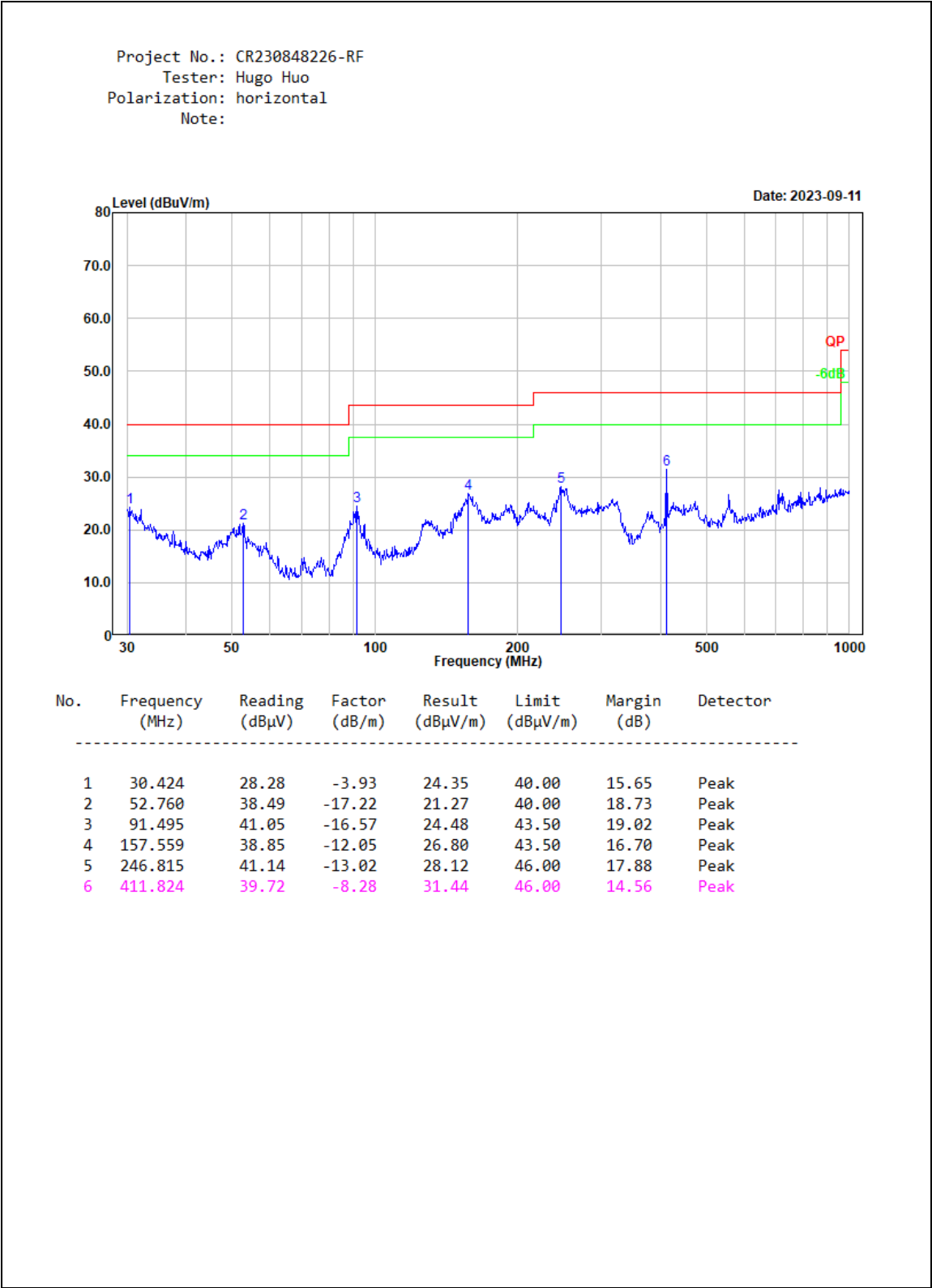
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	31.289	28.27	-4.59	23.68	40.00	16.32	Peak
2	69.757	43.99	-16.49	27.50	40.00	12.50	QP
3	93.440	46.68	-16.05	30.63	43.50	12.87	Peak
4	119.436	40.96	-11.49	29.47	43.50	14.03	Peak
5	136.939	40.85	-11.70	29.15	43.50	14.35	Peak
6	160.909	40.83	-12.15	28.68	43.50	14.82	Peak

Project No.: CR230848226-RF
Tester: Jeff Luo
Polarization: vertical
Note:

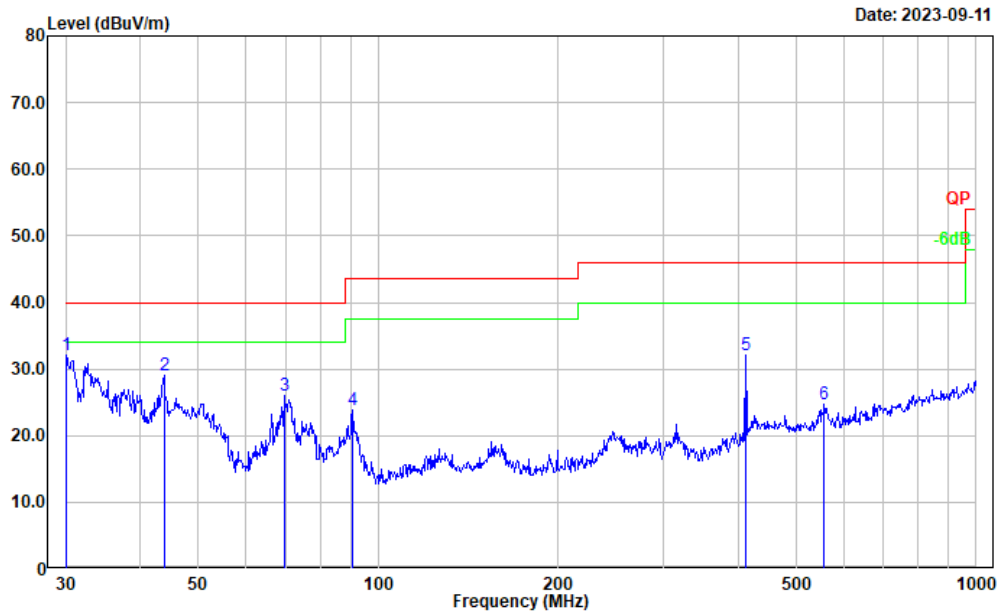


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.531	28.77	-4.00	24.77	40.00	15.23	Peak
2	39.715	35.24	-11.09	24.15	40.00	15.85	Peak
3	44.587	37.57	-14.00	23.57	40.00	16.43	Peak
4	70.090	44.15	-16.47	27.68	40.00	12.32	Peak
5	78.139	43.70	-17.27	26.43	40.00	13.57	Peak
6	151.597	42.53	-12.03	30.50	43.50	13.00	Peak

For model MLW7-1001-ICM (The length of lamp strip is 2m):
Low channel



Project No.: CR230848226-RF
Tester: Hugo Huo
Polarization: vertical
Note:

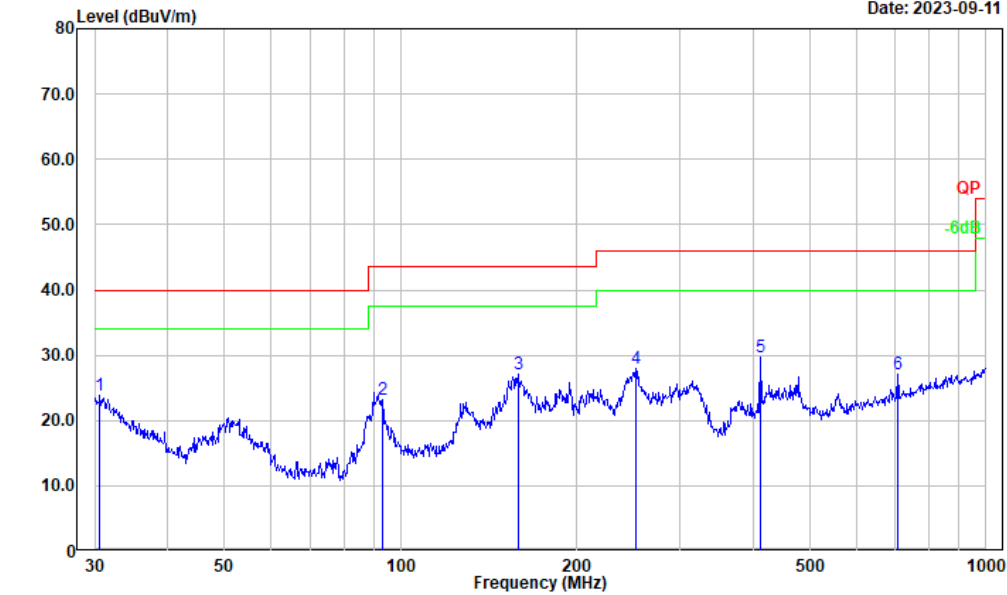


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.105	35.82	-3.68	32.14	40.00	7.86	Peak
2	43.812	42.70	-13.56	29.14	40.00	10.86	Peak
3	69.600	42.56	-16.52	26.04	40.00	13.96	Peak
4	90.537	40.70	-16.80	23.90	43.50	19.60	Peak
5	411.824	40.27	-8.28	31.99	46.00	14.01	Peak
6	556.774	30.36	-5.67	24.69	46.00	21.31	Peak

Middle channel

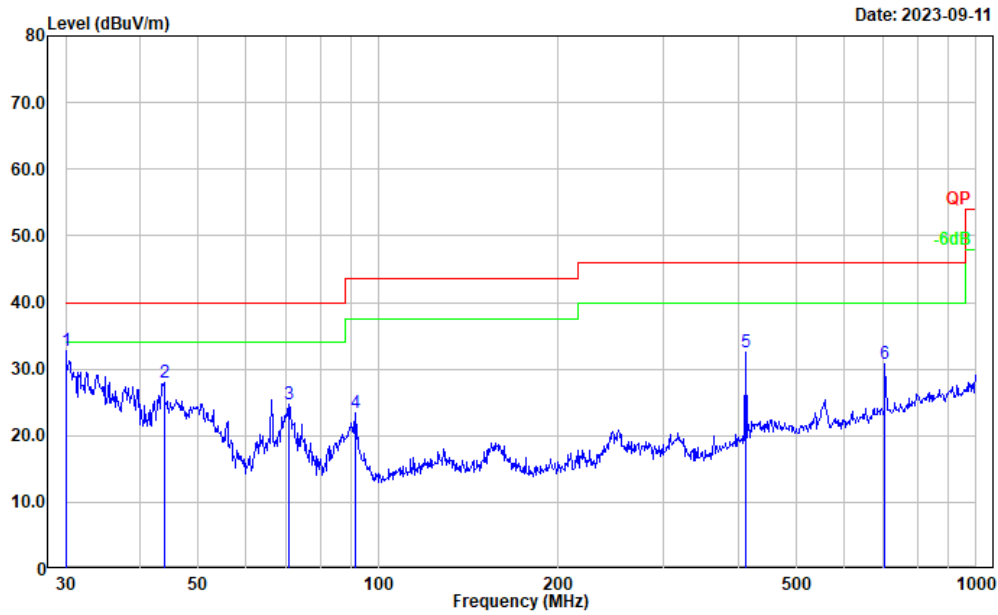
Project No.: CR230848226-RF
Tester: Hugo Huo
Polarization: horizontal
Note:

Date: 2023-09-11



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.638	27.98	-4.09	23.89	40.00	16.11	Peak
2	93.113	39.26	-16.12	23.14	43.50	20.36	Peak
3	158.668	39.15	-12.05	27.10	43.50	16.40	Peak
4	252.063	40.99	-12.98	28.01	46.00	17.99	Peak
5	411.824	37.92	-8.28	29.64	46.00	16.36	Peak
6	706.700	30.67	-3.49	27.18	46.00	18.82	Peak

Project No.: CR230848226-RF
 Tester: Hugo Huo
 Polarization: vertical
 Note:

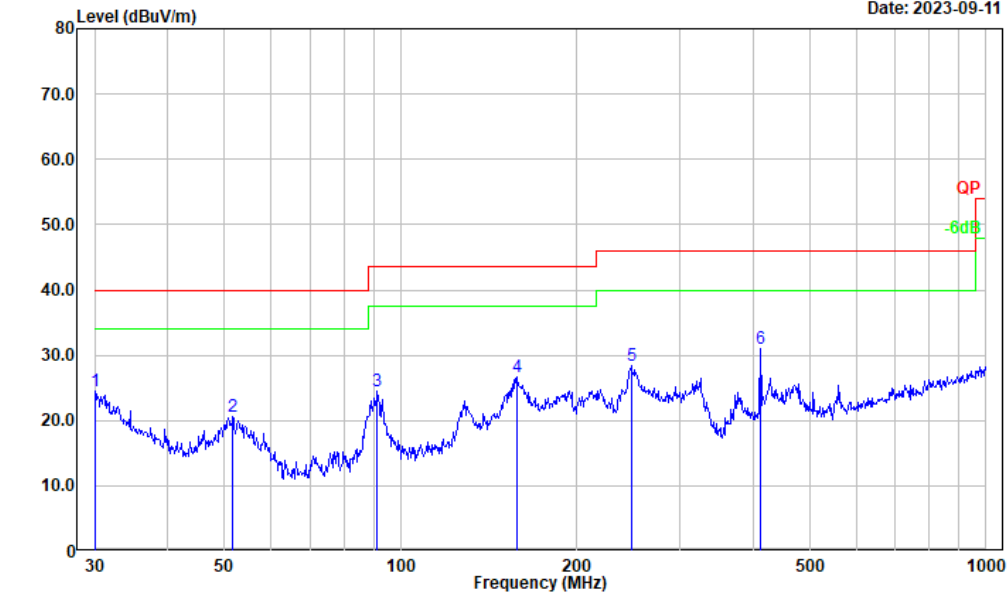


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.000	36.24	-3.60	32.64	40.00	7.36	Peak
2	43.812	41.55	-13.56	27.99	40.00	12.01	Peak
3	70.832	41.30	-16.55	24.75	40.00	15.25	Peak
4	91.495	39.97	-16.57	23.40	43.50	20.10	Peak
5	411.824	40.89	-8.28	32.61	46.00	13.39	Peak
6	704.226	34.28	-3.50	30.78	46.00	15.22	Peak

High channel

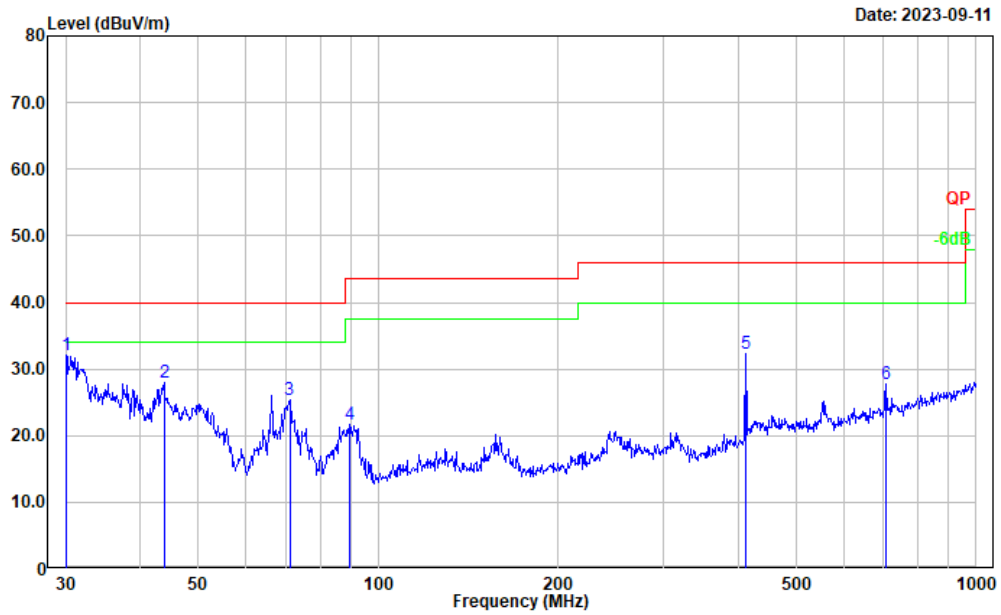
Project No.: CR230848226-RF
Tester: Hugo Huo
Polarization: horizontal
Note:

Date: 2023-09-11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.105	28.20	-3.68	24.52	40.00	15.48	Peak
2	51.662	37.72	-17.20	20.52	40.00	19.48	Peak
3	91.175	41.14	-16.64	24.50	43.50	19.00	Peak
4	158.112	38.68	-12.06	26.62	43.50	16.88	Peak
5	247.682	41.44	-13.04	28.40	46.00	17.60	Peak
6	411.824	39.37	-8.28	31.09	46.00	14.91	Peak

Project No.: CR230848226-RF
Tester: Hugo Huo
Polarization: vertical
Note:



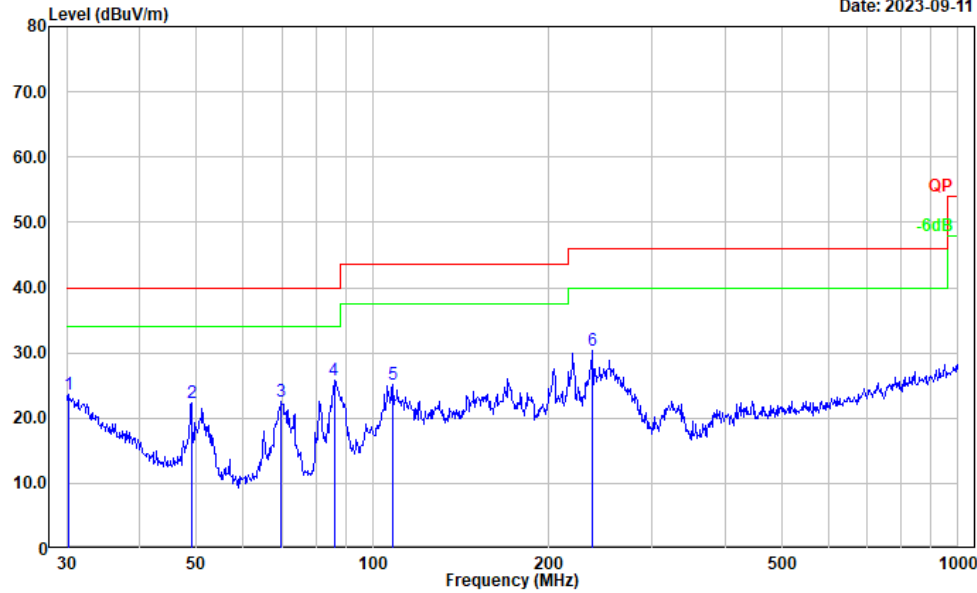
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.105	35.85	-3.68	32.17	40.00	7.83	Peak
2	43.812	41.63	-13.56	28.07	40.00	11.93	Peak
3	71.080	41.87	-16.59	25.28	40.00	14.72	Peak
4	89.590	38.74	-16.96	21.78	43.50	21.72	Peak
5	411.824	40.68	-8.28	32.40	46.00	13.60	Peak
6	706.700	31.17	-3.49	27.68	46.00	18.32	Peak

For model MLW7-1002-ICM (The length of lamp strip is 5 m):

Low channel

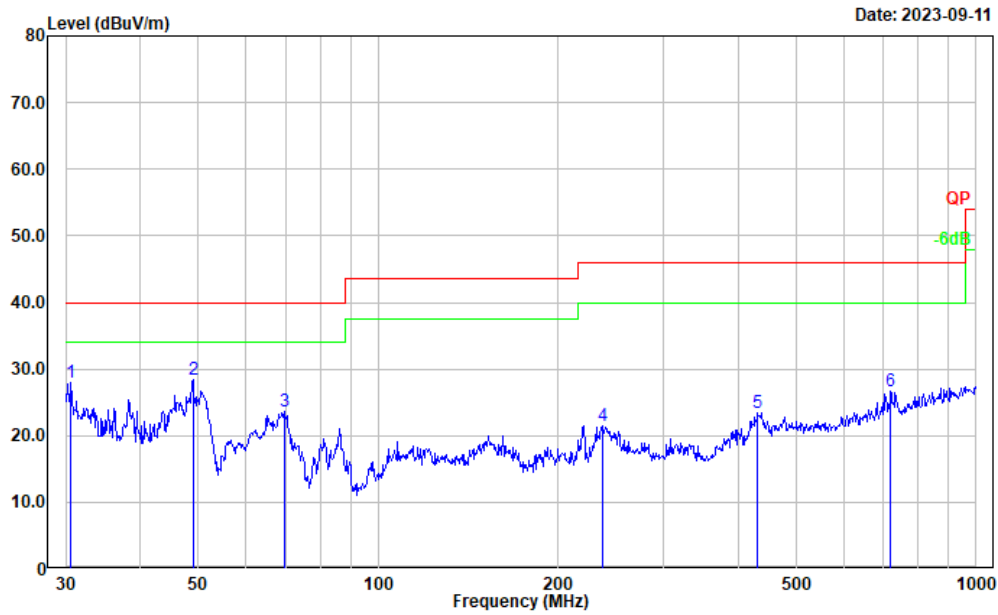
Project No.: CR230848226-RF
 Tester: Hugo Huo
 Polarization: horizontal
 Note:

Date: 2023-09-11



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.317	27.50	-3.85	23.65	40.00	16.35	Peak
2	49.014	38.82	-16.60	22.22	40.00	17.78	Peak
3	69.845	39.05	-16.48	22.57	40.00	17.43	Peak
4	85.898	43.00	-17.15	25.85	40.00	14.15	Peak
5	108.267	37.82	-12.64	25.18	43.50	18.32	Peak
6	236.645	43.30	-13.05	30.25	46.00	15.75	Peak

Project No.: CR230848226-RF
 Tester: Hugo Huo
 Polarization: vertical
 Note:

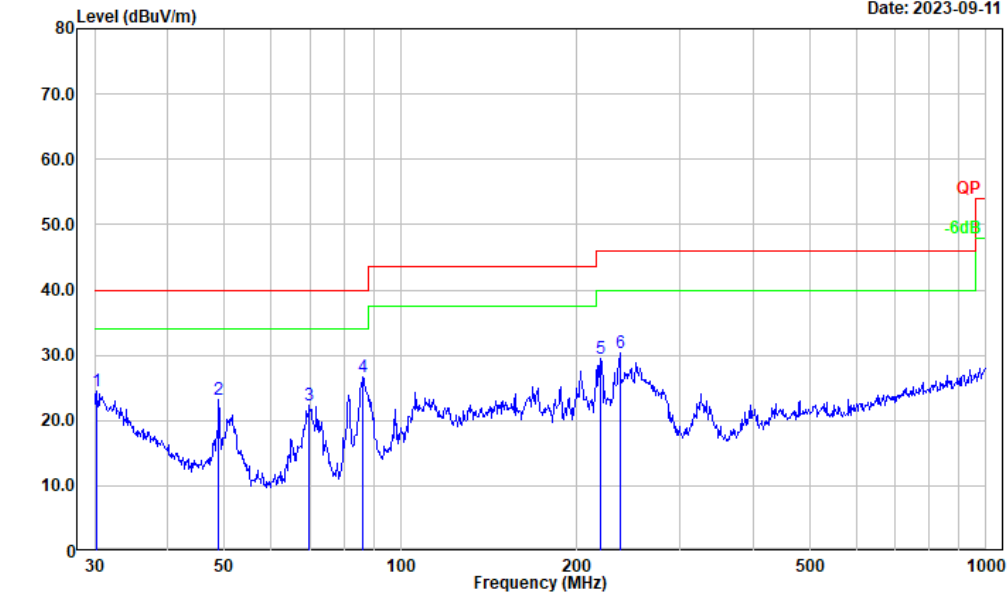


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.638	31.99	-4.09	27.90	40.00	12.10	Peak
2	49.014	44.93	-16.60	28.33	40.00	11.67	Peak
3	69.600	40.09	-16.52	23.57	40.00	16.43	Peak
4	236.645	34.57	-13.05	21.52	46.00	24.48	Peak
5	431.032	30.93	-7.46	23.47	46.00	22.53	Peak
6	719.200	29.92	-3.30	26.62	46.00	19.38	Peak

Middle channel

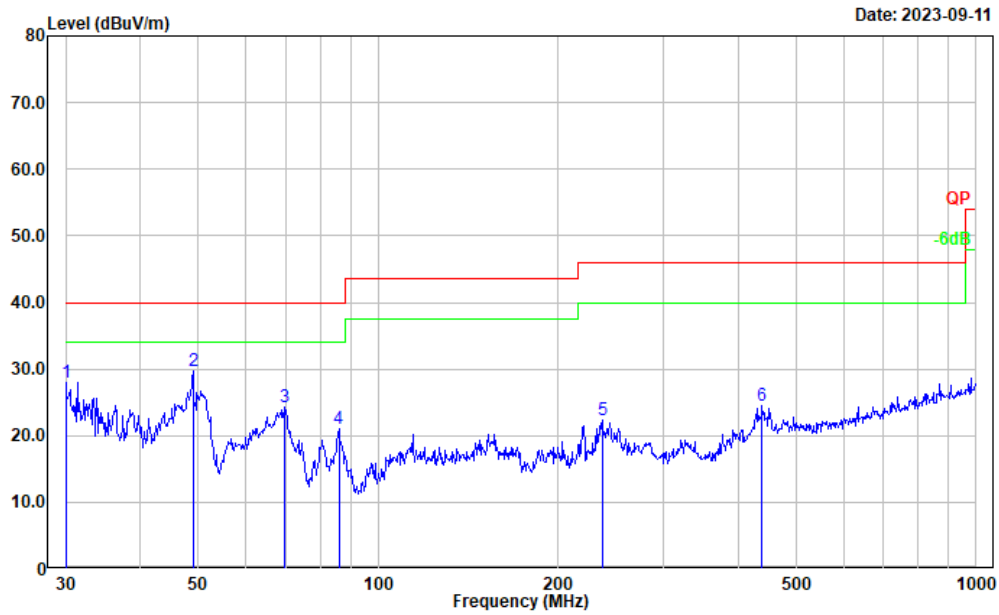
Project No.: CR230848226-RF
Tester: Hugo Huo
Polarization: horizontal
Note:

Date: 2023-09-11



No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Result (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	30.211	28.36	-3.76	24.60	40.00	15.40	Peak
2	48.843	39.70	-16.50	23.20	40.00	16.80	Peak
3	69.845	38.91	-16.48	22.43	40.00	17.57	Peak
4	86.200	43.84	-17.13	26.71	40.00	13.29	Peak
5	219.075	42.27	-12.78	29.49	46.00	16.51	Peak
6	236.645	43.49	-13.05	30.44	46.00	15.56	Peak

Project No.: CR230848226-RF
Tester: Hugo Huo
Polarization: vertical
Note:

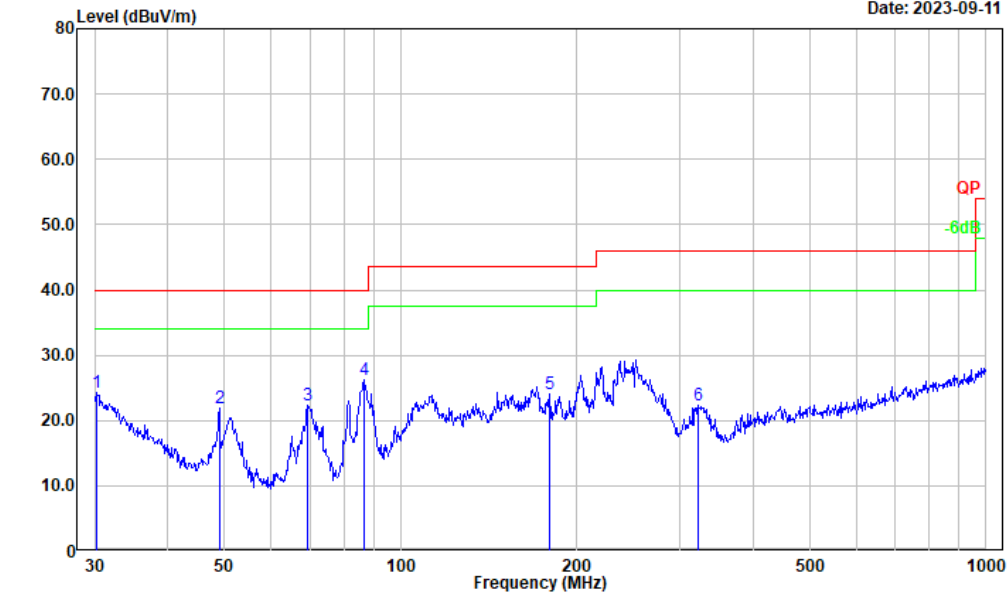


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.000	31.63	-3.60	28.03	40.00	11.97	Peak
2	49.014	46.21	-16.60	29.61	40.00	10.39	Peak
3	69.600	40.81	-16.52	24.29	40.00	15.71	Peak
4	85.898	38.09	-17.15	20.94	40.00	19.06	Peak
5	236.645	35.34	-13.05	22.29	46.00	23.71	Peak
6	438.655	31.75	-7.31	24.44	46.00	21.56	Peak

High channel

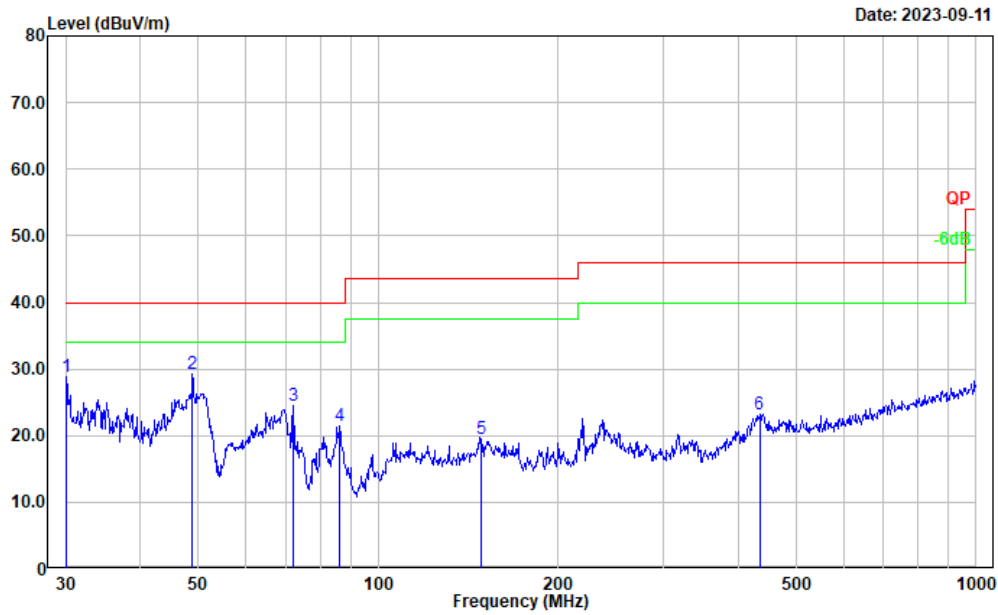
Project No.: CR230848226-RF
Tester: Hugo Huo
Polarization: horizontal
Note:

Date: 2023-09-11



No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Result (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	30.317	28.11	-3.85	24.26	40.00	15.74	Peak
2	49.014	38.41	-16.60	21.81	40.00	18.19	Peak
3	69.357	38.94	-16.56	22.38	40.00	17.62	Peak
4	86.807	43.31	-17.10	26.21	40.00	13.79	Peak
5	180.017	37.67	-13.63	24.04	43.50	19.46	Peak
6	322.189	32.87	-10.47	22.40	46.00	23.60	Peak

Project No.: CR230848226-RF
Tester: Hugo Huo
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.000	32.43	-3.60	28.83	40.00	11.17	Peak
2	48.843	45.78	-16.50	29.28	40.00	10.72	Peak
3	72.084	41.20	-16.69	24.51	40.00	15.49	Peak
4	86.200	38.50	-17.13	21.37	40.00	18.63	Peak
5	148.963	31.61	-12.00	19.61	43.50	23.89	Peak
6	434.065	30.48	-7.37	23.11	46.00	22.89	Peak

2) 1-25GHz for model MLW7-1003-ICM (The length of lamp strip is 15m):**802.11b Mode**

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel:				2412	MHz		
2390.000	27.48	PK	H	31.64	59.12	74.00	14.88
2390.000	14.81	AV	H	31.64	46.45	54.00	7.55
2390.000	24.27	PK	V	31.46	59.73	74.00	14.27
2390.000	15.44	AV	V	31.46	46.9	54.00	7.10
4824.000	45.62	PK	H	10.94	56.56	74.00	17.44
4824.000	36.9	AV	H	10.94	47.84	54.00	6.16
4824.000	45.77	PK	V	10.94	56.71	74.00	17.29
4824.000	37.09	AV	V	10.94	48.03	54.00	5.97
Middle Channel:				2437	MHz		
4874.000	46.66	PK	H	11.05	57.71	74.00	16.29
4874.000	37.80	AV	H	11.05	48.85	54.00	5.15
4874.000	47.05	PK	V	11.05	58.1	74.00	15.90
4874.000	38.59	AV	V	11.05	49.64	54.00	4.36
High Channel:				2462	MHz		
2483.500	29.61	PK	H	31.64	61.25	74.00	12.75
2483.500	15.69	AV	H	31.64	47.33	54.00	6.67
2483.500	30.83	PK	V	31.64	62.47	74.00	11.53
2483.500	16.98	AV	V	31.64	48.62	54.00	5.38
4924.000	44.59	PK	H	11.19	55.78	74.00	18.22
4924.000	31.86	AV	H	11.19	43.05	54.00	10.95
4924.000	51.28	PK	V	11.19	62.47	74.00	11.53
4924.000	38.97	AV	V	11.19	50.16	54.00	3.84

802.11g Mode

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel:				2412	MHz		
2390.000	26.92	PK	H	31.46	58.38	74.00	15.62
2390.000	14.77	AV	H	31.46	46.23	54.00	7.77
2390.000	28.22	PK	V	31.46	59.68	74.00	14.32
2390.000	15.33	AV	V	31.46	46.79	54.00	7.21
4824.000	51.28	PK	H	10.94	62.22	74.00	11.78
4824.000	37.17	AV	H	10.94	48.11	54.00	5.89
4824.000	51.83	PK	V	10.94	62.77	74.00	11.23
4824.000	38.54	AV	V	10.94	49.48	54.00	4.52
Middle Channel:				2437	MHz		
4874.000	52.93	PK	H	11.05	63.98	74.00	10.02
4874.000	38.28	AV	H	11.05	49.33	54.00	4.67
4874.000	51.59	PK	V	11.05	62.64	74.00	11.36
4874.000	39	AV	V	11.05	50.05	54.00	3.95
High Channel:				2462	MHz		
2483.500	37.63	PK	H	31.64	69.27	74.00	4.73
2483.500	15.34	AV	H	31.64	46.98	54.00	7.02
2483.500	38.85	PK	V	31.64	70.49	74.00	3.51
2483.500	16.97	AV	V	31.64	48.61	54.00	5.39
4924.000	50.96	PK	H	11.19	55.66	74.00	18.34
4924.000	38.81	AV	H	11.19	43.52	54.00	10.48
4924.000	51.48	PK	V	11.19	62.67	74.00	11.33
4924.000	39.66	AV	V	11.19	50.85	54.00	3.15

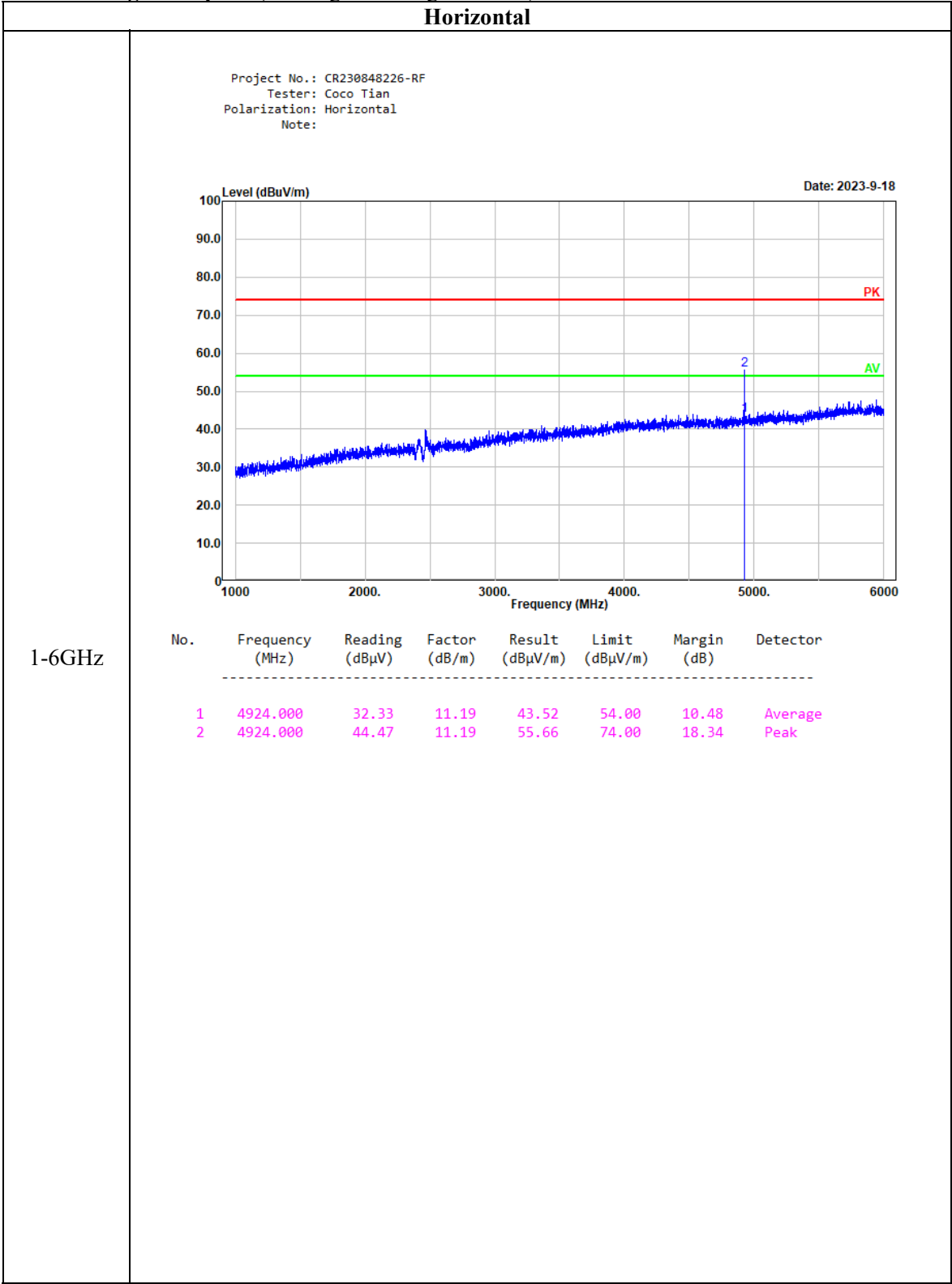
802.11n ht20 Mode:

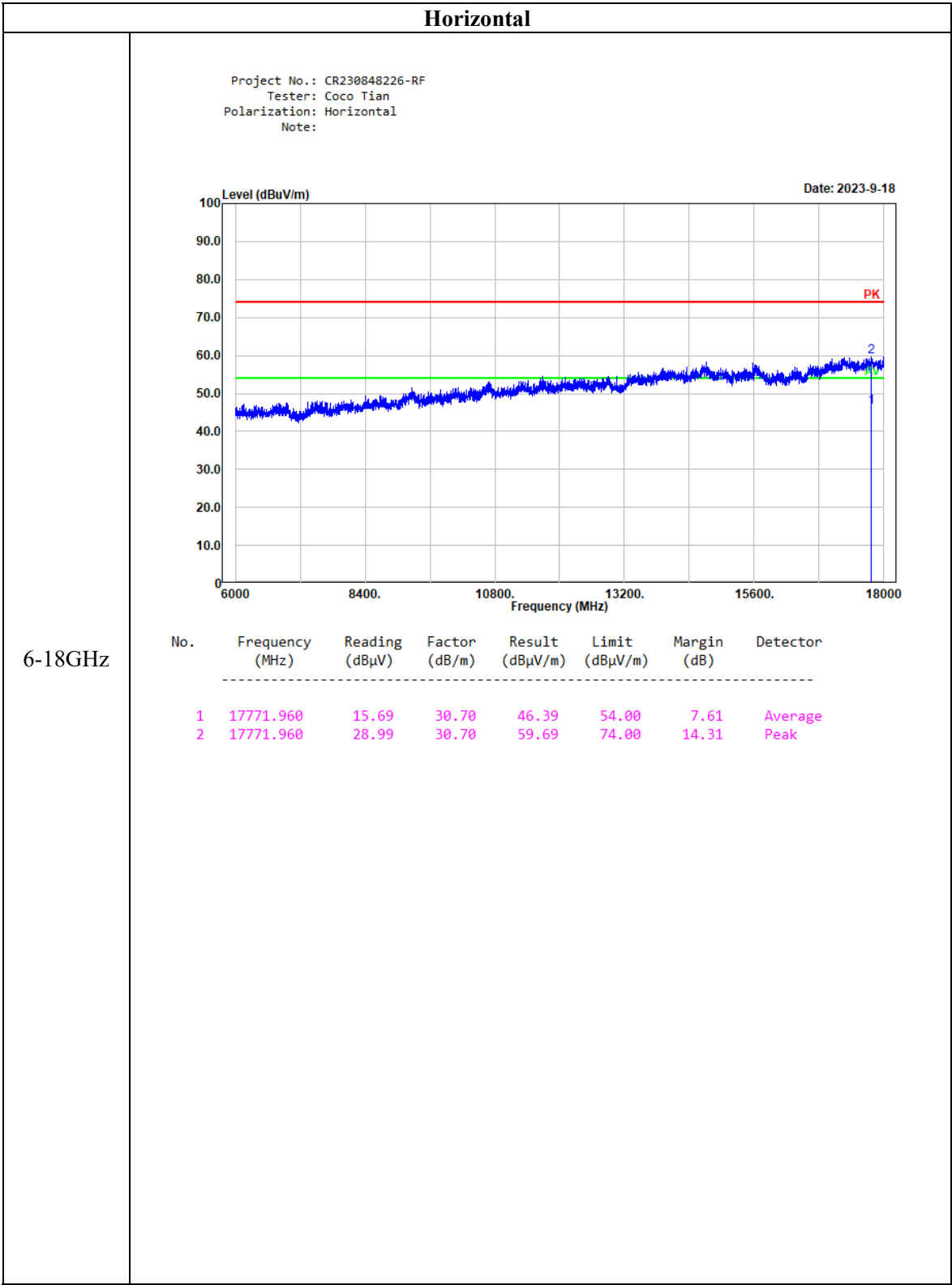
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel:			2412	MHz			
2390.000	28.82	PK	H	31.46	60.28	74.00	13.72
2390.000	15.09	AV	H	31.46	46.55	54.00	7.45
2390.000	30.46	PK	V	31.46	61.92	74.00	12.08
2390.000	15.31	AV	V	31.46	46.77	54.00	9.23
4824.000	49.11	PK	H	10.94	60.05	74.00	13.95
4824.000	35.99	AV	H	10.94	46.93	54.00	7.07
4824.000	11.34	PK	V	10.94	59.41	74.00	14.59
4824.000	3.16	AV	V	10.94	47.82	54.00	6.18
Middle Channel:			2437	MHz			
4874.000	52.71	PK	H	11.05	63.76	74.00	10.24
4874.000	38.30	AV	H	11.05	49.35	54.00	4.65
4874.000	49.33	PK	V	11.05	60.38	74.00	13.62
4874.000	37.72	AV	V	11.05	48.77	54.00	5.23
High Channel:			2462	MHz			
2483.500	34.40	PK	H	31.64	66.04	74.00	7.96
2483.500	16.63	AV	H	31.64	48.27	54.00	5.73
2483.500	35.85	PK	V	31.64	67.49	74.00	6.51
2483.500	18.07	AV	V	31.64	49.71	54.00	4.29
4924.000	43.98	PK	H	11.19	55.17	74.00	18.83
4924.000	32.12	AV	H	11.19	43.31	54.00	10.69
4924.000	51.31	PK	V	11.19	62.5	74.00	11.5
4924.000	39.69	AV	V	11.19	50.88	54.00	4.12

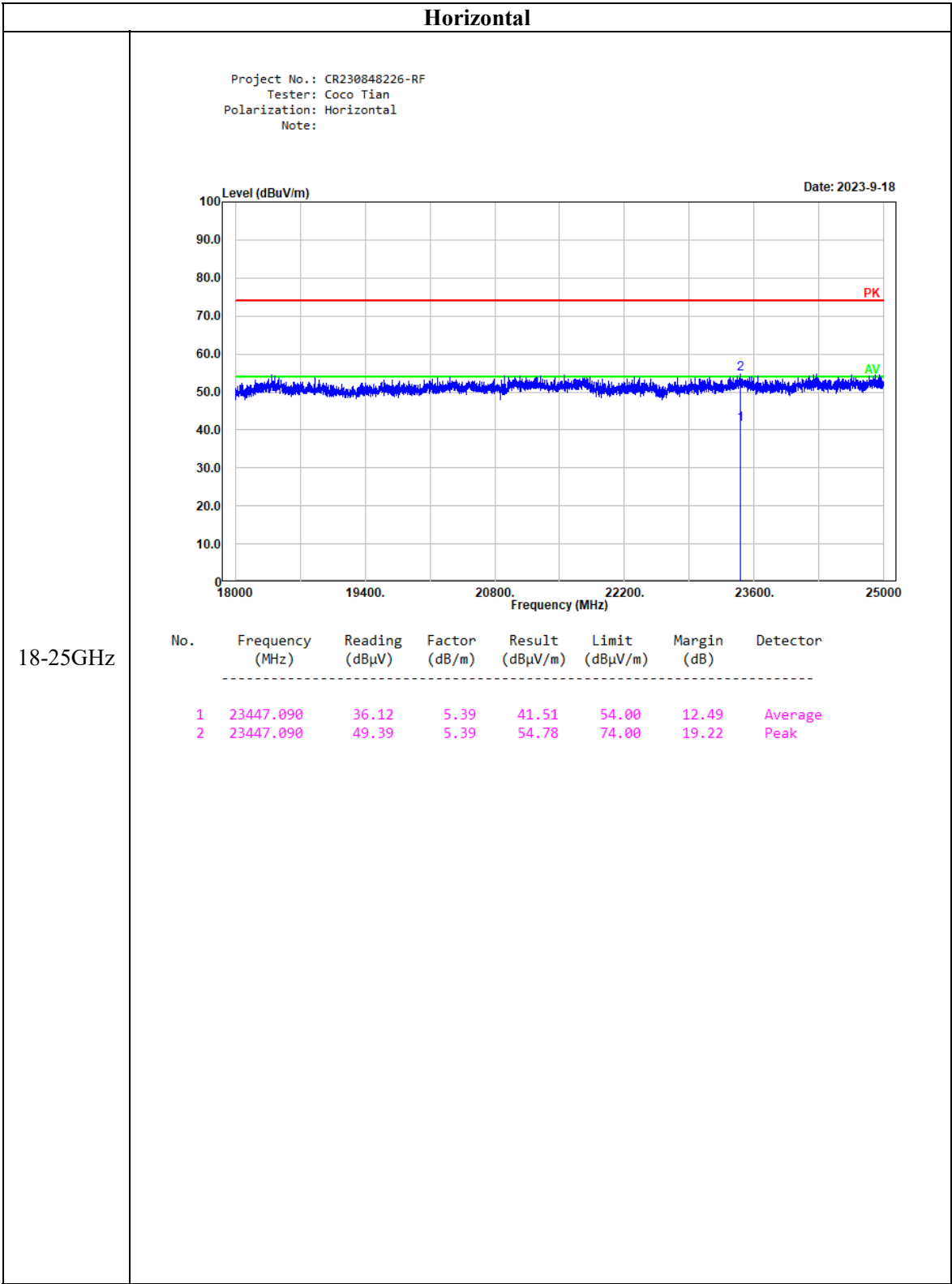
802.11n ht40 Mode:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel:				2422	MHz		
2390.000	27.82	PK	H	31.46	59.28	74.00	14.72
2390.000	14.77	AV	H	31.46	46.23	54.00	7.77
2390.000	29.16	PK	V	31.46	60.62	74.00	13.38
2390.000	15.20	AV	V	31.46	46.66	54.00	8.34
4844.000	47.56	PK	H	10.96	58.52	74.00	15.48
4844.000	33.98	AV	H	10.96	44.94	54.00	9.06
4844.000	48.70	PK	V	10.96	59.66	74.00	14.34
4844.000	35.27	AV	V	10.96	46.23	54.00	7.77
Middle Channel:				2437	MHz		
4874.000	48.09	PK	H	11.05	59.14	74.00	14.86
4874.000	34.92	AV	H	11.05	45.97	54.00	8.03
4874.000	48.87	PK	V	11.05	59.92	74.00	14.08
4874.000	36.00	AV	V	11.05	47.05	54.00	6.95
High Channel:				2452	MHz		
2483.500	33.53	PK	H	31.64	65.17	74.00	8.83
2483.500	17.35	AV	H	31.64	48.99	54.00	5.01
2483.500	34.86	PK	V	31.64	66.5	74.00	7.50
2483.500	19.12	AV	V	31.64	50.76	54.00	3.24
4904.000	48.28	PK	H	11.14	59.42	74.00	14.58
4904.000	35.37	AV	H	11.14	46.51	54.00	7.49
4904.000	48.93	PK	V	11.14	60.07	74.00	13.93
4904.000	36.04	AV	V	11.14	47.18	54.00	6.82

Harmonic margin test plots (802.11g mode High channel)

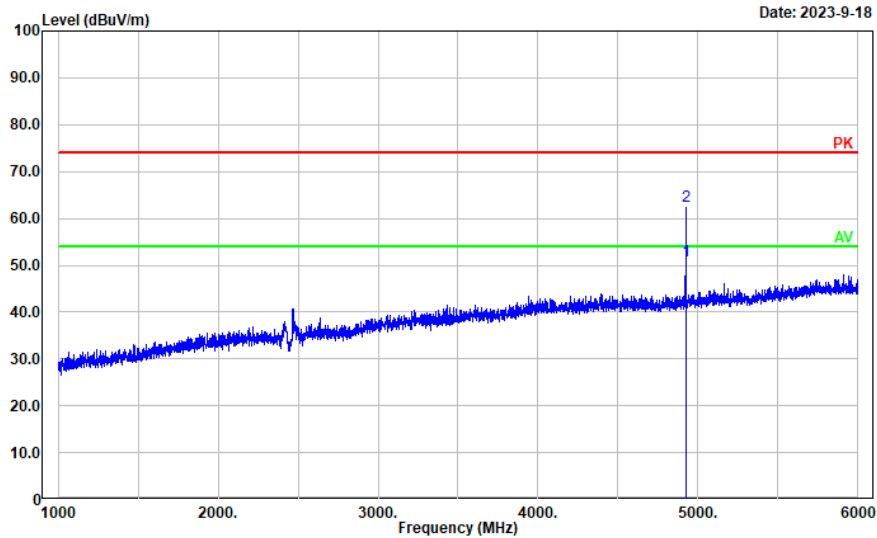






Vertical

Project No.: CR230848226-RF
Tester: Coco Tian
Polarization: Vertical
Note:

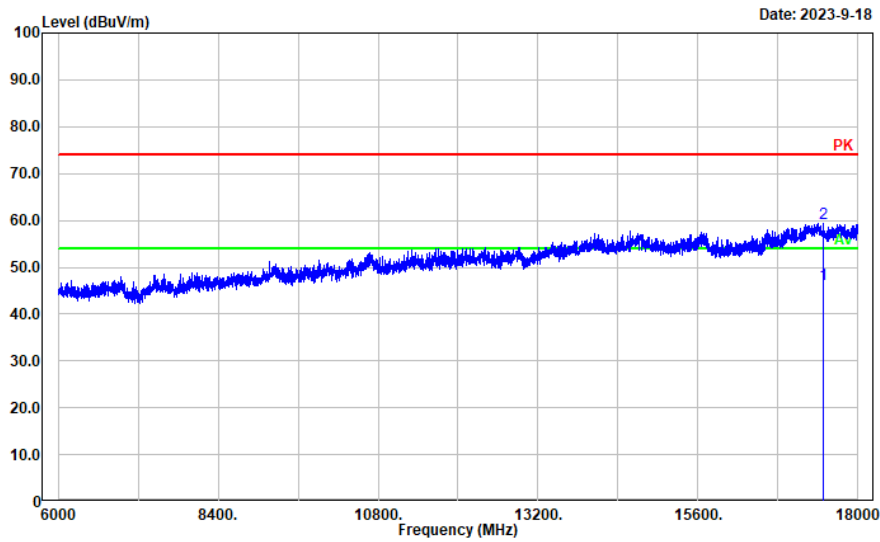


1-6GHz

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	4924.000	39.66	11.19	50.85	54.00	3.15	Average
2	4924.000	51.48	11.19	62.67	74.00	11.33	Peak

Vertical

Project No.: CR230848226-RF
Tester: Coco Tian
Polarization: Vertical
Note:

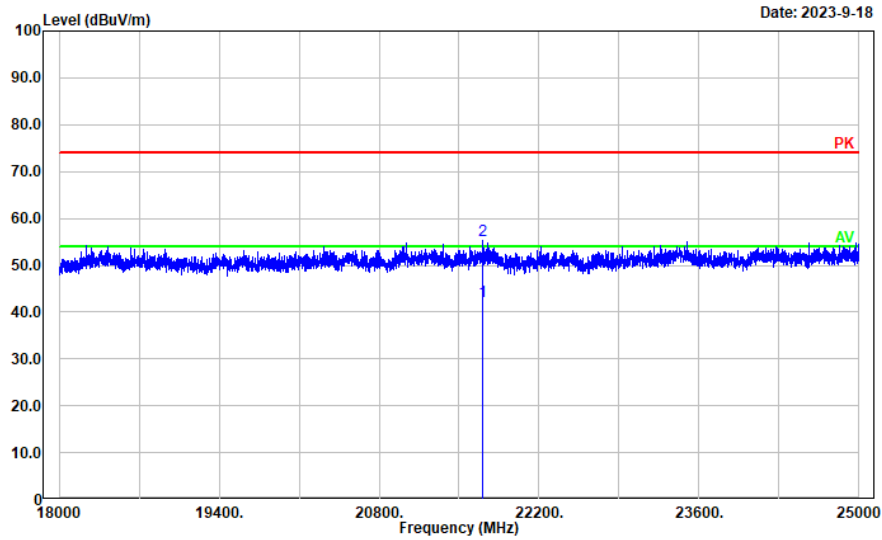


6-18GHz

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	17476.700	17.72	28.62	46.34	54.00	7.66	Average
2	17476.700	30.83	28.62	59.45	74.00	14.55	Peak

Vertical

Project No.: CR230848226-RF
Tester: Coco Tian
Polarization: Vertical
Note:



18-25GHz

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	21710.740	37.44	4.94	42.38	54.00	11.62	Average
2	21710.740	50.31	4.94	55.25	74.00	18.75	Peak

4.3 Minimum 6 dB Emission Bandwidth

Serial Number:	2A3A-4	Test Date:	2023/9/16-2023/10/27
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	Pass

Environmental Conditions:					
Temperature: (°C)	26.2-26.8	Relative Humidity: (%)	55-56	ATM Pressure: (kPa)	101-101.3

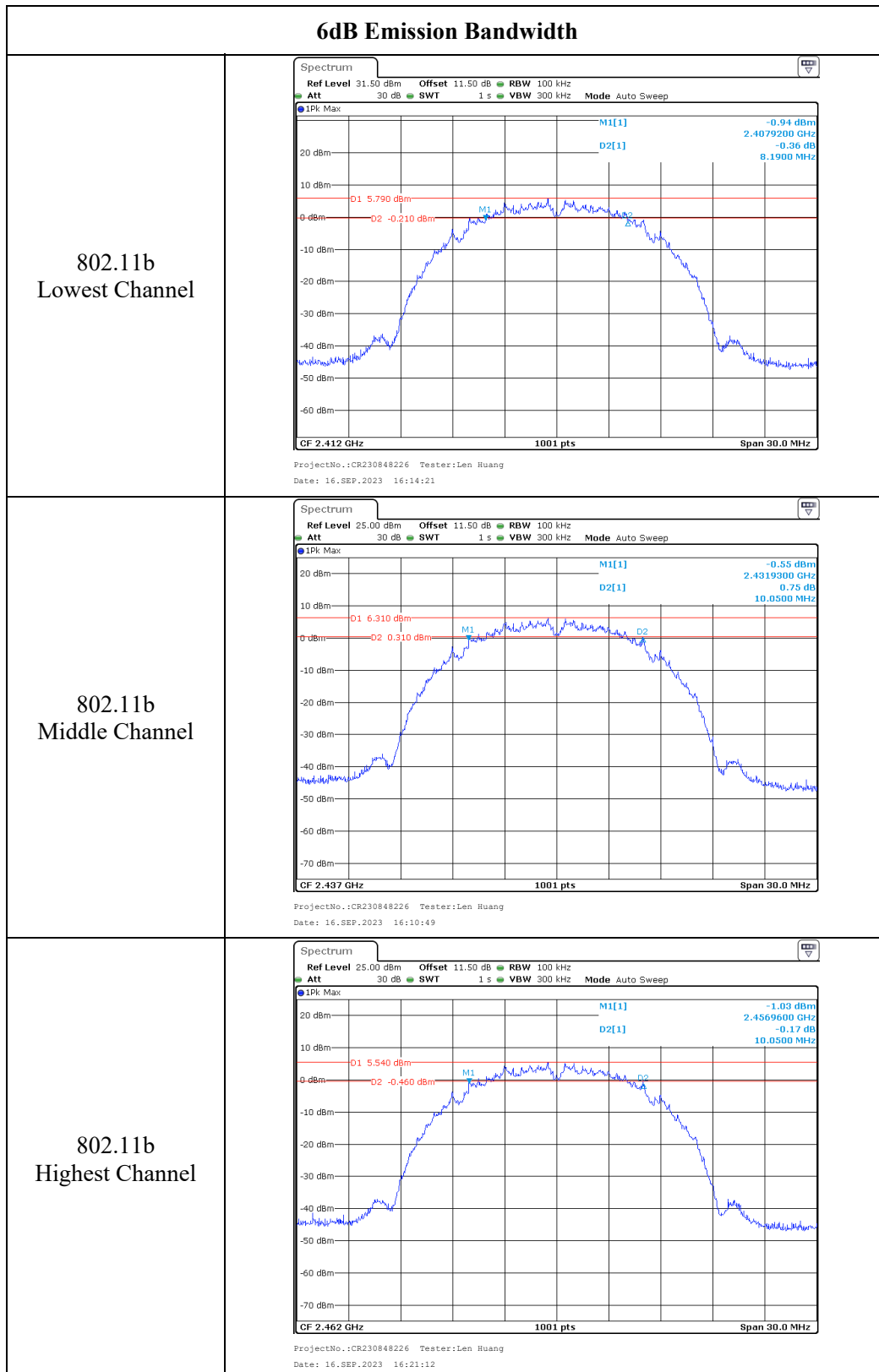
Test Equipment List and Details:

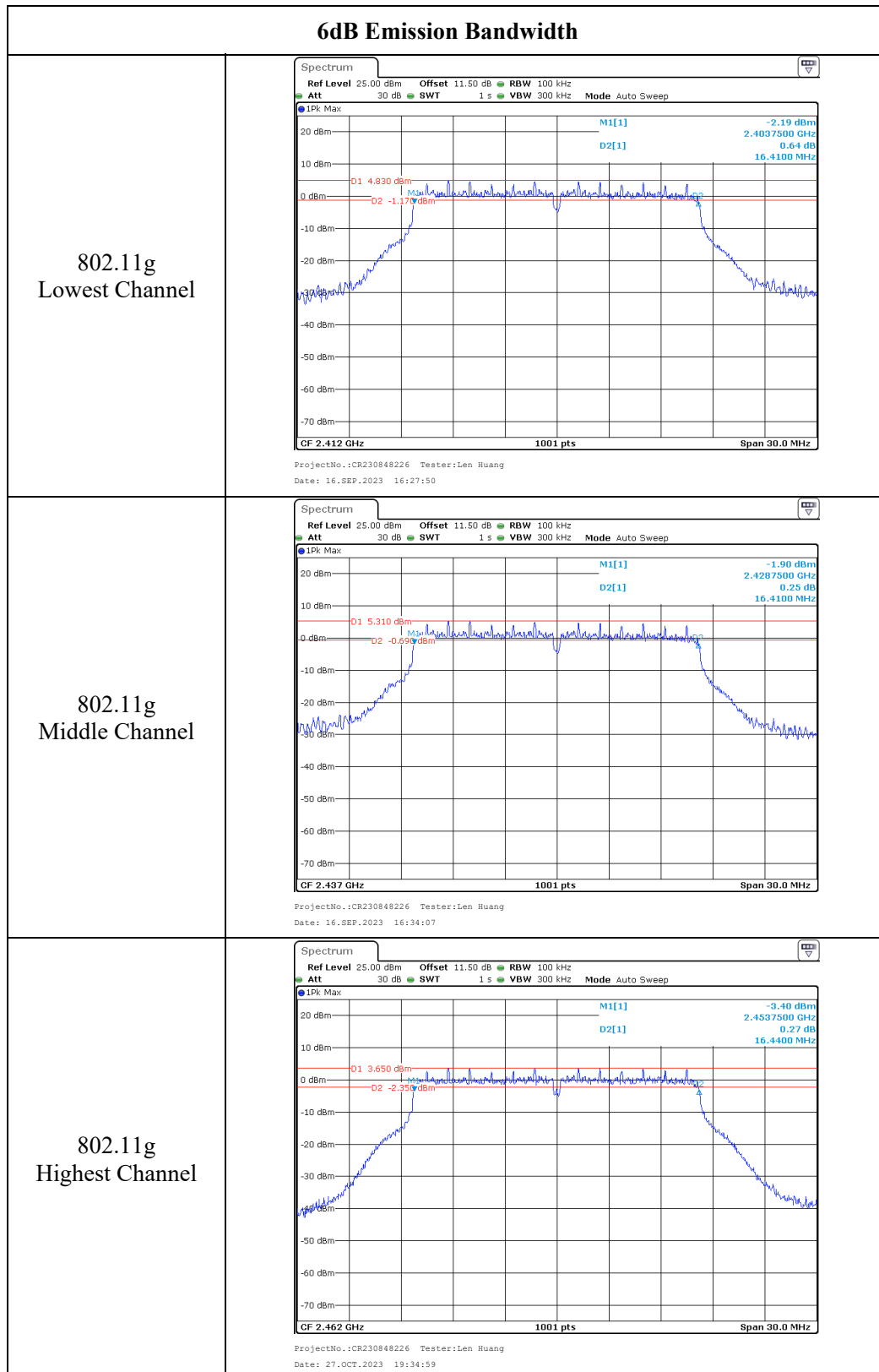
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40-N	102259	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A

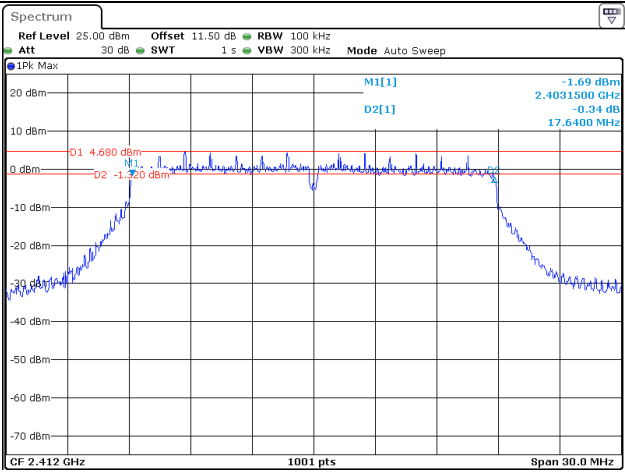
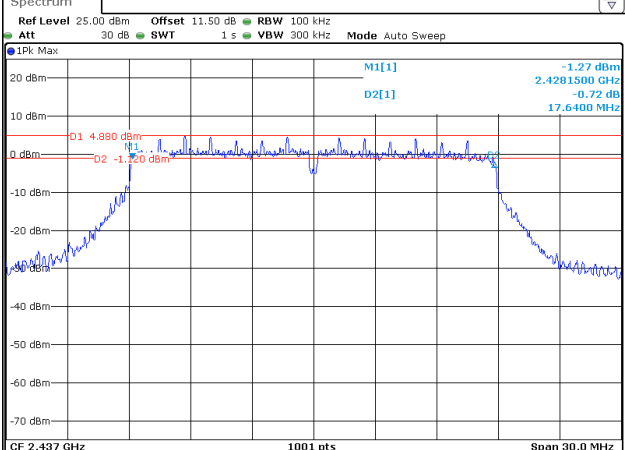
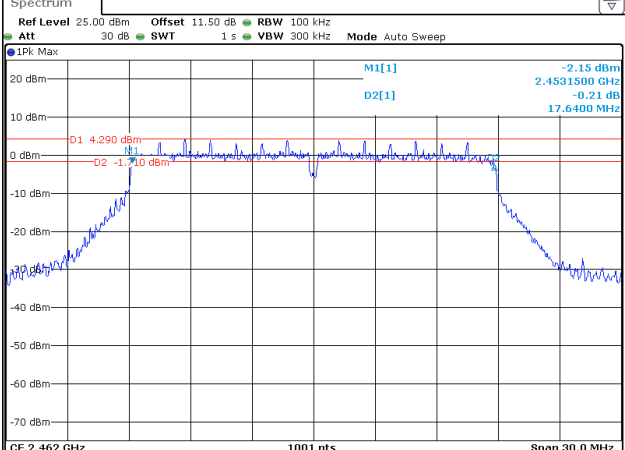
* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

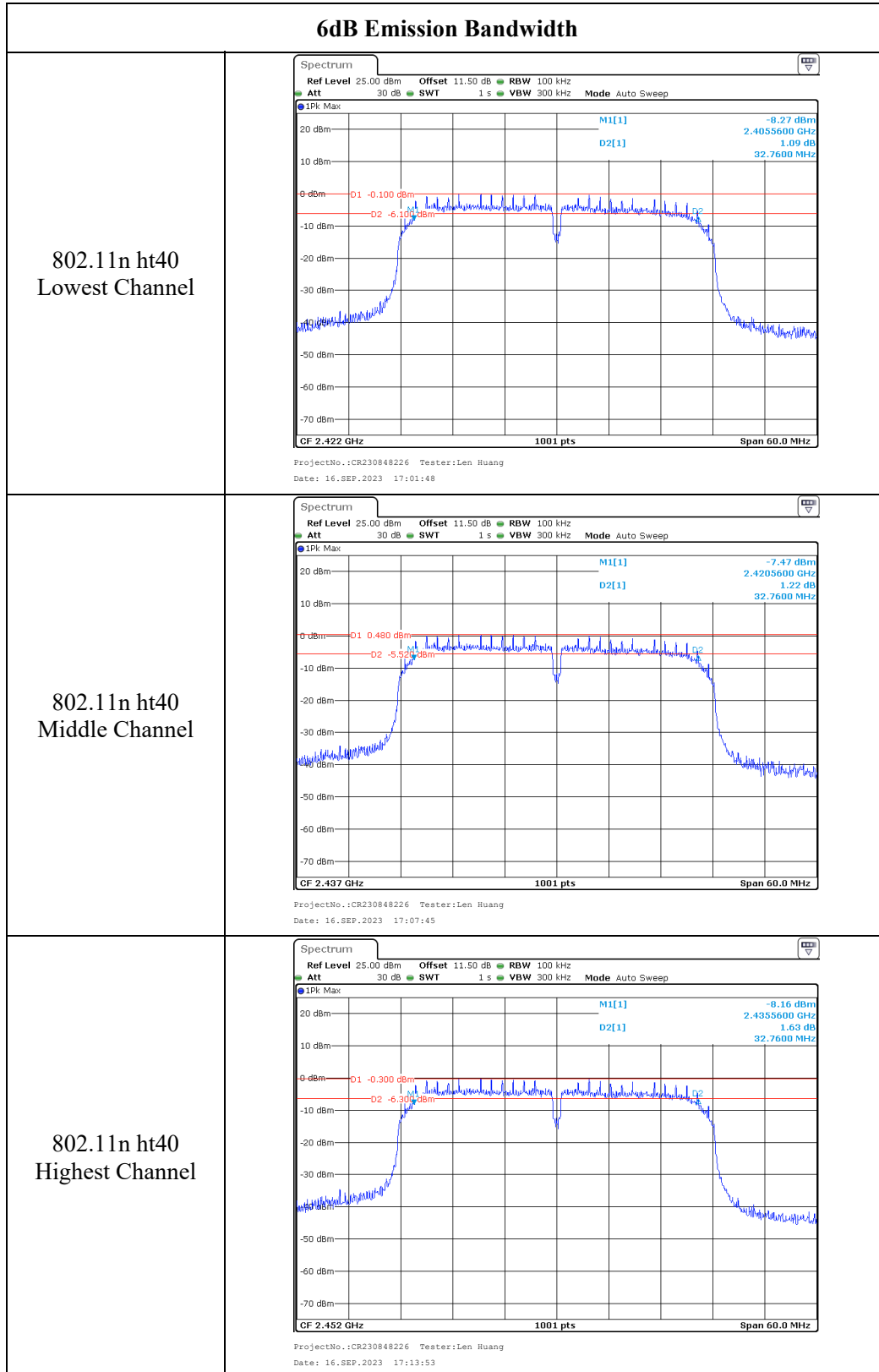
Test Data:

Test Modes	Test Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)
802.11b	2412	8.19	0.5
	2437	10.05	0.5
	2462	10.05	0.5
802.11g	2412	16.41	0.5
	2437	16.41	0.5
	2462	16.44	0.5
802.11n ht20	2412	17.64	0.5
	2437	17.64	0.5
	2462	17.64	0.5
802.11n ht40	2422	32.76	0.5
	2437	32.76	0.5
	2452	32.76	0.5





802.11n ht20 Lowest Channel	6dB Emission Bandwidth  ProjectNo.:CR230848226 Tester:Len Huang Date: 16.SEP.2023 16:45:16
802.11n ht20 Middle Channel	 ProjectNo.:CR230848226 Tester:Len Huang Date: 16.SEP.2023 16:51:22
802.11n ht20 Highest Channel	 ProjectNo.:CR230848226 Tester:Len Huang Date: 18.SEP.2023 09:20:20



4.4 99% Occupied Bandwidth

Serial Number:	2A3A-4	Test Date:	2023/9/16-2023/10/27
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	N/A

Environmental Conditions:

Temperature: (°C)	26.2-26.8	Relative Humidity: (%)	55-56	ATM Pressure: (kPa)	101-101.3
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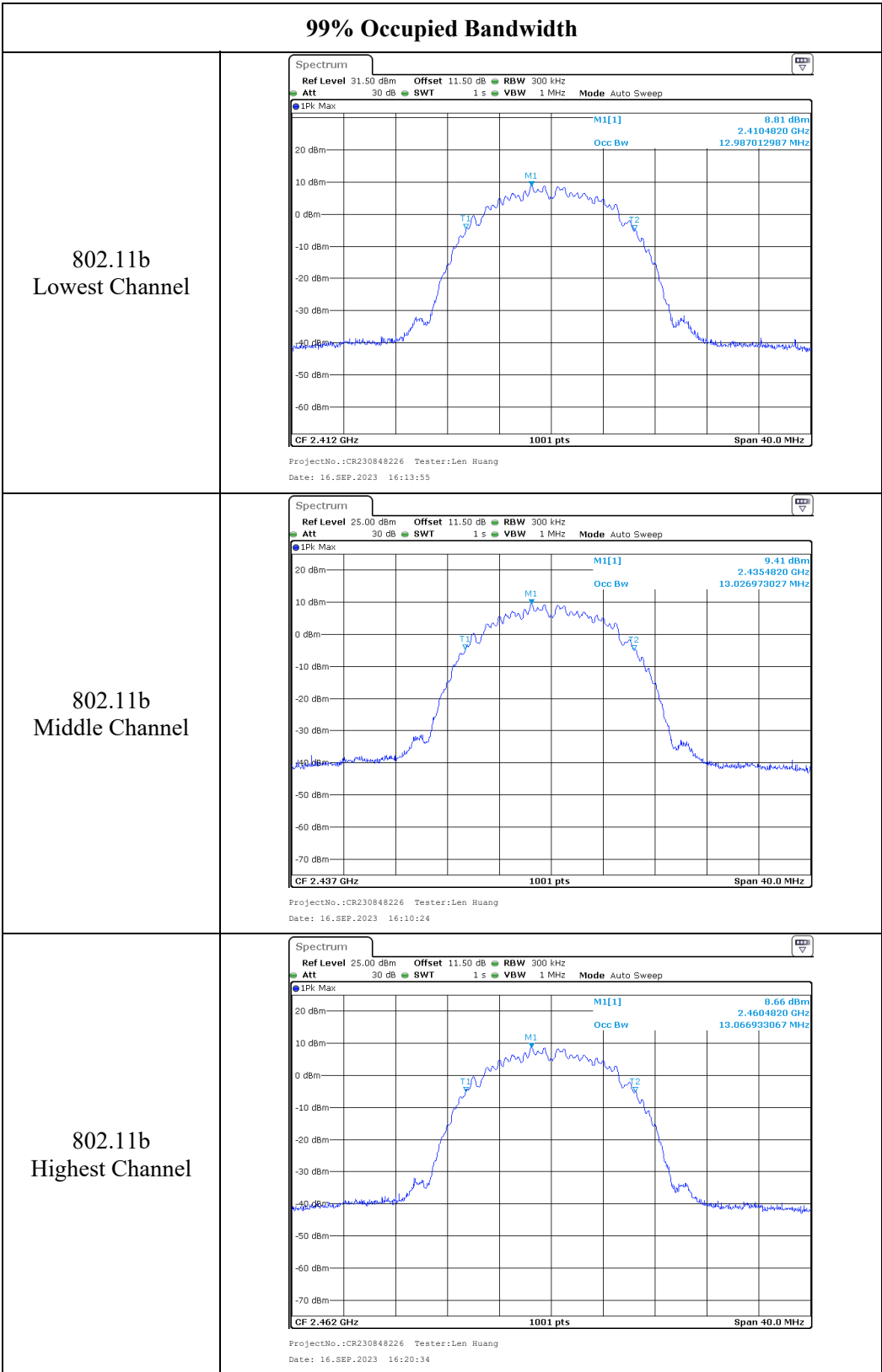
Test Equipment List and Details:

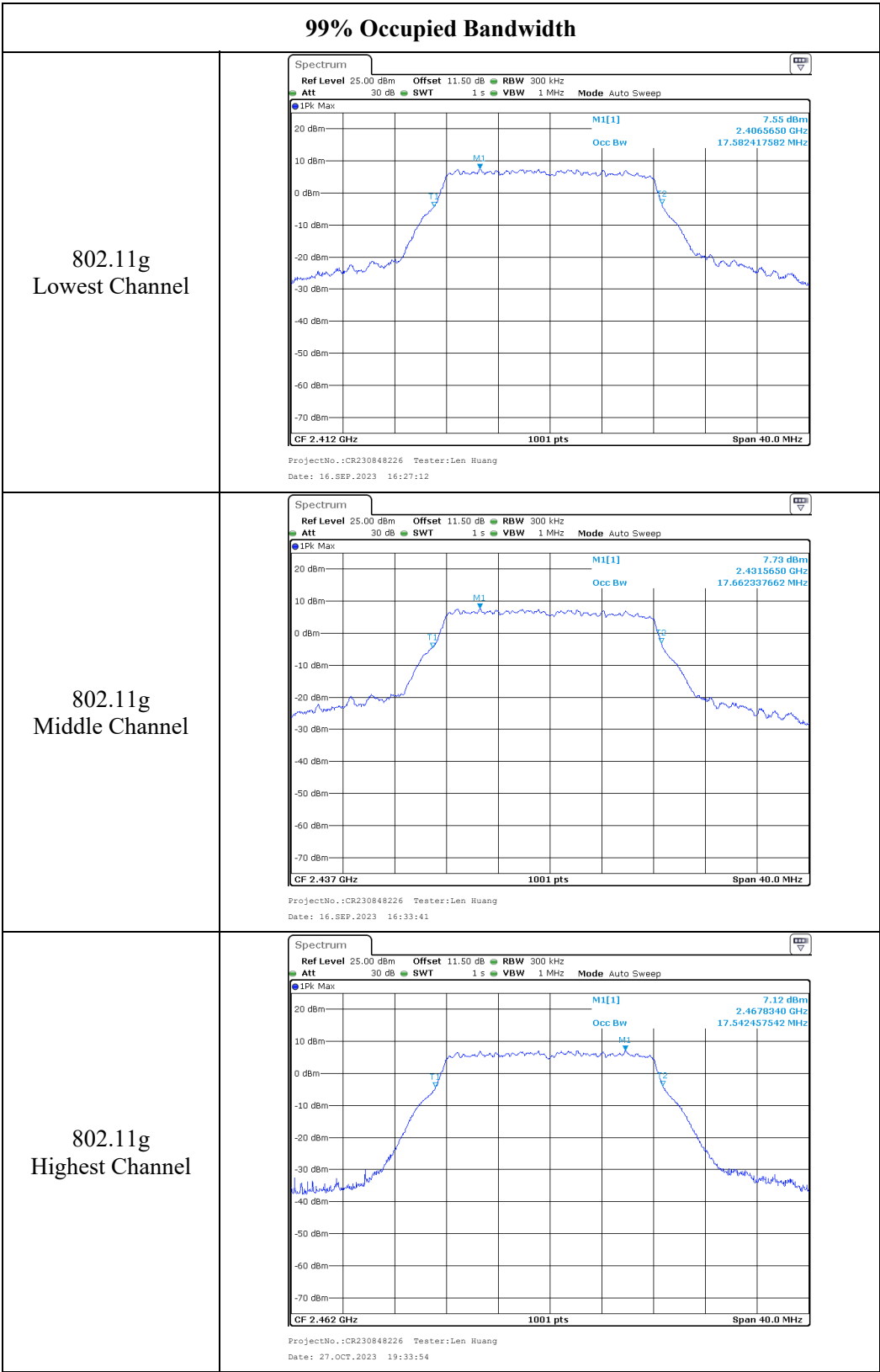
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40-N	102259	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A

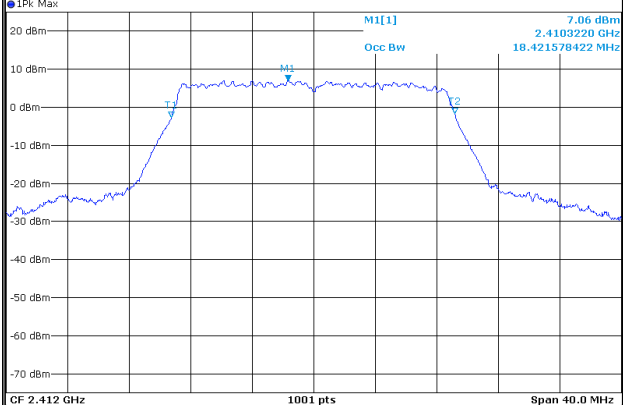
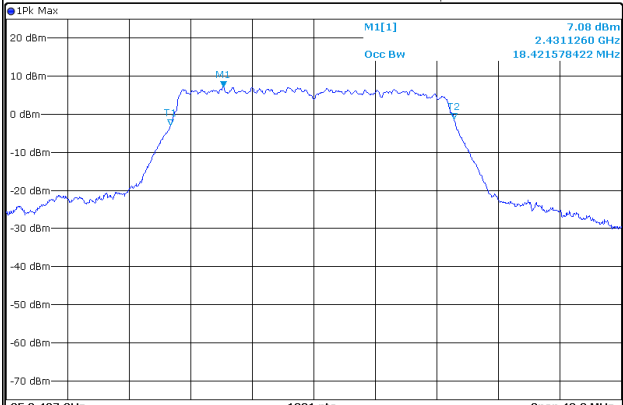
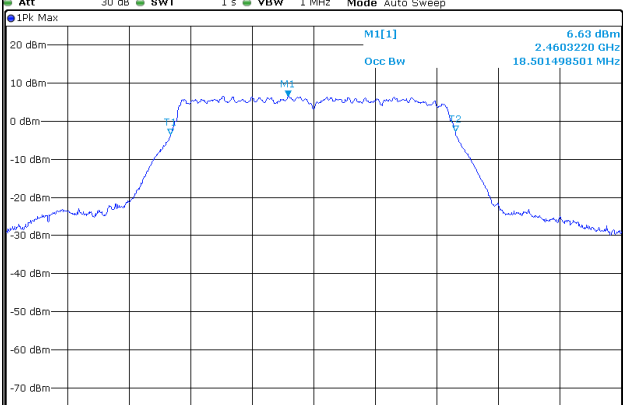
* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data:

Test Modes	Test Channel	Test Frequency (MHz)	99% Occupied Bandwidth (MHz)
802.11b	Lowest	2412	12.99
	Middle	2437	13.03
	Highest	2462	13.07
802.11g	Lowest	2412	17.58
	Middle	2437	17.66
	Highest	2462	17.54
802.11n ht20	Lowest	2412	18.42
	Middle	2437	18.42
	Highest	2462	18.5
802.11n ht40	Lowest	2422	34.61
	Middle	2437	34.69
	Highest	2452	34.77





99% Occupied Bandwidth	
802.11n ht20 Lowest Channel	Spectrum Ref Level 25.00 dBm Offset 11.50 dB RBW 300 kHz Att 30 dB SWI 1 s VBW 1 MHz Mode Auto Sweep 1Pk Max M1[1] 7.06 dBm 2.4103220 GHz 18.421578422 MHz Occ Bw  CF 2.412 GHz 1001 pts Span 40.0 MHz ProjectNo.:CR230848226 Tester:Len Huang Date: 16.SEP.2023 16:44:50
802.11n ht20 Middle Channel	Spectrum Ref Level 25.00 dBm Offset 11.50 dB RBW 300 kHz Att 30 dB SWI 1 s VBW 1 MHz Mode Auto Sweep 1Pk Max M1[1] 7.08 dBm 2.4311260 GHz 18.421578422 MHz Occ Bw  CF 2.437 GHz 1001 pts Span 40.0 MHz ProjectNo.:CR230848226 Tester:Len Huang Date: 16.SEP.2023 16:50:44
802.11n ht20 Highest Channel	Spectrum Ref Level 25.00 dBm Offset 11.50 dB RBW 300 kHz Att 30 dB SWI 1 s VBW 1 MHz Mode Auto Sweep 1Pk Max M1[1] 6.63 dBm 2.4603220 GHz 18.501498501 MHz Occ Bw  CF 2.462 GHz 1001 pts Span 40.0 MHz ProjectNo.:CR230848226 Tester:Len Huang Date: 18.SEP.2023 09:19:42

99% Occupied Bandwidth	
802.11n ht40 Lowest Channel	Spectrum Ref Level 25.00 dBm Offset 11.50 dB RBW 500 kHz Att 30 dB SWT 1 s VBW 2 MHz Mode Auto Sweep 1Pk Max 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm M1[1] 5.09 dBm 2.4108910 GHz 34.605394605 MHz Occ Bw CF 2.422 GHz 1001 pts Span 80.0 MHz ProjectNo.:CR230848226 Tester:Len Huang Date: 16.SEP.2023 17:01:23
802.11n ht40 Middle Channel	Spectrum Ref Level 25.00 dBm Offset 11.50 dB RBW 500 kHz Att 30 dB SWT 1 s VBW 2 MHz Mode Auto Sweep 1Pk Max 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm M1[1] 5.61 dBm 2.4258910 GHz 34.685314685 MHz Occ Bw CF 2.437 GHz 1001 pts Span 80.0 MHz ProjectNo.:CR230848226 Tester:Len Huang Date: 16.SEP.2023 17:07:07
802.11n ht40 Highest Channel	Spectrum Ref Level 25.00 dBm Offset 11.50 dB RBW 500 kHz Att 30 dB SWT 1 s VBW 2 MHz Mode Auto Sweep 1Pk Max 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm M1[1] 4.91 dBm 2.4409710 GHz 34.765234765 MHz Occ Bw CF 2.452 GHz 1001 pts Span 80.0 MHz ProjectNo.:CR230848226 Tester:Len Huang Date: 16.SEP.2023 17:13:14

4.5 Maximum Conducted Output Power

Serial Number:	2A3A-4	Test Date:	2023/9/16-2023/9/18
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	26.2-26.8	Relative Humidity: (%)	55-56	ATM Pressure: (kPa)	101-101.3
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Anritsu	Power Meter	ML2495A	1106009	2023/8/4	2024/8/3
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060302	Each time	N/A
Anritsu	Pulse Power Sensor	MA2411A	10780	2023/8/4	2024/8/3

* 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 Modes	Test Frequency (MHz)	Maximum Conducted Peak Output Power (dBm)	Limit (dBm)
802.11b	2412	19.99	30
	2437	20.64	30
	2462	19.83	30
802.11g	2412	24.24	30
	2437	24.44	30
	2462	23.87	30
802.11n ht20	2412	24.01	30
	2437	24.18	30
	2462	23.65	30
802.11n ht40	2422	21.92	30
	2437	22.19	30
	2452	21.88	30

4.6 Maximum Power Spectral Density

Serial Number:	2A3A-4	Test Date:	2023/9/16-2023/9/18
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	Pass

Environmental Conditions:					
Temperature: (°C)	26.2-26.8	Relative Humidity: (%)	55-56	ATM Pressure: (kPa)	101-101.3

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40-N	102259	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A

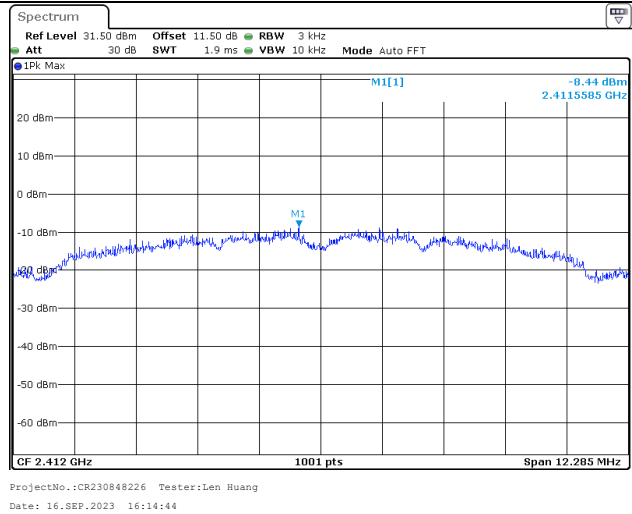
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

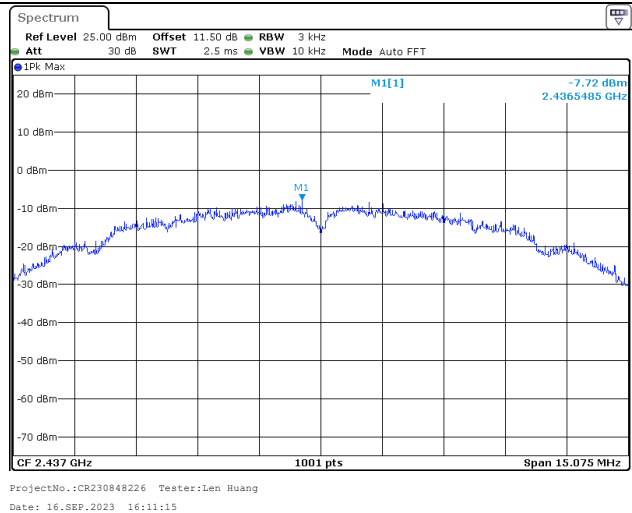
Test Channel	Test Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
802.11b	2412	-8.44	8.00
	2437	-7.72	8.00
	2462	-8.52	8.00
802.11g	2412	-9.53	8.00
	2437	-9.14	8.00
	2462	-8.96	8.00
802.11n ht20	2412	-8.73	8.00
	2437	-8.79	8.00
	2462	-9.09	8.00
802.11n ht40	2422	-13.31	8.00
	2437	-12.86	8.00
	2452	-13.49	8.00

Maximum power spectral density

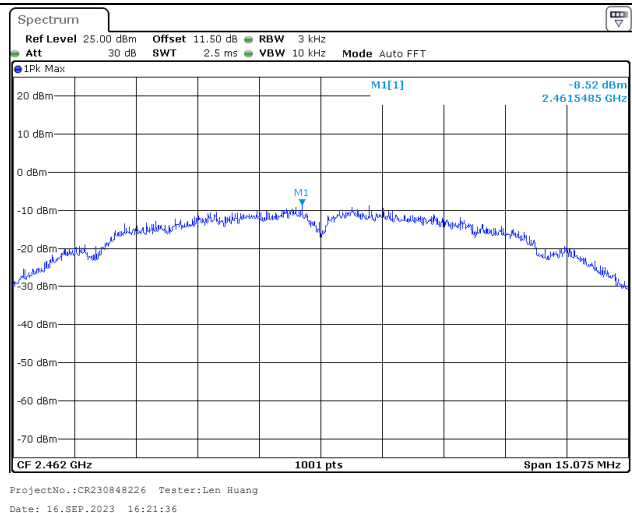
802.11b
Lowest Channel

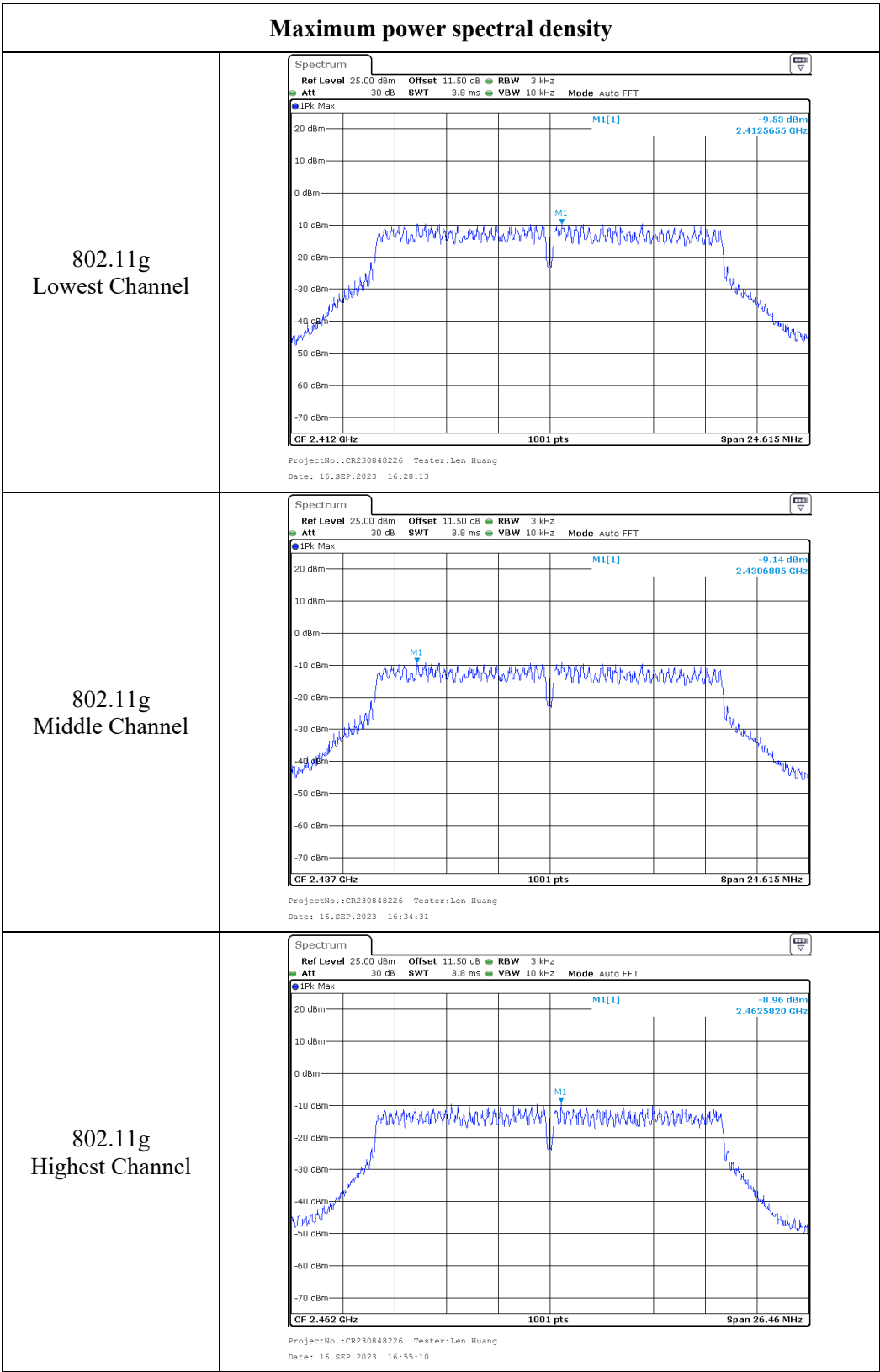


802.11b
Middle Channel



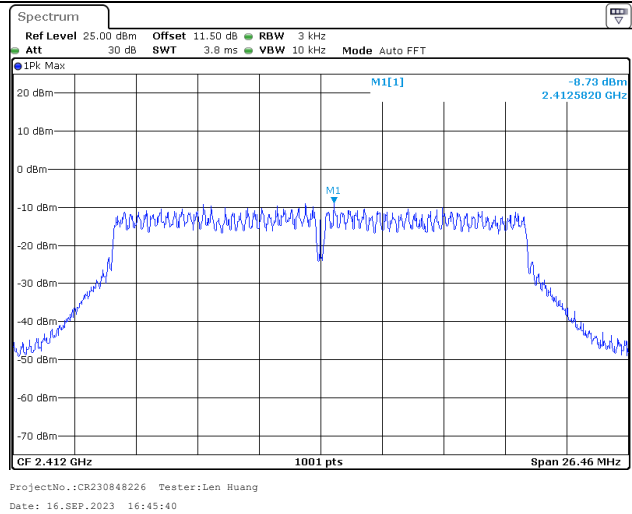
802.11b
Highest Channel



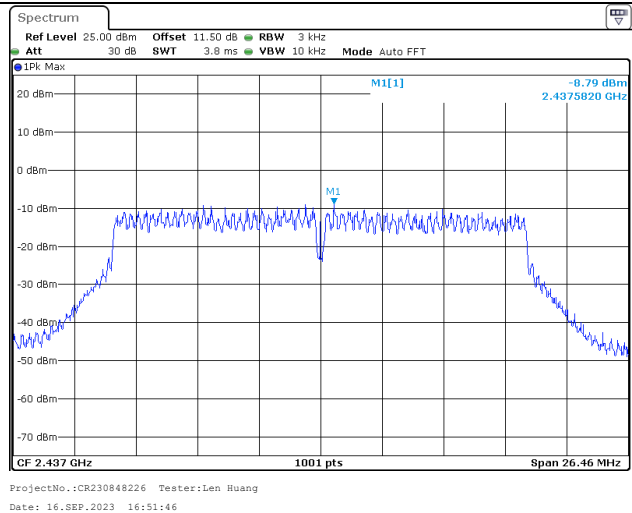


Maximum power spectral density

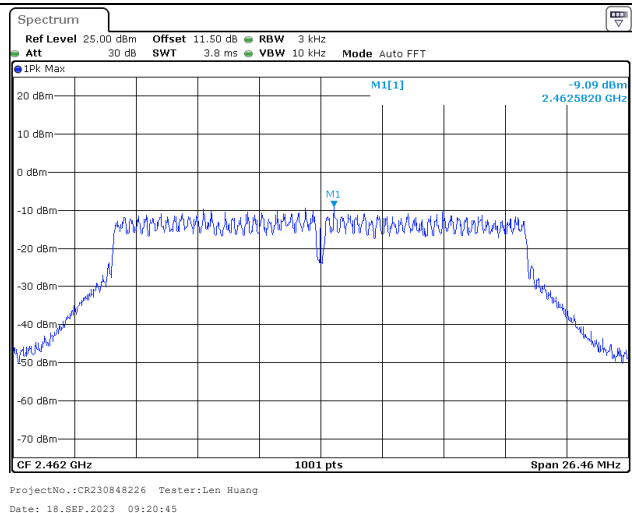
802.11n ht20
Lowest Channel



802.11n ht20
Middle Channel

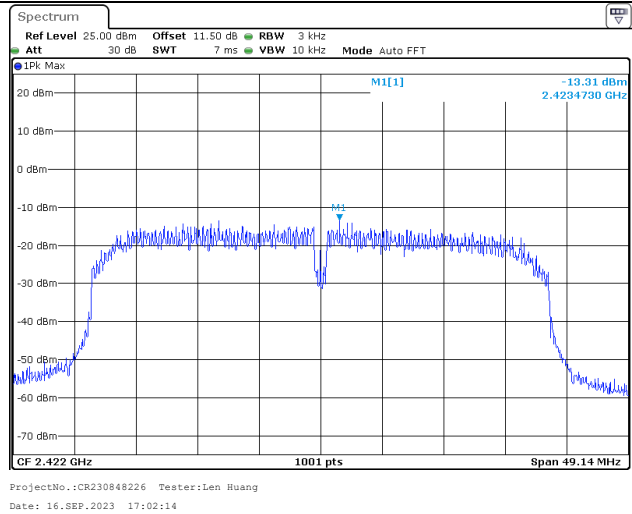


802.11n ht20
Highest Channel

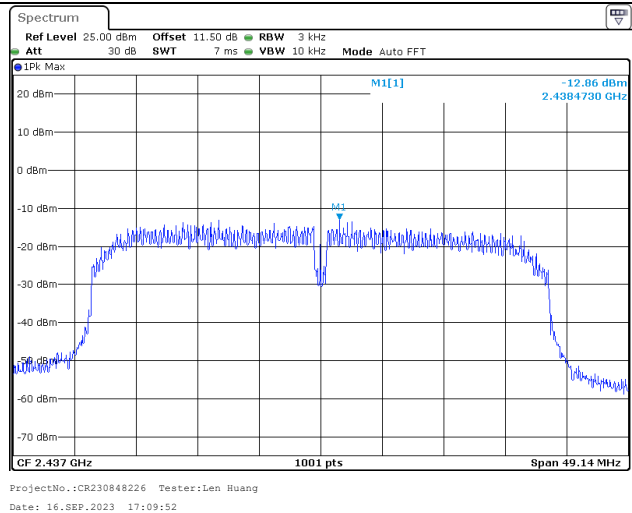


Maximum power spectral density

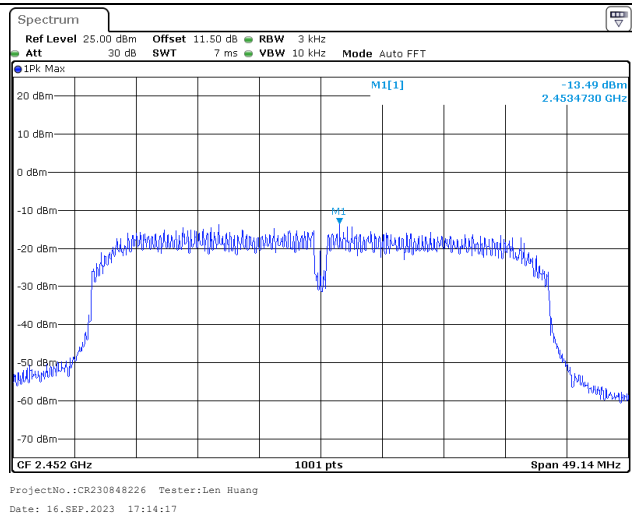
802.11n ht40
Lowest Channel



802.11n ht40
Middle Channel



802.11n ht40
Highest Channel



4.7 100 kHz Bandwidth of Frequency Band Edge:

Serial Number:	2A3A-4	Test Date:	2023/9/16~2023/9/18
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	26.2-26.8	Relative Humidity: (%)	55-56	ATM Pressure: (kPa)	101-101.3
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Test Equipment List and Details:

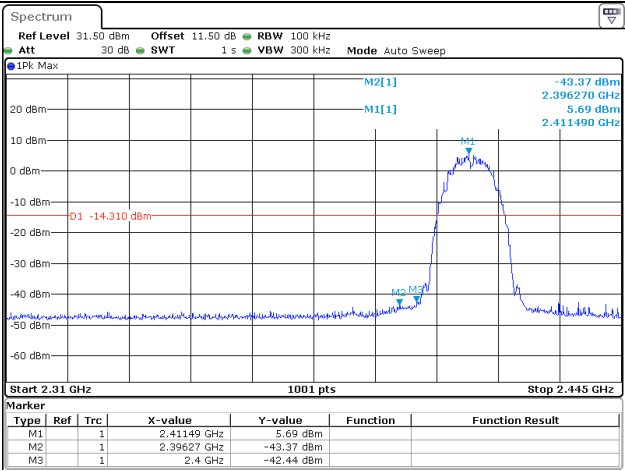
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40-N	102259	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A

** 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:

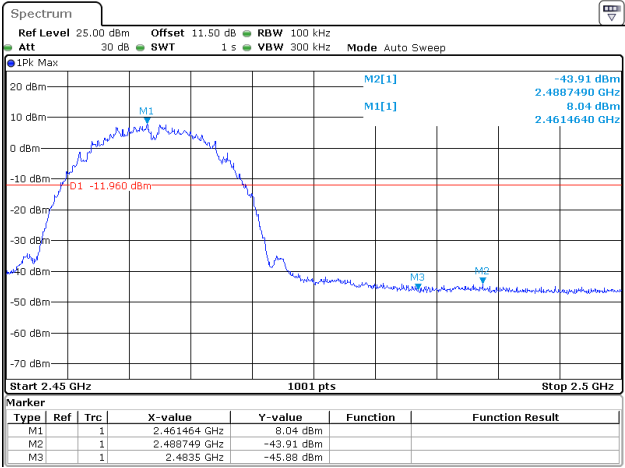
100 kHz Bandwidth of Frequency Band Edge

802.11b
Lowest Band edge



ProjectNo.:CR230848226 Tester:Len Huang
Date: 16.SEP.2023 16:17:32

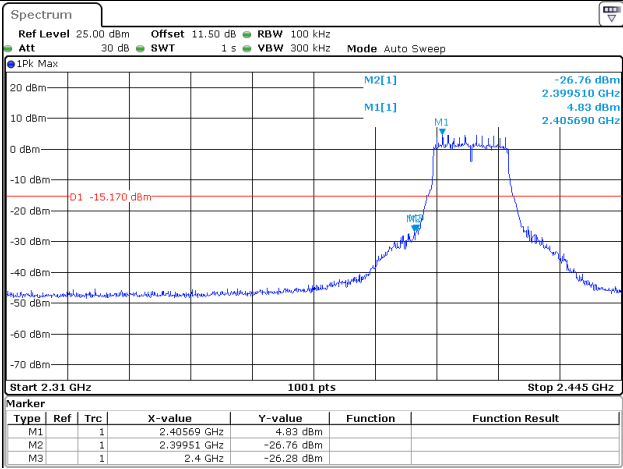
802.11b
Highest Band edge



ProjectNo.:CR230848226 Tester:Len Huang
Date: 16.SEP.2023 16:24:21

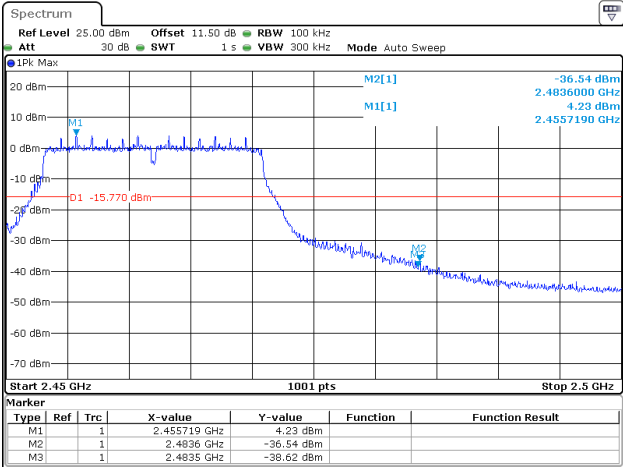
100 kHz Bandwidth of Frequency Band Edge

802.11g
Lowest Band edge



ProjectNo.:CR230848226 Tester:Len Huang
Date: 16.SEP.2023 16:30:46

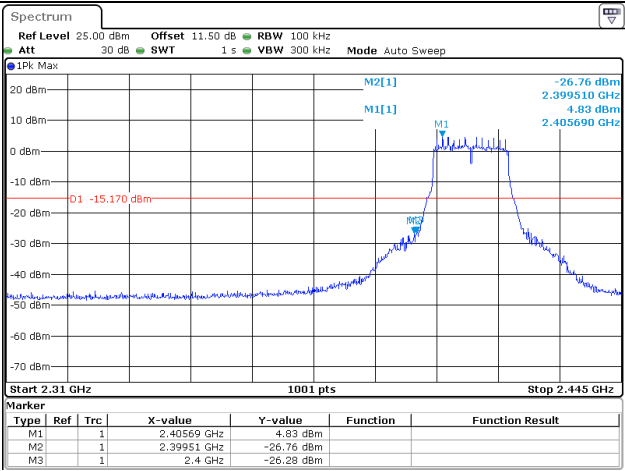
802.11g
Highest Band edge



ProjectNo.:CR230848226 Tester:Len Huang
Date: 16.SEP.2023 16:58:33

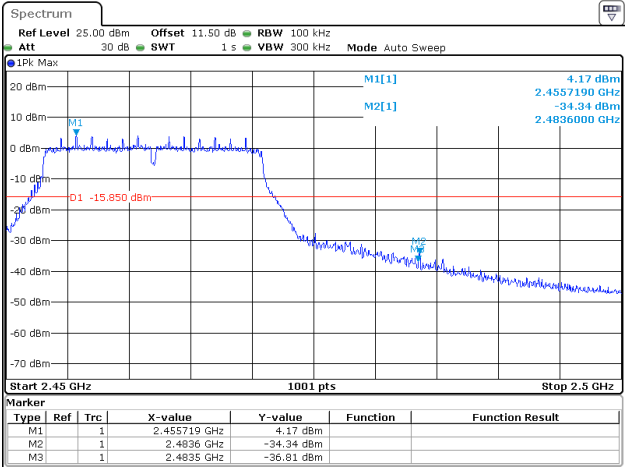
100 kHz Bandwidth of Frequency Band Edge

802.11n ht20
Lowest Band edge



ProjectNo.:CR230848226 Tester:Len Huang
Date: 16.SEP.2023 16:30:46

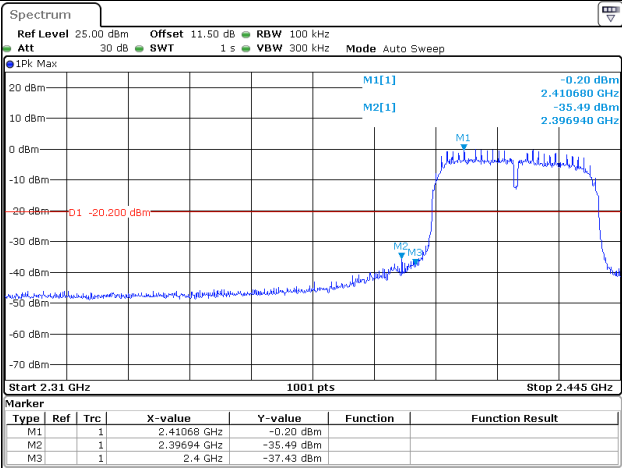
802.11n ht20
Highest Band edge



ProjectNo.:CR230848226 Tester:Len Huang
Date: 18.SEP.2023 09:22:50

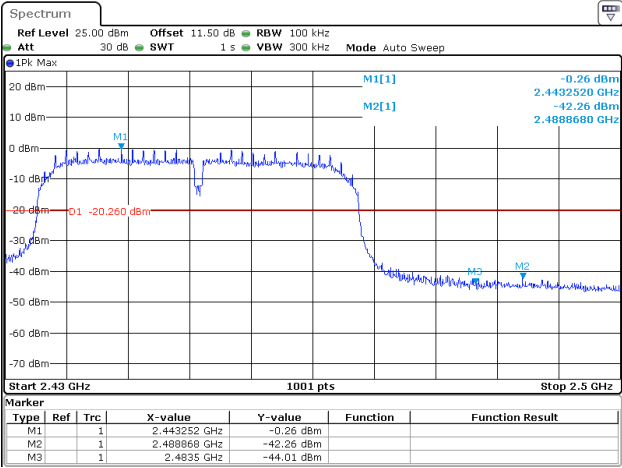
100 kHz Bandwidth of Frequency Band Edge

802.11n ht40
Lowest Band edge



ProjectNo.:CR230848226 Tester:Len Huang
Date: 16.SEP.2023 17:03:44

802.11n ht40
Highest Band edge



ProjectNo.:CR230848226 Tester:Len Huang
Date: 16.SEP.2023 17:16:13

4.8 Duty Cycle:

Serial Number:	2A3A-4	Test Date:	2023/9/16
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	N/A

Environmental Conditions:

Temperature: (°C)	26.2	Relative Humidity: (%)	55	ATM Pressure: (kPa)	101
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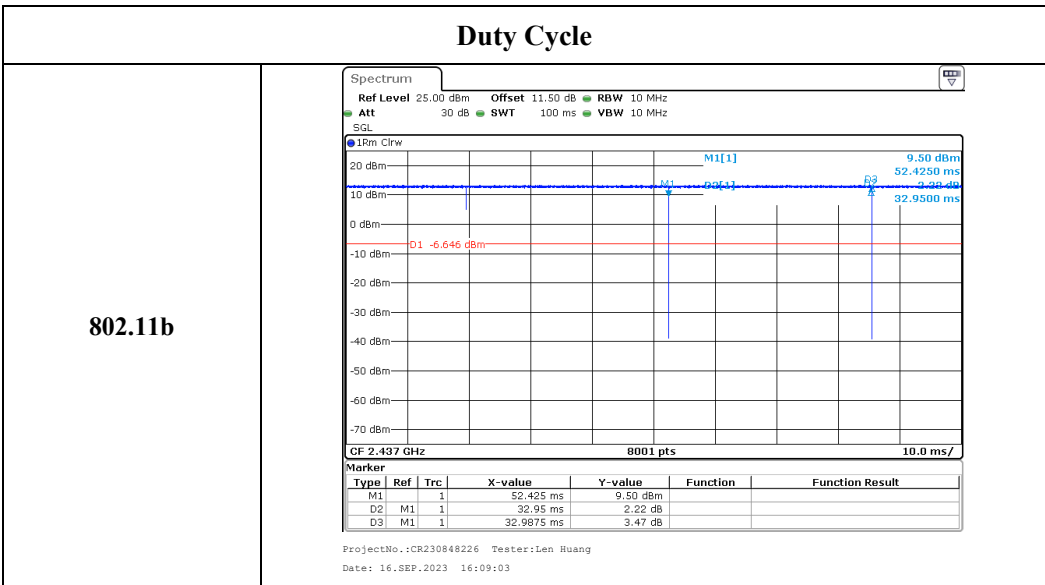
Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40-N	102259	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	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).

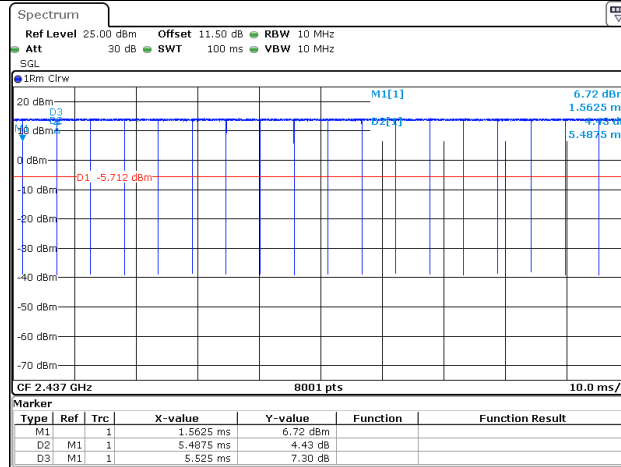
Test Data:

Test Modes	Ton (ms)	Ton+off (ms)	Duty cycle (%)	1/T (Hz)	VBW Setting (Hz)
802.11b	32.95	32.9875	99.89	/	10
802.11g	5.4875	5.525	99.32	/	10
802.11n ht20	5.075	5.1125	99.27	/	10
802.11n ht40	2.4625	2.5	98.50	/	10



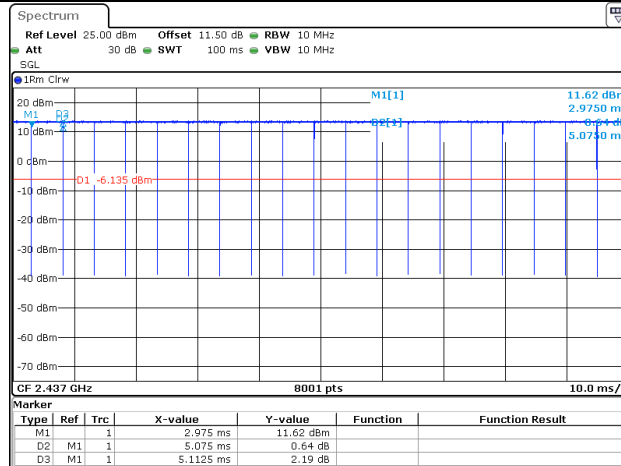
Duty Cycle

802.11g



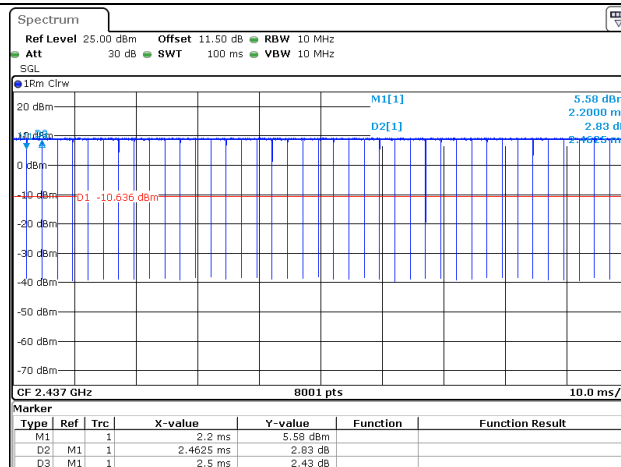
ProjectNo.:CR230848226 Tester:Len Huang
Date: 16.SEP.2023 16:32:13

802.11n ht20



ProjectNo.:CR230848226 Tester:Len Huang
Date: 16.SEP.2023 16:49:15

802.11n ht40



ProjectNo.:CR230848226 Tester:Len Huang
Date: 16.SEP.2023 17:05:37

5. RF EXPOSURE EVALUATION

5.1.1 Applicable Standard

According to §1.1307(b)(3)(i)

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	$1,920 R^2$.
1.34-30	$3,450 R^2/f^2$.
30-300	$3.83 R^2$.
300-1,500	$0.0128 R^2 f$.
1,500-100,000	$19.2 R^2$.

5.1.2 Measurement Result

Operation Modes	Frequency (MHz)	$\lambda/2\pi$ (mm)	Distance (mm)	Exemption ERP		Maximum Conducted Power including Tune-up Tolerance (dBm)	Antenna Gain (dBi)	ERP (dBm)	MPE-Based Exemption
				(mW)	(dBm)				
BLE	2408-2480	19.88	200	768	28.85	8	2.5	8.35	Compliant
2.4G WLAN	2412-2462	19.80	200	768	28.85	25	2.5	25.35	Compliant

Note:

The Maximum Conducted Power including Tune-up Tolerance was declared by manufacturer.
The WLAN 2.4G and BLE can't transmission simultaneously.

Result: The device compliant the MPE-Based Exemption at 20cm distances.

6. EUT PHOTOGRAPHS

Please refer to the attachment CR230848226-EXP EUT EXTERNAL PHOTOGRAPHS and
CR230848226-INP EUT INTERNAL PHOTOGRAPHS

7. TEST SETUP PHOTOGRAPHS

Please refer to the attachment CR230848226-00A-TSP TEST SETUP PHOTOGRAPHS.

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