RADIO TEST REPORT

Test Report No. : 10348320H-E

Applicant	:	**Sony Computer Entertainment Inc.**
Type of Equipment	:	**PlayStation® TV**
Model No.	:	**VTE-1001**
FCC ID	:	**AK8VTE1001F1**
Test regulation	:	**FCC Part 15 Subpart C: 2014** ***WLAN part**
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 regulation.
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.

Date of test: August 29 to September 5, 2013

Representative test engineer:
Takumi Shimada
Engineer
Consumer Technology Division

Approved by:
Masanori Nishiyama
Manager
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.
*As for the range of Accreditation in NVLAP, you may refer to the WEB address, http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap

REVISION HISTORY

Original Test Report No.: 10348320H-E

Revision	Test report No.	Date	Page revised	Contents
- (Original)	10348320H-E	June 6, 2014	-	-

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SECTION 1: Customer information

Company Name	Sony Computer Entertainment Inc.
Brand Name	SONY
Address	1-7-1 Konan, Minato-ku, Tokyo, 108-0075 Japan
Telephone Number	+81-3-6748-6333
Facsimile Number	+81-3-6748-6383
Contact Person	Kiyoto Sasaki

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

2.1 Identification of E.U.T.

Type of Equipment	PlayStation® TV
Model No	VTE-1001
Serial No	8200094 for Antenna Terminal Conducted test 8200109 for Conducted Emission and Radiated Emission tests
Country of Manufacture	China
Receipt Date of Sample	August 27, 2013
Condition of EUT	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	No modification by the test lab.

2.2 Product Description

VTE-1001 is the PlayStation® TV.
WLAN antenna and Bluetooth antenna transmit simultaneously, but there is no correlation between WLAN antenna and Bluetooth antenna.

Product Specification

Maximum clock frequency in the system	444MHz
Operating Temperature	5-35 deg. C
Power Supply	DC5.0V
Size	105.0 x 65.0 x 13.6 mm
Weight	Approx. 110g

Radio Specification
WLAN (IEEE802.11b/g/n-20)

Equipment Type	Transceiver
Frequency of Operation	2412-2462MHz
Type of Modulation	DSSS, OFDM
Bandwidth & Channel spacing	20MHz & 5MHz
Method of frequency generation	Synthesizer
Power Supply (inner)	DC1.8V/DC3.1V
Antenna Type	Chip Multilayer Antenna
Antenna Gain	-0.33dBi

Bluetooth (BDR/EDR)

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Type of Modulation	FHSS (GFSK, π/4DQPSK, 8DPSK)
Bandwidth & Channel spacing	1MHz & 1MHz
Method of frequency generation	Synthesizer
Power Supply (inner)	DC1.8V
Antenna Type	Chip Multilayer Antenna
Antenna Gain	-0.56dBi (peak)

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C: 2014, final revised on May 1, 2014 and effective June 2, 2014
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators Section 15.207 Conducted limits Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz

* The revision on May 1, 2014 does not affect the test specification applied to the EUT.
* The EUT complies with FCC Part 15 Subpart B: 2014, final revised on May 1, 2014 and effective June 2, 2014.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.4:2003 7. AC powerline Conducted Emission measurements	**FCC:** Section 15.207	**QP** 13.4dB 2.24138MHz, L 2.34342MHz, L **AV** 8.1dB, 2.24138MHz, L	Complied	-
	IC: RSS-Gen 7.2.4	**IC:** RSS-Gen 7.2.4			
6dB Bandwidth	**FCC:** "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247(issued on April 9, 2013)"	**FCC:** Section 15.247(a)(2)	See data.	Complied	Conducted
	IC: RSS-Gen 4.6.2	**IC:** RSS-210 A8.2(a)			
Maximum Peak Output Power	**FCC:** "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247(issued on April 9, 2013)"	**FCC:** Section 15.247(b)(3)		Complied	Conducted
	IC: RSS-Gen 4.8	**IC:** RSS-210 A8.4(4)			
Power Density	**FCC:** "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247(issued on April 9, 2013)"	**FCC:** Section 15.247 (e)		Complied	Conducted
	IC: -	**IC:** RSS-210 A8.2(b)			
Spurious Emission Restricted Band Edges	**FCC:** "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247(issued on April 9, 2013)"	**FCC:** Section15.247(d)	4.7dB 370.892MHz, QP, Hori.	Complied	Conducted/ Radiated
	IC: RSS-Gen 4.9	**IC:** RSS-210 A8.5 RSS-Gen 7.2.3			
Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.					

* In case any questions arise about test procedure, ANSI C63.4: 2003 is also referred.

FCC 15.31 (e)
This EUT provides stable voltage (DC1.8V/3.1V) constantly to RF Part regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement
It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99% Occupied Bandwidth	**IC:** RSS-Gen 4.6.1	**IC:** RSS-Gen 4.6.1	N/A	-	Conducted

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 (semi-anechoic chamber)	Conducted emission (±dB)
	150kHz-30MHz
No.1	3.5dB
No.2	3.6dB
No.3	3.6dB
No.4	3.6dB

Test room (semi-anechoic chamber)	Radiated emission						
	(3m*)(±dB)				(1m*)(±dB)		(0.5m*)(±dB)
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	4.3dB	5.0dB	5.1dB	4.9dB	5.8dB	4.4dB	4.3dB
No.2	4.3dB	5.2dB	5.1dB	5.0dB	5.7dB	4.3dB	4.2dB
No.3	4.6dB	5.0dB	5.1dB	5.0dB	5.7dB	4.5dB	4.2dB
No.4	4.8dB	5.2dB	5.0dB	5.0dB	5.7dB	5.2dB	4.2dB

*3m/1m/0.5m = Measurement distance

Power meter (±dB)	
Below 1GHz	Above 1GHz
0.7dB	1.5dB

Antenna terminal conducted emission and Power density (±dB)			Antenna terminal conducted emission (±dB)		Channel power (±dB)
Below 1GHz	1GHz-3GHz	3GHz-18GHz	18GHz-26.5GHz	26.5GHz-40GHz	
1.5dB	1.7dB	2.8dB	2.8dB	2.9dB	2.6dB

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

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

3.5 Test Location

UL Japan, Inc. Ise EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8999 Facsimile : +81 596 24 8124

	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	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	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	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	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	4.0 x 4.5 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 4.6 x 2.8m	2.4 x 2.4m	-
No.11 measurement room	-	6.2 x 4.7 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 Data of EMI, Test instruments, and Test set up

Refer to APPENDIX.

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

4.1 Operating Mode(s)

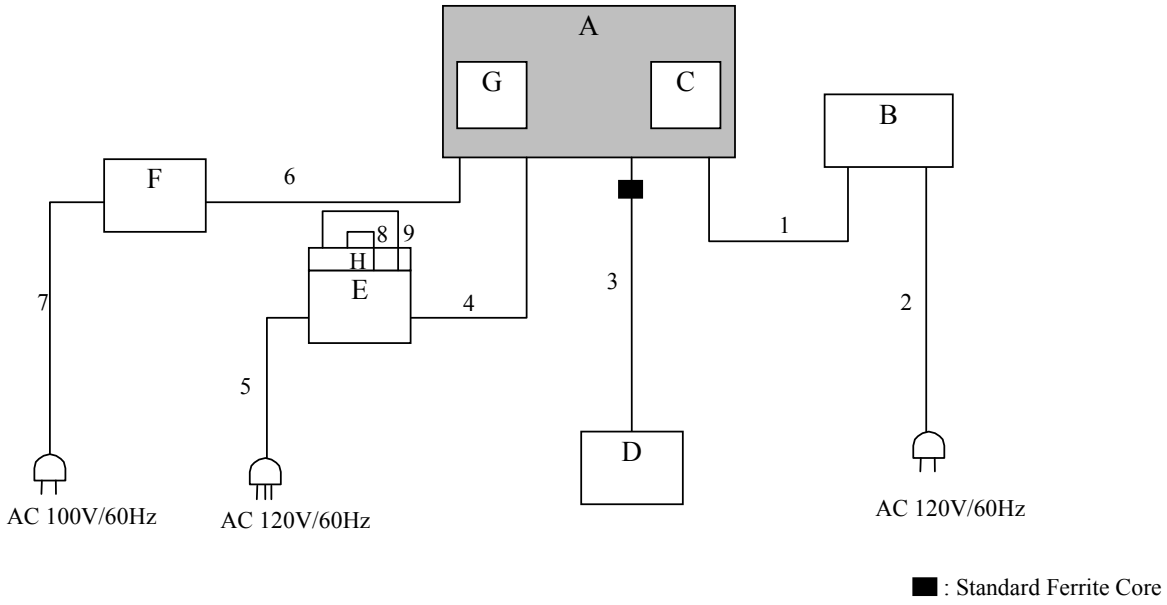
Test operating mode was determined as follows according to "Section 1 of 802.11 a/b/g/n testing Managing Complex regulatory Approvals-"of TCB Council Workshop October 2009.

Mode	Remarks*
IEEE 802.11b (11b)	1Mbps, PN9
IEEE 802.11g (11g)	24Mbps, PN9
IEEE 802.11n MIMO 20MHz BW (11n-20)	MCS4, PN9
*Transmitting duty was 100% on all of WLAN tests. *The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel)	
*Power of the EUT was set by the software as follows; Power settings: 10dBm Software: Marvell 8787 Labtool Ver.14.0.11.p74 *This setting of software is the worst case. 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 for WLAN

Test Item	Operating Mode	Tested frequency
Conducted Emission Spurious Emission (Conducted)	11g Tx *1)	2462MHz *1)
6dB Bandwidth 99% Occupied Bandwidth Maximum Peak Output Power Power Density Spurious Emission (Radiated)	11b Tx 11g Tx 11n-20 Tx	2412MHz 2437MHz 2462MHz
*1) The test was performed on the representative mode/frequency that had the highest power at antenna terminal test.		

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 and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remark
A	PlayStation® TV	VTE-1001	8200094: AT 8200109: CE/RE	Sony Computer Entertainment Inc.	EUT
B	AC Adaptor	ACC-219	13046000362A	Sony Computer Entertainment Inc.	-
C	Memory Card	PCH-Z041	-	Sony Computer Entertainment Inc.	-
D	Wireless Controller (DS3)	CECHZC2U	PDC0000000094	Sony Computer Entertainment Inc.	-
E	Monitor	U2413f	CN-0M0Y5W-72872-31 S-A6LL	DELL	-
F	LAN Hub	FX-051S	07FA03634C	PLANEX COMMUNICATIONS INC.	-
G	Vita Card	-	VCDMA1294DB00A 1JS	Sony Computer Entertainment Inc.	-
H	Speaker	AX510	CN-0C730C-71623-348 -3855	DELL	-

AT: Antenna Terminal Conducted tests
CE/RE: Conducted Emission and Radiated Spurious Emission tests

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC Cable	1.5	Shielded	Shielded	-
2	AC Cable	1.0	Unshielded	Unshielded	-
3	USB Cable	1.5	Shielded	Shielded	-
4	HDMI Cable	2.0	Shielded	Shielded	-
5	AC Cable	1.8	Unshielded	Unshielded	-
6	LAN Cable	1.0	Unshielded	Unshielded	-
7	AC Cable	1.8	Unshielded	Unshielded	-
8	DC Cable	0.3	Unshielded	Unshielded	-
9	Audio Cable	1.5	Shielded	Shielded	-

SECTION 5: Conducted Emission

Test Procedure and conditions
EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m 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.

For the tests on EUT with other peripherals (as a whole system)
I/O 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.
The EUT was connected to a LISN (AMN).
An overview sweep with peak detection has been performed.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

Detector : QP and CISPR AV
Measurement range : 0.15-30MHz
Test data : APPENDIX
Test result : Pass

SECTION 6: Radiated Spurious Emission

Test Procedure
It was measured based on "11.0 Emissions in non-restricted frequency bands" of "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 (Issued on April 9, 2013)".
EUT was placed on a urethane platform of nominal size, 0.5m by 1.0m, raised 0.8m above the conducting ground plane.
The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.
The height of the measuring antenna varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.
The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.
The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Test Antennas are used as below;

Frequency	Below 30MHz	30MHz to 300MHz	300MHz to 1GHz	Above 1GHz
Antenna Type	Loop	Biconical	Logperiodic	Horn

In any 100kHz bandwidth outside the restricted band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

20dBc was applied to the frequency over the limit of FCC 15.209 / Table 5 of RSS-Gen 7.2.5(IC) and outside the restricted band of FCC15.205 / Table 3 of RSS-Gen 7.2.2 (IC).

Frequency	Below 1GHz	Above 1GHz		20dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV *1)	PK
IF Bandwidth	BW 120kHz(T/R)	RBW: 1MHz VBW: 3MHz	Average Power Method: WLAN: 12.2.5.1 RBW: 1MHz VBW: 3MHz Detector: Power Averaging (RMS) Trace: 100 traces	RBW: 100kHz VBW: 300kHz (S/A)
Test Distance	3m	3m (below 10GHz), 1m *3) (above 10GHz)		3m (below 10GHz), 1m *3) (above 10GHz)

*1) Average Power Measurement was performed based on 6.0 & 12.2.5 of "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 (Issued on April 9, 2013)"
*2) Distance Factor: 20 x log (3.0m/1.0m) = 9.5dB

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

Measurement range : 30M-26.5GHz
Test data : APPENDIX
Test result : Pass

SECTION 7: Antenna Terminal Conducted Tests

Test Procedure

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

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used
6dB Bandwidth	20MHz	100kHz	300kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99% Occupied Bandwidth	Enough width to display 20dB Bandwidth	1 to 3% of Span	Three times of RBW	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak Average *1)	-	Power Meter (Sensor: 50MHz BW)
Peak Power Density	1.5 times the 6dB Bandwidth	3kHz	10kHz	Auto	Peak	Max Hold	Spectrum Analyzer *2)
Conducted Spurious Emission *3)	9kHz to 150kHz	200Hz	620Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz to 30MHz	9.1kHz	27kHz				

*1) Reference data
*2) Section 10.2 Method PKPSD (peak PSD) of "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 (Issued on April 9, 2013)".
*3) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.
Then, wide-band noise near the limit was checked separately, however the noise was low enough as shown in the chart.(9kHz-150kHz:RBW=200Hz, 150kHz-30MHz:RBW=9.1kHz).

The test results and limit are rounded off to two decimals place, so some differences might be observed.

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Data of EMI test

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

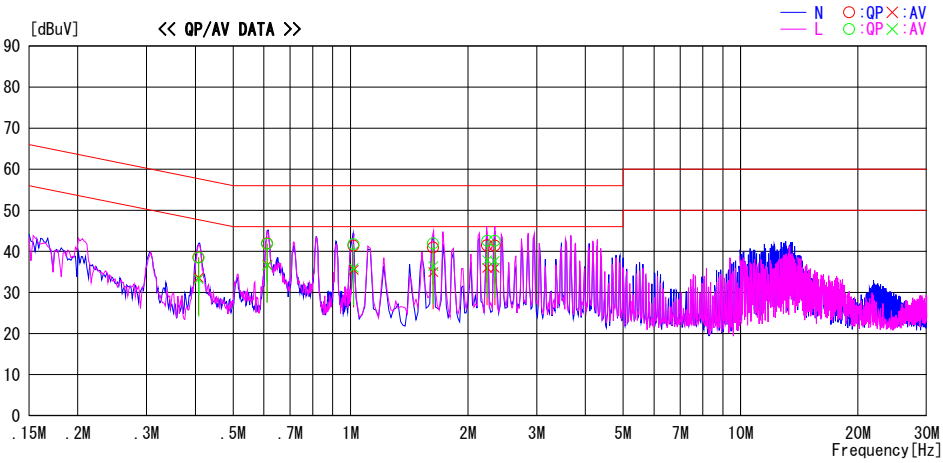
UL Japan, Inc. Ise EMC Lab. No.3 Semi Anechoic Chamber
Date: 2013/09/05

Report No. : 10348320H

Temp./Humi. : 24deg. C / 58% RH
Engineer : Takumi Shimada

Mode / Remarks : WLAN 11g 2462MHz 24Mbps

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.40792	25.3	20.3	13.3	38.6	33.6	57.7	47.7	19.1	14.1	N	
0.61168	28.6	23.4	13.3	41.9	36.7	56.0	46.0	14.1	9.3	N	
1.01845	28.1	22.2	13.3	41.4	35.5	56.0	46.0	14.6	10.5	N	
1.63064	27.4	21.5	13.5	40.9	35.0	56.0	46.0	15.1	11.0	N	
2.24070	28.0	22.5	13.5	41.5	36.0	56.0	46.0	14.5	10.0	N	
2.34284	27.9	22.5	13.5	41.4	36.0	56.0	46.0	14.6	10.0	N	
0.40824	25.2	19.9	13.3	38.5	33.2	57.7	47.7	19.2	14.5	L	
0.61198	28.5	23.3	13.3	41.8	36.6	56.0	46.0	14.2	9.4	L	
1.01859	28.4	22.7	13.3	41.7	36.0	56.0	46.0	14.3	10.0	L	
1.63031	28.4	22.9	13.5	41.9	36.4	56.0	46.0	14.1	9.6	L	
2.24138	29.1	24.4	13.5	42.6	37.9	56.0	46.0	13.4	8.1	L	
2.34342	29.1	24.2	13.5	42.6	37.7	56.0	46.0	13.4	8.3	L	

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT[dBuV]=READING[dBuV]+C.F[dB](LISN+CABLE+ATTEN.)
Except for the above table : adequate margin data below the limits.

6dB Bandwidth

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10348320H
Date	09/05/2013
Temperature/ Humidity	23 deg. C/ 68% RH
Engineer	Takumi Shimada
Mode	Tx

11b

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	9.986	>500
2437	9.985	>500
2462	9.973	>500

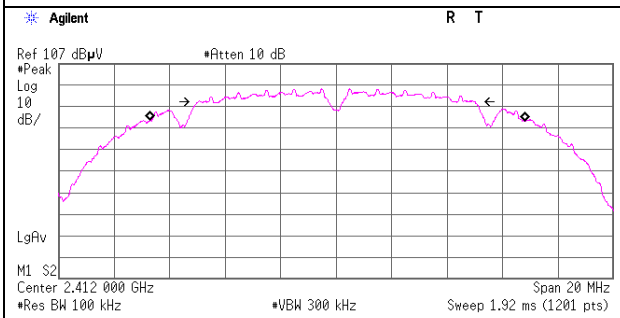
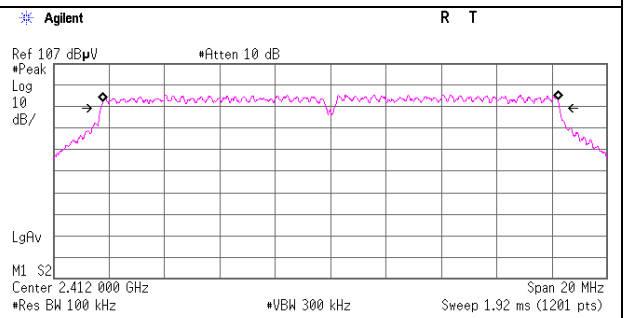
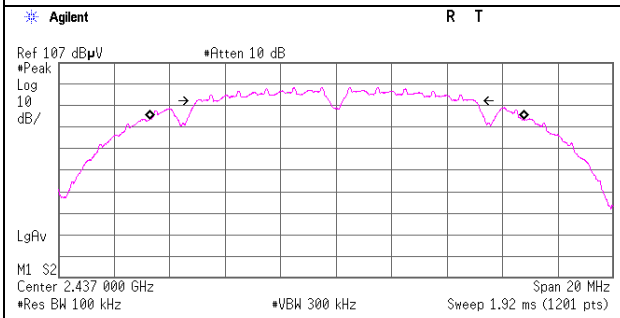
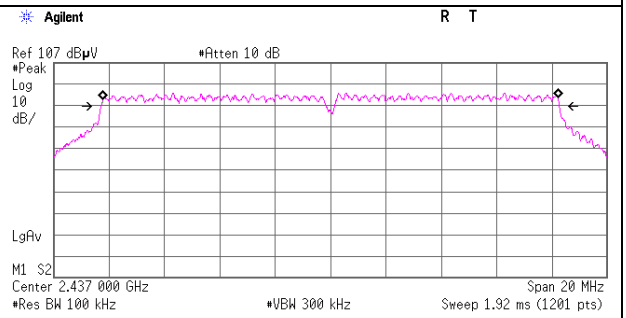
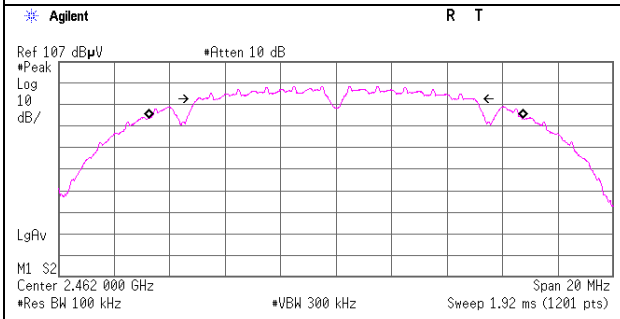
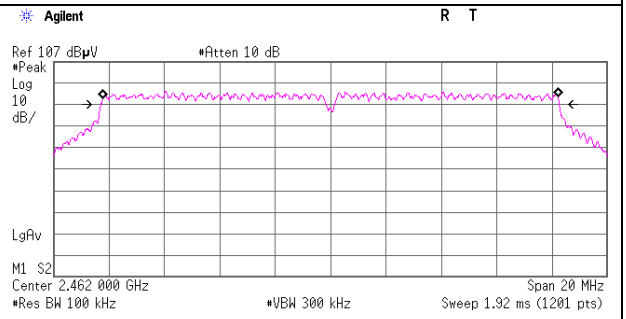
11g

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	16.564	>500
2437	16.557	>500
2462	16.554	>500

11n-20

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	17.819	>500
2437	17.824	>500
2462	17.805	>500

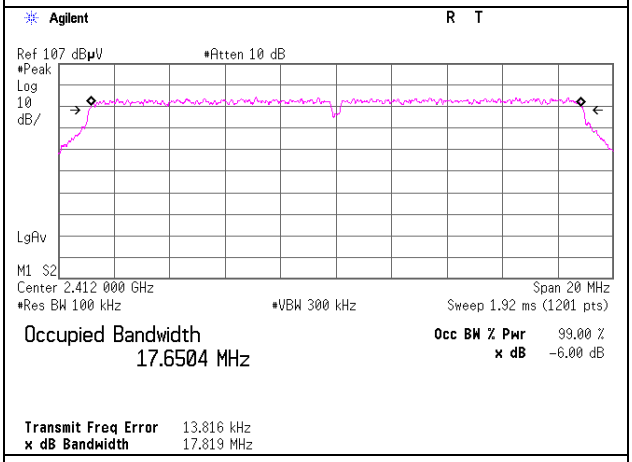
6dB Bandwidth

11b	11g
2412MHz	**2412MHz**
	
2437MHz	**2437MHz**
	
2462MHz	**2462MHz**
	

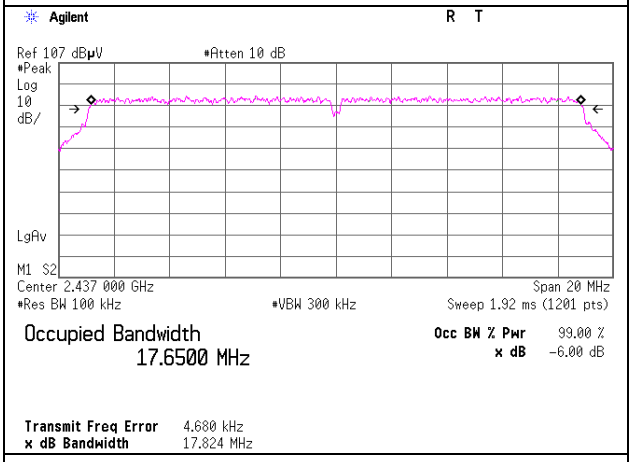
6dB Bandwidth

11n-20

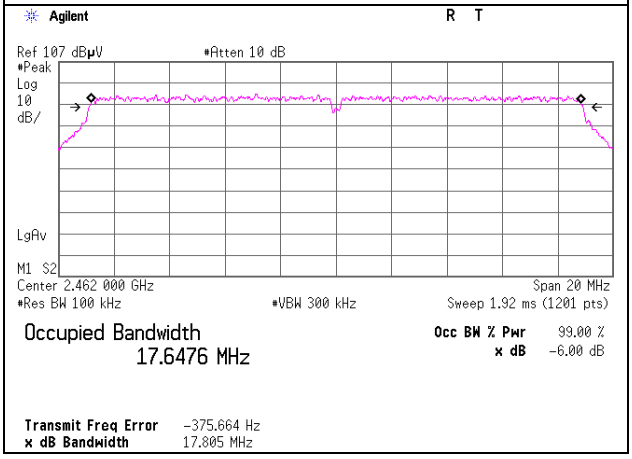
2412MHz



2437MHz



2462MHz



Maximum Peak Output Power

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10348320H
Date	08/29/2013
Temperature/ Humidity	23 deg. C / 68 %RH
Engineer	Takumi Shimada
Mode	Tx 11b / 11g / 11n-20

11b 1Mbps

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	1.81	0.50	9.97	12.28	16.90	30.00	1000	17.72
2437	2.00	0.50	9.97	12.47	17.66	30.00	1000	17.53
2462	2.23	0.50	9.97	12.70	18.62	30.00	1000	17.30

11g 24Mbps

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	8.79	0.50	9.97	19.26	84.33	30.00	1000	10.74
2437	9.07	0.50	9.97	19.54	89.95	30.00	1000	10.46
2462	9.24	0.50	9.97	19.71	93.54	30.00	1000	10.29

11n-20 MCS4

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	7.93	0.50	9.97	18.40	69.18	30.00	1000	11.60
2437	8.24	0.50	9.97	18.71	74.30	30.00	1000	11.29
2462	8.27	0.50	9.97	18.74	74.82	30.00	1000	11.26

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

Maximum Peak Output Power

Worst Rate Check

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10348320H
Date	08/29/2013
Temperature/ Humidity	23 deg. C / 68 %RH
Engineer	Takumi Shimada
Mode	Tx 11b / 11g / 11n-20

11b,2437MHz

Rate [Mbps]	Reading [dBm]	Remark
1	2.00	*
2	1.78	
5.5	1.24	
11	1.71	

*: Worst Rate
All comparizon were carried out on same frequency and measurement factors.

11g,2437MHz

Rate [Mbps]	Reading [dBm]	Remark
6	8.61	
9	8.41	
12	8.72	
18	8.27	
24	9.07	*
36	8.32	
48	8.43	
54	8.76	

*: Worst Rate
All comparizon were carried out on same frequency and measurement factors.

11n-20,2437MHz

MCS Number	Reading [dBm]	Remark
0	8.12	
1	8.23	
2	8.21	
3	8.15	
4	8.24	*
5	8.13	
6	8.09	
7	8.22	

*: Worst Rate
All comparizon were carried out on same frequency and measurement factors.

Average Output Power

Test place	Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No.	10348320H
Date	08/29/2013
Temperature/ Humidity	23 deg. C / 68 %RH
Engineer	Takumi Shimada
Mode	Tx 11b / 11g / 11n-20

[AV]

11b **1Mbps**

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	-0.72	0.50	9.97	9.75	9.44	30.00	1000	20.25
2437	-0.53	0.50	9.97	9.94	9.86	30.00	1000	20.06
2462	-0.34	0.50	9.97	10.13	10.30	30.00	1000	19.87

11g **24Mbps**

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	-0.74	0.50	9.97	9.73	9.40	30.00	1000	20.27
2437	-0.51	0.50	9.97	9.96	9.91	30.00	1000	20.04
2462	-0.41	0.50	9.97	10.06	10.14	30.00	1000	19.94

11n-20 **MCS4**

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	-0.76	0.50	9.97	9.71	9.35	30.00	1000	20.29
2437	-0.54	0.50	9.97	9.93	9.84	30.00	1000	20.07
2462	-0.43	0.50	9.97	10.04	10.09	30.00	1000	19.96

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

Radiated Spurious Emission

Test place	Ise EMC Lab. No.2, 3 and 4 Semi Anechoic Chamber		
Report No.	10348320H		
Date	08/30/2013	09/03/2013	09/04/2013
Temperature/ Humidity	23 deg. C / 65% RH	23 deg. C / 69% RH	24 deg. C / 58% RH
Engineer	Takumi Shimada (1-10GHz)	Takumi Shimada (10-26.5GHz)	Takumi Shimada (30-1000MHz)
Mode	11b Tx 2412MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2390.000	PK	45.2	26.8	2.4	35.7	38.7	73.9	35.2	
Hori	4824.000	PK	44.9	30.7	4.2	34.9	44.9	73.9	29.0	
Hori	7236.000	PK	43.7	35.6	5.0	34.9	49.4	73.9	24.5	
Hori	9648.000	PK	43.8	38.2	5.8	35.4	52.4	73.9	21.5	
Hori	2390.000	AV	36.4	26.8	2.4	35.7	29.9	53.9	24.0	
Hori	4824.000	AV	37.1	30.7	4.2	34.9	37.1	53.9	16.8	
Hori	7236.000	AV	34.6	35.6	5.0	34.9	40.3	53.9	13.6	
Hori	9648.000	AV	34.6	38.2	5.8	35.4	43.2	53.9	10.7	
Vert	2390.000	PK	45.5	26.8	2.4	35.7	39.0	73.9	34.9	
Vert	4824.000	PK	44.9	30.7	4.2	34.9	44.9	73.9	29.0	
Vert	7236.000	PK	44.4	35.6	5.0	34.9	50.1	73.9	23.8	
Vert	9648.000	PK	43.4	38.2	5.8	35.4	52.0	73.9	21.9	
Vert	2390.000	AV	36.3	26.8	2.4	35.7	29.8	53.9	24.1	
Vert	4824.000	AV	37.1	30.7	4.2	34.9	37.1	53.9	16.8	
Vert	7236.000	AV	34.4	35.6	5.0	34.9	40.1	53.9	13.8	
Vert	9648.000	AV	34.5	38.2	5.8	35.4	43.1	53.9	10.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2412.000	PK	98.0	26.8	2.4	35.7	91.5	-	-	Carrier
Hori	2397.480	PK	50.4	26.8	2.4	35.7	43.9	71.5	27.6	
Hori	2400.000	PK	42.1	26.8	2.4	35.7	35.6	71.5	35.9	
Vert	2412.000	PK	97.5	26.8	2.4	35.7	91.0	-	-	Carrier
Vert	2397.480	PK	50.2	26.8	2.4	35.7	43.7	71.0	27.3	
Vert	2400.000	PK	40.5	26.8	2.4	35.7	34.0	71.0	37.0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.2, 3 and 4 Semi Anechoic Chamber		
Report No.	10348320H		
Date	08/30/2013	09/03/2013	09/04/2013
Temperature/ Humidity	23 deg. C / 65% RH	23 deg. C / 69% RH	24 deg. C / 58% RH
Engineer	Takumi Shimada (1-10GHz)	Takumi Shimada (10-26.5GHz)	Takumi Shimada (30-1000MHz)
Mode	11b Tx 2437MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	4874.000	PK	44.3	30.8	4.2	34.9	44.4	73.9	29.5	
Hori	7311.000	PK	43.4	35.7	5.0	34.9	49.2	73.9	24.7	
Hori	9748.000	PK	43.4	38.4	5.8	35.4	52.2	73.9	21.7	
Hori	4874.000	AV	36.0	30.8	4.2	34.9	36.1	53.9	17.8	
Hori	7311.000	AV	34.4	35.7	5.0	34.9	40.2	53.9	13.7	
Hori	9748.000	AV	34.5	38.4	5.8	35.4	43.3	53.9	10.6	
Vert	4874.000	PK	44.6	30.8	4.2	34.9	44.7	73.9	29.2	
Vert	7311.000	PK	44.3	35.7	5.0	34.9	50.1	73.9	23.8	
Vert	9748.000	PK	43.1	38.4	5.8	35.4	51.9	73.9	22.0	
Vert	4874.000	AV	37.2	30.8	4.2	34.9	37.3	53.9	16.6	
Vert	7311.000	AV	34.5	35.7	5.0	34.9	40.3	53.9	13.6	
Vert	9748.000	AV	34.5	38.4	5.8	35.4	43.3	53.9	10.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.2, 3 and 4 Semi Anechoic Chamber		
Report No.	10348320H		
Date	08/30/2013	09/03/2013	09/04/2013
Temperature/ Humidity	23 deg. C / 65% RH	23 deg. C / 69% RH	24 deg. C / 58% RH
Engineer	Takumi Shimada (1-10GHz)	Takumi Shimada (10-26.5GHz)	Takumi Shimada (30-1000MHz)
Mode	11b Tx 2462MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2483.500	PK	45.3	26.7	2.4	35.7	38.7	73.9	35.2	
Hori	4924.000	PK	45.5	31.0	4.2	34.9	45.8	73.9	28.1	
Hori	7386.000	PK	43.1	35.8	5.1	34.9	49.1	73.9	24.8	
Hori	9848.000	PK	43.1	38.6	5.9	35.4	52.2	73.9	21.7	
Hori	2483.500	AV	34.7	26.7	2.4	35.7	28.1	53.9	25.8	
Hori	4924.000	AV	34.9	31.0	4.2	34.9	35.2	53.9	18.7	
Hori	7386.000	AV	34.6	35.8	5.1	34.9	40.6	53.9	13.3	
Hori	9848.000	AV	34.3	38.6	5.9	35.4	43.4	53.9	10.5	
Vert	2483.500	PK	44.6	26.7	2.4	35.7	38.0	73.9	36.0	
Vert	4924.000	PK	44.2	31.0	4.2	34.9	44.5	73.9	29.4	
Vert	7386.000	PK	43.8	35.8	5.1	34.9	49.8	73.9	24.1	
Vert	9848.000	PK	43.1	38.6	5.9	35.4	52.2	73.9	21.7	
Vert	2483.500	AV	36.1	26.7	2.4	35.7	29.5	53.9	24.4	
Vert	4924.000	AV	34.8	31.0	4.2	34.9	35.1	53.9	18.8	
Vert	7386.000	AV	34.4	35.8	5.1	34.9	40.4	53.9	13.5	
Vert	9848.000	AV	34.2	38.6	5.9	35.4	43.3	53.9	10.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.2, 3 and 4 Semi Anechoic Chamber		
Report No.	10348320H		
Date	08/30/2013	09/03/2013	09/04/2013
Temperature/ Humidity	23 deg. C / 65% RH	23 deg. C / 69% RH	24 deg. C / 58% RH
Engineer	Takumi Shimada (1-10GHz)	Takumi Shimada (10-26.5GHz)	Takumi Shimada (30-1000MHz)
Mode	11g Tx 2412MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2390.000	PK	62.4	26.8	2.4	35.7	55.9	73.9	18.1	
Hori	4824.000	PK	44.6	30.7	4.2	34.9	44.6	73.9	29.3	
Hori	7236.000	PK	43.8	35.6	5.0	34.9	49.5	73.9	24.4	
Hori	9648.000	PK	44.0	38.2	5.8	35.4	52.6	73.9	21.3	
Hori	2390.000	AV	50.2	26.8	2.4	35.7	43.7	53.9	10.2	
Hori	4824.000	AV	35.2	30.7	4.2	34.9	35.2	53.9	18.7	
Hori	7236.000	AV	34.4	35.6	5.0	34.9	40.1	53.9	13.8	
Hori	9648.000	AV	34.3	38.2	5.8	35.4	42.9	53.9	11.0	
Vert	2390.000	PK	60.8	26.8	2.4	35.7	54.3	73.9	19.6	
Vert	4824.000	PK	44.7	30.7	4.2	34.9	44.7	73.9	29.2	
Vert	7236.000	PK	44.3	35.6	5.0	34.9	50.0	73.9	23.9	
Vert	9648.000	PK	43.4	38.2	5.8	35.4	52.0	73.9	21.9	
Vert	2390.000	AV	48.3	26.8	2.4	35.7	41.8	53.9	12.1	
Vert	4824.000	AV	34.5	30.7	4.2	34.9	34.5	53.9	19.4	
Vert	7236.000	AV	34.2	35.6	5.0	34.9	39.9	53.9	14.0	
Vert	9648.000	AV	34.3	38.2	5.8	35.4	42.9	53.9	11.0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2412.000	PK	97.3	26.8	2.4	35.7	90.8	-	-	Carrier
Hori	2400.000	PK	58.4	26.8	2.4	35.7	51.9	70.8	18.9	
Vert	2412.000	PK	96.2	26.8	2.4	35.7	89.7	-	-	Carrier
Vert	2400.000	PK	56.8	26.8	2.4	35.7	50.3	69.7	19.4	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.2, 3 and 4 Semi Anechoic Chamber		
Report No.	10348320H		
Date	08/30/2013	09/03/2013	09/04/2013
Temperature/ Humidity	23 deg. C / 65% RH	23 deg. C / 69% RH	24 deg. C / 58% RH
Engineer	Takumi Shimada (1-10GHz)	Takumi Shimada (10-26.5GHz)	Takumi Shimada (30-1000MHz)
Mode	11g Tx 2437MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	4874.000	PK	42.8	30.8	4.2	34.9	42.9	73.9	31.0	
Hori	7311.000	PK	43.4	35.7	5.0	34.9	49.2	73.9	24.7	
Hori	9748.000	PK	43.2	38.4	5.8	35.4	52.0	73.9	21.9	
Hori	4874.000	AV	34.2	30.8	4.2	34.9	34.3	53.9	19.6	
Hori	7311.000	AV	34.4	35.7	5.0	34.9	40.2	53.9	13.7	
Hori	9748.000	AV	34.3	38.4	5.8	35.4	43.1	53.9	10.8	
Vert	4874.000	PK	44.3	30.8	4.2	34.9	44.4	73.9	29.5	
Vert	7311.000	PK	43.3	35.7	5.0	34.9	49.1	73.9	24.8	
Vert	9748.000	PK	43.2	38.4	5.8	35.4	52.0	73.9	21.9	
Vert	4874.000	AV	34.5	30.8	4.2	34.9	34.6	53.9	19.3	
Vert	7311.000	AV	34.5	35.7	5.0	34.9	40.3	53.9	13.6	
Vert	9748.000	AV	34.4	38.4	5.8	35.4	43.2	53.9	10.7	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.2, 3 and 4 Semi Anechoic Chamber		
Report No.	10348320H		
Date	08/30/2013	09/03/2013	09/04/2013
Temperature/ Humidity	23 deg. C / 65% RH	23 deg. C / 69% RH	24 deg. C / 58% RH
Engineer	Takumi Shimada (1-10GHz)	Takumi Shimada (10-26.5GHz)	Takumi Shimada (30-1000MHz)
Mode	11g Tx 2462MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	31.434	QP	25.3	17.5	7.0	32.2	17.6	40.0	22.4	
Hori	125.000	QP	39.1	13.4	8.3	32.1	28.7	43.5	14.8	
Hori	250.000	QP	35.3	17.3	9.5	32.1	30.0	46.0	16.0	
Hori	296.724	QP	33.3	19.8	9.8	32.0	30.9	46.0	15.1	
Hori	370.892	QP	46.3	16.6	10.4	32.0	41.3	46.0	4.7	
Hori	445.043	QP	38.3	17.7	10.8	32.0	34.8	46.0	11.2	
Hori	500.000	QP	37.4	18.1	11.2	32.0	34.7	46.0	11.3	
Hori	2483.500	PK	51.4	26.7	2.4	35.7	44.8	73.9	29.1	
Hori	4924.000	PK	44.3	31.0	4.2	34.9	44.6	73.9	29.3	
Hori	7386.000	PK	43.6	35.8	5.1	34.9	49.6	73.9	24.3	
Hori	9848.000	PK	44.2	38.6	5.9	35.4	53.3	73.9	20.6	
Hori	2483.500	AV	41.0	26.7	2.4	35.7	34.4	53.9	19.5	
Hori	4924.000	AV	34.7	31.0	4.2	34.9	35.0	53.9	18.9	
Hori	7386.000	AV	34.4	35.8	5.1	34.9	40.4	53.9	13.5	
Hori	9848.000	AV	34.4	38.6	5.9	35.4	43.5	53.9	10.4	
Vert	31.434	QP	38.6	17.5	7.0	32.2	30.9	40.0	9.1	
Vert	125.000	QP	45.2	13.4	8.3	32.1	34.8	43.5	8.7	
Vert	250.000	QP	37.8	17.3	9.5	32.1	32.5	46.0	13.5	
Vert	296.724	QP	32.2	19.8	9.8	32.0	29.8	46.0	16.2	
Vert	370.892	QP	41.6	16.6	10.4	32.0	36.6	46.0	9.4	
Vert	445.043	QP	32.2	17.7	10.8	32.0	28.7	46.0	17.3	
Vert	500.000	QP	30.2	18.1	11.2	32.0	27.5	46.0	18.5	
Vert	2483.500	PK	56.1	26.7	2.4	35.7	49.5	73.9	24.4	
Vert	4924.000	PK	44.0	31.0	4.2	34.9	44.3	73.9	29.6	
Vert	7386.000	PK	43.9	35.8	5.1	34.9	49.9	73.9	24.0	
Vert	9848.000	PK	44.3	38.6	5.9	35.4	53.4	73.9	20.5	
Vert	2483.500	AV	46.1	26.7	2.4	35.7	39.5	53.9	14.4	
Vert	4924.000	AV	34.6	31.0	4.2	34.9	34.9	53.9	19.0	
Vert	7386.000	AV	34.3	35.8	5.1	34.9	40.3	53.9	13.6	
Vert	9848.000	AV	34.1	38.6	5.9	35.4	43.2	53.9	10.7	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

Test place Ise EMC Lab. No.2 Semi Anechoic Chamber
Report No. 10348320H
Date 08/30/2013
Temperature/ Humidity 23 deg. C / 65% RH
Engineer Takumi Shimada
(1-10GHz)
Mode 11n-20 Tx

2412MHz Band edge

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2390.000	PK	65.2	26.8	2.4	35.7	58.7	73.9	15.2	
Hori	2390.000	AV	51.2	26.8	2.4	35.7	44.7	53.9	9.2	
Vert	2390.000	PK	63.5	26.8	2.4	35.7	57.0	73.9	16.9	
Vert	2390.000	AV	49.2	26.8	2.4	35.7	42.7	53.9	11.2	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2412.000	PK	95.4	26.8	2.4	35.7	88.9	-	-	Carrier
Hori	2400.000	PK	58.4	26.8	2.4	35.7	51.9	68.9	17.0	
Vert	2412.000	PK	93.3	26.8	2.4	35.7	86.8	-	-	Carrier
Vert	2400.000	PK	57.1	26.8	2.4	35.7	50.6	66.8	16.2	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

2462MHz Band edge

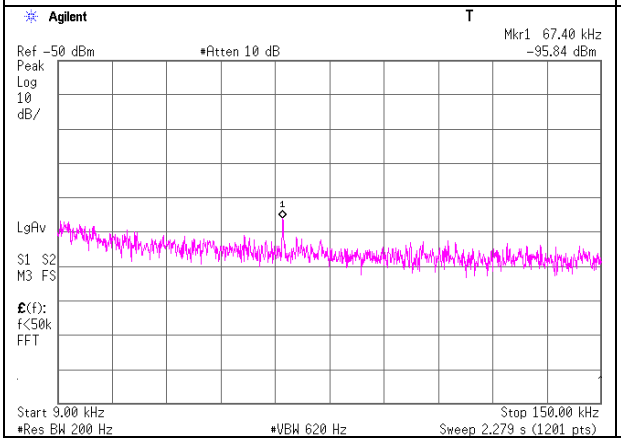
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2483.500	PK	61.0	26.7	2.4	35.7	54.4	73.9	19.5	
Hori	2483.500	AV	50.0	26.7	2.4	35.7	43.4	53.9	10.5	
Vert	2483.500	PK	59.4	26.7	2.4	35.7	52.8	73.9	21.1	
Vert	2483.500	AV	48.6	26.7	2.4	35.7	42.0	53.9	11.9	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).
*The 10th harmonic was not seen so the result was its base noise level.
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

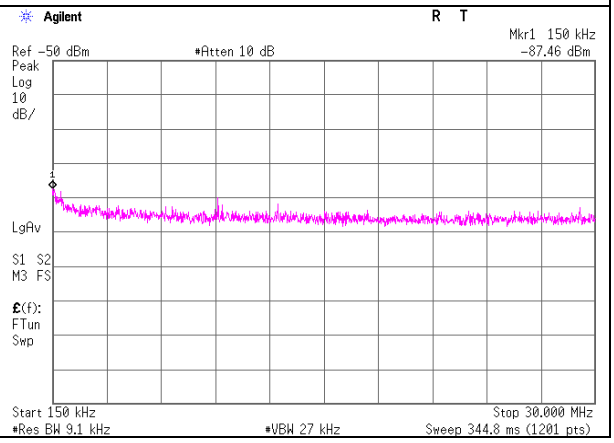
Conducted Spurious Emission

11g Tx 2462MHz

9kHz-150kHz



150kHz-30MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenator [dB]	Antenna Gain [dBi]	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]
67.40	-95.8	0.01	10.0	0.7	-85.1	300.0	6.0	-23.9	31.0
150	-87.5	0.01	10.0	0.7	-76.7	300.0	6.0	-15.5	24.1

E=EIRP-20log(D)+Ground bounce +104.8[dBuV/m]
EIRP=Reading+Cable Loss+Attenator+Antenna Gain

Power Density

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10348320H
Date	09/05/2013
Temperature/ Humidity	23 deg. C/ 68% RH
Engineer	Takumi Shimada
Mode	11b Tx, 11g Tx, 11n-20 Tx

11b

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-30.32	1.39	10.01	-18.92	8.00	26.92
2437.00	-30.19	1.39	10.01	-18.79	8.00	26.79
2462.00	-30.06	1.39	10.01	-18.66	8.00	26.66

11g

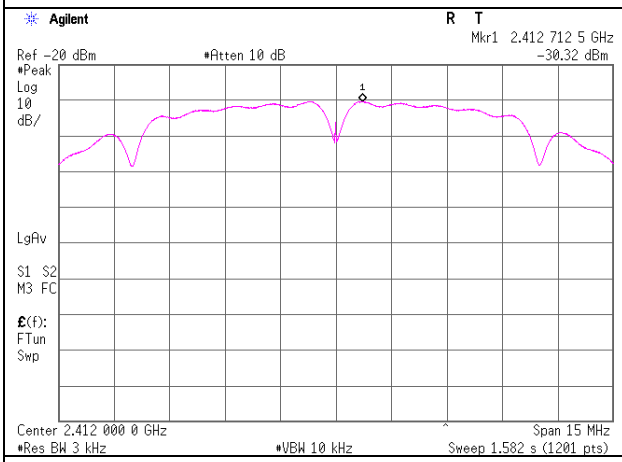
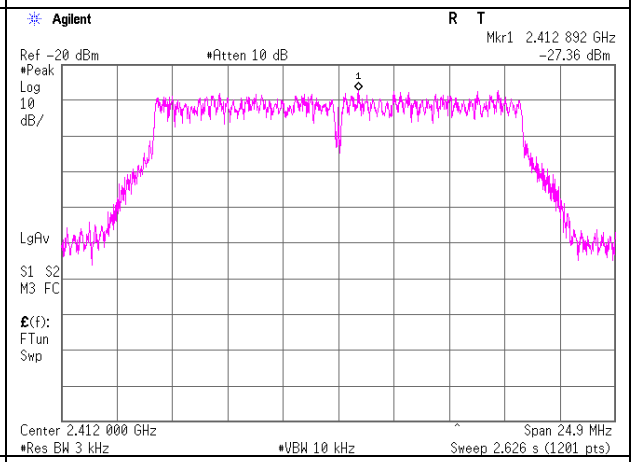
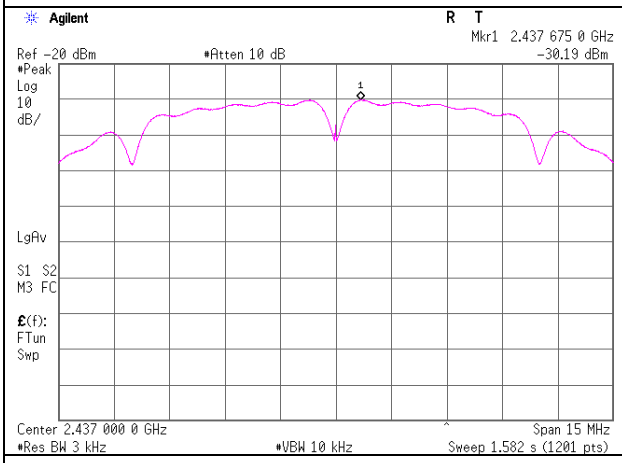
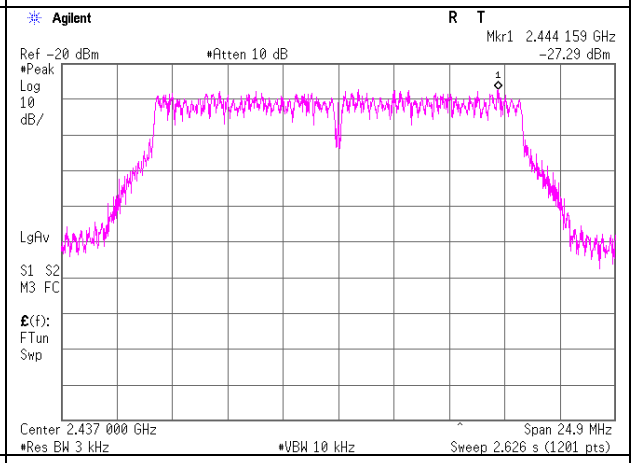
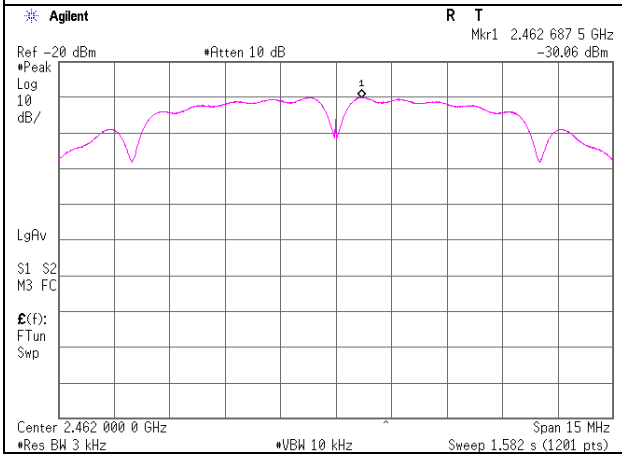
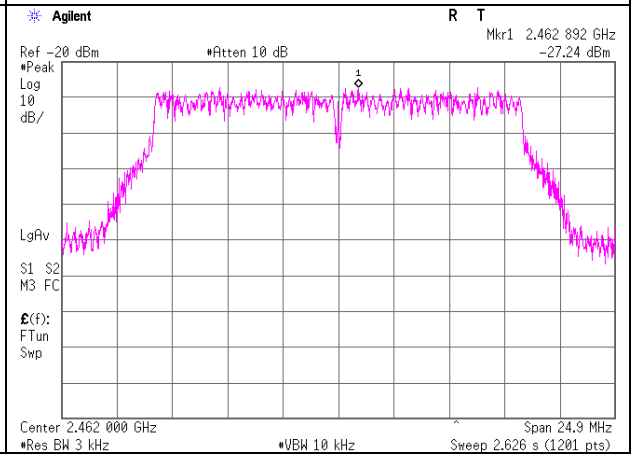
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-27.36	1.39	10.01	-15.96	8.00	23.96
2437.00	-27.29	1.39	10.01	-15.89	8.00	23.89
2462.00	-27.24	1.39	10.01	-15.84	8.00	23.84

11g

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-29.57	1.39	10.01	-18.17	8.00	26.17
2437.00	-29.81	1.39	10.01	-18.41	8.00	26.41
2462.00	-28.67	1.39	10.01	-17.27	8.00	25.27

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

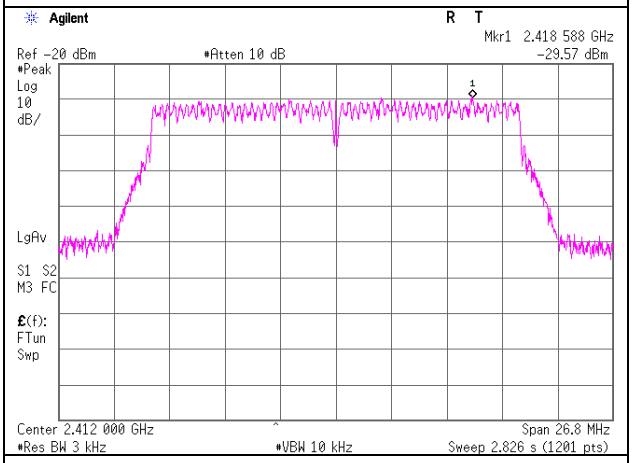
Power Density

11b	11g
2412MHz	2412MHz
	
2437MHz	2437MHz
	
2462MHz	2462MHz
	

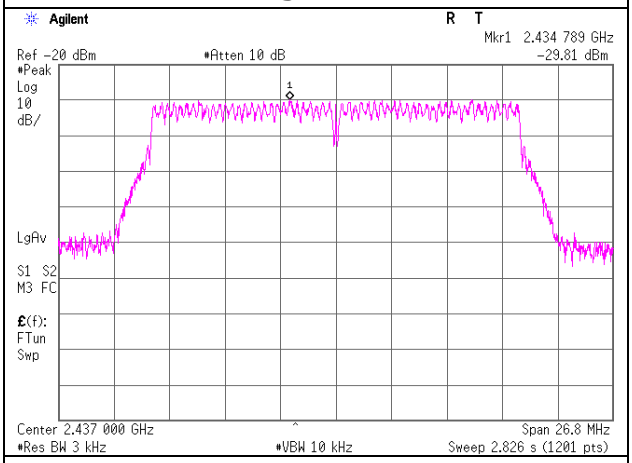
Power Density

11n-20

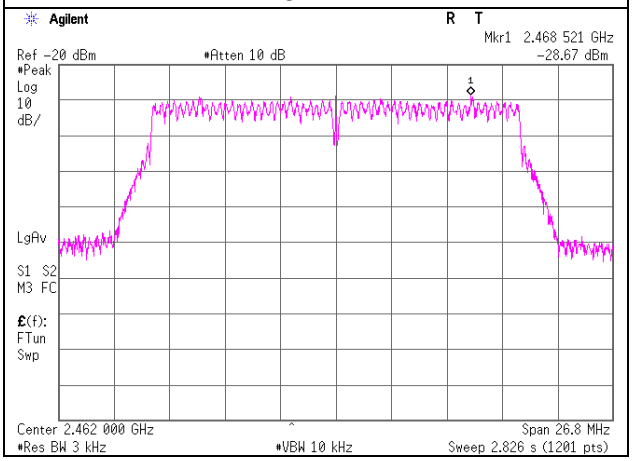
2412MHz



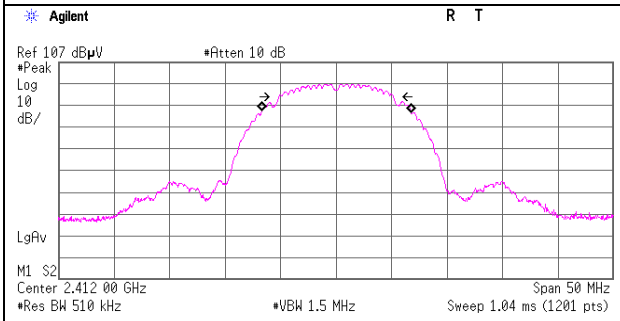
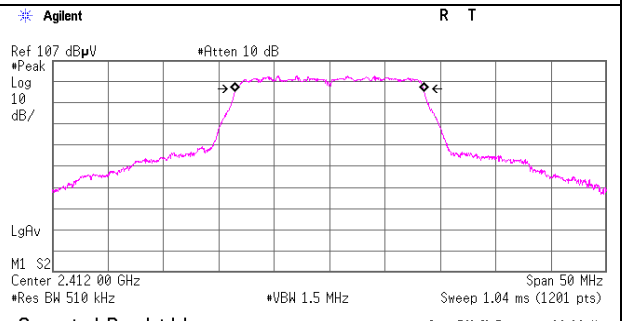
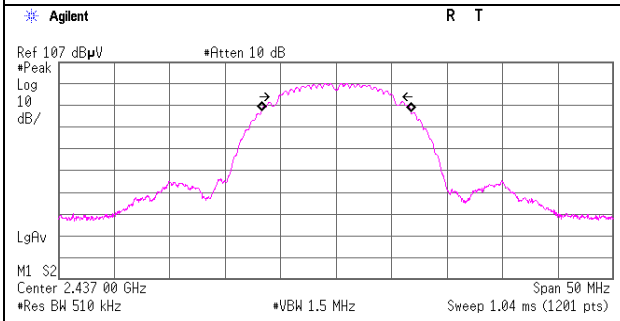
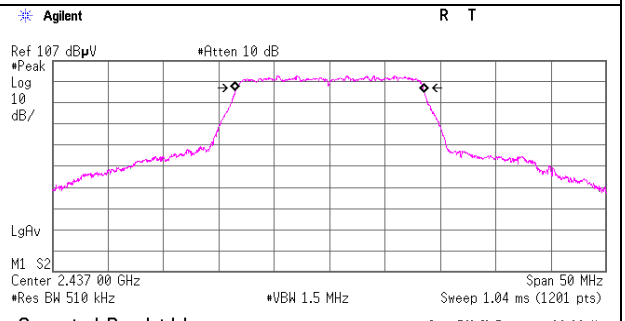
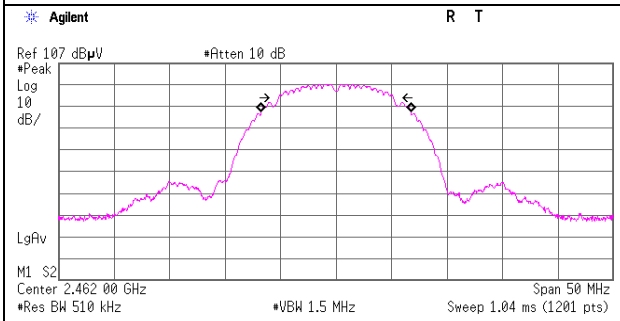
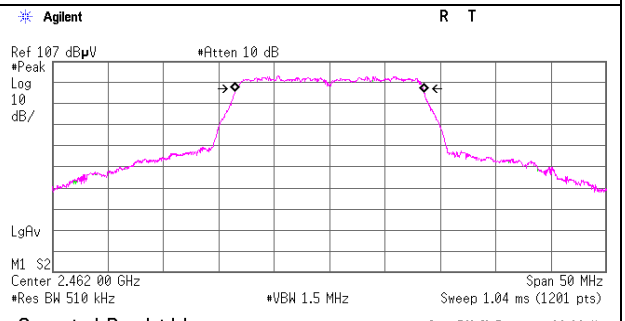
2437MHz



2462MHz



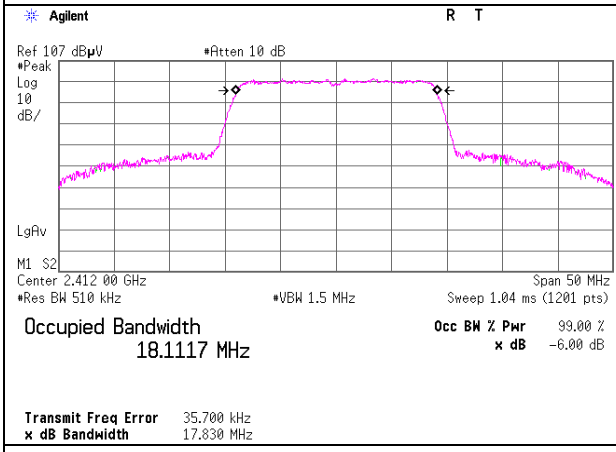
99%Occupied Bandwidth

11b	11g
2412MHz	**2412MHz**
	
2437MHz	**2437MHz**
	
2462MHz	**2462MHz**
	

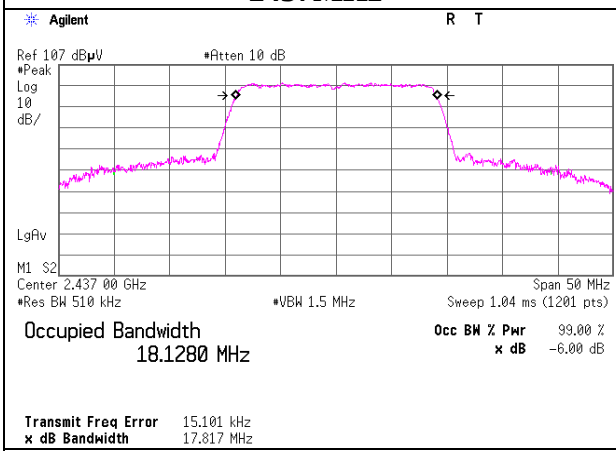
99% Occupied Bandwidth

11n-20

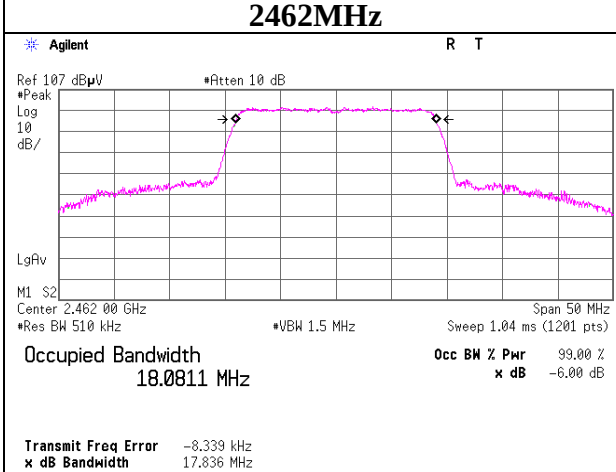
2412MHz



2437MHz



2462MHz



APPENDIX 2: Test instruments

EMI test equipment (1/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAT-24	Attenuator(10dB)(above1GHz)	Agilent	8493C	71389	AT	2013/06/05 * 12
MPM-12	Power Meter	Anritsu	ML2495A	0825002	AT	2013/06/12 * 12
MPSE-17	Power sensor	Anritsu	MA2411B	0738285	AT	2013/06/12 * 12
MAT-25	Attenuator(10dB)(above1GHz)	Agilent	8493C	71642	AT	2013/06/20 * 12
MCC-144	Microwave Cable	Junkosha	MWX221	1207S407	AT	2013/08/19 * 12
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE	2013/06/30 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE/AT	2013/02/26 * 12
MJM-14	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE/AT	2013/02/22 * 12
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2013/02/15 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2013/01/10 * 12
MCC-132	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336161/4(1m) / 340639(5m)	RE	2012/09/05 * 12
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2013/05/30 * 12
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2013/02/28 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	RE	2013/02/26 * 12
MJM-09	Measure	KDS	E19-55	-	RE	-
MCC-141	Microwave Cable	Junkosha	MWX221	1305S002R(1m) / 1204S062(5m)	RE	2013/05/28 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2013/03/19 * 12
MHA-17	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170307	RE	2013/06/30 * 12
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE/CE	2013/02/28 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE/CE	2013/02/26 * 12
MJM-16	Measure	KOMELON	KMC-36	-	RE/CE	-
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE/CE	2012/11/20 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE/CE	2013/08/20 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2012/10/08 * 12

EMI test equipment (2/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2012/10/08 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2013/07/23 * 12
MAT-70	Attenuator(6dB)	Agilent	8491A-006	MY52460153	RE	2013/04/05 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2013/03/12 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(AE)	2013/01/07 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(EUT)	2013/01/07 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2013/01/21 * 12
MCC-112	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W(10m)/SFM141(3m)/sucoform141-PE(1m)/421-010(1.5m)/RFM-E321(Switcher)	-/00640	CE	2013/07/23 * 12
MAT-66	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2013/01/22 * 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: CE: Conducted Emission
RE: Radiated Emission
AT: Antenna Terminal Conducted test