FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

WIRELESS LAN MODULE

MODEL NUMBER: FZ09913-200

FCC ID: W2Z-02000002
IC: 7736B-02000002

REPORT NUMBER: 33BE0111-SH-R1

ISSUE DATE: SEPTEMBER 24, 2012

Prepared for

Fuji Film Corporation
798 Miyanodai, Kaisei-machi,
Ashigarakami-gun, Kanagawa 258-8538 Japan

Prepared by

UL Japan, Inc. Shonan EMC Lab.
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JAB Accreditation No. : RTL02610

JAB Testing
RTL2610

Revision History

Rev.	Issue Date	Revisions	Revised By
--	09/24/12	Initial Issue	A.Hayashi
1	10/02/12	Addition of the test instruments (SHA-04, SAF-08, SCC-G17) that was used for the radiated tests. *This report is a revised version of 33BE0111-SH, which is replaced with this report. Changing the “9.MAXIMUM PERMISSIBLE EXPOSURE” to a “Not applied”. Addition of the “10.Statement for exclusion of RF Exposure”.	A.Hayashi

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Fuji Film Corporation
798 Miyanodai, Kaisei-machi,
Ashigarakami-gun, Kanagawa 258-8538 Japan

EUT DESCRIPTION: Wireless LAN Module

MODEL: FZ09913-200

SERIAL NUMBER: 719591 (Antenna port tests),
71958E (other tests)

DATE TESTED: SEPTEMBER 12-18, 2012

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 3	Pass

UL Japan Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Japan, Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Japan, Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Japan, Inc. will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by any government agency.

Approved & Released For UL Japan, Inc. By:

Go Ishiwata
Manager of WiSE Japan,
UL Verification Service

Tested By:

Akio Hayashi
Engineer of WiSE Japan,
UL Verification Service

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN.

UL Japan is accredited by JAB, Laboratory Code RTL02610. The full scope of accreditation can be viewed at
http://www.jab.or.jp/cgi-bin/jab_exam_proof_j.cgi?page=2&authorization_number=RTL02610

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER		UNCERTAINTY
Power Line Conducted Emission	150kHz-30MHz	+/- 3.5 dB
Radiated Emission	30MHz-300MHz	+/- 4.9 dB
	300MHz-1000MHz	+/- 4.9 dB
	1GHz-15GHz	+/- 4.9 dB
	15GHz-18GHz	+/- 5.6 dB
	18GHz-26.5GHz	+/- 4.4 dB

Uncertainty figures are valid to a confidence level of 95% using a coverage factor k=2.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Wireless LAN Module.
The radio module is manufactured by Mitsumi.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	b	16.53	44.98
2412 - 2462	g	20.08	101.86
2412 - 2462	HT20 SISO	20.04	100.93
2422 - 2452	HT40 SISO	19.82	95.94

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes PCB Printed antenna, with a maximum gain of -4.14 dBi.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was WiFi_GUI_TOOL (Release x86) Ver. 1.0.0.0.

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5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power.

All final tests in the 802.11b Mode were made at 1 Mb/s.
All final tests in the 802.11g mode were made at 6 Mb/s.
All final tests in the 802.11n HT20 SISO mode were made at MCS 0.
All final tests in the 802.11n HT40 SISO mode were made at MCS 0.

The fundamental and spurious was measured in three different orientations X, Y and Z to find worst-case orientation, and final testing for radiated emissions was performed with EUT in following orientation.

	Horizontal	Vertical
Carrier	X	Y
Spurious (below 1GHz)	X	Y
Spurious (above 1GHz)	X	Y
Spurious (Harmonics)	X	Y

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Band	Mode	Separation Distance (m)	Output Power (dBm)	Antenna Gain (dBi)	IC Power Density (W/m^2)	FCC Power Density (mW/cm^2)
2.4 GHz	WLAN	0.20	12.98	-4.14	0.0152	0.0015

I/O CABLES

Cable No.	Port	# of Identica Ports	Connector Type	Cable Type	Cable Length	Remarks
1	Flat	1	FPC	Un-shielded	0.04m	N/A
2	DC	1	DC	Un-shielded	1.2m	N/A
3	AC	1	AC	Un-shielded	0.9m	N/A
4	DC	1	DC	Un-shielded	1.9m	N/A

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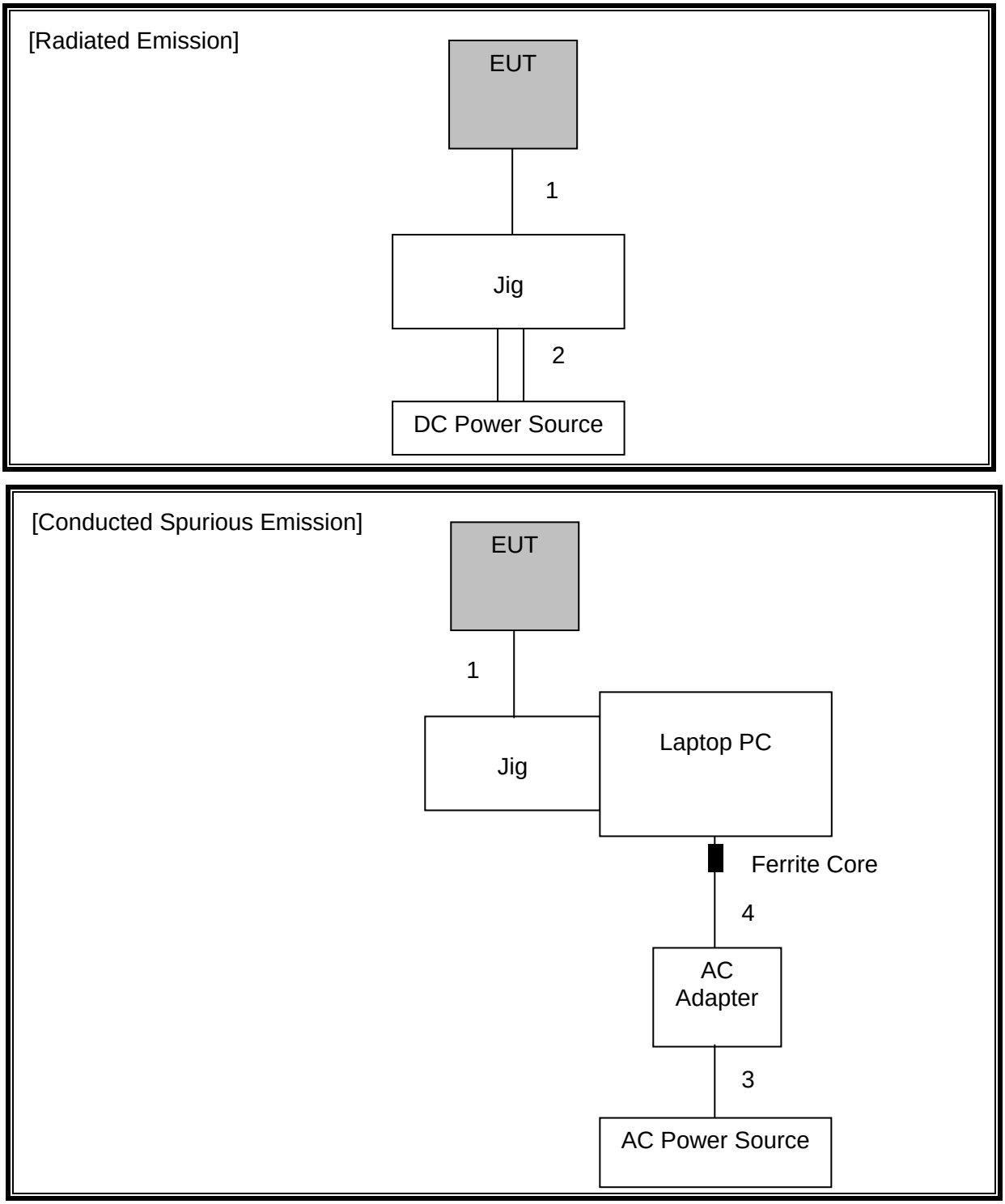

SETUP DIAGRAM FOR TESTS

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6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	AT	2012/03/26 * 12
SPM-06	Power Meter	Anritsu	ML2495A	850009	AT	2012/04/19 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	917063	AT	2012/04/19 * 12
SAT20-07	Attenuator	Weinschel Corp.	54A-20	31484	AT	2012/04/12 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2012/03/12 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	AT	2012/02/16 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2011/09/23 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2012/07/18 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2012/04/10 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2012/05/22 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2012/08/17 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2012/02/06 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	RE	2012/02/16 * 12
SAT20-01	Attenuator(above1GHz)	Agilent	8493C-020	74889	RE	2011/12/27 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	51	RE	2011/12/27 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2012/02/10 * 12
SAT6-03	Attenuator	JFW	50HF-006N	-	RE	2012/02/10 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2011/10/23 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	RE	2012/04/10 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2011/10/23 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	03/30/2012 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	03/12/2012 * 12
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE	03/12/2012 * 12
SJM-10	Measure	PROMART	SEN1935	-	CE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	CE	-
SCC-C9/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	CE	2012/04/10 * 12
SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE	2012/02/23 * 12
SAT3-06	Attenuator	JFW	50HF-003N	-	CE	2012/02/17 * 12
STM-05	Terminator	TME	CT-01 BP	-	CE	2012/01/05 * 12
STR-03	Test Receiver	Rohde & Schwarz	ESI40	100054/040	CE	2012/06/14 * 12

The expiration date of the calibration is the end of the expired month.
As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.
All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

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Test Item:

RE: Radiated emission, CE: Conducted emission, AT: Antenna terminal disturbance voltage

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7. ANTENNA PORT TEST RESULTS

7.1. 802.11b MODE IN THE 2.4 GHz BAND

7.1.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	9.14	0.5
Middle	2437	9.15	0.5
High	2462	9.14	0.5

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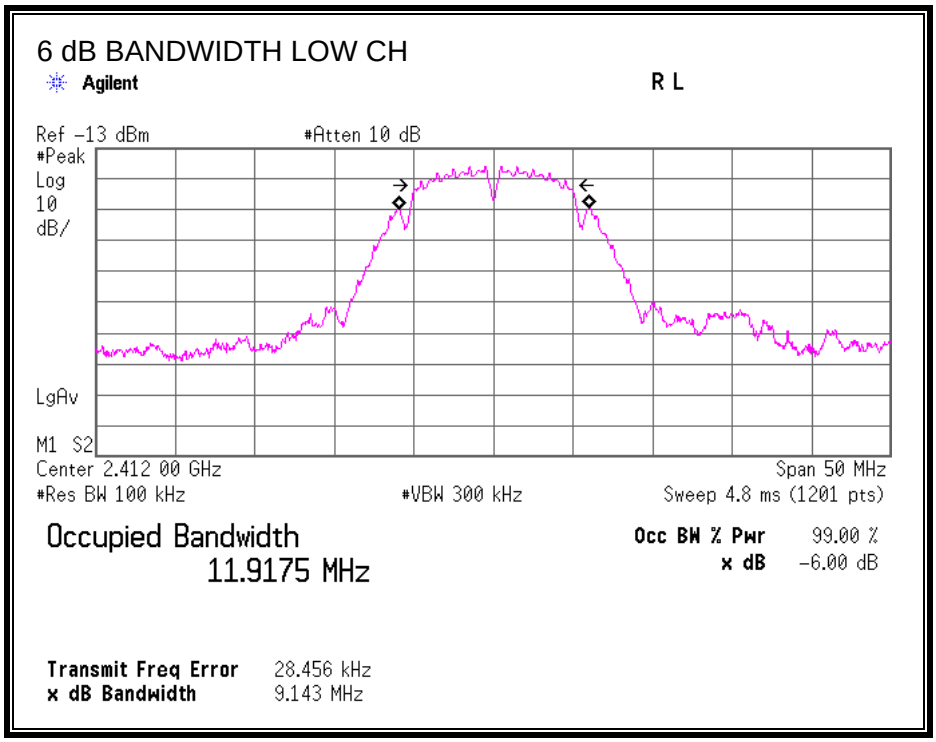
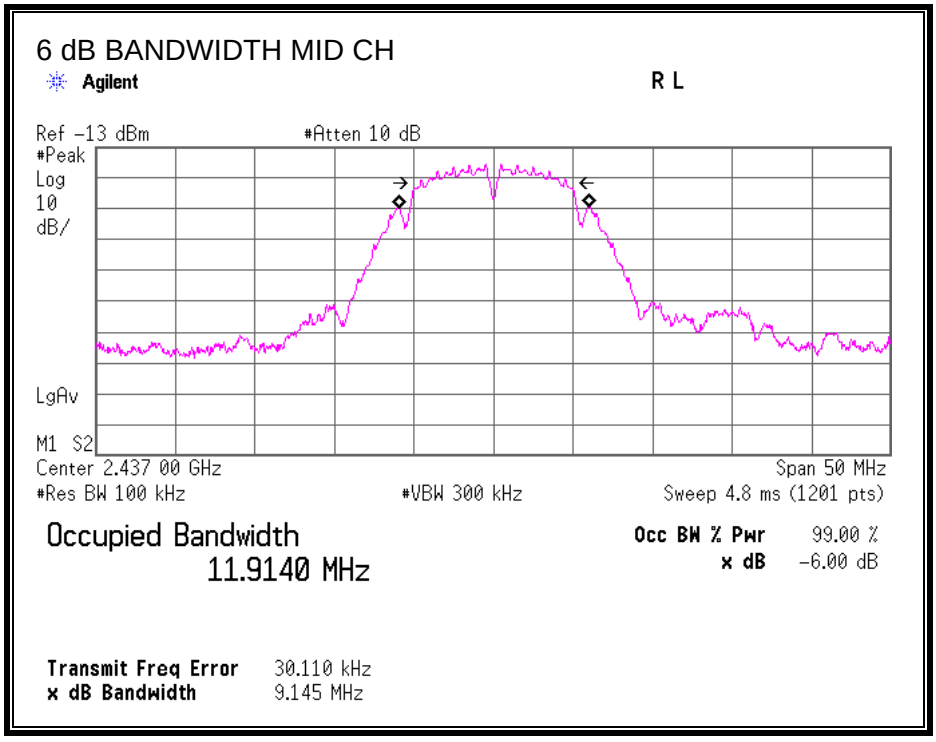
6 dB BANDWIDTH





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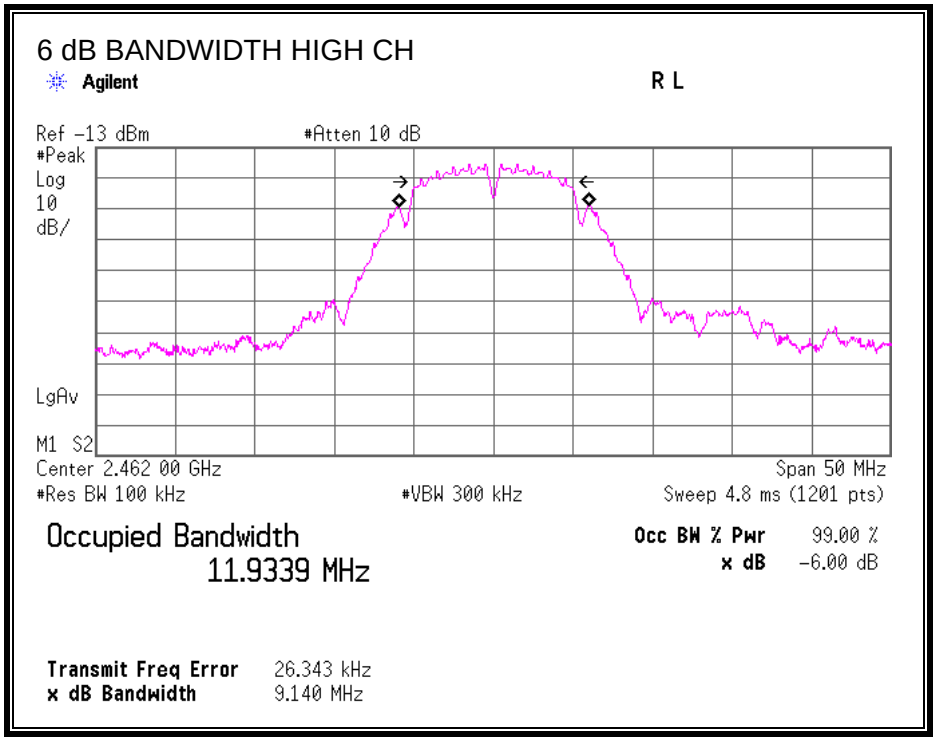

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7.1.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% of SPAN. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	11.9271
Middle	2437	11.9501
High	2462	11.9662

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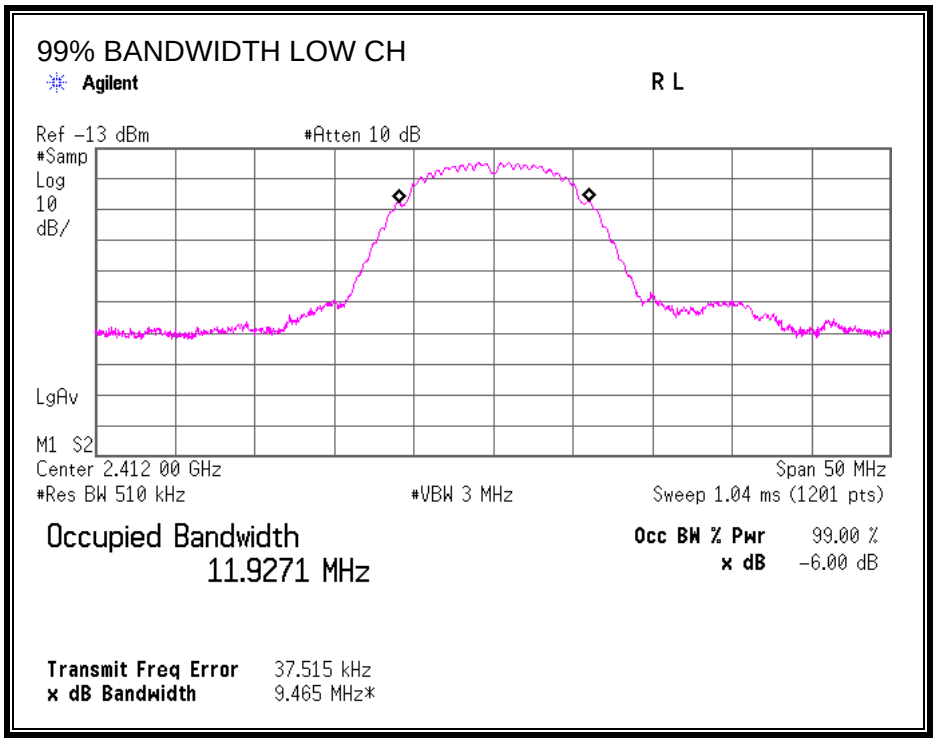
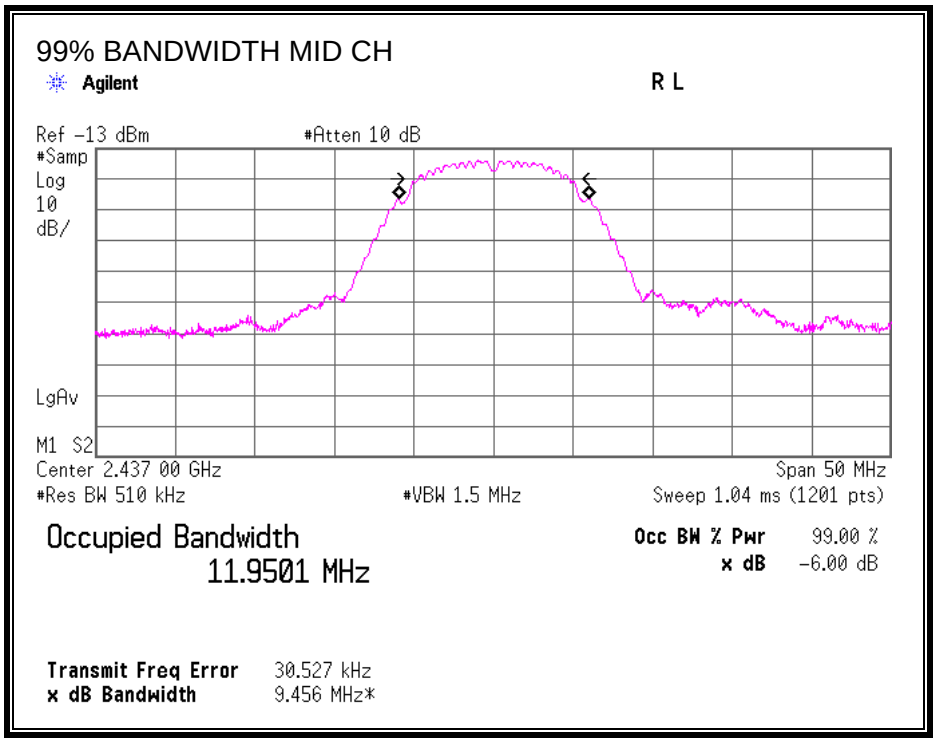
99% BANDWIDTH





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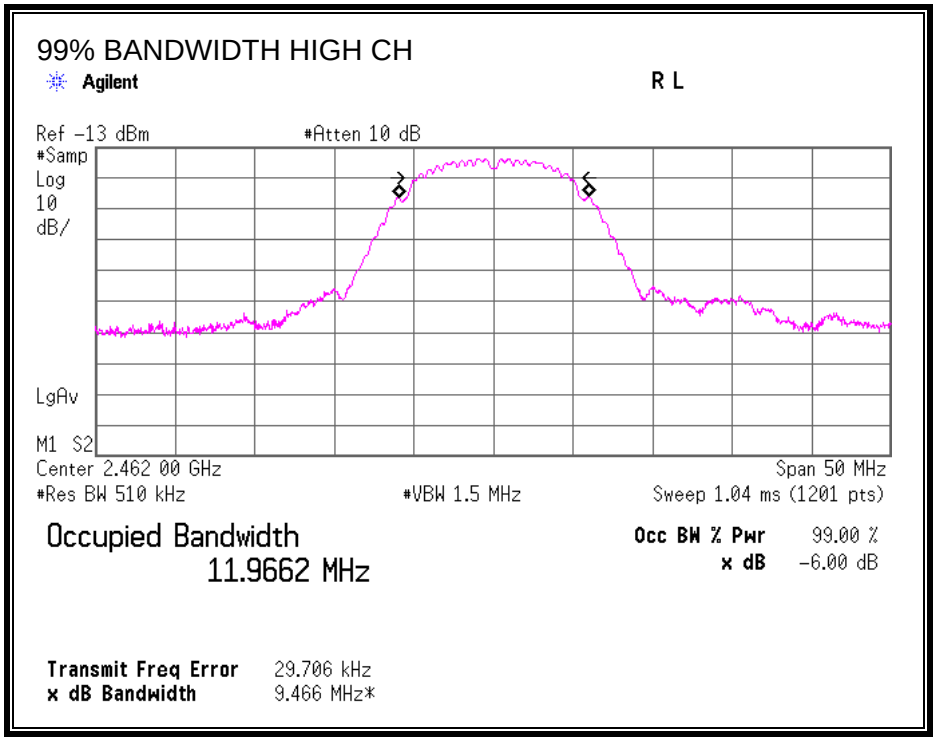

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7.1.3. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a power sensor with power meter.

RESULTS

The cable assembly insertion loss of 21.60dB (including 20.25 dB pad and 1.35dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2412	16.04
Middle	2437	16.41
High	2462	16.53

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7.1.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power sensor with power meter.

RESULTS

The cable assembly insertion loss of 21.60dB (including 20.25 dB pad and 1.35dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2412	12.82
Middle	2437	12.91
High	2462	12.98

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7.1.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-15.95	8	-23.95
Middle	2437	-15.84	8	-23.84
High	2462	-15.44	8	-23.44

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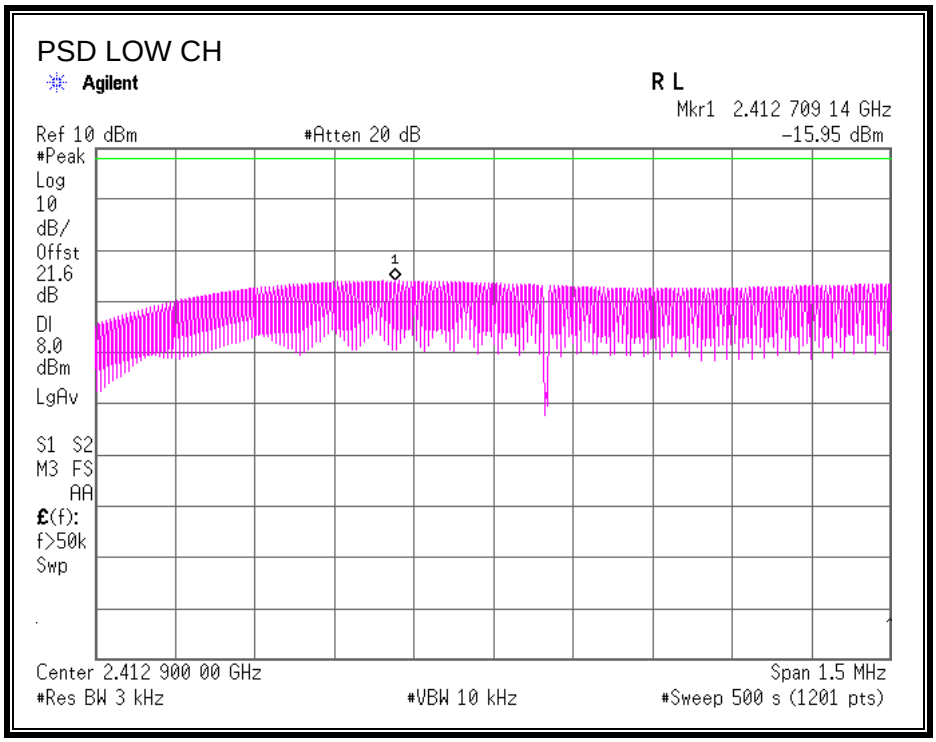
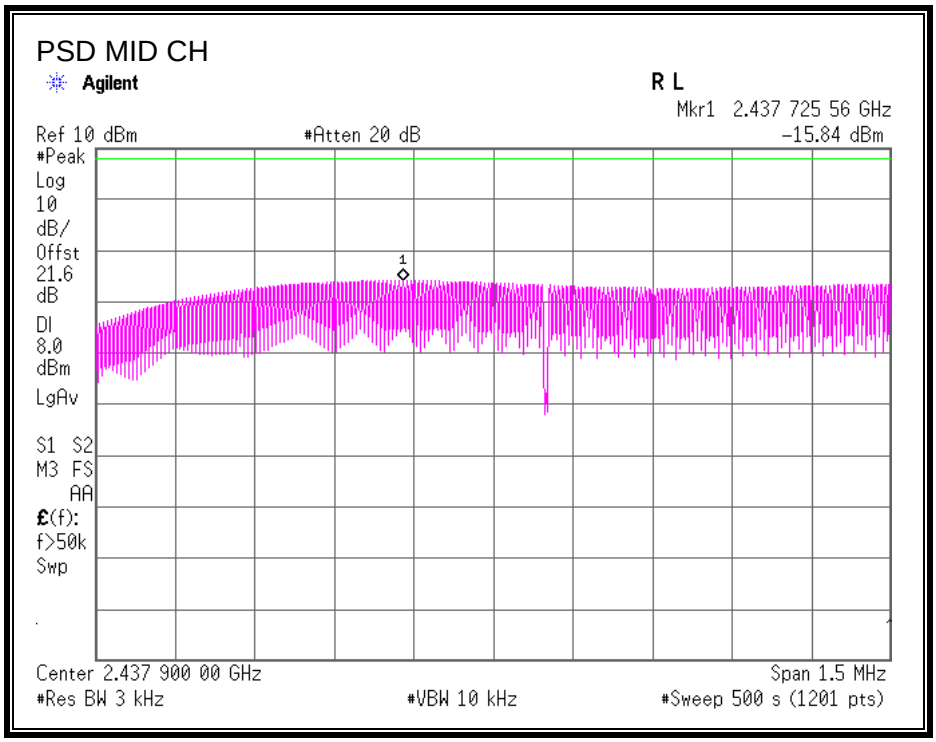
POWER SPECTRAL DENSITY





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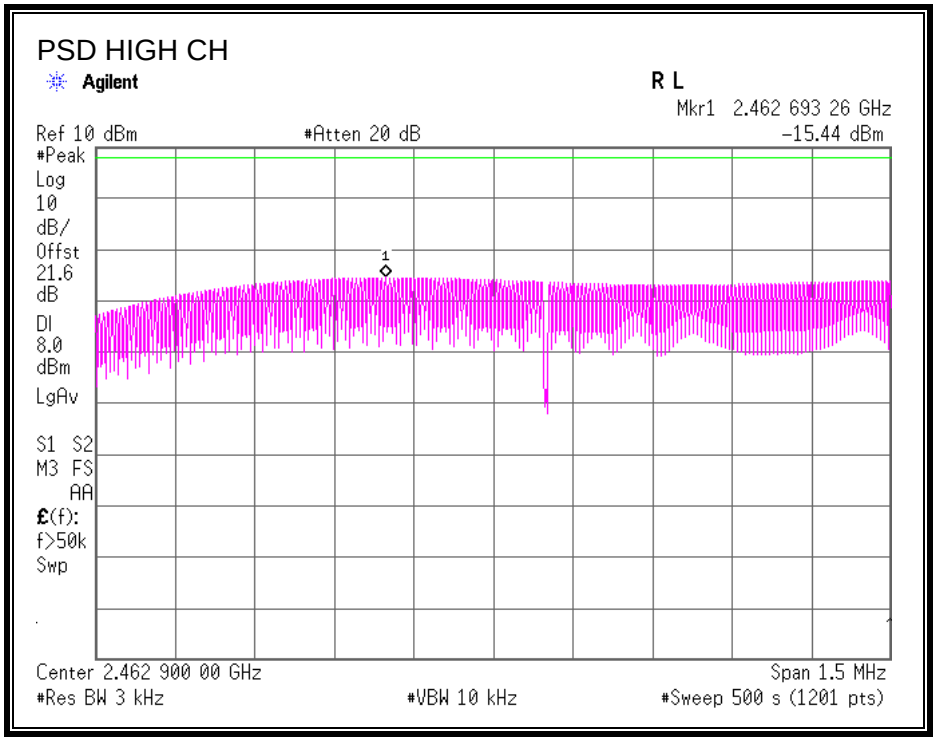

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7.1.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 9 kHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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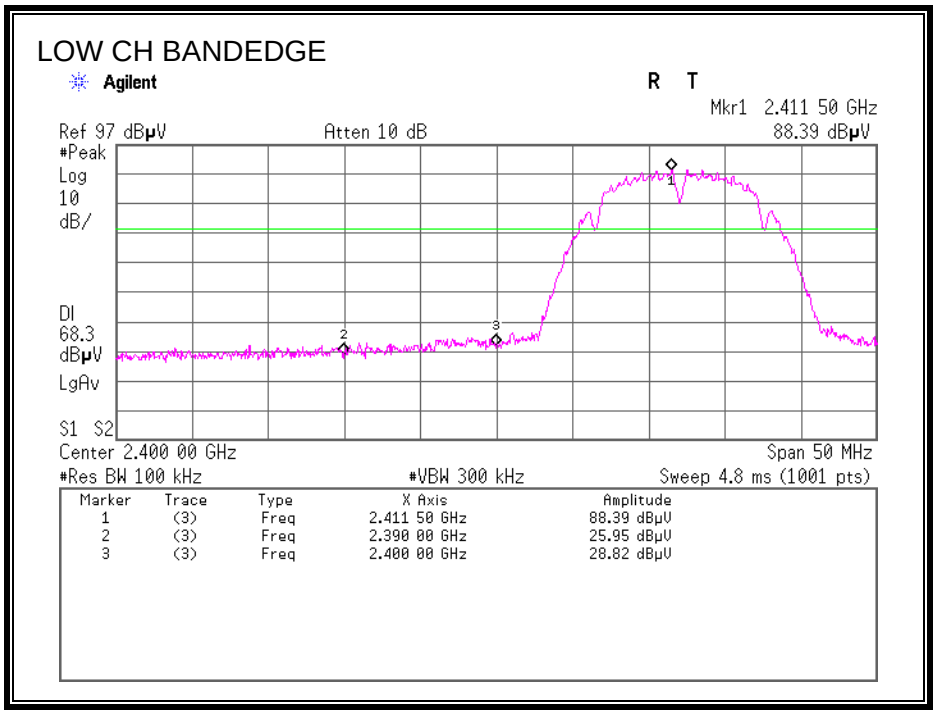
RESULTS

SPURIOUS EMISSIONS, LOW CHANNEL



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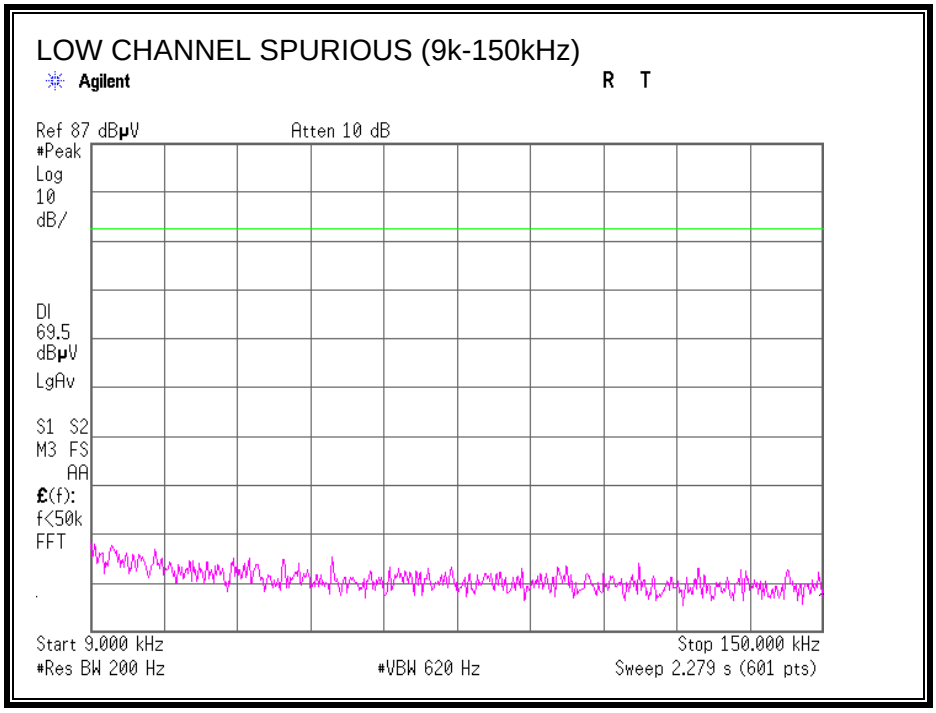

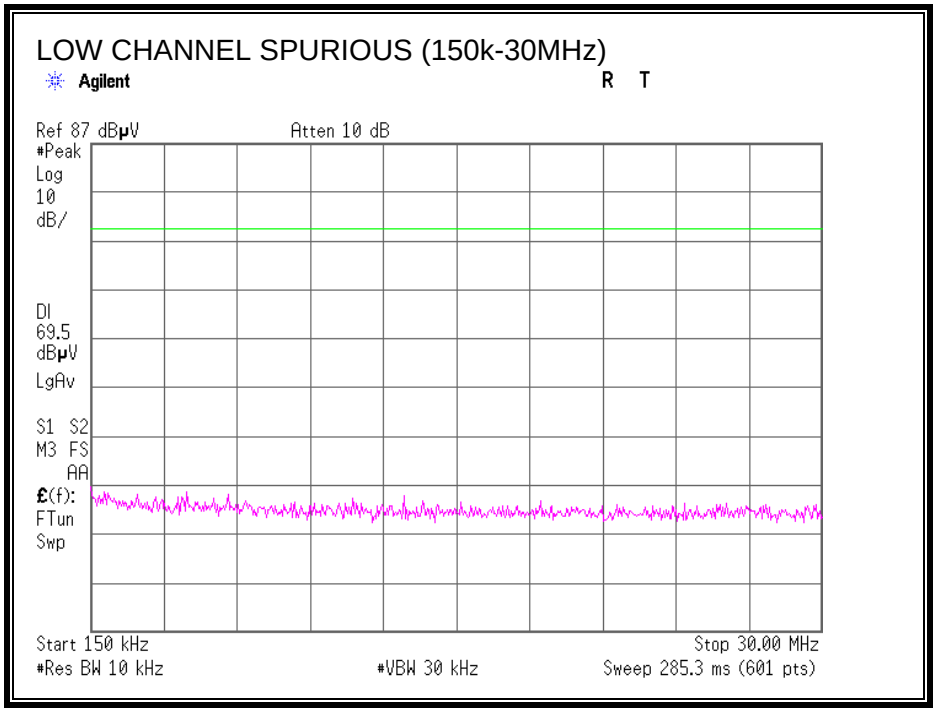

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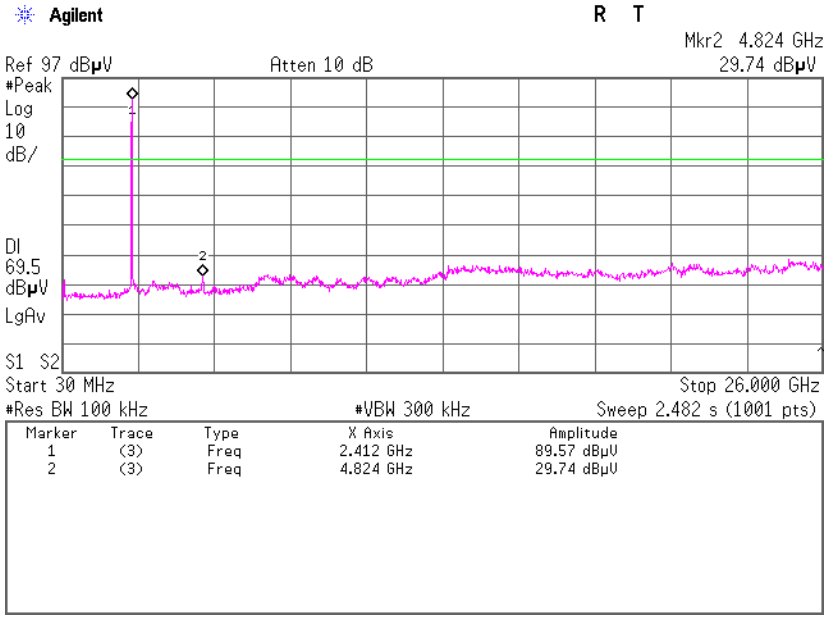
LOW CHANNEL SPURIOUS



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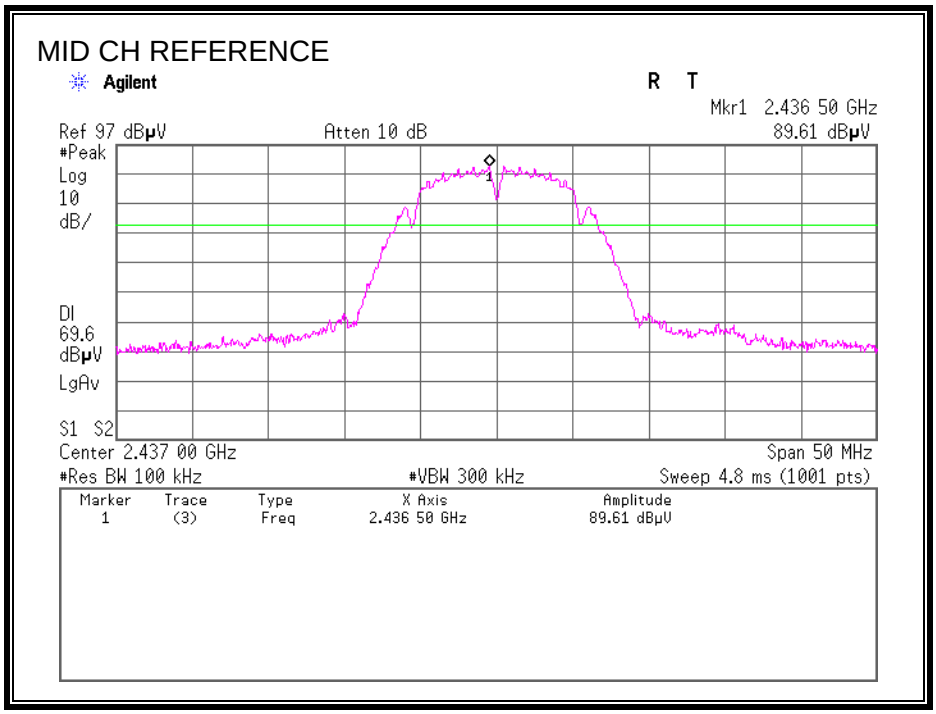
SPURIOUS EMISSIONS, MID CHANNEL



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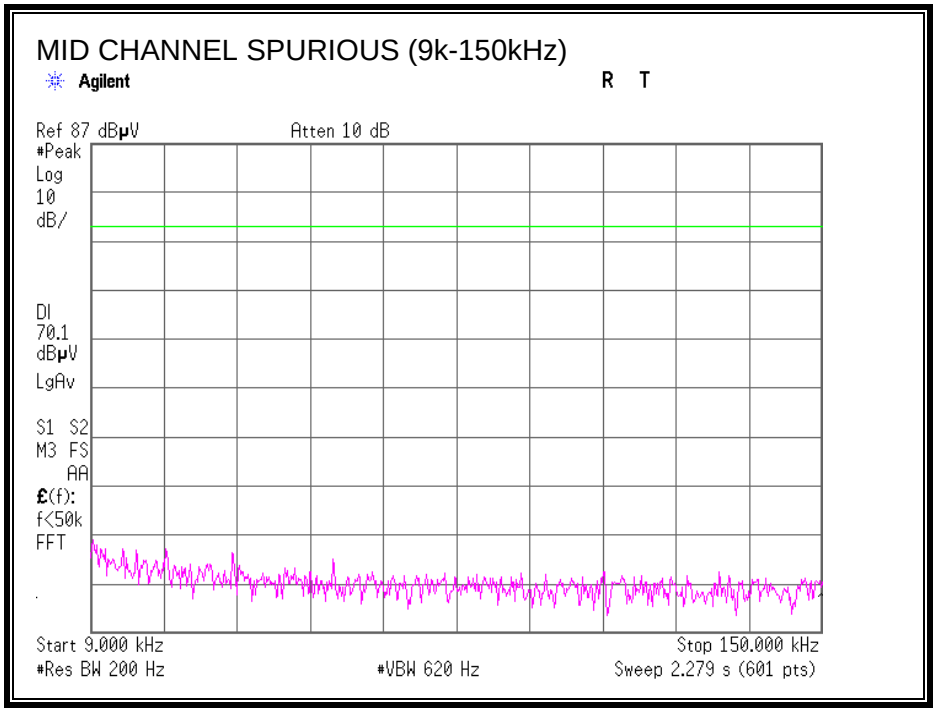

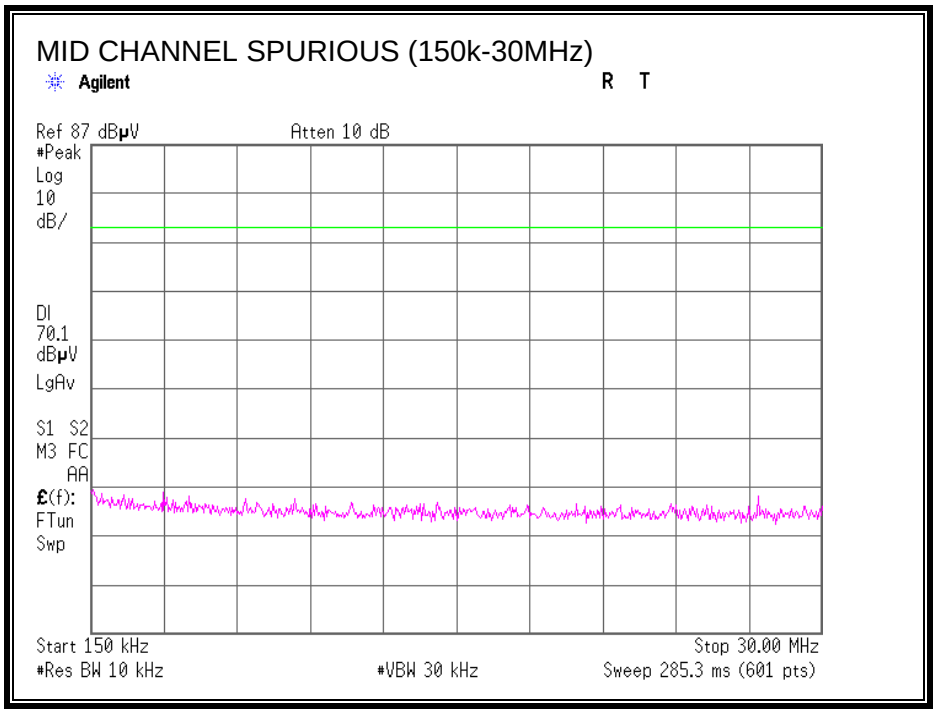

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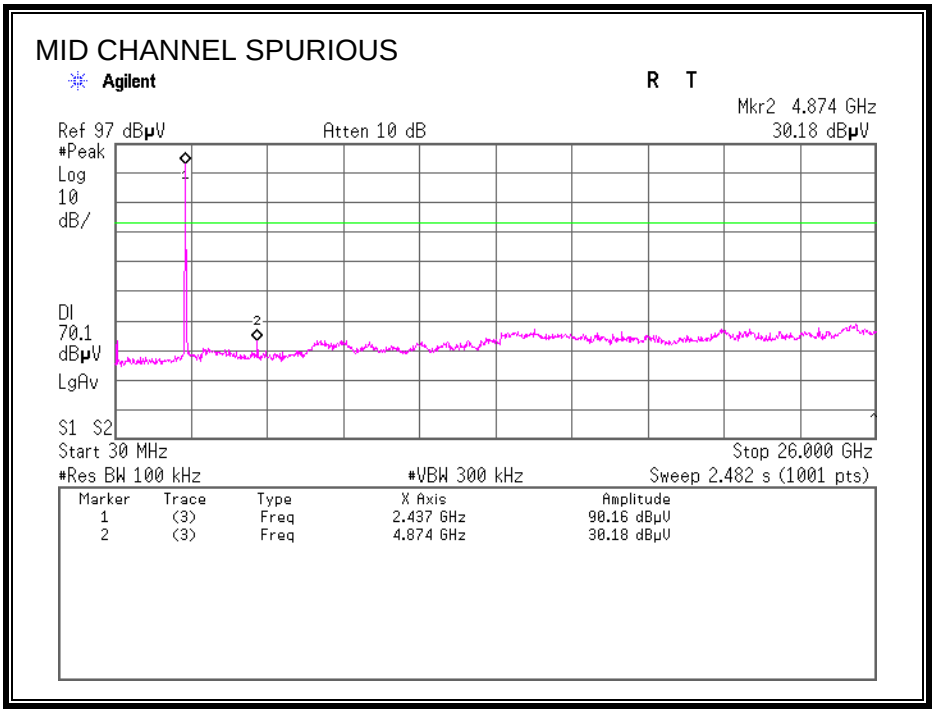
MID CHANNEL SPURIOUS



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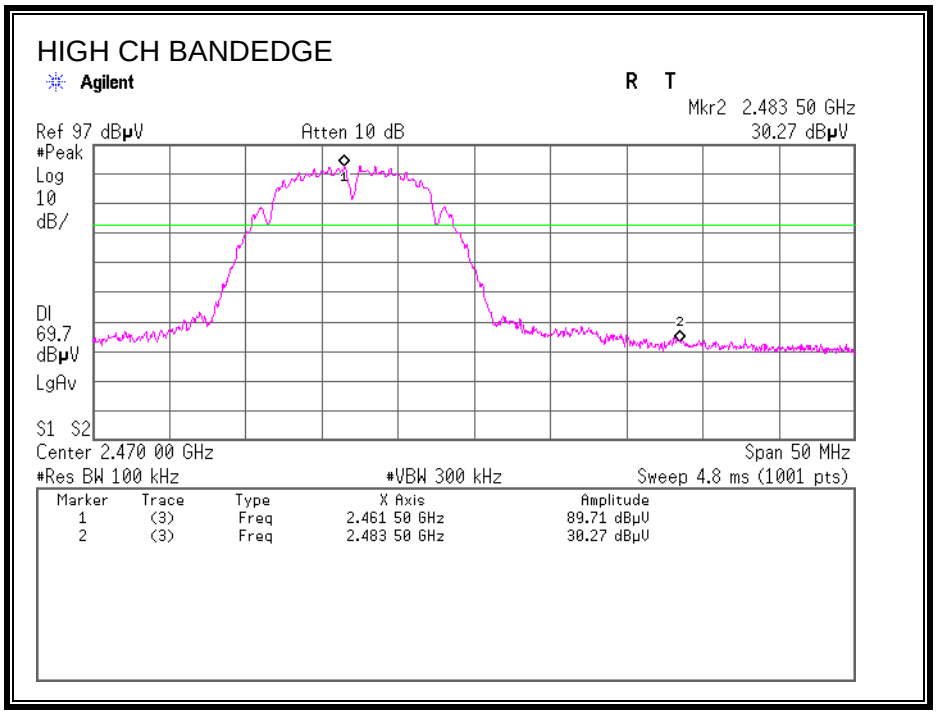
SPURIOUS EMISSIONS, HIGH CHANNEL



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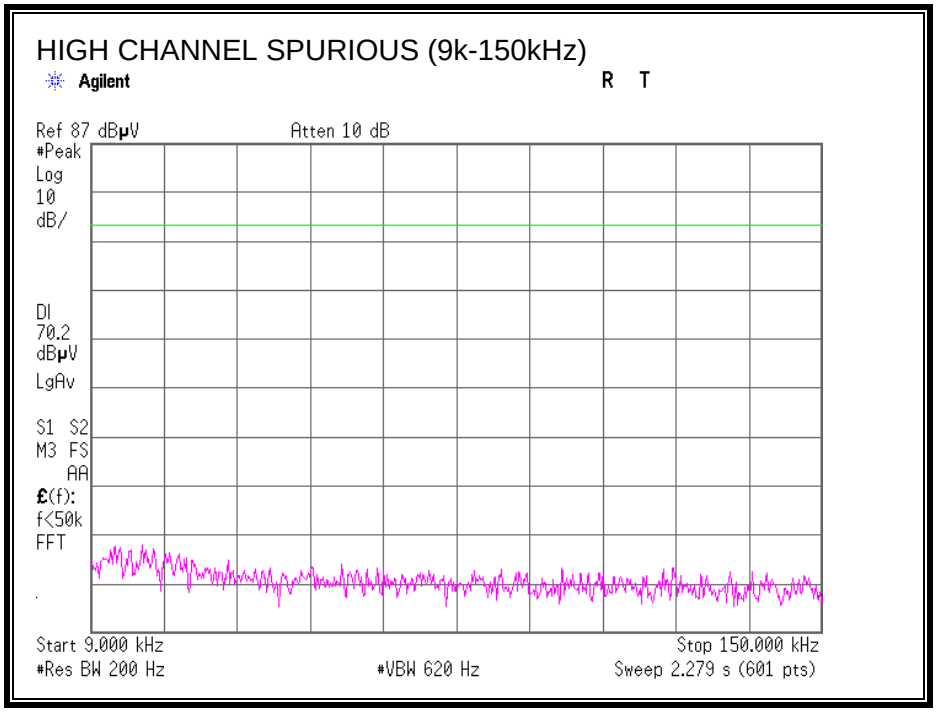

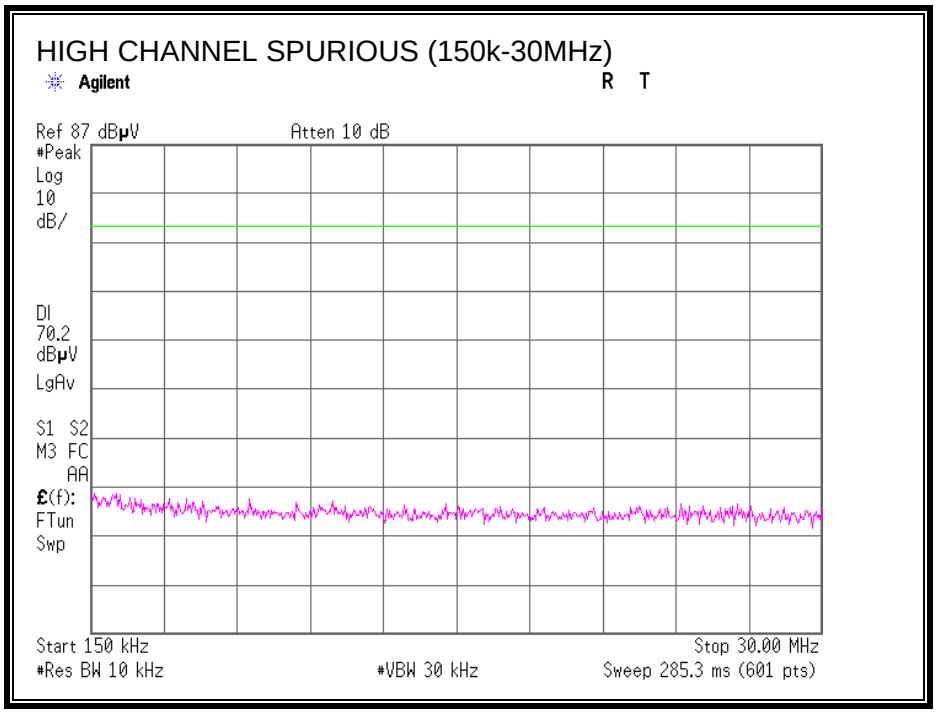

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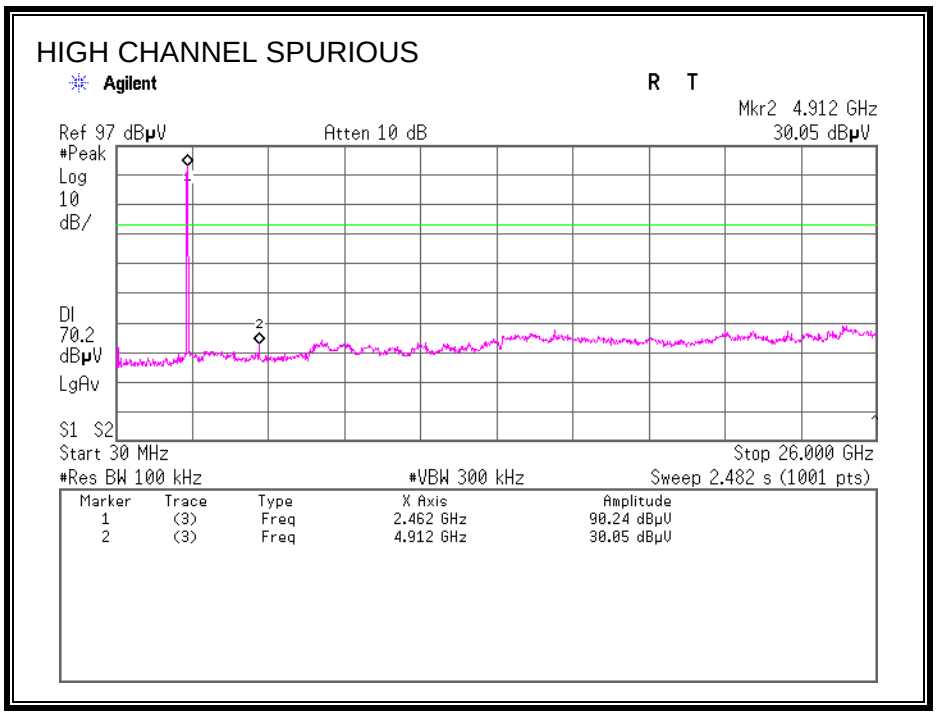
HIGH CHANNEL SPURIOUS



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7.2. 802.11g MODE IN THE 2.4 GHz BAND

7.2.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.49	0.5
Middle	2437	16.51	0.5
High	2462	16.52	0.5

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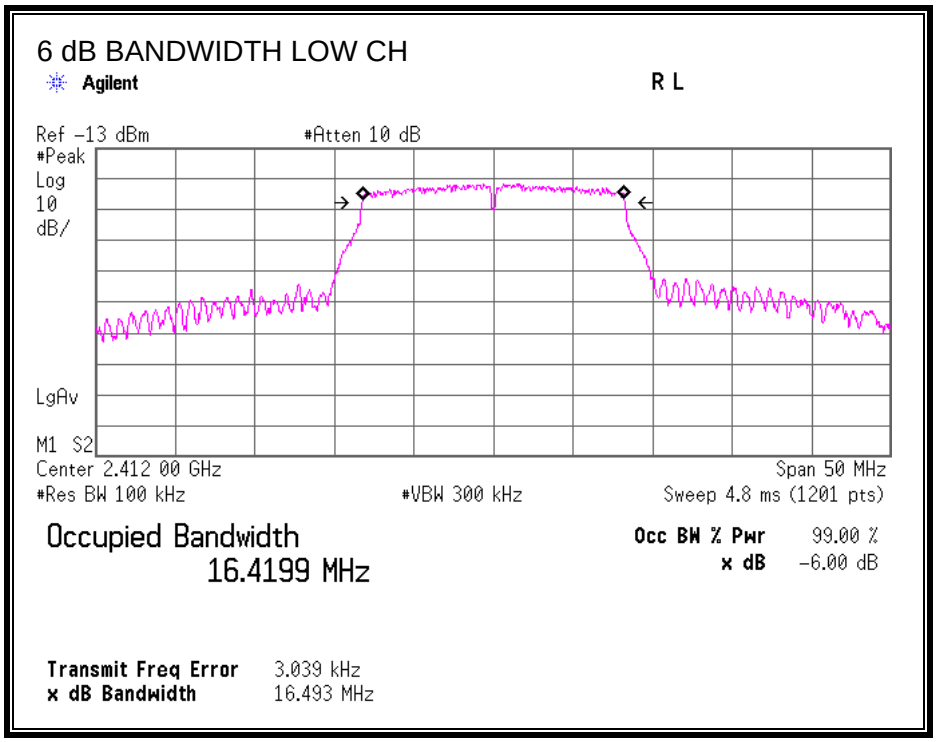
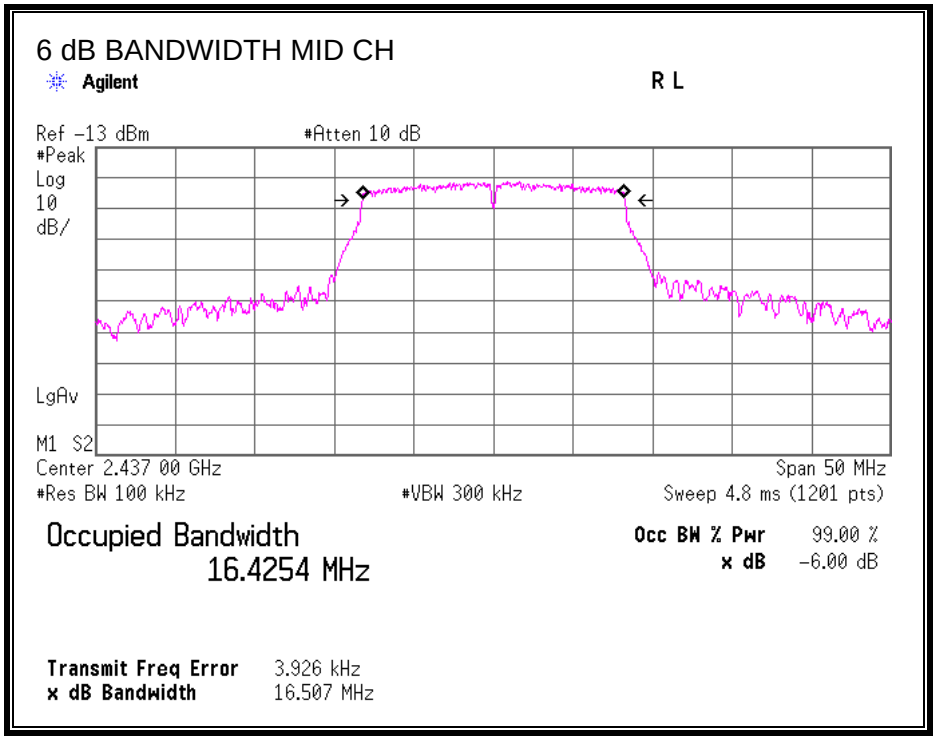
6 dB BANDWIDTH





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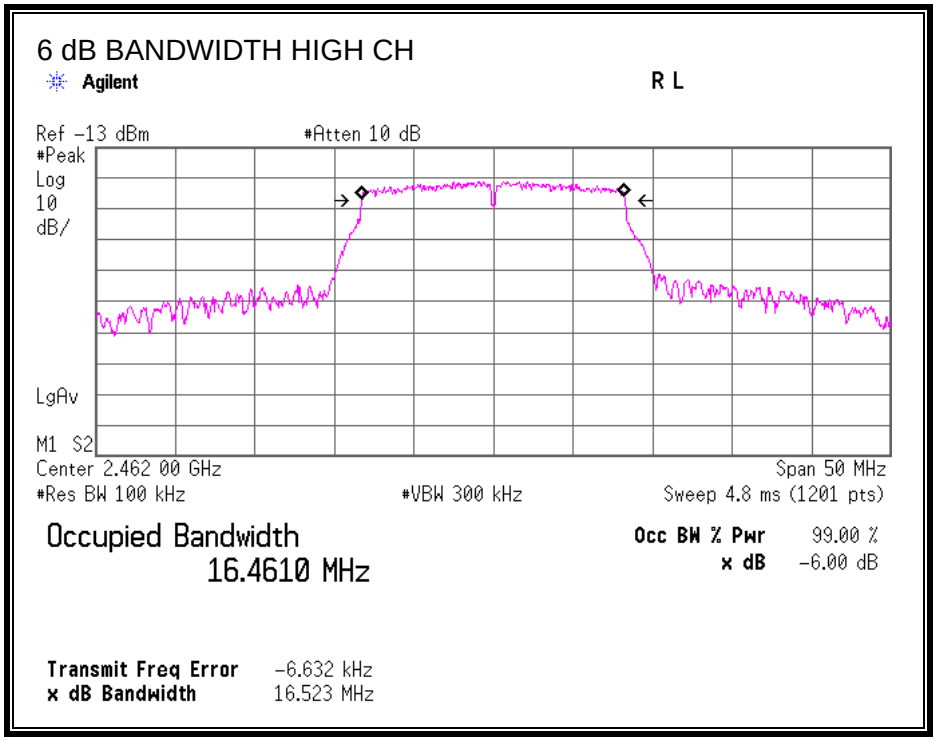

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7.2.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% of SPAN. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.1357
Middle	2437	17.1288
High	2462	17.2622

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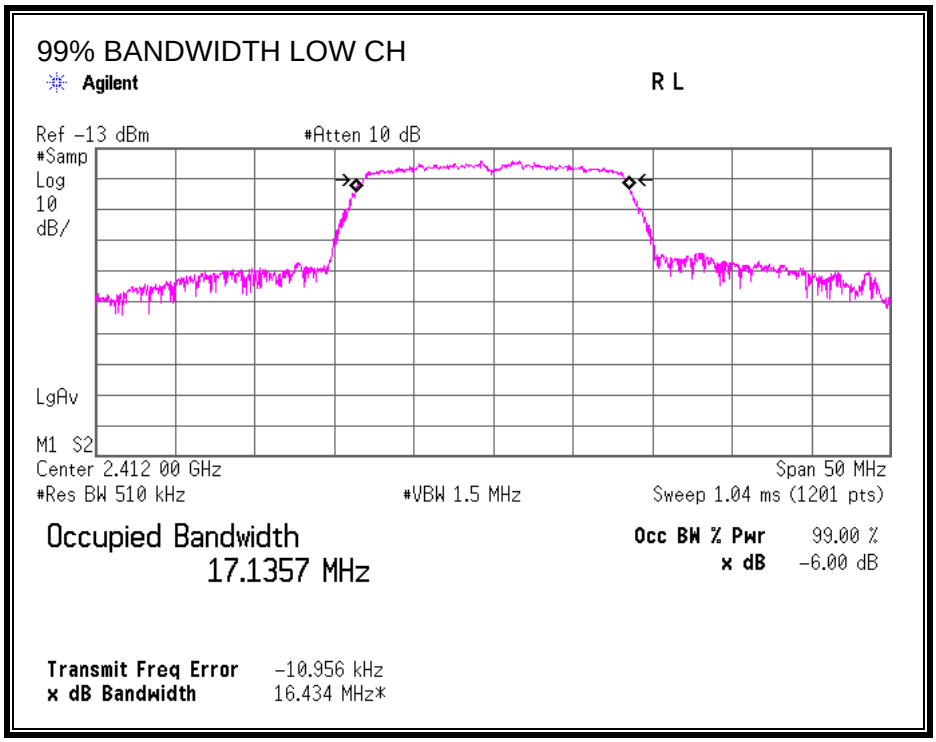
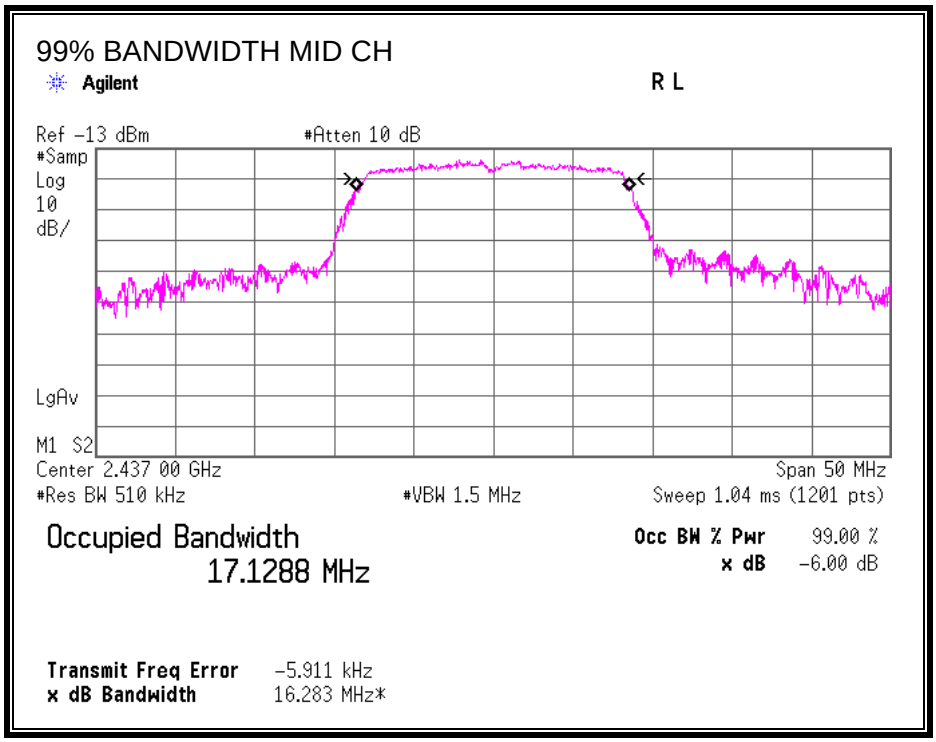
99% BANDWIDTH





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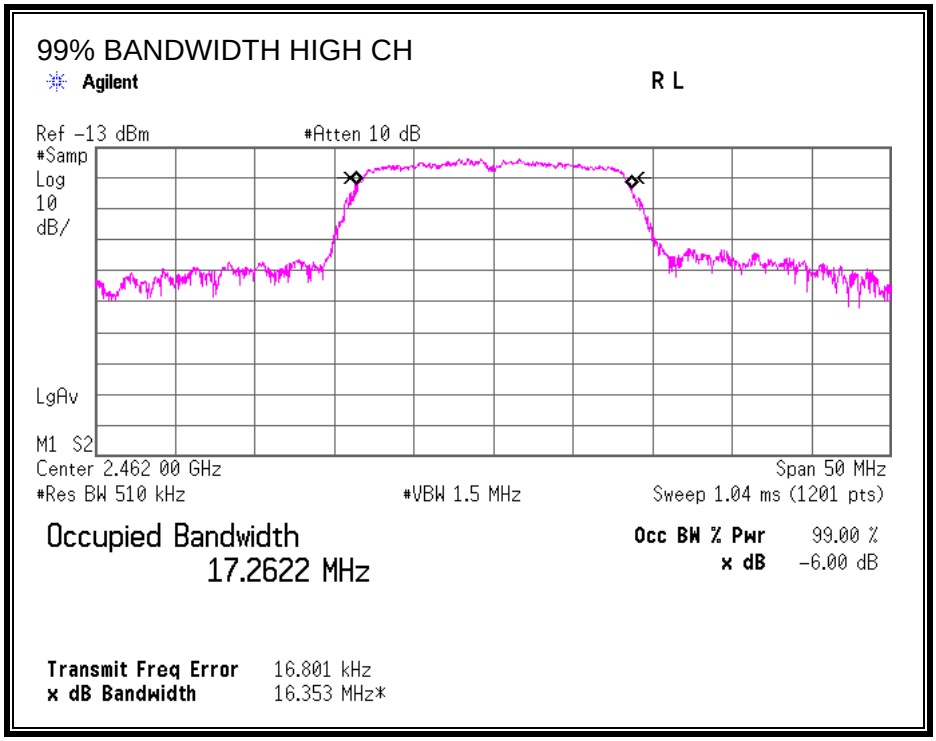

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7.2.3. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a power sensor with power meter.

RESULTS

The cable assembly insertion loss of 21.60dB (including 20.25 dB pad and 1.35dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2412	19.89
Middle	2437	20.03
High	2462	20.08

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7.2.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power sensor with power meter.

RESULTS

The cable assembly insertion loss of 21.60dB (including 20.25 dB pad and 1.35dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2412	11.01
Middle	2437	11.13
High	2462	11.30

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7.2.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-17.82	8	-25.82
Middle	2437	-17.25	8	-25.25
High	2462	-16.97	8	-24.97

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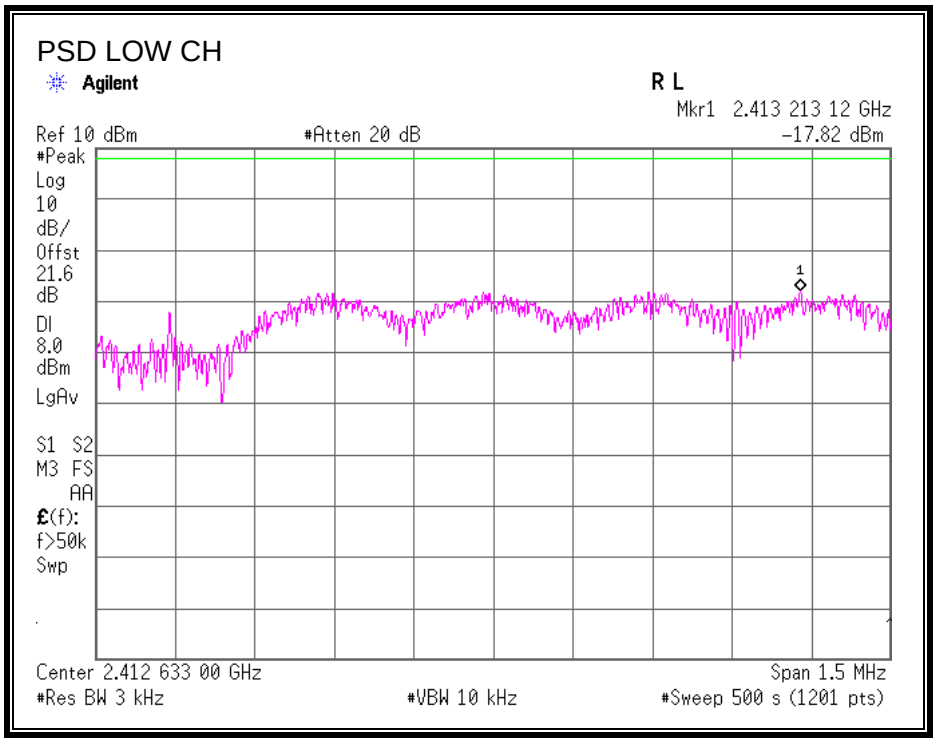
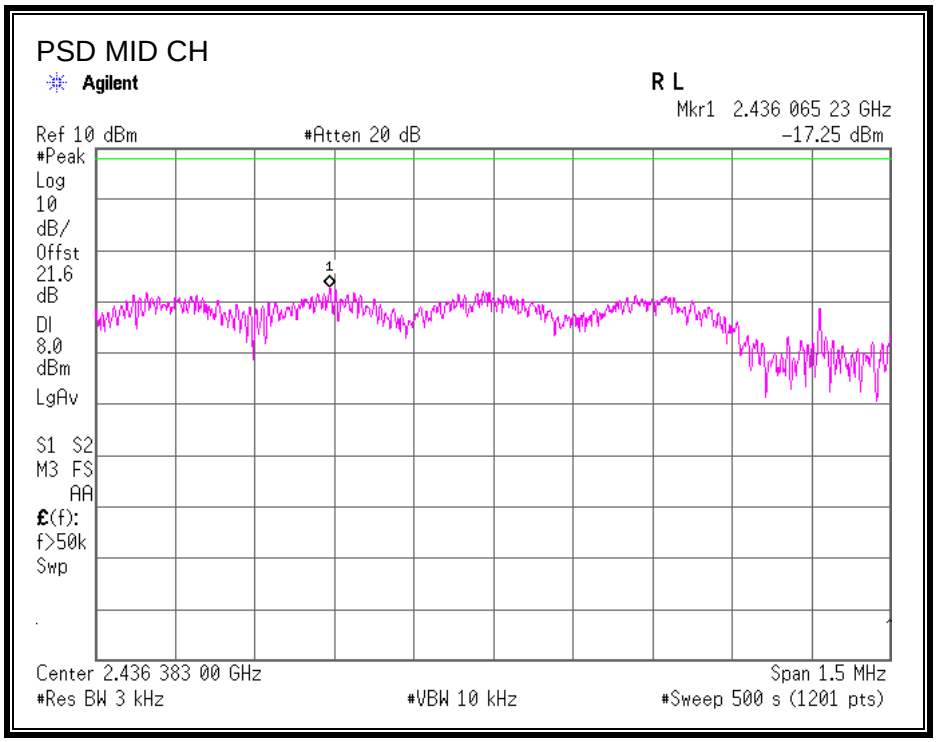
POWER SPECTRAL DENSITY





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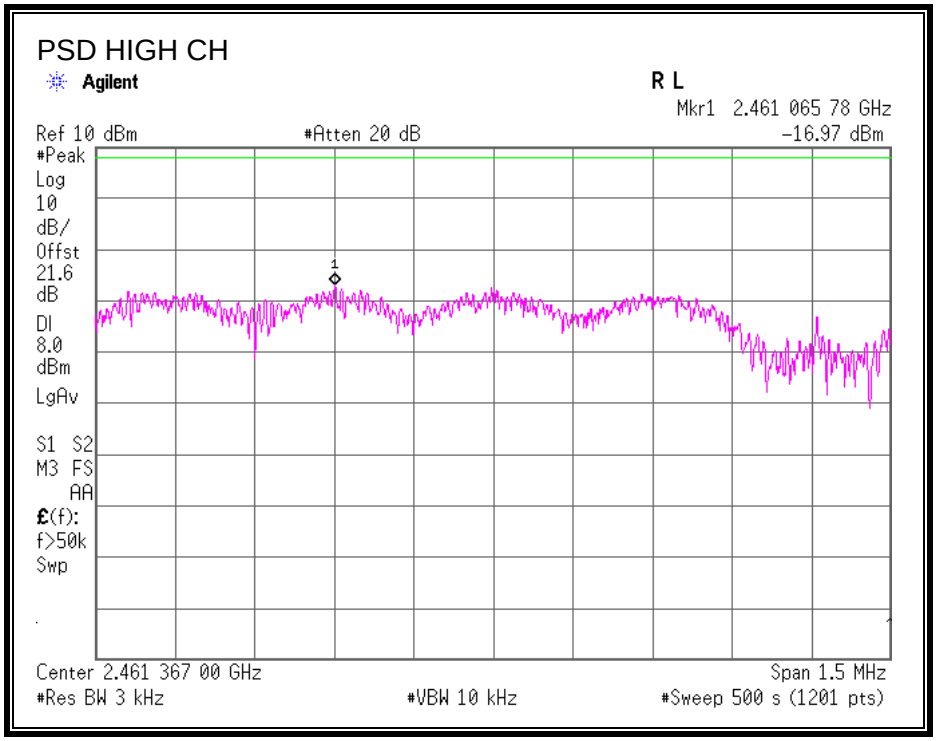

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7.2.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 9 kHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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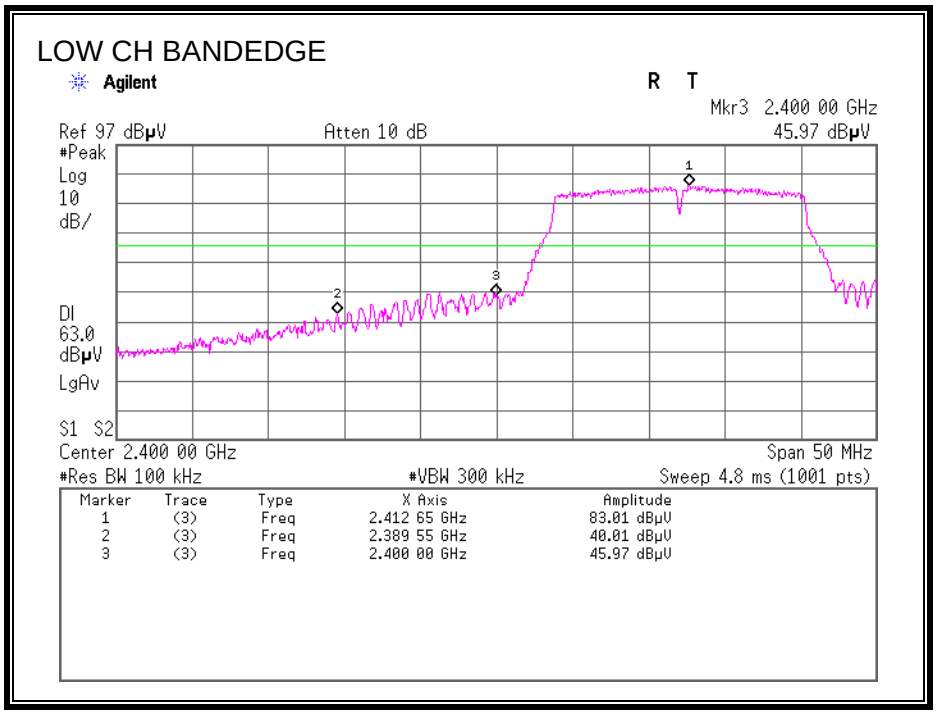
RESULTS

SPURIOUS EMISSIONS, LOW CHANNEL



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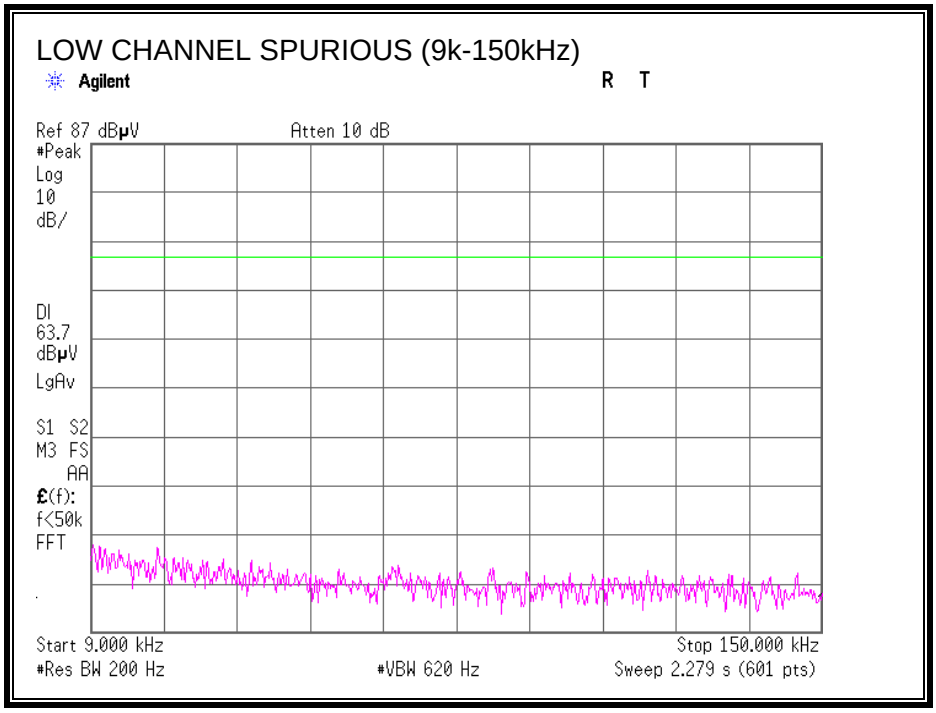

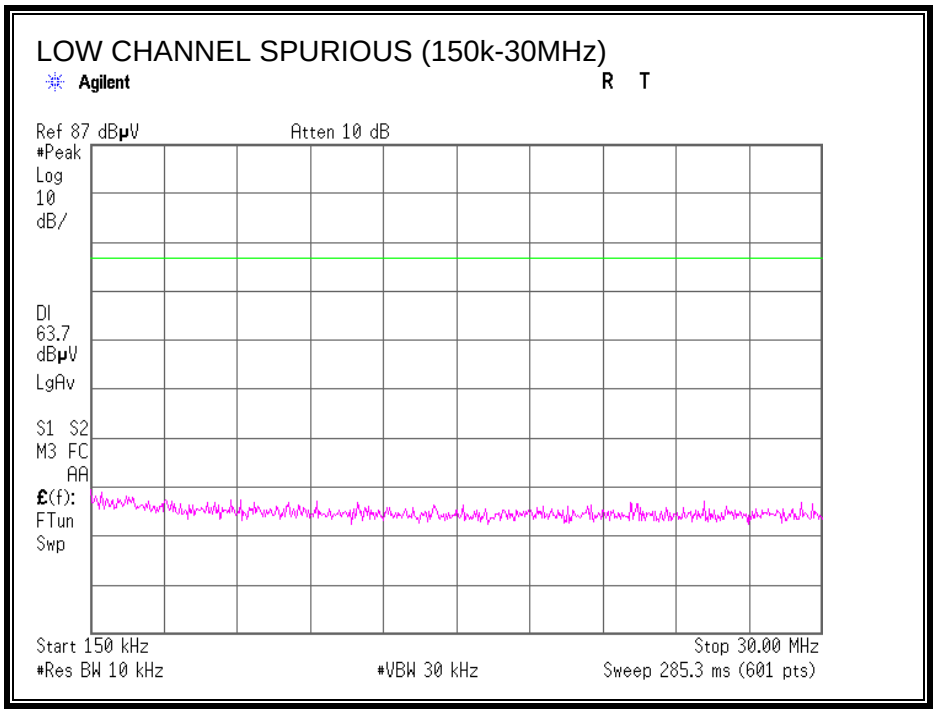

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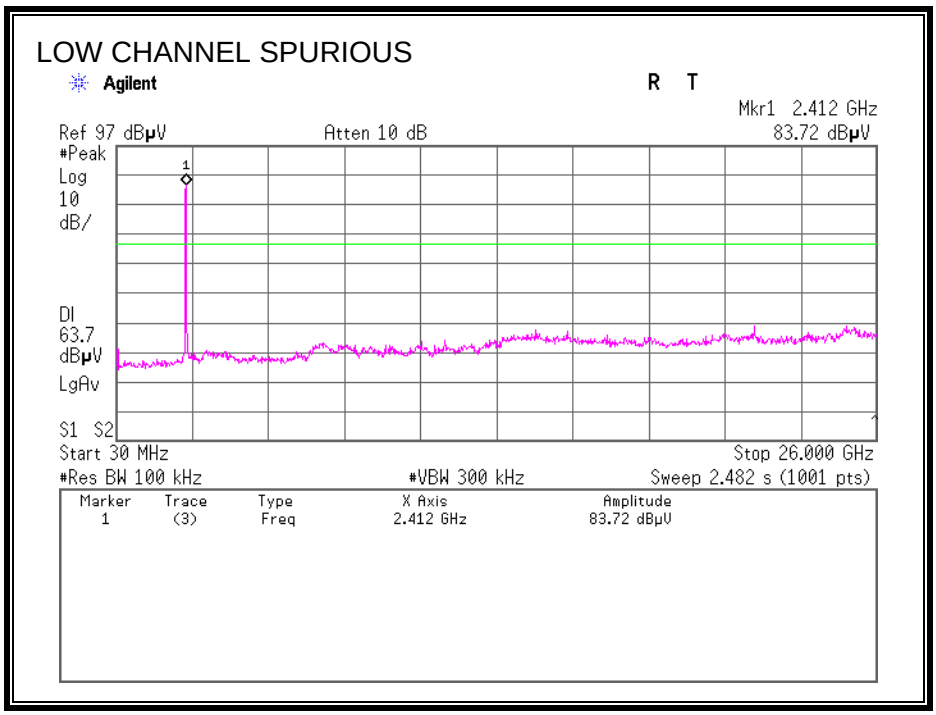

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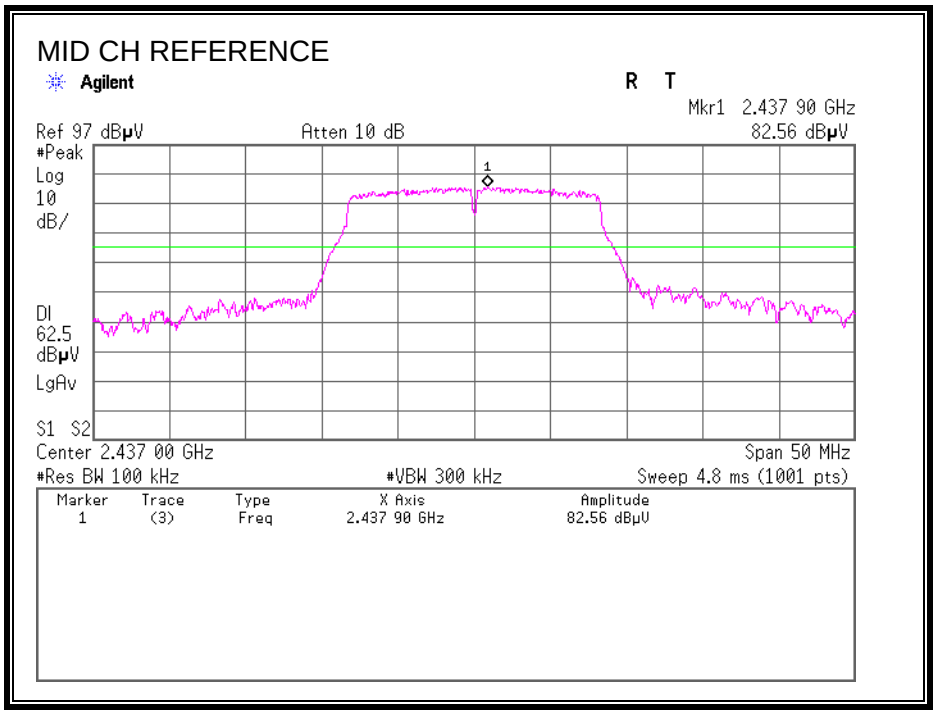
SPURIOUS EMISSIONS, MID CHANNEL



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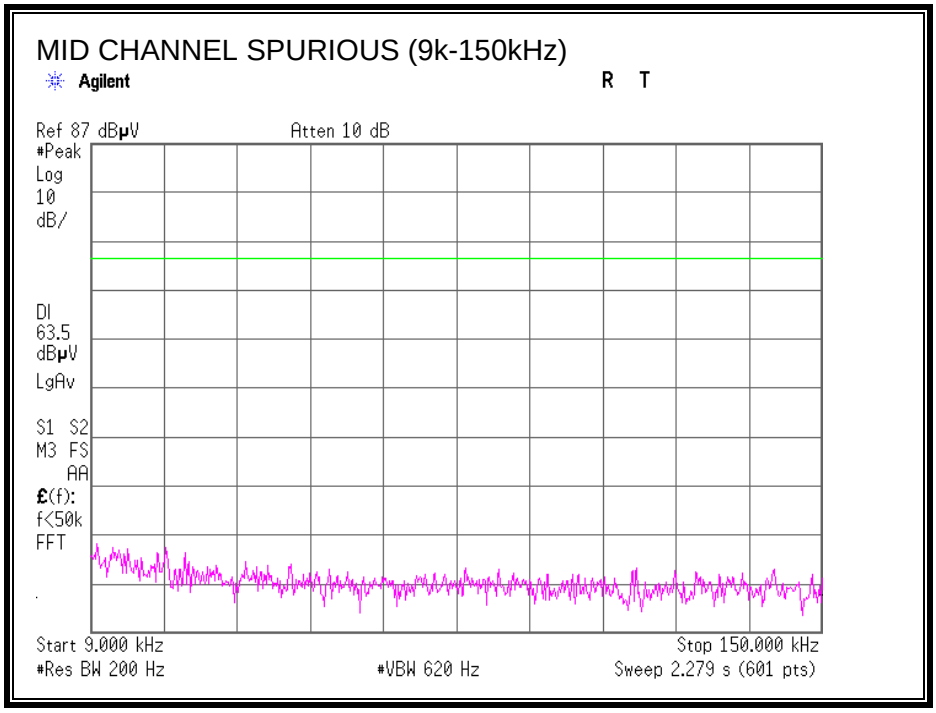

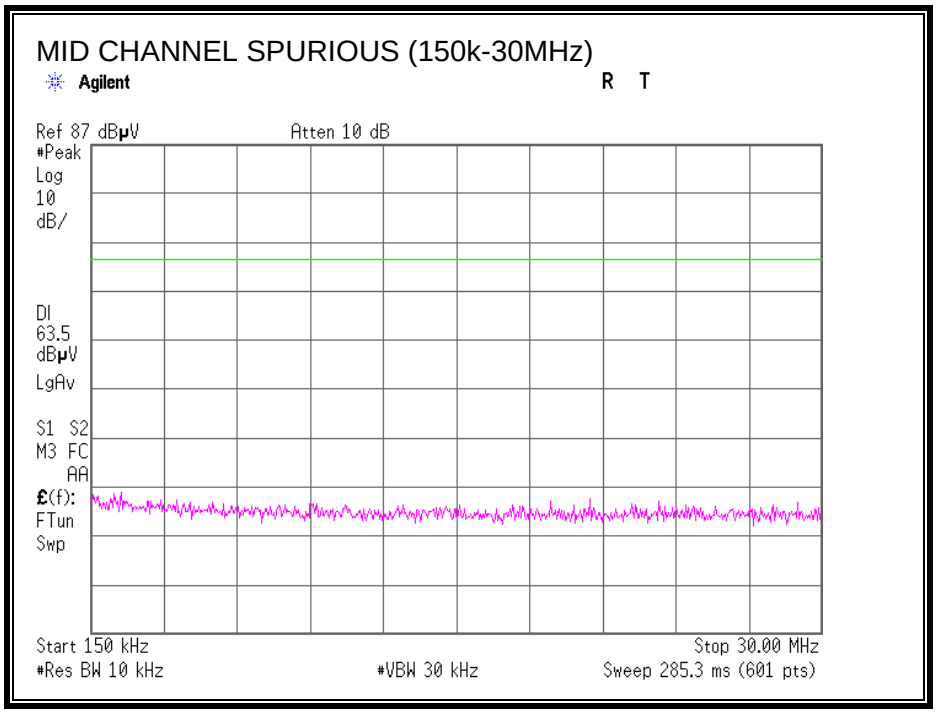

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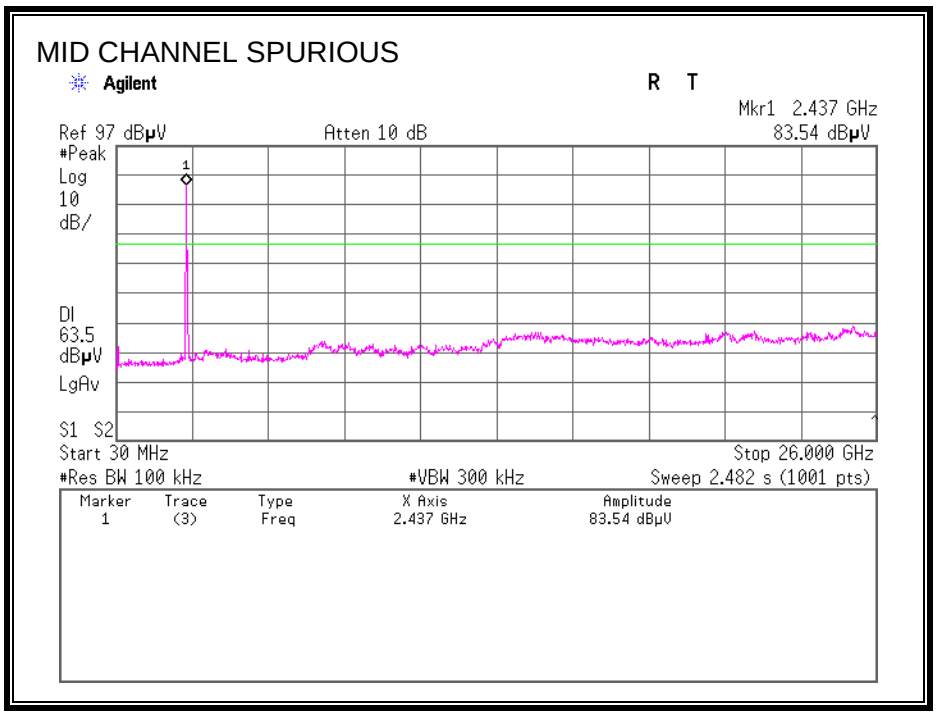

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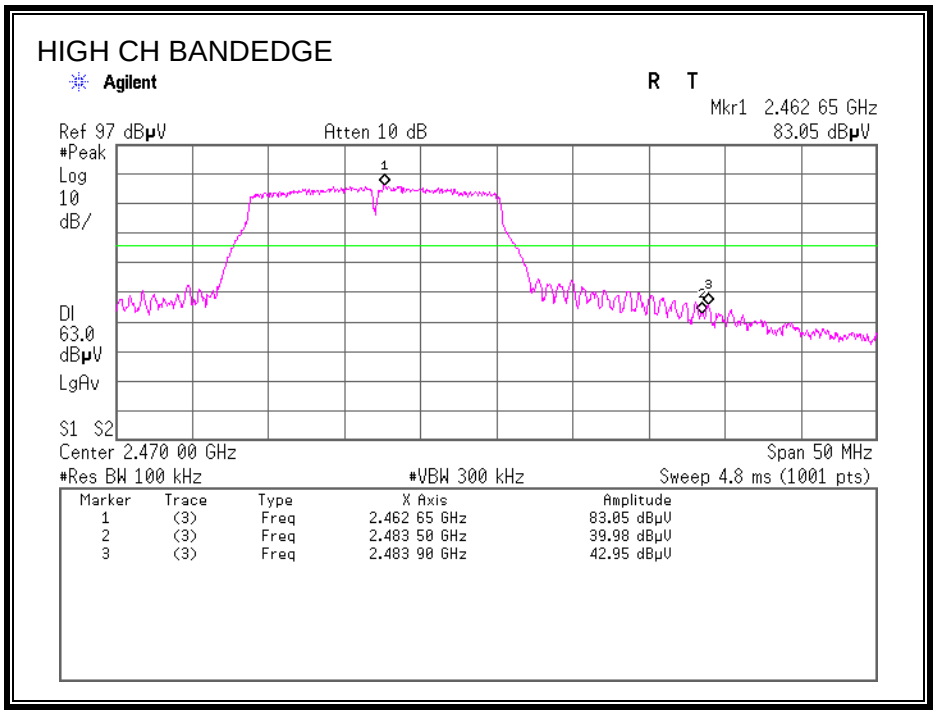
SPURIOUS EMISSIONS, HIGH CHANNEL



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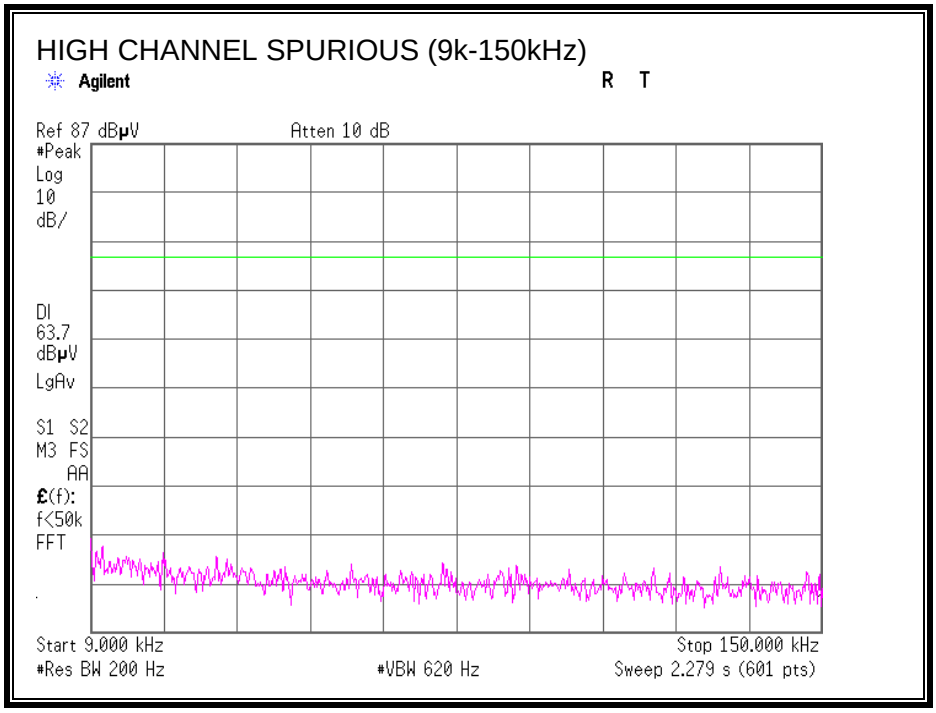

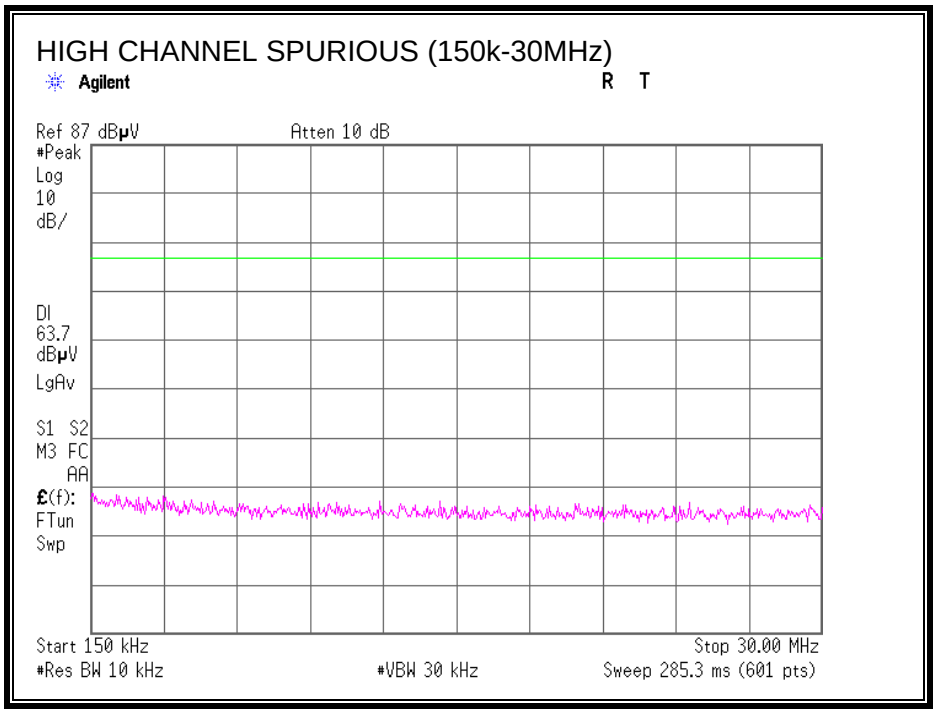

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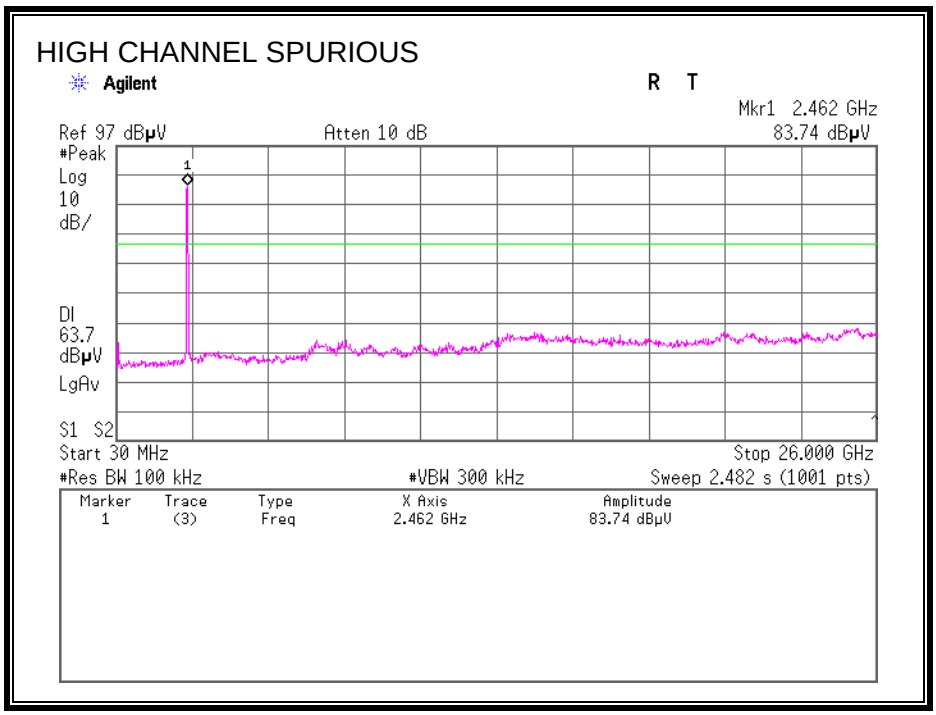
HIGH CHANNEL SPURIOUS



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7.3. 802.11n HT20 SISO MODE IN THE 2.4 GHz BAND

7.3.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.69	0.5
Middle	2437	17.69	0.5
High	2462	17.70	0.5

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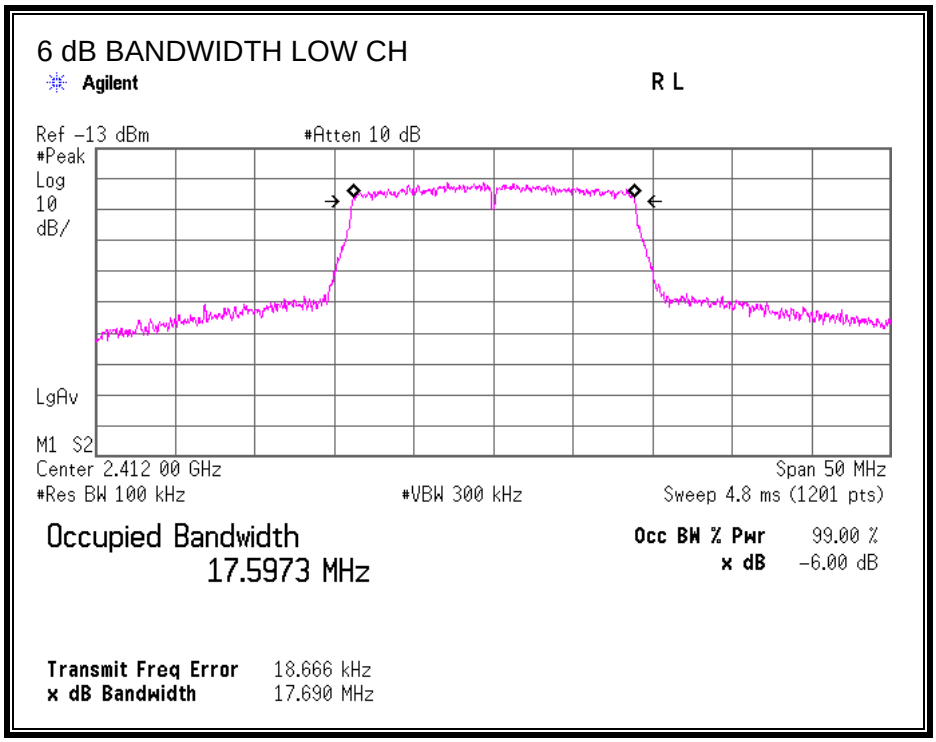
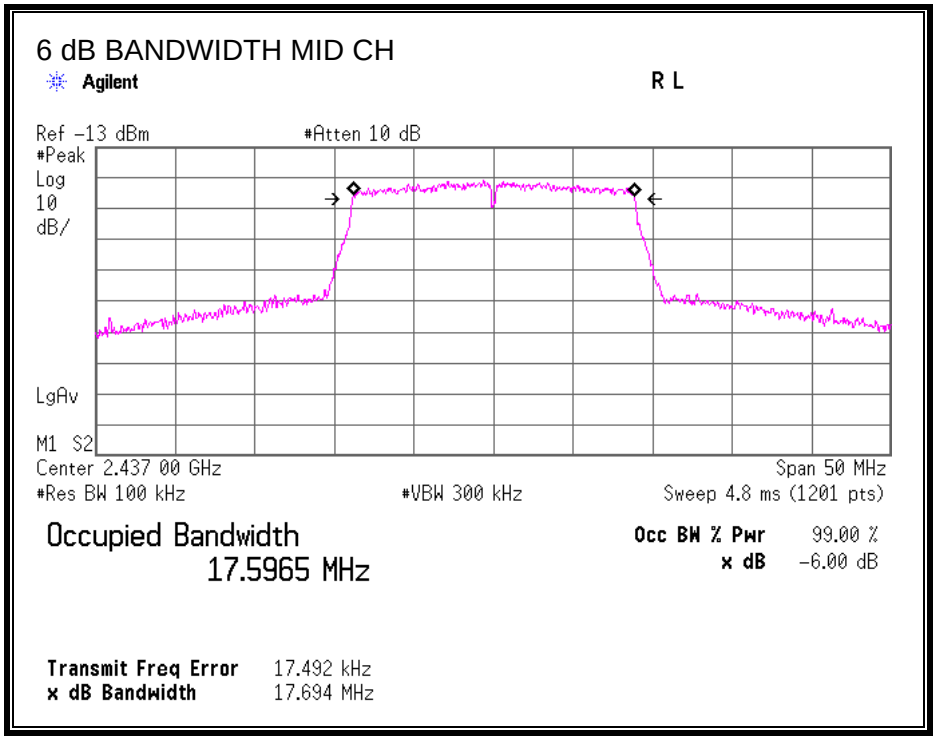
6 dB BANDWIDTH





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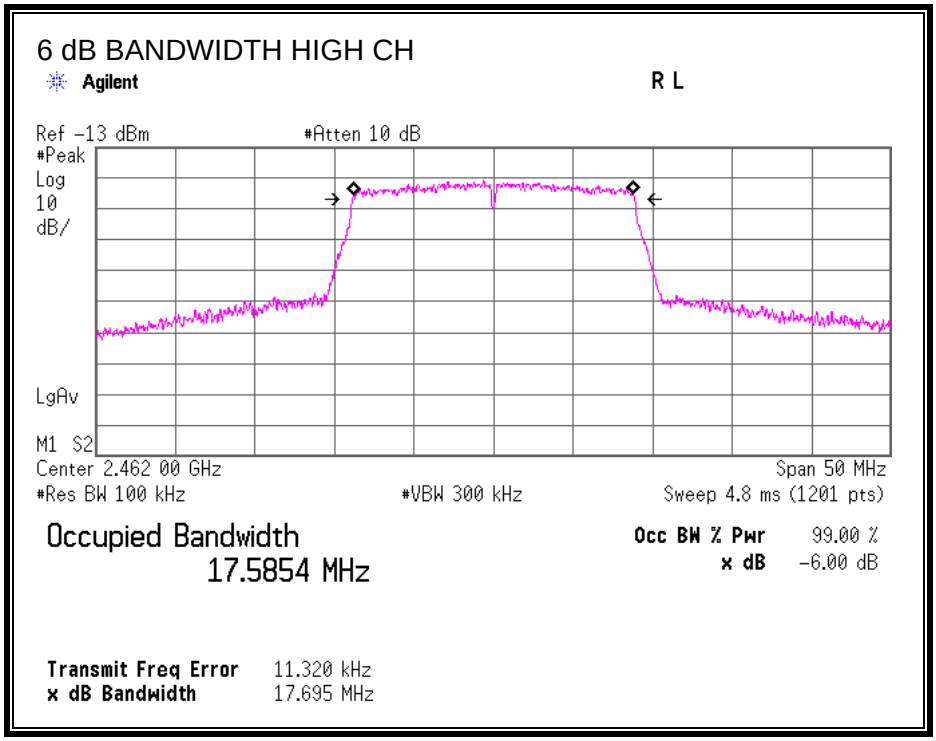

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7.3.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% of SPAN. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.8435
Middle	2437	17.8316
High	2462	17.8159

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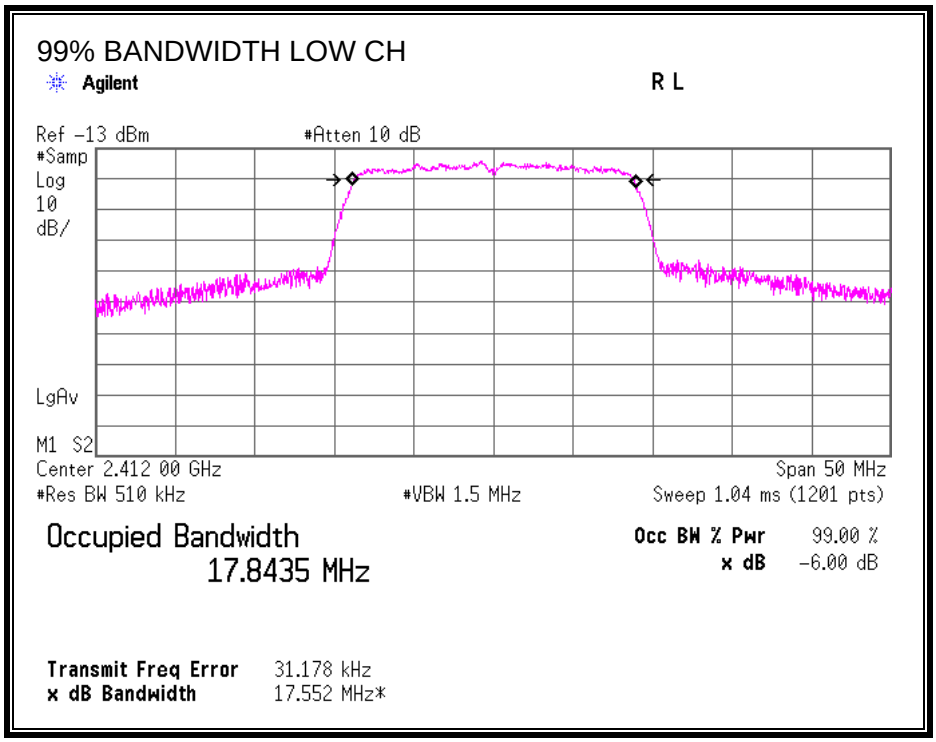
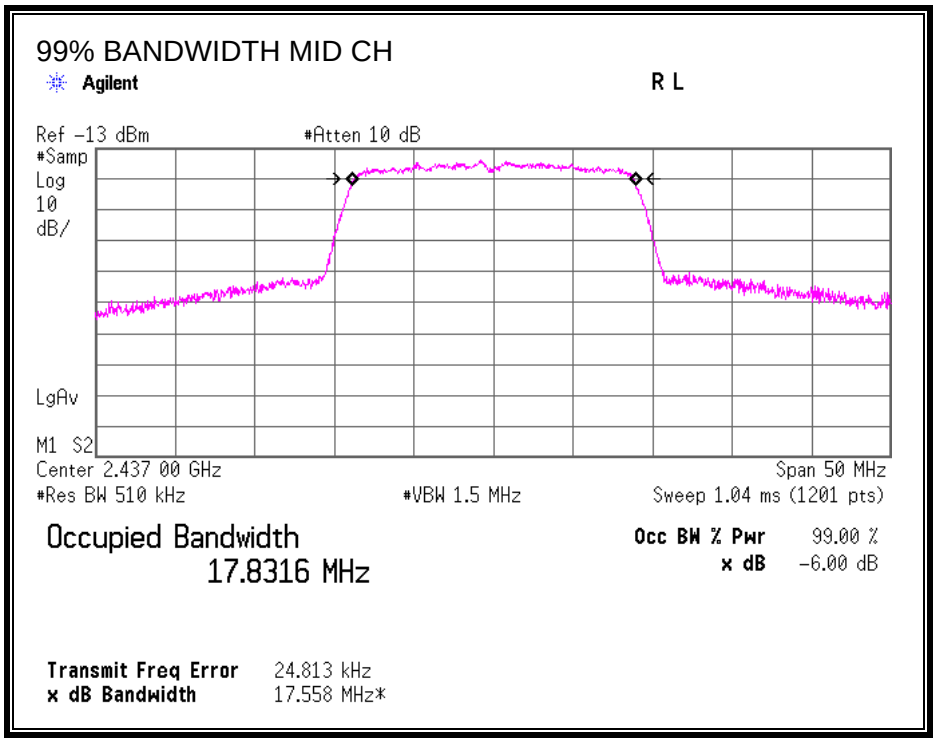
99% BANDWIDTH





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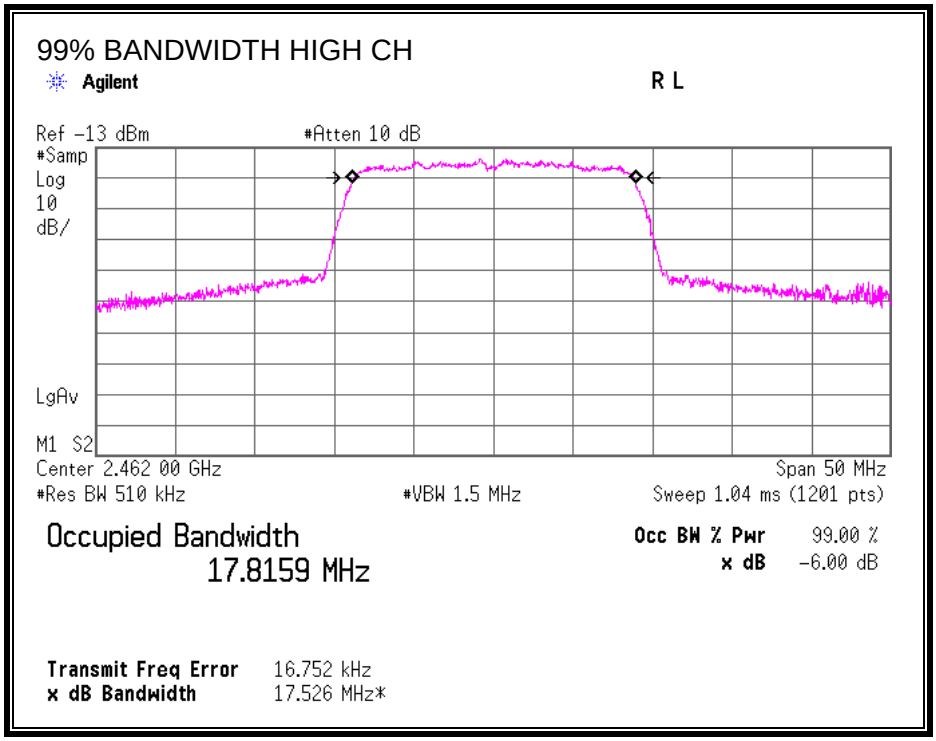

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7.3.3. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a power sensor with power meter.

RESULTS

The cable assembly insertion loss of 21.60dB (including 20.25 dB pad and 1.35dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2412	19.81
Middle	2437	20.04
High	2462	20.01

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7.3.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power sensor with power meter.

RESULTS

The cable assembly insertion loss of 21.60dB (including 20.25 dB pad and 1.35dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2412	11.04
Middle	2437	11.07
High	2462	11.32

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7.3.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-17.67	8	-25.67
Middle	2437	-17.61	8	-25.61
High	2462	-17.18	8	-25.18

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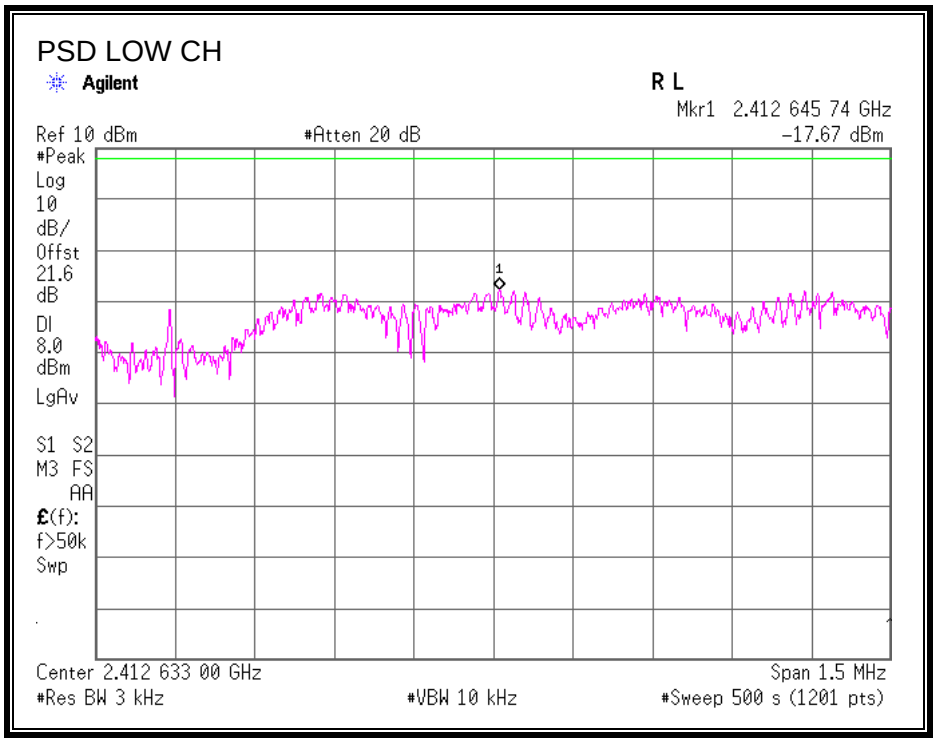
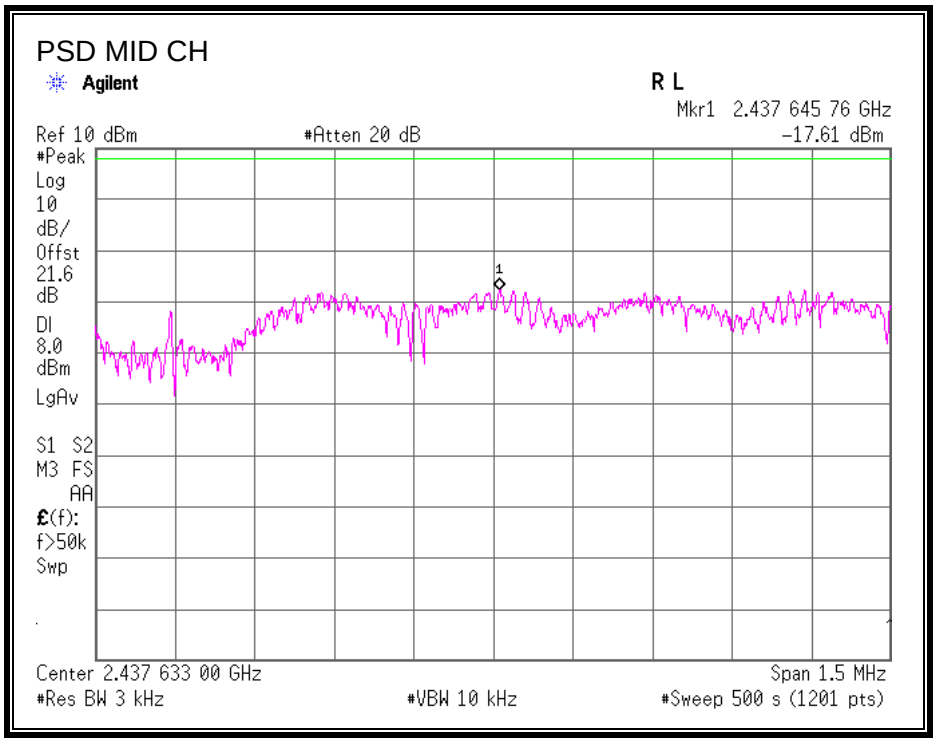
POWER SPECTRAL DENSITY





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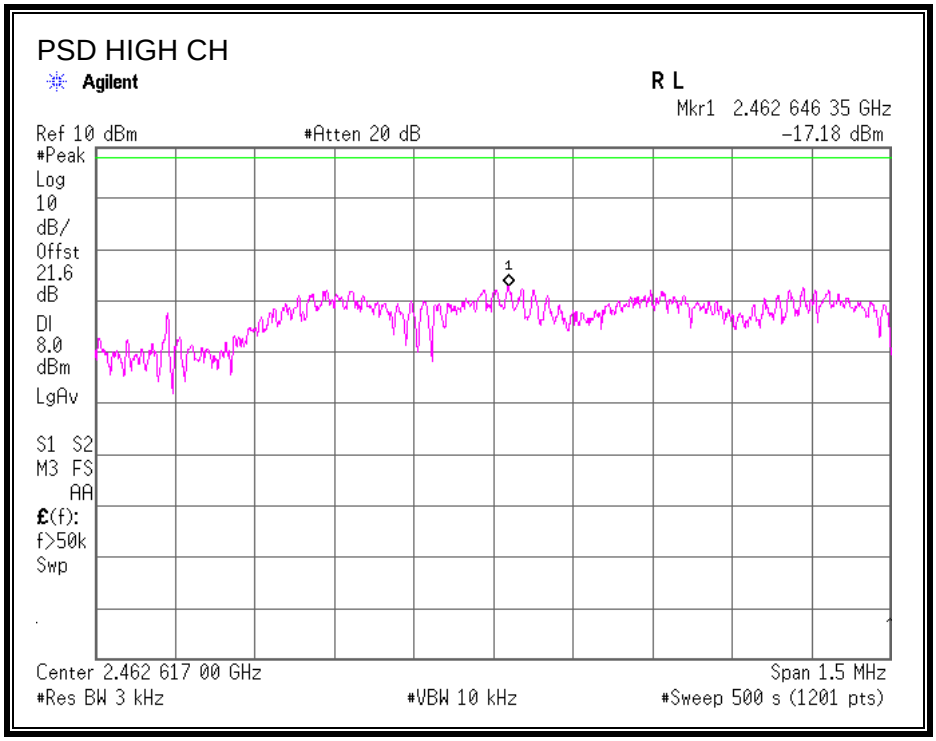

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7.3.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 9 kHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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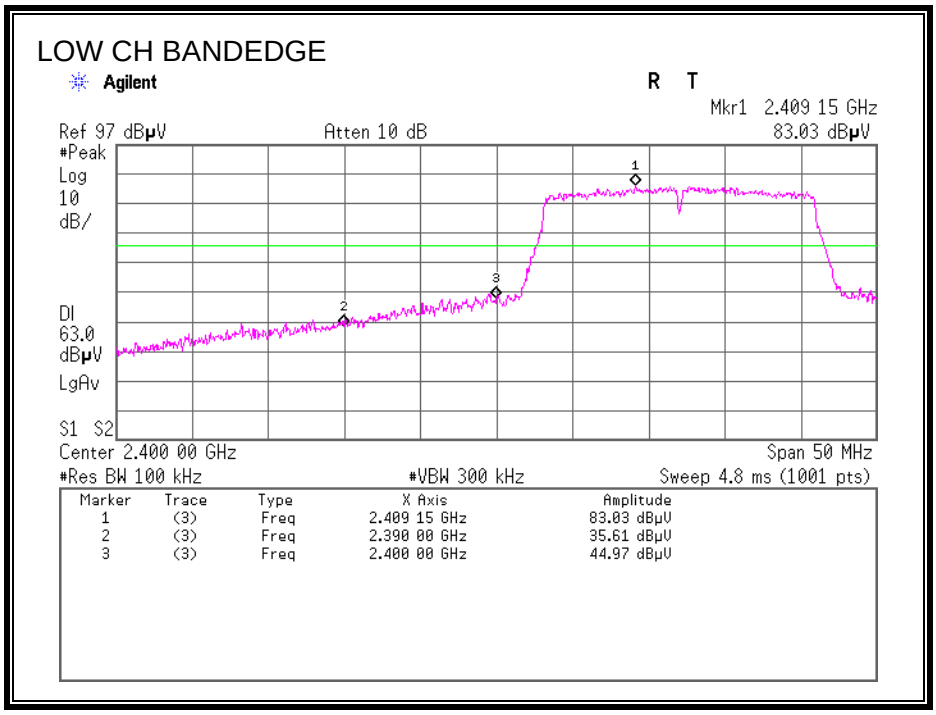
RESULTS

SPURIOUS EMISSIONS, LOW CHANNEL



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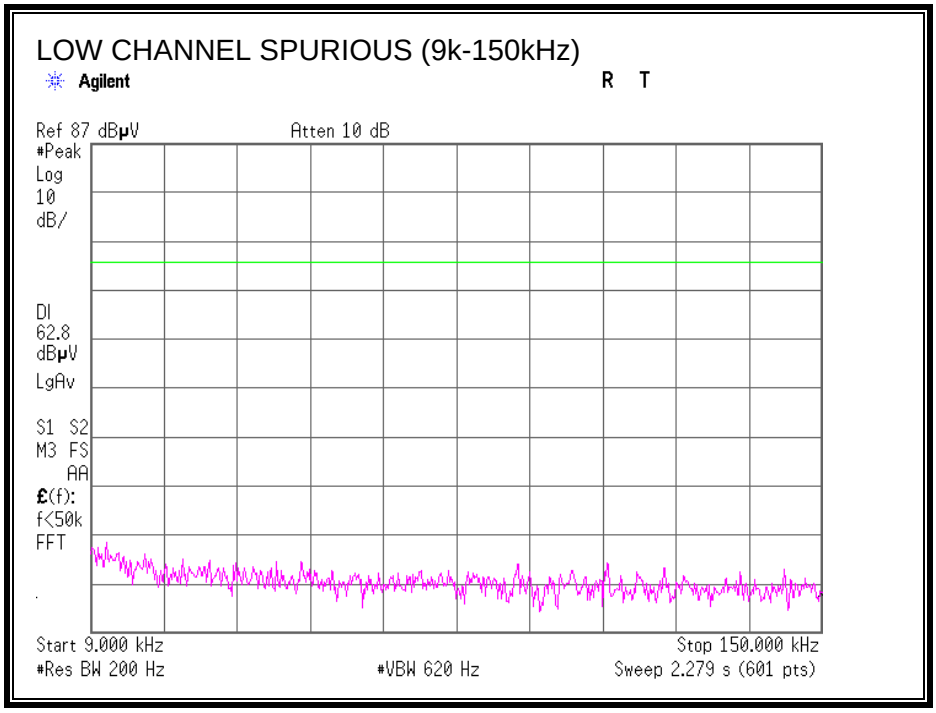

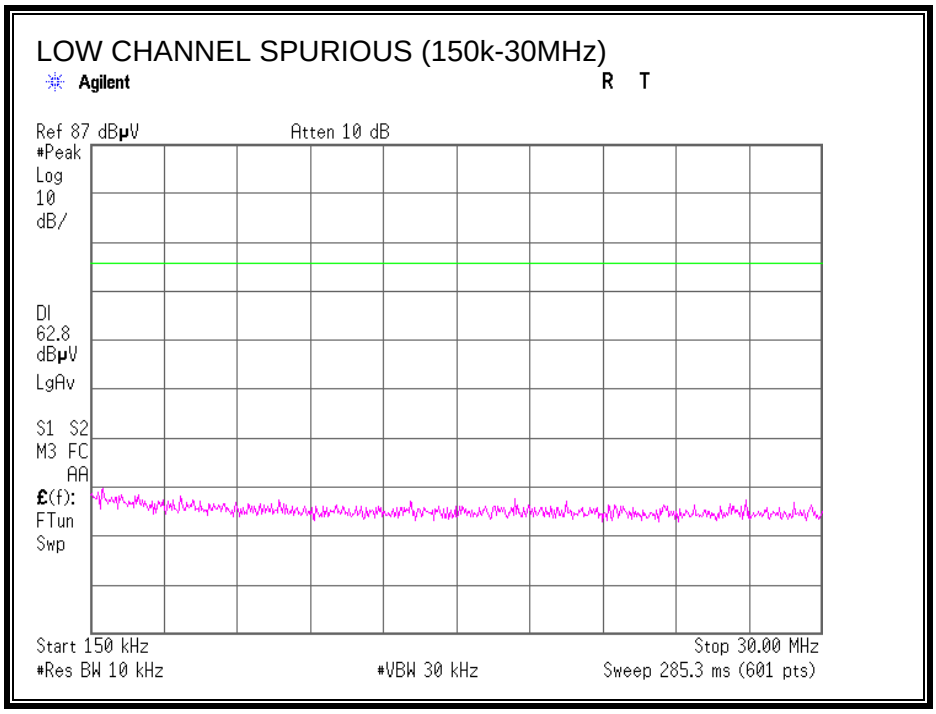

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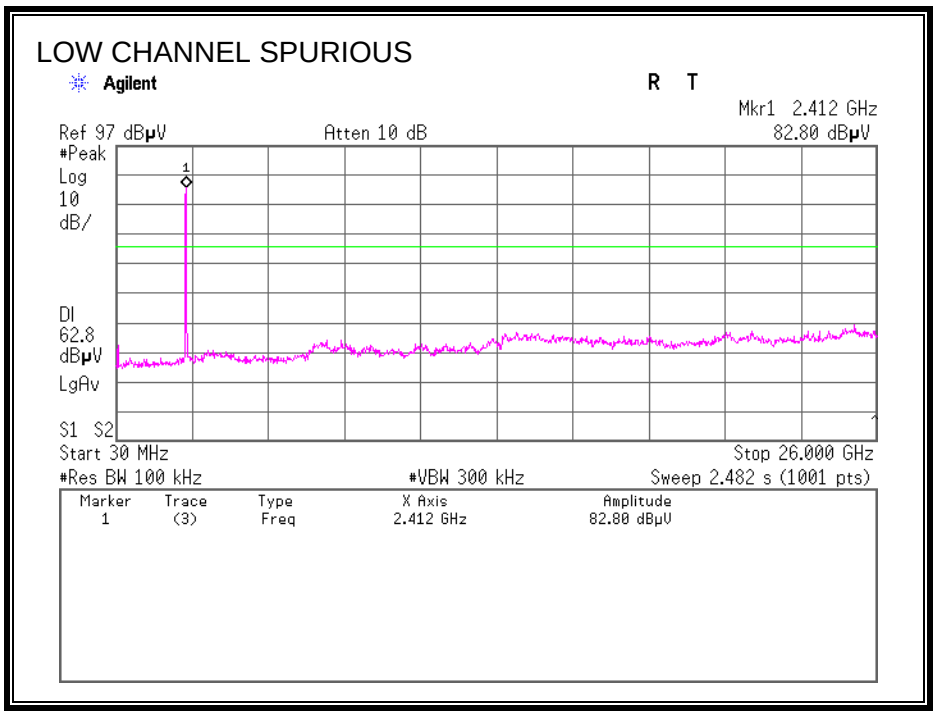

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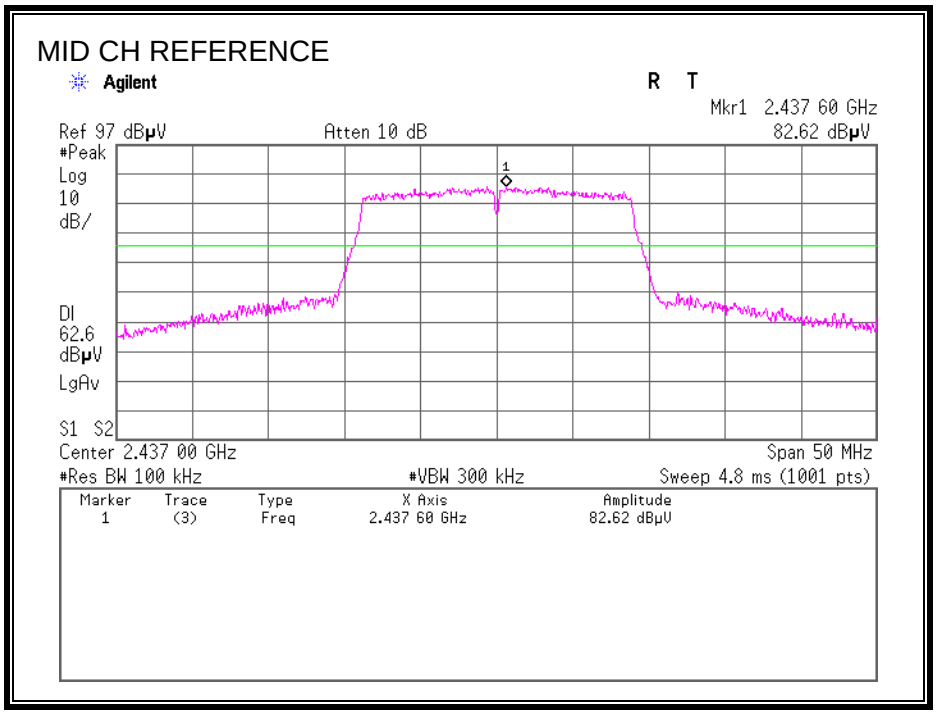
SPURIOUS EMISSIONS, MID CHANNEL



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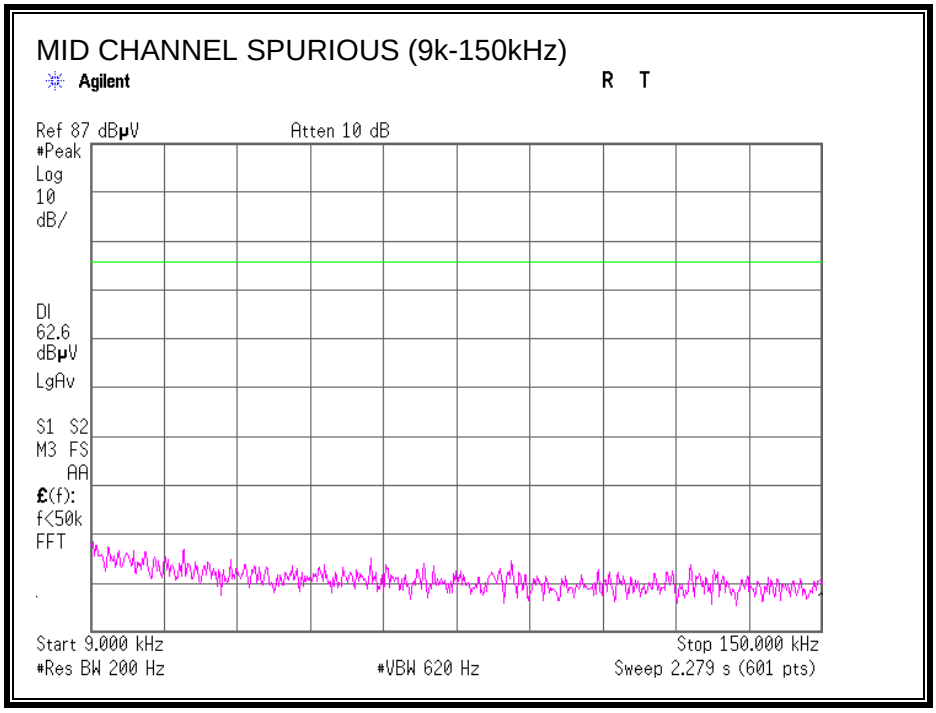

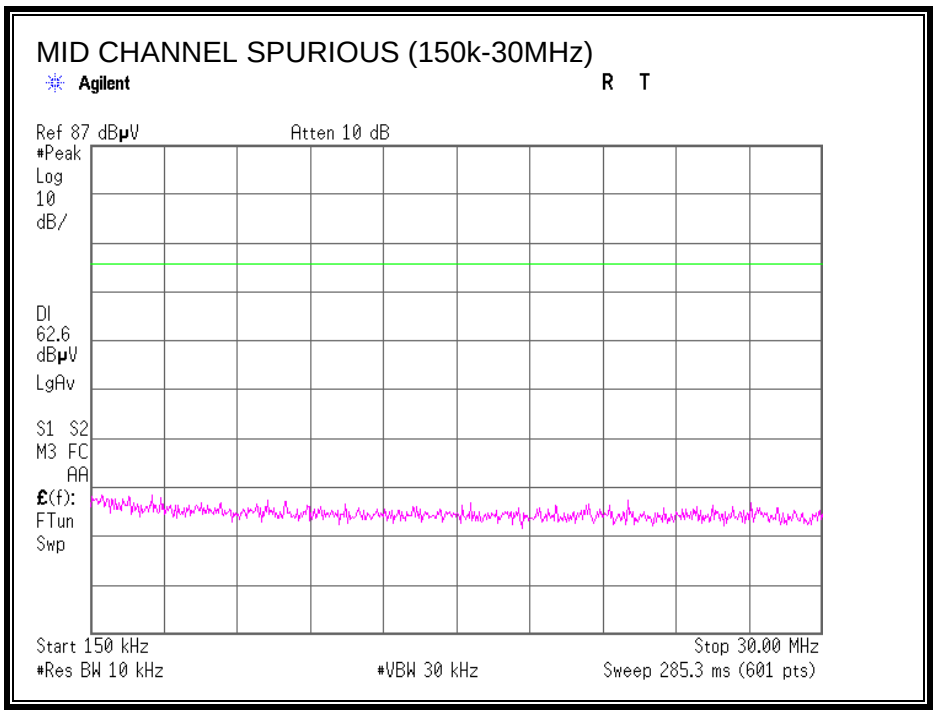

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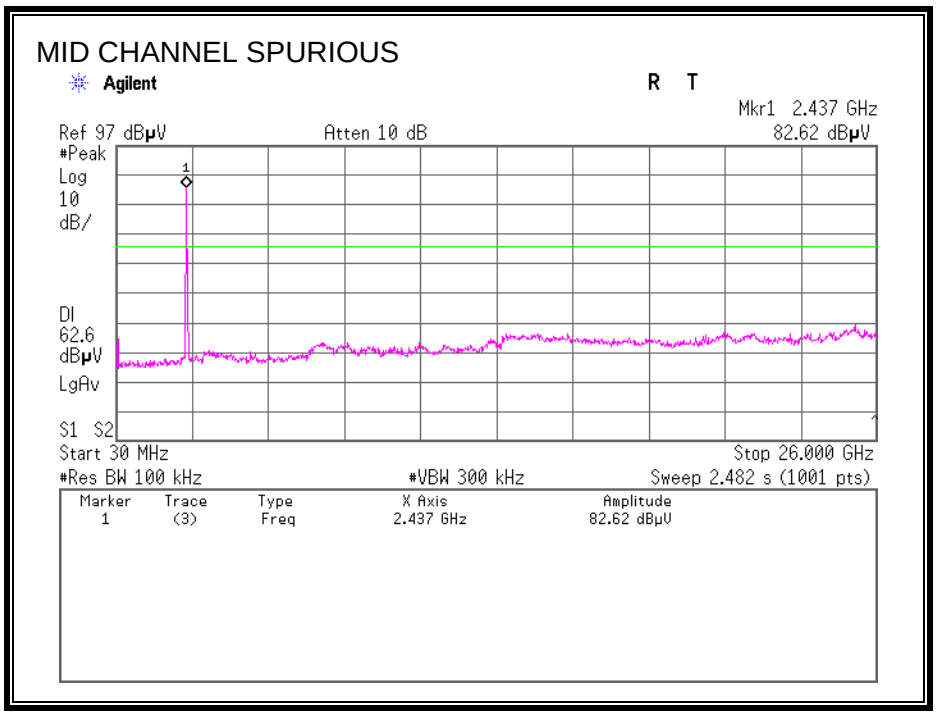

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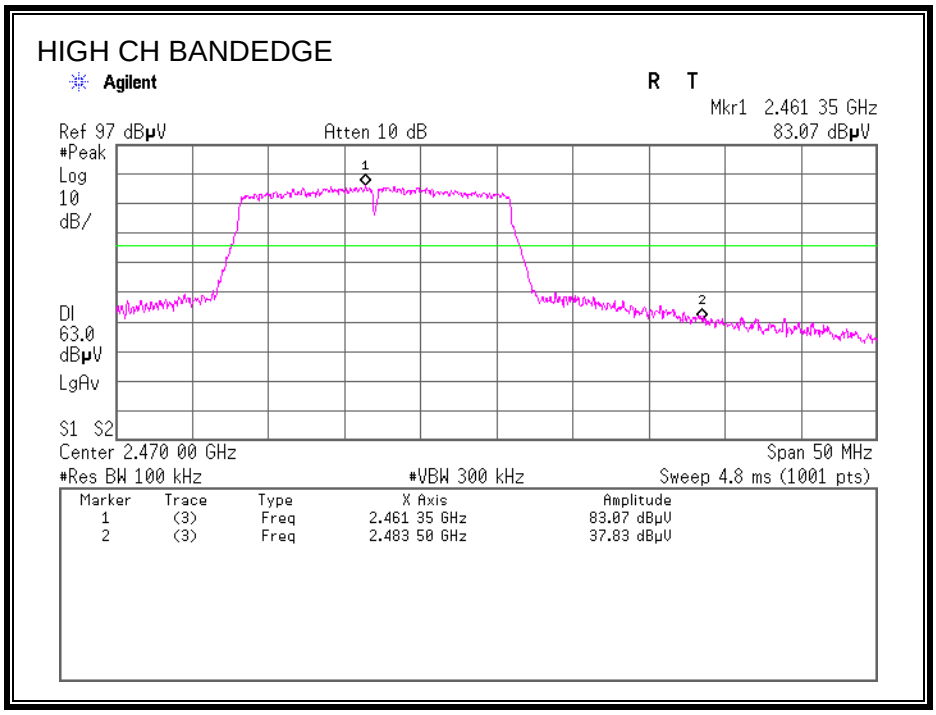
SPURIOUS EMISSIONS, HIGH CHANNEL



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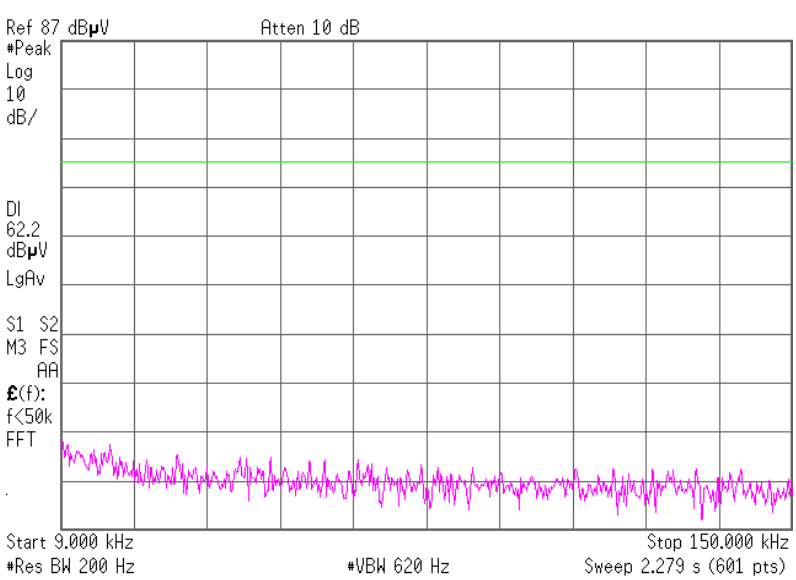
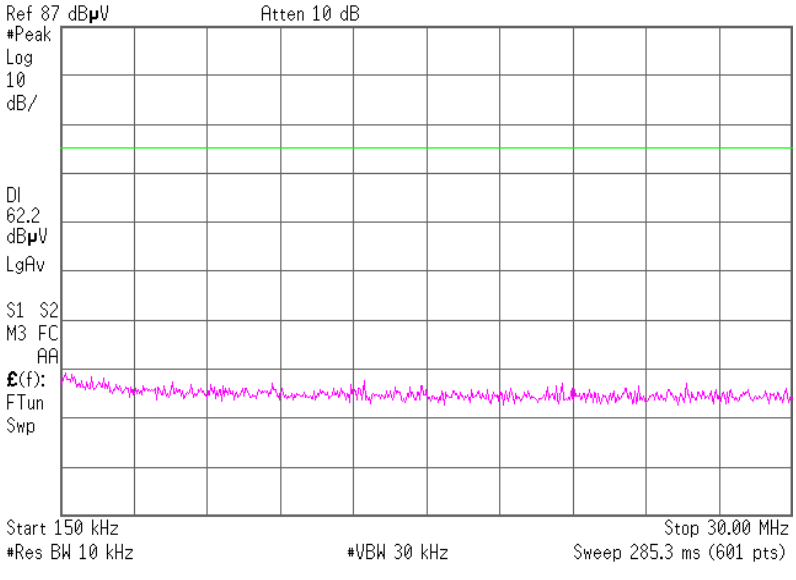
HIGH CHANNEL SPURIOUS (9k-150kHz)



HIGH CHANNEL SPURIOUS (150k-30MHz)



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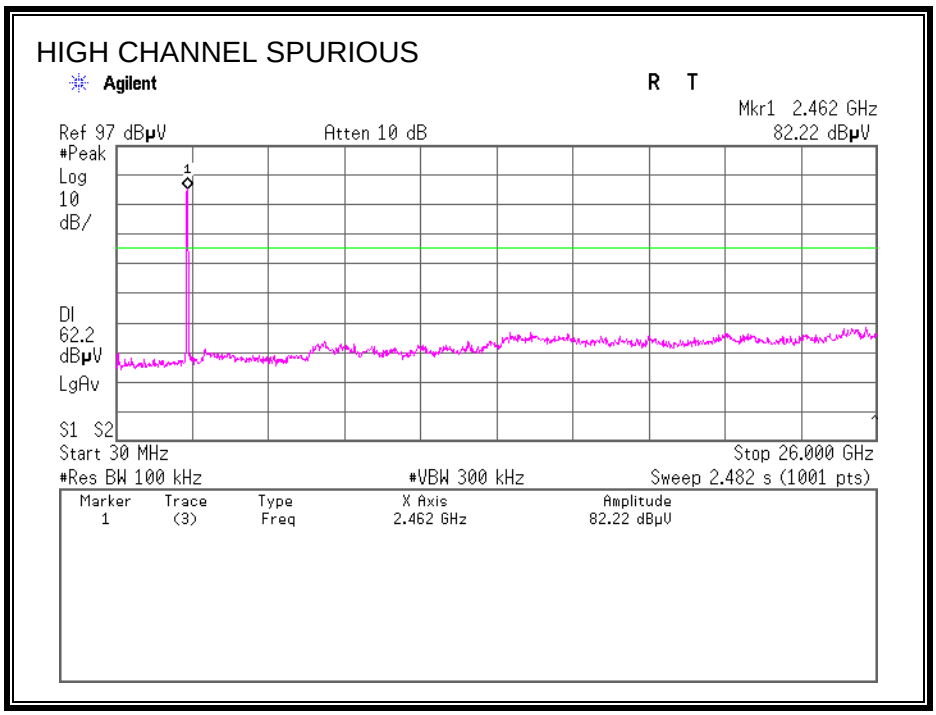
HIGH CHANNEL SPURIOUS



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7.4. 802.11n HT40 SISO MODE IN THE 2.4 GHz BAND

7.4.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2422	36.13	0.5
Middle	2437	36.39	0.5
High	2452	36.26	0.5

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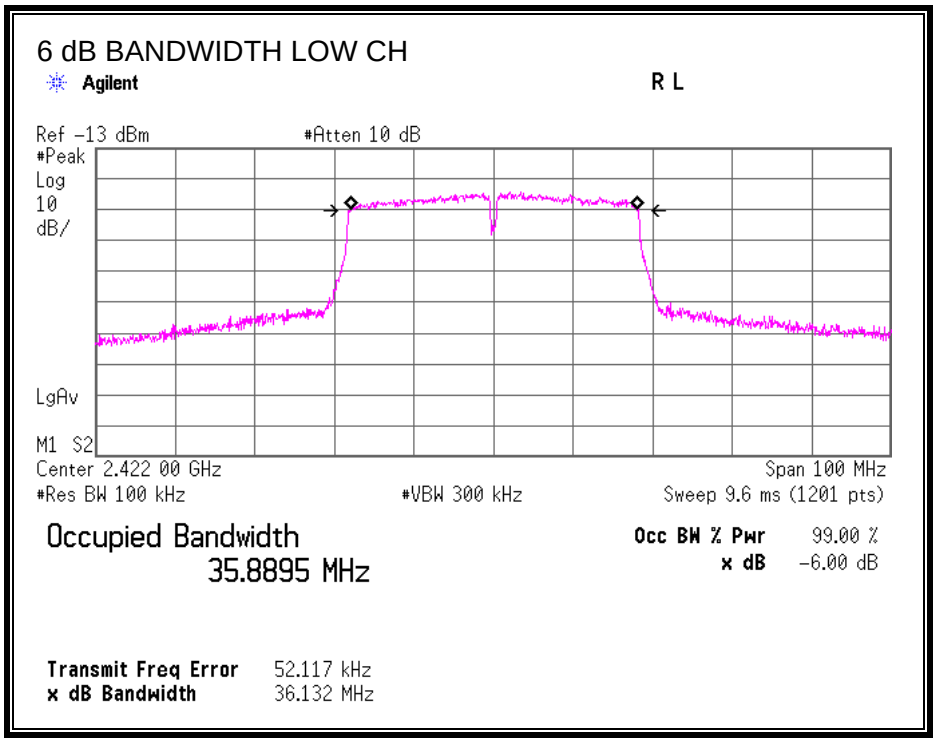
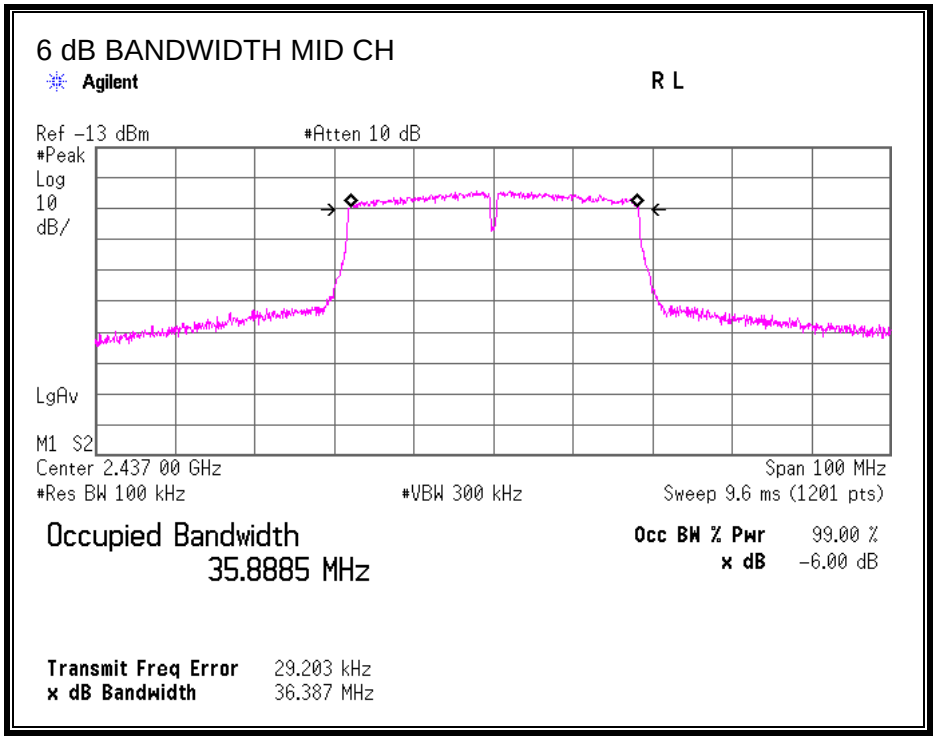
6 dB BANDWIDTH





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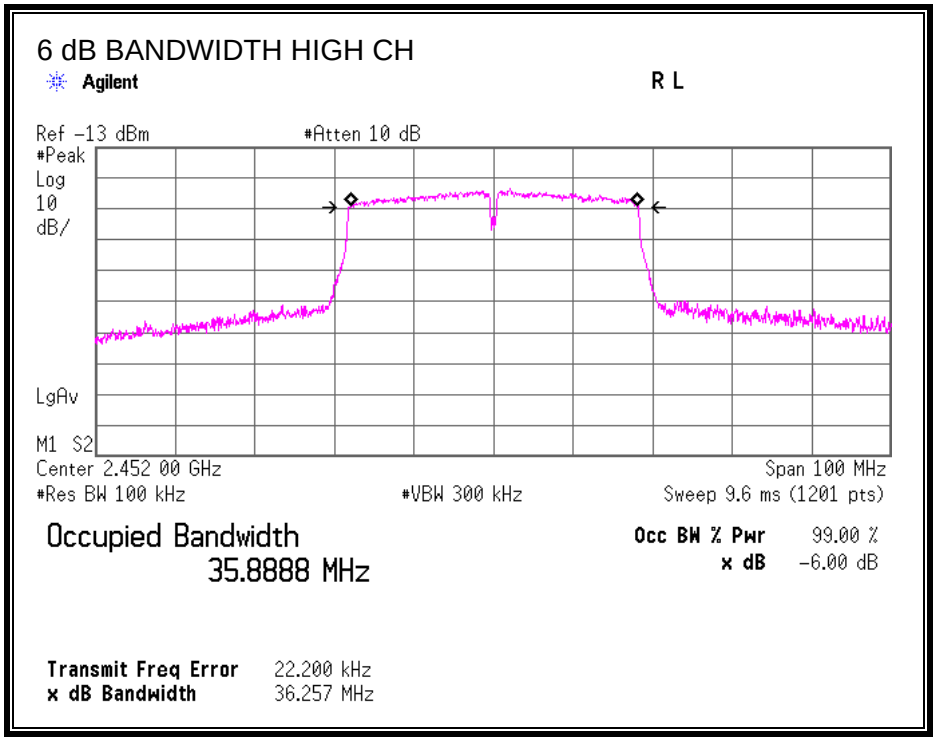

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7.4.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% of SPAN. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2422	36.1066
Middle	2437	36.1223
High	2452	36.0623

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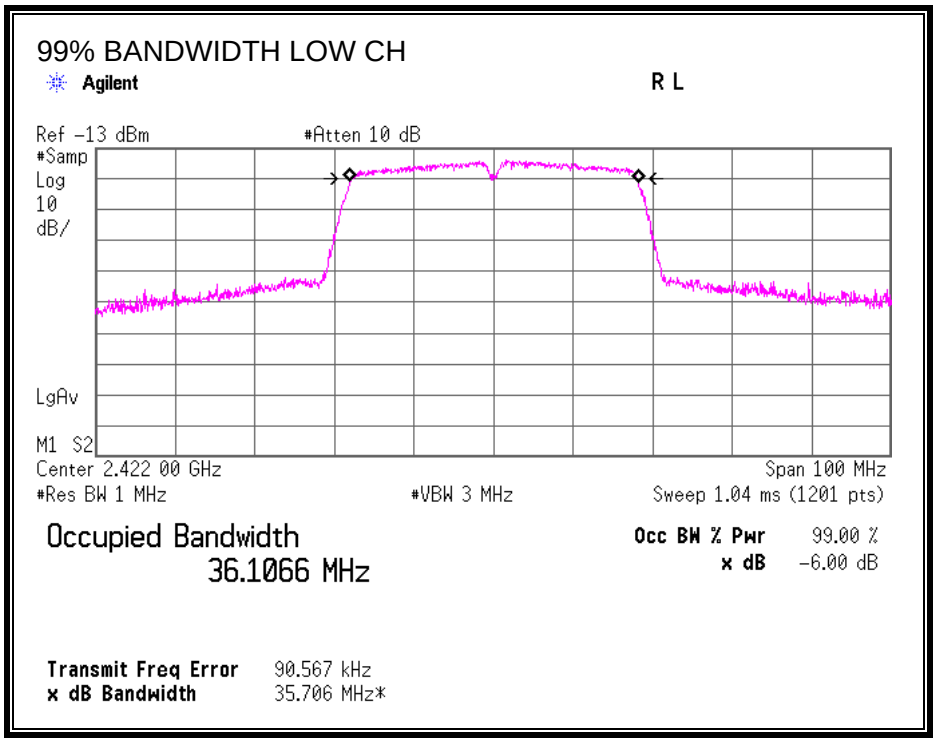
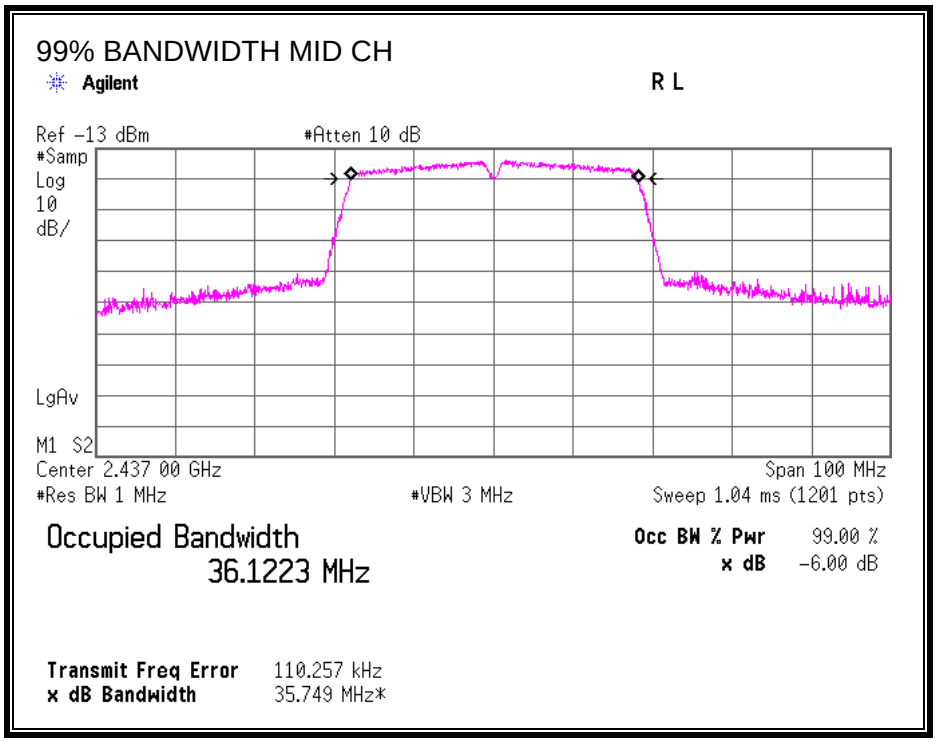
99% BANDWIDTH





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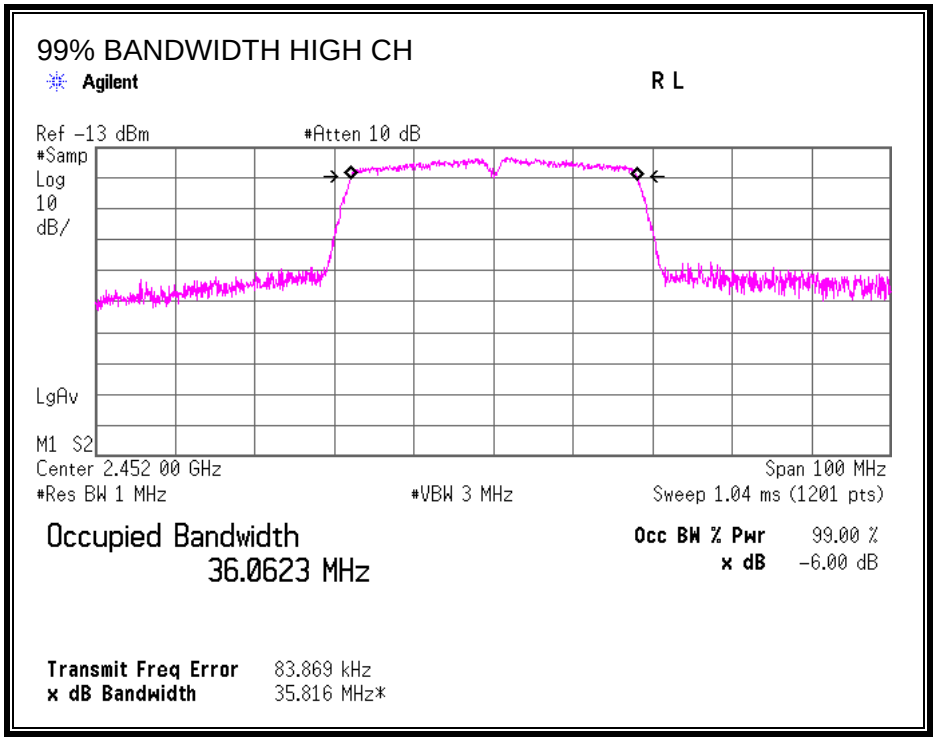

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7.4.3. OUTPUT POWER

LIMITS

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a power sensor with power meter.

RESULTS

The cable assembly insertion loss of 21.60dB (including 20.25 dB pad and 1.35dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2422	19.74
Middle	2437	19.78
High	2452	19.82

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7.4.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power sensor with power meter.

RESULTS

The cable assembly insertion loss of 21.60dB (including 20.25 dB pad and 1.35dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Power (dBm)
Low	2422	10.79
Middle	2437	10.98
High	2452	11.10

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7.4.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2422	-18.81	8	-26.81
Middle	2437	-20.01	8	-28.01
High	2452	-19.13	8	-27.13

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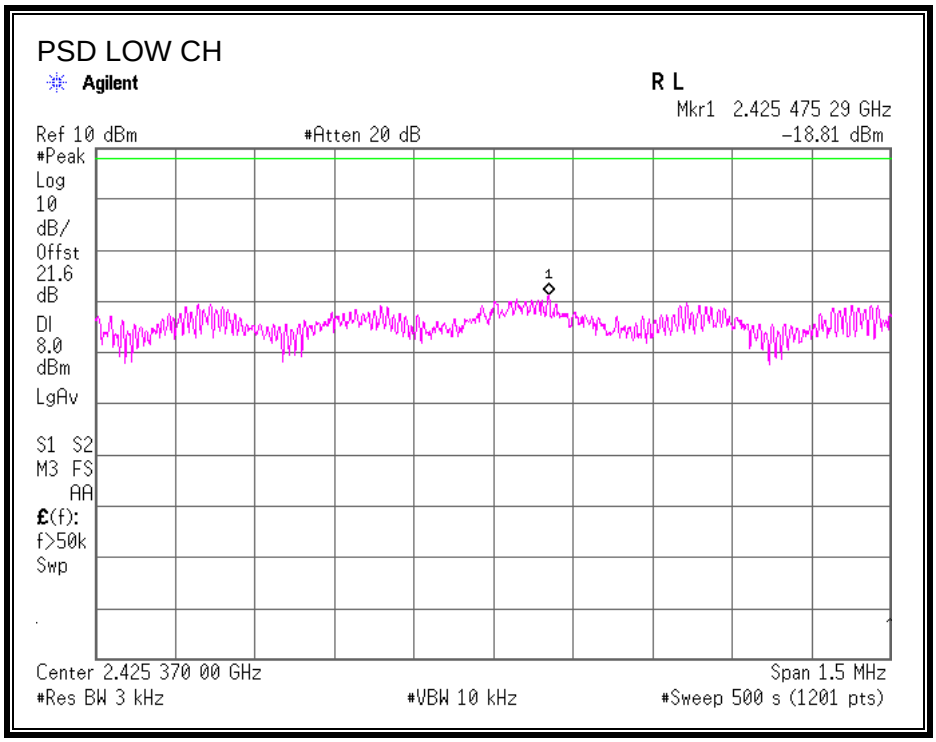
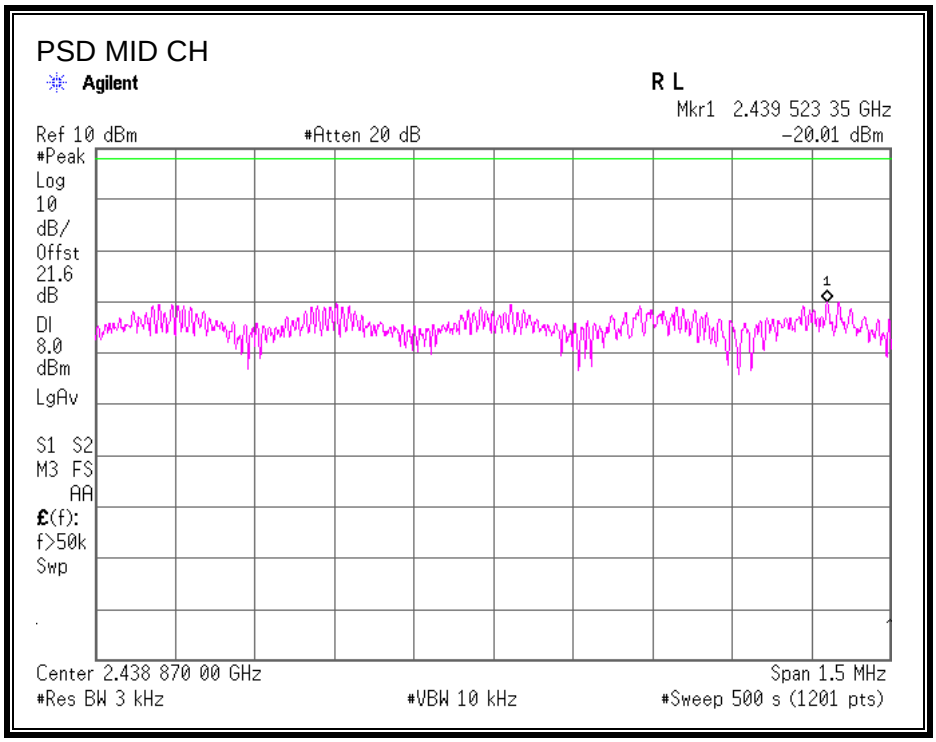
POWER SPECTRAL DENSITY





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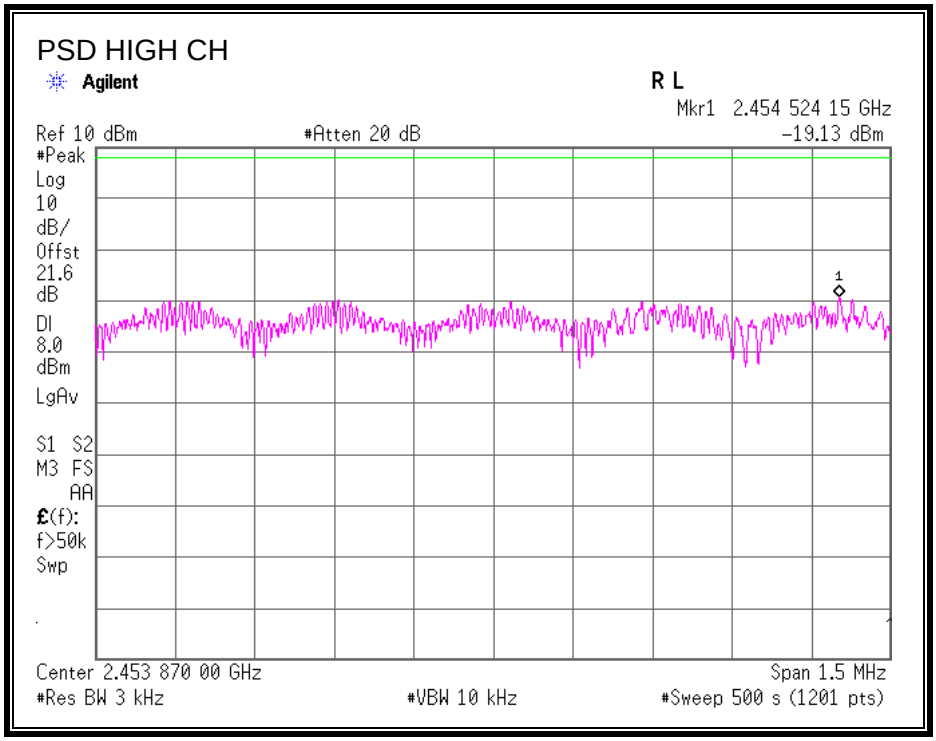

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7.4.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 9 kHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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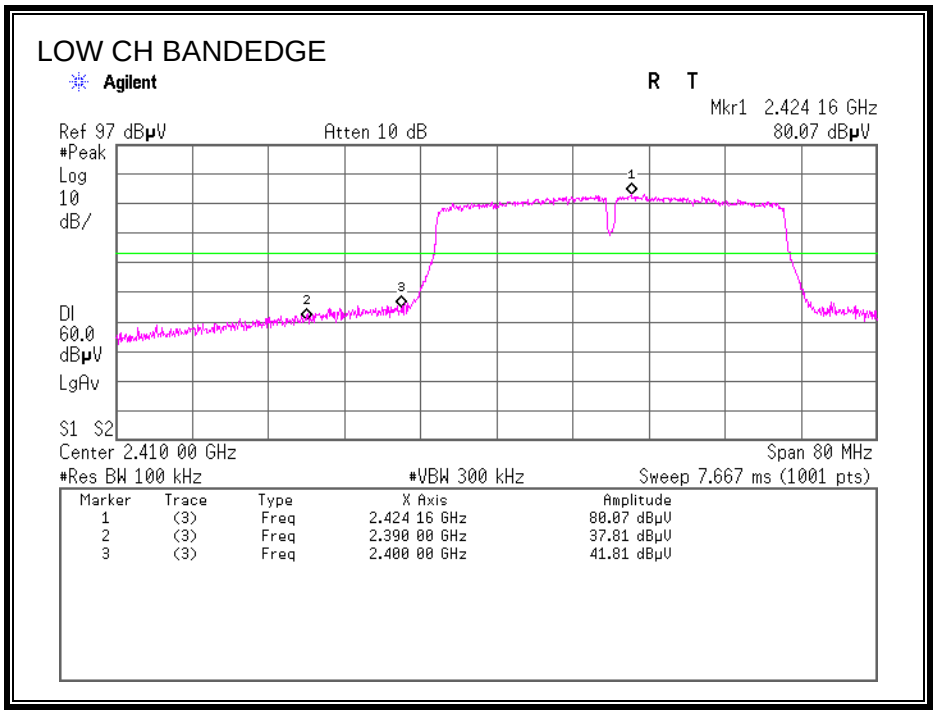
RESULTS

SPURIOUS EMISSIONS, LOW CHANNEL



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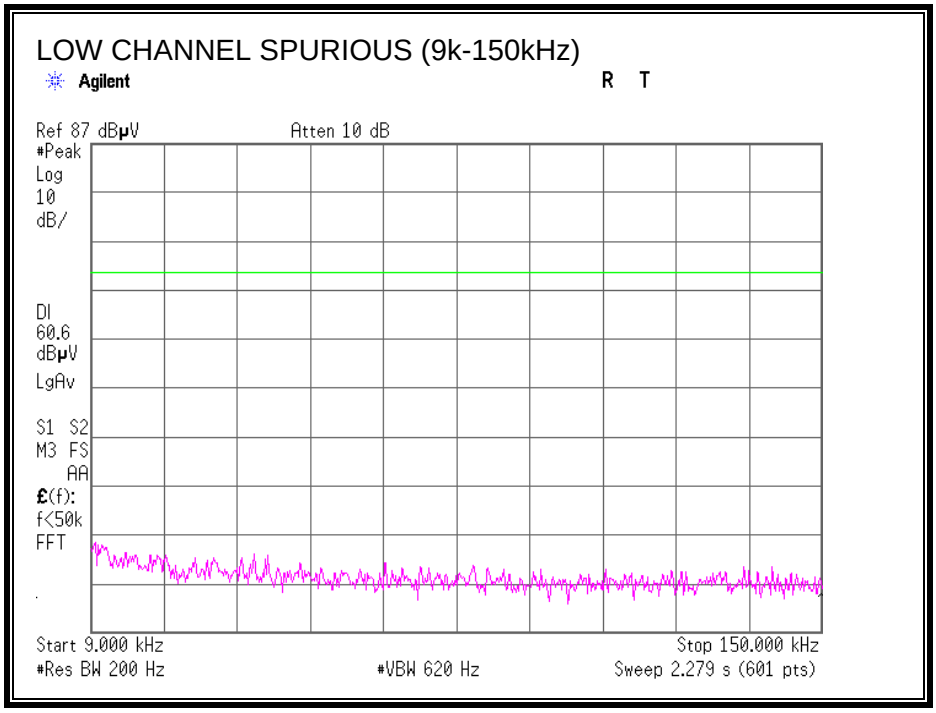

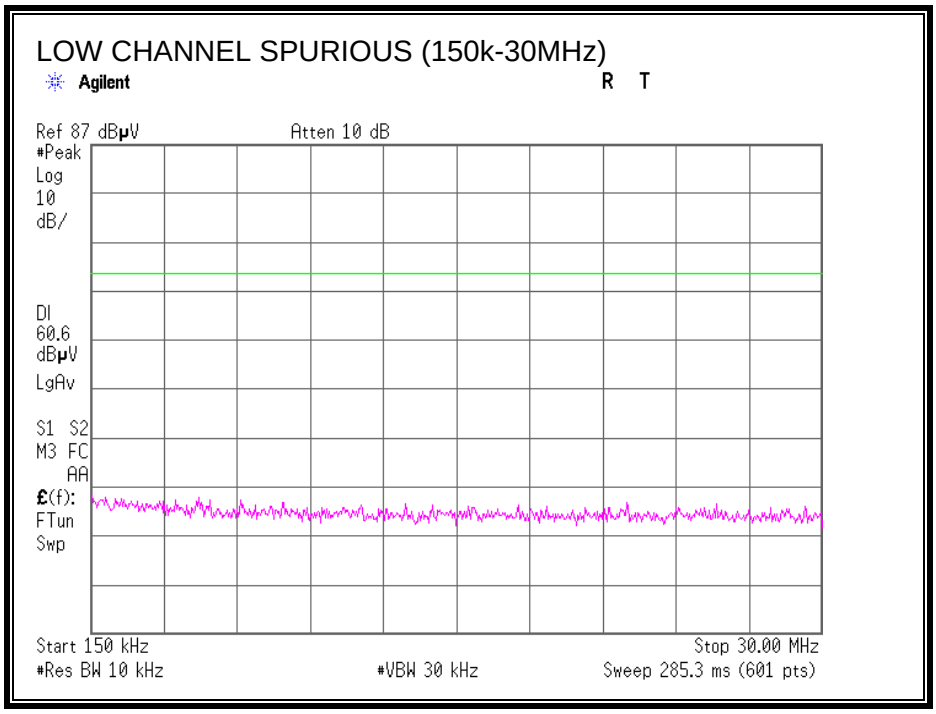

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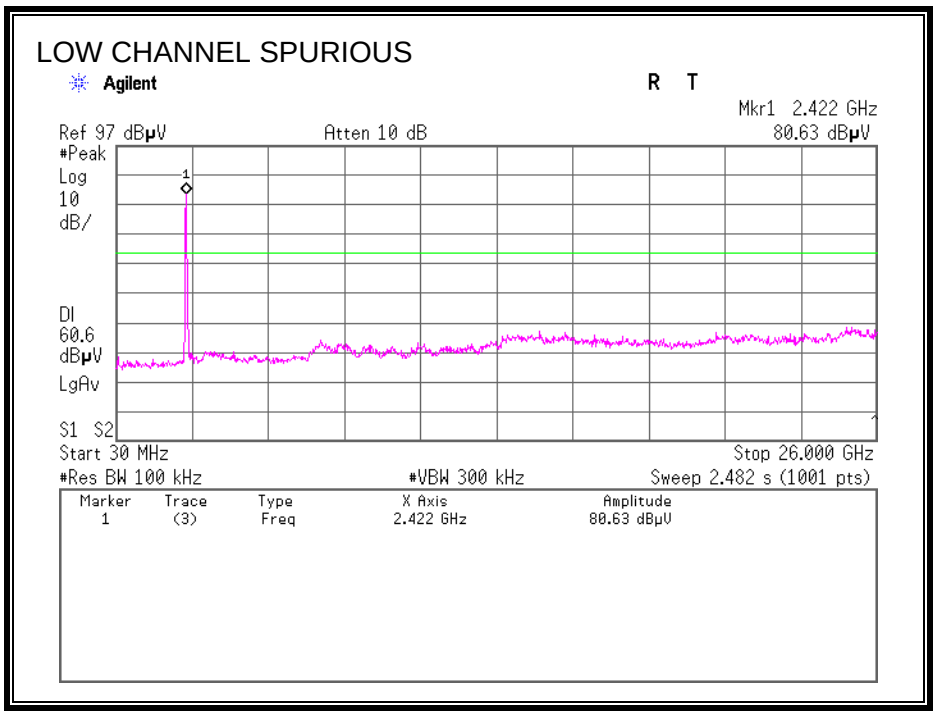

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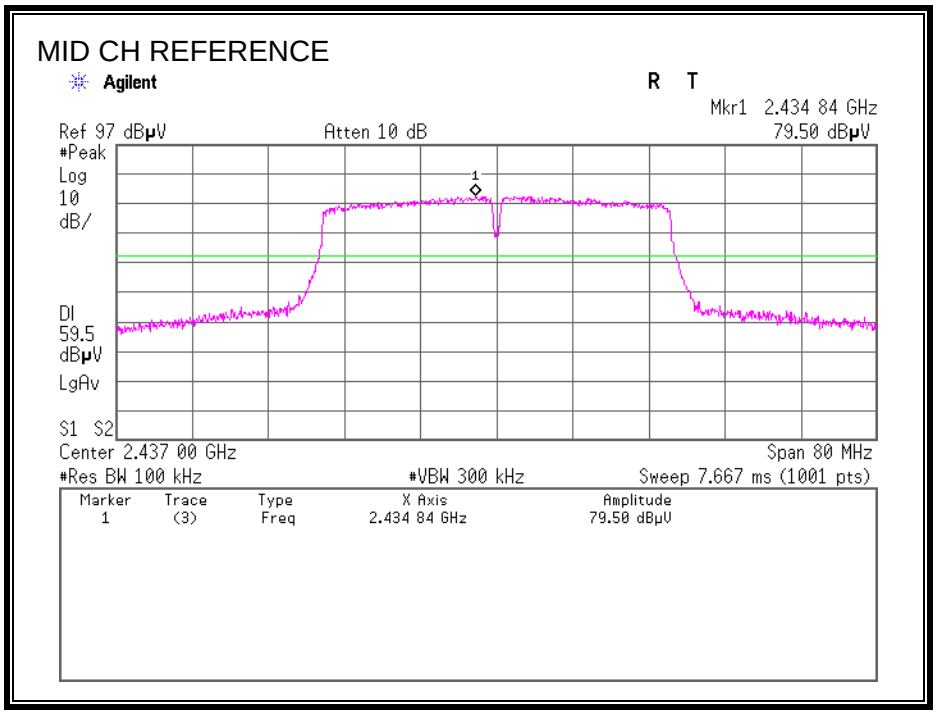
SPURIOUS EMISSIONS, MID CHANNEL



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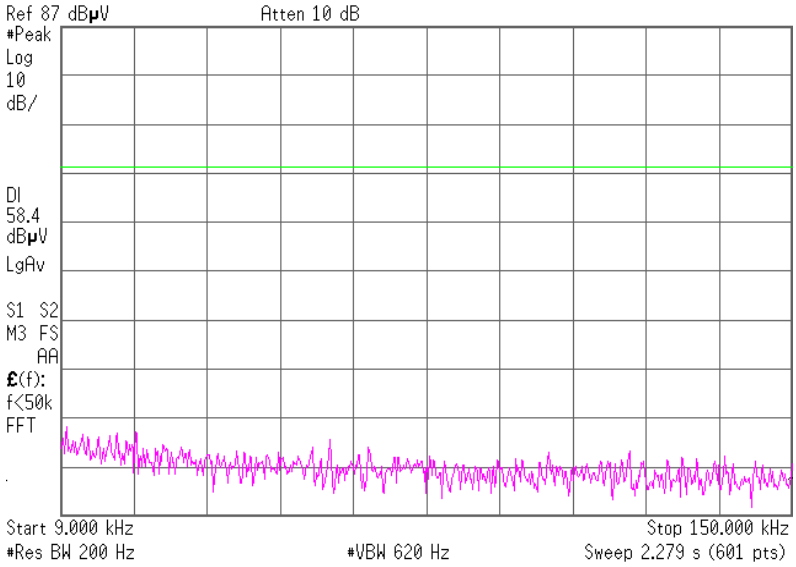
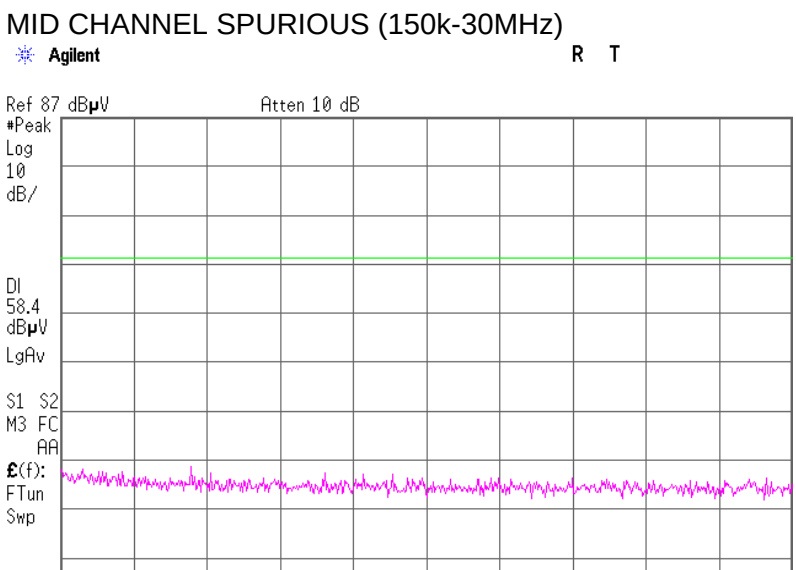
MID CHANNEL SPURIOUS (9k-150kHz)



MID CHANNEL SPURIOUS (150k-30MHz)



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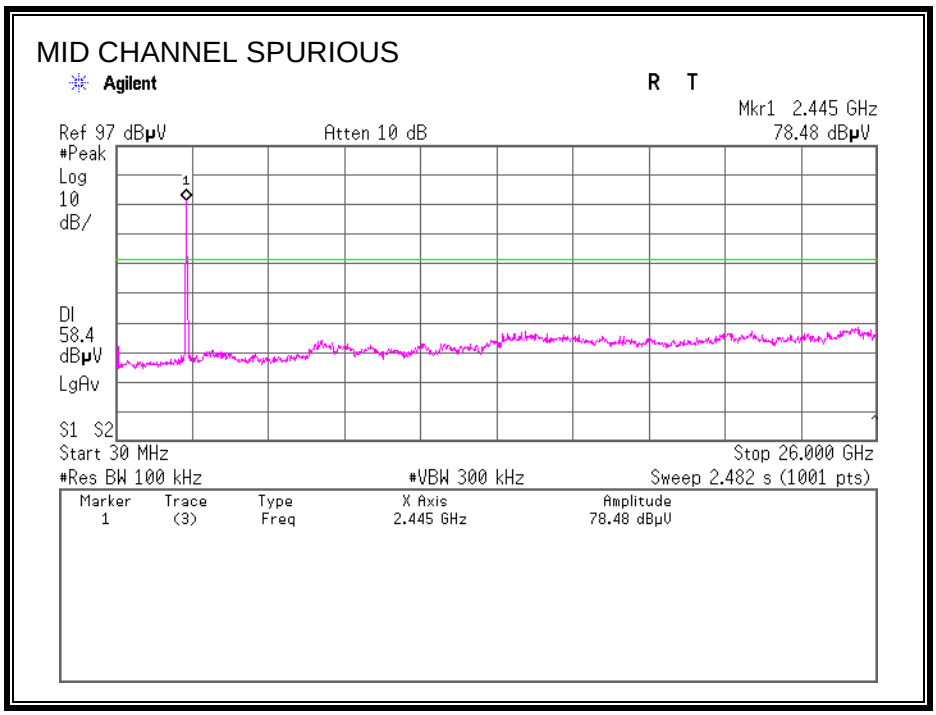

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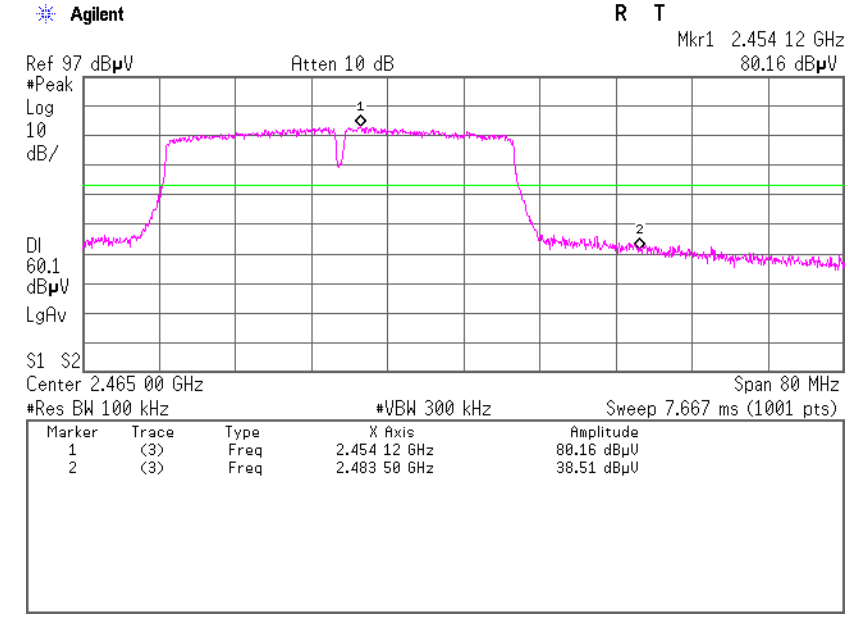
SPURIOUS EMISSIONS, HIGH CHANNEL

HIGH CH BANDEDGE



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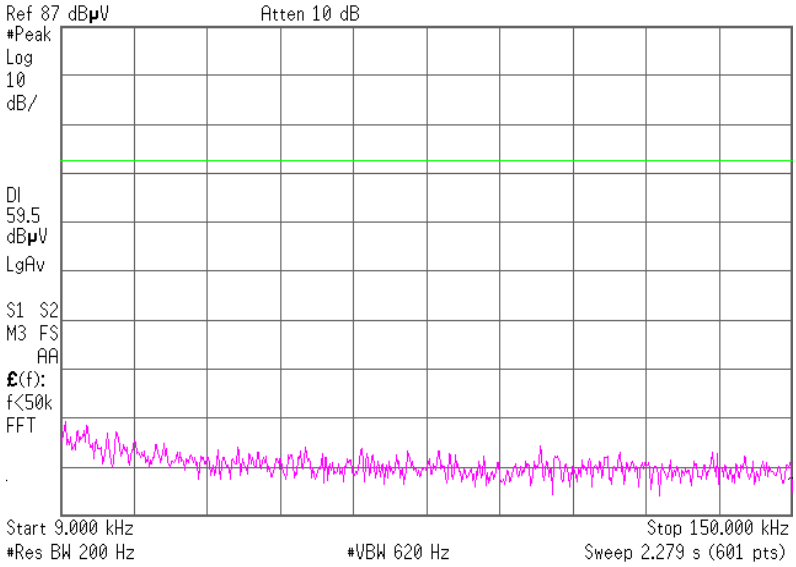
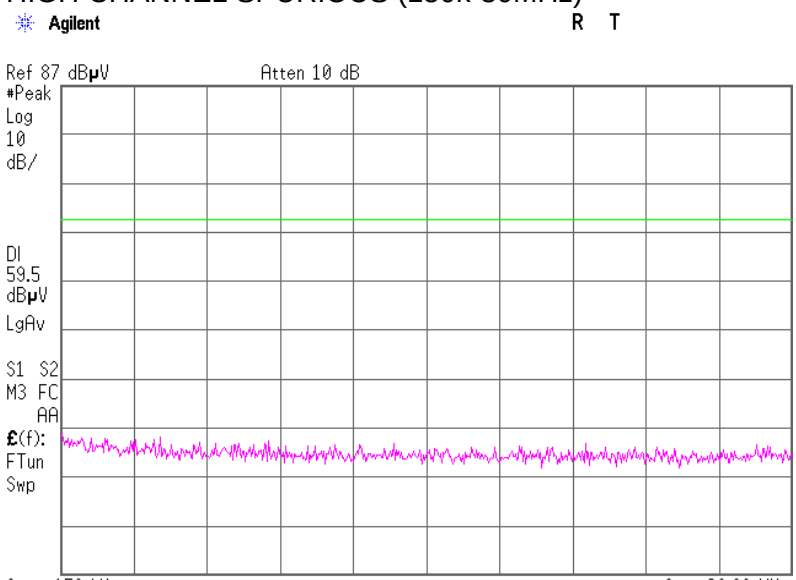
HIGH CHANNEL SPURIOUS (9k-150kHz)



HIGH CHANNEL SPURIOUS (150k-30MHz)



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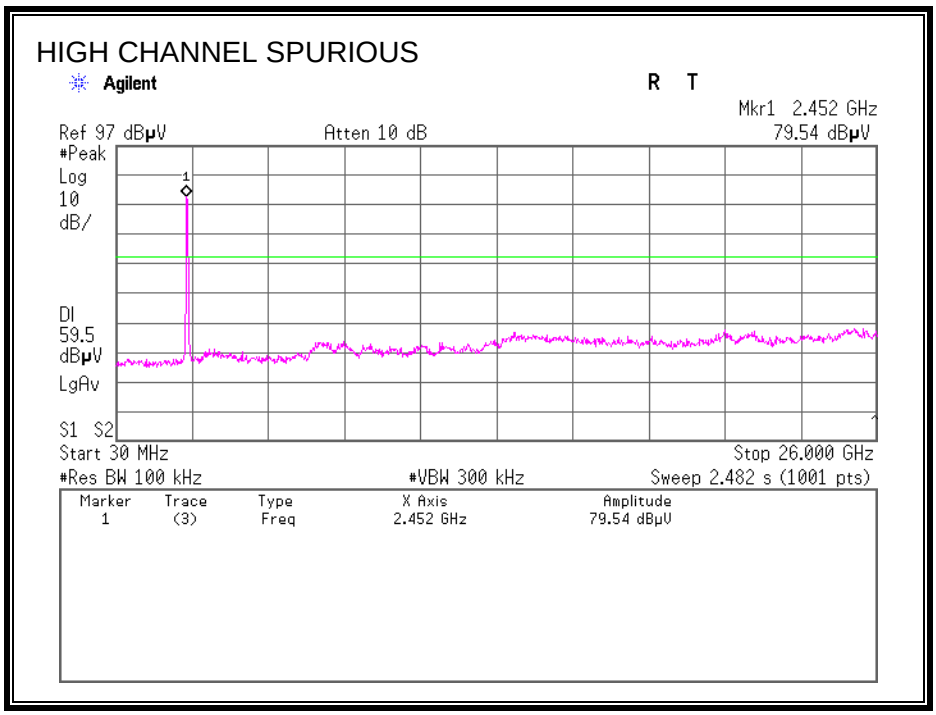
HIGH CHANNEL SPURIOUS



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8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

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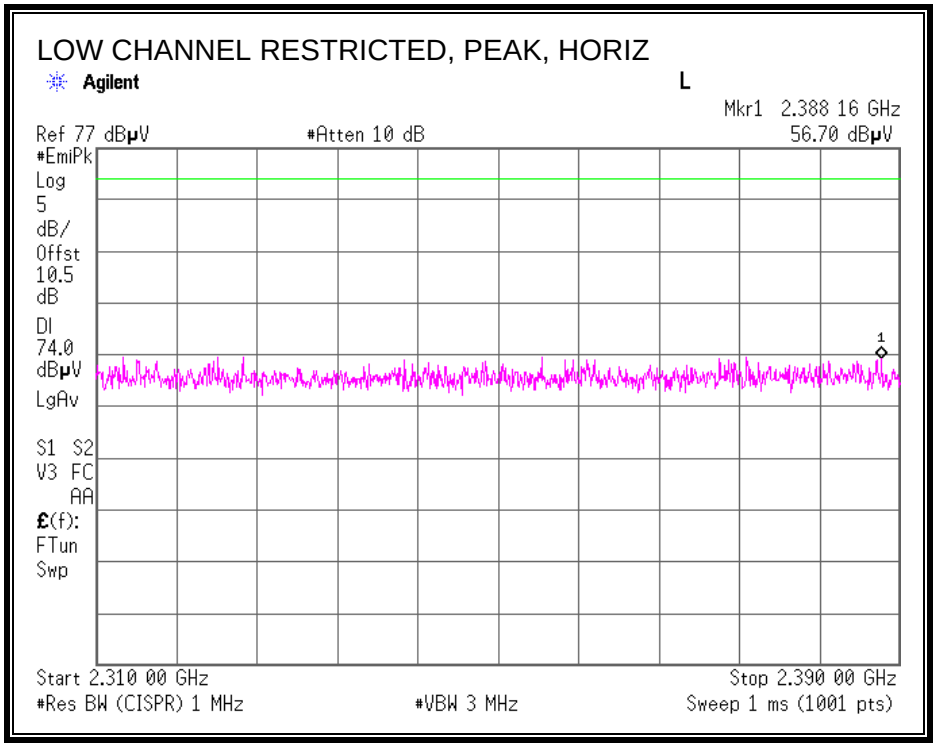
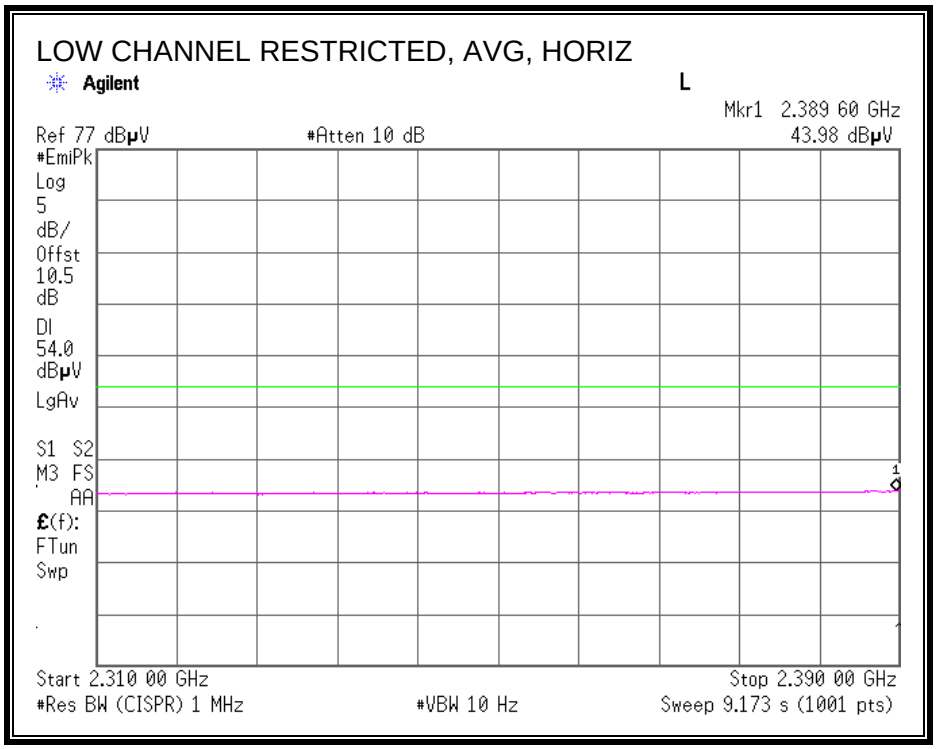
8.2. TRANSMITTER ABOVE 1 GHz

8.2.1. 802.11b MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





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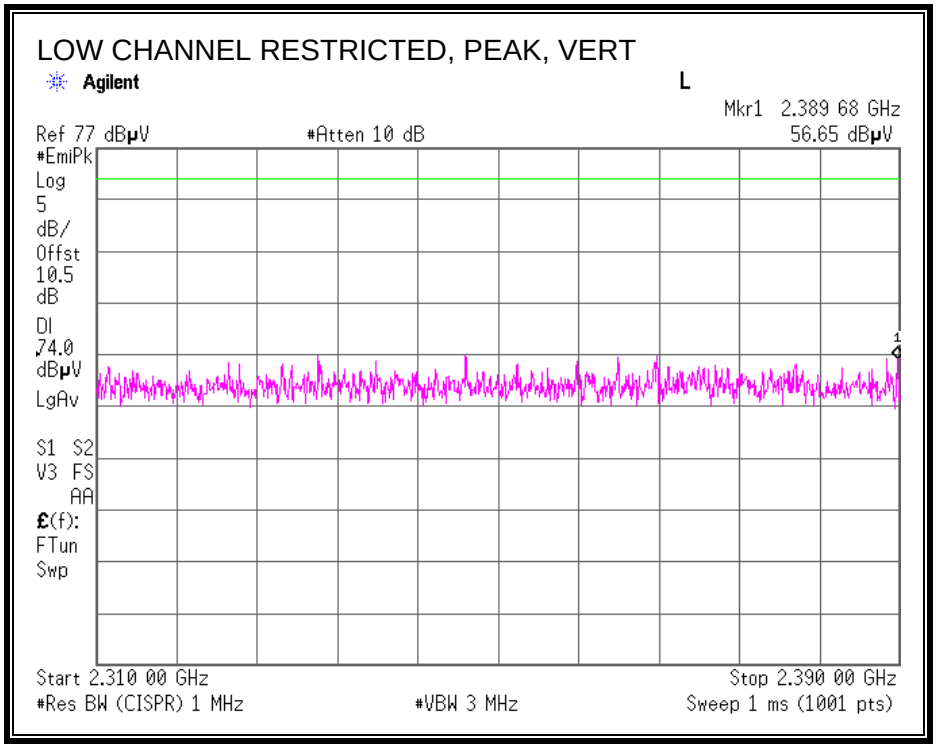
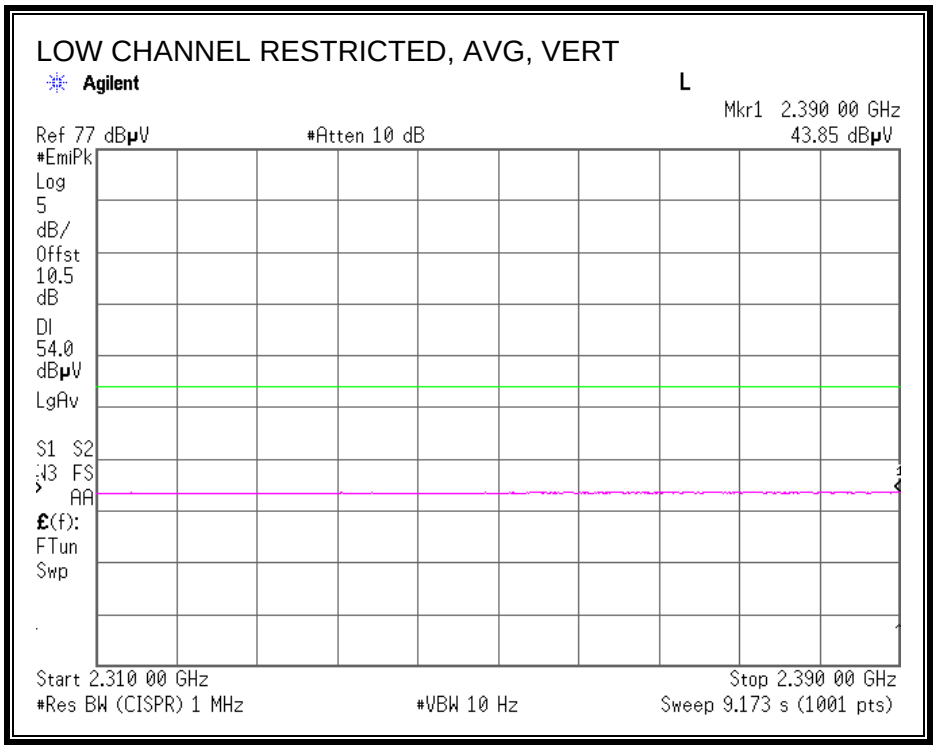
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





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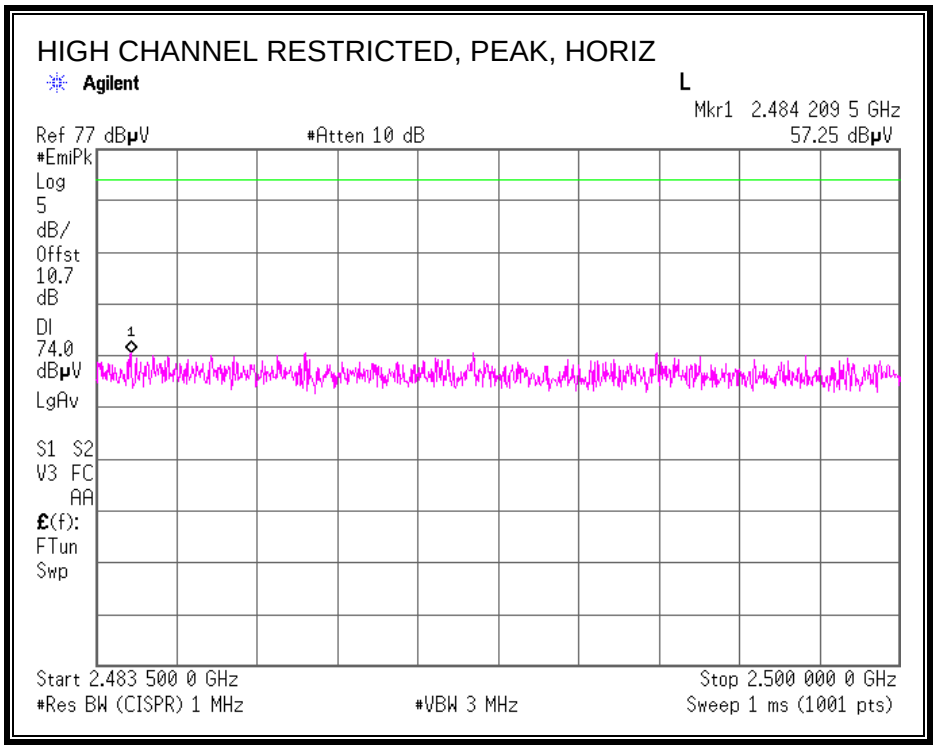
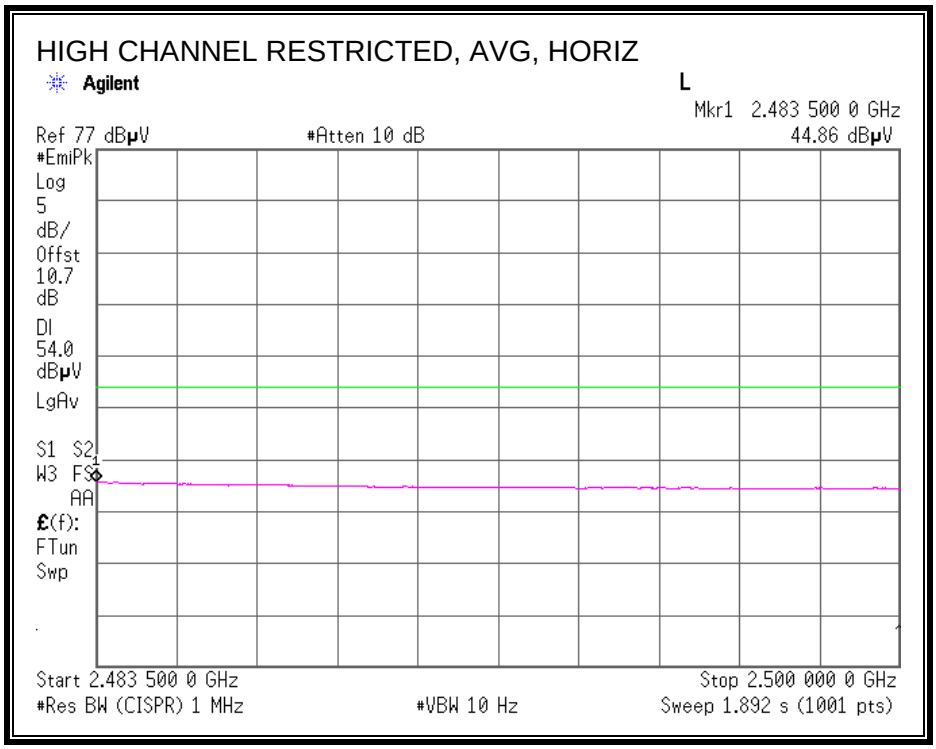
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





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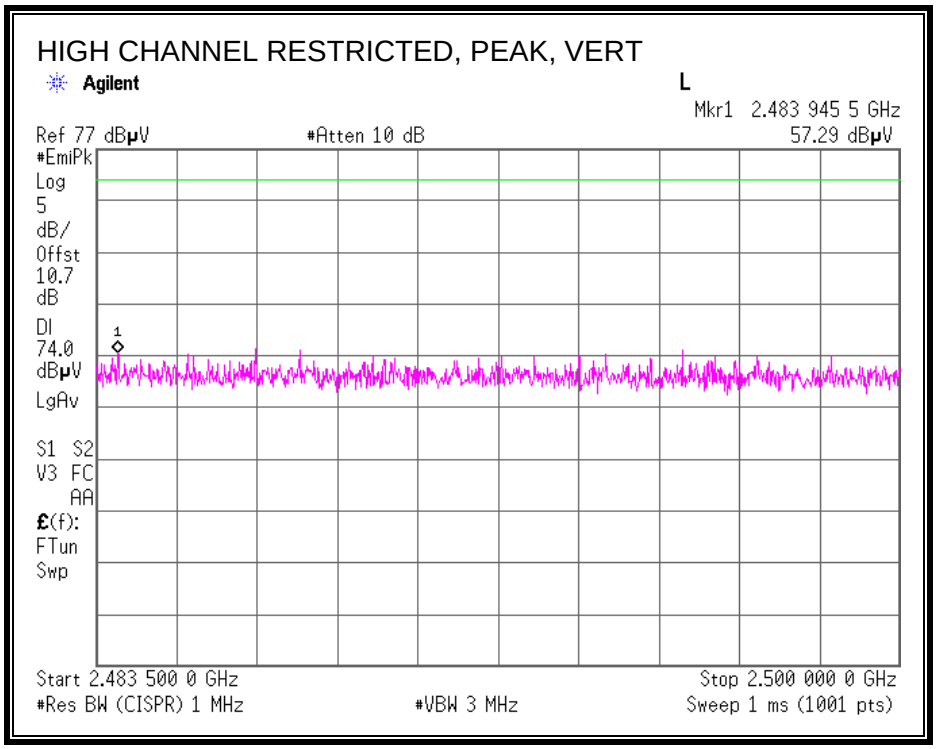
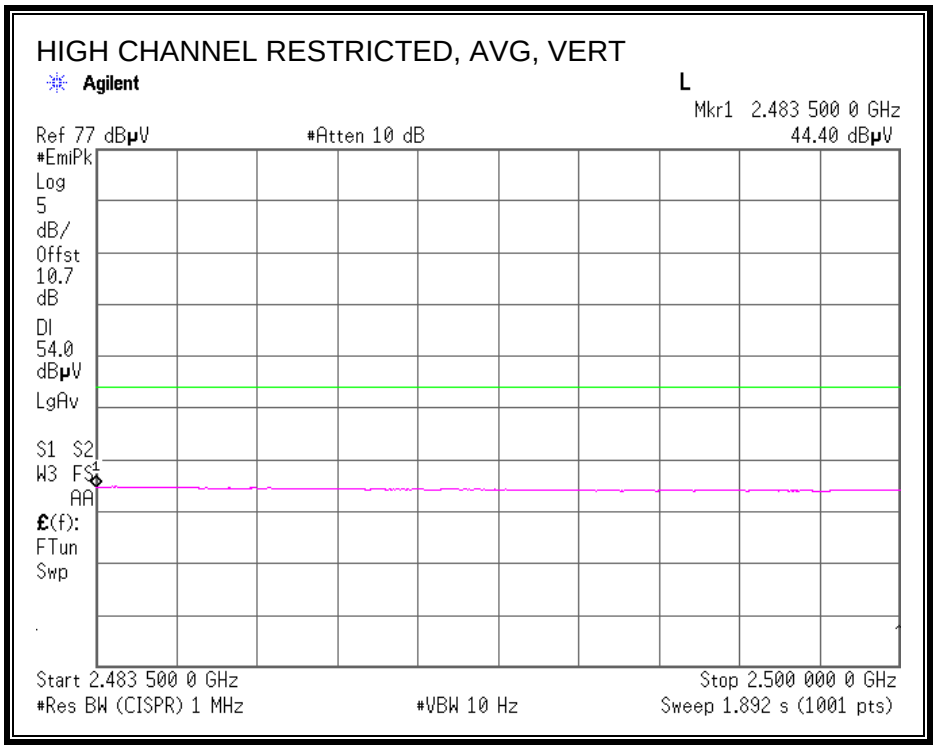
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





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HARMONICS AND SPURIOUS EMISSIONS

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber
Date	September 12, 2012	September 13, 2012
Temperature / Humidity	28 deg.C , 46%RH	24 deg.C , 48%RH
Engineer	Akio Hayashi	Akio Hayashi
Mode	Tx, IEEE802.11b	

Tx 2412MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4824.000	PK	51.0	31.1	6.8	41.2	47.7	73.9	26.2	100	217	
Hori.	4824.000	AV	43.5	31.1	6.8	41.2	40.2	53.9	13.7	100	217	
Vert.	4824.000	PK	50.7	31.1	6.8	41.2	47.4	73.9	26.5	119	150	
Vert.	4824.000	AV	43.4	31.1	6.8	41.2	40.1	53.9	13.8	119	150	

Tx 2437MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	49.6	31.3	6.9	41.1	46.7	73.9	27.2	100	158	
Hori.	4874.000	AV	41.5	31.3	6.9	41.1	38.6	53.9	15.3	100	158	
Vert.	4874.000	PK	50.4	31.3	6.9	41.1	47.5	73.9	26.4	100	225	
Vert.	4874.000	AV	42.9	31.3	6.9	41.1	40.0	53.9	13.9	100	225	

Tx 2462MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4924.000	PK	50.9	31.5	6.9	41.0	48.3	73.9	25.6	100	250	
Hori.	4924.000	AV	43.2	31.5	6.9	41.0	40.6	53.9	13.3	100	250	
Vert.	4924.000	PK	52.0	31.5	6.9	41.0	49.4	73.9	24.5	106	227	
Vert.	4924.000	AV	44.8	31.5	6.9	41.0	42.2	53.9	11.7	106	227	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
No noise was detected above the 3rd order harmonics.
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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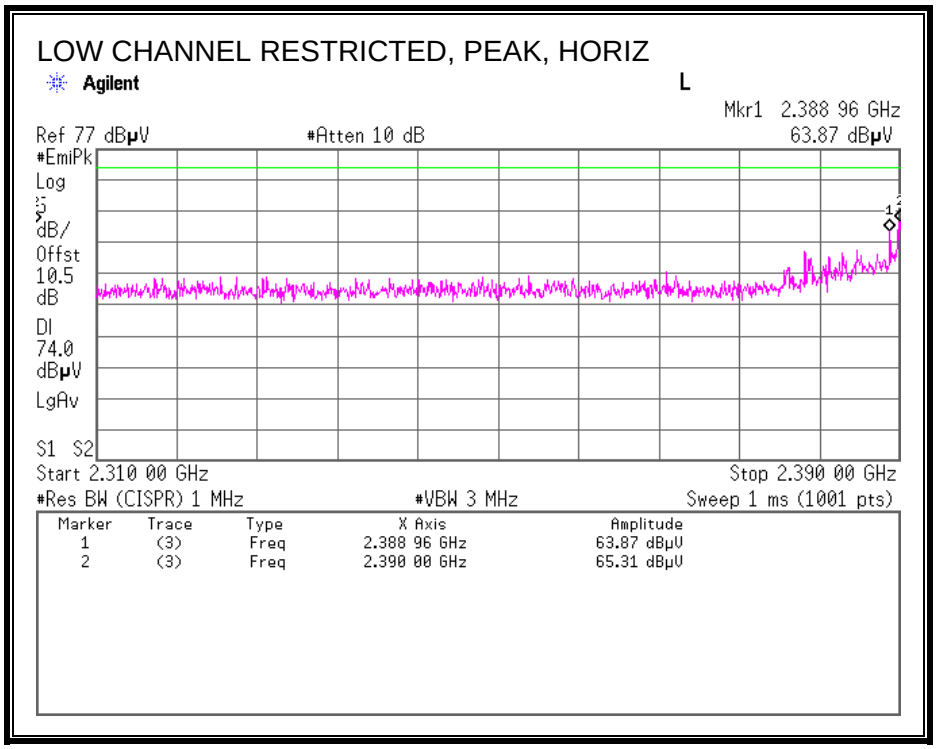
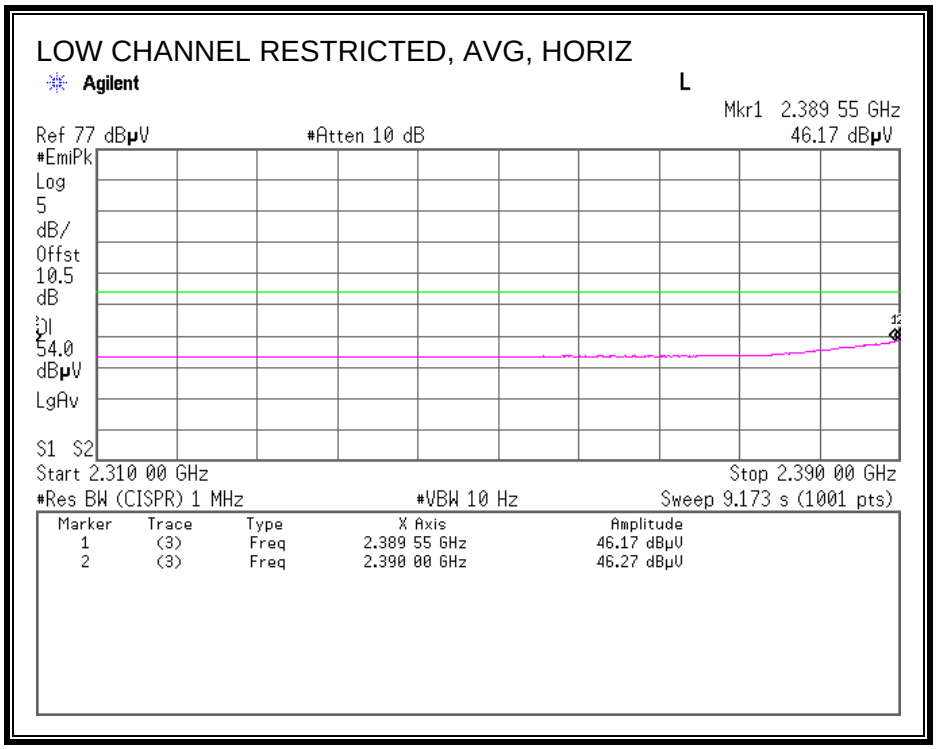
8.2.2. 802.11g MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





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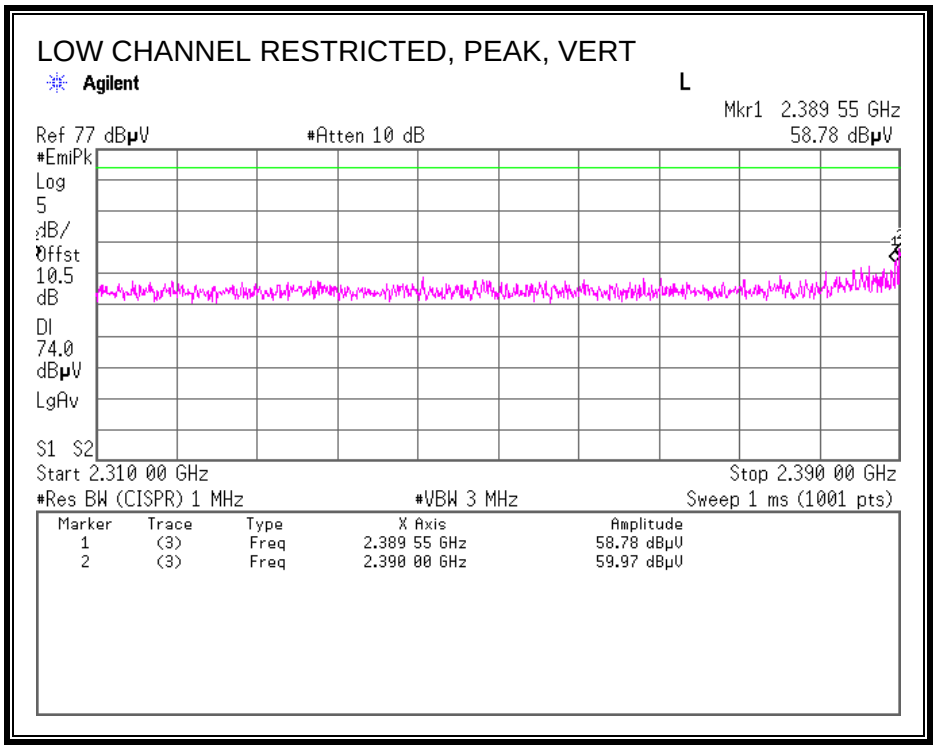
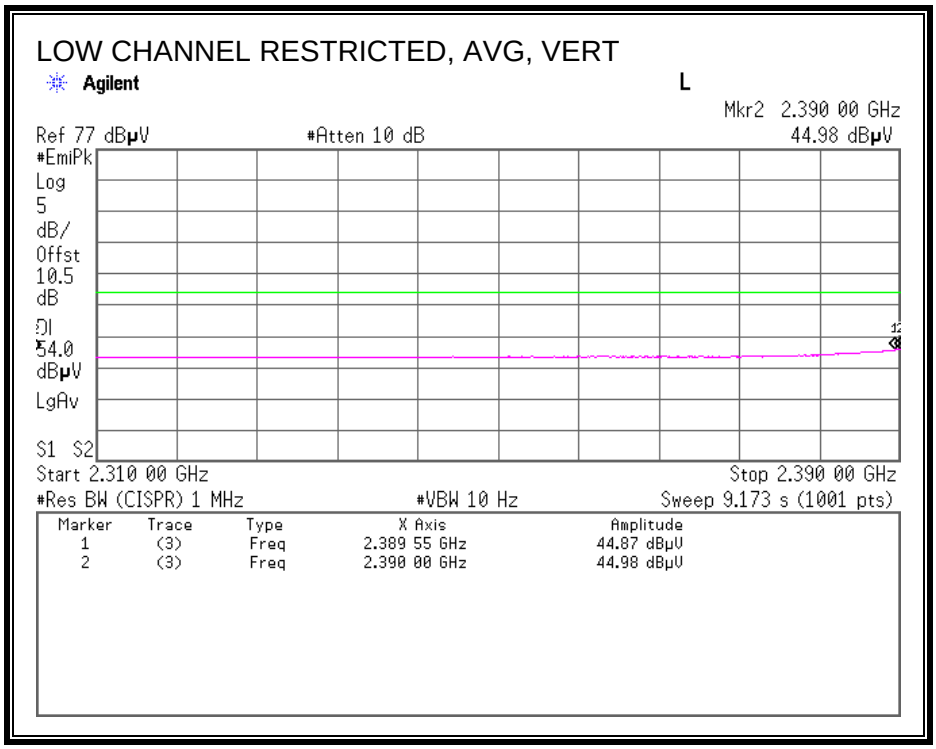
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





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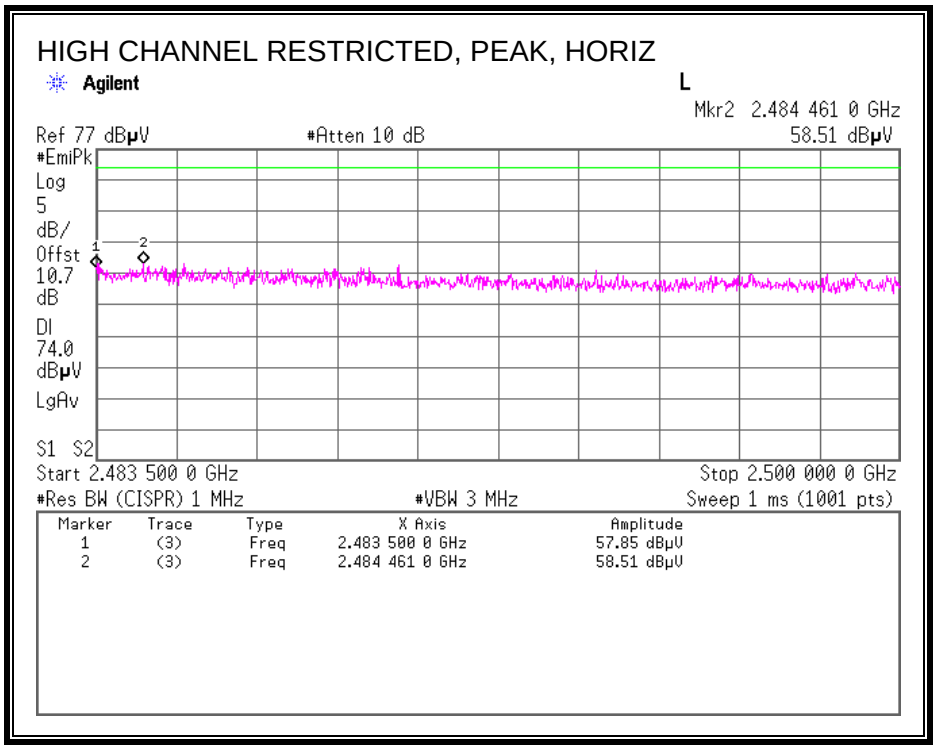
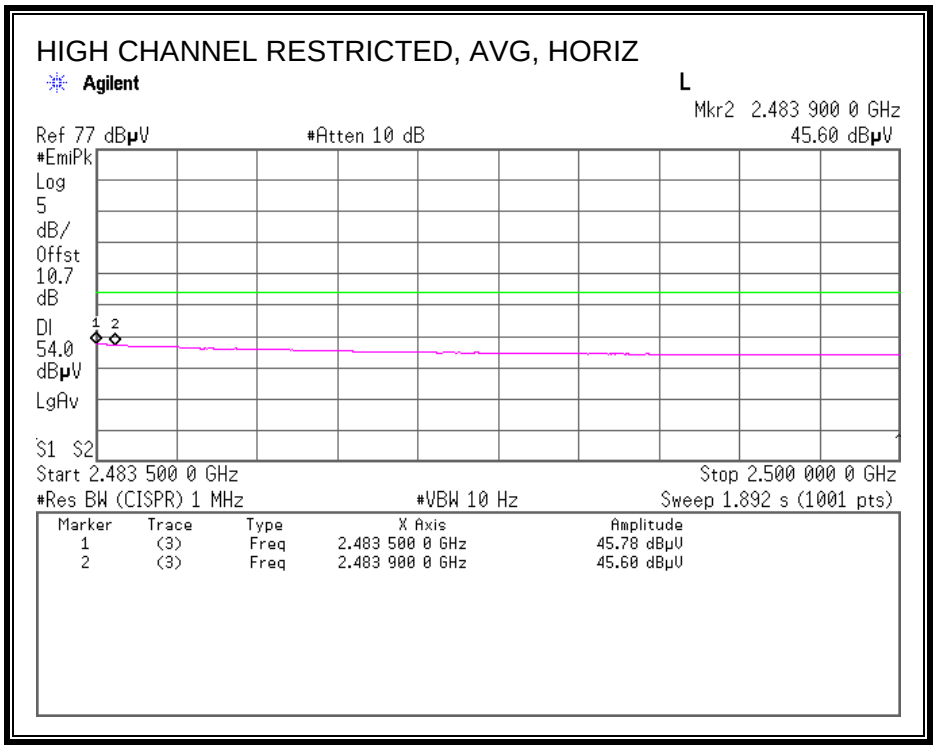
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





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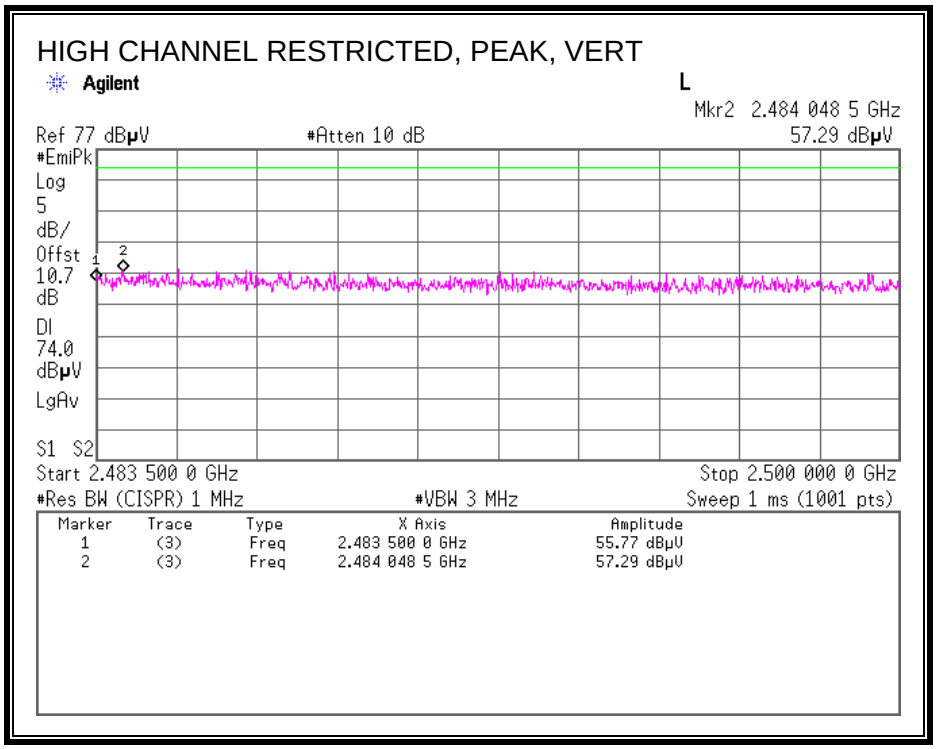
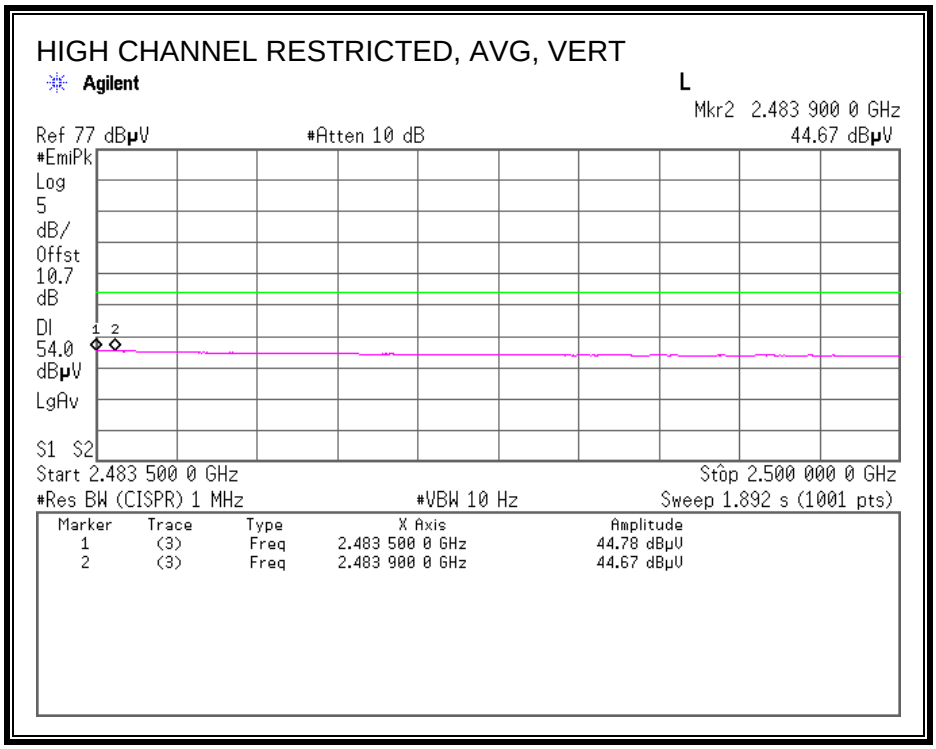
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





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HARMONICS AND SPURIOUS EMISSIONS

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber
Date	September 12, 2012	September 13, 2012
Temperature / Humidity	28 deg.C , 46%RH	24 deg.C , 48%RH
Engineer	Akio Hayashi	Akio Hayashi
Mode	Tx, IEEE802.11g	

Tx 2412MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4824.000	PK	50.6	31.1	6.8	41.2	47.3	73.9	26.6	100	50	
Hori.	4824.000	AV	43.3	31.1	6.8	41.2	40.0	53.9	13.9	100	50	
Vert.	4824.000	PK	50.4	31.1	6.8	41.2	47.1	73.9	26.8	107	235	
Vert.	4824.000	AV	43.0	31.1	6.8	41.2	39.7	53.9	14.2	107	235	

Tx 2437MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	49.4	31.3	6.9	41.1	46.5	73.9	27.4	130	55	
Hori.	4874.000	AV	40.9	31.3	6.9	41.1	38.0	53.9	15.9	130	55	
Vert.	4874.000	PK	50.1	31.3	6.9	41.1	47.2	73.9	26.7	137	231	
Vert.	4874.000	AV	42.6	31.3	6.9	41.1	39.7	53.9	14.2	137	231	

Tx 2462MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4924.000	PK	50.3	31.5	6.9	41.0	47.7	73.9	26.2	100	250	
Hori.	4924.000	AV	41.7	31.5	6.9	41.0	39.1	53.9	14.8	100	250	
Vert.	4924.000	PK	51.0	31.5	6.9	41.0	48.4	73.9	25.5	104	232	
Vert.	4924.000	AV	44.1	31.5	6.9	41.0	41.5	53.9	12.4	104	232	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
No noise was detected above the 3rd order harmonics.
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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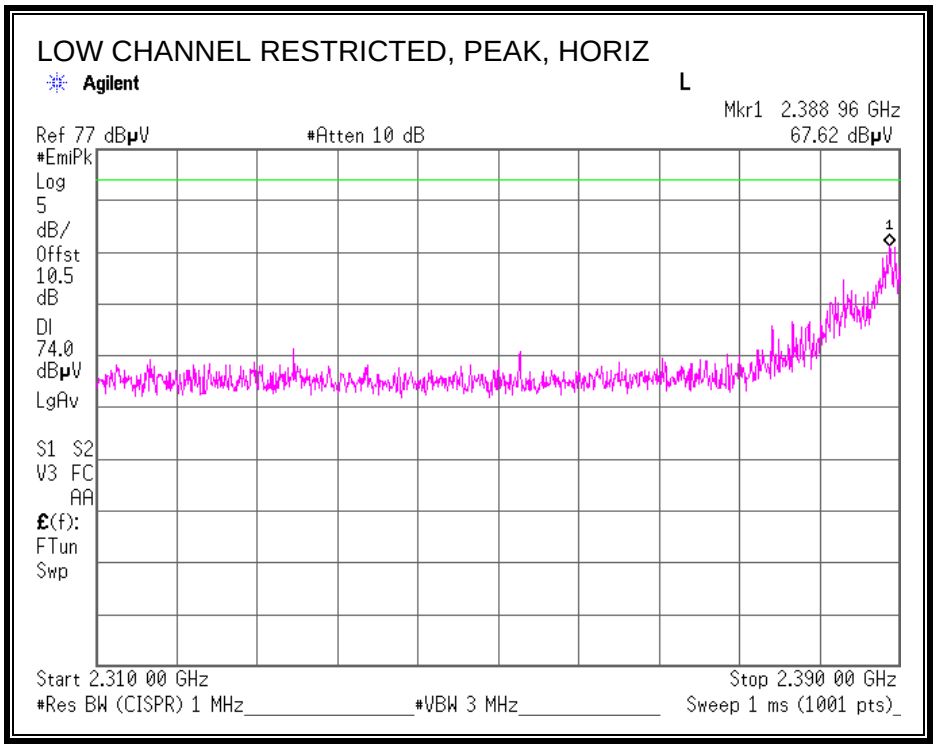
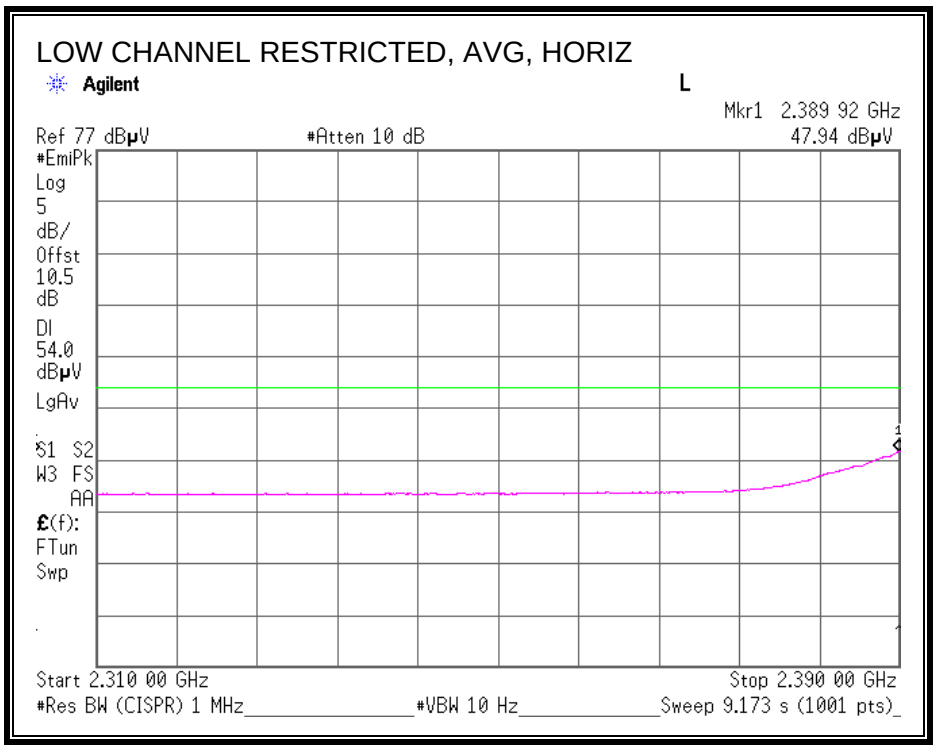
8.2.3. 802.11n HT20 SISO MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





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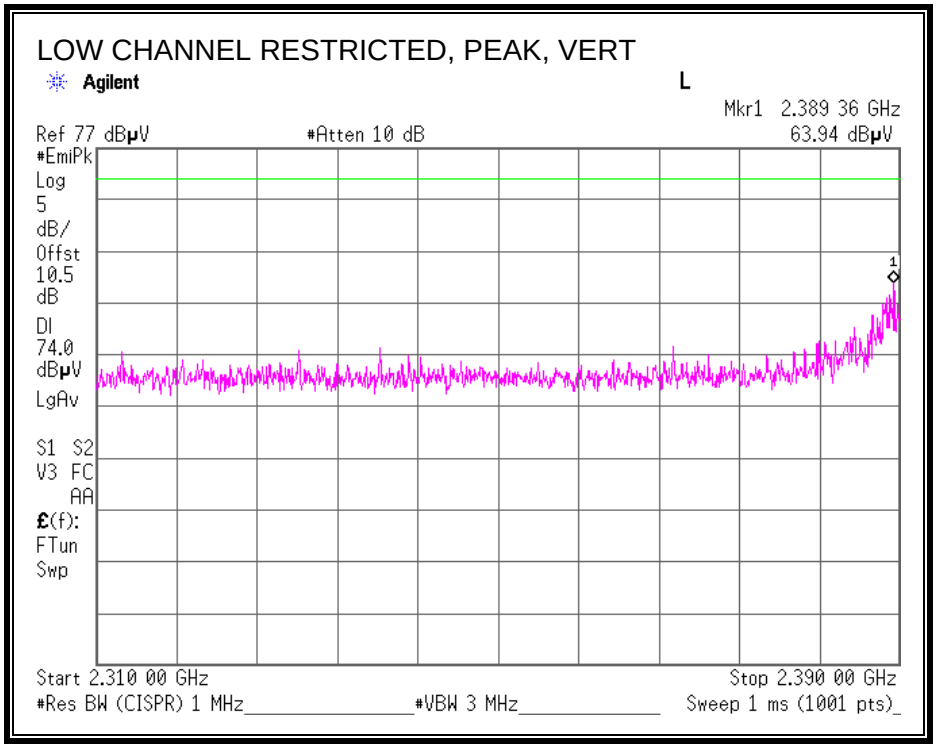
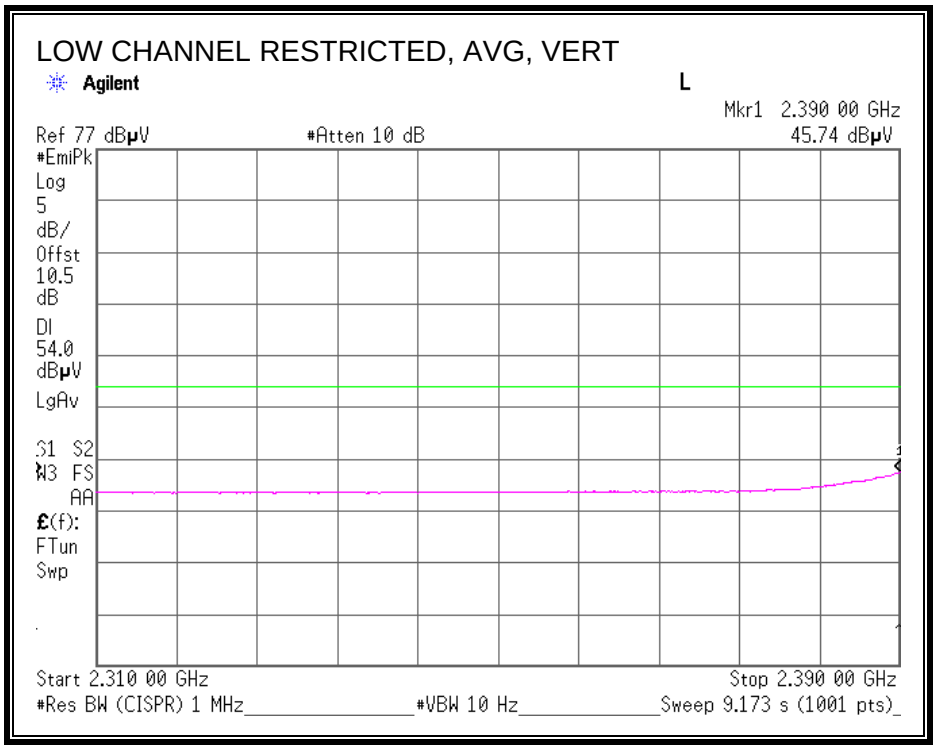
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





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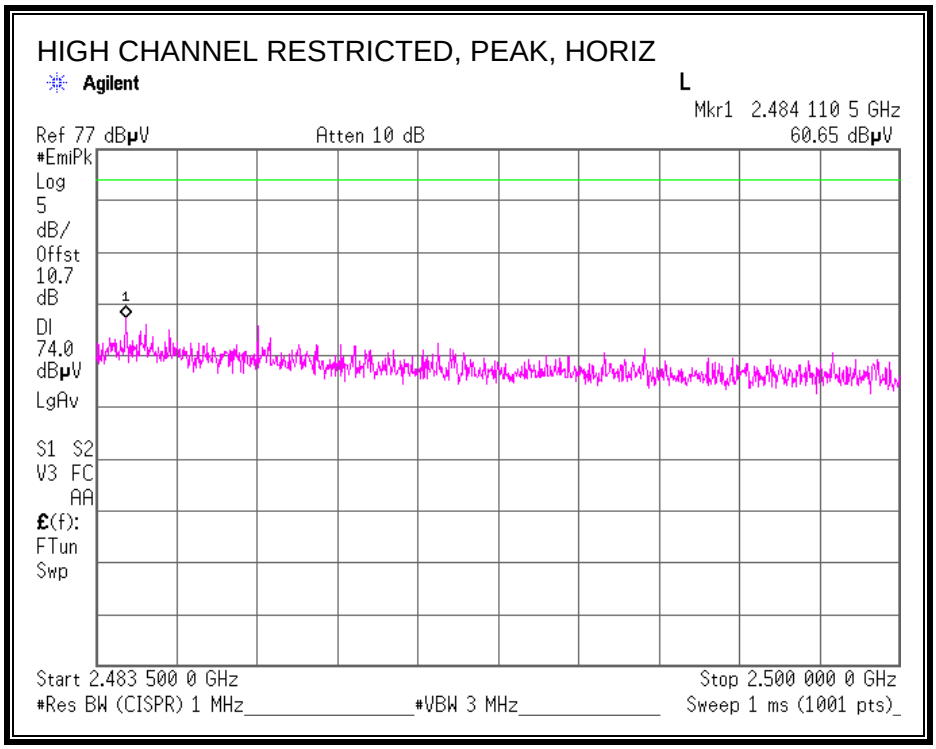
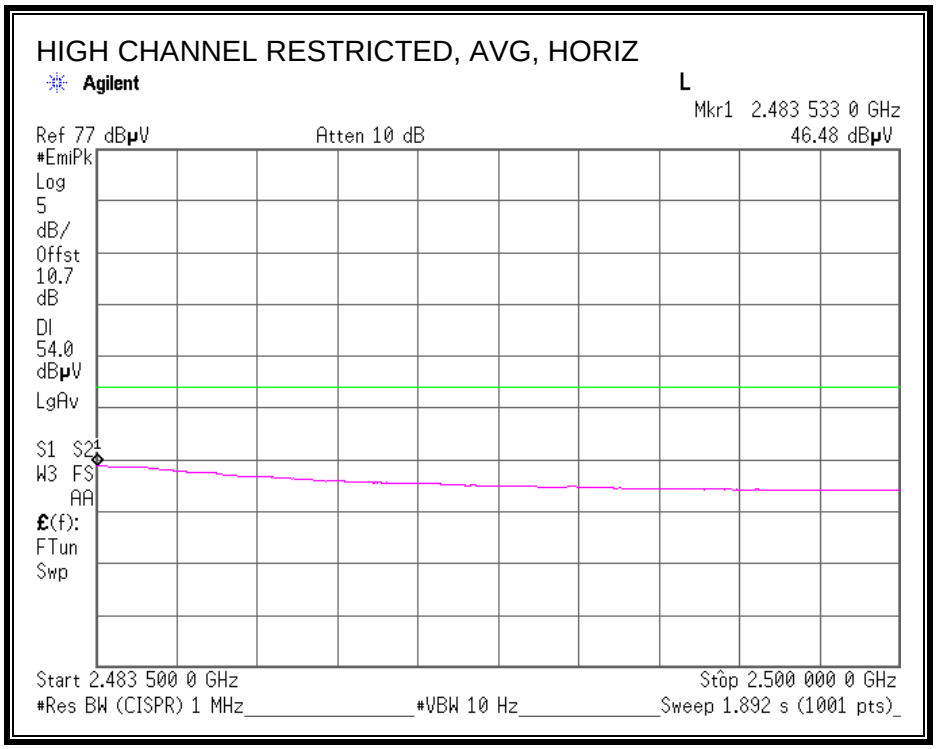
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





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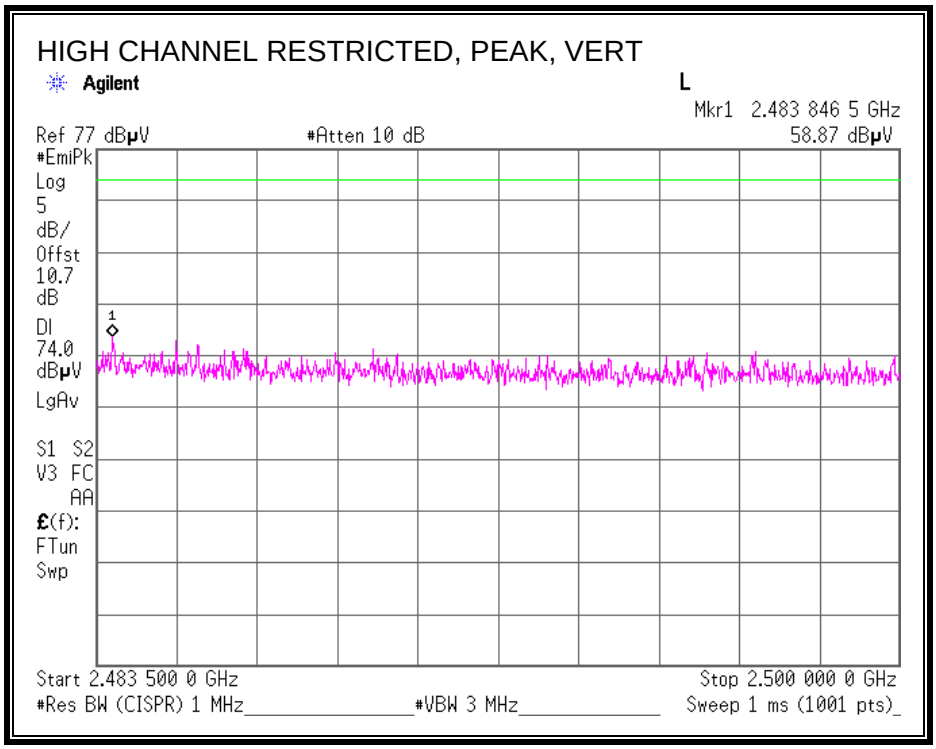
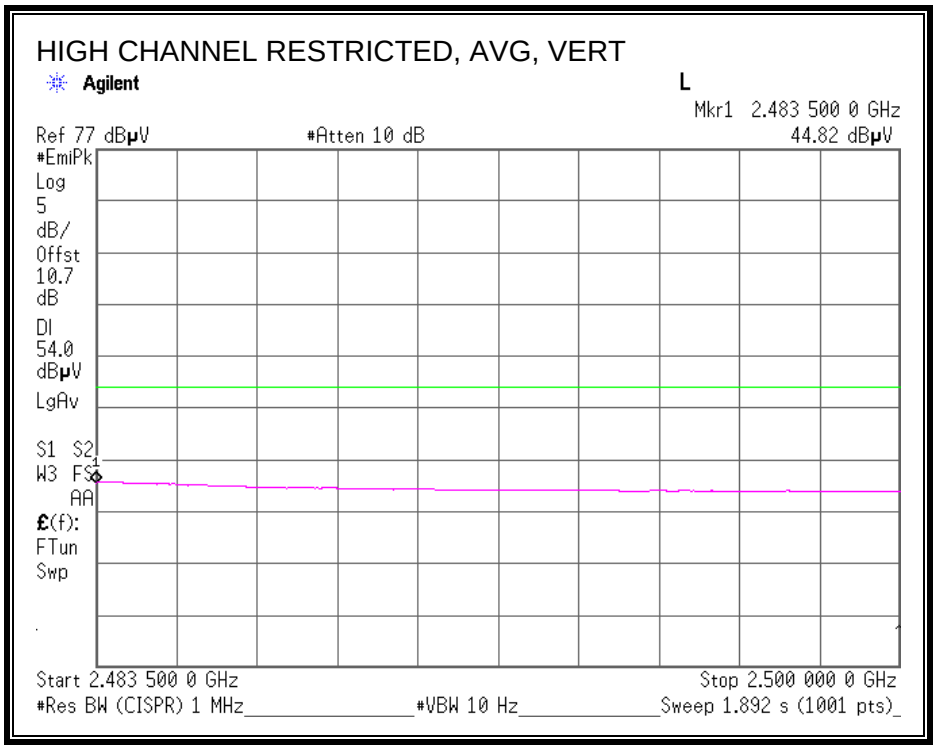
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





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HARMONICS AND SPURIOUS EMISSIONS

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber
Date	September 12, 2012	September 13, 2012
Temperature / Humidity	28 deg.C , 46%RH	24 deg.C , 48%RH
Engineer	Akio Hayashi	Akio Hayashi
Mode	Tx, IEEE802.11n HT20	

Tx 2412MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4824.000	PK	50.4	31.1	6.8	41.2	47.1	73.9	26.8	100	49	
Hori.	4824.000	AV	43.1	31.1	6.8	41.2	39.8	53.9	14.1	100	49	
Vert.	4824.000	PK	50.8	31.1	6.8	41.2	47.5	73.9	26.4	135	233	
Vert.	4824.000	AV	43.8	31.1	6.8	41.2	40.5	53.9	13.4	135	233	

Tx 2437MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	50.0	31.3	6.9	41.1	47.1	73.9	26.8	106	51	
Hori.	4874.000	AV	41.8	31.3	6.9	41.1	38.9	53.9	15.0	106	51	
Vert.	4874.000	PK	50.3	31.3	6.9	41.1	47.4	73.9	26.5	100	231	
Vert.	4874.000	AV	43.1	31.3	6.9	41.1	40.2	53.9	13.7	100	231	

Tx 2462MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4924.000	PK	50.4	31.5	6.9	41.0	47.8	73.9	26.1	100	72	
Hori.	4924.000	AV	41.4	31.5	6.9	41.0	38.8	53.9	15.1	100	72	
Vert.	4924.000	PK	51.4	31.5	6.9	41.0	48.8	73.9	25.1	112	229	
Vert.	4924.000	AV	44.0	31.5	6.9	41.0	41.4	53.9	12.5	112	229	

Result = Reading + Ant Factor + Loss (Cable+Attennator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
No noise was detected above the 3rd order harmonics.
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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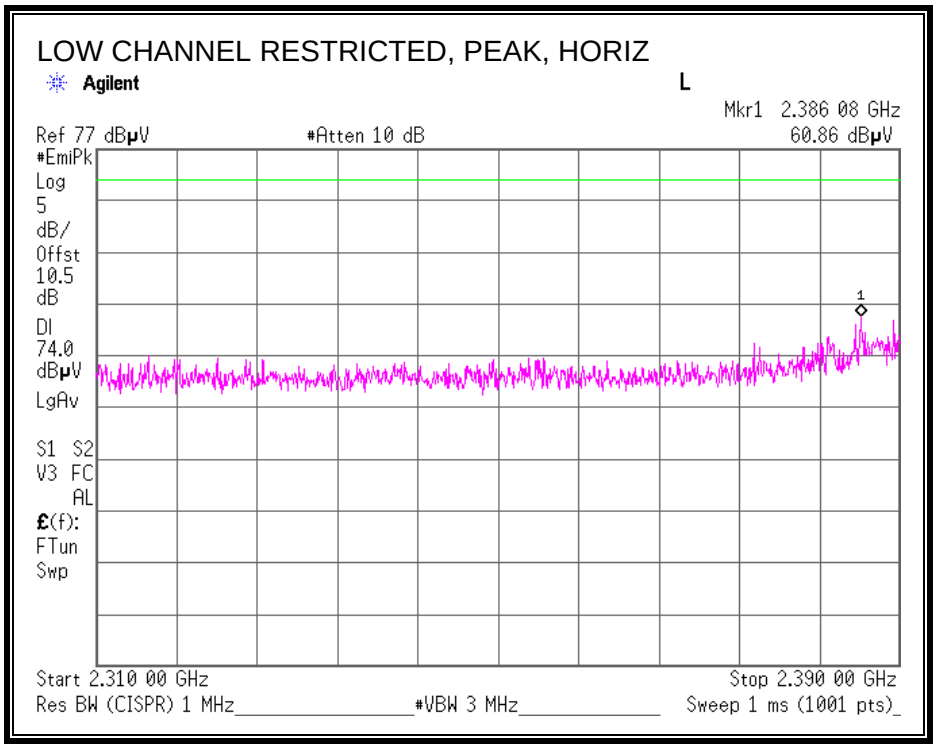
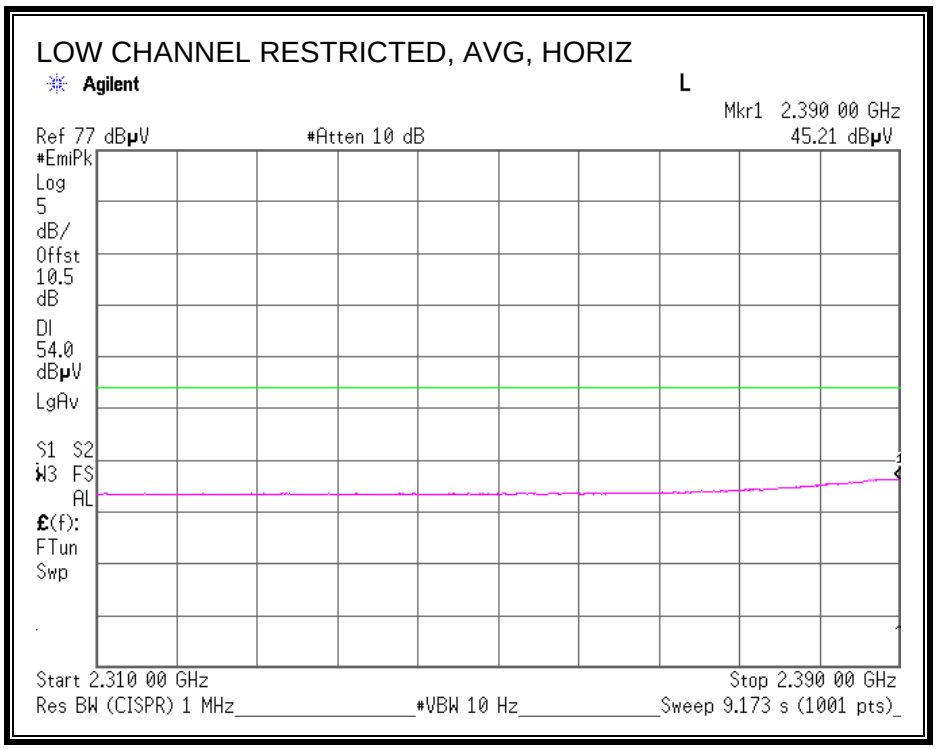
8.2.4. 802.11n HT40 SISO MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





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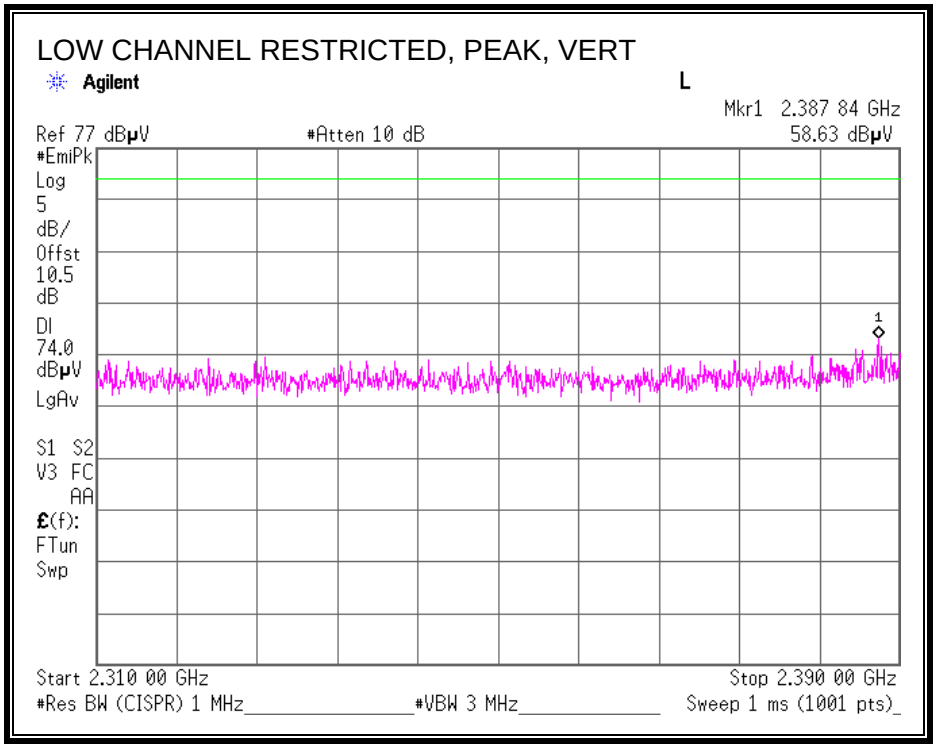
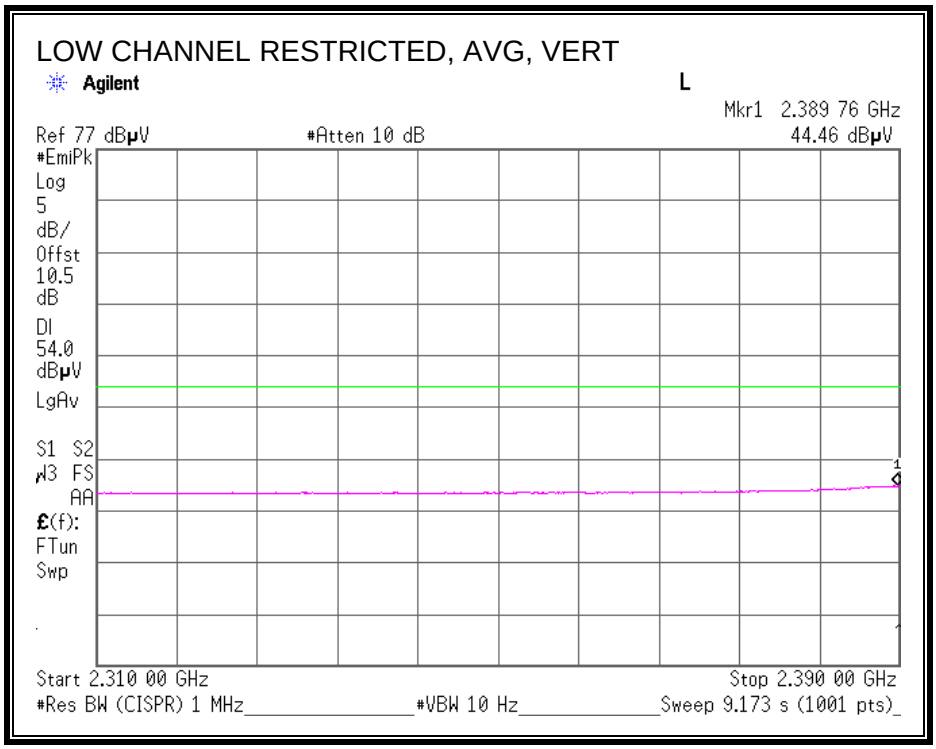
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





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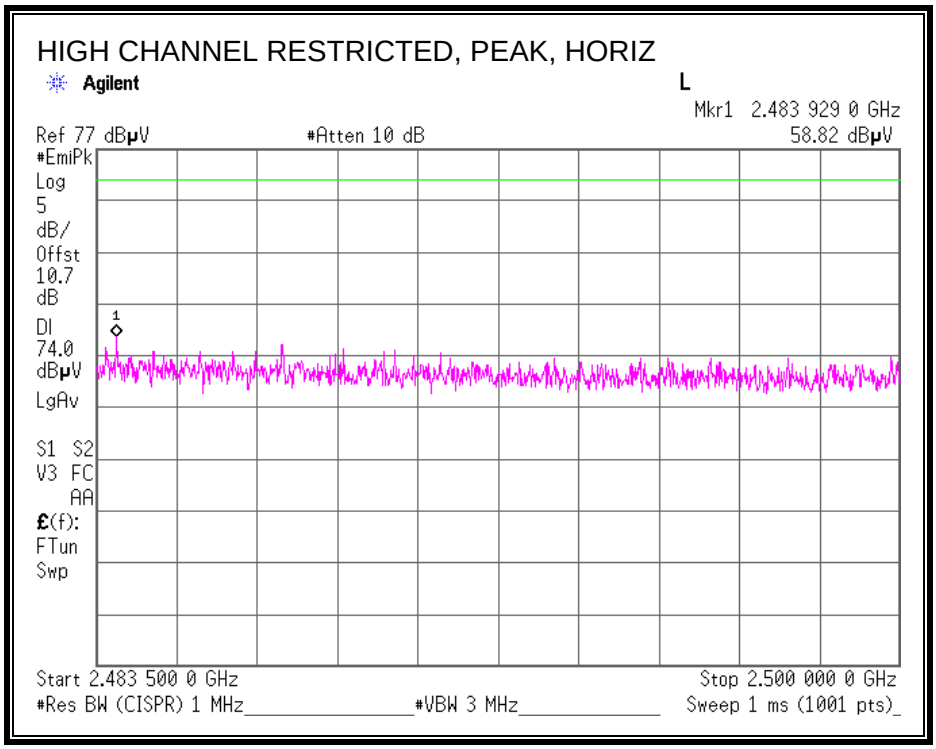
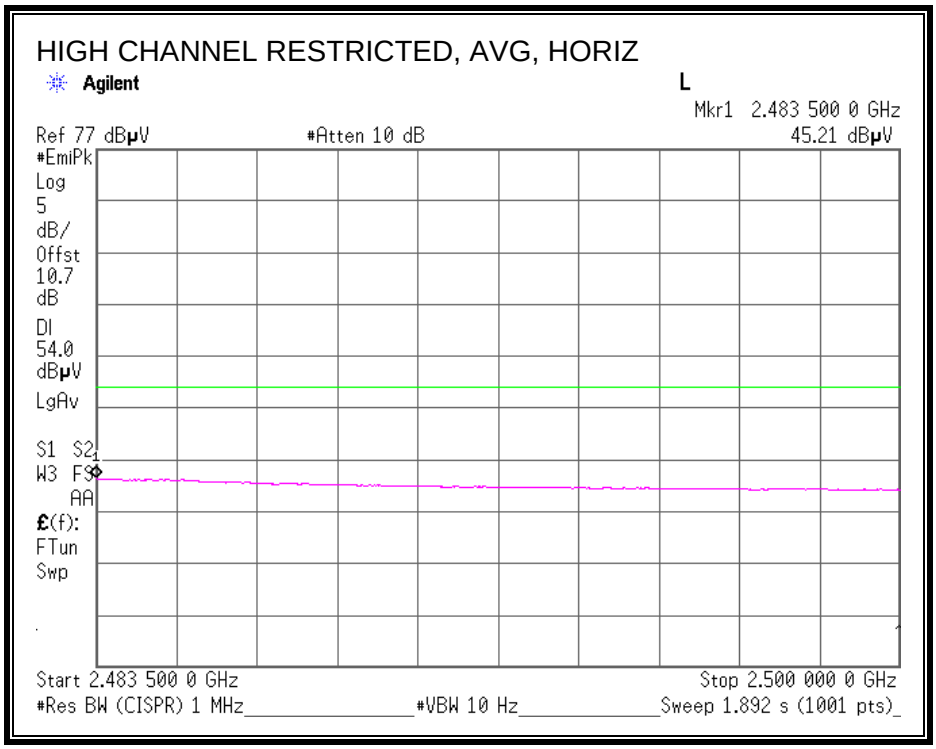
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





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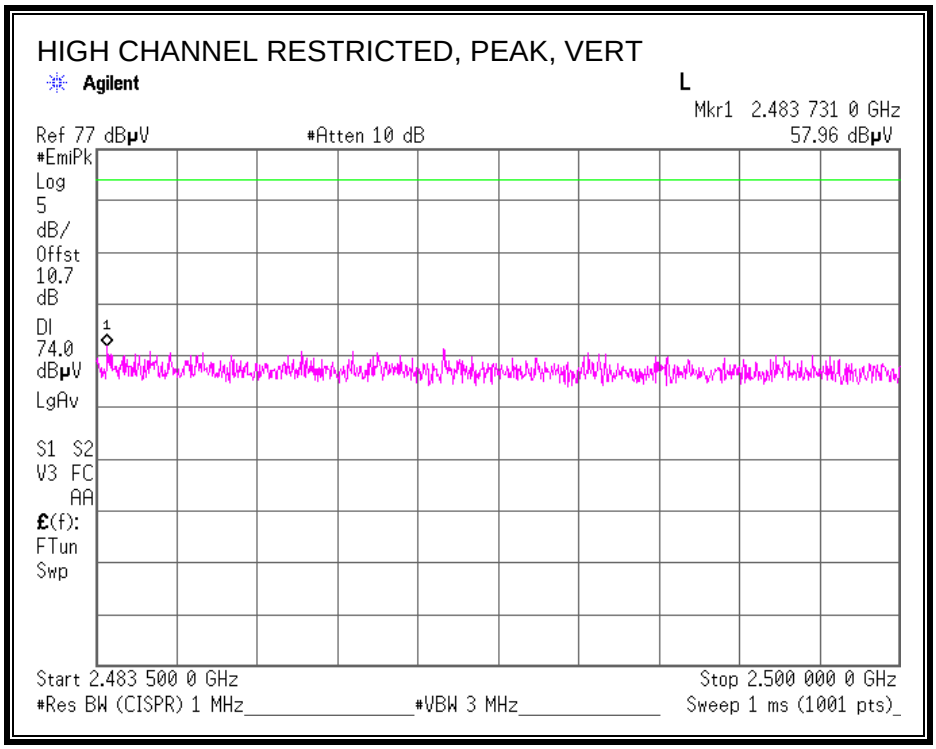
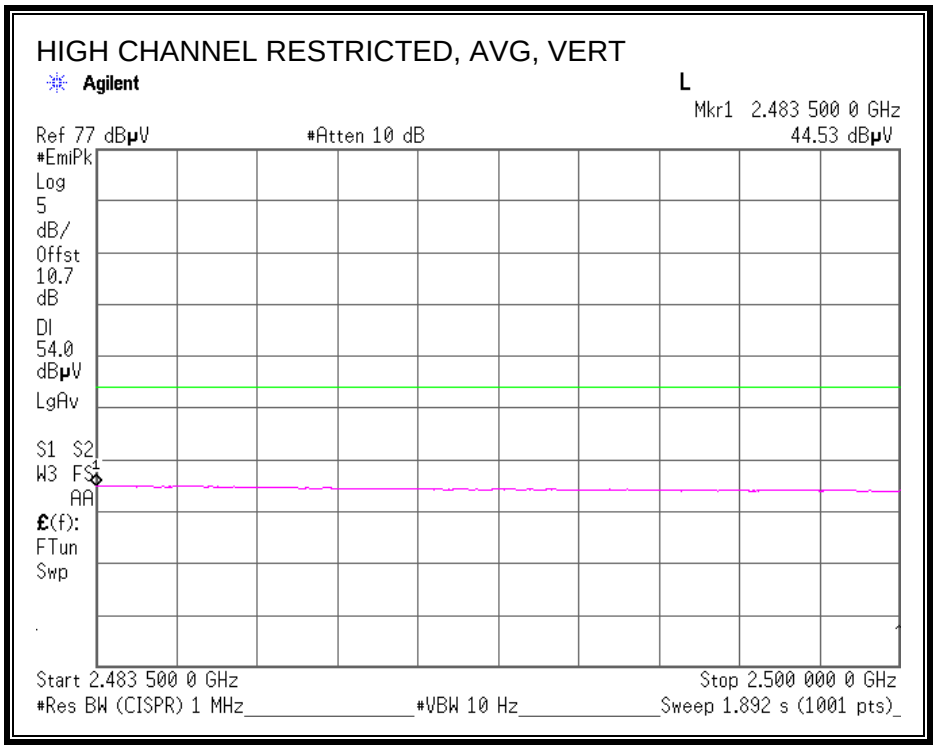
RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





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HARMONICS AND SPURIOUS EMISSIONS

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber
Date	September 12, 2012	September 13, 2012
Temperature / Humidity	28 deg.C , 46%RH	24 deg.C , 48%RH
Engineer	Akio Hayashi	Akio Hayashi
Mode	Tx, IEEE802.11n HT40	

Tx 2422MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4844.000	PK	50.1	31.2	6.8	41.1	47.0	73.9	26.9	108	40	
Hori.	4844.000	AV	43.3	31.2	6.8	41.1	40.2	53.9	13.7	108	40	
Vert.	4844.000	PK	51.1	31.2	6.8	41.1	48.0	73.9	25.9	104	234	
Vert.	4844.000	AV	43.5	31.2	6.8	41.1	40.4	53.9	13.5	104	234	

Tx 2437MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4874.000	PK	49.9	31.3	6.9	41.1	47.0	73.9	26.9	125	52	
Hori.	4874.000	AV	41.8	31.3	6.9	41.1	38.9	53.9	15.0	125	52	
Vert.	4874.000	PK	50.4	31.3	6.9	41.1	47.5	73.9	26.4	100	234	
Vert.	4874.000	AV	42.6	31.3	6.9	41.1	39.7	53.9	14.2	100	234	

Tx 2452MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4904.000	PK	50.7	31.4	6.9	41.0	48.0	73.9	25.9	100	55	
Hori.	4904.000	AV	42.4	31.4	6.9	41.0	39.7	53.9	14.2	100	55	
Vert.	4904.000	PK	50.9	31.4	6.9	41.0	48.2	73.9	25.7	107	229	
Vert.	4904.000	AV	43.0	31.4	6.9	41.0	40.3	53.9	13.6	107	229	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amprifier)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
No noise was detected above the 3rd order harmonics.
Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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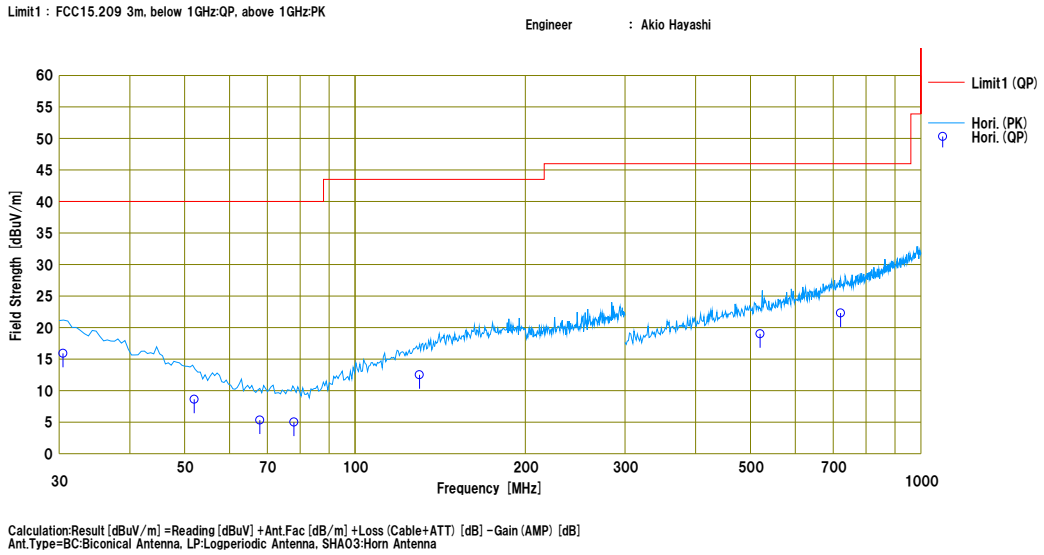
8.3. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)

HORIZONTAL PLOT



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RADIATED EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT

UL Japan, Inc. Shonan EMC Lab.
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RADIATED EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)

HORIZONTAL AND VERTICAL DATA

DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2012/09/13

Company : MITSUMI ELECTRIC CO., LTD.
Kind of EUT : Wireless LAN Module
Model No. : DWM-W094
Serial No. : 71958E

Mode : Tx 2.4GHz Worst Case
Report No. : 33BE0111-SH
Power : DC 3.3V
Temp./Humi. : 25deg.C. / 65%RH

Remarks :

Limit1 : FCC15.209 3m, below 1GHz:QP, above 1GHz:PK

Engineer : Akio Hayashi

<< QP DATA >>

No.	Freq.	Reading <QP>	Ant.Fac	Loss	Gain	Result <QP>	Limit <QP>	Margin <QP>	Pola.	Height	Angle	Ant. Type	Comment
	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg]		
1	30.480	23.8	17.8	6.5	32.2	15.9	40.0	24.1	Hori	300	275	BC	
2	52.000	23.6	10.5	6.7	32.2	8.6	40.0	31.4	Hori	151	144	BC	
3	67.879	24.0	7.0	6.5	32.2	5.3	40.0	34.7	Hori	100	2	BC	
4	78.000	23.7	6.2	7.3	32.2	5.0	40.0	35.0	Hori	121	285	BC	
5	130.000	23.6	13.6	7.4	32.1	12.5	43.5	31.0	Hori	120	61	BC	
6	520.000	23.5	18.0	9.5	32.0	19.0	46.0	27.0	Hori	152	159	LP	
7	721.234	23.2	20.7	10.2	31.8	22.3	46.0	23.7	Hori	100	6	LP	
8	30.480	23.7	17.8	6.5	32.2	15.8	40.0	24.2	Vert.	100	88	BC	
9	52.000	23.6	10.5	6.7	32.2	8.6	40.0	31.4	Vert.	100	321	BC	
10	67.879	26.6	7.0	6.5	32.2	7.9	40.0	32.1	Vert.	100	155	BC	
11	78.000	24.3	6.2	7.3	32.2	5.6	40.0	34.4	Vert.	100	358	BC	
12	130.000	23.4	13.6	7.4	32.1	12.3	43.5	31.2	Vert.	100	134	BC	
13	520.000	23.0	18.0	9.5	32.0	18.5	46.0	27.5	Vert.	100	4	LP	
14	721.234	23.4	20.7	10.2	31.8	22.5	46.0	23.5	Vert.	100	284	LP	

Calculation:Result [dBuV/m] =Reading [dBuV] +Ant.Fac [dB/m] +Loss (Cable+ATT) [dB] -Gain (AMP) [dB]
Ant.Type=BC:Biconical Antenna, LP:Logperiodic Antenna, SHA03:Horn Antenna

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8.4. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

ANSI C63.4

UL Japan, Inc. Shonan EMC Lab.
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RESULTS

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Akio Hayashi

<< QP/AV DATA >>

No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15600	30.6	4.7	12.7	43.3	17.4	65.6	55.6	22.3	38.2	N	
2	0.18200	34.8	19.2	12.7	47.5	31.9	64.3	54.3	16.8	22.4	N	
3	0.24200	27.4	12.6	12.7	40.1	25.3	62.0	52.0	21.9	26.7	N	
4	0.33400	13.4	1.7	12.7	26.1	14.4	59.3	49.3	33.2	34.9	N	
5	0.42300	18.4	12.8	12.7	31.1	25.5	57.3	47.3	26.2	21.8	N	
6	3.62240	11.3	2.5	12.8	24.1	15.3	56.0	46.0	31.9	30.7	N	
7	0.15600	30.2	4.6	12.7	42.9	17.3	65.6	55.6	22.7	38.3	L1	
8	0.18900	26.6	9.0	12.7	39.3	21.7	64.0	54.0	24.7	32.3	L1	
9	0.24300	26.9	12.4	12.7	39.6	25.1	61.9	51.9	22.3	26.8	L1	
10	0.33400	13.7	1.2	12.7	26.4	13.9	59.3	49.3	32.9	35.4	L1	
11	0.42300	17.5	13.3	12.7	30.2	26.0	57.3	47.3	27.1	21.3	L1	
12	3.62240	14.3	4.9	12.8	27.1	17.7	56.0	46.0	28.9	28.3	L1	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

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LINE 1 RESULTS

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/09/13

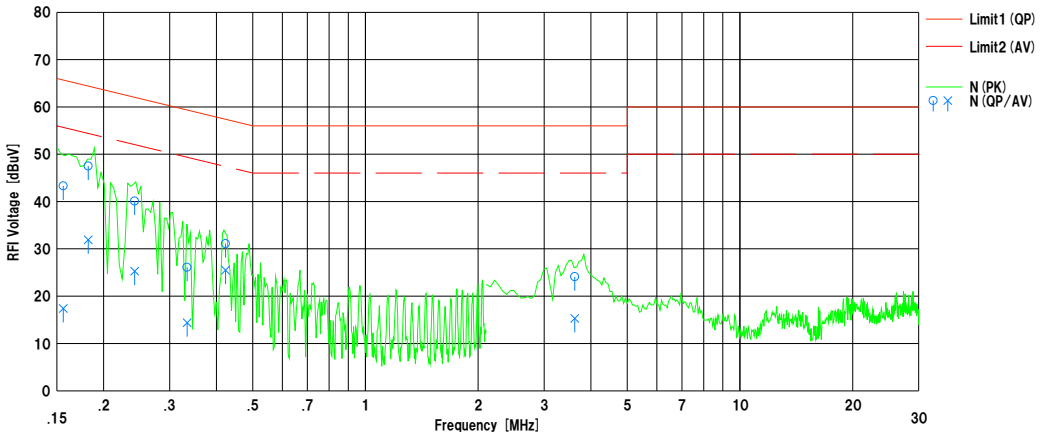
Company : MITSUMI ELECTRIC CO., LTD.
Kind of EUT : Wireless LAN Module
Model No. : DWM-W094
Serial No. : 71958E

Mode : Tx 2.4GHz Worst Case
Report No. : 33BE0111-SH
Power : AC 120V / 60Hz (DC 3.3V)
Temp./Humi. : 25deg.C. / 65%RH

Remarks :

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Akio Hayashi



Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

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LINE 2 RESULTS

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/09/13

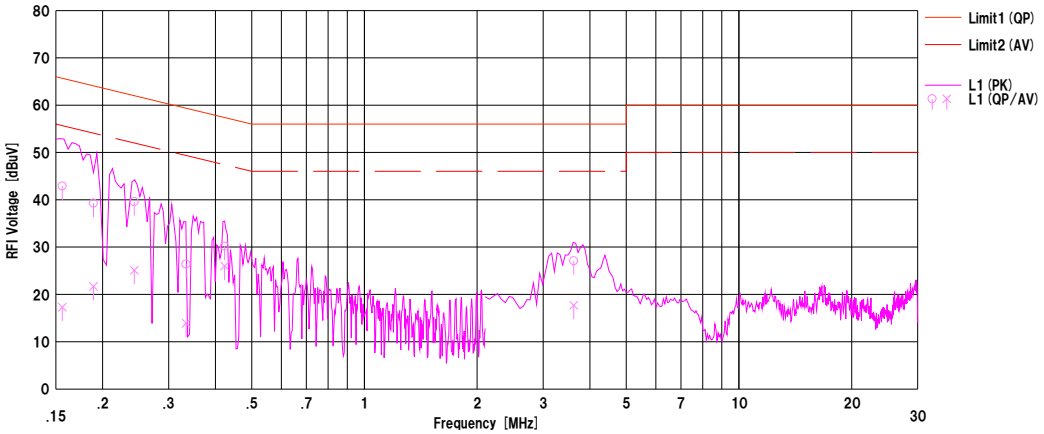
Company : MITSUMI ELECTRIC CO., LTD.
Kind of EUT : Wireless LAN Module
Model No. : DWM-W094
Serial No. : 71958E

Mode : Tx 2.4GHz Worst Case
Report No. : 33BE0111-SH
Power : AC 120V / 60Hz (DC 3.3V)
Temp./Humi. : 25deg.C. / 65%RH

Remarks :

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Akio Hayashi



Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

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