FCC Test Report
FCC ID: 2A8LQ-WE006US

Applicant:	Hareau SAS (Weenect)
Address:	101 rue de Sèvres, 75272 Paris cedex 06
Manufacturer:	Toplovo Industrial Co., Limited
Address:	4F, Building B2b, Yingzhan Industrial Park, Kengzi Town, Pingshan district, Shenzhen, China. 518122
EUT:	WE006US Gps tracker
Trade Mark:	N/A
Model Number:	WE006US WE006US belongs to general model number WE006
Date of Receipt:	Aug. 15, 2022
Test Date:	Aug. 15, 2022 – Oct. 26, 2022
Date of Report:	Oct. 26, 2022
Prepared By:	Shenzhen DL Testing Technology Co., Ltd.
Address:	101-201, Building C, Shuanghuan, No.8, Baoqing Road, Baolong Industrial Zone, Baolong Street, Longgang District, Shenzhen, Guangdong, China
Applicable Standards:	FCC CFR Title 47 Part22 Subpart H FCC CFR Title 47 Part24 Subpart E ANSI/TIA-603-E-2016 FCC KDB 971168 D01 Power Meas. License Digital Systems v03v01 ANSI C63.26:2015
Test Result:	Pass
Report Number:	DL-20220825031E

Prepared (Test Engineer):	Pxing Huang
Reviewer (Supervisor):	Jack Bu
Approved (Manager):	Jade Yang

This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.

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1. TEST STANDARDS

The tests were performed according to following standards:

FCC CFR Title 47 Part22 Subpart H: PRIVATE LAND MOBILE RADIO SERVICES.

FCC CFR Title 47 Part24 Subpart E: PUBLIC MOBILE SERVICES

ANSI/TIA-603-E-2016: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

2. SUMMARY

2.1 PRODUCT DESCRIPTION

Product Name:	WE006US Gps tracker
Trademark	N/A
Model No.:	WE006US WE006US belongs to general model number WE006
Test Model:	WE006US
Model Difference	N/A
Power supply:	DC 5V from charger DC 3.85V from battery
Modilation Type	GMSK
Antenna Type	Internal antenna
GPS function	Supported
GPRS	Supported
GPRS Power Class	GPRS 850:Power Class 4/ GPRS 1900:Power Class 1
GPRS Operation Frequency	GPRS 850 :824.2MHz-848.8MHz/ GPRS 1900:1850.2MHz-1909.8MHz
GPRS Operation Frequency Band	GPRS850/GPRS1900
GPRS Multislot Class	Multi-slot Class 12
Extreme temp. Tolerance	-30°C to +50°C
GPRS operation mode	Class B
Antenna gain:	3.35dBi
Remark: The products are identical in interior structure, electrical circuits and components, just model names and color are different.	

2.2 EQUIPMENT UNDER TEST

Power supply system utilised

Power supply voltage	:	○	120V / 60 Hz	○	230V / 50Hz
		○	12 V DC	○	24 V DC
		●	Other (specified in blank below)		

DC 3.85V

Test frequency list

Test Mode	TX/RX	RF Channel		
		Low(L)	Middle (M)	High (H)
GPRS 850	TX	Channel 128	Channel 190	Channel 251
		824.2 MHz	836.6 MHz	848.8 MHz
	RX	Channel 128	Channel 190	Channel 251
		869.2 MHz	881.6 MHz	893.8 MHz
Test Mode	TX/RX	RF Channel		
		Low(L)	Middle (M)	High (H)
GPRS 1900	TX	Channel 512	Channel 661	Channel 810
		1850.2 MHz	1880.0 MHz	1909.8 MHz
	RX	Channel 512	Channel 661	Channel 810
		1930.2 MHz	1960.0 MHz	1989.8 MHz

2.3 SHORT DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT)

This is a position tracker .

For more details, refer to the user's manual of the EUT.

2.4 EUT CONFIGURATION

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

○	/	M/N :	/
		Manufacturer:	/

2.5 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2A8LQ-WE006US** filing to comply with FCC Part 22 and Part 24 Rules.

2 . 6 MODIFICATIONS

No modifications were implemented to meet testing criteria.

2.7 GENERAL TEST CONDITIONS/CONFIGURATIONS

2.7.1 TEST MODES

NOTE:The test mode(s) are selected according to relevant radio technology specifications.

Test Mode	GPRS

2.7.2 TEST ENVIRONMENT

Environment Parameter	**Selected Values During Tests**	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VL	3.465V
	VN	3.85V
	VH	4.235V

NOTE: VL=lower extreme test voltage VN=nominal voltage
VH=upper extreme test voltage TN=normal temperature

3 . TEST ENVIRONMENT

3.1 ADDRESS OF THE TEST LABORATORY

Shenzhen DL Testing Technology Co., Ltd.
101-201, Building C, Shuanghuan, No.8, Baoqing Road, Baolong Industrial Zone, Baolong Street, Longgang District, Shenzhen, Guangdong, China

3.2 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 854456

Shenzhen DL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

3.3 ENVIRONMENTAL CONDITIONS

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

4. TEST DESCRIPTION

1.1 CELLULAR BAND (824-849MHZ PAIRED WITH 869-894MHZ)

Test Item	FCC Rule No.	Requirements	Verdict
Effective(Isotropic) Radiated Output Power	§2.1046, §22.913	FCC: ERP ≤ 7W.	Pass
Modulation Characteristics	§2.1047	Digital modulation	N/A
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Pass
Band Edges Compliance	§2.1051, §22.917	≤-13dBm/1%*EBW, in 1MHz bands immediately outside and adjacent to The frequency block.	Pass
Spurious Emission at Antenna Terminals	§2.1051, §22.917	FCC: ≤ -13dBm/100kHz, from 9kHz to 10th harmonics but outside authorized operating frequency ranges.	Pass
Field Strength of Spurious Radiation	§2.1053, §22.917	FCC: ≤ -13dBm/100kHz.	Pass
Frequency Stability	§2.1055, §22.355	≤ ±2.5ppm.	Pass
NOTE 1: For the verdict, the “N/A” denotes “not applicable”, the “N/T” de notes “not tested”.			

1.2 PCS BAND (1850-1915MHZ PAIRED WITH 1930-1995MHZ)

Test Item	FCC Rule No.	Requirements	Verdict
Effective(Isotropic) Radiated Output Power	§2.1046, §24.232	EIRP ≤ 2W	Pass
Peak-Average Ratio	§2.1046, §24.232	FCC:Limit≤13dB	Pass
Modulation Characteristics	§2.1047	Digital modulation	N/A
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Pass
Band Edges Compliance	§2.1051, §24.238	≤ -13dBm/1%*EBW, In 1MHz bands immediately outside and adjacent to The frequency block.	Pass
Spurious Emission at Antenna Terminals	§2.1051, §24.238	≤-13dBm/1MHz, from 9kHz to10th harmonics but outside authorized Operating frequency ranges.	Pass
Field Strength of Spurious Radiation	§2.1053, §24.238	≤ -13dBm/1MHz.	Pass
Frequency Stability	§2.1055, §24.235	FCC: within authorized frequency block.	Pass
NOTE 1: For the verdict, the “N/A” denotes “not applicable”, the “N/T” de notes “not tested”.			

Remark:The measurement uncertainty is not included in the test result.

1.3 EQUIPMENTS USED DURING THE TEST

For conducted emission at the mains terminals test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
843 Shielded Room	ChengYu	843 Room	843	Nov. 25, 2019	Nov. 24, 2022
EMI Receiver	R&S	ESR	101421	Nov. 06, 2021	Nov. 05, 2022
LISN	R&S	ENV216	102417	Nov. 06, 2021	Nov. 05, 2022
843 Cable 1#	ChengYu	CE Cable	001	Nov. 06, 2021	Nov. 05, 2022
843 Cable 1#	FUJIKURA	843C1#	001	Nov. 06, 2021	Nov. 05, 2022

For radiated test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4408B	MY50140780	Nov. 06, 2021	Nov. 05, 2022
Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Nov. 06, 2021	Nov. 05, 2022
Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Nov. 06, 2021	Nov. 05, 2022
Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Nov. 06, 2021	Nov. 05, 2022
Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Nov. 06, 2021	Nov. 05, 2022
Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Nov. 06, 2021	Nov. 05, 2022
Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Nov. 06, 2021	Nov. 05, 2022
Amplifier(18GHz-40GHz)	Quanjuda	DLE-161	97	Nov. 06, 2021	Nov. 05, 2022
Loop Antenna(9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Nov. 06, 2021	Nov. 05, 2022
RF cables1 (9kHz-1GHz)	ChengYu	966	004	Nov. 06, 2021	Nov. 05, 2022
RF cables2 (1GHz-40GHz)	ChengYu	966	003	Nov. 06, 2021	Nov. 05, 2022
Antenna connector	Florida RF Labs	N/A	RF 01#	Nov. 06, 2021	Nov. 05, 2022
Power probe	KEYSIGHT	U2021XA	MY55210018	Nov. 06, 2021	Nov. 05, 2022
Signal Analyzer	Agilent	N9020A	MY55370280	Nov. 06, 2021	Nov. 05, 2022
Test Receiver	R&S	ESU 40	100376	Nov. 06, 2021	Nov. 05, 2022
D.C. Power Supply	LongWei	PS-305D	010964729	Nov. 06, 2021	Nov. 05, 2022
Signal Amplifier	DAZE	ZN3380B	11235	Nov. 06, 2021	Nov. 05, 2022
High Pass filter	KANGMAI	WHKX1.0/1.5G-10SS	40	Nov. 06, 2021	Nov. 05, 2022
Filter	COM-MW	ZBSF-C836.5-25-X	BCTC042	Nov. 06, 2021	Nov. 05, 2022
Filter	COM-MW	ZBSF-C1747.5-75-X2	BCTC045	Nov. 06, 2021	Nov. 05, 2022
Filter	COM-MW	ZBSF-C1880-60-X2	BCTC047	Nov. 06, 2021	Nov. 05, 2022
Splitter	Agilent	11435B	1125162	Nov. 06, 2021	Nov. 05, 2022
RF CONDUCTED TEST					
System Simulator	Agilent	E5515C	GB43130252	Nov. 06, 2021	Nov. 05, 2022
Spectrum Analyzer	Agilent	N9020A	MY45108040	Nov. 06, 2021	Nov. 05, 2022
DC Power Supply	LongWei	PS-305D	010965682	Nov. 06, 2021	Nov. 05, 2022
Constant temperature and humidity box	GF	GTH-800-40-2P	MAA9906-012	Nov. 06, 2021	Nov. 05, 2022
Universal radio communication tester	R&S	CMW500	115295	Nov. 06, 2021	Nov. 05, 2022

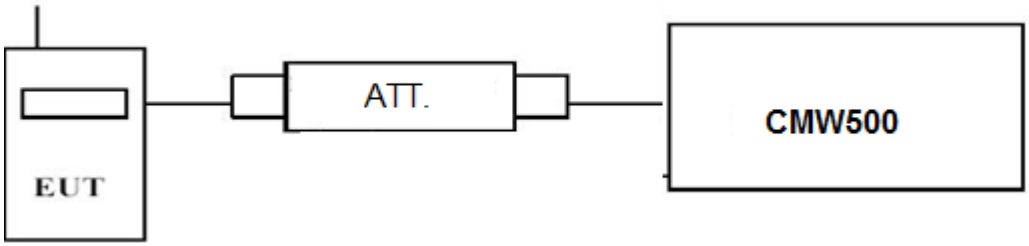
5 . TEST CONDITIONS AND RESULTS
5.1 OUTPUT POWER

TEST APPLICABLE

During the process of testing, the EUT was controlled via R&S Digital Radio Communication tester (CMW500) to ensure max power transmission and proper modulation. This result contains output power and EIRP measurements for the EUT. In all cases, output power is within the specified limits.

5.1.1 CONDUCTED OUTPUT POWER

TEST CONFIGURATION



TEST PROCEDURE

Conducted Power Measurement:
a) Place the EUT on a bench and set it in transmitting mode.
b) Connect a low loss RF cable from the antenna port to a CMW500 by an Att.
c) EUT Communicate with CMW500 then selects a channel for testing.
d) Add a correction factor to the display CMW500, and then test.

GSM850				
Function	**Power step**	**Nominal output power (dBm)**	**Power &Multislot class**	**Operation class**
GSM	5	33dBm(2W)	4	/
GPRS	3	33dBm(2W)	12	B

PCS1900				
Function	**Power step**	**Nominal output power (dBm)**	**Power &Multislot class**	**Operation class**
GSM	0	30dBm(1W)	1	/
GPRS	3	30dBm(1W)	12	B

TEST RESULTS

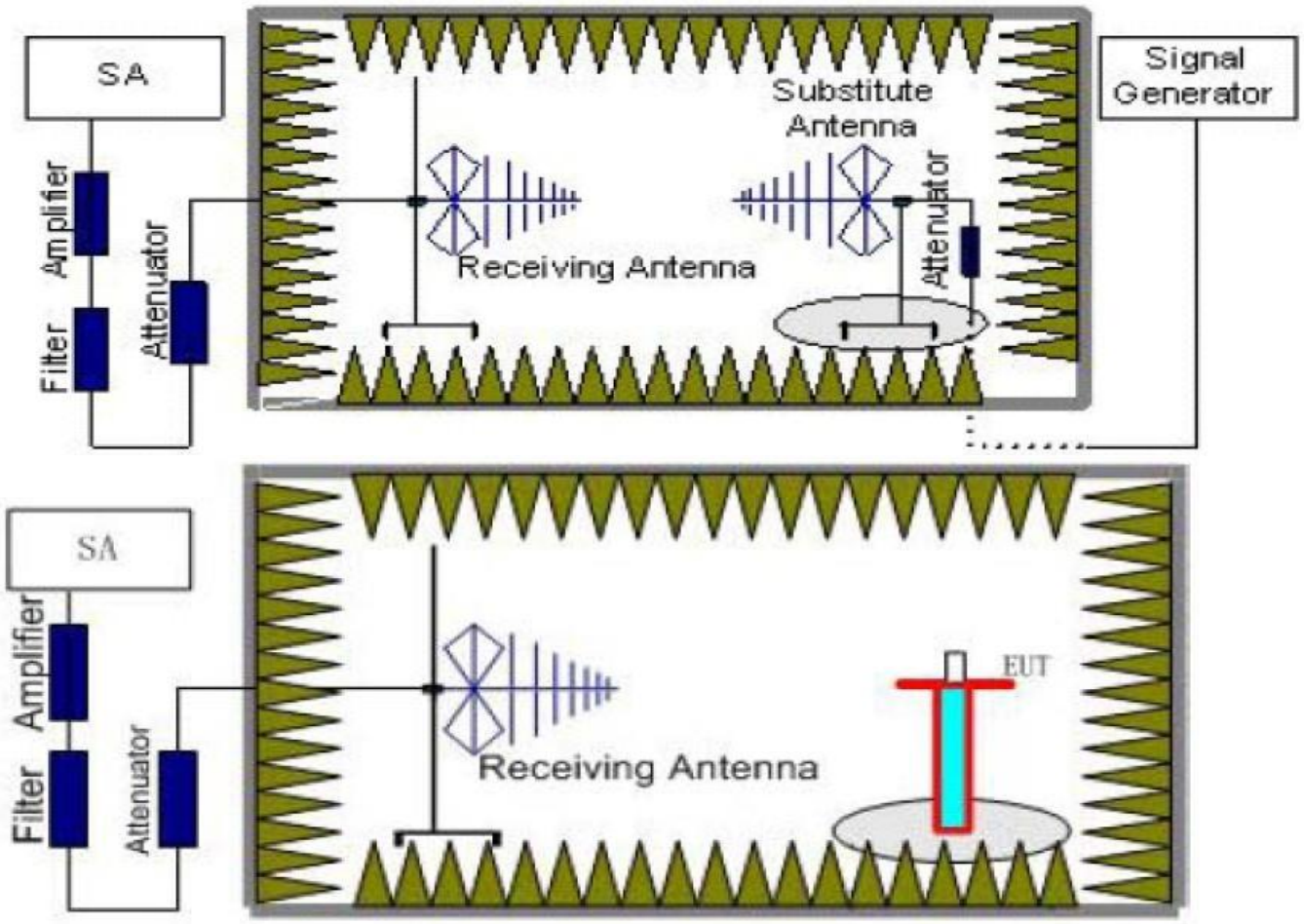
GSM 850		**Burst Average Conducted power (dBm)**		
		Channel/Frequency(MHz)		
		128/824.2	**190/836.6**	**251/848.8**
GPRS (GMSK)	1TX slot	32.18	32.03	32.05
	2TX slot	31.45	31.35	31.23
	3TX slot	29.76	29.56	29.48
	4TX slot	28.64	28.47	28.36
PCS 1900		**Burst Average Conducted power (dBm)**		
		Channel/Frequency(MHz)		
		512/1850.2	**661/1880**	**810/1909.8**
GPRS (GMSK)	1TX slot	28.93	28.86	28.54
	2TX slot	28.22	28.13	27.83
	3TX slot	26.58	26.44	26.25
	4TX slot	25.46	25.46	25.28

5 . 1 . 2 RADIATED OUTPUT POWER

TEST DESCRIPTION

This is the test for the maximum radiated power from the EUT.
Rule Part 24.232(c) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(e) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage." Rule Part 22.913(a) specifies ” The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.”

TEST CONFIGURATION



TEST PROCEDURE

1. EUT was placed on a 0.80 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 0.80m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

3. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz, And the maximum value of the receiver should be recorded as (P_r).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}) ,the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.
   The measurement results are obtained as described below:
   Power(EIRP)=P_{Mea}+ P_{Ag} - P_{cl} + G_a
   We used SMF100A micowave signal generator which signal level can up to 33dBm,so we not used power Amplifier for substituation test; The measurement results are amend as described below:
   Power(EIRP)=P_{Mea}- P_{cl} + G_a
6. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
7. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

TEST LIMIT

Note: We test the H direction and V direction, V direction is worse.

According to 22.913(a) and 24.232(c), the ERP should be not exceed following table limits:

GSM850(GPRS850,EDGE850)		
Function	**Power Step**	**Burst Peak ERP (dBm)**
GSM	5	≤38.45dBm (7W)
GPRS	3	≤38.45dBm (7W)

PCS1900(GPRS1900,EDGE1900)		
Function	**Power Step**	**Burst Peak EIRP (dBm)**
GSM	0	≤33dBm (2W)
GPRS	3	≤33dBm (2W)

TEST RESULTS

Remark:
1. We were tested all Configuration refer 3GPP TS151 010.
2. EIRP=P_{Mea}(dBm)-P_{cl}(dB)+P_{Ag}(dB)+G_a(dBi)
3. ERP = EIRP – 2.15dBi as EIRP by subtracting the gain of the dipole.

GPRS 850

Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	Correction (dB)	P_{Ag} (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)	Polarization
824.20	-13.52	2.42	8.45	2.15	36.82	27.18	38.45	11.27	V
836.60	-13.41	2.46	8.45	2.15	36.82	27.25	38.45	11.20	V
848.80	-13.59	2.53	8.36	2.15	36.82	26.91	38.45	11.54	V

GPRS 1900

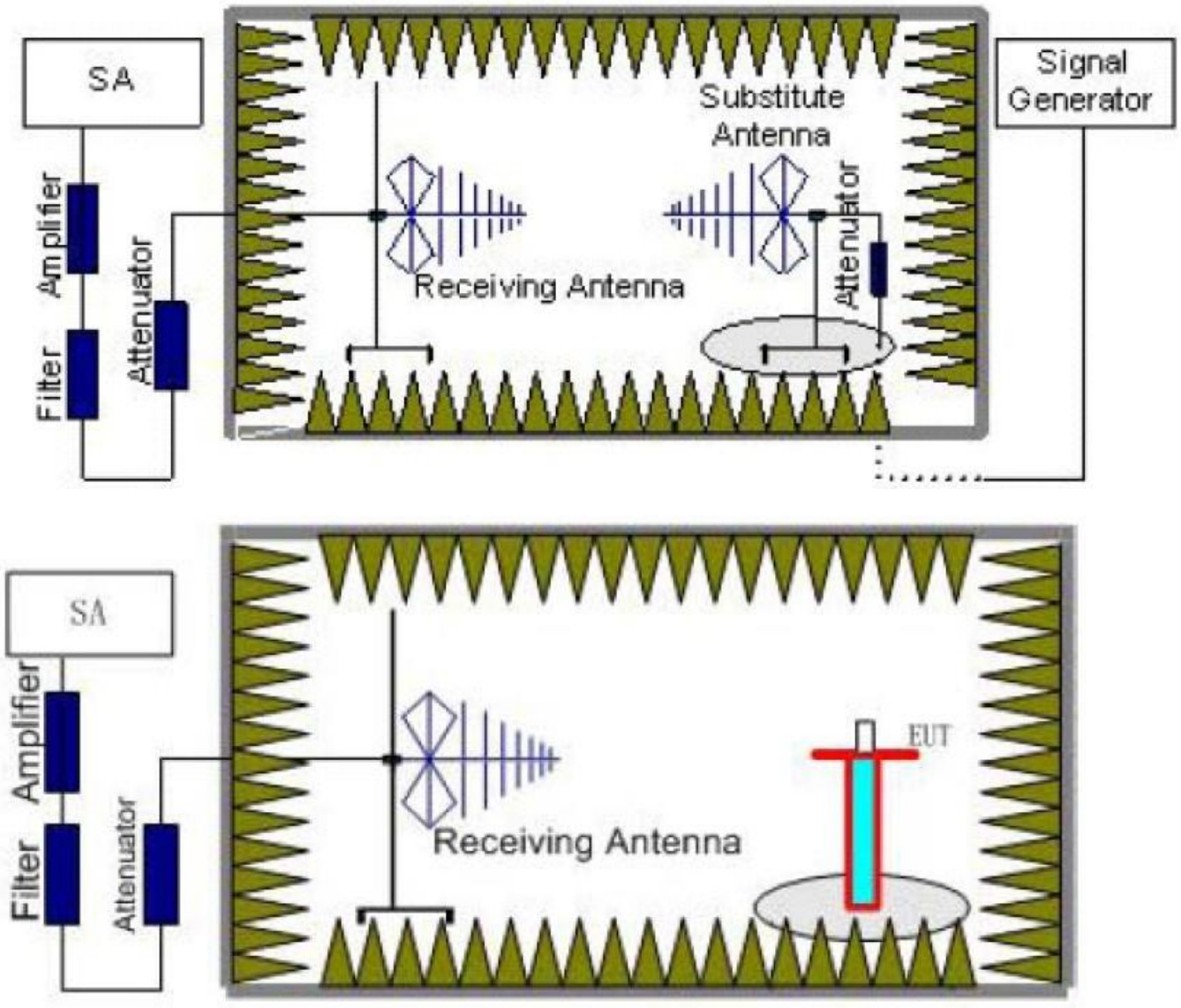
Frequency (MHz)	P_{Mea} (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	P_{Ag} (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1850.20	-15.36	3.41	10.24	33.60	25.07	33.01	7.94	V
1880.00	-15.01	3.49	10.24	33.60	25.34	33.01	7.67	V
1909.80	-15.68	3.55	10.23	33.60	24.60	33.01	8.41	V

5 . 2 RADIATED SPURIOUS EMSSION

TEST APPLICABLE

According to the TIA/EIA 603D:2010 test method, The Receiver or Spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. The resolution bandwidth is set as outlined in Part 24.238 and Part 22.917. The spectrum is scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of PCS1900 and GSM850.

TEST CONFIGURATION



TEST PROCEDURE

1. EUT was placed on a 0.80 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 0.80m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.

2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz, And the maximum value of the receiver should be recorded as (P_r).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}) ,the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.
   The measurement results are obtained as described below:
   Power(EIRP)=P_{Mea}- P_{Ag} - P_{cl} + G_a
6. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
7. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.
8. In order to make sure test results more clearly,we set frequency range and sweep time for difference frequency range as follows table:

Working Frequency	Subrange (GHz)	RBW	VBW	Sweep time (s)
GSM 850	0.00009~0.15	1KHz	3KHz	30
	0.00015~0.03	10KHz	30KHz	10
	0.03~1	100KHz	300KHz	10
	1~2	1 MHz	3 MHz	2
	2~5	1 MHz	3 MHz	3
	5~8	1 MHz	3 MHz	3
	8~10	1 MHz	3 MHz	3
PCS 1900	0.00009~0.15	1KHz	3KHz	30
	0.00015~0.03	10KHz	30KHz	10
	0.03~1	100KHz	300KHz	10
	1~2	1 MHz	3 MHz	2
	2~5	1 MHz	3 MHz	3
	5~8	1 MHz	3 MHz	3
	8~11	1 MHz	3 MHz	3
	11~14	1 MHz	3 MHz	3
	14~18	1 MHz	3 MHz	3
	18~20	1 MHz	3 MHz	2

TEST LIMITS

According to 24.238 and 22.917 specify that 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.
The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

Frequency	Channel	Frequency Range	Verdict
GSM 850	Low	9KHz-10GHz	PASS
	Middle	9KHz -10GHz	PASS
	High	9KHz -10GHz	PASS
PCS 1900	Low	9KHz -20GHz	PASS
	Middle	9KHz -20GHz	PASS
	High	9KHz -20GHz	PASS

TEST RESULTS

Remark:
1. We were tested all refer 3GPP TS151 010.
2. EIRP=P_{Mea}(dBm)-P_{cl}(dB) +G_a(dBi)
3. We were not recorded other points as values lower than limits.
4. Margin = Limit - EIRP

GPRS 850_ Low Channel

Frequency (MHz)	P_{Mea} (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1648.4	-33.56	3.00	3.00	9.58	-26.98	-13.00	13.98	H
2472.6	-37.82	3.03	3.00	10.72	-30.13	-13.00	17.13	H
1648.4	-32.69	3.00	3.00	9.68	-26.01	-13.00	13.01	V
2472.6	-36.35	3.03	3.00	10.72	-28.66	-13.00	15.66	V

GPRS 850_ Middle Channel

Frequency (MHz)	P_{Mea} (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1673.2	-32.14	3.00	3.00	9.58	-25.56	-13.00	-12.56	H
2509.8	-37.48	3.03	3.00	10.72	-29.79	-13.00	-16.79	H
1673.2	-31.53	3.00	3.00	9.68	-24.85	-13.00	-11.85	V
2509.8	-38.24	3.03	3.00	10.72	-30.55	-13.00	-17.55	V

GPRS 850_ High Channel

Frequency (MHz)	P_{Mea} (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
1697.6	-30.08	3.00	3.00	9.58	-23.50	-13.00	10.50	H
2546.4	-37.42	3.03	3.00	10.72	-29.73	-13.00	16.73	H
1697.6	-31.28	3.00	3.00	9.68	-24.60	-13.00	11.60	V
2546.4	-38.33	3.03	3.00	10.72	-30.64	-13.00	17.64	V

GPRS 1900_ Low Channel

Frequency (MHz)	P_{Mea} (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	Peak EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3700.4	-30.18	4.39	3.00	12.34	-22.23	-13.00	9.23	H
5550.6	-36.39	5.31	3.00	13.52	-28.18	-13.00	15.18	H
3700.4	-31.59	4.39	3.00	12.34	-23.64	-13.00	10.64	V
5550.6	-37.88	5.31	3.00	13.52	-29.67	-13.00	16.67	V

GPRS 1900_ Middle Channel

Frequency (MHz)	P_{Mea} (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3760.0	-37.41	4.41	3.00	12.34	-29.48	-13.00	16.48	H
5640.0	-41.05	5.38	3.00	13.58	-32.85	-13.00	19.85	H
3760.0	-35.16	4.41	3.00	12.34	-27.23	-13.00	14.23	V
5640.0	-39.87	5.38	3.00	13.58	-31.67	-13.00	18.67	V

GPRS 1900_ High Channel

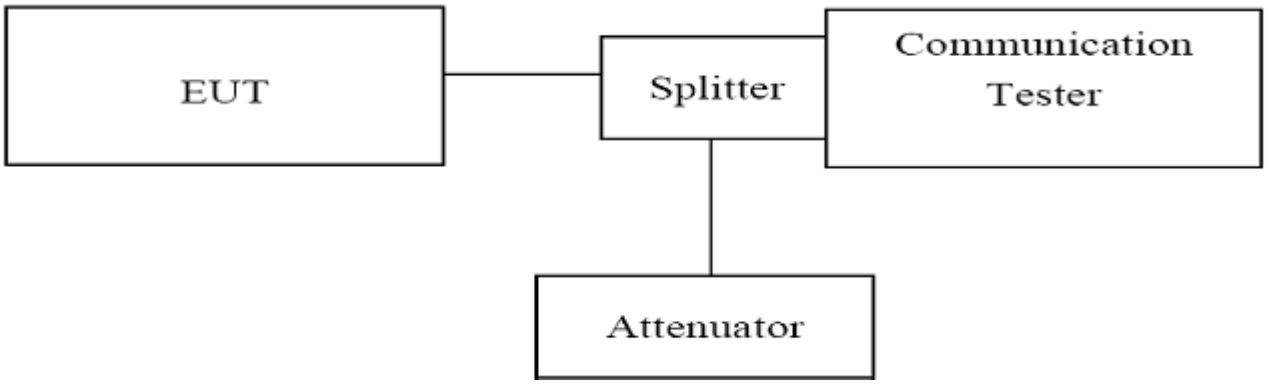
Frequency (MHz)	P_{Mea} (dBm)	Pcl (dB)	Diatance	Ga Antenna Gain(dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
3819.6	-37.32	4.45	3.00	12.45	-29.32	-13.00	16.32	H
5729.4	-40.54	5.47	3.00	13.66	-32.35	-13.00	19.35	H
3819.6	-38.41	4.45	3.00	12.45	-30.41	-13.00	17.41	V
5729.4	-41.24	5.48	3.00	13.66	-33.06	-13.00	20.06	V

5 . 3 OCCUPIED BANDWIDTH AND EMISSION BANDWIDTH

TEST APPLICABLE

Similar to conducted emissions; occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of PCS1900 band and GSM850 band. The table below lists the measured 99% Bandwidth and -26dBc Bandwidth.

TEST CONFIGURATION



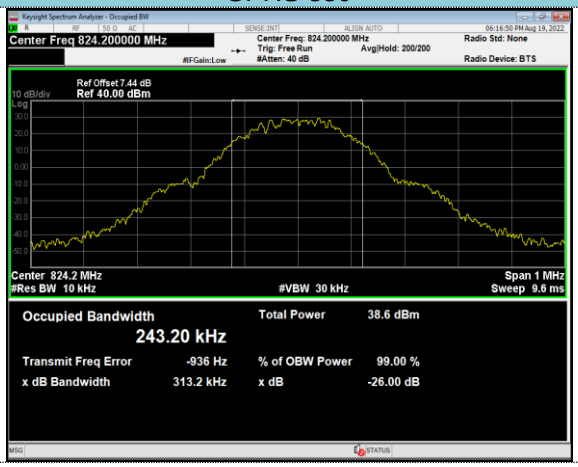
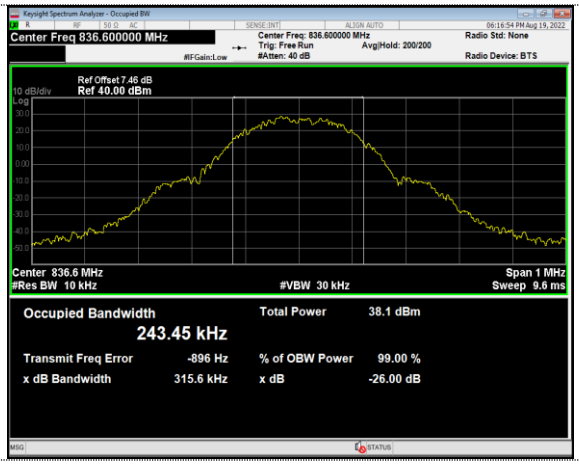
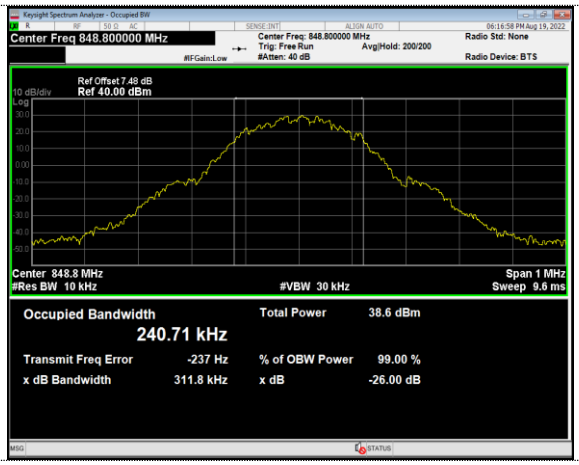
TEST PROCEDURE

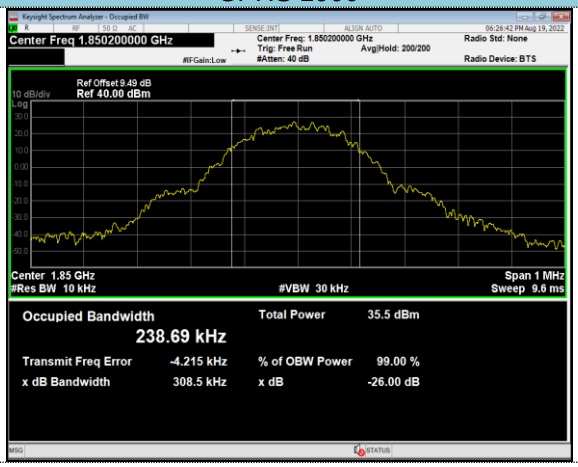
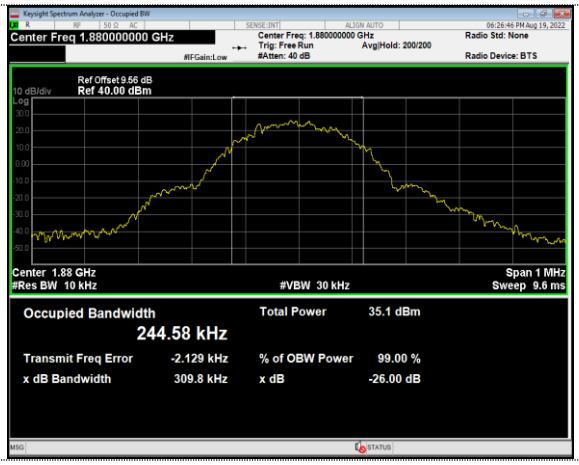
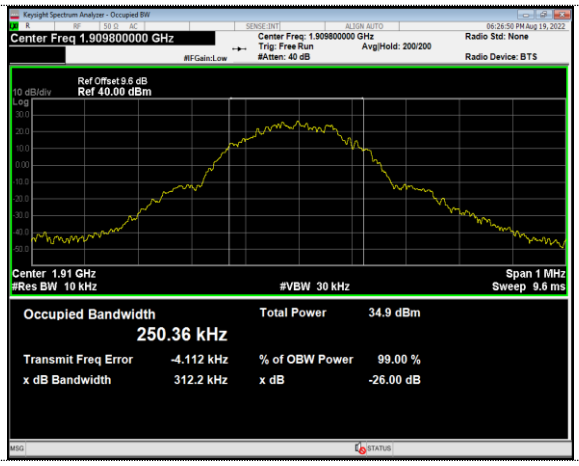
1. The EUT was set up for the max output power with pseudo random data modulation;
2. The Occupied bandwidth and Emission Bandwidth were measured with Aglient Spectrum Analyzer N9030A (peak);
3. Set RBW=5.1KHz,VBW=51KHz,Span=1MHz,SWT=500ms;
4. Set SPA Max hold and View, Set 99% Occupied Bandwidth/ Set -26dBc Occupied Bandwidth
5. These measurements were done at 3 frequencies, 1850.20 MHz, 1880.00 MHz and 1909.80 MHz for PCS1900 band; 824.20MHz, 836.60 MHz and 848.80 MHz for GSM850 band. (Low, middle and high of operational frequency range).

TEST RESULTS

GPRS 850				
Channel Number	**Frequency (MHz)**	**Occupied Bandwidth (99% BW) (kHz)**	**Emission Bandwidth (26 dBc BW) (kHz)**	**Verdict**
128	824.20	243.205	313.235	PASS
190	836.60	243.455	315.595	PASS
251	848.80	240.713	311.802	PASS

GPRS 1900				
Channel Number	**Frequency (MHz)**	**Occupied Bandwidth (99% BW) (kHz)**	**Emission Bandwidth (26 dBc BW) (kHz)**	**Verdict**
512	1850.20	238.690	308.514	PASS
661	1880.00	244.584	309.755	PASS
810	1909.80	250.357	312.188	PASS

GPRS 850

Channel 128

Channel 190

Channel 251

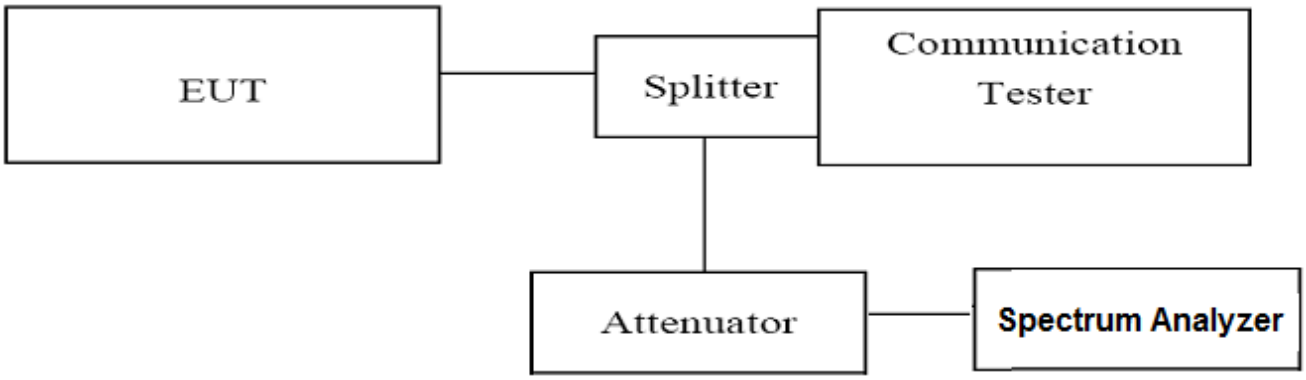
GPRS 1900

Channel 512

Channel 661

Channel 810

5.4 BAND EDGE COMPLICANCE

TEST APPLICABLE

During the process of testing, the EUT was controlled via Aglient Digital Radio Communication tester (CMW500) to ensure max power transmission and proper modulation.

TEST CONFIGURATION



TEST PROCEDURE

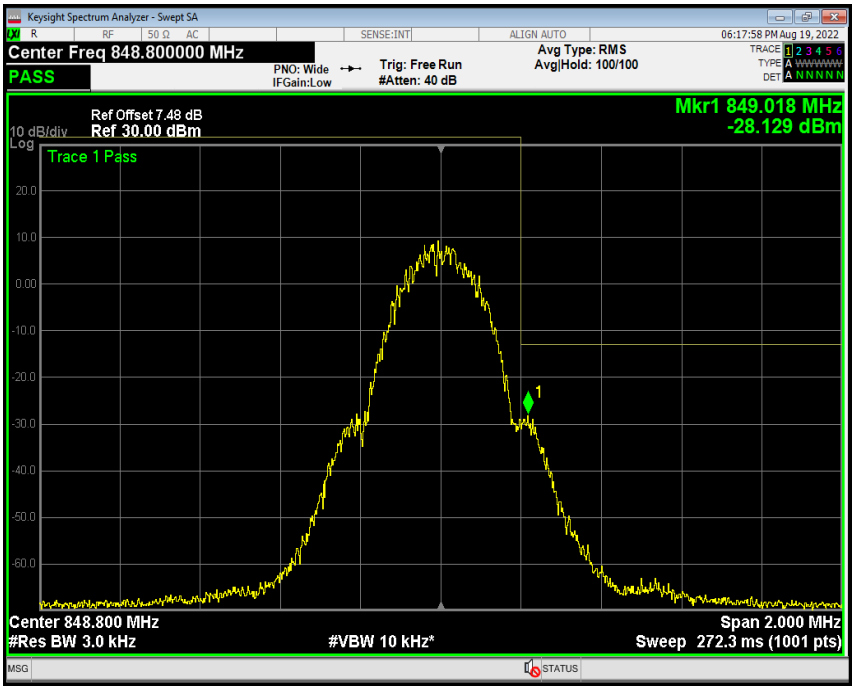
1. The EUT was set up for the max output power with pseudo random data modulation;
2. The power was measured with Aglient Spectrum Analyzer N9030A;
3. Set RBW=5.1KHz,VBW=51KHz,Span=2MHz,SWT=300ms, Dector: RMS;
4. These measurements were done at 3 frequencies, 1850.20 MHz, 1880.00 MHz and 1909.80 MHz for PCS1900 band; 824.20 MHz, 836.60 MHz and 848.80 MHz for GSM850 band. (bottom, middle and top of operational frequency range).

TEST RESULTS

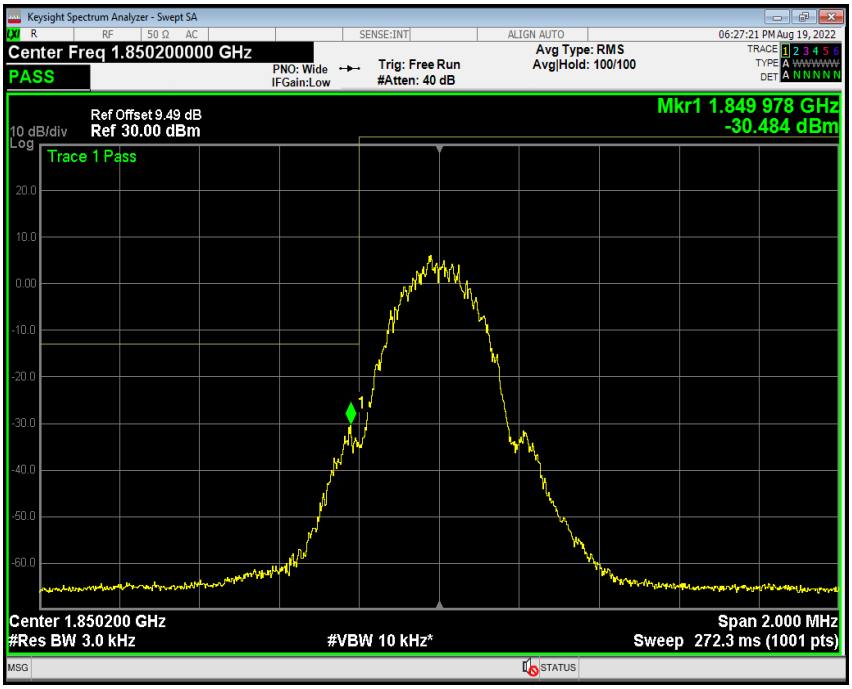
GPRS 850					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency (MHz)	Values (dBm)		
128	824.20	823.98	-27.54	-13.00	PASS
251	848.80	849.02	-28.12	-13.00	PASS

GPRS 1900					
Channel Number	Frequency (MHz)	Measurement Results		Limit (dBm)	Verdict
		Frequency (MHz)	Values (dBm)		
512	1850.20	1849.98	-30.48	-13.00	PASS
810	1909.80	1910.02	-31.75	-13.00	PASS

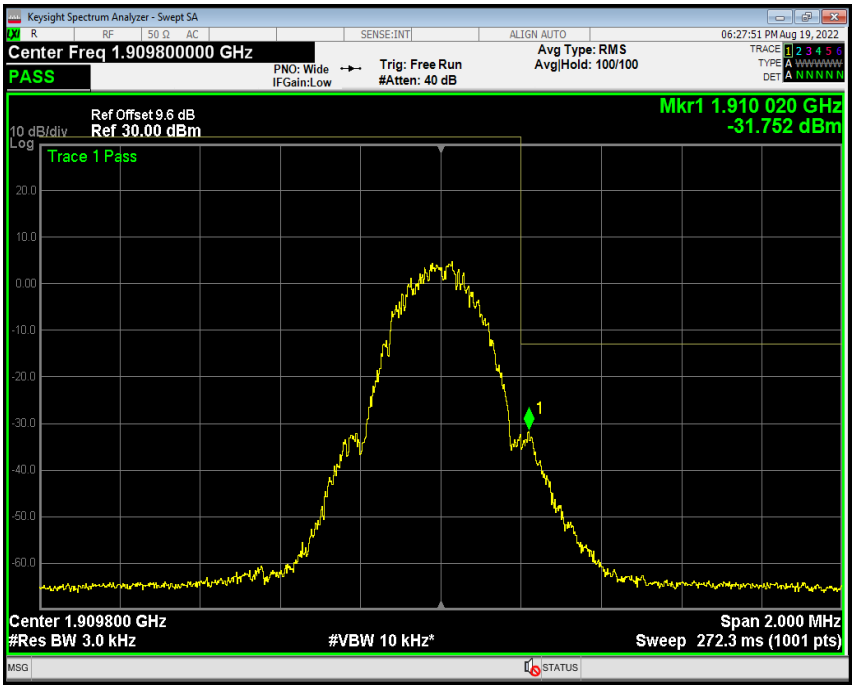
(Channel 128: 824.20MHz @ GPRS 850)



(Channel 251: 848.80MHz @ GPRS 850)



(Channel 512: 1850.20MHz @ GPRS 1900)



(Channel 810: 1909.80MHz @ GPRS 1900)

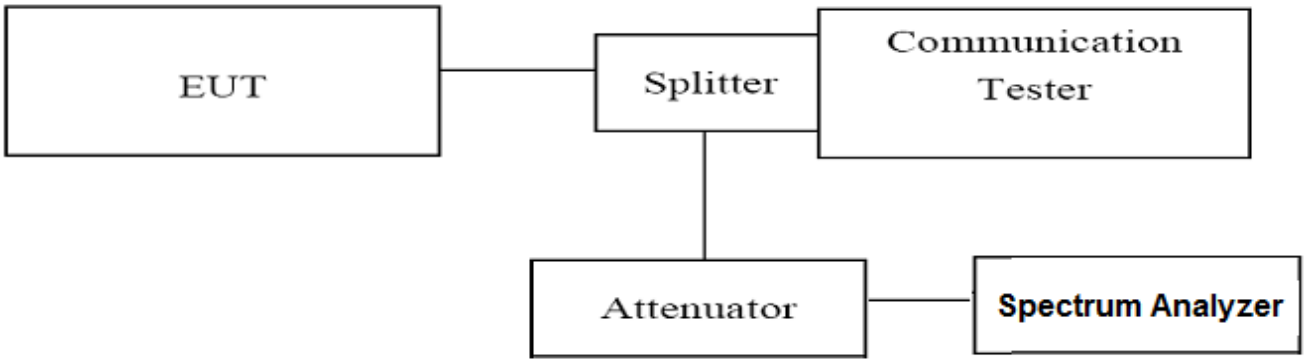
5.5 SPURIOUS EMSSION ON ANTENNA PORT

TEST APPLICABLE

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the equipment of PCS1900 band, this equates to a frequency range of 9 KHz to 19.1 GHz, data taken from 9 KHz to 25 GHz. For GSM850, data taken from 9 KHz to 9 GHz.
2. The sweep time is set automatically by instrument itself. That should be the optimal sweep time for the span and the RBW. If the sweep time is too short, that is sweep is too fast, the sweep result is not accurate; if the sweep time is too long, that is sweep is too low, some frequency components may be lost. The instrument will give an optimal sweep time according the selected span and RBW.
3. The procedure to get the conducted spurious emission is as follows:
   The trace mode is set to MaxHold to get the highest signal at each frequency;
   Wait 25 seconds;
   Get the result.
4. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

TEST CONFIGURATION



TEST PROCEDURE

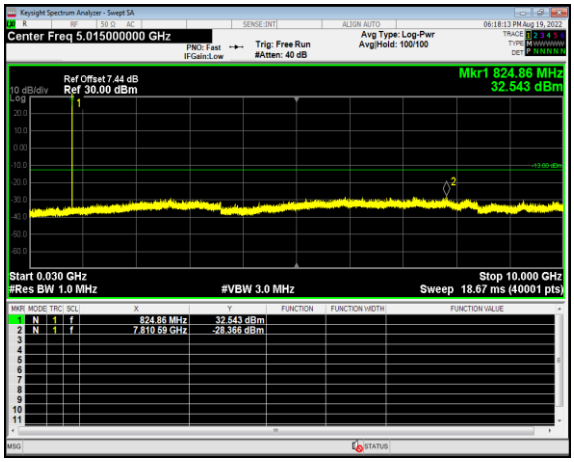
1. The EUT was set up for the max output power with pseudo random data modulation;
2. The power was measured with Agilent Spectrum Analyzer N9030A (peak);
3. These measurements were done at 3 frequencies, 1850.20 MHz, 1880.00 MHz and 1909.80 MHz for PCS1900 band; 824.20 MHz, 836.60 MHz and 848.80 MHz for GSM850 band. (Low, middle and high of operational frequency range).

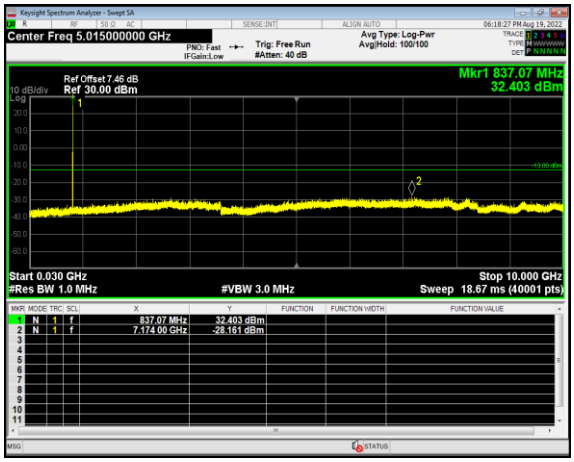
TEST LIMIT

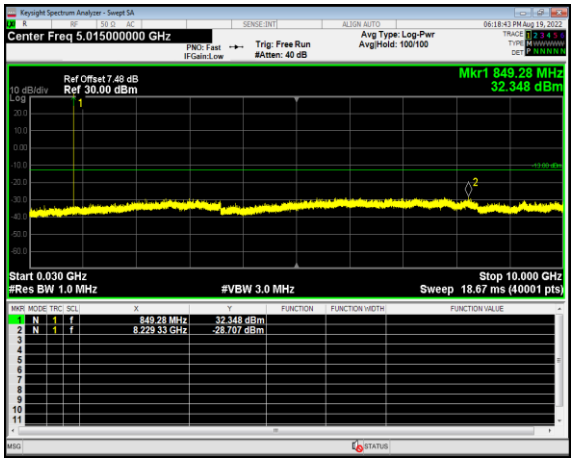
Part 24.238 and Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.
The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

TEST RESULTS

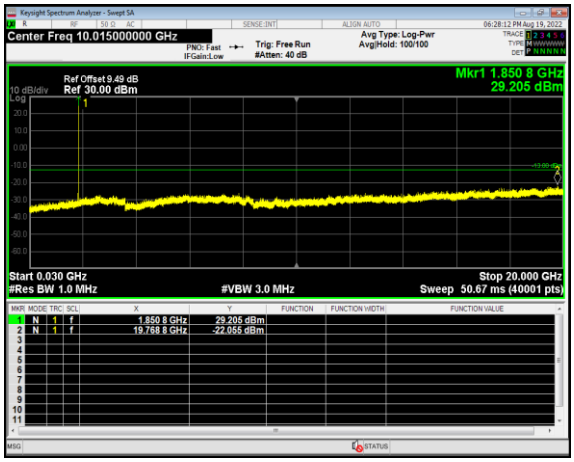
For GPRS 850Test Results

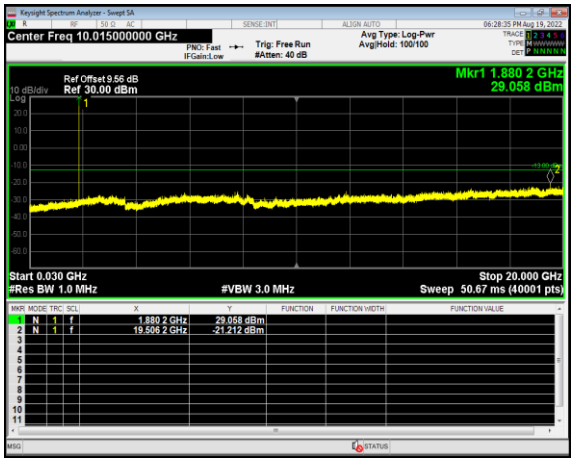
Test Mode:	GPRS 850	Test channel :	128
			
30MHz-10GHz			

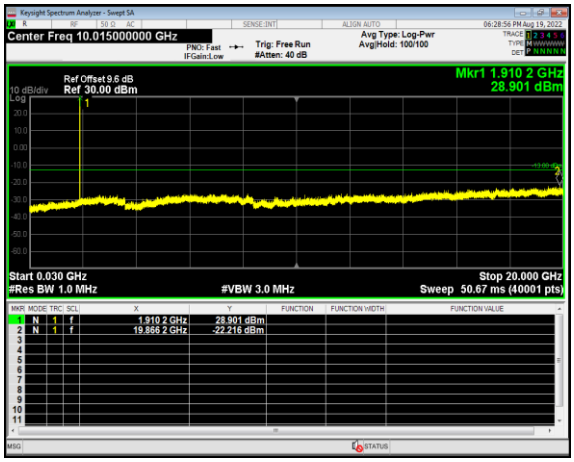
Test Mode:	GPRS 850	Test channel :	190
			
30MHz-10GHz			

Test Mode:	GPRS 850	Test channel :	251
			
30MHz-10GHz			

For GPRS 1900 Test Results

Test Mode:	GPRS 1900	Test channel :	512
			
30MHz-20GHz			

Test Mode:	GPRS 1900	Test channel :	661
			
30MHz-20GHz			

Test Mode:	GPRS 1900	Test channel :	810
			
30MHz-20GHz			

5.6 FREQUENCY STABILITY TEST

TEST APPLICABLE

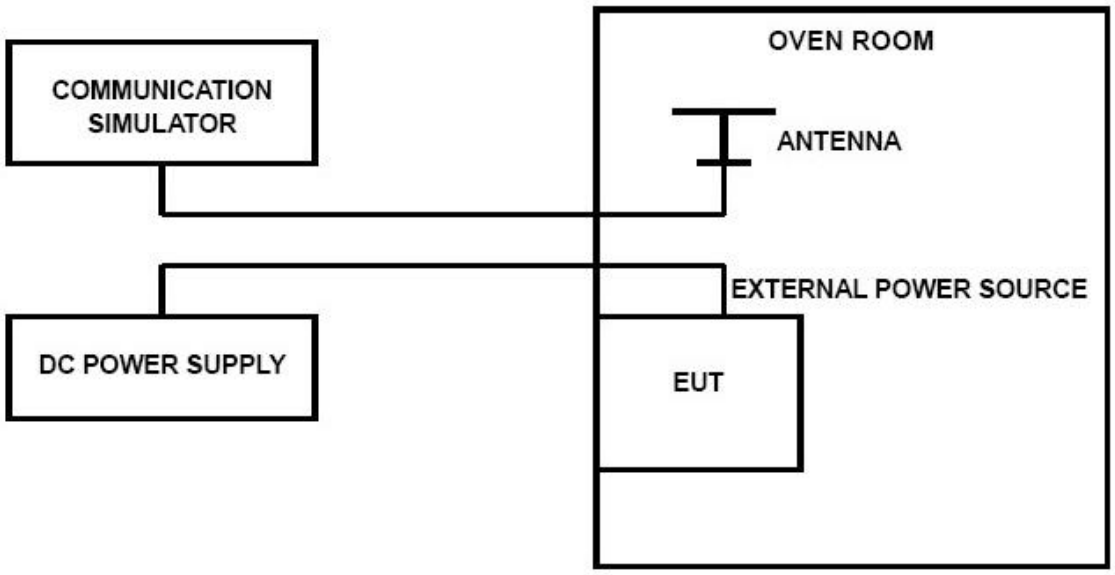
1. According to FCC Part 2 Section 2.1055 (a)(1), the frequency stability shall be measured with variation of ambient temperature from -30℃ to +50℃ centigrade.
2. According to FCC Part 2 Section 2.1055 (E) (2), for battery powered equipment, the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point, which is specified by the manufacture.
3. Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried voltage equipment and the end voltage point was 3.4V.

TEST PROCEDURE

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a “call mode”. This is accomplished with the use of R&S CMW500 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature;
2. Subject the EUT to overnight soak at -30℃;
3. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on middle channel of PCS 1900 and GSM850, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming;
4. Repeat the above measurements at 10℃ increments from -30℃ to +50℃. Allow at least 0.5 hours at each temperature, unpowered, before making measurements;
5. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments remeasuring carrier frequency at each voltage. Pause at nominal voltage for 0.5 hours unpowered, to allow any self-heating to stabilize, before continuing;
6. Subject the EUT to overnight soak at +50℃;
7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming;
8. Repeat the above measurements at 10℃ increments from +50℃ to -30℃. Allow at least 0.5 hours at each temperature, unpowered, before making measurements;
9. At all temperature levels hold the temperature to +/- 0.5℃ during the measurement procedure;

TEST CONFIGURATION



TEST LIMITS

For Hand carried battery powered equipment

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 10.8VDC and 13.2VDC, with a nominal voltage of 12 DC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -10 % and +12.5 %. For the purposes of measuring frequency stability these voltage limits are to be used.

For equipment powered by primary supply voltage

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. For this EUT section 2.1055(d)(1) applies. This requires varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

TEST RESULTS

GPRS 850 Middle channel=190 channel=836.6MHz					
DC Power	**Temperature (℃)**	**Frequency error(Hz)**	**Frequency error(ppm)**	**Limit (ppm)**	**Verdict**
3.465	25	25	0.0299	2.50	PASS
3.85	25	23	0.0275	2.50	PASS
4.235	25	24	0.0287	2.50	PASS
3.85	-30	27	0.0323	2.50	PASS
3.85	-20	19	0.0227	2.50	PASS
3.85	-10	22	0.0263	2.50	PASS
3.85	0	21	0.0251	2.50	PASS
3.85	10	23	0.0275	2.50	PASS
3.85	20	27	0.0323	2.50	PASS
3.85	30	19	0.0227	2.50	PASS
3.85	40	18	0.0215	2.50	PASS
3.85	50	20	0.0239	2.50	PASS

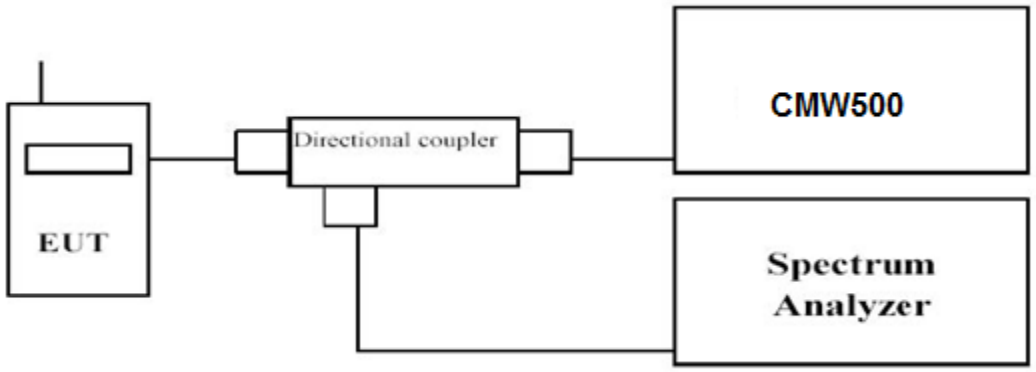
GPRS 1900 Middle channel=661 channel=1880MHz					
DC Power	**Temperature (℃)**	**Frequency error(Hz)**	**Frequency error(ppm)**	**Limit (ppm)**	**Verdict**
3.465	25	27	0.0144	2.50	PASS
3.85	25	28	0.0149	2.50	PASS
4.235	25	30	0.0160	2.50	PASS
3.85	-30	25	0.0133	2.50	PASS
3.85	-20	26	0.0138	2.50	PASS
3.85	-10	29	0.0154	2.50	PASS
3.85	0	27	0.0144	2.50	PASS
3.85	10	28	0.0149	2.50	PASS
3.85	20	32	0.0170	2.50	PASS
3.85	30	25	0.0133	2.50	PASS
3.85	40	30	0.0160	2.50	PASS
3.85	50	31	0.0165	2.50	PASS

5.7 PEAK-TO-AVERAGE RATIO (PAR)

LIMIT

The Peak-to-Average Ratio (PAR) of the transmission may not exceed 13 dB.

TEST CONFIGURATION



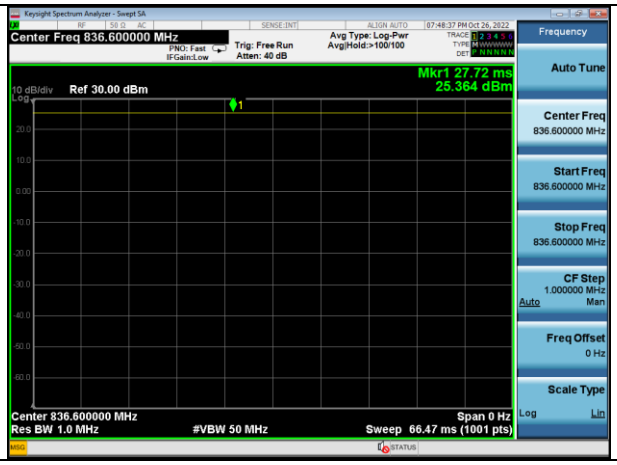
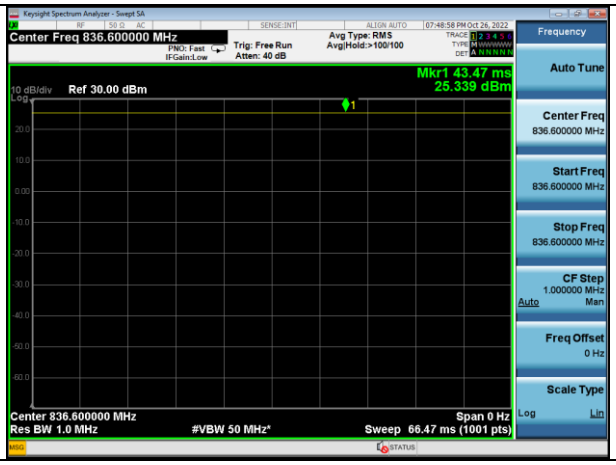
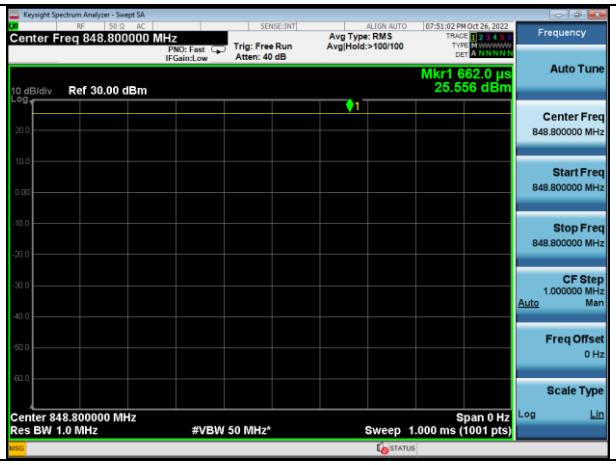
TEST PROCEDURE

Use spectrum to measure the total peak power and record as P_{Pk}. Use spectrum to measure the total average power and record as P_{Avg}. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm).
Determine the PAPR from:
PAPR (dB) = P_{Pk} (dBm) - P_{Avg} (dBm).

TEST RESULTS

GPRS 850	
Frequency (MHz)	Measured (dB)
824.20	0.014
836.60	0.025
848.80	0.003

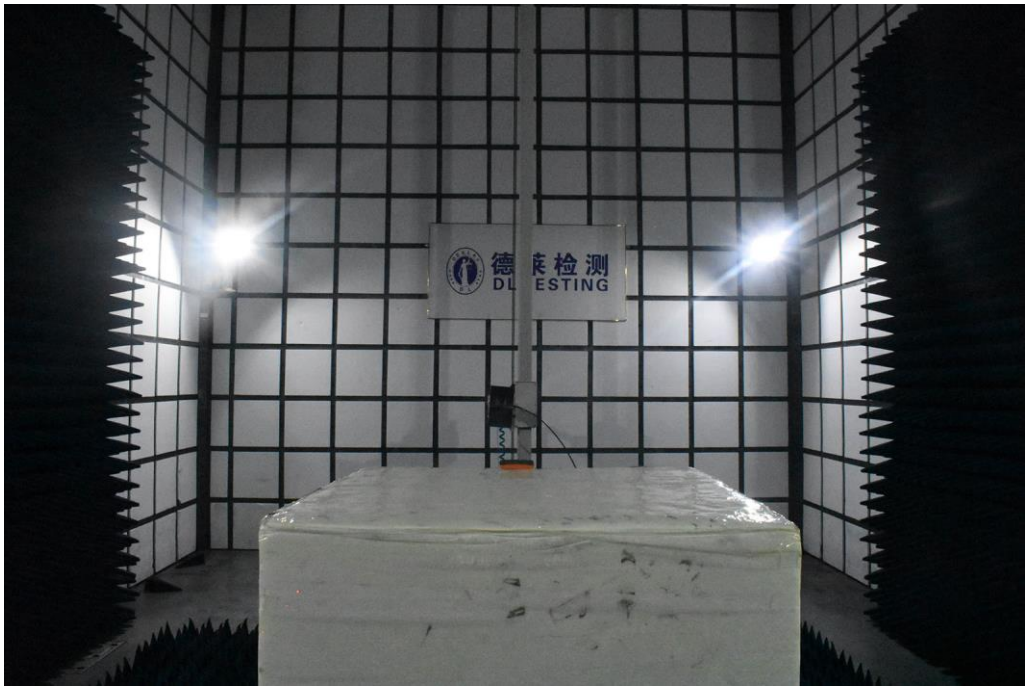
GPRS 1900	
Frequency (MHz)	Measured (dB)
1850.20	0.031
1880.00	0.017
1909.80	0.020

GPRS 850	
	
Channel 128	
	
Channel 190	
	
Channel 251	

GPRS 1900	
	
Channel 512	
	
Channel 661	
	
Channel 810	

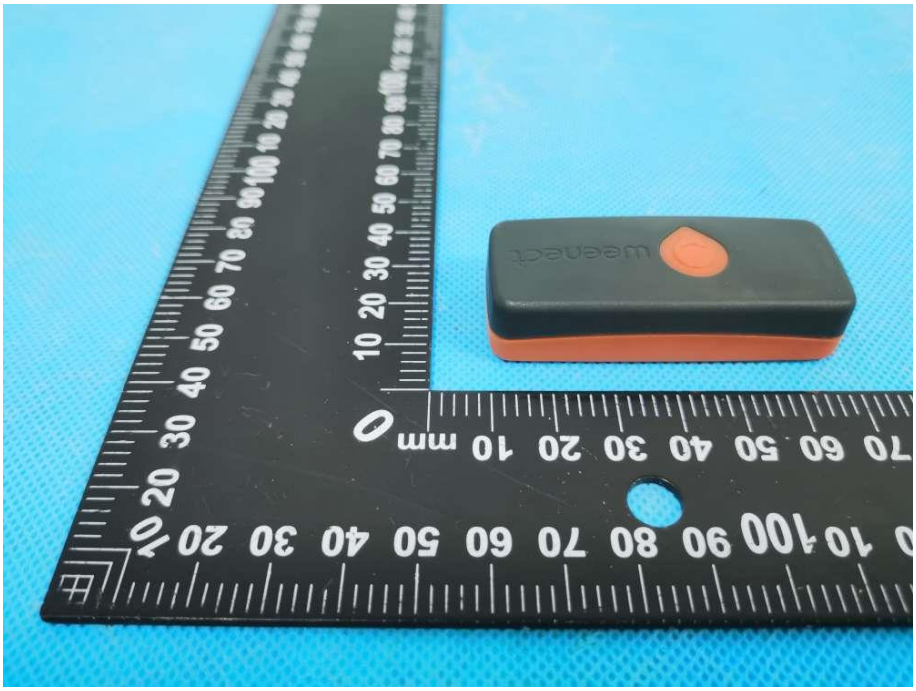
6 . TEST SETUP PHOTOS OF THE EUT

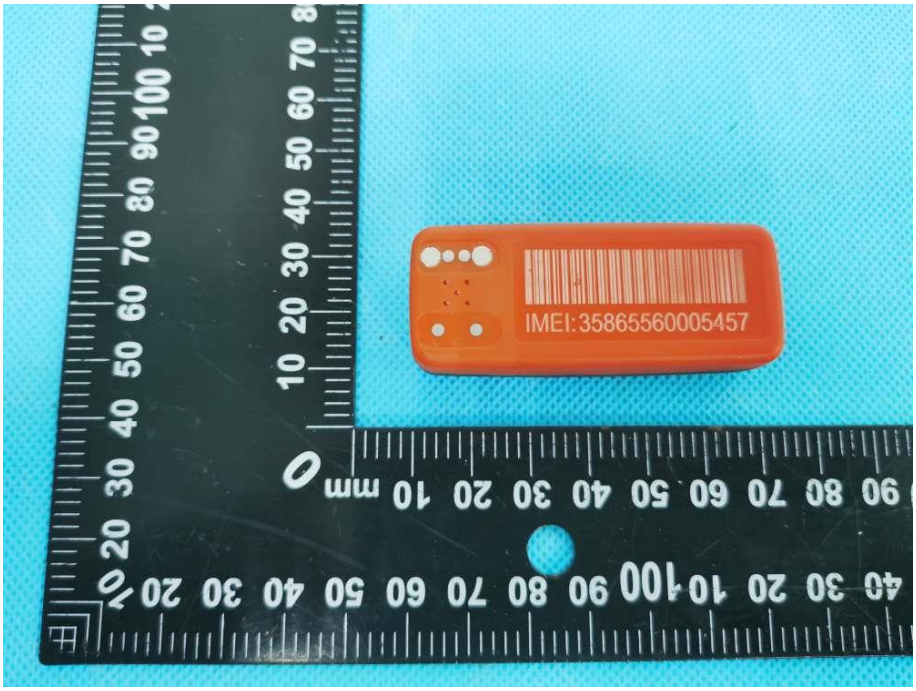
Radiated Measurement Photos



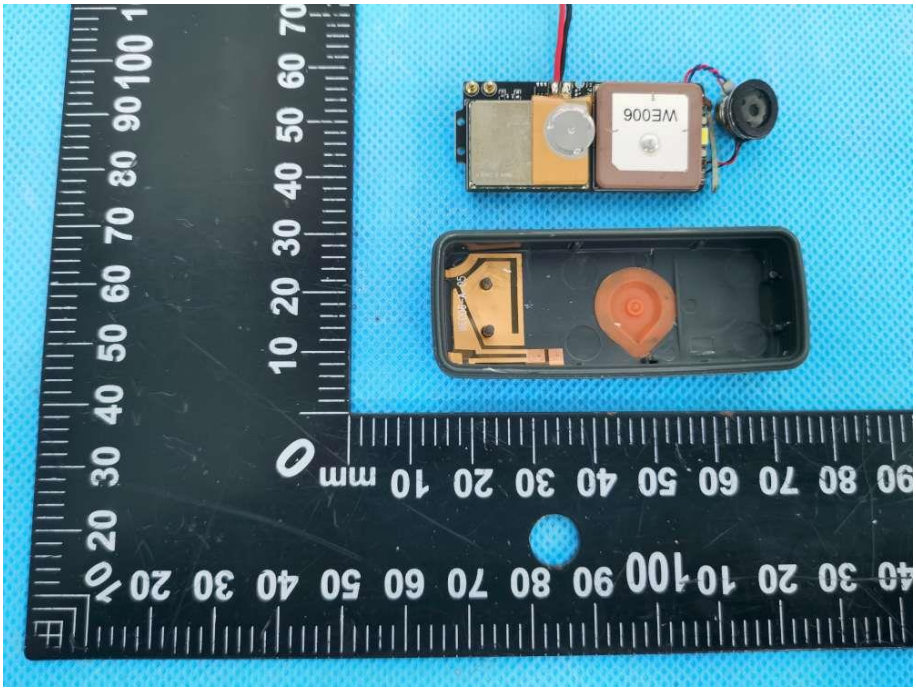
7. PHOTOGRAPHS OF THE EUT


weenect




IMEI:35865560005457


-HYT 581938 3.85V
500mAh 1.925Wh
+00952233000002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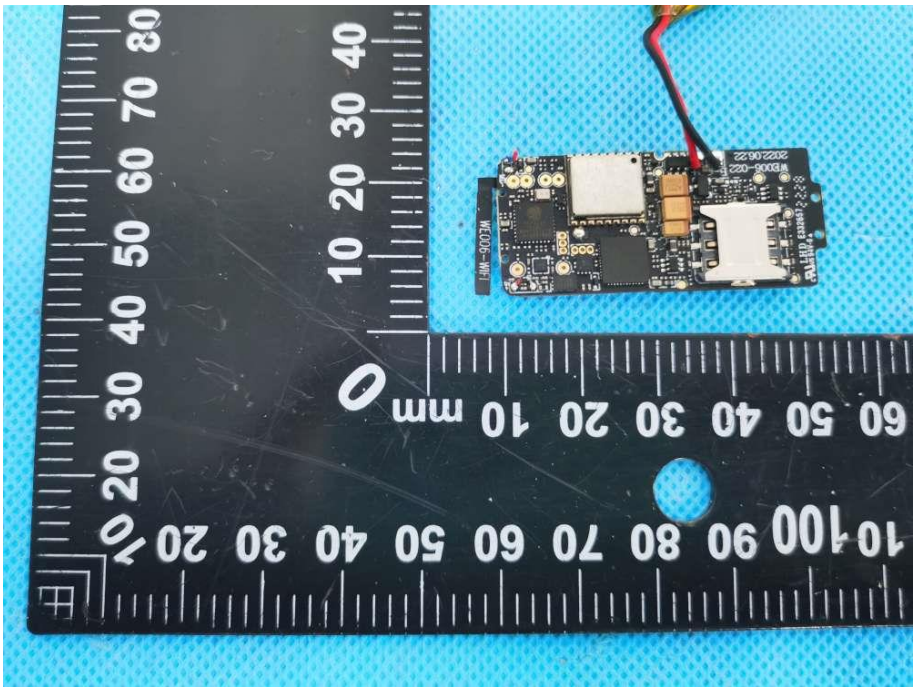

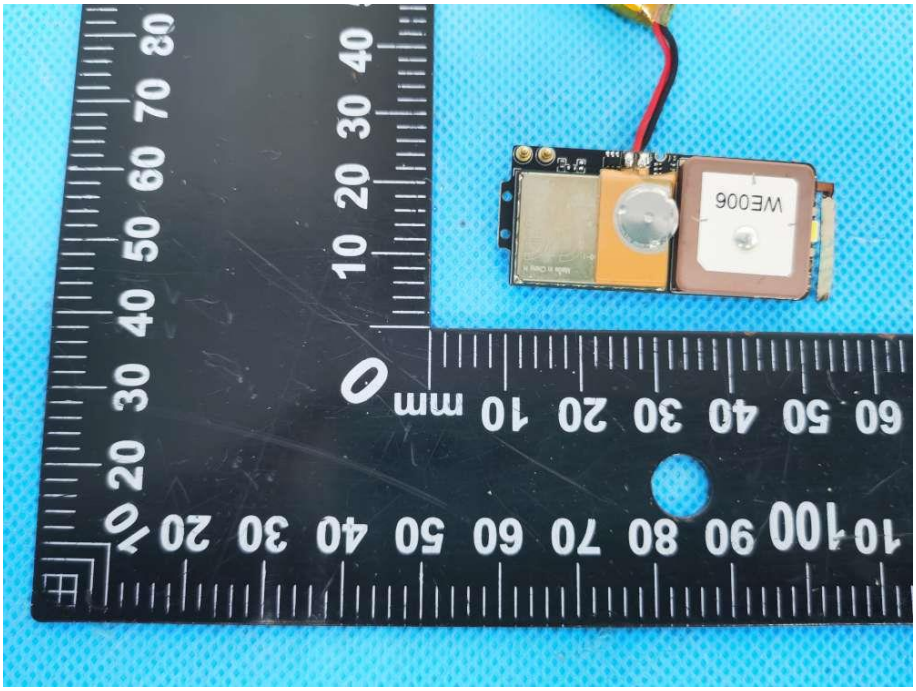
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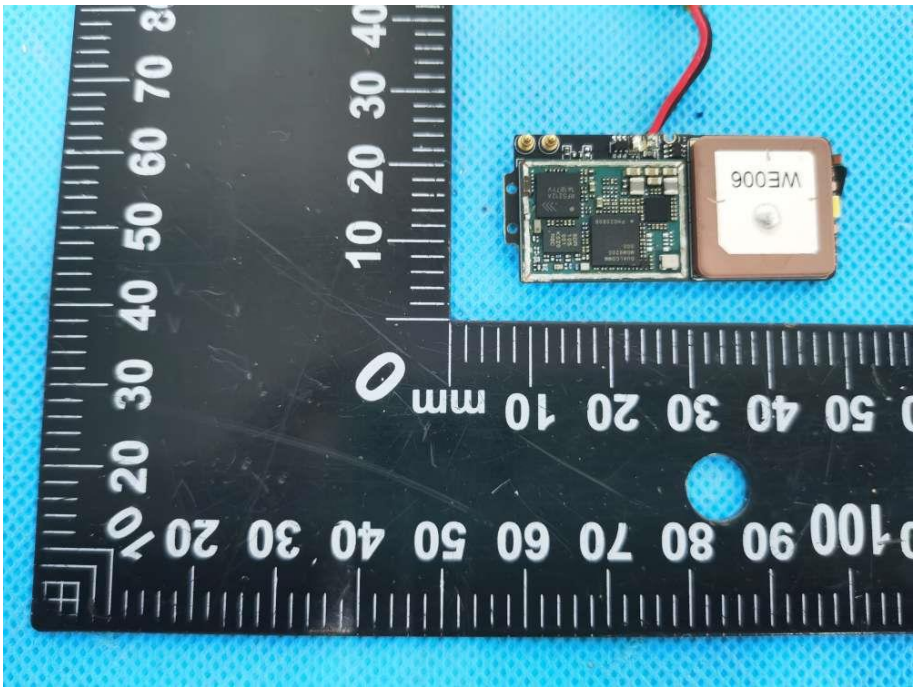
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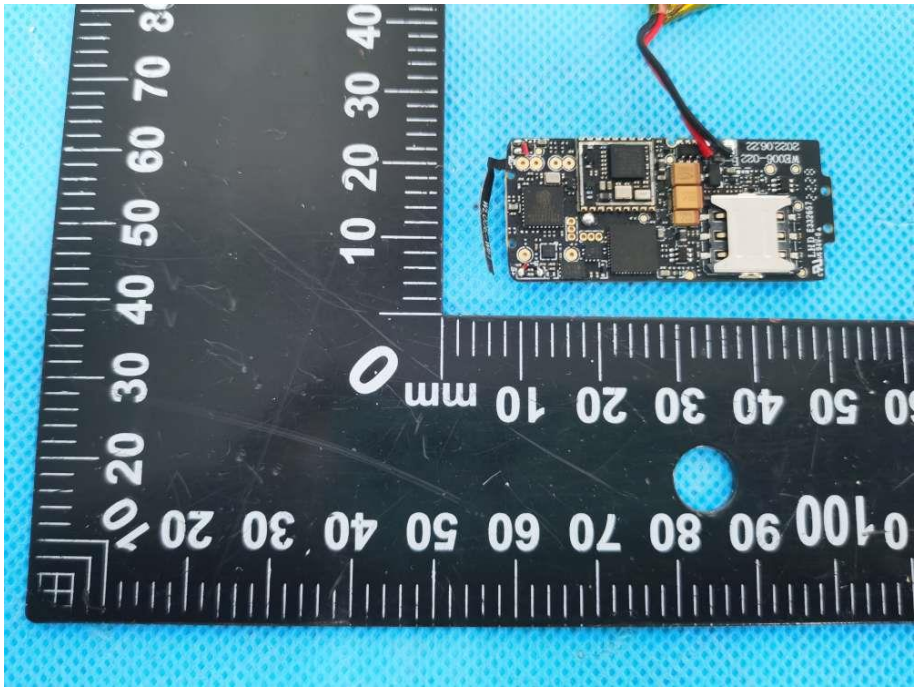

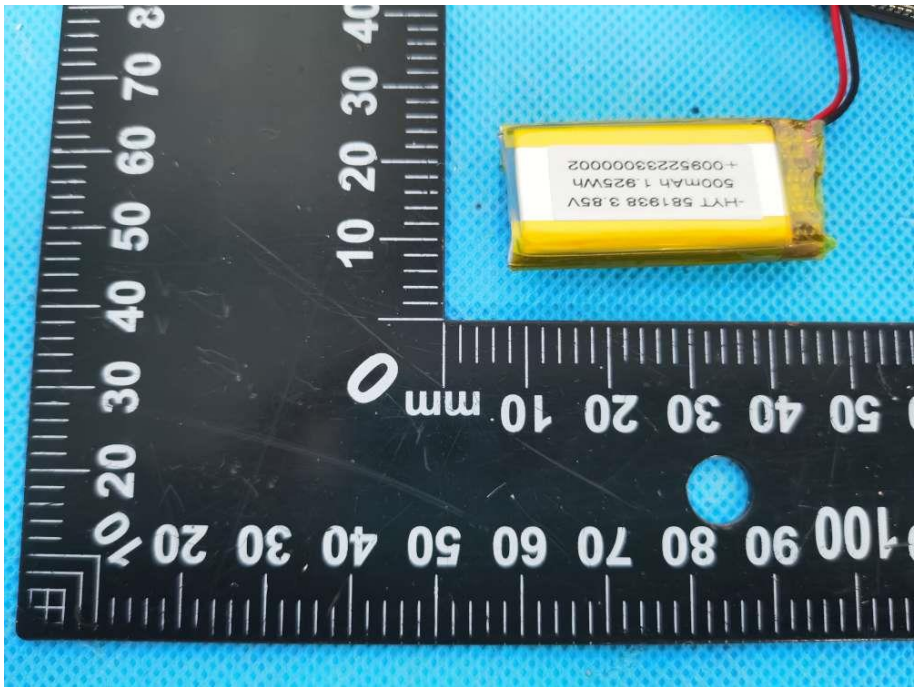

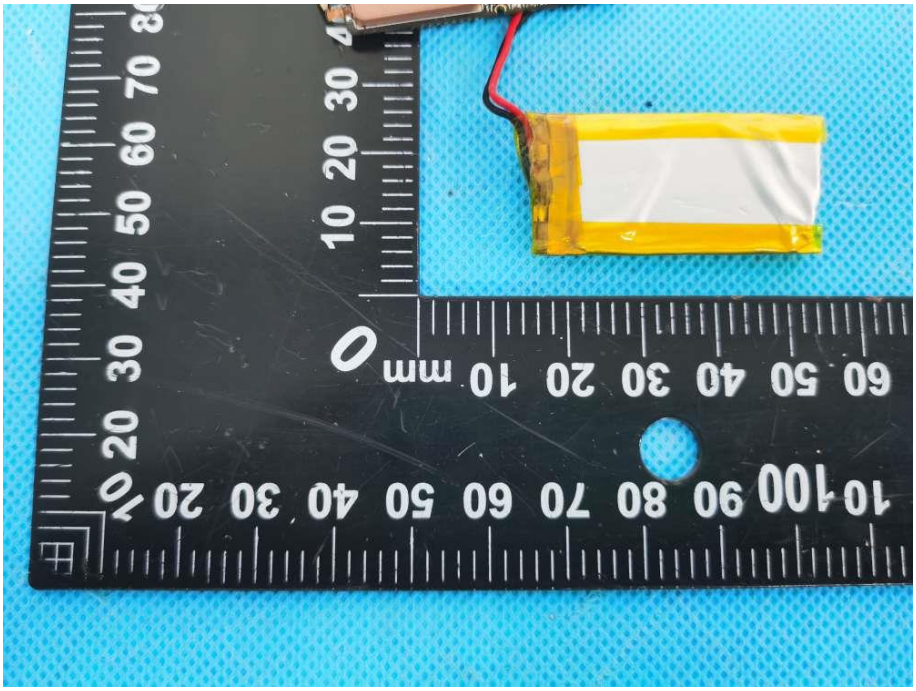

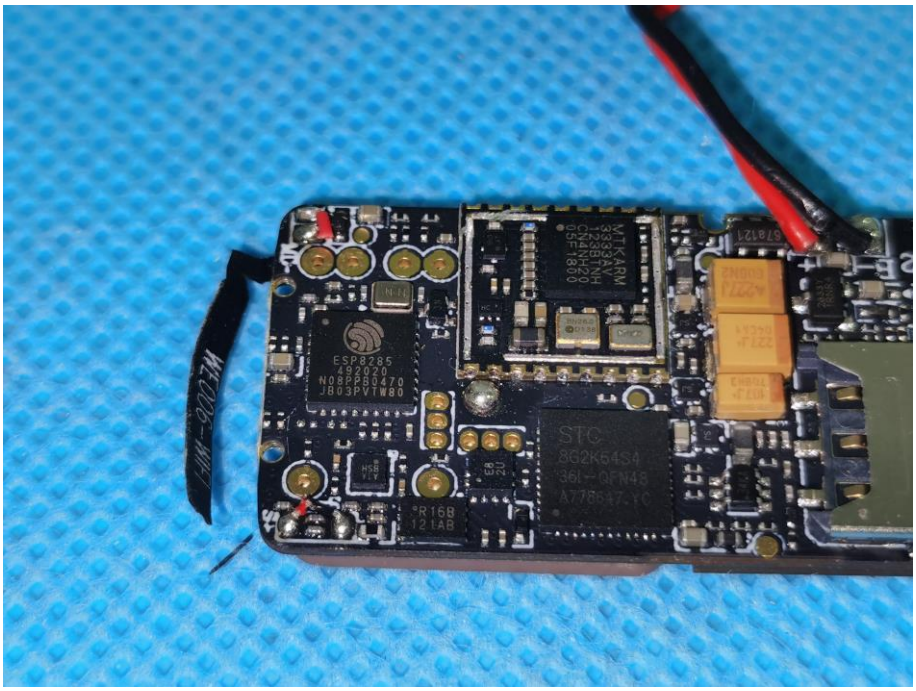

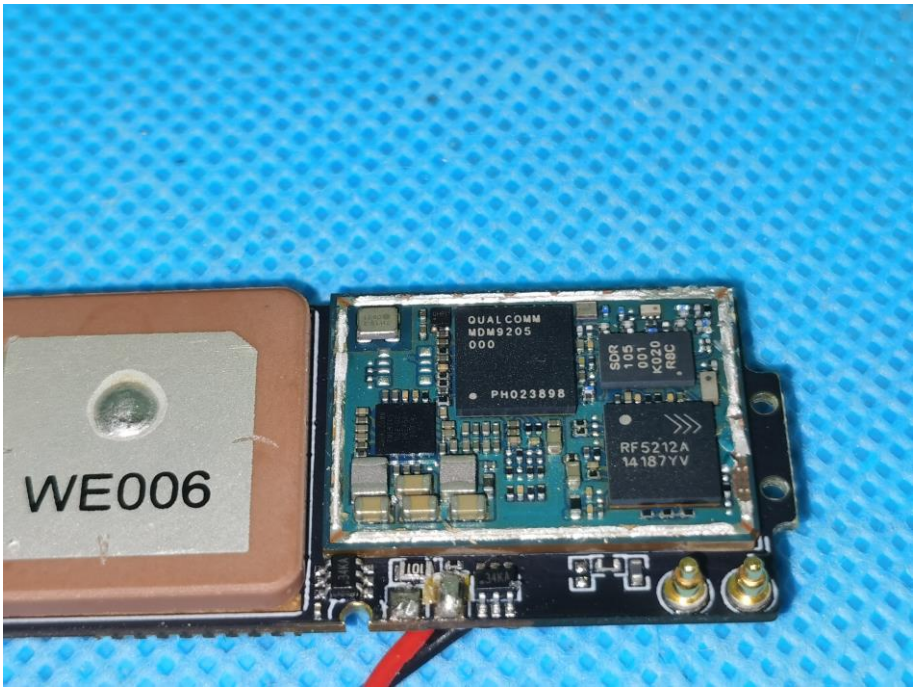

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