

FCC Report (WIFI)

Applicant: Mitac International Corporation

Address of Applicant: Building B, No.209, Sec.1, Nan Gang Rd., Nan Gang Taipei,
11568 Taiwan

Equipment Under Test (EUT)

Product Name: GPS Portable Navigation Device

Model No.: N515

Trade Mark: Mitac, Magellan, Mio

FCC ID: P4Q-N515

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247:2015

Date of sample receipt: August 29, 2016

Date of Test: August 30-September 01, 2016

Date of report issued: September 02, 2016

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Lo
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the GTS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of GTS or testing done by GTS in connection with, distribution or use of the product described in this report must be approved by GTS in writing.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

2 Version

Version No.	Date	Description
00	September 02, 2016	Original

Prepared By:

Edward Pan

Date:

September 02, 2016

Project Engineer

Check By:

Andy Wu

Date:

September 02, 2016

Reviewer

3 Contents

	Page
1 COVER PAGE	1
2 VERSION	2
3 CONTENTS	3
4 TEST SUMMARY	4
4.1 MEASUREMENT UNCERTAINTY	4
5 GENERAL INFORMATION	5
5.1 CLIENT INFORMATION	5
5.2 GENERAL DESCRIPTION OF EUT	5
5.3 TEST MODE	6
5.4 DESCRIPTION OF SUPPORT UNITS	6
5.5 TEST FACILITY	7
5.6 TEST LOCATION	7
6 TEST INSTRUMENTS LIST	8
7 TEST RESULTS AND MEASUREMENT DATA	10
7.1 ANTENNA REQUIREMENT	10
7.2 CONDUCTED EMISSIONS	11
7.3 SPURIOUS EMISSION	14
7.3.1 Radiated Emission Method	14
8 TEST SETUP PHOTO	26
9 EUT CONSTRUCTIONAL DETAILS	28

4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	N/A
Channel Bandwidth	15.247 (a)(2)	N/A
Power Spectral Density	15.247 (e)	N/A
Band Edge	15.247(d)	N/A
Spurious Emission	15.205/15.209	Pass

Pass: The EUT complies with the essential requirements in the standard.

N/A: not applicable

Remark: Test according to ANSI C63.4:2014 and ANSI C63.10:2013.

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	$\pm 4.34\text{dB}$	(1)
Radiated Emission	30MHz ~ 1000MHz	$\pm 4.24\text{dB}$	(1)
Radiated Emission	1GHz ~ 26.5GHz	$\pm 4.68\text{dB}$	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	$\pm 3.45\text{dB}$	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 General Information

5.1 Client Information

Applicant:	Mitac International Corporation
Address of Applicant:	Building B, No.209, Sec.1, Nan Gang Rd., Nan Gang Taipei, 11568 Taiwan
Manufacturer:	MiTAC Computer (Kunshan) CO., Ltd.
Address of Manufacturer:	No. 269, 2nd Avenue, District A, Comprehensive Free Trade Zone, Kunshan, Jiangsu, P.R.C.

5.2 General Description of EUT

Product Name:	GPS Portable Navigation Device
Model No.:	N515
CPT panel No.:	KD070D28-40NB-B22 C
Operation Frequency:	802.11b/802.11g/802.11n(HT20): 2412MHz~2462MHz
Channel numbers:	802.11b/802.11g /802.11n(HT20): 11
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum (DSSS) 802.11g/802.11n(H20): Orthogonal Frequency Division Multiplexing (OFDM)
Antenna Type:	Integral antenna
Antenna gain:	0dBi(declare by Applicant)
Power supply:	Adapter 1: Model:MIL050200I Input: AC 100-240V~50/60Hz, 0.6A Output: DC 5V ,2A Adapter 2: Model:CA-052-00U-09 Input: DC 12/24V, 1300mA Output: DC 5V ,2A Adapter 3: Model:TCV10100 Input: DC 12-24V Output: DC 5V ,2A Or DC 3.7V 4000mAh Li-ion Battery
Remark: All of the adapter was tested. And found radiated emission of adapter 3 was the worst case. Conducted emission of adapter 1 was the worst. So only the worst case was recorded in the report.	

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)
	802.11b/802.11g/802.11n(HT20)
Lowest channel	2412MHz
Middle channel	2437MHz
Highest channel	2462MHz

5.3 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode (duty cycle > 98%)
<i>Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:			
Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.			
Mode	802.11b	802.11g	802.11n(HT20)
Data rate	1Mbps	6Mbps	6.5Mbps

5.4 Description of Support Units

None.

5.5 Test Facility

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

- **FCC —Registration No.: 600491**

Global United Technology Services Co., Ltd., Shenzhen 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 files. Registration 600491, June 22, 2016.

- **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016.

5.6 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China

Tel: 0755-27798480

Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July 03 2015	July 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June 29 2016	June 28 2017
4	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June 29 2016	June 28 2017
5	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June 29 2016	June 28 2017
6	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 29 2016	June 28 2017
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 29 2016	June 28 2017
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial Cable	GTS	N/A	GTS213	June 29 2016	June 28 2017
10	Coaxial Cable	GTS	N/A	GTS211	June 29 2016	June 28 2017
11	Coaxial cable	GTS	N/A	GTS210	June 29 2016	June 28 2017
12	Coaxial Cable	GTS	N/A	GTS212	June 29 2016	June 28 2017
13	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June 29 2016	June 28 2017
14	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	June 29 2016	June 28 2017
15	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 29 2016	June 28 2017
16	Band filter	Amindeon	82346	GTS219	June 29 2016	June 28 2017
17	Power Meter	Anritsu	ML2495A	GTS540	June 29 2016	June 28 2017
18	Power Sensor	Anritsu	MA2411B	GTS541	June 29 2016	June 28 2017

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.16 2014	May.15 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 29 2016	June. 28 2017
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 29 2016	June. 28 2017
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 29 2016	June. 28 2017
5	High voltage probe	SCHWARZBECK	TK9420	GTS537	June. 29 2016	June. 28 2017
6	ISN	SCHWARZBECK	NTFM 8158	GTS565	June. 29 2016	June. 28 2017
7	Coaxial Cable	GTS	N/A	GTS227	June. 29 2016	June. 28 2017
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Thermo meter	KTJ	TA328	GTS233	June. 29 2016	June. 28 2017
10	10dB Pulse Limiter	Rohde & Schwarz	N/A	GTS224	June. 29 2016	June. 28 2017

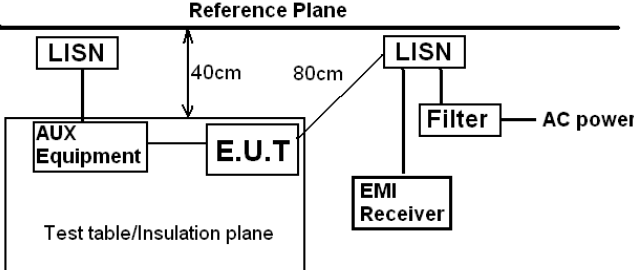
General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	ChangChun	DYM3	GTS255	June. 29 2016	June. 28 2017

7 Test results and Measurement Data

7.1 Antenna requirement

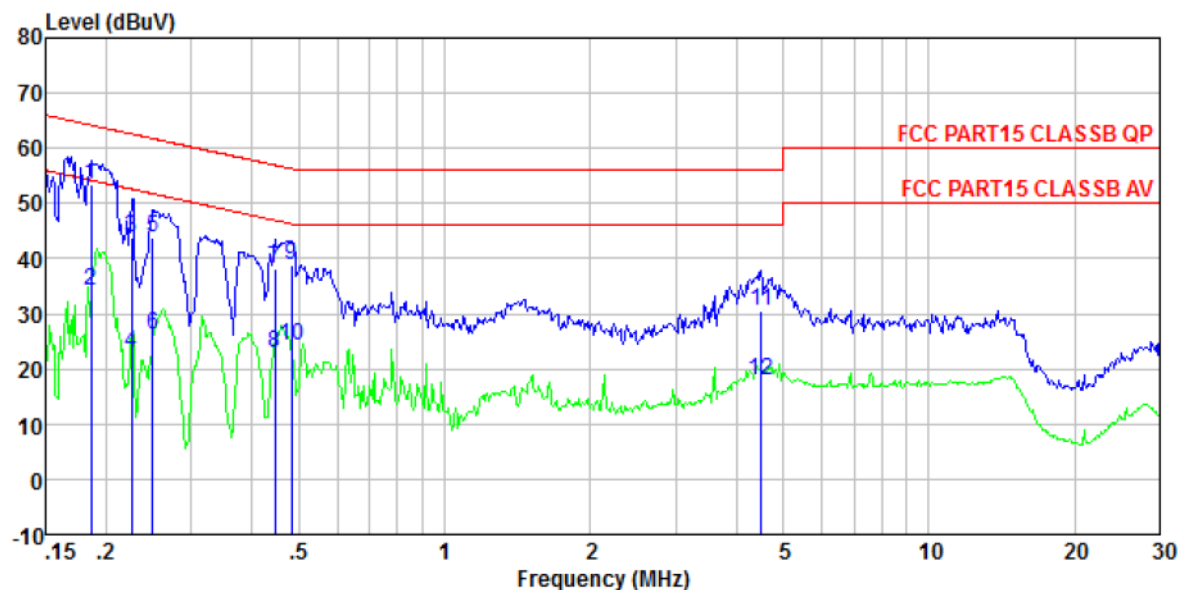
Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.	
EUT Antenna:	
<i>The antenna is Integral antenna, the best case gain of the antenna is 0dBi</i> 	

7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207		
Test Method:	ANSI C63.10:2013		
Test Frequency Range:	150KHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test setup:			
	Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m		
Test procedure:	1. The E.U.T is connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.		
Test Instruments:	Refer to section 6.0 for details		
Test mode:	Refer to section 5.3 for details		
Test results:	Pass		

Measurement data

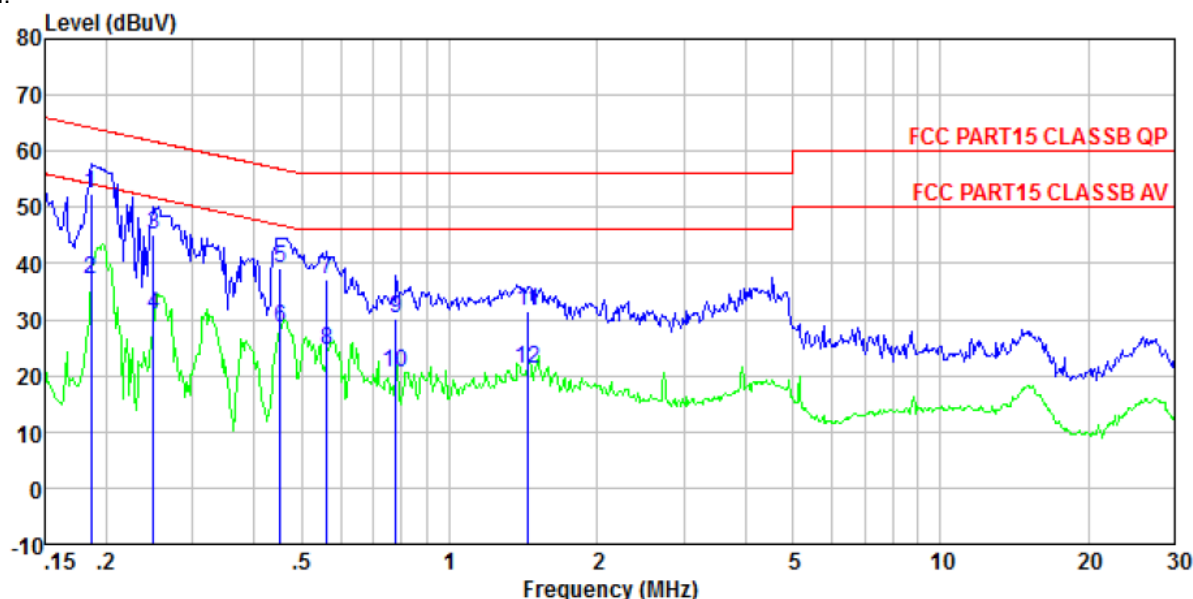
Line:



Site : Shielded room
Condition : FCC PART15 CLASSB QP LISN-2013 LINE
Job No. : 0356
Test mode : WiFi mode
Test Engineer: Boy

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.186	53.06	0.14	0.13	53.33	64.20	-10.87	QP
2	0.186	33.75	0.14	0.13	34.02	54.20	-20.18	Average
3	0.226	43.70	0.12	0.12	43.94	62.61	-18.67	QP
4	0.226	22.67	0.12	0.12	22.91	52.61	-29.70	Average
5	0.249	43.66	0.12	0.11	43.89	61.78	-17.89	QP
6	0.249	26.14	0.12	0.11	26.37	51.78	-25.41	Average
7	0.447	37.91	0.12	0.11	38.14	56.93	-18.79	QP
8	0.447	22.54	0.12	0.11	22.77	46.93	-24.16	Average
9	0.484	38.50	0.12	0.11	38.73	56.27	-17.54	QP
10	0.484	24.09	0.12	0.11	24.32	46.27	-21.95	Average
11	4.501	30.31	0.20	0.15	30.66	56.00	-25.34	QP
12	4.501	17.50	0.20	0.15	17.85	46.00	-28.15	Average

Neutral:



Site : Shielded room
Condition : FCC PART15 CLASSB QP LISN-2013 NEUTRAL
Job No. : 0356
Test mode : WiFi mode
Test Engineer: Boy

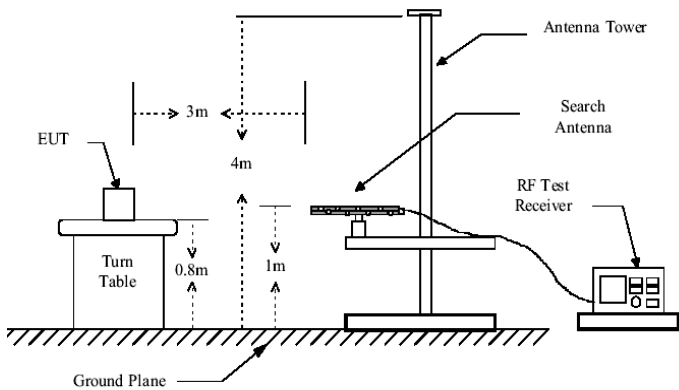
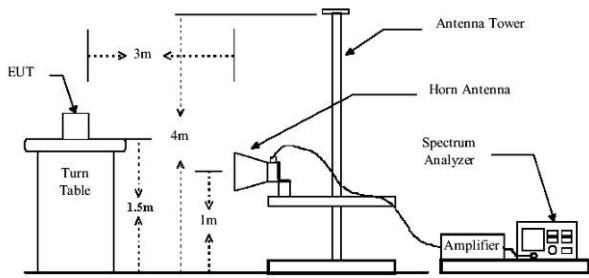
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.186	52.40	0.07	0.13	52.60	64.20	-11.60	QP
2	0.186	36.80	0.07	0.13	37.00	54.20	-17.20	Average
3	0.249	44.92	0.06	0.11	45.09	61.78	-16.69	QP
4	0.249	30.72	0.06	0.11	30.89	51.78	-20.89	Average
5	0.452	39.08	0.06	0.11	39.25	56.85	-17.60	QP
6	0.452	28.51	0.06	0.11	28.68	46.85	-18.17	Average
7	0.564	36.99	0.07	0.12	37.18	56.00	-18.82	QP
8	0.564	24.30	0.07	0.12	24.49	46.00	-21.51	Average
9	0.779	29.96	0.07	0.13	30.16	56.00	-25.84	QP
10	0.779	20.32	0.07	0.13	20.52	46.00	-25.48	Average
11	1.449	31.29	0.09	0.13	31.51	56.00	-24.49	QP
12	1.449	21.01	0.09	0.13	21.23	46.00	-24.77	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

7.3 Spurious Emission

7.3.1 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	30MHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		RMS	1MHz	3MHz	Average
Limit:	Frequency		Limit (dBuV/m @3m)		Value
	30MHz-88MHz		40.00		Quasi-peak
	88MHz-216MHz		43.50		Quasi-peak
	216MHz-960MHz		46.00		Quasi-peak
	960MHz-1GHz		54.00		Quasi-peak
	Above 1GHz		54.00		Average
			74.00		Peak
Test setup:	Below 1GHz				
					
Test setup:	Above 1GHz				
					

Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. 7. The radiation measurements are performed in X, Y, Z axis positioning. And found the Y axis positioning which it is worse case, only the test worst case mode is recorded in the report.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Remark:

Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

Measurement Data

■ Below 1GHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
37.55	34.33	14.96	0.64	30.06	19.87	40.00	-20.13	Vertical
80.93	40.43	10.84	1.04	29.79	22.52	40.00	-17.48	Vertical
127.22	39.39	11.32	1.41	29.53	22.59	43.50	-20.91	Vertical
560.69	32.75	19.77	3.56	29.30	26.78	46.00	-19.22	Vertical
785.09	35.93	21.87	4.40	29.20	33.00	46.00	-13.00	Vertical
942.13	33.30	23.37	5.01	29.10	32.58	46.00	-13.42	Vertical
42.60	31.69	15.56	0.69	30.03	17.91	40.00	-22.09	Horizontal
82.07	49.97	11.28	1.05	29.79	32.51	40.00	-7.49	Horizontal
127.22	40.58	11.32	1.41	29.53	23.78	43.50	-19.72	Horizontal
386.63	34.41	16.78	2.79	29.56	24.42	46.00	-21.58	Horizontal
566.62	32.13	19.88	3.59	29.30	26.30	46.00	-19.70	Horizontal
909.67	33.51	23.15	4.88	29.10	32.44	46.00	-13.56	Horizontal

■ Above 1GHz

Test mode:	802.11b	Test channel:	Lowest
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	40.39	31.79	8.62	32.10	48.70	74.00	-25.30	Vertical
7236.00	34.28	36.19	11.68	31.97	50.18	74.00	-23.82	Vertical
9648.00	32.76	38.07	14.16	31.56	53.43	74.00	-20.57	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	39.04	31.79	8.62	32.10	47.35	74.00	-26.65	Horizontal
7236.00	34.02	36.19	11.68	31.97	49.92	74.00	-24.08	Horizontal
9648.00	32.33	38.07	14.16	31.56	53.00	74.00	-21.00	Horizontal
12060.00	*					74.00		Horizontal
14472.00	*					74.00		Horizontal
16884.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	29.46	31.79	8.62	32.10	37.77	54.00	-16.23	Vertical
7236.00	23.14	36.19	11.68	31.97	39.04	54.00	-14.96	Vertical
9648.00	23.10	38.07	14.16	31.56	43.77	54.00	-10.23	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	28.58	31.79	8.62	32.10	36.89	54.00	-17.11	Horizontal
7236.00	22.60	36.19	11.68	31.97	38.50	54.00	-15.50	Horizontal
9648.00	22.08	38.07	14.16	31.56	42.75	54.00	-11.25	Horizontal
12060.00	*					54.00		Horizontal
14472.00	*					54.00		Horizontal
16884.00	*					54.00		Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.

Test mode:	802.11b	Test channel:	Middle
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	39.43	31.85	8.66	32.12	47.82	74.00	-26.18	Vertical
7311.00	34.34	36.37	11.71	31.91	50.51	74.00	-23.49	Vertical
9748.00	33.77	38.27	14.25	31.56	54.73	74.00	-19.27	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	39.89	31.85	8.66	32.12	48.28	74.00	-25.72	Horizontal
7311.00	32.97	36.37	11.71	31.91	49.14	74.00	-24.86	Horizontal
9748.00	33.65	38.27	14.25	31.56	54.61	74.00	-19.39	Horizontal
12185.00	*					74.00		Horizontal
14622.00	*					74.00		Horizontal
17059.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	30.27	31.85	8.66	32.12	38.66	54.00	-15.34	Vertical
7311.00	22.65	36.37	11.71	31.91	38.82	54.00	-15.18	Vertical
9748.00	23.02	38.27	14.25	31.56	43.98	54.00	-10.02	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	30.00	31.85	8.66	32.12	38.39	54.00	-15.61	Horizontal
7311.00	22.06	36.37	11.71	31.91	38.23	54.00	-15.77	Horizontal
9748.00	23.37	38.27	14.25	31.56	44.33	54.00	-9.67	Horizontal
12185.00	*					54.00		Horizontal
14622.00	*					54.00		Horizontal
17059.00	*					54.00		Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.

Test mode:	802.11b	Test channel:	Highest
------------	---------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	45.01	31.90	8.70	32.15	53.46	74.00	-20.54	Vertical
7386.00	35.05	36.49	11.76	31.83	51.47	74.00	-22.53	Vertical
9848.00	37.09	38.62	14.31	31.77	58.25	74.00	-15.75	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	44.30	31.90	8.70	32.15	52.75	74.00	-21.25	Horizontal
7386.00	33.94	36.49	11.76	31.83	50.36	74.00	-23.64	Horizontal
9848.00	33.26	38.62	14.31	31.77	54.42	74.00	-19.58	Horizontal
12310.00	*					74.00		Horizontal
14772.00	*					74.00		Horizontal
17234.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	35.92	31.90	8.70	32.15	44.37	54.00	-9.63	Vertical
7386.00	24.96	36.49	11.76	31.83	41.38	54.00	-12.62	Vertical
9848.00	25.59	38.62	14.31	31.77	46.75	54.00	-7.25	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	34.66	31.90	8.70	32.15	43.11	54.00	-10.89	Horizontal
7386.00	23.33	36.49	11.76	31.83	39.75	54.00	-14.25	Horizontal
9848.00	22.51	38.62	14.31	31.77	43.67	54.00	-10.33	Horizontal
12310.00	*					54.00		Horizontal
14772.00	*					54.00		Horizontal
17234.00	*					54.00		Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.

Test mode:	802.11g	Test channel:	lowest
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	39.10	31.79	8.62	32.10	47.41	74.00	-26.59	Vertical
7236.00	33.46	36.19	11.68	31.97	49.36	74.00	-24.64	Vertical
9648.00	32.17	38.07	14.16	31.56	52.84	74.00	-21.16	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	37.95	31.79	8.62	32.10	46.26	74.00	-27.74	Horizontal
7236.00	33.31	36.19	11.68	31.97	49.21	74.00	-24.79	Horizontal
9648.00	31.79	38.07	14.16	31.56	52.46	74.00	-21.54	Horizontal
12060.00	*					74.00		Horizontal
14472.00	*					74.00		Horizontal
16884.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	28.28	31.79	8.62	32.10	36.59	54.00	-17.41	Vertical
7236.00	22.36	36.19	11.68	31.97	38.26	54.00	-15.74	Vertical
9648.00	22.54	38.07	14.16	31.56	43.21	54.00	-10.79	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	27.55	31.79	8.62	32.10	35.86	54.00	-18.14	Horizontal
7236.00	21.91	36.19	11.68	31.97	37.81	54.00	-16.19	Horizontal
9648.00	21.56	38.07	14.16	31.56	42.23	54.00	-11.77	Horizontal
12060.00	*					54.00		Horizontal
14472.00	*					54.00		Horizontal
16884.00	*					54.00		Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. “*”, means this data is too weak instrument of signal is unable to test.

Test mode:	802.11g	Test channel:	Middle
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	38.36	31.85	8.66	32.12	46.75	74.00	-27.25	Vertical
7311.00	33.66	36.37	11.71	31.91	49.83	74.00	-24.17	Vertical
9748.00	33.29	38.27	14.25	31.56	54.25	74.00	-19.75	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	38.99	31.85	8.66	32.12	47.38	74.00	-26.62	Horizontal
7311.00	32.38	36.37	11.71	31.91	48.55	74.00	-25.45	Horizontal
9748.00	33.21	38.27	14.25	31.56	54.17	74.00	-19.83	Horizontal
12185.00	*					74.00		Horizontal
14622.00	*					74.00		Horizontal
17059.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	29.29	31.85	8.66	32.12	37.68	54.00	-16.32	Vertical
7311.00	22.00	36.37	11.71	31.91	38.17	54.00	-15.83	Vertical
9748.00	22.56	38.27	14.25	31.56	43.52	54.00	-10.48	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	29.16	31.85	8.66	32.12	37.55	54.00	-16.45	Horizontal
7311.00	21.49	36.37	11.71	31.91	37.66	54.00	-16.34	Horizontal
9748.00	22.94	38.27	14.25	31.56	43.90	54.00	-10.10	Horizontal
12185.00	*					54.00		Horizontal
14622.00	*					54.00		Horizontal
17059.00	*					54.00		Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.

Test mode:	802.11g	Test channel:	Highest
------------	---------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	43.18	31.90	8.70	32.15	51.63	74.00	-22.37	Vertical
7386.00	33.89	36.49	11.76	31.83	50.31	74.00	-23.69	Vertical
9848.00	36.26	38.62	14.31	31.77	57.42	74.00	-16.58	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	42.75	31.90	8.70	32.15	51.20	74.00	-22.80	Horizontal
7386.00	32.92	36.49	11.76	31.83	49.34	74.00	-24.66	Horizontal
9848.00	32.49	38.62	14.31	31.77	53.65	74.00	-20.35	Horizontal
12310.00	*					74.00		Horizontal
14772.00	*					74.00		Horizontal
17234.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	34.23	31.90	8.70	32.15	42.68	54.00	-11.32	Vertical
7386.00	23.84	36.49	11.76	31.83	40.26	54.00	-13.74	Vertical
9848.00	24.79	38.62	14.31	31.77	45.95	54.00	-8.05	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	33.20	31.90	8.70	32.15	41.65	54.00	-12.35	Horizontal
7386.00	22.34	36.49	11.76	31.83	38.76	54.00	-15.24	Horizontal
9848.00	21.77	38.62	14.31	31.77	42.93	54.00	-11.07	Horizontal
12310.00	*					54.00		Horizontal
14772.00	*					54.00		Horizontal
17234.00	*					54.00		Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is too weak instrument of signal is unable to test.

Test mode:	802.11n(HT20)	Test channel:	Lowest
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	39.86	31.79	8.62	32.10	48.17	74.00	-25.83	Vertical
7236.00	33.94	36.19	11.68	31.97	49.84	74.00	-24.16	Vertical
9648.00	32.52	38.07	14.16	31.56	53.19	74.00	-20.81	Vertical
12060.00	*					74.00		Vertical
14472.00	*					74.00		Vertical
16884.00	*					74.00		Vertical
4824.00	38.60	31.79	8.62	32.10	46.91	74.00	-27.09	Horizontal
7236.00	33.73	36.19	11.68	31.97	49.63	74.00	-24.37	Horizontal
9648.00	32.11	38.07	14.16	31.56	52.78	74.00	-21.22	Horizontal
12060.00	*					74.00		Horizontal
14472.00	*					74.00		Horizontal
16884.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	28.98	31.79	8.62	32.10	37.29	54.00	-16.71	Vertical
7236.00	22.82	36.19	11.68	31.97	38.72	54.00	-15.28	Vertical
9648.00	22.87	38.07	14.16	31.56	43.54	54.00	-10.46	Vertical
12060.00	*					54.00		Vertical
14472.00	*					54.00		Vertical
16884.00	*					54.00		Vertical
4824.00	28.16	31.79	8.62	32.10	36.47	54.00	-17.53	Horizontal
7236.00	22.32	36.19	11.68	31.97	38.22	54.00	-15.78	Horizontal
9648.00	21.87	38.07	14.16	31.56	42.54	54.00	-11.46	Horizontal
12060.00	*					54.00		Horizontal
14472.00	*					54.00		Horizontal
16884.00	*					54.00		Horizontal

Remark:

1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.

Test mode:	802.11n(HT20)	Test channel:	Middle
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	38.99	31.85	8.66	32.12	47.38	74.00	-26.62	Vertical
7311.00	34.06	36.37	11.71	31.91	50.23	74.00	-23.77	Vertical
9748.00	33.57	38.27	14.25	31.56	54.53	74.00	-19.47	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	39.53	31.85	8.66	32.12	47.92	74.00	-26.08	Horizontal
7311.00	32.73	36.37	11.71	31.91	48.90	74.00	-25.10	Horizontal
9748.00	33.47	38.27	14.25	31.56	54.43	74.00	-19.57	Horizontal
12185.00	*					74.00		Horizontal
14622.00	*					74.00		Horizontal
17059.00	*					74.00		Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	29.87	31.85	8.66	32.12	38.26	54.00	-15.74	Vertical
7311.00	22.39	36.37	11.71	31.91	38.56	54.00	-15.44	Vertical
9748.00	22.83	38.27	14.25	31.56	43.79	54.00	-10.21	Vertical
12185.00	*					54.00		Vertical
14622.00	*					54.00		Vertical
17059.00	*					54.00		Vertical
4874.00	29.66	31.85	8.66	32.12	38.05	54.00	-15.95	Horizontal
7311.00	21.83	36.37	11.71	31.91	38.00	54.00	-16.00	Horizontal
9748.00	23.19	38.27	14.25	31.56	44.15	54.00	-9.85	Horizontal
12185.00	*					54.00		Horizontal
14622.00	*					54.00		Horizontal
17059.00	*					54.00		Horizontal

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *“*” means this data is too weak instrument of signal is unable to test.*

Test mode:	802.11n(HT20)	Test channel:	Highest
------------	---------------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	44.26	31.90	8.70	32.15	52.71	74.00	-21.29	Vertical
7386.00	34.57	36.49	11.76	31.83	50.99	74.00	-23.01	Vertical
9848.00	36.75	38.62	14.31	31.77	57.91	74.00	-16.09	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	43.66	31.90	8.70	32.15	52.11	74.00	-21.89	Horizontal
7386.00	33.52	36.49	11.76	31.83	49.94	74.00	-24.06	Horizontal
9848.00	32.94	38.62	14.31	31.77	54.10	74.00	-19.90	Horizontal
12310.00	*					74.00		Horizontal
14772.00	*					74.00		Horizontal
17234.00	*					74.00		Horizontal

Average value:

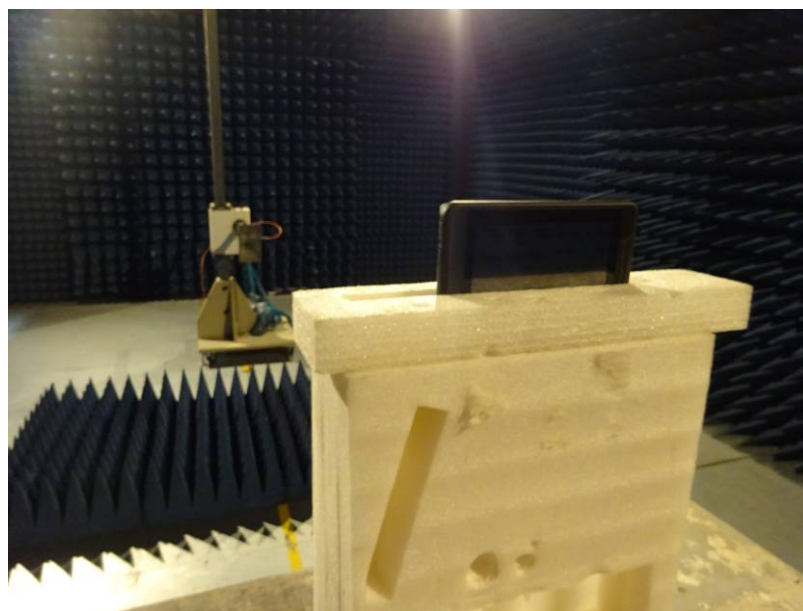
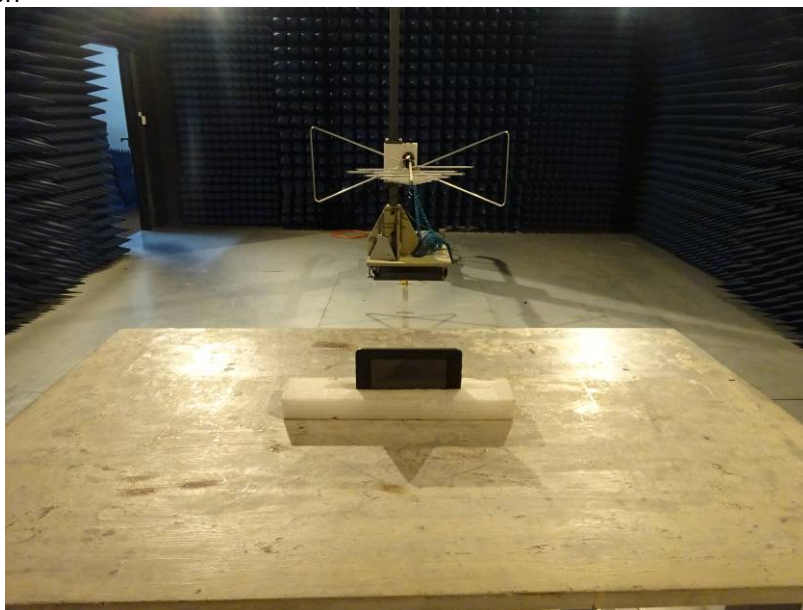
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	35.22	31.90	8.70	32.15	43.67	54.00	-10.33	Vertical
7386.00	24.50	36.49	11.76	31.83	40.92	54.00	-13.08	Vertical
9848.00	25.26	38.62	14.31	31.77	46.42	54.00	-7.58	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertical
17234.00	*					54.00		Vertical
4924.00	34.06	31.90	8.70	32.15	42.51	54.00	-11.49	Horizontal
7386.00	22.92	36.49	11.76	31.83	39.34	54.00	-14.66	Horizontal
9848.00	22.21	38.62	14.31	31.77	43.37	54.00	-10.63	Horizontal
12310.00	*					54.00		Horizontal
14772.00	*					54.00		Horizontal
17234.00	*					54.00		Horizontal

Remark:

- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2 “*”, means this data is the too weak instrument of signal is unable to test.

8 Test Setup Photo

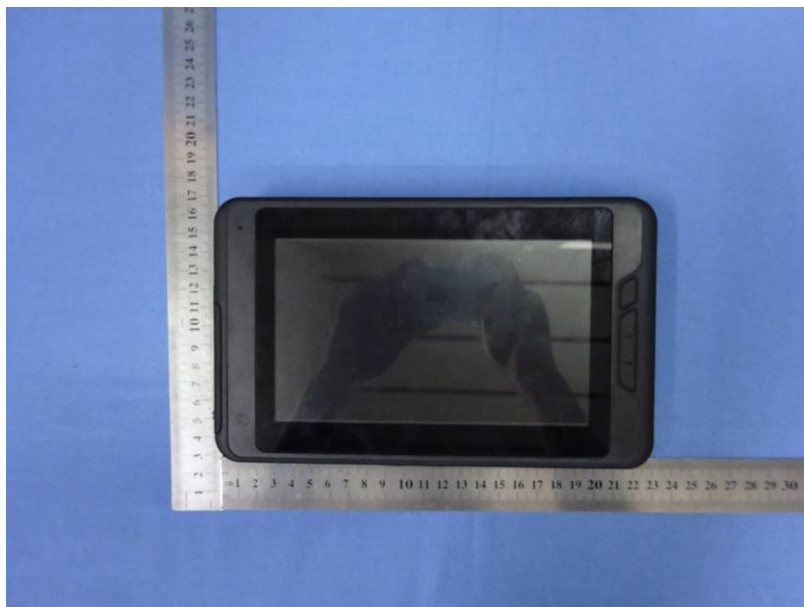
Radiated Emission

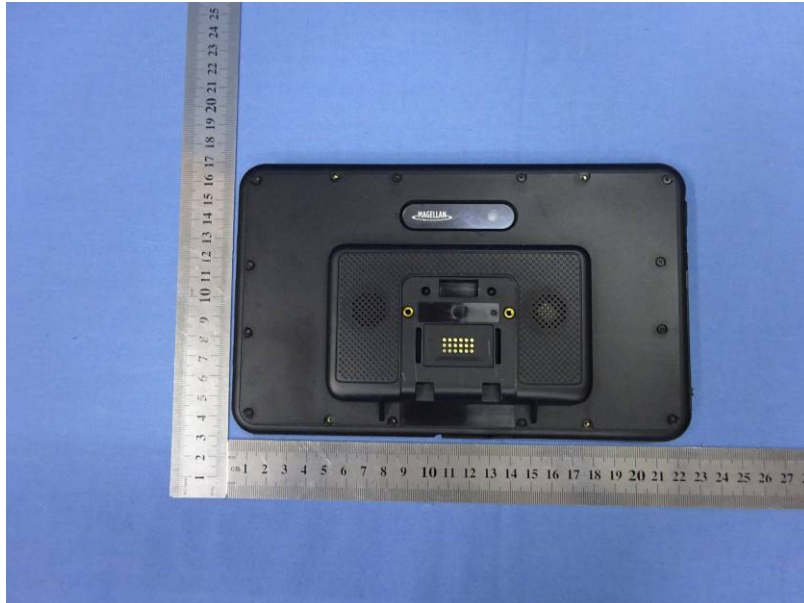


Conducted Emission

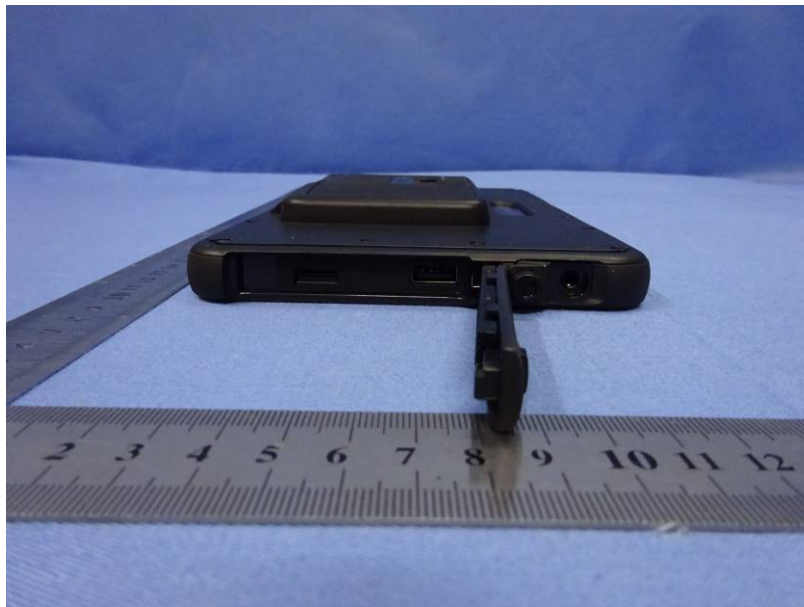


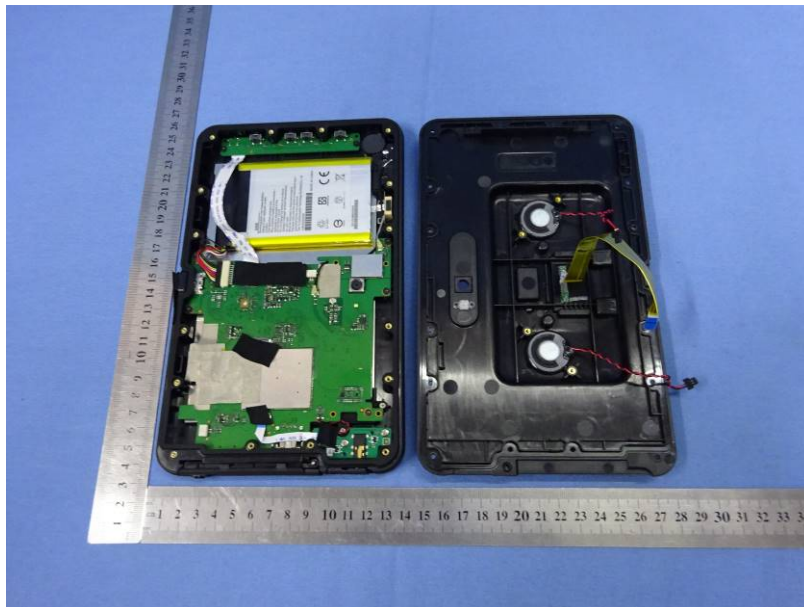
9 EUT Constructional Details

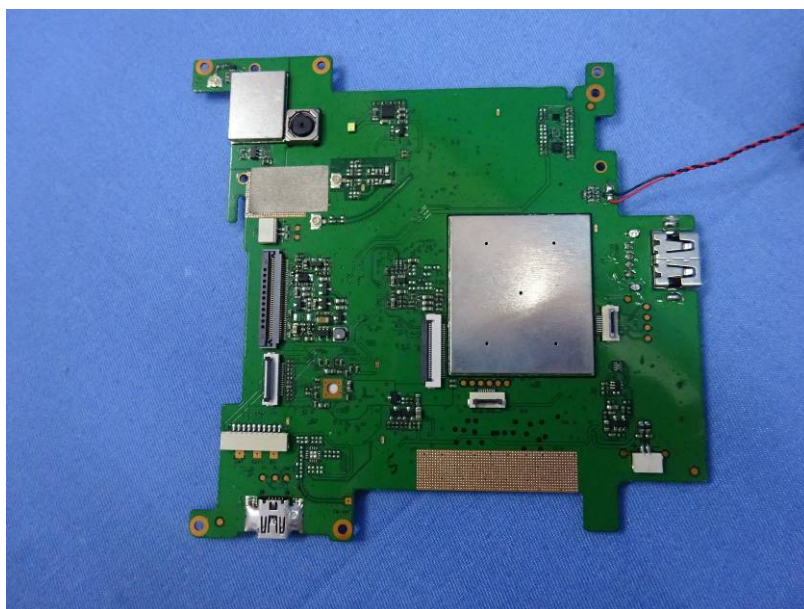


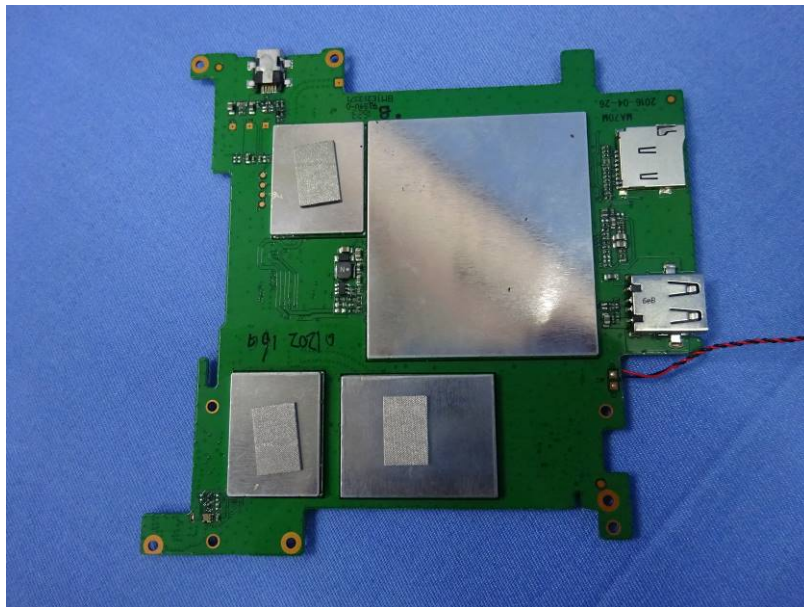
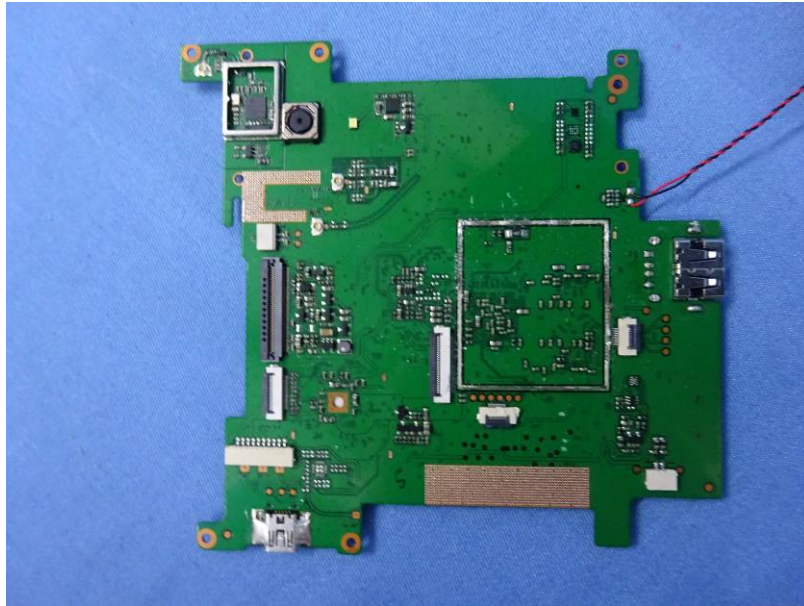


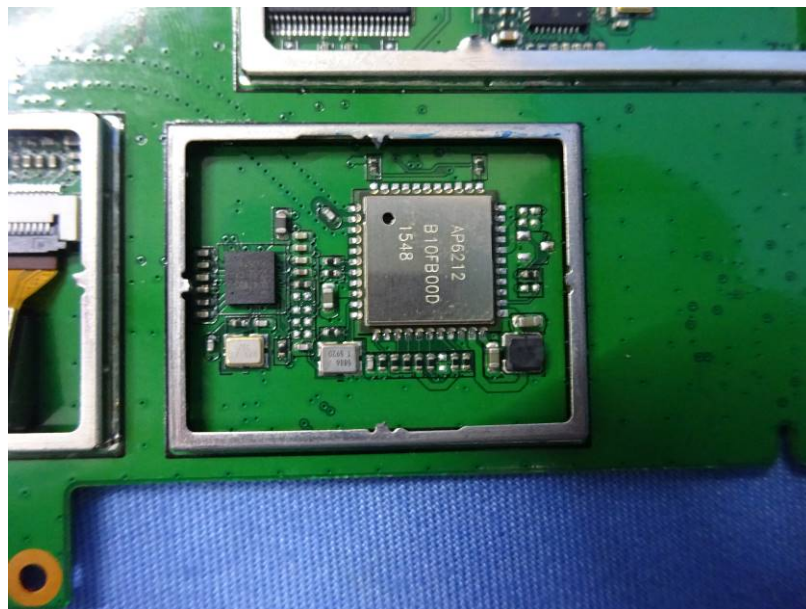
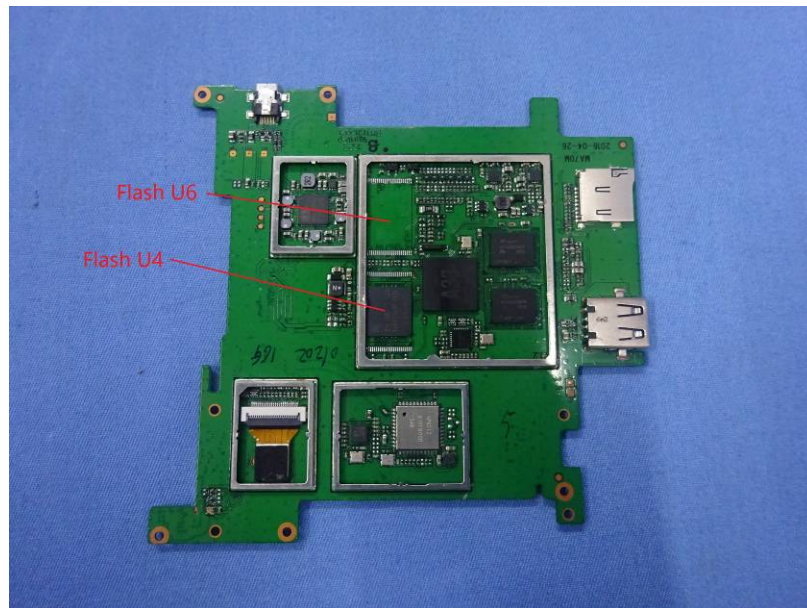


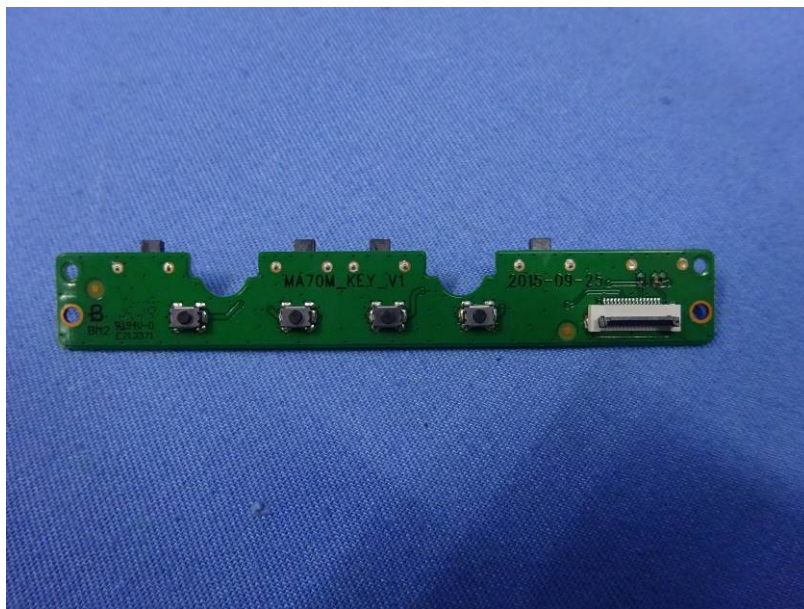
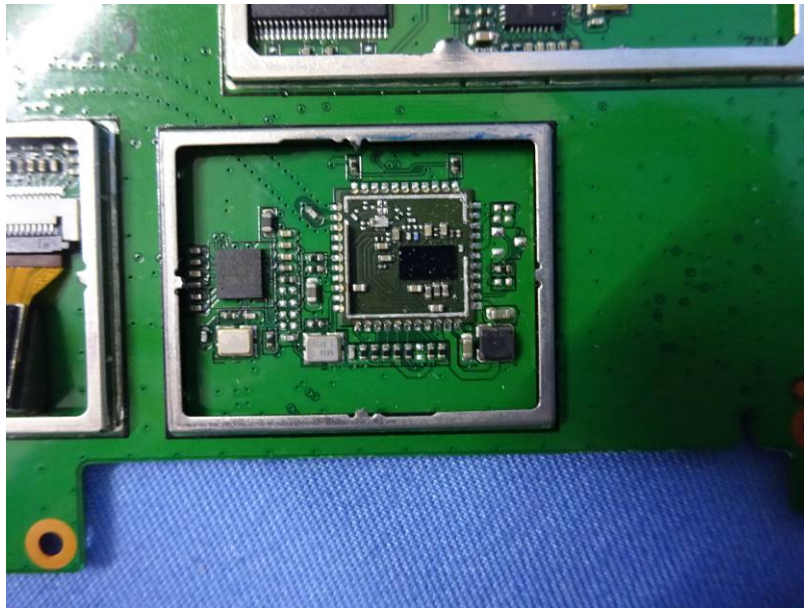


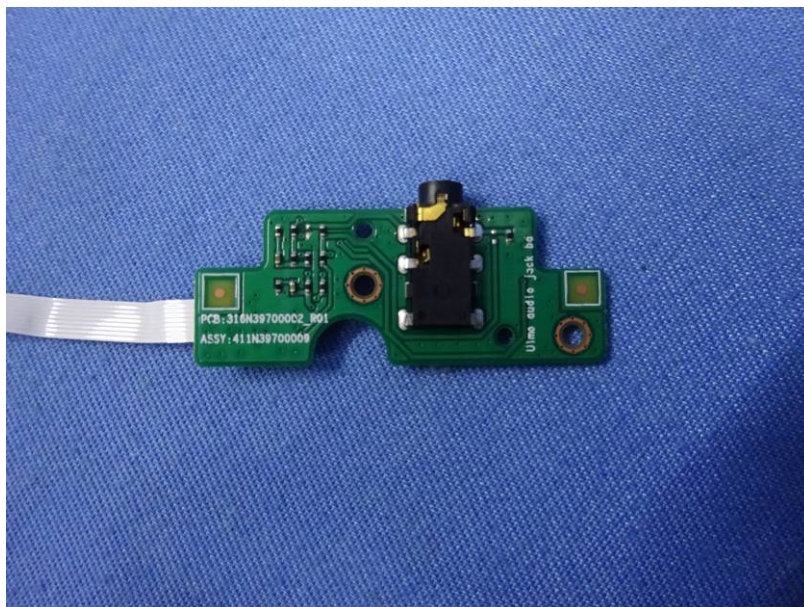
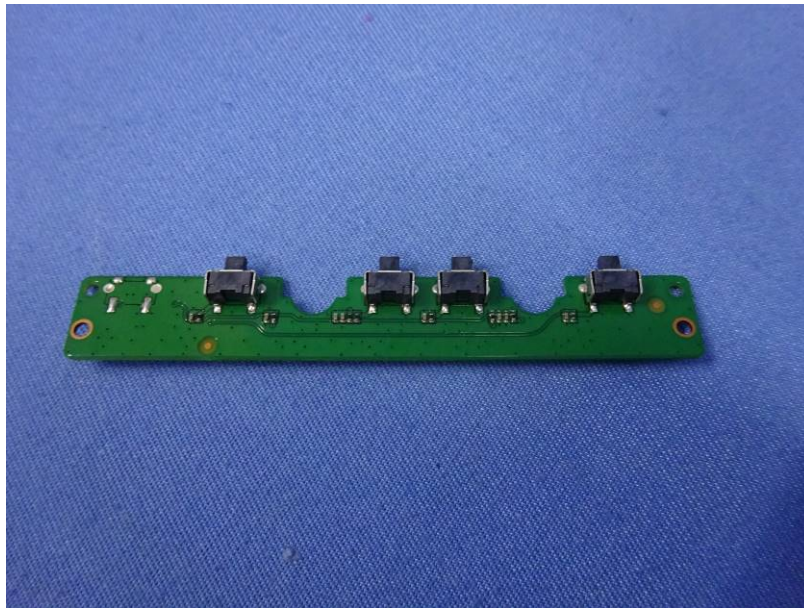


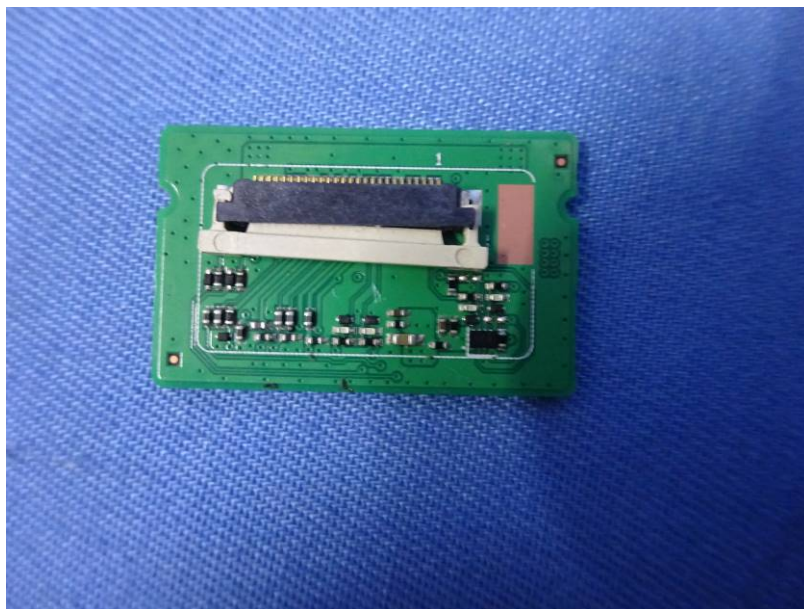
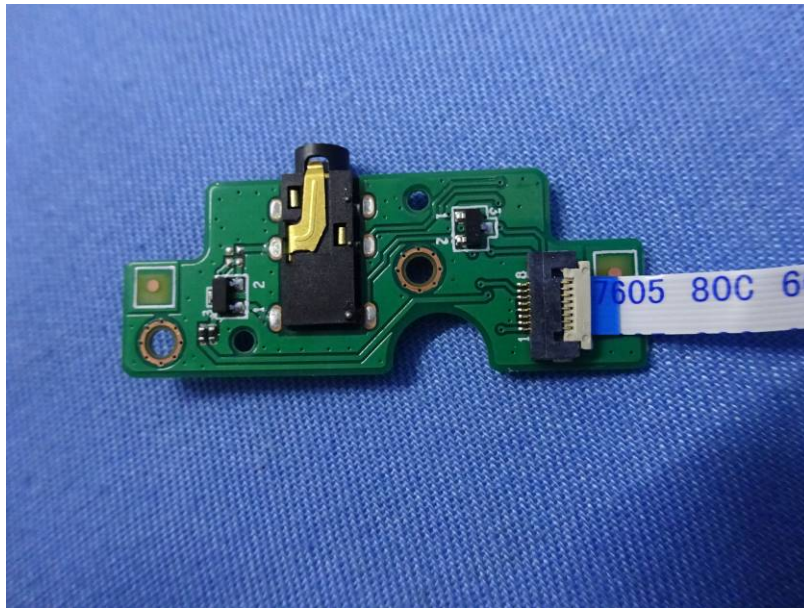


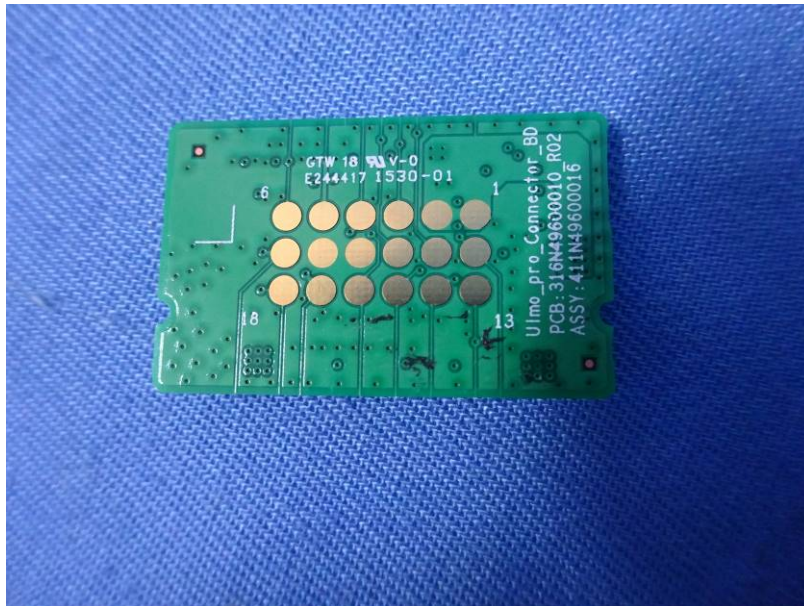












Adapter 1:



Adapter 2:





Adapter 3:



-----End-----