TEST REPORT

Applicant Name :	Max Sales Group
Address :	15240 NELSON AVENUE CITY OF INDUSTRY,Los Angeles California United States 90040
Report Number :	RA230129-03801E-RF-00
FCC ID:	2AUIF-NV-08082-2

Test Standard (s)

FCC PART 15.249

Sample Description

Product Type:	LIGHT-UP DRONE-Remote Control
Model No.:	NV-08082
Multiple Model(s) No.:	N/A
Trade Mark:	BESMERY
Date Received:	2023/01/29
Report Date:	2023/02/17

Test Result:	Pass*

* In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Andy Yu
EMC Engineer

Approved By:

Candy Li
EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★ ".
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	RA230129-03801E-RF-00	Original Report	2023-02-17

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Frequency Range	2420-2460MHz
Maximum E-field strength	93.99dBuV/m@3m
Modulation Technique	GFSK
Antenna Specification*	0.59dBi (provided by the applicant)
Voltage Range	DC 4.5V(1.5V AA*3) from battery
Sample serial number	1ZGA-1 (Assigned by ATC, Shenzhen)
Sample/EUT Status	Good condition

Objective

This test report is in accordance with Part 2-Subpart J, and Part 15-Subparts A and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.209 and 15.249 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF Frequency		$0.082*10^{-7}$
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	9kHz - 30MHz	2.66dB
	30MHz - 1GHz	4.28dB
	1GHz - 18GHz	4.98dB
	18GHz - 26.5GHz	5.06dB
	26.5GHz - 40GHz	4.72dB
Temperature		1℃
Humidity		6%
Supply voltages		0.4%

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

Test Facility

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISEDC), the Registration Number is 5077A.

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing by manufacturer.

Frequency Channel List:

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	**2420**	11	2430	**21**	**2440**	31	2451
2	2421	12	2431	22	2441	32	2452
3	2422	13	2432	23	2442	33	2453
4	2423	14	2433	24	2443	34	2454
5	2424	15	2434	25	2445	35	2455
6	2425	16	2435	26	2446	36	2456
7	2426	17	2436	27	2447	37	2457
8	2427	18	2437	28	2448	38	2458
9	2428	19	2438	29	2449	39	2459
10	2429	20	2439	30	2450	**40**	**2460**

Note: Test on Channel 1, 21 and 40.

EUT Exercise Software

No exercise software was used.

Equipment Modifications

No modifications were made to the unit tested.

Support Equipment List and Details

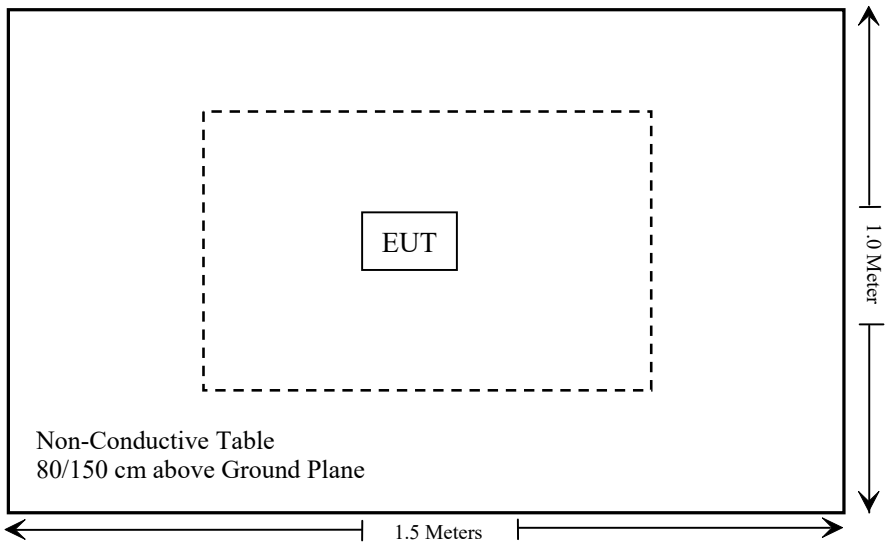
Manufacturer	Description	Model	Serial Number
/	/	/	/

Support Cable Descriptions

Cable Description	Length (m)	From/Port	To
/	/	/	/

Block Diagram of Test Setup

For Radiated Emission:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 (b) (3) &§2.1093	RF EXPOSURE	Compliant
§15.203	Antenna Requirement	Compliant
§15.207(a)	Conduction Emissions	Not Applicable
15.205, §15.209, §15.249(d)	Radiated Emissions& Outside of Band Emission	Compliant
§15.215 (c)	20 dB Bandwidth	Compliant

Not Applicable: The EUT is powered by battery only.

Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emissions Test					
Rohde& Schwarz	Test Receiver	ESR	102725	2022/11/25	2023/11/24
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2022/11/25	2023/11/24
SONOMA INSTRUMENT	Amplifier	310 N	186131	2022/11/08	2023/11/07
A.H. Systems, inc.	Preamplifier	PAM-0118P	135	2022/11/08	2023/11/07
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2022/11/08	2023/11/07
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2022/11/30	2025/11/29
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2022/12/26	2025/12/25
Radiated Emission Test Software: e3 19821b (V9)					
Unknown	RF Coaxial Cable	No.10	N050	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.11	N1000	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.12	N040	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.13	N300	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.14	N800	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.15	N600	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.16	N650	2022/11/25	2023/11/24
Wainwright	High Pass Filter	WHKX3.6/18 G-10SS	5	2022/11/25	2023/11/24

*** Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

§1.1307 (b) (3) &§2.1093 – RF EXPOSURE

Applicable Standard

According to FCC §2.1093 and §1.1307(b) (3), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D04 Interim General RF Exposure Guidance

1-mW Test Exemption:

Per § 1.1307(b)(3)(i)(A), a single RF source is exempt RF device (from the requirement to show data demonstrating compliance to RF exposure limits, as previously mentioned) if the available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption applies to all operating configurations and exposure conditions, for the frequency range 100 kHz to 100 GHz, regardless of fixed, mobile, or portable device exposure conditions. This is a standalone exemption, and it cannot be applied in conjunction with any other test exemption.

For worst case:

Mode	Frequency (MHz)	Maximum ERP		1-mW Test Exemption
		(dBm)	(mW)	
GFSK	2420-2460	-3.36	0.46	**Yes**

Note1: Use the maximum E-field strength (93.99dBuV/m@3m) for the RF exposure evaluation

Note2: E (dBuV/m) = EIRP[dBm]+95.2 @3m, So the EIRP = 93.99 dBuV/m-95.2= -1.21dBm

Note3: EIRP[dBm] = ERP[dBm]+2.15dBi, So the ERP = -1.21dBm-2.15dBi= -3.36dBm

Result: Compliant.

FCC§15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to 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.

Antenna Connector Construction

The EUT has one internal antenna which was permanently attached and the antenna gain is 0.59dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Antenna Type	Antenna Gain	Impedance	Frequency Range
Monopole	0.59dBi	50 Ω	2420-2460MHz

Result: Compliance.

FCC§15.205, §15.209 & §15.249(d) - RADIATED EMISSIONS

Applicable Standard

As per FCC§15.249 (a), except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

As per FCC§15.249 (c), Field strength limits are specified at a distance of 3 meters.

As per FCC§15.249 (d), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

Test Equipment Setup

The spectrum analyzer or receiver is set as:

Below 1000MHz:

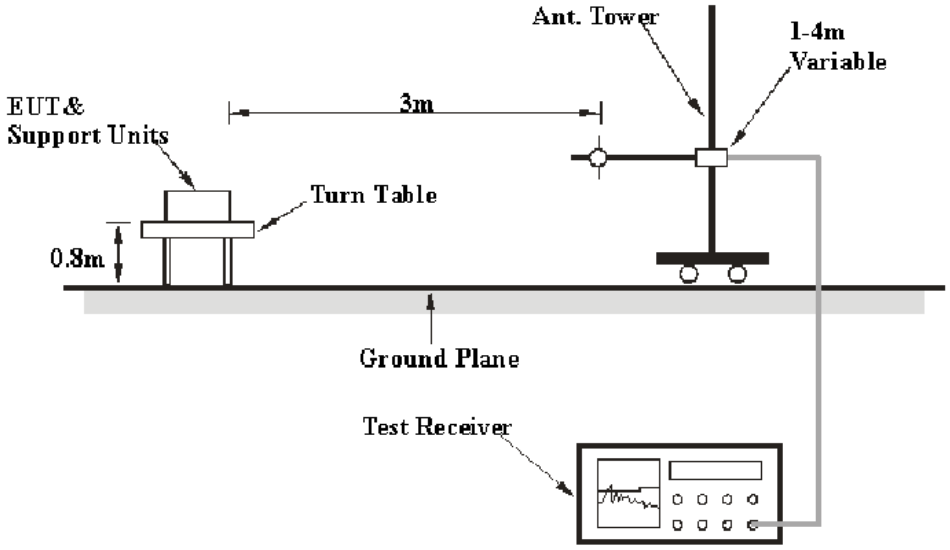
RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000MHz:

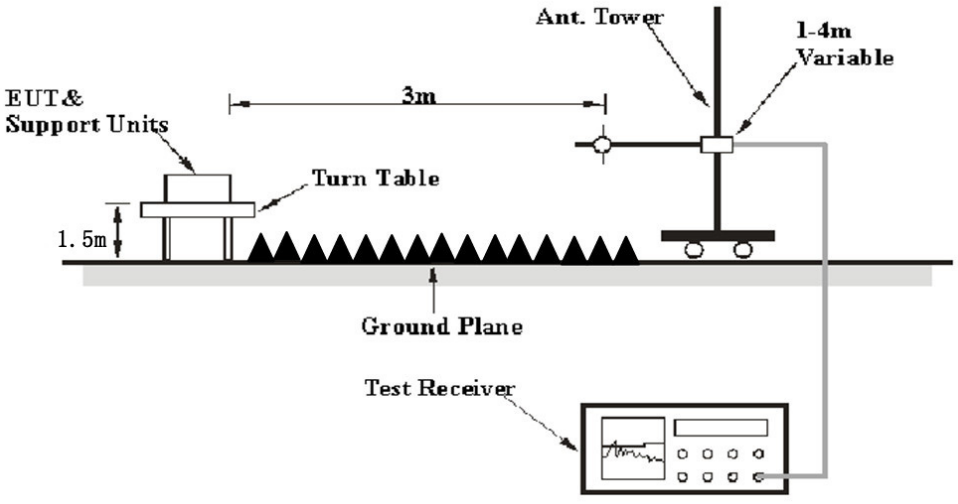
Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto
Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission and out of band 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 the FCC 15.209/15.205 and FCC 15.249 limits.

Test Procedure

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

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 meter, and the EUT is placed on a turntable, which is 0.8 meter above ground plane for below 1GHz or 1.5 meter for above 1GHz, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Over Limit/Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit/margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Over Limit/Margin = Level / Corrected Amplitude – Limit

Test Results Summary

According to the EUT complied with the FCC Part 15.205, 15.209 & §15.249

Test Data

Environmental Conditions

Temperature:	24 ~24.5℃
Relative Humidity:	45~56%
ATM Pressure:	101.0 kPa

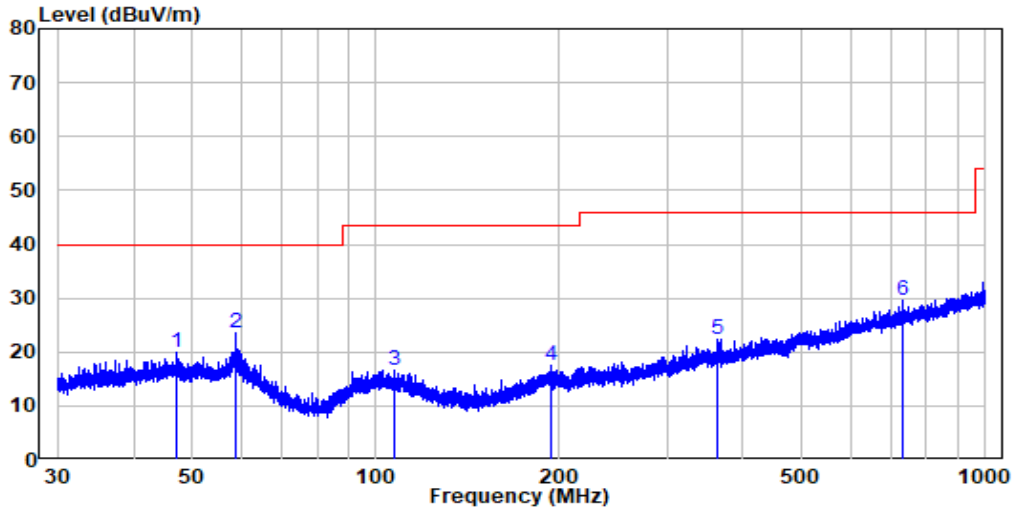
The testing was performed by Jimi Zheng on 2023-02-01 for below 1GHz, Jaosn Liu on 2023-02-16 for above 1GHz

EUT operation mode: Transmitting (Pre-scan in the X,Y and Z axes of orientation, the worst case X-axes of orientation was recorded)

30MHz-1GHz: worst case at high channel

Note: When the test result of peak was less than the limit of QP more than 6dB, just peak value were recorded.

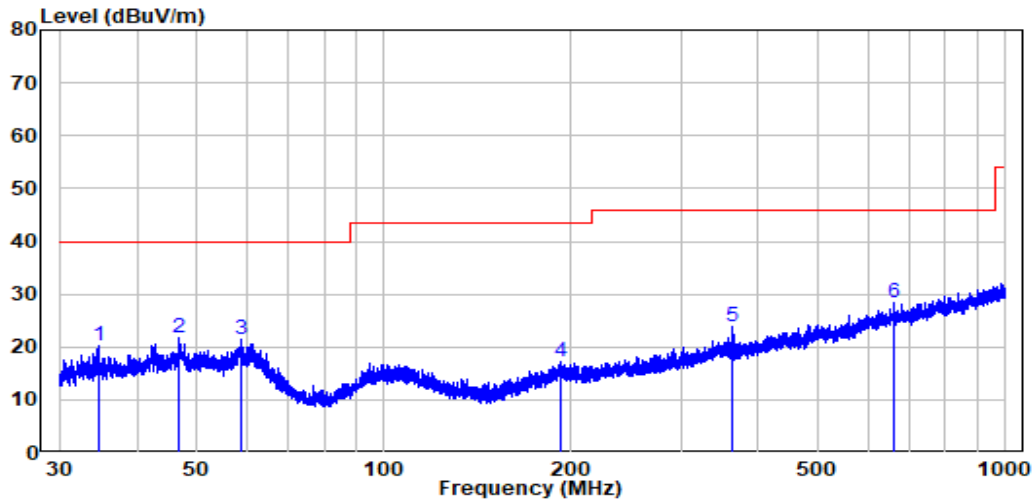
Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No. : RA230129-03801E-RF
Test Mode: Transmitting

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	47.057	-10.00	29.91	19.91	40.00	-20.09	Peak
2	58.690	-10.16	33.83	23.67	40.00	-16.33	Peak
3	107.087	-11.96	28.67	16.71	43.50	-26.79	Peak
4	193.095	-11.28	28.67	17.39	43.50	-26.11	Peak
5	362.031	-7.62	30.07	22.45	46.00	-23.55	Peak
6	733.526	-0.74	30.24	29.50	46.00	-16.50	Peak

Vertical



Site : chamber
Condition: 3m VERTICAL
Job No. : RA230129-03801E-RF
Test Mode: Transmitting

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	34.684	-11.64	31.96	20.32	40.00	-19.68	Peak
2	46.851	-10.00	31.60	21.60	40.00	-18.40	Peak
3	58.715	-10.17	31.71	21.54	40.00	-18.46	Peak
4	192.587	-11.27	28.46	17.19	43.50	-26.31	Peak
5	362.031	-7.62	31.59	23.97	46.00	-22.03	Peak
6	662.601	-1.65	29.91	28.26	46.00	-17.74	Peak

Above 1GHz:

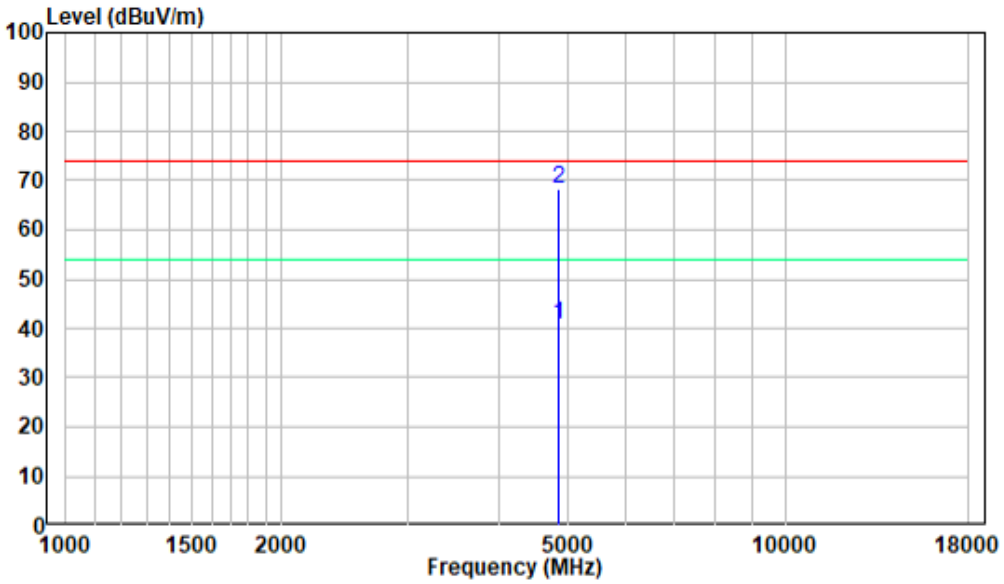
Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB/m)	Absolute Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/Ave		Height (m)	Polar (H/V)				
Low Channel(2420MHz)									
2420	101.12	PK	25	1.1	H	-7.23	93.89	114	-20.11
2420	100.85	PK	327	1	V	-7.23	93.62	114	-20.38
2310	61.70	PK	223	1.2	H	-7.24	54.46	74	-19.54
2310	47.33	AV	223	1.2	H	-7.24	40.09	54	-13.91
2310	62.26	PK	196	1.5	V	-7.24	55.02	74	-18.98
2310	47.27	AV	196	1.5	V	-7.24	40.03	54	-13.97
2400	63.19	PK	12	1.6	H	-7.23	55.96	74	-18.04
2400	48.83	AV	12	1.6	H	-7.23	41.60	54	-12.40
2400	63.47	PK	115	1.3	V	-7.23	56.24	74	-17.76
2400	48.97	AV	115	1.3	V	-7.23	41.74	54	-12.26
4840	71.65	PK	319	1.1	H	-3.53	68.12	74	-5.88
4840	44.16	AV	319	1.1	H	-3.53	40.63	54	-13.37
4840	69.67	PK	59	1.2	V	-3.53	66.14	74	-7.86
4840	44.25	AV	59	1.2	V	-3.53	40.72	54	-13.28
Middle Channel(2440MHz)									
2440	100.23	PK	303	1.5	H	-7.24	92.99	114	-21.01
2440	101.02	PK	163	1.8	V	-7.24	93.78	114	-20.22
4880	70.55	PK	130	1.5	H	-3.38	67.17	74	-6.83
4880	44.41	AV	130	1.5	H	-3.38	41.03	54	-12.97
4880	70.36	PK	335	2.3	V	-3.38	66.98	74	-7.02
4880	44.52	AV	335	2.3	V	-3.38	41.14	54	-12.86
High Channel(2460 MHz)									
2460	101.22	PK	320	1.7	H	-7.23	93.99	114	-20.01
2460	100.92	PK	267	1.9	V	-7.23	93.69	114	-20.31
2483.5	65.27	PK	269	2.1	H	-7.20	58.07	74	-15.93
2483.5	49.72	AV	269	2.1	H	-7.20	42.52	54	-11.48
2483.5	66.05	PK	187	1.4	V	-7.20	58.85	74	-15.15
2483.5	49.75	AV	187	1.4	V	-7.20	42.55	54	-11.45
2500	63.52	PK	167	1.2	H	-7.18	56.34	74	-17.66
2500	49.21	AV	167	1.2	H	-7.18	42.03	54	-11.97
2500	64.15	PK	327	1.2	V	-7.18	56.97	74	-17.03
2500	49.22	AV	327	1.2	V	-7.18	42.04	54	-11.96
4920	69.56	PK	118	1.6	H	-3.18	66.38	74	-7.62
4920	44.17	AV	118	1.6	H	-3.18	40.99	54	-13.01
4920	70.02	PK	166	1.3	V	-3.18	66.84	74	-7.16
4920	44.14	AV	166	1.3	V	-3.18	40.96	54	-13.04

Note:
Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
Absolute Level (Corrected Amplitude） = Factor + Reading
Margin = Absolute Level - Limit
The other spurious emission which is 20dB to the limit or in noise floor level was not recorded.
The test result of Peak was less than the limit of average, just the Peak value was recorded.

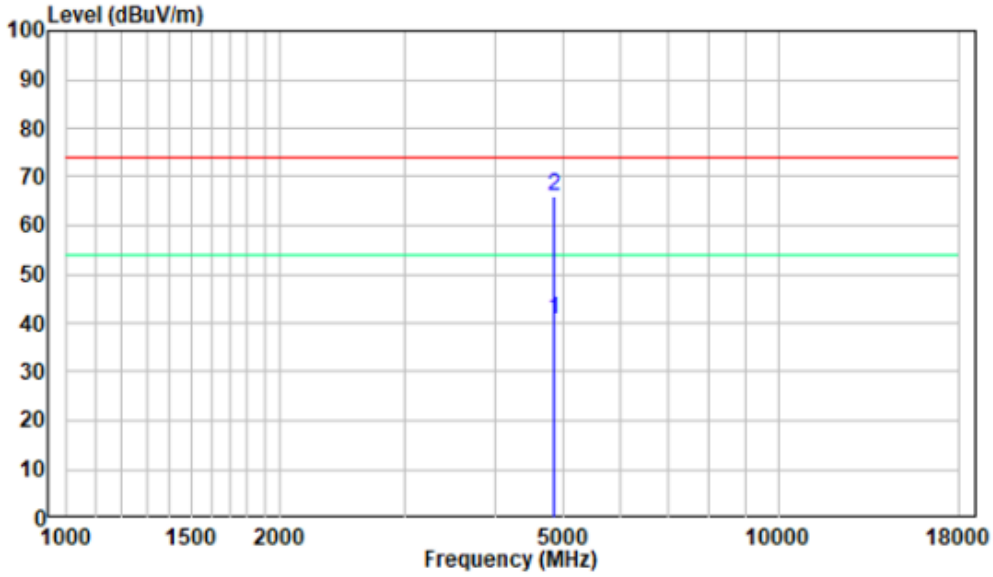
1-18GHz

Pre-scan for Low Channel

Horizontal



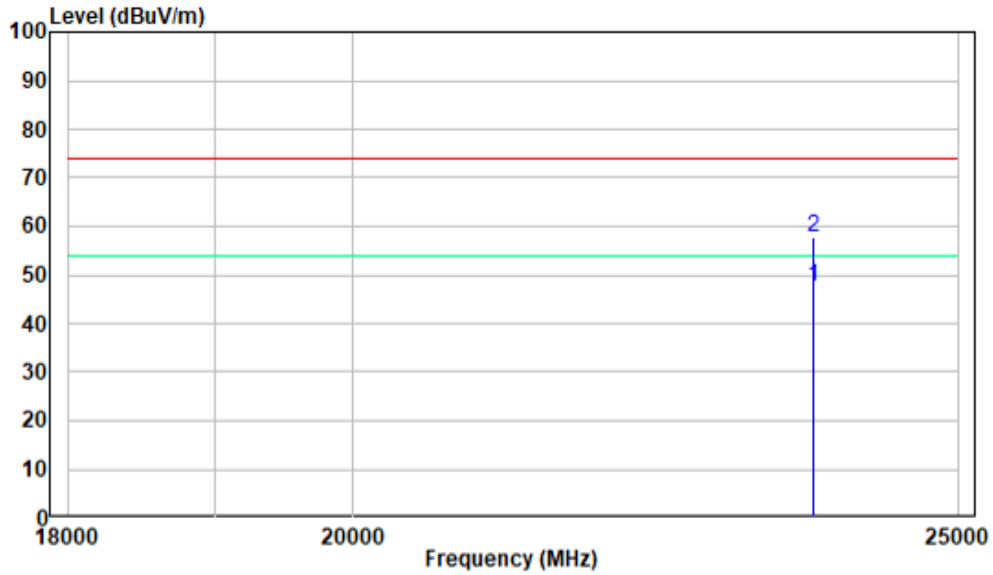
Vertical



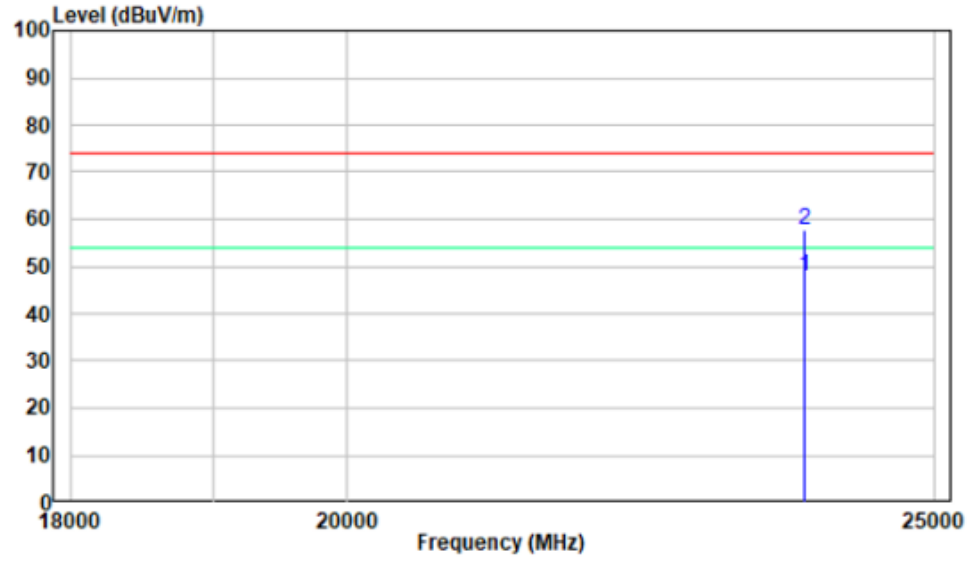
18-25GHz

Pre-scan for Low Channel

Horizontal



Vertical



FCC§15.215(c) - 20dB EMISSION BANDWIDTH

Applicable Standard

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

3. Measure the frequency difference of two frequencies that indicated 20dB bandwidth.

4. Repeat above procedures until all frequencies measured were complete.

Test Data

Environmental Conditions

Temperature:	24.5℃
Relative Humidity:	45 %
ATM Pressure:	101.0 kPa

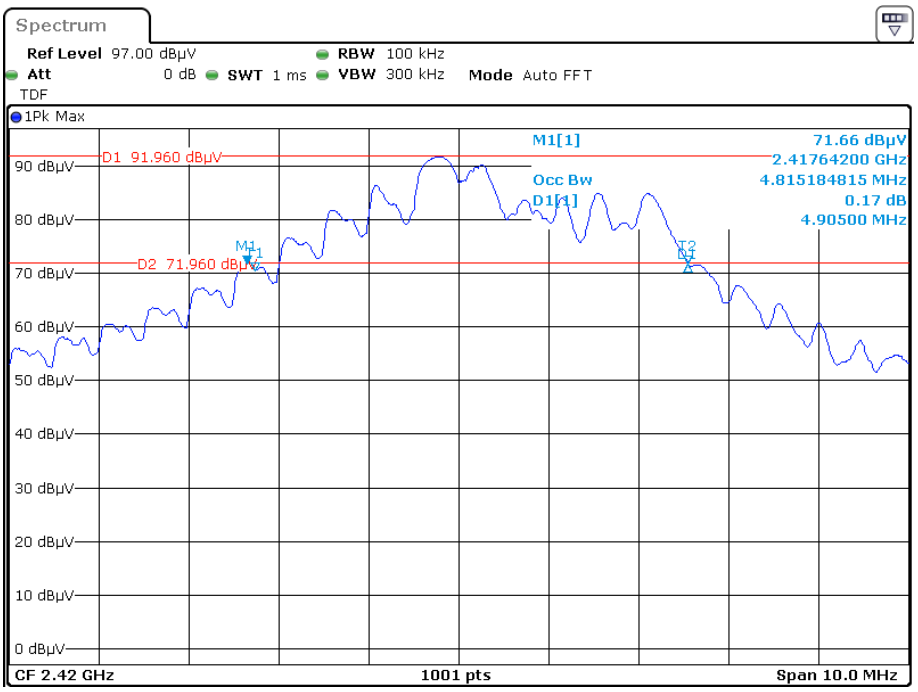
The testing was performed by Jason Liu on 2023-02-16.

EUT operation mode: Transmitting

Please refer to the following table and plots.

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low	2420	4.905
Middle	2440	4.595
High	2460	4.376

Low channel



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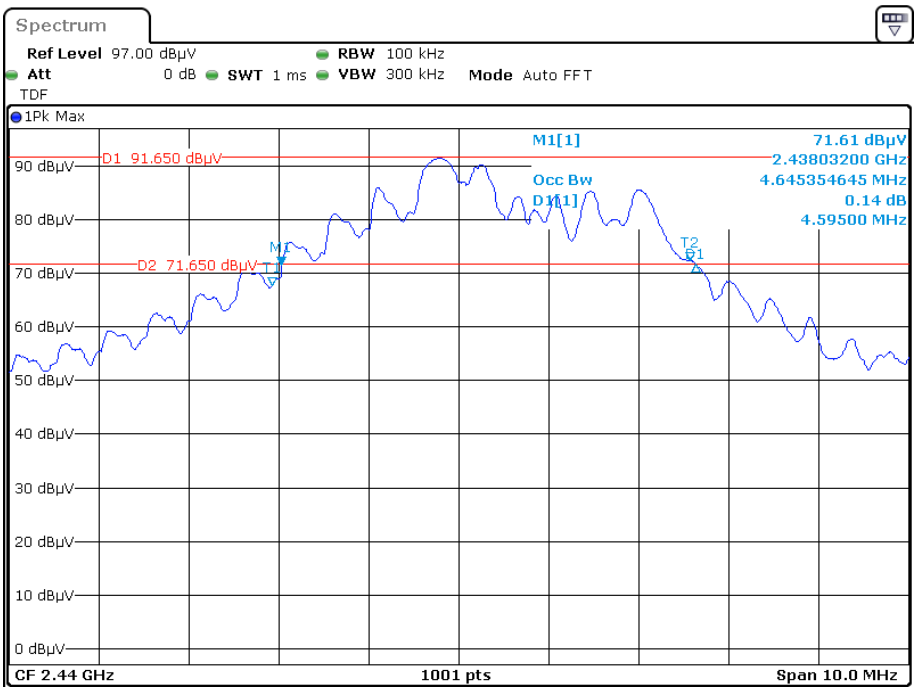
Middle Channel



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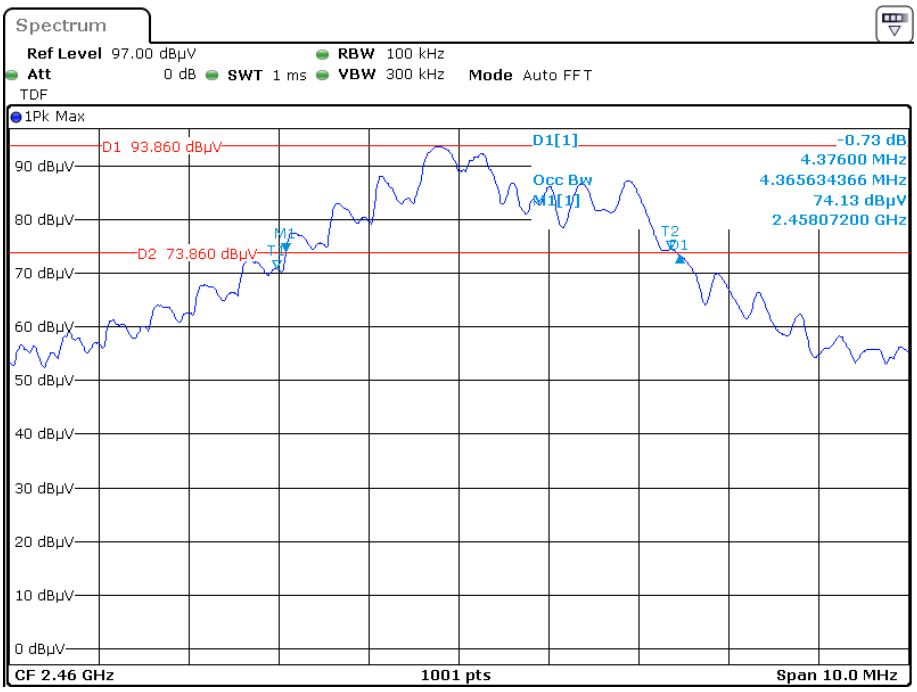
High Channel



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