

# TEST REPORT

**Product Name** : PilotPano Panoramic Camera  
**Brand Mark** : Labpano  
**Model No.** : PIP221  
**Extension Model** : PIP221+  
**Report Number** : BLA-EMC-202207-A1501  
**Date of Sample Receipt** : 2022/8/1  
**Date of Test** : 2022/8/1 to 2022/9/5  
**Date of Issue** : 2022/9/5  
**Test Standard** : 47 CFR Part 15, Subpart B  
**Test Result** : Pass

Prepared for:

**Shenzhen Pisoftware Technology Co., Ltd.**  
**C11-B, TCL International E City, 1001 Zhongshanyuan Road, Nanshan District, Shenzhen City, 518057, P.R.China**

Prepared by:

**BlueAsia of Technical Services(Shenzhen) Co.,Ltd.**  
**Building C, No. 107, Shihuan Road, Shiyuan Sub-District, Baoan District, Shenzhen, Guangdong Province, China**  
**TEL: +86-755-23059481**

Compiled by: *Charlie*

Review by:

*Sueels*

Approved by: *Bluezhong*

Date:

2022/9/5



**REPORT REVISE RECORD**

<b>Version No.</b>	<b>Date</b>	<b>Description</b>
00	2022/9/5	Original

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## 1 TEST SUMMARY

Test item	Test Requirement	Test Method	Class/Severity	Result
Radiated Emissions (above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass

## 2 GENERAL INFORMATION

<b>Applicant</b>	Shenzhen Pisoftware Technology Co., Ltd.
<b>Address</b>	C11-B, TCL International E City, 1001 Zhongshanyuan Road,,Nanshan District, Shenzhen City, 518057, P.R.China
<b>Manufacturer</b>	Shenzhen Pisoftware Technology Co., Ltd.
<b>Address</b>	C11-B, TCL International E City, 1001 Zhongshanyuan Road, Nanshan District, Shenzhen City, 518057, P.R.China
<b>Factory</b>	SHENZHEN AONI ELECTRONIC CO,LTD
<b>Address</b>	2F、3F、6F、7F、The half laye of 8F、9F,Honghui Industrial Park,2nd Liuxian Road,Xinan street,Baoan District,Shenzhen
<b>Product Name</b>	PilotPano Panoramic Camera
<b>Test Model No.</b>	PIP221
<b>Extension Model</b>	PIP221+
<b>Remark</b>	All above models are identical in the same PCB layout, interior structure and electrical circuits. The differences are model name for commercial purpose.

## 3 GENERAL DESCRIPTION OF E.U.T.

<b>Hardware Version</b>	N/A
<b>Software Version</b>	N/A
<b>Power Supply</b>	Rechargeable Li-ion polymer Battery DC3.8V

#### 4 TEST MODE

TEST MODE	TEST MODE DESCRIPTION
Camera +AC adapte	Keep the EUT on with the camera working and camera +AC adapte
TF card+camera	EUT keeps recording function and stores data in TF card
TF card+video	EUT keeps video playback and transmits data with TF card
Operation(BT)	Put the EUT in wireless working mode
Remark:Only the data of the worst mode would be recorded in this report.	

#### 5 MEASUREMENT UNCERTAINTY

Parameter	Expanded Uncertainty (Confidence of 95%)
Radiated Emission(9kHz-30MHz)	±4.34dB
Radiated Emission(30Mz-1000MHz)	±4.24dB
Radiated Emission(1GHz-18GHz)	±4.68dB
AC Power Line Conducted Emission(150kHz-30MHz)	±3.45dB

## 6 DESCRIPTION OF SUPPORT UNIT

Device Type	Manufacturer	Model Name	Serial No.	Remark
AC Adapter	UGREEN	CD112	N/A	N/A

## 7 LABORATORY LOCATION

All tests were performed at:  
BlueAsia of Technical Services(Shenzhen) Co., Ltd.  
Building C, No. 107, Shihuan Road, Shiyuan Sub-District, Baoan District, Shenzhen, Guangdong Province,  
China  
Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673  
No tests were sub-contracted.

## 8 TEST INSTRUMENTS LIST

Test Equipment Of Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Chamber	SKET	966	N/A	10/11/2020	9/11/2023
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Horn Antenna	Schwarzbeck	9120D	01892 P:00331	26/9/2020	25/9/2022
Amplifier	SKET	LNPA-0118-45	N/A	24/9/2021	23/9/2022
EMI software	EZ	EZ-EMC	N/A	N/A	N/A

Test Equipment Of Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Chamber	SKET	966	N/A	10/11/2020	9/11/2023
Receiver	R&S	ESR7	101199	24/9/2021	23/9/2022
EMI software	EZ	EZ-EMC	N/A	N/A	N/A
broadband Antenna	Schwarzbeck	VULB9168	00836 P:00227	26/9/2020	25/9/2022

Test Equipment Of Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Shield room	SKET	833	N/A	25/11/2020	24/11/2023
Receiver	R&S	ESPI3	101082	24/9/2021	23/9/2022
LISN	R&S	ENV216	3560.6550.15	24/9/2021	23/9/2022
LISN	AT	AT166-2	AKK1806000003	26/9/2021	25/9/2022
EMI software	EZ	EZ-EMC	N/A	N/A	N/A



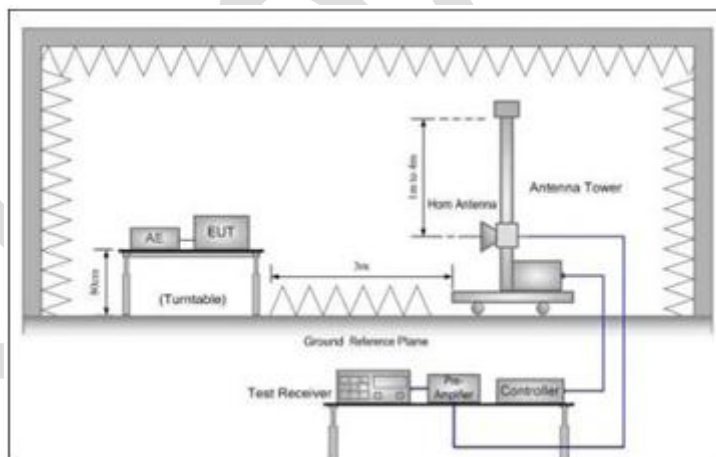
## 9 RADIATED EMISSIONS (ABOVE 1GHZ)

<b>Test Standard</b>	47 CFR Part 15, Subpart B
<b>Test Method</b>	ANSI C63.4:2014
<b>Test Mode (Pre-Scan)</b>	Camera +AC adapte; TF card+camera; TF card+video; Operation(BT)
<b>Test Mode (Final Test)</b>	Operation(BT)
<b>Tester</b>	Charlie
<b>Temperature</b>	25°C
<b>Humidity</b>	60%

### 9.1 LIMITS

<b>Frequency Range</b>	<b>Limit</b>
Above 1GHz	74(dB $\mu$ V/m) peak, 54(dB $\mu$ V/m) average

### 9.2 BLOCK DIAGRAM OF TEST SETUP

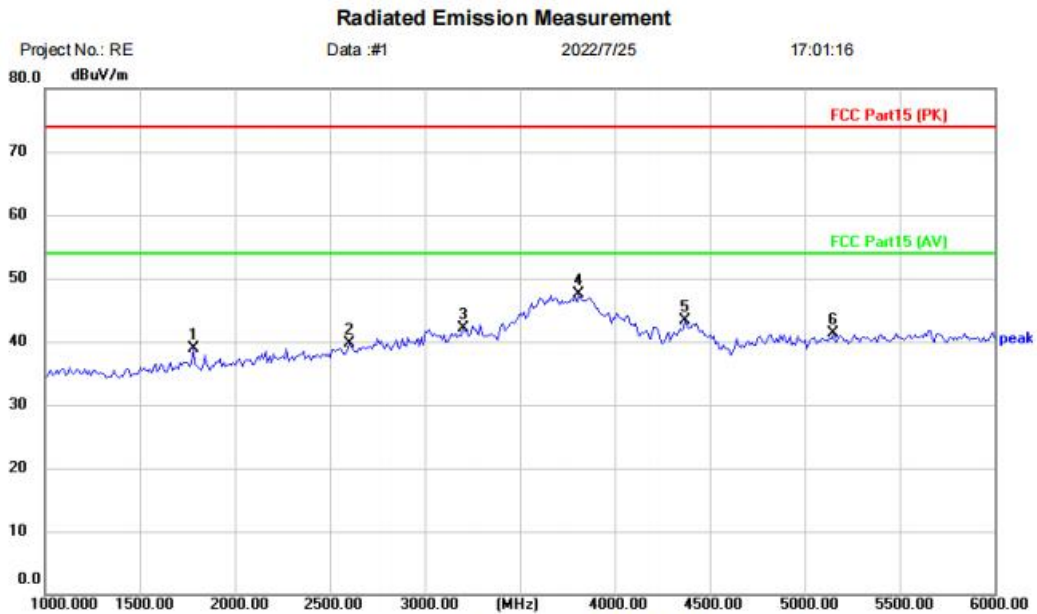


### 9.3 PROCEDURE

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

### 9.4 TEST DATA

[TestMode: Operation(BT)]; [Polarity: Horizontal]



Site:      Polarization: **Horizontal**      Temperature: (C)  
 Limit: FCC Part15 (PK)      Power:      Humidity: %RH  
 EUT: panoramic camera  
 M/N: Pilot pano  
 Mode: BT MODE  
 Note:

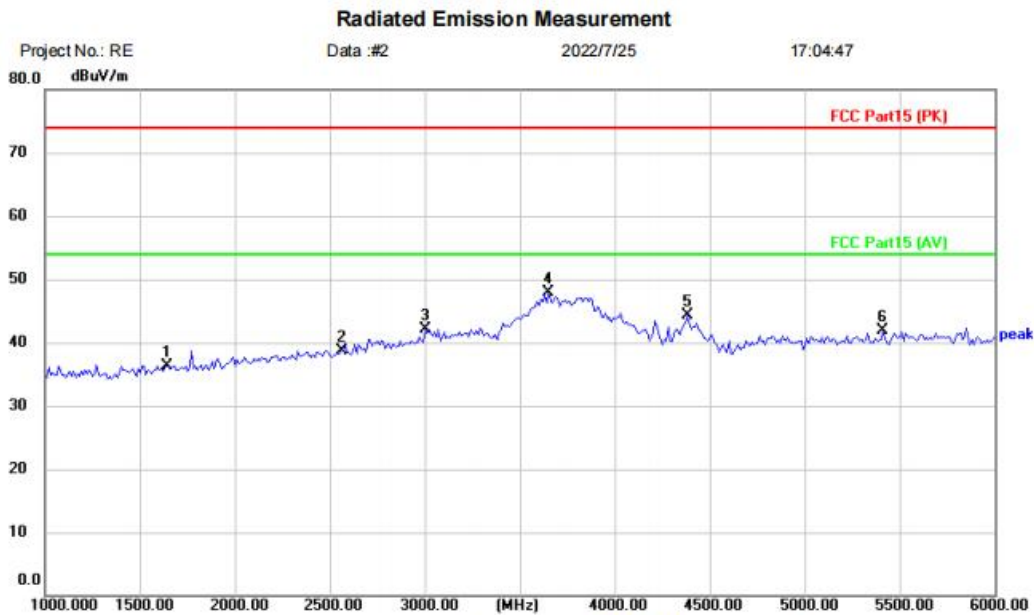
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		1780.000	45.42	-6.53	38.89	74.00	-35.11	peak	
2		2600.000	42.14	-2.50	39.64	74.00	-34.36	peak	
3		3200.000	42.85	-0.68	42.17	74.00	-31.83	peak	
4	*	3810.000	41.63	5.89	47.52	74.00	-26.48	peak	
5		4370.000	40.82	2.45	43.27	74.00	-30.73	peak	
6		5150.000	40.12	1.26	41.38	74.00	-32.62	peak	

\*:Maximum data    x:Over limit    !:over margin

(Reference Only)

**Test Result: Pass**

[TestMode: Operation(BT)]; [Polarity: Vertical]



Site:      Polarization: **Vertical**      Temperature: (C)  
 Limit: FCC Part15 (PK)      Power:      Humidity: %RH  
 EUT: panoramic camera  
 M/N: Pilot pano  
 Mode: BT MODE  
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		1640.000	43.26	-6.86	36.40	74.00	-37.60	peak	
2		2560.000	41.54	-2.74	38.80	74.00	-35.20	peak	
3		3000.000	42.92	-0.79	42.13	74.00	-31.87	peak	
4	*	3650.000	41.72	6.09	47.81	74.00	-26.19	peak	
5		4380.000	41.81	2.46	44.27	74.00	-29.73	peak	
6		5410.000	40.28	1.66	41.94	74.00	-32.06	peak	

\*:Maximum data    x:Over limit    !:over margin

(Reference Only)

**Test Result: Pass**

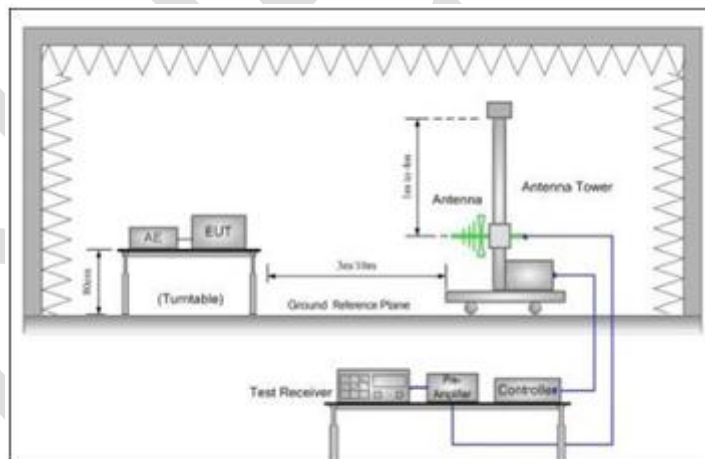
## 10 RADIATED EMISSIONS (30MHZ-1GHZ)

Test Standard	47 CFR Part 15, Subpart B
Test Method	ANSI C63.4:2014
Test Mode (Pre-Scan)	Camera +AC adapte; TF card+camera; TF card+video; Operation(BT)
Test Mode (Final Test)	Camera +AC adapte
Tester	Charlie
Temperature	25°C
Humidity	60%

### 10.1 LIMITS

Frequency Range	Limit
30MHz -88MHz	40.0(dB $\mu$ V/m) quasi-peak
88MHz-216MHz	43.5(dB $\mu$ V/m) quasi-peak
216MHz-960MHz	46.0(dB $\mu$ V/m) quasi-peak
960MHz-1000MHz	54.0(dB $\mu$ V/m) quasi-peak

### 10.2 BLOCK DIAGRAM OF TEST SETUP

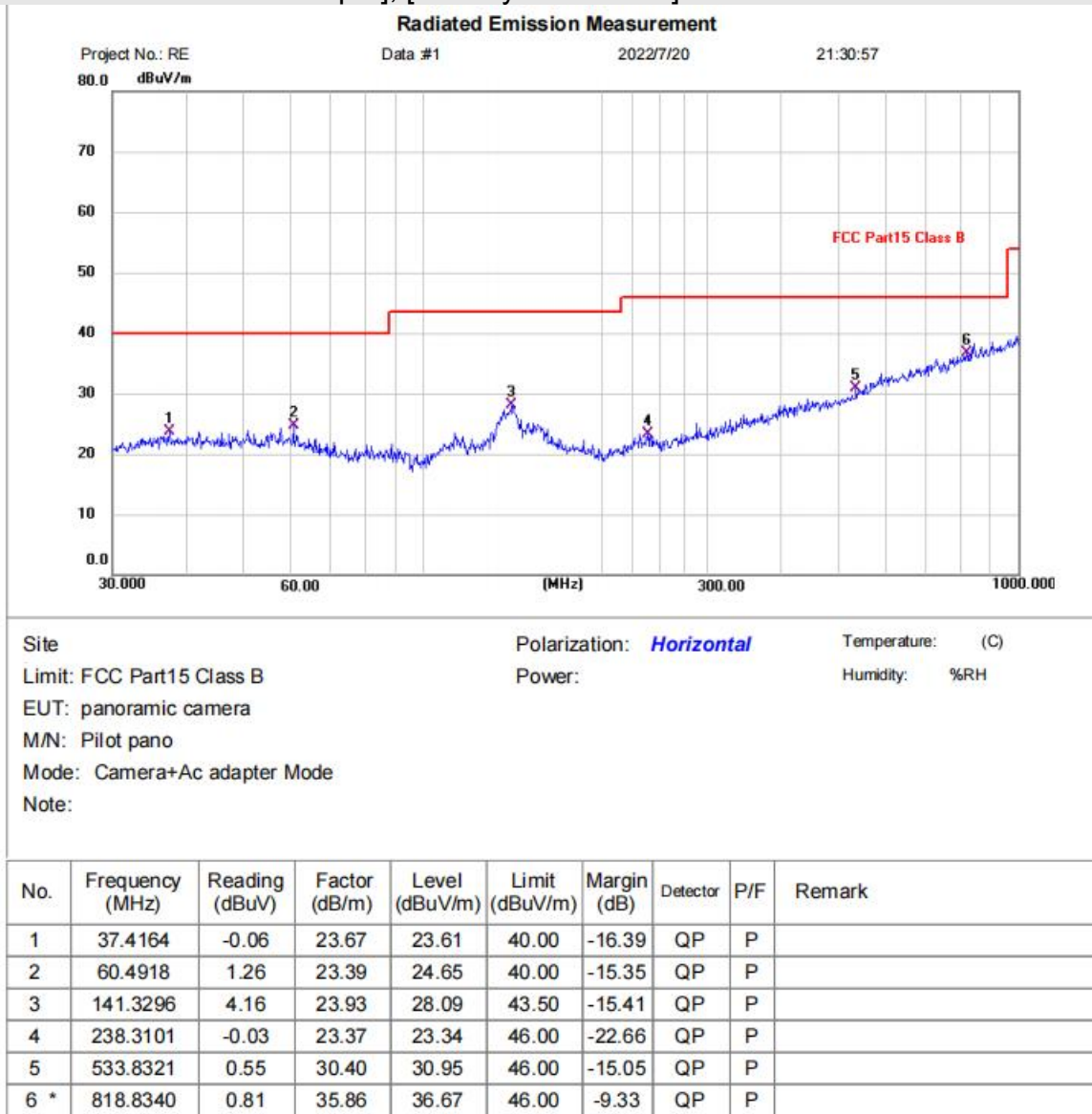


### 10.3 PROCEDURE

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

### 10.4 TEST DATA

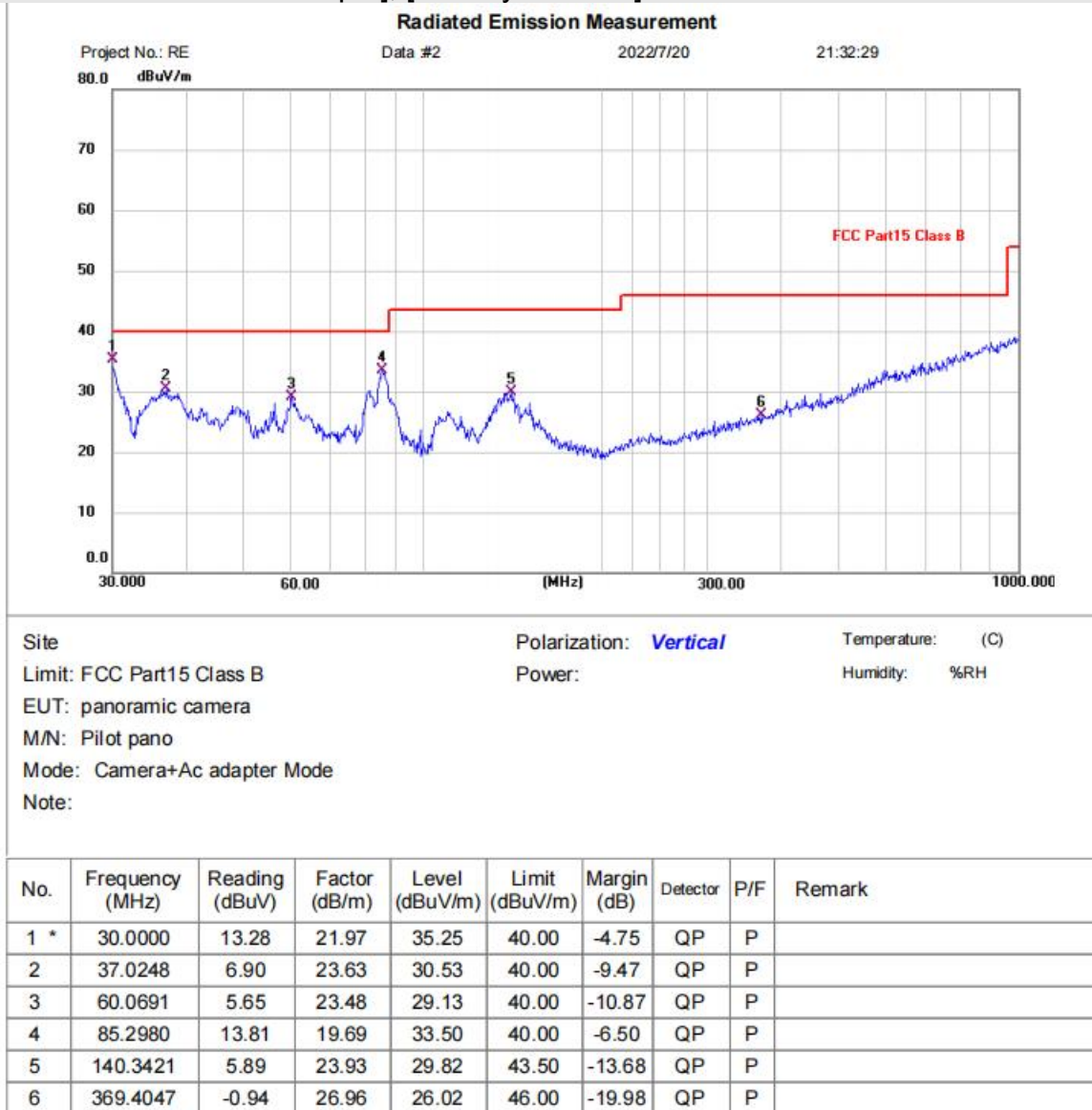
[TestMode: camera +AC adapte]; [Polarity: Horizontal]



\*:Maximum data    x:Over limit    !:over margin

**Test Result: Pass**

[TestMode: camera +AC adapte]; [Polarity: Vertical]



\*:Maximum data    x:Over limit    !:over margin

**Test Result: Pass**

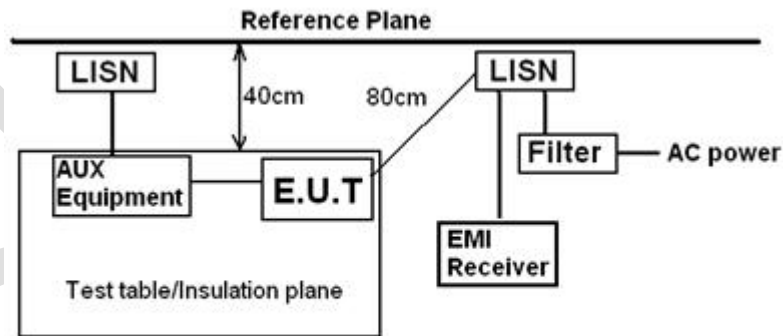
## 11 CONDUCTED EMISSIONS AT MAINS TERMINALS (150KHZ-30MHZ)

Test Standard	47 CFR Part 15, Subpart B
Test Method	ANSI C63.4:2014
Test Mode (Pre-Scan)	Camera +AC adapte; TF card+camera; TF card+video; Operation(BT)
Test Mode (Final Test)	Camera +AC adapte
Tester	Charlie
Temperature	25°C
Humidity	60%

### 11.1 LIMITS

Frequency Range	Limit
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average

### 11.2 BLOCK DIAGRAM OF TEST SETUP



Remark  
 E.U.T: Equipment Under Test  
 LISN: Line Impedance Stabilization Network  
 Test table height=0.8m

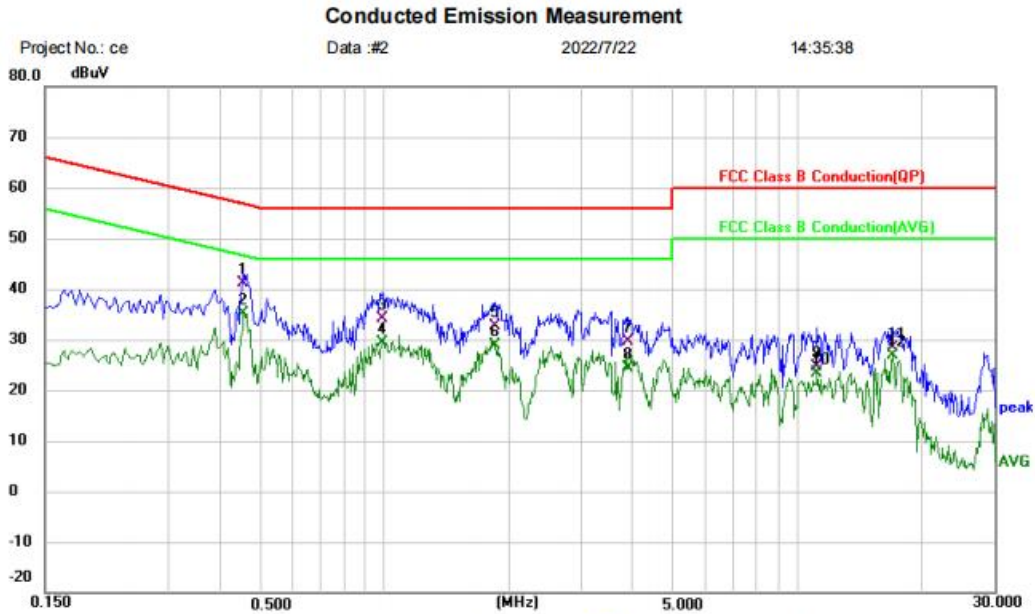
### 11.3 PROCEDURE

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.





[TestMode: camera +AC adapte]; [Line: Nutral] ; [Power: 1200V/60Hz]



Site	Phase: <i>N</i>	Temperature: (C)
Limit: FCC Class B Conduction(QP)	Power:	Humidity: %RH
EUT: panoramic camera		
M/N: pilot pano		
Mode: Camera+Ac adapter Mode		
Note:		

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.4540	31.30	9.79	41.09	56.80	-15.71	QP	
2	*	0.4540	25.41	9.79	35.20	46.80	-11.60	AVG	
3		0.9860	24.27	9.84	34.11	56.00	-21.89	QP	
4		0.9860	19.58	9.84	29.42	46.00	-16.58	AVG	
5		1.8580	22.73	9.86	32.59	56.00	-23.41	QP	
6		1.8580	19.01	9.86	28.87	46.00	-17.13	AVG	
7		3.8900	19.68	9.91	29.59	56.00	-26.41	QP	
8		3.8900	14.41	9.91	24.32	46.00	-21.68	AVG	
9		11.1820	14.51	10.19	24.70	60.00	-35.30	QP	
10		11.1820	13.07	10.19	23.26	50.00	-26.74	AVG	
11		17.0540	18.02	10.35	28.37	60.00	-31.63	QP	
12		17.0540	16.63	10.35	26.98	50.00	-23.02	AVG	

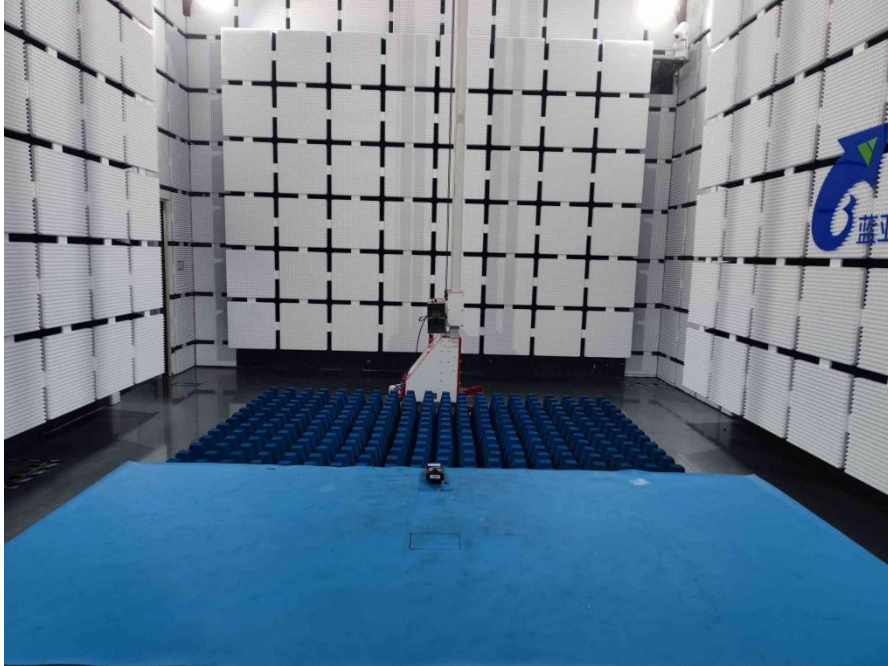
\*:Maximum data    x:Over limit    !:over margin

(Reference Only)

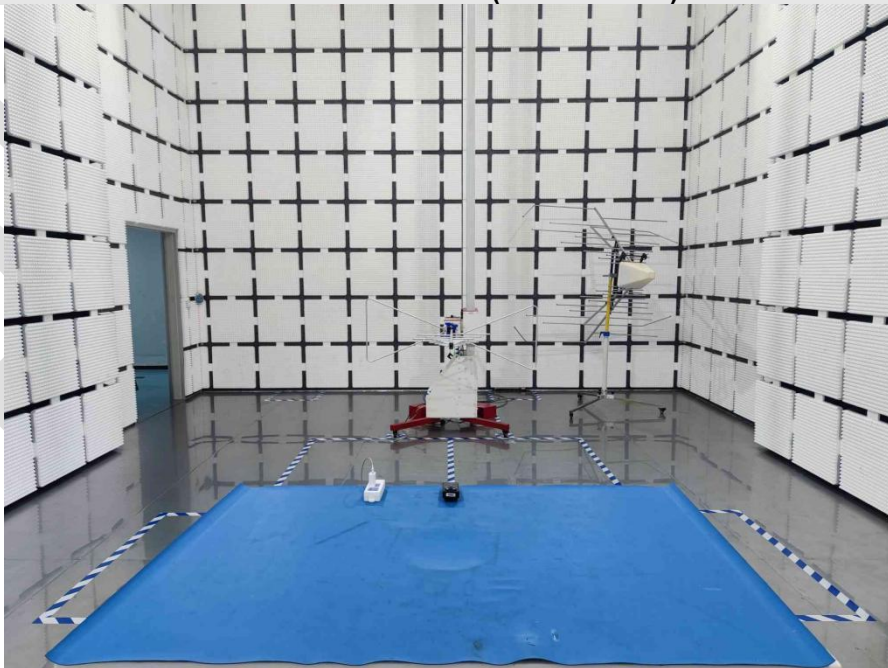
**Test Result: Pass**

## APPENDIX A: PHOTOGRAPHS OF TEST SETUP

**Radiated Emissions (above 1GHz)**



**Radiated Emissions (30MHz-1GHz)**

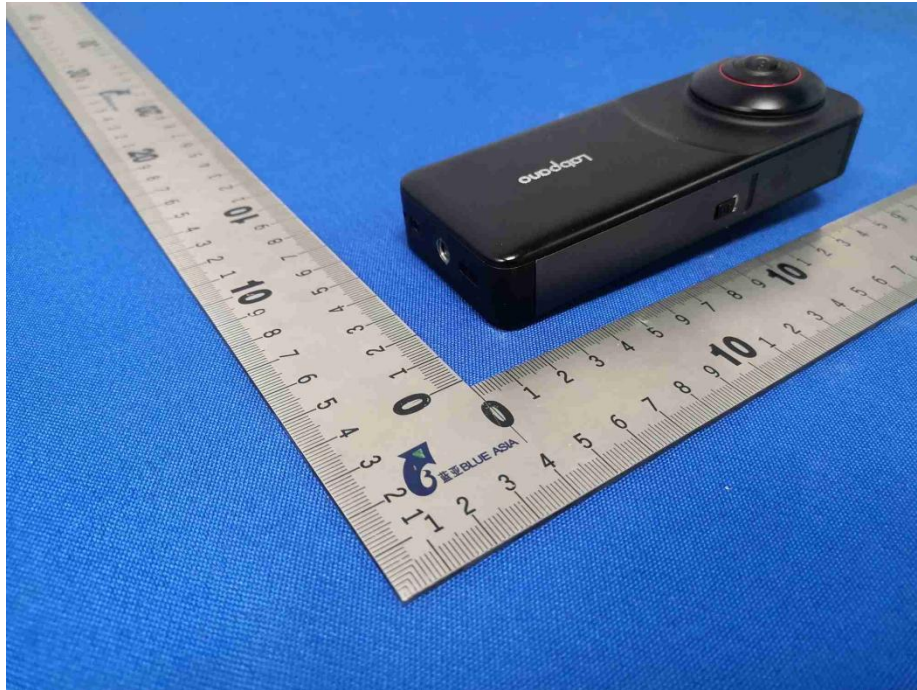


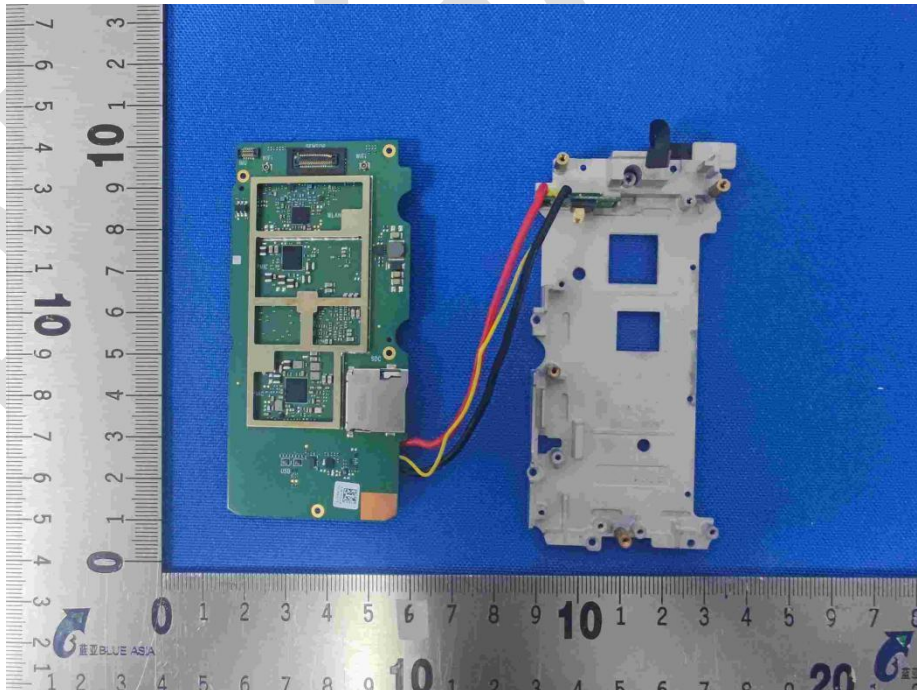
**Conducted Emissions at Mains Terminals (150kHz-30MHz)**

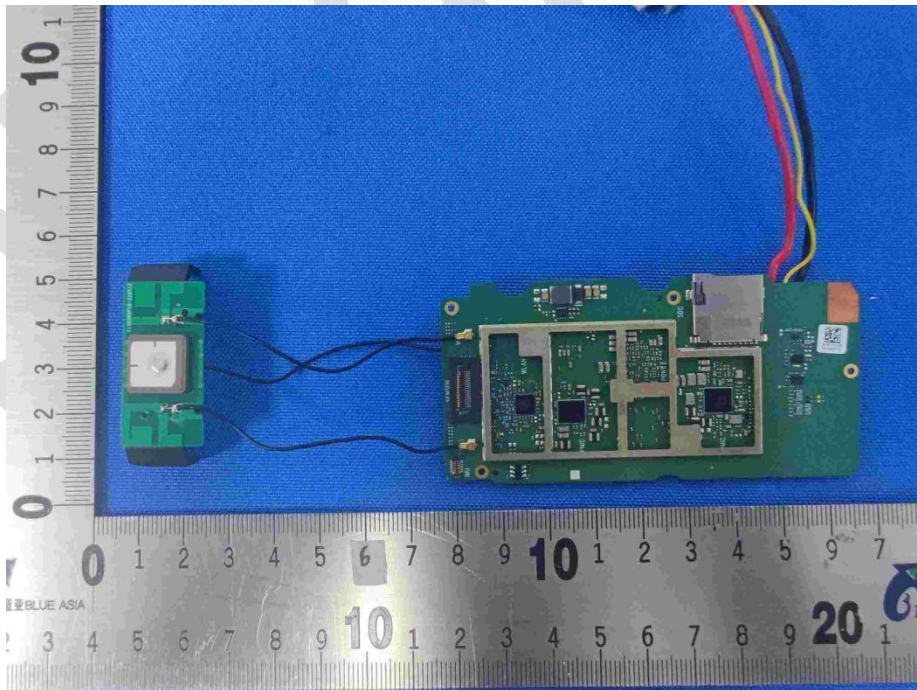
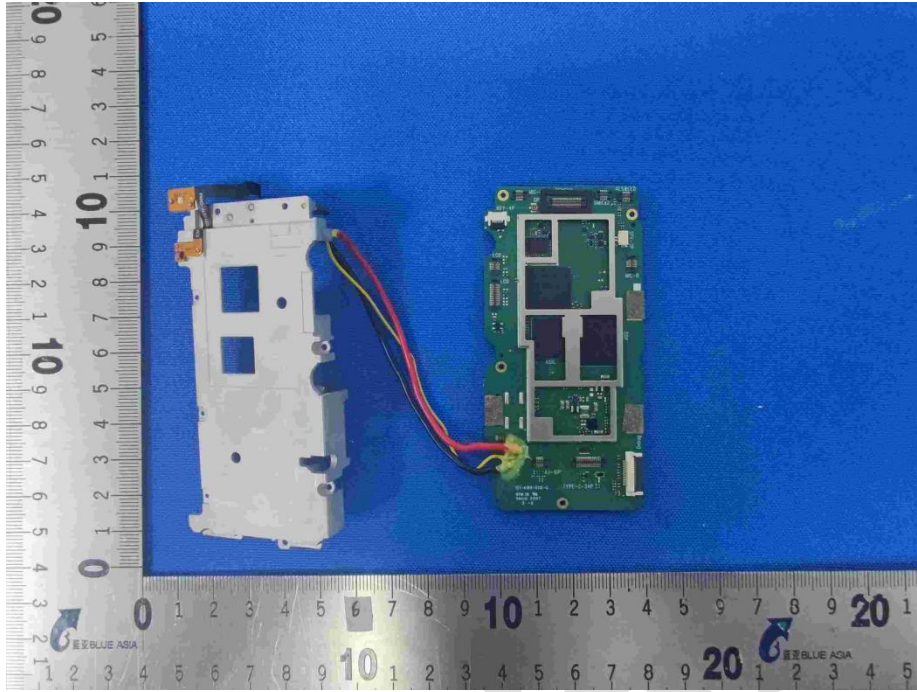


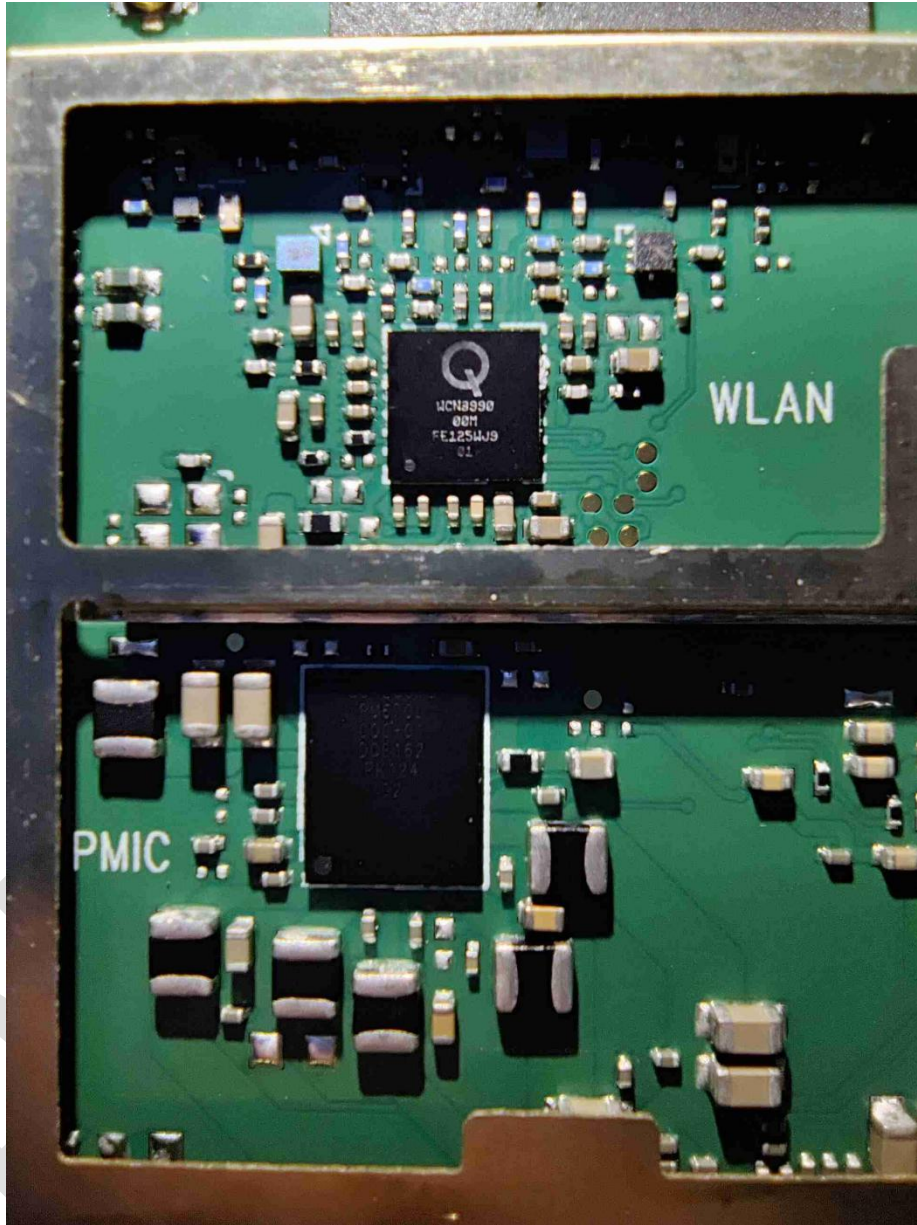
### APPENDIX B: PHOTOGRAPHS OF EUT















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----END OF REPORT----

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