FCC - TEST REPORT

Report Number	:	**68.950.24.0294.01**	Date of Issue:	2024-04-26
Model	:	**EA-J100, 3WWDZ-45A**		
Product Type	:	EA-J100 Agricultural Spraying Drone		
Applicant	:	SUZHOU EAVISION ROBOTIC TECHNOLOGIES CO., LTD		
Address	:	Room 504&505, Building 2, Nanopolis District II, No.333, Xingpu Road, SIP Suzhou, Jiangsu, China		
Manufacture	:	SUZHOU EAVISION ROBOTIC TECHNOLOGIES CO., LTD		
Address	:	Room 504&505, Building 2, Nanopolis District II, No.333, Xingpu Road, SIP Suzhou, Jiangsu, China		
Factory	:	SUZHOU EAVISION ROBOTIC TECHNOLOGIES CO., LTD		
Address	:	Unit 1-A, No.3 Workshop, 28 Xiasheng Road, SIP, Suzhou, China		
Test Result	:	■ **Positive** ☐ **Negative**		
Total pages including Appendices	:	**19**		

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2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12&13, Zhiheng Wisdomland Business Park,
Nantou Checkpoint Road 2, Nanshan District,
Shenzhen City, 518052,
P. R. China

Telephone: +86 755 8828 6998
Fax: +86 755 8828 5299

Test site2:
Company name: Ke Mei Ou Lab Co., Ltd.
2013-2016, 20th Floor, Business Center, No 3027, Shen Nan Road, Fu Tian, Shen Zhen, Guang Dong, P. R. China Postcode: 518033

Telephone: +86 755 83642690
Fax: +86 755 83297077

3 Description of the Equipment Under Test

Description of the Equipment Under Test

Product:	EA-J100 Agricultural Spraying Drone
Model no.:	EA-J100, 3WWDZ-45A
Brand Name:	EAVISION
FCC ID:	2AXLB-EA-J100
Power Supply:	DC 52.22V by Lithium Ion Polmer Rechargeable Battery Battery model: EAV-CTB29000A Max Charge Voltage:59.92V Nominal Voltage:52.22V Rated Capacity:29000mAh
RF Transmission Frequency:	24000MHz - 24250MHz
Modulation:	FMCW
Antenna Type:	Microstrip planar antenna
Antenna Gain:	18.3dBi
Description of the EUT:	NIL

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
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4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2023 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

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5 Summary of Test Results

Technical Requirements					
FCC Part 15 Subpart C					
Test Condition	Pages	Test Site	Test Result		
			Pass	Fail	N/A
15.207 Conducted emission AC power port*	N/A	Site 1	☐	☐	☒
§15.205(a), §15.209(a), §15.249(a), §15.249(c) Field strength of emissions and Restricted bands	9	Site 1	☒	☐	☐
§15.249(d) Out of band emissions	14	Site 1,2	☒	☐	☐
FCC §15.215(c) 20dB bandwidth	16	Site 1	☒	☐	☐

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6 General Remarks

Remarks
This submittal(s) (test report) is intended for FCC ID: 2AXLB-EA-J100, complies with Section 15.207, 15.209, 15.205, 15.247 of the FCC Part 15 Subpart C rules.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

☐ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Sample Received Date: March 01, 2024

Testing Start Date: March 01, 2024

Testing End Date: April 24, 2024

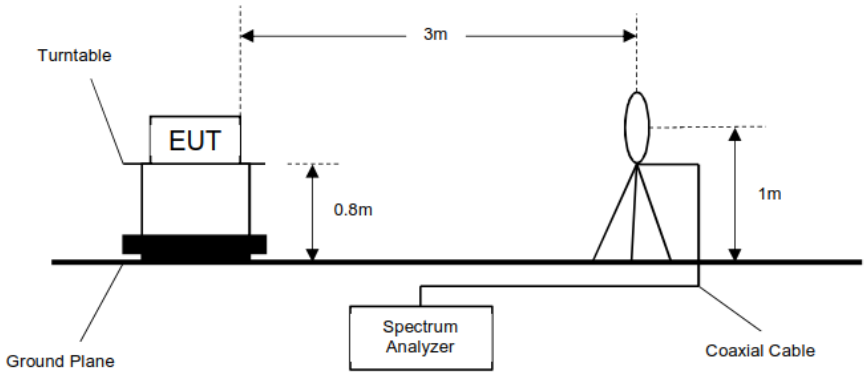
- TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch -

Reviewed by:	Prepared by:	Tested by:
John Zhi	Sanvin Zheng	Carry Cai
Project Manager	Project Engineer	EMC Test Engineer

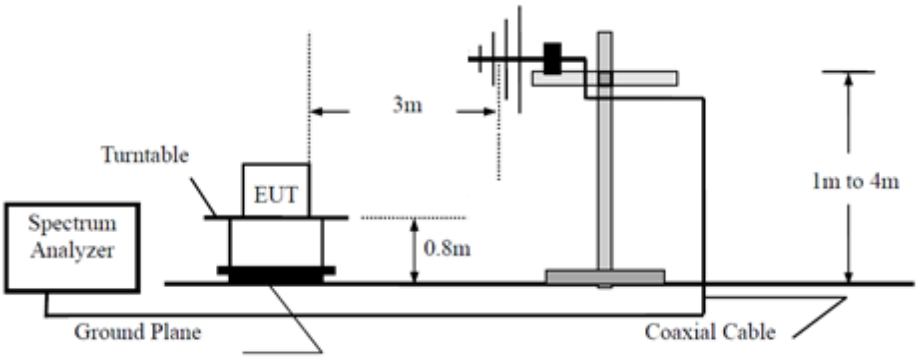
7 Test setups

7.1 Radiated test setups

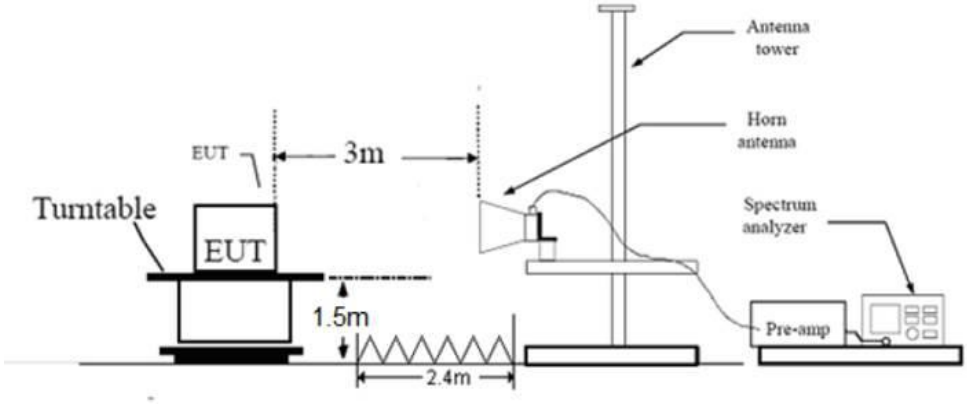
9kHz - 30MHz



Below 1GHz



Above 1GHz



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8 Technical Requirement

8.1 Field strength of emissions and Restricted bands

Test Method

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
3. Use the following spectrum analyzer settings:
   Span = wide enough to fully capture the emission being measured ,RBW = 1 MHz for f ≥ 1GHz, 100 kHz for f < 1 GHz, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold
4. Follow the guidelines in ANSI C63.4-1992 with respect to maximizing the emission by rotating the EUT, adjusting the measurement antenna height and polarization, etc. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, submit this data. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the duty cycle per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log(duty cycle/100 ms), in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

Limits

According to §15.249 (a), 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

According to §15.249 (c), Field strength limits are specified at a distance of 3 meters.
According to §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.
According to §15.205 Unwanted emissions falling into restricted bands in §15.205 (a) Table 3 shall comply with the limits specified in §15.209.

Remark:

(1) “*” means the emission(s) appear within the restrict bands shall follow the requirement of § 15.205.
(2) Data of measurement within frequency ranges 9kHz-30MHz is the noise floor or attenuated more than 20dB below the permissible limits or the field strength is too small to be measured, so test data does not present in this report.
(3) Above 1GHz: During the test, 1.5 meters was the worst data

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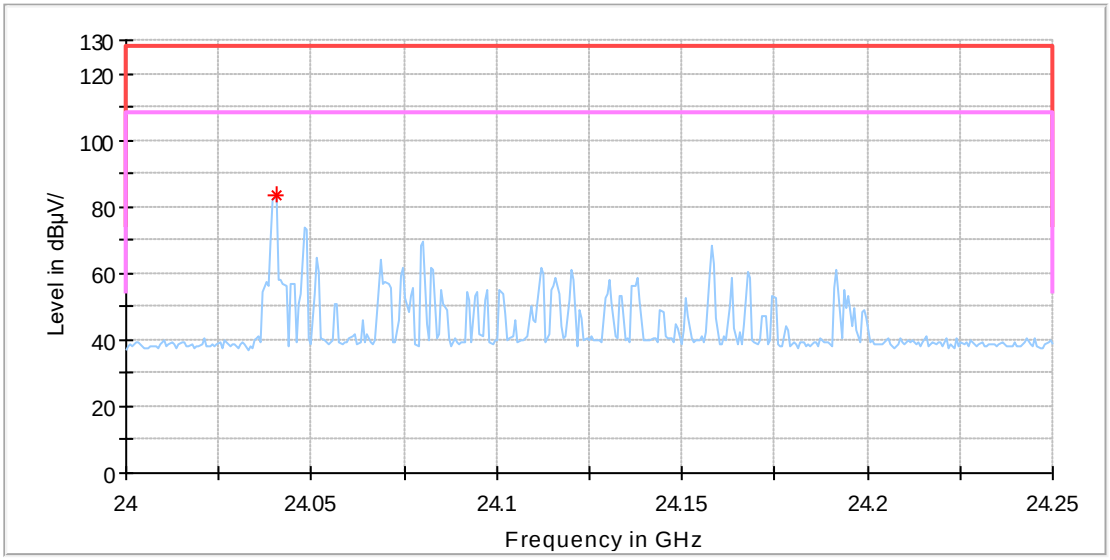
Filed Strength of Fundamental

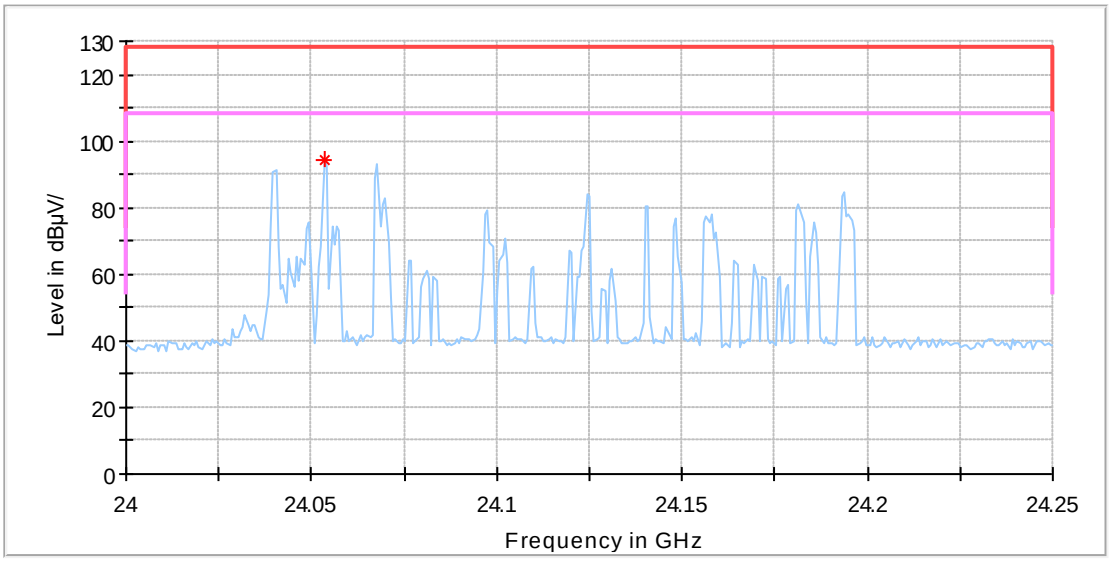
EUT: EA-J100 Agricultural Spraying Drone M/N: EA-J100
Operating Condition: Tx
Ant. Polarity: Vertical



Critical_Freqs

Frequency (MHz)	MaxPeak (dB¦ìV/m)	Limit (dB¦ìV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
24040.375000	83.33	128.00	44.67	150.0	V	0.0	1.70

EUT: EA-J100 Agricultural Spraying Drone M/N: EA-J100
Operating Condition: Tx
Ant. Polarity: Horizontal



Critical_Freqs

Frequency (MHz)	MaxPeak (dB¦ìV/m)	Limit (dB¦ìV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Corr. (dB)
24053.437500	94.34	128.00	33.66	150.0	H	158.0	1.71	---

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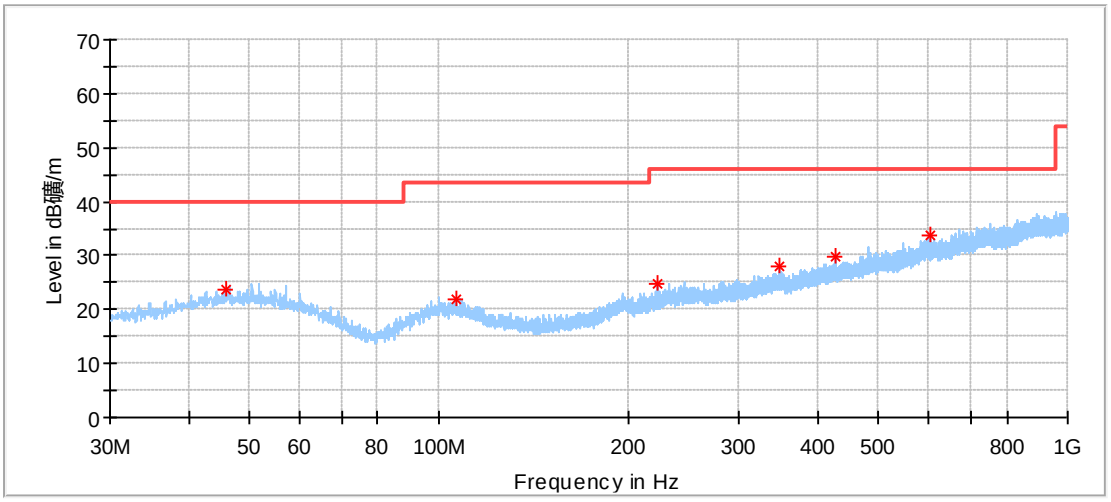
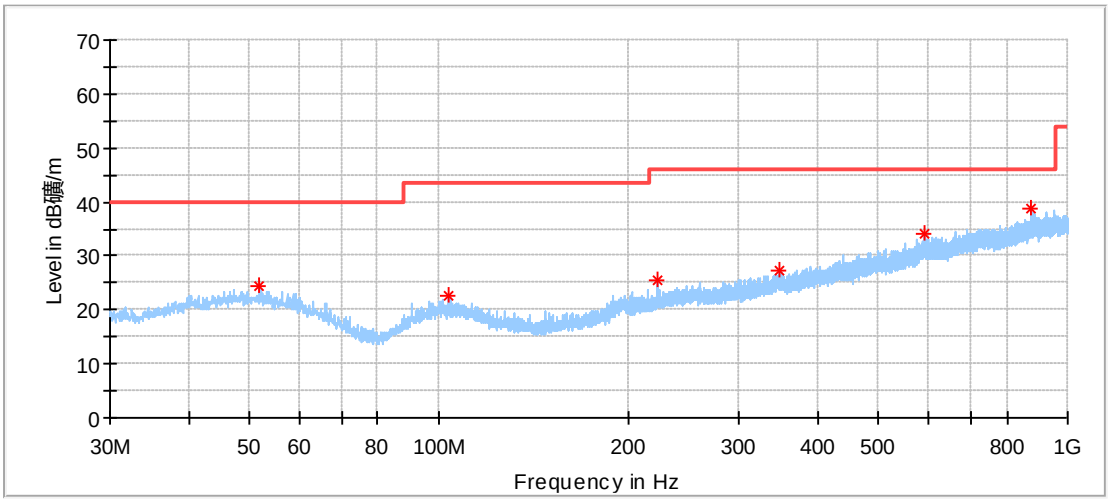
Radiation Spurious Emission

EUT: EA-J100 Agricultural Spraying Drone M/N: EA-J100
Operating Condition: Tx
Ant. Polarity: Vertical
Comment: 30-1000MHz



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
45.735556	23.69	40.00	16.31	200.0	H	82.0	18.18
106.576111	22.06	43.50	21.44	200.0	H	356.0	15.73
222.760556	24.67	46.00	21.33	100.0	H	356.0	16.06
348.860556	28.15	46.00	17.85	100.0	H	359.0	19.84
426.298889	29.62	46.00	16.38	200.0	H	47.0	21.39
605.748889	33.87	46.00	12.13	200.0	H	65.0	24.82

EUT: EA-J100 Agricultural Spraying Drone M/N: EA-J100
Operating Condition: Tx
Ant. Polarity: Horizontal
Comment: 30-1000MHz



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
51.878889	24.36	40.00	15.64	100.0	V	37.0	18.09
103.720000	22.60	43.50	20.90	100.0	V	310.0	15.90
222.760556	25.46	46.00	20.54	100.0	V	301.0	16.06
347.082222	27.18	46.00	18.82	200.0	V	258.0	19.80
592.600000	33.95	46.00	12.05	200.0	V	94.0	24.63
874.385000	38.76	46.00	7.24	100.0	V	274.0	28.36

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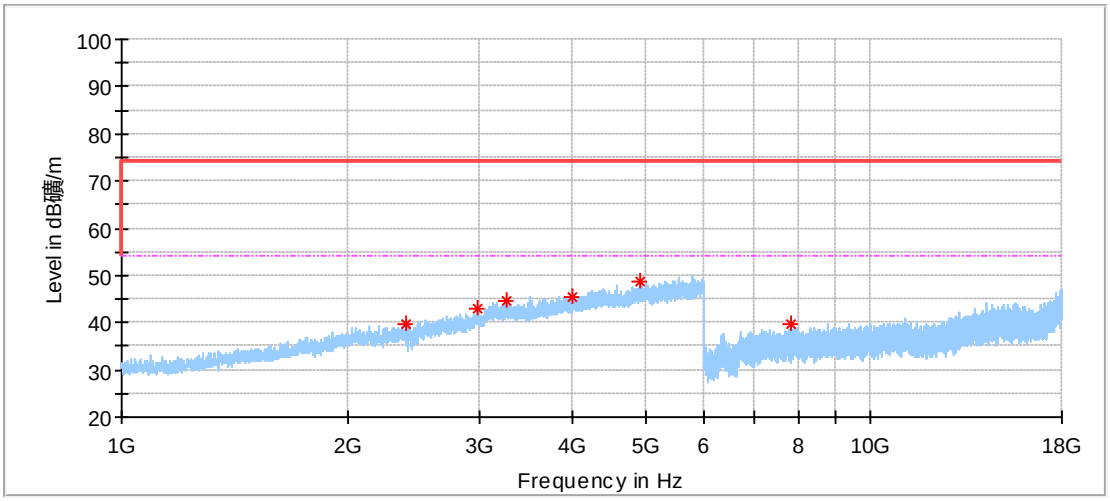
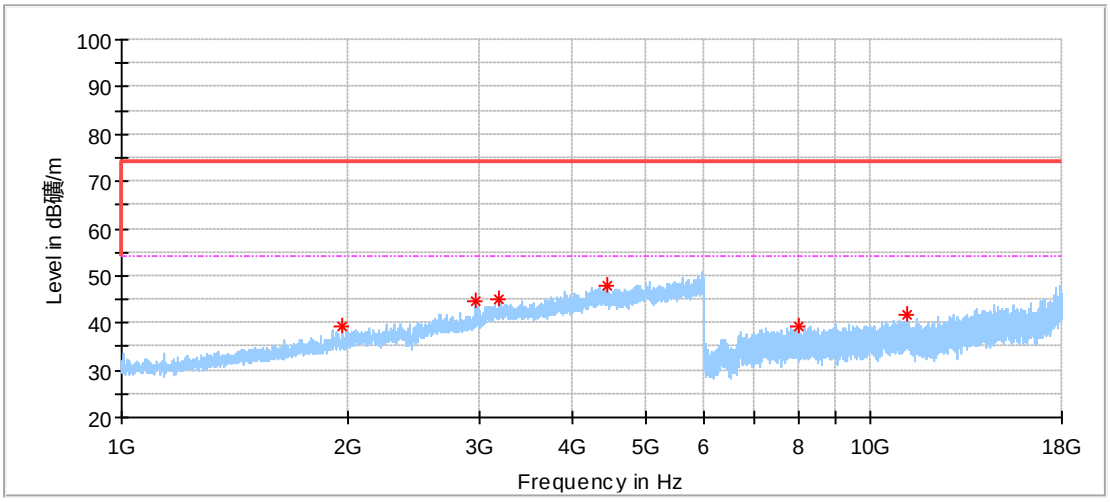
EUT: EA-J100 Agricultural Spraying Drone M/N: EA-J100
Operating Condition: Tx
Ant. Polarity: Vertical
Comment: 1GHz-18GHz



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2392.500000	39.53	74.00	34.47	150.0	V	274.0	-5.99
2993.000000	43.03	74.00	30.97	150.0	V	93.0	-2.68
3269.500000	44.79	74.00	29.21	150.0	V	175.0	-0.96
3993.000000	45.34	74.00	28.66	150.0	V	162.0	1.02
4926.000000	48.59	74.00	25.41	150.0	V	80.0	4.22
7811.000000	39.60	74.00	34.40	150.0	V	35.0	6.75

EUT: EA-J100 Agricultural Spraying Drone M/N: EA-J100
Operating Condition: Tx
Ant. Polarity: Horizontal
Comment: 1GHz-18GHz



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1972.000000	39.35	74.00	34.65	150.0	H	244.0	-7.46
2968.500000	44.51	74.00	29.49	150.0	H	285.0	-2.92
3196.500000	44.99	74.00	29.01	150.0	H	216.0	-1.14
4437.500000	47.82	74.00	26.18	150.0	H	230.0	2.83
8023.500000	39.28	74.00	34.72	150.0	H	0.0	7.03
11193.000000	41.66	74.00	32.34	150.0	H	216.0	9.72

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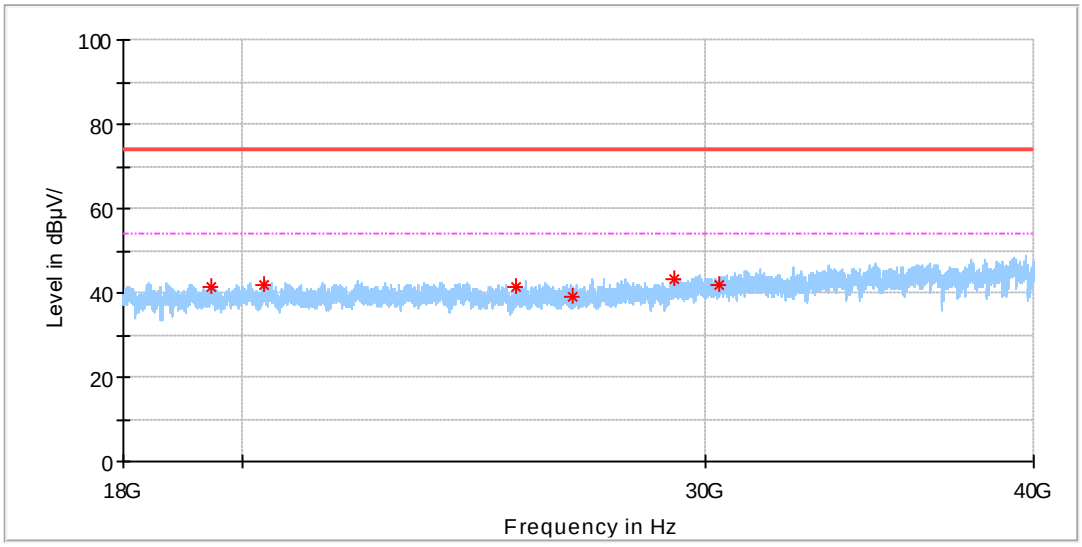
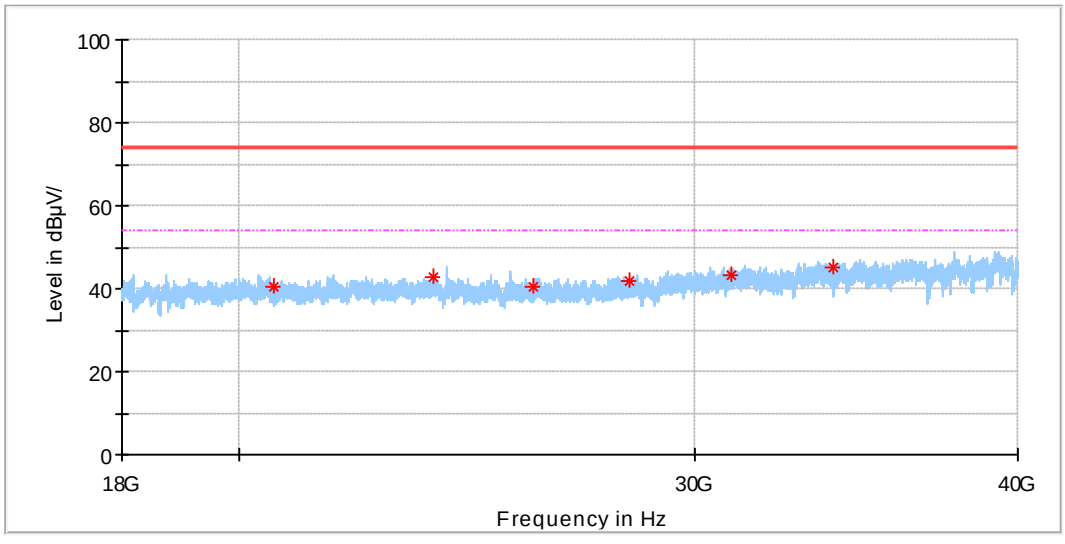
EUT: EA-J100 Agricultural Spraying Drone M/N: EA-J100
Operating Condition: Tx
Ant. Polarity: Vertical
Comment: 18GHz-40GHz



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Corr. (dB)
19453.375000	41.48	74.00	32.52	150.0	V	227.0	-1.25	---
20373.937500	41.71	74.00	32.29	150.0	V	216.0	-0.31	---
25381.687500	41.61	74.00	32.39	150.0	V	216.0	2.29	---
26685.187500	38.89	74.00	35.11	150.0	V	0.0	2.16	---
29169.812500	43.29	74.00	30.71	150.0	V	239.0	1.94	---
30351.625000	41.92	74.00	32.08	150.0	V	124.0	2.49	---

EUT: EA-J100 Agricultural Spraying Drone M/N: EA-J100
Operating Condition: Tx
Ant. Polarity: Horizontal
Comment: 18GHz-40GHz



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Corr. (dB)
20624.875000	40.32	74.00	33.68	150.0	H	30.0	-0.09	---
23761.937500	42.63	74.00	31.37	150.0	H	356.0	1.68	---
25994.250000	40.58	74.00	33.42	150.0	H	101.0	2.22	---
28280.187500	41.79	74.00	32.21	150.0	H	169.0	2.00	---
30986.187500	43.29	74.00	30.71	150.0	H	356.0	2.47	---
33908.062500	45.31	74.00	28.69	150.0	H	1.0	3.62	---

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8.2 Out of Band Emissions

Test Method

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find outthe highest emissions.
4. The spectrum analyzer or receiver is set as:
   (1) Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto
   (2) Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

Limits

According to §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.

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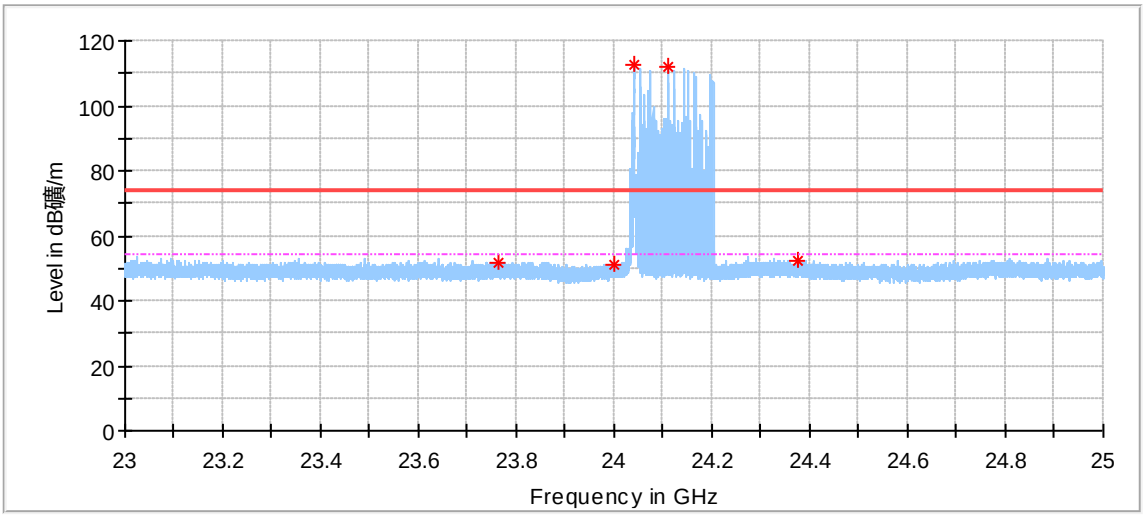
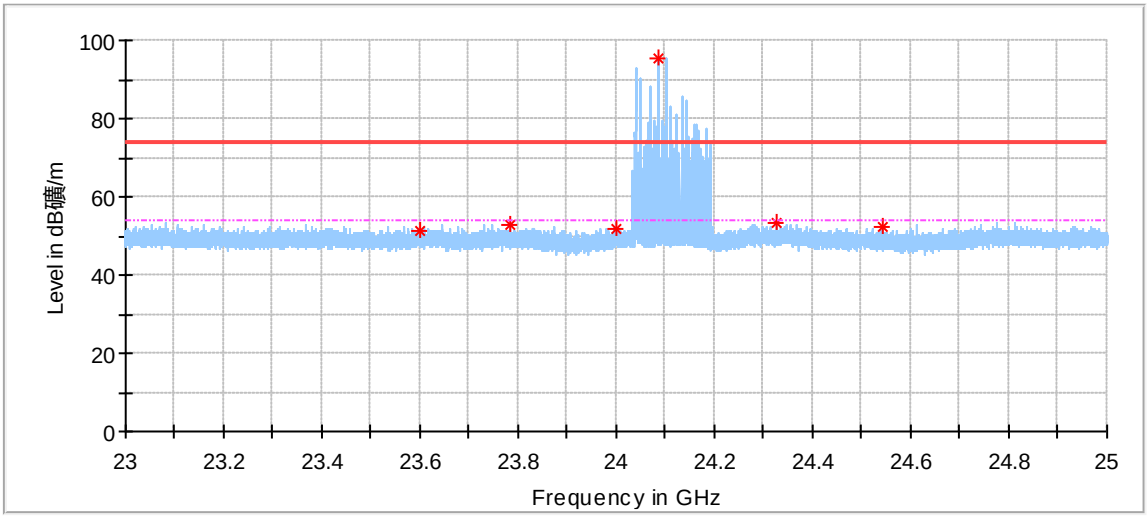
EUT: EA-J100 Agricultural Spraying Drone M/N: EA-J100
Operating Condition: Tx
Ant. Polarity: Horizontal



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2360.000000	51.55	74.00	22.45	150.0	H	99.0	1.62
23761.250000	52.00	74.00	22.00	150.0	H	344.0	1.68
24000.000000	51.10	74.00	22.90	150.0	H	0.0	1.69
24040.312500	112.31	74.00	-38.31	150.0	H	210.0	1.70
24108.500000	111.98	74.00	-37.98	150.0	H	210.0	1.73
24376.250000	52.14	74.00	21.86	150.0	H	59.0	1.75

EUT: EA-J100 Agricultural Spraying Drone M/N: EA-J100
Operating Condition: Tx, lower edge
Ant. Polarity: Vertical



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
23600.000000	51.21	74.00	22.79	150.0	V	118.0	1.63
23783.937500	53.02	74.00	20.98	150.0	V	71.0	1.70
24000.000000	51.93	74.00	22.07	150.0	V	6.0	1.69
24084.875000	95.50	74.00	-21.50	150.0	V	205.0	1.72
24327.437500	53.20	74.00	20.80	150.0	V	17.0	1.76
24544.250000	52.41	74.00	21.59	150.0	V	171.0	1.72

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8.3 20dB Bandwidth

Test Method

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 were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.

Limits:

According to 15.215 (c) 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. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

According to RSS-Gen 4.6.1 when an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

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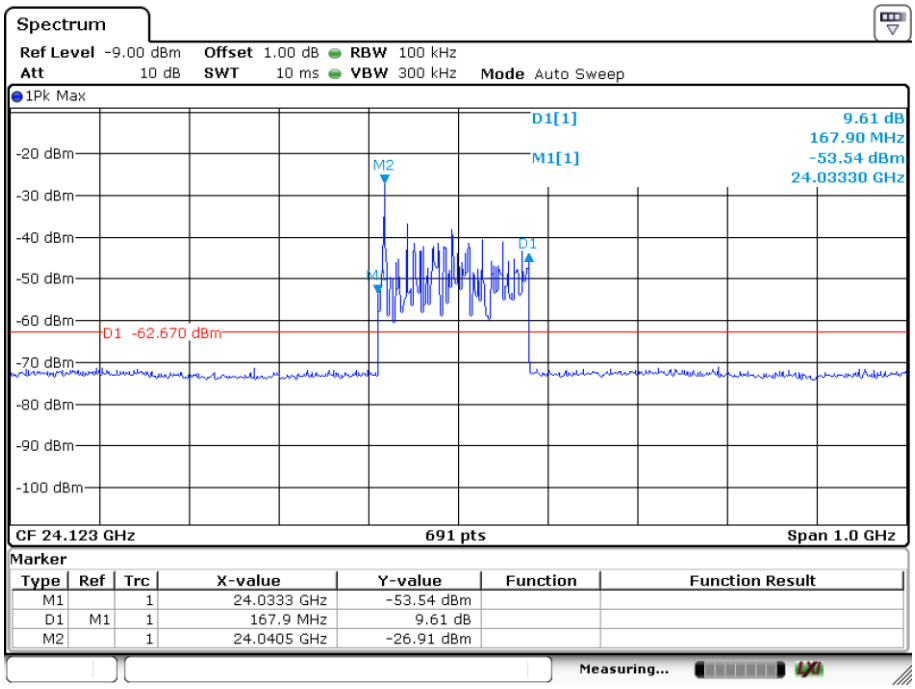
20dB Bandwidth Occupied Bandwidth

Frequency MHz	20dB Bandwidth MHz	Limit kHz	Result
24123	167.90	--	Pass



Date: 9.APR.2024 19:10:57

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9 Test equipment list

List of Test Instruments

Radiated Emission Test 1# Test

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL INTERVAL (YEAR)	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 7	68-4-74-19-001	102176	1	2024-5-20
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	68-4-80-14-002	707	1	2024-7-18
Horn Antenna	Rohde & Schwarz	HF907	68-4-80-14-005	102294	1	2024-5-28
Loop Antenna	Rohde & Schwarz	HFH2-Z2	68-4-80-14-006	100398	1	2024-8-7
Pre-amplifier	Rohde & Schwarz	SCU 18	68-4-29-14-001	102230	1	2024-5-19
Attenuator	Mini-circuits	UNAT-6+	68-4-81-21-001	15542	1	2024-5-19
Cable	HUBER-SUHNER	RG214	68-4-90-14-001-A20	----	----	----
Cable	HUBER-SUHNER	RG214	68-4-90-14-001-A21	----	----	----
Cable	JUNFLON	MWX221	68-4-90-14-001-A22	----	----	----
3m Semi-anechoic chamber	TDK	SAC-3 #1	68-4-90-14-001	----	3	2026-10-25
Test software	Rohde & Schwarz	EMC32	68-4-90-14-001-A10	Version10.35.02	N/A	N/A

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10 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty

Items		Extended Uncertainty
RE	Field strength (dBμV/m)	U=4.2dB (30MHz-1GHz) U=3.57dB (1GHz-25GHz)
Bandwidth test	--	$1*10^{-9}$

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