

7.5 EMISSION MASK PLOT

Standard Applicable [FCC Part 95.579] FRS: Unwanted emissions shall be attenuated below the unmodulated carrier power in accordance with the following:

- (1) At least 25 dB (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.
- (2) 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.
- (3) At least $43 + 10 \log_{10}(T)$ dB on any frequency removed from the center of the authorized bandwidth by more than 250 %.

The detailed procedure employed for Emission Mask measurements are specified as following:

- The transmitter shall be modulated by a 2.5 kHz 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.

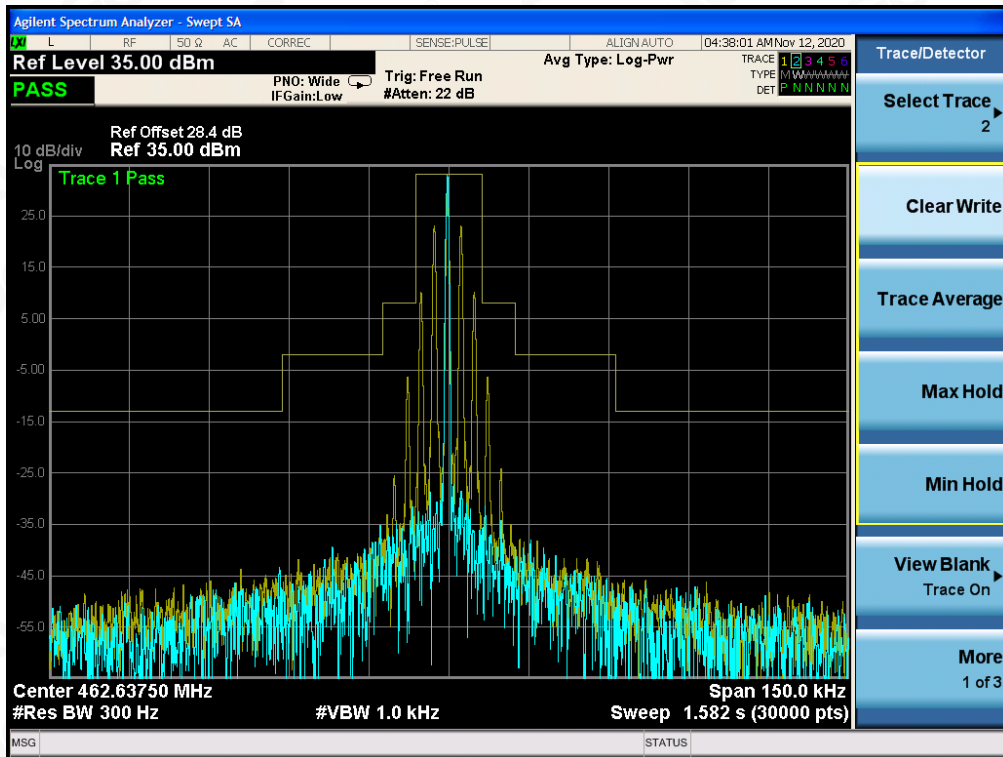
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Channel 4:

The Worst Emission Mask for channel 4 -2W



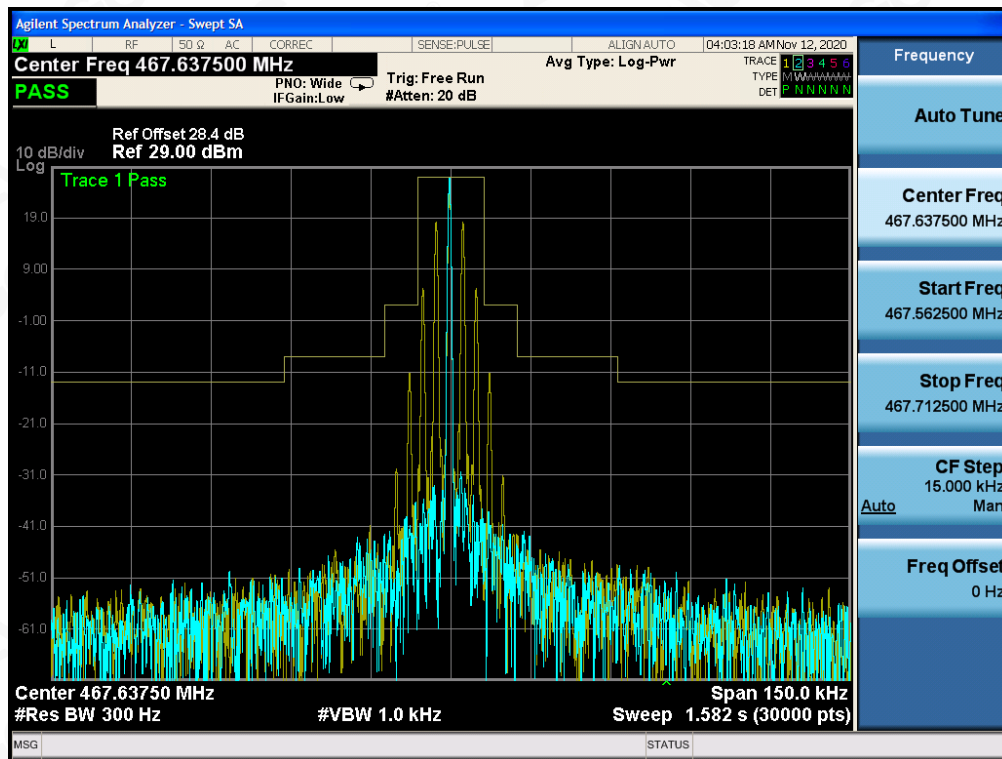
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Channel 11:

The Worst Emission Mask for channel 11 -0.5W



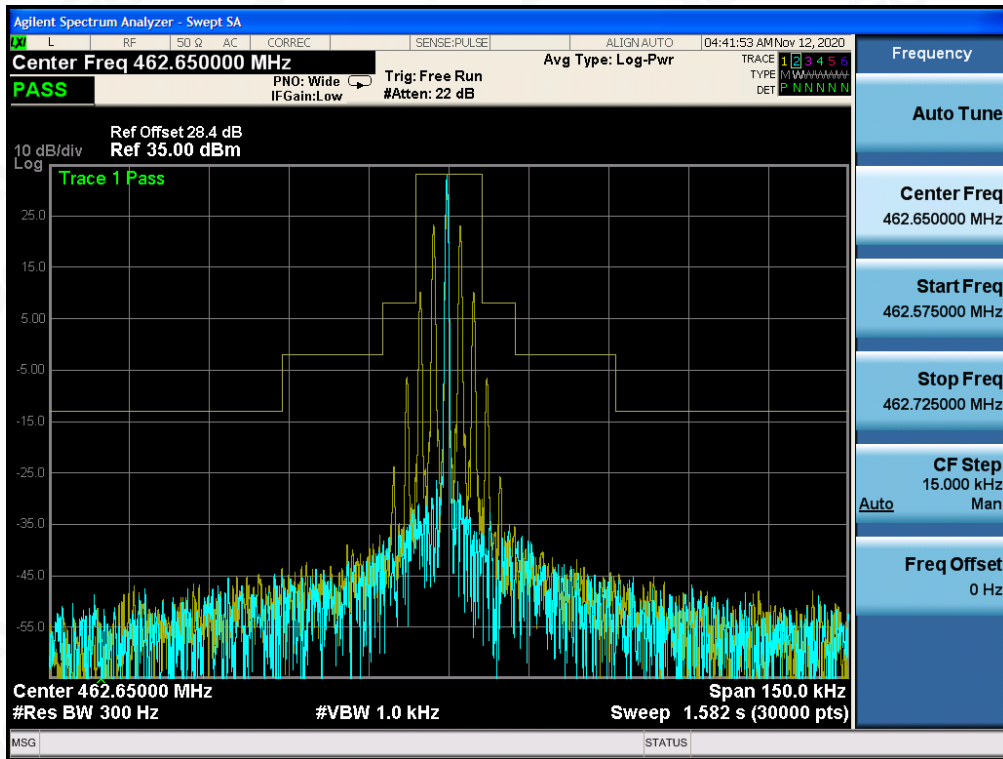
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Channel 19:

The Worst Emission Mask for channel 19-2W



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8. MAXIMUM TRANSMITTER POWER

8.1 PROVISIONS APPLICABLE

Per FCC §2.1046 and §95.567(h): Maximum ERP is dependent upon the station's antenna HAAT and required service area.

FCC Part 95.567 For FRS

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.

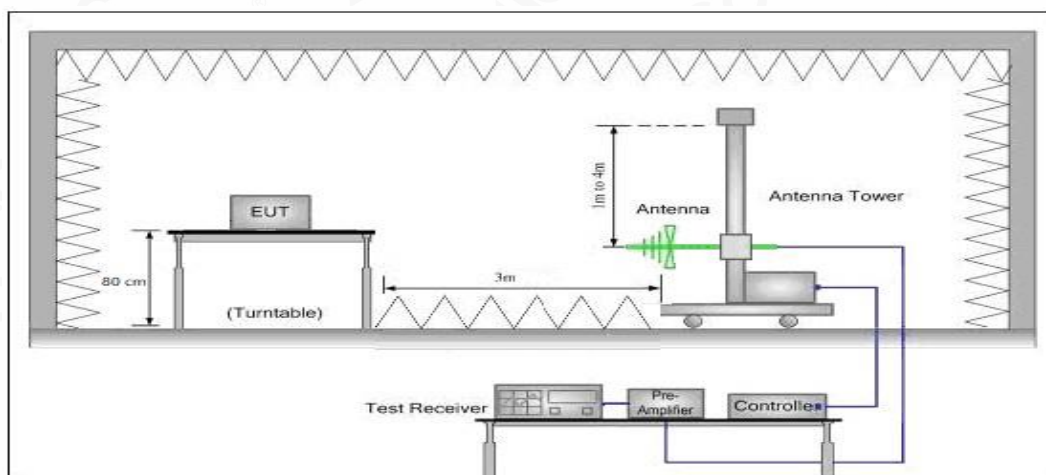
8.2 TEST PROCEDURE

- (1) The spectrum setting for Equivalent Isotropically Radiated Power (EIRP) is RBW = 100 kHz, VBW = 300 kHz. Detector Mode is RMS.
- (2) In the semi-anechoic chamber, setup as illustrated above the EUT placed on the 1.5m height of Turn Table, rotated the table 45 degree each interval to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power for each degree interval. The "Read Value" is the spectrum reading of maximum power value.
- (3) 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 rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum radiation power. Record the power level of maximum radiation power from spectrum. So, the Measured substitution value = Ref level of S.G + TX cables loss – Substituted Antenna Gain

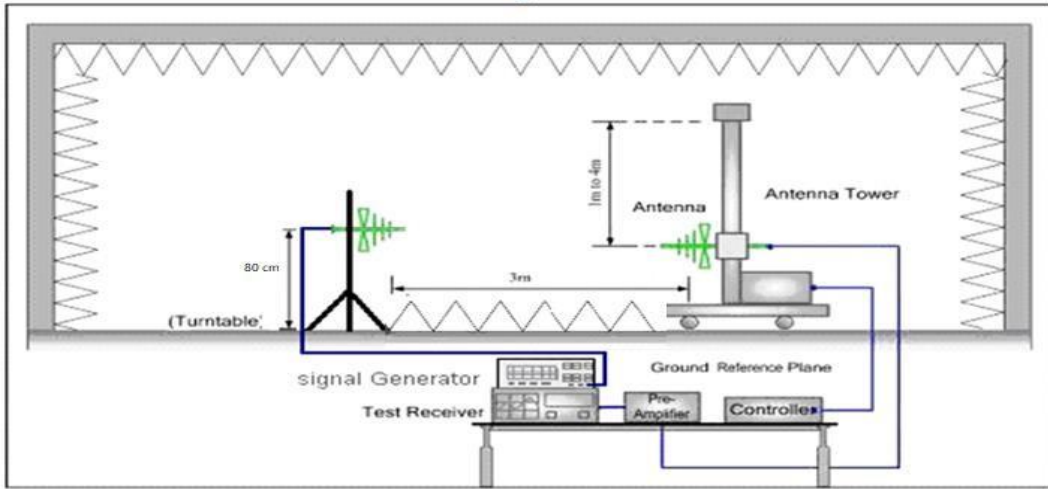
8.3 TEST CONFIGURATION

Effective Radiated Power

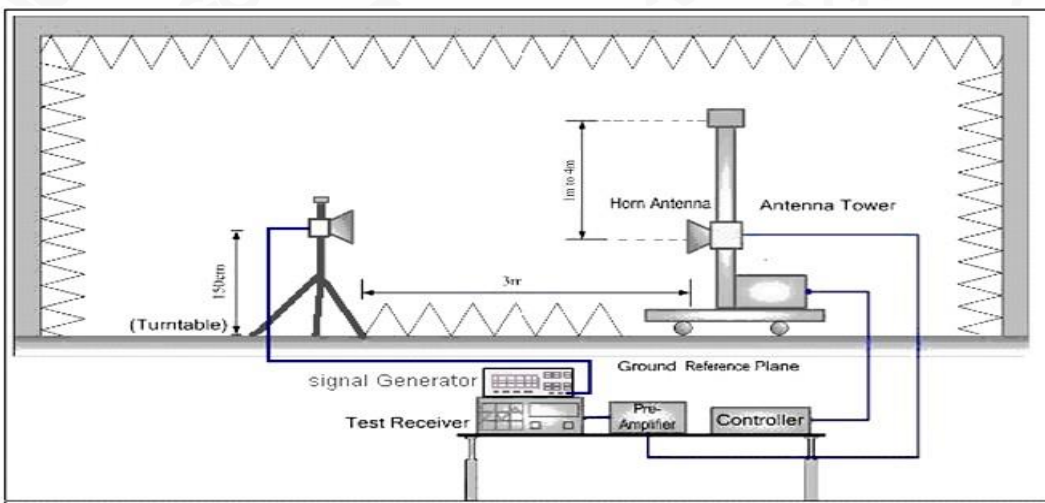
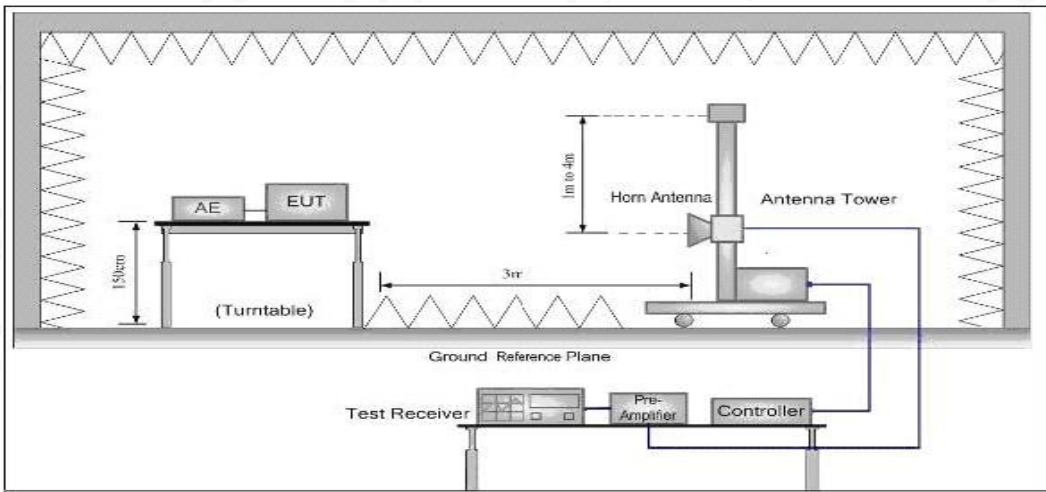
Radiated Below 1GHz



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Radiated Above 1 GHz



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8.4 TEST RESULT

The maximum Power (CP) for UHF is
 Analog: 2W/0.5W for 12.5 KHz Channel Separation
 Calculation Formula: $CP = R + A + L$

* Note:

- CP: The final Conducted Power
- R : The reading value from spectrum analyzer
- A : The attenuation value of the used attenuator
- L : The loss of all connection cables

ERP RESULT:

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	ERP Level	Limit	Margin
(MHz)	(dBuv/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
Frequency: 462.6375MHz								
462.6375	101.300	V	26.07	0.38	6.6	32.29	33.01	0.72
462.6375	101.250	H	26.02	0.38	6.6	32.24	33.01	0.77
Frequency: 467.6375MHz								
467.6375	95.680	V	20.45	0.38	6.6	26.67	26.99	0.32
467.6375	95.650	H	20.42	0.38	6.6	26.64	26.99	0.35
Frequency: 462.6500MHz								
462.6500	101.280	V	26.05	0.38	6.6	32.27	33.01	0.74
462.6500	101.260	H	26.03	0.38	6.6	32.25	33.01	0.76

Note: ERP level(dBm)=S.G.(dBm)-Cable Lloss(dB)+Ant. Gain(dBi), The Ant. Gain including the correct factor 2.15. and Margin(dB)=Limit(dBm)-Emission Level(dBm).

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9. MODULATION CHARACTERISTICS

9.1 PROVISIONS APPLICABLE

According to [FCC Part 95.575, Part 2.1047(a)], for Voice Modulation Communication Equipment, the frequency response of the audio modulation circuit over a range of 100 to 5000Hz shall be measured.

Part 95.575 A FRS unit that transmits emission type F3E must not exceed a peak frequency deviation of plus or minus 2.5 kHz, and the audio frequency response must not exceed 3.125 kHz.

Part 2.1047(a) 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. For equipment required to have an audio low-pass filter, a curve showing the frequency response of the filter, or of all circuitry installed between the modulation limiter and the modulated stage shall be submitted.

9.2 MEASUREMENT METHOD

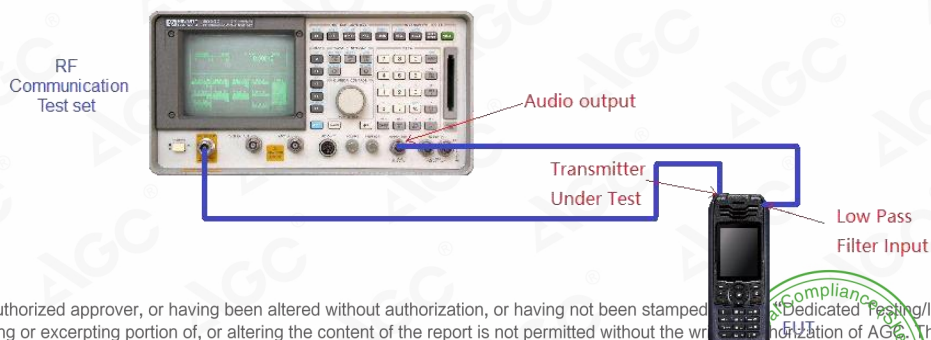
9.2.1 Modulation Limit

- (1). Configure the EUT as shown in figure 1, adjust the audio input for 60% of rated system deviation at 1KHz using this level as a reference (0dB) and vary the input level from -20 to +20dB. Record the frequency deviation obtained as a function of the input level.
- (2). Repeat step 1 with input frequency changing to 300, 1000, 1500 and 3000Hz in sequence.

9.2.2 Audio Frequency Response

Personal Radio Service stations that transmit voice emissions may also transmit audible or subaudible tones or other signals for the purpose of selective calling and/or receiver squelch activation. These tones and signals are ancillary to voice communications and are considered to be included within the voice emission types, e.g., A3E, F3E, and G3E.

- (a) Tones that are audible (having a frequency higher than 300 Hertz), must last no longer than 15 seconds at one time.
- (b) Tones that are subaudible (having a frequency of 300 Hertz or less), may be transmitted continuously during a communication session.
 - (1). Configure the EUT as shown in figure 1.
 - (2). Adjust the audio input for 20% of rated system deviation at 1 KHz using this level as a reference (0 dB).
 - (3). Vary the Audio frequency from 100 Hz to 10 KHz and record the frequency deviation.
 - (4). Audio Frequency Response = $20\log_{10}(\text{Deviation of test frequency}/\text{Deviation of 1 KHz reference})$.



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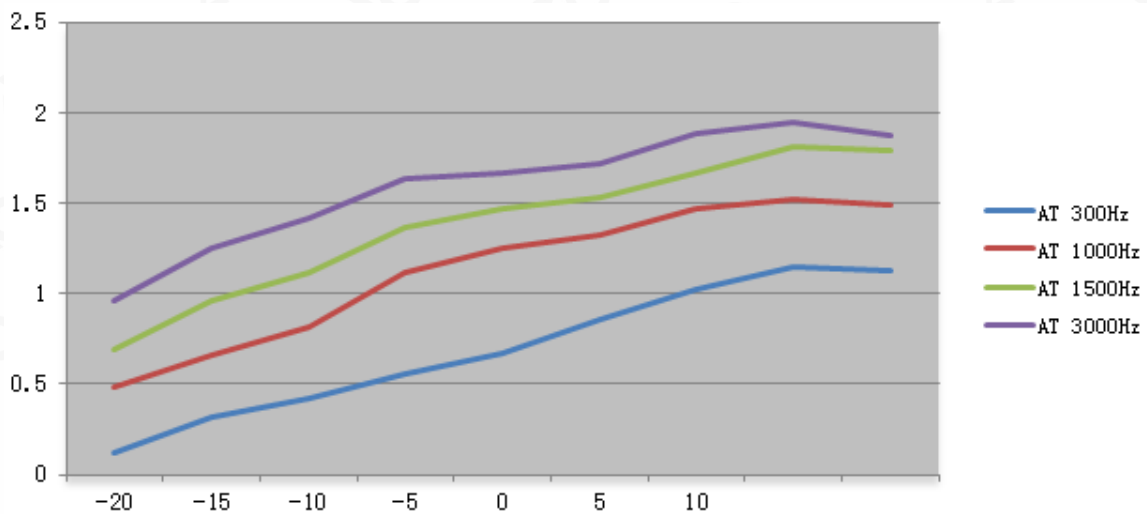
9.3 MEASUREMENT RESULT

TEST CHANNEL: 4

(A). MODULATION LIMIT:

462.6375MHz @ 12.5 KHz Channel Separations-2W

Modulation Level (dB)	Peak Freq. Deviation At 300 Hz	Peak Freq. Deviation At 1000 Hz	Peak Freq. Deviation At 1500 Hz	Peak Freq. Deviation At 3000 Hz
-20	0.12	0.48	0.69	0.96
-15	0.32	0.66	0.96	1.25
-10	0.42	0.81	1.12	1.42
-5	0.55	1.11	1.36	1.63
0	0.67	1.25	1.47	1.66
+5	0.86	1.32	1.53	1.72
+10	1.02	1.47	1.67	1.88
+15	1.15	1.52	1.81	1.95
+20	1.13	1.49	1.79	1.87



- Note: 1. All the modes had been tested, but only the worst data recorded in the report.
2. The data unit evaluated in this report is "KHz"

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(B). AUDIO FREQUENCY RESPONSE:

462.6375MHz @ 12.5 KHz Channel Separations-2W

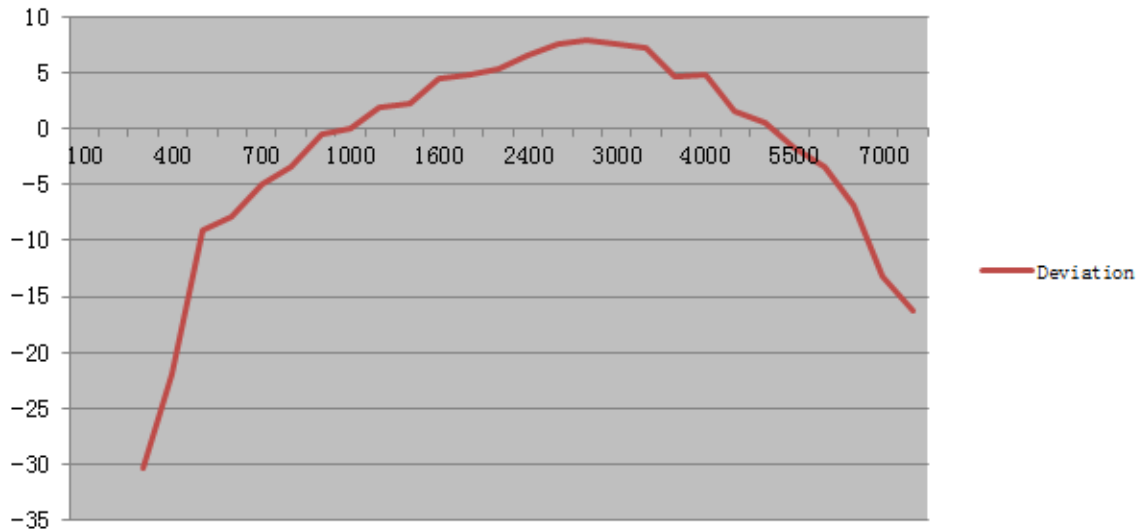
Frequency (Hz)	Deviation (KHz)	Audio Frequency Response(dB)
100	--	--
200	--	--
300	0.05	-30.26
400	0.13	-21.96
500	0.58	-8.98
600	0.66	-7.85
700	0.93	-4.87
800	1.11	-3.34
900	1.54	-0.49
1000	1.63	0.00
1200	2.03	1.91
1400	2.11	2.24
1600	2.74	4.51
1800	2.83	4.79
2000	3.03	5.39
2400	3.49	6.61
2500	3.89	7.56
2800	4.03	7.86
3000	3.89	7.56
3200	3.76	7.26
3600	2.79	4.67
4000	2.84	4.82
4500	1.96	1.60
5000	1.74	0.57
5500	1.33	-1.77
6000	1.11	-3.34
6500	0.74	-6.86
7000	0.36	-13.12
7500	0.25	-16.28
9000	--	--
10000	--	--
14000	--	--
18000	--	--
20000	--	--
30000	--	--

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Frequency Response Result

12.5 KHz Channel Separations



Note: All the modes had been tested, but only the worst data recorded in the report.

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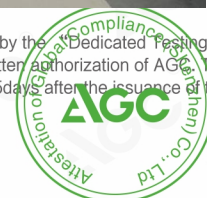
APPENDIX I: PHOTOGRAPHS OF SETUP RADIATED EMISSION BELOW 1G TEST SETUP



RADIATED EMISSION ABOVE 1G TEST SETUP



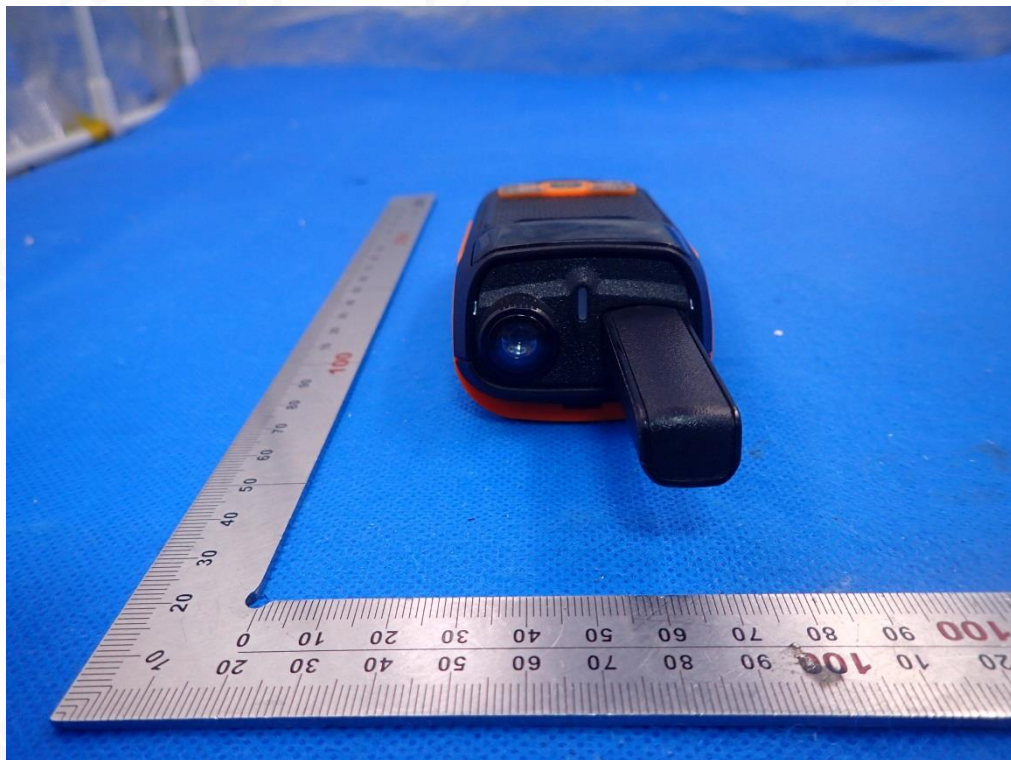
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APPENDIX II: EXTERNAL VIEW OF EUT WHOLE VIEW OF EUT



TOP VIEW OF EUT



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BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



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BACK VIEW OF EUT



LEFT VIEW OF EUT



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RIGHT VIEW OF EUT



OPEN VIEW-1 OF EUT

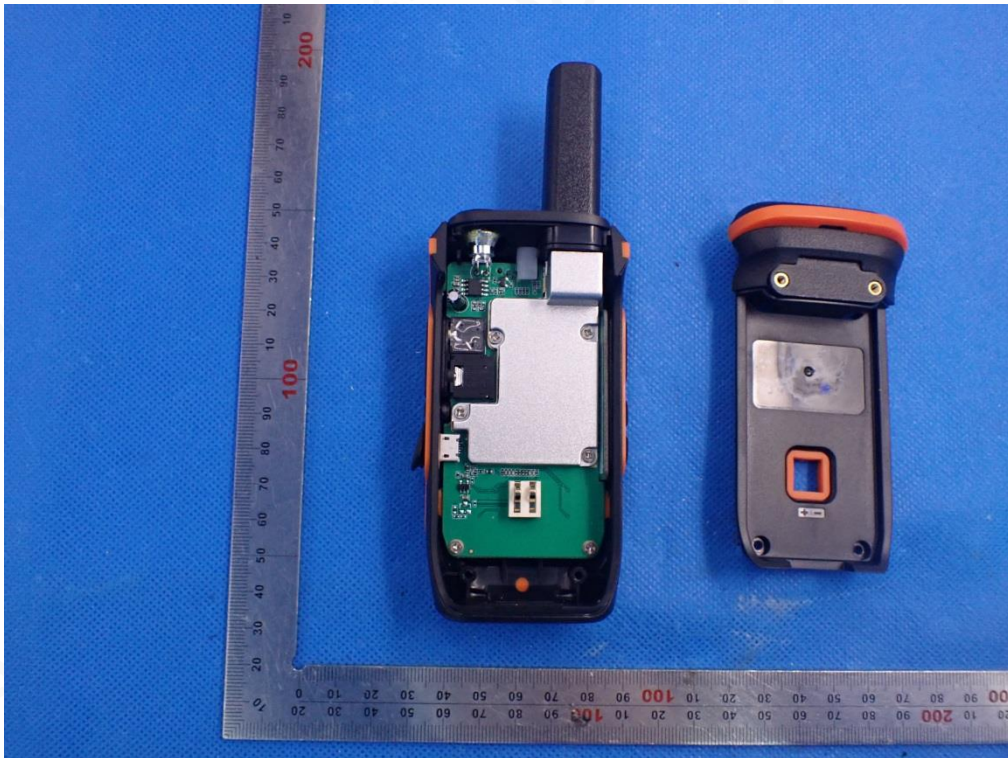


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OPEN VIEW-2 OF EUT



OPEN VIEW-3 OF EUT

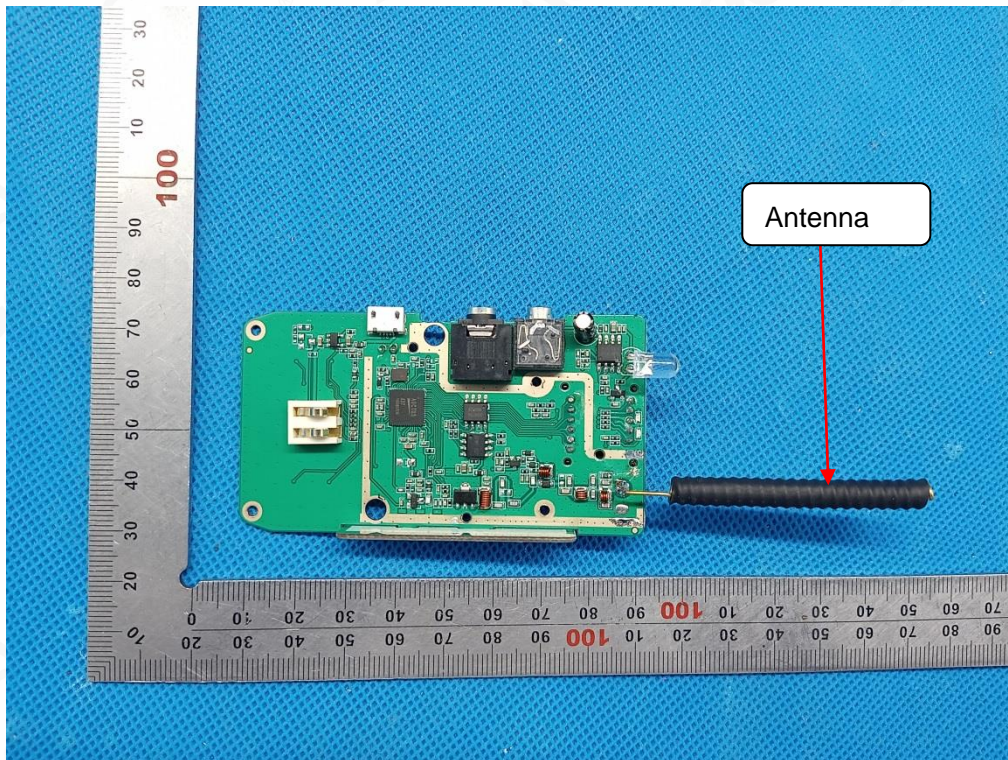


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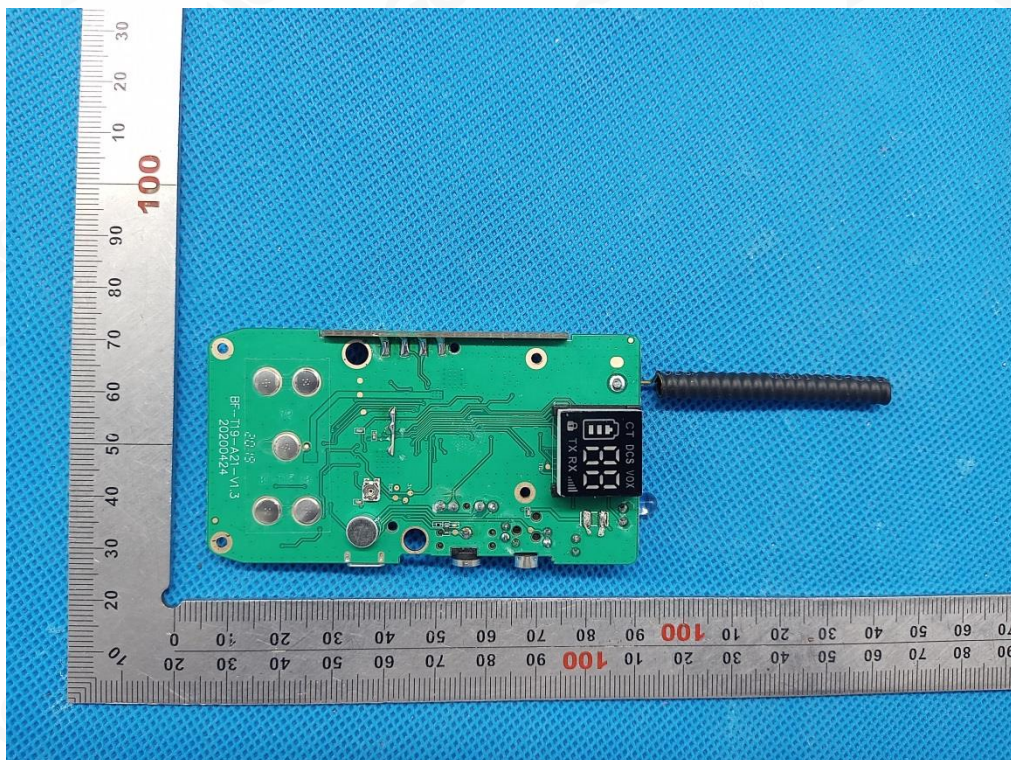
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INTERNAL VIEW-1 OF EUT



INTERNAL VIEW-2 OF EUT

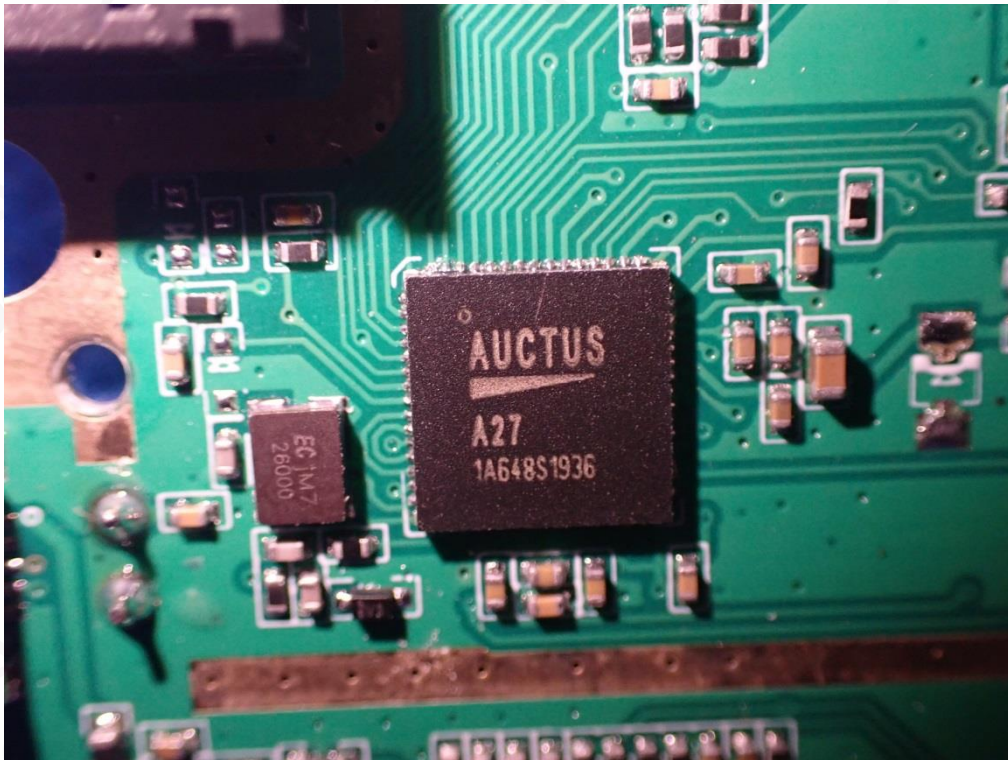


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INTERNAL VIEW-3 OF EUT



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Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the “Company”) solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the “Clients”).
2. Any report issued by Company as a result of this application for testing services (the “Report”) shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
4. The non-CMA report issued by AGC is only permitted to be used by the client as internal reference use and shall not be used for public demonstration purpose.
5. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
6. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
7. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
8. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
9. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
10. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the “Dedicated Testing/Inspection Stamp” is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.

