



Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

TEST REPORT

FCC Part 95

Report Reference No.....: CTA250302212

FCC ID.: 2AIJ4F-711

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Date of issue.....: 2025-03-02



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Testing Laboratory Name.....: Shenzhen CTA Testing Technology Co., Ltd.

Address: Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name: Quanzhou HengLiDa Tel-Equipment Co.,Ltd.

Address: 659 Xingpu, Xiamei Town, Nan'an City, Fujian Province, China.

Test specification

Standard.....: FCC Part 95

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Test item description.....: DMR MINI WALKIE-TALKIE

Trade Mark: /

Manufacturer: Quanzhou HengLiDa Tel-Equipment Co.,Ltd.

Model/Type reference.....: F-711

Listed Models: /

Ratings: DC 3.7V from battery or DC 5V from adapter

Modulation: FM

Hardware version: /

Software version: /

Frequency: 462.5500 MHz -462.7250MHz
467.5625 MHz -467.7125MHz

Result: PASS

TEST REPORT

Equipment under Test : DMR MINI WALKIE-TALKIE

Model /Type : F-711

Listed Models : /

Applicant : Quanzhou HengLiDa Tel-Equipment Co.,Ltd.

Address : 659 Xingpu, Xiamei Town, Nan'an City, Fujian Province,China.

Manufacturer : Quanzhou HengLiDa Tel-Equipment Co.,Ltd.

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Test result	Pass *
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1 SUMMARY

1.1 TEST STANDARDS

The tests were performed according to following standards:

[FCC Rules Part 95 : PERSONAL RADIO SERVICES](#)

[ANSI/TIA-603-E-2016](#): Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

[FCC Part 2: FREQUENCY ALLOCATION AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS](#)

[ANSI C63.26-2015](#) : IEEE/ANSI Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

1.2 Test Description

Description of Test Item	Standard clause	Verdict
Maximum Transmitter Power	FCC Part 95.567	PASS
Modulation Characteristic	FCC Part 2.1047 FCC Part 95.575	PASS
Occupied Bandwidth and Emission Mask	FCC Part 2.1049 FCC Part 95.573 FCC Part 95.579	PASS
Radiated Spurious Emission	FCC Part 95.579	PASS
Frequency Stability	FCC Part 2.1055 FCC Part 95.565	PASS

1.3 Address of the test laboratory

Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

The 3m-Semi anechoic test site fulfills CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 517856 Designation Number: CN1318

Shenzhen CTA Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA-Lab Cert. No.: 6534.01

Shenzhen CTA Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

ISED#: 27890 CAB identifier: CN0127

Shenzhen CTA Testing Technology Co., Ltd. has been listed by Innovation, Science and Economic Development Canada to perform electromagnetic emission measurement.

1.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the Shenzhen CTA Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10 dB	(1)
Radiated Emission	1~18GHz	4.32 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.12 dB	(1)
Conducted Power	9KHz~18GHz	0.61 dB	(1)
Spurious RF Conducted Emission	9KHz~40GHz	1.22 dB	(1)
Band Edge Compliance of RF Emission	9KHz~40GHz	1.22 dB	(1)
Occupied Bandwidth	9KHz~40GHz	-	(1)

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

2 GENERAL INFORMATION

2.1 General Remarks

Date of receipt of test sample	:	2025.03.02
Testing commenced on	:	2025.03.03
Testing concluded on	:	2025.03.21

2.2 Environmental conditions

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

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.3 General Description of EUT

Name of EUT	DMR MINI WALKIE-TALKIE
Model Number	F-711
Power Supply	DC 3.7V from battery or DC 5V from adapter
Frequency Range	462.5500 MHz -462.7250MHz 467.5625 MHz -467.7125MHz
Transmit Power(ERP)	462.6375 MHz: 24.23dBm 467.6375 MHz: 24.37dBm
Modulation Type	FM
Antenna Type	Integral antenna
Antenna Gain	1.5dBi
Sample ID:	202501047

Note: For more details, refer to the user's manual of the EUT.

2.4 Description of Test Modes and Test Frequency

The EUT has been tested under typical operating condition. As, test modes selected as below by the technical parameters of the EUT:

Operation Mode No.	Modulation	Condition	
		FM	TX
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
2	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>

Frequency list

Channel	Frequency(MHz)
1	462.5625
2	462.5875
3	462.6125
4	462.6375
5	462.6625
6	462.6875
7	462.7125
8	467.5625
9	467.5875
10	467.6125
11	467.6375
12	467.6625
13	467.6875
14	467.7125
15	462.5500
16	462.5750
17	462.6000
18	462.6250
19	462.6500
20	462.6750
21	462.7000
22	462.7250

Note1: The line display in grey was the channel selected for test.

2.5 Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	R&S	ENV216	3560.6550.08	2024/09/19	2025/09/18
LISN	R&S	ESH2-Z5	893606/008	2024/09/19	2025/09/18
EMI Test Receiver	R&S	ESPI3	101841-cd	2024/09/19	2025/09/18
EMI Test Receiver	R&S	ESCI7	101102	2024/09/19	2025/09/18
Spectrum Analyzer	Agilent	N9020A	MY48010425	2024/09/19	2025/09/18
Spectrum Analyzer	R&S	FSV40	100019	2024/09/19	2025/09/18
Vector Signal generator	Agilent	N5181A	MY49060502	2024/09/19	2025/09/18
Signal generator	Agilent	E4421B	3610AO1069	2024/09/19	2025/09/18
Climate Chamber	ESPEC	EL-10KA	A20120523	2024/09/19	2025/09/18
Controller	EM Electronics	Controller EM 1000	N/A	N/A	N/A
Biconic Logarithmic Periodic Antennas	Schwarzbeck	VULB 9162	00345	2024/09/19	2025/09/18
Horn Antenna	Schwarzbeck	BBHA 9120D	01622	2024/09/19	2025/09/18
Active Loop Antenna	Beijing Da Ze Technology Co.,Ltd.	ZN30900C	15006	2024/09/19	2025/09/18
Bilog Antenna	Schwarzbeck	VULB9163	000976	2024/09/19	2025/09/18
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	791	2024/09/19	2025/09/18
Amplifier	Schwarzbeck	BBV 9743	#202	2024/09/19	2025/09/18
Amplifier	Schwarzbeck	BBV9179	9719-025	2024/09/19	2025/09/18
Amplifier	EMCI	EMC051845B	980355	2024/09/19	2025/09/18
Temperature/Humidity Meter	Gangxing	CTH-608	02	2024/09/19	2025/09/18
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	KL142031	2024/09/19	2025/09/18
High-Pass Filter	K&L	41H10-1375/U12750-O/O	KL142032	2024/09/19	2025/09/18
RF Cable(below 1GHz)	HUBER+SUHNER	RG214	RE01	2024/09/19	2025/09/18
RF Cable(above 1GHz)	HUBER+SUHNER	RG214	RE02	2024/09/19	2025/09/18
Data acquisition card	Agilent	U2531A	TW53323507	2024/09/19	2025/09/18
Power Sensor	Agilent	U2021XA	MY5365004	2024/09/19	2025/09/18
Test Control Unit	Tonscend	JS0806-1	178060067	2024/09/19	2025/09/18
Automated filter bank	Tonscend	JS0806-F	19F8060177	2024/09/19	2025/09/18
Radio Communication Tester	HP	8920A	116250	2024/09/19	2025/09/18
EMI Test Software	Tonscend	JS1120-1	Ver 2.6.8.0518	/	/
EMI Test Software	Tonscend	JS1120-3	Ver 2.5.77.0418	/	/
EMI Test Software	Tonscend	JS32-CE	Ver 2.5	/	/
EMI Test Software	Tonscend	JS32-RE	Ver 2.5.1.8	/	/

Note: The Cal.Interval was one year.

2.6 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with FCC Part 95 Rules.

2.7 Modifications

No modifications were implemented to meet testing criteria.

3 TEST CONDITIONS AND RESULTS

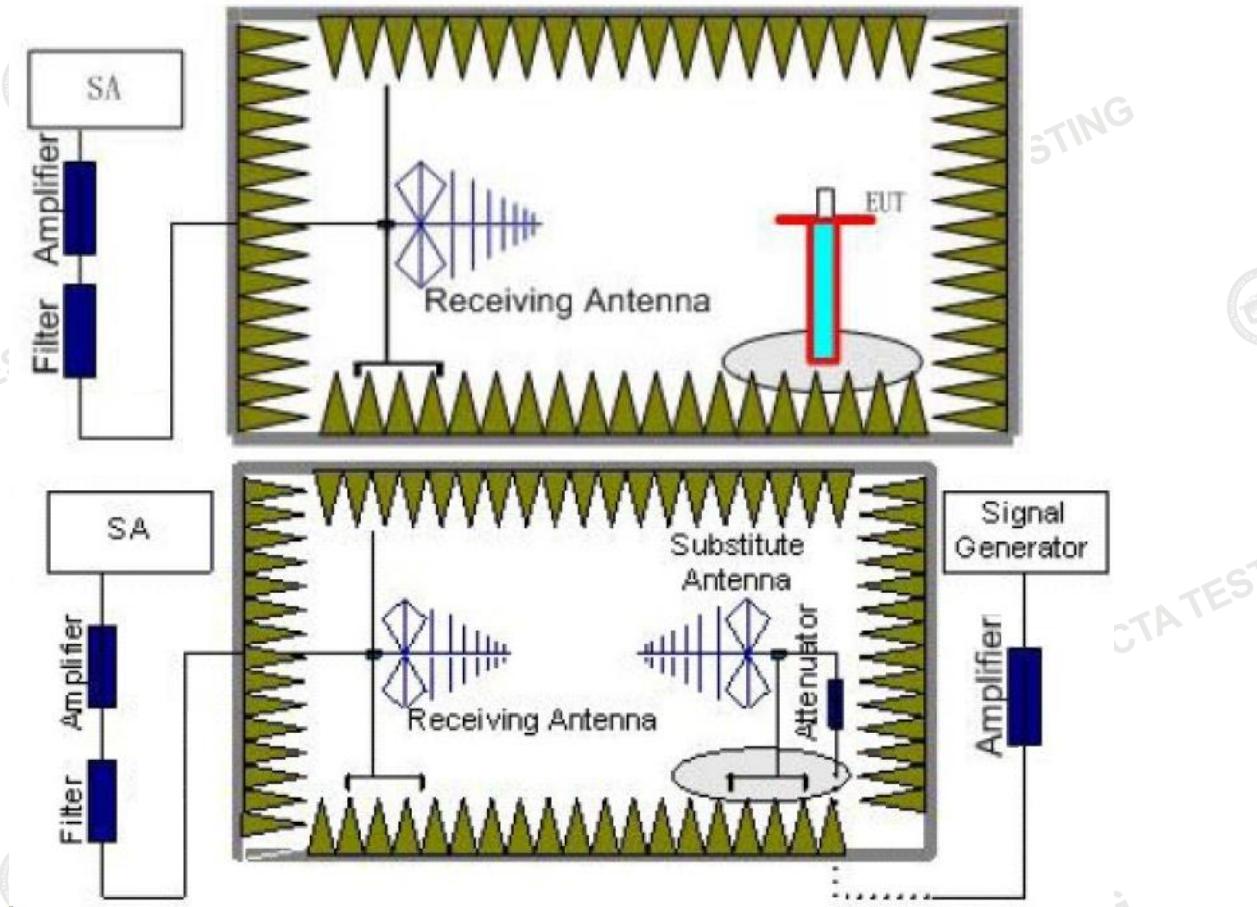
3.1 Maximum Transmitter Power

LIMITS

According to FCC Part 95.567:

Each FRS transmitter type must be designed such that the effective radiated power (ERP) on channels 8 through 14 does not exceed 0.5 Watts and the ERP on channels 1 through 7 and 15 through 22 does not exceed 2.0 Watts.

TEST CONFIGURATION



Measurement Procedure

1. EUT was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.0m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all test transmit frequencies were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz, And the maximum value of the receiver should be recorded as (P_r).

4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. An amplifier may be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}), the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test. The measurement results are obtained as described below:
$$\text{Power(EIRP)} = P_{Mea} + P_{Ag} - P_{cl} + G_a$$
6. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
7. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15\text{dBi}$.

TEST RESULTS

Remark;

The field strength of radiation emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The data show in this report only with the worst case setup. After exploratory measurement the worst case of Z axis and receiver antenna at vertical polarization was reported.

Test Frequency (MHz)	P _{Mea} (dBm)	P _{cl} (dB)	G _a Antenna Gain(dBi)	Correction (dB)	P _{Ag} (dB)	ERP (dBm)	ERP (W)	Limit (W)	Polarization
462.6375	-13.82	2.08	7.69	2.15	34.59	24.23	0.26	2.0	V
462.6375	-13.95	2.08	7.69	2.15	34.59	24.10	0.26	2.0	H
467.6375	-13.70	2.08	7.71	2.15	34.59	24.37	0.27	0.5	V
467.6375	-13.95	2.08	7.71	2.15	34.59	24.12	0.26	0.5	H

Remark:

1. $EIRP = P_{Mea}(dBm) + P_{Ag}(dB) - P_{cl}(dB) + G_a(dBi) - \text{Correction}(dB)$
2. $ERP = EIRP - 2.15dBi$ as $EIRP$ by subtracting the gain of the dipole.

3.2 Occupied Bandwidth and Emission Mask

LIMITS

According to FCC 95.573:

Each FRS transmitter type must be designed such that the occupied bandwidth does not exceed 12.5 kHz.

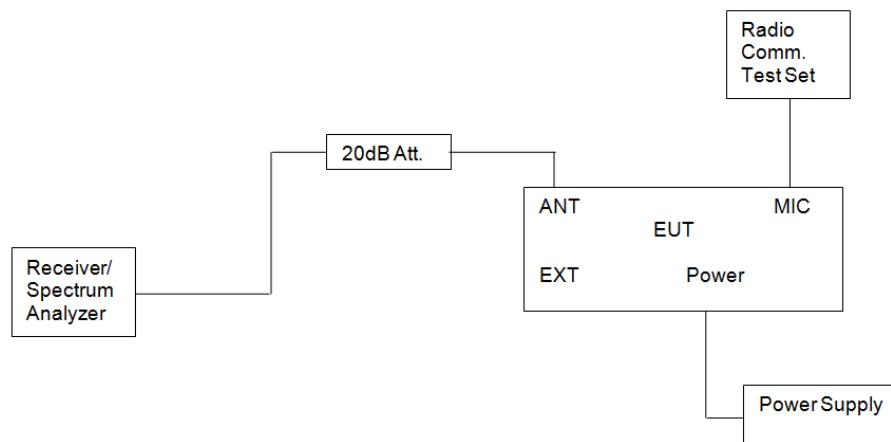
According to FCC 95.579:

At least 25dB (decibels) on any frequency removed from the center of the authorized bandwidth by more than 50 % up to and including 100 % of the authorized bandwidth.

At least 35 dB on any frequency removed from the center of the authorized bandwidth by more than 100 % up to and including 250 % of the authorized bandwidth.

At least $43 + 10 \log_{10} (T)$ dB on any frequency removed from the center of the authorized bandwidth by more than 250 %.

TEST CONFIGURATION



TEST PROCEDURE

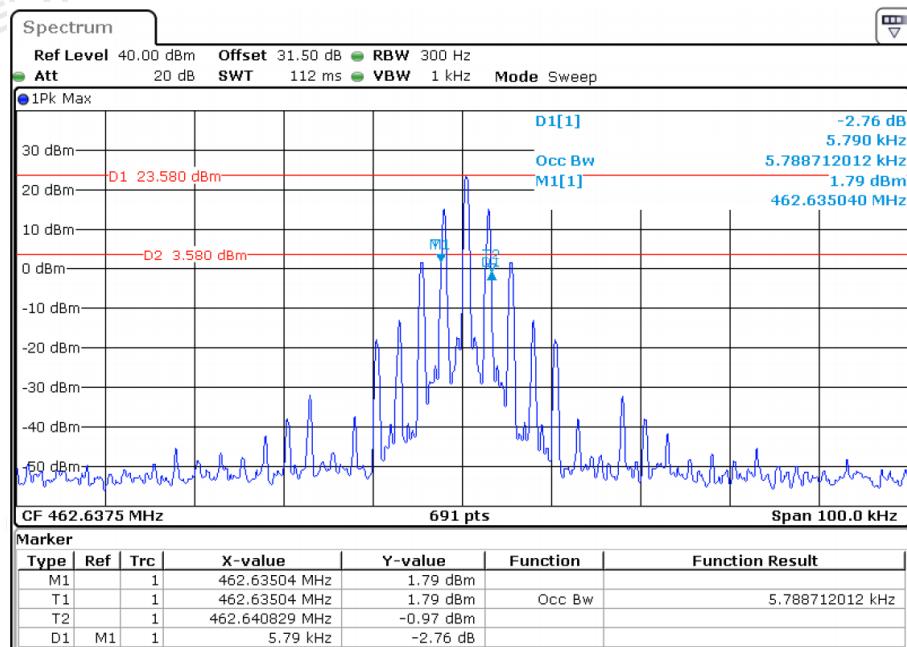
- 1 The EUT was modulated by 2.5 KHz Sine wave audio signal; the level of the audio signal employed is 16 dB greater than that necessary to produce 50% of rated system deviation. Rated system deviation is 2.5 kHz (12.5 kHz channel spacing) and 5 kHz (25 kHz channel spacing).
- 2 Set SPA Center Frequency = fundamental frequency, RBW=300Hz, VBW= 3 KHz, span =50 KHz.
- 3 Set SPA Max hold. Mark peak, Set 99% Occupied Bandwidth and 26dB Occupied Bandwidth.

TEST RESULTS

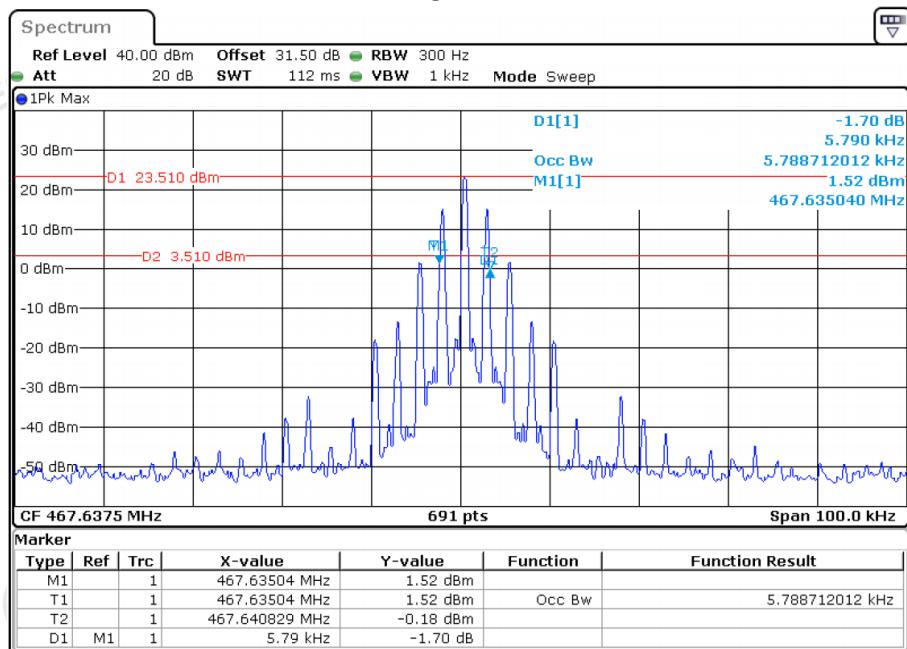
Occupied Bandwidth:

Modulation	Channel	99% Occupied Bandwidth (kHz)	Limit (KHz)	Result
FM	CH4	5.788	12.5	Pass
FM	CH11	5.788	12.5	Pass

CH4

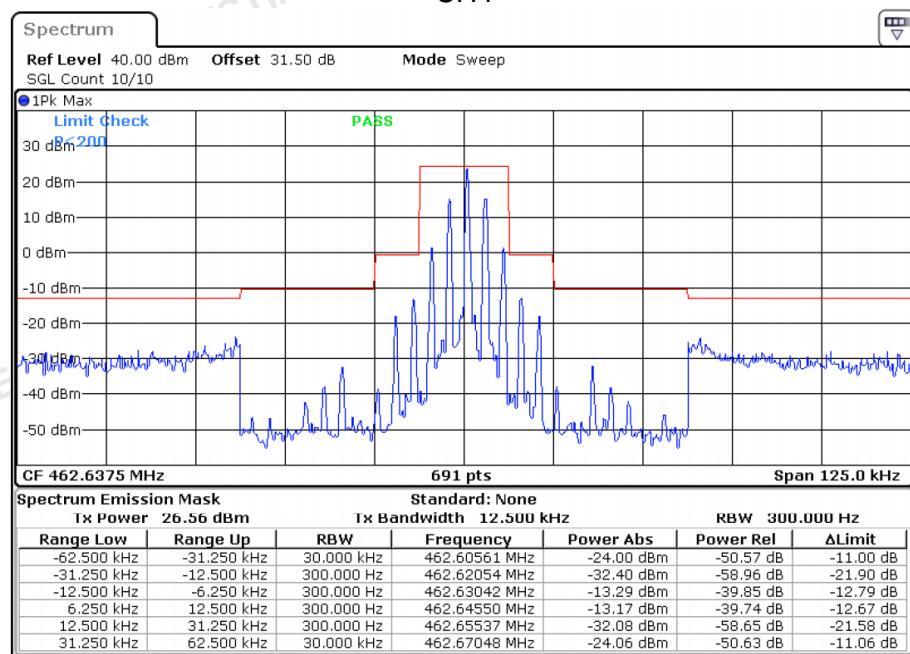


CH11

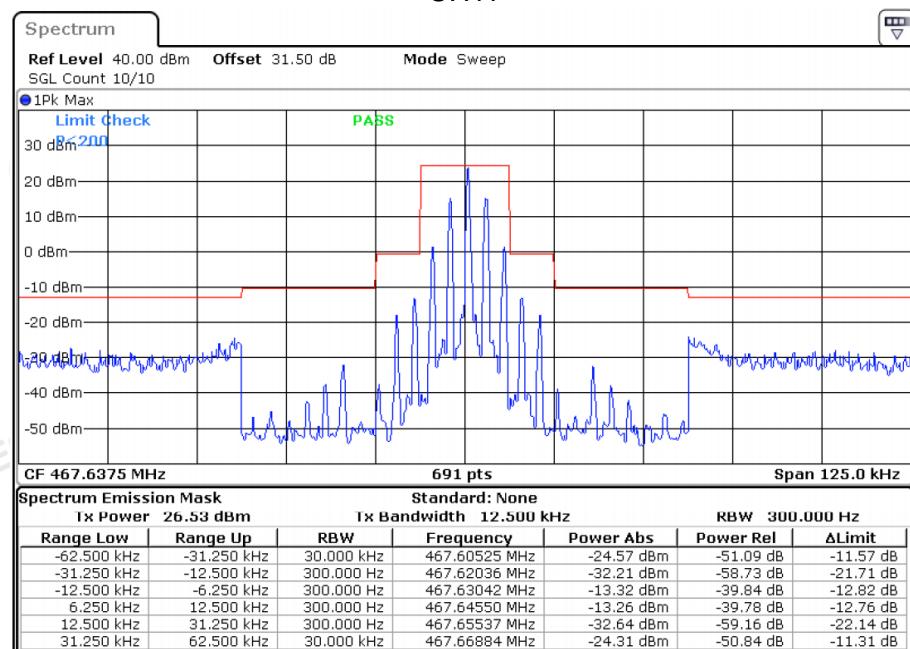


Emission Mask:

CH4



CH11



3.3 Modulation Limit

LIMITS

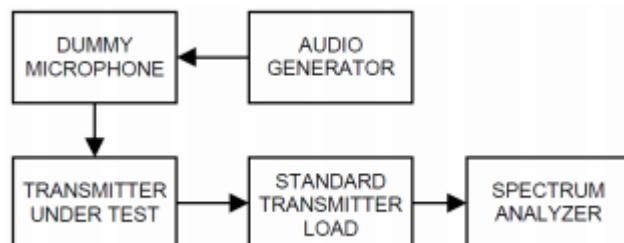
FCC Part 95.575, FCC Part 2.1047(b) Each FRS transmitter type must be designed such that the peak frequency deviation does not exceed 2.5 kHz, and the highest audio frequency contributing substantially to modulation must not exceed 3.125 kHz.

TEST PROCEDURE

Modulation Limit

- 1) Connect the equipment as illustrated.
- 2) Adjust the transmitter per the manufacturer's procedure for full rated system deviation.
- 3) Set the test receiver to measure peak positive deviation. Set the audio bandwidth for ≤ 0.25 Hz to $\geq 15,000$ Hz. Turn the de-emphasis function off.
- 4) 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.
- 5) Apply Input Modulation Signal to EUT according to Section 3.4 and vary the input level from -20 to $+20$ dB.
- 6) Measure both the instantaneous and steady-state deviation at and after the time of increasing the audio input level
- 7) With the level from the audio frequency generator held constant at the level obtained in step e), slowly vary the audio frequency from 300 Hz to 3000 Hz and observe the steady-state deviation. Record the maximum deviation.
- 8) Set the test receiver to measure peak negative deviation and repeat steps d) through g).
- 9) The values recorded in steps g) and h) are the modulation limiting.

TEST CONFIGURATION

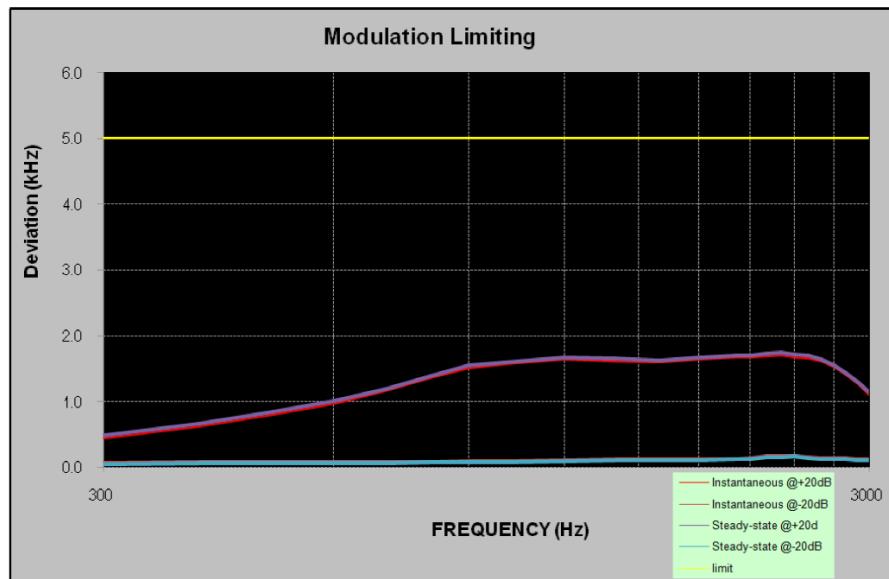


TEST RESULTS

MODULATION LIMITING

Carrier Frequency: 462.6250MHz

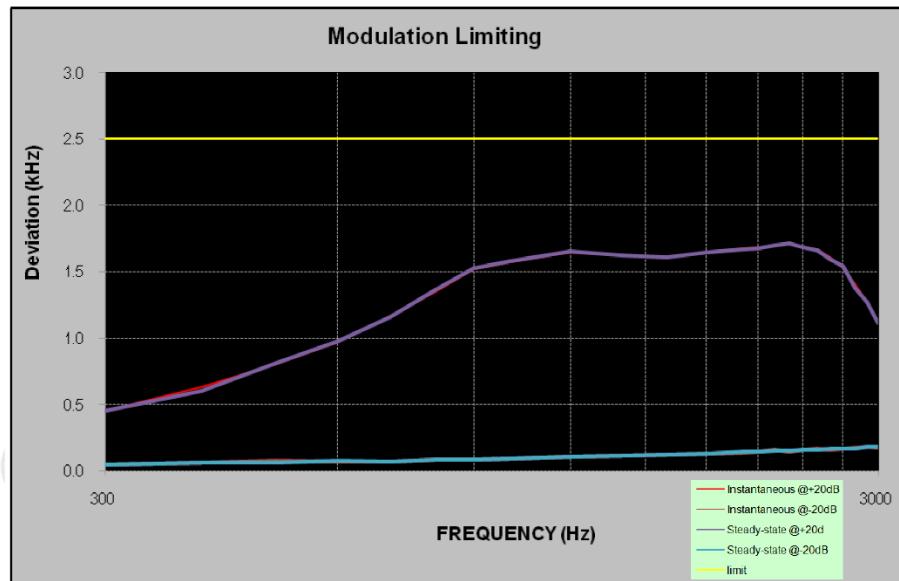
Audio Frequency (Hz)	Instantaneous		Steady-state		FCC Limit [kHz]
	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	
300	0.445	0.072	0.481	0.059	5.000
400	0.624	0.076	0.660	0.064	5.000
500	0.808	0.087	0.844	0.074	5.000
600	0.970	0.080	1.006	0.067	5.000
700	1.156	0.084	1.192	0.071	5.000
800	1.351	0.089	1.388	0.077	5.000
900	1.514	0.094	1.549	0.081	5.000
1000	1.568	0.098	1.604	0.085	5.000
1200	1.636	0.110	1.672	0.097	5.000
1400	1.620	0.122	1.656	0.109	5.000
1600	1.598	0.128	1.635	0.115	5.000
1800	1.639	0.129	1.676	0.117	5.000
2000	1.666	0.133	1.702	0.120	5.000
2100	1.674	0.138	1.710	0.125	5.000
2200	1.692	0.172	1.728	0.159	5.000
2300	1.709	0.177	1.745	0.164	5.000
2400	1.679	0.177	1.714	0.165	5.000
2500	1.660	0.159	1.696	0.146	5.000
2600	1.606	0.144	1.642	0.131	5.000
2700	1.522	0.141	1.558	0.128	5.000
2800	1.402	0.135	1.439	0.123	5.000
2900	1.267	0.126	1.304	0.113	5.000
3000	1.109	0.123	1.146	0.110	5.000



MODULATION LIMITING

Carrier Frequency: 467.6375MHz

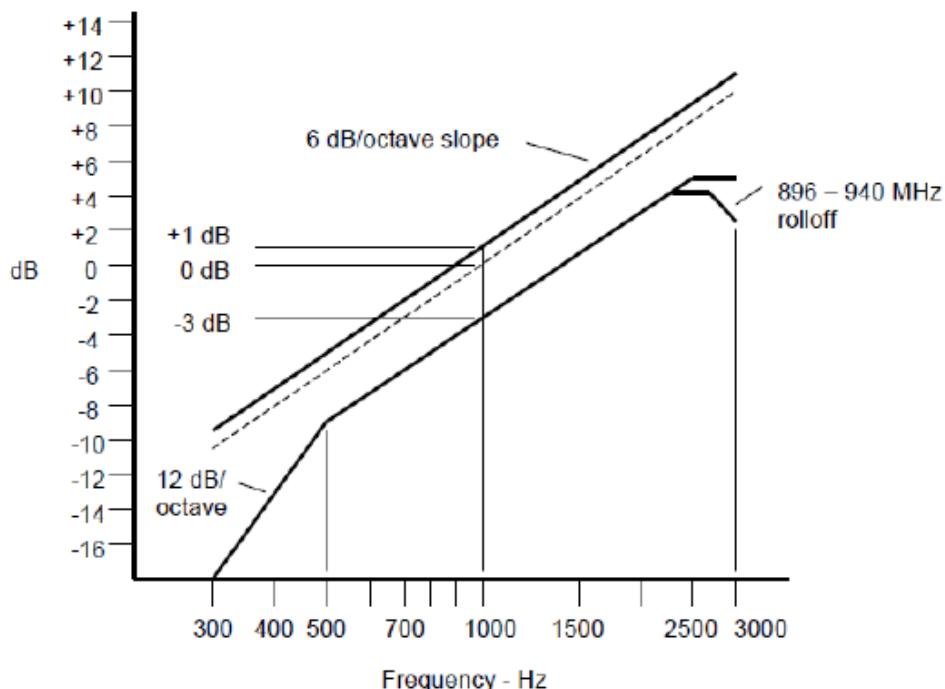
Audio Frequency (Hz)	Instantaneous		Steady-state		FCC Limit [kHz]
	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	DEVIATION (@+20dB) [kHz]	DEVIATION (@-20dB) [kHz]	
300	0.452	0.050	0.453	0.051	2.500
400	0.632	0.061	0.605	0.062	2.500
500	0.810	0.077	0.816	0.064	2.500
600	0.971	0.071	0.978	0.075	2.500
700	1.164	0.073	1.161	0.073	2.500
800	1.350	0.084	1.362	0.088	2.500
900	1.522	0.086	1.528	0.085	2.500
1000	1.574	0.091	1.576	0.095	2.500
1200	1.644	0.105	1.653	0.111	2.500
1400	1.623	0.117	1.628	0.113	2.500
1600	1.606	0.124	1.610	0.122	2.500
1800	1.647	0.131	1.645	0.129	2.500
2000	1.674	0.137	1.671	0.144	2.500
2100	1.682	0.143	1.679	0.148	2.500
2200	1.697	0.158	1.700	0.151	2.500
2300	1.717	0.147	1.712	0.157	2.500
2400	1.687	0.161	1.687	0.159	2.500
2500	1.668	0.166	1.660	0.164	2.500
2600	1.613	0.162	1.598	0.167	2.500
2700	1.530	0.169	1.541	0.166	2.500
2800	1.410	0.175	1.380	0.169	2.500
2900	1.270	0.185	1.275	0.181	2.500
3000	1.119	0.179	1.117	0.183	2.500



3.4 Audio Frequency Response

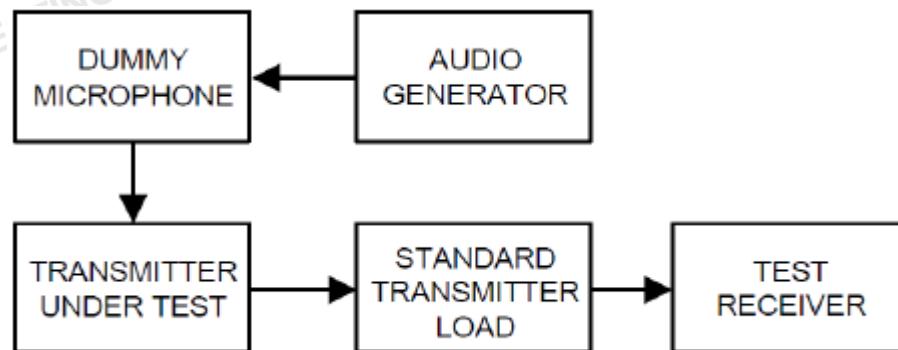
LIMIT

FCC Part 95.575), FCC Part 2.1047(a): Each FRS transmitter type must be designed such that the peak frequency deviation does not exceed 2.5 kHz, and the highest audio frequency contributing substantially to modulation must not exceed 3.125 kHz. Voice modulated communication equipment. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted.



An additional 6 dB per octave attenuation is allowed from 2500 Hz to 3000 Hz in equipment operating in the 25 MHz to 869 MHz range.

TEST CONFIGURATION



TEST PROCEDURE

- 1) Connect the equipment as illustrated.
- 2) Set the test receiver to measure peak positive deviation. Set the audio bandwidth for 50 Hz to 15,000 Hz. Turn the de-emphasis function off.
- 3) Set the DMM to measure rms voltage.
- 4) Adjust the transmitter per the manufacturer's procedure for full rated system deviation.
- 5) Apply Input Modulation Signal to EUT.
- 6) Set the test receiver to measure rms deviation and record the deviation reading.
- 7) Record the DMM reading as V_{REF} .
- 8) Set the audio frequency generator to the desired test frequency between 300 Hz and 3000 Hz.
- 9) Vary the audio frequency generator output level until the deviation reading that was recorded in

step 6) is obtained.

10) Record the DMM reading as V_{FREQ}

11) Calculate the audio frequency response at the present frequency as: audio frequency response=20log10 (V_{FREQ}/V_{REF}).

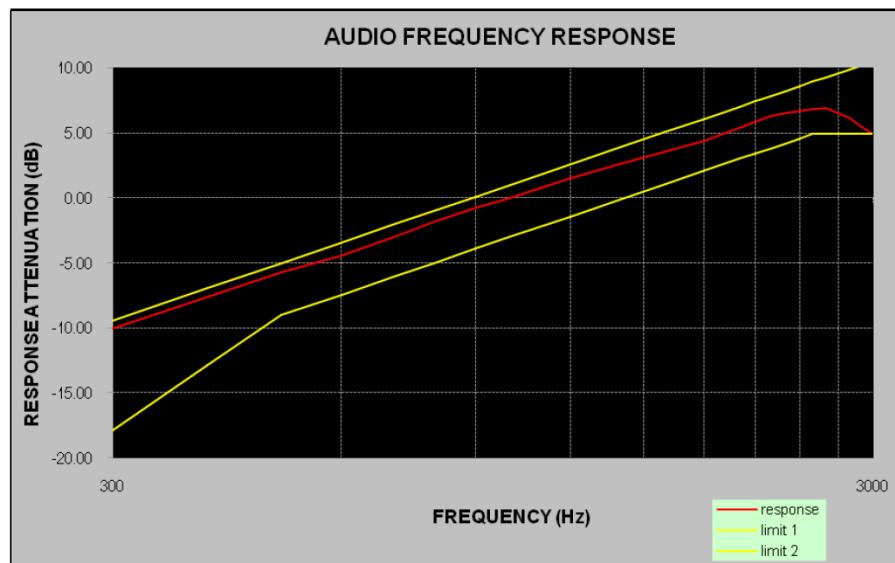
12) Repeat steps 8) through 11) for all the desired test frequencies

TEST RESULTS

Audio Frequency Response

Carrier Frequency: 462.6375 MHz

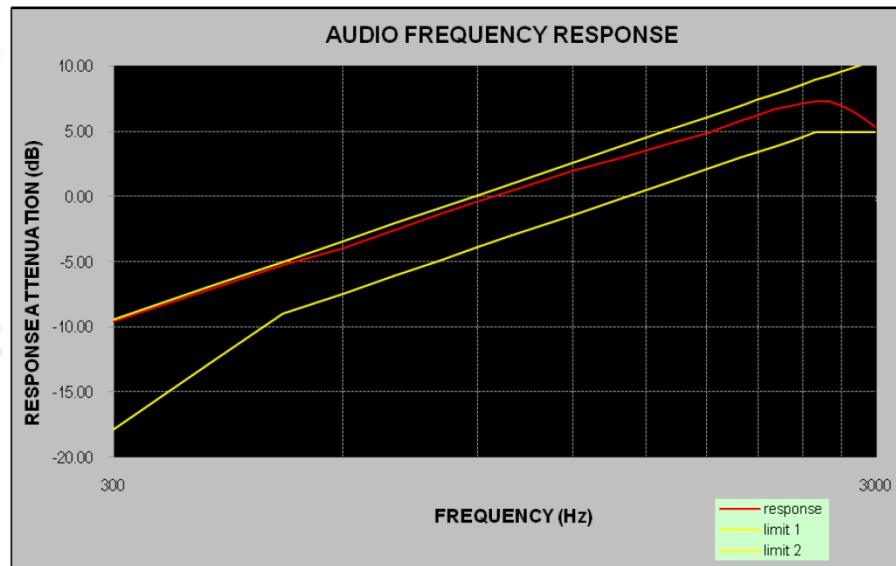
Audio Frequency (Hz)	Response Attenuation (dB)
300	-10.01
400	-7.58
500	-5.71
600	-4.38
700	-3.02
800	-1.79
900	-0.80
1000	0.00
1200	1.53
1400	2.65
1600	3.57
1800	4.42
2000	5.42
2100	5.82
2200	6.29
2300	6.51
2400	6.72
2500	6.84
2600	6.88
2700	6.55
2800	6.12
2900	5.47
3000	4.93



Audio Frequency Response

Carrier Frequency: 467.6375 MHz

Audio Frequency (Hz)	Response Attenuation (dB)
300	-9.58
400	-7.15
500	-5.29
600	-3.96
700	-2.60
800	-1.36
900	-0.38
1000	0.00
1200	1.95
1400	3.07
1600	3.99
1800	4.85
2000	5.84
2100	6.24
2200	6.71
2300	6.93
2400	7.14
2500	7.26
2600	7.30
2700	6.98
2800	6.55
2900	5.90
3000	5.35



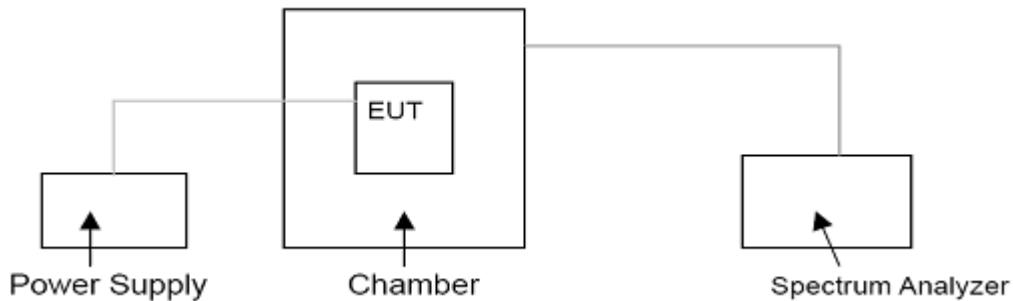
3.5 Frequency Stability

LIMITS

According to FCC 95.565

Each FRS transmitter type must be designed such that the carrier frequencies remain within ± 2.5 parts-per-million of the channel center frequencies specified in §95.563 during normal operating conditions.

TEST CONFIGURATION



TEST PROCEDURE

The EUT was set in the climate chamber and connected to an external DC power supply. The RF output was directly connected to Spectrum Analyzer. The coupling loss of the additional cables was recorded and taken in account for all the measurements. After temperature stabilization (approx. 20 min for each stage), the frequency for the lower, the middle and the highest frequency range was recorded. For Frequency stability Vs. Voltage the EUT was connected to a DC power supply and the voltage was adjusted in the required ranges. The result was recorded.

TEST RESULTS

Reference Frequency: 462.6375 MHz, Limit: ±2.5ppm			
Environment Temperature (°C)	Voltage Supplied (V _{DC})	Measurement Frequency (MHz)	Frequency Error (ppm)
Frequency Stability Ver. Temperature			
50	3.7	462.638165	1.44
40	3.7	462.637354	-0.32
30	3.7	462.637406	-0.20
20	3.7	462.637325	-0.38
10	3.7	462.637349	-0.33
0	3.7	462.637396	-0.22
-10	3.7	462.637387	-0.24
-20	3.7	462.637393	-0.23
Frequency Stability Ver. Input Voltage			
20	3.4	462.637410	-0.19
20	4.2	462.637362	-0.30

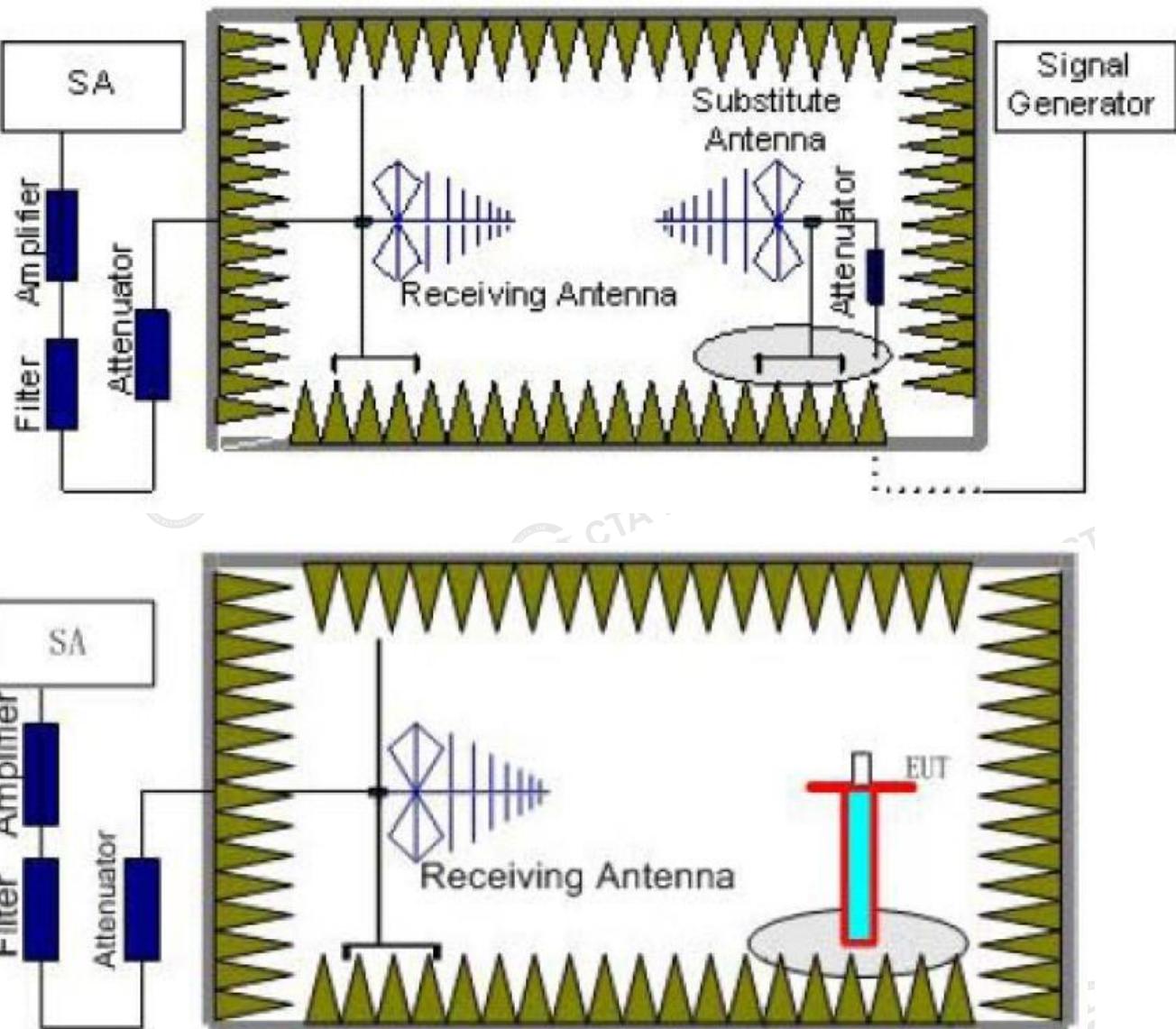
Reference Frequency: 467.6375 MHz, Limit: ±2.5 ppm			
Environment Temperature (°C)	Voltage Supplied (V _{DC})	Measurement Frequency (MHz)	Frequency Error (ppm)
Frequency Stability Ver. Temperature			
50	3.7	467.638278	1.66
40	3.7	467.637154	-0.74
30	3.7	467.637185	-0.67
20	3.7	467.637105	-0.84
10	3.7	467.637145	-0.76
0	3.7	467.637171	-0.70
-10	3.7	467.637123	-0.81
-20	3.7	467.637128	-0.80
Frequency Stability Ver. Input Voltage			
20	3.4	467.637110	-0.83
20	4.2	467.637129	-0.79

3.6 Transmitter Radiated Spurious Emission

Limit

The unwanted emission should be attenuated below TP by at least $43+10\log(\text{Transmit Power})$ dB and unwanted emissions falling within the restricted bands of RSS-Gen shall be attenuated to the limits provided in this section or to the general field strength limits shown in RSS-Gen, whichever are less stringent.

TEST CONFIGURATION



TEST PROCEDURE

- a. EUT was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.0m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all test transmit frequencies were measured with peak detector.
- b. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
- c. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum 100 kHz below 1GHz and 1MHz above 1GHz, Sweep from 30MHz to the 10th harmonic of the fundamental frequency; and recorded the level of the concerned spurious emission point as (P_r).
- d. The EUT then replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

The measurement results are obtained as described below:

$$\text{Power}_{(\text{EIRP})} = P_{Mea} - P_{cl} + G_a$$

Where;

P_{Mea} is the recorded signal generator level

P_{cl} is the cable loss connect between instruments

G_a Substitution Antenna Gain

- e. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dB_i) and known input power.
- f. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15\text{dB}_i$.
- g. Test site anechoic chamber refer to ANSI C63.

TEST RESULTS**30MHz-5 GHz:**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB μ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
frequency:462.6375 MHz								
925.275	H	46.88	-21.27	0.00	0.62	-21.89	-13.00	8.89
925.275	V	46.73	-18.90	0.00	0.62	-19.52	-13.00	6.52
1387.913	H	66.76	-36.83	8.19	0.73	-29.37	-13.00	16.37
1387.913	V	68.37	-35.31	8.19	0.73	-27.85	-13.00	14.85
1850.550	H	53.48	-49.75	8.92	0.89	-41.72	-13.00	28.72
1850.550	V	46.83	-56.32	8.92	0.89	-48.29	-13.00	35.29
2313.188	H	59.18	-42.63	9.29	0.98	-34.32	-13.00	21.32
2313.188	V	58.68	-42.91	9.29	0.98	-34.60	-13.00	21.60
2775.825	H	59.90	-40.04	9.84	1.05	-31.25	-13.00	18.25
2775.825	V	55.18	-44.65	9.84	1.05	-35.86	-13.00	22.86
3238.463	H	63.87	-33.08	10.30	1.16	-23.94	-13.00	10.94
3238.463	V	62.45	-34.25	10.30	1.16	-25.11	-13.00	12.11
3701.100	H	64.99	-32.32	10.60	1.25	-22.97	-13.00	9.97
3701.100	V	61.28	-36.01	10.60	1.25	-26.66	-13.00	13.66
4163.738	H	55.46	-40.51	10.80	1.30	-31.01	-13.00	18.01
4163.738	V	53.97	-41.97	10.80	1.30	-32.47	-13.00	19.47
4626.375	H	48.96	-46.32	10.75	1.41	-36.98	-13.00	23.98
4626.375	V	46.23	-48.94	10.75	1.41	-39.60	-13.00	26.60
frequency:467.6375MHz								
935.275	H	41.23	-26.68	0.00	0.66	-27.34	-13.00	14.34
935.275	V	45.54	-19.90	0.00	0.66	-20.56	-13.00	7.56
1402.913	H	65.23	-38.47	8.23	0.71	-30.95	-13.00	17.95
1402.913	V	65.65	-38.09	8.23	0.71	-30.57	-13.00	17.57
1870.550	H	52.03	-51.10	8.94	0.89	-43.05	-13.00	30.05
1870.550	V	46.34	-56.60	8.94	0.89	-48.55	-13.00	35.55
2338.188	H	64.48	-37.11	9.30	0.97	-28.78	-13.00	15.78
2338.188	V	63.52	-37.84	9.30	0.97	-29.51	-13.00	16.51
2805.825	H	59.13	-40.77	9.89	1.04	-31.92	-13.00	18.92
2805.825	V	53.72	-46.07	9.89	1.04	-37.22	-13.00	24.22
3273.463	H	67.73	-29.06	10.31	1.16	-19.91	-13.00	6.91
3273.463	V	64.21	-32.34	10.31	1.16	-23.19	-13.00	10.19
3741.100	H	63.72	-32.98	10.64	1.23	-23.57	-13.00	10.57
3741.100	V	62.67	-33.94	10.64	1.23	-24.53	-13.00	11.53
4208.738	H	56.09	-39.88	10.77	1.33	-30.44	-13.00	17.44
4208.738	V	52.37	-43.56	10.77	1.33	-34.12	-13.00	21.12
4676.375	H	50.50	-44.47	10.81	1.41	-35.07	-13.00	22.07
4676.375	V	49.25	-45.70	10.81	1.41	-36.30	-13.00	23.30

Remark:

1. The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency; and worst spurious emissions recorded.

2. Absolute Level = Reading Level + Substituted Factor

Substituted Factor contains: SG Level - Cable loss+ Antenna Gain

Margin = Absolute Level - Limit

4 Test Setup Photos of the EUT



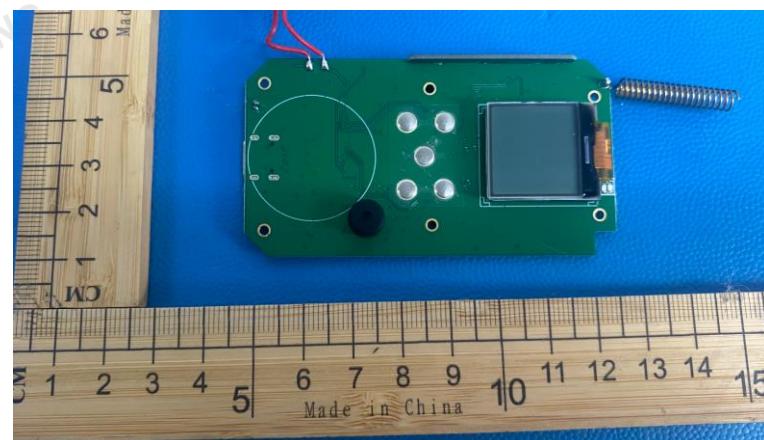
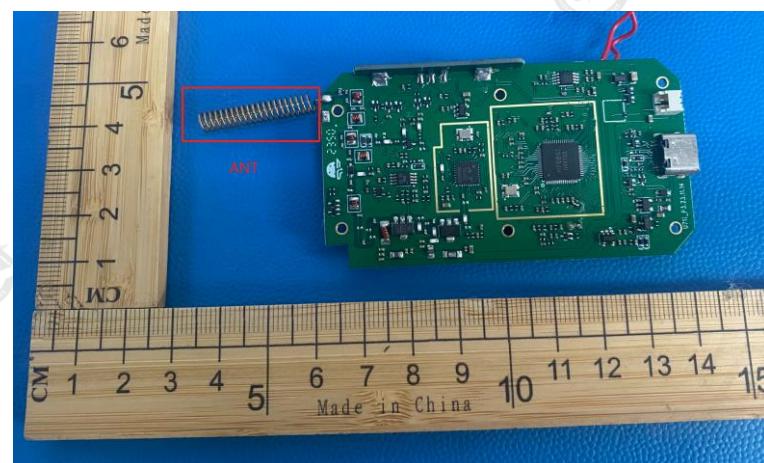
5 External and Internal Photos of the EUT

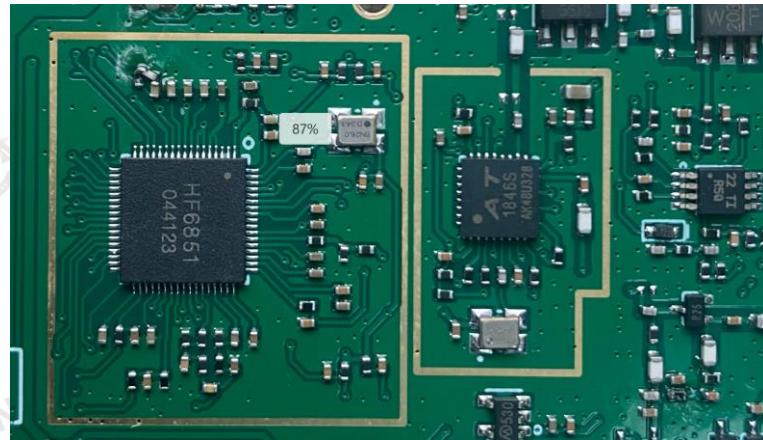
External Photos





Internal Photos





***** End of Report *****