

FCC Test Report

Equipment : 11ac Wireless Single-Band 5G Only USB Adapter
Brand Name : EDIMAX
Model No. : EW-7711ULC / GWU-H11ULC / EW-7711MAC
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 Sep. 27, 2013 and completely tested on Oct. 02, 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:



Kent Chen / Assistant Manager



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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]: 0.1500000MHz 55.12 (Margin 10.88dB) - QP 41.93 (Margin 14.07dB) - AV	Ref. 3.1.1	Complied
3.2	15.109	Radiated Emissions	[dBuV/m at 10m]: 48.43MHz 35.29 (Margin 4.71dB) – QP	Ref. 3.2.1	Complied

Revision History

[illegible]

1 General Description

1.1 Information

1.1.1 Equipment Authorization Category

FCC Equipment Authorization of Unintentional Radiators Category	
☒	Class B personal computers and peripherals: Declaration of Conformity or Certification
☐	Class A personal computers and peripherals: Verification
☒	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)
☐	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
5150-5250 / 5725-5850	5GHz WLAN

1.1.3 Antenna Information

Antenna Category	
☒	Integral antenna (antenna permanently attached)
☐	External antenna (dedicated antennas)

1.1.4 Type of EUT

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

1.1.5 EUT Operational Condition

Supply Voltage	☐ AC mains	☒ DC (5Vdc)	
Type of DC Source	☐ Internal DC supply	☐ External DC adapter	☒ From Host

1.2 Support Equipment

Support Equipment				
No.	Equipment	Brand Name	Model Name	Serial No.
In Local				
1	Notebook	DELL	Latitude E5430	764RWW1
2	Printer	EPSON	XP-30	QSDK002410
2	Mouse	DELL	MS111-L	2DNL
In Remote Workstation				
1	AP	D-LINK	DIR-815	3000228

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				
☒	Sporton Lab	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		
☒	ICC Lab	ADD : No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsein 333, Taiwan (R.O.C.)		
		TEL : 886-3-271-8666 FAX : 886-3-318-0155		
Test Condition		Test Site No.	Test Engineer	Test Environment
AC Conduction		CO04-HY	Skys Huang	23°C / 53%
*Radiated Emission		03CH02-WS	Skys Huang	24°C / 64%
				Test Date
				Oct. 02, 2013
				Oct. 02, 2013

Note: * Sporton Lab subcontracts this test item to ICC lab (TAF:2732).

ICC lab is a TAF accreditation test firm and also is an approved provider of Sporton Lab.

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	Limit
AC power-line conducted emissions		± 2.80 dB	N/A
All emissions, radiated	30 – 1000 MHz	± 3.9 dB	N/A
	Above 1GHz	± 4.2 dB	N/A

2 Test Configuration of EUT

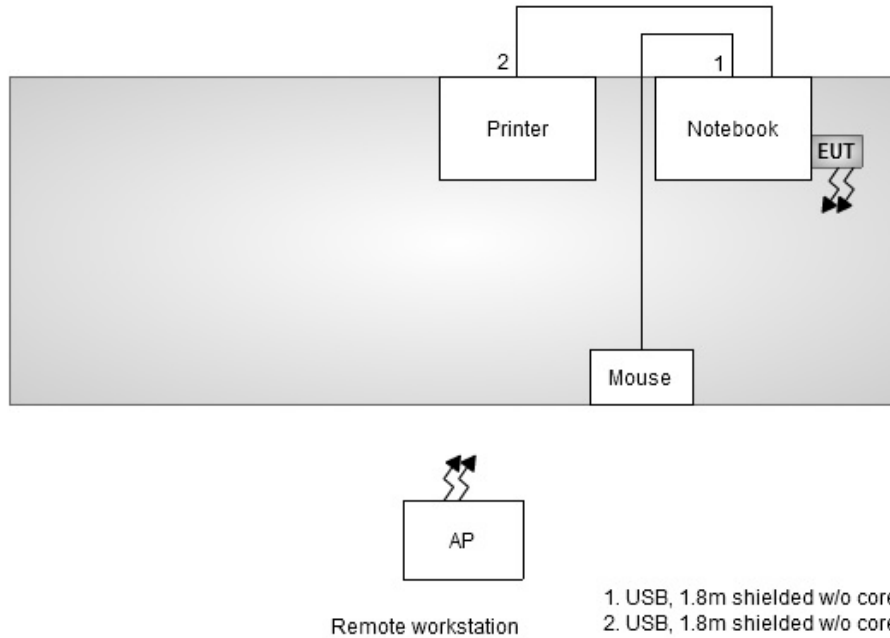
2.1 The Worst Case Measurement Configuration

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	WiFi link to AP

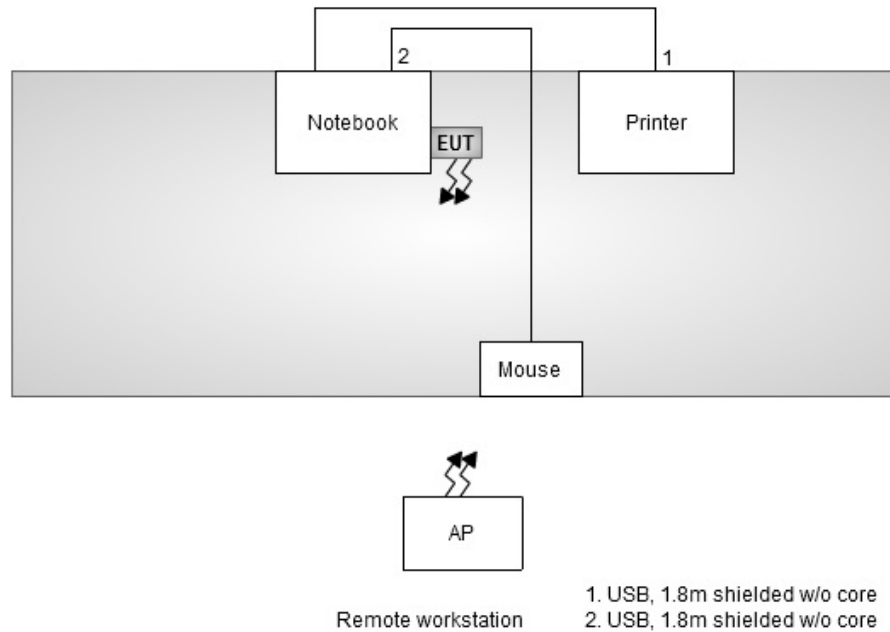
The Worst Case Mode for Following Conformance Tests		
Tests Item	Radiated Emissions	
Test Condition	Radiated measurement	
Search Range	Highest Frequency Generated or Used in Device	Upper Frequency of Radiated Measurement
	Below 1.705MHz	No radiated testing required
	1.705MHz-108MHz	1GHz
	108MHz-500MHz	2GHz
	500MHz-1GHz	5GHz
	Above 1GHz	5th harmonic of the highest frequency or 40 GHz, whichever is lower.
User Position	☒ EUT will be placed in fixed position.	
	☐ EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes.	
	☐ EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed three orthogonal planes. The worst planes is X.	
Operating Mode ≤1GHz	Operating Mode Description	
1	1. WiFi link to AP	
Operating Mode >1GHz	Operating Mode Description	
1	2. WiFi link to AP	

2.2 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Test Setup Diagram – Radiated Emission 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.

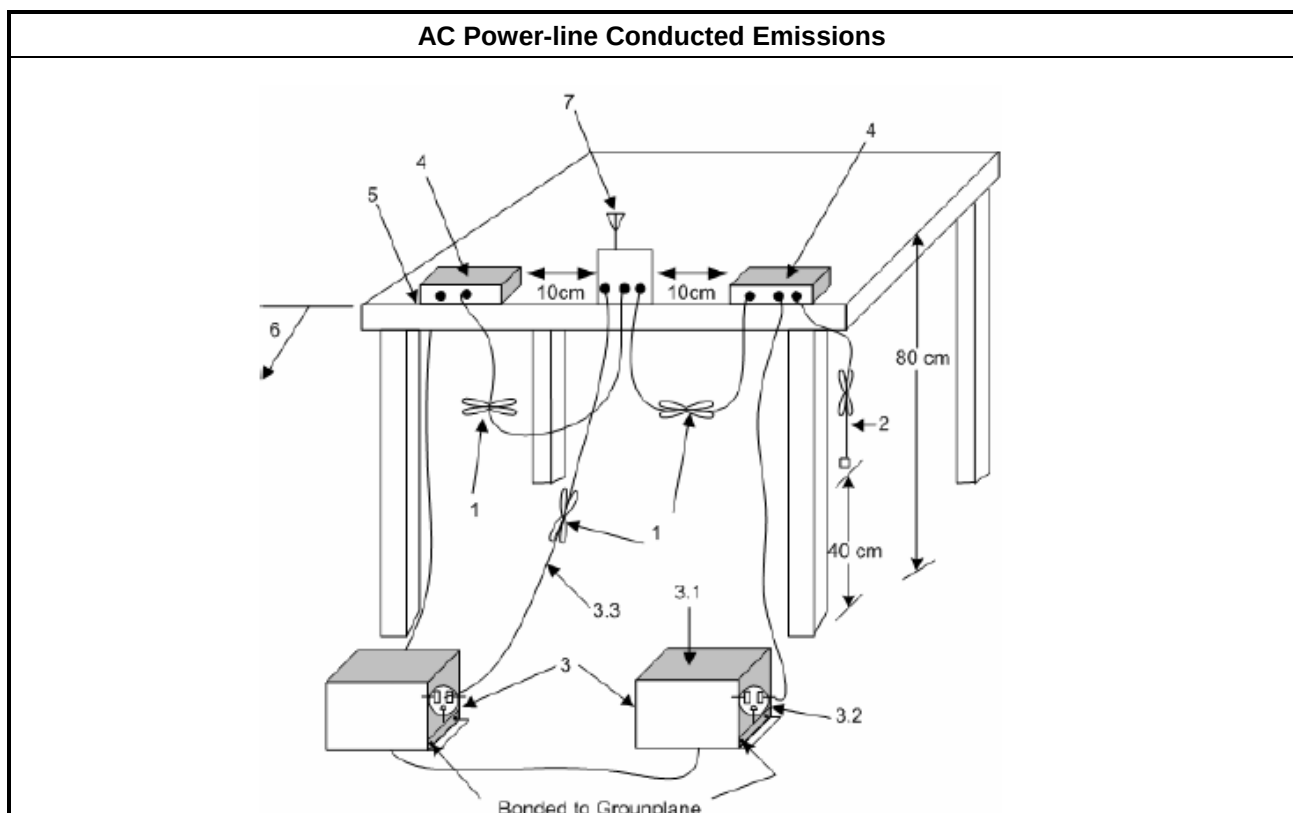
3.1.2 Measuring Instruments

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

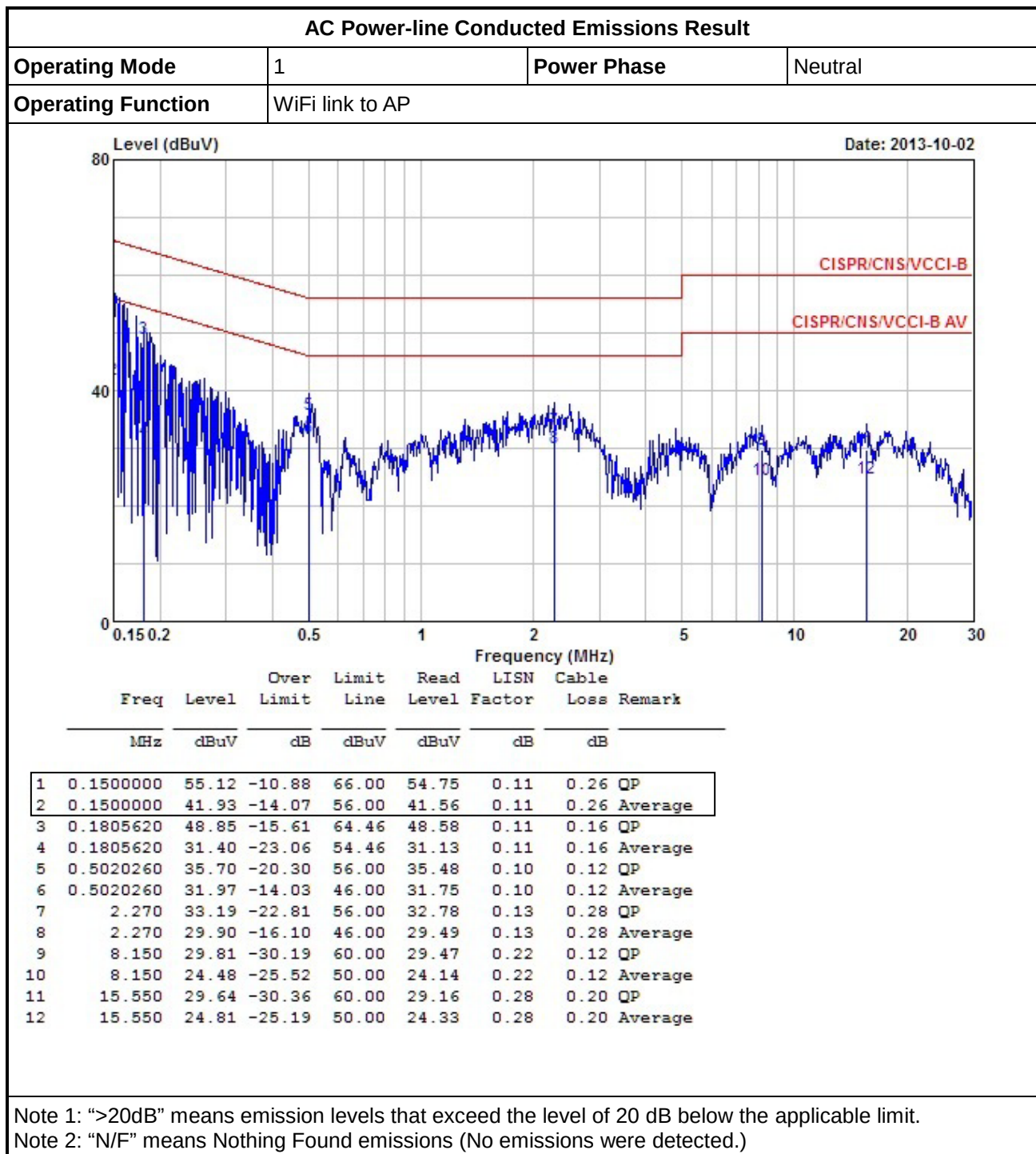
3.1.3 Test Procedures

Test Method
☒ Refer as ANSI C63.4, clause 7.3 for AC power-line conducted emissions.

3.1.4 Test Setup

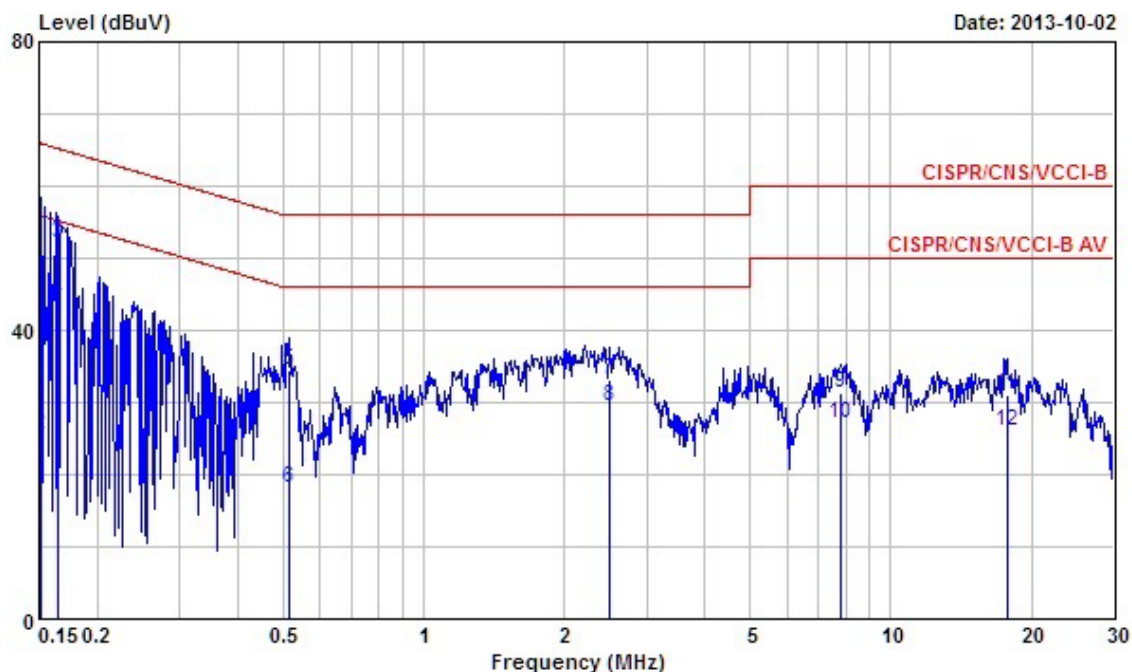


3.1.5 Test Result of AC Power-line Conducted Emissions



AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	WiFi link to AP		



	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1515980	51.32	-14.59	65.91	50.82	0.24	0.26	QP
2	0.1515980	25.59	-30.32	55.91	25.09	0.24	0.26	Average
3	0.1650100	52.09	-13.12	65.21	51.64	0.24	0.21	QP
4	0.1650100	44.28	-10.93	55.21	43.83	0.24	0.21	Average
5	0.5155030	34.41	-21.59	56.00	34.06	0.22	0.13	QP
6	0.5155030	18.28	-27.72	46.00	17.93	0.22	0.13	Average
7	2.500	33.18	-22.82	56.00	32.65	0.26	0.27	QP
8	2.500	29.38	-16.62	46.00	28.85	0.26	0.27	Average
9	7.810	31.26	-28.74	60.00	30.75	0.38	0.13	QP
10	7.810	27.06	-22.94	50.00	26.55	0.38	0.13	Average
11	17.750	30.96	-29.04	60.00	30.22	0.54	0.20	QP
12	17.750	26.16	-23.84	50.00	25.42	0.54	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

FCC Part 15B Radiated Spurious Emissions Limit (Class B)			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
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).

CISPR 22 Limits for radiated disturbance of class B ITE at a measuring distance of 10 m	
Frequency range (MHz)	Quasi-peak limits (dBμV/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.

CISPR 22 Limits for radiated disturbance of Class B ITE at a measurement distance of 3 m		
Frequency range (GHz)	Average limit (dBμV/m)	Peak limit (dBμV/m)
1 to 3	50	70
3 to 6	54	74

Note 1: The lower limit applies at the transition frequency.

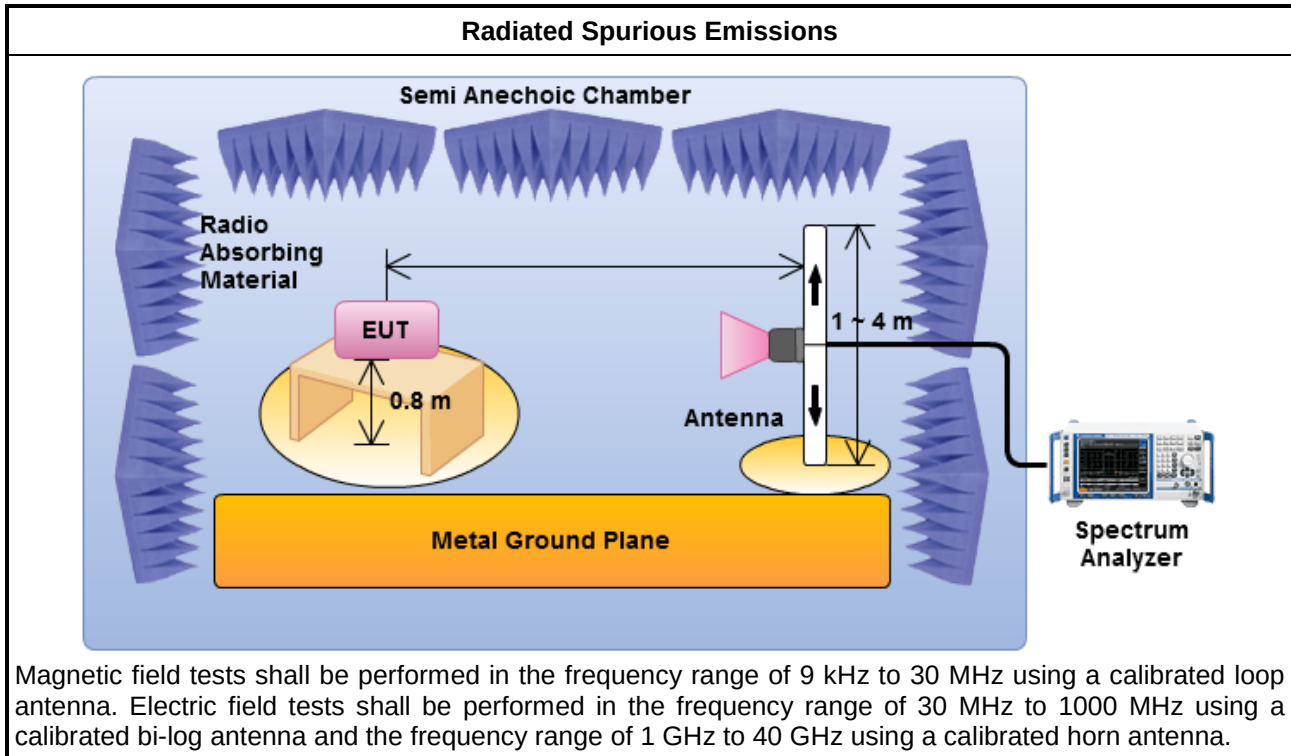
3.2.2 Measuring Instruments

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

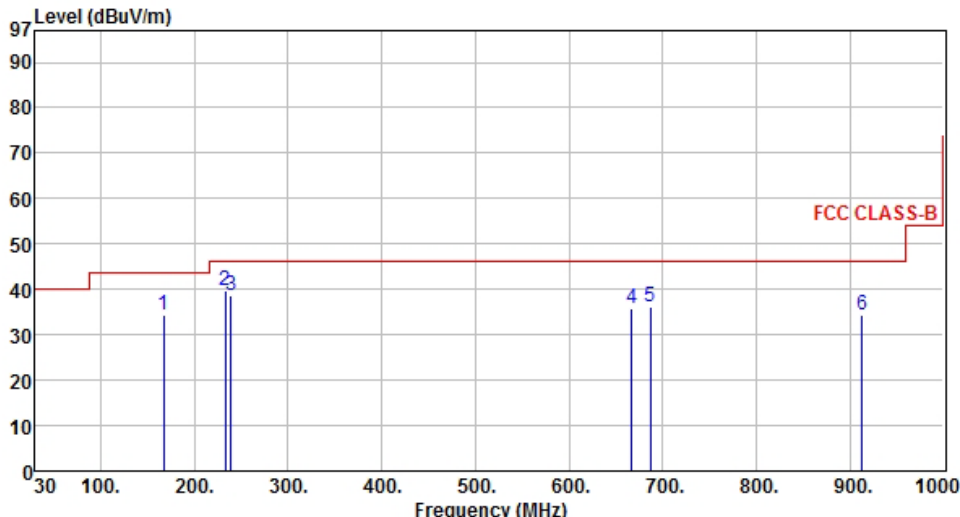
3.2.3 Test Procedures

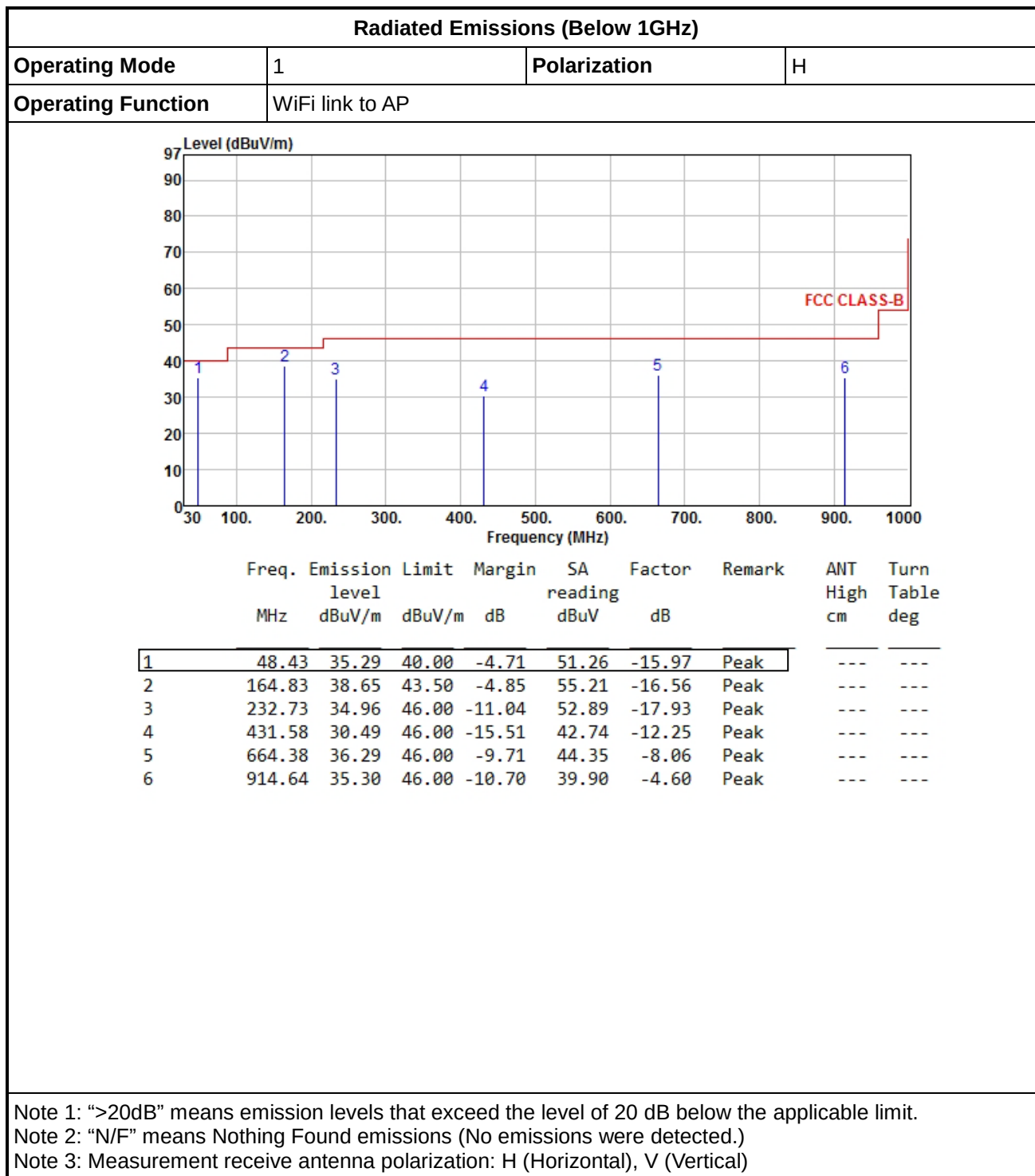
Test Method – General Information	
☒	The search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is higher, to at least 5 times the highest tunable or local oscillator frequency, whichever is higher, without exceeding 40 GHz.
☒	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).
☒	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.
☒	For radiated measurement.
☐	Refer as ANSI C63.4, clause 8.3.1.1 and 8.3.2.2 for radiated emissions from below 30 MHz.
☒	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.
☒	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



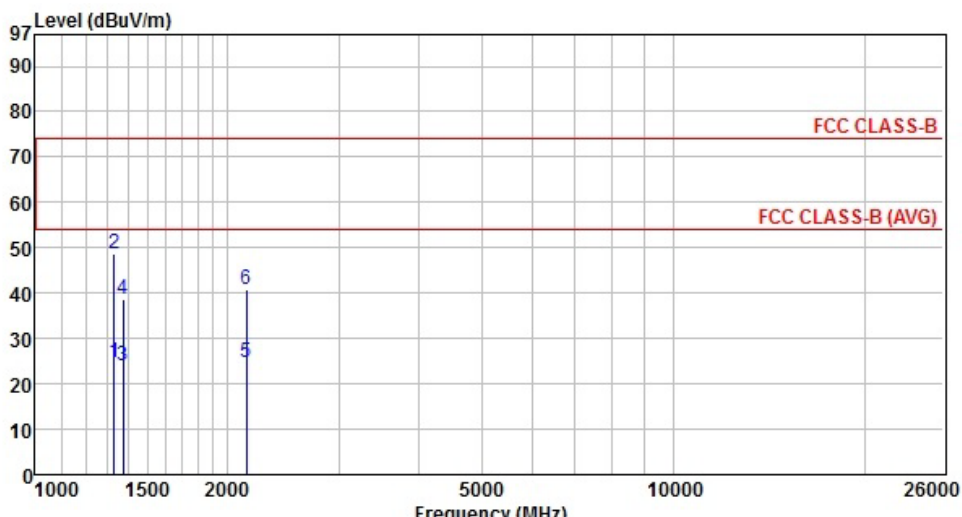
3.2.5 Radiated Emissions (Below 1GHz)

Radiated Emissions (Below 1GHz)																																																																															
Operating Mode		1			Polarization			V																																																																							
Operating Function		WiFi link to AP																																																																													
Level (dBUV/m)  Frequency (MHz) <table><thead><tr><th></th><th>Freq. MHz</th><th>Emission level dBUV/m</th><th>Limit dBUV/m</th><th>Margin dB</th><th>SA reading dBUV</th><th>Factor dB</th><th>Remark</th><th>ANT High cm</th><th>Turn Table deg</th></tr></thead><tbody><tr><td>1</td><td>166.77</td><td>34.45</td><td>43.50</td><td>-9.05</td><td>51.08</td><td>-16.63</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>2</td><td>232.73</td><td>39.73</td><td>46.00</td><td>-6.27</td><td>57.66</td><td>-17.93</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>3</td><td>239.52</td><td>38.68</td><td>46.00</td><td>-7.32</td><td>56.19</td><td>-17.51</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>4</td><td>667.29</td><td>35.85</td><td>46.00</td><td>-10.15</td><td>43.87</td><td>-8.02</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>5</td><td>686.69</td><td>36.17</td><td>46.00</td><td>-9.83</td><td>43.87</td><td>-7.70</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>6</td><td>912.70</td><td>34.27</td><td>46.00</td><td>-11.73</td><td>38.92</td><td>-4.65</td><td>Peak</td><td>---</td><td>---</td></tr></tbody></table>											Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg	1	166.77	34.45	43.50	-9.05	51.08	-16.63	Peak	---	---	2	232.73	39.73	46.00	-6.27	57.66	-17.93	Peak	---	---	3	239.52	38.68	46.00	-7.32	56.19	-17.51	Peak	---	---	4	667.29	35.85	46.00	-10.15	43.87	-8.02	Peak	---	---	5	686.69	36.17	46.00	-9.83	43.87	-7.70	Peak	---	---	6	912.70	34.27	46.00	-11.73	38.92	-4.65	Peak	---	---
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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)

Radiated Emissions (Above 1GHz)									
Operating Mode	1				Polarization		V		
Operating Function	WiFi link to AP								
Level (dBUV/m) </									

Radiated Emissions (Above 1GHz)																																																																															
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4 Test Equipment and Calibration Data

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO04-HY)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
EMC Receiver	R&S	ESCS 30	100174	Mar. 26, 2013	Mar. 26, 2014
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	Jan. 21, 2013	Jan. 21, 2014
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	Apr. 18, 2013	Apr. 18, 2014
RF Cable-CON	HUBER+SUHNER	RG213/U	7.61183201e+012	Nov. 09, 2012	Nov. 09, 2013
ISN	TESEQ	ISN T800	30330	Mar. 15, 2013	Mar. 15, 2014
EMI Filter	LINDGREN	LRE-2030	2651	N/A	N/A
CDN	TESEQ	M016	25100	Mar. 11, 2013	Mar. 11, 2014
CDN	TESEQ	M016	25103	Mar. 11, 2013	Mar. 11, 2014
50 ohm terminal	N/A	N/A	TM012	Feb. 26, 2013	Feb. 26, 2014
50 ohm terminal	N/A	N/A	CON-04-02	Feb. 26, 2013	Feb. 26, 2014
50 ohm terminal	N/A	N/A	CON-04-01	Apr. 22, 2013	Apr. 22, 2014
50 ohm terminal	N/A	N/A	CON-04-03	Feb. 26, 2013	Feb. 26, 2014
50 ohm terminal	N/A	N/A	CON-01-04	Feb. 26, 2013	Feb. 26, 2014
ISN	TESEQ	ISN T400	21653	Jun. 25, 2013	Jun. 25, 2014
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission above 1GHz				
Test Site	966 chamber 2 / (03CH02-WS)				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
3m semi-anechoic chamber	CHAMPRO	SAC-03	03CH02-WS	Jan. 02, 2013	Jan. 01, 2014
Spectrum Analyzer	R&S	FSV40	101499	Jan. 28, 2013	Jan. 27, 2014
Receiver	R&S	ESR3	101657	Jan. 30, 2013	Jan. 29, 2014
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-524	Jan. 11, 2013	Jan. 10, 2014
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120D	BBHA 9120 D 1095	Jan. 29, 2013	Jan. 28, 2014
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Jan. 14, 2013	Jan. 13, 2014
Amplifier	Burgeon	BPA-530	100218	Dec. 14, 2012	Dec. 13, 2013
Amplifier	Agilent	83017A	MY39501309	Dec. 18, 2012	Dec. 17, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16140/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16018/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16015/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable-R03m	Woken	CFD400NL-LW	CFD400NL-003	Dec. 25, 2012	Dec. 24, 2013
RF Cable-R10m	Woken	CFD400NL-LW	CFD400NL-004	Dec. 25, 2012	Dec. 24, 2013
control	EM Electronics	EM1000	060608	N/A	N/A
Note: Calibration Interval of instruments listed above is one year.					