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TEST REPORT

Report No. ..... :	**CHTEW22030016** Report Verification:
Project No.....:	**SHT2201025501EW**
FCC ID..... :	**2A3OORT47V**
Applicant's name..... :	**Shenzhen Ysair Technology Co., LTD**
Address.....:	6/F, building 6, Yunli intelligent park, No. 3, Changfa Middle Road, Yangmei community, Bantian street, Longgang District, Shenzhen,Guangdong,China
Test item description ..... :	**Two Way Radio**
Trade Mark .....:	RETEVIS
Model/Type reference.....:	RT47V
Listed Model(s) .....:	RT21V,RB27V
Standard ..... :	**FCC CFR Title 47 Part 95 Subpart J**
Date of receipt of test sample.....:	Jan.14, 2022
Date of testing.....:	Jan.14, 2022 -Mar.01, 2022
Date of issue.....:	Mar.02, 2022
Result..... .....:	**PASS**

Compiled by (Position - Printed name - Signature):	File administrators Fanghui Zhu	Fanghui Zhu
Supervised by (Position - Printed name - Signature):	Project Engineer Cheng Xiao	ChengXiao
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 Rules Part 95: PERSONAL RADIO SERVICES

– FCC Rules Part 2: Frequency allocations and radio treaty matters; General rules and regulations

– ANSI C63.26-2013: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

– 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 40 GHz

1.2. Report version

Revision No.	Date of issue	Description
N/A	2022-03-02	Original

2. TEST DESCRIPTION

Report clause	Test Items	Standard Requirement	Result
5.1	Carrier Output Power (ERP)	Part 95.2767 Part 2.1046(a)	PASS
5.2	99% Occupied Bandwidth & 26dB bandwidth	Part 95.2773 Part 2.1049	PASS
5.3	Emission Mask	Part 95.2779 Part 2.1049	PASS
5.4	Audio Low Pass Filter Response	Part 95.2775 Part 2.1047(a)	PASS
5.5	Frequency Stability V.S. Temperature	Part 95.2765 Part 2.1055	PASS
5.6	Frequency Stability V.S. Voltage	Part 95.2765 Part 2.1055	PASS
5.7	Transmit Radiated Spurious Emission	Part 95.2779 Part 2.1049	PASS

Note:

– The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Client Information

Applicant:	Shenzhen Ysair Technology Co., LTD
Address:	6/F, building 6, Yunli intelligent park, No. 3, Changfa Middle Road, Yangmei community, Bantian street, Longgang District, Shenzhen,Guangdong,China
Manufacturer:	Shenzhen Ysair Technology Co., LTD
Address:	6/F, building 6, Yunli intelligent park, No. 3, Changfa Middle Road, Yangmei community, Bantian street, Longgang District, Shenzhen,Guangdong,China

3.2. Product Description

Name of EUT:	Two Way Radio
Trade Mark:	RETEVIS
Model No.:	RT47V
Listed Model(s):	RT21V,RB27V
Power supply:	DV3.7V
Battery information:	Model: BL47 Voltage: 3.7 V Capacity: 1100mAh Power: 4.07Wh
Adapter information:	Model: DSA-5PF07-05 FUS 050100 Input: 100-240Va.c., 50/60Hz 0.2A Output: 5.0Vd.c., 1.0A
Hardware version:	A190101-BKEM2U-V1.0
Software version:	V1.37f

3.3. Radio Specification Description

Support Frequency Range:	151.820MHz, 151.880MHz, 151.940MHz, 154.570MHz, 154.600MHz
Modulation Type:	FM
Emission Designator: *1	11K0F3E
Antenna Type:	detachable
Antenna Gain:	2.15dBi

Note:

(1) *1 According to FCC Part 2.202 requirements, the Necessary Bandwidth is calculated as follows:

- For FM Voice Modulation

  Channel Spacing = 12.5 KHz, D = 2.5 KHz max, K = 1, M = 3 KHz

  Bn = 2M + 2DK = 2*3 + 2*2.5*1 = **11 KHz**

  Emission designation: 11K0F3E

(2) The device only supports voice communication.

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. 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

Test Channel	Test Frequency (MHz)	Type
CH_{M1}	151.880	12.5kHz
CH_{H}	154.600	12.5kHz

4.2. Test mode

Test mode	Transmitting	Receiving	Analog Voice/FM
			MURS
TX	√		√

Note:

√: is operation mode.

Modulation Type	Description
UM	Un-modulation
AM2	Apply a 1000 Hz tone and adjust the audio frequency generator to produce 20% of the rated system deviation.
AM6	Apply a 1000 Hz modulating signal to the transmitter from the audio frequency generator, and adjust the level to obtain 60% of full rated system deviation, then increase the level from the audio generator by 20 dB
AM5	Modulate the transmitter with a 2500 Hz sine wave at an input level 16 dB greater than that necessary to produce 50% of rated system deviation.

Test item	Modulation Type	Test mode
Output Power(ERP)	UM	TX-MURS
99% Occupied Bandwidth & 26dB bandwidth	AM6	TX-MURS
Emission Mask	AM5	TX-MURS
Modulation Limit	AM6	TX-MURS
Audio Frequency Response	AM2	TX-MURS
Frequency Stability VS Temperature	UM	TX-MURS
Frequency Stability VS Voltage	UM	TX-MURS
Transmit Radiated Spurious Emission	AM5	TX-MURS

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	Equipment	Trade Name	Model No.	FCC ID	Power cord
1					
2					

4.4. Testing environmental condition

Type	Requirement	Actual
Temperature:	15~35°C	25°C
Relative Humidity:	25~75%	50%
Air Pressure:	860~1060mbar	1000mbar
Test voltage:	Normal voltage:	3.7V
	Extreme lower voltage:	3.145
	Extreme upper voltage:	4.25

4.5. Measurement uncertainty

Test Item	Measurement Uncertainty
Frequency stability	25 Hz
Carrier output power (ERP)	2.20 dB
Occupied Bandwidth	35 Hz
Modulation Limiting	0.42 %
FM deviation	25 Hz
Audio level	0.62 dB
Radiated Spurious Emission 30~1000MHz	4.65 dB
Radiated Spurious Emission 1~18GHz	5.16 dB
AC power line Conducted Emission 9KHz-30MHz	3.39 dB

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

4.6. Equipment Used during the Test

● TS8613 Test system							
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	2021/09/13	2022/09/12
●	Signal & Spectrum Analyzer	R&S	HTWE0262	FSW26	103440	2021/09/13	2022/09/12
●	RF Communication Test Set	HP	HTWE0038	8920A	3813A10206	2021/09/13	2022/09/12
●	Digital intercom communication tester	Aeroflex	HTWE0255	3920B	1001682041	2021/09/13	2022/09/12
●	Signal Generator	R&S	HTWE0191	SML02	100507	2021/09/13	2022/09/12
●	RF Control Unit	Tonscend	HTWE0294	JS0806-2	N/A	2021/09/13	2022/09/12
○	Filter-VHF	Microwave	HTWE0309	N26460M1	498702	N/A	N/A
○	Filter-UHF	Microwave	HTWE0311	N25155M2	498704	N/A	N/A
○	Power Divider	Microwave	HTWE0043	OPD1040-N-4	N/A	N/A	N/A
○	Attenuator	JFW	HTWE0292	50FH-030-100	N/A	2021/05/17	2022/05/16
○	Attenuator	JFW	HTWE0293	50-A-MFN-20	0322	2021/05/17	2022/05/16
●	Test software	HTW	N/A	Radio ATE	N/A	2021/05/17	2022/05/16

● 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	HTWE0254	GPL-2	N/A	2021/9/14	2022/9/13
●	DC Power Supply	Gwinstek	HTWE0274	SPS-2415	GER835793	N/A	N/A

● 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	2018/09/27	2022/09/26
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2021/09/13	2022/09/12
●	Loop Antenna	R&S	HTWE0170	HFH2-Z2	100020	2021/04/06	2024/04/05
●	Broadband Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2020/04/27	2023/04/26
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0123	VULB9163	538	2021/04/06	2024/04/05
●	Horn Antenna	SCHWARZBECK	HTWE0126	9120D	1011	2020/04/01	2023/03/31
●	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2021/11/05	2022/11/04
●	Broadband Preamplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2021/03/05	2022/03/04
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-01	6m 18GHz S Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-02	6m 3GHz RG Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0119-05	6m 3GHz RG Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-04	6m 3GHz RG Serisa	N/A	2021/02/26	2022/02/25
●	EMI Test Software	Audix	N/A	E3	N/A	N/A	N/A

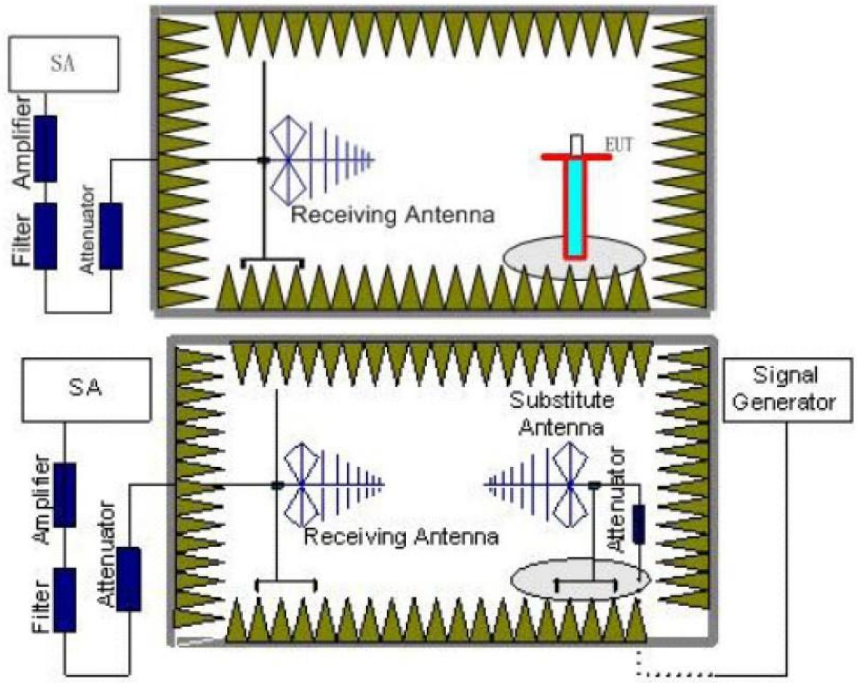
5. TEST CONDITIONS AND RESULTS

5.1. Carrier Output Power (ERP)

LIMIT

FCC Part FCC Part 95.2767, FCC Part 2.1046
Each MURS transmitter type must be designed such that the transmitter power output does **not exceed 2Watts** under normal operating conditions

TEST CONFIGURATION



TEST PROCEDURE

1) The measuring distance of at 3m shall be used for measurements
2) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. 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 for Equivalent Isotropically Radiated Power (EIRP) is RBW = 100kHz, VBW = 300kHz. Detector Mode is Positive Peak
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) The ERP level = EIRP-2.15

TEST MODE

Please reference to the section 4.2

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

TEST Data

Please refer to appendix A on the appendix report

5.2. 99% Occupied Bandwidth & 26dB Bandwidth

LIMIT

FCC Part 95.2773, FCC Part 2.1049

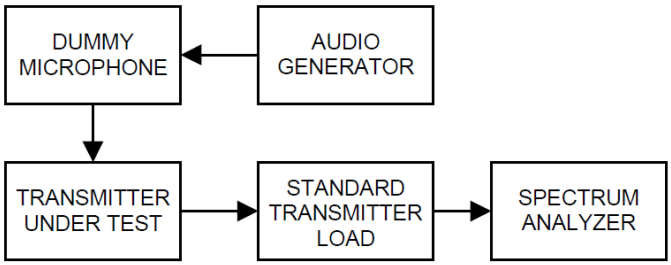
Each MURS transmitter type must be designed to meet the emission bandwidth limitations in this section.

a) The occupied bandwidth of emissions transmitted on the center frequencies 151.820 MHz, 151.880 MHz, and 151.940MHz **must not exceed 11.25 kHz**.

b) The occupied bandwidth of emissions transmitted on the center frequencies 154.570 MHz and 154.600MHz must **not exceed 20.0 kHz.**

c) The occupied bandwidth of type A3E emissions must **not exceed 8.0 kHz.**

TEST CONFIGURATION



TEST PROCEDURE

1) 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 × 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

☒ **Passed** ☐ **Not Applicable**

TEST Data

Please refer to appendix B on the appendix report

5.3. Emission Mask

LIMIT

FCC Part 95.2779, FCC Part 2.1049

Channel center frequencies (MHz)	Paragraphs
151.820, 151.880 and 151.940	(1), (2).
154.570 & 154.600, with audio filter	(3), (4), (7).
154.570 & 154.600, without audio filter	(5), (6), (7).

Attenuation requirements: The power of unwanted emissions must be attenuated below the transmitter output power in Watts (P) by at least:

(1) **7.27(fd−2.88 kHz) dB** on any frequency removed from the channel center frequency by a displacement frequency (fd in kHz) that is more than 5.625 kHz, but not more than 12.5 kHz.

(2) **50 + 10 log (P) dB or 70 dB**, whichever is the lesser attenuation, on any frequency removed from the channel center frequency by more than 12.5 kHz.

(3) **25 dB** on any frequency removed from the channel center frequency by more than 10 kHz, but not more than 20 kHz.

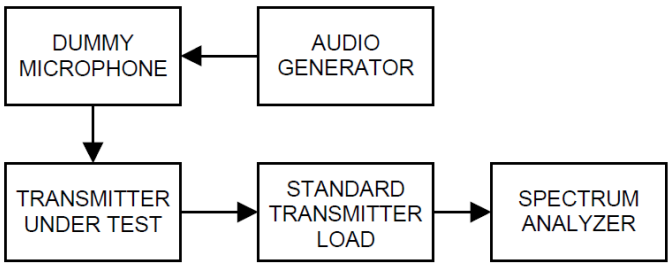
(4) **35 dB** on any frequency removed from the channel center frequency by more than 20 kHz, but not more than 50 kHz.

(5) **83 log (fd ÷ 5) dB** on any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) that is more than 5 kHz, but not more than 10 kHz.

(6) **29 log (fd2 ÷ 11) dB or 50 dB**, whichever is the lesser attenuation on any frequency removed from the channel center frequency by a displacement frequency (fd in kHz) that is more than 10 kHz, but not more than 50 kHz.

(7) **43 + 10 log(P) dB** on any frequency removed from the channel center frequency by more than 50 kHz.

TEST CONFIGURATION



TEST PROCEDURE

1) Connect the equipment as illustrated.
2) Spectrum set as follow:
   Centre frequency = fundamental frequency, RBW=300Hz, VBW=1000Hz, 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

☒ **Passed** ☐ **Not Applicable**

TEST Data

Please refer to appendix C on the appendix report

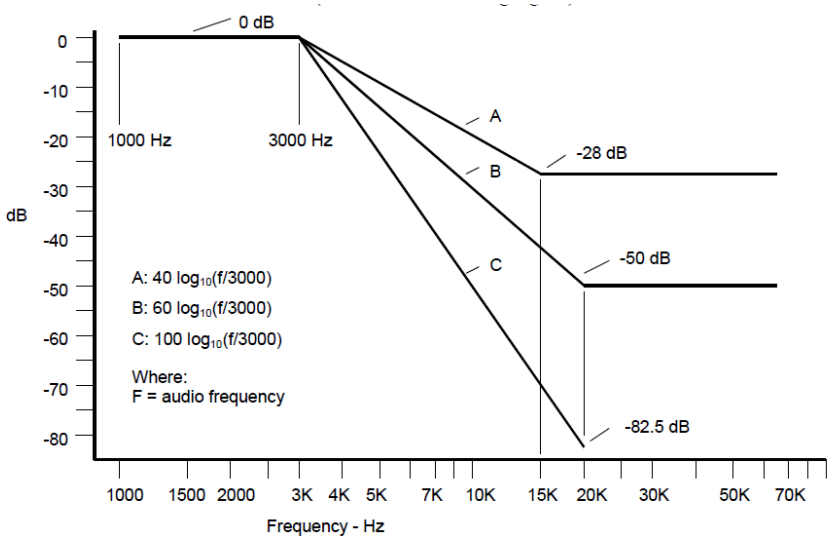
5.4. Audio Low Pass Filter Response

LIMIT

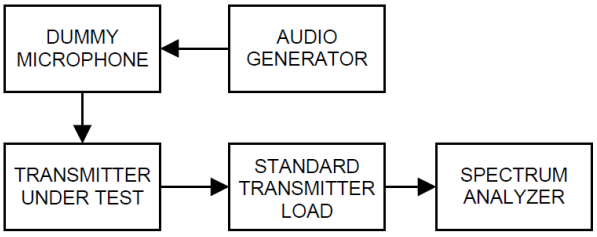
FCC Part 95.2775:

(a) The audio filter must be between the modulation limiter and the modulated stage of the transmitter.

(b) At any frequency (f in kHz) between 3 and 15 kHz, the filter must have an attenuation of at least 40 log (f/3) dB more than the attenuation at 1 kHz. Above 15 kHz, it must have an attenuation of at least 28 dB more than the attenuation at 1 kHz.



TEST CONFIGURATION



TEST PROCEDURE

1) Configure the EUT as shown in figure.
2) Apply a 1000 Hz tone from the audio signal generator and adjust the level per manufacturer's specifications. Record the dB level of the 1000 Hz tone as LEV_{REF}.
3) Set the audio signal generator to the desired test frequency between 3000 Hz and the upper low pass filter limit. Record the dB level at the test frequency as $LEV_{FREQ.}$
4) Calculate the audio frequency response at the test frequency as:
low pass filter response = LEV_{FREQ} - LEV_{REF}

TEST MODE

Please reference to the section 4.2

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

TEST Data

Please refer to appendix D on the appendix report

5.5. Frequency stability VS Temperature

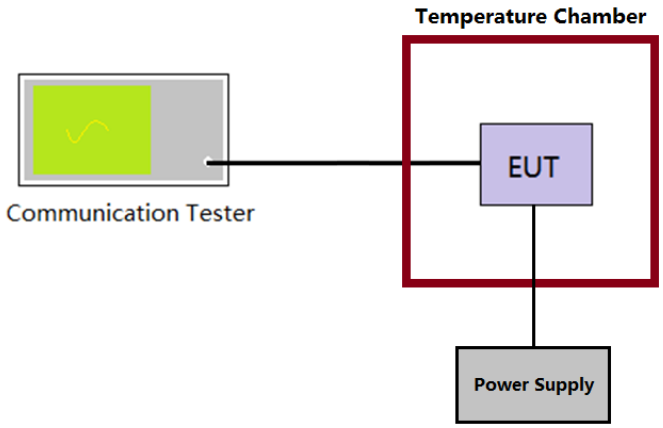
LIMIT

FCC Part 95.2765:

a) MURS transmitters that operate with an emission bandwidth of 6.25 kHz or less must be designed such that the carrier frequencies remain within ±**2.0 parts-per-million (ppm)** of the channel center frequencies during normal operating conditions.

b) MURS transmitters that operate with an emission bandwidth greater than 6.25 kHz must be designed such that the carrier frequencies remain within ±**5.0 ppm** of the channel center frequencies during 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=$(MCF_{MHZ}/ACF_{MHZ}-1)*10^6$
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

☒ **Passed** ☐ **Not Applicable**

TEST Data

Please refer to appendix E on the appendix report

5.6. Frequency stability VS Voltage

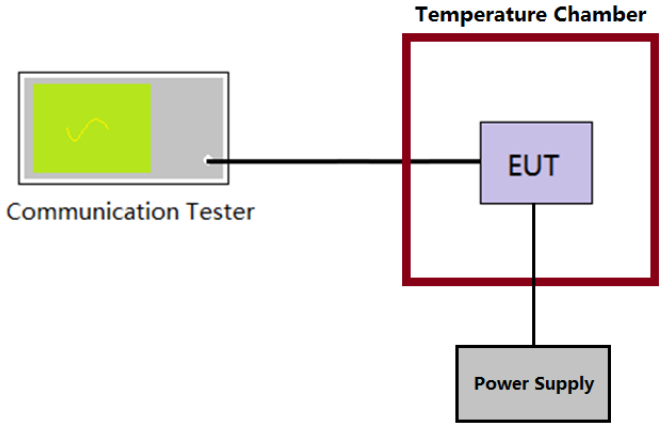
LIMIT

FCC Part 95.2765:

a) MURS transmitters that operate with an emission bandwidth of 6.25 kHz or less must be designed such that the carrier frequencies remain within ±**2.0 parts-per-million (ppm)** of the channel center frequencies during normal operating conditions.

b) MURS transmitters that operate with an emission bandwidth greater than 6.25 kHz must be designed such that the carrier frequencies remain within ±**5.0 ppm** of the channel center frequencies during 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=$(MCF_{MHZ}/ACF_{MHZ}-1)*10^6$
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

☒ **Passed** ☐ **Not Applicable**

TEST Data

Please refer to appendix F on the appendix report

5.7. Transmit Radiated Spurious Emission

LIMIT

FCC Part 95.2779, FCC Part 2.1049

Channel center frequencies (MHz)	Paragraphs
151.820, 151.880 and 151.940	(1), (2).
154.570 & 154.600, with audio filter	(3), (4), (7).
154.570 & 154.600, without audio filter	(5), (6), (7).

Attenuation requirements: The power of unwanted emissions must be attenuated below the transmitter output power in Watts (P) by at least:

(1) **7.27(fd−2.88 kHz) dB** on any frequency removed from the channel center frequency by a displacement frequency (fd in kHz) that is more than 5.625 kHz, but not more than 12.5 kHz.

(2) **50 + 10 log (P) dB or 70 dB**, whichever is the lesser attenuation, on any frequency removed from the channel center frequency by more than 12.5 kHz.

(3) **25 dB** on any frequency removed from the channel center frequency by more than 10 kHz, but not more than 20 kHz.

(4) **35 dB** on any frequency removed from the channel center frequency by more than 20 kHz, but not more than 50 kHz.

(5) **83 log (fd ÷ 5) dB** on any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) that is more than 5 kHz, but not more than 10 kHz.

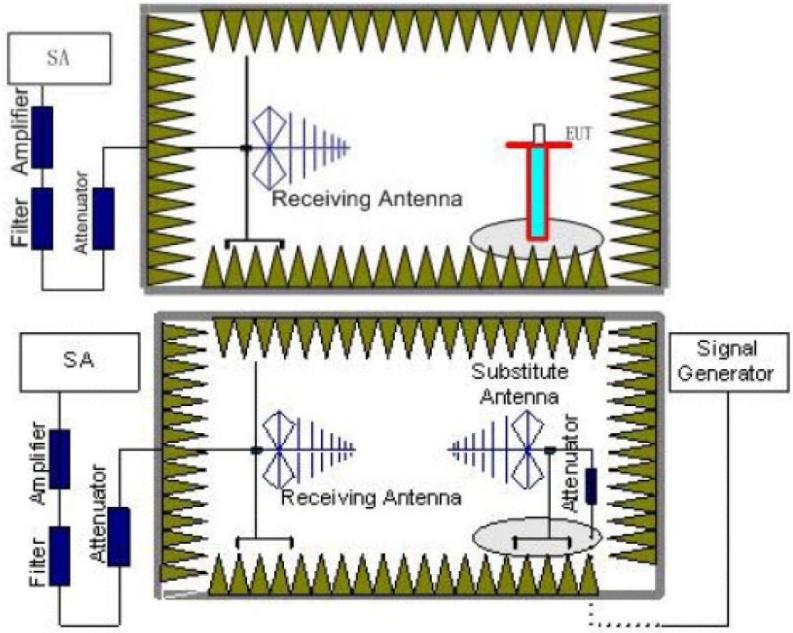
(6) **29 log (fd2 ÷ 11) dB or 50 dB**, whichever is the lesser attenuation on any frequency removed from the channel center frequency by a displacement frequency (fd in kHz) that is more than 10 kHz, but not more than 50 kHz.

(7) **43 + 10 log(P) dB** on any frequency removed from the channel center frequency by more than 50 kHz.

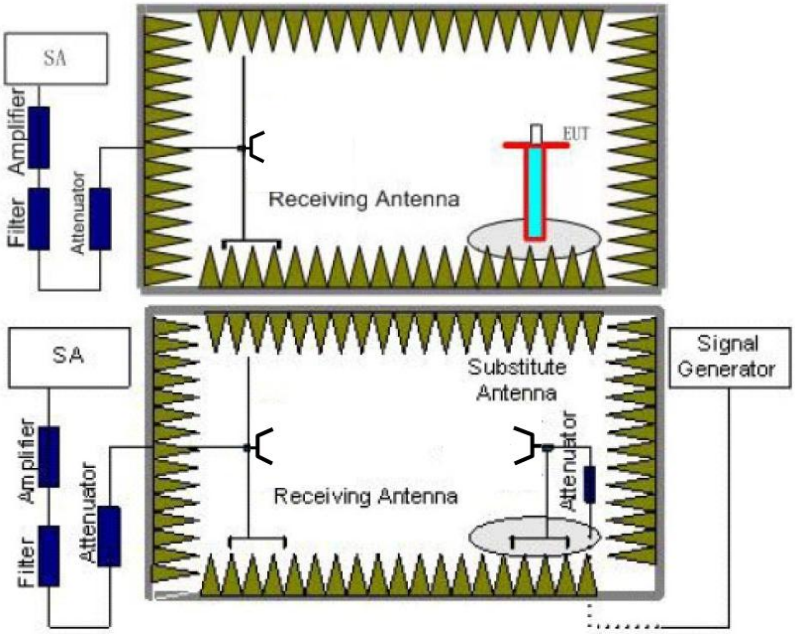
Note:
(2): **Limit (dBm)**=EL-[50+10log(P)] =10log(P*1000)-[50+10log(P)] = 10log(P)+30-50-10log(P)**=-20dBm**
(7): **Limit (dBm)**=EL-[43+10log(P)] =10log(P*1000)-[43+10log(P)] = 10log(P)+30-43-10log(P)**=-13dBm**
EL is the emission level of the Output Power expressed in dBm,

TEST CONFIGURATION

Below 1GHz:



Above 1GHz:



TEST PROCEDURE

1) The measuring distance of at 3m shall be used for measurements
2) 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.

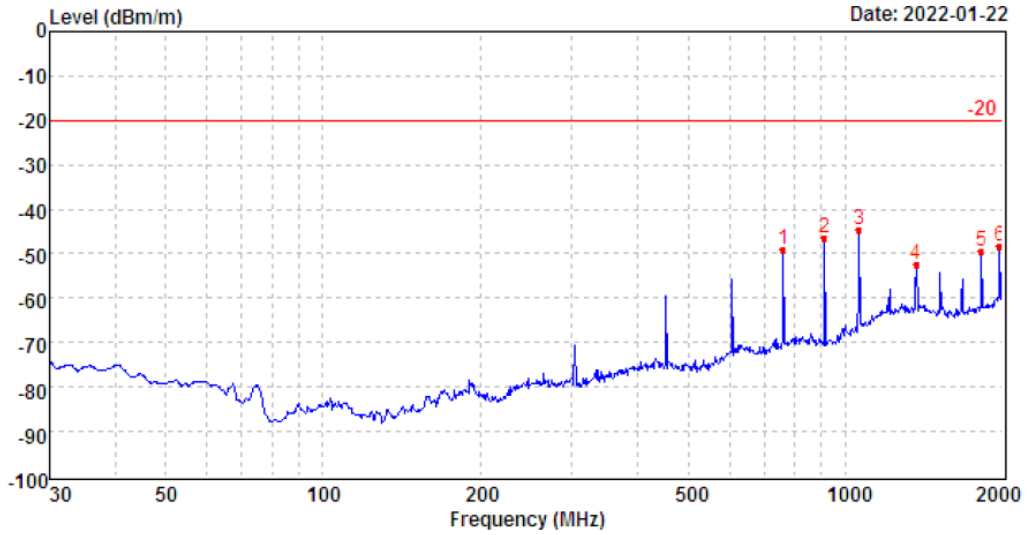
TEST MODE

Please reference to the section 4.2

TEST RESULTS

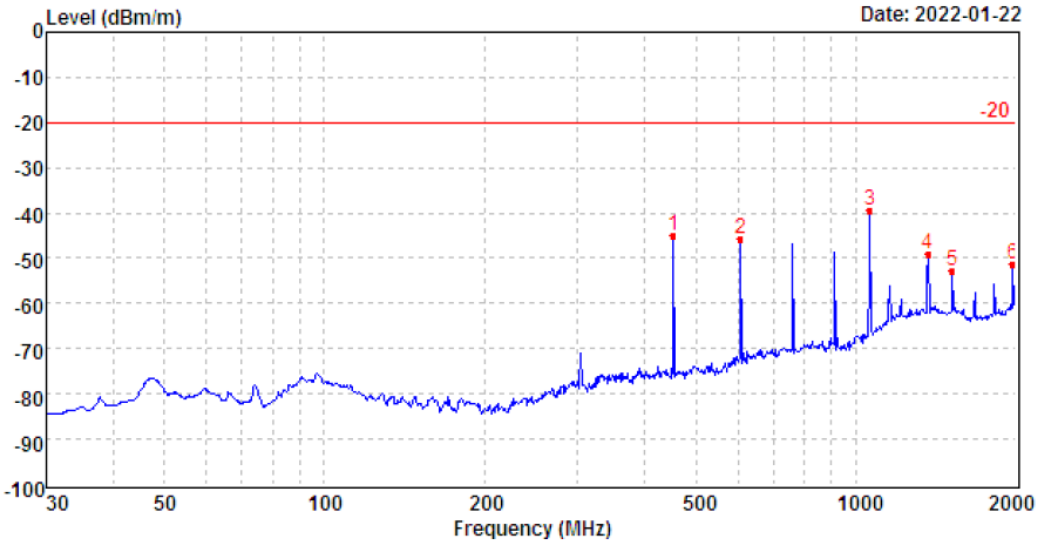
☒ **Passed** ☐ **Not Applicable**

Test Channel:	CH_L	Polarity:	Horizontal



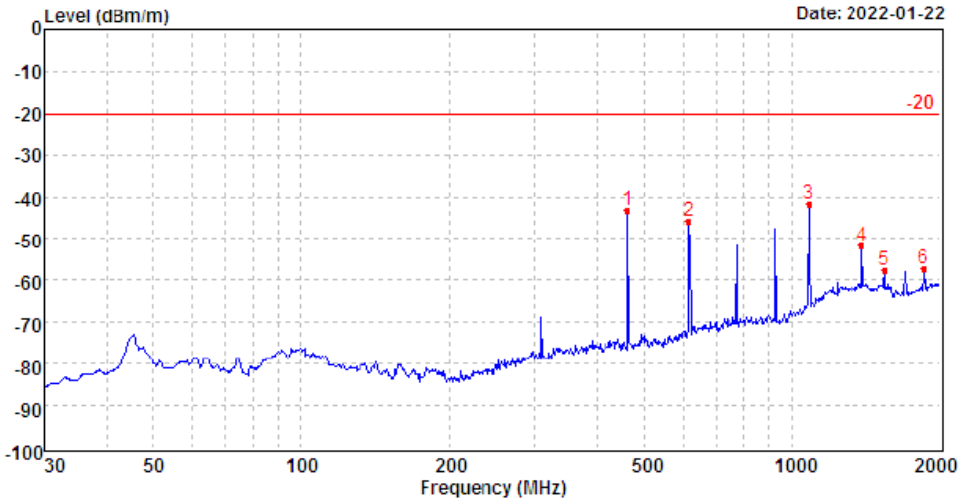
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	759.66	-58.69	29.15	10.44	30.15	-49.25	-20.00	-29.25	Peak
2	912.08	-56.70	29.28	10.89	29.91	-46.44	-20.00	-26.44	Peak
3	1062.16	-44.57	33.20	3.64	37.03	-44.76	-20.00	-24.76	Peak
4	1366.04	-57.42	37.09	4.13	36.40	-52.60	-20.00	-32.60	Peak
5	1822.60	-54.14	37.00	4.79	37.07	-49.42	-20.00	-29.42	Peak
6	1973.83	-55.02	38.81	4.98	37.20	-48.43	-20.00	-28.43	Peak

Test Channel:	CH_L	Polarity:	Vertical



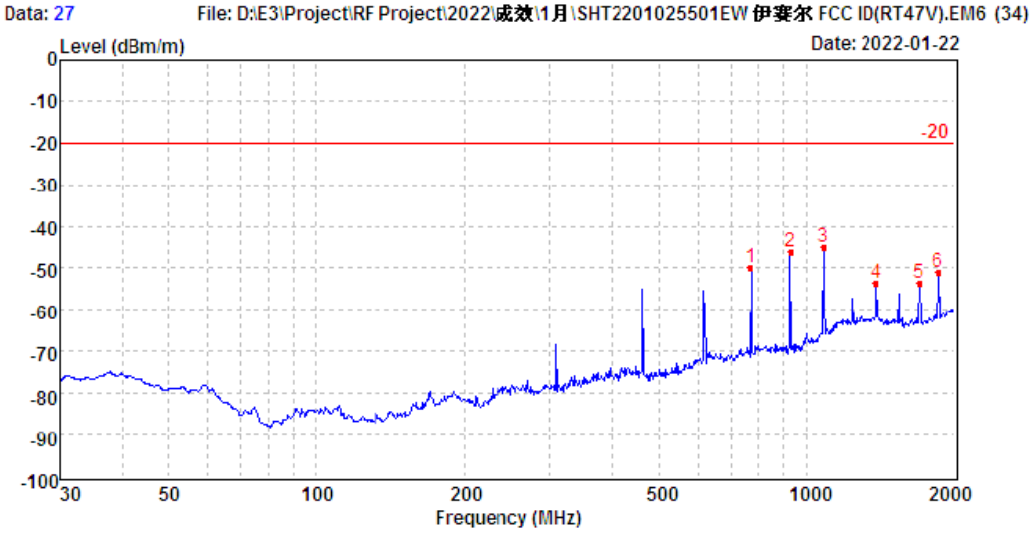
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	454.62	-49.15	25.12	9.39	30.43	-45.07	-20.00	-25.07	Peak
2	606.57	-52.86	27.55	9.94	30.43	-45.80	-20.00	-25.80	Peak
3	1062.16	-39.04	32.99	3.64	37.03	-39.44	-20.00	-19.44	Peak
4	1366.04	-54.43	37.61	4.13	36.40	-49.09	-20.00	-29.09	Peak
5	1518.87	-57.94	37.76	4.35	36.91	-52.74	-20.00	-32.74	Peak
6	1973.83	-57.05	38.08	4.98	37.20	-51.19	-20.00	-31.19	Peak

Test Channel:	CH_H	Polarity:	Vertical



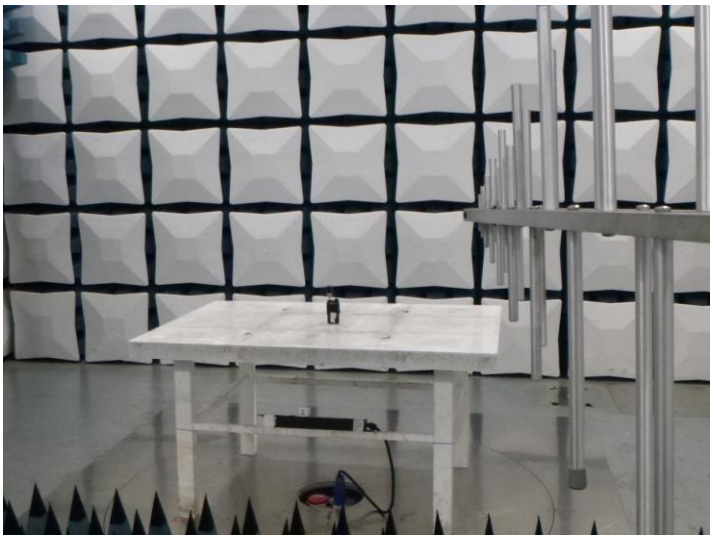
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	464.31	-47.16	25.12	9.44	30.44	-43.04	-20.00	-23.04	Peak
2	617.32	-53.20	27.75	9.97	30.34	-45.82	-20.00	-25.82	Peak
3	1082.23	-41.81	33.58	3.67	37.01	-41.57	-20.00	-21.57	Peak
4	1390.88	-56.88	37.72	4.16	36.53	-51.53	-20.00	-31.53	Peak
5	1546.49	-62.68	37.76	4.39	36.93	-57.46	-20.00	-37.46	Peak
6	1855.75	-61.84	37.00	4.83	37.22	-57.23	-20.00	-37.23	Peak

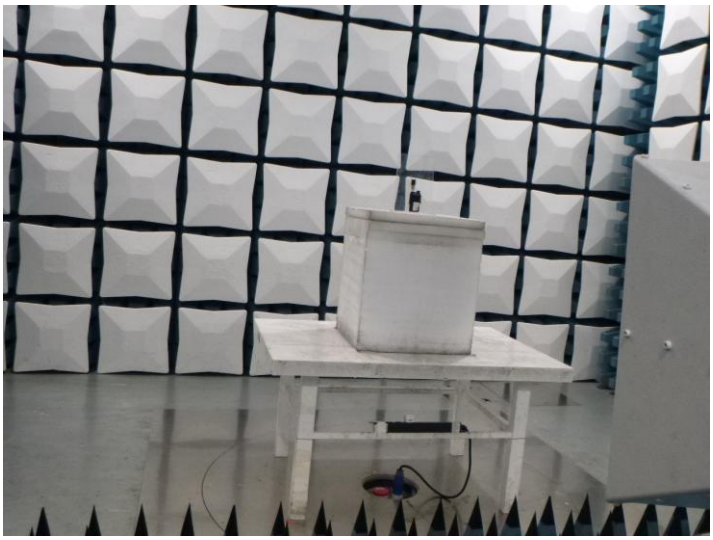
Test Channel:	$CH_{H:}$	Polarity:	Horizontal



Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	773.13	-59.87	29.57	10.49	30.08	-49.89	-20.00	-29.89	Peak
2	928.26	-56.41	29.16	10.94	29.83	-46.14	-20.00	-26.14	Peak
3	1082.23	-45.26	33.74	3.67	37.01	-44.86	-20.00	-24.86	Peak
4	1391.85	-58.19	37.14	4.16	36.53	-53.42	-20.00	-33.42	Peak
5	1700.55	-57.23	36.35	4.61	37.23	-53.50	-20.00	-33.50	Peak
6	1855.75	-55.99	37.41	4.83	37.22	-50.97	-20.00	-30.97	Peak

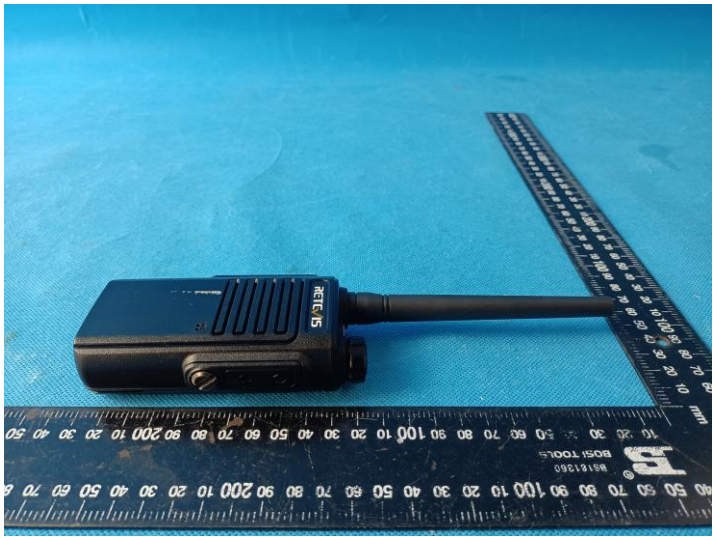
6. TEST SETUP PHOTOS





7. EXTERANAL AND INTERNAL PHOTOS

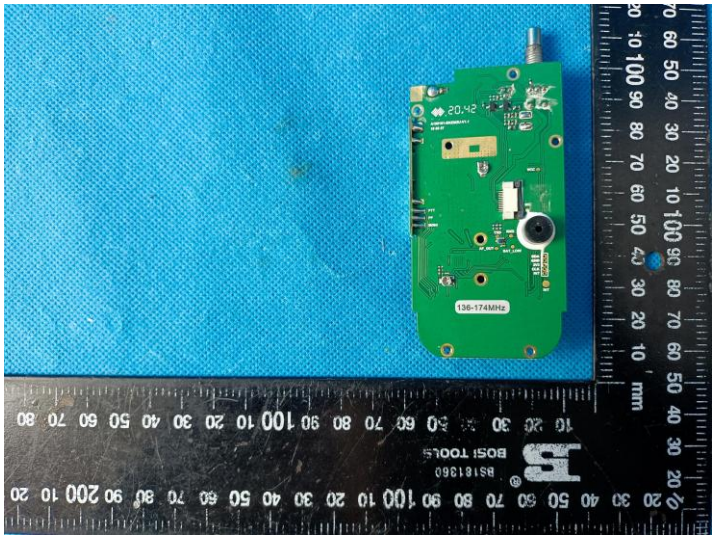
7.1. EXTERANAL PHOTOS

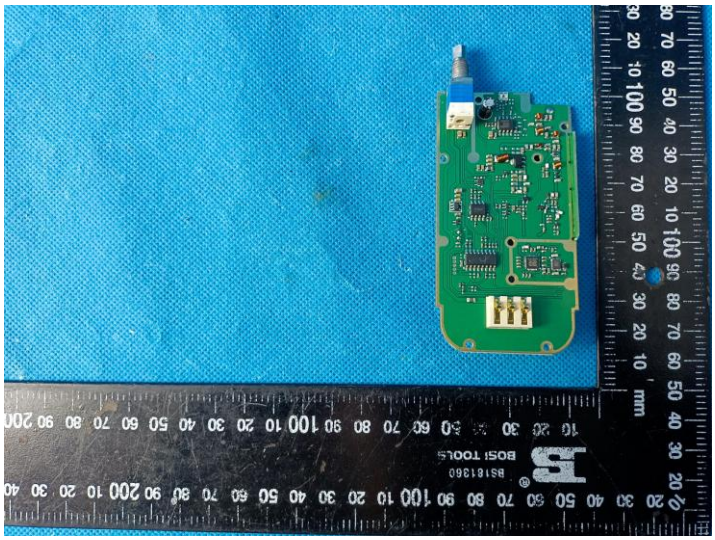


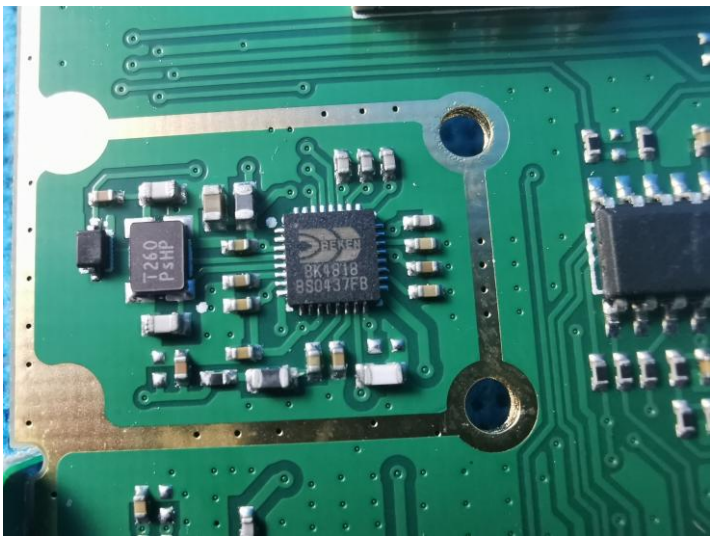

ANT


RETEVIS Switching Adapter
MODEL: DSA-5PF07-05 FUS
INPUT: 100-240V~ 50/60Hz 0.2A
OUTPUT: +5V ⎓ 1A
Made in China 0421HB

7.2. INTERNAL PHOTOS







8. APPENDIX REPORT

Project No.	SHT2201025501EW		
Test sample No.	YPHT22010255003	Model No.	RT47V
Start test date	2022/1/21	Finish date	2022/1/24
Temperature	23.2℃	Humidity	46%
Test Engineer	Caspar Chen	Auditor	Xiaodong Zhao

Appendix clause	Test Item	Test date （M/D)	Test Result (PASS/FAIL)
A	Transmitter Power	1/21	PASS
B	99% Occupied Bandwidth & 26dB Bandwidth	1/21	PASS
C	Emission Mask	1/24	PASS
D	Audio Low Pass Filter Response	1/21	PASS
E	Frequency Stability Test & Temperature	1/21	PASS
F	Frequency Stability Test & Voltage	1/21	PASS
G	Spurious Emission On Antenna Port	1/24	PASS

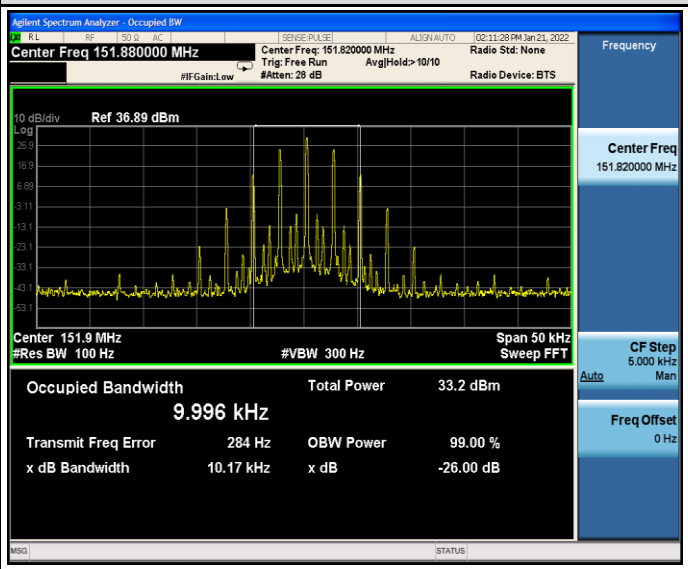
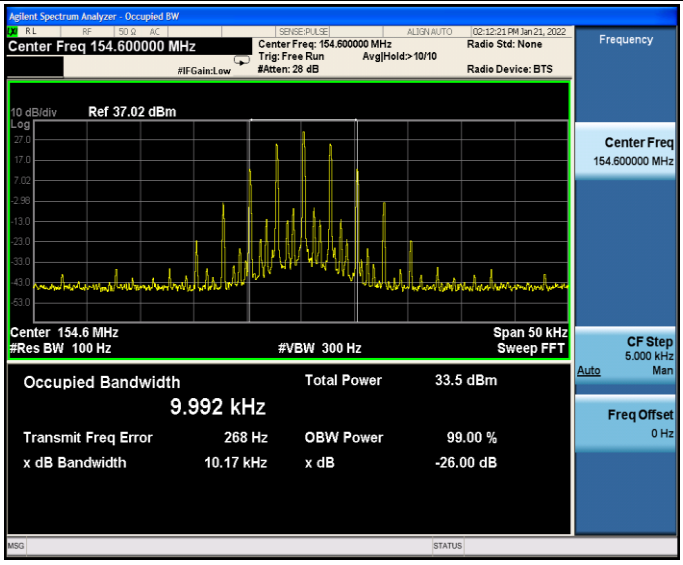
Appendix A: Transmitter Power

Test Mode	Modulation Type	Test Channel	Measured power (dBm)	Measured power (W)	Limit (W)	Result
TX-MURS	FM	CH_{M1}	32.73	1.87	<2	PASS
TX-MURS	FM	CH_{H}	32.99	1.99	<2	PASS

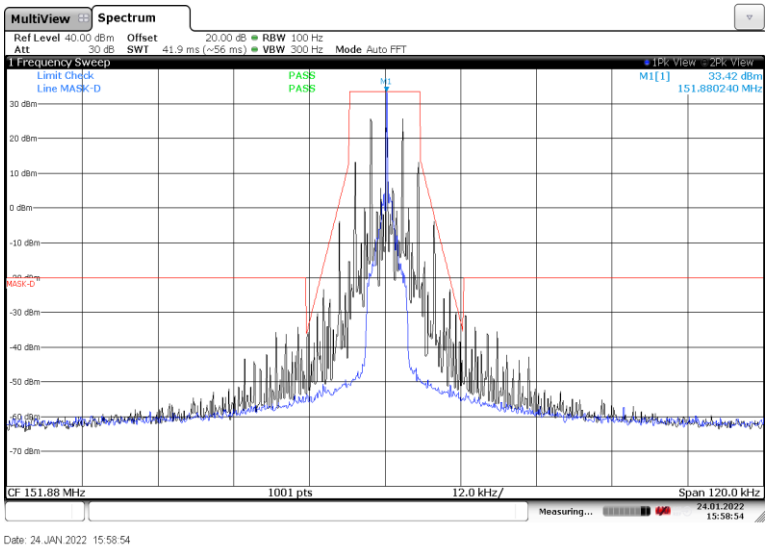
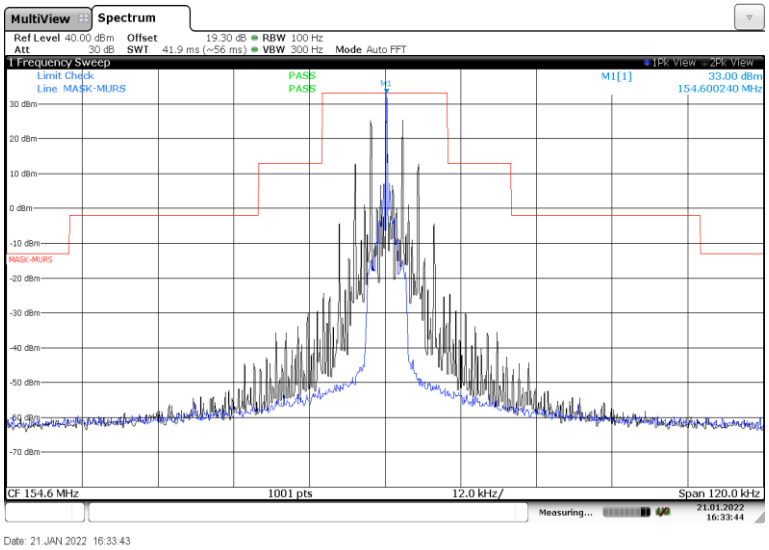
Appendix B: 99% Occupied Bandwidth & 26dB Bandwidth

Test Mode	Modulation Type	Test Channel	Occupied Bandwidth		99% Limit (kHz)	Result
			99%(kHz)	26dB(kHz)		
TX-MURS	FM	CH_{M1}	9.996	10.17	≤11.25	PASS
TX-MURS	FM	CH_{H}	9.992	10.17	≤20	PASS

Appendix B:99% Occupied Bandwidth & 26dB Bandwidth

Test Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-MURS	FM	CH_{M1}	
TX-MURS	FM	CH_{H}	

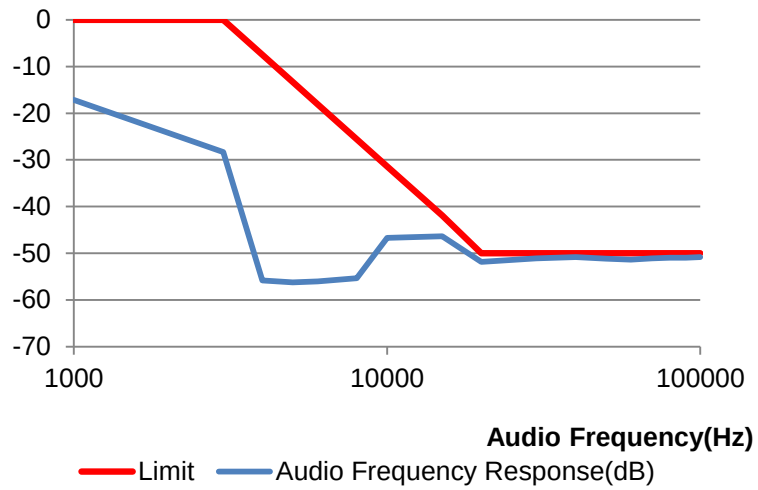
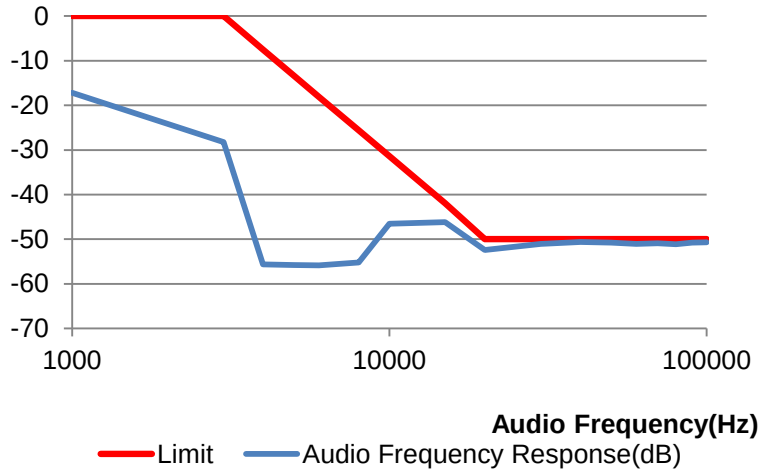
Appendix C:Emission Mask

Test Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-MURS	FM	CH_{M1}	
TX-MURS	FM	CH_{H}	

Appendix D:Audio Low Pass Filter Response

Test Mode	Modulation Type	Test Channel	Audio Frequency(Hz)	Audio Frequency Response(dB)	Limit	Result
TX-MURS	FM	CH_{M1}	1000	-17.14	0	PASS
TX-MURS	FM	CH_{M1}	3000	-28.3	0	PASS
TX-MURS	FM	CH_{M1}	4000	-55.83	-7.5	PASS
TX-MURS	FM	CH_{M1}	5000	-56.22	-13.3	PASS
TX-MURS	FM	CH_{M1}	6000	-56.06	-18.1	PASS
TX-MURS	FM	CH_{M1}	8000	-55.37	-25.6	PASS
TX-MURS	FM	CH_{M1}	10000	-46.7	-31.4	PASS
TX-MURS	FM	CH_{M1}	15000	-46.33	-41.9	PASS
TX-MURS	FM	CH_{M1}	20000	-51.85	-50	PASS
TX-MURS	FM	CH_{M1}	30000	-51.11	-50	PASS
TX-MURS	FM	CH_{M1}	40000	-50.83	-50	PASS
TX-MURS	FM	CH_{M1}	50000	-51.17	-50	PASS
TX-MURS	FM	CH_{M1}	60000	-51.39	-50	PASS
TX-MURS	FM	CH_{M1}	70000	-51.11	-50	PASS
TX-MURS	FM	CH_{M1}	80000	-50.98	-50	PASS
TX-MURS	FM	CH_{M1}	90000	-50.94	-50	PASS
TX-MURS	FM	CH_{M1}	100000	-50.79	-50	PASS
TX-MURS	FM	CH_{H}	1000	-17.19	0	PASS
TX-MURS	FM	CH_{H}	3000	-28.22	0	PASS
TX-MURS	FM	CH_{H}	4000	-55.64	-7.5	PASS
TX-MURS	FM	CH_{H}	5000	-55.75	-13.3	PASS
TX-MURS	FM	CH_{H}	6000	-55.88	-18.1	PASS
TX-MURS	FM	CH_{H}	8000	-55.22	-25.6	PASS
TX-MURS	FM	CH_{H}	10000	-46.54	-31.4	PASS
TX-MURS	FM	CH_{H}	15000	-46.2	-41.9	PASS
TX-MURS	FM	CH_{H}	20000	-52.4	-50	PASS
TX-MURS	FM	CH_{H}	30000	-51.04	-50	PASS
TX-MURS	FM	CH_{H}	40000	-50.64	-50	PASS
TX-MURS	FM	CH_{H}	50000	-50.73	-50	PASS
TX-MURS	FM	CH_{H}	60000	-51.01	-50	PASS
TX-MURS	FM	CH_{H}	70000	-50.89	-50	PASS
TX-MURS	FM	CH_{H}	80000	-51.08	-50	PASS
TX-MURS	FM	CH_{H}	90000	-50.73	-50	PASS
TX-MURS	FM	CH_{H}	100000	-50.65	-50	PASS

Appendix D:Audio Low Pass Filter Response

Test Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-MURS	FM	CH_{M1}	
TX-MURS	FM	CH_{H}	

Appendix E:Frequency Stability Test & Temperature

Test Mode	Modulation Type	Test Conditions		Frequency error (ppm)		Limit (ppm)	Result
		Voltage	Temperature	CH_{M1}	CH_H		
TX-MURS	FM	V_N	-30	2.062	1.881	±5	PASS
TX-MURS	FM	V_N	-20	1.908	1.910	±5	PASS
TX-MURS	FM	V_N	-10	2.049	1.881	±5	PASS
TX-MURS	FM	V_N	0	1.985	1.937	±5	PASS
TX-MURS	FM	V_N	10	1.930	1.862	±5	PASS
TX-MURS	FM	V_N	20	1.885	1.797	±5	PASS
TX-MURS	FM	V_N	30	1.994	1.883	±5	PASS
TX-MURS	FM	V_N	40	2.072	1.957	±5	PASS
TX-MURS	FM	V_N	50	2.064	1.923	±5	PASS

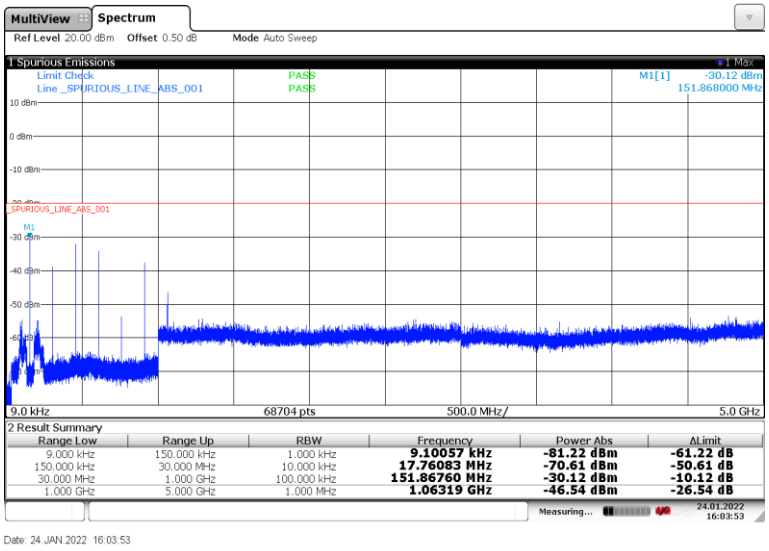
Note：
1）emission bandwidth ＜ 6.25 kHz，Limit is ±2.0ppm；
2）emission bandwidth ＞ 6.25 kHz，Limit is ±5.0ppm

Appendix F:Frequency Stability Test & Voltage

Test Mode	Modulation Type	Test Conditions		Frequency error (ppm)		Limit (ppm)	Result
		Voltage	Temperature	CH_{M1}	CH_H		
TX-MURS	FM	V_L	T_N	1.940	1.912	±5	PASS
TX-MURS	FM	V_N	T_N	1.885	1.797	±5	PASS
TX-MURS	FM	V_H	T_N	1.910	1.822	±5	PASS

Note：
1）emission bandwidth ＜ 6.25 kHz，Limit is ±2.0ppm；
2）emission bandwidth ＞ 6.25 kHz，Limit is ±5.0ppm

Appendix G: Spurious Emission On Antenna Port

Test Mode	Modulation Type	Test Channel	TEST PLOT RESULT
TX-MURS	FM	CH_{M1}	
TX-MURS	FM	CH_{H}