



ADDENDUM TEST REPORT

Test Report No. : 11166419H

Applicant : silex technology, Inc.
Type of Equipment : Wireless LAN PCI Express Mini Card Module
Model No. : SX-PCEGN
Test standard : EN 300 328 V1.9.1
(Transmitter unwanted emissions in the out-of-band domain test only)
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 the above standard(s).
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)

Date of test: May 31 to June 2, 2016

**Representative
test engineer:**

M. Niwa

Masafumi Niwa
Engineer
Consumer Technology Division

Approved by :

Tsubasa Takayama
Tsubasa Takayama
Engineer
Consumer Technology Division



NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
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13-EM-F0429

Original Test Report No.: 11166419H

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SECTION 1: Customer information

Company Name : silex technology, Inc.
Address : 2-3-1 Hikaridai, Seika-cho, Kyoto 619-0237, Japan
Telephone Number : +81-774-98-3878
Facsimile Number : +81-774-98-3758
Contact Person : Toshiro Kometani

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Wireless LAN PCI Express Mini Card Module
Model No. : SX-PCEGN
Serial No. : Refer to Clause 4.2
Rating : DC 3.3 V
Receipt Date of Sample : October 16, 2016
Country of Mass-production : Japan
Condition of EUT : Production model
Modification of EUT : No Modification by the test lab

2.2 Product Description

Model No: SX-PCEGN (referred to as the EUT in this report) is the Wireless LAN PCI Express Mini Card Module.

Equipment Type : Transceiver
Clock frequency : 40 MHz
Method of Frequency Generation : Synthesizer
Operating voltage(Power Supply) : DC 3.3 V
Operating voltage (inner) : DC 1.2 V
Maximum Antenna Gain : 2.0 dBi

	IEEE802.11b	IEEE802.11g	IEEE802.11n (20HT)	IEEE802.11n (40HT)
Frequency of operation	2412-2472MHz		2412 - 2472MHz	2422 - 2462MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)	
Channel spacing	5MHz		5MHz	5MHz
Antenna type	Omni-directional			
Antenna Connector type	U.FL Alternative connector			

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Radio : EN 300 328 V1.9.1

Title : Electromagnetic compatibility and Radio spectrum Matters (ERM);
Wideband transmission systems; Data transmission equipment operating in the 2.4GHz ISM
band and using wide band modulation techniques;
Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

Purpose of test Compliance with the R&TTE directive 1999/5/EC.

Test reports: 10462196H and 11166419H (this report) include information of all the requirements in EN 300 328 V1.9.1. 11166419H is for updating the test standard: EN 300 328 from V1.8.1 to V1.9.1 and it only includes the requirements newly introduced in EN 300 328 V1.9.1.

Therefore only Transmitter unwanted emissions in the out-of-band domain test was performed in this report.

3.2 Procedures and results

No.	Item	Test Procedure	Limit	Remarks	Worst margin	Exclusions	Results
1	Transmitter unwanted emissions in the out-of-band domain	Clause 5.3.9	Clause 4.3.2.8	Conducted	-	N/A	Complied
Note: UL Japan, Inc.'s EMI Work Procedure 13-EM-W0420.							

3.3 Additions or deviations to standards

No addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k = 2$.
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Antenna terminal test	Uncertainty (+/-)
Unwanted Emissions	1.7 dB

3.5 Test Location

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Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber	2973C-1	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10 m
No.2 semi-anechoic chamber	2973C-2	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	2973C-3	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
No.3 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	2973C-4	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3 m
No.4 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	-	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.6 shielded room	-	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	-	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	-	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	-	3.1 x 5.0 x 2.7	N/A	-	-
No.9 measurement room	-	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.11 measurement room	-	6.2 x 4.7 x 3.0	4.8 x 4.6	-	-

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

3.6 Test data and Test instruments

Refer to APPENDIX.

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

4.1 Operating Mode(s)

Mode	Remarks*												
IEEE 802.11b (11b)	5.5Mbps (Short), PN9												
IEEE 802.11g (11g)	18Mbps, PN9												
IEEE 802.11n MIMO 20MHz BW (11n-20)	MCS9, PN9												
IEEE 802.11n MIMO 40MHz BW (11n-40)	MCS9, PN9												
*The worst condition was determined based on the test result of RF output power (Mid Channel)													
*Power of the EUT was set by the software as follows;													
Power settings:													
ch	1	2	3	4	5	6	7	8	9	10	11	12	13
11b	15dBm	15dBm	15dBm	15dBm	15dBm	15dBm	15dBm	15dBm	15dBm	15dBm	15dBm	15dBm	15dBm
11g	13dBm	15dBm	15dBm	15dBm	15dBm	15dBm	15dBm	15dBm	15dBm	15dBm	11.5dBm	15dBm	13dBm
11n-20	9dBm	12dBm	12dBm	12dBm	12dBm	12dBm	12dBm	12dBm	12dBm	12dBm	11dBm	12dBm	10.5dBm
11n-40	-	-	8dBm	12.5dBm	12.5dBm	12.5dBm	12.5dBm	12.5dBm	12.5dBm	12.5dBm	8dBm	-	-

Software: 9K Atheros Radio test
Firmware: FW 1.3.0

* Any conditions under the normal use do not exceed the condition of setting.

In addition, end users cannot change the settings of the output power of the product.

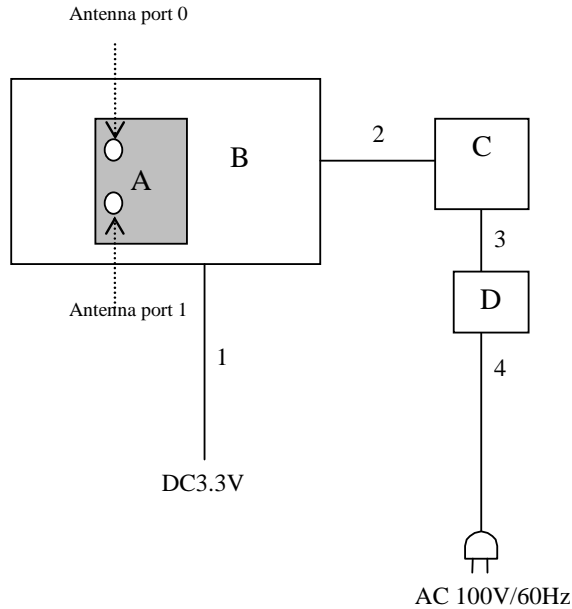
Details of Operating Mode(s)

Test item	Operating mode	Tested Antenna port	Tested frequency
Transmitter unwanted emissions in the out-of-band domain	Transmitting (Tx) IEEE 802.11b/g	0	2412 MHz
	Transmitting (Tx) IEEE 802.11n-20	0+1, 0, 1	2472 MHz
	Transmitting (Tx) IEEE 802.11n-40	0+1, 0, 1	2422MHz 2462MHz

*1) Occupied channel bandwidth test was performed with Antenna port 0 as representative, and other tests were performed with the antenna port that had higher power as a representative.

Extreme test condition	
Temperature	-20deg.C. to +70deg.C. : operating temperature range of EUT(plug-in devices)
Voltage	Vnom:DC3.3V, Vmin:DC2.97V, Vmax:DC3.63V : operating voltage range of EUT

4.2 Configuration and peripherals



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

Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Wireless LAN PCI Express Mini Card Module	SX-PCEGN	0080924AB9DB	silex technology, Inc.	EUT
B	Jig board	-	-	silex technology, Inc.	-
C	Laptop PC	T60	L3-KY149	Lenovo	-
D	AC Adapter	92P1160	11S92P1160ZIZBGH7 7W6YJ	Lenovo	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	1.5	Unshielded	Unshielded	-
2	HDMI Cable	0.5	Shielded	Shielded	-
3	DC Cable	1.1	Unshielded	Unshielded	-
4	AC Cable	1.1	Unshielded	Unshielded	-

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SECTION 5: Antenna Terminal Conducted Tests

Test Procedure

The tests were made with below setting connected to the antenna port.

Test	Instrument used	Remark
Transmitter unwanted emissions in the out-of band domain	Spectrum Analyzer	Normal and Extreme conditions - Detector mode: RMS - Trace: Max Hold - Band power was used on behalf of the time domain power function. - Filter mode: Gaussian Filter

The test results are rounded off to two decimals place, so some differences might be observed.
The equipment and cables were not used for factor 0.0 dB of the data sheets.

Test data : APPENDIX
Test result : Pass

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APPENDIX 1: Test data

Transmitter unwanted emissions in the out-of-band domain

Test place : Ise EMC Lab. No.11 Measurement Room
Report No. : 11166419H
Date : May 31, 2016 June 1, 2016 June 2, 2016
Temperature / Humidity : 23 deg. C / 50% RH 24 deg. C / 42% RH 24 deg. C / 35% RH
Engineer : Masafumi Niwa Masafumi Niwa Masafumi Niwa
Mode : Tx 11b

11b Antenna port 0, 5.5Mbps(short)

Test Condition	Temp.	Volt.	Frequency [MHz]	S/A (AV) Reading [dBm/MHz]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Result [dBm/MHz]	Limit [dBm/MHz]	Margin [dB]	Remarks
nom	nom		2385.8	-56.48	1.57	10.00	2.00	-42.91	-20.00	22.91	Lowest ch 2400 MHz - 2 BW
			2399.5	-35.66	1.59	10.00	2.00	-22.07	-10.00	12.07	Lowest ch 2400 MHz - BW
			2485.0	-38.35	1.61	10.00	2.00	-24.74	-10.00	14.74	Highest ch 2483.5 MHz + BW
			2497.7	-56.37	1.62	10.00	2.00	-42.75	-20.00	22.75	Highest ch 2483.5 MHz + 2 BW
min	min		2385.8	-58.24	1.57	10.00	2.00	-44.67	-20.00	24.67	Lowest ch 2400 MHz - 2 BW
			2399.5	-35.20	1.59	10.00	2.00	-21.61	-10.00	11.61	Lowest ch 2400 MHz - BW
			2484.0	-37.57	1.61	10.00	2.00	-23.96	-10.00	13.96	Highest ch 2483.5 MHz + BW
			2497.7	-59.05	1.62	10.00	2.00	-45.43	-20.00	25.43	Highest ch 2483.5 MHz + 2 BW
min	max		2385.8	-56.17	1.57	10.00	2.00	-42.60	-20.00	22.60	Lowest ch 2400 MHz - 2 BW
			2399.5	-31.97	1.59	10.00	2.00	-18.38	-10.00	8.38	Lowest ch 2400 MHz - BW
			2485.0	-35.24	1.61	10.00	2.00	-21.63	-10.00	11.63	Highest ch 2483.5 MHz + BW
			2497.7	-56.52	1.62	10.00	2.00	-42.90	-20.00	22.90	Highest ch 2483.5 MHz + 2 BW
max	min		2385.8	-58.77	1.57	10.00	2.00	-45.20	-20.00	25.20	Lowest ch 2400 MHz - 2 BW
			2399.5	-35.65	1.59	10.00	2.00	-22.06	-10.00	12.06	Lowest ch 2400 MHz - BW
			2484.0	-37.63	1.61	10.00	2.00	-24.02	-10.00	14.02	Highest ch 2483.5 MHz + BW
			2497.7	-59.46	1.62	10.00	2.00	-45.84	-20.00	25.84	Highest ch 2483.5 MHz + 2 BW
max	max		2385.8	-58.54	1.57	10.00	2.00	-44.97	-20.00	24.97	Lowest ch 2400 MHz - 2 BW
			2399.5	-34.82	1.59	10.00	2.00	-21.23	-10.00	11.23	Lowest ch 2400 MHz - BW
			2484.0	-37.52	1.61	10.00	2.00	-23.91	-10.00	13.91	Highest ch 2483.5 MHz + BW
			2497.7	-59.23	1.62	10.00	2.00	-45.61	-20.00	25.61	Highest ch 2483.5 MHz + 2 BW

Result = Reading + Cable Loss + Attenuator Loss + Antenna Gain

*Above test result was maximum value on each 1 BW.

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Transmitter unwanted emissions in the out-of-band domain

Test place	Ise EMC Lab. No.11 Measurement Room		
Report No.	11166419H		
Date	May 31, 2016	June 1, 2016	June 2, 2016
Temperature / Humidity	23 deg. C / 50% RH	24 deg. C / 42% RH	24 deg. C / 35% RH
Engineer	Masafumi Niwa	Masafumi Niwa	Masafumi Niwa
Mode	Tx 11g		

11g Antenna port 0, 18Mbps

Test Condition Temp.	Volt.	Frequency [MHz]	S/A (AV) Reading [dBm/MHz]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Result [dBm/MHz]	Limit [dBm/MHz]	Margin [dB]	Remarks
nom	nom	2382.8	-55.72	1.57	10.00	2.00	-42.15	-20.00	22.15	Lowest ch 2400 MHz - 2 BW
		2399.5	-26.25	1.59	10.00	2.00	-12.66	-10.00	2.66	Lowest ch 2400 MHz - BW
		2484.0	-26.90	1.61	10.00	2.00	-13.29	-10.00	3.29	Highest ch 2483.5 MHz + BW
		2500.7	-55.67	1.62	10.00	2.00	-42.05	-20.00	22.05	Highest ch 2483.5 MHz + 2 BW
min	min	2374.8	-55.57	1.57	10.00	2.00	-42.00	-20.00	22.00	Lowest ch 2400 MHz - 2 BW
		2399.5	-28.25	1.59	10.00	2.00	-14.66	-10.00	4.66	Lowest ch 2400 MHz - BW
		2484.0	-28.74	1.61	10.00	2.00	-15.13	-10.00	5.13	Highest ch 2483.5 MHz + BW
		2508.7	-55.08	1.62	10.00	2.00	-41.46	-20.00	21.46	Highest ch 2483.5 MHz + 2 BW
min	max	2382.8	-54.07	1.57	10.00	2.00	-40.50	-20.00	20.50	Lowest ch 2400 MHz - 2 BW
		2399.5	-26.80	1.59	10.00	2.00	-13.21	-10.00	3.21	Lowest ch 2400 MHz - BW
		2484.0	-27.52	1.61	10.00	2.00	-13.91	-10.00	3.91	Highest ch 2483.5 MHz + BW
		2508.7	-54.48	1.62	10.00	2.00	-40.86	-20.00	20.86	Highest ch 2483.5 MHz + 2 BW
max	min	2382.8	-58.68	1.57	10.00	2.00	-45.11	-20.00	25.11	Lowest ch 2400 MHz - 2 BW
		2399.5	-28.60	1.59	10.00	2.00	-15.01	-10.00	5.01	Lowest ch 2400 MHz - BW
		2484.0	-28.50	1.61	10.00	2.00	-14.89	-10.00	4.89	Highest ch 2483.5 MHz + BW
		2500.7	-58.63	1.62	10.00	2.00	-45.01	-20.00	25.01	Highest ch 2483.5 MHz + 2 BW
max	max	2382.8	-57.90	1.57	10.00	2.00	-44.33	-20.00	24.33	Lowest ch 2400 MHz - 2 BW
		2399.5	-27.13	1.59	10.00	2.00	-13.54	-10.00	3.54	Lowest ch 2400 MHz - BW
		2484.0	-27.78	1.61	10.00	2.00	-14.17	-10.00	4.17	Highest ch 2483.5 MHz + BW
		2500.7	-57.82	1.62	10.00	2.00	-44.20	-20.00	24.20	Highest ch 2483.5 MHz + 2 BW

Result = Reading + Cable Loss + Attenuator Loss + Antenna Gain

*Above test result was maximum value on each 1 BW.

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Transmitter unwanted emissions in the out-of-band domain

Test place	Ise EMC Lab. No.11 Measurement Room		
Report No.	11166419H		
Date	May 31, 2016	June 1, 2016	June 2, 2016
Temperature / Humidity	23 deg. C / 50% RH	24 deg. C / 42% RH	24 deg. C / 35% RH
Engineer	Masafumi Niwa	Masafumi Niwa	Masafumi Niwa
Mode	Tx 11n-20		

11n-20 Antenna port 0 + 1, MCS9

Test Condition Temp.	Volt.	Frequency [MHz]	Result Antenna 0 [mW/MHz]	Result Antenna 1 [mW/MHz]	Result Antenna 0+1 [mW/MHz]	Result Antenna 0+1 [dBm/MHz]	Limit [dBm/MHz]	Margin [dB]	Remarks
nom	nom	2381.7	0.00003703	0.00001442	0.00005146	-42.89	-20.00	22.89	Lowest ch 2400MHz- 2BW
		2399.5	0.03158639	0.02736529	0.05895168	-12.30	-10.00	2.30	Lowest ch 2400MHz- BW
		2484.0	0.03275669	0.03833540	0.07109209	-11.48	-10.00	1.48	Highest ch 2483.5MHz + BW
		2501.8	0.00004284	0.00002597	0.00006882	-41.62	-20.00	21.62	Highest ch 2483.5MHz + 2BW
min	min	2373.7	0.00005264	0.00003208	0.00008472	-40.72	-20.00	20.72	Lowest ch 2400MHz- 2BW
		2399.5	0.01992967	0.01981983	0.03974950	-14.01	-10.00	4.01	Lowest ch 2400MHz- BW
		2484.0	0.02081613	0.02607954	0.04689567	-13.29	-10.00	3.29	Highest ch 2483.5MHz + BW
		2509.8	0.00007376	0.00006411	0.00013786	-38.61	-20.00	18.61	Highest ch 2483.5MHz + 2BW
min	max	2375.7	0.00004837	0.00003586	0.00008423	-40.75	-20.00	20.75	Lowest ch 2400MHz- 2BW
		2399.5	0.02665017	0.02603754	0.05268771	-12.78	-10.00	2.78	Lowest ch 2400MHz- BW
		2484.0	0.02167205	0.03685530	0.05852735	-12.33	-10.00	2.33	Highest ch 2483.5MHz + BW
		2508.8	0.00006209	0.00006776	0.00012985	-38.87	-20.00	18.87	Highest ch 2483.5MHz + 2BW
max	min	2381.7	0.00001526	0.00001618	0.00003144	-45.02	-20.00	25.02	Lowest ch 2400MHz- 2BW
		2399.5	0.02981261	0.02064905	0.05046166	-12.97	-10.00	2.97	Lowest ch 2400MHz- BW
		2484.0	0.03146299	0.02604354	0.05750653	-12.40	-10.00	2.40	Highest ch 2483.5MHz + BW
		2509.8	0.00001533	0.00002792	0.00004325	-43.64	-20.00	23.64	Highest ch 2483.5MHz + 2BW
max	max	2381.7	0.00002356	0.00001585	0.00003941	-44.04	-20.00	24.04	Lowest ch 2400MHz- 2BW
		2399.5	0.04070052	0.02510152	0.06580204	-11.82	-10.00	1.82	Lowest ch 2400MHz- BW
		2484.0	0.04360136	0.03688077	0.08048213	-10.94	-10.00	0.94	Highest ch 2483.5MHz + BW
		2507.8	0.00004155	0.00002927	0.00007082	-41.50	-20.00	21.50	Highest ch 2483.5MHz + 2BW

*Above test result was maximum value on each 1BW.

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Transmitter unwanted emissions in the out-of-band domain

Test place	Ise EMC Lab. No.11 Measurement Room		
Report No.	11166419H		
Date	May 31, 2016	June 1, 2016	June 2, 2016
Temperature / Humidity	23 deg. C / 50% RH	24 deg. C / 42% RH	24 deg. C / 35% RH
Engineer	Masafumi Niwa	Masafumi Niwa	Masafumi Niwa
Mode	Tx 11n-20		

11n-20 Antenna port 0, MCS9

Test Condition Temp.	Volt.	Frequency	S/A(AV) Reading	Cable Loss	Atten. Loss	Antenna Gain	Result	Limit	Margin	Remarks
		[MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dB]	
nom	nom	2381.7	-57.88	1.57	10.00	2.00	-44.31	-20.00	24.31	Lowest ch 2400MHz- 2BW
		2399.5	-28.60	1.59	10.00	2.00	-15.01	-10.00	5.01	Lowest ch 2400MHz- BW
		2484.0	-28.46	1.61	10.00	2.00	-14.85	-10.00	4.85	Highest ch 2483.5MHz + BW
		2501.8	-57.30	1.62	10.00	2.00	-43.68	-20.00	23.68	Highest ch 2483.5MHz + 2BW
min	min	2373.7	-56.36	1.57	10.00	2.00	-42.79	-20.00	22.79	Lowest ch 2400MHz- 2BW
		2399.5	-30.60	1.59	10.00	2.00	-17.01	-10.00	7.01	Lowest ch 2400MHz- BW
		2484.0	-30.43	1.61	10.00	2.00	-16.82	-10.00	6.82	Highest ch 2483.5MHz + BW
		2509.8	-54.94	1.62	10.00	2.00	-41.32	-20.00	21.32	Highest ch 2483.5MHz + 2BW
min	max	2375.7	-56.72	1.57	10.00	2.00	-43.15	-20.00	23.15	Lowest ch 2400MHz- 2BW
		2399.5	-29.33	1.59	10.00	2.00	-15.74	-10.00	5.74	Lowest ch 2400MHz- BW
		2484.0	-30.25	1.61	10.00	2.00	-16.64	-10.00	6.64	Highest ch 2483.5MHz + BW
		2508.8	-55.69	1.62	10.00	2.00	-42.07	-20.00	22.07	Highest ch 2483.5MHz + 2BW
max	min	2381.7	-61.74	1.57	10.00	2.00	-48.17	-20.00	28.17	Lowest ch 2400MHz- 2BW
		2399.5	-28.85	1.59	10.00	2.00	-15.26	-10.00	5.26	Lowest ch 2400MHz- BW
		2484.0	-28.63	1.61	10.00	2.00	-15.02	-10.00	5.02	Highest ch 2483.5MHz + BW
		2509.8	-61.77	1.62	10.00	2.00	-48.15	-20.00	28.15	Highest ch 2483.5MHz + 2BW
max	max	2381.7	-59.85	1.57	10.00	2.00	-46.28	-20.00	26.28	Lowest ch 2400MHz- 2BW
		2399.5	-27.49	1.59	10.00	2.00	-13.90	-10.00	3.90	Lowest ch 2400MHz- BW
		2484.0	-27.22	1.61	10.00	2.00	-13.61	-10.00	3.61	Highest ch 2483.5MHz + BW
		2507.8	-57.43	1.62	10.00	2.00	-43.81	-20.00	23.81	Highest ch 2483.5MHz + 2BW

11n-20 Antenna port 1, MCS9

Test Condition Temp.	Volt.	Frequency	S/A(AV) Reading	Cable Loss	Atten. Loss	Antenna Gain	Result	Limit	Margin	Remarks
		[MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dB]	
nom	nom	2381.7	-61.98	1.57	10.00	2.00	-48.41	-20.00	28.41	Lowest ch 2400MHz- 2BW
		2399.5	-29.22	1.59	10.00	2.00	-15.63	-10.00	5.63	Lowest ch 2400MHz- BW
		2484.0	-27.77	1.61	10.00	2.00	-14.16	-10.00	4.16	Highest ch 2483.5MHz + BW
		2501.8	-59.48	1.62	10.00	2.00	-45.86	-20.00	25.86	Highest ch 2483.5MHz + 2BW
min	min	2373.7	-58.51	1.57	10.00	2.00	-44.94	-20.00	24.94	Lowest ch 2400MHz- 2BW
		2399.5	-30.62	1.59	10.00	2.00	-17.03	-10.00	7.03	Lowest ch 2400MHz- BW
		2484.0	-29.45	1.61	10.00	2.00	-15.84	-10.00	5.84	Highest ch 2483.5MHz + BW
		2509.8	-55.55	1.62	10.00	2.00	-41.93	-20.00	21.93	Highest ch 2483.5MHz + 2BW
min	max	2375.7	-58.02	1.57	10.00	2.00	-44.45	-20.00	24.45	Lowest ch 2400MHz- 2BW
		2399.5	-29.43	1.59	10.00	2.00	-15.84	-10.00	5.84	Lowest ch 2400MHz- BW
		2484.0	-27.95	1.61	10.00	2.00	-14.34	-10.00	4.34	Highest ch 2483.5MHz + BW
		2508.8	-55.31	1.62	10.00	2.00	-41.69	-20.00	21.69	Highest ch 2483.5MHz + 2BW
max	min	2381.7	-61.48	1.57	10.00	2.00	-47.91	-20.00	27.91	Lowest ch 2400MHz- 2BW
		2399.5	-30.44	1.59	10.00	2.00	-16.85	-10.00	6.85	Lowest ch 2400MHz- BW
		2484.0	-29.45	1.61	10.00	2.00	-15.84	-10.00	5.84	Highest ch 2483.5MHz + BW
		2509.8	-59.16	1.62	10.00	2.00	-45.54	-20.00	25.54	Highest ch 2483.5MHz + 2BW
max	max	2381.7	-61.57	1.57	10.00	2.00	-48.00	-20.00	28.00	Lowest ch 2400MHz- 2BW
		2399.5	-29.59	1.59	10.00	2.00	-16.00	-10.00	6.00	Lowest ch 2400MHz- BW
		2484.0	-27.94	1.61	10.00	2.00	-14.33	-10.00	4.33	Highest ch 2483.5MHz + BW
		2507.8	-58.96	1.62	10.00	2.00	-45.34	-20.00	25.34	Highest ch 2483.5MHz + 2BW

Result = Reading + Cable Loss + Attenuator Loss + Antenna Gain

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Transmitter unwanted emissions in the out-of-band domain

Test place	Ise EMC Lab. No.11 Measurement Room		
Report No.	11166419H		
Date	May 31, 2016	June 1, 2016	June 2, 2016
Temperature / Humidity	23 deg. C / 50% RH	24 deg. C / 42% RH	24 deg. C / 35% RH
Engineer	Masafumi Niwa	Masafumi Niwa	Masafumi Niwa
Mode	Tx 11n-40		

11n-40 Antenna port 0 + 1, MCS9

Test Condition		Frequency	Result	Result	Result	Result	Limit	Margin	Remarks
Temp.	Volt.	[MHz]	Antenna 0 [mW/MHz]	Antenna 1 [mW/MHz]	Antenna 0+1 [mW/MHz]	Antenna 0+1 [dBm/MHz]	[dBm/MHz]	[dB]	
nom	nom	2362.0	0.0000176	0.0000154	0.00003300	-44.82	-20.00	24.82	Lowest ch 2400MHz- 2BW
		2399.5	0.0250726	0.0168811	0.04195371	-13.77	-10.00	3.77	Lowest ch 2400MHz- BW
		2484.0	0.0176970	0.0133598	0.03105682	-15.08	-10.00	5.08	Highest ch 2483.5MHz + BW
		2532.5	0.0000170	0.0000255	0.00004247	-43.72	-20.00	23.72	Highest ch 2483.5MHz + 2BW
min	min	2350.0	0.0000211	0.0000115	0.00003264	-44.86	-20.00	24.86	Lowest ch 2400MHz- 2BW
		2399.5	0.0154348	0.0109977	0.02643242	-15.78	-10.00	5.78	Lowest ch 2400MHz- BW
		2484.0	0.0103157	0.0105317	0.02084747	-16.81	-10.00	6.81	Highest ch 2483.5MHz + BW
		2532.5	0.0000483	0.0000158	0.00006406	-41.93	-20.00	21.93	Highest ch 2483.5MHz + 2BW
min	max	2363.0	0.0000192	0.0000119	0.00003111	-45.07	-20.00	25.07	Lowest ch 2400MHz- 2BW
		2399.5	0.0194402	0.0128086	0.03224872	-14.91	-10.00	4.91	Lowest ch 2400MHz- BW
		2484.0	0.0153674	0.0135550	0.02892240	-15.39	-10.00	5.39	Highest ch 2483.5MHz + BW
		2532.5	0.0000439	0.0000295	0.00007338	-41.34	-20.00	21.34	Highest ch 2483.5MHz + 2BW
max	min	2363.0	0.0000115	0.0000143	0.00002587	-45.87	-20.00	25.87	Lowest ch 2400MHz- 2BW
		2399.5	0.0186080	0.0115001	0.03010807	-15.21	-10.00	5.21	Lowest ch 2400MHz- BW
		2484.0	0.0140185	0.0094167	0.02343518	-16.30	-10.00	6.30	Highest ch 2483.5MHz + BW
		2535.5	0.0000208	0.0000176	0.00003841	-44.16	-20.00	24.16	Highest ch 2483.5MHz + 2BW
max	max	2363.0	0.0000202	0.0000135	0.00003374	-44.72	-20.00	24.72	Lowest ch 2400MHz- 2BW
		2399.5	0.0271894	0.0130197	0.04020909	-13.96	-10.00	3.96	Lowest ch 2400MHz- BW
		2484.0	0.0189365	0.0124108	0.03134732	-15.04	-10.00	5.04	Highest ch 2483.5MHz + BW
		2532.5	0.0000203	0.0000185	0.00003877	-44.11	-20.00	24.11	Highest ch 2483.5MHz + 2BW

*Above test result was maximum value on each 1BW.

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Transmitter unwanted emissions in the out-of-band domain

Test place	Ise EMC Lab. No.11 Measurement Room		
Report No.	11166419H		
Date	May 31, 2016	June 1, 2016	June 2, 2016
Temperature / Humidity	23 deg. C / 50% RH	24 deg. C / 42% RH	24 deg. C / 35% RH
Engineer	Masafumi Niwa	Masafumi Niwa	Masafumi Niwa
Mode	Tx 11n-40		

11n-40 Antenna port 0, MCS9

Test Condition Temp.	Volt.	Frequency	S/A(AV) Reading	Cable Loss	Atten. Loss	Antenna Gain	Result	Limit	Margin	Remarks
		[MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dB]	
nom	nom	2362.0	-61.13	1.57	10.00	2.00	-47.56	-20.00	27.56	Lowest ch 2400MHz- 2BW
		2399.5	-29.60	1.59	10.00	2.00	-16.01	-10.00	6.01	Lowest ch 2400MHz- BW
		2484.0	-31.13	1.61	10.00	2.00	-17.52	-10.00	7.52	Highest ch 2483.5MHz + BW
		2532.5	-61.33	1.63	10.00	2.00	-47.70	-20.00	27.70	Highest ch 2483.5MHz + 2BW
min	min	2350.0	-60.33	1.57	10.00	2.00	-46.76	-20.00	26.76	Lowest ch 2400MHz- 2BW
		2399.5	-31.71	1.59	10.00	2.00	-18.12	-10.00	8.12	Lowest ch 2400MHz- BW
		2484.0	-33.48	1.61	10.00	2.00	-19.87	-10.00	9.87	Highest ch 2483.5MHz + BW
		2532.5	-56.79	1.63	10.00	2.00	-43.16	-20.00	23.16	Highest ch 2483.5MHz + 2BW
min	max	2363.0	-60.73	1.57	10.00	2.00	-47.16	-20.00	27.16	Lowest ch 2400MHz- 2BW
		2399.5	-30.70	1.59	10.00	2.00	-17.11	-10.00	7.11	Lowest ch 2400MHz- BW
		2484.0	-31.74	1.61	10.00	2.00	-18.13	-10.00	8.13	Highest ch 2483.5MHz + BW
		2532.5	-57.21	1.63	10.00	2.00	-43.58	-20.00	23.58	Highest ch 2483.5MHz + 2BW
max	min	2363.0	-62.95	1.57	10.00	2.00	-49.38	-20.00	29.38	Lowest ch 2400MHz- 2BW
		2399.5	-30.89	1.59	10.00	2.00	-17.30	-10.00	7.30	Lowest ch 2400MHz- BW
		2484.0	-32.14	1.61	10.00	2.00	-18.53	-10.00	8.53	Highest ch 2483.5MHz + BW
		2535.5	-60.45	1.63	10.00	2.00	-46.82	-20.00	26.82	Highest ch 2483.5MHz + 2BW
max	max	2363.0	-60.52	1.57	10.00	2.00	-46.95	-20.00	26.95	Lowest ch 2400MHz- 2BW
		2399.5	-29.25	1.59	10.00	2.00	-15.66	-10.00	5.66	Lowest ch 2400MHz- BW
		2484.0	-30.84	1.61	10.00	2.00	-17.23	-10.00	7.23	Highest ch 2483.5MHz + BW
		2532.5	-60.55	1.63	10.00	2.00	-46.92	-20.00	26.92	Highest ch 2483.5MHz + 2BW

11n-40 Antenna port 1, MCS9

Test Condition Temp.	Volt.	Frequency	S/A(AV) Reading	Cable Loss	Atten. Loss	Antenna Gain	Result	Limit	Margin	Remarks
		[MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dB]	
nom	nom	2362.0	-61.68	1.57	10.00	2.00	-48.11	-20.00	28.11	Lowest ch 2400MHz- 2BW
		2399.5	-31.32	1.59	10.00	2.00	-17.73	-10.00	7.73	Lowest ch 2400MHz- BW
		2484.0	-32.35	1.61	10.00	2.00	-18.74	-10.00	8.74	Highest ch 2483.5MHz + BW
		2532.5	-59.57	1.63	10.00	2.00	-45.94	-20.00	25.94	Highest ch 2483.5MHz + 2BW
min	min	2350.0	-62.95	1.57	10.00	2.00	-49.38	-20.00	29.38	Lowest ch 2400MHz- 2BW
		2399.5	-33.18	1.59	10.00	2.00	-19.59	-10.00	9.59	Lowest ch 2400MHz- BW
		2484.0	-33.39	1.61	10.00	2.00	-19.78	-10.00	9.78	Highest ch 2483.5MHz + BW
		2532.5	-61.66	1.63	10.00	2.00	-48.03	-20.00	28.03	Highest ch 2483.5MHz + 2BW
min	max	2363.0	-62.82	1.57	10.00	2.00	-49.25	-20.00	29.25	Lowest ch 2400MHz- 2BW
		2399.5	-32.52	1.59	10.00	2.00	-18.93	-10.00	8.93	Lowest ch 2400MHz- BW
		2484.0	-32.29	1.61	10.00	2.00	-18.68	-10.00	8.68	Highest ch 2483.5MHz + BW
		2532.5	-58.93	1.63	10.00	2.00	-45.30	-20.00	25.30	Highest ch 2483.5MHz + 2BW
max	min	2363.0	-62.01	1.57	10.00	2.00	-48.44	-20.00	28.44	Lowest ch 2400MHz- 2BW
		2399.5	-32.98	1.59	10.00	2.00	-19.39	-10.00	9.39	Lowest ch 2400MHz- BW
		2484.0	-33.87	1.61	10.00	2.00	-20.26	-10.00	10.26	Highest ch 2483.5MHz + BW
		2535.5	-61.16	1.62	10.00	2.00	-47.54	-20.00	27.54	Highest ch 2483.5MHz + 2BW
max	max	2363.0	-62.25	1.57	10.00	2.00	-48.68	-20.00	28.68	Lowest ch 2400MHz- 2BW
		2399.5	-32.44	1.59	10.00	2.00	-18.85	-10.00	8.85	Lowest ch 2400MHz- BW
		2484.0	-32.67	1.61	10.00	2.00	-19.06	-10.00	9.06	Highest ch 2483.5MHz + BW
		2532.5	-60.96	1.62	10.00	2.00	-47.34	-20.00	27.34	Highest ch 2483.5MHz + 2BW

Result = Reading + Cable Loss + Attenuator Loss + Antenna Gain

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APPENDIX 2: Test instruments

Test Equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MOS-19	Thermo-Hygrometer	Custom	CTH-201	0001	AT	2015/12/08 * 12
MMM-17	DIGITAL HiTESTER	Hioki	3805	070900530	AT	2016/01/13 * 12
MSA-14	Spectrum Analyzer	Agilent	E4440A	MY48250080	AT	2015/10/07 * 12
MCC-173	Microwave Cable	Junkosha	MWX221	1409S496	AT	2016/03/11 * 12
MCC-211	Microwave Cable	RS Components	R-132G7210200CD	-	AT	2016/04/01 * 12
MAT-91	Attenuator	Weinschel Associates	WA56-10	56100307	AT	2015/06/01 * 12

The expiration date of the calibration is the end of the expired month.

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test Item:

AT: Antenna Terminal Conducted test

End of Report

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