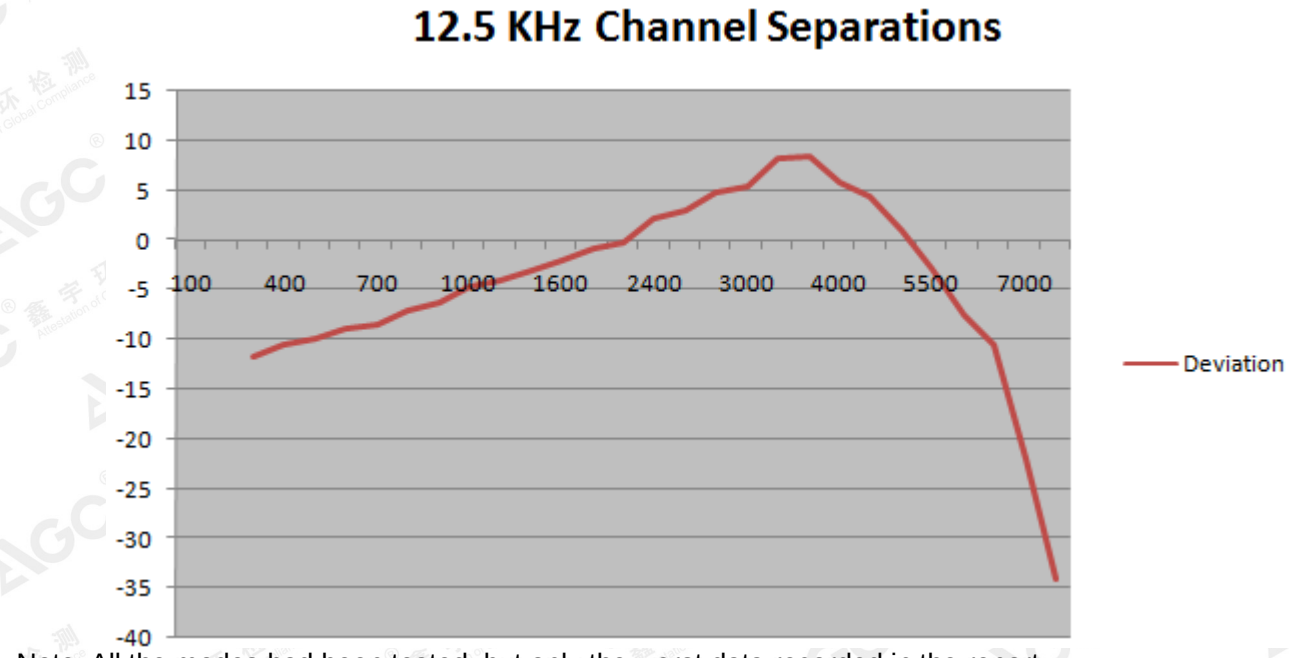
Frequency Response of High Channel---H Power



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

10. MAXIMUMN TRANSMITTER POWER (CONDUCTED OUTPUT POWER) PEAK POWER

10.1 PROVISIONS APPLICABLE

Per FCC §2.1046 § 22.565 and §90.205: Maximum ERP is dependent upon the station's antenna HAAT and required service area.

10.2 TEST PROCEDURE

The RF output of Two-way Radio was conducted to a spectrum analyzer through an appropriate attenuator.

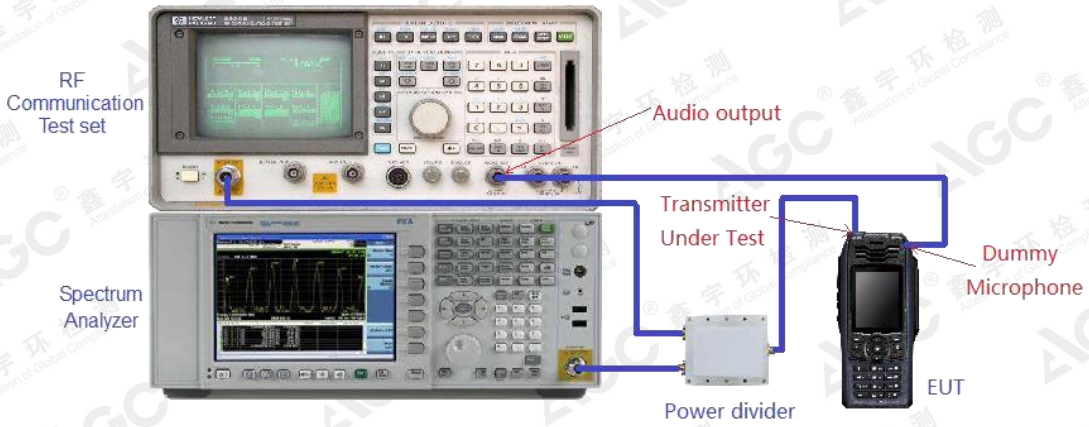
In the semi-anechoic chamber, setup as illustrated above the DUT placed on the 0.8m height of Turn Table, rotated the table 45 degree each interval to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power for each degree interval. The "Read Value" is the spectrum reading of maximum power value.

The substitution antenna is substituted for DUT 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.

EIRP = "Read Value" + Measured substitution value + 2.15.

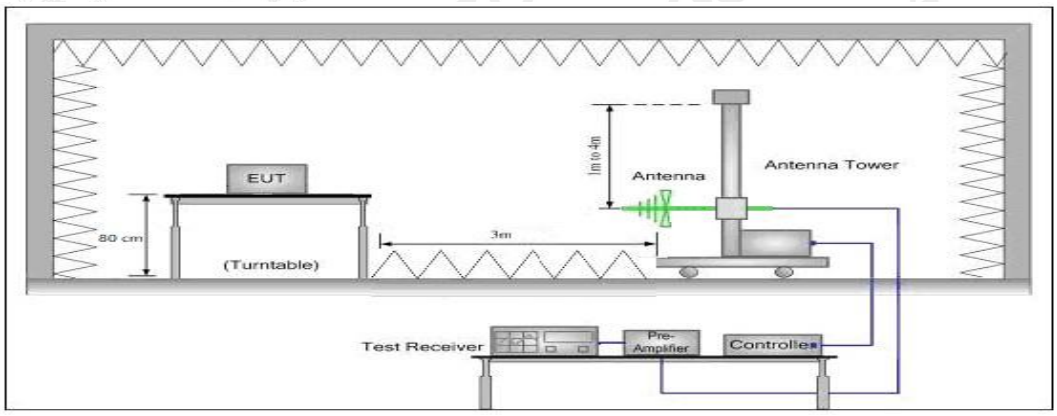
10.3 TEST CONFIGURATION

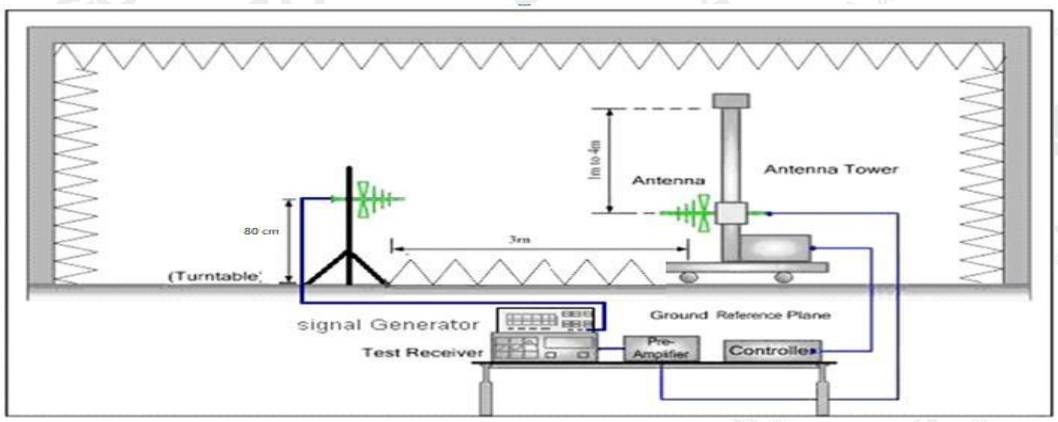
Conducted Output Power:



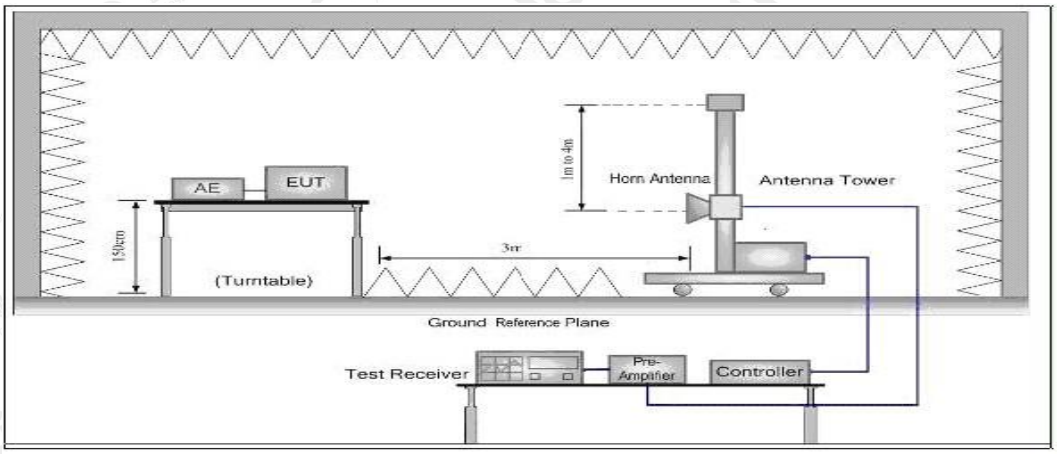
Effective Radiated Power

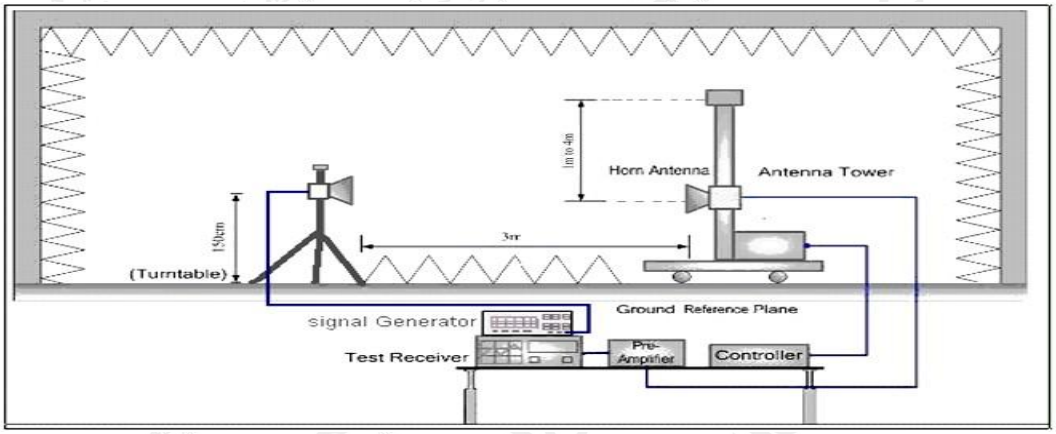
Radiated Below1GHz





Radiated Above 1 GHz





10.4 TEST RESULT

The maximum Conducted Power (CP) for VHF/UHF is
Analog: 2W/0.5 W for 12.5 KHz Channel Separation VHF
Analog: 2W/0.5 W for 12.5 KHz Channel Separation UHF
Digital: 2W/0.5 W for 12.5 KHz Channel Separation VHF
Digital: 2W/0.5 W for 12.5 KHz Channel Separation UHF

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

UHF:
Analog:

Conducted Power Measurement Results-2W		
Channel Separation	Channel	Measurement Result (dBm)
		For 33dBm(2W)
12.5 KHz	Bottom(400.025MHz)	32.21
	Middle(453.225MHz)	32.35
	Middle(454.025MHz)	32.34
	Top (479.975MHz)	32.46

Radiated Power Measurement Results-2W		
Channel Separation	Channel	Measurement Result (dBm)
		For 33dBm(2W)
12.5 KHz	Bottom(400.025MHz)	32.14
	Middle(453.225MHz)	32.27
	Middle(454.025MHz)	32.24
	Top (479.975MHz)	32.31

Conducted Power Measurement Results-0.5W		
Channel Separation	Channel	Measurement Result (dBm)
		For 26.99dBm(0.5W)
12.5 KHz	Bottom(400.025MHz)	26.31
	Middle(453.225MHz)	26.35
	Middle(454.025MHz)	26.33
	Top (479.975MHz)	26.47

Radiated Power Measurement Results-0.5W		
Channel Separation	Channel	Measurement Result (dBm)
		For 26.99dBm(0.5W)
12.5 KHz	Bottom(400.025MHz)	26.21
	Middle(453.225MHz)	26.24
	Middle(454.025MHz)	26.23
	Top (479.975MHz)	26.35

Digital:

Date + voice:

Conducted Power Measurement Results-2W		
Channel Separation	Channel	Measurement Result (dBm)
		For 33dBm(2W)
12.5 KHz	Bottom(400.025MHz)	32.18
	Middle(453.225MHz)	32.14
	Middle(454.025MHz)	32.15
	Top (479.975MHz)	32.19

Radiated Power Measurement Results-2W		
Channel Separation	Channel	Measurement Result (dBm)
		For 33dBm(2W)
12.5 KHz	Bottom(400.025MHz)	32.09
	Middle(453.225MHz)	32.05
	Middle(454.025MHz)	32.06
	Top (479.975MHz)	32.13

Date transmission mode:

Conducted Power Measurement Results-2W		
Channel Separation	Channel	Measurement Result (dBm)
		For 33dBm(2W)
12.5 KHz	Bottom(400.025MHz)	31.99
	Middle(453.225MHz)	31.98
	Middle(454.025MHz)	31.96
	Top (479.975MHz)	32.08

Radiated Power Measurement Results-2W		
Channel Separation	Channel	Measurement Result (dBm)
		For 33dBm(2W)
12.5 KHz	Bottom(400.025MHz)	31.95
	Middle(453.225MHz)	31.94
	Middle(454.025MHz)	31.92
	Top (479.975MHz)	32.01

Date + voice:

Conducted Power Measurement Results-0.5W		
Channel Separation	Channel	Measurement Result (dBm)
		For 26.99dBm(0.5W)
12.5 KHz	Bottom(400.025MHz)	26.21
	Middle(453.225MHz)	26.35
	Middle(454.025MHz)	26.31
	Top (479.975MHz)	26.36

Radiated Power Measurement Results-0.5W		
Channel Separation	Channel	Measurement Result (dBm)
		For 26.99dBm(0.5W)
12.5 KHz	Bottom(400.025MHz)	26.15
	Middle(453.225MHz)	26.22
	Middle(454.025MHz)	26.19
	Top (479.975MHz)	26.24

Date transmission mode:

Conducted Power Measurement Results-0.5W		
Channel Separation	Channel	Measurement Result (dBm)
		For 26.99dBm(0.5W)
12.5 KHz	Bottom(400.025MHz)	26.14
	Middle(453.225MHz)	26.15
	Middle(454.025MHz)	26.12
	Top (479.975MHz)	26.18

Radiated Power Measurement Results-0.5W		
Channel Separation	Channel	Measurement Result (dBm)
		For 26.99dBm(0.5W)
12.5 KHz	Bottom(400.025MHz)	26.07
	Middle(453.225MHz)	26.08
	Middle(454.025MHz)	26.05
	Top (479.975MHz)	26.11

10.5 CONDUCT SPURIOUS PLOT

Note:The EUT antenna is a non-removable antenna and does not need to measure Conduct spurious

11. RANSMITTER FREQUENCY BEHAVIOR

11.1PROVISIONS APPLICABLE

FCC §90.214

Time intervals [1, 2]	Maximum frequency difference [3]	All equipment	
		150 to 174 MHz	421 to 512 MHz
Transient Frequency Behavior for Equipment Designed to Operate on 25 kHz Channels			
t_1 [4]	± 25.0 kHz	5.0 ms	10.0 ms
t_2	± 12.5 kHz	20.0 ms	25.0 ms
t_3 [4]	± 25.0 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 12.5 kHz Channels			
t_1 [4]	± 12.5 kHz	5.0 ms	10.0 ms
t_2	± 6.25 kHz	20.0 ms	25.0 ms
t_3 [4]	± 12.5 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 6.25 kHz Channels			
t_1 [4]	± 6.25 kHz	5.0 ms	10.0 ms
t_2	± 3.125 kHz	20.0 ms	25.0 ms
t_3 [4]	± 6.25 kHz	5.0 ms	10.0 ms

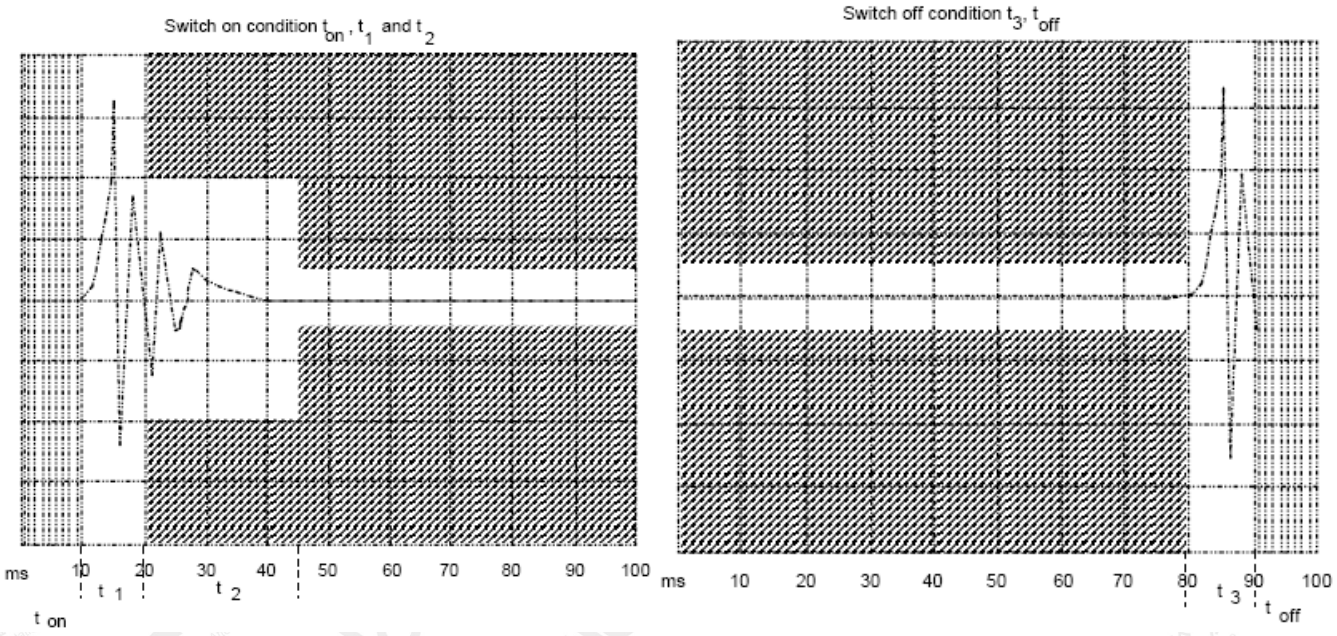
[1] t_{on} is the instant when a 1 kHz test signal is completely suppressed, including any capture time due to phasing.
t_1 is the time period immediately following t_{on}.
t_2 is the time period immediately following t_1.
t_3 is the time period from the instant when the transmitter is turned off until t_{off}.
t_{off} is the instant when the 1 kHz test signal starts to rise.
[2] During the time from the end of t_2 to the beginning of t_3, the frequency difference must not exceed the limits specified in §90.213.
[3] Difference between the actual transmitter frequency and the assigned transmitter frequency.
[4] If the transmitter carrier output power rating is 6 watts or less, the frequency difference during this time period may exceed the maximum frequency difference for this time period.

11.2 TEST METHOD

TIA/EIA-603 2.2.19.3

11.3 DESCRIBE LIMIT LINE OF RANSMITTER FREQUENCY BEHAVIOR

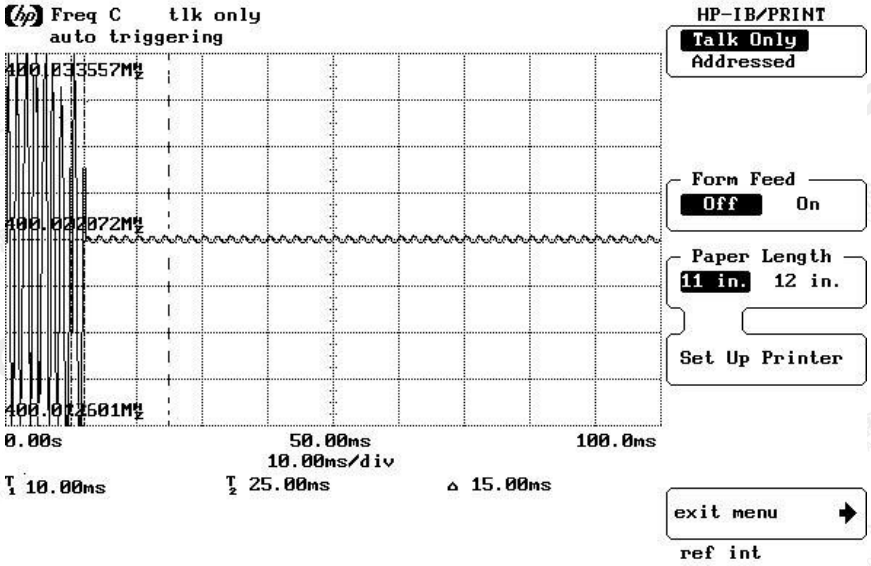
ton: The switch-on instant ton of a transmitter is defined by the condition when the output power, measured at the antenna terminal, exceeds 0,1 % of the full output power (-30 dBc).
t1: period of time starting at ton and finishing according to above 11.1
t2: period of time starting at the end of t1 and finishing according to above 11.1
toff: switch-off instant defined by the condition when the output power falls below 0,1 % of the full output power (-30 dBc).
t3: period of time that finishing at toff and starting according to above 11.1



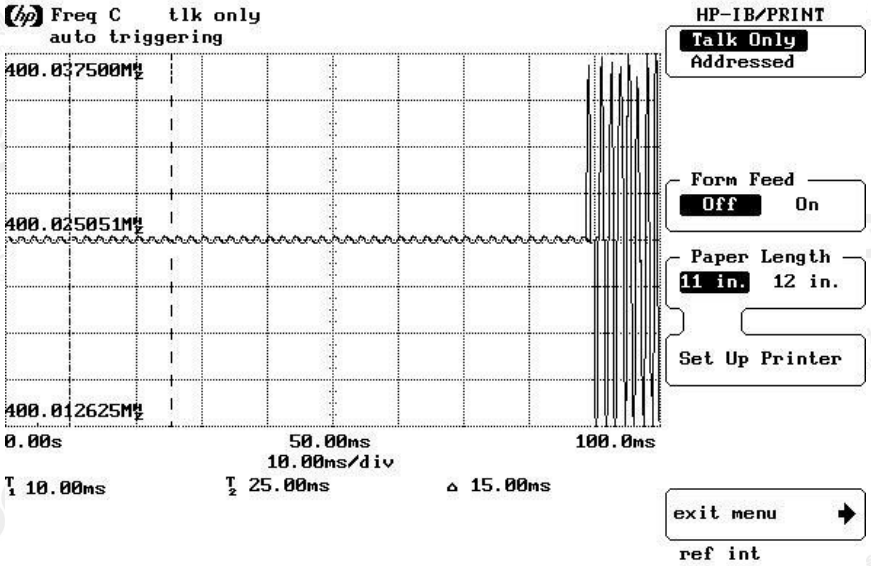
11.4 MEASURE RESULT

UHF:

Transmitter Frequency Behavior @ 12.5 KHz Channel Separation--Off to On



Transmitter Frequency Behavior @ 12.5 KHz Channel Separation--On to Off



12. AUDIO LOW PASS FILTER RESPONSE

12.1.TEST LIMITS

2.1047(a): 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. 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.
90.242(b)(8): Recommended audio filter attenuation characteristics are given below:

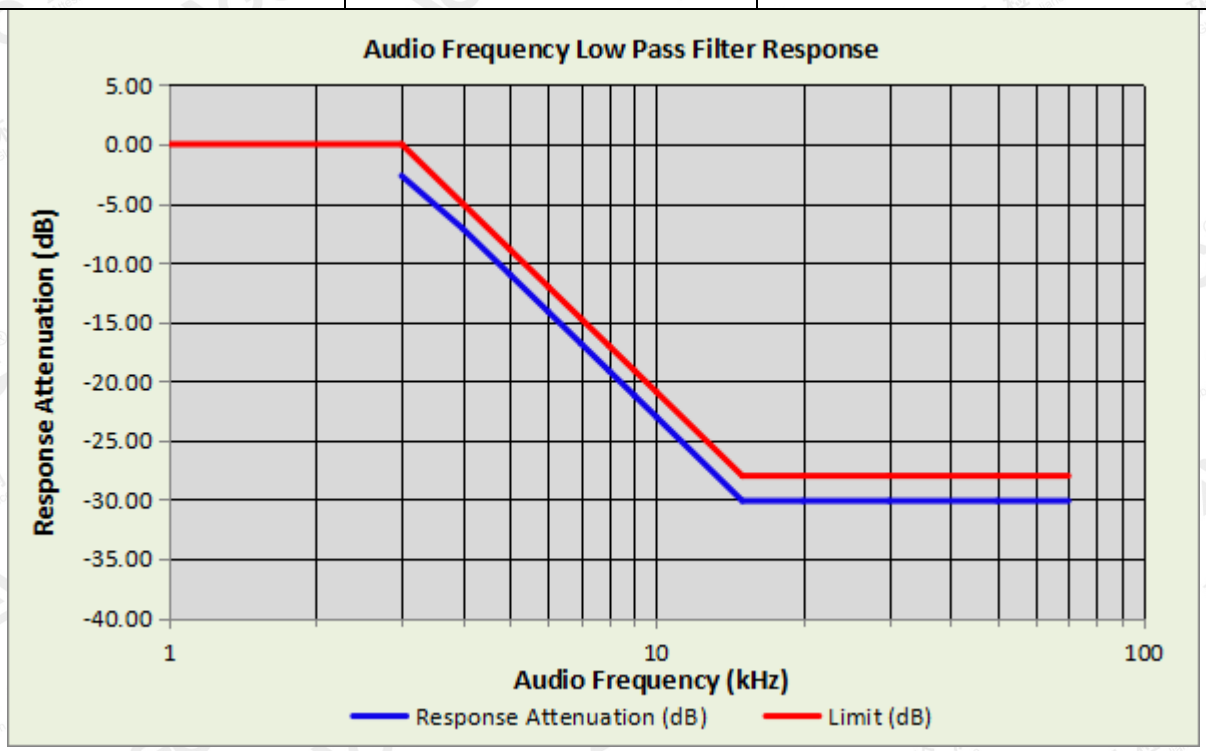
Audio band	Minimum Attenuation Rel. to 1 KHz Attenuation
3 –20 KHz 20 – 30 KHz	60 $\log_{10}$(f/3) dB where f is in KHz 50dB

12.2. METHOD OF MEASUREMENTS

The rated audio input signal was applied to the input of the audio low-pass filter (or of all modulation stages) using an audio oscillator, this input signal level and its corresponding output signal were then measured and recorded using the FFT Digital Spectrum Analyzer. Tests were repeated at different audio signal frequencies from 0 to 50 KHz.

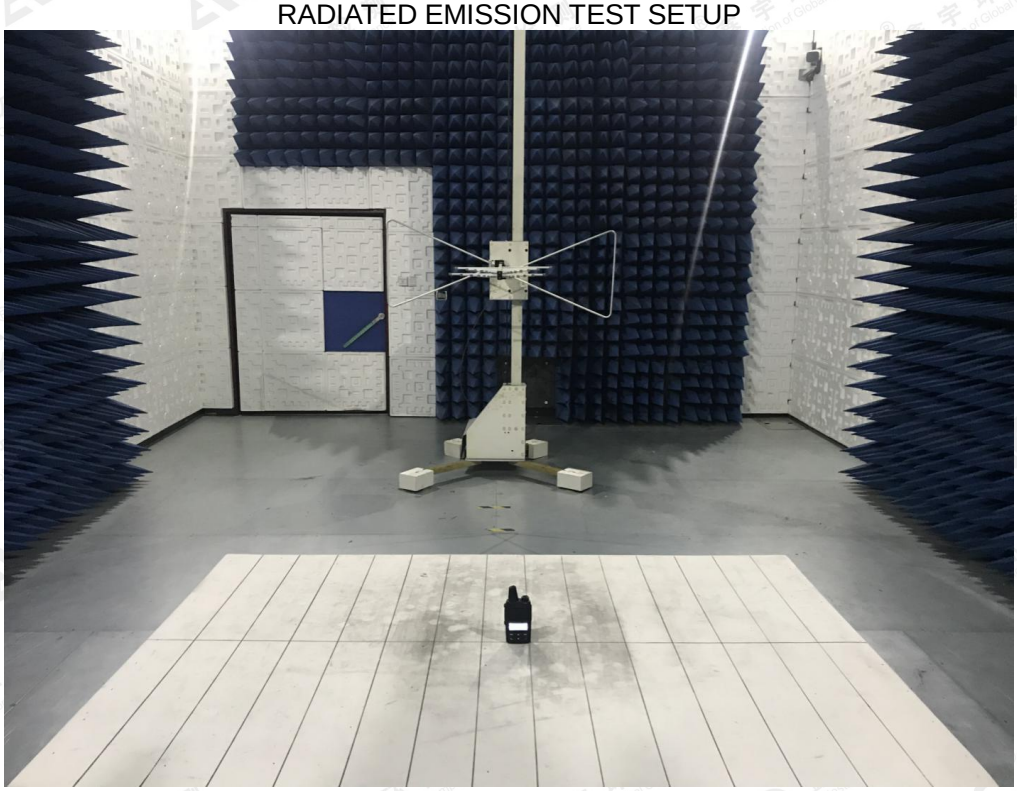
12.3.MEASURE RESULT
Analog:
12.5 KHZ CHANNEL SPACING, F3E, FREQUENCY OF ALL MODULATION STATES (TEST RESULT FOR UHF)-2W

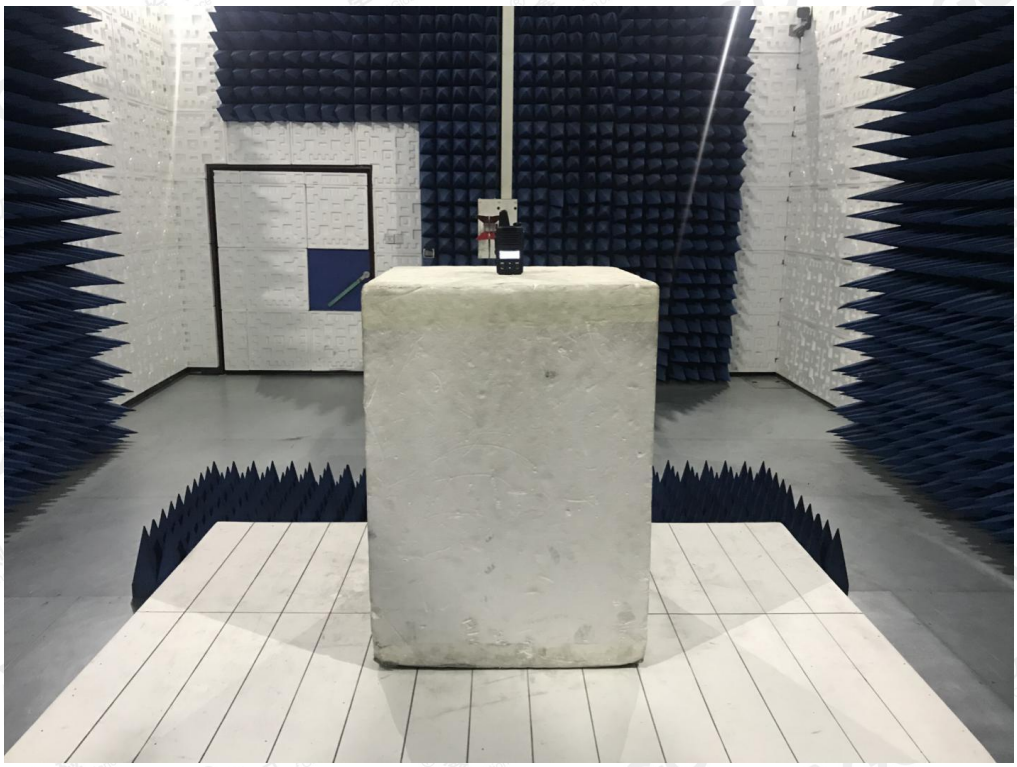
Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
1	0	/
3	-2.67	0.00
4	-7.11	-5.00
5	-10.98	-8.87
6	-14.15	-12.04
7	-16.83	-14.72
8	-19.15	-17.04
9	-21.19	-19.08
10	-23.03	-20.92
15	-30.11	-28.00
20	-30.11	-28.00
30	-30.11	-28.00
50	-30.11	-28.00
70	-30.11	-28.00



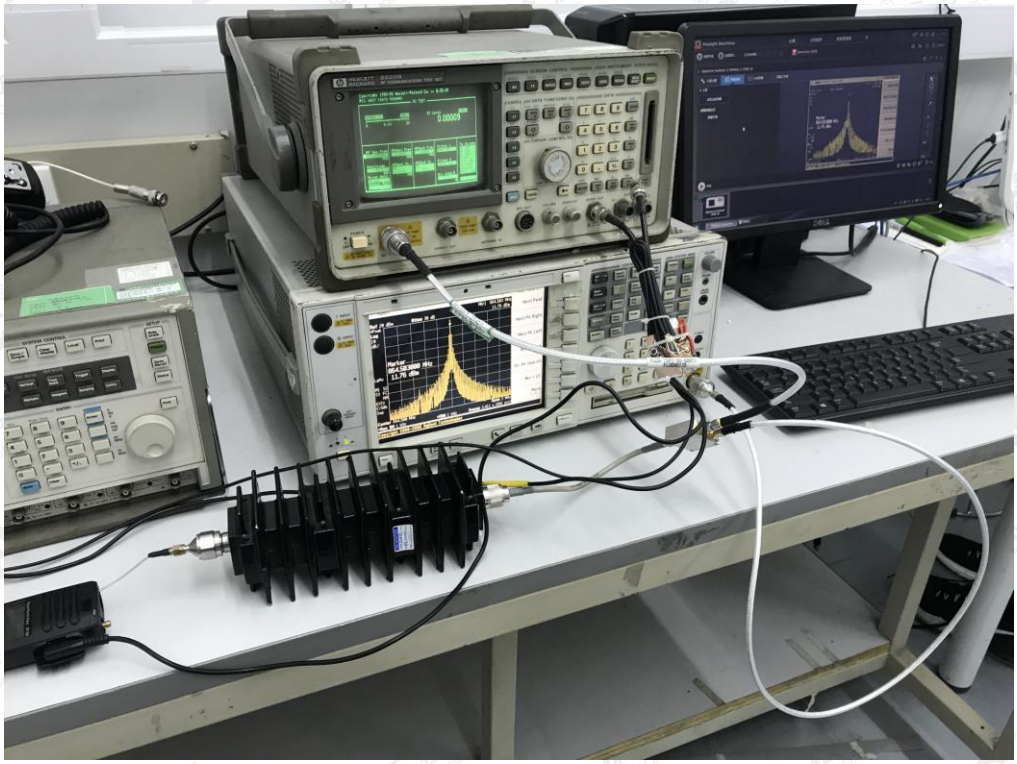
APPENDIX I: PHOTOGRAPHS OF SETUP

RADIATED EMISSION TEST SETUP





CONDUCTED TEST SETUP



APPENDIX II PHOTOGRAPHS OF EUT

TOTAL VIEW OF EUT

TOP VIEW OF EUT

BOTTOM VIEW OF EUT

FRONT VIEW OF EUT

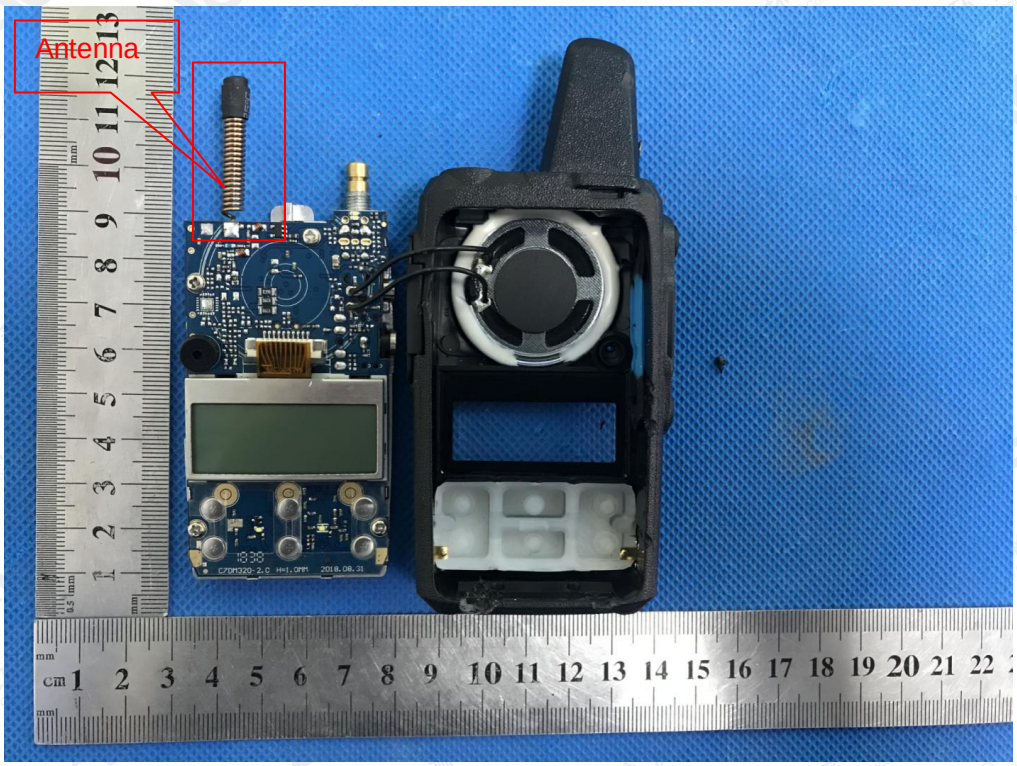
BACK VIEW OF EUT

LEFT VIEW OF EUT

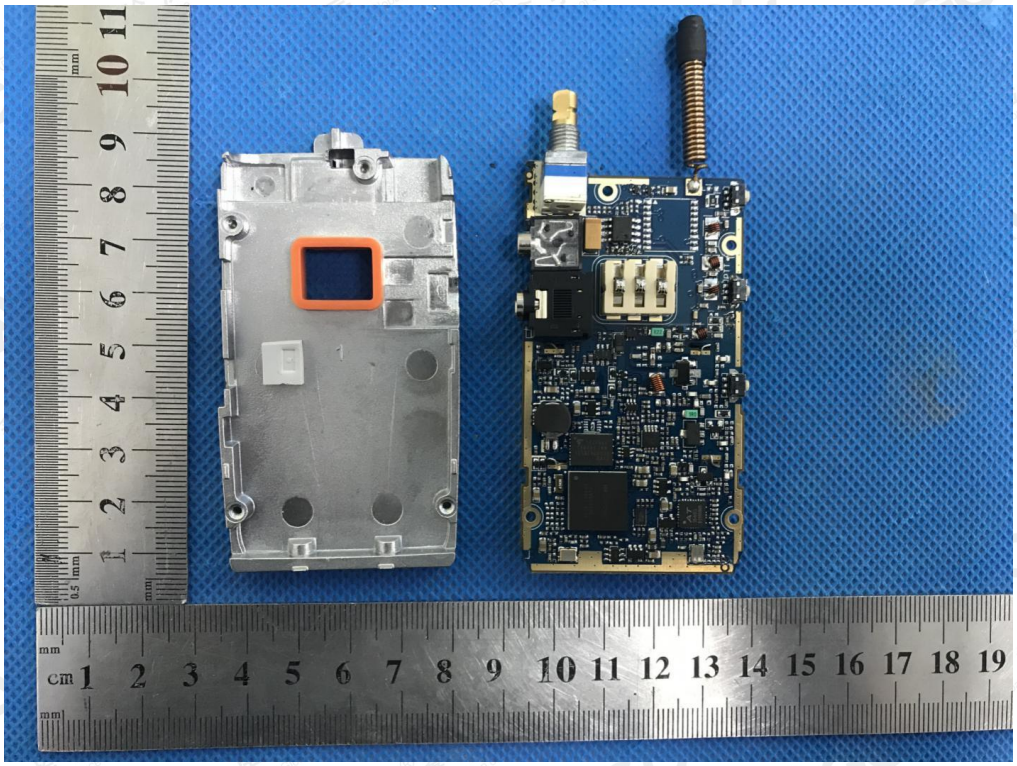
RIGHT VIEW OF EUT

OPEN VIEW-1 OF EUT

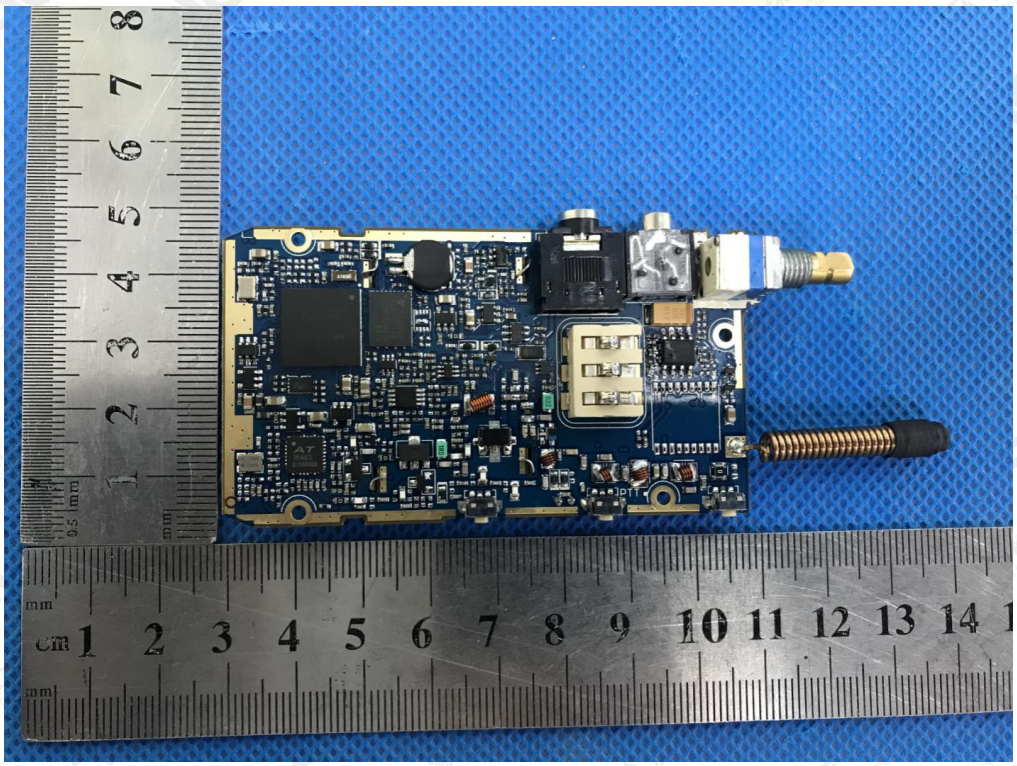
OPEN VIEW-2 OF EUT



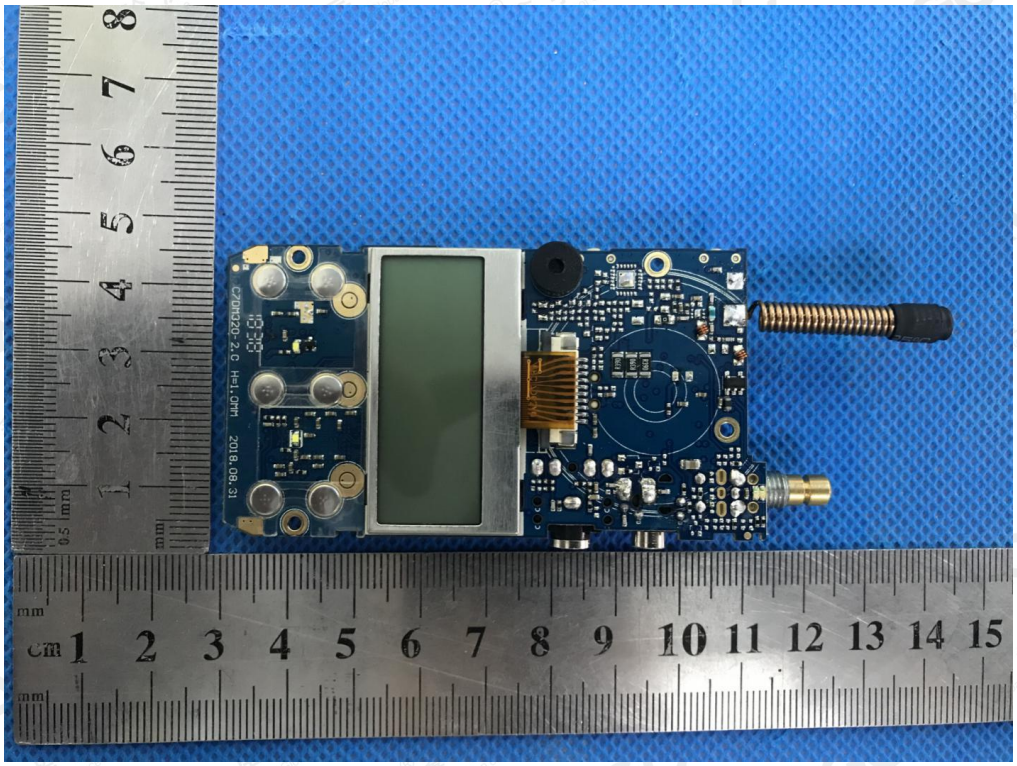
OPEN VIEW-3 OF EUT



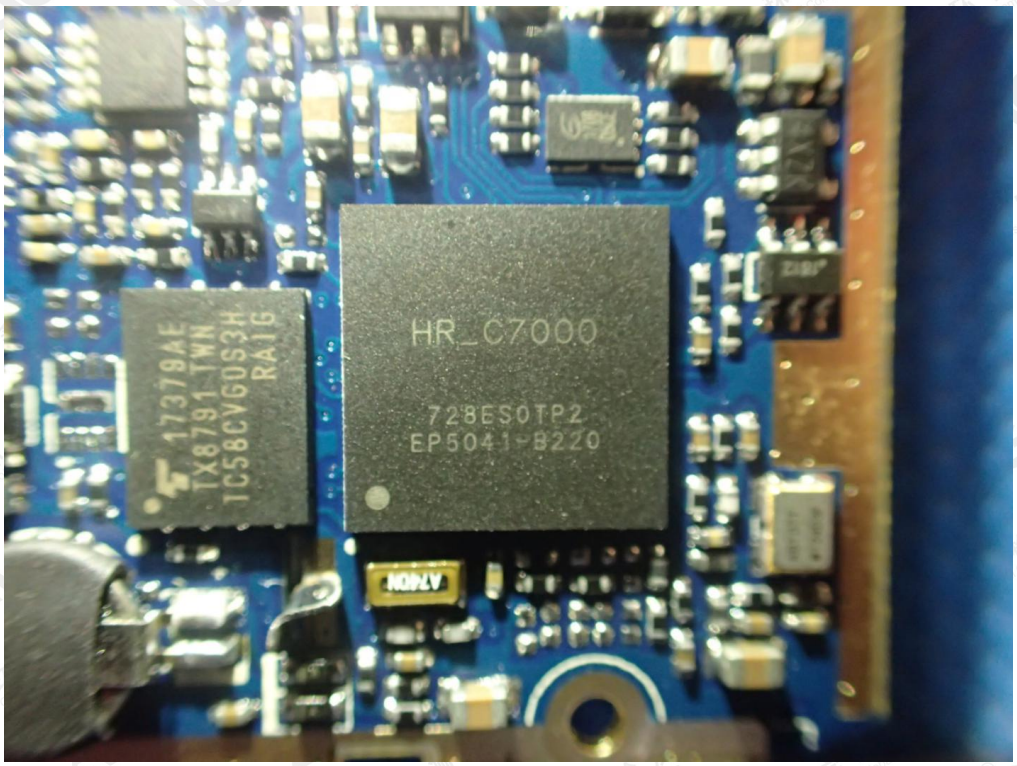
INTERNAL VIEW-1 OF EUT



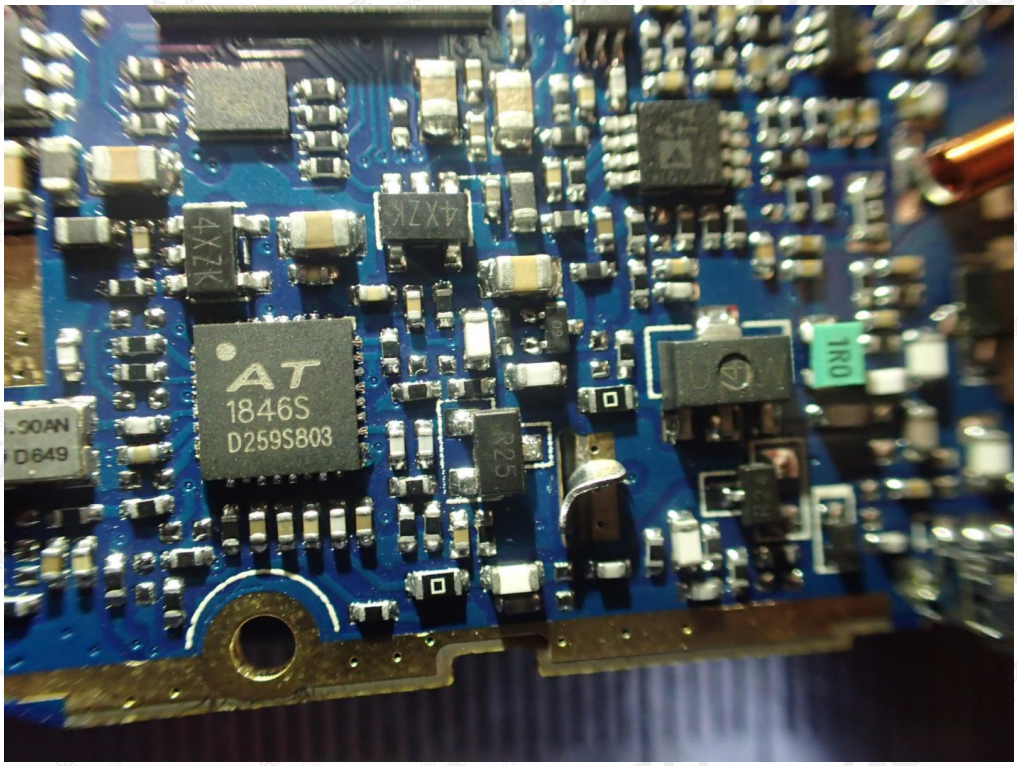
INTERNAL VIEW-2 OF EUT



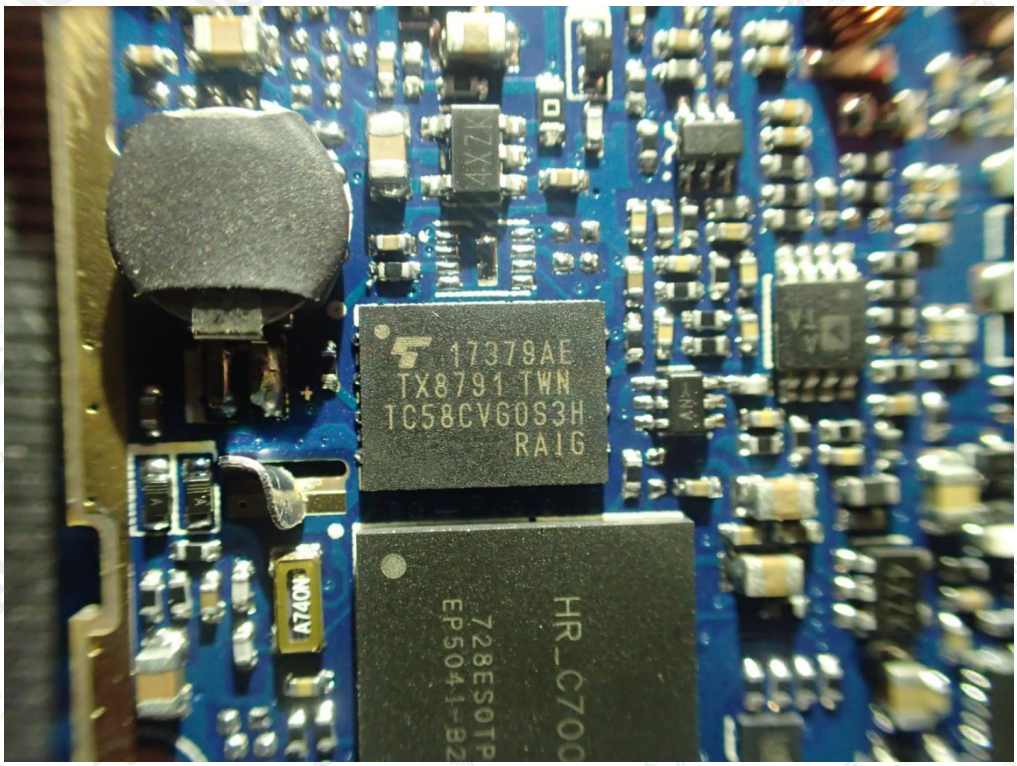
INTERNAL VIEW-3 OF EUT



INTERNAL VIEW-4 OF EUT



INTERNAL VIEW-5 OF EUT



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