



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

CERTIFICATION TEST REPORT

FOR

HANDHELD TERMINAL

MODEL NUMBER: IT-800A-35U

**FCC ID: BBQIT800A
IC: 2388F-IT800A**

REPORT NUMBER: 31KE0135-SH-B

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Prepared for
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NVLAP LAB CODE: 200572-0

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

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: CASIO COMPUTER CO., LTD
6-2 HON-MACHI 1-CHOME, SHIBUYA-KU
TOKYO, 151-8543, JAPAN

EUT DESCRIPTION: HANDHELD TERMINAL

MODEL: IT-800A-35U (HANDHELD) & HA-H62IO (ETHERNET CRADLE)

SERIAL NUMBER: 22PFU A21400526AAAA1 (RADIATED)
30 (CONDUCTED)

DATE TESTED: JUNE 20 - 22, 2011

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart E	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 9	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. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL Japan, Inc. By:

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 06-96, 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 4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN.

UL Japan, Inc. is accredited by NVLAP, Laboratory Code 200572-0
The full scope of accreditation can be viewed at
<http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap>

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)
 $36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$

4.3. MEASUREMENT UNCERTAINTY

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

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.4	3.2dB

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.4	4.0dB	5.0dB	5.1dB	4.8dB	5.0dB	5.1dB	4.2dB

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

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a 802.11abg, Bluetooth and RFID equipped Handheld Terminal.

The 802.11abg module is manufactured by Fujitsu Component Limited.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5180-5240	802.11a	11.70	14.79
5260-5320	802.11a	11.25	13.34
5500-5700	802.11a	12.37	17.25

5.3. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was RFTTestTool.exe.

5.4. WORST-CASE CONFIGURATION AND MODE

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

All final tests in the 802.11a Mode were made at 6 Mb/s.

The EUT has been evaluated at X, Y, Z-orientations and the worst among them with AC/DC adapter and with Ethernet cradle. The highest measured emission was determined as the following table.

	Horizontal	Vertical
Carrier and Bandedge	Z	X
Radiated Emission (above 1GHz)	Z	Z
Radiated Emission (below 1GHz)	X with AC/DC adapter	Z with AC/DC adapter
Conducted Emission	with Cradle	with Cradle

5.5. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a Dipole antenna, with a maximum gain of 0.15 dBi(5180-5320MHz) and 0.65dBi(5500-5700MHz).

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST			
Description	Manufacturer	Model	Serial Number
AC/DC Adaptor	Casio	AD-S15050B	18
Ethernet Cradle	Casio	HA-H62IO	224AA 3C0101725GAAA1
AC/DC Adaptor	Casio	AD-S42120B	001
Micro SD	Panasonic	RP-SM01GBJ1K	SR9FB014582

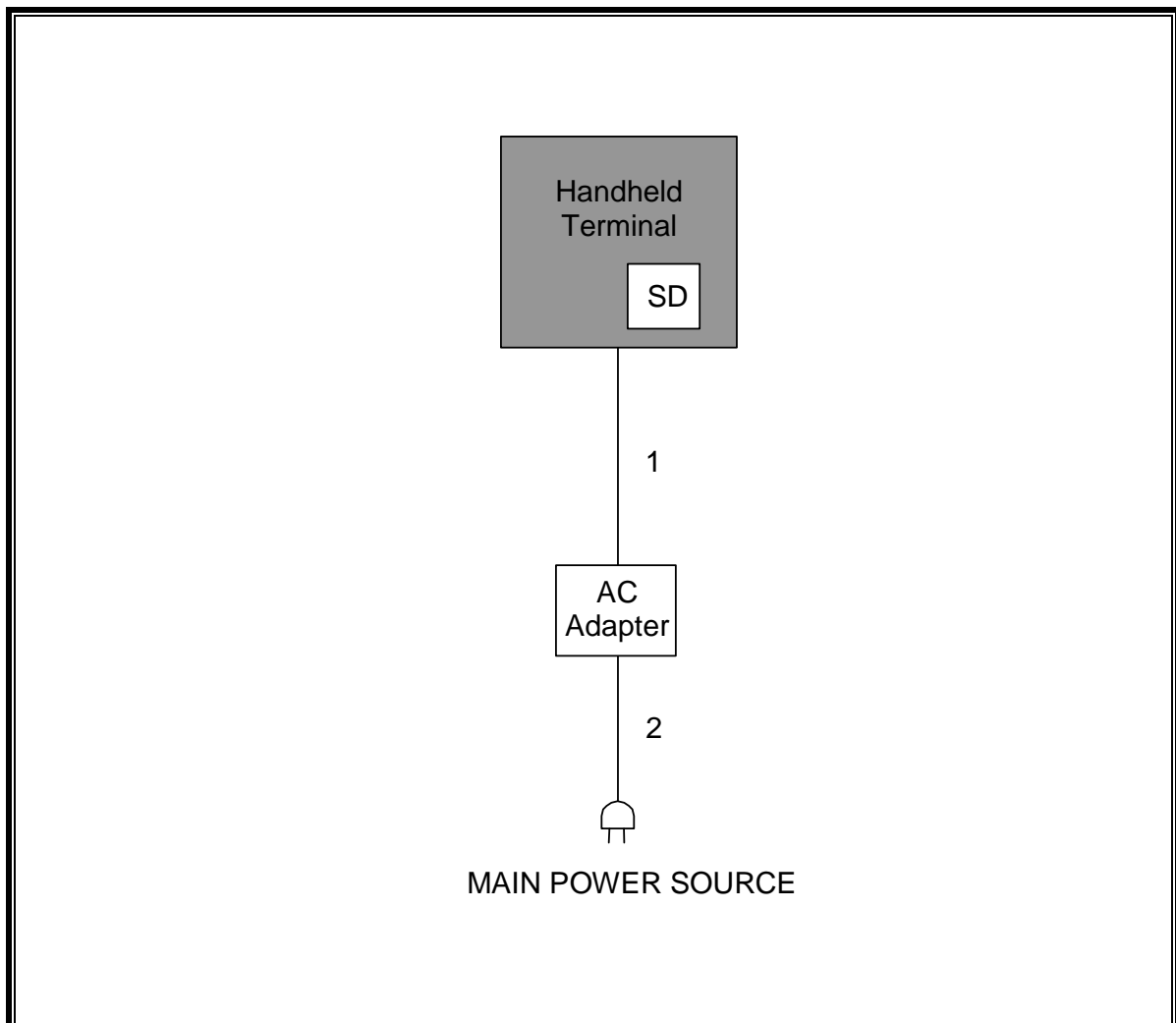
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC	1	DC	Un-shielded	1.5m	one ferrite at Handheld Terminal end.
2	AC	1	US 115V	Un-shielded	2.0m	N/A
3	DC	1	DC	Un-shielded	1.6m	one ferrite at Cradle end.

TEST SETUP

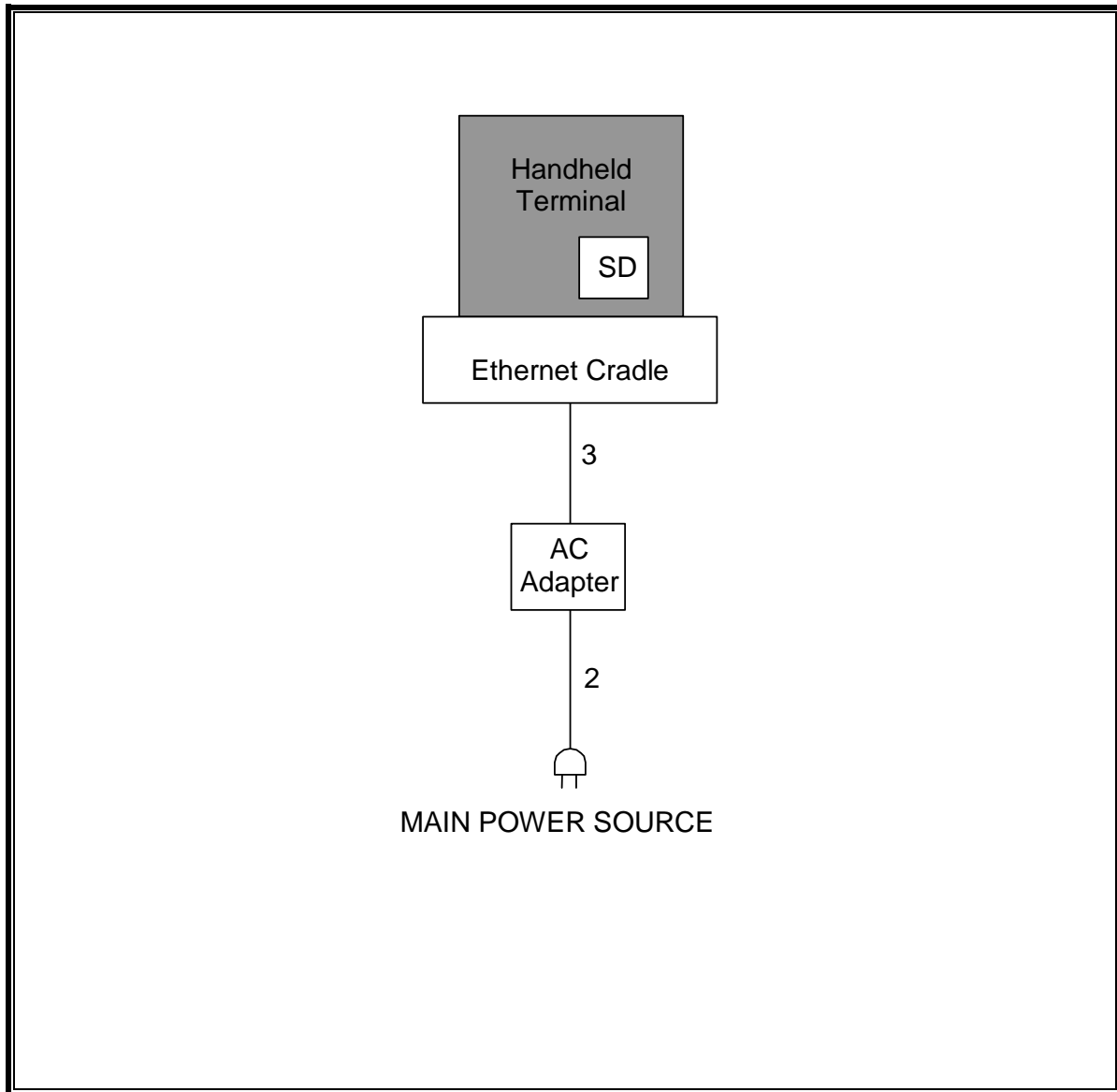
The EUT is sitting on a cradle during the Conducted emission test.
The EUT is connected with AC/DC adapter during the Radiated emission (below 1GHz) test.
The EUT is a stand alone configuration during Radiated emission (above 1GHz) test.
Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS (1/2)



Radiated Emission (worst case)

SETUP DIAGRAM FOR TESTS (2/2)



Conducted Emission (worst case)

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	Calibration Date * Interval(month)
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	2011/03/01 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	2011/02/23 * 12
MJM-07	Measure	PROMART	SEN1955	-	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	-
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	2011/02/15 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	2010/08/08 * 12
MCC-56	Microwave Cable	Suhner	SUCOFLEX104	270875/4(1m) / 284655(5m)	2011/03/02 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	2011/03/10 * 12
MCC-79	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278923/4	2010/12/02 * 12
MHF-23	High Pass Filter 7-20GHz	TOKIMEC	TF37NCCC	603	2011/01/06 * 12
MHA-17	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170307	2011/06/17 * 12
MCC-54	Microwave Cable	Suhner	SUCOFLEX101	2873(1m) / 2876(5m)	2011/03/02 * 12
MPA-03	Microwave System Power Amplifier	Agilent	83050A	3950M00205	2011/06/15 * 12
MOS-19	Thermo-Hygrometer	Custom	CTH-201	0001	2010/12/13 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	2010/11/30 * 12
MPSE-18	Power sensor	Anritsu	MA2411B	0738174	2010/11/01 * 12
MPM-13	Power Meter	Anritsu	ML2495A	0824014	2010/11/01 * 12
MAT-20	Attenuator(10dB)(above1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-110	-	2011/01/06 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	2011/04/08 * 12
MTR-07	Test Receiver	Rohde & Schwarz	ESCI	100635	2010/10/27 * 12
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	1302	2010/10/11 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	N/A	2010/10/11 * 12
MCC-50	Coaxial Cable	UL Japan	-	-	2011/03/25 * 12

Control No.	Instrument	Manufacturer	Model No	Serial No	Calibration Date * Interval(month)
MAT-51	Attenuator(6dB)	Weinschel	2	AS3557	2011/01/14 * 12
MPA-14	Pre Amplifier	SONOMA INSTRUMENT	310	260833	2011/03/04 * 12
MSA-05	Spectrum Analyzer	Advantest	R3273	160400285	2010/11/18 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	2011/02/22 * 12
MTA-31	Terminator	TME	CT-01	-	2011/01/05 * 12
MAT-67	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	2011/02/22 * 12
MCC-113	Coaxial cable	Fujikura/Suhner/TS J	5D-2W(10m)/SFM141(5m)/421-010(1m)/sucoform141-PE(1m)/RFM-E121(Switcher)	-/04178	2010/07/21 * 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 traceable calibrations. Each calibration is traceable to the national or international standards.

7. ANTENNA PORT TEST RESULTS

7.1. 802.11a MODE IN THE 5.2 GHz BAND

7.1.1. 26 dB and 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

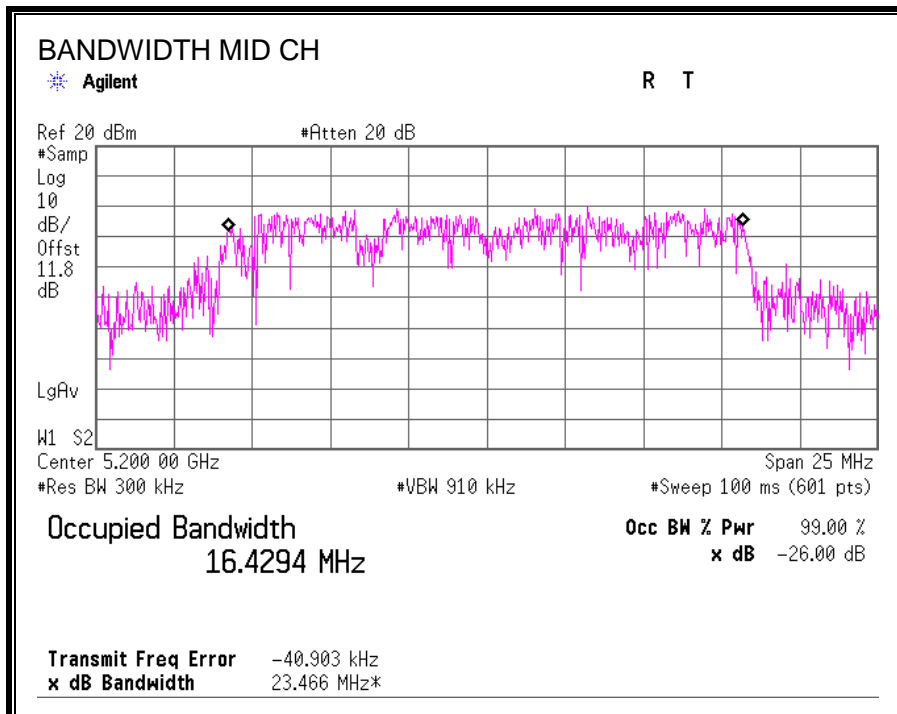
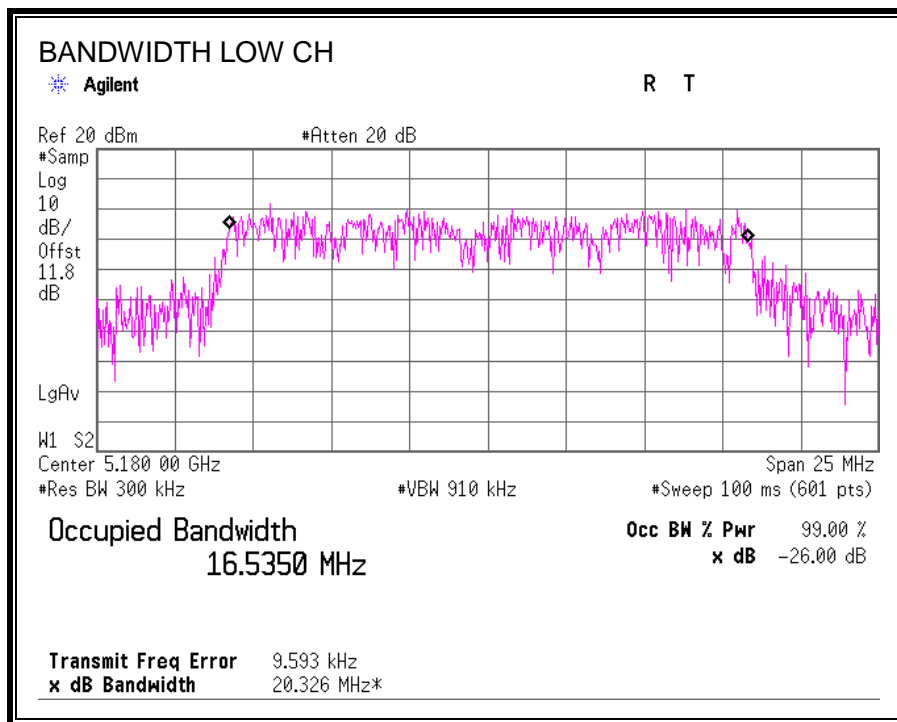
TEST PROCEDURE

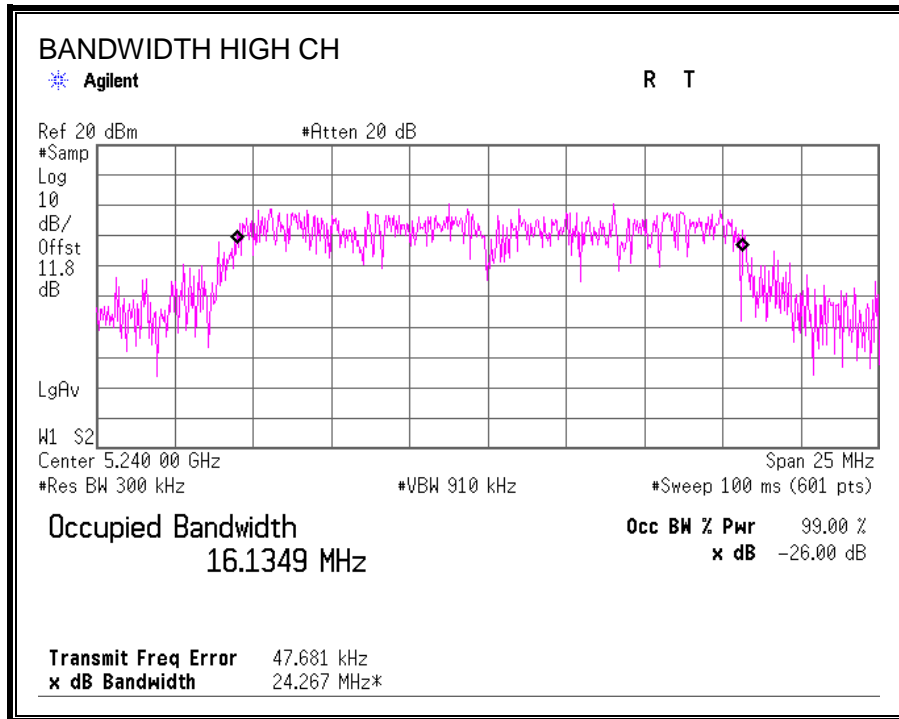
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	20.326	16.5350
Middle	5200	23.466	16.4294
High	5240	24.267	16.1349

26 dB & 99%BANDWIDTH





7.1.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

For the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

RESULTS

FCC

Limit

Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	4 + 10 Log B Limit (dBm)	Limit (dBm)
Low	5180	17	20.326	17.08	17
Mid	5200	17	23.466	17.70	17
High	5240	17	24.627	17.91	17

Results

Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)
Low	5180	11.70	17	-5.30
Mid	5200	11.45	17	-5.55
High	5240	11.27	17	-5.73

IC

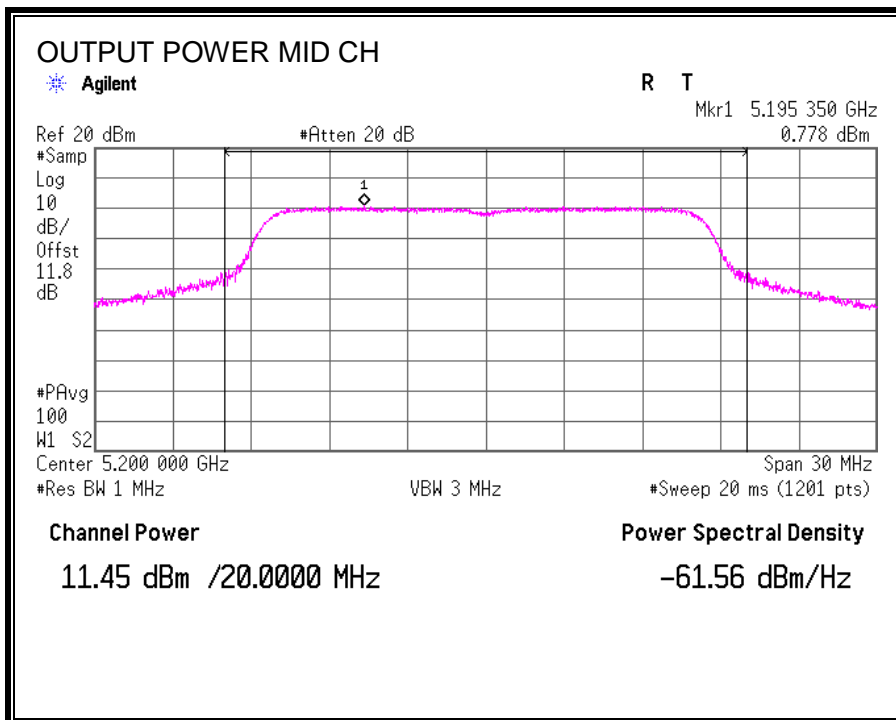
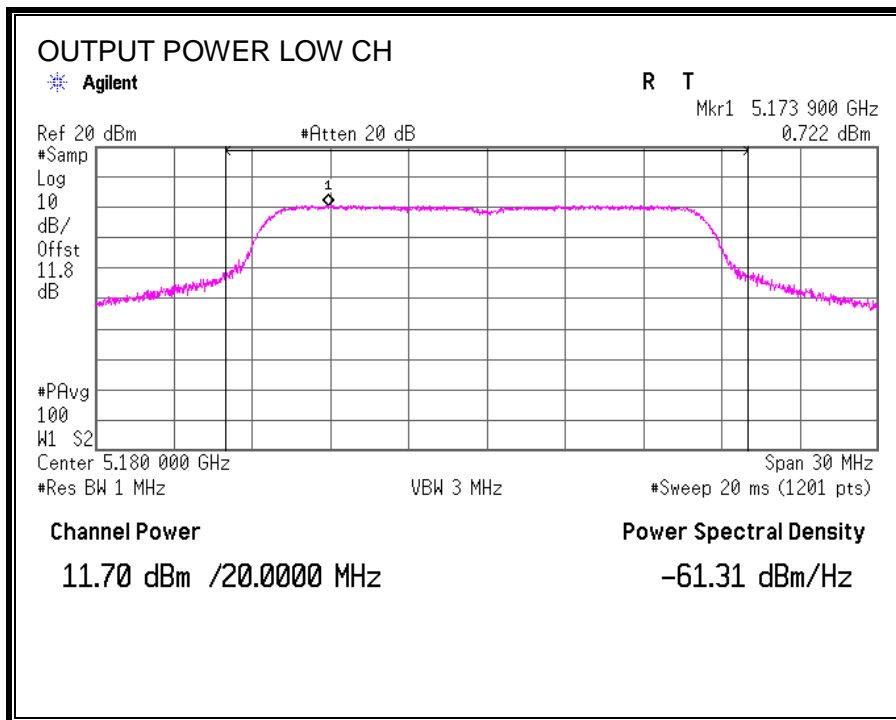
Limit

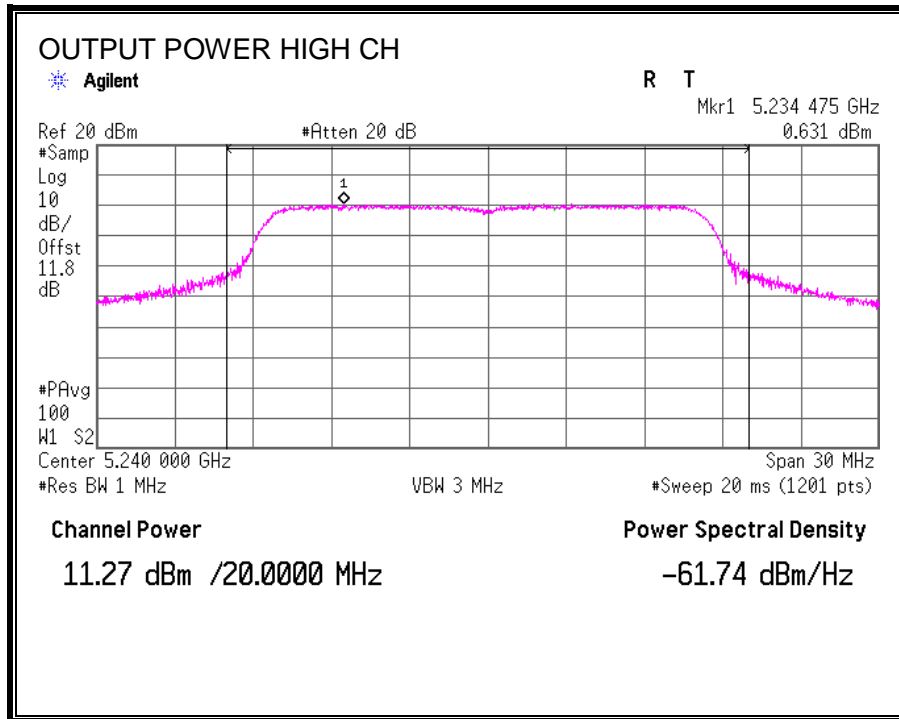
Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B Limit (dBm)	Limit (dBm)	EIRP Fixed Limit	10 + 10 Log B Limit (dBm)	EIRP Limit (dBm)
Low	5180	-	16.5350	-	-	23.01	22.18	22.18
Mid	5200	-	16.4294	-	-	23.01	22.16	22.16
High	5240	-	16.1349	-	-	23.01	22.08	22.08

Results

Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)	Antenna Gain (dBi)	EIRP Power(dBm)	EIRP Limit (dBm)	Margin (dB)
Low	5180	11.70	-	-	0.15	11.85	22.18	-10.33
Mid	5200	11.45	-	-	0.15	11.60	22.16	-10.56
High	5240	11.27	-	-	0.15	11.42	22.08	-10.66

OUTPUT POWER





7.1.3. PEAK POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

For the 5.15-5.25 GHz band, the peak power spectral density shall not exceed 4 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is equal to 0.15 dBi, therefore the limit is 4 dBm.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

RESULTS

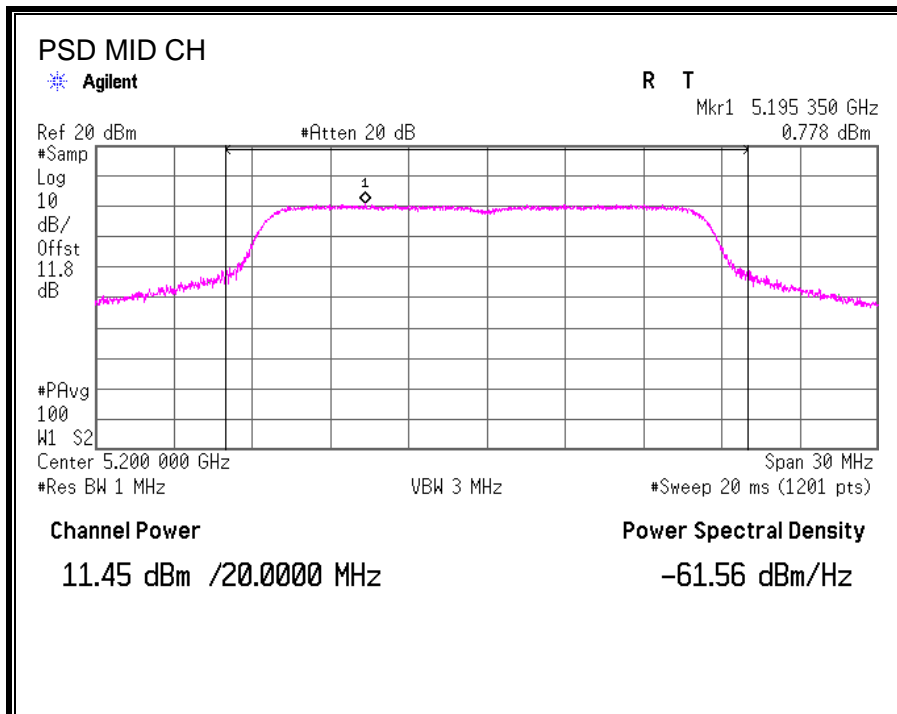
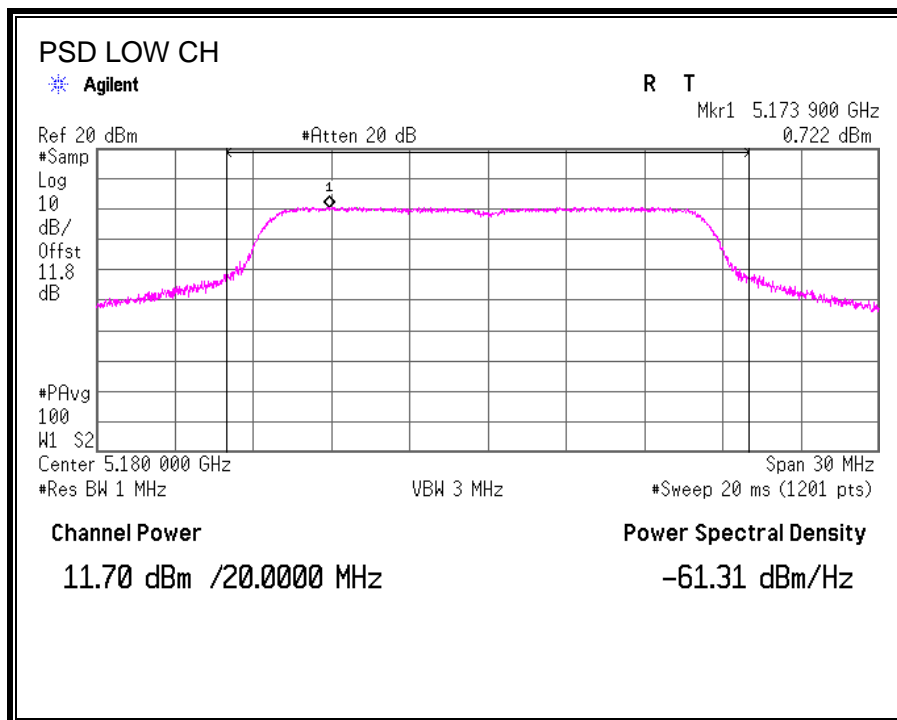
FCC

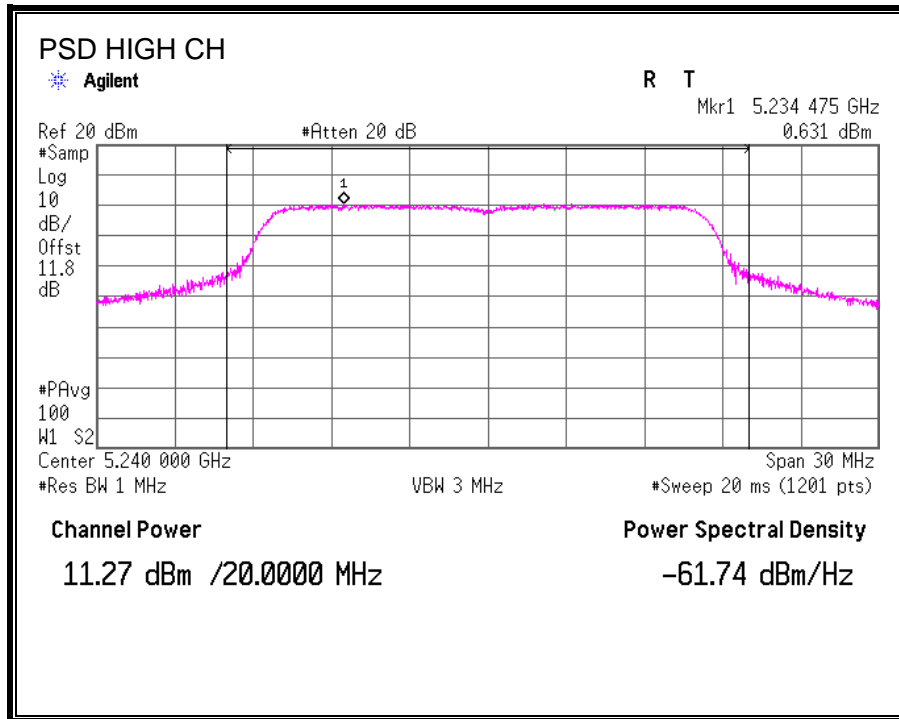
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5180	0.722	4.00	-3.28
Middle	5200	0.778	4.00	-3.22
High	5240	0.631	4.00	-3.37

IC

Channel	Frequency (MHz)	PPSD (dBm)	Antenna Gain(dBi)	EIRP PPSD(dBm)	Limit (dBm)	Margin (dB)
Low	5180	0.722	0.15	0.87	10	-9.128
Middle	5200	0.778	0.15	0.93	10	-9.072
High	5240	0.631	0.15	0.78	10	-9.219

POWER SPECTRAL DENSITY





7.1.4. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

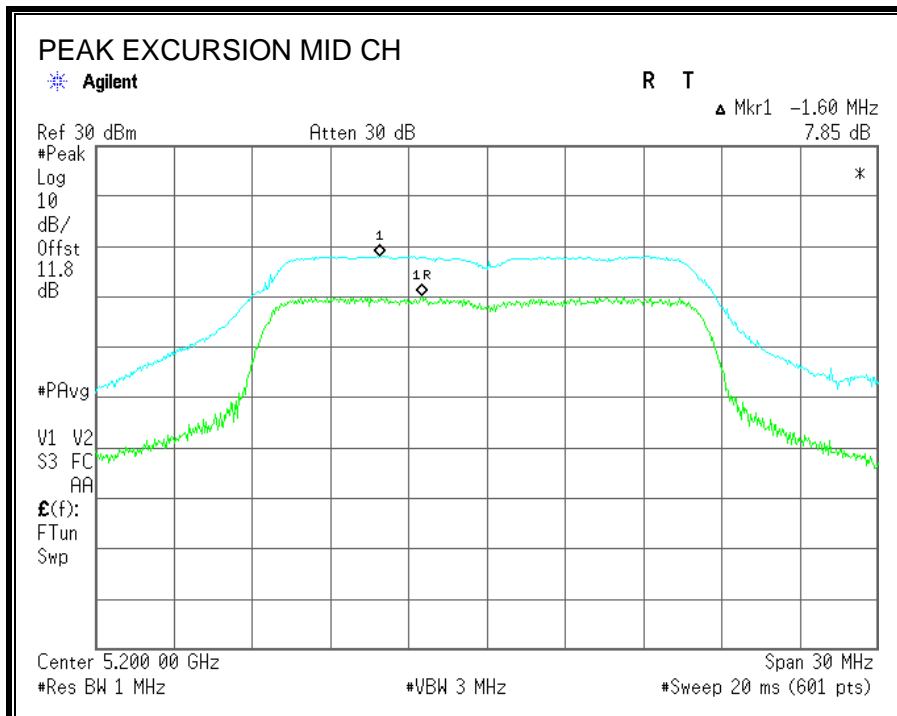
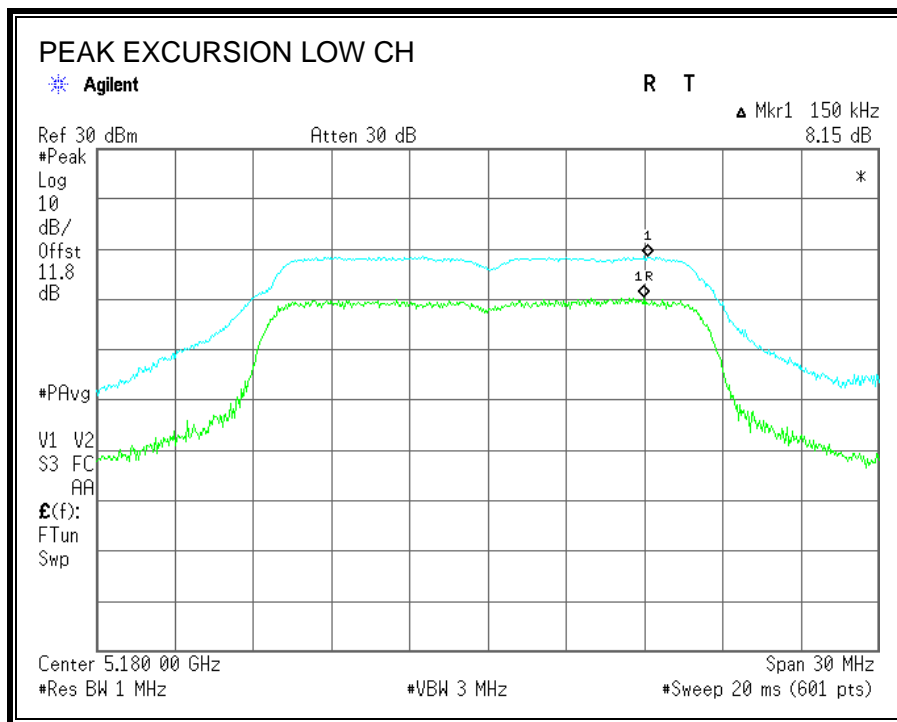
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

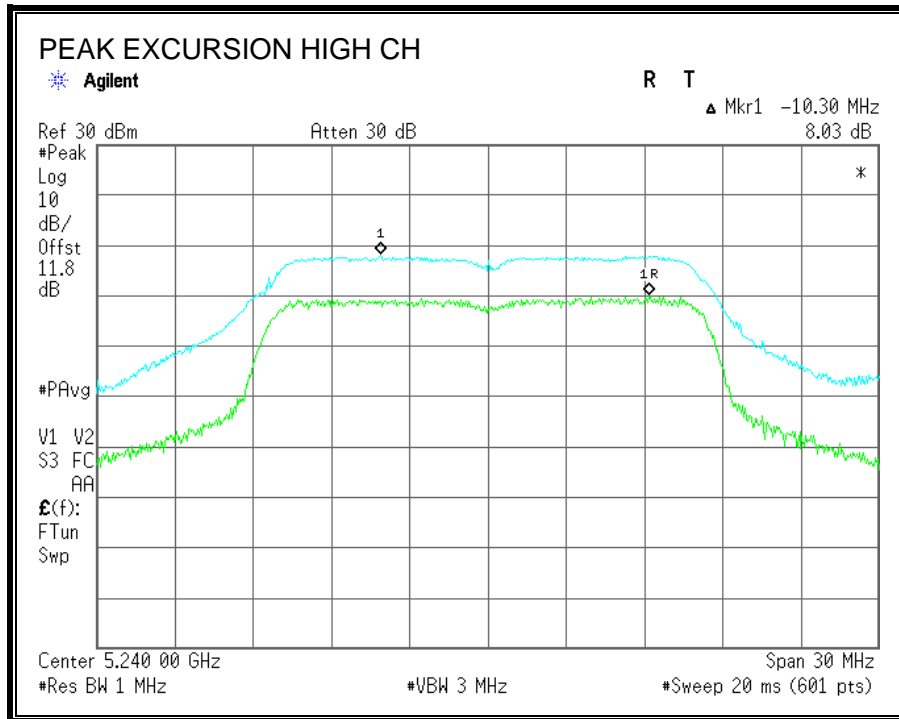
Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

RESULTS

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5180	8.15	13	-4.85
Middle	5200	7.85	13	-5.15
High	5240	8.03	13	-4.97

PEAK EXCURSION





7.1.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (b) (1)

IC RSS-210 A9.2 (1)

For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm / MHz.

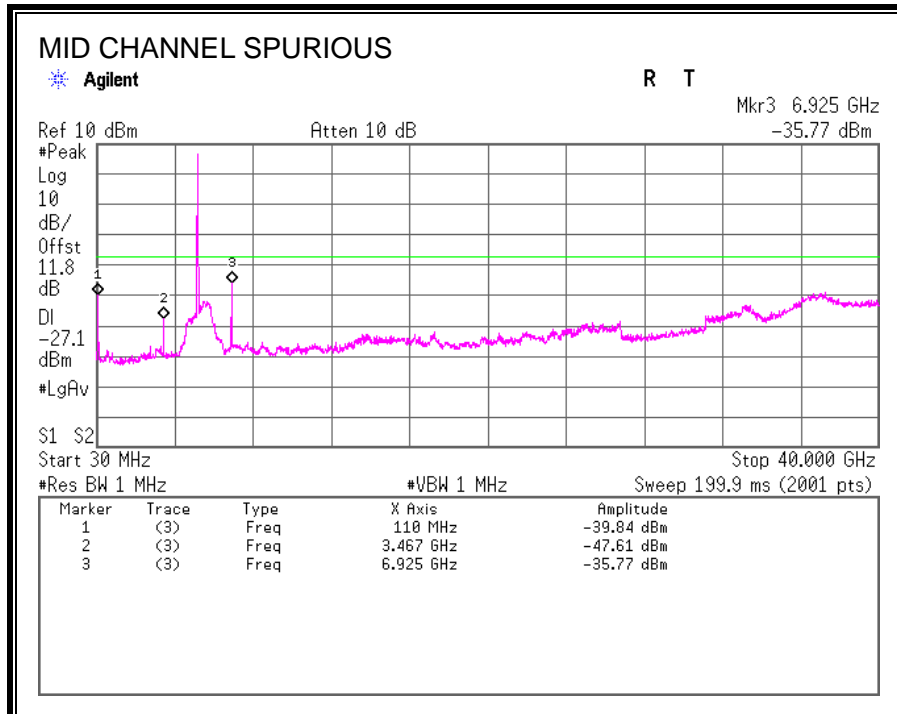
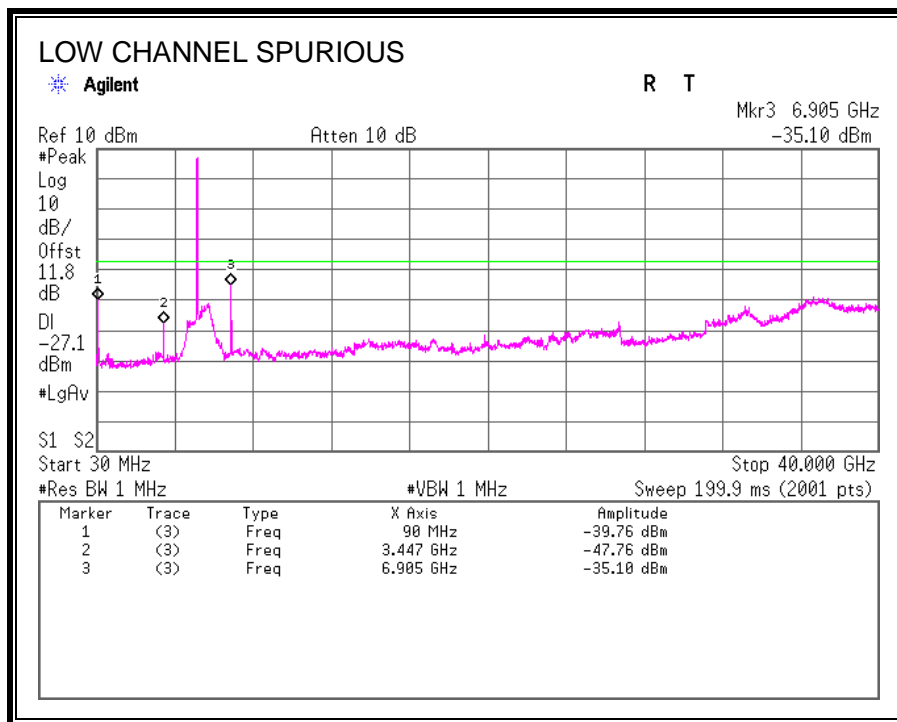
TEST PROCEDURE

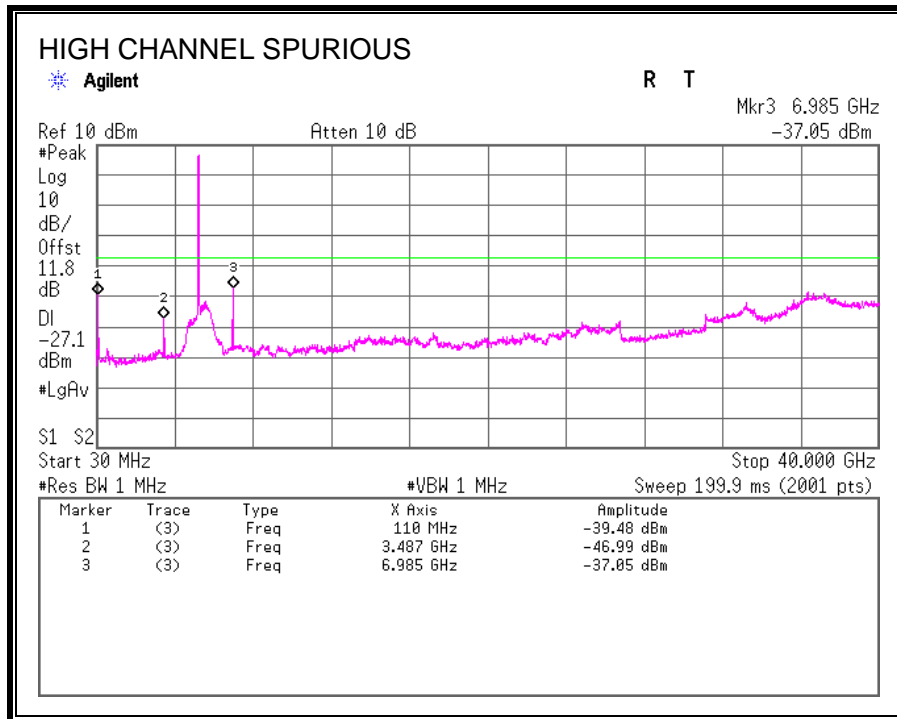
Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1MHz. Peak detection measurements are compared to EIRP limit, adjusted for the maximum antenna gain.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

SPURIOUS EMISSIONS





7.2. 802.11a MODE IN THE 5.3 GHz BAND

7.2.1. 26 dB and 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

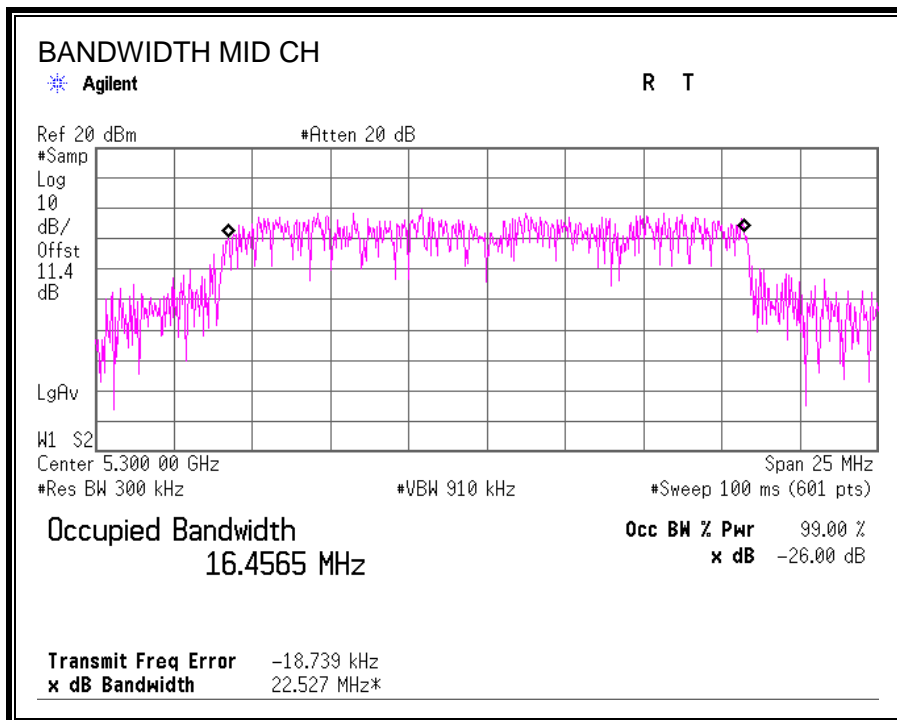
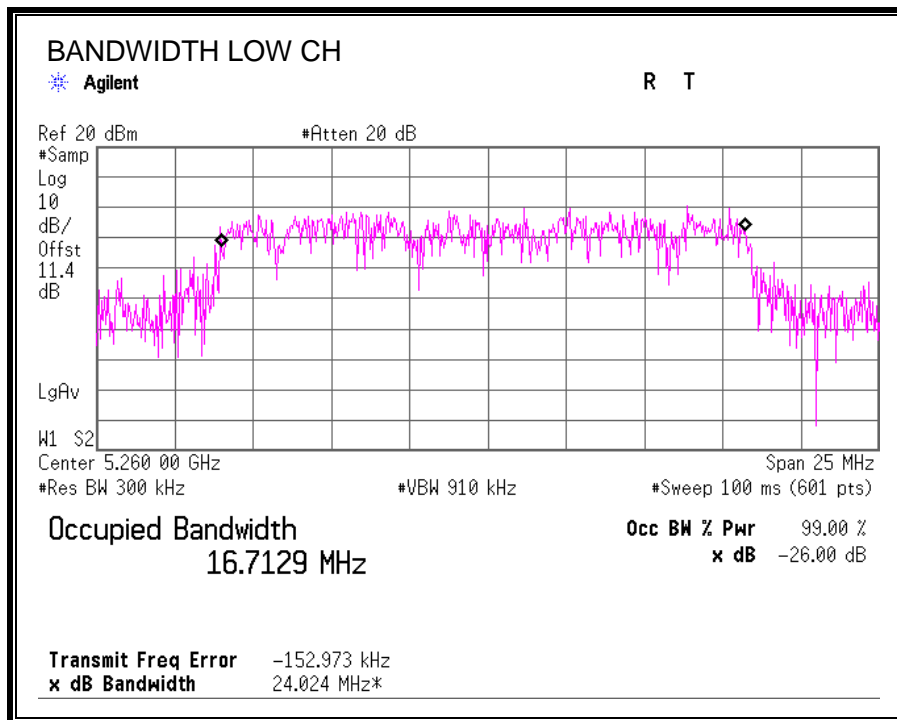
TEST PROCEDURE

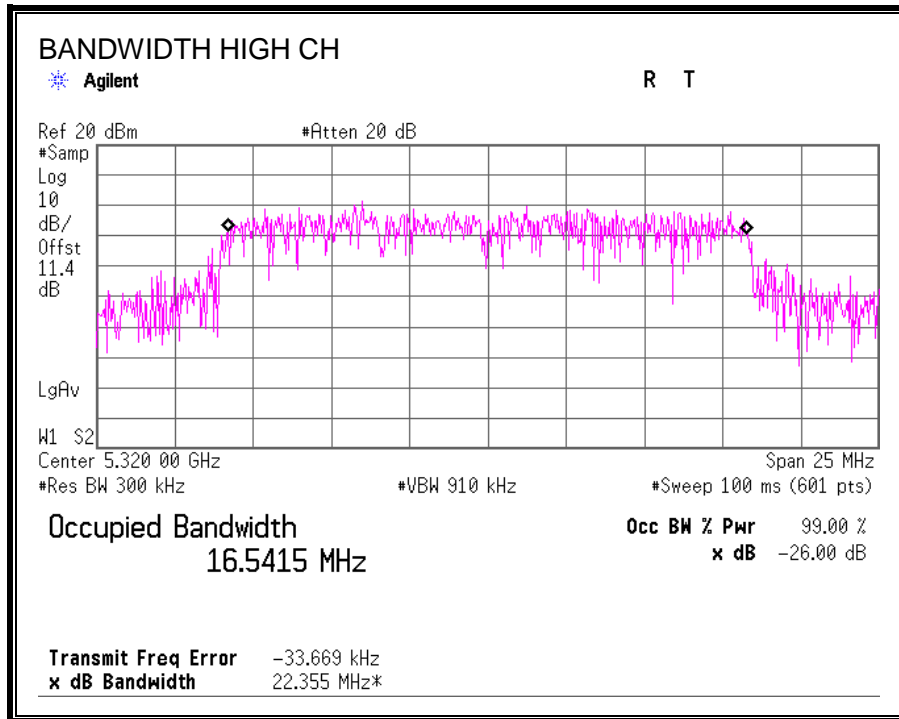
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	24.024	16.7129
Middle	5300	22.527	16.4565
High	5320	22.355	16.5415

26 dB and 99% BANDWIDTH





7.2.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.25-5.35 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

RESULTS

FCC

Limit

Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B Limit (dBm)	Limit (dBm)
Low	5260	24	24.024	24.81	24
Mid	5300	24	22.527	24.53	24
High	5320	24	22.355	24.49	24

Results

Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)
Low	5260	10.98	24	-13.02
Mid	5300	10.73	24	-13.27
High	5320	11.25	24	-12.75

IC

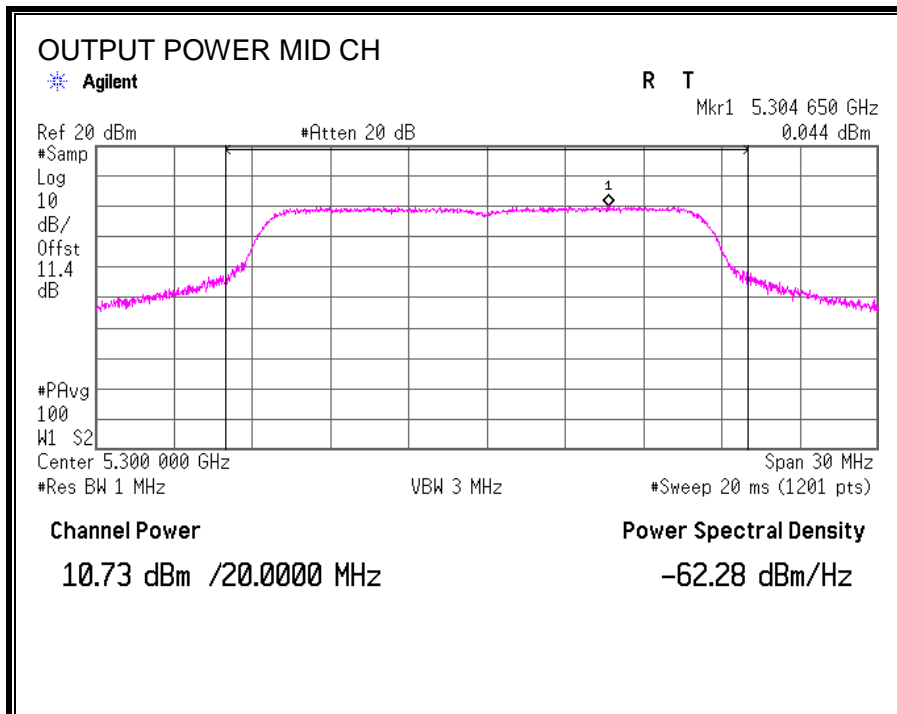
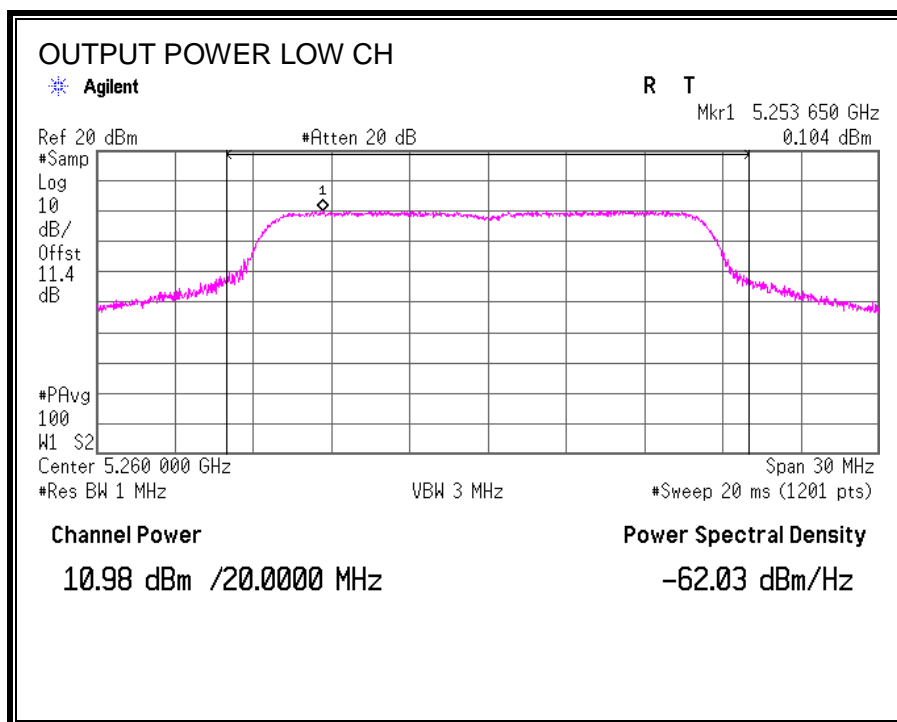
Limit

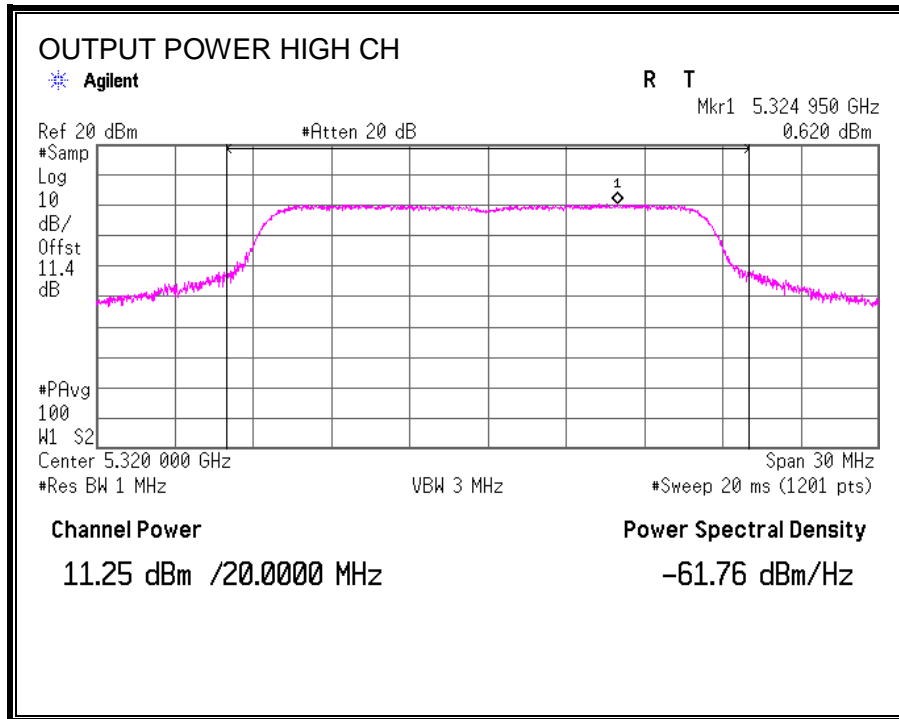
Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B Limit (dBm)	Limit (dBm)	EIRP Fixed Limit	17 + 10 Log B Limit (dBm)	EIRP Limit (dBm)
Low	5260	24	16.7129	23.23	23.23	30.00	29.23	29.23
Mid	5300	24	16.4565	23.16	23.16	30.00	29.16	29.16
High	5320	24	16.5415	23.19	23.19	30.00	29.19	29.19

Results

Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)	Antenna Gain (dBi)	EIRP Power(dBm)	EIRP Limit (dBm)	Margin (dB)
Low	5260	10.98	23.23	-12.25	0.15	11.13	29.23	-18.10
Mid	5300	10.73	23.16	-12.43	0.15	10.88	29.16	-18.28
High	5320	11.25	23.19	-11.94	0.15	11.40	29.19	-17.79

OUTPUT POWER





7.2.3 PEAK POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.25–5.35 GHz band, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

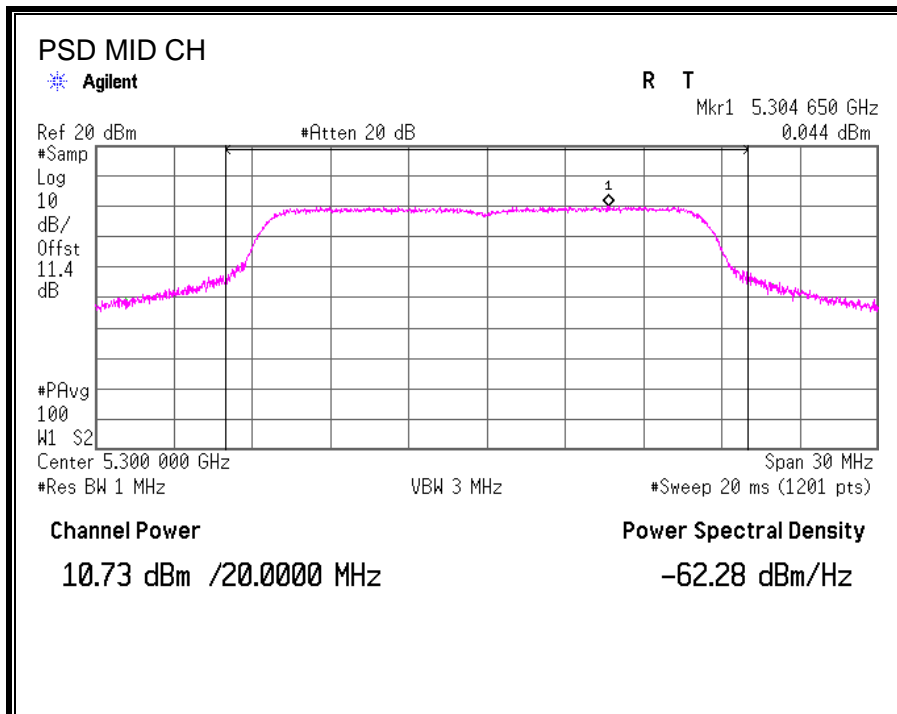
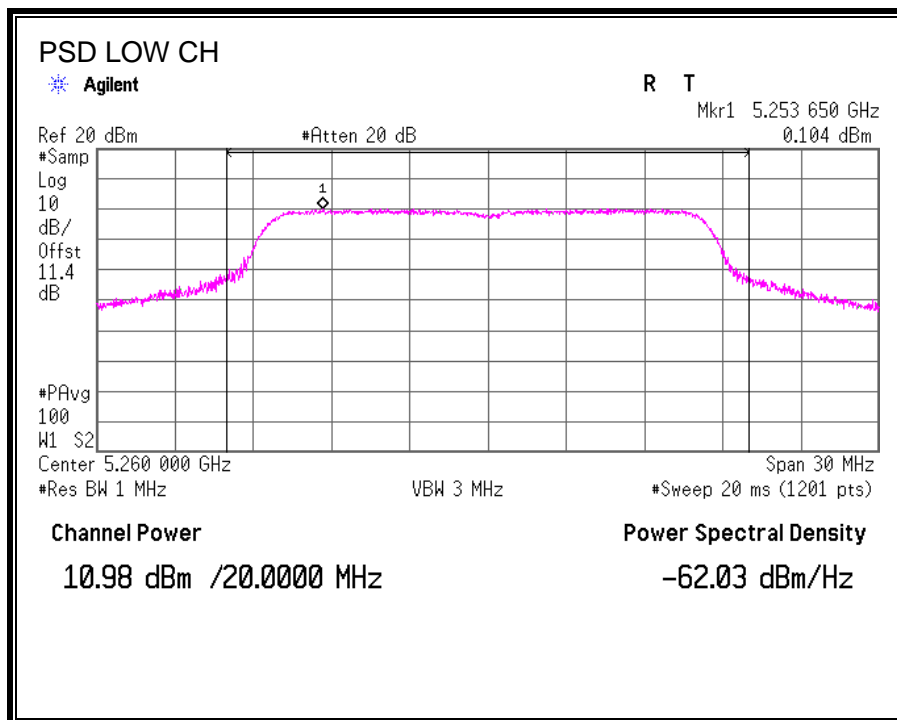
TEST PROCEDURE

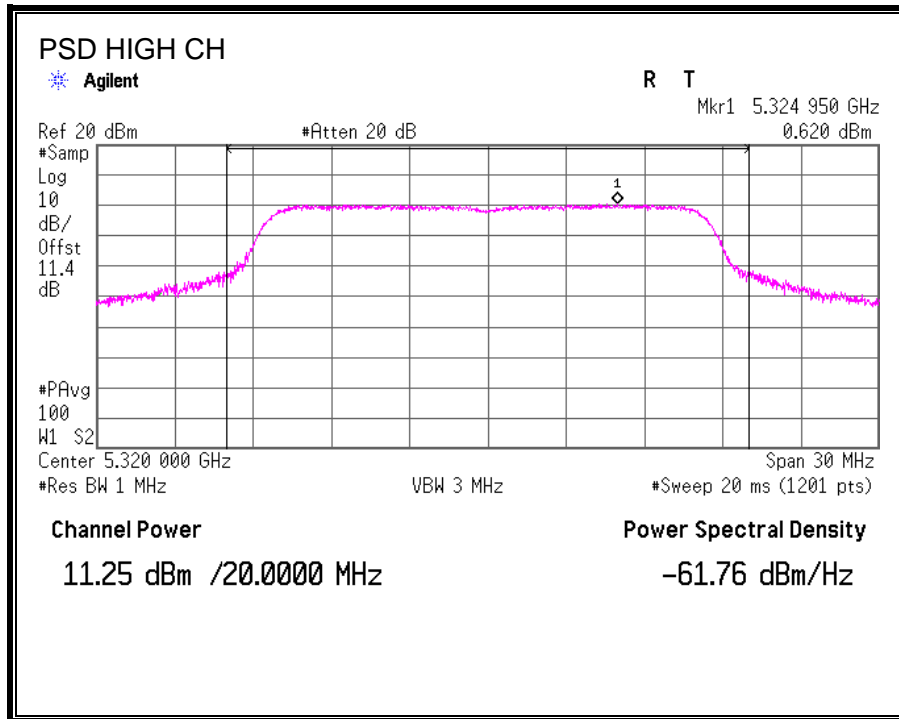
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5260	0.104	11	-10.90
Middle	5300	0.044	11	-10.96
High	5320	0.620	11	-10.38

POWER SPECTRAL DENSITY





7.2.5 PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

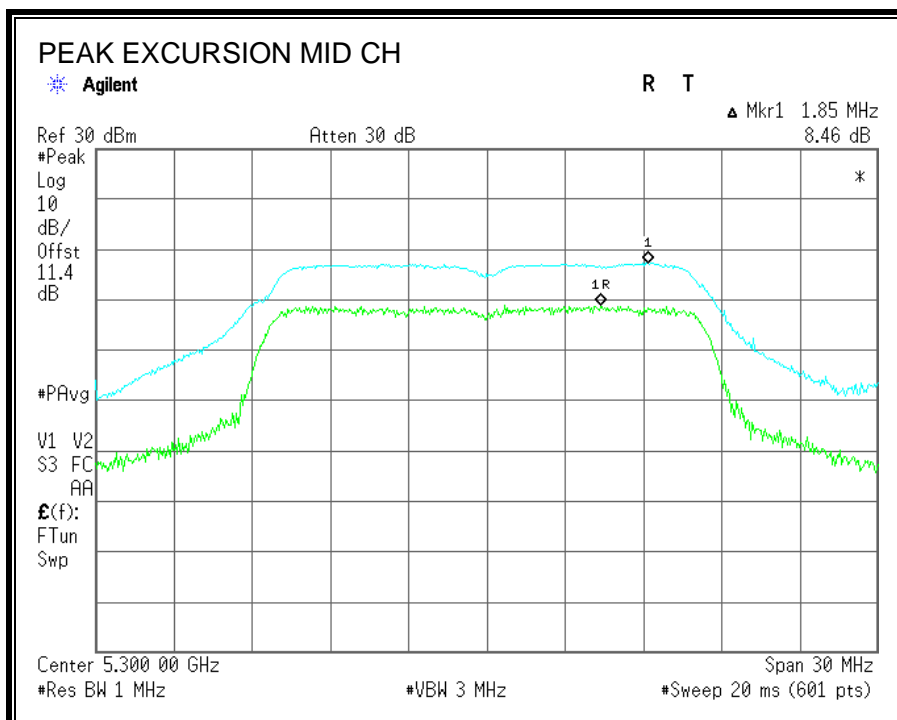
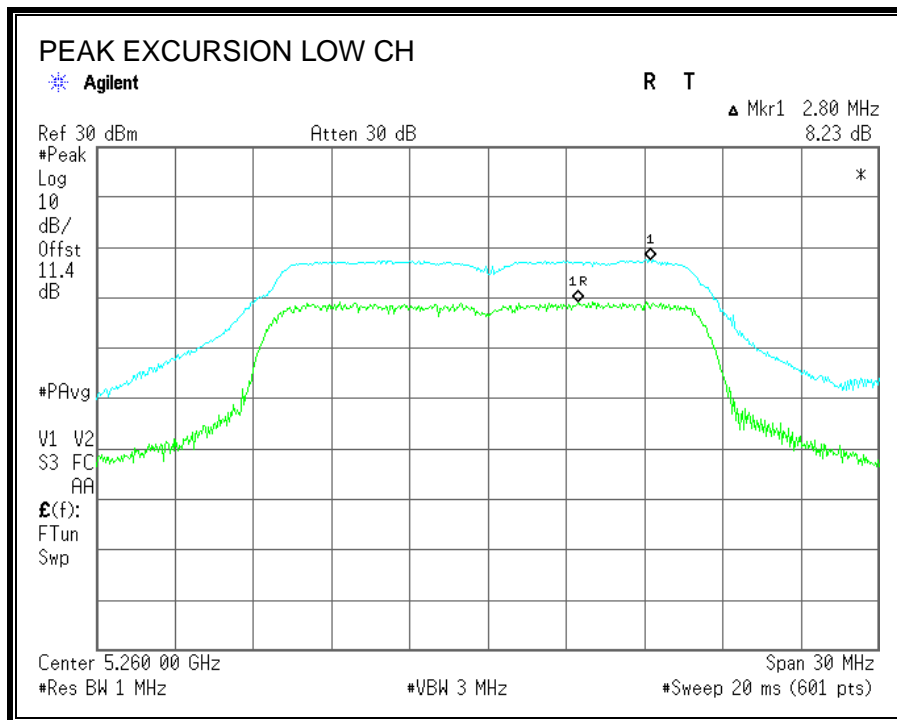
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

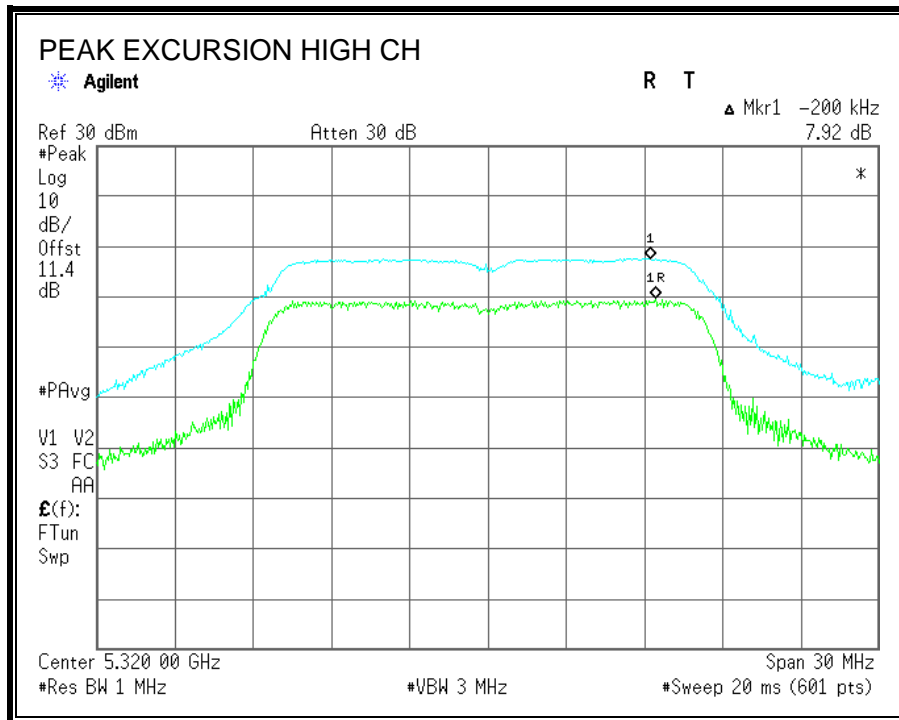
Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

RESULTS

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5260	8.23	13	-4.77
Middle	5300	8.46	13	-4.54
High	5320	7.92	13	-5.08

PEAK EXCURSION





7.2.6 CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (b) (2)

IC RSS-210 A9.2 (2)

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.25-5.35 GHz band shall not exceed an EIRP of -27 dBm / MHz.

Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.

TEST PROCEDURE

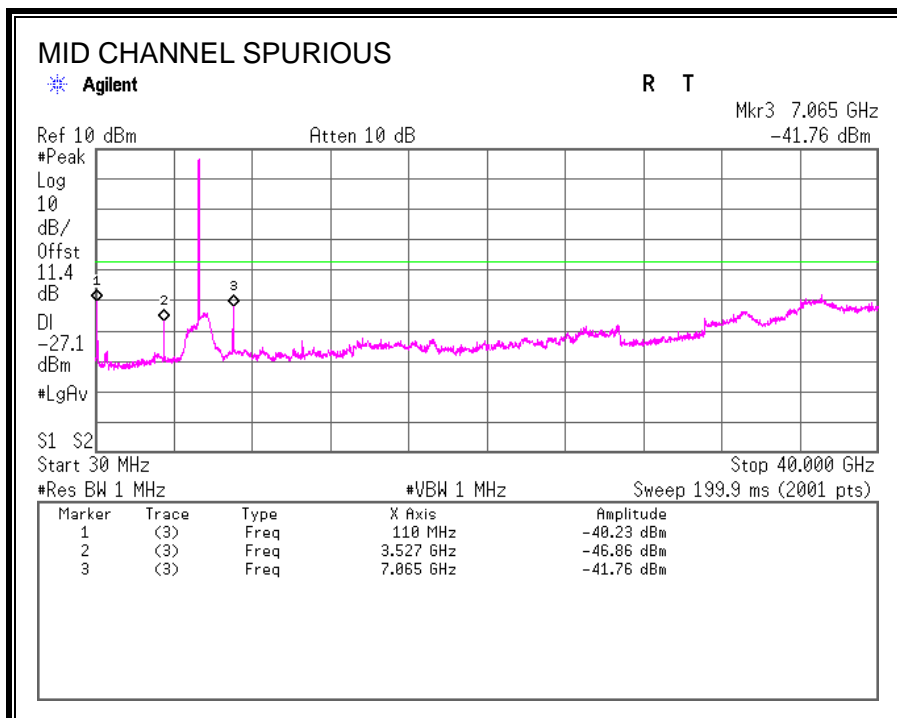
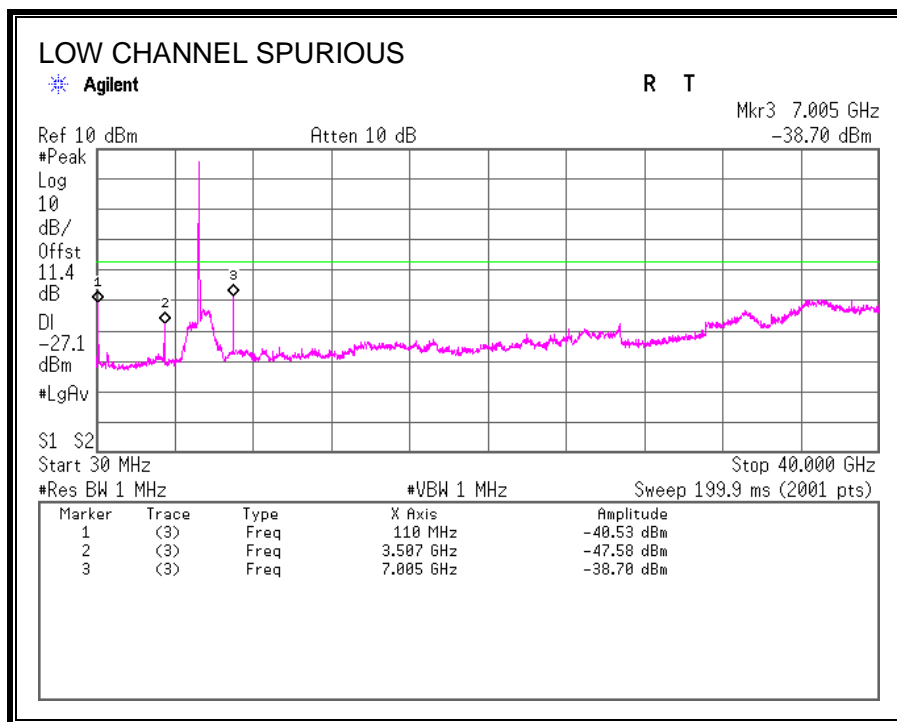
Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

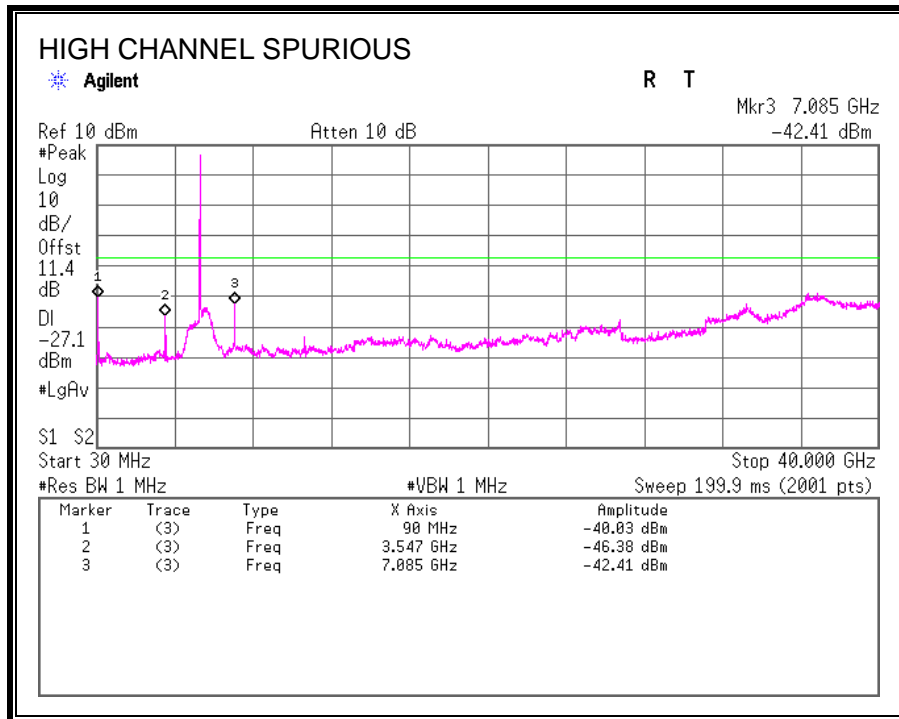
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1MHz. Peak detection measurements are compared to EIRP limit, adjusted for the maximum antenna gain.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

RESULTS

SPURIOUS EMISSIONS





7.3. 802.11a MODE IN THE 5.6 GHz BAND

7.3.1. 26 dB and 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

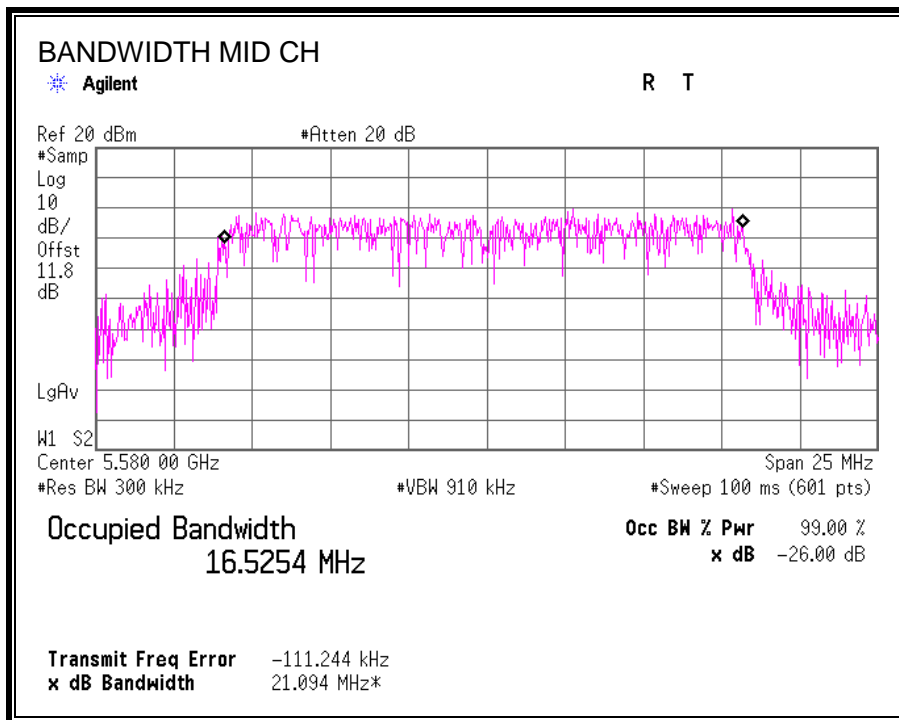
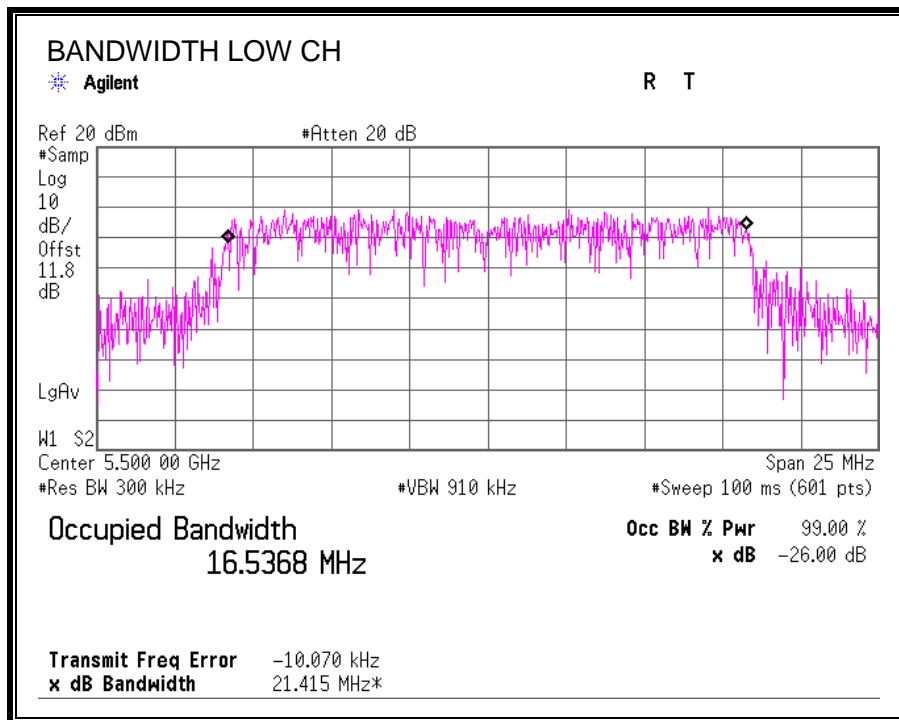
TEST PROCEDURE

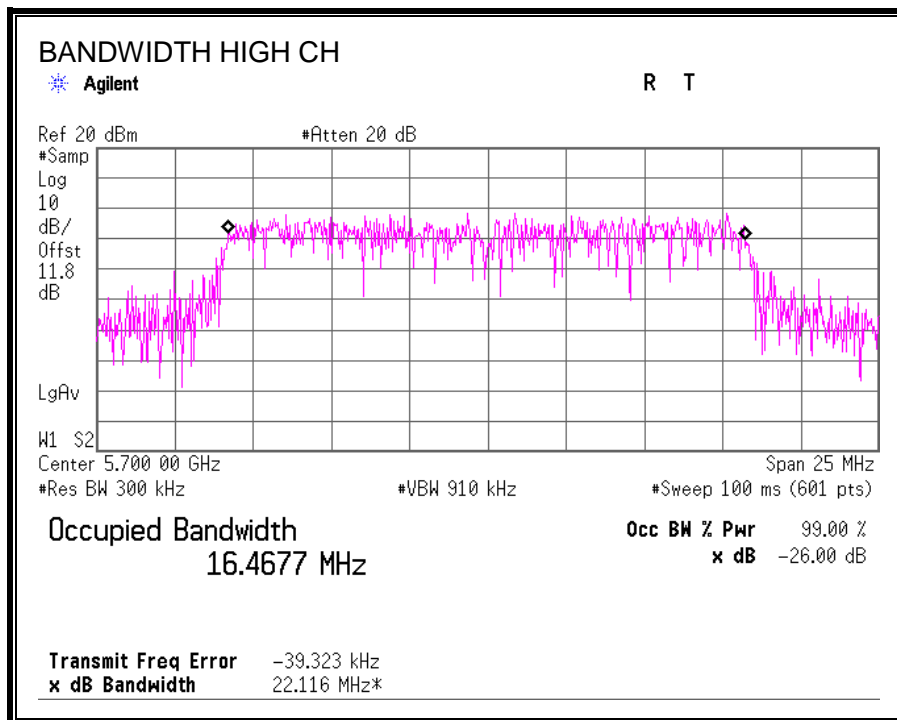
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5500	21.415	16.5368
Middle	5580	21.094	16.5254
High	5700	22.116	16.4677

26 dB and 99% BANDWIDTH





7.3.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (3)

For the 5.47-5.725 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

RESULTS

FCC

Limit

Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B Limit (dBm)	Limit (dBm)
Low	5500	24	21.415	24.31	24
Mid	5580	24	21.094	24.24	24
High	5700	24	22.116	24.45	24

Results

Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)
Low	5500	10.87	24	-13.13
Mid	5580	12.37	24	-11.63
High	5700	10.56	24	-13.44

IC

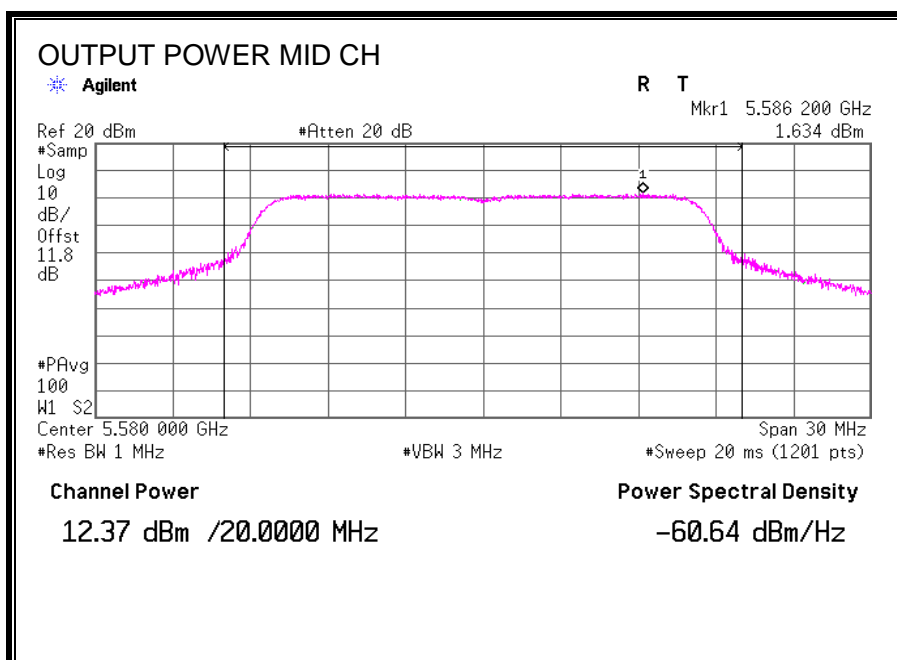
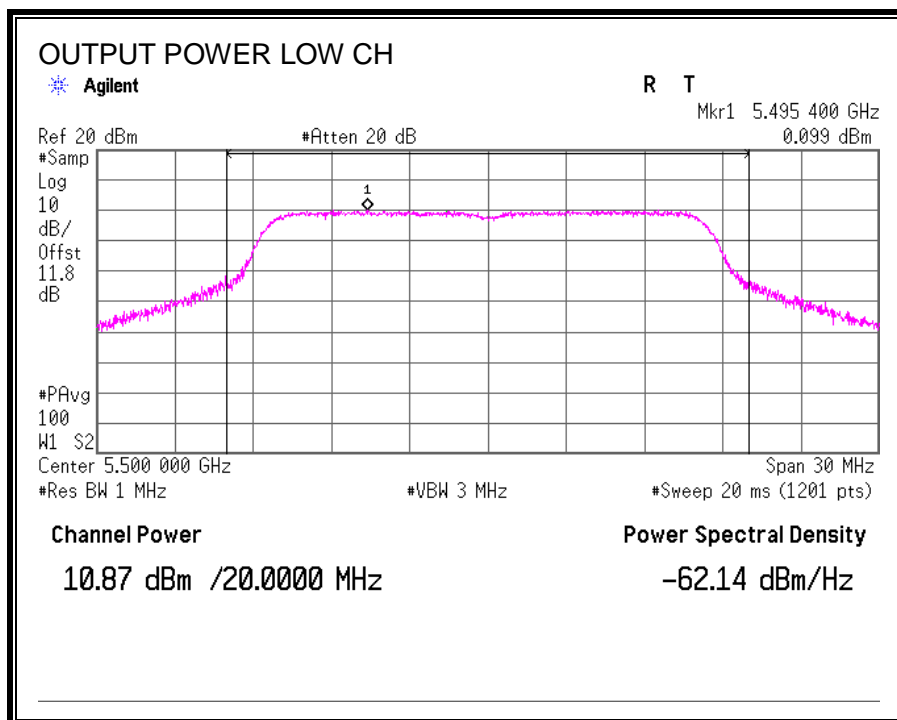
Limit

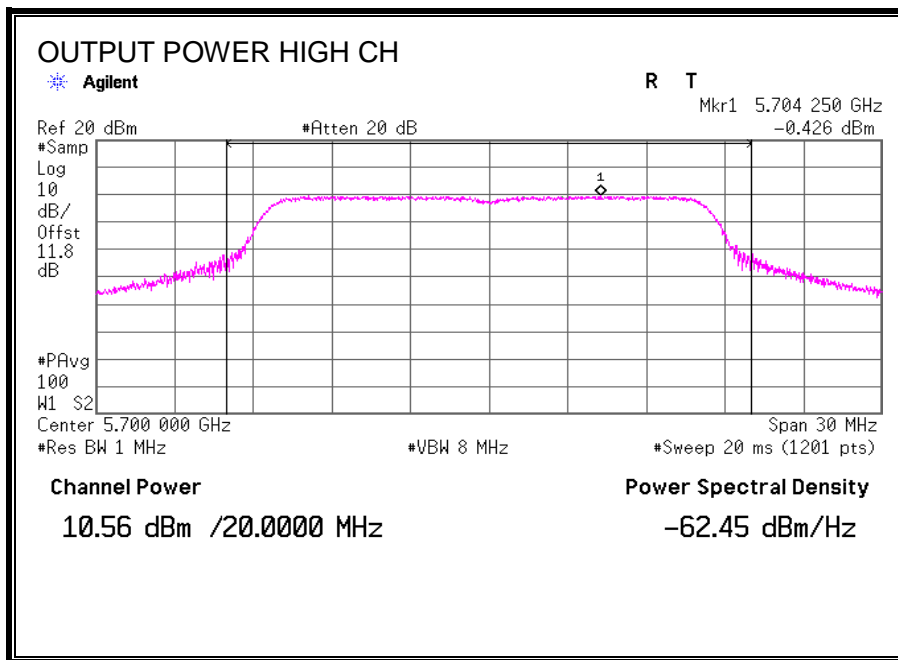
Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B Limit (dBm)	Limit (dBm)	EIRP Fixed Limit	17 + 10 Log B Limit (dBm)	EIRP Limit (dBm)
Low	5500	24	16.5368	23.18	23.18	30.00	29.18	29.18
Mid	5580	24	16.5254	23.18	23.18	30.00	29.18	29.18
High	5700	24	16.4677	23.17	23.17	30.00	29.17	29.17

Results

Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)	Antenna Gain (dBi)	EIRP Power(dBm)	EIRP Limit (dBm)	Margin (dB)
Low	5500	10.87	23.18	-12.31	0.65	11.52	29.18	-17.66
Mid	5580	12.37	23.18	-10.81	0.65	13.02	29.18	-16.16
High	5700	10.56	23.17	-12.61	0.65	11.21	29.17	-17.96

OUTPUT POWER





PEAK POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (3)

For the 5.47-5.725 GHz band, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 11 dBm.

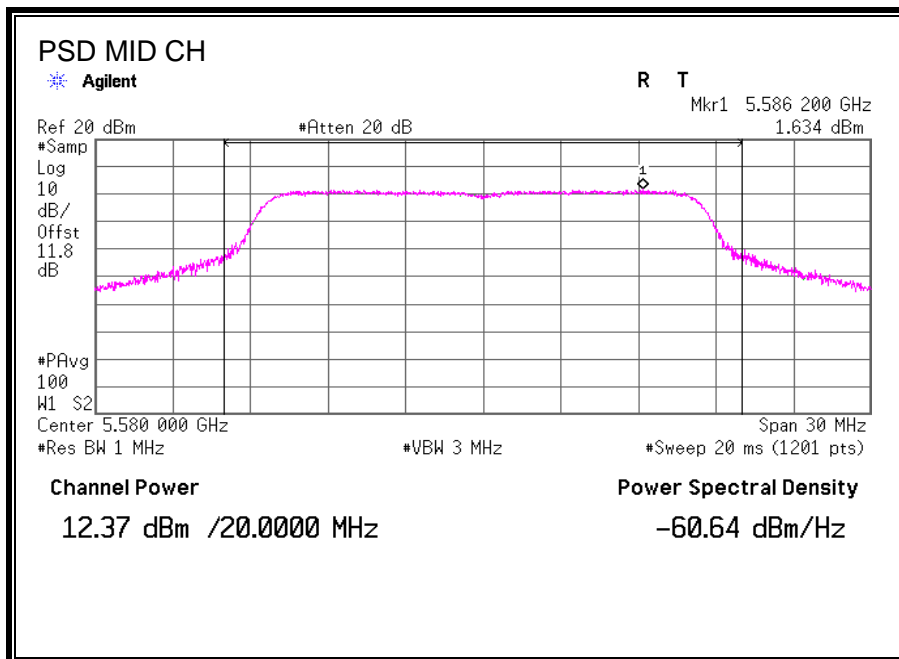
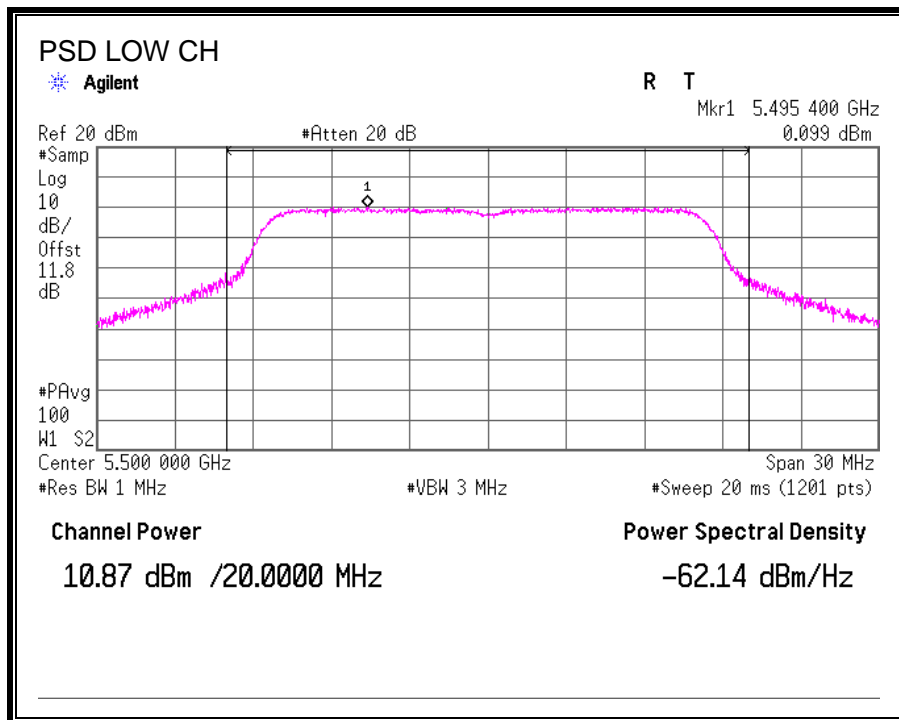
TEST PROCEDURE

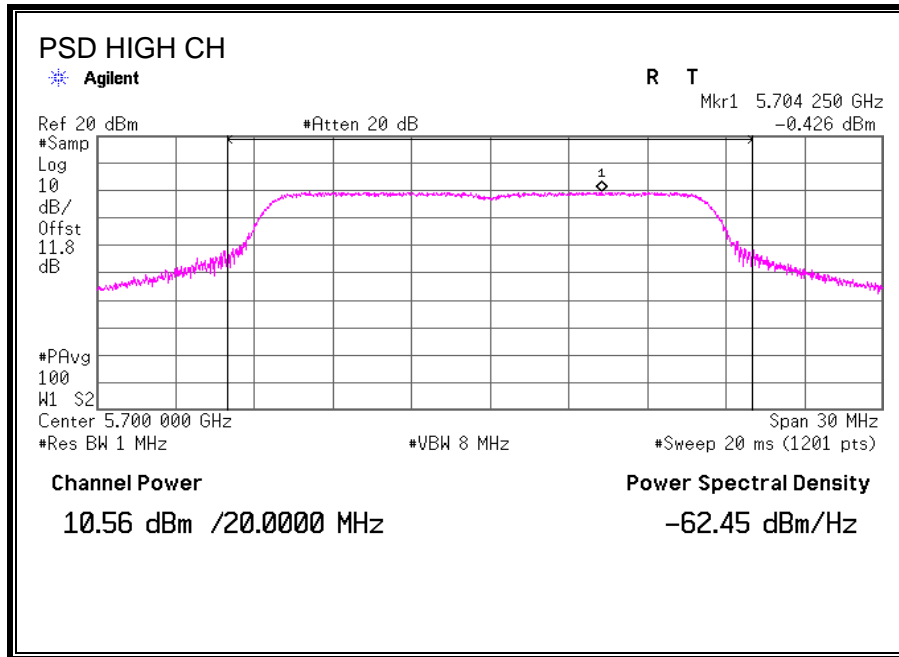
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5500	0.099	11	-10.90
Middle	5580	1.634	11	-9.37
High	5700	-0.426	11	-11.43

POWER SPECTRAL DENSITY





7.3.3. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

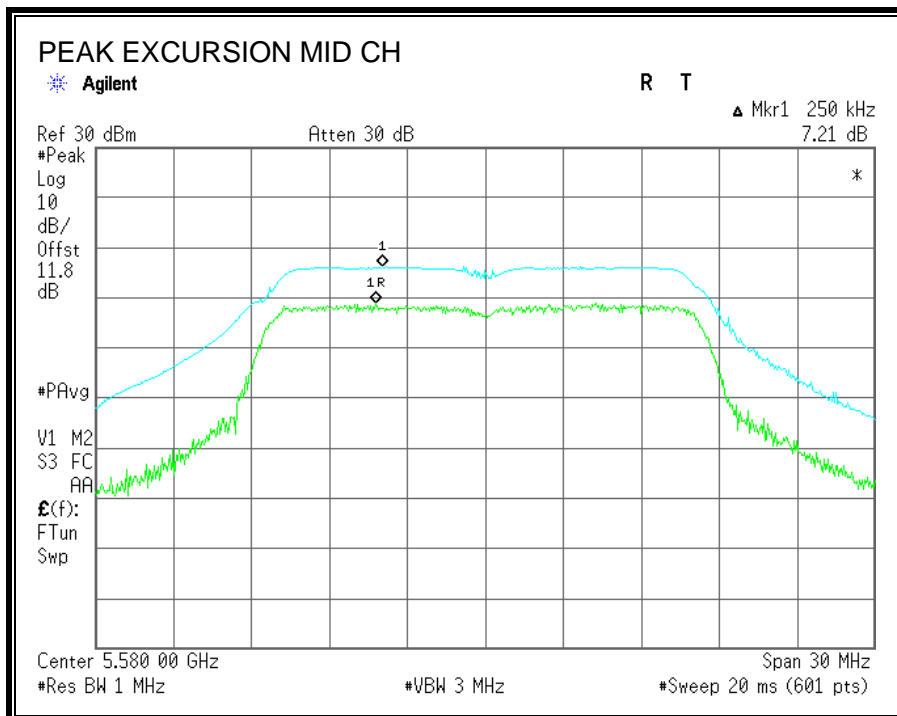
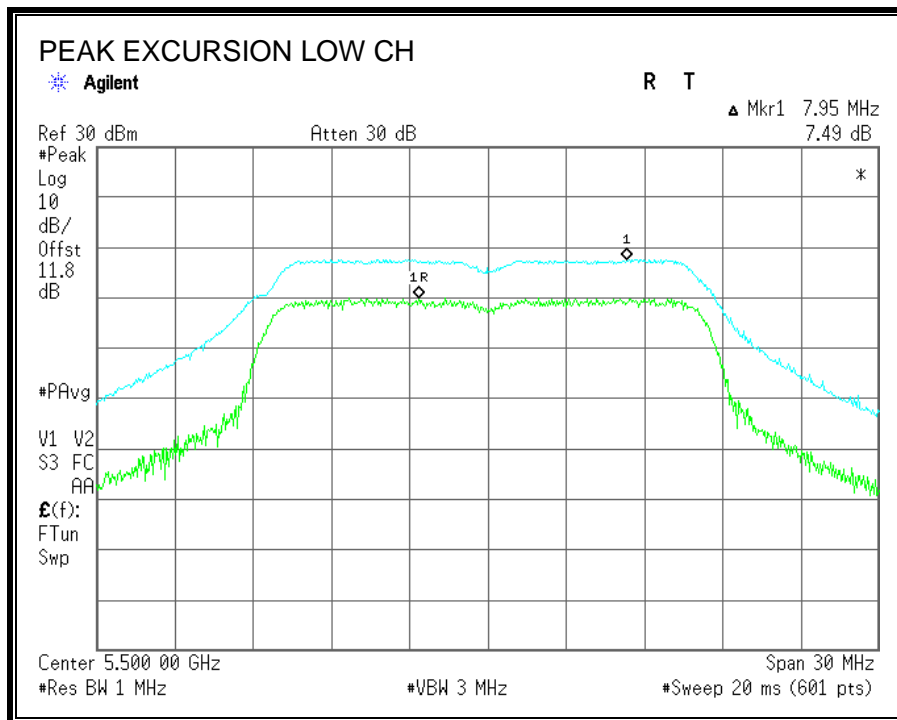
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

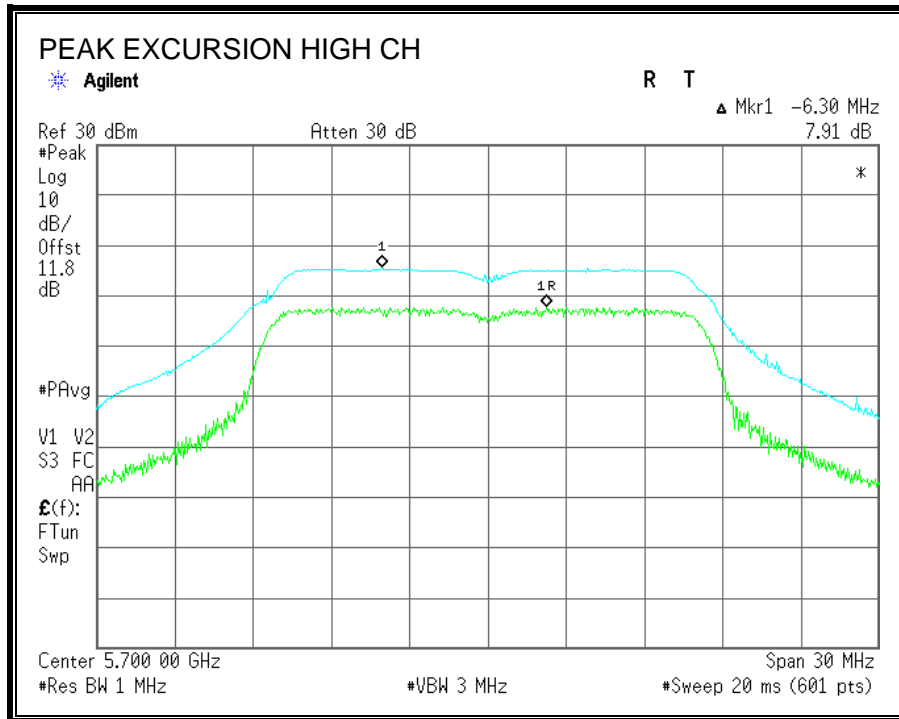
Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

RESULTS

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5500	7.49	13	-5.51
Middle	5580	7.21	13	-5.79
High	5700	7.91	13	-5.09

PEAK EXCURSION





7.3.4. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (b) (3)

IC RSS-210 A9.2 (3)

For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm / MHz.

TEST PROCEDURE

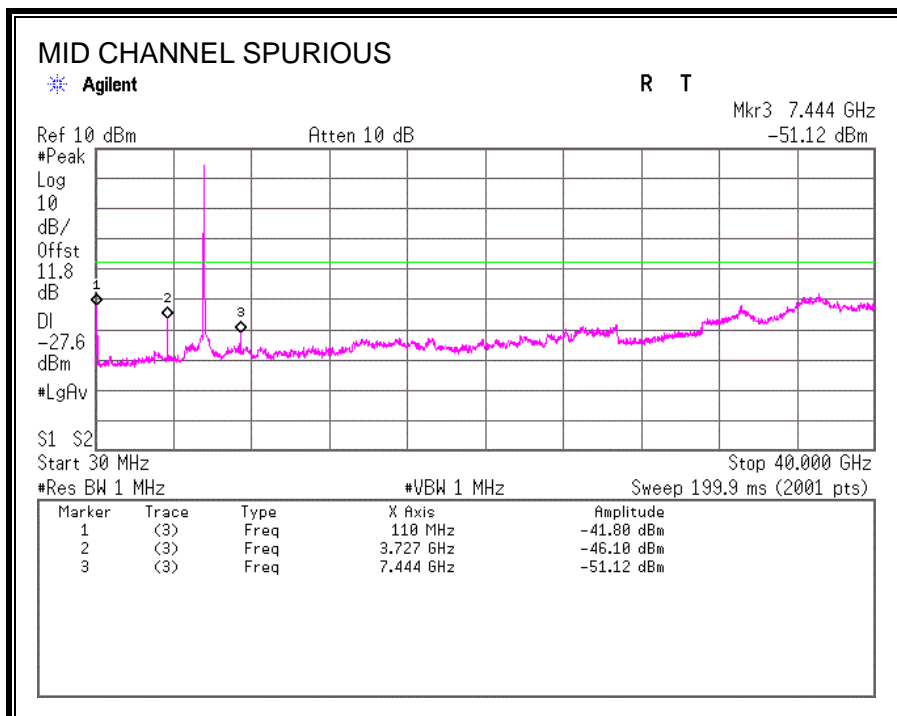
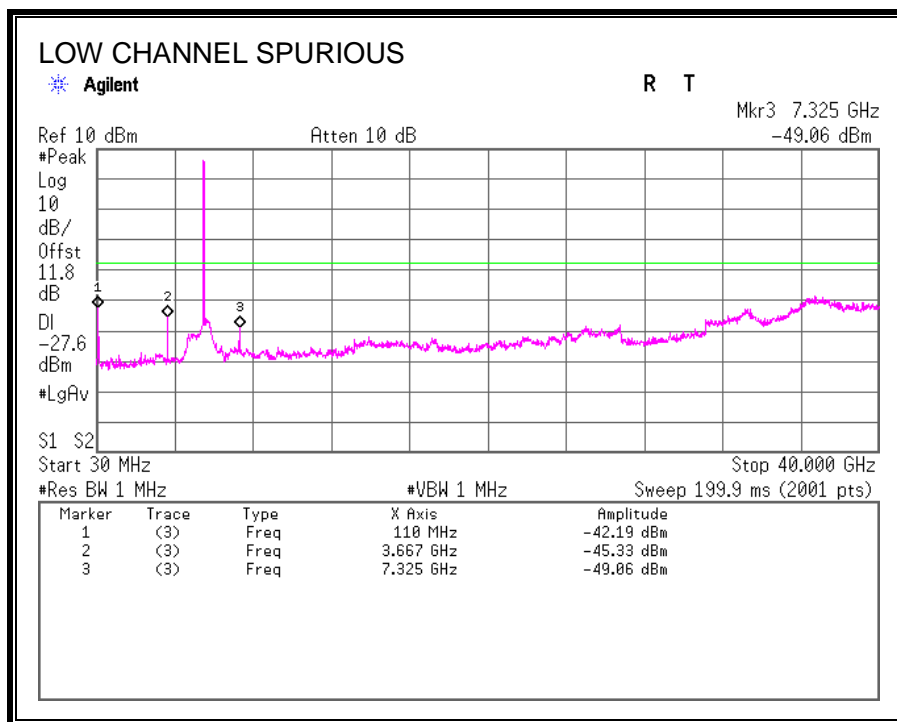
Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

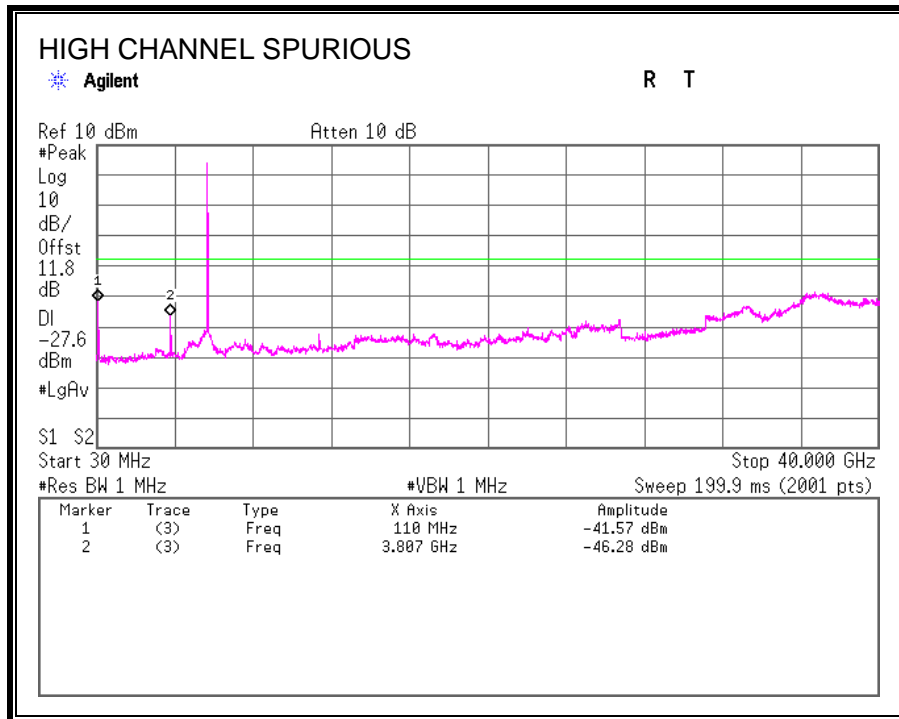
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to EIRP limit, adjusted for the maximum antenna gain.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

RESULTS

SPURIOUS EMISSIONS





8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.5 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

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

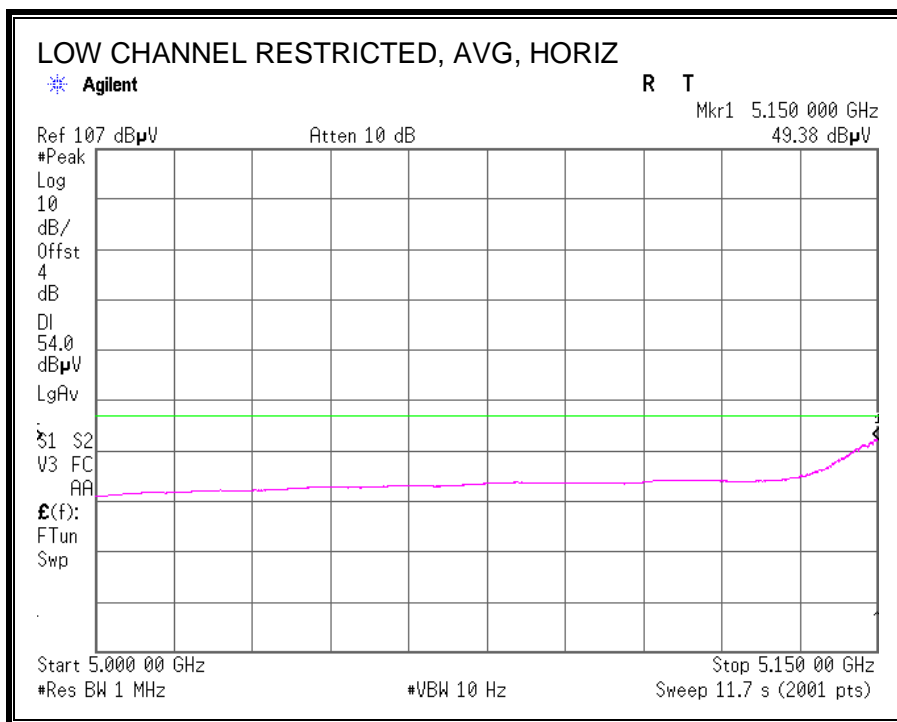
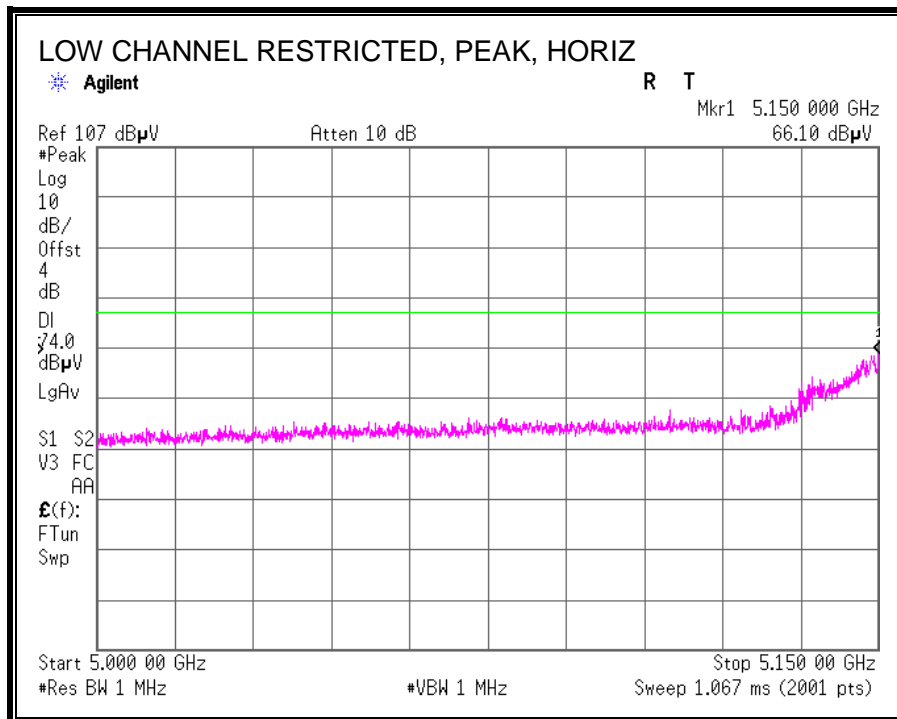
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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.

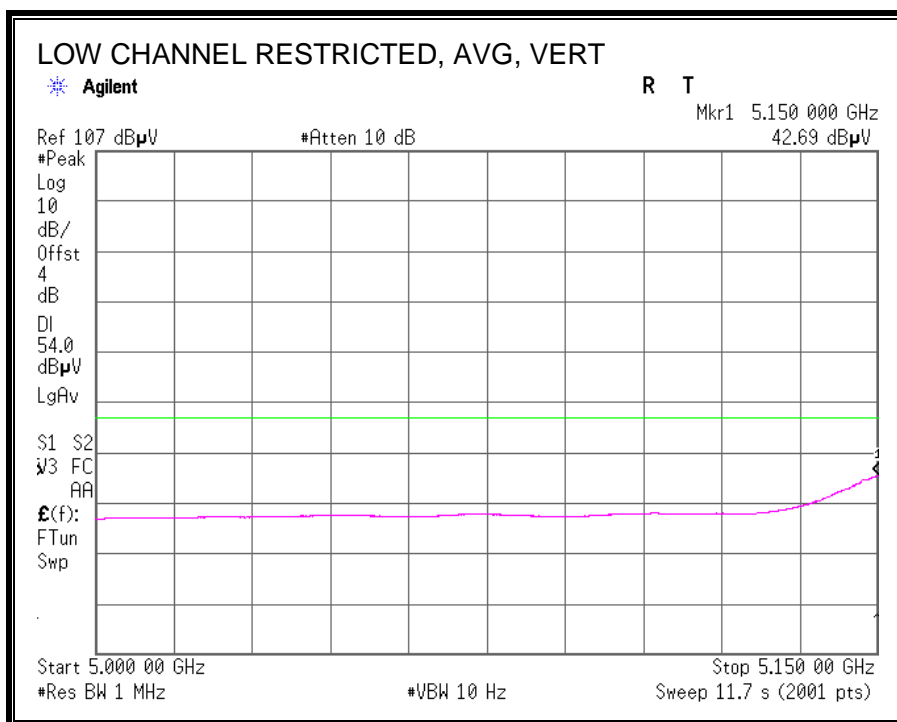
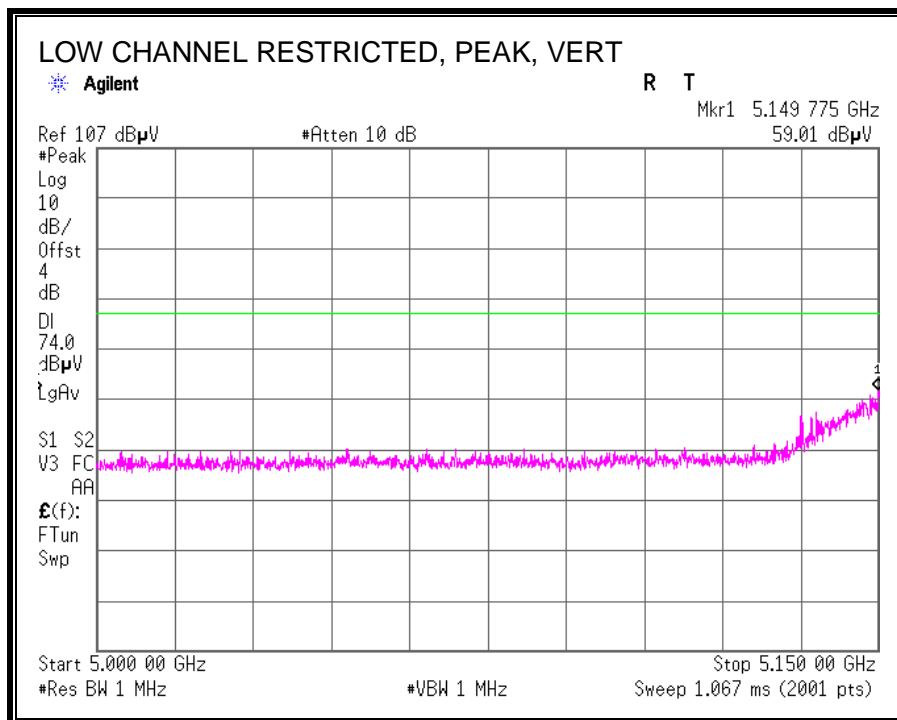
8.2. TRANSMITTER ABOVE 1 GHz

8.2.1. 802.11a MODE IN THE LOWER 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
 Report No. 31KE0135-SH-B
 Date 06/20/2011 06/21/2011
 Temperature/ Humidity 24 deg. C / 62% RH 24 deg. C / 62% RH
 Engineer Takayuki Shimada Takumi Shimada
 (1-10GHz) (Above 10GHz)
 Mode 11a Tx, 5.2GHz Band, Legacy

LOW CH(5180MHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5150.000	PK	63.6	31.6	3.8	31.4	67.6	68.2	-0.6	Bandedge	
Hori	6906.600	PK	56.8	35.2	4.5	32.3	64.2	68.2	-4.0	Outside	
Hori	10360.000	PK	64.3	38.9	-2.0	33.3	67.9	68.2	-0.3	Outside	
Hori	15540.000	PK	46.8	39.3	-0.9	32.7	52.5	74.0	-21.5	Inside	
Hori	5150.000	AV	47.2	31.6	3.8	31.4	51.2	54.0	-2.8	Bandedge	
Hori	15540.000	AV	35.3	39.3	-0.9	32.7	41.0	54.0	-13.0	Inside	
Vert	5150.000	PK	57.0	31.6	3.8	31.4	61.0	68.2	-7.2	Bandedge	
Vert	6906.600	PK	56.5	35.2	4.5	32.3	63.9	68.2	-4.3	Outside	
Vert	10360.000	PK	63.2	38.9	-2.0	33.3	66.8	68.2	-1.4	Outside	
Vert	15540.000	PK	45.7	39.3	-0.9	32.7	51.4	74.0	-22.6	Inside	
Vert	5150.000	AV	40.2	31.6	3.8	31.4	44.2	54.0	-9.8	Bandedge	
Vert	15540.000	AV	34.3	39.3	-0.9	32.7	40.0	54.0	-14.0	Inside	

MID CH(5200MHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	6933.280	PK	55.7	35.2	4.5	32.3	63.1	68.2	-5.1	Outside	
Hori	10400.000	PK	64.0	38.9	-2.0	33.3	67.6	68.2	-0.6	Outside	
Hori	15600.000	PK	47.0	39.1	-0.9	32.7	52.5	74.0	-21.5	Inside	
Hori	15600.000	AV	35.2	39.1	-0.9	32.7	40.7	54.0	-13.3	Inside	
Vert	6933.280	PK	55.0	35.2	4.5	32.3	62.4	68.2	-5.8	Outside	
Vert	10400.000	PK	63.0	38.9	-2.0	33.3	66.6	68.2	-1.6	Outside	
Vert	15600.000	PK	46.2	39.1	-0.9	32.7	51.7	74.0	-22.3	Inside	
Vert	15600.000	AV	34.2	39.1	-0.9	32.7	39.7	54.0	-14.3	Inside	

HI CH(5240MHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	6986.642	PK	54.3	35.3	4.6	32.3	61.9	68.2	-6.3	Outside	
Hori	10480.000	PK	63.3	39.1	-2.0	33.3	67.1	68.2	-1.1	Outside	
Hori	15720.000	PK	45.8	38.6	-1.0	32.7	50.7	74.0	-23.3	Inside	
Hori	15720.000	AV	34.6	38.6	-1.0	32.7	39.5	54.0	-14.5	Inside	
Vert	6986.642	PK	53.9	35.3	4.6	32.3	61.5	68.2	-6.7	Outside	
Vert	10480.000	PK	62.9	39.1	-2.0	33.3	66.7	68.2	-1.5	Outside	
Vert	15720.000	PK	45.6	38.6	-1.0	32.7	50.5	74.0	-23.5	Inside	
Vert	15720.000	AV	34.0	38.6	-1.0	32.7	38.9	54.0	-15.1	Inside	

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

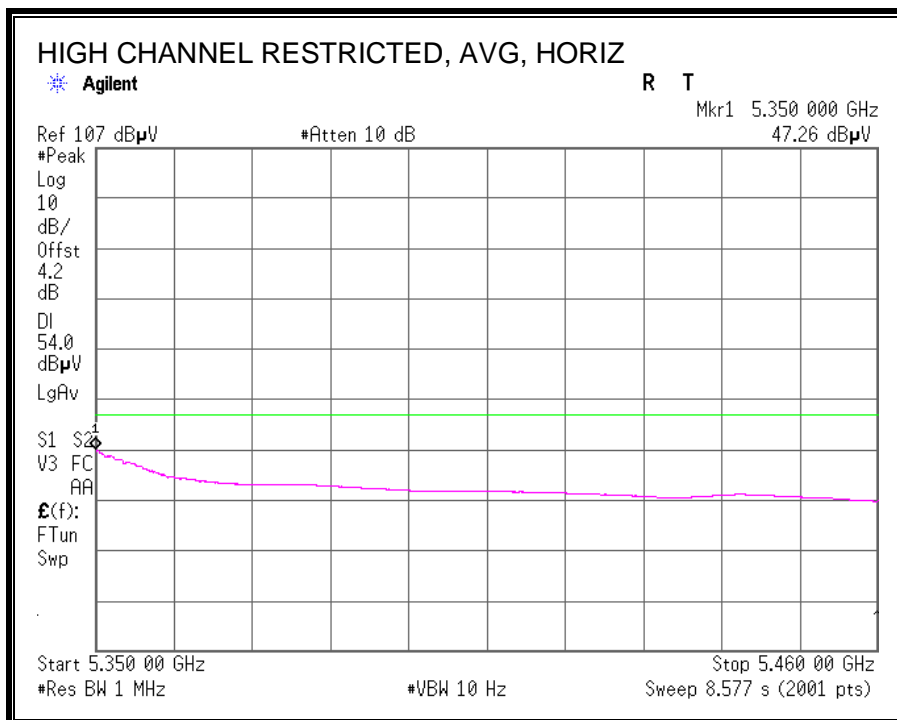
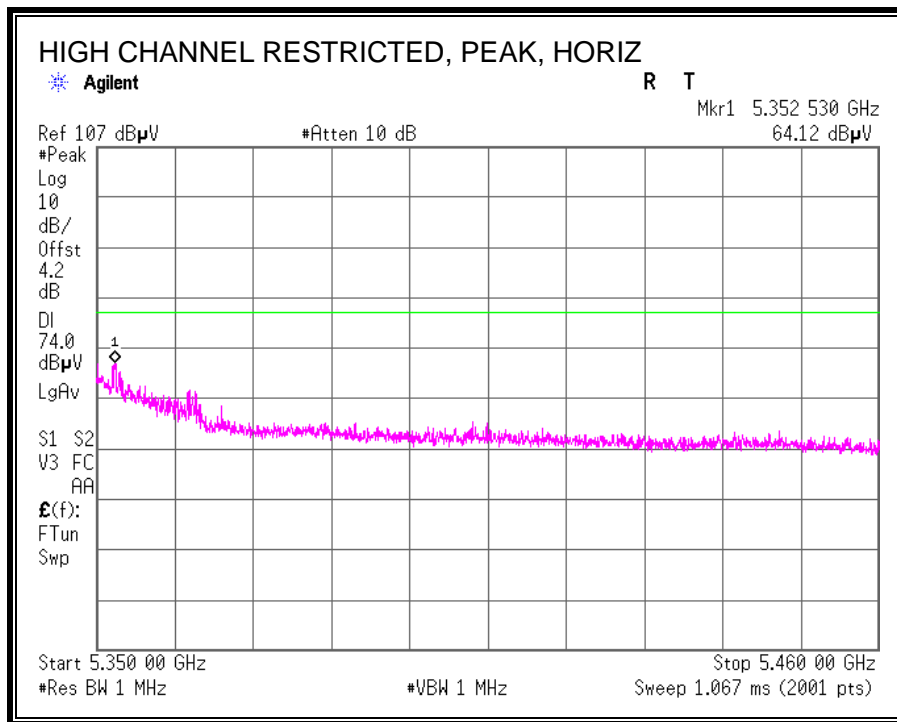
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

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

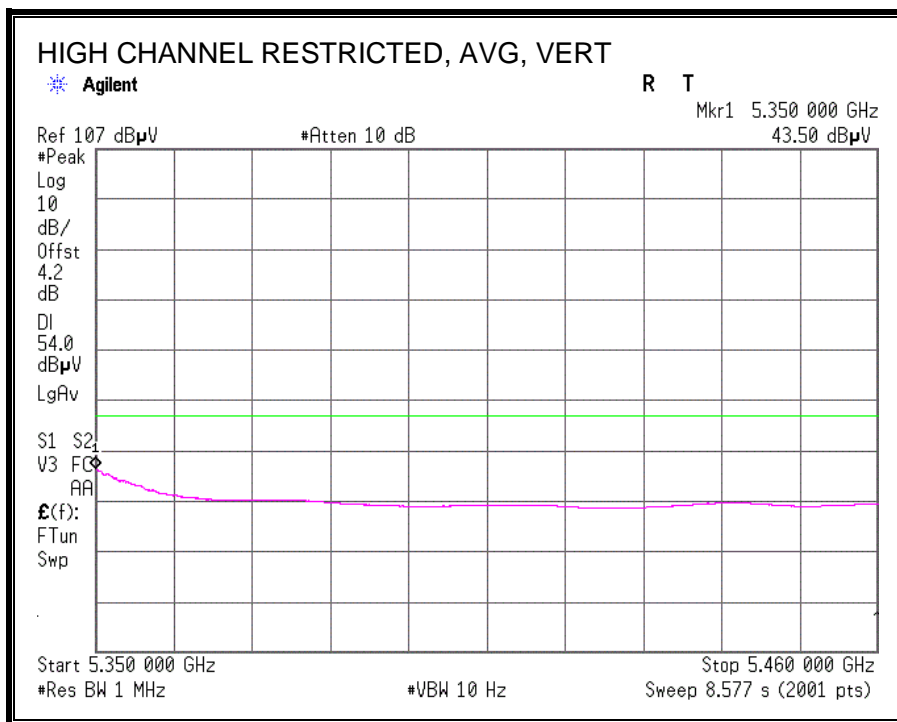
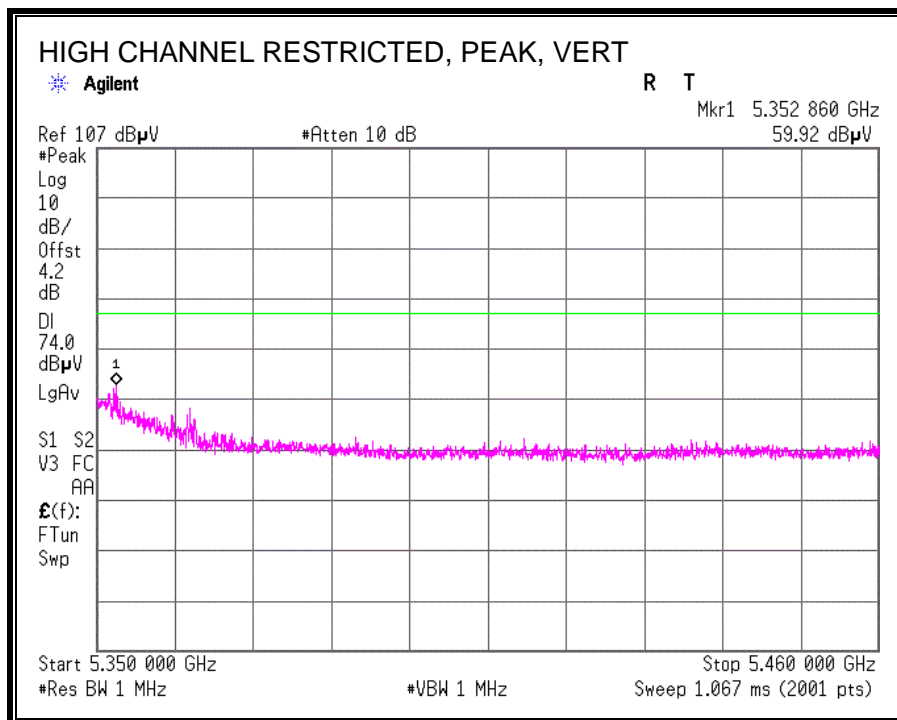
Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
 26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

8.2.2. 802.11a MODE IN THE UPPER 5.3 GHz BAND

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
 Report No. 31KE0135-SH-B
 Date 06/20/2011 06/21/2011
 Temperature/ Humidity 24 deg. C / 62% RH 24 deg. C / 62% RH
 Engineer Takayuki Shimada Takumi Shimada
 (1-10GHz) (Above 10GHz)
 Mode 11a Tx, 5.3GHz Band, Legacy

LOW CH(5260MHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	7013.265	PK	53.6	35.4	4.6	32.3	61.3	68.2	-6.9	Outside	
Hori	10520.000	PK	62.1	39.1	-2.0	33.3	65.9	68.2	-2.3	Outside	
Hori	15780.000	PK	47.4	38.4	-1.0	32.7	52.1	74.0	-21.9	Inside	
Hori	15780.000	AV	34.5	38.4	-1.0	32.7	39.2	54.0	-14.8	Inside	
Vert	7013.265	PK	53.1	35.4	4.6	32.3	60.8	68.2	-7.4	Outside	
Vert	10520.000	PK	61.2	39.1	-2.0	33.3	65.0	68.2	-3.2	Outside	
Vert	15780.000	PK	47.0	38.4	-1.0	32.7	51.7	74.0	-22.3	Inside	
Vert	15780.000	AV	34.4	38.4	-1.0	32.7	39.1	54.0	-14.9	Inside	

MID CH(5300MHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	7066.592	PK	52.0	35.5	4.6	32.4	59.7	68.2	-8.5	Outside	
Hori	10600.000	PK	60.4	39.2	-1.9	33.3	64.4	74.0	-9.6	Inside	
Hori	15900.000	PK	47.2	38.0	-0.8	32.6	51.8	74.0	-22.2	Inside	
Hori	10600.000	AV	49.2	39.2	-1.9	33.3	53.2	54.0	-0.8	Inside	
Hori	15900.000	AV	34.7	38.0	-0.8	32.6	39.3	54.0	-14.7	Inside	
Vert	7066.592	PK	50.8	35.5	4.6	32.4	58.5	68.2	-9.7	Outside	
Vert	10600.000	PK	59.2	39.2	-1.9	33.3	63.2	74.0	-10.8	Inside	
Vert	15900.000	PK	45.8	38.0	-0.8	32.6	50.4	74.0	-23.6	Inside	
Vert	10600.000	AV	48.6	39.2	-1.9	33.3	52.6	54.0	-1.4	Inside	
Vert	15900.000	AV	34.5	38.0	-0.8	32.6	39.1	54.0	-14.9	Inside	

HI CH(5320MHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5350.000	PK	59.8	31.8	3.9	31.5	64.0	68.2	-4.2	Bandedge	
Hori	7093.260	PK	51.6	35.5	4.6	32.4	59.3	68.2	-8.9	Outside	
Hori	10640.000	PK	62.0	39.3	-1.9	33.3	66.1	74.0	-7.9	Inside	
Hori	15960.000	PK	45.7	37.8	-0.8	32.6	50.1	74.0	-23.9	Inside	
Hori	5350.000	AV	44.6	31.8	3.9	31.5	48.8	54.0	-5.2	Bandedge	
Hori	10640.000	AV	49.5	39.3	-1.9	33.3	53.6	54.0	-0.4	Inside	
Hori	15960.000	AV	34.3	37.8	-0.8	32.6	38.7	54.0	-15.3	Inside	
Vert	5350.000	PK	54.8	31.8	3.9	31.5	59.0	68.2	-9.2	Bandedge	
Vert	7093.260	PK	50.1	35.5	4.6	32.4	57.8	68.2	-10.4	Outside	
Vert	10640.000	PK	61.1	39.3	-1.9	33.3	65.2	74.0	-8.8	Inside	
Vert	15960.000	PK	45.5	37.8	-0.8	32.6	49.9	74.0	-24.1	Inside	
Vert	5350.000	AV	40.3	31.8	3.9	31.5	44.5	54.0	-9.5	Bandedge	
Vert	10640.000	AV	49.1	39.3	-1.9	33.3	53.2	54.0	-0.8	Inside	
Vert	15960.000	AV	34.1	37.8	-0.8	32.6	38.5	54.0	-15.5	Inside	

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 have enough margin (more than 20dB).

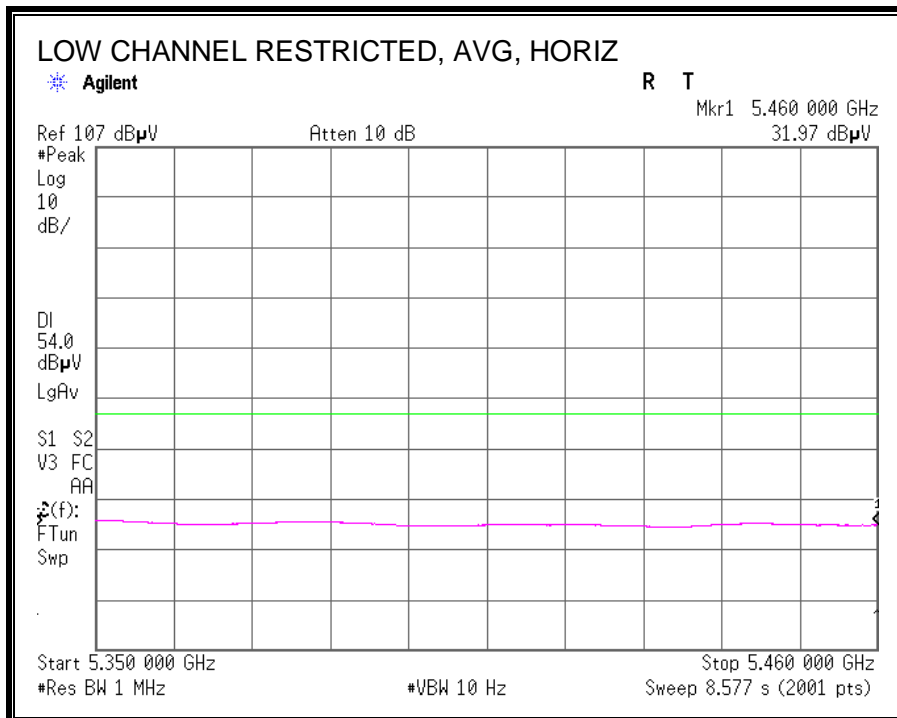
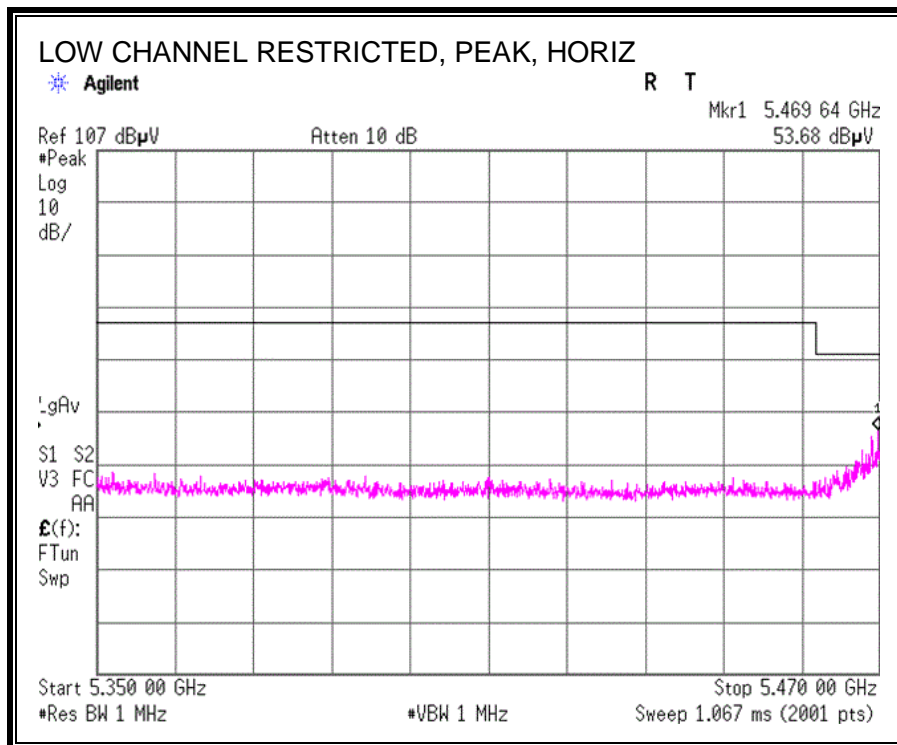
*The 10th harmonic was not seen so the result was its base noise level.

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

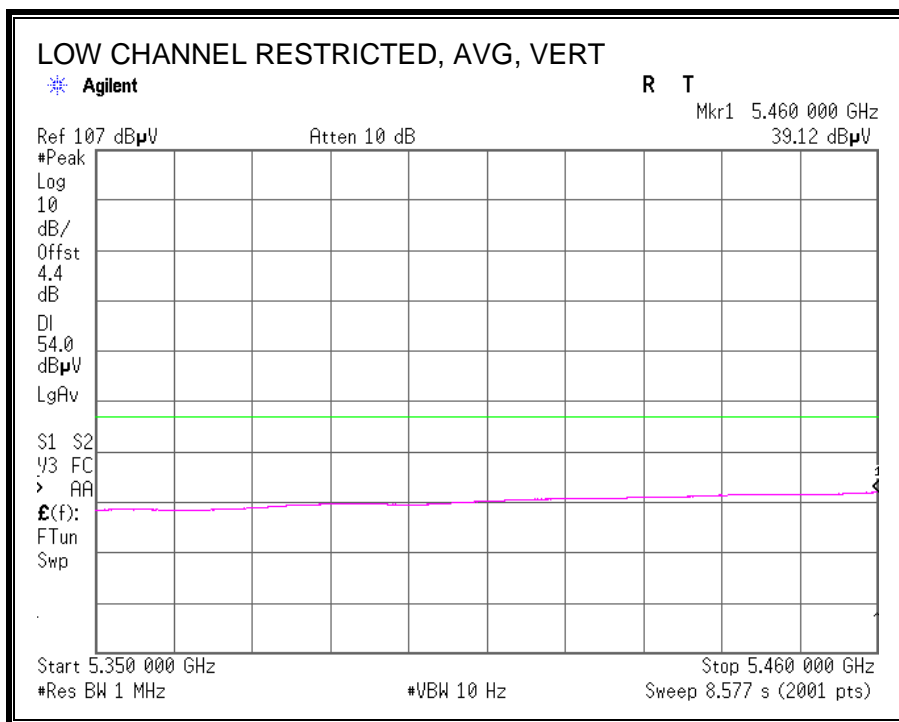
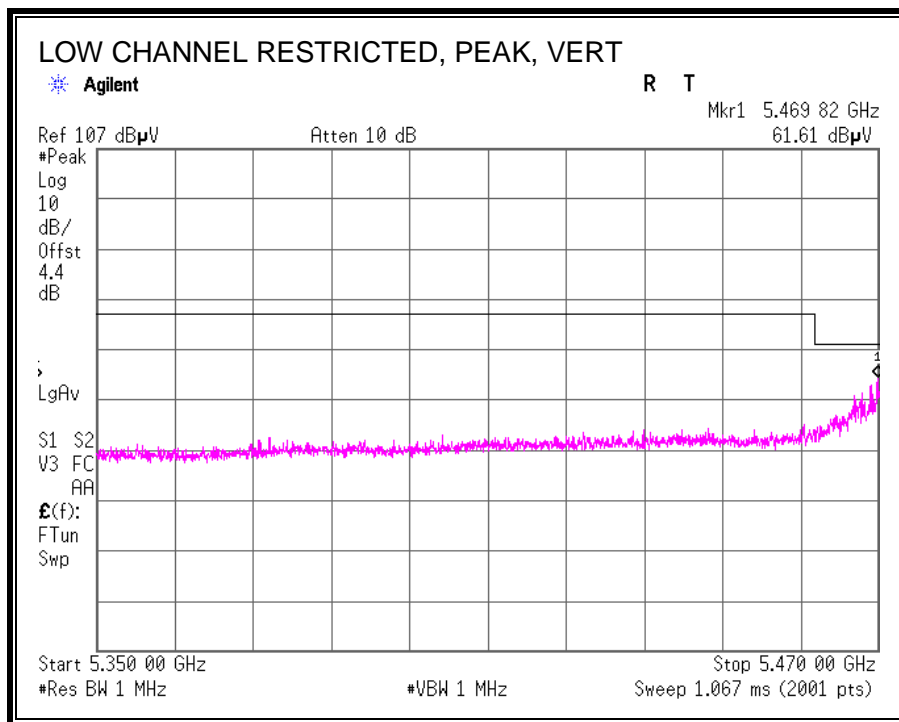
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

8.2.3. 802.11a MODE IN THE 5.6 GHz BAND

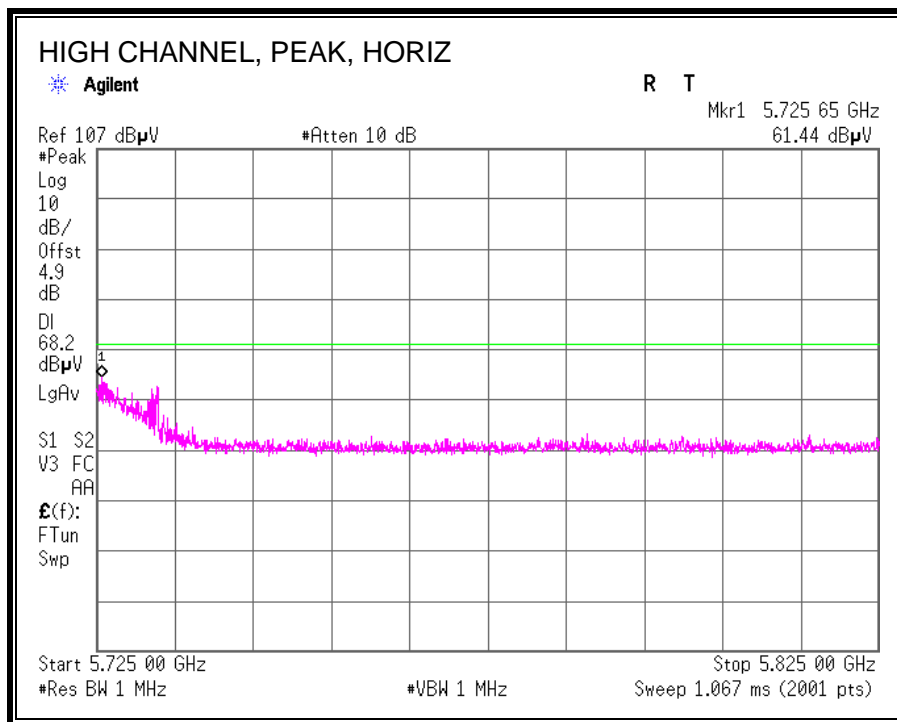
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



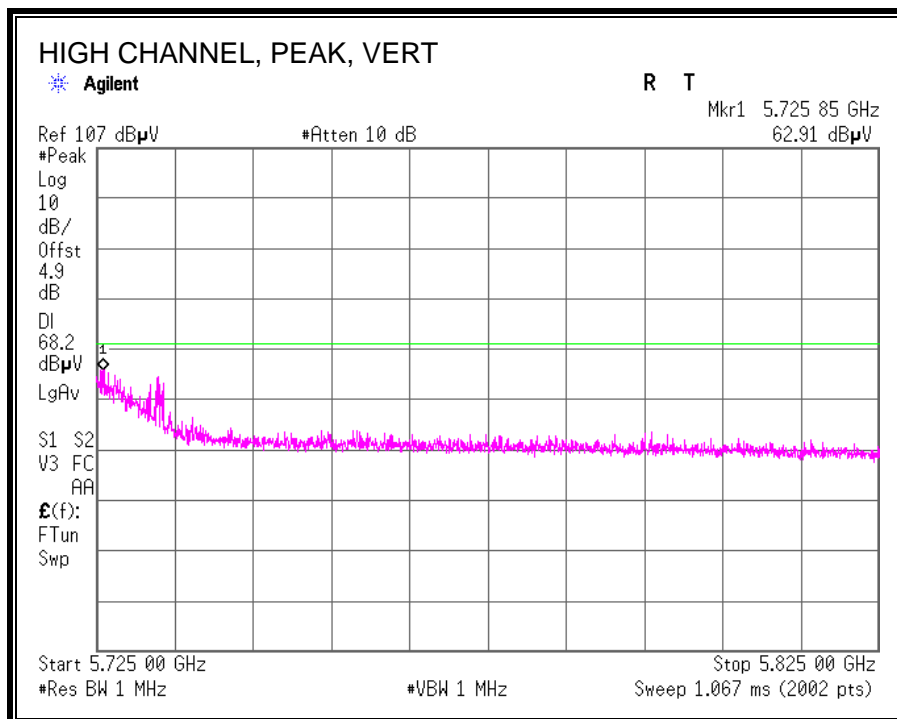
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



AUTHORIZED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
 Report No. 31KE0135-SH-B
 Date 06/20/2011 06/21/2011
 Temperature/ Humidity 24 deg. C / 62% RH 24 deg. C / 62% RH
 Engineer Takayuki Shimada Takumi Shimada
 (1-10GHz) (Above 10GHz)
 Mode 11a Tx, 5.6GHz Band, Legacy

LOW CH(5500MHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5470.000	PK	54.7	31.9	4.0	31.5	59.1	68.2	-9.1	Outside	
Hori	7333.258	PK	46.4	35.9	4.7	32.5	54.5	74.0	-19.5	Inside	
Hori	11000.000	PK	55.4	39.8	-1.9	33.3	60.0	74.0	-14.0	Inside	
Hori	16500.000	PK	48.5	38.5	-0.6	32.6	53.8	68.2	-14.4	Outside	
Hori	7333.258	AV	37.9	35.9	4.7	32.5	46.0	54.0	-8.0	Inside	
Hori	11000.000	AV	43.6	39.8	-1.9	33.3	48.2	54.0	-5.8	Inside	
Vert	5470.000	PK	57.9	31.9	4.0	31.5	62.3	68.2	-5.9	Outside	
Vert	7333.258	PK	45.8	35.9	4.7	32.5	53.9	74.0	-20.1	Inside	
Vert	11000.000	PK	57.6	39.8	-1.9	33.3	62.2	74.0	-11.8	Inside	
Vert	16500.000	PK	50.6	38.5	-0.6	32.6	55.9	68.2	-12.3	Outside	
Vert	7333.258	AV	36.5	35.9	4.7	32.5	44.6	54.0	-9.4	Inside	
Vert	11000.000	AV	44.7	39.8	-1.9	33.3	49.3	54.0	-4.7	Inside	

MID CH(5580MHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	7439.925	PK	45.0	36.1	4.7	32.5	53.3	74.0	-20.7	Inside	
Hori	11160.000	PK	57.7	39.7	-1.9	33.3	62.2	74.0	-11.8	Inside	
Hori	16740.000	PK	50.0	38.9	-0.5	32.6	55.8	68.2	-12.4	Outside	
Hori	7439.925	AV	35.0	36.1	4.7	32.5	43.3	54.0	-10.7	Inside	
Hori	11160.000	AV	45.7	39.7	-1.9	33.3	50.2	54.0	-3.8	Inside	
Vert	7439.925	PK	44.9	36.1	4.7	32.5	53.2	74.0	-20.8	Inside	
Vert	11160.000	PK	56.7	39.7	-1.9	33.3	61.2	74.0	-12.8	Inside	
Vert	16740.000	PK	49.1	38.9	-0.5	32.6	54.9	68.2	-13.3	Outside	
Vert	7439.925	AV	34.2	36.1	4.7	32.5	42.5	54.0	-11.5	Inside	
Vert	11160.000	AV	44.8	39.7	-1.9	33.3	49.3	54.0	-4.7	Inside	

HI CH(5700MHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Inside or Outside of Restricted Bands	Remark
Hori	5725.000	PK	61.7	32.4	4.1	31.6	66.6	68.2	-1.6	Outside	
Hori	7600.051	PK	45.0	36.4	4.8	32.6	53.6	74.0	-20.4	Inside	
Hori	11400.000	PK	60.8	39.7	-1.9	33.3	65.3	74.0	-8.7	Inside	
Hori	17100.000	PK	50.8	40.0	-0.3	32.6	57.9	68.2	-10.3	Outside	
Hori	7600.051	AV	33.5	36.4	4.8	32.6	42.1	54.0	-11.9	Inside	
Hori	11400.000	AV	48.1	39.7	-1.9	33.3	52.6	54.0	-1.4	Inside	
Vert	5725.000	PK	60.7	32.4	4.1	31.6	65.6	68.2	-2.6	Outside	
Vert	7600.051	PK	45.2	36.4	4.8	32.6	53.8	74.0	-20.2	Inside	
Vert	11400.000	PK	57.2	39.7	-1.9	33.3	61.7	74.0	-12.3	Inside	
Vert	17100.000	PK	49.9	40.0	-0.3	32.6	57.0	68.2	-11.2	Outside	
Vert	7600.051	AV	33.7	36.4	4.8	32.6	42.3	54.0	-11.7	Inside	
Vert	11400.000	AV	45.2	39.7	-1.9	33.3	49.7	54.0	-4.3	Inside	

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 have enough margin (more than 20dB).

*The 10th harmonic was not seen so the result was its base noise level.
 Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
 26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

8.3. RECEIVER ABOVE 1 GHz

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
 Report No. 31KE0135-SH-B
 Date 06/20/2011 06/21/2011
 Temperature/ Humidity 24 deg. C / 62% RH 24 deg. C / 62% RH
 Engineer Takayuki Shimada Takumi Shimada
 (1-10GHz) (Above 10GHz)
 Mode Rx, 5GHz Band

5.2GHz Band

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5200.000	PK	42.1	31.6	3.8	31.5	46.0	74.0	-28.0	
Hori	5200.000	PK	30.2	31.6	3.8	31.5	34.1	74.0	-39.9	
Vert	5200.000	PK	41.8	31.6	3.8	31.5	45.7	74.0	-28.3	
Vert	5200.000	PK	30.2	31.6	3.8	31.5	34.1	74.0	-39.9	

5.3GHz Band

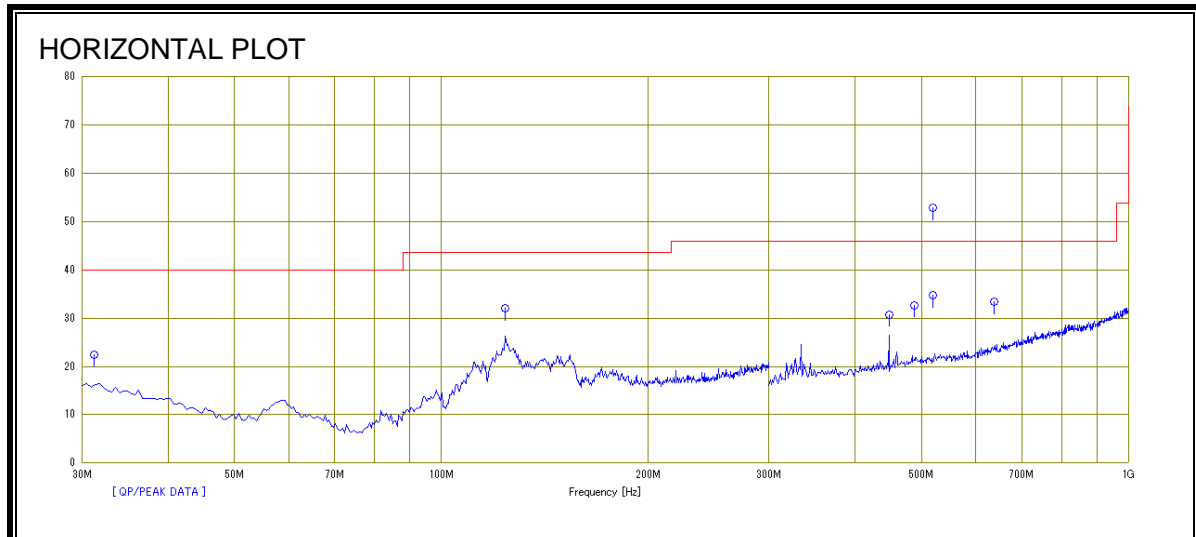
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5300.000	PK	41.6	31.7	3.9	31.5	45.7	74.0	-28.3	
Hori	5300.000	PK	30.3	31.7	3.9	31.5	34.4	74.0	-39.6	
Vert	5300.000	PK	41.7	31.7	3.9	31.5	45.8	74.0	-28.2	
Vert	5300.000	PK	30.3	31.7	3.9	31.5	34.4	74.0	-39.6	

5.6GHz Band

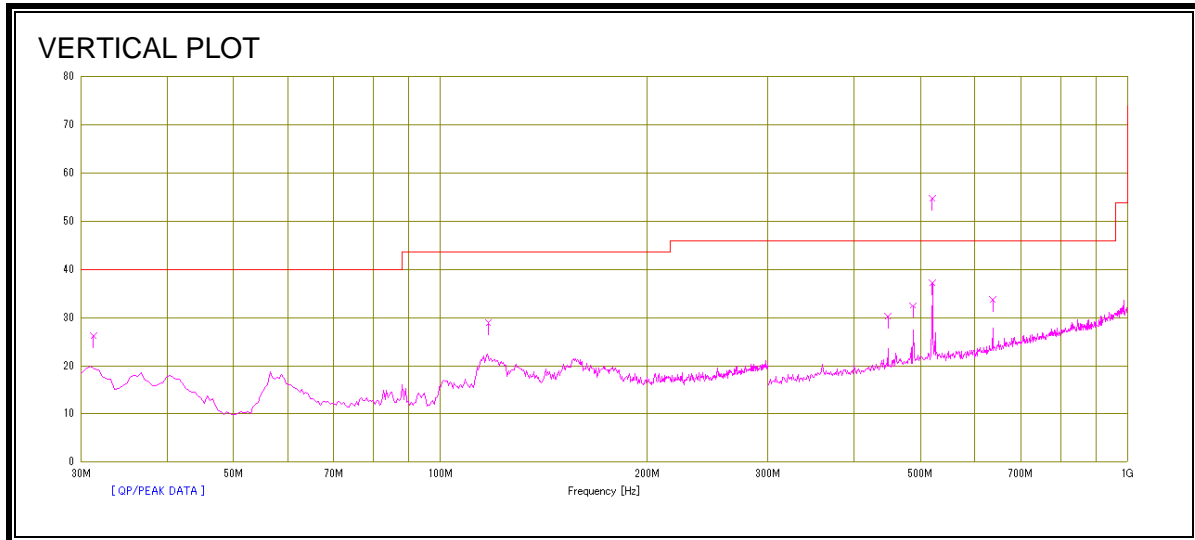
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5580.000	PK	42.0	32.1	4.0	31.6	46.5	74.0	-27.5	
Hori	5580.000	PK	30.8	32.1	4.0	31.6	35.3	74.0	-38.7	
Vert	5580.000	PK	42.2	32.1	4.0	31.6	46.7	74.0	-27.3	
Vert	5580.000	PK	30.8	32.1	4.0	31.6	35.3	74.0	-38.7	

8.4. WORST-CASE BELOW 1 GHz

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



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



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

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
 Report No. 31KE0135-SH-B
 Date 06/21/2011
 Temperature/ Humidity 24 deg. C / 62% RH
 Engineer Takayuki Shimada
 Mode Tx

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	520.002	QP	36.3	19.4	11.1	32.1	34.7	46.0	-11.3	
Hori	31.260	PK	30.1	17.5	7.0	32.2	22.4	40.0	-17.6	
Hori	124.050	PK	42.5	13.3	8.3	32.1	32.0	43.5	-11.5	
Hori	448.501	PK	33.7	18.4	10.7	32.1	30.7	46.0	-15.3	
Hori	487.501	PK	34.8	19.0	10.9	32.1	32.6	46.0	-13.4	
Hori	637.002	PK	33.0	20.8	11.7	32.2	33.3	46.0	-12.7	
Vert	520.002	QP	38.8	19.4	11.1	32.1	37.2	46.0	-8.8	
Vert	31.260	PK	33.9	17.5	7.0	32.2	26.2	40.0	-13.8	
Vert	117.540	PK	40.0	12.7	8.2	32.1	28.8	43.5	-14.7	
Vert	448.501	PK	33.2	18.4	10.7	32.1	30.2	46.0	-15.8	
Vert	487.501	PK	34.6	19.0	10.9	32.1	32.4	46.0	-13.6	
Vert	637.002	PK	33.4	20.8	11.7	32.2	33.7	46.0	-12.3	

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

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

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

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.4

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.

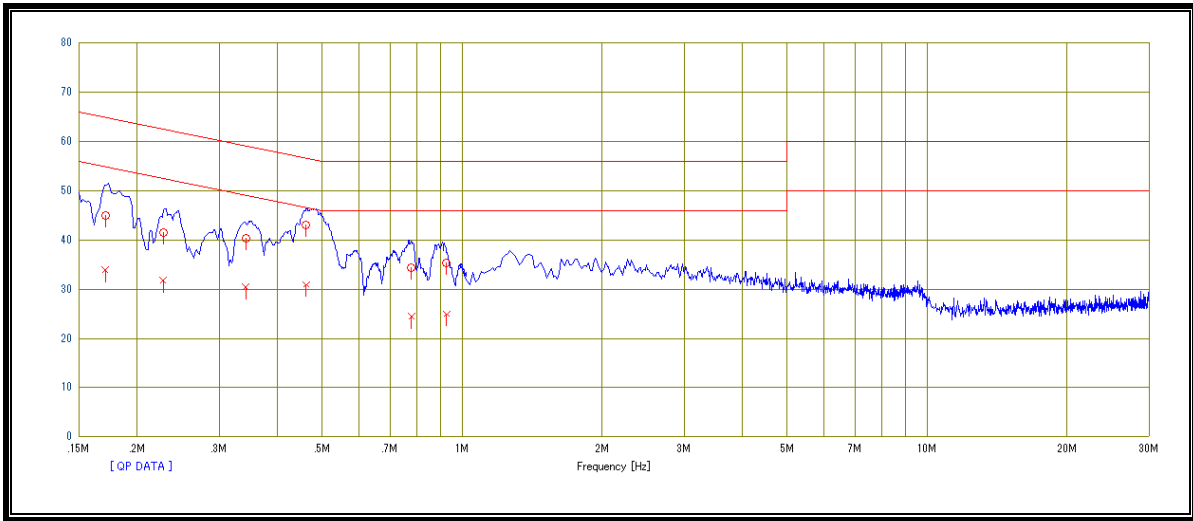
TEST PROCEDURE

ANSI C63.4

RESULTS

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]		
0.17075	31.9	20.8	13.1	45.0	33.9	64.9	54.9	-19.9	-21.0	N	
0.22755	28.2	18.4	13.3	41.5	31.7	62.5	52.5	-21.0	-20.8	N	
0.34245	27.0	17.1	13.3	40.3	30.4	59.1	49.1	-18.8	-18.7	N	
0.46190	29.8	17.6	13.3	43.1	30.9	56.7	46.7	-13.6	-15.8	N	
0.77770	21.1	11.1	13.3	34.4	24.4	56.0	46.0	-21.6	-21.6	N	
0.92570	22.0	11.6	13.3	35.3	24.9	56.0	46.0	-20.7	-21.1	N	
0.17230	29.0	19.4	13.1	42.1	32.5	64.8	54.8	-22.7	-22.3	L	
0.22830	27.5	17.0	13.3	40.8	30.3	62.5	52.5	-21.7	-22.2	L	
0.34245	26.7	16.7	13.3	40.0	30.0	59.1	49.1	-19.1	-19.1	L	
0.46220	29.3	17.1	13.3	42.6	30.4	56.7	46.7	-14.1	-16.3	L	
0.77730	20.6	10.7	13.3	33.9	24.0	56.0	46.0	-22.1	-22.0	L	
0.92520	21.1	10.7	13.3	34.4	24.0	56.0	46.0	-21.6	-22.0	L	

LINE 1 RESULTS



LINE 2 RESULTS

