

# TEST REPORT

For RF

Report No. ...... CHTEW23040031 Report verification:

Project No. ...... SHT2303077301EW

FCC ID.....: 2BAOS-AUK1

Applicant's name.....: Auk Eco AS

Address...... Brugata 17D, 0186 Oslo

Product Name .....: Auk

Trade Mark .....: -

Model No. ..... 1

Listed Model(s) .....

Standard .....: FCC CFR Title 47 Part 15 Subpart C § 15.225

Date of receipt of test sample.......... Mar.22, 2023

Date of testing...... Mar.22, 2023-Apr.10, 2023

Date of issue...... Apr.11, 2023

Result.....: PASS

Compiled by

(position+printedname+signature)....: File administrators Fanghui Zhu

Supervised by

(position+printedname+signature)....: Project Engineer Kiki Kong

Approved by

(position+printedname+signature)....: RF Manager Hans Hu

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

Tianliao, Gongming, Shenzhen, China

Shenzhen Huatongwei International Inspection Co., Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen Huatongwei International Inspection Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen Huatongwei International Inspection Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

The test report merely correspond to the test sample.

Page: 1 of 29

Report No.: CHTEW23040031 Page: 2 of 29 Date of issue: 2023-04-11

# **Contents**

TEST STANDARDS AND REPORT VERSION	3
Test Standards	3
Report version information	3
TEST DESCRIPTION	4
SUMMARY	5
Client Information	5
Product Description	5
Radio Specification Description	5
Testing Laboratory Information	6
TEST CONFIGURATION	7
Test mode	7
Test sample information	7
Support unit used in test configuration and system	7
Testing environmental condition	7
Statement of the measurement uncertainty	8
Equipments Used during the Test	9
TEST CONDITIONS AND RESULTS	10
Antenna requirement	10
AC Power Conducted Emissions	11
Field Strength of the Fundamental and Mask Measurement	14
20dB Bandwidth	16
Radiated Spurious Emission	18
Frequency Stability	22
TEST SETUP PHOTOS	23
EXTERNAL AND INTERNAL PHOTOS OF THE EUT	25
External Photos	25
Internal Photos	28

Report No.: CHTEW23040031 Page: 3 of 29 Date of issue: 2023-04-11

# 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 C § 15.225: Operation within the band 13.110-14.010 MHz ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

# 1.2. Report version information

Revision No.	Date of issue	Description
N/A	2023-04-11	Original

Report No.: CHTEW23040031 Page: 4 of 29 Date of issue: 2023-04-11

# 2. TEST DESCRIPTION

Report clause	Test Items	Standard Requirement Result		Test Engineer
5.1	Antenna requirement	15.203	PASS	Xiaoqin Li
5.2	AC Power Conducted Emissions	15.207	PASS	Yongjin Lin
5.3	Field Strength of the Fundamental and Mask Measurement	15.225(a)(b)(c)	PASS	Yongjin Lin
5.4	20dB Bandwidth	15.215	PASS	Yongjin Lin
5.5	Radiated Spurious Emission	15.225(d)&15.209	PASS	Yifan Wang
5.6	Frequency Stability	15.225(e)	PASS	Yongjin Lin

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

Report No.: CHTEW23040031 Page: 5 of 29 Date of issue: 2023-04-11

# 3. **SUMMARY**

# 3.1. Client Information

Applicant:	Auk Eco AS
Address:	Brugata 17D, 0186 Oslo
Manufacturer:	Auk Eco AS
Address:	Brugata 17D, 0186 Oslo
Factory:	Hanza Electronics Poland (Hanza Poland Sp. z o.o.)
Address:	Aleje Jerozolimskie 38, 56-120 Brzeg Dolny, Poland

# 3.2. Product Description

Main unit information:				
Product Name:	Auk			
Trade Mark:	-			
Model No.:	1			
Listed Model(s):	-			
Power supply:	DC 12V from adapter			
Hardware version:	v2.0 Main pcb rev6c Led pcb rev 6d			
Software version:	v1.3.0			
Accessory unit information:				
	Model:YYHMN12-A			
Adapter information:	Input:100-240Va.c., 0.8A			
	Output:12Vd.c., 2.1A			

# 3.3. Radio Specification Description

Radio function:	RFID
Operation frequency:	13.56MHz
Modulation:	ASK
Channel number:	1
Antenna type:	Loop Antenna

Report No.: CHTEW23040031 Page: 6 of 29 Date of issue: 2023-04-11

# 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:	Phone: 86-755-26715499 E-mail: cs@szhtw.com.cn http://www.szhtw.com.cn			
Qualifications	Type Accreditation Numbe			
Qualifications	FCC	762235		

Report No.: CHTEW23040031 Page: 7 of 29 Date of issue: 2023-04-11

# 4. TEST CONFIGURATION

#### 4.1. Test mode

For RF test items

The engineering test program was provided and enabled to make EUT continuous transmit.

For AC power line conducted emissions:

The engineering test program was provided and enabled to make EUT continuous transmit.

For Radiated spurious emissions test item:

The engineering test program was provided and enabled to make EUT continuous transmit.

The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data Recorded in the report.

# 4.2. Test sample information

Test item	HTW sample no.
RF Radiated test items	YPHT23030773007
EMI test items	YPHT23030773007

Note:

RF Radiated test items: Field Strength of the Fundamental and Mask Measurement, 20dB Bandwidth,

Radiated Spurious Emission, Frequency Stability

EMI test items: AC Power Conducted Emissions

# 4.3. Support unit used in test configuration and system

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 Equipement Trade Name Model No.					
1					
2					

## 4.4. Testing environmental condition

Туре	Requirement	Actual
Temperature:	15~35°C	25°C
Relative Humidity:	25~75%	50%
Air Pressure:	860~1060mbar	1000mbar

Report No.: CHTEW23040031 Page: 8 of 29 Date of issue: 2023-04-11

# 4.5. Statement of the measurement uncertainty

Test Items	Measurement Uncertainty	
AC Power Conducted Emissions	3.21 dB	
Radiated emissions below 1GHz	4.54dB	
Radiated emissions above 1GHz	5.10 dB	
Occupied Bandwidth	0.002%	

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

Report No.: CHTEW23040031 Page: 9 of 29 Date of issue: 2023-04-11

# 4.6. Equipments Used during the Test

•	Conducted test item						
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
•	Signal and spectrum Analyzer	R&S	HTWE0242	FSV40	100048	2022/08/25	2023/08/24
•	Signal & Spectrum Analyzer	R&S	HTWE0262	FSW26	103440	2022/08/25	2023/08/24
•	Vector signal generator	R&S	HTWE0244	SMBV100A	260790	2022/05/25	2023/05/24
•	Test software	Tonscend	N/A	JS1120	N/A	N/A	N/A

•	Radiated emission- Below 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	2018/09/30	2023/09/29
•	EMI Test Receiver	R&S	HTWE0099	ESCI	100900	2022/08/30	2023/08/29
•	Loop Antenna	R&S	HTWE0546	HFH2-Z2E	101073	2021/05/25	2024/05/24
•	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0547	VULB9163	945	2022/05/23	2025/05/22
•	Pre-Amplifer	SCHWARZBECK	HTWE0295	BBV 9742	N/A	2022/11/04	2023/11/03
•	RF Connection Cable	HUBER+SUHNER	HTWE0062-01	N/A	N/A	2023/02/24	2024/02/23
•	RF Connection Cable	HUBER+SUHNER	HTWE0062-02	SUCOFLEX104	501184/4	2023/02/24	2024/02/23
•	Test Software	R&S	N/A	ES-K1	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	2018/09/27	2023/09/26
•	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2022/08/25	2023/08/24
•	Horn Antenna	ETS	HTWE0548	3117	240120	2022/05/20	2025/05/19
•	Horn Antenna	STEATITE	HTWE0549	QMS-00880	25661	2022/05/20	2025/05/19
•	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2022/11/04	2023/11/03
•	Broadband Pre- amplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2023/02/27	2024/02/26
•	RF Connection Cable	HUBER+SUHNER	HTWE0120-01	6m 18GHz S Serisa	N/A	2023/02/24	2024/02/23
•	RF Connection Cable	HUBER+SUHNER	HTWE0120-02	6m 3GHz RG Serisa	N/A	2023/02/24	2024/02/23
•	RF Connection Cable	HUBER+SUHNER	HTWE0119-05	6m 3GHz RG Serisa	N/A	2023/02/24	2024/02/23
•	RF Connection Cable	HUBER+SUHNER	HTWE0120-04	6m 3GHz RG Serisa	N/A	2023/02/24	2024/02/23
•	Test Software	Audix	N/A	E3	N/A	N/A	N/A

Report No.: CHTEW23040031 Page: 10 of 29 Date of issue: 2023-04-11

# 5. TEST CONDITIONS AND RESULTS

# 5.1. Antenna requirement

### Requirement

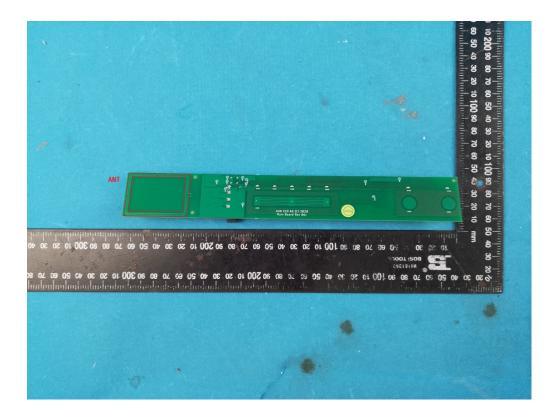
### FCC CFR Title 47 Part 15 Subpart C Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responseble 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.

## **TEST RESULT**

$oxed{oxed}$ Passed $oxed{oxed}$	Not Applicable
----------------------------------	----------------

The antenna type is a Loop Antenna , please refer to the below antenna photo.



Report No.: CHTEW23040031 Page: 11 of 29 Date of issue: 2023-04-11

#### 5.2. AC Power Conducted Emissions

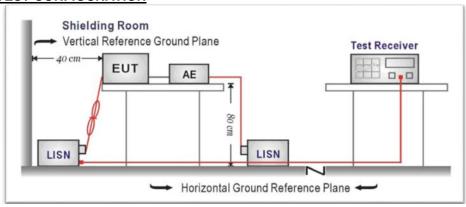
#### **LIMIT**

FCC CFR Title 47 Part 15 Subpart C Section 15.207:

Fraguency range (MHz)	Limit (c	lBuV)
Frequency range (MHz)	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

<sup>\*</sup> Decreases with the logarithm of the frequency.

#### **TEST CONFIGURATION**



#### **TEST PROCEDURE**

- 1. The EUT was setup according to ANSI C63.10
- The EUT was placed on a plat form of nominal size, 1 m by 1.5 m, raised 80 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 80 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.
- 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.

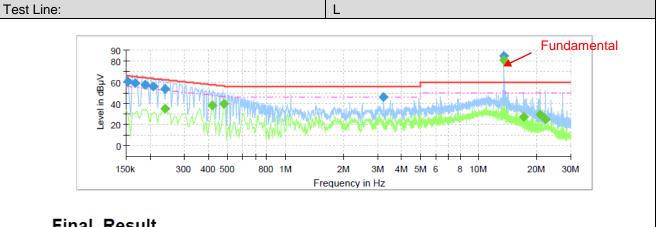
#### **TEST MODE:**

Please refer to the clause 4.1

#### **TEST RESULTS**

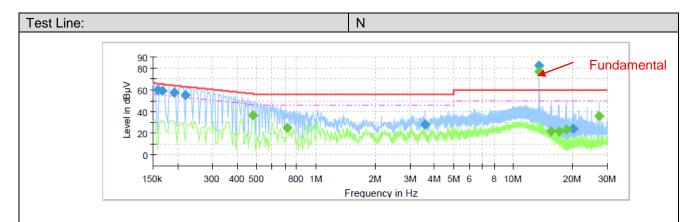
 Report No.: CHTEW23040031 Page: 12 of 29 Date of issue: 2023-04-11

## Data with antenna



# Final Result

<u> </u>	i iiai_ixesait					
Frequency	QuasiPeak	CAverage	Limit	Margin	Line	Corr.
(MHz)	(dBµV)	(dBµV)	(dBµV)	(dB)		(dB)
0.154000	60.19		65.78	5.59	L1	10.2
0.167500	58.97		65.08	6.11	L1	10.2
0.187500	57.38		64.15	6.77	L1	10.2
0.207500	55.84		63.30	7.47	L1	10.2
0.239500		34.86	52.11	17.25	L1	10.2
0.239500	53.54		62.11	8.57	L1	10.2
0.419500		38.39	47.46	9.07	L1	10.2
0.479500		39.73	46.35	6.62	L1	10.2
3.219500	46.15		56.00	9.85	L1	10.4
13.559500	84.77		60.00	-24.77	L1	10.6
13.559500		81.04	50.00	-31.04	L1	10.6
17.187500		26.97	50.00	23.03	L1	10.7
20.767500		29.83	50.00	20.17	L1	10.8
22.207500		24.88	50.00	25.12	L1	10.8

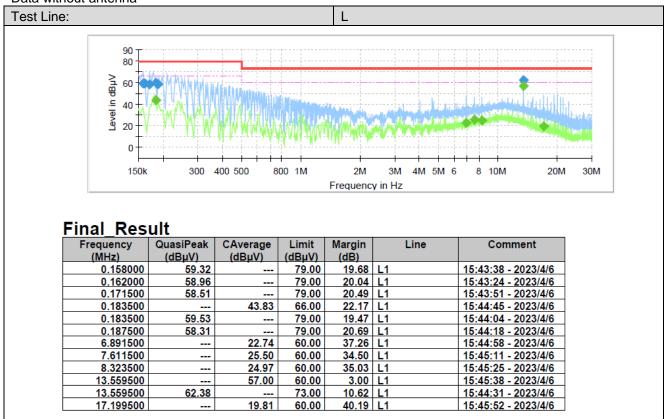


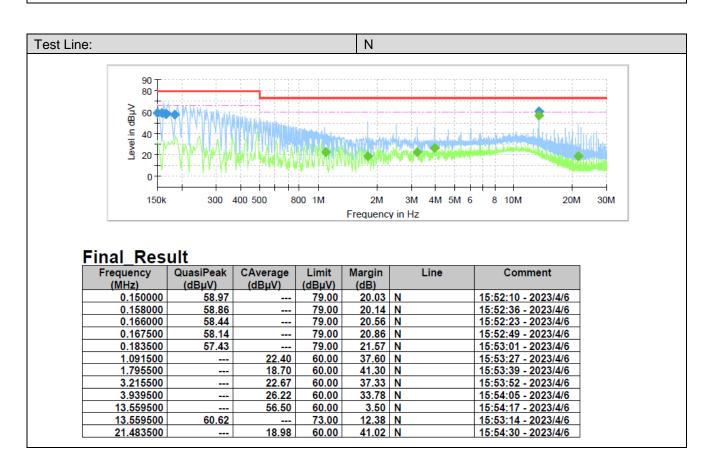
# Final Result

I IIIui_IXC3	iliai_i\esuit					
Frequency	QuasiPeak	CAverage	Limit	Margin	Line	Corr.
(MHz)	(dBµV)	(dBµV)	(dBµV)	(dB)		(dB)
0.158000	59.77		65.57	5.80	N	10.2
0.167500	58.92		65.08	6.16	N	10.2
0.191500	57.11		63.97	6.86	N	10.2
0.219500	54.76		62.84	8.08	N	10.2
0.479500		36.60	46.35	9.75	N	10.2
0.719500		25.00	46.00	21.00	N	10.2
3.587500	27.60		56.00	28.40	N	10.4
13.559500		76.80	50.00	-26.80	N	10.6
13.559500	82.00		60.00	-22.00	N	10.6
15.483500		21.88	50.00	28.12	N	10.6
17.099500		22.08	50.00	27.92	N	10.7
18.619500		23.27	50.00	26.73	N	10.7
20.063500	24.13		60.00	35.87	N	10.7
27.119500		35.80	50.00	14.20	N	10.7

Report No.: CHTEW23040031 Page: 13 of 29 Date of issue: 2023-04-11

### Data without antenna





Report No.: CHTEW23040031 Page: 14 of 29 Date of issue: 2023-04-11

# 5.3. Field Strength of the Fundamental and Mask Measurement

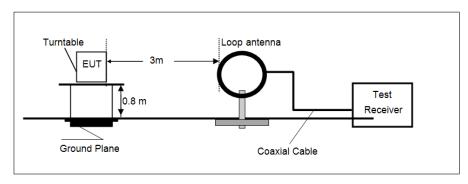
#### **LIMIT**

FCC CFR Title 47 Part 15 Subpart C Section 15.225(a)(b)(c)

Fundamental frequency(MHz)	Field strength of fundamental (uV/m @30m)	Field strength of fundamental (dBuV/m @3m)	
13.553-13.567	15848	124.0	
13.410-13.553&13.567-13.710	334	90.5	
13.110-13.410&13.710-14.010	106	80.5	

Note: Limit dBuV/m @3m =Limit dBuV/m @30m +40\*log(30/3)= Limit dBuV/m @30m + 40.

#### **TEST CONFIGURATION**



#### **TEST PROCEDURE**

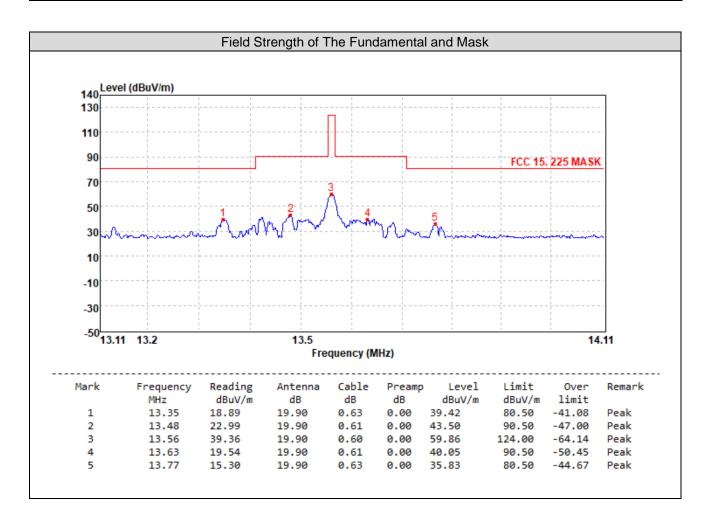
- 1. The EUT was setup and tested according to ANSI C63.10 requirements.
- 2. The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- 3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
- 4. 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. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10 on radiated measurement.

### **TEST MODE:**

Please refer to the clause 4.1

#### **TEST RESULTS**

 Report No.: CHTEW23040031 Page: 15 of 29 Date of issue: 2023-04-11



Report No.: CHTEW23040031 Page: 16 of 29 Date of issue: 2023-04-11

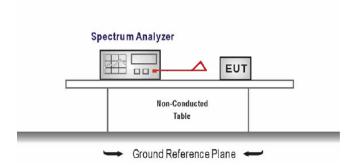
### 5.4. 20dB Bandwidth

#### **Limit**

### FCC CFR Title 47 Part 15 Subpart C Section 15.215

Intentional radiators must be designed to ensure that the 20dB emission bandwidth in the specific band 13.553~13.567MHz.

#### **TEST CONFIGURATION**



#### **TEST PROCEDURE**

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- 3. Use the following spectrum analyzer settings:
  - Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
  - RBW ≥ 1% of the 20 dB bandwidth, VBW ≥ RBW
  - Sweep = auto, Detector function = peak, Trace = max hold
- 4. Measure and record the results in the test report.

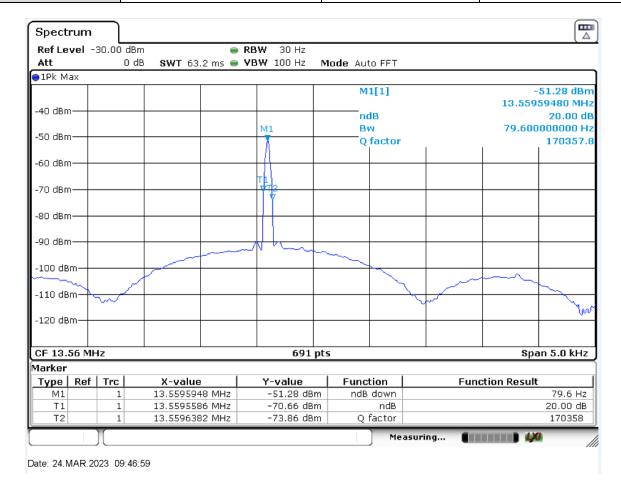
#### **TEST MODE:**

Please refer to the clause 4.1

### **TEST RESULTS**

 Report No.: CHTEW23040031 Page: 17 of 29 Date of issue: 2023-04-11

Frequency	Frequency Measurement data (MHz)		Result
f <sub>L</sub>	13.5595586	>13.553	PASS
f <sub>H</sub> 13.5596382		<13.567	PASS



Report No.: CHTEW23040031 Page: 18 of 29 Date of issue: 2023-04-11

# 5.5. Radiated Spurious Emission

### **LIMIT**

## FCC CFR Title 47 Part 15 Subpart C Section 15.209&15.225(d)

Limit for frequency below 30MHz:

Frequency	Limit (uV/m)	Measurement Distance(m)	Remark
0.009~0.490	2400/F(kHz)	300	Quasi-peak
0.490~1.705	24000/F(kHz)	30	Quasi-peak
1.705~30.0	30	30	Quasi-peak

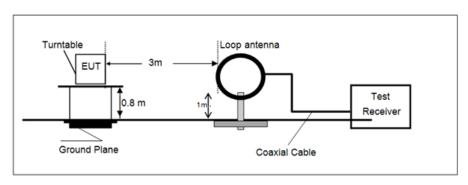
Note: Limit dBuV/m @3m = Limit dBuV/m @300m + 40\*log(300/3)= Limit dBuV/m @300m +80, Limit dBuV/m @3m = Limit dBuV/m @30m +40\*log(30/3)= Limit dBuV/m @30m + 40.

Limit for frequency above 30MHz:

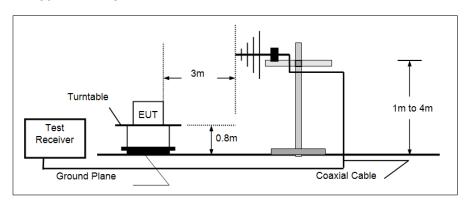
Frequency	Limit (dBuV/m@3m)	Remark
30MHz~88MHz	40.00	Quasi-peak
88MHz~216MHz	43.50	Quasi-peak
216MHz~960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
Above IGHZ	74.00	Peak

### **TEST CONFIGURATION**

#### • 9 kHz ~ 30 MHz



#### 30 MHz ~ 1 GHz



Report No.: CHTEW23040031 Page: 19 of 29 Date of issue: 2023-04-11

## **TEST PROCEDURE**

- 1. The EUT was setup and tested according to ANSI C63.10 requirements.
- 2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
- 4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
- 5. Set to the maximum power setting and enable the EUT transmit continuously.
- 6. Use the following spectrum analyzer settings
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Below 30MHz: RBW=10 kHz, VBW=30 kHz, Sweep=auto, Detector function=peak, Trace=max hold;
  - (3) 30MHz to 1 GHz: RBW=120 kHz, VBW=300 kHz, 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 guasi-peak detector and reported.

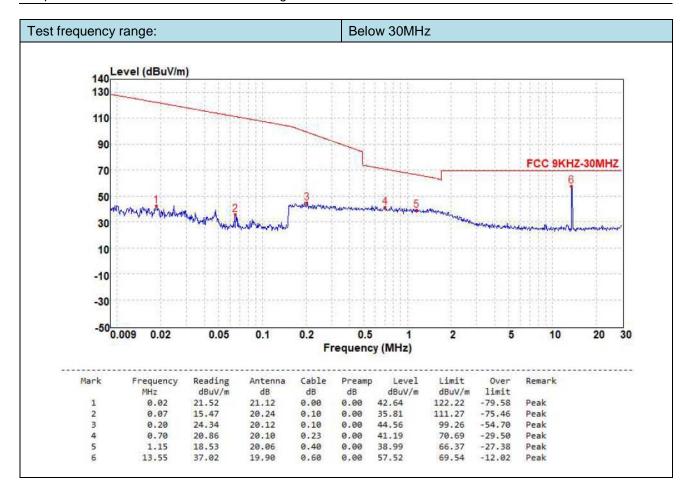
#### **TEST MODE:**

Please refer to the clause 4.1

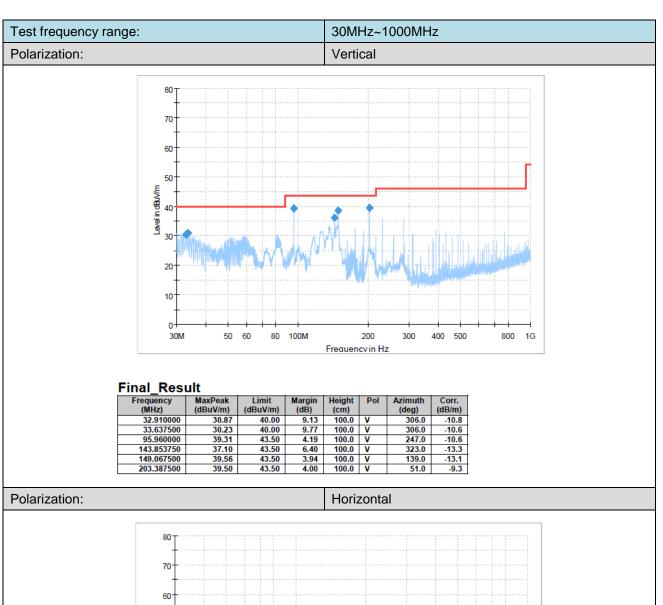
T	<u>ES</u>	<u>t f</u>	<u>₹E</u>	<u>SU</u>	<u> L</u>	<u>ΓS</u>

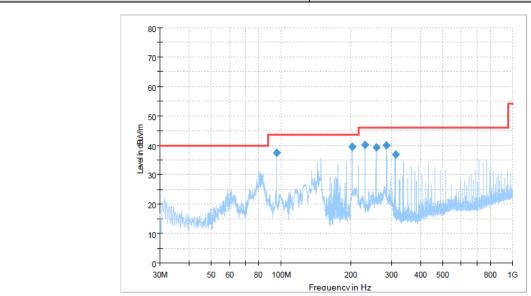
□ Passed	■ Not Applicable

Report No.: CHTEW23040031 Page: 20 of 29 Date of issue: 2023-04-11



Report No.: CHTEW23040031 Page: 21 of 29 Date of issue: 2023-04-11





## Final\_Result

MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
37.47	43.50	6.03	300.0	Н	191.0	-10.6
39.87	43.50	3.63	100.0	Н	106.0	-9.3
40.90	46.00	5.10	100.0	Н	306.0	-8.4
38.58	46.00	7.42	100.0	Н	299.0	-7.8
40.38	46.00	5.62	100.0	Н	130.0	-7.2
36.96	46.00	9.04	100.0	H	122.0	-6.0
	(dBuV/m) 37.47 39.87 40.90 38.58 40.38	(dBuV/m) (dBuV/m) 37.47 43.50 39.87 43.50 40.90 46.00 38.58 46.00 40.38 46.00	(dBuV/m)         (dBuV/m)         (dB)           37.47         43.50         6.03           39.87         43.50         3.63           40.90         46.00         5.10           38.58         46.00         7.42           40.38         46.00         5.62	(dBuV/m)         (dBuV/m)         (dB)         (cm)           37.47         43.50         6.03         300.0           39.87         43.50         3.63         100.0           40.90         46.00         5.10         100.0           38.58         46.00         7.42         100.0           40.38         46.00         5.62         100.0	(dBuV/m)         (dBuV/m)         (dB)         (cm)           37.47         43.50         6.03         300.0         H           39.87         43.50         3.63         100.0         H           40.90         46.00         5.10         100.0         H           38.58         46.00         7.42         100.0         H           40.38         46.00         5.62         100.0         H	(dBuV/m)         (dBuV/m)         (dB)         (cm)         (deg)           37.47         43.50         6.03         300.0         H         191.0           39.87         43.50         3.63         100.0         H         106.0           40.90         46.00         5.10         100.0         H         306.0           38.58         46.00         7.42         100.0         H         299.0           40.38         46.00         5.62         100.0         H         130.0

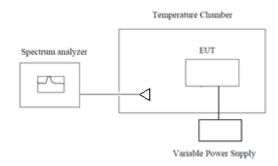
Report No.: CHTEW23040031 Page: 22 of 29 Date of issue: 2023-04-11

# 5.6. Frequency Stability

#### **LIMIT**

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  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.

#### **TEST CONFIGURATION**



### **TEST PROCEDURE**

- 1. The equipment under test was connected to an external power supply.
- 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.
- 3. The EUT was placed inside the temperature chamber.
- Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25<sup>™</sup>C operating frequency as reference frequency.
- 5. Turn EUT off and set the chamber temperature to  $-20^{\circ}$ C. After the temperature stabilized for approximately 30 minutes recorded the frequency.
- 6. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

#### **TEST MODE:**

Please refer to the clause 4.1

#### **TEST RESULTS**

Test Enviroment		Measurement	Frequency	Limit	Result	
Voltage	$Temperature(^{\circ}\!\mathbb{C})$	data (MHz)	Error (%)	Limit	Result	
DC 12V	-20	13.55959	-0.0030	±0.01%	Pass	
	-10	13.55956	-0.0032	±0.01%	Pass	
	0	13.55952	-0.0035	±0.01%	Pass	
	10	13.55954	-0.0034	±0.01%	Pass	
	20	13.55956	-0.0032	±0.01%	Pass	
	30	13.55958	-0.0031	±0.01%	Pass	
	40	13.55959	-0.0030	±0.01%	Pass	
	50	13.55960	-0.0029	±0.01%	Pass	
DC 10.8V	20	13.55962	-0.0028	±0.01%	Pass	
DC 13.2V	20	13.55954	-0.0034	±0.01%	Pass	

Report No.: CHTEW23040031 Page: 23 of 29 Date of issue: 2023-04-11

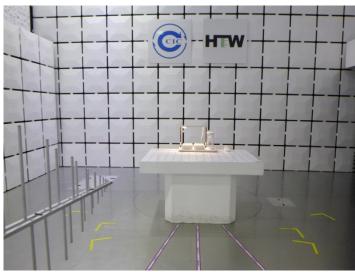
# 6. TEST SETUP PHOTOS

Conducted Emissions (AC Mains)

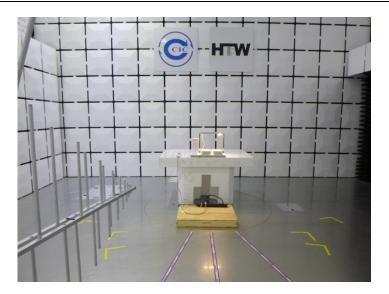


## Radiated Emissions





Report No.: CHTEW23040031 Page: 24 of 29 Date of issue: 2023-04-11



Report No.: CHTEW23040031 Page: 25 of 29 Date of issue: 2023-04-11

# 7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

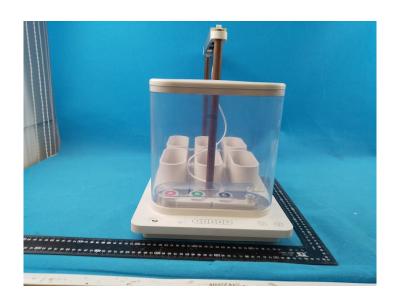
# 7.1. External Photos







Report No.: CHTEW23040031 Page: 26 of 29 Date of issue: 2023-04-11

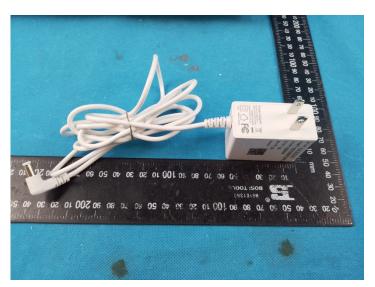






Report No.: CHTEW23040031 Page: 27 of 29 Date of issue: 2023-04-11



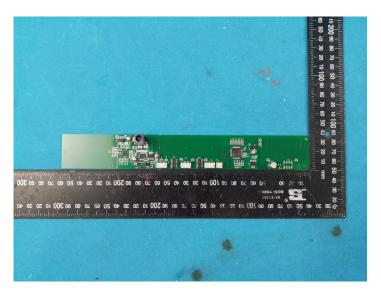


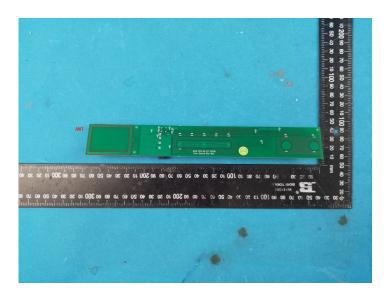


Report No.: CHTEW23040031 Page: 28 of 29 Date of issue: 2023-04-11

# 7.2. Internal Photos







Report No.: CHTEW23040031 Page: 29 of 29 Date of issue: 2023-04-11



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