



FCC Test Report

Equipment : 150N Wireless LAN USB Adapter
Brand Name : EDIMAX
Model No. : EW-7711ULn / GWU-H711ULn
FCC ID : NDD9577111311
Standard : 47 CFR FCC Part 15B
Device Class : Class B
Applicant : EDIMAX TECHNOLOGY CO., LTD.
Manufacturer : No.3, Wu-Chuan 3rd Road, Wu-Ku Industrial Park,
New Taipei City, Taiwan

The product sample received on Dec. 02, 2013 and completely tested on Dec. 07, 2013. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2009 and shown 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 INC., the test report shall not be reproduced except in full.

Reviewed by:



Kero Kuo / Engineering Supervisor





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APPENDIX A. TEST PHOTOS

APPENDIX B. PHOTOGRAPHS OF EUT



Summary of Test Result

Conformance Test Specifications					
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result
3.1	15.107	AC Power-line Conducted Emissions	[dBuV]: 0.200747MHz 50.80 (Margin 12.78dB) – QP 34.53 (Margin 19.05dB) - AV	Ref. 3.3.1	Complied
3.2	15.109	Radiated Emissions	[dBuV/m at 3m]: 797.60MHz 31.54 (Margin 5.46dB) - Peak	Ref. 3.2.1	Complied



Revision History



1 General Description

1.1 Information

1.1.1 Equipment Authorization Category

FCC Equipment Authorization of Unintentional Radiators Category	
<input checked="" type="checkbox"/>	Class B personal computers and peripherals: Declaration of Conformity or Certification
<input type="checkbox"/>	Class A personal computers and peripherals: Verification
<input checked="" type="checkbox"/>	Receivers operation above 960 MHz or below 30 MHz, except for radar detectors and CB receivers, do not require equipment authorization (verification, Declaration of Conformity, or certification)
<input type="checkbox"/>	Receivers operation within 30 MHz to 960 MHz, except for radar detectors and CB receivers, require equipment authorization (Declaration of Conformity)

1.1.2 RF General Information

RF General Information	
Frequency Range (MHz)	Evaluation Mode
2400-2483.5	2.4GHz WLAN

1.1.3 Antenna Information

Antenna Category	
<input checked="" type="checkbox"/>	Integral antenna (antenna permanently attached)
<input type="checkbox"/>	External antenna (dedicated antennas)

1.1.4 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input checked="" type="checkbox"/> Production ; <input type="checkbox"/> Pre-Production ; <input type="checkbox"/> Prototype
Type of EUT	
<input checked="" type="checkbox"/>	Stand-alone
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.:
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.:
<input type="checkbox"/>	Other:

1.1.5 EUT Operational Condition

Supply Voltage	<input type="checkbox"/> AC mains	<input checked="" type="checkbox"/> DC 5Vdc	
Type of DC Source	<input type="checkbox"/> Internal DC supply	<input type="checkbox"/> From DC Adapter	<input checked="" type="checkbox"/> From Host



1.2 Support Equipment

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
In Local				
1	NoteBook	DELL	E5430	DoC
2	(USB) Printer	EPSON	C61	N/A
3	(USB) Mouse (For Below 1GHz)	Microsoft	1113	Doc
4	(USB) Mouse (For Above 1GHz)	DELL	MOC5UO	Doc
In Remote				
1	Wireless AP	ASUS	RT-AC66U	MSQ-RTA

1.3 Testing Applied Standards

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

- ♦ 47 CFR FCC Part 15B
- ♦ ANSI C63.4-2009

1.4 Testing Location Information

Testing Location				
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.		
	TEL	: 886-3-327-3456		FAX : 886-3-327-0973
Test Condition		Test Site No.	Test Engineer	Test Environment
AC Conduction		CO04-HY	Zeus	24°C / 51%
Radiated Emission (Below 1GHz)		10CH01	Nigel	13°C / 50%
Radiated Emission (Above 1GHz)		03CH04	Allan	25°C / 50%
Test site registered number [643075] with FCC.				



1.5 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Uncertainty		
Test Item	Uncertainty	
AC power-line conducted emissions	± 2.26 dB	
All emissions, radiated	30 – 1000 MHz	± 2.56 dB
	1 – 18 GHz	± 3.59 dB
	18 – 40 GHz	± 3.82 dB
	40 – 200 GHz	N/A



2 Test Configuration of EUT

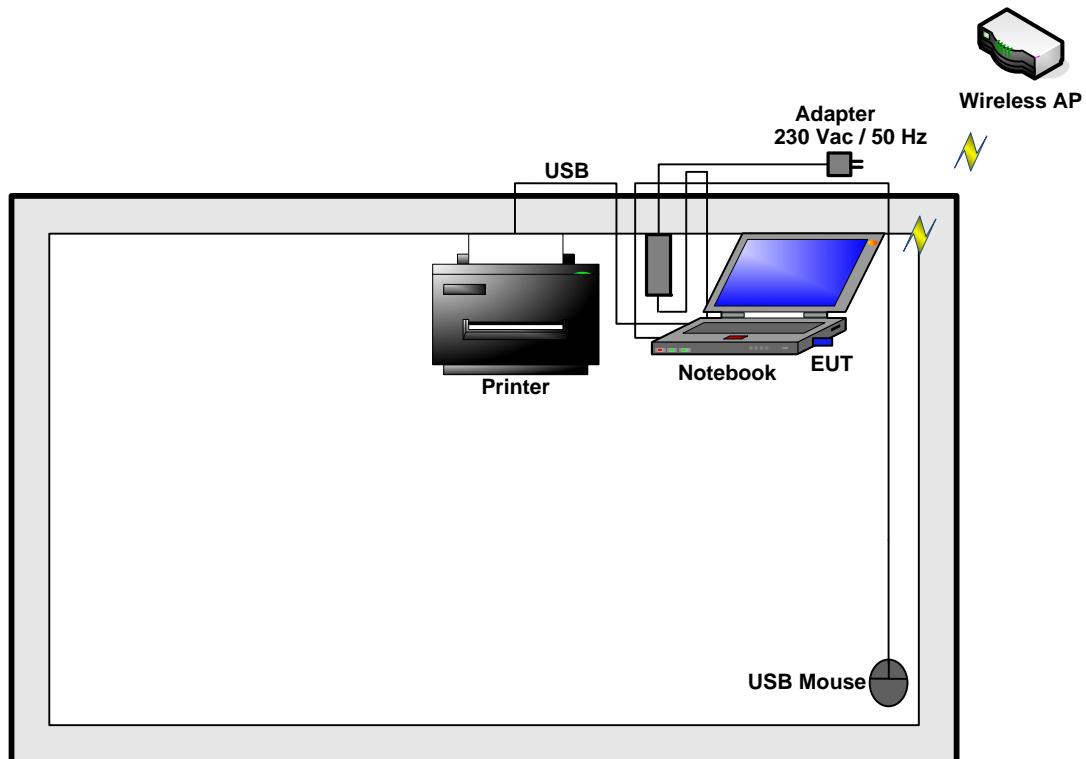
2.1 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	EUT with Notebook via WiFi link

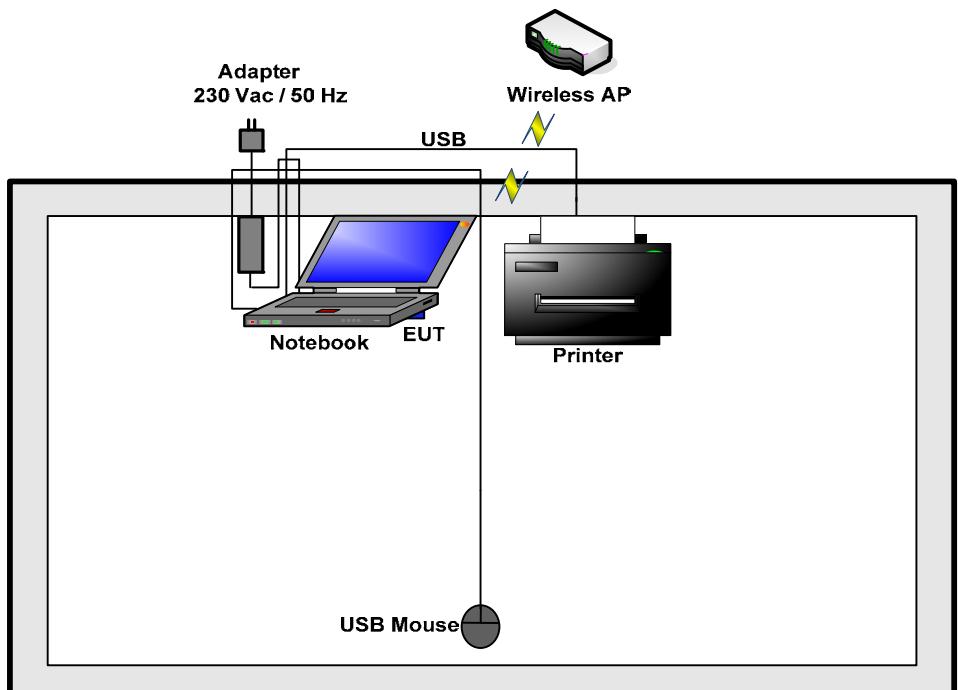
The Worst Case Mode for Following Conformance Tests		
Tests Item	Radiated Emissions	
Test Condition	Radiated measurement	
Search Range	Highest Frequency Generated or Used in Device	Upper Frequency of Radiated Measurement
	Below 1.705MHz	No radiated testing required
	1.705MHz-108MHz	1GHz
	108MHz-500MHz	2GHz
	500MHz-1GHz	5GHz
	Above 1GHz	5 th harmonic of the highest frequency or 40 GHz, whichever is lower.
User Position	<input type="checkbox"/> EUT will be placed in fixed position. <input checked="" type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes. The worst plane is X. <input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed two or three orthogonal planes. <input checked="" type="checkbox"/> 1. EUT with Notebook via WiFi link	
For operating mode 1 is the worst case and it was record in this test report.		
Orthogonal Planes of EUT	X Plane	Y Plane

2.2 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Test Setup Diagram - Radiated Test



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit (Class B)		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

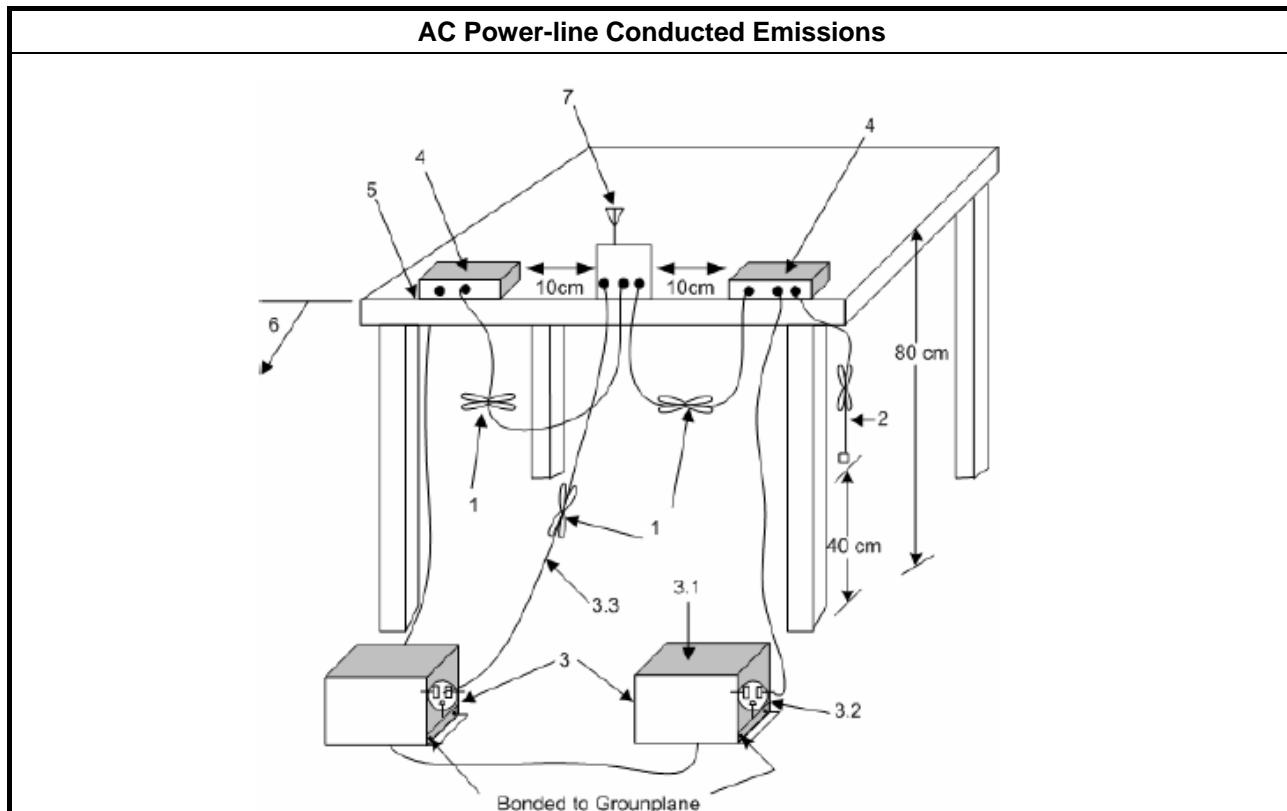
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

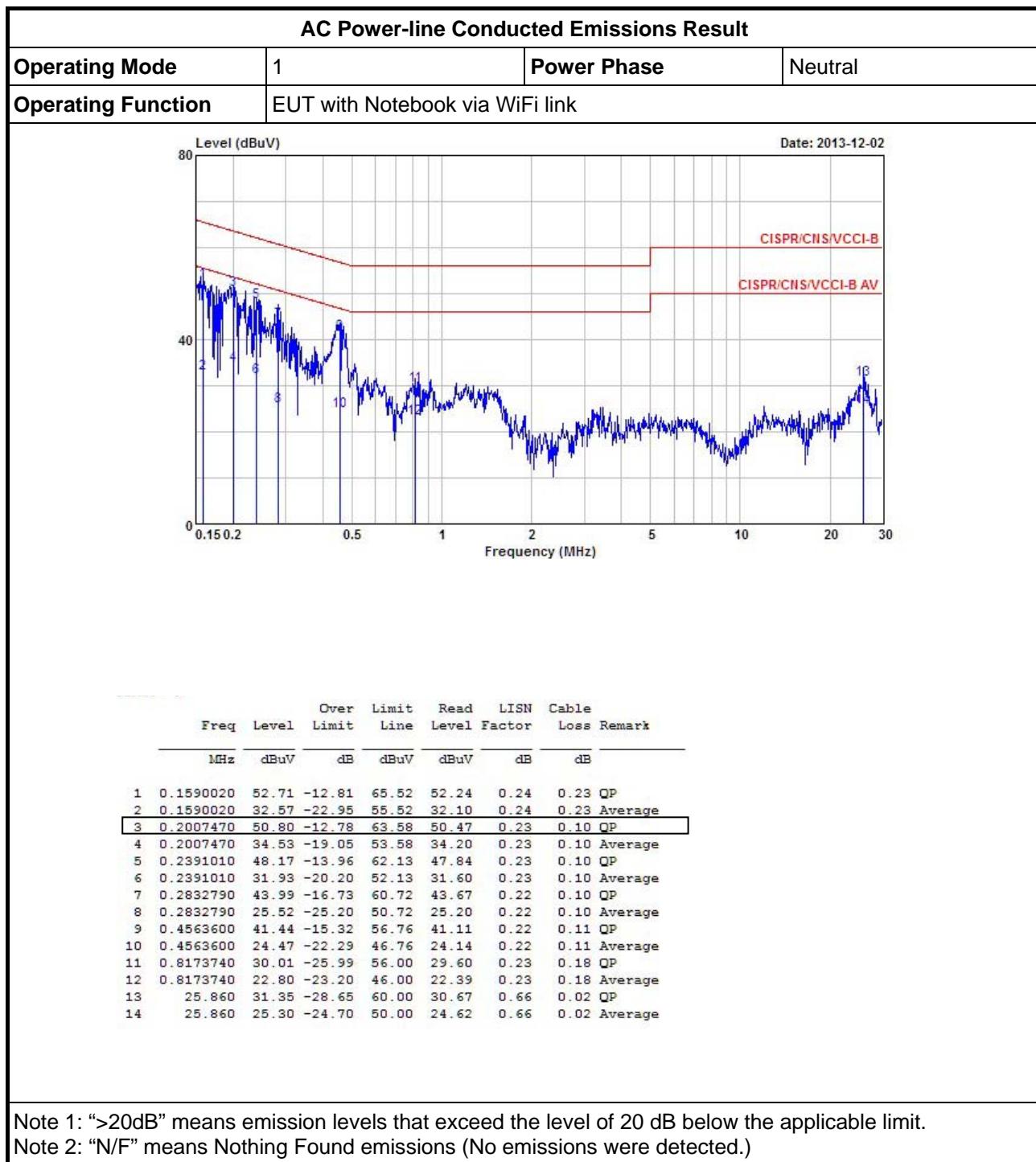
Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.4, clause 7.3 for AC power-line conducted emissions.

3.1.4 Test Setup





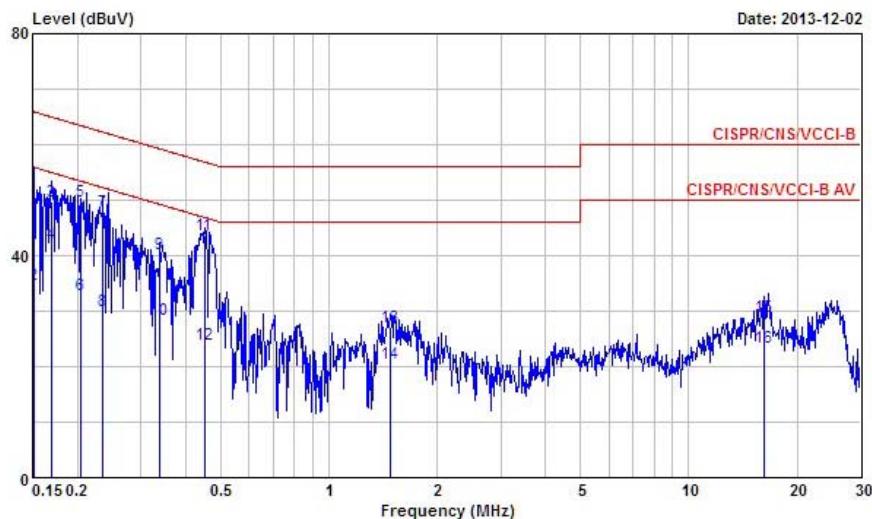
3.1.5 Test Result of AC Power-line Conducted Emissions





AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	EUT with Notebook via WiFi link		



Freq	Level	Over	Limit	Read	LISN	Cable
		Limit	Line	Level	Factor	Loss Remark
MHz	dBuV	dB	dBuV	dBuV	dB	dB
0.1507970	50.20	-15.76	65.96	49.83	0.11	0.26 QP
0.1507970	34.75	-21.21	55.96	34.38	0.11	0.26 Average
0.1694400	49.86	-15.13	64.99	49.56	0.11	0.19 QP
0.1694400	42.11	-12.88	54.99	41.81	0.11	0.19 Average
0.2050460	49.66	-13.74	63.40	49.45	0.11	0.10 QP
0.2050460	32.87	-20.53	53.40	32.66	0.11	0.10 Average
0.2353310	48.01	-14.25	62.26	47.80	0.11	0.10 QP
0.2353310	29.91	-22.35	52.26	29.70	0.11	0.10 Average
0.3391950	40.15	-19.07	59.22	39.95	0.10	0.10 QP
0.3391950	28.51	-20.71	49.22	28.31	0.10	0.10 Average
0.4515500	43.68	-13.17	56.85	43.47	0.10	0.11 QP
0.4515500	24.06	-22.79	46.85	23.85	0.10	0.11 Average
1.480	27.18	-28.82	56.00	26.80	0.12	0.26 QP
1.480	20.42	-25.58	46.00	20.04	0.12	0.26 Average
16.230	28.97	-31.03	60.00	28.48	0.29	0.20 QP
16.230	23.36	-26.64	50.00	22.87	0.29	0.20 Average

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)



3.2 Radiated Spurious Emissions

3.2.1 Radiated Spurious Emissions Limit

CISPR 22 Limits for radiated disturbance of class B ITE at a measuring distance of 10 m	
Frequency range (MHz)	Quasi-peak limits (dB μ V/m)
30 to 230	30
230 to 1000	37

Note 1: The lower limit shall apply at the transition frequency.
Note 2: Additional provisions may be required for cases where interference occurs.

FCC Part 15B Radiated Spurious Emissions Limit (Class B)			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dB μ V/m)	Measure Distance (m)
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

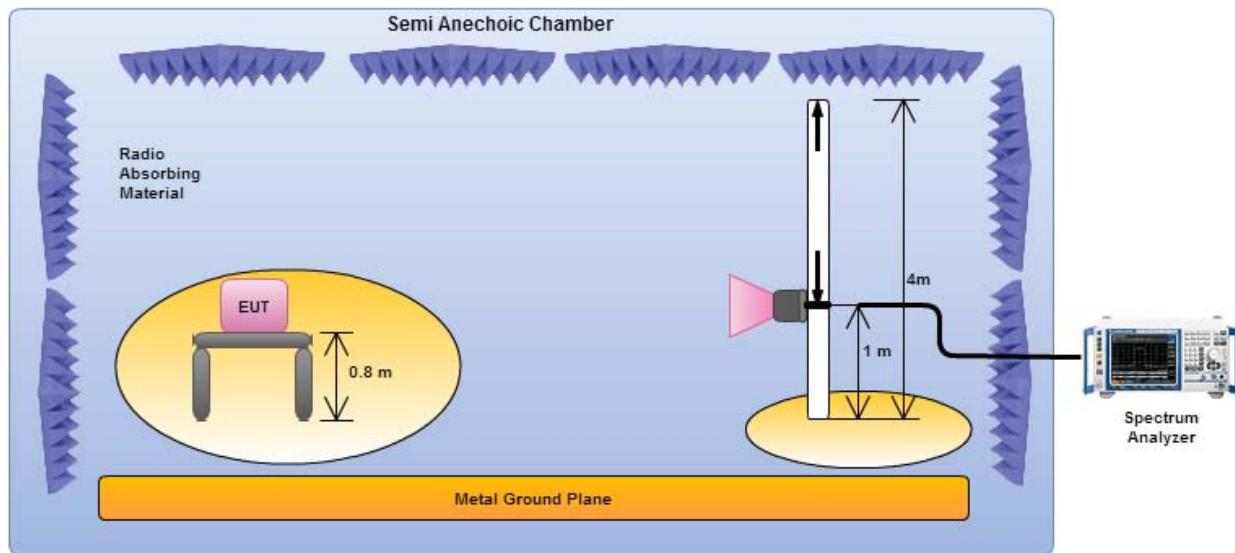


3.2.3 Test Procedures

Test Method – General Information	
<input checked="" type="checkbox"/>	The search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is higher, to at least 5 times the highest tunable or local oscillator frequency, whichever is higher, without exceeding 40 GHz.
<input checked="" type="checkbox"/>	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Measurements in the frequency range 10 GHz - 40GHz are typically made at a closer distance 1m, because the instrumentation noise floor is typically close to the radiated emission limit.
<input checked="" type="checkbox"/>	For radiated measurement. <ul style="list-style-type: none"><input type="checkbox"/> Refer as ANSI C63.4, clause 8.3.1.1 and 8.3.2.2 for radiated emissions from below 30 MHz.<input checked="" type="checkbox"/> Refer as ANSI C63.4, clause 8.3.1.1 and 8.3.2.2 for radiated emissions from 30 MHz-1 GHz. For the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the QP-Limit so that the QP level does not need to be reported in addition.<input checked="" type="checkbox"/> Refer as ANSI C63.4, clause 8.3.2.1 and 8.3.2 for radiated emissions from above 1 GHz. For the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

3.2.4 Test Setup

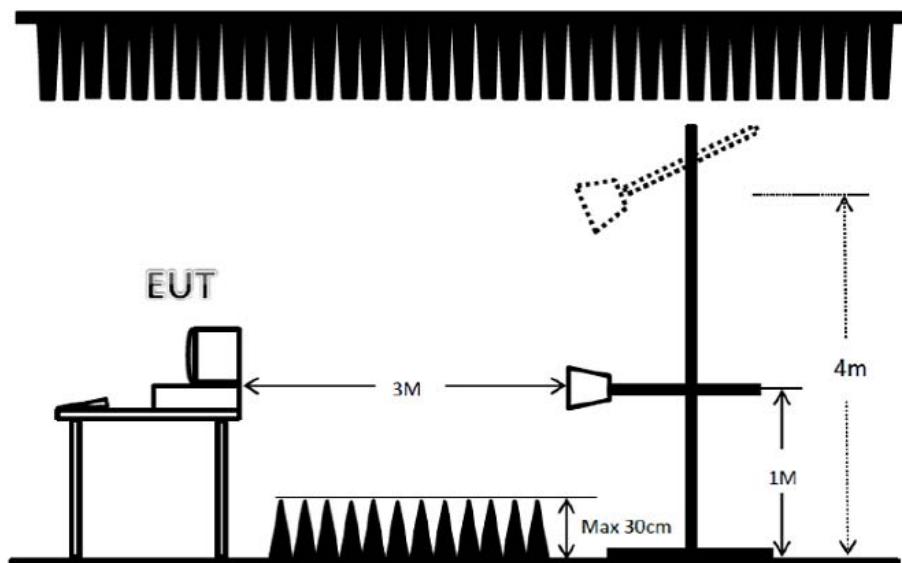
Radiated Spurious Emissions below 1GHz



Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna and the frequency range of 1 GHz to 13 GHz using a calibrated horn antenna.

Radiated Spurious Emissions Above 1GHz

< Above 1GHz >



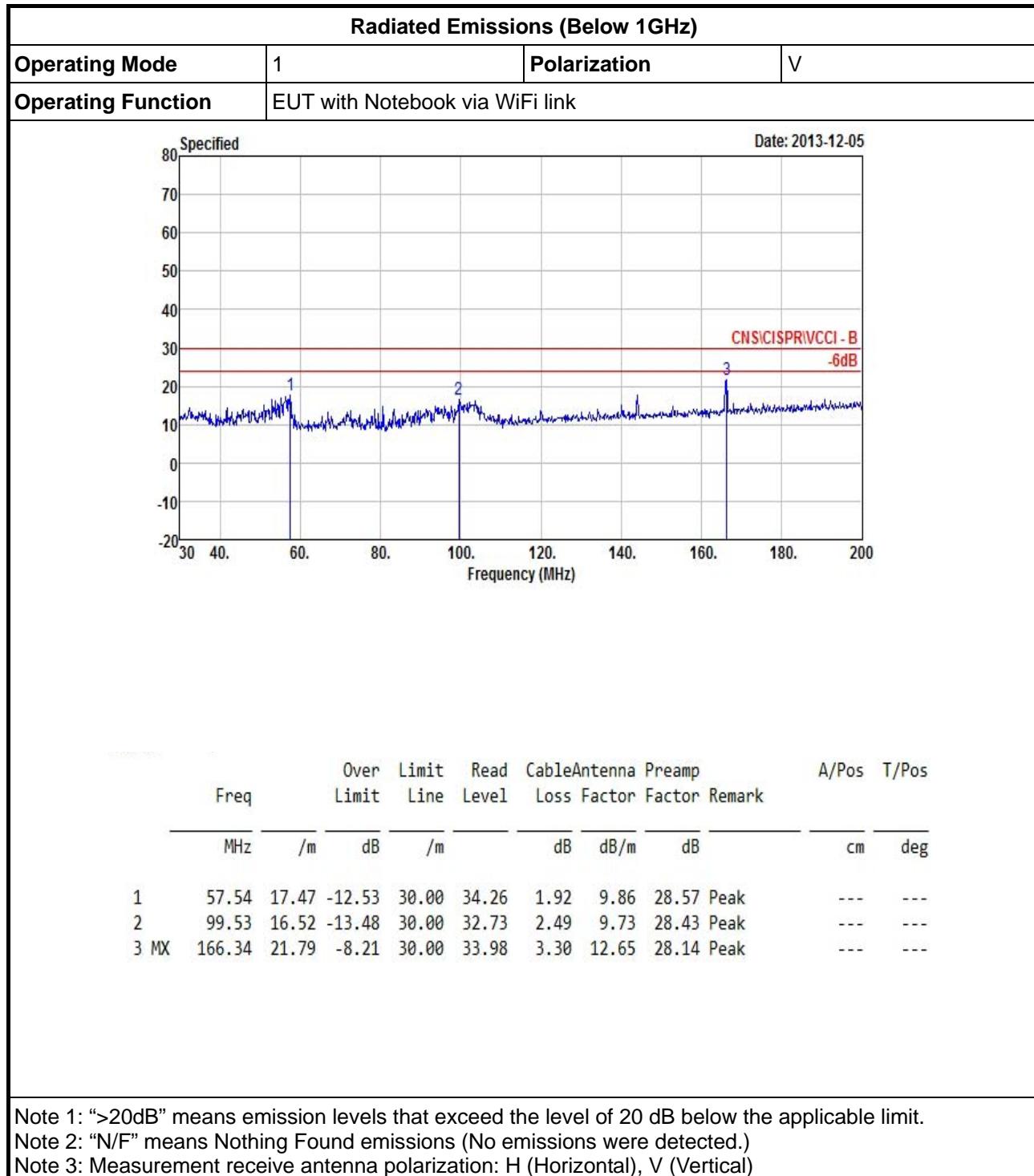
Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna and the frequency range of 1 GHz to 13 GHz using a calibrated horn antenna.

For radiated emissions 30 MHz to 1 GHz, test distance is 10m.

For radiated emissions 1 GHz to 13 GHz, test distance is 3m.



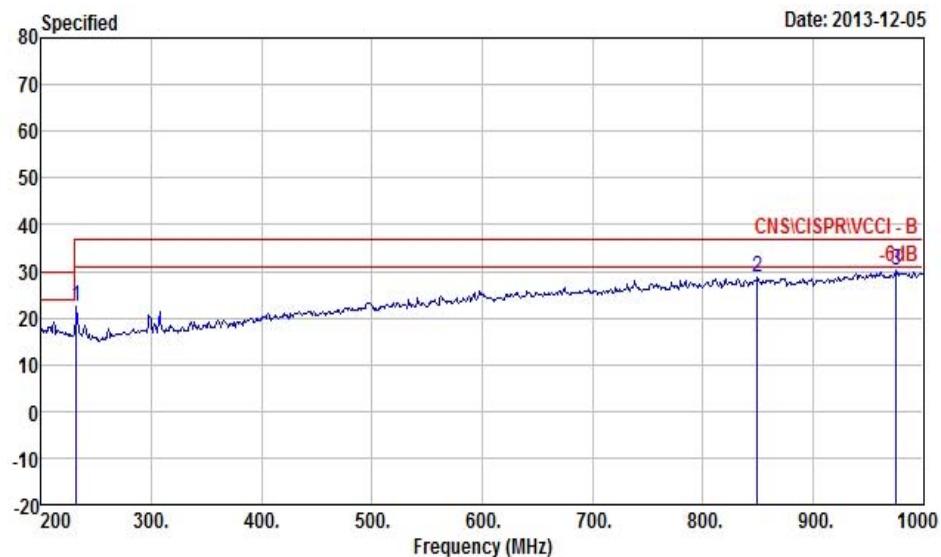
3.2.5 Radiated Emissions (Below 1GHz)





Radiated Emissions (Below 1GHz)

Operating Mode	1	Polarization	V
Operating Function	EUT with Notebook via WiFi link		



Freq	Over Limit Read Cable Antenna Preamp						A/Pos	T/Pos
	Limit	Line	Level	Cable Loss	Antenna Factor	Preamp Factor		
MHz	/m	dB	/m	dB	dB/m	dB	cm	deg
1 232.00	22.52	-14.48	37.00	32.98	3.95	13.00	27.41	Peak
2 849.60	28.63	-8.37	37.00	27.24	8.10	20.95	27.66	Peak
3 MX 976.00	30.14	-6.86	37.00	27.20	8.30	21.79	27.15	Peak

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

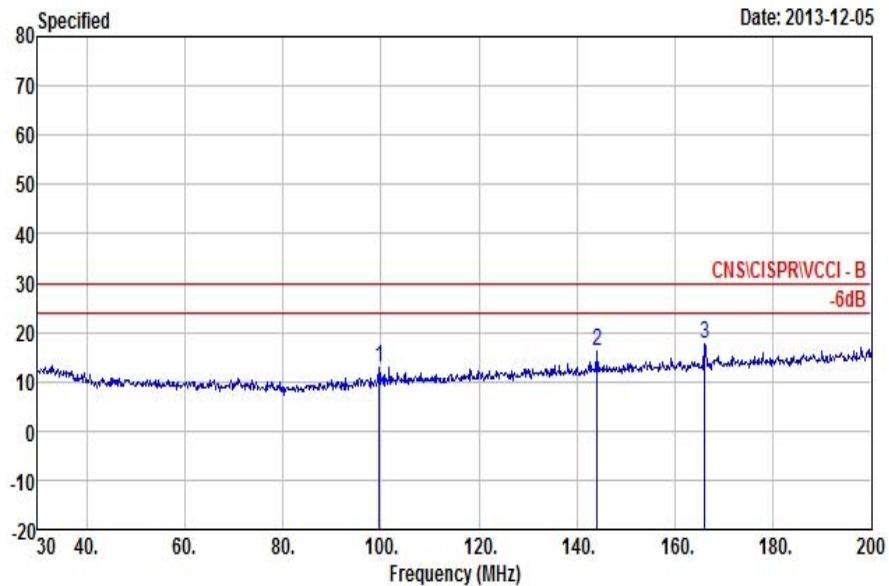
Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



Radiated Emissions (Below 1GHz)

Operating Mode	1	Polarization	H
Operating Function	EUT with Notebook via WiFi link		



Freq	Over	Limit	Read	Cable	Antenna	Preamp	A/Pos	T/Pos		
	Limit	Line	Level	Loss	Factor	Factor				
	MHz	/m	dB	/m		dB	dB/m	dB	cm	deg
1	99.70	12.94	-17.06	30.00	29.13	2.49	9.75	28.43	Peak	---
2	144.07	16.05	-13.95	30.00	29.50	2.99	11.80	28.24	Peak	---
3 MX	166.00	17.52	-12.48	30.00	29.72	3.30	12.64	28.14	Peak	---

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

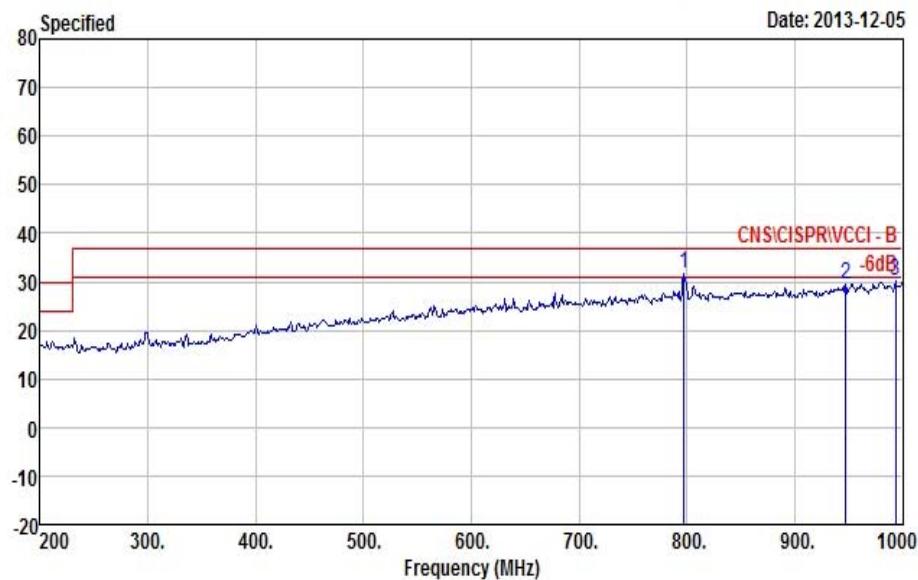
Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



Radiated Emissions (Below 1GHz)

Operating Mode	1	Polarization	H
Operating Function	EUT with Notebook via WiFi link		



Freq	Over Limit	Read Level	Cable Antenna Preamp			A/Pos	T/Pos	
			Line	Loss Factor	Factor			
MHz	/m	dB	/m	dB	dB/m	dB	cm	deg
1 MX	797.60	31.54	-5.46	37.00	30.87	7.66	20.88	27.87 Peak
2	947.20	29.52	-7.48	37.00	27.01	8.29	21.49	27.27 Peak
3	993.60	30.13	-6.87	37.00	27.01	8.24	21.97	27.09 Peak

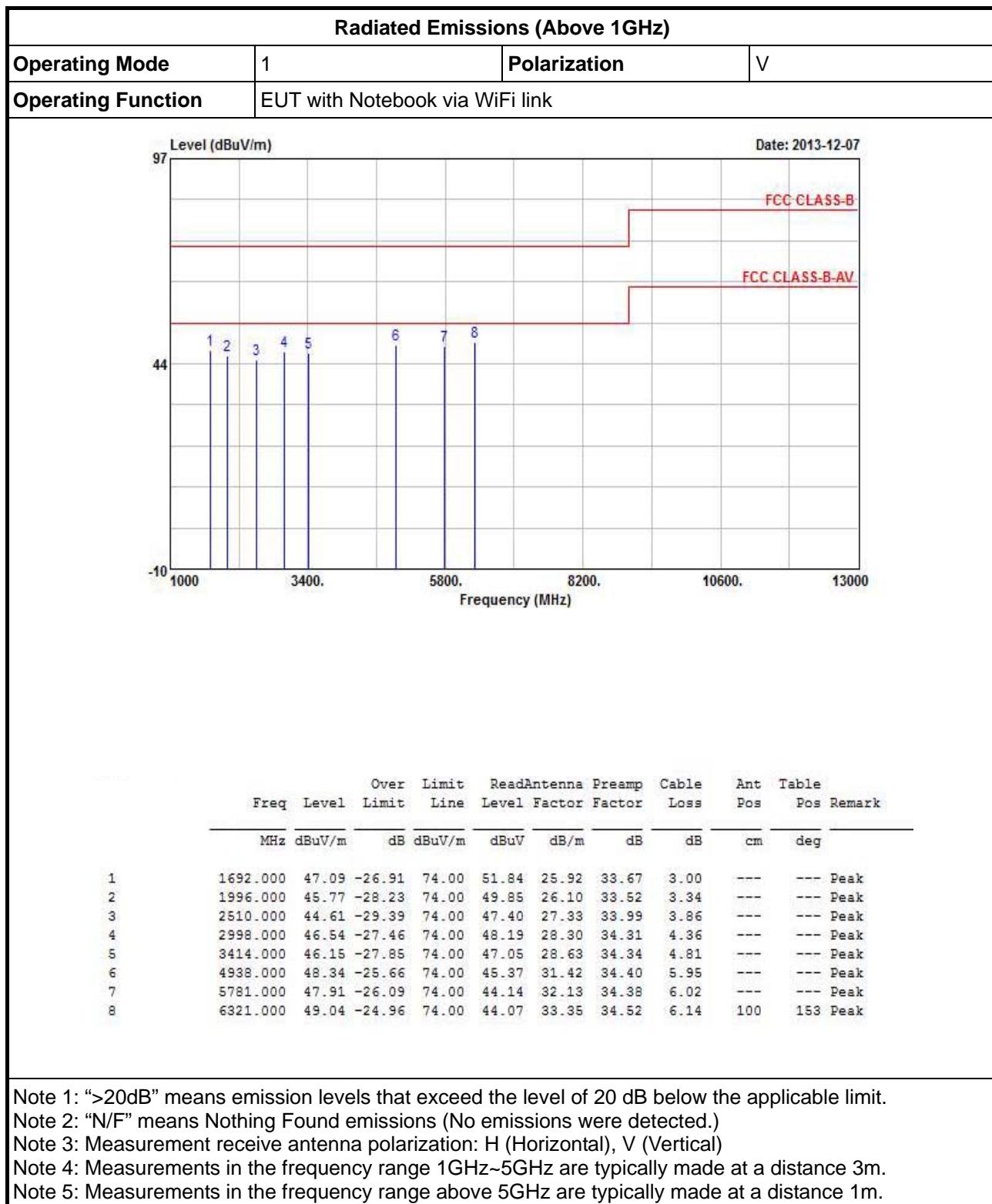
Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

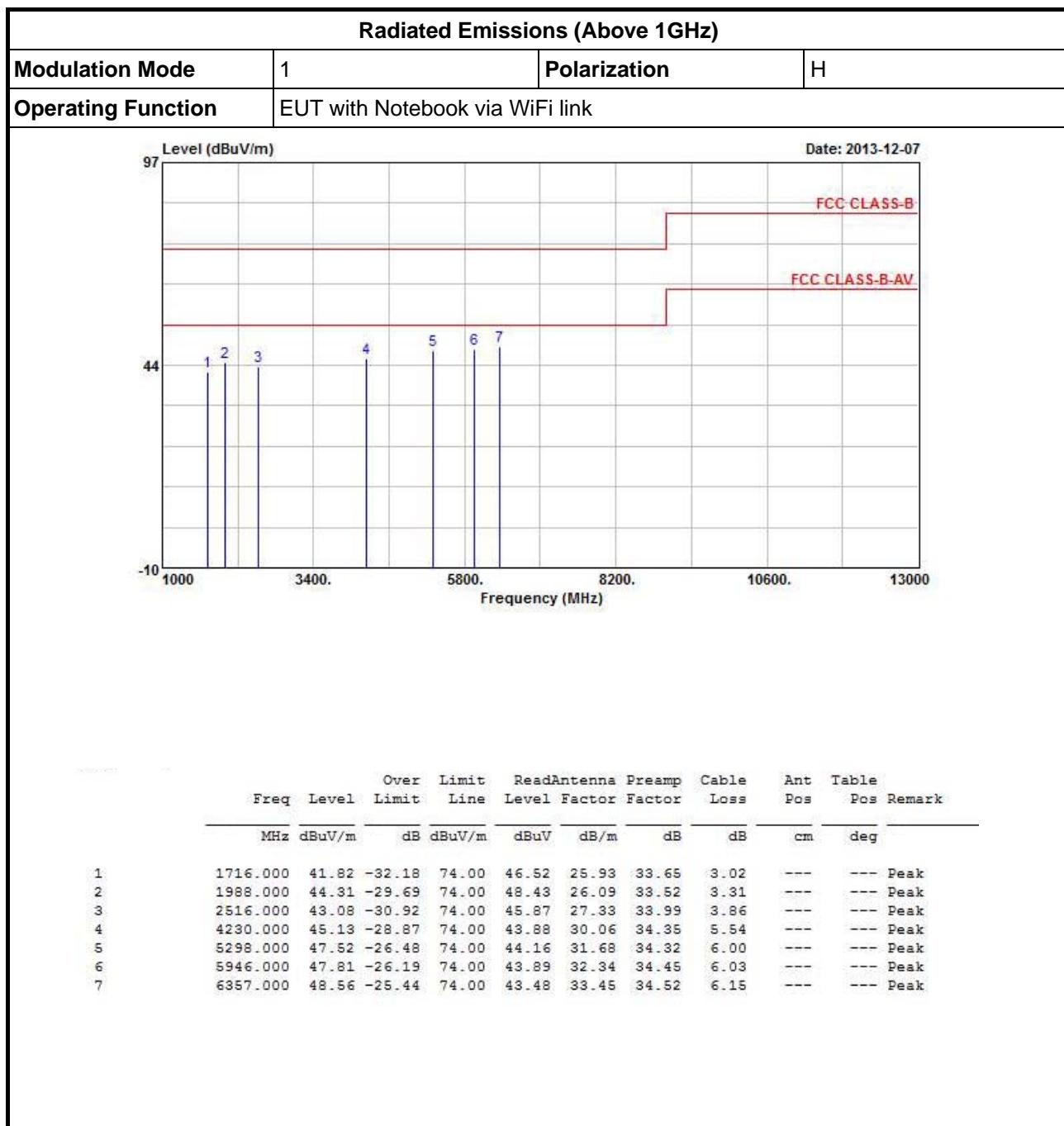
Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



3.2.6 Radiated Emissions (Above 1GHz)





Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 4: Measurements in the frequency range 1GHz~5GHz are typically made at a distance 3m.

Note 5: Measurements in the frequency range above 5GHz are typically made at a distance 1m.



4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz ~ 2.75GHz	Mar. 26, 2013	Conduction (CO04-HY)
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 21, 2013	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9kHz ~ 30MHz	Apr. 18, 2013	Conduction (CO04-HY)
RF Cable-CON	HUBER+SUHNER	RG213/U	7.61183201e+012	9kHz ~ 30MHz	Oct. 30, 2013	Conduction (CO04-HY)
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
10m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-10M	10CH01-HY	30MHz ~ 1GHz 10m/3m	Jun. 10, 2013	Radiation (10CH01-HY)
Spectrum Analyzer	R&S	FSP7	838858/013	9kHz ~ 7GHz	Feb. 21, 2013	Radiation (10CH01-HY)
Receiver	R&S	ESI7	838496/009	20Hz ~ 7GHz	Jul. 23, 2013	Radiation (10CH01-HY)
Amplifier	Agilent	8447D	2944A10825	100kHz ~ 1.3GHz	Apr. 19, 2013	Radiation (10CH01-HY)
Amplifier	Agilent	8447D	2944A10826	100kHz ~ 1.3GHz	Apr. 12, 2013	Radiation (10CH01-HY)
Biconical Antenna	Schwarz beck	VHBB 9124	286	30MHz ~ 200MHz	Aug. 02, 2013	Radiation (10CH01-HY)
Log Antenna	Schwarz beck	VUSLP 9111	206	200MHz ~ 1GHz	Aug. 02, 2013	Radiation (10CH01-HY)
Turn Table	HD	DT 60 RPS	1513/004/00	0 ~ 360 degree	N/A	Radiation (10CH01-HY)
Antenna Mast	HD	MA240	240/556/00	1 ~ 4 m	N/A	Radiation (10CH01-HY)
Antenna Mast	HD	MA240	240/559/00	1 ~ 4 m	N/A	Radiation (10CH01-HY)
RF Cable-R10m	BELDEN	RG8/U	CB023-INSIDE	30MHz ~ 1GHz	Nov. 14, 2013	Radiation (10CH01-HY)
RF Cable-R10m	Suhner Switzerland + Rosenberger	RG223/U + UAA220A-0	CB022-DOOR	30MHz ~ 1GHz	Nov. 14, 2013	Radiation (10CH01-HY)

Note: Calibration Interval of instruments listed above is one year.



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH04-HY	1 GHz ~ 6 GHz 3m	May. 17, 2013	Radiation (03CH04-HY)
Receiver	R&S	ESU	100422	20Hz ~ 26.5GHz	Apr. 02, 2013	Radiation (03CH04-HY)
Amplifier	Agilent	8449B	3008A02326	1 GHz ~ 26.5 GHz	May. 17, 2013	Radiation (03CH04-HY)
Horn Antenna	SCHWARZBECK	BBHA9120	BBHA9120D113 0	1 GHz ~ 18 GHz	Sep.10, 2013	Radiation (03CH04-HY)
Turn Table	Chaintek	3000	MF7802056	0 ~ 360 degree	NCR	Radiation (03CH04-HY)
Antenna Mast	MF	MF-7802	MF780208163	1 m ~ 4 m	NCR	Radiation (03CH04-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	CB063-HF	1 GHz ~ 40 GHz	Nov. 21, 2013	Radiation (03CH04-HY)

Note: Calibration Interval of instruments listed above is one year.