

FCC PART 15.247 TEST REPORT

For

CHENGDU JOUAV DA PENG TECH CO., LTD

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Tested Model: CW-007
FCC ID: 2AVXCCW-007

Report Type: Original Report		Product Name: Unmanned Aerial Photography UAV	
Report Number:	RSHA200310002-00C		
Date of Report Issue:	2020-08-04		
Reviewed By:	Sula Huang 		
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant	CHENGDU JOUAV DA PENG TECH CO., LTD
Product	Unmanned Aerial Photography UAV
Tested Model	CW-007
FCC ID	2AVXCCW-007
Radio Mode	SRD
Frequency	2401.6-2477.6MHz
Modulation Type:	GFSK
Voltage Range	DC 22.8V from battery
Sample serial number	200310002/01 (assigned by the BACL, Chengdu)
Sample/EUT Status	The test sample was in good condition and received: 2020-03-10

Note: Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Objective

This report is prepared on behalf of **CHENGDU JOUAV DA PENG TECH CO., LTD** in accordance with Part 2, Subpart J, Part 15, Subparts A and C of the Federal Communications Commission's rules.

The tests were performed in order to determine the compliance of the EUT with FCC Part 15-Subpart C, section 15.203, 15.205, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS submissions with FCC ID: 2AVXCGCS-202.
FCC Part 15.247 DTS submissions with FCC ID: 2AVXCGCS-202.

Measurement Uncertainty

Item			Uncertainty
AC power line conducted emission			2.48 dB
Radiated Emission(Field Strength)	30MHz-200MHz	H	4.31 dB
		V	4.57 dB
	200MHz-1GHz	H	4.68 dB
		V	5.78 dB
	1GHz-6GHz		4.56 dB
	6GHz-18GHz		4.57 dB
	18GHz-40GHz		5.44 dB
RF output power, conducted			±0.65 dB
Occupied Bandwidth			±5 %
Power Spectrum Density, conducted			±2.5 dB
Humidity			±5 %
Temperature			±1 °C
Voltage(DC)			±0.4 %
Voltage(AC,<10kHz)			±1 %
Time			±1 %

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the corresponding inclusion factor K when the inclusion probability is about 95%.

Test Methodology

All measurements contained in this report were conducted with:

1. ANSI C63.10-2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.
2. KDB558074 D01 DTS Meas Guidance v05r02.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Chengdu) to collect test data is located No.5040, Huilongwan Plaza, No. 1, Shawan Road, Jinniu District, Chengdu, Sichuan, China.

Bay Area Compliance Laboratories Corp. (Chengdu) lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4324.01) and the FCC designation No. CN1186 under the FCC KDB 974614 D01. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured in testing mode, which was provided by manufacturer.

For FHSS (GFSK) mode, 76 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2401.6	31	2431.6
2	2402.6	32	2432.6
3	2403.6	33	2433.6
4	2404.6	34	2434.6
5	2405.6	35	2435.6
6	2406.6	36	2436.6
7	2407.6	37	2437.6
8	2408.6	38	2438.6
9	2409.6	39	2439.6
10	2410.6	40	2440.6
11	2411.6	41	2441.6
12	2412.6	42	2442.6
13	2413.6	43	2443.6
14	2414.6	44	2444.6
15	2415.6	45	2445.6
16	2416.6	46	2446.6
17	2417.6	47	2447.6
18	2418.6	48	2448.6
19	2419.6	49	2449.6
20	2420.6	50	2450.6
21	2421.6	51	2451.6
22	2422.6	52	2452.6
23	2423.6	53	2453.6
24	2424.6	54	2454.6
25	2425.6	55	2455.6
26	2426.6	56	2456.6
27	2427.6	57	2457.6
28	2428.6	58	2458.6
29	2429.6	59	2459.6
30	2430.6	60	2461.6

Channel	Frequency (MHz)	Channel	Frequency (MHz)
61	2462.6	69	2470.6
62	2463.6	70	2471.6
63	2464.6	71	2472.6
64	2465.6	72	2473.6
65	2466.6	73	2474.6
66	2467.6	74	2475.6
67	2468.6	75	2476.6
68	2469.6	76	2477.6

EUT were tested with Channel 1, 39 and 76.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

The EUT was tested in the engineering mode; EUT can be setup for fixed channel mode and hopping mode.

Support Equipment List and Details

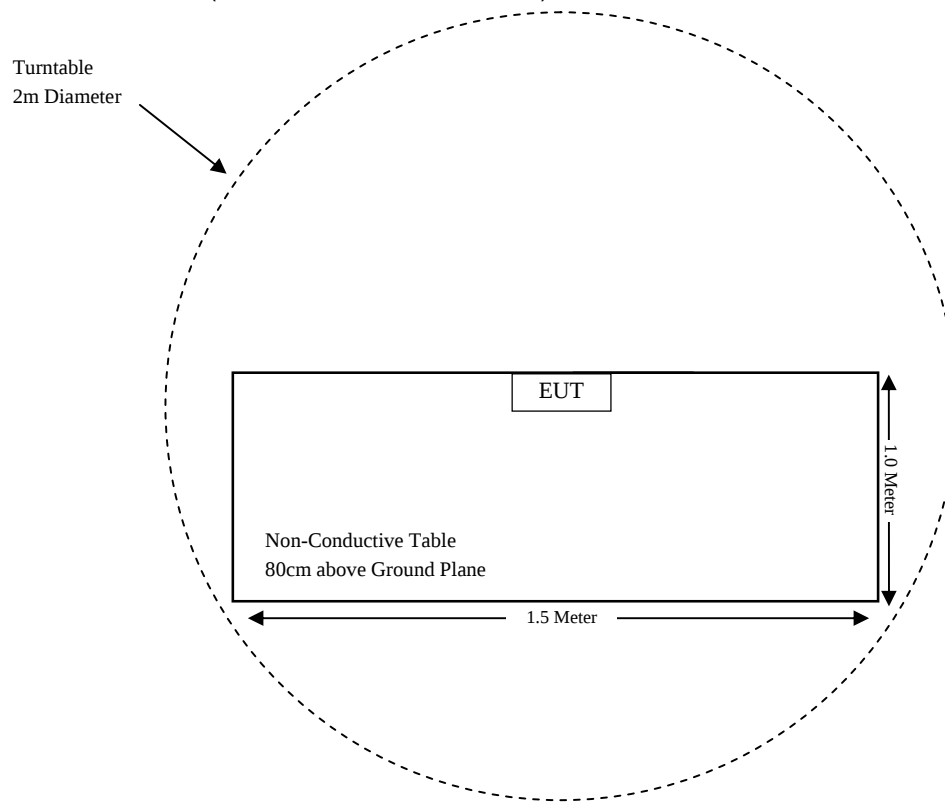
Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

Cable Description	Length (m)	From	To
Raidated Emissions			
/	/	/	/

Block Diagram of Test Setup

For Radiated Emissions (Below 1GHz & Above 1GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 & §1.1310 & §2.1091	Maximum Permissible exposure (MPE)	Compliant*
§15.203	Antenna Requirement	Compliant*
§15.207 (a)	AC Line Conducted Emissions	Not Applicable (See note 1)
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Emission 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*

Note1: Not Applicable: The EUT is powered by battery.

Note2: Compliance*: Refer to report No. RSHA200310002-00B.

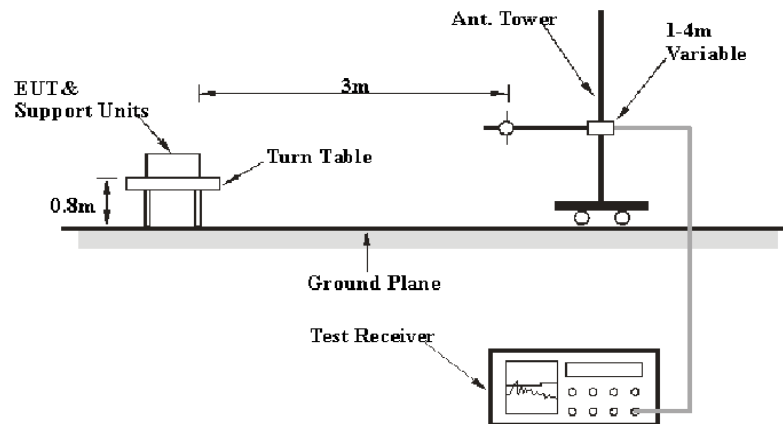
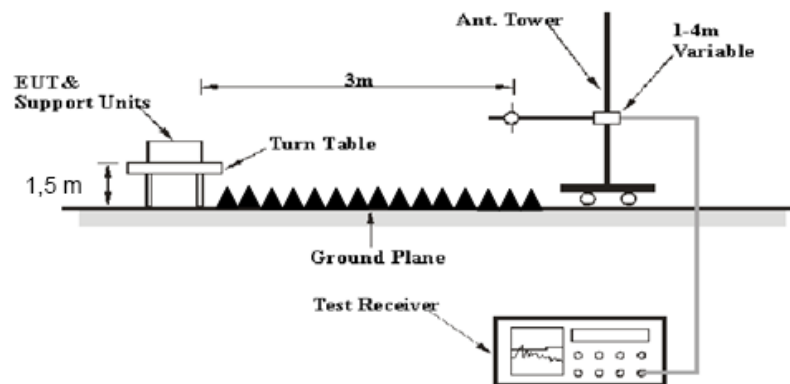
Note3: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

TEST EQUIPMENTS LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission					
EMCT	Semi-Anechoic Chamber	966	001	2017-05-18	2022-05-17
SONOMA INSTRUMENT	Amplifier	310 N	186684	2019-09-06	2020-09-05
SUNOL SCIENCES	Broadband Antenna	JB3	A121808	2019-12-10	2022-12-09
INMET	Attenuator	18N-6dB	N/A	2019-10-17	2020-10-16
Rohde & Schwarz	EMI Test Receiver	ESR3	102456	2019-04-13	2020-04-12
Rohde & Schwarz	Spectrum Analyzer	FSU26	200835	2019-04-13	2020-04-12
EMCO	Horn Antenna	3115	2192	2019-09-25	2021-09-24
Mini-circuits	Pre-Amplifier	ZVA-183-S+	771001215	2019-09-20	2020-09-19
EM Electronics	Pre-Amplifier	EM18G40	060725	2019-07-24	2020-07-23
A.H. Systems, Inc	Horn Antenna	SAS-574	510	2019-09-02	2021-09-01
MICRO-TRONICS	2.4GHz Notch Filter	BRM50702	G396	2020-02-22	2021-02-21
Unknown	RF Cable (Below 1GHz)	L-E005	000005	2019-09-06	2020-09-05
Unknown	RF Cable (Below 1GHz)	T-E128	000128	2019-10-17	2020-10-16
UTIFLEX	RF Cable (Below 1GHz)	T-E237	233522-001	2019-07-19	2020-07-18
Unknown	RF Cable (Above 1GHz)	T-E069	000069	2019-07-24	2020-07-23
UTIFLEX	RF Cable (Above 1GHz)	T-E222	2551/2	2019-07-24	2020-07-23
UTIFLEX	RF Cable (Above 1GHz)	T-E210	1042	2019-07-24	2020-07-23
Rohde & Schwarz	EMC32	EMC32	V9.10.00	NCR	NCR

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS**Applicable Standard**

FCC §15.247 (d); §15.209; §15.205;

EUT Setup**Below 1GHz:****Above 1GHz:**

The radiated 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, 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.

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 Setup was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	3 MHz	/	AV

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.

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.

Corrected Amplitude & Margin Calculation

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

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

Corrected Amplitude = Meter Reading + Antenna Loss + Cable Loss

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

Margin = Limit –Corrected Amplitude

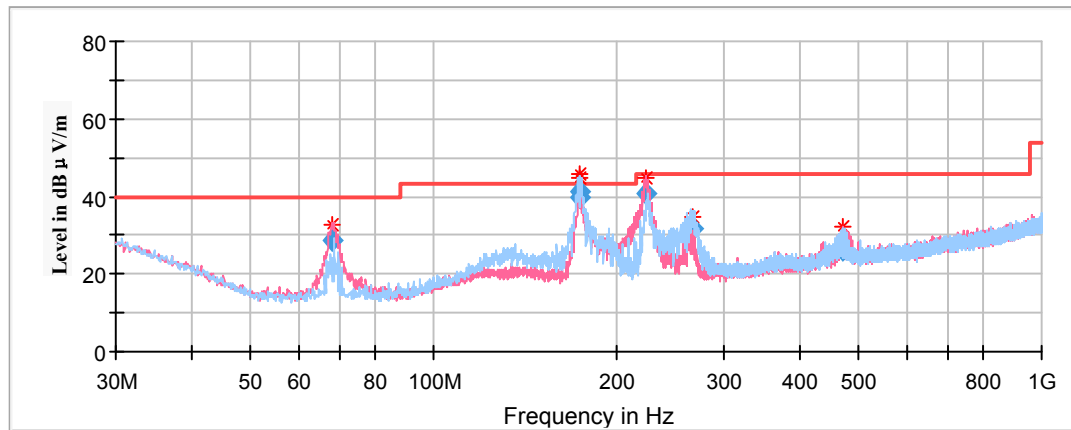
Test Data

Test Environment Conditions

Temperature:	24.2 °C~24.3°C
Relative Humidity:	50%~51%
ATM Pressure:	101.2 kPa~101.3kPa

The testing was performed by Winfred Wang from 2020-03-27 to 2020-03-31.

Test Mode: Transmitting

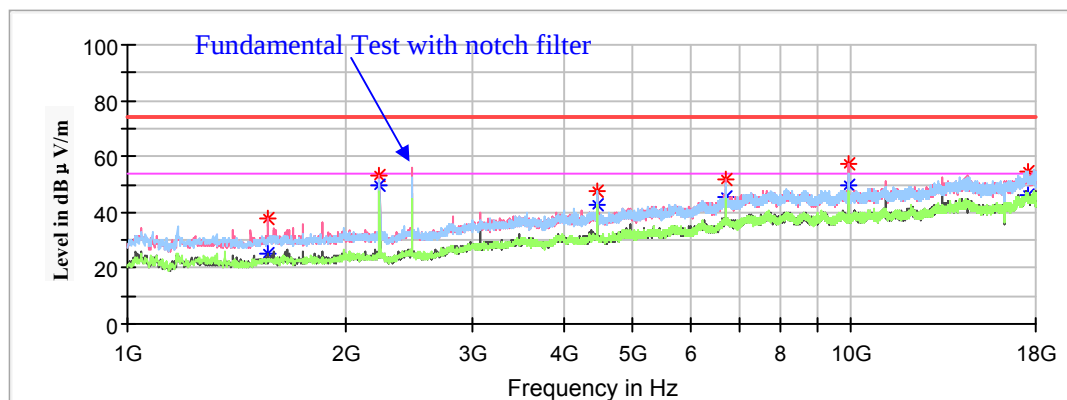
30 MHz to 1 GHz: Low Channel-Worst case

Frequency (MHz)	Corrected Amplitude	Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	QuasiPeak (dBμV/m)	Height (cm)	Polar (H/V)				
68.16	28.91	100	V	101	-17.4	40.00	11.09
173.21	39.82	200	H	136	-13.3	43.50	3.68
173.85	41.14	200	H	290	-13.3	43.50	2.36
223.72	40.95	100	V	89	-12.2	46.00	5.05
266.07	31.56	200	H	102	-11.6	46.00	14.44
471.00	26.11	200	V	256	-6.9	46.00	19.89

1 GHz to 18 GHz

Low Channel: 2401.6MHz

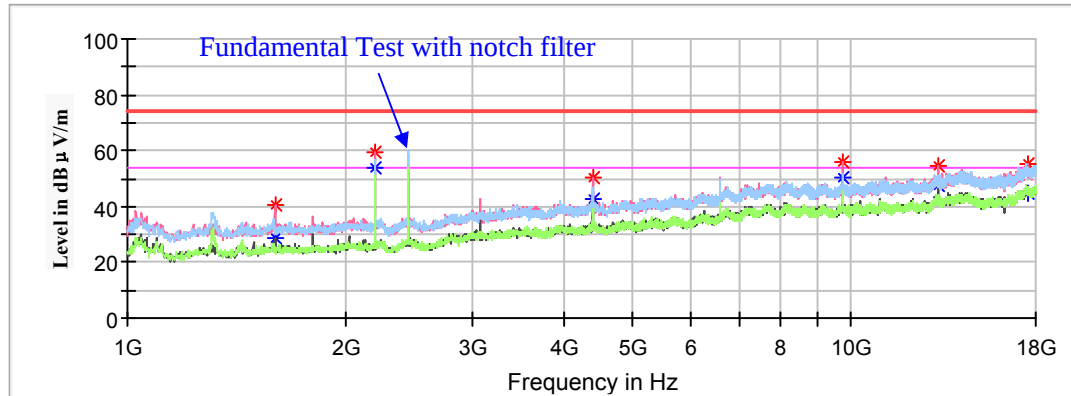
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1598.40	---	28.87	200	V	198	-16.0	54.00	25.13
1598.40	40.81	---	200	V	198	-16.0	74.00	33.19
2195.10	---	53.50	150	V	97	-13.7	54.00	0.50
2195.10	59.33	---	150	V	97	-13.7	74.00	14.67
4393.20	---	42.89	200	H	80	-6.4	54.00	11.11
4393.20	50.46	---	200	H	80	-6.4	74.00	23.54
9761.80	---	50.27	200	V	154	2.0	54.00	3.73
9761.80	55.84	---	200	V	154	2.0	74.00	18.16
13178.80	---	47.28	200	V	169	5.4	54.00	6.72
13178.80	54.44	---	200	V	169	5.4	74.00	19.56
17575.00	---	44.74	200	V	3	8.9	54.00	9.26
17575.00	55.20	---	200	V	3	8.9	74.00	18.80

Middle Channel: 2439.6MHz

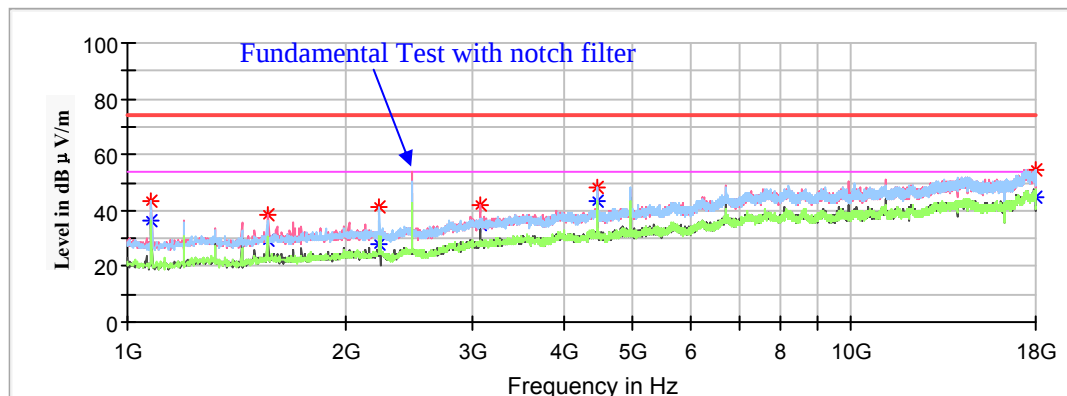
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1598.40	---	28.87	200	V	198	-16.0	54.00	25.13
1598.40	40.81	---	200	V	198	-16.0	74.00	33.19
2195.10	---	53.50	150	V	97	-13.7	54.00	0.50
2195.10	59.33	---	150	V	97	-13.7	74.00	14.67
4393.20	---	42.89	200	H	80	-6.4	54.00	11.11
4393.20	50.46	---	200	H	80	-6.4	74.00	23.54
9761.80	---	50.27	200	V	154	2.0	54.00	3.73
9761.80	55.84	---	200	V	154	2.0	74.00	18.16
13178.80	---	47.28	200	V	169	5.4	54.00	6.72
13178.80	54.44	---	200	V	169	5.4	74.00	19.56
17575.00	---	44.74	200	V	3	8.9	54.00	9.26
17575.00	55.20	---	200	V	3	8.9	74.00	18.80

High Channel: 2477.6MHz

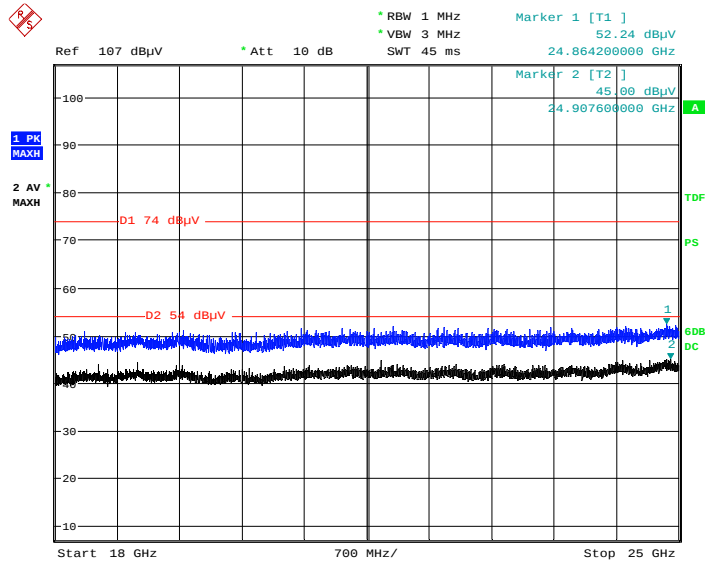
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
1078.20	---	36.16	150	H	176	-18.6	54.00	17.84
1078.20	43.69	---	150	H	176	-18.6	74.00	30.31
1567.80	---	29.41	150	V	158	-16.1	54.00	24.59
1567.80	38.63	---	150	V	158	-16.1	74.00	35.37
2232.50	---	27.73	200	H	108	-13.5	54.00	26.27
2232.50	41.41	---	200	H	108	-13.5	74.00	32.59
3070.60	---	34.83	200	V	88	-9.9	54.00	19.17
3070.60	41.65	---	200	V	88	-9.9	74.00	32.35
4466.30	---	43.03	150	H	132	-6.3	54.00	10.97
4466.30	48.34	---	150	H	132	-6.3	74.00	25.66
17962.60	---	44.89	200	H	317	8.8	54.00	9.11
17962.60	54.50	---	200	H	317	8.8	74.00	19.50

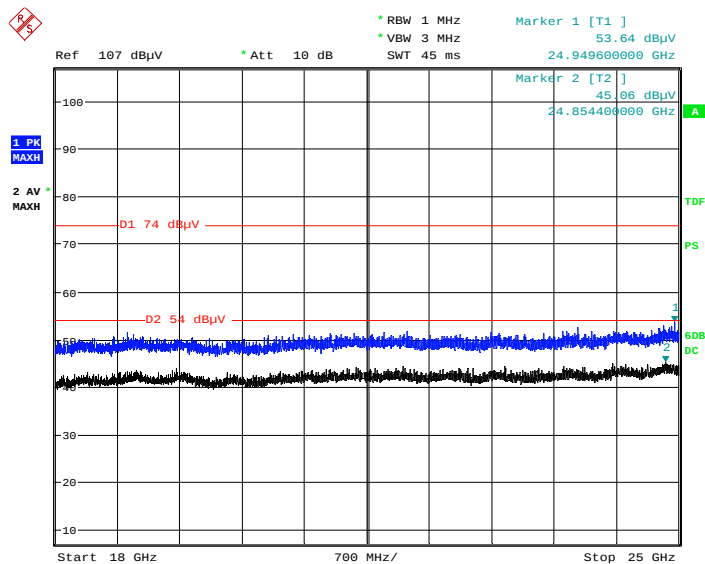
18 GHz to 25 GHz: Low Channel-worst case

Horizontal



Date: 31.MAR.2020 02:41:11

Vertical



Date: 31.MAR.2020 12:42:18

Band Edge Emission (worst case):

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 2401.6MHz								
2390.00	---	50.37	200.0	V	94.0	-13.5	54.00	3.63
2390.00	57.58	---	200.0	V	94.0	-13.5	74.00	16.42
High Channel: 2477.6MHz								
2483.50	---	50.17	150.0	V	358.0	-13.5	54.00	3.83
2483.50	58.50	---	150.0	V	358.0	-13.5	74.00	15.50

Note:

Corrected Amplitude = Corrected Factor + Reading

Corrected Factor=Antenna factor (RX) + Cable Loss – Amplifier Factor or Antenna factor (RX) + Cable Loss

Margin = Limit- Corr. Amplitude

END OF REPORT