

## TEST REPORT

**Applicant:** Dongguan Pink Panther Electronic Technology Co. , Ltd

Room 1201, Building 14, No.52, Fuhai Road, Xiagang

**Address:** community, Chang'an Town, Dongguan City, Guangdong Province,China

**Product Name:** remote control

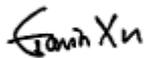
**FCC ID:** 2BFFLPR-2403

**Standard(s):** 47 CFR Part 15, Subpart C(15.231)  
ANSI C63.10-2013

**Report Number:** DG8240314-12956E-RF-00

**Report Date:** 2024/4/16

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).



**Reviewed By:** Gavin Xu  
Title: RF Engineer



**Approved By:** Ivan Cao  
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**DOCUMENT REVISION HISTORY**

<b>Revision Number</b>	<b>Report Number</b>	<b>Description of Revision</b>	<b>Date of Revision</b>
1.0	DG8240314-12956E-RF-00	Original Report	2024/4/16

## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment under Test (EUT)

<b>EUT Name:</b>	remote control
<b>EUT Model:</b>	PR-2403
<b>Operation Frequency:</b>	433.92 MHz
<b>Modulation Type:</b>	OOK
<b>Rated Input Voltage:</b>	DC 3V from battery
<b>Serial Number:</b>	2IP7-1
<b>EUT Received Date:</b>	2024/3/16
<b>EUT Received Status:</b>	Good

### 1.2 Accessory Information

Accessory Description	Manufacturer	Model	Parameters
/	/	/	/

### 1.3 Antenna Information Detail ▲

Antenna Manufacturer	Antenna Type	Antenna Connector	Frequency Range	Antenna Gain
Dongguan Pink Panther Electronic Technology Co., Ltd	Loop	Integrated	433.92 MHz	Unknown
<b>The design of compliance with §15.203:</b>				
<input checked="" type="checkbox"/> Unit uses a permanently attached antenna.				
<input type="checkbox"/> Unit uses a unique coupling to the intentional radiator.				
<input type="checkbox"/> Unit was professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.				

### 1.4 Equipment Modifications

No modifications are made to the EUT during all test items.

## 2. SUMMARY OF TEST RESULTS

Standard(s) Section	Test Items	Result
§15.207 (a)	Conducted Emissions	Not Applicable
§15.205, §15.209, §15.231 (b)	Radiated Emissions	Compliant
§15.231 (c)	20dB Bandwidth	Compliant
§15.231 (a)	Deactivation Testing	Compliant
§15.203	Antenna Requirement	Compliant
Not Applicable: the device was powered by battery.		

### 3. DESCRIPTION OF TEST CONFIGURATION

#### 3.1 EUT Operation Condition

The system was configured for testing in Engineering Mode, which was provided by the manufacturer.

#### 3.2 EUT Exercise Software

No EUT software is used for testing.

#### 3.3 Support Equipment List and Details

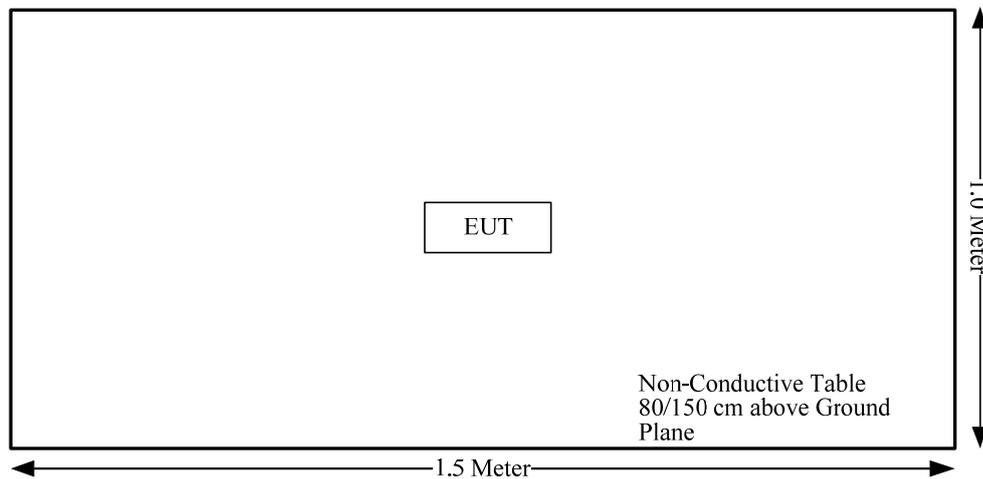
Manufacturer	Description	Model	Serial Number
/	/	/	/

#### 3.4 Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
/	/	/	/	/	/

#### 3.5 Block Diagram of Test Setup

Radiated Emissions:



### 3.6 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 829273, the FCC Designation No. : CN5044.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

### 3.7 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
Unwanted Emissions, radiated	9kHz~30MHz: 3.3dB, 30MHz~200MHz: 4.55 dB, 200MHz~1GHz: 5.92 dB, 1GHz~6GHz: 4.98 dB, 6GHz~18GHz: 5.89 dB, 18GHz~26.5GHz:5.47 dB, 26.5GHz~40GHz:5.63 dB
Unwanted Emissions, conducted	±2.47 dB
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.11 dB (150 kHz to 30 MHz)

## **4. REQUIREMENTS AND TEST RESULT**

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### **4.1 AC Line Conducted Emissions**

**Not Applicable**, the device was powered by battery only.

## 4.2 Radiation Spurious Emissions

### 4.2.1 Applicable Standard

FCC §15.231 (b);

In addition to the provisions of § 15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

<b>Fundamental frequency (MHz)</b>	<b>Field strength of fundamental (microvolts/meter)</b>	<b>Field strength of spurious emissions (microvolts/meter)</b>
40.66–40.70	2,250	225
70–130	1,250	125
130–174	<sup>1</sup> 1,250 to 3,750	<sup>1</sup> 125 to 375
174–260	3,750	375
260–470	<sup>1</sup> 3,750 to 12,500	<sup>1</sup> 375 to 1,250
Above 470	12,500	1,250

<sup>1</sup> Linear interpolations.

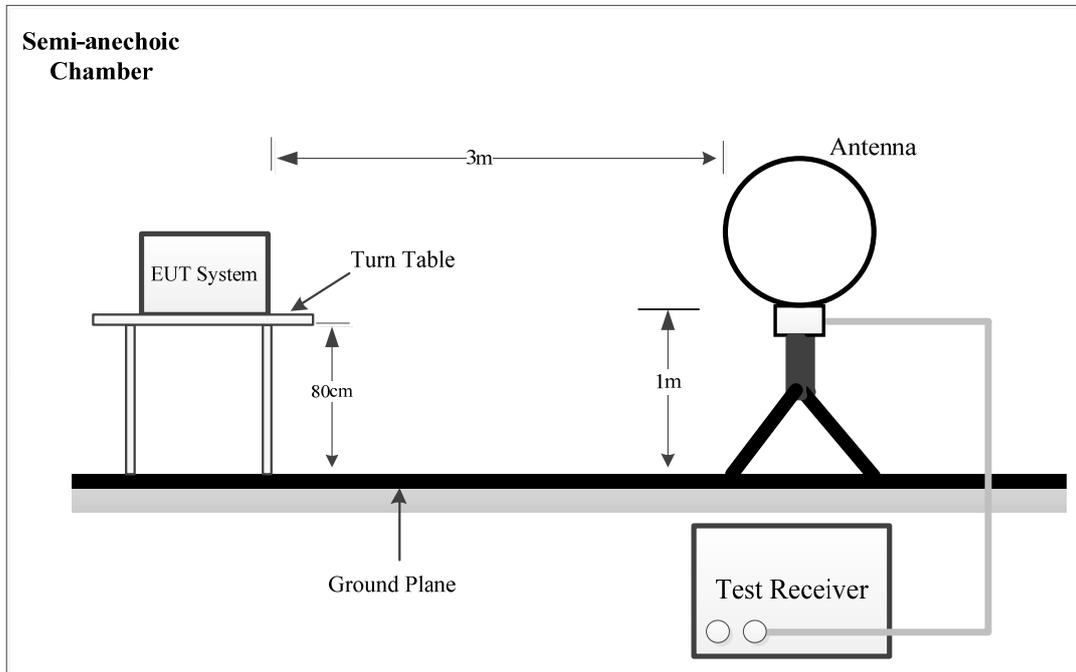
(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.

(2) Intentional radiators operating under the provisions of this section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in § 15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of § 15.205 shall be demonstrated using the measurement instrumentation specified in that section.

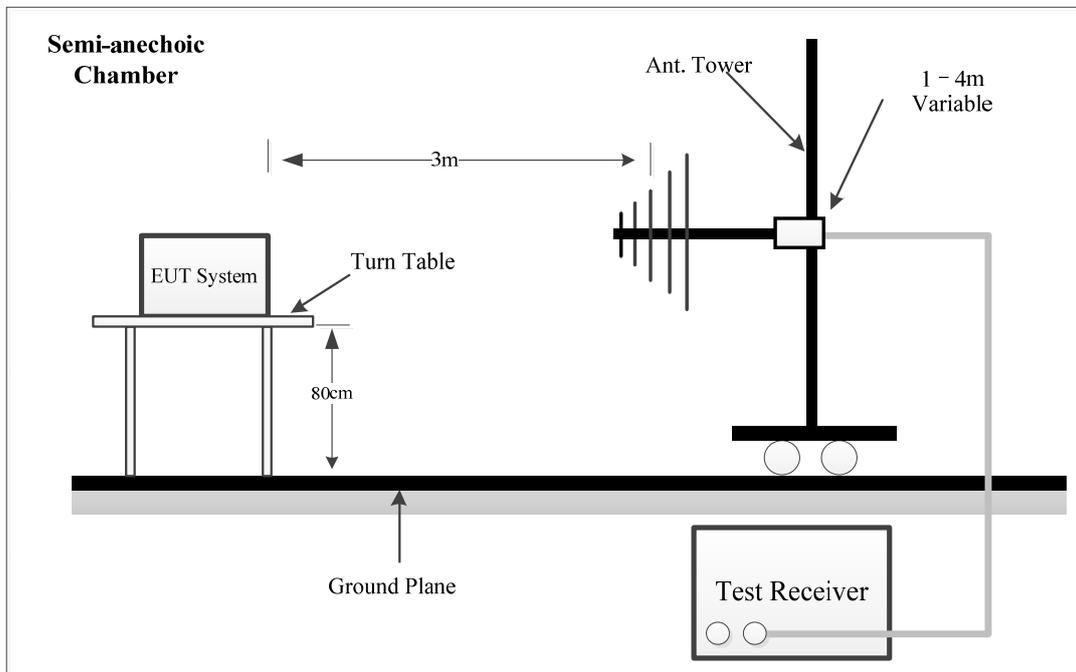
(3) The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in § 15.209, whichever limit permits a higher field strength.

### 4.2.2 EUT Setup

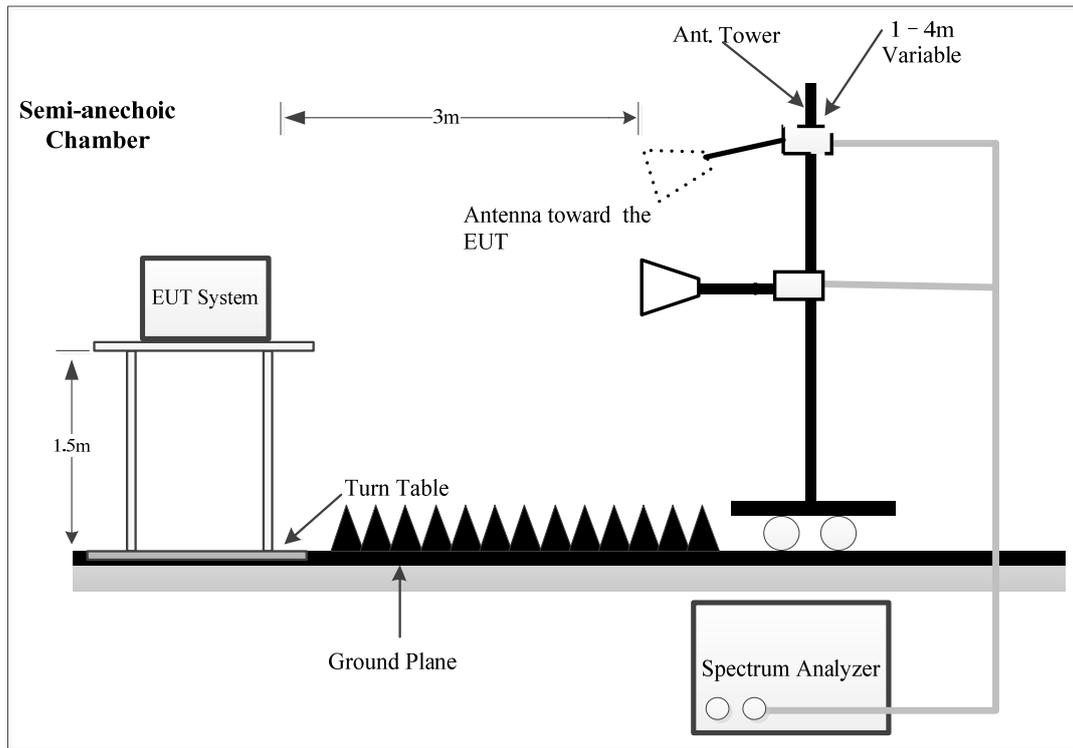
9kHz - 30MHz:



30MHz - 1GHz:



**Above 1GHz:**



The radiated emissions were performed in the 3 meters distance, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.205, 15.209, and FCC 15.231 limits.

For 9kHz-30MHz test, the lowest height of the magnetic antenna shall be 1 m above the ground and three antenna orientations (parallel, perpendicular, and ground-parallel) shall be measured.

**4.2.3 EMI Test Receiver & Spectrum Analyzer Setup**

During the radiated emission test, the test receiver was set with the following configurations other than pulsed emissions for average test:

9kHz-1000MHz:

Frequency Range	Measurement	RBW	Video B/W	IF B/W
9 kHz – 150 kHz	QP/AV	200 Hz	1 kHz	200 Hz
150 kHz – 30 MHz	QP/AV	9 kHz	30 kHz	9 kHz
30 MHz – 1000 MHz	PK	100 kHz	300 kHz	/
	QP	/	/	120 kHz

Above 1GHz:

Measurement	RBW	Video B/W
PK	1MHz	3 MHz

#### 4.2.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

According to §15.231, Intentional radiators operating under the provisions of this Section shall demonstrate compliance with the limits on the field strength of emissions, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector

For pulsed emissions, according to C63.10 clause 7.5, Procedure for determining the average value of pulsed emissions

Unless otherwise specified, when the radiated emission limits are expressed in terms of the average value of the emission, 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 s (100 ms). In cases where the pulse train exceeds 0.1 s, the measured field strength shall be determined during a 0.1 s interval.<sup>64</sup> The following procedure is an example of how the average value may be determined. The average field strength may be found by measuring the peak pulse amplitude (in log equivalent units) and determining the duty cycle correction factor (in dB) associated with the pulse modulation as shown in Equation

$$\delta(\text{dB}) = 20\log(\Delta)$$

where

$\delta$  is the duty cycle correction factor (dB)

$\Delta$  is the duty cycle (dimensionless)

#### 4.2.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = Antenna Factor + Cable Loss - Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

**4.2.6 Test Result**

Serial Number:	2IP7-1	Test Date:	2024/4/2~2024/4/8
Test Site:	Chamber 10m, Chamber B	Test Mode:	Transmitting
Tester:	Zoo Zou, Bill Yang	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24.4~24.6	Relative Humidity: (%)	54~63	ATM Pressure: (kPa)	100.2~100.5
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
9 kHz~30 MHz					
EMCO	Passive Loop Antenna	6512	9706-1206	2023/10/21	2026/10/20
Sunol Sciences	Hybrid Antenna	JB3	A060611-1	2023/9/6	2026/9/5
Narda	Coaxial Attenuator	779-6dB	04269	2023/9/6	2026/9/5
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2023/8/1	2024/7/31
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-04	2023/8/1	2024/7/31
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2023/8/1	2024/7/31
Sonoma	Amplifier	310N	185914	2023/8/1	2024/7/31
R&S	EMI Test Receiver	ESCI	101121	2023/10/18	2024/10/17
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Above 1GHz					
ETS-Lindgren	Horn Antenna	3115	000 527 35	2023/9/7	2024/9/6
Xinhang Macrowave	Coaxial Cable	XH750A-N/J-SMA/J-10M	20231117004 #0001	2023/11/17	2024/11/16
AH	Preamplifier	PAM-0118P	469	2023/8/19	2024/8/18
R&S	Spectrum Analyzer	FSV40	101944	2023/10/18	2024/10/17
Audix	Test Software	E3	191218 (V9)	N/A	N/A

\* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

**Test Data:**

Please refer to the below table and plots.

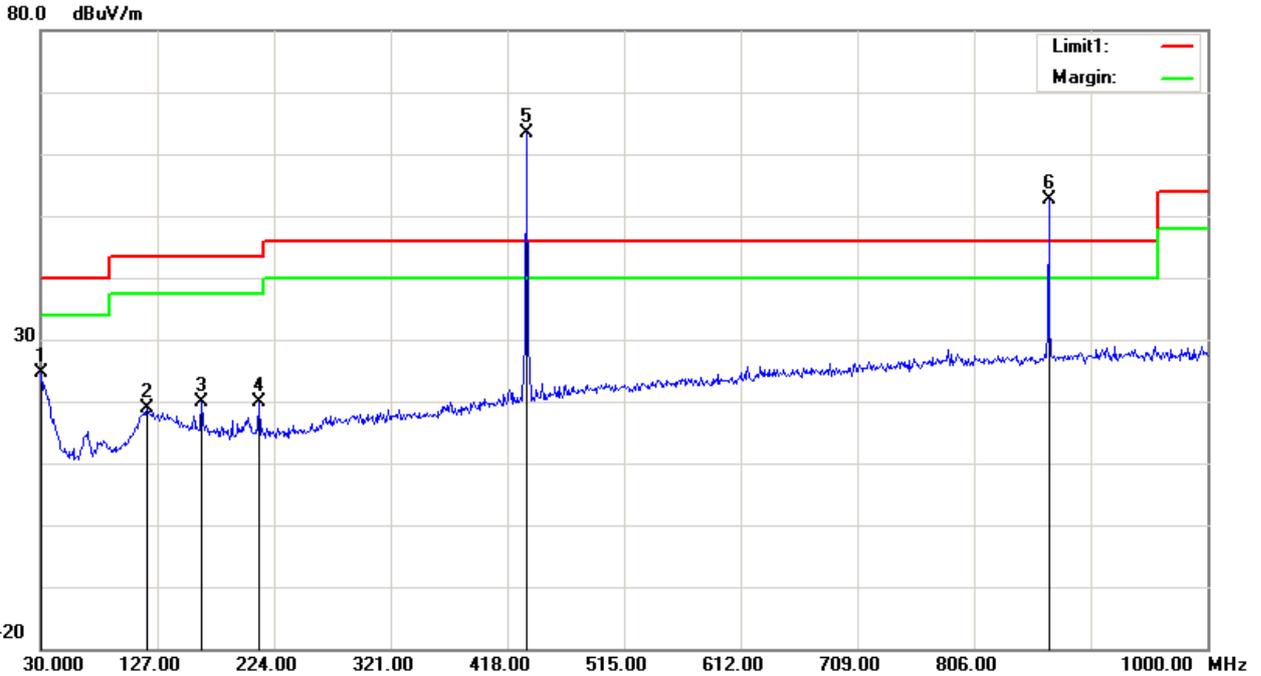
Note: The device can be mounted in multiple orientations, test was performed with X,Y, Z Axis according to C63.10 figure 8, the worst orientation was photographed and it's data was recorded.

**1) 9kHz~30MHz**

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

2) 30MHz-1GHz

Project No: DG8240314-12956E-RF  
 Test Engineer: Zoo Zou  
 Test Date: 2024-4-8  
 Polarization: Horizontal  
 Test Mode: Transmitting  
 Power Source: DC 3V



No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBμV)		(dB/m)	(dBμV/m)	(dBμV/m)	(dB)
1	30.9700	28.91	peak	-4.31	24.60	40.00	15.4
2	118.2700	29.01	peak	-10.03	18.98	43.5	24.52
3	163.8600	31.18	peak	-11.35	19.83	43.5	23.67
4	211.3900	32.37	peak	-12.59	19.78	43.5	23.72
5*	433.9200	69.37	peak	-5.96	63.41	100.83	37.42
6**	867.8400	51.41	peak	1.17	52.58	80.83	28.25

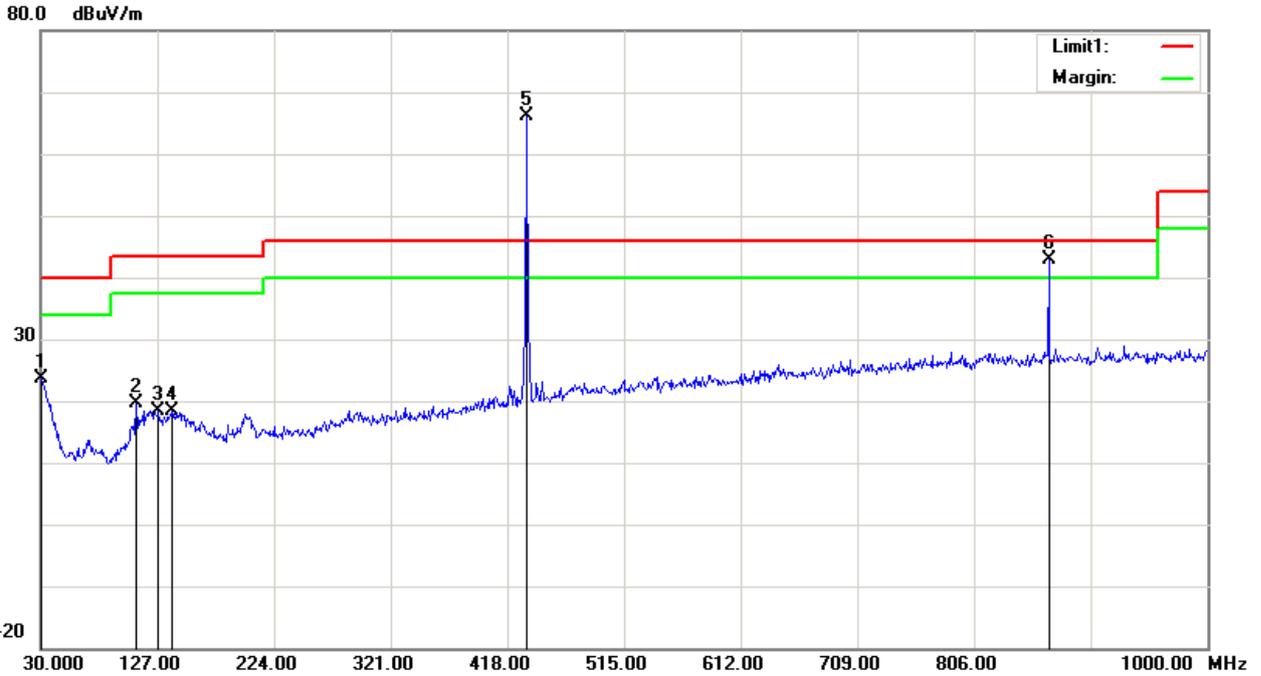
Note:

\*Fundamental

\*\*Harmonic

The peak value of fundamental and harmonic is under limit more than 20dB, therefore, the average detector is not necessary.

Project No: DG8240314-12956E-RF  
 Test Engineer: Zoo Zou  
 Test Date: 2024-4-8  
 Polarization: Vertical  
 Test Mode: Transmitting  
 Power Source: DC 3V



No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBμV)		(dB/m)	(dBμV/m)	(dBμV/m)	(dB)
1	30.9700	28.02	peak	-4.31	23.71	40.00	16.29
2	109.5400	31.18	peak	-11.47	19.71	43.50	23.79
3	127.9700	28.05	peak	-9.64	18.41	43.50	25.09
4	139.6100	28.79	peak	-10.45	18.34	43.50	25.16
5*	433.9200	72.10	peak	-5.96	66.14	100.83	34.69
6**	867.8400	41.65	peak	1.17	42.82	80.83	38.01

Note:

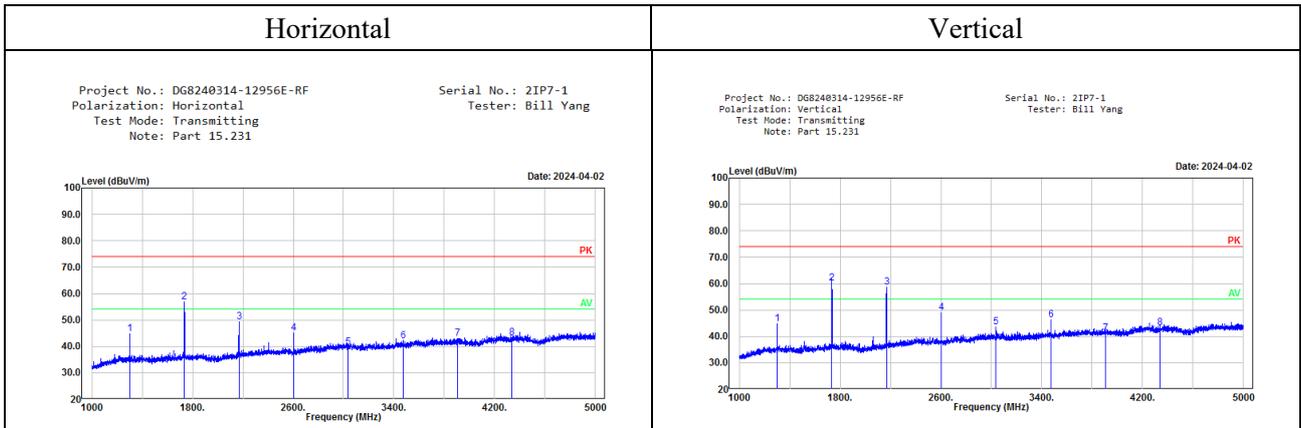
\*Fundamental

\*\*Harmonic

The peak value of fundamental and harmonic is under limit more than 20dB, therefore, the average detector is not necessary.

**3) 1GHz-5GHz  
Peak:**

Frequency MHz	Receiver Reading	Rx Antenna		Cable loss dB	Amplifier Gain dB	Corrected Amplitude dBμV/m	Limit dBμV/m	Margin dB
	dBμV	Polar H/V	Factor dB/m					
1301.76	55.23	H	24.58	0.82	35.73	44.90	74.00	29.10
1301.76	55.06	V	24.58	0.82	35.73	44.73	74.00	29.27
1735.68	66.64	H	25.42	0.88	35.99	56.95	80.83	23.88
1735.68	69.87	V	25.42	0.88	35.99	60.18	80.83	20.65
2169.60	57.97	H	26.71	0.89	36.30	49.27	80.83	31.56
2169.60	67.41	V	26.71	0.89	36.30	58.71	80.83	22.12
2603.52	52.45	H	28.47	0.91	36.88	44.95	80.83	35.88
2603.52	56.43	V	28.47	0.91	36.88	48.93	80.83	31.90
3037.44	45.60	H	29.96	0.94	37.00	39.50	80.83	41.33
3037.44	49.63	V	29.96	0.94	37.00	43.53	80.83	37.30
3471.36	47.79	H	30.65	0.98	37.34	42.08	80.83	38.75
3471.36	51.83	V	30.65	0.98	37.34	46.12	80.83	34.71
3905.28	47.43	H	31.75	1.08	37.45	42.81	74.00	31.19
3905.28	45.82	V	31.75	1.08	37.45	41.20	74.00	32.80
4339.20	46.70	H	32.41	1.19	37.10	43.20	74.00	30.80
4339.20	46.89	V	32.41	1.19	37.10	43.39	74.00	30.61



Note:  
The peak value is under limit more than 20dB, therefore, the average detector is not necessary.

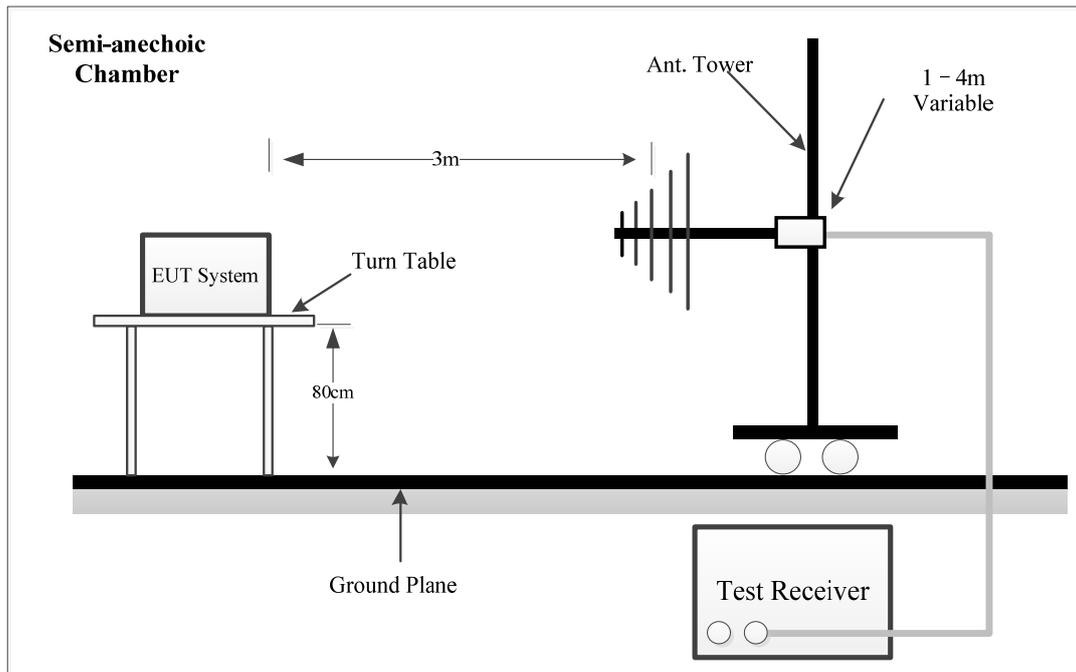
### 4.3 20 dB Emission Bandwidth:

#### 4.3.1 Applicable Standard

FCC §15.231(c)

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

#### 4.3.2 EUT Setup



#### 4.3.3 Test Procedure

According to ANSI C63.10-2013 Section 6.9.2

- The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, unless otherwise specified by the applicable requirement.
- Set the video bandwidth (VBW)  $\geq 3 \times \text{RBW}$ .
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

**4.3.4 Test Result**

Serial Number:	2IP7-1	Test Date:	2024/4/8
Test Site:	Chamber 10m	Test Mode:	Transmitting
Tester:	Joe Li	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24.6	Relative Humidity: (%)	63	ATM Pressure: (kPa)	100.2
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**Test Equipment List and Details:**

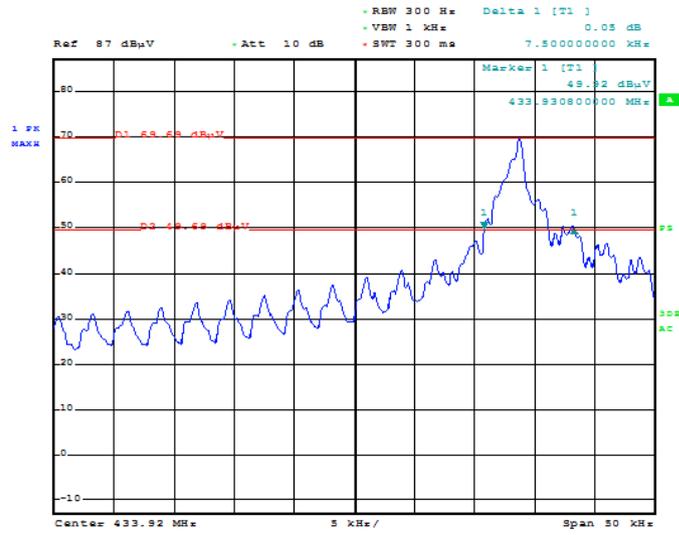
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Hybrid Antenna	JB3	A060611-1	2023/9/6	2026/9/5
Narda	Coaxial Attenuator	779-6dB	04269	2023/9/6	2026/9/5
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2023/8/1	2024/7/31
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-04	2023/8/1	2024/7/31
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2023/8/1	2024/7/31
Sonoma	Amplifier	310N	185914	2023/8/1	2024/7/31
R&S	EMI Test Receiver	ESCI	101121	2023/10/18	2024/10/17

*\* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

**Test Data:**

Test Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)
433.92	7.5	1084.8

### 20dB Emission Bandwidth



Project: DG8240314-12956E-RF    Tester: Joe Li  
Date: 8.APR.2024 14:38:02

## 4.4 DEACTIVATION TESTING

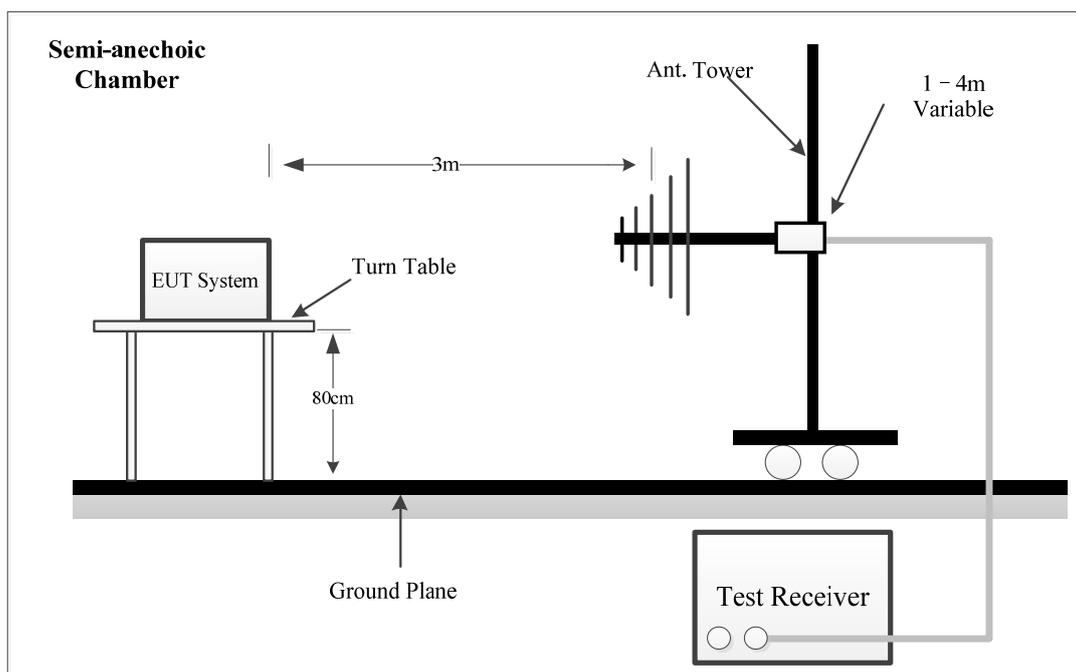
### 4.4.1 Applicable Standard

FCC §15.231 (a)

The provisions of this section are restricted to periodic operation within the band 40.66–40.70 MHz and above 70 MHz. Except as shown in paragraph (e) of this section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal. The following conditions shall be met to comply with the provisions for this periodic operation:

- (1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.
- (2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.
- (3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.
- (4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition
- (5) Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a)(1) and (a)(2) of this section, provided such transmissions are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

### 4.4.2 EUT Setup



#### 4.4.3 Test Procedure

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:

- 1) Set the center frequency of the instrument to the center frequency of the transmission.
- 2) Set  $RBW \geq OBW$  if possible; otherwise, set RBW to the largest available value.
- 3) Set  $VBW \geq RBW$ . Set detector = peak or average.

**4.4.4 Test Result**

Serial Number:	2IP7-1	Test Date:	2024/4/8
Test Site:	Chamber 10m	Test Mode:	Transmitting
Tester:	Bill Yang	Test Result:	Pass

<b>Environmental Conditions:</b>					
Temperature: (°C)	25.2	Relative Humidity: (%)	48	ATM Pressure: (kPa)	100.5

**Test Equipment List and Details:**

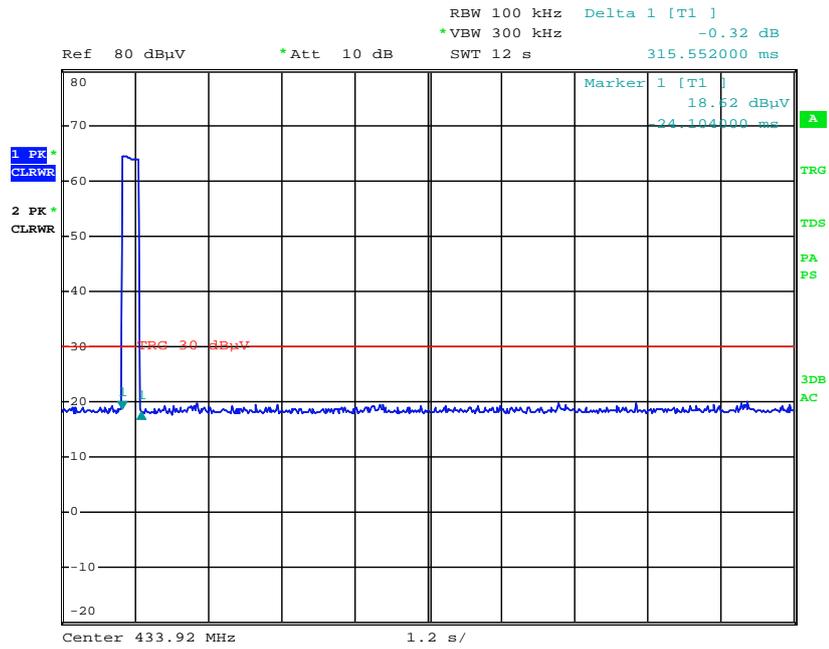
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Hybrid Antenna	JB3	A060611-1	2023/9/6	2026/9/5
Narda	Coaxial Attenuator	779-6dB	04269	2023/9/6	2026/9/5
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2023/8/1	2024/7/31
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-04	2023/8/1	2024/7/31
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2023/8/1	2024/7/31
Sonoma	Amplifier	310N	185914	2023/8/1	2024/7/31
R&S	EMI Test Receiver	ESCI	101121	2023/10/18	2024/10/17

*\* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

**Test Data:**

Test Frequency (MHz)	Transmission duration Time (s)	Transmission duration Time Limit (s)
433.92	0.316	<5

### Transmission duration Time



Project:DG8240314-12956E-RF Tester:Joe Li  
Date: 8.APR.2024 16:58:42

## **4.5 Antenna Requirement**

### **4.5.1 Applicable Standard**

FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

### **4.5.2 Judgment**

**Compliant.** Please refer to the Antenna Information detail in Section 1.3.

## **APPENDIX A - EUT PHOTOGRAPHS**

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Please refer to the attachment DG8240314-12956E-RF-EXP EUT external photographs and DG8240314-12956E-RF-INP EUT internal photographs.

## **APPENDIX B - TEST SETUP PHOTOGRAPHS**

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Please refer to the attachment DG8240314-12956E-RF-00-TSP test setup photographs.

## APPENDIX C - RF EXPOSURE EVALUATION

### Applicable Standard

§1.1307(b)(3)(i) For single RF sources (*i.e.*, any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

### Measurement Result

Frequency (MHz)	Maximum EIRP		1-mW Test Exemption
	dBm	mW	
433.92	-29.06	0.001	Compliant

Note:

1. This device maximum E-Field level is 66.14 dB $\mu$ V/m at 3m, so the EIRP power is -29.06 dBm.
2. Pout EIRP(dBm)=Field Strength of Fundamental(dBuV/m)-95.2

**Result: Compliant.** RF Exposure is exemption.

**\*\*\*\*\* END OF REPORT\*\*\*\*\***