

FCC PART 15E TEST REPORT FOR CERTIFICATION
On Behalf of

HUNAN GREATWALL COMPUTER STSTEM CO., LTD

10.1" Android Tablet

Model Number: TBBVNC100005208

Additional Model: ONA19TB003, 100005208

FCC ID: 2APUQW1026

Prepared for:	HUNAN GREATWALL COMPUTER STSTEM CO., LTD
	Hunan GreatWall Industrial Park, Tianyi Science and Technology City,
	Xiangyun Moddle Road, Tianyuan District, Zhuzhou, Hunan Province
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
Tel: 86-769-83081888-808	

Report Number:	ESTE-R1901047-5
Date of Test:	Sep. 03~20, 2019
Date of Report:	Sep. 24, 2019

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EST Technology Co., Ltd.

Applicant:	HUNAN GREATWALL COMPUTER STSTEM CO., LTD		
Address:	Hunan GreatWall Industrial Park, Tianyi Science and Technology City, Xiangyun Moddle Road, Tianyuan District, Zhuzhou, Hunan Province		
Manufacturer:	HUNAN GREATWALL COMPUTER STSTEM CO., LTD		
Address:	Hunan GreatWall Industrial Park, Tianyi Science and Technology City, Xiangyun Moddle Road, Tianyuan District, Zhuzhou, Hunan Province		
E.U.T:	8" Android Tablet		
Model Number:	TBBVNC100005208		
Additional Model:	ONA19TB003, 100005208 Note: only the Model Number, PCB and screen are different, the others are the same.		
Power Supply:	DC 5V From Adapter Input AC 100~240V, 50/60Hz, 0.3A DC 3.7V From battery		
Test Voltage:	DC 5V From Adapter Input AC 120V/60Hz, 0.3A DC 5V From Adapter Input AC 240V/50Hz, 0.3A		
Trade Name:	onn.	Serial No.:	-----
Date of Receipt:	Sep. 03, 2019	Date of Test:	Sep. 03~20, 2019
Test Specification:	FCC Rules and Regulations Part 15 Subpart E:2018 ANSI C63.10:2013		
Test Result:	The device described above is tested by EST Technology Co., Ltd. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC Rules and Regulations Part 15 Subpart E requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd. Date: Sep. 24, 2019		
Prepared by:	Reviewed by:	Approved by:	
Ring			
Ring / Assistant	Tony / Engineer	Iceman Hu / Manager	
Other Aspects:	This report base on the previous report with report number: ESTE-R1901047-1, a new model number has been added to this report. Because the added model number electrical and mechanical self has not changed, only the PCB have been Changed, so just re-tested Radiated Emissions (30-1000Mhz), other test item needn't re-tested. (IC model: SUTJ96VZZ7D6EKKFB-107FT(PA053-107BT); (EMMC: MEMA016G 16GB 1 153-FBGA ISOCOM); (DDRIII: L5TC4G83AFR-PBA 512M FBGA78) Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested <i>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 EST Technology Co., Ltd.</i>		

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Product Name	:	10.1" Android Tablet
FCC ID	:	2APUQW1026
Model Number	:	TBBVNC100005208
Operation frequency	:	UNII Band I: IEEE 802.11a: 5180 ~ 5240MHz; IEEE 802.11n HT20: 5180 ~ 5240MHz; IEEE 802.11n HT40: 5190 ~ 5230MHz; UNII Band II: IEEE 802.11a: 5260 ~ 5320MHz; IEEE 802.11n HT20: 5260 ~ 5320MHz; IEEE 802.11n HT40: 5270 ~ 5310MHz; UNII Band III: IEEE 802.11a: 5500 ~ 5700MHz; IEEE 802.11n HT20: 5500 ~ 5700MHz; IEEE 802.11n HT40: 5510 ~ 5670MHz; UNII Band IV: IEEE 802.11a: 5745 ~ 5825MHz; IEEE 802.11n HT20: 5745 ~ 5825MHz; IEEE 802.11n HT40: 5755 ~ 5795MHz;
Number of channel	:	UNII Band I: IEEE 802.11a / n HT20 IEEE 802.11n HT40 UNII Band II: IEEE 802.11a / n HT20 IEEE 802.11n HT40 UNII Band III: IEEE 802.11a / n HT20 IEEE 802.11n HT40 UNII Band IV: IEEE 802.11a / n HT20 IEEE 802.11n HT40

Modulation	:	OFDM(QPSK, BPSK, 16-QAM, 64-QAM, 256-QAM)	
Transmit Data Rate	:	IEEE 802.11a: 54, 48, 36, 24, 18, 12, 9, 6Mbps; IEEE 802.11n HT20: 14.4, 28.9, 43.3, 57.8, 86.7, 115.6, 130.0, 144.4 Mbps; IEEE 802.11n HT40: 30, 60, 90, 120, 180, 240, 270, 300 Mbps;	
Channels Spacing	:	IEEE 802.11a: 20MHz; IEEE 802.11n HT20: 20MHz; IEEE 802.11n HT40: 40MHz;	
Antenna	:	Internal antenna	
		Frequency Range	Antenna
		5150~5875 MHz	1.27 dBi
		Note: Bluetooth uses Antenna 11a,b,g,n, uses Antenna	
Transmit Power	:	UNII Band I: IEEE 802.11a: 4 Channels; IEEE 802.11n HT20: 4 Channels; IEEE 802.11n HT40: 2 Channels. UNII Band II: IEEE 802.11a: 4 Channels; IEEE 802.11n HT20: 4 Channels; IEEE 802.11n HT40: 2 Channels. UNII Band III: IEEE 802.11a: 8 Channels; IEEE 802.11n HT20: 8 Channels; IEEE 802.11n HT40: 3 Channels. UNII Band IV: IEEE 802.11a: 5 Channels; IEEE 802.11n HT20: 5 Channels; IEEE 802.11n HT40: 2 Channels.	
Sample Type	:	Prototype production	

2. SUMMARY OF TEST

2.1. Test methodology.

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10. Radiated testing was performed at an antenna to EUT distance 3 meters. The tests documented in this report were performed in accordance with ANSI C63.10: 2013 and FCC CFR 47 Part 15.207, 15.209, 15.407 and FCC 14-30. Radio testing was performed according to KDB DA 02-2138, KDB 789033 D02, KDB 905462 D06.

2.2. Summary of test result

Description of Test Item	Standard	Results
99%, 6dB and 26dB Bandwidth	FCC Part 15: 407(a) FCC Part 15: 407(e)	N/A
Maximum Conducted Output Power	FCC Part 15: 407(a)	N/A
Peak Power Spectral Density	FCC Part 15: 407(a)	N/A
Radiated Spurious Emissions	FCC Part 15: 407(b)	PASS
Conducted Unwanted Emissions	FCC Part 15: 407(b)	N/A
Band Edge Measurement	FCC Part 15: 407(b)	N/A
Frequency Stability	FCC Part 15: 407(g)	N/A
Power Line Conducted Emissions	FCC Part 15: 207 FCC Part 15: 407(b)(6)	N/A
Antenna requirement	FCC Part 15: 203 FCC Part 15: 407(a)	N/A

2.3. Test Facilities

EMC Lab

: Certificated by CNAS, CHINA
Registration No.: L5288
Date of registration: November 13, 2017

Certificated by FCC, USA
Designation Number: CN1215
Test Firm Registration Number: 722932
Date of registration: November 21, 2017

Certificated by A2LA, USA
Registration No.: 4366.01
Date of registration: November 07, 2017

Certificated by Industry Canada
CAB identifier No.: CN0035
Date of registration: January 04, 2019

Certificated by VCCI, Japan
Registration No.: R-13663; C-14103
Date of registration: July 25, 2017
This Certificate is valid until: July 24, 2020

Certificated by TUV Rheinland, Germany
Registration No.: UA 50413872 0001
Date of registration: July 31, 2018

Certificated by TUV/PS, Shenzhen
Registration No.: SCN1017
Date of registration: January 27, 2011

Certificated by Intertek ETL SEMKO
Registration No.: 2011-RTL-L2-64
Date of registration: April 28, 2011

Certificated by Nemko, Hong Kong
Registration No.: 175193
Date of registration: May 4, 2011

Name of Firm : EST Technology Co., Ltd.

Site Location : Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China

2.4. Measurement uncertainty for EST Technology Co., Ltd.

Test Item	Uncertainty
Uncertainty for Conduction emission test	2.54dB
Uncertainty for Radiation Emission test (30MHz-1GHz)	3.62
Uncertainty for Radiation Emission test (1GHz to 18GHz)	4.86
Uncertainty for spurious emissions test (18GHz to 40GHz)	4.67
Uncertainty for radio frequency	7×10^{-8}
Uncertainty for conducted RF Power	0.20dB
Uncertainty for Power density test	0.26dB
Temperature	$\pm 0.6^{\circ}\text{C}$
Humidity	$\pm 4.0\%$
Volatage DC	$\pm 1.0\%$
Volatage (AC, <10KHz)	$\pm 1.5\%$

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2.5. Assistant equipment used for test

2.5.1. Router (Master)

Manufacturer : LINKSYS
 M/N : WRT3200ACM
 FCC ID : Q87-WRT3200ACM
 IC : 3839A-WRT3200ACM
 S/N : 1981060A621419
 MAC : 6038E0B87B20

2.5.2. Notebook

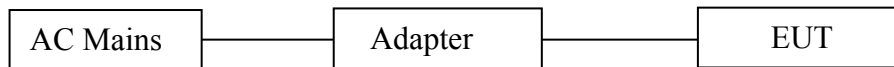
Manufacturer : DELL
 M/N : Laititude E6420
 Adapter : M/N: DA90PM111

2.5.3. Adapter

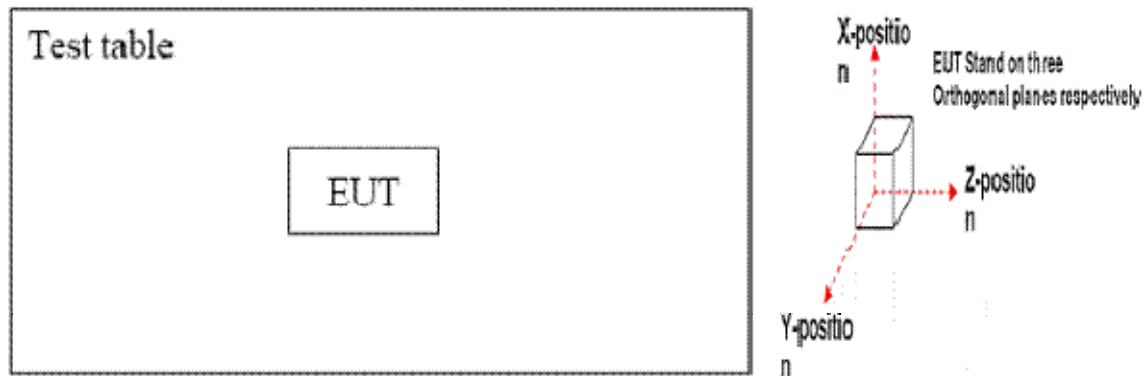
Manufacturer : onn
 M/N : BSY01J3050200U U
 Input : AC 100-240V, 50/60Hz, 0.3A
 Output : DC 5.0V, 2.0A

2.6. Block Diagram

For radiated emissions test: EUT was placed on a turn table, which is 0.8 (or 1.5) meter high above ground. EUT was set into TX test mode by software before test.



(EUT: 10.1" Android Tablet)



Note: We test X-axis, Y-axis, and Z-axis,. The Y-axis is the worst mode, so only the worst mode test data was included in the report.

2.7. Test mode

The test software was used to control EUT work in Continuous TX mode, and select test channel, wireless mode

Band	Mode	Channel	Frequency (MHz)	Data rate (Mbps)
UNII Band I	IEEE 802.11a & n HT20 VHT20: 5180-5240MHz	Low	5180	6
		Middle	5200	6
		High	5240	6
	IEEE 802.11n HT40 : 5180-5240MHz	Low	5190	13.5
		High	5230	13.5
UNII Band II	IEEE 802.11a & n HT20: 5260-5320MHz	Low	5260	6
		Middle	5300	6
		High	5320	6
	IEEE 802.11n HT40: 5270-5310MHz	Low	5270	13.5
		High	5310	13.5
UNII Band III	IEEE 802.11a & n HT20: 5500-5700MHz	Low	5500	6
		Middle	5580	6
		High	5700	6
	IEEE 802.11n HT40: 5510-5670	Low	5510	13.5
		High	5670	13.5
UNII Band IV	IEEE 802.11a & n HT20: 5745-5825MHz	Low	5745	6
		Middle	5785	6
		High	5825	6
	IEEE 802.11n HT40: 5755-5795MHz	Low	5755	13.5
		High	5795	13.5

2.8. Channel List

Band	Mode	Channel	Frequency (MHz)	
UNII Band I	IEEE 802.11a & n HT20: 5180-5240MHz	36	5180	
		40	5200	
		44	5220	
		48	5240	
	IEEE 802.11n HT40: 5180-5240MHz	38	5190	
		46	5230	
UNII Band II	IEEE 802.11a & n HT20: 5260-5320MHz	52	5260	
		56	5280	
		60	5300	
		64	5320	
	IEEE 802.11n HT40: 5270-5310MHz	54	5270	
		62	5310	
UNII Band III	IEEE 802.11a & n HT20: 5500-5700MHz	100	5500	
		104	5520	
		108	5540	
		112	5560	
		116	5580	
		132	5660	
		136	5680	
		140	5700	
	IEEE 802.11n HT40: 5510-5670	102	5510	
		110	5550	
		134	5670	
UNII Band IV	IEEE 802.11a & n HT20: 5745-5825MHz	149	5745	
		153	5765	
		157	5785	
		161	5805	
		165	5825	
	IEEE 802.11n HT40: 5755-5795MHz	151	5755	
		159	5795	

2.9. Test Equipment For EST Technology Co., Ltd.

2.9.1. For conducted emission test

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESHS30	832354	CEPREI	June 14,19	1 Year
Artificial Mains Network	Rohde & Schwarz	ENV216	101260	CEPREI	June 14,19	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	101100	CEPREI	June 14,19	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

2.9.2. For radiated emission test(9 kHz-30MHz)

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	101780	CEPREI	June 14,19	1 Year
Active Loop Antenna	SCHWARZB ECK	FMZB 1519B	1519B-088	N/A	June 14,19	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

2.9.3. For radiated emissions test (30-1000MHz)

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	101780	CEPREI	June 14,19	1 Year
Bilog Antenna	Teseq	CBL 6111D	27090	CEPREI	June 14,19	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

2.9.4. For radiated emission test(above 1GHz)

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
Horn Antenna	SCHWARZB ECK	BBHA 9120 D	BBHA9120D1002	CEPREI	June 14,19	1 Year
Horn Antenna	SCHWARZB ECK	BBHA9170	BBHA9170242	CEPREI	June 14,19	1Year
Signal Amplifier	SCHWARZB ECK	BBV9718	9718-212	CEPREI	June 14,19	1 Year
Spectrum Analyzer	Rohde &Schwarz	FSV	103173	CEPREI	June 14,19	1 Year
PSA Series Spertrum Analyzer	Agilent	E4447A	MY50180031	CEPREI	June 14,19	1Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

2.9.5. For DFS and connect EUT antenna terminal test

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
TS 8997	Rohde & Schwarz	/	/	/	/	/
Open Switch and Control Unit	Rohde & Schwarz	OSP-B157WB	101309	CEPREI	June 14,19	1 Year
Signal and Spectrum Analyzer	Rohde & Schwarz	FSV	103173	CEPREI	June 14,19	1 Year
Signal Generator	Rohde & Schwarz	SMB100A	108752	CEPREI	June 14,19	1 Year
Vector Signal Generator	Rohde & Schwarz	SMBV100A	260753	CEPREI	June 14,19	1 Year
Test Software	Rohde & Schwarz	WMS32	V10.40.00	N/A	N/A	N/A
Spectrum Analyzer	Agilent	E4408B	MY44211139	CEPREI	June 14,19	1 Year
Temperature controller	DK	DK70A	006562	Tiansu	June 14,19	1 Year
AC Source	CHANGJIAN	3KV	EST215-007	N/A	N/A	N/A

2.10. Test Data

9 kHz – 30 MHz

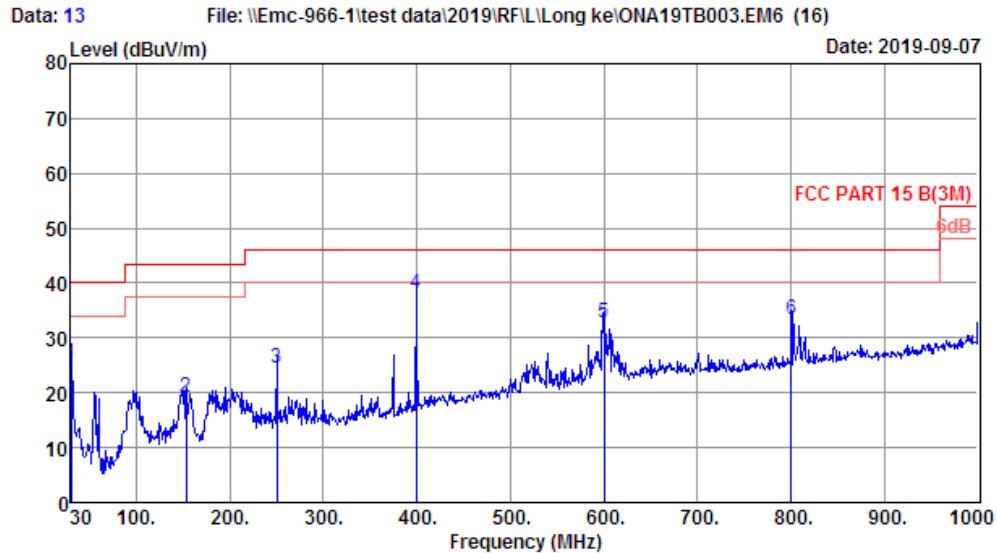
Pass

Note: The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

30 MHz – 1000 MHz

EST Technology

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Site no. : 1# 966 Chamber Data no. : 13
 Dis. / Ant. : 3m 37062 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B(3M)
 Env. / Ins. : Temp:26.9';Humi:61%;Press:101.52kPa
 Engineer : TEA
 EUT : 10.1" Android Tablet
 Power : DC 5V From Adapter Input AC 120V/60Hz
 M/N : TBBVNC100005208
 Test Mode : TX Mode

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.00	18.40	0.14	6.99	25.53	40.00	14.47	QP
2	153.19	11.42	1.10	6.59	19.11	43.50	24.39	QP
3	250.19	12.40	1.62	10.44	24.46	46.00	21.54	QP
4	399.57	16.20	2.14	19.69	38.03	46.00	7.97	QP
5	600.36	20.40	2.97	9.46	32.83	46.00	13.17	QP
6	800.18	22.90	3.58	6.74	33.22	46.00	12.78	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

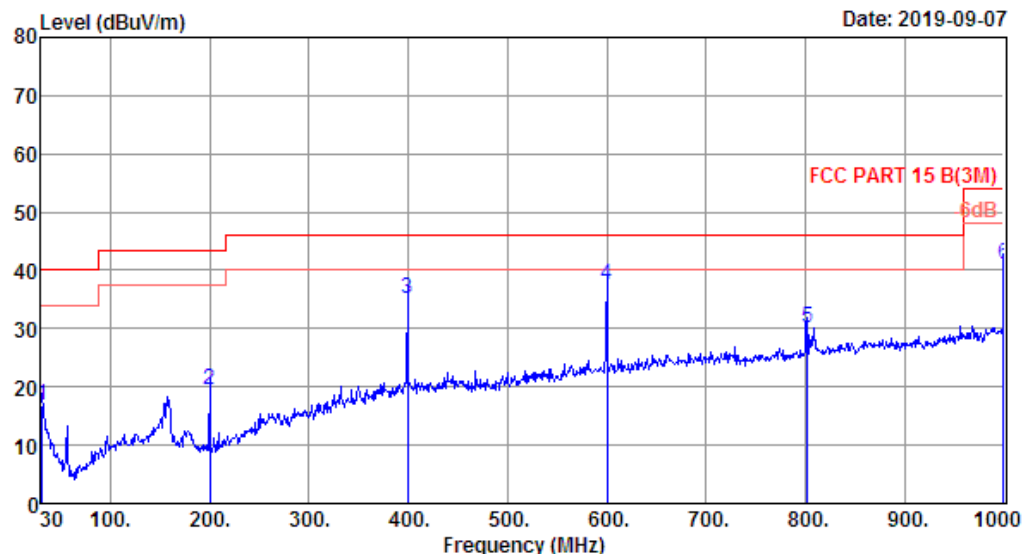
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Fax: +86-769-83081878

Data: 14

File: \\Emc-966-1\test data\2019\RFIL\Long ke\ONA19TB003.EM6 (16)

Date: 2019-09-07



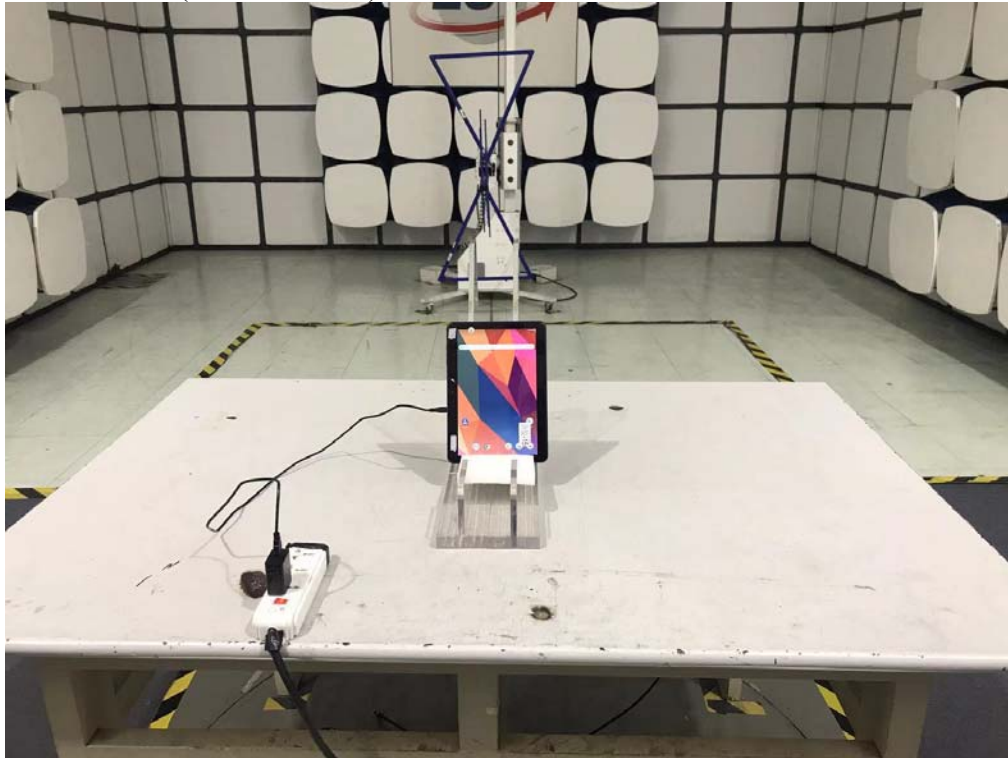
Site no. : 1# 966 Chamber Data no. : 14
 Dis. / Ant. : 3m 37062 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B(3M)
 Env. / Ins. : Temp:26.9'; Humi:61%; Press:101.52kPa
 Engineer : TEA
 EUT : 10.1" Android Tablet
 Power : DC 5V From Adapter Input AC 120V/60Hz
 M/N : TBBVNC100005208
 Test Mode : TX Mode

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.97	17.60	0.14	-0.90	16.84	40.00	23.16	QP
2	199.75	8.40	1.28	9.79	19.47	43.50	24.03	QP
3	399.57	16.20	2.14	16.73	35.07	46.00	10.93	QP
4	600.36	20.40	2.97	14.03	37.40	46.00	8.60	QP
5	802.12	22.96	3.59	3.47	30.02	46.00	15.98	QP
6	1000.00	25.80	4.31	10.94	41.05	54.00	12.95	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

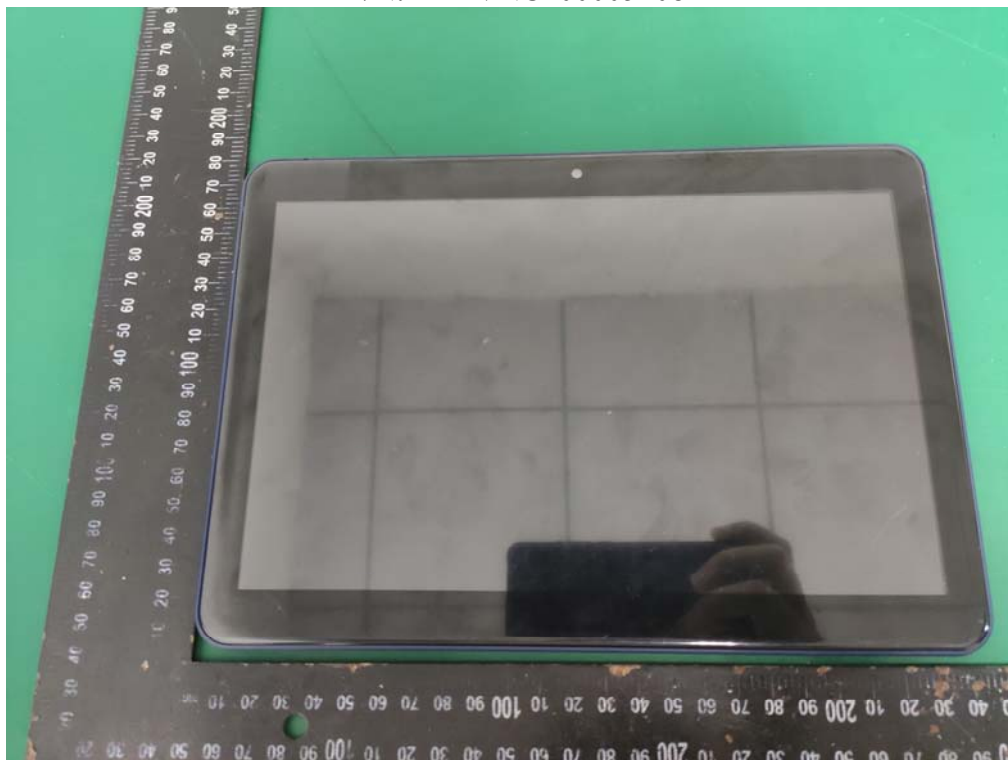
3. TEST SETUP PHOTO

Radiated Test (30-1000 MHz)



4. PHOTO OF EUT

External Photos
M/N: TBBVNC100005208



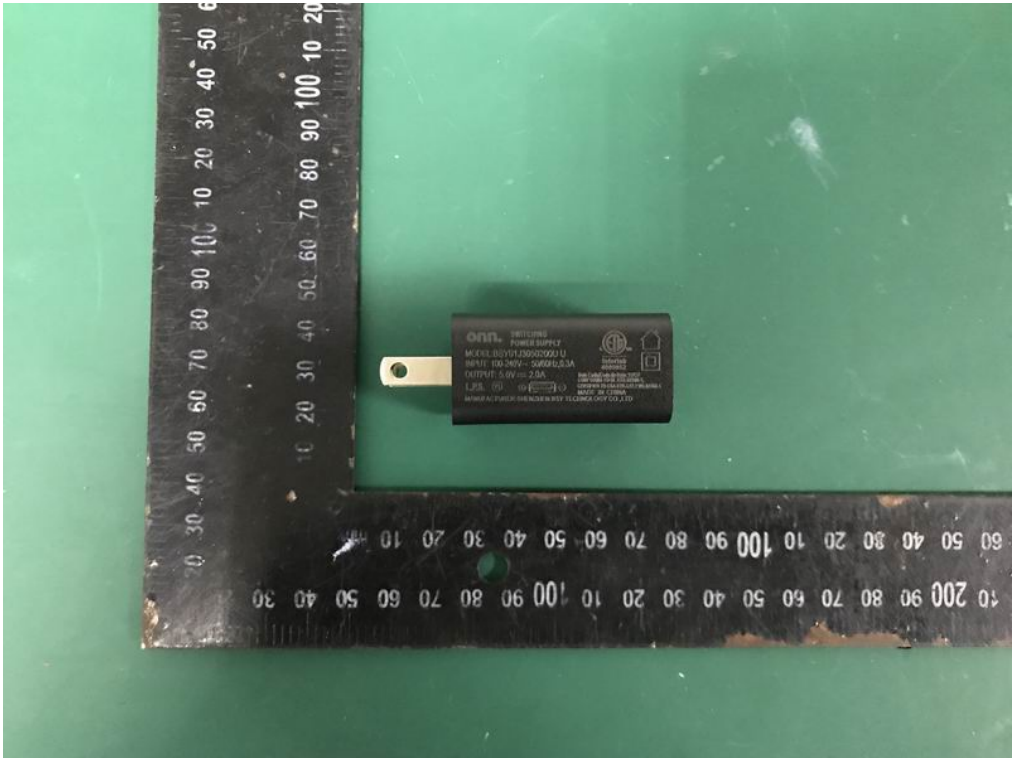
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M/N: TBBVNC100005208



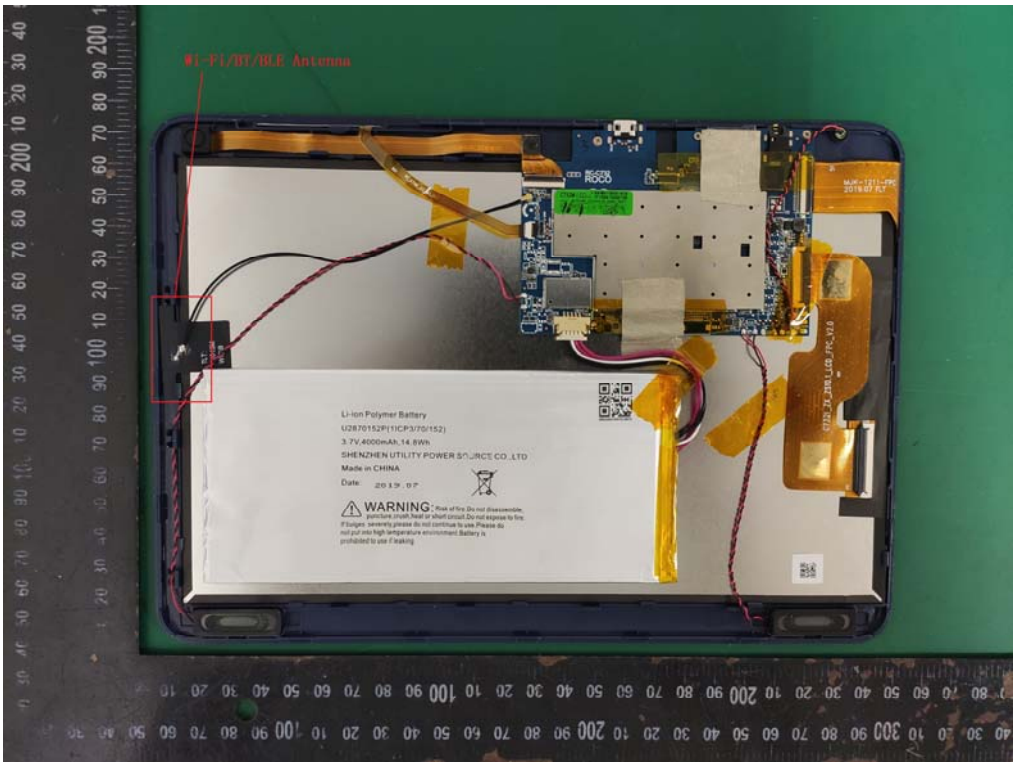
External Photos
M/N: TBBVNC100005208



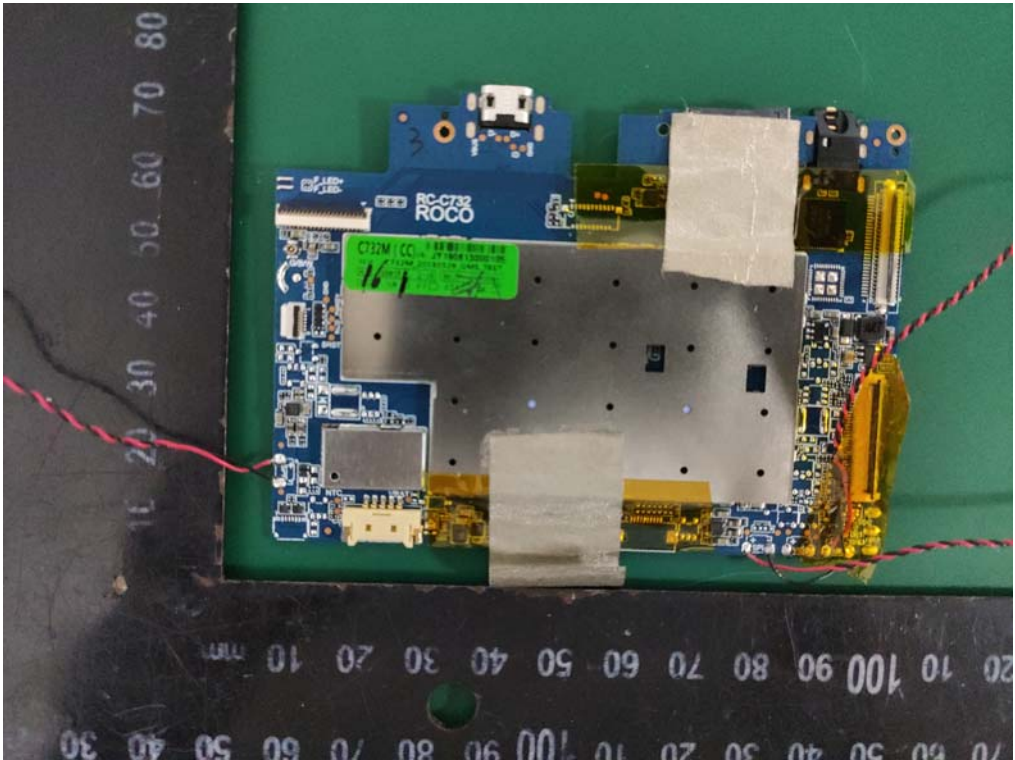
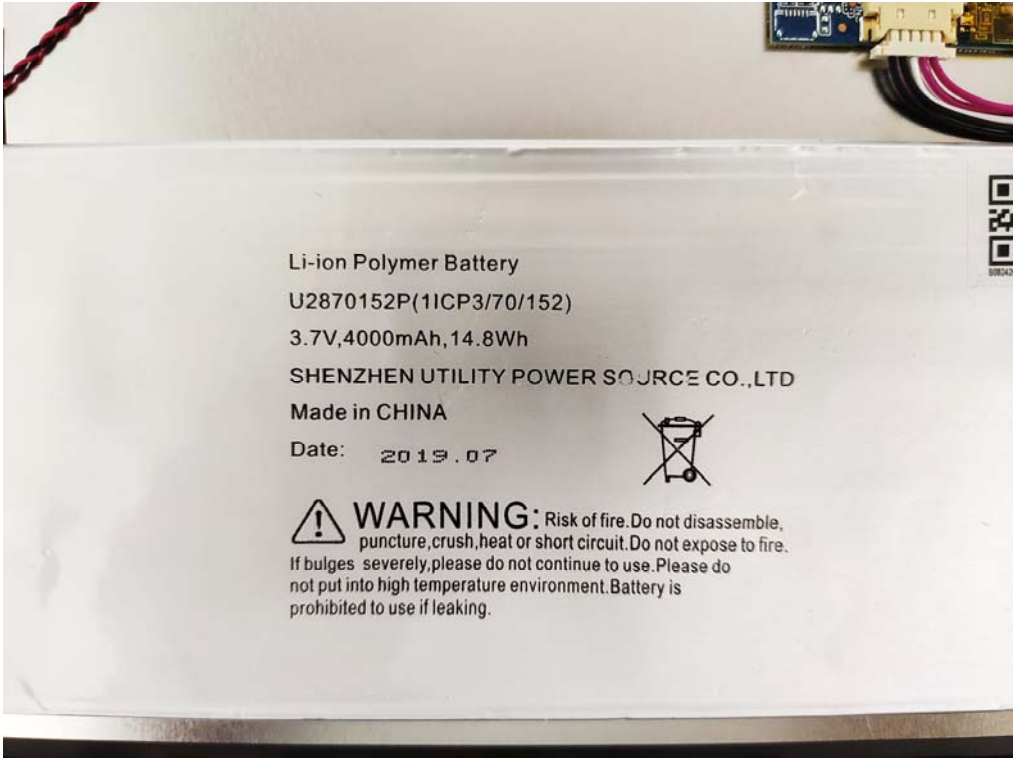
External Photos
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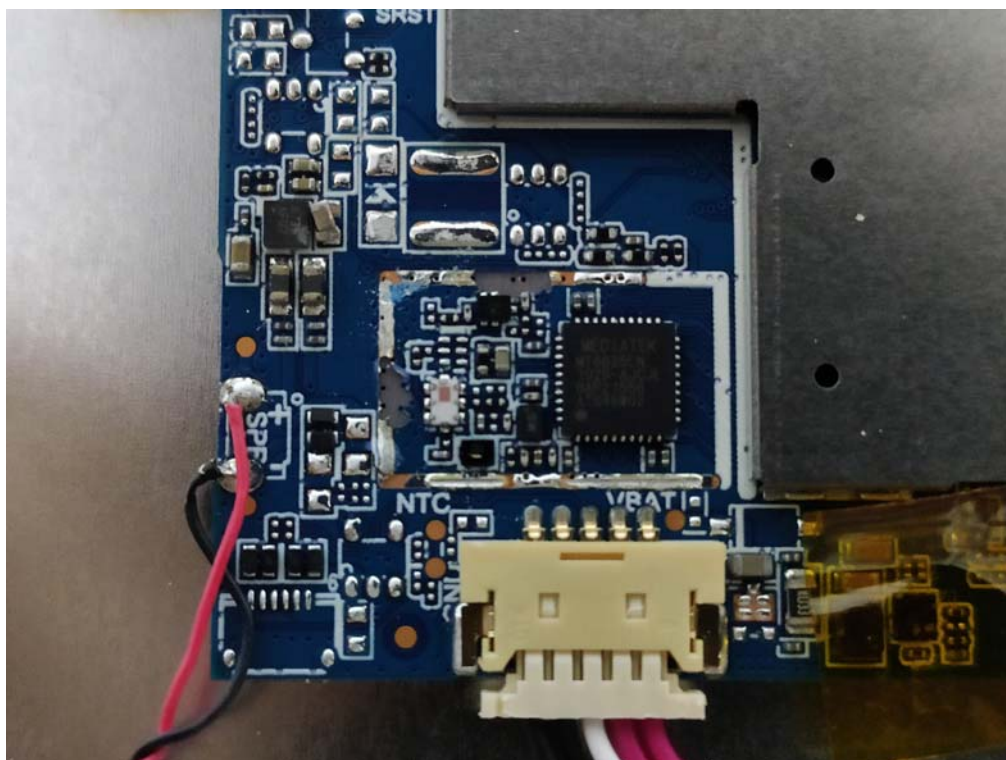
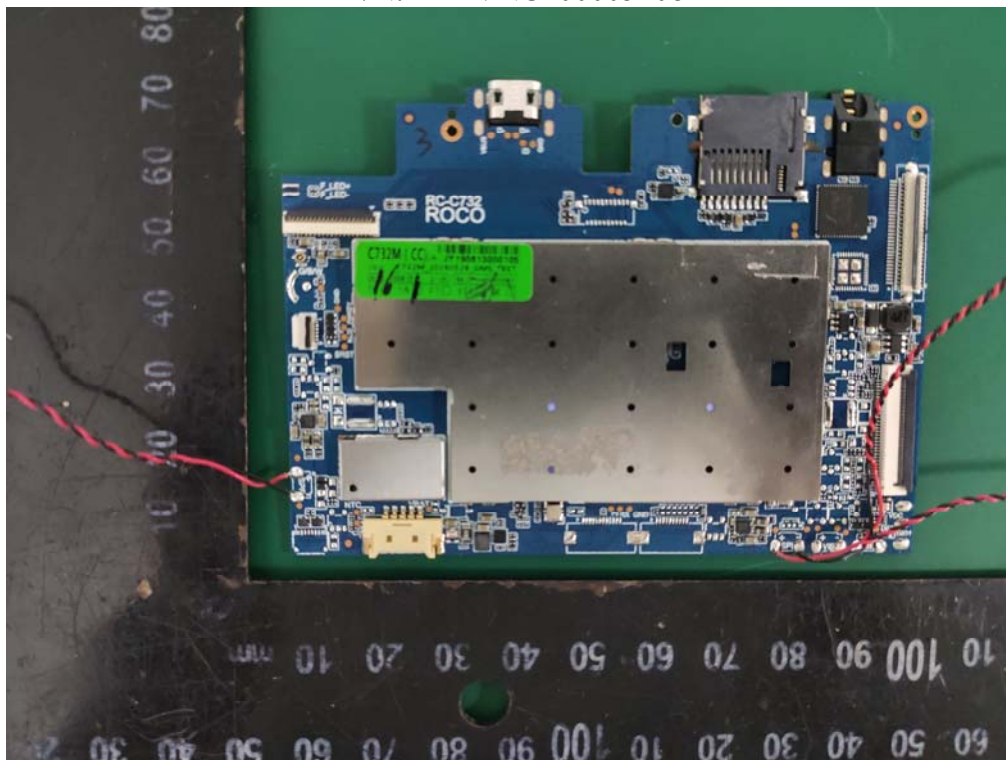
Internal Photos
M/N: TBBVNC100005208



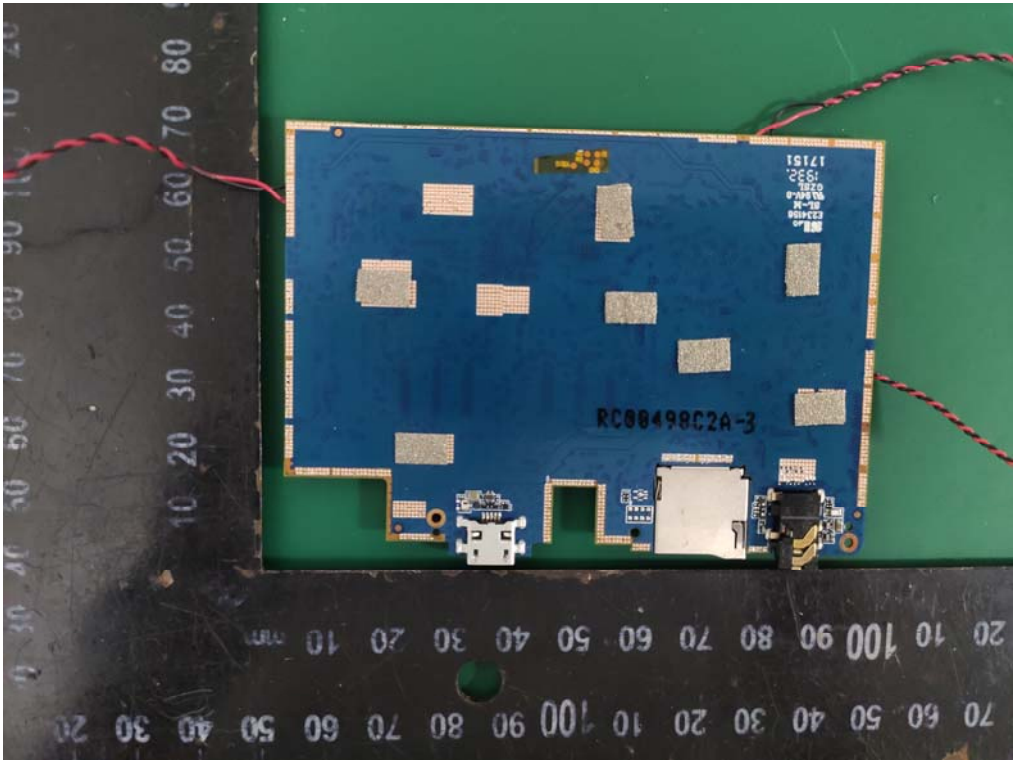
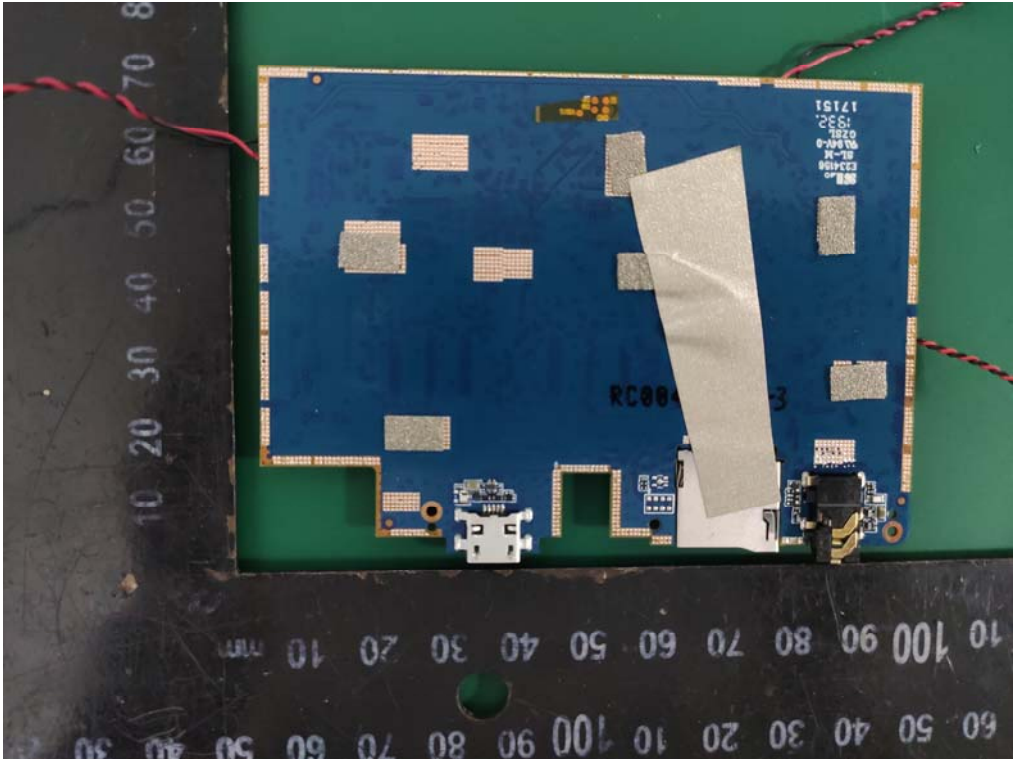
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M/N: TBBVNC100005208



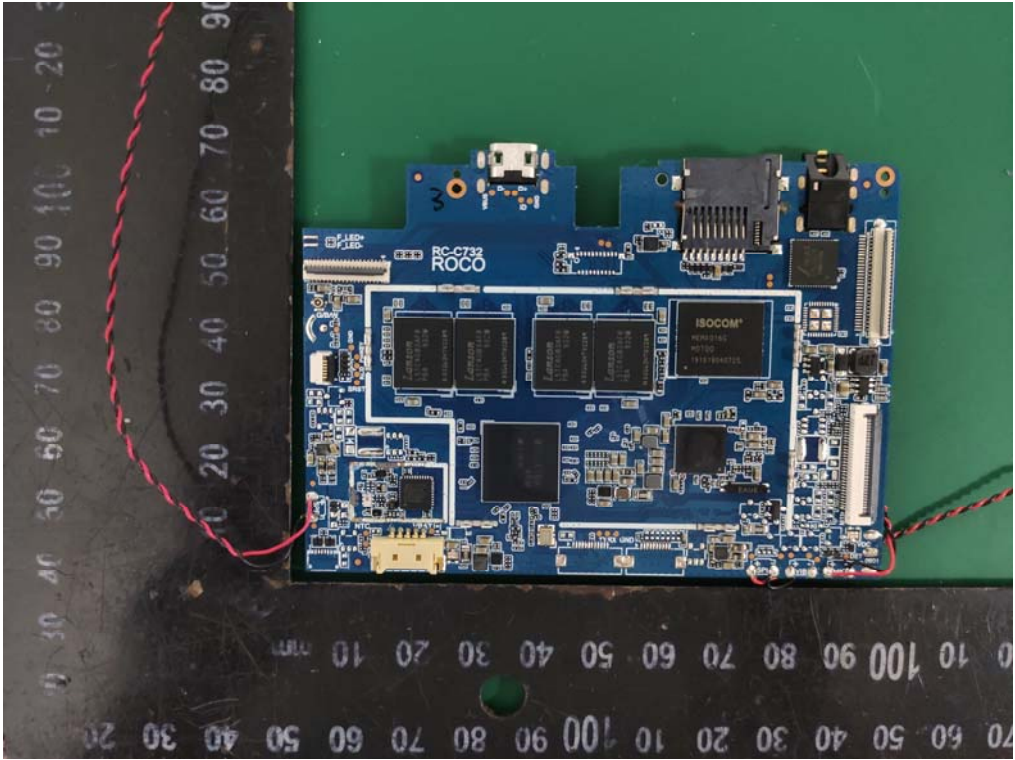
Internal Photos
M/N: TBBVNC100005208



Internal Photos
M/N: TBBVNC100005208



Internal Photos
M/N: TBBVNC100005208



RF
Antenna Port

