CO-LOCATION TEST REPORT

For

P40 Agricultural Drone

MODEL NUMBER: 3WWDZ-20BH

FCC ID: 2A46G-3WWDZ-20BH

REPORT NUMBER: 4790254511-12

ISSUE DATE: April 18, 2022

Prepared for

Guangzhou Xaircraft Technology CO.,LTD

Block C, 115 Gaopu Rd, Tianhe Dist, Guangzhou, Guang-dong, China

Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	04/18/2022	Initial Issue	

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	Guangzhou Xaircraft Technology CO.,LTD
Address:	Block C, 115 Gaopu Rd, Tianhe Dist, Guangzhou, Guang-dong, China

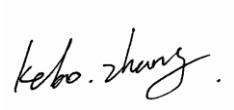
Manufacturer Information

Company Name:	Guangzhou Xaircraft Technology CO.,LTD
Address:	Block C, 115 Gaopu Rd, Tianhe Dist, Guangzhou, Guang-dong, China

EUT Information

EUT Name:	P40 Agricultural Drone
Model:	3WWDZ-20BH
Sample Received Date:	February 14, 2022
Sample Status:	Normal
Sample ID:	4675027-2
Date of Tested:	April 13, 2022 ~ April 18, 2022

Prepared By:



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Project Engineer

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Laboratory Manager

2. FACILITIES AND ACCREDITATION

Accreditation Certificate	**A2LA (Certificate No.: 4102.01)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. **FCC (FCC Designation No.: CN1187)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Delcaration of Conformity (DoC) and Certification rules **ISED (Company No.: 21320)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320. **VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B , the VCCI registration No. is C-20012 and T-20011

Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30MHz had been correlated to measurements performed on an OFS.

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Conduction emission	3.62 dB
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	2.2 dB
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB
Radiated Emission (Included Fundamental Emission) (1 GHz to 40 GHz)	5.78 dB (1 GHz-18 GHz)
	5.23dB (18 GHz-26 GHz)
	5.64 dB (26 GHz-40 GHz)
Bandwidth	1.1 %
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.	

4. EQUIPMENT UNDER TEST

4.1. DESCRIPTION OF EUT

EUT Name	P40 Agricultural Drone
Model Name	3WWDZ-20BH
Rating	Powered by XAG Smart Battery

Item	Equipment	Mfr/Brand	Model/Type No.	Specification	Series No.
1	Smart Battery	XAG	B13960S	Output: 48.1V/120A	N/A

4.2. THE TEST CASE CONFIGURATIONS

Simultaneously transmission condition.

NO.	Combination	Support (YES/NO)
1	GSM+2.4GHz Wi-Fi	YES
2	WCDMA+2.4GHz Wi-Fi	YES
3	LTE+2.4GHz Wi-Fi	YES

For the detailed test description, please refer to the below report number.

Technology	Report Number
GSM/WCDMA	4790254511-5
LTE	4790254511-6
WIFI	4790254511-3

5. MEASURING INSTRUMENT AND SOFTWARE USED

Radiated Test						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
☑	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Oct.30, 2021	Oct.29, 2022
☑	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Aug.02, 2021	Aug.01, 2024
☑	Preamplifier	HP	8447D	2944A09099	Oct.30, 2021	Oct.29, 2022
☑	EMI Measurement Receiver	R&S	ESR26	101377	Oct.30, 2021	Oct.29, 2022
☑	Horn Antenna	TDK	HRN-0118	130939	July 20, 2021	July 19, 2024
☑	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	July 20, 2021	July 19, 2024
☑	Preamplifier	TDK	PA-02-0118	TRS-305-00066	Oct.31, 2021	Oct.30, 2022
☑	Preamplifier	TDK	PA-02-2	TRS-307-00003	Oct.31, 2021	Oct.30, 2022
☑	Loop antenna	Schwarzbeck	1519B	00008	Jan.17,2022	Jan.17,2025
☑	High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23	Oct.31, 2021	Oct.30, 2022
☑	Wideband Radio Communication Tester	R&S	CMW500	155523	Oct.30, 2021	Oct.29, 2022
☑	DC Power Supply	Array	3662A	A1512015	Oct.30, 2021	Oct.29, 2022
Software						
Used	Description		Manufacturer	Name		Version
☑	Test Software for Radiated disturbance		Farad	EZ-EMC		Ver. UL-3A1

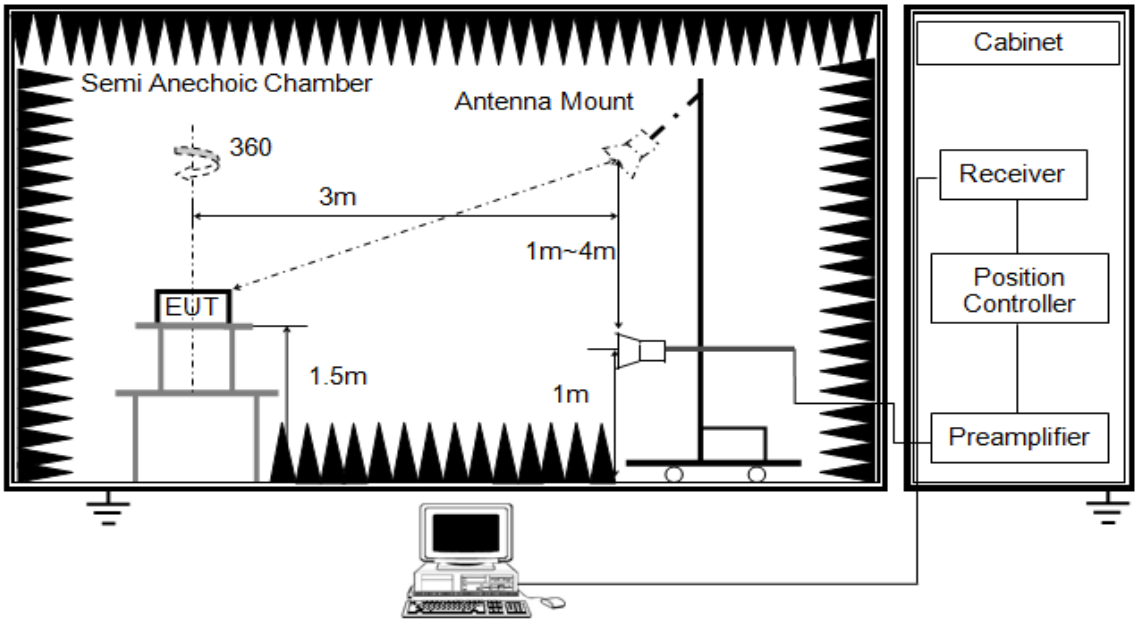
6. RADIATED TEST RESULTS

LIMITS

Please refer to CFR 47 FCC §15.205 and §15.209.

Emissions radiated outside of the specified frequency bands above 30MHz			
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m	
		Quasi-Peak	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average
		74	54

Above 1 GHz



The setting of the spectrum analyser

RBW	1 MHz
VBW	PEAK: 3 MHz AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 6.6.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 1.5 m above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement above 1 GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements.

TEST ENVIRONMENT

Temperature	23.4°C	Relative Humidity	57%
Atmosphere Pressure	101kPa	Test Voltage	DC 48.1V

RESULTS

6.1. WORST-CASE CO-LOCATION

6.1.1. Condition 1

GSM 1900 (High CHANNEL) and WIFI 2.4G (High CHANNEL 802.11n HT20 MIMO)

1-3 GHz

(WORST-CASE CONFIGURATION, HORIZONTAL)

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1142.000	48.82	-14.10	34.72	74.00	-39.28	peak
2	1584.000	49.17	-11.94	37.23	74.00	-36.77	peak
3	1722.000	46.39	-11.08	35.31	74.00	-38.69	peak
4	1960.000	48.14	-10.89	37.25	74.00	-36.75	peak
5	2340.000	48.19	-9.18	39.01	74.00	-34.99	peak
6	2840.000	45.03	-7.56	37.47	74.00	-36.53	peak

(WORST-CASE CONFIGURATION, VERTICAL)

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1214.000	46.87	-13.66	33.21	74.00	-40.79	peak
2	1438.000	48.08	-12.81	35.27	74.00	-38.73	peak
3	1820.000	46.97	-10.62	36.35	74.00	-37.65	peak
4	2134.000	52.58	-10.12	42.46	74.00	-31.54	peak
5	2298.000	52.24	-9.34	42.90	74.00	-31.10	peak
6	2578.000	48.76	-8.61	40.15	74.00	-33.85	peak

3-18 GHz

(WORST-CASE CONFIGURATION, HORIZONTAL)

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4830.000	42.27	-1.14	41.13	74.00	-32.87	peak
2	5970.000	39.90	1.27	41.17	74.00	-32.83	peak
3	9390.000	39.25	9.61	48.86	74.00	-25.14	peak
4	11925.000	34.61	17.14	51.75	74.00	-22.25	peak
5	13920.000	34.47	20.58	55.05	74.00	-18.95	peak
6	17205.000	33.44	20.15	53.59	74.00	-20.41	peak

(WORST-CASE CONFIGURATION, VERTICAL)

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5670.000	40.27	0.68	40.95	74.00	-33.05	peak
2	7320.000	39.02	5.52	44.54	74.00	-29.46	peak
3	9015.000	36.78	9.45	46.23	74.00	-27.77	peak
4	11865.000	35.32	17.18	52.50	74.00	-21.5	peak
5	13980.000	33.83	20.63	54.46	74.00	-19.54	peak
6	17265.000	32.80	20.16	52.96	74.00	-21.04	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6.1.1. Condition 2

WCDMA B4 (High CHANNEL HSDPA) and WIFI 2.4G (High CHANNEL 802.11n HT20 MIMO)

1-3 GHz

(WORST-CASE CONFIGURATION, HORIZONTAL)

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1414.000	49.12	-12.97	36.15	74.00	-37.85	peak
2	1776.000	49.20	-10.73	38.47	74.00	-35.53	peak
3	2228.000	46.77	-9.61	37.16	74.00	-36.84	peak
4	2462.000	57.03	-8.94	48.09	/	/	fundamental
5	2670.000	45.60	-8.25	37.35	74.00	-36.65	peak
6	2882.000	45.14	-7.44	37.70	74.00	-36.30	peak

(WORST-CASE CONFIGURATION, VERTICAL)

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1124.000	47.29	-14.22	33.07	74.00	-40.93	peak
2	1622.000	47.43	-11.71	35.72	74.00	-38.28	peak
3	1972.000	50.01	-10.91	39.10	74.00	-34.90	peak
4	2150.000	52.93	-10.02	42.91	74.00	-31.09	peak
5	2462.000	55.34	-8.94	46.40	/	/	fundamental
6	2600.000	49.35	-8.57	40.78	74.00	-33.22	peak

3-18 GHz

(WORST-CASE CONFIGURATION, HORIZONTAL)

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5115.000	42.23	0.69	42.92	74.00	-31.08	peak
2	8115.000	39.63	9.50	49.13	74.00	-24.87	peak
3	12240.000	37.61	17.52	55.13	74.00	-18.87	peak
4	13995.000	34.82	19.36	54.18	74.00	-19.82	peak
5	15630.000	35.32	15.63	50.95	74.00	-23.05	peak
6	16860.000	33.21	19.33	52.54	74.00	-21.46	peak

(WORST-CASE CONFIGURATION, VERTICAL)

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5730.000	41.32	2.17	43.49	74.00	-30.51	peak
2	8745.000	40.47	8.52	48.99	74.00	-25.01	peak
3	11310.000	38.88	15.40	54.28	74.00	-19.72	peak
4	12480.000	38.62	17.04	55.66	74.00	-18.34	peak
5	14445.000	38.23	17.77	56.00	74.00	-18.00	peak
6	17310.000	32.42	21.46	53.88	74.00	-20.12	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

6.1.1. Condition 3

LTE Band 2 (High CHANNEL QPSK-20 MHz) and WIFI 2.4G (High CHANNEL 802.11n HT20 MIMO)

1-3 GHz

(WORST-CASE CONFIGURATION, HORIZONTAL)

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1076.000	50.10	-14.55	35.55	74.00	-38.45	peak
2	1424.000	51.49	-12.90	38.59	74.00	-35.41	peak
3	1918.000	49.47	-10.81	38.66	74.00	-35.34	peak
4	2220.000	49.29	-9.64	39.65	74.00	-34.35	peak
5	2462.000	53.57	-8.82	44.75	/	/	fundamental
6	2870.000	46.38	-7.47	38.91	74.00	-35.09	peak

(WORST-CASE CONFIGURATION, VERTICAL)

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1124.000	48.07	-14.22	33.85	74.00	-40.15	peak
2	1486.000	47.00	-12.50	34.50	74.00	-39.50	peak
3	1886.000	49.21	-10.74	38.47	74.00	-35.53	peak
4	2242.000	52.75	-9.55	43.20	74.00	-30.80	peak
5	2462.000	55.32	-8.94	46.38	/	/	fundamental
6	2924.000	44.14	-7.33	36.81	74.00	-37.19	peak

3-18 GHz

(WORST-CASE CONFIGURATION, HORIZONTAL)

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5670.000	55.03	0.68	55.71	74.00	-18.29	peak
2	6660.000	45.32	3.71	49.03	74.00	-24.97	peak
3	7560.000	54.57	5.53	60.10	74.00	-13.9	peak
4	9450.000	40.72	9.81	50.53	74.00	-23.47	peak
5	11805.000	34.69	17.21	51.90	74.00	-22.1	peak
6	13980.000	32.70	20.63	53.33	74.00	-20.67	peak

(WORST-CASE CONFIGURATION, VERTICAL)

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5670.000	50.72	0.68	51.40	74.00	-22.6	peak
2	7560.000	54.06	5.53	59.59	74.00	-14.41	peak
3	9450.000	44.33	9.81	54.14	74.00	-19.86	peak
4	11355.000	45.54	15.01	60.55	74.00	-13.45	peak
5	15135.000	39.55	15.87	55.42	74.00	-18.58	peak
6	13845.000	33.72	20.52	54.24	74.00	-19.76	peak

Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Note: All the test modes and combination have been considered. Only the worst data record in the report.

END OF REPORT