

# **TEST REPORT**

Product Name	:	Smart Doorbell
Brand Name	:	anyfree
Model/HVIN	:	anyfree-ML01-M
Series Model	:	anyfree-ML01-O, anyfree-ML01-Y
FCC ID	:	2AMJYANYFREEML
Applicant	:	Zhuhai Taichuan Cloud Technology Co., Ltd
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Manufacturer	:	Zhuhai Taichuan Cloud Technology Co., Ltd
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Standard(s)	:	FCC CFR Title 47 Part 15 Subpart C Section 15.249 RSS-210 Issue 11, RSS-Gen Issue 5
Date of Receipt	:	Oct. 09, 2024
Date of Test	:	Oct. 10, 2024~ Nov. 11, 2024

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Note: This device has been tested and found to comply with the standard(s) listed, this test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory. This report shall not be reproduced except in full, without the written approval of Guangdong Asia Hongke Test Technology Limited. If there is a need to alter or revise this document, the right belongs to Guangdong Asia Hongke Test Technology Limited, and it should give a prior written notice of the revision document. This test report must not be used by the client to claim product endorsement.

#### **Guangdong Asia Hongke Test Technology Limited**

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### Report Revise Record

Report Version	Issued Date	Notes
M1	Nov. 12, 2024	Initial Release



# Contents

1	TEST	SUMMARY	4
	1.1	Test Standards	4
	1.2	TEST SUMMARY	4
	1.3	TEST FACILITY	5
	1.4	MEASUREMENT UNCERTAINTY	5
2	GEN	GENERAL INFORMATION	6
	2.1	ENVIRONMENTAL CONDITIONS	6
	2.2	GENERAL DESCRIPTION OF EUT	6
	2.3	DESCRIPTION OF TEST MODES AND TEST FREQUENCY.	7
	2.4	SPECIAL ACCESSORIES	7
	2.5	EQUIPMENT LIST FOR THE TEST	7
3	TEST	CONDITIONS AND RESULTS	9
	3.1	CONDUCTED EMISSIONS TEST	9
	3.2	RADIATED EMISSIONS AND BAND EDGE	12
	3.3	20dB Bandwidth & Occupied Bandwidth	19
	3.4	ANTENNA REQUIREMENT	21
4	TEST	SETUP PHOTOGRAPHS OF EUT	22
5	EXTE	RNAL PHOTOGRAPHS OF EUT	22
6	INTE	RNAL PHOTOGRAPHS OF EUT	22



# **1 TEST SUMMARY**

### 1.1 Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.249: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.

ANSI C63.10: 2013: American National Standard for Testing Unlicensed Wireless Devices.

RSS-210 Issue 11: Licence-Exempt Radio Apparatus: Category I Equipment.

RSS-Gen Issue 5: General Requirements for Compliance of Radio Apparatus.

### 1.2 Test Summary

FCC PART 15.249						
FCC Part 15.249(a)	Field Strength of Fundamental	PASS				
FCC Part 15.249(d),15.209	Spurious Emission	PASS				
FCC Part 15.215(c)	20dB bandwidth	PASS				
FCC Part 15.207	Conducted Emission	PASS				
FCC Part 15.203	Antenna Requirement	PASS				



### 1.3 Test Facility

#### **Test Laboratory:**

#### Guangdong Asia Hongke Test Technology Limited

B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

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

#### FCC-Registration No.: 251906 Designation Number: CN1376

Guangdong Asia Hongke Test Technology Limited 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.

#### IC — Registration No.: 31737 CAB identifier: CN0165

The 3m Semi-anechoic chamber of Guangdong Asia Hongke Test Technology Limited has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 31737

#### A2LA-Lab Cert. No.: 7133.01

Guangdong Asia Hongke Test Technology Limited has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with 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.

#### **1.4 Measurement uncertainty**

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the Guangdong Asia Hongke Test Technology Limited's quality system according to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Asia Hongke laboratory is reported:

Test	Measurement Uncertainty	Notes
Power Line Conducted Emission	150KHz~30MHz $\pm$ 1.20 dB	(1)
Radiated Emission	9KHz~30Hz ±3.10dB	(1)
Radiated Emission	9KHz~1GHz $\pm$ 3.75dB	(1)
Radiated Emission	1GHz~18GHz ±3.88 dB	(1)
Radiated Emission	18GHz-40GHz $\pm$ 3.88dB	(1)
RF power, conducted	30MHz~6GHz $\pm$ 0.16dB	(1)
RF power density, conducted	$\pm$ 0.24dB	(1)
Spurious emissions, conducted	$\pm$ 0.21dB	(1)
Temperature	±1℃	(1)
Humidity	$\pm 3\%$	(1)
DC and low frequency voltages	±1.5%	(1)
Time	±2%	(1)
Duty cycle	±2%	(1)

The report 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%



# **2** GENGENERAL INFORMATION

### 2.1 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

# 2.2 General Description of EUT

Product Name:	Smart Doorbell		
Model/Type reference:	anyfree-ML01-M		
Serial Model:	anyfree-ML01-O, anyfree-ML01-Y		
Power Supply:	DC 3.7V from battery		
Rating:	DC 5v2A		
Hardware Version:	TC-U9ML-A-DB-Z-V06		
Software Version:	V1.1.0		
24G Radar			
Operating frequency:	24000-24250MHz		
Nominal center frequency	24100MHz		
Modulation type:	FMCW		
Antenna type:	PCB antenna		
Antenna gain:	5.0dBi		
<b>Remark:</b> The above DUT's information was declared by manufacturer. For more detailed features			

description, please refer to the manufacturer's specifications or the User's Manual.



# 2.3 Description of Test Modes and Test Frequency

The EUT has been tested under typical operating condition. The EUT stay in sweep model during the test.

#### **Operation Frequency:**

Sweep Start Frequency	Sweep Stop Frequency
(MHz)	(MHz)
24010	24245

# 2.4 Special Accessories

Follow auxiliary equipment(s) test with EUT that provided by the manufacturer or laboratory is listed as follow:

Description	Manufacturer	Model	Serial No.	Provided by	Other
Adapter	HNT	HNT-QC530	/	Test lab	/
/	/	/	1	/	/

# 2.5 Equipment List for the Test

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	EMI Measuring Receiver	R&S	ESR	101160	2024.09.25	2025.09.24
2	Spectrum Analyzer	R&S	FSV40	101470	2024.09.23	2025.09.22
3	EMI Test Receiver	R&S	ESPI	100771	2024.09.25	2025.09.24
4	LISN	R&S	NNLK 8129	8130179	2024.09.24	2025.09.23
5	LISN	R&S	ESH3-Z5	892785/016	2024.09.23	2025.09.22
6	Pulse Limiter	R&S	ESH3-Z2	102789	2024.09.24	2025.09.23
7	Low Noise Pre Amplifier	SCHWARZBECK	BBV 9745	00282	2024.09.25	2025.09.24
8	Low Noise Pre Amplifier	CESHENG	CSKJLNA23101 6A	CSKJLNA231016 A	2024.09.25	2025.09.24
9	Pre Amplifier	AT-Microwave	AT-LNA-4060	3803	2024.08.20	2025.08.19
10	Pre Amplifier	AT-Microwave	AT-LNA-5075	3825	2024.08.20	2025.08.19
11	Pre Amplifier	AT-Microwave	AT-LNA-75110	4204	2024.08.20	2025.08.19
12	Passive Loop	ETS	6512	00165355	2024.08.29	2027.08.28
13	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9168	01434	2024.08.29	2027.08.28
14	Broadband Horn Antenna	Schwarzbeck	BBHA 9120D	452	2024.08.29	2027.08.28
15	Horn Antenna 15- 40GHz	SCHWARZBECK	BBHA9170	BBHA9170367	2024.08.28	2027.08.27
16	Horn Antenna 40- 60GHz	A-INFO	LB-19-25-A2	2020036000052	2024.09.25	2027.09.24
17	Horn Antenna 60- 90GHz	A-INFO	LB-12-25-A	2020026000062	2024.09.25	2027.09.24
18	Horn Antenna 90- 140GHz	A-INFO	LB-8-25-A	2020016000185	2024.09.25	2027.09.24
19	6dB Attenuator	JFW	50FPE-006	4360846-949-1	2024.09.24	2025.09.23



Page 8 of 22

Report No.: AiTSZ-241009013FW2

20	Attenuator	EZLZ	AT-SAX8-4060	104	2024.08.20	2025.08.19	
21	Attenuator	EZLZ	MFA-050075- A30A	111	2024.08.20	2025.08.19	
22	Attenuator	EZLZ	MFA-075110- A30A	127	2024.08.20	2025.08.19	
23	Harmonic Mixer	AT-Microwave	AT-SAX8-4060	101318	2024.08.20	2025.08.19	
24	Harmonic Mixer	AT-Microwave	AT-SAX8-5075	101335	2024.08.20	2025.08.19	
25	Harmonic Mixer	AT-Microwave	AT-SAX8- 75110	101376	2024.08.20	2025.08.19	
26	DC power supply	ZHAOXIN	RXN-305D-2	28070002559	N/A	N/A	
27	RE Software	EZ	EZ-EMC_RE	Ver.AIT-03A	N/A	N/A	
28	CE Software	EZ	EZ-EMC_CE	Ver.AIT-03A	N/A	N/A	
29	RF Software	TST	TSTPASS	Version 2.0	N/A	N/A	
30	RF Software	cesheng	WCS-WCN	Version 2024.6.20	N/A	N/A	
31	temporary antenna connector(Note)	NTS	R001	N/A	N/A	N/A	
Note:	Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.						



# **3 TEST CONDITIONS AND RESULTS**

# 3.1 Conducted Emissions Test

#### <u>LIMIT</u>

	Limit (d	BuV)
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\* Decreases with the logarithm of the frequency.

#### **TEST CONFIGURATION**



#### TEST PROCEDURE

- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. 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 C63.10:2013.
- 2. Support equipment, if needed, was placed as per ANSI C63.10:2013.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
- 4. The adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5. All support equipments received AC power from a second LISN, if any.
- 6. The EUT 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 50 ohm 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.



#### TEST RESULTS

Remark: Both 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz power supply have been tested, only the worst result of 120 VAC, 60 Hz was reported as below:



Remark: Correct Factor = Insertion loss of LISN + Cable loss + Insertion loss of Pulse Limiter; Measurement Result = Reading Level +Correct Factor;

Margin = Measurement Result- Limit

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	
1	0.4920	29.54	10.69	40.23	46.13	-5.90	AVG
2	0.5053	38.11	10.69	48.80	56.00	-7.20	QP
3	0.9375	20.67	10.65	31.32	46.00	-14.68	AVG
4	0.9510	31.62	10.65	42.27	56.00	-13.73	QP
5	1.1220	30.90	10.66	41.56	56.00	-14.44	QP
6	1.2660	18.37	10.68	29.05	46.00	-16.95	AVG
7	2.3054	18.13	10.79	28.92	46.00	-17.08	AVG
8	2.5754	31.51	10.79	42.30	56.00	-13.70	QP
9	3.9570	17.85	11.00	28.85	46.00	-17.15	AVG
10	4.1910	29.97	11.00	40.97	56.00	-15.03	QP
11	9.6225	29.51	10.97	40.48	60.00	-19.52	QP
12	10.7565	23.43	11.15	34.58	50.00	-15.42	AVG





Remark: Correct Factor = Insertion loss of LISN + Cable loss + Insertion loss of Pulse Limiter; Measurement Result = Reading Level +Correct Factor;

Margin = Measurement Result- Limit

	No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
		(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	
	1	0.4425	29.87	10.69	40.56	57.01	-16.45	QP
	2	0.4425	20.41	10.69	31.10	47.01	-15.91	AVG
	3	0.4920	37.89	10.69	48.58	56.13	-7.55	QP
	4	0.4920	29.79	10.69	40.48	46.13	-5.65	AVG
	5	0.5503	16.57	10.68	27.25	46.00	-18.75	AVG
	6	0.6225	24.78	10.68	35.46	56.00	-20.54	QP
	7	0.9284	26.79	10.65	37.44	56.00	-18.56	QP
	8	1.2703	15.99	10.67	26.66	46.00	-19.34	AVG
	9	2.6520	28.94	10.79	39.73	56.00	-16.27	QP
	10	3.9794	29.81	10.99	40.80	56.00	-15.20	QP
Ī	11	3.9930	18.95	10.99	29.94	46.00	-16.06	AVG
	12	9.7035	21.28	10.96	32.24	50.00	-17.76	AVG



### 3.2 Radiated Emissions and Band Edge

#### <u>Limit</u>

According 15.249, the field strength of emissions from intentional radiators operated within 24000-24250 MHz shall not exceed 107.96dBµV/m (250mV/m):

FCC PART 15.249(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

In addition, 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)

Frequency	Distance		Radiated
(MHz) (Meters)		Radiated (dBµV/m)	(µV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

#### **TEST CONFIGURATION**

#### **Below 1GHz**





#### 1GHz-26.5G



26.5GHz-40G



40GHz-90G





#### 90GHz-100G



#### **Test Procedure**

- 1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
- 2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0°℃ to 360°℃ to acquire the highest emissions from EUT
- 3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 4. Repeat above procedures until all frequency measurements have been completed.
- 5. Radiated emission test frequency band from 9KHz to 100GHz.
- 6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance(m)
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Bilog Antenna	3
1GHz-26.5GHz	Horn Antenna	3
26.5GHz-40GHz	Horn Antenna	1.5
40GHz-90G	Horn Antenna	1
90GHz-100G	Horn Antenna	0.5

7. Setting test receiver/spectrum as following table states:

<b>U</b> 1	0		
Test Frequency	Test Receiver/Spectrum Setting	Detector	
range			
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP	
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP	
	RBW=120KHz/VBW=1000KHz,Sweep	QP	
301VINZ-1GNZ	time=Auto		
	Peak Value: RBW=1MHz/VBW=3MHz,		
Above 1047	e 1GHz Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz,		
	Sweep time=Auto		



#### TEST RESULTS

#### For 30MHz-1GHz





5

6

902.0000

928.0000

36.02

43.58

-4.77

-4.09

31.25

39.49

46.00

46.00

-14.75

-6.51

peak

peak





#### For 1GHz to 40GHz

Frequency	Rec	eiver	Polar	Factor	Distance	Result (dBµV)	Limit (dBµV)	Margin (dB)
(MHz)	Reading	Detector	(H/V)	(dB/m)	Factor			
04400.000		DI		5.00		00.50	407.00	44.40
24100.000	80.93	PK	н	5.63	0.00	86.56	127.96	-41.40
24100.000	71.80	AV	Н	5.63	0.00	77.43	107.96	-30.53
24100.000	84.48	PK	V	5.63	0.00	90.11	127.96	-37.85
24100.000	77.65	AV	V	5.63	0.00	83.28	107.96	-24.68
4634.70	36.64	PK	Н	10.45	0.00	47.09	74.00	-26.91
4634.70	23.65	AV	Н	10.45	0.00	34.10	54.00	-19.90
4510.70	38.98	PK	V	10.04	0.00	49.02	74.00	-24.98
4510.70	29.43	AV	V	10.04	0.00	39.47	54.00	-14.53
8042.89	45.22	PK	Н	16.24	0.00	61.46	74.00	-12.54
8042.89	35.37	AV	Н	16.24	0.00	51.61	54.00	-2.39
8042.89	46.29	PK	V	16.24	0.00	62.53	74.00	-11.47
8042.89	35.35	AV	V	16.24	0.00	51.59	54.00	-2.41
23544.80	50.97	PK	Н	5.94	0.00	56.91	74.00	-17.09
23544.80	39.99	AV	Н	5.94	0.00	45.93	54.00	-8.07
23544.80	51.91	PK	V	5.94	0.00	57.85	74.00	-16.15
23544.80	39.45	AV	V	5.94	0.00	45.39	54.00	-8.61
39335.50	52.10	PK	Н	16.32	6.02	62.40	74.00	-11.60
39335.50	38.73	AV	Н	16.32	6.02	49.03	54.00	-4.97
39335.50	52.75	PK	V	16.32	6.02	63.05	74.00	-10.95
39335.50	39.43	AV	V	16.32	6.02	49.73	54.00	-4.27

REMARKS:

1. Result (dBuV/m) = Reading (dBuV)+ Factor (dB/m) -Distance extrapolation Factor *For 1-26.5GHz:* 

Distance extrapolation Factor =20 log (specific distance [3m]/test distance [3m]) dB= 0 dB For 26.5-40GHz:

Distance extrapolation Factor =20 log (specific distance [3m]/test distance [1.5m]) dB= 6.02 dB

2. Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

- 3. Margin value = Result Limit value.
- 4. -- Mean the PK detector measured value is below average limit.

5. Other emission levels are attenuated 20dB below the limit and not recorded in report.

 RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.



#### For 40GHz to 100GHz

Froquency	Rec	eiver	Polar	Factor	Distance	Pocult	Limit	Morgin
(GHz)	Reading (dBµV)	Detector	(H/V)	(dB/m)	Factor (dB)	(dBµV)	(dBµV)	(dB)
48.200	25.67	PK	Н	40.07	9.54	56.20	87.96	-31.76
48.200	11.13	AV	Н	40.07	9.54	41.66	67.96	-26.30
48.200	24.08	PK	V	40.07	9.54	54.61	87.96	-33.35
48.200	11.33	AV	V	40.07	9.54	41.86	67.96	-26.10
72.300	39.26	PK	Н	43.83	9.54	73.55	87.96	-14.41
72.300	24.23	AV	Н	43.83	9.54	58.52	67.96	-9.44
72.300	37.11	PK	V	43.83	9.54	71.40	87.96	-16.56
72.300	24.88	AV	V	43.83	9.54	59.17	67.96	-8.79
96.400	31.47	PK	Н	45.90	15.56	61.81	87.96	-26.15
96.400	17.84	AV	Н	45.90	15.56	48.18	67.96	-19.78
96.400	30.85	PK	V	45.90	15.56	61.19	87.96	-26.77
96.400	17.57	AV	V	45.90	15.56	47.91	67.96	-20.05

#### REMARKS:

1. Emission level (dBuV/m) = Reading (dBuV)+ Factor (dB/m) -Distance extrapolation Factor *For 40-90GHz:* 

Distance extrapolation Factor =20 log (specific distance [3m]/test distance [1m]) dB= 9.54 dB For 90-100GHz:

Distance extrapolation Factor =20 log (specific distance [3m]/test distance [0.5m]) dB= 15.56 dB

2. Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

3. Margin value = Emission level- Limit value.

4. -- Mean the PK detector measured value is below average limit.

5. Other emission levels are attenuated 20dB below the limit and not recorded in report.

 RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.



# 3.3 20dB Bandwidth & Occupied Bandwidth

#### <u>Limit</u>

N/A

#### Test Procedure

- 1. The EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
- 2. Set the SPECTRUM ANALYZER as follow:

RBW=1% to 5% of the OBW

VBW=approximately 3 X RBW

Detector=Peak

Trace Mode: Max Hold

- 3. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from  $0^{\circ}$  to  $360^{\circ}$  to acquire the highest emissions from EUT.
- 4. Use the 99% power bandwidth and ndb down function of the instrument to measure the bandwidth and recoded.

Note: The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission

#### Test Configuration





#### <u>Test Results</u>

#### 20dB Emission Bandwidth=241.10MHz

Spectrum	1	Spectrum 2 🛛			
Ref Leve	97.00 d	вµ∨ 🗧	RBW 3 MHz		
Att	0	) dB 🥌 SWT 300 ms 🖷	VBW 10 MHz 1	Mode Auto Sweep	1
1Pk Max				1000 A 1000	Contraction of the second s
90 dBuV-			M	M1[1]	85.87 dBµ\ 24.09590 GH
			man the		20.00 dE
80 dBµV				Bw	241.10000000 MH
54				Q factor	99.9
70 dBµV		T.			1
Fact CONTRACTOR		J			
60 dBµV-	A DE LA DESCRIPTION	and	+ +		Aunteline turning and the
50 dBuV					
40 dBµV			-	-	
30 dBµV			+ +		
20 dBµV					
10 dBµV			+ + +		
0 dBµV					
CF 24.1 G	4z		691 pts	;	Span 700.0 MHz
Marker					
Type Re	f Trc	X-value	Y-value	Function	Function Result
M1	1	24.0959 GHz	85.87 dBµV	ndB down	241.1 MHz
T1	1	24.0088 GHz	66.75 dBµV	ndB	20.00 dB
12	1	24.2499 GHZ	67.82 dBµV	Q factor	99.9
	T T			Measuring	440



### 3.4 Antenna Requirement

#### Standard Applicable

#### For intentional device, according to FCC 47 CFR Section 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, 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

#### FCC CFR Title 47 Part 15 Subpart C Section 15.247(b) (4):

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### Test Result

The maximum gain of antenna was 5.0dBi with impedance 50 Ω.



# 4 Test Setup Photographs of EUT

Please refer to separated files for Test Setup Photos of the EUT.

# 5 External Photographs of EUT

Please refer to separated files for External Photos of the EUT.

# 6 Internal Photographs of EUT

Please refer to separated files for Internal Photos of the EUT.