



TEST REPORT

Report No.....: CHTW24060038 Report Verification: 

Project No.....: SHT2406009001W

FCC ID.....: Q9SAWRD7000-05

Applicant's name.....: Northfield Telecommunications, Inc. d/b/a Advanced Wireless Communications

Address.....: 20809 Kensington Blvd, Lakeville, Minnesota, United States 55044

Test item description.....: Two Way Radio

Trade Mark.....: AWC

Model/Type reference.....: AWR-D7000N

Listed Model(s).....: -

Standard.....: FCC CFR Title 47 Part 15 Subpart B

Date of receipt of test sample.....: Dec.21, 2023

Date of testing.....: Dec.22, 2023- Jun.14, 2024

Date of issue.....: Jun.19, 2024

Result.....: PASS

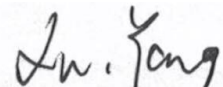
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Approved by
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Testing Laboratory Name: Shenzhen Huatongwei International Inspection Co., Ltd.

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The test report merely corresponds to the test sample.

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1. TEST STANDARDS AND REPORT VERSION

1.1. Test Standards

The tests were performed according to following standards:

[FCC CFR Title 47 Part 15 Subpart B](#) - Unintentional Radiators

[ANSI C63.4: 2014](#) – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz

1.2. Report version

Revision No.	Date of issue	Description
N/A	2024-06-19	Original

2. **TEST DESCRIPTION**

Test Item	Section in CFR 47	Result	Test Engineer
Conducted Emissions	15.107(a)	Pass	Junman Wang
Radiated Emissions	15.109(a)	Pass	Chuanfeng Li

Note: The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Client Information

Applicant:	Northfield Telecommunications, Inc. d/b/a Advanced Wireless Communications
Address:	20809 Kensington Blvd, Lakeville, Minnesota, United States 55044
Manufacturer:	Northfield Telecommunications, Inc. d/b/a Advanced Wireless Communications
Address:	20809 Kensington Blvd, Lakeville, Minnesota, United States 55044

3.2. Product Description

Main unit	
Name of EUT:	Two Way Radio
Trade Mark:	AWC
Model/Type reference:	AWR-D7000N
Listed Model(s)	-
Power supply:	DC7.4V for battery
Ancillary unit	
Battery information:	Model: AWB-D7000/7500 DC 7.4V 1800mAh/13.3Wh
Rapid charger information:	Model: BC-7000 Input: DC 12V/1000mA Output: DC 600mA
Adapter information:	Model: DSA-12PFT-12 FUS 120100 Input: 100-240Va.c.,50/60Hz 0.5A Output: 12Vd.c.,1A

3.3. Radio Specification Description

Support Frequency Range:	400MHz~470MHz	
Rated Output Power:	☒ High Power: 4.5W	☒ Low Power: 1.5W
Modulation Type:	Analog:	FM
	Digital :	4FSK
Supported Digital Protocol:	DMR	
Channel Separation:	Analog:	☒ 12.5kHz
	Digital :	☐ 6.25kHz ☒ 12.5kHz
Emission Designator:	Analog:	11K0F3E
	Digital:	7K60FXW, 7K60FXD
Support data rate:	9.6kbps	
Antenna Type:	External	
Antenna Gain:	0dBi	

3.4. Testing Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.	
Laboratory Location	Building 7, Baiwang Idea Factory, No.1051, Songbai Road, Yangguang Community, Xili Subdistrict, Nanshan District, Shenzhen, Guangdong, China	
Connect information:	Tel: 86-755-26715499 E-mail: cs@szhtw.com.cn http://www.szhtw.com.cn	
Qualifications	Type	Accreditation Number
	FCC Registration Number	762235
	FCC Designation Number	CN1181

4. TEST CONFIGURATION

4.1. EUT operation mode

Test mode	Describe
Charging mode	Keep the EUT in charging mode, but the EUT shut down.
Receive mode	Keep the EUT in receiving mode, but don't charging.

Receive frequency: 406.1125MHz.

Test item	Pretest mode	Worse case mode
Conducted emissions	Charging mode, receive mode	Charging mode
Radiated emissions	Receive mode	Receive mode

Only show the test data for worse case mode on the test report.

4.2. Support unit used in test configuration

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

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

Whether support unit is used?					
No					
Item	Equipment	Trade Name	Model No.	FCC ID	Power cord
1					
2					

4.3. Environmental conditions

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

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

4.4. Statement of the measurement uncertainty

Test	Frequency range	Measurement uncertainty
Radiated Emission	30~1000MHz	4.54dB
Radiated Emission	1~18GHz	5.10dB
Conducted Disturbance	0.15~30MHz	3.02 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.5. Equipments Used during the Test

● Conducted Emission

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	EMI Test Receiver	R&S	HTWE0111	ESCI	101247	2023/8/30	2024/8/29
●	Artificial Mains	SCHWARZBECK	HTWE0113	NNLK 8121	573	2023/08/18	2024/08/17
●	Protection Network	SCHWARZBECK	HTWE0567	VTSD9561FN	00899	2023/08/18	2024/08/17
●	ISN	FCC	HTWE0148	FCC-TLISN-T2-02	20371	2023/08/18	2024/08/17
●	ISN	FCC	HTWE0150	FCC-TLISN-T8-02	20375	2023/08/18	2024/08/17
●	Test Software	R&S	N/A	EMC32	N/A	N/A	N/A

● Radiated Emission - 30MHz~1GHz

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0127	SAC-3m-02	C11121	2023/04/06	2026/04/05
●	EMI Test Receiver	R&S	HTWE0099	ESCI 7	100900	2023/8/30	2024/8/29
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0119	VULB9163	546	2023/2/22	2026/2/21
●	Pre-Amplifier	SCHWARZBECK	HTWE0295	BBV 9742	/	2024/5/24	2025/5/23
●	Test Software	R&S	N/A	EMC32	N/A	N/A	N/A

● Radiated emission-Above 1GHz

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0122	SAC-3m-01	C11121	2023/04/17	2026/04/16
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2023/08/22	2024/08/21
●	Horn Antenna	SCHWARZBECK	HTWE0126	BBHA 9120D	1011	2023/02/14	2026/02/13
●	Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2023/02/20	2026/02/19
●	Broadband Pre-amplifier	SCHWARZBECK	HTWE0551	SCU18F	100855	2024/6/6	2025/6/5
●	Test Software	R&S	N/A	EMC32	N/A	N/A	N/A

5. TEST CONDITIONS AND RESULTS

5.1. Conducted Emissions

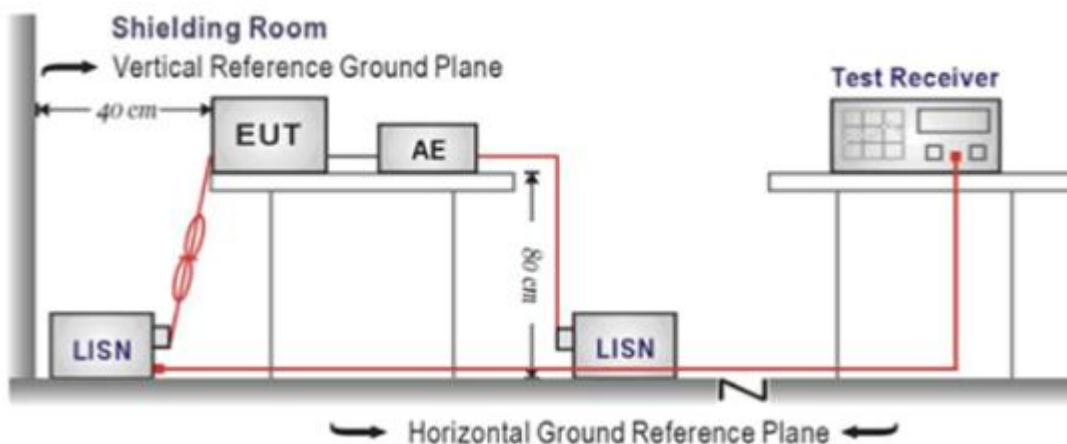
LIMIT

FCC CFR Title 47 Part 15 Subpart B Section 15.107:

Frequency range (MHz)	Limit (dBuV)	
	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 EUT was setup according to ANSI C63.4:2014
2. The EUT was placed on a plat form of nominal size, 1 m by 1.5 m, raised 10 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 10 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50ohm / 50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST MODE:

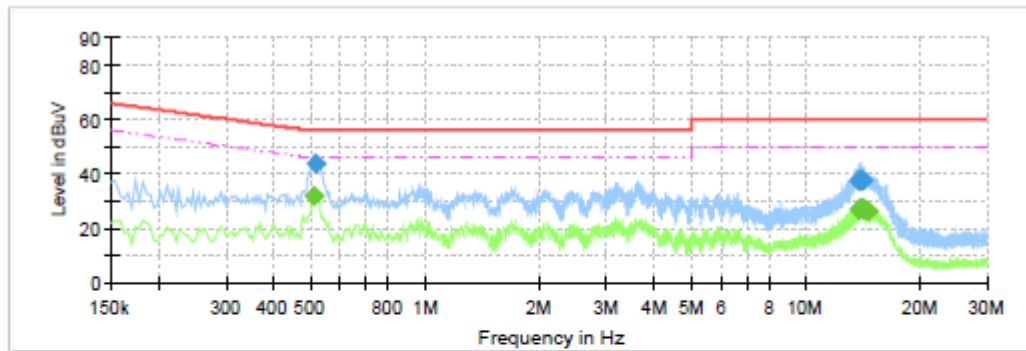
Please refer to the clause 4.1

TEST RESULTS

☒ Passed ☐ Not Applicable

Test Line:

L

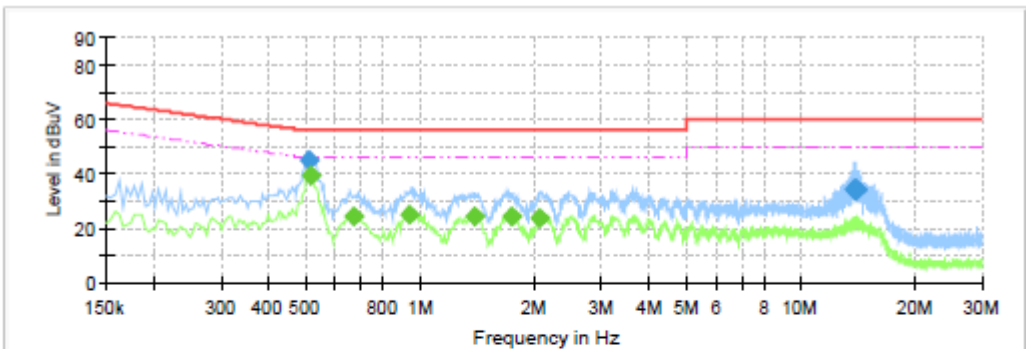


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.5115	---	31.87	46.00	14.13	L1	11.0
0.5155	43.77	---	56.00	12.23	L1	11.0
13.7875	---	26.90	50.00	23.10	L1	11.3
13.8235	37.22	---	60.00	22.78	L1	11.3
13.8595	37.47	---	60.00	22.53	L1	11.3
13.8875	---	27.23	50.00	22.77	L1	11.3
13.8955	37.74	---	60.00	22.26	L1	11.3
14.0155	37.97	---	60.00	22.03	L1	11.3
14.0795	---	27.40	50.00	22.60	L1	11.3
14.1755	37.26	---	60.00	22.74	L1	11.3
14.3315	---	27.03	50.00	22.97	L1	11.3
14.5835	---	26.28	50.00	23.72	L1	11.3

Test Line:

N



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.5115	44.80	---	56.00	11.20	N	10.7
0.5155	---	39.39	46.00	6.61	N	10.7
0.6675	---	24.42	46.00	21.58	N	10.8
0.9435	---	24.82	46.00	21.18	N	10.8
1.3875	---	24.54	46.00	21.46	N	10.8
1.7395	---	24.21	46.00	21.79	N	10.8
2.0715	---	23.89	46.00	22.11	N	10.8
13.8035	34.11	---	60.00	25.89	N	11.0
13.8965	34.62	---	60.00	25.38	N	11.0
13.9075	34.53	---	60.00	25.47	N	11.0
13.9795	34.23	---	60.00	25.77	N	11.0
14.0075	33.90	---	60.00	26.10	N	11.0

5.2. Radiated Emissions

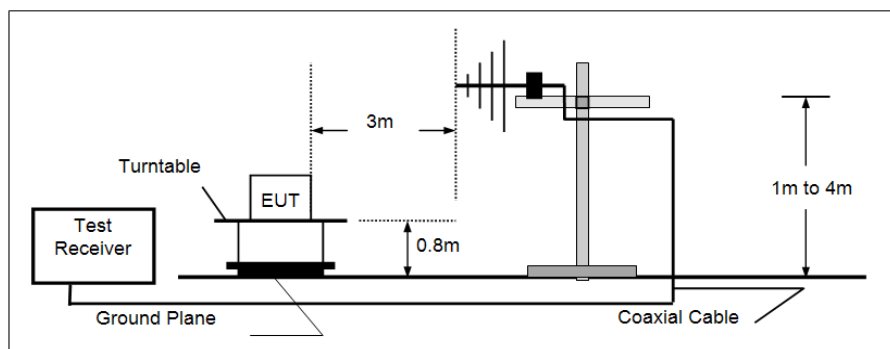
LIMIT

FCC CFR Title 47 Part 15 Subpart B Section 15.109

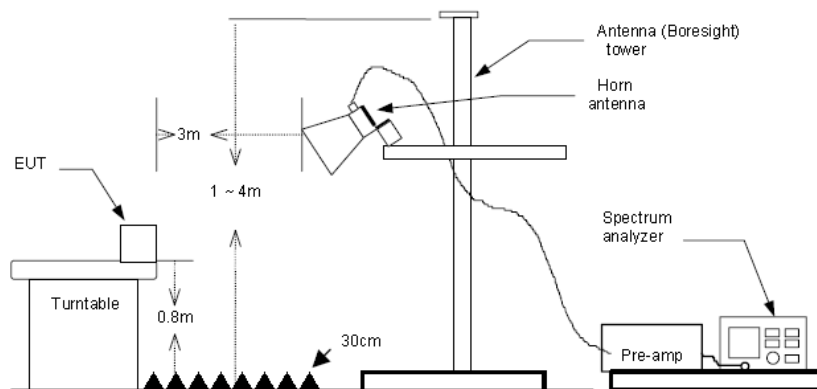
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

➤ 30MHz ~ 1GHz



➤ Above 1GHz



TEST PROCEDURE

- The EUT was tested according to ANSI C63.4:2014.
- The EUT is placed on a turn table which is 0.8 meter above ground.
- The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
- The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna.
- Use the following spectrum analyzer settings
 - Span shall wide enough to fully capture the emission being measured;
 - Below 1GHz,
RBW=120KHz, VBW=300KHz, Sweep=auto, Detector function=peak, Trace=max hold;
If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
 - From 1GHz to 5th harmonic, RBW=1MHz, VBW=3MHz

TEST MODE:

Please refer to the clause 4.1

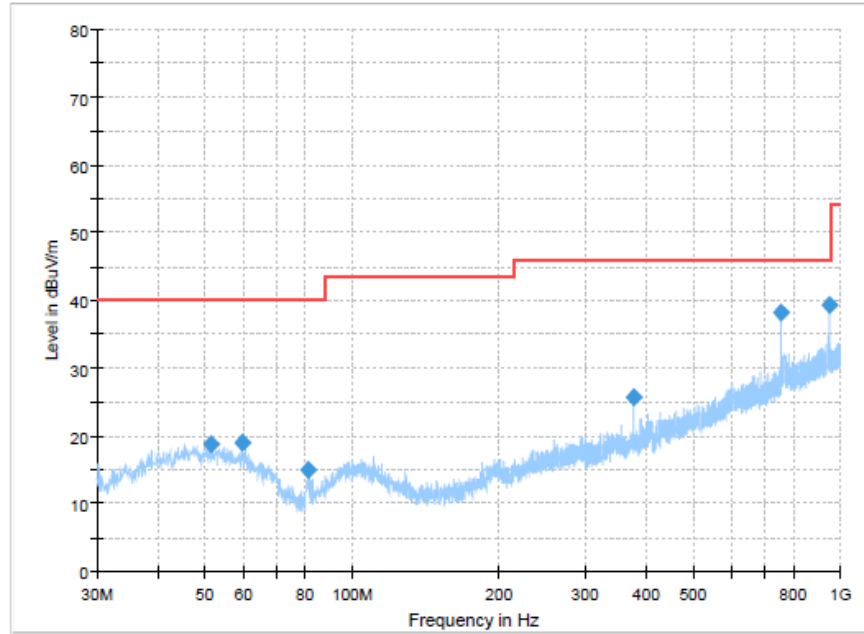
TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

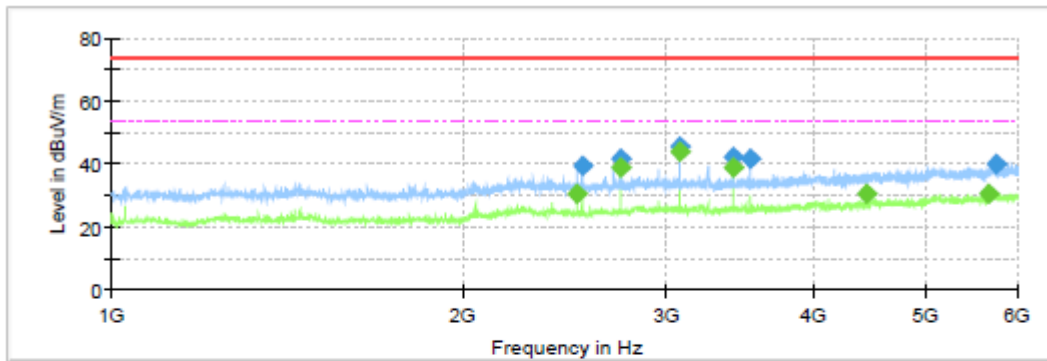
Note: Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
The emission levels of frequency above 6GHz are very lower than limit and not show in test report.

Polarization:

Horizontal

**Final Result**

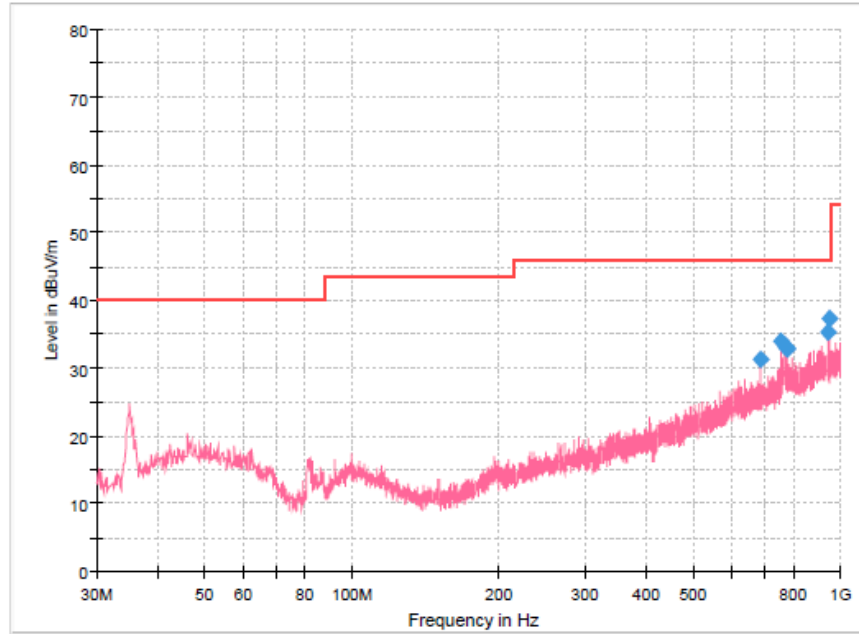
Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
51.3400	18.86	40.00	21.14	300.0	H	333.0	-8.8
59.4638	19.01	40.00	20.99	100.0	H	84.0	-9.9
81.4100	14.87	40.00	25.13	100.0	H	33.0	-15.5
377.0175	25.77	46.00	20.23	100.0	H	325.0	-5.1
753.9838	38.28	46.00	7.72	100.0	H	305.0	3.7
948.2263	39.27	46.00	6.73	300.0	H	11.0	7.1

**Final Result**

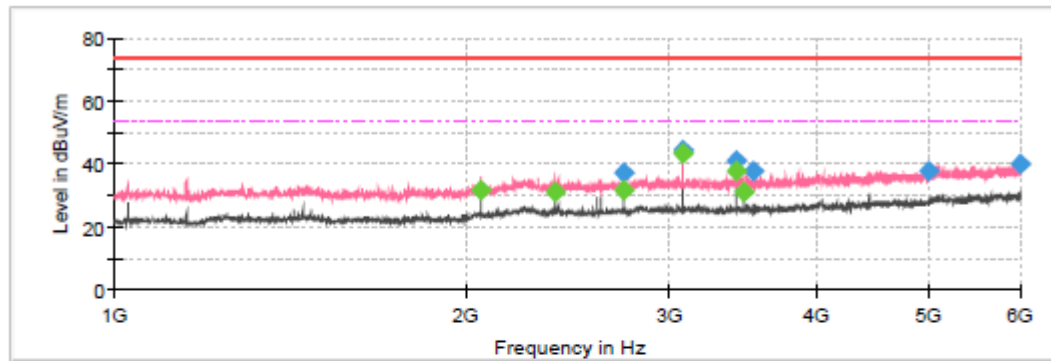
Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2508.1250	---	30.50	54.00	23.50	150.0	H	0.0	-10.3
2535.0000	39.41	---	74.00	34.59	150.0	H	108.0	-10.2
2735.6250	---	39.07	54.00	14.93	150.0	H	345.0	-9.5
2735.6250	41.81	---	74.00	32.19	150.0	H	345.0	-9.5
3077.5000	45.44	---	74.00	28.56	150.0	H	307.0	-8.2
3078.1250	---	44.05	54.00	9.95	150.0	H	307.0	-8.2
3420.0000	---	38.98	54.00	15.02	150.0	H	17.0	-8.1
3420.0000	41.98	---	74.00	32.02	150.0	H	17.0	-8.1
3540.0000	41.77	---	74.00	32.23	150.0	H	0.0	-7.4
4445.6250	---	30.61	54.00	23.39	150.0	H	44.0	-5.2
5678.7500	---	30.77	54.00	23.23	150.0	H	199.0	-2.5
5763.7500	40.26	---	74.00	33.74	150.0	H	90.0	-2.1

Polarization:

Vertical

**Final Result**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
687.5388	31.39	46.00	14.61	100.0	V	222.0	2.1
753.9838	33.88	46.00	12.12	100.0	V	198.0	3.7
772.0500	32.97	46.00	13.03	100.0	V	104.0	4.0
780.0525	32.90	46.00	13.10	100.0	V	305.0	4.2
945.1950	35.21	46.00	10.79	100.0	V	230.0	7.1
948.2263	37.41	46.00	8.59	100.0	V	41.0	7.1

**Final Result**

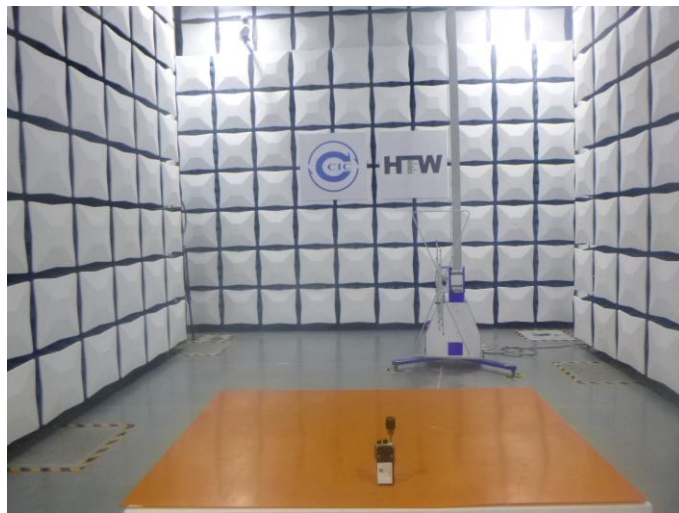
Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2062.5000	---	31.67	54.00	22.33	150.0	V	104.0	-11.4
2393.7500	---	31.21	54.00	22.79	150.0	V	186.0	-10.1
2735.6250	37.22	---	74.00	36.78	150.0	V	186.0	-9.5
2735.6250	---	31.60	54.00	22.40	150.0	V	186.0	-9.5
3078.1250	---	43.10	54.00	10.90	150.0	V	333.0	-8.2
3078.1250	44.47	---	74.00	29.53	150.0	V	333.0	-8.2
3420.0000	40.90	---	74.00	33.10	150.0	V	149.0	-8.1
3420.0000	---	37.94	54.00	16.06	150.0	V	149.0	-8.1
3474.3750	---	31.12	54.00	22.88	150.0	V	58.0	-7.8
3533.7500	38.05	---	74.00	35.95	150.0	V	324.0	-7.4
5011.8750	38.00	---	74.00	36.00	150.0	V	58.0	-3.5
5995.6250	39.78	---	74.00	34.22	150.0	V	122.0	-1.4

6. TEST SETUP PHOTOS OF THE EUT

Conducted Emissions (AC Mains)



Radiated Emissions



7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

Reference to the test report No.: CHTW24060037.

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