

# FCC Test Report

Report No.: AGC15705240125FR01

FCC ID	:	2AFIOWJRC1180
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Scooper RC
BRAND NAME	:	N/A
MODEL NAME	:	See page 4
APPLICANT	:	HUAJIA TECHNOLOGY INDUSTRY CO., LTD
DATE OF ISSUE	:	Feb. 26, 2024
STANDARD(S)	:	FCC Part 15 Subpart C §15.227
REPORT VERSION	:	V1.0







# **Report Revise Record**

Report Version	Revise Time	Issued Date	Valid Version	Notes	
V1.0	/	Feb. 26, 2024	Valid	Initial Release	



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## **1. General Information**

Applicant	HUAJIA TECHNOLOGY INDUSTRY CO., LTD
Address	FL.12.Jiafa Mansion, No. 9, Guangyi Road, Chenghai Dist., Shantou City, Gaungdong Province, China
Manufacturer	HUAJIA TECHNOLOGY INDUSTRY CO., LTD
Address	FL.12.Jiafa Mansion, No. 9, Guangyi Road, Chenghai Dist., Shantou City, Gaungdong Province, China
Factory	HUAJIA TECHNOLOGY INDUSTRY CO., LTD
Address	FL.12.Jiafa Mansion, No. 9, Guangyi Road, Chenghai Dist., Shantou City, Gaungdong Province, China
Product Designation	Scooper RC
Brand Name	N/A
Test Model	ODY-8808
Series Model(s)	See page 5
Difference Description	All the series models are the same as the test model except for the model names and the color of appearance.
Date of receipt of test item	Jan. 30, 2024
Date of Test	Jan. 30, 2024 to Feb. 26, 2024
Deviation from Standard	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Test Report Form No	AGCER-FCC-SRD27MHz-V1

Note: The test results of this report relate only to the tested sample identified in this report.

Prepared By

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Cici Li (Project Engineer)

Feb. 26, 2024

**Reviewed By** 

Calvin Liu (Reviewer)

Feb. 26, 2024

Approved By

than

Max Zhang Authorized Officer

Feb. 26, 2024



# 2. Product Information

## 2.1 Product Technical Description

Operation Frequency	27.145
Hardware Version	V1.0
Software Version	V1.0
Modulation Type	ASK
Number of channels	1
Field Strength of Fundamental	63.20dBµV/m
Antenna Designation	Spring-loaded soft Antenna
Antenna Gain	0dBi
Power Supply	DC 3V by battery
Series Model(s)	RC1101, RC1102, RC1103, RC1104, RC1105, RC1106, RC1107, RC1108, RC1109, RC1110, RC1111, RC1112, RC1113, RC1114, RC1115, RC1116, RC1117, RC1118, RC1119, RC1120, RC1121, RC1122, RC1123, RC1124, RC1125, RC1126, RC1127, RC1128, RC1129, RC1130, RC1131, RC1132, RC1133, RC1134, RC1135, RC1136, RC1137, RC1138, RC1139, RC1140, RC1141, RC1142, RC1143, RC1144, RC1145, RC1146, RC1147, RC1148, RC1149, RC1150, RC1151, RC1152, RC1153, RC1154, RC1155, RC1156, RC1157, RC1158, RC1159, RC1160, RC1161, RC1162, RC1163, RC1164, RC1165, RC1166, RC1167, RC1168, RC1169, RC1170, RC1171, RC1172, RC1173, RC1174, RC1175, RC1176, RC1177, RC1178, RC1179, RC1180, BC1049

## 2.2 Test Frequency List

Frequency Band	Channel Number	Test Frequency
26.96~27.28 MHz	01	27.145MHz



## 2.3 Related Submittal(S) / Grant (S)

This submittal(s) (test report) is intended for FCC ID: **2AFIOWJRC1180**, filing to comply with Part 2, Part 15 of the Federal Communication Commission rules.

#### 2.4 Test Methodology

The tests were performed according to following standards:

No.	Identity	Document Title				
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations				
2	FCC 47 CFR Part 15	Radio Frequency Devices				
3	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices				

#### 2.5 Special Accessories

Not available for this EUT intended for grant.

#### 2.6 Equipment Modifications

Not available for this EUT intended for grant.

#### 2.7 Antenna Requirement

## **Standard Requirement**

#### 15.203 requirement:

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, 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.

#### **EUT Antenna:**

The non-detachable antenna inside the device cannot be replaced by the user at will. The gain of the antenna is 0dBi.



## 3. Test Environment

## 3.1 Address of The Test Laboratory

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

## 3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

#### CNAS-Lab Code: L5488

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to follow CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories.)

## A2LA-Lab Cert. No.: 5054.02

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to follow ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

#### FCC-Registration No.: 975832

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 975832.

#### IC-Registration No.: 24842(CAB identifier: CN0063)

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.



## **3.3 Environmental Conditions**

	Normal Conditions
Temperature range (℃)	15 - 35
Relative humidity range	20 % - 75 %
Pressure range (kPa)	86 - 106
Power supply	DC 3V

#### 3.4 Measurement Uncertainty

The reported uncertainty of measurement y  $\pm U$ , where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Item	Measurement Uncertainty
Uncertainty of Radiated Emission below 150kHz	$U_c = \pm 3.9 \text{ dB}$
Uncertainty of Radiated Emission below 30MHz	$U_c = \pm 4.9 \text{ dB}$
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 3.9 \text{ dB}$
Uncertainty of Occupied Channel Bandwidth	U <sub>c</sub> = ±2 %



## 3.5 List of Equipment Used

RF Conducted Test System								
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)	
$\boxtimes$	AGC-ER-E036	Spectrum Analyzer	Agilent	N9020A	MY49100060	2023-06-01	2024-05-31	
	AGC-ER-E062	Power Sensor	Agilent	U2021XA	MY54110007	2023-03-03	2024-03-02	
	AGC-ER-E063	Power Sensor	Agilent	U2021XA	MY54110009	2023-03-03	2024-03-02	
	AGC-EM-A152	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08	
	N/A	RF Connection Cable	N/A	1#	N/A	Each time	N/A	
	N/A	RF Connection Cable	N/A	2#	N/A	Each time	N/A	

• F	Radiated Spurious Emission								
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)		
$\boxtimes$	AGC-EM-E046	EMI Test Receiver	R&S	ESCI	10096	2023-02-18	2024-02-17		
$\boxtimes$	AGC-EM-E116	EMI Test Receiver	R&S	ESCI	100034	2023-06-03	2024-06-02		
$\boxtimes$	AGC-EM-E061	Spectrum Analyzer	Agilent	N9010A	MY53470504	2023-06-01	2024-05-31		
$\boxtimes$	AGC-EM-E086	Loop Antenna	ZHINAN	ZN30900C	18051	2022-03-12	2024-03-11		
$\boxtimes$	AGC-EM-E001	Wideband Antenna	SCHWARZBECK	VULB9168	D69250	2023-05-11	2025-05-10		
	AGC-EM-E029	Broadband Ridged Horn Antenna	ETS	3117	00034609	2023-03-23	2024-03-22		
	AGC-EM-E082	Horn Antenna	SCHWARZBECK	BBHA 9170	#768	2023-09-24	2025-09-23		
	AGC-EM-E146	Pre-amplifier	ETS	3117-PA	00246148	2022-08-04	2024-08-03		
	AGC-EM-A119	2.4G Filter	SongYi	N/A	N/A	2023-06-01	2024-05-31		
	AGC-EM-A138	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08		
	AGC-EM-A139	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08		

• A	AC Power Line Conducted Emission								
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)		
	AGC-EM-E045	EMI Test Receiver	R&S	ESPI	101206	2023/06/03	2024/06/02		
	AGC-EM-E023	AMN	R&S	100086	ESH2-Z5	2023/06/03	2024/06/02		



Test Software								
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Version Information			
	AGC-EM-S003	RE Test System	FARA	EZ-EMC	V.RA-03A			
$\boxtimes$	AGC-EM-S011	RSE Test System	Tonscend	TS <sup>+</sup> Ver2.1(JS36-RSE)	4.0.0.0			
	AGC-EM-S001	CE Test System	R&S	ES-K1	V1.71			
	AGC-ER-S009	BT/WIFI Test System	Tonscend	JS1120-3	2.6.77.0518			



## 4. System Test Configuration

#### **4.1 EUT Configuration**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

#### 4.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

## 4.3 Configuration of Tested System

Radiated Emission Configure:



#### 4.4 Equipment Used in Tested System

The following peripheral devices and interface cables were connected during the measurement:

Test Accessories Come From The Laboratory

No.	Equipment	Model No.	Manufacturer	Specification Information	Cable				
1									
	Test Accessories Come From The Manufacturer								

No.	Equipment	Model No.	Manufacturer	Specification Information	Cable				
1									



#### 4.5 Summary of Test Results

ltem	FCC Rules	Description Of Test	Result
1	§15.203	Antenna Equipment	Pass
2	15.227(a)	Field Strength of Fundamental	Pass
3	§15.209	Radiated Emission	Pass
4	§15.215(c)	20dB Bandwidth	Pass
5	§15.205(a)	Restricted Bands of Operation	Pass
6	§15.207	AC Power Line Conducted Emission	N/A

Note: 1.N/A means not applicable

Note: 2. The device under test is battery-powered and does not require evaluation of AC Power Line Conducted Emission.



# 5. Description of Test Modes

Summary table of Test Cases							
Equipment Type / Modulation							
Test Item	Short Range Wireless Device/ ASK						
Radiated & Conducted Test Cases	Mode 1: TX _27.145 MHz						
AC Conducted Emission							
Note:							
1. Only the result of the worst case was recorded in the report, if no other cases.							

For Radiated Emission, 3axis were chosen for testing for each applicable mode.

2. 3. For Conducted Test method, a temporary antenna connector is provided by the manufacture.



# 6. Field Strength of Fundamental and Radiated Emission

## 6.1 Provisions Applicable

15.209 Limit in the below table has to be followed:

Frequency	Distance	Field Strengths Limit		
(MHz)	Meters	μV/m	dBµV/m	
0.009 ~ 0.490	300	2400/F(kHz)		
0.490 ~ 1.705	30	24000/F(kHz)		
1.705 ~ 30	30	30		
30 ~ 88	3	100	40.0	
88 ~ 216	3	150	43.5	
216 ~ 960	3	200	46.0	
960 ~ 1000	3	500	54.0	
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)		

Remark:

1) Emission level dB $\mu$ V = 20 log Emission level  $\mu$ V/m

2) The smaller limit shall apply at the cross point between two frequency bands.

3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.

#### 15.227(a) Limit in the below table has to be followed:

Fundamental Frequency	Field Strength of Fundamental	
r undamentar requency	(microvolts/meter)	
26.96-27.28MHz	10000	

## 6.2 Measurement Procedure

- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement



antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, 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 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

Spectrum Parameter	Setting		
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP		
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP		
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP		
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/3MHz for Average		

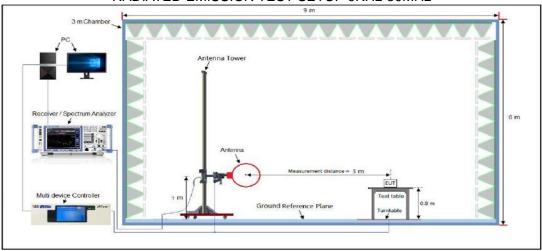
The following table is the setting of spectrum analyzer and receiver.

Receiver Parameter	Setting	
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP	
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP	
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP	

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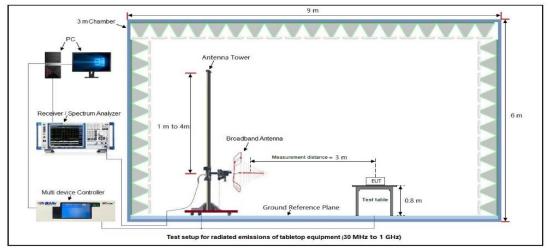


## 6.3 Measurement Setup (Block Diagram Of Configuration)



## RADIATED EMISSION TEST SETUP 9KHz-30MHz

## RADIATED EMISSION TEST SETUP 30MHz-1000MHz





## 6.4 Measurement Result

<b>Field Strength</b>	of	Fundamental
-----------------------	----	-------------

EUT Name		Scooper RC			Model Name		ODY-8808	
Temperature		22.5°C			Relative Humidity		56.1%	
Pressure		960hPa			Test Voltage		Normal Voltage	
Test Mode N		Mode 1			Antenna		Face/Side	
			Peal	k Va	alue			
Frequency (MHz)		ured Level@3m (dBµV/m)				E-Field Polarity		
27.145 38.70		38.70	24.50		63.20	100		Face
27.145 31.71		31.71	24.50		56.21 100		Side	

	Average Value									
Frequency (MHz)	Measured Level@3m (dBµV/m)	Correction Factor dB/m	Field Strength (dBµV/m)	Limit @3m (dBµV/m)	E-Field Polarity					
27.145	33.26	24.50	57.76	80	Face					
27.145	29.81	24.50	54.31	80	Side					

## **RESULT: Pass**

Note: Corr. Factor= Antenna Factor (dB/m) + Cable Loss (dB)



EUT Name		Scoo	per RC			Model Nam	е	ODY	ODY-8808		
Temperature		22.5°	С			Relative Hu	imidity	56.19	%		
Pressure		960hl	Pa			Test Voltage N			nal Voltage		
Test Mode		Mode	e 1			Antenna		Face			
									Limit: — Margin: —		
									Margin: —		
								┿╍╍┿╺╍┿			
70											
ł			2	3		4	5		r.		
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				out:					" The share		
10.0											
0.009	I				(MHz)				0.150		
-											
	No	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
-	NU.	IVIN.							Datastas		
_			MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector		
	1		0.0091	17.44	28.41	45.85	128.2	-82.36	peak		
-	2		0.0165	14.18	27.85	42.03	123.0	-81.04	peak		
-	3		0.0244	15.15	27.26	42.41	119.7	-77.29	peak		
-	4		0.0427	18.48	25.90	44.38	114.8	-70.48	peak		
-	5		0.0623	16.42	24.44	40.86	111.6	-70.74	peak		
-	6	*	0.1184	18.09	21.59	39.68	106.0	-66.38	peak		
-											

## Electric Field Test in The Frequency Range 9kHz-150kHz

## **RESULT: PASS**



Electric Field Test in The Frequency Range 9kHz-150kHz									
EUT Name	Scoop	per RC			Model Nam	ODY	ODY-8808		
Temperature	22.5°	CC			Relative Hu	56.1	%		
Pressure	960hF	960hPa			Test Voltage	e	Norn	nal Voltage	Э
Test Mode	Mode	Mode 1			Antenna		Side	1	
130.0 dBu\	//m								_
								.imit: — Aargin: —	
								naryin. —	
									-
70									
	1	2				-			_
Marian	Mummun	un man	WWWWW ANALAN	Leagure and man	man in the man	Anna .	man	\$	
			Alexander and a second	n v			hed when we are	man manager	
10.0									
0.009				(MHz)	·			0.15	D
			Reading	Correct	Measure-				
N	o. Mk.	Freq.	Level	Factor	ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	
	1	0.0111	15.29	28.26	43.55	126.5	-82.95	peak	
	2	0.0159	15.77	27.90	43.67	123.3	-79.72	peak	
	3	0.0229	11.87	27.38	39.25	120.2	-80.99	peak	
	4	0.0476	14.59	25.53	40.12	113.9	-73.81	peak	
	5	0.0614	15.73	24.50	40.23	111.7	-71.50	peak	
	6 *	0.1184	15.58	21.59	37.17	106.0	-68.89	peak	

## Electric Field Test in The Frequency Range 9kHz-150kHz

#### **RESULT: Pass**



EUT Name	Scooper RC			Model Name			ODY-8808	
Temperature	22.5°C			Relative Humidity			56.1%	
Pressure	960hPa			Test Voltag	е	Norr	Normal Voltage	
Test Mode	Mode 1	Mode 1			Antenna			
0.0						M	imit: largin:	
0.150	0.5		(MHz)	5			30.0	00
No	). Mk. Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Dotostar	
							Detector	
	0.2615		21.32	38.89		-60.34	peak	
	2 0.5155		20.89	37.11		-36.25	peak	
	3 2.5400		22.27	37.59		-31.95	peak	
4	4 8.6373	20.09	24.01	44.10	69.54	-25.44	peak	
5	5 10.1254	18.49	24.39	42.88	69.54	-26.66	peak	
6	6 * 26.1393	38.70	24.50	63.20	69.54	-6.34	peak	

## Electric Field Test in The Frequency Range 150kHz-30MHz

### **RESULT: Pass**



			-					
EUT Nmae	Scooper RC			Model Name			ODY-8808	
Temperature	22.5°C			Relative Humidity			56.1%	
Pressure	960hPa			Test Voltage No			nal Voltag	je
Test Mode	Mode 1	Mode 1				Face	Э	
a.o 0.150	. Mk. Freq.	Reading	(MH2)	Measure- ment			Limit: — Margin: — Margin: — — — — — — — — — — — — — — — — — — —	
	MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	
	0.2630	20.25	21.32	41.57		-57.60	peak	
	2 0.4812	18.21	20.91	39.12	93.95	-54.83	peak	
	3 <b>0.6719</b>	17.70	21.02	38.72	71.06	-32.34	peak	
	4 2.1438	16.05	22.15	38.20		-31.34	peak	
	5 9.6539 5 * 26.1393	17.39 31.71	24.29 24.50	41.68 56.21		-27.86 -13.33	peak peak	

## Electric Field Test in The Frequency Range 150kHz-30MHz

## **RESULT: Pass**

## Note:

- 1. Negative value in the margin column shows emission below limit.
- 2. All measurements were made with 0.6m loop antenna at 3m distance. All emissions are below the QP limit.
- 3. Corr. Factor= Antenna Factor (dB/m) + Cable Loss (dB)
- 4. Loop antenna is used for the emission under 30MHz.

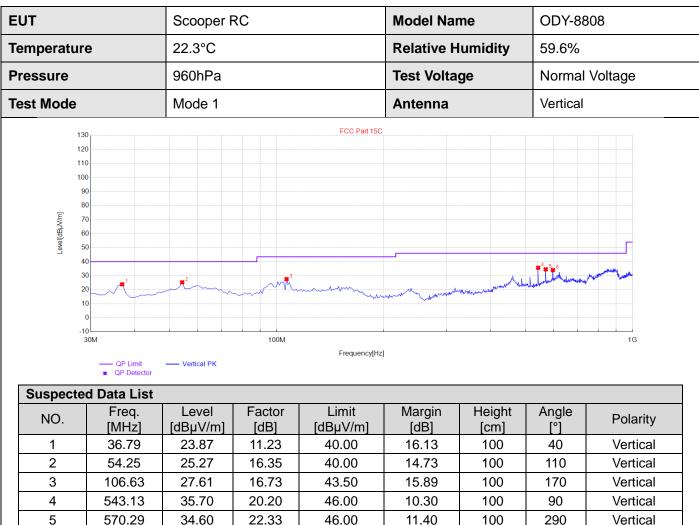


EUT Name		Scooper F	RC		Model Nar	ne	ODY-88	ODY-8808	
Temperature	9	22.3°C			Relative H	umidity	59.6%		
Pressure		960hPa			Test Volta	ge	Normal Voltage		
Test Mode		Mode 1			Antenna		Horizontal		
130 120 110 90 80 90 80 90 80 90 80 90 80 90 80 80 80 90 80 80 80 80 80 80 80 80 80 80 80 80 80		2		FCC Part 15C		when the set had			
10 0 -10 3	)	Horizontal PK	100M	Frequency[Hz]				16	
Suspected	d Data List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	
1	37.76	23.45	10.93	40.00	16.55	100	60	Horizontal	
2	54.25	29.49	16.35	40.00	10.51	100	330	Horizontal	
3	141.55	27.65	16.13	43.50	15.85	100	230	Horizontal	
4	461.65	33.50	24.36	46.00	12.50	100	310	Horizontal	
5	543.13	33.36	20.20	46.00	12.64	100	120	Horizontal	
6	862.26	35.43	29.93	46.00	10.57	100	290	Horizontal	

## Radiated Emission from 30MHz ~1000MHz

**RESULT: Pass** 





## Radiated Emission from 30MHz ~1000MHz

## **RESULT: Pass**

6

597.45

## Note:

1. Factor=Antenna Factor + Cable loss, Margin=Limit-Level.

34.07

2. The "Factor" value can be calculated automatically by software of measurement system.

46.00

11.93

100

90

Vertical

23.53



## 7. 20dB Bandwidth Measurement

#### 7.1 Provisions Applicable

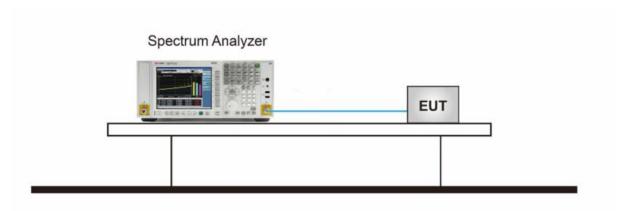
Intentional radiators must be designed to ensure that the 20dB and 99% emission bandwidth in the specific band 26.98~27.28MHz.

#### 7.2 Measurement Procedure

Set the parameters of SPA as below:

- 1. The spectrum analyzer connected via a receive antenna placed near the EUT in peak Max hold mode.
- 2. Centre frequency = Operation Frequency
- 3. The resolution bandwidth of 1 kHz and the video bandwidth of 3 kHz were used.
- 4. Span: 30kHz, Sweep time: Auto
- 5. Set the EUT to continue transmitting mode. Allow the trace to stabilize. Use the "N dB down" function of SPA to define the bandwidth.
- 6. Measured the spectrum width with power higher than 20dB below carrier.
- 7. Measured the 99% OBW.
- 8. Record the plots and Reported.

#### 7.3 Measurement Setup (Block Diagram of Configuration)





#### 7.4 Measurement Result

	Test Data of Bandwidth Measurement							
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (MHz)	-20dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail			
ASK	27.145	0.002289	0.002698	N/A	Pass			

## Test Graphs of Occupied Bandwidth and -20dB Bandwidth

🔰 Keysight Spectrum Analyzer - Occupied						
Image: RLT RF 50 Ω AC   Center Freq 27.145000 Comparison <t< td=""><td></td><td>Freq: 27.145000 MHz</td><td>ALIGN AUTO</td><td>10:30:13 A Radio Std</td><td>M Feb 26, 2024</td><td>Frequency</td></t<>		Freq: 27.145000 MHz	ALIGN AUTO	10:30:13 A Radio Std	M Feb 26, 2024	Frequency
Conter 1100 27.145000	Trig: Fi	ree Run Avg Ho	ld:>10/10	Radio Dev	ice: BTS	
	#IFGain:Low #Atten:	10 08		Radio Dev	ICE. BT3	
15 dB/div Ref -10.00 d	Bm					
Log						
-25.0						Center Freq
-40.0						27.145000 MHz
-55.0						
-70.0						
-85.0						
-100		+				
-115				<u> </u>		
-130						
-145						
Center 27.15 MHz					an 30 kHz	CF Step
#Res BW 1 kHz	#\	/BW 3 kHz		Sweep	37.07 ms	3.000 kHz
Occupied Bandwig	dth	Total Power	-50.8	dBm		<u>Auto</u> Man
	2.289 kHz		0010			
	2.203 KHZ					Freq Offset
Transmit Freq Error	-377 Hz	<b>OBW Power</b>	99	.00 %		0 Hz
x dB Bandwidth	2.698 kHz	x dB	-20.	00 dB		
MSG			STATUS	3		
	Test_Graph_AS	K ANT1 27	1/5MH		٨/	
				2_0Bv	v	



# 8. AC Power Line Conducted Emission Test

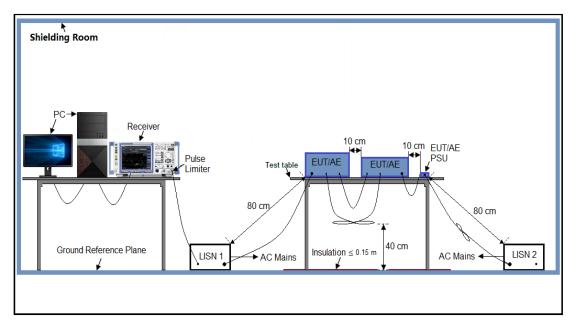
## 8.1 Measurement Limit

	Maximum RF Line Voltage				
Frequency Range	Q.P. (dBµV)	Average (dBµV)			
150kHz~500kHz	66-56	56-46			
500kHz~5MHz	56	46			
5MHz~30MHz	60	50			

Note:

- 1. The lower limit shall apply at the transition frequency.
- 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

## 8.2 Measurement Setup (Block Diagram of Configuration)





## 8.3 Preliminary Procedure of Line Conducted Emission Test

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipment received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received DC 3V power from battery.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

## 8.4 Final Procedure of Line Conducted Emission Test

- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less – 2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case condition(s) was reported on the Summary Data page.

#### 8.5 Measurement Result

Not Applicable Note: This device is battery powered, there is no AC power supply



# **APPENDIX I: PHOTOGRAPHS OF TEST SETUP**

Refer to the Report No.: AGC15705240125AP01

# **APPENDIX II: PHOTOGRAPHS OF TEST EUT**

Refer to the Report No.: AGC15705240125AP02

-----End of Report-----



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1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

7. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.