



Shenzhen Certification Technology Service Co., Ltd  
2F, Building B, East Area of Nanchang Second Industrial  
Zone, Gushu 2nd Road, Bao'an District, Shenzhen  
518126, P.R. China.

# TEST REPORT

**FCC ID: 2ABCS-A6102**

**Applicant** : Truly Industrial (ShanWei) Ltd  
**Address** : Truly Industrial Area, Shanwei City, Guangdong Province,  
People's Republic of China

**Equipment Under Test (EUT):**

Name : 3D PAD  
Model : A6102, A6100, N103D

**Standards** : FCC PART 15, SUBPART C : 2013 (Section 15.247)

**Report No** : STI130621090-1  
**Date of Test** : November 10- December 2, 2013  
**Date of Issue** : December 3, 2013

\*

<b>Test Result :</b>	<b>PASS *</b>
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In the configuration tested, the EUT complied with the standards specified above

Authorized Signature

(Mark Zhu)  
General Manager

The manufacture should ensure that all the products in series production are in conformity with the product sample detailed in this report.

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 Shenzhen Certification Technology Service Co., Ltd. Or test done by Shenzhen Certification Technology Service Co., Ltd. Approvals in connection with, distribution or use of the product described in this report must be approved by Shenzhen Certification Technology Service Co., Ltd. Approvals in writing.

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# 1 General Information

## 1.1 Description of Device (EUT)

EUT	: 3D PAD
Model No.	: A6102, A6100, N103D
DIFF.	: All model's the function, software and electric circuit are the same, only with a model named different. The test model: A6102.
Trade mark	: TRULY
Power supply	: DC 3.7V Supply by battery DC 5V from adapter with AC 120V/60Hz adapter
Adapter	: Manufacturer: Ktec Model No.: KAS29A0500250D5
Radio Technology	: NFC, Bluetooth 4.0, Bluetooth 2.1+EDR, IEEE 802.11a,b,g,n/HT20,n/HT40, GSM 850/1900, WCDMA BAND II/V
Operation frequency	: NFC:13.56MHz IEEE 802.11a: 5745MHz-5825MHz IEEE 802.11b: 2412MHz-2462MHz IEEE 802.11g: 2412MHz-2462MHz IEEE 802.11n HT20: 2412-2462MHz, IEEE 802.11n HT40:2422-2452MHz Bluetooth 4.0: 2402-2480MHz Bluetooth 2.1+EDR: 2402-2480MHz GSM 850: 824.2MHz—848.8MHz GSM 1900: 1850.2MHz—1909.8MHz WCDMA BAND II: 1852.4MHz—1907.6MHz WCDMA BAND V: 826.4MHz—846.6MHz
Modulation	: IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK), IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK), IEEE 802.11n :OFDM(64QAM, 16QAM, QPSK, BPSK), Bluetooth 2.1+EDR: GFSK, $\pi/4$ DQPSK, 8-DPSK, Bluetooth 4.0: GFSK, GSM: GMSK, WCDMA: QPSK
Antenna Type	: PIFA Antenna, max gain 1 dBi for WIFI, PIFA Antenna, max gain 1 dBi for BT. PIFA Antenna, max gain 1.5 dBi for GSM PIFA Antenna, max gain 1.5 dBi for WCDMA
Applicant	: Truly Industrial (ShanWei) Ltd
Address	: Truly Industrial Area, Shanwei City, Guangdong Province, People's Republic of China
Manufacturer	: Truly Industrial (ShanWei) Ltd
Address	: Truly Industrial Area, Shanwei City, Guangdong Province, People's Republic of China

Note: This report only test for Bluetooth 4.0, for other radio test see other test report.

## 1.2 Description of Test Facility

Shenzhen Certification Technology Service Co., Ltd.  
2F, Building B, East Area of Nanchang Second Industrial Zone,  
Gushu 2nd Road, Bao'an District, Shenzhen 518126, P.R. China  
FCC Registered No.:197647  
IC Registered No.: 8528B

## 2 EMC Equipment List

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
3m Semi-Anechoic	ETS-LINDGREN	N/A	SEL0017	Nov. 16, 13	1 Year
Spectrum analyzer	Agilent	E4407B	MY49510055	Oct. 30, 13	1 Year
Receiver	R&S	ESCI	101165	Oct. 30, 13	1 Year
Receiver	R&S	ESCI	101202	Oct. 30, 13	1 Year
Bilog Antenna	SCHWARZBECK	VULB 9168	9168-438	Mar.12, 13	1 Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D(1201)	Mar.12, 13	1 Year
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170 D(1432)	Mar.12, 13	1 Year
Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	Mar.12, 13	1 Year
L.I.S.N.	SCHWARZBECK	NSLK8126	8126466	Oct. 30, 13	1 Year
Cable	Resenberger	N/A	No.1	Oct. 30, 13	1 Year
Cable	SCHWARZBECK	N/A	No.2	Oct. 30, 13	1 Year
Cable	SCHWARZBECK	N/A	No.3	Oct. 30, 13	1 Year
Power Meter	Anritsu	ML2487A	6K00001491	Oct. 30, 13	1 Year
Power sensor	Anritsu	ML2491A	32516	Oct. 30, 13	1 Year
Pre-amplifier	SCHWARZBECK	BBV9743	9743-019	Oct. 30, 13	1 Year
Pre-amplifier	Quietek	AP-180C	CHM-0602012	Oct. 30, 13	1 Year

### 3 Test Procedure

**POWER LINE CONDUCTED INTERFERENCE:** The test procedure used was ANSI Standard C63.4-2003 using a 50 u H LISN. Both Lines were observed. The bandwidth of the receiver was 10kHz with an appropriate sweep speed. The ambient temperature of the EUT was 25°C with a humidity of 58%.

**RADIATION INTERFERENCE:** The test procedure used was ANSI Standard C63.4-2003 using a ANRITSU spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a micro volt at the output of the antenna. The resolution bandwidth was 100kHz and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3MHz above 1 GHz. The ambient temperature of the EUT was 25°C with a humidity of 58%.

**FORMULA OF CONVERSION FACTORS:** The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer and cable loss. The antenna correction factors and cable loss are stated in terms of dB. The gain of the Pre-selector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

Freq (MHz) METER READING + ACF + CABLE = FS

33.20 dBuV + 10.36 dB + 0.9 dB = 44.46 dBuV/m @ 3m

**ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES:** The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes. The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSI Standard C63.4-2003 10.1.7 with the EUT 40 cm from the vertical ground wall.

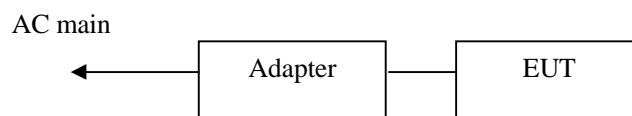
## 4 Summary of Measurement

### 4.1 Summary of test result

Test Item	Test Requirement	Standards Paragraph	Result
Spurious Emission	FCC PART 15:2013	Section 15.247&15.209	Compliance
Conduction Emission	FCC PART 15:2013	Section 15.207	Compliance
Bandwidth Test	FCC PART 15:2013	Section 15.247	Compliance
Peak Power	FCC PART 15:2013	Section 15.247	Compliance
Power Density	FCC PART 15:2013	Section 15.247	Compliance
Band Edge	FCC PART 15:2013	Section 15.247	Compliance
Antenna Requirement	FCC PART 15:2013	Section 15.203	Compliance

Note: The EUT has been tested as an independent unit. And Continual Transmitting in maximum power (The Adapter be used during Test)

### 4.2 Test connection



### 4.3 Assistant equipment used for test

Description	:	Adapter
Manufacturer	:	Ktec
Model No.	:	KAS29A0500250D5

#### 4.4 Test mode

The test software “adb.exe” was used to control EUT work in Continuous TX mode, and select test channel, wireless mode

Tested mode, channel, and data rate information		
Mode	Channel	Frequency (MHz)
GFSK	Low :CH1	2402
	Middle: CH20	2440
	High: CH40	2480

#### 4.5 Test Conditions

Temperature range	21-25℃
Humidity range	40-75%
Pressure range	86-106kPa

#### 4.6 Measurement Uncertainty (95% confidence levels, k=2)

Item	MU	Remark
Uncertainty for Power point Conducted Emissions Test	2.42dB	
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	2.13 dB	Polarize: V
	2.57dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.54dB	Polarize: V
	4.1dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	2.08dB	Polarize: H
	2.56dB	Polarize: V
Uncertainty for radio frequency	$1 \times 10^{-9}$	
Uncertainty for conducted RF Power	0.65dB	
Uncertainty for temperature	0.2℃	
Uncertainty for humidity	1%	
Uncertainty for DC and low frequency voltages	0.06%	

## 5 Spurious Emission

### 5.1 Radiation Emission

#### 5.1.1 Radiation Emission Limits(15.209)

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

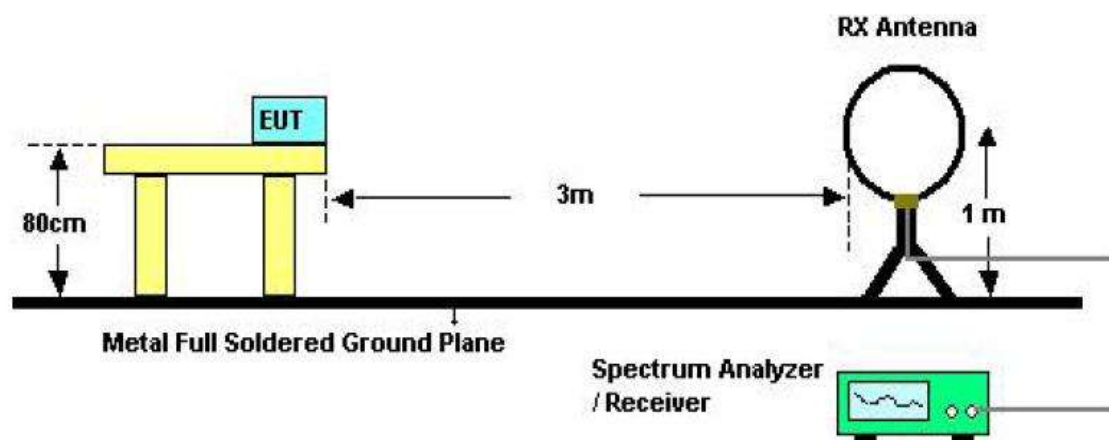
Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

**NOTE:**

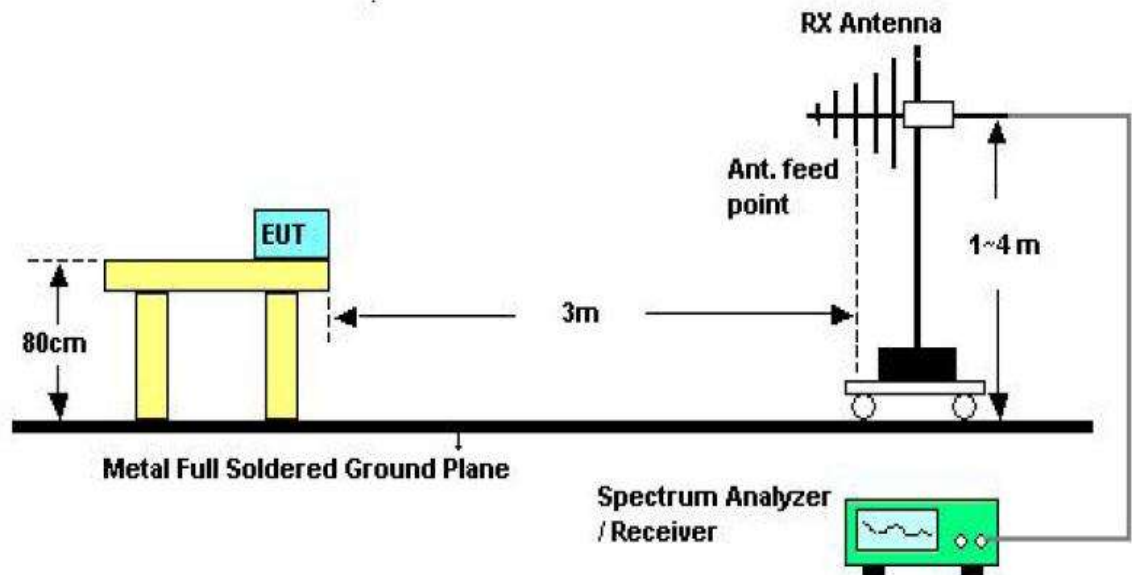
- The tighter limit applies at the band edges.
- Emission Level(dB uV/m)=20log Emission Level(Uv/m)

#### 5.1.2 Test Setup

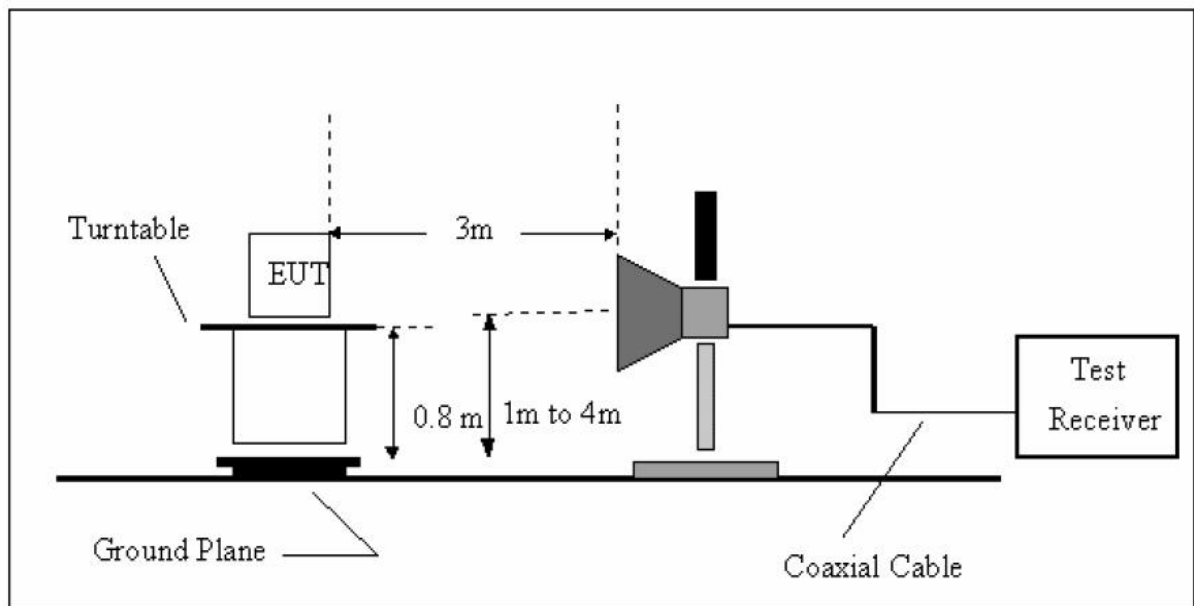
See the next page



### Below 30MHz Test Setup



### Above 30MHz Test Setup



### Above 1GHz Test Setup

### 5.1.3 Test Procedure

- a) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1GHz, The EUT was placed on a rotating 0.8 m high above ground, The table was rotated 360 degrees to determine the position of the highest radiation
- b) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set of make measurement.
- c) The initial step in collecting conducted emission data is a spectrum analyzer Peak detector mode pre-scanning the measurement frequency range. Significant Peaks are then marked. and then Qusia Peak Detector mode premeasured
- d) If Peak value comply with QP limit Below 1GHz. The EUT deemed to comply with QP limit. But the Peak value and average value both need to comply with applicable limit above 1GHz.
- e) For the actual test configuration, please see the test setup photo.

### 5.1.4 Test Equipment Setting For emission test Result

9KHz~150KHz	RBW 200Hz	VBW1KHz
150KHz~30MHz	RBW 9KHz	VBW 30KHz
30MHz~1GHz	RBW 120KHz	VBW 300KHz
Above 1GHz	RBW 1MHz	VBW 3MHz

### 5.1.5 Test Condition

Continual Transmitting in maximum power.

### 5.1.6 Test Result

We have scanned the 10th harmonic from 9KHz to the EUT.

Detailed information please see the following page.

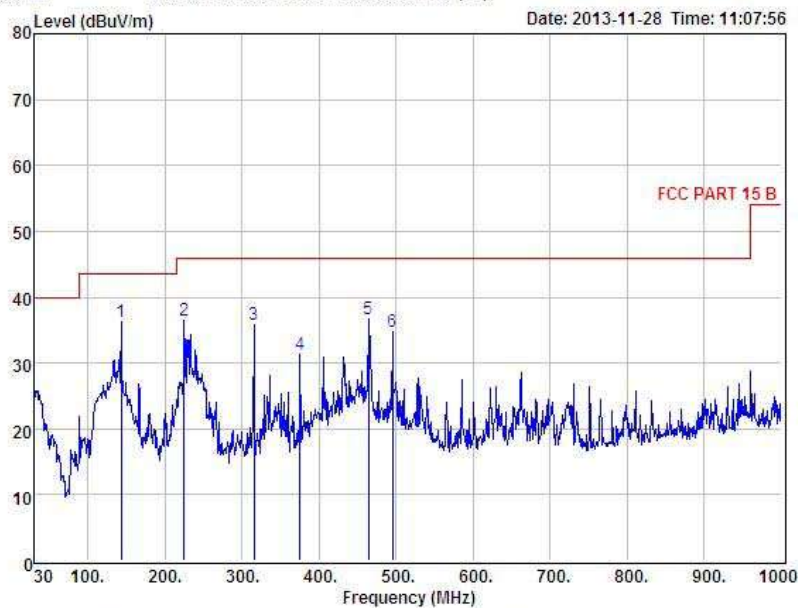
From 9KHz to 30MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



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Website: <http://www.cessz.com> Email: [Service@cessz.com](mailto:Service@cessz.com)

Data: 11 File: E:\TEST DATA\TUTURYRE设置.EM6 (47) Date: 2013-11-28 Time: 11:07:56



Condition : FCC PART 15 B 3m POL: HORIZONTAL  
EUT : 3D PAD  
Model No : A6102  
Test Mode : Link mode  
Power : DC 5V From Adapter AC 120V/60Hz  
Test Engineer : Simple  
Remark :  
Temp : 24  
Hum : 56%

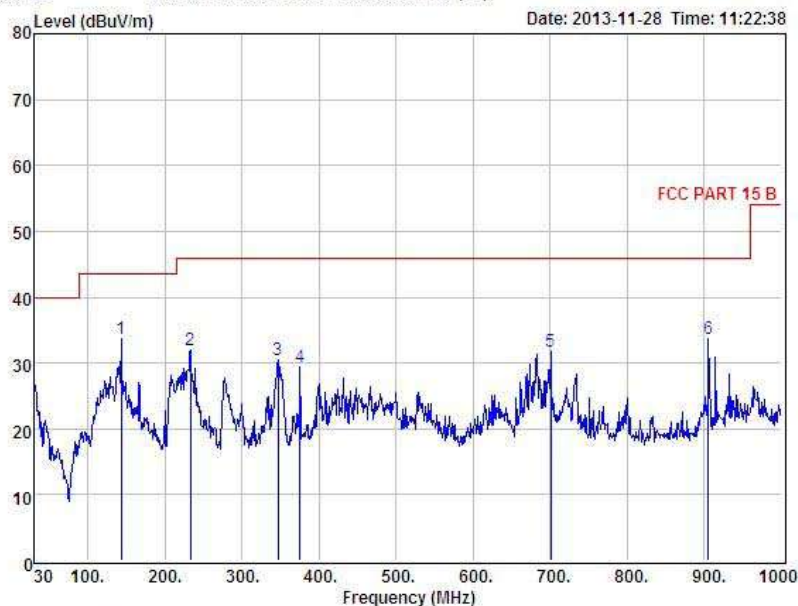
Item	Freq MHz	Read Level dBUV	Antenna Factor dB	Preamplifier Factor dB	Cable Loss dB	Level dBUV	Limit dBUV	Margin dBUV	Remark
1	143.49	53.73	13.64	31.51	0.38	36.24	43.80	-7.26	QP
2	224.97	56.12	10.98	31.17	0.55	36.48	46.00	-9.52	QP
3	315.18	53.28	13.19	31.30	0.57	35.74	46.00	-10.26	QP
4	375.32	46.85	14.32	30.90	1.01	31.28	46.00	-14.72	QP
5	464.56	50.09	16.11	30.62	1.00	36.58	46.00	-9.42	QP
6	495.60	47.75	16.46	30.62	1.07	34.66	46.00	-11.34	QP

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss



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Website: <http://www.cessz.com> Email: [Service@cessz.com](mailto:Service@cessz.com)

Data: 12 File: E:\TEST DATA\TUTURYRE设置.EM6 (47) Date: 2013-11-28 Time: 11:22:38



Condition : FCC PART 15 B 3m POL: VERTICAL  
EUT : 3D PAD  
Model No : A6102  
Test Mode : Link mode  
Power : DC 5V From Adapter AC 120V/60Hz  
Test Engineer : Simple  
Remark :  
Temp : 24  
Hum : 56%

Item	Freq MHz	Read Level dBuV	Antenna Factor dB	Preamplifier Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	143.49	51.18	13.64	31.51	0.38	33.69	43.80	-9.81	QP
2	232.73	51.06	11.26	31.02	0.56	31.86	46.00	-14.14	QP
3	347.19	46.62	13.77	30.66	0.69	30.42	46.00	-15.58	QP
4	375.32	45.01	14.32	30.90	1.01	29.44	46.00	-16.56	QP
5	700.27	41.47	19.67	30.07	0.71	31.78	46.00	-14.22	QP
6	904.94	39.70	21.72	29.11	1.44	33.75	46.00	-12.25	QP

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

1GHz—25GHz Radiated emissison Test result									
EUT: 3D PAD		M/N: A6102							
Power: DC 19V Supply by adapter with AC 120V/60Hz									
Test date: 2013-07-14		Test site: 3m Chamber			Tested by: Simple Guan				
Test mode: GFSK Tx CH1 2402MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4804	46.87	33.95	10.18	34.26	56.74	74.00	17.26	PK
2	4804	35.93	33.95	10.18	34.26	45.80	54.00	8.20	AV
3	7206	/							
4	9608	/							
5	12010	/							
Antenna Polarity: Horizontal									
1	4804	44.28	33.95	10.18	34.26	54.15	74.00	19.85	PK
2	4804	33.75	33.95	10.18	34.26	43.62	54.00	10.38	AV
3	7206	/							
4	9608	/							
5	12010	/							
Note:									
1, Measuring frequency from 1GHz to 25GHz									
2, Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK									
2, Spectrum Set for AV measure: RBW=1MHz, VBW=10Hz, Sweep time=Auto, Detector: PK									
3, Result = Read level + Antenna factor + cable loss-Amp factor									
4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

1GHz—25GHz Radiated emissison Test result									
EUT: 3D PAD			M/N: A6102						
Power: DC 19V Supply by adapter with AC 120V/60Hz									
Test date: 2013-07-14			Test site: 3m Chamber			Tested by: Simple Guan			
Test mode: GFSK Tx CH20 2440MHZ									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4880	44.82	33.93	10.20	34.29	54.66	74.00	19.34	PK
2	4880	36.59	33.93	10.20	34.29	46.43	54.00	7.57	AV
3	7320	/							
4	9760	/							
5	12200	/							
Antenna Polarity: Horizontal									
1	4880	43.82	33.93	10.20	34.29	53.66	74.00	20.34	PK
2	4880	32.75	33.93	10.20	34.29	42.59	54.00	11.41	AV
3	7320	/							
4	9760	/							
5	12200	/							
Note:									
1, Measuring frequency from 1GHz to 25GHz									
2, Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK									
2, Spectrum Set for AV measure: RBW=1MHz, VBW=10Hz, Sweep time=Auto, Detector: PK									
3, Result = Read level + Antenna factor + cable loss-Amp factor									
4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

1GHz—25GHz Radiated emission Test result									
EUT: 3D PAD M/N: A6102									
Power: DC 19V Supply by adapter with AC 120V/60Hz									
Test date: 2013-07-14 Test site: 3m Chamber Tested by: Simple Guan									
Test mode: GFSK Tx CH40 2480MHz									
Antenna polarity: Vertical									
No	Freq (MHz)	Read Level (dBuV/m)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960	45.28	33.98	10.22	34.25	55.23	74.00	18.77	PK
2	4960	34.79	33.98	10.22	34.25	44.74	54.00	9.26	AV
3	7440	/							
4	9920	/							
5	12400	/							
Antenna Polarity: Horizontal									
1	4960	43.53	33.98	10.22	34.25	53.48	74.00	20.52	PK
2	4960	33.06	33.98	10.22	34.25	43.01	54.00	10.99	AV
3	7440	/							
4	9920	/							
5	12400	/							
Note:									
1, Measuring frequency from 1GHz to 25GHz									
2, Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK									
2, Spectrum Set for AV measure: RBW=1MHz, VBW=10Hz, Sweep time=Auto, Detector: PK									
3, Result = Read level + Antenna factor + cable loss-Amp factor									
4, All the other emissions not reported were too low to read and deemed to comply with FCC limit.									

## 6 POWER LINE CONDUCTED EMISSION

### 6.1 Conducted Emission Limits(15.207)

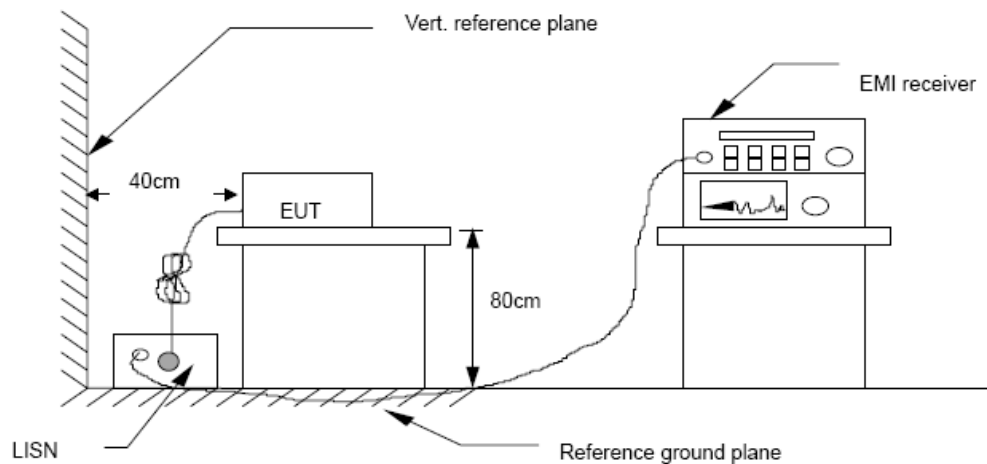
Frequency MHz	Limits dB( $\mu$ V)	
	Quasi-peak Level	Average Level
0.15 -0.50	66 -56*	56 - 46*
0.50 -5.00	56	46
5.00 -30.00	60	50

Notes: 1. \*Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3. The limit decreases in line with the logarithm of the frequency in the rang of 0.15 to 0.50 MHz.

### 6.2 Test Setup



### 6.3 Test Procedure

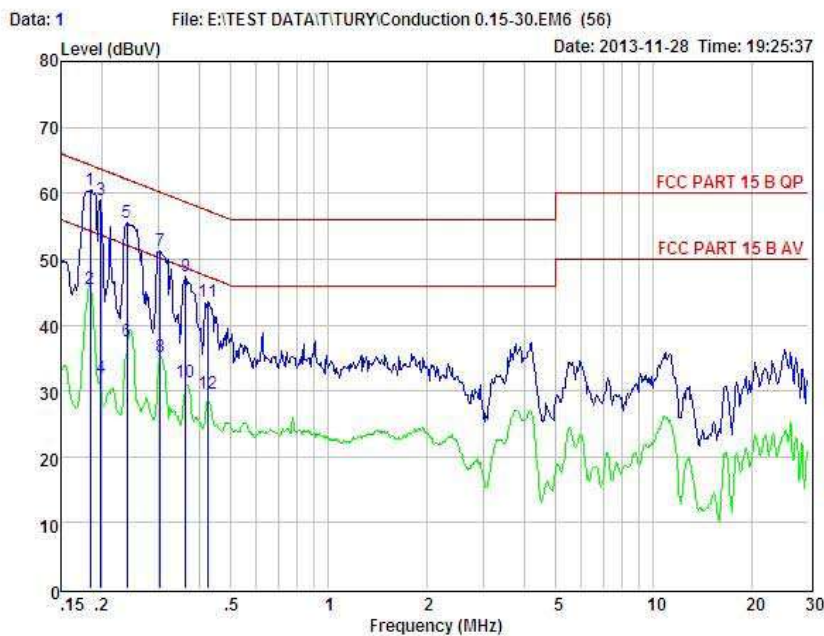
The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4-2003 on Conducted Emission Measurement. The bandwidth of test receiver (R & S ESCS30) is set at 9 kHz.

### 6.4 Test Results

**PASS.** Detailed information please see the following page.



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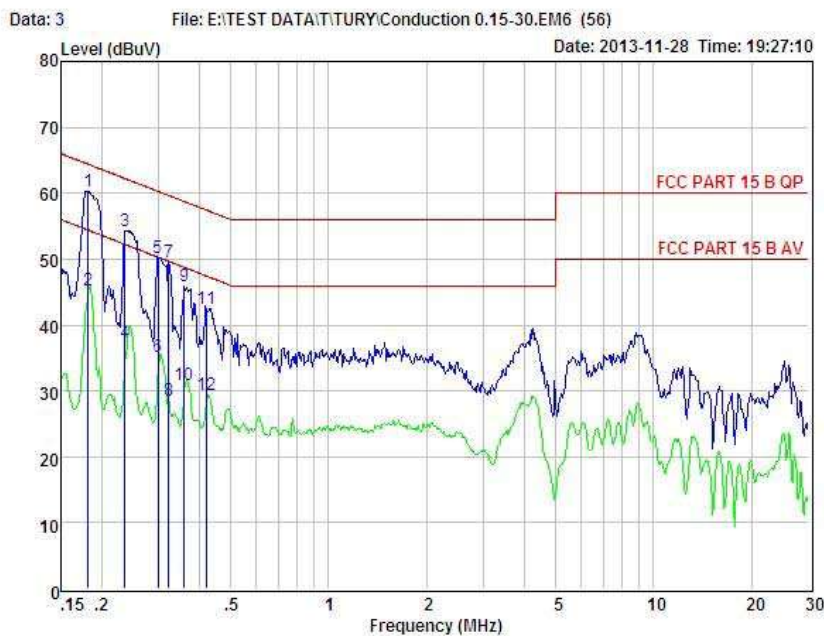
Condition : FCC PART 15 B QP POL: NEUTRAL Temp:24 °C Hum:56 %  
EUT : 3D PAD  
Model No : A6102  
Test Mode : Link mode  
Power : DC 5V From Adapter AC 120V/60Hz  
Test Engineer: Simple  
Remark :

Item	Freq MHz	Read dBuV	LISN Factor dB	Preamplifier Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	0.184	50.84	0.03	-9.72	0.10	60.39	64.28	-3.89	QP
2	0.184	35.84	0.03	-9.72	0.10	45.39	54.28	-8.89	Average
3	0.199	49.11	0.03	-9.72	0.10	58.96	63.67	-4.71	QP
4	0.199	22.11	0.03	-9.72	0.10	31.96	53.67	-21.71	Average
5	0.239	45.63	0.03	-9.72	0.10	55.48	62.13	-6.65	QP
6	0.239	27.63	0.03	-9.72	0.10	37.48	52.13	-14.65	Average
7	0.303	41.32	0.03	-9.72	0.10	51.17	60.15	-8.98	QP
8	0.303	25.32	0.03	-9.72	0.10	35.17	50.15	-14.98	Average
9	0.363	37.56	0.03	-9.72	0.10	47.41	58.65	-11.24	QP
10	0.363	21.56	0.03	-9.72	0.10	31.41	48.65	-17.24	Average
11	0.426	33.76	0.03	-9.72	0.10	43.61	57.33	-13.72	QP
12	0.426	19.76	0.03	-9.72	0.10	29.61	47.33	-17.72	Average

Remarks: Level = Read + LISN Factor - Preamp Factor + Cable loss



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Condition : FCC PART 15 B QP POL: LINE Temp:24 °C Hum:56 %  
EUT : 3D PAD  
Model No : A6102  
Test Mode : Link mode  
Power : DC 5V From Adapter AC 120V/60Hz  
Test Engineer: Simple  
Remark :

Item	Freq MHz	Read dBuV	LISN Factor dB	Preamp Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	0.182	50.50	0.03	-9.72	0.10	60.35	64.42	-4.07	QP
2	0.182	35.50	0.03	-9.72	0.10	45.35	64.42	-19.07	Average
3	0.237	44.47	0.03	-9.72	0.10	54.32	62.22	-7.90	QP
4	0.237	27.47	0.03	-9.72	0.10	37.32	62.22	-24.90	Average
5	0.299	40.42	0.03	-9.72	0.10	50.27	60.28	-10.01	QP
6	0.299	25.42	0.03	-9.72	0.10	35.27	60.28	-25.01	Average
7	0.322	39.72	0.03	-9.72	0.10	49.57	59.66	-10.09	QP
8	0.322	18.72	0.03	-9.72	0.10	28.57	49.66	-21.09	Average
9	0.360	36.02	0.03	-9.72	0.10	45.87	58.74	-12.87	QP
10	0.360	21.02	0.03	-9.72	0.10	30.87	48.74	-17.87	Average
11	0.419	32.58	0.03	-9.72	0.10	42.43	57.46	-15.03	QP
12	0.419	19.58	0.03	-9.72	0.10	29.43	47.46	-18.03	Average

Remarks: Level = Read + LISN Factor - Preamp Factor + Cable loss

## 7 Conducted Maximum Output Power

### 7.1 Test limit

Please refer section 15.247.

Regulation 15.247(b) The limit of Maximum Peak Output Power Measurement is 1W(30dBm)

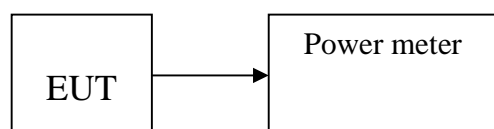
### 7.2 Test Procedure

7.2.1 Connected the EUT's antenna port to peak power meter by 20dB attenuator.

7.2.2 Measure out each mode and each bands peak output power of EUT.

Note: The cable loss and attenuator loss were offset into measure device as amplitude offset.  
Details see the KDB558074 DTS Meas Guidance V03

### 7.3 Test Setup



### 7.4 Test Results

**PASS**

Detailed information please see the Below.

Channel	Frequency (MHz)	PK Output Power (dBm)	PK Output Power (mW)	Limit (dBm)
CH0	2402	3.89	2.45	30
CH19	2440	3.52	2.25	30
CH39	2480	3.64	2.31	30

## 8 PEAK POWER SPECTRAL DENSITY

### 8.1 Test limit

8.1.1 Please refer section 15.247.

8.1.2 For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

8.1.3 The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

### 8.2 Method of measurement

Details see the KDB558074 D01 Meas Guidance

8.2.1 Place the EUT on the table and set it in transmitting mode.

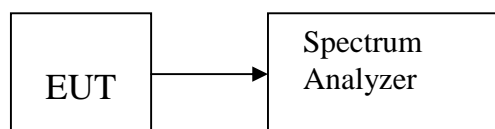
8.2.2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

8.2.3 Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, span=1.5OBW, detail see the test plot.

8.2.4 Record the max reading.

8.2.5 Repeat the above procedure until the measurements for all frequencies are completed.

### 8.3 Test Setup



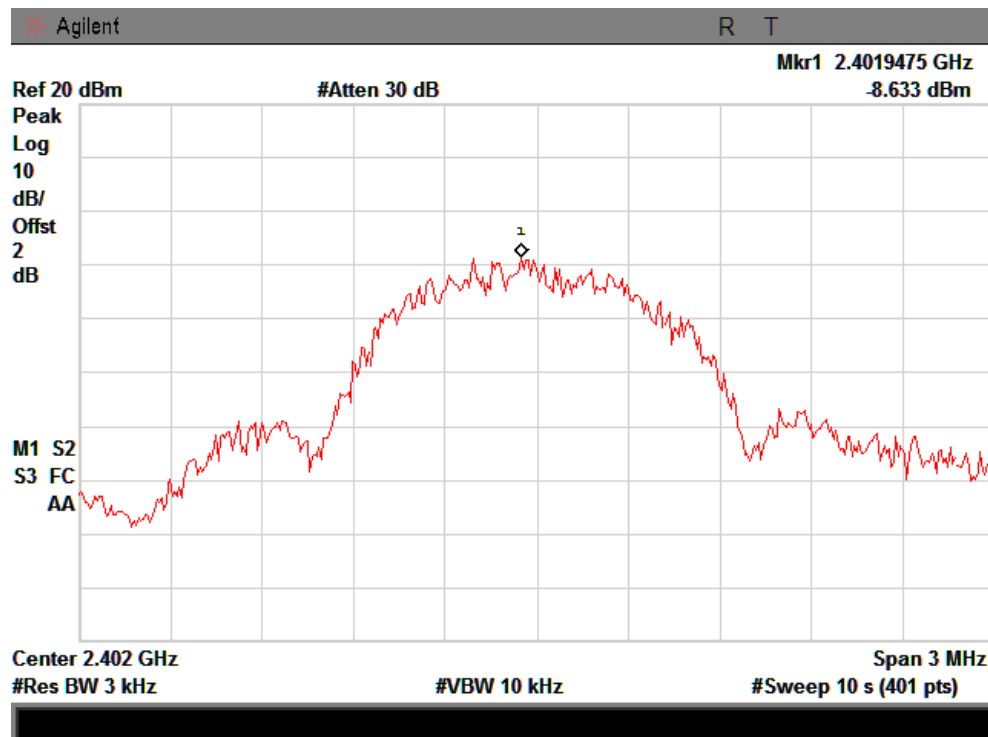
### 8.4 Test Results

PASS.

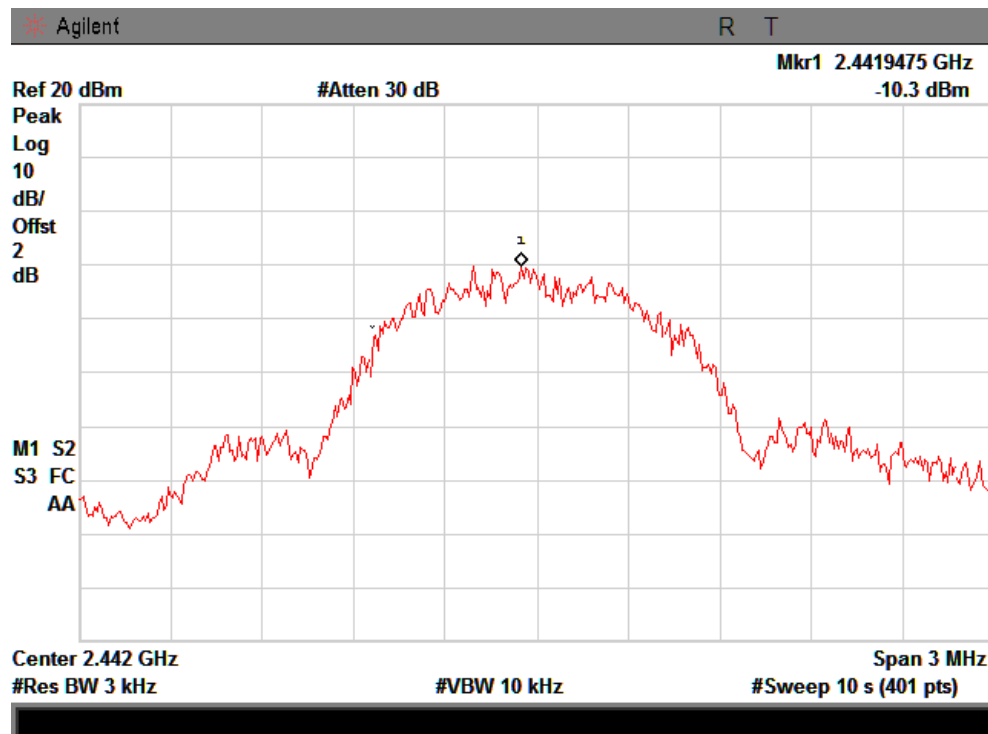
Detailed information please see the following page.

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm)	Result
CH0	2402	-8.63	8	PASS
CH19	2440	-10.30	8	PASS
CH39	2480	-11.59	8	PASS

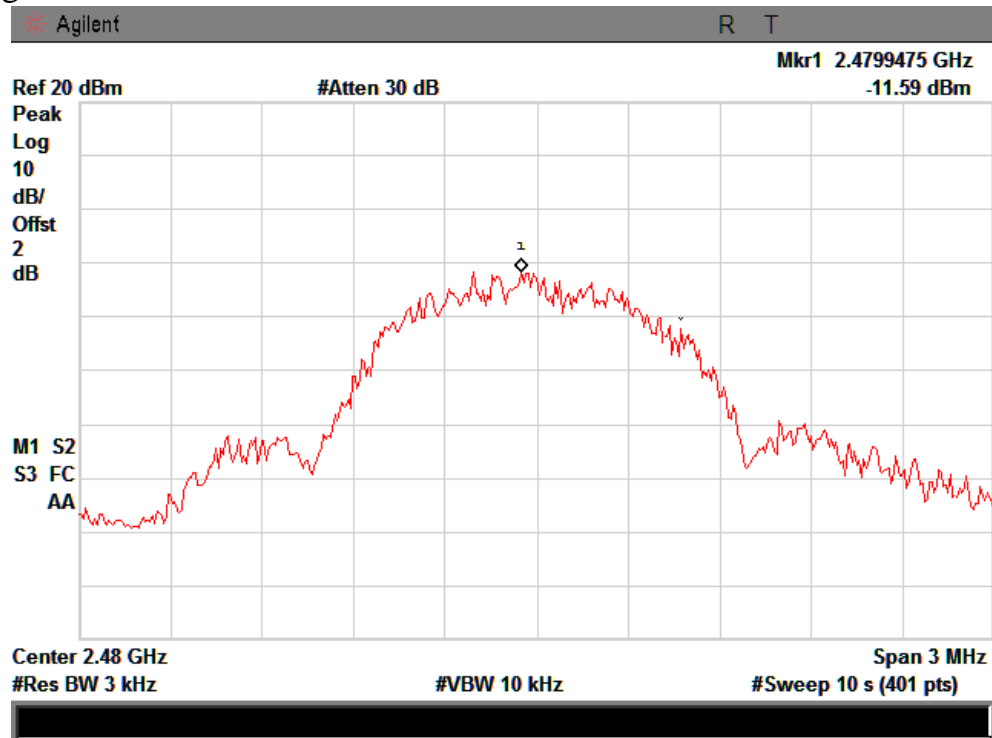
CH Low :



CH Mid :



CH High :



## 9 Bandwidth

### 9.1 Test limit

Please refer section 15.247

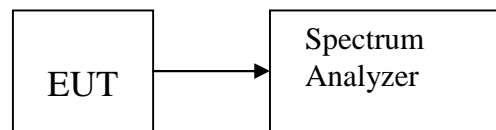
For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

### 9.2 Method of measurement

Details see the KDB558074 D01 Meas Guidance

- a) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.
- b) The test receiver set RBW = 100KHz, VBW  $\geq$  3RBW, Sweep time set auto, detail see the test plot.

### 9.3 Test Setup



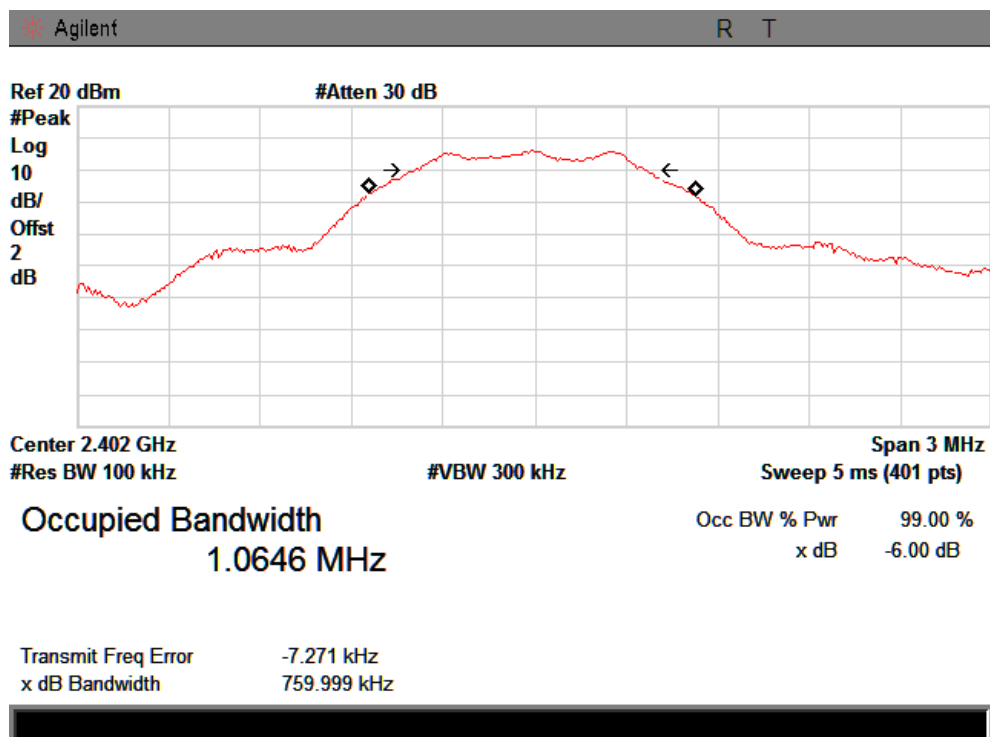
### 9.4 Test Results

PASS.

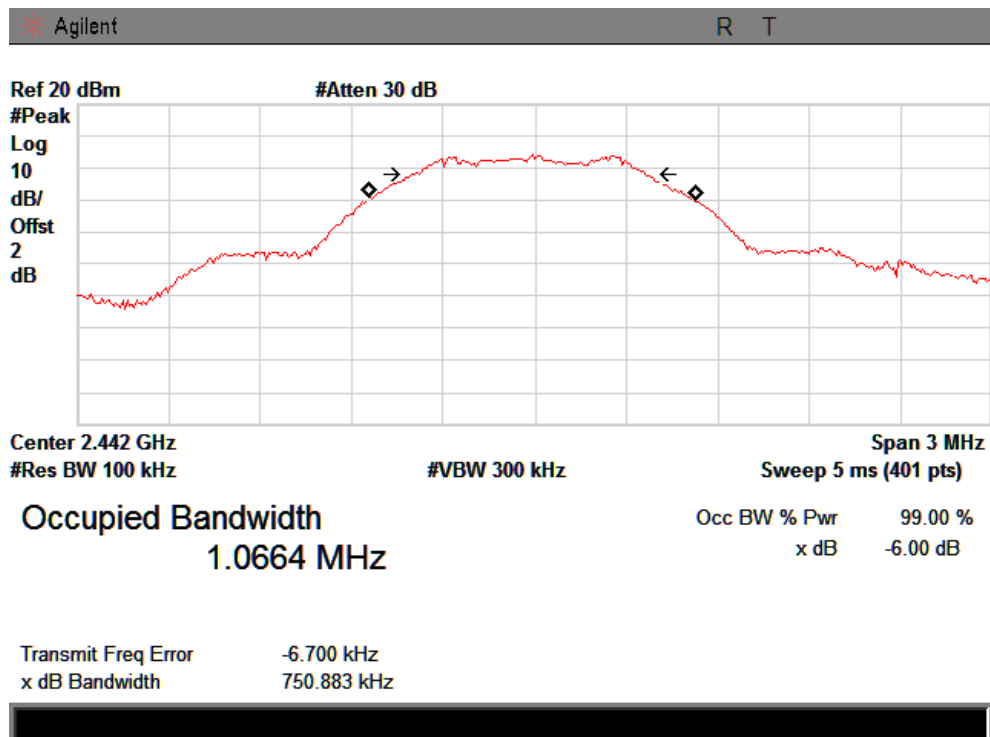
Detailed information please see the following page.

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
CH0	2402	0.760	0.5	PASS
CH19	2440	0.751	0.5	PASS
CH39	2480	0.752	0.5	PASS

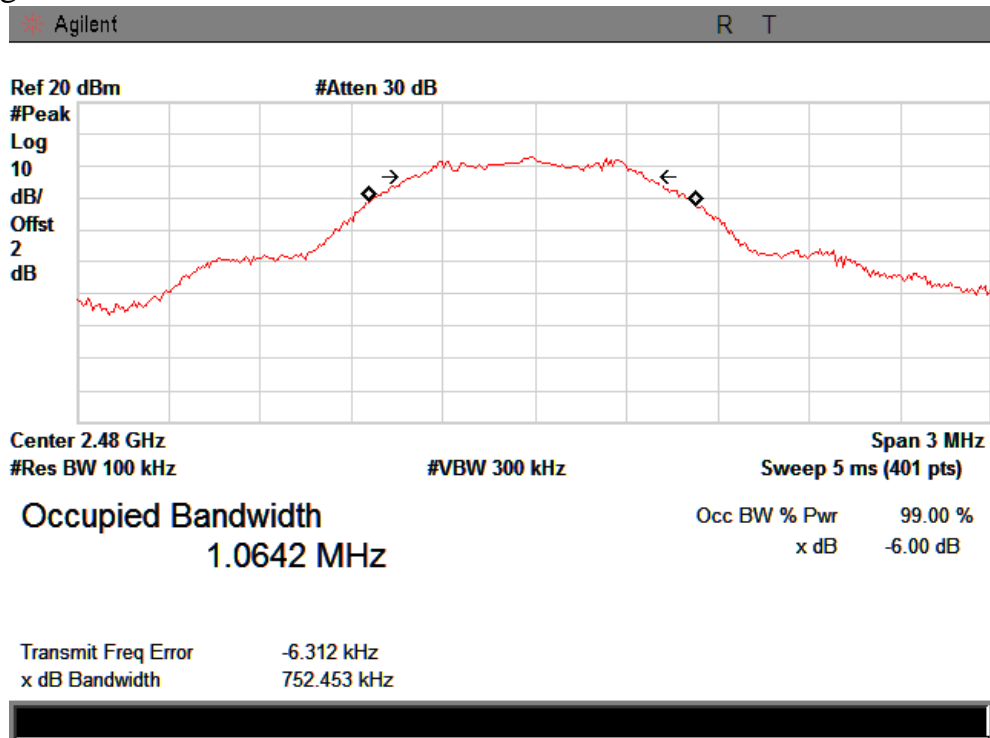
CH Low :



CH Mid :



CH High :



## 10 Band Edge Check

### 10.1 Test limit

Please refer section 15.247

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

### 10.2 Test Procedure

12.2.1 Put the EUT on a 0.8m high table, power on the EUT. Emissions were scanned and measured rotating the EUT to 360 degrees, Find the maximum Emission

12.2.2 Check the spurious emissions out of band.

12.2.3 RBW, VBW Setting, please see the following test plot.

### 10.3 Test Setup

Same as 5.2.2.

### 10.4 Test Result

PASS.

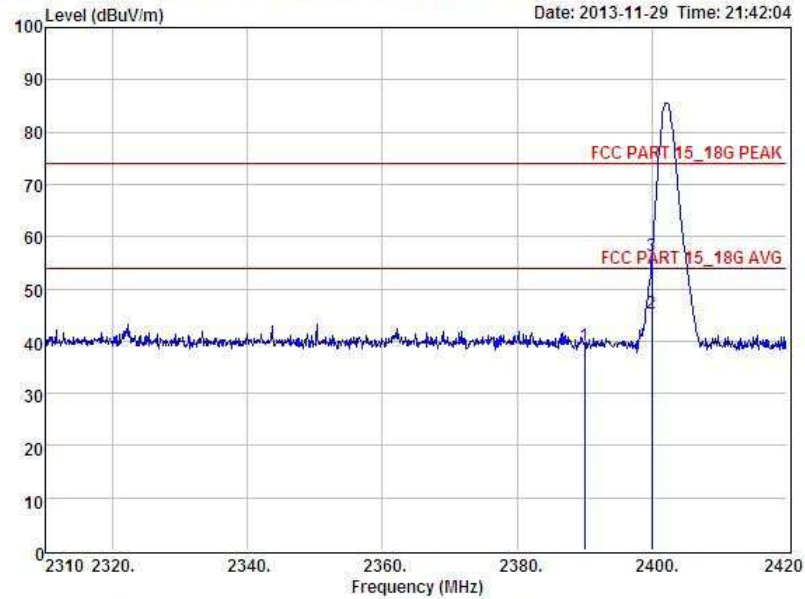
Detailed information please see the following page.

CH LOW :



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Website: <http://www.cessz.com> Email: [Service@cessz.com](mailto:Service@cessz.com)

Data: 10 File: D:\TEST DATA\无线测试\Truly\BAND.EM6 (36) Date: 2013-11-29 Time: 21:42:04



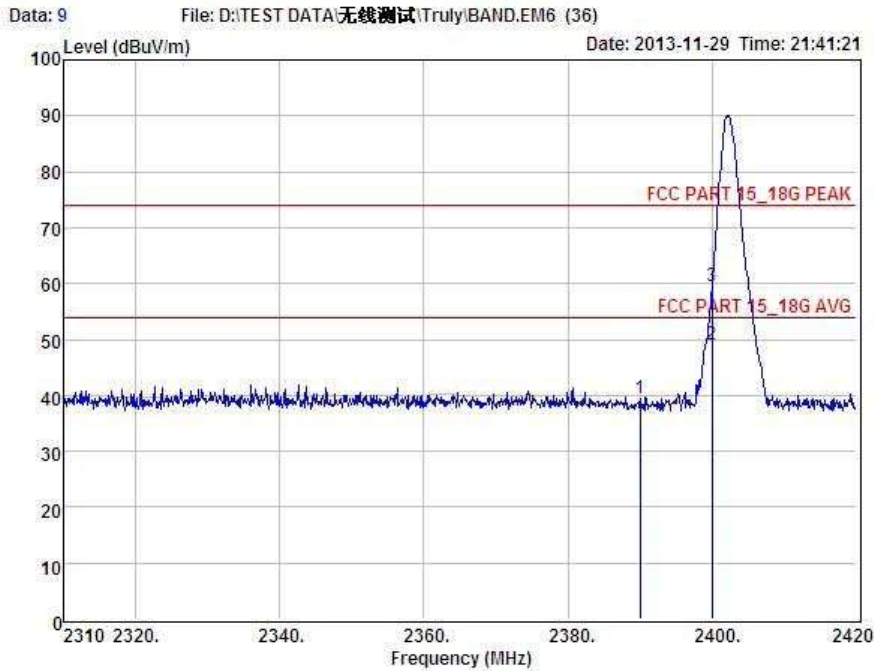
Condition : FCC PART 15\_18G PEAK 3m POL: HORIZONTAL  
EUT : 3D PAD  
Model No : A6102  
Test Mode : BT 4.0 TX 2402MHz  
Power : DC 19V From adapter with AC 120V/60Hz  
Test Engineer : Simple  
Remark :  
Temp : 24.2℃  
Hum : 54%

Item	Freq MHz	Read Level dBuV	Antenna Factor dB	Preamplifier Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	2390.00	42.44	27.62	34.97	3.92	39.01	74.00	-34.99	Peak
2	2400.00	48.79	27.62	34.97	3.94	45.38	54.00	-8.62	Average
3	2400.00	59.69	27.62	34.97	3.94	56.28	74.00	-17.72	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss



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Condition : FCC PART 15\_18G PEAK 3m POL: VERTICAL  
EUT : 3D PAD  
Model No : A6102  
Test Mode : BT 4.0 TX 2402MHz  
Power : DC 19V From adapter with AC 120V/60Hz  
Test Engineer : Simple  
Remark :  
Temp : 24.2℃  
Hum : 54%

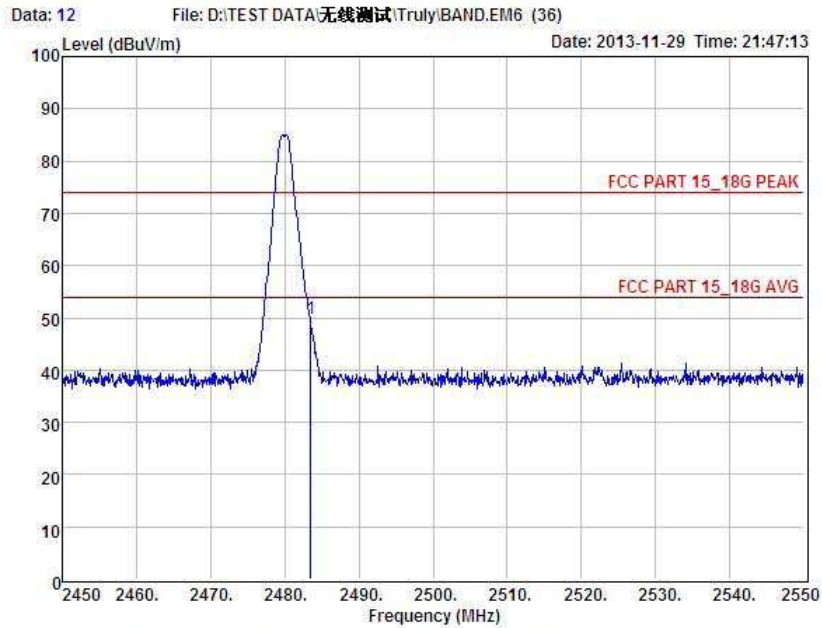
Item	Freq MHz	Read Level dBuV	Antenna Factor dB	Preamp Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	2390.00	42.92	27.62	34.97	3.92	39.49	74.00	-34.51	Peak
2	2400.00	52.57	27.62	34.97	3.94	49.16	54.00	-4.84	Average
3	2400.00	62.90	27.62	34.97	3.94	59.49	74.00	-14.51	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

CH High :



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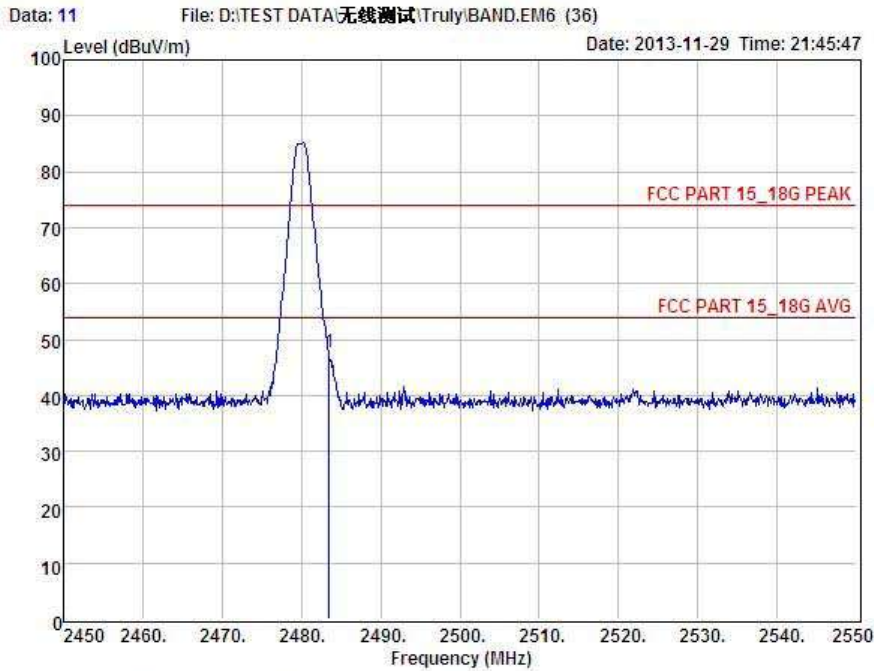
Condition : FCC PART 15\_18G PEAK 3m POL: HORIZONTAL  
EUT : 3D PAD  
Model No : A6102  
Test Mode : BT 4.0 TX 2480MHz  
Power : DC 19V From adapter with AC 120V/60Hz  
Test Engineer : Simple  
Remark :  
Temp : 24.2°C  
Hum : 54%

Item	Freq MHz	Read Level dBuV	Antenna Factor dB	Preamplifier Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	2483.50	83.38	27.59	34.97	4.00	80.00	74.00	-24.00	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss



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Condition : FCC PART 15\_18G PEAK 3m POL: VERTICAL  
EUT : 3D PAD  
Model No : A6102  
Test Mode : BT 4.0 TX 2480MHz  
Power : DC 19V From adapter with AC 120V/60Hz  
Test Engineer : Simple  
Remark :  
Temp : 24.2℃  
Hum : 54%

Item	Freq MHz	Read Level dBuV	Antenna Factor dB	Preamplifier Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	2483.50	51.13	27.59	34.97	4.00	47.75	74.00	-26.25	Peak

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

## 11 Antenna Requirement

### 11.1 Limit

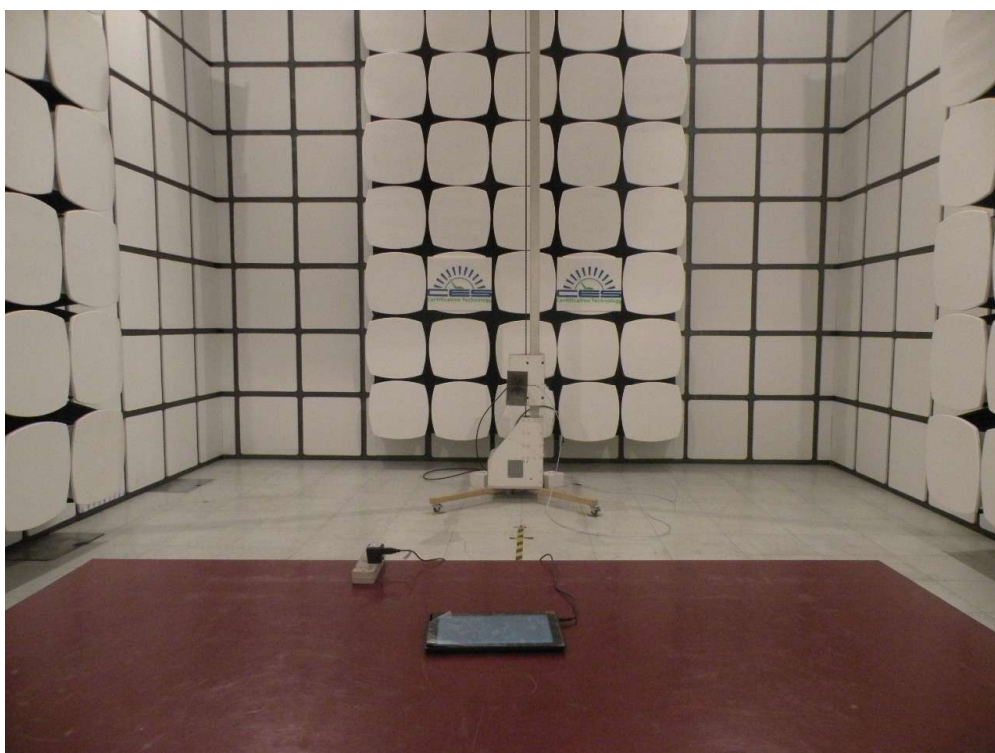
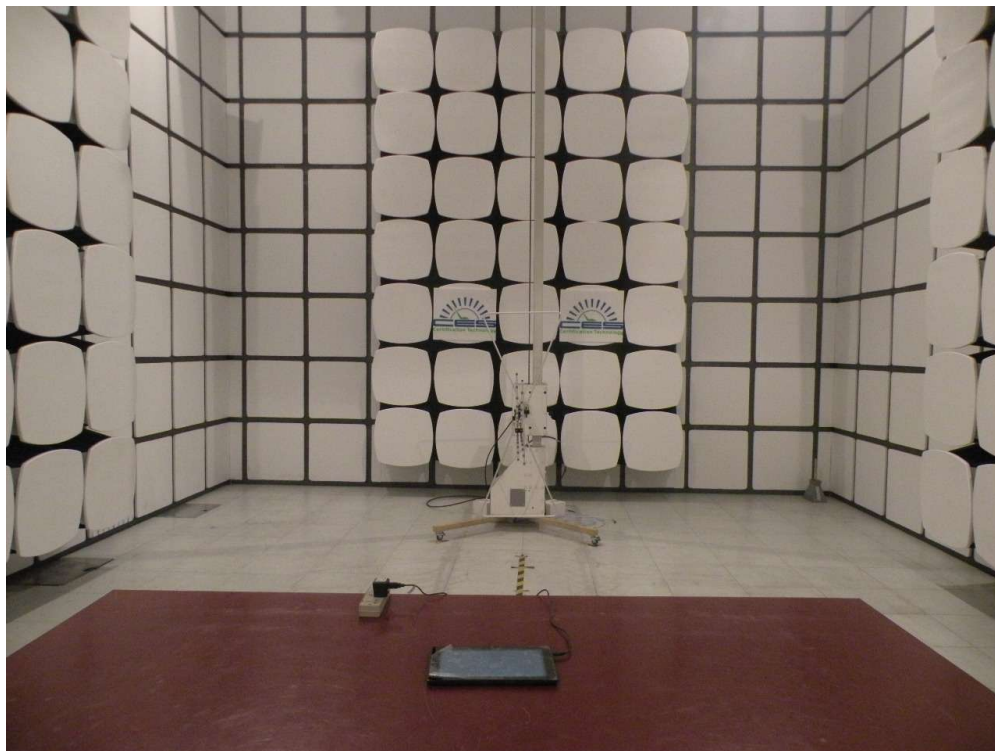
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### 11.2 Result

The antennas used for this product are PIFA Antenna for Bluetooth/WIFI, PIFA Antenna For GSM/WCDMA and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 1dBi for Bluetooth/WIFI and 1.5dBi for GSM/WCDMA .

## 12 Test setup photo

### 12.1 Photos of Radiated emission



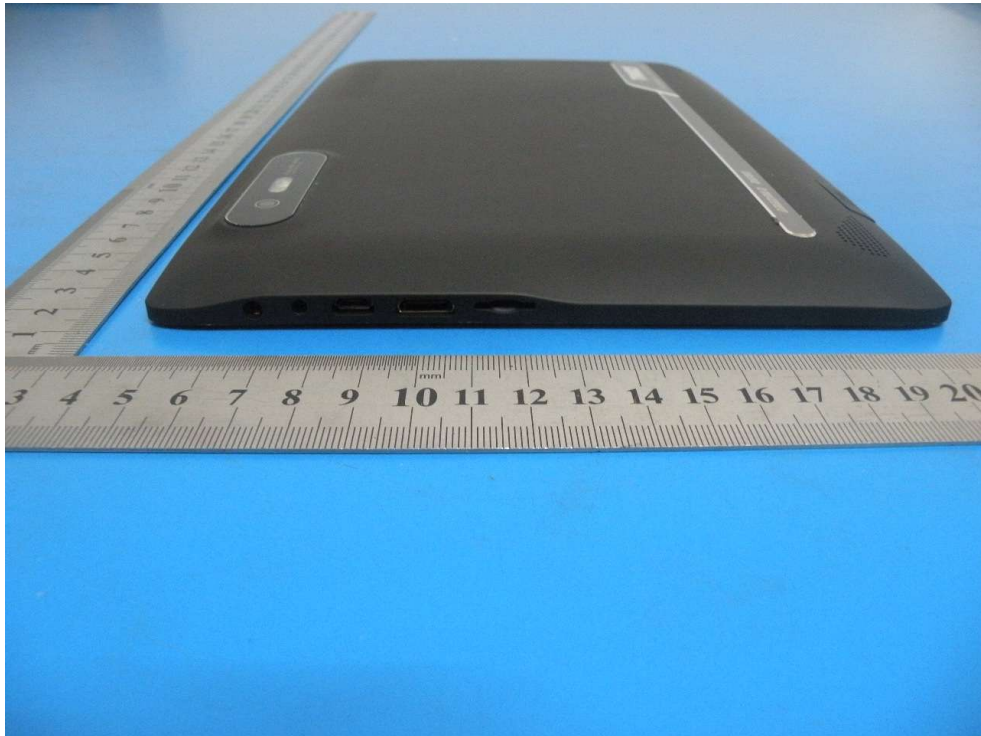
## 12.2 Photos of Conducted Emission test

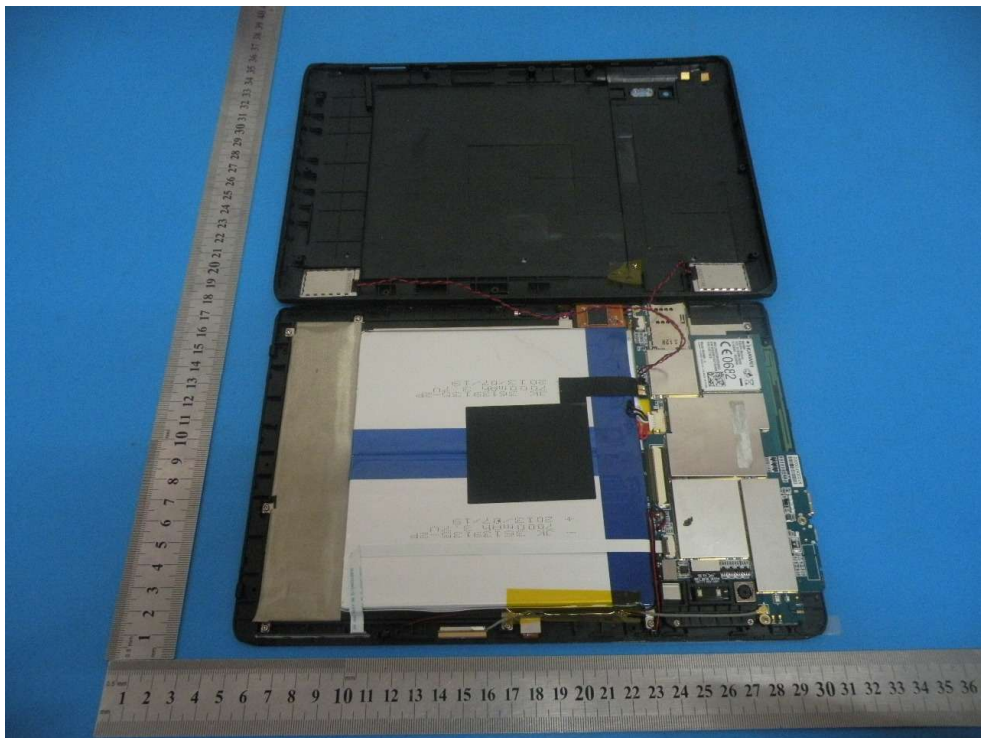


## 13 Photographs of EUT

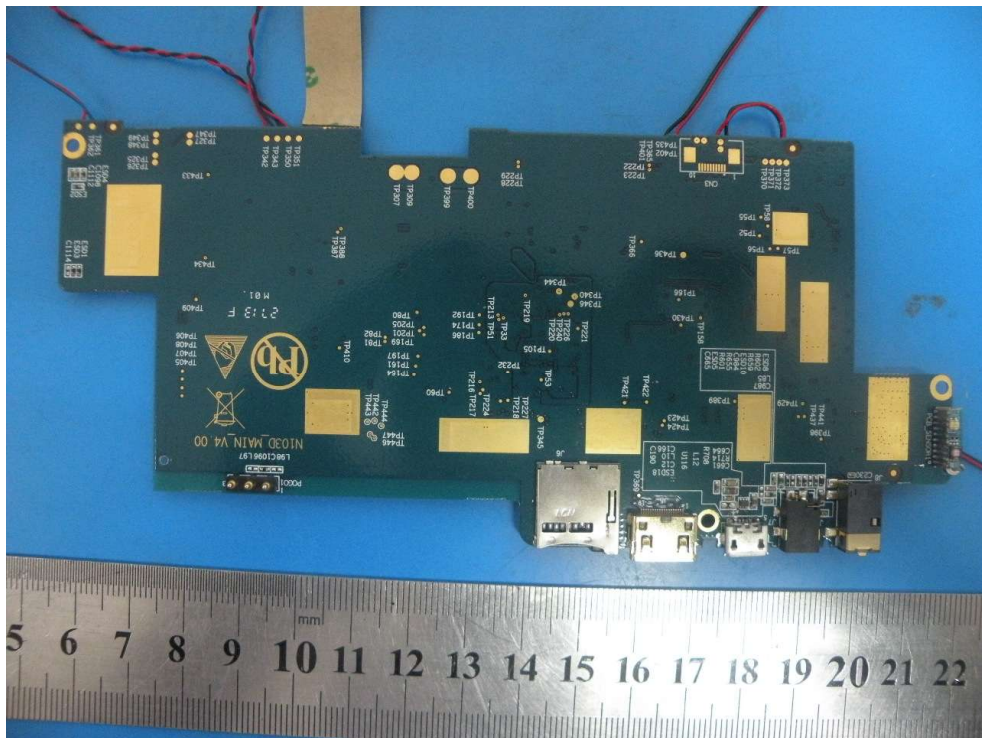
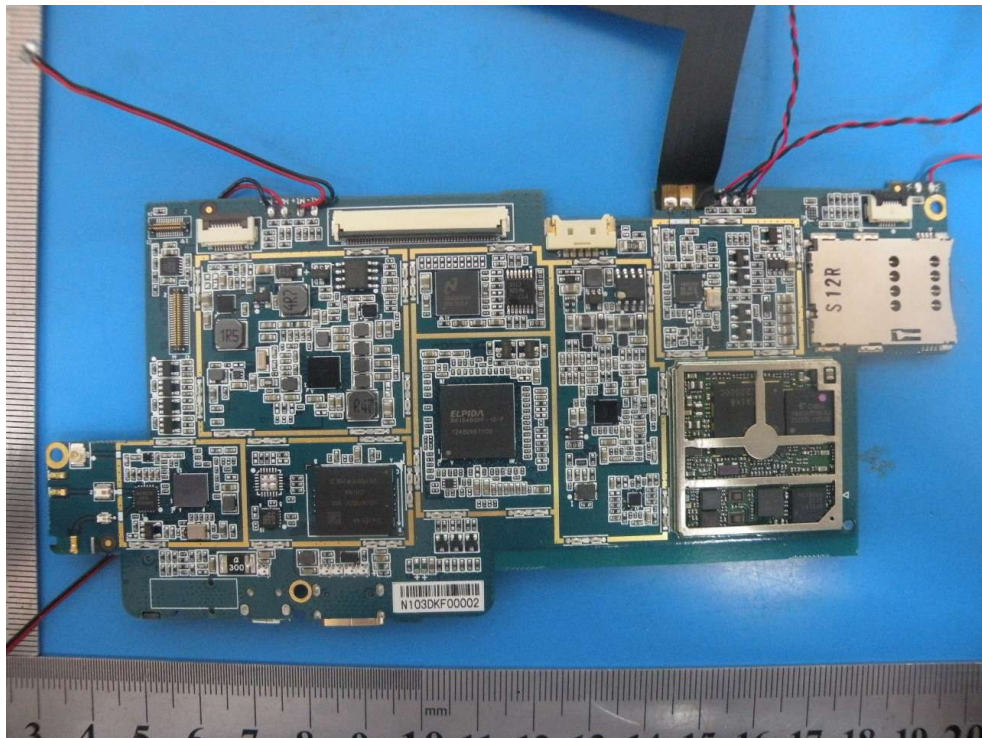


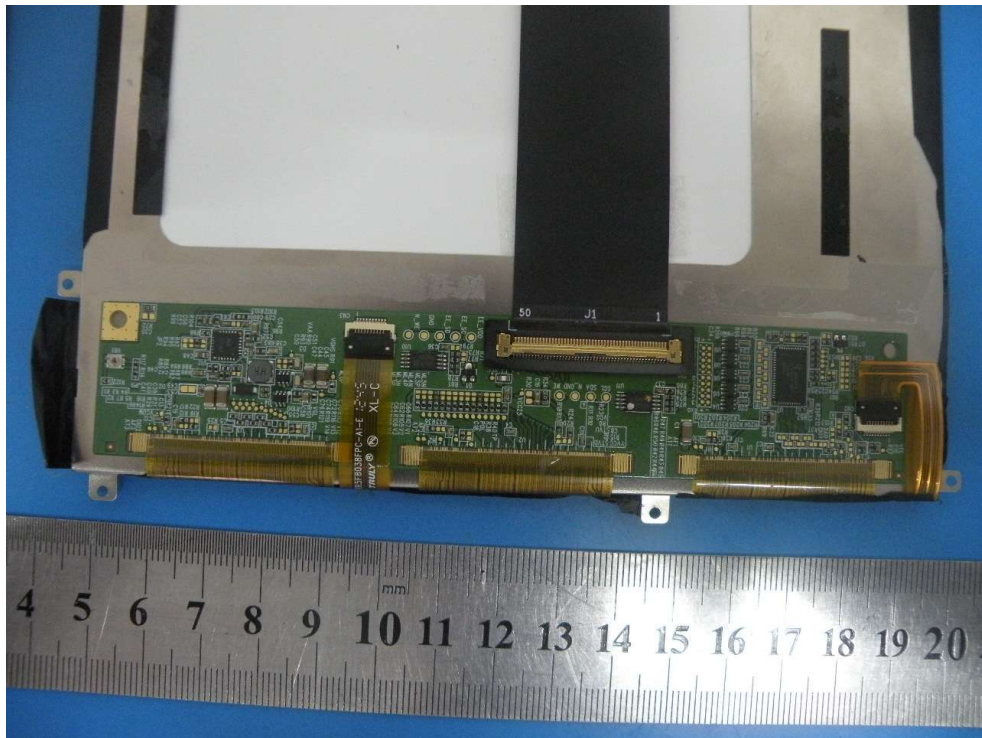














-----END OF THE REPORT-----