



Variant FCC RF Test Report

APPLICANT : Lenovo (Shanghai) Electronics
Technology Co., Ltd.
EQUIPMENT : Tablet PC IdeaTab A1000-F
BRAND NAME : lenovo
MODEL NAME : 60027
MARKETING NAME : IDEATAB A1000-F
FCC ID : O57A1000F
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

This is a variant report which is only valid together with the original test report. The product was received on May 03, 2013 and completely tested on May 29, 2013. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (SHENZHEN) INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (SHENZHEN) INC.

No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District,
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TABLE OF CONTENTS

REVISION HISTORY	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant.....	5
1.2 Manufacturer.....	5
1.3 Feature of Equipment Under Test	5
1.4 Product Specification of Equipment Under Test.....	5
1.5 Modification of EUT	6
1.6 Testing Site.....	6
1.7 Applied Standards	6
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	7
2.1 Descriptions of Test Mode.....	7
2.2 Test Mode.....	8
2.3 Connection Diagram of Test System.....	9
2.4 Support Unit used in test configuration and system	10
2.5 Description of RF Function Operation Test Setup.....	10
2.6 Measurement Results Explanation Example.....	11
3 TEST RESULT	12
3.1 Peak Output Power Measurement	12
3.2 Radiated Band Edges and Spurious Emission Measurement	15
3.3 Antenna Requirements.....	27
4 LIST OF MEASURING EQUIPMENT	28
5 UNCERTAINTY OF EVALUATION	29
APPENDIX A. PHOTOGRAPHS OF EUT	
APPENDIX B. SETUP PHOTOGRAPHS	
APPENDIX C. PRODUCT EQUALITY DECLARATION	



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(b)(1)	Peak Output Power	≤ 30dBm	Pass	-
3.2	15.247(d)	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 11.66 dB at 81.500 MHz
3.3	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Lenovo (Shanghai) Electronics Technology Co., Ltd.
No. 68 Building, 199 Fenju Road, Wai Gao Qiao FTZ, Shanghai, China

1.2 Manufacturer

Lenovo PC HK Limited
23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Tablet PC IdeaTab A1000-F
Brand Name	lenovo
Model Name	60027
Marketing Name	IdeaTab A1000-F
FCC ID	O57A1000F
EUT supports Radios application	WLAN 11bgn / Bluetooth 2.1/3.0/4.0
HW Version	A3000_MB_PCB_V3.0
SW Version	A1000T_A412_01_07_130118_CN
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Number of Channels	40
Carrier Frequency of Each Channel	40 Channel(37 hopping + 3 advertising channel)
Maximum Output Power to Antenna	1.57 dBm (0.00144 W)
Antenna Type	PIFA Antenna type with gain 1 dBi
Type of Modulation	Bluetooth 4.0 - LE : GFSK



1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Site

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.		
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755- 3320-2398		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	TH01-SZ	03CH01-SZ	831040/4086F-1

The test site complies with ANSI C63.4 2003 requirement.

1.7 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01
- ♦ ANSI C63.10-2009

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Descriptions of Test Mode

The RF output power was recorded in the following table:

Channel	Frequency	Bluetooth 4.0 – LE RF Output Power	
		Data Rate / Modulation	
		GFSK	
		1Mbps	
Ch00	2402MHz	1.57 dBm	
Ch19	2440MHz	0.2 dBm	
Ch39	2480MHz	0.14 dBm	

- a. The EUT has been associated with peripherals pursuant to ANSI C63.10-2009 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 KHz to 30 MHz), radiation (9 KHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). Pre-scanned tests, X, Y, Z in three orthogonal panels to determine the final configuration (Z plane as worst plane) from all possible combinations.



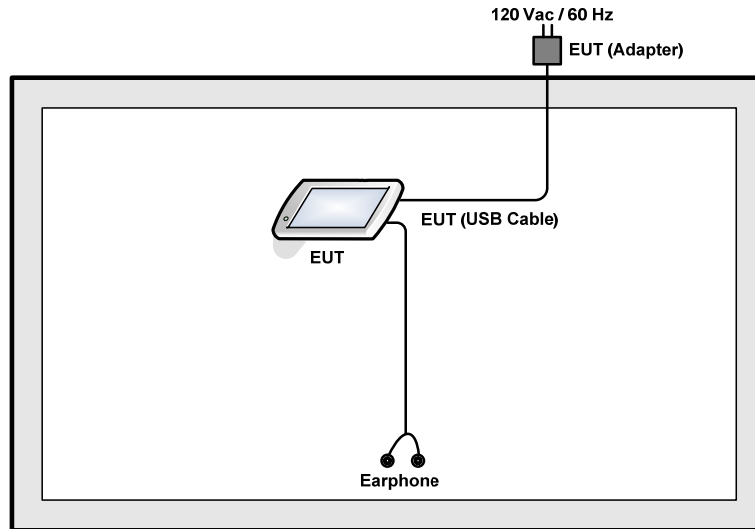
2.2 Test Mode

The following summary table is showing all test modes to demonstrate in compliance with the standard.

Summary table of Test Cases	
Test Item	Data Rate / Modulation
	Bluetooth 4.0 – LE / GFSK
Conducted TCs	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps
Radiated TCs	Mode 1: Bluetooth Tx CH39_2480 MHz_1Mbps

2.3 Connection Diagram of Test System

<Bluetooth 4.0 – LE Tx Mode>





2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	DC Power Supply	GWINSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m

2.5 Description of RF Function Operation Test Setup

For Bluetooth function, the engineering test program was provided and enabled to make EUT connect with Bluetooth base station to continuous transmit/receive.



2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 4.2 + 10 = 14.2 \text{ (dB)} \end{aligned}$$

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

$$\text{Offset} = \text{RF cable loss} + \text{attenuator factor}.$$

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

3 Test Result

3.1 Peak Output Power Measurement

3.1.1 Limit of Peak Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

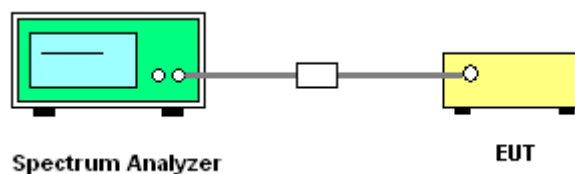
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r01.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.1.4 Test Setup



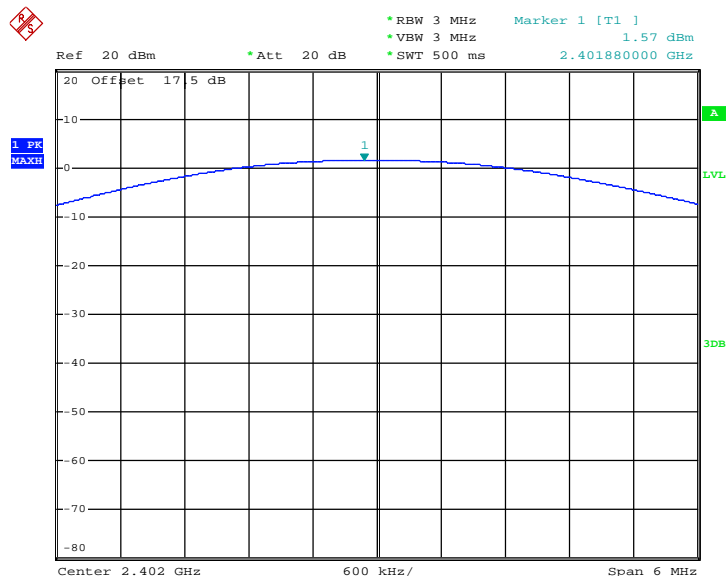


3.1.5 Test Result of Peak Output Power

Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	1.57	30.00	Pass
19	2440	0.2	30.00	Pass
39	2480	0.14	30.00	Pass

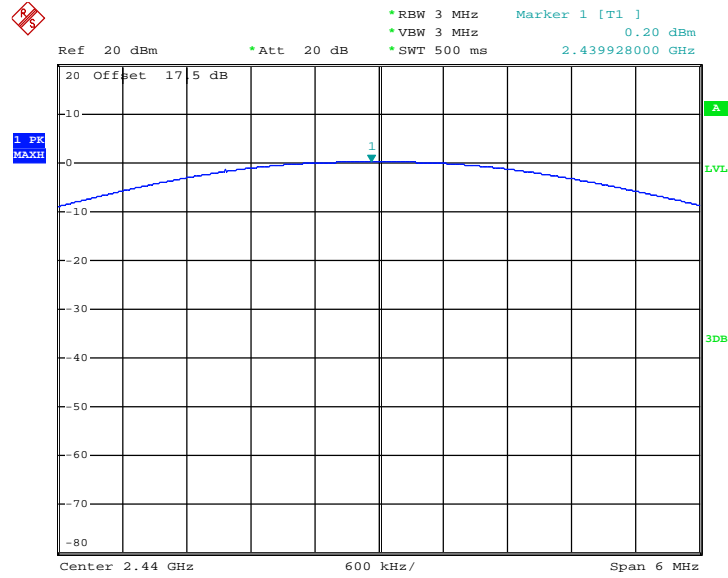
Peak Output Power Plot on Channel 00



Date: 11.MAY.2013 17:28:32

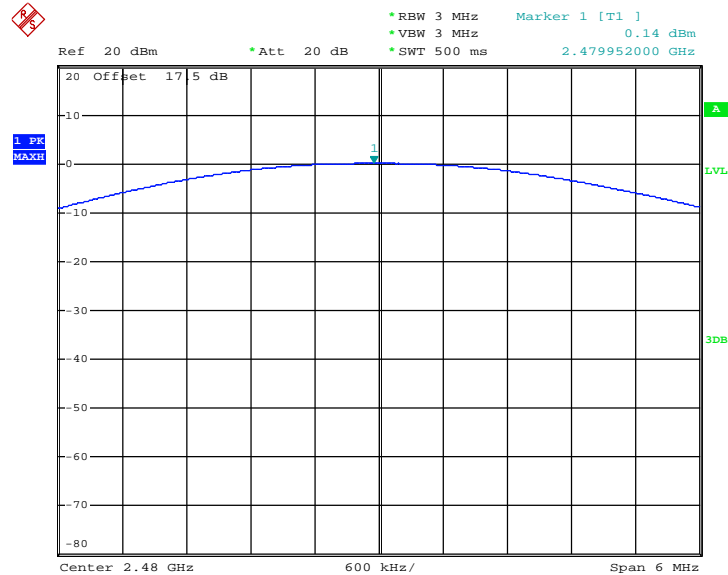


Peak Output Power Plot on Channel 19



Date: 12.MAY.2013 16:29:28

Peak Output Power Plot on Channel 39



Date: 11.MAY.2013 17:27:12



3.2 Radiated Band Edges and Spurious Emission Measurement

3.2.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 KHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/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

3.2.2 Measuring Instruments

See list of measuring instruments of this test report.



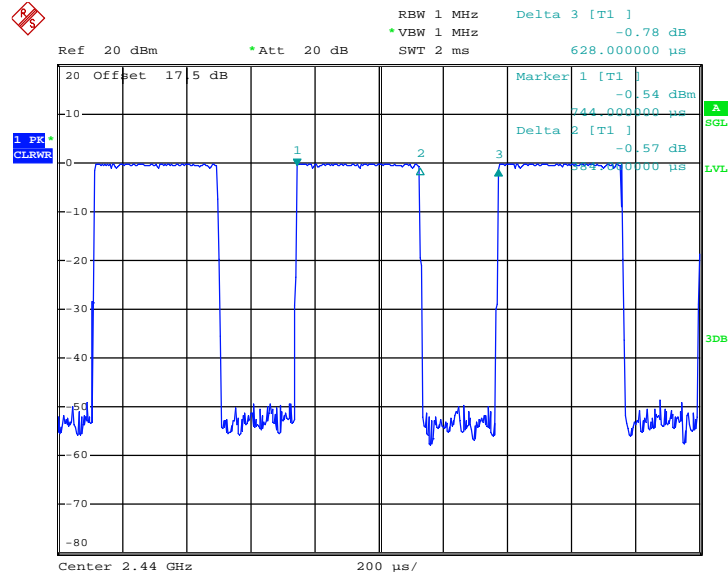
3.2.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.10-2009.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 KHz for $f < 1$ GHz; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, $VBW = 3$ MHz for $f \geq 1$ GHz for peak measurement.
For average measurement:
 - $VBW = 10$ Hz, when duty cycle is no less than 98 percent.
 - $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
Bluetooth 4.0 - LE	61.146	0.384	2.604	3kHz

Note: For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

Bluetooth 4.0 - LE Duty Cycle



Note:

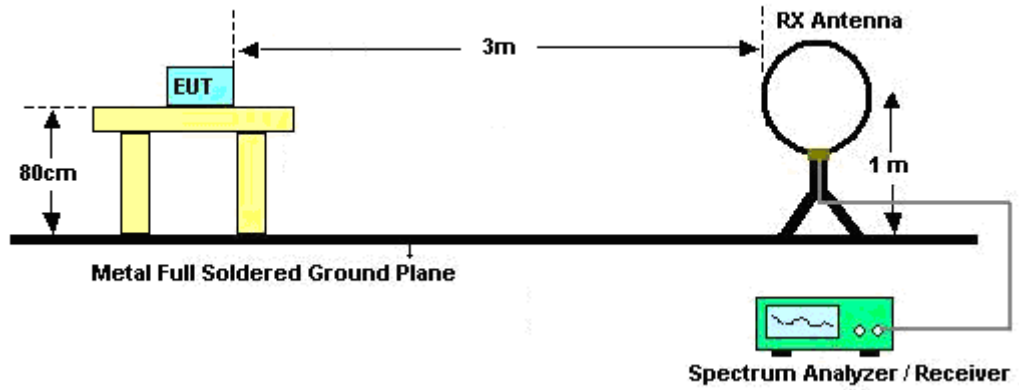
The total loss is 17.5dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

Marker-Delta method :

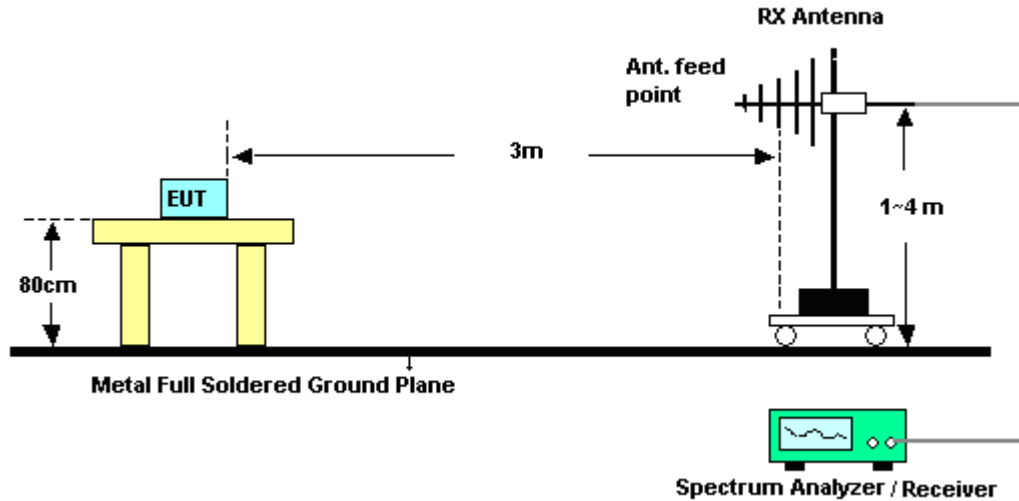
- (1) Set RBW = 1 MHz, VBW = 3 MHz, peak detector.
 Repeat the measurement with an average detector, use RBW = 1MHz
 VBW = 10 Hz, when duty cycle is no less than 98 percent.
 VBW ≥ 1/T, when duty cycle is less than 98 percent
- (2) Set span = 10MHz, that encompasses both the peak of the fundamental emission and the band-edge emission under investigation. Set RBW = 100KHz, 1% of the total span. Set VBW = 100KHz ≥ RBW.
- (3) Subtract the delta measured in step (2) from the field strengths measured in step (1).
 The resultant field strengths (peak/average) are then used to determine band-edge compliance as required by Section 15.205.

3.2.4 Test Setup

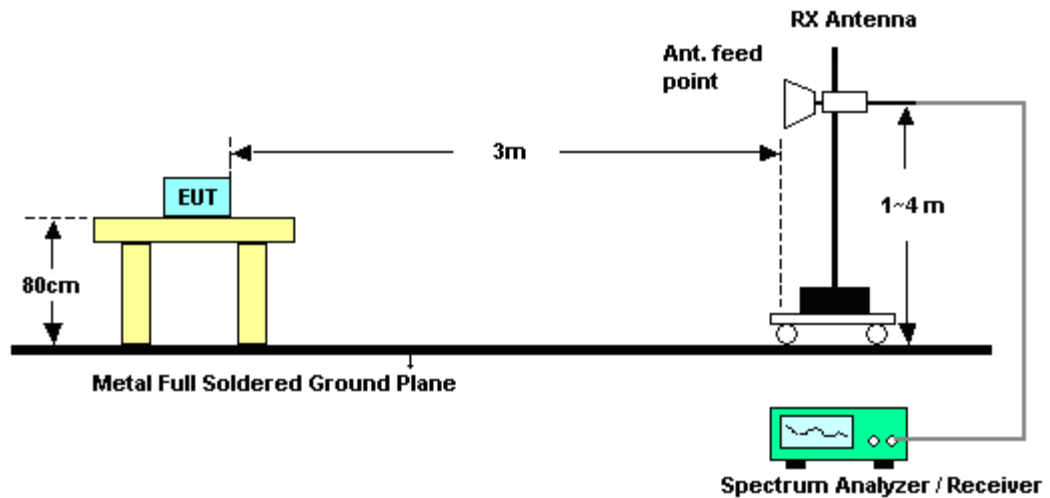
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.2.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.2.6 Test Result of Radiated Band Edges

Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~25°C
Test Channel :	39	Relative Humidity :	54~56%
		Test Engineer :	John Zheng

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dB μ V/m)	Over Limit (dB)	Limit Line (dB μ V/m)	Read Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	61.38	-12.62	74	55.42	32.27	4.47	30.78	100	345	Peak
2483.5	55.36	1.36	54	49.4	32.27	4.47	30.78	100	345	Average
2483.5	44.35	-29.65	74	-	-	-	-	-	-	Peak
2483.5	38.99	-15.01	54	-	-	-	-	-	-	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dB μ V/m)	Delta Result (dB)	Measurement Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
Peak	98.81	54.46	44.35	74	-29.65	Pass
Average	93.45	54.46	38.99	54	-15.01	Pass

Note :

1. Measurement result = Maximum field strength – Delta result

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dB μ V/m)	Over Limit (dB)	Limit Line (dB μ V/m)	Read Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	61.59	-12.41	74	55.63	32.27	4.47	30.78	100	297	Peak
2483.5	55.18	1.18	54	49.22	32.27	4.47	30.78	100	297	Average
2483.5	43.70	-30.30	74	-	-	-	-	-	-	Peak
2483.5	38.38	-15.62	54	-	-	-	-	-	-	Average

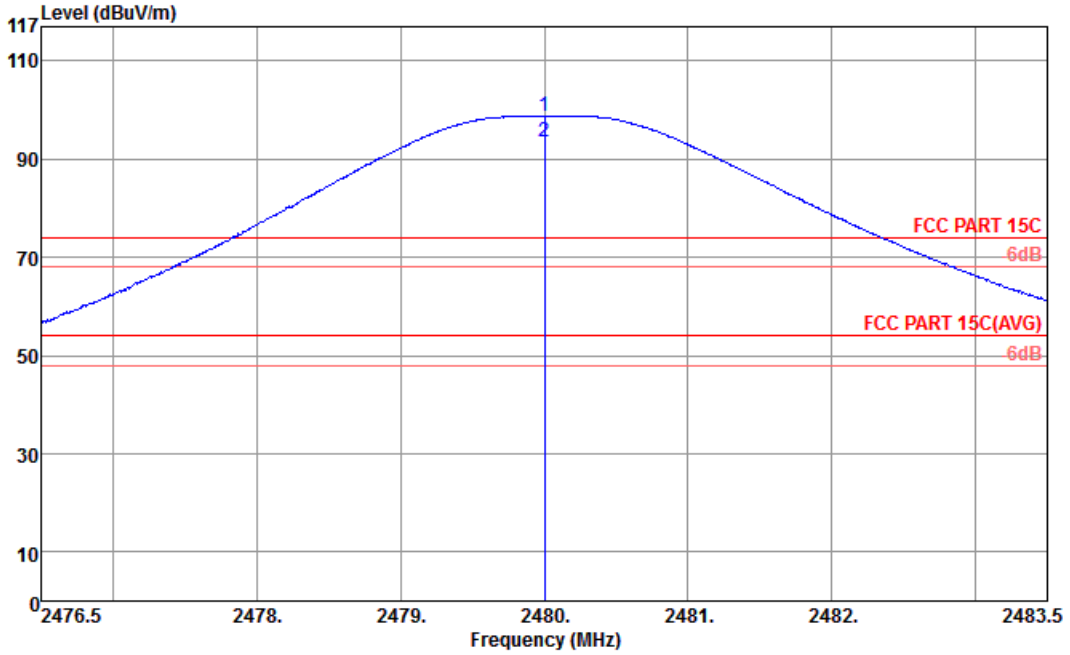
Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dB μ V/m)	Delta Result (dB)	Measurement Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
Peak	98.94	55.24	43.70	74	-30.30	Pass
Average	93.62	55.24	38.38	54	-15.62	Pass

Note : Measurement result = Maximum field strength – Delta result



Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~25°C
Test Channel :	39	Relative Humidity :	54~56%
Test Engineer :	John Zheng	Polarization :	Horizontal



Site : 03CH01-SZ
 Condition : FCC PART 15C 3m FULLY_3117_HORNANT HORIZONTAL

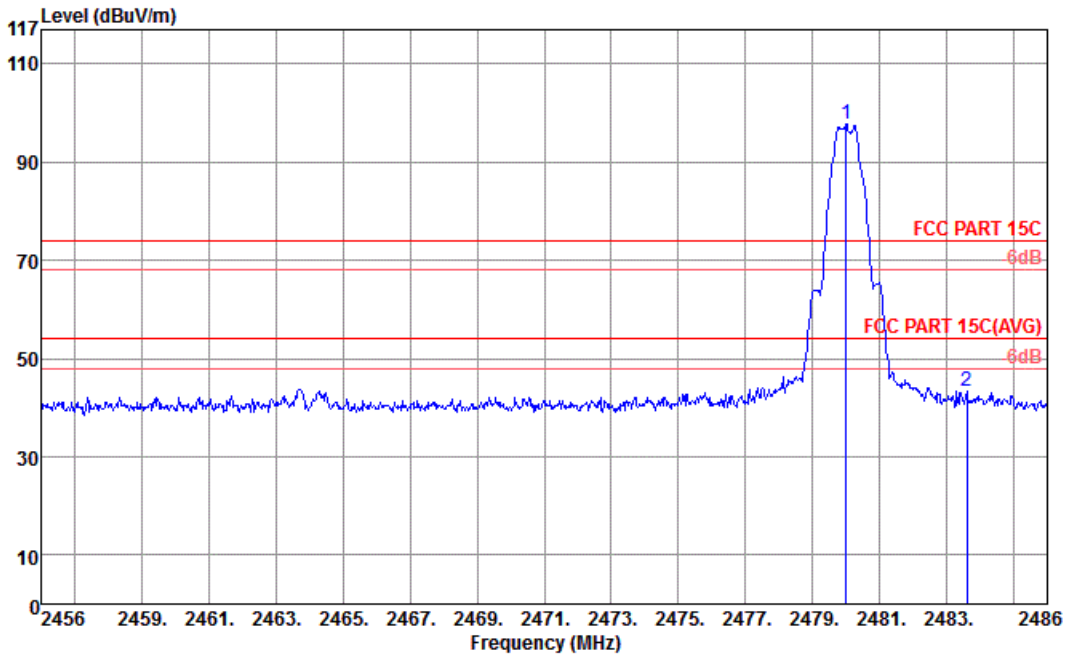
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Loss	A/Pos	I/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 P	2480.00	98.81	24.81	74.00	92.85	32.27	4.47	30.78	100	345	Peak
2 A	2480.00	93.45	39.45	54.00	87.49	32.27	4.47	30.78	100	345	Average

* Maximum field strength of the fundamental emission



Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~25°C
Test Channel :	39	Relative Humidity :	54~56%
Test Engineer :	John Zheng	Polarization :	Horizontal

Data: 10



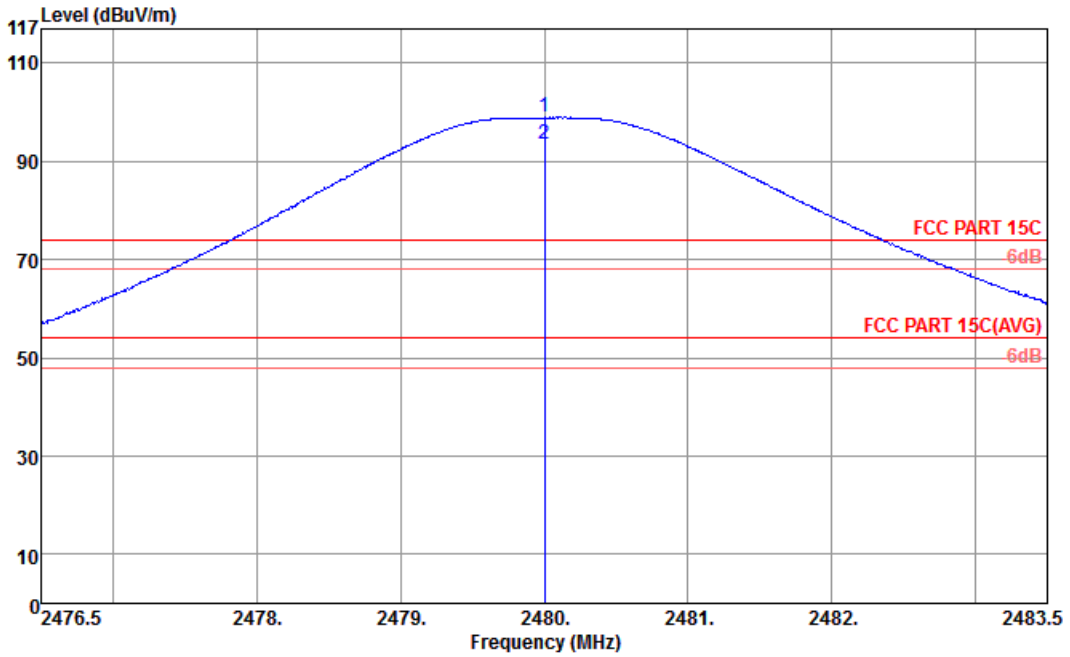
Site : 03CH01-SZ
 Condition : FCC PART 15C 3m FULLY 3117 HORN ANT HORIZONTAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Loss	Preamp Factor	A/Pos	I/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 P	2480.00	97.92	23.92	74.00	91.96	32.27	4.47	30.78	100	345 Peak
2	2483.50	43.46	-30.54	74.00	37.50	32.27	4.47	30.78	100	345 Peak

* Marker-Delta Method (RBW/VBW=100KHz): 54.46 dB , single carrier Mode



Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~25°C
Test Channel :	39	Relative Humidity :	54~56%
Test Engineer :	John Zheng	Polarization :	Vertical



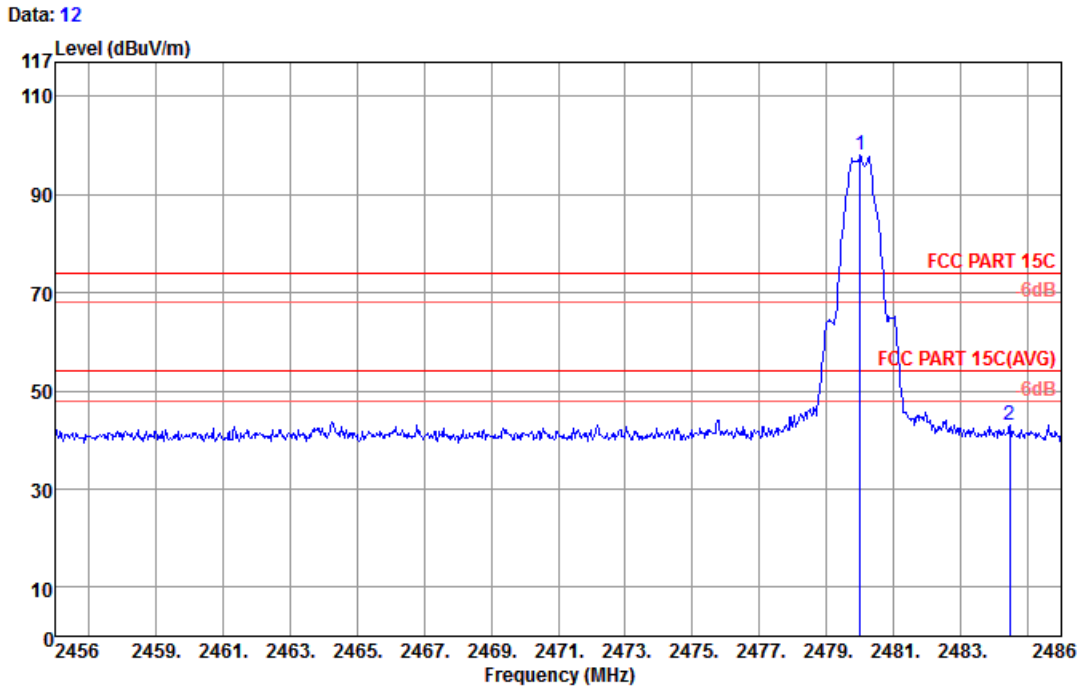
Site : 03CH01-SZ
 Condition : FCC PART 15C 3m FULLY_3117_HORNANT VERTICAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Gain	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 P	2480.00	98.94	24.94	74.00	92.98	32.27	4.47	30.78	100	297	Peak
2 A	2480.00	93.62	39.62	54.00	87.66	32.27	4.47	30.78	100	297	Average

* Maximum field strength of the fundamental emission



Test Mode :	Bluetooth 4.0 - LE	Temperature :	24~25°C
Test Channel :	39	Relative Humidity :	54~56%
Test Engineer :	John Zheng	Polarization :	Vertical



Site : 03CH01-SZ
 Condition : FCC PART 15C 3m FULLY 3117 HORN ANT VERTICAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 P	2480.00	98.10	24.10	74.00	92.14	32.27	4.47	30.78	100	297	Peak
2	2484.47	42.86	-31.14	74.00	36.90	32.27	4.47	30.78	100	297	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 55.24 dB , single carrier Mode



3.2.7 Test Result of Radiated Emission (30 MHz ~ 10th Harmonic)

Note: Below 1GHz for radiated emission measurement, pre-scanned all test modes and only choose the worst case mode was recorded in the report.

Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	39	Relative Humidity :	54~56%
Test Engineer :	John Zheng	Polarization :	Horizontal
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
42.15	21.94	-18.06	40	41.91	9.7	0.87	30.54	-	-	Peak
58.82	21.06	-18.94	40	45.16	5.6	0.83	30.53	-	-	Peak
104.17	26.98	-16.52	43.5	44.66	11.8	1.17	30.65	100	222	Peak
118.6	24.97	-18.53	43.5	42.18	12.17	1.22	30.6	-	-	Peak
139.85	24.65	-18.85	43.5	42.34	11.6	1.24	30.53	-	-	Peak
381.25	26.51	-19.49	46	38.36	16	1.88	29.73	-	-	Peak
2480	98.9	-	-	92.94	32.27	4.47	30.78	100	345	Peak
2480	93.72	-	-	87.76	32.27	4.47	30.78	100	345	Average
4960	48.71	-25.29	74	36.06	34.01	6.13	27.49	100	203	Peak
7440	51.05	-22.95	74	35.47	35.37	8.08	27.87	100	62	Peak

Note: Other harmonics are lower than background noise.



Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	39	Relative Humidity :	54~56%
Test Engineer :	John Zheng	Polarization :	Vertical
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
55.03	20.64	-19.36	40	44.62	5.7	0.83	30.51	-	-	Peak
62.65	23.36	-16.64	40	47.52	5.53	0.85	30.54	-	-	Peak
81.5	28.34	-11.66	40	50.23	7.7	1.02	30.61	100	112	Peak
100.23	23.27	-20.23	43.5	41.58	11.2	1.16	30.67	-	-	Peak
239.99	22.67	-23.33	46	39.34	11.9	1.63	30.2	-	-	Peak
400.43	24.39	-21.61	46	35.65	16.5	1.91	29.67	-	-	Peak
2480	98.94	-	-	92.98	32.27	4.47	30.78	100	270	Peak
2480	93.46	-	-	87.5	32.27	4.47	30.78	100	270	Average
4960	49.01	-24.99	74	36.36	34.01	6.13	27.49	100	119	Peak
7440	50.4	-23.6	74	34.82	35.37	8.08	27.87	122	331	Peak

Note: Other harmonics are lower than background noise.



3.3 Antenna Requirements

3.3.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.3.2 Antenna Connected Construction

Non-standard connector used.

3.3.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Jun. 01, 2012	May 11, 2013~ May 12, 2013	May 31, 2013	Conducted (TH01-SZ)
Power meter	Anritsu	ML2495A	1218010	N/A	Mar. 28, 2013	May 11, 2013~ May 12, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Power Senso	Anritsu	MA2411B	1207253	N/A	Mar. 28, 2013	May 11, 2013~ May 12, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Thermal Chamber	Hongzhan	LP-150U	HD20120425	N/A	Jun. 11, 2012	May 11, 2013~ May 12, 2013	Jun. 10, 2013	Conducted (TH01-SZ)
ESCI TEST Receiver	R&S	ESCI	100724	9K-3GHz	Mar. 28, 2013	May 29, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
Spectrum Analyzer	R&S	FSP30	101362	9kHz~30GHz	Oct. 11, 2012	May 29, 2013	Oct. 10, 2013	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 12, 2012	May 29, 2013	Oct. 11, 2013	Radiation (03CH01-SZ)
Bilog Antenna	SCHAFFNER	CBL6112B	2614	30Mhz~2Ghz	Nov. 03, 2012	May 29, 2013	Nov. 02, 2013	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9K-3000MHZ GAIN 30db	Mar. 28, 2013	May 29, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	Mar. 28, 2013	May 29, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
SHF-EHF-Horn	Schwarzbeck	BBHA9170	BBHA9170249	14Ghz~40Ghz	Nov. 23, 2012	May 29, 2013	Nov. 22, 2013	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100321	9KHZ-30MHZ	Oct. 22, 2012	May 29, 2013	Oct. 21, 2013	Radiation (03CH01-SZ)
Turn Table	EM Electronice	EM 1000	N/A	0 ~ 360 degree	N/A	May 29, 2013	N/A	Radiation (03CH01-SZ)
Antenna Mast	EM Electronice	EM 1000	N/A	1 m - 4 m	N/A	May 29, 2013	N/A	Radiation (03CH01-SZ)



5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.26
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.54
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.72
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Appendix A. Photographs of EUT

Please refer to Sporton report number EP312802-01 as below.



Appendix C. Product Equality Declaration

Lenovo (Shanghai) Electronics Technology Co., Ltd.

No. 68 Building, 199 Fenju Road, Wai Gao Qiao FTZ , Shanghai , China

Tel: 86-21-50504500-8237



Date: July 19, 2013

Product Equality Declaration



We, Lenovo (Shanghai) Electronics Technology Co., Ltd., declare on our sole responsibility for the product of **lenovo 60027** below:

The differences between previous and current model of **lenovo 60027** are as below:

1. BT/ WIFI Antenna difference:

Original Antenna(BT/WIFI)	New Antenna(Change shape and add absorbing material) (BT/WIFI)
	

2. GPS Antenna difference :

Original Antenna (GPS)	New Antenna(Change shape) (GPS)
	

Except for the antenna shape changes listed above, and adding absorbing material beside BT/WIFI antenna, antenna type, material and the gain of antenna and matching are in all relevant parts identical to the original product.

Should you have any questions or comments regarding this matter, please have my best attention.

Spring Zhou

Declared by :

on behalf of Lenovo (Shanghai) Electronics Technology Co., Ltd.