FCC Test Report

Report No.: AGC11315200902FE03

FCC ID	:	2AXQL-F11GIM
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	FOLDING DRONE
BRAND NAME	:	N/A
MODEL NAME	:	See page 5
APPLICANT	:	Shenzhen Ruike Innovation Technology Co., Ltd
DATE OF ISSUE	:	Nov. 05, 2020
STANDARD(S) **TEST PROCEDURE(S)**	:	FCC Part 15 Rules
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov. 05, 2020	Valid	Initial Release

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1. VERIFICATION OF CONFORMITY

Applicant	Shenzhen Ruike Innovation Technology Co., Ltd
Address	Unit 1701, Rufeng Building, 573 Bulong Rd, Bantian Maantang community, Longgang district, Shenzhen
Manufacturer	Shenzhen Ruike Innovation Technology Co., Ltd
Address	Unit 1701, Rufeng Building, 573 Bulong Rd, Bantian Maantang community, Longgang district, Shenzhen
Factory	Shenzhen Ruike Innovation Technology Co., Ltd
Address	Unit 1701, Rufeng Building, 573 Bulong Rd, Bantian Maantang community, Longgang district, Shenzhen
Product Designation	FOLDING DRONE
Brand Name	N/A
Test Model	F11GIM
Series Model	F11GIM2, F11GIM3, F11, F11PRO, B11, B11PRO, B11PRO2, B11PRO3, B11AIR, B11AIR2, B11AIR3, B7, B7PRO, B7PRO2, B7PRO3, B7AIR, B7AIR2, B7AIR3, U11, U11PRO, U11PRO2, U11PRO3, U11AIR, U11AIR2, U11AIR3, X11, X11PRO, X11PRO2, X11PRO3, X11AIR, X11AIR2, X11AIR3, M3, M3PRO, M3PRO2, M3PRO3, M3AIR, M3AIR2, M3AIR3, A1, A1PRO, A1PRO2, A1PRO3, A1AIR, A1AIR2, A1AIR3, A2, A2PRO, A2PRO2, A2PRO3, A2AIR, A2AIR2, A2AIR3, A8, A8PRO, A8PRO2, A8PRO3, A8AIR, A8AIR2
Difference Description	All the series models arethe same as the test model except for the model names Packaging different.
Date of test	Oct. 14, 2020 to Nov. 05, 2020
Deviation	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-US-BR/RF

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.249.

Prepared By	Sky Dong (Project Engineer)	Nov. 05, 2020
Reviewed By	Max Zhang (Reviewer)	Nov. 05, 2020
Approved By	Forrest Lei (Authorized Officer)	Nov. 05, 2020

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

Operation Frequency	2405MHz-2477MHz
Maximum field strength	91.89dBuV/m(Average)@3m
Modulation	GFSK
Number of channels	16
Antenna Gain	2.86dBi
Antenna Designation	Internal Antenna (Met 15.203 Antenna requirement)
Hardware Version	1919
Software Version	V2.6
Power Supply	DC 3.7V by battery or DC 5V by adapter

2.2. TABLE OF CARRIER FREQUENCY

Frequency Band	Channel Number	Frequency(MHZ)	Channel Number	Frequency(MHZ)	Channel Number	Frequency(MHZ)
2400~2483.5MHZ	01	2405	07	2433	13	2463
	02	2409	08	2439	14	2468
	03	2413	9	2443	15	2473
	04	2418	10	2448	16	2477
	05	2423	11	2453		
	06	2428	12	2458		

2.3. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.

3. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in measurement” (GUM) published by CISPR and ANSI.

- Uncertainty of Conducted Emission, Uc = ±3.1 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±4.0 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB

4. DESCRIPTION OF TEST MODES

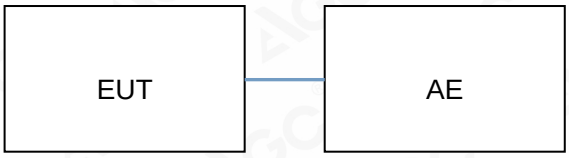
NO.	TEST MODE DESCRIPTION
1	TX mode at 2405MHz
2	TX mode at 2439MHz
3	TX mode at 2477MHz
4	Charging mode(adapter connected)

Note:
1. All the test modes can be supply by battery, only the result of the worst case was recorded in the report, if no other cases.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
3. The EUT enters test modes by pressing keys of EUT.

5. SYSTEM TEST CONFIGURATION

5.1. CONFIGURATION OF EUT SYSTEM

Configure:



5.2 EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	FOLDING DRONE	F11GIM	2AXQL-F11GIM	EUT
2	Adapter	TPA-46050100VU	DC 5V	AE

5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.249&15.209	Radiated Emission	Compliant
§15.249	Band Edges	Compliant
§15.215	20dB bandwidth	Compliant
§15.207	Conducted Emission	Compliant

6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA

TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	May 15, 2020	May 14, 2021
LISN	R&S	ESH2-Z5	100086	Jul. 03,2020	Jul. 02,2021
Test software	R&S	ES-K1(Ver.V1.71)	N/A	N/A	N/A

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	May 15, 2020	May 14, 2021
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 12, 2019	Dec. 11, 2020
2.4GHz Fliter	EM Electronics	2400-2500MHz	N/A	Mar. 23, 2020	Mar. 22, 2022
Attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep.21, 2019	Sep. 20, 2021
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	May 22, 2020	May 21, 2022
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00154520	Oct. 26, 2019	Oct. 25, 2021
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Oct. 15, 2019	Oct. 16, 2021
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 09, 2019	Jan. 08, 2021
Test software	Tonscend	JS32-RE (Ver.2.5)	N/A	N/A	N/A

7. RADIATED EMISSION

7.1TEST LIMIT

Standard FCC15.249

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
900-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

Standard FCC 15.209

Frequency (MHz)	Distance Meters	Field Strengths Limit	
		μV/m	dB(μV)/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	---
1.705 ~ 30	30	30	---
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	Other:74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Remark: (1) Emission level dBμV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

7.2. MEASUREMENT PROCEDURE

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use minimum resolution bandwidth of 1 MHz. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

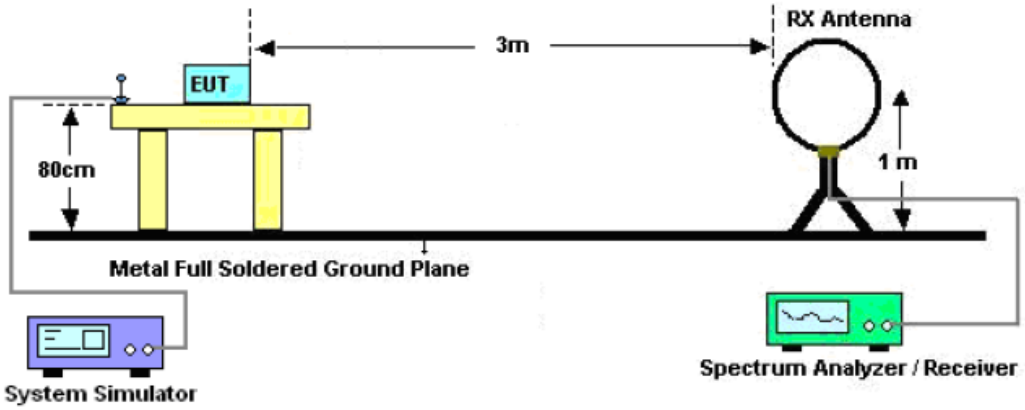
The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz RBW 2.4MHz/ VBW 8MHz for Peak, RBW 2.4MHz/8MHz for Average

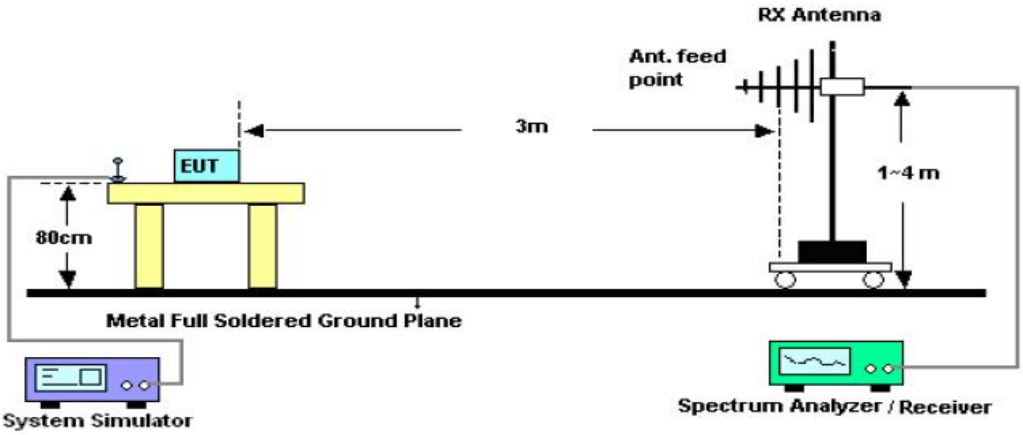
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

7.3. TEST SETUP

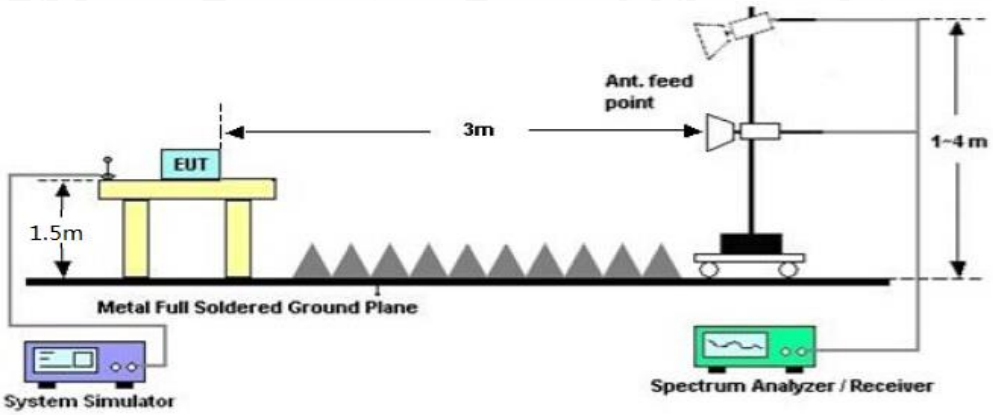
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



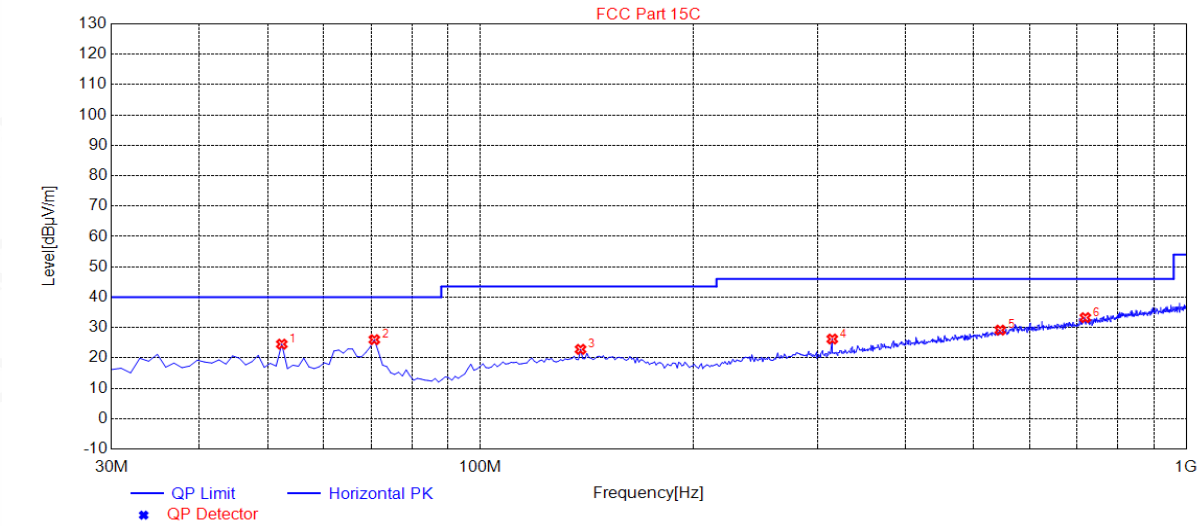
7.4. TEST RESULT

RADIATED EMISSION BELOW 30MHZ

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

RADIATED EMISSION 30MHz- 1GHZ

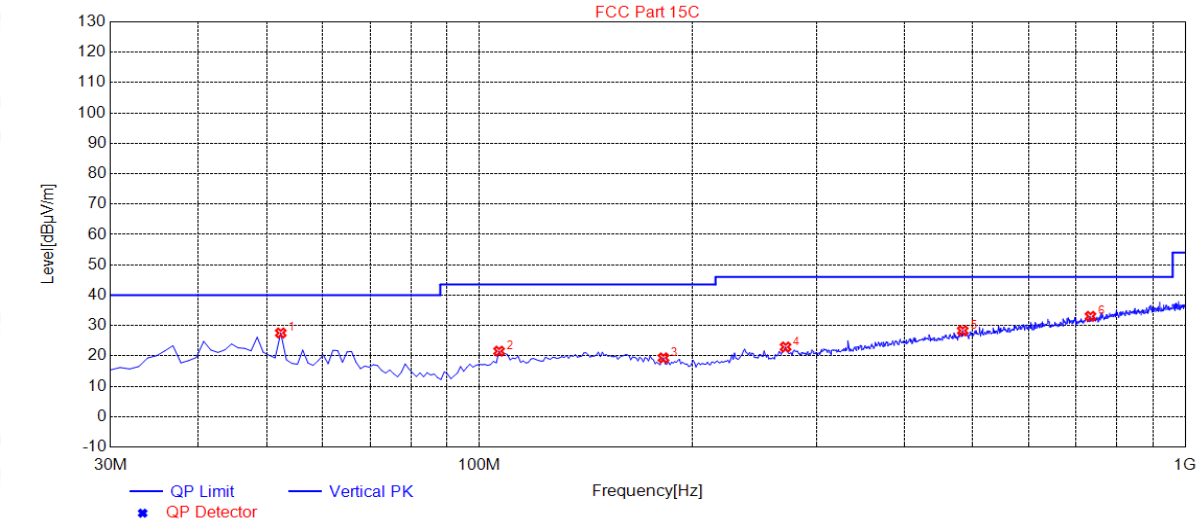
EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Mode	Mode 1	Polarization	Horizontal



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	52.3100	24.53	11.49	40.00	15.47	100	42	Horizontal
2	70.7400	26.02	9.07	40.00	13.98	100	360	Horizontal
3	138.6400	22.82	14.78	43.50	20.68	100	69	Horizontal
4	315.1800	26.22	16.48	46.00	19.78	100	61	Horizontal
5	545.0700	29.16	23.17	46.00	16.84	100	66	Horizontal
6	719.6700	33.26	26.45	46.00	12.74	100	53	Horizontal

RESULT: PASS

EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Mode	Mode 1	Polarization	Vertical



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	52.3100	27.55	11.49	40.00	12.45	100	297	Vertical
2	106.6300	21.57	12.07	43.50	21.93	100	86	Vertical
3	182.2900	19.35	12.88	43.50	24.15	100	238	Vertical
4	271.5300	22.94	15.55	46.00	23.06	100	206	Vertical
5	483.9600	28.31	21.81	46.00	17.69	100	46	Vertical
6	734.2200	33.03	26.83	46.00	12.97	100	344	Vertical

RESULT: PASS

Note: Factor=Antenna Factor + Cable loss, Margin=Limit-Level.

The “Factor” value can be calculated automatically by software of measurement system.

The mode 1 is the worst case, and only the data of the worst case recorded in this test report.

FIELD STRENGTH OF FUNDAMENTAL

EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Modulation	GFSK	Polarization	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2405	47.63	49.05	94.53	114.00	-19.47	peak
2405	32.33	49.05	91.11	94.00	-2.89	AVG
2439	47.14	49.12	94.92	114.00	-19.08	peak
2439	28.66	49.12	91.33	94.00	-2.67	AVG
2477	46.22	49.25	95.03	114.00	-18.97	peak
2477	28.60	49.25	91.89	94.00	-2.11	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Modulation	GFSK	Polarization	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2405	45.65	49.05	92.38	114.00	-21.62	peak
2405	29.51	49.05	89.15	94.00	-4.85	AVG
2439	45.31	49.12	93.08	114.00	-20.92	peak
2439	30.11	49.12	89.77	94.00	-4.23	AVG
2477	40.78	49.25	93.12	114.00	-20.88	peak
2477	30.48	49.25	89.81	94.00	-4.19	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

RADIATED EMISSION ABOVE 1GHZ

EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Mode	Mode 1	Polarization	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4810.67	55.20	0.08	55.28	74.00	-18.72	peak
4810.67	42.93	0.08	43.01	54.00	-10.99	AVG
7215.426	50.14	2.21	52.35	74.00	-21.65	peak
7215.426	38.15	2.21	40.36	54.00	-13.64	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Mode	Mode 1	Polarization	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4810.67	53.15	0.08	53.23	74.00	-20.77	peak
4810.67	42.17	0.08	42.25	54.00	-11.75	AVG
7215.426	47.35	2.21	49.56	74.00	-24.44	peak
7215.426	35.47	2.21	37.68	54.00	-16.32	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Mode	Mode 2	Polarization	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4878.683	51.14	0.14	51.28	74.00	-22.72	peak
4878.683	43.16	0.14	43.30	54.00	-10.70	AVG
7317.436	45.37	2.36	47.73	74.00	-26.27	peak
7317.436	34.49	2.36	36.85	54.00	-17.15	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Mode	Mode 2	Polarization	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4878.683	49.19	0.14	49.33	74.00	-24.67	peak
4878.683	39.28	0.14	39.42	54.00	-14.58	AVG
7317.436	44.29	2.36	46.65	74.00	-27.35	peak
7317.436	36.25	2.36	38.61	54.00	-15.39	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Mode	Mode 3	Polarization	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4954.056	53.24	0.22	53.46	74.00	-20.54	peak
4954.056	46.25	0.22	46.47	54.00	-7.53	AVG
7431.384	50.97	2.64	53.61	74.00	-20.39	peak
7431.384	39.99	2.64	42.63	54.00	-11.37	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Mode	Mode 3	Polarization	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4954.056	54.36	0.22	54.58	74.00	-19.42	peak
4954.056	43.39	0.22	43.61	54.00	-10.39	AVG
7431.384	49.78	2.64	52.42	74.00	-21.58	peak
7431.384	37.89	2.64	40.53	54.00	-13.47	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Note: The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Measurement-Limit.

The “Factor” value can be calculated automatically by software of measurement system.

8. BAND EDGE EMISSION

8.1. MEASUREMENT PROCEDURE

1. The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.

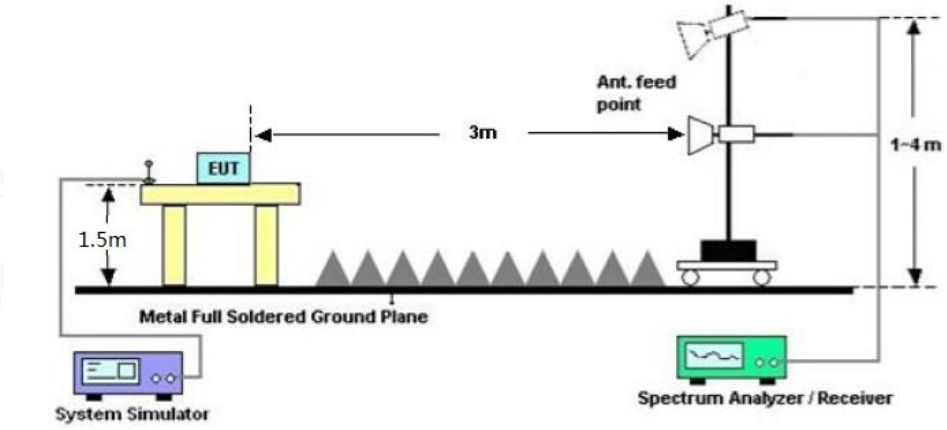
2. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission: (a) PEAK: RBW=1MHz, VBW=3MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz ; VBW=3MHz / Sweep=AUTO

3. Other procedures refer to clause 7.2.

8.2 TEST SETUP

RADIATED EMISSION TEST SETUP



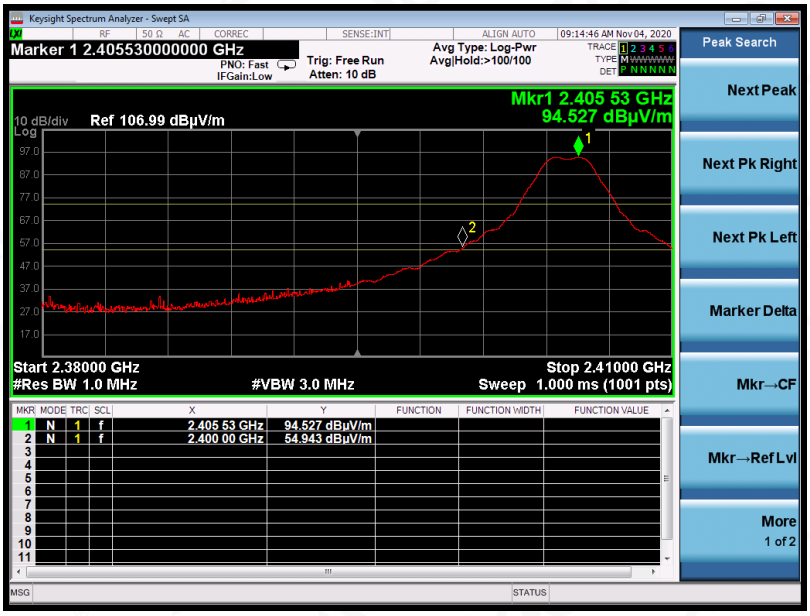
8.3 RADIATED TEST RESULT

Note:

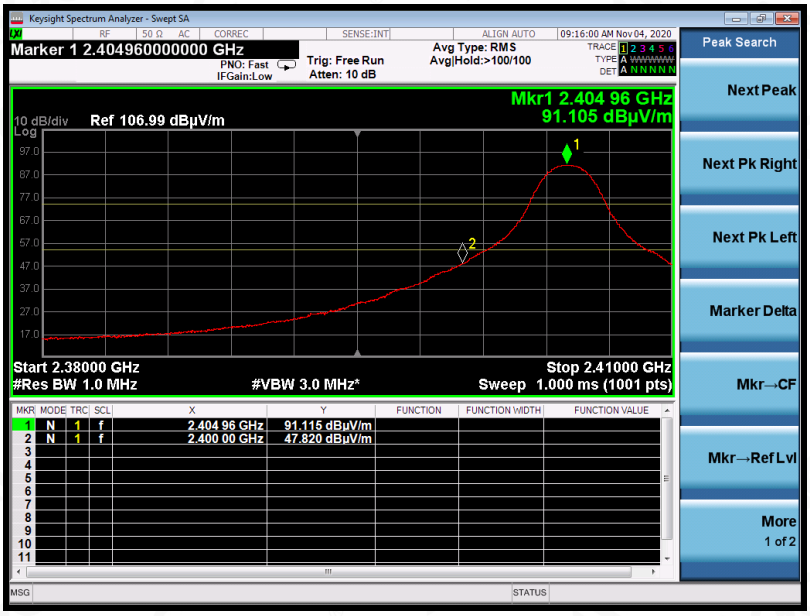
1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level
2. The factor had been edited in the “Input Correction” of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB(μV) to represent the Amplitude. Use the F dB(μV/m) to represent the Field Strength. So A=F.

EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Mode	Mode 1	Polarization	Horizontal

Peak Value



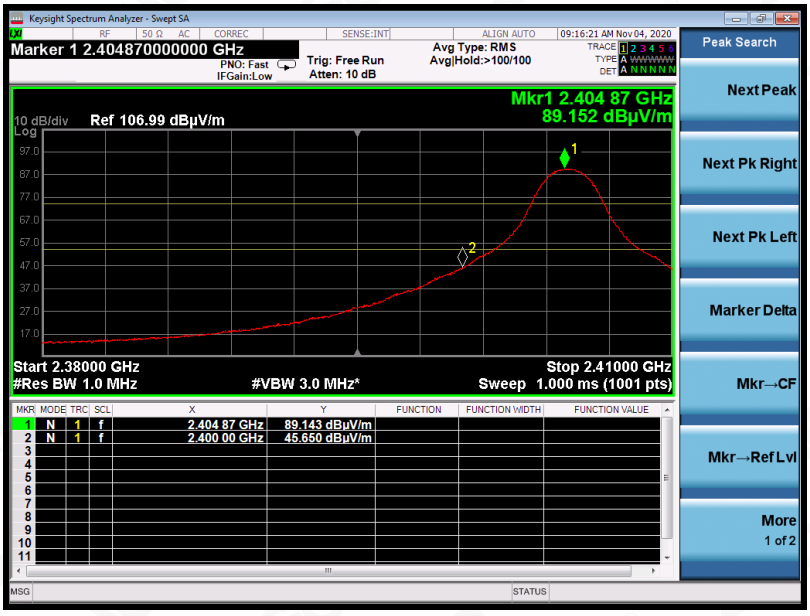
Average Value



EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Mode	Mode 1	Polarization	Vertical

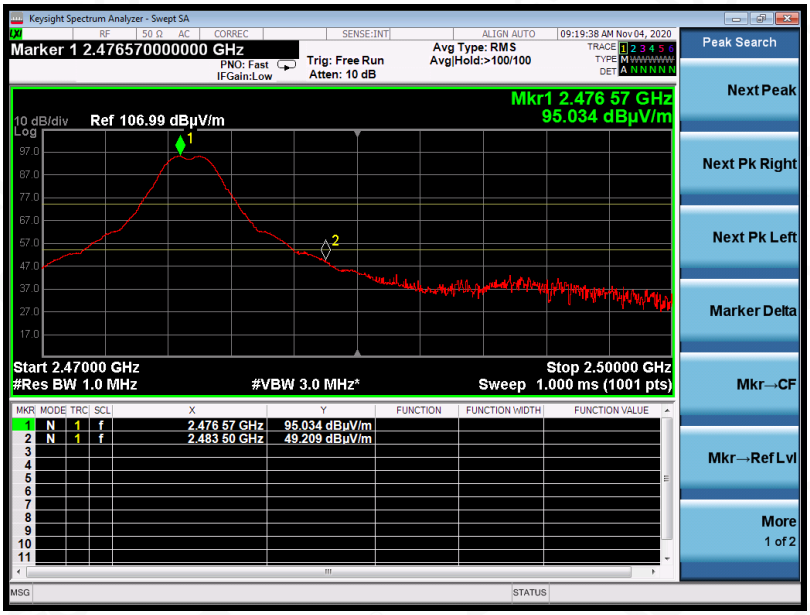
Peak Value

Average Value

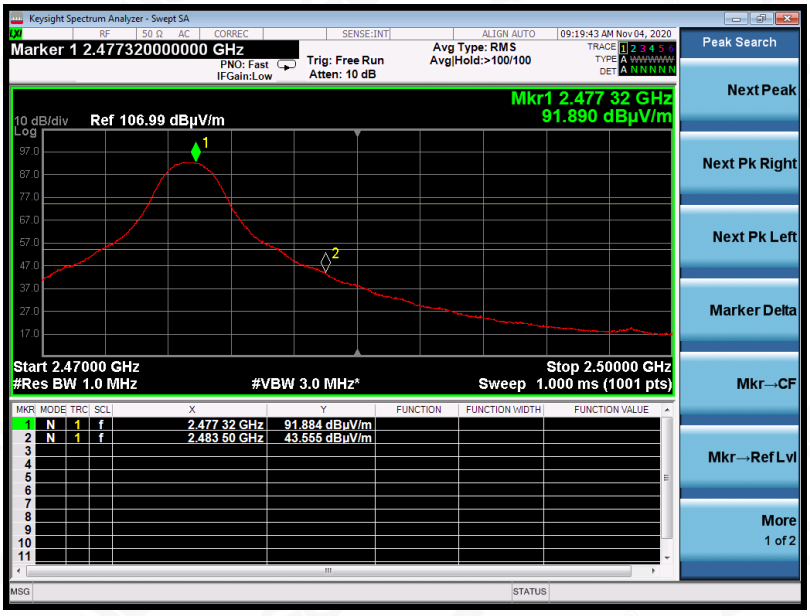


EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Mode	Mode 1	Polarization	Horizontal

Peak Value



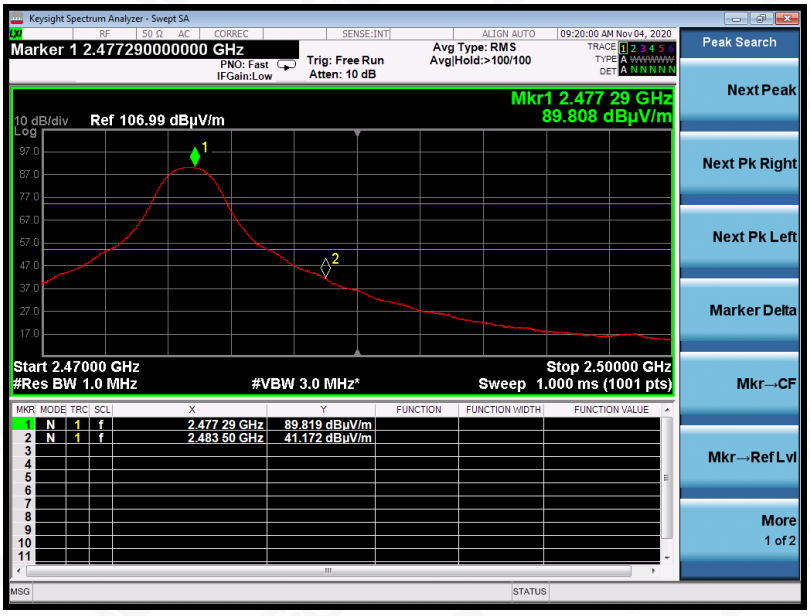
Average Value



EUT	FOLDING DRONE	Model Name	F11GIM
Temperature	25℃	Relative Humidity	60%
Pressure	101kPa	Test Voltage	DC 3.7V
Test Mode	Mode 1	Polarization	Vertical

Peak Value

Average Value

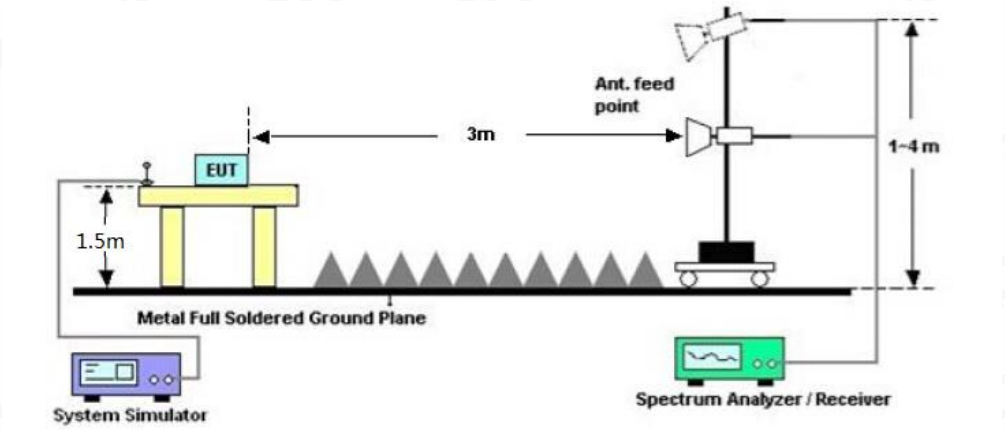


9. 20DB BANDWIDTH

9.1. MEASUREMENT PROCEDURE

1. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
2. Set SPA Centre Frequency = Operation Frequency, RBW= 30 KHz, VBW≥3×RBW.
3. Set SPA Trace 1 Max hold, then View.

9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

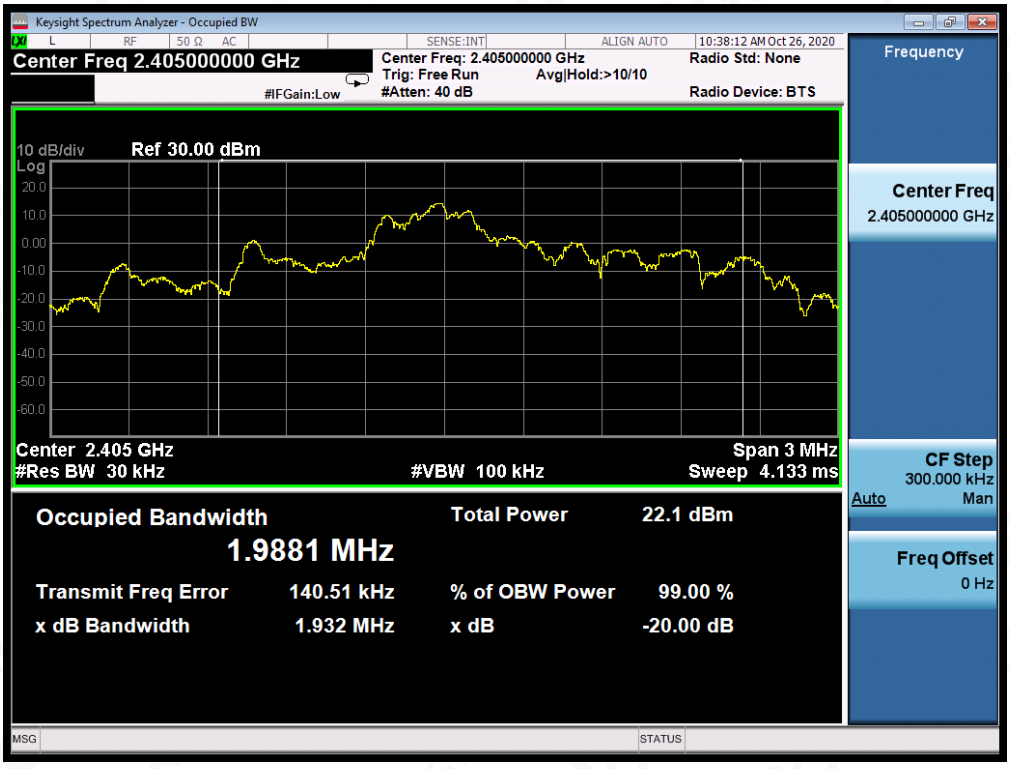


9.3. MEASUREMENT RESULTS

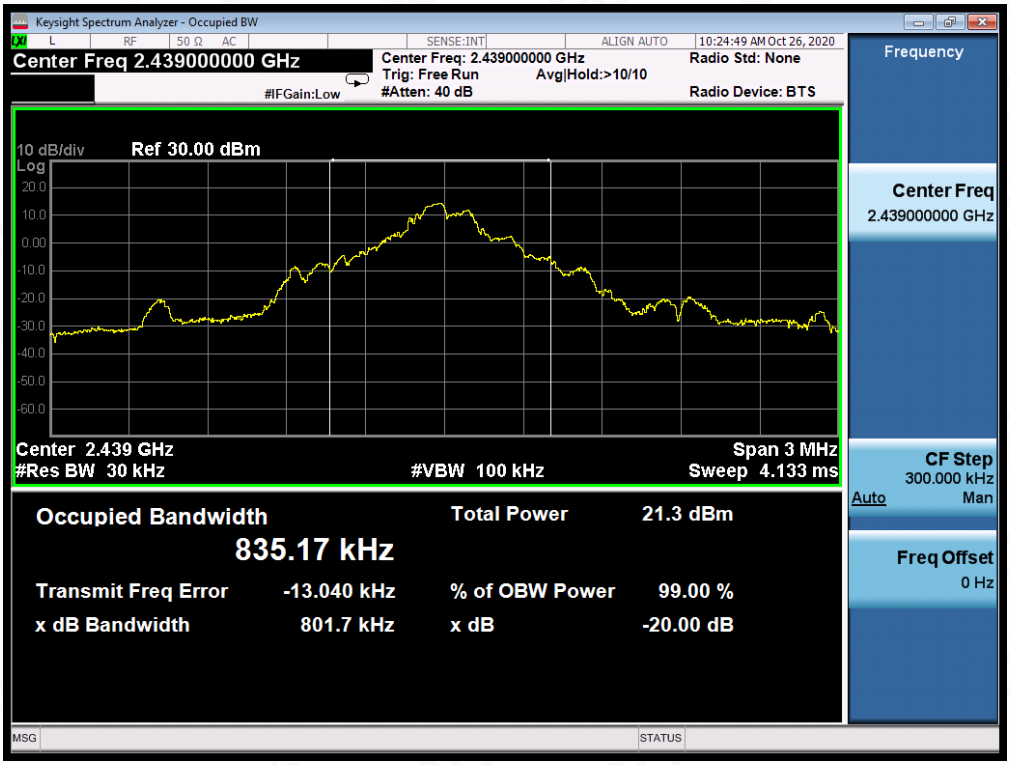
TEST ITEM	20DB BANDWIDTH
TEST MODULATION	GFSK

Test Channel (MHz)	20DB BANDWIDTH (MHz)	99% BANDWIDTH (MHz)	Criteria
2405	1.932	1.9881	PASS
2439	0.801	0.835	PASS
2477	1.284	1.4266	PASS

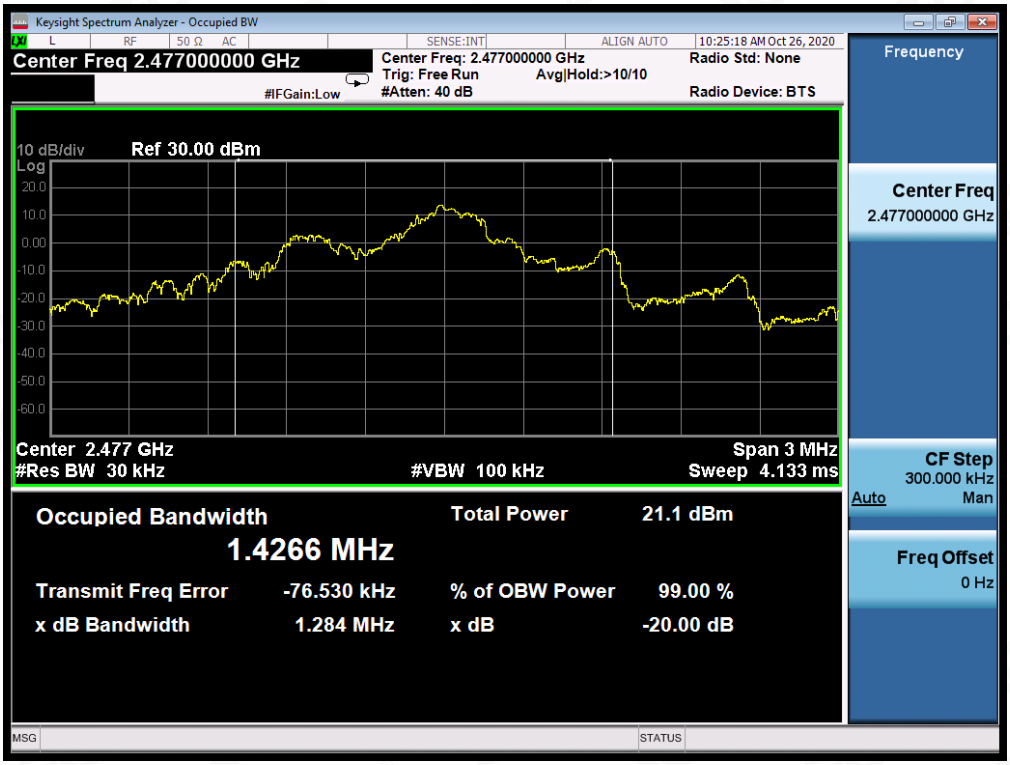
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



10. FCC LINE CONDUCTED EMISSION TEST

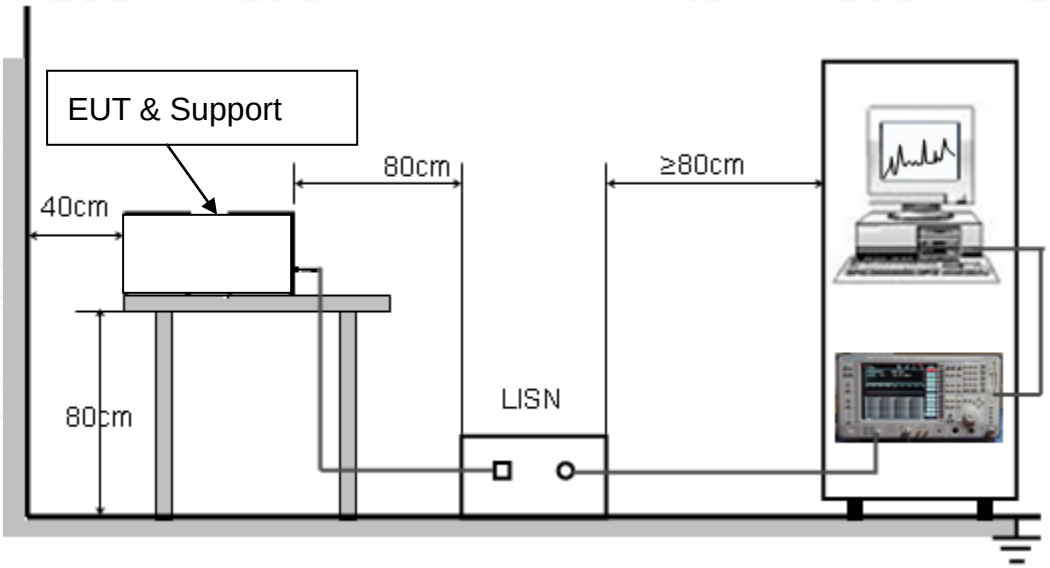
10.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

10.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



10.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipment received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC 5V power from control board which received AC120V/60Hz power from a LISN.
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

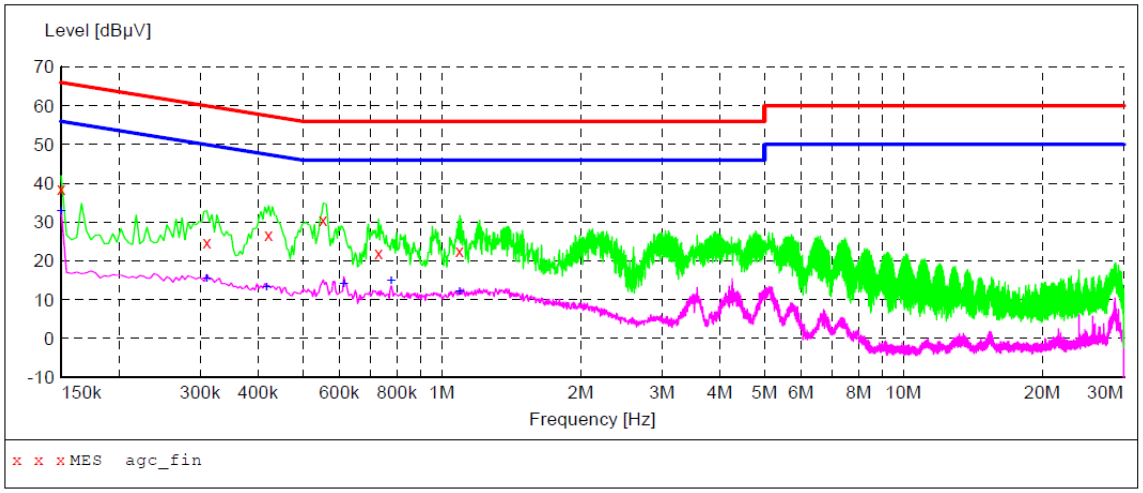
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

12.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Line Conducted Emission Test Line 1-L



MEASUREMENT RESULT: "agc_fin"

2020/10/28 8:52

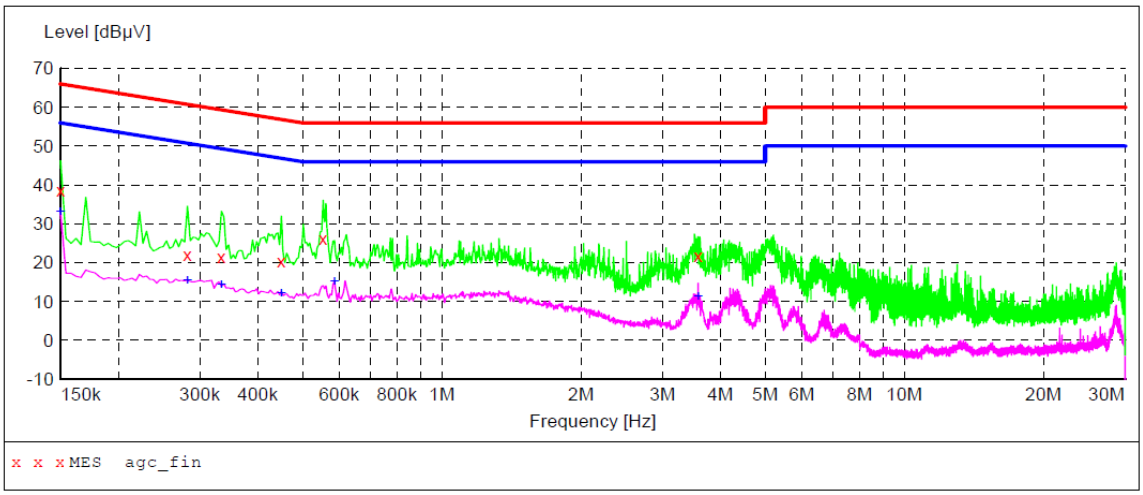
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.150000	38.70	11.3	66	27.3	QP	L1
0.310000	24.90	11.3	60	35.1	QP	L1
0.422000	26.60	11.3	57	30.8	QP	L1
0.554000	30.50	11.3	56	25.5	QP	L1
0.730000	22.00	11.3	56	34.0	QP	L1
1.094000	22.70	11.3	56	33.3	QP	L1

MEASUREMENT RESULT: "agc_fin2"

2020/10/28 8:52

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.150000	32.90	11.3	56	23.1	AV	L1
0.310000	15.30	11.3	50	34.7	AV	L1
0.418000	13.10	11.3	48	34.4	AV	L1
0.614000	14.00	11.3	46	32.0	AV	L1
0.778000	14.90	11.3	46	31.1	AV	L1
1.094000	12.00	11.3	46	34.0	AV	L1

Line Conducted Emission Test Line 2-N



MEASUREMENT RESULT: "agc_fin"

2020/10/28 9:00

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.150000	38.70	11.3	66	27.3	QP	N
0.282000	22.00	11.3	61	38.8	QP	N
0.334000	21.40	11.3	59	38.0	QP	N
0.450000	20.30	11.3	57	36.6	QP	N
0.554000	26.30	11.3	56	29.7	QP	N
3.582000	21.80	11.4	56	34.2	QP	N

MEASUREMENT RESULT: "agc_fin2"

2020/10/28 9:00

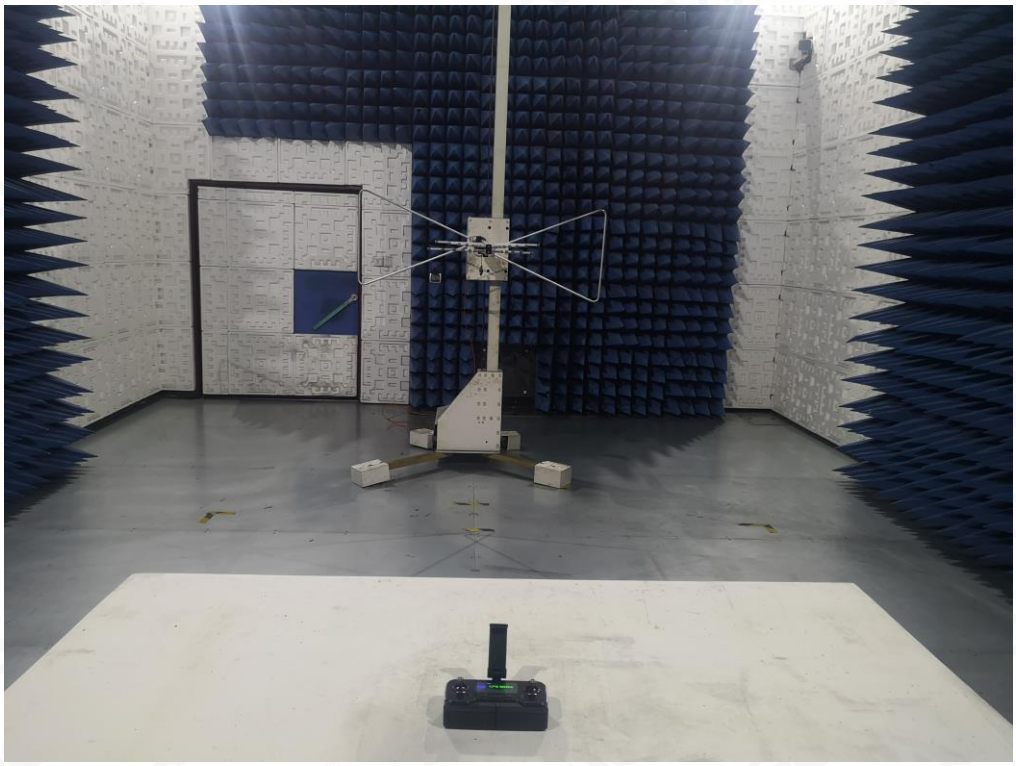
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.150000	33.00	11.3	56	23.0	AV	N
0.282000	15.30	11.3	51	35.5	AV	N
0.334000	14.30	11.3	49	35.1	AV	N
0.450000	12.10	11.3	47	34.8	AV	N
0.586000	15.10	11.3	46	30.9	AV	N
3.582000	11.20	11.4	46	34.8	AV	N

RESULT: PASS

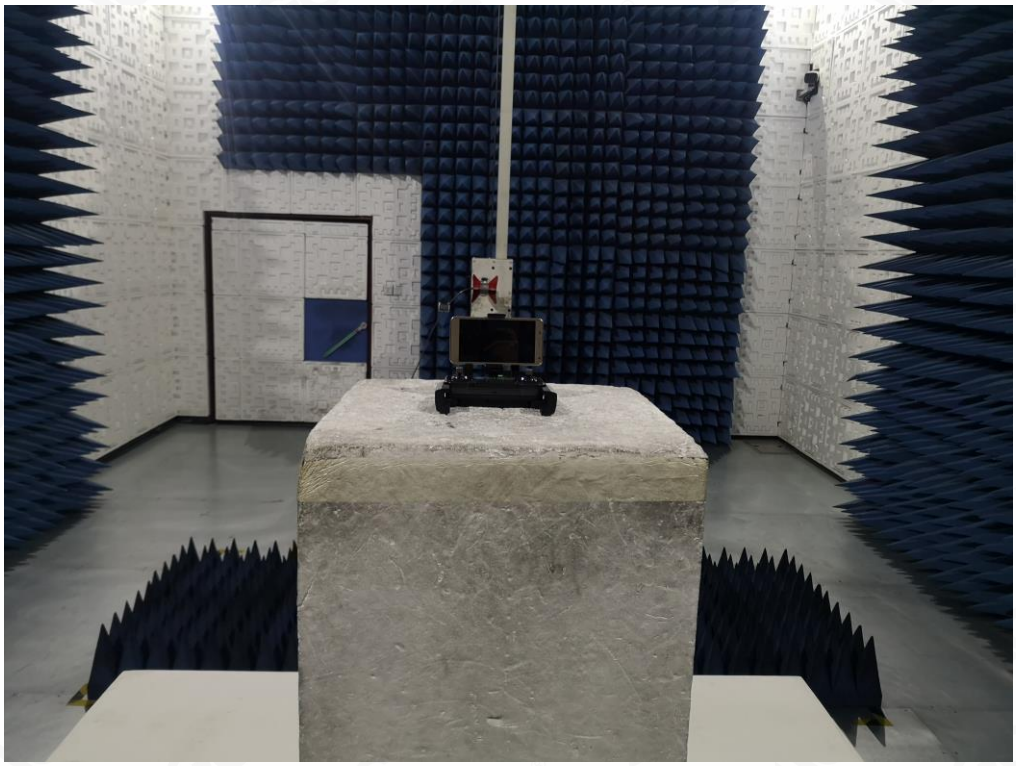
Note: All the test modes had been tested, the mode 1 was the worst case. Only the data of the worst case would be record in this test report.

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

FCC RADIATED EMISSION TEST SETUP BELOW 1GHZ



FCC RADIATED EMISSION TEST SETUP ABOVE 1



CONDUCTED EMISSION TEST SETUP