



RADIO TEST REPORT

Test Report No. : 31JE0038-HO-01-A

Applicant : silex technology, Inc.
Type of Equipment : Wireless LAN PCI Express Mini Card Module
Model No. : SX-PCEAN
FCC ID : N6C-SXPCEAN
Test regulation : FCC Part 15 Subpart C: 2012
Test Result : Complied

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Date of test: March 28 to April 27, 2012

Representative test engineer:

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Engineer of WiSE Japan,
UL Verification Service

Approved by:

Takahiro Hatakeda
Leader of WiSE Japan,
UL Verification Service



NVLAP LAB CODE: 200572-0

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<http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap>

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13-EM-F0429

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SECTION 1: Customer information

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

2.1 Identification of E.U.T.

Type of Equipment : Wireless LAN PCI Express Mini Card Module
Model No. : SX-PCEAN
Serial No. : Refer to Clause 4.2
Rating : DC3.3V
Receipt Date of Sample : February 15, 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

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

General Specification

Clock frequency(ies) in the system : 40MHz

Radio Specification

Radio Type : Transceiver
Method of Frequency Generation : Synthesizer
Power Supply (inner) : DC1.2V

	IEEE802.11b	IEEE802.11g	IEEE802.11a	IEEE802.11n (20 M band)	IEEE802.11n (40 M band)
Frequency of operation	2412-2462MHz	2412-2462MHz	5180-5320MHz *1) 5745-5825MHz	2412 - 2462MHz 5180-5320MHz *1) 5745-5825MHz	2422 - 2452MHz 5190 - 5310MHz *2) 5755 - 5795MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)		
Channel spacing	5MHz		20MHz	2.4GHz band 5MHz 5GHz band 20MHz	2.4GHz band 5MHz 5GHz band 40MHz
Antenna type	Sleeve antenna (Omni-Directional)				
Antenna Gain: G _{ANT}	1.5dBi@2.4GHz Band, 2.1dBi@5GHz Band				
Directional Gain	4.51dBi@2.4GHz Band, 5.11dBi@5GHz Band (G _{ANT} + 10log2)				
Antenna Connector type	U.FL Alternative connector				

*1) 5180 - 5320MHz is applied for other test report.(Test Report No.: 31JE0038-HO-01-B)

*2) 5190 - 5310MHz is applied for other test report.(Test Report No.: 31JE0038-HO-01-B)

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C: 2012, final revised on March 30, 2012 and effective April 30, 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 March 30, 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 IC: RSS-Gen 7.2.4	FCC: Section 15.207 IC: RSS-Gen 7.2.4	QP 16.5dB, 4.83476MHz, L AV 16.5dB, 4.83476MHz, L	Complied	-
6dB Bandwidth	FCC: "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247" IC: RSS-Gen 4.6.2	FCC: Section 15.247(a)(2) IC: RSS-210 A8.2(a)	See data.	Complied	Conducted
Maximum Peak Output Power	FCC: "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247" IC: RSS-Gen 4.8	FCC: Section 15.247(b)(3) IC: RSS-210 A8.4(4)		Complied	Conducted
Power Density	FCC: "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247" IC: -	FCC: Section 15.247 (e) IC: RSS-210 A8.2(b)		Complied	Conducted
Spurious Emission Restricted Band Edges	FCC: "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247" IC: RSS-Gen 4.9	FCC: Section15.247(d) IC: RSS-210 A8.5 RSS-Gen 7.2.3	0.2dB 32.250MHz, QP, Vert.	Complied	Conducted/ Radiated

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)

The RF Module has own regulator.

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

Therefore, this EUT complies with the requirement.

FCC Part 15.203/212 Antenna requirement

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

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

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3.3 Addition to standard

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

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

3.4 Uncertainty

EMI

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

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

Test room (semi-anechoic chamber)	Radiated emission						
	(3m*)(+dB)				(1m*)(+dB)		(0.5m*)(+dB)
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	4.2dB	5.0dB	5.1dB	4.7dB	5.7dB	4.4dB	4.3dB
No.2	4.1dB	5.2dB	5.1dB	4.8dB	5.6dB	4.3dB	4.2dB
No.3	4.5dB	5.0dB	5.2dB	4.8dB	5.6dB	4.5dB	4.2dB
No.4	4.7dB	5.2dB	5.2dB	4.8dB	5.6dB	5.1dB	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 report meets the limits unless the uncertainty is taken into consideration.

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(Long), PN9
IEEE 802.11g (11g)	6Mbps, PN9
IEEE 802.11n MIMO 20MHz BW (11n-20): 2.4GHz / 5GHz	MCS 8, PN9
IEEE 802.11n MIMO 40MHz BW (11n-40): 2.4GHz / 5GHz	MCS 8, PN9
*Transmitting duty was close to 100% on all tests. *The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel) *EUT has the power settings by the software as follows; Power settings: 11b(1Mbps): 13.5dBm(2412 to 2462MHz), 11g(6Mbps): 13.5dBm(2412MHz), 17.0dBm(2417 to 2457MHz), 15.0dBm(2462MHz) 11n-20 2.4GHz (MCS8): 10.5dBm(2412MHz), 14.5dBm(2417 to 2457MHz), 10.5dBm(2462MHz) 11n-40 2.4GHz (MCS8): 6.0dBm(2422MHz), 13.5dBm(2427 to 2447MHz), 7.0dBm(2452MHz) 11a(6Mbps): 15.0dBm(5745 to 5825MHz) 11n-20 5GHz (MCS8): 13.5dBm(5745 to 5825MHz) 11n-40 5GHz (MCS8): 11.0dBm(5755 and 5795MHz) Software: Atheros Radio Test (ART) - Revision 0.9 BUILD #27 ART_11n - Customer Version (ANWI BUILD) *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.	

*The details of Operating mode(s): 2.4GHz

Test Item	Operating Mode	Tested Antenna	Tested frequency
Conducted Emission	11n-20(MIMO) Tx *1)	0+1	2437MHz
Spurious Emission (Radiated)	11b Tx	0 *3)	2412MHz 2437MHz 2462MHz
	11n-20(MIMO) Tx *2)	0+1	2412MHz 2437MHz 2462MHz
	11n-40(MIMO) Tx	0+1	2422MHz 2437MHz 2452MHz
	11b Tx	0 *3)	2412MHz 2437MHz 2462MHz
	11g Tx	1 *3)	2412MHz 2437MHz 2462MHz
	11n-40(MIMO) Tx	0 *3)	2422MHz 2437MHz 2452MHz
Maximum Peak Output Power	11b Tx	0, 1	2412MHz 2437MHz 2462MHz
	11g Tx	0+1	2412MHz 2437MHz 2462MHz
	11n-20(MIMO) Tx	0+1	2412MHz 2437MHz 2462MHz
	11n-40(MIMO) Tx	0+1	2422MHz 2437MHz 2452MHz
	11b Tx	0 *3)	2412MHz 2437MHz 2462MHz
	11g Tx	0+1	2412MHz 2437MHz 2462MHz
Power Density	11n-20(MIMO) Tx	0+1	2412MHz 2437MHz 2462MHz
	11n-40(MIMO) Tx	0+1	2422MHz 2437MHz 2452MHz
	11b Tx	0 *3)	2412MHz 2437MHz 2462MHz
	11g Tx	0+1	2412MHz 2437MHz 2462MHz
	11n-20(MIMO) Tx	0+1	2412MHz 2437MHz 2462MHz
	11n-40(MIMO) Tx	0+1	2422MHz 2437MHz 2452MHz

*1) The mode was tested as a representative, because it had the highest power at antenna terminal test.

*2) Since 11g and 11n-20 have the same modulation method and no differences in transmitting specification, test was performed on the representative mode that had the highest peak output power.

*3) After the comparison between Antenna 0 and Antenna 1, test was performed with the antenna that had higher power as a representative.

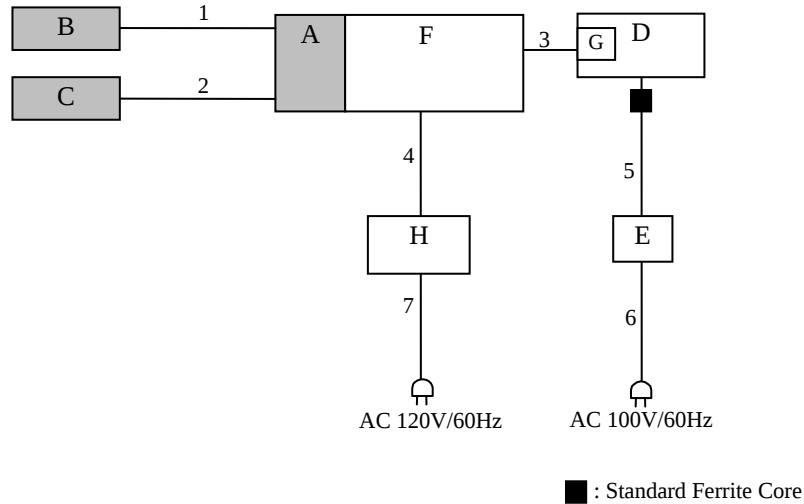
*The details of Operating mode(s): 5GHz

Test Item	Operating Mode	Tested Antenna	Tested frequency
Spurious Emission (Radiated)	11n-20(MIMO) Tx *1)	0+1	5745MHz 5785MHz 5825MHz
	11n-40(MIMO) Tx	0+1	5755MHz 5795MHz
Spurious Emission (Conducted) 6dB Bandwidth 99% Occupied Bandwidth	11a Tx	1 *2)	5745MHz 5785MHz 5825MHz
	11n-20(MIMO) Tx	1 *2)	5745MHz 5785MHz 5825MHz
	11n-40(MIMO) Tx	0 *2)	5755MHz 5795MHz
Maximum Peak Output Power	11a Tx	0, 1	5745MHz 5785MHz 5825MHz
	11n-20(MIMO) Tx	0+1	5745MHz 5785MHz 5825MHz
	11n-40(MIMO) Tx	0+1	5755MHz 5795MHz
Power Density	11a Tx	1 *2)	5745MHz 5785MHz 5825MHz
	11n-20(MIMO) Tx	0+1	5745MHz 5785MHz 5825MHz
	11n-40(MIMO) Tx	0+1	5755MHz 5795MHz

*1) Since 11a and 11n-20 have the same modulation method and no differences in transmitting specification, test was performed on the representative mode that had the highest peak output power.

*2) After the comparison between Antenna 0 and Antenna 1, test was performed with the antenna that had higher power as a representative.

4.2 Configuration and peripherals



* 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	Wireless LAN PCI Express Mini Card Module	SX-PCEAN	008092-01 1B48	silex technology, Inc.	EUT
B	Antenna	TD17027A2S0	001	Sansei Denki	EUT
C	Antenna	TD17027A2S0	002	Sansei Denki	EUT
D	Laptop PC	T60	L3-KY149	Lenovo	-
E	AC Adaptor	92P1160	11S92P1160Z1ZBGH77W6YJ	Lenovo	-
F	Jig	MR11-EC2C	-	B plus	-
G	Express Card Adaptor	-	-	B plus	-
H	DC Power Supply	PW8-3ATP	09067054	KENWOOD TMI	-

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	Antenna Cable	0.1	Shielded	Shielded	-
2	Antenna Cable	0.1	Shielded	Shielded	-
3	MiniPCI Cable	0.3	Shielded	Shielded	-
4	DC Cable	2.0	Unshielded	Unshielded	-
5	DC Cable	1.8	Unshielded	Unshielded	-
6	AC Cable	0.9	Unshielded	Unshielded	-
7	AC Cable	2.0	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

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SECTION 6: Radiated Spurious Emission

Test Procedure

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	30MHz to 300MHz	300MHz to 1GHz	Above 1GHz
Antenna Type	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)	RBW: 100kHz VBW: 300kHz (S/A)
Test Distance	3m	3m (below 10GHz), 1m*2) (above 10GHz)		3m (below 10GHz), 1m*2) (above 10GHz)

*1) The test was performed with VBW 10Hz since the EUT had transmitting duty cycle close to 100%. (see Appendix).

*2) Distance Factor: $20 \times \log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT and of X(0 and 90), Y(0 and 90) and Z(0 and 90) axes of antenna to see the position of maximum noise, and the test was made at the position that has the maximum noise.

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

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

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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, 22MHz, 40MHz	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	-	Power Meter (Sensor: 50MHz BW)
Peak Power Density	18MHz, 20MHz, 40MHz	30kHz	100kHz	600sec, 667sec, 1.334ksec	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 or 40GHz (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).

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

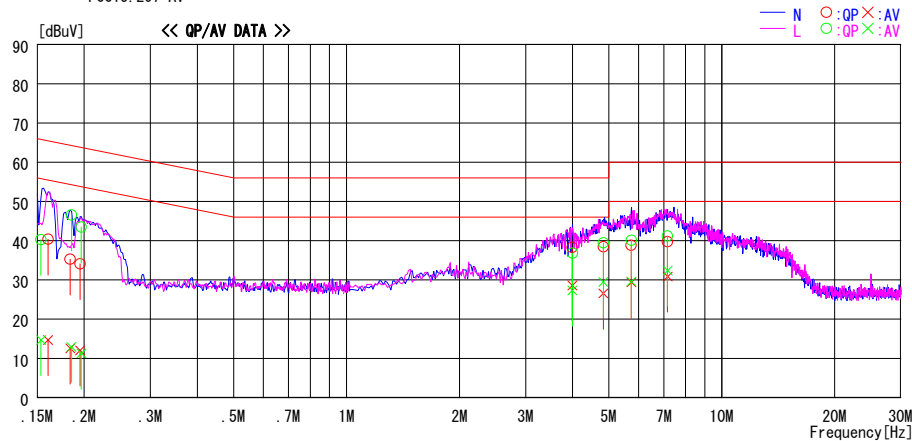
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber
Date : 2012/04/27

Report No. : 31JE0038-HO-01
Power : DC 3.3V
Temp./Humi. : 22deg. C / 40% RH
Engineer : Hiroshi Kukita

Mode / Remarks : 11n-20(MIMO) ant0+1 MCS8 2437MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.16015	27.1	1.4	13.3	40.4	14.7	65.5	55.5	25.1	40.8	N	
0.18335	22.0	-0.7	13.3	35.3	12.6	64.3	54.3	29.0	41.7	N	
0.19495	20.8	-1.2	13.3	34.1	12.1	63.8	53.8	29.7	41.7	N	
3.99440	24.7	15.0	13.6	38.3	28.6	56.0	46.0	17.7	17.4	N	
4.83476	24.8	12.9	13.7	38.5	26.6	56.0	46.0	17.5	19.4	N	
5.73500	25.0	15.6	13.8	38.8	29.4	60.0	50.0	21.2	20.6	N	
7.16273	25.8	17.0	13.9	39.7	30.9	60.0	50.0	20.3	19.1	N	
0.15341	27.0	1.4	13.3	40.3	14.7	65.8	55.8	25.5	41.1	L	
0.18480	33.3	-0.3	13.3	46.6	13.0	64.3	54.3	17.7	41.3	L	
0.19640	30.2	-2.0	13.3	43.5	11.3	63.8	53.8	20.3	42.5	L	
3.99760	23.2	13.7	13.6	36.8	27.3	56.0	46.0	19.2	18.7	L	
4.83476	25.8	15.8	13.7	39.5	29.5	56.0	46.0	16.5	16.5	L	
5.74176	26.3	15.8	13.8	40.1	29.6	60.0	50.0	19.9	20.4	L	
7.16273	27.3	18.5	13.9	41.2	32.4	60.0	50.0	18.8	17.6	L	

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

6dB Bandwidth

Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 31JE0038-HO-01
Date 04/04/2012
Temperature/ Humidity 21deg. C / 51% RH
Engineer Yutaka Yoshida
Mode Tx

11b, Antenna 0 1Mbps(Long)

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	11.994	>500
2437	12.102	>500
2462	12.096	>500

11g, Antenna 0 6Mbps

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	16.405	>500
2437	16.427	>500
2462	16.435	>500

11n-20, Antenna 1 MCS 8

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	17.705	>500
2437	17.627	>500
2462	17.658	>500

11n-40, Antenna 0 MCS 8

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2422	36.078	>500
2437	35.885	>500
2452	36.205	>500

6dB Bandwidth

Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 31JE0038-HO-01
Date 04/13/2012
Temperature/ Humidity 21deg. C / 44% RH
Engineer Hiroshi Kukita
Mode Tx

11a, Antenna 1 6Mbps

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
5745	16.385	>500
5785	16.401	>500
5825	16.370	>500

11n-20, Antenna 1 MCS 8

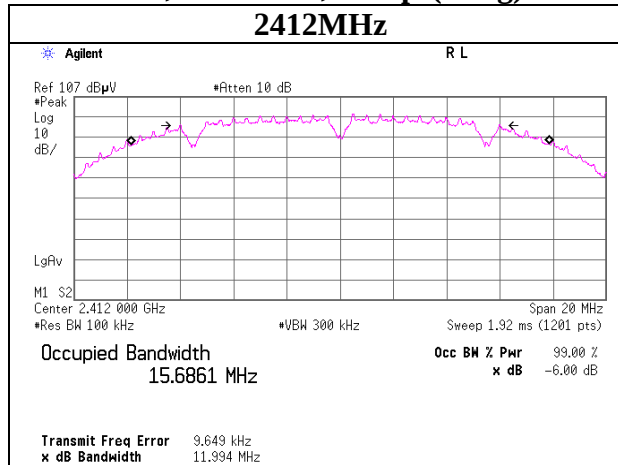
Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
5745	17.645	>500
5785	17.719	>500
5825	17.735	>500

11n-40, Antenna 0 MCS 8

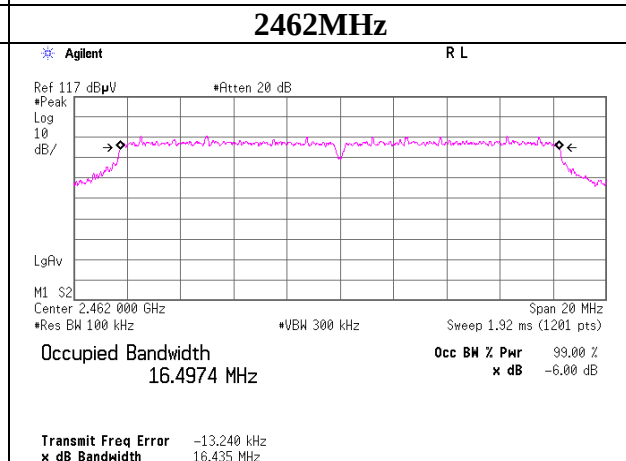
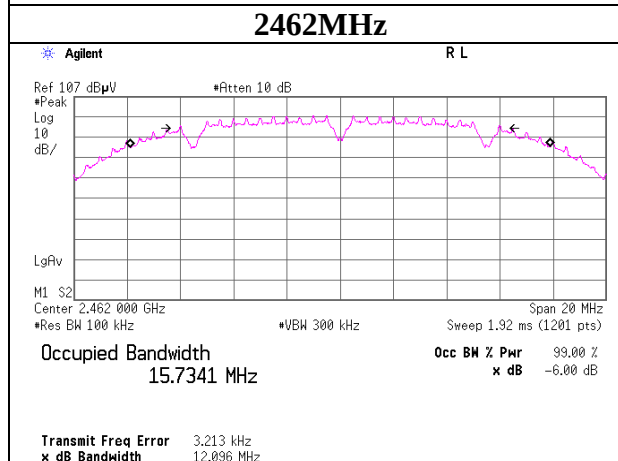
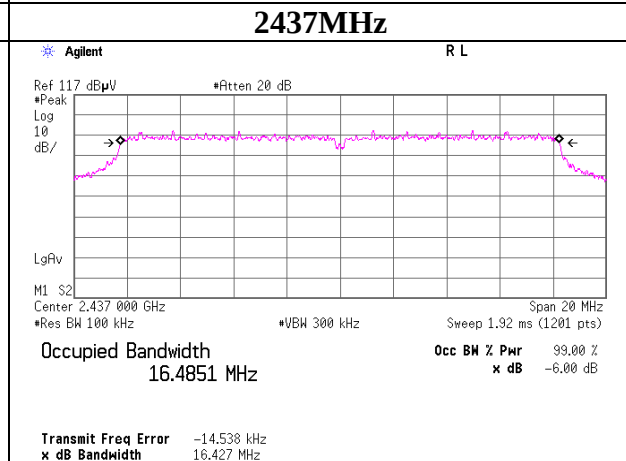
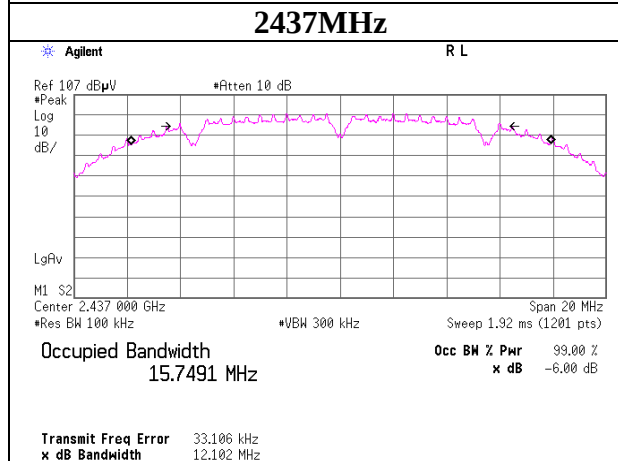
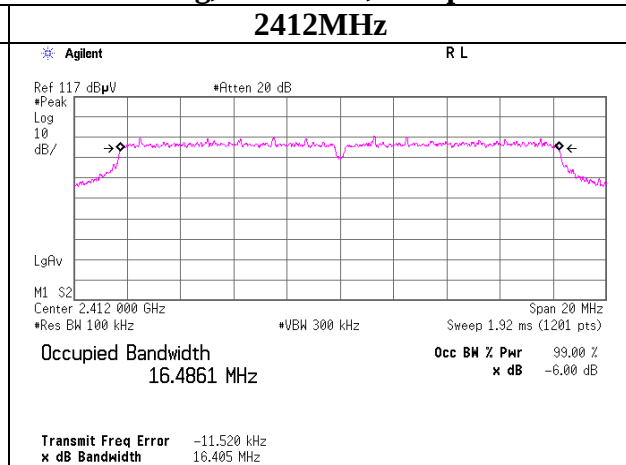
Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
5755	36.101	>500
5795	35.877	>500

6dB Bandwidth

11b, Antenna 0, 1Mbps(Long)



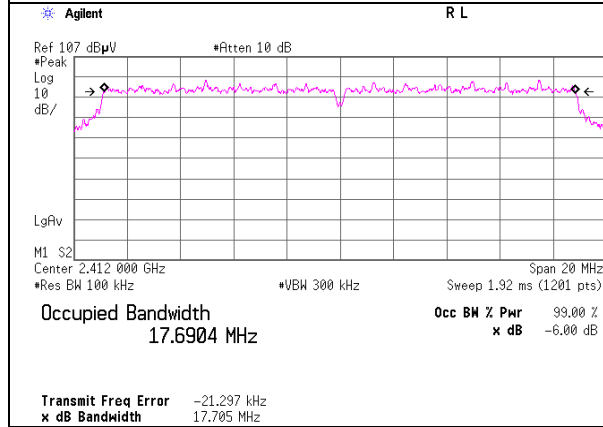
11g, Antenna 0, 6Mbps



6dB Bandwidth

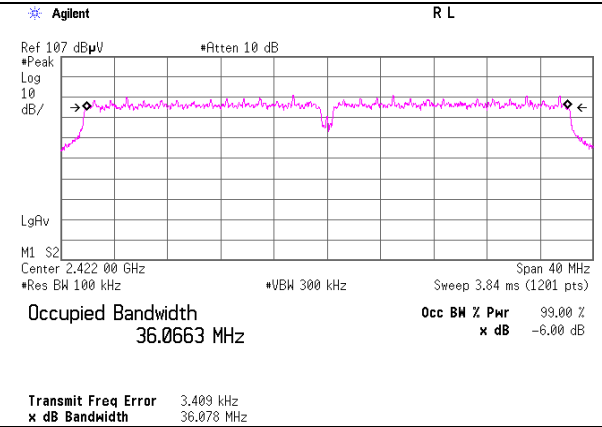
11n-20, MCS 8, Antenna 1

2412MHz

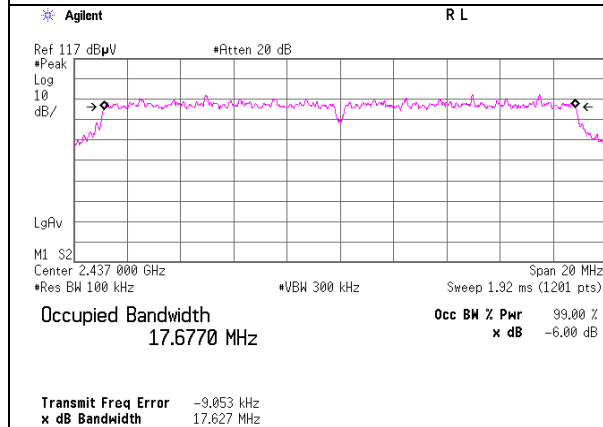


11n-40, MCS 8, Antenna 0

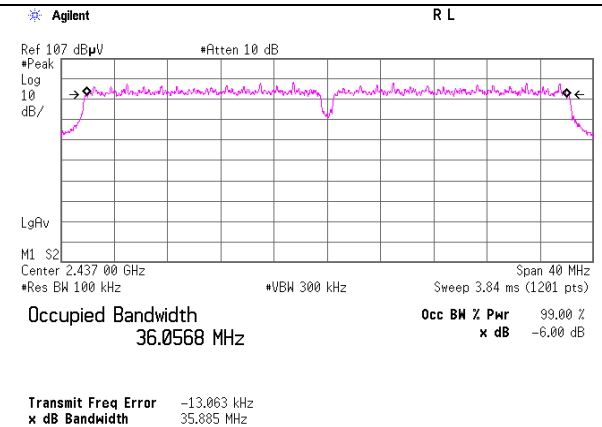
2422MHz



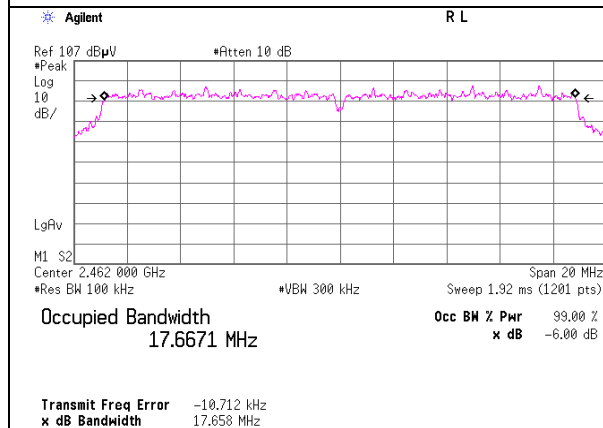
2437MHz



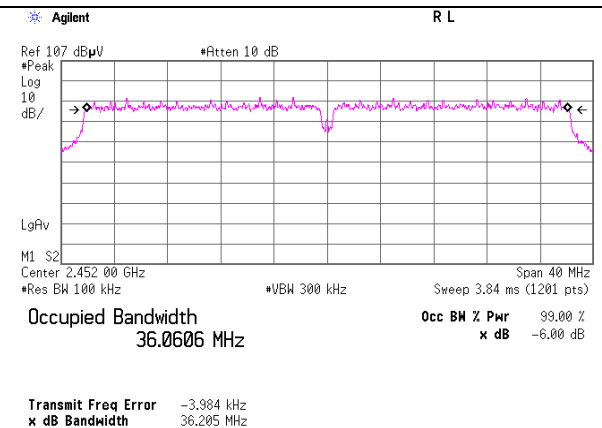
2437MHz



2462MHz

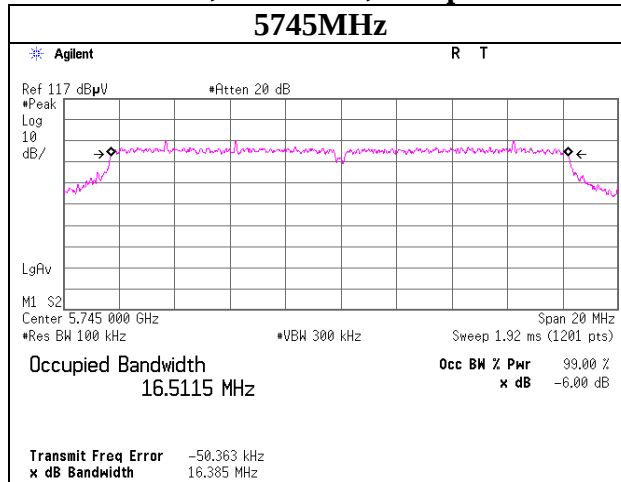


2452MHz

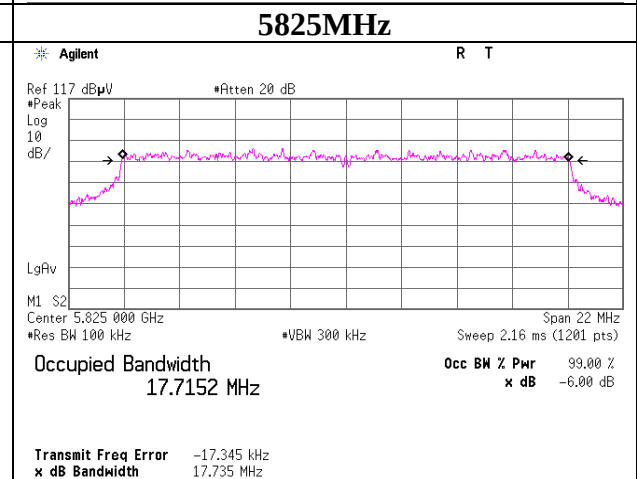
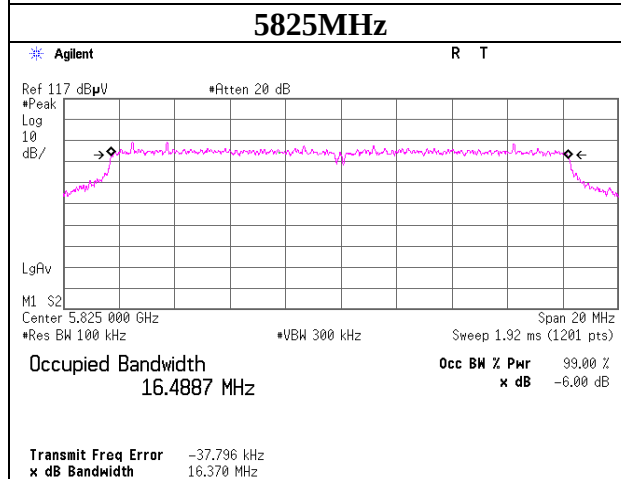
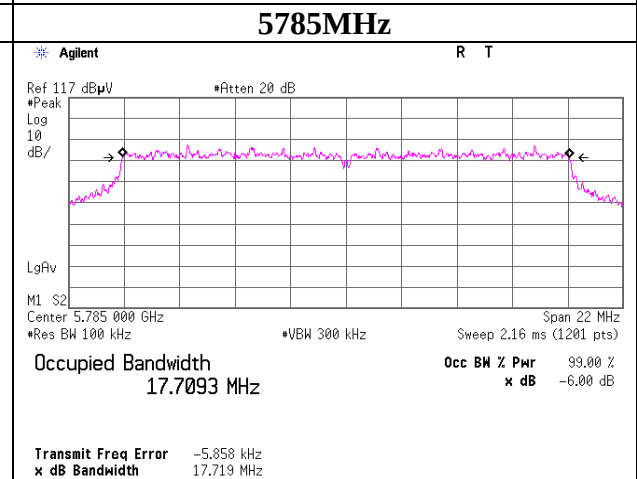
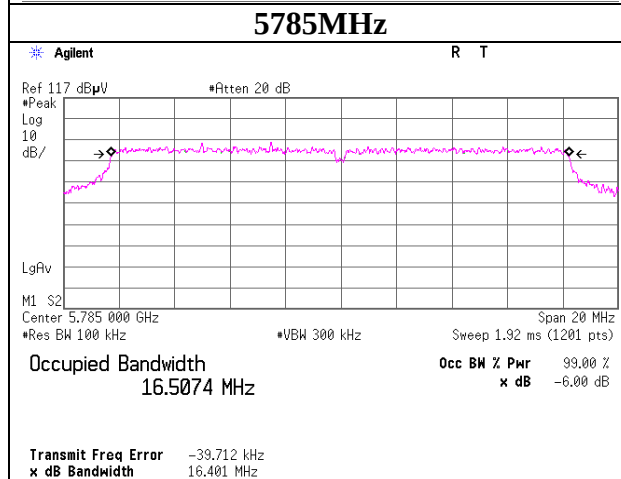
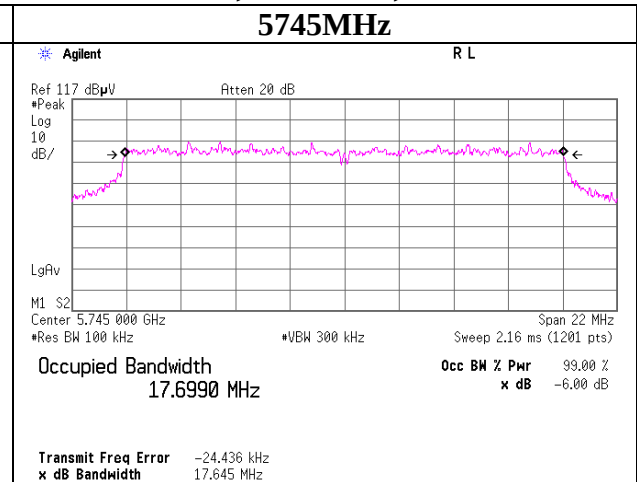


6dB Bandwidth

11a, Antenna 1, 6Mbps

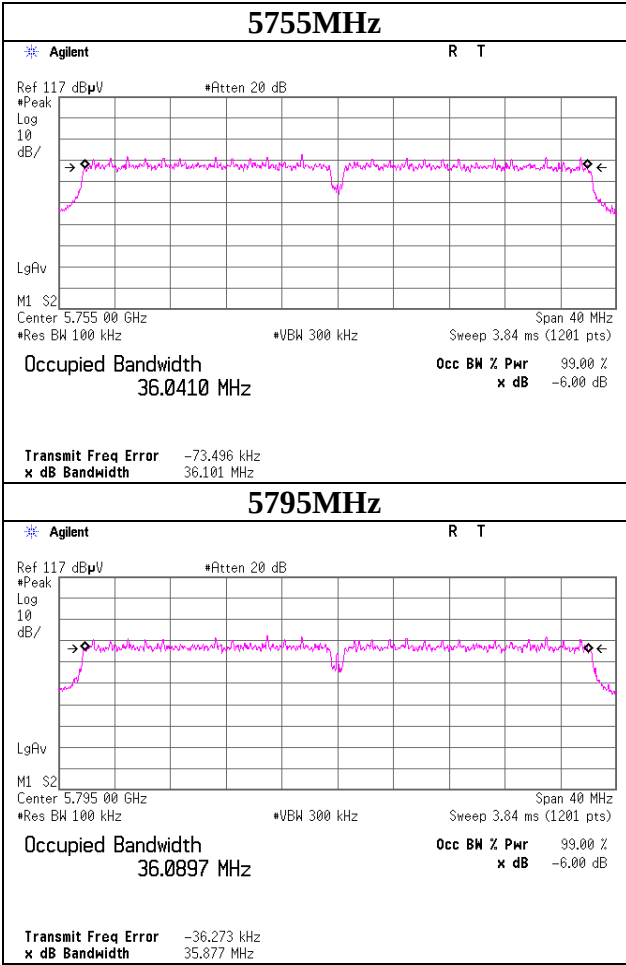


11n-20, Antenna 1, MCS 8



6dB Bandwidth

11n-40, Antenna 0, MCS 8



Maximum Peak Output Power

Test place : Head Office EMC Lab. No.6 Measurement Room
Report No. : 31JE0038-HO-01
Date : 04/04/2012
Temperature/ Humidity : 21deg. C / 51% RH
Engineer : Yutaka Yoshida
Mode : 11b Tx

Antenna 0 1Mbps(Long)

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	3.94	2.13	10.07	16.14	41.11	30.00	1000	13.86
2437	3.25	2.14	10.07	15.46	35.16	30.00	1000	14.54
2462	3.14	2.15	10.07	15.36	34.36	30.00	1000	14.64

Antenna 1 1Mbps(Long)

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	3.30	2.13	10.07	15.50	35.48	30.00	1000	14.50
2437	3.35	2.14	10.07	15.56	35.97	30.00	1000	14.44
2462	3.23	2.15	10.07	15.45	35.08	30.00	1000	14.55

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

Antenna 0, 2437MHz

Rate [Mbps]	Reading [dBm]	Remark
1(Long)	3.25	*
2(Long)	3.16	
2(Short)	3.18	
5.5(Long)	3.15	
5.5(Short)	3.13	
11(Long)	3.19	
11(Short)	3.17	

Antenna 1, 2437MHz

Rate [Mbps]	Reading [dBm]	Remark
1(Long)	3.35	*
2(Long)	3.31	
2(Short)	3.32	
5.5(Long)	3.30	
5.5(Short)	3.28	
11(Long)	3.34	
11(Short)	3.32	

*: 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.	31JE0038-HO-01
Date	04/04/2012
Temperature/ Humidity	21deg. C / 51% RH
Engineer	Yutaka Yoshida
Mode	11g Tx

Antenna 0 6Mbps

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	12.11	2.13	10.07	24.31	269.77	30.00	1000	5.69
2437	13.35	2.14	10.07	25.56	359.75	30.00	1000	4.44
2462	11.33	2.15	10.07	23.55	226.46	30.00	1000	6.45

Antenna 1 6Mbps

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	11.66	2.13	10.07	23.86	243.22	30.00	1000	6.14
2437	13.21	2.14	10.07	25.42	348.34	30.00	1000	4.58
2462	11.48	2.15	10.07	23.70	234.42	30.00	1000	6.30

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

Antenna 0, 2437MHz

Rate [Mbps]	Reading [dBm]	Remark
6	13.35	*
9	13.29	
12	13.19	
18	13.24	
24	13.13	
36	13.13	
48	12.46	
54	12.20	

Antenna 1, 2437MHz

Rate [Mbps]	Reading [dBm]	Remark
6	13.21	*
9	13.15	
12	13.02	
18	13.02	
24	13.03	
36	12.92	
48	12.43	
54	12.18	

*: 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. : 31JE0038-HO-01
Date : 04/04/2012
Temperature/ Humidity : 21deg. C / 51% RH
Engineer : Yutaka Yoshida
Mode : 11n-20(MIMO) Tx

Antenna 0 + 1, MCS 8

Freq. [MHz]	Result Antenna 0 [mW]	Result Antenna 1 [mW]	Result Antenna 0 + 1		Limit		Margin [dB]
			[dBm]	[mW]	[dBm]	[mW]	
2412	139.00	123.59	24.19	262.59	30.00	1000	5.81
2437	271.02	280.54	27.42	551.56	30.00	1000	2.58
2462	122.46	123.03	23.90	245.49	30.00	1000	6.10

Sample Calculation:

Result Antenna 0 + 1 [mW] = Result Antenna 0 [mW] + Result Antenna 1 [mW]

Antenna 0, MCS 8

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	9.23	2.13	10.07	21.43	139.00	30.00	1000	8.57
2437	12.12	2.14	10.07	24.33	271.02	30.00	1000	5.67
2462	8.66	2.15	10.07	20.88	122.46	30.00	1000	9.12

Antenna 1, MCS 8

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	8.72	2.13	10.07	20.92	123.59	30.00	1000	9.08
2437	12.27	2.14	10.07	24.48	280.54	30.00	1000	5.52
2462	8.68	2.15	10.07	20.90	123.03	30.00	1000	9.10

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

Maximum Peak Output Power

Test place : Head Office EMC Lab. No. 6 Measurement Room
Report No. : 31JE0038-HO-01
Date : 04/04/2012
Temperature/ Humidity : 21deg. C / 51% RH
Engineer : Yutaka Yoshida
Mode : 11n-40(MIMO) Tx

Antenna 0 + 1, MCS 8

Freq. [MHz]	Result Antenna 0 [mW]	Result Antenna 1 [mW]	Result Antenna 0 + 1		Limit		Margin [dB]
			[dBm]	[mW]	[dBm]	[mW]	
2422	48.53	59.57	20.34	108.10	30.00	1000	9.66
2437	245.47	242.66	26.89	488.13	30.00	1000	3.11
2452	59.84	69.82	21.13	129.66	30.00	1000	8.87

Sample Calculation:

Result Antenna 0 + 1 [mW] = Result Antenna 0 [mW] + Result Antenna 1 [mW]

Antenna 0, MCS 8

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2422	4.66	2.13	10.07	16.86	48.53	30.00	1000	13.14
2437	11.69	2.14	10.07	23.90	245.47	30.00	1000	6.10
2452	5.55	2.15	10.07	17.77	59.84	30.00	1000	12.23

Antenna 1, MCS 8

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2422	5.55	2.13	10.07	17.75	59.57	30.00	1000	12.25
2437	11.64	2.14	10.07	23.85	242.66	30.00	1000	6.15
2452	6.22	2.15	10.07	18.44	69.82	30.00	1000	11.56

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

Maximum Peak Output Power

Test place : Head Office EMC Lab. No.6 Measurement Room
Report No. : 31JE0038-HO-01
Date : 04/04/2012 04/05/2012
Temperature/ Humidity : 21deg. C / 51% RH 24deg. C / 42% RH
Engineer : Yutaka Yoshida Yutaka Yoshida
Mode : 11n-20 Tx

11n-20 2437MHz

MCS Number	Reading Antenna 0		Reading Antenna 1		Result Antenna 0 + 1		Remark
	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
0	12.26	16.83	12.16	16.44	-	-	*(SISO)
1	11.98	15.78	11.92	15.56	-	-	
2	12.05	16.03	12.09	16.18	-	-	
3	12.07	16.11	12.04	16.00	-	-	
4	12.17	16.48	12.12	16.29	-	-	
5	11.82	15.21	11.68	14.72	-	-	
6	11.21	13.21	11.15	13.03	-	-	
7	11.07	12.79	10.84	12.13	-	-	
8	12.12	16.29	12.27	16.87	15.21	33.16	*(MIMO)
9	11.80	15.14	11.91	15.52	14.87	30.66	
10	12.38	17.30	11.75	14.96	15.09	32.26	
11	11.86	15.35	11.96	15.70	14.92	31.05	
12	12.04	16.00	12.11	16.26	15.09	32.25	
13	12.29	16.94	11.86	15.35	15.09	32.29	
14	11.40	13.80	11.51	14.16	14.47	27.96	
15	10.69	11.72	10.90	12.30	13.81	24.02	

*: Worst Rate

Sample Calculation:

Result Antenna 0 + 1[dBm] = 10*LOG(Result Antenna 0 + 1[mW])

Result Antenna 0 + 1[mW] = Reading Antenna 0[mW] + Reading Antenna 1[mW]

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. : 31JE0038-HO-01
Date : 04/04/2012 04/05/2012
Temperature/ Humidity : 21deg. C / 51% RH 24deg. C / 42% RH
Engineer : Yutaka Yoshida Yutaka Yoshida
Mode : 11n-40 Tx

11n-40 2437MHz

MCS Number	Reading Antenna 0		Reading Antenna 1		Result Antenna 0 + 1		Remark
	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
0	12.27	16.87	12.25	16.79	-	-	*(SISO)
1	11.86	15.35	11.26	13.37	-	-	
2	11.66	14.66	11.27	13.40	-	-	
3	11.88	15.42	11.33	13.58	-	-	
4	11.79	15.10	11.36	13.68	-	-	
5	11.35	13.65	11.42	13.87	-	-	
6	10.99	12.56	10.85	12.16	-	-	
7	10.18	10.42	10.32	10.76	-	-	
8	11.69	14.76	11.64	14.59	14.68	29.35	*(MIMO)
9	11.50	14.13	11.42	13.87	14.47	27.99	
10	11.34	13.61	11.34	13.61	14.35	27.23	
11	11.45	13.96	11.20	13.18	14.34	27.15	
12	11.30	13.49	11.72	14.86	14.53	28.35	
13	10.78	11.97	10.79	11.99	13.80	23.96	
14	10.72	11.80	10.82	12.08	13.78	23.88	
15	10.61	11.51	10.58	11.43	13.61	22.94	

*: Worst Rate

Sample Calculation:

Result Antenna 0 + 1[dBm] = 10*LOG(Result Antenna 0 + 1[mW])

Result Antenna 0 + 1[mW] = Reading Antenna 0[mW] + Reading Antenna 1[mW]

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.	31JE0038-HO-01
Date	04/13/2012
Temperature/ Humidity	21deg. C / 44% RH
Engineer	Hiroshi Kukita
Mode	11a Tx

Antenna 0 6Mbps

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
5745	9.89	3.41	9.98	23.28	212.81	30.00	1000	6.72
5785	9.45	3.43	9.98	22.86	193.20	30.00	1000	7.14
5825	9.13	3.45	9.98	22.56	180.30	30.00	1000	7.44

Antenna 1 6Mbps

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
5745	9.91	3.41	9.98	23.30	213.80	30.00	1000	6.70
5785	9.62	3.43	9.98	23.03	200.91	30.00	1000	6.97
5825	9.36	3.45	9.98	22.79	190.11	30.00	1000	7.21

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

Antenna 0, 5785MHz

Rate [Mbps]	Reading [dBm]	Remark
6	9.45	*
9	9.17	
12	9.08	
18	9.14	
24	9.19	
36	9.11	
48	9.06	
54	8.77	

Antenna 1, 5785MHz

Rate [Mbps]	Reading [dBm]	Remark
6	9.62	*
9	9.38	
12	9.42	
18	9.44	
24	9.32	
36	9.33	
48	9.26	
54	8.97	

*: 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. : 31JE0038-HO-01
Date : 04/13/2012
Temperature/ Humidity : 21deg. C / 44% RH
Engineer : Hiroshi Kukita
Mode : 11n-20(MIMO)(5GHz) Tx

Antenna 0 + 1, MCS 8

Freq. [MHz]	Result Antenna 0 [mW]	Result Antenna 1 [mW]	Result Antenna 0 + 1		Limit		Margin
			[dBm]	[mW]	[dBm]	[mW]	[dB]
5745	115.08	123.31	23.77	238.39	30.00	1000	6.23
5785	172.58	172.98	25.39	345.57	30.00	1000	4.61
5825	110.92	118.58	23.61	229.49	30.00	1000	6.39

Sample Calculation:

Result Antenna 0 + 1 [mW] = Result Antenna 0 [mW] + Result Antenna 1 [mW]

Antenna 0, MCS 8

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin
				[dBm]	[mW]	[dBm]	[mW]	[dB]
5745	7.22	3.41	9.98	20.61	115.08	30.00	1000	9.39
5785	8.96	3.43	9.98	22.37	172.58	30.00	1000	7.63
5825	7.02	3.45	9.98	20.45	110.92	30.00	1000	9.55

Antenna 1, MCS 8

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin
				[dBm]	[mW]	[dBm]	[mW]	[dB]
5745	7.52	3.41	9.98	20.91	123.31	30.00	1000	9.09
5785	8.97	3.43	9.98	22.38	172.98	30.00	1000	7.62
5825	7.31	3.45	9.98	20.74	118.58	30.00	1000	9.26

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

Maximum Peak Output Power

Test place : Head Office EMC Lab. No. 6 Measurement Room
Report No. : 31JE0038-HO-01
Date : 04/04/2012
Temperature/ Humidity : 21deg. C / 44% RH
Engineer : Hiroshi Kukita
Mode : 11n-40(MIMO) Tx

Antenna 0 + 1, MCS 8

Freq. [MHz]	Result Antenna 0 [mW]	Result Antenna 1 [mW]	Result Antenna 0 + 1		Limit		Margin [dB]
			[dBm]	[mW]	[dBm]	[mW]	
5755	124.74	112.20	23.75	236.94	30.00	1000	6.25
5795	110.15	120.23	23.62	230.38	30.00	1000	6.38

Sample Calculation:

Result Antenna 0 + 1 [mW] = Result Antenna 0 [mW] + Result Antenna 1 [mW]

Antenna 0, MCS 8

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
5755	7.56	3.42	9.98	20.96	124.74	30.00	1000	9.04
5795	7.01	3.43	9.98	20.42	110.15	30.00	1000	9.58

Antenna 1, MCS 8

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
5755	7.10	3.42	9.98	20.50	112.20	30.00	1000	9.50
5795	7.39	3.43	9.98	20.80	120.23	30.00	1000	9.20

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

Maximum Peak Output Power

Test place : Head Office EMC Lab. No.6 Measurement Room
Report No. : 31JE0038-HO-01
Date : 04/13/2012
Temperature/ Humidity : 21deg. C / 44% RH
Engineer : Hiroshi Kukita
Mode : 11n-20(5GHz) Tx

11n-20 5785MHz

MCS Number	Reading Antenna 0		Reading Antenna 1		Result Antenna 0 + 1		Remark
	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
0	9.15	8.22	9.17	8.26	-	-	*(SISO)
1	8.91	7.78	8.74	7.48	-	-	
2	9.10	8.13	9.09	8.11	-	-	
3	9.04	8.02	8.96	7.87	-	-	
4	9.09	8.11	9.14	8.20	-	-	
5	8.18	6.58	8.50	7.08	-	-	
6	6.10	4.07	6.35	4.32	-	-	
7	4.22	2.64	4.08	2.56	-	-	
8	8.96	7.87	8.97	7.89	11.98	15.76	*(MIMO)
9	8.77	7.53	8.57	7.19	11.68	14.73	
10	8.81	7.60	8.63	7.29	11.73	14.90	
11	8.74	7.48	8.59	7.23	11.68	14.71	
12	8.66	7.35	8.77	7.53	11.73	14.88	
13	8.47	7.03	8.26	6.70	11.38	13.73	
14	6.45	4.42	6.44	4.41	9.46	8.82	
15	3.43	2.20	4.08	2.56	6.78	4.76	

*: Worst Rate

Sample Calculation:

Result Antenna 0 + 1[dBm] = 10*LOG(Result Antenna 0 + 1[mW])

Result Antenna 0 + 1[mW] = Reading Antenna 0[mW] + Reading Antenna 1[mW]

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. : 31JE0038-HO-01
Date : 04/13/2012
Temperature/ Humidity : 21deg. C / 44% RH
Engineer : Hiroshi Kukita
Mode : 11n-40 (5GHz) Tx

11n-40 5755MHz

MCS Number	Reading Antenna 0		Reading Antenna 1		Result Antenna 0 + 1		Remark
	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
0	8.51	7.10	8.74	7.48	-	-	*(SISO)
1	7.06	5.08	7.36	5.45	-	-	
2	7.21	5.26	7.31	5.38	-	-	
3	7.18	5.22	7.25	5.31	-	-	
4	7.42	5.52	7.29	5.36	-	-	
5	7.86	6.11	7.93	6.21	-	-	
6	7.31	5.38	7.42	5.52	-	-	
7	7.13	5.16	7.07	5.09	-	-	
8	7.27	5.33	7.38	5.47	10.34	10.80	*(MIMO)
9	6.81	4.80	6.75	4.73	9.79	9.53	
10	6.91	4.91	6.32	4.29	9.64	9.19	
11	6.87	4.86	6.41	4.38	9.66	9.24	
12	7.46	5.57	7.10	5.13	10.29	10.70	
13	6.98	4.99	6.40	4.37	9.71	9.35	
14	5.51	3.56	5.47	3.52	8.50	7.08	
15	4.41	2.76	4.50	2.82	7.47	5.58	

*: Worst Rate

Sample Calculation:

Result Antenna 0 + 1[dBm] = 10*LOG(Result Antenna 0 + 1[mW])

Result Antenna 0 + 1[mW] = Reading Antenna 0[mW] + Reading Antenna 1[mW]

All comparizon were carried out on same frequency and measurement factors.

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 31JE0038-HO-01
Date : 04/22/2012 04/24/2012
Temperature/ Humidity : 22 deg. C / 56% RH 22 deg. C / 48% RH
Engineer : Satofumi Matsuyama Katsunori Okai
(1-10GHz) (Above 10GHz)
Mode : 11b Tx 2412MHz, 6Mbps, Antenna 0

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	51.7	26.4	2.2	32.4	47.9	73.9	26.0	
Hori	2397.000	PK	68.1	26.4	2.2	32.4	64.3	-	-	- See 20dBc Data Sheet
Hori	2400.000	PK	66.4	26.4	2.2	32.4	62.6	-	-	- See 20dBc Data Sheet
Hori	2488.170	PK	69.9	26.5	2.2	32.3	66.3	73.9	7.6	
Hori	4824.000	PK	43.7	30.4	3.8	31.4	46.5	73.9	27.4	
Hori	4993.354	PK	53.6	30.6	3.9	31.4	56.7	73.9	17.2	
Hori	7236.000	PK	41.9	35.2	4.6	32.4	49.3	73.9	24.6	
Hori	9648.000	PK	48.3	38.1	5.5	33.0	58.9	-	-	- See 20dBc Data Sheet
Hori	24120.000	PK	44.4	38.6	-1.7	31.0	50.3	73.9	23.6	
Hori	2390.000	AV	39.1	26.4	2.2	32.4	35.3	53.9	18.6	
Hori	2397.000	AV	63.9	26.4	2.2	32.4	60.1	-	-	- See 20dBc Data Sheet
Hori	2400.000	AV	61.1	26.4	2.2	32.4	57.3	-	-	- See 20dBc Data Sheet
Hori	2488.170	AV	52.2	26.5	2.2	32.3	48.6	53.9	5.3	
Hori	4824.000	AV	34.8	30.4	3.8	31.4	37.6	53.9	16.3	
Hori	4993.354	AV	35.5	30.6	3.9	31.4	38.6	53.9	15.3	
Hori	7236.000	AV	30.9	35.2	4.6	32.4	38.3	53.9	15.6	
Hori	9648.000	AV	44.6	38.1	5.5	33.0	55.2	-	-	- See 20dBc Data Sheet
Hori	24120.000	AV	32.6	38.6	-1.7	31.0	38.5	53.9	15.4	
Vert	2390.000	PK	54.1	26.4	2.2	32.4	50.3	73.9	23.6	
Vert	2397.000	PK	70.1	26.4	2.2	32.4	66.3	-	-	- See 20dBc Data Sheet
Vert	2400.000	PK	67.5	26.4	2.2	32.4	63.7	-	-	- See 20dBc Data Sheet
Vert	2498.170	PK	65.9	26.5	2.2	32.3	62.3	73.9	11.6	
Vert	4824.000	PK	44.2	30.4	3.8	31.4	47.0	73.9	26.9	
Vert	4998.917	PK	53.7	30.6	3.9	31.4	56.8	73.9	17.1	
Vert	7236.000	PK	42.8	35.2	4.6	32.4	50.2	73.9	23.7	
Vert	9648.000	PK	47.0	38.1	5.5	33.0	57.6	-	-	- See 20dBc Data Sheet
Vert	24120.000	PK	45.3	38.6	-1.7	31.0	51.2	73.9	22.7	
Vert	2390.000	AV	41.1	26.4	2.2	32.4	37.3	53.9	16.6	
Vert	2397.000	AV	65.7	26.4	2.2	32.4	61.9	-	-	- See 20dBc Data Sheet
Vert	2400.000	AV	62.6	26.4	2.2	32.4	58.8	-	-	- See 20dBc Data Sheet
Vert	2498.170	AV	48.9	26.5	2.2	32.3	45.3	53.9	8.6	
Vert	4824.000	AV	36.3	30.4	3.8	31.4	39.1	53.9	14.8	
Vert	4998.917	AV	35.2	30.6	3.9	31.4	38.3	53.9	15.6	
Vert	7236.000	AV	30.9	35.2	4.6	32.4	38.3	53.9	15.6	
Vert	9648.000	AV	41.4	38.1	5.5	33.0	52.0	-	-	- See 20dBc Data Sheet
Vert	24120.000	AV	32.6	38.6	-1.7	31.0	38.5	53.9	15.4	

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).

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

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

 26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission 20dBc Data Sheet

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 31JE0038-HO-01
Date : 04/22/2012
Temperature/ Humidity : 22 deg. C / 56% RH
Engineer : Satofumi Matsuyama
Mode : 11b Tx 2412MHz, 6Mbps, Antenna 0

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	103.8	26.4	2.2	32.4	100.0	-	-	Carrier
Hori	2397.000	PK	65.1	26.4	2.2	32.4	61.3	80.0	18.7	
Hori	2400.000	PK	63.4	26.4	2.2	32.4	59.6	80.0	20.4	
Hori	9648.000	PK	46.0	38.1	5.5	33.0	56.6	80.0	23.4	
Vert	2412.000	PK	104.7	26.4	2.2	32.4	100.9	-	-	Carrier
Vert	2397.000	PK	67.7	26.4	2.2	32.4	63.9	80.9	17.0	
Vert	2400.000	PK	64.7	26.4	2.2	32.4	60.9	80.9	20.0	
Vert	9648.000	PK	43.3	38.1	5.5	33.0	53.9	80.9	27.0	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 31JE0038-HO-01
Date 04/22/2012 04/24/2012
Temperature/ Humidity 22 deg. C / 56% RH 22 deg. C / 48% RH
Engineer Satofumi Matsuyama Katsunori Okai
(1-10GHz) (Above 10GHz)
Mode 11b Tx 2437MHz, 6Mbps, Antenna 0

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2499.330	PK	70.7	26.5	2.2	32.3	67.1	73.9	6.8	See 20dBc Data Sheet
Hori	4874.000	PK	44.5	30.5	3.8	31.4	47.4	73.9	26.5	
Hori	4998.575	PK	54.8	30.6	3.9	31.4	57.9	73.9	16.0	
Hori	7311.000	PK	42.0	35.2	4.6	32.5	49.3	73.9	24.6	
Hori	9748.000	PK	47.4	38.3	5.5	33.0	58.2	-	-	
Hori	24370.000	PK	45.2	38.8	-1.7	30.9	51.4	73.9	22.5	
Hori	2499.330	AV	52.7	26.5	2.2	32.3	49.1	53.9	4.8	See 20dBc Data Sheet
Hori	4874.000	AV	38.9	30.5	3.8	31.4	41.8	53.9	12.1	
Hori	4998.575	AV	35.6	30.6	3.9	31.4	38.7	53.9	15.2	
Hori	7311.000	AV	30.7	35.2	4.6	32.5	38.0	53.9	15.9	
Hori	9748.000	AV	42.5	38.3	5.5	33.0	53.3	-	-	
Hori	24370.000	AV	33.4	38.8	-1.7	30.9	39.6	53.9	14.3	
Vert	2499.298	PK	66.8	26.5	2.2	32.3	63.2	73.9	10.7	See 20dBc Data Sheet
Vert	4874.000	PK	44.9	30.5	3.8	31.4	47.8	73.9	26.1	
Vert	4998.667	PK	53.7	30.6	3.9	31.4	56.8	73.9	17.1	
Vert	7311.000	PK	42.2	35.2	4.6	32.5	49.5	73.9	24.4	
Vert	9748.000	PK	47.5	38.3	5.5	33.0	58.3	-	-	
Vert	24370.000	PK	44.7	38.8	-1.7	30.9	50.9	73.9	23.0	
Vert	2499.298	AV	48.9	26.5	2.2	32.3	45.3	53.9	8.6	See 20dBc Data Sheet
Vert	4874.000	AV	39.3	30.5	3.8	31.4	42.2	53.9	11.7	
Vert	4998.667	AV	35.3	30.6	3.9	31.4	38.4	53.9	15.5	
Vert	7311.000	AV	30.7	35.2	4.6	32.5	38.0	53.9	15.9	
Vert	9748.000	AV	40.3	38.3	5.5	33.0	51.1	-	-	
Vert	24370.000	AV	33.4	38.8	-1.7	30.9	39.6	53.9	14.3	

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).

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

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

Radiated Spurious Emission 20dBc Data Sheet

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 31JE0038-HO-01
Date : 04/22/2012
Temperature/ Humidity : 22 deg. C / 56% RH
Engineer : Satofumi Matsuyama
Mode : 11b Tx 2437MHz, 6Mbps, Antenna 0

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2437.000	PK	102.0	26.4	2.2	32.4	98.2	-	-	Carrier
Hori	9748.000	PK	44.5	38.3	5.5	33.0	55.3	78.2	22.9	
Vert	2437.000	PK	104.2	26.4	2.2	32.4	100.4	-	-	Carrier
Vert	9748.000	PK	43.2	38.3	5.5	33.0	54.0	80.4	26.4	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 31JE0038-HO-01
Date 04/22/2012 04/24/2012
Temperature/ Humidity 22 deg. C / 56% RH 22 deg. C / 48% RH
Engineer Satofumi Matsuyama Katsunori Okai
(1-10GHz) (Above 10GHz)
Mode 11b Tx 2462MHz, 6Mbps, Antenna 0

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	53.2	26.5	2.2	32.3	49.6	73.9	24.3	
Hori	2487.000	PK	56.4	26.5	2.2	32.3	52.8	73.9	21.1	
Hori	2499.265	PK	70.7	26.5	2.2	32.3	67.1	73.9	6.8	
Hori	4924.000	PK	45.6	30.5	3.8	31.4	48.5	73.9	25.4	
Hori	4998.800	PK	54.4	30.6	3.9	31.4	57.5	73.9	16.4	
Hori	7386.000	PK	42.1	35.2	4.6	32.5	49.4	73.9	24.5	
Hori	9848.000	PK	45.7	38.5	5.5	33.1	56.6	-	-	See 20dBc Data Sheet
Hori	24620.000	PK	45.0	38.9	-1.7	30.9	51.3	73.9	22.6	
Hori	2483.500	AV	40.7	26.5	2.2	32.3	37.1	53.9	16.8	
Hori	2487.000	AV	45.3	26.5	2.2	32.3	41.7	53.9	12.2	
Hori	2499.265	AV	52.6	26.5	2.2	32.3	49.0	53.9	4.9	
Hori	4924.000	AV	41.1	30.5	3.8	31.4	44.0	53.9	9.9	
Hori	4998.800	AV	35.8	30.6	3.9	31.4	38.9	53.9	15.0	
Hori	7386.000	AV	31.0	35.2	4.6	32.5	38.3	53.9	15.6	
Hori	9848.000	AV	40.5	38.5	5.5	33.1	51.4	-	-	See 20dBc Data Sheet
Hori	24620.000	AV	33.6	38.9	-1.7	30.9	39.9	53.9	14.0	
Vert	2483.500	PK	50.9	26.5	2.2	32.3	47.3	73.9	26.6	
Vert	2487.000	PK	53.3	26.5	2.2	32.3	49.7	73.9	24.2	
Vert	2499.328	PK	67.3	26.5	2.2	32.3	63.7	73.9	10.2	
Vert	4924.000	PK	46.0	30.5	3.8	31.4	48.9	73.9	25.0	
Vert	4998.853	PK	53.8	30.6	3.9	31.4	56.9	73.9	17.0	
Vert	7386.000	PK	41.8	35.2	4.6	32.5	49.1	73.9	24.8	
Vert	9848.000	PK	46.4	38.5	5.5	33.1	57.3	-	-	See 20dBc Data Sheet
Vert	24620.000	PK	45.3	38.9	-1.7	30.9	51.6	73.9	22.3	
Vert	2483.500	AV	38.6	26.5	2.2	32.3	35.0	53.9	18.9	
Vert	2487.000	AV	42.7	26.5	2.2	32.3	39.1	53.9	14.8	
Vert	2499.328	AV	50.1	26.5	2.2	32.3	46.5	53.9	7.4	
Vert	4924.000	AV	40.9	30.5	3.8	31.4	43.8	53.9	10.1	
Vert	4998.853	AV	35.0	30.6	3.9	31.4	38.1	53.9	15.8	
Vert	7386.000	AV	31.0	35.2	4.6	32.5	38.3	53.9	15.6	
Vert	9848.000	AV	39.3	38.5	5.5	33.1	50.2	-	-	See 20dBc Data Sheet
Vert	24620.000	AV	33.6	38.9	-1.7	30.9	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).

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

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

Radiated Spurious Emission
20dBc Data Sheet

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	31JE0038-HO-01
Date	04/22/2012
Temperature/ Humidity	22 deg. C / 56% RH
Engineer	Satofumi Matsuyama
Mode	11b Tx 2462MHz, 6Mbps, Antenna 0

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2462.000	PK	106.0	26.5	2.2	32.4	102.3	-	-	Carrier
Hori	9848.000	PK	42.8	38.5	5.5	33.1	53.7	82.3	28.6	
Vert	2462.000	PK	103.5	26.5	2.2	32.4	99.8	-	-	Carrier
Vert	9848.000	PK	42.0	38.5	5.5	33.1	52.9	79.8	26.9	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 31JE0038-HO-01
Date 04/22/2012 04/24/2012
Temperature/ Humidity 22 deg. C / 56% RH 22 deg. C / 48% RH
Engineer Satofumi Matsuyama Katsunori Okai
(1-10GHz) (Above 10GHz)
Mode 11n-20(MIMO) Tx 2412MHz, MCS 8

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	70.8	28.1	2.2	32.3	68.8	73.9	5.1	See 20dBc Data Sheet
Hori	2400.000	PK	90.5	26.4	2.2	32.4	86.7	-	-	
Hori	2499.180	PK	69.7	26.5	2.2	32.3	66.1	73.9	7.8	
Hori	4824.000	PK	40.7	30.4	3.8	31.4	43.5	73.9	30.4	
Hori	4998.050	PK	53.4	30.6	3.9	31.4	56.5	73.9	17.4	
Hori	7236.000	PK	43.0	35.2	4.6	32.4	50.4	73.9	23.5	
Hori	9648.000	PK	42.5	38.1	5.5	33.0	53.1	73.9	20.8	
Hori	24120.000	PK	45.2	38.6	-1.7	31.0	51.1	73.9	22.8	See 20dBc Data Sheet
Hori	2390.000	AV	53.9	28.1	2.2	32.3	51.9	53.9	2.0	
Hori	2400.000	AV	70.3	26.4	2.2	32.4	66.5	-	-	
Hori	2499.180	AV	51.8	26.5	2.2	32.3	48.2	53.9	5.7	
Hori	4824.000	AV	28.7	30.4	3.8	31.4	31.5	53.9	22.4	
Hori	4998.050	AV	35.1	30.6	3.9	31.4	38.2	53.9	15.7	
Hori	7236.000	AV	30.5	35.2	4.6	32.4	37.9	53.9	16.0	
Hori	9648.000	AV	30.3	38.1	5.5	33.0	40.9	53.9	13.0	
Hori	24120.000	AV	33.3	38.6	-1.7	31.0	39.2	53.9	14.7	See 20dBc Data Sheet
Vert	2390.000	PK	67.9	28.1	2.2	32.3	65.9	73.9	8.0	
Vert	2400.000	PK	89.4	26.4	2.2	32.4	85.6	-	-	
Vert	2499.267	PK	67.4	26.5	2.2	32.3	63.8	73.9	10.1	
Vert	4824.000	PK	41.8	30.4	3.8	31.4	44.6	73.9	29.3	
Vert	4998.580	PK	52.5	30.6	3.9	31.4	55.6	73.9	18.3	
Vert	7236.000	PK	43.2	35.2	4.6	32.4	50.6	73.9	23.3	
Vert	9648.000	PK	43.1	38.1	5.5	33.0	53.7	73.9	20.2	See 20dBc Data Sheet
Vert	24120.000	PK	44.6	38.6	-1.7	31.0	50.5	73.9	23.4	
Vert	2390.000	AV	50.8	28.1	2.2	32.3	48.8	53.9	5.1	
Vert	2400.000	AV	67.0	26.4	2.2	32.4	63.2	-	-	
Vert	2499.267	AV	50.1	26.5	2.2	32.3	46.5	53.9	7.4	
Vert	4824.000	AV	28.7	30.4	3.8	31.4	31.5	53.9	22.4	
Vert	4998.580	AV	34.3	30.6	3.9	31.4	37.4	53.9	16.5	
Vert	7236.000	AV	30.5	35.2	4.6	32.4	37.9	53.9	16.0	
Vert	9648.000	AV	30.3	38.1	5.5	33.0	40.9	53.9	13.0	
Vert	24120.000	AV	33.3	38.6	-1.7	31.0	39.2	53.9	14.7	

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

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

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

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

Radiated Spurious Emission
20dBc Data Sheet

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	31JE0038-HO-01
Date	04/22/2012
Temperature/ Humidity	22 deg. C / 56% RH
Engineer	Satofumi Matsuyama
Mode	11n-20(MIMO) Tx 2412MHz, MCS 8

20dBc Data Sheet

Polarity	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori	2412.000	PK	106.1	26.4	2.2	32.4	102.3	-	-	Carrier
Hori	2400.000	PK	75.6	26.4	2.2	32.4	71.8	82.3	10.5	
Vert	2412.000	PK	103.5	26.4	2.2	32.4	99.7	-	-	Carrier
Vert	2400.000	PK	72.9	26.4	2.2	32.4	69.1	79.7	10.6	

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

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 31JE0038-HO-01
Date : 04/24/2012
Temperature/ Humidity : 22 deg. C / 48% RH
Engineer : Katsunori Okai
(30-1000MHz)
Mode : 11n-20(MIMO) Tx 2437MHz, MCS 8

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	33.251	QP	34.8	17.4	7.2	32.2	27.2	40.0	12.8	
Hori	71.996	QP	41.1	6.6	7.8	32.2	23.3	40.0	16.7	
Hori	85.906	QP	47.6	7.6	8.0	32.2	31.0	40.0	9.0	
Hori	100.233	QP	55.9	10.1	8.1	32.3	41.8	43.5	1.7	
Hori	133.222	QP	41.5	13.9	8.5	32.3	31.6	43.5	11.9	
Hori	143.186	QP	47.9	14.6	8.6	32.3	38.8	43.5	4.7	
Hori	166.535	QP	47.5	15.6	8.9	32.2	39.8	43.5	3.7	
Hori	171.816	QP	40.9	15.9	8.9	32.2	33.5	43.5	10.0	
Hori	232.333	QP	33.8	17.2	9.4	32.2	28.2	46.0	17.8	
Hori	335.998	QP	41.3	15.6	10.2	32.1	35.0	46.0	11.0	
Hori	432.008	QP	37.1	17.9	10.9	32.0	33.9	46.0	12.1	
Hori	528.007	QP	36.4	18.6	11.5	32.0	34.5	46.0	11.5	
Hori	624.005	QP	43.9	19.7	12.0	32.0	43.6	46.0	2.4	
Hori	718.401	QP	32.1	20.8	12.6	31.9	33.6	46.0	12.4	
Hori	815.998	QP	35.8	22.1	13.1	31.4	39.6	46.0	6.4	
Hori	912.000	QP	30.7	22.5	13.5	30.9	35.8	46.0	10.2	
Vert	33.250	QP	47.4	17.4	7.2	32.2	39.8	40.0	0.2	
Vert	48.000	QP	40.7	11.8	7.4	32.2	27.7	40.0	12.3	
Vert	71.588	QP	37.7	6.6	7.8	32.2	19.9	40.0	20.1	
Vert	85.912	QP	48.3	7.6	8.0	32.2	31.7	40.0	8.3	
Vert	100.230	QP	51.2	10.1	8.1	32.3	37.1	43.5	6.4	
Vert	143.182	QP	42.3	14.5	8.6	32.3	33.1	43.5	10.4	
Vert	166.536	QP	42.2	15.6	8.9	32.2	34.5	43.5	9.0	
Vert	232.605	QP	28.1	17.2	9.5	32.2	22.6	46.0	23.4	
Vert	336.002	QP	33.0	15.6	10.2	32.1	26.7	46.0	19.3	
Vert	431.993	QP	35.3	17.9	10.9	32.0	32.1	46.0	13.9	
Vert	528.007	QP	34.7	18.6	11.5	32.0	32.8	46.0	13.2	
Vert	624.005	QP	37.2	19.7	12.0	32.0	36.9	46.0	9.1	
Vert	718.402	QP	32.4	20.8	12.6	31.9	33.9	46.0	12.1	
Vert	816.006	QP	29.2	22.1	13.1	31.4	33.0	46.0	13.0	
Vert	912.002	QP	25.9	22.5	13.5	30.9	31.0	46.0	15.0	

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

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

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

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 31JE0038-HO-01
Date 04/22/2012 04/24/2012
Temperature/ Humidity 22 deg. C / 56% RH 22 deg. C / 48% RH
Engineer Satofumi Matsuyama Katsunori Okai
(1-10GHz) (Above 10GHz)
Mode 11n-20(MIMO) Tx 2437MHz, MCS 8

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2499.211	PK	69.7	26.5	2.2	32.3	66.1	73.9	7.8	
Hori	4874.000	PK	43.2	30.5	3.8	31.4	46.1	73.9	27.8	
Hori	4998.717	PK	52.2	30.6	3.9	31.4	55.3	73.9	18.6	
Hori	7311.000	PK	42.9	35.2	4.6	32.5	50.2	73.9	23.7	
Hori	9748.000	PK	48.4	38.3	5.5	33.0	59.2	73.9	14.7	
Hori	24370.000	PK	44.8	38.8	-1.7	30.9	51.0	73.9	22.9	
Hori	2499.211	AV	51.7	26.5	2.2	32.3	48.1	53.9	5.8	
Hori	4874.000	AV	30.0	30.5	3.8	31.4	32.9	53.9	21.0	
Hori	4998.717	AV	34.3	30.6	3.9	31.4	37.4	53.9	16.5	
Hori	7311.000	AV	30.5	35.2	4.6	32.5	37.8	53.9	16.1	
Hori	9748.000	AV	36.1	38.3	5.5	33.0	46.9	53.9	7.0	
Hori	24370.000	AV	33.1	38.8	-1.7	30.9	39.3	53.9	14.6	
Vert	2499.300	PK	67.8	26.5	2.2	32.3	64.2	73.9	9.7	
Vert	4874.000	PK	42.7	30.5	3.8	31.4	45.6	73.9	28.3	
Vert	4998.800	PK	51.9	30.6	3.9	31.4	55.0	73.9	18.9	
Vert	7311.000	PK	43.2	35.2	4.6	32.5	50.5	73.9	23.4	
Vert	9748.000	PK	46.6	38.3	5.5	33.0	57.4	73.9	16.5	
Vert	24370.000	PK	44.3	38.8	-1.7	30.9	50.5	73.9	23.4	
Vert	2499.300	AV	50.7	26.5	2.2	32.3	47.1	53.9	6.8	
Vert	4874.000	AV	30.0	30.5	3.8	31.4	32.9	53.9	21.0	
Vert	4998.800	AV	33.9	30.6	3.9	31.4	37.0	53.9	16.9	
Vert	7311.000	AV	30.5	35.2	4.6	32.5	37.8	53.9	16.1	
Vert	9748.000	AV	33.9	38.3	5.5	33.0	44.7	53.9	9.2	
Vert	24370.000	AV	33.1	38.8	-1.7	30.9	39.3	53.9	14.6	

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

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

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

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 and 4 Semi Anechoic Chamber
Report No. 31JE0038-HO-01
Date 03/28/2012 04/22/2012 04/24/2012
Temperature/ Humidity 24 deg. C / 39% RH 22 deg. C / 56% RH 22 deg. C / 48% RH
Engineer Hiroshi Kukita Satofumi Matsuyama Katsunori Okai
(1-10GHz) (1-10GHz) (Above 10GHz)
Mode 11n-20(MIMO) Tx 2462MHz, MCS 8

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	66.8	28.5	2.2	32.2	65.3	73.9	8.6	
Hori	2499.233	PK	69.9	26.5	2.2	32.3	66.3	73.9	7.6	
Hori	4924.000	PK	41.6	30.5	3.8	31.4	44.5	73.9	29.4	NS
Hori	4998.467	PK	52.9	30.6	3.9	31.4	56.0	73.9	17.9	
Hori	7386.000	PK	42.7	35.2	4.6	32.5	50.0	73.9	23.9	NS
Hori	9848.000	PK	43.1	38.5	5.5	33.1	54.0	73.9	19.9	NS
Hori	24620.000	PK	45.9	38.9	-1.7	30.9	52.2	73.9	21.7	
Hori	2483.500	AV	52.8	28.5	2.2	32.2	51.3	53.9	2.6	
Hori	2499.233	AV	52.0	26.5	2.2	32.3	48.4	53.9	5.5	
Hori	4924.000	AV	28.7	30.5	3.8	31.4	31.6	53.9	22.3	NS
Hori	4998.467	AV	34.6	30.6	3.9	31.4	37.7	53.9	16.2	
Hori	7386.000	AV	30.5	35.2	4.6	32.5	37.8	53.9	16.1	NS
Hori	9848.000	AV	30.3	38.5	5.5	33.1	41.2	53.9	12.7	NS
Hori	24620.000	AV	33.7	38.9	-1.7	30.9	40.0	53.9	13.9	
Vert	2483.500	PK	67.8	28.5	2.2	32.2	66.3	73.9	7.6	
Vert	2498.480	PK	68.2	26.5	2.2	32.3	64.6	73.9	9.3	
Vert	4924.000	PK	40.8	30.5	3.8	31.4	43.7	73.9	30.2	NS
Vert	4998.853	PK	51.4	30.6	3.9	31.4	54.5	73.9	19.4	
Vert	7386.000	PK	43.0	35.2	4.6	32.5	50.3	73.9	23.6	NS
Vert	9848.000	PK	42.9	38.5	5.5	33.1	53.8	73.9	20.1	NS
Vert	24620.000	PK	45.2	38.9	-1.7	30.9	51.5	73.9	22.4	
Vert	2483.500	AV	53.4	28.5	2.2	32.2	51.9	53.9	2.0	
Vert	2498.480	AV	52.4	26.5	2.2	32.3	48.8	53.9	5.1	
Vert	4924.000	AV	28.7	30.5	3.8	31.4	31.6	53.9	22.3	NS
Vert	4998.853	AV	33.5	30.6	3.9	31.4	36.6	53.9	17.3	
Vert	7386.000	AV	30.5	35.2	4.6	32.5	37.8	53.9	16.1	NS
Vert	9848.000	AV	30.3	38.5	5.5	33.1	41.2	53.9	12.7	NS
Vert	24620.000	AV	33.7	38.9	-1.7	30.9	40.0	53.9	13.9	

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

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

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

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 31JE0038-HO-01
Date 04/24/2012
Temperature/ Humidity 22 deg. C / 48% RH
Engineer Katsunori Okai
(Above 1GHz)
Mode 11n-40(MIMO) Tx 2422MHz, MCS 8

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	71.6	28.1	2.2	32.3	69.6	73.9	4.3	See 20dBc Data Sheet
Hori	2400.000	PK	82.1	26.4	2.2	32.4	78.3	-	-	
Hori	2492.250	PK	70.4	26.5	2.2	32.3	66.8	73.9	7.1	
Hori	4844.000	PK	40.1	30.4	3.8	31.4	42.9	73.9	31.0	
Hori	4998.920	PK	54.3	30.6	3.9	31.4	57.4	73.9	16.5	
Hori	7266.000	PK	41.1	35.2	4.6	32.5	48.4	73.9	25.5	
Hori	9688.000	PK	42.1	38.2	5.5	33.0	52.8	73.9	21.1	
Hori	24220.000	PK	44.5	38.7	-1.7	31.0	50.5	73.9	23.4	
Hori	2390.000	AV	54.2	28.1	2.2	32.3	52.2	53.9	1.7	See 20dBc Data Sheet
Hori	2400.000	AV	61.4	26.4	2.2	32.4	57.6	-	-	
Hori	2492.250	AV	52.1	26.5	2.2	32.3	48.5	53.9	5.4	
Hori	4844.000	AV	28.8	30.4	3.8	31.4	31.6	53.9	22.3	
Hori	4998.920	AV	34.6	30.6	3.9	31.4	37.7	53.9	16.2	
Hori	7266.000	AV	30.1	35.2	4.6	32.5	37.4	53.9	16.5	
Hori	9688.000	AV	29.9	38.2	5.5	33.0	40.6	53.9	13.3	
Hori	24220.000	AV	33.2	38.7	-1.7	31.0	39.2	53.9	14.7	
Vert	2390.000	PK	67.4	28.1	2.2	32.3	65.4	73.9	8.5	See 20dBc Data Sheet
Vert	2400.000	PK	82.9	26.4	2.2	32.4	79.1	-	-	
Vert	2498.570	PK	66.2	26.5	2.2	32.3	62.6	73.9	11.3	
Vert	4844.000	PK	40.4	30.4	3.8	31.4	43.2	73.9	30.7	
Vert	4998.980	PK	53.3	30.6	3.9	31.4	56.4	73.9	17.5	
Vert	7266.000	PK	40.6	35.2	4.6	32.5	47.9	73.9	26.0	
Vert	9688.000	PK	42.7	38.2	5.5	33.0	53.4	73.9	20.5	
Vert	24220.000	PK	44.9	38.7	-1.7	31.0	50.9	73.9	23.0	
Vert	2390.000	AV	50.2	28.1	2.2	32.3	48.2	53.9	5.7	See 20dBc Data Sheet
Vert	2400.000	AV	61.1	26.4	2.2	32.4	57.3	-	-	
Vert	2498.570	AV	48.4	26.5	2.2	32.3	44.8	53.9	9.1	
Vert	4844.000	AV	28.6	30.4	3.8	31.4	31.4	53.9	22.5	
Vert	4998.980	AV	33.7	30.6	3.9	31.4	36.8	53.9	17.1	
Vert	7266.000	AV	30.1	35.2	4.6	32.5	37.4	53.9	16.5	
Vert	9688.000	AV	30.0	38.2	5.5	33.0	40.7	53.9	13.2	
Vert	24220.000	AV	33.2	38.7	-1.7	31.0	39.2	53.9	14.7	

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

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

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

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

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	99.5	26.4	2.2	32.4	95.7	-	-	Carrier
Hori	2400.000	PK	67.7	26.4	2.2	32.4	63.9	75.7	11.8	
Vert	2422.000	PK	99.0	26.4	2.2	32.4	95.2	-	-	Carrier
Vert	2400.000	PK	68.0	26.4	2.2	32.4	64.2	75.2	11.0	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 31JE0038-HO-01
Date 04/24/2012
Temperature/ Humidity 22 deg. C / 48% RH
Engineer Katsunori Okai
(Above 1GHz)
Mode 11n-40(MIMO) Tx 2437MHz, MCS 8

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2488.920	PK	71.3	26.5	2.2	32.3	67.7	73.9	6.2	
Hori	4874.000	PK	40.9	30.5	3.8	31.4	43.8	73.9	30.1	
Hori	4998.580	PK	56.4	30.6	3.9	31.4	59.5	73.9	14.4	
Hori	7311.000	PK	43.1	35.2	4.6	32.5	50.4	73.9	23.5	
Hori	9748.000	PK	47.6	38.3	5.5	33.0	58.4	73.9	15.5	
Hori	24370.000	PK	44.0	38.8	-1.7	30.9	50.2	73.9	23.7	
Hori	2488.920	AV	53.1	26.5	2.2	32.3	49.5	53.9	4.4	
Hori	4874.000	AV	30.1	30.5	3.8	31.4	33.0	53.9	20.9	
Hori	4998.580	AV	36.2	30.6	3.9	31.4	39.3	53.9	14.6	
Hori	7311.000	AV	31.7	35.2	4.6	32.5	39.0	53.9	14.9	
Hori	9748.000	AV	34.0	38.3	5.5	33.0	44.8	53.9	9.1	
Hori	24370.000	AV	32.9	38.8	-1.7	30.9	39.1	53.9	14.8	
Vert	2488.050	PK	68.0	26.5	2.2	32.3	64.4	73.9	9.5	
Vert	4874.000	PK	40.2	30.5	3.8	31.4	43.1	73.9	30.8	
Vert	4998.250	PK	54.8	30.6	3.9	31.4	57.9	73.9	16.0	
Vert	7311.000	PK	41.3	35.2	4.6	32.5	48.6	73.9	25.3	
Vert	9748.000	PK	40.8	38.3	5.5	33.0	51.6	73.9	22.3	
Vert	24370.000	PK	44.4	38.8	-1.7	30.9	50.6	73.9	23.3	
Vert	2488.050	AV	52.0	26.5	2.2	32.3	48.4	53.9	5.5	
Vert	4874.000	AV	28.4	30.5	3.8	31.4	31.3	53.9	22.6	
Vert	4998.250	AV	34.5	30.6	3.9	31.4	37.6	53.9	16.3	
Vert	7311.000	AV	30.1	35.2	4.6	32.5	37.4	53.9	16.5	
Vert	9748.000	AV	32.8	38.3	5.5	33.0	43.6	53.9	10.3	
Vert	24370.000	AV	32.9	38.8	-1.7	30.9	39.1	53.9	14.8	

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

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

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

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

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 31JE0038-HO-01
Date : 04/24/2012
Temperature/ Humidity : 22 deg. C / 48% RH
Engineer : Katsunori Okai
(Above 1GHz)
Mode : 11n-40(MIMO) Tx 2452MHz, MCS 8

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	72.2	26.5	2.2	32.3	68.6	73.9	5.3	
Hori	2489.500	PK	70.6	26.5	2.2	32.3	67.0	73.9	6.9	
Hori	4904.000	PK	40.5	30.5	3.8	31.4	43.4	73.9	30.5	
Hori	4998.580	PK	54.8	30.6	3.9	31.4	57.9	73.9	16.0	
Hori	7356.000	PK	42.1	35.2	4.6	32.5	49.4	73.9	24.5	
Hori	9808.000	PK	41.0	38.4	5.5	33.0	51.9	73.9	22.0	
Hori	24520.000	PK	46.4	38.9	-1.7	30.9	52.7	73.9	21.2	
Hori	2483.500	AV	55.5	26.5	2.2	32.3	51.9	53.9	2.0	
Hori	2489.500	AV	53.0	26.5	2.2	32.3	49.4	53.9	4.5	
Hori	4904.000	AV	28.5	30.5	3.8	31.4	31.4	53.9	22.5	
Hori	4998.580	AV	34.3	30.6	3.9	31.4	37.4	53.9	16.5	
Hori	7356.000	AV	30.2	35.2	4.6	32.5	37.5	53.9	16.4	
Hori	9808.000	AV	30.2	38.4	5.5	33.0	41.1	53.9	12.8	
Hori	24520.000	AV	33.2	38.9	-1.7	30.9	39.5	53.9	14.4	
Vert	2483.500	PK	69.9	26.5	2.2	32.3	66.3	73.9	7.6	
Vert	2489.500	PK	69.2	26.5	2.2	32.3	65.6	73.9	8.3	
Vert	4904.000	PK	40.1	30.5	3.8	31.4	43.0	73.9	30.9	
Vert	4998.830	PK	53.3	30.6	3.9	31.4	56.4	73.9	17.5	
Vert	7356.000	PK	42.4	35.2	4.6	32.5	49.7	73.9	24.2	
Vert	9808.000	PK	41.2	38.4	5.5	33.0	52.1	73.9	21.8	
Vert	24520.000	PK	46.2	38.9	-1.7	30.9	52.5	73.9	21.4	
Vert	2483.500	AV	52.9	26.5	2.2	32.3	49.3	53.9	4.6	
Vert	2489.500	AV	52.3	26.5	2.2	32.3	48.7	53.9	5.2	
Vert	4904.000	AV	28.5	30.5	3.8	31.4	31.4	53.9	22.5	
Vert	4998.830	AV	33.6	30.6	3.9	31.4	36.7	53.9	17.2	
Vert	7356.000	AV	30.2	35.2	4.6	32.5	37.5	53.9	16.4	
Vert	9808.000	AV	30.2	38.4	5.5	33.0	41.1	53.9	12.8	
Vert	24520.000	AV	33.2	38.9	-1.7	30.9	39.5	53.9	14.4	

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).

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

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 31JE0038-HO-01
Date 04/26/2012 04/26/2012
Temperature/ Humidity 23 deg. C / 57% RH 23 deg. C / 57% RH
Engineer Takumi Shimada Katsunori Okai
(1-10GHz) (Above 10GHz)
Mode 11n-20(MIMO) Tx 5745MHz, MCS 8

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5724.375	PK	72.5	31.5	3.5	31.5	76.0	-	-	See 20dBc Data Sheet
Hori	5725.000	PK	73.7	31.5	3.5	31.5	77.2	-	-	See 20dBc Data Sheet
Hori	11490.000	PK	48.9	37.8	-2.0	33.1	51.6	73.9	22.3	
Hori	17235.000	PK	48.4	42.1	-0.5	32.3	57.7	73.9	16.2	
Hori	5724.375	AV	58.2	31.5	3.5	31.5	61.7	-	-	See 20dBc Data Sheet
Hori	5725.000	AV	59.2	31.5	3.5	31.5	62.7	-	-	See 20dBc Data Sheet
Hori	11490.000	AV	33.9	37.8	-2.0	33.1	36.6	53.9	17.3	
Hori	17235.000	AV	34.9	42.1	-0.5	32.3	44.2	53.9	9.7	
Vert	5724.375	PK	68.4	31.5	3.5	31.5	71.9	-	-	See 20dBc Data Sheet
Vert	5725.000	PK	70.1	31.5	3.5	31.5	73.6	-	-	See 20dBc Data Sheet
Vert	11490.000	PK	52.9	37.8	-2.0	33.1	55.6	73.9	18.3	
Vert	17235.000	PK	46.0	42.1	-0.5	32.3	55.3	73.9	18.6	
Vert	5724.375	AV	55.0	31.5	3.5	31.5	58.5	-	-	See 20dBc Data Sheet
Vert	5725.000	AV	55.7	31.5	3.5	31.5	59.2	-	-	See 20dBc Data Sheet
Vert	11490.000	AV	38.4	37.8	-2.0	33.1	41.1	53.9	12.8	
Vert	17235.000	AV	32.9	42.1	-0.5	32.3	42.2	53.9	11.7	

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
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	101.5	31.6	3.5	31.5	105.1	-	-	Carrier
Hori	5724.375	PK	62.8	31.5	3.5	31.5	66.3	85.1	18.8	
Hori	5725.000	PK	63.2	31.5	3.5	31.5	66.7	85.1	18.4	
Vert	5745.000	PK	98.4	31.6	3.5	31.5	102.0	-	-	Carrier
Vert	5724.375	PK	59.2	31.5	3.5	31.5	62.7	82.0	19.3	
Vert	5725.000	PK	59.7	31.5	3.5	31.5	63.2	82.0	18.8	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 31JE0038-HO-01
Date 04/26/2012 04/26/2012
Temperature/ Humidity 23 deg. C / 57% RH 23 deg. C / 57% RH
Engineer Takumi Shimada Katsunori Okai
(1-10GHz) (Above 10GHz)
Mode 11n-20(MIMO) Tx 5785MHz, MCS 8

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5290.083	PK	59.8	30.9	3.4	31.4	62.7	73.9	11.3	
Hori	11570.000	PK	48.8	37.8	-2.0	33.1	51.5	73.9	22.4	
Hori	17355.000	PK	47.8	42.9	-0.4	32.4	57.9	73.9	16.0	
Hori	5290.083	AV	47.2	30.9	3.4	31.4	50.1	53.9	3.8	
Hori	11570.000	AV	34.3	37.8	-2.0	33.1	37.0	53.9	16.9	
Hori	17355.000	AV	35.5	42.9	-0.4	32.4	45.6	53.9	8.3	
Vert	5298.657	PK	56.7	30.9	3.4	31.4	59.6	73.9	14.3	
Vert	11570.000	PK	52.6	37.8	-2.0	33.1	55.3	73.9	18.6	
Vert	17355.000	PK	45.9	42.9	-0.4	32.4	56.0	73.9	17.9	
Vert	5298.657	AV	44.4	30.9	3.4	31.4	47.3	53.9	6.6	
Vert	11570.000	AV	38.3	37.8	-2.0	33.1	41.0	53.9	12.9	
Vert	17355.000	AV	33.8	42.9	-0.4	32.4	43.9	53.9	10.0	

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 $20\log(3.0\text{m}/1.0\text{m})= 9.5\text{dB}$
26.5GHz-40GHz $20\log(3.0\text{m}/0.5\text{m})=15.6\text{dB}$

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 31JE0038-HO-01
Date 04/26/2012 04/26/2012
Temperature/ Humidity 23 deg. C / 57% RH 23 deg. C / 57% RH
Engineer Takumi Shimada Katsunori Okai
(1-10GHz) (Above 10GHz)
Mode 11n-20(MIMO) Tx 5825MHz, MCS 8

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5367.373	PK	60.4	31.0	3.4	31.4	63.4	73.9	10.5	See 20dBc Data Sheet
Hori	5850.000	PK	69.1	31.7	3.6	31.5	72.9	-	-	
Hori	11650.000	PK	49.5	37.7	-1.9	33.1	52.2	73.9	21.7	
Hori	17475.000	PK	46.5	43.6	-0.3	32.4	57.4	73.9	16.5	
Hori	5367.373	AV	47.8	31.0	3.4	31.4	50.8	53.9	3.1	See 20dBc Data Sheet
Hori	5850.000	AV	49.9	31.7	3.6	31.5	53.7	-	-	
Hori	11650.000	AV	35.4	37.7	-1.9	33.1	38.1	53.9	15.8	
Hori	17475.000	AV	33.7	43.6	-0.3	32.4	44.6	53.9	9.3	
Vert	5334.656	PK	56.5	30.9	3.4	31.4	59.4	73.9	14.5	See 20dBc Data Sheet
Vert	5850.000	PK	64.6	31.7	3.6	31.5	68.4	-	-	
Vert	11650.000	PK	53.2	37.7	-1.9	33.1	55.9	73.9	18.0	
Vert	17475.000	PK	45.4	43.6	-0.3	32.4	56.3	73.9	17.6	
Vert	5334.656	AV	45.1	30.9	3.4	31.4	48.0	53.9	5.9	See 20dBc Data Sheet
Vert	5850.000	AV	46.5	31.7	3.6	31.5	50.3	-	-	
Vert	11650.000	AV	38.8	37.7	-1.9	33.1	41.5	53.9	12.4	
Vert	17475.000	AV	32.5	43.6	-0.3	32.4	43.4	53.9	10.5	

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 $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$
26.5GHz-40GHz $20\log(3.0\text{m}/0.5\text{m}) = 15.6\text{dB}$

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	100.0	31.7	3.6	31.5	103.8	-	-	Carrier
Hori	5850.000	PK	55.1	31.7	3.6	31.5	58.9	83.8	24.9	
Vert	5825.000	PK	96.0	31.7	3.6	31.5	99.8	-	-	Carrier
Vert	5850.000	PK	52.4	31.7	3.6	31.5	56.2	79.8	23.6	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 31JE0038-HO-01
Date 04/26/2012
Temperature/ Humidity 23 deg. C / 57% RH
Engineer Katsunori Okai
Mode 11n-40(MIMO) Tx 5755MHz, MCS 8

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5370.803	PK	57.5	31.0	3.4	31.4	60.5	73.9	13.4	See 20dBc Data Sheet
Hori	5725.000	PK	74.7	31.5	3.5	31.5	78.2	-	-	
Hori	11510.000	PK	46.2	37.8	-2.0	33.1	48.9	73.9	25.0	
Hori	17265.000	PK	44.3	42.3	-0.5	32.3	53.8	73.9	20.1	
Hori	5370.803	AV	44.3	31.0	3.4	31.4	47.3	53.9	6.6	See 20dBc Data Sheet
Hori	5725.000	AV	58.7	31.5	3.5	31.5	62.2	-	-	
Hori	11510.000	AV	31.7	37.8	-2.0	33.1	34.4	53.9	19.5	
Hori	17265.000	AV	31.5	42.3	-0.5	32.3	41.0	53.9	12.9	
Vert	5353.702	PK	55.5	31.0	3.4	31.4	58.5	73.9	15.4	See 20dBc Data Sheet
Vert	5725.000	PK	69.7	31.5	3.5	31.5	73.2	-	-	
Vert	11510.000	PK	48.6	37.8	-2.0	33.1	51.3	73.9	22.6	
Vert	17265.000	PK	43.7	42.3	-0.5	32.3	53.2	73.9	20.7	
Vert	5353.702	AV	43.2	31.0	3.4	31.4	46.2	53.9	7.7	See 20dBc Data Sheet
Vert	5725.000	AV	52.9	31.5	3.5	31.5	56.4	-	-	
Vert	11510.000	AV	33.2	37.8	-2.0	33.1	35.9	53.9	18.0	
Vert	17265.000	AV	31.8	42.3	-0.5	32.3	41.3	53.9	12.6	

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

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

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	98.2	31.6	3.5	31.5	101.8	-	-	Carrier
Hori	5725.000	PK	64.2	31.5	3.5	31.5	67.7	81.8	14.1	
Vert	5755.000	PK	92.6	31.6	3.5	31.5	96.2	-	-	Carrier
Vert	5725.000	PK	58.1	31.5	3.5	31.5	61.6	76.2	14.6	

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

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 31JE0038-HO-01
Date : 04/26/2012
Temperature/ Humidity : 23 deg. C / 57% RH
Engineer : Katsunori Okai
Mode : 11n-40(MIMO) Tx 5795MHz, MCS 8

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5370.803	PK	57.2	31.0	3.4	31.4	60.2	73.9	13.7	See 20dBc Data Sheet
Hori	5850.000	PK	59.8	31.7	3.6	31.5	63.6	-	-	
Hori	11590.000	PK	44.2	37.8	-1.9	33.1	47.0	73.9	26.9	
Hori	17385.000	PK	43.7	43.0	-0.4	32.4	53.9	73.9	20.0	
Hori	5370.803	AV	44.5	31.0	3.4	31.4	47.5	53.9	6.4	See 20dBc Data Sheet
Hori	5850.000	AV	40.9	31.7	3.6	31.5	44.7	-	-	
Hori	11590.000	AV	31.5	37.8	-1.9	33.1	34.3	53.9	19.6	
Hori	17385.000	AV	31.8	43.0	-0.4	32.4	42.0	53.9	11.9	
Vert	5362.292	PK	56.2	31.0	3.4	31.4	59.2	73.9	14.7	See 20dBc Data Sheet
Vert	5850.000	PK	57.5	31.7	3.6	31.5	61.3	-	-	
Vert	11590.000	PK	48.6	37.8	-1.9	33.1	51.4	73.9	22.5	
Vert	17385.000	PK	43.1	43.0	-0.4	32.4	53.3	73.9	20.6	
Vert	5362.292	AV	43.6	31.0	3.4	31.4	46.6	53.9	7.3	See 20dBc Data Sheet
Vert	5850.000	AV	37.6	31.7	3.6	31.5	41.4	-	-	
Vert	11590.000	AV	33.3	37.8	-1.9	33.1	36.1	53.9	17.8	
Vert	17385.000	AV	31.5	43.0	-0.4	32.4	41.7	53.9	12.2	

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).

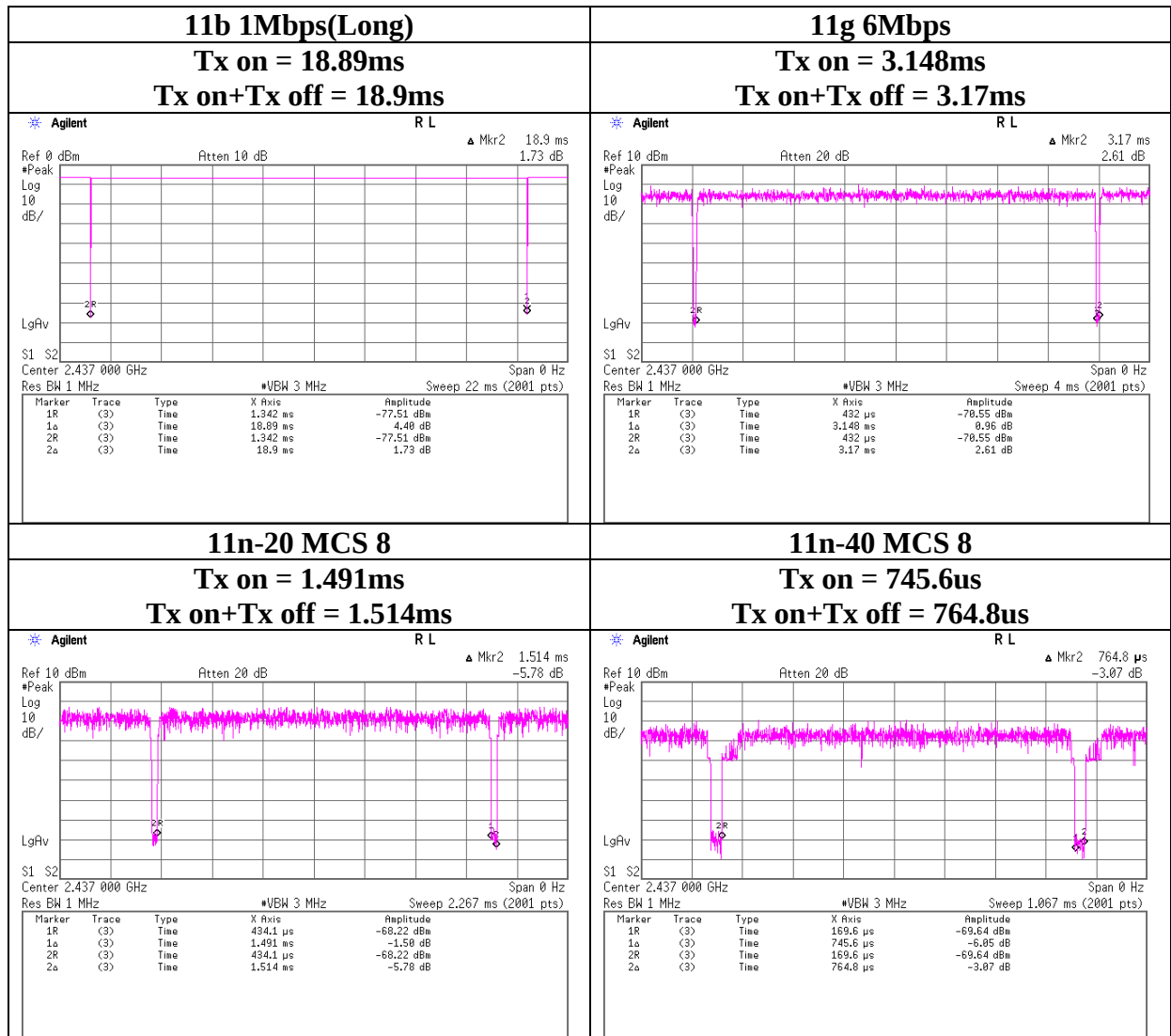
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

20dBc Data Sheet

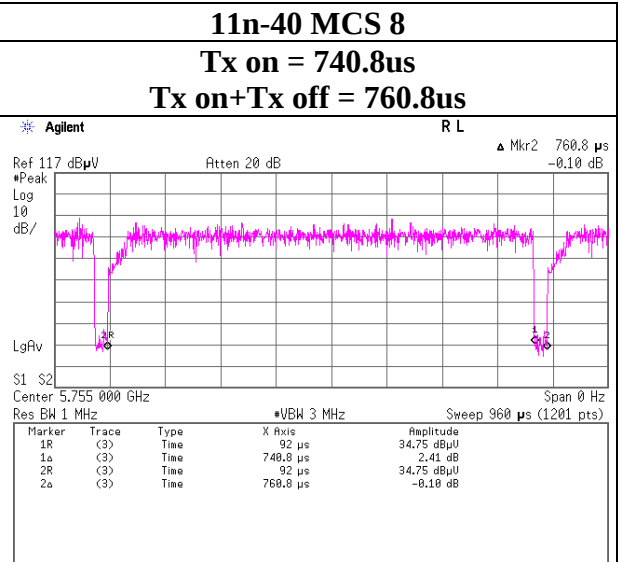
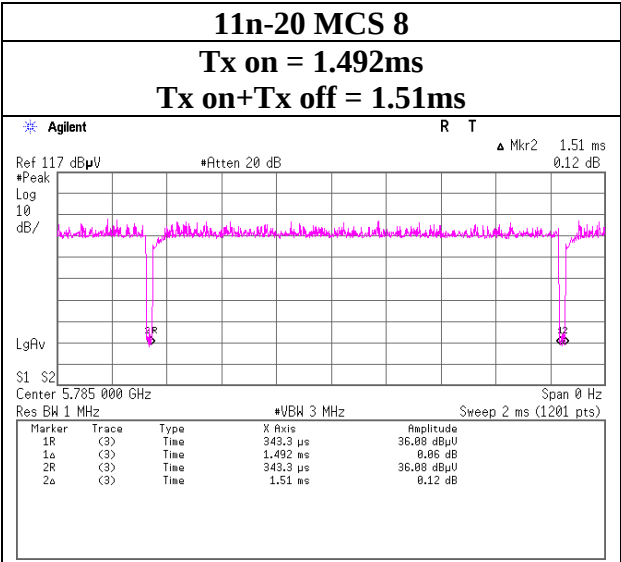
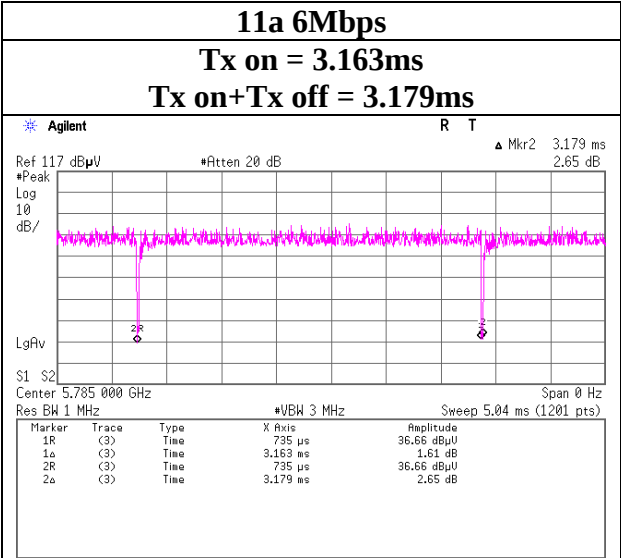
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5795.000	PK	98.0	31.6	3.5	31.5	101.6	-	-	Carrier
Hori	5850.000	PK	47.5	31.7	3.6	31.5	51.3	81.6	30.3	
Vert	5795.000	PK	93.3	31.6	3.5	31.5	96.9	-	-	Carrier
Vert	5850.000	PK	44.3	31.7	3.6	31.5	48.1	76.9	28.8	

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

Duty Cycle

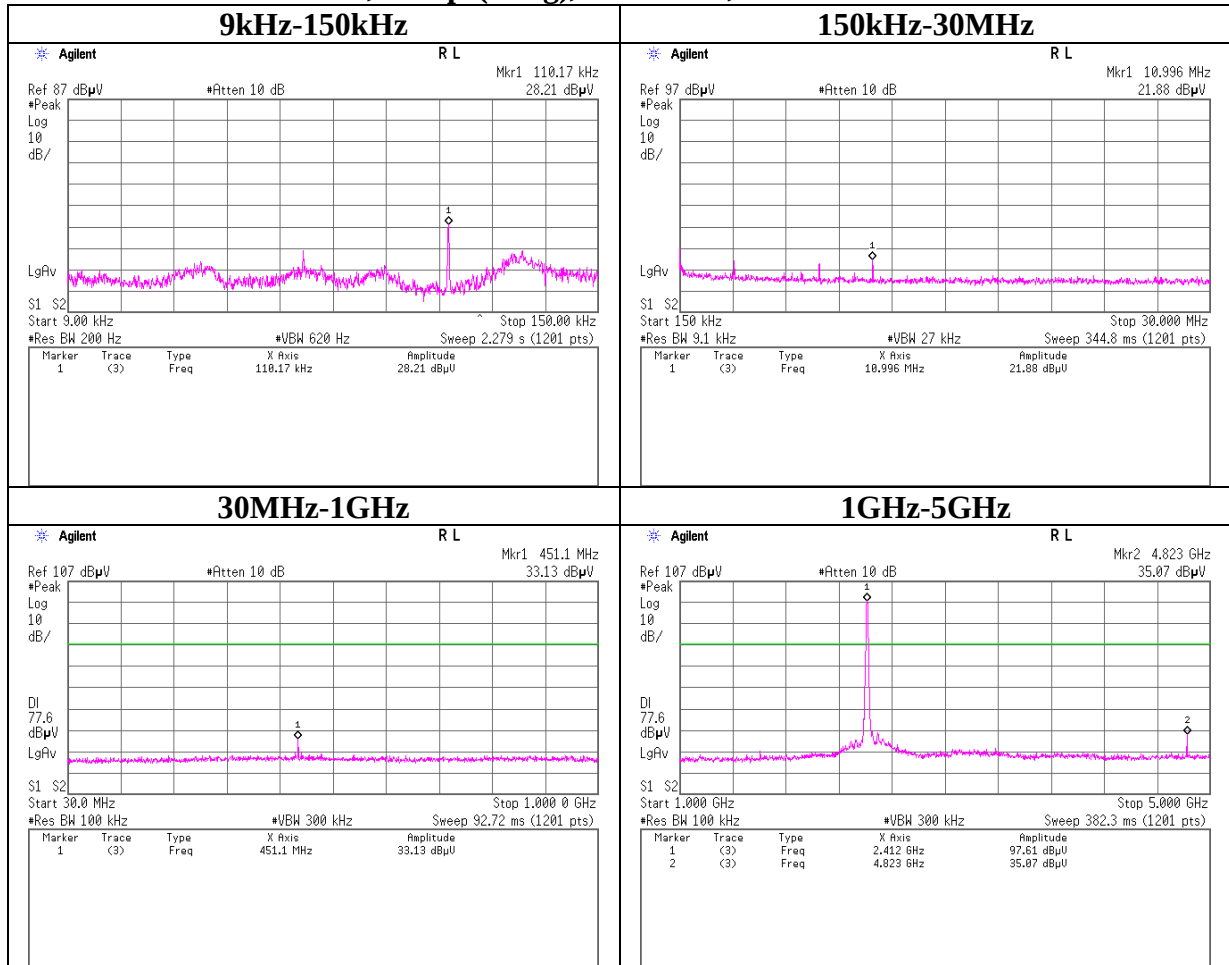


Duty Cycle



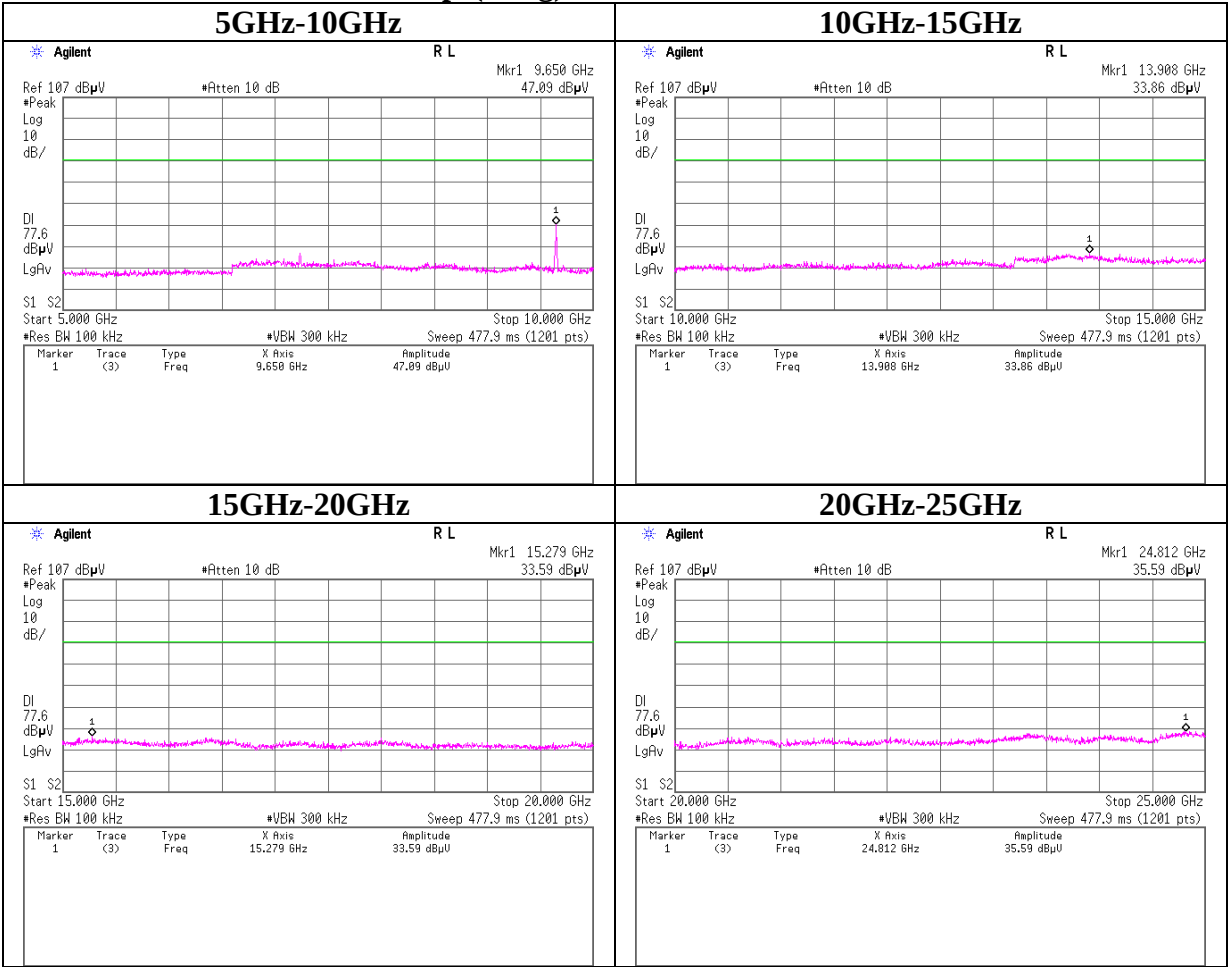
Conducted Spurious Emission

11b, 1Mbps(Long), Antenna 0, Tx 2412MHz



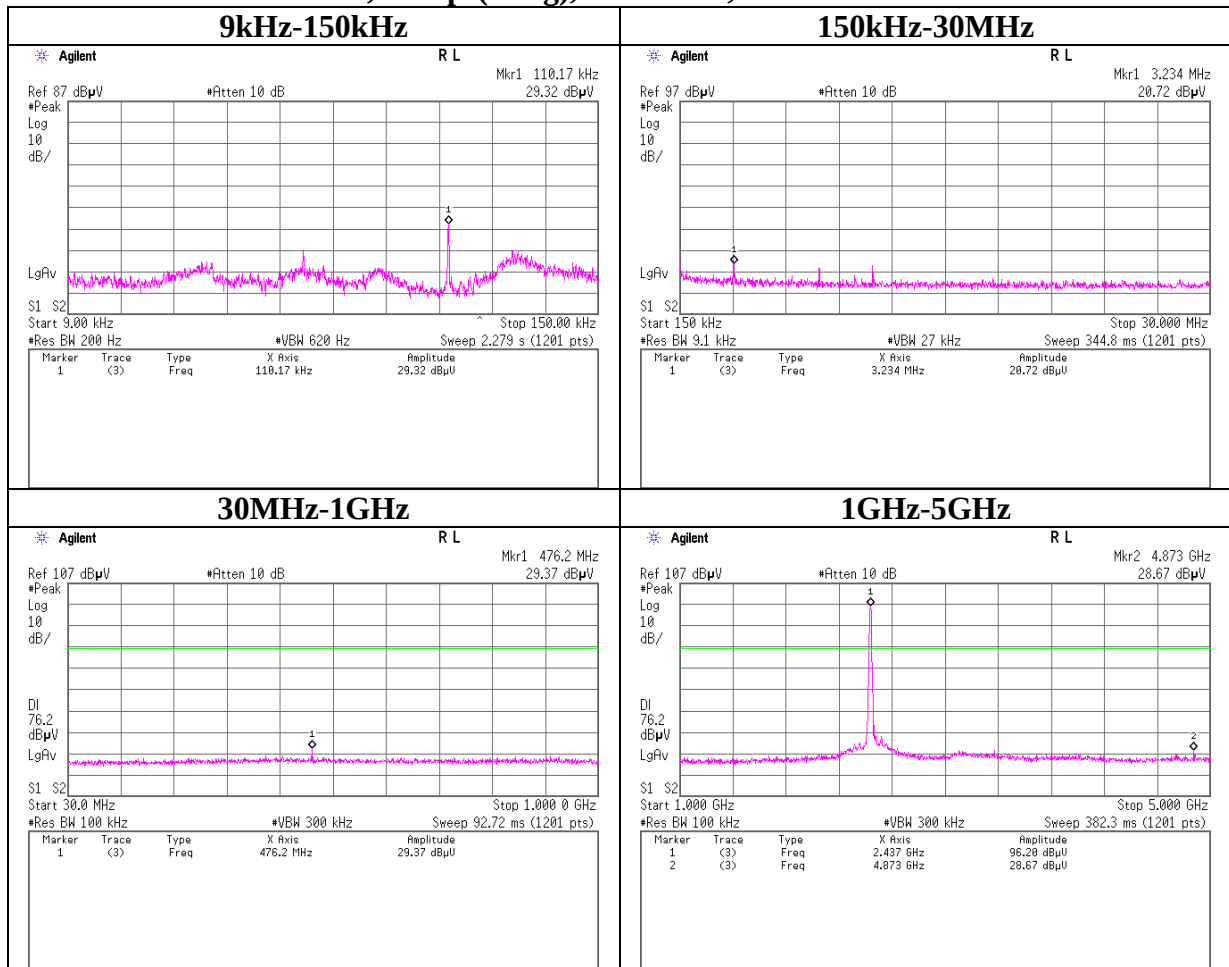
Conducted Spurious Emission

11b, 1Mbps(Long), Antenna 0, Tx 2412MHz



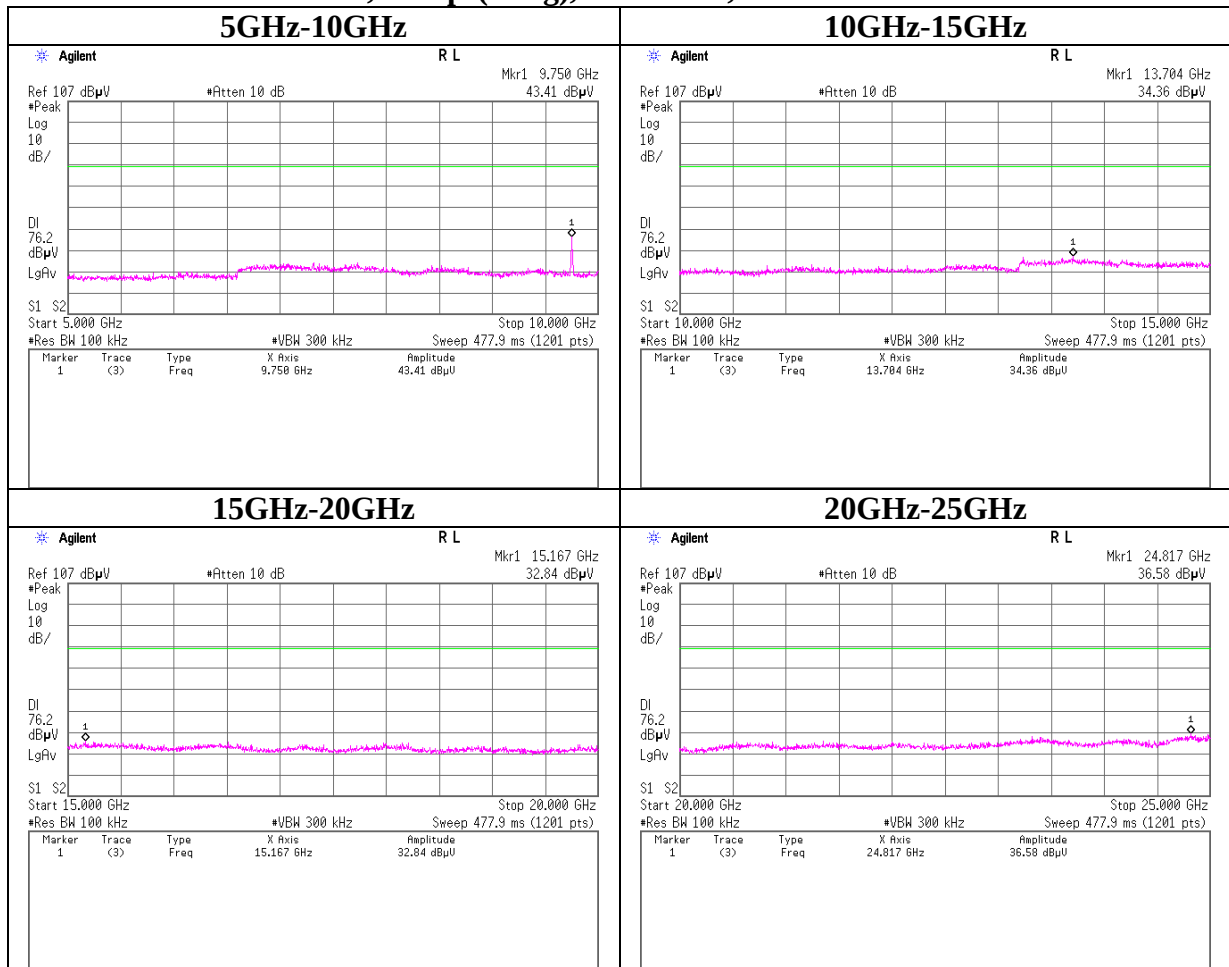
Conducted Spurious Emission

11b, 1Mbps(Long), Antenna 0, Tx 2437MHz



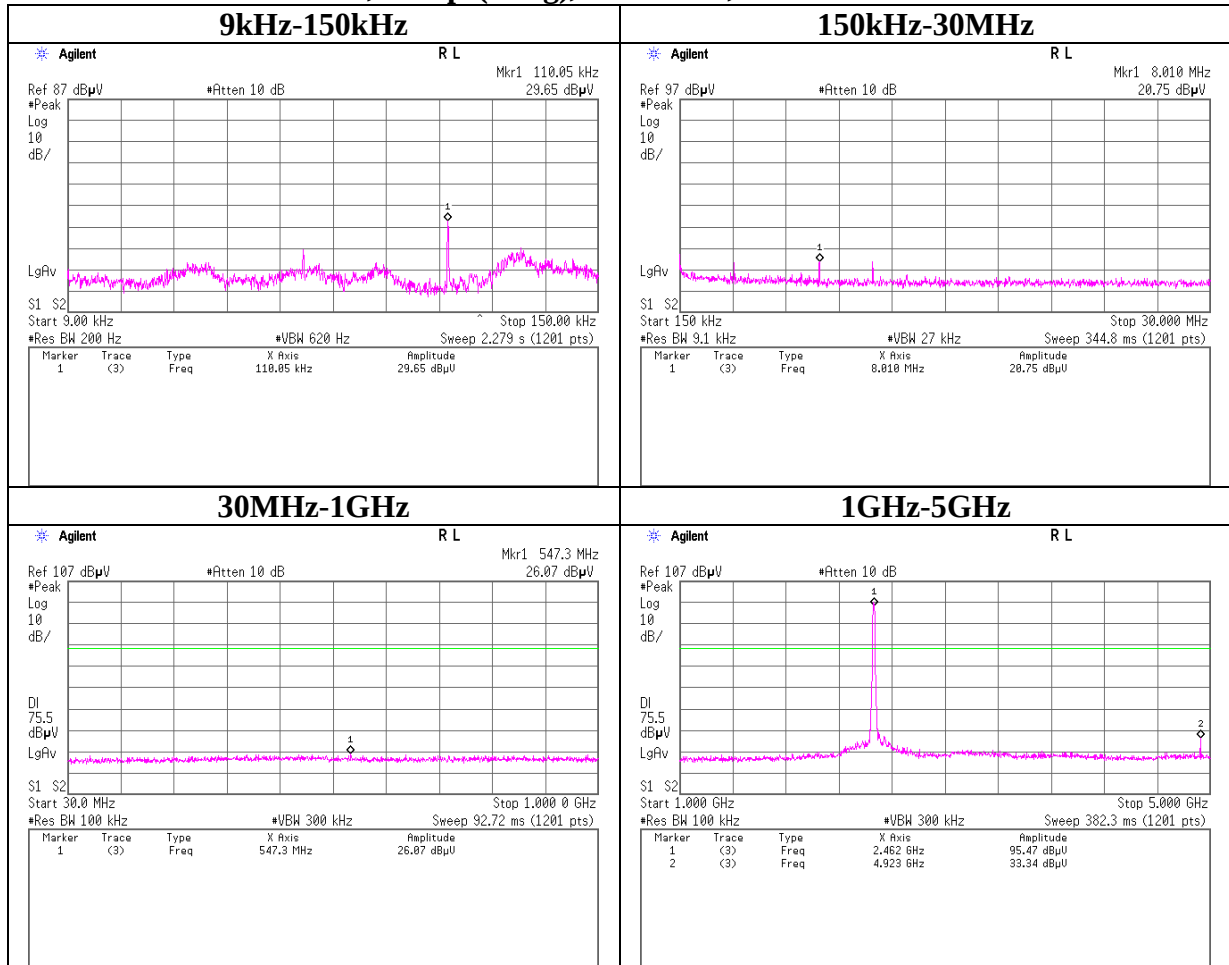
Conducted Spurious Emission

11b, 1Mbps(Long), Antenna 0, Tx 2437MHz



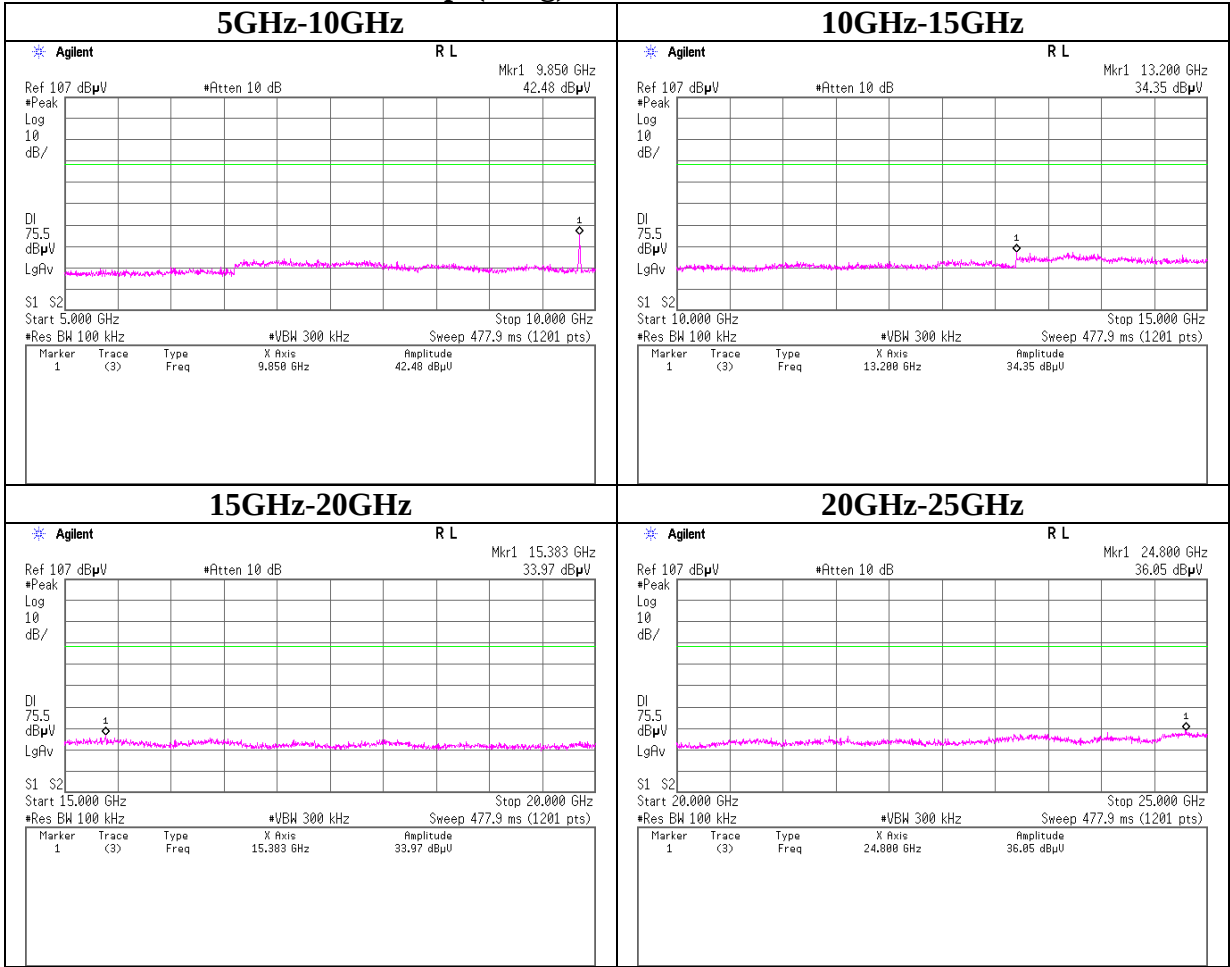
Conducted Spurious Emission

11b, 1Mbps(Long), Antenna 0, Tx 2462MHz



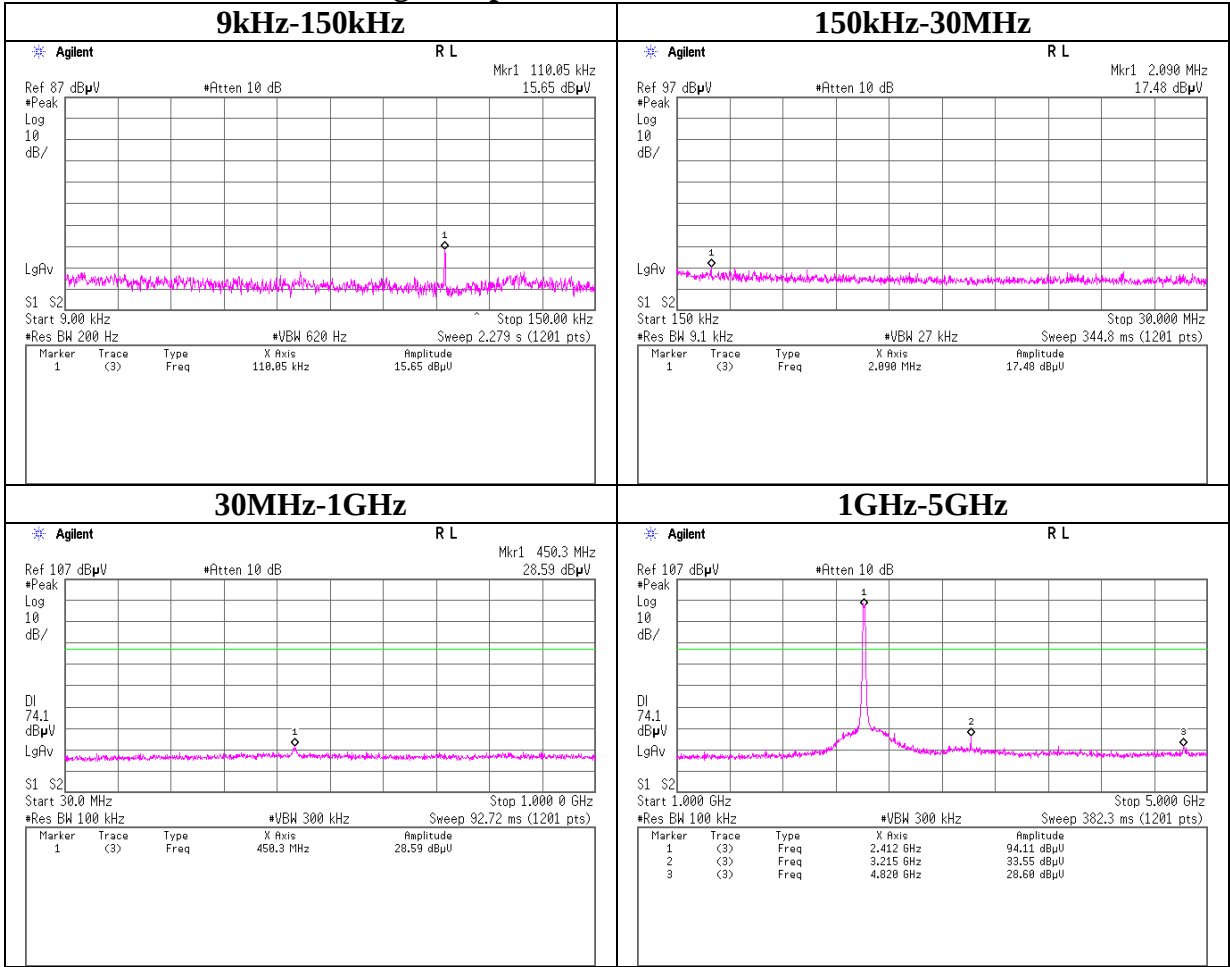
Conducted Spurious Emission

11b, 1Mbps(Long), Antenna 0, Tx 2462MHz



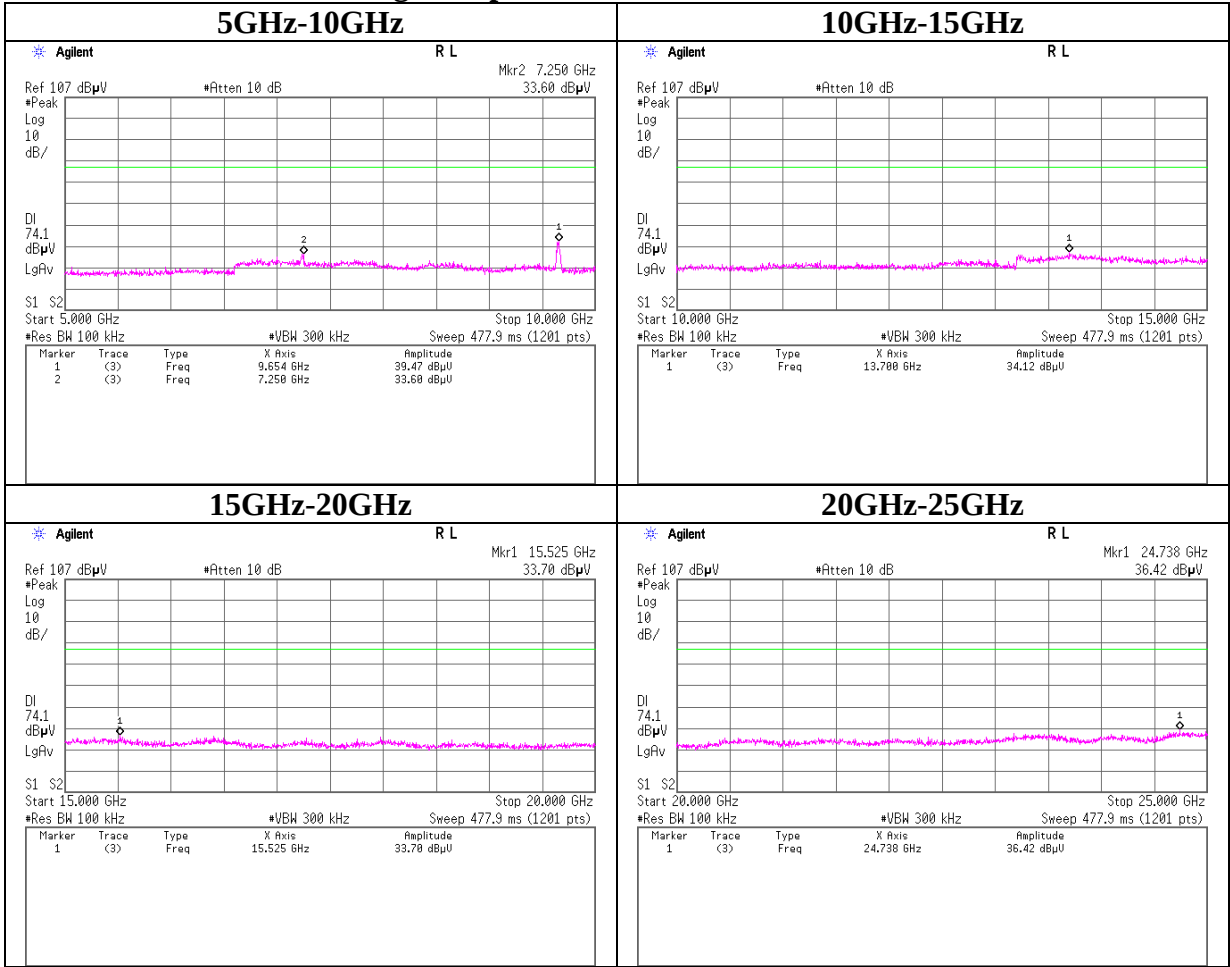
Conducted Spurious Emission

11g, 6Mbps, Antenna 0, Tx 2412MHz



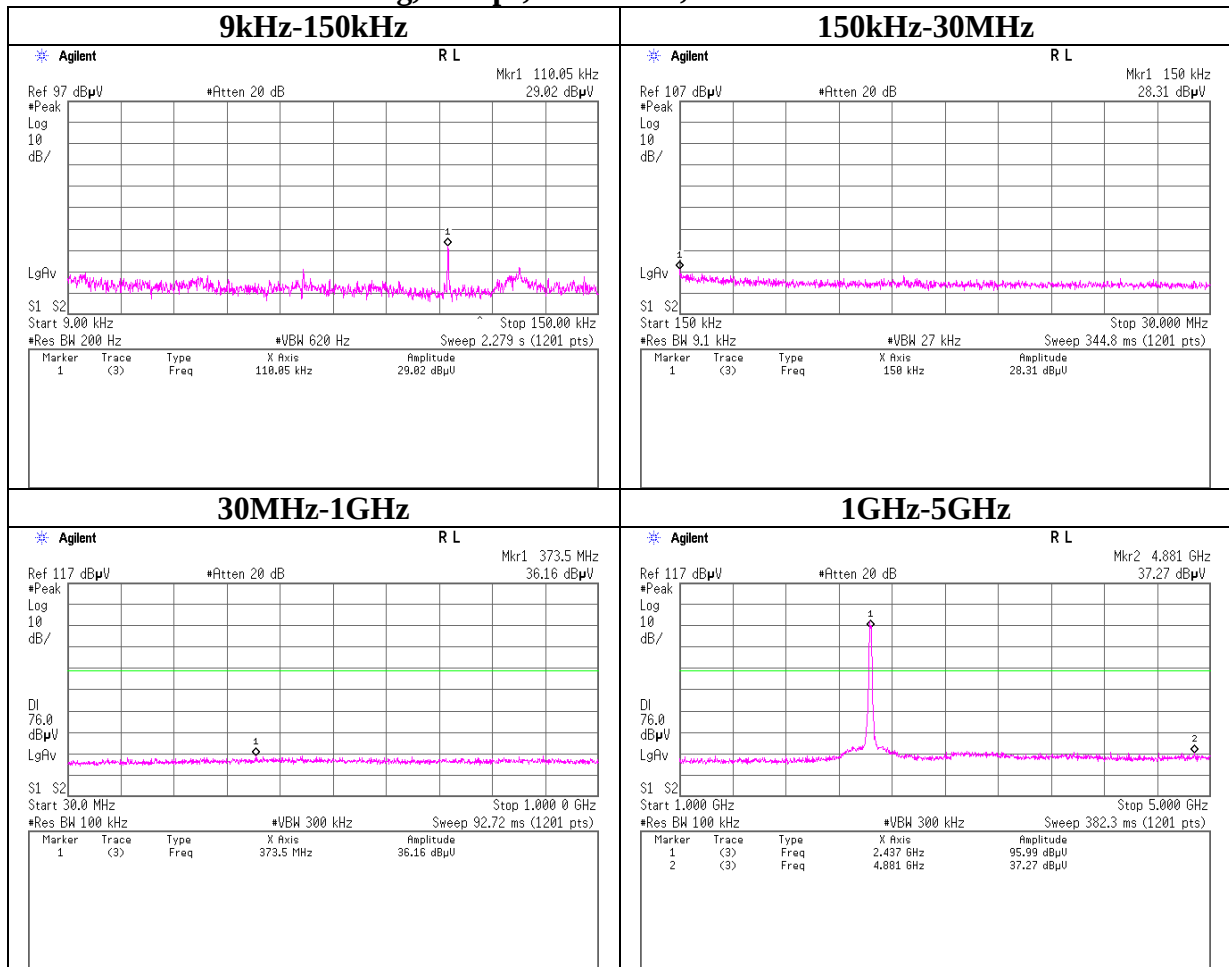
Conducted Spurious Emission

11g, 6Mbps, Antenna 0, Tx 2412MHz



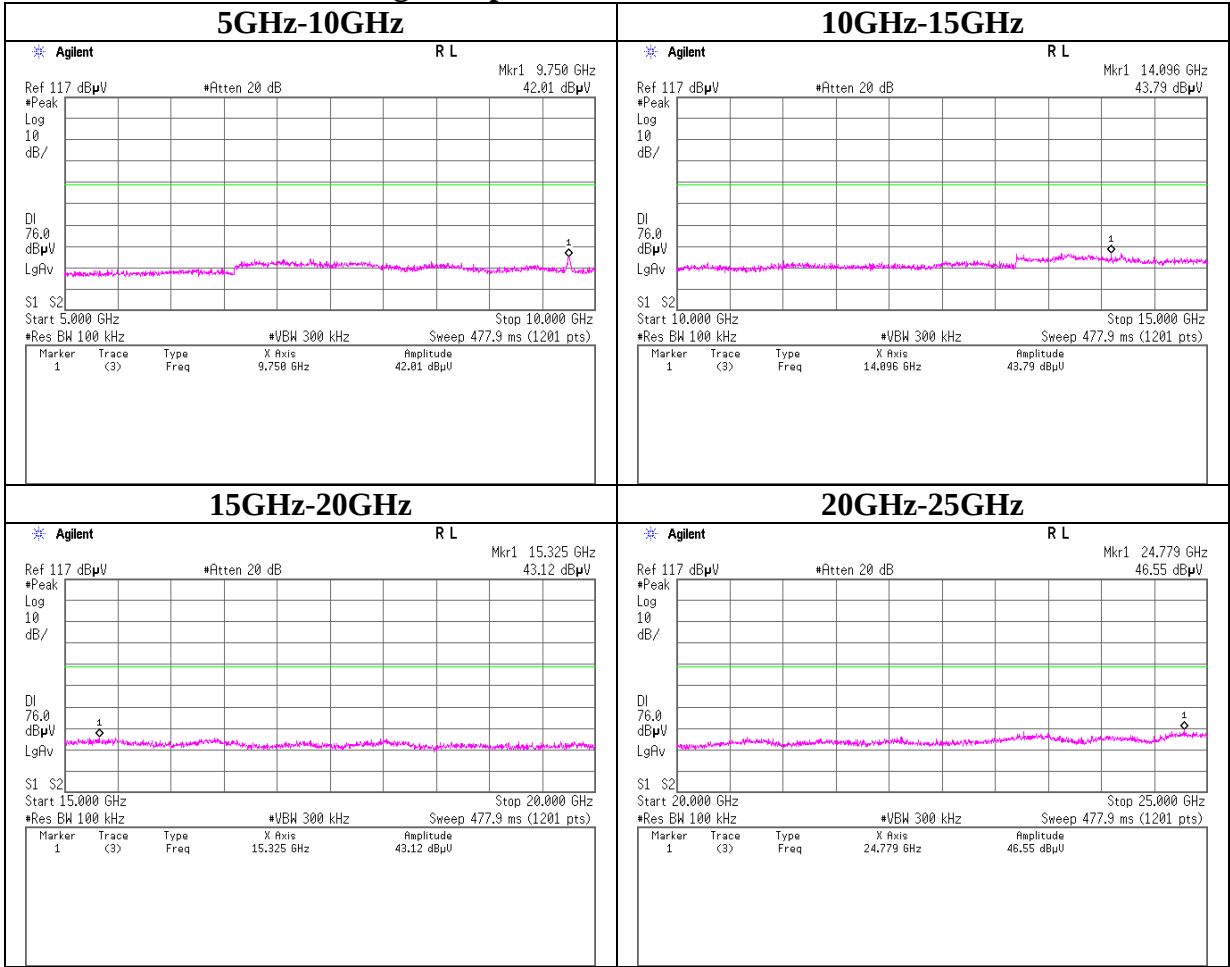
Conducted Spurious Emission

11g, 6Mbps, Antenna 0, Tx 2437MHz



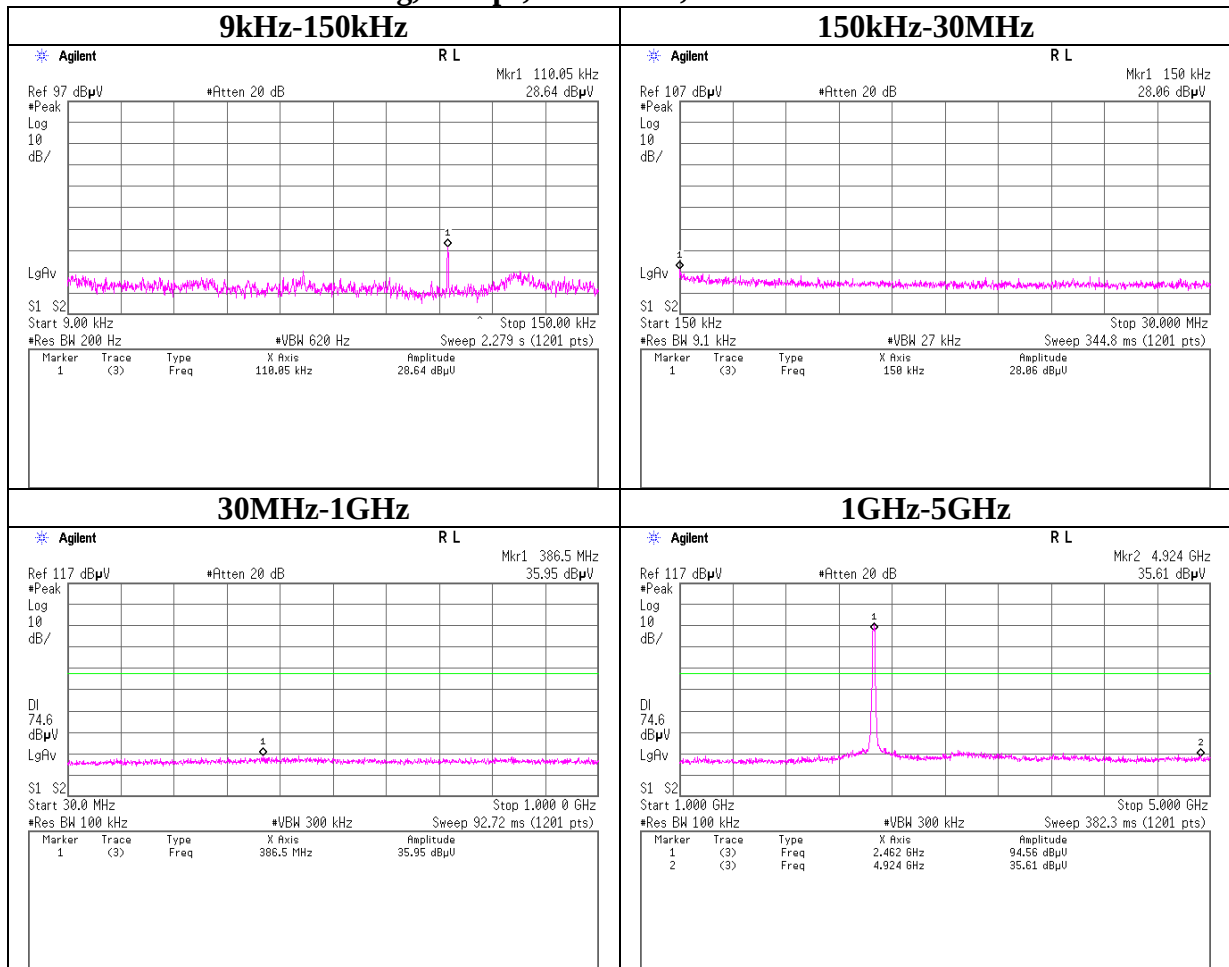
Conducted Spurious Emission

11g, 6Mbps, Antenna 0, Tx 2437MHz



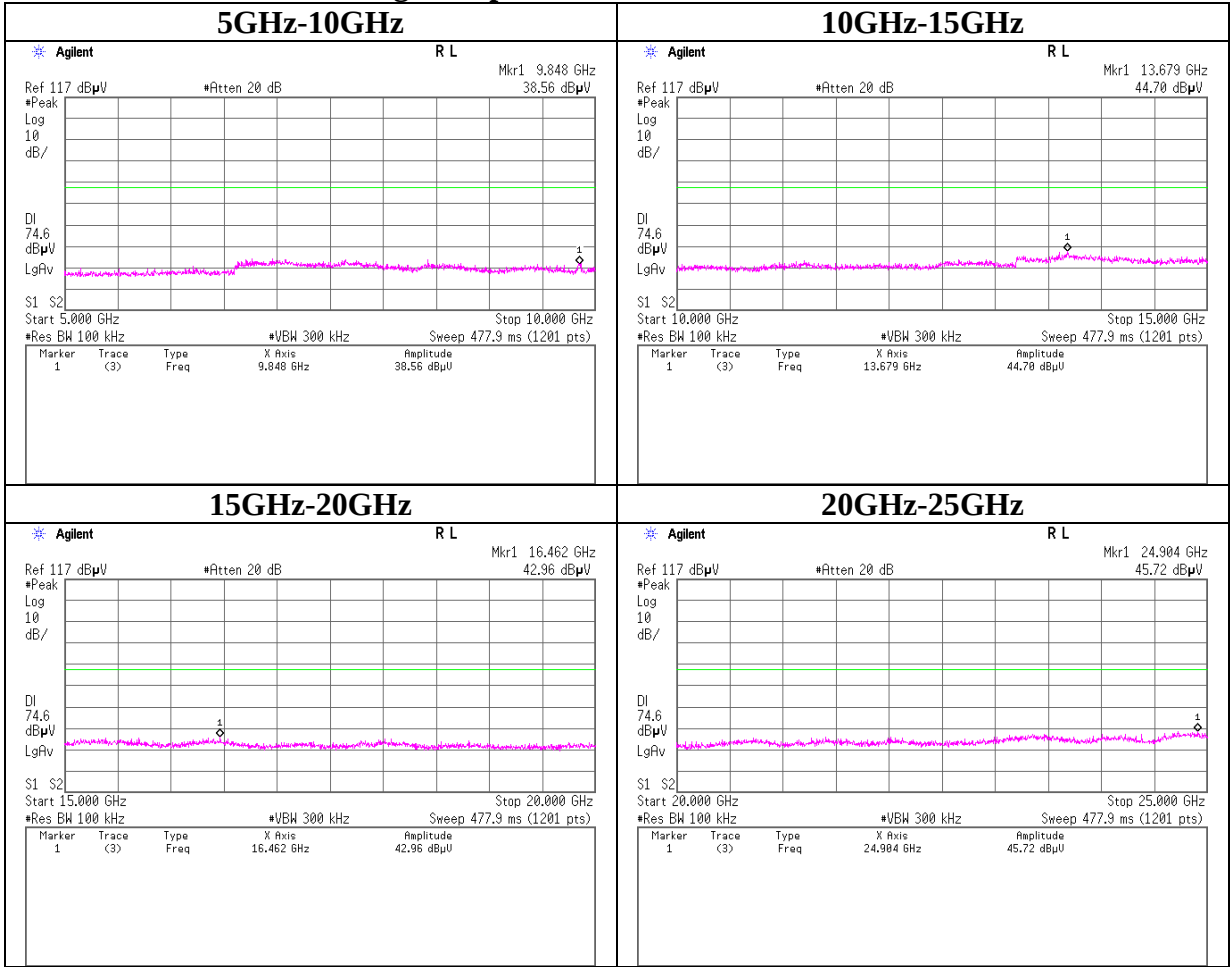
Conducted Spurious Emission

11g, 6Mbps, Antenna 0, Tx 2462MHz



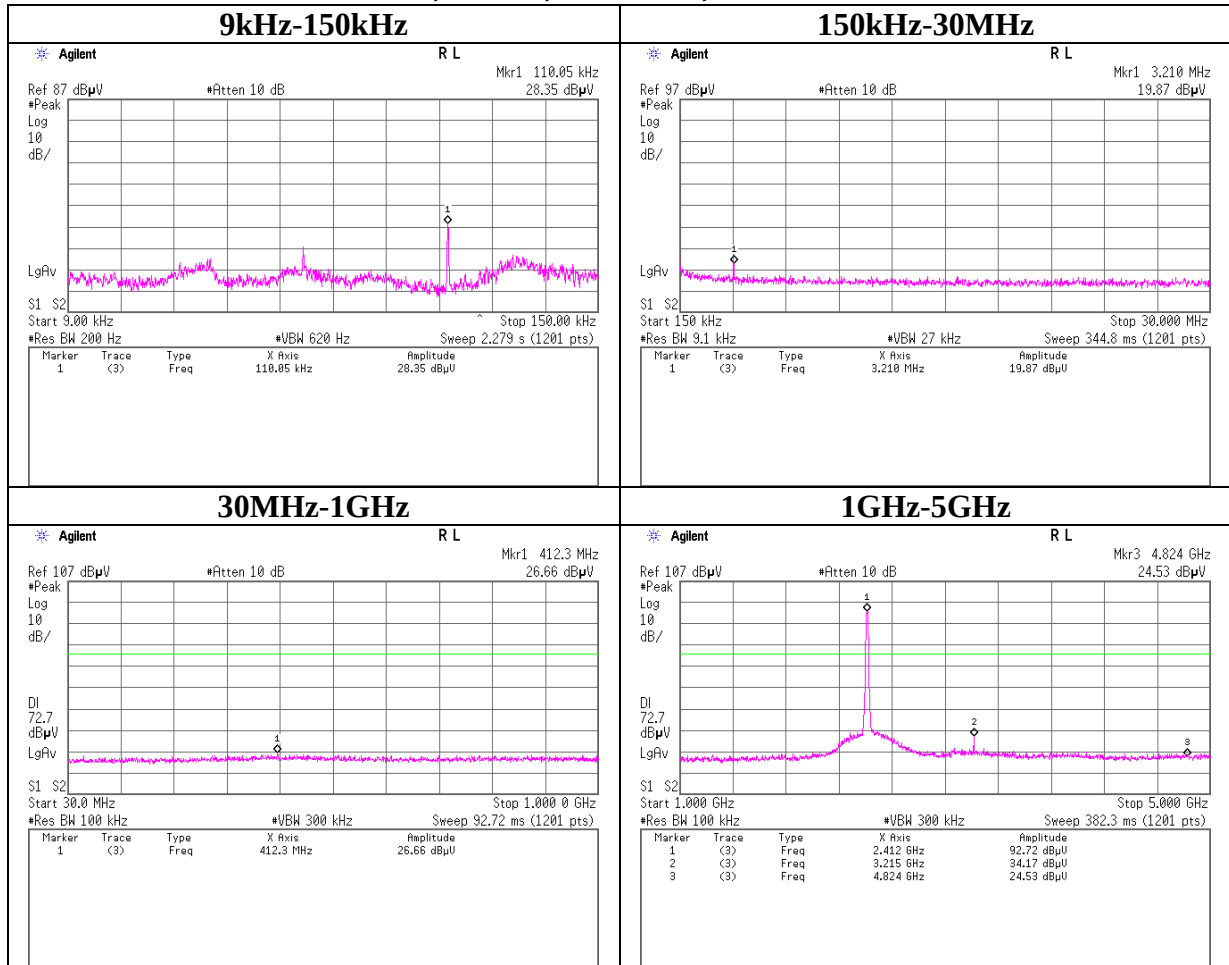
Conducted Spurious Emission

11g, 6Mbps, Antenna 0, Tx 2462MHz



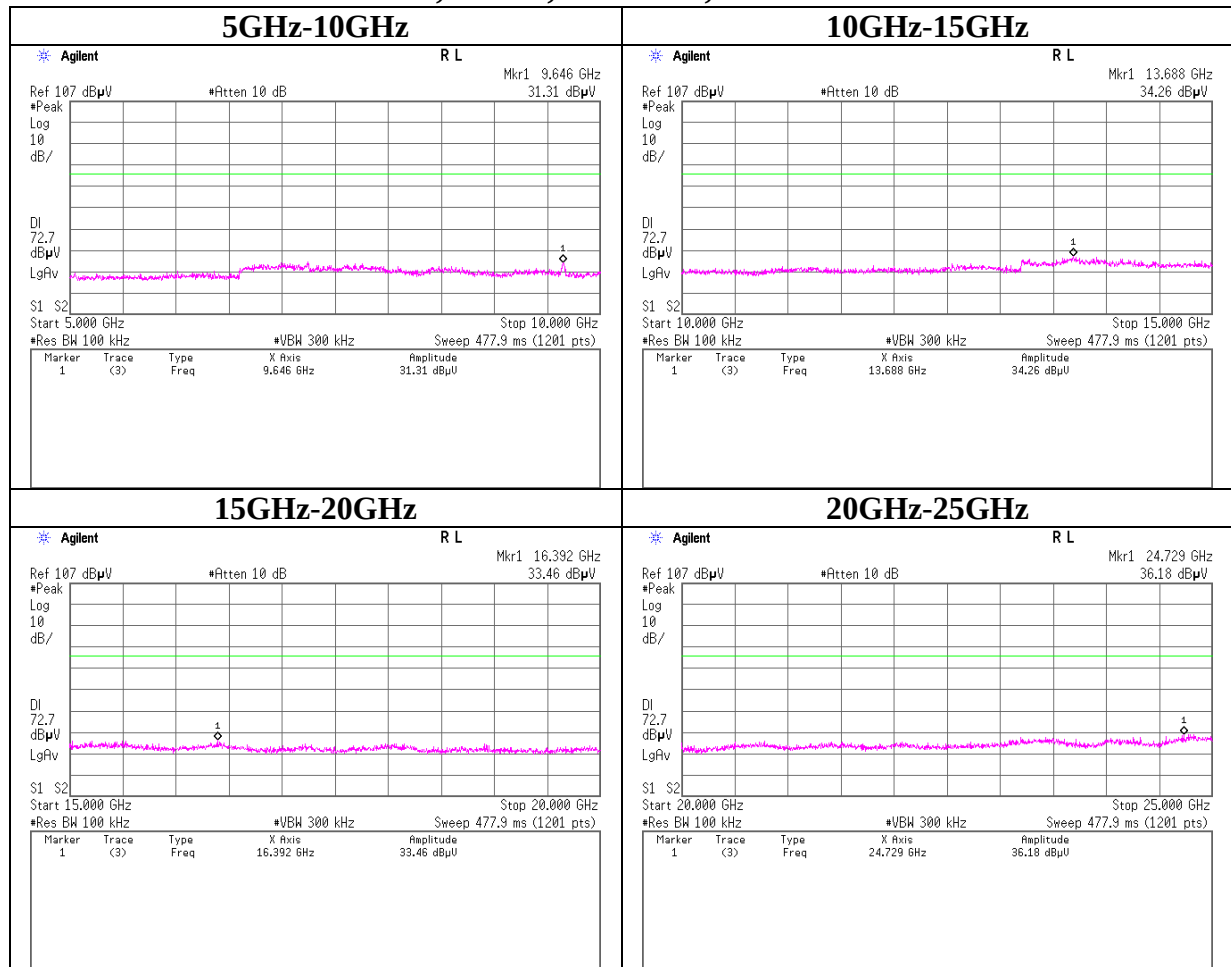
Conducted Spurious Emission

11n-20, MCS 8, Antenna 0, Tx 2412MHz



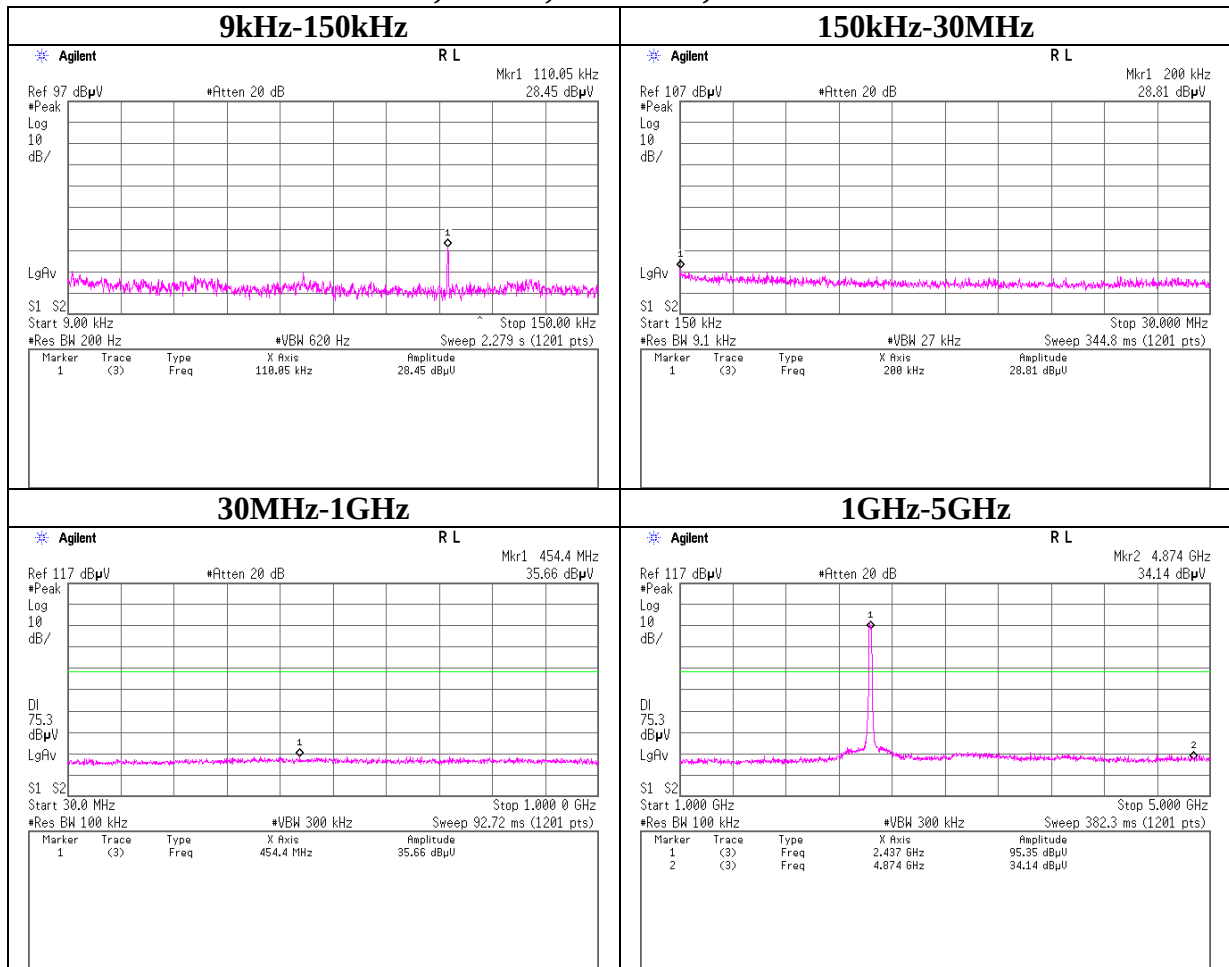
Conducted Spurious Emission

11n-20, MCS 8, Antenna 0, Tx 2412MHz



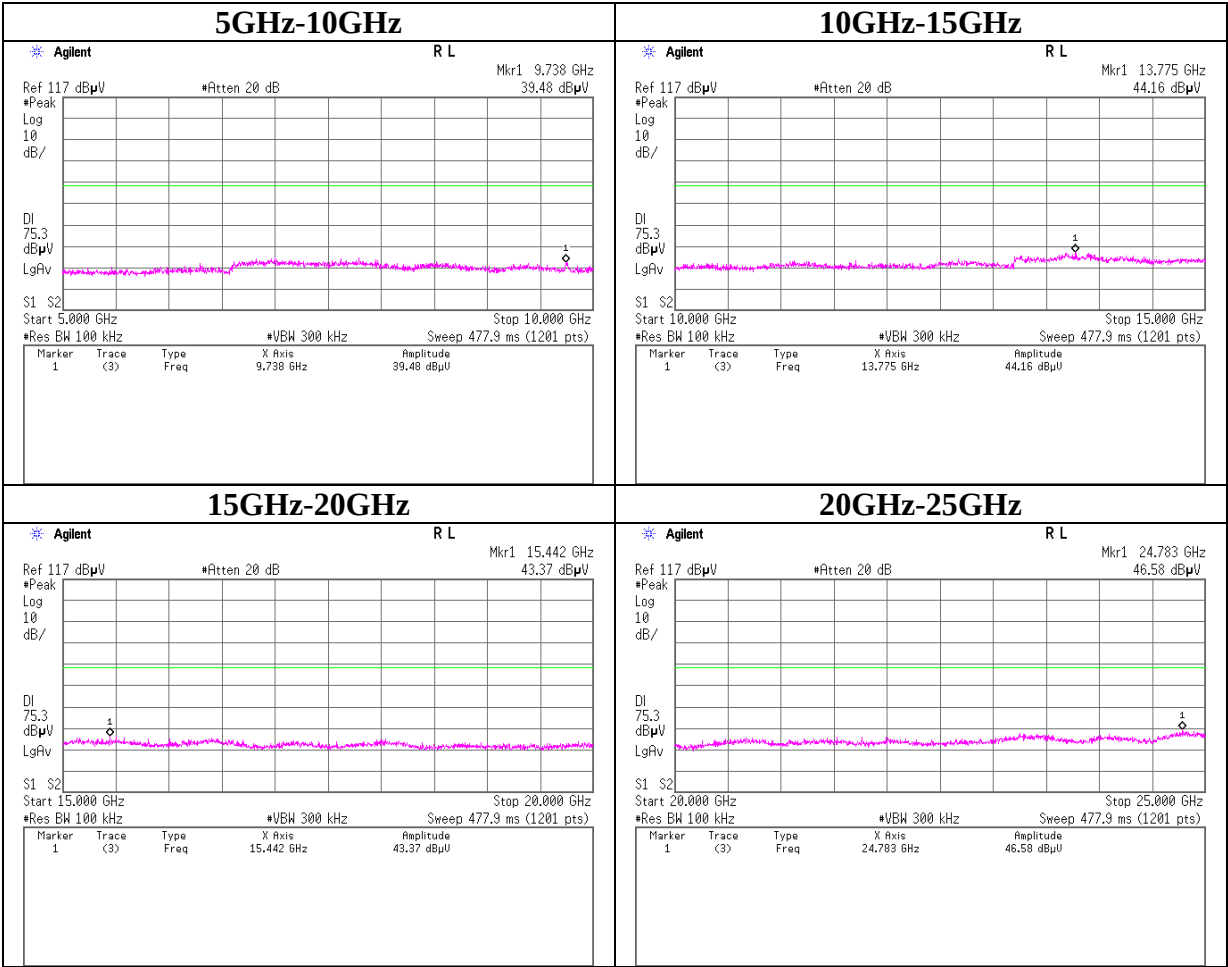
Conducted Spurious Emission

11n-20, MCS 8, Antenna 0, Tx 2437MHz



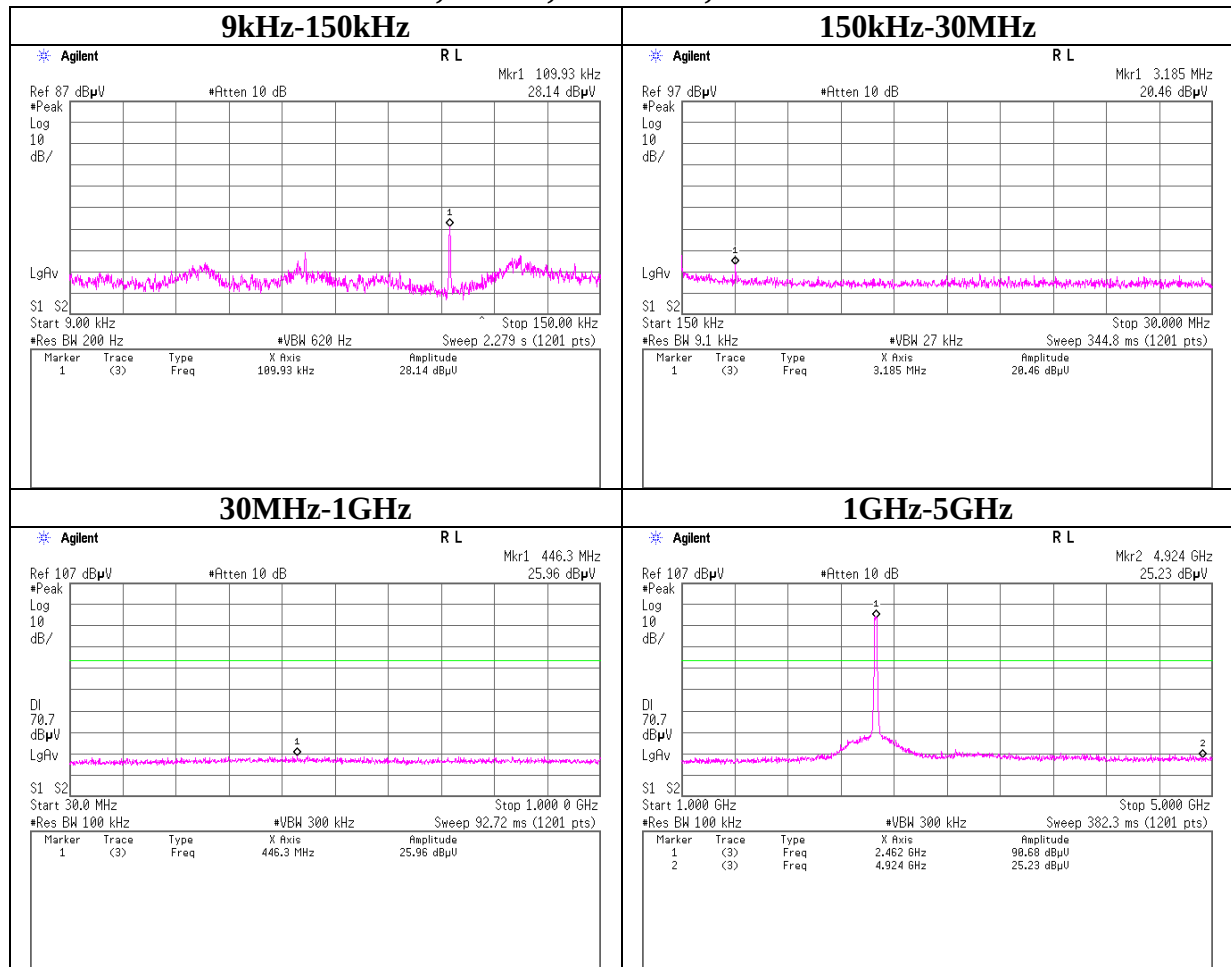
Conducted Spurious Emission

11n-20, MCS 8, Antenna 0, Tx 2437MHz



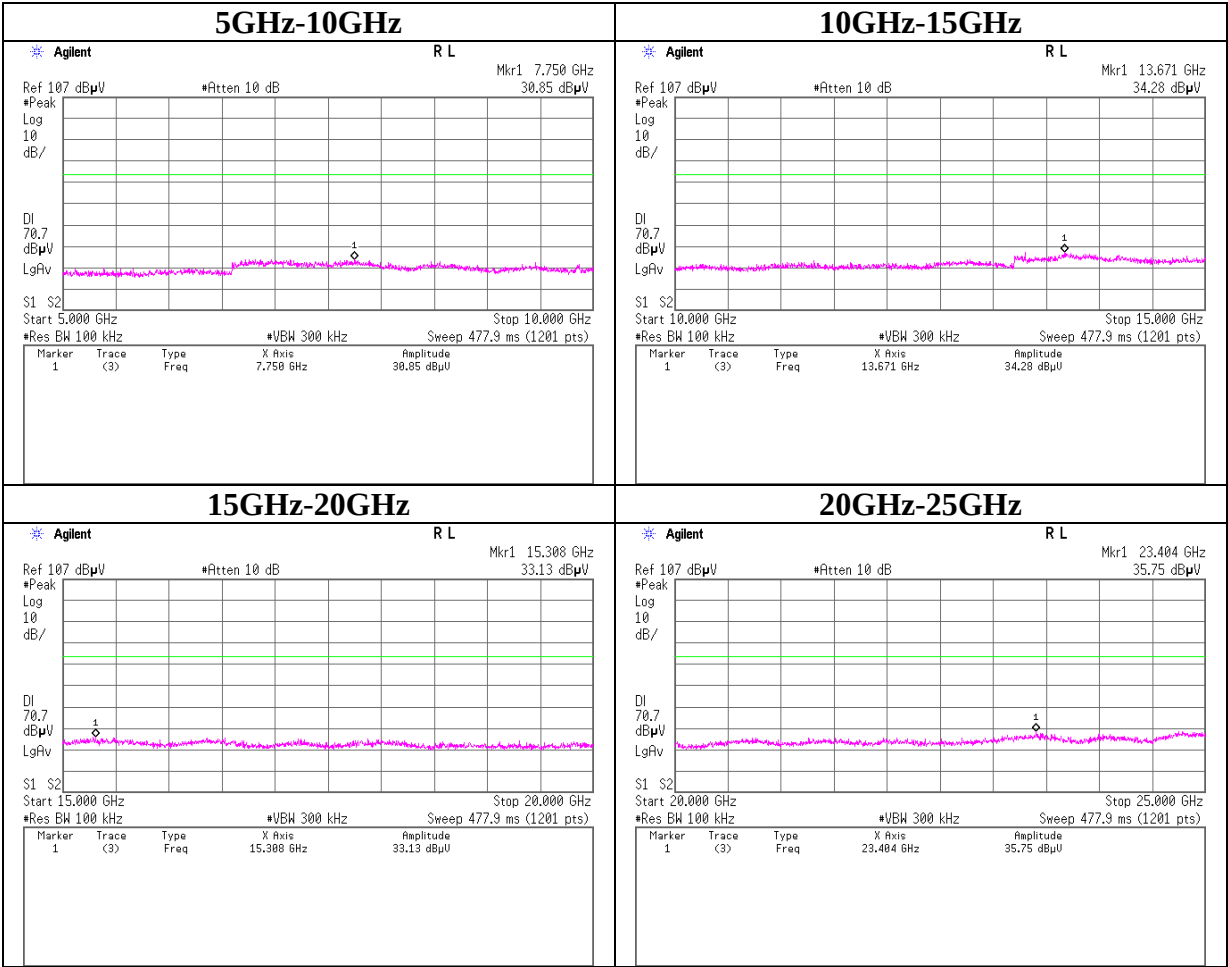
Conducted Spurious Emission

11n-20, MCS 8, Antenna 0, Tx 2462MHz



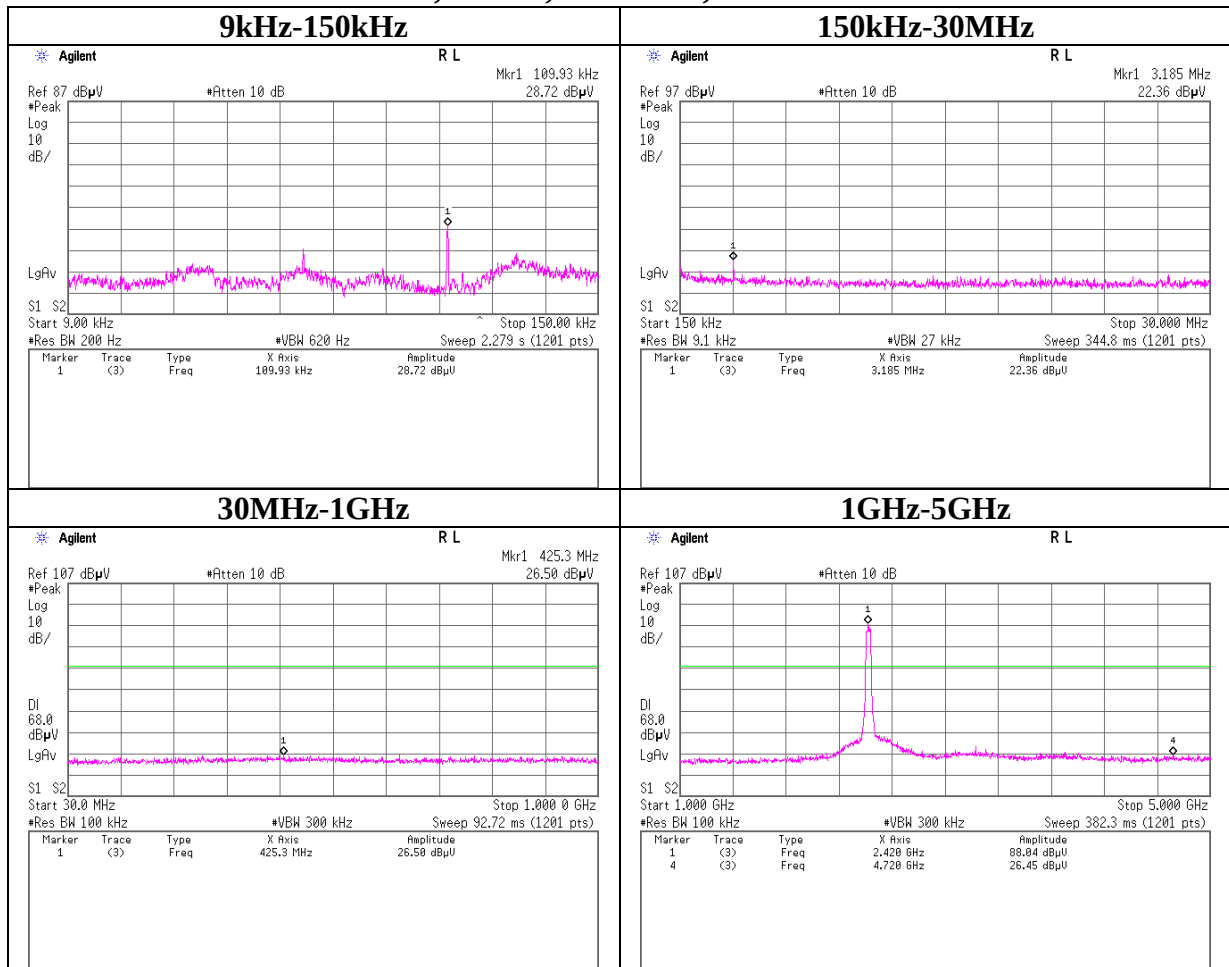
Conducted Spurious Emission

11n-20, MCS 8, Antenna 0, Tx 2462MHz



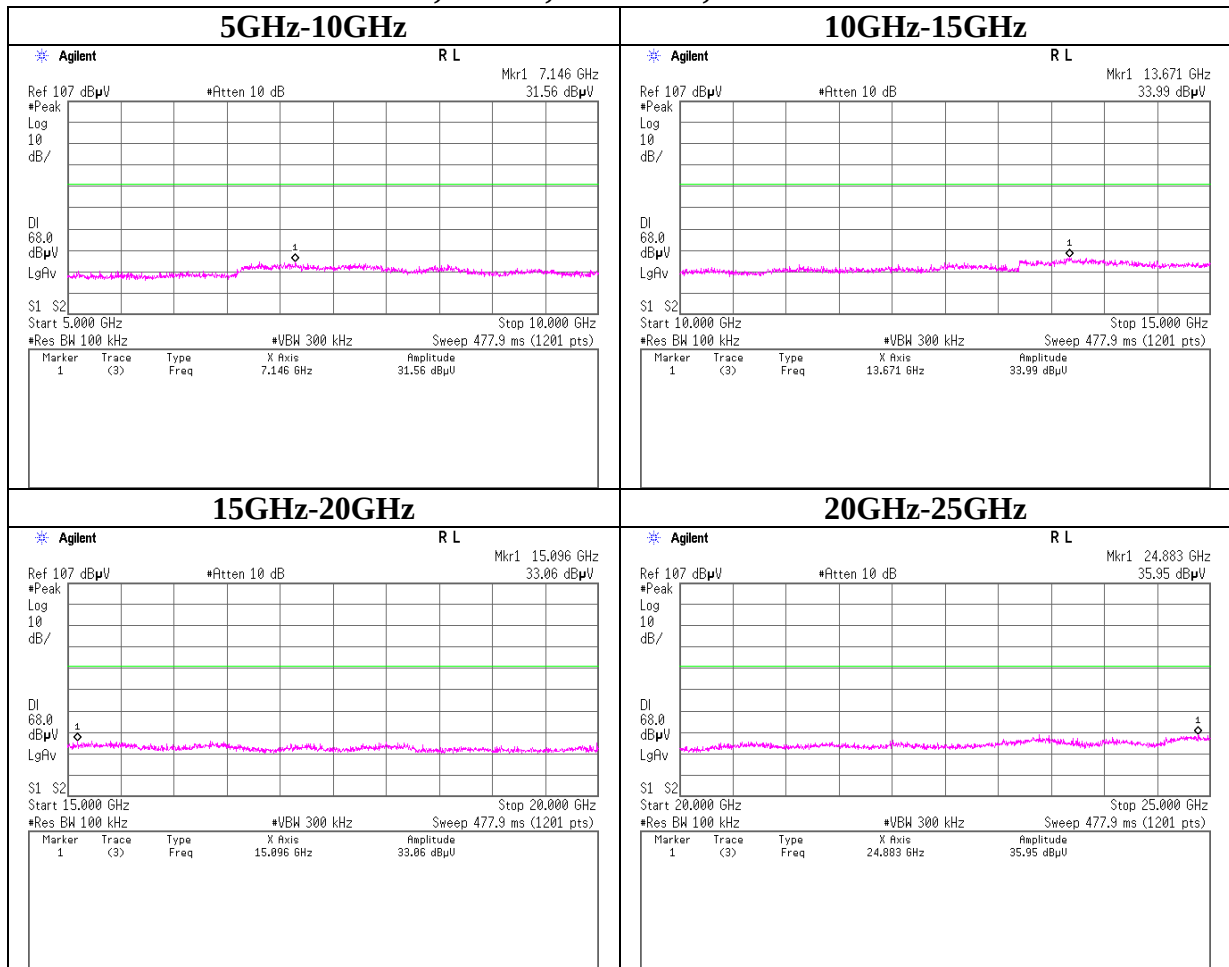
Conducted Spurious Emission

11n-40, MCS 8, Antenna 0, Tx 2422MHz



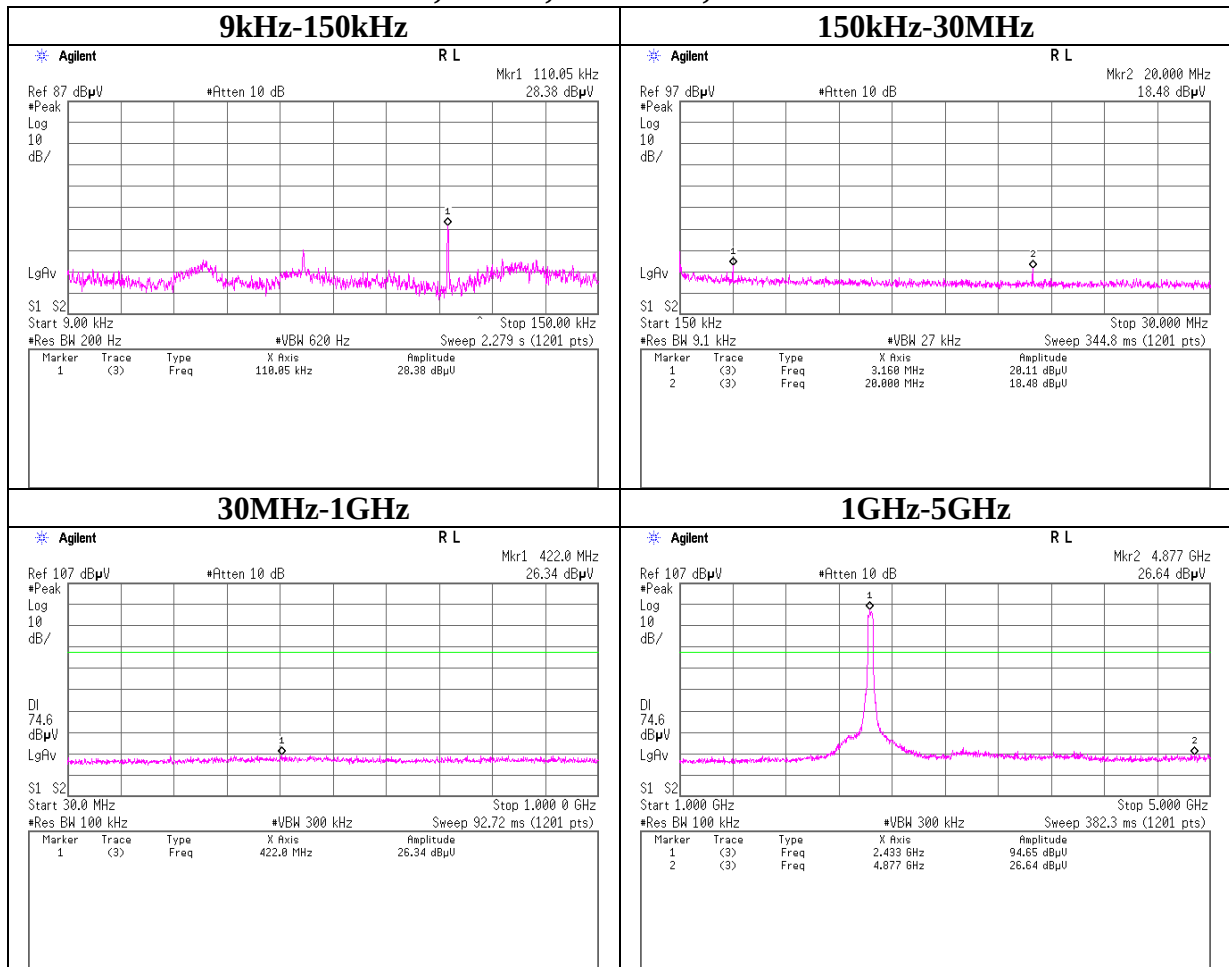
Conducted Spurious Emission

11n-40, MCS 8, Antenna 0, Tx 2422MHz



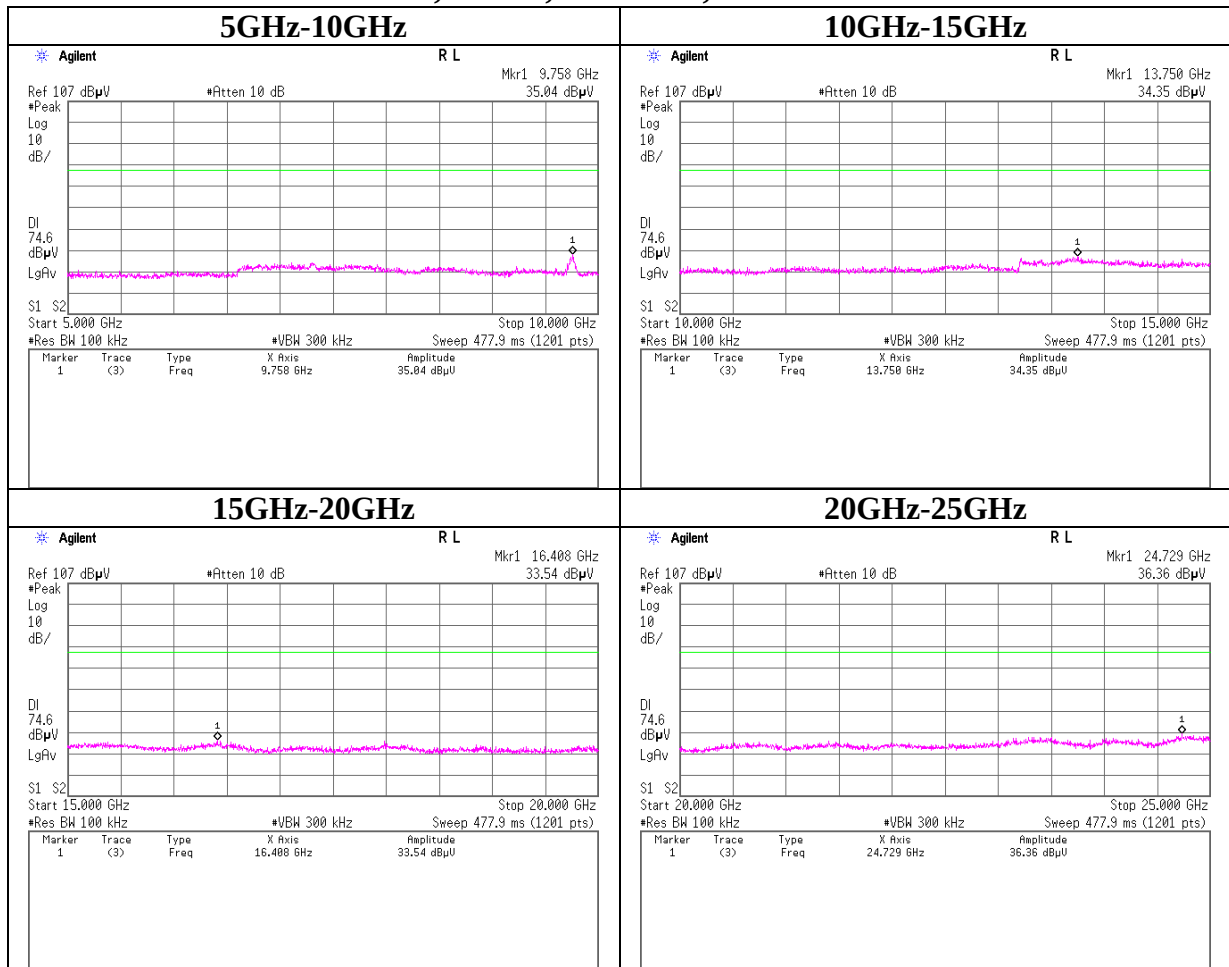
Conducted Spurious Emission

11n-40, MCS 8, Antenna 0, Tx 2437MHz



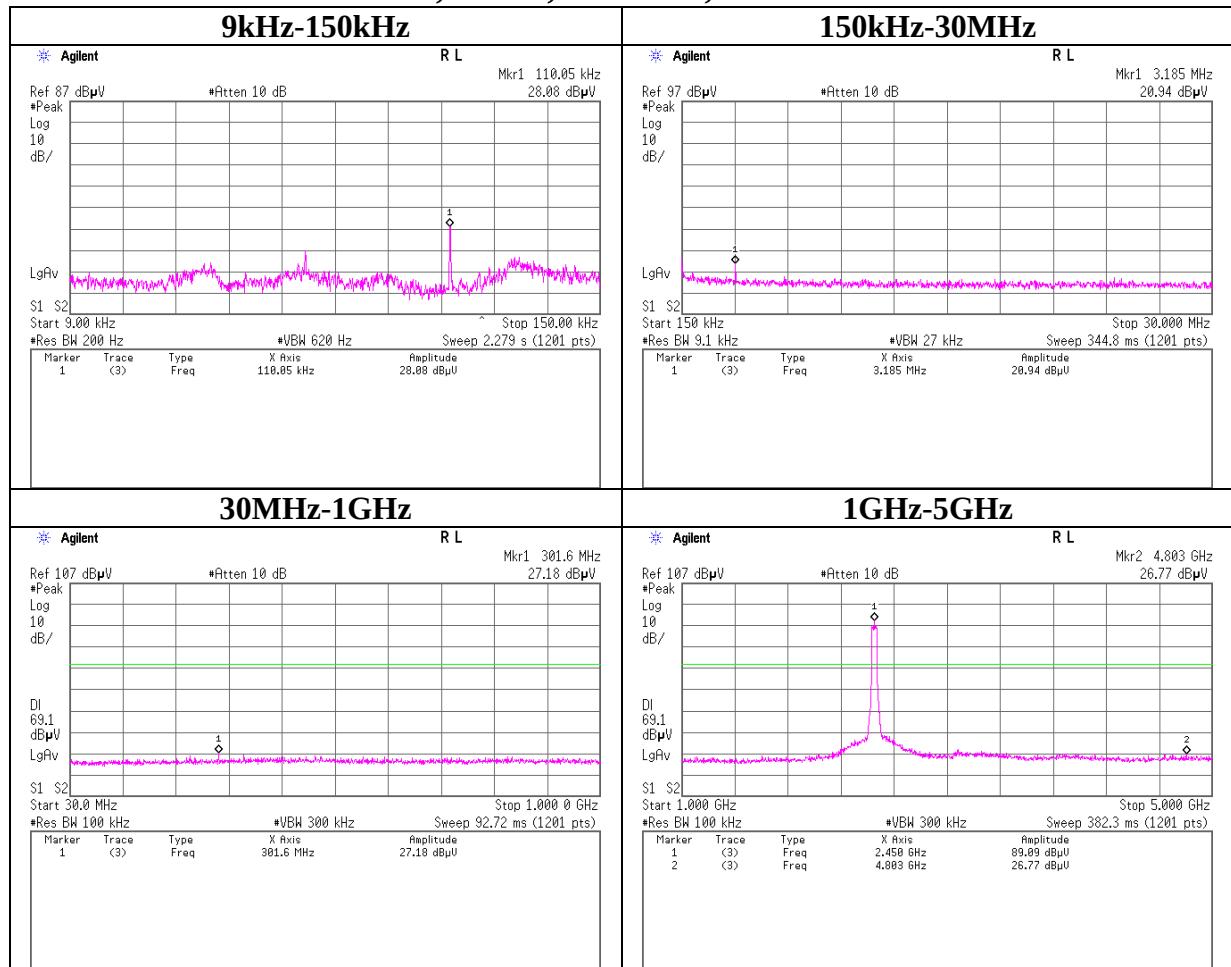
Conducted Spurious Emission

11n-40, MCS 8, Antenna 0, Tx 2437MHz



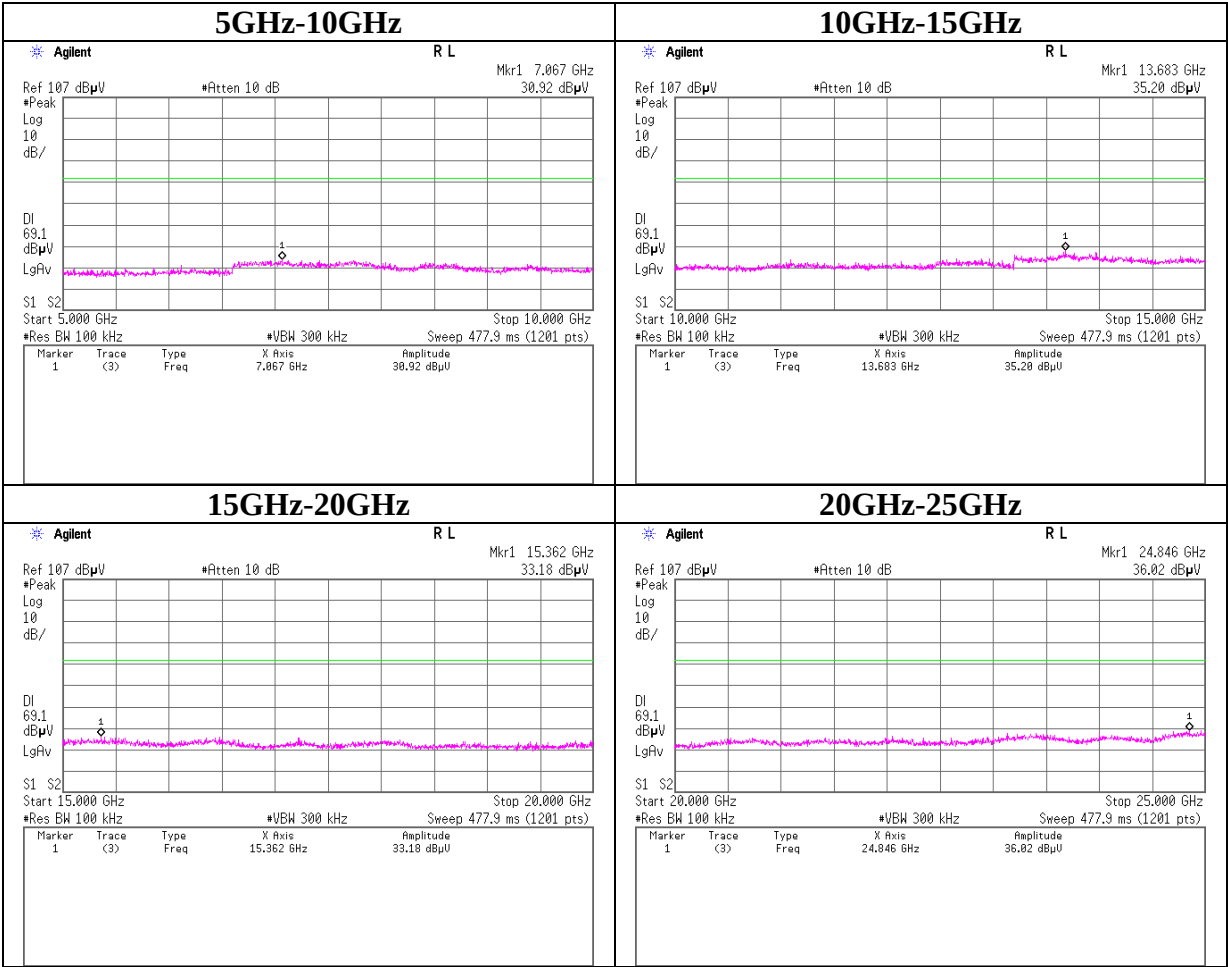
Conducted Spurious Emission

11n-40, MCS 8, Antenna 0, Tx 2452MHz



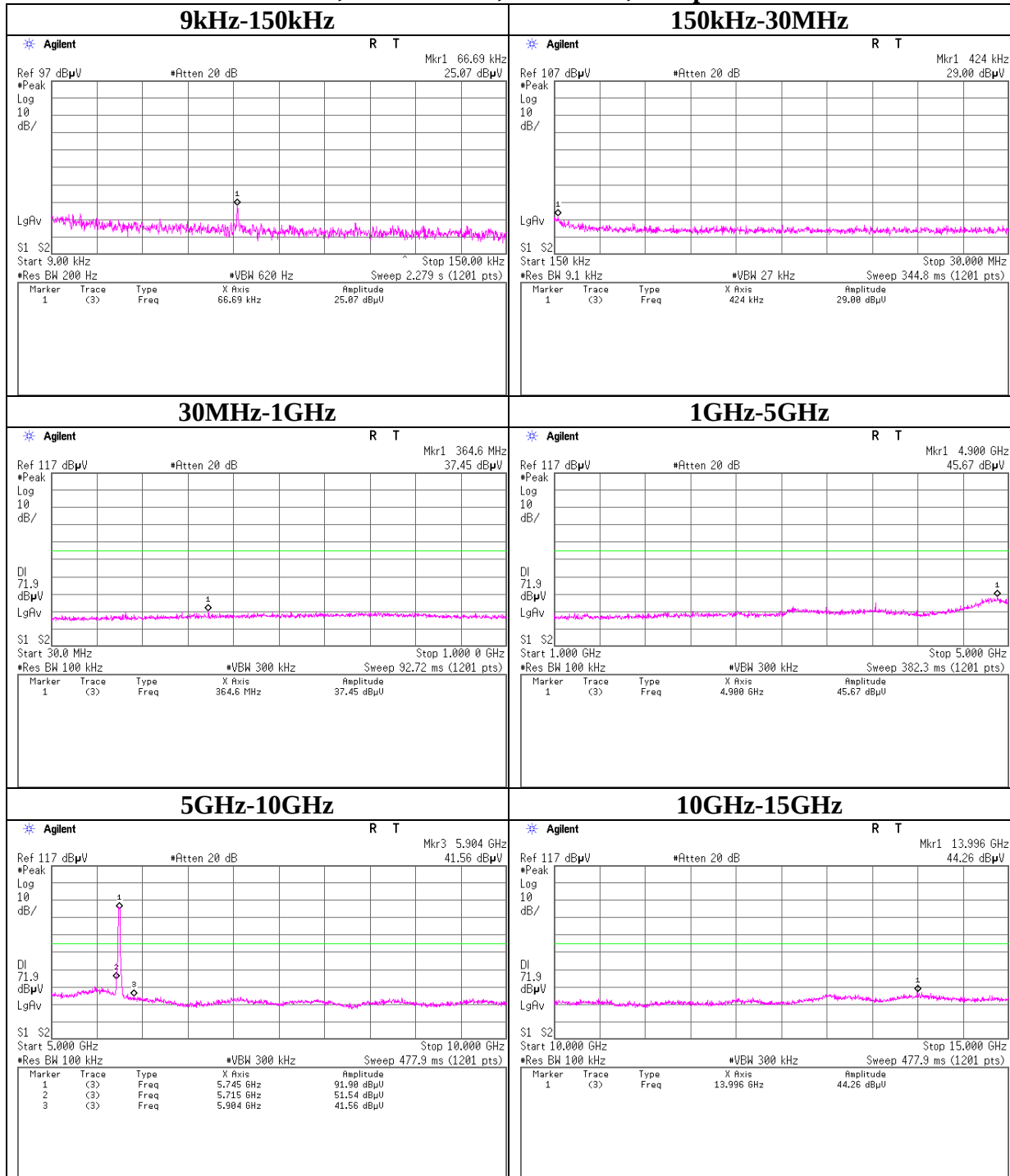
Conducted Spurious Emission

11n-40, MCS 8, Antenna 0, Tx 2452MHz



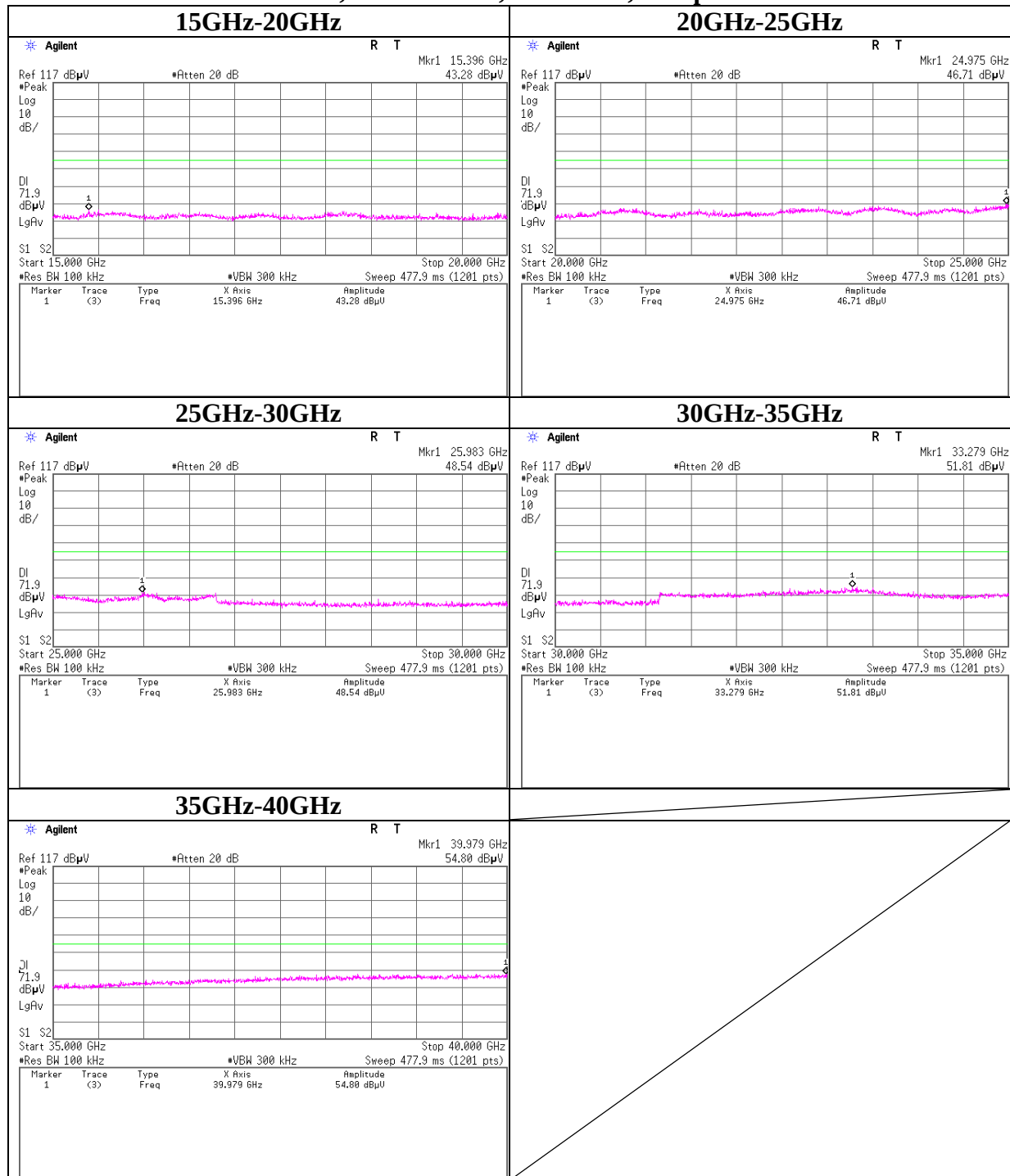
Conducted Spurious Emission

11a, Tx 5745MHz, Antenna 1, 6Mbps



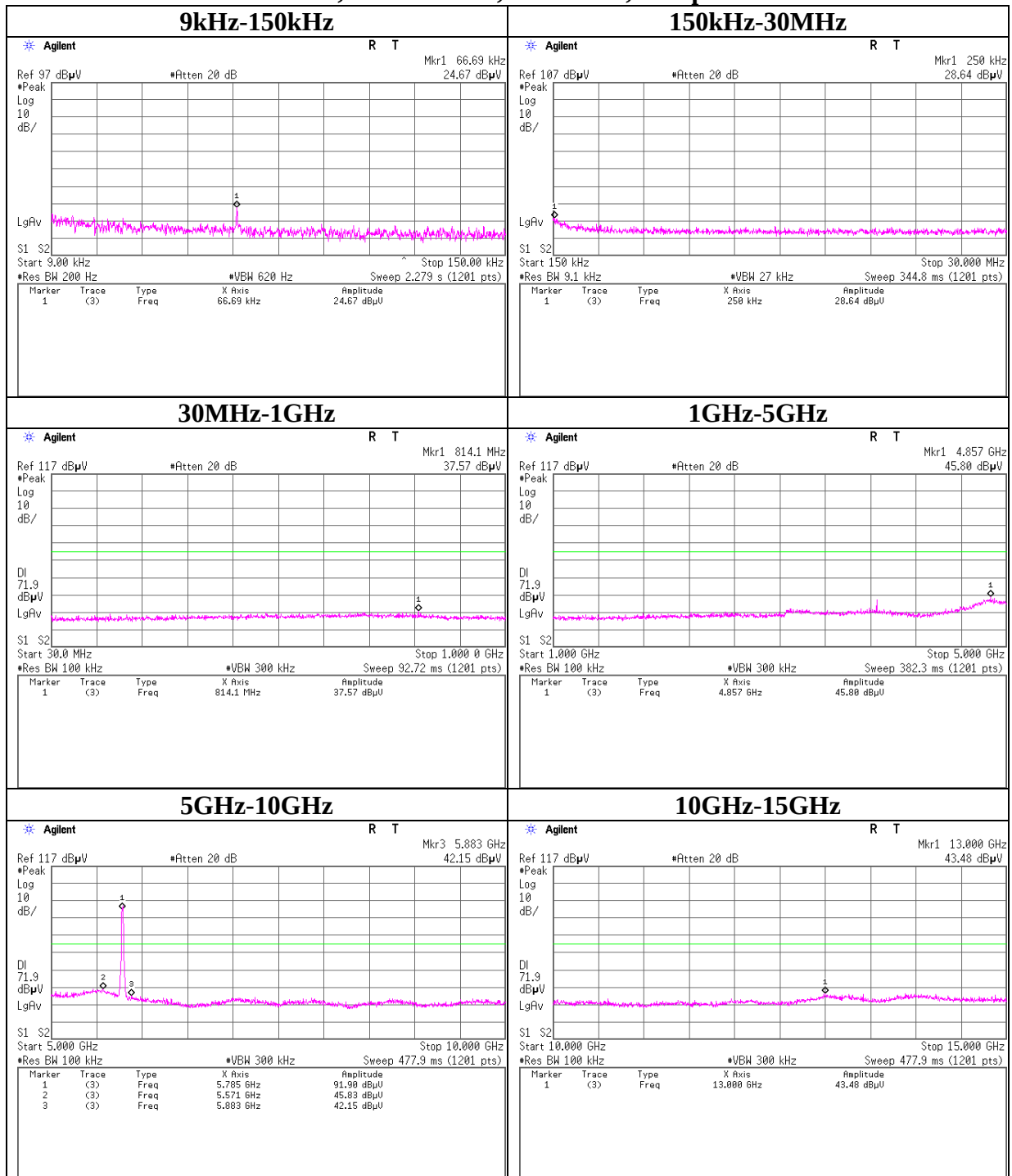
Conducted Spurious Emission

11a, Tx 5745MHz, Antenna 1, 6Mbps



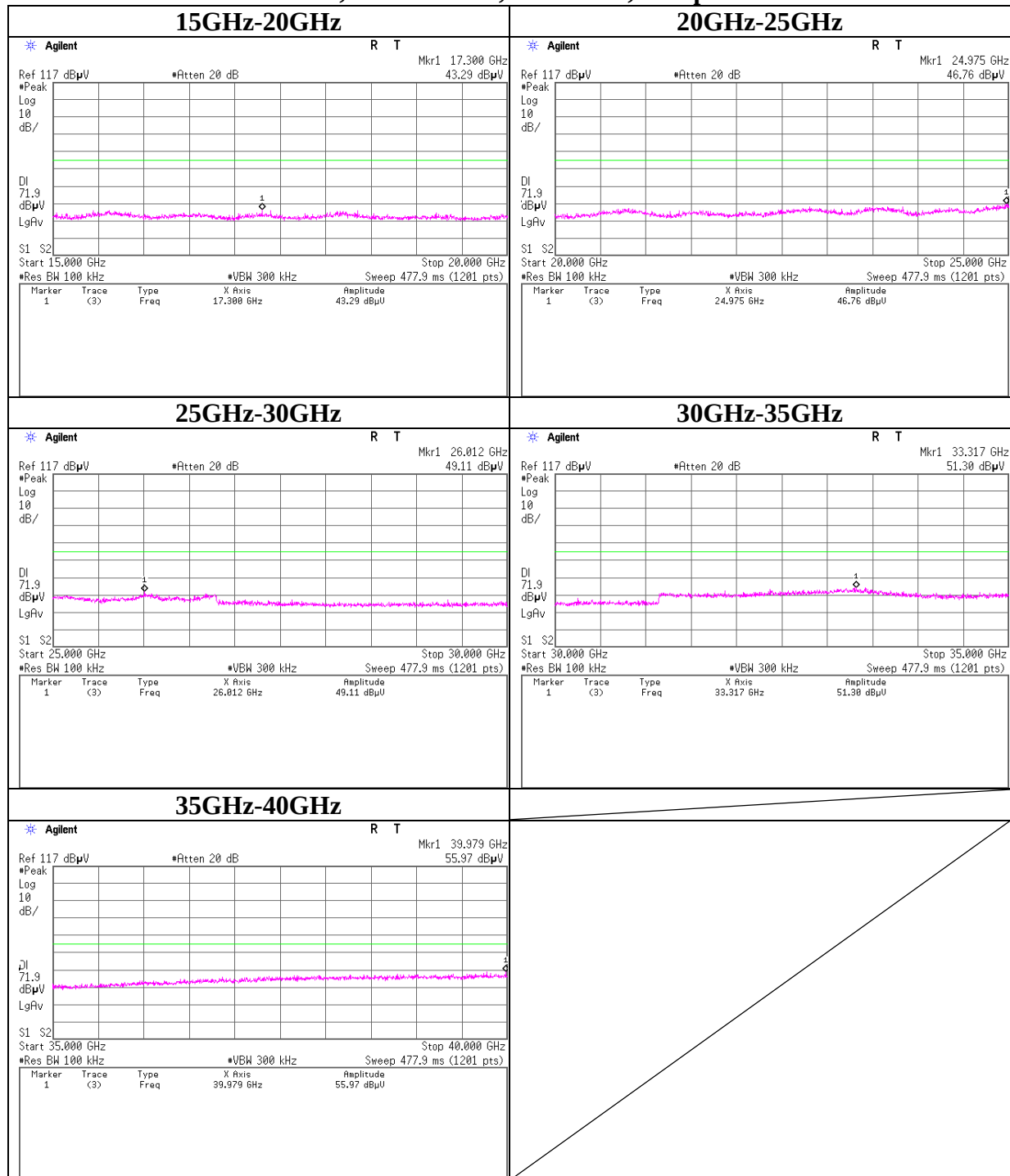
Conducted Spurious Emission

11a, Tx 5785MHz, Antenna 1, 6Mbps



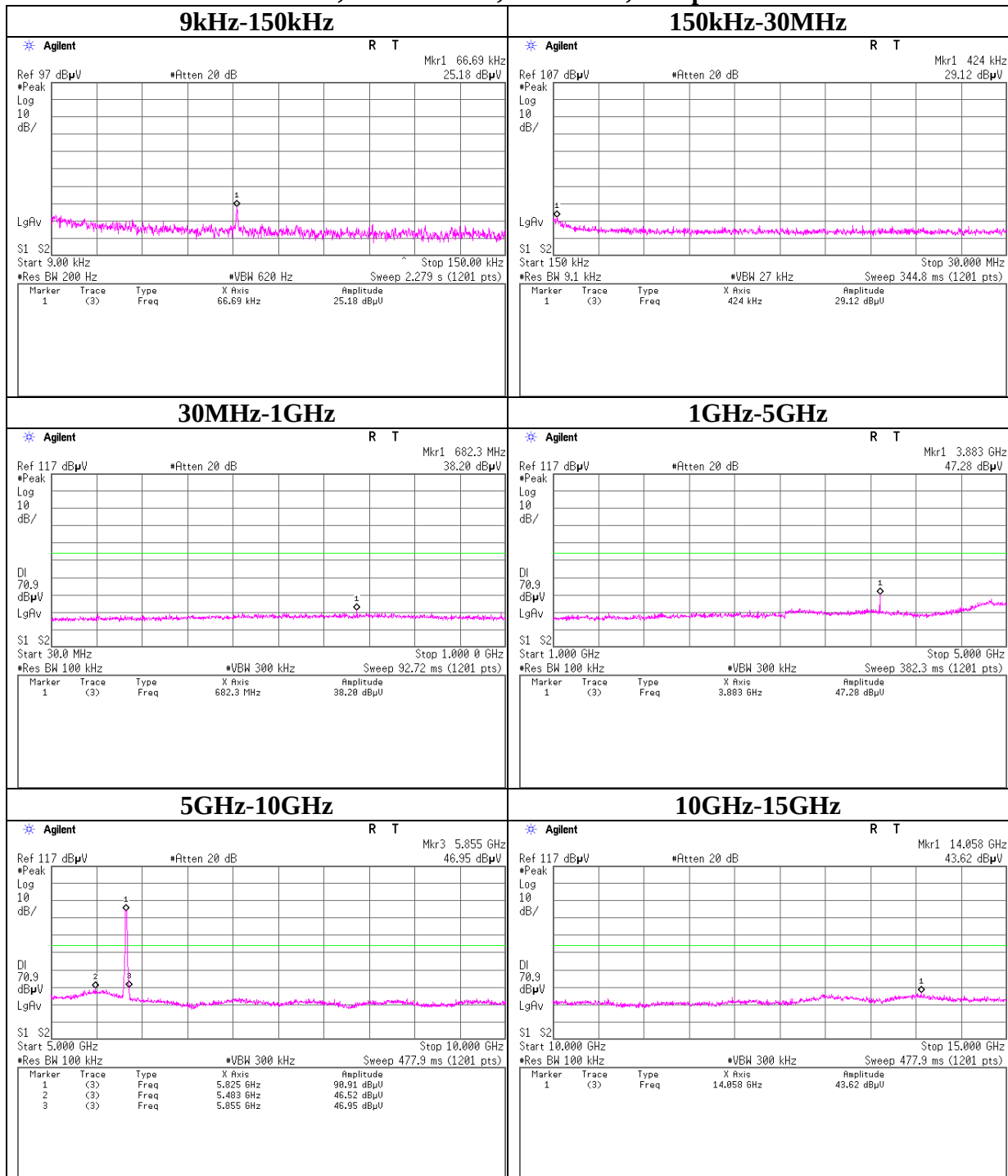
Conducted Spurious Emission

11a, Tx 5785MHz, Antenna 1, 6Mbps



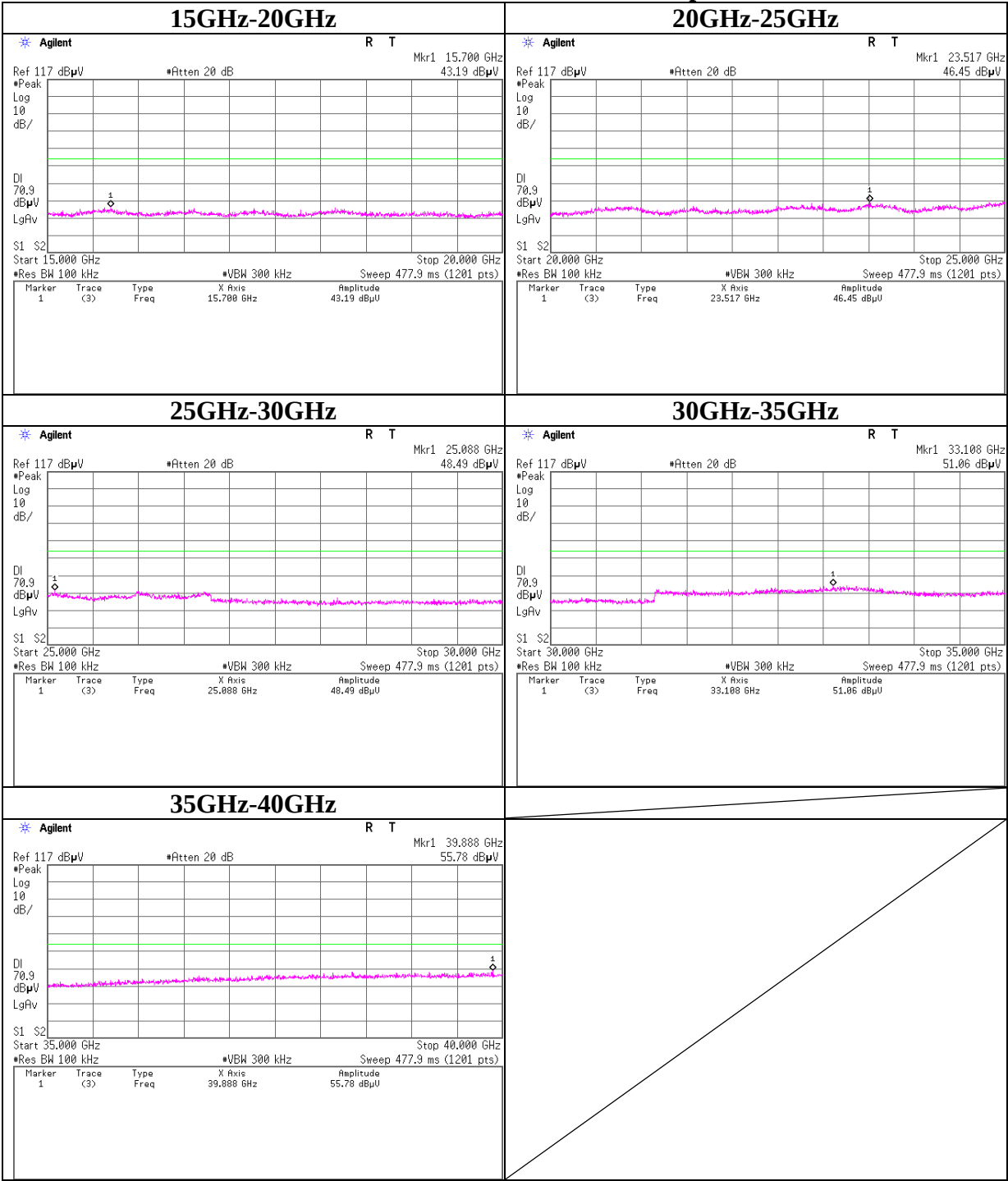
Conducted Spurious Emission

11a, Tx 5825MHz, Antenna 1, 6Mbps



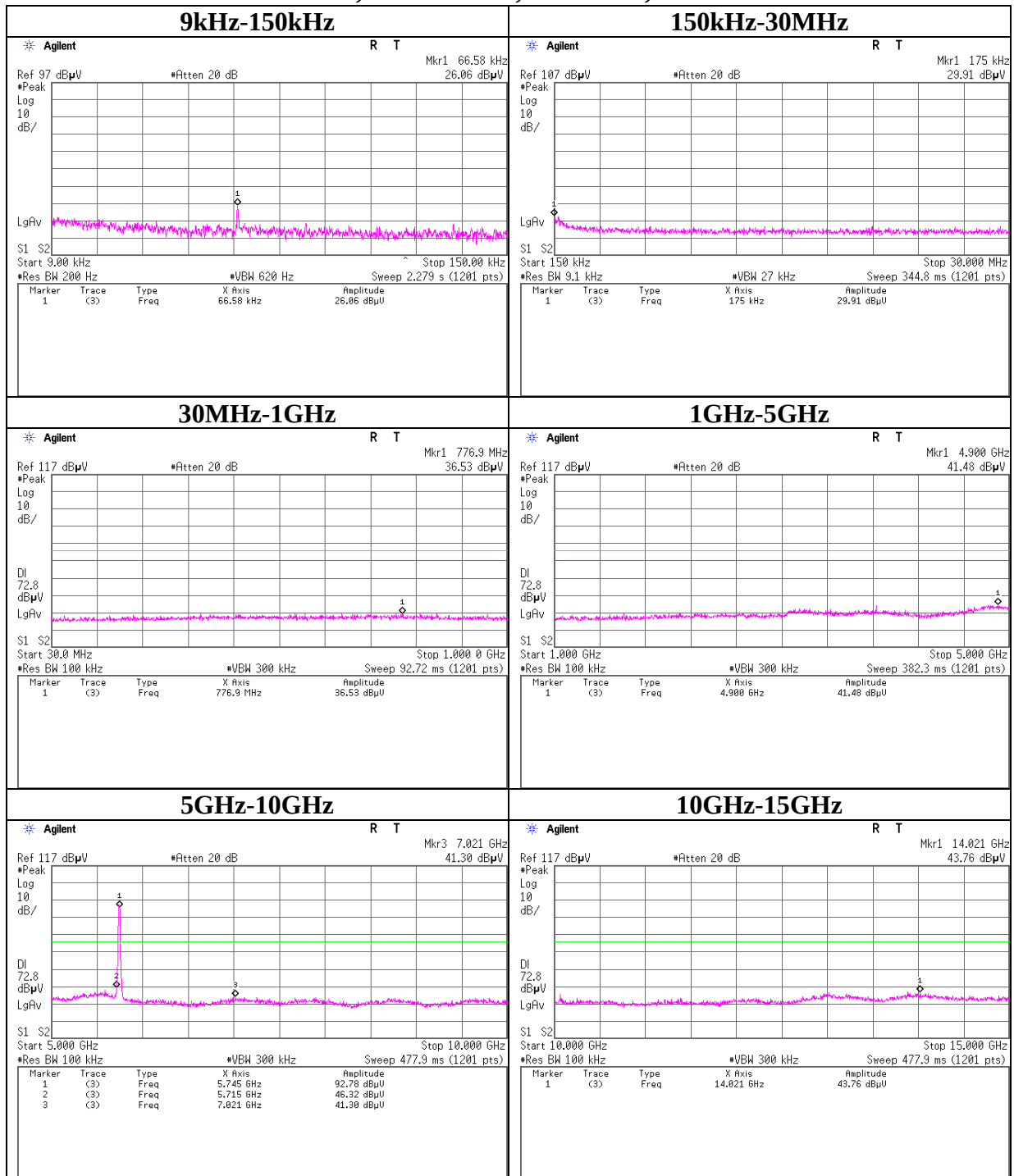
Conducted Spurious Emission

11a, Tx 5825MHz, Antenna 1, 6Mbps



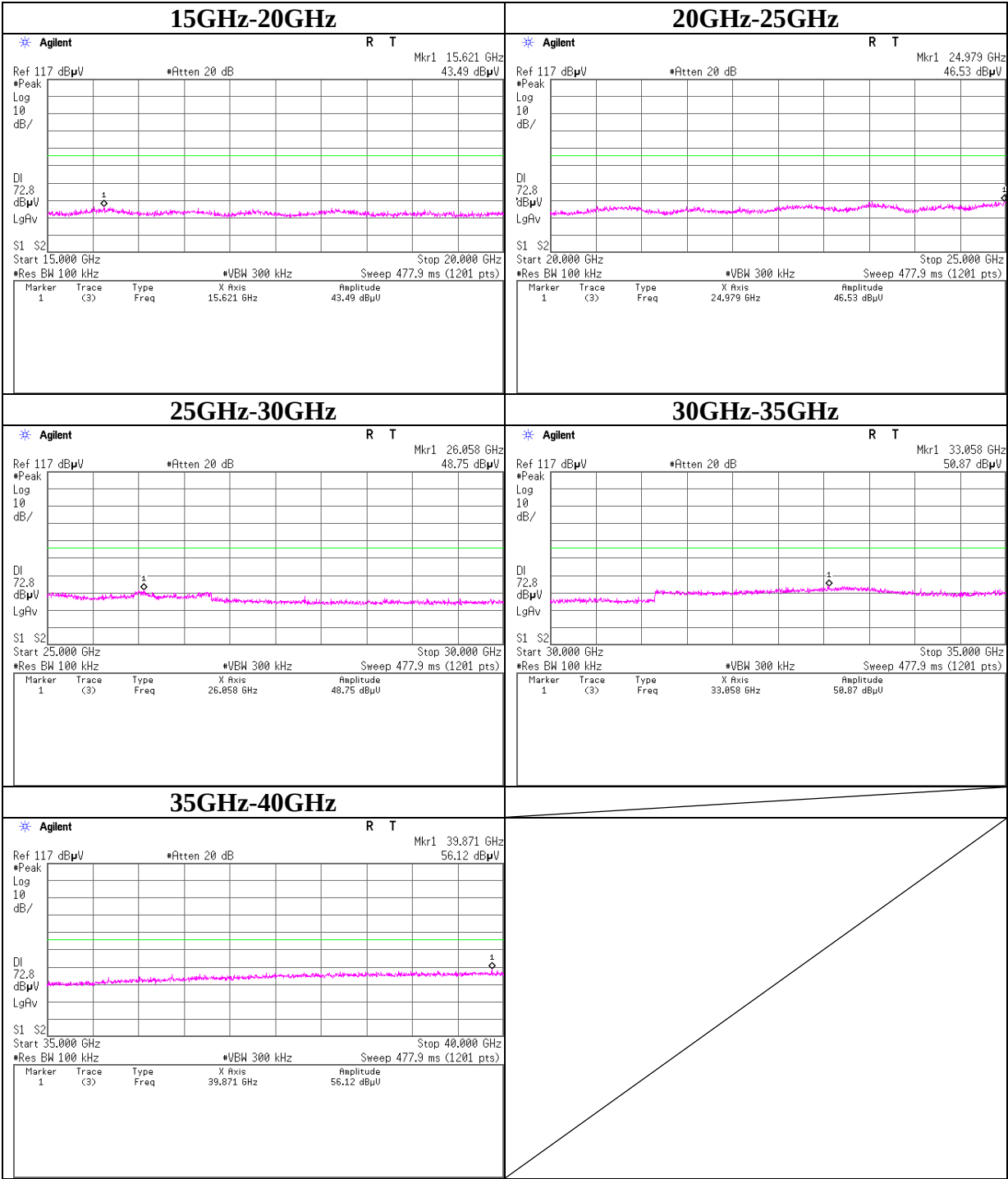
Conducted Spurious Emission

11n-20, Tx 5745MHz, Antenna 1, MCS 8



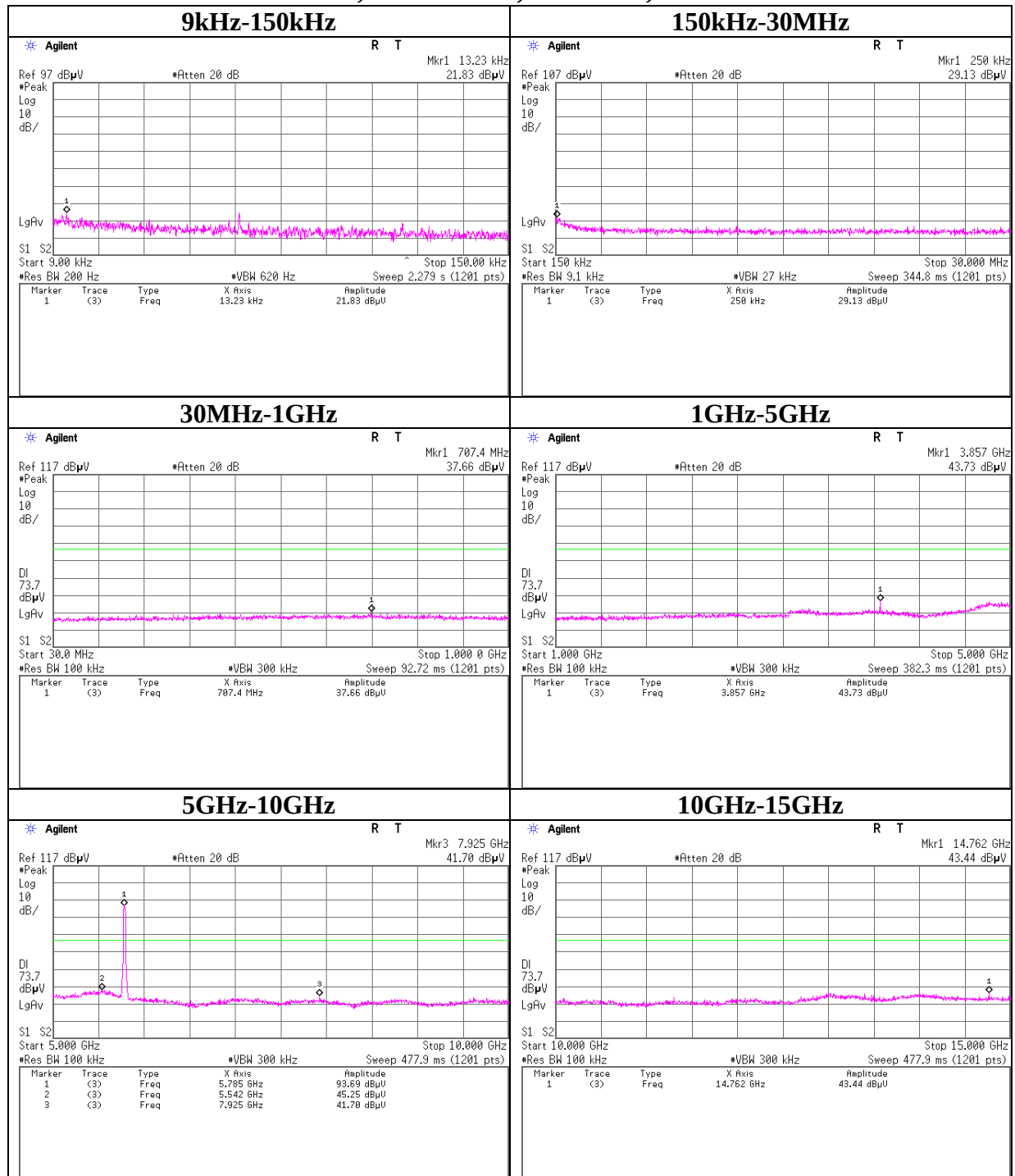
Conducted Spurious Emission

11n-20, Tx 5745MHz, Antenna 1, MCS 8



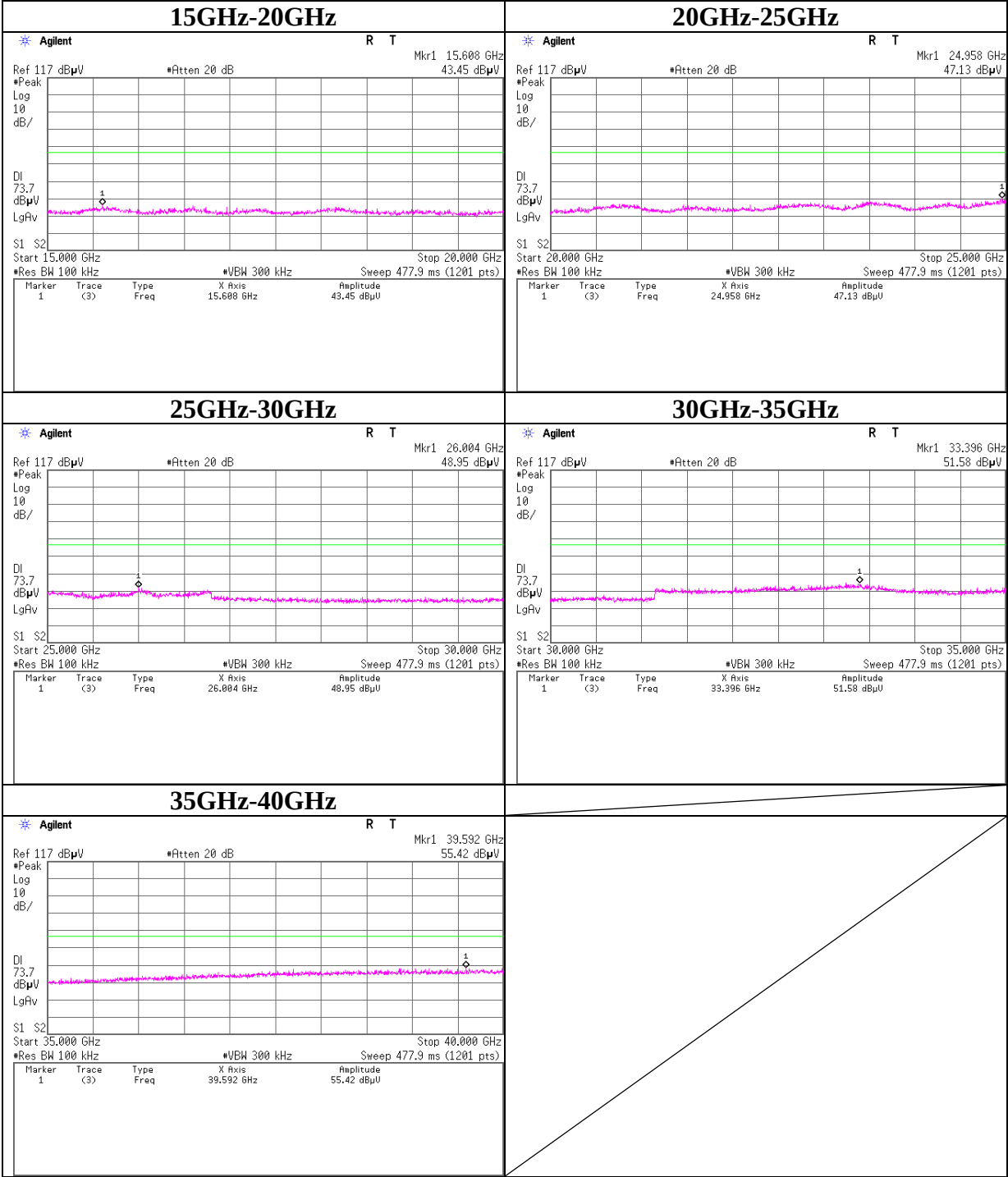
Conducted Spurious Emission

11n-20, Tx 5785MHz, Antenna 1, MCS 8



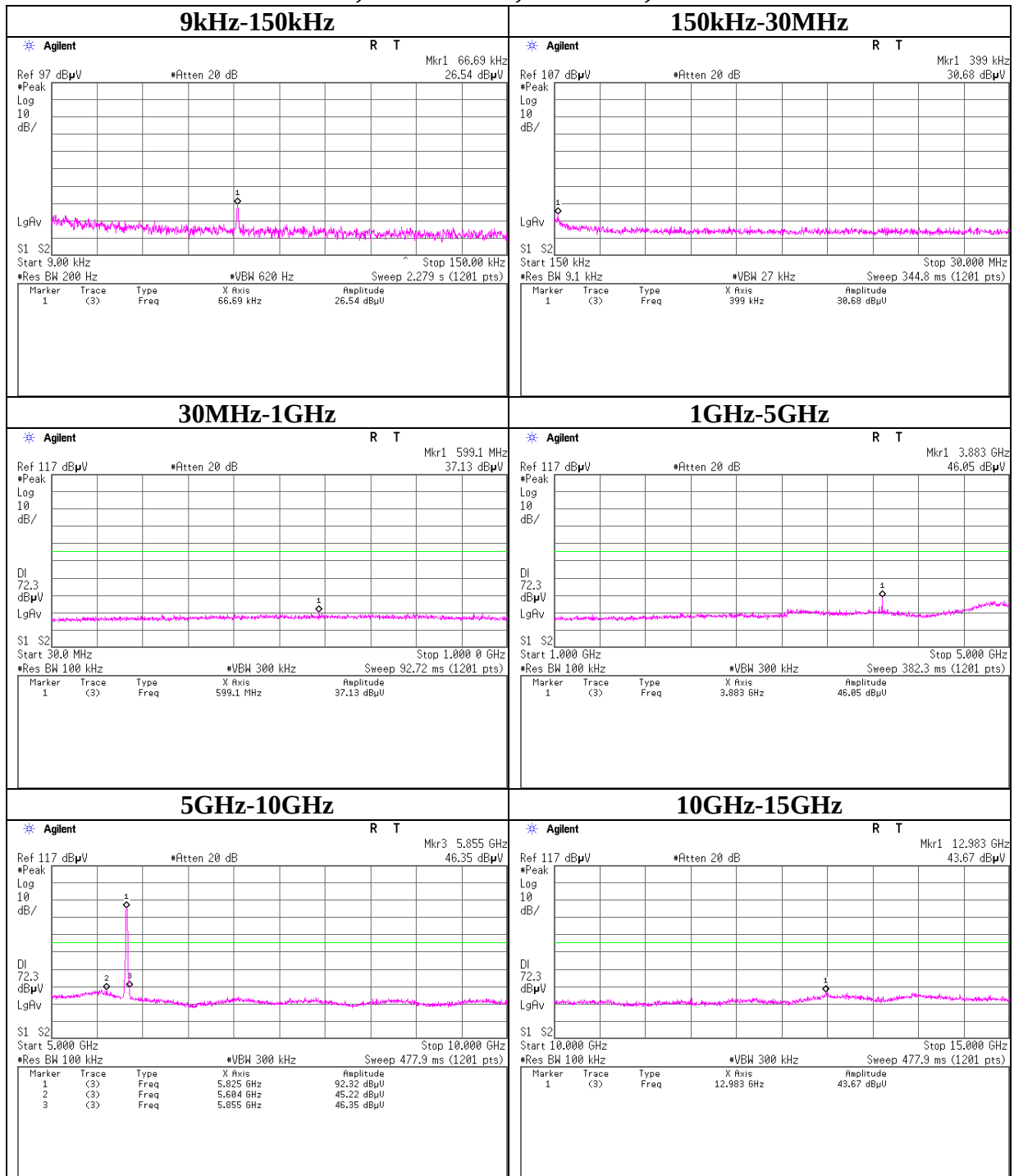
Conducted Spurious Emission

11n-20, Tx 5785MHz, Antenna 1, MCS 8



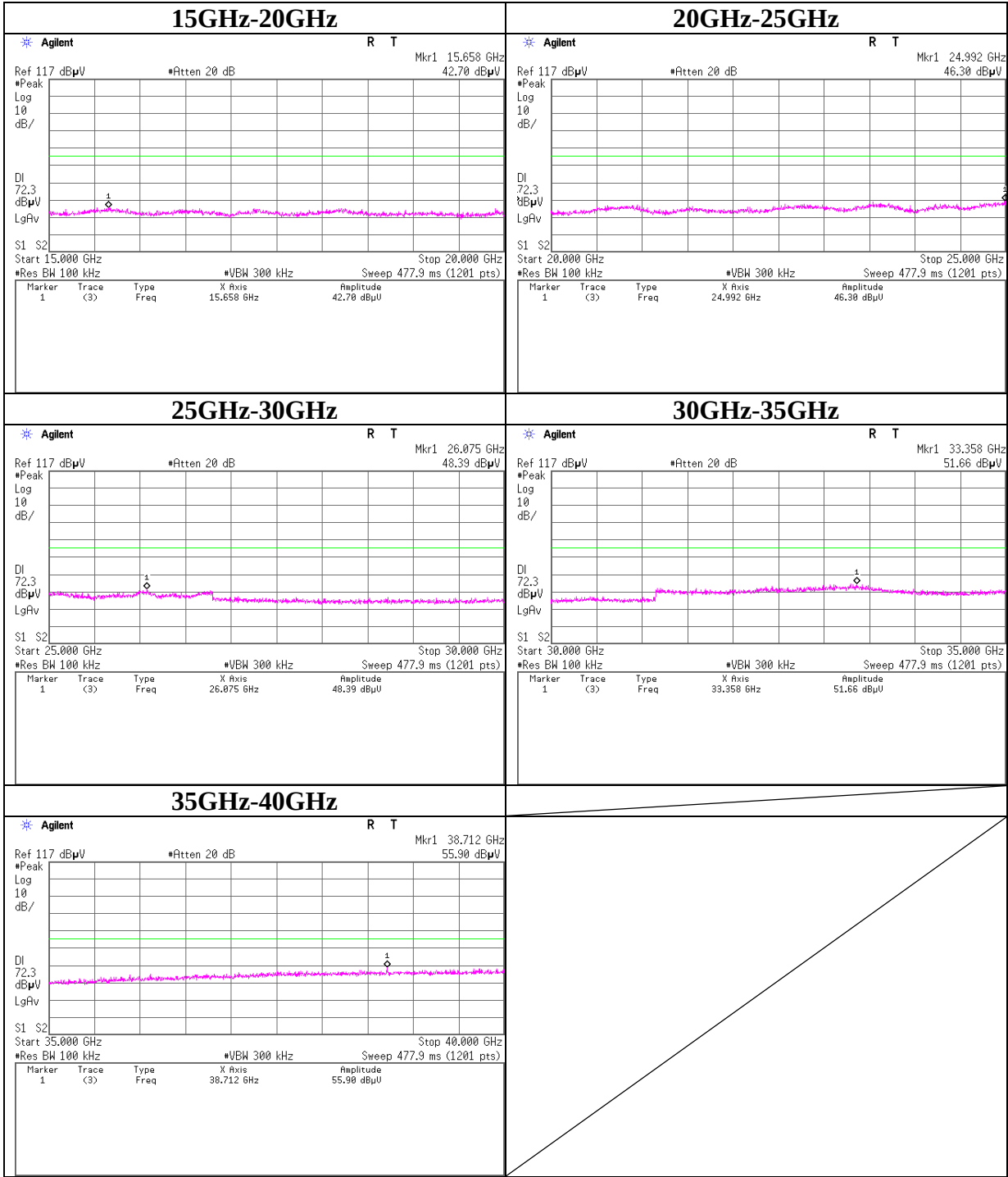
Conducted Spurious Emission

11n-20, Tx 5825MHz, Antenna 1, MCS 8



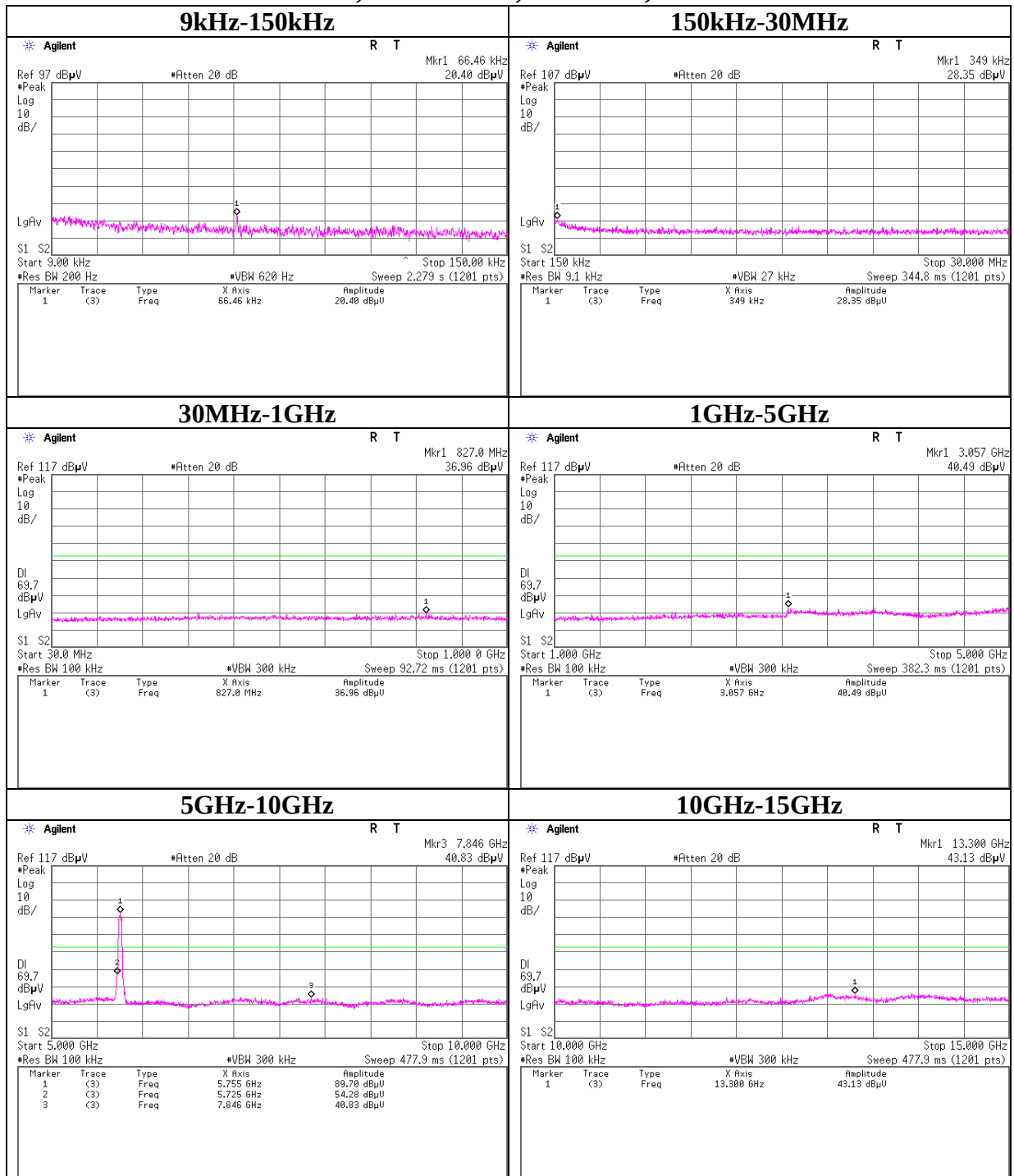
Conducted Spurious Emission

11n-20, Tx 5825MHz, Antenna 1, MCS 8



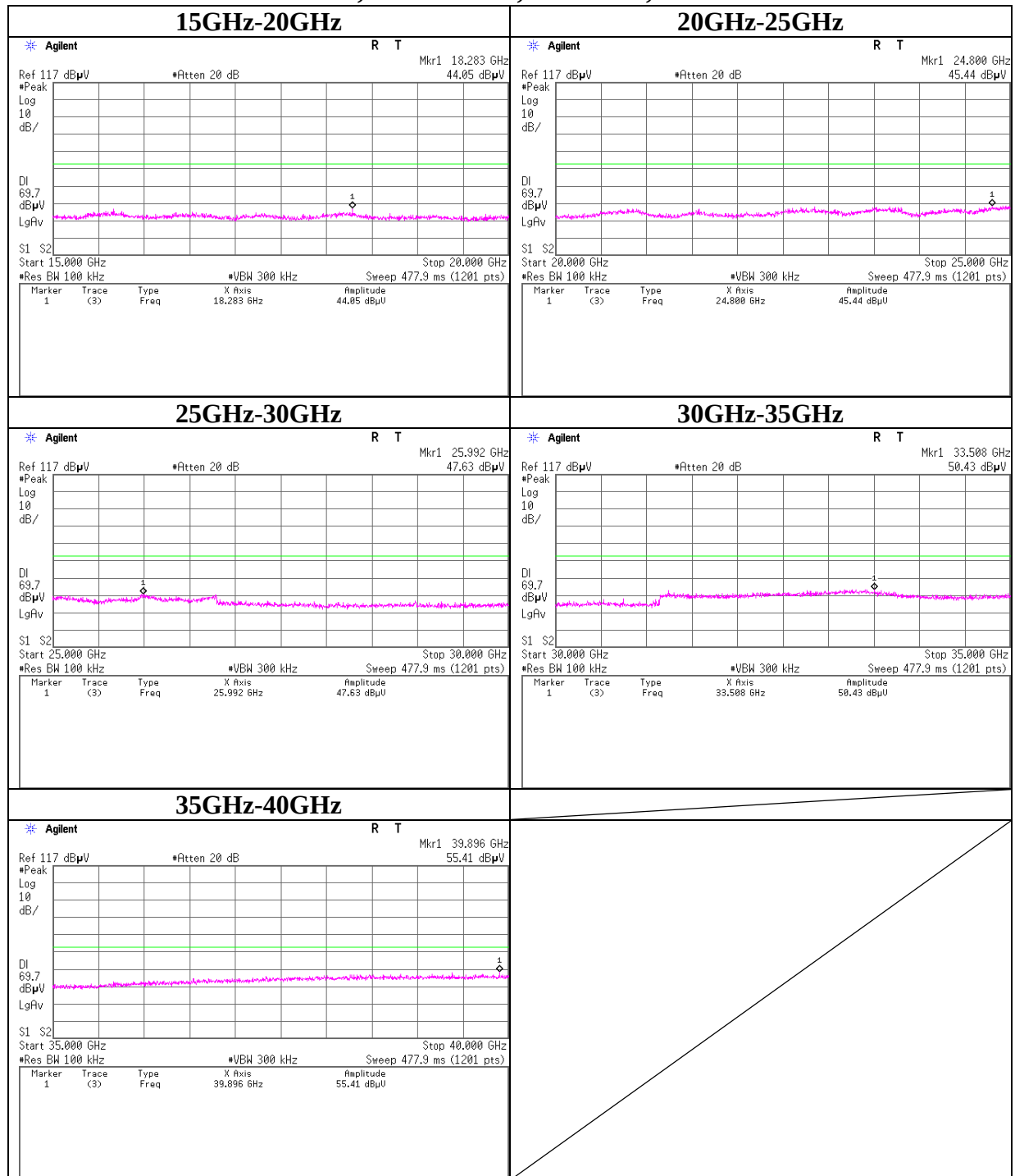
Conducted Spurious Emission

11n-40, Tx 5755MHz, Antenna 0, MCS 8



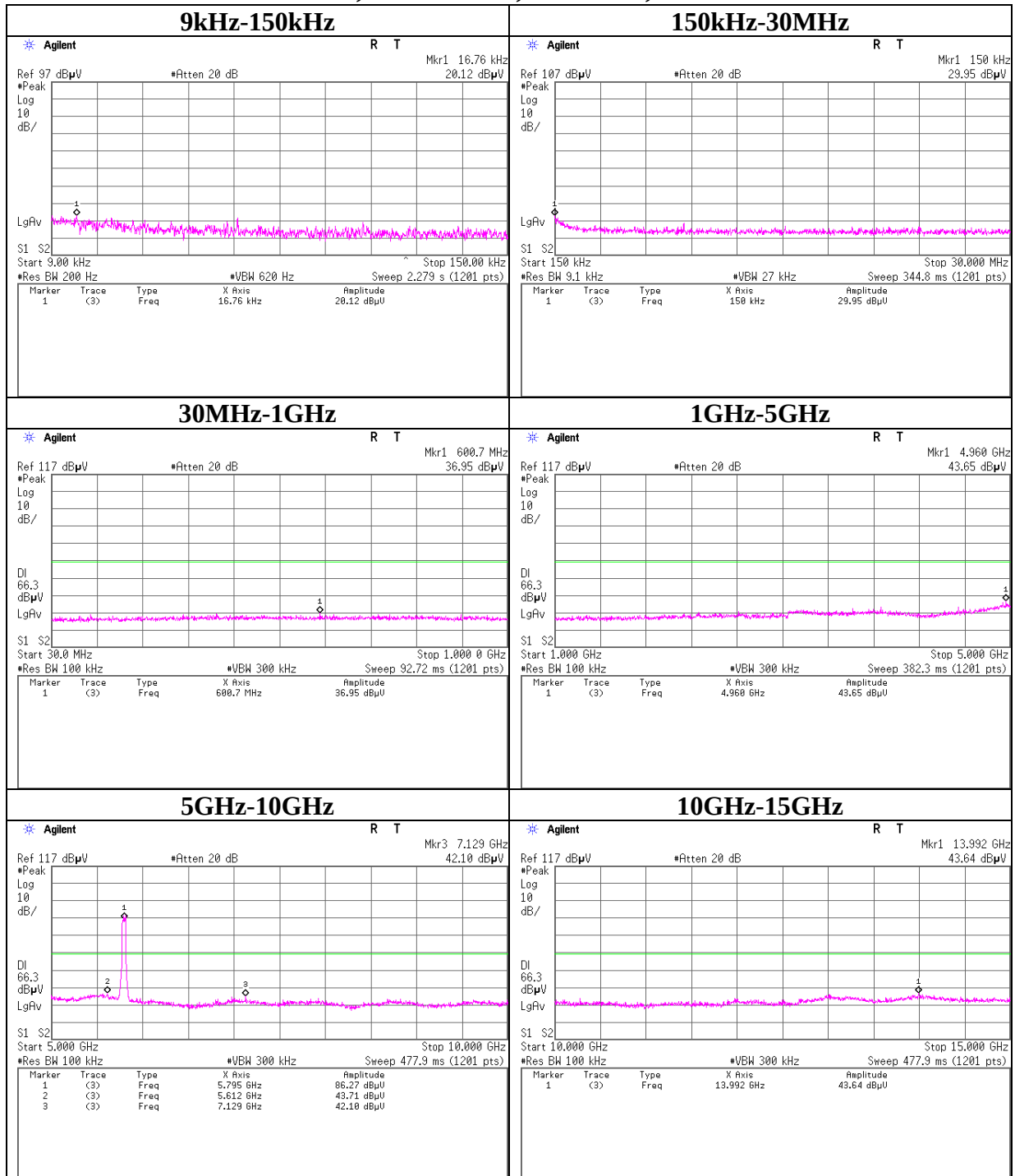
Conducted Spurious Emission

11n-40, Tx 5755MHz, Antenna 0, MCS 8



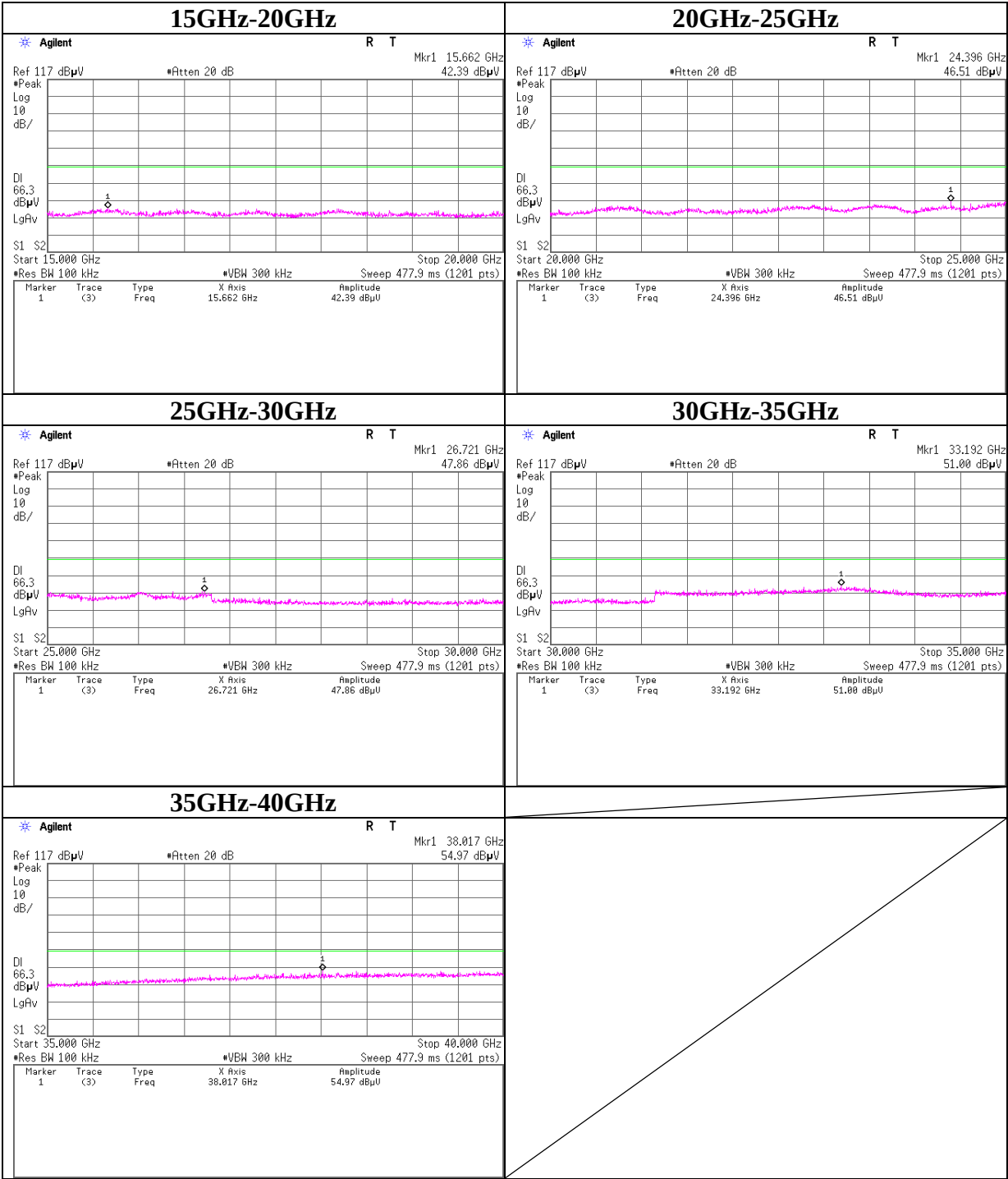
Conducted Spurious Emission

11n-40, Tx 5795MHz, Antenna 0, MCS 8



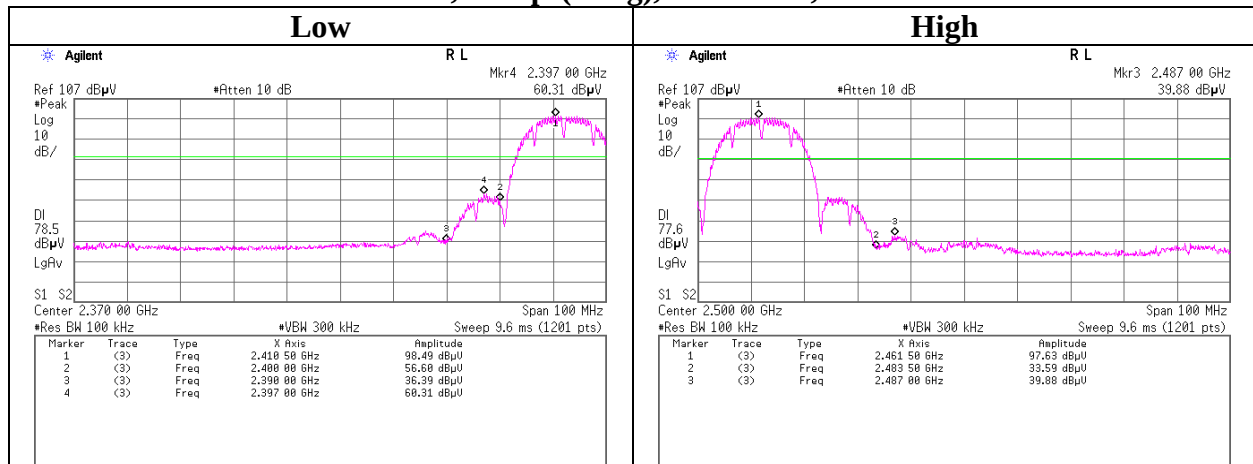
Conducted Spurious Emission

11n-40, Tx 5795MHz, Antenna 0, MCS 8

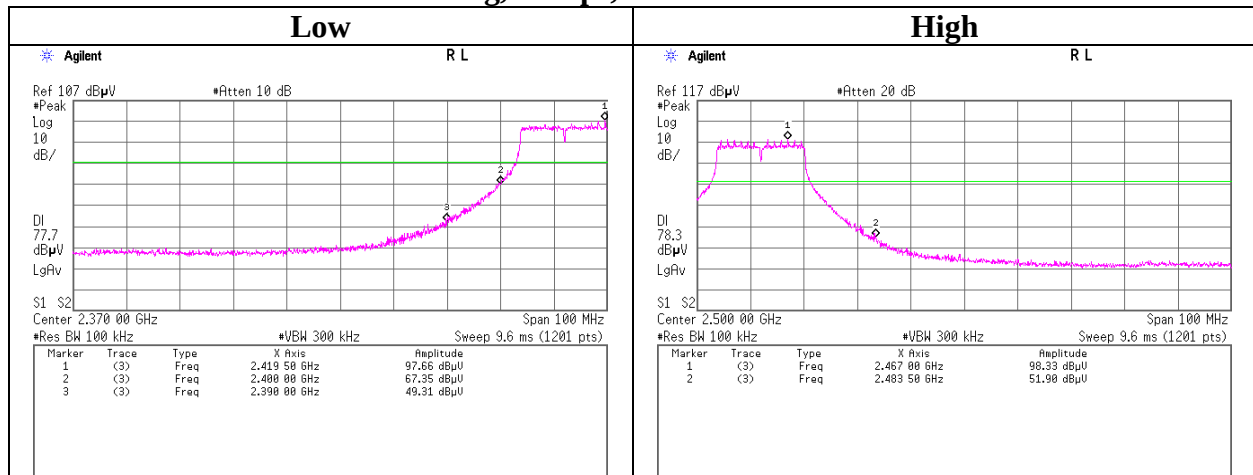


Conducted Emission Band Edge compliance

11b, 1Mbps(Long), Antenna 0, Tx

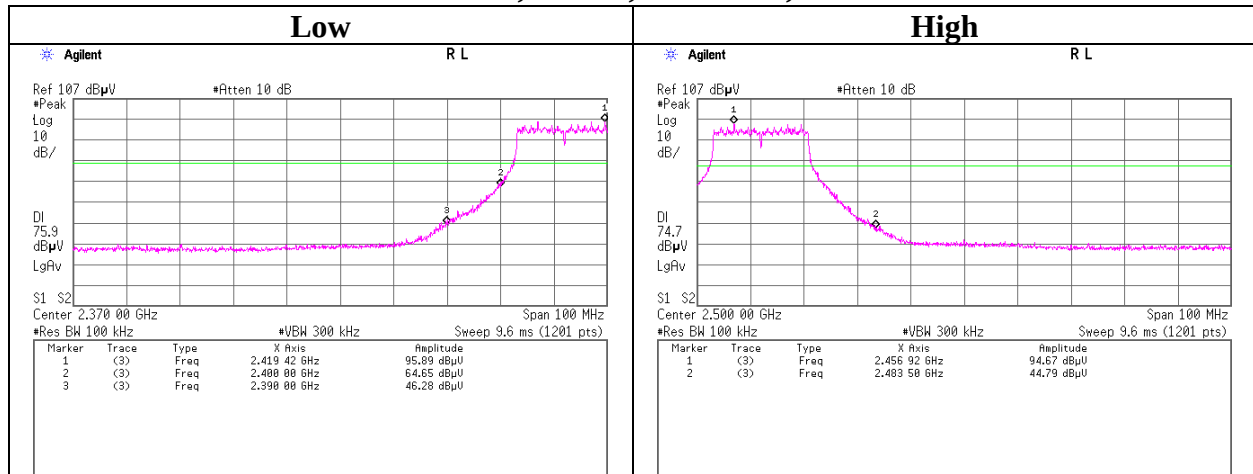


11g, 6Mbps, Antenna 0 Tx

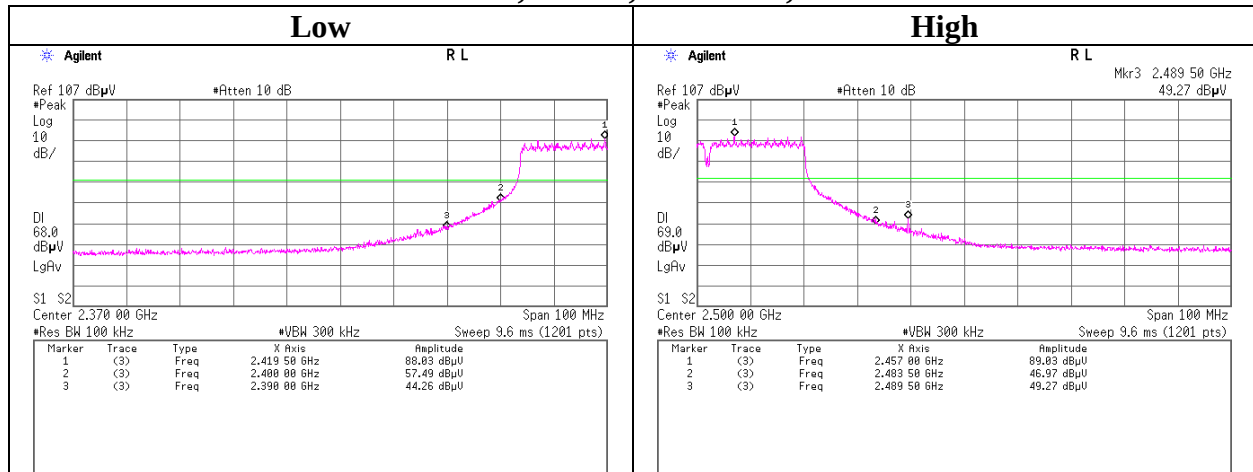


Conducted Emission Band Edge compliance

11n-20, MCS 8, Antenna 1, Tx

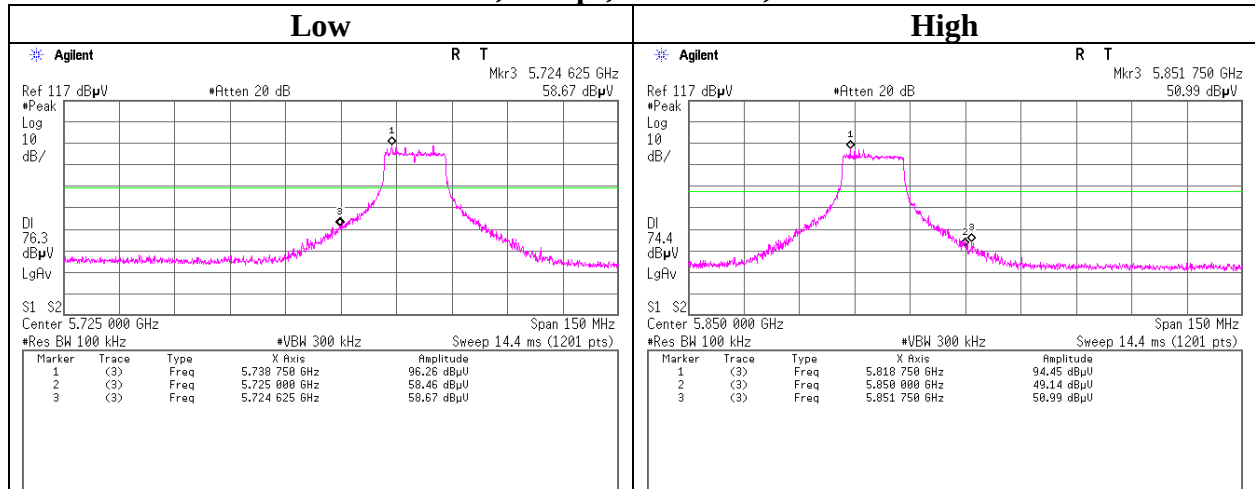


11n-40, MCS 8, Antenna 0, Tx

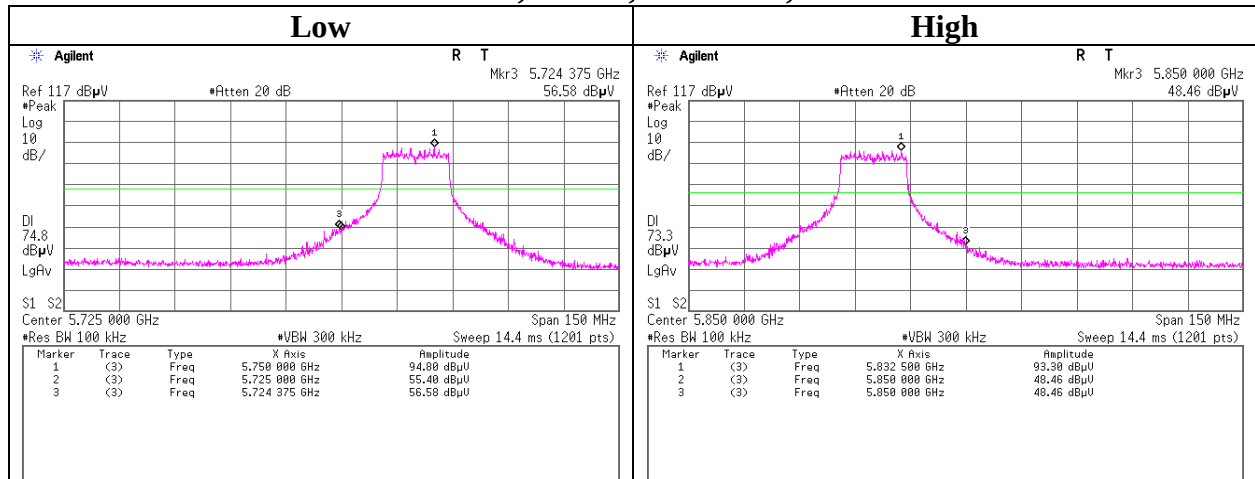


Conducted Emission Band Edge compliance

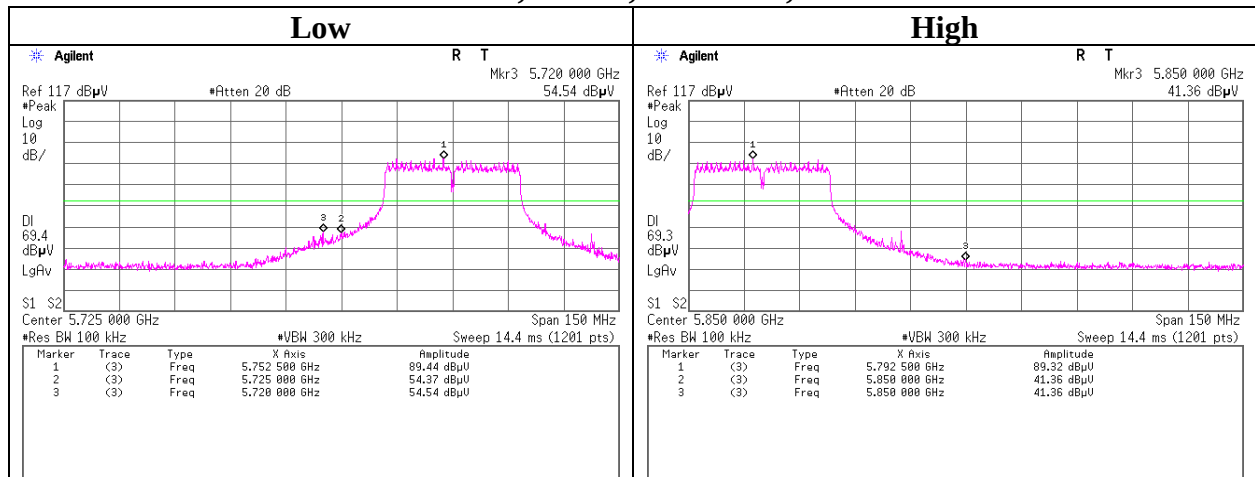
11a, 6Mbps, Antenna 1, Tx



11n-20, MCS 8, Antenna 1, Tx



11n-40, MCS 8, Antenna 0, Tx



Power Density

Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 31JE0038-HO-01
Date 04/04/2012
Temperature/ Humidity 21deg. C / 51% RH
Engineer Yutaka Yoshida
Mode 11b/g Tx

11b 1Mbps(Long), Antenna 0

Freq.	Reading	Cable Loss	Atten.	Result	Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[dBm]	[dB]
2412.00	-11.96	2.13	10.07	0.24	8.00	7.76
2437.00	-10.03	2.14	10.07	2.18	8.00	5.82
2462.00	-12.59	2.15	10.07	-0.37	8.00	8.37

11g 6Mbps, Antenna 0

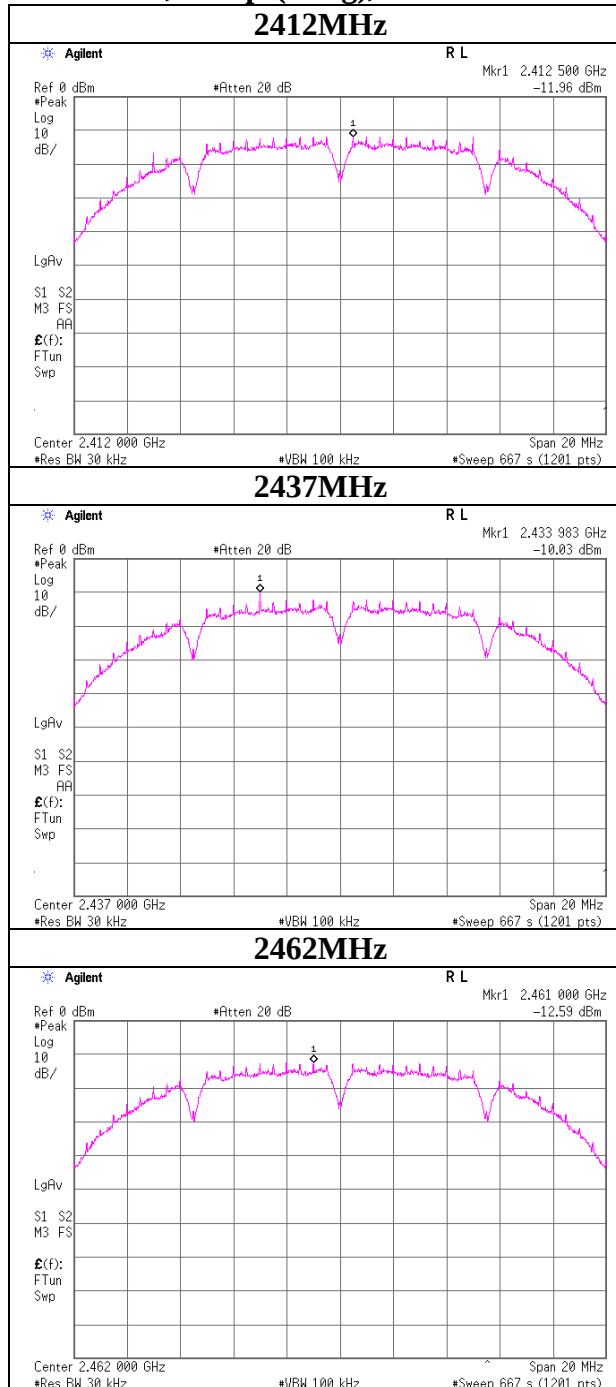
Freq.	Reading	Cable Loss	Atten.	Result	Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[dBm]	[dB]
2412.00	-13.18	2.13	10.07	-0.98	8.00	8.98
2437.00	-11.14	2.14	10.07	1.07	8.00	6.93
2462.00	-12.75	2.15	10.07	-0.53	8.00	8.53

Sample Calculation:

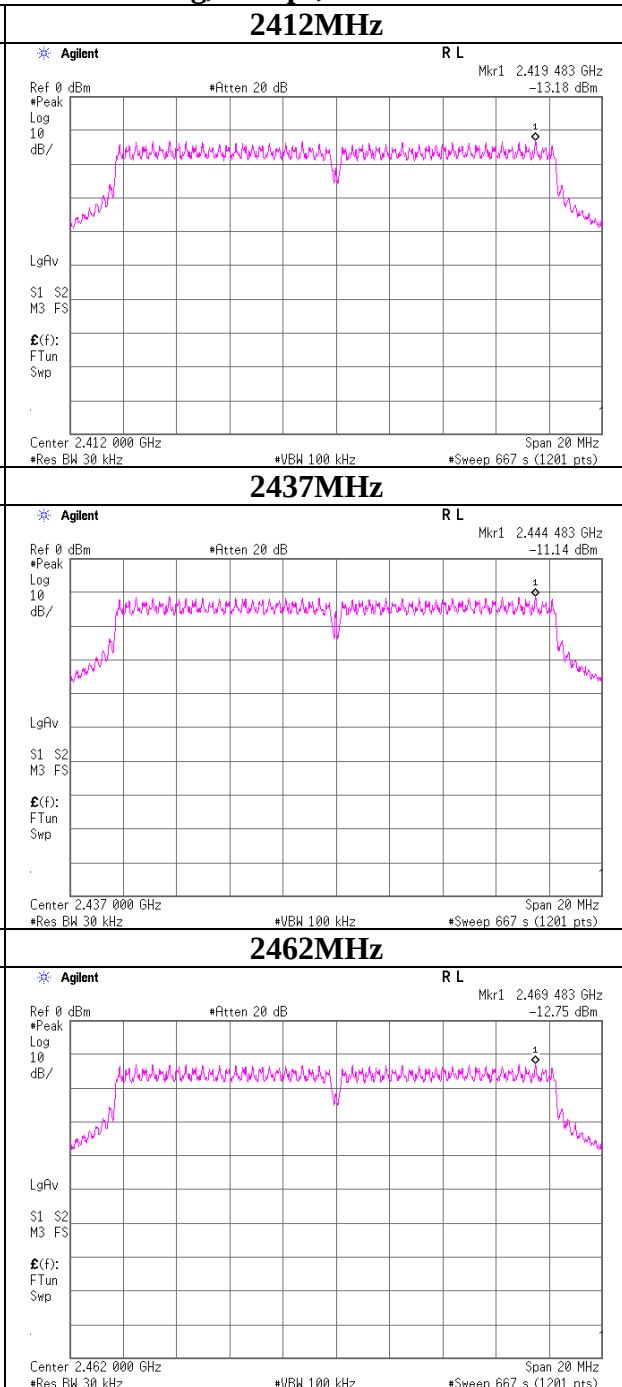
Result = Reading + Cable Loss + Attenuator

Power Density

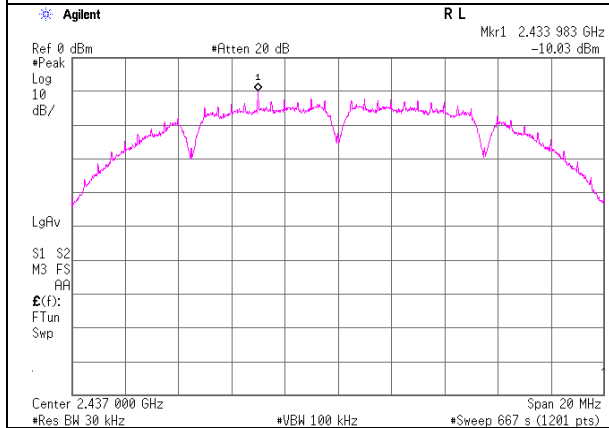
11b, 1Mbps(Long), Antenna 0



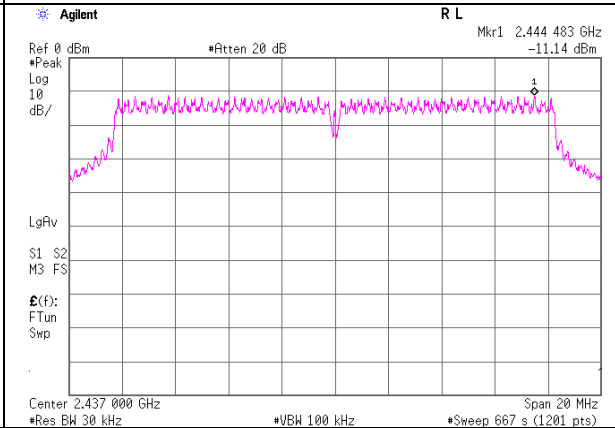
11g, 6Mbps, Antenna 0



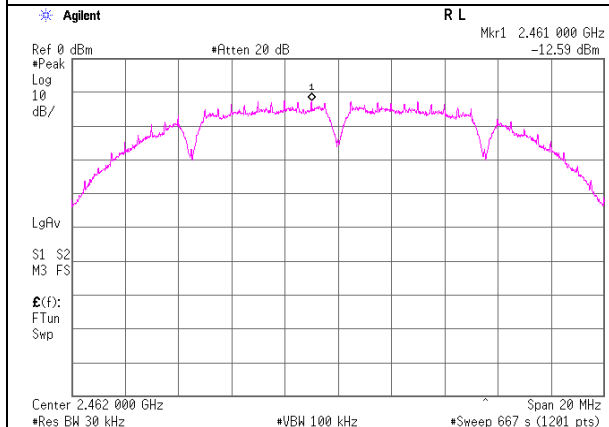
2437MHz



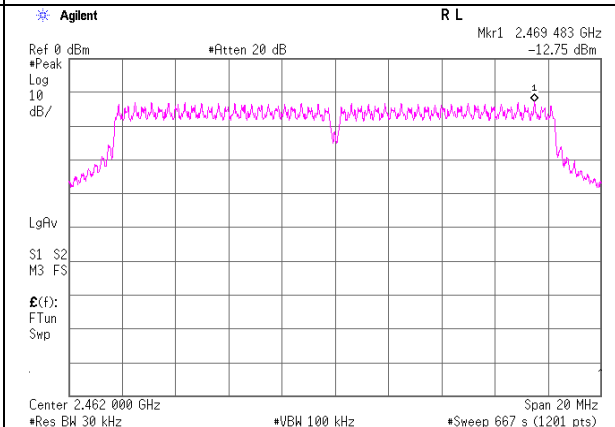
2437MHz



2462MHz



2462MHz



Power Density

Test place : Head Office EMC Lab. No.6 Measurement Room
Report No. : 31JE0038-HO-01
Date : 04/05/2012
Temperature/ Humidity : 24deg. C / 42% RH
Engineer : Yutaka Yoshida
Mode : 11n-20(MIMO) Tx,

11n-20, MCS 8, Antenna 0 + 1

Freq. [MHz]	Result Antenna 0 [mW]	Result Antenna 1 [mW]	Result Antenna 0 + 1 [dBm] [mW]		Limit [dBm]	Margin [dB]
2412.00	0.507	0.377	-0.54	0.88	8.00	8.54
2437.00	1.151	0.989	3.30	2.14	8.00	4.70
2462.00	0.391	0.419	-0.92	0.81	8.00	8.92

Sample Calculation:

Result Antenna 0 + 1 [mW] = Result Antenna 0 [mW] + Result Antenna 1 [mW]

11n-20, MCS 8, Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm] [mW]		Limit [dBm]	Margin [dB]
2412.00	-15.15	2.13	10.07	-2.95	0.507	8.00	10.95
2437.00	-11.60	2.14	10.07	0.61	1.151	8.00	7.39
2462.00	-16.30	2.15	10.07	-4.08	0.391	8.00	12.08

11n-20, MCS 8, Antenna 1

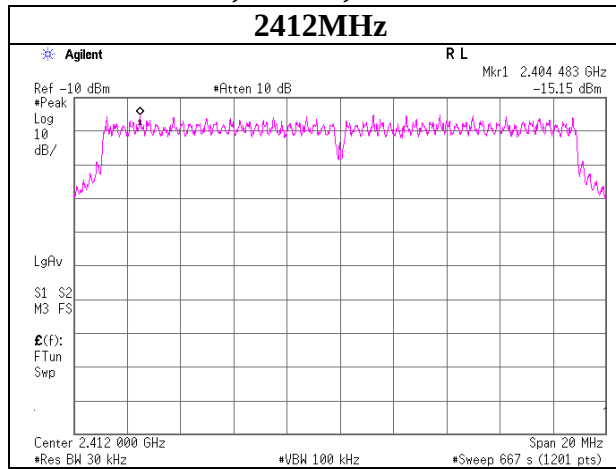
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm] [mW]		Limit [dBm]	Margin [dB]
2412.00	-16.44	2.13	10.07	-4.24	0.377	8.00	12.24
2437.00	-12.26	2.14	10.07	-0.05	0.989	8.00	8.05
2462.00	-16.00	2.15	10.07	-3.78	0.419	8.00	11.78

Sample Calculation:

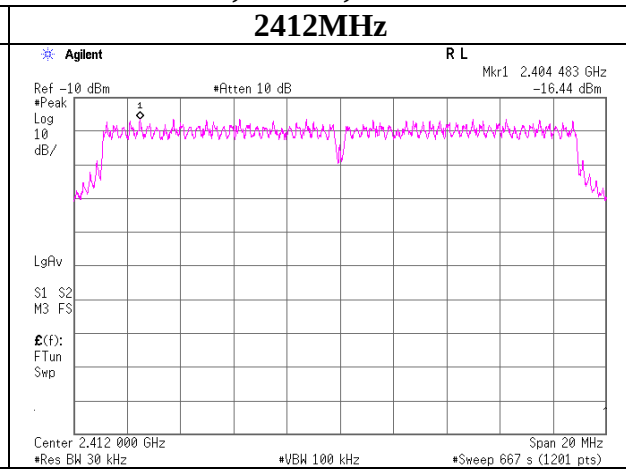
Result = Reading + Cable Loss + Attenuator

Power Density

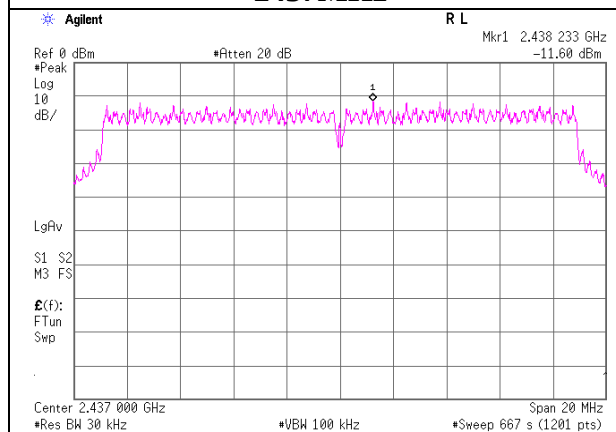
11n-20, MCS 8, Antenna 0



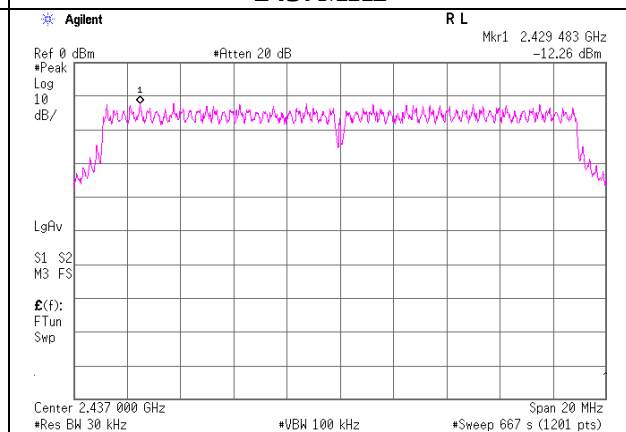
11n-20, MCS 8, Antenna 1



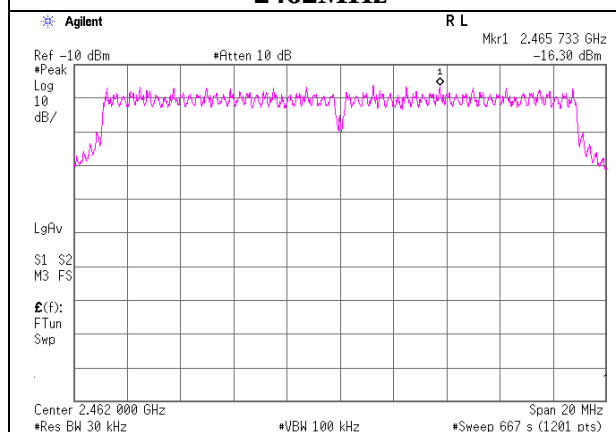
2437MHz



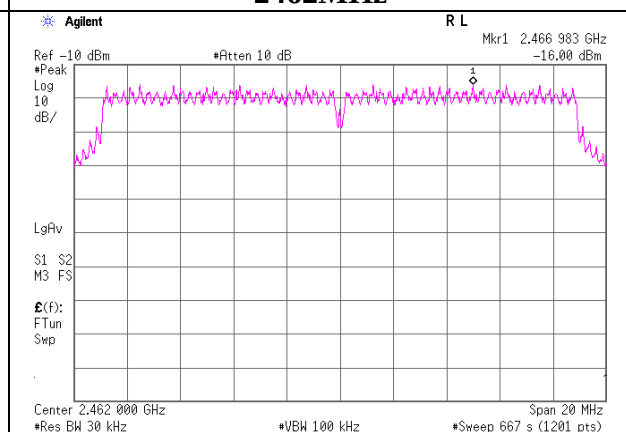
2437MHz



2462MHz



2462MHz



Power Density

Test place : Head Office EMC Lab. No.6 Measurement Room
Report No. : 31JE0038-HO-01
Date : 04/06/2012
Temperature/ Humidity : 20deg. C / 50% RH
Engineer : Yutaka Yoshida
Mode : 11n-40(MIMO) Tx,

11n-40, MCS 8, Antenna 0 + 1

Freq. [MHz]	Result Antenna 0 [mW]	Result Antenna 1 [mW]	Result Antenna 0 + 1 [dBm] [mW]		Limit [dBm]	Margin [dB]
2422.00	0.09	0.097	-7.27	0.19	8.00	15.27
2437.00	0.49	0.568	0.22	1.05	8.00	7.78
2452.00	0.12	0.130	-5.98	0.25	8.00	13.98

Sample Calculation:

Result Antenna 0 + 1 [mW] = Result Antenna 0 [mW] + Result Antenna 1 [mW]

11n-40, MCS 8, Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm] [mW]		Limit [dBm]	Margin [dB]
2422.00	-22.64	2.13	10.07	-10.44	0.090	8.00	18.44
2437.00	-15.35	2.14	10.07	-3.14	0.485	8.00	11.14
2452.00	-21.35	2.15	10.07	-9.13	0.122	8.00	17.13

11n-40, MCS 8, Antenna 1

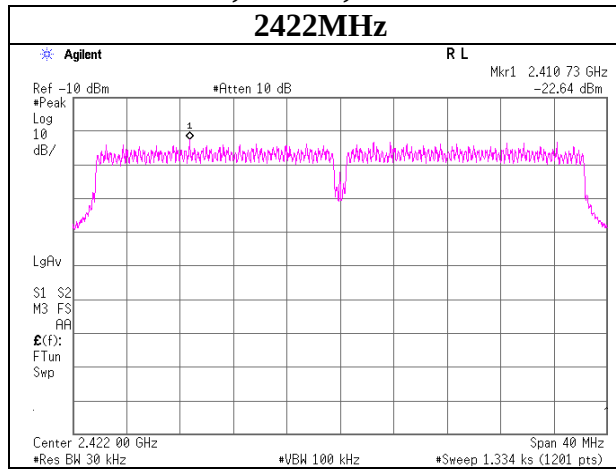
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm] [mW]		Limit [dBm]	Margin [dB]
2422.00	-22.32	2.13	10.07	-10.12	0.097	8.00	18.12
2437.00	-14.67	2.14	10.07	-2.46	0.568	8.00	10.46
2452.00	-21.08	2.15	10.07	-8.86	0.130	8.00	16.86

Sample Calculation:

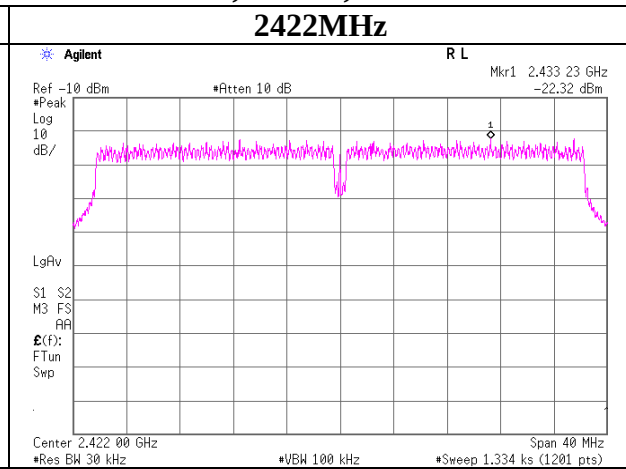
Result = Reading + Cable Loss + Attenuator

Power Density

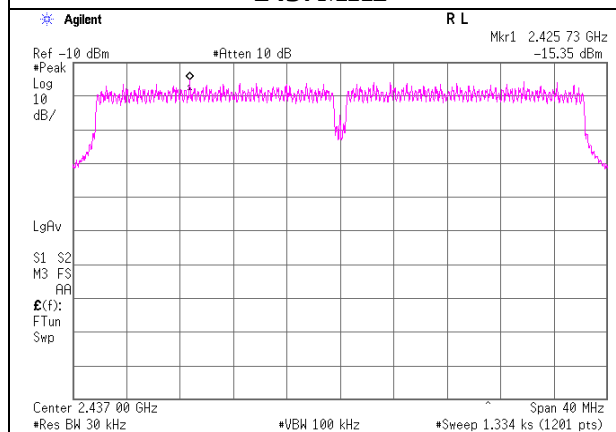
11n-40, MCS 8, Antenna 0



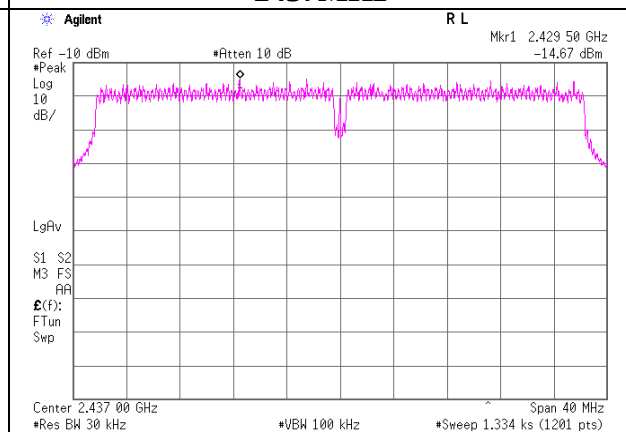
11n-40, MCS 8, Antenna 1



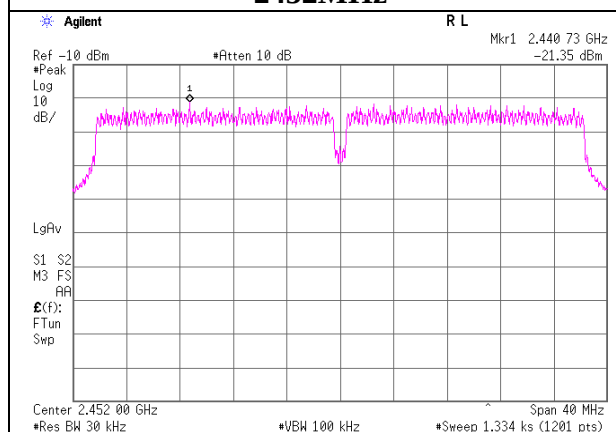
2437MHz



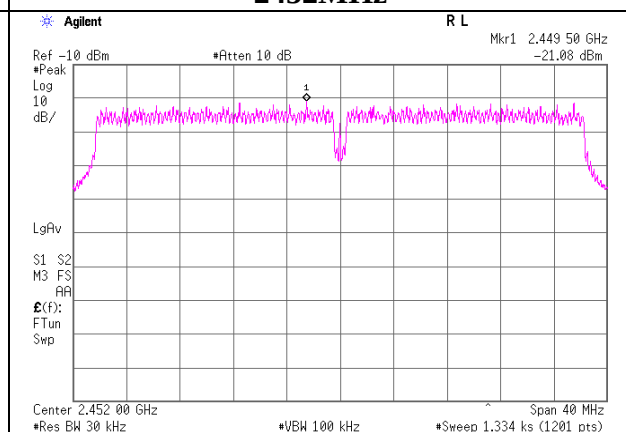
2437MHz



2452MHz



2452MHz



Power Density

Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 31JE0038-HO-01
Date 04/13/2012
Temperature/ Humidity 21deg. C / 44% RH
Engineer Hiroshi Kukita
Mode 11a Tx

11a, 6Mbps, Antenna 1

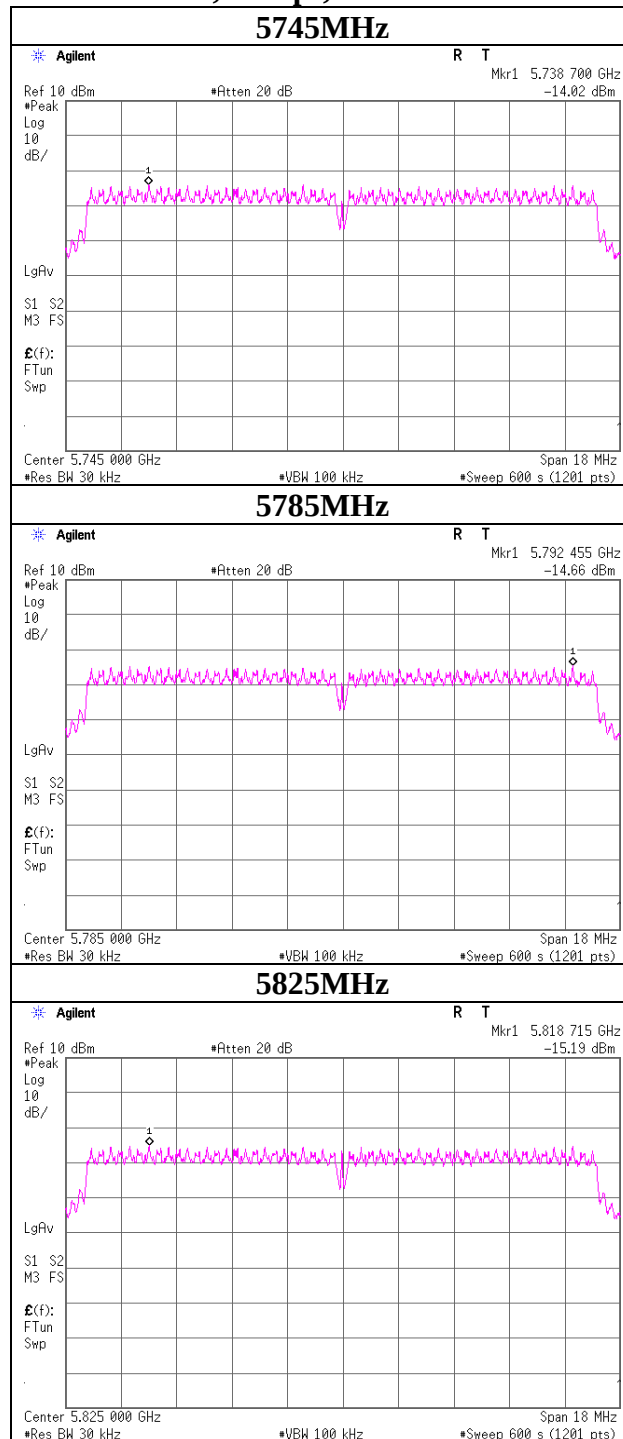
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit [dBm]	Margin [dB]
				[dBm]	[mW]		
5745.00	-14.02	3.41	9.98	-0.63	0.86	8.00	8.63
5785.00	-14.66	3.43	9.98	-1.25	0.75	8.00	9.25
5825.00	-15.19	3.45	9.98	-1.76	0.67	8.00	9.76

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

Power Density

11a, 6Mbps, Antenna 1



Power Density

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	31JE0038-HO-01
Date	04/13/2012
Temperature/ Humidity	21deg. C / 44% RH
Engineer	Hiroshi Kukita
Mode	11n-20(MIMO)

11n-20, MCS 8, Antenna 0 + 1

Freq. [MHz]	Result Antenna 0 [mW]	Result Antenna 1 [mW]	Result Antenna 0 + 1 [dBm] [mW]		Limit [dBm]	Margin [dB]
			[dBm]	[mW]		
5745.00	0.61	0.55	0.65	1.16	8.00	7.35
5785.00	0.59	0.49	0.31	1.07	8.00	7.69
5825.00	0.56	0.46	0.07	1.02	8.00	7.93

Sample Calculation:

Result Antenna 0 + 1 [mW] = Result Antenna 0 [mW] + Result Antenna 1 [mW]

11n-20, MCS 8, Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm] [mW]		Limit [dBm]	Margin [dB]
				[dBm]	[mW]		
5745.00	-15.51	3.41	9.98	-2.12	0.61	8.00	10.12
5785.00	-15.72	3.43	9.98	-2.31	0.59	8.00	10.31
5825.00	-15.98	3.45	9.98	-2.55	0.56	8.00	10.55

11n-20, MCS 8, Antenna 1

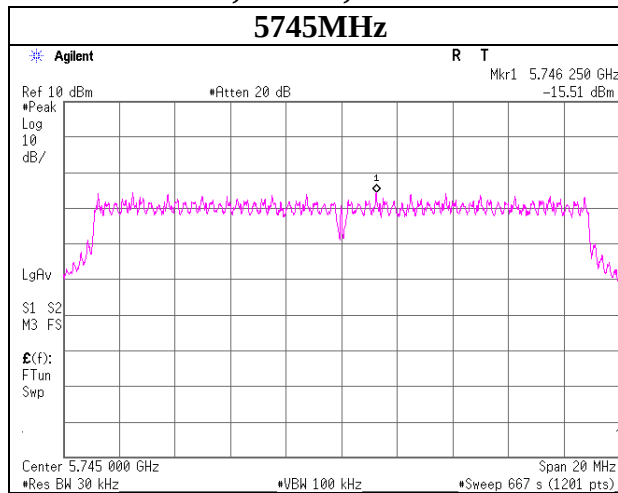
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm] [mW]		Limit [dBm]	Margin [dB]
				[dBm]	[mW]		
5745.00	-16.01	3.41	9.98	-2.62	0.55	8.00	10.62
5785.00	-16.55	3.43	9.98	-3.14	0.49	8.00	11.14
5825.00	-16.80	3.45	9.98	-3.37	0.46	8.00	11.37

Sample Calculation:

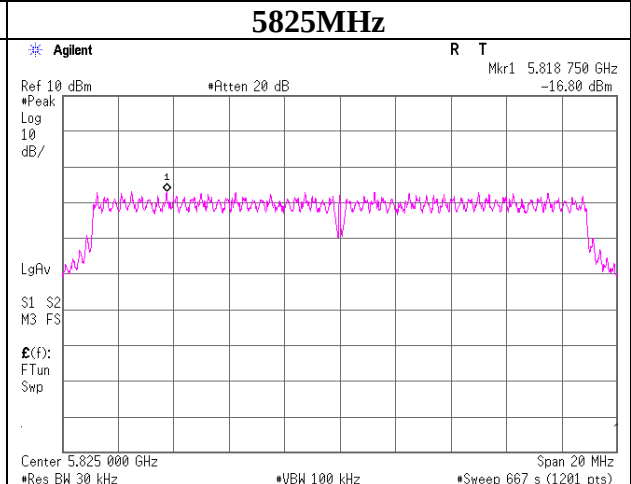
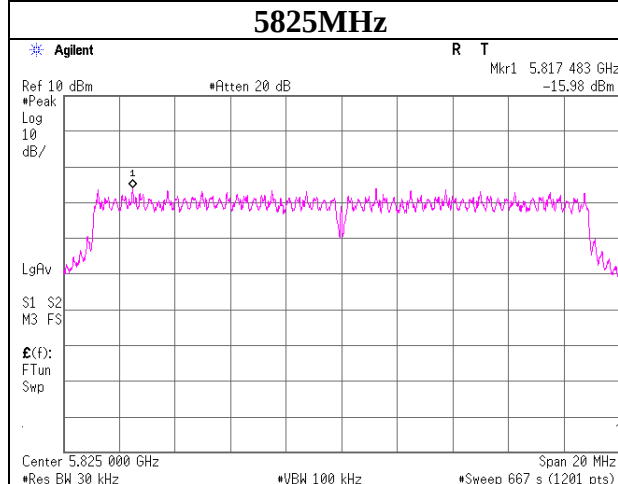
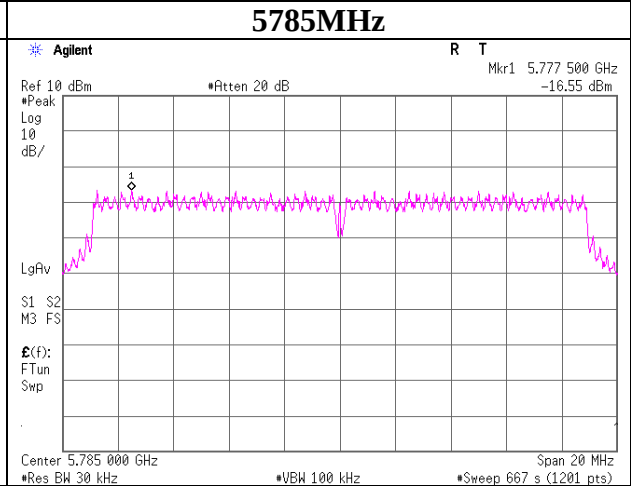
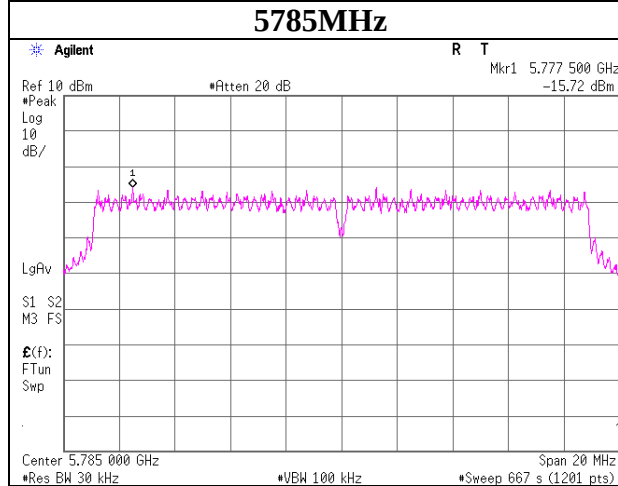
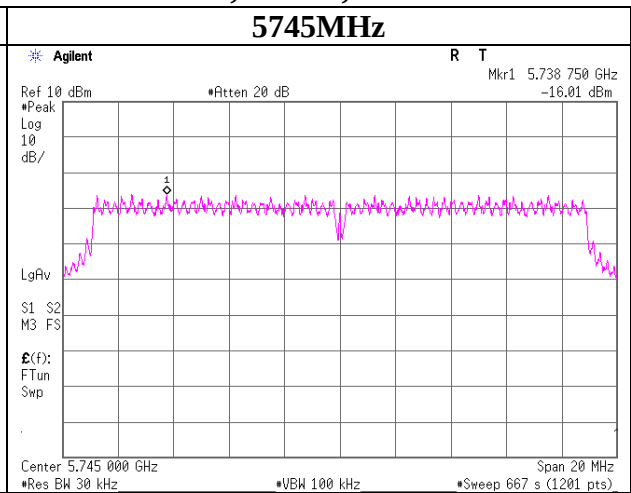
Result = Reading + Cable Loss + Attenuator

Power Density

11n-20, MCS 8, Antenna 0



11n-20, MCS 8, Antenna 1



Power Density

Test place : Head Office EMC Lab. No.6 Measurement Room
Report No. : 31JE0038-HO-01
Date : 04/13/2012
Temperature/ Humidity : 21deg. C / 44% RH
Engineer : Hiroshi Kukita
Mode : 11n-40(MIMO)

11n-40, MCS 8, Antenna 0 + 1

Freq. [MHz]	Result Antenna 0 [mW]	Result Antenna 1 [mW]	Result Antenna 0 + 1		Limit [dBm]	Margin [dB]
			[dBm]	[mW]		
5755.00	0.16	0.18	-4.61	0.35	8.00	12.61
5795.00	0.16	0.16	-4.95	0.32	8.00	12.95

Sample Calculation:

Result Antenna 0 + 1 [mW] = Result Antenna 0 [mW] + Result Antenna 1 [mW]

11n-40, MCS 8, Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit [dBm]	Margin [dB]
				[dBm]	[mW]		
5755.00	-21.27	3.42	9.98	-7.87	0.16	8.00	15.87
5795.00	-21.40	3.43	9.98	-7.99	0.16	8.00	15.99

11n-40, MCS 8, Antenna 1

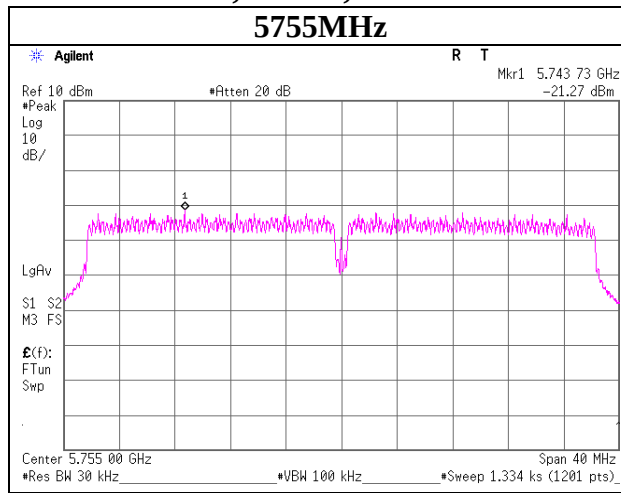
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit [dBm]	Margin [dB]
				[dBm]	[mW]		
5755.00	-20.79	3.42	9.98	-7.39	0.18	8.00	15.39
5795.00	-21.34	3.43	9.98	-7.93	0.16	8.00	15.93

Sample Calculation:

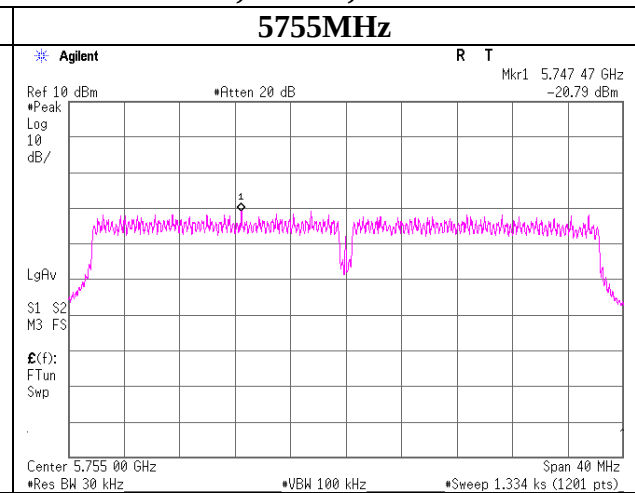
Result = Reading + Cable Loss + Attenuator

Power Density

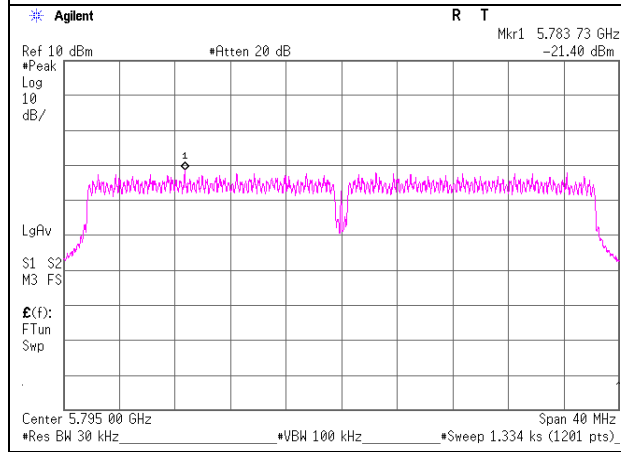
11n-40, MCS 8, Antenna 0



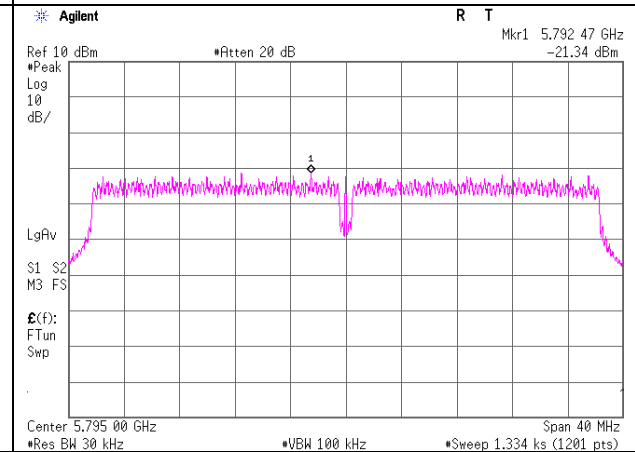
11n-40, MCS 8, Antenna 1



5795MHz

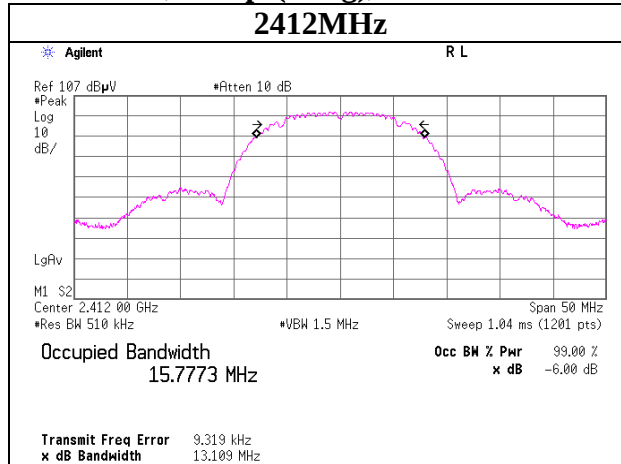


5795MHz

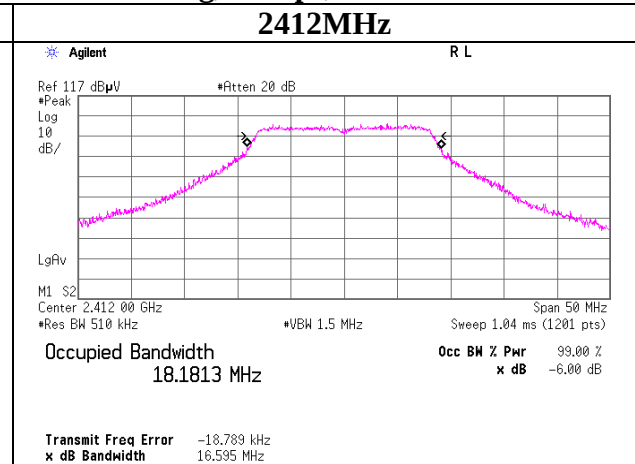


99%Occupied Bandwidth

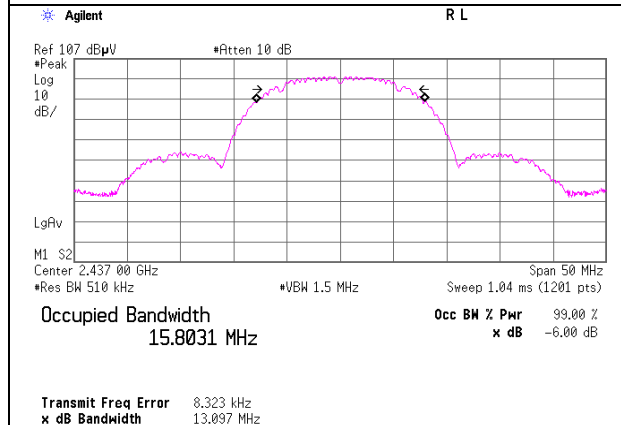
11b, 1Mbps(Long), Antenna 0



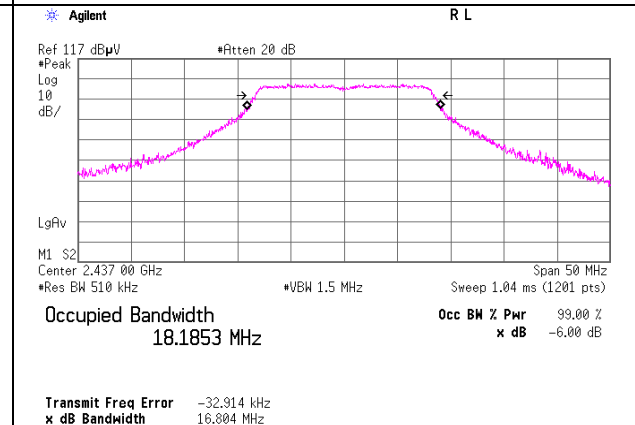
11g, 6Mbps, Antenna 0



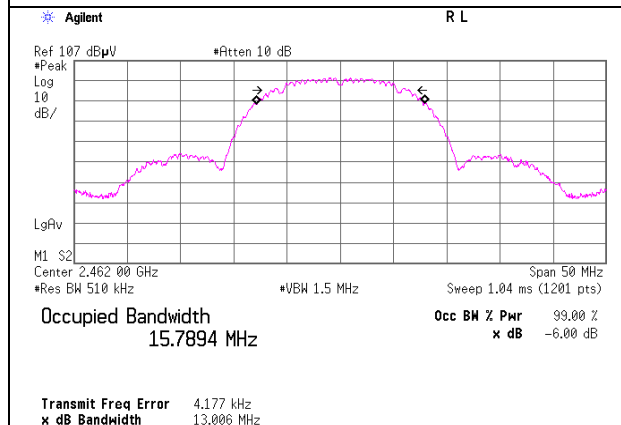
2437MHz



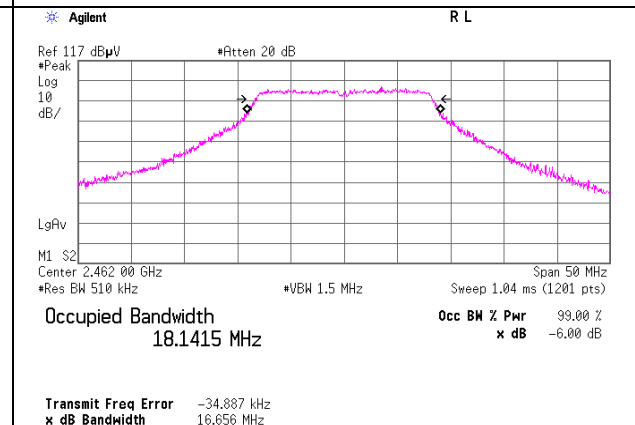
2437MHz



2462MHz

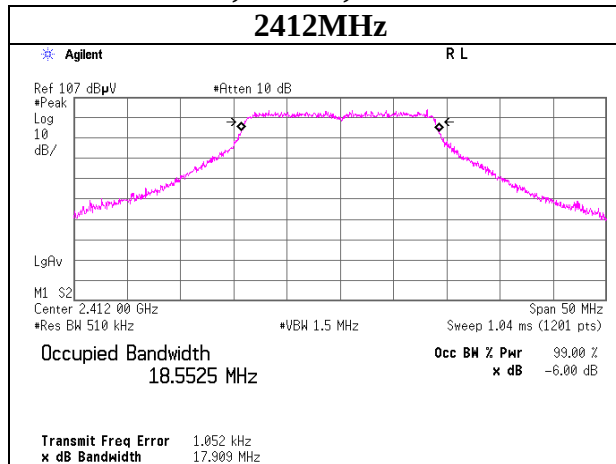


2462MHz

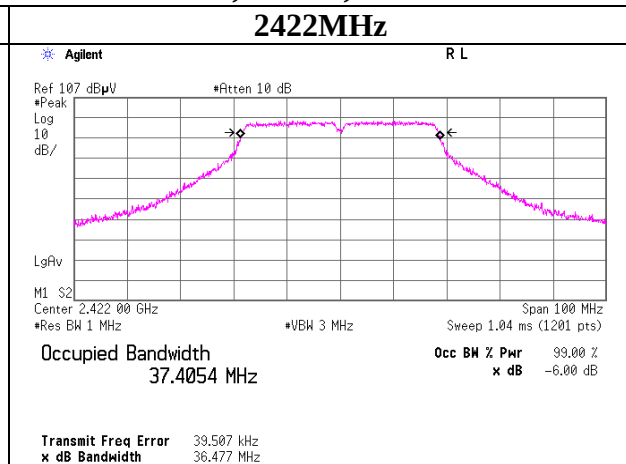


99% Occupied Bandwidth

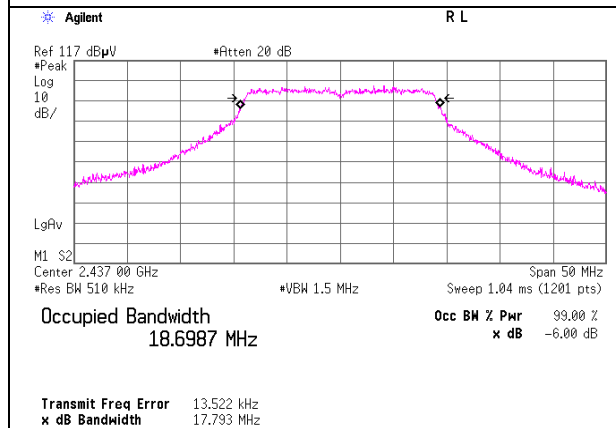
11n-20, MCS 8, Antenna 0



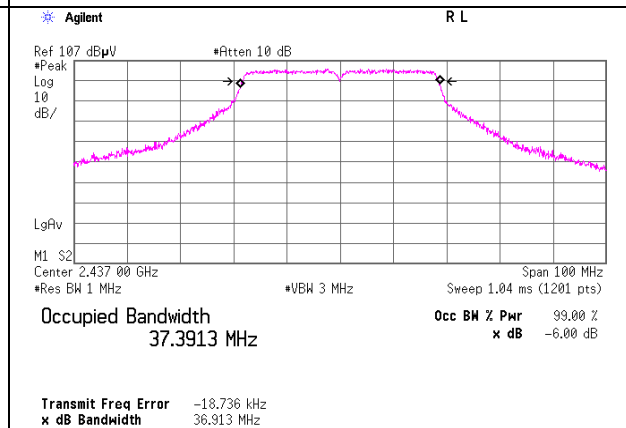
11n-40, MCS 8, Antenna 0



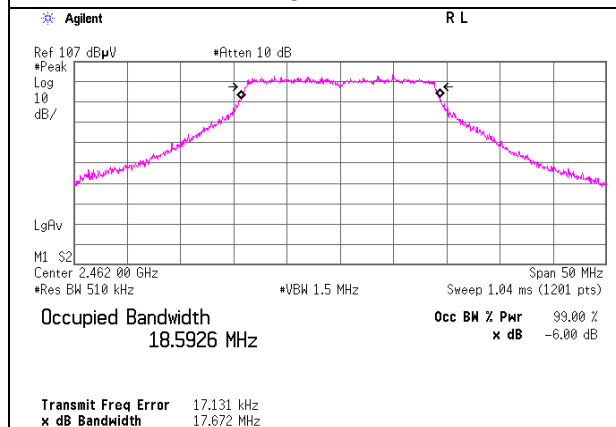
2437MHz



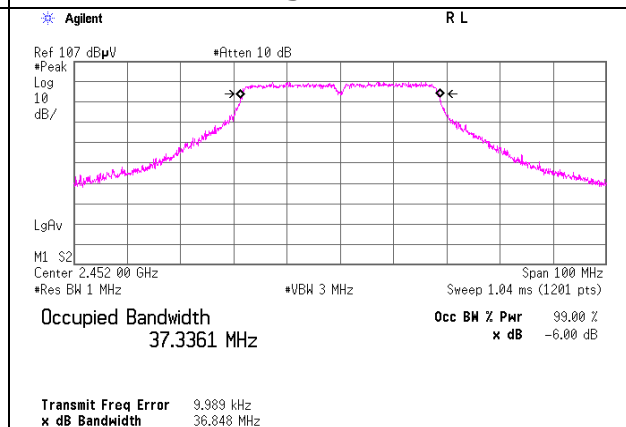
2437MHz



2462MHz

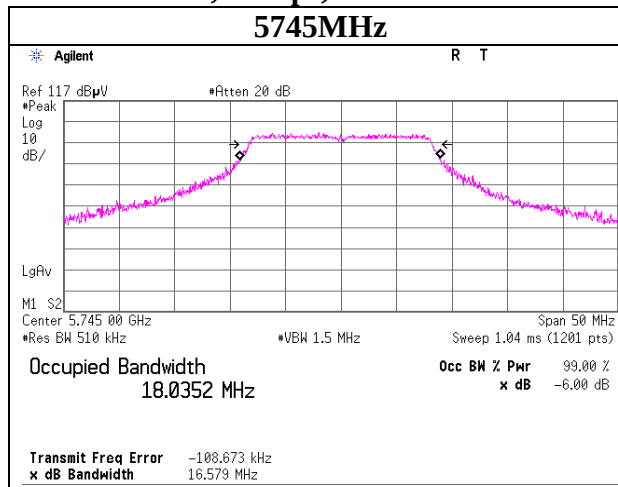


2452MHz

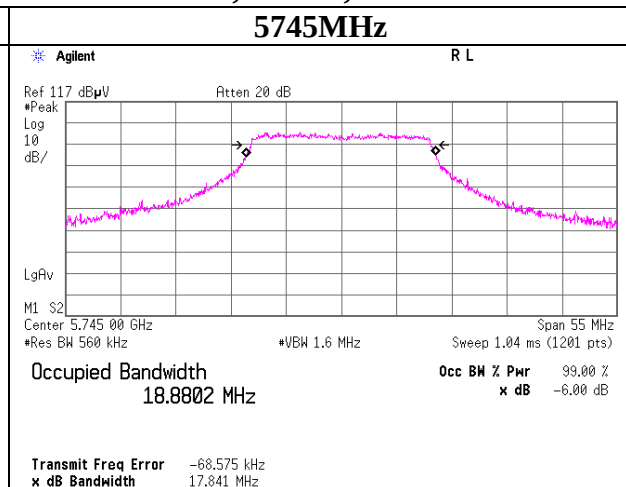


99%Occupied Bandwidth

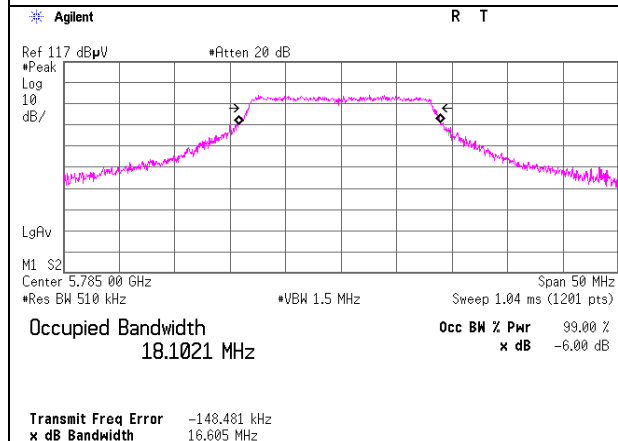
11a, 6Mbps, Antenna 1



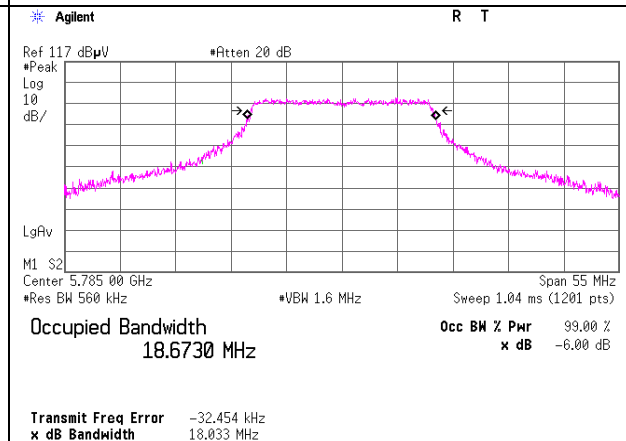
11n-20, MCS 8, Antenna 1



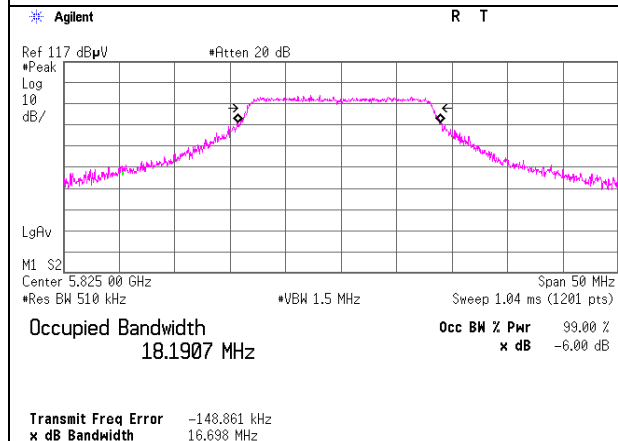
5785MHz



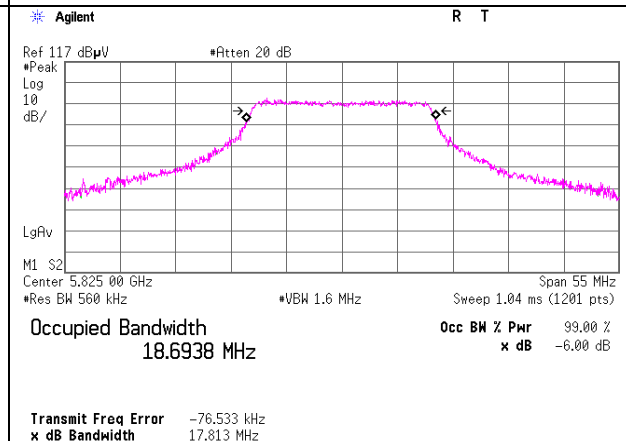
5785MHz



5825MHz

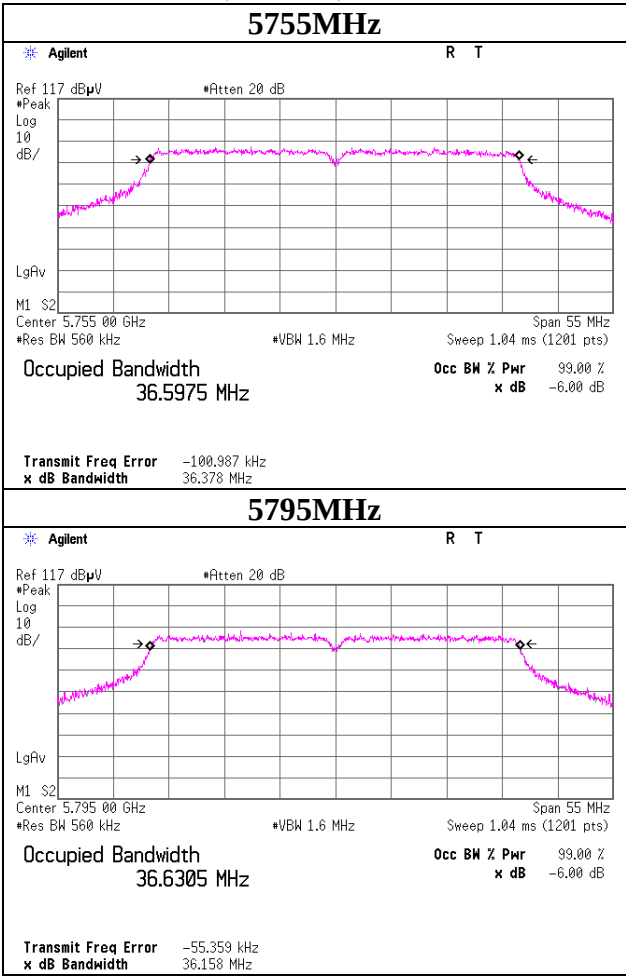


5825MHz



99%Occupied Bandwidth

11n-40, MCS 8, Antenna 0



APPENDIX 2: Test instruments

EMI test equipment [1/2]

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	AT/RE	2012/02/03 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	AT	2012/04/06 * 12
MPM-09	Power Meter	Anritsu	ML2495A	6K00003348	AT	2011/09/12 * 12
MPM-08	Power Meter	Anritsu	ML2495A	6K00003338	AT	2011/09/13 * 12
MPSE-12	Power sensor	Anritsu	MA2411B	011598	AT	2011/09/12 * 12
MPSE-11	Power sensor	Anritsu	MA2411B	011737	AT	2011/09/13 * 12
MCC-138	Microwave cable	HUBER+SUHNER	SUCOFLEX 102	37953/2	AT	2011/10/28 * 12
MCC-105	Microwave Cable	Hirose Electric	U.FL-2LP-066J1-A(200)	-	AT	2011/06/24 * 12
MAT-22	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2012/03/27 * 12
MCC-103	Microwave Cable	Hirose Electric	U.FL-2LP-066J1-A(200)	-	AT	2011/06/24 * 12
MAT-23	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2012/03/27 * 12
MMM-12	DIGITAL HiTESTER	Hioki	3805	060500120	AT	2012/03/23 * 12
MDPS-13	DC Power Supply	Kikusui	PAK35-10A	LF002313	AT	Pre Check
MOS-14	Thermo-Hygrometer	Custom	CTH-201	-	AT	2012/02/06 * 12
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2012/02/24 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE	2012/02/06 * 12
MJM-06	Measure	PROMART	SEN1955	-	RE	
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2011/05/23 * 12
MCC-133	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336164/4(1m) / 340640(5m)	RE	2011/09/07 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2012/03/29 * 12
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2011/05/16 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE	2012/04/03 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2011/10/15 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2011/10/15 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2011/07/15 * 12
MAT-09	Attenuator(6dB)	Weinschel Corp	2	BK7973	RE	2011/11/02 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2012/03/16 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2011/05/23 * 12
MCC-76	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278967/4	RE	2011/12/08 * 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	2011/06/15 * 12
MHF-22	High Pass Filter 7-20GHz	TOKIMEC	TF37NCCB	602	RE	2012/01/28 * 12
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	CE	2012/02/29 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	CE	2012/02/06 * 12
MJM-07	Measure	PROMART	SEN1955	-	CE	-

EMI test equipment [2/2]

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MSA-05	Spectrum Analyzer	Advantest	R3273	160400285	CE	2011/11/23 * 12
MTR-07	Test Receiver	Rohde & Schwarz	ESCI	100635	CE	2012/04/05 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT)	2012/02/06 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(AE)	2012/02/09 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2012/01/11 * 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	2011/07/04 * 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

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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