



Hong Kong

FCC – Test report

Report Number : **60/760.11.127.01** Date of Issue: 27 July 2011

Model : **WMR180A**

Product Type : Wireless Hub

Applicant : IDT Technology Limited

Address : Block C, 9/F, Kaiser Estate, Phase 1,
41 Man Yue Street, Hunghom, Kowloon, Hong Kong

Production Facility : IDT Technology Limited

Address : Block C, 9/F, Kaiser Estate, Phase 1,
41 Man Yue Street, Hunghom, Kowloon, Hong Kong

Test Result : **Positive** **Negative**

Total pages including Appendices : 32

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2 Details about the Test Laboratory

Details about the Test Laboratory

Company name: TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2,
10 Science Park West Avenue,
Science Park, Shatin
HK.

Telephone: 852 2776 1323
Fax: 852 2776 1372

Company name: Neutron Engineering Inc.
3, Jinshagang 1st Road,
ShiXia, Dalang Town,
DongGuan, China

FCC Registered Test Site Number 319330



3 Description of the Equipment Under Test

Description of the Equipment Under Test

Product: Wireless Hub

Model no.: WMR180A

Serial number: NIL

Options and accessories: NIL

Rated Voltage: 120 VAC

Rated Current: NIL

Rated Power: NIL

Frequency: 60 Hz

Description of the EUT:	EUT Main unit size:	18cm x 11 cm x 5 cm
	Supply by power supply:	Model: CSD0600300U-22
		Input: 120 VAC 60 Hz 80mA
		Output: 6 VDC 300mA



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4 Summary of Test Standards and Results

Emission Tests						
Test Condition	Test Requirement	Test Method	Pages	Test Result		
				Pass	Fail	N/A
Radiated Emission (Fundamental & Spurious Emission)	FCC Part 15 Section 15.249 & 15.209	ANSI C63.4:2003	7-16	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducted Emission on AC 150kHz to 30MHz	FCC Part 15 Section 15.207	ANSI C63.4:2003	17-20	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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5 General Remarks

Remarks

NIL

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: 15 June 2011

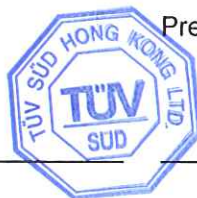
Testing Start Date: 15 June 2011

Testing End Date: 27 July 2011

- TÜV SÜD HONG KONG LTD. -

Reviewed by:

Edmond FUNG
EMC Test Engineer



Prepared by:

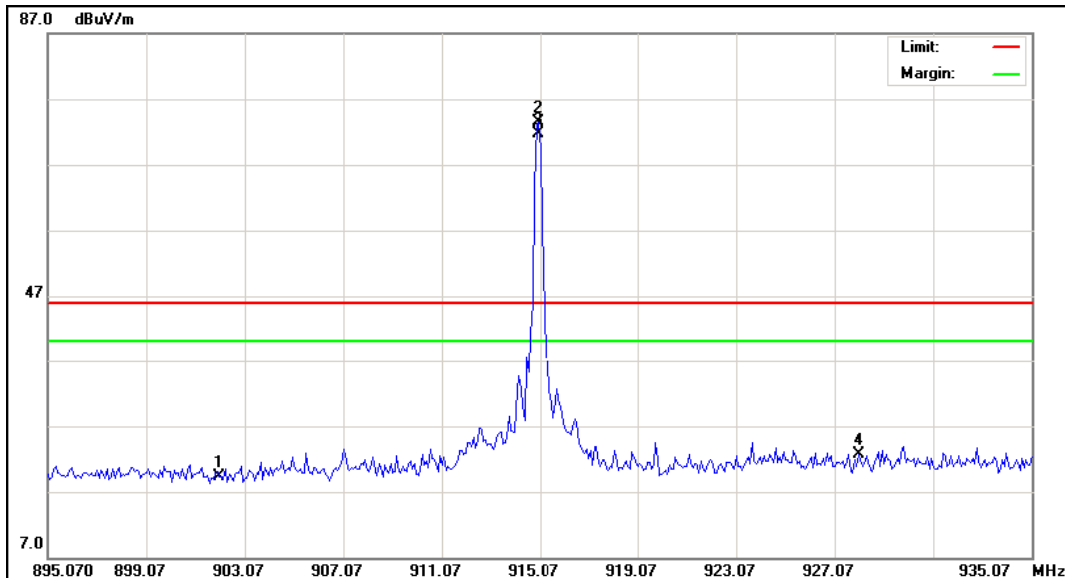
Cheng Kin Yeung
EMC Test Engineer

6 Emission Test Results

6.1 Radiated Emission Test (Fundamental)

Date of test : 29 June 2011
 Test requirement : FCC Part 15 Section 15.249
 Test method : ANSI C63.4:2003
 Operating mode : On mode
 Antenna polarity : Horizontal
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



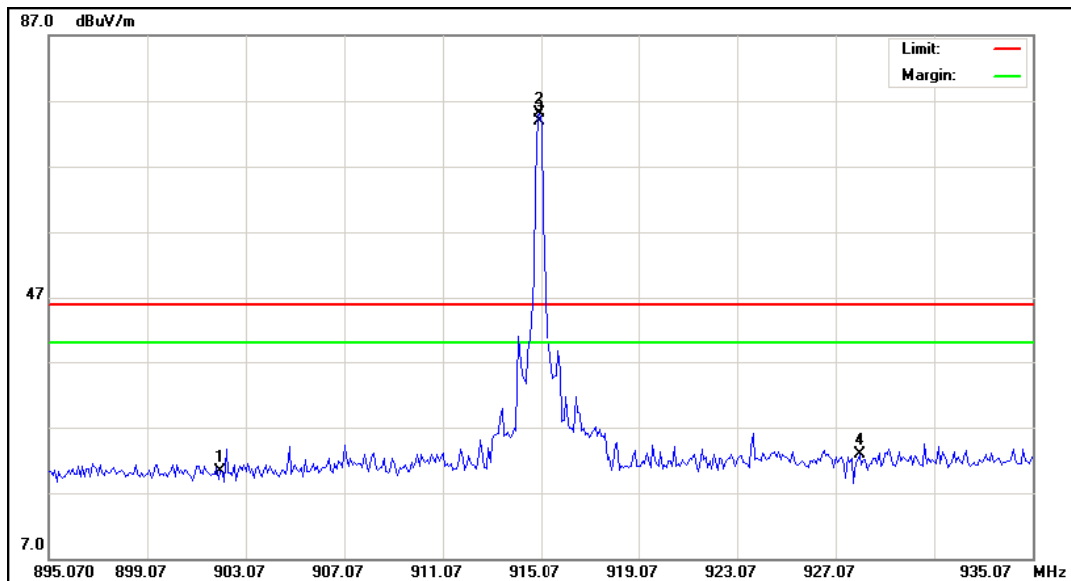
Freq. (MHz)	Ant.Pol. H/V	Reading	Ant./CF CF(dB)	Act.	Limit		Note
		Peak (dBuV/m)		Peak (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
914.99	H	76.50	2.94	73.56	114.00	94.00	X/F

Remark: The EUT was placed on the top of the turntable in test site area. The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation. For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable. The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization. Adjust the emission and slightly rotate the turntable to locate the position with maximum reading. Adjust the emission and slightly height of the antenna to locate the position with maximum reading.

Radiated Emission Test (Fundamental)

Date of test : 29 June 2011
 Test requirement : FCC Part 15 Section 15.249
 Test method : ANSI C63.4:2003
 Operating mode : On mode
 Antenna polarity : Vertical
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



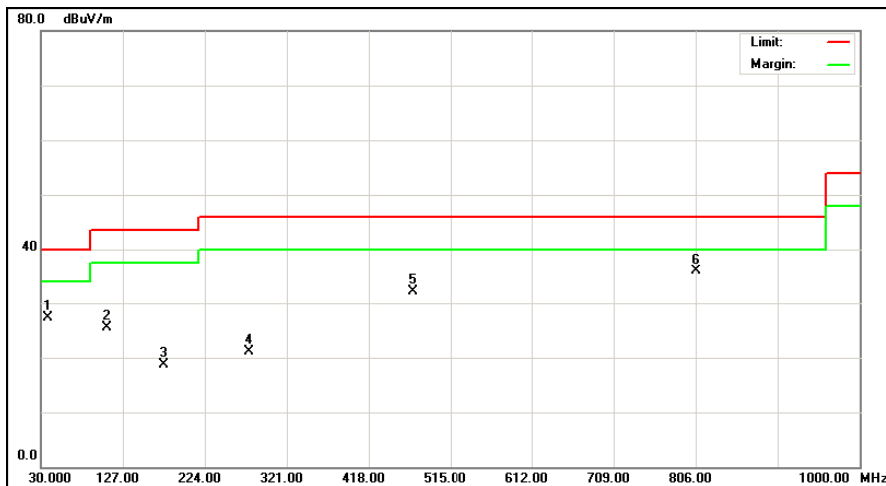
Freq. (MHz)	Ant.Pol. H/V	Reading	Ant./CF CF(dB)	Act.	Limit		Note
		Peak (dBuV/m)		Peak (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
914.99	H	78.02	2.94	75.08	114.00	94.00	X/F

Remark: The EUT was placed on the top of the turntable in test site area.
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable. The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.

Radiated Emission Test 9kHz - 1000MHz

Date of test : 29 June 2011
 Test requirement : FCC Part 15 Section 15.249
 Test method : ANSI C63.4:2003
 Operating mode : Standalone mode
 Antenna polarity : Horizontal
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant. Pol. H/V	Reading	Ant./CF CF(dB)	Act.	Limit	Note
		QP (dBuV)		QP (dBuV)	QP (dBuV)	
37.76	H	54.71	27.32	27.39	40.00	X/F
107.60	H	56.62	31.07	25.55	43.50	X/F
175.50	H	49.37	30.72	18.65	43.50	X/F
276.38	H	48.80	27.79	21.01	46.00	X/F
470.38	H	51.21	19.13	32.08	46.00	X/F
806.00	H	47.00	11.17	35.83	46.00	X/F

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph



Radiated Emission Test 1000MHz - 10000MHz

Date of test : 29 June 2011

Test requirement : FCC Part 15 Section 15.249

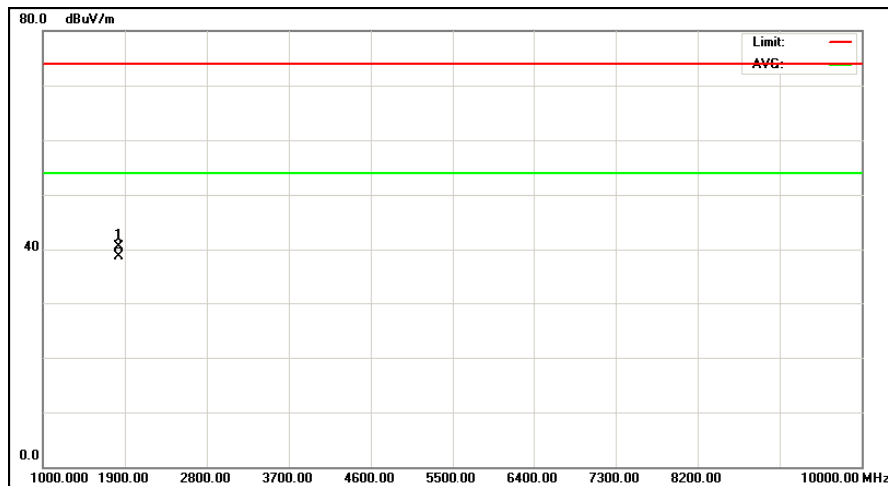
Test method : ANSI C63.4:2003

Operating mode : Standalone mode

Antenna Polarity : Horizontal

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant. Pol. H/V	Reading (dBµV/m)	Ant./CF CF(dB)	Act. (dBµV/m)	Limit (dBµV/m)	Note
1828.34	H	43.11	2.68	40.43	74.00	Peak
1828.34	H	41.35	2.68	38.67	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph

Radiated Emission Test 9kHz - 1000MHz

Date of test : 29 June 2011

Test requirement : FCC Part 15 Section 15.249

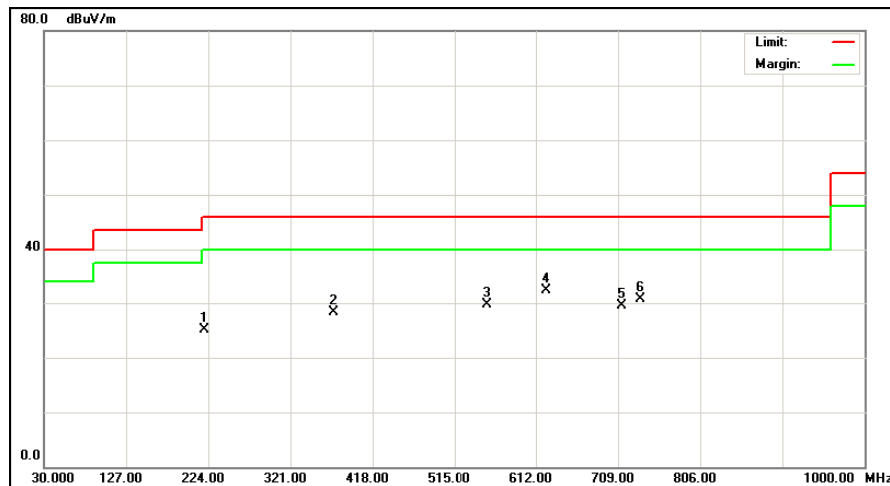
Test method : ANSI C63.4:2003

Operating mode : Standalone mode

Antenna Polarity : Vertical

Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



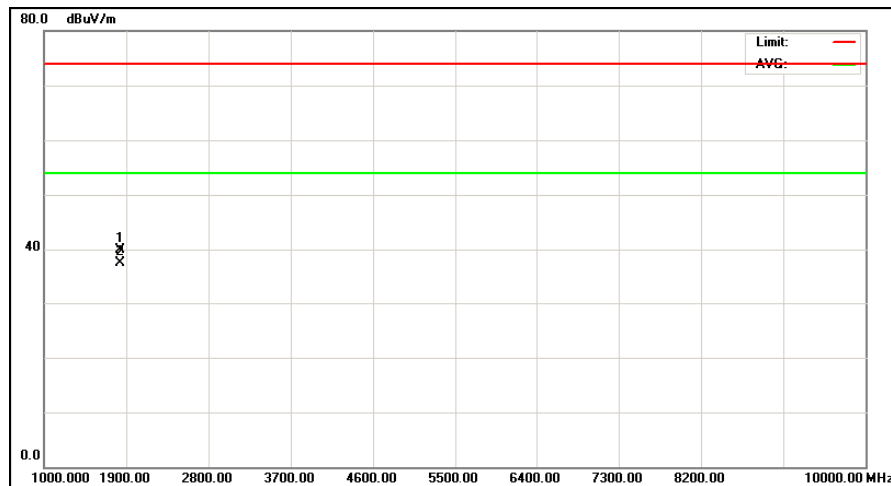
Freq. (MHz)	Ant. Pol. H/V	Reading	Ant./CF	Act.	Limit	Note
		QP (dBuV)	CF(dB)	QP (dBuV)	QP (dBuV)	
218.24	V	47.42	22.38	25.04	46.00	X/F
371.50	V	52.35	24.04	28.31	46.00	X/F
553.86	V	49.52	19.88	29.64	46.00	X/F
623.70	V	47.58	15.27	32.31	46.00	X/F
712.94	V	42.22	12.64	29.58	46.00	X/F
734.28	V	41.03	10.42	30.61	46.00	X/F

Remark: The EUT was placed on the top of the turntable in test site area.
 The resolution bandwidth setting on the test receiver was 120 KHz, Detector function peak (30 MHz~1000MHz).
 The resolution bandwidth setting on the test receiver was 1MHz, Detector function peak (1 GHz~5GHz).
 The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
 For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable.
 The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization.
 Adjust the emission and slightly rotate the turntable to locate the position with maximum reading.
 Adjust the emission and slightly height of the antenna to locate the position with maximum reading.
 If the peak scan value lower limit more than 20dB, then this signal data does not show in graph

Radiated Emission Test 1000MHz - 10000MHz

Date of test : 29 June 2011
 Test requirement : FCC Part 15 Section 15.249
 Test method : ANSI C63.4:2003
 Operating mode : Standalone mode
 Antenna Polarity : Vertical
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Freq. (MHz)	Ant. Pol. H/V	Reading (dBµV/m)	Ant./CF CF(dB)	Act. (dBµV/m)	Limit (dBµV/m)	Note
1828.34	V	42.55	2.68	39.87	74.00	Peak
1828.34	V	40.15	2.68	37.47	54.00	AVG

Remark: The EUT was placed on the top of the turntable in test site area. The test shall be made in the operation mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation. For emissions measurement, the receiving antenna was placed 3 meters far away from the turntable. The antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization. Adjust the emission and slightly rotate the turntable to locate the position with maximum reading. Adjust the emission and slightly height of the antenna to locate the position with maximum reading.

Test Equipment List

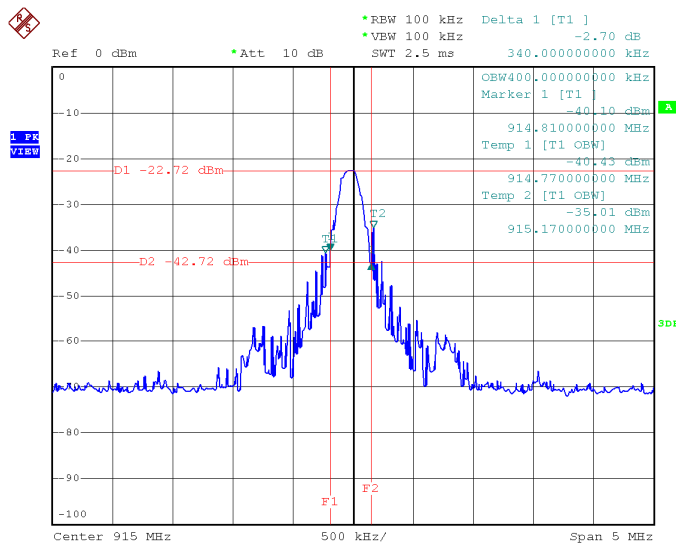
Radiated Emission Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
Antenna	EMCO	3142C	00066462	Jun .08.2012
Antenna	EMCO	3142C	00066464	Jun .08.2012
Amplifier	Agilent	8447D	2944A11203	Nov.26.2011
Amplifier	Agilent	8447D	2944A11204	Nov.26.2011
Spectrum Analyzer	Agilent	E4443A	MY48250370	Nov.26.2011
RF Pre-selector	Agilent	N9039A	MY46520201	Nov.26.2011
Test Cable	N/A	Cable_5m_8m_15m	N/A	Feb.04.2012
Test Cable	N/A	Cable_5m_11m_15m	N/A	Feb.04.2012
Spectrum Analyzer	Agilent	E4447A	MY48250208	Nov.26.2011
RF Pre-selector	Agilent	N9039A	MY46520214	Nov.26.2011
Multi-Device Controller	ETS-Lindgren	2090	N/A	N/A
Spectrum Analyzer	R&S	FSP 40	100185	Nov.26.2011
Signal Generator	R&S	SMR 40	3008A02274	May.26.2012
Signal Generator	HP	8648A	3636A02964	May.26.2012
Amplifier	Agilent	8447D	2944A11203	May.26.2012
Amplifier	Agilent	8449B	3008A02274	May.26.2012
Double Ridged Guide Antenna	ETS-LINDGREN	3115	00075846	May.27.2012
Antenna	SCHWARZBECK	VULB 9160	9160-3231	Jun .08.2012
Test Cable	N/A	CL-CB02-001	N/A	Dec.06.2011
Test Cable	N/A	CL-CB02-004	N/A	Dec.06.2011
Test Cable	N/A	CL-CB02-006	N/A	Dec.06.2011
Controller	CT	SC100	N/A	N/A
Wireband Power sensor	Agilent	N1921A	MY45240824	May.26.2012
DC power supply	GW Instek	GPC-30300N	EK880675	Oct.18.2011
Horn Antenna	Schwarzbeck	VULB9160	9160-3232	May.26.2012
Broad-Band Horn Antenna	ETS	3115	00075789	May,12.2012
Triple Loop Antenna	R&S	HFH2-Z2	830749/020	May.27.2012

6.2 20dB Bandwidth measurement

Date of test : 29 June 2011
 Test requirement : FCC Part 15 Section 15.249
 Test method : ANSI C63.4:2003
 Operating mode : On mode
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

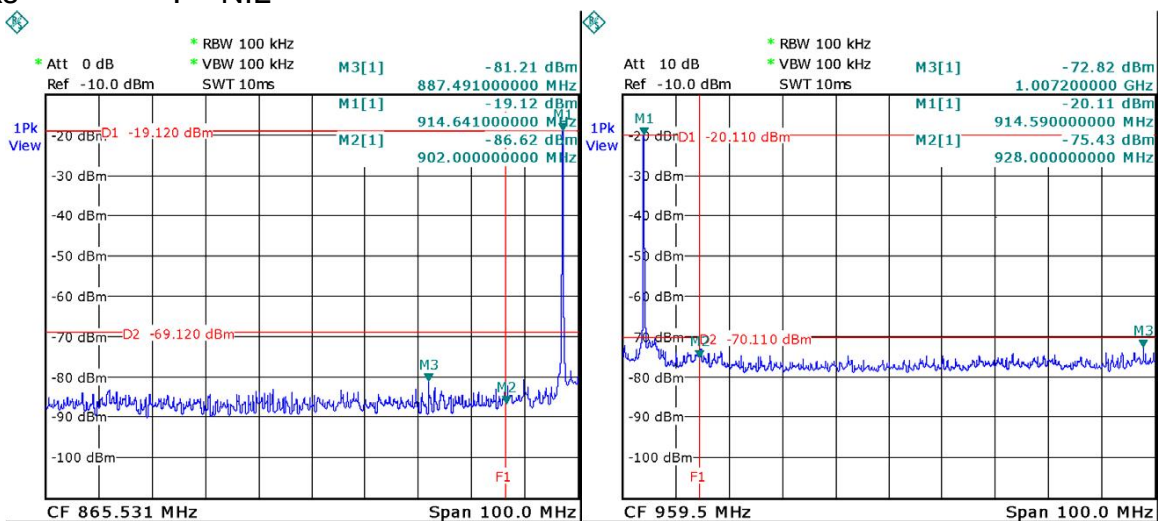


Remark: Use the following spectrum analyzer settings:
 Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
 RBW \geq 1% of the 20 dB bandwidth
 VBW \geq RBW Sweep = auto
 Detector function = peak
 Trace = max hold
 The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section.

6.4 Bandedge measurement

Date of test : 29 June 2011
 Test requirement : FCC Part 15 Section 15.249
 Test method : ANSI C63.4:2003
 Operating mode : On mode
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 20.JAN.2011 18:45:13

Remark: Use the following spectrum analyzer settings:
 Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation
 RBW \geq 1% of the span
 VBW \geq RBW
 Sweep = auto
 Detector function = peak
 Trace = max hold
 Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section. Submit this plot. Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit. Submit this plot.

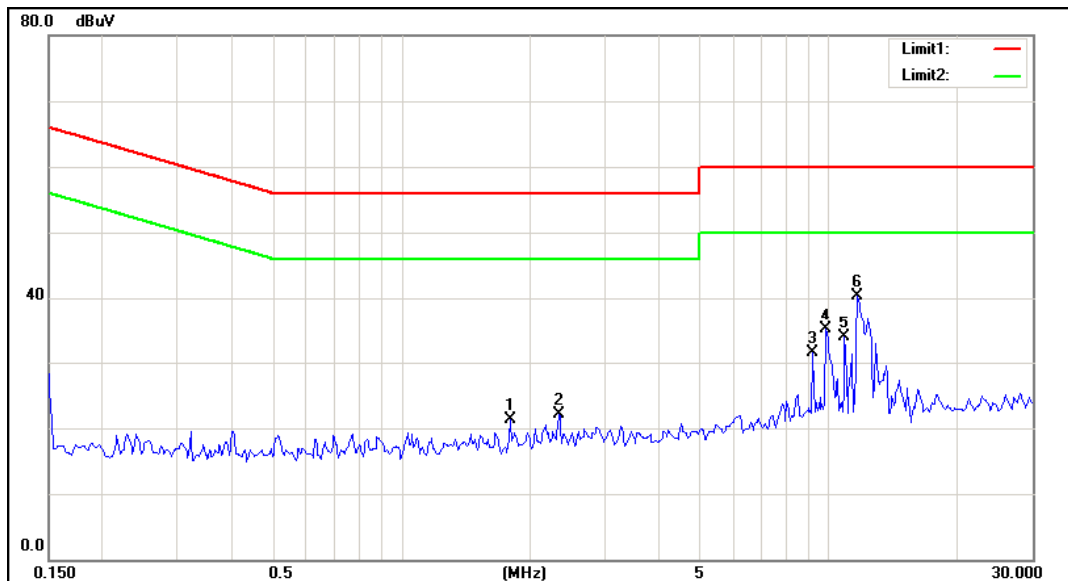
Test Equipment List

Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
Antenna	EMCO	3142C	00066462	Jun .08.2012
Antenna	EMCO	3142C	00066464	Jun .08.2012
Amplifier	Agilent	8447D	2944A11203	Nov.26.2011
Amplifier	Agilent	8447D	2944A11204	Nov.26.2011
Spectrum Analyzer	Agilent	E4443A	MY48250370	Nov.26.2011
RF Pre-selector	Agilent	N9039A	MY46520201	Nov.26.2011
Test Cable	N/A	Cable_5m_8m_15m	N/A	Feb.04.2012
Test Cable	N/A	Cable_5m_11m_15m	N/A	Feb.04.2012
Spectrum Analyzer	Agilent	E4447A	MY48250208	Nov.26.2011
RF Pre-selector	Agilent	N9039A	MY46520214	Nov.26.2011
Multi-Device Controller	ETS-Lindgren	2090	N/A	N/A
Spectrum Analyzer	R&S	FSP 40	100185	Nov.26.2011
Signal Generator	R&S	SMR 40	3008A02274	May.26.2012
Signal Generator	HP	8648A	3636A02964	May.26.2012
Amplifier	Agilent	8447D	2944A11203	May.26.2012
Amplifier	Agilent	8449B	3008A02274	May.26.2012
Double Ridged Guide Antenna	ETS-LINDGREN	3115	00075846	May.27.2012
Antenna	SCHWARZBECK	VULB 9160	9160-3231	Jun .08.2012
Test Cable	N/A	CL-CB02-001	N/A	Dec.06.2011
Test Cable	N/A	CL-CB02-004	N/A	Dec.06.2011
Test Cable	N/A	CL-CB02-006	N/A	Dec.06.2011
Controller	CT	SC100	N/A	N/A
Wireband Power sensor	Agilent	N1921A	MY45240824	May.26.2012
DC power supply	GW Instek	GPC-30300N	EK880675	Oct.18.2011
Horn Antenna	Schwarzbeck	VULB9160	9160-3232	May.26.2012
Broad-Band Horn Antenna	ETS	3115	00075789	May,12.2012
Triple Loop Antenna	R&S	HFH2-Z2	830749/020	May.27.2012

7.5 Conducted Emission Test 150kHz – 30MHz

Date of test : 29 June 2011
 Test requirement : FCC Part 15 Section 15.207
 Test method : ANSI C63.4:2003
 Operating mode : Stand alone
 Tested on : AC Mains, Live
 Remarks : NIL

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



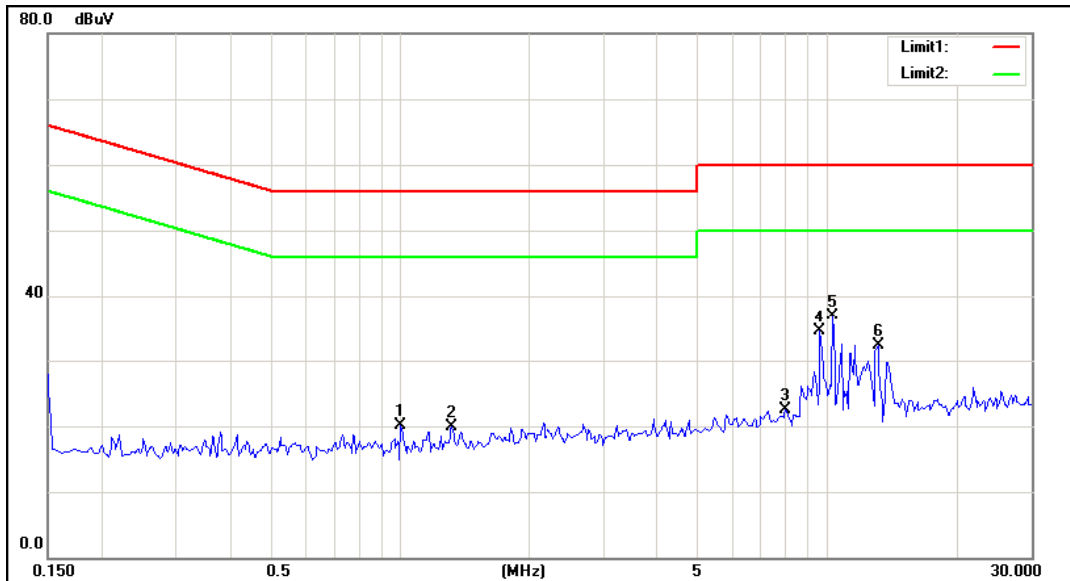
f/MHz	Reading	Limit	Margin	Note
1.80	21.36	56.00	-34.64	QP
2.36	22.07	56.00	-33.93	QP
9.20	31.54	60.00	-28.46	QP
9.90	35.09	60.00	-24.91	QP
10.93	33.97	60.00	-26.09	QP
11.71	40.23	60.00	-19.77	QP

P.S. : If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured

Conducted Emission Test 150kHz – 30MHz

Date of test : 29 June 2011
 Test requirement : FCC Part 15 Section 15.207
 Test method : ANSI C63.4:2003
 Operating mode : Stand alone
 Tested on : AC Mains; Neutral
 Remarks : NIL

Test Result
 Passed
 Not Passed



f/MHz	Reading	Limit	Margin	Note
1.00	20.06	56.00	-35.94	QP
1.32	19.98	56.00	-36.02	QP
7.98	22.57	60.00	-37.43	QP
9.63	34.57	60.00	-25.43	QP
10.30	36.96	60.00	-23.44	QP
13.13	32.23	60.00	-27.77	QP

P.S. : If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured



Hong Kong

Test Equipment List

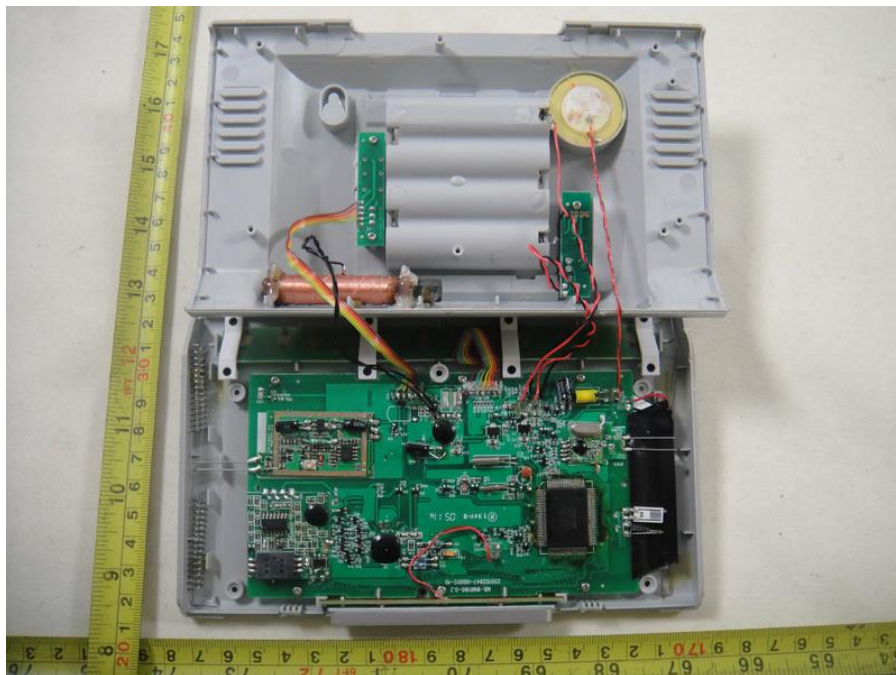
Conducted Emission Test

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DATE	CAL.DUE DATE
60-7/63-06-006	EMI Test Receiver	Rohde & Schwarz	ESCI	100427	29-Mar-11	29-Mar-12
60-7/65-08-014	Coaxial Cable	N/A	N/A	N/A	15-Jun-11	15-Jun-12
60-7/60-08-002	LISN	Rohde & Schwarz	ENV 216	100432	25-Mar-11	25-Mar-12

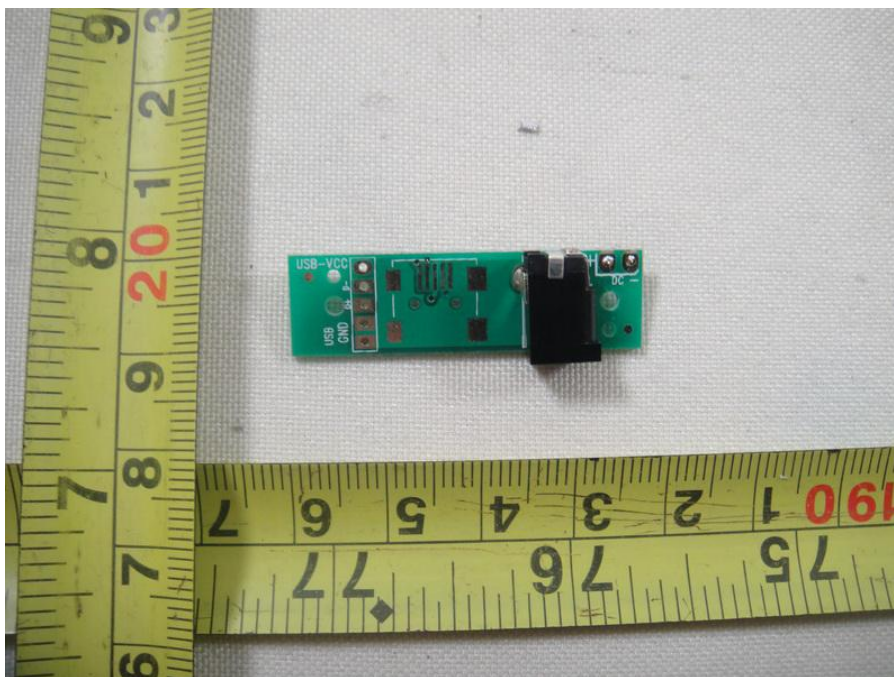
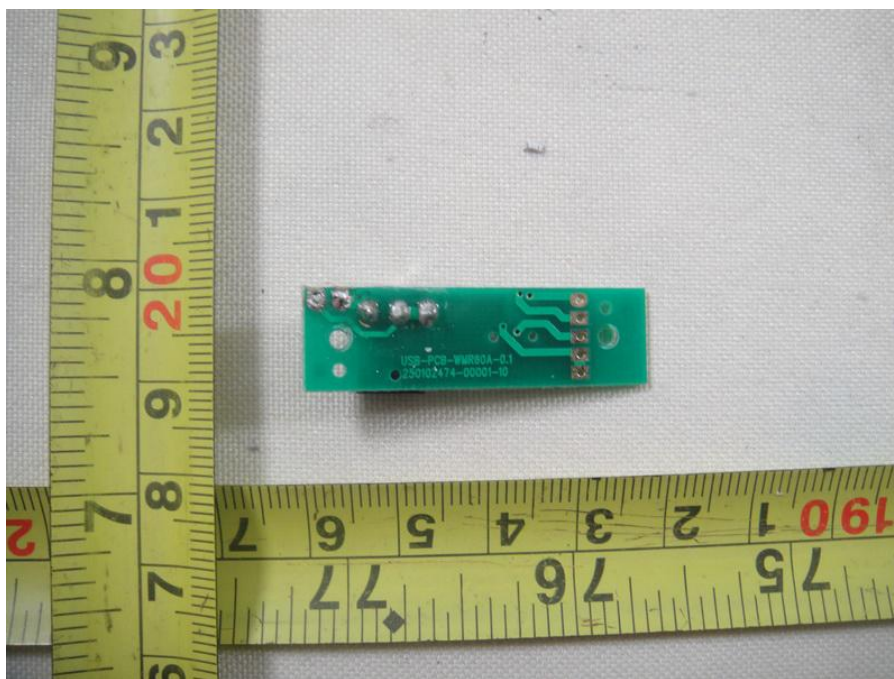
7 Appendix A



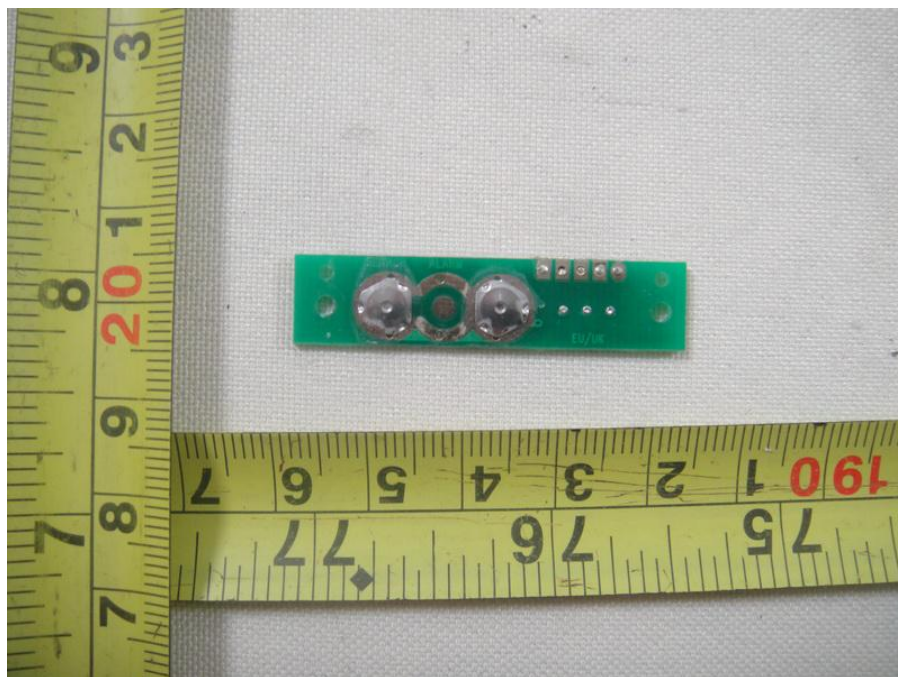
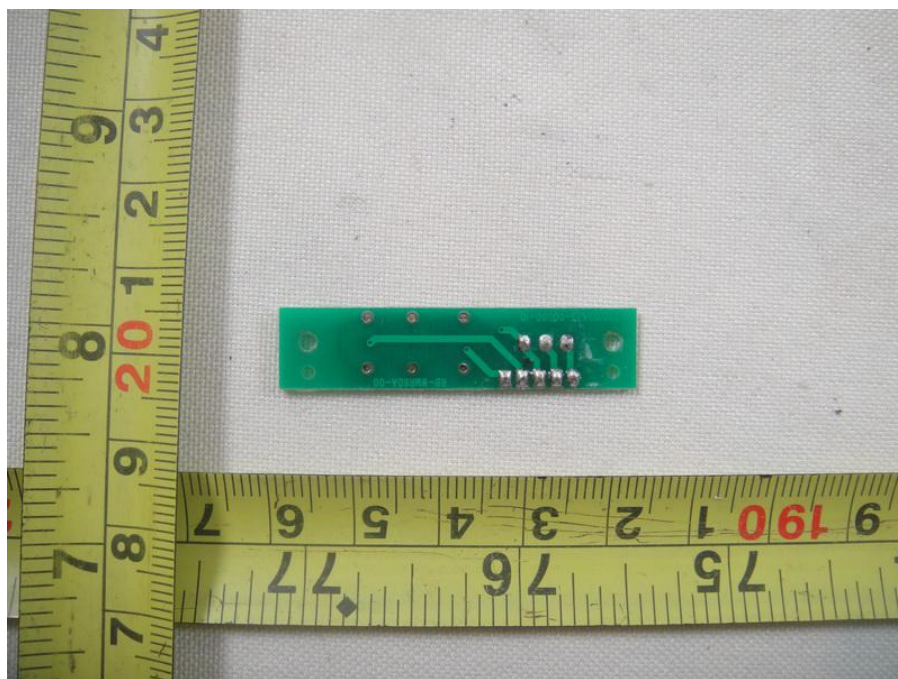
Appendix A



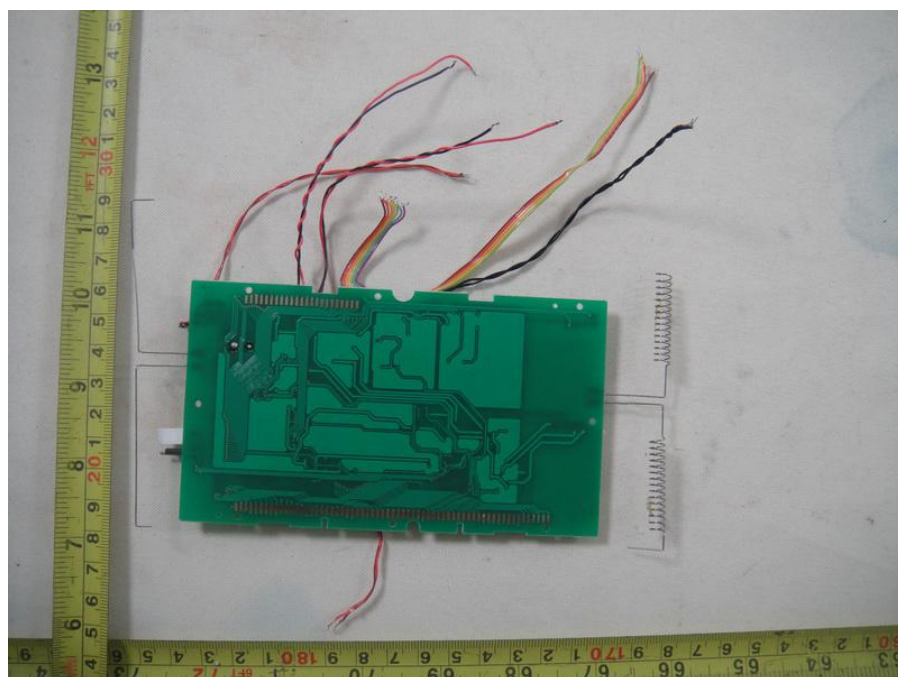
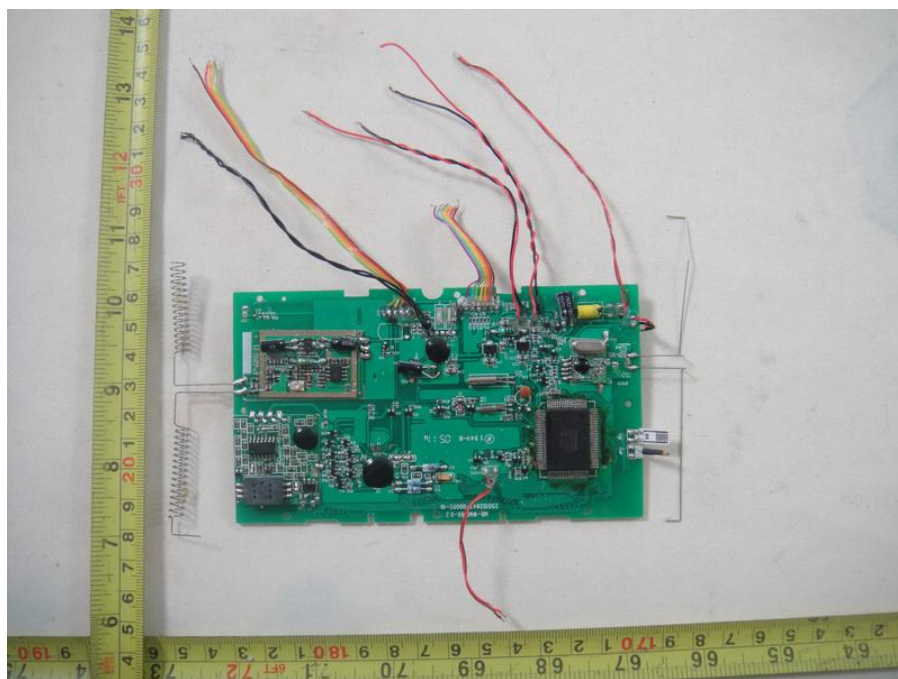
Appendix A



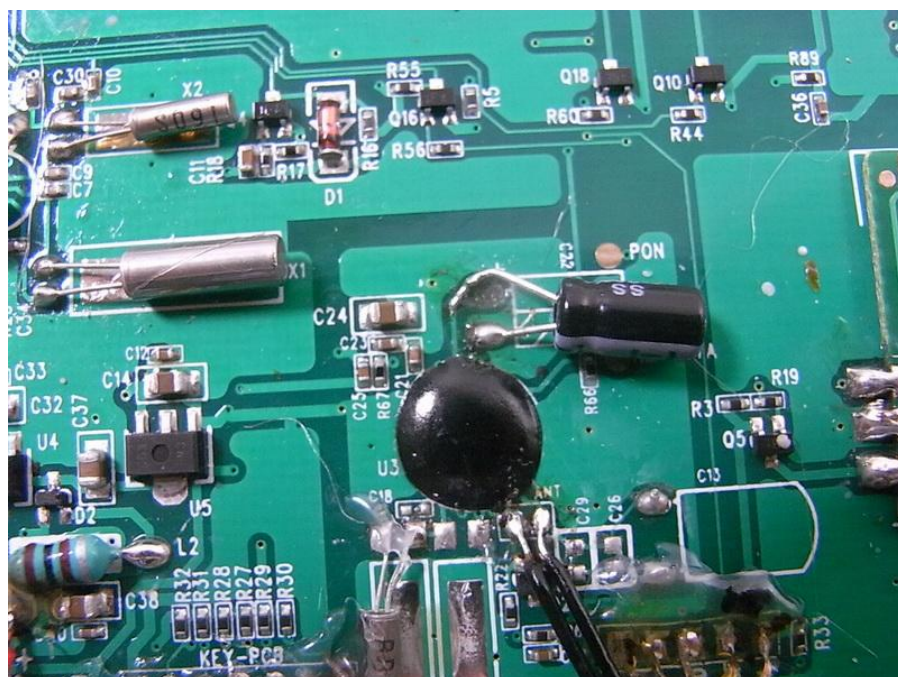
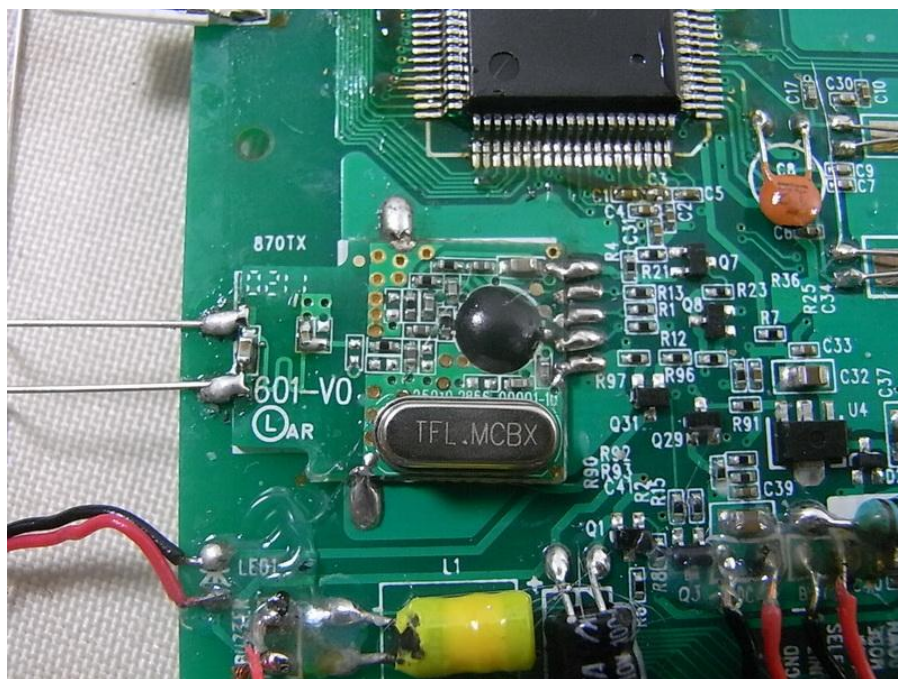
Appendix A



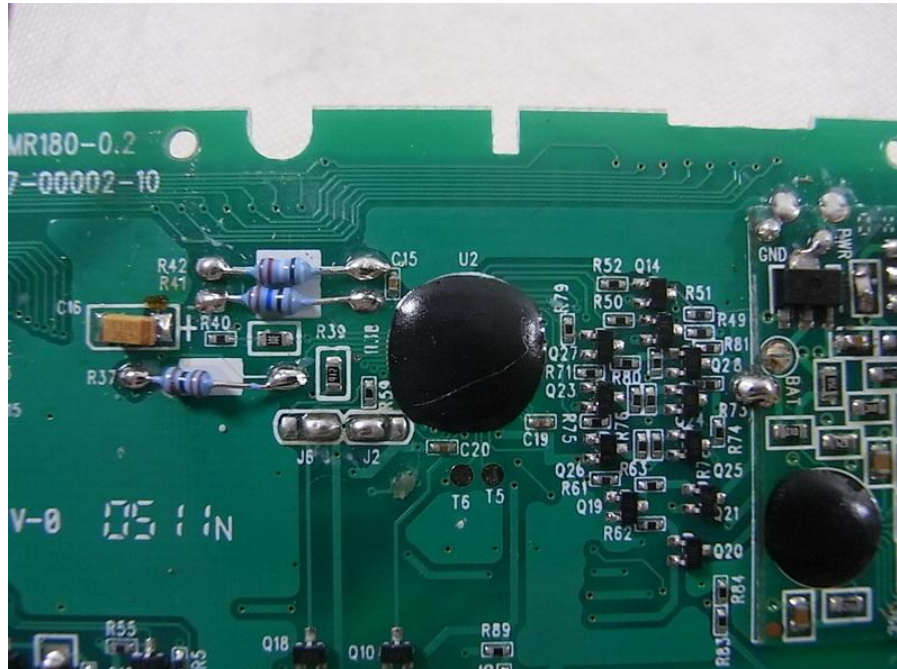
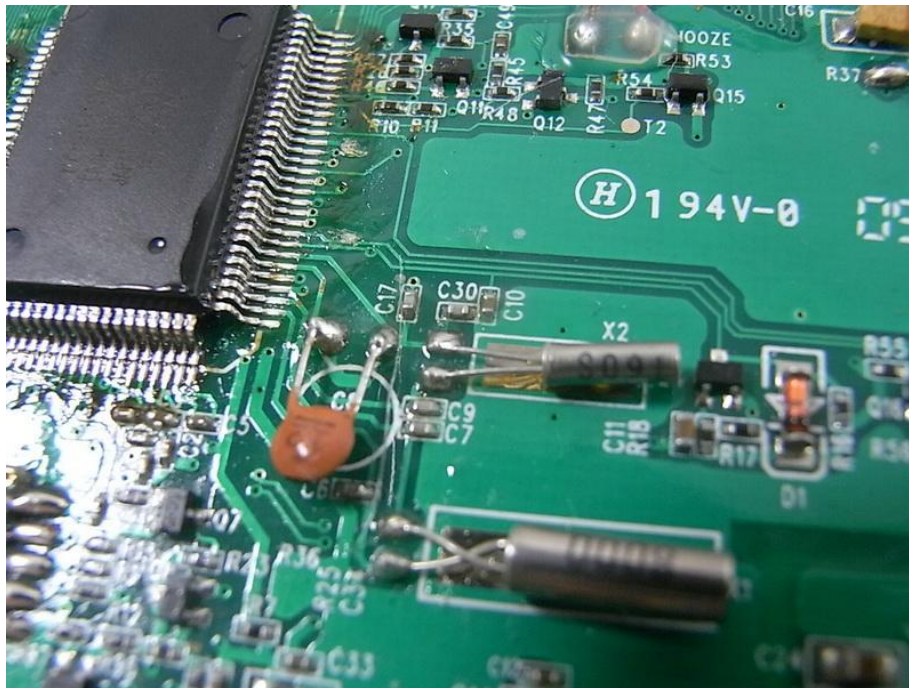
Appendix A



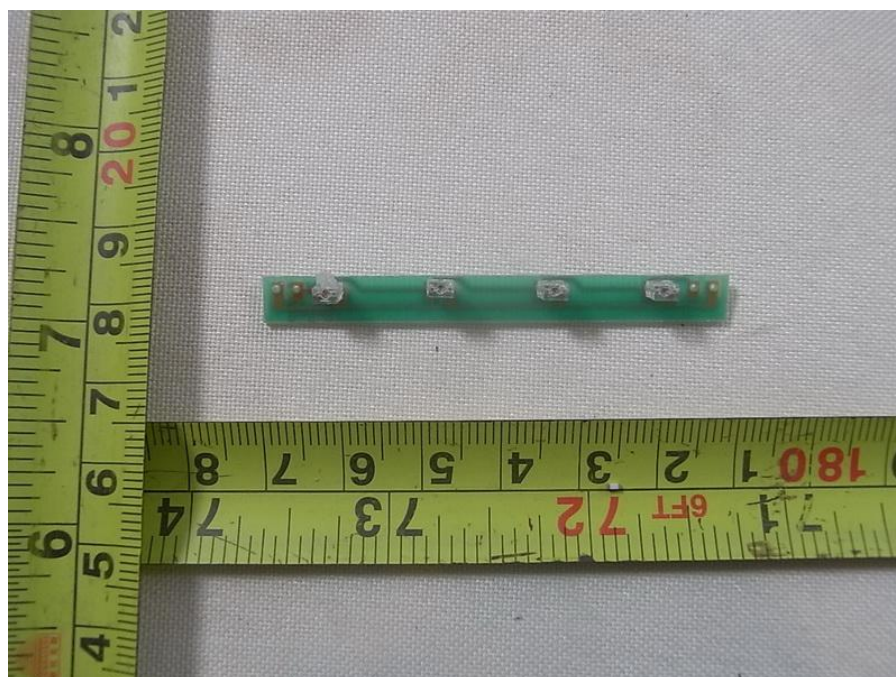
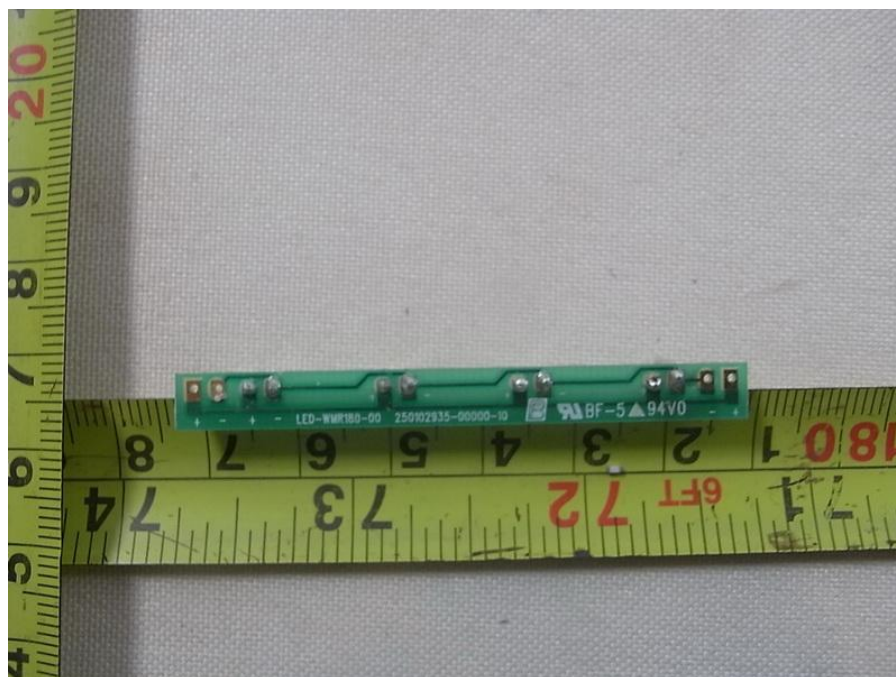
Appendix A



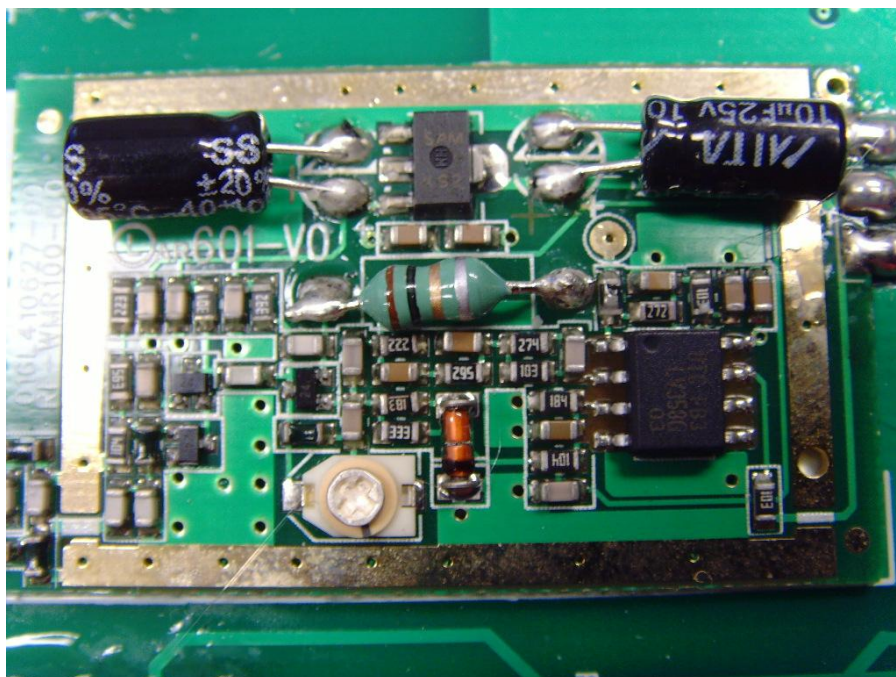
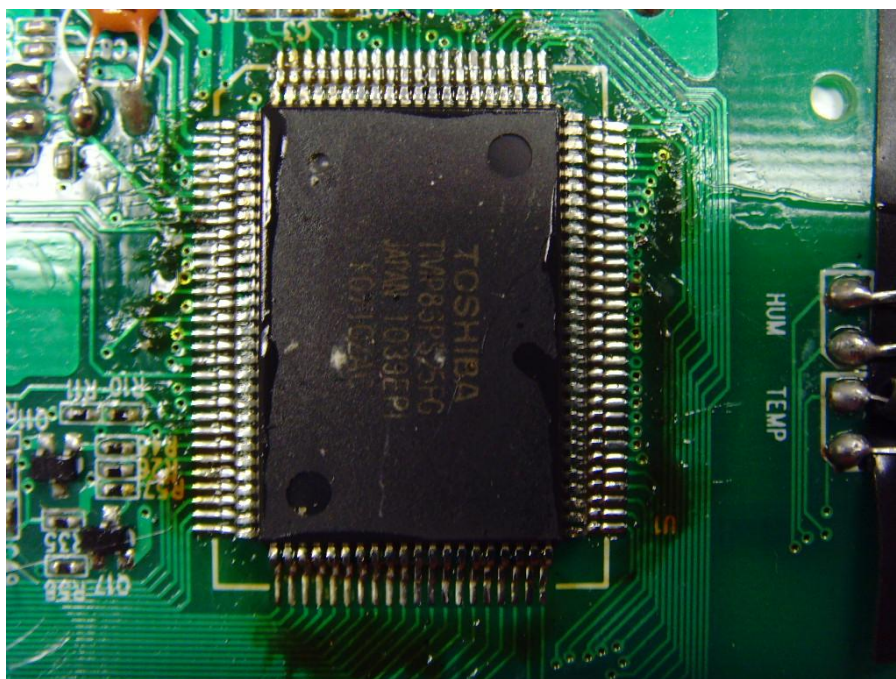
Appendix A



Appendix A

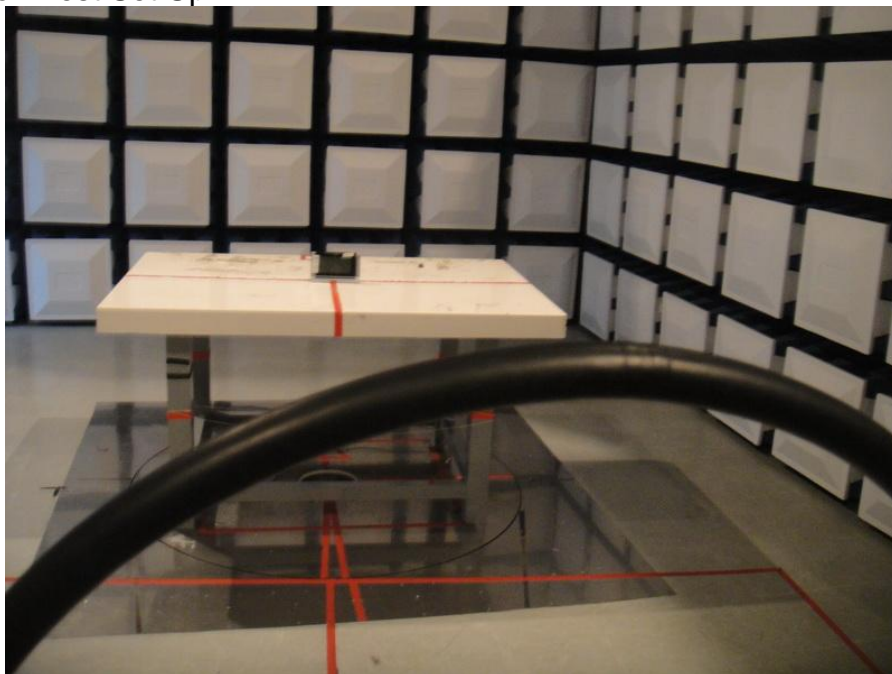


Appendix A



8 Appendix B

Radiated Emission Test Set Up



9kHz - 1GHz

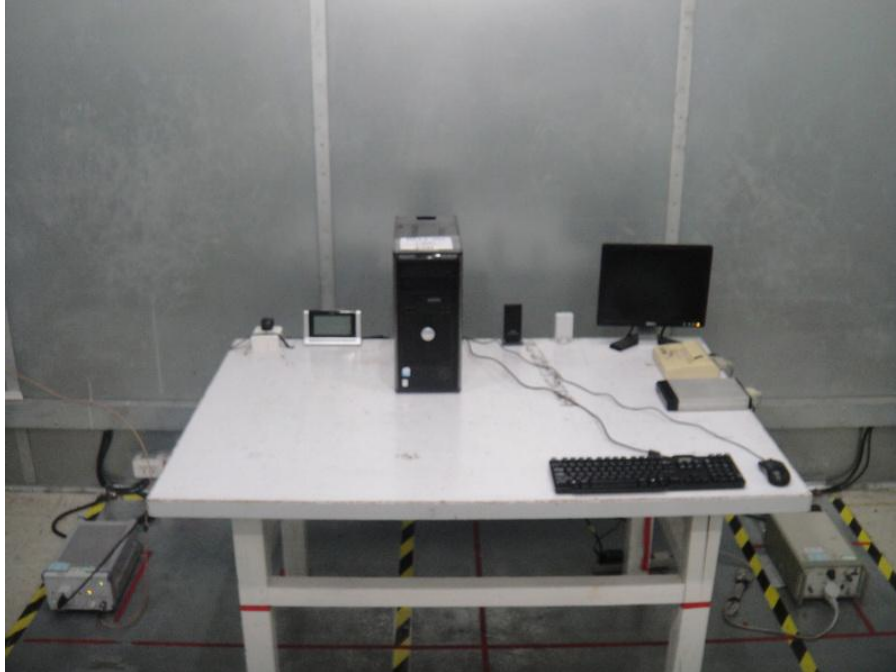
Appendix B



1GHz above

Appendix B

Conduct Emission Test Set Up



9 Appendix C

