



EUROFINS ELECTRICAL TESTING SERVICE (SHENZHEN) CO., LTD.

RADIO TEST - REPORT

FCC Compliance Test Report for

Product name: wireless live streaming camera

Model name: Q03ZW

FCC ID: 2A3YW-Q03ZW

Test Report Number: EFGX24060480-IE-03-E04



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1 General Information

1.1 Notes

The results of this test report relate exclusively to the item tested as specified in chapter “Description of test item” and are not transferable to any other test items.

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd. is not responsible for any generalisations and conclusions drawn from this report. Any modification of the test item can lead to invalidity of test results and this test report may therefore be not applicable to the modified test item.

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Operator:

2024-10-14

Bruce Zheng / Project Engineer



Date

Eurofins-Lab.


Name / Title

Signature

Technical responsibility for area of testing:

2024-10-14

Albert Xu / Lab Manager



Date

Eurofins-Lab.

Name / Title

Signature

1.2 Testing laboratory

Eurofins Electrical Testing Service (Shenzhen) Co., Ltd.

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The Laboratory has passed the Accreditation by the American Association for Laboratory Accreditation (A2LA). The Accreditation number is 5376.01

The Laboratory has been listed by industry Canada to perform electromagnetic emission measurements, The CAB identifier is CN0088

1.3 Details of applicant

Name : Hangzhou Chingan Tech Co., Ltd.
Address : 4F, BLDG. 4, 16# XIYUAN YI ROAD HANGZHOU,
ZHEJIANG,CHINA 310030
Telephone : ./.
Fax : ./.

1.4 Details of manufacturer

Name : Hangzhou Chingan Tech Co., Ltd.
Address : 4F, BLDG. 4, 16# XIYUAN YI ROAD HANGZHOU,
ZHEJIANG,CHINA 310030
Telephone : ./.
Fax : ./.

1.5 Application details

Date of receipt of application : 2024-06-28
 Date of receipt of test item : 2024-06-28
 Date of test : 2024-06-28 to 2024-10-14
 Date of issue : 2024-10-14

1.6 Test item

Product type : wireless live streaming camera
 Model name : Q03ZW
 Sample ID : 240807-04-001
 Brand : ./.
 Serial number : ./.
 Ratings : DC 5V input by USB port; Battery: DC 3.7V
 Test voltage : DC 3.7V
 FCC ID : 2A3YW-Q03ZW
 PMN : wireless live streaming camera

RadioTechnical data

Radio Tech. : WLAN (IEEE 802.11 a,n,ac,ax)
 U-NII-1, U-NII-2A, U-NII-2C, U-NII-3 MIMO
 Frequency Range : 5 180 MHz ~ 5 240 MHz
 5 260 MHz ~ 5 320 MHz
 5 500 MHz ~ 5 700 MHz
 5 745 MHz ~ 5 825 MHz
 Modulation : 802.11a: OFDM (BPSK, QPSK, 16QAM, 64QAM)
 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
 Antenna type : Internal antenna
 Channel Spacing : 802.11a/n(HT20)/ac(VHT20): 20MHz
 802.11n(HT40)/ac(VHT40): 40MHz
 802.11ac(VHT80): 80MHz
 Antenna gain : Ant1: 4.94 dB i
 Ant2: 4.94 dB i
 Additional information :

1. The RF module(FCC ID: 2AATL-6252B-SR) had been certificated and the final product replaces the antenna, so we only test radiated emission for compliance

The above sample(s) and sample information was/were submitted and identified on behalf of the applicant.

Eurofins assures objectivity and impartiality of the test, and fulfills the obligation of confidentiality for applicant's commercial information and technical documents.

1.7 Test standards

Test Standards	
FCC Part 15 Subpart E	Subpart E—Unlicensed National Information Infrastructure Devices

Test Method

- 1: ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
- 2: ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices.
- 3: KDB789033 D02 General UNII Test Procedures New Rules v02r01

2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.



or

The deviations as specified were ascertained in the course of the tests performed.



2.2 Test environment

Ac line conducted

Environment Parameter	Temperature	Relative Humidity
101.2kPa	23.7 °C	61.3%

RF conducted

Environment Parameter	Temperature	Relative Humidity
101.2kPa	24.7 °C	43.1%

Radiated

Environment Parameter	Temperature	Relative Humidity
101.2kPa	24.3 °C	51.6%

2.3 Measurement uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty in conducted measurements	1.96dB
Uncertainty for Conducted RF test	RF Power Conducted: 1.16dB Frequency test involved: 1.05x10 ⁻⁷ or 1%
Uncertainty for Radiated Spurious Emission 25MHz-3000MHz	Horizontal: 4.46dB; Vertical: 4.54dB;
Uncertainty for Radiated Spurious Emission 3000MHz-18000MHz	Horizontal: 4.42dB; Vertical: 4.41dB;
Uncertainty for Radiated Spurious Emission 18000MHz-40000MHz	Horizontal: 4.63dB; Vertical: 4.62dB;

2.4 Test mode

Frequency band (MHz)		5150~5250	
802.11a / n HT20 / ac VHT20 / ax HE20		802.11n HT40 / ac VHT40 / ax HE40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
36	5180	38	5190
40	5200	46	5230
44	5220	802.11ac VHT80 / ax HE80	
48	5240	42	5210

Frequency band (MHz)		5250~5350	
802.11a / n HT20 / ac VHT20 / ax HE20		802.11n HT40 / ac VHT40 / ax HE40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
52	5260	54	5270
56	5280	62	5310
60	5300	802.11ac VHT80 / ax HE80	
64	5320	58	5290
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Frequency band (MHz)		5470~5725	
802.11a / n HT20 / ac VHT20 / ax HE20		802.11n HT40 / ac VHT40 / ax HE40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
100	5500	102	5510
104	5520	110	5550
108	5540	118	5590
112	5560	126	5630
116	5580	134	5670
120	5600	--	--
124	5620	802.11ac VHT80 / ax HE80	
128	5640	106	5530
132	5660	122	5610
136	5680	--	--
140	5700	--	--

Frequency band (MHz)		5725~5850	
802.11a / n HT20 / ac VHT20 / ax HE20		802.11n HT40 / ac VHT40 / ax HE40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
149	5745	151	5755
153	5765	159	5795
157	5785	802.11ac VHT80 / ax HE80	
161	5805	155	5775
165	5825	--	--

For U-NII-1 Bnad 802.11a/n(HT20 SISO/MIMO)/ac(VHT20 SISO/MIMO), the lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 36 (5180MHz), 40 (5200MHz) and 48 (5240MHz).

For U-NII-1 Bnad 802.11n(HT40 SISO/MIMO)/ac(VHT40 SISO/MIMO), the lowest, highest channel numbers of the EUT used and tested in this report are separately 38 (5190MHz) , 46 (5230MHz).

For U-NII-1 Bnad 802.11ac(VHT80 SISO/MIMO), the middle channel numbers of the EUT used and tested in this report are separately 42 (5210MHz).

For U-NII-3 Bnad 802.11a/n(HT20 SISO/MIMO)/ac(VHT20 SISO/MIMO), the lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 149 (5745MHz), 157 (5785MHz) and 165 (5825MHz).

For U-NII-3 Bnad 802.11n(HT40 SISO/MIMO)/ac(VHT40 SISO/MIMO), the lowest, highest channel numbers of the EUT used and tested in this report are separately 151 (5755MHz) , 159 (5795MHz).

For U-NII-3 Bnad 802.11ac(VHT80 SISO/MIMO), the middle channel numbers of the EUT used and tested in this report are separately 155 (5775MHz).

The EUT was set at continuously transmitting mode during the test.

2.5 Test equipment utilized

EQUIPMENT ID	EQUIPMENT NAME	MODEL NO.	CAL. DUE DATE
23-2-13-05	EMI Test Receiver	ESR3	2025-03-25
23-2-13-06	LISN	NNLK 8127 RC	2025-03-25
23-2-10-16	Attenuator	VTSD 9561-F	2025-03-25
23-2-10-63	Temperature & Humidity Meter	COS-03	2025-03-25
23-2-10-65	Barometer	Baro	2025-03-25
23-2-13-12	Signal Analyzer	N9010B-544	2025-03-25
23-2-13-13	BT/WLAN Tester	CMW270	2025-03-25
23-2-13-14	Signal Generator	N5183B-520	2025-03-25
23-2-13-15	Vector Signal Generator	N5182B-506	2025-03-25
23-2-10-43	Switch and Control Unit	ERIT-E-JS0806-2	2025-03-25
23-2-10-44	DC power supply	E3642A	2025-03-25
23-2-10-45	Temperature test chamber	SG-80-CC-2	2025-03-25
23-2-10-50	Temperature & Humidity Meter	COS-03	2025-03-25
23-2-10-66	Barometer	Baro	2025-03-25
23-2-13-01	EMI Test Receiver	ESR7	2025-03-25
23-2-13-02	Signal Analyzer	N9020B-544	2025-03-25
23-2-12-01	Active Loop Antenna	FMZB 1519B	2025-06-03
23-2-12-02	TRILOG Broadband Antenna	VULB9168	2025-06-03
23-2-12-03	Horn Antenna	3117	2025-06-03
23-2-12-04	Horn Antenna	BBHA 9170	2025-06-03
23-2-10-01	Preamplifier	BBV9745	2025-03-25
23-2-10-02	Preamplifier	TAP01018048	2025-03-25
23-2-10-03	Preamplifier	TAP18040048	2025-03-25
23-2-10-62	Temperature & Humidity Meter	COS-03	2025-03-25
23-2-10-64	Barometer	Baro	2025-03-25
23-2-10-14	Switch and Control Unit	ERIT-E-JS0806-SF1	N/A
23-2-13-03	EMI Test Receiver	ESR7	2025-03-25
23-2-13-04	Signal Analyzer	N9020B-526	2025-03-25
23-2-10-46	Preamplifier	BBV9745	2025-03-25
23-2-10-47	Preamplifier	TAP01018048	2025-03-25
23-2-10-61	Temperature & Humidity Meter	COS-03	2025-03-25
23-2-10-52	Barometer	Baro	2025-03-25
23-2-10-15	Switch and Control Unit	ERIT-E-JS0806-SF1	N/A

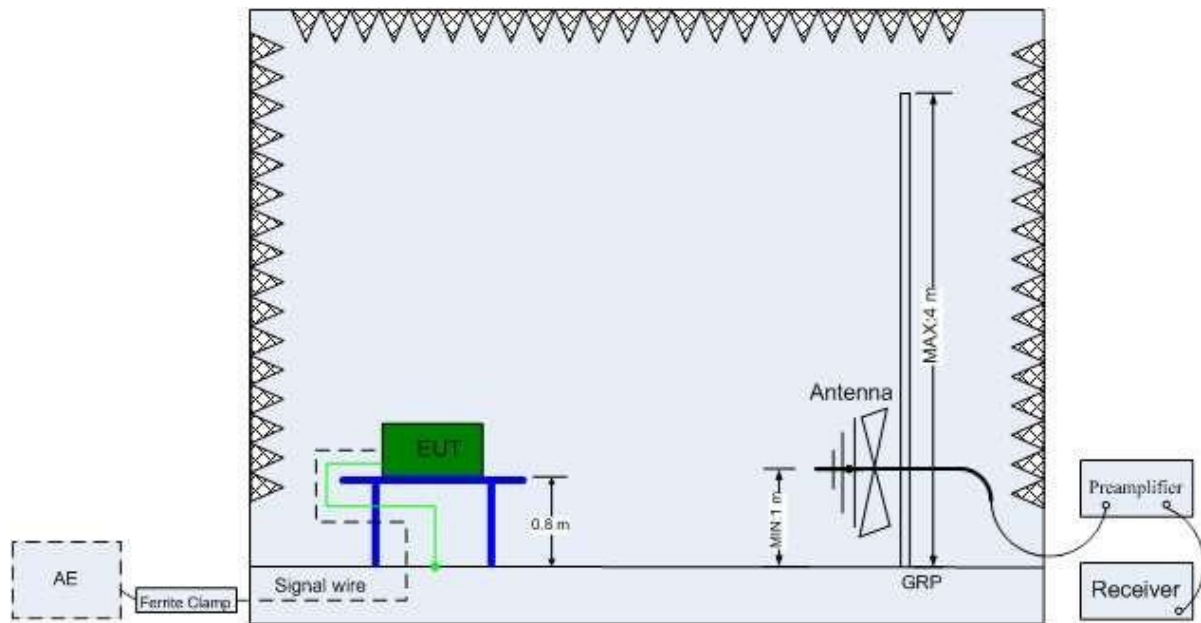
2.6 Auxiliary equipment used during test

DESCRIPTION	MANUFACTURER	MODEL NO.	S/N
Laptop	LENOVO	TP00096A	PF-1QH0LV

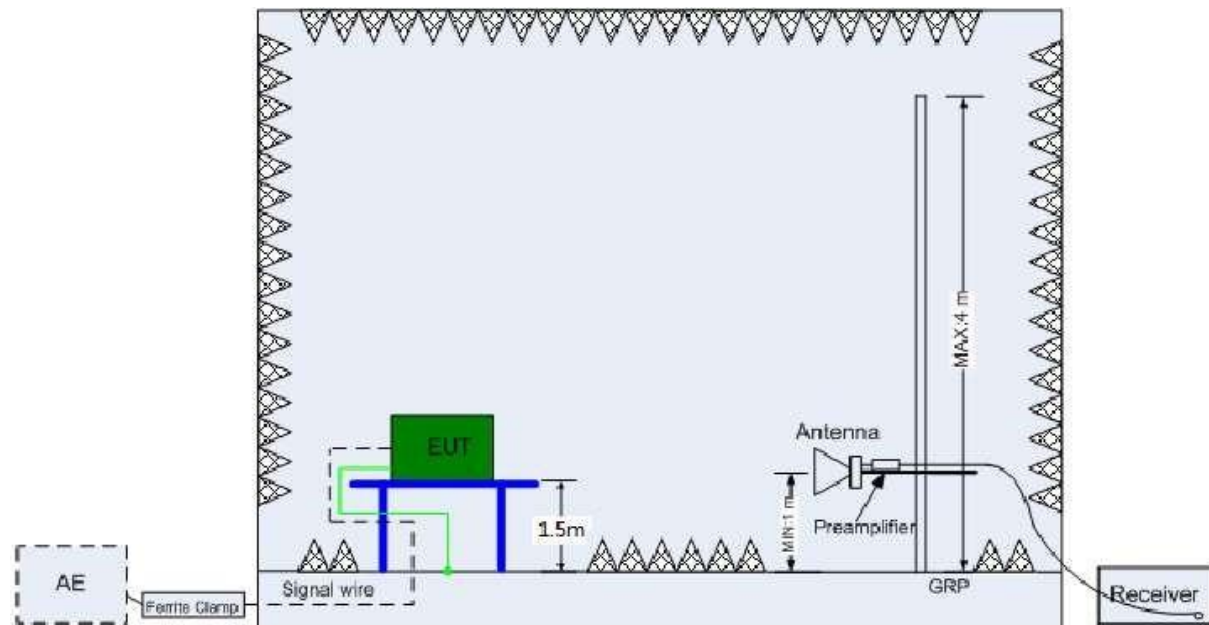
2.7 Test software information

Test Software&Version	CMD		
Mode	Power setting		Rate
	Ant1	Ant2	
802.11a	DEF	DEF	6Mbit
802.11n HT20	DEF	DEF	MCS0
802.11n HT40	DEF	DEF	MCS0
802.11ac VHT20	DEF	DEF	AC_MCS0
802.11ac VHT40	DEF	DEF	AC_MCS0
802.11ac HT80	DEF	DEF	AC_MCS0
802.11ax HE20	DEF	DEF	HE
802.11ax HE40	DEF	DEF	HE
802.11ax HE80	DEF	DEF	HE

Radiated tests below 1GHz



Radiated tests above 1GHz



2.9 Test results

☒ 1st test

☐ test after modification

☐ production test

Technical Requirements				
FCC Part 15 Subpart E				
Test Condition		Test Result	Verdict	Test Site
§15.207	Conducted emission AC power port	Appendix E	Pass	Site 1
§15.205(a) §15.209(a) §15.407(b)(1) §15.407(b)(4)	Transmitter Radiated Spurious Emissions	Appendix F	Pass	Site 1
§15.203	Antenna requirement	See note 1	Pass	--

Remark 1: N/A – Not Applicable.

Note 1: The EUT uses internal antenna,. According to §15.203, it is considered sufficiently to comply with the provisions of this section.

3 Technical Requirement

3.1 Conducted emission AC power port

Test Method:

The test method was referred to the subclause 6.2 of ANSI C63.10-2013.

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both Neutral and Live lines.

Limit:

FCC §15.207 (a)

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Frequency	QP Limit	AV Limit
MHz	dBμV	dBμV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Decreasing linear.

3.2 Transmitter radiated spurious emissions

Test Method:

The test method was referred to the subclause G of KDB 789033 D02 General UNII Test Procedures New Rules v02r01 and ANSI C63.10-2013.

Test Procedures for emission below 30 MHz

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.

1. Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular of the antenna are set to make the measurement.
2. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
3. The test-receiver system was set to average or quasi peak detect function and Specified Bandwidth with Maximum Hold Mode.

Test Procedures for emission from above 30 MHz

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site below 1 GHz and 1.5 meter above the ground at a 3 meter anechoic chamber test site above 1 GHz. The table was rotated 360 degrees to determine the position of the highest radiation.

1. During performing radiated emission below 1 GHz, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 GHz, the EUT was set 3 meter away from the interference-receiving antenna.
2. The antenna is a bi-log antenna, a horn antenna and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
4. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note

All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

- II.G.4. Unwanted emissions measurements below 1 GHz

Compliance shall be demonstrated using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.

- II.G.5. Unwanted maximum emissions measurements above 1 GHz

Peak emission levels are measured by setting the analyzer as follows: Set to RBW = 1 MHz, VBW \geq 3 MHz, Detector = Peak, Sweep time = auto, Trace mode = Max hold.

- II.G.6. Average unwanted emissions measurements above 1 GHz

Set to RBW = 1 MHz, VBW \geq 3 MHz, Detector = power averaging (rms), Averaging type = power averaging (rms), Sweep time = auto, Perform a trace average of at least 100 traces. If the transmission is

continuous, If the transmission is not continuous, the number of traces shall be increased by a factor of $1/x$, where x is the duty cycle. For example, with 50 % duty cycle, at least 200 traces shall be averaged.

If tests are performed with the EUT transmitting at a duty cycle less than 98 %, a correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 % duty cycle. The correction factor is computed as follows:

- If power averaging (rms) mode was used in II.G.6.c)(iv), the correction factor is $10 \log (1 / x)$, where x is the duty cycle. For example, if the transmit duty cycle was 50 %, then 3 dB must be added to the measured emission levels.

Limit:

FCC § 15.407(b)

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of - 27 dB m/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dB m/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dB m/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dB m/MHz at 5 MHz above or below the band edge, and from

5 MHz above or below the band edge increasing linearly to a level of 27 dB m/MHz at the band edge.

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6.2.1.2 Frequency band 5 150-5 250 MHz

For transmitters with operating frequencies in the band 5 150-5 250 MHz, all emissions outside the band 5 150-5 350 MHz shall not exceed -27 dB m/MHz e.i.r.p. Any unwanted emissions that fall into the band 5 250-5 350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5 % of the occupied bandwidth (i.e. 99% bandwidth), above 5 250 MHz. The 26 dB bandwidth may fall into the 5 250-5 350 MHz band; however, if the occupied bandwidth also falls within the 5 250- 5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5 250-5 350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5 250-5 350 MHz band.

6.2.4.2 Frequency band 5 725-5 850 MHz

Devices operating in the band 5 725-5 850 MHz with antenna gain greater than 10 dB i can have unwanted emissions that comply with either the limits in this section or in section 5.5 until six (6) months after the publication date of this standard for certification. Certified devices that do not comply with emission limits in this section shall not be manufactured, imported, distributed, leased, offered for sale or sold after April 1, 2018.

Devices operating in the band 5 725-5 850 MHz with antenna gain of 10 dB i or less can have unwanted emissions that comply with either the limits in this section or in section 5.5 until April 1, 2018 for certification. Certified devices that do not comply with emission limits in this section shall not be manufactured, imported, distributed, leased, offered for sale or sold after April 1, 2020.

Devices operating in the band 5 725-5 850 MHz shall have e.i.r.p. of unwanted emissions comply with the following:

- a) 27 dB m/MHz at frequencies from the band edges decreasing linearly to 15.6 dB m/MHz at 5 MHz above or below the band edges;
- b) 15.6 dB m/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dB m/MHz at 25 MHz above or below the band edges;
- c) 10 dB m/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dB m/MHz at 75 MHz above or below the band edges; and
- d) -27 dB m/MHz at frequencies more than 75 MHz above or below the band edges.

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)):

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

FCC §15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	
13.36-13.41			

4 Test Setup Photos

Ref "EFGX24060480-IE-03-E01_Setup_Photos.pdf"

5 External Photo

Ref "EFGX24060480-IE-03-E01_External_Photos.pdf"

6 Internal Photos

Ref "EFGX24060480-IE-03-E01_Internal_Photos.pdf"

7 Appendix

Ref "EFGX24050480-IE-03-E04_appendix.pdf"

--End of report--