



RADIO TEST REPORT

Test Report No. : 28IE0116-HO-02-C-R1

Applicant : silex technology, Inc.
Type of Equipment : MiniPCI Wireless LAN Board
Model No. : SX-10WAN
FCC ID : N6C-SX10WAN
Test regulation : FCC Part 15 Subpart E: 2009
Section 15.407
Test Result : Complied

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with above regulation.
4. The test results in this report are traceable to the national or international standards.
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6. Original test report number of this report is 28IE0116-HO-02-C.

Date of test: May 16, 2008 to May 13, 2009

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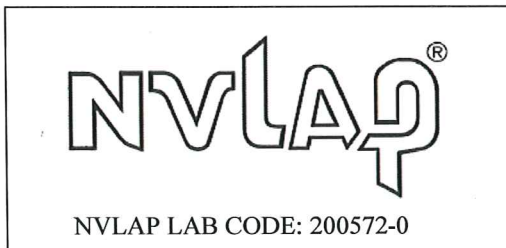
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CONTENTS	PAGE
SECTION 1: Customer information	3
SECTION 2: Equipment under test (E.U.T.)	3
SECTION 3: Test specification, procedures & results	4
SECTION 4: Operation of E.U.T. during testing	8
SECTION 5: Conducted Emission	16
SECTION 6: Spurious Emission and Band Edge Compliance.....	17
SECTION 7: 26dB Emission Bandwidth and 99% Occupied Bandwidth	18
SECTION 8: Maximum Peak Output Power	18
SECTION 9: Peak Power Spectral Density	18
SECTION 10: Peak Excursion Ratio	18
APPENDIX 1: Photographs of test setup.....	19
Conducted Emission	19
Spurious Emission (Radiated).....	20
Worst Case Position	21
APPENDIX 2: Data of EMI test	23
Conducted Emission	23
26dB Emission Bandwidth and 99% Occupied Bandwidth	45
Fundamental 20dBc bandedge points	66
Maximum Peak Output Power	72
Radiated Spurious Emission (below 1GHz).....	84
Radiated Spurious Emission (above 1GHz:Restricted band)	102
Radiated Spurious Emission (above 1GHz:Outside of the restricted band)	118
Conducted Spurious Emission	140
Radiated emission Band Edge compliance	178
Conducted emission Band Edge compliance	181
Peak Power Spectral Density	182
Peak Excursion Ratio.....	192
APPENDIX 3: Test instruments	202

SECTION 1: Customer information

Company Name : silex technology, Inc.
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SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : MiniPCI Wireless LAN Board
Model No. : SX-10WAN
Serial No. : 008092011314, 008092011316, 008092011317
Rating : DC3.3V
Receipt Date of Sample : April 17, 2008
Country of Mass-production : Japan
Condition of EUT : Production prototype
Modification of EUT : No Modification by the test lab

2.2 Product Description

Model No: SX-10WAN (referred to as the EUT in this report) is the MiniPCI Wireless LAN Board.
SX-10WAN is a MiniPCI TypeIII-A Wireless LAN module of the DualBand IEEE802.11a/b/g/n standard equivalent which supported EU RoHS.

Equipment Type : Transceiver
Clock frequency : 40MHz
Method of Frequency Generation : Synthesizer
Operating voltage(Power Supply) : DC3.3V
Operating voltage (inner) : DC1.2V, DC1.8V
Maximum Antenna Gain : 1.5dBi@2.4GHz, 2.1dBi@5.825GHz

	IEEE802.11b	IEEE802.11g	IEEE802.11a	IEEE802.11n (20HT)	IEEE802.11n (40HT)
Frequency of operation	2412-2462MHz		5180 – 5320MHz *1) 5745 - 5825MHz	2412 - 2462MHz 5180 - 5320MHz *1) 5745 - 5825MHz	2422 - 2452MHz 5190 - 5310MHz *1) 5755 – 5795MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)		
Channel spacing	5MHz		20MHz	<u>2.4GHz band</u> 5MHz <u>5GHz band</u> 20MHz	<u>2.4GHz band</u> 5MHz <u>5GHz band</u> 40MHz
Antenna type	Sleeve antenna (Omni-Directional)				
Antenna Connector type (on Module)	U.FL				
Antenna Connector type (Antenna itself)	Reverse SMA				

*1) These bands(5180 - 5320MHz and 5190-5310MHz) are applied for this report.
Other bands are applied for other test report.(Test Report No.: 28IE0116-HO-02-A)

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part15 Subpart E: 2009, final revised on February 27, 2009
Title : FCC 47CFR Part15 Radio Frequency Device
Subpart E Unlicensed National Information Infrastructure Devices
Section 15.407 General technical requirements

* The revision on February 27, 2009 does not influence the test specification applied to the EUT.

FCC 15.31 (e)

The RF Module has own regulator.

The RF Module is constantly provided voltage through own regulator regardless of input voltage (DC3.3V).

Therefore, this EUT complies with the requirement.

FCC Part 15.203/212 Antenna requirement

The EUT has a unique antenna connector (U.FL on the Module and Reverse SMA for Antenna itself).

Therefore the equipment complies with the requirement of 15.203/212.

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3.2 Procedures and results

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	Conducted Emission	FCC :ANSI C63.4:2003	FCC: 15.407(b)(6) / 15.207	-	N/A	10.4dB, L, QP, 0.53352MHz, 0.53430(11n(20HT) Tx 5180MHz, 11n(40HT) Tx 5190MHz) 7.1dB, N, AV, 0.58269MHz(11n(20HT) Tx 5180MHz)	Complied
		IC: RSS-Gen 7.2.2	IC: RSS-Gen 7.2.2				
2	26dB Emission Bandwidth	FCC :ANSI C63.4:2003	FCC : 15.407(a)(1)(2)	Conducted	N/A	See data	Complied
3	Maximum Peak Output Power	FCC :ANSI C63.4:2003, FCC Public Notice DA 02-2138A1	FCC : 15.407(a) (1)(2)	Conducted	N/A		Complied
4	Peak Power Spectral Density	FCC :ANSI C63.4:2003, FCC Public Notice DA 02-2138A1	FCC : 15.407(a) (1)(2)	Conducted	N/A		Complied
		IC: -	IC: RSS-210 A9.2 (1)(2)				
5	Peak Excursion Ratio	FCC :ANSI C63.4:2003, FCC Public Notice DA 02-2138A1	FCC : 15.407(a)(6)	Conducted	N/A		Complied
6	Spurious Emission	FCC: ANSI C63.4:2003	FCC : 15.407(b) (1)(2) (5)(6)(7), 15.205and15.209	Conducted / Radiated	N/A	[Tx] 3.9dB, 37240MHz, Ver., (11n(20HT) 5320MHz) [Rx] 2.3dB, QP, Hor. 249.992MHz (11a 5200MHz)	Complied
		IC: RSS-Gen 4.7, 4.8	IC: RSS-210 A.9.3 (1)(2) RSS-210 2.6				
7	Band Edge Compliance	FCC :ANSI C63.4:2003	FCC : 15.407(b) (1)(2) (5), 15.205and15.209	Conducted / Radiated	N/A	See data	Complied
		IC: RSS-Gen 4.7	IC: RSS-210 A.8.5 / A.9.3 (1)(2) RSS-210 2.6				

Note: UL Japan, Inc.'s EMI Work Procedures No.QPM05 and QPM15.

*These tests were also referred to FCC Public Notice DA 02-2138A1 "Measurement Procedure Updated for Peak Transmit Power in the Unlicensed National Information Infrastructure (U-NII) Bands".

*These tests were performed without any deviations from test procedure except for additions or exclusions.

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3.3 Addition to standard

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Bandwidth	RSS-Gen 4.6.1	RSS-Gen 4.6.1	Conducted	N/A	N/A	N/A

Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

EMI

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Test room	Conducted emission	Radiated emission (10m*)			Radiated emission (3m*)			Radiated emission (3m*)	
	150kHz-30MHz	9kHz-30MHz	30MHz-300MHz	300MHz-1GHz	9kHz-30MHz	30MHz-300MHz	300MHz-1GHz	1GHz-18GHz	18GHz-40GHz
No.1 semi-anechoic Chamber (±)	3.7dB	3.1dB	4.4dB	4.2dB	3.2dB	3.8dB	3.9dB	5.9dB	6.1dB
No.2 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.4dB	4.0dB	5.9dB	6.1dB
No.3 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.6dB	4.0dB	5.9dB	6.1dB
No.4 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	3.9dB	3.9dB	5.9dB	6.1dB

*10m/3m = Measurement distance

Conducted emission test

The data listed in this test report has enough margin, more than the site margin.

Radiated emission test(3m)

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty for this test is ±3.0dB.

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3.5 Test Location

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	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	2973C-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	-	8.0 x 4.5 x 2.8m	2.0 x 2.0m	-
No.10 measurement room	-	-	2.6 x 2.8 x 2.5m	2.4 x 2.4m	-
No.11 measurement room	-	-	3.1 x 3.4 x 3.0m	2.4 x 3.4m	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

SECTION 4: Operation of E.U.T. during testing

4.1 Operating Modes

The following modes are used for testing.

1. 11a Transmitting Mode : Refer to Table 1 for detail of this Mode
2. 11n(20HT) Transmitting Mode : Refer to Table 2 for detail of this Mode
3. 11n(40HT) Transmitting Mode : Refer to Table 3 for detail of this Mode
4. 11a Receiving Mode : Refer to Table 4 for detail of this Mode
5. 11n(20HT) Receiving Mode : Refer to Table 4 for detail of this Mode
6. 11n(40HT) Receiving Mode : Refer to Table 4 for detail of this Mode

[Table 1] (1/2)

Test Items	Operating Mode		Band	Ch	Freq [MHz]	Data Rate [Mbps]	Used Antennas(Ports) for Tx or Rx	Serial No.
Conducted Emission	11a	Tx	Lower	Lch	5180	54	Ant. 1	008092011314
	11a	Tx	Lower	Mch	5200	54	Ant. 1	008092011314
	11a	Tx	Lower	Hch	5240	54	Ant. 1	008092011314
	11a	Tx	Middle	Lch	5260	54	Ant. 1	008092011314
	11a	Tx	Middle	Mch	5280	54	Ant. 1	008092011314
	11a	Tx	Middle	Hch	5320	54	Ant. 1	008092011314
26dB EBW & 99% OBW	11a	Tx	Lower	Lch	5180	54	Ant. 3	008092011316
	11a	Tx	Lower	Mch	5200	54	Ant. 3	008092011316
	11a	Tx	Lower	Hch	5240	54	Ant. 3	008092011316
	11a	Tx	Middle	Lch	5260	54	Ant. 3	008092011316
	11a	Tx	Middle	Mch	5280	54	Ant. 3	008092011316
	11a	Tx	Middle	Hch	5320	54	Ant. 3	008092011316
Maximum Peak Output Power	11a	Tx	Lower	Lch	5180	54	Ant. 3	008092011316
	11a	Tx	Lower	Mch	5200	54	Ant. 3	008092011316
	11a	Tx	Lower	Hch	5240	54	Ant. 3	008092011316
	11a	Tx	Middle	Lch	5260	54	Ant. 3	008092011316
	11a	Tx	Middle	Mch	5280	54	Ant. 3	008092011316
	11a	Tx	Middle	Hch	5320	54	Ant. 3	008092011316
Radiated Spurious Emission(below 1GHz)	11a	Tx	Lower	Lch	5180	54	Ant. 3	008092011314
	11a	Tx	Lower	Mch	5200	54	Ant. 3	008092011314
	11a	Tx	Lower	Hch	5240	54	Ant. 3	008092011314
	11a	Tx	Middle	Lch	5260	54	Ant. 3	008092011314
	11a	Tx	Middle	Mch	5280	54	Ant. 3	008092011314
	11a	Tx	Middle	Hch	5320	54	Ant. 3	008092011314
Radiated Spurious Emission(above 1GHz)	11a	Tx	Lower	Lch	5180	54	Ant. 3	008092011317
	11a	Tx	Lower	Mch	5200	54	Ant. 3	008092011317
	11a	Tx	Lower	Hch	5240	54	Ant. 3	008092011317
	11a	Tx	Middle	Lch	5260	54	Ant. 3	008092011317
	11a	Tx	Middle	Mch	5280	54	Ant. 3	008092011317
	11a	Tx	Middle	Hch	5320	54	Ant. 3	008092011317
Conducted Spurious Emission	11a	Tx	Lower	Lch	5180	54	Ant. 3	008092011316
	11a	Tx	Lower	Mch	5200	54	Ant. 3	008092011316
	11a	Tx	Lower	Hch	5240	54	Ant. 3	008092011316
	11a	Tx	Middle	Lch	5260	54	Ant. 3	008092011316
	11a	Tx	Middle	Mch	5280	54	Ant. 3	008092011316
	11a	Tx	Middle	Hch	5320	54	Ant. 3	008092011316

*It was verified Data Rate and Antenna Port with maximum power.

*The formal tests were performed with the above modes, which had the maximum power.

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[Table 1] (2/2)

Test Items	Operating Mode		Band	Ch	Freq [MHz]	Data Rate [Mbps]	Used Antennas(Ports) for Tx or Rx	Serial No.
Peak Power Spectral Density	11a	Tx	Lower	Lch	5180	54	Ant. 3	008092011316
	11a	Tx	Lower	Mch	5200	54	Ant. 3	008092011316
	11a	Tx	Lower	Hch	5240	54	Ant. 3	008092011316
	11a	Tx	Middle	Lch	5260	54	Ant. 3	008092011316
	11a	Tx	Middle	Mch	5280	54	Ant. 3	008092011316
	11a	Tx	Middle	Hch	5320	54	Ant. 3	008092011316
	11a	Tx	Lower	Lch	5180	54	Ant. 3	008092011316
	11a	Tx	Lower	Mch	5200	54	Ant. 3	008092011316
	11a	Tx	Lower	Hch	5240	54	Ant. 3	008092011316
	11a	Tx	Middle	Lch	5260	54	Ant. 3	008092011316
Peak Excursion Ratio	11a	Tx	Middle	Mch	5280	54	Ant. 3	008092011316
	11a	Tx	Middle	Hch	5320	54	Ant. 3	008092011316

*It was verified Data Rate and Antenna Port with maximum power.

*The formal tests were performed with the above modes, which had the maximum power.

[Table 2] (1/3)

Test Items	Operating Mode		Band	Ch	Freq [MHz]	Data Rate [Mbps]	Used Antennas(Ports) for Tx or Rx	Serial No.
Conducted Emission	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
26dB EBW & 99% OBW	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 1	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 1	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 1	008092011316
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 1	008092011316
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 1	008092011316
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 1	008092011316
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 3	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 3	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 3	008092011316
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 3	008092011316
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 3	008092011316
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 3	008092011316

*It was verified Data Rate and Antenna Port with maximum power.

*The formal tests were performed with the above modes, which had the maximum power.

[Table 2] (2/3)

Test Items	Operating Mode		Band	Ch	Freq [MHz]	Data Rate [Mbps]	Used Antennas(Ports) for Tx or Rx	Serial No.
Maximum Peak Output Power	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 1	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 1	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 1	008092011316
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 1	008092011316
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 1	008092011316
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 1	008092011316
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 3	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 3	008092011316
11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 3	008092011316	
11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 3	008092011316	
11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 3	008092011316	
11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 3	008092011316	
Radiated Spurious Emission	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
Conducted Spurious Emission	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 2	008092011316
Peak Power Spectral Density	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 1	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 1	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 1	008092011316
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 1	008092011316
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 1	008092011316
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 1	008092011316
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 3	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 3	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 3	008092011316
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 3	008092011316
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 3	008092011316
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 3	008092011316

*It was verified Data Rate and Antenna Port with maximum power.

*The formal tests were performed with the above modes, which had the maximum power.

[Table 2] (3/3)

Test Items	Operating Mode		Band	Ch	Freq [MHz]	Data Rate [Mbps]	Used Antennas(Ports) for Tx or Rx	Serial No.
Peak Excursion Ratio	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 1	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 1	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 1	008092011316
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 1	008092011316
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 1	008092011316
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 1	008092011316
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 2	008092011316
	11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 2	008092011316
	11n(20HT)	Tx	Lower	Lch	5180	130	Ant. 3	008092011316
	11n(20HT)	Tx	Lower	Mch	5200	130	Ant. 3	008092011316
	11n(20HT)	Tx	Lower	Hch	5240	130	Ant. 3	008092011316
11n(20HT)	Tx	Middle	Lch	5260	130	Ant. 3	008092011316	
11n(20HT)	Tx	Middle	Mch	5280	130	Ant. 3	008092011316	
11n(20HT)	Tx	Middle	Hch	5320	130	Ant. 3	008092011316	

*It was verified Data Rate and Antenna Port with maximum power.

*The formal tests were performed with the above modes, which had the maximum power.

[Table 3] (1/2)

Test Items	Operating Mode		Band	Ch	Freq [MHz]	Data Rate [Mbps]	Used Antennas(Ports) for Tx or Rx	Serial No.
Conducted Emission	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 1	008092011316
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 1	008092011316
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 1	008092011316
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 1	008092011316
26dB EBW & 99% OBW	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 1	008092011316
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 1	008092011316
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 1	008092011316
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 1	008092011316
	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 2	008092011316
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 2	008092011316
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 2	008092011316
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 2	008092011316
Maximum Peak Output Power	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 3	008092011316
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 3	008092011316
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 3	008092011316
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 3	008092011316

*It was verified Data Rate and Antenna Port with maximum power.

*The formal tests were performed with the above modes, which had the maximum power.

[Table 3] (2/2)

Test Items	Operating Mode		Band	Ch	Freq [MHz]	Data Rate [Mbps]	Used Antennas(Ports) for Tx or Rx	Serial No.
Radiated Spurious Emission	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 1 +Ant. 2 +Ant. 3	008092011314
Conducted Spurious Emission	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 2	008092011316
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 2	008092011316
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 2	008092011316
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 2	008092011316
Peak Power Spectral Density	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 1 +Ant. 2 +Ant. 3	008092011316
	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 1	008092011316
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 1	008092011316
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 1	008092011316
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 1	008092011316
	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 2	008092011316
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 2	008092011316
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 2	008092011316
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 2	008092011316
	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 3	008092011316
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 3	008092011316
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 3	008092011316
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 3	008092011316
Peak Excursion Ratio	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 1	008092011316
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 1	008092011316
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 1	008092011316
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 1	008092011316
	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 2	008092011316
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 2	008092011316
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 2	008092011316
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 2	008092011316
	11n(40HT)	Tx	Lower	Lch	5190	270	Ant. 3	008092011316
	11n(40HT)	Tx	Lower	Hch	5230	270	Ant. 3	008092011316
	11n(40HT)	Tx	Middle	Lch	5270	270	Ant. 3	008092011316
	11n(40HT)	Tx	Middle	Hch	5310	270	Ant. 3	008092011316

*It was verified Data Rate and Antenna Port with maximum power.

*The formal tests were performed with the above modes, which had the maximum power.

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[Table 4]

Test Items	Operating Mode	Band	Ch	Freq [MHz]	Used for Tx or Rx	Antennas(Ports)	Serial No.
Conducted Emission	11a	Rx	Lower	Mch	5200	Ant. 1	008092011314
	11a	Rx	Middle	Mch	5280	Ant. 1	008092011314
Radiated Spurious Emission (below 1GHz)	11a	Rx	Lower	Mch	5200	Ant. 3	008092011314
	11a	Rx	Middle	Mch	5280	Ant. 3	008092011314
Radiated Spurious Emission (above 1GHz)	11a	Rx	Lower	Mch	5200	Ant. 3	008092011317
	11a	Rx	Middle	Mch	5280	Ant. 3	008092011317
Conducted Spurious Emission	11a	Rx	Lower	Mch	5200	Ant. 3	008092011316
	11a	Rx	Middle	Mch	5280	Ant. 3	008092011316
Conducted Emission	11n(20HT)	Rx	Lower	Mch	5200	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Rx	Middle	Mch	5280	Ant. 1 +Ant. 2 +Ant. 3	008092011314
Radiated Spurious Emission	11n(20HT)	Rx	Lower	Mch	5200	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(20HT)	Rx	Middle	Mch	5280	Ant. 1 +Ant. 2 +Ant. 3	008092011314
Conducted Spurious Emission	11n(20HT)	Rx	Lower	Mch	5200	Ant. 2	008092011316
	11n(20HT)	Rx	Middle	Mch	5280	Ant. 2	008092011316
Conducted Emission	11n(40HT)	Rx	Lower	Lch	5190	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(40HT)	Rx	Middle	Hch	5310	Ant. 1 +Ant. 2 +Ant. 3	008092011314
Radiated Spurious Emission	11n(40HT)	Rx	Lower	Lch	5190	Ant. 1 +Ant. 2 +Ant. 3	008092011314
	11n(40HT)	Rx	Middle	Hch	5310	Ant. 1 +Ant. 2 +Ant. 3	008092011314
Conducted Spurious Emission	11n(40HT)	Rx	Lower	Lch	5190	Ant. 2	008092011316
	11n(40HT)	Rx	Middle	Hch	5310	Ant. 2	008092011316

*It was verified Data Rate and Antenna Port with maximum power.

*The formal tests were performed with the above modes, which had the maximum power.

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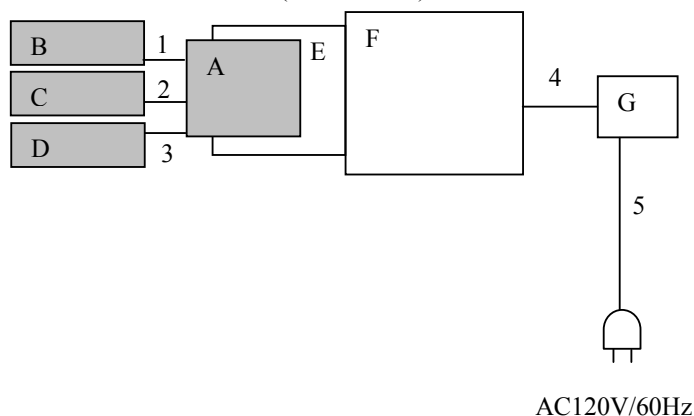
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4.2 Configuration and peripherals

For Conducted emission test and Radiated emission test (above 1GHz)



* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	MiniPCI Wireless LAN Board	SX-10WAN	Refer to Clause 4.1	silex	EUT
B	Antenna	TT98061	001	silex	EUT(Antenna 1)
C	Antenna	TT98061	002	silex	EUT(Antenna 2)
D	Antenna	TT98061	003	silex	EUT(Antenna 3)
E	PCI Adapter	-	-	silex	For setting test mode
F	Note PC	T30 (= 2366-LJ7)	97-99D4L	IBM	For setting test mode
G	AC adapter	02K6750	11S02K6750Z1Z2UP29A0TJ	IBM	-

List of cables used

No.	Name	Length (m)	Shield	
			Cable	Connector
1	Antenna cable	0.12	Shielded	Shielded
2	Antenna cable	0.12	Shielded	Shielded
3	Antenna cable	0.12	Shielded	Shielded
4	DC cable	1.8	Unshielded	Unshielded
5	AC cable	1.0	Unshielded	Unshielded

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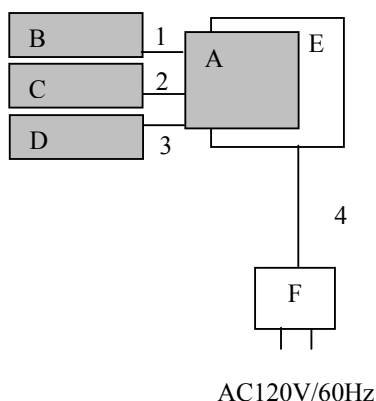
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For Radiated emission test (for below 1GHz)



* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	MiniPCI Wireless LAN Board	SX-10WAN	Refer to Clause 4.1	silex	EUT
B	Antenna	TT98061	001	silex	EUT(Antenna 1)
C	Antenna	TT98061	002	silex	EUT(Antenna 2)
D	Antenna	TT98061	003	silex	EUT(Antenna 3)
E	Jig	-	-	silex	For setting test mode
F	AC Adapter	9NA0100604	H00003622	FSP GROUP INC.	-

List of cables used

No.	Name	Length (m)	Shield	
			Cable	Connector
1	Antenna cable	0.10	Shielded	Shielded
2	Antenna cable	0.10	Shielded	Shielded
3	Antenna cable	0.10	Shielded	Shielded
4	DC cable	1.00	Unshielded	Unshielded

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SECTION 5: Conducted Emission

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center .

1) For the tests on EUT with other peripherals (as a whole system)

I/O cable and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. All unused 50ohm connectors of the LISN(AMN) were resistivity terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber or a Measurement Room.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

Detector	: quasi-peak and average detector (IF BW 9 kHz)
Measurement range	: 0.15-30MHz
Test data	: APPENDIX 2
Test result	: Pass

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SECTION 6: Spurious Emission and Band Edge Compliance

[Conducted]

Test Procedure

The Out of Band Emission was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2

Test result : Pass

[Radiated]

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.0m by 0.5m, raised 80cm above the conducting ground plane. The Radiated Electric Field Strength intensity has been measured in a Semi Anechoic Chamber with a ground plane and at a distance of 3m(Below 10GHz) , 1m(10-26.5GHz, Distance Factor : $20\log(3[m]/1[m])$) and 0.5m(Upper 26.5GHz, Distance Factor : $20\log(3[m]/0.5[m])$).

The height of the measuring varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver or the Spectrum Analyzer.

Below 1GHz

The result also satisfied with the general limits specified in section 15.209(a).

Above 1GHz

Restricted bands (Section 15.205): Apply to limit in the Section 15.209(a)

Outside of the restricted bands (Section 15.407): Limit -27dBm/MHz(EIRP)

Frequency	Below 1GHz	Above 1GHz (Restricted bands)	Above 1GHz (Outside of the restricted bands)
Instrument used	Test Receiver	Spectrum Analyzer	Spectrum Analyzer
Detector IF Bandwidth	QP: BW 120kHz	PK: RBW:1MHz/VBW: 1MHz AV: RBW:1MHz/VBW:10Hz	RBW:1MHz/VBW: 1MHz

Test data : APPENDIX 2

Test result : Pass

*The noise from the EUT was not seen in the above 18GHz. The measurement was made in the residual base noise levels.

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SECTION 7: 26dB Emission Bandwidth and 99% Occupied Bandwidth

Test Procedure

The Emission Bandwidth was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 2
Test result : Pass

SECTION 8: Maximum Peak Output Power

Test Procedure

The Peak Transmit Power was measured with a spectrum analyzer connected to the antenna port.
The test was made with the spectrum analyzer that has a function of channel-power measurement.
We followed the method 1 specified in DA-02-2138A1.

Test data : APPENDIX 2
Test result : Pass

SECTION 9: Peak Power Spectral Density

Test Procedure

The Peak Power Spectral Density was measured with a spectrum analyzer connected to the antenna port.
We followed the method 2 specified in DA-02-2138A1.

Test data : APPENDIX 2
Test result : Pass

SECTION 10: Peak Excursion Ratio

Test Procedure

The Peak Excursion Ratio was measured with a spectrum analyzer connected to the antenna port.
The second sweep was measured based on method 1(Maximum Peak Output Power) specified in DA-02-2138A1.

Test data : APPENDIX 2
Test result : Pass

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