

## 10. MODULATION CHARACTERISTICS

### 10.1 PROVISIONS APPLICABLE

According to [FCC Part 95.1775, 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 95.1775(a) A GMRS 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 5000Hz 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.

### 10.2 MEASUREMENT METHOD

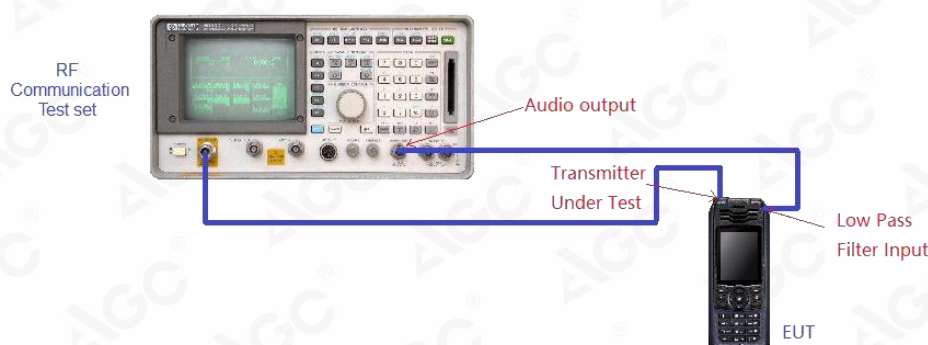
#### 10.2.1 Modulation Limit

- (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.

#### 10.2.2 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 =  $20\log_{10}(\text{Deviation of test frequency}/\text{Deviation of 1 KHz reference})$ .



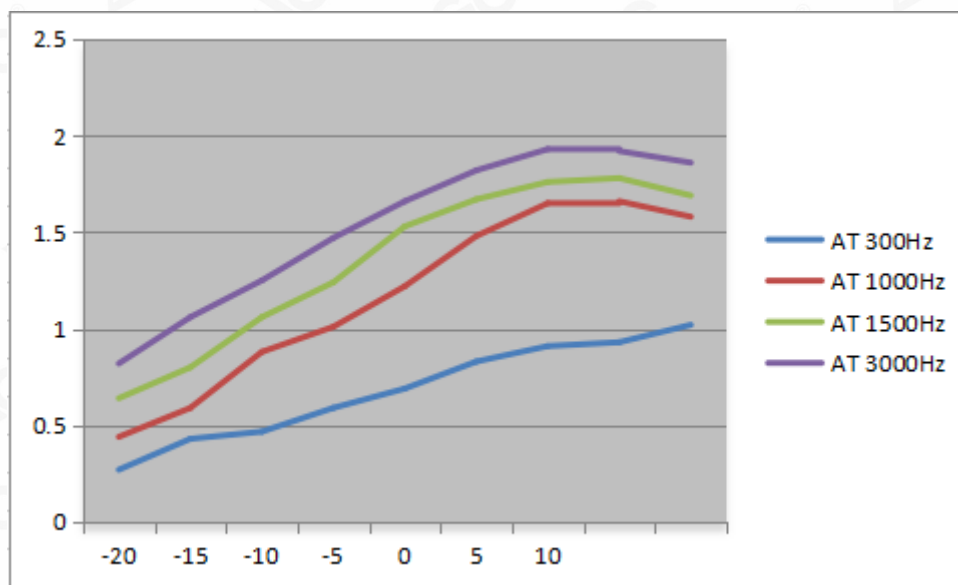
### 10.3 MEASUREMENT RESULT

TEST CHANNEL: 11

(A). MODULATION LIMIT:

**462.6250MHz @ 12.5KHz Channel Separations-45W**

| 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                   | 0.27                           | 0.44                            | 0.64                            | 0.82                            |
| -15                   | 0.43                           | 0.59                            | 0.8                             | 1.06                            |
| -10                   | 0.467                          | 0.88                            | 1.06                            | 1.25                            |
| -5                    | 0.59                           | 1.01                            | 1.24                            | 1.47                            |
| 0                     | 0.69                           | 1.22                            | 1.53                            | 1.66                            |
| +5                    | 0.83                           | 1.48                            | 1.67                            | 1.82                            |
| +10                   | 0.91                           | 1.65                            | 1.76                            | 1.93                            |
| +15                   | 0.93                           | 1.66                            | 1.78                            | 1.92                            |
| +20                   | 1.02                           | 1.58                            | 1.69                            | 1.86                            |



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

**(B). AUDIO FREQUENCY RESPONSE:**

**462.6250MHz @ 12.5 KHz Channel Separations-45W**

| Frequency (Hz) | Deviation (KHz) | Audio Frequency Response(dB) |
|----------------|-----------------|------------------------------|
| 100            | --              | --                           |
| 200            | --              | --                           |
| 300            | 0.13            | -11.70                       |
| 400            | 0.22            | -7.13                        |
| 500            | 0.31            | -4.15                        |
| 600            | 0.36            | -2.85                        |
| 700            | 0.39            | -2.16                        |
| 800            | 0.42            | -1.51                        |
| 900            | 0.49            | -0.18                        |
| 1000           | 0.55            | 0.83                         |
| 1200           | 0.72            | 3.17                         |
| 1400           | 0.73            | 3.29                         |
| 1600           | 0.77            | 3.75                         |
| 1800           | 0.97            | 5.76                         |
| 2000           | 0.95            | 5.58                         |
| 2400           | 1.3             | 8.30                         |
| 2500           | 1.66            | 10.42                        |
| 2800           | 1.84            | 11.32                        |
| 3000           | 1.83            | 11.27                        |
| 3200           | 1.77            | 10.98                        |
| 3600           | 1.59            | 10.05                        |
| 4000           | 0.99            | 5.93                         |
| 4500           | 0.93            | 5.39                         |
| 5000           | 0.65            | 2.28                         |
| 5500           | 0.61            | 1.73                         |
| 6000           | 0.27            | -5.35                        |
| 6500           | 0.16            | -9.90                        |
| 7000           | 0.1             | -13.98                       |
| 7500           | 0.04            | -21.94                       |
| 9000           | --              | --                           |
| 10000          | --              | --                           |
| 14000          | --              | --                           |
| 18000          | --              | --                           |
| 20000          | --              | --                           |
| 30000          | --              | --                           |



Attestation of Global Compliance

Attestation of Global Compliance(Shenzhen)Co.,Ltd.

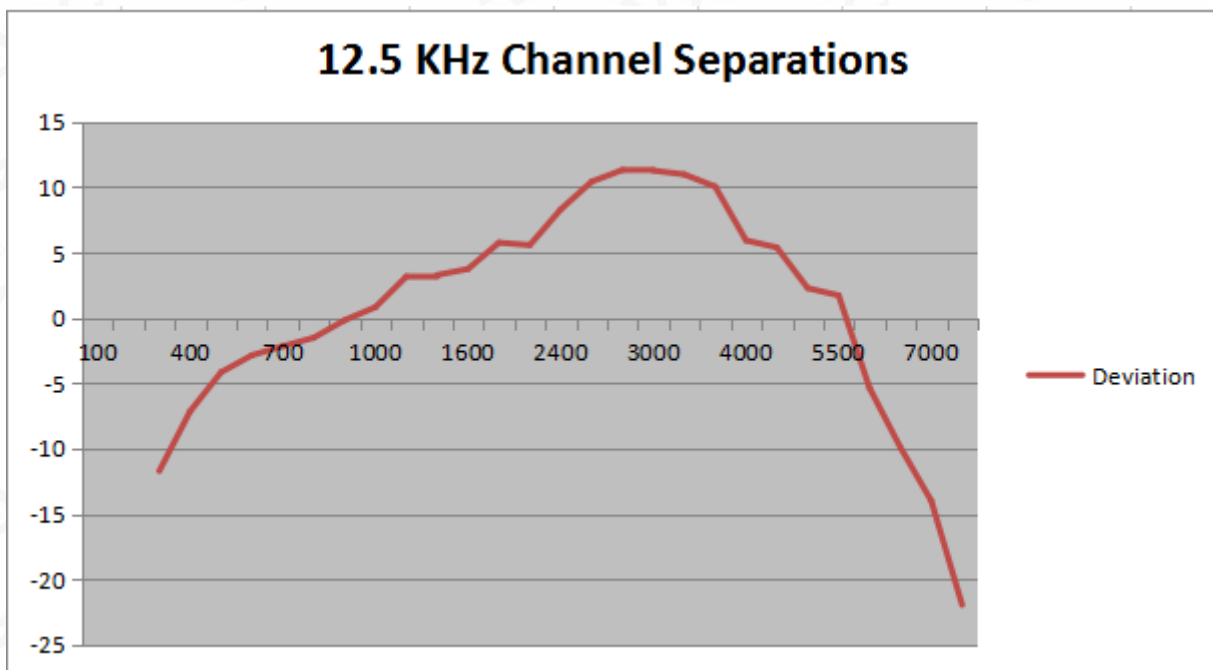
Add: 2/F., Building 2, Sanwei Chaxi Industrial Park, Sanwei Community,  
Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755 2523 4088

E-mail: agc@agc-cert.com

Service Hotline: 400 089 2118

### Frequency Response Result



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



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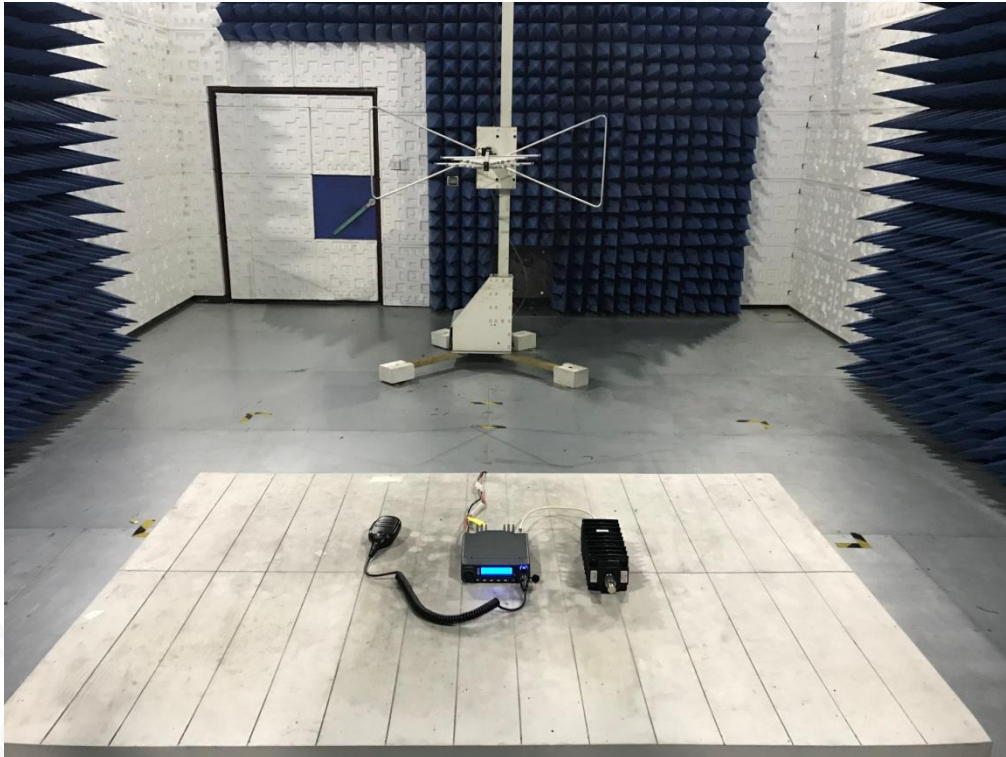
Tel: +86-755 2523 4088

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**APPENDIX I: PHOTOGRAPHS OF SETUP**  
**RADIATED EMISSION TEST SETUP**

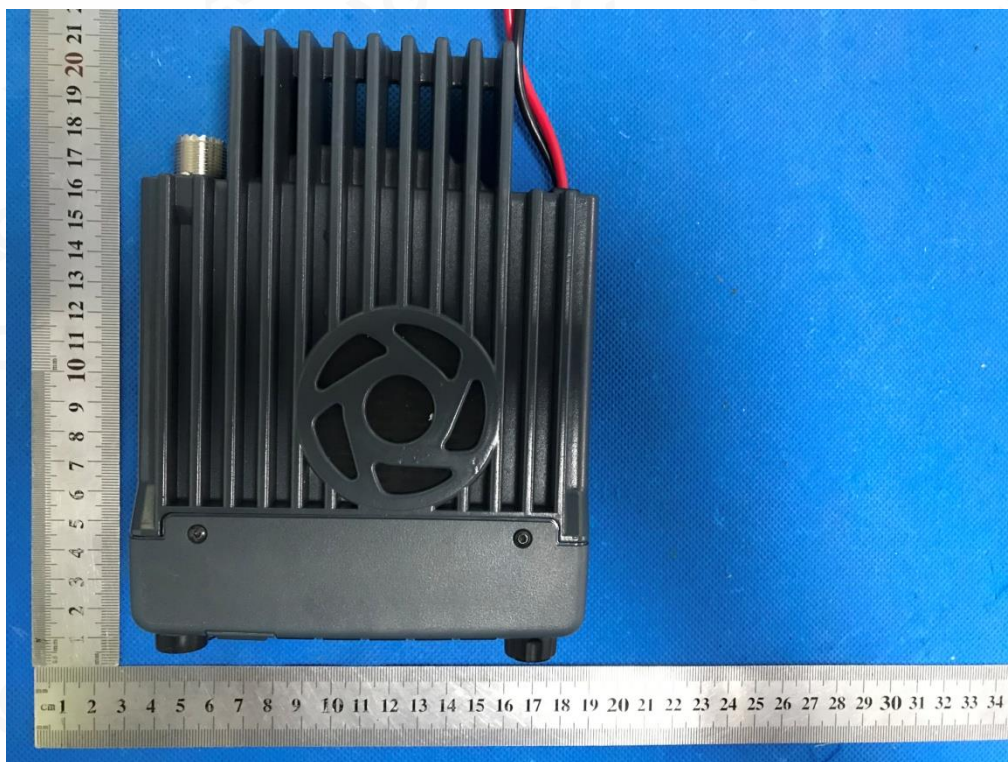




**APPENDIX II: EXTERNAL VIEW OF EUT**  
TOTAL VIEW OF EUT

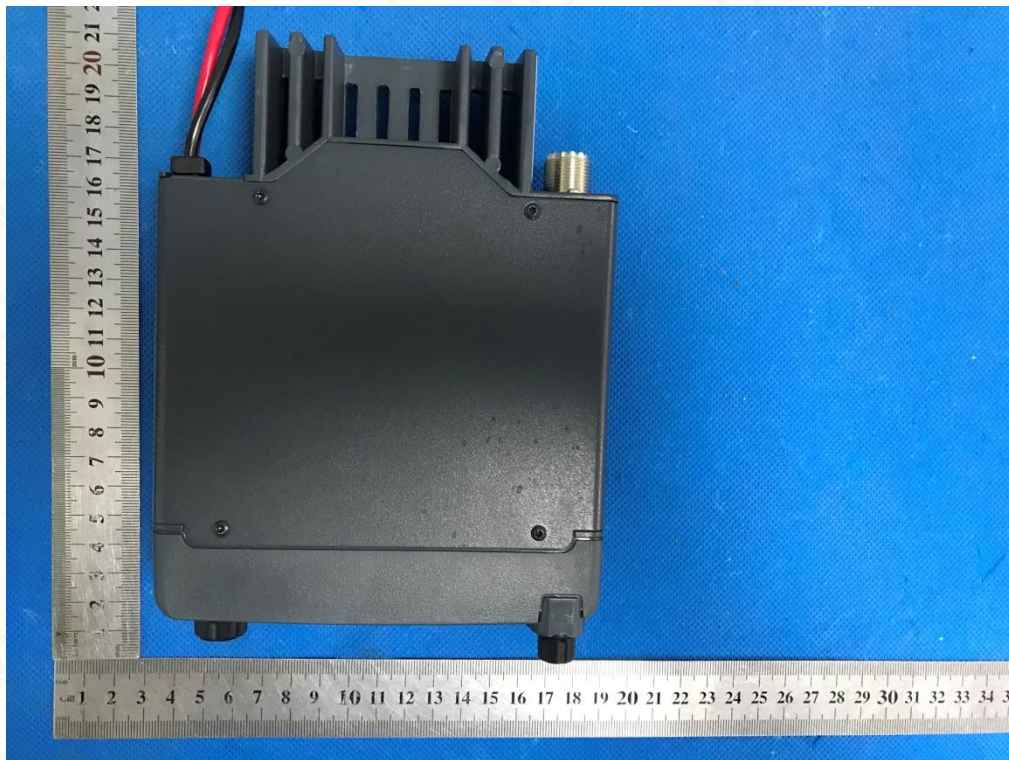


**Part I**  
**TOP VIEW OF EUT**





BOTTOM VIEW OF EUT

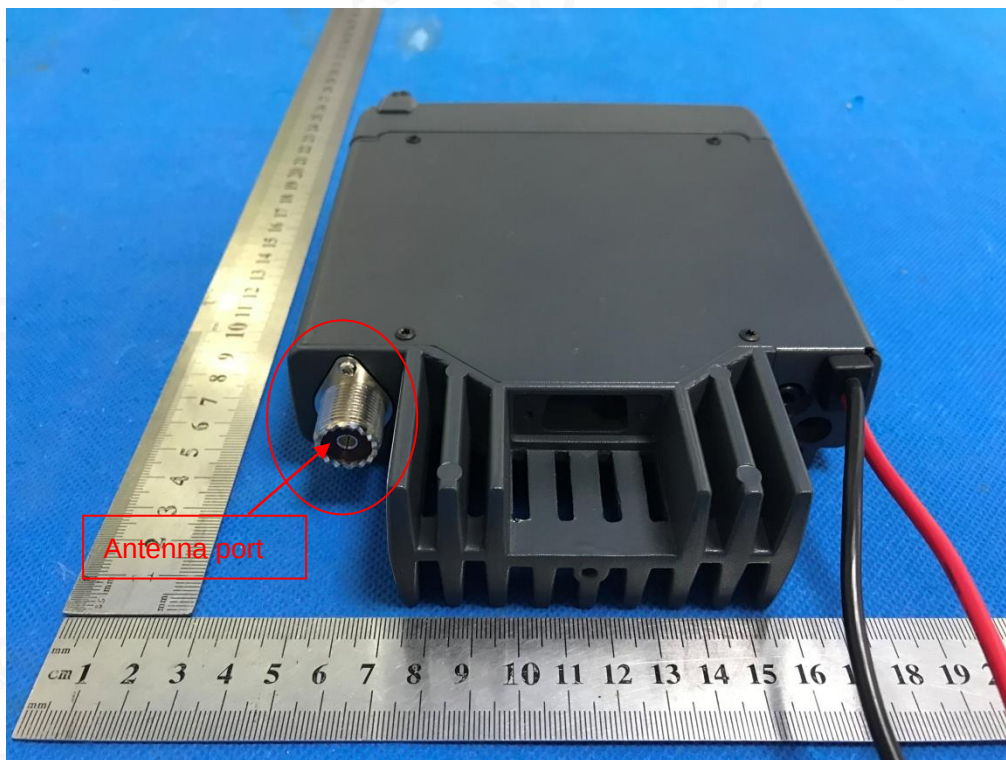


FRONT VIEW OF EUT





BACK VIEW OF EUT



LEFT VIEW OF EUT

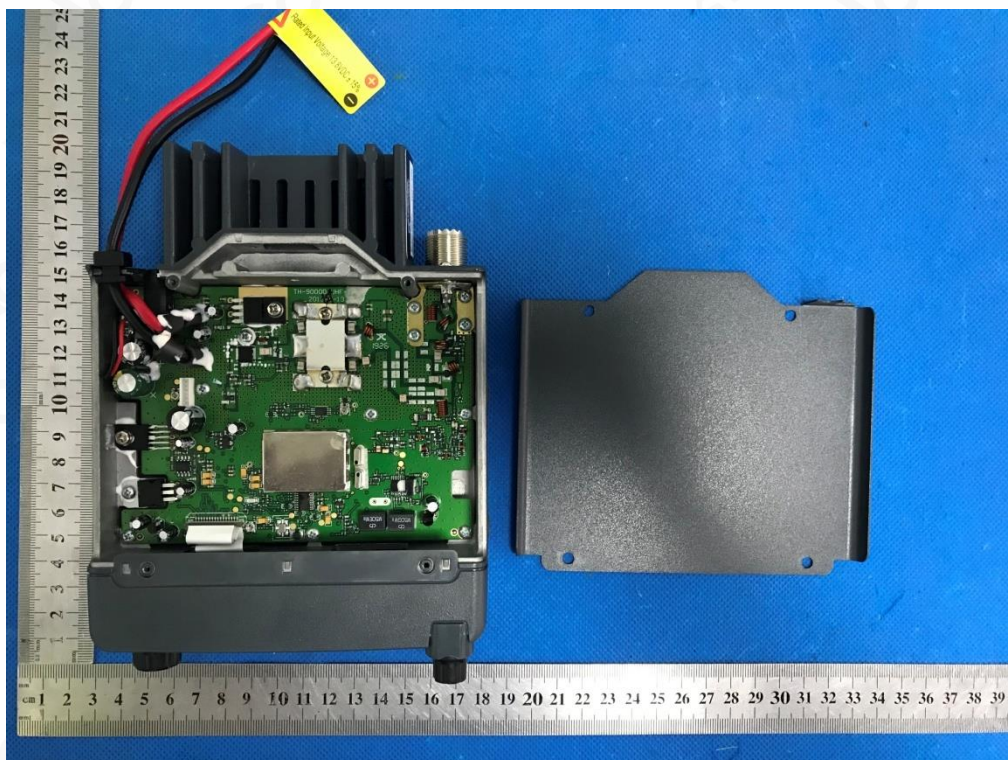




RIGHT VIEW OF EUT

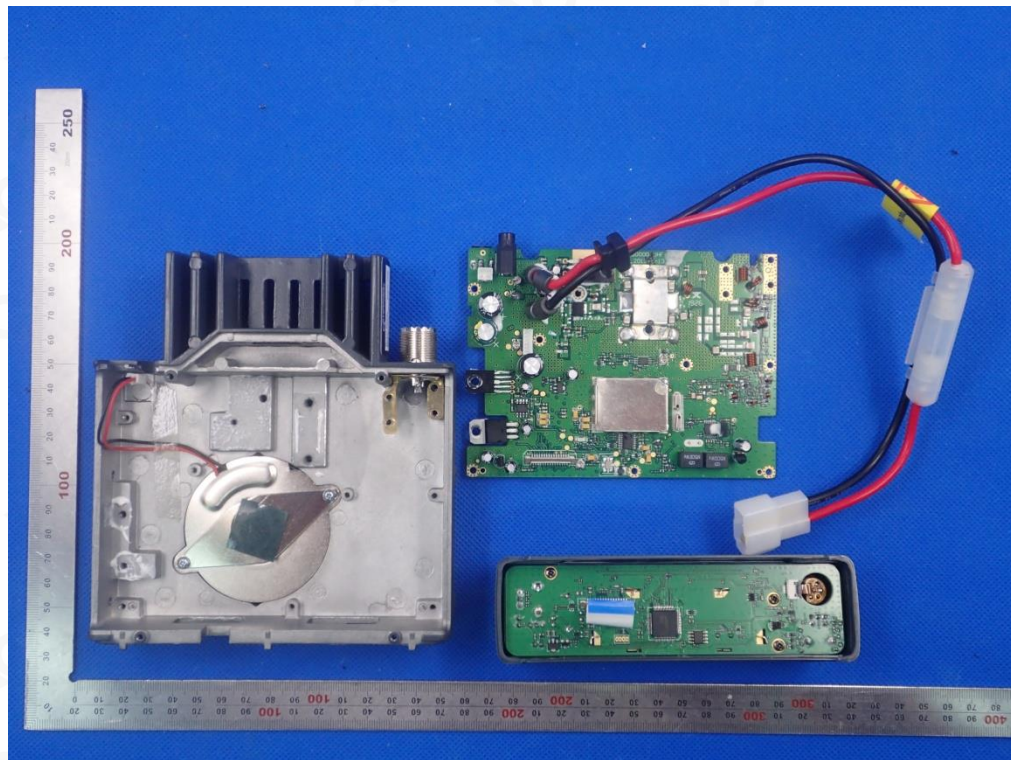


OPEN VIEW-1 OF EUT

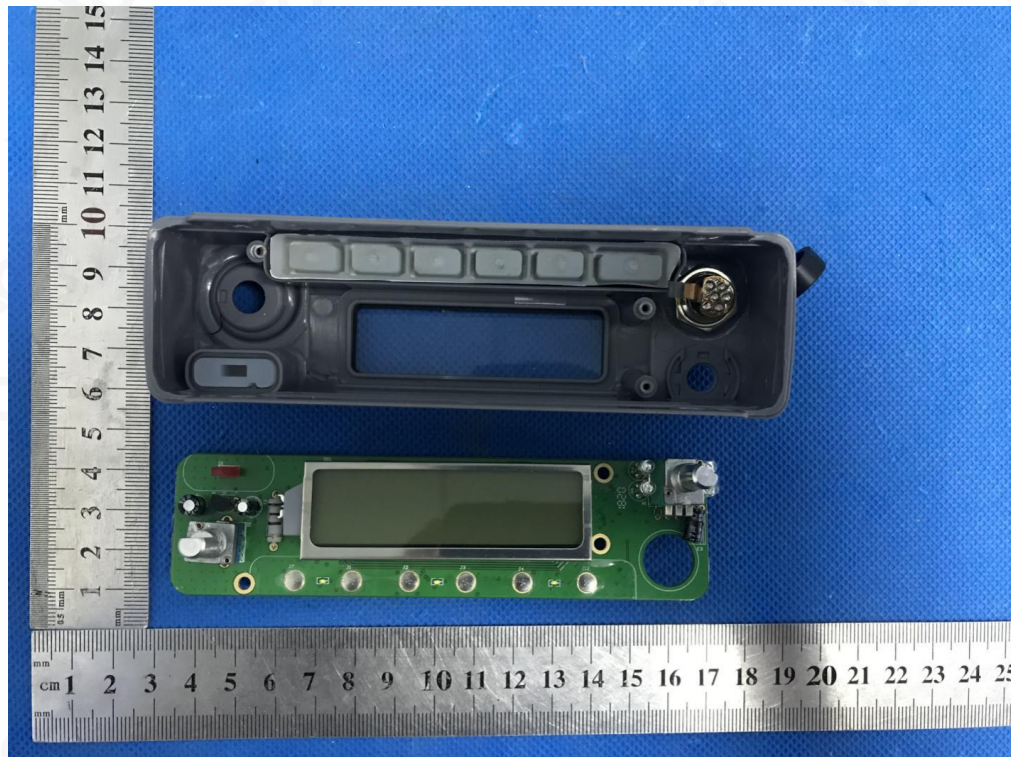




OPEN VIEW-2 OF EUT

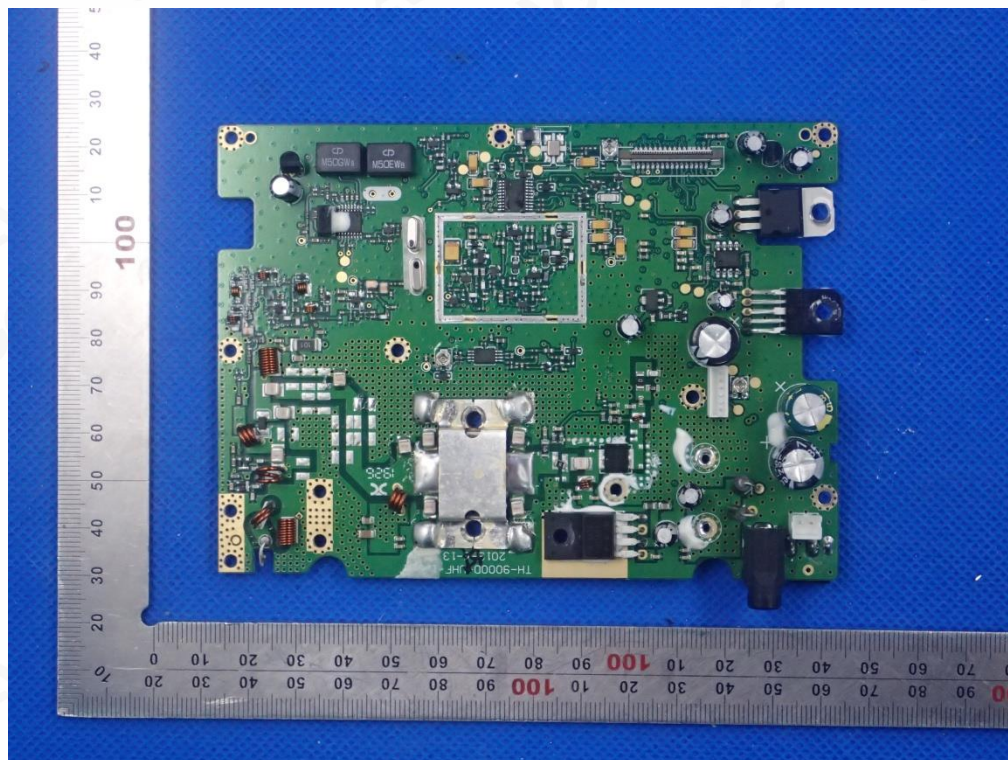


OPEN VIEW-3 OF EUT-1

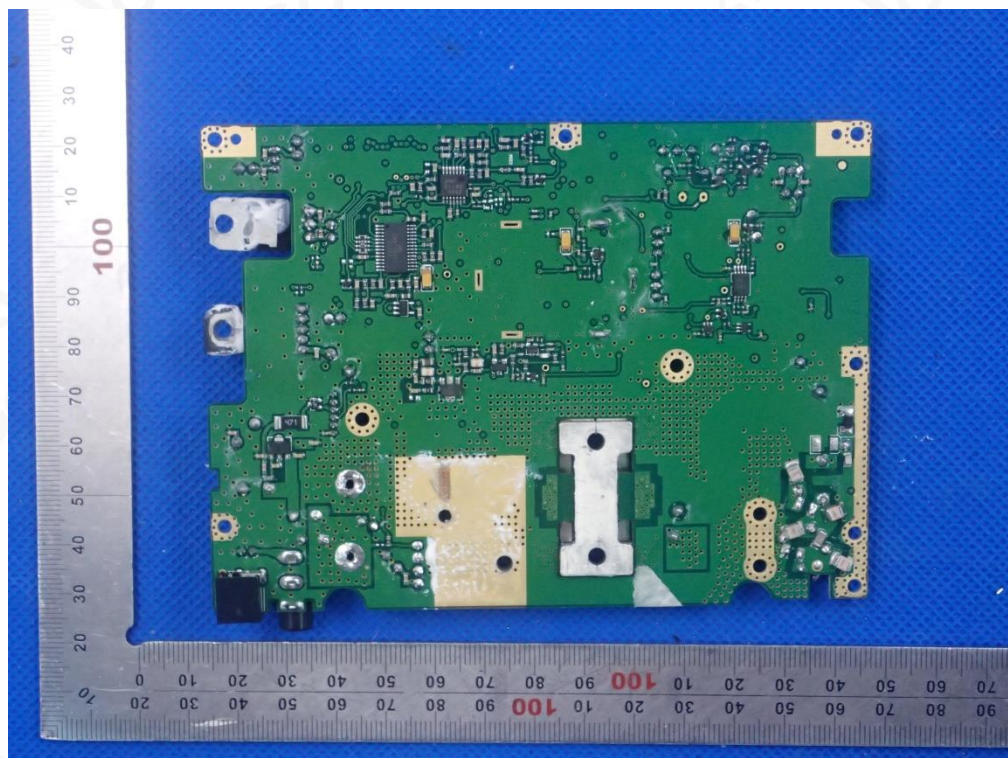




INTERNAL VIEW OF EUT(FIGURE 1)

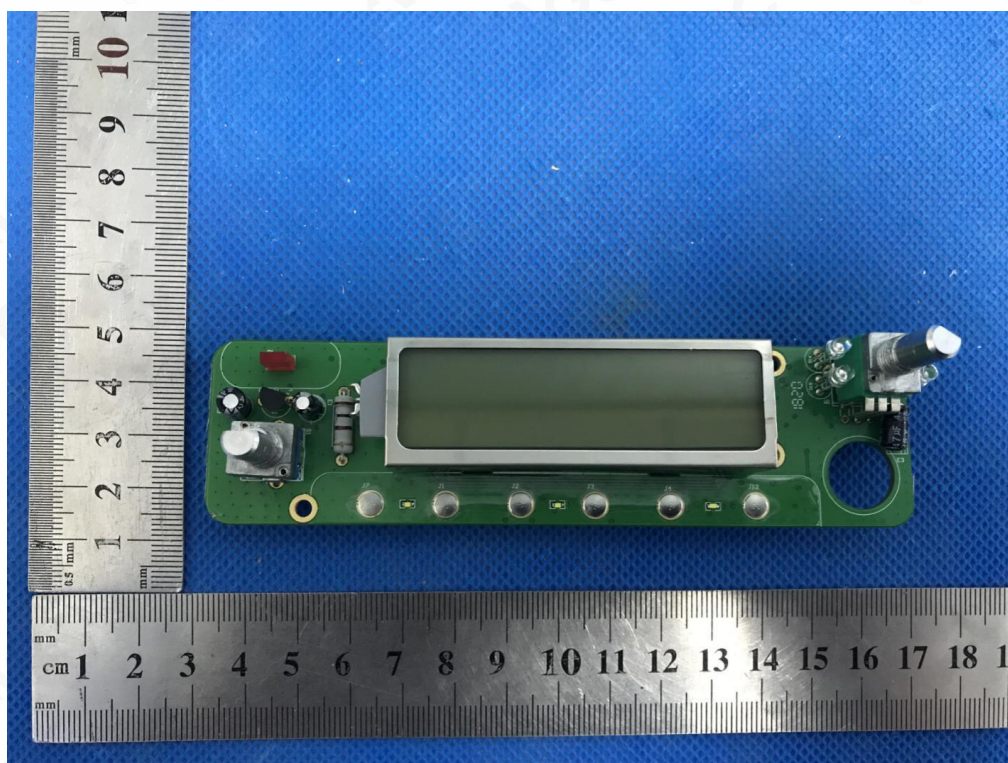


INTERNAL VIEW OF EUT(FIGURE 2)

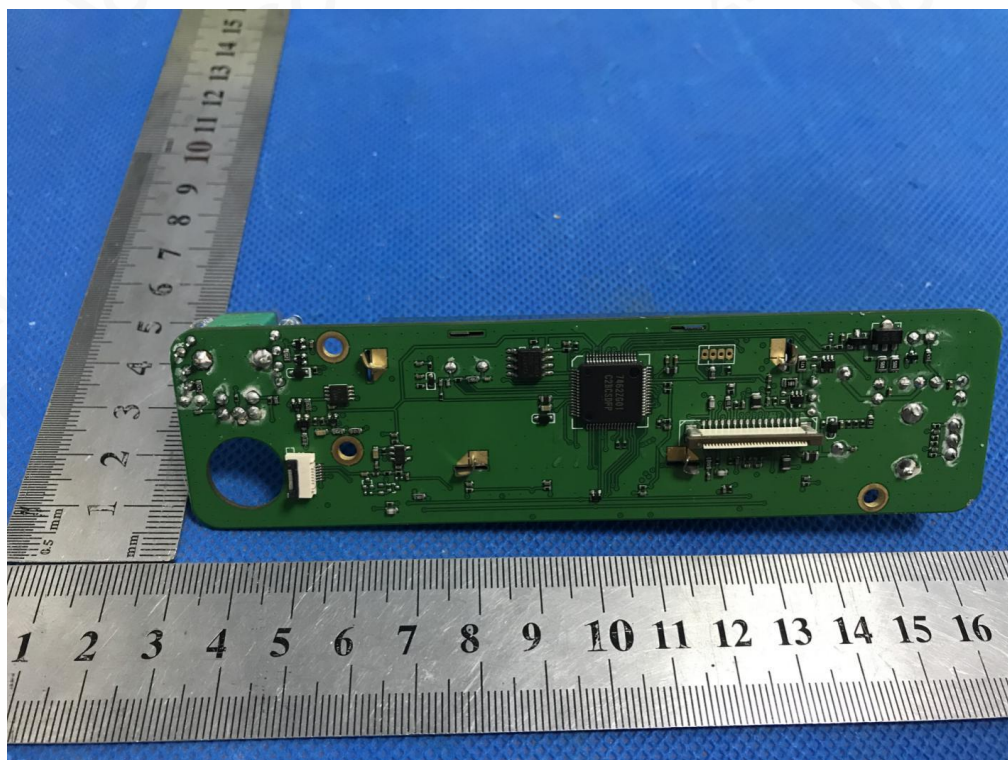




INTERNAL VIEW OF EUT(FIGURE 3)

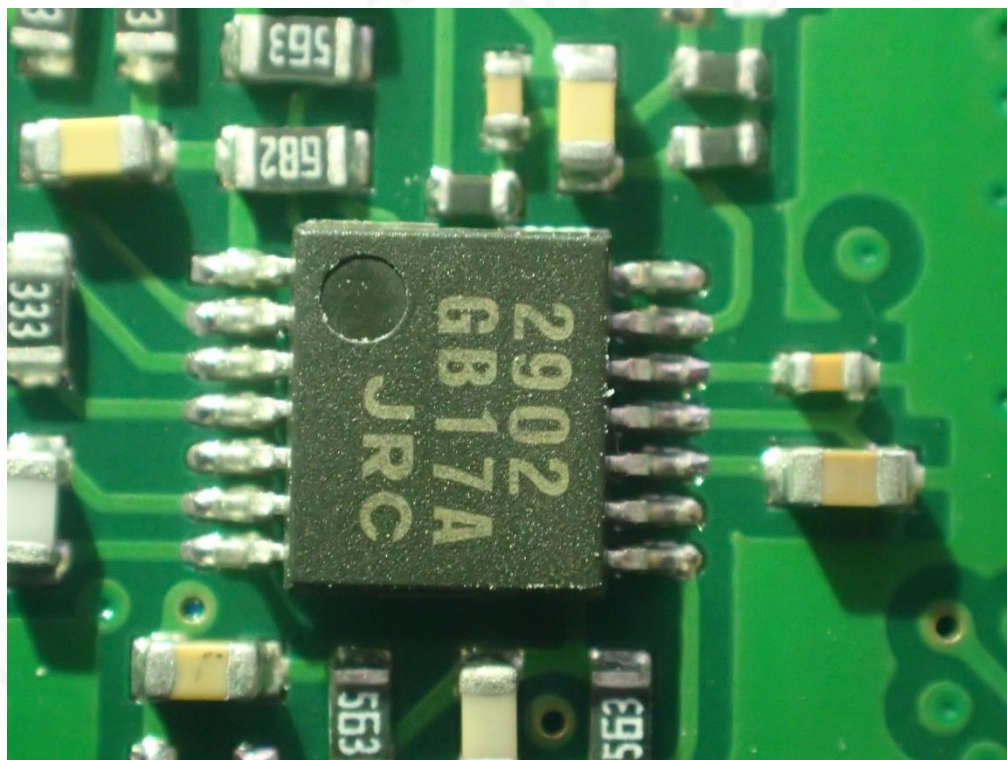


INTERNAL VIEW OF EUT(FIGURE 4)





INTERNAL VIEW OF EUT(FIGURE 5)

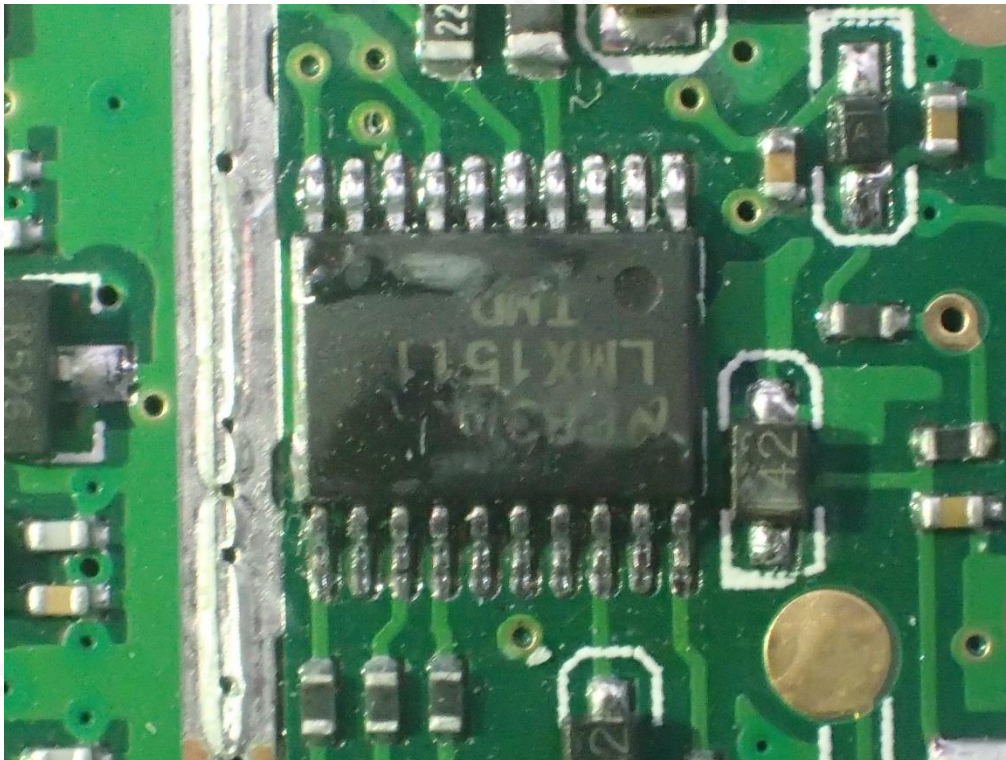


INTERNAL VIEW OF EUT(FIGURE 6)

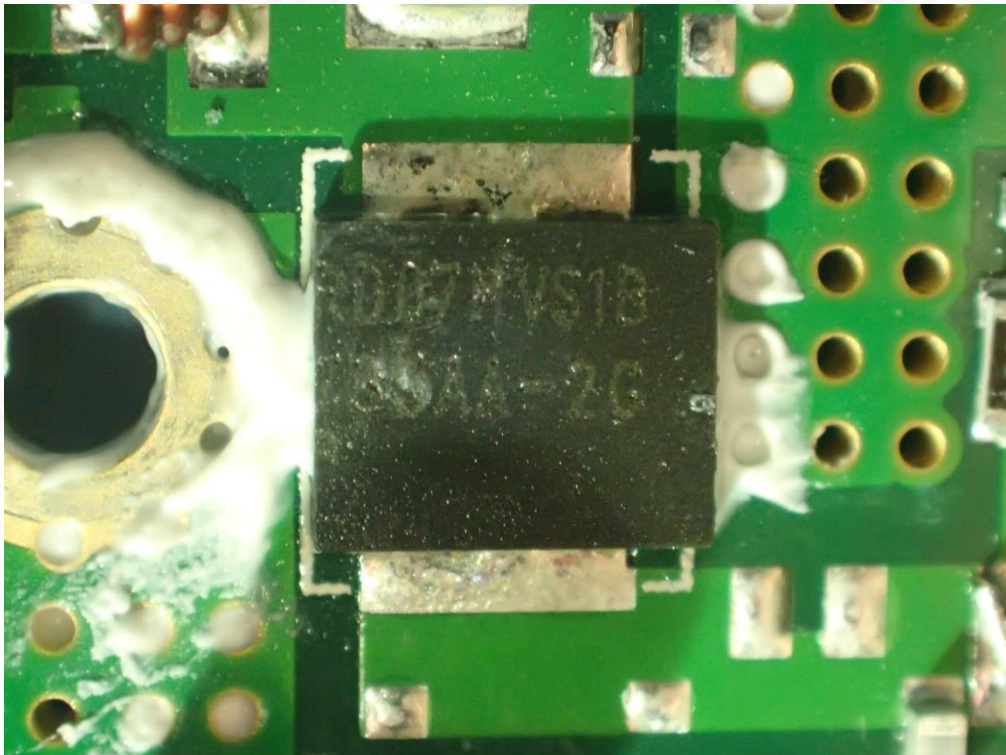




INTERNAL VIEW OF EUT(FIGURE 7)



INTERNAL VIEW OF EUT(FIGURE 8)





INTERNAL VIEW OF EUT(FIGURE 9)



**Part 2**

TOP VIEW OF EUT





BOTTOM VIEW OF EUT



FRONT VIEW OF EUT





BACK VIEW OF EUT



LEFT VIEW OF EUT

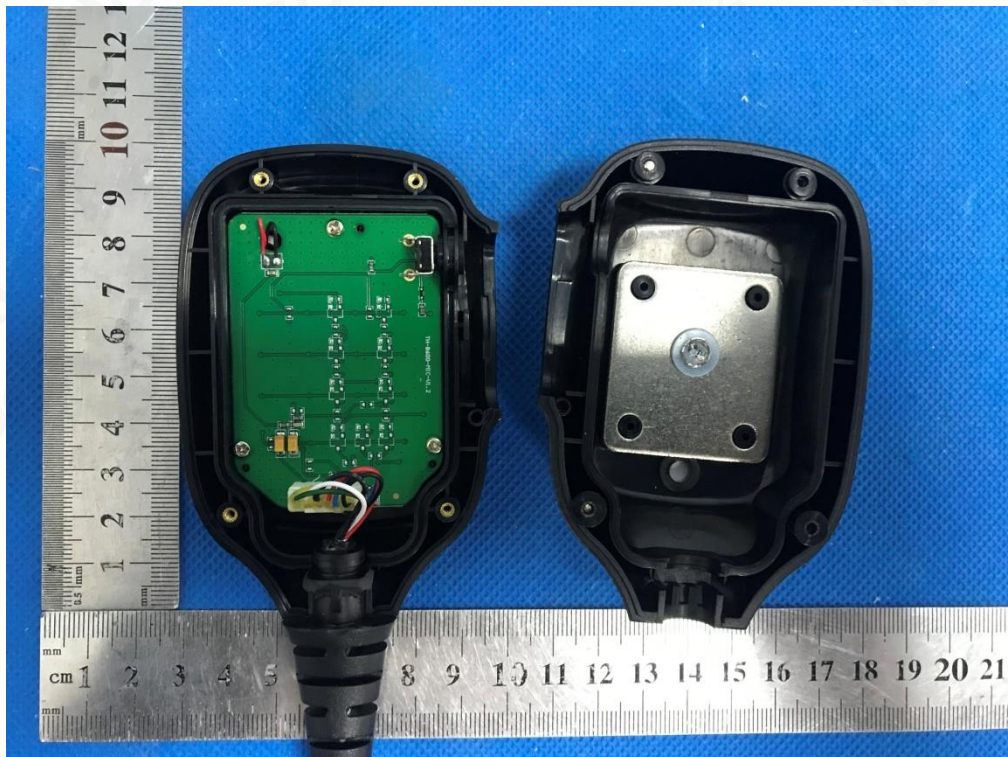




RIGHT VIEW OF EUT

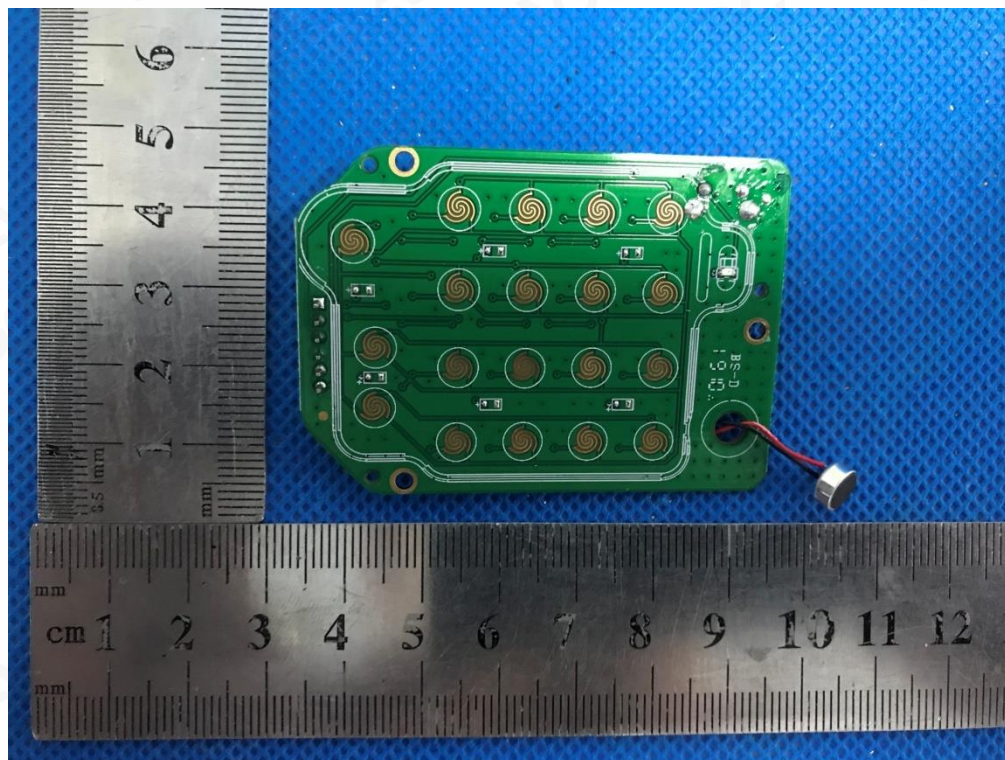


OPEN VIEW-1 OF EUT

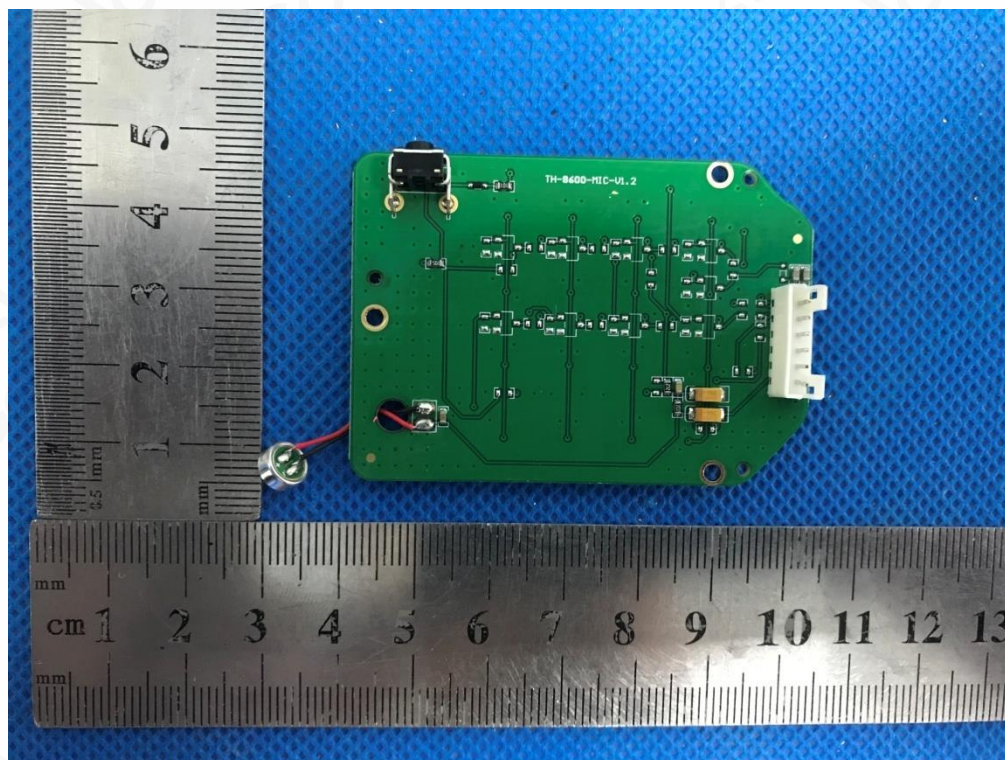




INTERNAL VIEW-1 OF EUT



INTERNAL VIEW-2 OF EUT



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