Test Report

Product Name	ASUS Tablet
Model No.	TF600T
FCC ID	MSQTF600T

Applicant	ASUSTeK COMPUTER INC.
Address	No. 15, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.

Date of Receipt	May 17, 2012
Issued Date	July 05, 2012
Report No.	125334R-RFUSP39V01
Report Version	V1.0

Testing Laboratory
0914

The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Test Report Certification

Issued Date: July 05, 2012
Report No.: 125334R-RFUSP39V01

Product Name	ASUS Tablet
Applicant	ASUSTeK COMPUTER INC.
Address	No. 15, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.
Manufacturer	1. PEGATRON CORPORATION Taoyuan Mfg 2. Protek (Shanghai) Limited. 3. Tech-Com(Shanghai) Computer Co.Ltd. 4. Wistron InfoComm(Kunshan) Co., Ltd.
Model No.	TF600T
FCC ID.	MSQTF600T
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	ASUS
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2010 ANSI C63.4: 2003
Test Result	Complied

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Documented By : Rita Huang
(Senior Adm. Specialist / Rita Huang)

Tested By : Henk Huang
(Engineer / Henk Huang)

Approved By :
(Manager /Vincent Lin)

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	ASUS Tablet
Trade Name	ASUS
Model No.	TF600T
FCC ID	MSQTF600T
Frequency Range	13.56MHz
Modulation	ASK
Antenna Type	Loop Antenna
Power Adapter	MFR: DELTA, M/N: ADP-18BW A Input: 100-240V~0.5A, 50-60Hz Output: 15V⎓1.2A or 5V⎓2A
USB Cable	Shielded, 1.5m

Frequency of Each Channel:

Channel	Frequency
Channel 1:	13.56 MHz

Note:

1. This device is an ASUS Tablet with a built-in 13.56MHz transceiver.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.225
3. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit mode

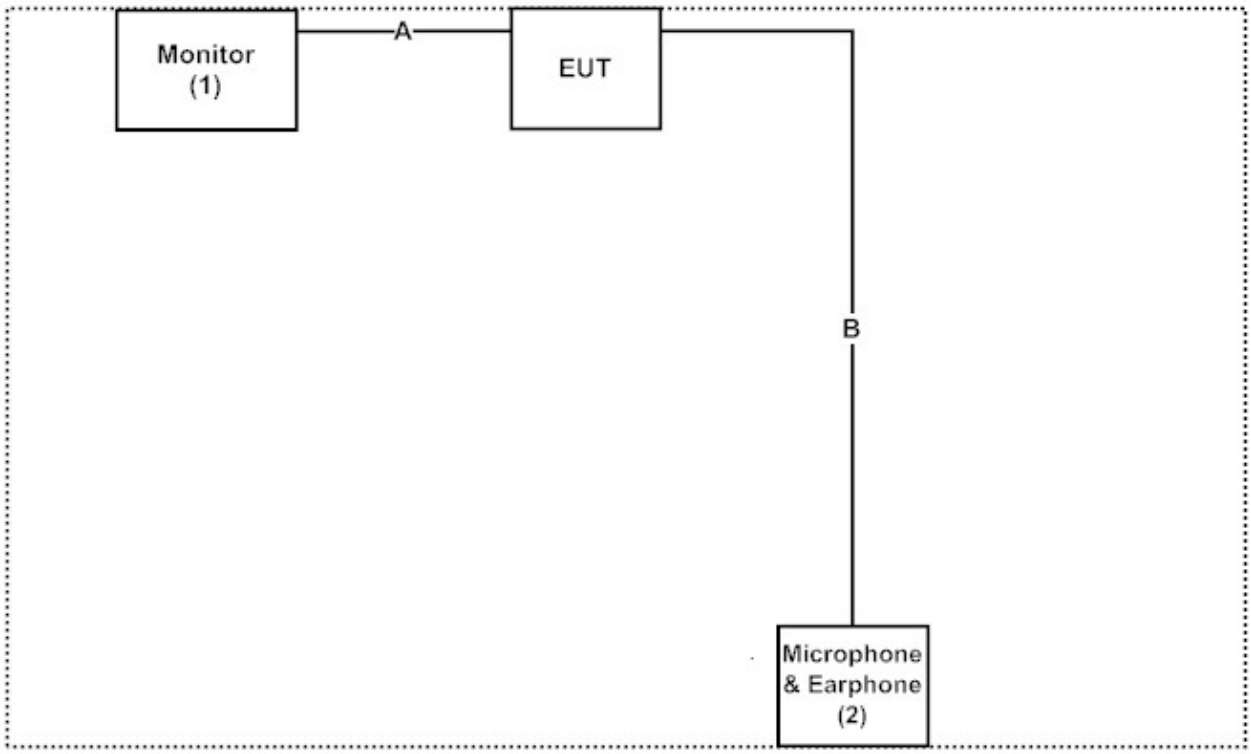
1.3. Tested System Datails

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
(1)	Monitor	LG	W2261VT	907YHPB07296	Non-Shielded, 1.8m
(2)	Microphone & Earphone	PCHOME	N/A	N/A	N/A

Signal Cable Type		Signal cable Description
A	HDMI Cable	Shielded, 1.7m
B	Microphone & Earphone Cable	Non-Shielded, 2.0m

1.4. Configuration of tested System



1.5. EUT Exercise Software

(1) Setup the EUT as shown in Section 1.4

(2) Execute Software on the EUT.

(3) Start the continuous transmitter.

(4) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site: http://www.quietek.com/tw/ctg/cts/accreditations.htm

The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site: http://www.quietek.com/

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Accreditation on NVLAP
NVLAP Lab Code: 200533-0

Site Name: Quietek Corporation
Site Address: No.5-22, Ruishukeng,
Linkou Dist. New Taipei City 24451,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

2. Conducted Emission

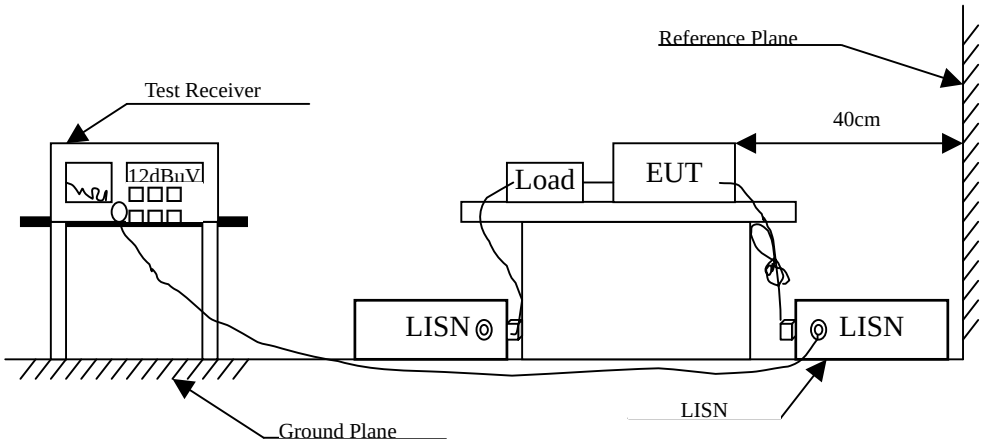
2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2011	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2012	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2012	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2012	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2012	
	No.1 Shielded Room				

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked by “X” are used to measure the final test results.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56(※)	56-46(※)
0.50-5.0	56	46
5.0 - 30	60	50

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

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 C63.4: 2003 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : ASUS Tablet
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 1: Transmit mode

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.181	9.699	36.200	45.899	-19.215	65.114
0.357	9.640	32.130	41.770	-18.316	60.086
0.537	9.640	28.000	37.640	-18.360	56.000
5.670	9.710	19.090	28.800	-31.200	60.000
9.330	9.780	27.830	37.610	-22.390	60.000
13.560	9.840	36.580	46.420	-13.580	60.000
Average					
0.181	9.699	25.070	34.769	-20.345	55.114
0.357	9.640	21.110	30.750	-19.336	50.086
0.537	9.640	16.350	25.990	-20.010	46.000
5.670	9.710	4.800	14.510	-35.490	50.000
9.330	9.780	18.330	28.110	-21.890	50.000
13.560	9.840	30.420	40.260	-9.740	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : ASUS Tablet
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 1: Transmit mode

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.170	9.714	32.430	42.144	-23.285	65.429
0.369	9.650	32.210	41.860	-17.883	59.743
2.283	9.700	24.500	34.200	-21.800	56.000
9.959	9.850	28.080	37.930	-22.070	60.000
13.560	9.940	36.210	46.150	-13.850	60.000
21.697	10.130	20.440	30.570	-29.430	60.000
Average					
0.170	9.714	13.360	23.074	-32.355	55.429
0.369	9.650	21.830	31.480	-18.263	49.743
2.283	9.700	10.590	20.290	-25.710	46.000
9.959	9.850	18.990	28.840	-21.160	50.000
13.560	9.940	30.030	39.970	-10.030	50.000
21.697	10.130	10.710	20.840	-29.160	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Radiated Emission

3.1. Test Equipment

The following test equipment are used during the radiated emission test:

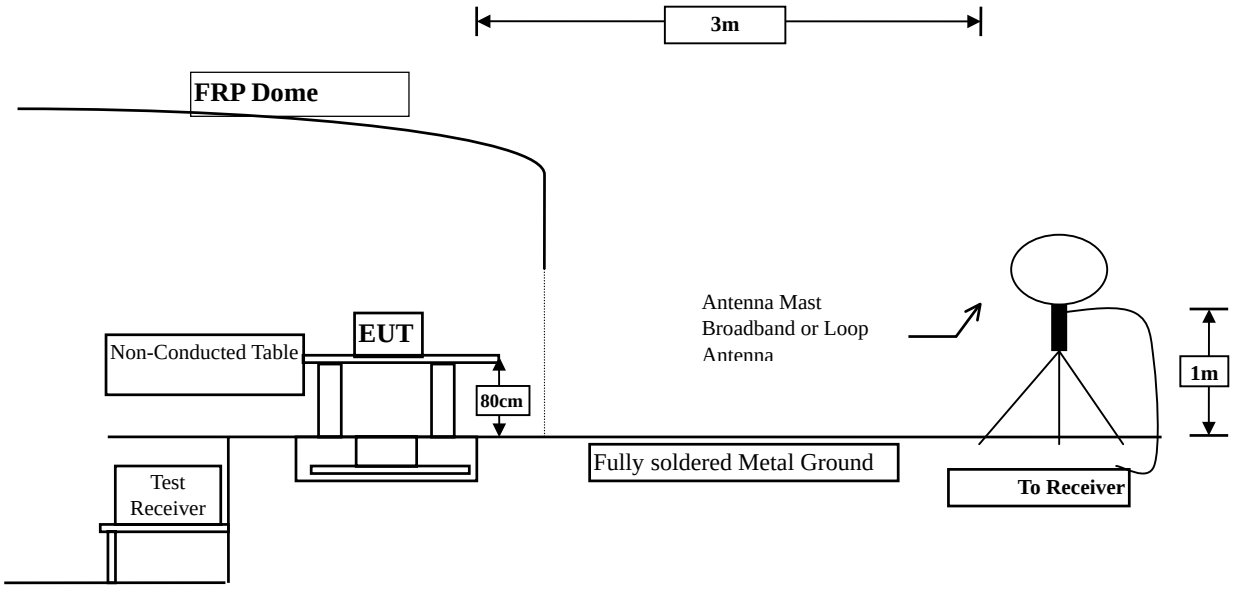
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2011
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2011
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2012
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2011
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2012
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2011
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2012
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

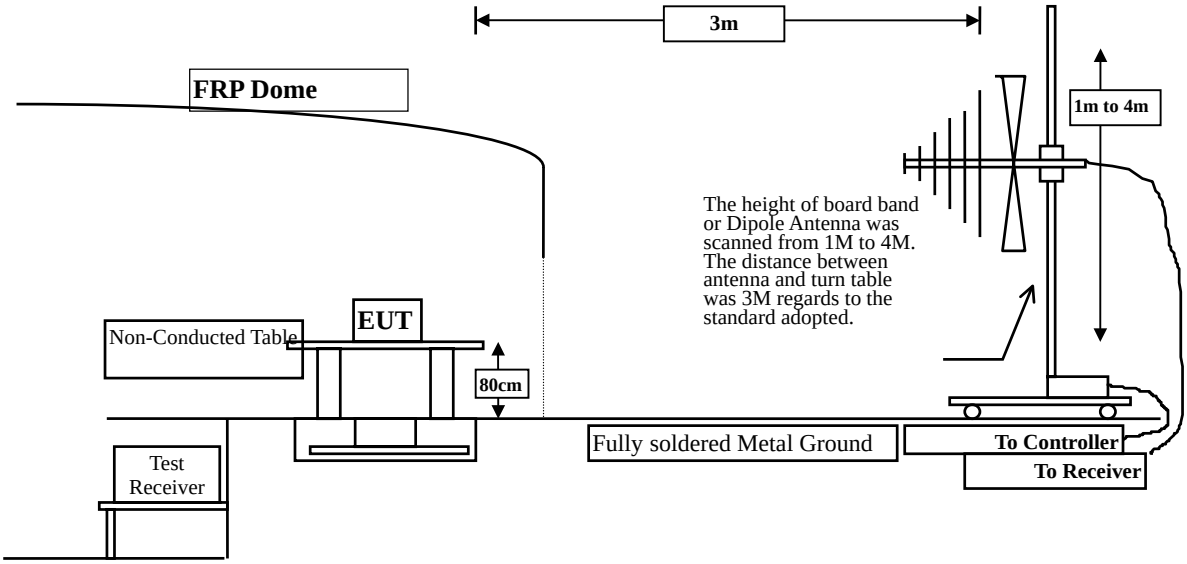
2. The test instruments marked with "X" are used to measure the final test results.

3.2. Test Setup

9kHz~30MHz



30MHz~1GHz



3.3. Limits

➢ Fundamental electric field strength Limit

FCC Part 15 Subpart C Paragraph 15.225 Limits				
Fundamental Frequency MHz	Field strength of fundamental			
	uV/m	Distance (meter)	dBuV/m	Distance (meter)
13.553 – 13.567	15848	30	124	3
13.410 – 13.553 and 13.567 – 13.710	334	30	90.47	3
13.110 – 13.410 and 13.710 – 14.010	106	30	80.50	3
Outside of the 13.110 – 14.010	See 15.209 Limits			

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

➢ Spurious electric field strength Limit

FCC Part 15 Subpart C Paragraph 15.209 Limits			
Frequency MHz	uV/m	dBuV/m	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	See Remark[1]	300
0.490-1.705	24000/F(kHz)	See Remark[1]	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.4. Test Procedure

Fundamental electric field strength:

The EUT and its simulators are placed on a turn table which is 1 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum electric field strength. The EUT was positioned such that the distance from antenna to the EUT was 3 meters. The antenna which is 1 meter above ground. All X-axis, Y-axis and Z-axis polarization of the antenna are set on measurement.

Spurious electric field strength:

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4 on

radiated measurement.

On any frequency the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

The bandwidth below 30MHz setting on the field strength meter is 9kHz and above 30MHz is 120kHz.

3.5. Uncertainty

± 2.6 dB below 30MHz

± 3.8 dB above 30MHz

3.6. Test Result of Radiated Emission

Product : ASUS Tablet
Test Item : Fundamental Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit mode

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
X-axis					
Quasi-Peak					
Horizontal					
13.560	20.040	25.322	45.362	-78.638	124.000
Vertical					
13.560	20.040	23.376	43.416	-80.584	124.000
Y-axis					
Quasi-Peak					
Horizontal					
13.560	20.040	25.641	45.681	-78.319	124.000
Vertical					
13.560	20.040	23.352	43.392	-80.608	124.000
Z-axis					
Quasi-Peak					
Horizontal					
13.560	20.040	19.237	39.277	-84.723	124.000
Vertical					
13.560	20.040	21.119	41.159	-82.841	124.000

Note:

1. Limit=84dBuV/m + 40*Log (30(m)/3(m))=124dBuV/m
2. All Readings below 1GHz are Quasi-Peak, above are average value.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : ASUS Tablet
Test Item : General Radiated Emission Data (below 30MHz)
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit mode

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
27.120	19.860	14.673	34.533	-35.007	69.540
Vertical					
27.120	19.860	10.492	30.352	-39.188	69.540

Note:

1. Limit=29.54dBuV/m + 40*Log (30(m)/3(m))=69.54dBuV/m
2. All Readings below 1GHz are Quasi-Peak, above are average value.
3. " " means the worst emission level.
4. Measurement Level = Reading Level + Correct Factor.

Product : ASUS Tablet
Test Item : General Radiated Emission Data (above 30MHz)
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit mode

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
QP Detector					
111.480	-7.914	30.432	22.518	-20.982	43.500
458.740	0.833	24.127	24.960	-21.040	46.000
615.880	3.215	26.345	29.560	-16.440	46.000
749.740	3.320	25.800	29.120	-16.880	46.000
856.440	6.382	23.204	29.586	-16.414	46.000
951.500	6.641	22.235	28.876	-17.124	46.000
Vertical					
QP Detector					
111.480	-0.954	35.757	34.803	-8.697	43.500
344.280	-3.171	27.443	24.273	-21.727	46.000
526.640	-0.423	23.491	23.068	-22.932	46.000
689.600	2.538	22.690	25.228	-20.772	46.000
819.580	3.319	24.468	27.788	-18.212	46.000
965.080	7.932	23.300	31.232	-22.768	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

4. Band Edge

4.1. Test Equipment

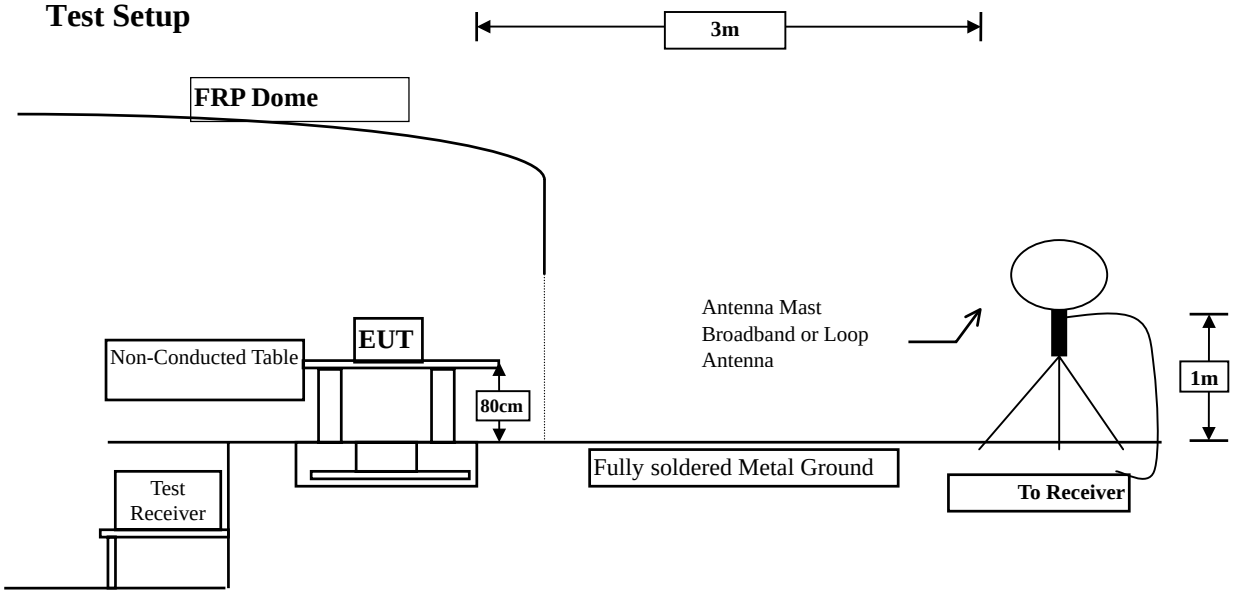
The following test equipments are used during the band edge tests:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Loop Antenna	Teseq	HLA6120 / 26739	Jul., 2012
		Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2011
		Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2011
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2012
		Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2012
		Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2011
		Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2012
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2012
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2011
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2012
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. The test instruments marked with "X" are used to measure the final test results.

4.2. Test Setup



4.3. Limits

In any 9 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 50 dB below that in the 9 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

4.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4 on radiated measurement.
The bandwidth below 30MHz setting on the field strength meter is 9kHz and above 30MHz is 120kHz.

4.5. Uncertainty

Radiated is ± 2.6 dB

4.6. Test Result of Band Edge

Product : ASUS Tablet
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit mode

RF Radiated Measurement

(Horizontal)

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	QP Limit (dBuV/m)	Result
13.110	20.020	11.223	31.243	69.540	Pass
13.360	20.031	12.066	32.097	69.540	Pass
13.410	20.040	13.901	33.941	69.540	Pass
14.010	20.060	12.790	32.850	69.540	Pass

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

(Vertical)

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	QP Limit (dBuV/m)	Result
13.110	20.020	11.345	31.365	69.540	Pass
13.360	20.031	11.167	31.198	69.540	Pass
13.410	20.040	11.235	31.275	69.540	Pass
14.010	20.060	15.115	35.175	69.540	Pass

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

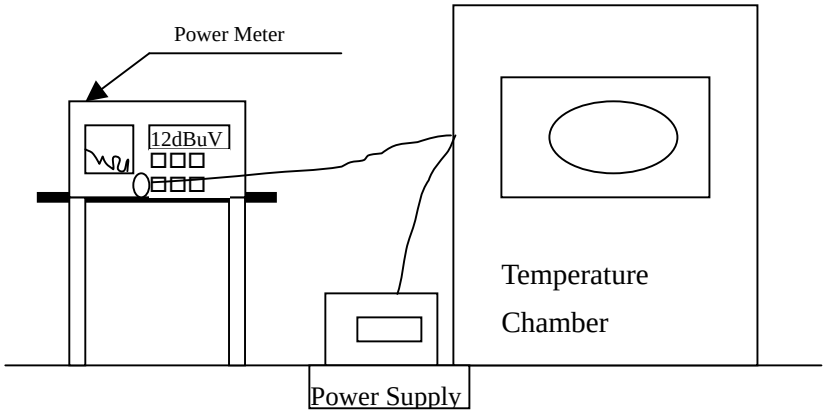
5. Frequency Tolerance

5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2012
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2012
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2012
X	Temperature Chamber	TDE	CHM 150CT	March, 2012

Note: All equipments are calibrated every one year.

5.2. Test Setup



5.3. Limits

The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency.

5.4. Test Procedure

The over operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

5.5. Uncertainty

± 150 Hz

5.6. Test Result of Frequency Stability

Product : ASUS Tablet
Test Item : Frequency Tolerance
Test Site : Temperature Chamber
Test Mode : Mode 1: Transmit mode

Temperature (℃)	Voltage (V)	Observe Time	Declared Frequency (MHz)	Read Frequency (MHz)	Tolerance (%)	Limit (%)
20	120	start	13.56	13.56069	0.005088	± 0.01 %
		2mins	13.56	13.56069	0.005088	
		5mins	13.56	13.56069	0.005088	
		10mins	13.56	13.56069	0.005088	
20	138	start	13.56	13.56069	0.005088	± 0.01 %
		2mins	13.56	13.56069	0.005088	
		5mins	13.56	13.56069	0.005088	
		10mins	13.56	13.56069	0.005088	
20	120	start	13.56	13.56069	0.005088	± 0.01 %
		2mins	13.56	13.56069	0.005088	
		5mins	13.56	13.56069	0.005088	
		10mins	13.56	13.56069	0.005088	
50	120	start	13.56	13.56056	0.004130	± 0.01 %
		2mins	13.56	13.56056	0.004130	
		5mins	13.56	13.56056	0.004130	
		10mins	13.56	13.56056	0.004130	
40	120	start	13.56	13.56057	0.004204	± 0.01 %
		2mins	13.56	13.56057	0.004204	
		5mins	13.56	13.56057	0.004204	
		10mins	13.56	13.56057	0.004204	
30	120	start	13.56	13.56058	0.004277	± 0.01 %
		2mins	13.56	13.56058	0.004277	
		5mins	13.56	13.56058	0.004277	
		10mins	13.56	13.56058	0.004277	

10	120	start	13.56	13.56059	0.004351	± 0.01 %
		2mins	13.56	13.56059	0.004351	
		5mins	13.56	13.56059	0.004351	
		10mins	13.56	13.56059	0.004351	
0	120	start	13.56	13.56060	0.004425	± 0.01 %
		2mins	13.56	13.56060	0.004425	
		5mins	13.56	13.56060	0.004425	
		10mins	13.56	13.56060	0.004425	
-10	120	start	13.56	13.56061	0.004499	± 0.01 %
		2mins	13.56	13.56061	0.004499	
		5mins	13.56	13.56061	0.004499	
		10mins	13.56	13.56061	0.004499	
-20	120	start	13.56	13.56062	0.004572	± 0.01 %
		2mins	13.56	13.56062	0.004572	
		5mins	13.56	13.56062	0.004572	
		10mins	13.56	13.56062	0.004572	

6. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs