



RADIO TEST REPORT

Test Report No. : 32GE0273-HO-01-G

Applicant : NEC Corporation of America
Type of Equipment : Digital Portable Cellular Telephone
Model No. : KMP7R4E1-2A
FCC ID : A98-ROV0164
Test regulation : FCC Part 15 Subpart C: 2012
Test Result : Complied

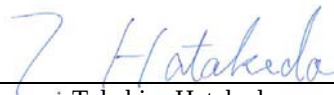
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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not 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 2, 2012

Representative test engineer:


Yutaka Yoshida
Engineer of WiSE Japan,
UL Verification Service

Approved by:


Takahiro Hatakeda
Leader of WiSE Japan,
UL Verification Service



NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
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<http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap>

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SECTION 1: Customer information

Company Name : NEC Corporation of America
Address : Radio Communications Systems Division
6535N. State Highway 161, Irving, TX 75039-2402 USA
Telephone Number : +1 214 262 4241
Facsimile Number : +1 214 262 4225
Contact Person : Sanjay Wadhwa

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

2.1 Identification of E.U.T.

Type of Equipment : Digital Portable Cellular Telephone
Model No. : KMP7R4E1-2A
Serial No. : Refer to Section 4, Clause 4.2
Rating : DC 3.8V
Receipt Date of Sample : March 27, 2012
Country of Mass-production : Japan
Condition of EUT : Production prototype
Modification of EUT : No Modification by the test lab

2.2 Product description

Model No: KMP7R4E1-2A, (referred to as the EUT in this report), is the Digital Portable Cellular Telephone.

Radio Specification [1/2]

Bluetooth (Ver.2.1 + EDR)

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Other Clock Frequency	48MHz
Type of Modulation	FHSS
Bandwidth & Channel spacing	1MHz & 1MHz
Antenna Connector Type	Integrated antenna

Low Energy (Ver.4.0)

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Other Clock Frequency	48MHz
Bandwidth & Channel spacing	1MHz & 2MHz
Antenna Connector Type	Integrated antenna

WLAN (IEEE802.11b/g/n (SISO/HT20))

Equipment Type	Transceiver
Frequency of Operation	2412-2462MHz
Other Clock Frequency	48MHz
Type of Modulation	DSSS, OFDM
Antenna Connector Type	Integrated antenna

GSM

Equipment Type	Transceiver
Frequency of Operation	[Up Link] GSM850: 824 – 849MHz PCS: 1850 – 1910MHz [Down Link] GSM850: 869 – 894MHz PCS: 1930 – 1990MHz
Other Clock Frequency	19.2MHz
Type of Modulation	GMSK
Channel spacing	200kHz
Antenna Connector Type	Integrated antenna

Radio Specification [2/2]

WCDMA

Equipment Type	Transceiver
Frequency of Operation	[Up Link] Band V: 824 – 849MHz [Down Link] Band V: 869 – 894MHz
Other Clock Frequency	19.2MHz
Type of Modulation	HPSK
Channel spacing	5MHz
Antenna Connector Type	Integrated antenna

GPS

Equipment Type	Receiver
Receiver Type	Direct Downconversion
Frequency of Operation	1575.42MHz
Other Clock Frequency	57.6MHz
Antenna Connector Type	Integrated antenna

RFID

Equipment Type	Transceiver
Frequency of Operation	13.56MHz
Type of Modulation	ASK
Antenna Connector Type	Integrated antenna

*This test report applies for WLAN (IEEE802.11b/g/n (SISO/HT20)).

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C: 2012, final revised on February 1, 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

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 18.5dB, 2.07058MHz, L AV 20.1dB, 2.07058MHz, 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	4.5dB 2483.500MHz, AV, Hori. (Chassis's color: Pink) 6.1dB 2483.500MHz, AV, Hori.	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)

This EUT provides stable voltage (DC1.3, 1.8, and 3.0V) constantly to RF Part regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

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

3.3 Addition to standard

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

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

3.4 Uncertainty

EMI

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

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

Test room (semi-anechoic chamber)	Radiated emission						
	(3m*)(+dB)				(1m*)(+dB)		(0.5m*)(+dB)
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	4.2dB	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.

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3.5 Test Location

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

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

3.6 Data of EMI, Test instruments, and Test set up

Refer to APPENDIX.

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

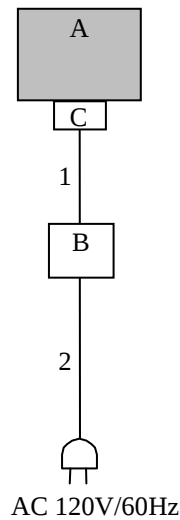
4.1 Operating Mode(s)

Mode	Remarks*
IEEE 802.11b (11b)	1Mbps, PN9
IEEE 802.11g (11g)	18Mbps, PN9
IEEE 802.11n SISO 20MHz BW (11n-20)	MCS 2(Long GI), PN9
*The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel)	

*The details of Operating mode(s)

Test Item	Operating Mode	Tested frequency
Conducted Emission	11n-20 Tx*1)	2412MHz
Spurious Emission (Radiated / Conducted) 6dB Bandwidth Maximum Peak Output Power Power Density 99% Occupied Bandwidth	11b Tx 11g Tx 11n-20 Tx	2412MHz 2437MHz 2462MHz
*1) The mode was tested as a representative, because it had the highest power at antenna terminal test and the noise levels at the mode/tested frequencies were equivalent to those of other modes/tested frequencies.		

4.2 Configuration and peripherals



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

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Digital Portable Cellular Telephone	KMP7R4E1-2A	004401200900021 *1) 004401200900054 *2) 004401200900062 *3)	NEC Corporation of America	EUT
B	AC Adaptor	MAS-BH0008-A002	-	MITSUMI	-
C	Micro USB	FOMA charging microUSB adapter N01	-	NEC Corporation of America	-

*1) Used for Antenna Terminal Conducted test

*2) Used for Conducted Emission and Radiated Emission tests

*3) Used for Radiated Emission test (Chassis's color: Pink)

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC Cable	1.6	Shielded	Shielded	-
2	AC Cable	0.6	Unshielded	Unshielded	-

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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, 1.0m by 1.5m, 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 Duty was close to 100%.

*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 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	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	20MHz	30kHz	100kHz	667sec	Peak	Max Hold	Spectrum Analyzer *1) *2)
Conducted Spurious Emission *3)	9kHz to 150kHz	200Hz	620Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz to 30MHz	9.1kHz	27kHz				
	30MHz to 25GHz (Less or equal to 5GHz)	100kHz	300kHz				
*1) PSD Option 1 of "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247 ". *2) The test was not performed at RBW:3kHz however the measurement is to be performed with RBW:3kHz in the regulation, because, the measurement value with RBW:3kHz is less than the value of RBW:30kHz and the test data met the limit with RBW:30kHz. *3) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents. Then, wide-band noise near the limit was checked separately, however the noise was not detected 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

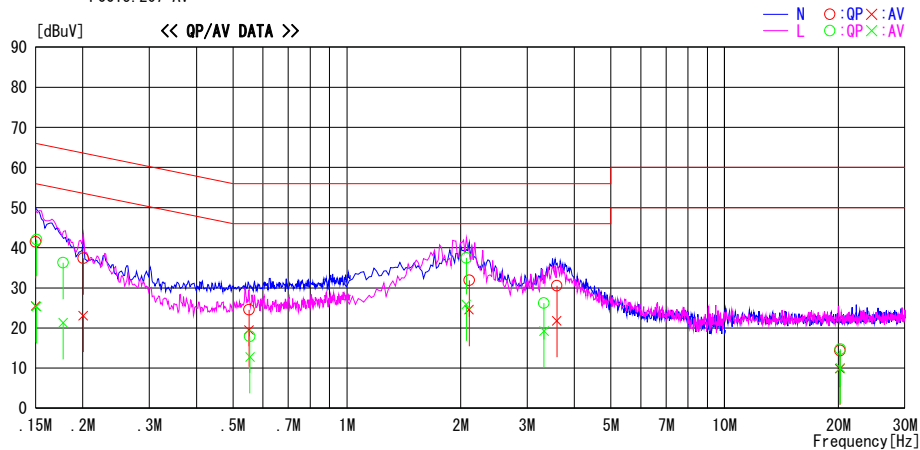
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/04/02

Report No. : 32GE0273-HO-01

Temp./Humi. : 22deg. C / 35% RH
Engineer : Tomohisa Nakagawa

Mode / Remarks : WLANTx11n-20 LGI MCS2 2412MHz

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]		
0.15000	28.3	12.3	13.2	41.5	25.5	66.0	56.0	24.5	30.5	N	
0.20056	24.2	9.9	13.2	37.4	23.1	63.6	53.6	26.2	30.5	N	
0.55100	11.4	6.3	13.2	24.6	19.5	56.0	46.0	31.4	26.5	N	
2.10693	18.5	11.2	13.4	31.9	24.6	56.0	46.0	24.1	21.4	N	
3.59739	16.9	8.1	13.7	30.6	21.8	56.0	46.0	25.4	24.2	N	
20.19595	-0.8	-5.3	15.2	14.4	9.9	60.0	50.0	45.6	40.1	N	
0.15080	28.8	12.1	13.2	42.0	25.3	66.0	56.0	24.0	30.7	L	
0.17736	23.1	8.1	13.2	36.3	21.3	64.6	54.6	28.3	33.3	L	
0.55420	4.7	-0.4	13.2	17.9	12.8	56.0	46.0	38.1	33.2	L	
2.07058	24.1	12.5	13.4	37.5	25.9	56.0	46.0	18.5	20.1	L	
3.32570	12.6	5.6	13.6	26.2	19.2	56.0	46.0	29.8	26.8	L	
20.23613	-0.5	-5.1	15.2	14.7	10.1	60.0	50.0	45.3	39.9	L	

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

*The limit is rounded down to one decimal place.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Conducted Emission
(Chassis's color: Pink)

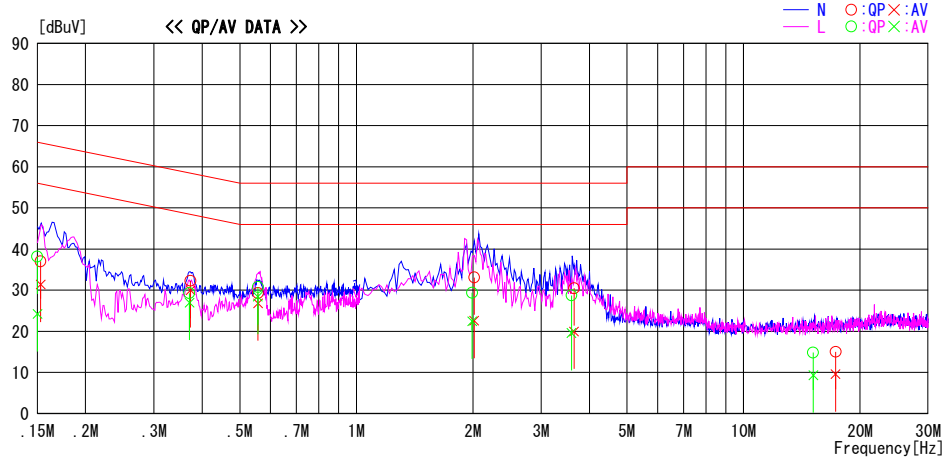
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/04/03

Report No. : 32GE0273-HO-01
Power : AC 120V / 60Hz
Temp./Humi. : 22deg. C / 35% RH
Engineer : Tomohisa Nakagawa

Mode / Remarks : WLANTx11n-20 LGI MCS2 2412MHz

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]		
0.15310	23.8	18.2	13.2	37.0	31.4	65.8	55.8	28.8	24.4	N	
0.37317	19.1	16.8	13.2	32.3	30.0	58.4	48.4	26.1	18.4	N	
0.55798	16.1	13.6	13.2	29.3	26.8	56.0	46.0	26.7	19.2	N	
2.01605	19.7	9.2	13.4	33.1	22.6	56.0	46.0	22.9	23.4	N	
3.65192	16.8	6.3	13.7	30.5	20.0	56.0	46.0	25.5	26.0	N	
17.30298	0.0	-5.4	15.0	15.0	9.6	60.0	50.0	45.0	40.4	N	
0.15000	25.0	11.0	13.2	38.2	24.2	66.0	56.0	27.8	31.8	L	
0.37071	16.1	13.8	13.2	29.3	27.0	58.5	48.5	29.2	21.5	L	
0.55708	17.5	15.2	13.2	30.7	28.4	56.0	46.0	25.3	17.6	L	
1.99230	16.0	9.0	13.4	29.4	22.4	56.0	46.0	26.6	23.6	L	
3.59739	15.0	5.9	13.7	28.7	19.6	56.0	46.0	27.3	26.4	L	
15.13325	0.0	-5.5	14.8	14.8	9.3	60.0	50.0	45.2	40.7	L	

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

6dB Bandwidth

Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 32GE0273-HO-01
Date 03/29/2012
Temperature/ Humidity 23deg. C / 40% RH
Engineer Yutaka Yoshida
Mode Tx

11b, 1Mbps

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	8.092	>500
2437	8.058	>500
2462	8.064	>500

11g, 18Mbps

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	16.436	>500
2437	16.441	>500
2462	16.419	>500

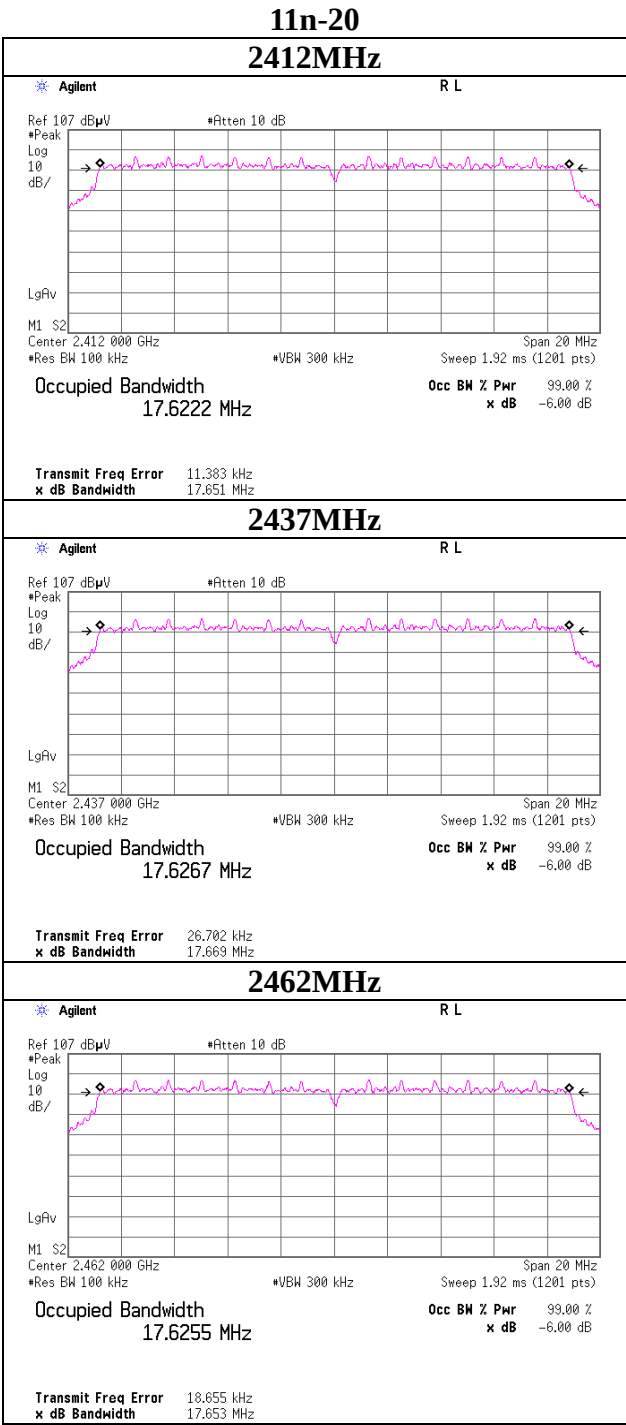
11n-20, MCS 2(Long GI)

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	17.651	>500
2437	17.669	>500
2462	17.653	>500

6dB Bandwidth



6dB Bandwidth



Maximum Peak Output Power

Test place : Head Office EMC Lab. No.6 Measurement Room
Report No. : 32GE0273-HO-01
Date : 03/28/2012
Temperature/ Humidity : 23deg. C / 51% RH
Engineer : Yutaka Yoshida
Mode : 11b Tx

11b 1Mbps

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	4.82	1.38	10.07	16.27	42.36	30.00	1000	13.73
2437	5.06	1.39	10.07	16.52	44.87	30.00	1000	13.48
2462	4.67	1.40	10.07	16.14	41.11	30.00	1000	13.86

Sample Calculation:

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

11b, 2437MHz

Rate [Mbps]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]	Remark
				[dBm]	[mW]	[dBm]	[mW]		
1	5.06	1.39	10.07	16.52	44.87	30.00	1000	13.48	*
2	5.02	1.39	10.07	16.48	44.46	30.00	1000	13.52	
5.5	5.00	1.39	10.07	16.46	44.26	30.00	1000	13.54	
11	5.01	1.39	10.07	16.47	44.36	30.00	1000	13.53	

*: Worst Rate

Sample Calculation:

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

Maximum Peak Output Power

Test place : Head Office EMC Lab. No.6 Measurement Room
Report No. : 32GE0273-HO-01
Date : 03/28/2012
Temperature/ Humidity : 23deg. C / 51% RH
Engineer : Yutaka Yoshida
Mode : 11g Tx

11g 18Mbps

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	6.88	1.38	10.07	18.33	68.08	30.00	1000	11.67
2437	6.61	1.39	10.07	18.07	64.12	30.00	1000	11.93
2462	6.63	1.40	10.07	18.10	64.57	30.00	1000	11.90

Sample Calculation:

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

11g, 2437MHz

Rate [Mbps]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]	Remark
				[dBm]	[mW]	[dBm]	[mW]		
6	6.55	1.39	10.07	18.01	63.24	30.00	1000	11.99	
9	6.37	1.39	10.07	17.83	60.67	30.00	1000	12.17	
12	5.96	1.39	10.07	17.42	55.21	30.00	1000	12.58	
18	6.61	1.39	10.07	18.07	64.12	30.00	1000	11.93	*
24	5.95	1.39	10.07	17.41	55.08	30.00	1000	12.59	
36	5.89	1.39	10.07	17.35	54.33	30.00	1000	12.65	
48	5.84	1.39	10.07	17.30	53.70	30.00	1000	12.70	
54	5.80	1.39	10.07	17.26	53.21	30.00	1000	12.74	

*: Worst Rate

Sample Calculation:

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

Maximum Peak Output Power

Test place : Head Office EMC Lab. No.6 Measurement Room
Report No. : 32GE0273-HO-01
Date : 03/28/2012
Temperature/ Humidity : 23deg. C / 51% RH
Engineer : Yutaka Yoshida
Mode : 11n-20 Tx

11n-20 MCS 2(Long GI)

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	7.09	1.38	10.07	18.54	71.45	30.00	1000	11.46
2437	6.87	1.39	10.07	18.33	68.08	30.00	1000	11.67
2462	6.85	1.40	10.07	18.32	67.92	30.00	1000	11.68

Sample Calculation:

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

11n-20(Long GI), 2437MHz

MCS Number	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]	Remark
				[dBm]	[mW]	[dBm]	[mW]		
0	6.15	1.39	10.07	17.61	57.68	30.00	1000	12.39	
1	6.14	1.39	10.07	17.60	57.54	30.00	1000	12.40	
2	6.87	1.39	10.07	18.33	68.08	30.00	1000	11.67	*
3	6.68	1.39	10.07	18.14	65.16	30.00	1000	11.86	
4	6.16	1.39	10.07	17.62	57.81	30.00	1000	12.38	
5	6.36	1.39	10.07	17.82	60.53	30.00	1000	12.18	
6	6.10	1.39	10.07	17.56	57.02	30.00	1000	12.44	
7	5.88	1.39	10.07	17.34	54.20	30.00	1000	12.66	

11n-20(Short GI), 2437MHz

MCS Number	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]	Remark
				[dBm]	[mW]	[dBm]	[mW]		
0	6.09	1.39	10.07	17.55	56.89	30.00	1000	12.45	
1	6.08	1.39	10.07	17.54	56.75	30.00	1000	12.46	
2	6.81	1.39	10.07	18.27	67.14	30.00	1000	11.73	
3	6.42	1.39	10.07	17.88	61.38	30.00	1000	12.12	
4	6.19	1.39	10.07	17.65	58.21	30.00	1000	12.35	
5	6.36	1.39	10.07	17.82	60.53	30.00	1000	12.18	
6	6.08	1.39	10.07	17.54	56.75	30.00	1000	12.46	
7	5.89	1.39	10.07	17.35	54.33	30.00	1000	12.65	

*: Worst Rate

Sample Calculation:

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

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Maximum Average Output Power (Reference data for SAR testing)

[IEEE802.11b] Rate Check

Rate [Mbps]	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
		AVG			[dBm] AVG	[mW] AVG
1.0	2412	2.72	1.38	10.07	14.17	26.12
2.0	2412	2.61	1.38	10.07	14.06	25.47
5.5	2412	2.72	1.38	10.07	14.17	26.12
11.0	2412	2.60	1.38	10.07	14.05	25.41
1.0	2437	2.73	1.39	10.07	14.19	26.24
2.0	2437	2.42	1.39	10.07	13.88	24.43
5.5	2437	2.60	1.39	10.07	14.06	25.47
11.0	2437	2.44	1.39	10.07	13.90	24.55
1.0	2462	2.67	1.40	10.07	14.14	25.94
2.0	2462	2.46	1.40	10.07	13.93	24.72
5.5	2462	2.65	1.40	10.07	14.12	25.82
11.0	2462	2.45	1.40	10.07	13.92	24.66

:Worst data rate

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

[IEEE802.11g] Rate Check

Rate [Mbps]	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result	
		AVG			[dBm] AVG	[mW] AVG
6.0	2412	-1.83	1.38	10.07	9.62	9.16
9.0	2412	-2.09	1.38	10.07	9.36	8.63
12.0	2412	-1.98	1.38	10.07	9.47	8.85
18.0	2412	-2.01	1.38	10.07	9.44	8.79
24.0	2412	-2.06	1.38	10.07	9.39	8.69
36.0	2412	-2.11	1.38	10.07	9.34	8.59
48.0	2412	-2.27	1.38	10.07	9.18	8.28
54.0	2412	-2.04	1.38	10.07	9.41	8.73
6.0	2437	-2.11	1.39	10.07	9.35	8.61
9.0	2437	-2.12	1.39	10.07	9.34	8.59
12.0	2437	-2.12	1.39	10.07	9.34	8.59
18.0	2437	-2.17	1.39	10.07	9.29	8.49
24.0	2437	-2.18	1.39	10.07	9.28	8.47
36.0	2437	-2.22	1.39	10.07	9.24	8.39
48.0	2437	-2.37	1.39	10.07	9.09	8.11
54.0	2437	-2.32	1.39	10.07	9.14	8.20
6.0	2462	-1.86	1.40	10.07	9.61	9.14
9.0	2462	-1.95	1.40	10.07	9.52	8.95
12.0	2462	-1.94	1.40	10.07	9.53	8.97
18.0	2462	-1.99	1.40	10.07	9.48	8.87
24.0	2462	-2.03	1.40	10.07	9.44	8.79
36.0	2462	-2.09	1.40	10.07	9.38	8.67
48.0	2462	-2.21	1.40	10.07	9.26	8.43
54.0	2462	-2.11	1.40	10.07	9.36	8.63

:Worst data rate

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

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Maximum Average Output Power (Reference data for SAR testing)

[IEEE802.11n-20 Long GI] Rate Check

Rate	Freq.	Reading	Cable Loss	Atten.	Result	
		[dBm]			[dBm]	[mW]
	[MHz]	AVG	[dB]	AVG	AVG	
MCS0	2412	-1.98	1.38	10.07	9.47	8.85
MCS1	2412	-1.99	1.38	10.07	9.46	8.83
MCS2	2412	-2.01	1.38	10.07	9.44	8.79
MCS3	2412	-2.06	1.38	10.07	9.39	8.69
MCS4	2412	-2.09	1.38	10.07	9.36	8.63
MCS5	2412	-2.10	1.38	10.07	9.35	8.61
MCS6	2412	-2.21	1.38	10.07	9.24	8.39
MCS7	2412	-2.19	1.38	10.07	9.26	8.43
MCS0	2437	-2.02	1.39	10.07	9.44	8.79
MCS1	2437	-2.04	1.39	10.07	9.42	8.75
MCS2	2437	-2.10	1.39	10.07	9.36	8.63
MCS3	2437	-2.13	1.39	10.07	9.33	8.57
MCS4	2437	-2.19	1.39	10.07	9.27	8.45
MCS5	2437	-2.22	1.39	10.07	9.24	8.39
MCS6	2437	-2.35	1.39	10.07	9.11	8.15
MCS7	2437	-2.32	1.39	10.07	9.14	8.20
MCS0	2462	-1.91	1.40	10.07	9.56	9.04
MCS1	2462	-1.96	1.40	10.07	9.51	8.93
MCS2	2462	-1.97	1.40	10.07	9.50	8.91
MCS3	2462	-2.01	1.40	10.07	9.46	8.83
MCS4	2462	-2.07	1.40	10.07	9.40	8.71
MCS5	2462	-2.08	1.40	10.07	9.39	8.69
MCS6	2462	-2.19	1.40	10.07	9.28	8.47
MCS7	2462	-2.15	1.40	10.07	9.32	8.55

:Worst data rate

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

Maximum Average Output Power (Reference data for SAR testing)

[IEEE802.11n-20 Short GI] Rate Check

Rate	Frequency [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Result [mW]
		AVG			AVG	AVG
MCS0	2412	-1.94	1.38	10.07	9.51	8.93
MCS1	2412	-1.98	1.38	10.07	9.47	8.85
MCS2	2412	-2.00	1.38	10.07	9.45	8.81
MCS3	2412	-2.01	1.38	10.07	9.44	8.79
MCS4	2412	-2.08	1.38	10.07	9.37	8.65
MCS5	2412	-2.14	1.38	10.07	9.31	8.53
MCS6	2412	-2.20	1.38	10.07	9.25	8.41
MCS7	2412	-2.20	1.38	10.07	9.25	8.41
MCS0	2437	-2.07	1.39	10.07	9.39	8.69
MCS1	2437	-2.10	1.39	10.07	9.36	8.63
MCS2	2437	-2.13	1.39	10.07	9.33	8.57
MCS3	2437	-2.53	1.39	10.07	8.93	7.82
MCS4	2437	-2.21	1.39	10.07	9.25	8.41
MCS5	2437	-2.27	1.39	10.07	9.19	8.30
MCS6	2437	-2.33	1.39	10.07	9.13	8.18
MCS7	2437	-2.33	1.39	10.07	9.13	8.18
MCS0	2462	-1.93	1.40	10.07	9.54	8.99
MCS1	2462	-1.94	1.40	10.07	9.53	8.97
MCS2	2462	-1.96	1.40	10.07	9.51	8.93
MCS3	2462	-2.01	1.40	10.07	9.46	8.83
MCS4	2462	-2.07	1.40	10.07	9.40	8.71
MCS5	2462	-2.11	1.40	10.07	9.36	8.63
MCS6	2462	-2.17	1.40	10.07	9.30	8.51
MCS7	2462	-2.18	1.40	10.07	9.29	8.49

:Worst data rate

Sample Calculation:

Result = Reading + Cable Loss + Attenuator

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 32GE0273-HO-01
Date 03/29/2012 03/30/2012
Temperature/ Humidity 22 deg. C / 35% RH 23 deg. C / 37% RH
Engineer Katsunori Okai Katsunori Okai
1-10GHz Above 10GHz
Mode 11b Tx 2412MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2340.292	PK	60.5	27.4	2.2	34.9	55.2	73.9	18.7	
Hori	2390.000	PK	53.6	27.4	2.2	34.8	48.4	73.9	25.5	
Hori	2398.775	PK	67.2	27.5	2.2	34.8	62.1	-	-	- See 20dBc Data Sheet
Hori	2400.000	PK	64.2	27.5	2.2	34.8	59.1	-	-	- See 20dBc Data Sheet
Hori	4824.000	PK	43.6	31.3	3.8	34.0	44.7	73.9	29.2	
Hori	7236.000	PK	43.7	35.9	4.6	34.2	50.0	73.9	23.9	
Hori	9648.000	PK	42.5	38.8	5.5	34.7	52.1	73.9	21.8	
Hori	24120.000	PK	44.3	40.5	-1.7	31.8	51.3	73.9	22.6	
Hori	2340.292	AV	33.3	27.4	2.2	34.9	28.0	53.9	25.9	
Hori	2390.000	AV	44.7	27.4	2.2	34.8	39.5	53.9	14.4	
Hori	2398.775	AV	63.2	27.5	2.2	34.8	58.1	-	-	- See 20dBc Data Sheet
Hori	2400.000	AV	54.9	27.5	2.2	34.8	49.8	-	-	- See 20dBc Data Sheet
Hori	4824.000	AV	35.6	31.3	3.8	34.0	36.7	53.9	17.2	
Hori	7236.000	AV	33.1	35.9	4.6	34.2	39.4	53.9	14.5	
Hori	9648.000	AV	32.0	38.8	5.5	34.7	41.6	53.9	12.3	
Hori	24120.000	AV	32.3	40.5	-1.7	31.8	39.3	53.9	14.6	
Vert	2340.304	PK	58.4	27.4	2.2	34.9	53.1	73.9	20.8	
Vert	2390.000	PK	51.8	27.4	2.2	34.8	46.6	73.9	27.3	
Vert	2398.242	PK	66.1	27.5	2.2	34.8	61.0	-	-	- See 20dBc Data Sheet
Vert	2400.000	PK	62.0	27.5	2.2	34.8	56.9	-	-	- See 20dBc Data Sheet
Vert	4824.000	PK	43.4	31.3	3.8	34.0	44.5	73.9	29.4	
Vert	7236.000	PK	43.5	35.9	4.6	34.2	49.8	73.9	24.1	
Vert	9648.000	PK	42.6	38.8	5.5	34.7	52.2	73.9	21.7	
Vert	24120.000	PK	44.2	40.5	-1.7	31.8	51.2	73.9	22.7	
Vert	2340.304	AV	33.0	27.4	2.2	34.9	27.7	53.9	26.2	
Vert	2390.000	AV	42.7	27.4	2.2	34.8	37.5	53.9	16.4	
Vert	2398.242	AV	62.4	27.5	2.2	34.8	57.3	-	-	- See 20dBc Data Sheet
Vert	2400.000	AV	52.7	27.5	2.2	34.8	47.6	-	-	- See 20dBc Data Sheet
Vert	4824.000	AV	34.8	31.3	3.8	34.0	35.9	53.9	18.0	
Vert	7236.000	AV	33.1	35.9	4.6	34.2	39.4	53.9	14.5	
Vert	9648.000	AV	31.5	38.8	5.5	34.7	41.1	53.9	12.8	
Vert	24120.000	AV	32.3	40.5	-1.7	31.8	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

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2412.000	PK	105.3	27.5	2.2	34.8	100.2	-	-	Carrier
Hori	2398.775	PK	65.1	27.5	2.2	34.8	60.0	80.2	20.2	
Hori	2400.000	PK	50.9	27.5	2.2	34.8	45.8	80.2	34.4	
Vert	2412.000	PK	102.6	27.5	2.2	34.8	97.5	-	-	Carrier
Vert	2398.242	PK	64.0	27.5	2.2	34.8	58.9	77.5	18.6	
Vert	2400.000	PK	47.4	27.5	2.2	34.8	42.3	77.5	35.2	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 32GE0273-HO-01
Date 03/29/2012 03/30/2012
Temperature/ Humidity 22 deg. C / 35% RH 23 deg. C / 37% RH
Engineer Katsunori Okai Katsunori Okai
1-10GHz Above 10GHz
Mode 11b Tx 2437MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	4874.000	PK	43.0	31.4	3.8	34.0	44.2	73.9	29.7	
Hori	7311.000	PK	42.6	36.0	4.6	34.2	49.0	73.9	24.9	
Hori	9748.000	PK	42.9	38.9	5.5	34.7	52.6	73.9	21.3	
Hori	24370.000	PK	45.3	40.5	-1.7	32.2	51.9	73.9	22.0	
Hori	4874.000	AV	34.1	31.4	3.8	34.0	35.3	53.9	18.6	
Hori	7311.000	AV	31.0	36.0	4.6	34.2	37.4	53.9	16.5	
Hori	9748.000	AV	32.0	38.9	5.5	34.7	41.7	53.9	12.2	
Hori	24370.000	AV	33.0	40.5	-1.7	32.2	39.6	53.9	14.3	
Vert	4874.000	PK	43.5	31.4	3.8	34.0	44.7	73.9	29.2	
Vert	7311.000	PK	43.6	36.0	4.6	34.2	50.0	73.9	23.9	
Vert	9748.000	PK	43.2	38.9	5.5	34.7	52.9	73.9	21.0	
Vert	24370.000	PK	45.2	40.5	-1.7	32.2	51.8	73.9	22.1	
Vert	4874.000	AV	34.0	31.4	3.8	34.0	35.2	53.9	18.7	
Vert	7311.000	AV	30.5	36.0	4.6	34.2	36.9	53.9	17.0	
Vert	9748.000	AV	32.0	38.9	5.5	34.7	41.7	53.9	12.2	
Vert	24370.000	AV	33.0	40.5	-1.7	32.2	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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	32GE0273-HO-01	
Date	03/29/2012	03/30/2012
Temperature/ Humidity	22 deg. C / 35% RH	23 deg. C / 37% RH
Engineer	Katsunori Okai	Katsunori Okai
	1-10GHz	Above 10GHz
Mode	11b Tx 2462MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2483.500	PK	54.1	27.5	2.2	34.8	49.0	73.9	24.9	
Hori	2520.317	PK	60.2	27.5	2.2	34.8	55.1	73.9	18.8	
Hori	4924.000	PK	42.8	31.5	3.8	34.0	44.1	73.9	29.8	
Hori	7386.000	PK	43.2	36.1	4.6	34.3	49.6	73.9	24.3	
Hori	9848.000	PK	43.6	39.1	5.5	34.7	53.5	73.9	20.4	
Hori	24620.000	PK	44.7	40.6	-1.7	32.5	51.1	73.9	22.8	
Hori	2483.500	AV	43.8	27.5	2.2	34.8	38.7	53.9	15.2	
Hori	2520.317	AV	34.2	27.5	2.2	34.8	29.1	53.9	24.8	
Hori	4924.000	AV	32.1	31.5	3.8	34.0	33.4	53.9	20.5	
Hori	7386.000	AV	31.5	36.1	4.6	34.3	37.9	53.9	16.0	
Hori	9848.000	AV	31.8	39.1	5.5	34.7	41.7	53.9	12.2	
Hori	24620.000	AV	33.2	40.6	-1.7	32.5	39.6	53.9	14.3	
Vert	2483.500	PK	50.5	27.5	2.2	34.8	45.4	73.9	28.5	
Vert	2519.999	PK	58.3	27.5	2.2	34.8	53.2	73.9	20.7	
Vert	4924.000	PK	43.1	31.5	3.8	34.0	44.4	73.9	29.5	
Vert	7386.000	PK	43.5	36.1	4.6	34.3	49.9	73.9	24.0	
Vert	9848.000	PK	43.1	39.1	5.5	34.7	53.0	73.9	20.9	
Vert	24620.000	PK	44.6	40.6	-1.7	32.5	51.0	73.9	22.9	
Vert	2483.500	AV	42.1	27.5	2.2	34.8	37.0	53.9	16.9	
Vert	2519.999	AV	33.7	27.5	2.2	34.8	28.6	53.9	25.3	
Vert	4924.000	AV	32.4	31.5	3.8	34.0	33.7	53.9	20.2	
Vert	7386.000	AV	31.3	36.1	4.6	34.3	37.7	53.9	16.2	
Vert	9848.000	AV	31.5	39.1	5.5	34.7	41.4	53.9	12.5	
Vert	24620.000	AV	33.2	40.6	-1.7	32.5	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

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. : 32GE0273-HO-01
Date : 03/29/2012 03/30/2012
Temperature/ Humidity : 23 deg. C / 40% RH 23 deg. C / 37% RH
Engineer : Tomohisa Nakagawa Katsunori Okai
: 1-10GHz Above 10GHz
Mode : 11g Tx 2412MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2340.311	PK	57.1	27.4	2.2	34.9	51.8	73.9	22.1	See 20dBc Data Sheet
Hori	2390.000	PK	62.8	27.4	2.2	34.8	57.6	73.9	16.3	
Hori	2400.000	PK	74.5	27.5	2.2	34.8	69.4	-	-	
Hori	4824.000	PK	42.6	31.3	4.4	34.0	44.3	73.9	29.6	
Hori	7236.000	PK	43.2	35.9	5.4	34.2	50.3	73.9	23.6	
Hori	9648.000	PK	42.8	38.8	6.1	34.7	41.8	73.9	20.9	
Hori	24120.000	PK	43.7	40.5	-1.7	31.8	50.7	73.9	23.2	See 20dBc Data Sheet
Hori	2340.311	AV	32.7	27.4	2.2	34.9	27.4	53.9	26.5	
Hori	2390.000	AV	46.2	27.4	2.2	34.8	41.0	53.9	12.9	
Hori	2400.000	AV	60.1	27.5	2.2	34.8	55.0	-	-	
Hori	4824.000	AV	30.3	31.3	4.4	34.0	32.0	53.9	21.9	
Hori	7236.000	AV	30.9	35.9	5.4	34.2	38.0	53.9	15.9	
Hori	9648.000	AV	31.6	38.8	6.1	34.7	53.0	53.9	12.1	See 20dBc Data Sheet
Hori	24120.000	AV	32.3	40.5	-1.7	31.8	39.3	53.9	14.6	
Vert	2340.311	PK	57.0	27.4	2.2	34.9	51.7	73.9	22.2	
Vert	2390.000	PK	62.4	27.4	2.2	34.8	57.2	73.9	16.7	
Vert	2400.000	PK	74.3	27.5	2.2	34.8	69.2	-	-	
Vert	4824.000	PK	43.1	31.3	4.4	34.0	44.8	73.9	29.1	
Vert	7236.000	PK	43.1	35.9	5.4	34.2	50.2	73.9	23.7	See 20dBc Data Sheet
Vert	9648.000	PK	43.7	38.8	6.1	34.7	53.9	73.9	20.0	
Vert	24120.000	PK	43.9	40.5	-1.7	31.8	50.9	73.9	23.0	
Vert	2340.311	AV	32.6	27.4	2.2	34.9	27.3	53.9	26.6	
Vert	2390.000	AV	45.8	27.4	2.2	34.8	40.6	53.9	13.3	
Vert	2400.000	AV	59.7	27.5	2.2	34.8	54.6	-	-	
Vert	4824.000	AV	30.4	31.3	4.4	34.0	32.1	53.9	21.8	See 20dBc Data Sheet
Vert	7236.000	AV	31.0	35.9	5.4	34.2	38.1	53.9	15.8	
Vert	9648.000	AV	32.5	38.8	6.1	34.7	42.7	53.9	11.2	
Vert	24120.000	AV	32.3	40.5	-1.7	31.8	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

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2412.000	PK	97.2	27.5	2.2	34.8	92.1	-	-	Carrier
Hori	2400.000	PK	61.7	27.5	2.2	34.8	56.6	72.1	15.5	
Vert	2412.000	PK	96.0	27.5	2.2	34.8	90.9	-	-	Carrier
Vert	2400.000	PK	61.2	27.5	2.2	34.8	56.1	70.9	14.8	

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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 32GE0273-HO-01
Date 03/29/2012 03/30/2012
Temperature/ Humidity 23 deg. C / 40% RH 23 deg. C / 37% RH
Engineer Tomohisa Nakagawa Katsunori Okai
Mode 11g Tx 2437MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	4874.000	PK	42.3	31.4	4.4	34.0	44.1	73.9	29.8	
Hori	7311.000	PK	43.6	36.0	5.4	34.2	50.8	73.9	23.1	
Hori	9748.000	PK	44.4	38.9	6.2	34.7	54.8	73.9	19.1	
Hori	24370.000	PK	44.4	40.5	-1.7	32.2	51.0	73.9	22.9	
Hori	4874.000	AV	30.2	31.4	4.4	34.0	32.0	53.9	21.9	
Hori	7311.000	AV	30.5	36.0	5.4	34.2	37.7	53.9	16.2	
Hori	9748.000	AV	32.7	38.9	6.2	34.7	43.1	53.9	10.8	
Hori	24370.000	AV	33.0	40.5	-1.7	32.2	39.6	53.9	14.3	
Vert	4874.000	PK	41.9	31.4	4.4	34.0	43.7	73.9	30.2	
Vert	7311.000	PK	43.1	36.0	5.4	34.2	50.3	73.9	23.6	
Vert	9748.000	PK	43.5	38.9	6.2	34.7	53.9	73.9	20.0	
Vert	24370.000	PK	45.1	40.5	-1.7	32.2	51.7	73.9	22.2	
Vert	4874.000	AV	30.2	31.4	4.4	34.0	32.0	53.9	21.9	
Vert	7311.000	AV	30.4	36.0	5.4	34.2	37.6	53.9	16.3	
Vert	9748.000	AV	32.7	38.9	6.2	34.7	43.1	53.9	10.8	
Vert	24370.000	AV	33.0	40.5	-1.7	32.2	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

Radiated Spurious Emission

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 32GE0273-HO-01
Date 03/29/2012 03/30/2012
Temperature/ Humidity 23 deg. C / 40% RH 23 deg. C / 37% RH
Engineer Tomohisa Nakagawa Katsunori Okai
1-10GHz Above 10GHz
Mode 11g Tx 2462MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2483.500	PK	63.4	27.5	2.2	34.8	58.3	73.9	15.7	
Hori	2519.596	PK	62.6	27.5	2.2	34.8	57.5	73.9	16.4	
Hori	4924.000	PK	41.8	31.5	4.4	34.0	43.7	73.9	30.2	
Hori	7386.000	PK	43.8	36.1	5.5	34.3	51.1	73.9	22.8	
Hori	9848.000	PK	42.8	39.1	6.2	34.7	53.4	73.9	20.5	
Hori	24620.000	PK	44.1	40.6	-1.7	32.5	50.5	73.9	23.4	
Hori	2483.500	AV	49.2	27.5	2.2	34.8	44.1	53.9	9.8	
Hori	2519.596	AV	33.6	27.5	2.2	34.8	28.5	53.9	25.4	
Hori	4924.000	AV	30.2	31.5	4.4	34.0	32.1	53.9	21.8	
Hori	7386.000	AV	31.1	36.1	5.5	34.3	38.4	53.9	15.5	
Hori	9848.000	AV	31.4	39.1	6.2	34.7	42.0	53.9	11.9	
Hori	24620.000	AV	33.1	40.6	-1.7	32.5	39.5	53.9	14.4	
Vert	2483.500	PK	63.0	27.5	2.2	34.8	57.9	73.9	16.0	
Vert	2519.596	PK	60.0	27.5	2.2	34.8	54.9	73.9	19.0	
Vert	4924.000	PK	41.8	31.5	4.4	34.0	43.7	73.9	30.2	
Vert	7386.000	PK	42.6	36.1	5.5	34.3	49.9	73.9	24.0	
Vert	9848.000	PK	42.2	39.1	6.2	34.7	52.8	73.9	21.1	
Vert	24620.000	PK	44.3	40.6	-1.7	32.5	50.7	73.9	23.2	
Vert	2483.500	AV	48.7	27.5	2.2	34.8	43.6	53.9	10.3	
Vert	2519.596	AV	32.9	27.5	2.2	34.8	27.8	53.9	26.1	
Vert	4924.000	AV	30.2	31.5	4.4	34.0	32.1	53.9	21.8	
Vert	7386.000	AV	31.1	36.1	5.5	34.3	38.4	53.9	15.5	
Vert	9848.000	AV	31.4	39.1	6.2	34.7	42.0	53.9	11.9	
Vert	24620.000	AV	33.1	40.6	-1.7	32.5	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

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber		
Report No.	32GE0273-HO-01		
Date	03/29/2012	03/30/2012	03/30/2012
Temperature/ Humidity	22 deg. C / 35% RH	23 deg. C / 37% RH	23 deg. C / 37% RH
Engineer	Katsunori Okai	Katsunori Okai	Katsunori Okai
	1-10GHz	Above 10GHz	Below 1GHz
Mode	11n-20 Tx 2412MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	46.602	QP	22.3	12.2	6.9	28.6	12.8	40.0	27.2	
Hori	54.401	QP	22.6	9.8	7.0	28.6	10.8	40.0	29.2	
Hori	214.399	QP	30.0	16.6	8.3	27.9	27.0	43.5	16.5	
Hori	380.799	QP	33.4	16.8	9.3	28.2	31.3	46.0	14.7	
Hori	441.597	QP	28.7	17.8	9.5	28.5	27.5	46.0	18.5	
Hori	515.197	QP	30.9	18.5	9.8	28.8	30.4	46.0	15.6	
Hori	2340.003	PK	60.6	27.4	2.2	34.9	55.3	73.9	18.6	
Hori	2390.000	PK	70.2	27.4	2.2	34.8	65.0	73.9	8.9	
Hori	2400.000	PK	82.2	27.5	2.2	34.8	77.1	-	-	See 20dBc Data Sheet
Hori	4824.000	PK	42.6	31.3	3.8	34.0	43.7	73.9	30.2	
Hori	7236.000	PK	43.1	35.9	4.6	34.2	49.4	73.9	24.5	
Hori	9648.000	PK	43.4	38.8	5.5	34.7	53.0	73.9	20.9	
Hori	24120.000	PK	45.5	40.5	-1.7	31.8	52.5	73.9	21.4	
Hori	2340.003	AV	33.4	27.4	2.2	34.9	28.1	53.9	25.8	
Hori	2390.000	AV	52.5	27.4	2.2	34.8	47.3	53.9	6.6	
Hori	2400.000	AV	63.8	27.5	2.2	34.8	58.7	-	-	See 20dBc Data Sheet
Hori	4824.000	AV	30.6	31.3	3.8	34.0	31.7	53.9	22.2	
Hori	7236.000	AV	30.6	35.9	4.6	34.2	36.9	53.9	17.0	
Hori	9648.000	AV	32.0	38.8	5.5	34.7	41.6	53.9	12.3	
Hori	24120.000	AV	32.8	40.5	-1.7	31.8	39.8	53.9	14.1	
Vert	46.588	QP	30.6	12.2	6.9	28.6	21.1	40.0	18.9	
Vert	54.404	QP	33.2	9.8	7.0	28.6	21.3	40.0	18.7	
Vert	214.399	QP	29.5	16.6	8.3	27.9	26.5	43.5	17.0	
Vert	380.799	QP	29.3	16.8	9.3	28.2	27.2	46.0	18.8	
Vert	441.599	QP	29.0	17.8	9.5	28.5	27.8	46.0	18.2	
Vert	515.198	QP	30.3	18.5	9.8	28.8	29.8	46.0	16.2	
Vert	2340.002	PK	57.8	27.4	2.2	34.9	52.5	73.9	21.4	
Vert	2390.000	PK	67.6	27.4	2.2	34.8	62.4	73.9	11.5	
Vert	2400.000	PK	79.7	27.5	2.2	34.8	74.6	-	-	See 20dBc Data Sheet
Vert	4824.000	PK	43.2	31.3	3.8	34.0	44.3	73.9	29.6	
Vert	7236.000	PK	42.5	35.9	4.6	34.2	48.8	73.9	25.1	
Vert	9648.000	PK	43.2	38.8	5.5	34.7	52.8	73.9	21.1	
Vert	24120.000	PK	44.7	40.5	-1.7	31.8	51.7	73.9	22.2	
Vert	2340.002	AV	32.7	27.4	2.2	34.9	27.4	53.9	26.5	
Vert	2390.000	AV	49.9	27.4	2.2	34.8	44.7	53.9	9.2	
Vert	2400.000	AV	61.1	27.5	2.2	34.8	56.0	-	-	See 20dBc Data Sheet
Vert	4824.000	AV	30.6	31.3	3.8	34.0	31.7	53.9	22.2	
Vert	7236.000	AV	30.6	35.9	4.6	34.2	36.9	53.9	17.0	
Vert	9648.000	AV	31.6	38.8	5.5	34.7	41.2	53.9	12.7	
Vert	24120.000	AV	32.8	40.5	-1.7	31.8	39.8	53.9	14.1	

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

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2412.000	PK	98.5	27.5	2.2	34.8	93.4	-	-	Carrier
Hori	2400.000	PK	63.2	27.5	2.2	34.8	58.1	73.4	15.3	
Vert	2412.000	PK	95.9	27.5	2.2	34.8	90.8	-	-	Carrier
Vert	2400.000	PK	60.8	27.5	2.2	34.8	55.7	70.8	15.1	

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

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. : 32GE0273-HO-01
Date : 03/29/2012 03/30/2012
Temperature/ Humidity : 22 deg. C / 35% RH 23 deg. C / 37% RH
Engineer : Katsunori Okai Katsunori Okai
: 1-10GHz Above 10GHz
Mode : 11n-20 Tx 2437MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	4874.000	PK	42.5	31.4	3.8	34.0	43.7	73.9	30.2	
Hori	7311.000	PK	42.7	36.0	4.6	34.2	49.1	73.9	24.8	
Hori	9748.000	PK	44.4	38.9	5.5	34.7	54.1	73.9	19.8	
Hori	24370.000	PK	45.3	40.5	-1.7	32.2	51.9	73.9	22.0	
Hori	4874.000	AV	30.2	31.4	3.8	34.0	31.4	53.9	22.5	
Hori	7311.000	AV	30.5	36.0	4.6	34.2	36.9	53.9	17.0	
Hori	9748.000	AV	31.8	38.9	5.5	34.7	41.5	53.9	12.4	
Hori	24370.000	AV	33.2	40.5	-1.7	32.2	39.8	53.9	14.1	
Vert	4874.000	PK	42.7	31.4	3.8	34.0	43.9	73.9	30.0	
Vert	7311.000	PK	42.7	36.0	4.6	34.2	49.1	73.9	24.8	
Vert	9748.000	PK	44.6	38.9	5.5	34.7	54.3	73.9	19.6	
Vert	24370.000	PK	45.1	40.5	-1.7	32.2	51.7	73.9	22.2	
Vert	4874.000	AV	30.2	31.4	3.8	34.0	31.4	53.9	22.5	
Vert	7311.000	AV	30.4	36.0	4.6	34.2	36.8	53.9	17.1	
Vert	9748.000	AV	31.6	38.9	5.5	34.7	41.3	53.9	12.6	
Vert	24370.000	AV	33.2	40.5	-1.7	32.2	39.8	53.9	14.1	

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

Radiated Spurious Emission

Test place : Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. : 32GE0273-HO-01
Date : 03/29/2012 03/30/2012
Temperature/ Humidity : 22 deg. C / 35% RH 23 deg. C / 37% RH
Engineer : Katsunori Okai Katsunori Okai
1-10GHz Above 10GHz
Mode : 11n-20 Tx 2462MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2483.500	PK	71.4	27.5	2.2	34.8	66.3	73.9	7.6	
Hori	2520.003	PK	64.7	27.5	2.2	34.8	59.6	73.9	14.3	
Hori	4924.000	PK	42.1	31.5	3.8	34.0	43.4	73.9	30.5	
Hori	7386.000	PK	43.7	36.1	4.6	34.3	50.1	73.9	23.8	
Hori	9848.000	PK	43.4	39.1	5.5	34.7	53.3	73.9	20.6	
Hori	24620.000	PK	44.8	40.6	-1.7	32.5	51.2	73.9	22.7	
Hori	2483.500	AV	54.5	27.5	2.2	34.8	49.4	53.9	4.5	
Hori	2520.003	AV	34.7	27.5	2.2	34.8	29.6	53.9	24.3	
Hori	4924.000	AV	30.0	31.5	3.8	34.0	31.3	53.9	22.6	
Hori	7386.000	AV	31.0	36.1	4.6	34.3	37.4	53.9	16.5	
Hori	9848.000	AV	32.0	39.1	5.5	34.7	41.9	53.9	12.0	
Hori	24620.000	AV	33.4	40.6	-1.7	32.5	39.8	53.9	14.1	
Vert	2483.500	PK	67.5	27.5	2.2	34.8	62.4	73.9	11.5	
Vert	2520.003	PK	61.1	27.5	2.2	34.8	56.0	73.9	17.9	
Vert	4924.000	PK	42.1	31.5	3.8	34.0	43.4	73.9	30.5	
Vert	7386.000	PK	43.6	36.1	4.6	34.3	50.0	73.9	23.9	
Vert	9848.000	PK	43.5	39.1	5.5	34.7	53.4	73.9	20.5	
Vert	24620.000	PK	45.6	40.6	-1.7	32.5	52.0	73.9	21.9	
Vert	2483.500	AV	50.6	27.5	2.2	34.8	45.5	53.9	8.4	
Vert	2520.003	AV	33.2	27.5	2.2	34.8	28.1	53.9	25.8	
Vert	4924.000	AV	30.0	31.5	3.8	34.0	31.3	53.9	22.6	
Vert	7386.000	AV	30.9	36.1	4.6	34.3	37.3	53.9	16.6	
Vert	9848.000	AV	31.9	39.1	5.5	34.7	41.8	53.9	12.1	
Vert	24620.000	AV	33.4	40.6	-1.7	32.5	39.8	53.9	14.1	

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

Radiated Spurious Emission
(Chassis's color: Pink, Serial No.: 004401200900062)

Test place Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. 32GE0273-HO-01
Date 03/29/2012 03/30/2012 03/30/2012
Temperature/ Humidity 22 deg. C / 35% RH 23 deg. C / 37% RH 23 deg. C / 37% RH
Engineer Katsunori Okai Katsunori Okai Katsunori Okai
1-10GHz Above 10GHz Below 1GHz
Mode 11n-20 Tx 2412MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	46.387	QP	22.3	12.2	6.9	28.6	12.8	40.0	27.2	
Hori	54.221	QP	22.7	9.9	7.0	28.6	11.0	40.0	29.0	
Hori	211.199	QP	30.1	16.5	8.3	27.9	27.0	43.5	16.5	
Hori	367.997	QP	34.4	16.5	9.2	28.1	32.0	46.0	14.0	
Hori	447.997	QP	32.1	17.8	9.6	28.5	31.0	46.0	15.0	
Hori	521.595	QP	32.9	18.6	9.9	28.8	32.6	46.0	13.4	
Hori	2340.008	PK	58.8	27.4	2.2	34.9	53.5	73.9	20.4	
Hori	2390.000	PK	67.1	27.4	2.2	34.8	61.9	73.9	12.0	
Hori	2400.000	PK	81.9	27.5	2.2	34.8	76.8	-	-	See 20dBc Data Sheet
Hori	4824.000	PK	42.3	31.3	3.8	34.0	43.4	73.9	30.5	
Hori	7236.000	PK	42.6	35.9	4.6	34.2	48.9	73.9	25.0	
Hori	9648.000	PK	42.5	38.8	5.5	34.7	52.1	73.9	21.8	
Hori	24120.000	PK	43.7	40.5	-1.7	31.8	50.7	73.9	23.2	
Hori	2340.008	AV	33.3	27.4	2.2	34.9	28.0	53.9	25.9	
Hori	2390.000	AV	49.8	27.4	2.2	34.8	44.6	53.9	9.3	
Hori	2400.000	AV	61.4	27.5	2.2	34.8	56.3	-	-	See 20dBc Data Sheet
Hori	4824.000	AV	30.6	31.3	3.8	34.0	31.7	53.9	22.2	
Hori	7236.000	AV	30.6	35.9	4.6	34.2	36.9	53.9	17.0	
Hori	9648.000	AV	31.9	38.8	5.5	34.7	41.5	53.9	12.4	
Hori	24120.000	AV	32.4	40.5	-1.7	31.8	39.4	53.9	14.5	
Vert	46.397	QP	33.0	12.2	6.9	28.6	23.5	40.0	16.5	
Vert	54.233	QP	32.9	9.9	7.0	28.6	21.1	40.0	18.9	
Vert	211.198	QP	30.5	16.5	8.3	27.9	27.4	43.5	16.1	
Vert	367.998	QP	34.1	16.5	9.2	28.1	31.7	46.0	14.3	
Vert	447.999	QP	31.9	17.8	9.6	28.5	30.8	46.0	15.2	
Vert	521.598	QP	30.7	18.6	9.9	28.8	30.4	46.0	15.6	
Vert	2340.011	PK	58.5	27.4	2.2	34.9	53.2	73.9	20.7	
Vert	2390.000	PK	65.5	27.4	2.2	34.8	60.3	73.9	13.6	
Vert	2400.000	PK	79.6	27.5	2.2	34.8	74.5	-	-	See 20dBc Data Sheet
Vert	4824.000	PK	42.6	31.3	3.8	34.0	43.7	73.9	30.2	
Vert	7236.000	PK	42.8	35.9	4.6	34.2	49.1	73.9	24.8	
Vert	9648.000	PK	42.6	38.8	5.5	34.7	52.2	73.9	21.7	
Vert	24120.000	PK	44.0	40.5	-1.7	31.8	51.0	73.9	22.9	
Vert	2340.011	AV	32.7	27.4	2.2	34.9	27.4	53.9	26.5	
Vert	2390.000	AV	47.8	27.4	2.2	34.8	42.6	53.9	11.3	
Vert	2400.000	AV	58.9	27.5	2.2	34.8	53.8	-	-	See 20dBc Data Sheet
Vert	4824.000	AV	30.6	31.3	3.8	34.0	31.7	53.9	22.2	
Vert	7236.000	AV	30.6	35.9	4.6	34.2	36.9	53.9	17.0	
Vert	9648.000	AV	31.9	38.8	5.5	34.7	41.5	53.9	12.4	
Vert	24120.000	AV	32.4	40.5	-1.7	31.8	39.4	53.9	14.5	

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).

*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

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2412.000	PK	98.4	27.5	2.2	34.8	93.3	-	-	Carrier
Hori	2400.000	PK	62.8	27.5	2.2	34.8	57.7	73.3	15.6	
Vert	2412.000	PK	95.2	27.5	2.2	34.8	90.1	-	-	Carrier
Vert	2400.000	PK	60.3	27.5	2.2	34.8	55.2	70.1	14.9	

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

Radiated Spurious Emission
(Chassis's color: Pink, Serial No.: 004401200900062)

Test place : Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No. : 32GE0273-HO-01
Date : 03/29/2012 03/30/2012
Temperature/ Humidity : 22 deg. C / 35% RH 23 deg. C / 37% RH
Engineer : Katsunori Okai Katsunori Okai
: 1-10GHz Above 10GHz
Mode : 11n-20 Tx 2437MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	4874.000	PK	42.5	31.4	3.8	34.0	43.7	73.9	30.2	
Hori	7311.000	PK	42.7	36.0	4.6	34.2	49.1	73.9	24.8	
Hori	9748.000	PK	44.4	38.9	5.5	34.7	54.1	73.9	19.8	
Hori	24370.000	PK	45.3	40.5	-1.7	32.2	51.9	73.9	22.0	
Hori	4874.000	AV	30.2	31.4	3.8	34.0	31.4	53.9	22.5	
Hori	7311.000	AV	30.5	36.0	4.6	34.2	36.9	53.9	17.0	
Hori	9748.000	AV	31.8	38.9	5.5	34.7	41.5	53.9	12.4	
Hori	24370.000	AV	33.2	40.5	-1.7	32.2	39.8	53.9	14.1	
Vert	4874.000	PK	42.7	31.4	3.8	34.0	43.9	73.9	30.0	
Vert	7311.000	PK	42.7	36.0	4.6	34.2	49.1	73.9	24.8	
Vert	9748.000	PK	44.6	38.9	5.5	34.7	54.3	73.9	19.6	
Vert	24370.000	PK	45.1	40.5	-1.7	32.2	51.7	73.9	22.2	
Vert	4874.000	AV	30.2	31.4	3.8	34.0	31.4	53.9	22.5	
Vert	7311.000	AV	30.4	36.0	4.6	34.2	36.8	53.9	17.1	
Vert	9748.000	AV	31.6	38.9	5.5	34.7	41.3	53.9	12.6	
Vert	24370.000	AV	33.2	40.5	-1.7	32.2	39.8	53.9	14.1	

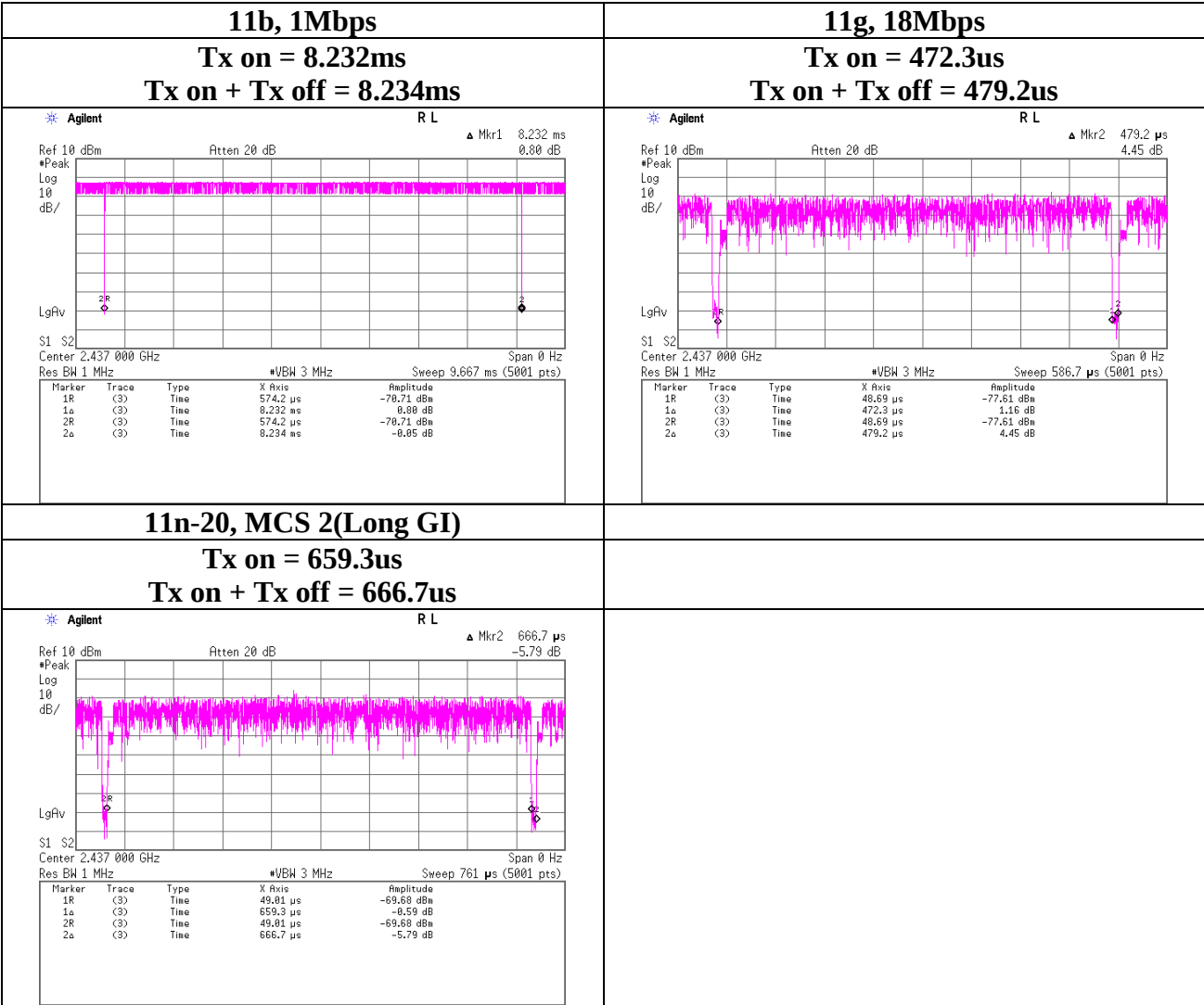
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

*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.

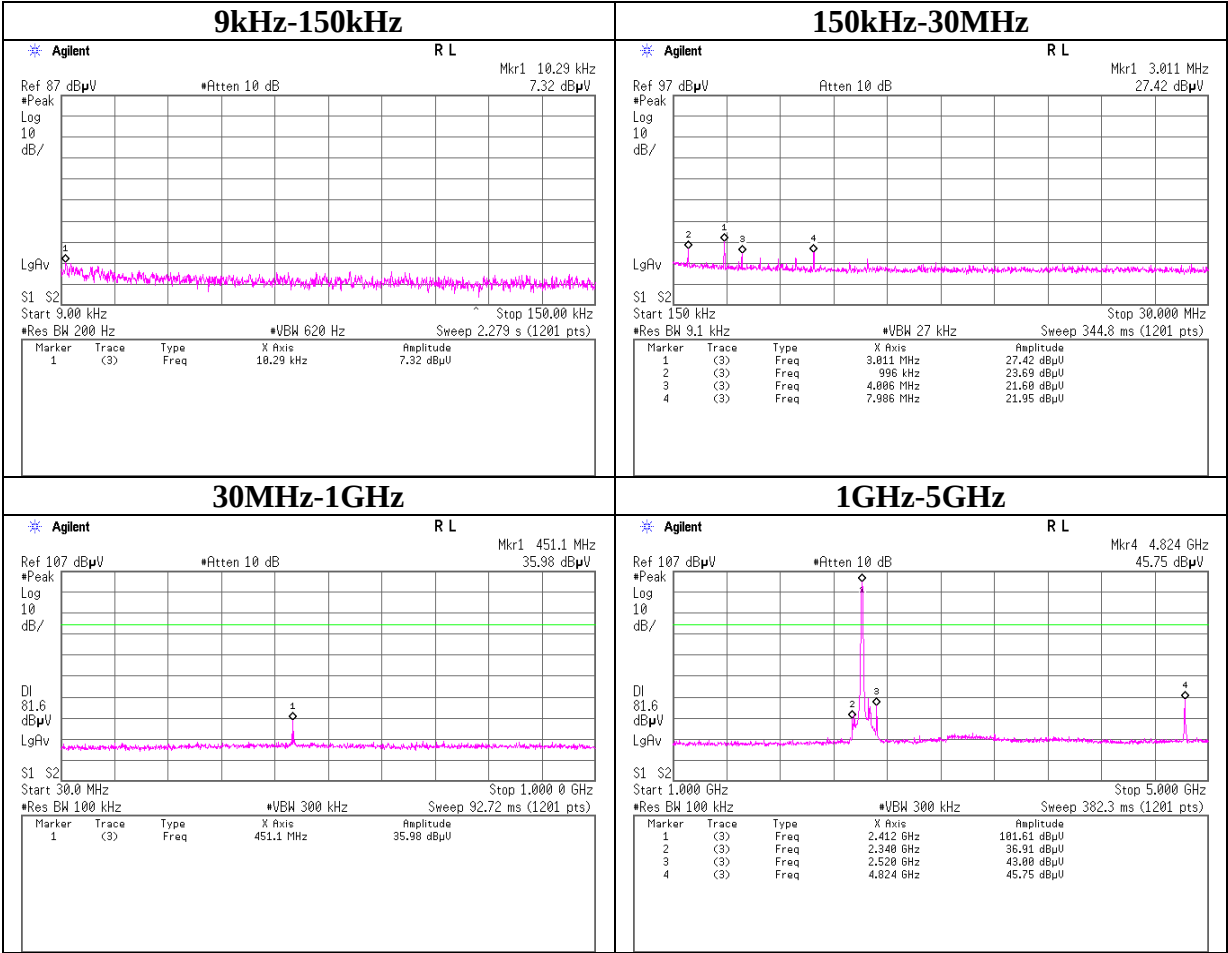
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Tested Duty Cycle (Worst Data Rate)



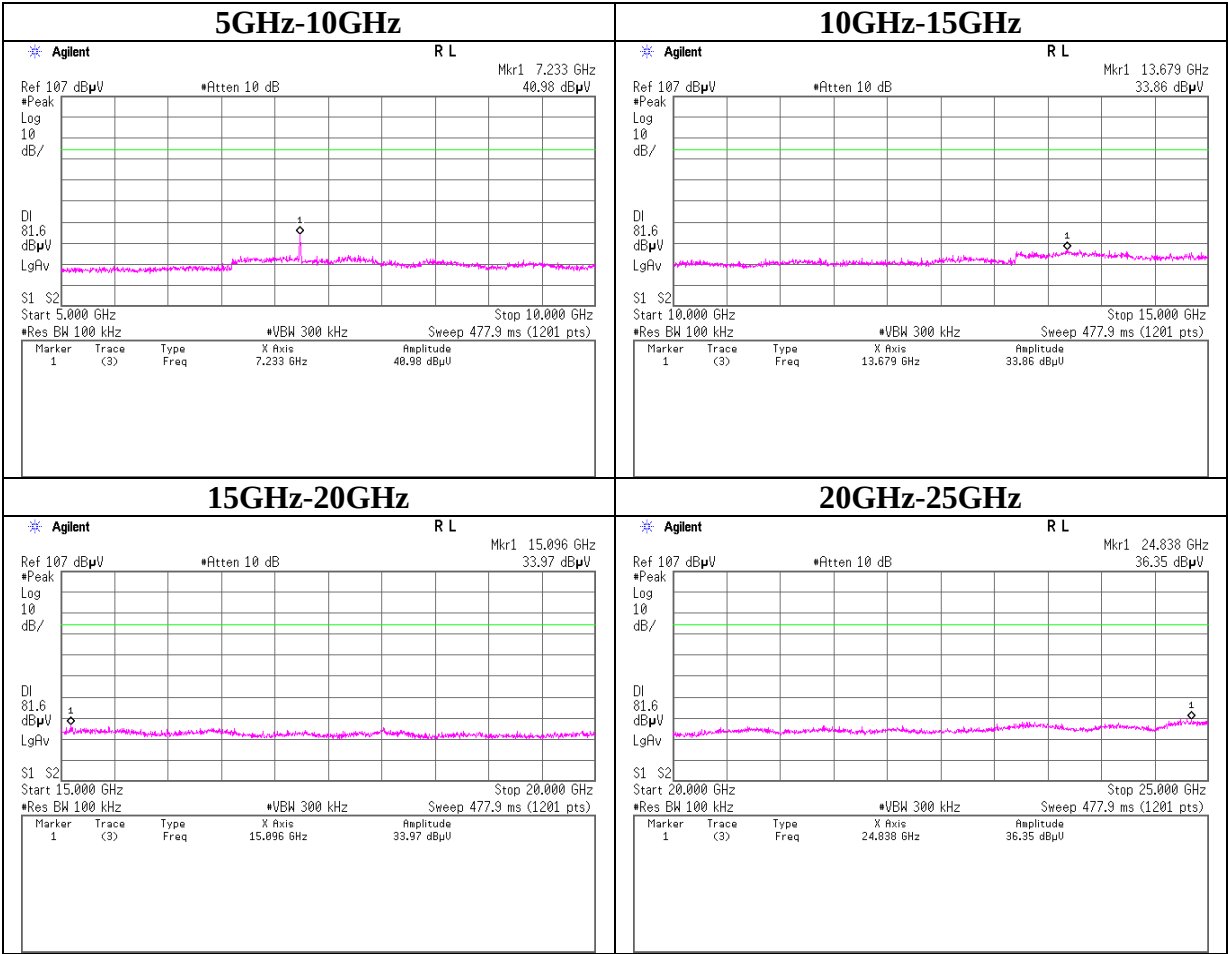
Conducted Spurious Emission

11b Tx 2412MHz



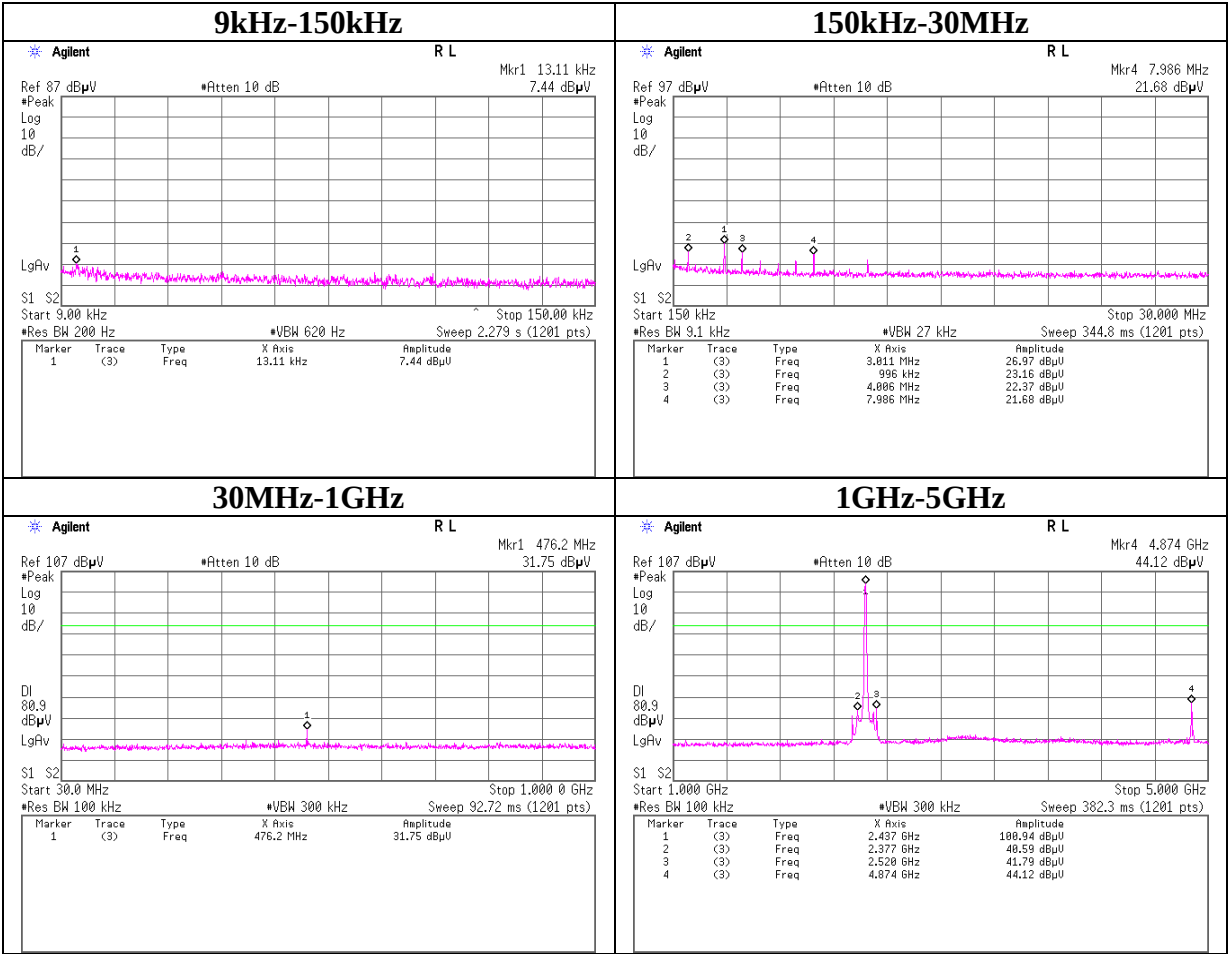
Conducted Spurious Emission

11b Tx 2412MHz



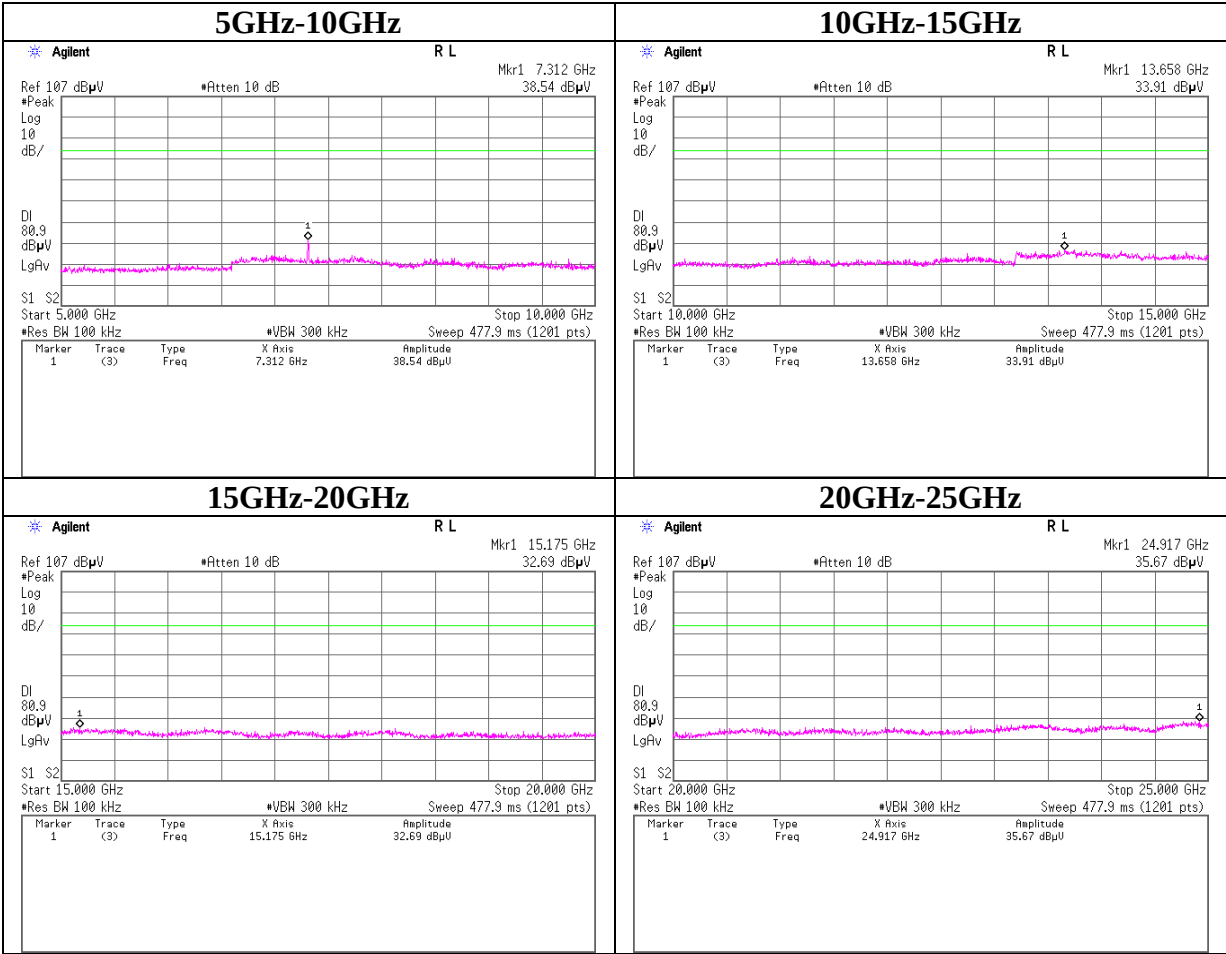
Conducted Spurious Emission

11b Tx 2437MHz



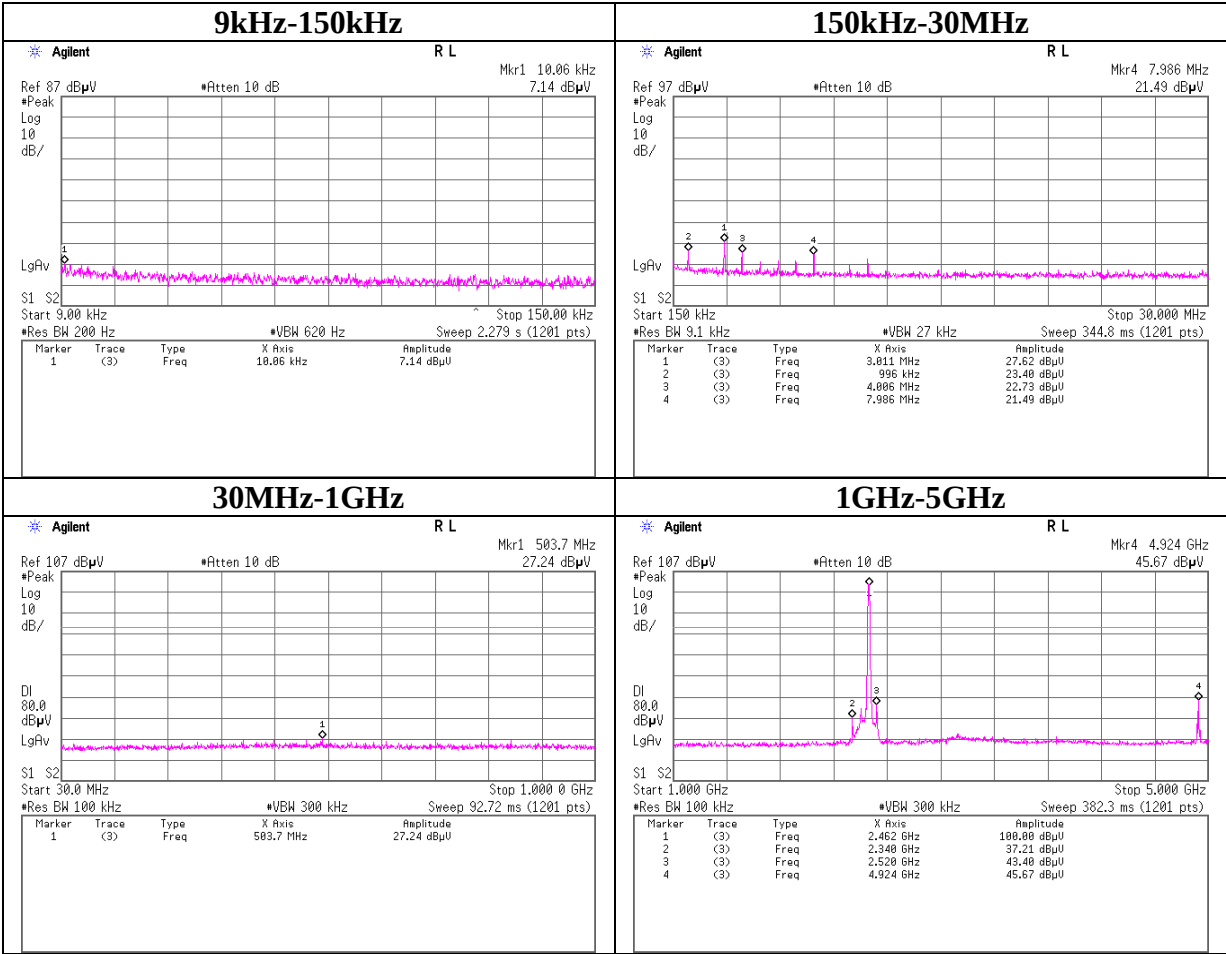
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11b Tx 2437MHz



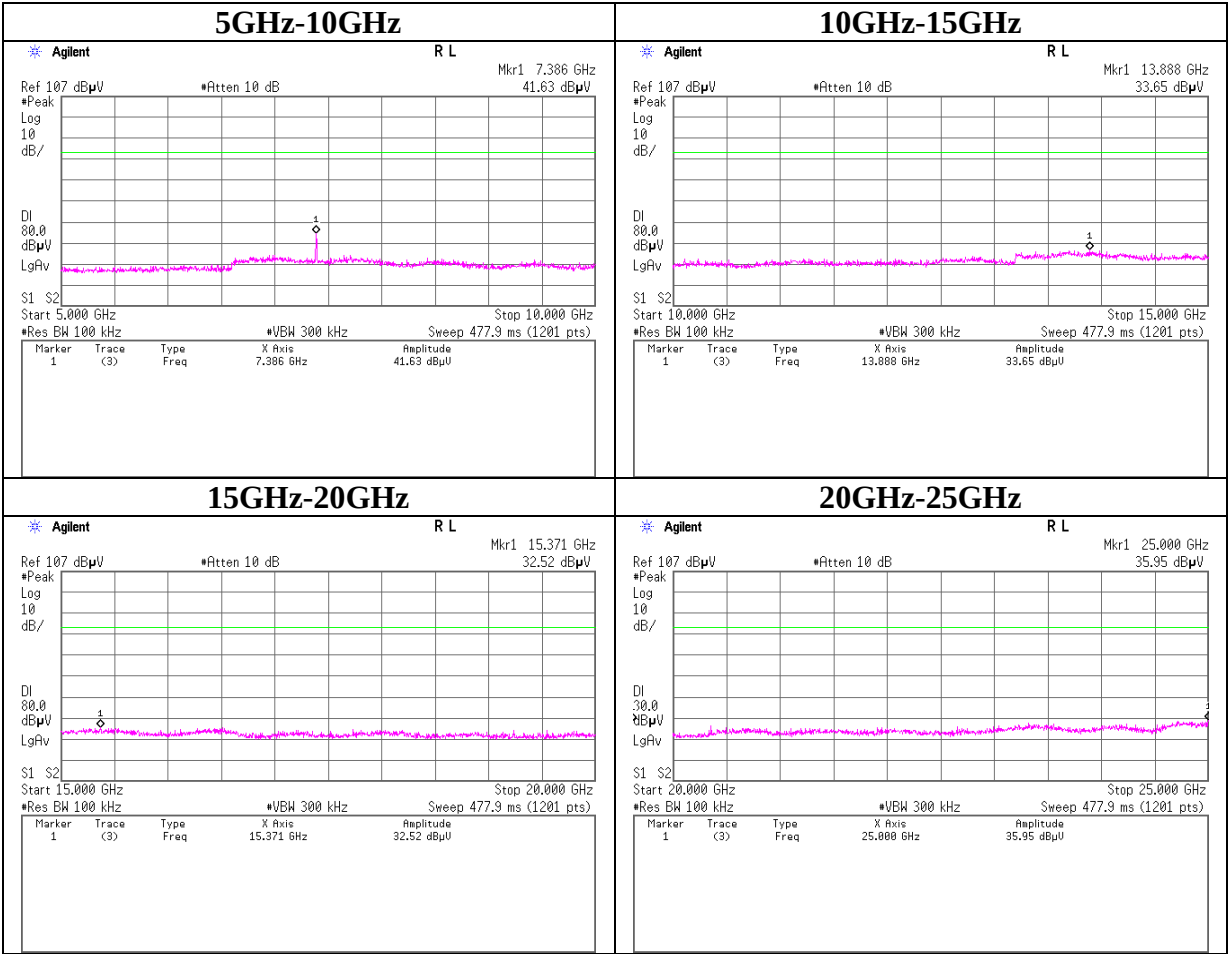
Conducted Spurious Emission

11b Tx 2462MHz



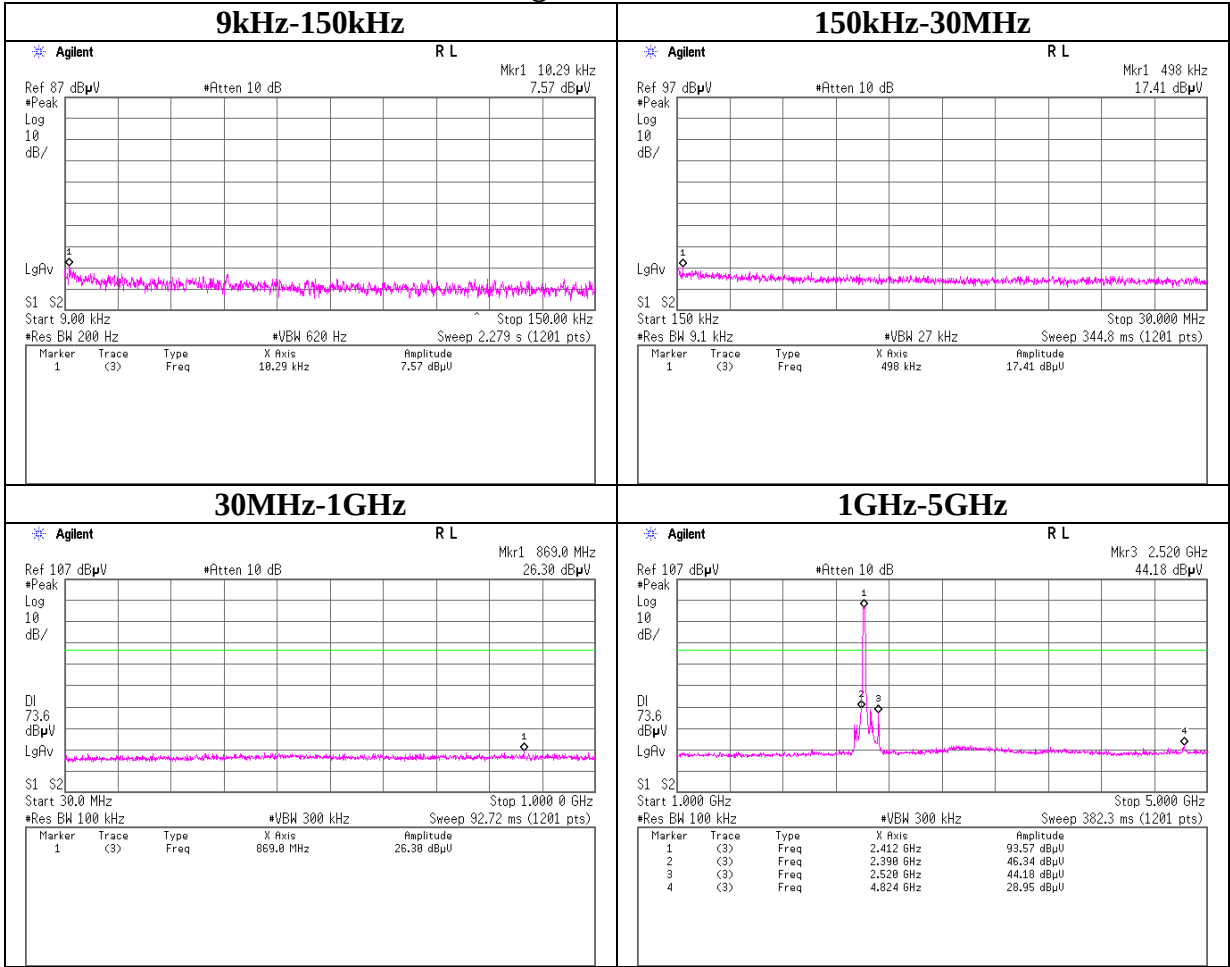
Conducted Spurious Emission

11b Tx 2462MHz



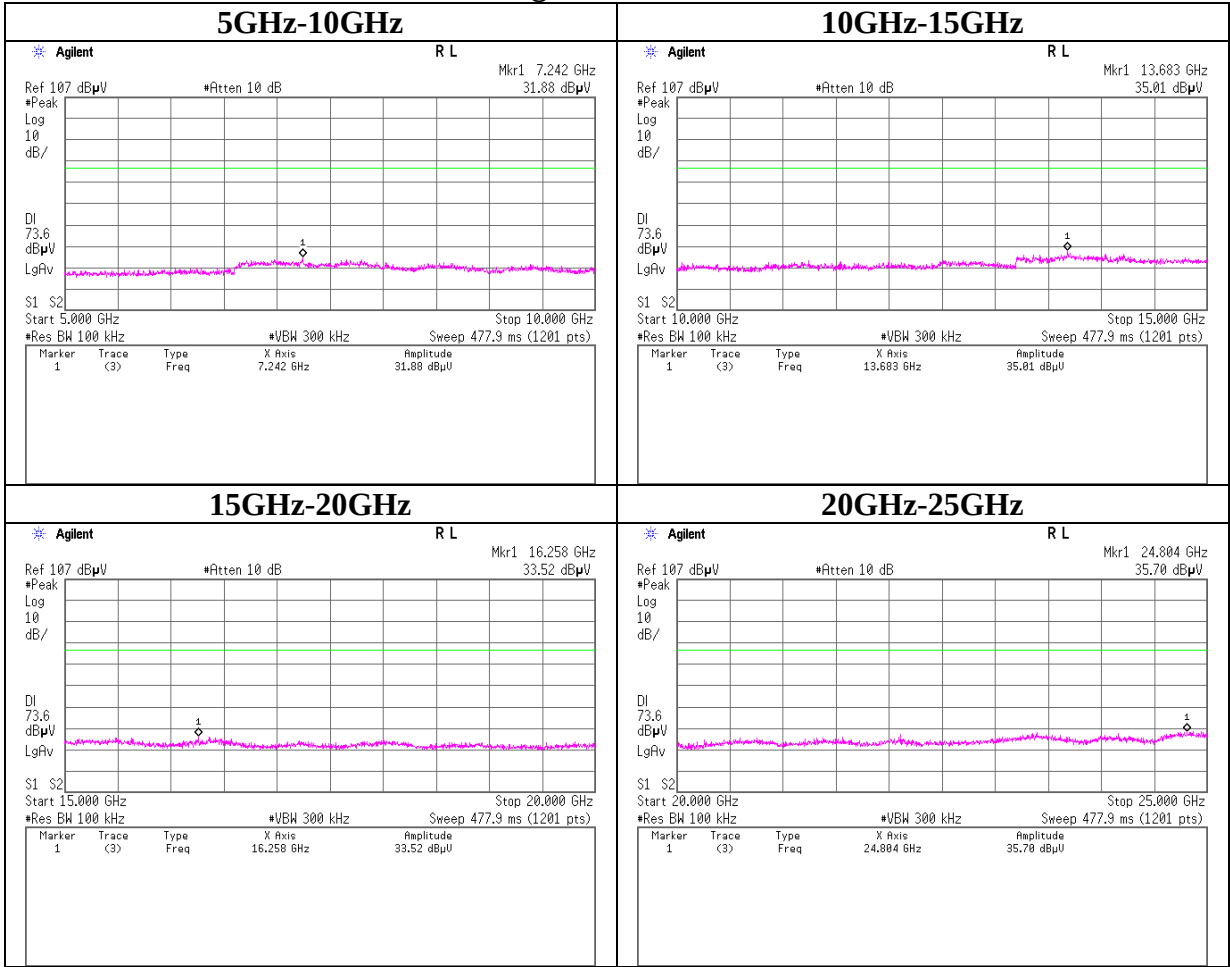
Conducted Spurious Emission

11g Tx 2412MHz



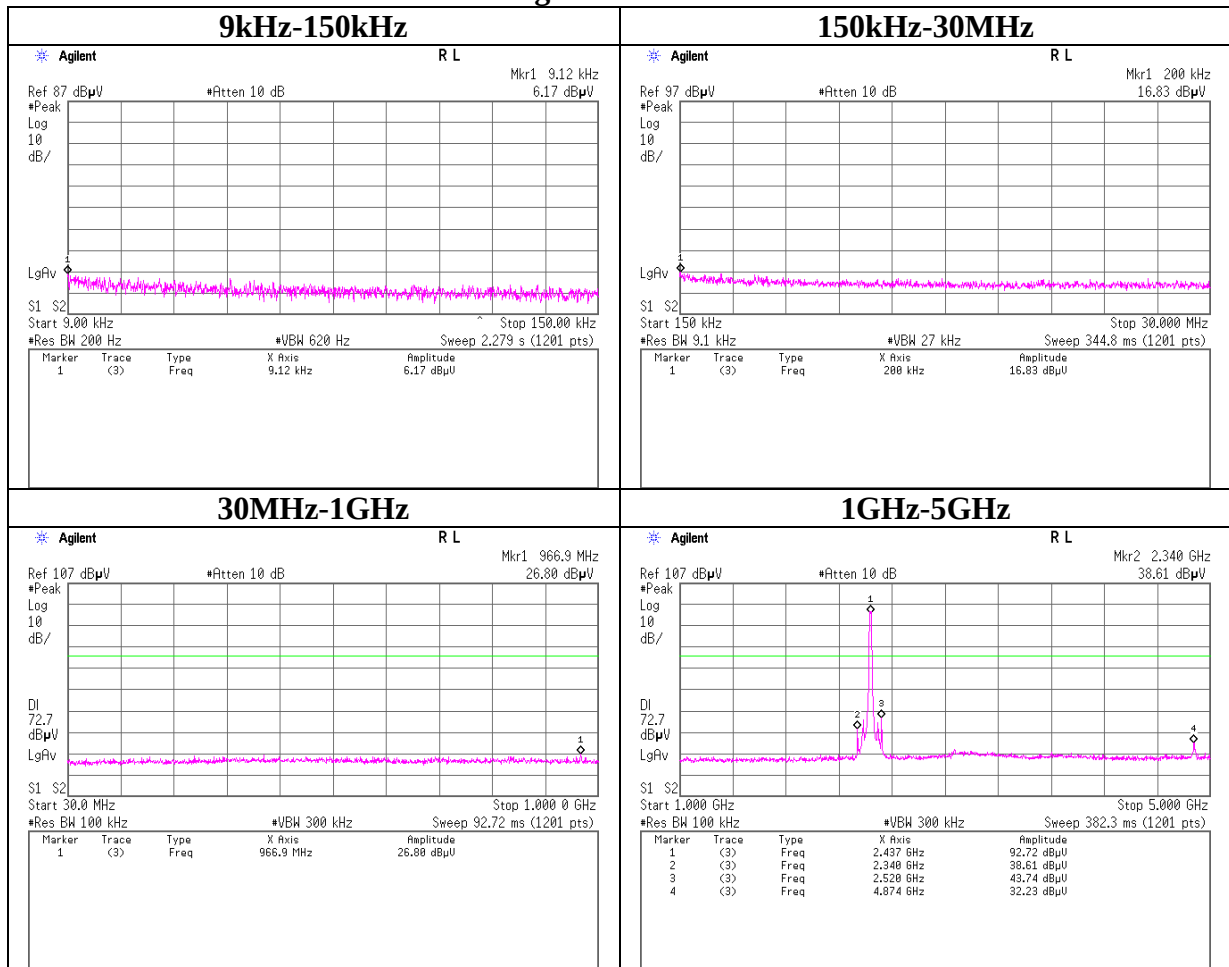
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11g Tx 2412MHz



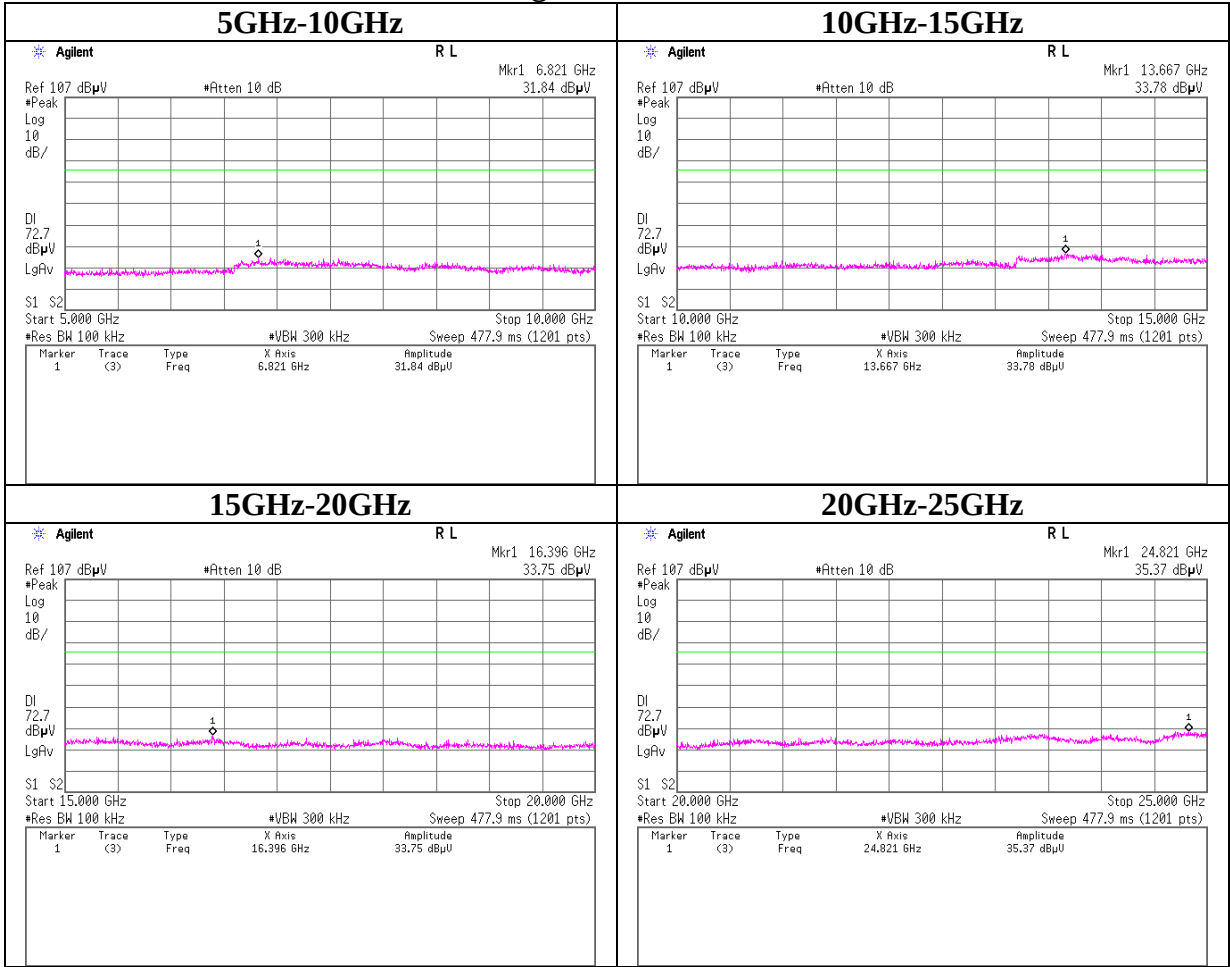
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11g Tx 2437MHz



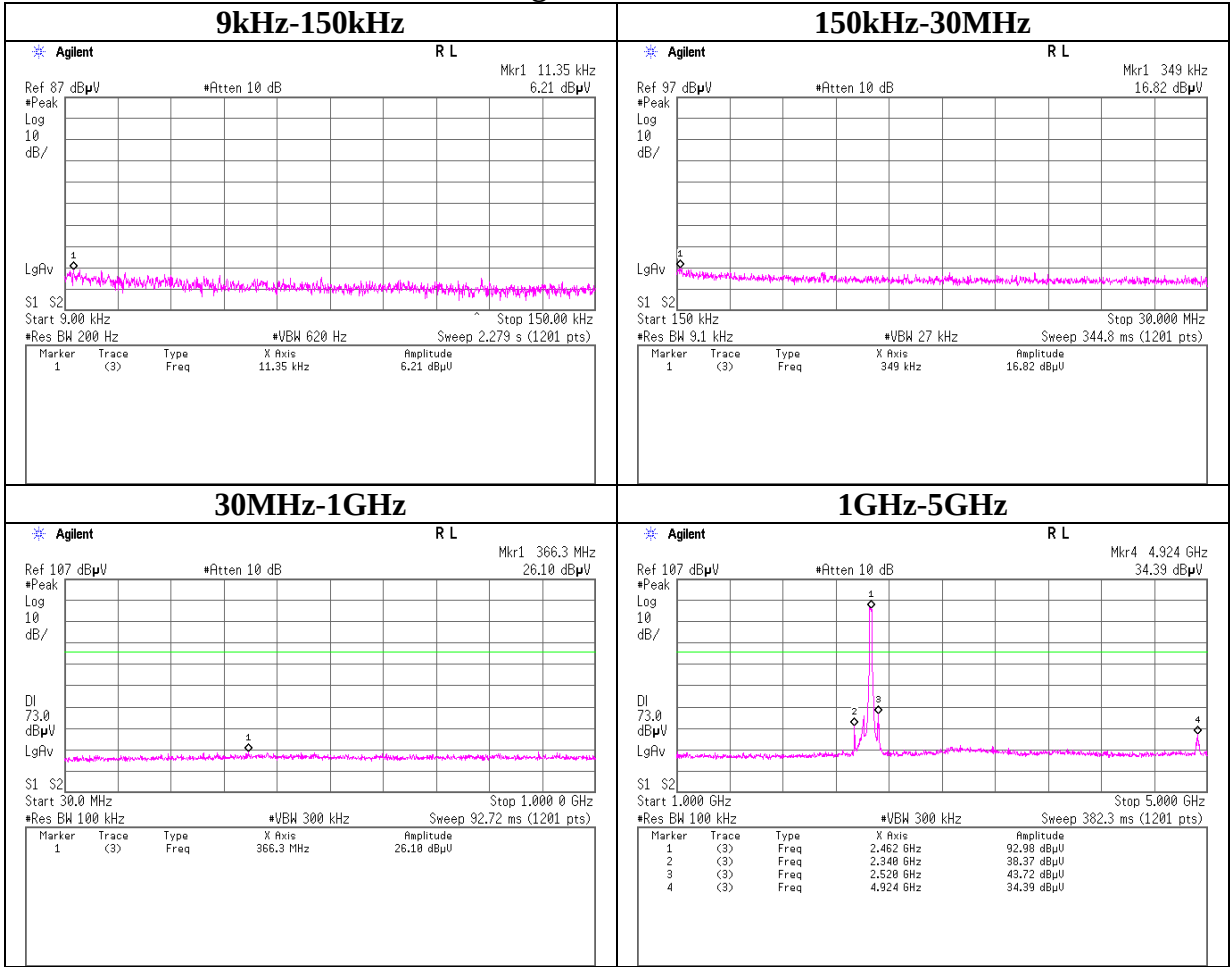
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11g Tx 2437MHz



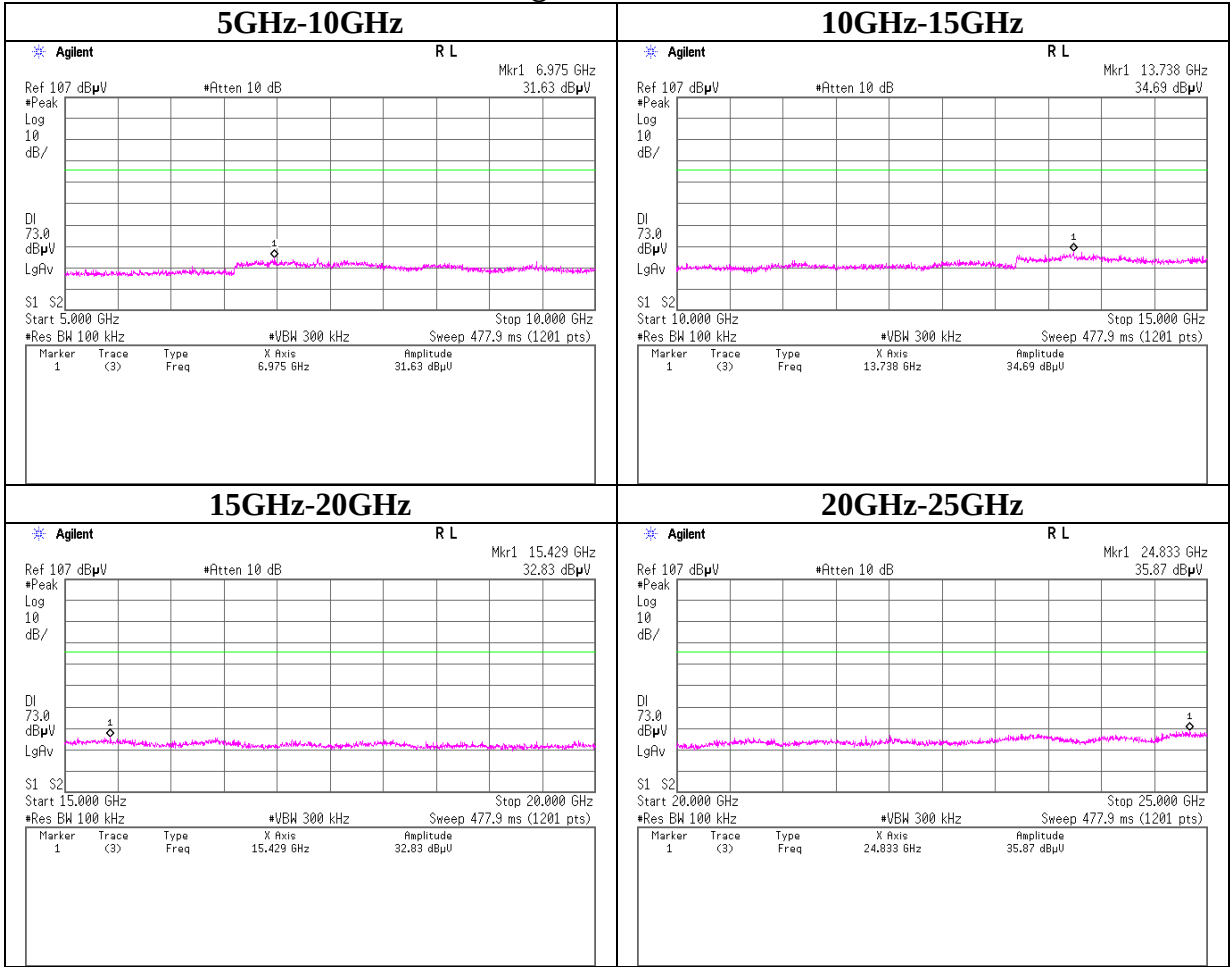
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11g Tx 2462MHz



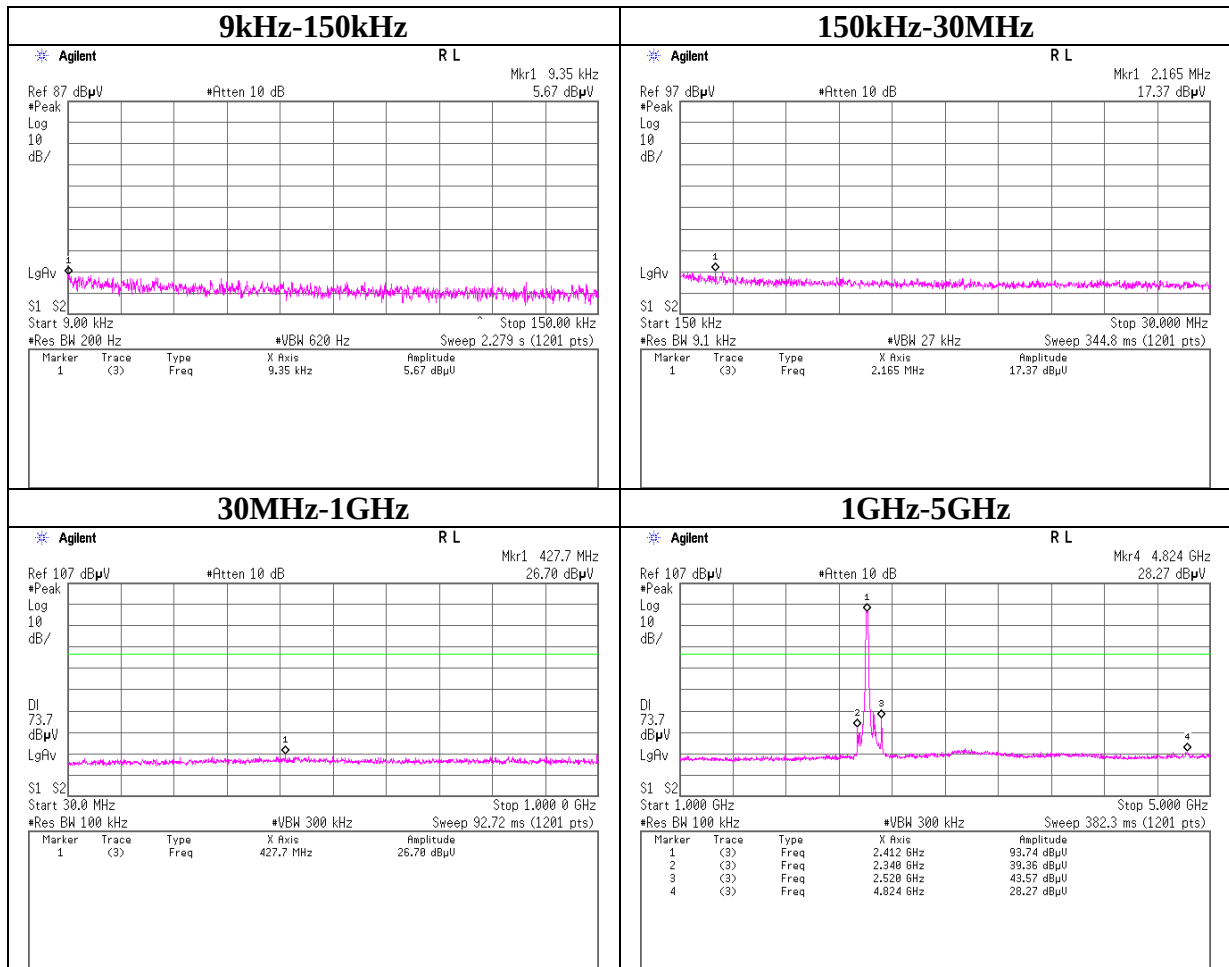
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11g Tx 2462MHz



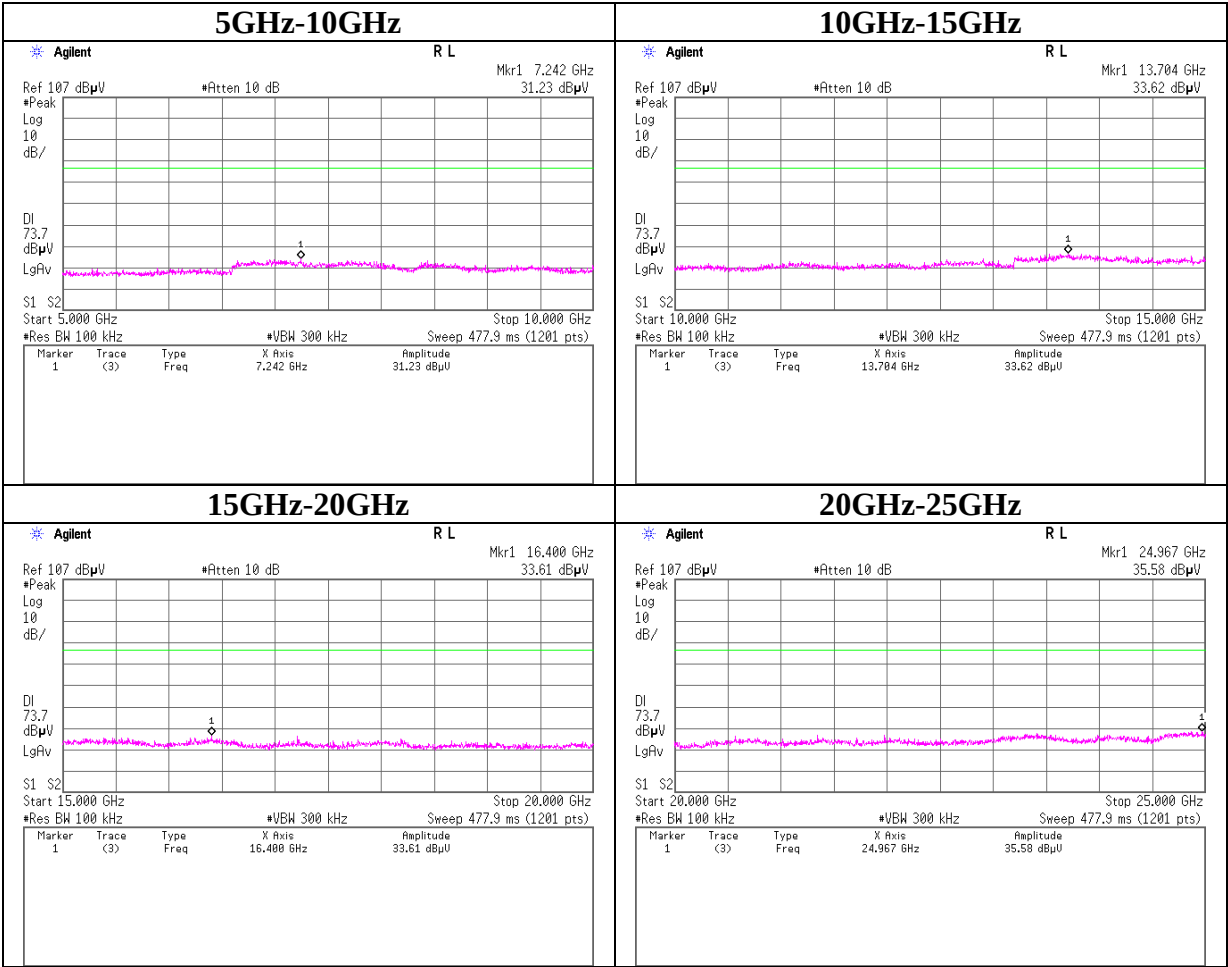
Conducted Spurious Emission

11n-20 Tx 2412MHz



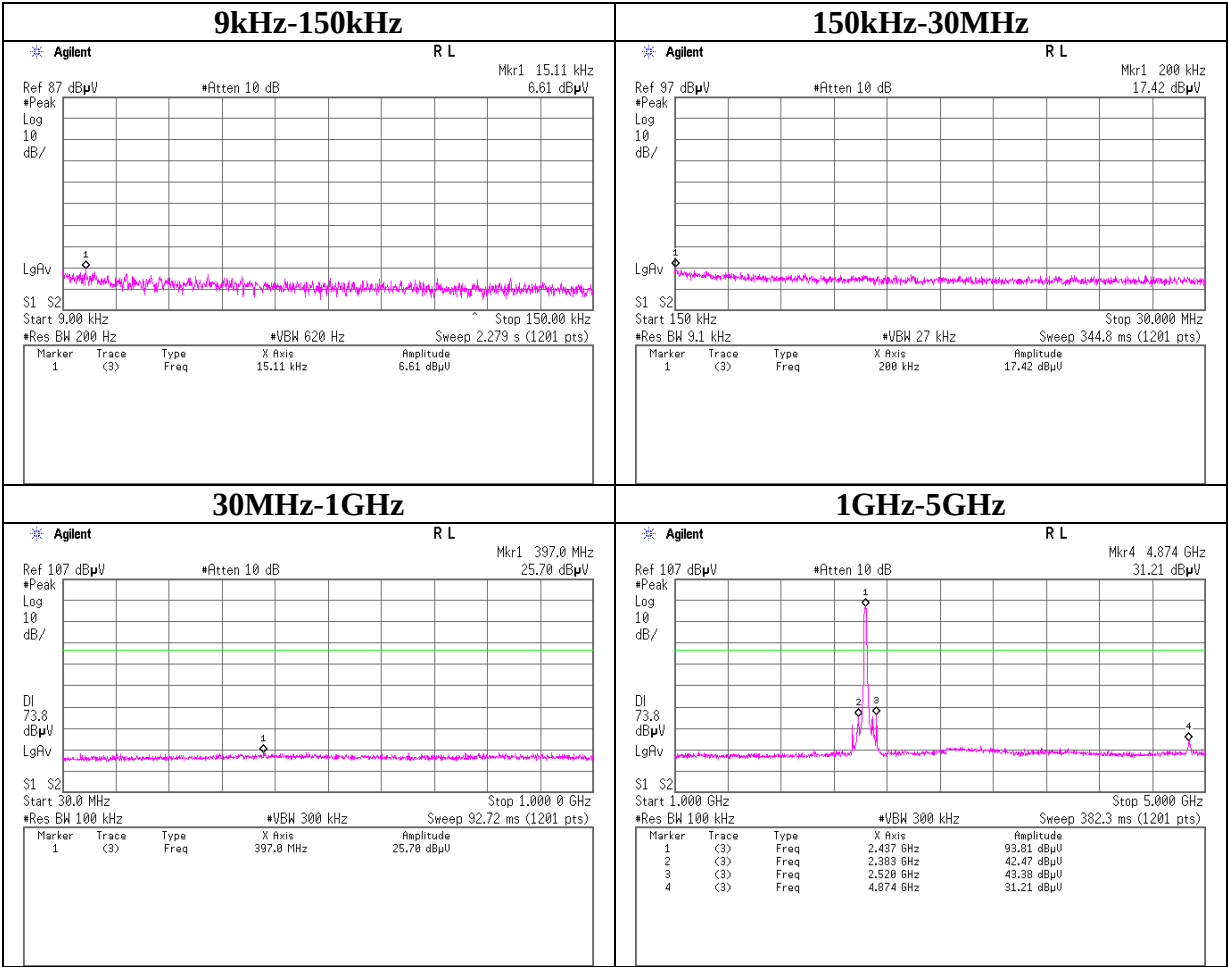
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11n-20 Tx 2412MHz



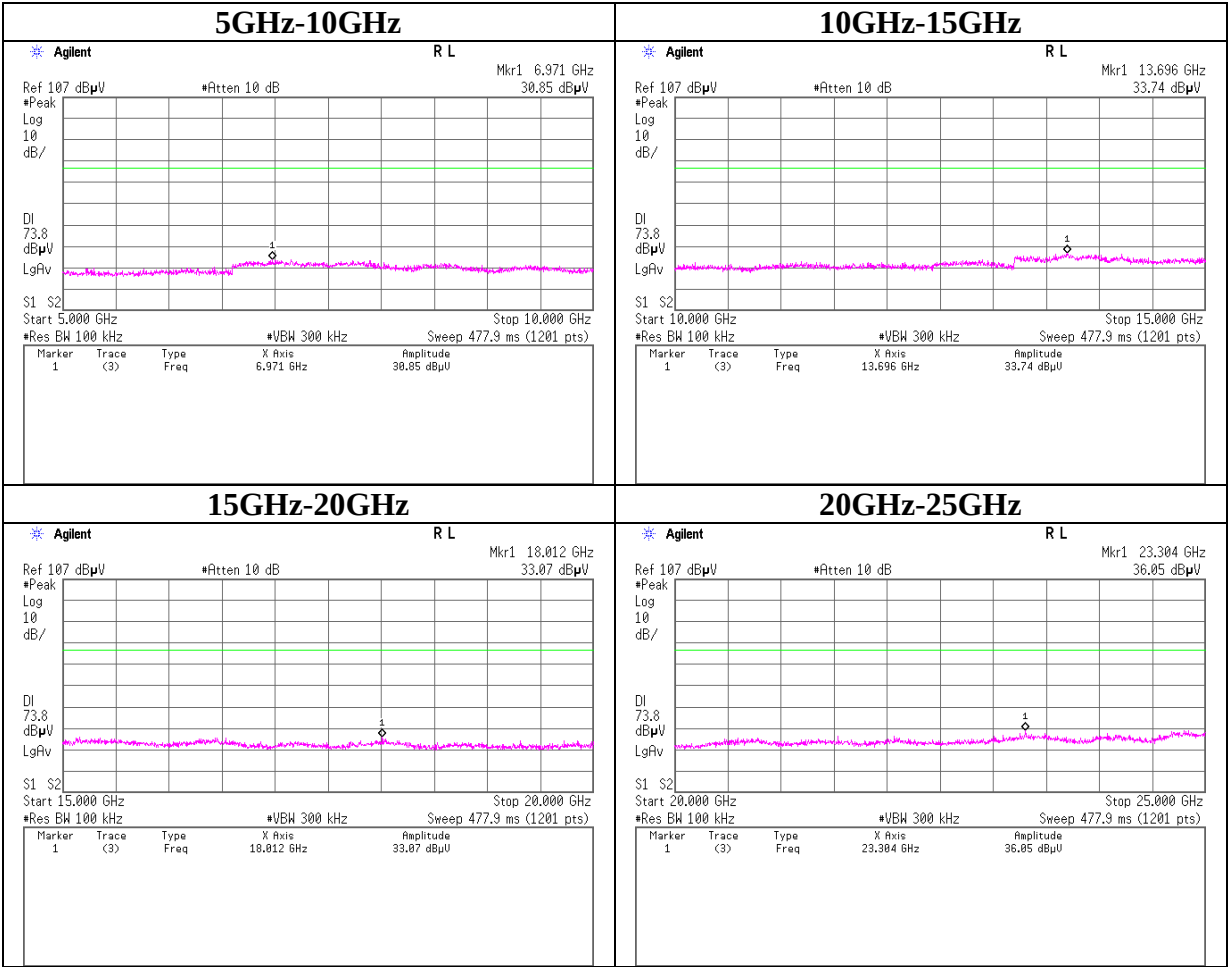
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11n-20 Tx 2437MHz



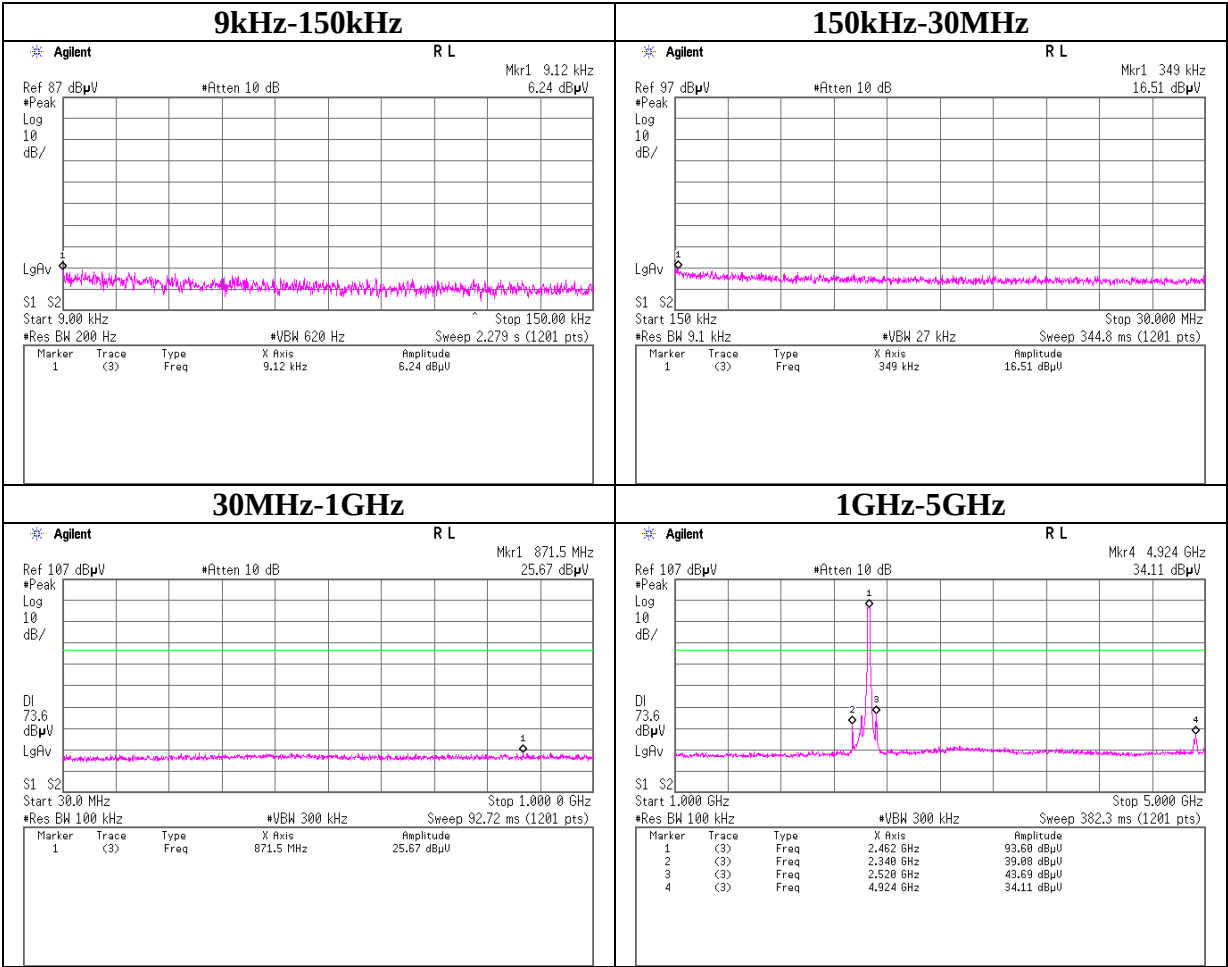
Conducted Spurious Emission

11n-20 Tx 2437MHz



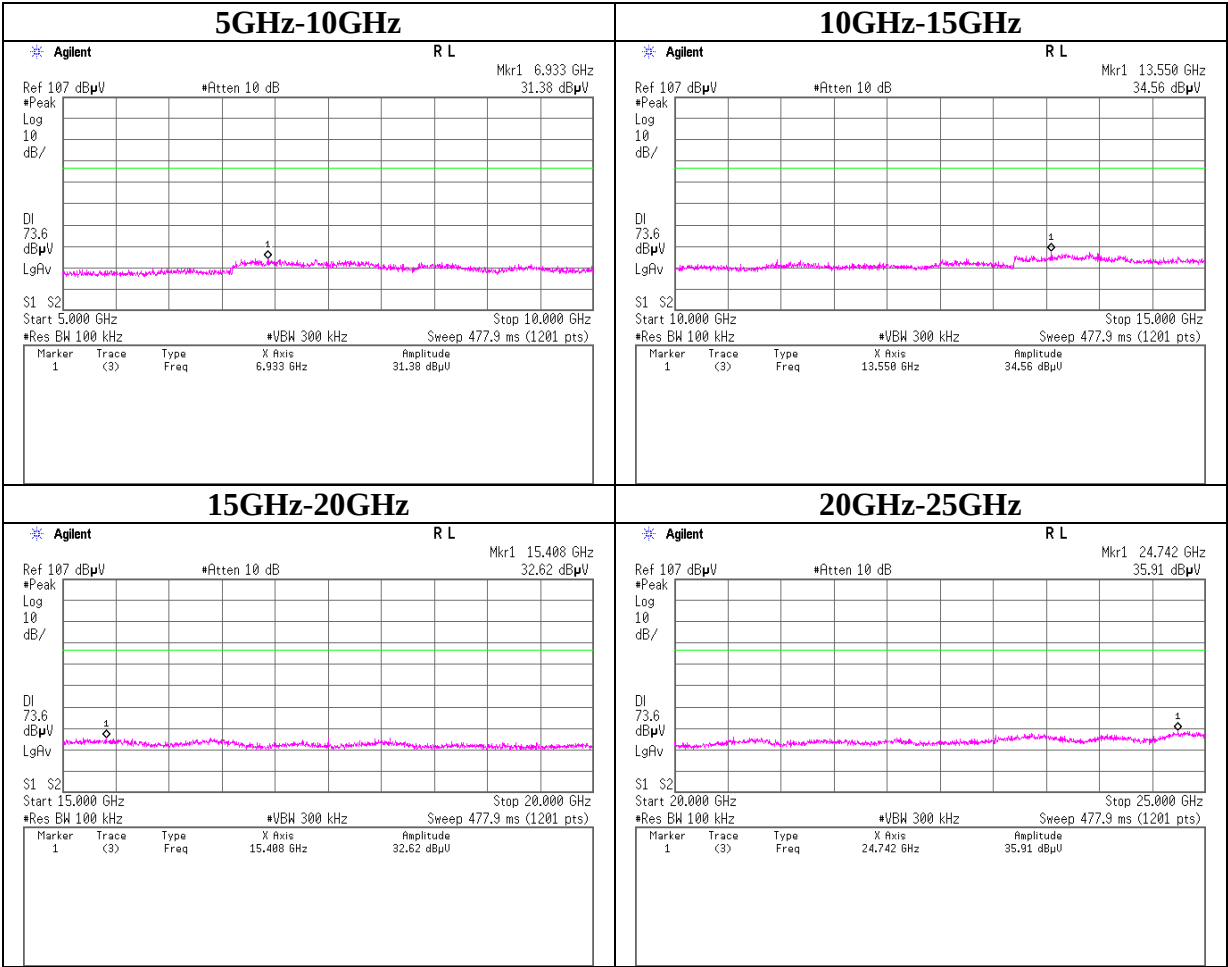
Conducted Spurious Emission

11n-20 Tx 2462MHz



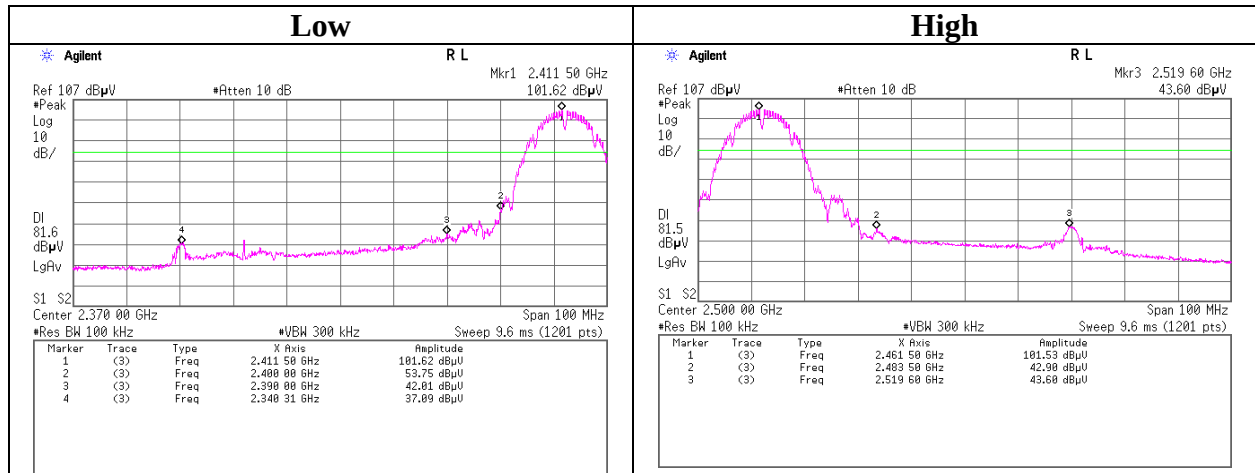
Conducted Spurious Emission

11n-20 Tx 2462MHz

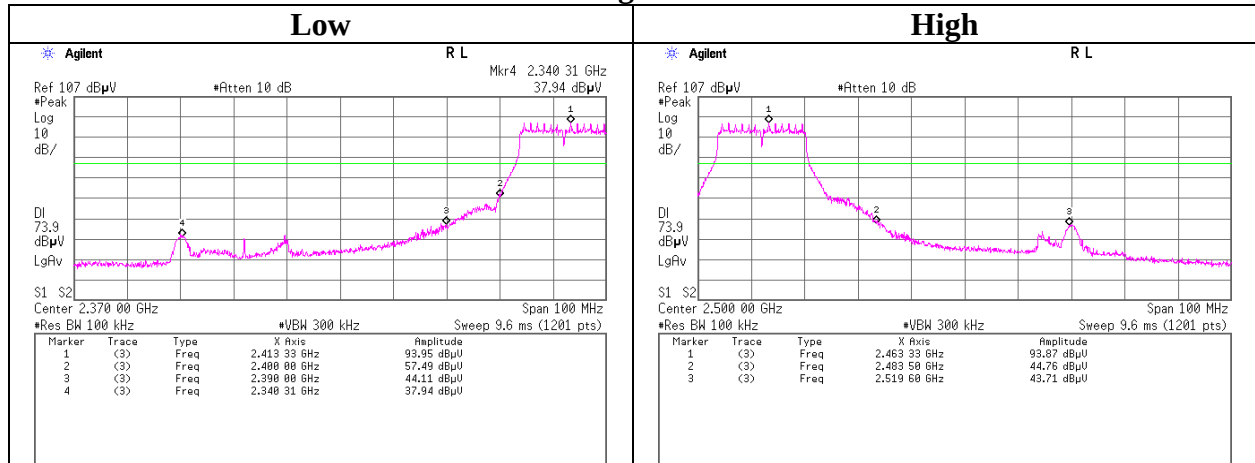


Conducted Emission Band Edge compliance

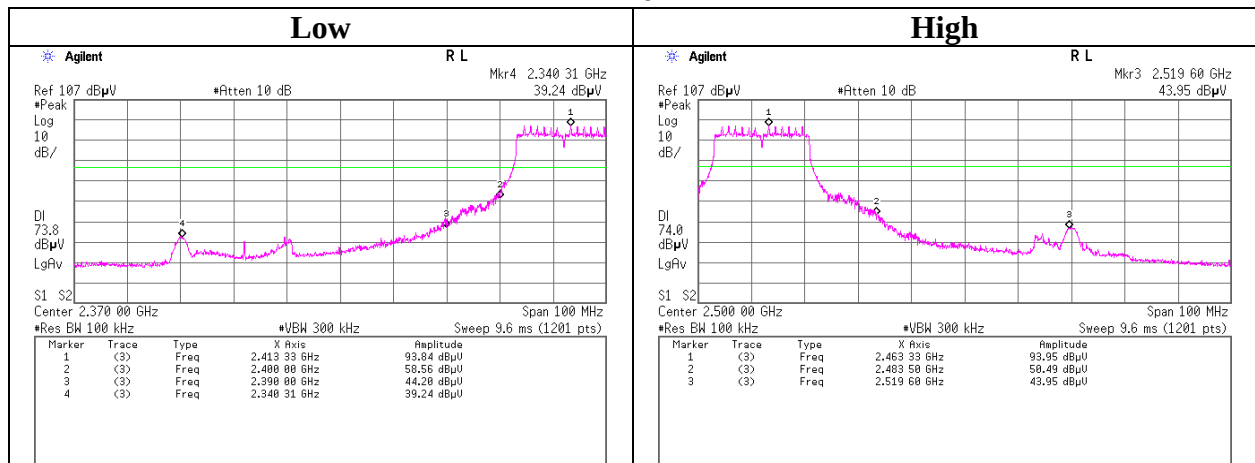
11b Tx



11g Tx



11n-20 Tx



Power Density

Test place Head Office EMC Lab. No.6 Measurement Room
Report No. 32GE0273-HO-01
Date 03/29/2012
Temperature/ Humidity 23deg. C / 40% RH
Engineer Yutaka Yoshida
Mode 11b Tx, 11g Tx, 11n-20 Tx

11b 1Mbps

Freq.	Reading	Cable Loss	Atten.	Result	Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[dBm]	[dB]
2412.00	-10.53	1.38	10.07	0.92	8.00	7.08
2437.00	-10.58	1.39	10.07	0.88	8.00	7.12
2462.00	-10.48	1.40	10.07	0.99	8.00	7.01

11g 18Mbps

Freq.	Reading	Cable Loss	Atten.	Result	Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[dBm]	[dB]
2412.00	-18.08	1.38	10.07	-6.63	8.00	14.63
2437.00	-18.44	1.39	10.07	-6.98	8.00	14.98
2462.00	-18.14	1.40	10.07	-6.67	8.00	14.67

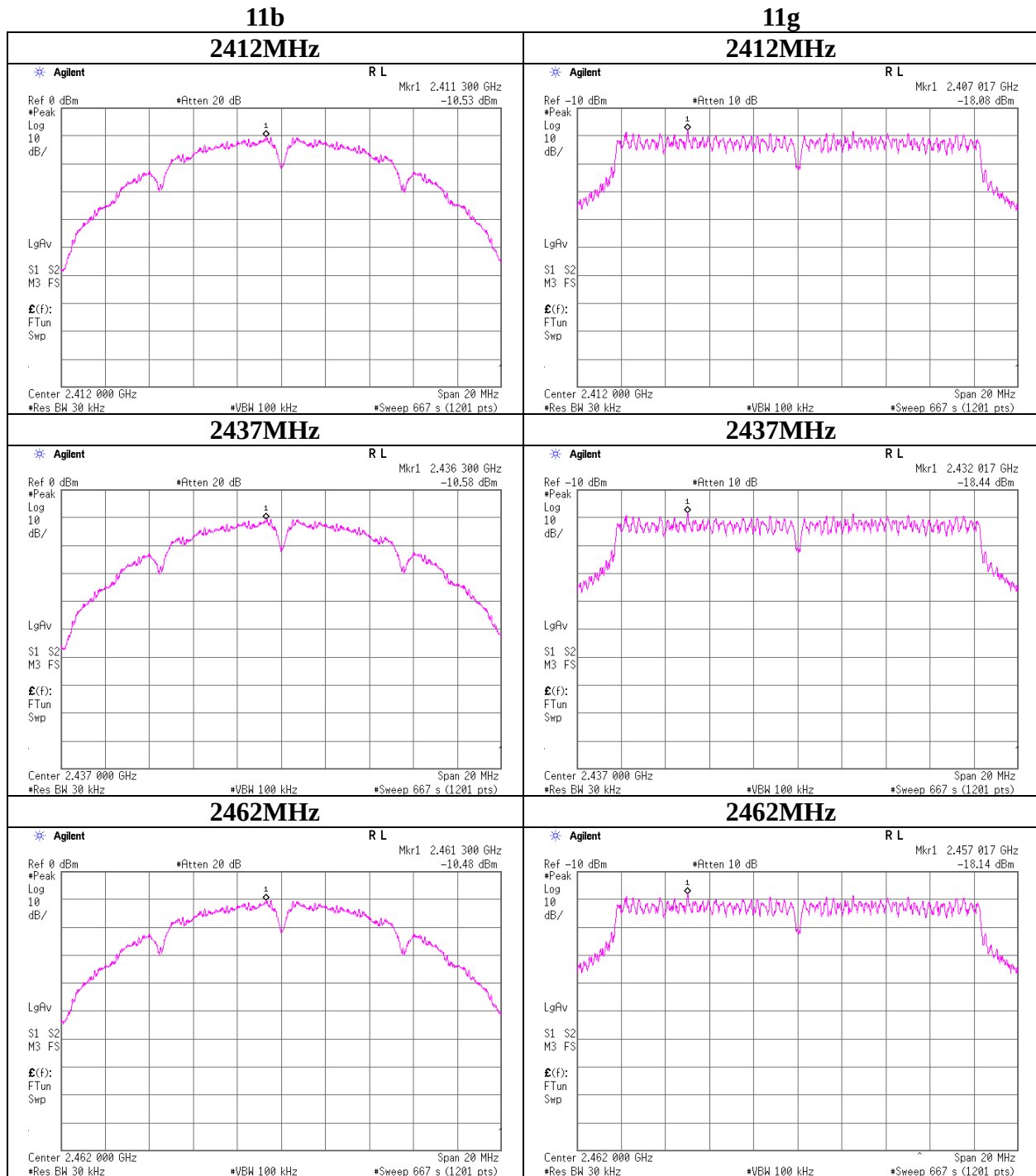
11n-20 MCS 2(Long GI)

Freq.	Reading	Cable Loss	Atten.	Result	Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[dBm]	[dB]
2412.00	-17.95	1.38	10.07	-6.50	8.00	14.50
2437.00	-18.32	1.39	10.07	-6.86	8.00	14.86
2462.00	-18.00	1.40	10.07	-6.53	8.00	14.53

Sample Calculation:

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

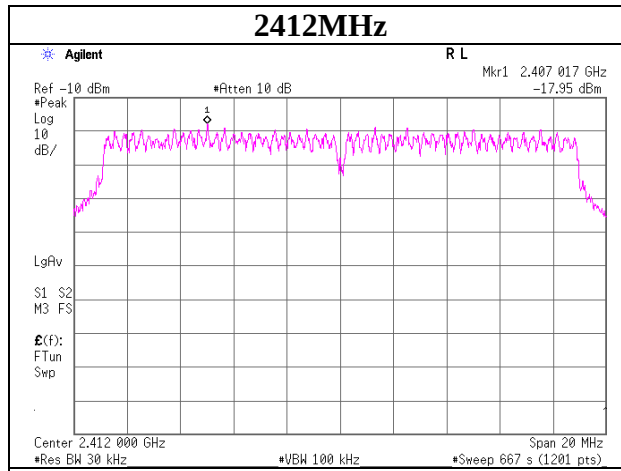
Power Density



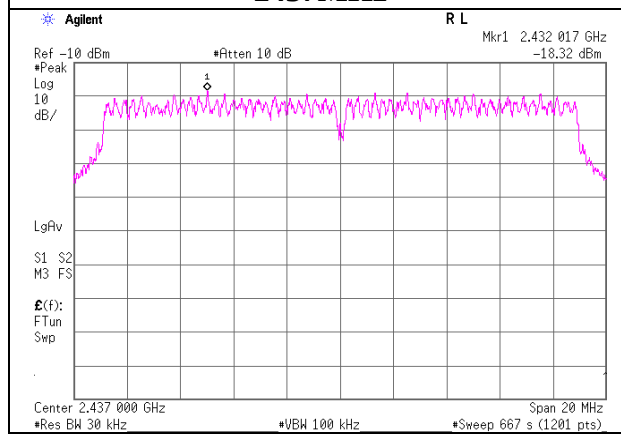
Power Density

11n-20

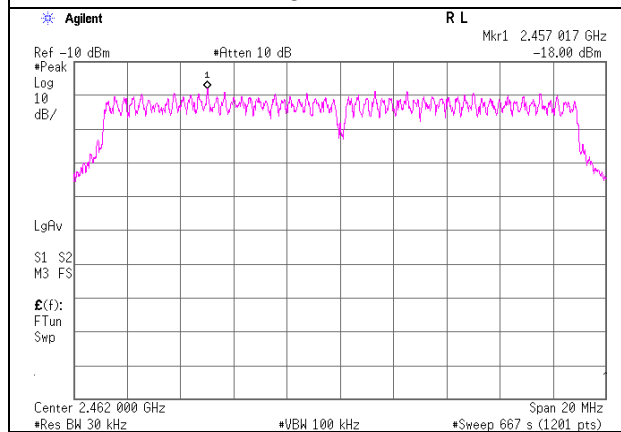
2412MHz



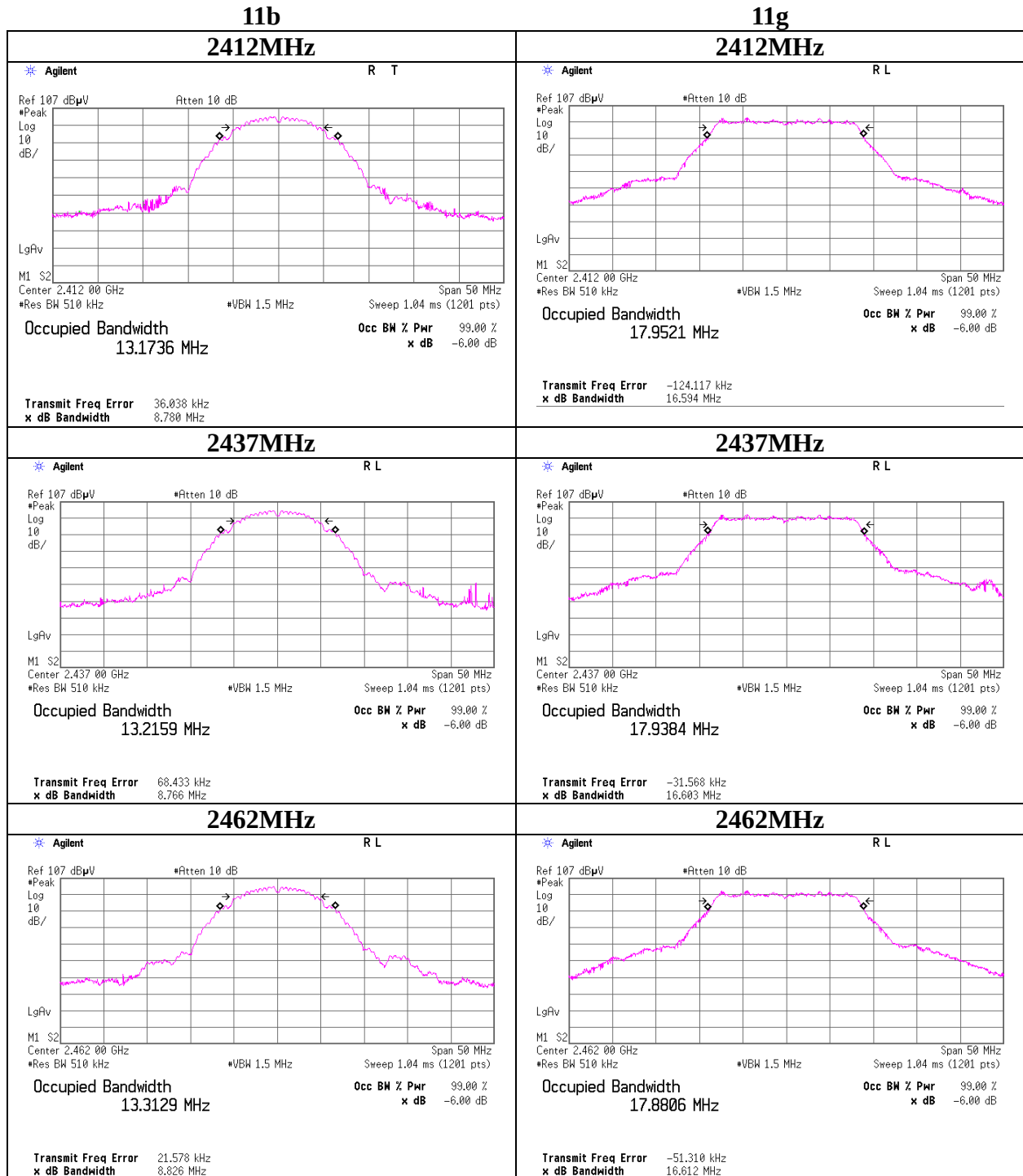
2437MHz



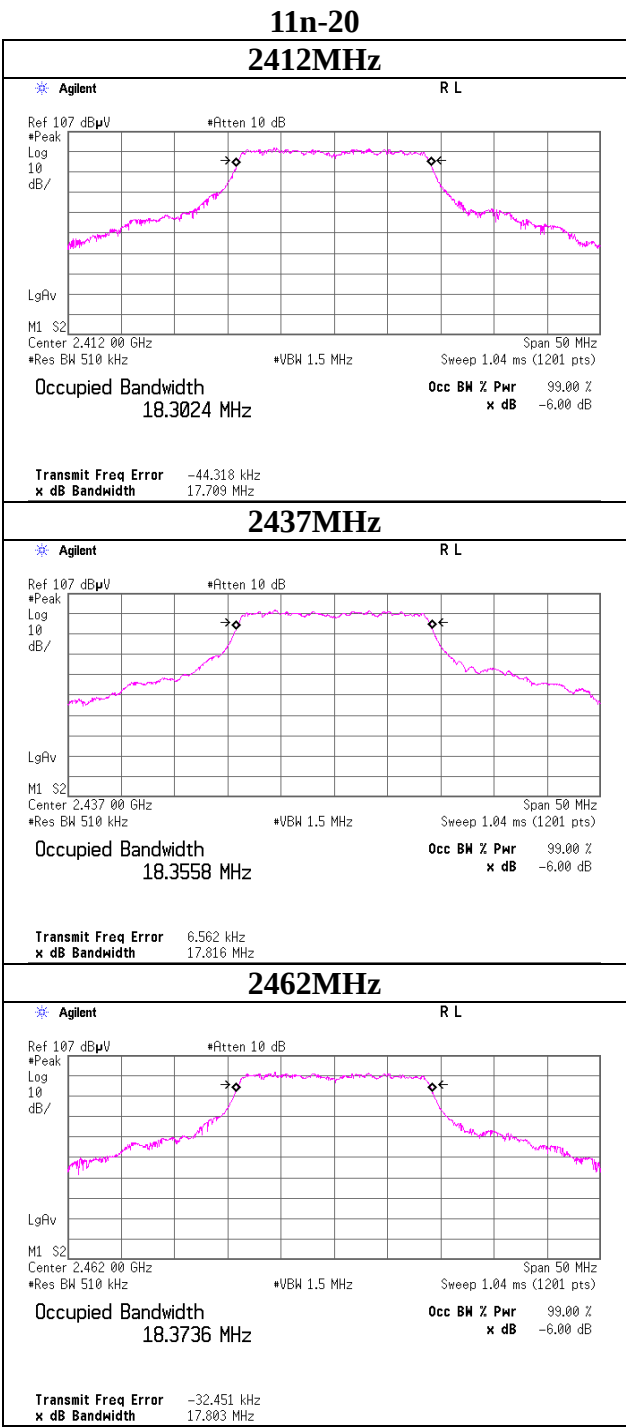
2462MHz



99% Occupied Bandwidth



99% Occupied Bandwidth



APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date	Expiration date of the calibration
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	AT	2012/02/03	2013/02/28
MPM-12	Power Meter	Anritsu	ML2495A	0825002	AT	2011/08/09	2012/08/31
MPSE-17	Power sensor	Anritsu	MA2411B	0738285	AT	2011/08/09	2012/08/31
MCC-67	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX102	28635/2	AT	2011/04/22	2012/04/30
MAT-23	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2012/03/27	2013/03/31
MOS-14	Thermo-Hygrometer	Custom	CTH-201	-	AT	2012/02/06	2013/02/28
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE/CE	2011/06/21	2012/06/30
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE/CE	2012/02/06	2013/02/28
MJM-14	Measure	KOMELON	KMC-36	-	RE/CE	-	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-	-
MRENT-95	Spectrum Analyzer	Agilent	E4440A	MY46185823	RE/CE	2011/06/30	2012/06/30
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2012/02/22	2013/02/28
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2012/01/25	2013/01/31
MCC-133	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336164/4(1m) / 340640(5m)	RE	2011/09/07	2012/09/30
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2011/05/16	2012/05/31
MHA-02	Horn Antenna 18-26.5GHz	EMCO	3160-09	1265	RE	2012/02/22	2013/02/28
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE/CE	2011/04/15	2012/04/30
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2011/10/23	2012/10/31
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2011/10/23	2012/10/31
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2012/02/16	2013/02/28
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2011/11/02	2012/11/30
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2011/09/26	2012/09/30
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	CE	2011/04/08	2012/04/30
MTA-31	Terminator	TME	CT-01	-	CE	2012/01/11	2013/01/31
MCC-13	Coaxial Cable	Fujikura	3D-2W(12m)/5D-2W(5m)/5D-2W(0.8m)/5D-2W(1m)	-	CE	2012/02/16	2013/02/28
MAT-65	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2012/01/28	2013/01/31
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE	2012/02/06	2013/02/28

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

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