

FCC Test Report

Report No.: RWAZ202300123M

Shenzhen Youmi Intelligent Technology Co., Ltd. Applicant:

Address: 406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan

District, Shenzhen City, China

Product Name: Smart phone

Product Model: PG3NBG7YA

Multiple N/A

Models:

Trade Mark: UMIDIGI

FCC ID: 2ATZ4-G7

Standards: FCC CFR Title 47 Part 15C (§15.225)

Test Date: 2024-1-17~2024-02-22

Test Result: Complied

Report Date: 2024-03-08

Reviewed by: Abel chen

Abel Chen

Project Engineer

Approved by:

Jacob Kong

Jacob Gong

Manager

Prepared by:

World Alliance Testing and Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China



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Report Template: TR-4-E-006/V1 Page 1 of 25





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Revision History

Version No.	Issued Date	Description
00	2024-03-08	Original

Report Template: TR-4-E-006/V1 Page 2 of 25



Contents

1	Gene	al Information 4	
	1.1	Client Information	4
	1.2	Product Description of EUT	4
	1.3	Antenna information	4
	1.4	Related Submittal(s)/Grant(s)	5
	1.5	Measurement Uncertainty	5
	1.6	Laboratory Location	5
	1.7	Test Methodology	5
2	Desc	ription of Measurement	6
	2.1	Test Configuration	6
	2.2	Test Auxiliary Equipment	6
	2.3	Test Setup	7
	2.4	Test Procedure	8
	2.5	Measurement Method	9
	2.6	Measurement Equipment	10
3	Test l	Results	11
	3.1	Test Summary	11
	3.2	Limit	12
	3.3	AC Line Conducted Emissions Test Data	13
	3.4	Radiated emission Test Data	17
	3.5	Frequency Stability Test Data	22
	3.6	Bandwidth Test Data	23
4	Test	Setup Photo	24
5	E.U.T	Photo	25



1 General Information

1.1 Client Information

Applicant:	Shenzhen Youmi Intelligent Technology Co., Ltd.	
Address:	406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan	
	District, Shenzhen City, China	
Manufacturer:	Shenzhen Youmi Intelligent Technology Co., Ltd.	
Address:	406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan	
	District, Shenzhen City, China	

1.2 Product Description of EUT

The EUT is Smart phone that contains Classic Bluetooth(BDR/EDR), BLE, 2.4G/5G WLAN, GSM/GPRS/WCDMA/LTE and NFC radios, this report covers the full testing of the NFC radio.

Sample Serial Number	36-2 for CE&RE test, 36-1 for RF test conducted test
	(assigned by WATC)
Sample Received Date	2023-12-15
Sample Status	Good Condition
Frequency Range	13.56 MHz
Maximum E-field	71.13dBuV/m@3m
Strength:	71.1000047/11(@0111
Modulation Technology	ASK
Antenna Gain [#]	N/A
Spatial Streams	SISO (1TX, 1RX)
Power Supply	DC 3.87V from battery or DC 5V from adapter
Operating temperature#	0 deg.C to +45 deg.C
Adapter 1 Information	Model: HF-0502000U
	Input: AC 100-240V~50/60Hz, 0.3A
	Output: DC 5.0V, 2.0A
Adapter 2 Information	Model: HJ-0502000W2-US
	Input: AC 100-240V~50/60Hz, 0.3A
	Output: DC 5.0V, 2.0A
Modification	Sample No Modification by the test lab

1.3 Antenna information

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.

Device Antenna information:

The BT antenna is an internal antenna which cannot replace by end-user, please see product internal photos for details.



1.4 Related Submittal(s)/Grant(s)

FCC Part 15, Subpart C, Equipment Class: DTS, FCC ID: 2ATZ4-G7

FCC Part 15, Subpart C, Equipment Class: DSS, FCC ID: 2ATZ4-G7

FCC Part 15, Subpart E, Equipment Class: NII, FCC ID: 2ATZ4-G7

FCC Part 22H/24E/27, Equipment Class: PCE, FCC ID: 2ATZ4-G7

1.5 Measurement Uncertainty

Parameter		Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
AC Power Lines Conducted Emissions		±3.14dB
	Below 30MHz	±2.78dB
Emissions, Radiated	Below 1GHz	±4.84dB
	Above 1GHz	±5.44dB
Bandwidth		0.34%
Frequency Error		150Hz

Note 1: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Note 2: The Decision Rule is based on simple acceptance with ISO Guide 98-4:2012 Clause 8.2 (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

1.6 Laboratory Location

World Alliance Testing and Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

Tel: +86-755-29691511, Email: qa@watc.com.cn

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. : 463912, the FCC Designation No. : CN5040.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0160.

1.7 Test Methodology

FCC CFR 47 Part 2

FCC CFR 47 Part 15

ANSI C63.10-2020



2 Description of Measurement

2.1 Test Configuration

Operating channels:					
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	13.56	1	1	1	1

According to ANSI C63.10-2020 chapter 5.6.1 Table 11 requirement, the above frequency listed above was tested.

Test Mode:			
Transmitting mode:	Keep the EUT in continuous transmitting with modulation		
Exercise software [#] :	Engineering mode		
Mode: NFC Powel Level Setting*: Default			
The exercise software and the maximum power setting that provided by manufacturer.			

Worst-Case Configuration:

For radiated emissions, EUT was investigated in three orthogonal orientation, the worst-case orientation was recorded in report

For radiated emission 9kHz-30MHz, investigation was done on the three antenna orientations (parallel, perpendicular, gound-parallel), the worst-case antenna orientation was recorded in report.

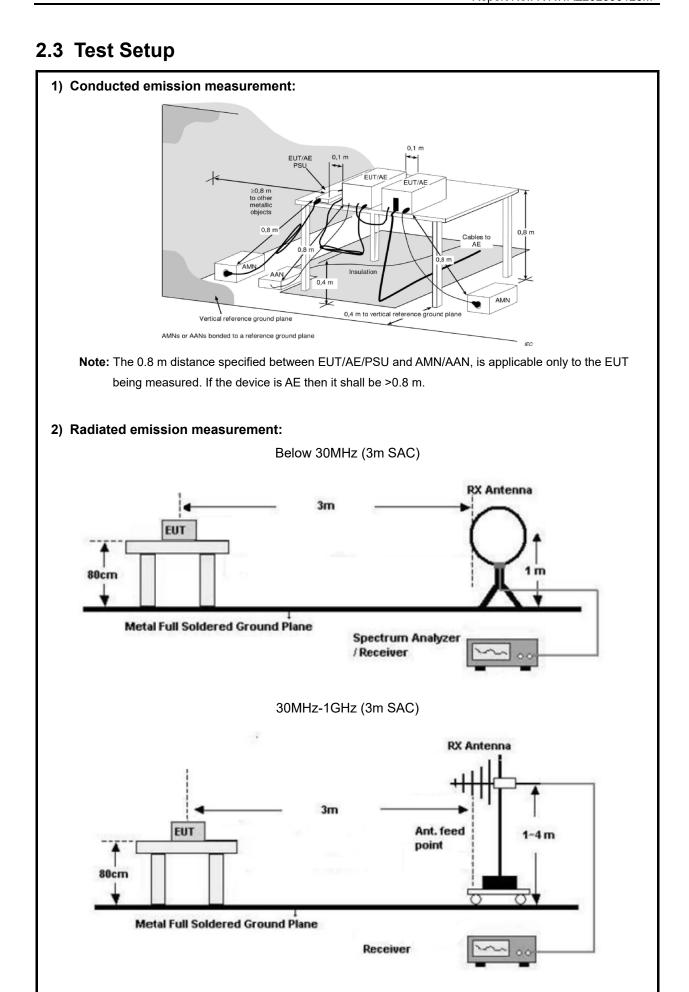
For radiated emission below 1GHz, according to the test result of BT report, the worst case adapter HF-0502000U was select to test.

2.2 Test Auxiliary Equipment

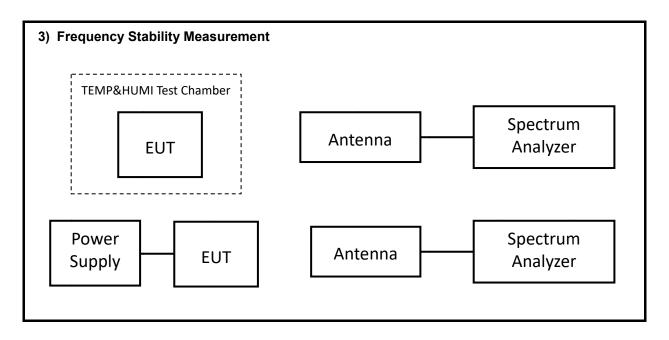
Manufacturer	Description	Model	Serial Number
1	1	1	/

Report Template: TR-4-E-006/V1 Page 6 of 25









2.4 Test Procedure

Conducted emission:

- 1. The E.U.T is placed on a non-conducting table 40cm from the vertical ground plane and 80cm above the horizontal ground plane (Please refer to the block diagram of the test setup and photographs).
- Both sides of A.C. line are checked for maximum conducted interference. In order to find the
 maximum emission, the relative positions of equipment and all of the interface cables must be
 changed according to ANSI C63.10 on conducted measurement.
- 3. Line conducted data is recorded for both Line and Neutral

Radiated Emission Procedure:

a) For below 30MHz

- 1. All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz- 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance with the requirement that the level of any spurious emissions be below the level of the intentionally transmitted signal. The extrapolation factor for the limits were 40*Log (test distance / specification distance).
- 2. Loop antenna use, investigation was done on the three antenna orientations (parallel, perpendicular, gound-parallel)

b) For 30MHz-1GHz:

- 1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m.
- 2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations..

Bandwidth Test:



- 1. Use the same setup for radiated 9kHz ~30MHz, found the maximum fundamental level.
- 2. Change the spectrum analyzer setting for bandwidth testing
- 3. Test the bandwidth and record the result

Frequency Stability VS temperature Test:

- 1. The EUT was supply power with normal voltage and placed in the center of the environmental chamber
- 2. Adjust the location of the measurement antenna to obtain a suitable signal level in measurement instrument
- 3. Turn off the EUT and set the temperature control on the chamber to the highest specified in the regulatory requirements and allow the chamber temperature to stabilize.
- 4. While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency
- 5. Switch OFF the EUT, Lower the chamber temperature by not more that 10 °C, and allow the temperature inside the chamber to stabilize
- 6. Repeat step 4 and step 5 down to the lowest specified temperature

Frequency Stability VS Voltage Test:

- 1. EUT was placed at ambient room temperature (+15 °C to +25 °C) and connect to a power source which can varying supply voltage
- 2. Adjust the location of the measurement antenna to obtain a suitable signal level in measurement instrument
- 3. Varying the supply voltage at 85% and 115% of the nominal supply voltage, record the operating frequency

2.5 Measurement Method

Description of Test	Measurement Method
AC Line Conducted Emissions	ANSI C63.10-2020 Section 6.2
Field strength of fundamental and Radiated emission	ANSI C63.10-2020 Section 6.3&6.4&6.5
20dB Emission Bandwidth	ANSI C63.10-2020 Section 6.9.2
Frequency Stability	ANSI C63.10-2020 Section 6.8

Report Template: TR-4-E-006/V1 Page 9 of 25



2.6 Measurement Equipment

Manufacturer	Description	Model	Management No.	Calibration Date	Calibration Due Date
	AC L	ine Conducted En	nission Test		
ROHDE& SCHWARZ	EMI TEST RECEIVER	ESR	101817	2023/7/3	2024/7/2
R&S	LISN	ENV216	101748	2023/8/1	2024/7/30
N/A	Coaxial Cable	NO.12	N/A	2023/7/3	2024/7/2
Farad	Test Software	EZ-EMC	Ver. EMEC-3A1	/	/
		Radiated Emissio	n Test		
R&S	EMI test receiver	ESR3	102758	2023/7/3	2024/7/2
SONOMA INSTRUMENT	Low frequency amplifier	310	186014	2023/7/12	2024/7/11
BACL	Loop Antenna	1313-1A	4010611	2024/2/7	2427/2/6
SCHWARZBECK	Log - periodic wideband antenna	VULB 9163	9163-872	2023/7/7	2024/7/6
N/A	Coaxial Cable	N/A	NO.9	2023/8/8	2024/8/7
N/A	Coaxial Cable	N/A	NO.10	2023/8/8	2024/8/7
N/A	Coaxial Cable	N/A	NO.11	2023/8/8	2024/8/7
Audix	Test Software	E3	191218 V9	/	/
	Frequency Stability				
R&S	Spectrum Analyzer	FSV40	101419	2023/9/12	2024/9/11
BACL	Loop Antenna	1313-1A	4010611	2024/2/7	2427/2/6
N/A	Coaxial Cable	N/A	NO.9	2023/8/8	2024/8/7
BACL	TEMP&HUMI Test Chamber	BTH-150	30022	2023/7/12	2024/7/11
FLUKE	Digital Multimeter	15B+	N/A	2023/7/12	2024/7/11

Note: All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or International standards.



3 Test Results

3.1 Test Summary

FCC/ISEDC Rules	Description of Test	Result
FCC §15.203	Antenna Requirement	Compliance
FCC §15.207(a)	AC Line Conducted Emissions	Compliance
FCC §15.205, §15.209, §15.225	Field strength of fundamental and Radiated emission	Compliance
§15.225(e)	Frequency Stability	Compliance
FCC §15.215(c)	20dB Emission Bandwidth	Compliance



3.2 Limit

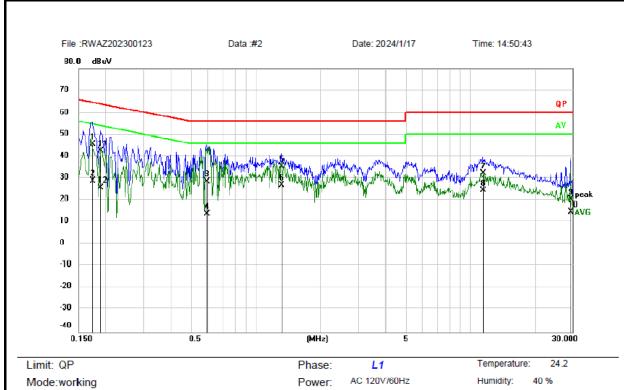
Test items	Limit
AC Line Conducted Emissions	See details §15.207 (a)
Field strength of fundamental and Radiated emission	 (a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters. (b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters. (c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters. (d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in §15.209.
Frequency Stability	The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.
20dB Emission Bandwidth	contained within the frequency band designated



3.3 AC Line Conducted Emissions Test Data

Test Date:	2024-1-17	Test By:	Lirou Li
Environment condition:	Temperature: 24.2°C; Relative	Humidity:40%; ATM Pr	essure: 101.2kPa

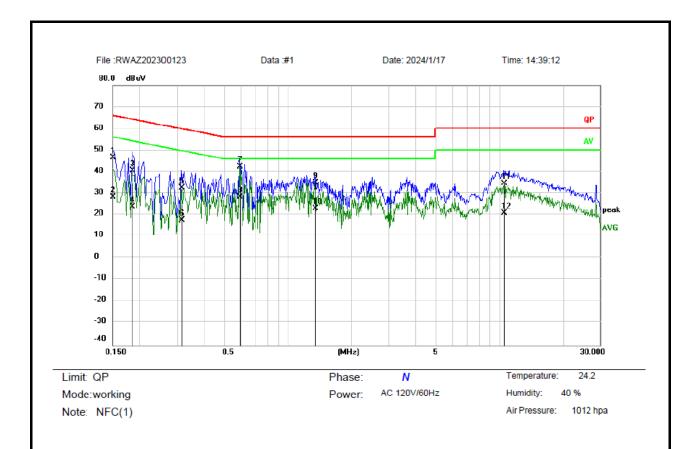
Adapter HF-0502000U



Air Pressure: 1012 hpa Note: NFC(1)

No. I	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over Limit			
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment	
1	C).1740	35.08	10.71	45.79	64.77	-18.98	QP		
2	C	0.1740	18.03	10.71	28.74	54.77	-26.03	AVG		
3	C	0.5940	17.82	10.84	28.66	56.00	-27.34	QP		
4	C	0.5940	3.04	10.84	13.88	46.00	-32.12	AVG		
5	1	1.3180	24.55	10.88	35.43	56.00	-20.57	QP		
6 '	* 1	1.3180	16.20	10.88	27.08	46.00	-18.92	AVG		
7	11	1.4180	21.69	10.46	32.15	60.00	-27.85	QP		
8	11	1.4180	14.17	10.46	24.63	50.00	-25.37	AVG		
9	29	9.4540	10.06	10.38	20.44	60.00	-39.56	QP		
10	29	9.4540	4.44	10.38	14.82	50.00	-35.18	AVG		
11	C	0.1900	32.10	10.65	42.75	64.04	-21.29	QP		
12	C	0.1900	15.26	10.65	25.91	54.04	-28.13	AVG		

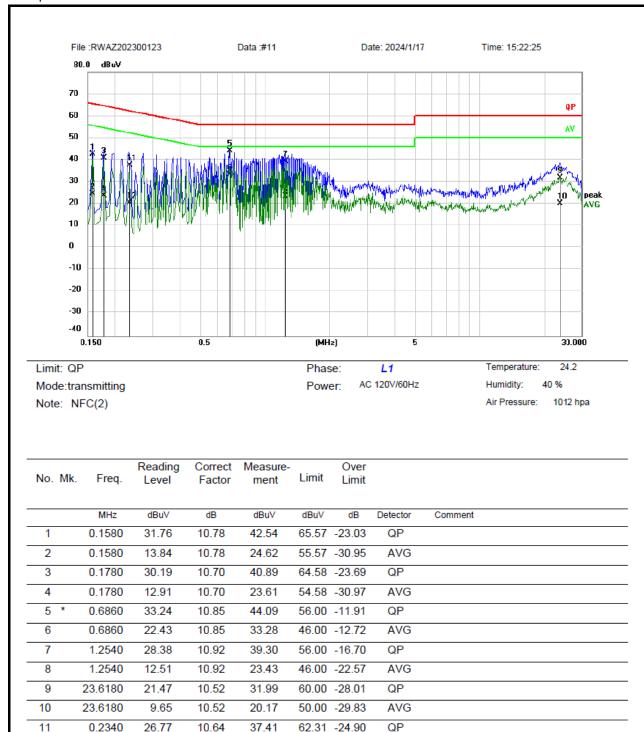




1 2 3 4	MHz 0.1500	dBuV						
3	0.1500	abay	dB	dBuV	dBuV	dB	Detector	Comment
3	0.1500	35.89	10.61	46.50	66.00	-19.50	QP	
4	0.1500	17.63	10.61	28.24	56.00	-27.76	AVG	
	0.1860	29.97	10.47	40.44	64.21	-23.77	QP	
5	0.1860	13.35	10.47	23.82	54.21	-30.39	AVG	
3	0.3140	21.97	10.55	32.52	59.86	-27.34	QP	
6	0.3140	6.79	10.55	17.34	49.86	-32.52	AVG	
7 *	0.5940	31.63	10.65	42.28	56.00	-13.72	QP	
8	0.5940	17.71	10.65	28.36	46.00	-17.64	AVG	
9	1.3460	24.33	10.67	35.00	56.00	-21.00	QP	
10	1.3460	12.25	10.67	22.92	46.00	-23.08	AVG	
11 1	10.4860	23.91	10.73	34.64	60.00	-25.36	QP	
12 1		9.90						



Adapter HJ-0502000W2-US



0.2340

9.75

10.64

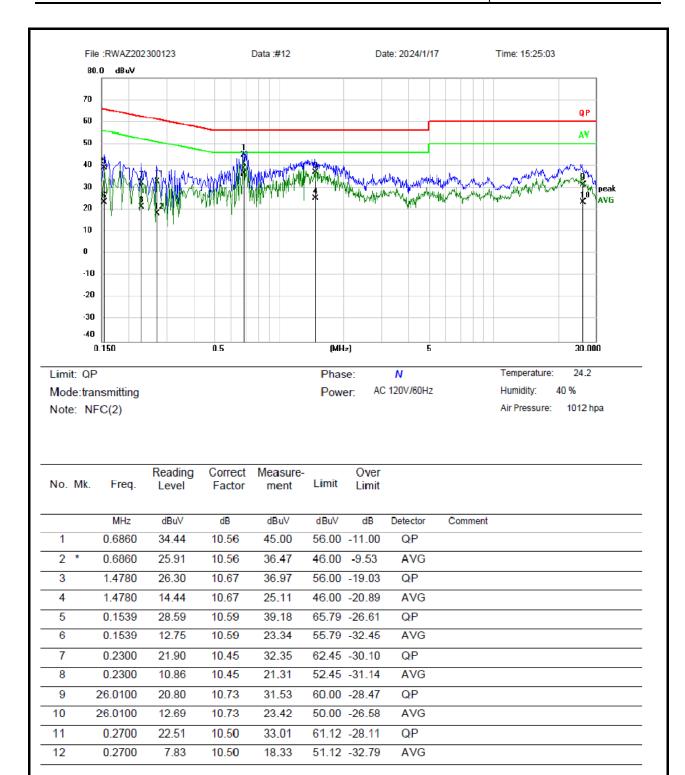
20.39

52.31 -31.92

AVG

12





Remark:

Measurement (dBuV) = Reading Level (dBuV) + Correct Factor(dB)

Correct Factor(dB)= LISN Voltage Division Factor (dB)+ Cable loss(dB)

Over Limit = Measurement - Limit

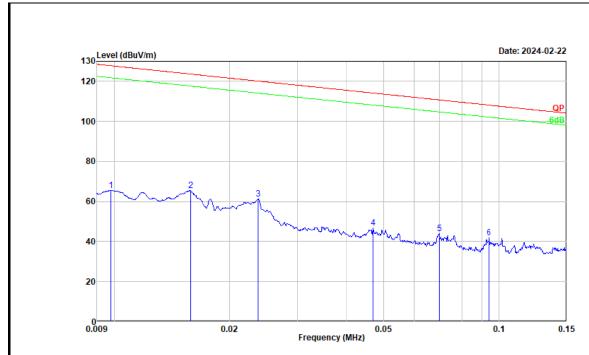


3.4 Radiated emission Test Data

9 kHz-30MHz:

Test Date:	2024-02-22	Test By:	Luke Li
Environment condition:	Temperature: 22.4°C; Relativ	e Humidity:70%; AT	M Pressure: 101kPa

Worst case antenna orientation:



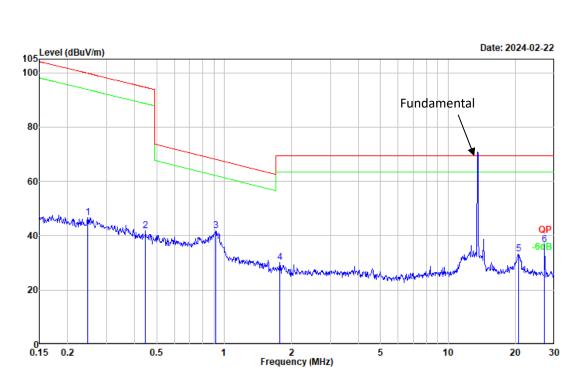
Project No. : RWAZ202300123 Test Mode : Transmitting Test Voltage : AC 120V/60Hz

Environment : 22.4℃/70%R.H./101.0kPa Tested by : Luke Li

Tested by : Luke Li Polarization : Parallel Remark : /

No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	0.010	27.77	37.67	65.44	127.79	-62.35	Peak
2	0.016	31.69	33.82	65.51	123.63	-58.12	Peak
3	0.024	32.38	28.85	61.23	120.14	-58.91	Peak
4	0.047	25.55	21.30	46.85	114.15	-67.30	Peak
5	0.070	26.00	17.93	43.93	110.73	-66.80	Peak
6	0.094	26.25	15.59	41.84	108.14	-66.30	Peak





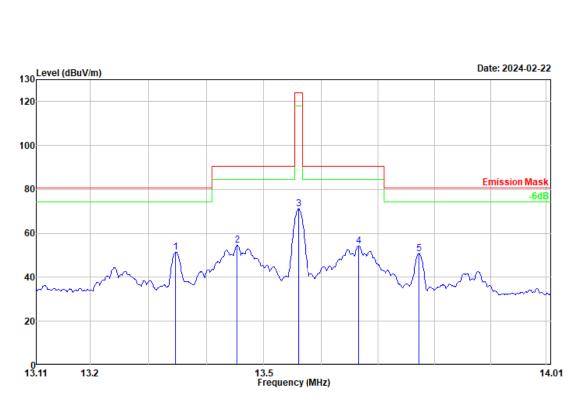
Project No. : RWAZ202300123 Test Mode : Transmitting Test Voltage : AC 120V/60Hz

Environment : 22.4℃/70%R.H./101.0kPa

Tested by : Luke Li Polarization : Parallel Remark : /

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	0.246	35.48	11.13	46.61	99.80	-53.19	Peak
2	0.447	34.91	6.81	41.72	94.60	-52.88	Peak
3	0.918	40.32	1.42	41.74	68.23	-26.49	Peak
4	1.781	31.80	-1.74	30.06	69.54	-39.48	Peak
5	20.704	36.42	-3.27	33.15	69.54	-36.39	Peak
6	27.127	41.02	-4.18	36.84	69.54	-32.70	Peak





Project No. : RWAZ202300123 Test Mode : Transmitting Test Voltage : AC 120V/60Hz

Environment : $22.4\,^{\circ}\text{C}/70\%\text{R.H.}/101.0\text{kPa}$

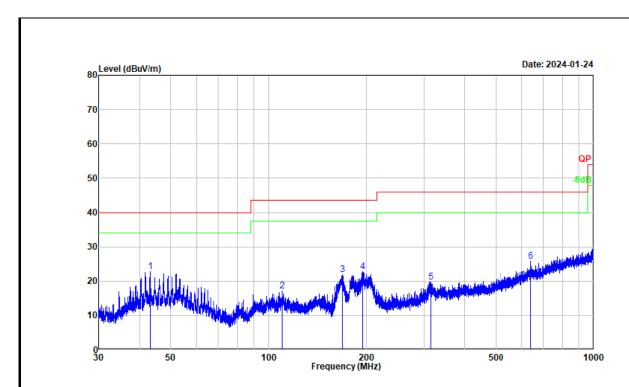
Tested by : Luke Li Polarization : Parallel Remark : /

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector	
1	13.348	55.01	-3.50	51.51	80.51	-29.00	Peak	
2	13.454	58.13	-3.52	54.61	90.47	-35.86	Peak	
3	13.560	74.66	-3.53	71.13	124.00	-52.87	Peak	
4	13.666	57.87	-3.55	54.32	90.47	-36.15	Peak	
5	13.772	54.44	-3.57	50.87	80.51	-29.64	Peak	



30MHz-1GHz:

Test Date:	2024-01-24	Test By:	Bard Huang
Environment condition:	Temperature: 22.4°C; Relativ	e Humidity:28%; A	M Pressure: 102kPa

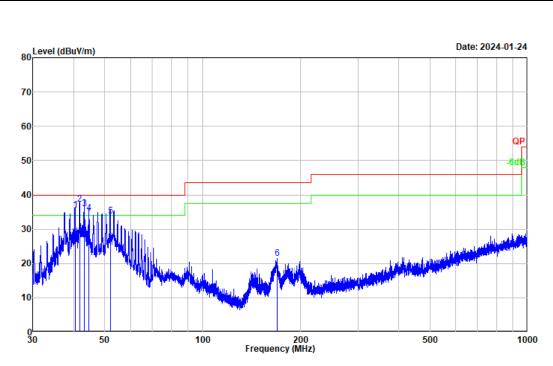


Project No. : RWAY2023000123 Test Mode : Transmitting Test Voltage : AC 120V/60Hz

Environment : 22.4°C/28%R.H./102.0kPa Tested by : Bard Huang Polarization : horizontal Remark : NFC

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	43.277	35.22	-12.38	22.84	40.00	-17.16	Peak
2	110.182	31.37	-14.27	17.10	43.50	-26.40	Peak
3	168.266	38.23	-16.43	21.80	43.50	-21.70	Peak
4	194.880	37.00	-14.14	22.86	43.50	-20.64	Peak
5	316.312	30.59	-10.92	19.67	46.00	-26.33	Peak
6	640.892	30.08	-4.25	25.83	46.00	-20.17	Peak





Project No. : RWAY2023000123 Test Mode : Transmitting Test Voltage : AC 120V/60Hz

Environment : 22.4℃/28%R.H./102.0kPa

Tested by : Bard Huang Polarization : vertical Remark : NFC

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector	
1	40.435	48.50	-12.99	35.51	40.00	-4.49	QP	
2	41.896	49.90	-12.54	37.36	40.00	-2.64	QP	
3	43.315	48.31	-12.38	35.93	40.00	-4.07	QP	
4	44.743	46.91	-12.23	34.68	40.00	-5.32	QP	
5	52.002	46.10	-12.28	33.82	40.00	-6.18	QP	
6	169.005	37.75	-16.35	21.40	43.50	-22.10	Peak	

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Remark:

Result = Reading + Factor

Factor = Antenna factor + Cable loss – Amplifier gain

Over Limit = Result - Limit



3.5 Frequency Stability Test Data

Test Date:	2024-02-22	Test By:	Luke Li
Environment condition:	Temperature: 22.4°C; Relativ	e Humidity:70%; AT	M Pressure: 101kPa

	Nominal frequency: 13.56MHz								
Temperature (°C)	Voltage Supplied (V _{DC})	Test Frequency (MHz)	Frequency Error (Hz)	Limit (Hz)	Result				
-20		13.551	-90	±1356	Pass				
-10		13.554	-60	±1356	Pass				
0		13.556	-40	±1356	Pass				
10		13.559	-10	±1356	Pass				
20	3.87	13.561	10	±1356	Pass				
25		13.562	20	±1356	Pass				
30		13.557	-30	±1356	Pass				
40		13.550	-100	±1356	Pass				
50		13.564	40	±1356	Pass				
20	3.45	13.557	-30	±1356	Pass				
20	4.45	13.559	-10	±1356	Pass				

Note 1: Frequency error=test frequency – Nominal frequency

Note 2: the limit is ± 100 ppm

Center frequency is 13.56MHz, so limit=13.56MHz*(\pm 100ppm)= \pm 1356Hz

Report Template: TR-4-E-006/V1 Page 22 of 25

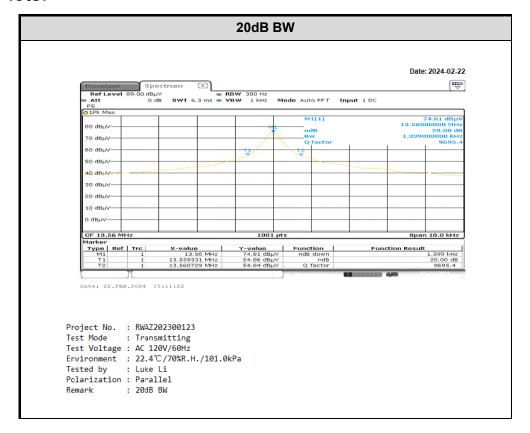


3.6 Bandwidth Test Data

Test Date:	2024-02-22	Test By:		Luke Li
Environment condition:	Temperature: 22.4°C; Relative Humidity:70%;		ATM	Pressure: 101kPa

Channel Frequency [MHz]	20dB BW [kHz]			
13.56	1.399			
Note: the 20dB Bandwidth fall within 13.110~14.010MHz range				

Test Plots:





4 Test Setup Photo

Please refer to the attachment RWAZ202300123M Test Setup photo.



5 E.U.T Photo

Please refer to the attachment RWAZ202300123 External photo and RWAZ202300123 Internal photo.

---End of Report---