FCC Part 90& Part 22 Rules Test Report

Report No.: AGC01039170302FE10A

FCC ID	:	POD-DMR1
PRODUCT DESIGNATION	:	DMR Digital Transceiver
BRAND NAME	:	TYT
MODEL NAME	:	MD-280, MD-280A, MD-280B, MD-280C, MD-280D
APPLICANT	:	TYT ELECTRONICS CO., LTD
DATE OF ISSUE	:	Sep. 14, 2020
STANDARD(S)	:	FCC Part 90 Rules FCC Part 22 Rules
REPORT VERSION	:	V 1.0

Attestation of ***G***lobal ***C***ompliance (Shenzhen) Co., Ltd

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Sep. 14, 2020	Valid	Class II Permissive Change

Note: The original test report Ref. No. (AGC01039170302FE10) (dated 2017-06-29), was modified on 2020-09-14 to include the following changes and additions for:

-Updated serial model name.

-Update the appearance of the series model, the components on the PCB.

For the above described changes, update Spurious Ratiated Emission and EUT PHOTOs

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1. VERIFICATION OF COMPLIANCE

Applicant:	TYT ELECTRONICS CO., LTD
Address	Block 39-1, Optoelectronics-information industry base, Nan'an, Quanzhou, Fujian, China.
Manufacturer:	TYT ELECTRONICS CO., LTD
Address	Block 39-1, Optoelectronics-information industry base, Nan'an, Quanzhou, Fujian, China.
Factory	TYT ELECTRONICS CO., LTD
Address	Block 39-1, Optoelectronics-information industry base, Nan'an, Quanzhou, Fujian, China.
Product Designation:	DMR Digital Transceiver
Brand Name:	TYT
Test Model	MD-280
Serial Model	MD-280A, MD-280B, MD-280C, MD-280D
Difference Description	Only the model and product appearance line design are different
Date of Test:	Jul. 31, 2020~Sep. 14, 2020

WE HEREBY CERTIFY THAT:

The above equipment was tested by Shenzhen Attestation of Global Compliance Science & Technology Co., Ltd.The data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI/TIA-603-E (2016). The sample tested as described in this report is in compliance with the FCC Rules Part 90 and FCC Rules Part 22 requirements

The test results of this report relate only to the tested sample identified in this report.

Prepared By	Calvin Liu Calvin Liu (Project Engineer)	Sep. 14, 2020
Reviewed By	Max Zhang Max Zhang (Reviewer)	Sep. 14, 2020
Approved By	Forrest Lei Forrest Lei Authorized Officer	Sep. 14, 2020

2. GENERAL INFORMATION

2.1PRODUCT DESCRIPTION

The EUT is a **DMR Digital Transceiver** designed for voice/data communication. It is designed by way of utilizing the FM/4FSK modulation achieves the system operating.

A major technical description of EUT is described as following:

Communication Type	Voice / Data
Hardware Version	V2.2
Software Version	MD-280-d12.32
Modulation	FM/4FSK
Emission Type	7K60FXD/7K60FXE/11K0F3E
Output power Modification	5W/1W (It was fixed by the manufacturer, any individual can't arbitrarily change it.)
Data Rate	9600bps/12.5KHz(Channel Spacing)
Antenna Designation	Detachable
Antenna Gain	1.2dBi
Antenna Length	9.5 cm
Power Supply	DC 7.4V
Adapter Parameter	INPUT: 100V-240V , 50HZ , 0.2A OUTPUT: 12V , 0.5A
Limiting Voltage	DC 6.00 V~ 8.51V
Operation Frequency Range and Channel	Frequency Range: 400 MHz to 480 MHz (UHF) Channel Separation: 12.5KHz(Digital/ Analog)
	Bottom Channel: 400.025MHz Middle Channel: 453.225MHz Middle Channel: 454.025MHz Top Channel: 479.975MHz

Frequency Range (MHz)	Rated Transmit Power(W)(Conducted)	Transmit Mode/Emission Designator
400-480	5W/1W	11K0F3E(Analog Vioce;NB)
400-480	5W/1W	7K60FXD/7K60FXW(9600Data/Digital Voice NB)

Channel No. (6.25KHz)	Channel No. (12.5KHz)	12.5KHz Channel Spaced 400MHz Band Plan(MHz)
1	1-2	400.025
2		
3	3-4	440.025
4		
5	5-6	479.975
6		

FCC Rules and Regulations Part 2.202: Necessary Bandwidth and Emission Bandwidth

For FM Mode (ChannelSpacing: 12.5kHz)

Emission Designator 11K0F3E
In this case, the maximum modulating frequency is 3.0 kHz with a 2.5 kHz deviation.
BW = 2(M+D) = 2*(3.0 kHz + 2.5 kHz) = 11 kHz = 11K0
F3E portion of the designator represents an FM voice transmission
Therefore, the entire designator for 12.5 kHz channel spacing FM mode is 11K0F3E.

For FM Mode (Channel Spacing: 25kHz)

Emission Designator 16K0F3E
In this case, the maximum modulating frequency is 3.0 kHz with a 5.0 kHz deviation.
BW = 2(M+D) = 2*(3.0 kHz + 5.0 kHz) = 16 kHz = 16K0
F3E portion of the designator represents an FM voice transmission
Therefore, the entire designator for 25 kHz channel spacing FM mode is 16K0F3E.

For Digital Mode (Channel Spacing: 12.5 kHz)

Emission Designator 7K60F1D and
7K60F1E
The 99% energy rule was used for digital mode. It basically states that 99% of the modulation energy falls within X kHz, in this case, 7.60 kHz.
F1D and F1E portion of the designator indicates digital information.
Therefore, the entire designator for 12.5 kHz channel spacing digital mode is 7K60F1D and 7K60F1E.

2.2RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: **POD-DMR1,** filing to comply with Part 2, Part 22, and Part 90 of the Federal Communication Commission rules.

2.3 TEST METHODOLOGY

The radiated emission testing was performed according to the procedures of ANSI/TIA-603-E (2016).

2.4 TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong,China
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA

2.5 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

2.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. SYSTEM TEST CONFIGURATION

3.1EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

3.3 GENERAL TECHNICAL REQUIREMENTS

For FCC Part 90& Part 22 requirements:

(1). Section 90.205 &22.565: RF Output Power

(2). Section 90.207: Modulation Characteristic

(3). Section 90.209 &22.359: Occupied Bandwidth

(4). Section 90.210&22.359: Emission Mask

(5). Section 90.213&22.355: Frequency Tolerance

(6). Section 90.214: Transient Frequency Behavior

(7). Section 90.210&22.359: Spurious Emission on Antenna Port

(8). Section 90.210&22.359: Spurious Ratiated Emission

3.4CONFIGURATION OF TESTED SYSTEM

Fig. 2-1 Configuration of Tested System

Table 2-1 Equipment Used in Tested System

Item	Equipment	Model No.	Identifier	Note
1	DMR Digital Transceiver	MD-280	FCC ID: POD-DMR1	EUT

4. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§90.210& 22.359 §2.1053	Spurious Ratiated Emission	Compliant

LIST OF EQUIPMENTS USED

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	May 15, 2020	May 14, 2021
EXA Signal Analyzer	Aglient	N9020A	W1312-60196	Oct. 08, 2019	Oct. 07, 2020
EXA Signal Analyzer	Aglient	N9020A	MY52090123	Oct. 08, 2019	Oct. 07, 2020
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Sep.16, 2019	Sep.15, 2021
preamplifier	ChengYi	EMC184045SE	980508	Oct.29, 2019	Oct 28, 2020
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May. 17, 2019	May. 16, 2021
Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-205	Jun. 09, 2020	Jun. 08, 2021
HORN ANTENNA	EM	EM-AH-10180	/	Feb.28, 2020	Feb.27, 2021
SIGNAL GENERATOR	AGILENT	E4421B	MY43351603	Jun. 09, 2020	Jun. 08, 2021
SIGNAL GENERATOR	R&S	SMT03	A0304261	Jun. 09, 2020	Jun. 08, 2021
ANTENNA	SCHWARZBECK	VULB9168	VULB9168-494	Jan. 09, 2019	Jan. 08, 2021
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep.26, 2018	Sep.25, 2020
Modulation Domain Analyzer	HP	53310A	3121A02467	Oct. 30, 2019	Oct. 29, 2020
Small environmental tester	ESPEC	SH-242	--	Feb. 25, 2019	Feb. 24, 2020
RF Communication Test Set	HP	8920B	--	Jun. 09, 2020	Jun. 08, 2021
Attenuator	Weinachel Corp	58-30-33	ML030	Oct. 28, 2019	Oct. 27, 2020
RF Cable	R&S	1#	--	Each time	N/A
RF Cable	R&S	2#	--	Each time	N/A
Fliter-UHF	Microwave	N25155M2	498705	May. 11, 2020	May. 10, 2021
Fliter-VHF	Microwave	N26460M1	498703	May. 11, 2020	May. 10, 2021

5. DESCRIPTION OF TEST MODES

RF TEST MODES

The EUT (**DMR Digital Transceiver**) has been tested under normal operating condition. (The top channel, the middle channel and the bottom channel) are chosen for testing at each channel separation.

Analog:

No.	TEST MODES	CHANNEL SEPARATION
1	Low Channel	12.5 KHz
2	Middle Channel	12.5 KHz
3	High Channel	12.5 KHz

Digital:

No.	TEST MODES	CHANNEL SEPARATION
1	Low Channel	12.5 KHz
2	Middle Channel	12.5 KHz
3	High Channel	12.5 KHz

Note: Only the result of the worst case was recorded in the report.

6. SPURIOUS RATIATED EMISSION

6.1 PROVISIONS APPLICABLE

According to FCC §2.1053 §22.359 and §90.210, the power of each unwanted emission shall be less than Transmitted Power as specified below for transmitters designed to operate with each channel separation.

Emission Mask D -for 12.5 KHz Channel Separation:

(1).On any frequency removed from the center of the authorized bandwidth fo to 5.625 KHz removed from fo: Zero dB.

(2).On any frequency removed from the center of the authorized bandwidth by a displacement Frequency (fd in KHz) fo of more than 5.625 KHz but no more than 12.5 KHz: At least 7.27(fd-2.88 KHz) dB

(3).On any frequency removed from the center of the authorized bandwidth by a displacement Frequency (fd in KHz)fo of more than 12.5 KHz: At least 50+10 log(P) dB or 70 dB, whichever is lesser attenuation.

According to FCC §22.359:

(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

6.2 MEASUREMENT PROCEDURE

(1)On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.

(2)The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.

(3)The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.

(4)The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.

(5)The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.

(6)The transmitter shall than be rotated through 360°in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

(7)The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.

(8)The maximum signal level detected by the measuring receiver shall be noted.

(9)The measurement shall be repeated with the test antenna set to horizontal polarization.

(10) Replace the antenna with a proper Antenna (substitution antenna).

(11)The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.

(12)The substitution antenna shall be connected to a calibrated signal generator.

(13)If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.

(14)The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.

(15)The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.

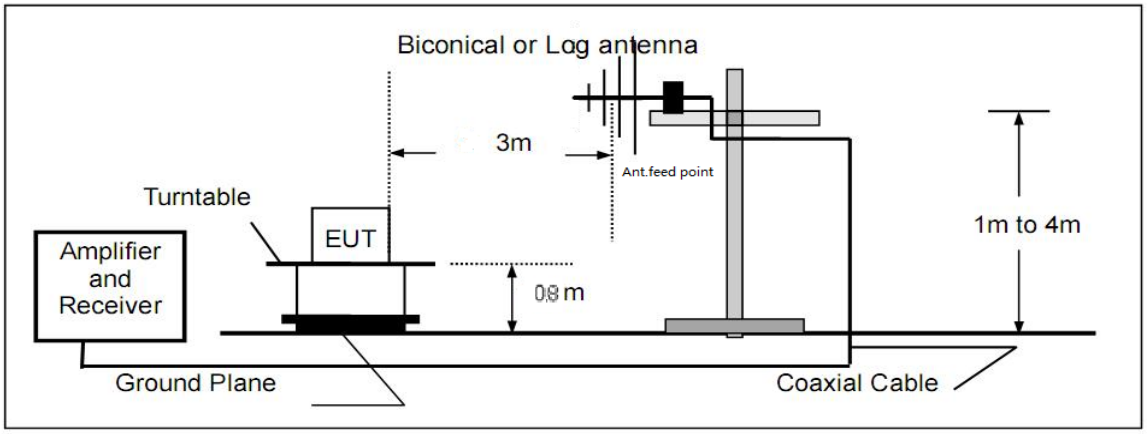
(16)The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

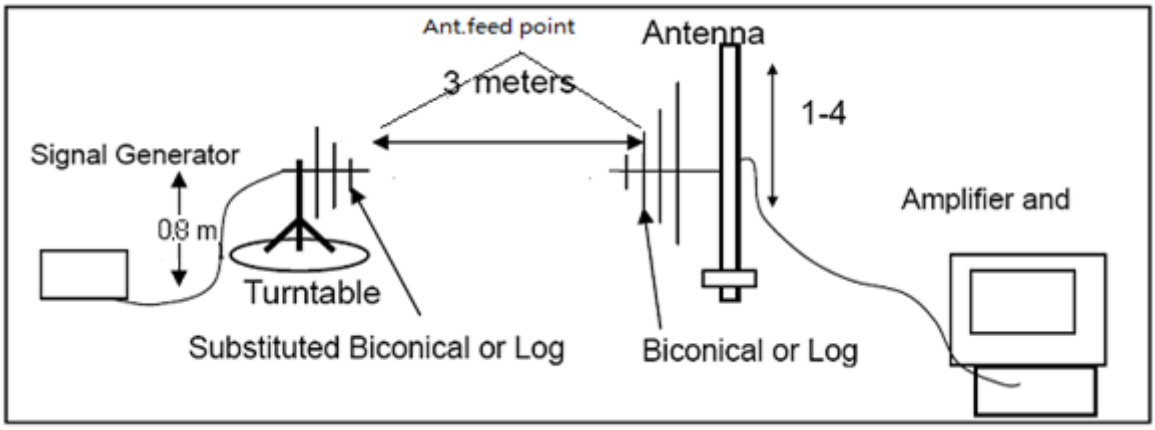
(17)The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

6.3 TEST SETUP BLOCK DIAGRAM

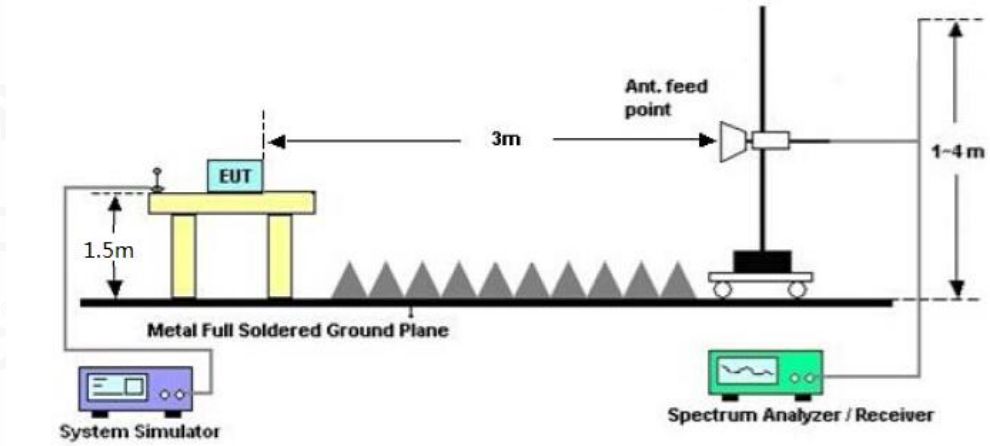
SUBSTITUTION METHOD: (Radiated Emissions)

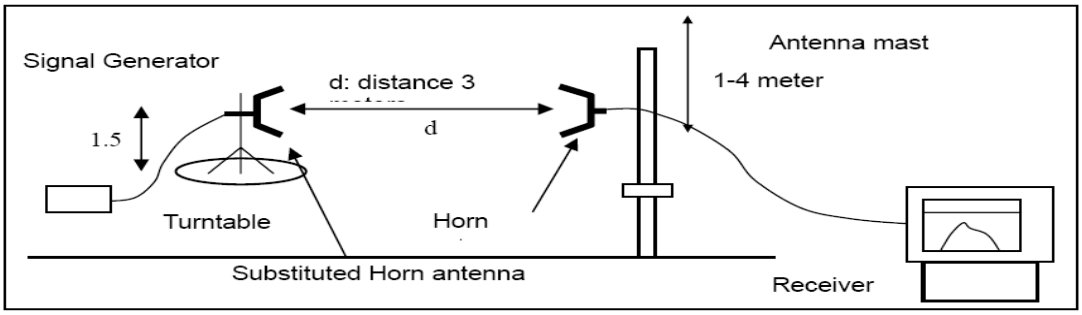
Radiated Below1GHz





Radiated Above 1 GHz





6.4 MEASUREMENT RESULTS:

Applicable Standard

FCC §2.1053, §22.359 and §90.210

On any frequency removed from the center of the authorized bandwidth by a displacement

Frequency (fd in KHz)for of more than 12.5 KHz: at least 50+10 log(P) dB or 70 dB, whichever is lesser attenuation.

Test Procedure

The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz for below 1GHz, and 1MHz for above 1GHz. Sufficient scans were taken to show any out of band emissions up to 10 harmonic.

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.

Limit: FCC PART 90:

At least 50+10 log (P) =50+10log (5) =56.99 (dB)—5W 36.99-56.99=-20dBm

At least 50+10 log (P) =50+10log (1) =50 (dB)—1W 30-50=-20dBm

FCC PART 22:

At least 43+10 log (P) =43+10log (5) =49.99 (dB)—5W 36.99-49.99=-13dBm

At least 43+10 log (P) =43+10log (1) =43 (dB)—1W 30-43=-13dBm

Analog:

Measurement Result for 12.5 KHz Channel Separation @ 400.025MHz-5W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
400.025	H	-	-	pass
800.050	H	71.46	57	pass
1200.075	H	73.18	57	pass
1600.100	H	74.98	57	pass
2000.125	H	76.42	57	pass
2400.150	H	75.85	57	pass
2800.175	H	78.70	57	pass
3200.200	H	80.02	57	pass
3600.225	H	78.42	57	pass
4000.250	H	81.52	57	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
400.025	V	-	-	pass
800.050	V	71.41	57	pass
1200.075	V	71.62	57	pass
1600.100	V	73.13	57	pass
2000.125	V	73.37	57	pass
2400.150	V	74.40	57	pass
2800.175	V	74.18	57	pass
3200.200	V	80.12	57	pass
3600.225	V	80.76	57	pass
4000.250	V	79.26	57	pass

Measurement Result for 12.5 KHz Channel Separation @ 454.025MHz-5W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
454.025	H	-	-	pass
908.050	H	69.14	57	pass
1362.075	H	69.03	57	pass
1816.100	H	71.74	57	pass
2270.125	H	74.37	57	pass
2724.150	H	74.16	57	pass
3178.175	H	75.89	57	pass
3632.200	H	77.65	57	pass
4086.225	H	78.78	57	pass
4540.250	H	81.39	57	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
454.025	V	-	-	pass
908.050	V	71.21	57	pass
1362.075	V	70.36	57	pass
1816.100	V	73.51	57	pass
2270.125	V	74.38	57	pass
2724.150	V	76.49	57	pass
3178.175	V	75.36	57	pass
3632.200	V	78.59	57	pass
4086.225	V	78.26	57	pass
4540.250	V	80.42	57	pass

Measurement Result for 12.5 KHz Channel Separation @ 479.975MHz-5W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
479.975	H	-	-	pass
959.950	H	70.49	57	pass
1439.925	H	68.95	57	pass
1919.900	H	71.24	57	pass
2399.875	H	71.53	57	pass
2879.850	H	73.41	57	pass
3359.825	H	74.94	57	pass
3839.800	H	77.43	57	pass
4319.775	H	79.33	57	pass
4799.750	H	79.57	57	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
479.975	V	-	-	pass
959.950	V	66.41	57	pass
1439.925	V	68.45	57	pass
1919.900	V	69.24	57	pass
2399.875	V	75.61	57	pass
2879.850	V	74.98	57	pass
3359.825	V	77.73	57	pass
3839.800	V	79.62	57	pass
4319.775	V	79.99	57	pass
4799.750	V	80.18	57	pass

Measurement Result for 12.5 KHz Channel Separation @ 400.025MHz-1W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
400.025	H	-	-	pass
800.050	H	71.24	50	pass
1200.075	H	72.04	50	pass
1600.100	H	72.45	50	pass
2000.125	H	75.62	50	pass
2400.150	H	76.75	50	pass
2800.175	H	75.97	50	pass
3200.200	H	81.47	50	pass
3600.225	H	81.66	50	pass
4000.250	H	80.68	50	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
400.025	V	-	-	pass
800.050	V	70.62	50	pass
1200.075	V	72.11	50	pass
1600.100	V	74.36	50	pass
2000.125	V	75.48	50	pass
2400.150	V	74.01	50	pass
2800.175	V	74.65	50	pass
3200.200	V	79.02	50	pass
3600.225	V	80.03	50	pass
4000.250	V	80.43	50	pass

Measurement Result for 12.5 KHz Channel Separation @ 454.025MHz-1W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
454.025	H	-	-	pass
908.050	H	67.72	50	pass
1362.075	H	69.34	50	pass
1816.100	H	72.14	50	pass
2270.125	H	74.72	50	pass
2724.150	H	75.18	50	pass
3178.175	H	74.27	50	pass
3632.200	H	76.12	50	pass
4086.225	H	78.73	50	pass
4540.250	H	79.66	50	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
454.025	V	-	-	pass
908.050	V	68.03	50	pass
1362.075	V	68.80	50	pass
1816.100	V	69.62	50	pass
2270.125	V	71.81	50	pass
2724.150	V	75.82	50	pass
3178.175	V	78.44	50	pass
3632.200	V	78.32	50	pass
4086.225	V	78.18	50	pass
4540.250	V	79.01	50	pass

Measurement Result for 12.5 KHz Channel Separation @ 479.975MHz-1W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
479.975	H	-	-	pass
959.950	H	71.27	50	pass
1439.925	H	74.86	50	pass
1919.900	H	73.37	50	pass
2399.875	H	75.57	50	pass
2879.850	H	76.32	50	pass
3359.825	H	78.94	50	pass
3839.800	H	79.73	50	pass
4319.775	H	80.17	50	pass
4799.750	H	82.44	50	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
479.975	V	-	-	pass
959.950	V	70.15	50	pass
1439.925	V	67.34	50	pass
1919.900	V	80.87	50	pass
2399.875	V	79.77	50	pass
2879.850	V	78.60	50	pass
3359.825	V	80.64	50	pass
3839.800	V	81.86	50	pass
4319.775	V	80.97	50	pass
4799.750	V	81.92	50	pass

Digital:

Measurement Result for 12.5 KHz Channel Separation @ 400.025MHz-5W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
400.025	H	-	-	pass
800.050	H	67.56	57	pass
1200.075	H	68.24	57	pass
1600.100	H	69.85	57	pass
2000.125	H	71.98	57	pass
2400.150	H	80.71	57	pass
2800.175	H	82.15	57	pass
3200.200	H	81.21	57	pass
3600.225	H	80.41	57	pass
4000.250	H	80.24	57	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
400.025	V	-	-	pass
800.050	V	71.41	57	pass
1200.075	V	69.33	57	pass
1600.100	V	66.48	57	pass
2000.125	V	67.73	57	pass
2400.150	V	73.72	57	pass
2800.175	V	73.40	57	pass
3200.200	V	75.81	57	pass
3600.225	V	80.19	57	pass
4000.250	V	81.56	57	pass

Measurement Result for 12.5 KHz Channel Separation @ 454.025MHz-5W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
454.025	H	-	-	pass
908.050	H	70.33	57	pass
1362.075	H	70.25	57	pass
1816.100	H	72.01	57	pass
2270.125	H	73.32	57	pass
2724.150	H	75.33	57	pass
3178.175	H	77.49	57	pass
3632.200	H	78.62	57	pass
4086.225	H	79.93	57	pass
4540.250	H	80.50	57	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
454.025	V	-	-	pass
908.050	V	69.95	57	pass
1362.075	V	70.77	57	pass
1816.100	V	71.33	57	pass
2270.125	V	73.01	57	pass
2724.150	V	73.73	57	pass
3178.175	V	73.63	57	pass
3632.200	V	75.48	57	pass
4086.225	V	77.23	57	pass
4540.250	V	78.06	57	pass

Measurement Result for 12.5 KHz Channel Separation @ 479.975MHz-5W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
479.975	H	-	-	pass
959.950	H	67.82	57	pass
1439.925	H	68.22	57	pass
1919.900	H	69.66	57	pass
2399.875	H	72.08	57	pass
2879.850	H	73.25	57	pass
3359.825	H	75.32	57	pass
3839.800	H	77.98	57	pass
4319.775	H	80.43	57	pass
4799.750	H	81.28	57	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
479.975	V	-	-	pass
959.950	V	69.70	57	pass
1439.925	V	68.14	57	pass
1919.900	V	72.12	57	pass
2399.875	V	74.89	57	pass
2879.850	V	76.72	57	pass
3359.825	V	80.96	57	pass
3839.800	V	80.69	57	pass
4319.775	V	82.37	57	pass
4799.750	V	81.53	57	pass

Measurement Result for 12.5 KHz Channel Separation @ 400.025MHz-1W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
400.025	H	-	-	pass
800.050	H	68.03	50	pass
1200.075	H	70.69	50	pass
1600.100	H	72.98	50	pass
2000.125	H	74.56	50	pass
2400.150	H	74.78	50	pass
2800.175	H	76.32	50	pass
3200.200	H	77.57	50	pass
3600.225	H	79.59	50	pass
4000.250	H	80.72	50	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
400.025	V	-	-	pass
800.050	V	69.81	50	pass
1200.075	V	71.36	50	pass
1600.100	V	71.66	50	pass
2000.125	V	73.33	50	pass
2400.150	V	73.46	50	pass
2800.175	V	75.74	50	pass
3200.200	V	77.00	50	pass
3600.225	V	78.07	50	pass
4000.250	V	79.31	50	pass

Measurement Result for 12.5 KHz Channel Separation @ 454.025MHz-1W

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
454.025	H	-	-	pass
908.050	H	70.00	50	pass
1362.075	H	73.36	50	pass
1816.100	H	73.66	50	pass
2270.125	H	73.88	50	pass
2724.150	H	73.43	50	pass
3178.175	H	75.75	50	pass
3632.200	H	78.33	50	pass
4086.225	H	79.80	50	pass
4540.250	H	80.13	50	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
454.025	V	-	-	pass
908.050	V	68.33	50	pass
1362.075	V	69.82	50	pass
1816.100	V	70.07	50	pass
2270.125	V	70.99	50	pass
2724.150	V	73.19	50	pass
3178.175	V	74.63	50	pass
3632.200	V	75.64	50	pass
4086.225	V	78.64	50	pass
4540.250	V	79.39	50	pass

Measurement Result for 12.5 KHz Channel Separation @ 479.975MHz-1W

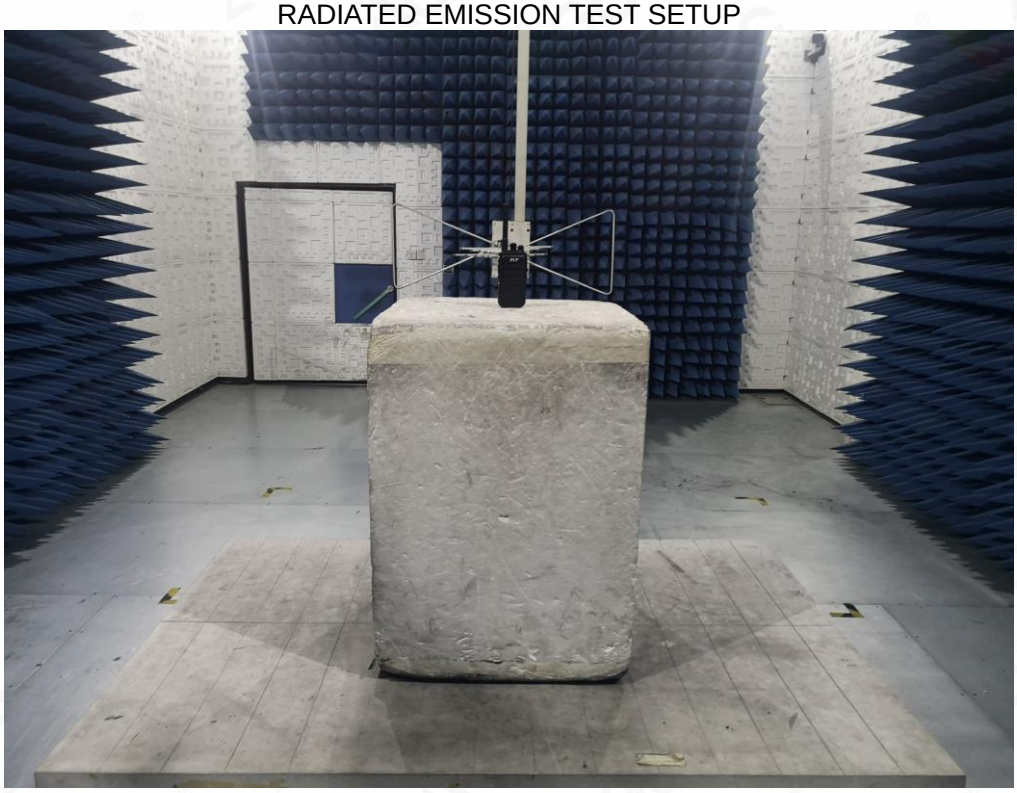
Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
479.975	H	-	-	pass
959.950	H	71.15	50	pass
1439.925	H	69.44	50	pass
1919.900	H	73.26	50	pass
2399.875	H	74.84	50	pass
2879.850	H	75.13	50	pass
3359.825	H	77.31	50	pass
3839.800	H	78.15	50	pass
4319.775	H	80.26	50	pass
4799.750	H	79.53	50	pass

Emission Frequency (MHz)	Ant. Polarity(H/V)	Measurement Result Below carrier(dBc)	Limit below carrier(dBc)	Result(P/F)
479.975	V	-	-	pass
959.950	V	68.36	50	pass
1439.925	V	68.32	50	pass
1919.900	V	70.45	50	pass
2399.875	V	70.29	50	pass
2879.850	V	74.65	50	pass
3359.825	V	76.03	50	pass
3839.800	V	76.88	50	pass
4319.775	V	76.87	50	pass
4799.750	V	77.84	50	pass

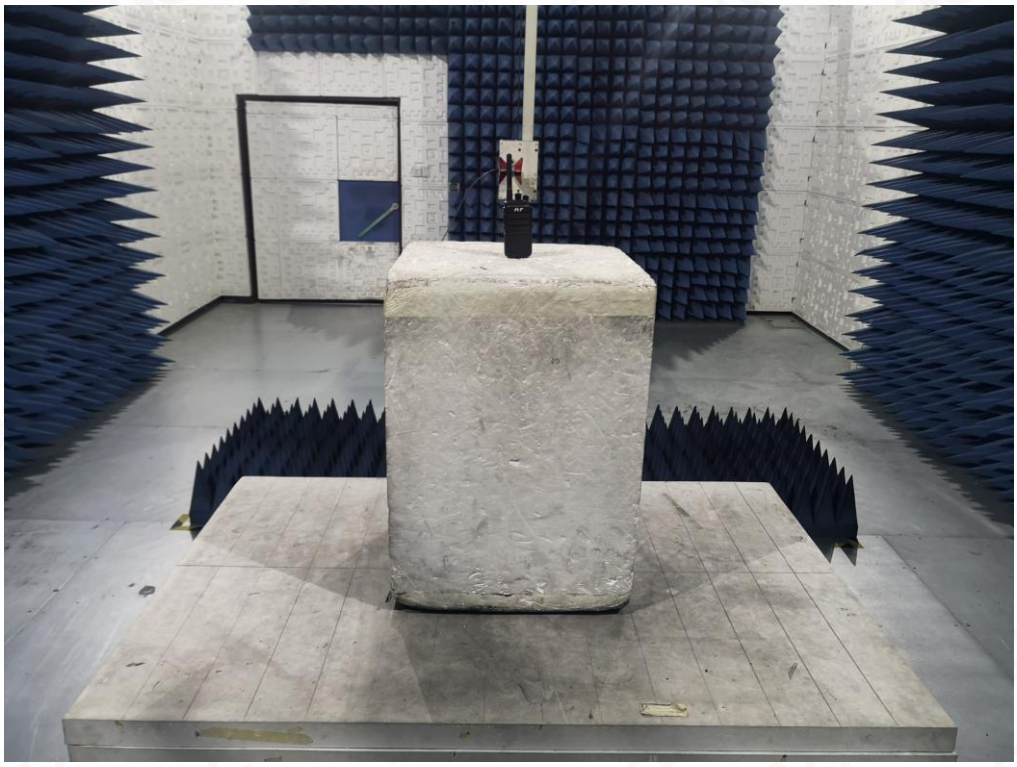
Note：In this case, Part 22 (-13 dBm) is less than the limit of Part 90 (-20 dBm), so we do not need to test Part 22, which meets the spurious limits of PART 90+22.

APPENDIX I: PHOTOGRAPHS OF SETUP

RADIATED EMISSION TEST SETUP



RADIATED EMISSION ABOVE 1G TEST SETUP

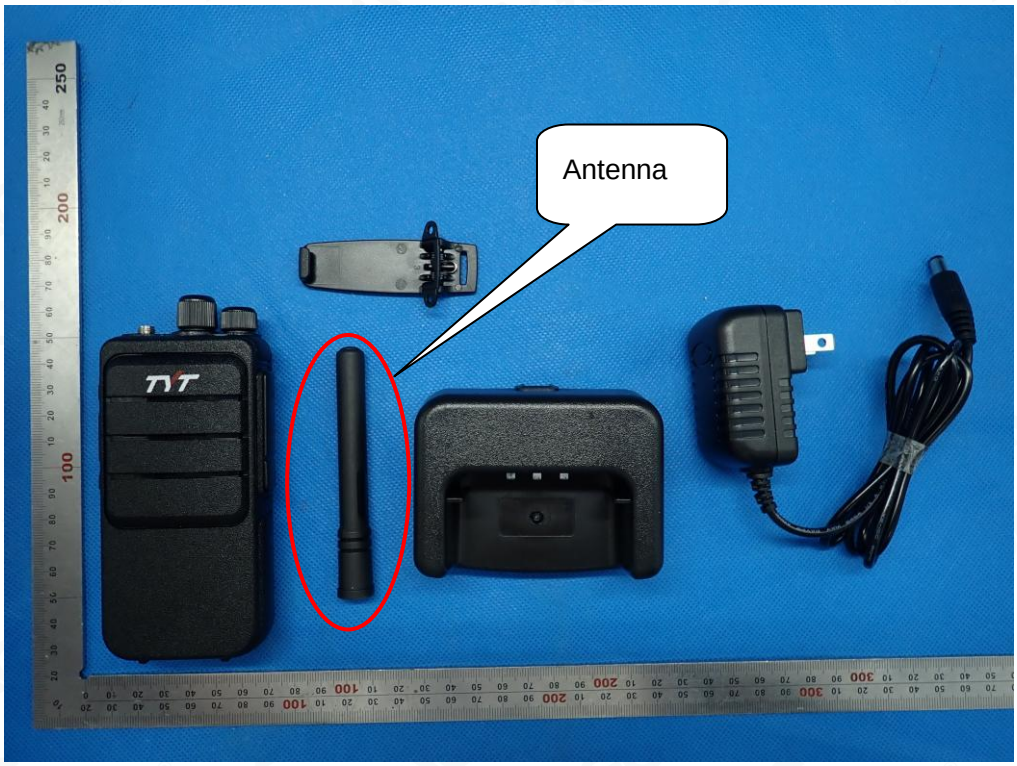


APPENDIX II: EXTERNAL VIEW OF EUT

ALL VIEW OF SERIAL MODEL

ALL VIEW OF SERIAL MODEL-BACK VIEW

WHOLE VIEW OF EUT



TOP VIEW OF EUT

BOTTOM VIEW OF EUT

FRONT VIEW OF EUT

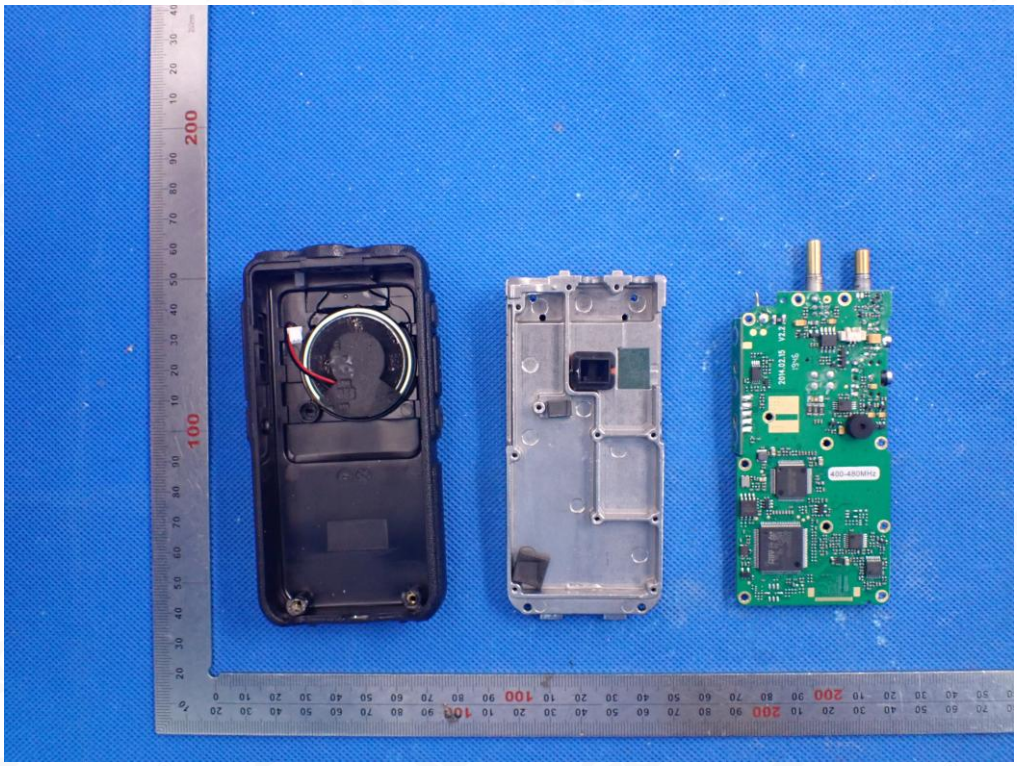
BACK VIEW OF EUT

LEFT VIEW OF EUT

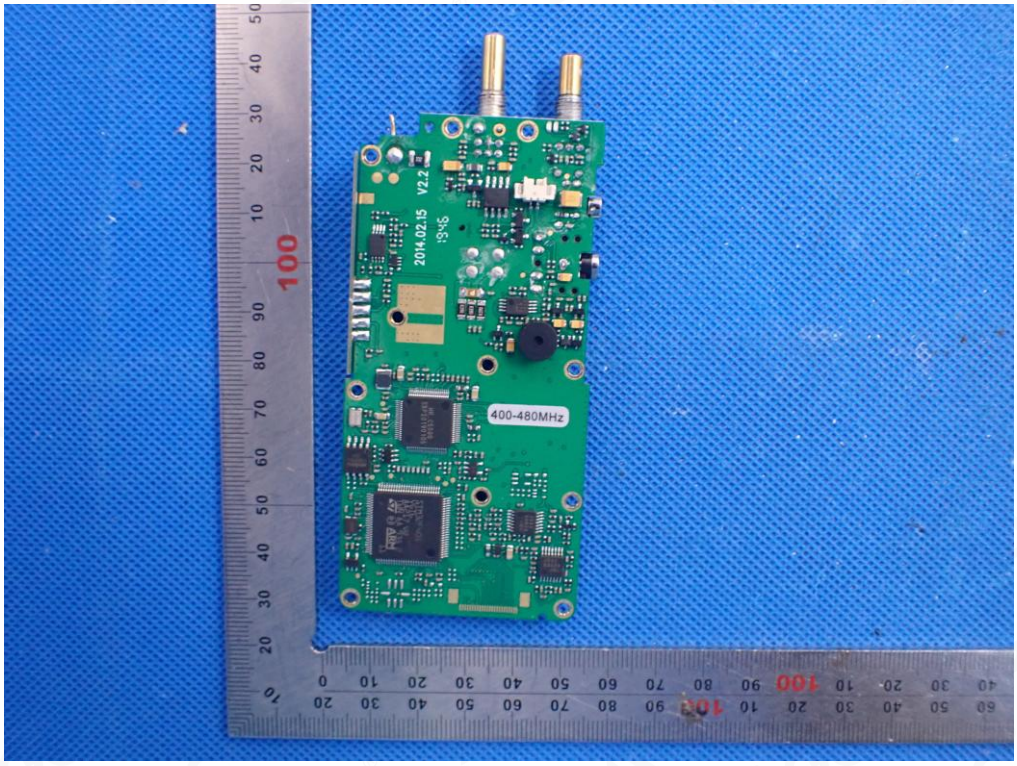
RIGHT VIEW OF EUT

OPEN VIEW-1 OF EUT

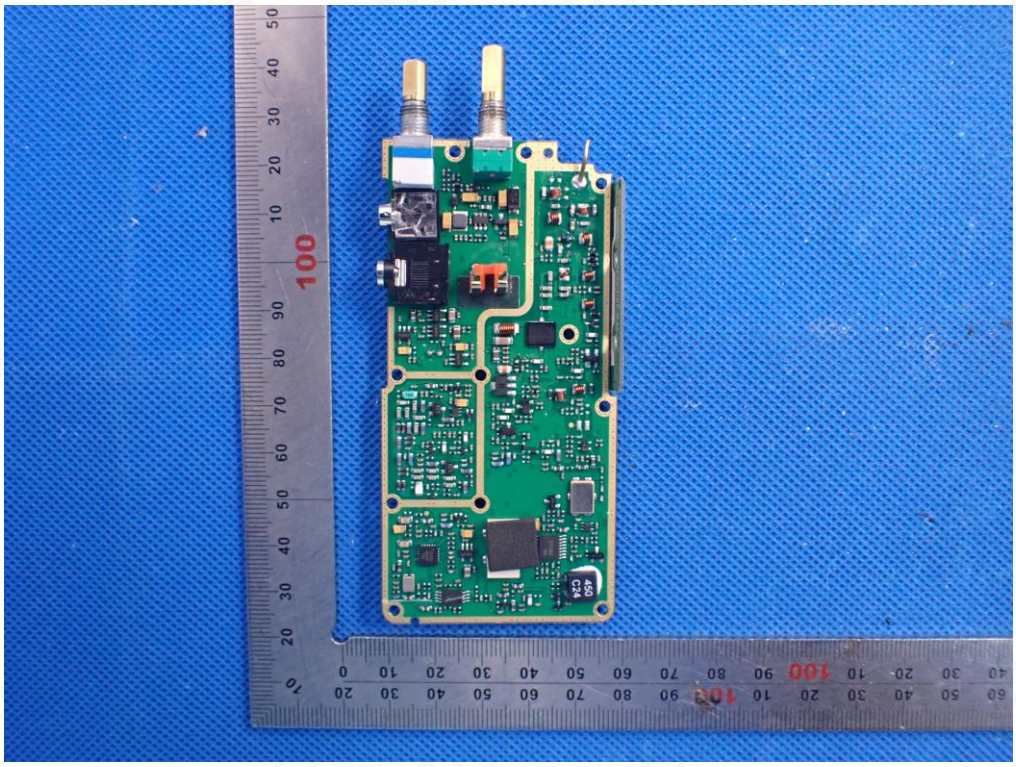
OPEN VIEW-2 OF EUT



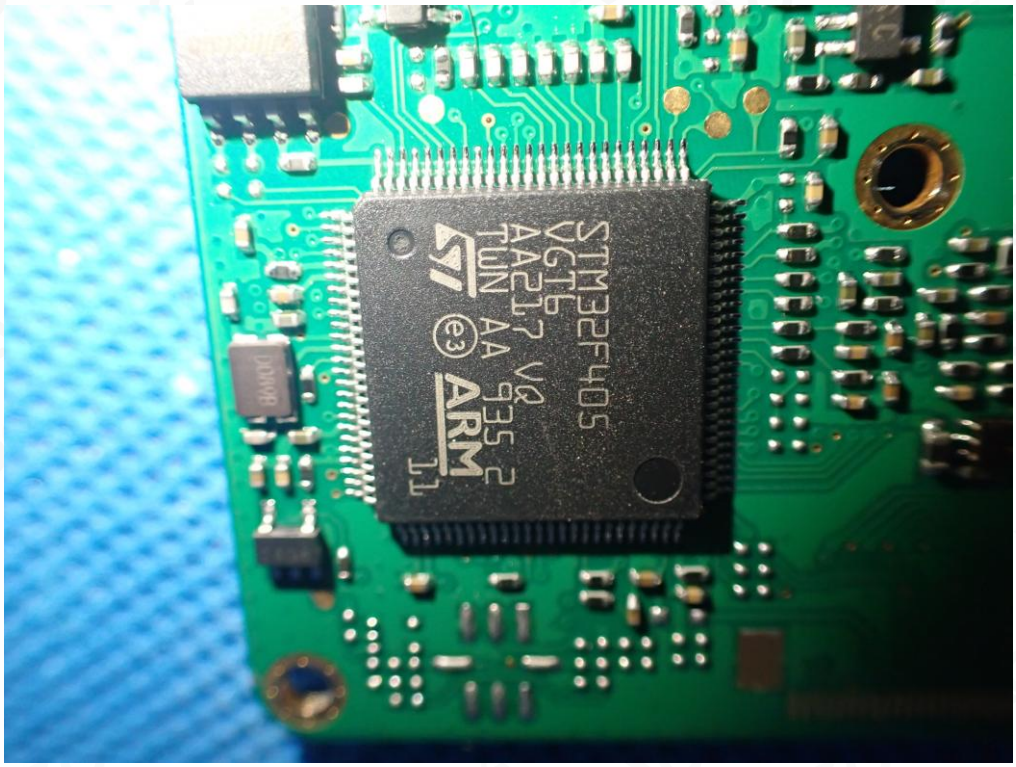
INTERNAL VIEW-1 OF EUT



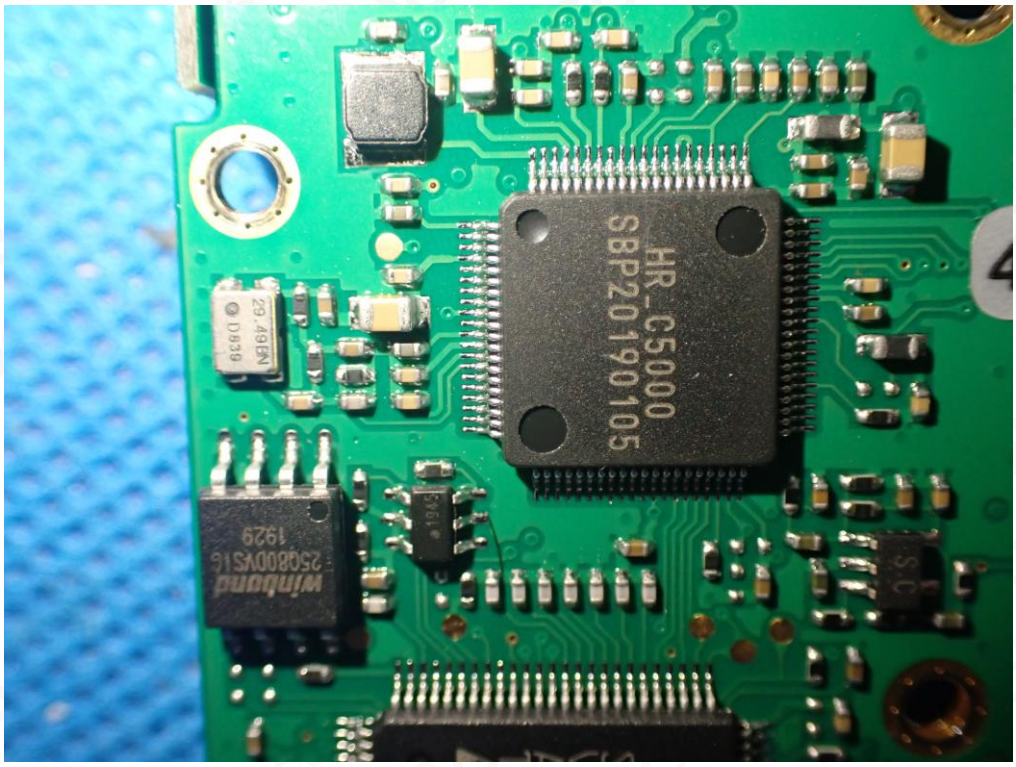
INTERNAL VIEW-2 OF EUT



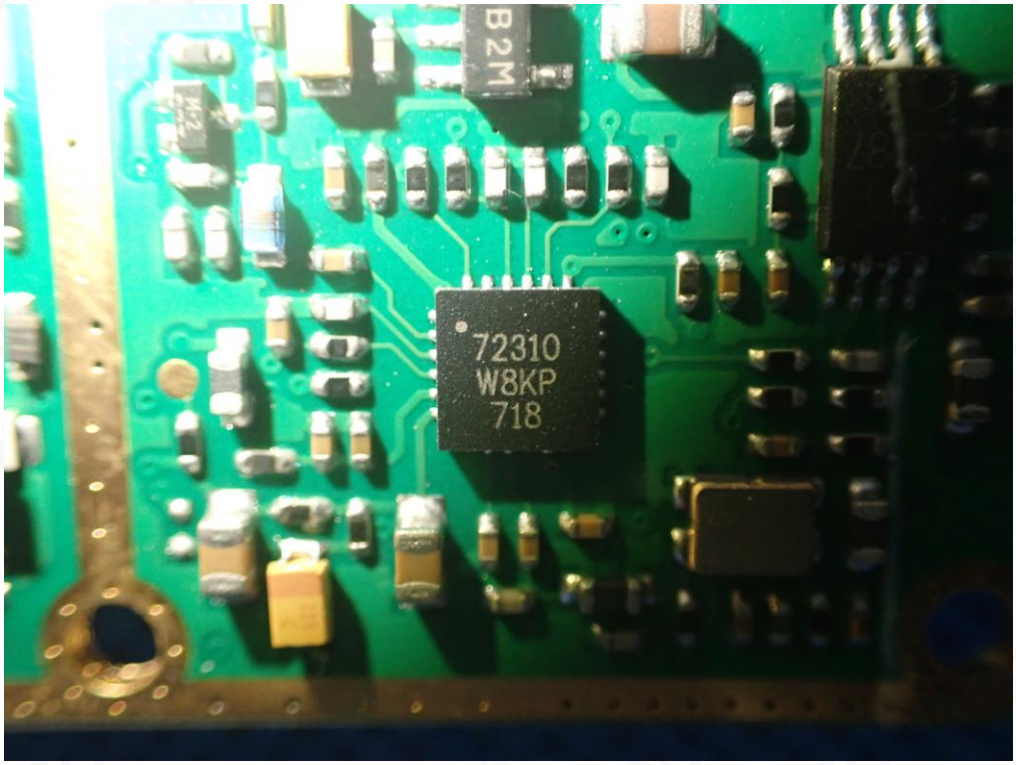
INTERNAL VIEW-3 OF EUT



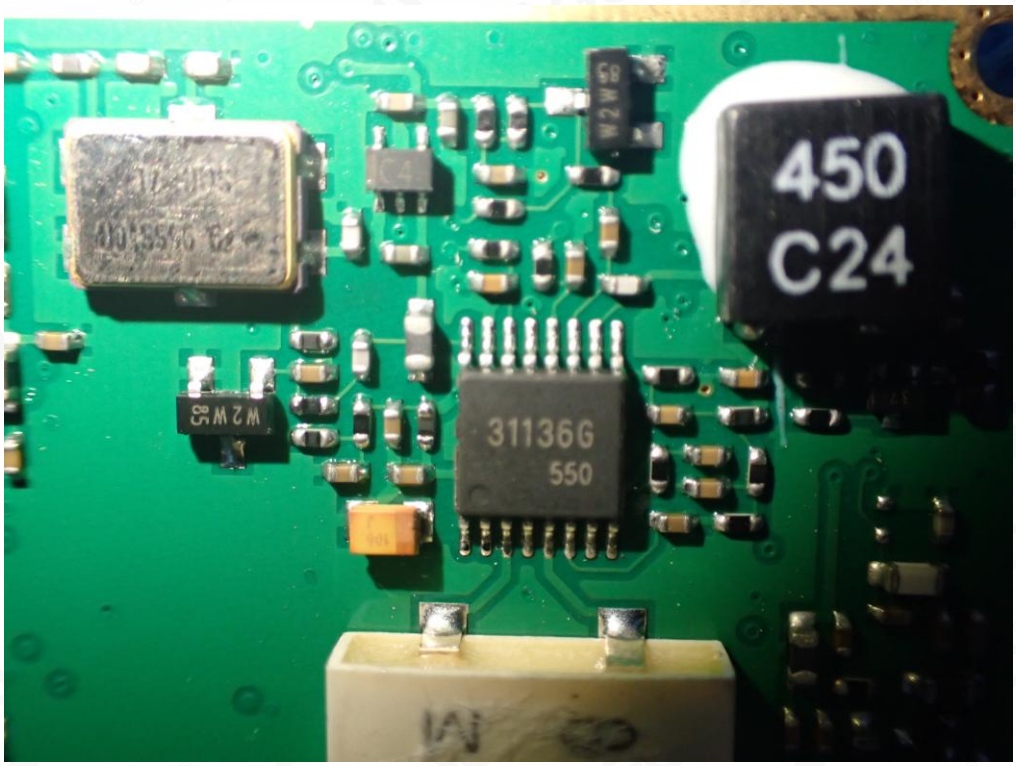
INTERNAL VIEW-4 OF EUT



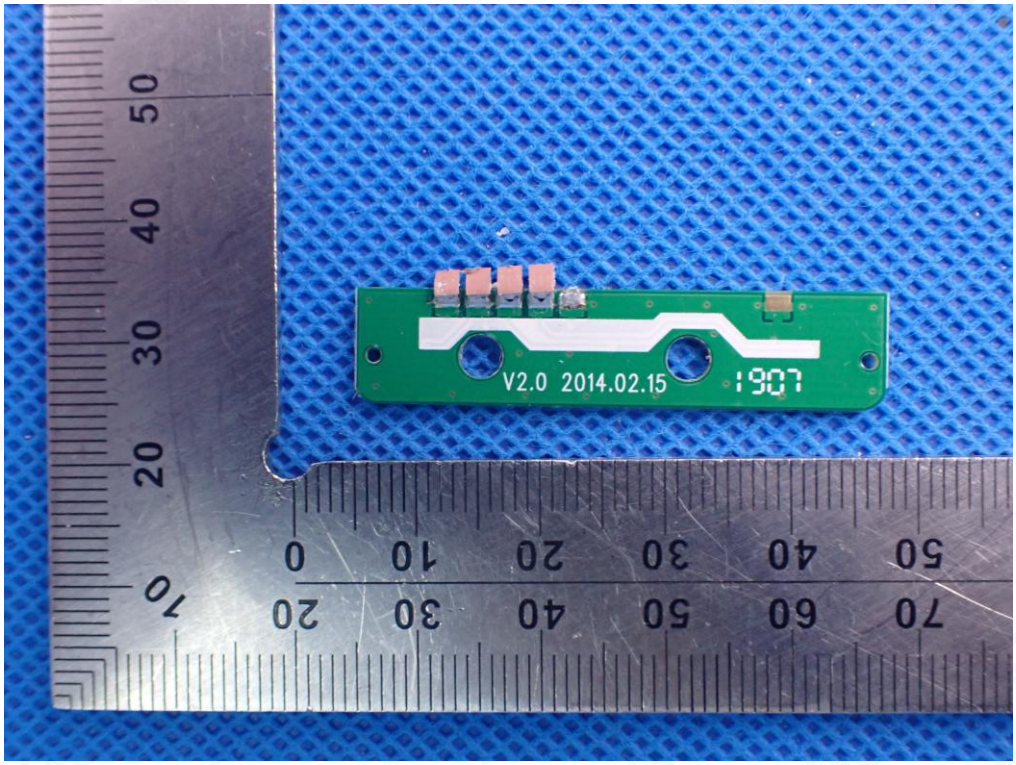
INTERNAL VIEW-5 OF EUT



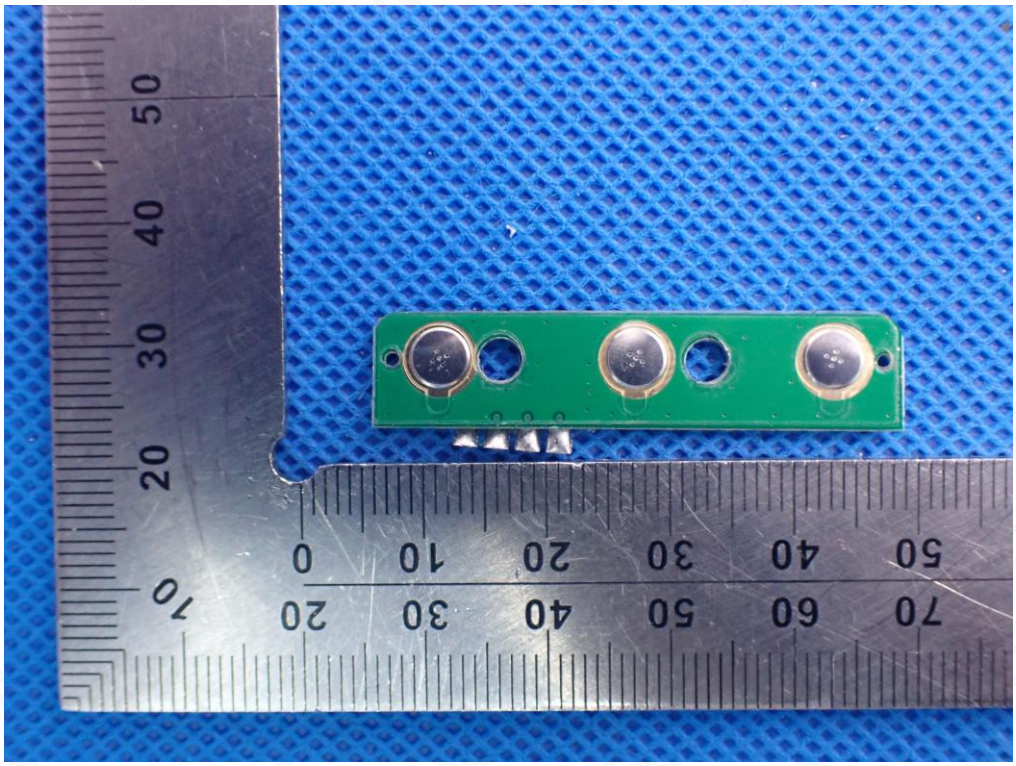
INTERNAL VIEW-6 OF EUT



INTERNAL VIEW-7 OF EUT



INTERNAL VIEW-8 OF EUT



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