

TEST REPORT

For GSM

Report No. : **CHTEW22050121** Report Verification: 
Project No. : **SHT2204062801EW**
FCC ID : **2A3JW-SAPPHIRE**
Applicant : **Eitan Medical Ltd.**
Address : 29 Yad Haruzim St. P.O. Box 8639 Netanya 4250529, Israel
Product Name : **SapphireConnect**
Trade Mark : Sapphire Connect
Model No. : SapphireConnect
Listed Model(s) : -
Standard : **FCC CFR Title 47 Part 2**
FCC CFR Title 47 Part 22
FCC CFR Title 47 Part 24
Date of receipt of test sample : Apr. 22, 2022
Date of testing : Apr. 23, 2022- May. 19, 2022
Date of issue : May. 20, 2022
Result : **Pass**

Compiled by
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Supervised by
(position+printedname+signature) : Project Engineer David Chen



Approved by
(position+printedname+signature) : Manager Hans Hu



Testing Laboratory Name : **Shenzhen Huatongwei International Inspection Co., Ltd.**

Address : 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road,
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The test report merely correspond to the test sample.

Contents

<u>1. TEST STANDARDS AND REPORT VERSION</u>	3
1.1. Applicable Standards	3
1.2. Report version information	3
<u>2. TEST DESCRIPTION</u>	4
<u>3. SUMMARY</u>	5
3.1. Client Information	5
3.2. Product Description	5
3.3. Radio Specification Description	5
3.4. Testing Laboratory Information	6
<u>4. TEST CONFIGURATION</u>	7
4.1. Test frequency list	7
4.2. Descriptions of Test mode	7
4.3. Test sample information	7
4.4. Support unit used in test configuration and system	7
4.5. Testing environmental condition	8
4.6. Statement of the measurement uncertainty	8
4.7. Equipments Used during the Test	9
<u>5. TEST CONDITIONS AND RESULTS</u>	10
5.1. Radiated Spurious Emission	10
<u>6. TEST SETUP PHOTOS OF THE EUT</u>	18
<u>7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT</u>	19
7.1. External photos	19
7.2. Internal photos	22

1. TEST STANDARDS AND REPORT VERSION

1.1. Applicable Standards

The tests were performed according to following standards:

[FCC Rules Part 2](#): FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

[FCC Rules Part 22](#): PUBLIC MOBILE SERVICES

[FCC Rules Part 24](#): PERSONAL COMMUNICATIONS SERVICES

[TIA/EIA 603 E March 2016](#): Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

[ANSI C63.26-2015](#): American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

[KDB 971168 D01 Power Meas License Digital Systems v03](#): MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS

1.2. Report version information

Revision No.	Date of issue	Description
N/A	2022-05-20	Original

2. TEST DESCRIPTION

Section	Test Item	Section in CFR 47	Result ^{#1}	Test Engineer
	Conducted Output Power	Part 2.1046 Part 22.913(a) Part 24.232(c)	Pass*	N/A
	Peak-to-Average Ratio	Part 24.232	Pass*	N/A
	99% Occupied Bandwidth & 26 dB Bandwidth	Part 2.1049 Part 22.917(b) Part 24.238(b)	Pass*	N/A
	Band Edge	Part 2.1051 Part 22.917 Part 24.238	Pass*	N/A
	Conducted Spurious Emissions	Part 2.1051 Part 22.917 Part 24.238	Pass*	N/A
	Frequency stability vs temperature	Part 2.1055(a)(1)(b) Part 22.355 Part 24.235	Pass*	N/A
	Frequency stability vs voltage	Part 2.1055(d)(1)(2) Part 22.355 Part 24.235	Pass*	N/A
	ERP and EIRP	Part 22.913(a) Part 24.232(b)	Pass*	N/A
5.1	Radiated Spurious Emissions	Part 2.1053 Part 22.917 Part 24.238	Pass	Pan Xie

Note:

- 1) #1: The test result does not include measurement uncertainty value
- 2) *: Refer to the module report which report No. is R2005A0283-R1V1 and R2005A0283-R2V1.
- 3) This device has installed a certified modular which FCC ID is XMR202005BG95M5, so these conducted test data directly reference the modular's data.

3. SUMMARY

3.1. Client Information

Applicant:	Eitan Medical Ltd.
Address:	29 Yad Haruzim St. P.O. Box 8639 Netanya 4250529, Israel
Manufacturer:	Eitan Medical Ltd.
Address:	29 Yad Haruzim St. P.O. Box 8639 Netanya 4250529, Israel

3.2. Product Description

Main unit information:	
Product Name:	SappireConnect
Trade Mark:	SappireConnect
Model No.:	SappireConnect
Listed Model(s):	-
Power supply:	DC 3.7V from Battery
Hardware version:	1
Software version:	16
Accessory unit information:	
Battery information:	3.7Vdc, 850mAh
Adapter information:	Model:FW8000M/05 Input: AC100-240V, 50/60Hz, 300-150mA Output: 5.0Vdc, 2200mA

3.3. Radio Specification Description

Support Operating Band:	<input checked="" type="checkbox"/> GSM850	<input checked="" type="checkbox"/> PCS1900
Operating Frequency Range:	Please refer to note #2	
Support Network:	<input checked="" type="checkbox"/> GSM	<input checked="" type="checkbox"/> GPRS
Modulation type:	<input checked="" type="checkbox"/> GMSK	<input checked="" type="checkbox"/> 8PSK
GPRS Multislot Class:	<input type="checkbox"/> 8	<input type="checkbox"/> 10
EGPRS Multislot Class:	<input type="checkbox"/> 8	<input type="checkbox"/> 10
Antenna type:	SMD Antenna	
Antenna gain ^{#3} :	GSM850:1.6dBi	PCS1900:3.5dBi

Note:

- : means that this feature is supported; : means that this feature is not supported
- #2: Operating frequency range is as follow:

Band	Uplink frequency	Downlink frequency
GSM850	824.20 - 848.80MHz	869.20 - 893.80MHz
PCS1900	1850.20 -1909.80MHz	1930.20 -1989.80MHz

- #3: The antenna gain is provided by the applicant, and the applicant should be responsible for its authenticity, HTW lab has not verified the authenticity of its information

3.4. Testing Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.	
Laboratory Location	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China	
Connect information:	<p>Tel: 86-755-26715499 E-mail: cs@szhtw.com.cn http://www.szhtw.com.cn</p>	
Qualifications	Type	Accreditation Number
	FCC	762235

4. TEST CONFIGURATION

4.1. Test frequency list

GSM850		PCS1900	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20
190	836.60	661	1880.00
251	848.80	810	1909.80

4.2. Descriptions of Test mode

- 1) Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems and ANSI C63.26 with maximum output power.
- 2) Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

All modes and data rates and positions were investigated, test modes are chosen to be reported as the worst case configuration below:

Band	Radiated test items	Conducted test items
GSM 850	■ GSM link	■ GSM link ■ GPRS Class 8 link ■ EGPRS Class 8 link
PCS 1900	■ GSM link	■ GSM link ■ GPRS Class 8 link ■ EGPRS Class 8 link

4.3. Test sample information

Test item	HTW sample no.
Radiated test items	YPHT22040628004

Note:

Radiated test items: ERP and EIRP, Radiated Spurious Emission

4.4. Support unit used in test configuration and system

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

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

Whether support unit is used?				
✓ No				
Item	Equipment	Trade Name	Model No.	Other
1				
2				

4.5. Testing environmental condition

Voltage	VN=Nominal Voltage	DC 3.7V
	VL=Lower Voltage	DC 3.33V
	VH=Higher Voltage	DC 4.07V
Temperature	TN=Normal Temperature	25 °C
	Extreme Temperature	From -30°C to + 50°C
Humidity	30~60 %	
Air Pressure	950-1050 hPa	

4.6. Statement of the measurement uncertainty

Test Items	MeasurementUncertainty
Radio frequency	<1GHz: 0.022ppm >1GHz: 0.64ppm
Conducted output power	0.65 dB
ERP and EIRP	0.65 dB
Conducted spurious emission	0.65 dB
Radiated spurious emission	<1GHz: 2.85dB >1GHz: 3.66dB
99% Occupied Bandwidth & 26 dB Bandwidth	<1GHz: 0.022ppm >1GHz: 0.64ppm

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.7. Equipments Used during the Test

● Radiated Spurious Emission							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0122	SAC-3m-01	N/A	2018/09/27	2022/09/26
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2021/09/13	2022/09/12
●	Loop Antenna	R&S	HTWE0170	HFH2-Z2	100020	2021/04/06	2024/04/05
●	Broadband Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2020/04/27	2023/04/26
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0123	VULB9163	538	2021/04/06	2024/04/05
●	Horn Antenna	SCHWARZBECK	HTWE0126	9120D	1011	2020/04/01	2023/03/31
●	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2021/11/05	2022/11/04
●	Broadband Preamplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2022/02/28	2023/02/27
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-01	6m 18GHz S Serisa	N/A	2022/02/25	2023/02/24
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-02	6m 3GHz RG Serisa	N/A	2022/02/25	2023/02/24
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-03	6m 3GHz RG Serisa	N/A	2022/02/25	2023/02/24
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-04	6m 3GHz RG Serisa	N/A	2022/02/25	2023/02/24
●	RF Connection Cable	HUBER+SUHNER	HTWE0121-01	6m 18GHz S Serisa	N/A	2022/02/25	2023/02/24
●	EMI Test Software	Audix	N/A	E3	N/A	N/A	N/A

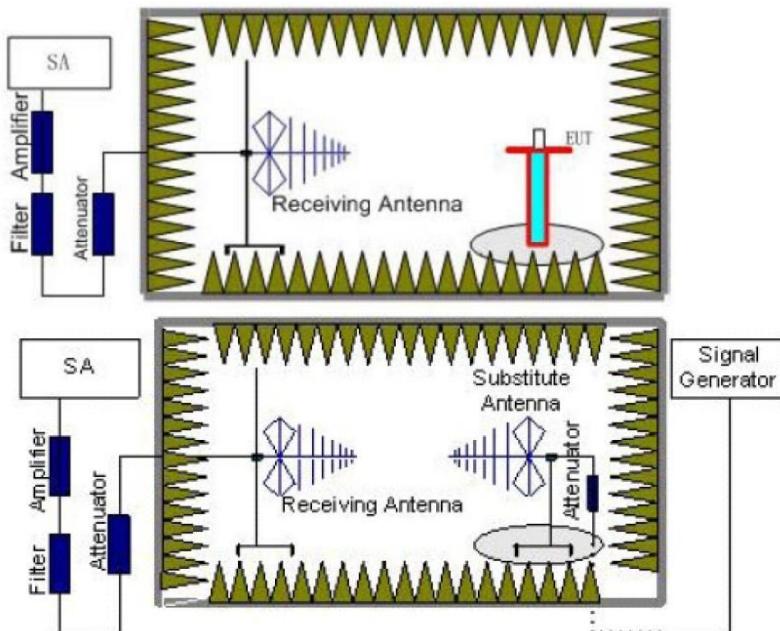
5. TEST CONDITIONS AND RESULTS

5.1. Radiated Spurious Emission

LIMIT

-13dBm

TEST CONFIGURATION



TEST PROCEDURE

1. Place the EUT in the center of the turntable.
 - a) For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, the EUT shall be placed on a RF-transparent table at a nominal height of 80 cm above the reference ground plane
 - b) For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table at a nominal height of 1.5 m above the ground plane.
2. Unless the EUT uses an integral antenna, the EUT shall be terminated with a non-radiating transmitter load. In cases where the EUT uses an adjustable antenna, the antenna shall be adjusted through typical positions and lengths to maximize emissions levels.
3. The EUT shall be tested while operating on the frequency per manufacturer specification. Set the transmitter to operate in continuous transmit mode.
4. Receiver or Spectrum set as follow:

Below 1GHz, RBW=100kHz, VBW=300kHz, Detector=Peak, Sweep time=Auto
 Above 1GHz, RBW=1MHz, VBW=3MHz, Detector=Peak, Sweep time=Auto
5. Each emission under consideration shall be evaluated:
 - a) Raise and lower the measurement antenna from 1 m to 4 m, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.
 - b) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.
 - c) Return the turntable to the azimuth where the highest emission amplitude level was observed.
 - d) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.
 - e) Record the measured emission amplitude level and frequency
6. Repeat step 5 for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.
7. Set-up the substitution measurement with the reference point of the substitution antenna located as near as possible to where the center of the EUT radiating element was located during the initial EUT measurement.
8. Maintain the previous measurement instrument settings and test set-up, with the exception that the EUT is removed and replaced by the substitution antenna.
9. Connect a signal generator to the substitution antenna; locate the signal generator so as to minimize any

potential influences on the measurement results. Set the signal generator to the frequency where emissions are detected, and set an output power level such that the radiated signal can be detected by the measurement instrument, with sufficient dynamic range relative to the noise floor.

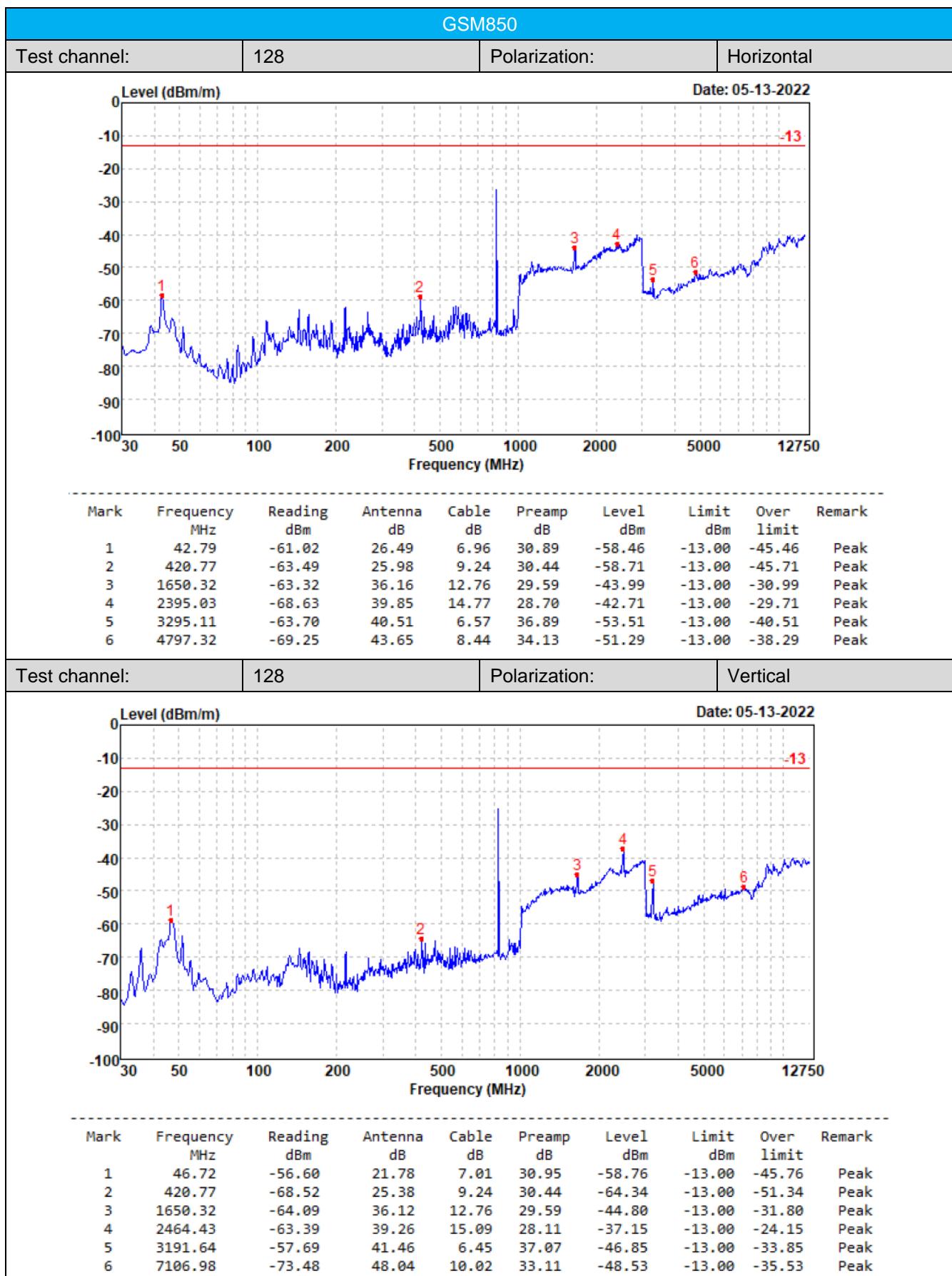
10. For each emission that was detected and measured in the initial test
 - a) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude.
 - b) Adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the amplitude level of the emission previously measured directly in step 5 and step 6.
 - c) Record the output power level of the signal generator when equivalence is achieved in step b).
11. Repeat step 8 through step 10 with the measurement antenna oriented in the opposite polarization.
12. Calculate the emission power in dBm referenced to a half-wave dipole using the following equation:
$$Pe = Ps(dBm) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$
where
Pe = equivalent emission power in dBm
Ps = source (signal generator) power in dBm
NOTE—dBd refers to the measured antenna gain in decibels relative to a half-wave dipole.
13. Correct the antenna gain of the substitution antenna if necessary to reference the emission power to a half-wave dipole. When using measurement antennas with the gain specified in dBi, the equivalent dipole-referenced gain can be determined from:
$$\text{gain (dBd)} = \text{gain (dBi)} - 2.15 \text{ dB}$$
If necessary, the antenna gain can be calculated from calibrated antenna factor information
14. Provide the complete measurement results as a part of the test report.

TEST MODE:

Please refer to the clause 4.2

TEST RESULTS

Passed Not Applicable



Test channel: 190 Date: 05-13-2022

Horizontal

Level (dBm/m)

Frequency (MHz)

Mark Frequency Reading Antenna Cable Preamp Level Limit Over limit Remark

Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	42.79	-60.76	26.49	6.96	30.89	-58.20	-13.00	-45.20	Peak
2	575.40	-67.71	26.70	9.85	30.38	-61.54	-13.00	-48.54	Peak
3	1201.38	-67.71	36.73	11.68	29.64	-48.94	-13.00	-35.94	Peak
4	1674.06	-66.76	36.25	12.82	29.44	-47.13	-13.00	-34.13	Peak
5	3187.02	-63.40	41.35	6.44	37.05	-52.66	-13.00	-39.66	Peak
6	5450.35	-71.77	43.99	9.35	32.75	-51.18	-13.00	-38.18	Peak

Test channel: 190 Date: 05-12-2022

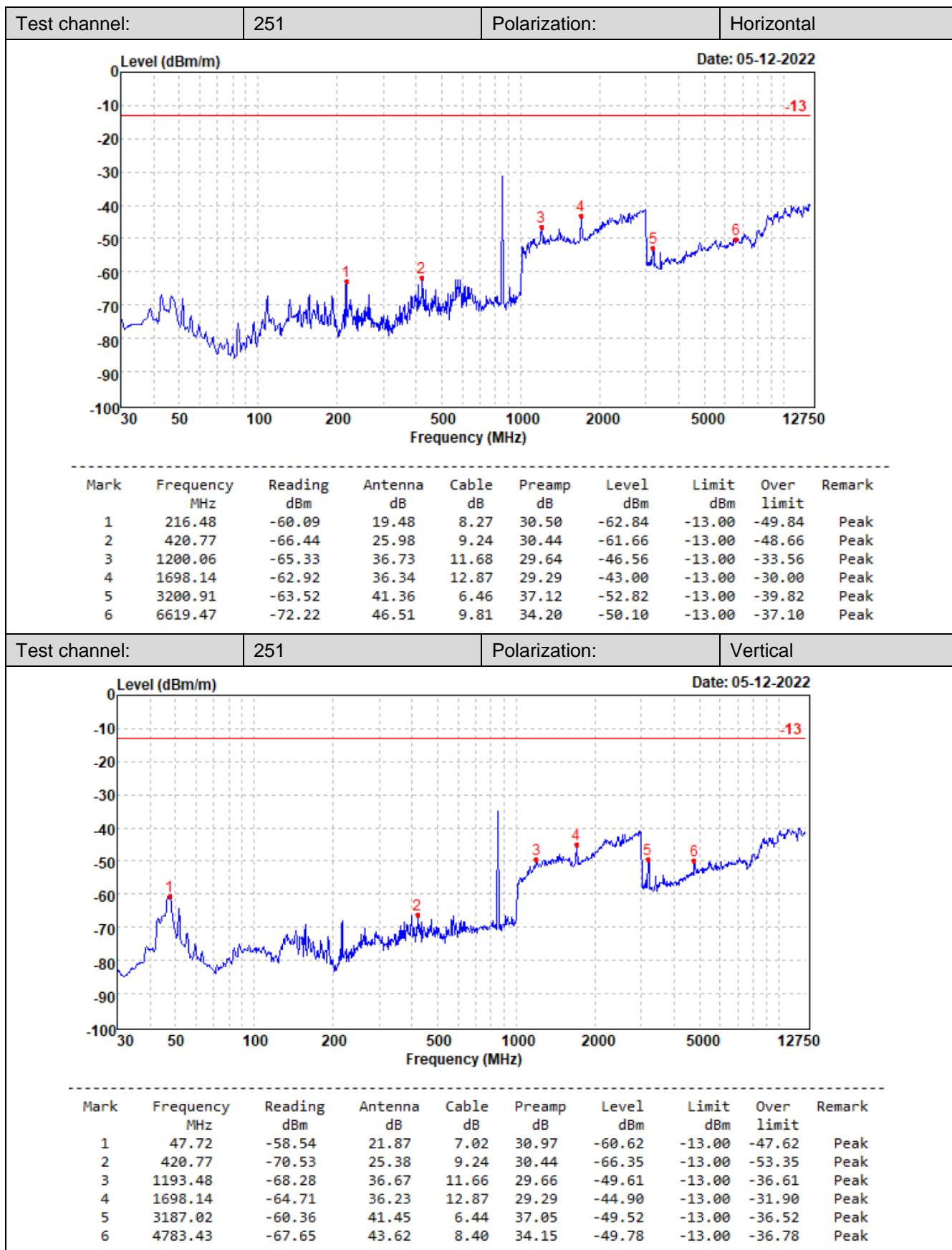
Vertical

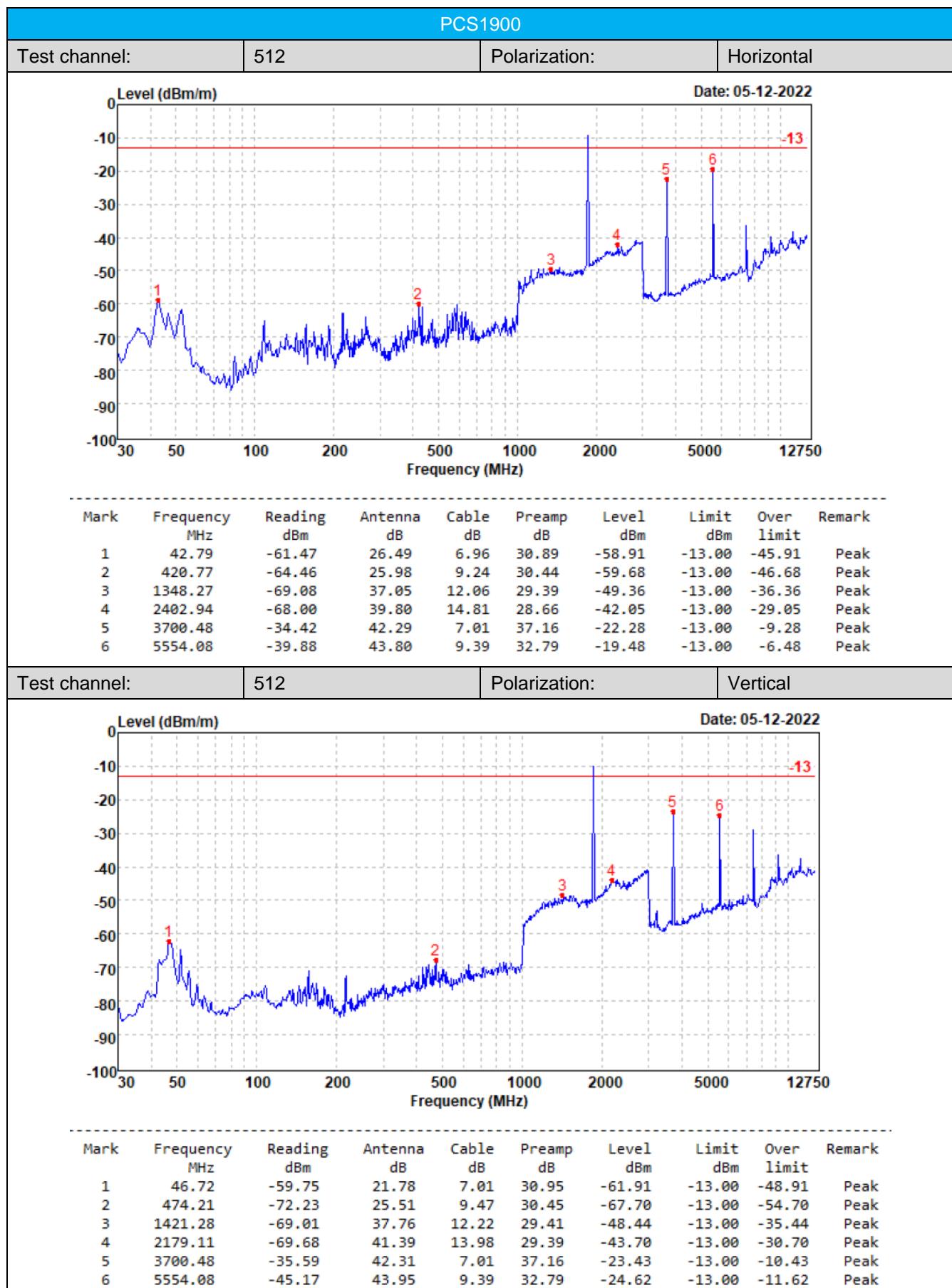
Level (dBm/m)

Frequency (MHz)

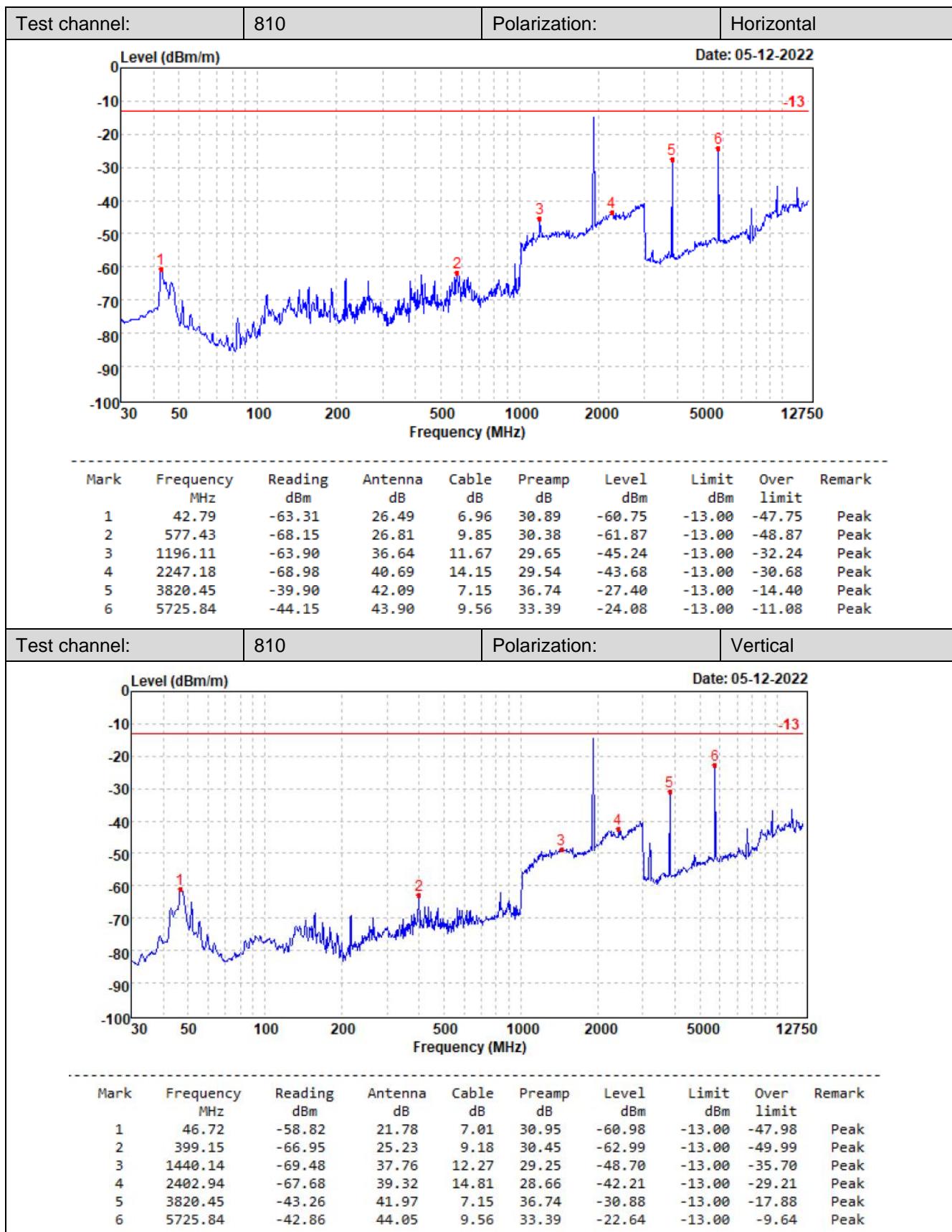
Mark Frequency Reading Antenna Cable Preamp Level Limit Over limit Remark

Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	46.72	-56.70	21.78	7.01	30.95	-58.86	-13.00	-45.86	Peak
2	399.15	-67.29	25.23	9.18	30.45	-63.33	-13.00	-50.33	Peak
3	1674.06	-65.14	36.17	12.82	29.44	-45.59	-13.00	-32.59	Peak
4	2203.18	-69.80	41.69	14.04	29.45	-43.52	-13.00	-30.52	Peak
5	3191.64	-60.04	41.46	6.45	37.07	-49.20	-13.00	-36.20	Peak
6	5017.92	-69.42	44.46	8.84	34.85	-50.97	-13.00	-37.97	Peak

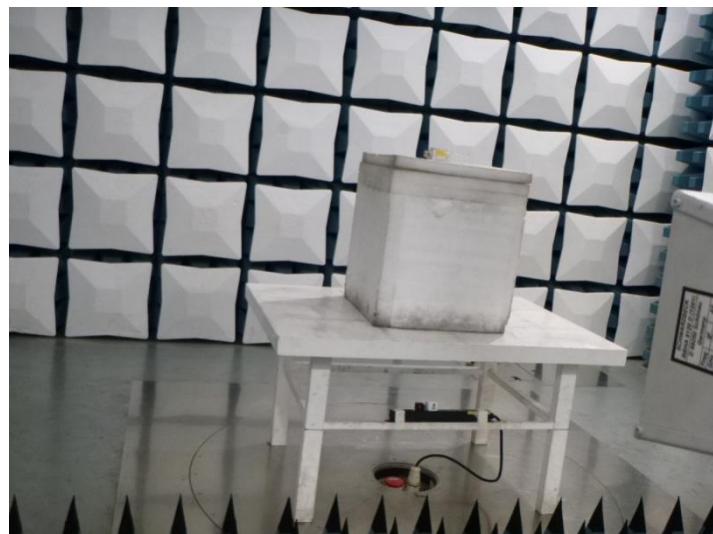
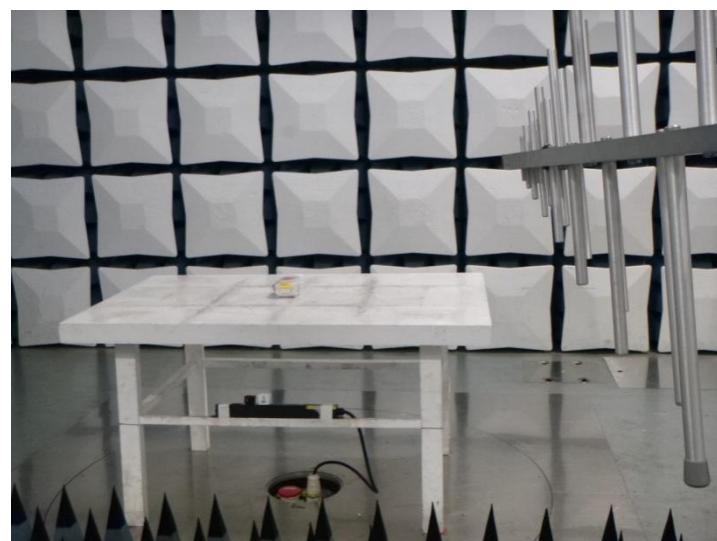




Test channel:		661	Polarization:		Horizontal				
Date: 05-12-2022						-13			
Level (dBm/m)									
-100	-90	-80	-70	-60	-50	-40			
-100	-90	-80	-70	-60	-50	-40			
30	50	100	200	500	1000	2000			
500	700	1000	2000	5000	10000	12750			
Frequency (MHz)									
Mark	Frequency	Reading	Antenna	Cable	Preamp	Level	Limit	Over	Remark
	MHz	dBm	dB	dB	dB	dBm	dBm	limit	
1	51.56	-61.43	23.70	7.06	31.03	-61.70	-13.00	-48.70	Peak
2	216.48	-59.79	19.48	8.27	30.50	-62.54	-13.00	-49.54	Peak
3	1123.51	-64.28	34.83	11.49	29.72	-47.68	-13.00	-34.68	Peak
4	2342.98	-69.06	40.14	14.50	28.93	-43.35	-13.00	-30.35	Peak
5	3759.98	-32.47	42.23	7.08	36.99	-20.15	-13.00	-7.15	Peak
6	5643.40	-42.45	43.78	9.47	33.41	-22.61	-13.00	-9.61	Peak
Test channel:		661	Polarization:		Vertical				
Date: 05-12-2022						-13			
Level (dBm/m)									
-100	-90	-80	-70	-60	-50	-40			
-100	-90	-80	-70	-60	-50	-40			
30	50	100	200	500	1000	2000			
500	700	1000	2000	5000	10000	12750			
Frequency (MHz)									
Mark	Frequency	Reading	Antenna	Cable	Preamp	Level	Limit	Over	Remark
	MHz	dBm	dB	dB	dB	dBm	dBm	limit	
1	46.72	-59.69	21.78	7.01	30.95	-61.85	-13.00	-48.85	Peak
2	420.77	-67.19	25.38	9.24	30.44	-63.01	-13.00	-50.01	Peak
3	1196.11	-66.83	36.74	11.67	29.65	-48.07	-13.00	-35.07	Peak
4	2198.35	-69.59	41.70	14.03	29.44	-43.30	-13.00	-30.30	Peak
5	3759.98	-37.30	42.14	7.08	36.99	-25.07	-13.00	-12.07	Peak
6	5643.40	-42.38	43.95	9.47	33.41	-22.37	-13.00	-9.37	Peak



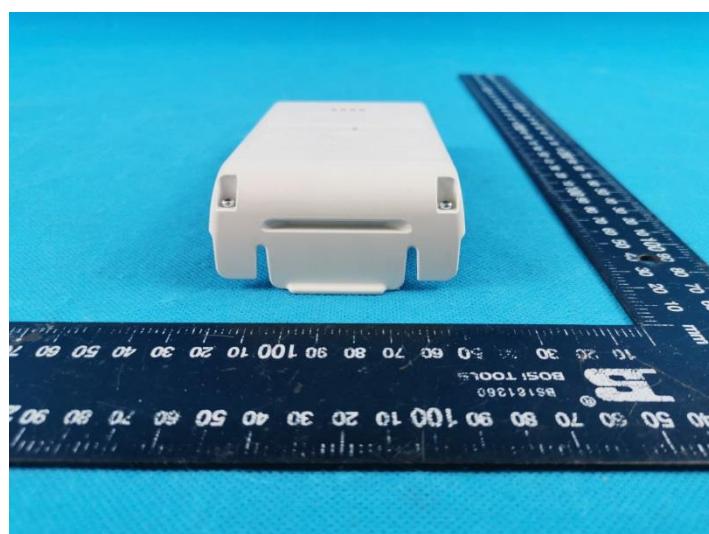
6. TEST SETUP PHOTOS OF THE EUT

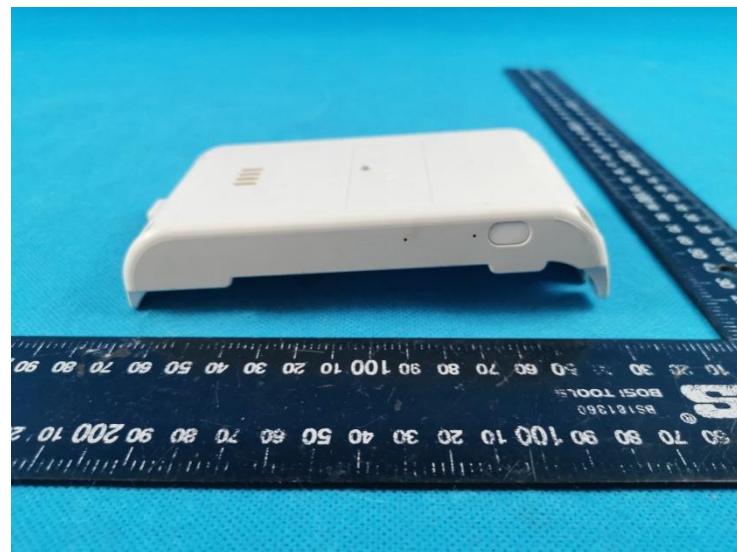


7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

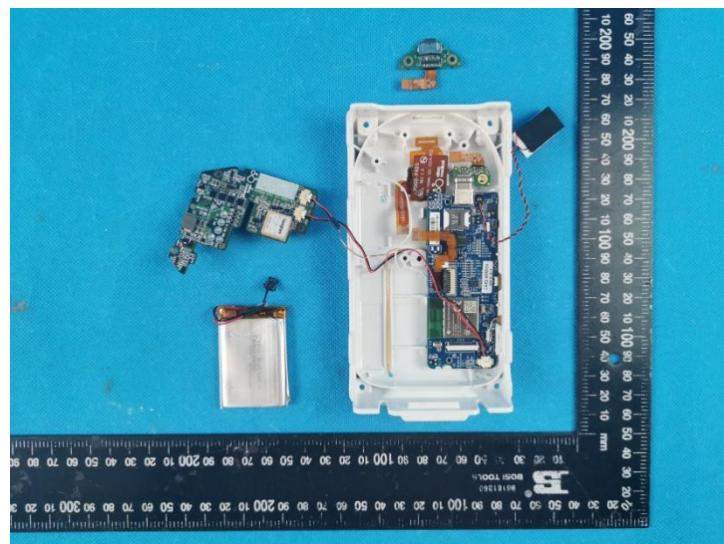
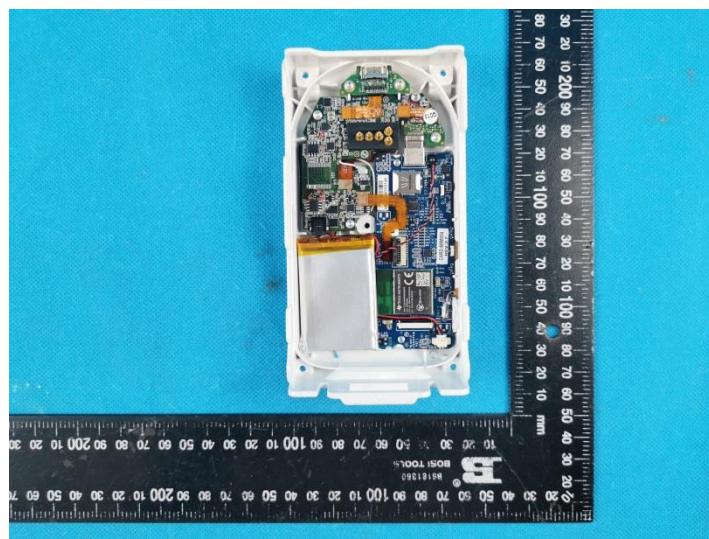
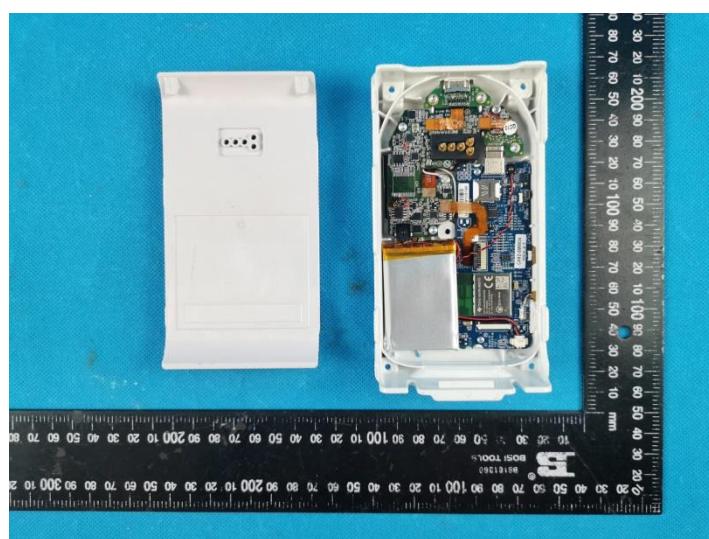
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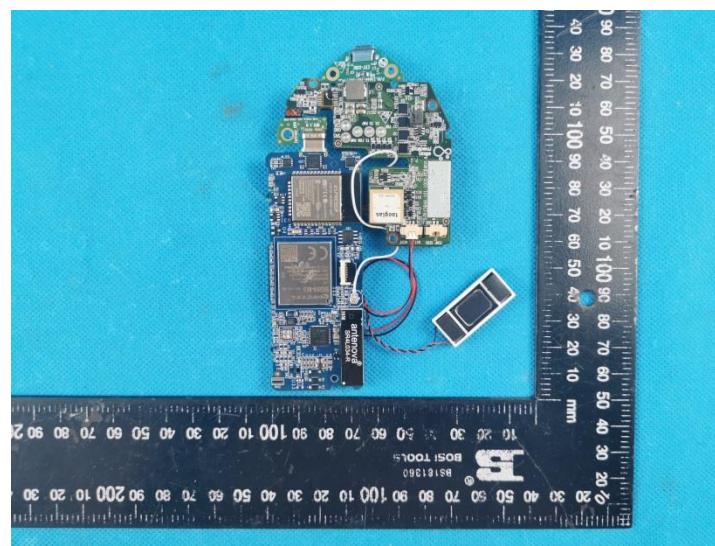
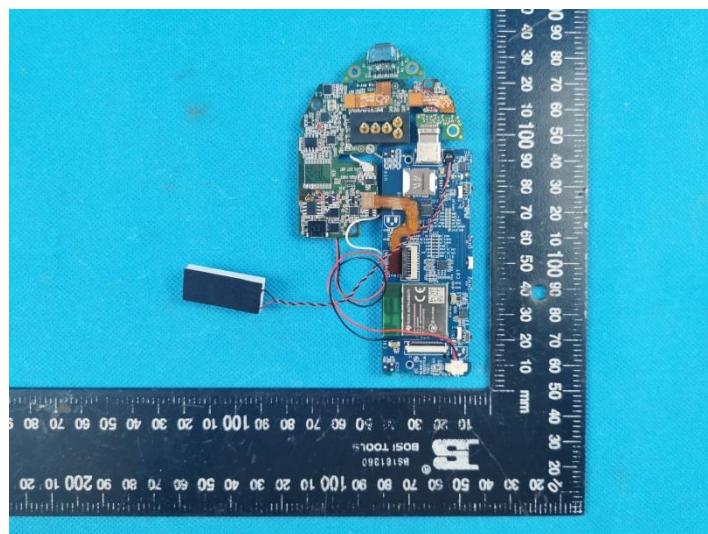
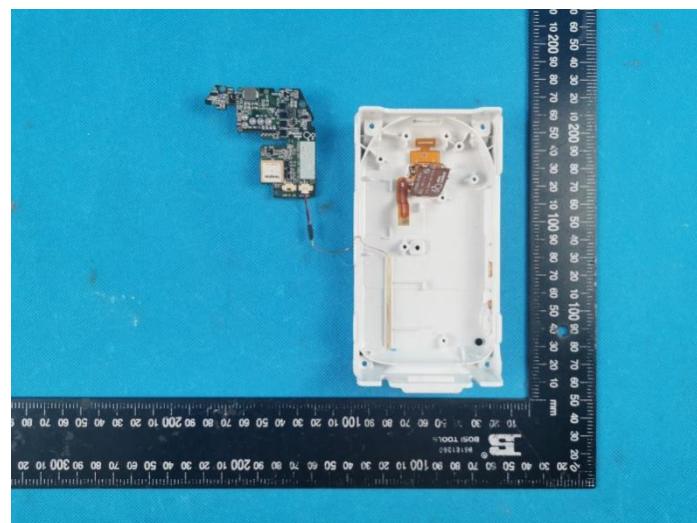


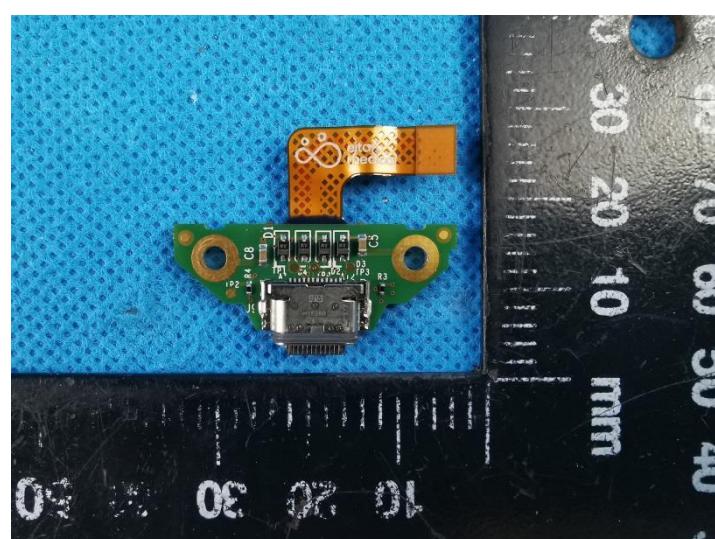
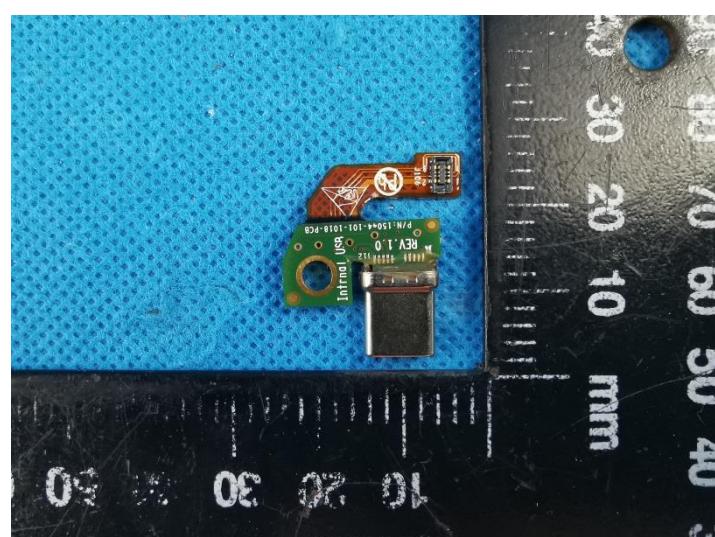
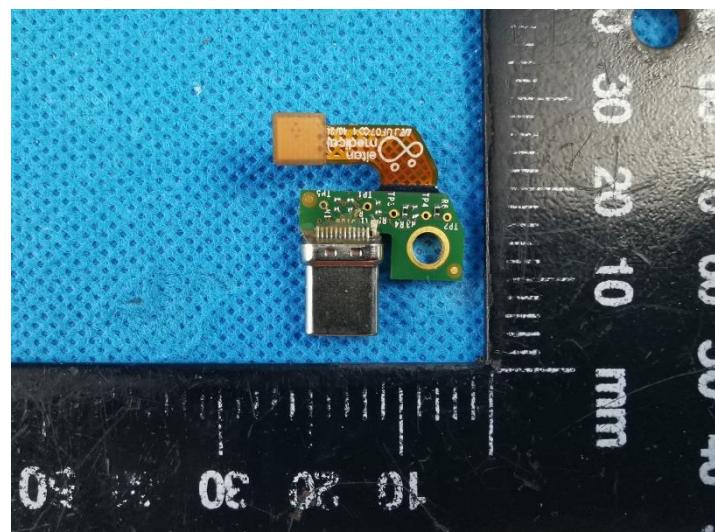


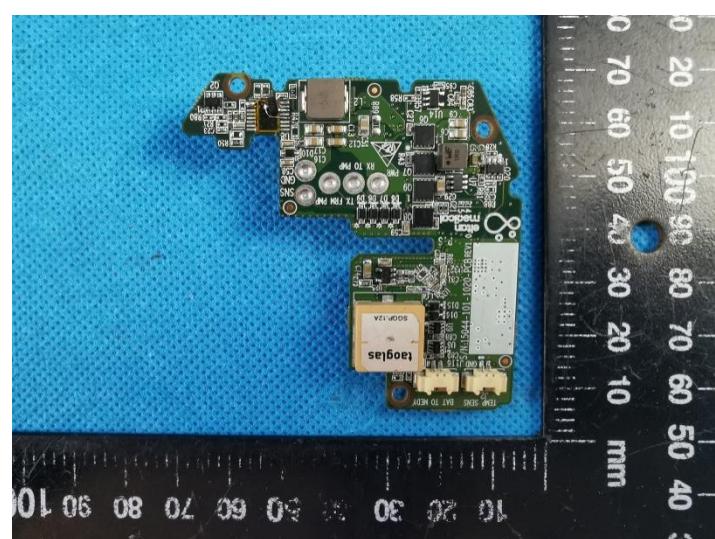
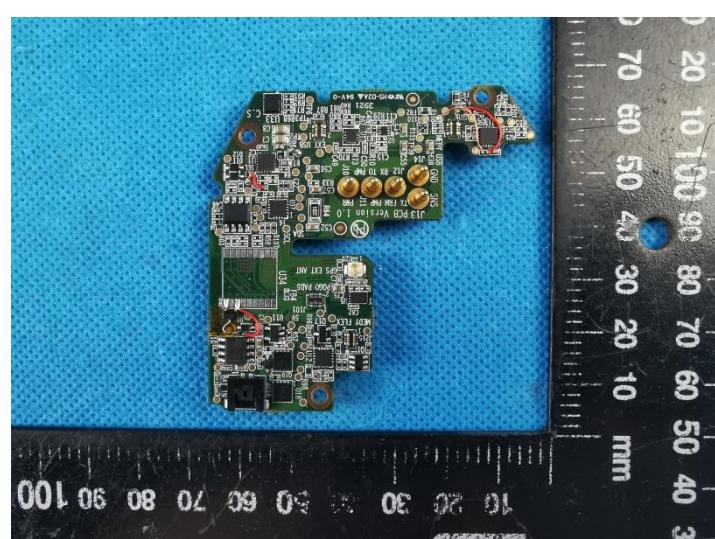
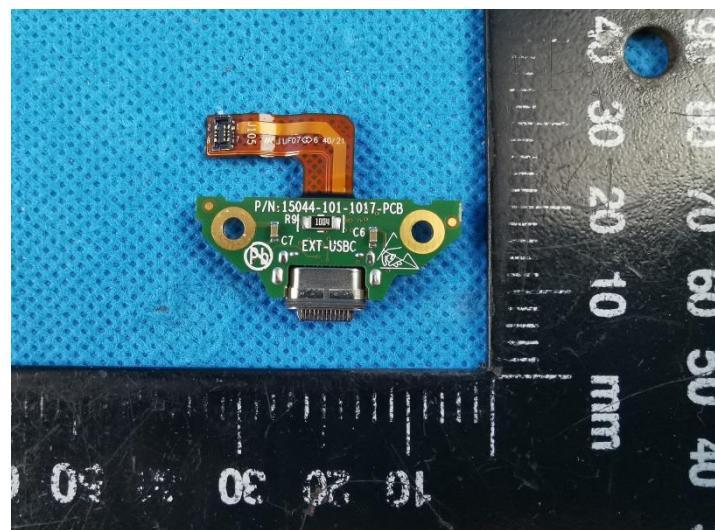


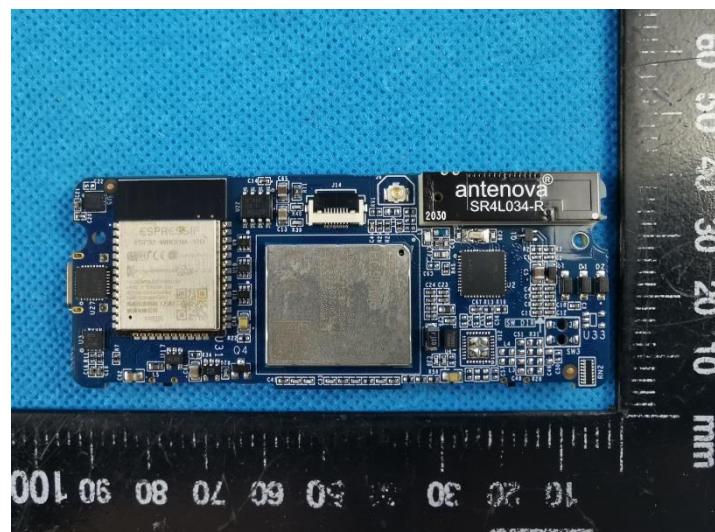
7.2. Internal photos

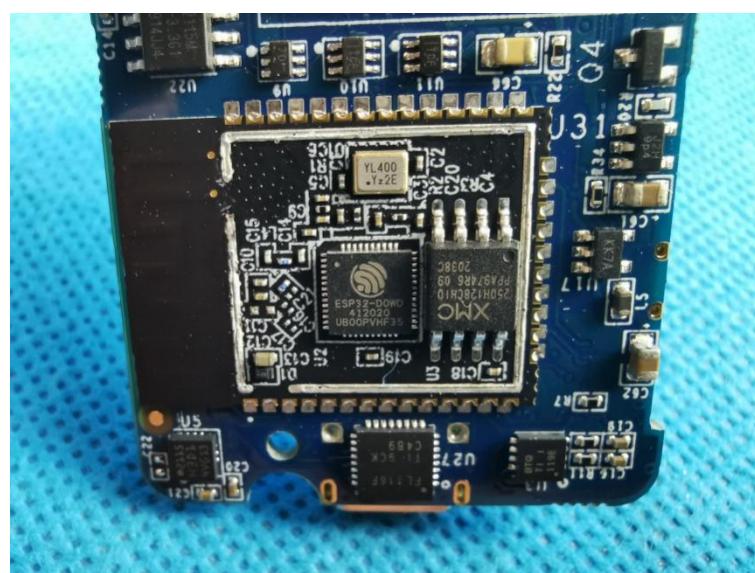
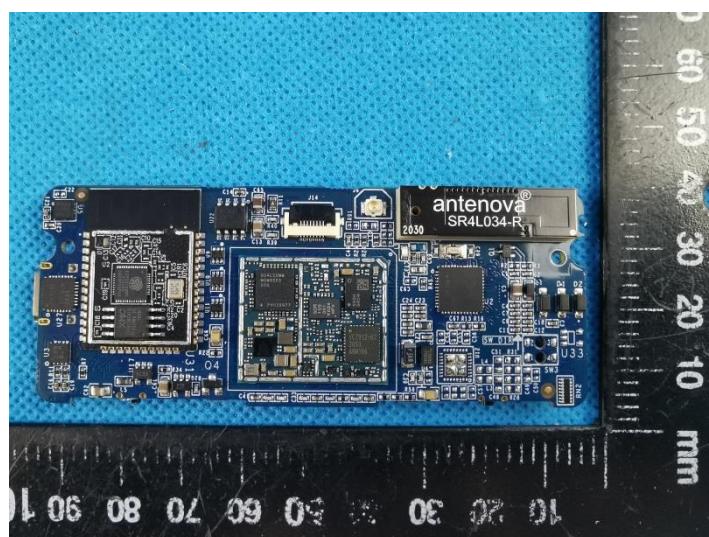
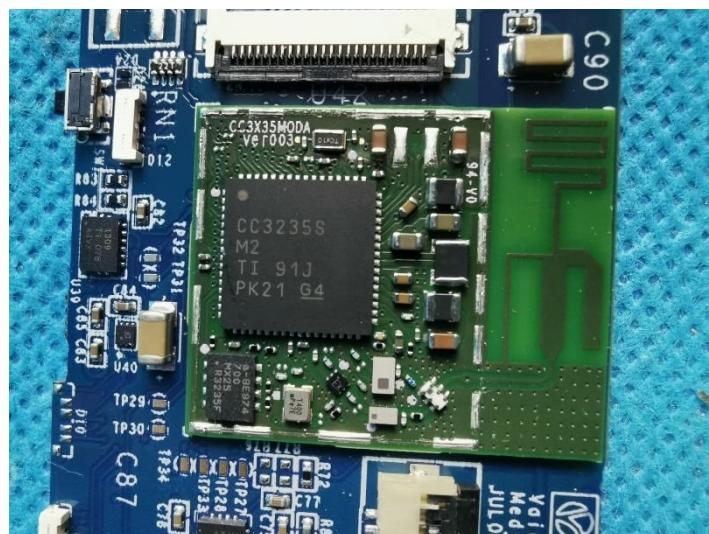


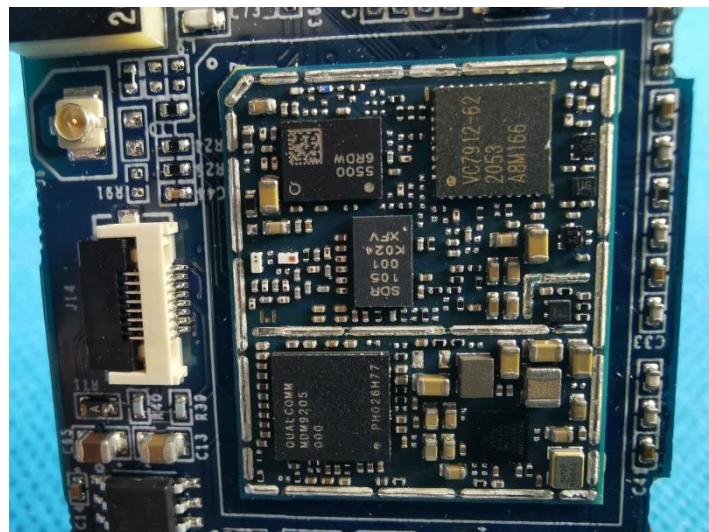














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