TEST REPORT

Report No.: CHTEW23100002 Report Verification:

Project No...... SHT2308094202EW

FCC ID...... UUPNF-CB272

Applicant's name.....: Xinwei Electronic Co., Ltd., Quanzhou

Address....... Wan An Tang Xi Industrial Area, Luo Jiang, Quanzhou City,

Fujian Province, China

Test item description CB RADIO

Trade Mark Nanfone

Model/Type reference...... CB272

Listed Model(s) CB272A

Standard: FCC CFR Title 47 Part 95 Subpart D

Date of receipt of test sample.......... Sept.06, 2023

Date of testing...... Sept.06, 2023- Oct.07, 2023

Date of issue...... Oct.08, 2023

Result.....: PASS

Compiled by

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The test report merely correspond to the test sample.

Testing Laboratory Name:

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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 95 Subpart D: CB Radio Service
- FCC Rules Part 2: Frequency allocations and radio treaty matters; General rules and regulations
- ANSI/EIA/TIA-382-A: 1989: Minimum standards Citizens band radio service amplitude modulated (AM) transceivers operating in the 27MHz band.
- ANSI C63.26-2015: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

1.2. Report version

Revision No.	Date of issue	Description
N/A	2023-10-08	Original

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2. TEST DESCRIPTION

Report clause	Test Items	Standard Requirement	Result
5.1	Carrier Output Power	Part 95.967 Part 2.1046(a)	PASS
5.2	99% Occupied Bandwidth & 26dB bandwidth	Part 95.973 Part 2.1049	PASS
5.3	Emission Mask	Part 95.979(a)(1)(2)(3) Part 2.1049	PASS
5.4	Modulation response	Part 95.975 Part 2.1047	PASS
5.5	Frequency Stability V.S. Temperature	Part 95.965 Part 2.1055	PASS
5.6	Frequency Stability V.S. Voltage	Part 95.965 Part 2.1055	PASS
5.7	Transmit Conducted Spurious Emission	Part 95.979(a)(3) Part 2.1051	PASS
5.8	Transmit Radiated Spurious Emission	Part 95.979(a)(3) Part 2.1053	PASS

Note:

The measurement uncertainty is not included in the test result.

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3. **SUMMARY**

3.1. Client Information

Applicant:	Xinwei Electronic Co., Ltd., Quanzhou
Address:	Wan An Tang Xi Industrial Area, Luo Jiang, Quanzhou City, Fujian Province, China
Manufacturer:	Xinwei Electronic Co., Ltd., Quanzhou
Address:	Wan An Tang Xi Industrial Area, Luo Jiang, Quanzhou City, Fujian Province, China

3.2. Product Description

Main unit		
Name of EUT:	CB RADIO	
Trade mark:	Nanfone	
Model/Type reference:	CB272	
Listed mode(s):	CB272A	
Power supply:	DC 5.0V by Adapter DC 7.4V by Battery	
Hardware version:	V1.8	
Software version:	V1.2	

3.3. Radio Specification Description

Support Frequency Range:	26.965MHz ~ 27.405MHz
Channel spacing:	10kHz
Channel quantity:	40
Modulation Type:	AM / FM
Emission type:	A3E / F3E
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	Туре	Accreditation Number
Qualifications	FCC	762235

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4. TEST CONFIGURATION

4.1. Test frequency list

According to ANSI C63.26 section 5.1.2.1:

Measurements of transmitters shall be performed and, if required, reported for each frequency band in which the EUT can be operated with the device transmitting at the number of frequencies in each band specified in Table 2.

Frequency range over which EUT operates	Number of frequencies	Location in frequency range of operation	
1 MHz or less	1	Middle	
1 MHz to 10 MHz	2	1 near top and 1 near bottom	
More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom	

Frequency band (MHz)	Test Channel	Channel No.	Frequency (MHz)
	CH _L	1	26.965
26.965 ~27.405	CH _M	19	27.185
	CH _H	40	27.405

The Product channel frequency table:

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	26.965	21	27.215
2	26.975	22	27.225
3	26.985	23	27.255
4	27.005	24	27.235
5	27.015	25	27.245
6	27.025	26	27.265
7	27.035	27	27.275
8	27.055	28	27.285
9	27.065	29	27.295
10	27.075	30	27.305
11	27.085	31	27.315
12	27.105	32	27.325
13	27.115	33	27.335
14	27.125	34	27.345
15	27.135	35	27.355
16	27.155	36	27.365
17	27.165	37	27.375
18	27.175	38	27.385
19	27.185	39	27.395
20	27.205	40	27.405

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4.2. Test mode

Test mode	Transmitting
TX-CB	\checkmark

Note:

 $\sqrt{}$: is operation mode.

Modulation Type	Description
UM	Un-modulation Un-modulation
AM2	Apply a 1000 Hz tone and adjust the audio frequency generator to produce 50% modulation level.
AM6	Apply a 2400 Hz modulating signal to the transmitter from the audio frequency generator, and adjust the level to obtain 50% modulation level, then increase the level from the audio generator by 16 dB

Test item	Modulation Type	Test mode
Carrier Output Power (ERP)	UM	TX-CB
99% Occupied Bandwidth & 26dB bandwidth	AM6	TX-CB
Emission Mask	AM6	TX-CB
Modulation response	AM2	TX-CB
Frequency Stability V.S. Temperature	UM	TX-CB
Frequency Stability V.S. Voltage	UM	TX-CB
Transmit Conducted Spurious Emission	AM6	TX-CB
Transmit Radiated Spurious Emission	AM6	TX-CB

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:

Wheth	er support unit is used	d?		
✓	No			
Item	Equipment	Trade Name	Model No.	Other specification
1				
2				

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4.4. Testing environmental condition

Туре	Requirement	Actual
Temperature:	15~35°C	25°C
Relative Humidity:	25~75%	50%
Air Pressure:	860~1060mbar	1000mbar
	Normal voltage:	DC 7.40V
Test voltage:	Extreme lower voltage:	DC 6.66V
	Extreme upper voltage:	DC 8.14V

4.5. Measurement uncertainty

Test Item	Measurement Uncertainty
Frequency stability	25 Hz
Conducted Output Power	0.51dB
Occupied Bandwidth	35 Hz
Modulation Limiting	0.42 %
FM deviation	25 Hz
Audio level	0.62 dB
Conducted Spurious Emission	0.51dB
Radiated Spurious Emission 30~1000MHz	4.65 dB
Radiated Spurious Emission 1~18GHz	5.16 dB

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

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4.6. Equipment Used during the Test

•	RF 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)
•	Spectrum Analyzer	Agilent	HTWE0286	N9020A	MY50510187	2023/08/22	2024/08/21
•	Signal & Spectrum Analyzer	R&S	HTWE0262	FSW26	103440	2023/08/22	2024/08/21
•	RF Communication Test Set	HP	HTWE0038	8920A	3813A10206	2023/08/22	2024/08/21
•	Digital intercom communication tester	Aeroflex	HTWE0255	3920B	1001682041	2023/08/22	2024/08/21
•	RF Control Unit	Tonscend	HTWE0294	JS0806-2	N/A	2023/08/22	2024/08/21
•	Filter-VHF	Microwave	HTWE0309	N26460M1	498702	2023/08/22	2024/08/21
•	Filter-UHF	Microwave	HTWE0311	N25155M2	498704	2023/08/22	2024/08/21
•	Attenuator	JFW	HTWE0292	50FH-030-100	N/A	2023/05/15	2024/05/14
•	Attenuator	Eastsheep	HTWE0387	NCP-20-3-100W	/	2023/05/15	2024/05/14
•	Attenuator	Eastsheep	HTWE0388	NCP-10-3-100W	/	2023/05/15	2024/05/14
•	High Pass Filter	RFSYS	HTWE0390- 05	RFSYS-GTA10	200615-1-04	2023/05/15	2024/05/14
•	Filter-UHF	Microwave	HTWE0310	N26460M1	498703 DC1808	2023/05/15	2024/05/14
•	Filter-VHF	Microwave	HTWE0312	N25155M2	498704 DC1808	2023/05/15	2024/05/14
•	Test software	HTW	N/A	Radio ATE	N/A	N/A	N/A

•	Auxiliary Equipment							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)	
•	Climate chamber	ESPEC	HTWS0715	GPL-2	N/A	2023/08/21	2024/08/20	
•	DC Power Supply	Gwinstek	HTWE0274	SPS-2415	GER835793	N/A	N/A	

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•	Radiated Spurious Emission						
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	2023/4/17	2026/4/16
•	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2023/08/22	2024/08/21
•	Spectrum Analyzer	R&S	HTWE0385	N9020A	MY54486658	2023/08/22	2024/08/21
•	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0123	VULB9163	538	2021/4/6	2024/4/5
•	Horn Antenna	SCHWARZBECK	HTWE0126	BBHA 9120D	1011	2023/2/14	2026/2/13
•	Pre-Amplifer	CD	HTWE0071	PAP-0102	12004	2023/5/25	2024/5/24
•	Broadband Pre- amplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2023/5/25	2024/5/24
•	Test Software	Audix	N/A	E3	N/A	N/A	N/A

•	Auxiliary Equipment						
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
•	High pass filter	Wainwright	HTWE0297	WHKX3.0/18G-10SS	38	2023/05/15	2024/05/14
0	Band Stop filter	-	HTWE0039	N/A	N/A	2023/02/03	2024/02/02

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5. TEST CONDITIONS AND RESULTS

5.1. Carrier Output Power

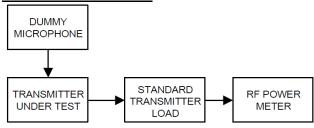
<u>LIMIT</u>

FCC Part 95.967, FCC Part2.1046(a)

Each CBRS transmitter type must be designed such that the transmitter power can not exceed the following limits:

- (a) When transmitting amplitude modulated (AM) voice signals or frequency modulated (FM) voice signals, the mean carrier power must not exceed 4 Watts.
- (b) When transmitting single sideband (SSB) voice signals, the peak envelope power must not exceed 12 Watts.

TEST CONFIGURATION



TEST PROCEDURE

- (1) Connect the equipment as illustrated
- (2) Correct for all losses in the RF path
- (3) Measure the transmitter output power
- (4) If the power output is adjustable, measurements shall be made for the highest and lowest power levels.

TEST MODE

Please reference to the section 4.2

TEST RESULTS

TEST DATA

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5.2. 99% Occupied Bandwidth & 26dB Bandwidth

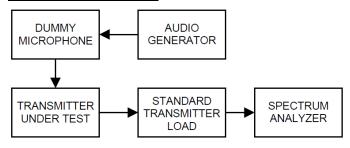
LIMIT

FCC Part 95.973, FCC Part 2.1049

Each CBRS transmitter type must be designed such that the occupied bandwidth does not exceed the authorized bandwidth for the emission type under test.

- (a) AM and FM. The authorized bandwidth for emission types A3E and F3E is 8 kHz.
- (b) SSB. The authorized bandwidth for emission types J3E, R3E, and H3E is 4 kHz.

TEST CONFIGURATION



TEST PROCEDURE

- Connect the equipment as illustrated
- 2) Spectrum set as follow:

Centre frequency = the nominal EUT channel center frequency,

The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of 1.5 x OBW is sufficient)

RBW = 1% to 5% of the anticipated OBW, VBW ≥ 3 × RBW, Sweep = auto,

Detector function = peak, Trace = max hold

- 3) Set 99% Occupied Bandwidth and 26dB Bandwidth
- 4) Measure and record the results in the test report.

TEST MODE

Please reference to the section 4.2

TEST RESULTS

TEST Data

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5.3. Emission Mask

LIMIT

FCC Part 95.979(a), FCC Part 2.1049

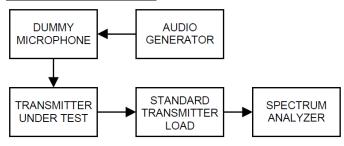
Each CBRS transmitter type must be designed to comply with the applicable unwanted emissions limits in this section.

The power of unwanted emissions must be attenuated below the transmitter output power in Watts (P) as specified in the applicable paragraphs listed in the following table:

Emission type	Paragraph
A3E, F3E	(1), (3), (5), (6)
H3E, J3E, R3E	(2), (4), (5), (6)

- (1) 25 dB (decibels) in the frequency band 4 kHz to 8 kHz removed from the channel center frequency;
- (2) 25 dB in the frequency band 2 kHz to 6 kHz removed from the channel center frequency;
- (3) 35 dB in the frequency band 8 kHz to 20 kHz removed from the channel center frequency;
- (4) 35 dB in the frequency band 6 kHz to 10 kHz removed from the channel center frequency;
- (5) 53 + 10 log (P) dB in any frequency band removed from the channel center frequency by more than 250% of the authorized bandwidth.
- (6) 60 dB in any frequency band centered on a harmonic (i.e., an integer multiple of two or more times) of the carrier frequency.

TEST CONFIGURATION



TEST PROCEDURE

- 1) Connect the equipment as illustrated.
- 2) Spectrum set as follow:

The power of unwanted emissions in the frequency bands specified in paragraphs (a)(1)

through (4) of this section is measured with a reference bandwidth of 300 Hz.

The power of unwanted emissions in the frequency ranges specified in paragraphs (a)(5) and (6) of this section is measured with a reference bandwidth of at least 30kHz.

Centre frequency = fundamental frequency, Sweep = auto,

Detector function = peak, Trace = max hold

- 3) Key the transmitter, and set the level of the unmodulated carrier to a full scale reference line. This is the 0dB reference for the measurement.
- 4) Apply Input Modulation Signal to EUT according to Section 4.2
- 5) Measure and record the results in the test report.

TEST MODE

Please reference to the section 4.2

TEST RESULTS

TEST Data

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5.4. Modulation response

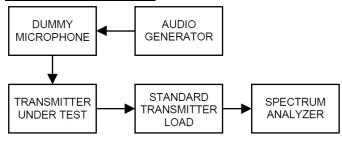
LIMIT

FCC Part 95.975, FCC Part 2.1047(b)

Each CBRS transmitter type must be designed such that the modulation characteristics are in compliance with the rules in this section.

- (a) When emission type A3E is transmitted with voice modulation, the modulation percentage must be at least 85%, but not more than 100%.
- (b) When emission type A3E is transmitted by a CBRS transmitter having a transmitter output power of more than 2.5 W, the transmitter must contain a circuit that automatically prevents the modulation percentage from exceeding 100%.
- (c) When emission type F3E is transmitted the peak frequency deviation shall not exceed ±2 kHz.

TEST CONFIGURATION



TEST PROCEDURE

Audio frequency response

- Connect the equipment as illustrated.
- 2) Adjust to deliver 50% modulation at the audio frequency that produces the maximum modulation level
- 3) Record the modulation input level (mV) and use this level as 0dB for plotting modulation limiting.
- 4) Vary the modulating frequency from 100Hz to 10000Hz and record the input levels necessary to maintain a constant 50% modulation.
- 5) Graph the audio level in dB relative to the 0dB reference level as a function of the modulating frequency. Record audio frequency where it is impossible to perform the measurement.

Modulation limiting

- 1) Connect the equipment as illustrated.
- Adjust to deliver 50% modulation at the audio frequency that produces the maximum modulation level
- 3) Record the modulation input level (mV) and use this level as 0dB for plotting modulation limiting.
- 4) Increment the audio signal level to 40dB above the reference level. Record the modulation level (%).
- 5) Repeat the measurements using a 400Hz and a 2500Hz sinusoidal audio signal, record the modulation level (%), perform for both positive and negative modulation.

TEST MODE

Please reference to the section 4.2

TEST RESULTS

TEST Data

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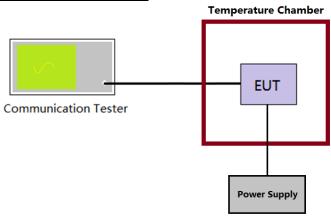
5.5. Frequency stability VS Temperature

LIMIT

FCC Part 95.965:

Each CBRS transmitter type must be designed such that the transmit carrier frequency (or in the case of SSB transmissions, the reference frequency) remains within 50 parts-per-million of the channel center frequencies specified in § 95.963 under all normal operating conditions.

TEST CONFIGURATION



TEST PROCEDURE

- 1) The EUT output port was connected to communication tester.
- 2) The EUT was placed inside the temperature chamber.
- 3) Turn EUT off and set the chamber temperature to -30 °C. After the temperature stabilized for approximately 30 minutes recorded the frequency as MCF_{MHz} .
- 4) Calculate the ppm frequency error by the following: ppm error=(MCF_{MHZ}/ACF_{MHZ}-1)*10⁶ where MCF_{MHz} is the Measured Carrier Frequency in MHz ACF_{MHz} is the Assigned Carrier Frequency in MHz
- 5) Repeat step 3 measure with 10°C increased per stage until the highest temperature of +50°C reached.

TEST MODE

Please reference to the section 4.2

TEST RESULTS

TEST Data

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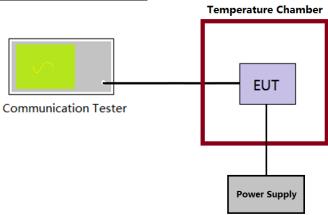
5.6. Frequency stability VS Voltage

LIMIT

FCC Part 95.965:

Each CBRS transmitter type must be designed such that the transmit carrier frequency (or in the case of SSB transmissions, the reference frequency) remains within 50 parts-per-million of the channel center frequencies specified in § 95.963 under all normal operating conditions.

TEST CONFIGURATION



TEST PROCEDURE

- 1) The EUT output port was connected to communication tester.
- 2) The EUT was placed inside the temperature chamber at 25°C
- 3) Record the carrier frequency of the transmitter as MCF_{MHZ}
- 4) Calculate the ppm frequency error by the following: ppm error=(MCF_{MHZ}/ACF_{MHZ}-1)*10⁶ where MCF_{MHz} is the Measured Carrier Frequency in MHz ACF_{MHz} is the Assigned Carrier Frequency in MHz
- 5) Repeat step 3 measure with varied ±15% of the nominal value measured at the input to the EUT

TEST MODE

Please reference to the section 4.2

TEST RESULTS

TEST Data

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5.7. Transmit Conducted Spurious Emission

LIMIT

FCC Part 95.979(a), FCC Part 2.1049

Each CBRS transmitter type must be designed to comply with the applicable unwanted emissions limits in this section.

The power of unwanted emissions must be attenuated below the transmitter output power in Watts (P) as specified in the applicable paragraphs listed in the following table:

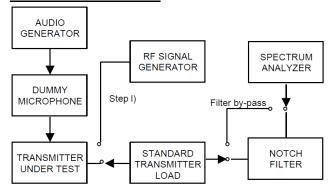
Emission type	Paragraph
A3E, F3E	(1), (3), (5), (6)
H3E, J3E, R3E	(2), (4), (5), (6)

- (1) 25 dB (decibels) in the frequency band 4 kHz to 8 kHz removed from the channel center frequency;
- (2) 25 dB in the frequency band 2 kHz to 6 kHz removed from the channel center frequency;
- (3) 35 dB in the frequency band 8 kHz to 20 kHz removed from the channel center frequency;
- (4) 35 dB in the frequency band 6 kHz to 10 kHz removed from the channel center frequency;
- (5) 53 + 10 log (P) dB in any frequency band removed from the channel center frequency by more than 250% of the authorized bandwidth.
- (6) 60 dB in any frequency band centered on a harmonic (i.e., an integer multiple of two or more times) of the carrier frequency.

Note:

Limit (dBm)=EL-[53+10log(P)] = 10log(P*1000)-[53+10log(P)] = 10log(P)+30-53-10log(P)=-23dBm EL is the emission level of the Output Power expressed in dBm

TEST CONFIGURATION



TEST PROCEDURE

- 1. Connect the equipment as illustrated, with the notch filter by-passed.
- 2. Apply Input Modulation Signal to EUT according to Section 3.4
- Adjust the spectrum analyzer for the following settings:

Below 1GHz: RBW=100kHz, VBW=300kHz

Above 1GHz: RBW=1MHz, VBW=3MHz

Detector=Peak, Sweep time=Auto, Trace=Max hold

- 4. Scan frequency range up to 10th harmonic.
- 5. Record the frequencies and levels of spurious emissions

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5.8. Transmit Radiated Spurious Emission

LIMIT

FCC Part 95.979(a), FCC Part 2.1049

Each CBRS transmitter type must be designed to comply with the applicable unwanted emissions limits in this section.

The power of unwanted emissions must be attenuated below the transmitter output power in Watts (P) as specified in the applicable paragraphs listed in the following table:

Emission type	Paragraph
A3E, F3E	(1), (3), (5), (6)
H3E, J3E, R3E	(2), (4), (5), (6)

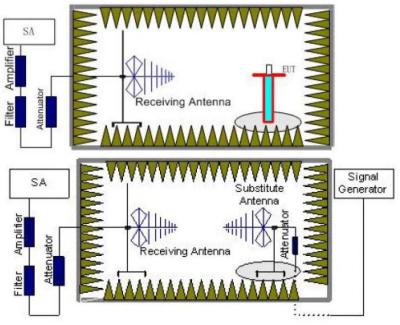
- (1) 25 dB (decibels) in the frequency band 4 kHz to 8 kHz removed from the channel center frequency;
- (2) 25 dB in the frequency band 2 kHz to 6 kHz removed from the channel center frequency;
- (3) 35 dB in the frequency band 8 kHz to 20 kHz removed from the channel center frequency;
- (4) 35 dB in the frequency band 6 kHz to 10 kHz removed from the channel center frequency;
- (5) 53 + 10 log (P) dB in any frequency band removed from the channel center frequency by more than 250% of the authorized bandwidth.
- (6) 60 dB in any frequency band centered on a harmonic (i.e., an integer multiple of two or more times) of the carrier frequency.

Note:

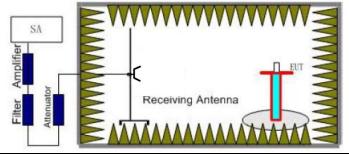
Limit (dBm)=EL-[53+10log(P)] = $10\log(P^*1000)$ -[53+10log(P)] = $10\log(P)$ +30-53-10log(P)=-23dBm EL is the emission level of the Output Power expressed in dBm,

TEST CONFIGURATION

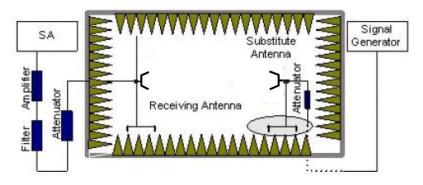
Below 1GHz:



Above 1GHz:



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TEST PROCEDURE

- 1) The measuring distance of at 3m shall be used for measurements
- 2) The transmitter shall be terminated in a nonradiating dummy load, the EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The table was rotated 360 degrees to determine the position of the highest radiation
- 3) The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4) The spectrum setting as follow
 - Below 1 GHz: RBW=120kHz, VBW=300kHz, Sweep time=auto, Detector =peak, Trace=max hold; Above 1GHz: RBW=1MHz, VBW=3MHz Sweep time=auto, Detector=peak, Trace=max hold
- 5) Record the field strength level of the EUT from the spectrum
- 6) The substitution antenna is substituted for EUT at the same position and signals generator (S.G) export the CW signal to the substitution antenna via a TX cable. The receiver antenna shall be moved height from 1m to 4m to find the highest radiation. Adjust the S.G. output level and repeat this step to get the same field strength level as the EUT
- 7) The EIRP level = S.G. output level(dBm)- TX cable(dB) + Substituted Antenna Gain(dBi)
- 8) Record the ERP value for below 1GHz, ERP value = EIRP-2.15; Record the EIRP for above 1GHz.

TEST MODE

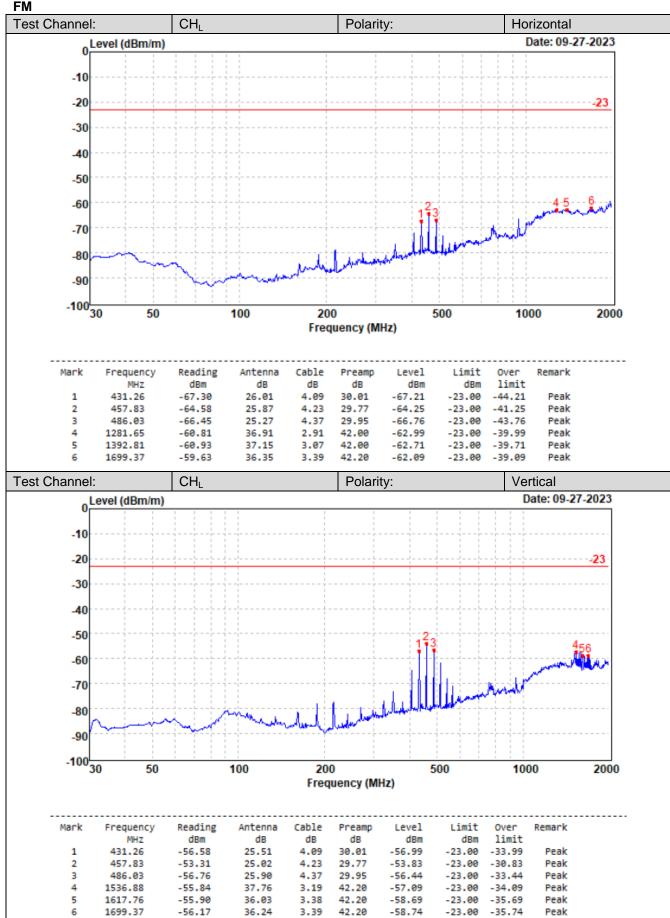
Please reference to the section 4.2

TEST RESULTS

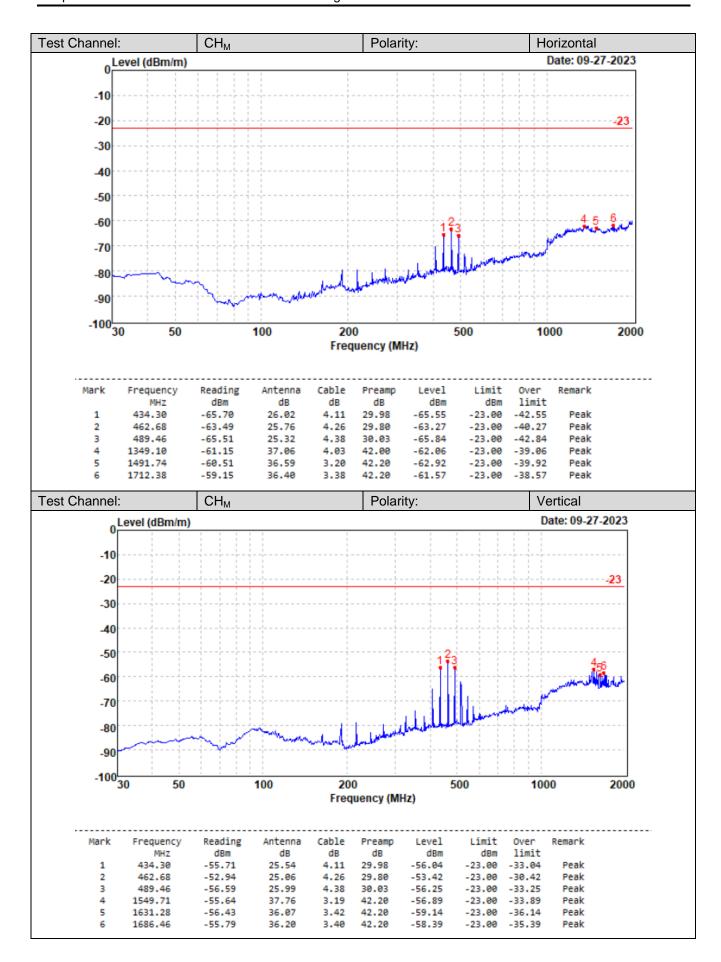
For 9 kHz ~ 30 MHz

The EUT was pre-scanned this frequency band, found the radiated level 20dB lower than the limit, so don't show data on this report.

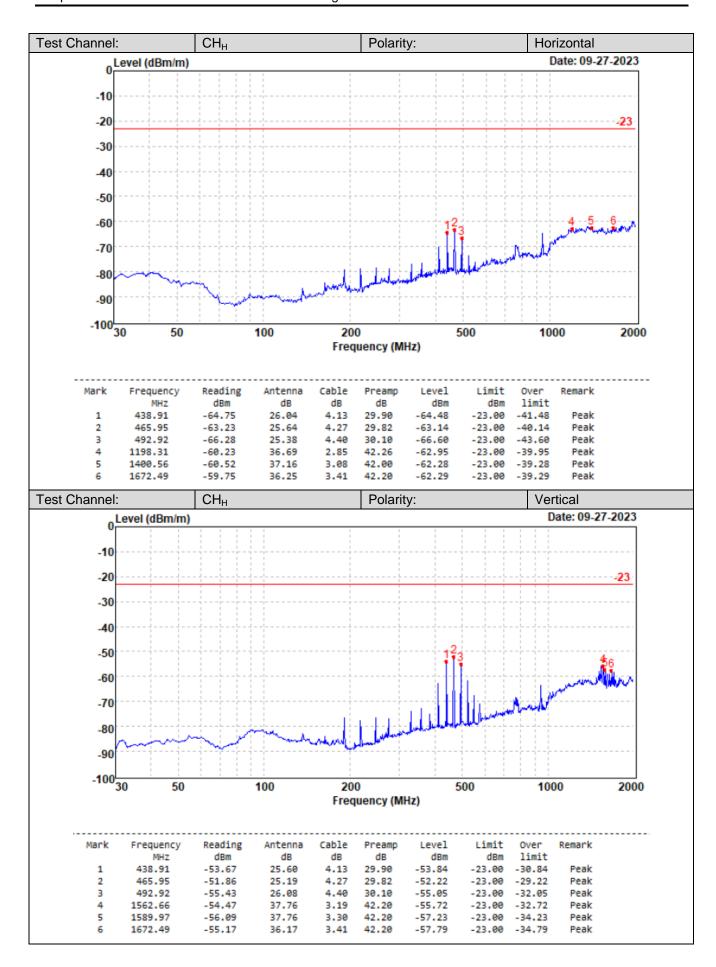
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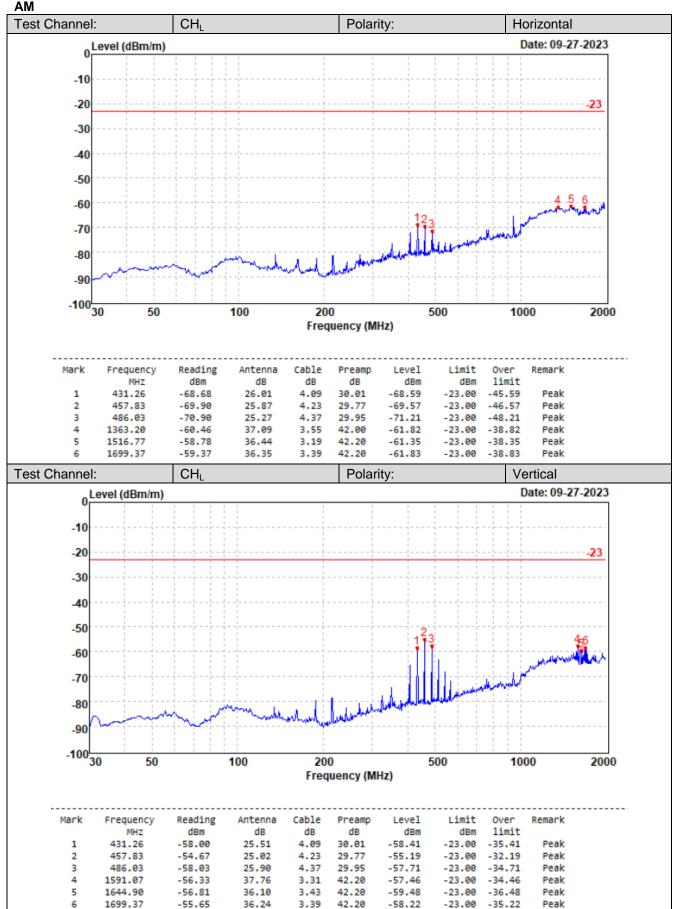
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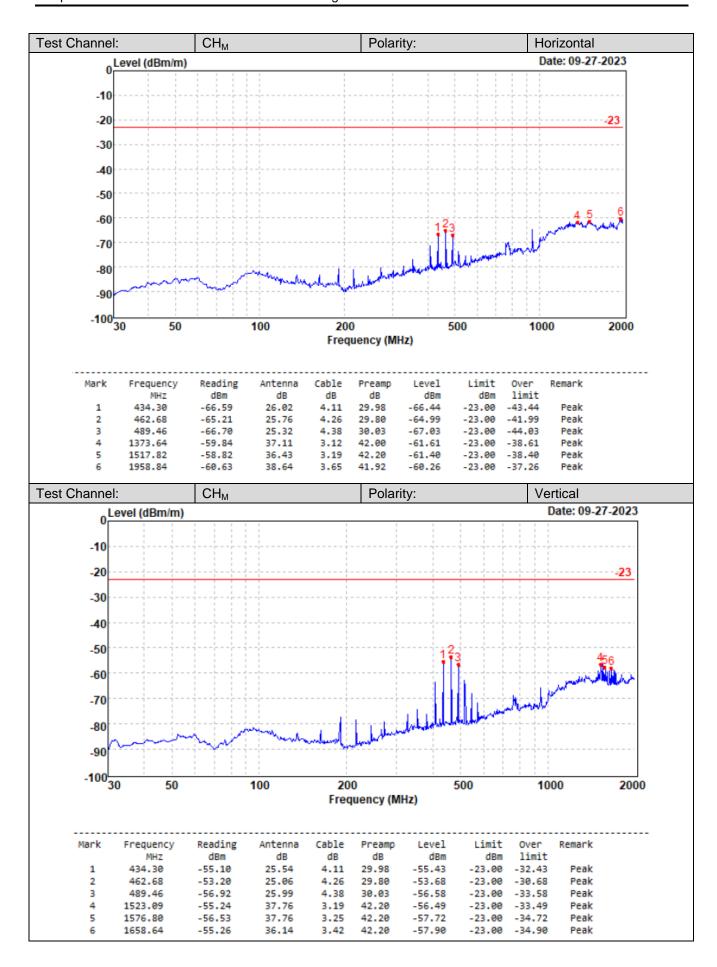
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