Shenzhen Huatongwei International Inspection Co.,Ltd.
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TEST REPORT

Report No.....:	**CHTEW21040106**	Report Verification:
Project No.....:	**SHT2101077003EW**	
FCC ID..... :	**2APPUD2300**	
Applicant's name..... :	**A Beep, LLC**	
Address.....:	710 W JEFFERSON ST,Joliet, IL, 60435,United States	
Test item description ..... :	**Digital Two-way Radio**	
Trade Mark .....:	Diga-Talk²	
Model/Type reference.....:	D2-300U	
Listed Model(s) .....:	-	
Standard ..... :	**FCC CFR Title 47 Part 15 Subpart B**	
Date of receipt of test sample.....:	Feb.20, 2021	
Date of testing.....:	Feb.20, 2021- Apr.20, 2021	
Date of issue.....:	Apr.21, 2021	
Result..... .....:	**PASS**	

Compiled by (position+printed name+signature)..:	File administrators Echo Wei	Echo Wei
Supervised by (position+printed name+signature)..:	Project Engineer Aaron Fang	Aaron.Fang
Approved by (position+printed name+signature)..:	RF Manager Hans Hu	Hans Hu

Testing Laboratory Name ..... :	**Shenzhen Huatongwei International Inspection Co., Ltd.**
Address.....:	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Contents

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	2021-04-21	Original

2. TEST DESCRIPTION

Test Item	Section in CFR 47	Result	Test Engineer
Conducted Emissions	15.107(a)	Pass	Quanhai Deng
Radiated Emissions	15.109(a)	Pass	Jianquan Wu

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

3. SUMMARY

3.1. Client Information

Applicant:	A Beep, LLC
Address:	710 W JEFFERSON ST,Joliet, IL, 60435,United States
Manufacturer:	A Beep, LLC
Address:	710 W JEFFERSON ST,Joliet, IL, 60435,United States
Factory:	Shenzhen HQT Science & Technology Co., Ltd.
Address:	Room 1705 & 1706, 17th Floor, Weisheng Technology Building, No.9966, Shennan Road, Maling Community, Yuehai Sub-district, Nanshan District, Shenzhen City,China

3.2. Product Description

Main unit	
Name of EUT:	Digital Two-way Radio
Trade Mark:	Diga-Talk²
Model/Type reference:	D2-300U
Listed Model(s)	-
Power supply:	DC 7.4V
Hardware version:	D2-300CPS
Software version:	D2-300U
Ancillary unit	
Battery information:	Model: D2-300-Bat DC7.4V 2000mAh
Charger information:	Model: D2-300-Charger Input: 12Vd.c.,1000mA Output: 1000mA
Adapter information:	Model: BYX-1201000 Input: 100-240Va.c.,50/60Hz Output: 12VDC 1000mA

3.3. Radio Specification Description

Support Frequency Range:	450-512MHz		
Rated Output Power:	☒ High Power: 4W	☒ Low Power: 1W	
Modulation Type:	Analog:	FM	
	Digital :	4FSK	
Supported Digital Protocol:	DMR		
Channel Separation:	Analog:	☒ 12.5kHz	☐ 25kHz
	Digital :	☐ 6.25kHz	☒ 12.5kHz
Emission Designator:	Analog:	11K0F3E	
	Digital:	7K60FXW, 7K60FXD	
Support data rate:	9.6kbps		
Antenna Type:	External		

3.4. Testing Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.	
Laboratory Location	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China	
Connect information:	Tel: 86-755-26715499 E-mail: cs@szhtw.com.cn http://www.szhtw.com.cn	
Qualifications	Type	Accreditation Number
	FCC	762235

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: 481MHz.

Test item	Pretest mode	Worse case mode
Conducted emissions	Charging mode	Charging mode
Radiated emissions	Charging mode, receive mode	Charging 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	4.90 dB
Radiated Emission	1~18GHz	4.96 dB
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)
●	Shielded Room	Albatross projects	HTWE0114	N/A	N/A	2018/09/28	2023/09/27
●	EMI Test Receiver	R&S	HTWE0111	ESCI	101247	2020/10/19	2021/10/18
●	Artificial Mains	SCHWARZBECK	HTWE0113	NNLK 8121	573	2020/10/15	2021/10/14
●	Pulse Limiter	R&S	HTWE0033	ESH3-Z2	100499	2020/10/15	2021/10/14
●	RF Connection Cable	HUBER+SUHNER	HTWE0113-02	ENVIROFLEX_142	EF-NM-BNCM-2M	2020/10/15	2021/10/14
●	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A

● Radiated Emission-6th test site							
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	2018/09/30	2021/09/29
●	EMI Test Receiver	R&S	HTWE0099	ESCI	100900	2020/10/19	2021/10/18
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0119	VULB9163	546	2020/04/28	2023/04/27
●	Pre-Amplifer	SCHWARZBECK	HTWE0295	BBV 9742	N/A	2020/11/13	2021/11/12
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-01	N/A	N/A	2020/05/27	2021/05/26
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-02	SUCOFLEX104	501184/4	2020/05/27	2021/05/26
●	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A

● Radiated emission-7th test site							
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	N/A	2018/09/27	2021/09/26
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2020/10/20	2021/10/19
●	Horn Antenna	SCHWARZBECK	HTWE0126	9120D	1011	2020/04/01	2023/03/31
●	Broadband Pre-amplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2020/05/23	2021/05/22
●	RF Connection Cable	HUBER+SUHNER	HTWE0121-01	RE-7-FH	N/A	2020/05/10	2021/05/09
●	Test Software	Audix	N/A	E3	N/A	N/A	N/A

5. TEST CONDITIONS AND RESULTS

5.1. Conducted Emissions

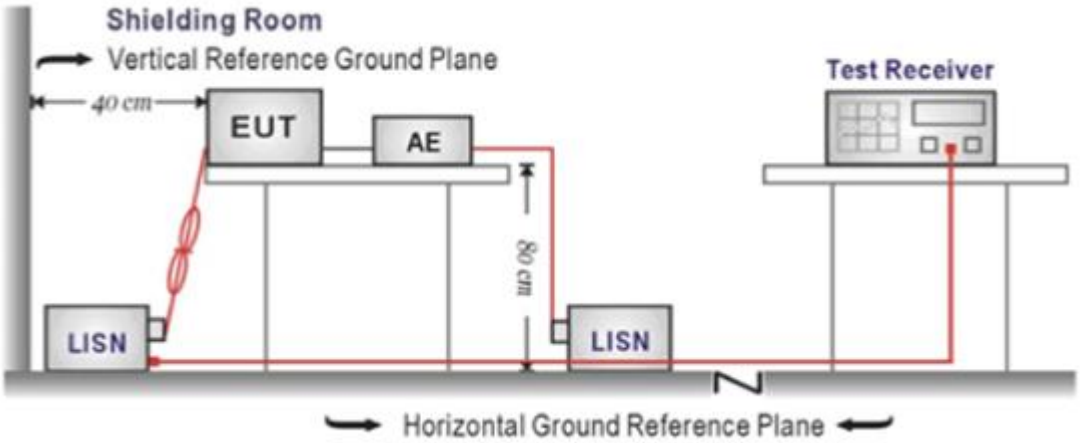
LIMIT

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.

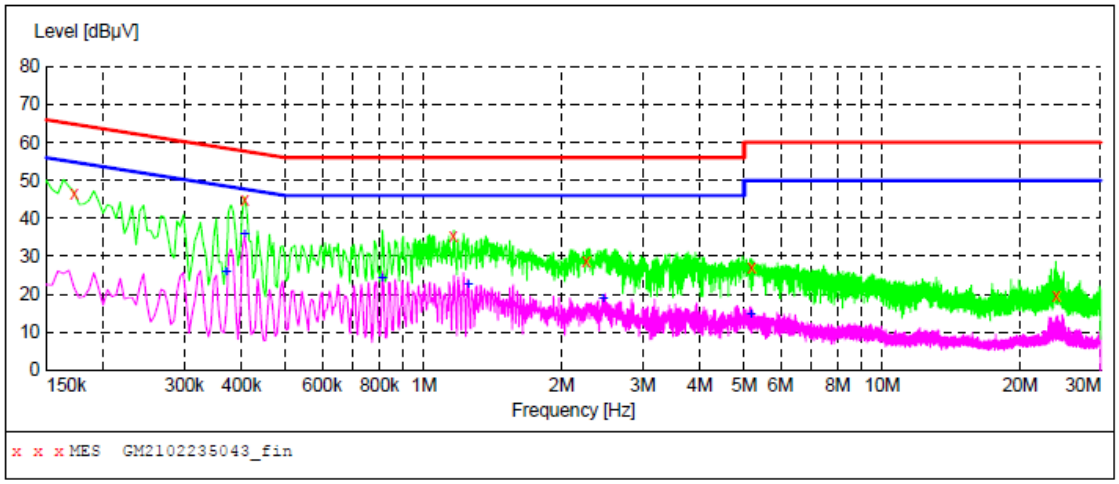
TEST MODE:

Please refer to the clause 4.1

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Test Line:	L



MEASUREMENT RESULT: "GM2102235043_fin"

2/23/2021 5:19PM

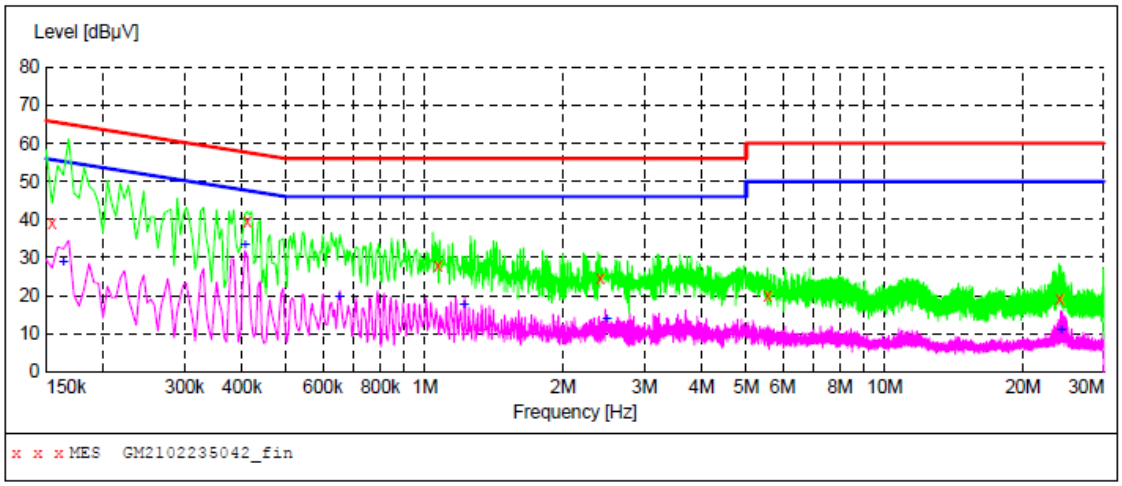
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.172500	46.50	10.2	65	18.3	QP	L1	GND
0.406500	44.90	10.2	58	12.8	QP	L1	GND
1.158000	35.30	10.2	56	20.7	QP	L1	GND
2.256000	28.70	10.2	56	27.3	QP	L1	GND
5.181000	27.20	10.2	60	32.8	QP	L1	GND
23.955000	19.60	10.5	60	40.4	QP	L1	GND

MEASUREMENT RESULT: "GM2102235043_fin2"

2/23/2021 5:19PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.370500	25.90	10.2	49	22.6	AV	L1	GND
0.406500	35.80	10.2	48	11.9	AV	L1	GND
0.811500	24.30	10.2	46	21.7	AV	L1	GND
1.248000	22.60	10.2	46	23.4	AV	L1	GND
2.463000	18.90	10.2	46	27.1	AV	L1	GND
5.172000	14.80	10.2	50	35.2	AV	L1	GND

Test Line:	N



MEASUREMENT RESULT: "GM2102235042_fin"

2/23/2021 5:16PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.154500	39.00	10.2	66	26.8	QP	N	GND
0.411000	39.50	10.2	58	18.1	QP	N	GND
1.068000	28.00	10.2	56	28.0	QP	N	GND
2.404500	24.70	10.2	56	31.3	QP	N	GND
5.568000	20.00	10.2	60	40.0	QP	N	GND
23.995500	19.20	10.5	60	40.8	QP	N	GND

MEASUREMENT RESULT: "GM2102235042_fin2"

2/23/2021 5:16PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.163500	28.80	10.2	55	26.5	AV	N	GND
0.406500	33.20	10.2	48	14.5	AV	N	GND
0.649500	19.60	10.2	46	26.4	AV	N	GND
1.216500	17.40	10.2	46	28.6	AV	N	GND
2.485500	14.00	10.2	46	32.0	AV	N	GND
24.189000	11.00	10.5	50	39.0	AV	N	GND

5.2. Radiated Emissions

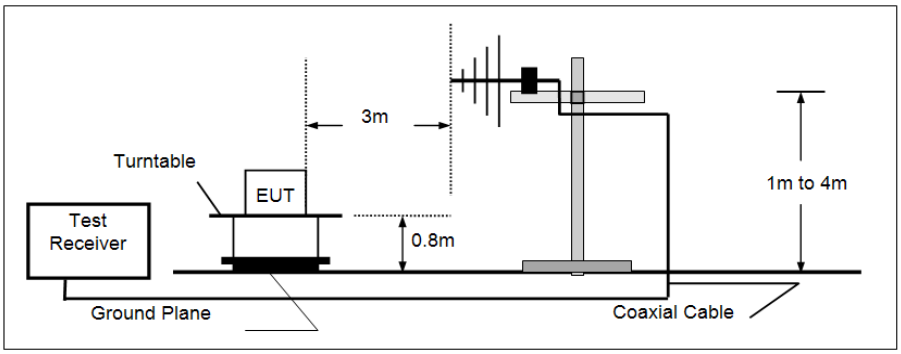
LIMIT

FCC CFR Title 47 Part 15 Subpart B Section 15.109

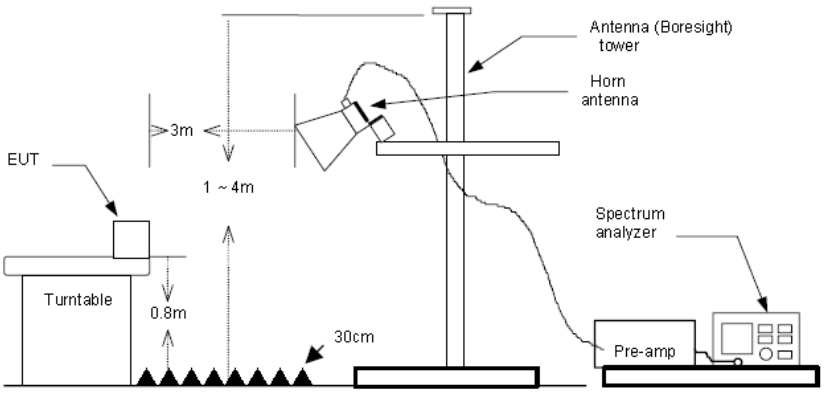
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

➢ 30MHz ~ 1GHz



➢ Above 1GHz



TEST PROCEDURE

1. The EUT was tested according to ANSI C63.4:2014.
2. The EUT is placed on a turn table which is 0.8 meter above ground.
3. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
4. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
5. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna.
6. Use the following spectrum analyzer settings
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) 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 detectoris 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, theemission measurement will be repeated using the quasi-peak detector and reported.
   (3) From 1GHz to 5th harmonic, RBW=1MHz, VBW=3MHz

TEST MODE:

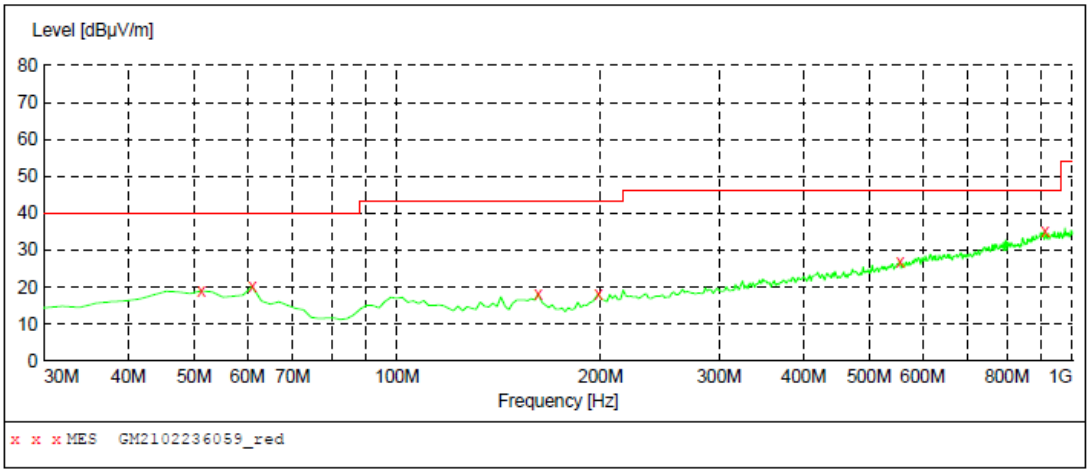
Please refer to the clause 4.1

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



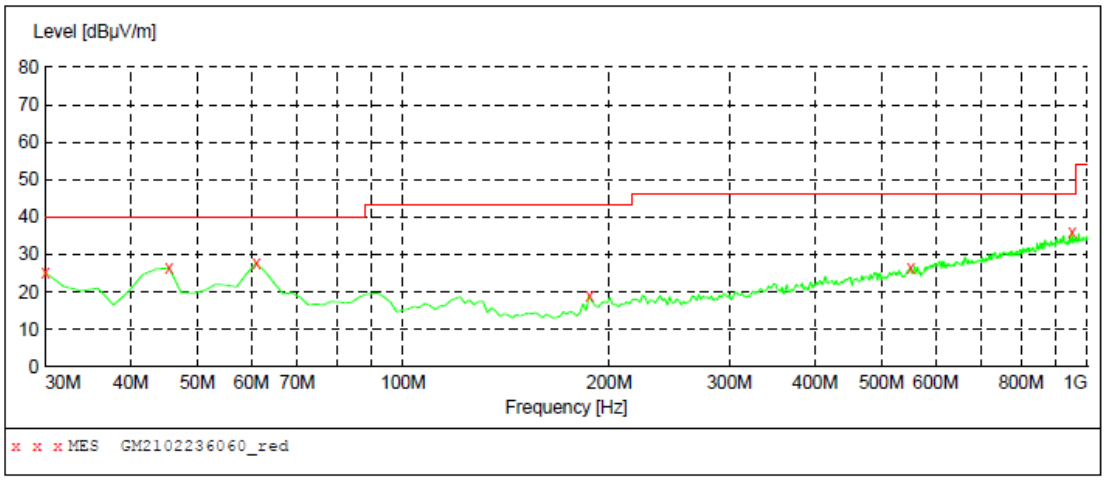
MEASUREMENT RESULT: "GM2102236059_red"

2/23/2021 2:42PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
51.340000	19.00	-8.8	40.0	21.0	QP	300.0	5.00	HORIZONTAL
61.040000	20.20	-10.1	40.0	19.8	QP	300.0	308.00	HORIZONTAL
161.920000	18.20	-13.3	43.5	25.3	QP	100.0	360.00	HORIZONTAL
198.780000	18.20	-9.8	43.5	25.3	QP	300.0	320.00	HORIZONTAL
555.740000	27.00	-0.3	46.0	19.0	QP	300.0	160.00	HORIZONTAL
910.760000	35.10	7.3	46.0	10.9	QP	300.0	53.00	HORIZONTAL

Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	1273.65	37.06	25.95	5.34	36.40	31.95	74.00	-42.05	Peak
2	1520.85	38.33	25.73	5.81	36.90	32.97	74.00	-41.03	Peak
3	2239.59	36.63	28.12	7.22	37.41	34.56	74.00	-39.44	Peak
4	2756.98	35.56	28.23	8.12	37.24	34.67	74.00	-39.33	Peak
5	4067.17	34.36	30.00	10.20	36.32	38.24	74.00	-35.76	Peak
6	4874.00	32.95	31.40	11.51	35.16	40.70	74.00	-33.30	Peak

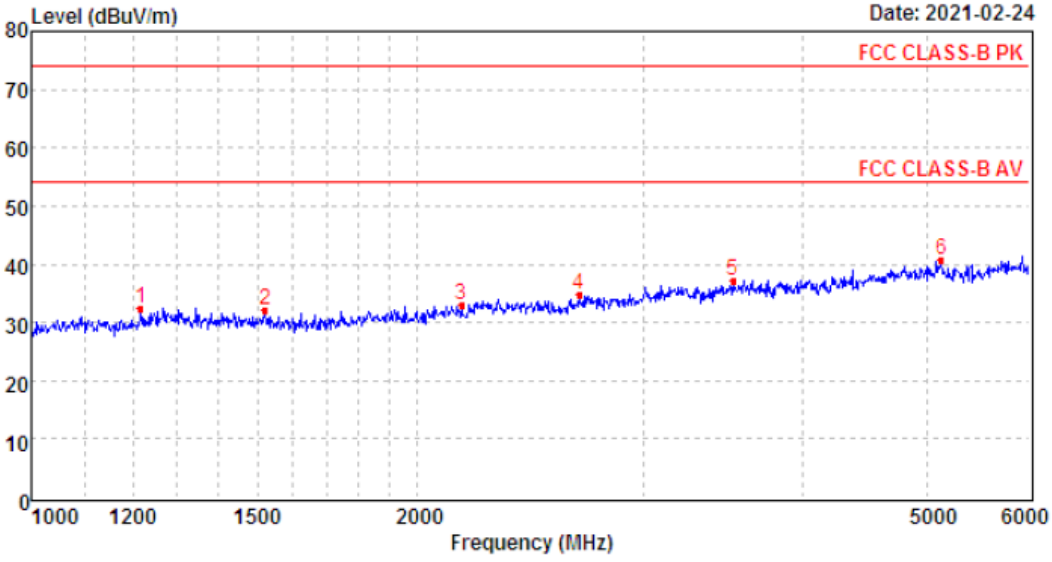
Polarization:	Vertical



MEASUREMENT RESULT: "GM2102236060_red"

2/23/2021 2:45PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	25.20	-12.4	40.0	14.8	QP	100.0	100.00	VERTICAL
45.520000	26.40	-8.9	40.0	13.6	QP	100.0	0.00	VERTICAL
61.040000	27.70	-10.1	40.0	12.3	QP	100.0	0.00	VERTICAL
187.140000	18.90	-11.4	43.5	24.6	QP	100.0	51.00	VERTICAL
551.860000	26.30	-0.5	46.0	19.7	QP	100.0	67.00	VERTICAL
949.560000	36.00	7.7	46.0	10.0	QP	100.0	186.00	VERTICAL

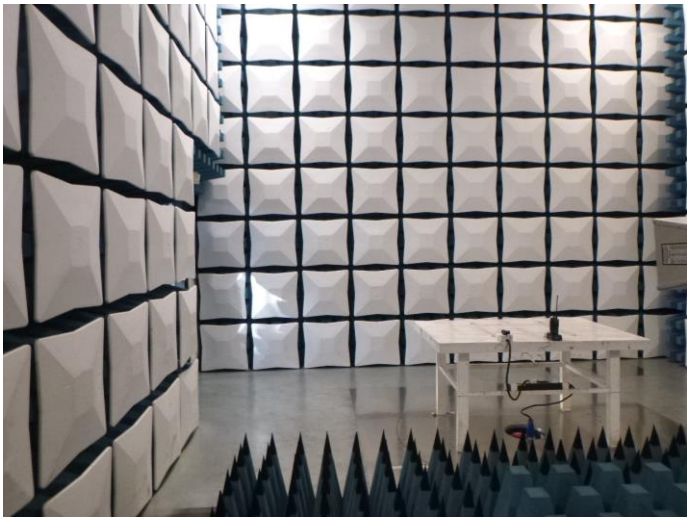


Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	1217.86	38.25	25.71	5.15	36.62	32.49	74.00	-41.51	Peak
2	1520.85	37.60	25.73	5.81	36.90	32.24	74.00	-41.76	Peak
3	2164.63	35.55	27.85	7.13	37.39	33.14	74.00	-40.86	Peak
4	2674.27	35.99	27.85	7.98	37.06	34.76	74.00	-39.24	Peak
5	3524.04	35.07	29.20	9.65	36.71	37.21	74.00	-36.79	Peak
6	5124.77	32.77	32.10	11.45	35.46	40.86	74.00	-33.14	Peak

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.: CHTEW21040105.

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