

RF TEST REPORT

For

Guangzhou TID Electronic Technology Co.,Ltd

Product Name: PoC Network Radio

Test Model(s): TD-M15

Report Reference No. : DACE250616001RF001

FCC ID : 2A4FBTD-M15

Applicant's Name : Guangzhou TID Electronic Technology Co.,Ltd

Address : Room 913A, Bentley International Building, Building 7, No. 50, Juyuan Street, Shijing Street, Baiyun District, Guangzhou, Guangdong, China

Testing Laboratory : Shenzhen DACE Testing Technology Co., Ltd.

Address : 102, Building H1, & 1/F., Building H, Hongfa Science & Technology Park, Tangtou Community, Shiyan Subdistrict, Bao'an District, Shenzhen, Guangdong, China

Test Specification Standard : 47 CFR Part 24E
47 CFR Part 22H
47 CFR Part 27

Date of Receipt : June 16, 2025

Date of Test : June 16, 2025 to November 1, 2025

Data of Issue : November 1, 2025

Result : Pass

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Apply for company information

Applicant's Name	:	Guangzhou TID Electronic Technology Co.,Ltd
Address	:	Room 913A, Bentley International Building, Building 7, No. 50, Juyuan Street, Shijing Street, Baiyun District, Guangzhou, Guangdong, China
Product Name	:	PoC Network Radio
Test Model(s)	:	TD-M15
Series Model(s)	:	TD-G500,TD-G16,TD-G17,TD-G18, TD-G19, TD-G20 ,TD-G21,TD-M15 plus, TD-M15pro
Test Specification Standard(s)	:	47 CFR Part 24E 47 CFR Part 22H 47 CFR Part 27

NOTE1:

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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November 1, 2025

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November 1, 2025

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November 1, 2025

Revision History Of Report

Version	Description	REPORT No.	Issue Date
V1.0	Original	DACE250616001RF001	November 1, 2025

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1 TEST SUMMARY

1.1 Test Standards

The tests were performed according to following standards:

47 CFR Part 24E: Personal Communications Services - Broadband PCS
47 CFR Part 22H: Public Mobile Services - Cellular Radiotelephone Service
47 CFR Part 27: Miscellaneous Wireless Communications Services

1.2 Summary of Test Result

Item	Standard	Method	Requirement	Result
Effective (Isotropic) Radiated Power Output	47 CFR Part 24E 47 CFR Part 22H 47 CFR Part 27	ANSI C63.26-2015, Section 5.2.4.2	47 CFR Part 2.1046, Part 22.913	Pass
Peak To Average Ratio	47 CFR Part 24E 47 CFR Part 22H 47 CFR Part 27	ANSI C63.26-2015, Section 5.2.3.4	47 CFR Part 2.1046, Part 22.913 (d)	Pass
Bandwidth	47 CFR Part 24E 47 CFR Part 22H 47 CFR Part 27	ANSI C63.26-2015, Section 5.4	47 CFR Part 2.1049(h)	Pass
Out of Band Emission	47 CFR Part 24E 47 CFR Part 22H 47 CFR Part 27	47 CFR Part 22.917(b) ANSI C63.26-2015, Section 5.7.3	47 CFR Part 2.1051, Part 22.917(a)	Pass
Spurious Unwanted Emission	47 CFR Part 24E 47 CFR Part 22H 47 CFR Part 27	47 CFR Part 22.917(b) ANSI C63.26-2015, Section 5.7.3	47 CFR Part 2.1051, Part 22.917(a)	Pass
Field Strength of Radiated Emission	47 CFR Part 24E 47 CFR Part 22H 47 CFR Part 27	ANSI C63.26-2015, Section 5.5.3	47 CFR Part 2.1053, Part 22.917(a)	Pass
Frequency Stability	47 CFR Part 24E 47 CFR Part 22H 47 CFR Part 27	ANSI C63.26-2015, Section 5.6	47 CFR Part 2.1055, Part 22.355	Pass

2 GENERAL INFORMATION

2.1 Client Information

Applicant's Name : Guangzhou TID Electronic Technology Co.,Ltd
Address : Room 913A, Bentley International Building, Building 7, No. 50, Juyuan Street, Shijing Street, Baiyun District, Guangzhou, Guangdong, China

Manufacturer : Guangzhou TID Electronic Technology Co.,Ltd
Address : Room 913A, Bentley International Building, Building 7, No. 50, Juyuan Street, Shijing Street, Baiyun District, Guangzhou, Guangdong, China

2.2 Description of Device (EUT)

Product Name:	PoC Network Radio
Model/Type reference:	TD-M15
Series Model:	TD-G500,TD-G16,TD-G17,TD-G18, TD-G19, TD-G20 ,TD-G21,TD-M15 plus, TD-M15pro
Model Difference:	The product has many models, only the model name, External dimensions and shape is different, and the other parts such as the circuit principle, pcb and electrical structure are the same.
Trade Mark:	TIDRADIO
Power Supply:	MODEL:RSF-DY101A-0501000EUU INPUT:100-240V-50/60Hz 0.2A OUTPUT:5.0V -1.0A 5.0W
Operation Frequency:	LTE BAND2: 1850 to 1910 MHz LTE BAND4: 1710 to 1755 MHz LTE BAND5: 824 to 849 MHz LTE BAND7: 2500 to 2570 MHz LTE BAND66: 1710 to 1780 MHz
Power Class	Class 3
Supported Channel Bandwidth	LTE BAND2: ☒ 1.4MHz ☒ 3MHz ☒ 5MHz LTE BAND4: ☒ 1.4MHz ☒ 3MHz ☒ 5MHz LTE BAND5: ☒ 1.4MHz ☒ 3MHz ☒ 5MHz LTE BAND7: ☒ 5MHz LTE BAND66: ☒ 3MHz ☒ 5MHz
Antenna Type:	PIFA ANT
Antenna Gain:	B2: 1.5dBi; B4:1.5dBi,B5:0.8dBi; B7:1.8dBi; B66:1.5dBi;
Hardware Version:	M15-08
Software Version:	V1.0

2.3 Description of Test Modes

No	Title	Description
TM1	FDD-LTE Band 2	Low, Middle, High Channels
TM2	FDD-LTE Band 4	Low, Middle, High Channels
TM3	FDD-LTE Band 5	Low, Middle, High Channels
TM4	FDD-LTE Band 7	Low, Middle, High Channels
TM5	FDD-LTE Band 66	Low, Middle, High Channels

2.4 Description of Support Units

The EUT was tested as an independent device.

2.5 Equipments Used During The Test

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RF Test Software	Tachoy Information Technology(she nzheng) Co.,Ltd.	RTS-01	V1.0.0	/	/
Power divider	MIDEWEST	PWD-2533	SMA-79	2025-04-18	2026-05-10
RF Sensor Unit	Tachoy Information Technology(she nzheng) Co.,Ltd.	TR1029-2	000001	/	/
Wideband radio communication tester	R&S	CMW500	113410	2025-04-25	2026-04-24
Vector Signal Generator	Keysight	N5181A	MY50143455	2024-12-06	2025-12-05
Signal Generator	Keysight	N5182A	MY48180415	2024-12-06	2025-12-05
Spectrum Analyzer	Keysight	N9020A	MY53420323	2024-12-06	2025-12-05

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Cable(HF)2	SCHWARZ BECK	50Ω	/	2025-04-18	2026-04-17
Cable(HF)1	SCHWARZ BECK	50Ω	/	2025-04-18	2026-04-17
Cable(LF)2	SCHWARZ BECK	50Ω	/	2025-04-18	2026-04-17
Cable(LF)1	SCHWARZ BECK	50Ω	/	2025-04-18	2026-04-17
Control	MF	MF-7802	MF780208362	2024-12-09	2025-12-08
Test Receiver	Rohde & Schwarz	ESPI TEST RECEIVER	1164.6607K03-102109-MH	2025-04-25	2026-04-24
EMI Test software	Farad	EZ -EMC	V1.1.42	/	/
Positioning Controller	MF	MF-7802	/	/	/
Amplifier(18-40G)	COM-POWER	AH-1840	10100008-1	2024-04-26	2027-04-25
Horn antenna	COM-POWER	AH-1840 (18-40G)	10100008	2024-04-26	2027-04-25
Horn Antenna	Sunol Sciences	DRH-118	A091114	2024-04-26	2027-04-25
Horn Antenna	ETS	3117	00086197	2024-04-26	2027-04-25
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170582	2024-04-26	2027-04-25
Loop antenna	ZHINAN	ZN30900C	ZN30900C	2025-04-28	2026-04-27
Power amplifier(LF)	Schwarzbeck	BBV9743	9743-151	2025-04-29	2026-04-28
Power amplifier(HF)	Schwarzbeck	BBV9718	9718-282	2025-04-29	2026-04-28
Test Receiver	R&S	ESCI 3	1166.5950K03-101431-Jq	2025-04-18	2026-04-17
Broadband Antenna	Sunol Sciences	JB6 Antenna	A090414	2024-09-28	2026-09-27
Broadband Antenna	SCHWARZBECK	VULB9168	00836 P:00227	2024-09-28	2026-09-27
Wideband radio communication tester	R&S	CMW500	113410	2025-04-25	2026-04-24
PSG Analog Signal Generator	Agilent	E8257D	MY51110112	Jun. 30,2025	Jun. 29, 2026
Signal Generator	Keysight	N5182A	MY48180415	2024-12-06	2025-12-05

2.6 Statement Of The Measurement Uncertainty

Test Item	Measurement Uncertainty
RF conducted power	$\pm 0.733\text{dB}$
Occupied Bandwidth	$\pm 3.63\%$
RF power density	$\pm 0.234\%$
Radiated Emission (Below 1GHz)	$\pm 5.79\text{dB}$
Radiated Emission (Above 1GHz)	$\pm 5.46\text{dB}$
Note: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.	

2.7 Authorizations

Company Name:	Shenzhen DACE Testing Technology Co., Ltd.
Address:	101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252

Identification of the Responsible Testing Location

Company Name:	Shenzhen DACE Testing Technology Co., Ltd.
Address:	101-102 Building H5 & 1/F., Building H, Hongfa Science & Technology Park, Tangtou, Shiyan, Bao'an District, Shenzhen, Guangdong, China
Phone Number:	+86-13267178997
Fax Number:	86-755-29113252
Designation Number:	CN1342
Test Firm Registration No.:	778666
A2LA Certificate Number:	6270.01

2.8 Announcement

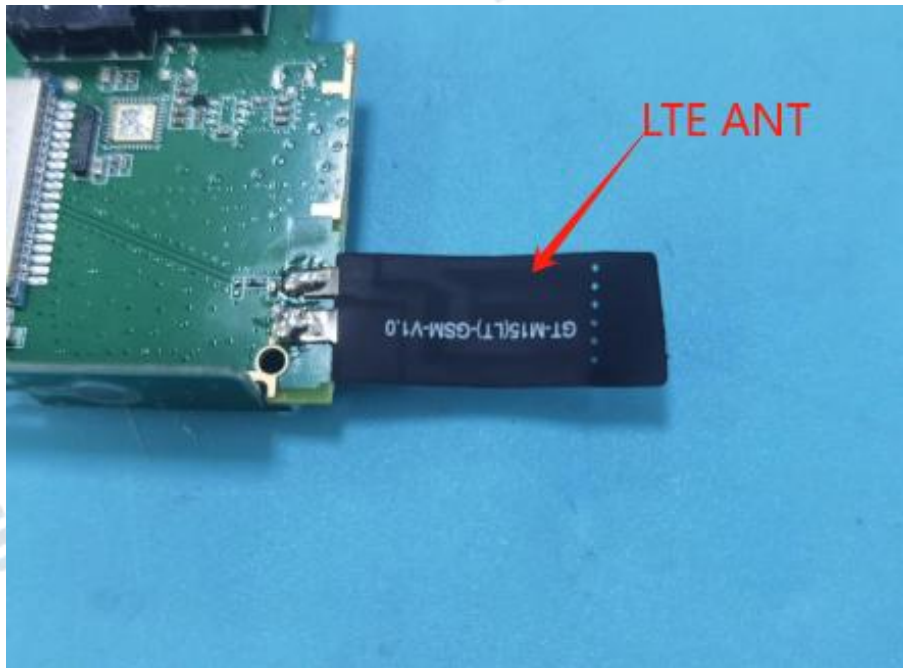
- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by DACE and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) We hereby declare that the laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant. the laboratory is not responsible for the accuracy of the information provided by the client(item 2.2). When the information provided by the customer may affect the effectiveness of the results, the responsibility lies with the customer, and the laboratory does not assume any responsibility.

3 Evaluation Results (Evaluation)

3.1 Antenna requirement

Test Requirement:	Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.
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3.1.1 Conclusion:



4 Radio Spectrum Matter Test Results (RF)

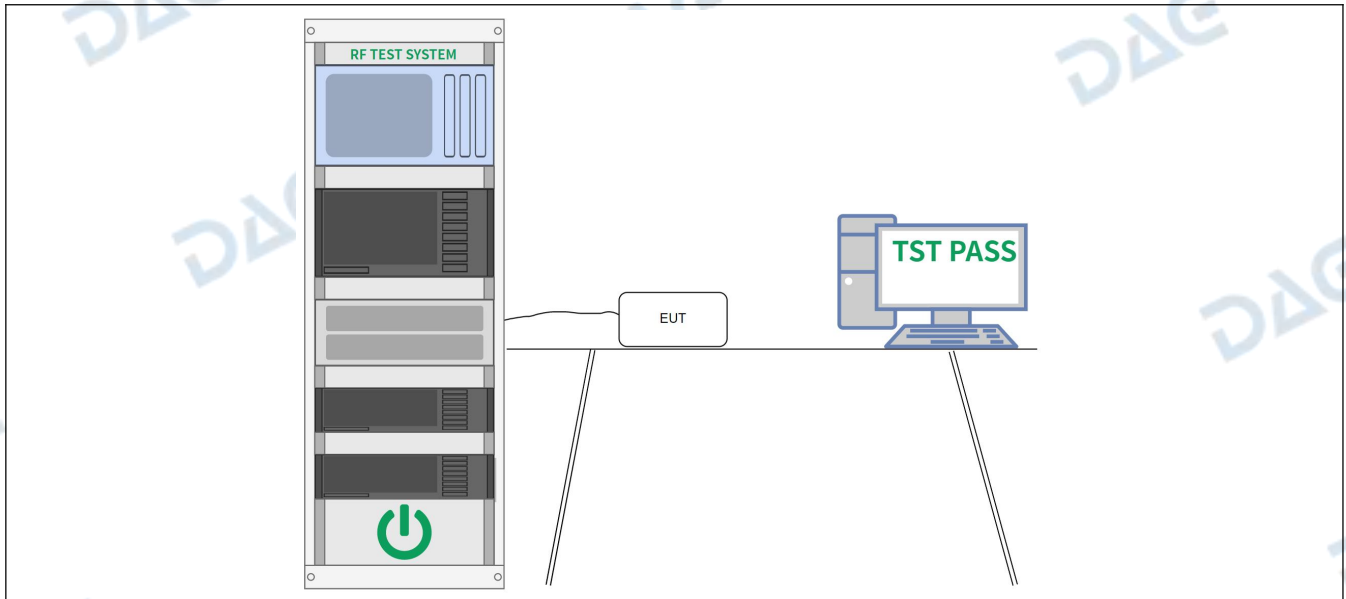
4.1 Effective (Isotropic) Radiated Power Output

Test Requirement:	47 CFR Part 2.1046, Part 24.232 47 CFR Part 2.1046, Part 22.913 47 CFR Part 2.1046, Part 27.50(h)(2)
Test Limit:	According to §24.232 (c), Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications. According to §27.50(d)(4), Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. According to § 22.913(a) specifies " The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.
Test Method:	ANSI C63.26-2015, Section 5.2.4.2
Procedure:	If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98%), then the following options can be implemented to facilitate measurement of the average power with an average power meter: a) A gated average power meter can be used to perform the measurement if the gating parameters can be adjusted such that the power is measured only during active transmission bursts at maximum output power levels. b) A conventional average power meter with no signal gating capability can also be used if the measured burst duty cycle is constant (i.e., duty cycle variations are less than or equal to $\pm 2\%$) by performing the measurement over the on/off burst cycles and then correcting (increasing) the measured level by a factor equal to $[10 \log (1/\text{duty cycle})]$. See 5.2.4.3.4 for guidance with respect to measuring the transmitter duty cycle.

4.1.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.5 °C	Humidity:	48 %	Atmospheric Pressure:	101 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.1.2 Test Setup Diagram:



4.1.3 Test Data:

Please Refer to Appendix for Conducted Power.
Radiated Power Output

LTE Band 2						
Bandwidth	Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
			Vertical	Horizontal		
1.4MHz	QPSK	Low	24.68	25.02	33.01	PASS
		Mid	24.22	23.96		
		High	23.62	23.98		
	16QAM	Low	22.59	24.64		PASS
		Mid	24.64	24.84		
		High	22.65	23.64		
3MHz	QPSK	Low	23.03	22.79	33.01	PASS
		Mid	23.92	23.42		
		High	24.68	22.77		
	16QAM	Low	22.62	23.44		PASS
		Mid	24.82	25.96		
		High	25.44	25.33		
5MHz	QPSK	Low	25.48	25.22	33.01	PASS
		Mid	25.93	23.21		
		High	22.74	24.04		
	16QAM	Low	23.94	23.73		PASS
		Mid	25.03	25.26		
		High	24.31	25.69		

LTE Band 4						
Bandwidth	Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
			Vertical	Horizontal		
1.4MHz	QPSK	Low	24.36	24.43	30.01	PASS
		Mid	25.46	25.56		
		High	24.46	25.86		
	16QAM	Low	22.72	24.47		PASS
		Mid	22.85	23.01		
		High	23.56	23.34		
3MHz	QPSK	Low	24.48	23.01	30.01	PASS
		Mid	23.04	24.25		
		High	24.84	24.51		
	16QAM	Low	25.67	22.68		PASS
		Mid	22.93	25.04		
		High	25.38	24.16		
5MHz	QPSK	Low	24.18	24.47	30.01	PASS
		Mid	25.00	24.92		
		High	25.35	25.77		
	16QAM	Low	24.98	22.17		PASS
		Mid	24.68	24.37		
		High	24.84	22.41		

LTE Band 5						
Bandwidth	Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
			Vertical	Horizontal		
1.4MHz	QPSK	Low	25.58	22.72	38.45	PASS
		Mid	24.25	22.62		
		High	22.71	22.29		
	16QAM	Low	22.54	24.42		PASS
		Mid	25.77	22.16		
		High	22.38	25.25		
3MHz	QPSK	Low	25.96	22.16	38.45	PASS
		Mid	23.13	24.43		
		High	25.90	25.45		
	16QAM	Low	25.57	22.86		PASS
		Mid	23.64	24.77		
		High	22.23	24.58		
5MHz	QPSK	Low	24.41	23.01	38.45	PASS
		Mid	25.63	23.56		
		High	22.97	23.48		
	16QAM	Low	25.63	25.81		PASS
		Mid	23.24	23.23		
		High	25.15	24.34		

LTE Band 7						
Bandwidth	Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
			Vertical	Horizontal		
5MHz	QPSK	Low	24.84	24.48	33.01	PASS
		Mid	22.51	23.35		
		High	22.26	25.14		
	16QAM	Low	24.14	22.96		
		Mid	22.25	22.94		
		High	24.08	23.42		

LTE Band 66						
Bandwidth	Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
			Vertical	Horizontal		
3MHz	QPSK	Low	22.39	25.96	30.01	PASS
		Mid	23.11	24.25		
		High	22.01	25.00		
	16QAM	Low	24.61	23.07		PASS
		Mid	22.85	22.33		
		High	25.40	24.78		
5MHz	QPSK	Low	24.43	22.22	30.01	PASS
		Mid	22.17	22.63		
		High	24.37	23.03		
	16QAM	Low	23.30	24.77		PASS
		Mid	24.53	22.59		
		High	24.18	23.94		

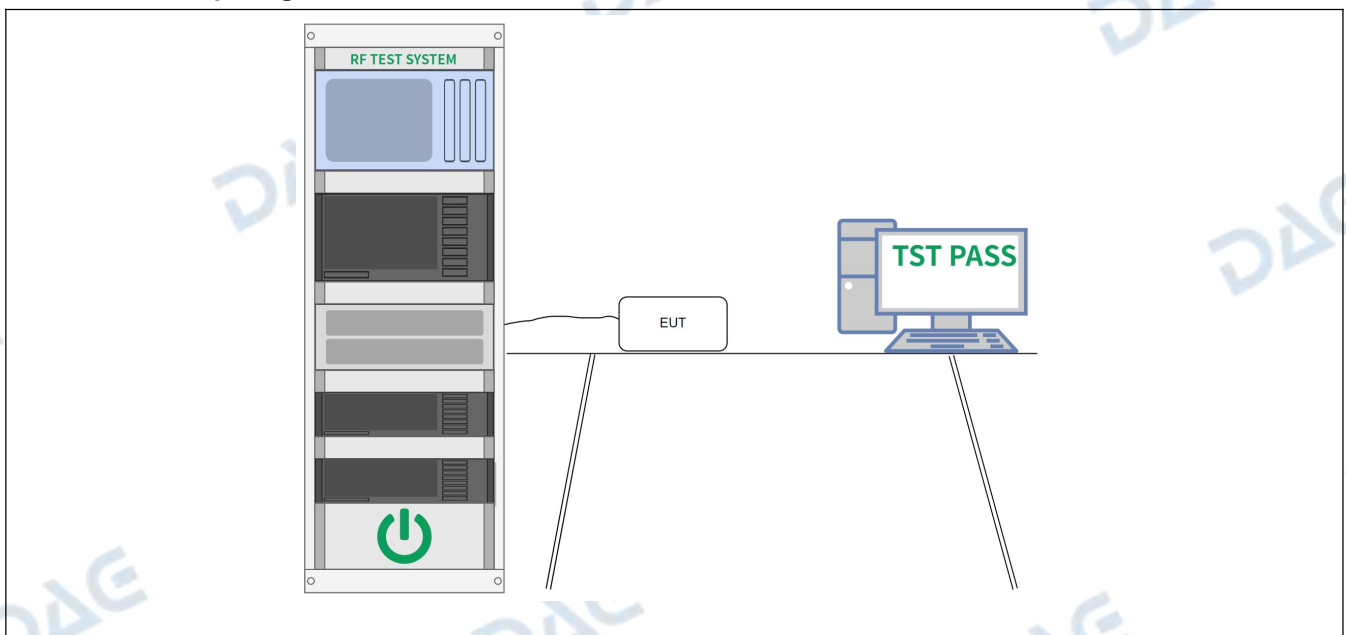
4.2 Peak To Average Ratio

Test Requirement:	47 CFR Part 2.1046, Part 24.232(d) 47 CFR Part 2.1046, Part 22.913 (d) 47 CFR Part 2.1046, Part 27.50
Test Limit:	The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.
Test Method:	ANSI C63.26-2015, Section 5.2.3.4
Procedure:	a) Set resolution/measurement bandwidth $\geq$ OBW or specified reference bandwidth. b) Set the number of counts to a value that stabilizes the measured CCDF curve. c) Set the measurement interval as follows: 1) For continuous transmissions, set to the greater of $[10 \times (\text{number of points in sweep}) \times (\text{transmission symbol period})]$ or 1 ms. 2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize. Set the measurement interval to a time that is less than or equal to the burst duration. 3) If there are several carriers in a single antenna port, the peak power shall be determined for each individual carrier (by disabling the other carriers while measuring the required carrier) and the total peak power calculated from the sum of the individual carrier peak powers. d) Record the maximum PAPR level associated with a probability of 0.1%. e) The peak power level is calculated from the sum of the PAPR value from step d) to the measured average power.

4.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.5 °C	Humidity:	48 %	Atmospheric Pressure:	101 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.2.2 Test Setup Diagram:



4.2.3 Test Data:

Please Refer to Appendix for Details.

4.3 Bandwidth

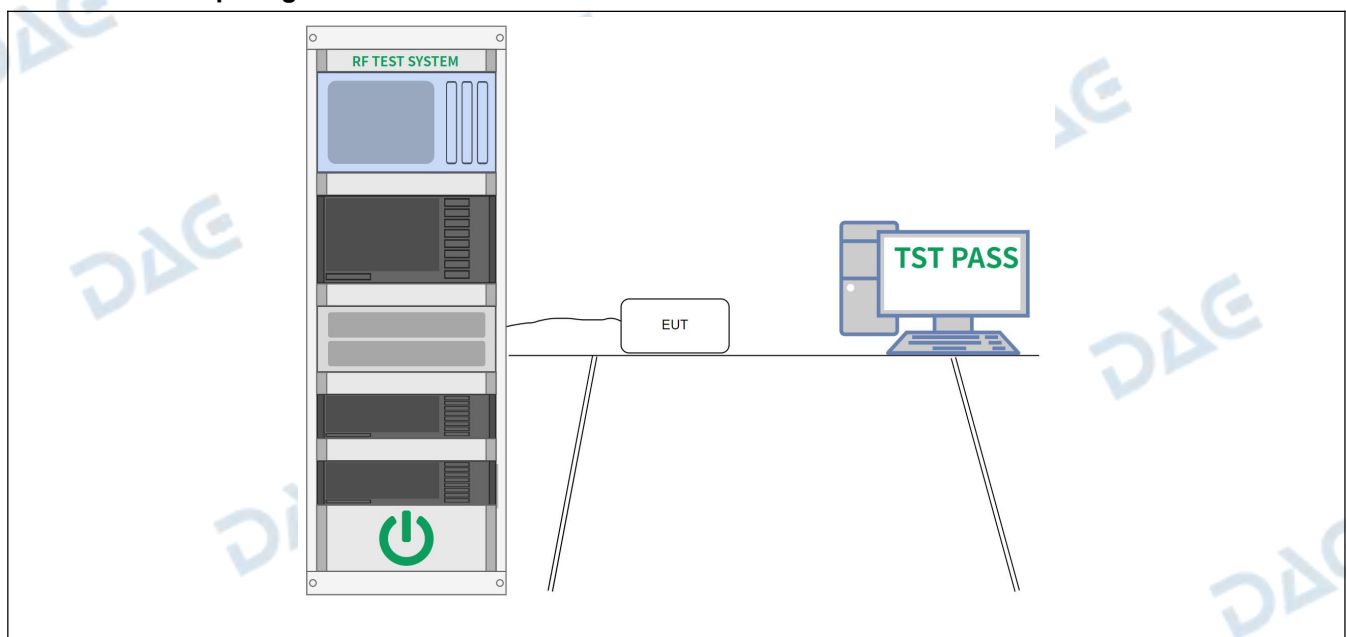
Test Requirement:	47 CFR Part 2.1049(h)
Test Limit:	OBW: No limit, only for report use. EBW: No limit, only for report use.
Test Method:	ANSI C63.26-2015, Section 5.4
Procedure:	OBW: a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts (typically a span of $1.5 \times \text{OBW}$ is sufficient). b) The nominal IF filter 3 dB bandwidth (RBW) shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times \text{RBW}$. c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3. NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances. d) Set the detection mode to peak, and the trace mode to max-hold. e) If the instrument does not have a 99% OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5% of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5% of the total is reached and record that frequency as the upper OBW frequency. The 99% power OBW can be determined by computing the difference these two frequencies. f) The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s). EBW: a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement. b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set $\geq 3 \times \text{RBW}$. c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3. NOTE—Step a), step b), and step c) may require iteration to adjust within the specified tolerances. d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target “-X dB” requirement, i.e., if the requirement calls for measuring the -26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level. e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold. f) Determine the reference value by either of the following: 1) Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value). 2) Set the EUT to transmit an unmodulated carrier. Set the spectrum analyzer marker to the level of the carrier. g) Determine the “-X dB amplitude” as equal to (Reference Value - X). Alternatively, this calculation can be performed on the spectrum analyzer using the delta-marker measurement function. h) If the reference value was determined using an unmodulated carrier, turn the EUT modulation on, then either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise the trace from step f) shall be used for step i).

- i) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB amplitude” determined in step f). If a marker is below this “-X dB amplitude” value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers. The spectral envelope can cross the “-X dB amplitude” at multiple points. The lowest or highest frequency shall be selected as the frequencies that are the farthest away from the center frequency at which the spectral envelope crosses the “-X dB amplitude.”
- j) The OBW shall be reported by providing plot(s) of the measuring instrument display, to include markers depicting the relevant frequency and amplitude information (e.g., marker table). The frequency and amplitude axis and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

4.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.5 °C	Humidity:	48 %	Atmospheric Pressure:	101 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.3.2 Test Setup Diagram:



4.3.3 Test Data:

Please Refer to Appendix for Details.

4.4 Out of Band Emission

Test Requirement:	47 CFR Part 2.1051, Part 24.238(a) 47 CFR Part 2.1051, Part 22.917(a) 47 CFR Part 2.1051, Part 27.53(m)(4)
Test Limit:	1. 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. 2. The Band 7/41 emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $55 + 10 \log (P)$ dB.
Test Method:	47 CFR Part 24.238(b) ANSI C63.26-2015, Section 5.7.3
Procedure:	Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (a) Set the spectrum analyzer center frequency to the block, band, or channel edge frequency. b) Set the span wide enough to capture the fundamental emission closest to the authorized block or band edge, and to include all modulation products that spill into the immediately adjacent frequency band. In some cases, it may be possible to set the center frequency and span so as to encompass the fundamental emission and the unwanted out-of-band (band-edge) emissions on either side of the authorized block, band, or channel. This can be accomplished with a single (slow) sweep, if adequate overload protection and sufficient dynamic range can be maintained. c) Set the number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$. d) Sweep time should be auto for peak detection. For rms detection the sweep time should be set as follows: 1) If the device can be configured to transmit continuously (duty cycle $\geq 98\%$), set the (sweep time) $> (\text{number of points in sweep}) \times (\text{symbol period})$ (e.g., by a factor of $10 \times \text{symbol period} \times \text{number of points}$). Increasing the sweep time (i.e., slowing the sweep speed) will allow for averaging over multiple symbols 2) If the device cannot transmit continuously (duty cycle $< 98\%$), a gated sweep shall be used when possible (i.e., gate triggered such that the analyzer only sweeps when the device is transmitting at full power), set the sweep time $> (\text{number of points in sweep}) \times (\text{symbol period})$ but the sweep time shall always be maintained at a value that is less than or equal to the minimum transmission time. 3) If the device cannot be configured to transmit continuously (duty cycle $< 98\%$) and a freerunning sweep must be used, set the sweep time so that the averaging is performed over multiple on/off cycles by setting the sweep time $> (\text{number of points in sweep}) \times (\text{transmitter period})$ (i.e., the transmit on-time + the off-time). The spectrum analyzer readings shall subsequently be corrected by $[10 \log (1/\text{duty cycle})]$. This assumes that the transmission period and duty cycle is relatively constant (duty cycle variation $\leq \pm 2\%$). 4) If the device cannot be configured to transmit continuously and a free-running sweep must be used, and if the transmissions exhibit a non-constant duty cycle (duty cycle variations $> \pm 2\%$), set the sweep time so that the averaging is performed over the on-period by setting the sweep time $> (\text{symbol period}) \times (\text{number of points})$, while also maintaining the sweep time $< (\text{transmitter on-time})$. The trace mode shall be set to max hold, since not every display point will be averaged only over just the on-time. Thus, multiple sweeps (e.g., 100) in maximum hold are necessary to ensure that the maximum power is measured. e) The test report shall include the plots of the measuring instrument display and

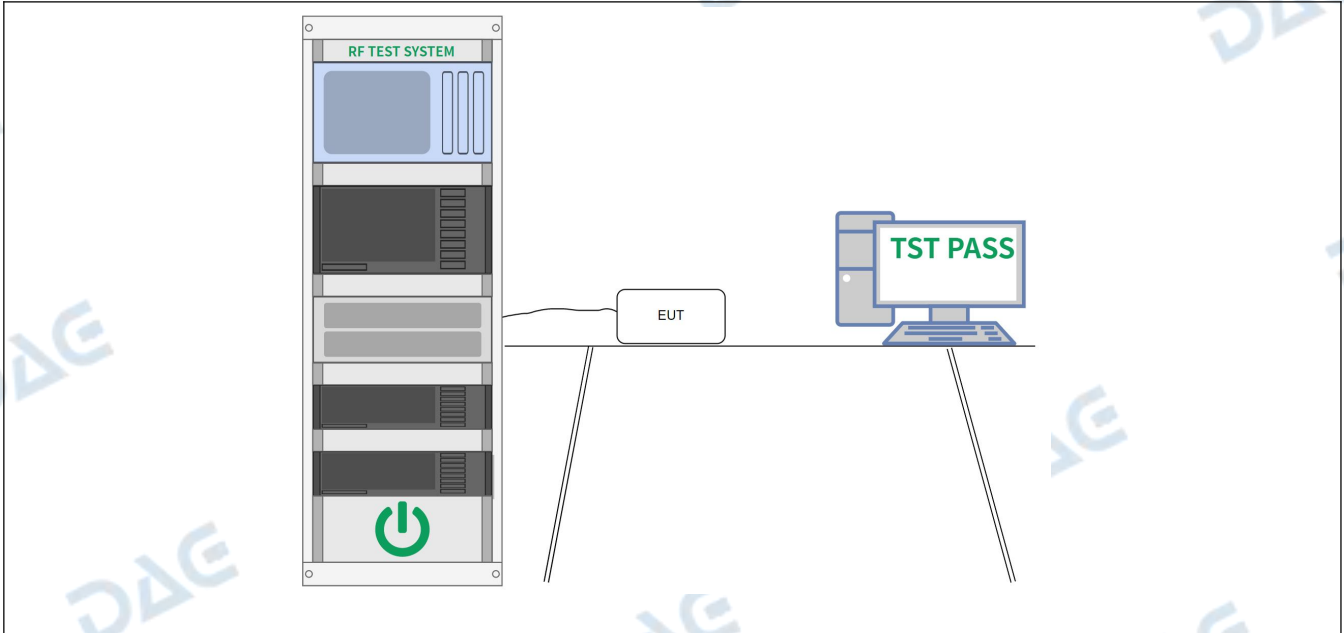
the measured data.
f) See Annex I for example emission mask plots.

4.4.1 E.U.T. Operation:

Operating Environment:

Temperature:	22.5 °C	Humidity:	48 %	Atmospheric Pressure:	101 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.4.2 Test Setup Diagram:



4.4.3 Test Data:

Please Refer to Appendix for Details.

4.5 Spurious Unwanted Emission

Test Requirement:	47 CFR Part 2.1051, Part 24.238(a) 47 CFR Part 2.1051, Part 22.917(a) 47 CFR Part 2.1051, Part 27.53(m)(4)
Test Limit:	§22.917 (e) and §24.238 and §90.691 (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. §27.53 (g) For operations in the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. §27.53 (h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log 10(P)$ dB.
Test Method:	47 CFR Part 24.238(b) ANSI C63.26-2015, Section 5.7.3
Procedure:	Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (a) Set the spectrum analyzer center frequency to the block, band, or channel edge frequency. b) Set the span wide enough to capture the fundamental emission closest to the authorized block or band edge, and to include all modulation products that spill into the immediately adjacent frequency band. In some cases, it may be possible to set the center frequency and span so as to encompass the fundamental emission and the unwanted out-of-band (band-edge) emissions on either side of the authorized block, band, or channel. This can be accomplished with a single (slow) sweep, if adequate overload protection and sufficient dynamic range can be maintained. c) Set the number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$. d) Sweep time should be auto for peak detection. For rms detection the sweep time should be set as follows: 1) If the device can be configured to transmit continuously (duty cycle $\geq 98\%$), set the (sweep time) $> (\text{number of points in sweep}) \times (\text{symbol period})$ (e.g., by a factor of $10 \times \text{symbol period} \times \text{number of points}$). Increasing the sweep time (i.e., slowing the sweep speed) will allow for averaging over multiple symbols 2) If the device cannot transmit continuously (duty cycle $< 98\%$), a gated sweep shall be used when possible (i.e., gate triggered such that the analyzer only sweeps when the device is transmitting at full power), set the sweep time $> (\text{number of points in sweep}) \times (\text{symbol period})$ but the sweep time shall always be maintained at a value that is less than or equal to the minimum transmission time. 3) If the device cannot be configured to transmit continuously (duty cycle $< 98\%$) and a freerunning sweep must be used, set the sweep time so that the averaging is performed over multiple on/off cycles by setting the sweep time $> (\text{number of points in sweep}) \times (\text{transmitter period})$ (i.e., the transmit on-time + the off-time). The spectrum analyzer readings shall subsequently be corrected by $[10 \log (1/\text{duty cycle})]$. This assumes that the transmission period and duty cycle is relatively constant (duty cycle variation $\leq \pm 2\%$). 4) If the device cannot be configured to transmit continuously and a free-running sweep must be used, and if the transmissions exhibit a non-constant duty cycle (duty cycle variations $> \pm 2\%$), set the sweep time so that the averaging is performed over the on-period by setting the sweep time $> (\text{symbol period}) \times (\text{number of points})$, while also maintaining the sweep time $< (\text{transmitter on-time})$.

The trace mode shall be set to max hold, since not every display point will be averaged only over just the on-time. Thus, multiple sweeps (e.g., 100) in maximum hold are necessary to ensure that the maximum power is measured.

e) The test report shall include the plots of the measuring instrument display and the measured data.

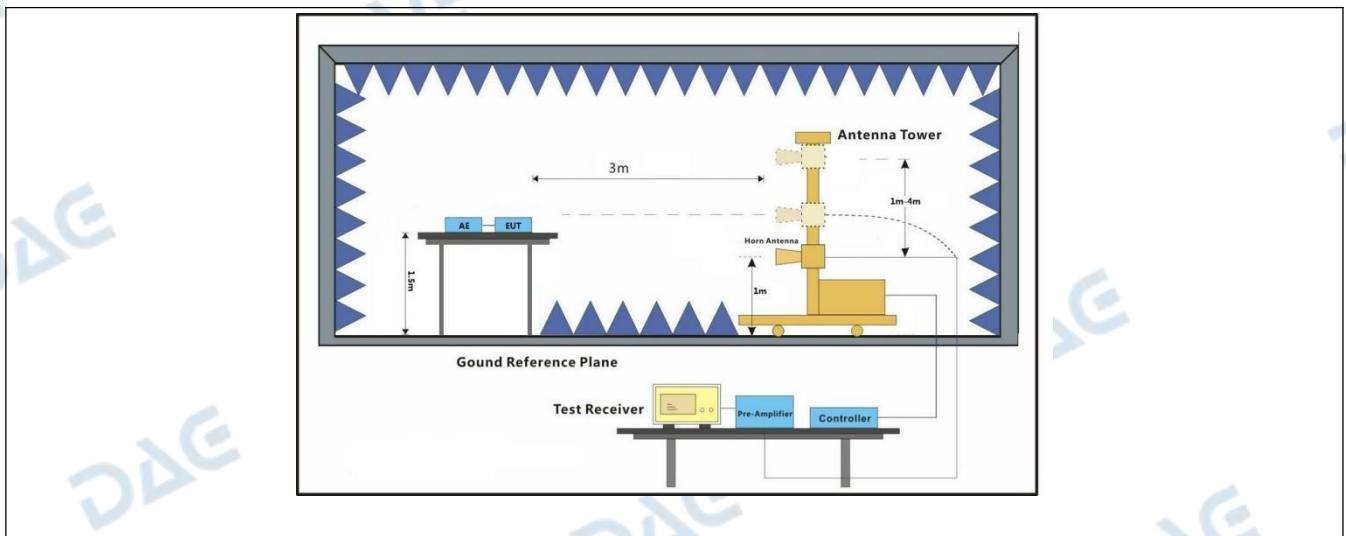
f) See Annex I for example emission mask plots.

4.5.1 E.U.T. Operation:

Operating Environment:

Temperature:	22.5 °C	Humidity:	48 %	Atmospheric Pressure:	101 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.5.2 Test Setup Diagram:



4.5.3 Test Data:

LTE Band 2								
Bandwidth	Channel	Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
			Polarization	Reading (dBm)	Factor (dB)	Level (dBm)		
1.4MHz	Low	292.74	Vertical	-36.59	-6.68	-43.27	- 13.00	PASS
		2,286.55	V	-43.33	-3.42	-46.75		
		3,282.46	V	-52.63	-1.42	-54.05		
		299.10	Horizontal	-32.16	-6.68	-38.84	- 13.00	PASS
		2,291.08	H	-42.57	-3.42	-45.99		
		3,292.61	H	-49.44	-1.42	-50.86		
	Mid	294.43	Vertical	-33.67	-6.68	-40.35	- 13.00	PASS
		2,287.40	V	-40.95	-3.42	-44.37		
		3,298.49	V	-50.21	-1.42	-51.63		
		284.72	Horizontal	-30.70	-6.68	-37.38	- 13.00	PASS
		2,283.93	H	-47.73	-3.42	-51.15		
		3,288.39	H	-52.66	-1.42	-54.08		

3MHz	High	292.04	Vertical	-30.08	-6.68	-36.76	- 13.00	PASS
		2,295.36	V	-49.27	-3.42	-52.69		
		3,286.79	V	-46.58	-1.42	-48.00		
		289.54	Horizontal	-37.49	-6.68	-44.17	- 13.00	PASS
		2,292.87	H	-48.29	-3.42	-51.71		
		3,288.63	H	-51.61	-1.42	-53.03		
	Low	292.31	Vertical	-32.83	-6.68	-39.51	- 13.00	PASS
		2,295.51	V	-46.08	-3.42	-49.50		
		3,297.90	V	-48.93	-1.42	-50.35		
		297.81	Horizontal	-39.89	-6.68	-46.57	- 13.00	PASS
		2,289.47	H	-42.16	-3.42	-45.58		
		3,283.84	H	-48.81	-1.42	-50.23		
5MHz	Mid	297.04	Vertical	-38.24	-6.68	-44.92	- 13.00	PASS
		2,297.89	V	-44.52	-3.42	-47.94		
		3,291.86	V	-49.62	-1.42	-51.04		
		289.70	Horizontal	-34.68	-6.68	-41.36	- 13.00	PASS
		2,292.08	H	-45.06	-3.42	-48.48		
		3,294.34	H	-48.25	-1.42	-49.67		
	High	282.63	Vertical	-35.78	-6.68	-42.46	- 13.00	PASS
		2,300.64	V	-44.07	-3.42	-47.49		
		3,299.29	V	-51.14	-1.42	-52.56		
		293.05	Horizontal	-38.09	-6.68	-44.77	- 13.00	PASS
		2,299.03	H	-44.30	-3.42	-47.72		
		3,294.75	H	-52.33	-1.42	-53.75		
	Low	289.59	Vertical	-30.19	-6.68	-36.87	- 13.00	PASS
		2,298.97	V	-47.93	-3.42	-51.35		
		3,286.32	V	-47.80	-1.42	-49.22		
		296.83	Horizontal	-31.35	-6.68	-38.03	- 13.00	PASS
		2,283.59	H	-46.74	-3.42	-50.16		
		3,301.40	H	-52.47	-1.42	-53.89		
	Mid	293.56	Vertical	-34.91	-6.68	-41.59	- 13.00	PASS
		2,292.13	V	-43.82	-3.42	-47.24		
		3,286.35	V	-49.47	-1.42	-50.89		
		285.61	Horizontal	-34.05	-6.68	-40.73	- 13.00	PASS
		2,288.74	H	-46.20	-3.42	-49.62		
		3,288.11	H	-46.48	-1.42	-47.90		
	High	283.07	Vertical	-36.19	-6.68	-42.87	- 13.00	PASS
		2,284.12	V	-49.77	-3.42	-53.19		

	3,286.19	V	-46.97	-1.42	-48.39		
	292.76	Horizontal	-36.49	-6.68	-43.17		
	2,290.47	H	-41.69	-3.42	-45.11	- 13.00	PASS
	3,297.42	H	-52.74	-1.42	-54.16		

LTE Band 4								
Bandwidth	Channel	Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
			Polarization	Reading (dBm)	Factor (dB)	Level (dBm)		
1.4MHz	Low	301.77	Vertical	-33.69	-6.68	-40.37	- 13.00	PASS
		2,283.69	V	-43.61	-3.42	-47.03		
		3,285.81	V	-45.31	-1.42	-46.73		
		287.08	Horizontal	-37.67	-6.68	-44.35	- 13.00	PASS
		2,301.63	H	-42.59	-3.42	-46.01		
		3,289.20	H	-46.21	-1.42	-47.63		
	Mid	287.18	Vertical	-37.37	-6.68	-44.05	- 13.00	PASS
		2,299.38	V	-45.79	-3.42	-49.21		
		3,289.39	V	-43.53	-1.42	-44.95		
		284.56	Horizontal	-32.46	-6.68	-39.14	- 13.00	PASS
		2,300.39	H	-45.83	-3.42	-49.25		
		3,289.24	H	-48.59	-1.42	-50.01		
	High	298.29	Vertical	-30.70	-6.68	-37.38	- 13.00	PASS
		2,285.82	V	-44.39	-3.42	-47.81		
		3,299.59	V	-46.36	-1.42	-47.78		
		284.61	Horizontal	-34.95	-6.68	-41.63	- 13.00	PASS
		2,295.24	H	-41.28	-3.42	-44.70		
		3,295.47	H	-51.91	-1.42	-53.33		
3MHz	Low	296.89	Vertical	-37.95	-6.68	-44.63	- 13.00	PASS
		2,294.39	V	-44.37	-3.42	-47.79		
		3,286.98	V	-48.26	-1.42	-49.68		
		290.09	Horizontal	-31.35	-6.68	-38.03	- 13.00	PASS
		2,290.18	H	-46.18	-3.42	-49.60		
		3,294.95	H	-45.62	-1.42	-47.04		
	Mid	301.00	Vertical	-33.11	-6.68	-39.79	- 13.00	PASS
		2,300.90	V	-40.19	-3.42	-43.61		
		3,282.65	V	-48.16	-1.42	-49.58		
		295.65	Horizontal	-33.64	-6.68	-40.32	- 13.00	PASS
		2,292.13	H	-41.88	-3.42	-45.30		

5MHz	High	3,293.64	H	-44.49	-1.42	-45.91	- 13.00	PASS
		294.70	Vertical	-35.16	-6.68	-41.84		
		2,291.21	V	-46.87	-3.42	-50.29		
		3,285.47	V	-50.05	-1.42	-51.47	- 13.00	PASS
		299.25	Horizontal	-30.64	-6.68	-37.32		
		2,295.90	H	-45.73	-3.42	-49.15		
	Low	3,288.21	H	-45.02	-1.42	-46.44	- 13.00	PASS
		283.71	Vertical	-35.01	-6.68	-41.69		
		2,288.41	V	-45.12	-3.42	-48.54		
		3,292.09	V	-46.13	-1.42	-47.55	- 13.00	PASS
		286.13	Horizontal	-30.81	-6.68	-37.49		
		2,285.15	H	-48.28	-3.42	-51.70		
	Mid	3,292.19	H	-43.54	-1.42	-44.96	- 13.00	PASS
		286.54	Vertical	-37.78	-6.68	-44.46		
		2,297.07	V	-46.76	-3.42	-50.18	- 13.00	PASS
		3,281.77	V	-50.51	-1.42	-51.93		
		290.31	Horizontal	-38.56	-6.68	-45.24		
		2,287.58	H	-42.19	-3.42	-45.61	- 13.00	PASS
5MHz	High	3,293.02	H	-44.34	-1.42	-45.76		
		282.18	Vertical	-38.37	-6.68	-45.05	- 13.00	PASS
		2,286.48	V	-45.15	-3.42	-48.57		
		3,288.86	V	-47.17	-1.42	-48.59	- 13.00	PASS
		298.87	Horizontal	-30.21	-6.68	-36.89		
		2,296.45	H	-47.35	-3.42	-50.77		
	Low	3,295.88	H	-44.05	-1.42	-45.47	- 13.00	PASS
		282.18	Vertical	-38.37	-6.68	-45.05		
		2,286.48	V	-45.15	-3.42	-48.57		
		3,288.86	V	-47.17	-1.42	-48.59	- 13.00	PASS
		298.87	Horizontal	-30.21	-6.68	-36.89		
		2,296.45	H	-47.35	-3.42	-50.77		

LTE Band 5								
Bandwidth	Channel	Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
			Polarization	Reading (dBm)	Factor (dB)	Level (dBm)		
1.4MHz	Low	299.56	Vertical	-31.40	-6.68	-38.08	- 13.00	PASS
		2,291.03	V	-48.30	-3.42	-51.72		
		3,293.19	V	-44.24	-1.42	-45.66		
		298.22	Horizontal	-30.99	-6.68	-37.67	- 13.00	PASS
		2,282.61	H	-47.77	-3.42	-51.19		
		3,290.12	H	-44.02	-1.42	-45.44		
	Mid	289.08	Vertical	-38.15	-6.68	-44.83	- 13.00	PASS
		2,298.10	V	-46.31	-3.42	-49.73		

		3,288.54	V	-46.58	-1.42	-48.00	- 13.00	PASS
		291.36	Horizontal	-37.89	-6.68	-44.57		
		2,288.21	H	-49.50	-3.42	-52.92		
		3,294.59	H	-43.67	-1.42	-45.09		
	High	289.13	Vertical	-36.78	-6.68	-43.46	- 13.00	PASS
		2,298.40	V	-44.31	-3.42	-47.73		
		3,286.18	V	-51.82	-1.42	-53.24	- 13.00	PASS
		297.31	Horizontal	-36.16	-6.68	-42.84		
		2,285.69	H	-48.99	-3.42	-52.41		
		3,286.85	H	-44.02	-1.42	-45.44		
3MHz	Low	295.04	Vertical	-31.74	-6.68	-38.42	- 13.00	PASS
		2,297.92	V	-47.48	-3.42	-50.90		
		3,288.33	V	-52.08	-1.42	-53.50		
		287.56	Horizontal	-32.64	-6.68	-39.32	- 13.00	PASS
		2,285.46	H	-49.17	-3.42	-52.59		
		3,297.26	H	-45.63	-1.42	-47.05		
	Mid	291.95	Vertical	-38.72	-6.68	-45.40	- 13.00	PASS
		2,290.62	V	-45.08	-3.42	-48.50		
		3,300.92	V	-47.51	-1.42	-48.93		
		293.34	Horizontal	-39.63	-6.68	-46.31	- 13.00	PASS
		2,299.45	H	-43.41	-3.42	-46.83		
		3,300.14	H	-45.22	-1.42	-46.64		
	High	287.48	Vertical	-39.74	-6.68	-46.42	- 13.00	PASS
		2,292.50	V	-44.29	-3.42	-47.71		
		3,300.65	V	-47.35	-1.42	-48.77		
		288.15	Horizontal	-36.14	-6.68	-42.82	- 13.00	PASS
		2,299.71	H	-43.50	-3.42	-46.92		
		3,297.47	H	-44.36	-1.42	-45.78		
5MHz	Low	289.89	Vertical	-39.58	-6.68	-46.26	- 13.00	PASS
		2,294.31	V	-48.37	-3.42	-51.79		
		3,288.11	V	-43.67	-1.42	-45.09		
		283.92	Horizontal	-33.09	-6.68	-39.77	- 13.00	PASS
		2,284.81	H	-40.53	-3.42	-43.95		
		3,286.20	H	-46.85	-1.42	-48.27		
	Mid	300.37	Vertical	-33.41	-6.68	-40.09	- 13.00	PASS
		2,282.13	V	-45.50	-3.42	-48.92		
		3,289.30	V	-51.43	-1.42	-52.85		
		286.38	Horizontal	-38.76	-6.68	-45.44		

		2,289.45	H	-44.48	-3.42	-47.90	- 13.00	PASS
		3,287.09	H	-52.46	-1.42	-53.88		
	High	288.24	Vertical	-30.98	-6.68	-37.66	- 13.00	PASS
		2,282.60	V	-42.82	-3.42	-46.24		
		3,289.85	V	-47.73	-1.42	-49.15		
		301.48	Horizontal	-30.83	-6.68	-37.51	- 13.00	PASS
		2,296.28	H	-47.40	-3.42	-50.82		
		3,299.73	H	-49.99	-1.42	-51.41		

LTE Band 7								
Bandwidth	Channel	Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
			Polarization	Reading (dBm)	Factor (dB)	Level (dBm)		
1.4MHz	Low	285.43	Vertical	-38.96	-6.68	-45.64	- 25.00	PASS
		2,291.85	V	-43.63	-3.42	-47.05		
		3,292.32	V	-48.11	-1.42	-49.53		
		290.27	Horizontal	-39.42	-6.68	-46.10	- 25.00	PASS
		2,294.52	H	-44.55	-3.42	-47.97		
		3,286.04	H	-51.54	-1.42	-52.96		
	Mid	301.01	Vertical	-34.47	-6.68	-41.15	- 25.00	PASS
		2,288.39	V	-47.64	-3.42	-51.06		
		3,296.54	V	-48.77	-1.42	-50.19		
		289.23	Horizontal	-37.62	-6.68	-44.30	- 25.00	PASS
		2,284.52	H	-45.36	-3.42	-48.78		
		3,286.26	H	-47.19	-1.42	-48.61		
	High	284.62	Vertical	-36.73	-6.68	-43.41	- 25.00	PASS
		2,288.02	V	-43.93	-3.42	-47.35		
		3,291.11	V	-51.41	-1.42	-52.83		
		287.77	Horizontal	-35.50	-6.68	-42.18	- 25.00	PASS
		2,297.80	H	-44.56	-3.42	-47.98		
		3,301.16	H	-52.26	-1.42	-53.68		

LTE Band 66								
Bandwidth	Channel	Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
			Polarization	Reading (dBm)	Factor (dB)	Level (dBm)		
3MHz	Low	300.96	Vertical	-31.51	-6.68	-38.19	- 13.00	PASS
		2,295.71	V	-44.52	-3.42	-47.94		

5MHz			3,288.20	V	-49.02	-1.42	-50.44	- 13.00	PASS
			288.03	Horizontal	-31.69	-6.68	-38.37		
			2,301.46	H	-45.78	-3.42	-49.20		
			3,299.22	H	-51.63	-1.42	-53.05		
		Mid	295.88	Vertical	-37.73	-6.68	-44.41	- 13.00	PASS
			2,298.66	V	-43.24	-3.42	-46.66		
			3,284.05	V	-52.64	-1.42	-54.06		
			296.02	Horizontal	-31.65	-6.68	-38.33		
		High	2,286.56	H	-44.12	-3.42	-47.54	- 13.00	PASS
			3,293.88	H	-44.04	-1.42	-45.46		
			294.94	Vertical	-37.76	-6.68	-44.44		
			2,287.13	V	-49.25	-3.42	-52.67		
		Low	3,284.04	V	-43.68	-1.42	-45.10	- 13.00	PASS
			301.22	Horizontal	-36.27	-6.68	-42.95		
			2,289.27	H	-41.31	-3.42	-44.73		
			3,288.62	H	-48.17	-1.42	-49.59		
		Mid	294.61	Vertical	-32.19	-6.68	-38.87	- 13.00	PASS
			2,287.65	V	-46.96	-3.42	-50.38		
			3,298.65	V	-48.64	-1.42	-50.06		
			294.90	Horizontal	-32.02	-6.68	-38.70		
		High	2,297.17	H	-44.10	-3.42	-47.52	- 13.00	PASS
			3,301.66	H	-52.75	-1.42	-54.17		
			287.22	Vertical	-36.84	-6.68	-43.52		
			2,292.85	V	-47.26	-3.42	-50.68		
		Low	3,298.77	V	-43.92	-1.42	-45.34	- 13.00	PASS
			283.20	Horizontal	-39.12	-6.68	-45.80		
			2,301.55	H	-46.98	-3.42	-50.40		
			3,290.50	H	-46.31	-1.42	-47.73		
		Mid	296.56	Vertical	-37.59	-6.68	-44.27	- 13.00	PASS
			2,297.58	V	-41.44	-3.42	-44.86		
			3,286.25	V	-48.58	-1.42	-50.00		
			292.98	Horizontal	-36.01	-6.68	-42.69		
		High	2,286.82	H	-47.54	-3.42	-50.96	- 13.00	PASS
			3,296.86	H	-52.29	-1.42	-53.71		

4.6 Frequency Stability

Test Requirement:	47 CFR Part 2.1055, Part 22.355
Test Limit:	+/- 2.5ppm
Test Method:	ANSI C63.26-2015, Section 5.6
Procedure:	Frequency stability over variations in temperature: - Supply the EUT with a nominal 60 Hz ac voltage, dc voltage, or install a new or fully charged battery in the EUT. - If possible a dummy load should be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, the EUT should be placed in the center of the chamber with the antenna adjusted to the shortest length possible. - Turn on the EUT, and tune it to the center frequency of the operating band. - Couple the transmitter output to the measuring instrument through a suitable attenuator and coaxial cable. If connection to the EUT output is not possible, make the measurement by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away). NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory authority is the recommended measuring instrument. - Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument, but is strong enough to allow measurement of the operating or fundamental frequency of the EUT). Adjust the detector bandwidth and span settings to achieve a resolution capable of accurate frequency measurements over the applicable frequency stability limits. - Turn the EUT off, and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit. - Set the temperature control on the chamber to the highest temperature specified in the regulatory requirements for the type of device, and allow the oscillator heater and the chamber temperature to stabilize. Unless otherwise instructed by the regulatory authority, this temperature should be 50 °C. - While maintaining a constant temperature inside the environmental chamber, turn on the EUT and allow sufficient time for the EUT temperature to stabilize. - Measure the frequency. - Switch off the EUT, but do not switch off the oscillator heater. - Lower the chamber temperature to the next level that is required by the standard and allow the temperature inside the chamber to stabilize. Unless otherwise instructed by the regulators, this temperature step should be 10 °C. - Repeat step h) through step k) down to the lowest specified temperature. Unless otherwise instructed by the regulators, this temperature should be -30 °C. When the frequency stability limit is stated as being sufficient such that the fundamental emissions stay within the authorized bands of operation, a reference point shall be established at the applicable unwanted emissions limit using a RBW equal to the RBW required by the unwanted emissions specification of the applicable regulatory standard. These reference points measured using the lowest and highest channel of operation shall be identified as fL and fH respectively. The worst-case frequency offset determined in the above methods shall be added or subtracted from the values of fL and fH and the resulting frequencies must remain within the band. - The following additional information is required for equipment incorporating heater type crystal oscillators to be used in mobile stations except for battery powered, hand carried, and portable equipment having mean output power lower than the threshold specified. - Measurement data showing variation in transmitter output frequency from a cold start and the elapsed time necessary for the frequency to stabilize within the applicable tolerance. Tests shall be made after temperature stabilization at each of the ambient temperature levels required by the standard.

- 2) Beginning at each temperature level specified, the frequency shall be measured within 60 s after application of primary power to the transmitter and at intervals of no more than 60 s thereafter until 10 min have elapsed or until sufficient measurements are obtained to indicate clearly that the frequency has stabilized within the applicable tolerance, whichever time period is greater.
- 3) The elapsed time necessary for the frequency to stabilize within the applicable tolerance from each beginning temperature level as determined from the tests specified in this paragraph shall be specified in the instruction book for the transmitter furnished to the user.
- 4) When it is impracticable to subject the complete transmitter to this test because of its physical dimensions or power rating, only its frequency determining and stabilizing portions need be tested.

Frequency stability when varying supply voltage:

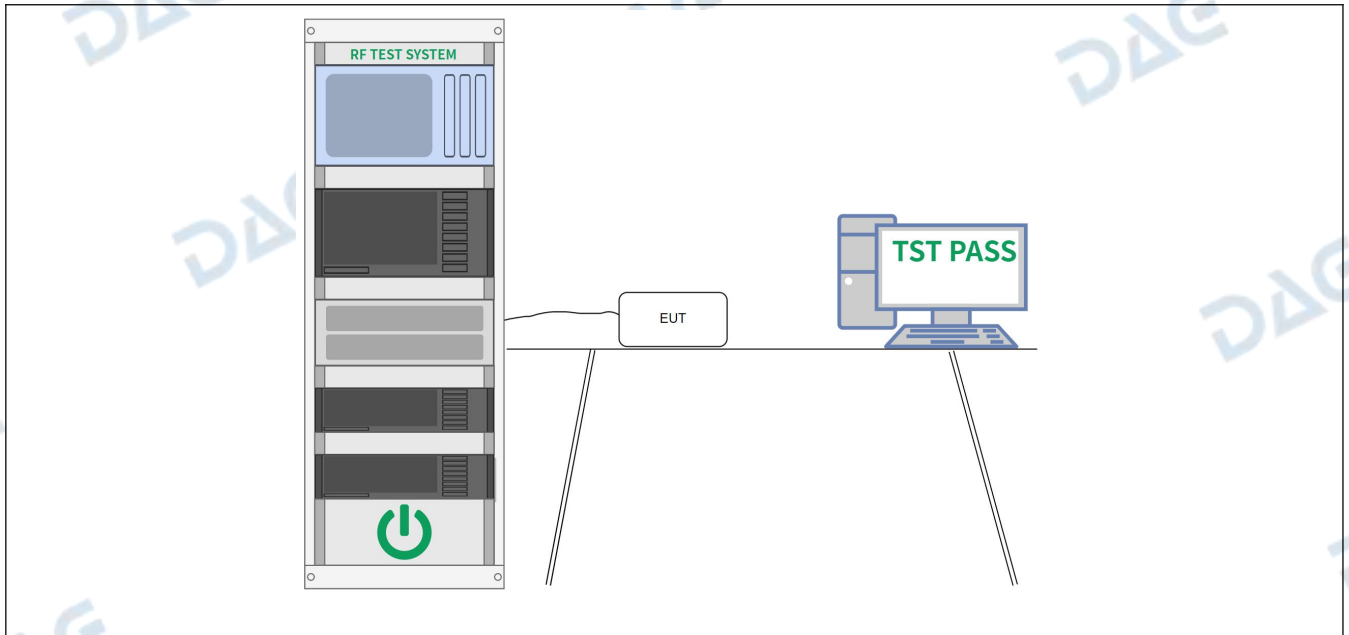
- a) Couple the transmitter output to the measuring instrument through a suitable attenuator and coaxial cable. If connection to the EUT output is not possible make the measurement by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away)
- b) Supply the EUT with nominal ac or dc voltage. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.
- c) Turn on the EUT, and couple its output to a frequency counter or other frequency-measuring instrument.
- d) Tune the EUT to the center frequency of the operating band. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument, but is strong enough to allow measurement of the operating or fundamental frequency of the EUT). Adjust the detector bandwidth and span settings to achieve a resolution capable of accurate frequency measurements over the applicable frequency stability limits.
- NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory authority is the recommended measuring instrument.
- e) Measure the frequency.
- f) Unless otherwise specified, vary primary supply voltage from 85% to 115% of the nominal value for other than hand carried battery equipment.
- g) For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
- h) Repeat the frequency measurement.

NOTE—For band-edge compliance, it can be required to make these measurements at the low and high channel of the operating band.

4.6.1 E.U.T. Operation:

Operating Environment:					
Temperature:	22.5 °C	Humidity:	48 %	Atmospheric Pressure:	101 kPa
Pretest mode:	TM1				
Final test mode:	TM1				

4.6.2 Test Setup Diagram:

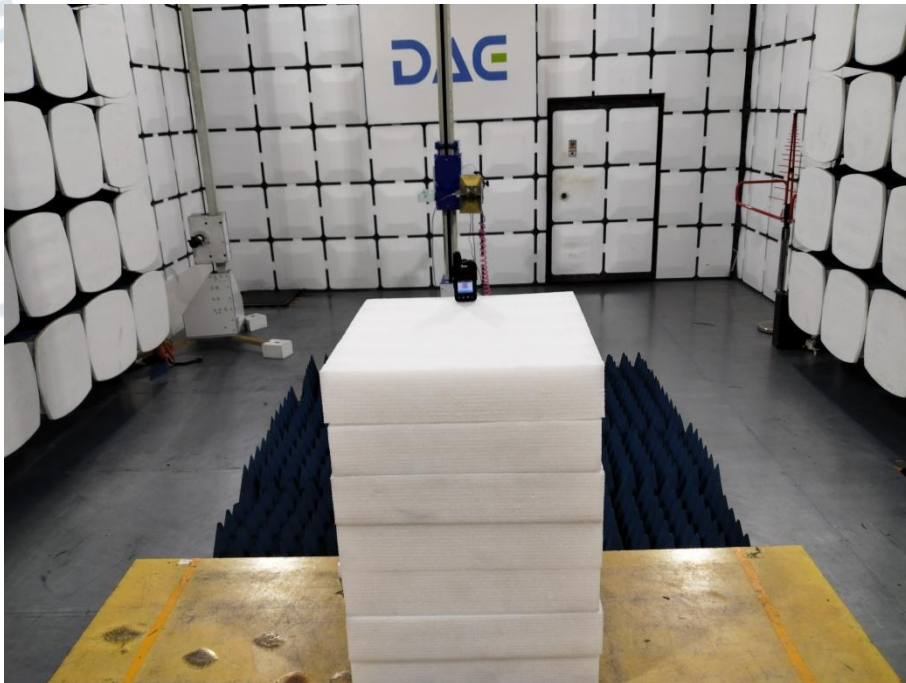
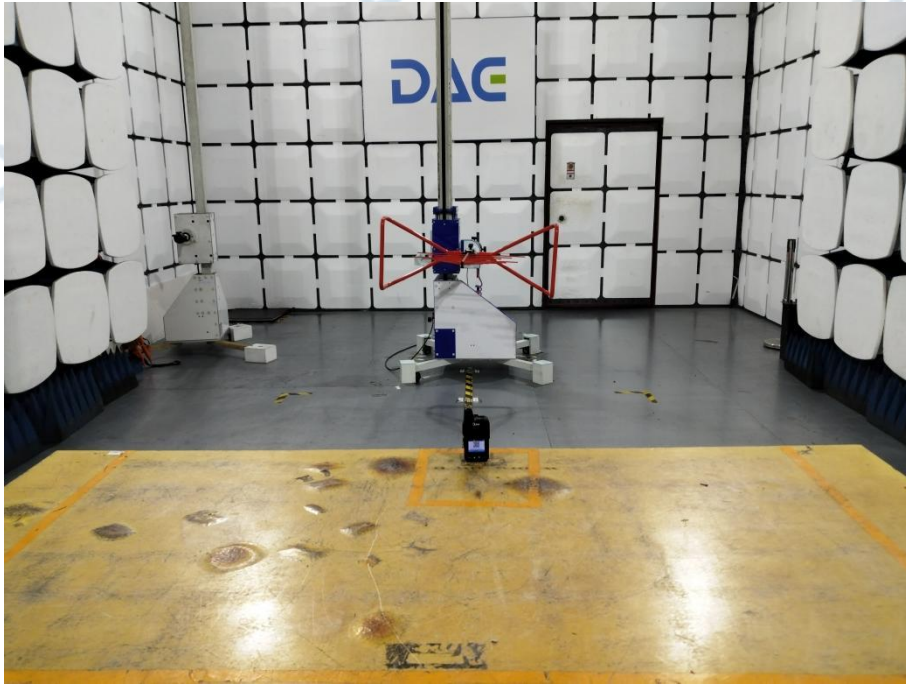


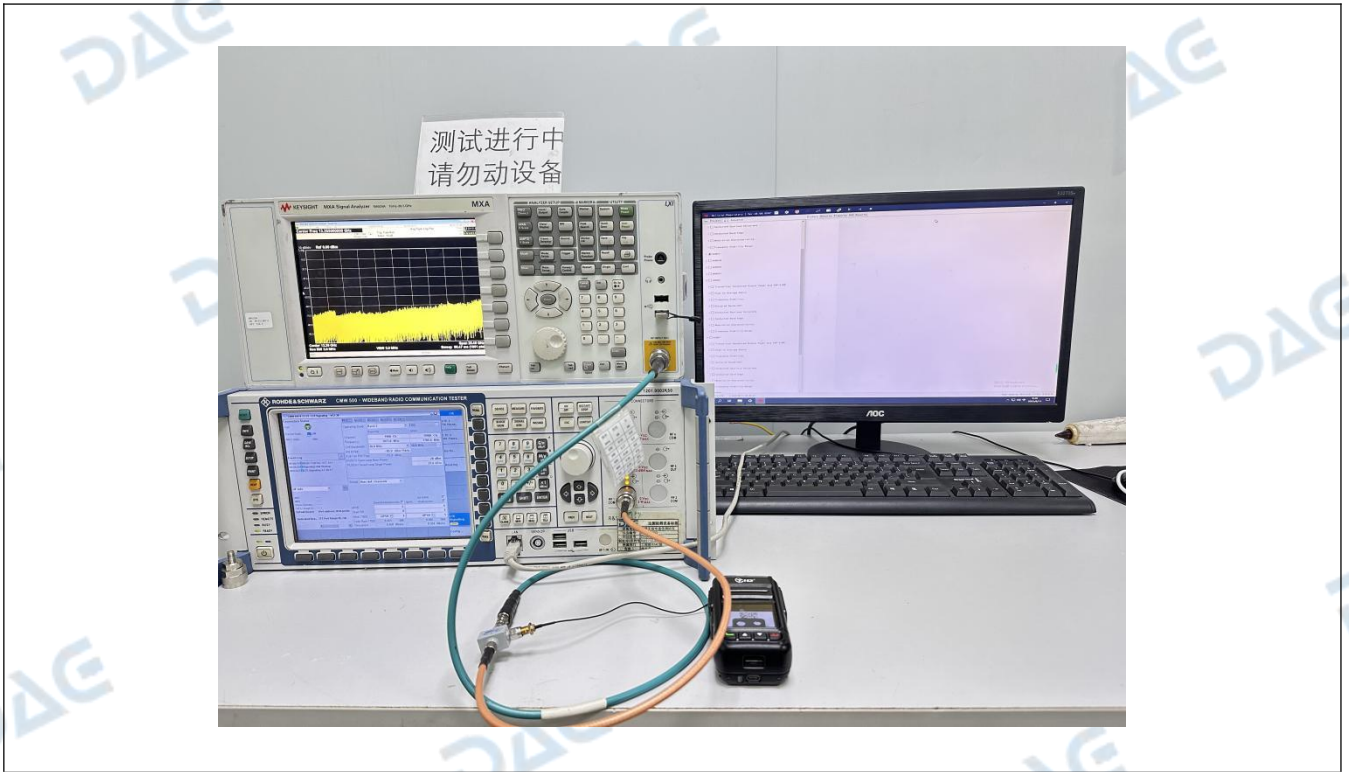
4.6.3 Test Data:

Please Refer to Appendix for Details.

5 TEST SETUP PHOTOS

Spurious Unwanted Emission

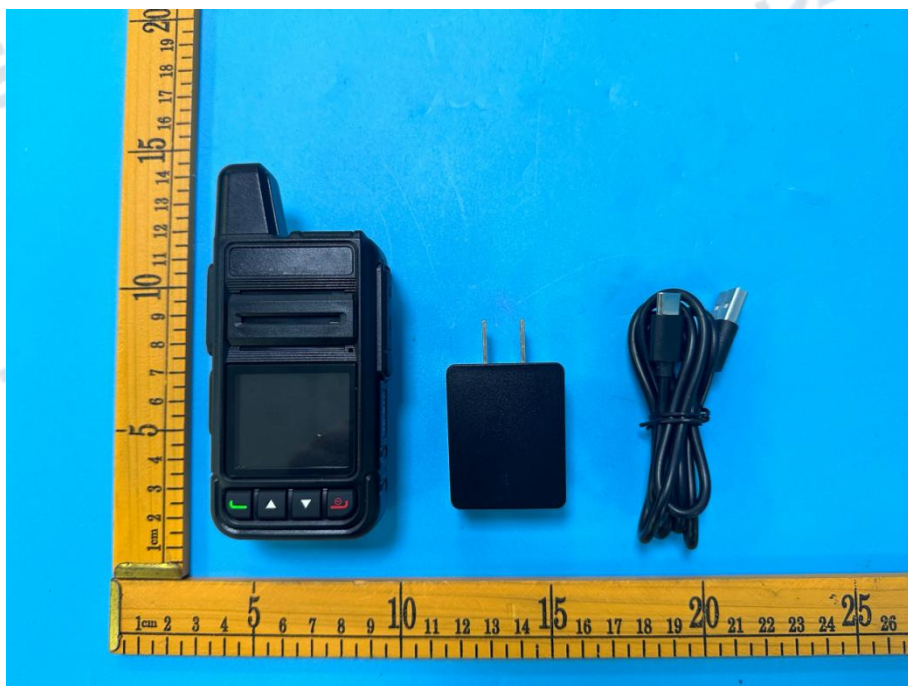




6 PHOTOS OF THE EUT

External





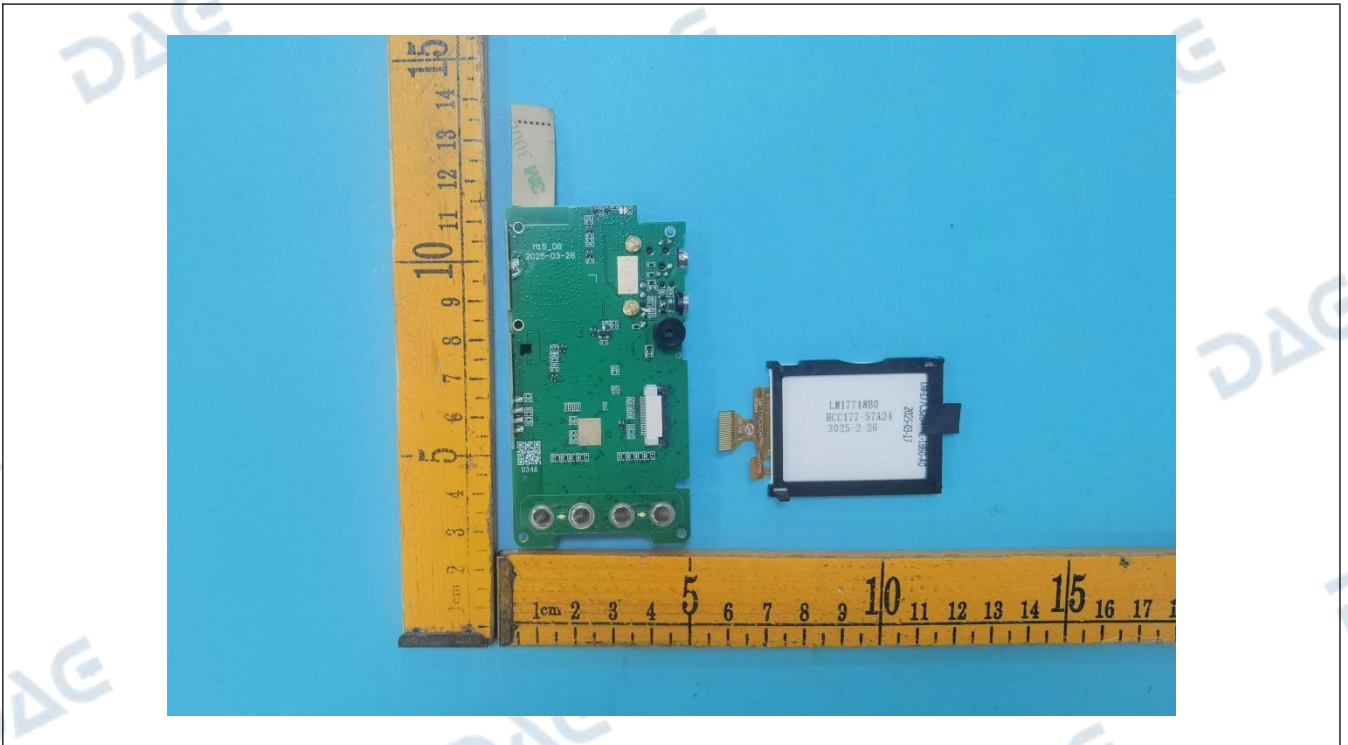


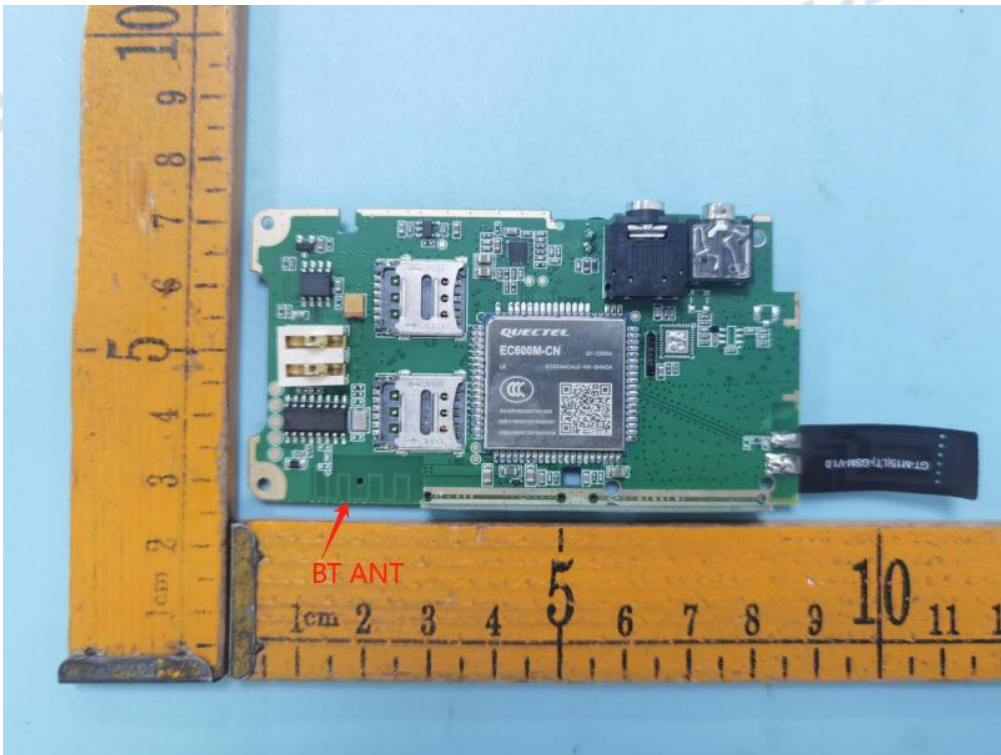
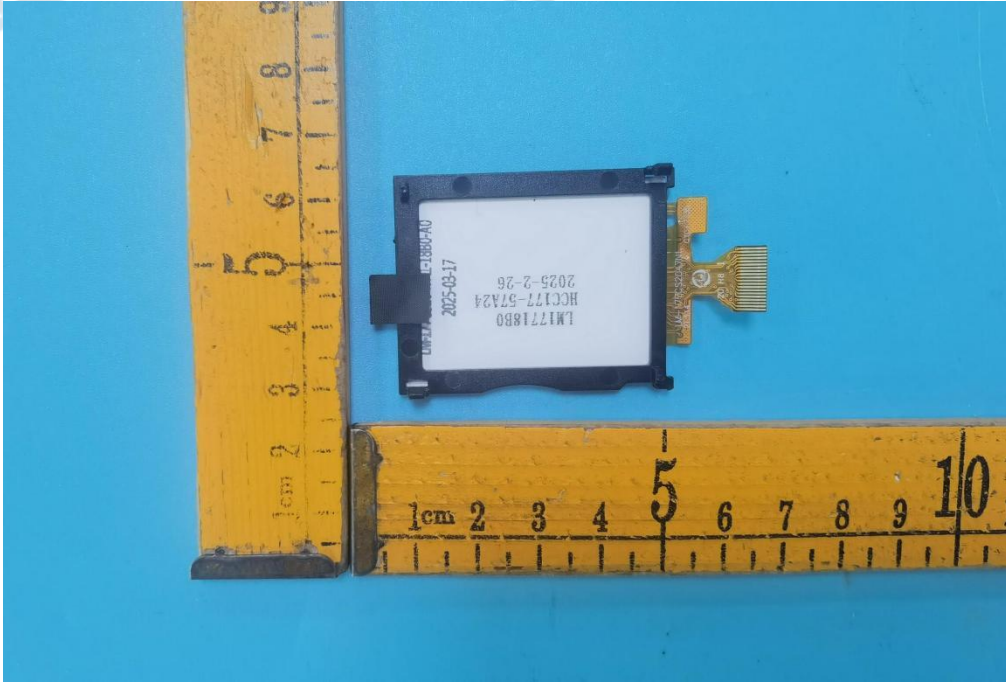


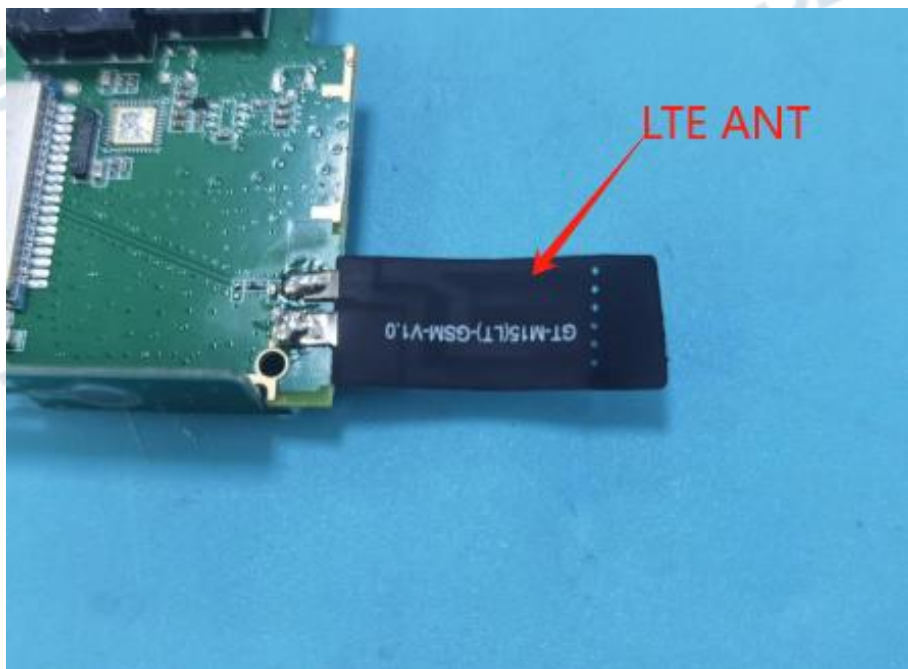
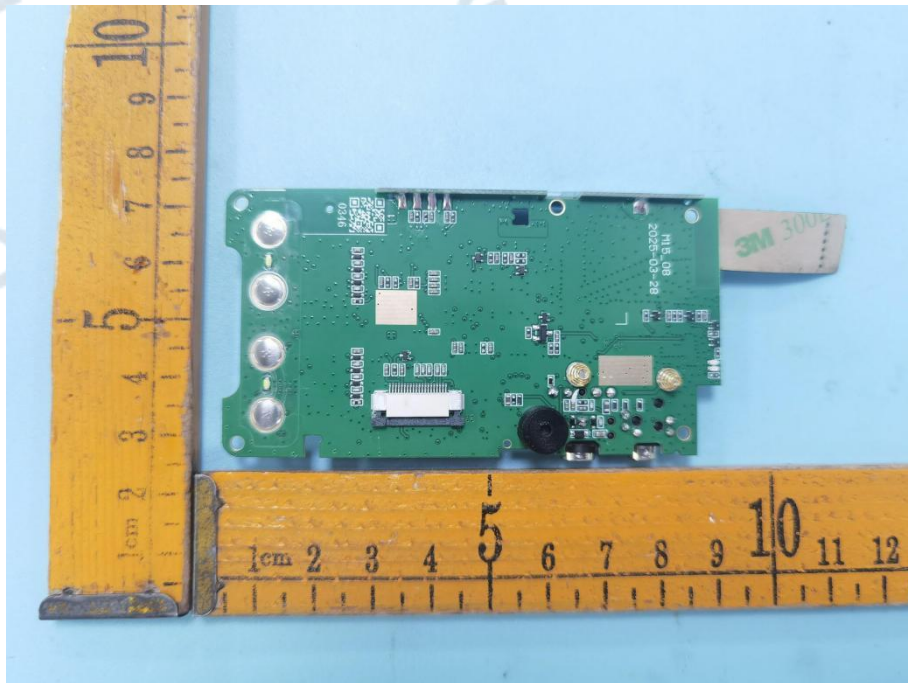


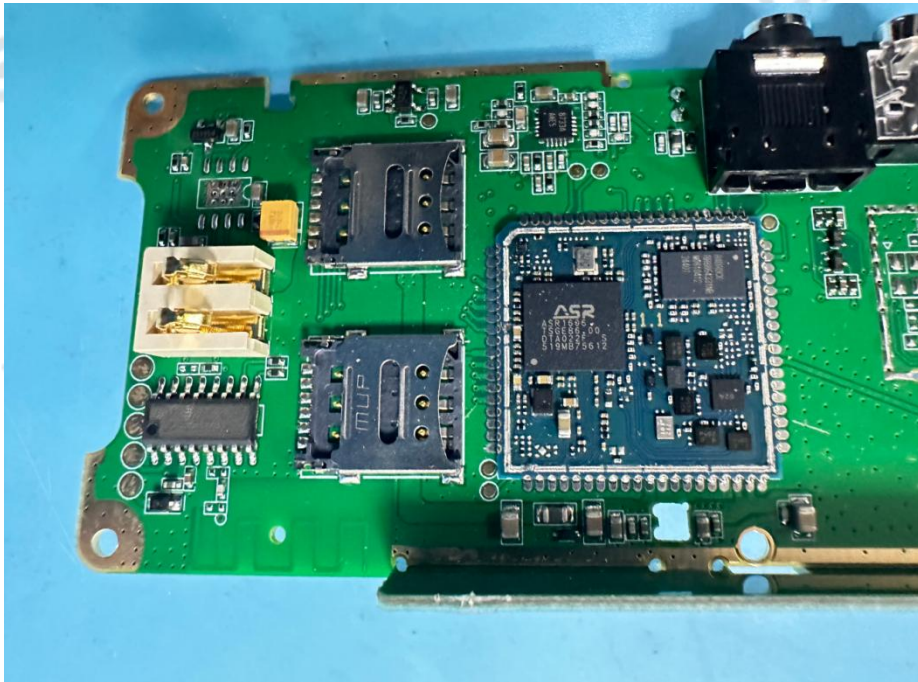
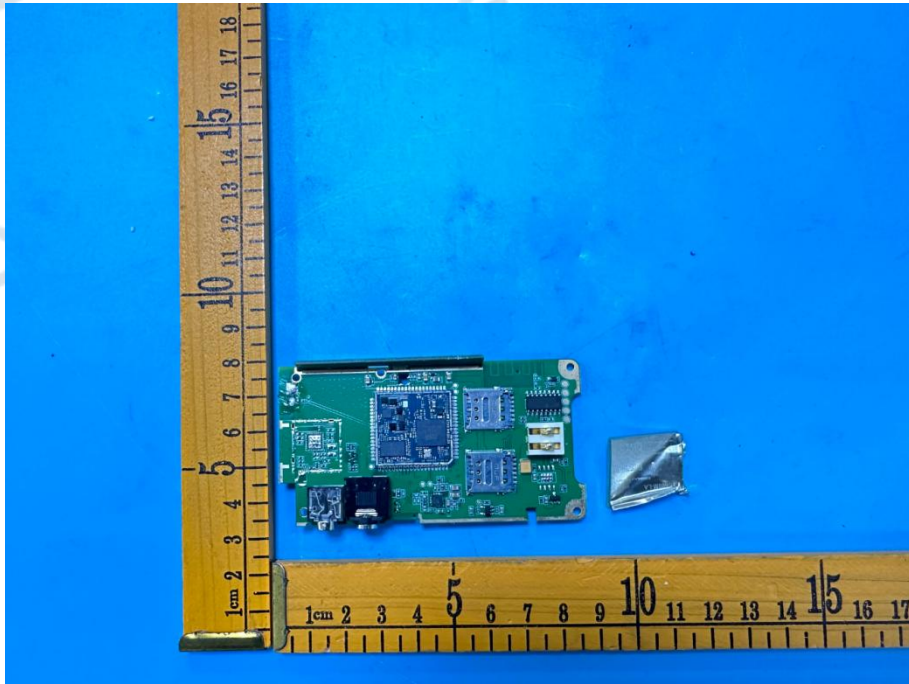
Internal











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