RADIO TEST REPORT

Test Report No. : 32KE0041-HO-02-A-R2

Applicant	:	**Sony Corporation**
Type of Equipment	:	**Personal Computer**
Model No.	:	**SVD112A1WL**
FCC ID	:	**AK8SVD112A1WL**
Test regulation	:	**FCC Part 15 Subpart C: 2012**
Test Result	:	**Complied**

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6. This report is a revised version of 32KE0041-HO-02-A-R1. 32KE0041-HO-02-A-R1 is replaced with this report.

Date of test: July 23 to August 2, 2012

Representative test engineer:
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NVLAP LAB CODE: 200572-0

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SECTION 1: Customer information

Company Name	:	Sony Corporation
Address	:	1-7-1 Konan, Minato-ku, Tokyo, 399-8282 Japan
Telephone Number	:	+81-263-71-8272
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Contact Person	:	Yuichi Kosaka

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

2.1 Identification of E.U.T.

Type of Equipment	:	Personal Computer
Model No.	:	SVD112A1WL
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 10.5V, 4.3A
Receipt Date of Sample	:	July 7, 2012
Country of Mass-production	:	Japan
Condition of EUT	:	Production 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

General Specification

Feature of EUT	:	This model is co-located with Wireless LAN(IEEE802.11a/b/g/n)/ Bluetooth module, NFC Module and stylus. Each antenna is included in the Personal computer. This model can co-operate Wireless LAN(IEEE802.11a) + Bluetooth + NFC + stylus.
Clock frequency(ies) in the system	:	12MHz, 25MHz

Radio Specification

Specification of Wireless LAN (IEEE802.11a/b/g) and Bluetooth

Type of radio	Wireless LAN (IEEE802.11a)	Wireless LAN (IEEE802.11b/g)	Bluetooth (EDR/BDR/LE)
Equipment Type	Transceiver		
Frequency of Operation	**Low Band** Lower frequency=5180MHz Upper frequency=5320MHz **High Band** Lower frequency=5500MHz Upper frequency=5700MHz **Upper Band** Lower frequency=5745MHz Upper frequency=5825MHz	Lower frequency=2412MHz Upper frequency=2462MHz	Lower frequency=2402MHz Upper frequency=2480MHz
Bandwidth & Channel spacing	Bandwidth: 20MHz Ch spacing: 20MHz	Bandwidth: 20MHz Ch spacing: 5MHz	Bandwidth: 1MHz Ch spacing: 1MHz (EDR/BDR), 2MHz (LE)
Type of Modulation	OFDM	11b: DSSS 11g: OFDM	EDR/BDR: GFSK, π/4DQPSK, 8DPSK LE: GFSK
Antenna Type	PIFA (Internal)		
Antenna Connector Type	U.FL compatible connector		
Antenna Gain	Antenna 1: +1.95dBi (2.4GHz) +1.83dBi (5GHz) Antenna 2: +1.20dBi (2.4GHz) +2.33dBi (5GHz) (Including Cableloss)		+1.20dBi
Power Supply	DC 3.3V		
Operating temperature range	+5 to +35 deg. C.		

Specification of Wireless LAN (IEEE802.11n)

Type of radio	Wireless LAN (IEEE802.11n)			
	2.4G Band MISO / MIMO (20M Band)	2.4G Band MISO / MIMO (40M Band)	5G Band MISO / MIMO (20M Band)	5G Band MISO / MIMO (40M Band)
Equipment Type	Transceiver			
Frequency of Operation	Lower frequency =2412MHz Upper frequency =2462MHz	Lower frequency =2422MHz Upper frequency =2452MHz	**Low Band** Lower frequency=5180MHz Upper frequency=5320MHz **High Band** Lower frequency=5500MHz Upper frequency=5700MHz **Upper Band** Lower frequency=5745MHz Upper frequency=5825MHz	**Low Band** Lower frequency=5190MHz Upper frequency=5310MHz **High Band** Lower frequency=5510MHz Upper frequency=5670MHz **Upper Band** Lower frequency=5755MHz Upper frequency=5795MHz
Bandwidth & Channel spacing	Bandwidth: 20MHz Ch spacing: 5MHz	Bandwidth: 40MHz Ch spacing: 5MHz	Bandwidth: 20MHz Ch spacing: 20MHz	Bandwidth: 40MHz Ch spacing: 40MHz
Type of Modulation	OFDM			
Antenna Type	PIFA (Internal)			
Antenna Connector Type	U.FL compatible connector			
Antenna Gain	Antenna 1: +1.95dBi (2.4GHz) +1.83dBi (5GHz) Antenna 2: +1.20dBi (2.4GHz) +2.33dBi (5GHz) (Including Cableloss)			
Power Supply	DC 3.3V			
Operating temperature range	+5 to +35 deg. C.			

*This test report applies for Wireless LAN (IEEE802.11b/g/a/n-20/n-40).

*Wireless LAN (IEEE802.11a/n, 5G Band) and Bluetooth transmit simultaneously by Antenna 2. The co-location and co-operation are tested in this test report.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C: 2012, final revised on July 23, 2012 and effective August 22, 2012
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 July 23, 2012 does not affect the test specification applied to the EUT.

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** 4.8dB, 0.15000MHz, L **AV** 8.0dB, 0.50426MHz, N	Complied	-
	IC: RSS-Gen 7.2.4	**IC:** RSS-Gen 7.2.4			
6dB Bandwidth	**FCC:** "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247"	**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 on Measurement of Digital Transmission Systems Operating under Section15.247"	**FCC:** Section 15.247(b)(3)		Complied	Conducted
	IC: RSS-Gen 4.8	**IC:** RSS-210 A8.4(4)			
Power Density	**FCC:** "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247"	**FCC:** Section 15.247 (e)		Complied	Conducted
	IC: -	**IC:** RSS-210 A8.2(b)			
Spurious Emission Restricted Band Edges	**FCC:** "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247"	**FCC:** Section15.247(d)	5.3dB 2483.500MHz, AV, Vert.	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(DC3.3V) 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
Co-location & Co-operation (Confirmation testing for Radiated Spurious Emission at simultaneous transmission)	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(d) RSS-210 A8.5	6.5dB 484.032MHz, Vertical, QP	Complied	Radiated

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 (10m*)(±dB)**		
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz
No.1	4.2dB	5.0dB	4.8dB
No.2	-	-	-
No.3	-	-	-
No.4	-	-	-

*10m = Measurement distance

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
1.0dB	1.0dB

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	
1.0dB	1.1dB	2.7dB	3.2dB	3.3dB	1.5dB

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 test report has enough margin, more than the site margin.

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 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 6 802.11 a/b/g/n testing- Managing Complex Regulatory Approvals - " of TCB Council Workshop October 2009.

Mode	Remarks*
IEEE 802.11a (11a)	6Mbps, PN9
IEEE 802.11b (11b)	1Mbps, PN9
IEEE 802.11g (11g)	6Mbps, PN9
IEEE 802.11n MIMO 20MHz BW (11n-20)	2.4GHz: MCS 8 (Long GI, 2 Streams), PN9 5GHz: MCS 12 (Long GI, 2 Streams), PN9
IEEE 802.11n MIMO 40MHz BW (11n-40)	2.4GHz: MCS 8 (Short GI, 2 Streams), PN9 5GHz: MCS 12 (Short GI, 2 Streams), PN9
*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; Software: DRTU Ver.1.5.3-0335 Power settings: Refer to the following table. *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.	

Power settings 2.4GHz (Tested power setting was tuned by software to produce a Target Power*.)

Operation	Antenna	Rate *1)	Frequency	Power Setting	Target Power*
11b	Port 1	1Mbps	2412MHz	14	14
			2437MHz	14.5	14.5
			2462MHz	14.5	14.5
11g	Port 1	6Mbps	2412MHz	12.5	12.5
			2437MHz	15	15
			2462MHz	12.5	12.5
11n MISO 20Mband	Port 1	MCS0 (LongGI)	2412MHz	11.5	11.5
			2437MHz	15.5	15
			2462MHz	11	11
11n MISO 40Mband	Port 1	MCS0 (ShortGI)	2422MHz	8.5	15
			2437MHz	12	15
			2452MHz	8	15
11n MIMO 20Mband	Port 1 + 2	MCS8 (LongGI)	2412MHz	11	11
			2437MHz	12.5	12
			2462MHz	10	10
11n MIMO 40Mband	Port 1 + 2	MCS8 (ShortGI)	2422MHz	7	12
			2437MHz	11.5	12
			2452MHz	7.5	12

*Target Power (Target power = Maximum specification power (Average Power from Antenna terminal))

*1) The test was performed with low rate according to the customer's request.

Power settings 5GHz (Tested power setting was tuned by software to produce a Target Power*.)

Operation	Band	Antenna	Frequency		Power Setting	Target Power*
11a	Low-Low	Port 2	MCS6	5180MHz	13.5	14
				5220MHz	14.5	14.5
				5240MHz	14.5	14.5
	Low-High	Port 2	MCS6	5260MHz	14.5	14.5
				5300MHz	14.5	14.5
				5320MHz	14.5	14.5
	High	Port 2	MCS6	5500MHz	13.5	14.5
				5580MHz	14	14.5
				5700MHz	14.5	14.5
	Upper	Port 2	MCS6	5745MHz	15	14.5
				5785MHz	15	14.5
				5825MHz	15.5	14.5
11n 20Mband MISO/MIMO	Low-Low	Port 2/ Port 1&2	MCS0/MCS8	5180MHz	13/11.5	13.5/11.5
				5220MHz	14.5/12.5	14.5/11.5
				5240MHz	14.5/12.5	14.5/11.5
	Low-High	Port 2/ Port 1&2	MCS0/MCS8	5260MHz	14.5/12	14.5/11.5
				5300MHz	14.5/13	14.5/12
				5320MHz	14/12.5	14/12
	High	Port 2/ Port 1&2	MCS0/MCS8	5500MHz	14/12.5	14.5/12
				5580MHz	14/12	14.5/11.5
				5700MHz	14.5/13	14.5/12
	Upper	Port 2/ Port 1&2	MCS0/MCS8	5745MHz	14.5/12	14.5/11.5
				5785MHz	15/12.5	14.5/11.5
				5825MHz	15.5/13	14.5/11.5
11n 40Mband MISO/MIMO	Low-Low	Port 2/ Port 1&2	MCS0/MCS8	5190MHz	10.5/9	10/8
				5230MHz	14.5/13.5	14/12
	Low-High	Port 2/ Port 1&2	MCS0/MCS8	5270MHz	14.5/13.5	14/12
				5310MHz	11.5/10	10.5/8.5
	High	Port 2/ Port 1&2	MCS0/MCS8	5510MHz	13/11.5	13/11
				5550MHz	14.5/12.5	14.5/11.5
				5670MHz	14.5/13	14.5/11.5
	Upper	Port 2/ Port 1&2	MCS0/MCS8	5755MHz	15.5/13	14.5/11.5
				5795MHz	15.5/13	14.5/11.5

*Target Power (Target power = Maximum specification power (Average Power from Antenna terminal))

** The test was performed with the worst rate according to the customer's request.

*The details of Operating mode(s)

Test Item	Operating Mode	Tested Antenna	Tested frequency
Spurious Emission (Radiated)	11b Tx	Antenna 1	2412MHz 2437MHz 2462MHz
	11n-20 Tx	Antenna 1&2	2412MHz 2437MHz 2462MHz
	11n-40 Tx	Antenna 1&2	2422MHz 2437MHz 2452MHz
6dB Bandwidth	11b Tx 11g Tx 11n-20 Tx	Antenna port 1	2412MHz 2437MHz 2462MHz
	11n-40 Tx	Antenna port 1	2422MHz 2437MHz 2452MHz
Maximum Peak Output Power	11b Tx 11g Tx	Antenna port 1 Antenna port 2	2412MHz 2437MHz 2462MHz
	11n-20 Tx	Antenna port 1 Antenna port 2 Antenna port 1&2	2412MHz 2437MHz 2462MHz
	11n-40 Tx	Antenna port 1 Antenna port 2 Antenna port 1&2	2422MHz 2437MHz 2452MHz
Power Density	11b Tx 11g Tx	Antenna port 1	2412MHz 2437MHz 2462MHz
	11n-20 Tx	Antenna port 1 Antenna port 2 Antenna port 1&2	2412MHz 2437MHz 2462MHz
	11n-40 Tx	Antenna port 1 Antenna port 2 Antenna port 1&2	2422MHz 2437MHz 2452MHz
99% Occupied Bandwidth	11b Tx 11g Tx 11n-20 Tx	Antenna port 1	2412MHz 2437MHz 2462MHz
	11n-40 Tx	Antenna port 1	2422MHz 2437MHz 2452MHz
Spurious Emission (Conducted)	11b Tx 11g Tx 11n-20 Tx	Antenna 1	2412MHz 2437MHz 2462MHz
	11n-40 Tx	Antenna 1	2422MHz 2437MHz 2452MHz

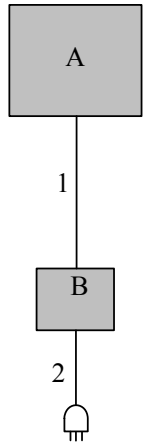
* Conducted emission and Spurious emission (Radiated)(Below 1GHz) tests were performed on 11n-40(MIMO) 5755MHz mode as the representative, because above modes and channels was the highest power.

*The details of Operating mode(s)

Test Item	Operating Mode	Tested Antenna	Tested frequency
Conducted Emission	11n-40 Tx	Antenna 1&2	5755MHz
Spurious Emission (Radiated)	11n-20 Tx	Antenna 1&2	5745MHz 5785MHz 5825MHz
	11n-40 Tx (Simultaneously)	Antenna 1&2	5755MHz 5795MHz
6dB Bandwidth	11a Tx	Antenna port 2	5745MHz 5785MHz 5825MHz
	11n-20 Tx	Antenna port 1	5745MHz 5785MHz 5825MHz
	11n-40 Tx	Antenna port 2	5755MHz 5795MHz
Maximum Peak Output Power	11a Tx	Antenna port 1 Antenna port 2	5745MHz 5785MHz 5825MHz
	11n-20 Tx	Antenna port 1 Antenna port 2 Antenna port 1&2	5745MHz 5785MHz 5825MHz
	11n-40 Tx	Antenna port 1 Antenna port 2 Antenna port 1&2	5755MHz 5795MHz
Power Density	11a Tx	Antenna port 2	5745MHz 5785MHz 5825MHz
	11n-20 Tx	Antenna port 1 Antenna port 2 Antenna port 1&2	5745MHz 5785MHz 5825MHz
	11n-40 Tx	Antenna port 1 Antenna port 2 Antenna port 1&2	5755MHz 5795MHz
99% Occupied Bandwidth	11a Tx	Antenna port 2	5745MHz 5785MHz 5825MHz
	11n-20 Tx	Antenna port 1	5745MHz 5785MHz 5825MHz
	11n-40 Tx	Antenna port 2	5755MHz 5795MHz
Spurious Emission (Conducted)	11a Tx	Antenna port 2	5745MHz 5785MHz 5825MHz
	11n-20 Tx	Antenna port 1	5745MHz 5785MHz 5825MHz
	11n-40 Tx	Antenna port 2	5755MHz 5795MHz

* Conducted emission and Spurious emission (Radiated)(Below 1GHz) tests were performed on 11n-40(MIMO) 5755MHz mode as the representative, because above modes and channels was the highest power.

4.2 Configuration and peripherals



AC 120V/60Hz

* Cabling and setup 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	Personal Computer	SVD112A1WL	XTA2-1 3 *1) XTD2-2 12 *2)	Sony Corporation	EUT
B	AC Adapter	VGP-AC10V8	1490488110000393	Sony Corporation	EUT

*1) Used for Conducted emission and Radiated emission tests
*2) Used for Antenna terminal conducted test

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC Cable	1.7	Unshielded	Unshielded	-
2	AC Cable	1.5	Unshielded	Unshielded	-

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 AV
Measurement range : 0.15-30MHz
Test data : APPENDIX
Test result : Pass

SECTION 6: Radiated Spurious Emission

Test Procedure

[Below 30MHz]

Frequency : From 9kHz to 30MHz at distance 3m

The EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
The measurements were performed for vertical polarization (antenna angle: 90deg.) and horizontal polarization.
*Refer to Figure 1 about Direction of the Loop Antenna.

[Above 30MHz]

It was measured based on "2. Radiated emission test" of "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247 ".
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	PK
IF Bandwidth	BW 120kHz(T/R)	RBW: 1MHz VBW: 3MHz	RBW: 1MHz VBW: 10Hz *1) or VBW: 430Hz or 1kHz or 2.2kHz or 5.1kHz or 9.1kHz *1)	RBW: 100kHz VBW: 300kHz (S/A)
Test Distance	3m	3m (below 10GHz), 1m*2) (above 10GHz)		3m (below 10GHz), 1m*2) (above 10GHz)

*1) Used for the band edge of the carrier and the harmonics that can be measured. The VBW is based on the inverse of the Tx on (see Appendix).
*2) Distance Factor: 20 x log (3.0m/1.0m) = 9.5dB

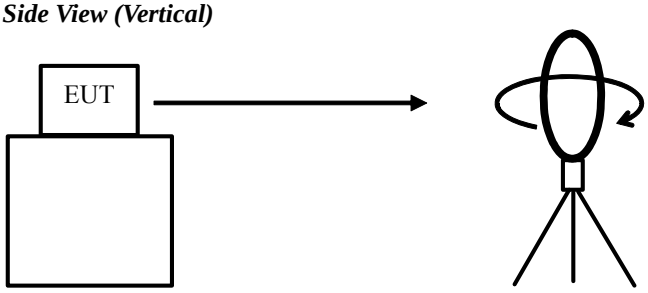
- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

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

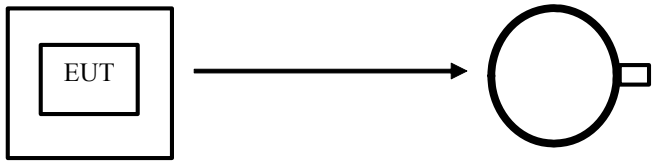
Measurement range : 9kHz-26.5GHz
Test data : APPENDIX
Test result : Pass

Figure 1: Direction of the Loop Antenna

Side View (Vertical)

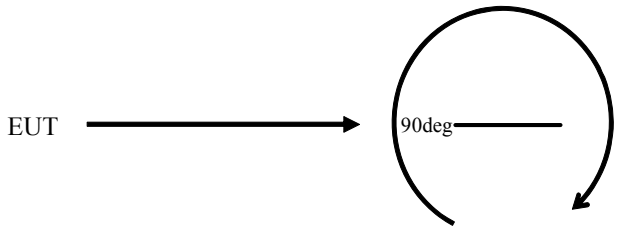


Top View (Horizontal)



Antenna was not rotated.

Top View (Vertical)



Front side: 0 deg.
Forward direction: clockwise

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 *4)	-	Power Meter (Sensor: 50MHz BW)
Peak Power Density	20MHz	30kHz	100kHz	1334ksec(11n-40) 667sec(other)	Peak	Max Hold	Spectrum Analyzer *1) *2)
Conducted Spurious Emission *3)	9kHz to 150kHz	200Hz	620Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz to 30MHz	9.1kHz	27kHz				
	30MHz to 25GHz (Less or equal to 5GHz)	100kHz	300kHz				

*1) PSD Option 1 of "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247 ".
*2) The test was not performed at RBW:3kHz however the measurement is to be performed with RBW:3kHz in the regulation, because, the measurement value with RBW:3kHz is less than the value of RBW:30kHz and the test data met the limit with RBW:30kHz.
*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).
*4) Testing using an average detector was performed in order to confirm that the output power of the EUT met the exclusion limits stated in FCC Part 2 Section 2.1093 and FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET 65 and the EUT was exempt from RF exposure SAR evaluation.

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

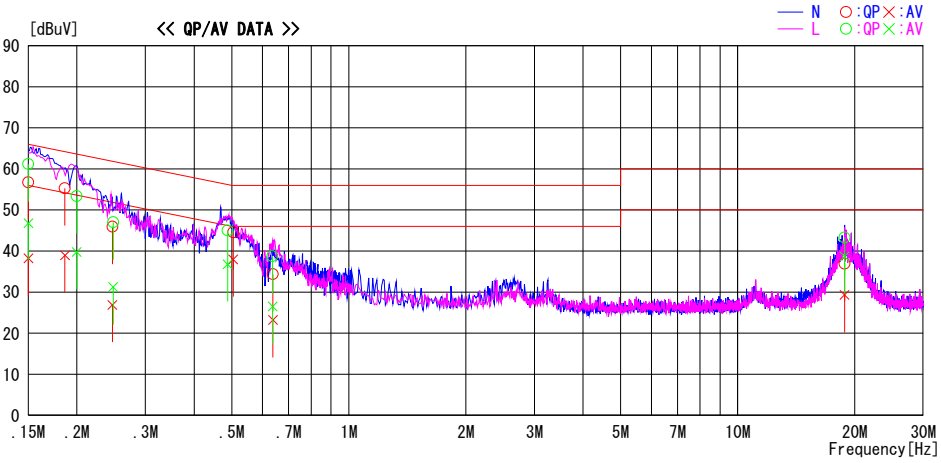
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2012/07/23

Report No. : 32KE0041-HO-02
Power : AC 120V / 60Hz
Temp./Humi. : 24 deg.C / 62% RH
Engineer : Takumi Shimada

Mode / Remarks : 11n40 MIMO 5755MHz MCS12(ShortGI)

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]		
0.15000	43.4	24.9	13.3	56.7	38.2	66.0	56.0	9.3	17.8	N	
0.18635	42.0	25.7	13.3	55.3	39.0	64.2	54.2	8.9	15.2	N	
0.24677	32.6	13.6	13.3	45.9	26.9	61.9	51.9	16.0	25.0	N	
0.50426	31.3	24.7	13.3	44.6	38.0	56.0	46.0	11.4	8.0	N	
0.63829	21.1	9.9	13.3	34.4	23.2	56.0	46.0	21.6	22.8	N	
18.82388	22.3	14.7	14.6	36.9	29.3	60.0	50.0	23.1	20.7	N	
0.15000	47.9	33.5	13.3	61.2	46.8	66.0	56.0	4.8	9.2	L	
0.19962	40.1	26.5	13.3	53.4	39.8	63.6	53.6	10.2	13.8	L	
0.24796	33.7	17.9	13.3	47.0	31.2	61.8	51.8	14.8	20.6	L	
0.48781	31.7	23.5	13.3	45.0	36.8	56.2	46.2	11.2	9.4	L	
0.63688	25.4	13.2	13.3	38.7	26.5	56.0	46.0	17.3	19.5	L	
18.82348	28.7	24.1	14.6	43.3	38.7	60.0	50.0	16.7	11.3	L	

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

UL Japan, Inc.
Head Office EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116
Facsimile : +81 596 24 8124

6dB Bandwidth

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/01/2012
Temperature/ Humidity	24 deg.C/ 64% RH
Engineer	Satofumi Matsuyama
Mode	Tx

11b

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	9.773	>500
2437	10.085	>500
2462	10.078	>500

11g

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	15.119	>500
2437	15.121	>500
2462	15.060	>500

11n-20

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	17.539	>500
2437	17.532	>500
2462	17.541	>500

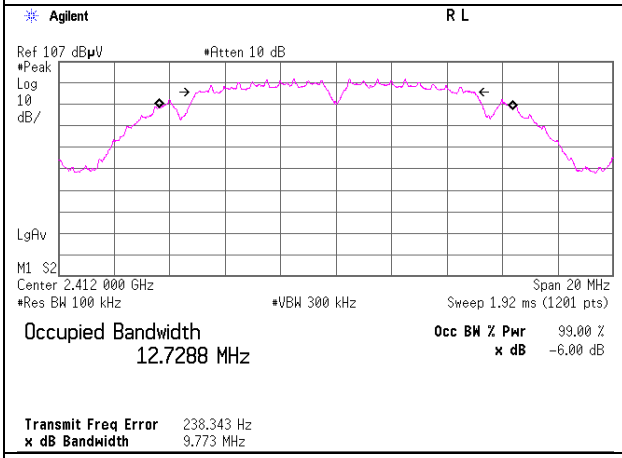
11n-40

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2422	35.648	>500
2437	35.391	>500
2452	35.406	>500

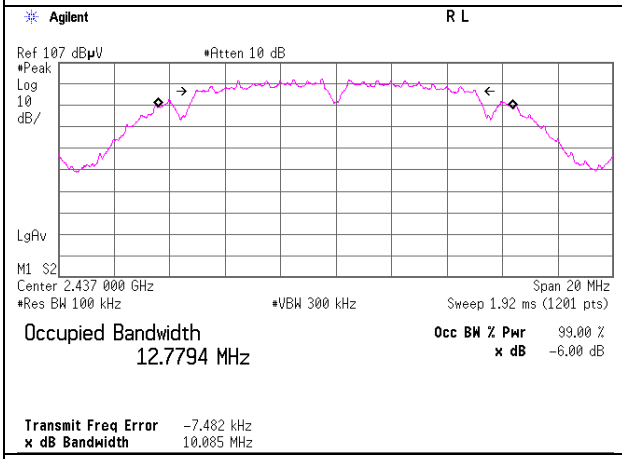
6dB Bandwidth

11b Antenna port 1

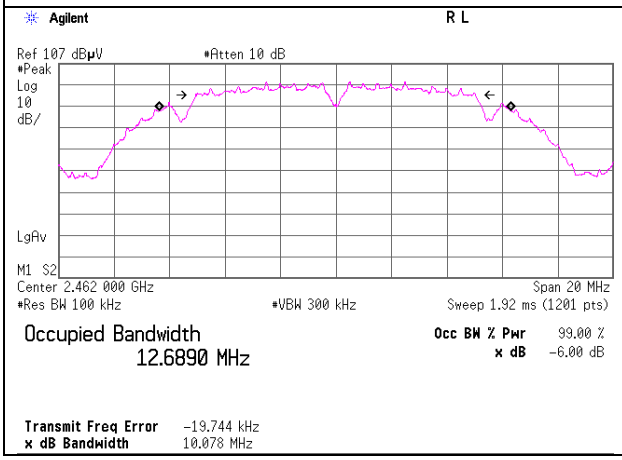
2412MHz



2437MHz

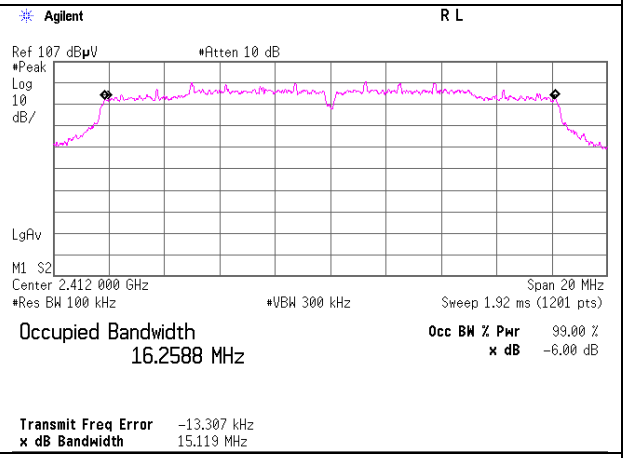


2462MHz

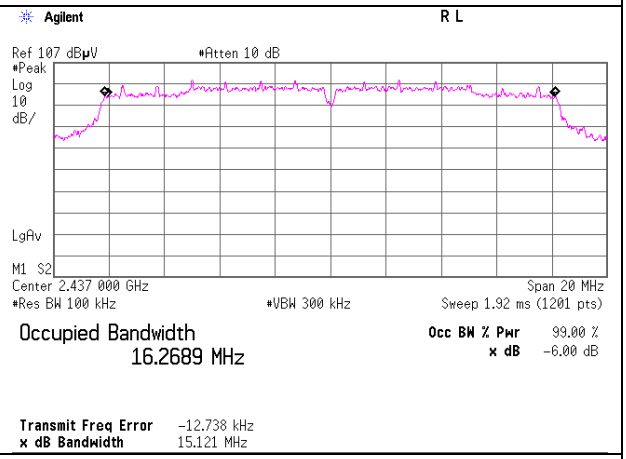


11g Antenna port 1

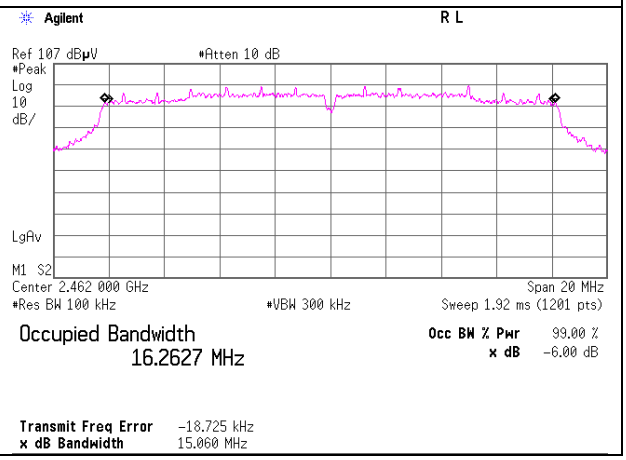
2412MHz



2437MHz



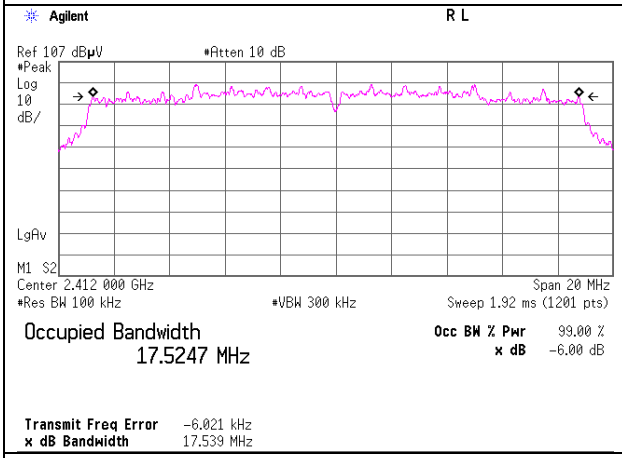
2462MHz



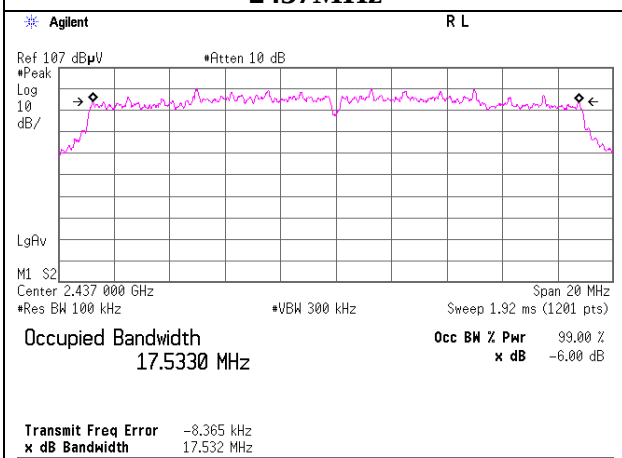
6dB Bandwidth

11n-20 Antenna port 1

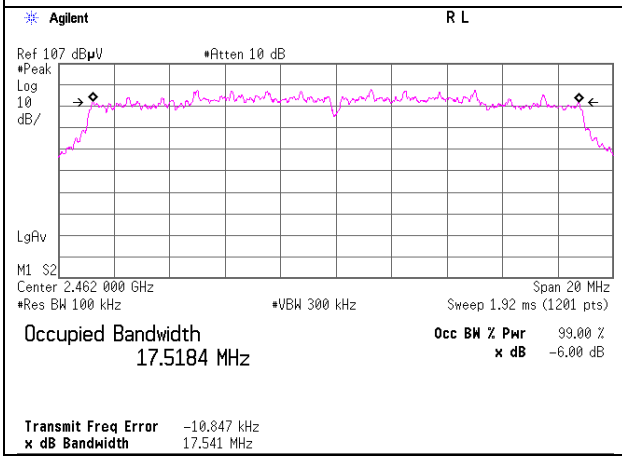
2412MHz



2437MHz

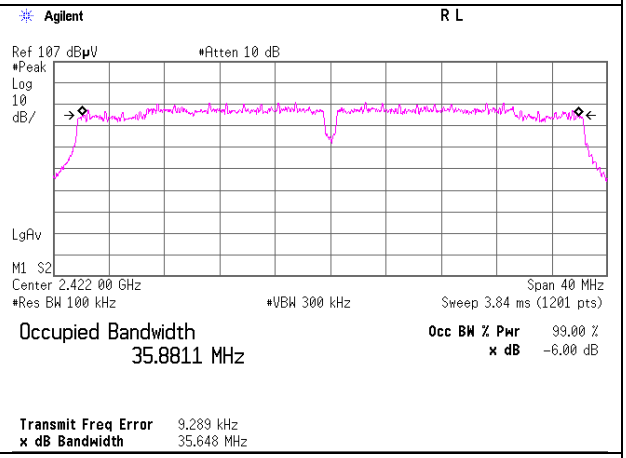


2462MHz

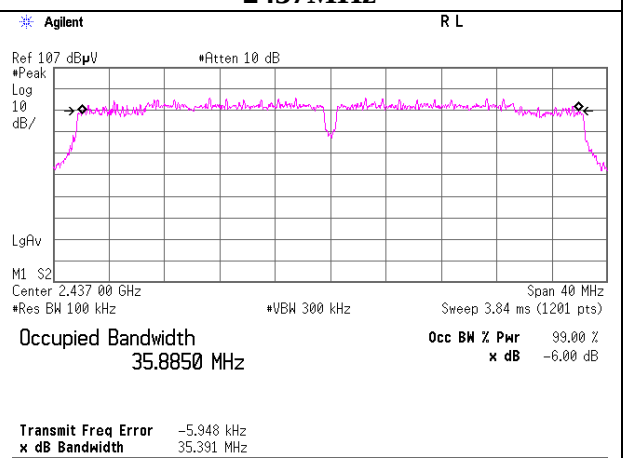


11n-40 Antenna port 1

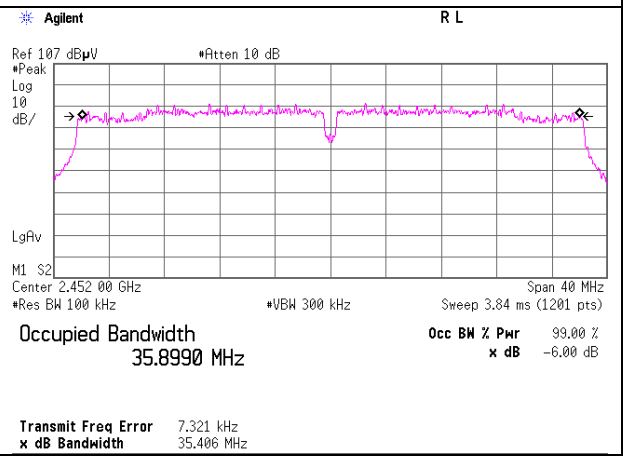
2422MHz



2437MHz



2452MHz



6dB Bandwidth

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/02/2012
Temperature/ Humidity	25 deg.C/ 62% RH
Engineer	Satofumi Matsuyama
Mode	Tx

11a

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
5745	16.334	>500
5785	16.330	>500
5825	16.349	>500

11n-20

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
5745	17.616	>500
5785	17.594	>500
5825	17.627	>500

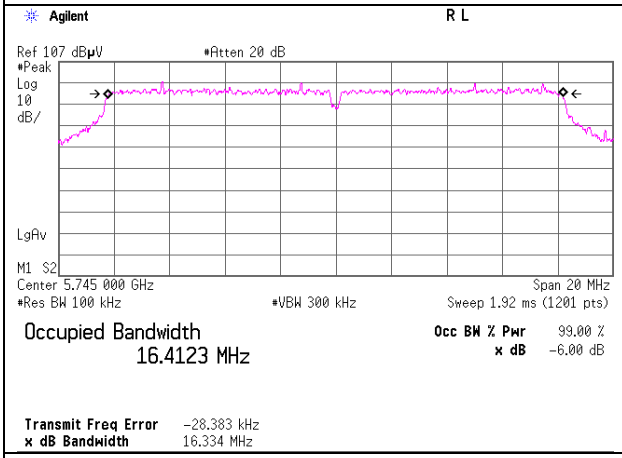
11n-40

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
5755	35.119	>500
5795	35.146	>500

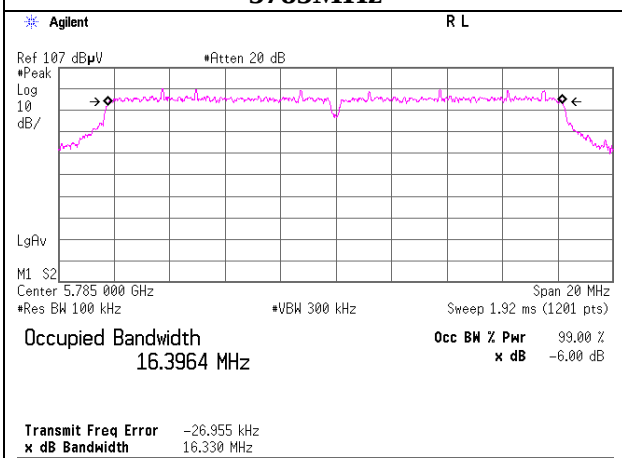
6dB Bandwidth

11a Antenna port 2

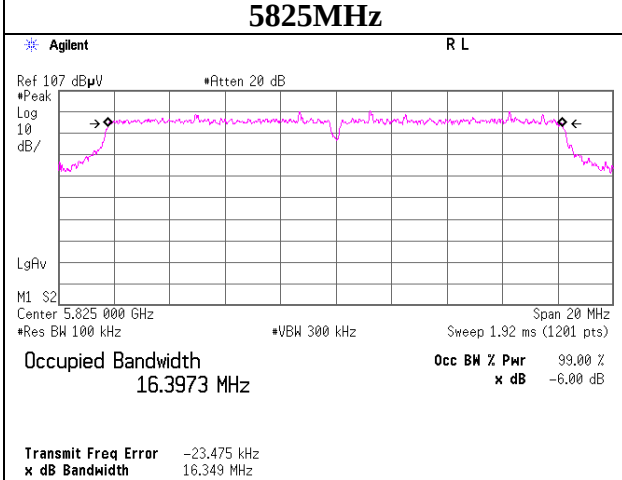
5745MHz



5785MHz

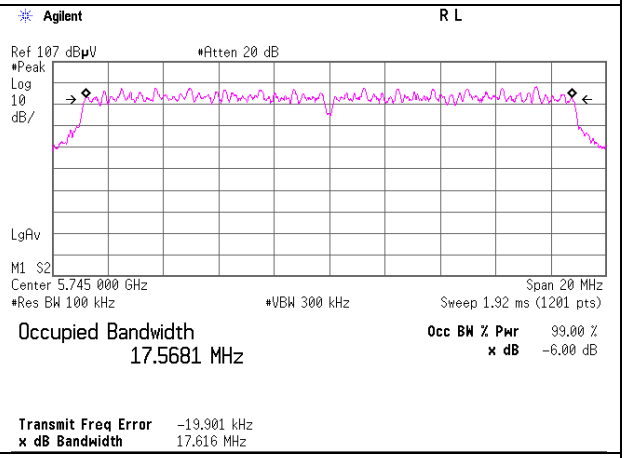


5825MHz

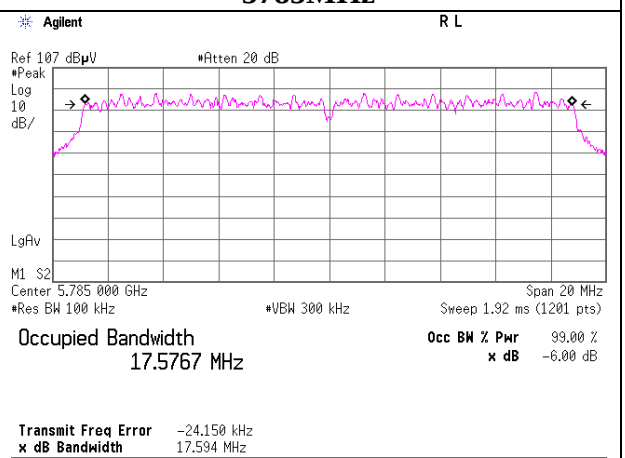


11n-20 Antenna port 1

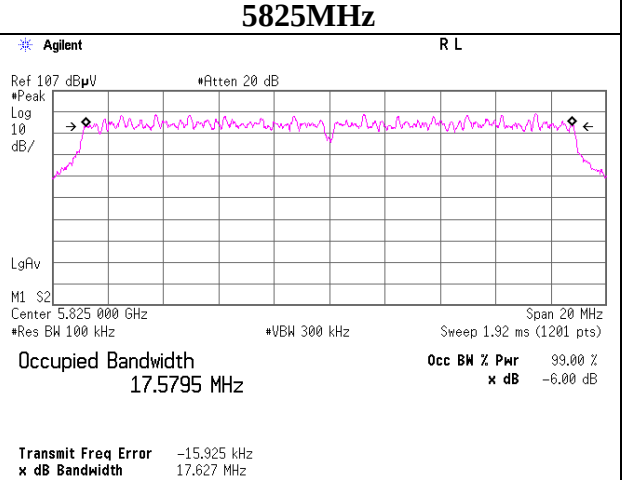
5745MHz



5785MHz



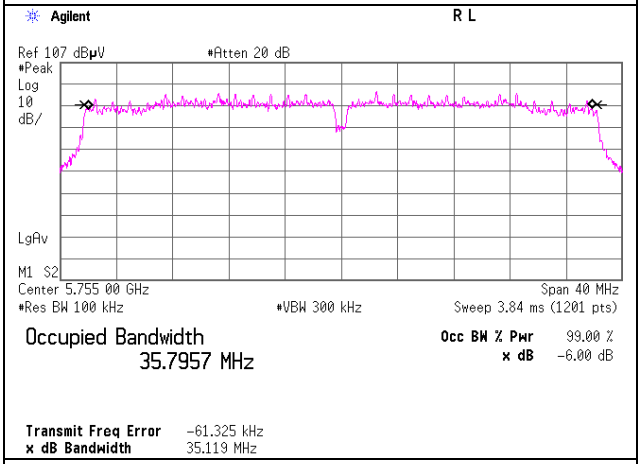
5825MHz



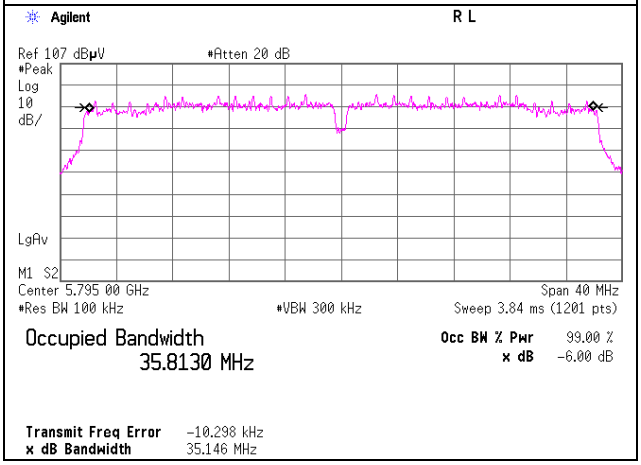
6dB Bandwidth

11n-40 Antenna port 2

5755MHz



5795MHz



Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/01/2012
Temperature/ Humidity	24 deg.C/ 64% RH
Engineer	Satofumi Matsuyama
Mode	11b Tx

Antenna port 1

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	5.95	1.20	10.00	17.15	51.87	30.00	1000	12.85
2437	6.55	1.22	10.00	17.77	59.85	30.00	1000	12.23
2462	6.36	1.33	10.00	17.69	58.74	30.00	1000	12.31

Antenna port 2

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	5.97	1.32	10.00	17.29	53.59	30.00	1000	12.71
2437	5.86	1.35	10.00	17.21	52.56	30.00	1000	12.79
2462	5.68	1.45	10.00	17.13	51.67	30.00	1000	12.87

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

Antenna port 1, 2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
1	6.55	*
2	6.48	
5.5	6.40	
11	6.52	

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/01/2012
Temperature/ Humidity	24 deg.C/ 64% RH
Engineer	Satofumi Matsuyama
Mode	11g Tx

Antenna port 1

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	10.34	1.20	10.00	21.54	142.53	30.00	1000	8.46
2437	10.83	1.22	10.00	22.05	160.35	30.00	1000	7.95
2462	9.93	1.33	10.00	21.26	133.63	30.00	1000	8.74

Antenna port 2

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	9.36	1.32	10.00	20.68	116.97	30.00	1000	9.32
2437	10.34	1.35	10.00	21.69	147.46	30.00	1000	8.31
2462	9.03	1.45	10.00	20.48	111.76	30.00	1000	9.52

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

Antenna port 1, 2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
6	10.83	*
9	10.75	
12	10.81	
18	10.80	
24	10.82	
36	10.79	
48	10.76	
54	10.77	

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/01/2012
Temperature/ Humidity	24 deg.C/ 64% RH
Engineer	Satofumi Matsuyama
Mode	11n-20(MISO) Tx

Antenna port 1

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	10.21	1.20	10.00	21.41	138.32	30.00	1000	8.59
2437	10.90	1.22	10.00	22.12	162.95	30.00	1000	7.88
2462	9.76	1.33	10.00	21.09	128.50	30.00	1000	8.91

Antenna port 2

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	9.18	1.32	10.00	20.50	112.22	30.00	1000	9.50
2437	10.42	1.35	10.00	21.77	150.20	30.00	1000	8.23
2462	9.07	1.45	10.00	20.52	112.79	30.00	1000	9.48

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

Antenna port 1, 2437MHz, LongGI

MCS	Reading [dBm]	Remark
0	10.90	*
1	10.84	
2	10.72	
3	10.84	
4	10.83	
5	10.78	
6	10.85	
7	10.88	

Antenna port 1, 2437MHz, ShortGI

MCS	Reading [dBm]	Remark
0	10.88	
1	10.81	
2	10.79	
3	10.79	
4	10.81	
5	10.85	
6	10.87	
7	10.85	

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/01/2012
Temperature/ Humidity	24 deg.C/ 64% RH
Engineer	Satofumi Matsuyama
Mode	11n-40(MISO) Tx

Antenna port 1

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2422	7.78	1.19	10.00	18.97	78.85	30.00	1000	11.03
2437	9.86	1.22	10.00	21.08	128.25	30.00	1000	8.92
2452	7.80	1.29	10.00	19.09	81.03	30.00	1000	10.91

Antenna port 2

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2422	7.19	1.31	10.00	18.50	70.86	30.00	1000	11.50
2437	8.81	1.35	10.00	20.16	103.67	30.00	1000	9.84
2452	6.90	1.42	10.00	18.32	67.86	30.00	1000	11.68

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

Antenna port 1, 2437MHz, LongGI

MCS	Reading [dBm]	Remark
0	9.84	
1	9.52	
2	9.57	
3	9.67	
4	9.66	
5	9.76	
6	9.77	
7	9.54	

Antenna port 1, 2437MHz, ShortGI

MCS	Reading [dBm]	Remark
0	9.86	*
1	9.55	
2	9.71	
3	9.72	
4	9.65	
5	9.77	
6	9.79	
7	9.57	

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/01/2012
Temperature/ Humidity	24 deg.C/ 64% RH
Engineer	Satofumi Matsuyama
Mode	11n-20(MIMO) Tx, MCS8(LongGI)

Antenna port 1 + 2

Freq.	Antenna port 1 Result	Antenna port 2 Result	Result		Limit		Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	99.98	90.38	22.80	190.35	30.00	1000	7.20
2437	108.66	102.72	23.25	211.38	30.00	1000	6.75
2462	75.49	97.56	22.38	173.06	30.00	1000	7.62

Sample Calculation:
Result = Antenna port 1 + 2

Antenna port 1

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	8.73	1.20	10.07	20.00	99.98	30.00	1000	10.00
2437	9.07	1.22	10.07	20.36	108.66	30.00	1000	9.64
2462	7.38	1.33	10.07	18.78	75.49	30.00	1000	11.22

Antenna port 2

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	8.24	1.32	10.00	19.56	90.38	30.00	1000	10.44
2437	8.77	1.35	10.00	20.12	102.72	30.00	1000	9.88
2462	8.44	1.45	10.00	19.89	97.56	30.00	1000	10.11

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/01/2012
Temperature/ Humidity	24 deg.C/ 64% RH
Engineer	Satofumi Matsuyama
Mode	11n-20(MIMO) Tx

2437MHz, Antenna port 1 + 2 , LongGI

MCS	Antenna port 1 Result [mW]	Antenna port 2 Result [mW]	Result [dBm]	Result [mW]	Remarks
8	108.66	102.72	23.25	211.38	*
9	105.21	102.25	23.17	207.46	
10	106.43	103.67	23.22	210.10	
11	107.91	102.96	23.24	210.87	
12	104.49	104.39	23.20	208.88	
13	108.66	100.85	23.21	209.50	
14	106.43	101.55	23.18	207.97	
15	105.70	104.39	23.22	210.09	

*: Worst Rate
Result = Antenna port 1 + 2

2437MHz, Antenna port 1 , LongGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	9.07	1.22	10.07	20.36	108.66
9	8.93	1.22	10.07	20.22	105.21
10	8.98	1.22	10.07	20.27	106.43
11	9.04	1.22	10.07	20.33	107.91
12	8.90	1.22	10.07	20.19	104.49
13	9.07	1.22	10.07	20.36	108.66
14	8.98	1.22	10.07	20.27	106.43
15	8.95	1.22	10.07	20.24	105.70

2437MHz, Antenna port 2 , LongGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	8.77	1.35	10.00	20.12	102.72
9	8.75	1.35	10.00	20.10	102.25
10	8.81	1.35	10.00	20.16	103.67
11	8.78	1.35	10.00	20.13	102.96
12	8.84	1.35	10.00	20.19	104.39
13	8.69	1.35	10.00	20.04	100.85
14	8.72	1.35	10.00	20.07	101.55
15	8.84	1.35	10.00	20.19	104.39

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/01/2012
Temperature/ Humidity	24 deg.C/ 64% RH
Engineer	Satofumi Matsuyama
Mode	11n-20(MIMO) Tx

2437MHz, Antenna port 1 + 2 , ShortGI

MCS	Antenna port 1 Result [mW]	Antenna port 2 Result [mW]	Result [dBm]	Result [mW]	Remarks
8	107.17	103.67	23.24	210.84	*
9	106.67	103.20	23.22	209.87	
10	105.45	103.43	23.20	208.89	
11	108.66	101.08	23.22	209.74	
12	105.70	102.49	23.18	208.18	
13	103.29	105.36	23.19	208.65	
14	104.73	104.87	23.21	209.60	
15	104.49	105.36	23.22	209.84	

*: Worst Rate
Result = Antenna port 1 + 2

2437MHz, Antenna port 1 , ShortGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	9.01	1.22	10.07	20.30	107.17
9	8.99	1.22	10.07	20.28	106.67
10	8.94	1.22	10.07	20.23	105.45
11	9.07	1.22	10.07	20.36	108.66
12	8.95	1.22	10.07	20.24	105.70
13	8.85	1.22	10.07	20.14	103.29
14	8.91	1.22	10.07	20.20	104.73
15	8.90	1.22	10.07	20.19	104.49

2437MHz, Antenna port 2 , ShortGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	8.81	1.35	10.00	20.16	103.67
9	8.79	1.35	10.00	20.14	103.20
10	8.80	1.35	10.00	20.15	103.43
11	8.70	1.35	10.00	20.05	101.08
12	8.76	1.35	10.00	20.11	102.49
13	8.88	1.35	10.00	20.23	105.36
14	8.86	1.35	10.00	20.21	104.87
15	8.88	1.35	10.00	20.23	105.36

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/01/2012
Temperature/ Humidity	24 deg.C/ 64% RH
Engineer	Satofumi Matsuyama
Mode	11n-40(MIMO) Tx, MCS8(ShortGI)

Antenna port 1 + 2

Freq.	Antenna port 1 Result	Antenna port 2 Result	Result		Limit		Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2422	45.90	38.06	19.24	83.95	30.00	1000	10.76
2437	94.85	90.50	22.68	185.36	30.00	1000	7.32
2452	49.74	46.52	19.83	96.25	30.00	1000	10.17

Sample Calculation:
Result = Antenna port 1 + 2

Antenna port1

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2422	5.36	1.19	10.07	16.62	45.90	30.00	1000	13.38
2437	8.48	1.22	10.07	19.77	94.85	30.00	1000	10.23
2452	5.61	1.29	10.07	16.97	49.74	30.00	1000	13.03

Antenna port 2

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2422	4.49	1.31	10.00	15.80	38.06	30.00	1000	14.20
2437	8.22	1.35	10.00	19.57	90.50	30.00	1000	10.43
2452	5.26	1.42	10.00	16.68	46.52	30.00	1000	13.32

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/01/2012
Temperature/ Humidity	24 deg.C/ 64% RH
Engineer	Satofumi Matsuyama
Mode	11n-40(MIMO) Tx

2437MHz, Antenna port 1 + 2 , LongGI

MCS	Antenna port 1 Result [mW]	Antenna port 2 Result [mW]	Result [dBm]	Result [mW]	Remarks
8	86.91	86.43	22.39	173.34	*
9	83.76	85.24	22.28	169.01	
10	85.71	79.55	22.18	165.27	
11	90.38	81.41	22.35	171.78	
12	86.51	83.11	22.29	169.62	
13	87.31	83.30	22.32	170.61	
14	85.52	81.22	22.22	166.74	
15	86.11	81.41	22.24	167.52	

*: Worst Rate
Result = Antenna port 1 + 2

2437MHz, Antenna port 1 , LongGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	8.10	1.22	10.07	19.39	86.91
9	7.94	1.22	10.07	19.23	83.76
10	8.04	1.22	10.07	19.33	85.71
11	8.27	1.22	10.07	19.56	90.38
12	8.08	1.22	10.07	19.37	86.51
13	8.12	1.22	10.07	19.41	87.31
14	8.03	1.22	10.07	19.32	85.52
15	8.06	1.22	10.07	19.35	86.11

2437MHz, Antenna port 2 , LongGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	8.02	1.35	10.00	19.37	86.43
9	7.96	1.35	10.00	19.31	85.24
10	7.66	1.35	10.00	19.01	79.55
11	7.76	1.35	10.00	19.11	81.41
12	7.85	1.35	10.00	19.20	83.11
13	7.86	1.35	10.00	19.21	83.30
14	7.75	1.35	10.00	19.10	81.22
15	7.76	1.35	10.00	19.11	81.41

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/01/2012
Temperature/ Humidity	24 deg.C/ 64% RH
Engineer	Satofumi Matsuyama
Mode	11n-40(MIMO) Tx

2437MHz, Antenna port 1 + 2 , ShortGI

MCS	Antenna port 1 Result [mW]	Antenna port 2 Result [mW]	Result [dBm]	Result [mW]	Remarks
8	94.85	90.50	22.68	185.36	*
9	86.71	89.06	22.45	175.76	
10	86.91	89.26	22.46	176.17	
11	90.17	82.16	22.36	172.33	
12	89.34	81.41	22.32	170.75	
13	87.91	82.54	22.32	170.45	
14	87.51	81.41	22.28	168.92	
15	93.12	81.03	22.41	174.16	

*: Worst Rate
Result = Antenna port 1 + 2

2437MHz, Antenna port 1 , ShortGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	8.48	1.22	10.07	19.77	94.85
9	8.09	1.22	10.07	19.38	86.71
10	8.10	1.22	10.07	19.39	86.91
11	8.26	1.22	10.07	19.55	90.17
12	8.22	1.22	10.07	19.51	89.34
13	8.15	1.22	10.07	19.44	87.91
14	8.13	1.22	10.07	19.42	87.51
15	8.40	1.22	10.07	19.69	93.12

2437MHz, Antenna port 2 , ShortGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	8.22	1.35	10.00	19.57	90.50
9	8.15	1.35	10.00	19.50	89.06
10	8.16	1.35	10.00	19.51	89.26
11	7.80	1.35	10.00	19.15	82.16
12	7.76	1.35	10.00	19.11	81.41
13	7.82	1.35	10.00	19.17	82.54
14	7.76	1.35	10.00	19.11	81.41
15	7.74	1.35	10.00	19.09	81.03

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.4 Measurement Room
Report No.	32KE0041-HO-02
Date	07/24/2012
Temperature/ Humidity	23 deg.C/ 55% RH
Engineer	Satofumi Matsuyama
Mode	11a Tx

Antenna port 1

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
5745	10.13	1.61	10.15	21.89	154.58	30.00	1000	8.11
5785	9.84	1.62	10.15	21.61	144.95	30.00	1000	8.39
5825	9.54	1.63	10.15	21.32	135.38	30.00	1000	8.68

Antenna port 2

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
5745	10.45	1.65	9.98	22.08	161.61	30.00	1000	7.92
5785	10.33	1.66	9.98	21.97	157.38	30.00	1000	8.03
5825	10.28	1.65	9.98	21.91	155.17	30.00	1000	8.09

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

Antenna port 1, 5745MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
6	10.13	*
9	10.12	
12	10.08	
18	10.03	
24	10.06	
36	10.01	
48	10.03	
54	10.09	

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.4 Measurement Room
Report No.	32KE0041-HO-02
Date	07/24/2012
Temperature/ Humidity	23 deg.C/ 55% RH
Engineer	Satofumi Matsuyama
Mode	11n-20(MISO) Tx

Antenna port 1

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
5745	10.06	1.61	10.15	21.82	152.11	30.00	1000	8.18
5785	9.72	1.62	10.15	21.49	141.00	30.00	1000	8.51
5825	9.38	1.63	10.15	21.16	130.48	30.00	1000	8.84

Antenna port 2

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
5745	10.59	1.65	9.98	22.22	166.91	30.00	1000	7.78
5785	10.47	1.66	9.98	22.11	162.54	30.00	1000	7.89
5825	10.25	1.65	9.98	21.88	154.10	30.00	1000	8.12

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

Antenna port 1, 5745MHz, LongGI

MCS	Reading [dBm]	Remark
0	10.06	*
1	9.83	
2	9.86	
3	9.84	
4	9.91	
5	9.84	
6	9.92	
7	9.97	

Antenna port 1, 5745MHz, ShortGI

MCS	Reading [dBm]	Remark
0	9.92	
1	9.71	
2	9.89	
3	9.80	
4	9.86	
5	9.85	
6	9.90	
7	9.85	

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.4 Measurement Room
Report No.	32KE0041-HO-02
Date	07/24/2012
Temperature/ Humidity	23 deg.C/ 55% RH
Engineer	Satofumi Matsuyama
Mode	11n-40(MISO) Tx

Antenna port 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]	Limit [dBm]	Limit [mW]	Margin [dB]
5755	10.15	1.65	10.15	21.95	156.63	30.00	1000	8.05
5795	9.89	1.60	10.15	21.64	145.89	30.00	1000	8.36

Antenna port 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]	Limit [dBm]	Limit [mW]	Margin [dB]
5755	10.62	1.68	9.98	22.28	169.01	30.00	1000	7.72
5795	10.44	1.63	9.98	22.05	160.40	30.00	1000	7.95

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

Antenna port 1, 5755MHz, LongGI

MCS	Reading [dBm]	Remark
0	10.03	
1	9.84	
2	9.94	
3	9.95	
4	9.93	
5	9.90	
6	10.01	
7	9.80	

Antenna port 1, 5755MHz, ShortGI

MCS	Reading [dBm]	Remark
0	10.15	*
1	10.08	
2	10.01	
3	9.98	
4	9.99	
5	10.02	
6	10.06	
7	9.99	

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.4 Measurement Room
Report No.	32KE0041-HO-02
Date	07/25/2012
Temperature/ Humidity	24 deg.C/ 58% RH
Engineer	Satofumi Matsuyama
Mode	11n-20(MIMO) Tx, MCS12(LongGI)

Antenna port 1 + 2

Freq.	Antenna port 1 Result	Antenna port 2 Result	Result		Limit		Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]
5745	104.51	101.97	23.15	206.48	30.00	1000	6.85
5785	107.21	99.99	23.16	207.20	30.00	1000	6.84
5825	99.67	104.19	23.09	203.85	30.00	1000	6.91

Sample Calculation:
Result = Antenna port 1 + 2

Antenna port 1

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
5745	8.43	1.61	10.15	20.19	104.51	30.00	1000	9.81
5785	8.53	1.62	10.15	20.30	107.21	30.00	1000	9.70
5825	8.21	1.63	10.15	19.99	99.67	30.00	1000	10.01

Antenna port 2

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
5745	8.45	1.65	9.98	20.08	101.97	30.00	1000	9.92
5785	8.36	1.66	9.98	20.00	99.99	30.00	1000	10.00
5825	8.55	1.65	9.98	20.18	104.19	30.00	1000	9.82

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.4 Measurement Room
Report No.	32KE0041-HO-02
Date	07/25/2012
Temperature/ Humidity	24 deg.C/ 58% RH
Engineer	Satofumi Matsuyama
Mode	11n-20(MIMO) Tx

5745MHz, Antenna port 1 + 2 , LongGI

MCS	Antenna port 1 Result [mW]	Antenna port 2 Result [mW]	Result [dBm]	Result [mW]	Remarks
8	101.66	97.61	22.99	199.27	
9	98.44	101.74	23.01	200.17	
10	99.81	98.51	22.97	198.32	
11	104.27	99.88	23.10	204.15	
12	104.51	101.97	23.15	206.48	*
13	103.08	102.68	23.13	205.75	
14	100.96	99.88	23.03	200.84	
15	102.60	101.50	23.10	204.11	

*: Worst Rate
Result = Antenna port 1 + 2

5745MHz, Antenna port 1 , LongGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	8.31	1.61	10.15	20.07	101.66
9	8.17	1.61	10.15	19.93	98.44
10	8.23	1.61	10.15	19.99	99.81
11	8.42	1.61	10.15	20.18	104.27
12	8.43	1.61	10.15	20.19	104.51
13	8.37	1.61	10.15	20.13	103.08
14	8.28	1.61	10.15	20.04	100.96
15	8.35	1.61	10.15	20.11	102.60

5745MHz, Antenna port 2 , LongGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	8.26	1.65	9.98	19.89	97.61
9	8.44	1.65	9.98	20.07	101.74
10	8.30	1.65	9.98	19.93	98.51
11	8.36	1.65	9.98	19.99	99.88
12	8.45	1.65	9.98	20.08	101.97
13	8.48	1.65	9.98	20.11	102.68
14	8.36	1.65	9.98	19.99	99.88
15	8.43	1.65	9.98	20.06	101.50

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.4 Measurement Room
Report No.	32KE0041-HO-02
Date	07/25/2012
Temperature/ Humidity	24 deg.C/ 58% RH
Engineer	Satofumi Matsuyama
Mode	11n-20(MIMO) Tx

5745MHz, Antenna port 1 + 2 , ShortGI

MCS	Antenna port 1 Result [mW]	Antenna port 2 Result [mW]	Result [dBm]	Result [mW]	Remarks
8	95.97	102.92	22.99	198.89	
9	105.23	94.29	23.00	199.53	
10	102.37	101.04	23.08	203.40	
11	105.23	98.06	23.08	203.29	
12	104.27	100.80	23.12	205.07	*
13	102.84	97.83	23.02	200.67	
14	103.31	99.88	23.08	203.19	
15	98.89	102.44	23.04	201.33	

*: Worst Rate
Result = Antenna port 1 + 2

5745MHz, Antenna port 1 , ShortGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	8.06	1.61	10.15	19.82	95.97
9	8.46	1.61	10.15	20.22	105.23
10	8.34	1.61	10.15	20.10	102.37
11	8.46	1.61	10.15	20.22	105.23
12	8.42	1.61	10.15	20.18	104.27
13	8.36	1.61	10.15	20.12	102.84
14	8.38	1.61	10.15	20.14	103.31
15	8.19	1.61	10.15	19.95	98.89

5745MHz, Antenna port 2 , ShortGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	8.49	1.65	9.98	20.12	102.92
9	8.11	1.65	9.98	19.74	94.29
10	8.41	1.65	9.98	20.04	101.04
11	8.28	1.65	9.98	19.91	98.06
12	8.40	1.65	9.98	20.03	100.80
13	8.27	1.65	9.98	19.90	97.83
14	8.36	1.65	9.98	19.99	99.88
15	8.47	1.65	9.98	20.10	102.44

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.4 Measurement Room
Report No.	32KE0041-HO-02
Date	07/25/2012
Temperature/ Humidity	24 deg.C/ 58% RH
Engineer	Satofumi Matsuyama
Mode	11n-40(MIMO) Tx, MCS12(ShortGI)

Antenna port 1 + 2

Freq.	Antenna port 1 Result	Antenna port 2 Result	Result		Limit		Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]
5755	106.14	114.00	23.43	220.14	30.00	1000	6.57
5795	99.77	112.26	23.26	212.03	30.00	1000	6.74

Sample Calculation:
Result = Antenna port 1 + 2

Antenna port 1

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
5755	8.46	1.65	10.15	20.26	106.14	30.00	1000	9.74
5795	8.24	1.60	10.15	19.99	99.77	30.00	1000	10.01

Antenna port 2

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
5755	8.91	1.68	9.98	20.57	114.00	30.00	1000	9.43
5795	8.89	1.63	9.98	20.50	112.26	30.00	1000	9.50

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.4 Measurement Room
Report No.	32KE0041-HO-02
Date	07/25/2012
Temperature/ Humidity	24 deg.C/ 58% RH
Engineer	Satofumi Matsuyama
Mode	11n-40(MIMO) Tx

5755MHz, Antenna port 1 + 2 , LongGI

MCS	Antenna port 1 Result [mW]	Antenna port 2 Result [mW]	Result [dBm]	Result [mW]	Remarks
8	104.92	102.31	23.16	207.23	
9	98.37	107.87	23.14	206.24	
10	99.51	106.39	23.14	205.90	
11	98.60	109.88	23.19	208.48	
12	102.53	107.62	23.23	210.16	*
13	98.37	109.62	23.18	208.00	
14	99.74	109.12	23.20	208.86	
15	100.20	109.62	23.22	209.83	

*: Worst Rate
Result = Antenna port 1 + 2

5755MHz, Antenna port 1 , LongGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	8.41	1.65	10.15	20.21	104.92
9	8.13	1.65	10.15	19.93	98.37
10	8.18	1.65	10.15	19.98	99.51
11	8.14	1.65	10.15	19.94	98.60
12	8.31	1.65	10.15	20.11	102.53
13	8.13	1.65	10.15	19.93	98.37
14	8.19	1.65	10.15	19.99	99.74
15	8.21	1.65	10.15	20.01	100.20

5755MHz, Antenna port 2 , LongGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	8.44	1.68	9.98	20.10	102.31
9	8.67	1.68	9.98	20.33	107.87
10	8.61	1.68	9.98	20.27	106.39
11	8.75	1.68	9.98	20.41	109.88
12	8.66	1.68	9.98	20.32	107.62
13	8.74	1.68	9.98	20.40	109.62
14	8.72	1.68	9.98	20.38	109.12
15	8.74	1.68	9.98	20.40	109.62

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

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.4 Measurement Room
Report No.	32KE0041-HO-02
Date	07/25/2012
Temperature/ Humidity	24 deg.C/ 58% RH
Engineer	Satofumi Matsuyama
Mode	11n-40(MIMO) Tx

5755MHz, Antenna port 1 + 2 , ShortGI

MCS	Antenna port 1 Result [mW]	Antenna port 2 Result [mW]	Result [dBm]	Result [mW]	Remarks
8	101.13	118.55	23.42	219.68	
9	98.15	113.48	23.26	211.62	
10	99.05	117.74	23.36	216.79	
11	99.51	116.12	23.34	215.63	
12	106.14	114.00	23.43	220.14	*
13	99.05	110.64	23.22	209.69	
14	98.83	114.79	23.30	213.62	
15	99.51	117.46	23.36	216.98	

*: Worst Rate
Result = Antenna port 1 + 2

5755MHz, Antenna port 1 , ShortGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	8.25	1.65	10.15	20.05	101.13
9	8.12	1.65	10.15	19.92	98.15
10	8.16	1.65	10.15	19.96	99.05
11	8.18	1.65	10.15	19.98	99.51
12	8.46	1.65	10.15	20.26	106.14
13	8.16	1.65	10.15	19.96	99.05
14	8.15	1.65	10.15	19.95	98.83
15	8.18	1.65	10.15	19.98	99.51

5755MHz, Antenna port 2 , ShortGI

MCS	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
8	9.08	1.68	9.98	20.74	118.55
9	8.89	1.68	9.98	20.55	113.48
10	9.05	1.68	9.98	20.71	117.74
11	8.99	1.68	9.98	20.65	116.12
12	8.91	1.68	9.98	20.57	114.00
13	8.78	1.68	9.98	20.44	110.64
14	8.94	1.68	9.98	20.60	114.79
15	9.04	1.68	9.98	20.70	117.46

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

Maximum Average Output Power (Reference data for RF Exposure)

Test place	Head Office EMC Lab. No.6 measurement room	
Report No.	32KE0041-HO-02	
Date	07/20/2012	07/21/2012
Temperature/ Humidity	25deg. C / 52% RH	24deg. C / 55% RH
Engineer	Yutaka Yoshida	Satofumi Matsuyama
Mode	11b Tx/11g Tx	

[IEEE802.11b Ant. port 1] 1Mbps

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
1	2412	2.81	1.20	10.00	14.01	25.17
6	2437	3.48	1.22	10.00	14.70	29.52
11	2462	3.25	1.33	10.00	14.58	28.70

[IEEE802.11b Ant. port 2] 1Mbps

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
1	2412	2.98	1.32	10.00	14.30	26.92
6	2437	2.83	1.35	10.00	14.18	26.16
11	2462	2.62	1.45	10.00	14.07	25.54

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

[IEEE802.11g Ant. port 1] 6Mbps

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
1	2412	1.67	1.20	10.00	12.87	19.36
6	2437	3.94	1.22	10.00	15.16	32.81
11	2462	1.39	1.33	10.00	12.72	18.70

[IEEE802.11g Ant. port 2] 6Mbps

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
1	2412	0.83	1.32	10.00	12.15	16.41
6	2437	3.61	1.35	10.00	14.96	31.31
11	2462	0.64	1.45	10.00	12.09	16.19

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Maximum Average Output Power (Reference data for RF Exposure)

Test place	Head Office EMC Lab. No.6 measurement room	
Report No.	32KE0041-HO-02	
Date	07/20/2012	07/21/2012
Temperature/ Humidity	25deg. C / 52% RH	24deg. C / 55% RH
Engineer	Yutaka Yoshida	Satofumi Matsuyama
Mode	11n-20 Tx(MISO)/11n-40 Tx(MISO)	

[IEEE802.11n 20M(2.4GHz) Ant. port 1 LongGI] MCS0

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
1	2412	0.53	1.20	10.00	11.73	14.89
6	2437	3.95	1.22	10.00	15.17	32.89
11	2462	-0.19	1.33	10.00	11.14	13.00

[IEEE802.11n 20M(2.4GHz) Ant. port 2 LongGI] MCS0

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
1	2412	-0.15	1.32	10.00	11.17	13.09
6	2437	3.88	1.35	10.00	15.23	33.32
11	2462	-0.08	1.45	10.00	11.37	13.72

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

[IEEE802.11n 40M(2.4GHz) Ant. port 1 ShortGI] MCS0

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
3	2422	-3.02	1.19	10.00	8.17	6.56
6	2437	1.13	1.22	10.00	12.35	17.18
9	2452	-2.81	1.29	10.00	8.48	7.04

[IEEE802.11n 40M(2.4GHz) Ant. port 2 ShortGI] MCS0

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
3	2422	-3.54	1.31	10.00	7.77	5.99
6	2437	-0.26	1.35	10.00	11.09	12.84
9	2452	-3.86	1.42	10.00	7.56	5.70

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Maximum Average Output Power (Reference data for RF Exposure)

Test place	Head Office EMC Lab. No.6 measurement room	
Report No.	32KE0041-HO-02	
Date	07/20/2012	07/21/2012
Temperature/ Humidity	25deg. C / 52% RH	24deg. C / 55% RH
Engineer	Yutaka Yoshida	Satofumi Matsuyama
Mode	11n-20 Tx(MIMO)/11n-40 Tx(MIMO)	

[IEEE802.11n 20M(2.4GHz) Ant. port 1+2 LongGI] MCS8

Ch	Frequency [MHz]	Antenna	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result AVG [dBm]	Result AVG Total [dBm]	Result AVG Total [mW]
1	2412	1	0.10	1.20	10.07	11.37	14.21	26.38
		2	-0.29	1.32	10.00	11.03		
6	2437	1	0.56	1.22	10.07	11.85	15.08	32.20
		2	0.93	1.35	10.00	12.28		
11	2462	1	-1.56	1.33	10.07	9.84	13.38	21.78
		2	-0.61	1.45	10.00	10.84		

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

[IEEE802.11n 40M(2.4GHz) Ant. port 1+2 ShortGI] MCS8

Ch	Frequency [MHz]	Antenna	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result AVG [dBm]	Result AVG Total [dBm]	Result AVG Total [mW]
3	2422	1	-4.98	1.19	10.07	6.28	8.99	7.93
		2	-5.65	1.31	10.00	5.66		
6	2437	1	-0.35	1.22	10.07	10.94	14.03	25.32
		2	-0.24	1.35	10.00	11.11		
9	2452	1	-4.79	1.29	10.07	6.57	9.64	9.21
		2	-4.72	1.42	10.00	6.70		

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Maximum Average Output Power (Reference data for RF Exposure)

Test place	Head Office EMC Lab. No.6 measurement room	
Report No.	32KE0041-HO-02	
Date	07/20/2012	07/21/2012
Temperature/ Humidity	25deg. C / 52% RH	24deg. C / 55% RH
Engineer	Yutaka Yoshida	Satofumi Matsuyama
Mode	11a Tx	

[IEEE802.11a Ant. port 1] 6Mbps

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
149	5745	3.02	1.61	10.15	14.78	30.07
153	5765	2.94	1.66	10.15	14.75	29.87
157	5785	3.15	1.62	10.15	14.92	31.06
161	5805	3.02	1.59	10.15	14.76	29.89
165	5825	3.10	1.63	10.15	14.88	30.73

[IEEE802.11a Ant. port 2] 6Mbps

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
149	5745	3.15	1.65	9.98	14.78	30.09
153	5765	2.99	1.69	9.98	14.66	29.24
157	5785	2.95	1.66	9.98	14.59	28.77
161	5805	2.94	1.61	9.98	14.53	28.35
165	5825	2.88	1.65	9.98	14.51	28.24

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Maximum Average Output Power (Reference data for RF Exposure)

Test place	Head Office EMC Lab. No.6 measurement room	
Report No.	32KE0041-HO-02	
Date	07/20/2012	07/21/2012
Temperature/ Humidity	25deg. C / 52% RH	24deg. C / 55% RH
Engineer	Yutaka Yoshida	Satofumi Matsuyama
Mode	11n-20 Tx(MISO)/11n-40 Tx(MISO)	

[IEEE802.11n 20M Ant. port 1 LongGI] MCS0

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
149	5745	2.74	1.61	10.15	14.50	28.19
153	5765	2.90	1.66	10.15	14.71	29.60
157	5785	2.89	1.62	10.15	14.66	29.26
161	5805	2.93	1.59	10.15	14.67	29.28
165	5825	2.87	1.63	10.15	14.65	29.14

[IEEE802.11n 20M Ant. port 2 LongGI] MCS0

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
149	5745	2.96	1.65	9.98	14.59	28.81
153	5765	2.93	1.69	9.98	14.60	28.83
157	5785	2.90	1.66	9.98	14.54	28.44
161	5805	2.99	1.61	9.98	14.58	28.68
165	5825	2.93	1.65	9.98	14.56	28.56

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

[IEEE802.11n 40M Ant. port 1 ShortGI] MCS0

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
151	5755	2.93	1.65	10.15	14.73	29.71
159	5795	2.88	1.60	10.15	14.63	29.04

[IEEE802.11n 40M Ant. port 2 ShortGI] MCS0

Ch	Frequency [MHz]	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result [dBm] AVG	Result [mW] AVG
151	5755	2.78	1.68	9.98	14.44	27.79
159	5795	2.80	1.63	9.98	14.41	27.62

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Maximum Average Output Power (Reference data for RF Exposure)

Test place	Head Office EMC Lab. No.6 measurement room	
Report No.	32KE0041-HO-02	
Date	07/20/2012	07/21/2012
Temperature/ Humidity	25deg. C / 52% RH	24deg. C / 55% RH
Engineer	Yutaka Yoshida	Satofumi Matsuyama
Mode	11n-20 Tx(MIMO)/11n-40 Tx(MIMO)	

[IEEE802.11n 20M(5GHz) Ant. port 1+2 LongGI] MCS8

Ch	Frequency [MHz]	Antenna	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result AVG [dBm]	Result AVG Total [dBm]	Result AVG Total [mW]
149	5745	1	-0.33	1.61	10.15	11.43	14.46	27.95
		2	-0.16	1.65	9.98	11.47		
153	5765	1	-0.25	1.66	10.15	11.56	14.65	29.19
		2	0.05	1.69	9.98	11.72		
157	5785	1	-0.13	1.62	10.15	11.64	14.60	28.82
		2	-0.11	1.66	9.98	11.53		
161	5805	1	0.25	1.59	10.15	11.99	14.74	29.81
		2	-0.12	1.61	9.98	11.47		
165	5825	1	0.09	1.63	10.15	11.87	14.67	29.32
		2	-0.18	1.65	9.98	11.45		

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

[IEEE802.11n 40M(5GHz) Ant. port 1+2 ShortGI] MCS8

Ch	Frequency [MHz]	Antenna	Reading [dBm] AVG	Cable Loss [dB]	Atten. [dB]	Result AVG [dBm]	Result AVG Total [dBm]	Result AVG Total [mW]
151	5755	1	0.01	1.65	10.15	11.81	14.67	29.32
		2	-0.15	1.68	9.98	11.51		
159	5795	1	-0.32	1.60	10.15	11.43	14.39	27.49
		2	-0.28	1.63	9.98	11.33		

Sample Calculation:
Result = Reading + Cable Loss + Attenuator

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	32KE0041-HO-02	
Date	08/02/2012	08/03/2012
Temperature/ Humidity	23 deg.C/ 68% RH	24 deg.C/ 58% RH
Engineer	Tomotaka Sasagawa (1-10GHz)	Keisuke Kawamura (10-26.5GHz)
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	63.4	27.4	2.2	34.8	58.2	73.9	15.7	
Hori	4824.000	PK	49.1	31.3	3.2	34.0	49.6	73.9	24.3	
Hori	2390.000	AV	42.0	27.4	2.2	34.8	36.8	53.9	17.1	
Hori	4824.000	AV	43.7	31.3	3.2	34.0	44.2	53.9	9.7	
Vert	2390.000	PK	59.6	27.4	2.2	34.8	54.4	73.9	19.5	
Vert	4824.000	PK	50.2	31.3	3.2	34.0	50.7	73.9	23.2	
Vert	2390.000	AV	39.6	27.4	2.2	34.8	34.4	53.9	19.5	
Vert	4824.000	AV	45.2	31.3	3.2	34.0	45.7	53.9	8.2	

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

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	105.1	27.5	2.2	34.8	100.0	-	-	Carrier
Hori	2400.000	PK	64.0	27.5	2.2	34.8	58.9	80.0	21.1	
Vert	2412.000	PK	101.3	27.5	2.2	34.8	96.2	-	-	Carrier
Vert	2400.000	PK	59.0	27.5	2.2	34.8	53.9	76.2	22.3	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	32KE0041-HO-02	
Date	08/02/2012	08/03/2012
Temperature/ Humidity	23 deg.C/ 68% RH	24 deg.C/ 58% RH
Engineer	Tomotaka Sasagawa (1-10GHz)	Keisuke Kawamura (10-26.5GHz)
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	50.3	31.4	3.2	34.0	50.9	73.9	23.0	
Hori	4874.000	AV	43.8	31.4	3.2	34.0	44.4	53.9	9.5	
Vert	4874.000	PK	50.3	31.4	3.2	34.0	50.9	73.9	23.0	
Vert	4874.000	AV	45.6	31.4	3.2	34.0	46.2	53.9	7.7	

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).

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	32KE0041-HO-02	
Date	08/02/2012	08/03/2012
Temperature/ Humidity	23 deg.C/ 68% RH	24 deg.C/ 58% RH
Engineer	Tomotaka Sasagawa	Keisuke Kawamura
	(1-10GHz)	(10-26.5GHz)
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	63.2	27.5	2.3	34.8	58.2	73.9	15.7	
Hori	4944.000	PK	48.9	31.6	3.3	34.0	49.8	73.9	24.1	
Hori	2483.500	AV	42.5	27.5	2.3	34.8	37.5	53.9	16.4	
Hori	4944.000	AV	38.3	31.6	3.3	34.0	39.2	53.9	14.7	
Vert	2483.500	PK	64.6	27.5	2.3	34.8	59.6	73.9	14.3	
Vert	4944.000	PK	49.8	31.6	3.3	34.0	50.7	73.9	23.2	
Vert	2483.500	AV	41.0	27.5	2.3	34.8	36.0	53.9	17.9	
Vert	4944.000	AV	39.2	31.6	3.3	34.0	40.1	53.9	13.8	

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).

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	32KE0041-HO-02	
Date	08/02/2012	08/03/2012
Temperature/ Humidity	23 deg.C/ 68% RH	24 deg.C/ 58% RH
Engineer	Tomotaka Sasagawa	Keisuke Kawamura
	(1-10GHz)	(10-26.5GHz)
Mode	11n-20(MIMO) 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	67.8	27.4	2.2	34.8	62.6	73.9	11.4	
Hori	2390.000	AV	48.2	27.4	2.2	34.8	43.0	53.9	10.9	
Vert	2390.000	PK	65.1	27.4	2.2	34.8	59.9	73.9	14.0	
Vert	2390.000	AV	45.1	27.4	2.2	34.8	39.9	53.9	14.0	

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

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	104.2	27.5	2.2	34.8	99.1	-	-	Carrier
Hori	2400.000	PK	63.9	27.5	2.2	34.8	58.8	79.1	20.3	
Vert	2412.000	PK	101.2	27.5	2.2	34.8	96.1	-	-	Carrier
Vert	2400.000	PK	61.5	27.5	2.2	34.8	56.4	76.1	19.7	

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

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Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	32KE0041-HO-02	
Date	08/02/2012	08/03/2012
Temperature/ Humidity	23 deg.C/ 68% RH	24 deg.C/ 58% RH
Engineer	Tomotaka Sasagawa	Keisuke Kawamura
	(1-10GHz)	(10-26.5GHz)
Mode	11n-20(MIMO) 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	50.3	31.4	3.2	34.0	50.9	73.9	23.0	
Hori	4874.000	AV	43.8	31.4	3.2	34.0	44.4	53.9	9.5	
Vert	4874.000	PK	50.3	31.4	3.2	34.0	50.9	73.9	23.0	
Vert	4874.000	AV	45.6	31.4	3.2	34.0	46.2	53.9	7.7	

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).

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	32KE0041-HO-02	
Date	08/02/2012	08/03/2012
Temperature/ Humidity	23 deg.C/ 68% RH	24 deg.C/ 58% RH
Engineer	Tomotaka Sasagawa	Keisuke Kawamura
	(1-10GHz)	(10-26.5GHz)
Mode	11n-20(MIMO) 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	63.2	27.5	2.3	34.8	58.2	73.9	15.7	
Hori	2483.500	AV	47.0	27.5	2.3	34.8	42.0	53.9	11.9	
Vert	2483.500	PK	69.9	27.5	2.3	34.8	64.9	73.9	9.0	
Vert	2483.500	AV	53.6	27.5	2.3	34.8	48.6	53.9	5.3	

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).

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	32KE0041-HO-02	
Date	08/02/2012	08/03/2012
Temperature/ Humidity	23 deg.C/ 68% RH	24 deg.C/ 58% RH
Engineer	Tomotaka Sasagawa	Keisuke Kawamura
	(1-10GHz)	(10-26.5GHz)
Mode	11n-40(MIMO) Tx 2422MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2389.580	PK	61.2	27.4	2.2	34.8	56.0	73.9	17.9	
Hori	2390.000	PK	60.0	27.4	2.2	34.8	54.8	73.9	19.1	
Hori	2389.580	AV	42.1	27.4	2.2	34.8	36.9	53.9	17.0	
Hori	2390.000	AV	41.9	27.4	2.2	34.8	36.7	53.9	17.2	
Vert	2389.580	PK	56.1	27.4	2.2	34.8	50.9	73.9	23.0	
Vert	2390.000	PK	55.5	27.4	2.2	34.8	50.3	73.9	23.6	
Vert	2389.580	AV	38.2	27.4	2.2	34.8	33.0	53.9	20.9	
Vert	2390.000	AV	37.8	27.4	2.2	34.8	32.6	53.9	21.4	

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

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	2422.000	PK	94.5	27.5	2.2	34.8	89.4	-	-	Carrier
Hori	2400.000	PK	48.3	27.5	2.2	34.8	43.2	69.4	26.2	
Vert	2422.000	PK	93.2	27.5	2.2	34.8	88.1	-	-	Carrier
Vert	2400.000	PK	45.0	27.5	2.2	34.8	39.9	68.1	28.2	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	32KE0041-HO-02	
Date	08/02/2012	08/03/2012
Temperature/ Humidity	23 deg.C/ 68% RH	24 deg.C/ 58% RH
Engineer	Tomotaka Sasagawa	Keisuke Kawamura
	(1-10GHz)	(10-26.5GHz)
Mode	11n-40(MIMO) 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	50.3	31.4	3.2	34.0	50.9	73.9	23.0	
Hori	4874.000	AV	43.8	31.4	3.2	34.0	44.4	53.9	9.5	
Vert	4874.000	PK	50.3	31.4	3.2	34.0	50.9	73.9	23.0	
Vert	4874.000	AV	45.6	31.4	3.2	34.0	46.2	53.9	7.7	

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).

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	32KE0041-HO-02	
Date	08/02/2012	08/03/2012
Temperature/ Humidity	23 deg.C/ 68% RH	24 deg.C/ 58% RH
Engineer	Tomotaka Sasagawa	Keisuke Kawamura
	(1-10GHz)	(10-26.5GHz)
Mode	11n-40(MIMO) Tx 2452MHz	

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	69.2	27.5	2.3	34.8	64.2	73.9	9.7	
Hori	2484.500	PK	70.3	27.5	2.3	34.8	65.3	73.9	8.6	
Hori	2483.500	AV	50.5	27.5	2.3	34.8	45.5	53.9	8.4	
Hori	2484.500	AV	51.2	27.5	2.3	34.8	46.2	53.9	7.7	
Vert	2483.500	PK	68.6	27.5	2.3	34.8	63.6	73.9	10.3	
Vert	2484.500	PK	69.5	27.5	2.3	34.8	64.5	73.9	9.4	
Vert	2483.500	AV	47.7	27.5	2.3	34.8	42.7	53.9	11.2	
Vert	2484.500	AV	48.2	27.5	2.3	34.8	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).
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No.	32KE0041-HO-02
Date	07/25/2012
Temperature/ Humidity	24 deg.C/ 58% RH
Engineer	Satofumi Matsuyama (1-40GHz)
Mode	11n20(MIMO) Tx 5745MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11490.000	PK	46.0	39.7	-2.0	33.1	50.6	73.9	23.3	
Hori	11490.000	AV	35.1	39.7	-2.0	33.1	39.7	53.9	14.2	
Vert	11490.000	PK	46.0	39.7	-2.0	33.1	50.6	73.9	23.3	
Vert	11490.000	AV	37.1	39.7	-2.0	33.1	41.7	53.9	12.2	

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

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

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	5745.000	PK	99.3	32.2	3.9	31.6	103.8	-	-	Carrier
Hori	5725.000	PK	56.3	32.2	3.9	31.6	60.8	83.8	23.0	
Vert	5745.000	PK	96.2	32.2	3.9	31.6	100.7	-	-	Carrier
Vert	5725.000	PK	54.3	32.2	3.9	31.6	58.8	80.7	21.9	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No.	32KE0041-HO-02
Date	07/25/2012
Temperature/ Humidity	24 deg.C/ 58% RH
Engineer	Satofumi Matsuyama
	(1-40GHz)
Mode	11n20(MIMO) Tx 5785MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11570.000	PK	46.0	39.6	-2.0	33.1	50.5	73.9	23.4	
Hori	11570.000	AV	36.0	39.6	-2.0	33.1	40.5	53.9	13.4	
Vert	11570.000	PK	48.1	39.6	-2.0	33.1	52.6	73.9	21.3	
Vert	11570.000	AV	39.2	39.6	-2.0	33.1	43.7	53.9	10.2	

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

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

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 Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32KE0041-HO-02
Date 07/25/2012
Temperature/ Humidity 24 deg.C/ 58% RH
Engineer Satofumi Matsuyama
(1-40GHz)
Mode 11n20(MIMO) Tx 5825MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11650.000	PK	47.8	39.5	-1.9	33.1	52.3	73.9	21.6	
Hori	11650.000	AV	38.7	39.5	-1.9	33.1	43.2	53.9	10.7	
Vert	11650.000	PK	50.0	39.5	-1.9	33.1	54.5	73.9	19.4	
Vert	11650.000	AV	41.1	39.5	-1.9	33.1	45.6	53.9	8.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(An
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

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	5825.000	PK	100.4	32.3	3.9	31.6	105.0	-	-	Carrier
Hori	5850.000	PK	48.7	32.4	3.9	31.6	53.4	85.0	31.6	
Hori	5852.500	PK	46.5	32.4	3.9	31.6	51.2	85.0	33.8	
Vert	5825.000	PK	97.0	32.3	3.9	31.6	101.6	-	-	Carrier
Vert	5850.000	PK	44.6	32.4	3.9	31.6	49.3	81.6	32.3	
Vert	5852.500	PK	43.5	32.4	3.9	31.6	48.2	81.6	33.4	

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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No.	32KE0041-HO-02
Date	07/25/2012
Temperature/ Humidity	24 deg.C/ 58% RH
Engineer	Satofumi Matsuyama (1-40GHz)
Mode	11n40(MIMO) Tx 5755MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11510.000	PK	46.1	39.6	-2.0	33.1	50.6	73.9	23.3	
Hori	11510.000	AV	35.2	39.6	-2.0	33.1	39.7	53.9	14.2	
Vert	11510.000	PK	49.6	39.6	-2.0	33.1	54.1	73.9	19.8	
Vert	11510.000	AV	38.6	39.6	-2.0	33.1	43.1	53.9	10.8	

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

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

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	5755.000	PK	96.2	32.2	3.9	31.6	100.7	-	-	Carrier
Hori	5722.478	PK	62.7	32.2	3.9	31.6	67.2	80.7	13.5	
Hori	5725.000	PK	58.7	32.2	3.9	31.6	63.2	80.7	17.5	
Vert	5755.000	PK	93.4	32.2	3.9	31.6	97.9	-	-	Carrier
Vert	5722.478	PK	60.9	32.2	3.9	31.6	65.4	77.9	12.5	
Vert	5725.000	PK	57.3	32.2	3.9	31.6	61.8	77.9	16.1	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32KE0041-HO-02
Date 07/25/2012
Temperature/ Humidity 24 deg.C/ 58% RH
Engineer Satofumi Matsuyama
(1-40GHz)
Mode 11n40(MIMO) Tx 5795MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11590.000	PK	48.3	39.5	-2.0	33.1	52.7	73.9	21.2	
Hori	11590.000	AV	37.2	39.5	-2.0	33.1	41.6	53.9	12.3	
Vert	11590.000	PK	51.4	39.5	-2.0	33.1	55.8	73.9	18.1	
Vert	11590.000	AV	39.3	39.5	-2.0	33.1	43.7	53.9	10.2	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Ampr
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5795.000	PK	97.1	32.3	3.9	31.6	101.7	73.9	-27.8	100k/300k
Hori	5850.000	PK	45.4	32.4	3.9	31.6	50.1	73.9	23.8	100k/300k
Hori	5852.500	PK	46.5	32.4	3.9	31.6	51.2	73.9	22.7	
Vert	5795.000	PK	93.2	32.3	3.9	31.6	97.8	73.9	-23.9	100k/300k
Vert	5850.000	PK	42.0	32.4	3.9	31.6	46.7	73.9	27.2	100k/300k
Vert	5852.500	PK	43.5	32.4	3.9	31.6	48.2	73.9	25.7	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(An
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Radiated Spurious Emission

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32KE0041-HO-02
Date 08/03/2012
Temperature/ Humidity 22 deg.C/ 59% RH
Engineer Tomotaka Sasagawa

Mode 11n40(MIMO) Tx 5755MHz + BT Hopping

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	98.543	QP	35.0	9.6	8.3	38.9	14.0	43.5	29.5	
Hori	140.092	QP	45.2	14.4	8.8	38.9	29.5	43.5	14.0	
Hori	315.982	QP	38.7	14.9	10.5	38.6	25.5	46.0	20.5	
Hori	338.223	QP	41.9	15.7	10.7	38.5	29.8	46.0	16.2	
Hori	445.231	QP	38.7	17.9	11.5	38.3	29.8	46.0	16.2	
Hori	474.230	QP	43.9	18.0	11.7	38.2	35.4	46.0	10.6	
Hori	11510.000	PK	45.8	39.8	-3.9	33.1	48.6	73.9	25.3	
Hori	11510.000	AV	35.4	39.8	-3.9	33.1	38.2	53.9	15.7	
Vert	98.920	QP	42.1	9.8	8.3	38.9	21.3	43.5	22.2	
Vert	122.762	QP	45.1	13.1	8.6	38.9	27.9	43.5	15.6	
Vert	260.231	QP	32.1	17.9	10.0	38.7	21.3	46.0	24.7	
Vert	426.231	QP	47.2	17.8	11.4	38.3	38.1	46.0	7.9	
Vert	484.032	QP	47.8	18.1	11.8	38.2	39.5	46.0	6.5	
Vert	565.231	QP	32.9	19.0	12.2	38.1	26.0	46.0	20.0	
Vert	11510.000	PK	48.9	39.8	-3.9	33.1	51.7	73.9	22.2	
Vert	11510.000	AV	37.8	39.8	-3.9	33.1	40.6	53.9	13.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Am
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

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	5755.000	PK	91.8	32.9	3.5	31.5	96.7	-	-	Carrier
Hori	5725.000	PK	55.2	32.8	3.5	31.5	60.0	76.7	16.7	
Vert	5755.000	PK	92.4	32.9	3.5	31.5	97.3	-	-	Carrier
Vert	5725.000	PK	55.2	32.8	3.5	31.5	60.0	77.3	17.3	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32KE0041-HO-02
Date 08/03/2012
Temperature/ Humidity 22 deg.C/ 59% RH
Engineer Tomotaka Sasagawa

Mode 11n40(MIMO) Tx 5795MHz + BT Hopping

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	5795.000	PK	91.1	32.9	3.5	31.5	96.0	-	-	Carrier
Hori	5850.000	PK	39.6	33.0	3.6	31.5	44.7	76.0	31.3	
Vert	5795.000	PK	93.2	32.3	3.9	31.6	97.8	-	-	Carrier
Vert	5850.000	PK	42.0	32.4	3.9	31.6	46.7	77.8	31.1	

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

Radiated Spurious Emission

Below 30MHz

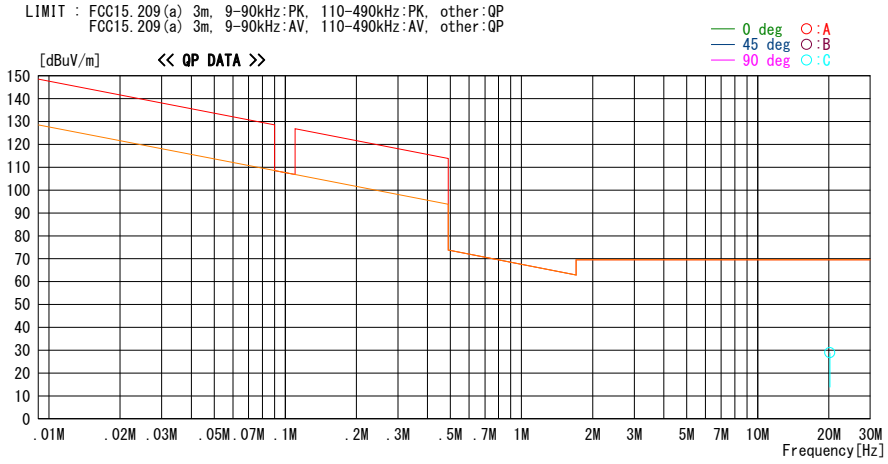
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2012/08/03

Report No. : 32KE0041-HO-02
Power : AC 120V / 60Hz
Temp. / Humi. : 24deg. C / 58% RH
Engineer : Keisuke Kawamura

Mode / Remarks : 11n40 MIMO 5755MHz MCS12(ShortGI) Worst-axis:Laptop Y

LIMIT : FCC15.209(a) 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.209(a) 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq. [MHz]	Reading [dBuV]	DET	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Antenna [deg]		Table [deg]	Comment
20.18957	34.2	QP	19.4	7.5	32.2	28.9	69.5	40.6	90	C	203	

CHART: WITH FACTOR , ANT TYPE: LOOP Except for the data below : adequate margin data below the limits.
CALCULATION : RESULT = READING + ANT FACTOR + LOSS(CABLE + ATTEN.) - GAIN(AMP.)

Radiated Spurious Emission

Below 1GHz

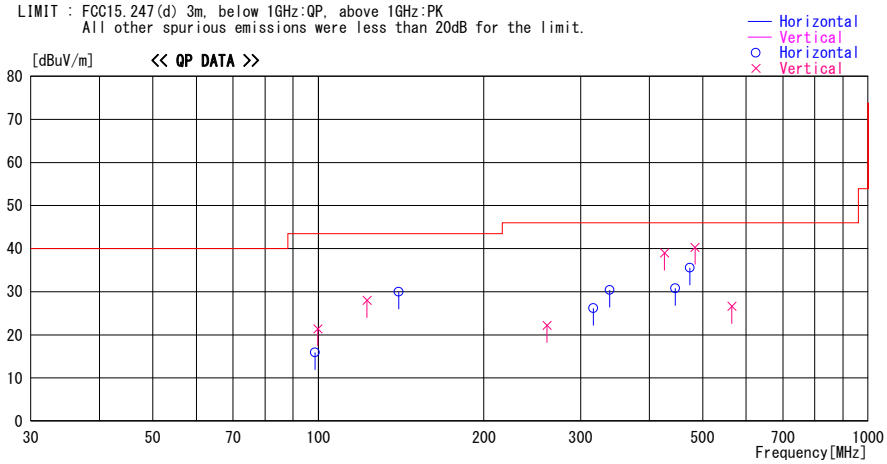
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2012/08/03

Report No. : 32KE0041-HO-02
Power : AC 120V / 60Hz
Temp./Humi. : 24deg. C / 58% RH
Engineer : Keisuke Kawamura

Mode / Remarks : 11n40 MIMO 5755MHz MCS12(ShortGI) Worst-axis(Hor:Laptop Y, Ver:Laptop Y)

LIMIT : FCC15.247(d) 3m, below 1GHz:QP, above 1GHz:PK
All other spurious emissions were less than 20dB for the limit.



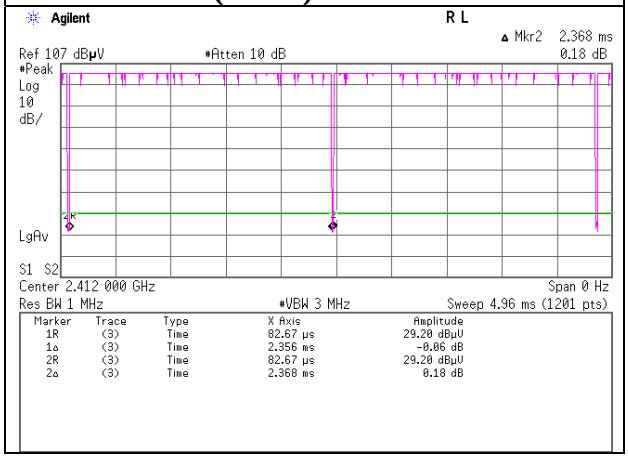
Frequency [MHz]	Reading [dBuV]	DET	Antenna Factor [dB/m]	Loss& Gain [dB]	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
99.811	42.2	QP	9.8	-30.6	21.4	355	100	Vert.	43.5	22.1	
98.603	36.9	QP	9.6	-30.6	15.9	265	181	Hori.	43.5	27.6	
122.682	45.2	QP	13.1	-30.3	28.0	0	100	Vert.	43.5	15.5	
140.004	45.7	QP	14.4	-30.1	30.0	287	226	Hori.	43.5	13.5	
260.573	33.0	QP	17.9	-28.7	22.2	0	100	Vert.	46.0	23.8	
316.109	39.4	QP	14.9	-28.1	26.2	142	100	Hori.	46.0	19.8	
338.689	42.5	QP	15.7	-27.8	30.4	353	100	Hori.	46.0	15.6	
426.163	48.1	QP	17.8	-26.9	39.0	333	118	Vert.	46.0	7.0	
445.763	39.7	QP	17.9	-26.8	30.8	322	183	Hori.	46.0	15.2	
474.163	44.1	QP	18.0	-26.5	35.6	171	196	Hori.	46.0	10.4	
484.342	48.6	QP	18.1	-26.4	40.3	0	100	Vert.	46.0	5.7	
565.211	33.5	QP	19.0	-25.9	26.6	342	100	Vert.	46.0	19.4	

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-300MHz:BICONICAL, 300MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN
CALCULATION:RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - GAIN(AMP)

Burst rate confirmation

11b 1Mbps

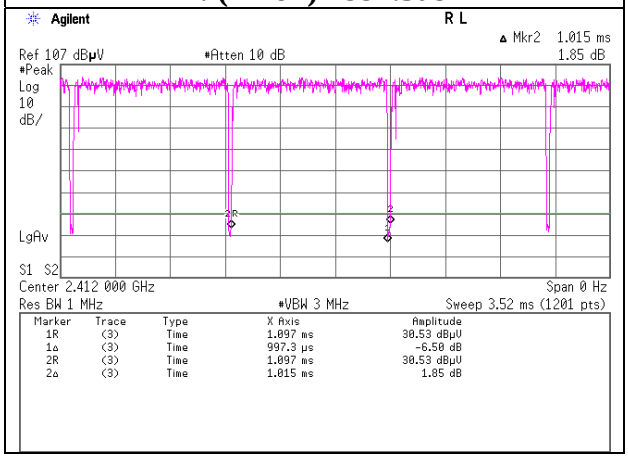
VBW: 1/x = 424Hz≒430Hz
x: (Tx on) =2.356ms



Burst rate confirmation

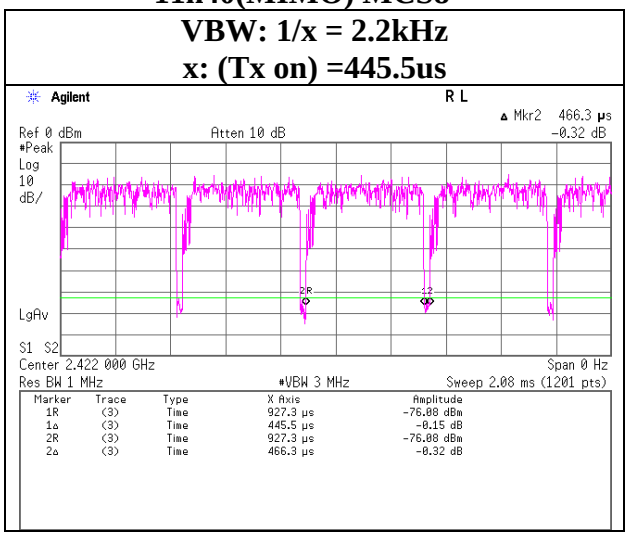
11n20(MIMO) MCS8

VBW: 1/x = 1.0kHz
x: (Tx on) =997.3us



11n40(MIMO) MCS8

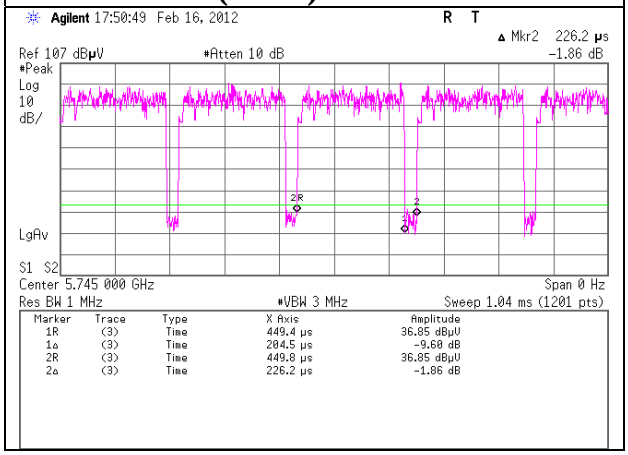
VBW: 1/x = 2.2kHz
x: (Tx on) =445.5us



Burst rate confirmation

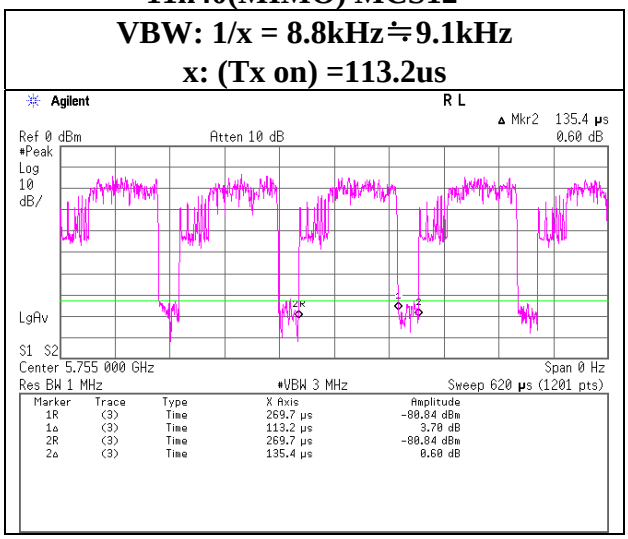
11n20(MIMO) MCS12

VBW: 1/x = 4.9kHz≒5.1kHz
x: (Tx on) =204.5us



11n40(MIMO) MCS12

VBW: 1/x = 8.8kHz≒9.1kHz
x: (Tx on) =113.2us



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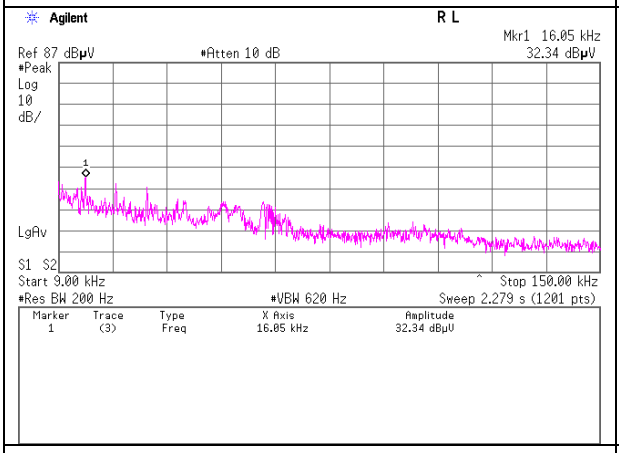
Facsimile : +81 596 24 8124

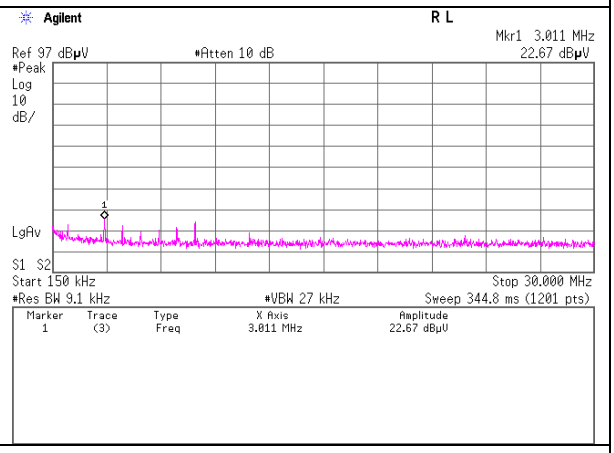
Conducted Spurious Emission

11b Tx 2412MHz

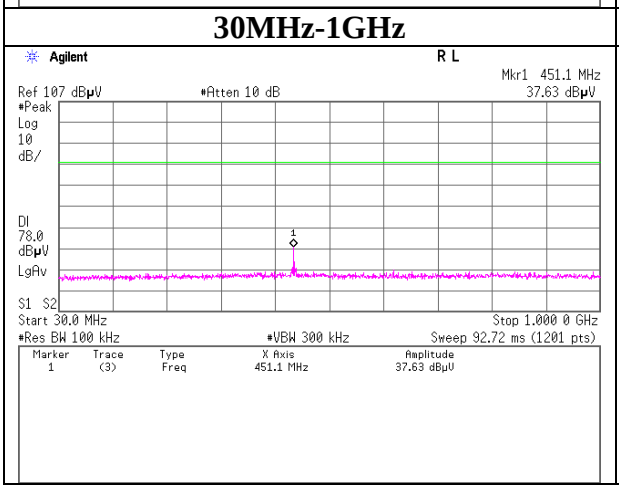
9kHz-150kHz



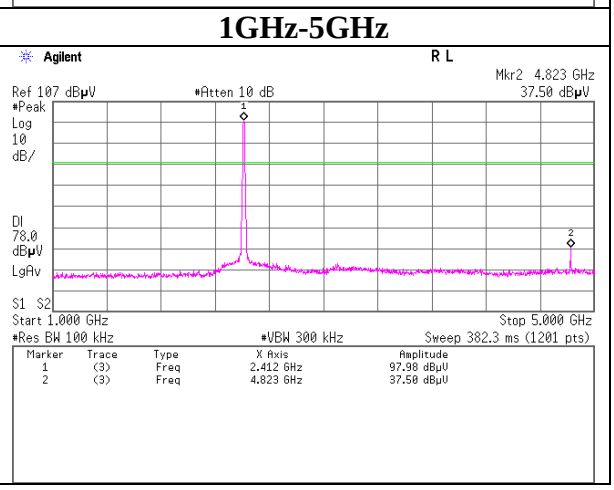
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



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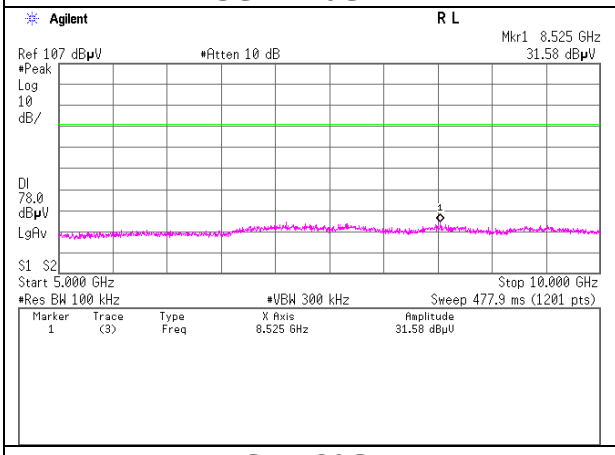
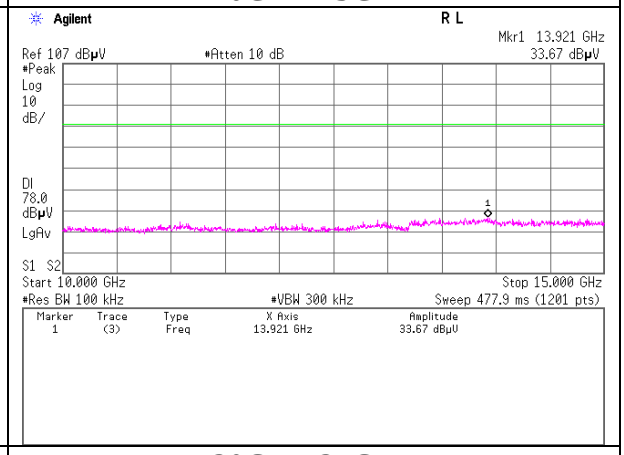
Conducted Spurious Emission

11b Tx 2412MHz

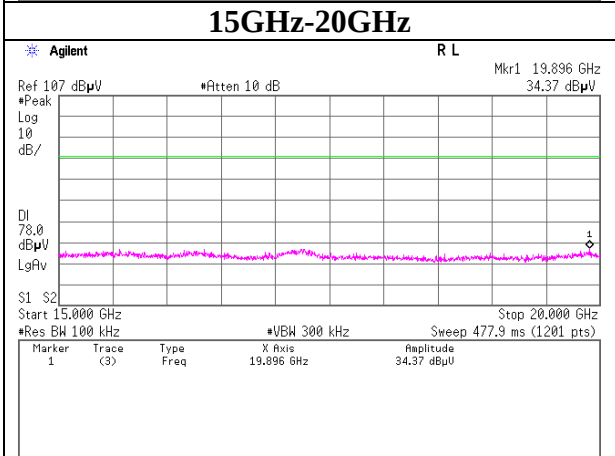
5GHz-10GHz



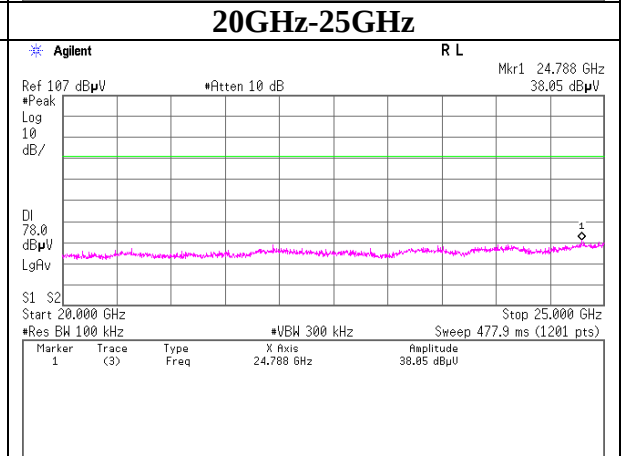
10GHz-15GHz



15GHz-20GHz



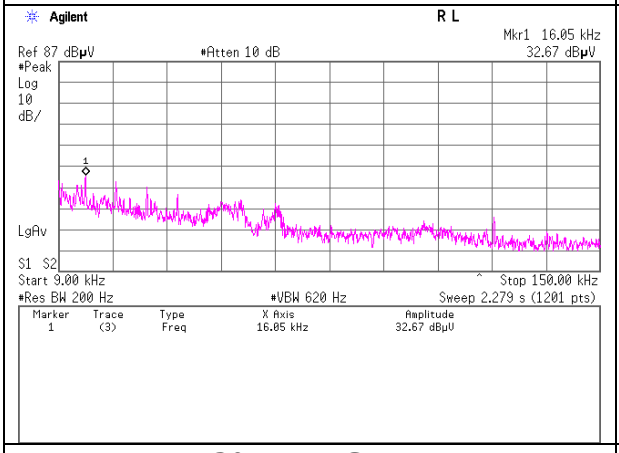
20GHz-25GHz



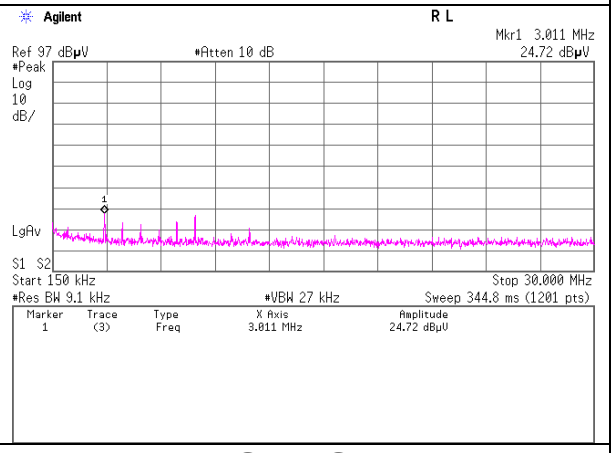
Conducted Spurious Emission

11b Tx 2437MHz

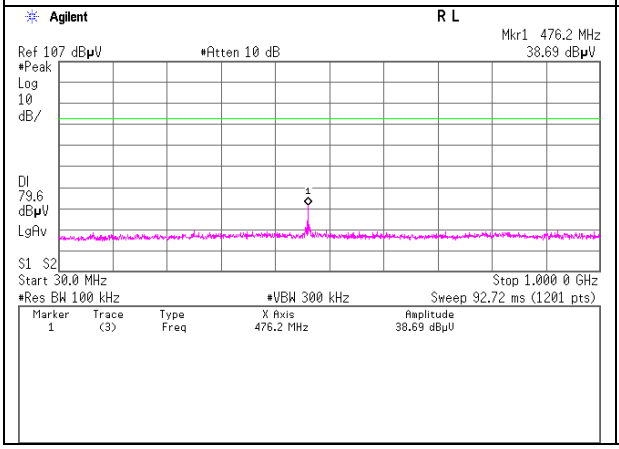
9kHz-150kHz



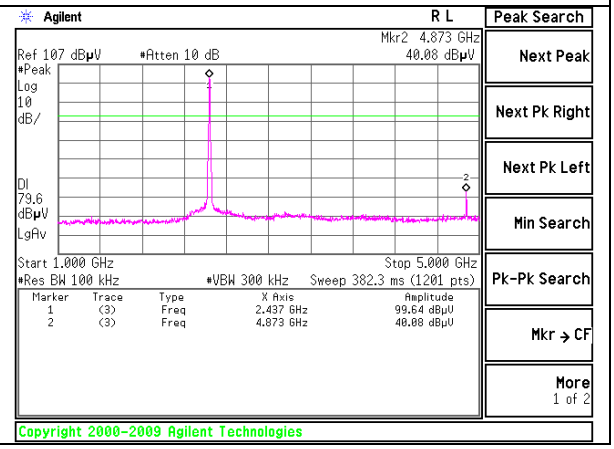
150kHz-30MHz



30MHz-1GHz



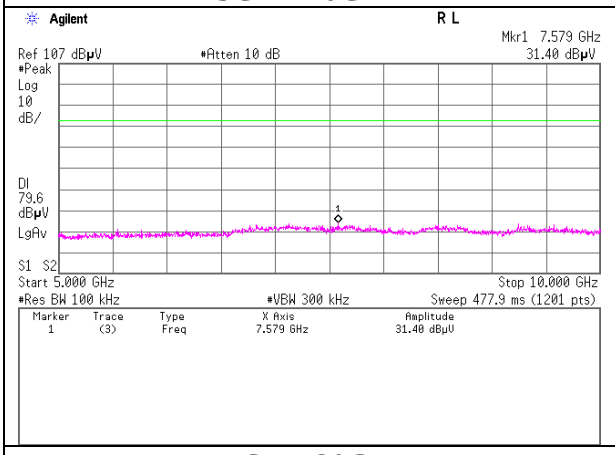
1GHz-5GHz



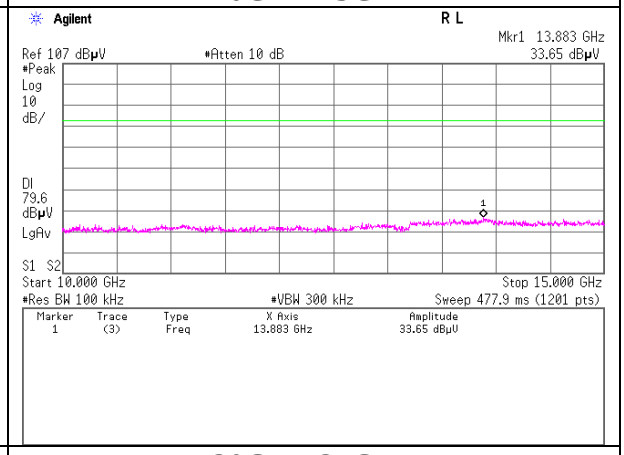
Conducted Spurious Emission

11b Tx 2437MHz

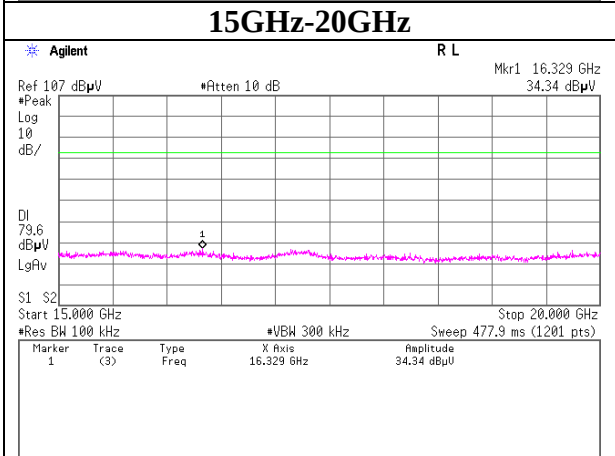
5GHz-10GHz



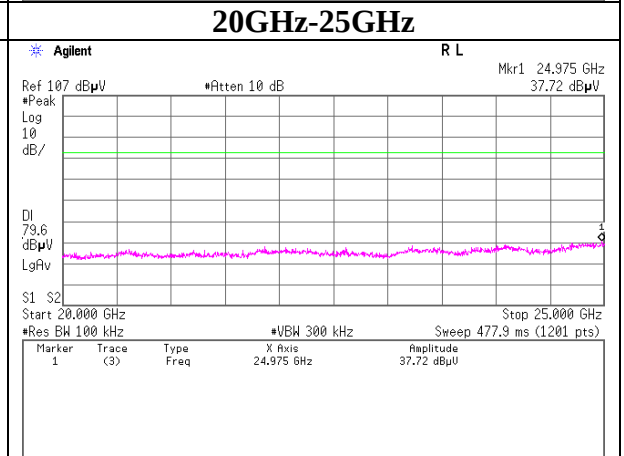
10GHz-15GHz



15GHz-20GHz



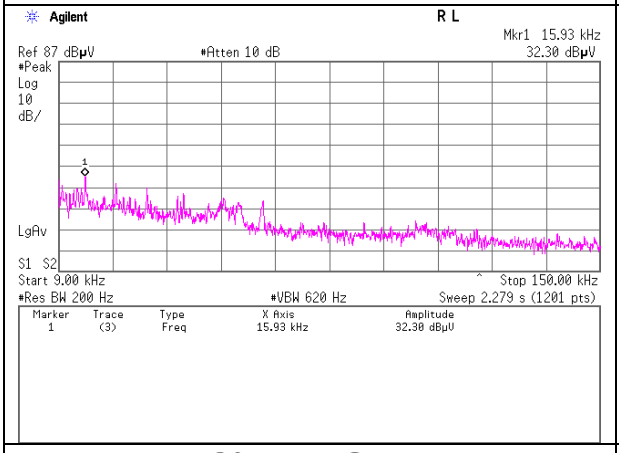
20GHz-25GHz



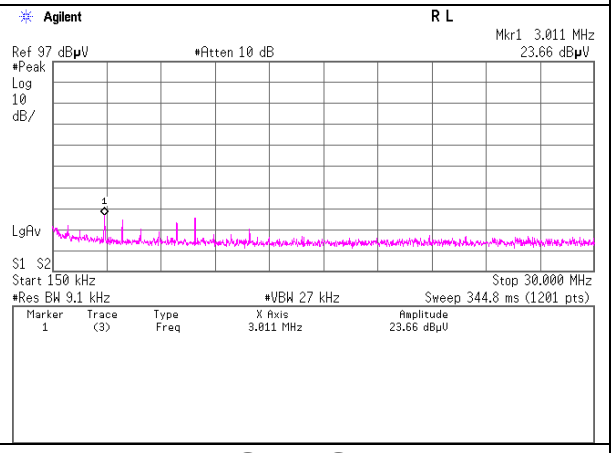
Conducted Spurious Emission

11b Tx 2462MHz

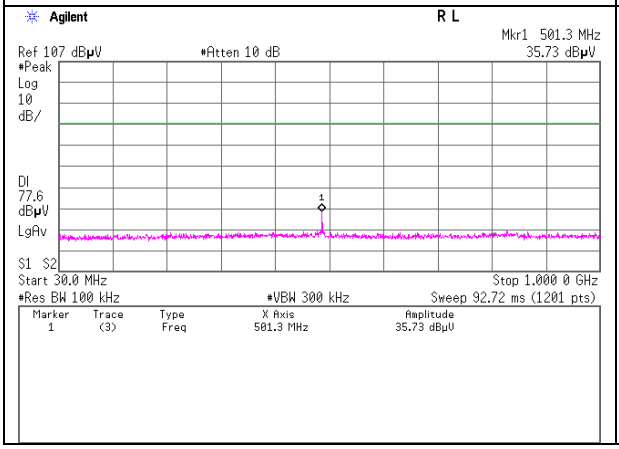
9kHz-150kHz



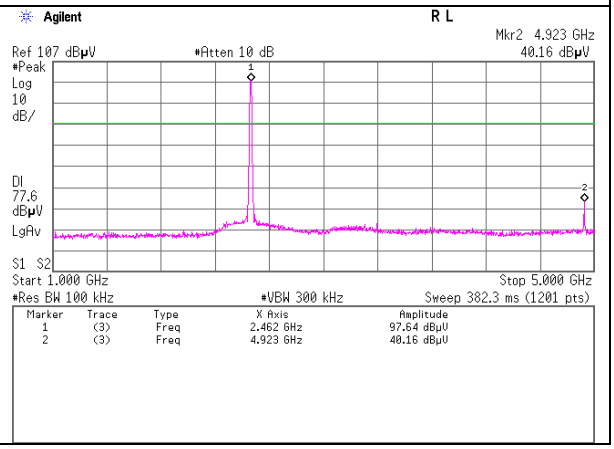
150kHz-30MHz



30MHz-1GHz



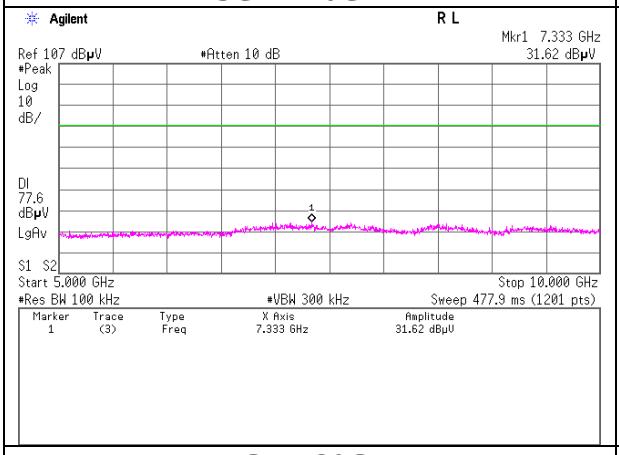
1GHz-5GHz



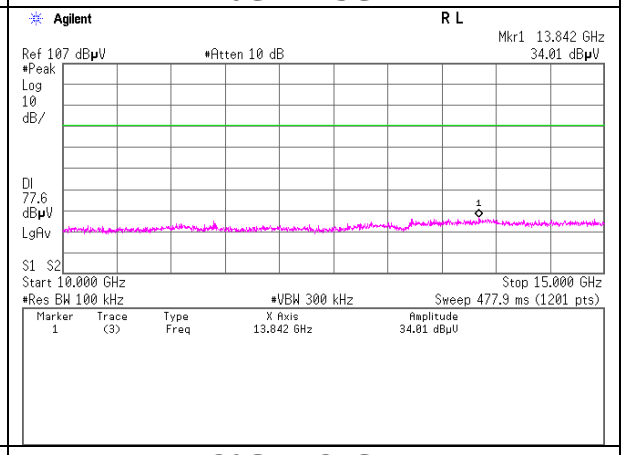
Conducted Spurious Emission

11b Tx 2462MHz

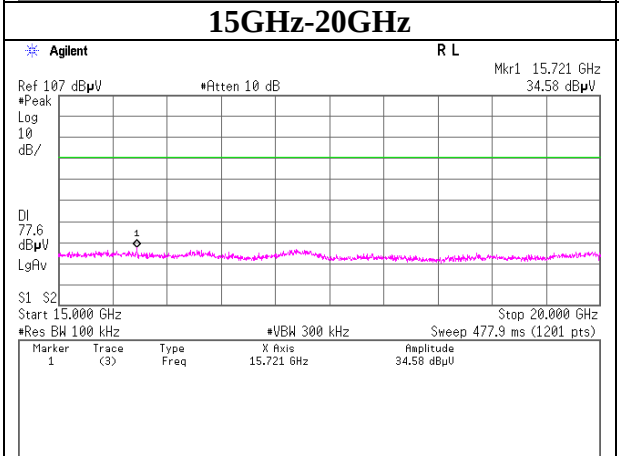
5GHz-10GHz



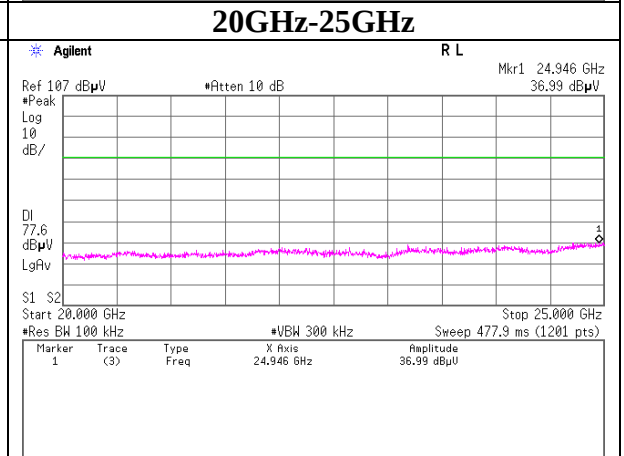
10GHz-15GHz



15GHz-20GHz



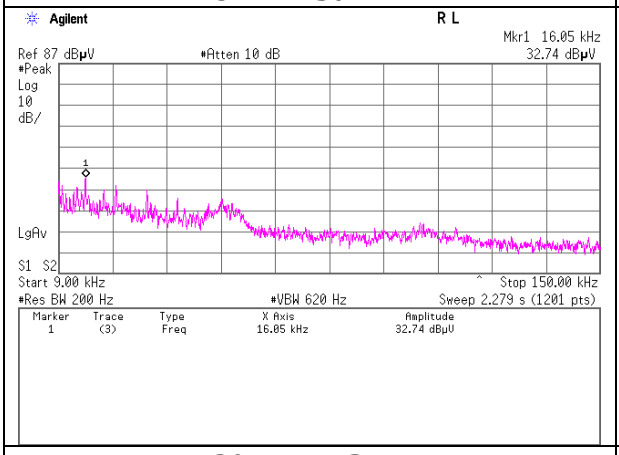
20GHz-25GHz



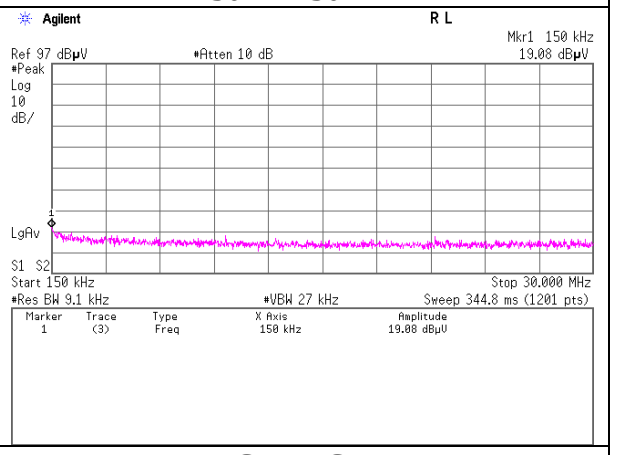
Conducted Spurious Emission

11g Tx 2412MHz

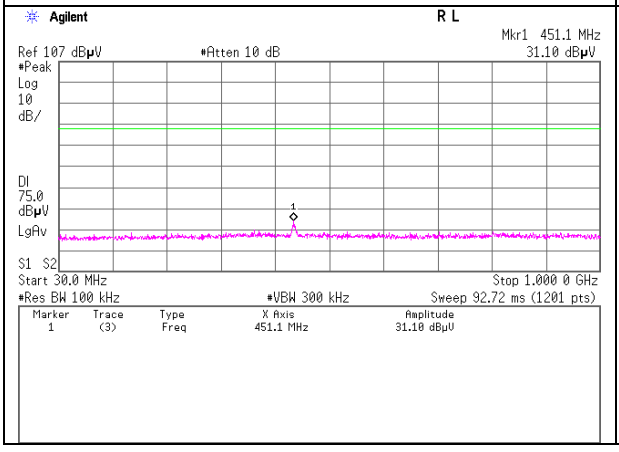
9kHz-150kHz



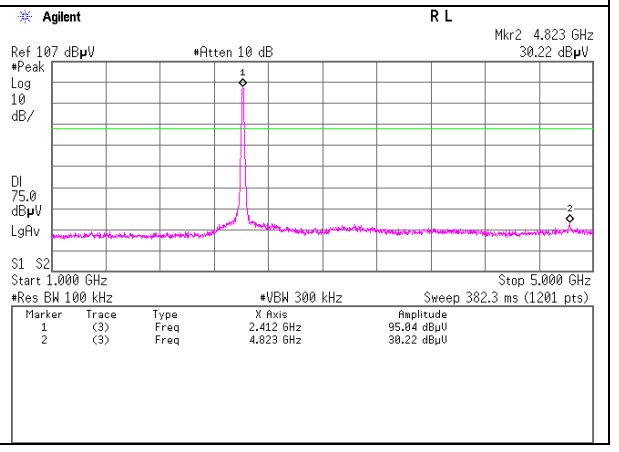
150kHz-30MHz



30MHz-1GHz



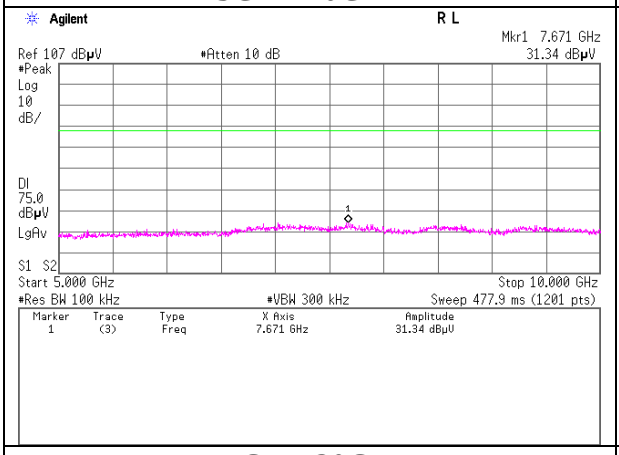
1GHz-5GHz



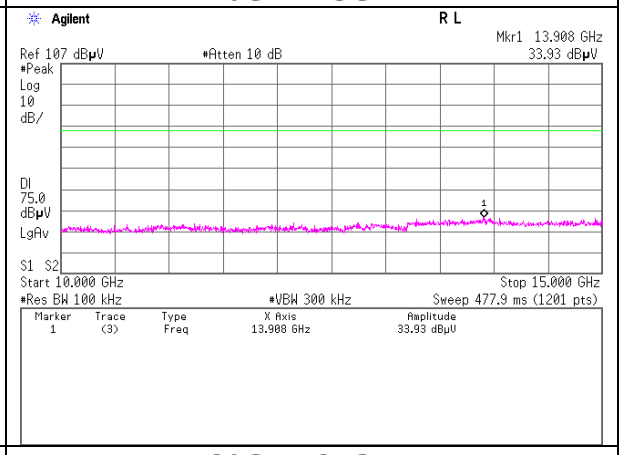
Conducted Spurious Emission

11g Tx 2412MHz

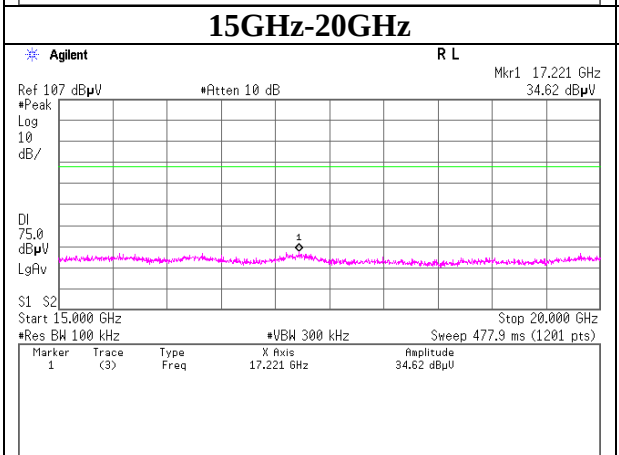
5GHz-10GHz



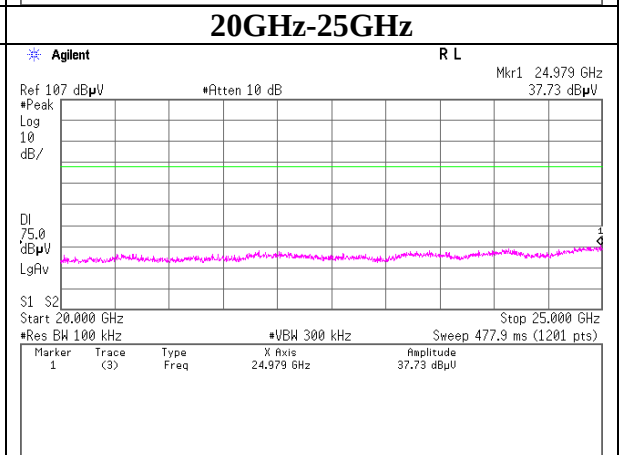
10GHz-15GHz



15GHz-20GHz



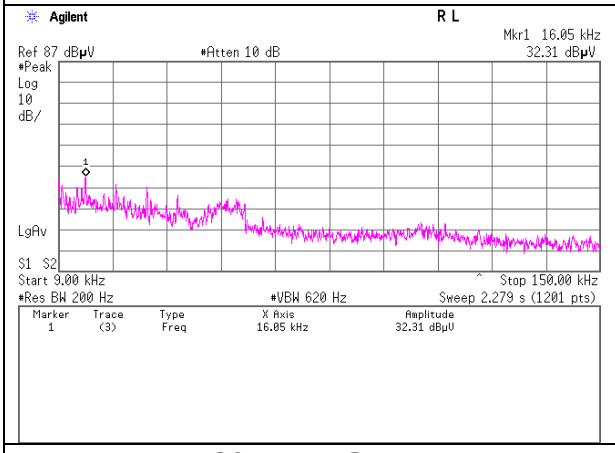
20GHz-25GHz



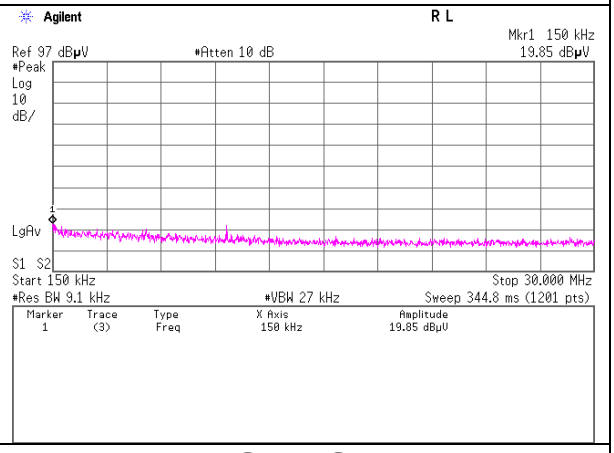
Conducted Spurious Emission

11g Tx 2437MHz

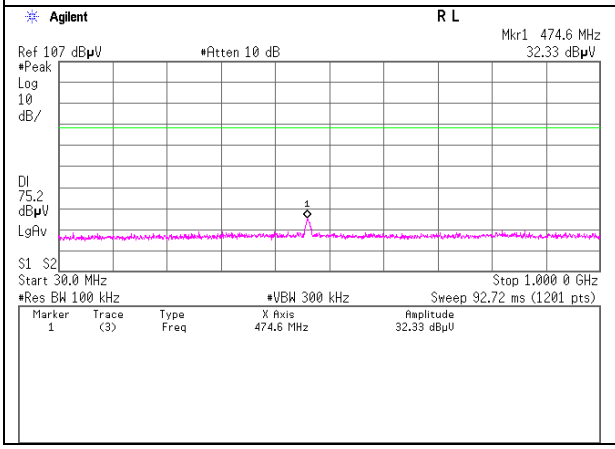
9kHz-150kHz



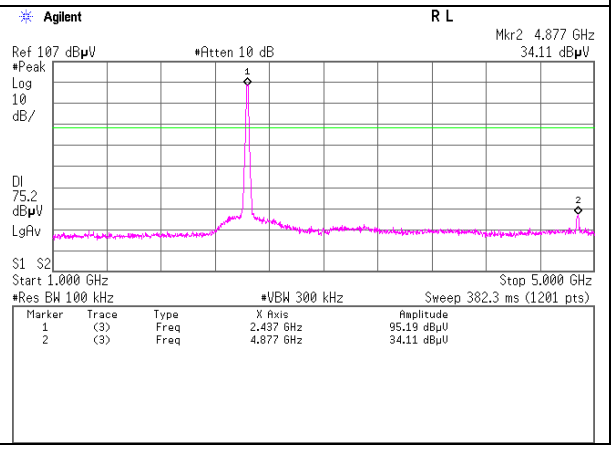
150kHz-30MHz



30MHz-1GHz



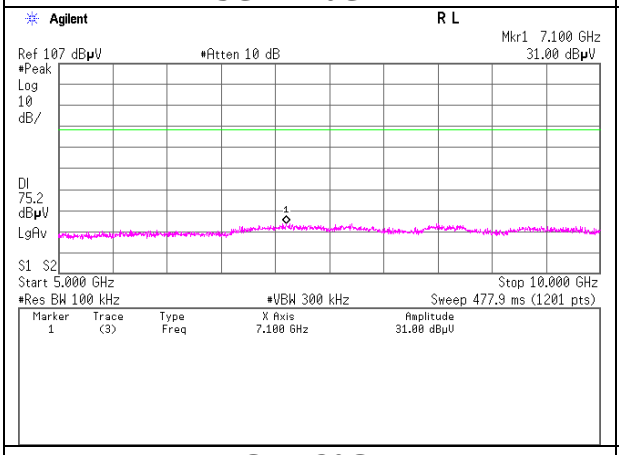
1GHz-5GHz



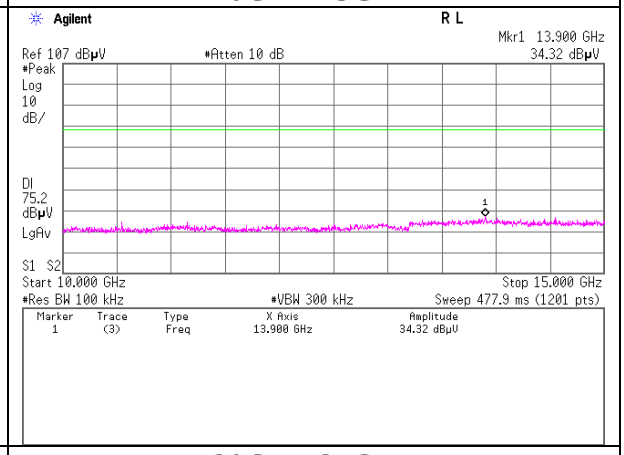
Conducted Spurious Emission

11g Tx 2437MHz

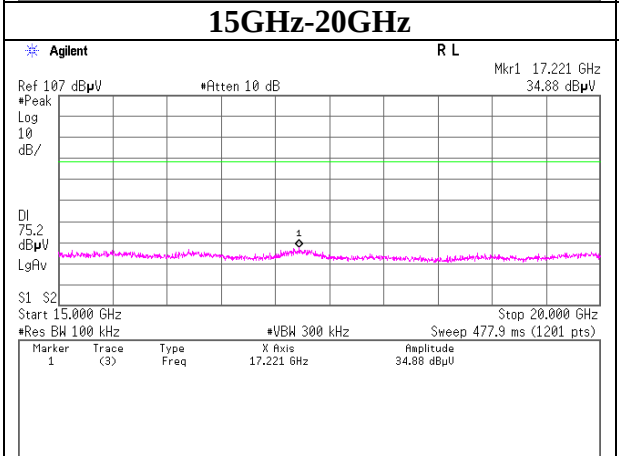
5GHz-10GHz



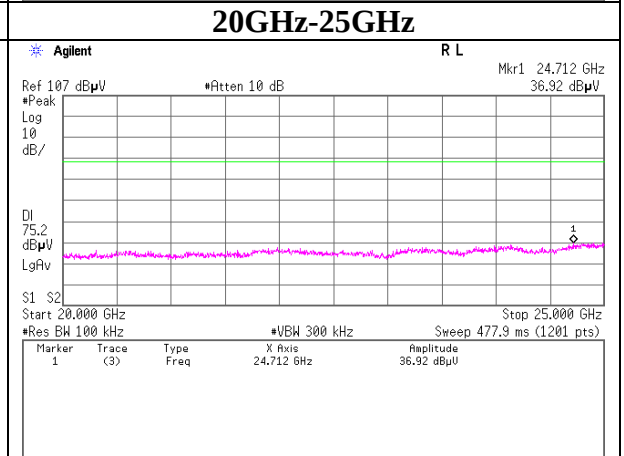
10GHz-15GHz



15GHz-20GHz



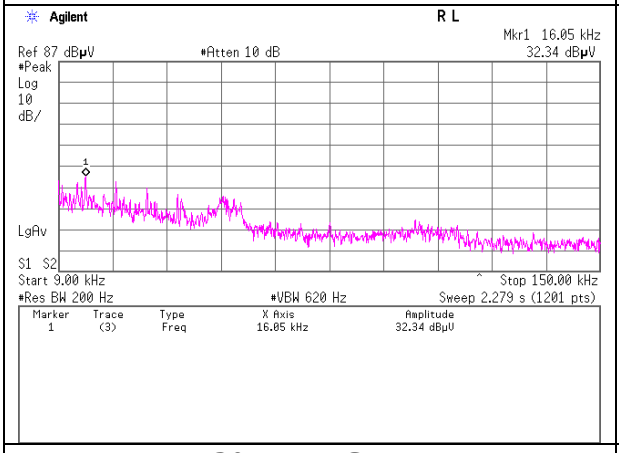
20GHz-25GHz



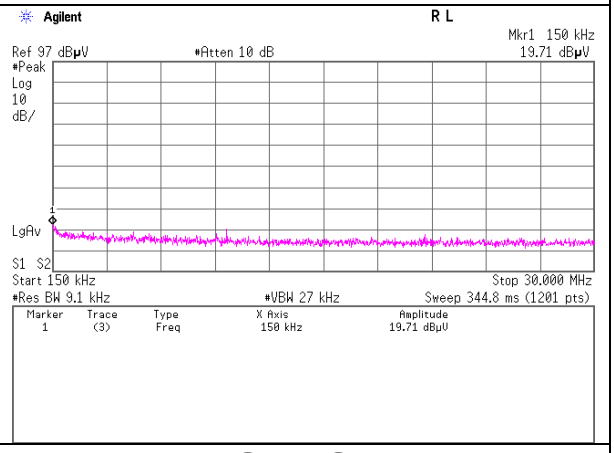
Conducted Spurious Emission

11g Tx 2462MHz

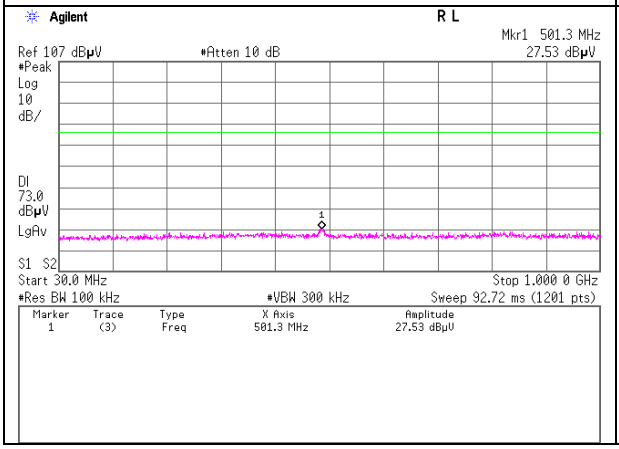
9kHz-150kHz



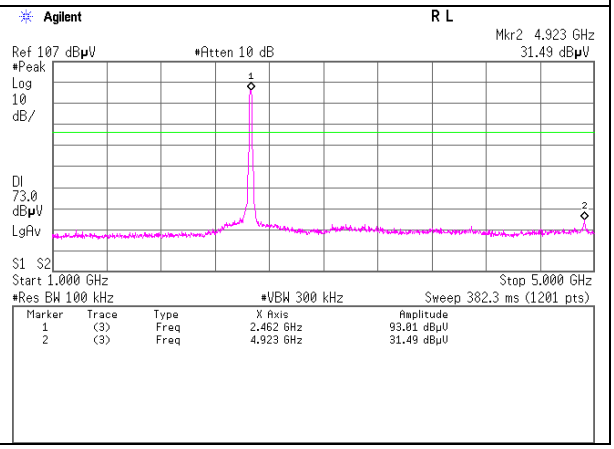
150kHz-30MHz



30MHz-1GHz



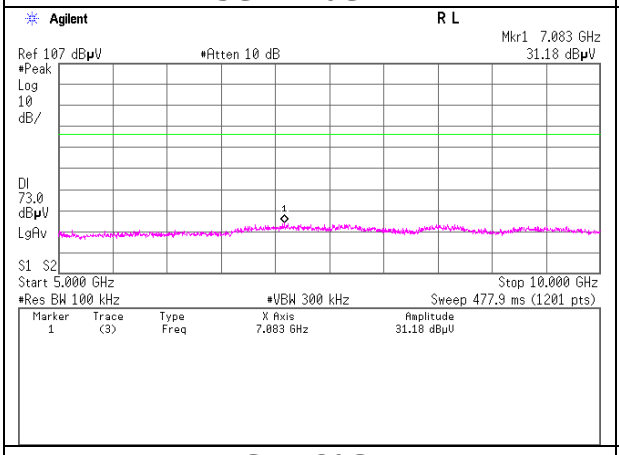
1GHz-5GHz



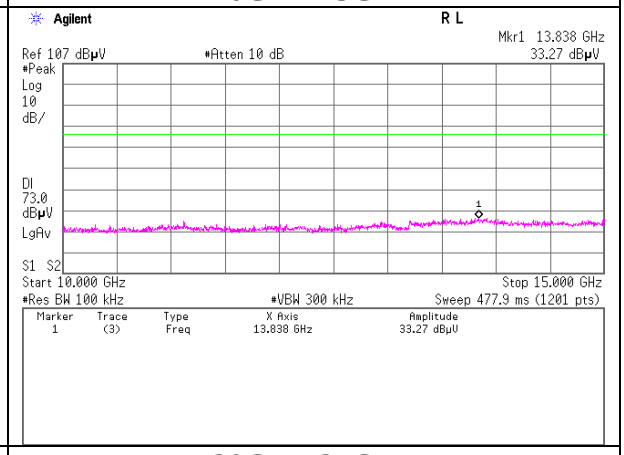
Conducted Spurious Emission

11g Tx 2462MHz

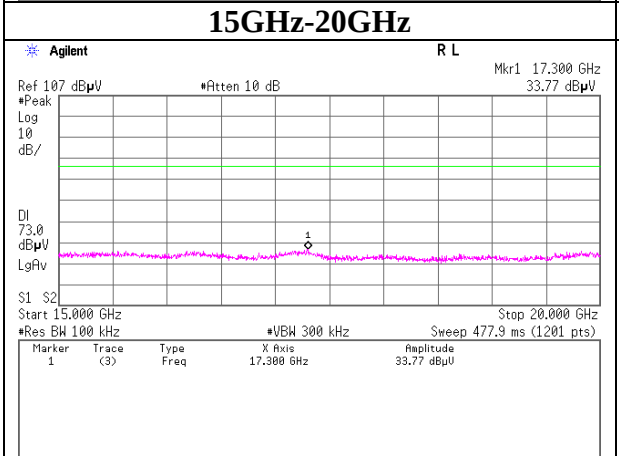
5GHz-10GHz



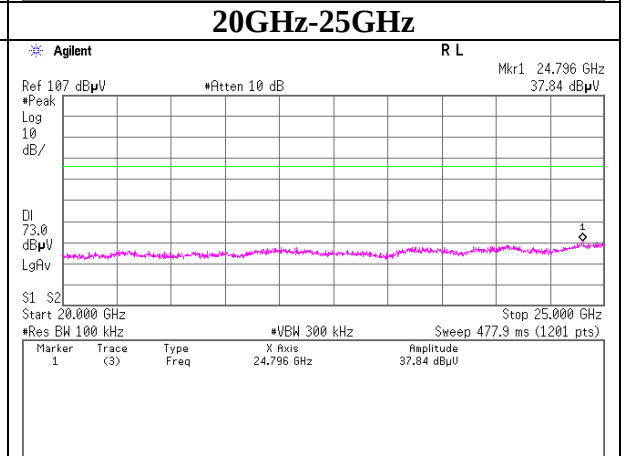
10GHz-15GHz



15GHz-20GHz



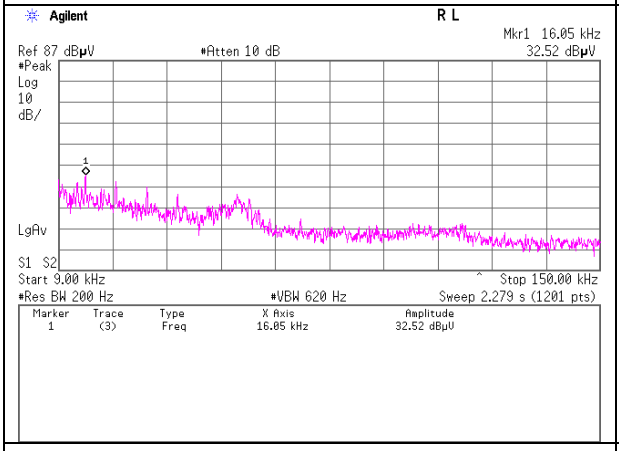
20GHz-25GHz



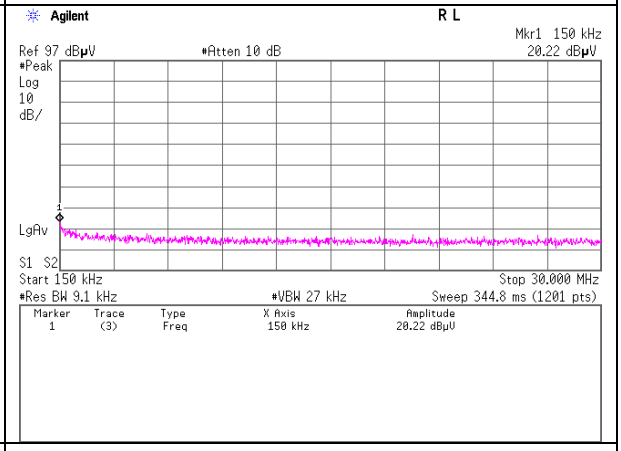
Conducted Spurious Emission

11n-20 Tx 2412MHz

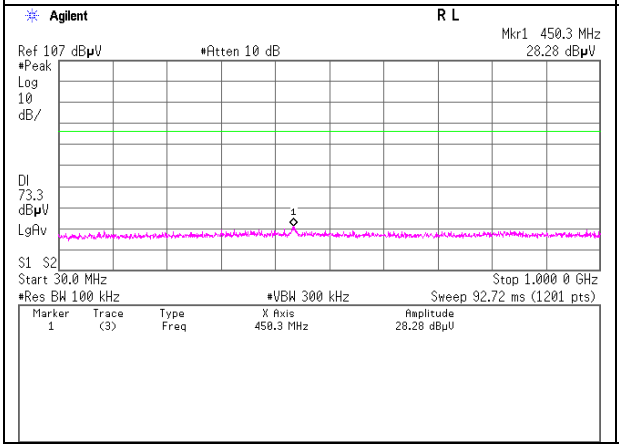
9kHz-150kHz



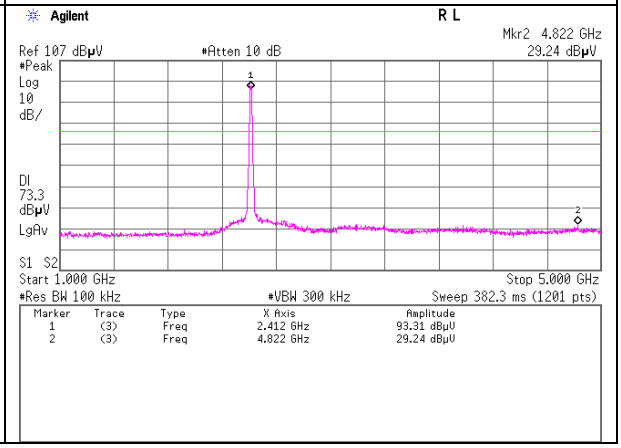
150kHz-30MHz



30MHz-1GHz



1GHz-5GHz



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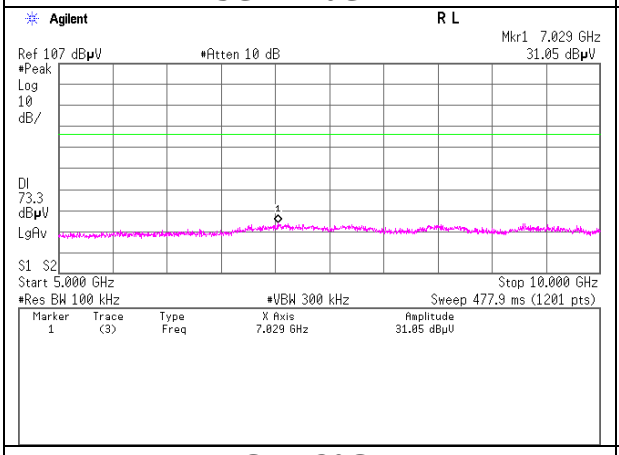
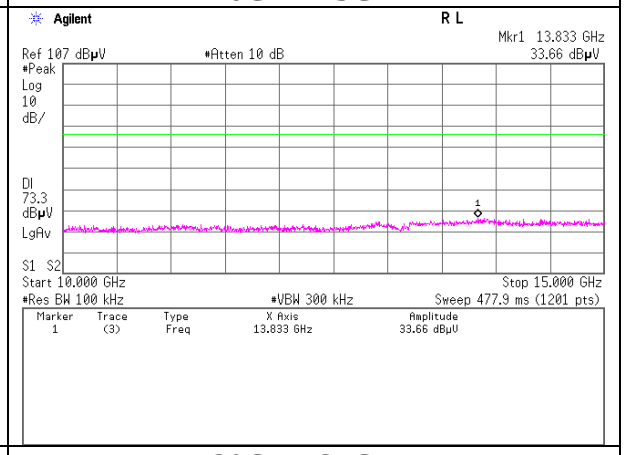
Conducted Spurious Emission

11n-20 Tx 2412MHz

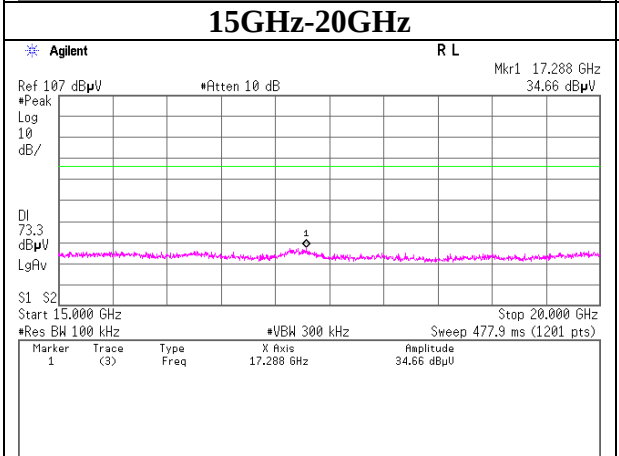
5GHz-10GHz



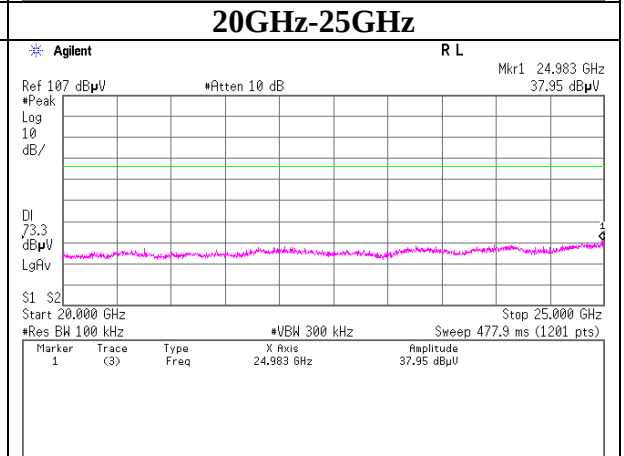
10GHz-15GHz



15GHz-20GHz



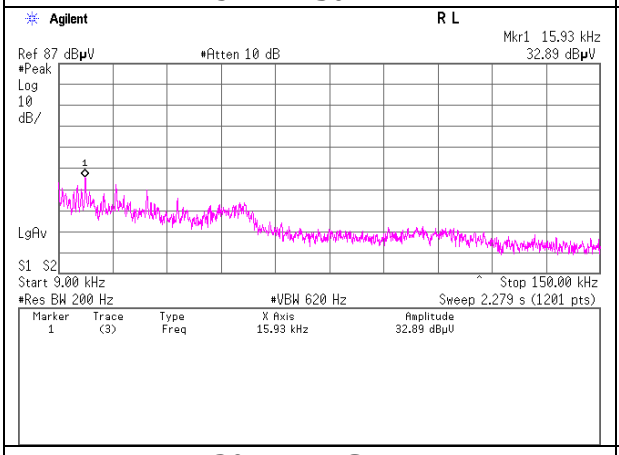
20GHz-25GHz



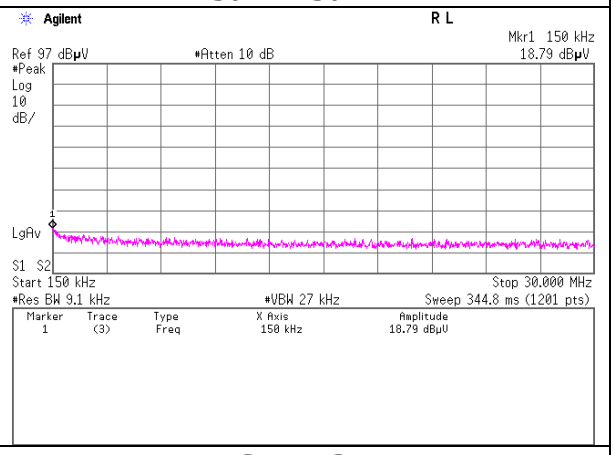
Conducted Spurious Emission

11n-20 Tx 2437MHz

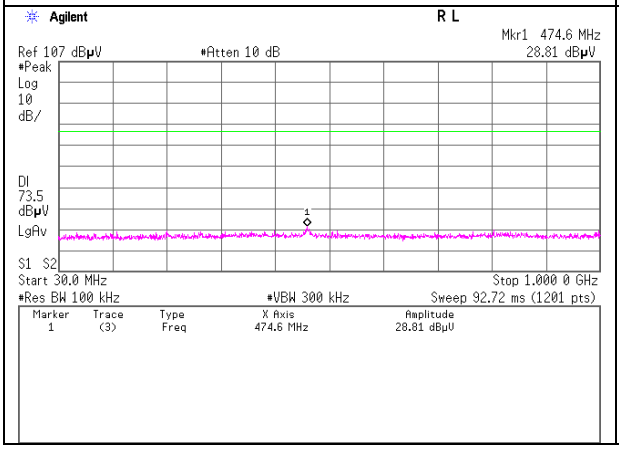
9kHz-150kHz



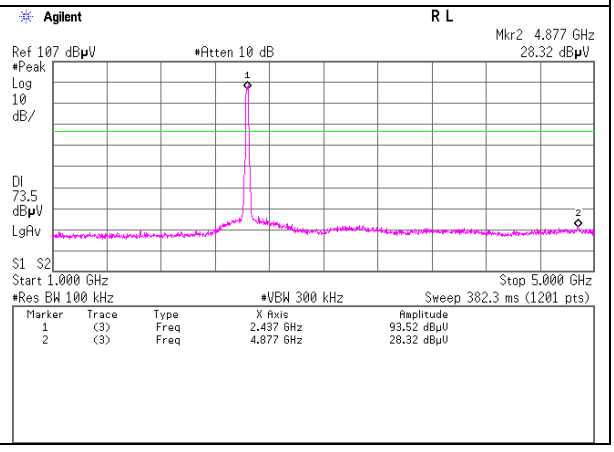
150kHz-30MHz



30MHz-1GHz



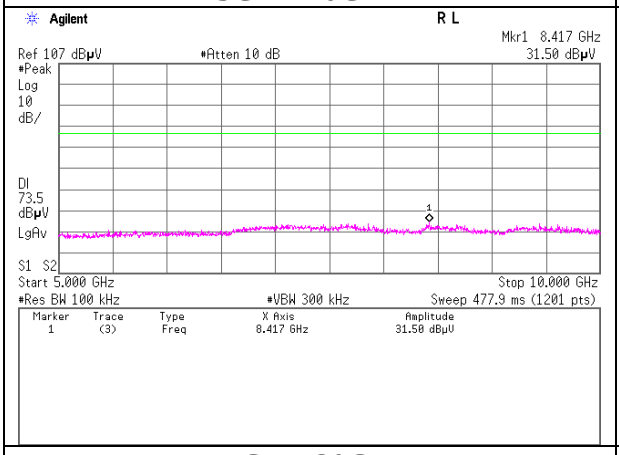
1GHz-5GHz



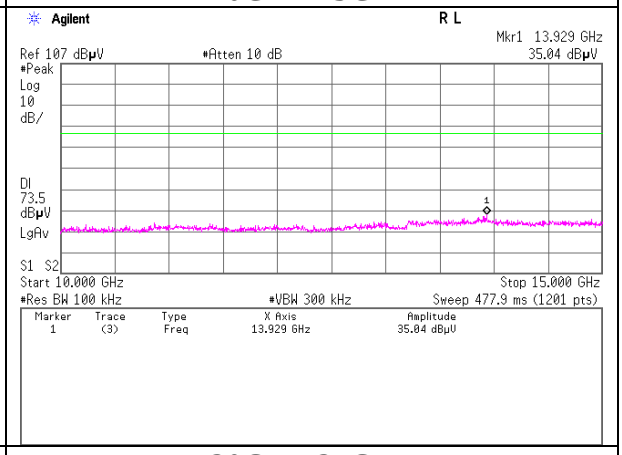
Conducted Spurious Emission

11n-20 Tx 2437MHz

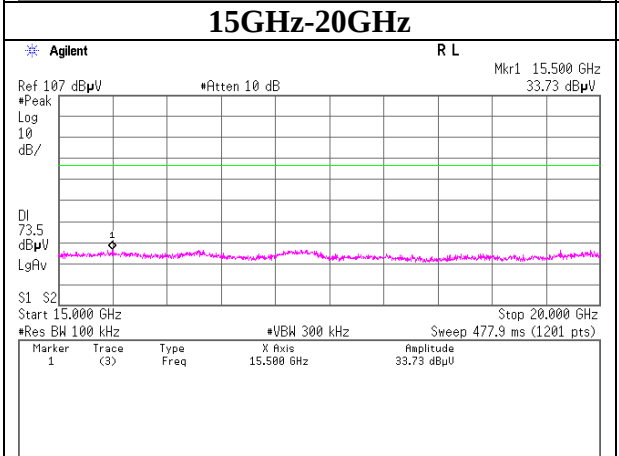
5GHz-10GHz



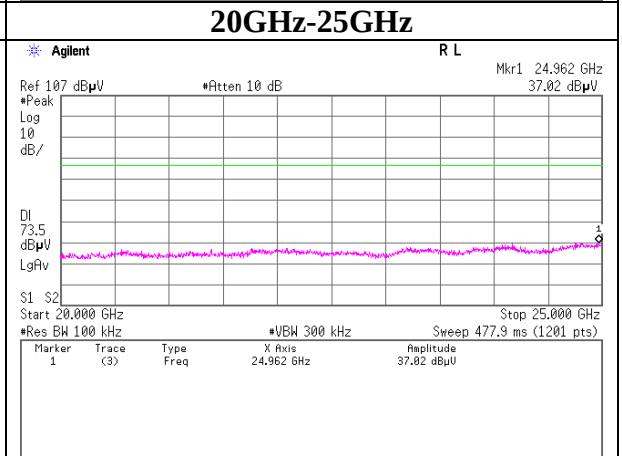
10GHz-15GHz



15GHz-20GHz



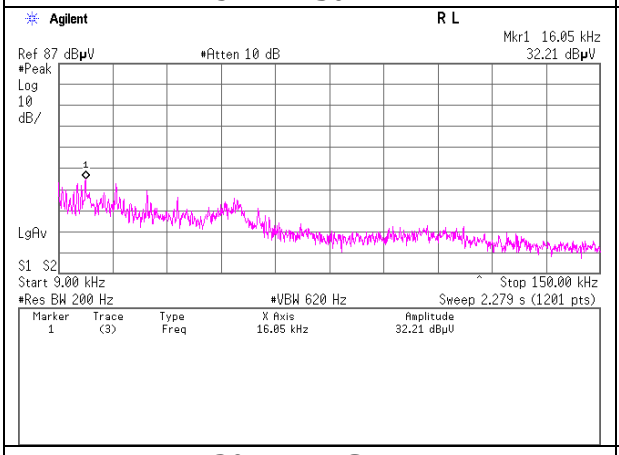
20GHz-25GHz



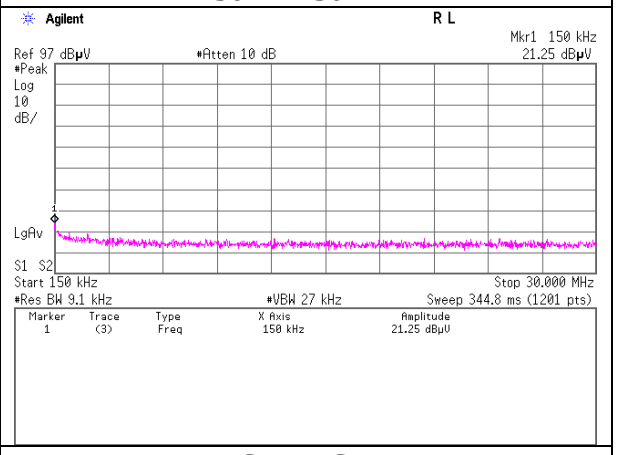
Conducted Spurious Emission

11n-20 Tx 2462MHz

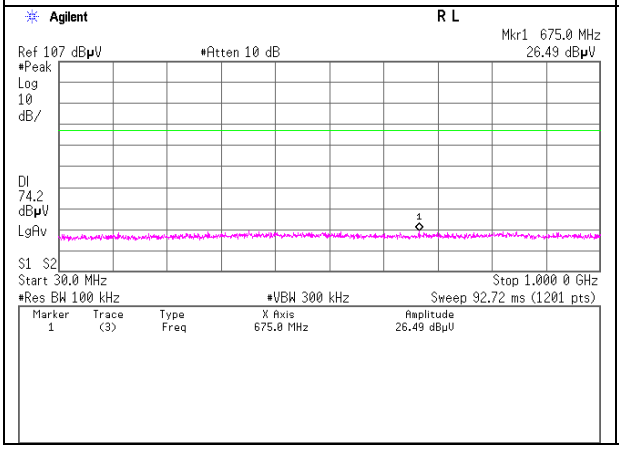
9kHz-150kHz



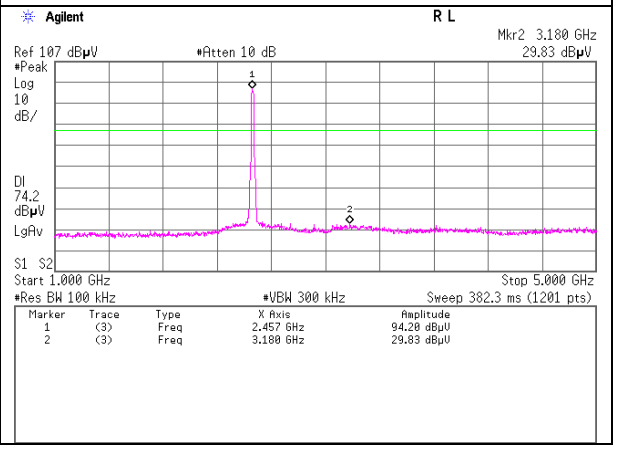
150kHz-30MHz



30MHz-1GHz



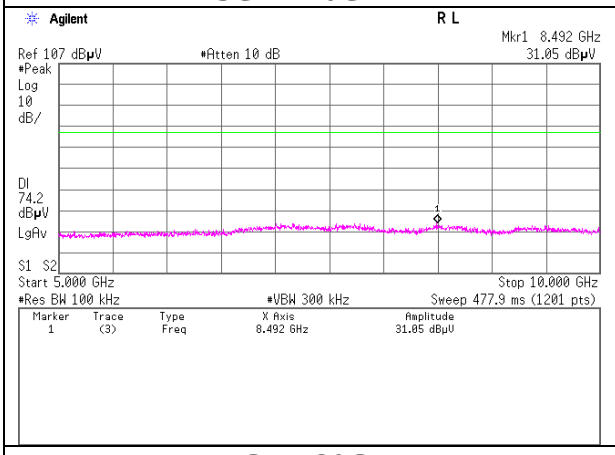
1GHz-5GHz



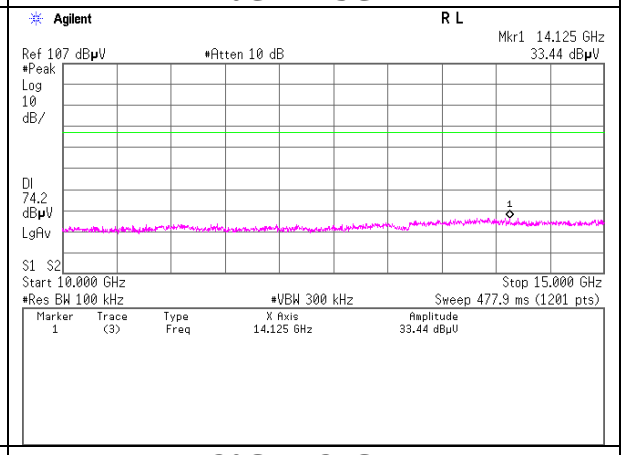
Conducted Spurious Emission

11n-20 Tx 2462MHz

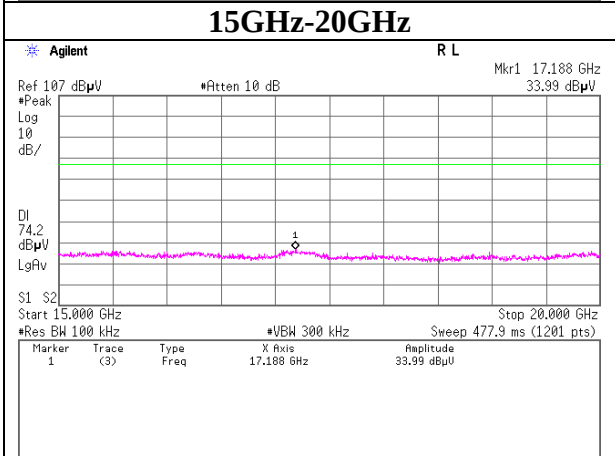
5GHz-10GHz



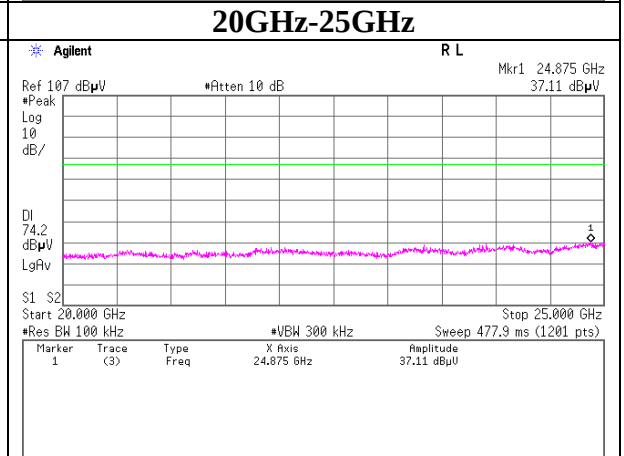
10GHz-15GHz



15GHz-20GHz



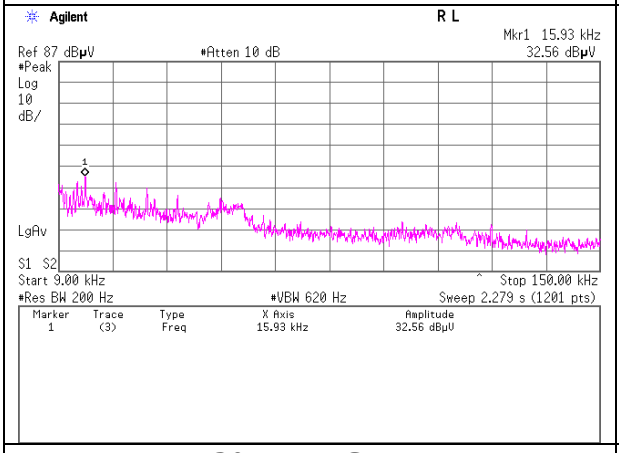
20GHz-25GHz



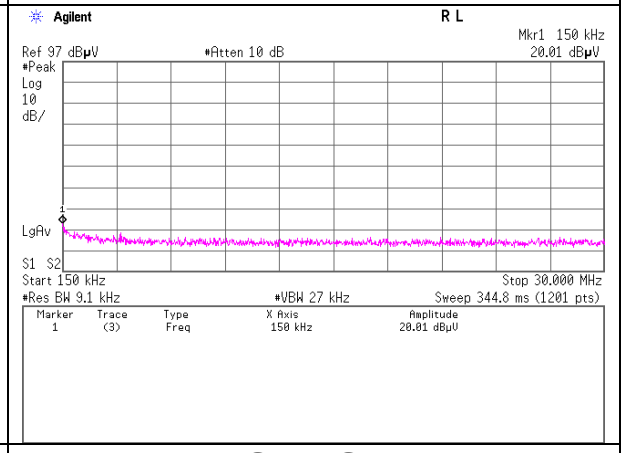
Conducted Spurious Emission

11n-40 Tx 2422MHz

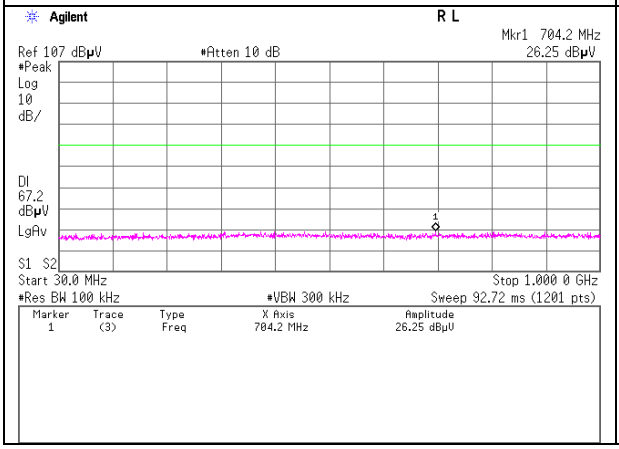
9kHz-150kHz



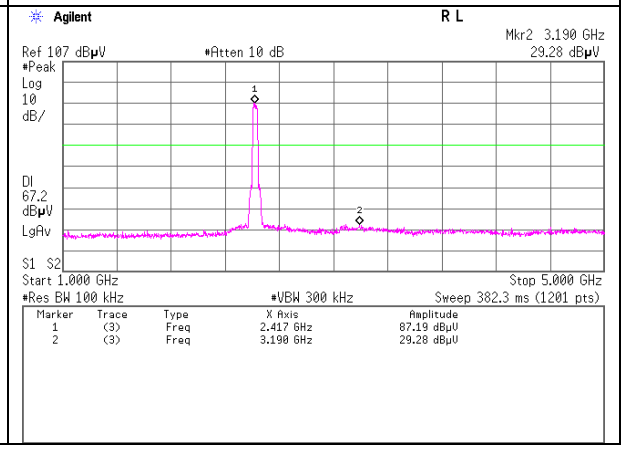
150kHz-30MHz



30MHz-1GHz



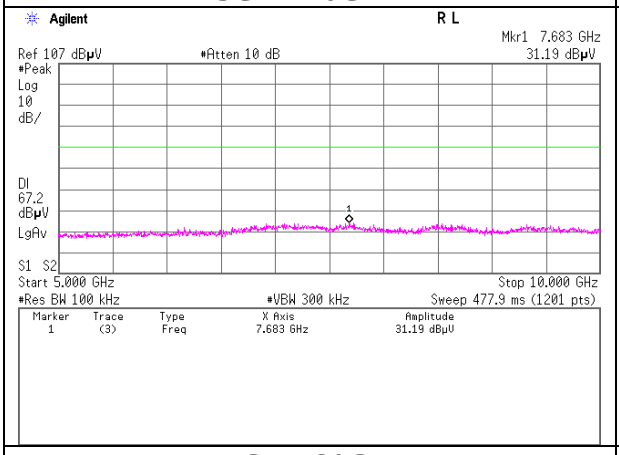
1GHz-5GHz



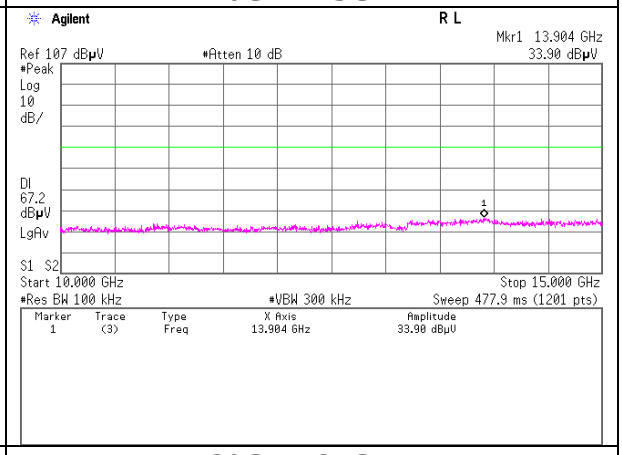
Conducted Spurious Emission

11n-40 Tx 2422MHz

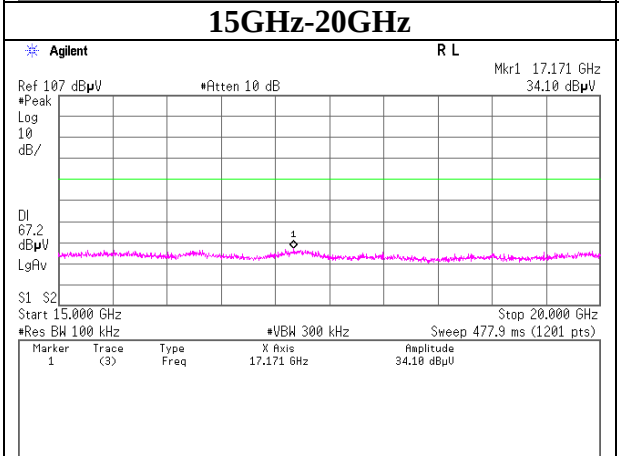
5GHz-10GHz



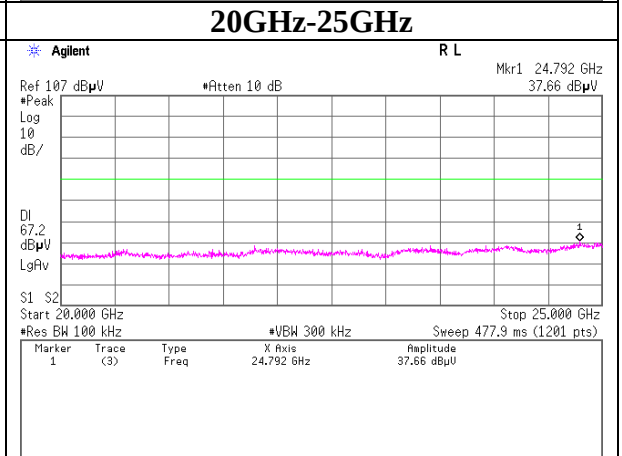
10GHz-15GHz



15GHz-20GHz



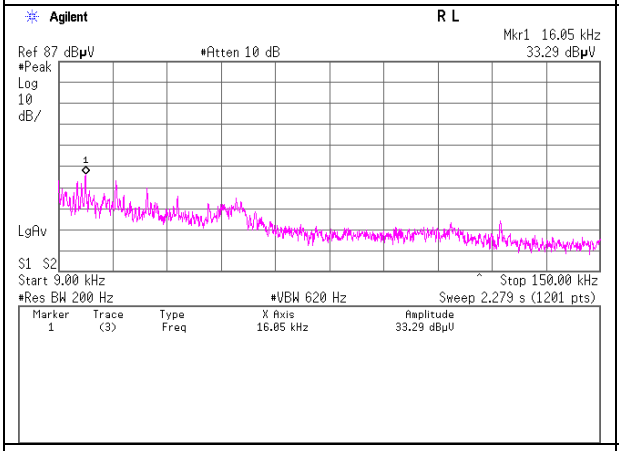
20GHz-25GHz



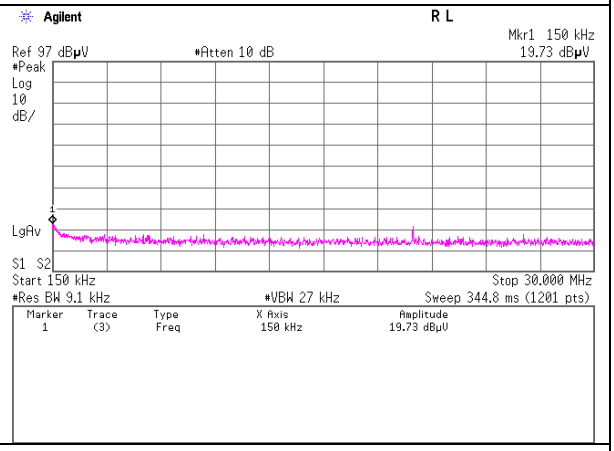
Conducted Spurious Emission

11n-40 Tx 2437MHz

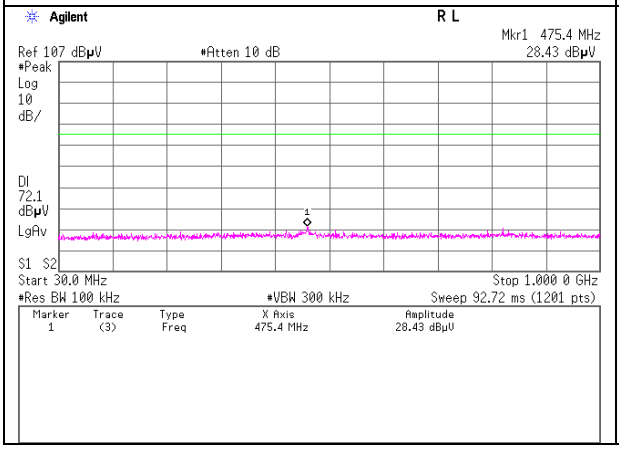
9kHz-150kHz



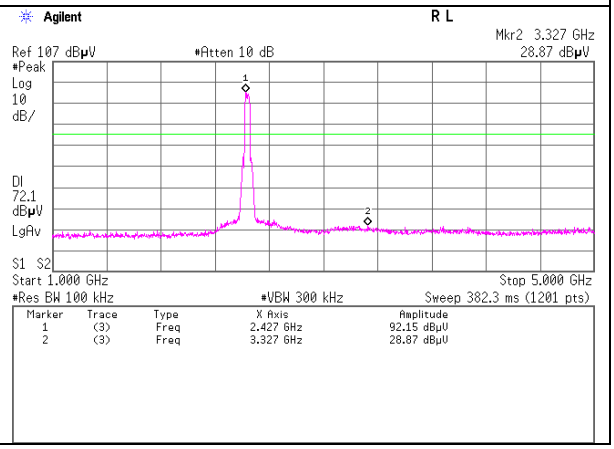
150kHz-30MHz



30MHz-1GHz



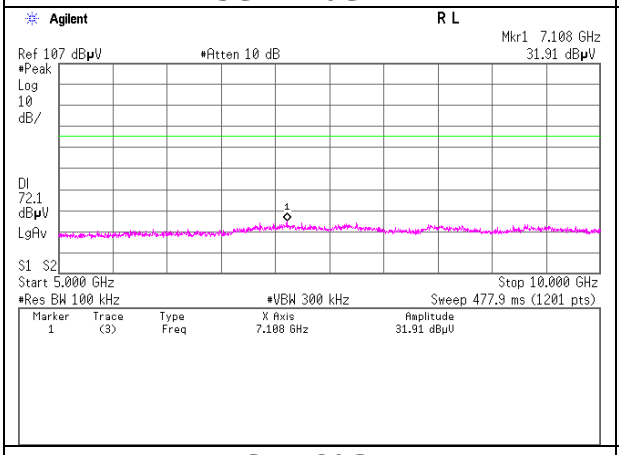
1GHz-5GHz



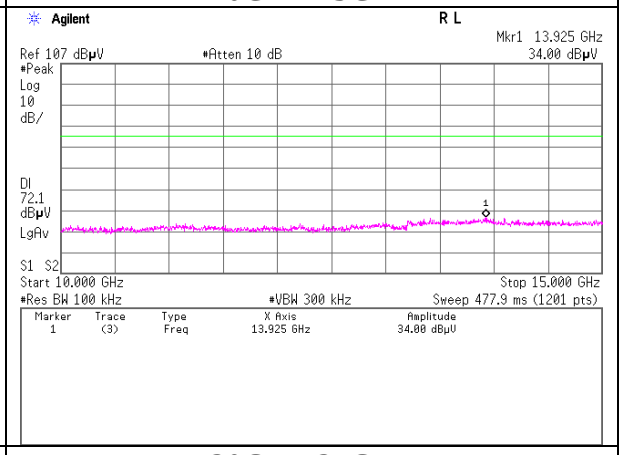
Conducted Spurious Emission

11n-40 Tx 2437MHz

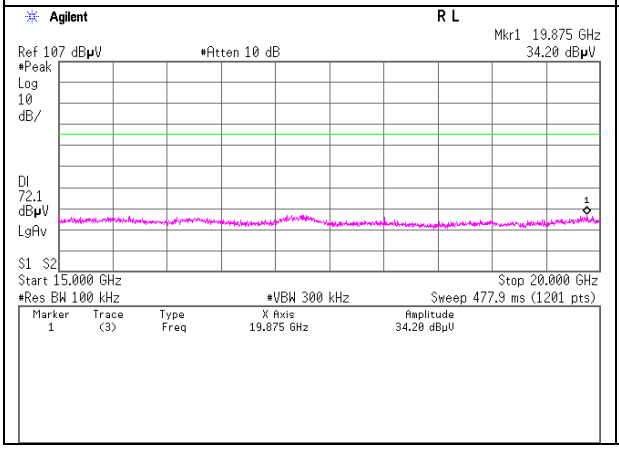
5GHz-10GHz



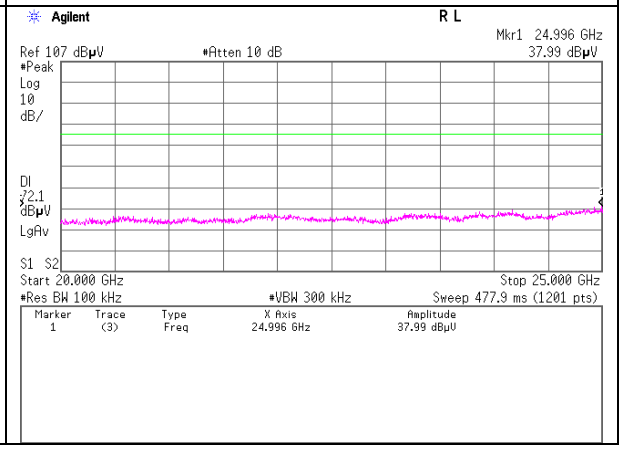
10GHz-15GHz



15GHz-20GHz



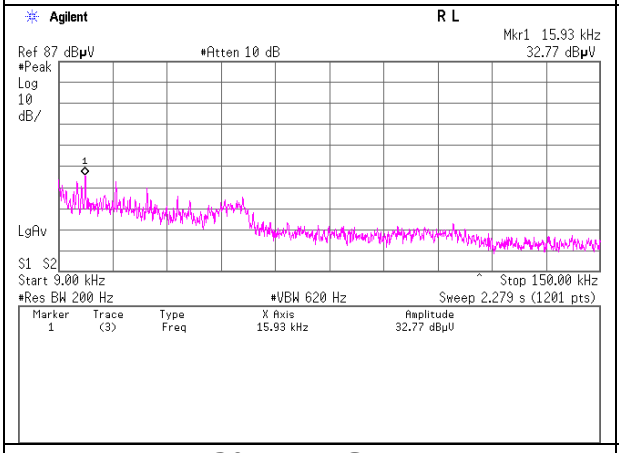
20GHz-25GHz



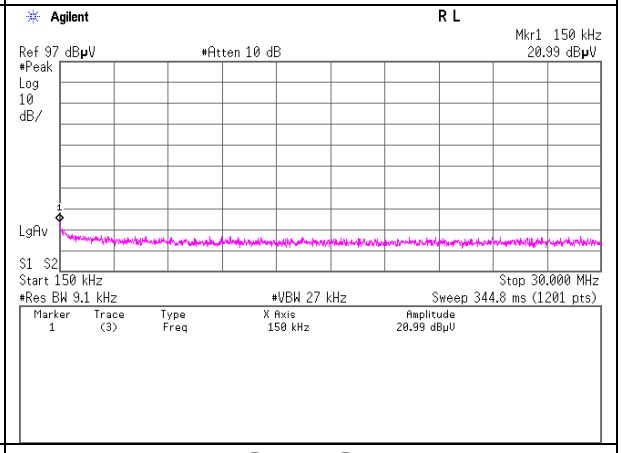
Conducted Spurious Emission

11n-40 Tx 2452MHz

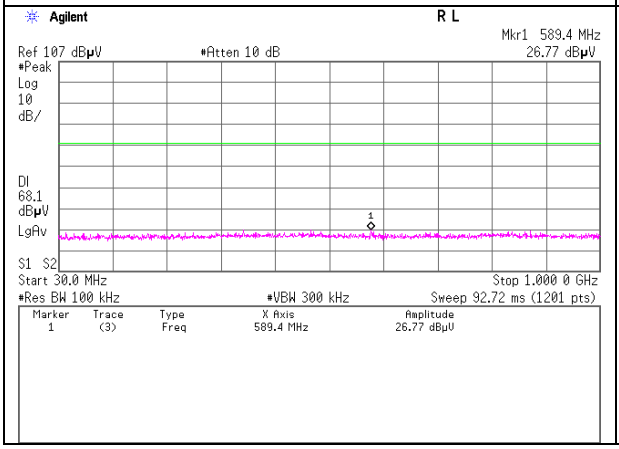
9kHz-150kHz



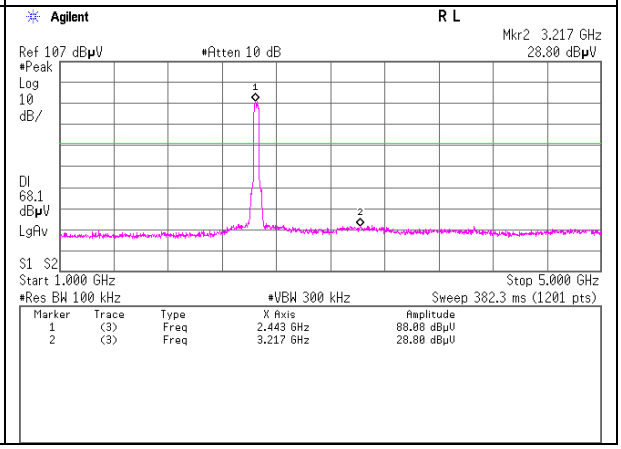
150kHz-30MHz



30MHz-1GHz



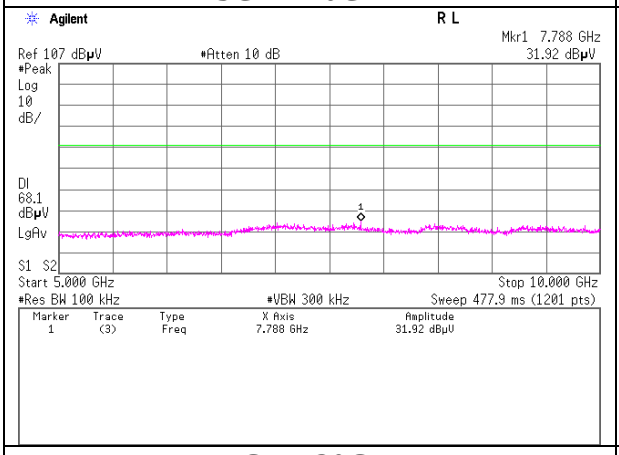
1GHz-5GHz



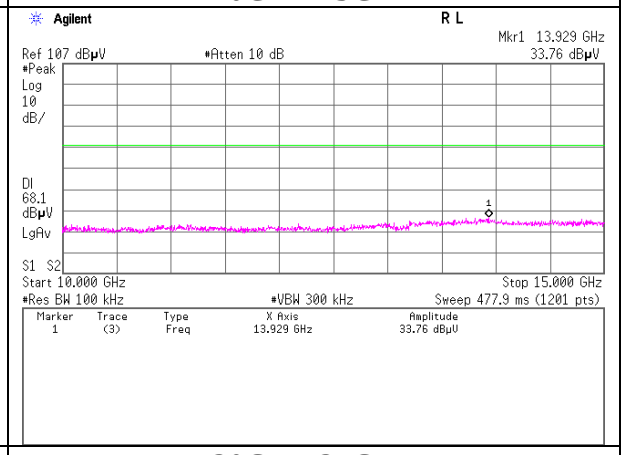
Conducted Spurious Emission

11n-40 Tx 2452MHz

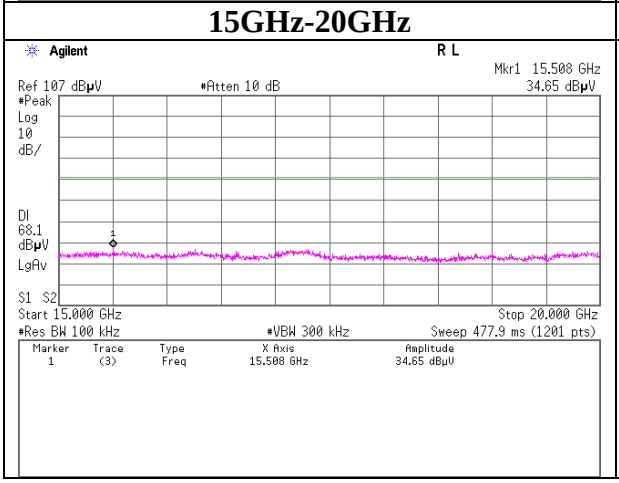
5GHz-10GHz



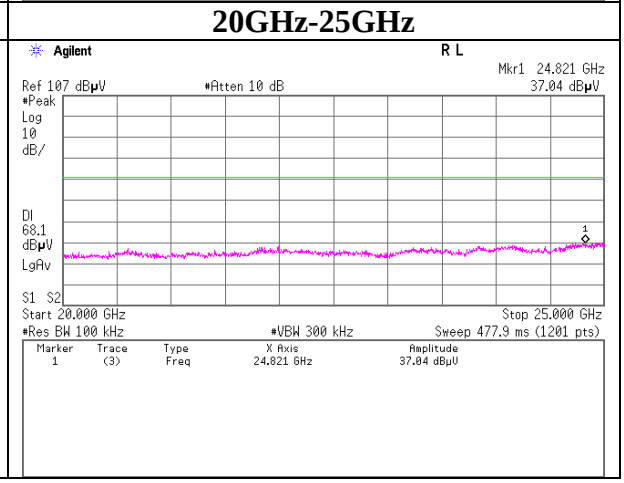
10GHz-15GHz



15GHz-20GHz



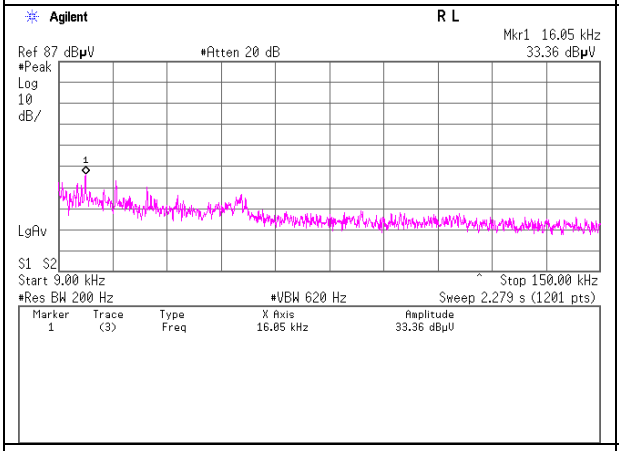
20GHz-25GHz



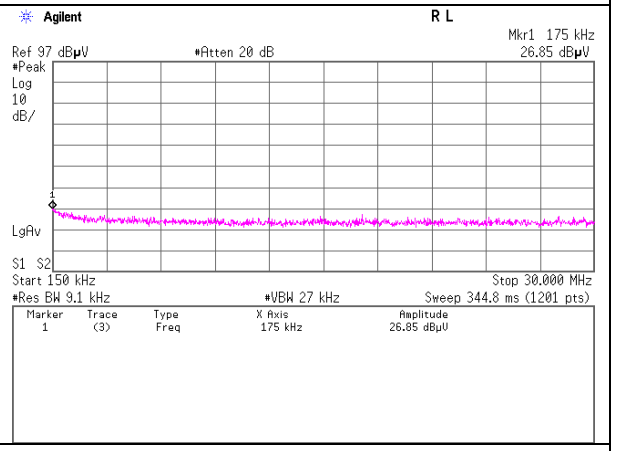
Conducted Spurious Emission

11a Tx 5745MHz

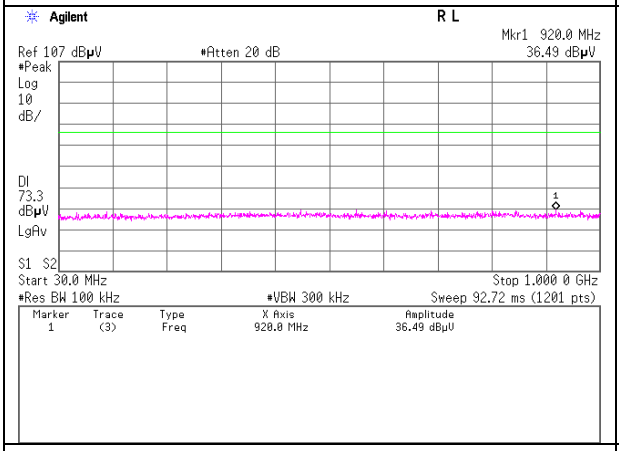
9kHz-150kHz



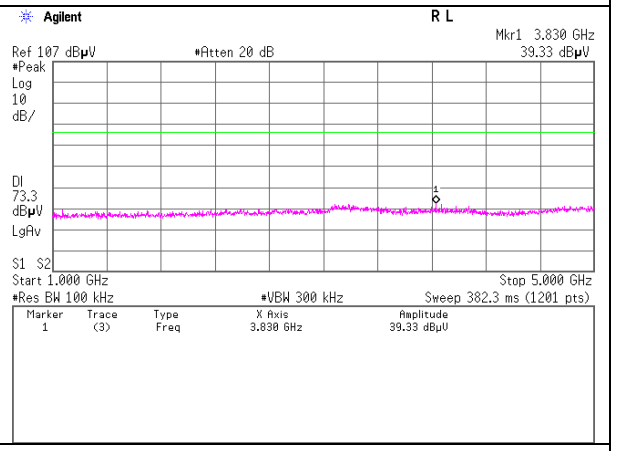
150kHz-30MHz



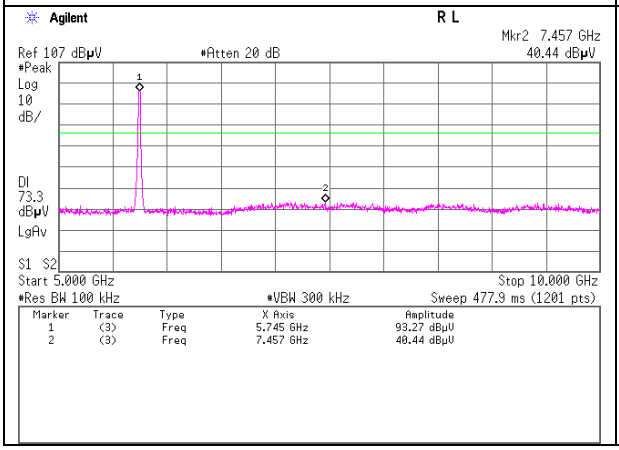
30MHz-1GHz



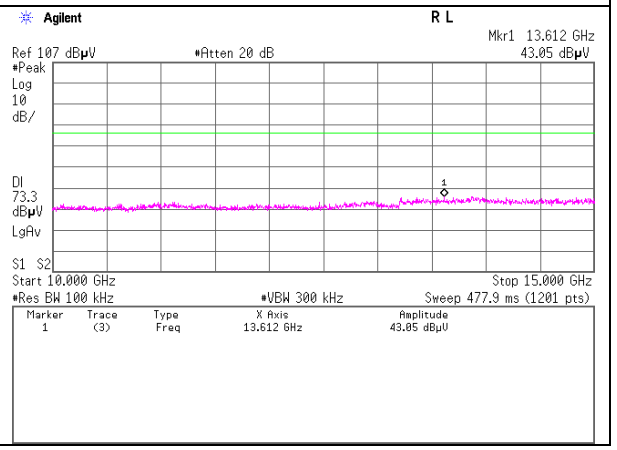
1GHz-5GHz



5GHz-10GHz



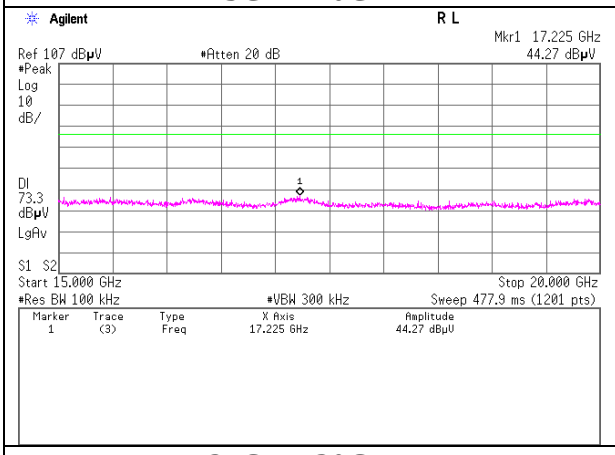
10GHz-15GHz



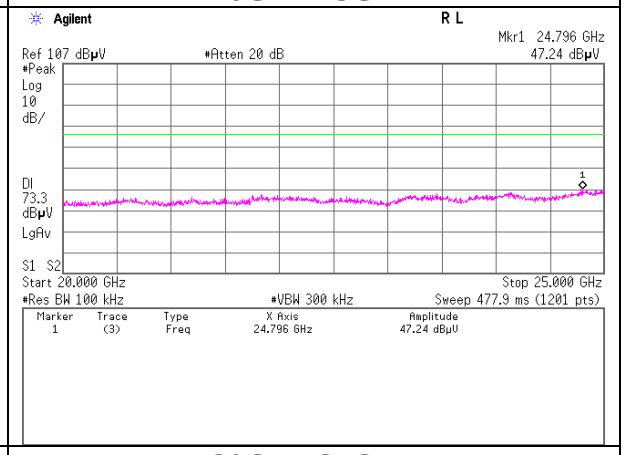
Conducted Spurious Emission

11a Tx 5745MHz

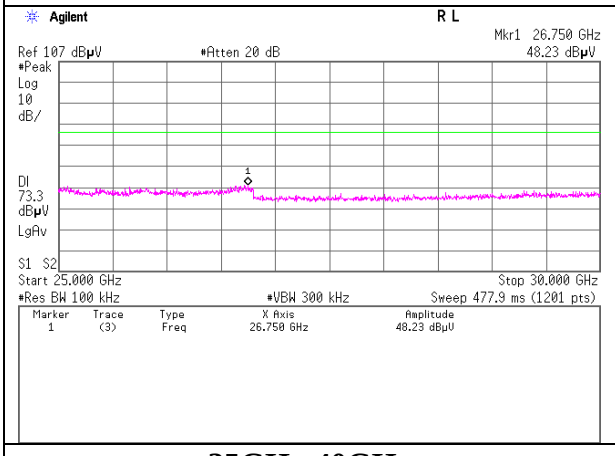
15GHz-20GHz



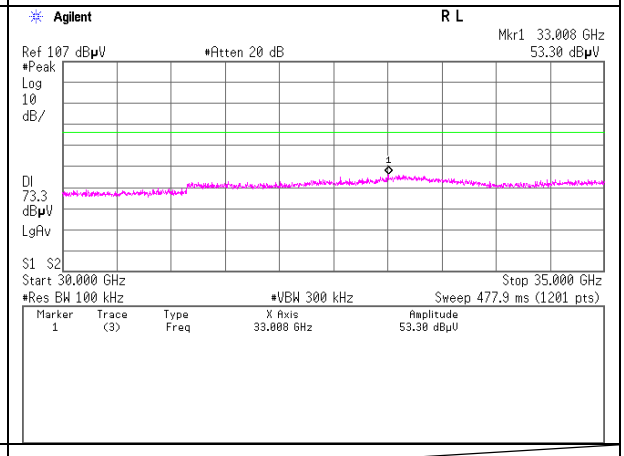
20GHz-25GHz



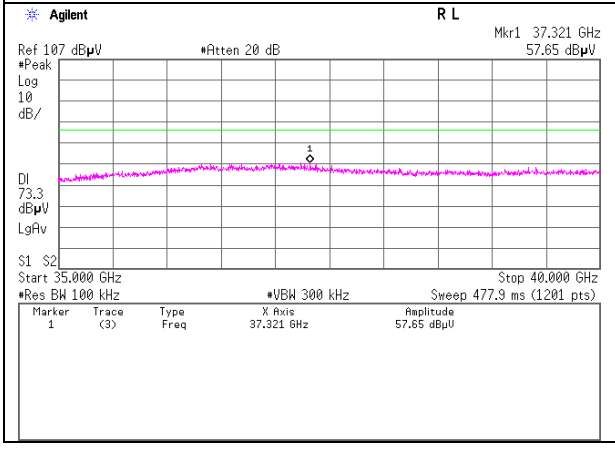
25GHz-30GHz



30GHz-35GHz



35GHz-40GHz



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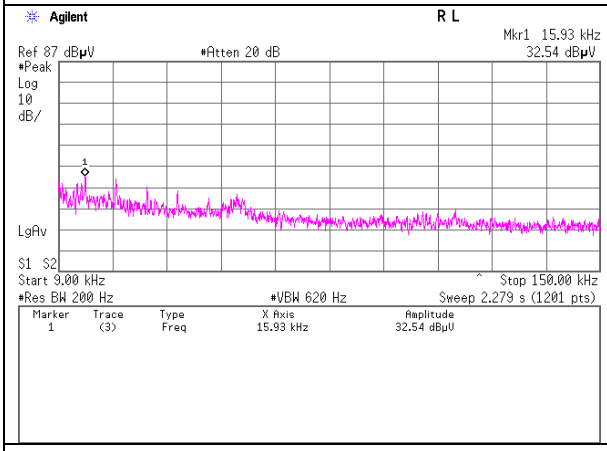
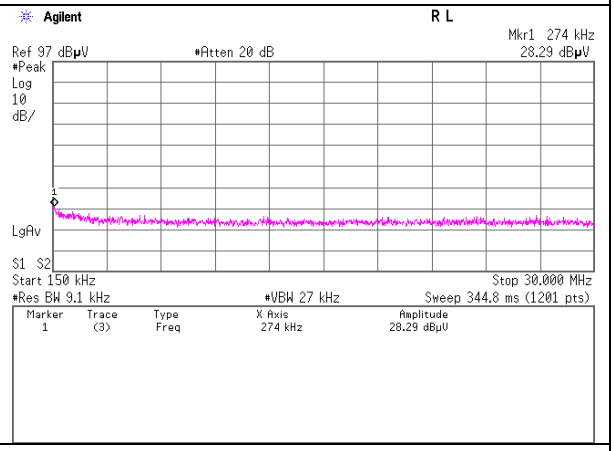
Conducted Spurious Emission

11a Tx 5785MHz

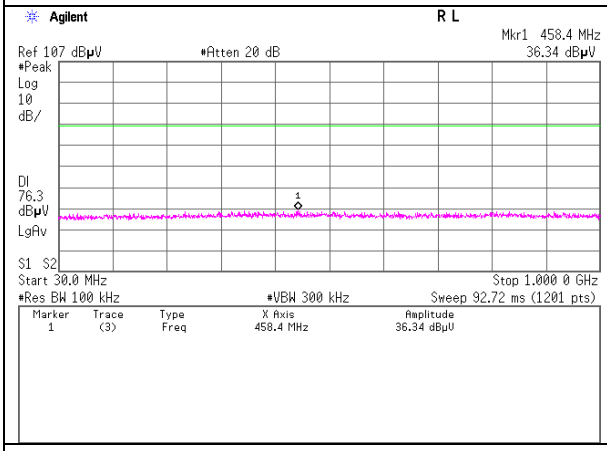
9kHz-150kHz



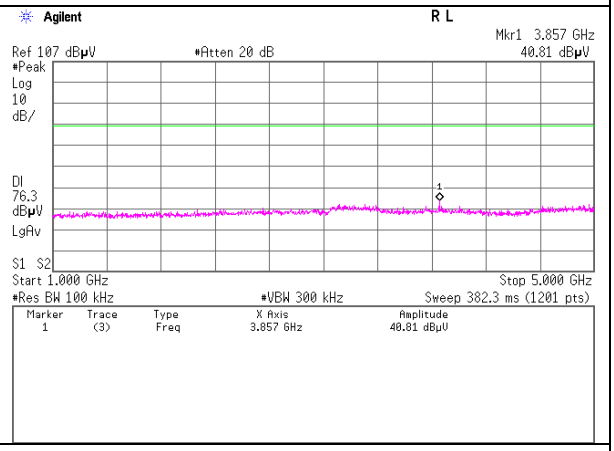
150kHz-30MHz



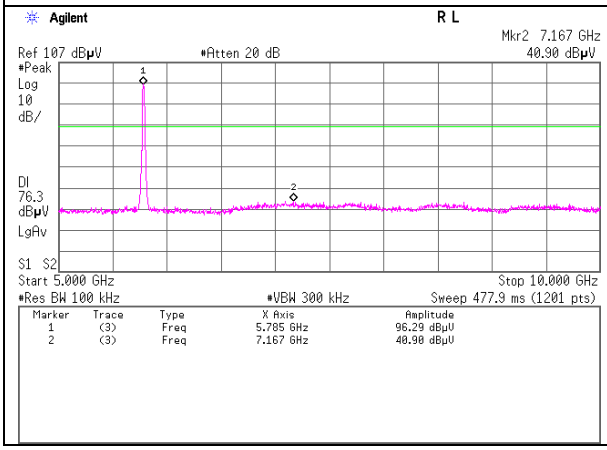
30MHz-1GHz



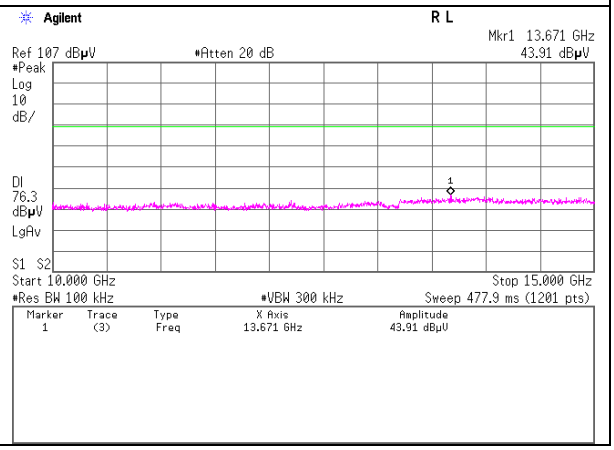
1GHz-5GHz



5GHz-10GHz



10GHz-15GHz



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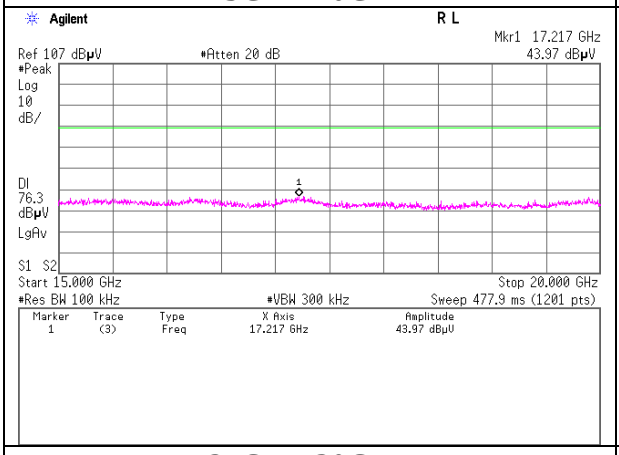
Facsimile : +81 596 24 8124

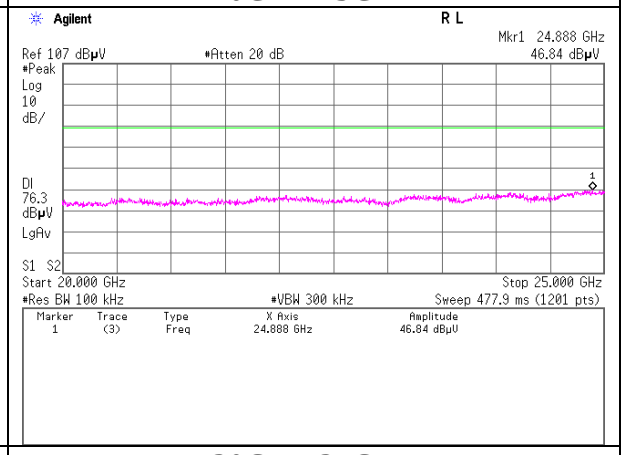
Conducted Spurious Emission

11a Tx 5785MHz

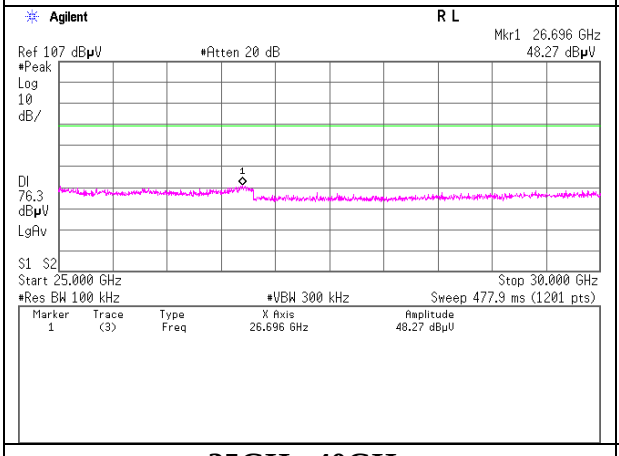
15GHz-20GHz



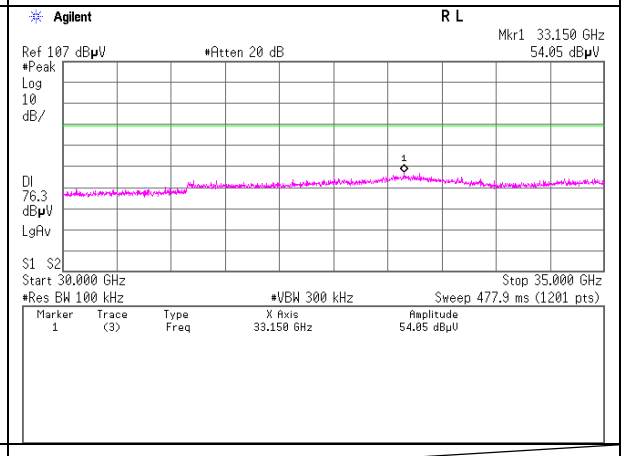
20GHz-25GHz



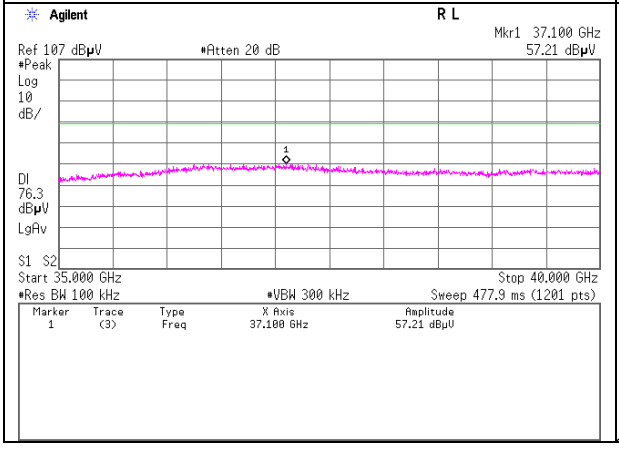
25GHz-30GHz



30GHz-35GHz



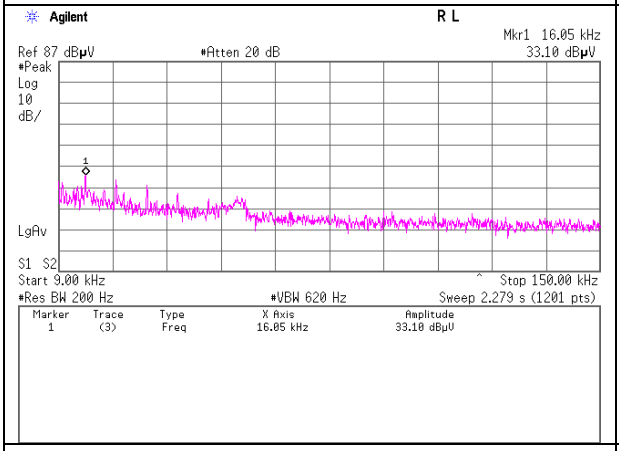
35GHz-40GHz



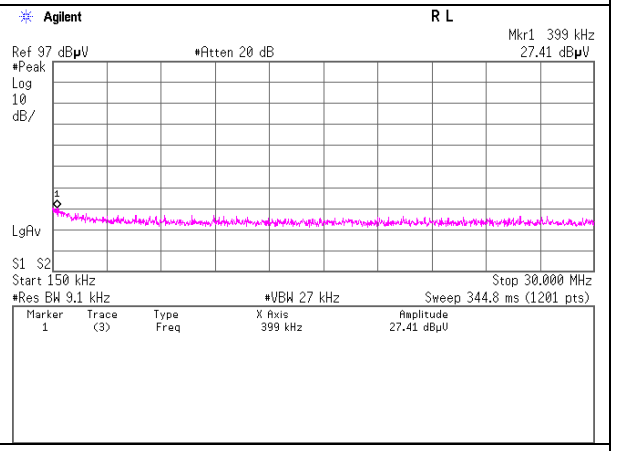
Conducted Spurious Emission

11a Tx 5825MHz

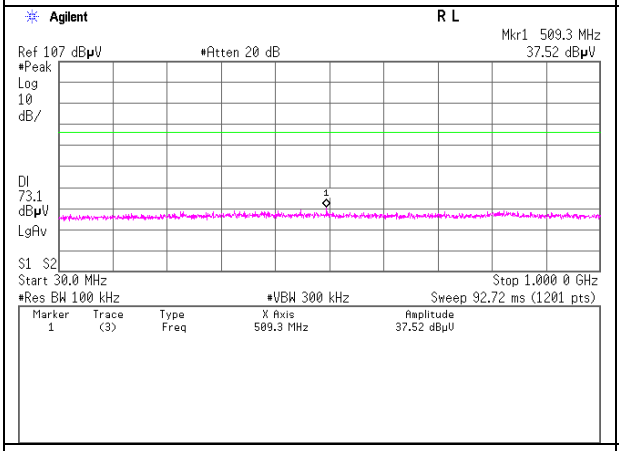
9kHz-150kHz



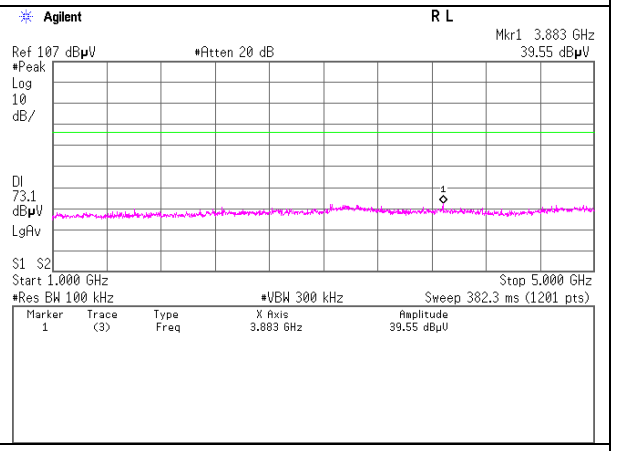
150kHz-30MHz



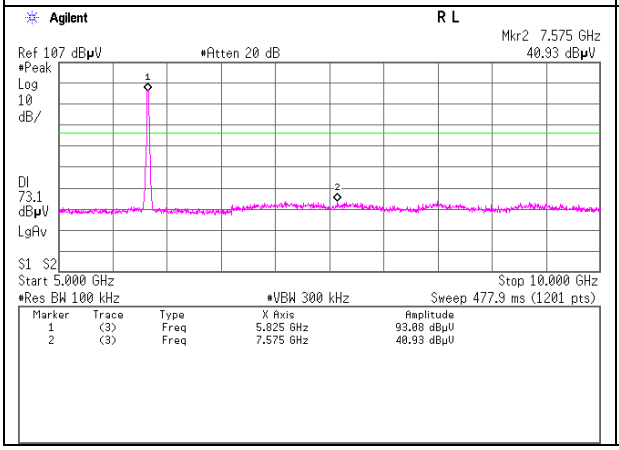
30MHz-1GHz



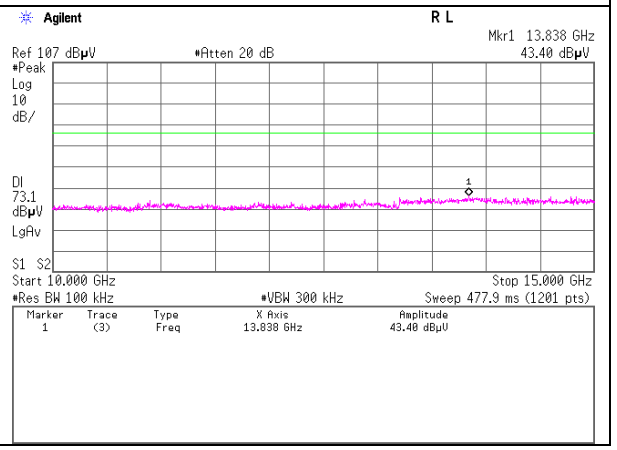
1GHz-5GHz



5GHz-10GHz



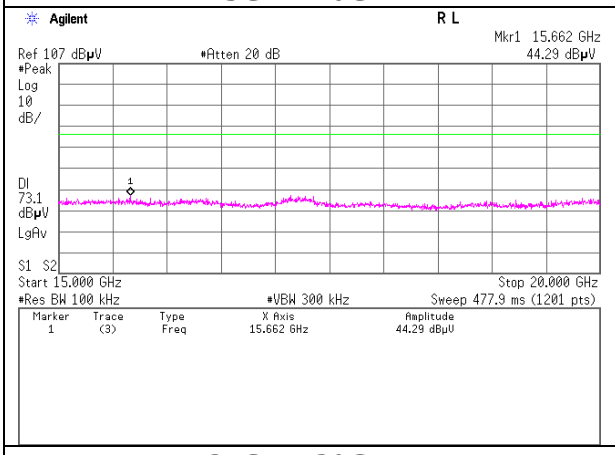
10GHz-15GHz



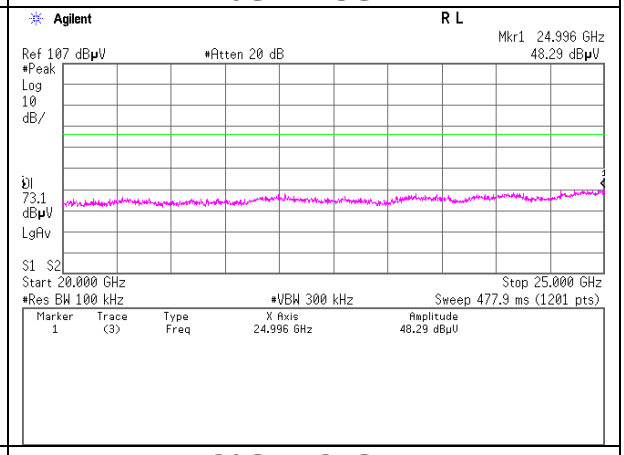
Conducted Spurious Emission

11a Tx 5825MHz

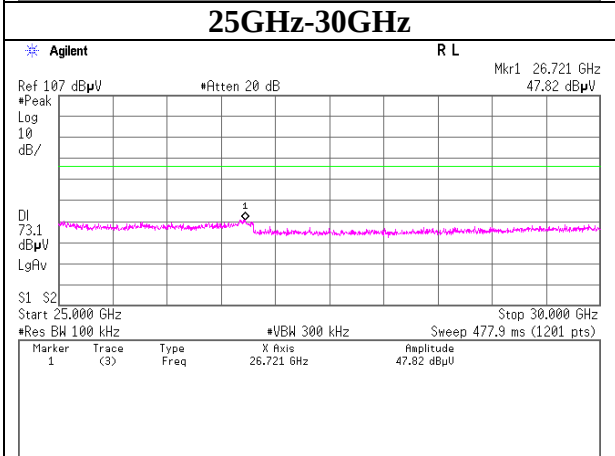
15GHz-20GHz



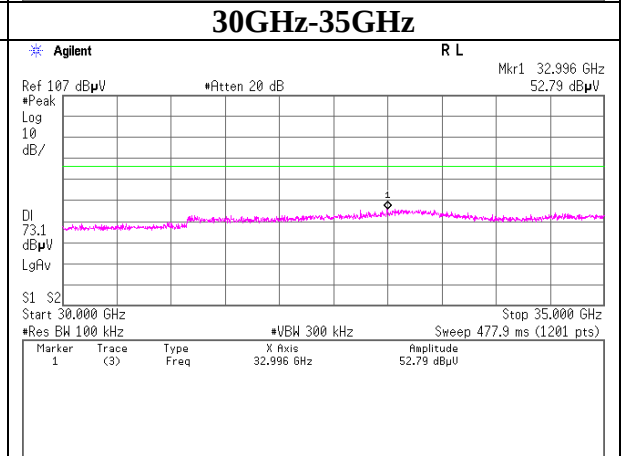
20GHz-25GHz



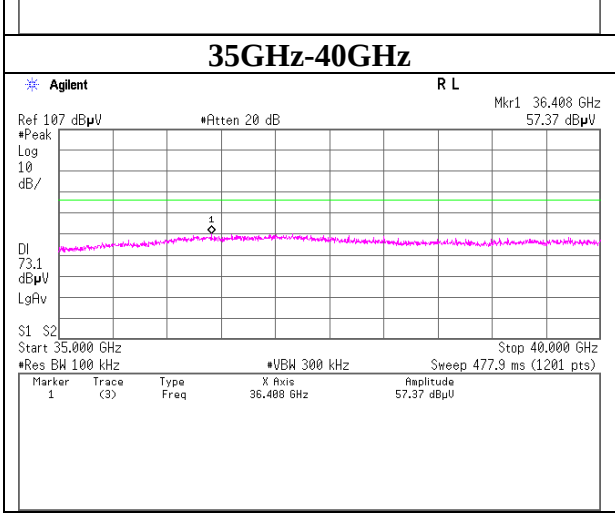
25GHz-30GHz



30GHz-35GHz



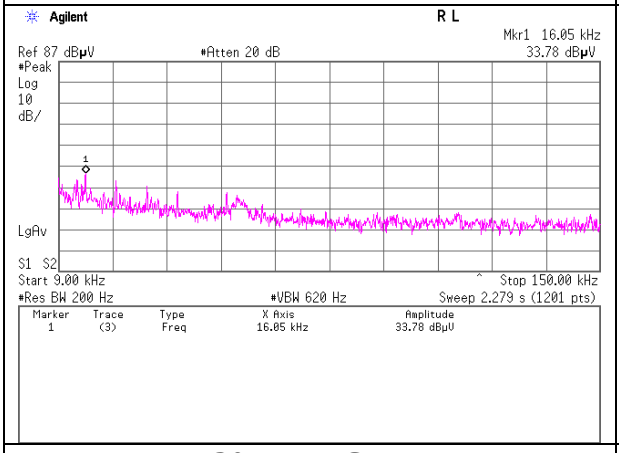
35GHz-40GHz



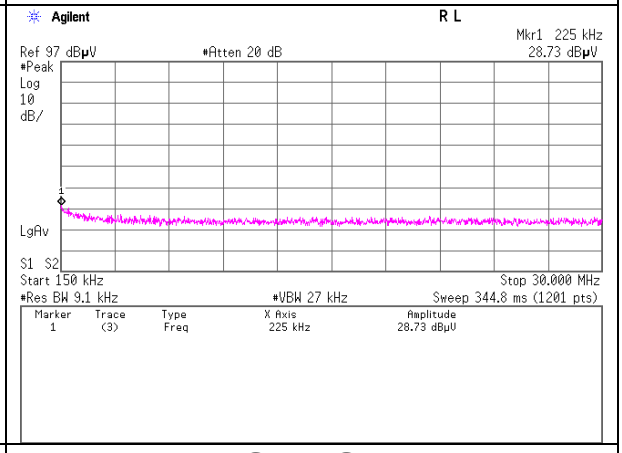
Conducted Spurious Emission

11n-20 Tx 5745MHz

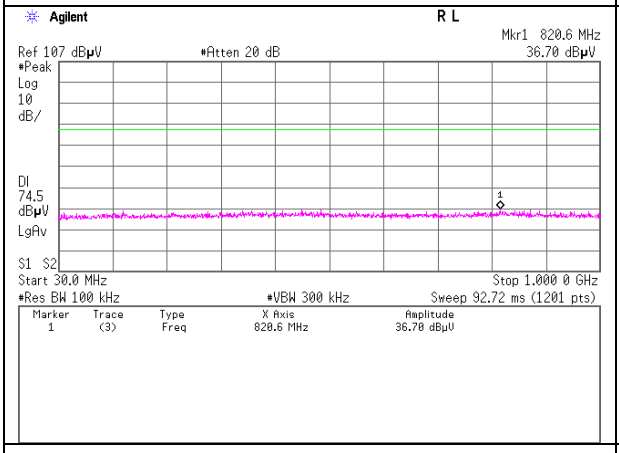
9kHz-150kHz



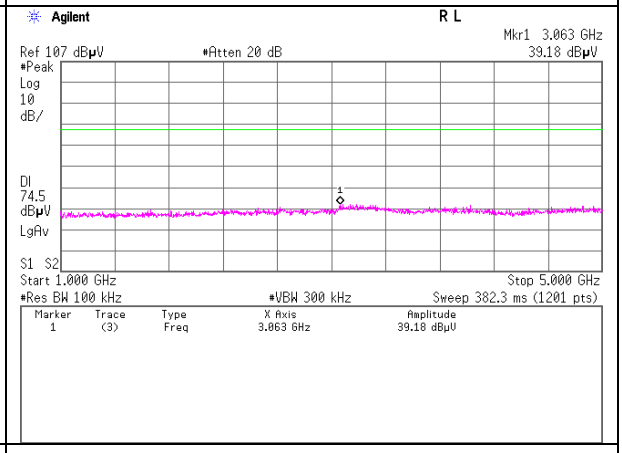
150kHz-30MHz



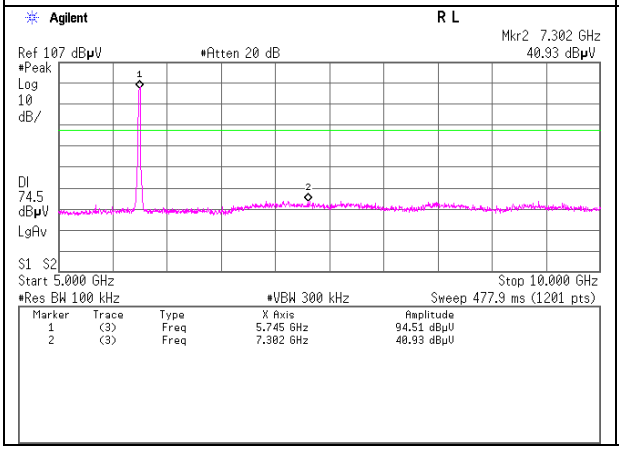
30MHz-1GHz



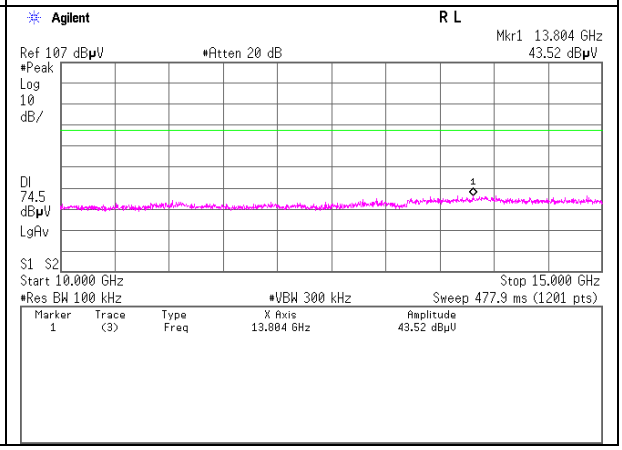
1GHz-5GHz



5GHz-10GHz



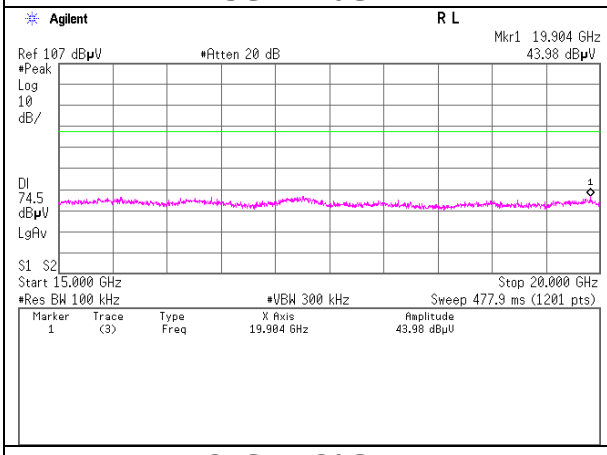
10GHz-15GHz



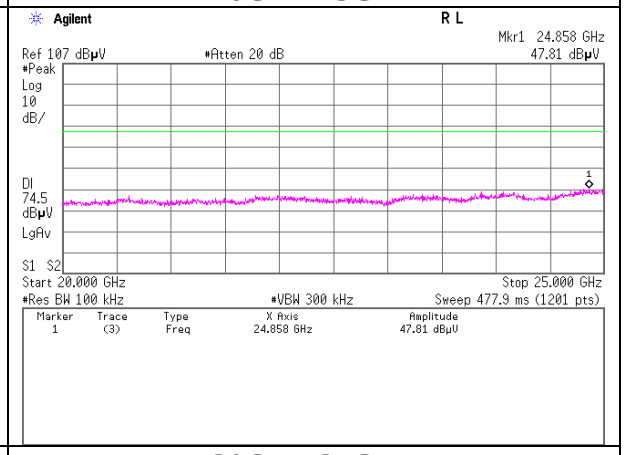
Conducted Spurious Emission

11n-20 Tx 5745MHz

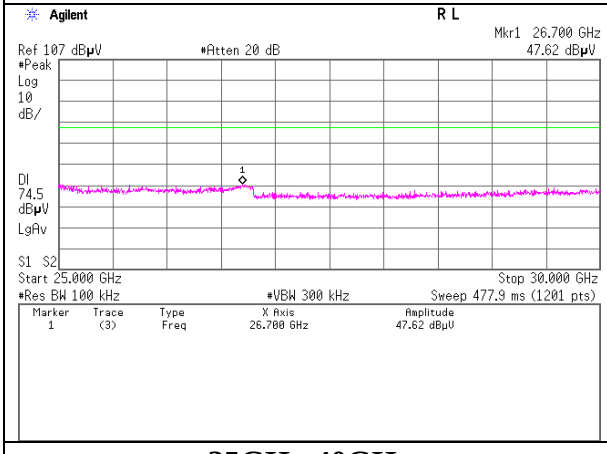
15GHz-20GHz



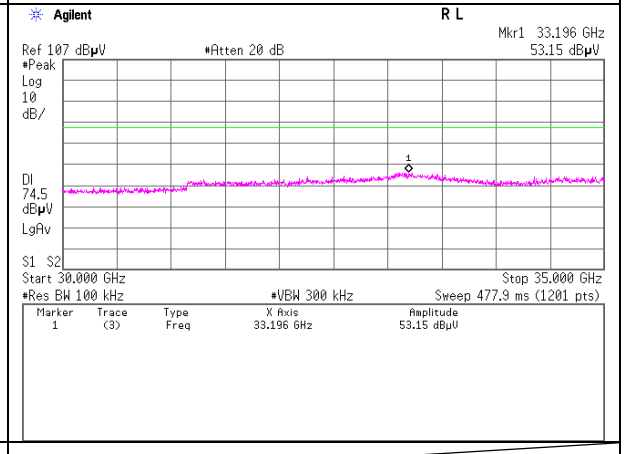
20GHz-25GHz



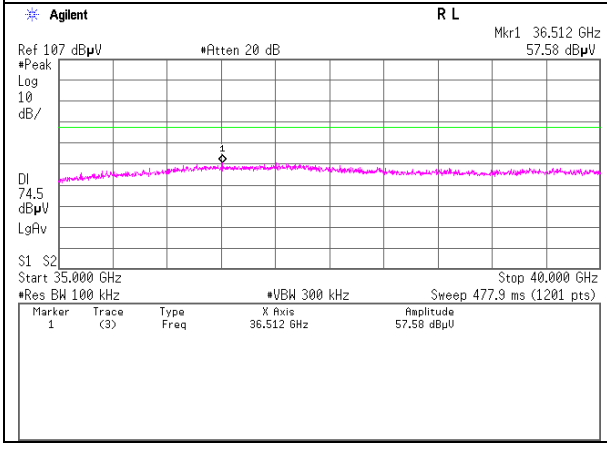
25GHz-30GHz



30GHz-35GHz



35GHz-40GHz



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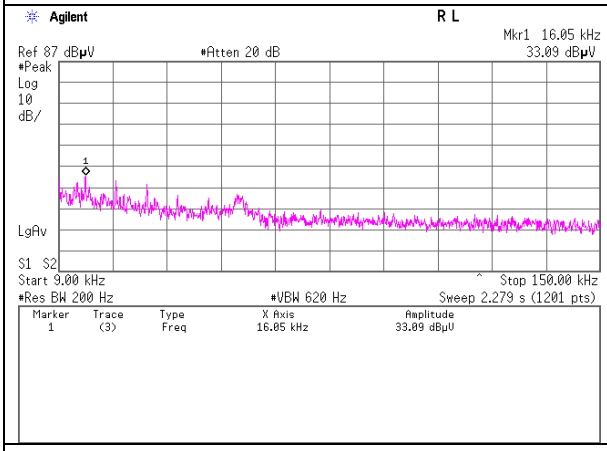
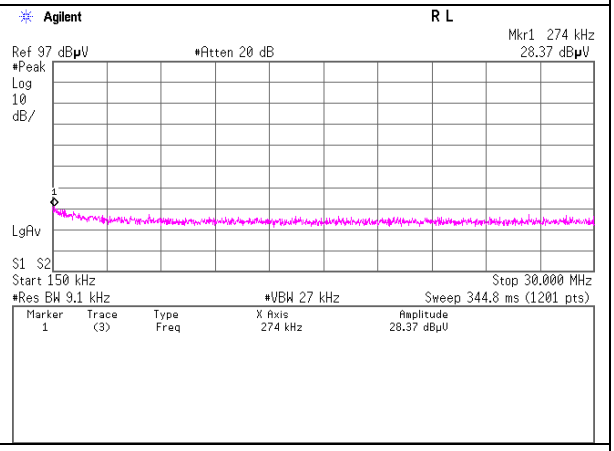
Conducted Spurious Emission

11n-20 Tx 5785MHz

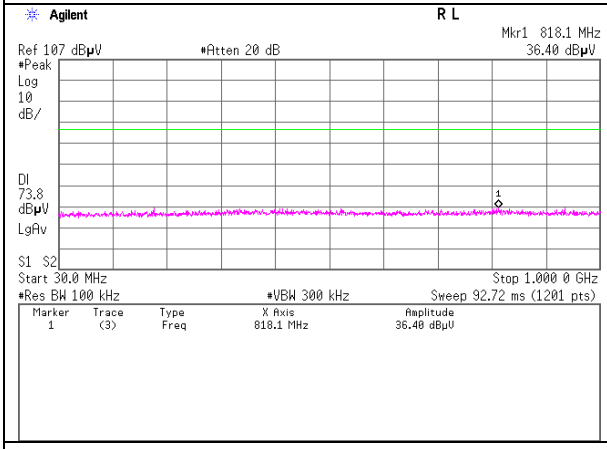
9kHz-150kHz



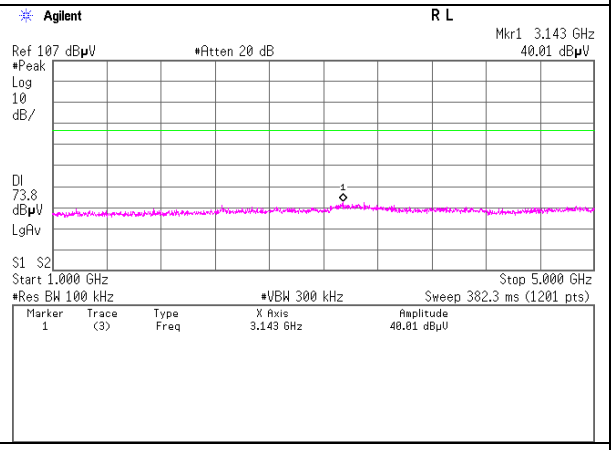
150kHz-30MHz



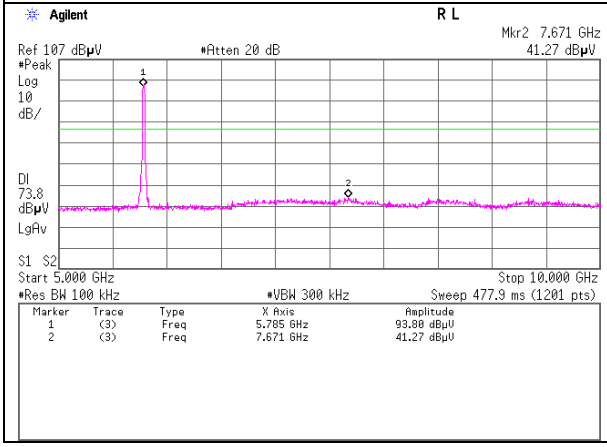
30MHz-1GHz



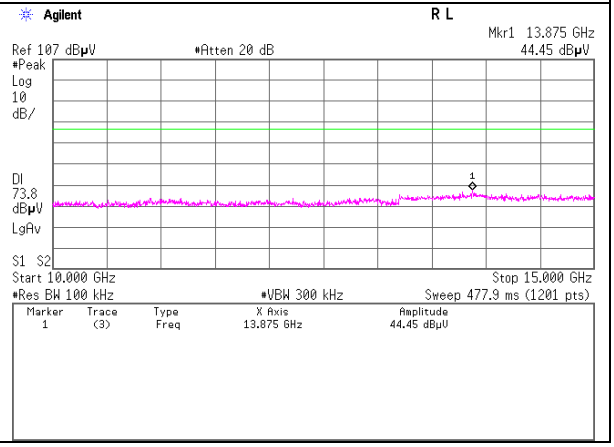
1GHz-5GHz



5GHz-10GHz



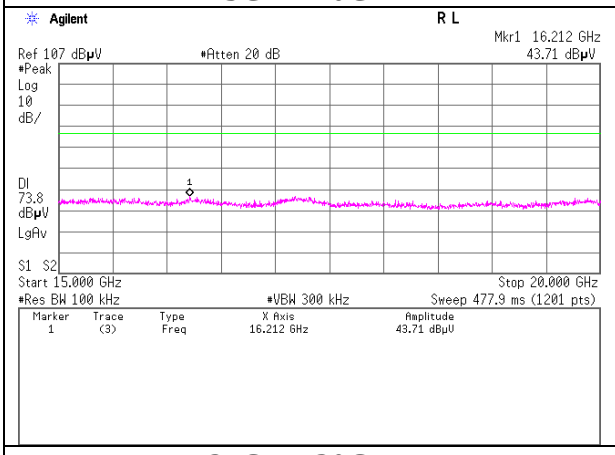
10GHz-15GHz



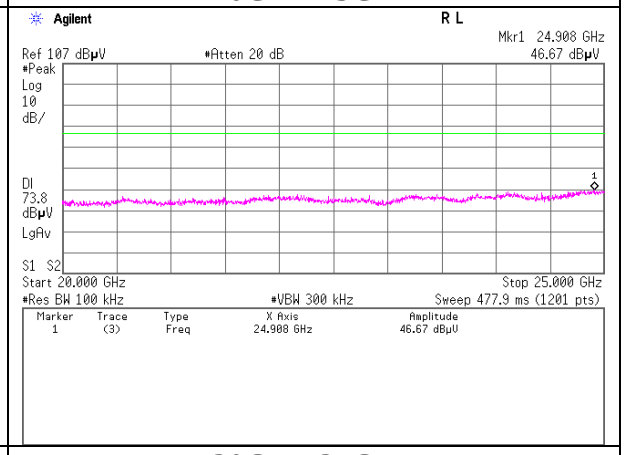
Conducted Spurious Emission

11n-20 Tx 5785MHz

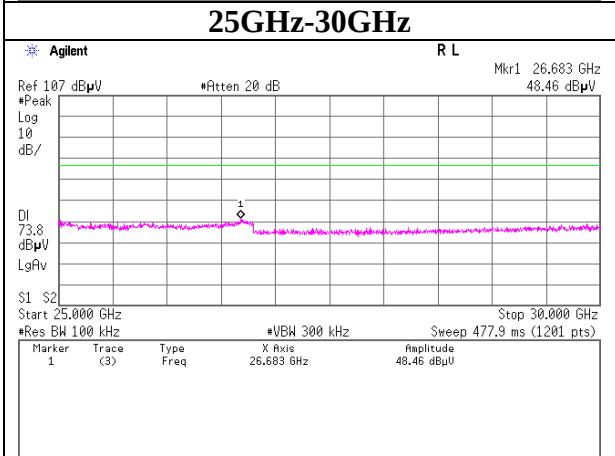
15GHz-20GHz



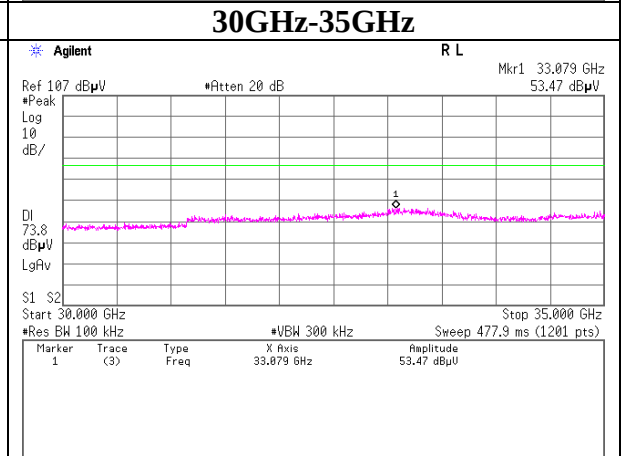
20GHz-25GHz



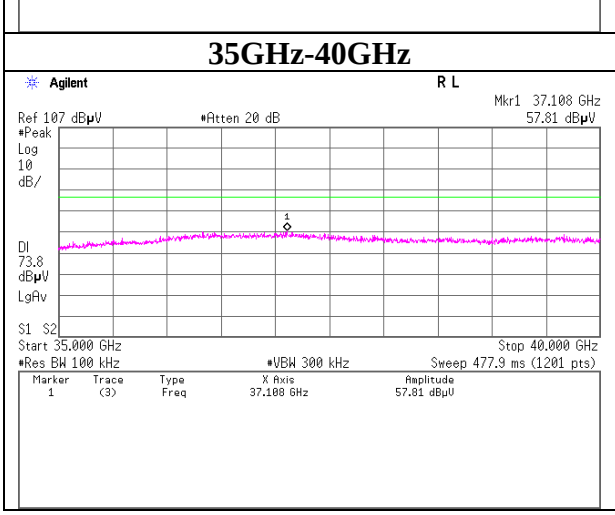
25GHz-30GHz



30GHz-35GHz



35GHz-40GHz



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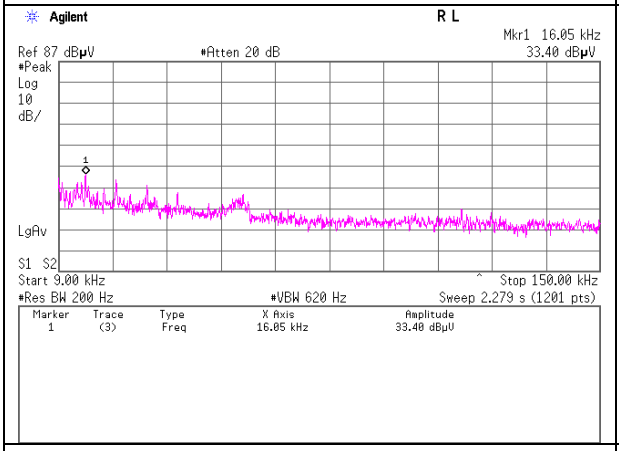
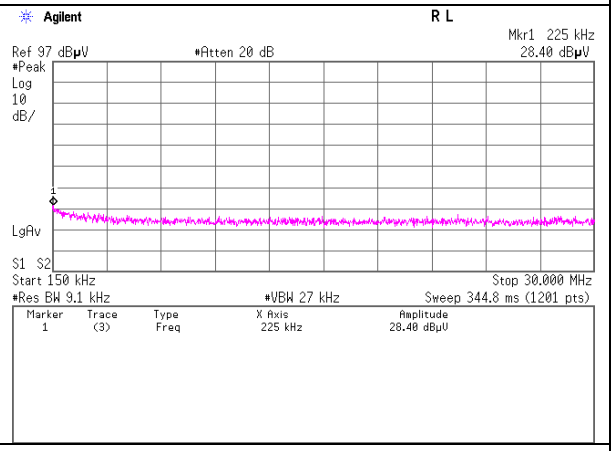
Conducted Spurious Emission

11n-20 Tx 5825MHz

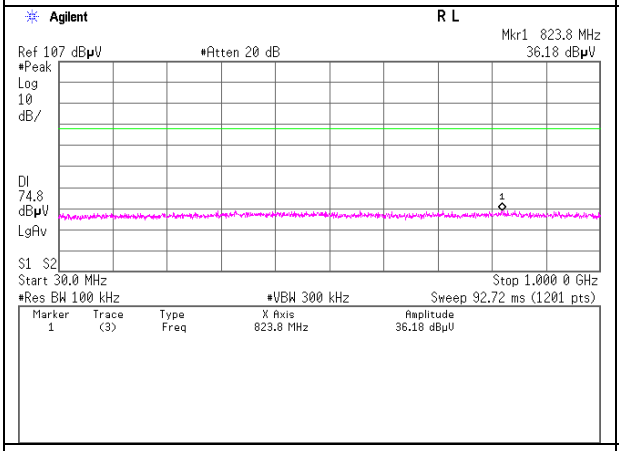
9kHz-150kHz



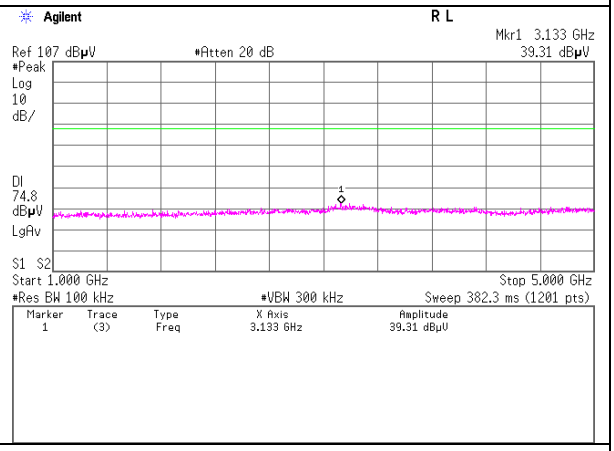
150kHz-30MHz



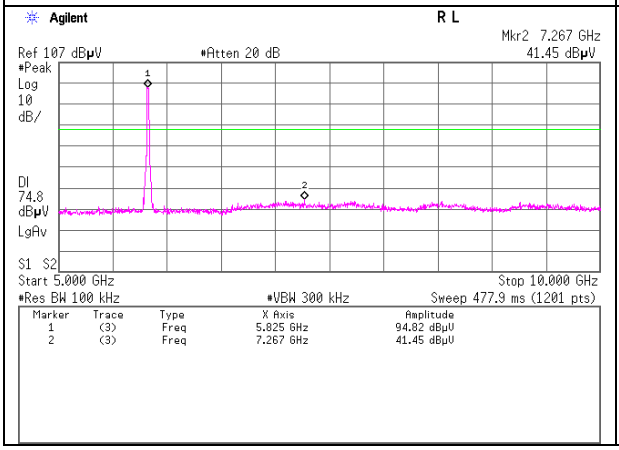
30MHz-1GHz



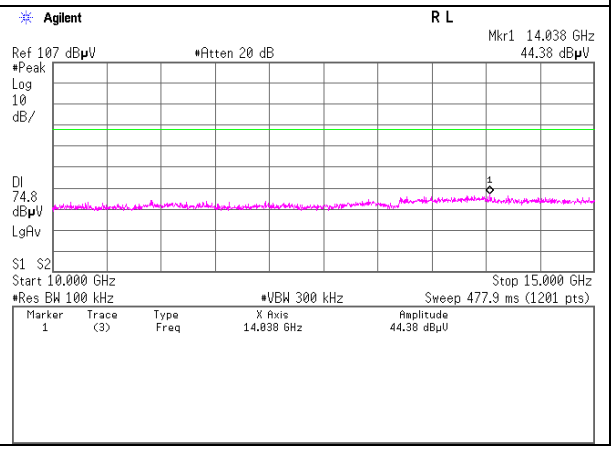
1GHz-5GHz



5GHz-10GHz



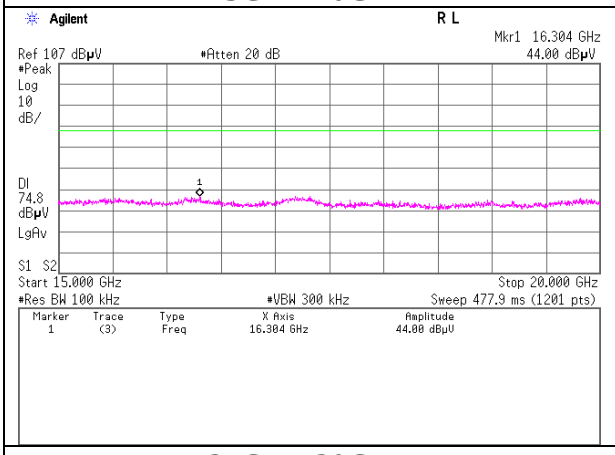
10GHz-15GHz



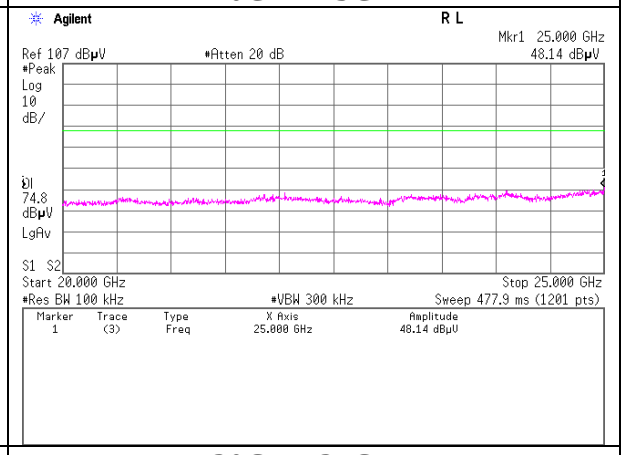
Conducted Spurious Emission

11n-20 Tx 5825MHz

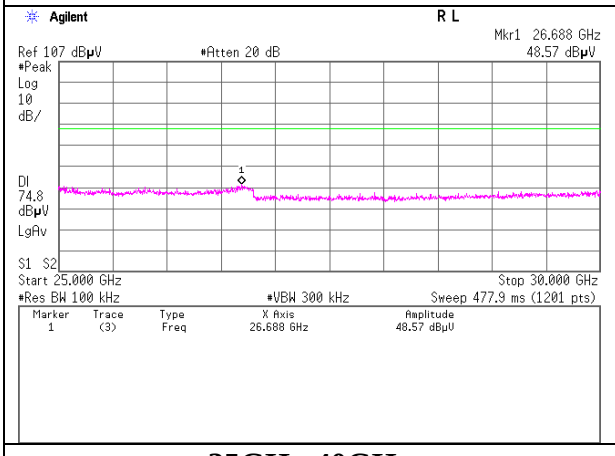
15GHz-20GHz



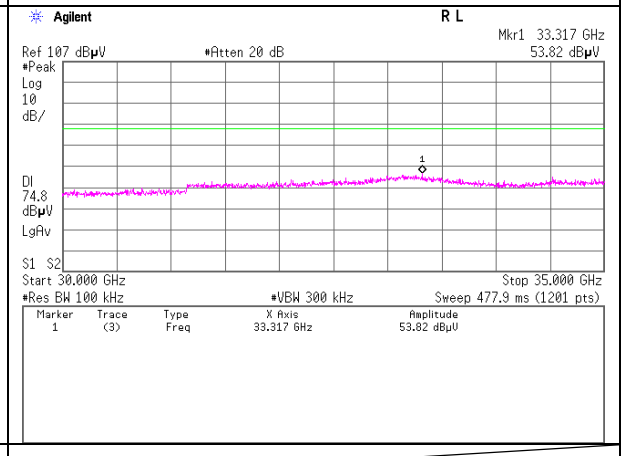
20GHz-25GHz



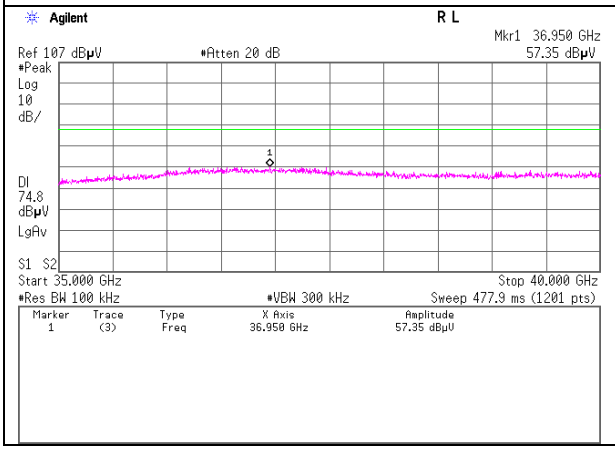
25GHz-30GHz



30GHz-35GHz



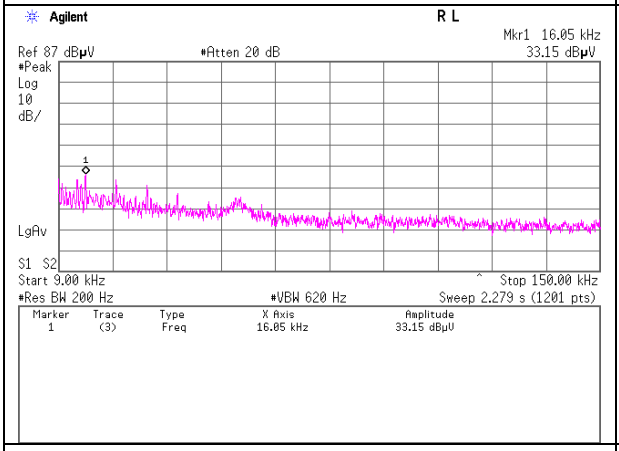
35GHz-40GHz



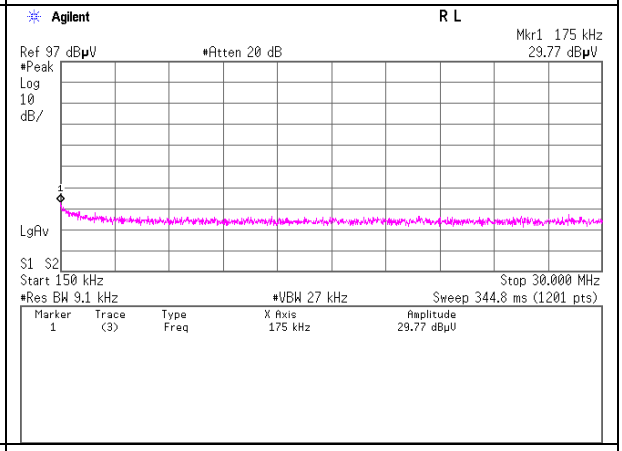
Conducted Spurious Emission

11n-40 Tx 5755MHz

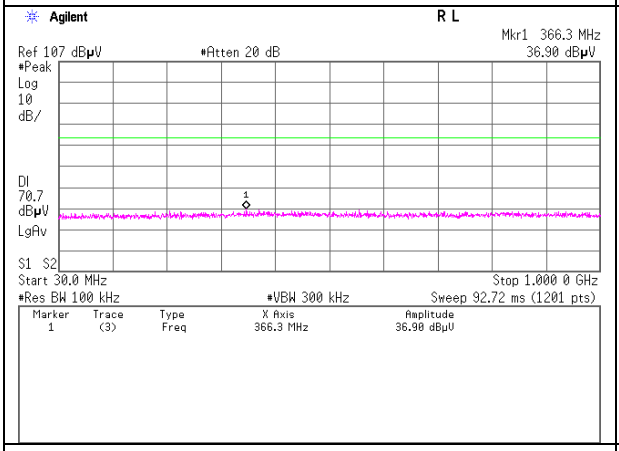
9kHz-150kHz



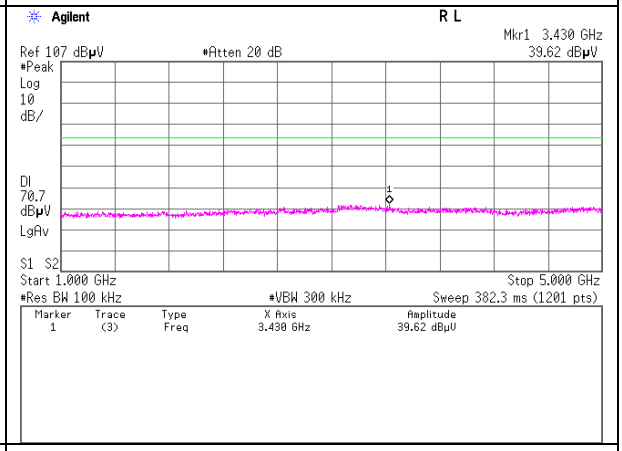
150kHz-30MHz



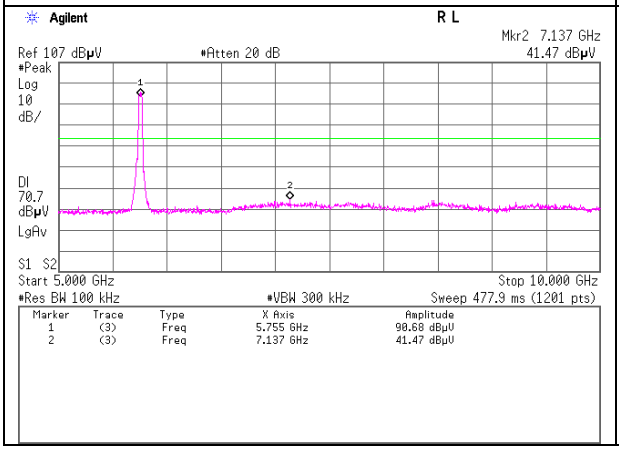
30MHz-1GHz



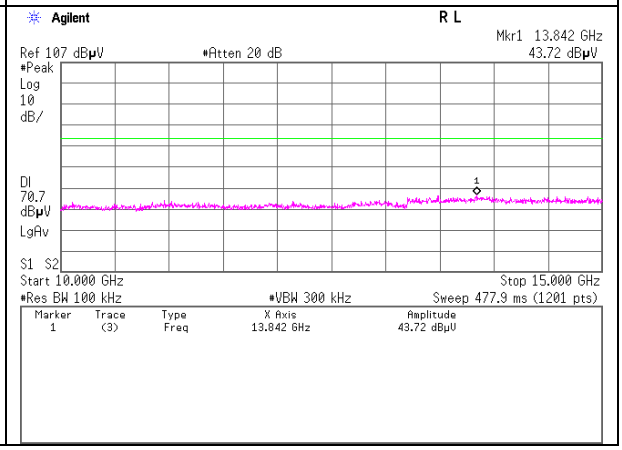
1GHz-5GHz



5GHz-10GHz



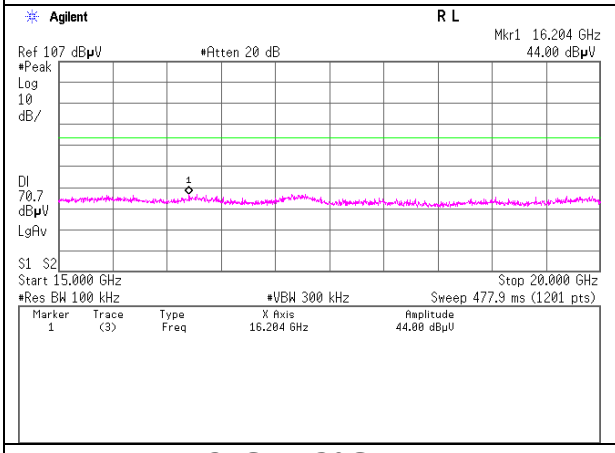
10GHz-15GHz



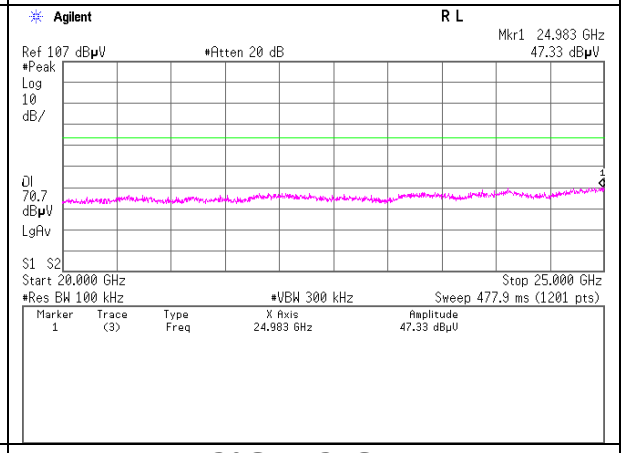
Conducted Spurious Emission

11n-40 Tx 5755MHz

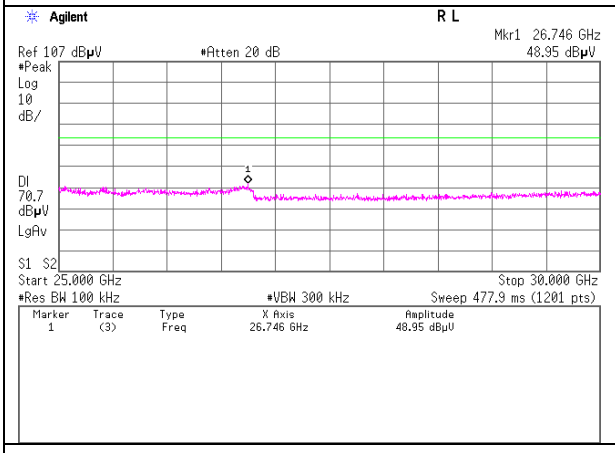
15GHz-20GHz



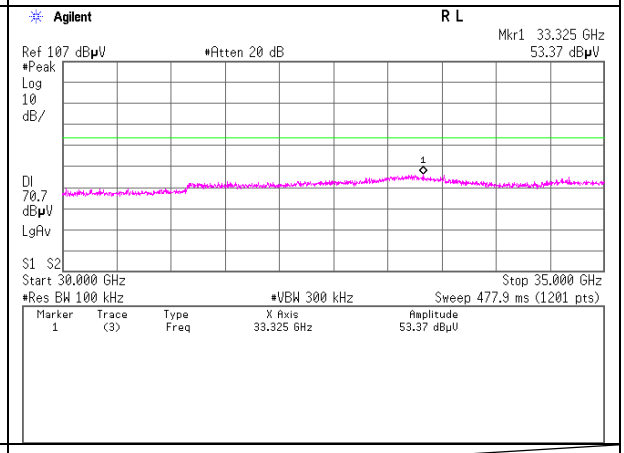
20GHz-25GHz



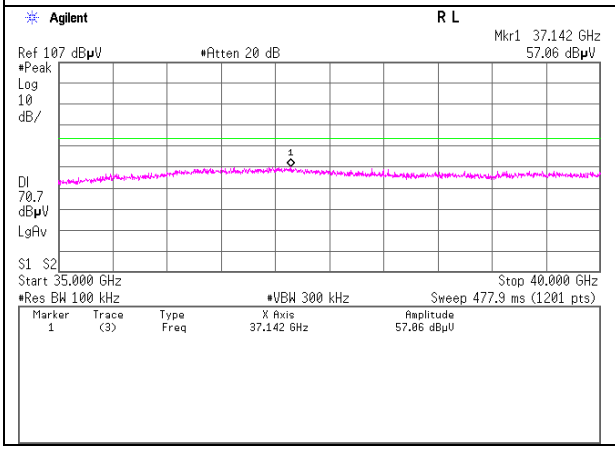
25GHz-30GHz



30GHz-35GHz



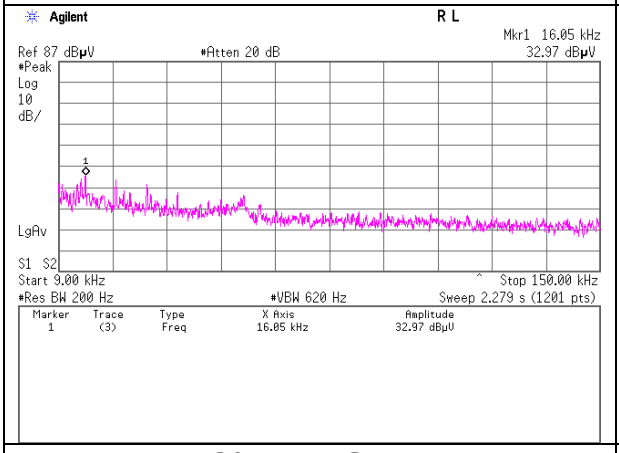
35GHz-40GHz



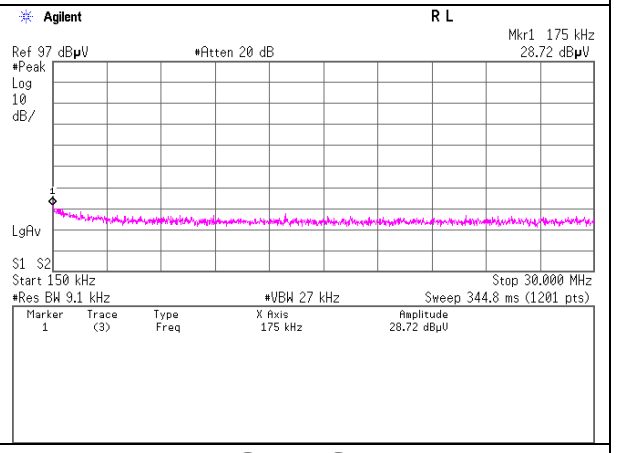
Conducted Spurious Emission

11n-40 Tx 5795MHz

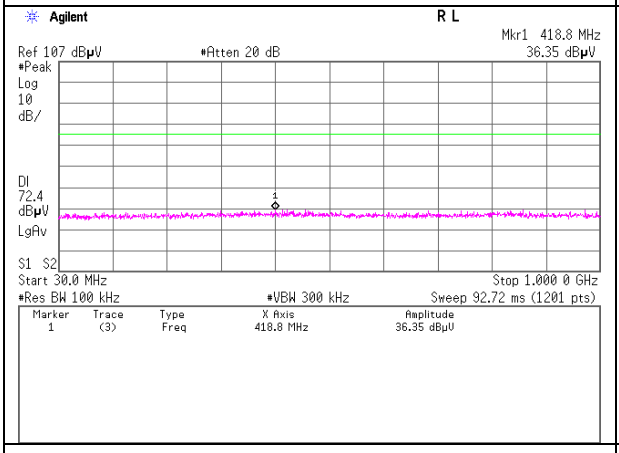
9kHz-150kHz



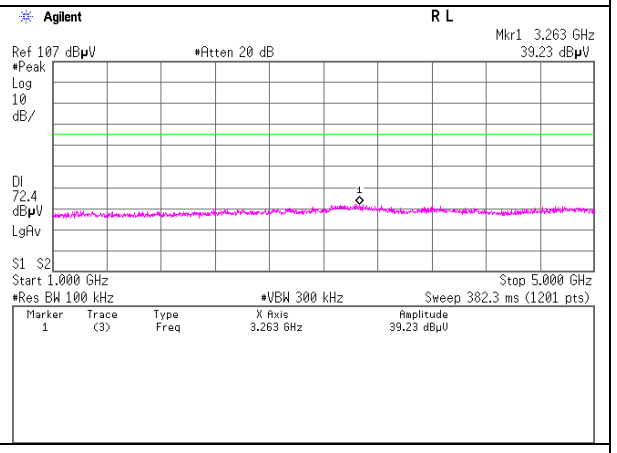
150kHz-30MHz



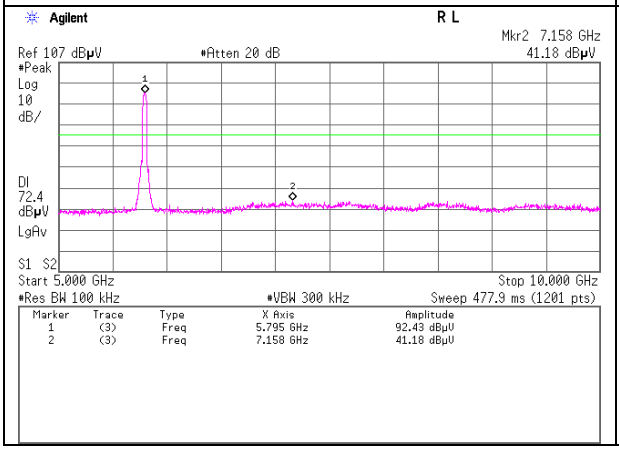
30MHz-1GHz



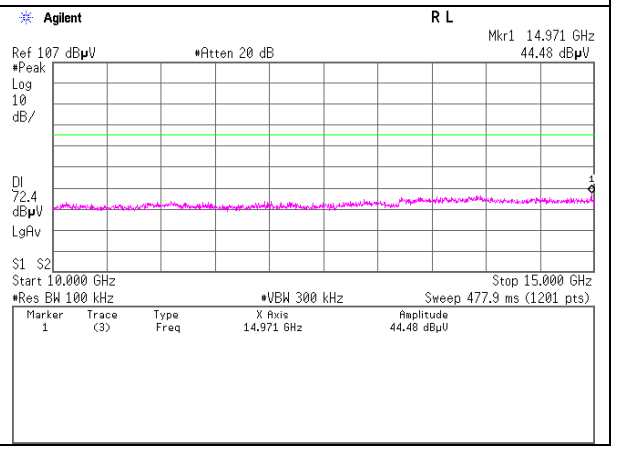
1GHz-5GHz



5GHz-10GHz



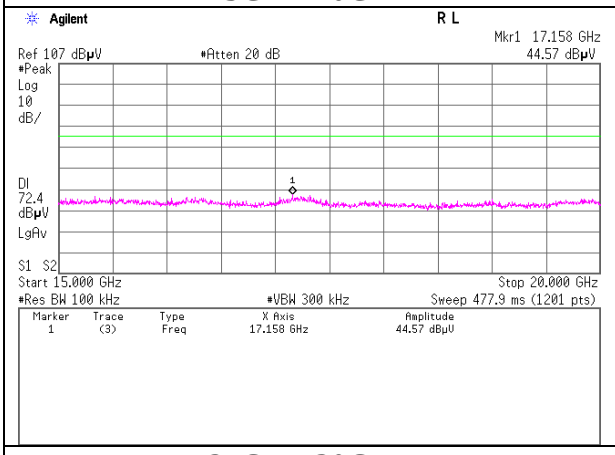
10GHz-15GHz



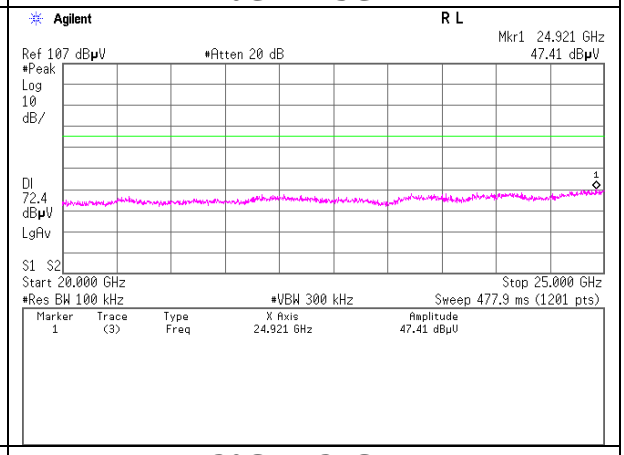
Conducted Spurious Emission

11n-40 Tx 5795MHz

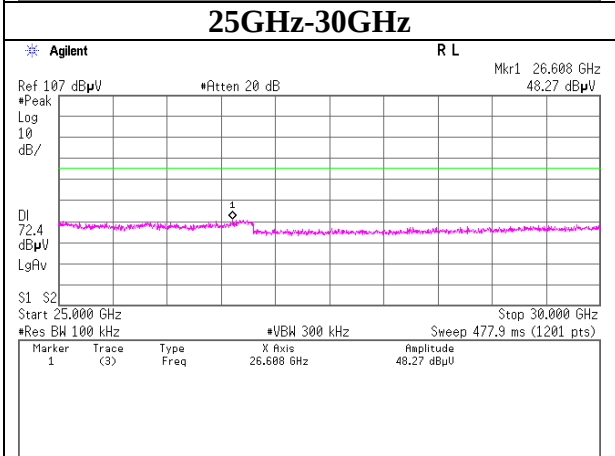
15GHz-20GHz



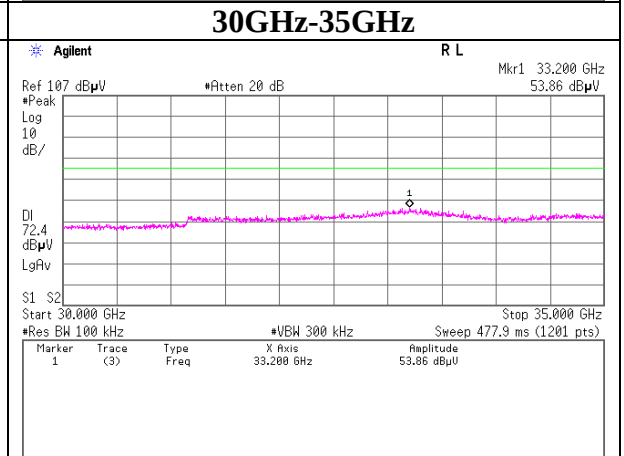
20GHz-25GHz



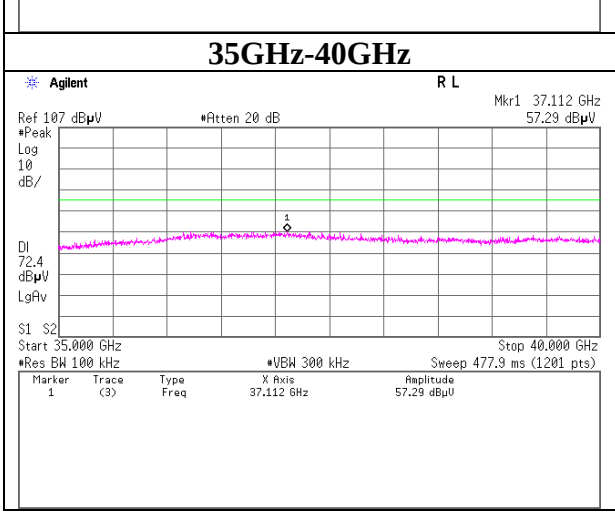
25GHz-30GHz



30GHz-35GHz



35GHz-40GHz



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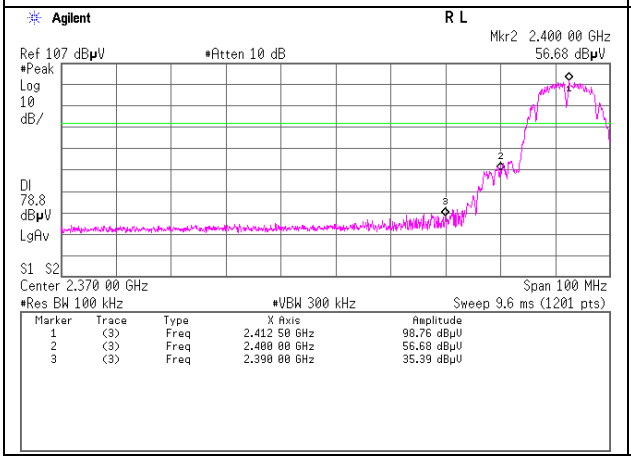
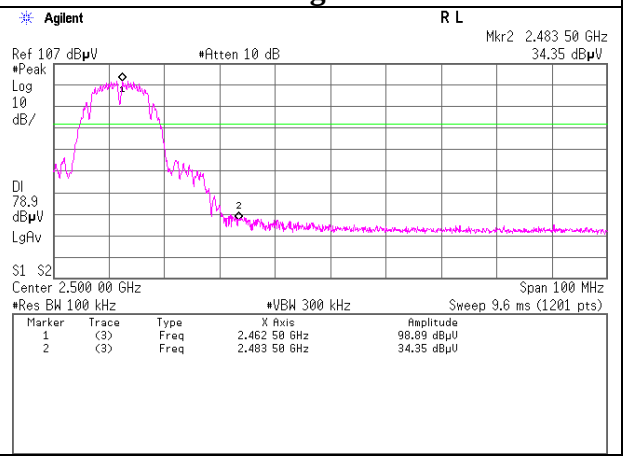
Conducted Emission Band Edge compliance

11b Tx

Low

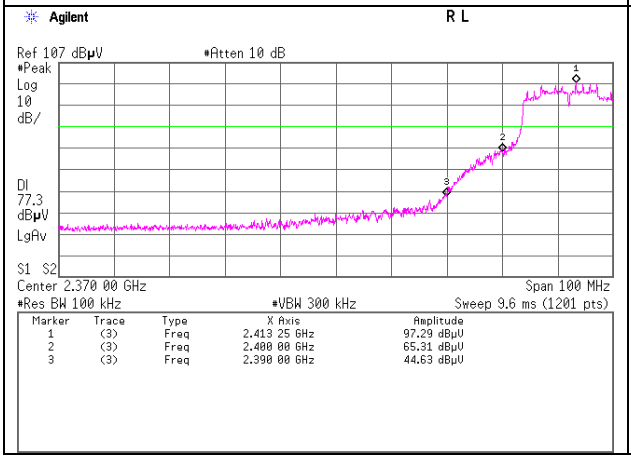


High

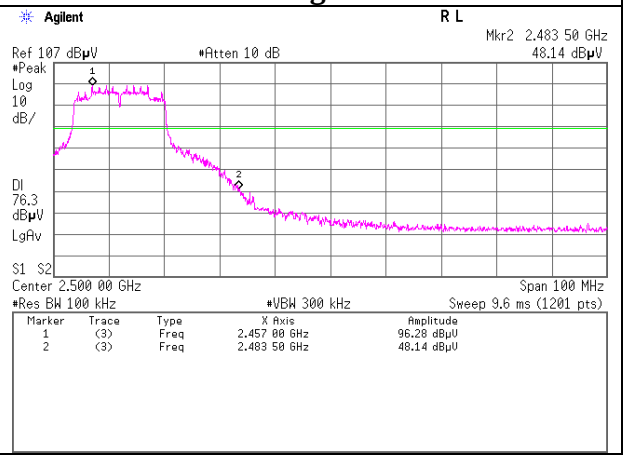


11g Tx

Low



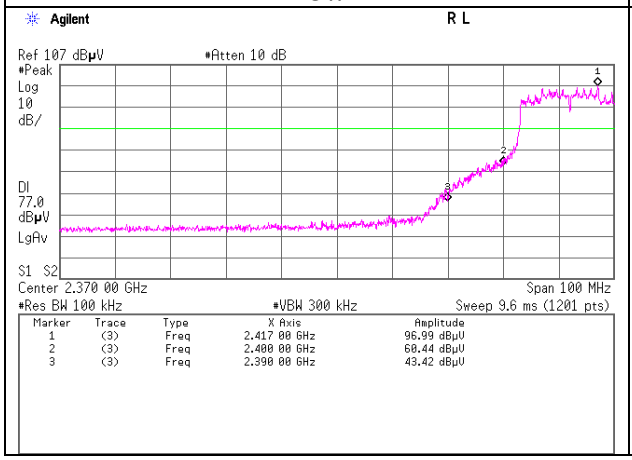
High



Conducted Emission Band Edge compliance

11n-20 Tx

Low



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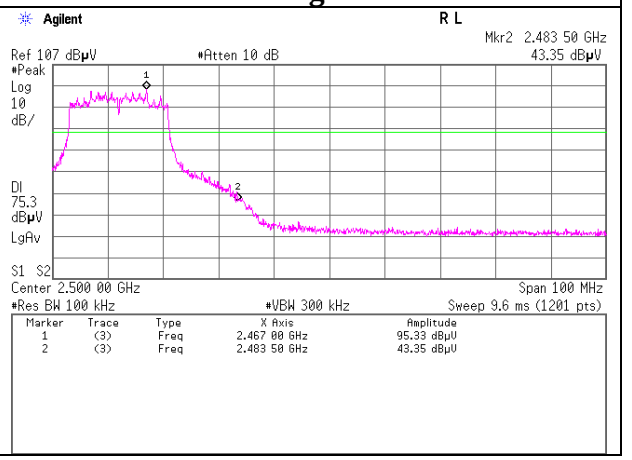
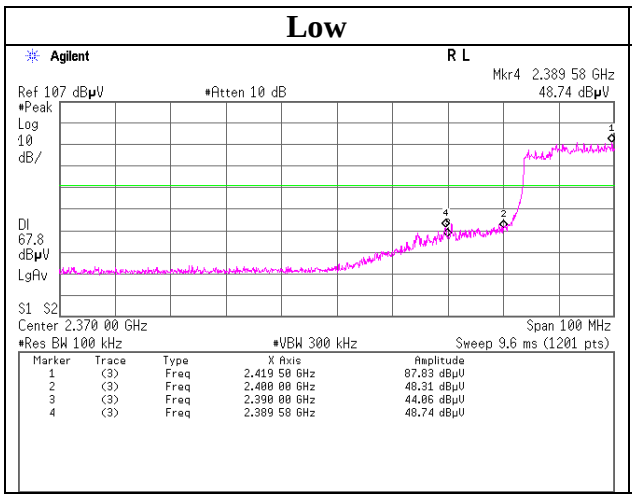
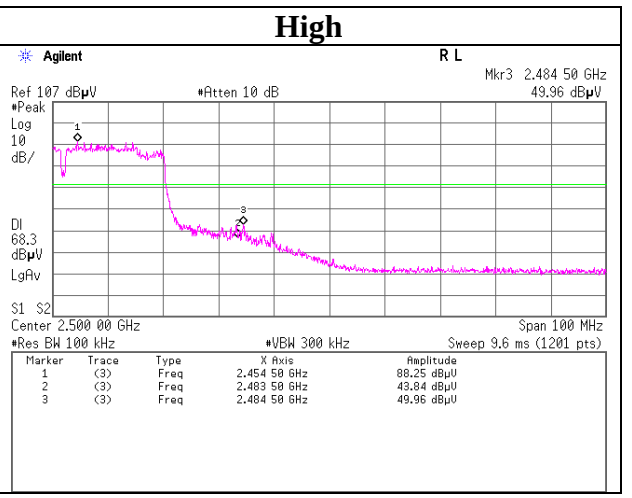


11n-40 Tx

Low



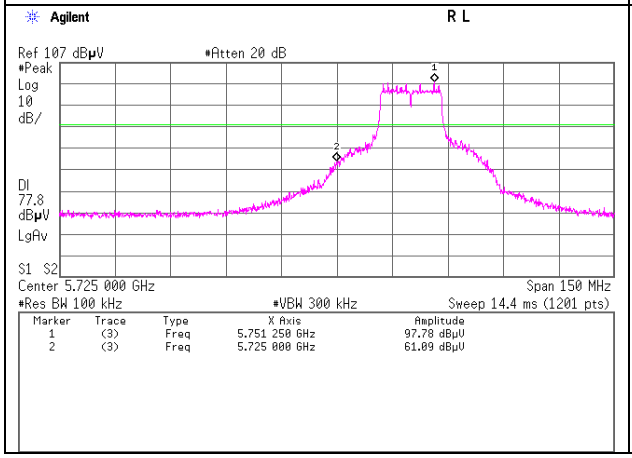
High



Conducted Emission Band Edge compliance

11a Tx

Low



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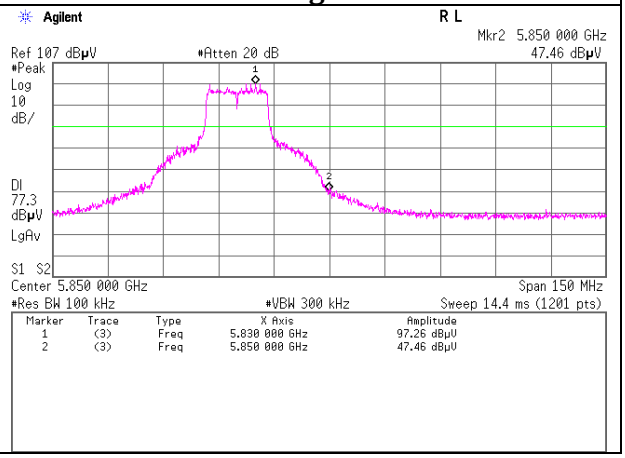
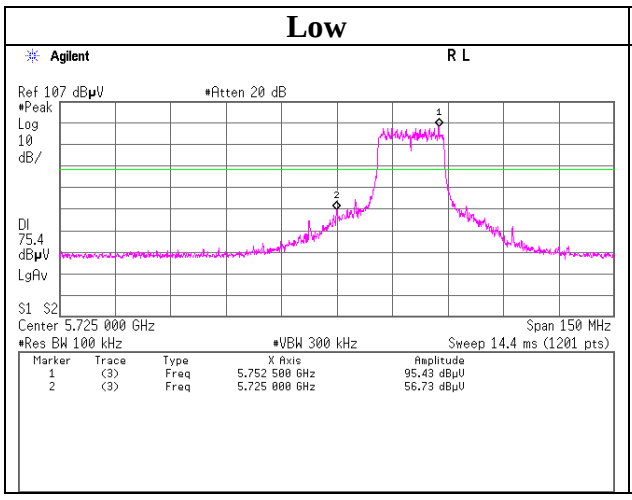
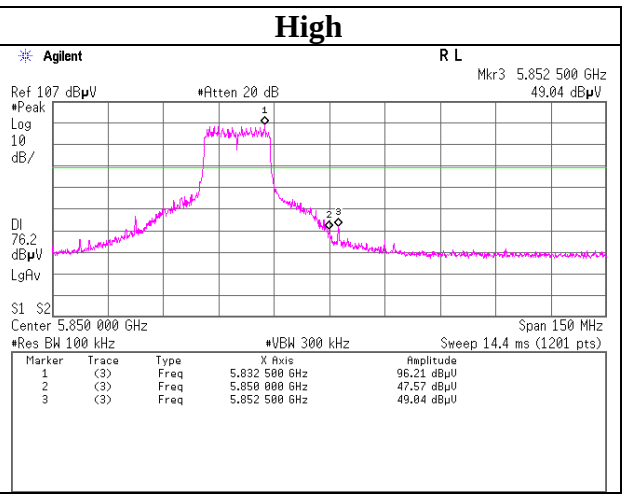


11n-20 Tx

Low



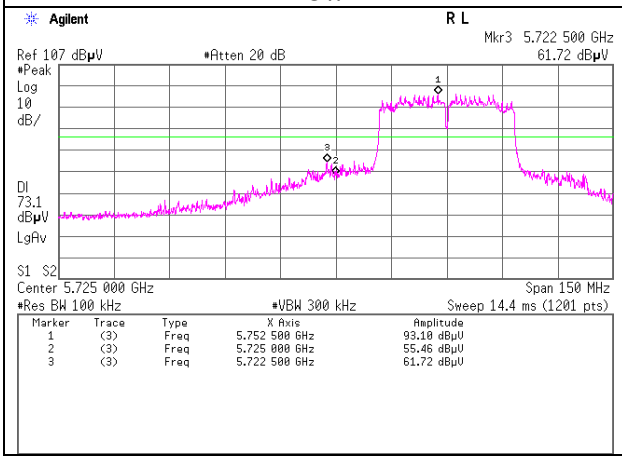
High



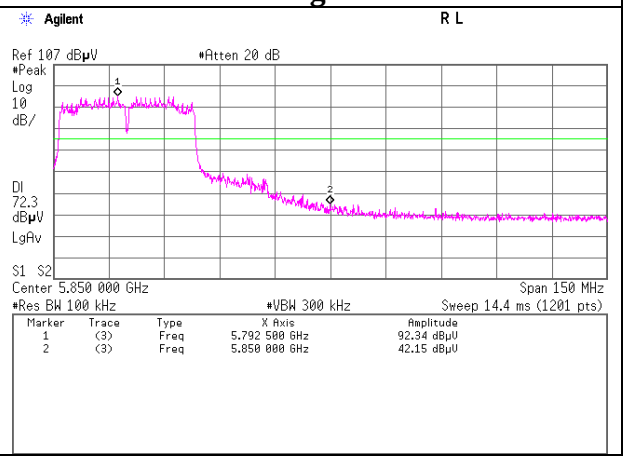
Conducted Emission Band Edge compliance

11n-40 Tx

Low



High



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Power Density

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/01/2012
Temperature/ Humidity	24 deg.C/ 64% RH
Engineer	Satofumi Matsuyama
Mode	11b Tx, 11g Tx

11b Antenna port 1

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-13.29	2.53	10.00	-0.76	8.00	8.76
2437.00	-12.76	2.55	10.00	-0.21	8.00	8.21
2462.00	-12.67	2.67	10.00	0.00	8.00	8.00

11g Antenna port 1

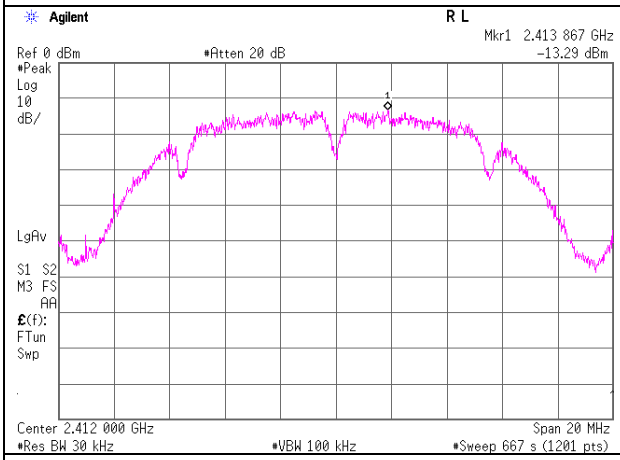
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-13.75	2.53	10.00	-1.22	8.00	9.22
2437.00	-11.95	2.55	10.00	0.60	8.00	7.40
2462.00	-14.19	2.67	10.00	-1.52	8.00	9.52

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

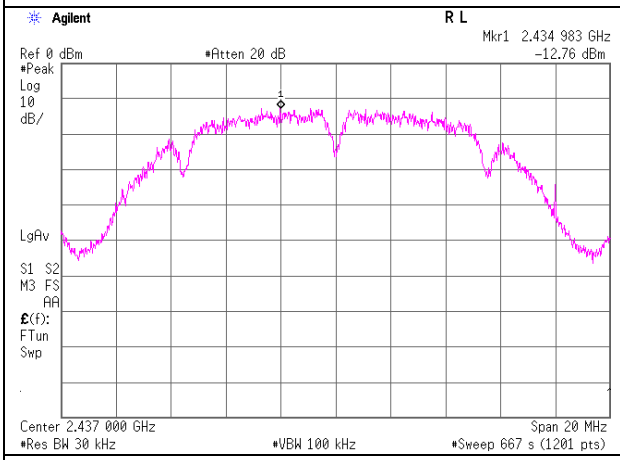
Power Density

11b

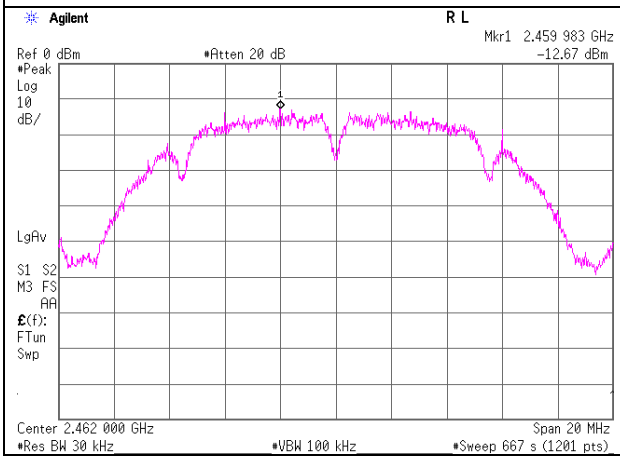
2412MHz



2437MHz

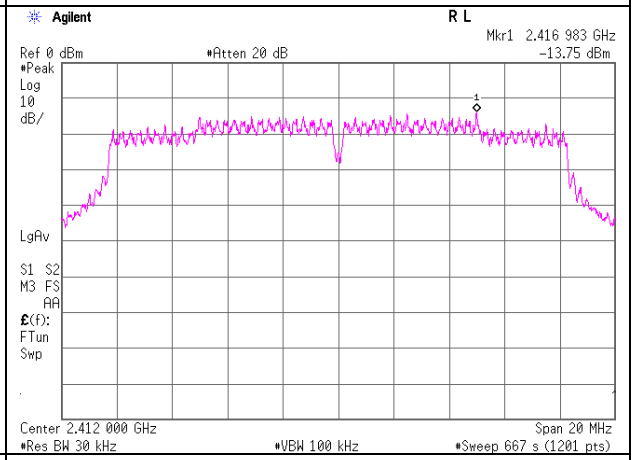


2462MHz

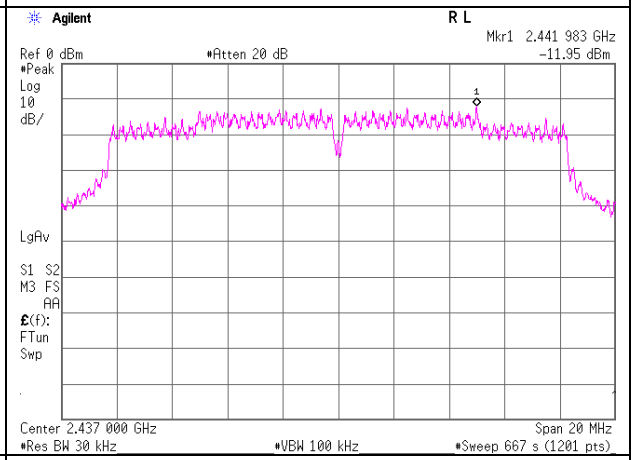


11g

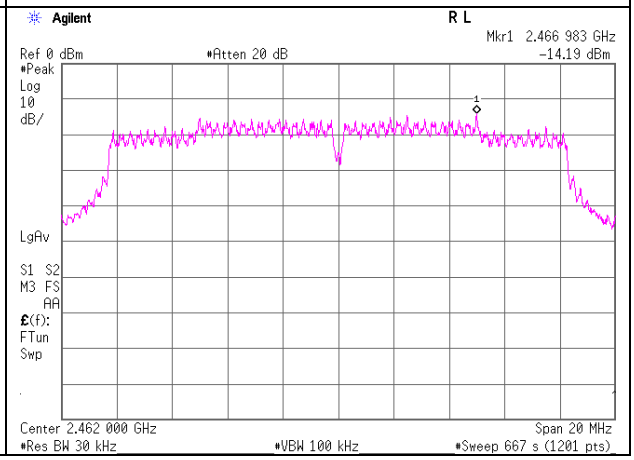
2412MHz



2437MHz



2462MHz



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Power Density

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/01/2012
Temperature/ Humidity	24 deg.C/ 64% RH
Engineer	Satofumi Matsuyama
Mode	11n-20 Tx

Antenna port 1 + 2

Freq.	Antenna port 1 Result	Antenna port 2 Result	Result		Limit	Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[dB]
2412.00	0.61	0.57	0.74	1.19	8.00	7.26
2437.00	0.72	0.70	1.54	1.43	8.00	6.46
2462.00	0.45	0.46	-0.41	0.91	8.00	8.41

Sample Calculation:
Result = Antenna port 1 + 2

Antenna port 1

Freq.	Reading	Cable Loss	Atten.	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412.00	-14.66	2.53	10.00	-2.13	0.61	8.00	10.13
2437.00	-13.95	2.55	10.00	-1.40	0.72	8.00	9.40
2462.00	-16.18	2.67	10.00	-3.51	0.45	8.00	11.51

Antenna port 2

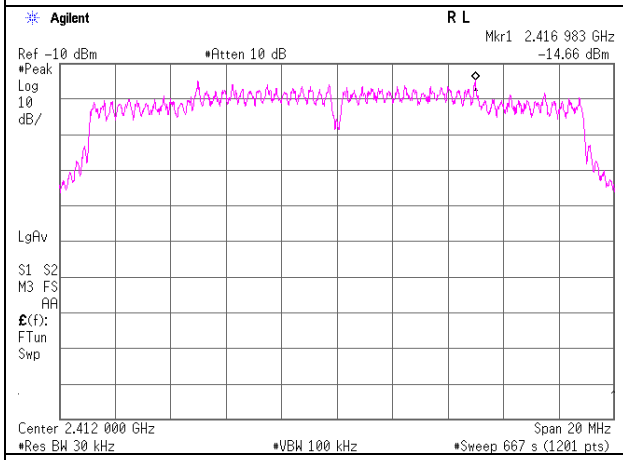
Freq.	Reading	Cable Loss	Atten.	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412.00	-15.06	2.65	10.00	-2.41	0.57	8.00	10.41
2437.00	-14.22	2.68	10.00	-1.54	0.70	8.00	9.54
2462.00	-16.13	2.79	10.00	-3.34	0.46	8.00	11.34

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

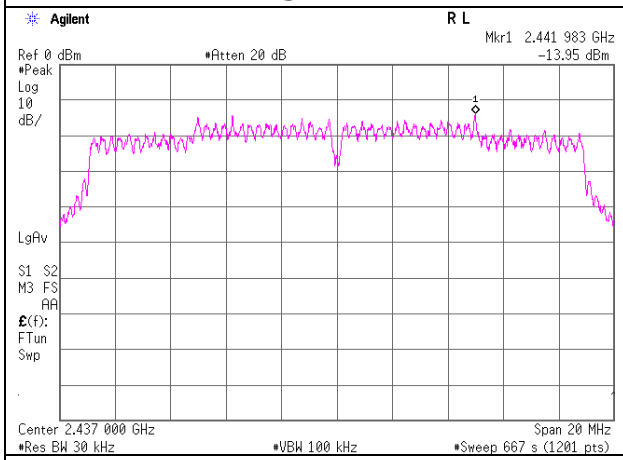
Power Density

11n-20 Antenna port 1

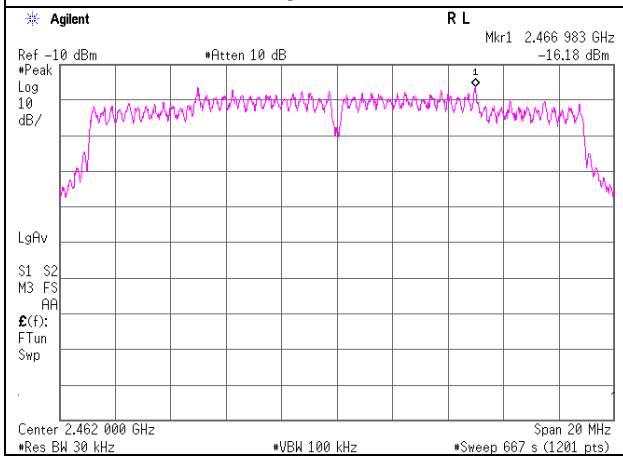
2412MHz



2437MHz

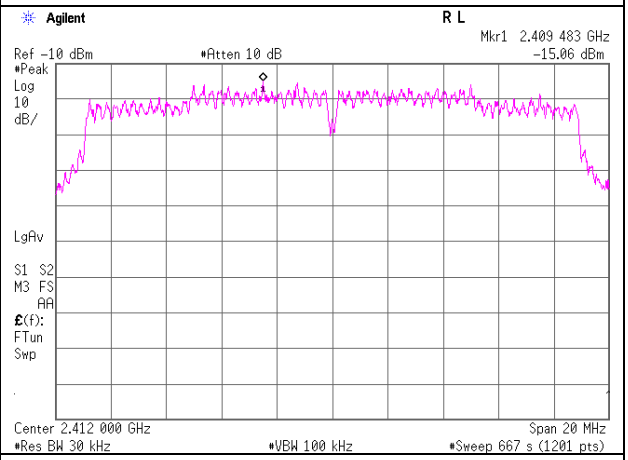


2462MHz

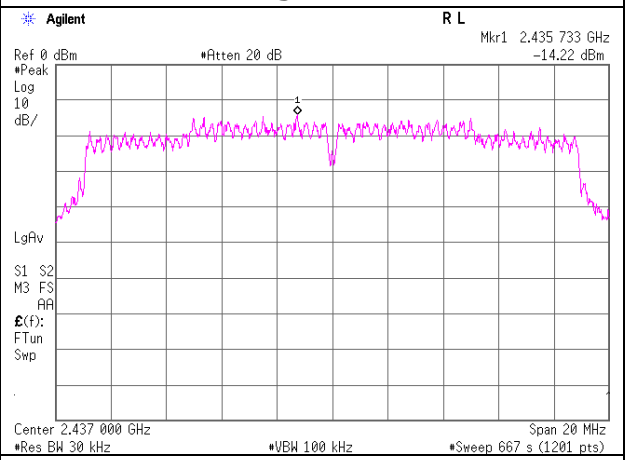


11n-20 Antenna port 2

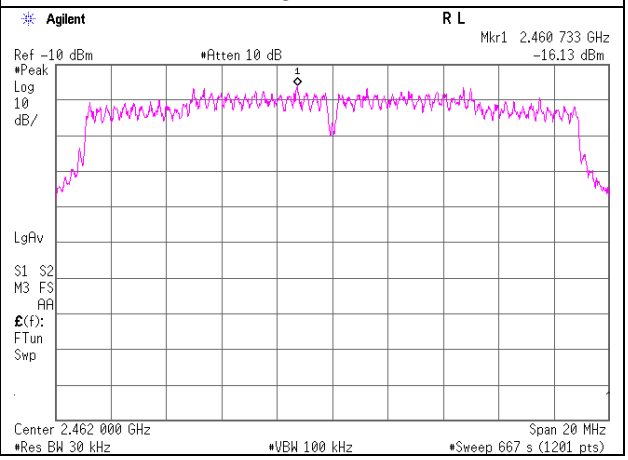
2412MHz



2437MHz



2462MHz



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Power Density

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/02/2012
Temperature/ Humidity	25 deg.C/ 62% RH
Engineer	Satofumi Matsuyama
Mode	11n-40 Tx

Antenna port 1 + 2

Freq.	Antenna port 1 Result	Antenna port 2 Result	Result		Limit	Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[dB]
2422.00	0.08	0.08	-7.92	0.16	8.00	15.92
2437.00	0.31	0.29	-2.22	0.60	8.00	10.22
2452.00	0.12	0.12	-6.25	0.24	8.00	14.25

Sample Calculation:
Result = Antenna port 1 + 2

Antenna port 1

Freq.	Reading	Cable Loss	Atten.	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2422.00	-23.27	2.52	10.00	-10.75	0.08	8.00	18.75
2437.00	-17.70	2.55	10.00	-5.15	0.31	8.00	13.15
2452.00	-21.92	2.63	10.00	-9.29	0.12	8.00	17.29

Antenna port 2

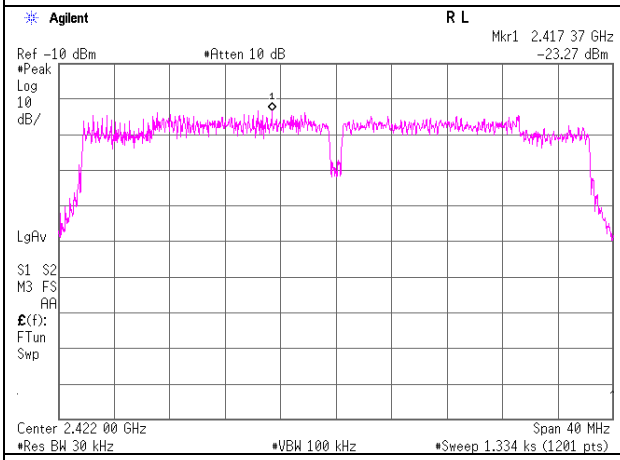
Freq.	Reading	Cable Loss	Atten.	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2422.00	-23.76	2.64	10.00	-11.12	0.08	8.00	19.12
2437.00	-17.99	2.68	10.00	-5.31	0.29	8.00	13.31
2452.00	-21.98	2.76	10.00	-9.22	0.12	8.00	17.22

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

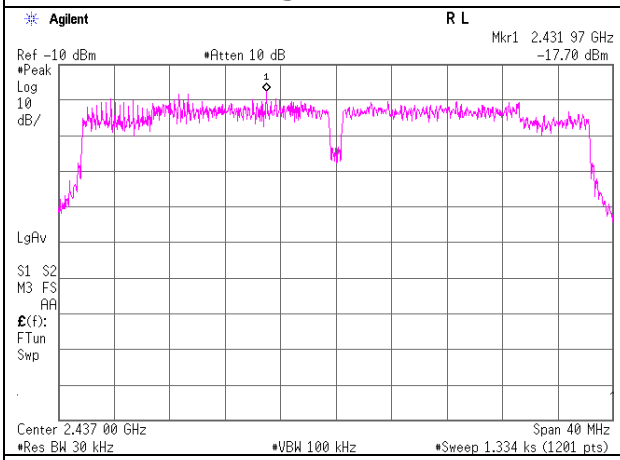
Power Density

11n-40 Antenna port 1

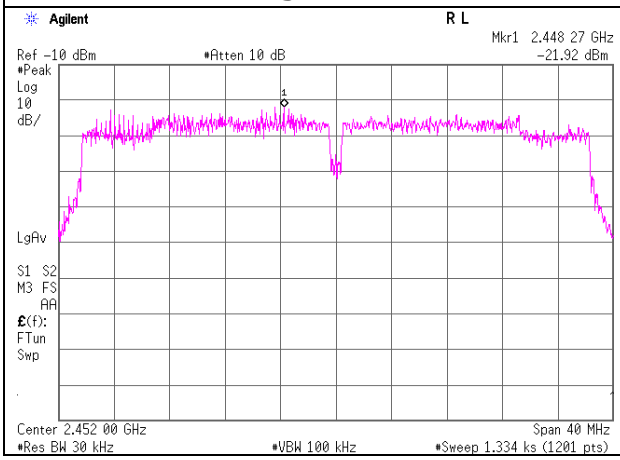
2422MHz



2437MHz

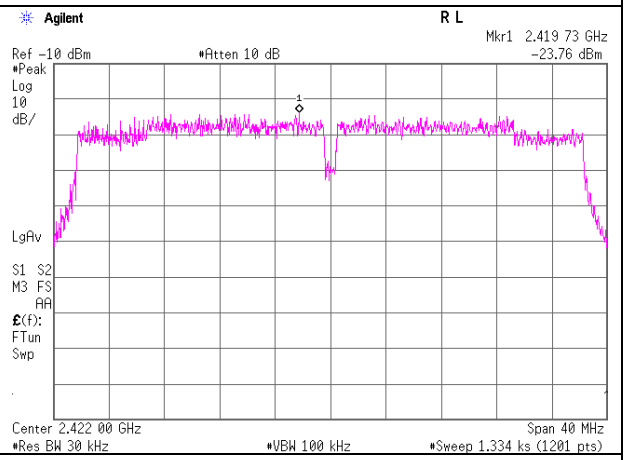


2452MHz

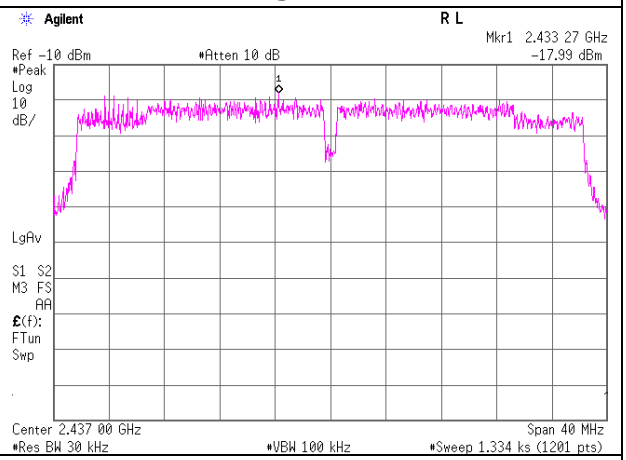


11n-40 Antenna port 2

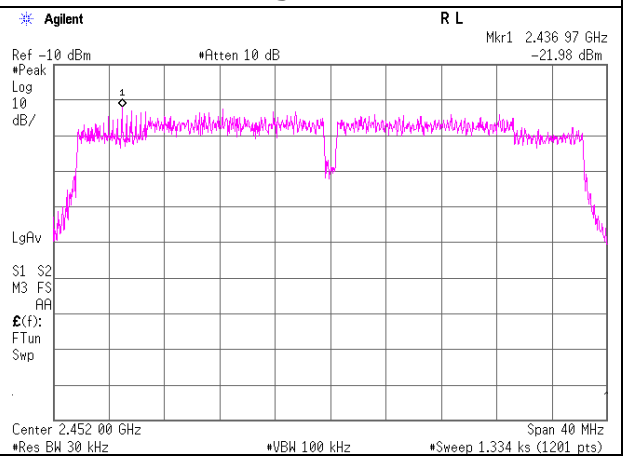
2422MHz



2437MHz



2452MHz



Power Density

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/02/2012
Temperature/ Humidity	25 deg.C/ 62% RH
Engineer	Satofumi Matsuyama
Mode	11a Tx

11a Antenna port 2

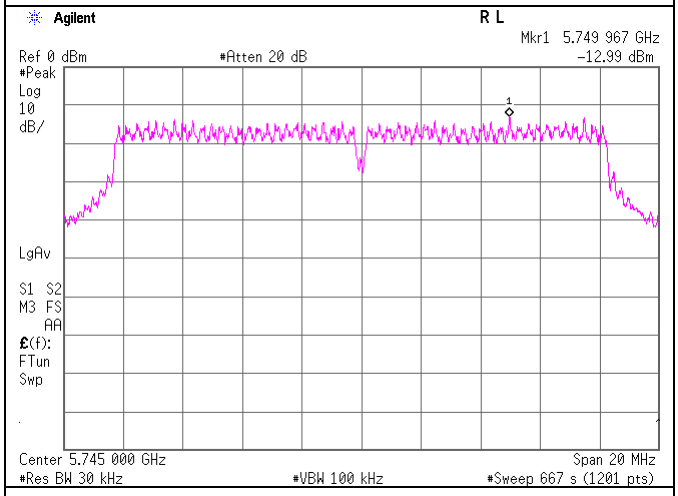
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
5745.00	-12.99	3.61	9.98	0.60	8.00	7.40
5785.00	-14.03	3.62	9.98	-0.43	8.00	8.43
5825.00	-13.91	3.62	9.98	-0.31	8.00	8.31

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

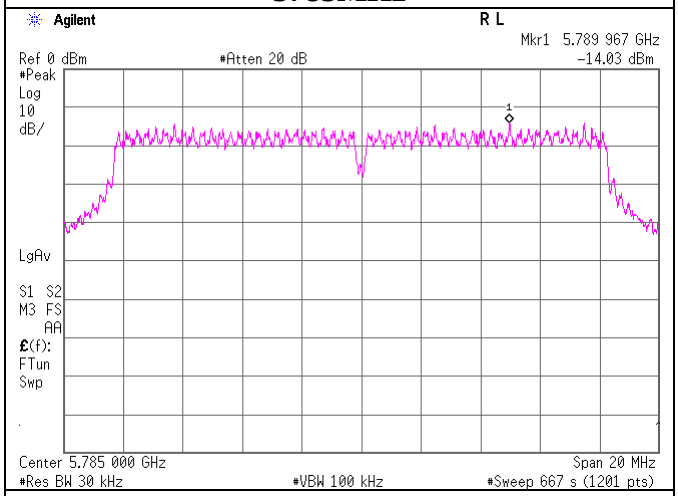
Power Density

11a Antenna port 2

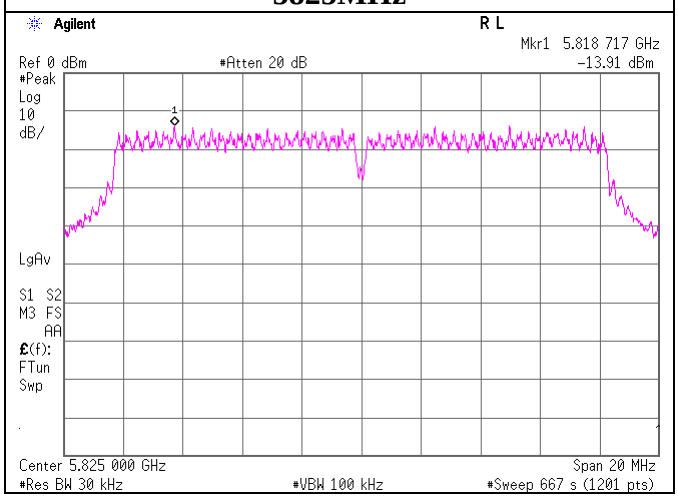
5745MHz



5785MHz



5825MHz



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Power Density

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/02/2012
Temperature/ Humidity	25 deg.C/ 62% RH
Engineer	Satofumi Matsuyama
Mode	11n-20 Tx

Antenna port 1 + 2

Freq.	Antenna port 1 Result	Antenna port 2 Result	Result		Limit	Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[dB]
5745.00	0.48	0.51	-0.06	0.99	8.00	8.06
5785.00	0.50	0.51	0.05	1.01	8.00	7.95
5825.00	0.57	0.53	0.44	1.11	8.00	7.56

Sample Calculation:
Result = Antenna port 1 + 2

Antenna port 1

Freq.	Reading	Cable Loss	Atten.	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5745.00	-16.73	3.57	9.98	-3.18	0.48	8.00	11.18
5785.00	-16.58	3.58	9.98	-3.02	0.50	8.00	11.02
5825.00	-16.00	3.60	9.98	-2.42	0.57	8.00	10.42

Antenna port 2

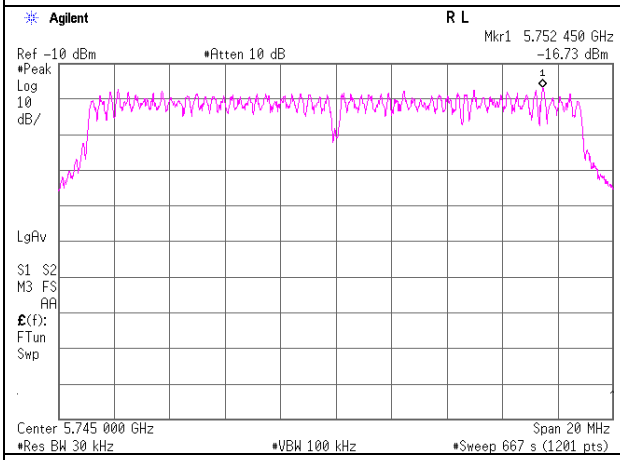
Freq.	Reading	Cable Loss	Atten.	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5745.00	-16.55	3.61	9.98	-2.96	0.51	8.00	10.96
5785.00	-16.50	3.62	9.98	-2.90	0.51	8.00	10.90
5825.00	-16.32	3.62	9.98	-2.72	0.53	8.00	10.72

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

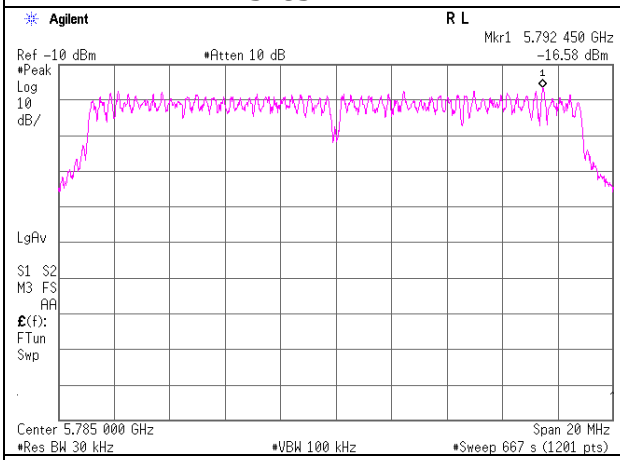
Power Density

11n-20 Antenna port 1

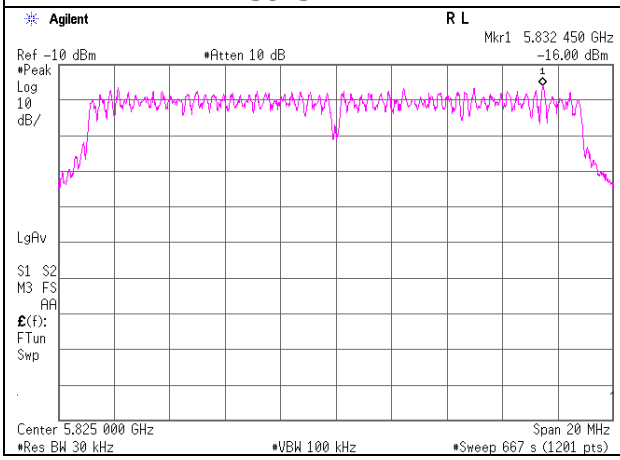
5745MHz



5785MHz

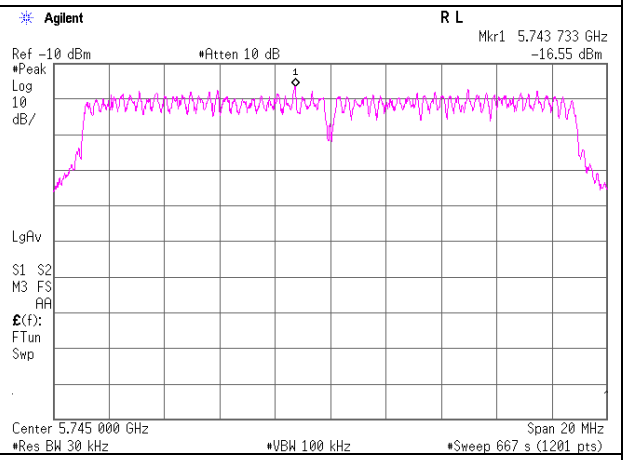


5825MHz

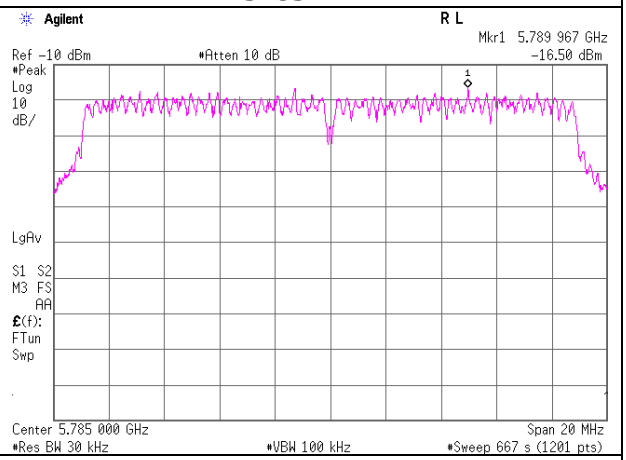


11n-20 Antenna port 2

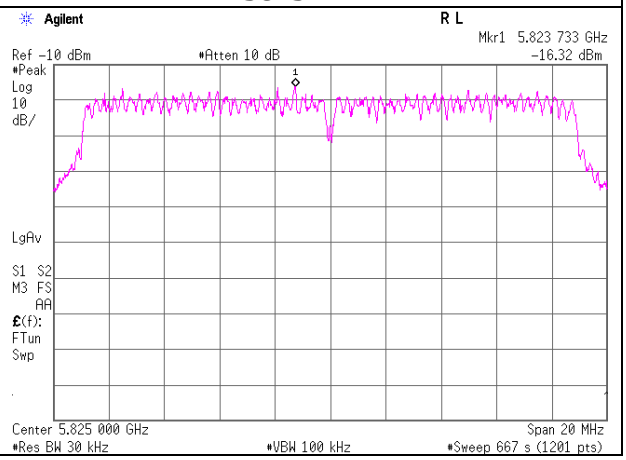
5745MHz



5785MHz



5825MHz



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Power Density

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32KE0041-HO-02
Date	08/02/2012
Temperature/ Humidity	25 deg.C/ 62% RH
Engineer	Satofumi Matsuyama
Mode	11n-40 Tx

Antenna port 1 + 2

Freq.	Antenna port 1 Result	Antenna port 2 Result	Result		Limit	Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[dB]
5755.00	0.35	0.50	-0.69	0.85	8.00	8.69
5795.00	0.31	0.49	-1.00	0.79	8.00	9.00

Sample Calculation:
Result = Antenna port 1 + 2

Antenna port 1

Freq.	Reading	Cable Loss	Atten.	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5755.00	-18.14	3.61	9.98	-4.55	0.35	8.00	12.55
5795.00	-18.70	3.57	9.98	-5.15	0.31	8.00	13.15

Antenna port 2

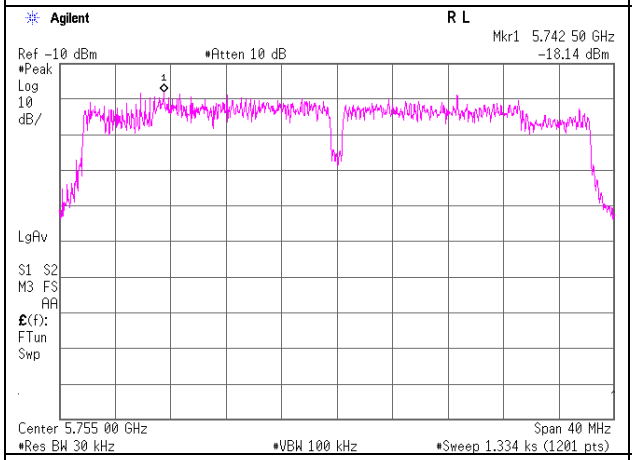
Freq.	Reading	Cable Loss	Atten.	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5755.00	-16.60	3.64	9.98	-2.98	0.50	8.00	10.98
5795.00	-16.69	3.60	9.98	-3.11	0.49	8.00	11.11

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

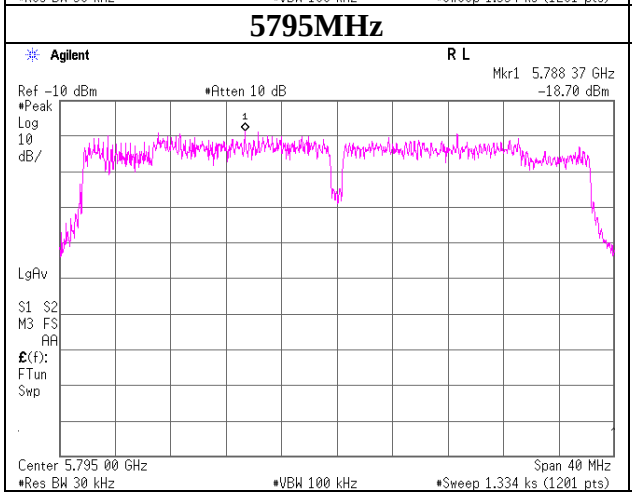
Power Density

11n-40 Antenna port 1

5755MHz

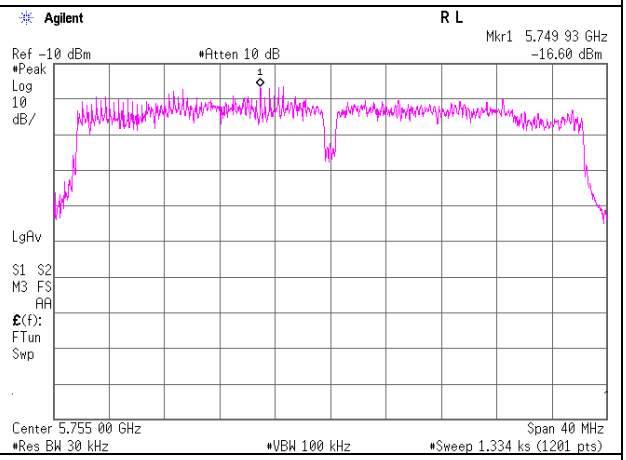


5795MHz

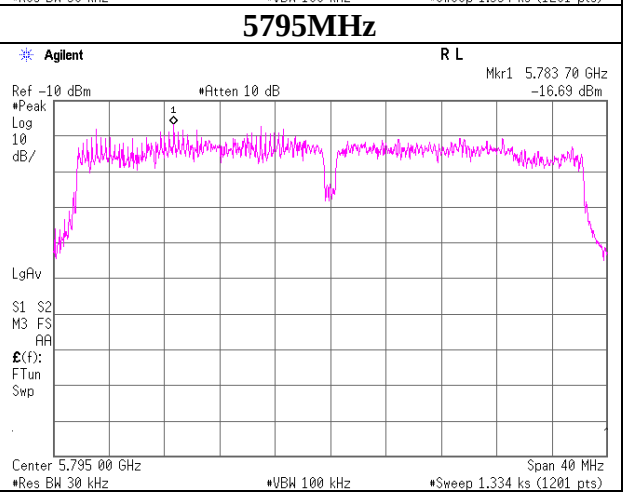


11n-40 Antenna port 2

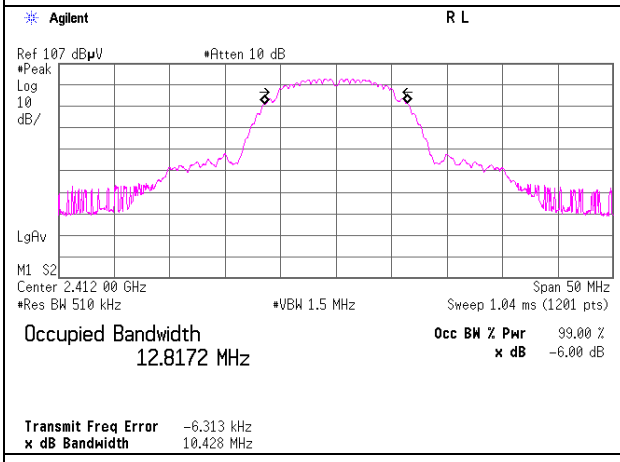
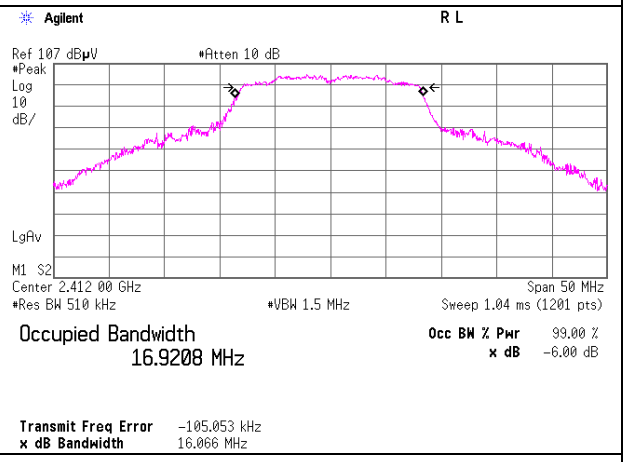
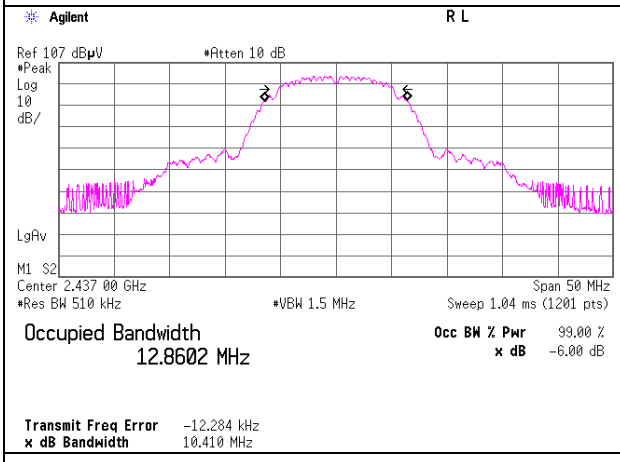
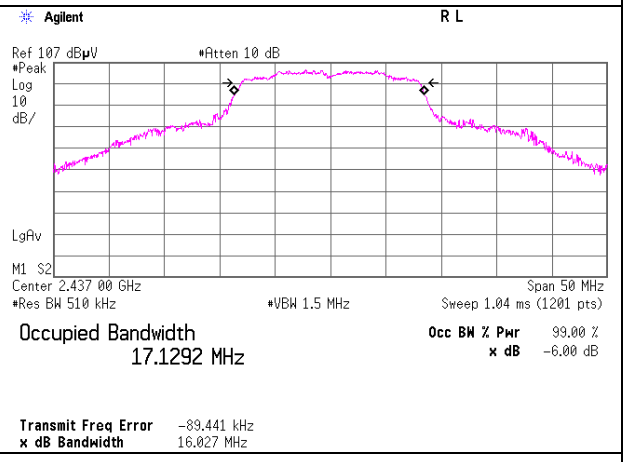
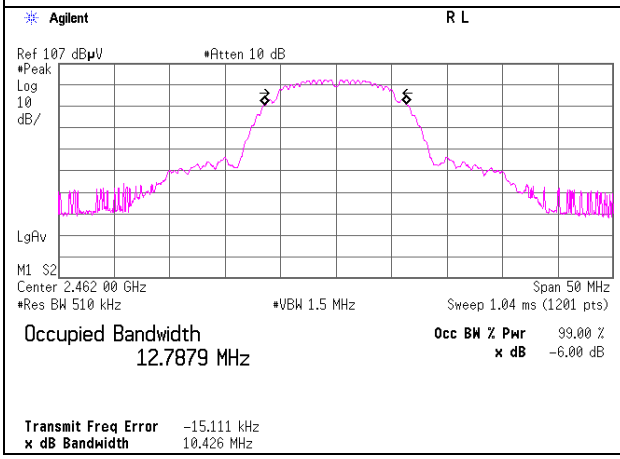
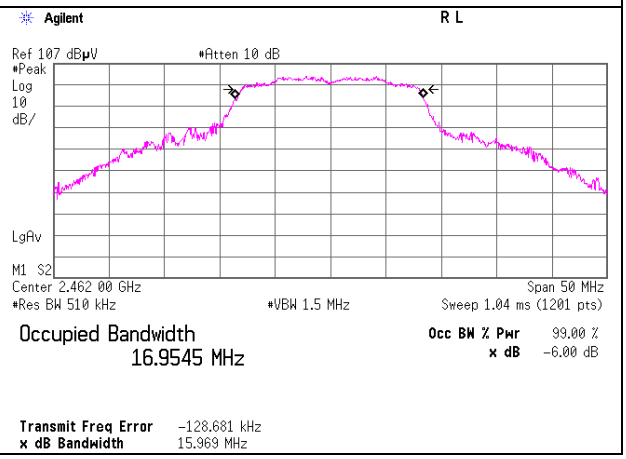
5755MHz



5795MHz



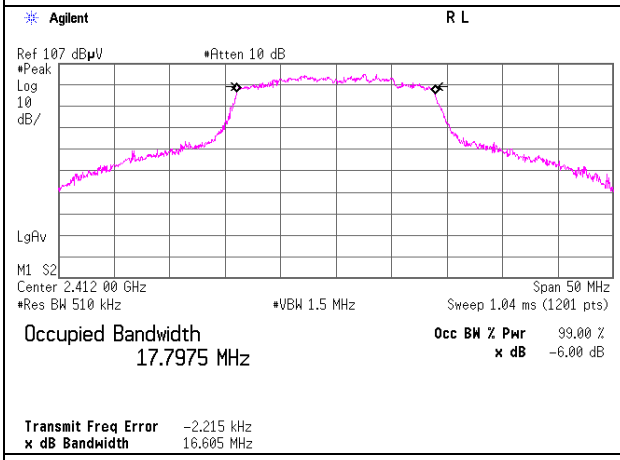
99%Occupied Bandwidth

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

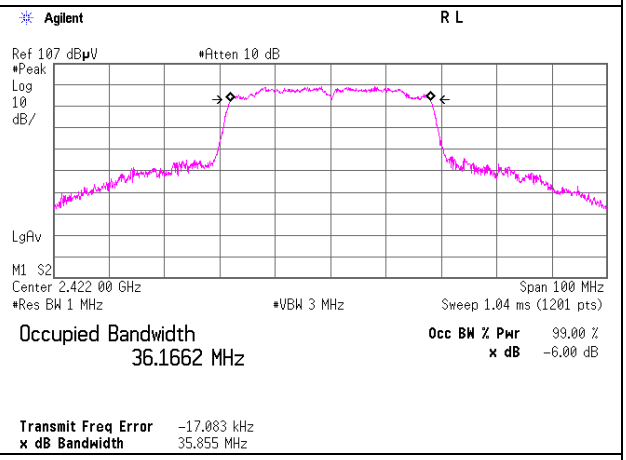
99% Occupied Bandwidth

11n-20 Antenna port 1

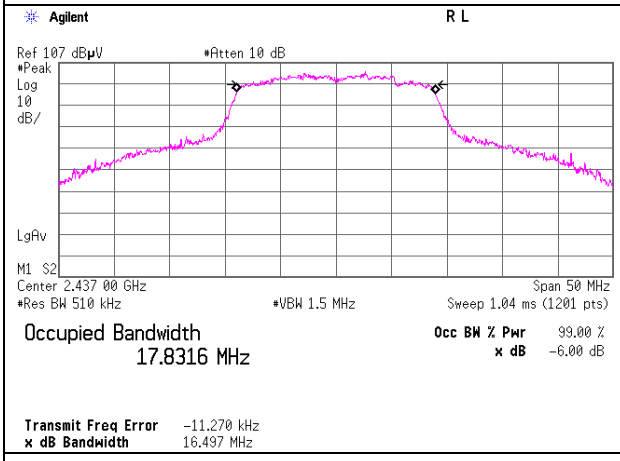
2412MHz



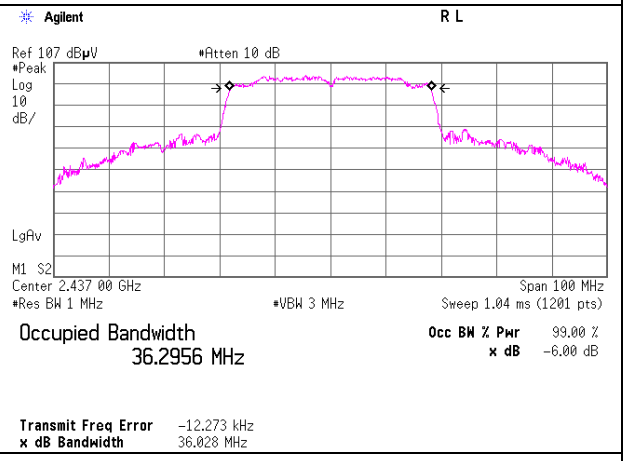
2422MHz



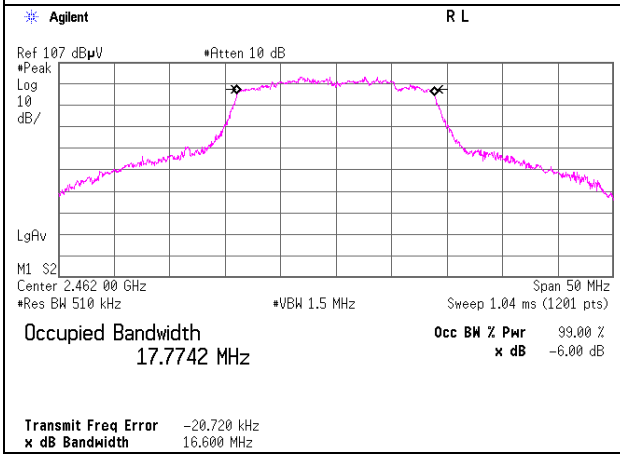
2437MHz



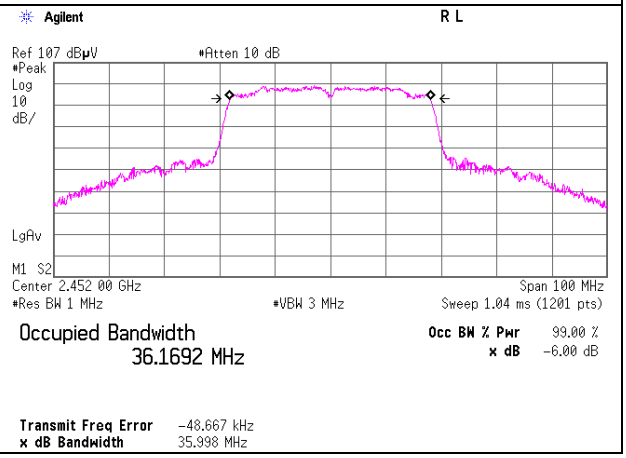
2437MHz



2462MHz



2452MHz



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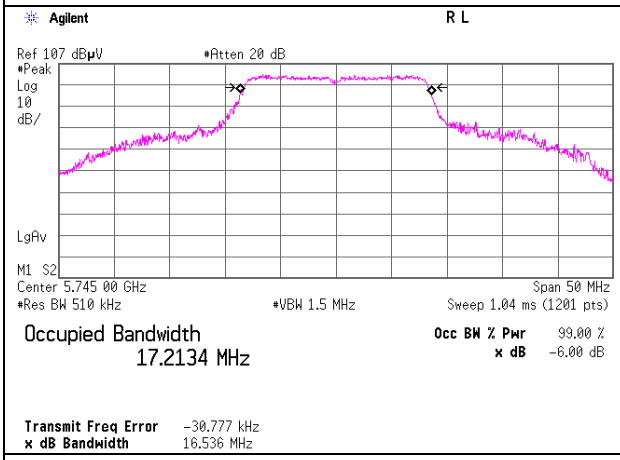
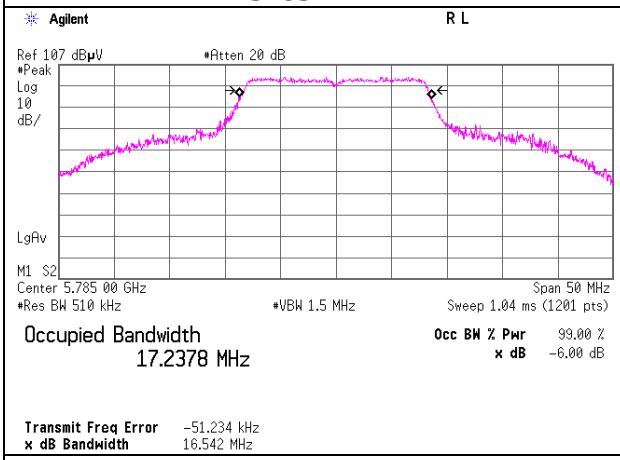
99% Occupied Bandwidth

11a Antenna port 2

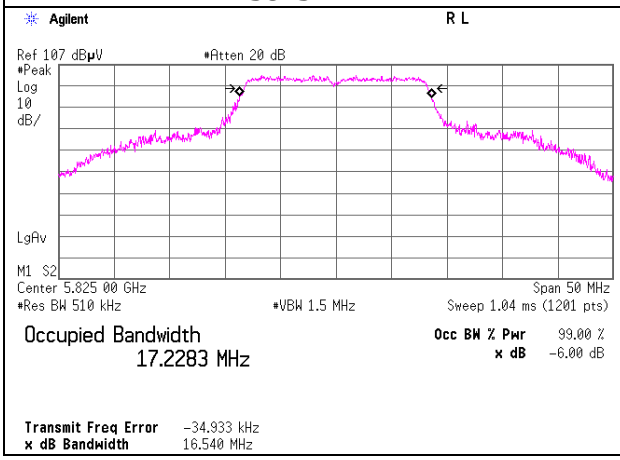
5745MHz



5785MHz

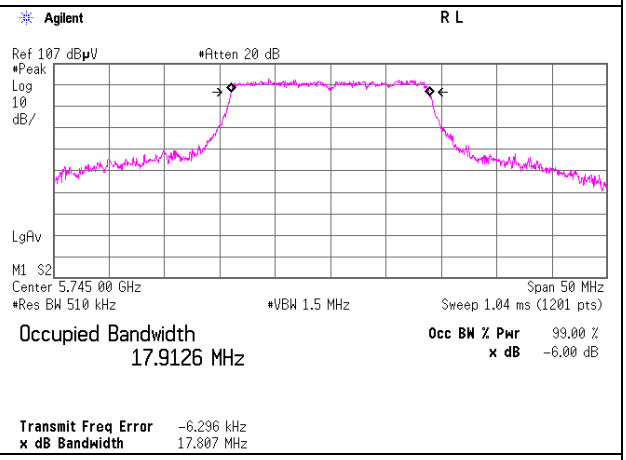


5825MHz

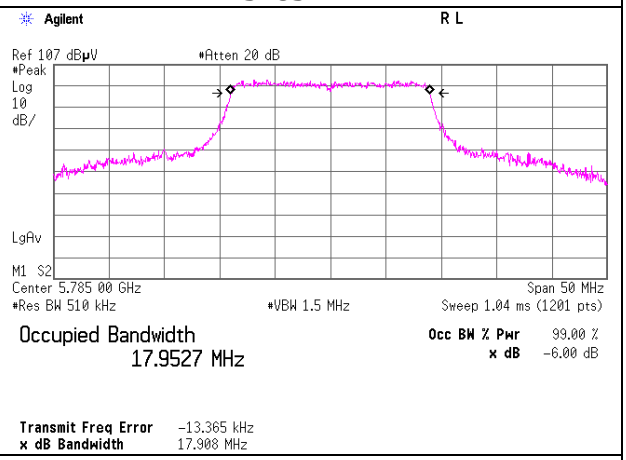


11n-20 Antenna port 1

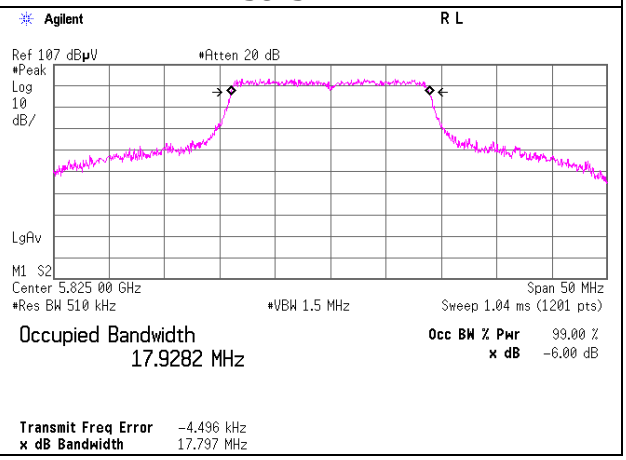
5745MHz



5785MHz



5825MHz



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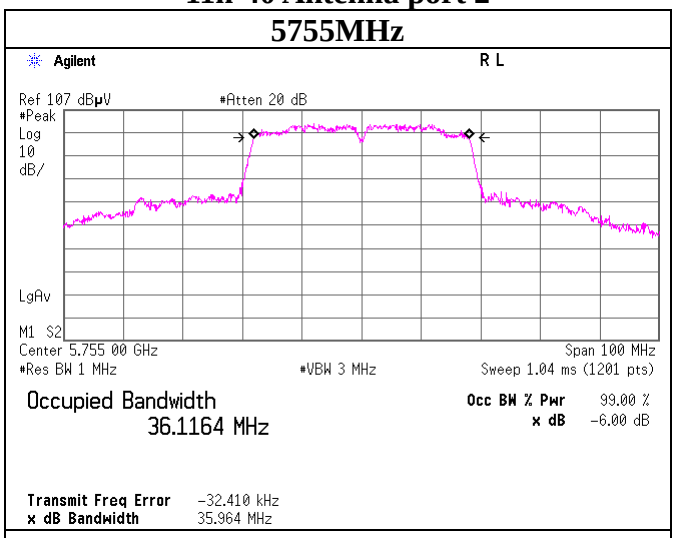
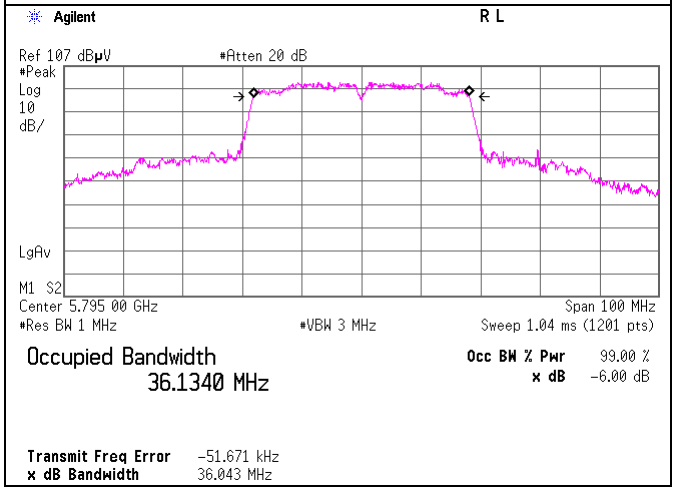
99% Occupied Bandwidth

11n-40 Antenna port 2

5755MHz



5795MHz



APPENDIX 2: Test instruments

EMI test equipment (1/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE	2012/06/29 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE	2012/02/06 * 12
MJM-14	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	RE	2012/04/06 * 12
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2012/02/22 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2012/01/25 * 12
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2012/05/30 * 12
MCC-132	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336161/4(1m) / 340639(5m)	RE	2011/09/06 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	AT/RE/CE	2012/02/06 * 12
MPM-12	Power Meter	Anritsu	ML2495A	0825002	AT	2012/06/01 * 12
MPSE-17	Power sensor	Anritsu	MA2411B	0738285	AT	2012/06/01 * 12
MPM-08	Power Meter	Anritsu	ML2495A	6K00003338	AT	2011/09/13 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	011737	AT	2011/09/13 * 12
MAT-20	Attenuator(10dB)(above1 GHz)	HIROSE ELECTRIC CO.,LTD.	AT-110	-	AT	2012/01/12 * 12
MAT-22	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2012/03/27 * 12
MCC-138	Microwave cable	HUBER+SUHNER	SUCOFLEX 102	37953/2	AT	2011/10/28 * 12
MAT-23	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2012/03/27 * 12
MOS-14	Thermo-Hygrometer	Custom	CTH-201	-	AT	2012/02/06 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	AT	2011/11/23 * 12
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE/CE	2012/02/29 * 12
MJM-07	Measure	PROMART	SEN1955	-	RE/CE	-
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE	2012/02/03 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2011/08/11 * 12
MCC-141	Microwave Cable	Junkosha	MWX221	1203S212(1m) / 1204S062(5m)	RE	2012/04/23 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2012/03/28 * 12
MHA-17	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170307	RE	2012/06/27 * 12
MCC-54	Microwave Cable	Suhner	SUCOFLEX101	2873(1m) / 2876(5m)	RE	2012/03/21 * 12
MPA-03	Microwave System Power Amplifier	Agilent	83050A	3950M00205	RE	2012/06/22 * 12
MHF-23	High Pass Filter 7-20GHz	TOKIMEC	TF37NCCC	603	RE	2012/01/12 * 12
MCC-79	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278923/4	RE	2011/12/08 * 12

EMI test equipment (2/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-01	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 10m	DA-06881	RE	2012/08/01 * 12
MOS-27	Thermo-Hygrometer	CUSTOM	CTH-201	A08Q26	RE	2012/02/08 * 12
MJM-01	Measure	KDS	ES19-55	-	RE	-
MTR-09	EMI Test Receiver	Rohde & Schwarz	ESU26	100412	RE	2012/06/14 * 12
KBA-05	Biconical Antenna	Schwarzbeck	BBA9106	2513	RE	2011/11/23 * 12
KLA-04	Logperiodic Antenna	Schwarzbeck	USLP9143	361	RE	2011/11/23 * 12
MAT-08	Attenuator(6dB)	Weinschel Corp	2	BK7971	RE	2011/11/02 * 12
MCC-02	Coaxial Cable	Suhner/storm/Agilent/TSJ	-	-	RE	2011/09/17 * 12
MPA-19	Pre Amplifier	MITEQ	MLA-10K01-B01-35	1237616	RE	2012/02/20 * 12
MLPA-01	Loop Antenna	Rohde & Schwarz	HFH2-Z2	100017	RE	2011/10/19 * 12
MCC-143	Coaxial Cable	UL Japan	-	-	RE	2012/07/27 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/TSJ	5D-2W(20m)/3D-2W(7.5m)/RG400u(1.5m)/RFM-E421(Switcher)	-/01068(Switcher)	RE	2012/01/22 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2012/03/16 * 12
MHA-05	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	253	RE	2012/06/27 * 12
MHA-01	Horn Antenna 18-26.5GHz	EMCO	3160-09	1266	RE	2012/06/27 * 12
MCC-134	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336167/4(1m) / 340641(5m)	RE	2011/09/07 * 12
MPA-01	Pre Amplifier	Agilent	8449B	3008A01671	RE	2012/02/28 * 12
MSA-11	Spectrum Analyzer	Agilent	E4408B	MY45106562	RE	2012/07/31 * 12
MHF-17	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCA	7001	RE	2011/09/08 * 12
MSA-05	Spectrum Analyzer	Advantest	R3273	160400285	CE	2011/11/23 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	CE	2011/08/11 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(EUT)	2012/02/09 * 12
MAT-67	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2012/01/28 * 12
MCC-113	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W(10m)/SFM141(5m)/421-010(1m)/sucoform141-PE(1m)/RFM-E121(Switcher)	-/04178	CE	2012/07/12 * 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