FCC 47 CFR PART 15 SUBPART E

CERTIFICATION TEST REPORT

FOR

Intelligent Backhaul Radio UNII 5.6 Band

MODEL NUMBER: IBR-120x-83-NA

FCC ID: 2AAEH-103

REPORT NUMBER: 14U18829-6 Revision B

ISSUE DATE: FEBRUARY 2, 2015

Prepared for
CBF NETWORKS, INC., DBA FASTBACK NETWORKS
2460 N. FIRST STREET, SUITE 200
SAN JOSE, CA 95131, USA

Prepared by
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	1/16/15	Initial Issue	F. de Anda
A	1/26/15	Updated pages 37, 65 and 96	F. de Anda
B	2/2/15	Update DFS EUT Description in Section 11.1.4	C. Cheung

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: CBF NETWORKS, INC., DBA FASTBACK NETWORKS
2460 N. FIRST STREET, SUITE 200
SAN JOSE, CA 95131, USA

EUT DESCRIPTION: Intelligent Backhaul Radio UNII 5.6GHz band

MODEL: IBR-120x-83-NA

SERIAL NUMBER: 40314120006 (conducted) 40314380089 (radiated)

DATE TESTED: October 21, 2014 – January 9, 2015

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart E	Pass

UL Verification Services 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 Verification Services 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 Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services 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
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Francisco deAnda
PROJECT LEAD/ PROGRAM MANAGER
UL VERIFICATION SERVICES INC.

Tested By:

Tony Wagoner
EMC ENGINEER
UL VERIFICATION SERVICES INC.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 06-96, FCC KDB 789033, ANSI C63.10-2009.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street	
☐ Chamber A	☐ Chamber D	☒ Chamber G
☐ Chamber B	☐ Chamber E	☒ Chamber H
☐ Chamber C	☒ Chamber F	

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

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
Conducted Disturbance, 0.15 to 30 MHz	± 3.52 dB
Radiated Disturbance, 30 to 1000 MHz	± 4.94 dB
Radiated Disturbance, 1 to 6 GHz	± 3.86 dB
Radiated Disturbance, 6 to 18 GHz	± 4.23 dB
Radiated Disturbance, 18 to 26 GHz	± 5.30 dB
Radiated Disturbance, 26 to 40 GHz	± 5.23 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Fixed Point-to-Point radio in 5.6GHz unlicensed bands with a proprietary communication management interface Intelligent Backhaul Radio.

This device uses 40MHz, 20MHz and 10MHz bandwidths with QAM4, QAM16, QAM64, QAM256 modulation. It transmits dual stream uncorrelated MIMO.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

5.6 GHz BAND

Bandwidth (MHz)	Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.6 GHz Band, 2Tx				
10	5478 - 5725	FDD	14.55	28.51
20	5482 - 5725	FDD	17.72	59.16
40	5492 - 5725	FDD	19.35	86.10

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a dipole array antenna, with a maximum gain of 10.6 dBi.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was version: 1.6.1

The test utility software used during testing was Micro monitor 1.18.0

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

All radiated testing was performed with the EUT in normal use orientation.

Based on the baseline scan, the worst-case data rates were:

10MHz bandwidth QAM 4
20MHz bandwidth QAM 4
40MHz bandwidth QAM 4
Data rate 30 Msamples/s for all bandwidths

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	Think Pad	R9-D497T 11/04	QDS-BRCM 1046
POE	PHIHONG	POE36U-1AT-R	P21601123D1	N/A
AC/DC Adapter	Lenovo	N/A	11S45N0113Z1ZH819P0FN	N/A

I/O CABLES

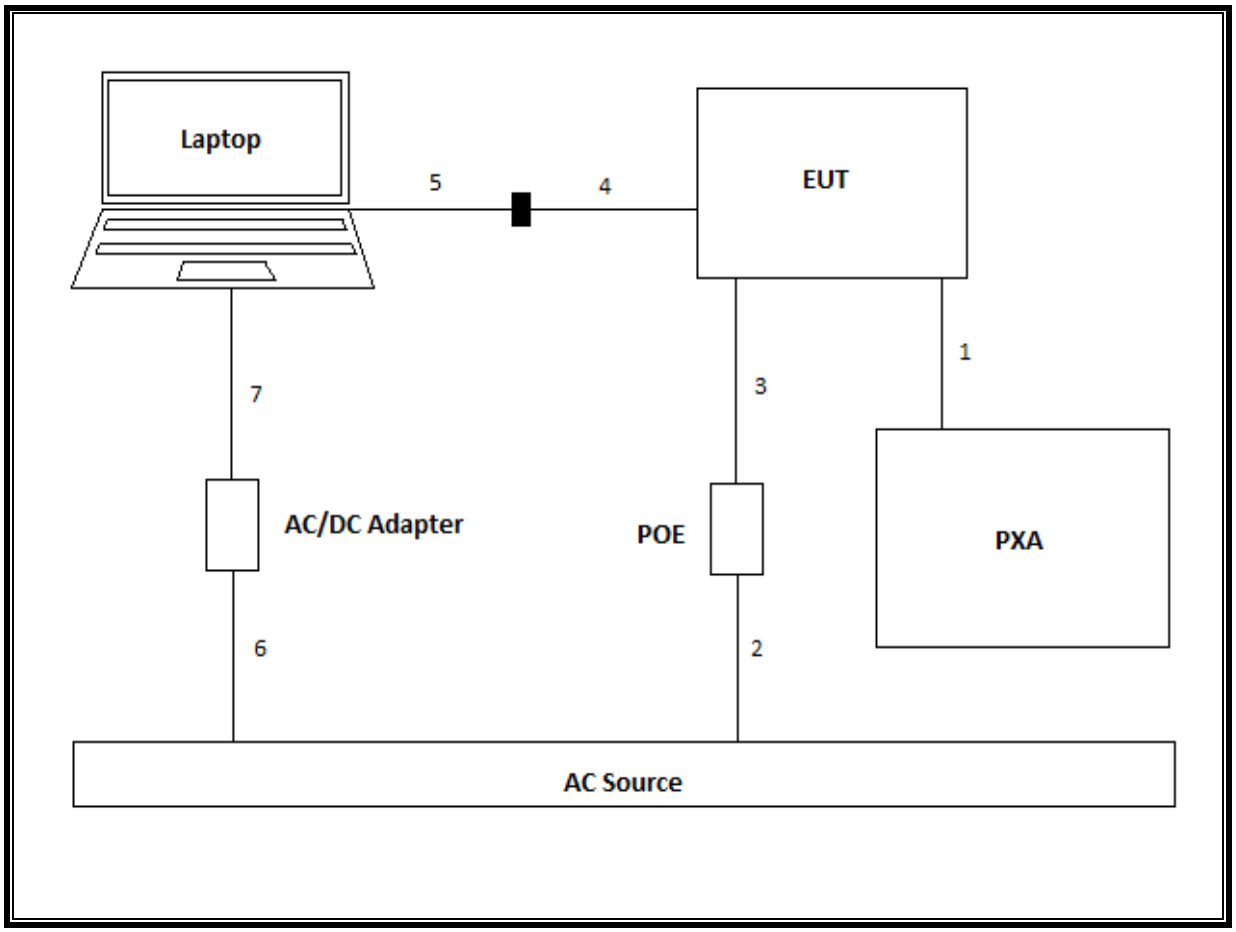
I/O Cable List						
Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Antenna	1	U.FL	Sheilded	0.3	N/A
2	AC	2	3 Prong	Un-Sheilded	1	N/A
3	POE/LAN	1	RJ45	Sheilded	1	N/A
4	USB	1	USB	Sheilded	0.3	N/A
5	Serial	1	9 Pin Sub D	Sheilded	1	N/A
6	AC	2	3 Prong	Un-Sheilded	1	N/A
7	DC	1	Barrel	Un-Sheilded	1	N/A

TEST SETUP

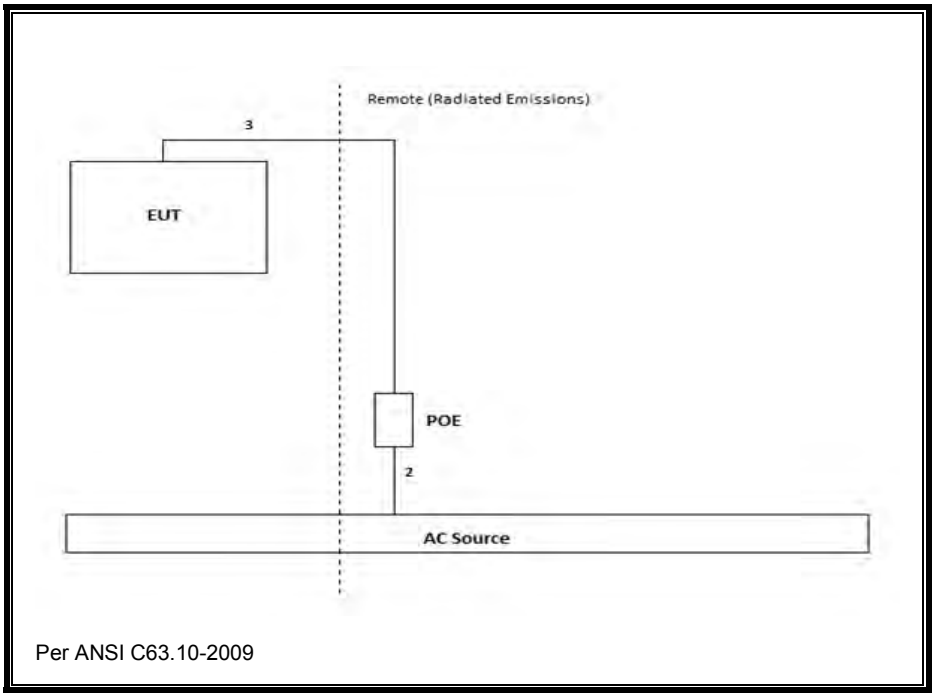
The EUT is a P-P outdoor radio used as a stand-alone device. Test software exercised the radio module

SETUP DIAGRAM FOR TESTS

CONDUCTED

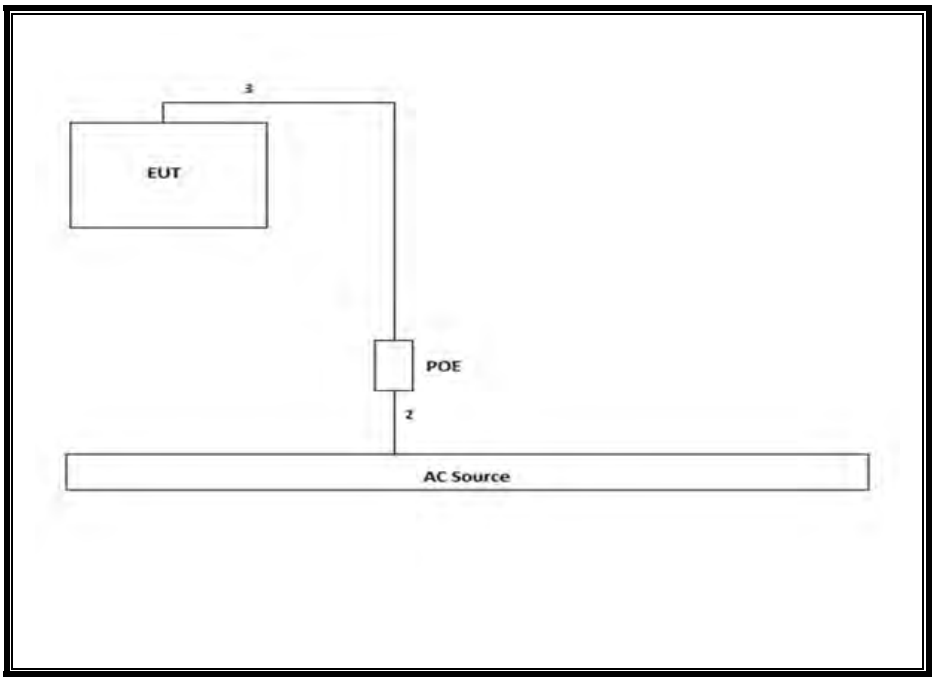


RADIATED



Per ANSI C63.10-2009

AC LINE CONDUCTED



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List					
Description	**Manufacturer**	**Model**	**T No.**	**Cal Date**	**Cal Due**
Chamber F					
Antenna, Horn 18 GHz	ETS Lindgren	3117	120	03/20/14	03/20/15
Antenna, Biconolog, 30MHz-1GHz	Sunol Sciences	JB1	122	04/22/14	01/28/15
High Pass Filter, fc: 3.0GHz, 50 Ohms	Micro-Tronics	HPM17543	427	01/20/14	01/20/15
Low Pass Filter, fc: 5GHz, 50 Ohms	Micro-Tronics	LPS17541	421	01/20/14	01/20/15
High Pass Filter, fc: 6GHz, 50 Ohms	Micro-Tronics	HPS17542	425	01/20/14	01/20/15
RF PreAmplifier, 1-18GHz	Miteq	AFS42-00101800-25-S-42	742	01/20/14	01/20/15
Preamp, 1000MHz	Sonoma	310N	173	06/07/14	06/07/15
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A	341	02/12/14	02/12/15
Chamber G					
Antenna, Horn 18 GHz	ETS Lindgren	3117	862	04/14/14	04/14/15
Antenna, Biconolog, 30MHz-1GHz	Sunol Sciences	JB3	899	05/14/14	04/27/15
High Pass Filter, fc: 3.0GHz, 50 Ohms	Micro-Tronics	HPM17543	898	05/13/14	05/13/15
Low Pass Filter, fc: 5GHz, 50 Ohms	Micro-Tronics	LPS17541	892	05/13/14	05/13/15
High Pass Filter, fc: 6GHz, 50 Ohms	Micro-Tronics	HPS17542	893	05/14/14	05/13/15
RF PreAmplifier, 1-18GHz	Miteq	AFS42-00101800-25-S-42	491	05/15/15	06/05/15
Preamp, 1000MHz	Sonoma	310N	834	05/16/15	06/05/15
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A	905	05/17/15	05/17/15
Chamber H					
Antenna, Horn 18 GHz	ETS Lindgren	3117	863	04/14/14	04/14/15
Antenna, Biconolog, 30MHz-1GHz	Sunol Sciences	JB3	900	05/14/14	04/27/15
High Pass Filter, fc: 3.0GHz, 50 Ohms	Micro-Tronics	HPM17543	897	05/14/14	05/13/15
Low Pass Filter, fc: 5GHz, 50 Ohms	Micro-Tronics	LPS17541	891	05/13/14	05/13/15
High Pass Filter, fc: 6GHz, 50 Ohms	Micro-Tronics	HPS17542	894	05/13/14	05/13/15
RF PreAmplifier, 1-18GHz	Miteq	AFS42-00101800-25-S-42	495	06/05/14	06/05/15
Preamp, 1000MHz	Sonoma	310N	835	06/05/14	06/05/15
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A	906	05/07/14	05/07/15
Conducted					
Spectrum Anaylyzer	Agilent	E4440A	189	05/09/14	05/09/15
Power Meter, P-series single channel	Agilent	N1911A	382	04/09/14	04/09/15
Power Sensor, Peak and average, 50 MHz to 6 GHz, 5 MHz BW	Agilent	E9323A	400	05/02/14	05/02/15
Power Meter, P-series single channel	Agilent	N1911A	385	04/30/14	04/30/15
Power Sensor, Peak and average, 50 MHz to 18 GHz, 5 MHz BW	Agilent	E9327A	117	05/15/14	05/15/15
LISN for Conducted Emissions CISPR-16	FCC	50/250-25-2	24	01/17/14	01/17/15
Rohde & Schwarz	ESCI 7	100773	212	08/14/14	08/14/15

Test Equipment List (cont.)					
Description	Manufacturer	Model	T No.	Cal Date	Cal Due
Above 18GHz					
Antenna, Horn 18 to 26.5GHz	ARA	SWH-28	T125	05/09/14	05/09/15
Amp. 26GHz	Agilent	8449B	T404	03/25/14	03/25/15
Antenna, Horn 26 to 40GHz	ARA	MWh-2640	T90	07/15/14	07/15/15
Amp. 26 to 40GHz	Miteq	NSP4000-SP2	T88	09/03/14	09/03/15
Spectrum Analyzer, 40 GHz	HP	8564E	T106	08/06/14	08/06/15

7. MEASUREMENT METHODS

26 dB Emission BW: KDB 789033 D02 v01r, Section C.

Conducted Output Power: KDB 789033 D02 v01, Section E.2.b (Method SA-1).

Power Spectral Density: KDB 789033 D02 v01, Section F.

Unwanted emissions in restricted bands: KDB 789033 D02 v01, Sections G.3, G.4, G.5, and G.6.

Unwanted emissions in non-restricted bands: KDB 789033 D02 v01, Sections G.3, G.4, and G.6.

KDB 662911 D02 MIMO with Cross-Polarized Antennas v01

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
802.11a 10MHz 2TX	3.963	4.023	0.985	98.51%	0.00	0.010
802.11n 20MHz 2TX	3.965	4.025	0.985	98.51%	0.00	0.010
802.11n 40MHz 2TX	3.970	4.030	0.985	98.51%	0.00	0.010

DUTY CYCLE PLOTS

DUTY CYCLE 802.11a 10MHz 2TX MODE

DUTY CYCLE 802.11n 20Hz 2TX MODE

DUTY CYCLE 802.11n 40MHz 2TX MODE

8.2. 10MHz 2Tx MODE IN THE 5.6 GHz BAND

8.2.1. 26 dB BANDWIDTH

LIMITS

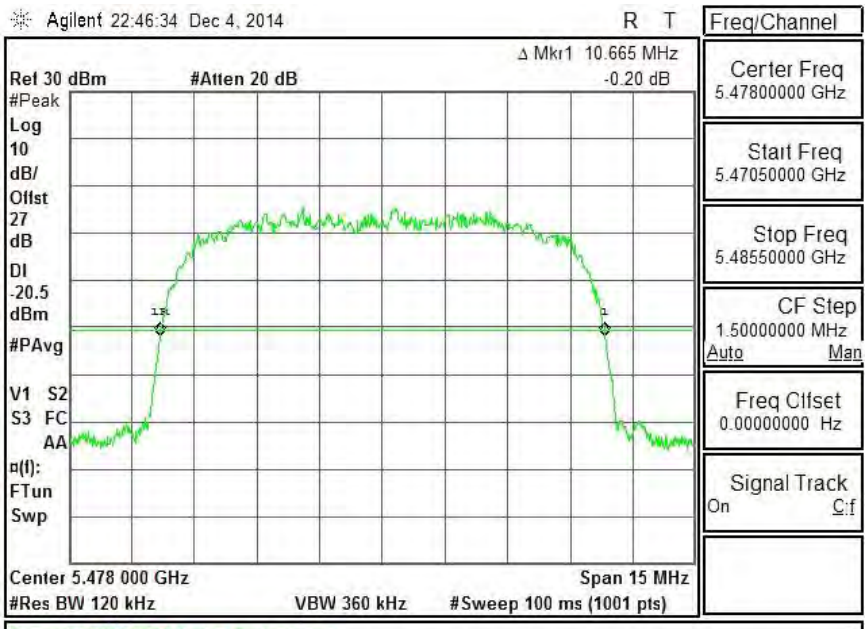
None; for reporting purposes only.

RESULTS

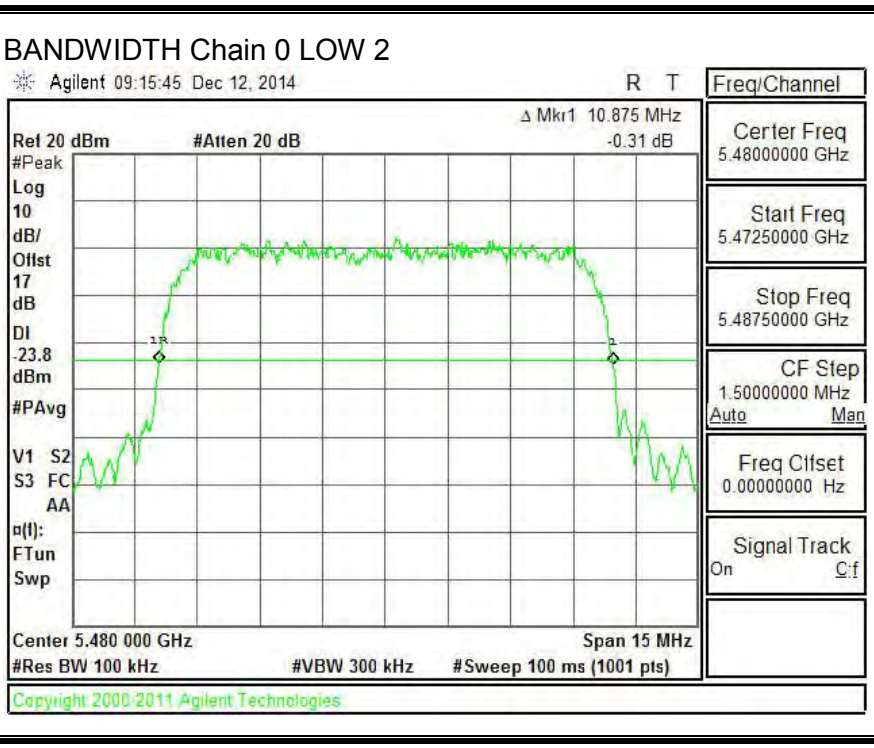
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low 1	5478	10.67	10.74
Low 2	5480	10.88	10.88
Mid	5600	10.88	10.90
High 1	5716	10.86	10.91
High 2	5718	10.64	10.66
Straddle	5725	10.87	10.91

26 dB BANDWIDTH, Chain 0

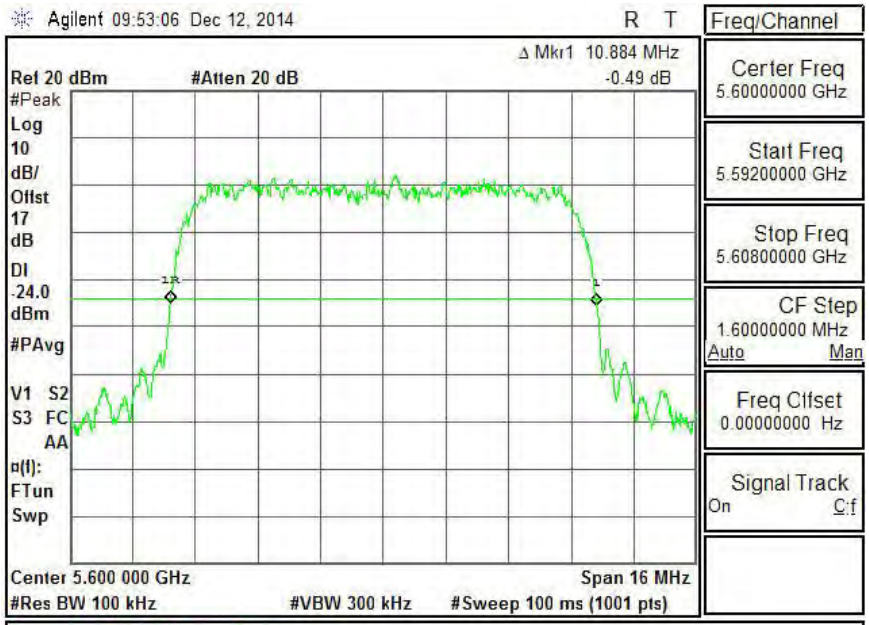
BANDWIDTH Chain 0 LOW 1



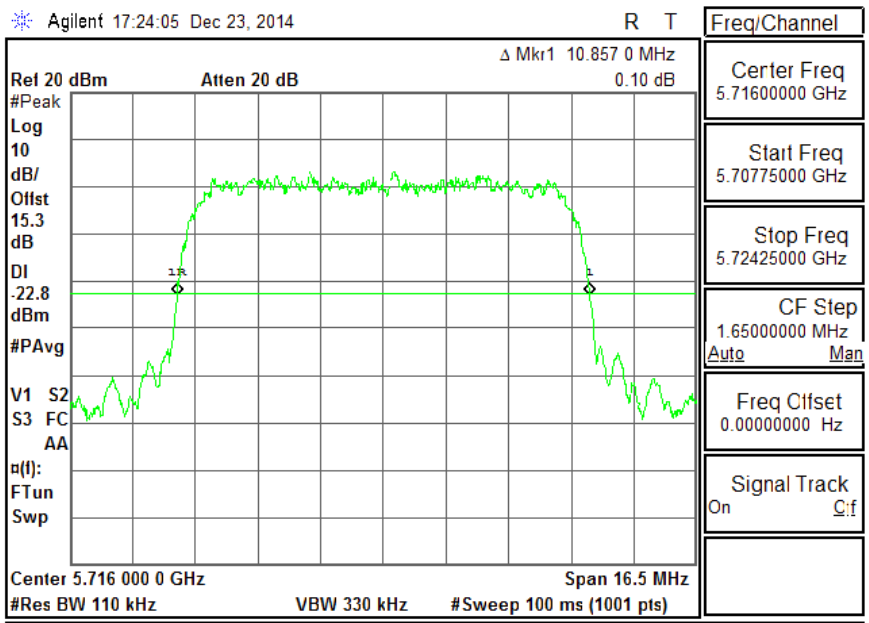
BANDWIDTH Chain 0 LOW 2

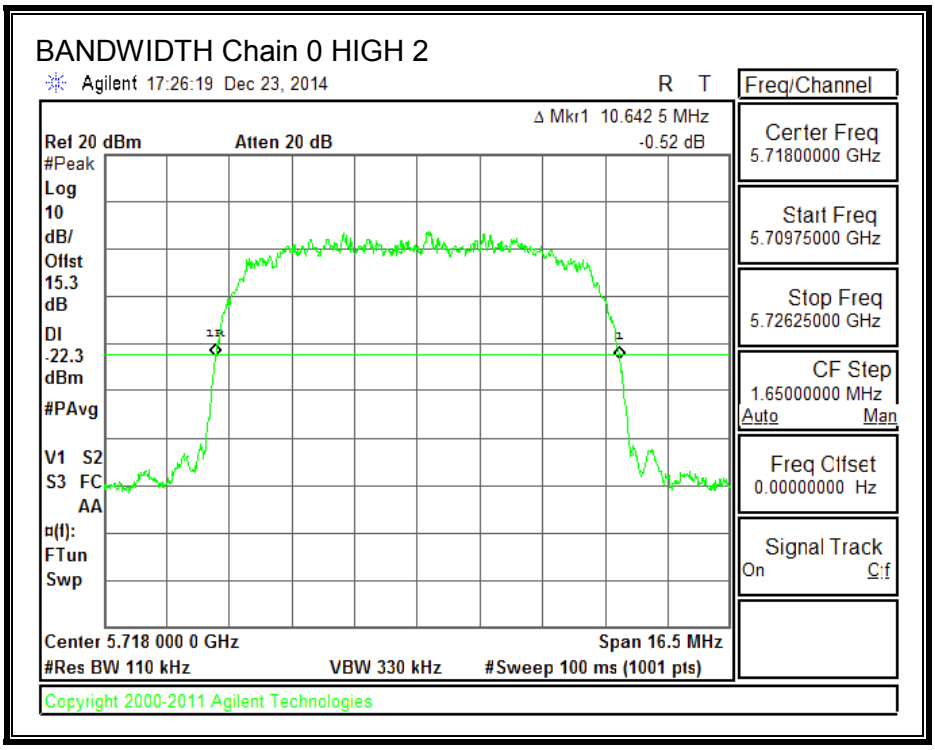


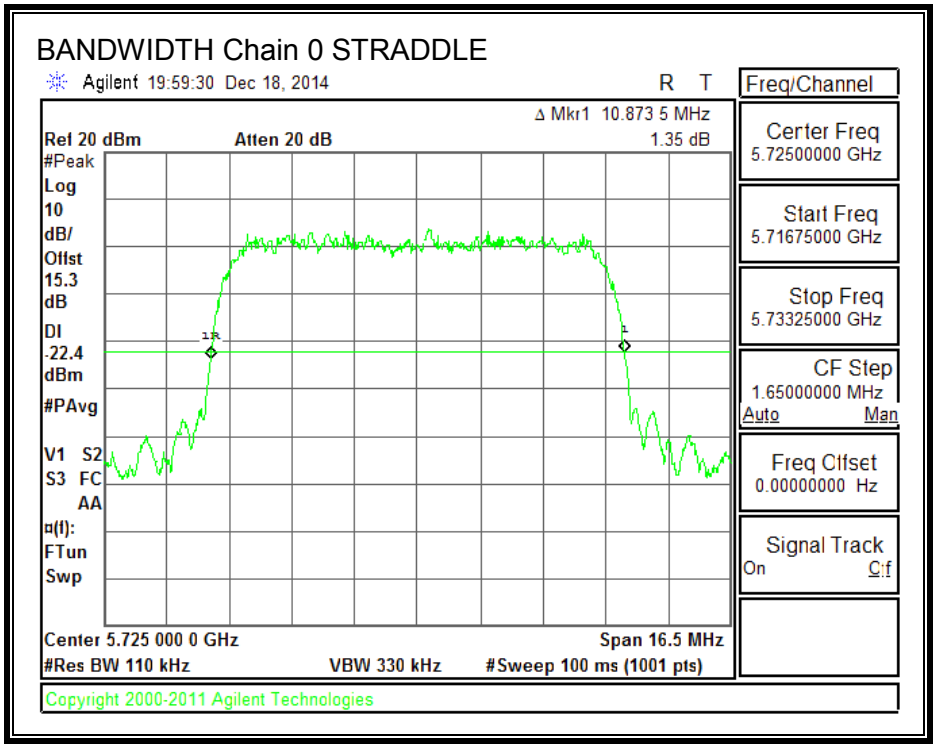
BANDWIDTH Chain 0 MID



BANDWIDTH Chain 0 HIGH 1

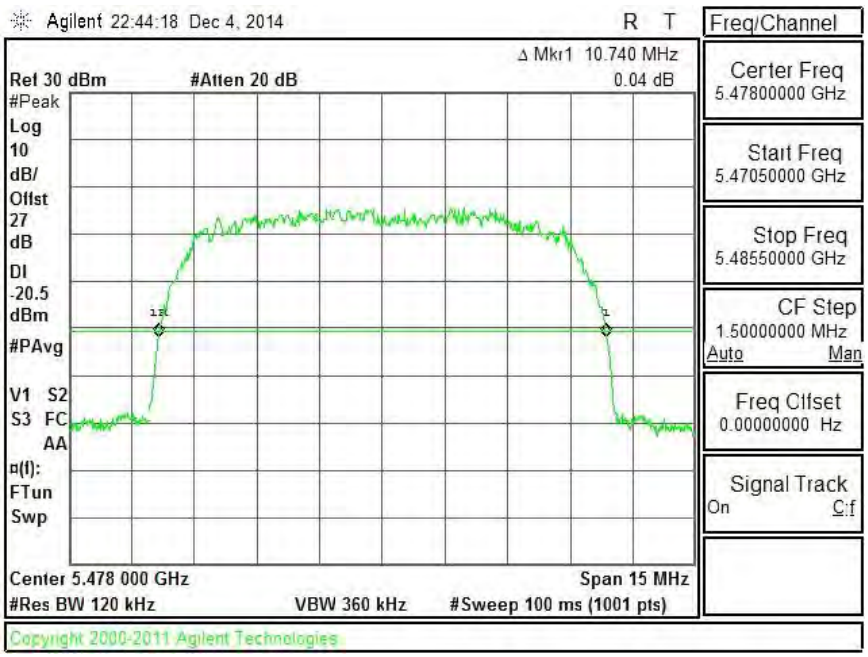




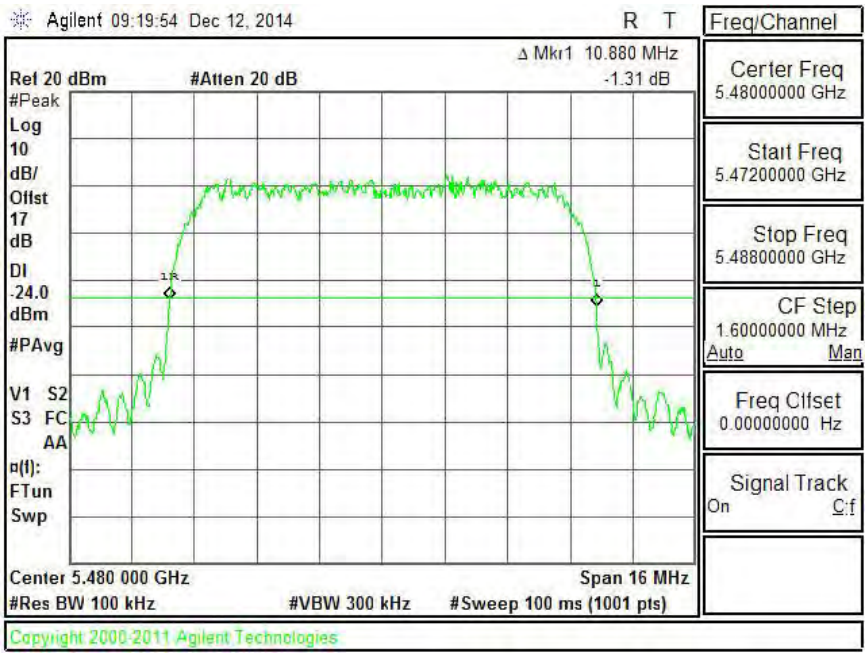


26 dB BANDWIDTH, Chain 1

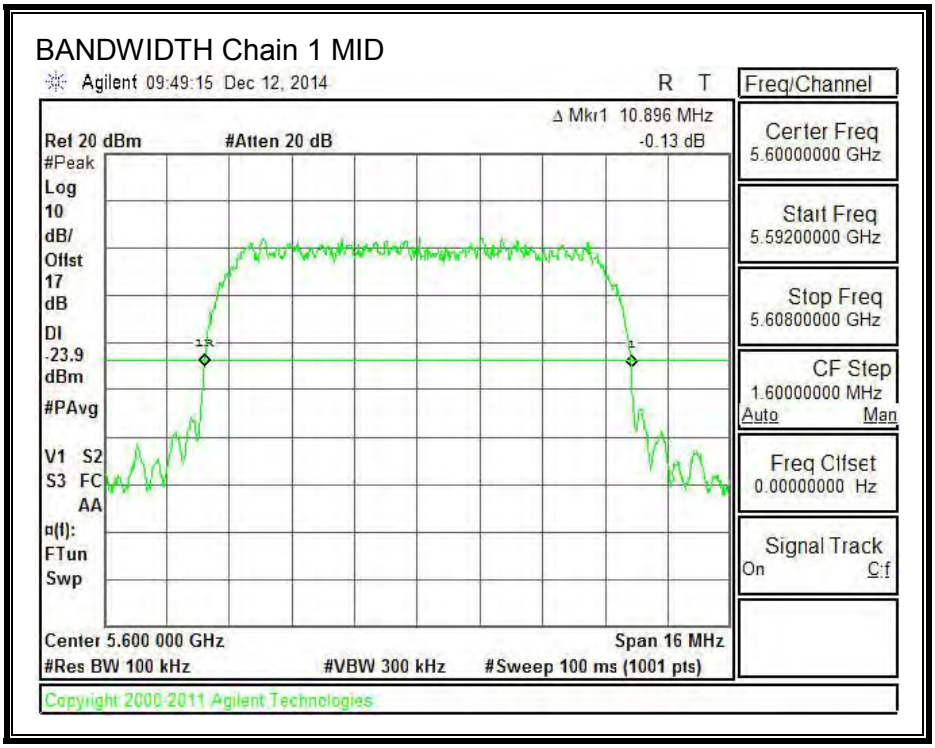
BANDWIDTH Chain 1 LOW 1



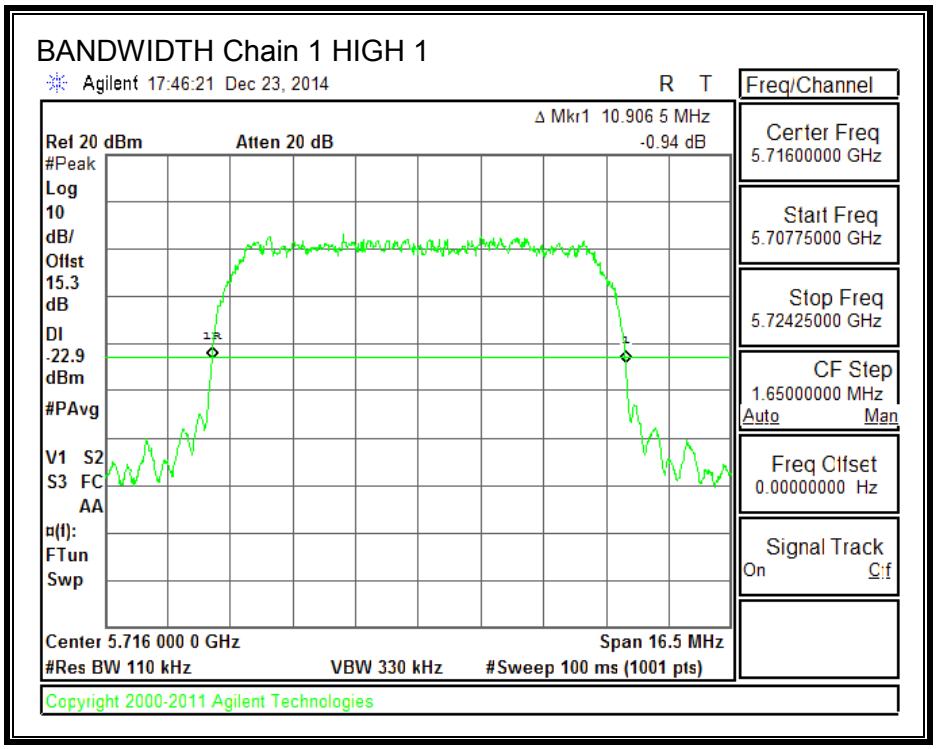
BANDWIDTH Chain 1 LOW 2

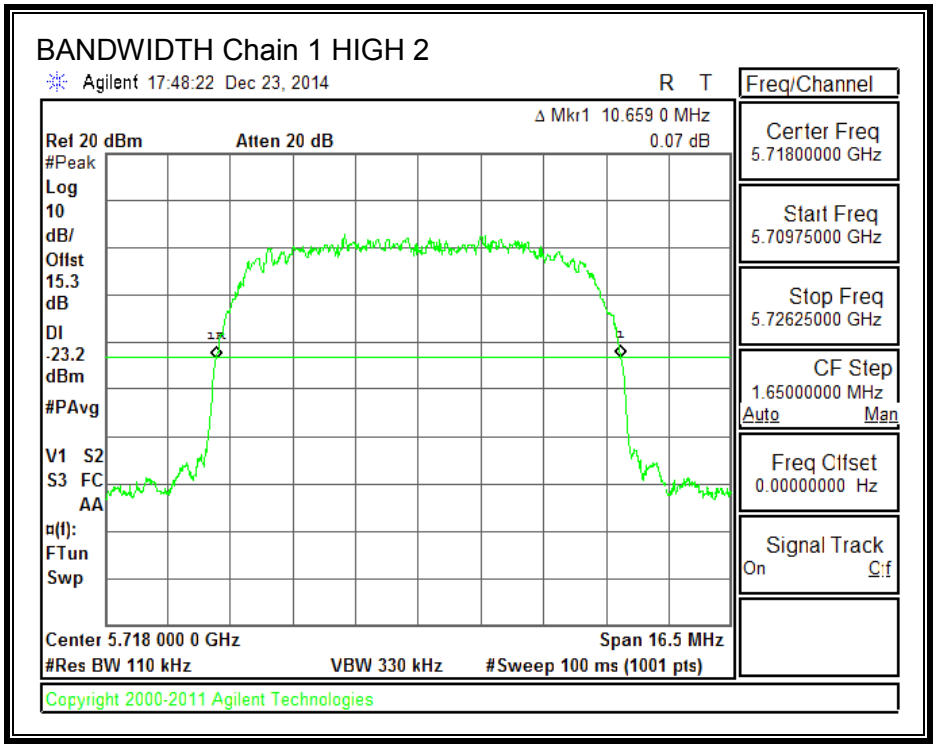


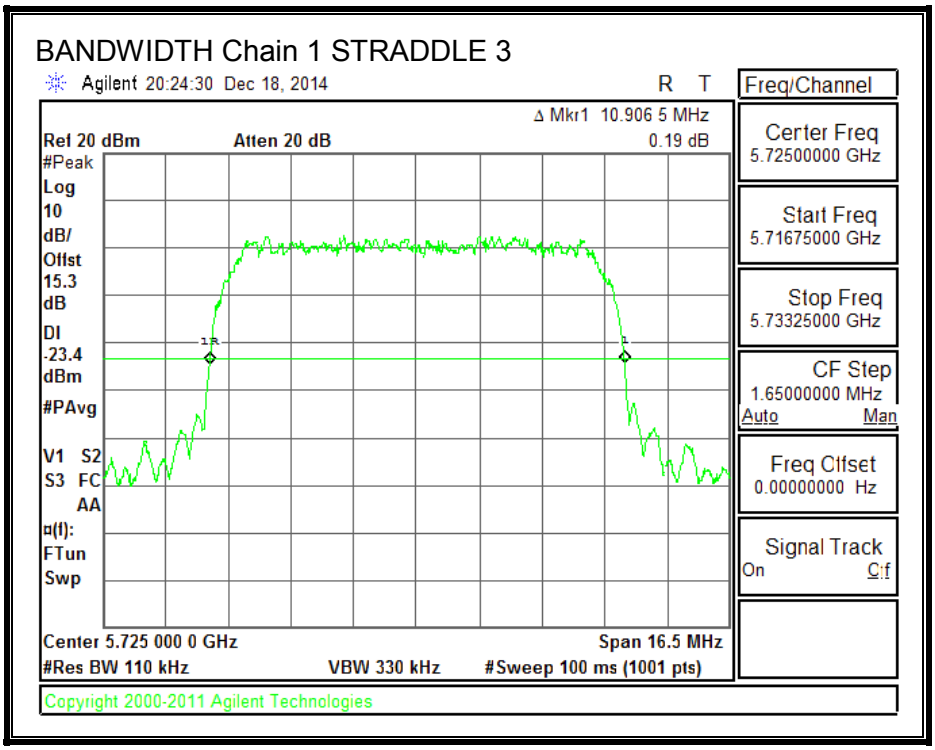
BANDWIDTH Chain 1 MID



BANDWIDTH Chain 1 HIGH 1







8.2.2. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, 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. In addition, the maximum 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 maximum conducted output 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
10.60	10.60	10.60

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5478	10.64	10.60	10.60	16.67	6.40
Low	5480	10.64	10.60	10.60	16.67	6.40
Mid	5600	10.64	10.60	10.60	16.67	6.40
High	5716	10.64	10.60	10.60	16.67	6.40
High	5718	10.64	10.60	10.60	16.67	6.40
Straddle	5725	10.64	10.60	10.60	16.67	6.40

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD

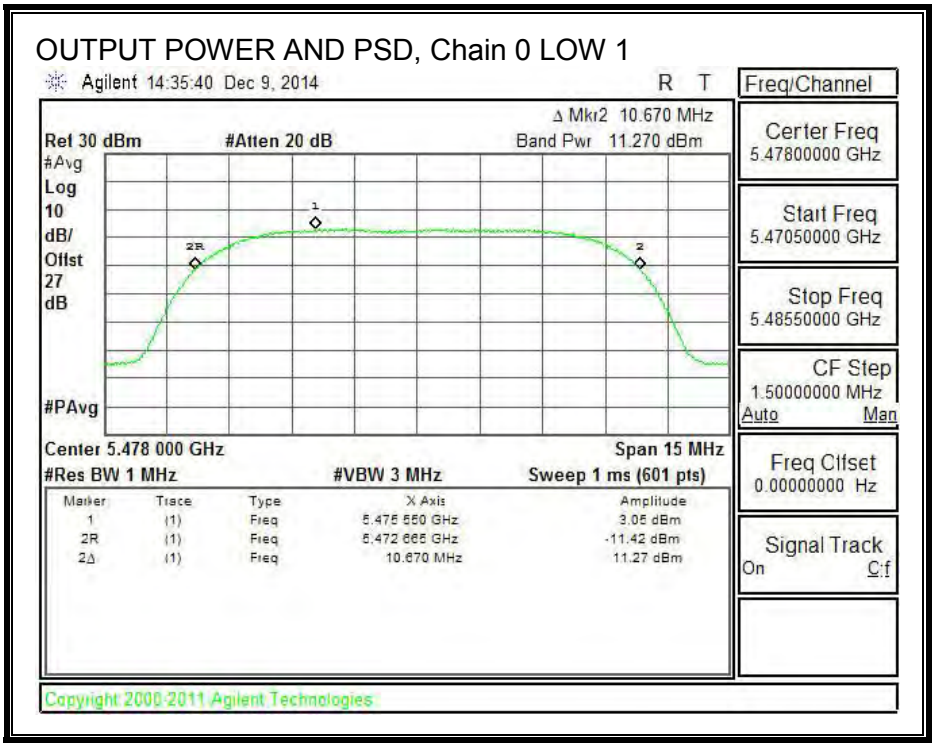
Output Power Results

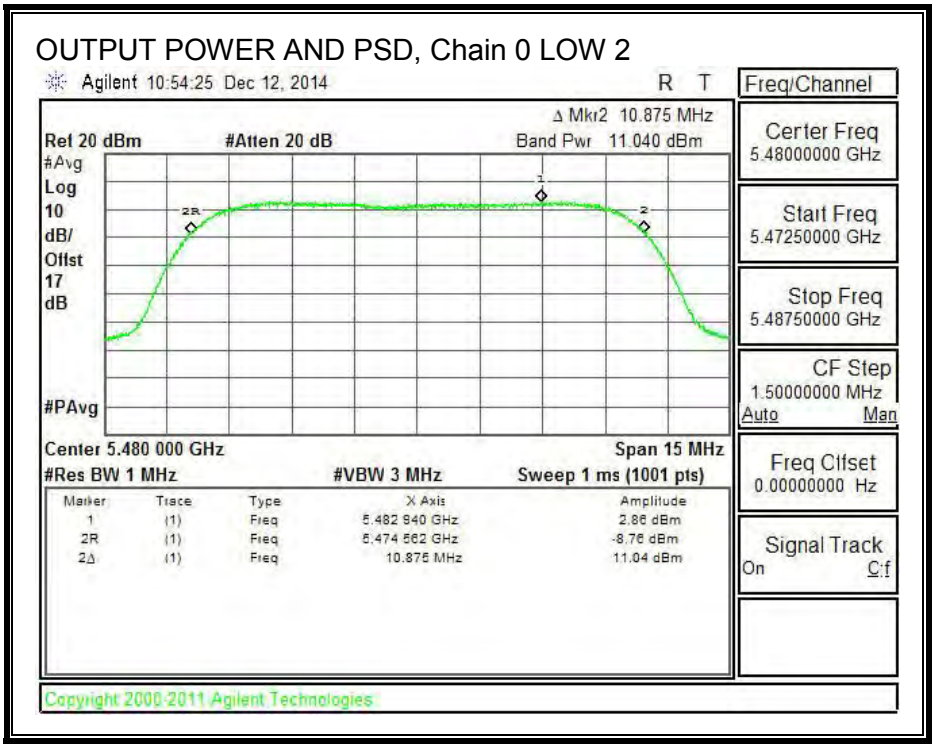
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5478	11.27	10.96	14.13	16.67	-2.54
Low	5480	11.04	11.32	14.19	16.67	-2.48
Mid	5600	11.13	10.65	13.90	16.67	-2.77
High	5716	11.53	11.54	14.55	16.67	-2.12
High	5718	11.01	10.69	13.86	16.67	-2.81
Straddle	5725	11.50	11.43	14.47	16.67	-2.20

PSD Results

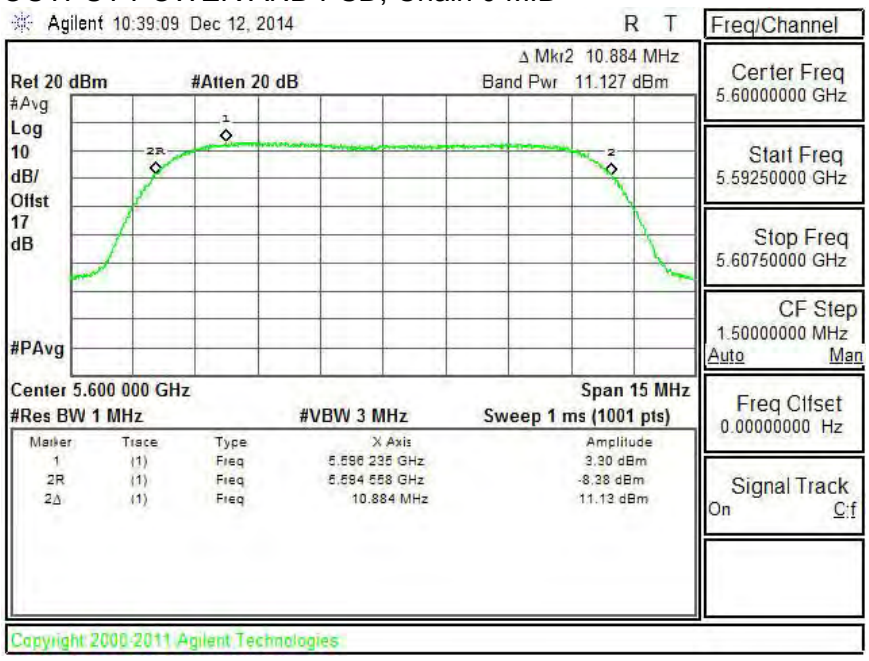
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5478	3.05	3.02	6.05	6.40	-0.35
Low	5480	2.86	2.99	5.94	6.40	-0.46
Mid	5600	3.30	2.92	6.12	6.40	-0.28
High	5716	3.21	3.04	6.14	6.40	-0.26
High	5718	3.06	3.17	6.13	6.40	-0.27

OUTPUT POWER AND PSD, Chain 0

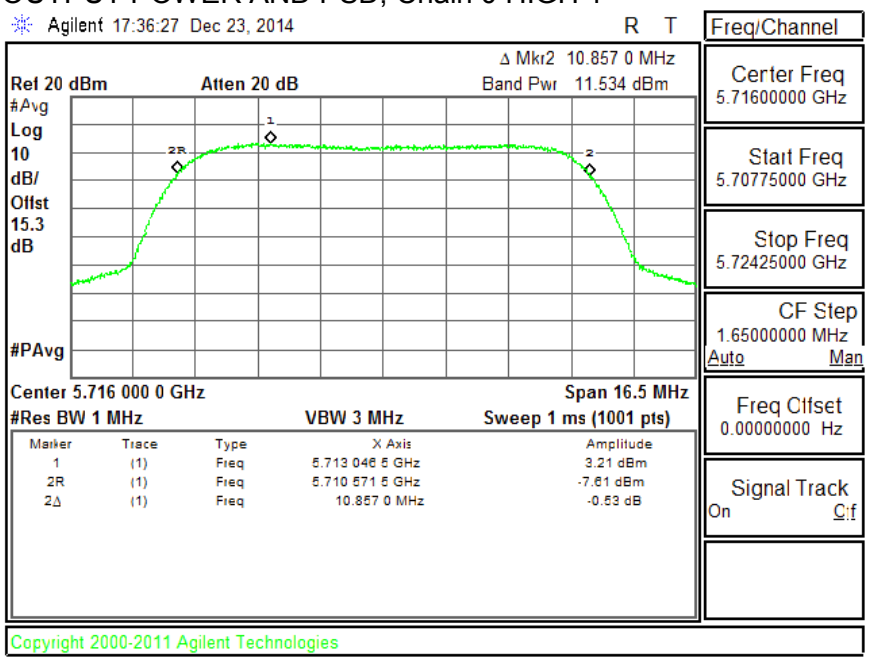


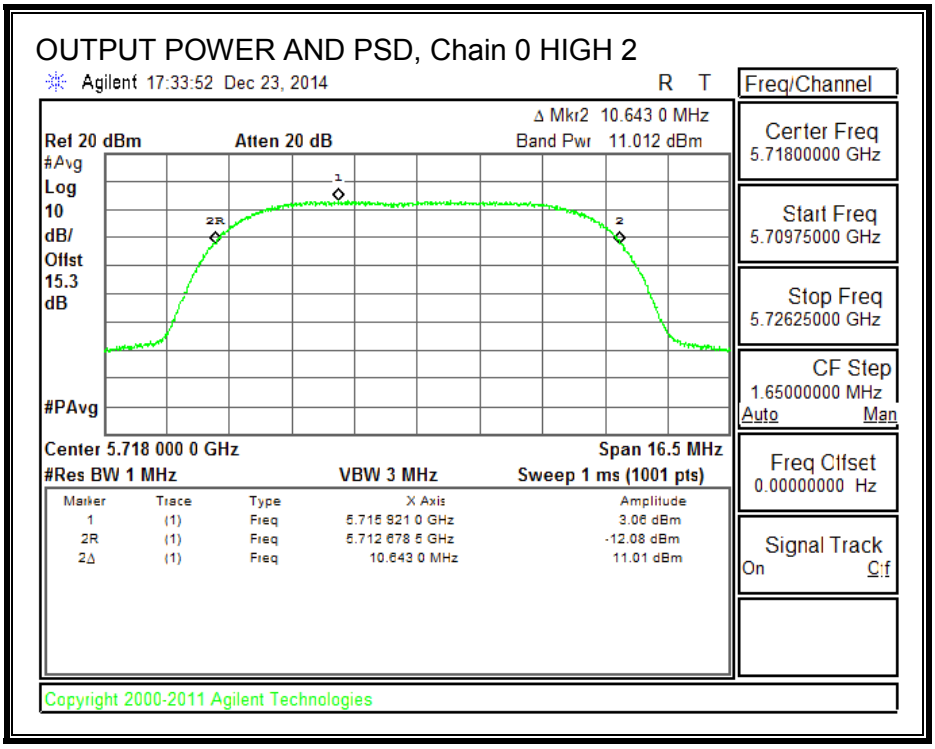


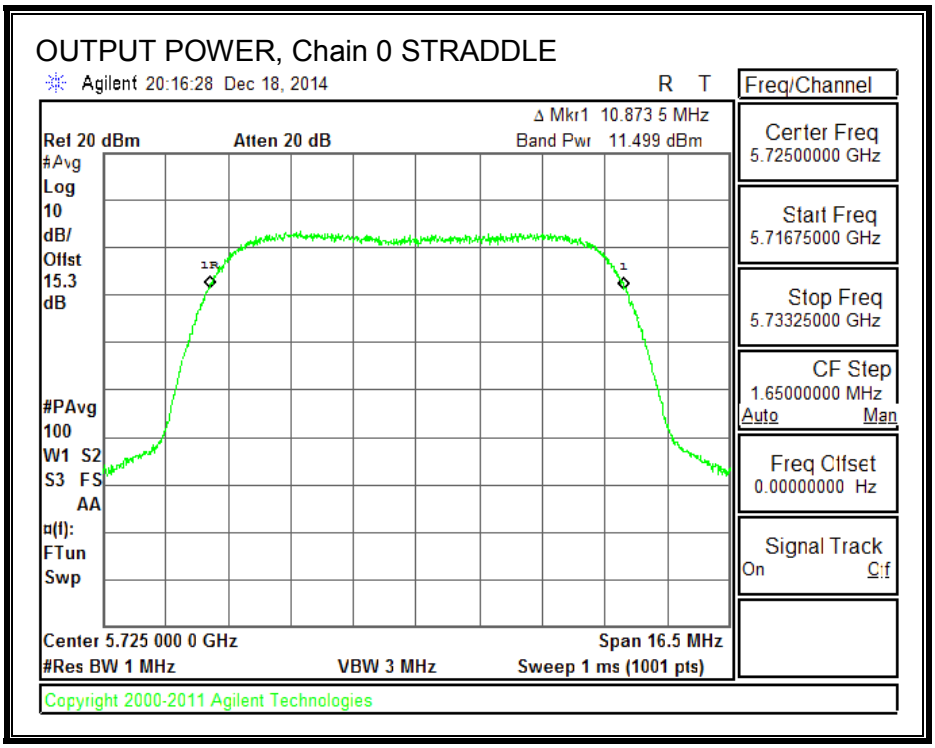
OUTPUT POWER AND PSD, Chain 0 MID



OUTPUT POWER AND PSD, Chain 0 HIGH 1

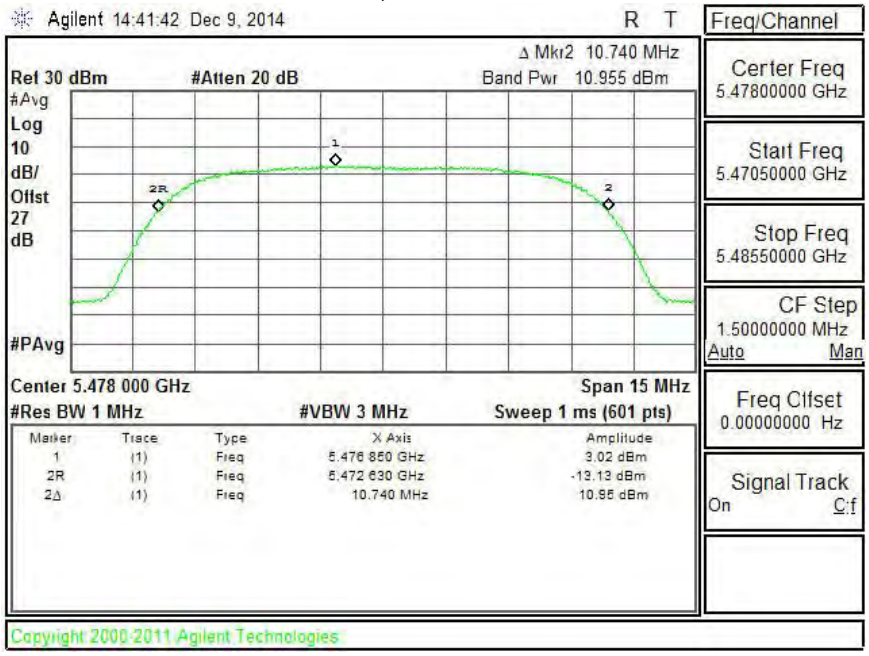




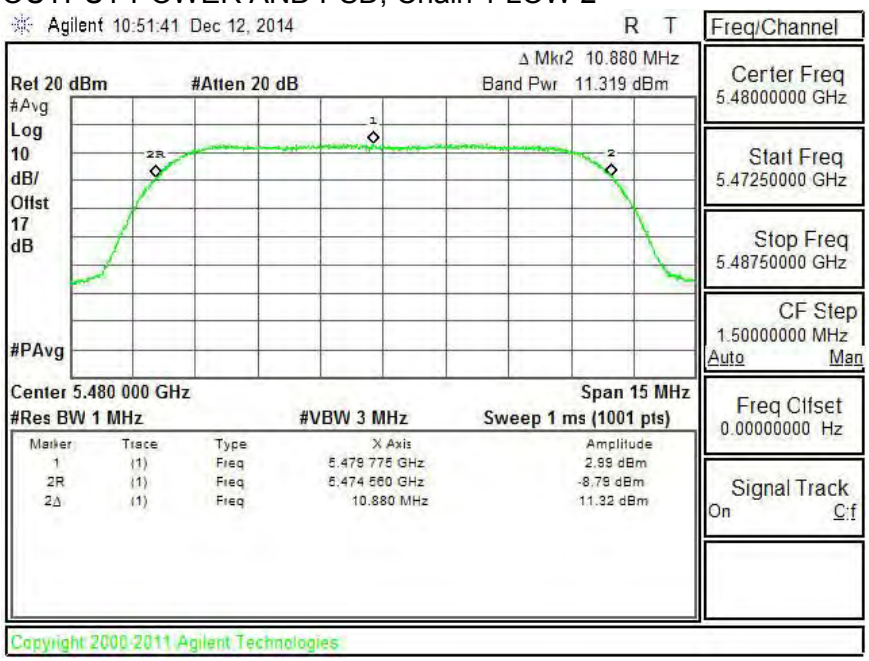


OUTPUT POWER AND PSD, Chain 1

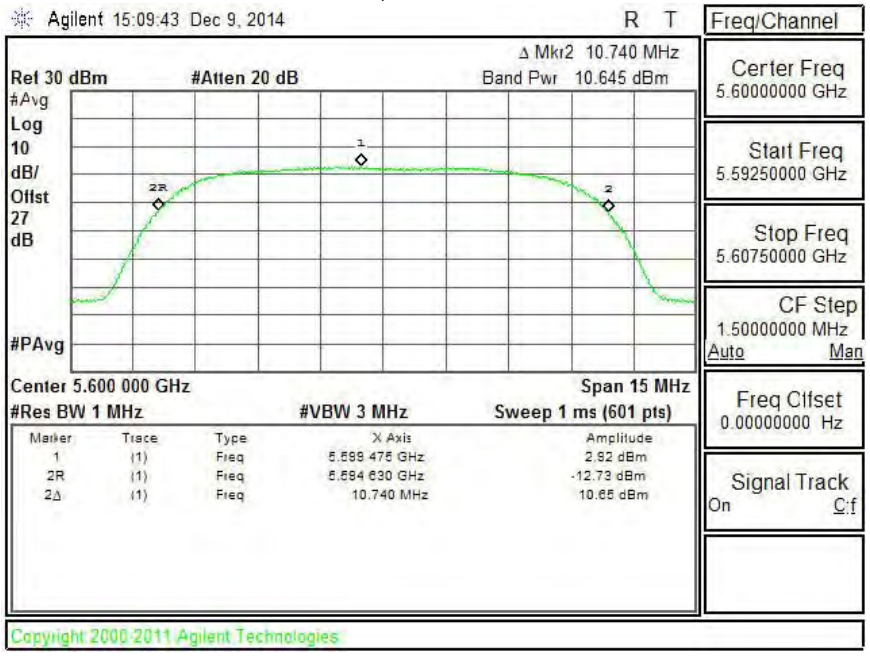
OUTPUT POWER AND PSD, Chain 1 LOW 1



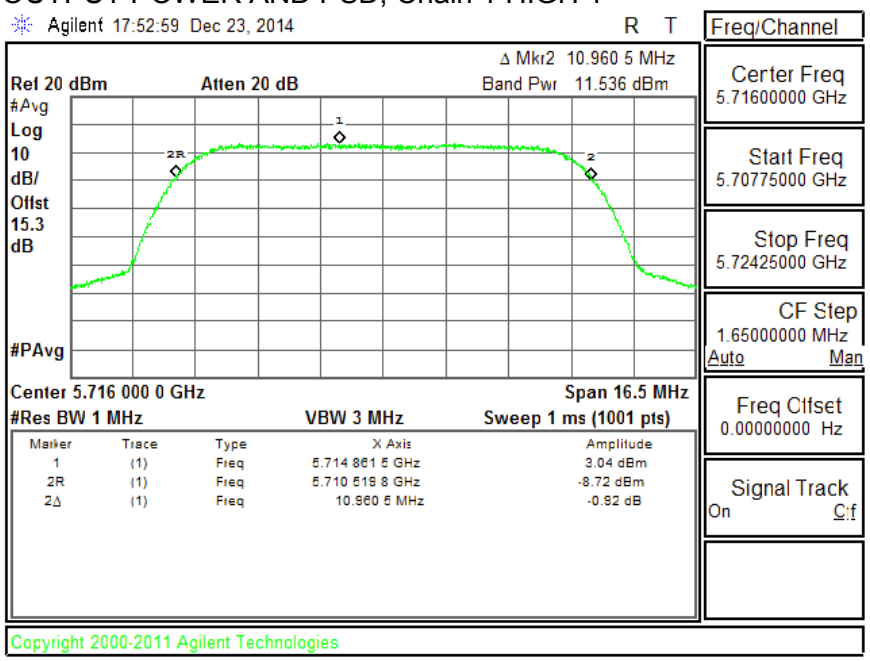
OUTPUT POWER AND PSD, Chain 1 LOW 2

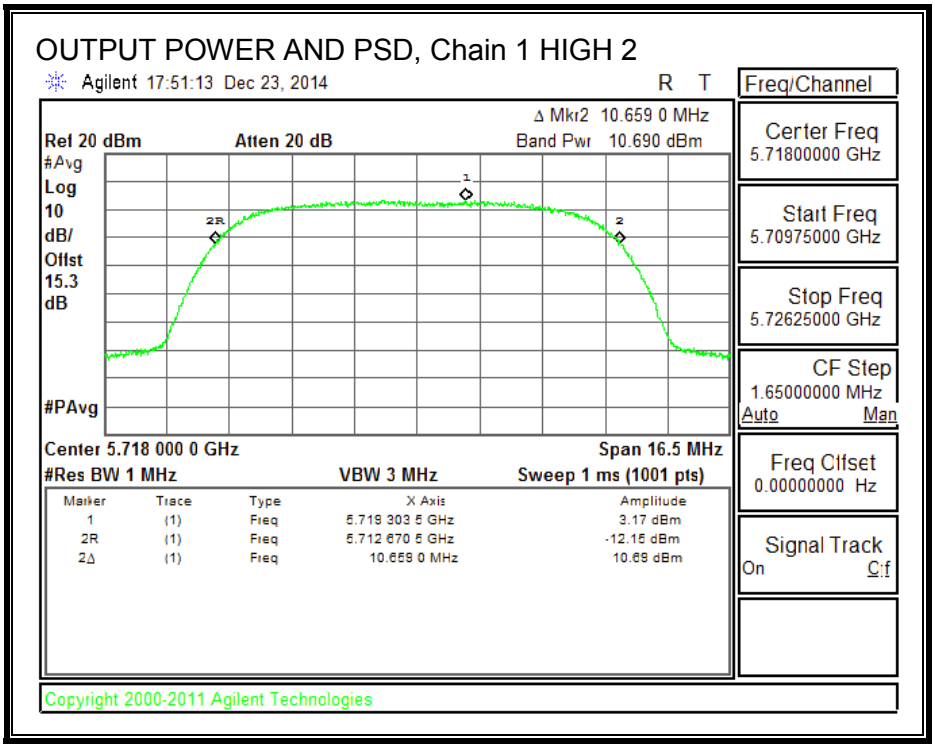


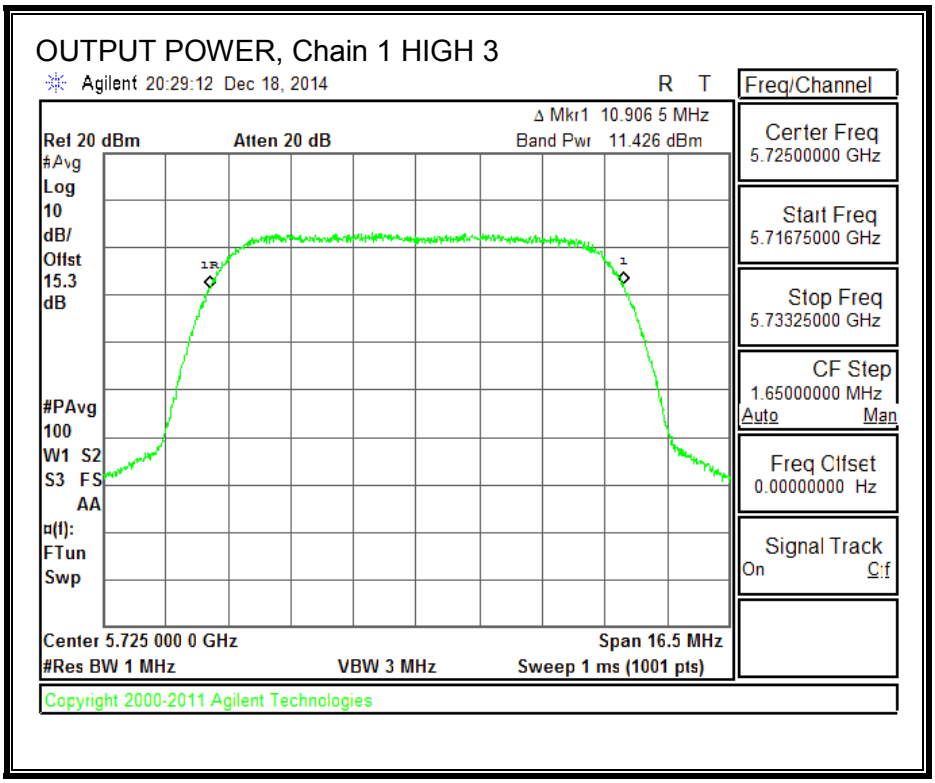
OUTPUT POWER AND PSD, Chain 1 MID



OUTPUT POWER AND PSD, Chain 1 HIGH 1







8.2.3. STRADDLE CHANNEL RESULTS

UNII-2C BAND

Bandwidth and Antenna Gain

Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
5725	5.44	10.60	10.60

Limits

Frequency (MHz)	FCC Power Limit (dBm)	PPSD Limit (dBm)
5725	13.75	6.40

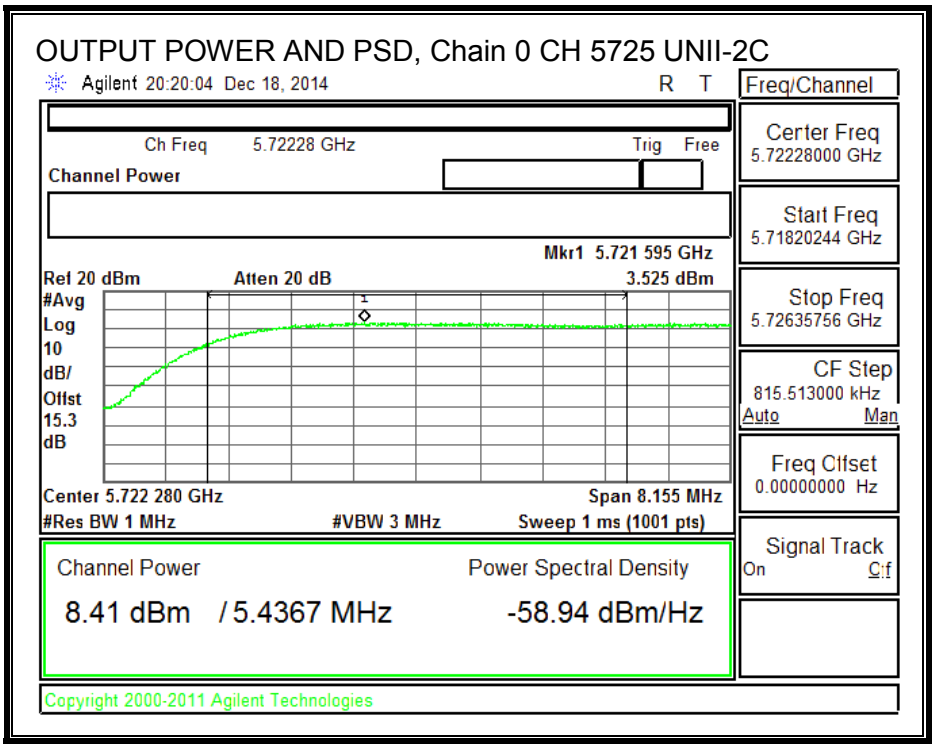
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PPSD

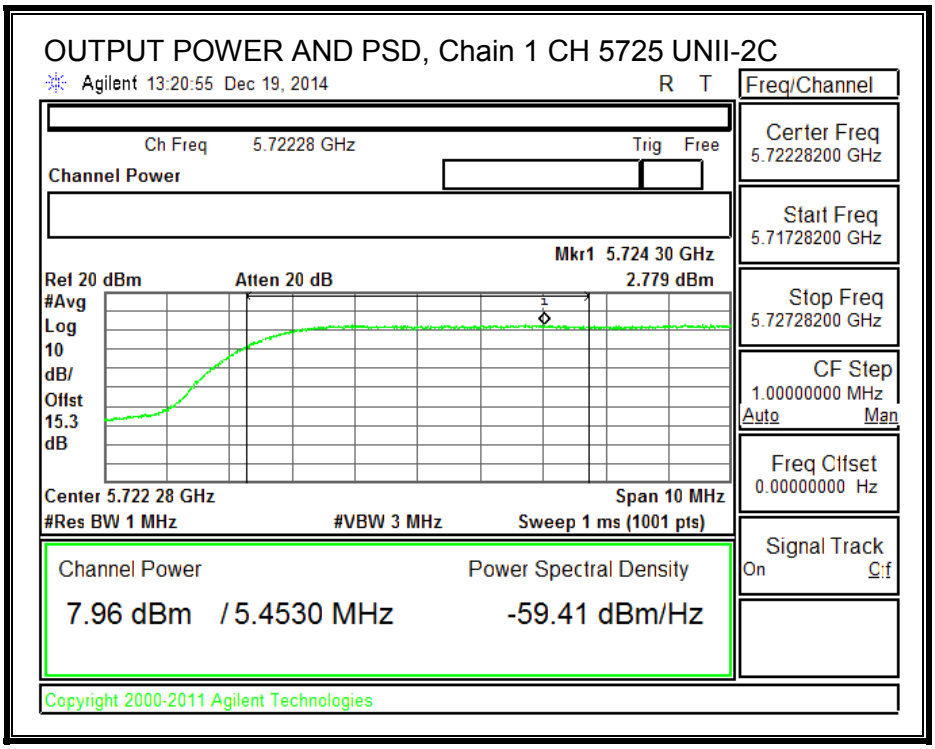
Output Power Results

Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
5725	8.41	7.96	11.20	13.75	-2.55

PPSD Results

Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
5725	3.53	2.78	6.18	6.40	-0.22





UNII-3 BAND

Bandwidth and Antenna Gain

Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
5725	5.44	10.60	10.60

Limits

Frequency (MHz)	FCC Power Limit (dBm)	FCC PPSD Limit (dBm)
5725	30.00	30.00

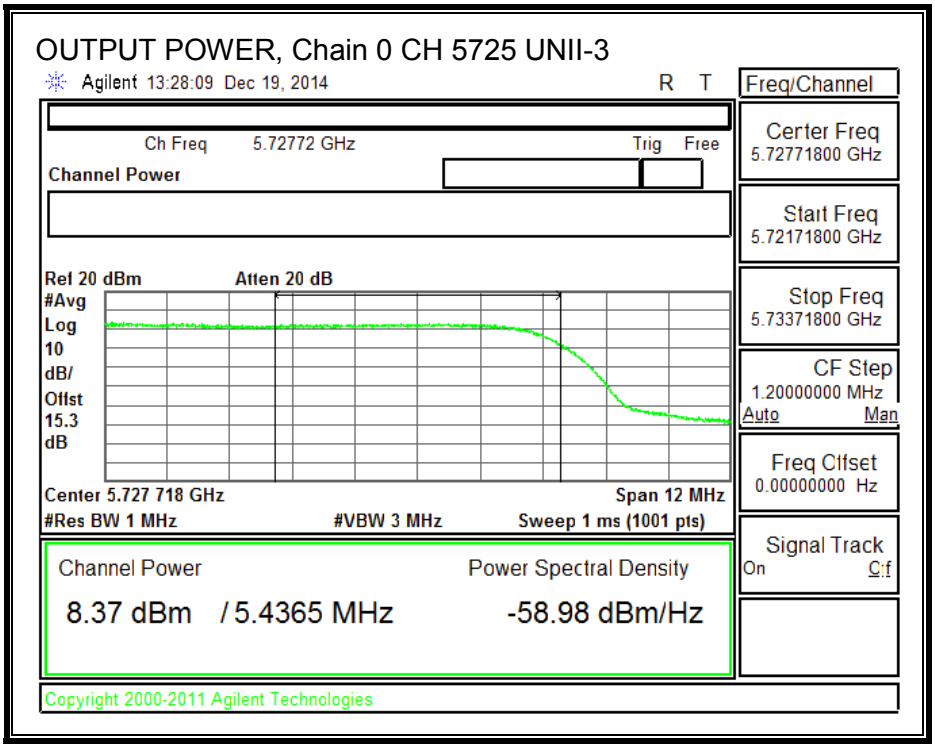
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PPSD

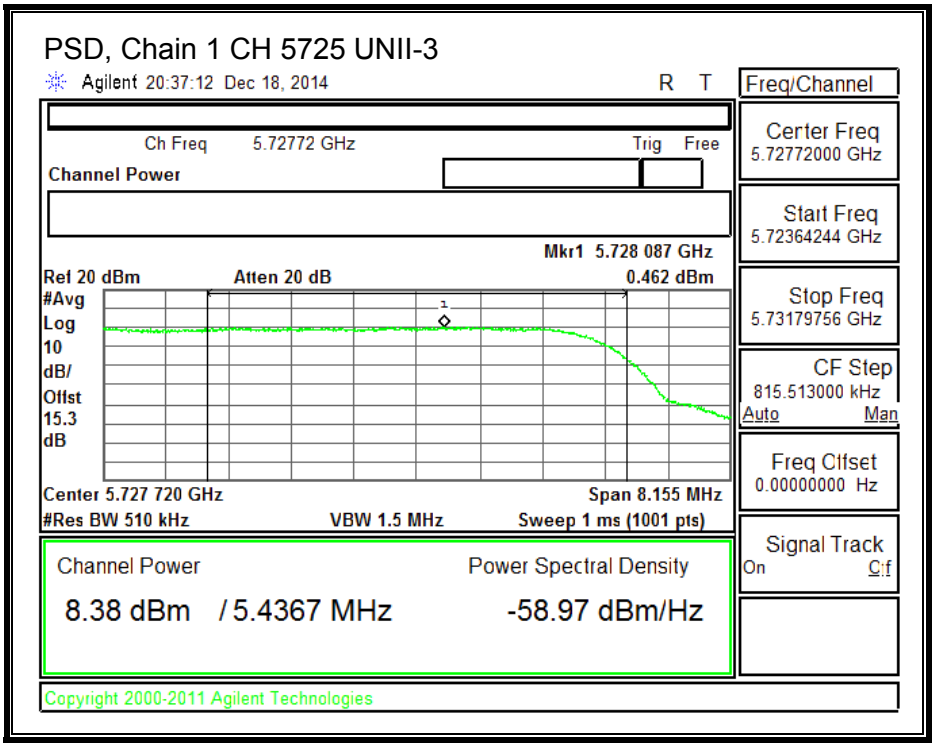
Output Power Results

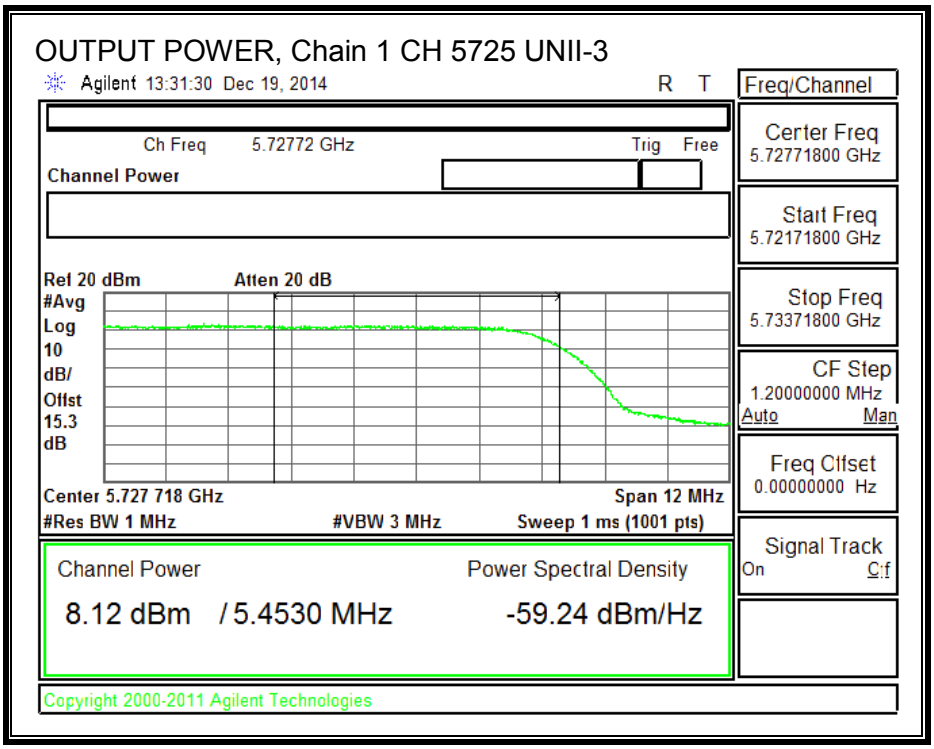
Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
5725	8.37	8.12	11.26	30.00	-18.74

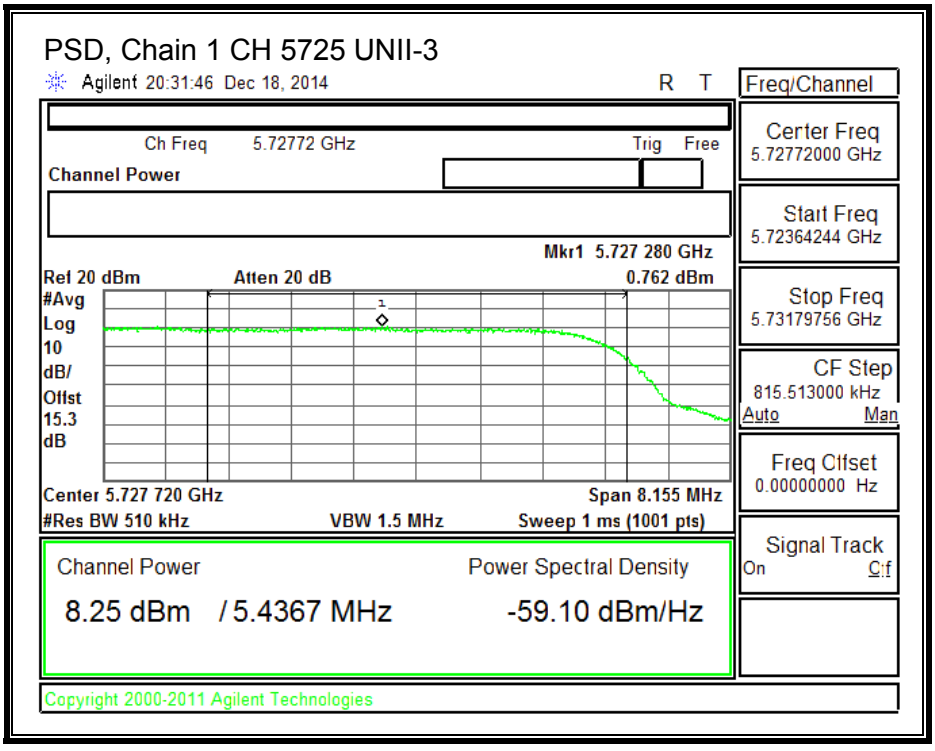
PPSD Results

Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
5725	0.46	0.76	3.62	30.00	-26.38









8.2.4. CONDUCTED BANDEDGE

LIMITS

FCC §15.205 and §15.209

PART 15, SUBPART E

Radiated LIMIT:

(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 e.i.r.p. of −27 dBm/MHz.

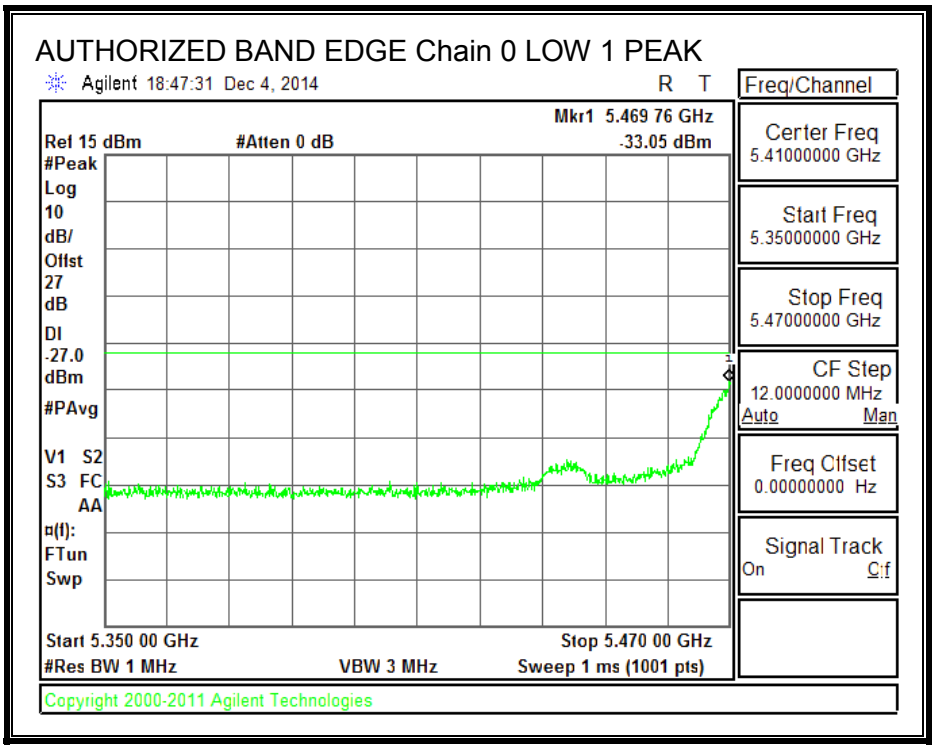
Procedure

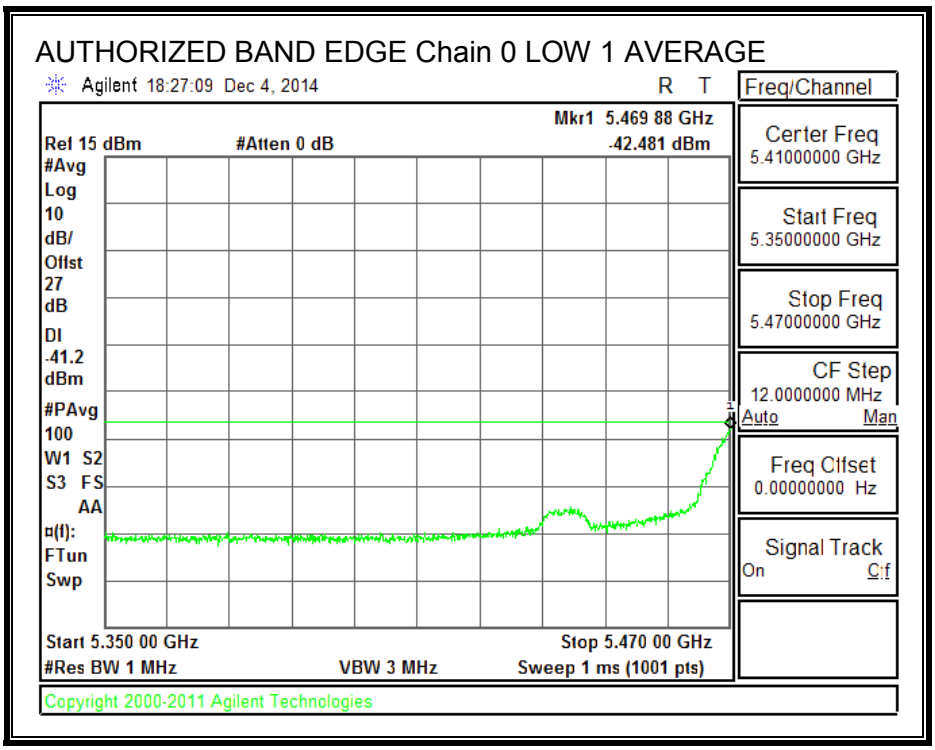
KDB 789033 D02 General UNII Test Procedures New Rules v01, Section II, G5, G6

Conducted measurements are being used to demonstrate compliance with the spurious limits in the restricted band (all other spurious emissions are measured using the radiated test method with the antennas connected). The limits are 54dBuV/m average and 74dBuV/m peak, which are equivalent to eirp of -41.2 dBm and -21.2dBm respectively. The plots include an offset to account for the EUT antenna gain and external attenuation between EUT antenna port and spectrum analyzer. As the two antenna chains feed cross polarized antennas with un- correlated signals the two chains are treated independently and the emissions do not need to be summed.

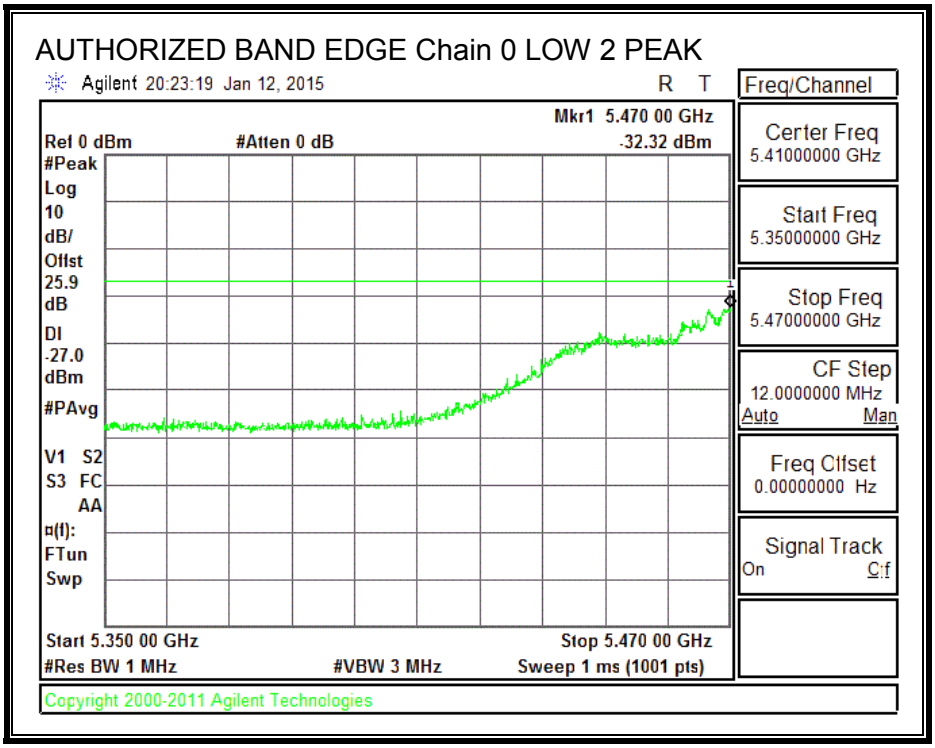
RESULTS

LOW CHANNEL BANDEDGE, Chain 0

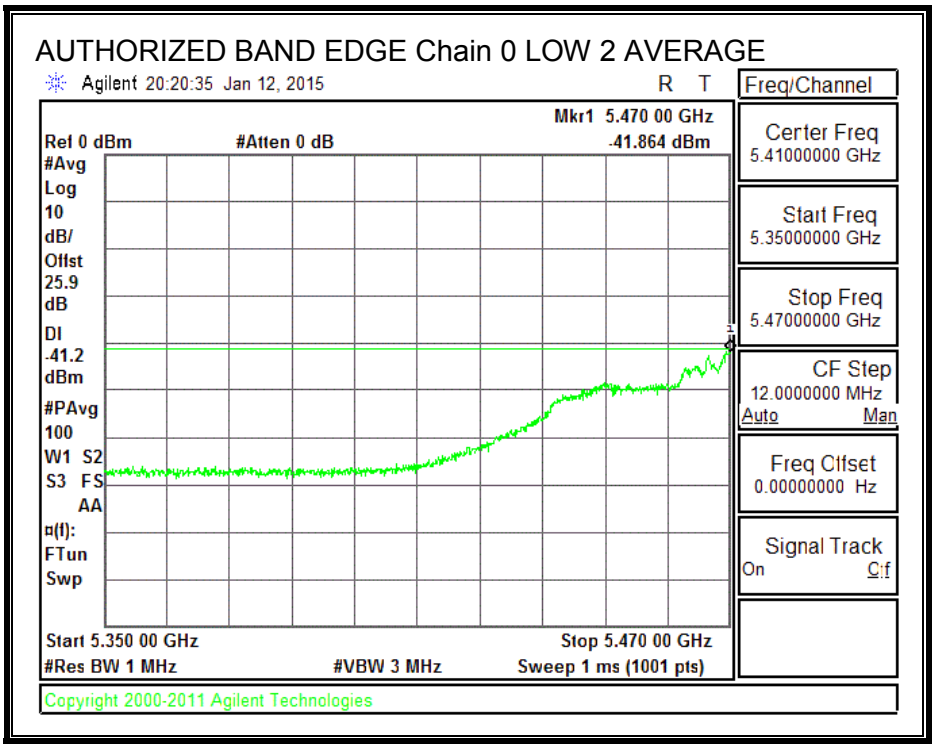




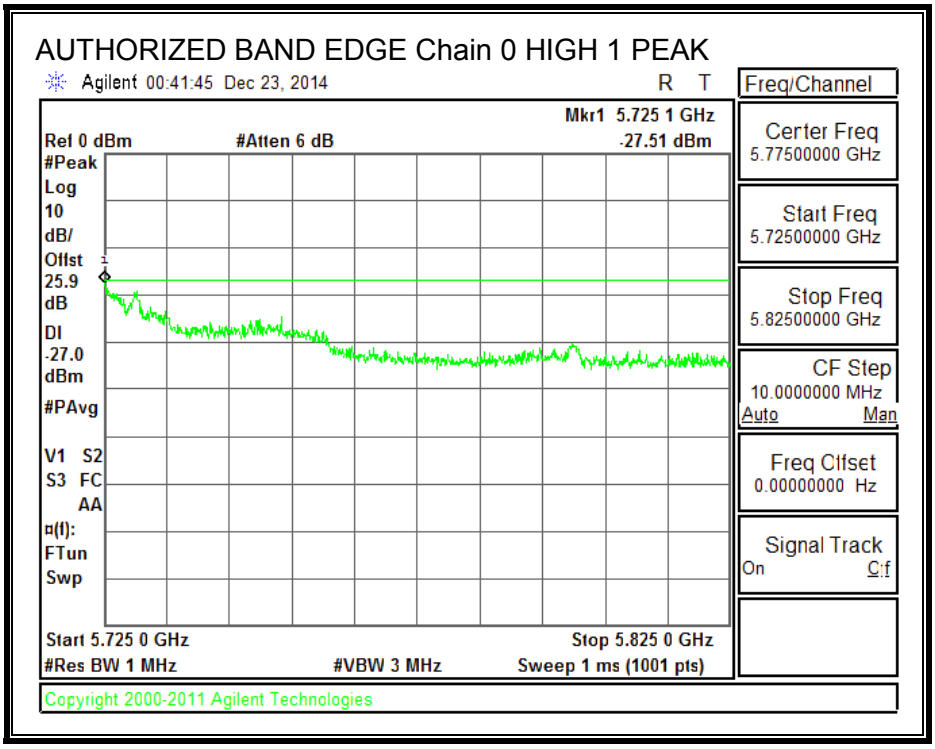
AUTHORIZED BAND EDGE Chain 0 LOW 2 PEAK

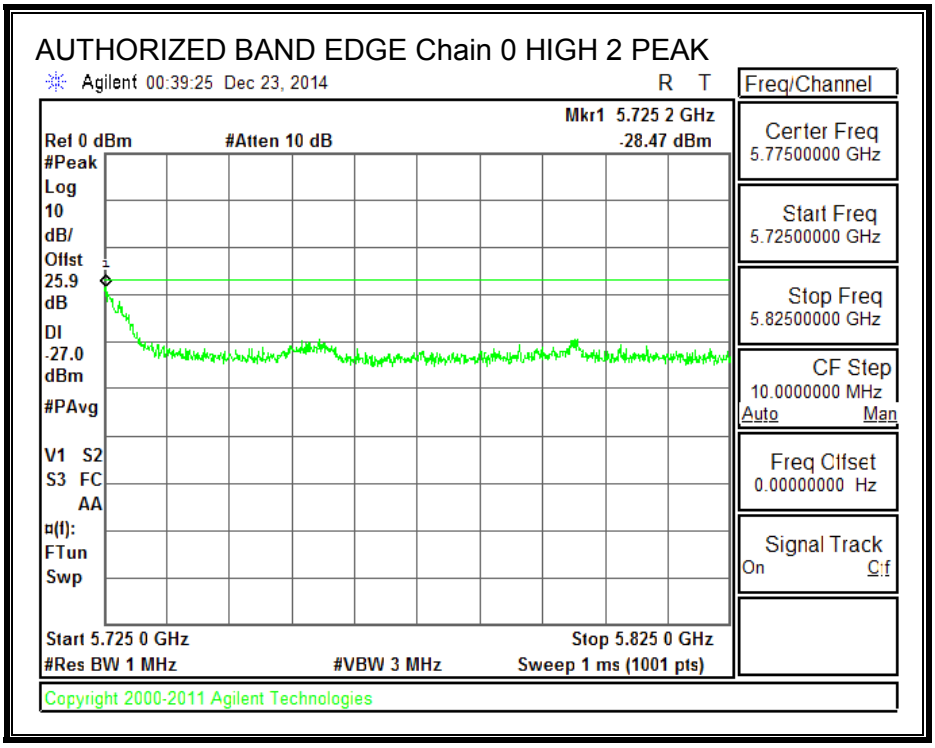


AUTHORIZED BAND EDGE Chain 0 LOW 2 AVERAGE

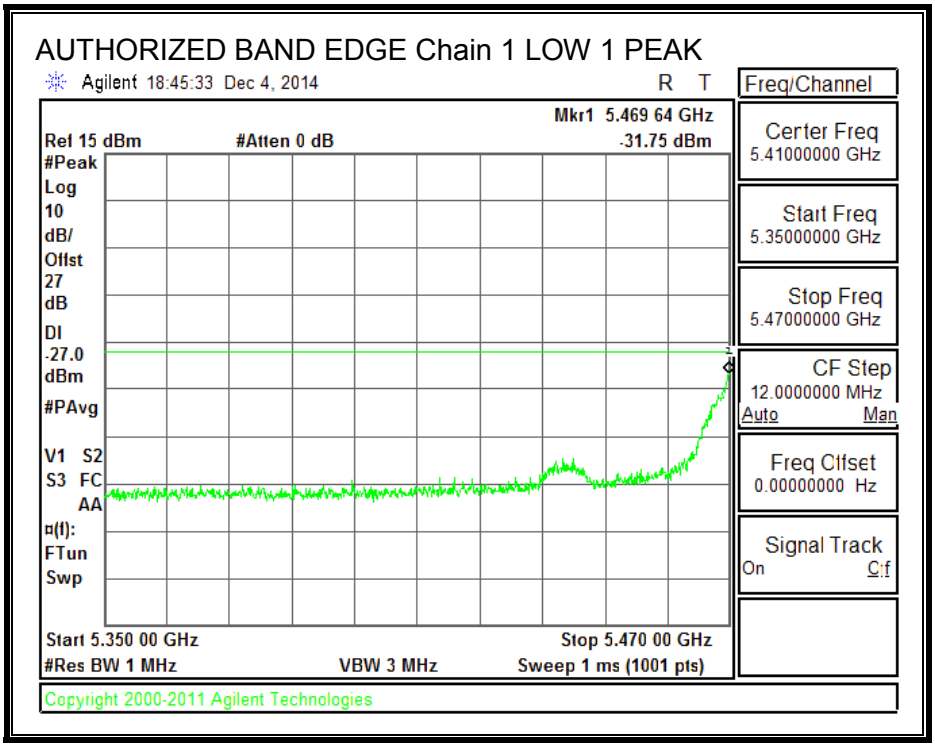


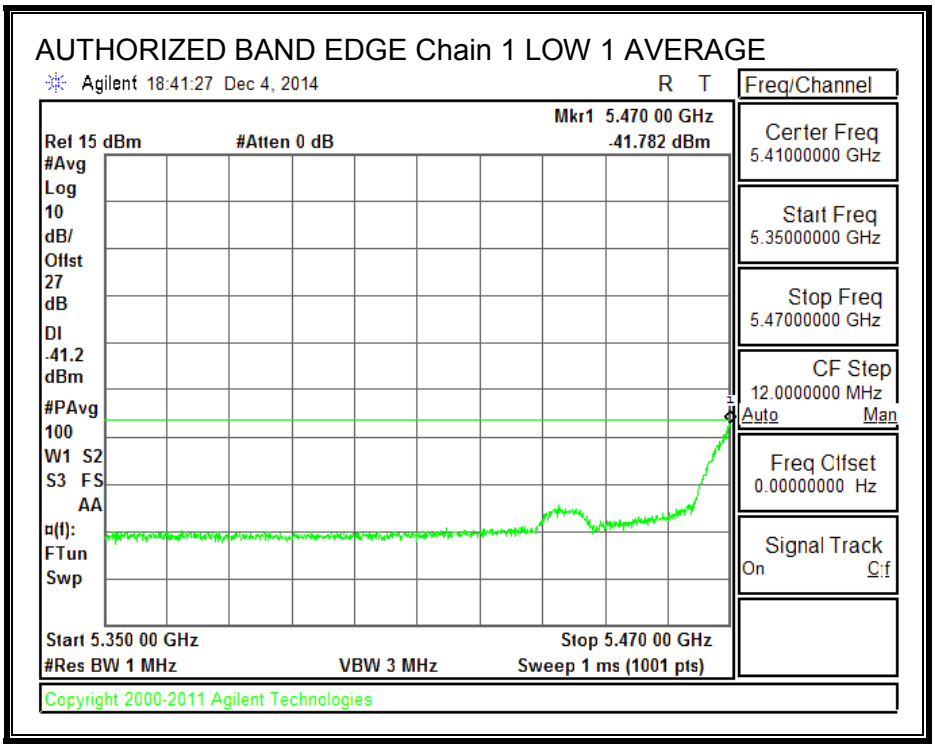
HIGH CHANNEL BANDEDGE, Chain 0



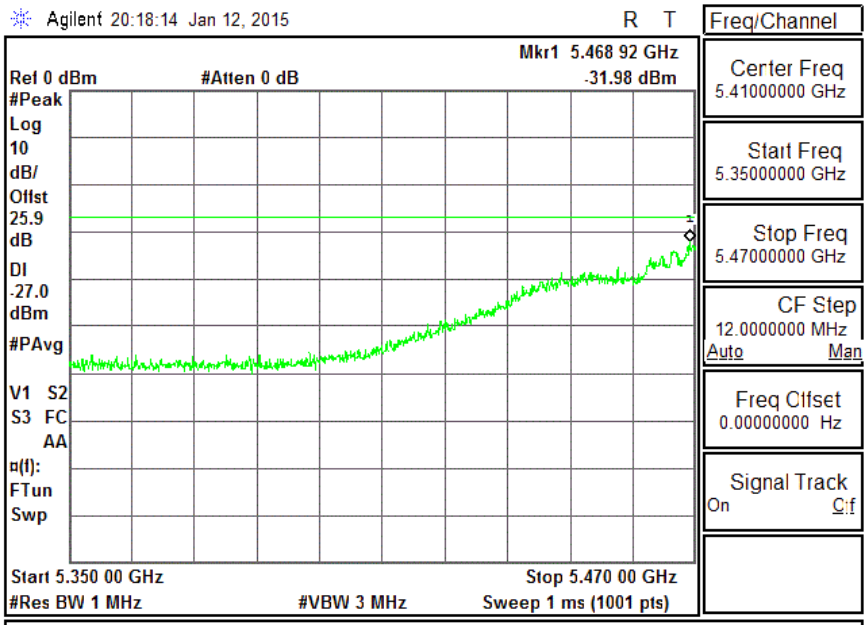


LOW CHANNEL BANDEDGE, Chain 1

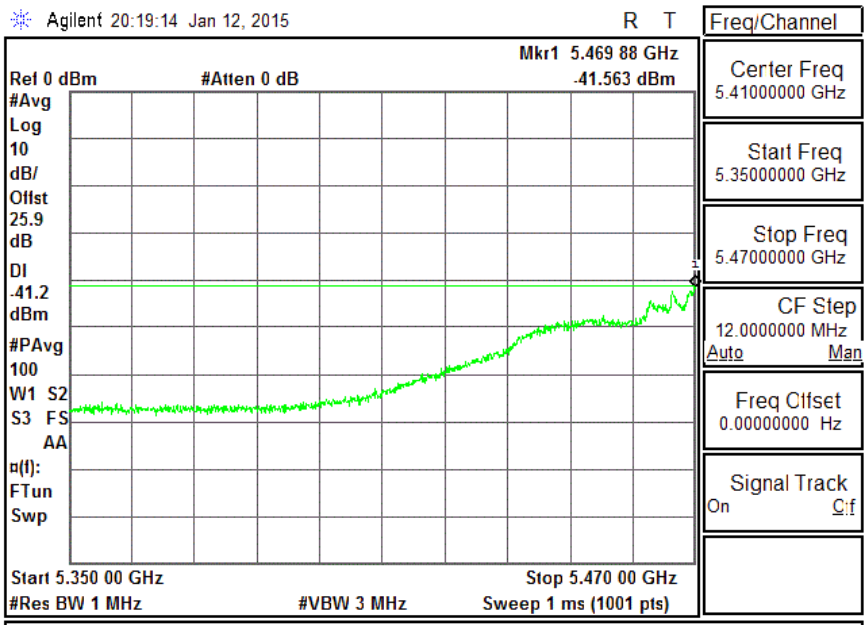




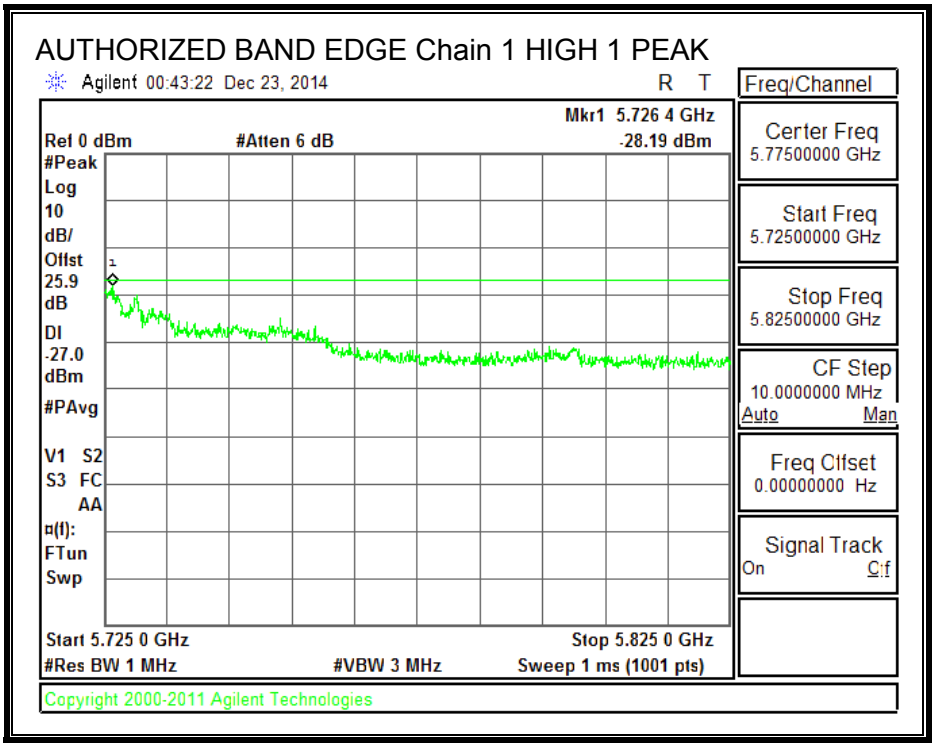
AUTHORIZED BAND EDGE Chain 1 LOW 2 PEAK

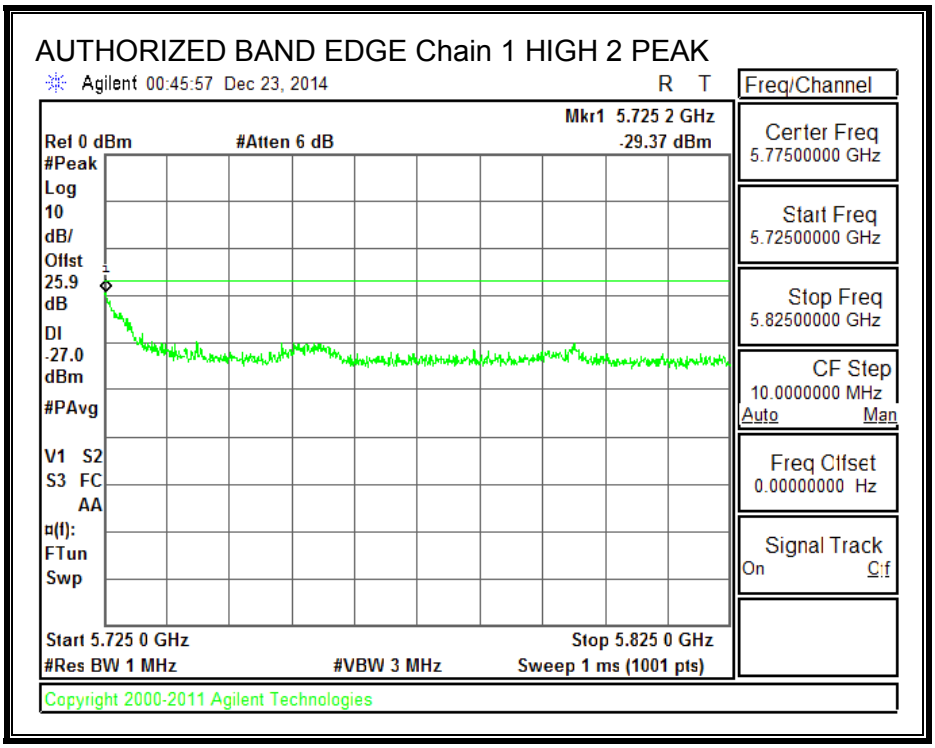


AUTHORIZED BAND EDGE Chain 1 LOW 2 AVERAGE



HIGH CHANNEL BANDEDGE, Chain 1





8.3. 20MHz 2Tx MODE IN THE 5.6 GHz BAND

8.3.1. 26 dB BANDWIDTH

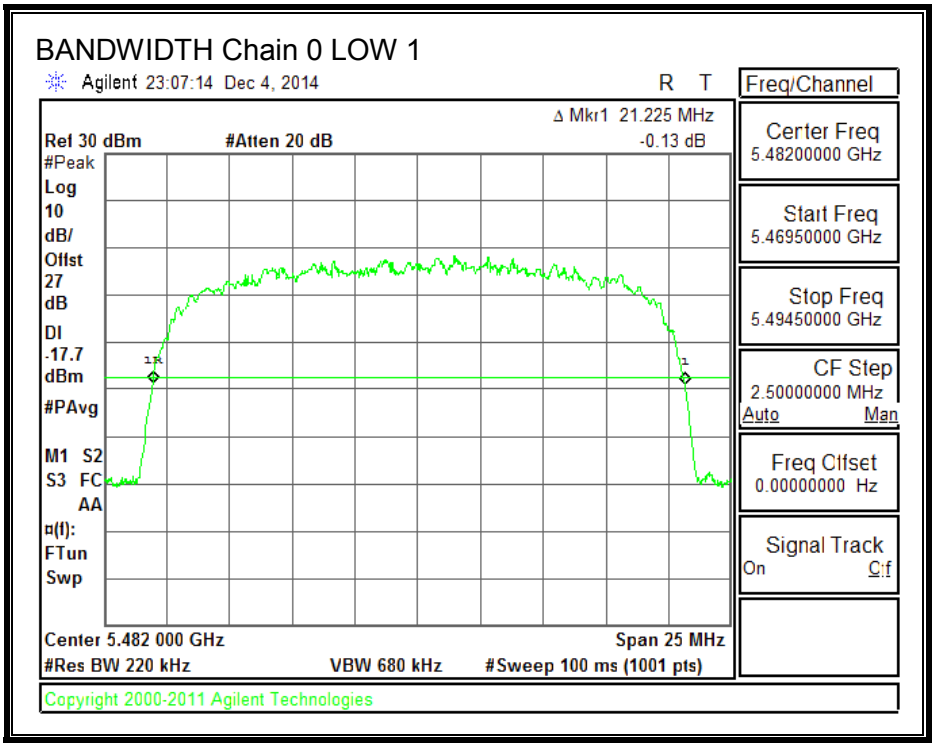
LIMITS

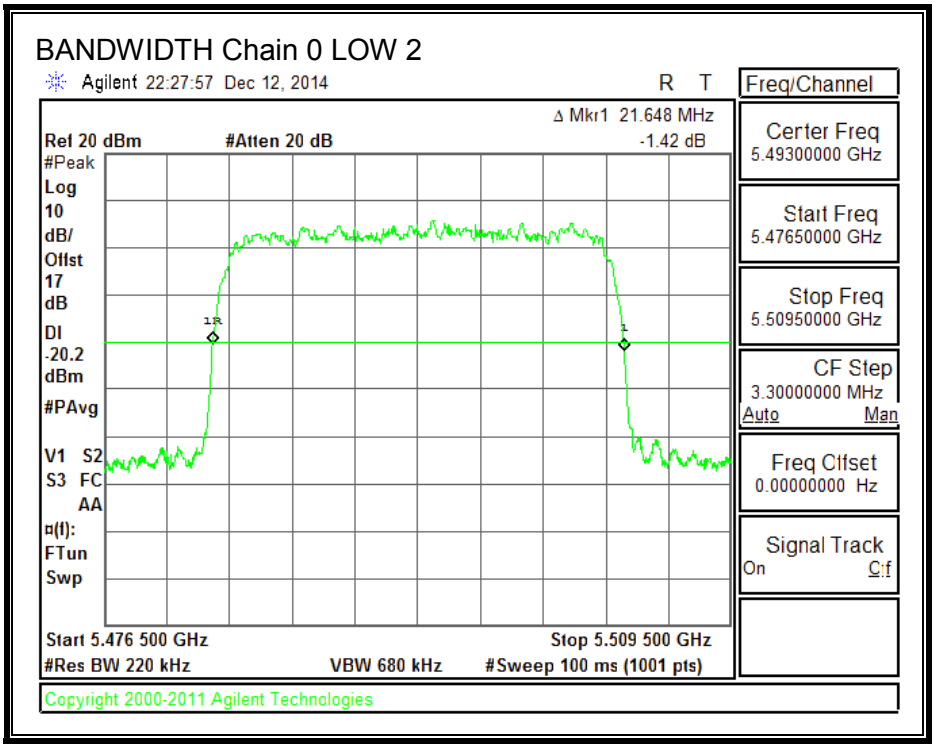
None; for reporting purposes only.

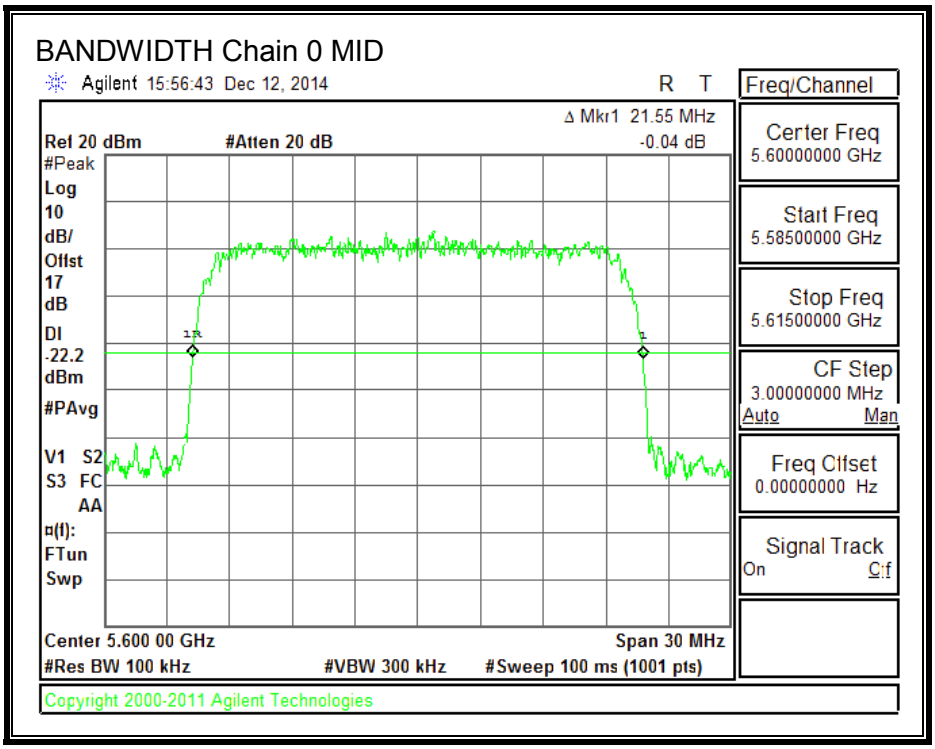
RESULTS

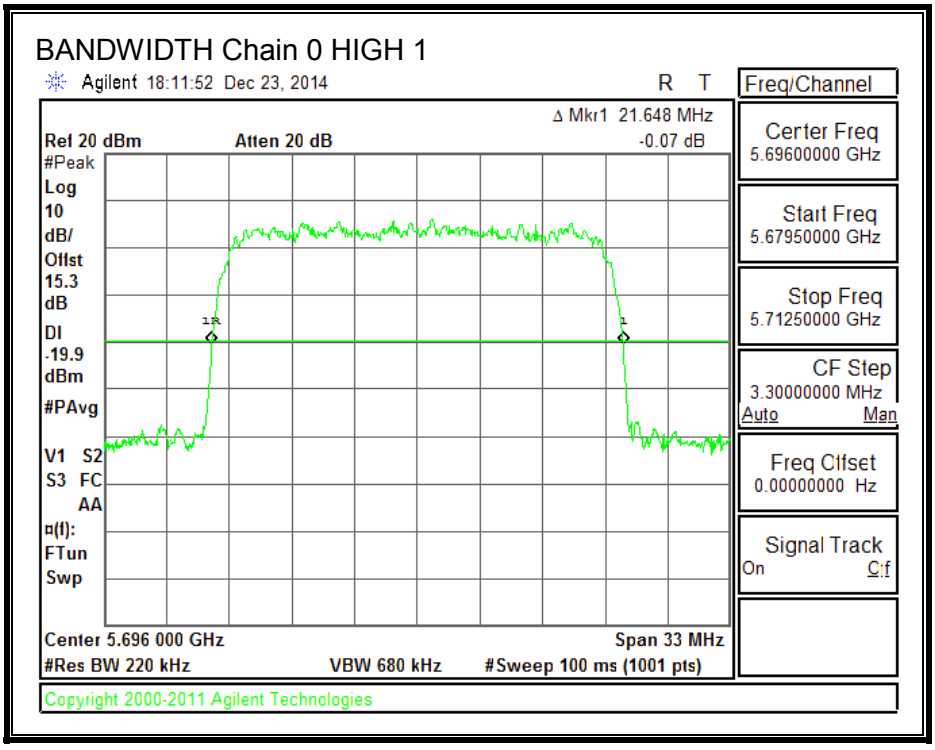
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low 1	5482	21.23	21.15
Low 2	5493	21.65	21.65
Mid	5600	21.55	21.18
High 1	5696	21.65	21.65
High 2	5709	21.25	21.20
Straddle	5725	21.65	21.65

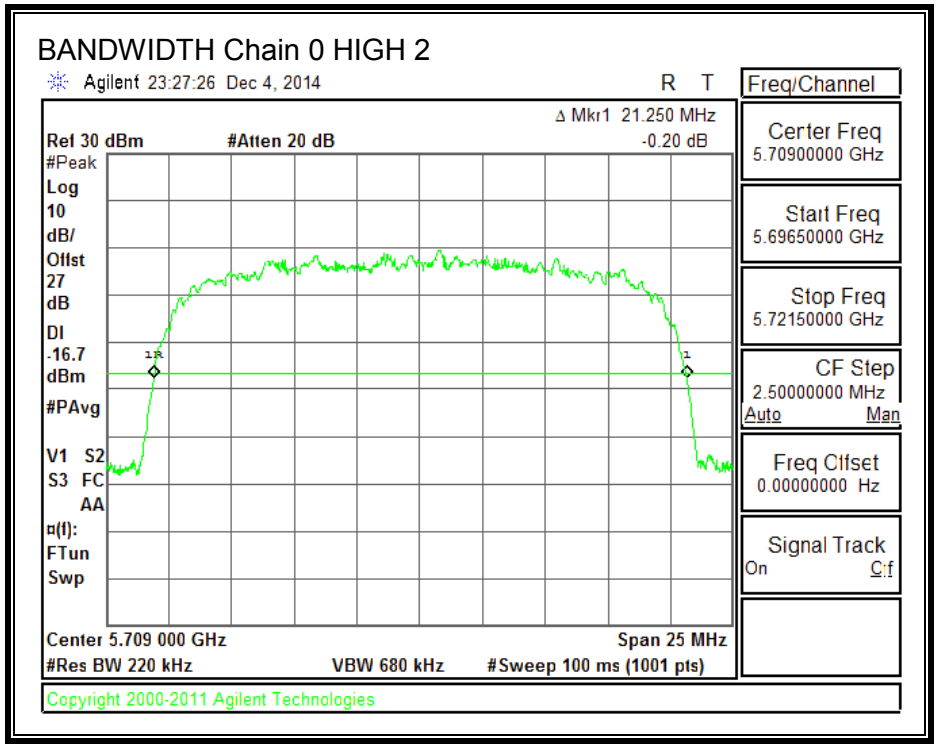
26 dB BANDWIDTH, Chain 0

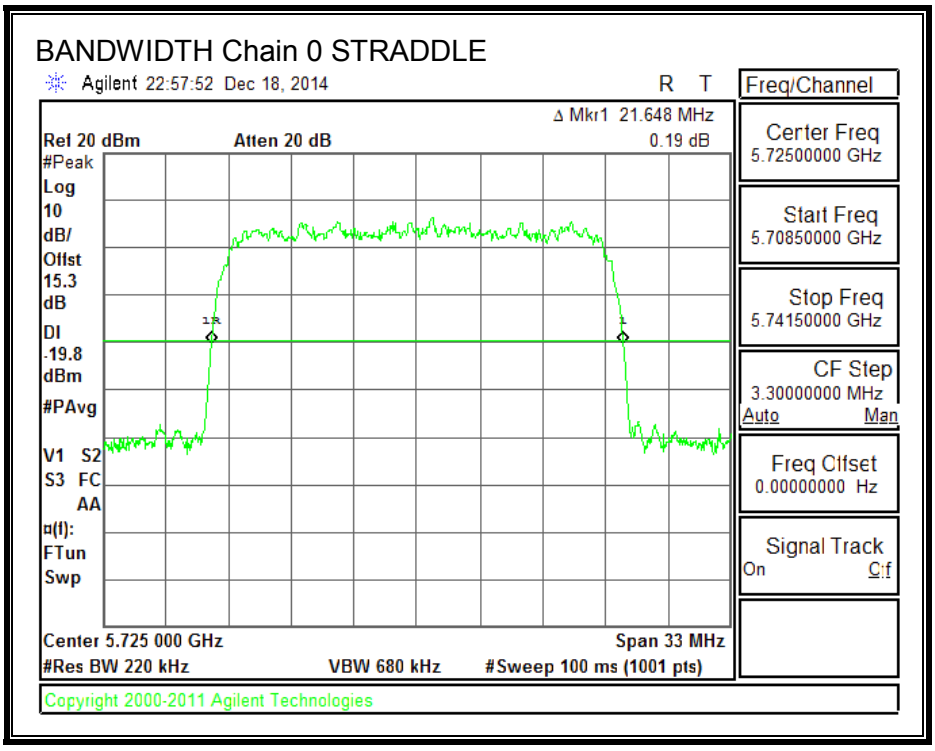




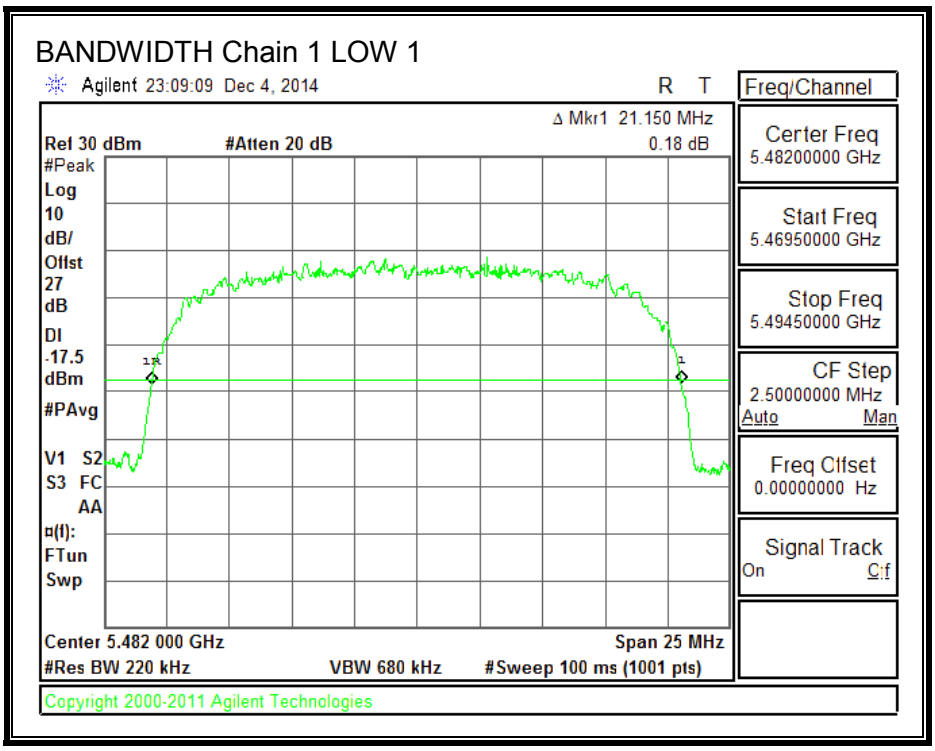


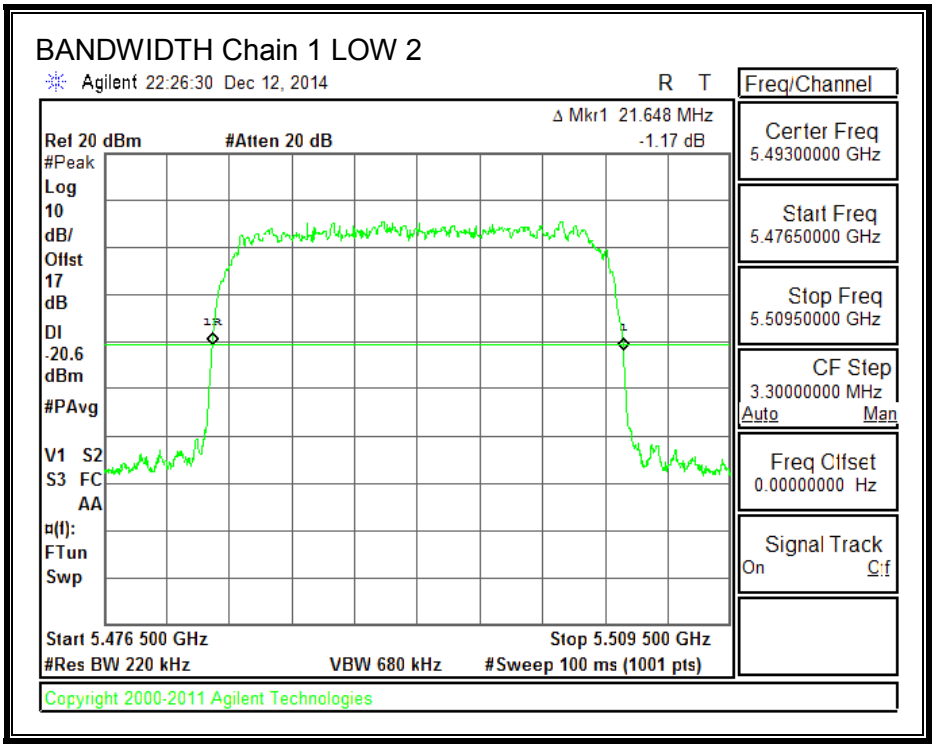


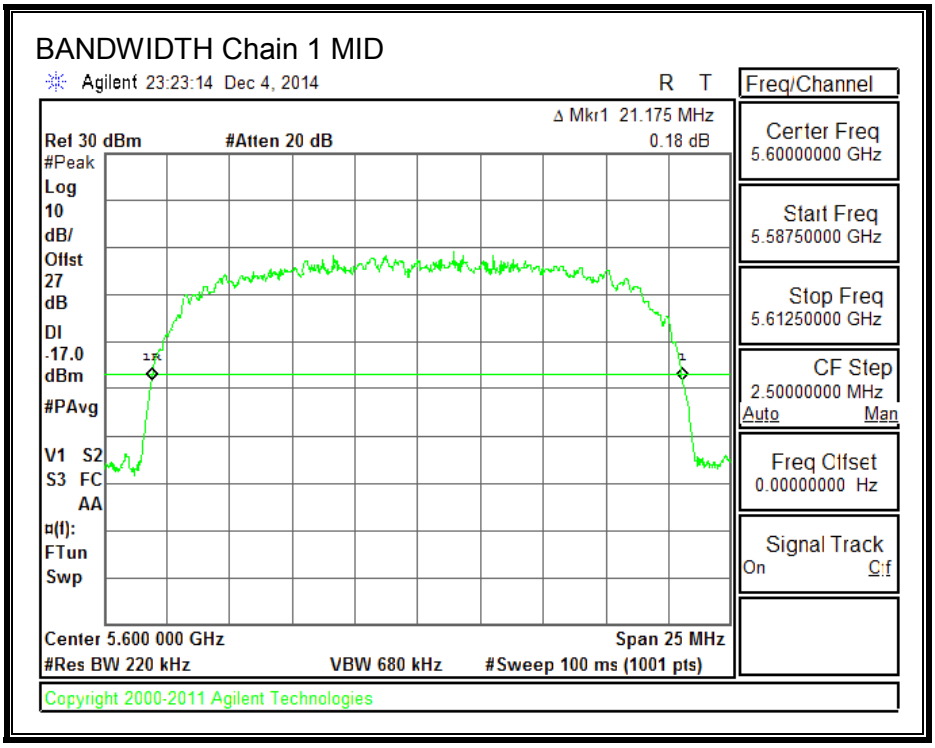


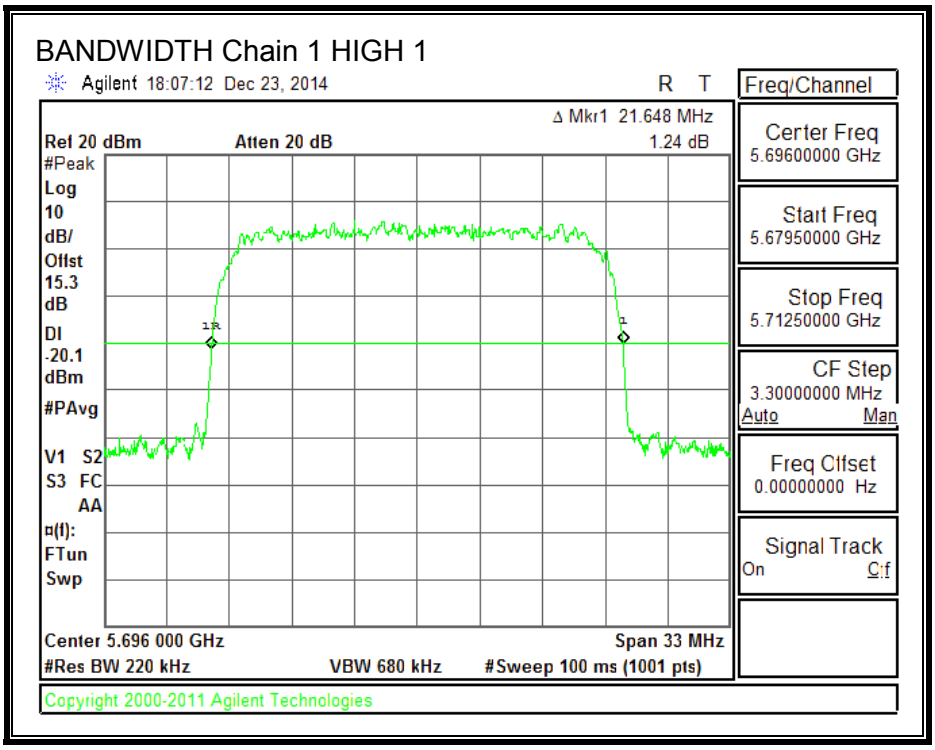


26 dB BANDWIDTH, Chain 1

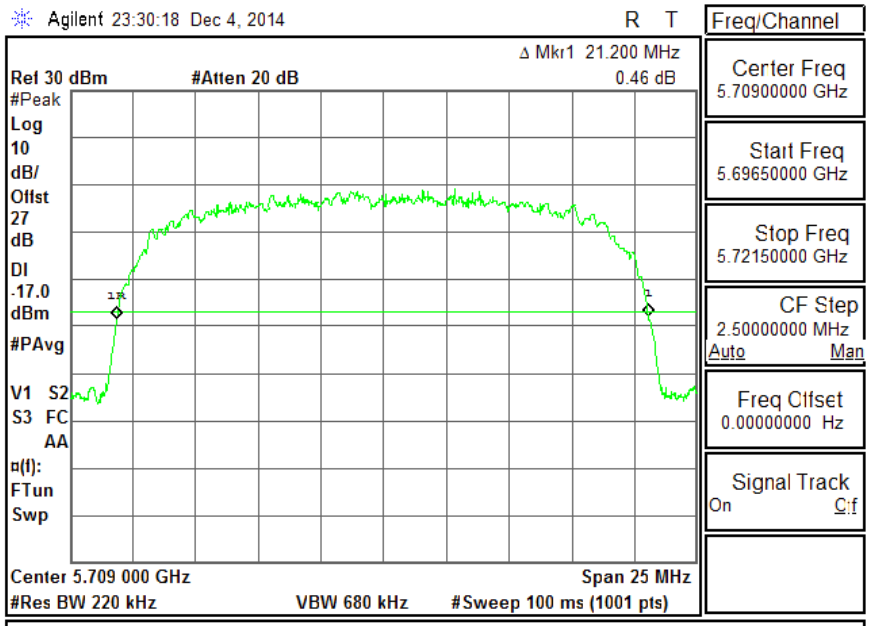




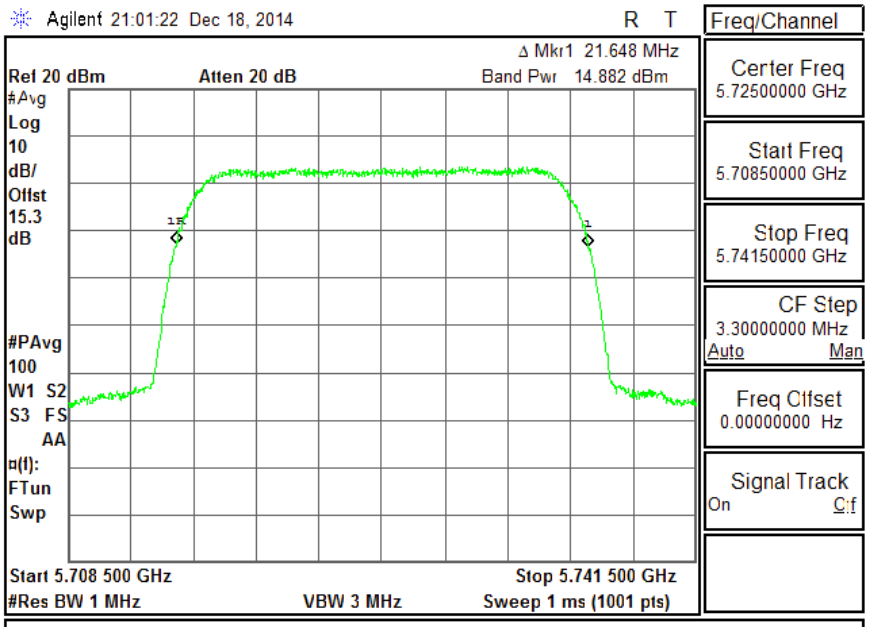




BANDWIDTH Chain 1 HIGH 2



BANDWIDTH Chain 1 STRADDLE



8.3.2. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, 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. In addition, the maximum 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 maximum conducted output 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
10.60	10.60	10.60

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low 1	5482	21.15	10.60	10.60	19.40	6.40
Low 2	5493	21.15	10.60	10.60	19.40	6.40
Mid	5600	21.15	10.60	10.60	19.40	6.40
High 1	5696	21.15	10.60	10.60	19.40	6.40
High 2	5709	21.15	10.60	10.60	19.40	6.40
Straddle	5725	21.15	10.60	10.60	19.40	6.40

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD

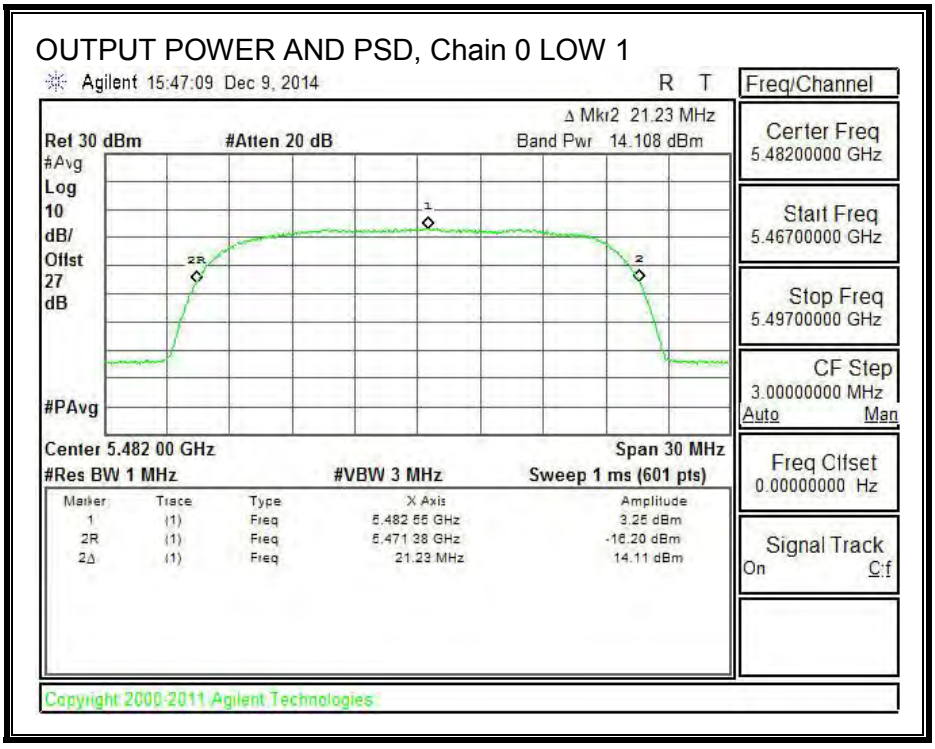
Output Power Results

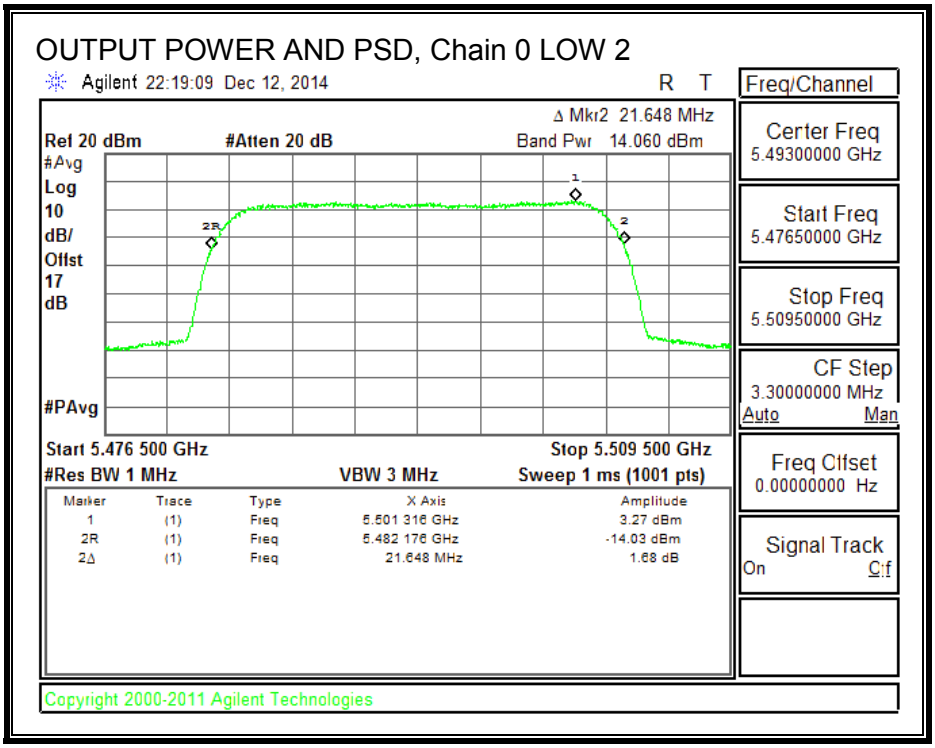
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low 1	5482	14.11	14.03	17.08	19.40	-2.32
Low 2	5493	14.06	14.56	17.33	19.40	-2.07
Mid	5600	14.17	14.39	17.29	19.40	-2.11
High 1	5696	14.40	14.70	17.56	19.40	-1.84
High 2	5709	13.98	14.02	17.01	19.40	-2.39
Straddle	5725	14.53	14.88	17.72	19.40	-1.68

PSD Results

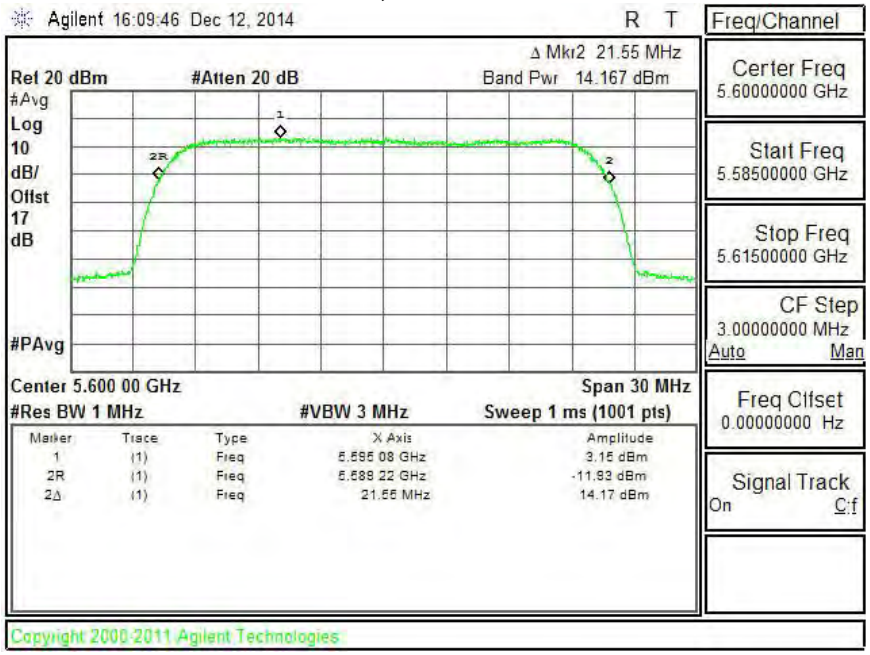
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low 1	5482	3.26	3.14	6.21	6.40	-0.19
Low 2	5493	3.27	3.32	6.31	6.40	-0.09
Mid	5600	3.15	3.10	6.14	6.40	-0.26
High 1	5696	3.25	3.35	6.31	6.40	-0.09
High 2	5709	3.16	3.09	6.14	6.40	-0.26

OUTPUT POWER AND PSD, Chain 0

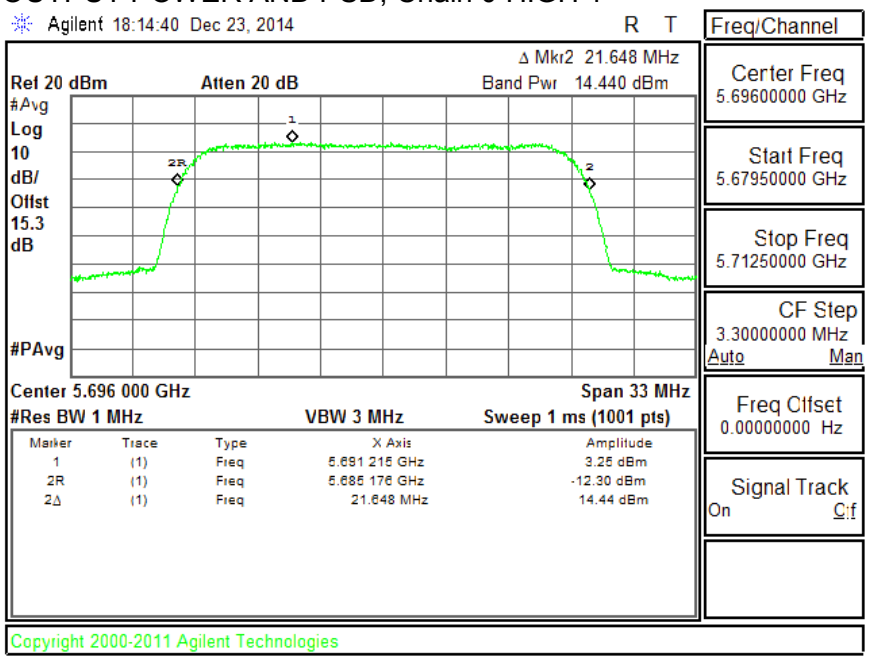


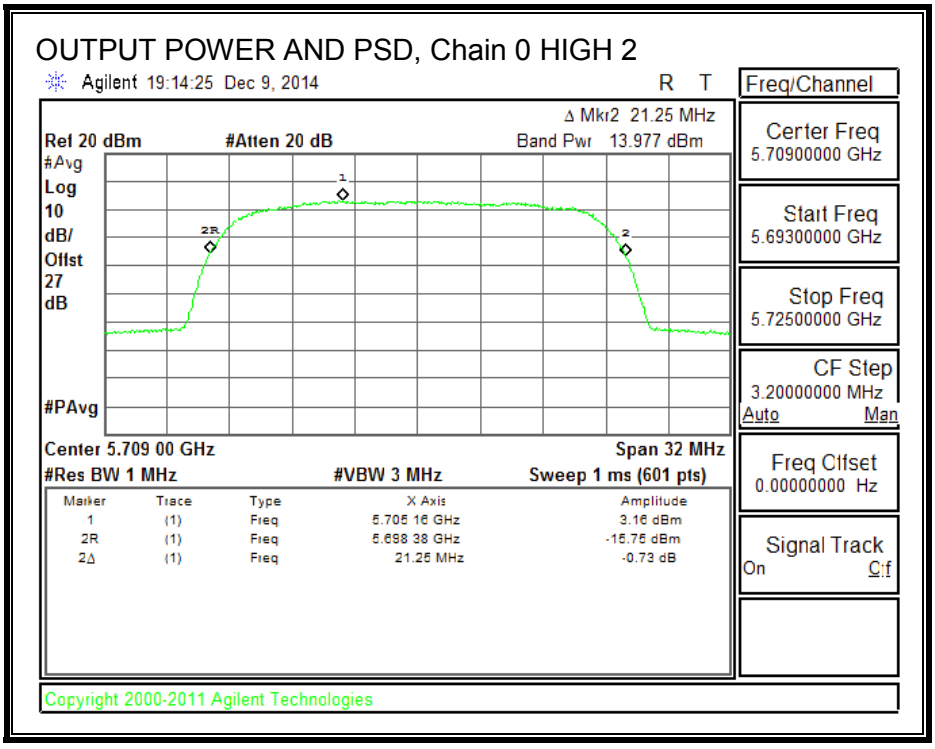


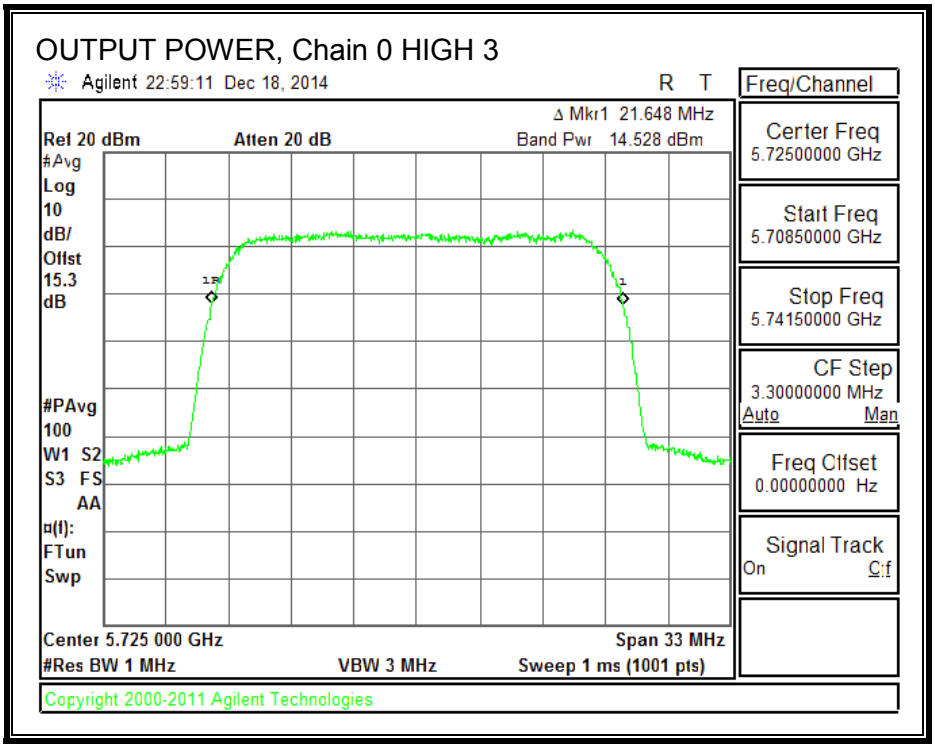
OUTPUT POWER AND PSD, Chain 0 MID



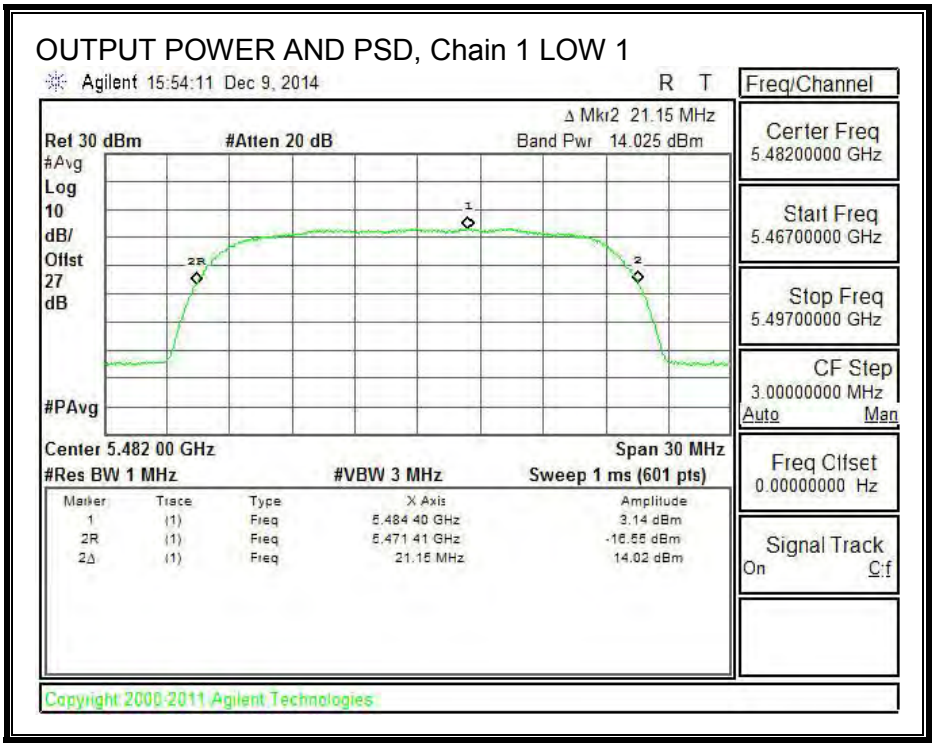
OUTPUT POWER AND PSD, Chain 0 HIGH 1

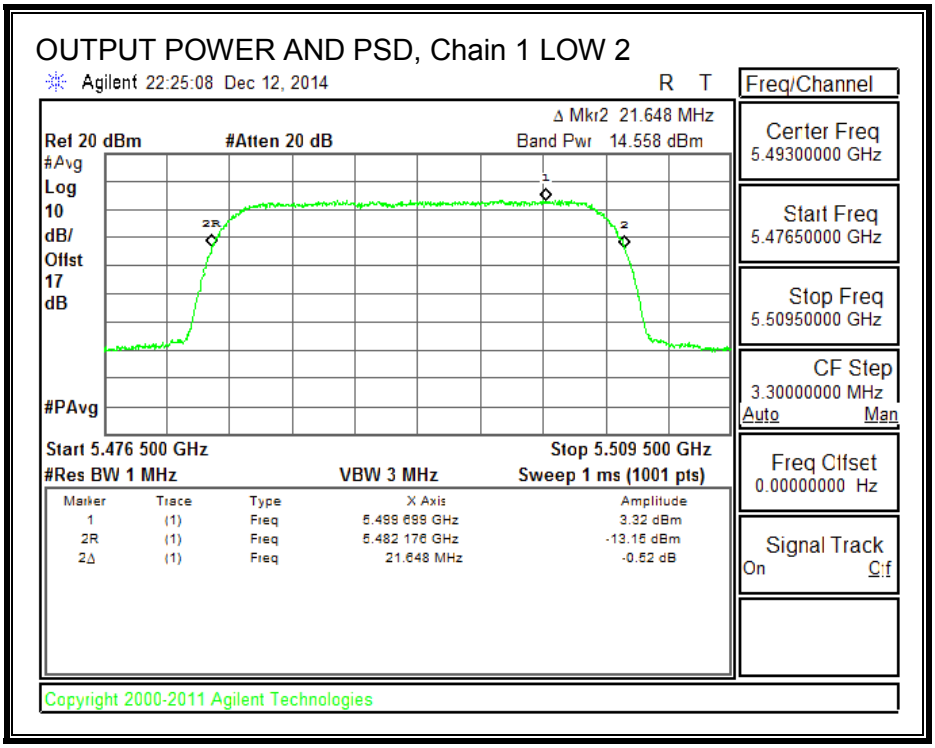




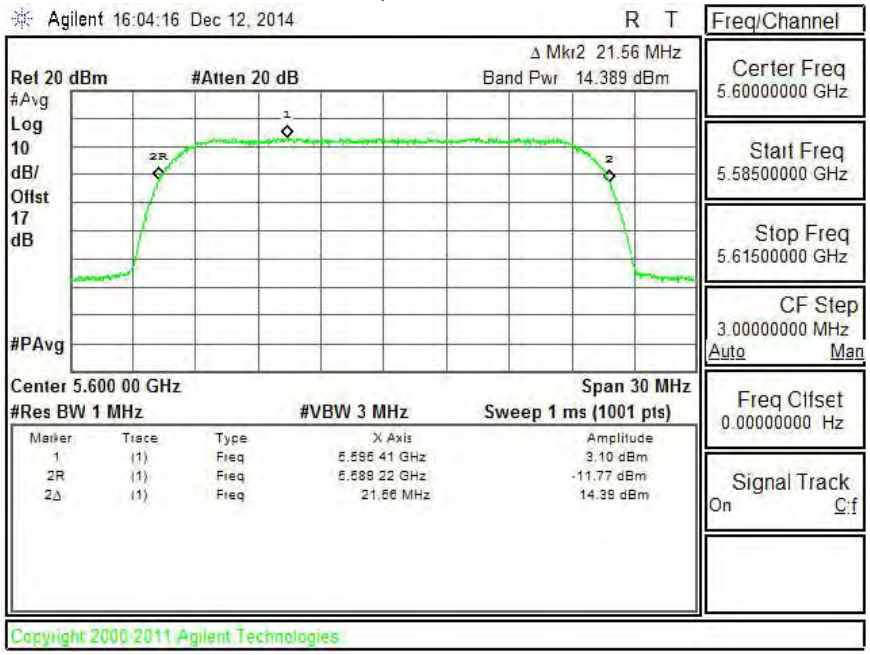


OUTPUT POWER AND PSD, Chain 1

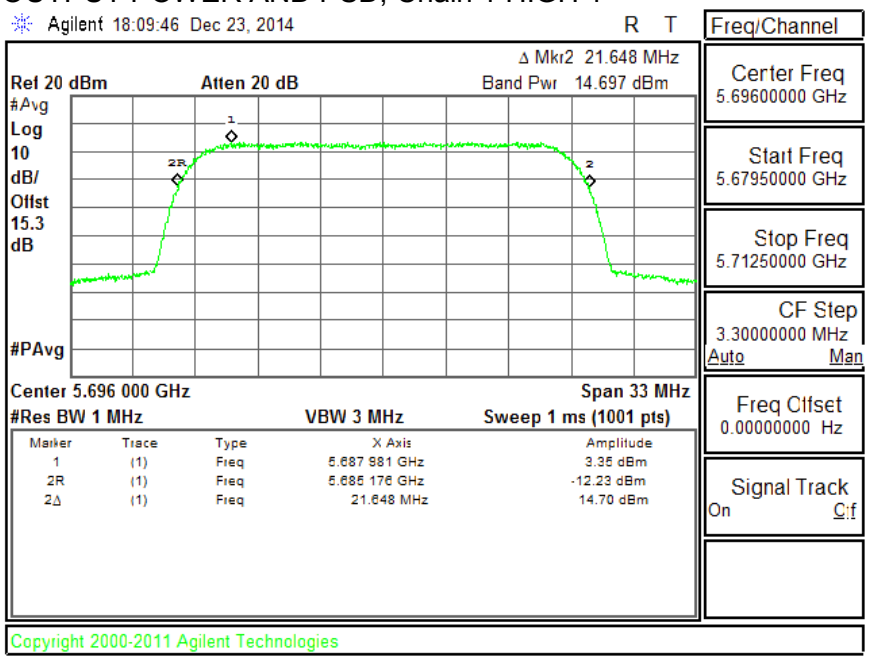


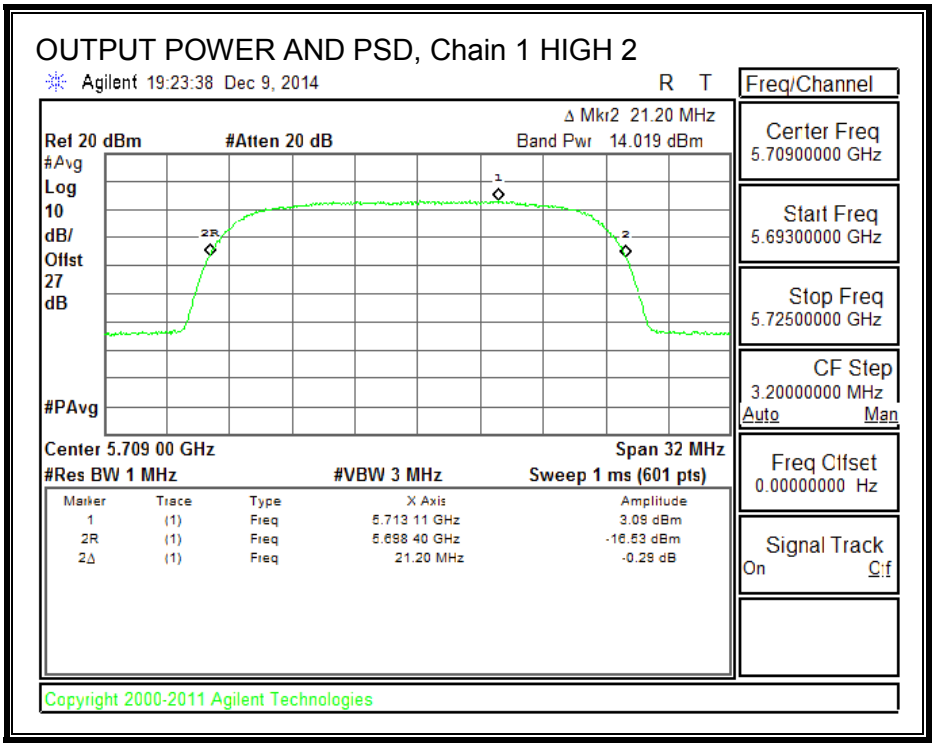


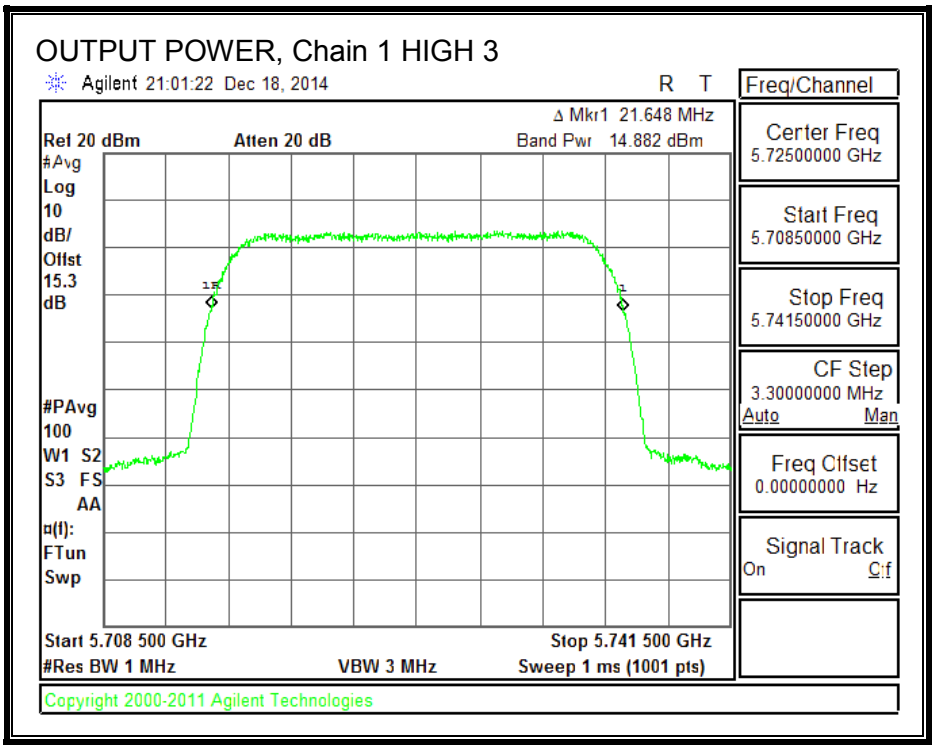
OUTPUT POWER AND PSD, Chain 1 MID



OUTPUT POWER AND PSD, Chain 1 HIGH 1







8.3.3. STRADDLE CHANNEL RESULTS

UNII-2C BAND

Bandwidth and Antenna Gain

Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
5725	10.82	10.60	10.60

Limits

Frequency (MHz)	FCC Power Limit (dBm)	PPSD Limit (dBm)
5725	16.74	6.40

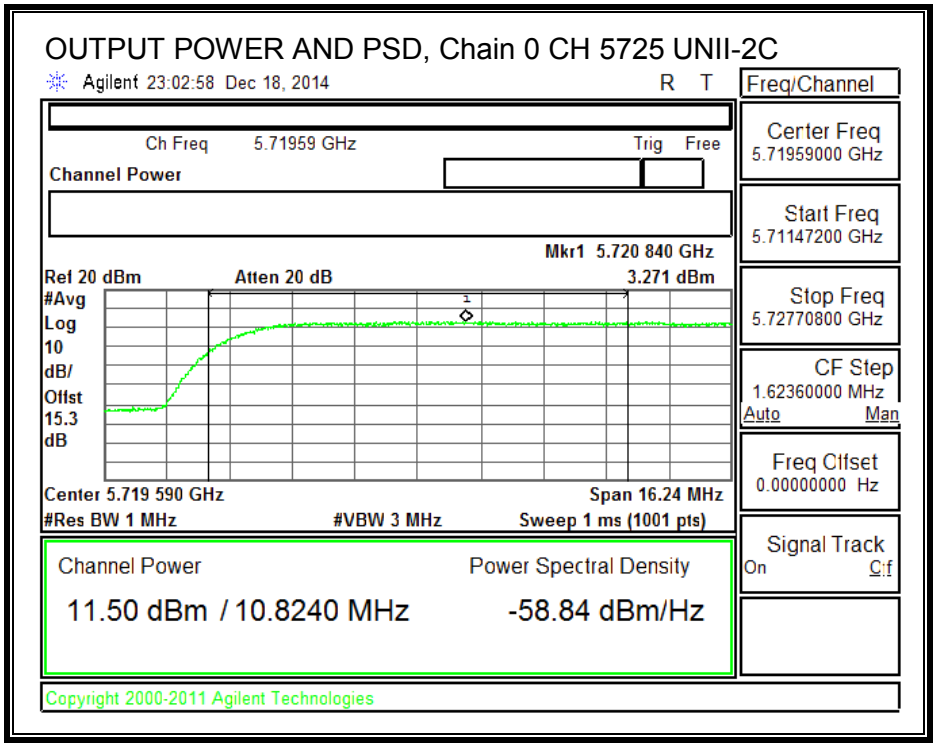
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PPSD

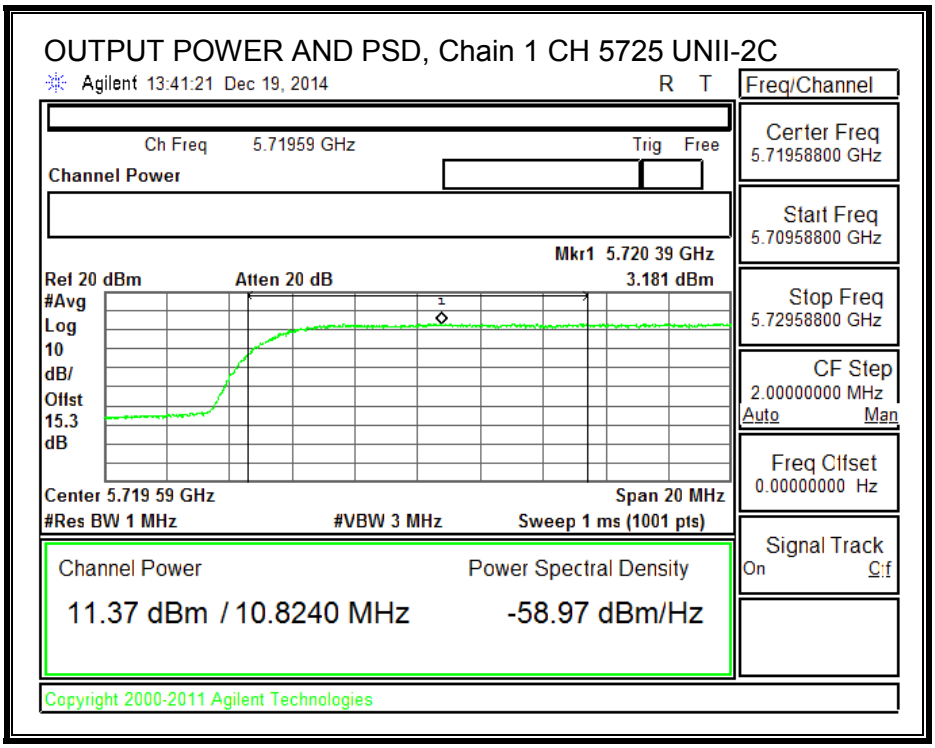
Output Power Results

Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
5725	11.50	11.37	14.45	16.74	-2.30

PPSD Results

Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
5725	3.27	3.18	6.24	6.40	-0.16





UNII-3 BAND

Bandwidth and Antenna Gain

Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
5725	10.82	10.60	10.60

Limits

Frequency (MHz)	FCC Power Limit (dBm)	FCC PPSD Limit (dBm)
5725	30.00	30.00

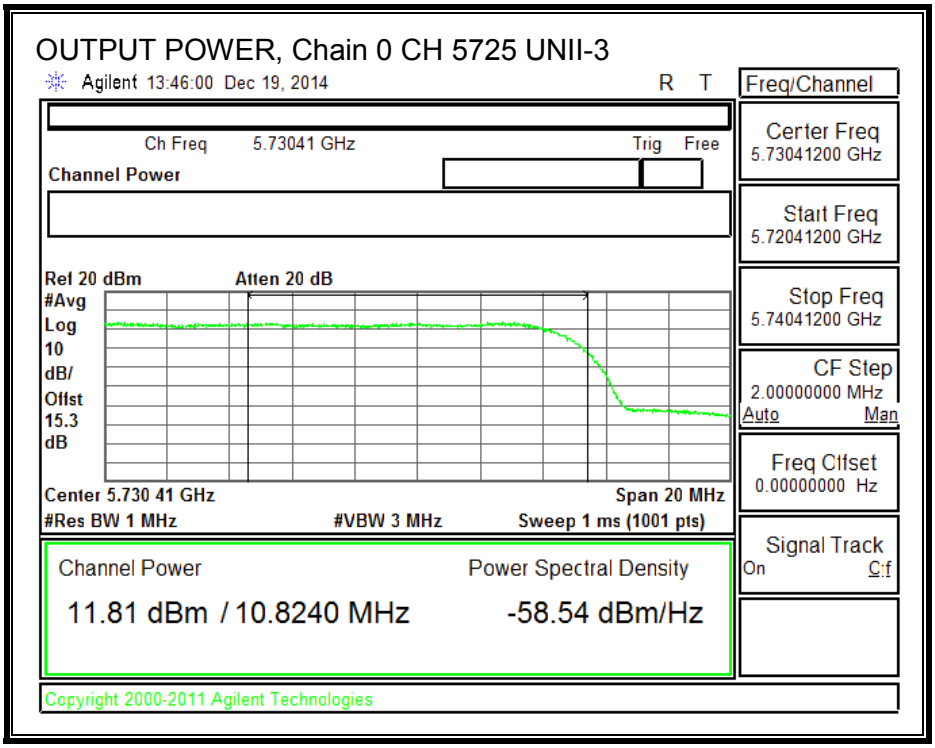
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PPSD

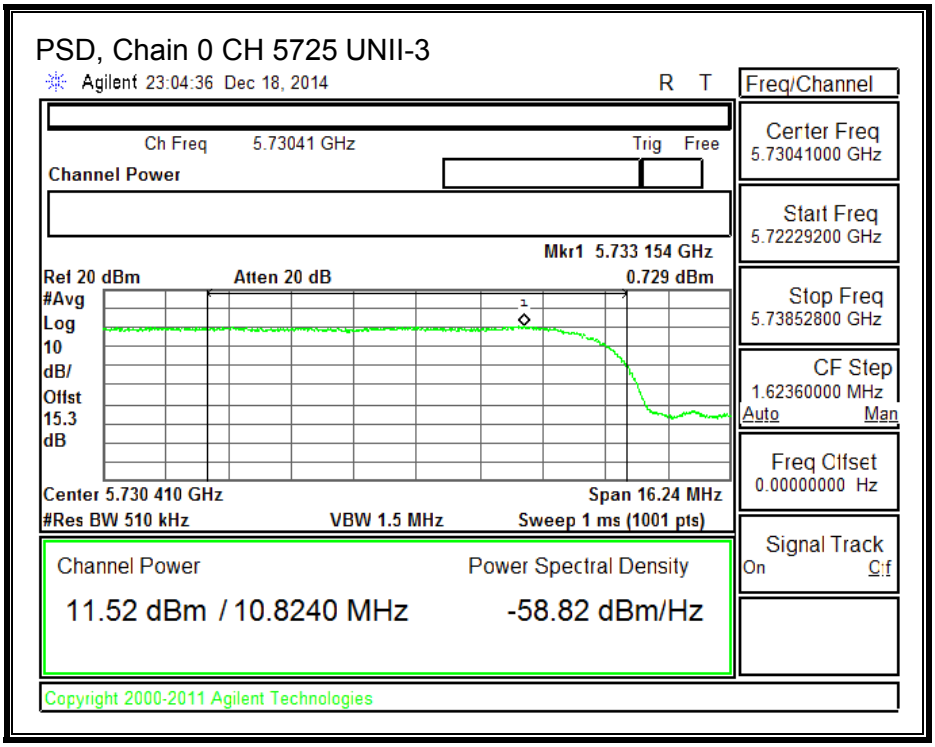
Output Power Results

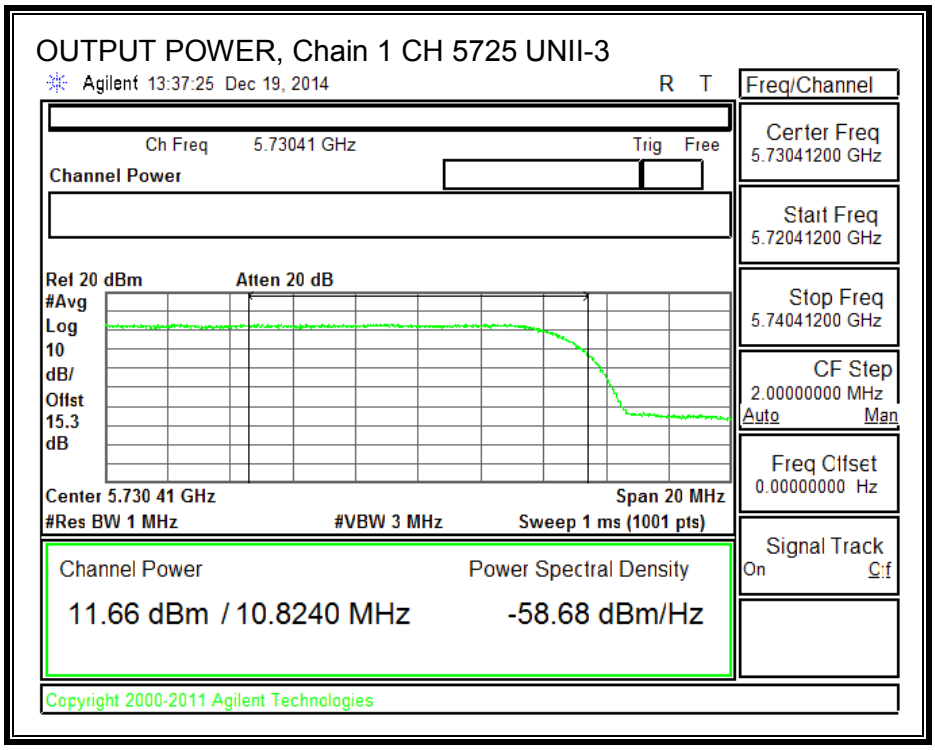
Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
5725	11.81	11.66	14.75	30.00	-15.25

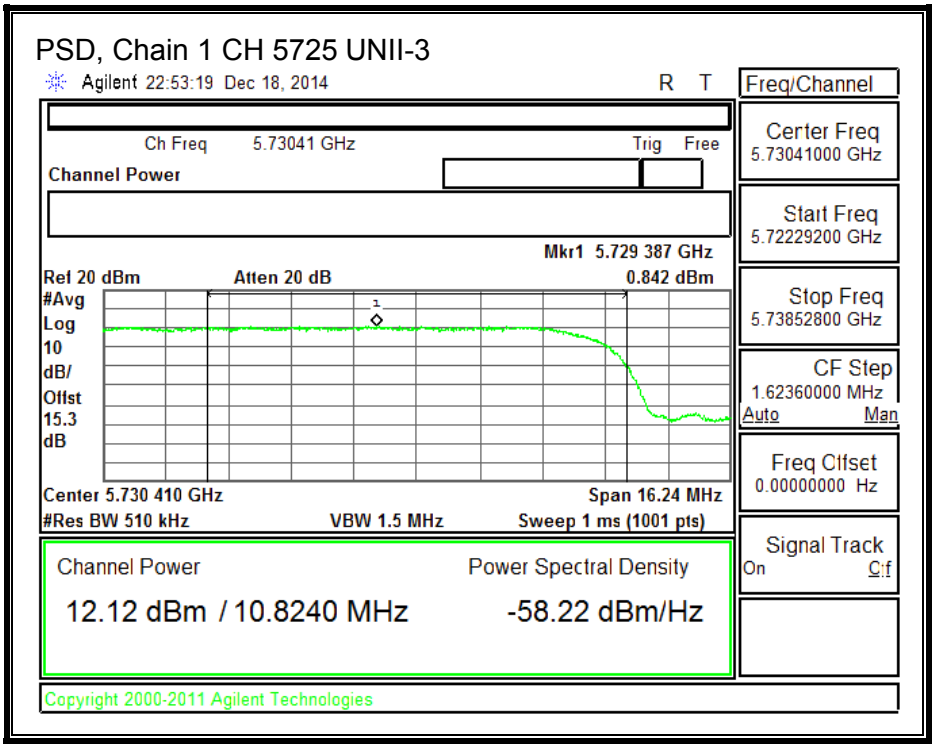
PPSD Results

Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
5725	0.73	0.84	3.80	30.00	-26.20









8.3.4. CONDUCTED BANDEDGE

LIMITS

FCC §15.205 and §15.209

PART 15, SUBPART E

Radiated LIMIT:

(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 e.i.r.p. of −27 dBm/MHz.

Conducted: Limits

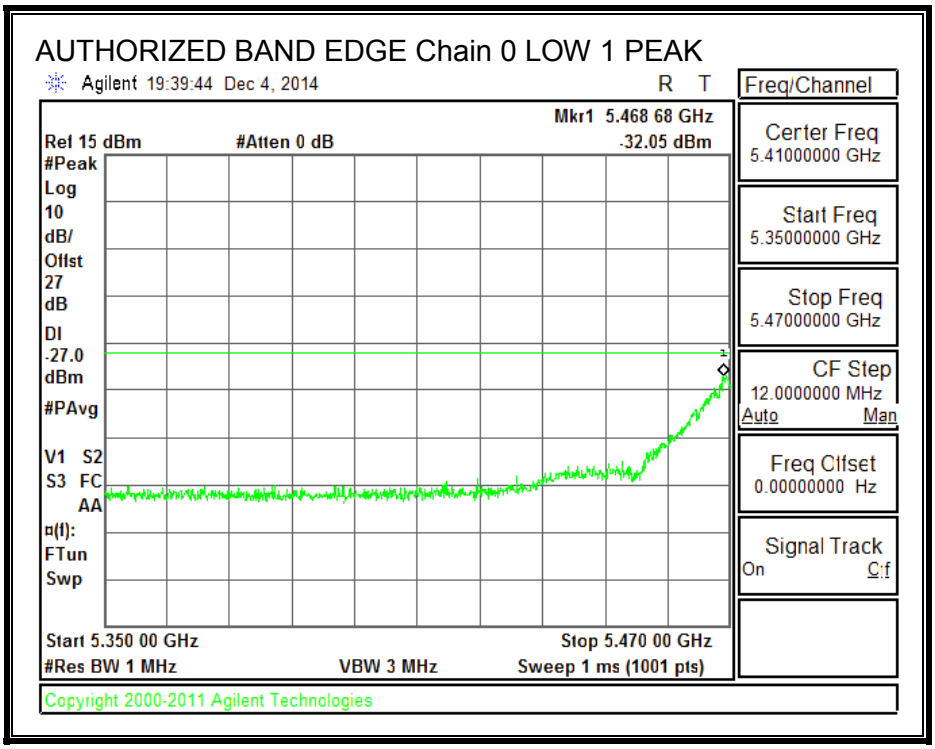
Procedure

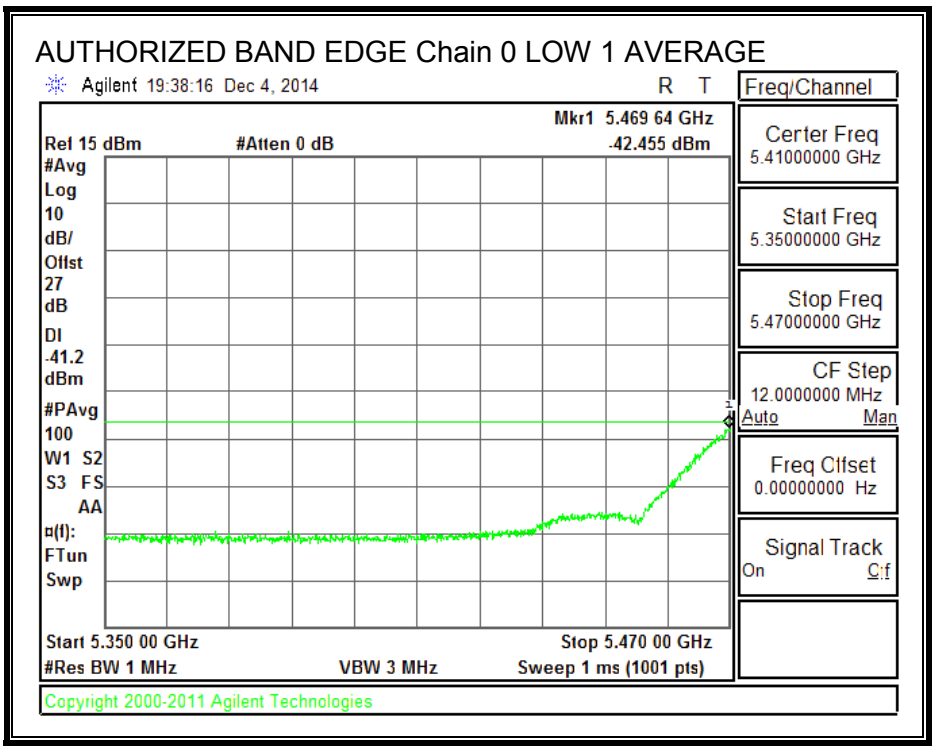
KDB 789033 D02 General UNII Test Procedures New Rules v01, Section II, G5, G6

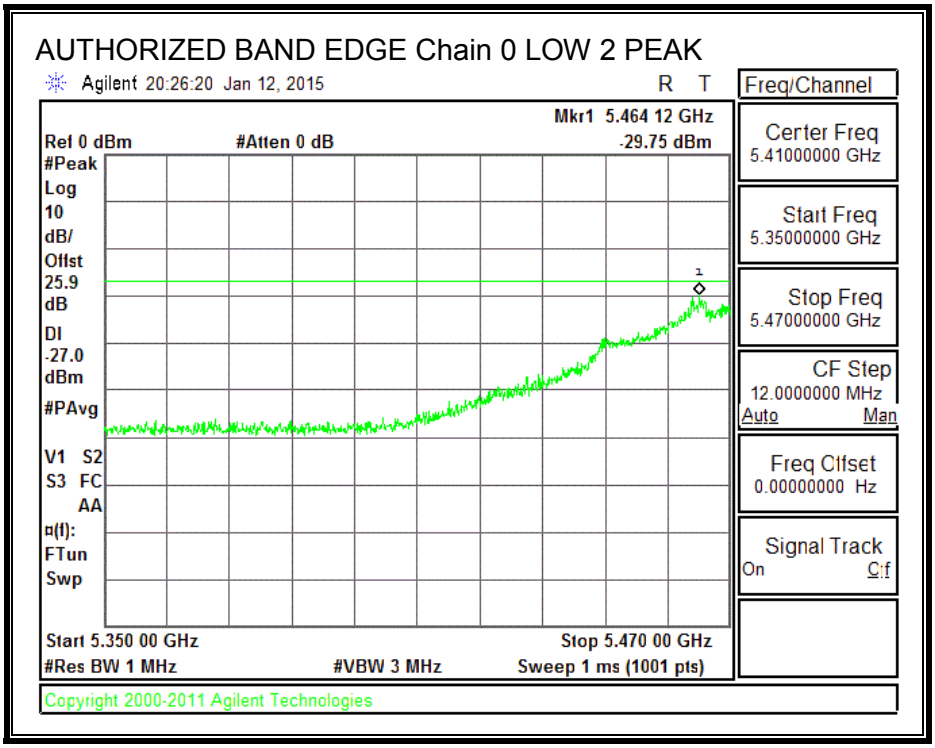
Conducted measurements are being used to demonstrate compliance with the spurious limits in the restricted band (all other spurious emissions are measured using the radiated test method with the antennas connected). The limits are 54dBuV/m average and 74dBuV/m peak, which are equivalent to eirp of -41.2 dBm and -21.2dBm respectively. The plots include an offset to account for the EUT antenna gain and external attenuation between EUT antenna port and spectrum analyzer. As the two antenna chains feed cross polarized antennas with un- correlated signals the two chains are treated independently and the emissions do not need to be summed.

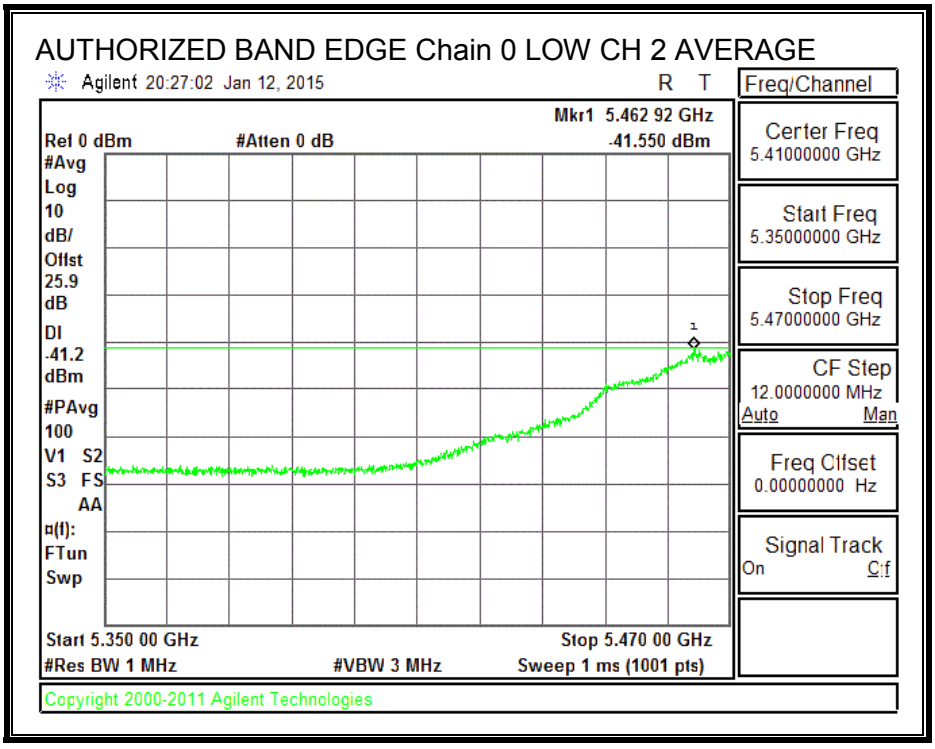
RESULTS

LOW CHANNEL BANDEDGE, Chain 0

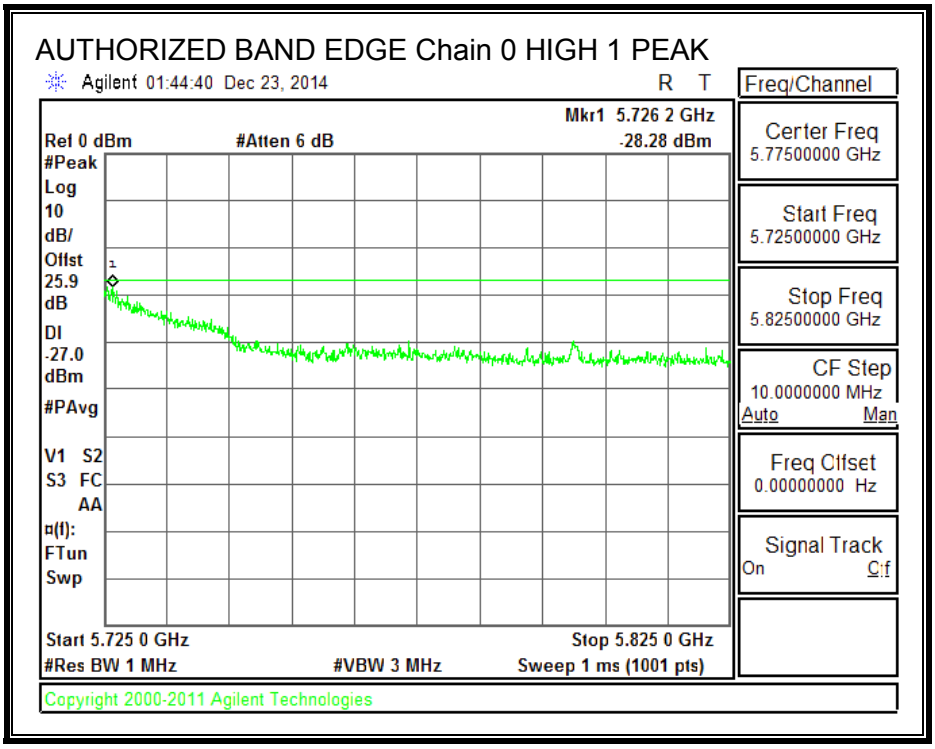


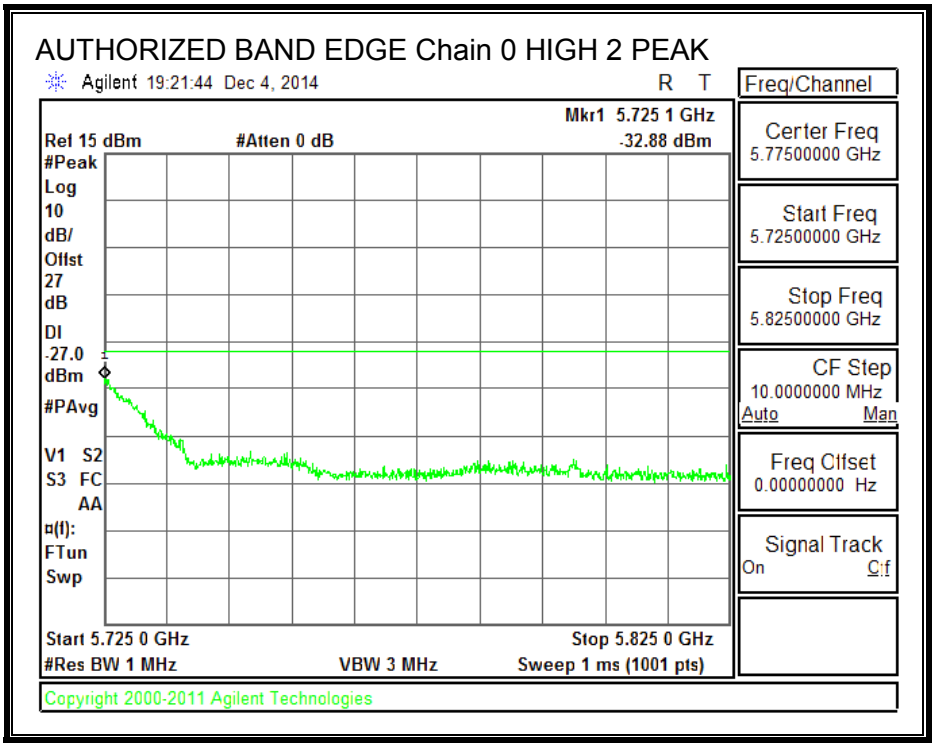




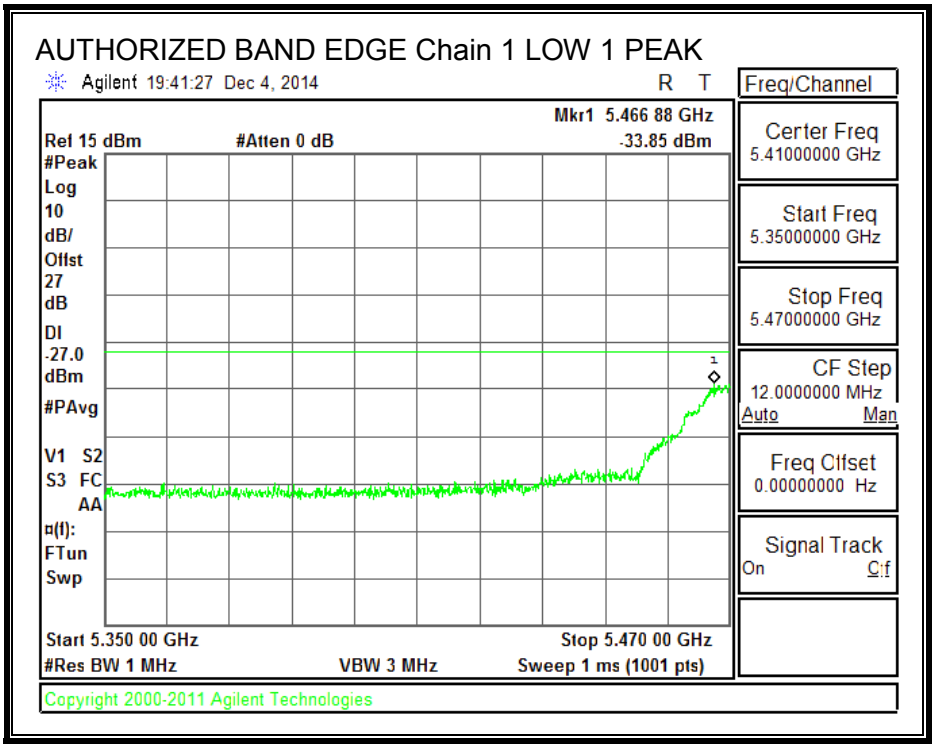


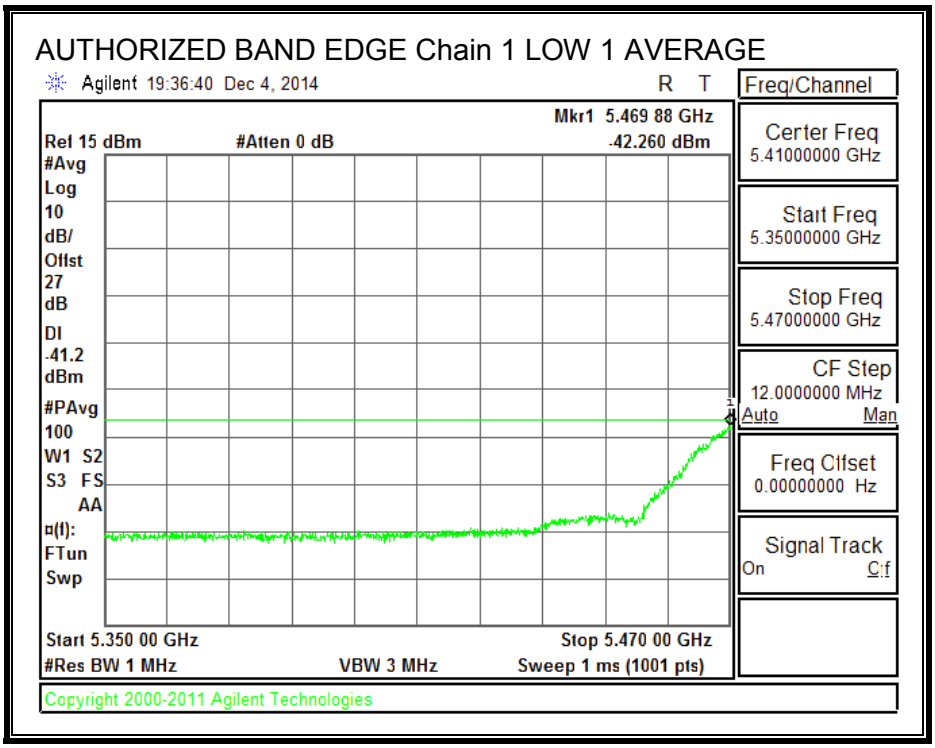
HIGH CHANNEL BANDEDGE, Chain 0



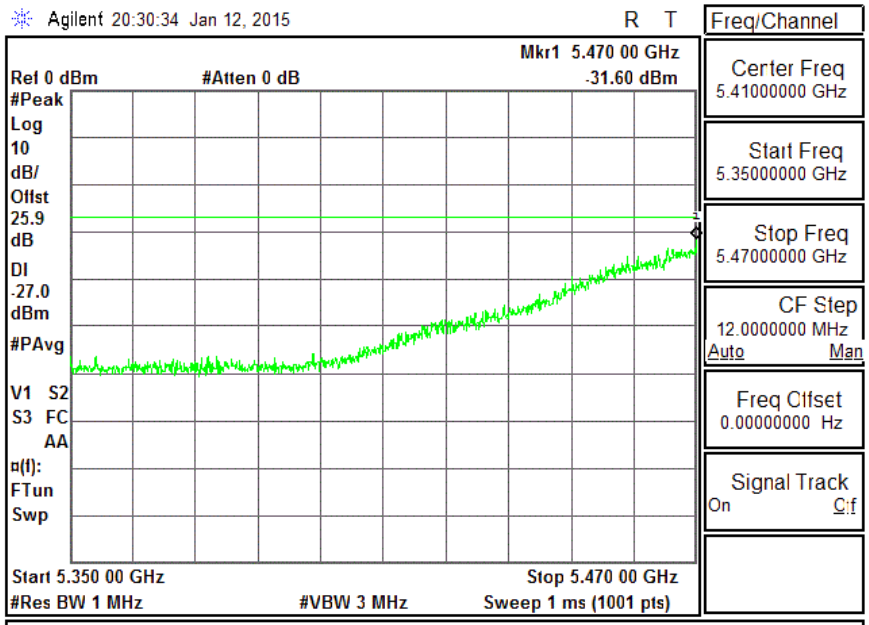


LOW CHANNEL BANDEDGE, Chain 1

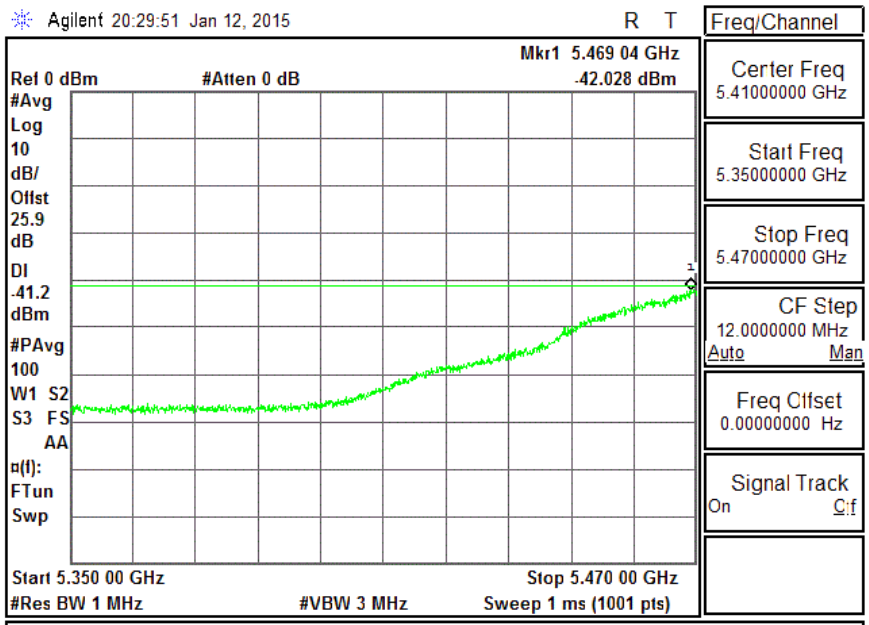




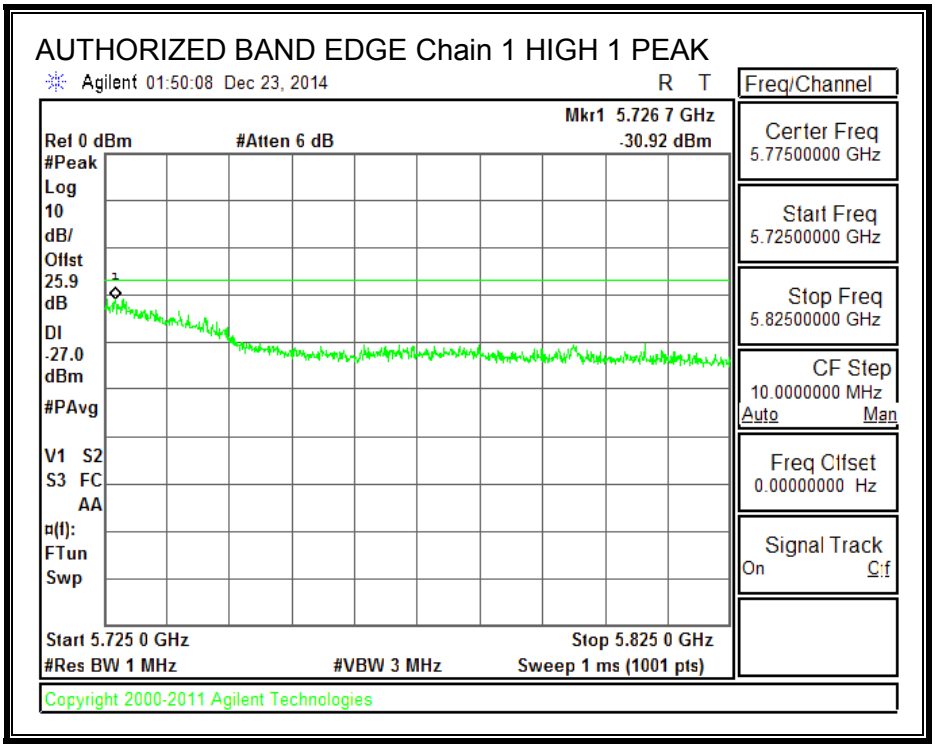
AUTHORIZED BAND EDGE Chain 1 LOW 2 PEAK

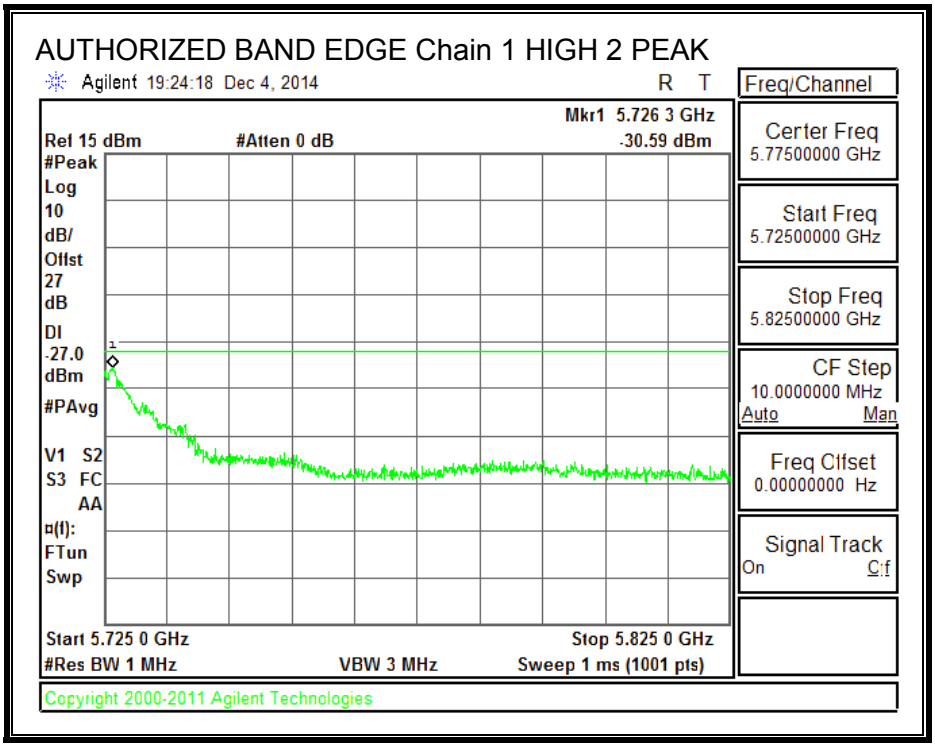


AUTHORIZED BAND EDGE Chain 1 LOW 2 AVERAGE



HIGH CHANNEL BANDEDGE, Chain 1





8.4. 40MHz 2 Tx MODE IN THE 5.6 GHz BAND

8.4.1. 26 dB BANDWIDTH

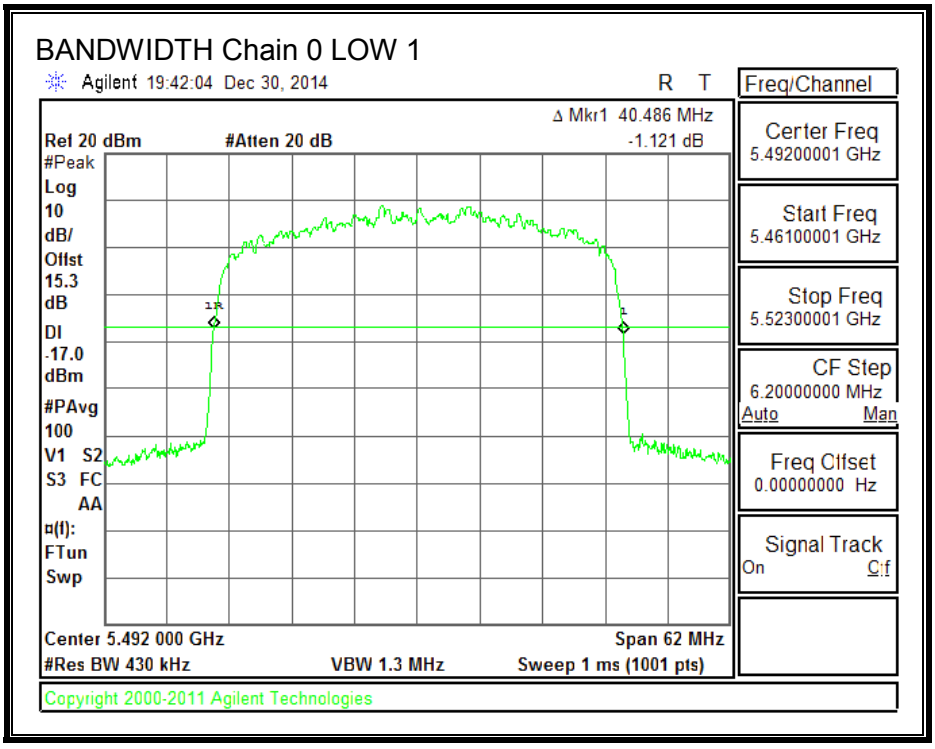
LIMITS

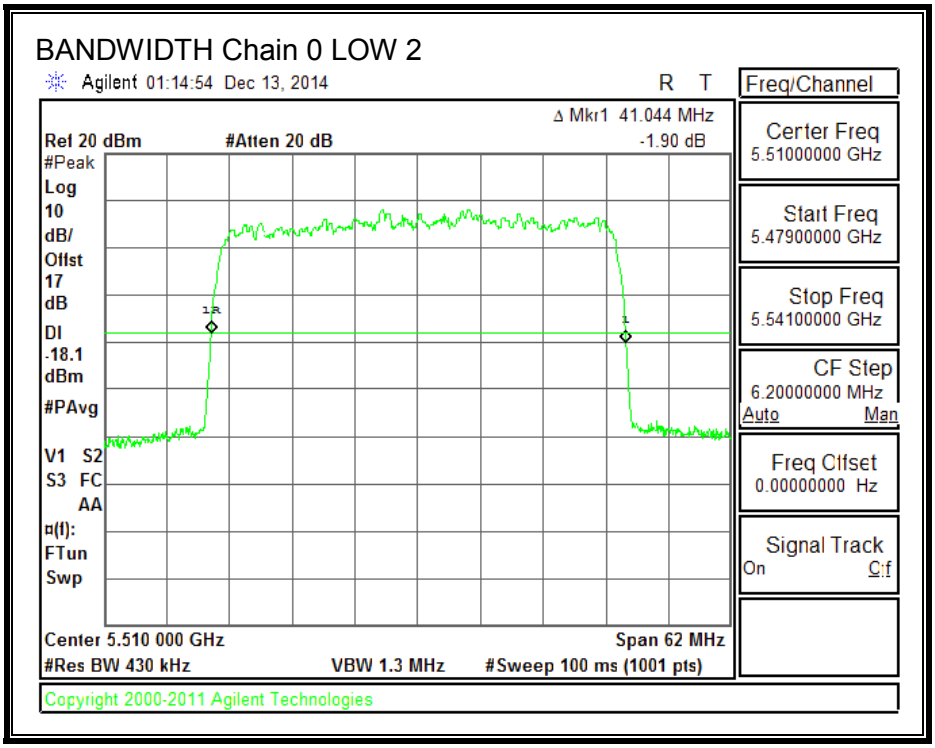
None; for reporting purposes only.

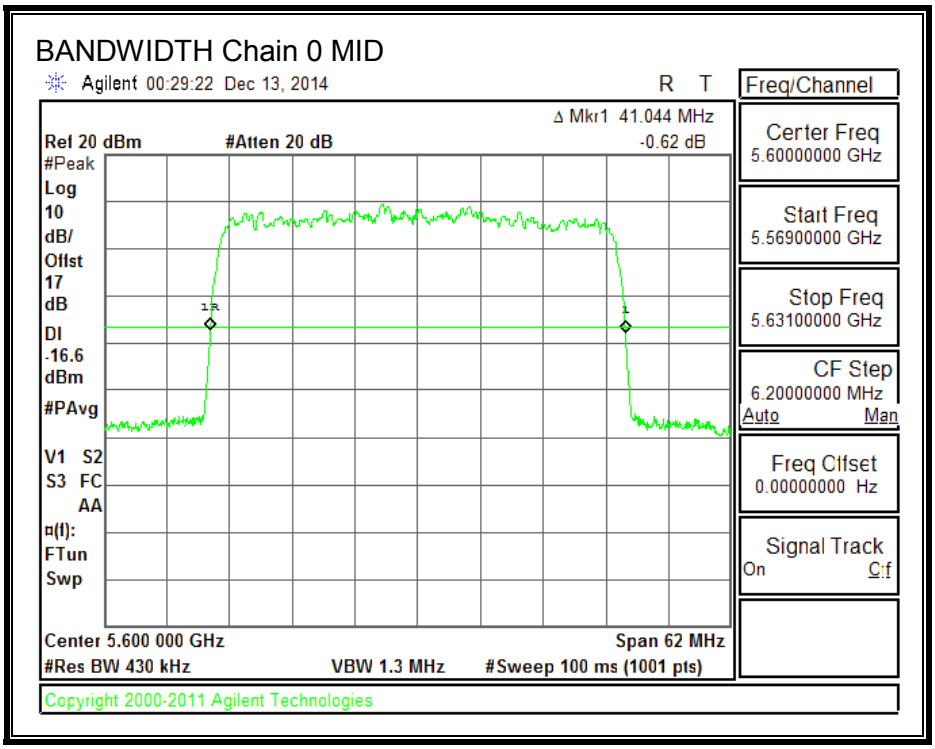
RESULTS

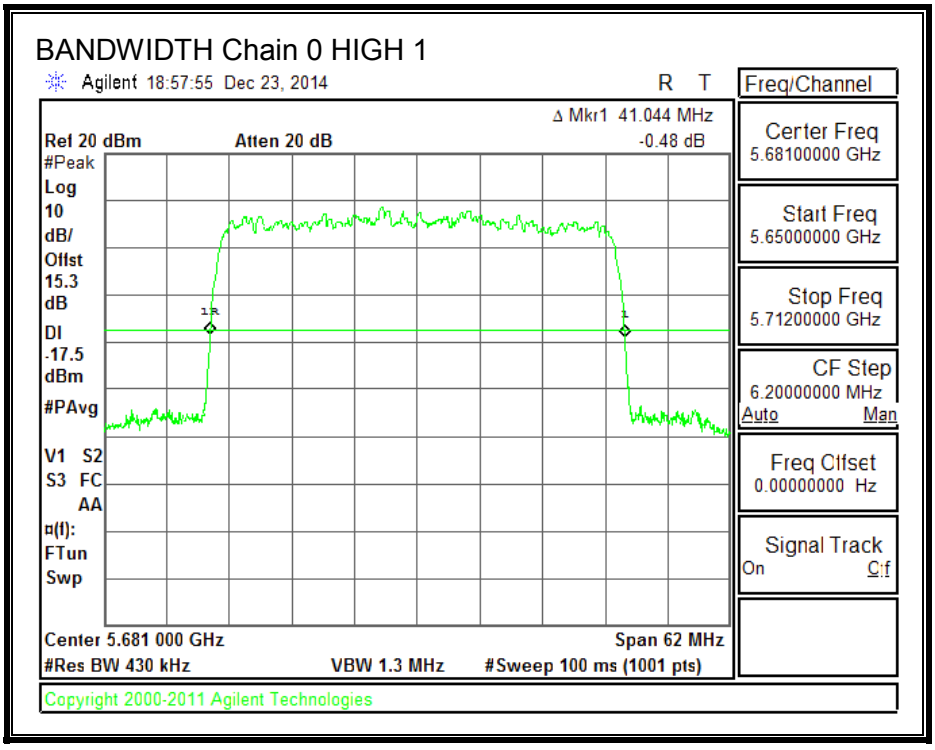
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low 1	5492	40.49	40.30
Low 2	5510	41.04	41.04
Mid	5600	41.04	41.04
High 1	5681	41.04	41.11
High 2	5690	40.55	40.36
High 3	5702	40.55	40.30
Straddle	5725	41.11	41.11

26 dB BANDWIDTH, Chain 0

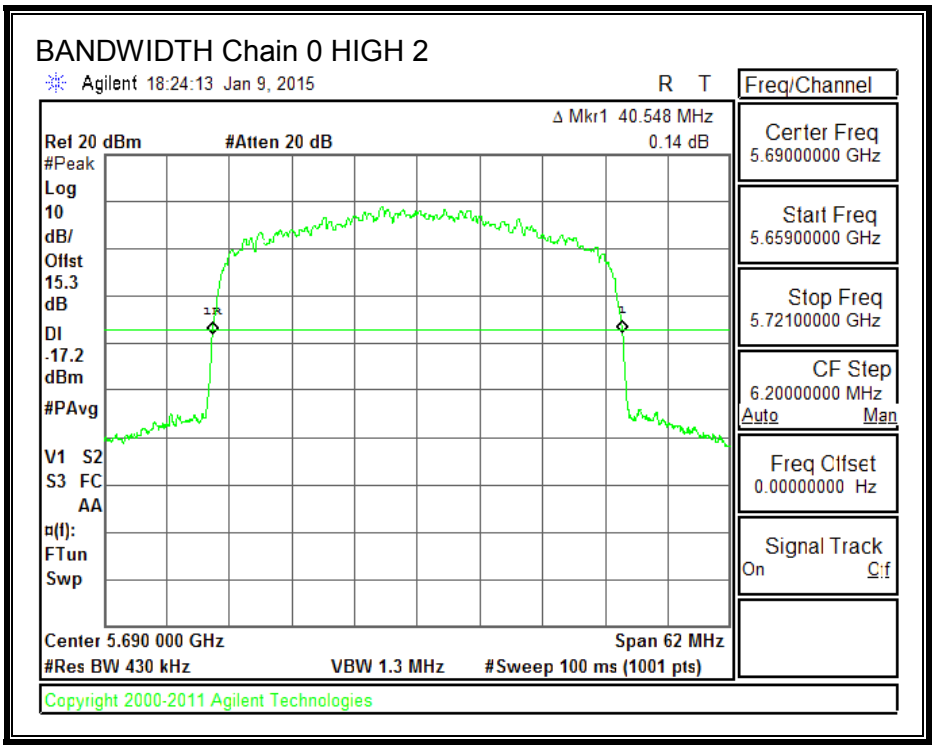




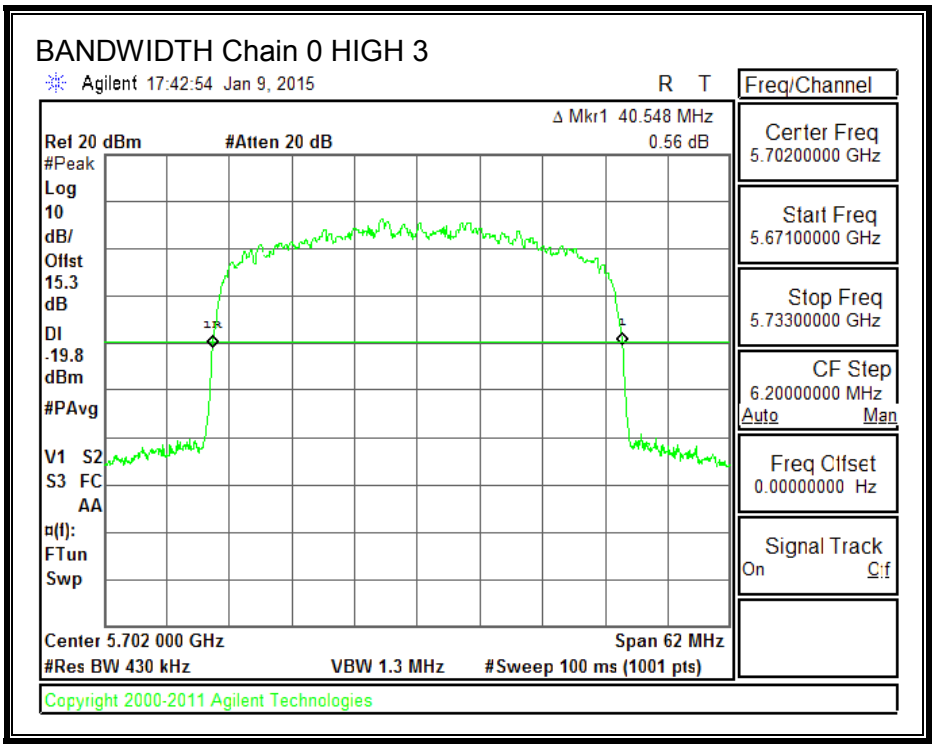


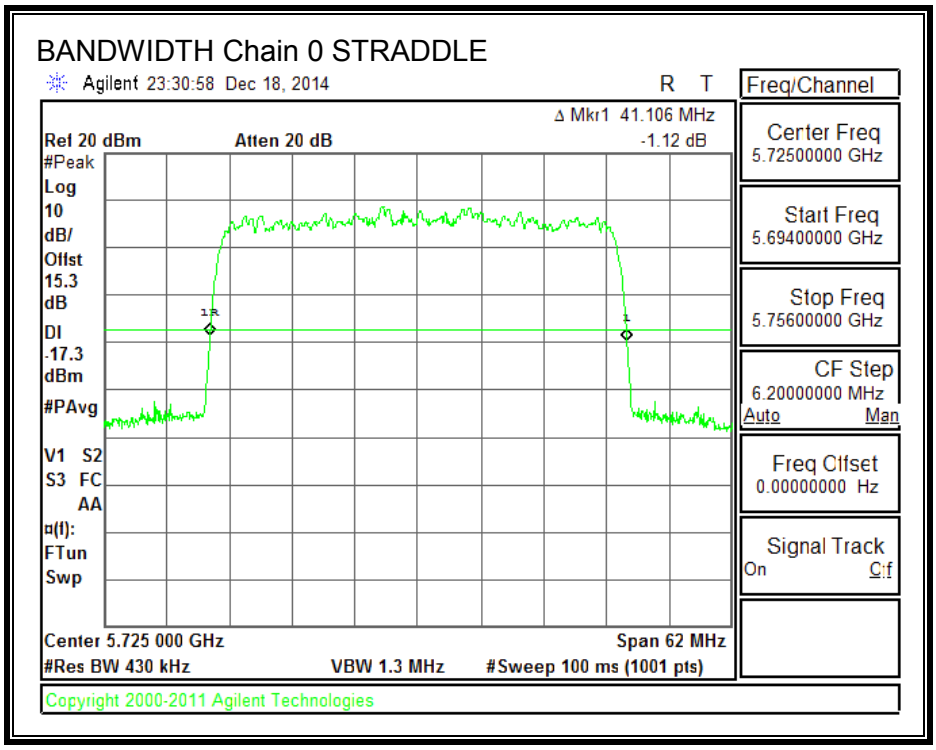


BANDWIDTH Chain 0 HIGH 2

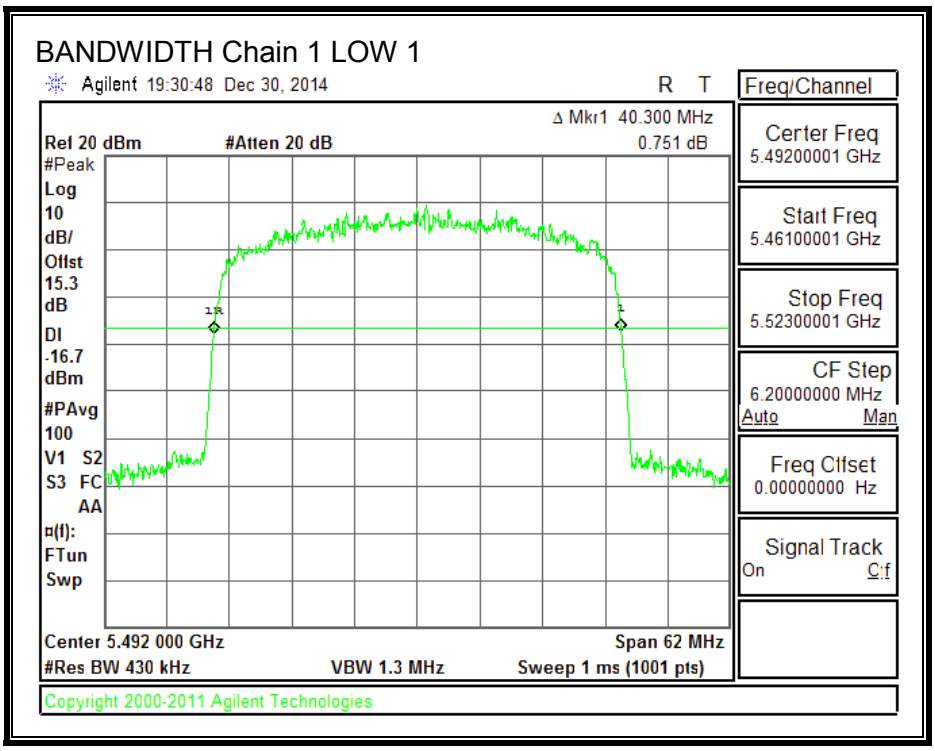


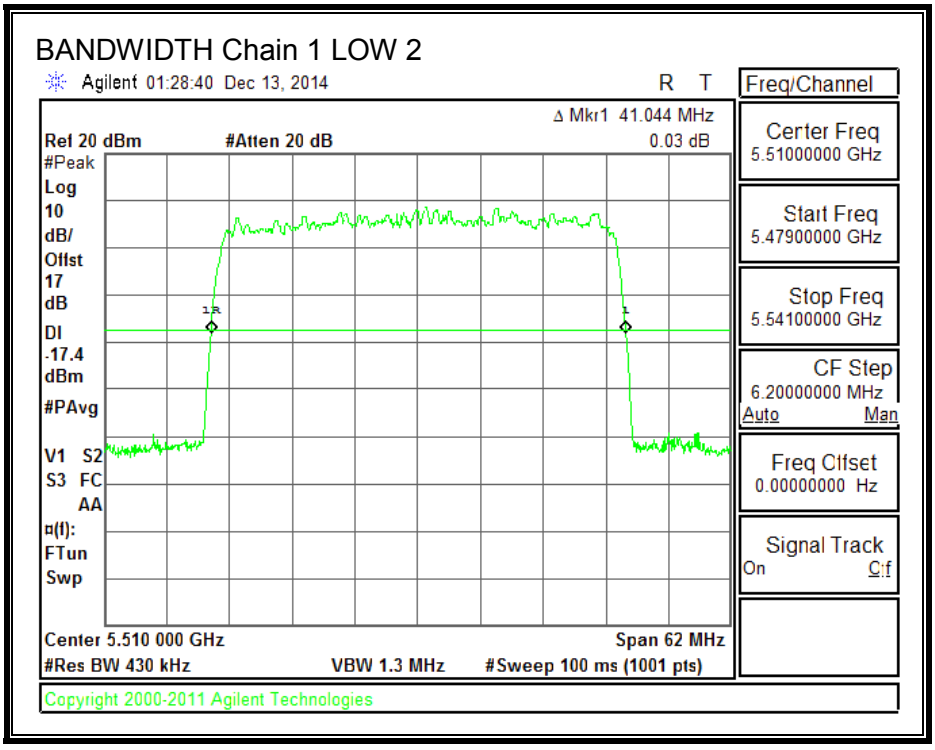
BANDWIDTH Chain 0 HIGH 3

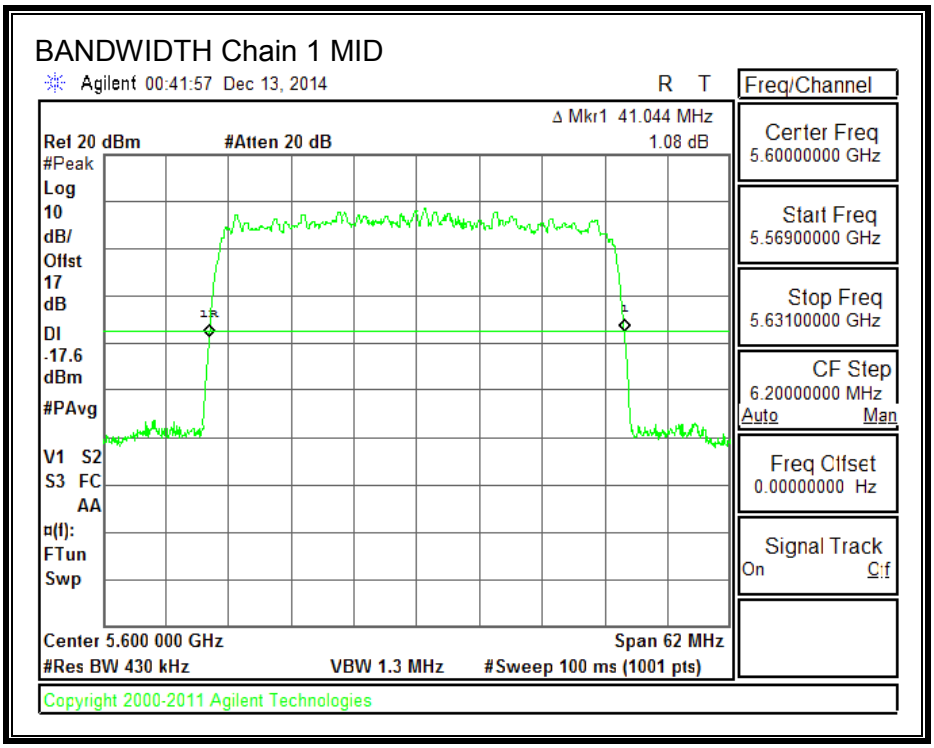


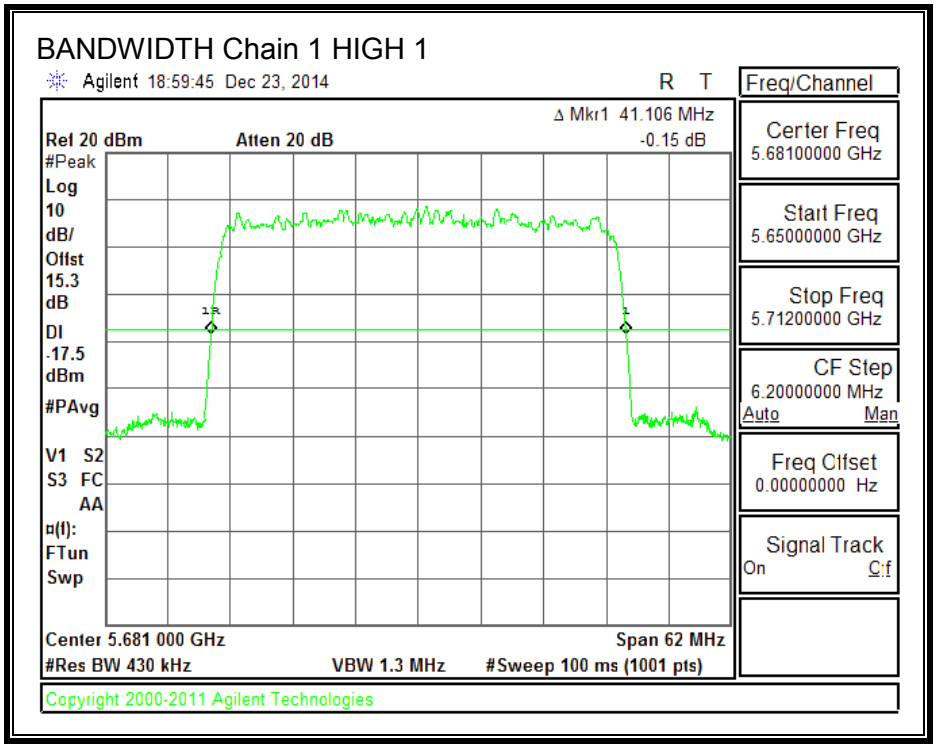


26 dB BANDWIDTH, Chain 1

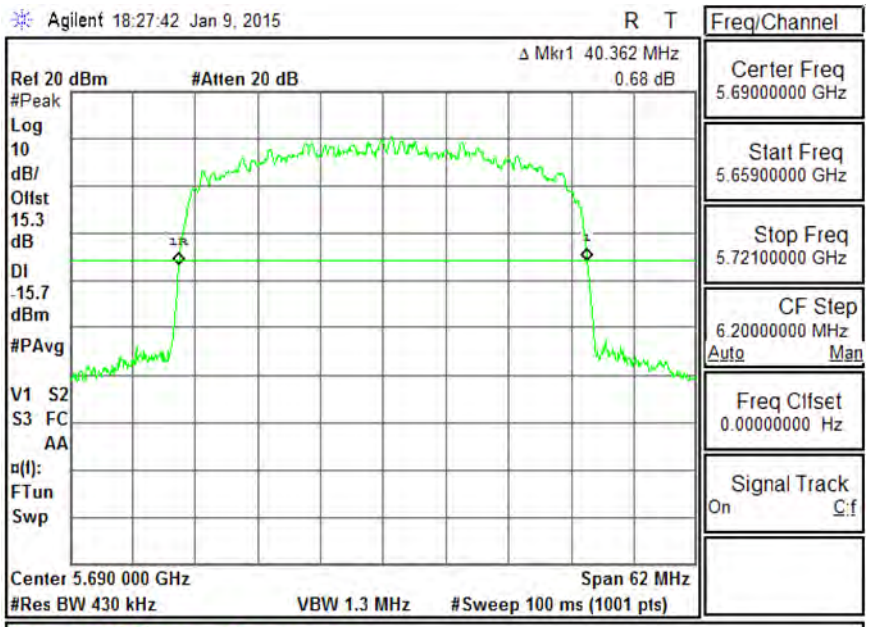




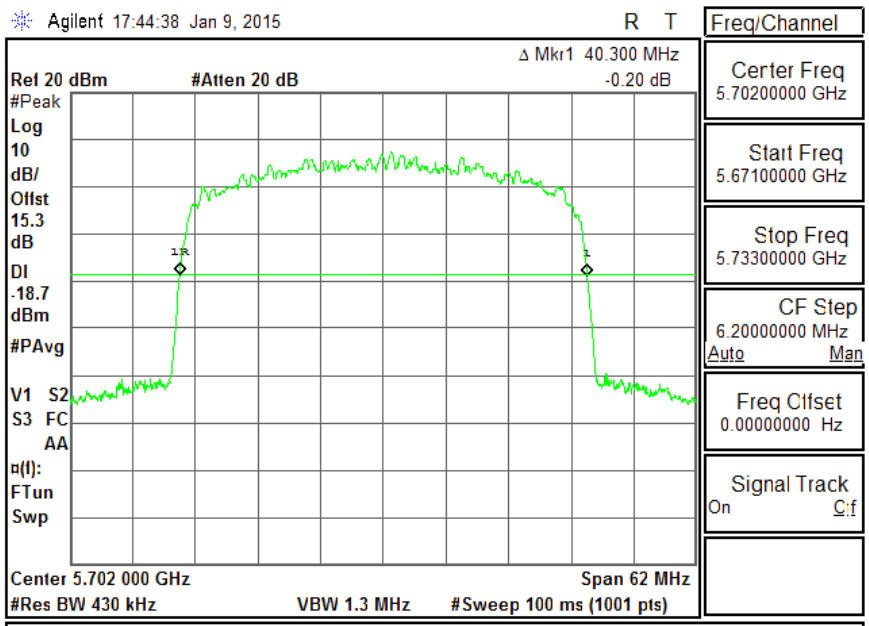


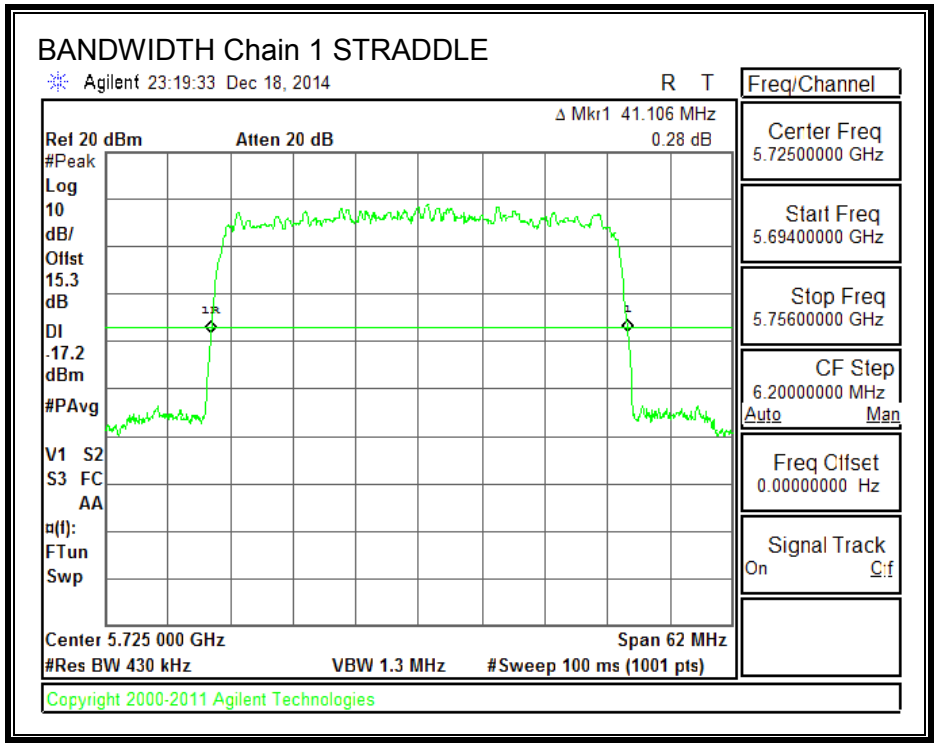


BANDWIDTH Chain 1 HIGH 2



BANDWIDTH Chain 1 HIGH 3





8.4.2. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, 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. In addition, the maximum 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 maximum conducted output 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
10.60	10.60	10.60

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low 1	5492	40.30	10.60	10.60	19.40	6.40
Low 2	5510	40.30	10.60	10.60	19.40	6.40
Mid	5600	40.30	10.60	10.60	19.40	6.40
High 1	5681	40.30	10.60	10.60	19.40	6.40
High 2	5690	40.30	10.60	10.60	19.40	6.40
High 3	5702	40.30	10.60	10.60	19.40	6.40
High 4	5725	40.30	10.60	10.60	19.40	6.40

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PSD

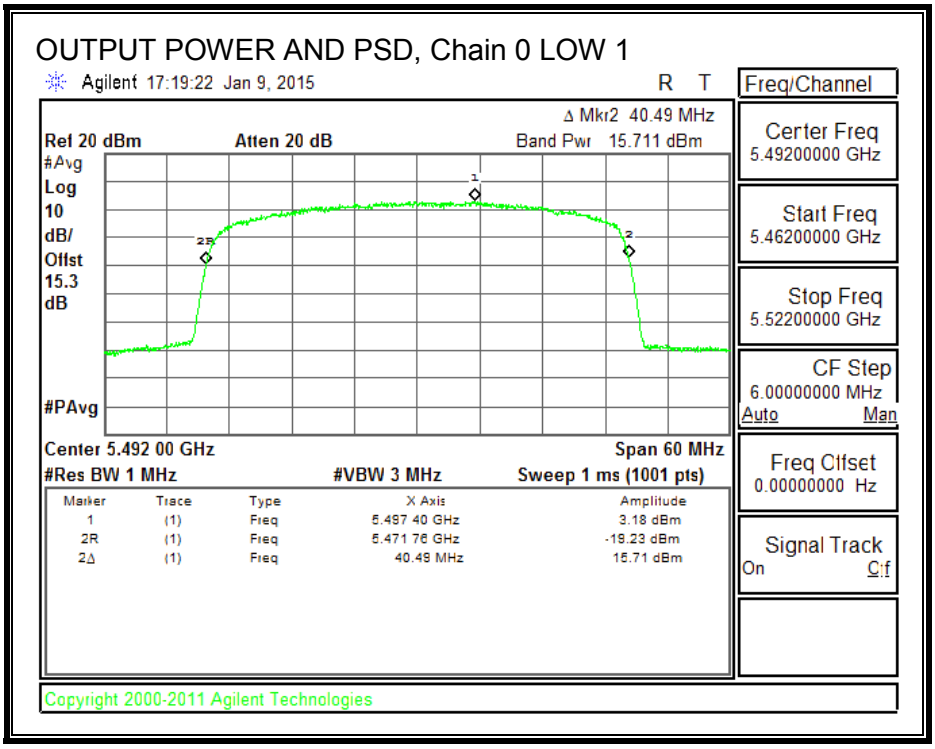
Output Power Results

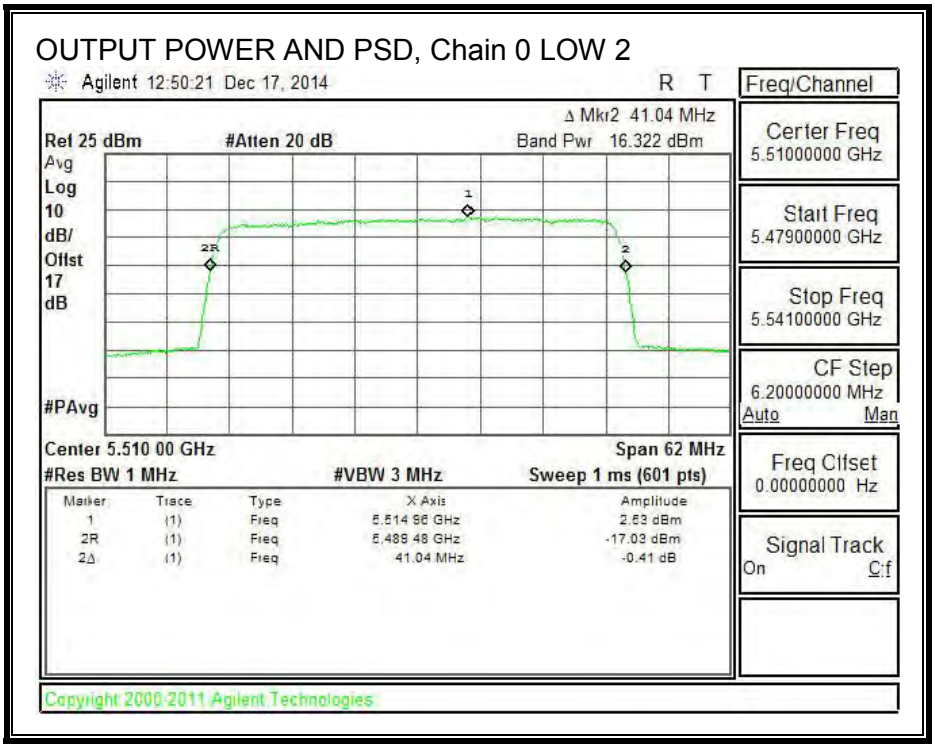
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low 1	5492	15.71	15.67	18.70	19.40	-0.70
Low 2	5510	16.32	16.35	19.35	19.40	-0.05
Mid	5600	16.21	16.15	19.19	19.40	-0.21
High 1	5681	16.16	16.31	19.24	19.40	-0.16
High 2	5690	15.33	15.88	18.62	19.40	-0.78
High 3	5702	12.87	13.77	16.35	19.40	-3.05
High 4	5725	16.34	16.35	19.35	19.40	-0.05

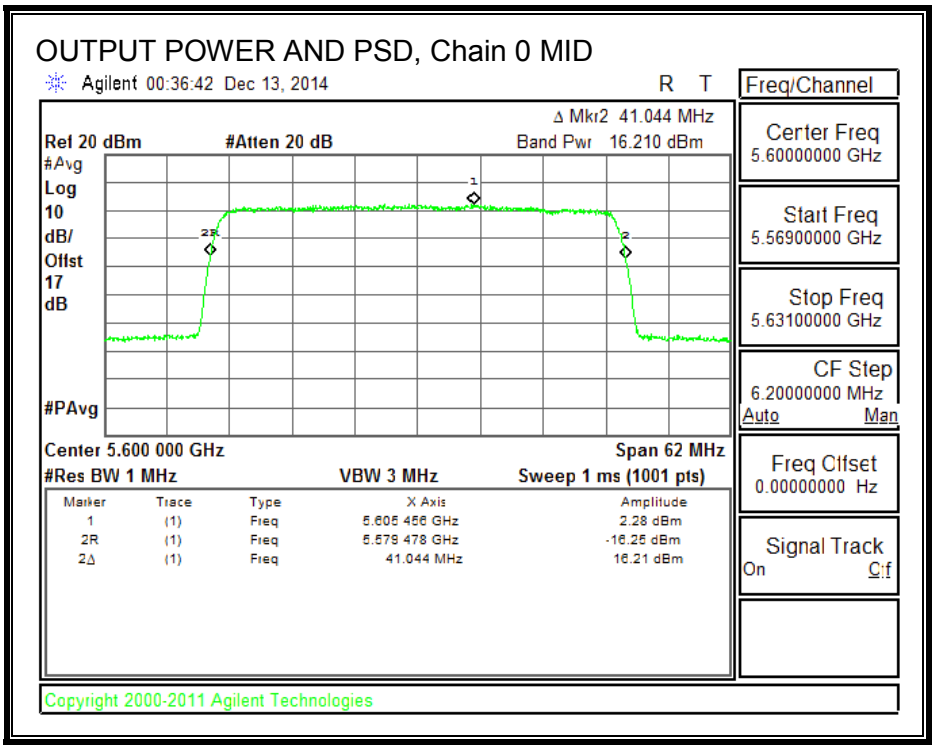
PSD Results

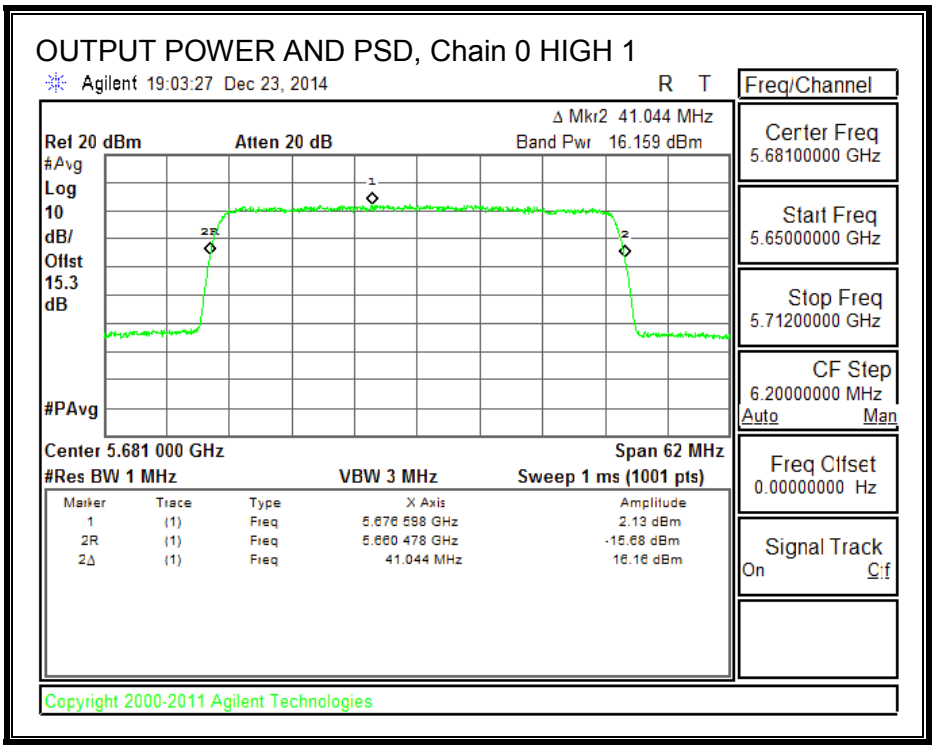
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low 1	5492	3.18	3.17	6.19	6.40	-0.21
Low 2	5510	2.63	2.22	5.44	6.40	-0.96
Mid	5600	2.28	2.70	5.51	6.40	-0.89
High 1	5681	2.13	2.56	5.36	6.40	-1.04
High 2	5690	2.67	3.31	6.01	6.40	-0.39
High 3	5702	0.03	1.06	3.59	6.40	-2.81

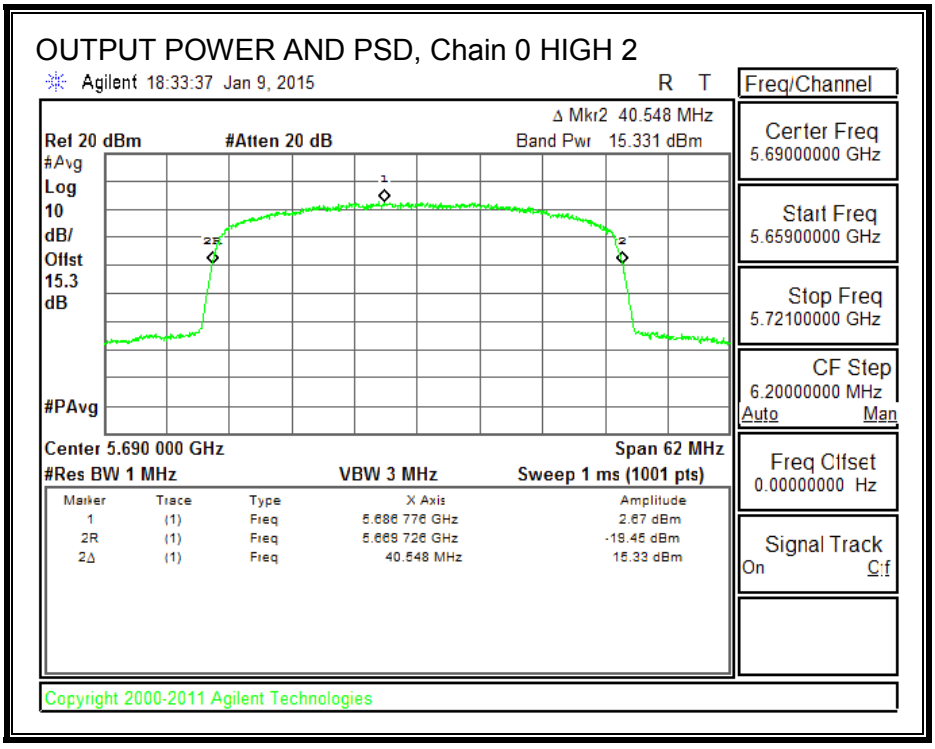
OUTPUT POWER AND PSD, Chain 0

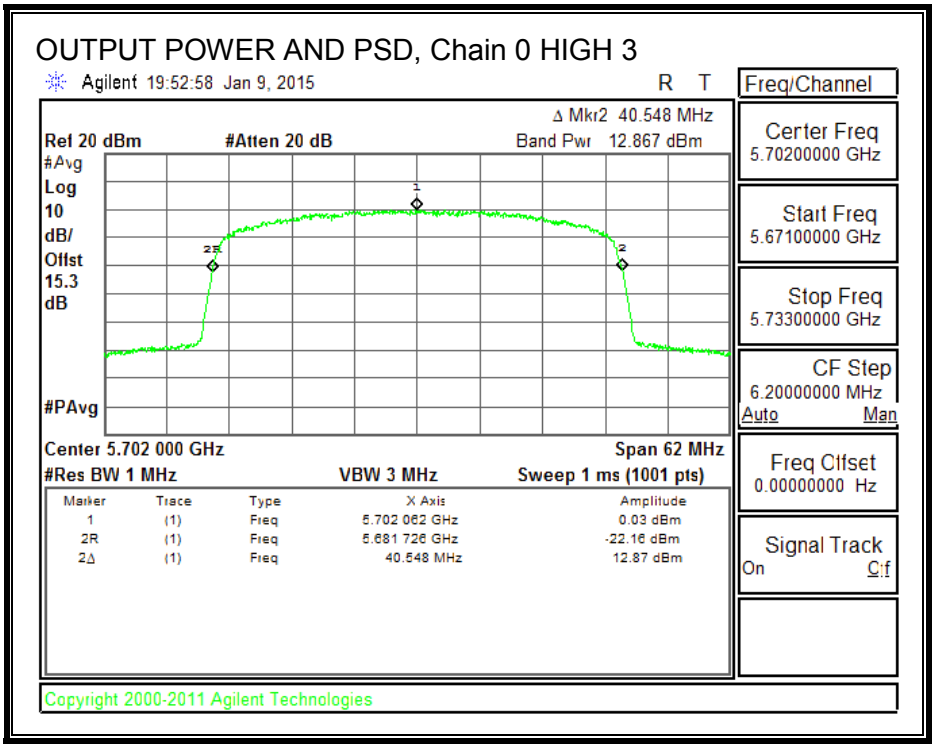


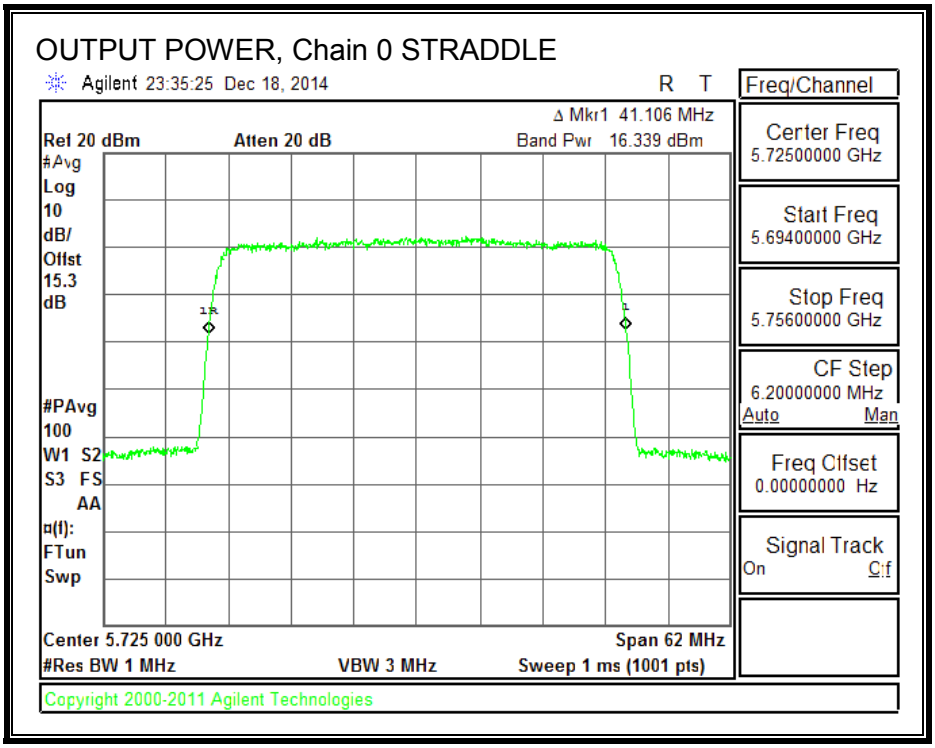




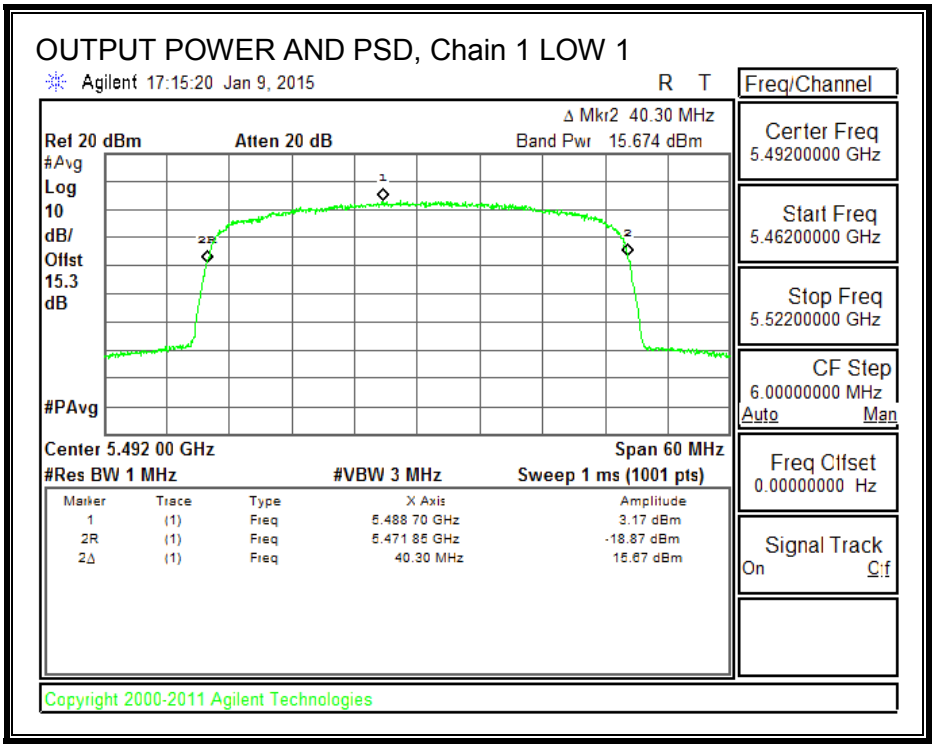


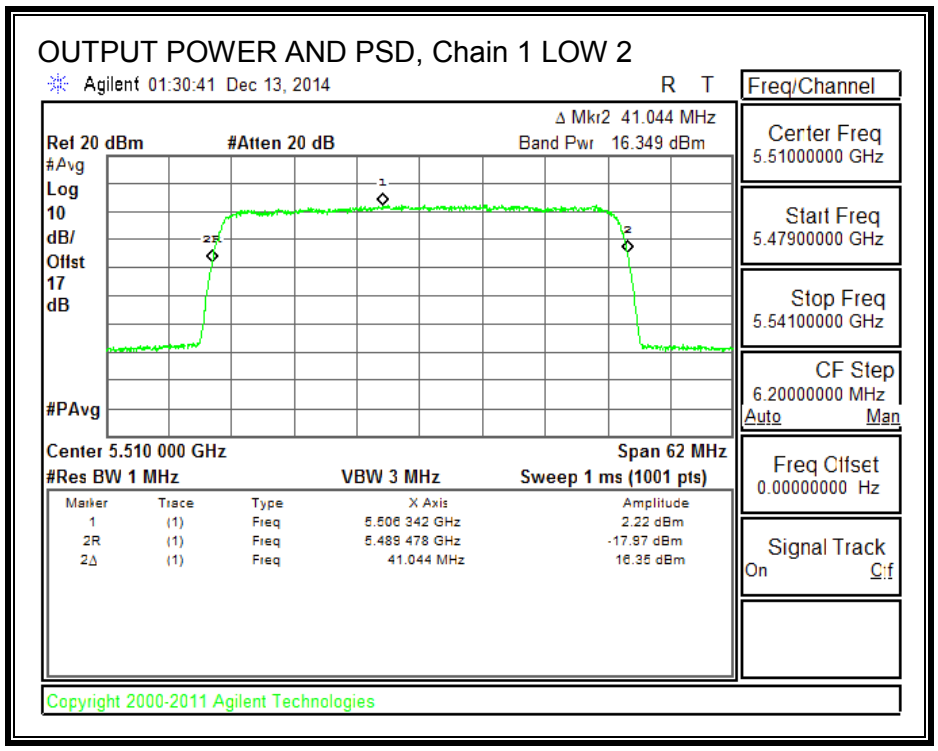


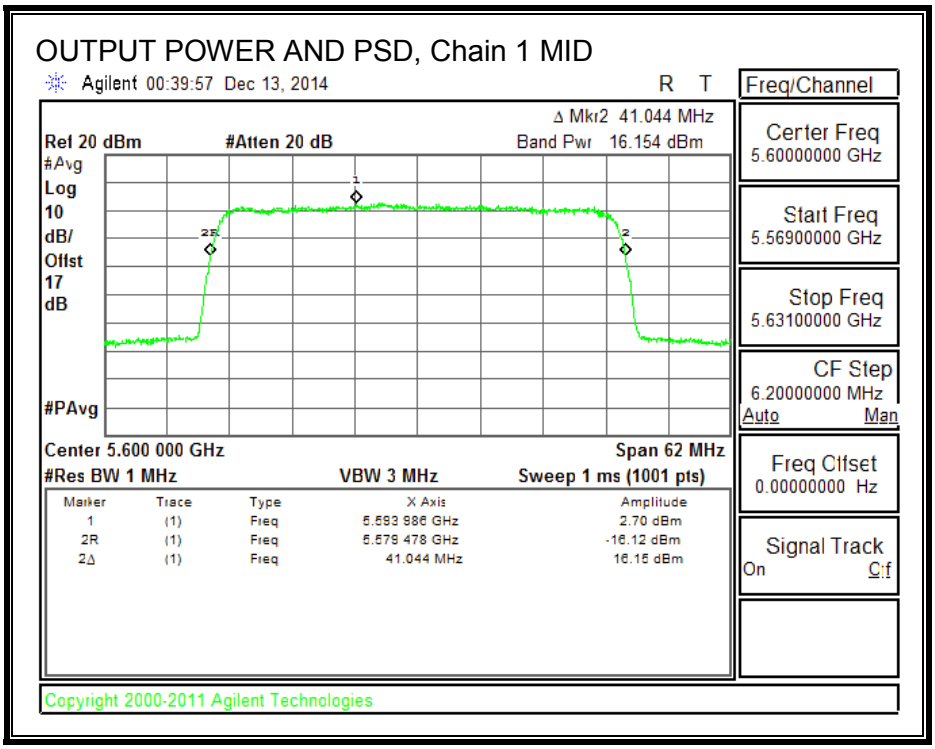


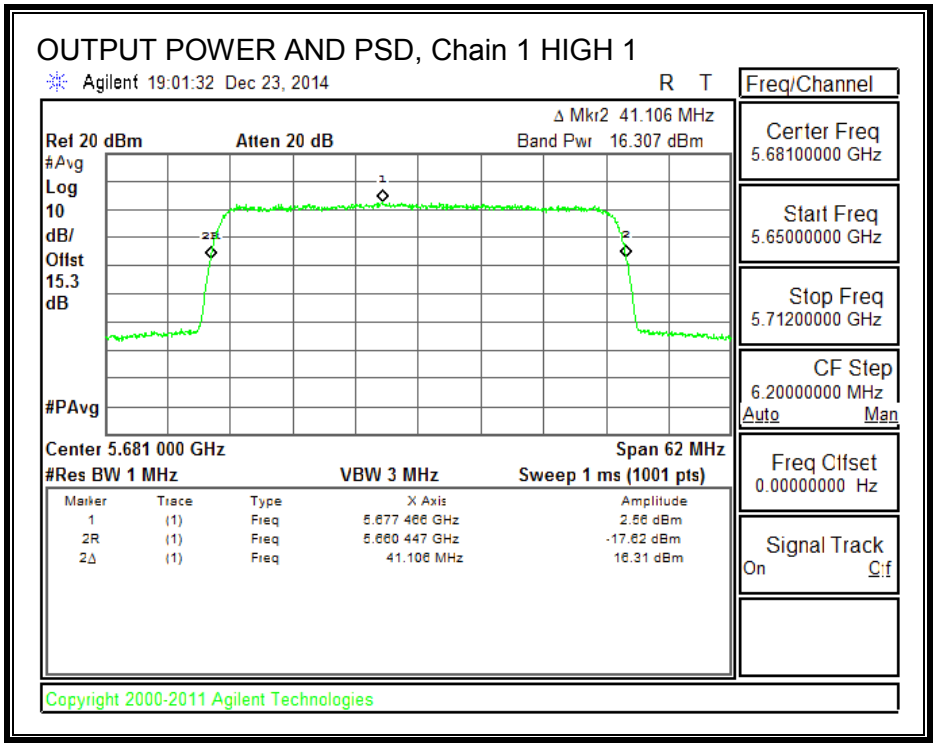


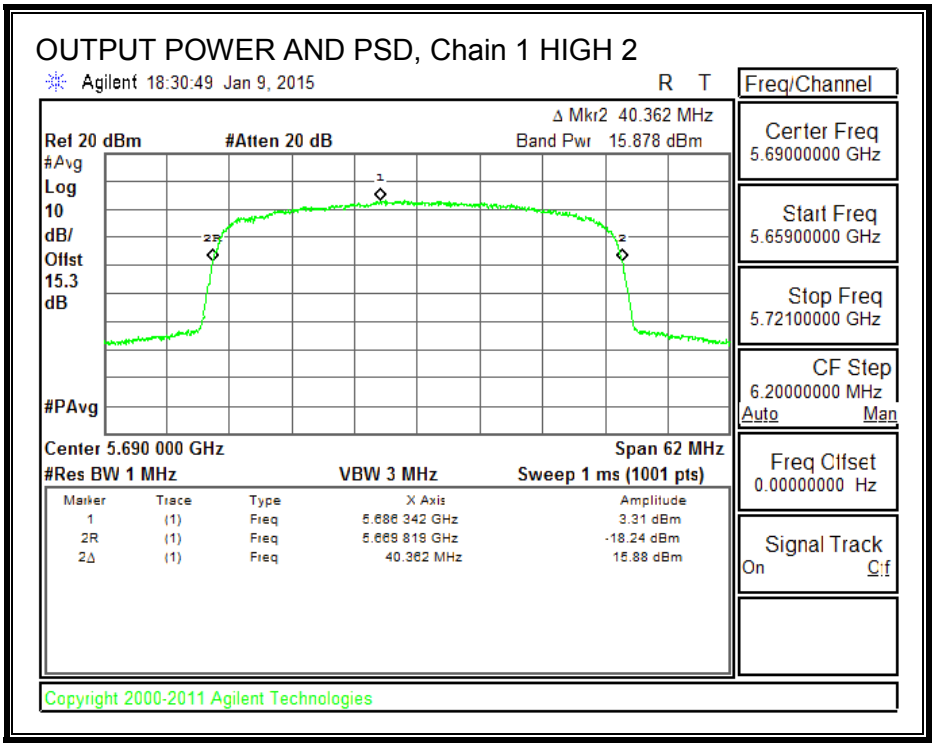
OUTPUT POWER AND PSD, Chain 1

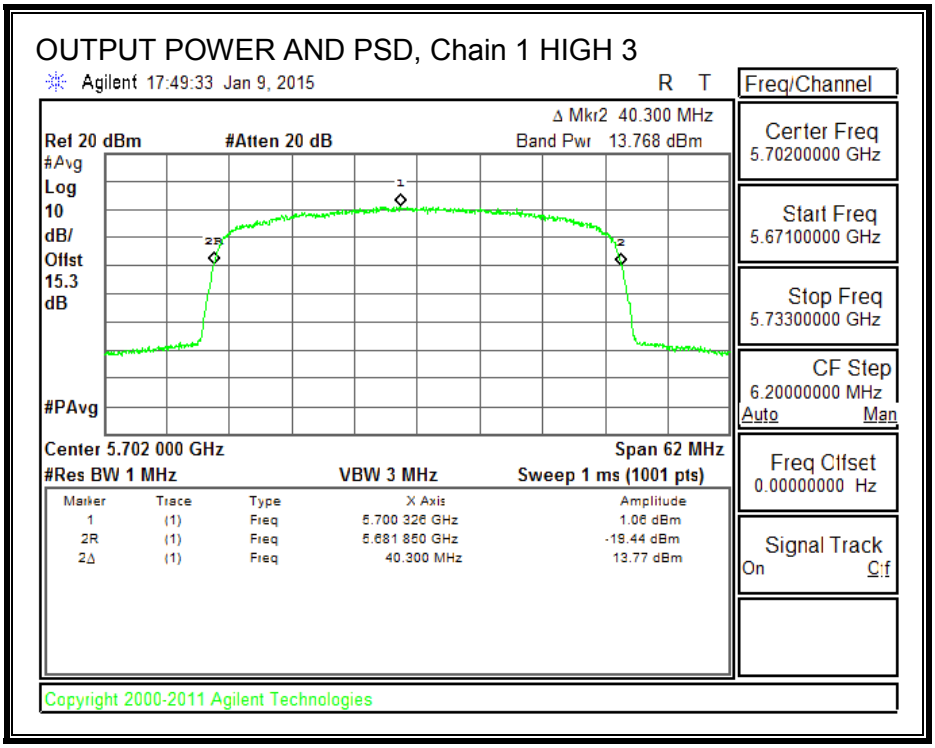


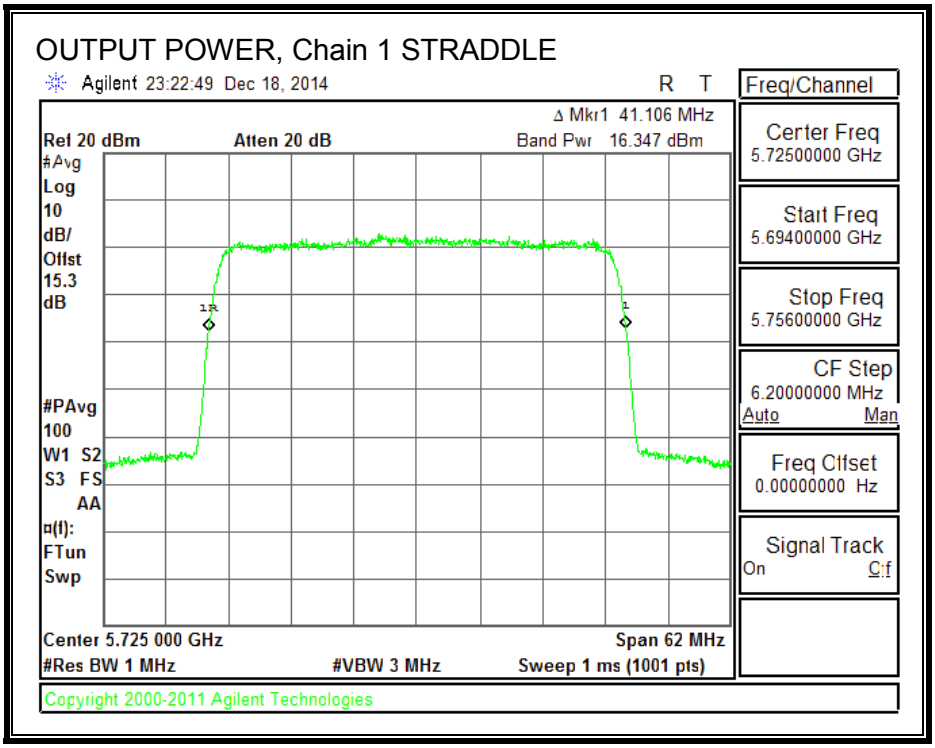












8.4.3. STRADDLE CHANNEL RESULTS

UNII-2C BAND

Bandwidth and Antenna Gain

Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
5725	20.56	10.60	10.60

Limits

Frequency (MHz)	FCC Power Limit (dBm)	PPSD Limit (dBm)
5725	19.40	6.40

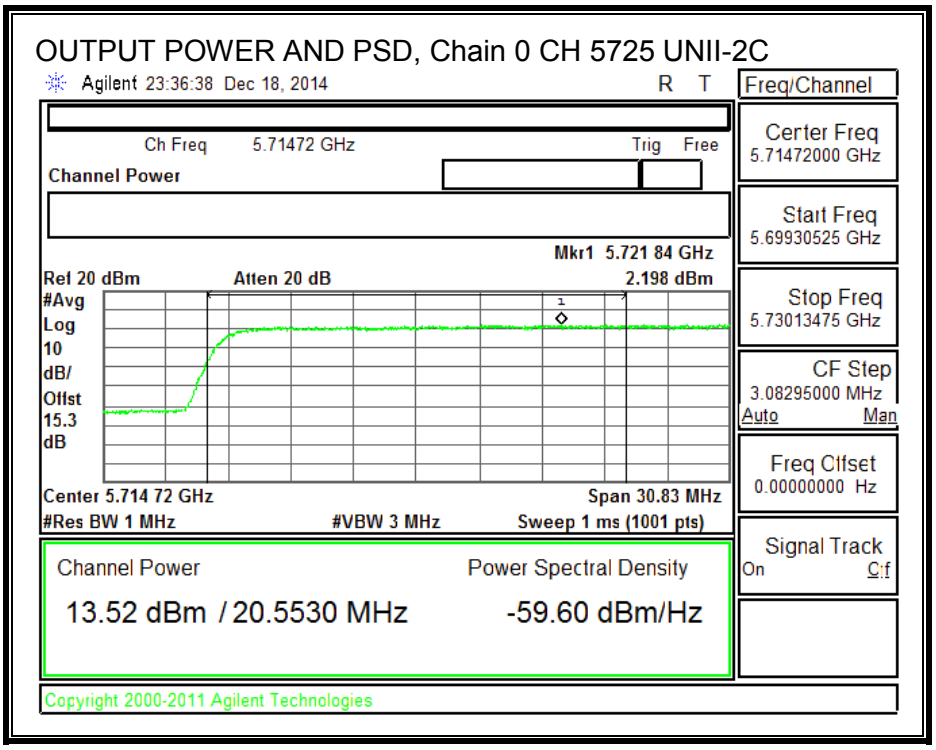
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PPSD

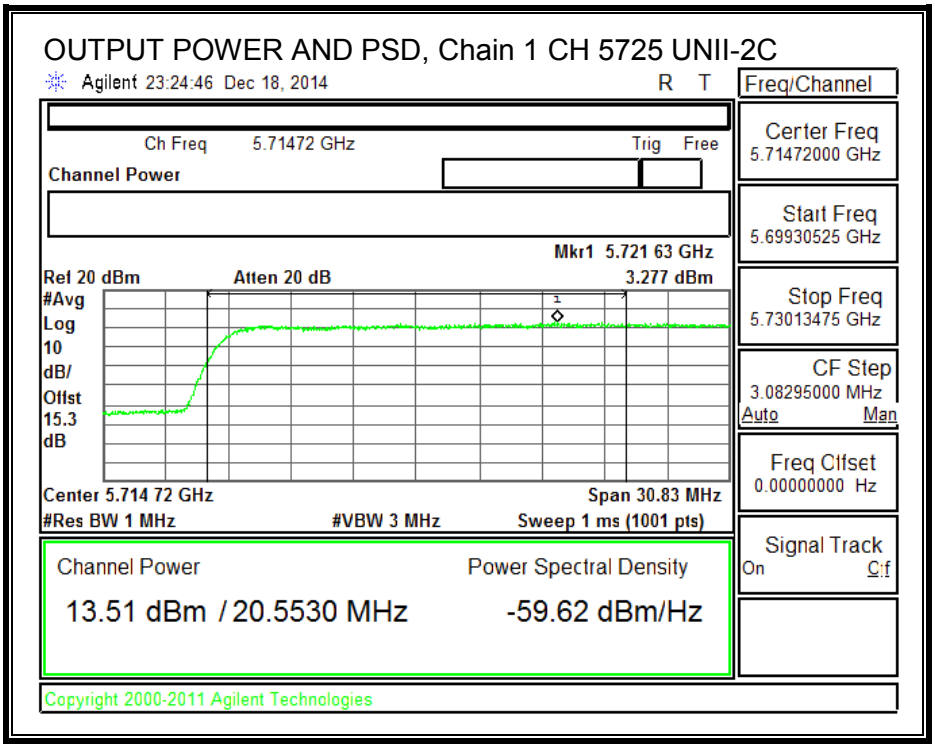
Output Power Results

Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
5725	13.52	13.51	16.53	19.40	-2.87

PPSD Results

Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
5725	2.20	3.28	5.78	6.40	-0.62





UNII-3 BAND

Bandwidth and Antenna Gain

Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PPSD (dBi)
5725	20.56	10.60	10.60

Limits

Frequency (MHz)	FCC Power Limit (dBm)	FCC PPSD Limit (dBm)
5725	30.00	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PPSD

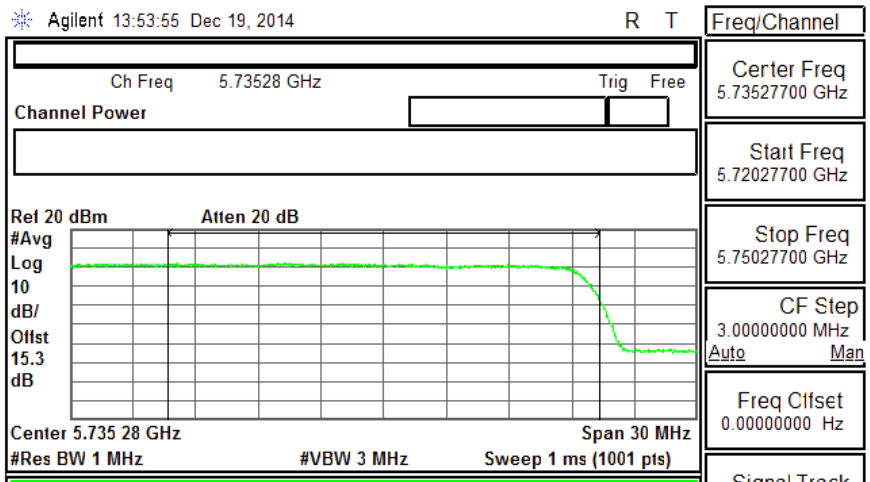
Output Power Results

Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
5725	13.25	13.32	16.30	30.00	-13.70

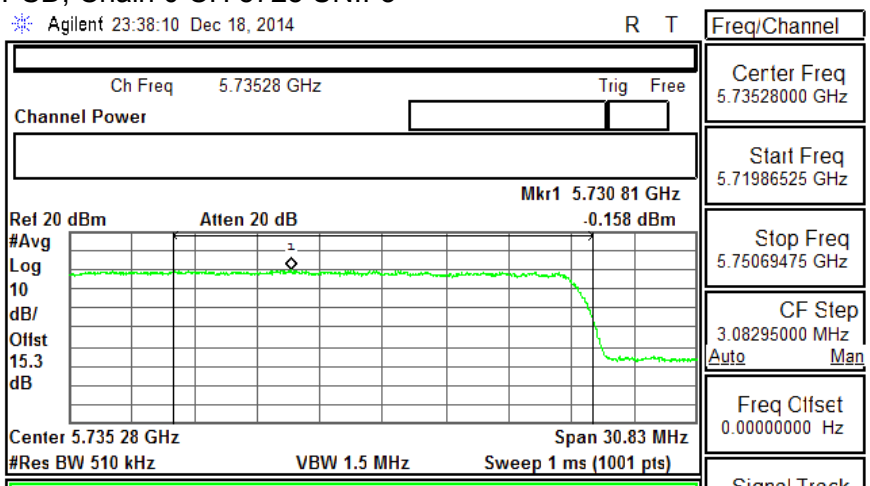
PPSD Results

Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
5725	-0.16	0.11	2.99	30.00	-27.01

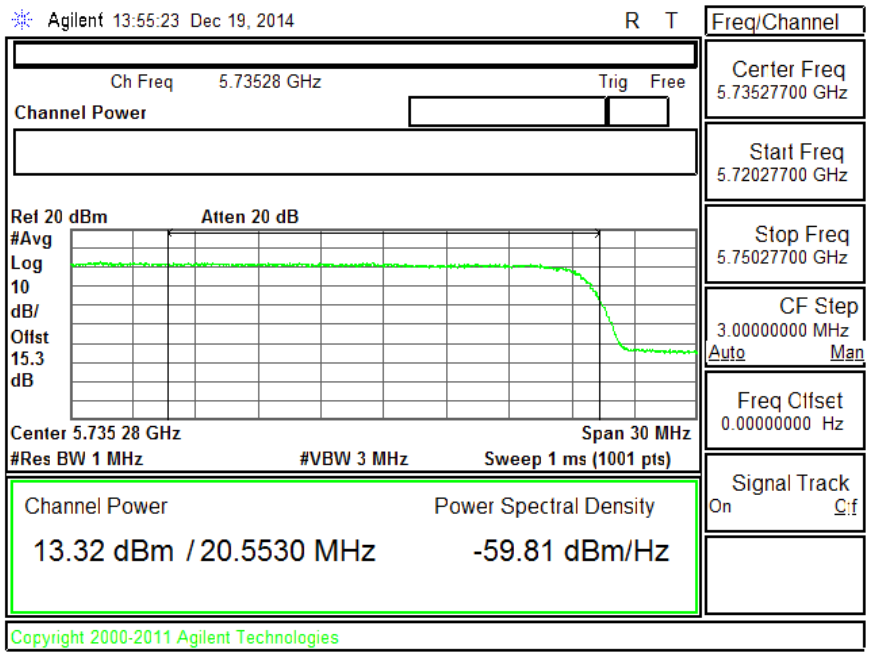
OUTPUT POWER, Chain 0 CH 5725 UNII-3



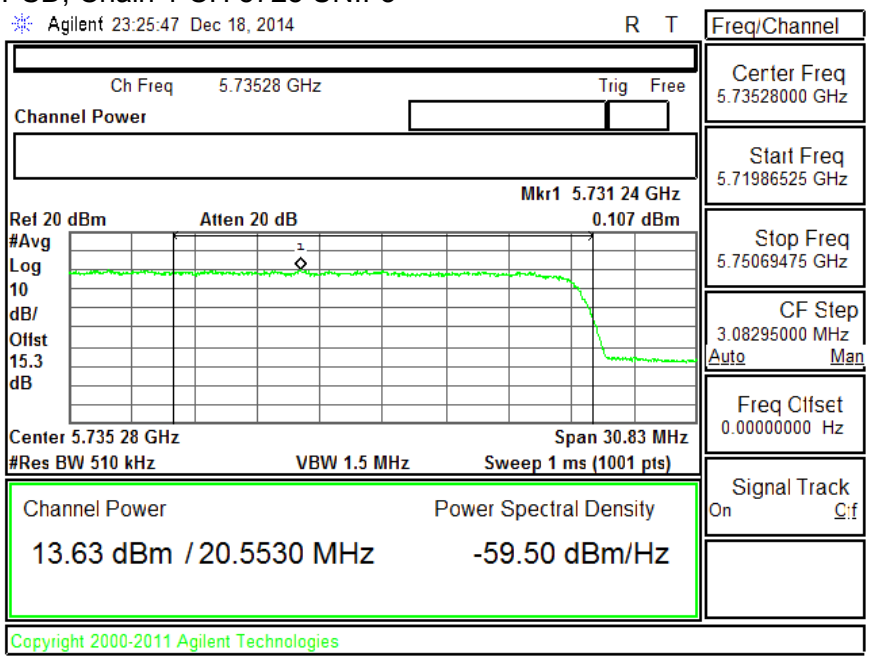
PSD, Chain 0 CH 5725 UNII-3



OUTPUT POWER, Chain 1 CH 5725 UNII-3



PSD, Chain 1 CH 5725 UNII-3



8.4.4. CONDUCTED BANDEDGE

LIMITS

FCC §15.205 and §15.209

PART 15, SUBPART E

Radiated LIMIT:

(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 e.i.r.p. of −27 dBm/MHz.

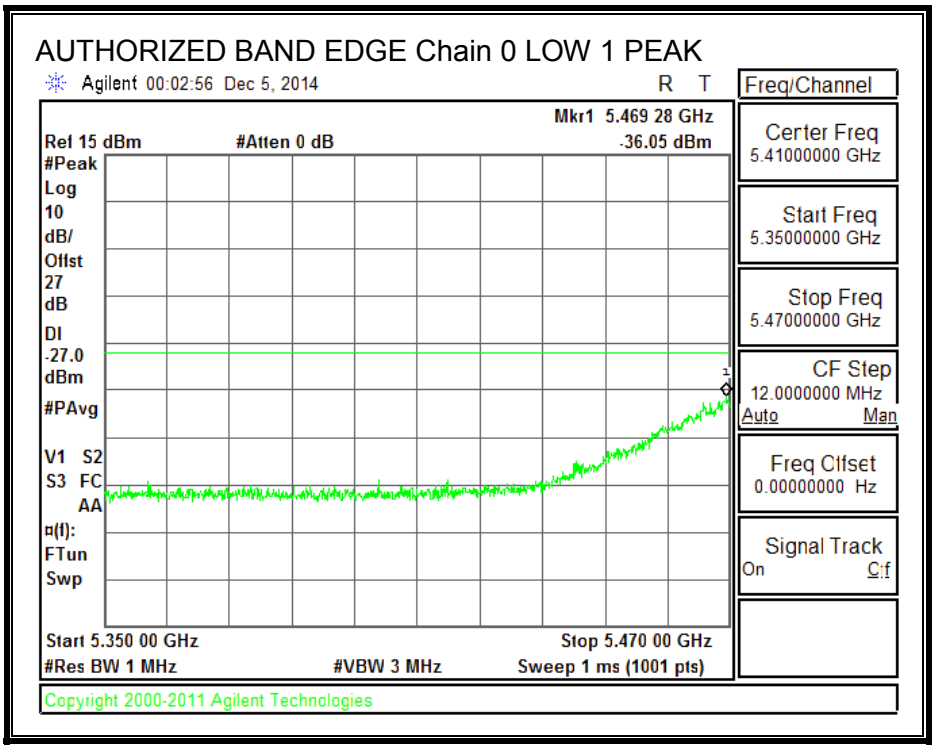
Procedure

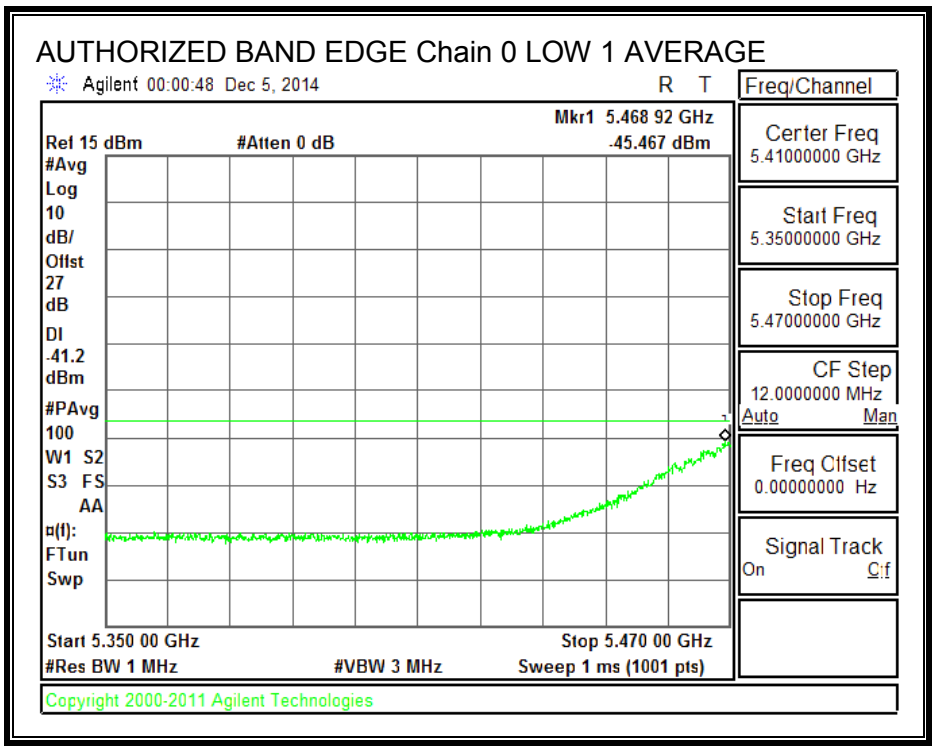
KDB 789033 D02 General UNII Test Procedures New Rules v01, Section II, G5, G6

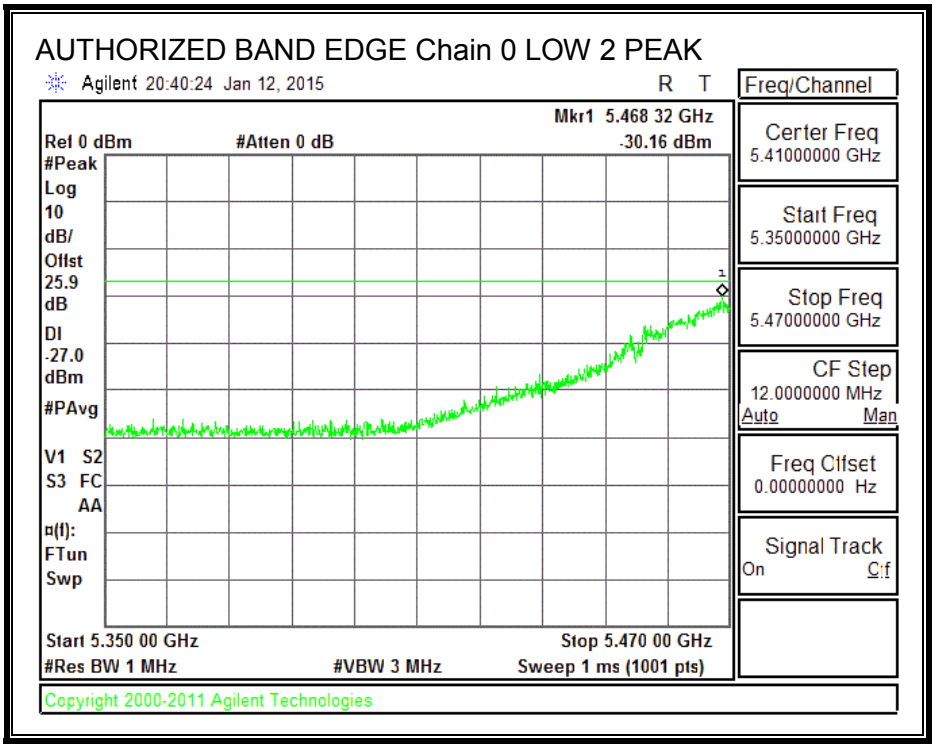
Conducted measurements are being used to demonstrate compliance with the spurious limits in the restricted band (all other spurious emissions are measured using the radiated test method with the antennas connected). The limits are 54dBuV/m average and 74dBuV/m peak, which are equivalent to eirp of -41.2 dBm and -21.2dBm respectively. The plots include an offset to account for the EUT antenna gain and external attenuation between EUT antenna port and spectrum analyzer. As the two antenna chains feed cross polarized antennas with un- correlated signals the two chains are treated independently and the emissions do not need to be summed.

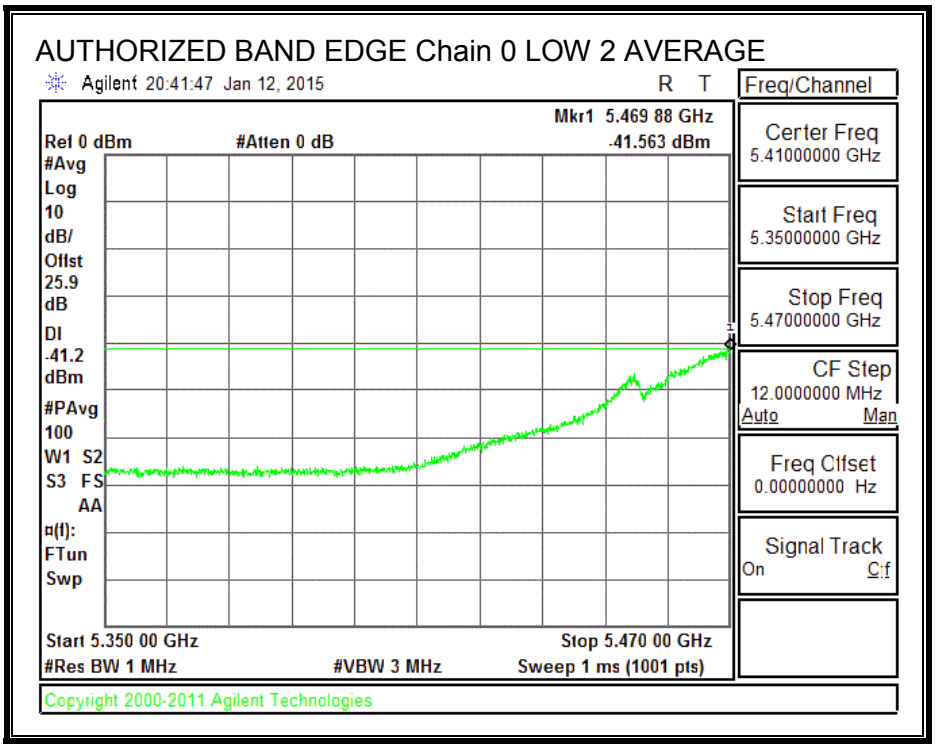
RESULTS

LOW CHANNEL BANDEDGE, Chain 0

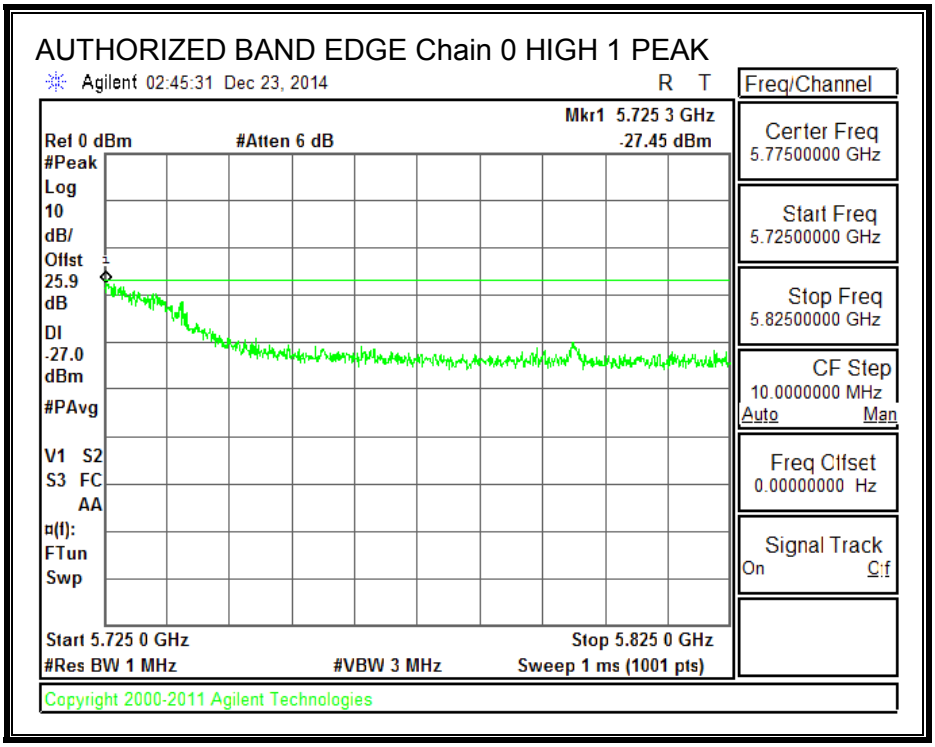


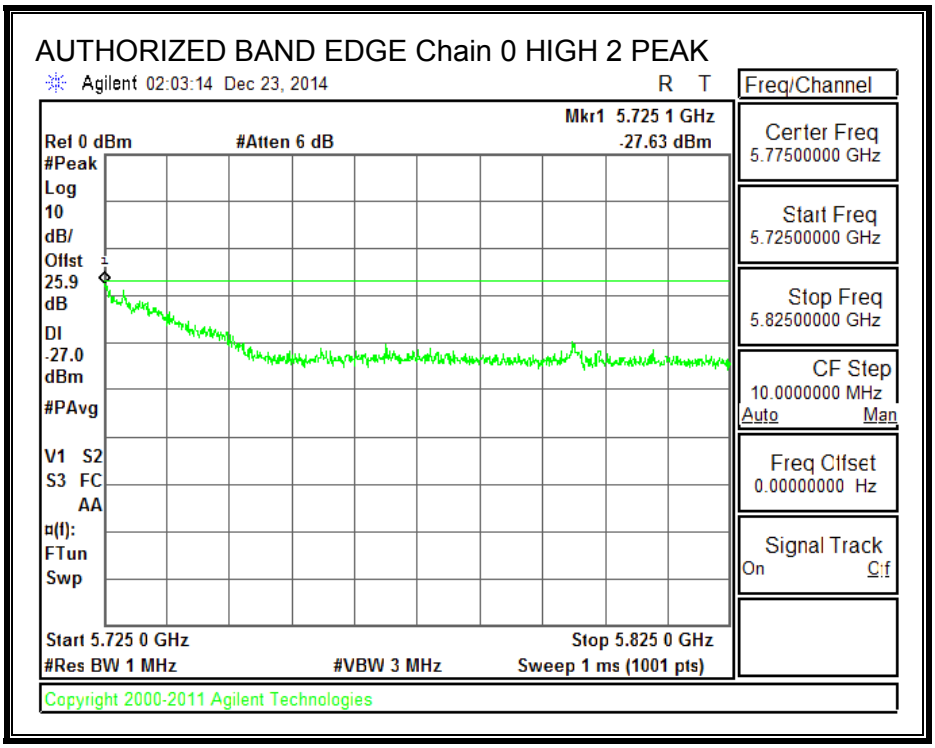


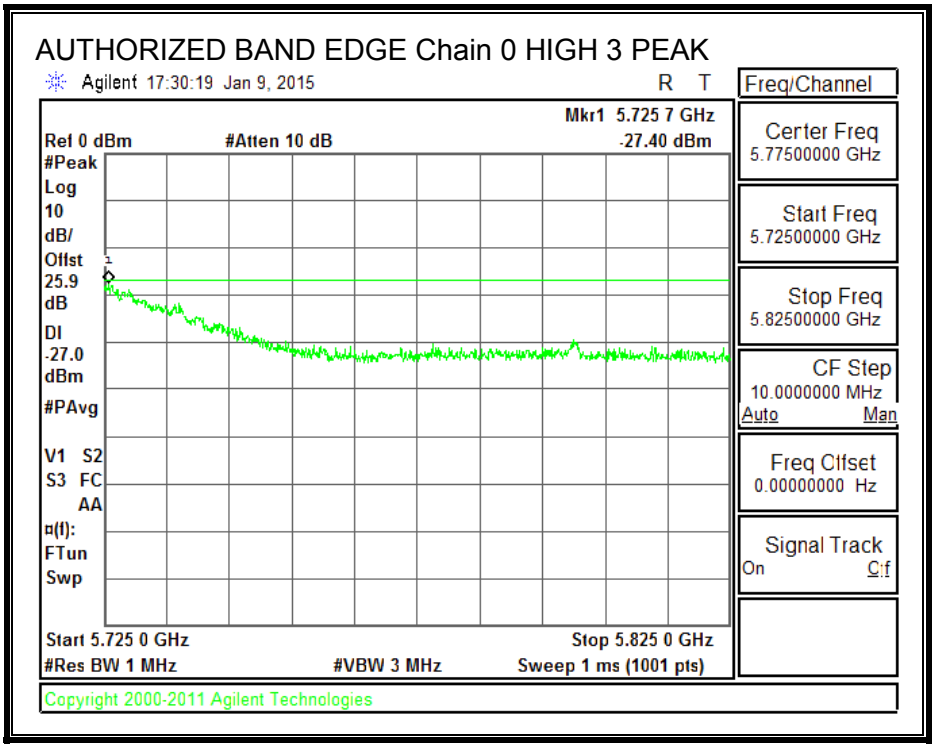




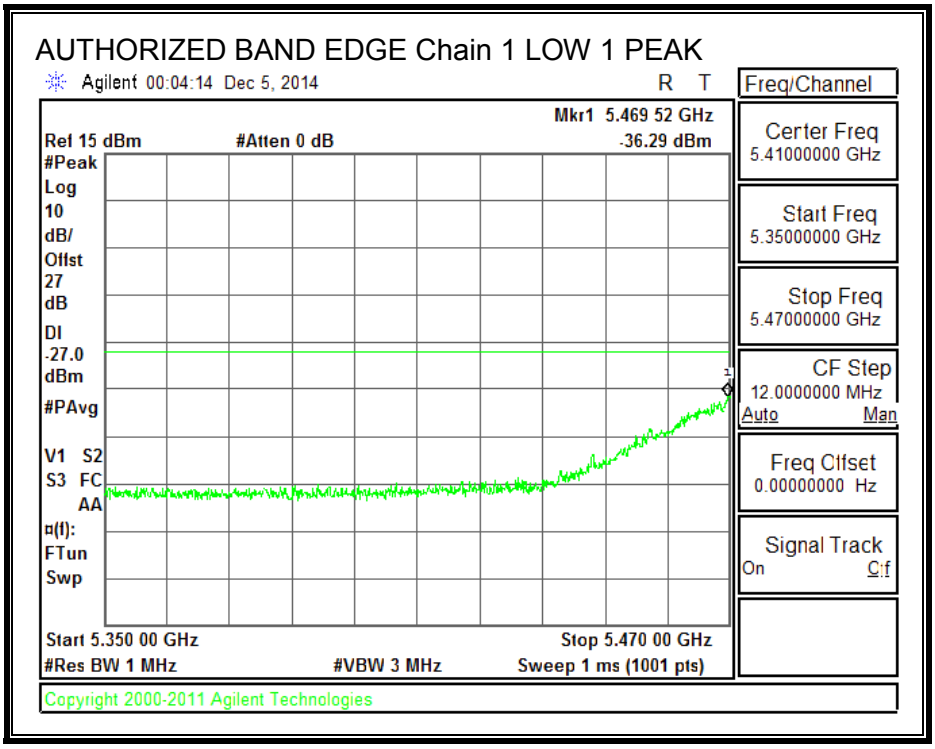
HIGH CHANNEL BANDEDGE, Chain 0

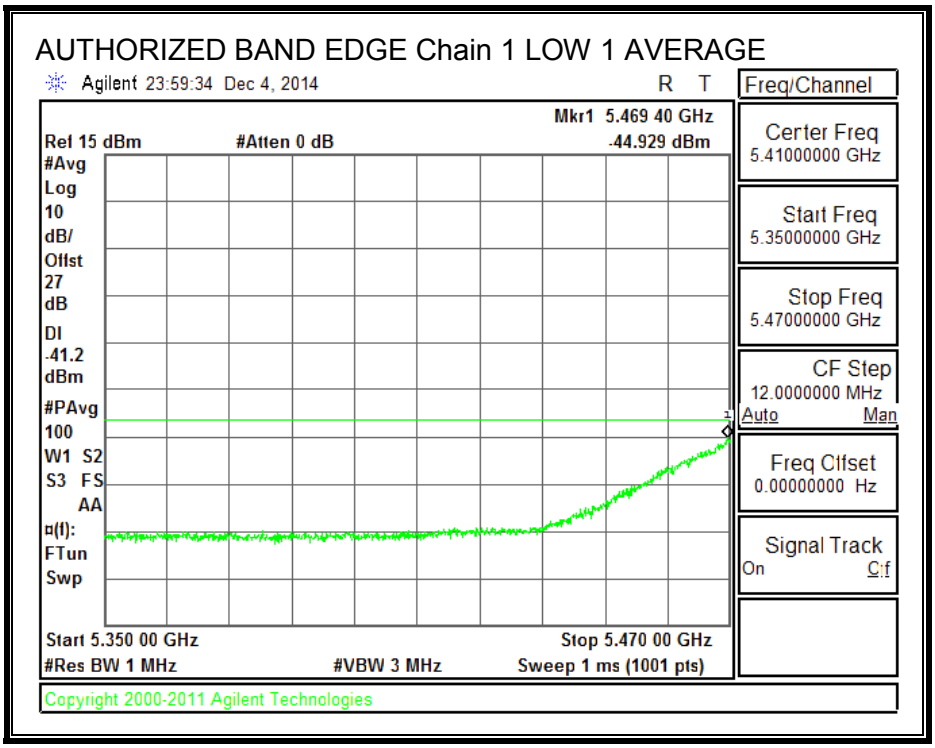




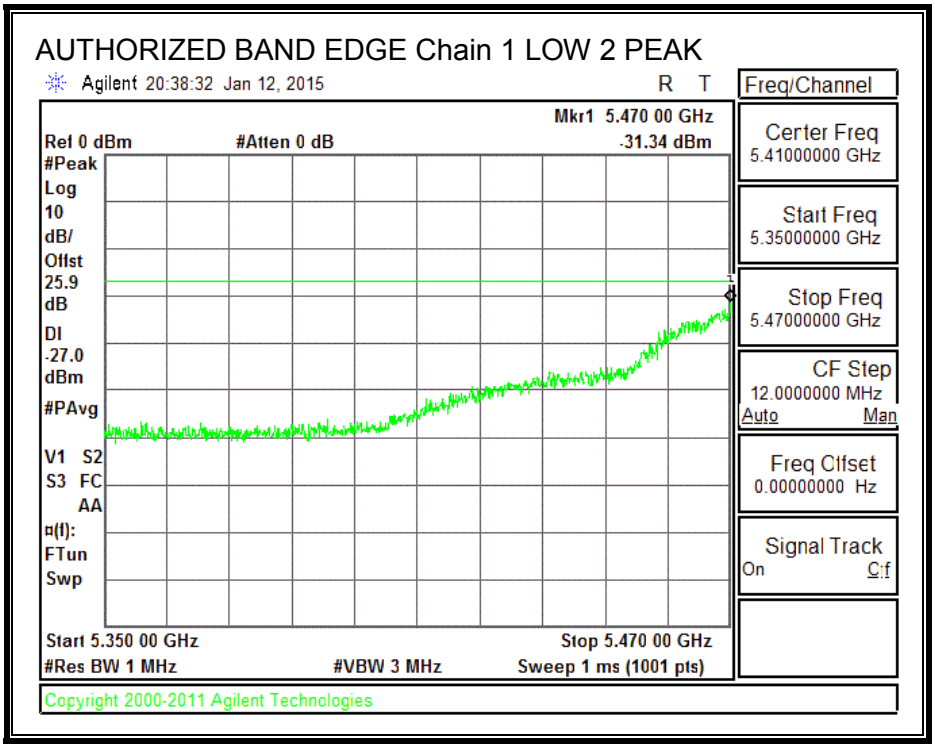


LOW CHANNEL BANDEDGE, Chain 1

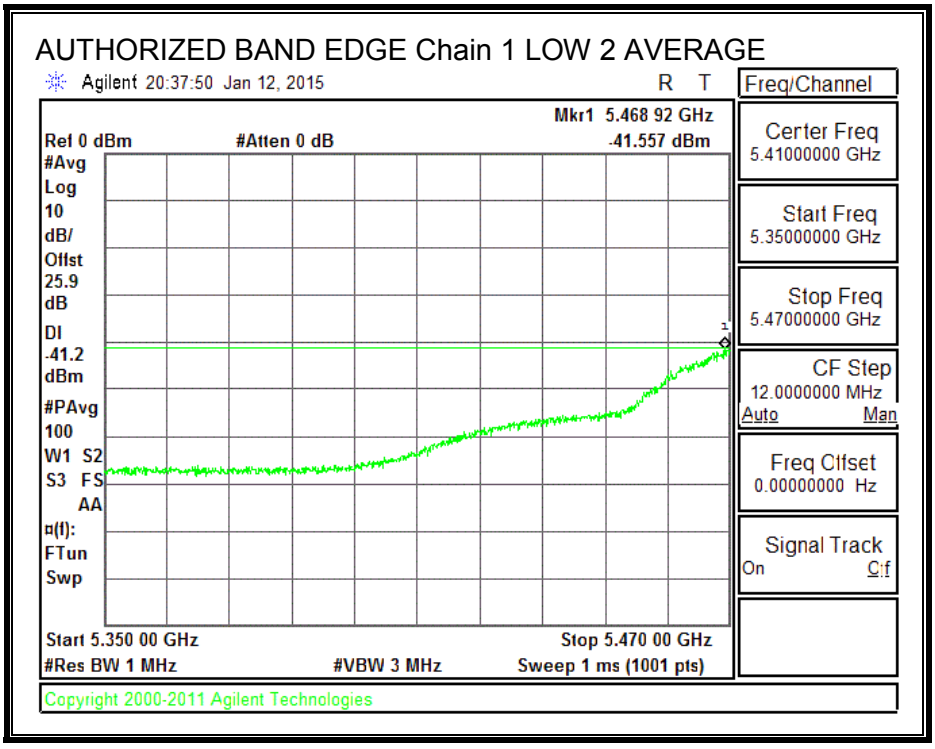




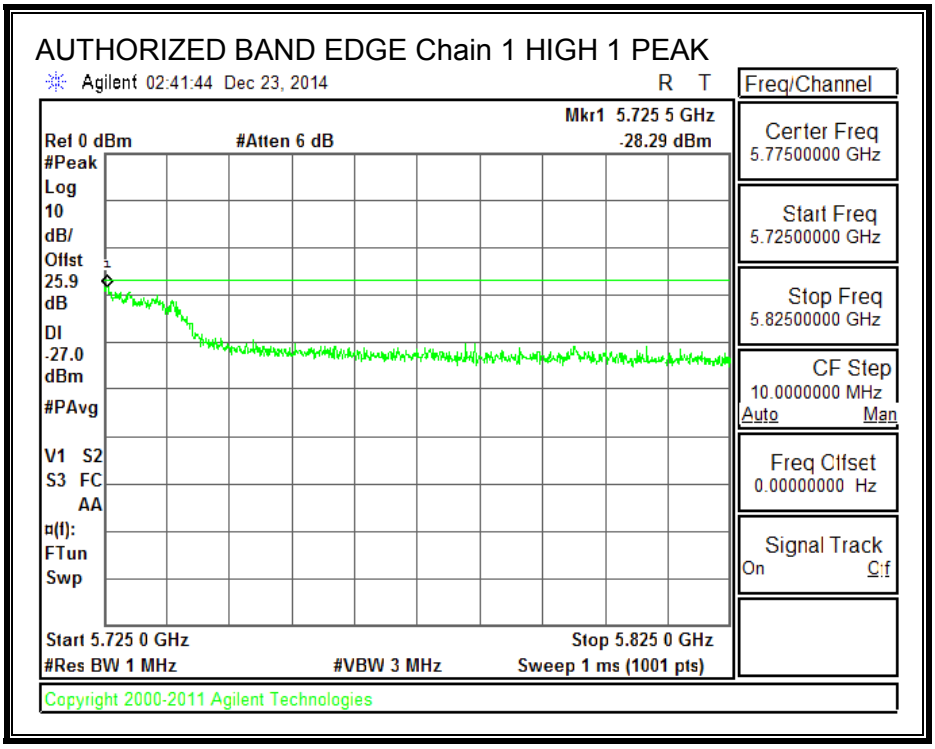
AUTHORIZED BAND EDGE Chain 1 LOW 2 PEAK

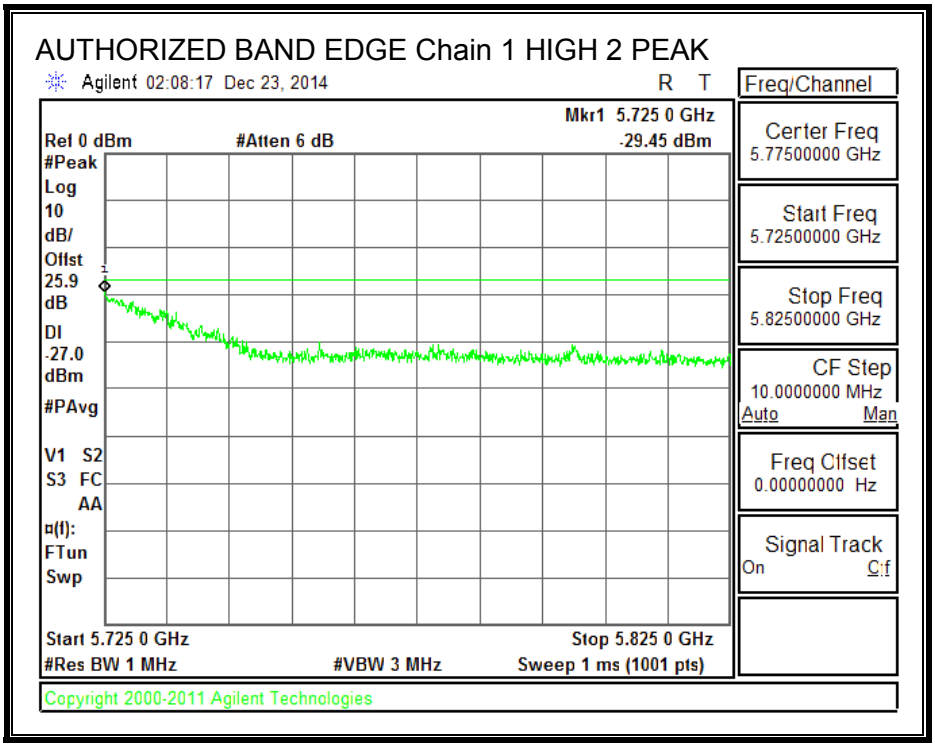


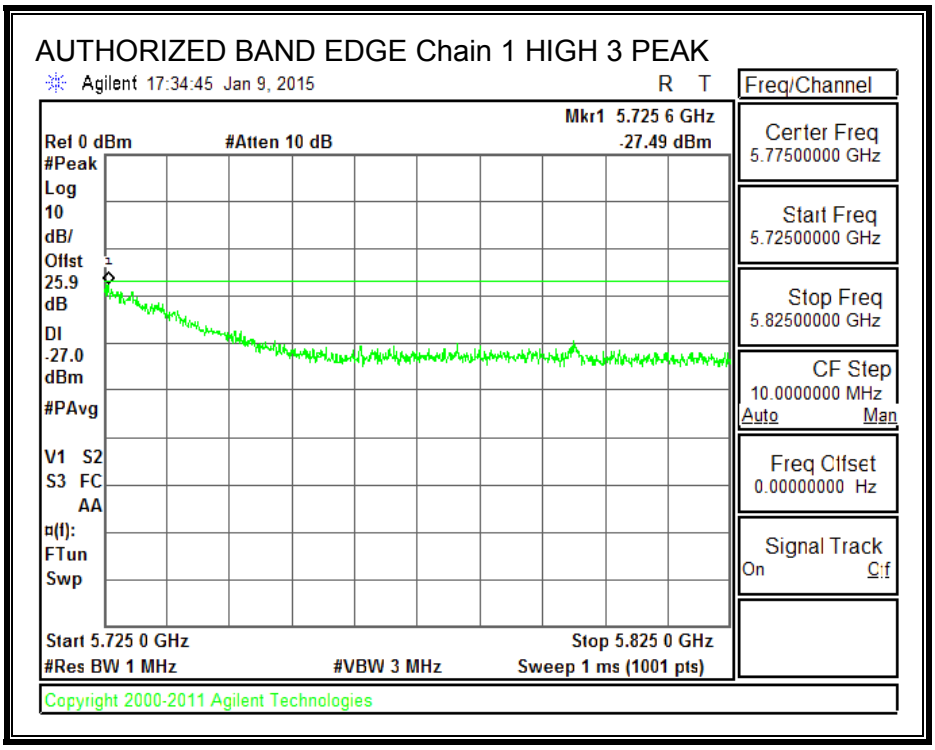
AUTHORIZED BAND EDGE Chain 1 LOW 2 AVERAGE



HIGH CHANNEL BANDEDGE, Chain 1







9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

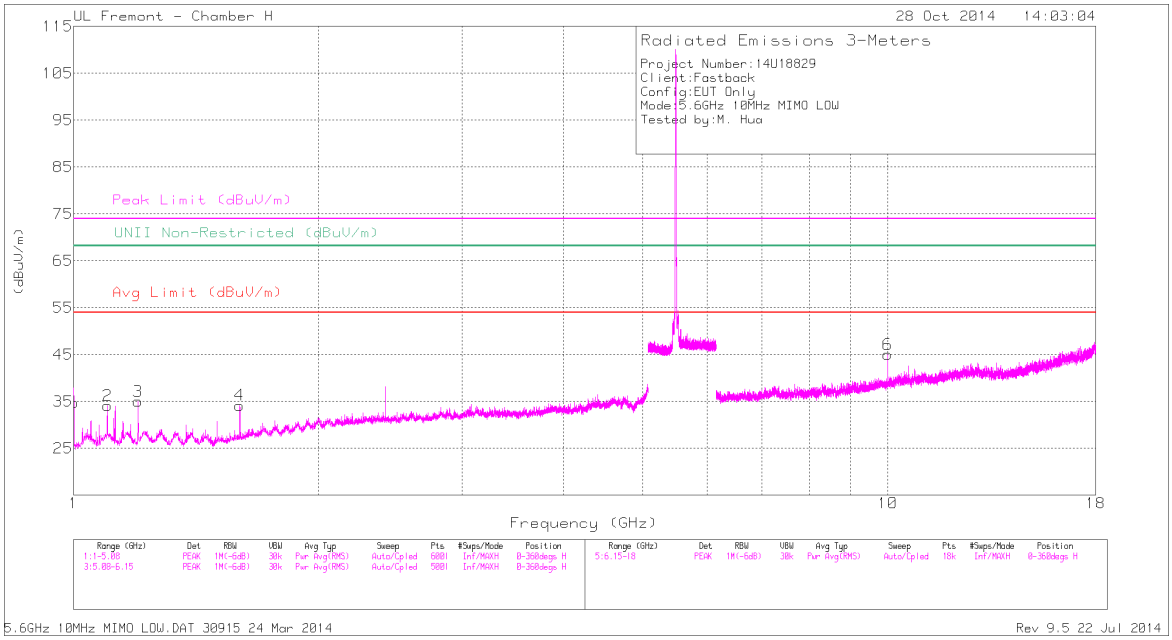
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

9.2. TRANSMITTER ABOVE 1 GHz

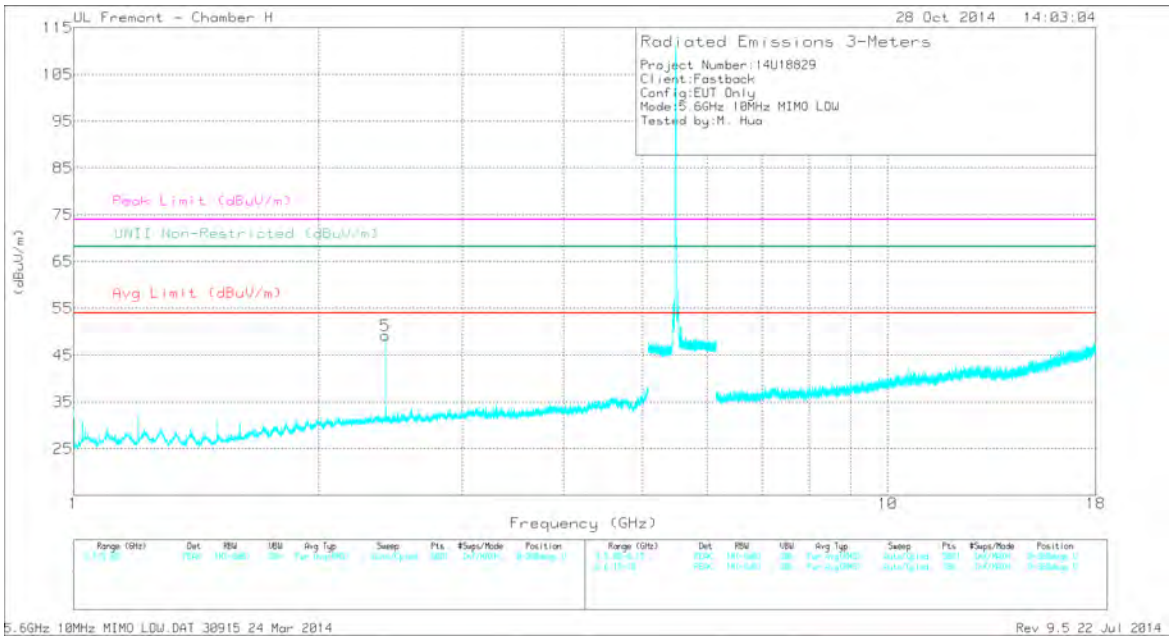
9.2.1. TX ABOVE 1 GHz 10MHz 2 TX MODE IN THE 5.6 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

LOW 1 CHANNEL HORIZONTAL PLOT



LOW 1 CHANNEL VERTICAL PLOT



DATA

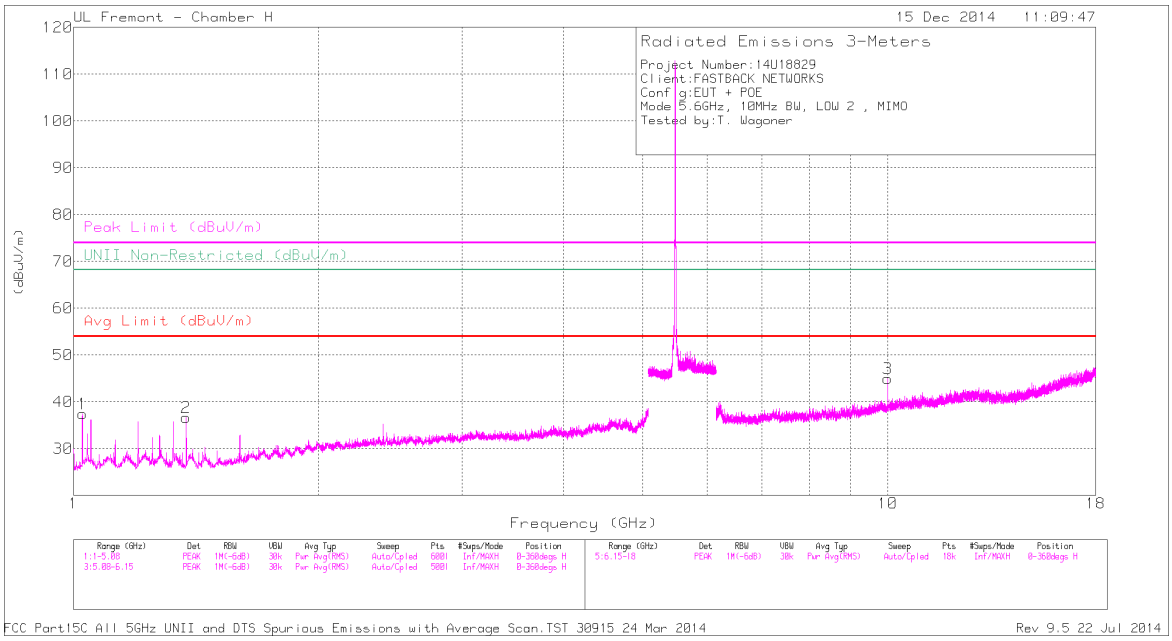
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1	50.59	PK1	27.7	-35.6	42.69	-	-	74	-31.31	-	-	70	186	H
1	* 1	43.54	AD1	27.7	-35.6	35.64	54	-18.36	-	-	-	-	70	186	H
2	* 1.1	45.06	PK1	28.2	-35.5	37.76	-	-	74	-36.24	-	-	70	186	H
2	* 1.1	35.2	AD1	28.2	-35.5	27.9	54	-26.1	-	-	-	-	70	186	H
3	* 1.2	47.19	PK1	28.7	-35.6	40.29	-	-	74	-33.71	-	-	5	106	H
3	* 1.2	40.97	AD1	28.7	-35.6	34.07	54	-19.93	-	-	-	-	5	106	H
4	* 1.6	44.55	PK1	28.5	-35	38.05	-	-	74	-35.95	-	-	16	120	H
4	* 1.6	34.13	AD1	28.5	-35	27.63	54	-26.37	-	-	-	-	16	120	H
5	2.416	42.9	PK1	32	-34.1	40.8	-	-	-	-	68.2	-27.4	106	170	V
6	10	40.04	PK1	37.3	-26.3	51.04	-	-	-	-	68.2	-17.16	199	104	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

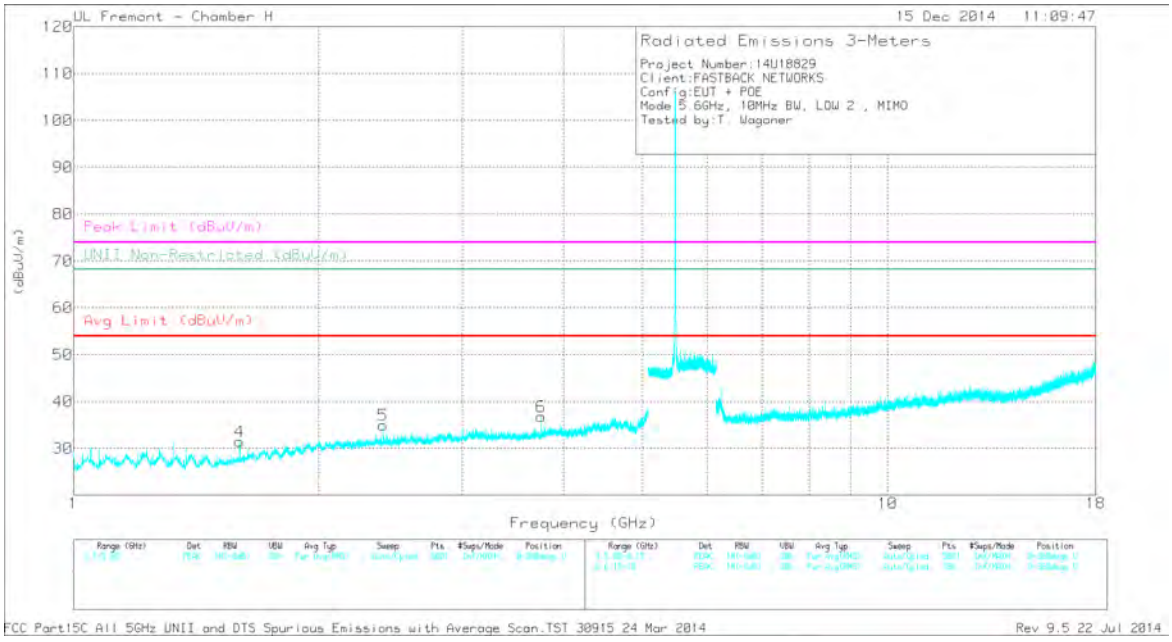
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

LOW 2 CHANNEL HORIZONTAL PLOT



LOW 2 CHANNEL VERTICAL PLOT



DATA

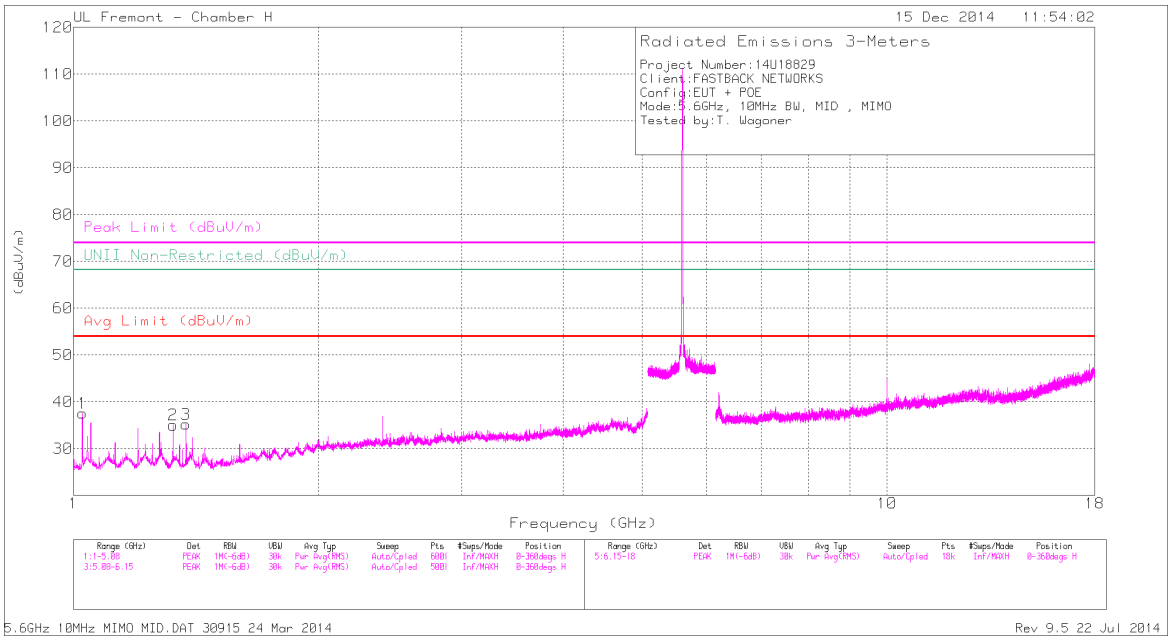
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.025	46.69	PK1	27.8	-35.5	38.99	-	-	74	-35.01	-	-	298	115	H
1	* 1.025	43.78	AD1	27.8	-35.5	36.08	54	-17.92	-	-	-	-	298	115	H
2	* 1.375	47.12	PK1	28.4	-35.3	40.22	-	-	74	-33.78	-	-	331	206	H
2	* 1.375	40.8	AD1	28.4	-35.3	33.9	54	-20.1	-	-	-	-	331	206	H
4	* 1.6	41.41	PK1	28.5	-35	34.91	-	-	74	-39.09	-	-	176	349	V
4	* 1.6	36.44	AD1	28.5	-35	29.94	54	-24.06	-	-	-	-	176	349	V
6	* 3.75	43.46	PK1	33.2	-33.1	43.56	-	-	74	-30.44	-	-	6	183	V
6	* 3.75	34.16	AD1	33.2	-33.1	34.26	54	-19.74	-	-	-	-	6	183	V
3	10	34.14	PK	37.3	-26.4	45.04	-	-	-	-	68.2	-23.16	0-360	100	H
5	2.4	37.01	PK	32	-34	35.01	-	-	-	-	68.2	-33.19	0-360	201	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

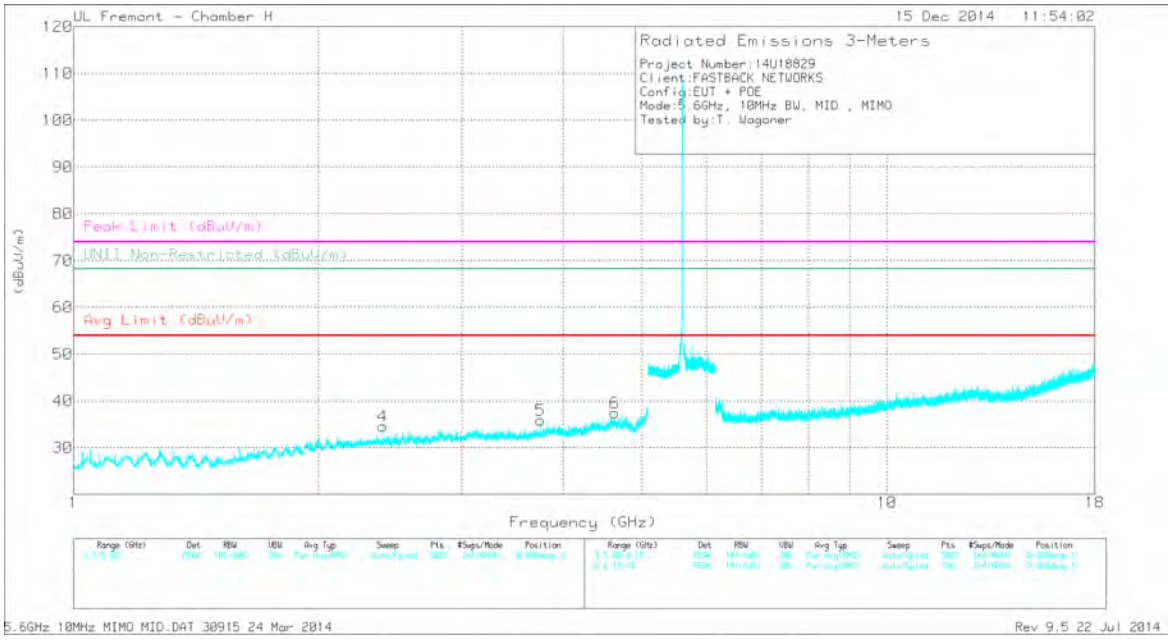
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

MID CHANNEL HORIZONTAL PLOT



MID CHANNEL VERTICAL PLOT



DATA

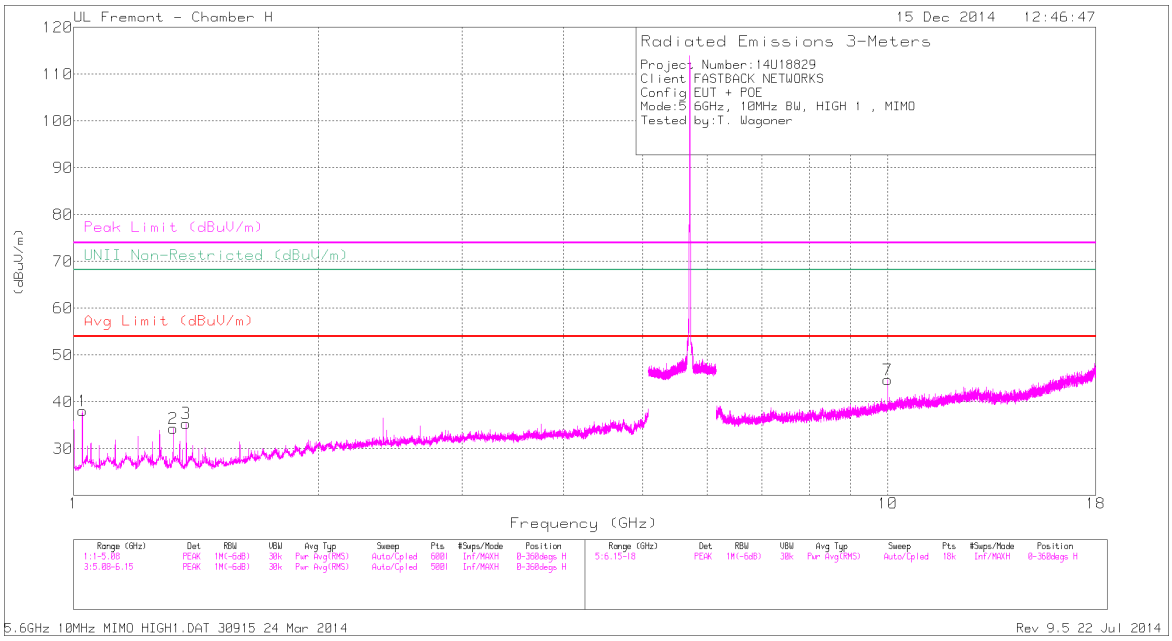
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.025	50.46	PK1	27.8	-35.5	42.76	-	-	74	-31.24	-	-	289	116	H
1	* 1.025	44.16	AD1	27.8	-35.5	36.46	54	-17.54	-	-	-	-	289	116	H
2	* 1.325	47.59	PK1	28.6	-35.7	40.49	-	-	74	-33.51	-	-	347	150	H
2	* 1.325	40.57	AD1	28.6	-35.7	33.47	54	-20.53	-	-	-	-	347	150	H
3	* 1.375	46.49	PK1	28.3	-35.3	39.49	-	-	74	-34.51	-	-	324	159	H
3	* 1.375	40.09	AD1	28.4	-35.3	33.19	54	-20.81	-	-	-	-	324	159	H
5	* 3.75	42.48	PK1	33.2	-33.1	42.58	-	-	74	-31.42	-	-	357	236	V
5	* 3.75	32.97	AD1	33.2	-33.1	33.07	54	-20.93	-	-	-	-	357	236	V
6	* 4.626	41.34	PK1	34.2	-32	43.54	-	-	74	-30.46	-	-	255	321	V
6	* 4.632	30.16	AD1	34.2	-32.1	32.26	54	-21.74	-	-	-	-	255	321	V
4	2.4	43.1	PK1	32	-34	41.1	-	-	-	-	68.2	-27.1	17	250	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

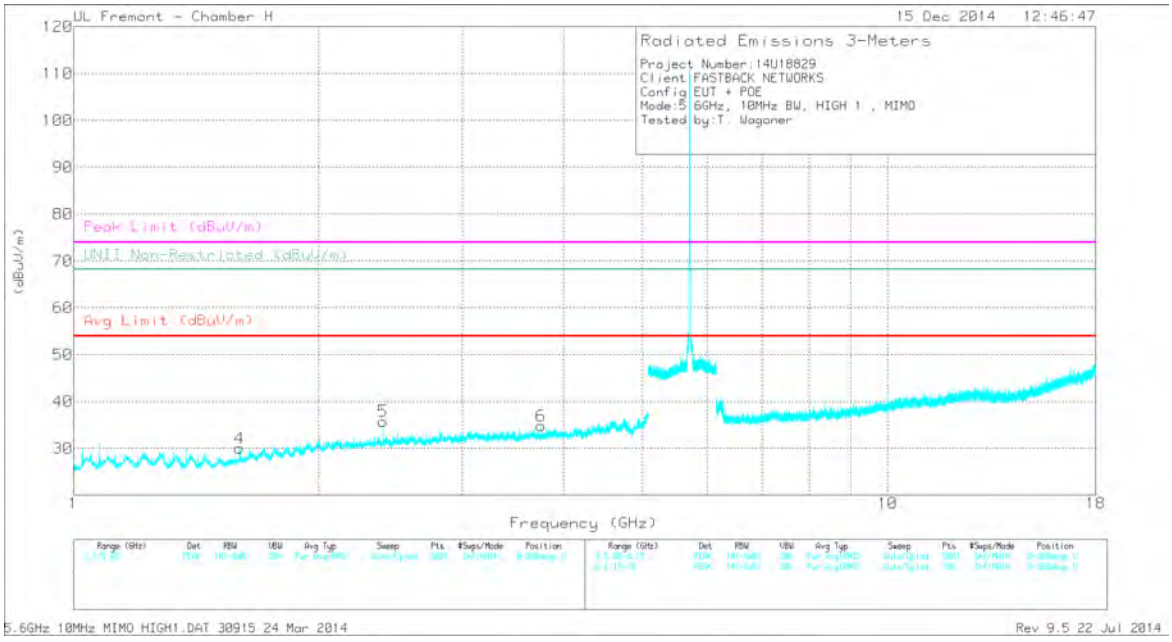
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

HIGH 1 CHANNEL HORIZONTAL PLOT



HIGH 1 CHANNEL VERTICAL PLOT



DATA

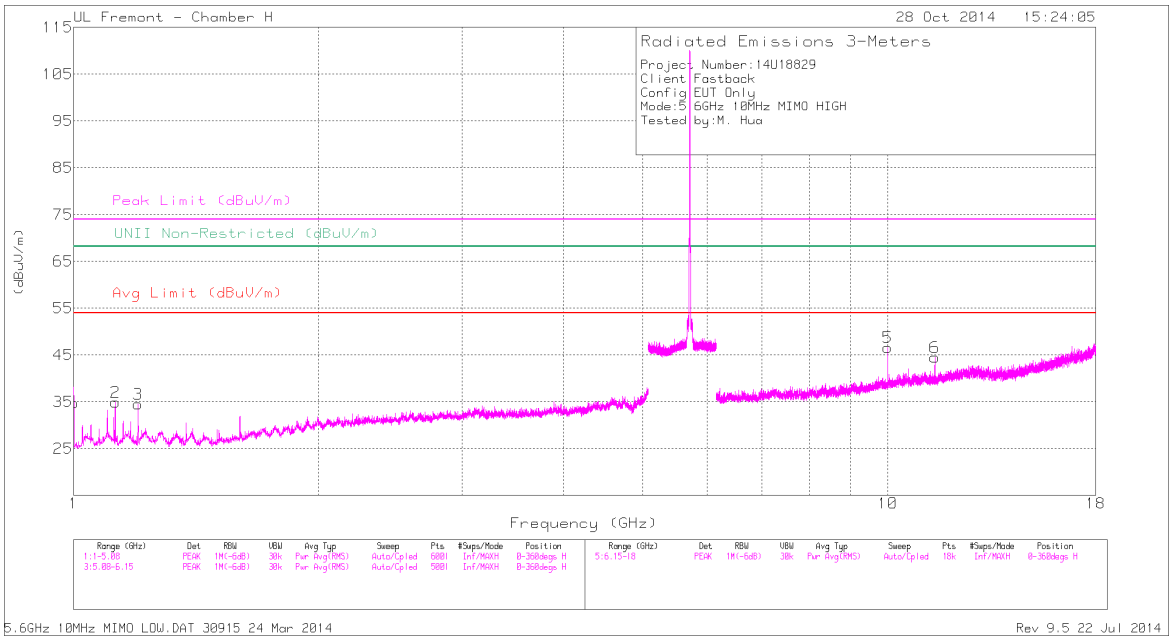
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.025	51.24	PK1	27.8	-35.5	43.54	-	-	74	-30.46	-	-	302	122	H
1	* 1.025	45.2	AD1	27.8	-35.5	37.5	54	-16.5	-	-	-	-	302	122	H
2	* 1.325	47.89	PK1	28.6	-35.7	40.79	-	-	74	-33.21	-	-	345	155	H
2	* 1.325	40.47	AD1	28.6	-35.7	33.37	54	-20.63	-	-	-	-	345	155	H
3	* 1.375	46.58	PK1	28.4	-35.3	39.68	-	-	74	-34.32	-	-	331	153	H
3	* 1.375	39.64	AD1	28.4	-35.3	32.74	54	-21.26	-	-	-	-	331	153	H
4	* 1.6	44.84	PK1	28.5	-35	38.34	-	-	74	-35.66	-	-	179	331	V
4	* 1.6	36.09	AD1	28.5	-35	29.59	54	-24.41	-	-	-	-	179	331	V
6	* 3.75	42.82	PK1	33.2	-33.1	42.92	-	-	74	-31.08	-	-	9	133	V
6	* 3.75	32.96	AD1	33.2	-33.1	33.06	54	-20.94	-	-	-	-	9	133	V
5	2.4	42.19	PK1	32	-34	40.19	-	-	-	-	68.2	-28.01	42	163	V
7	10	33.88	PK	37.3	-26.4	44.78	-	-	-	-	68.2	-23.42	0-360	100	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

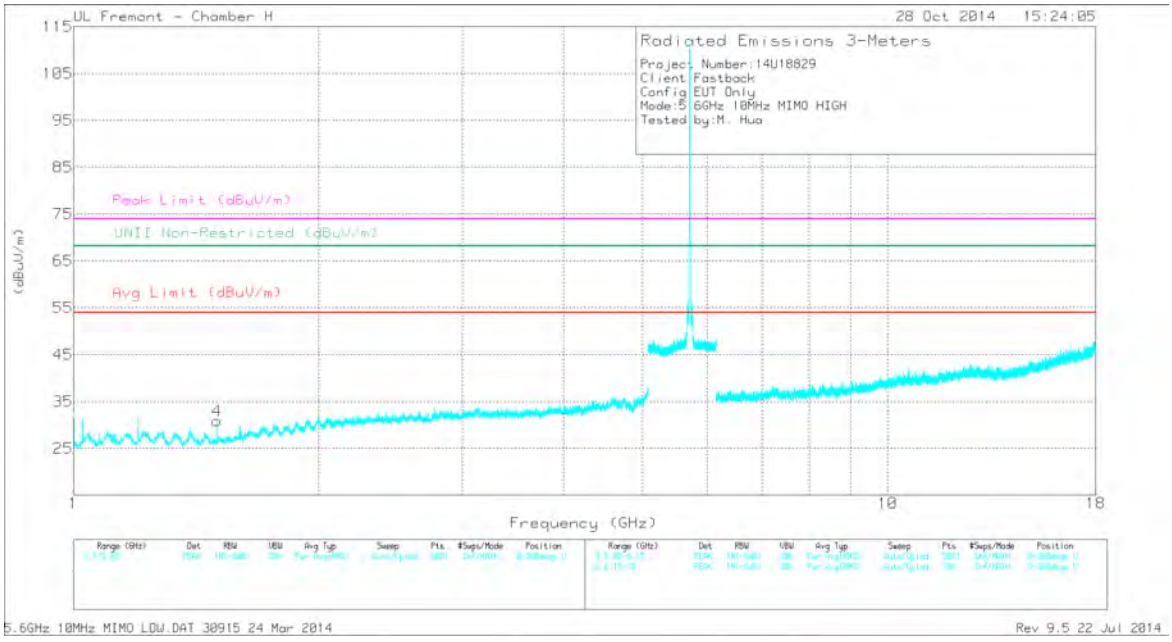
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

HIGH 2 CHANNEL HORIZONTAL PLOT



HIGH 2 CHANNEL VERTICAL PLOT



DATA

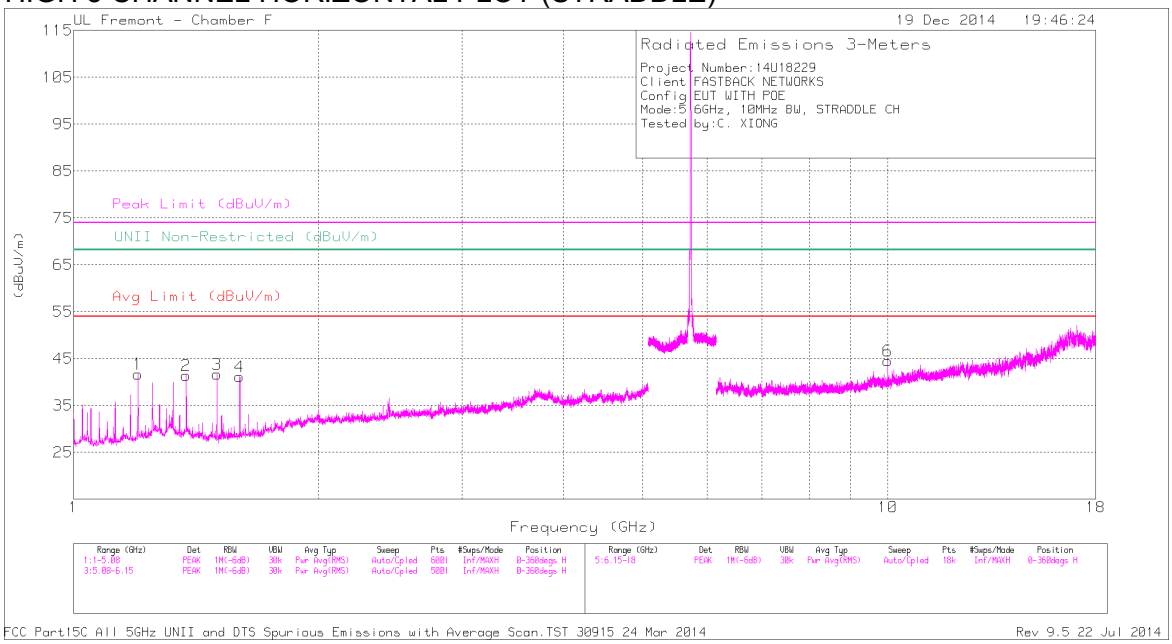
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1	49.28	PK1	27.7	-35.6	41.38	-	-	74	-32.62	-	-	62	123	H
1	* 1	43.41	AD1	27.7	-35.6	35.51	54	-18.49	-	-	-	-	62	123	H
2	* 1.125	44.23	PK1	28.4	-35.6	37.03	-	-	74	-36.97	-	-	62	123	H
2	* 1.125	34.41	AD1	28.4	-35.6	27.21	54	-26.79	-	-	-	-	62	123	H
3	* 1.2	47.01	PK1	28.7	-35.6	40.11	-	-	74	-33.89	-	-	58	119	H
3	* 1.2	41.56	AD1	28.7	-35.6	34.66	54	-19.34	-	-	-	-	58	119	H
4	* 1.5	44.84	PK1	27.7	-35.2	37.34	-	-	74	-36.66	-	-	202	102	V
4	* 1.5	36.02	AD1	27.7	-35.2	28.52	54	-25.48	-	-	-	-	202	102	V
5	10	40.53	PK1	37.3	-26.3	51.53	-	-	-	-	68.2	-16.67	199	120	H
6	* 11.42	36.77	PK1	38	-25.5	49.27	-	-	74	-24.73	-	-	34	132	H
6	* 11.42	28.05	AD1	38	-25.5	40.55	54	-13.45	-	-	-	-	34	132	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

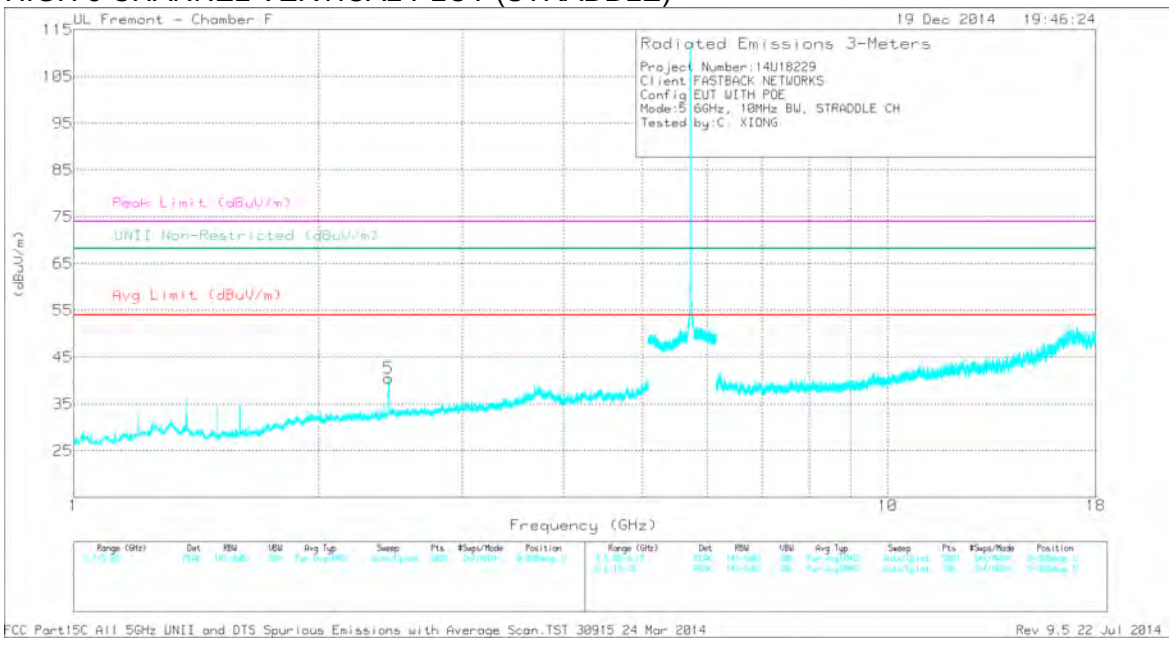
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

HIGH 3 CHANNEL HORIZONTAL PLOT (STRADDLE)



HIGH 3 CHANNEL VERTICAL PLOT (STRADDLE)



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.2	49.01	PK1	29	-32.5	45.51	-	-	74	-28.49	-	-	5	108	H
1	* 1.2	45.07	AD1	29	-32.5	41.57	54	-12.43	-	-	-	-	5	108	H
2	* 1.375	46.27	PK1	29.4	-31.9	43.77	-	-	74	-30.23	-	-	348	148	H
2	* 1.375	39.96	AD1	29.4	-31.9	37.46	54	-16.54	-	-	-	-	348	148	H
3	* 1.5	48.66	PK1	28.3	-32.1	44.86	-	-	74	-29.14	-	-	338	122	H
3	* 1.5	44.01	AD1	28.3	-32.1	40.21	54	-13.79	-	-	-	-	338	122	H
4	* 1.6	47.79	PK1	28.5	-31.7	44.59	-	-	74	-29.41	-	-	334	121	H
4	* 1.6	42.55	AD1	28.5	-31.7	39.35	54	-14.65	-	-	-	-	334	121	H
5	2.436	44.48	PK1	32.4	-30.9	45.98	-	-	-	-	68.2	-22.22	219	212	V
6	10	36.45	PK1	37.2	-22.3	51.35	-	-	-	-	68.2	-16.85	177	105	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

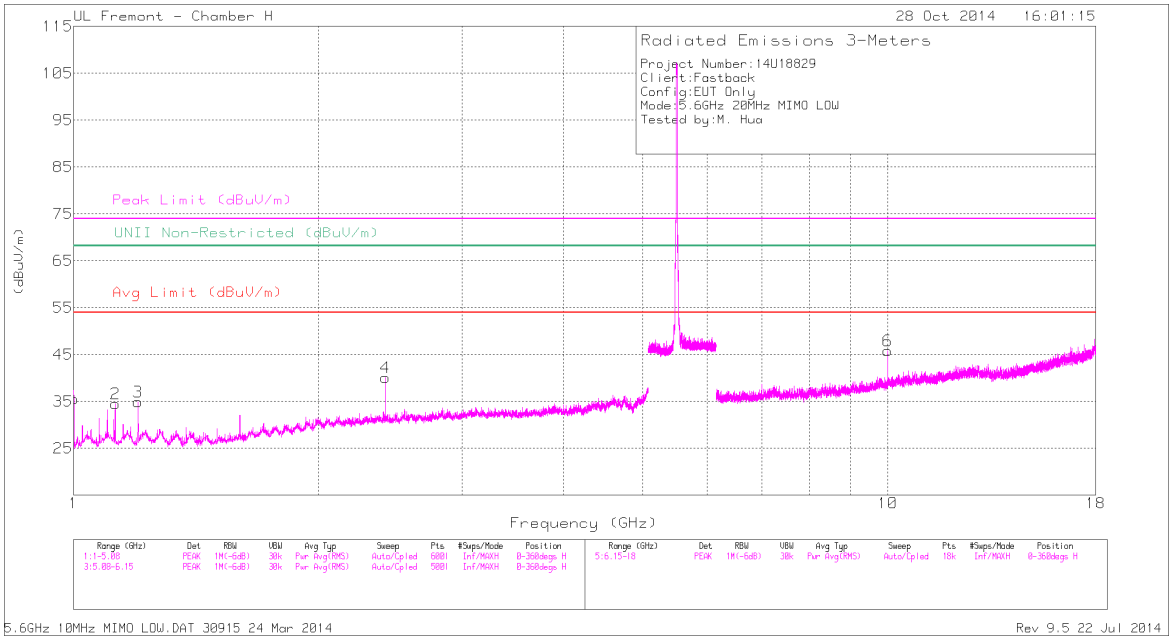
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

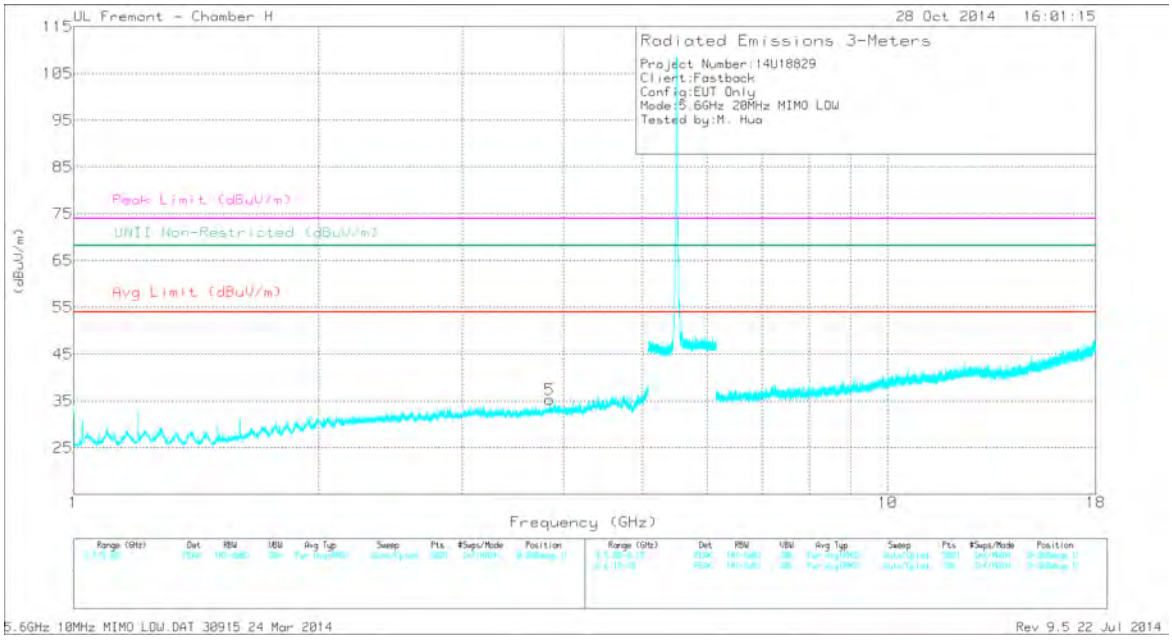
9.2.2. TX ABOVE 1 GHz 20MHz 2 TX MODE IN THE 5.6 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

LOW 1 CHANNEL HORIZONTAL PLOT



LOW 1 CHANNEL VERTICAL PLOT



DATA

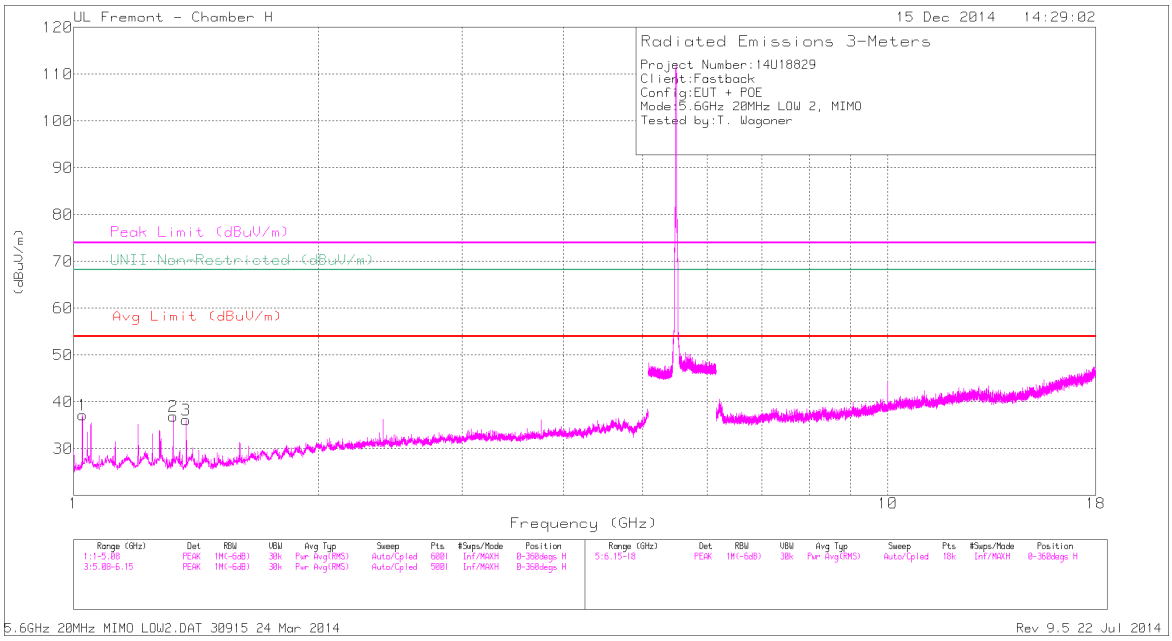
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1	49.46	PK1	27.7	-35.6	41.56	-	-	74	-32.44	-	-	62	193	H
1	* 1	43.1	AD1	27.7	-35.6	35.2	54	-18.8	-	-	-	-	62	193	H
2	* 1.125	43.59	PK1	28.4	-35.6	36.39	-	-	74	-37.61	-	-	62	193	H
2	* 1.125	33.78	AD1	28.3	-35.6	26.48	54	-27.52	-	-	-	-	62	193	H
3	* 1.2	46.8	PK1	28.7	-35.6	39.9	-	-	74	-34.1	-	-	360	109	H
3	* 1.2	40.9	AD1	28.7	-35.6	34	54	-20	-	-	-	-	360	109	H
5	* 3.843	41.81	PK1	33.3	-32.9	42.21	-	-	74	-31.79	-	-	348	167	V
5	* 3.844	30.34	AD1	33.3	-32.8	30.84	54	-23.16	-	-	-	-	348	167	V
4	2.418	42.32	PK1	32	-34.1	40.22	-	-	-	-	68.2	-27.98	293	208	H
6	10	39.94	PK1	37.3	-26.3	50.94	-	-	-	-	68.2	-17.26	182	130	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

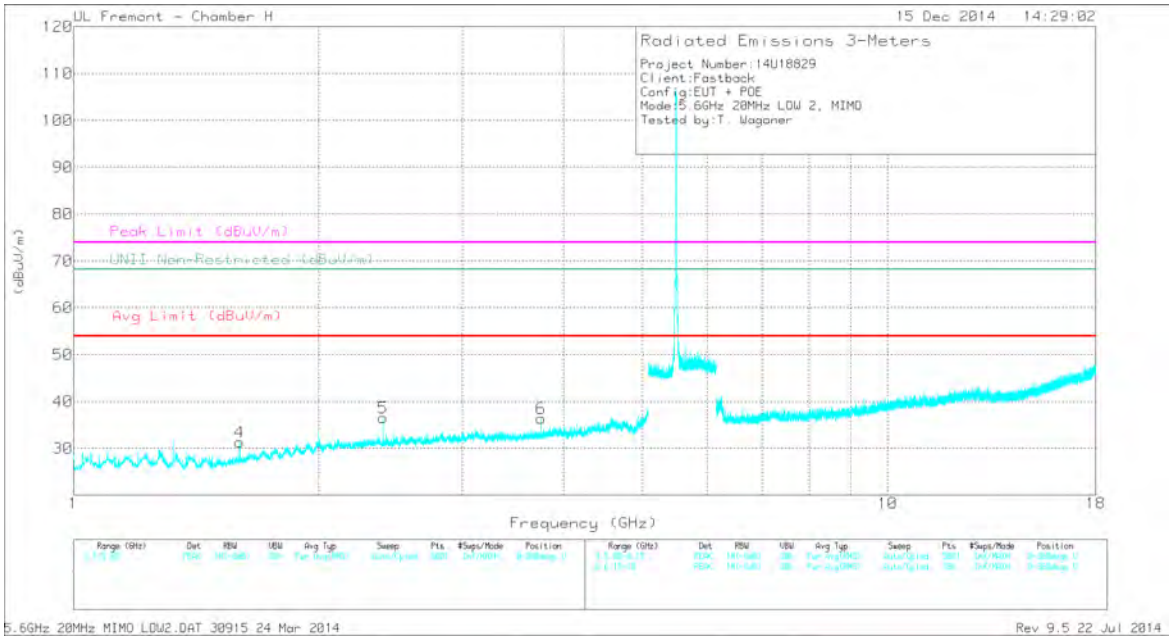
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

LOW 2 CHANNEL HORIZONTAL PLOT



LOW 2 CHANNEL VERTICAL PLOT



DATA

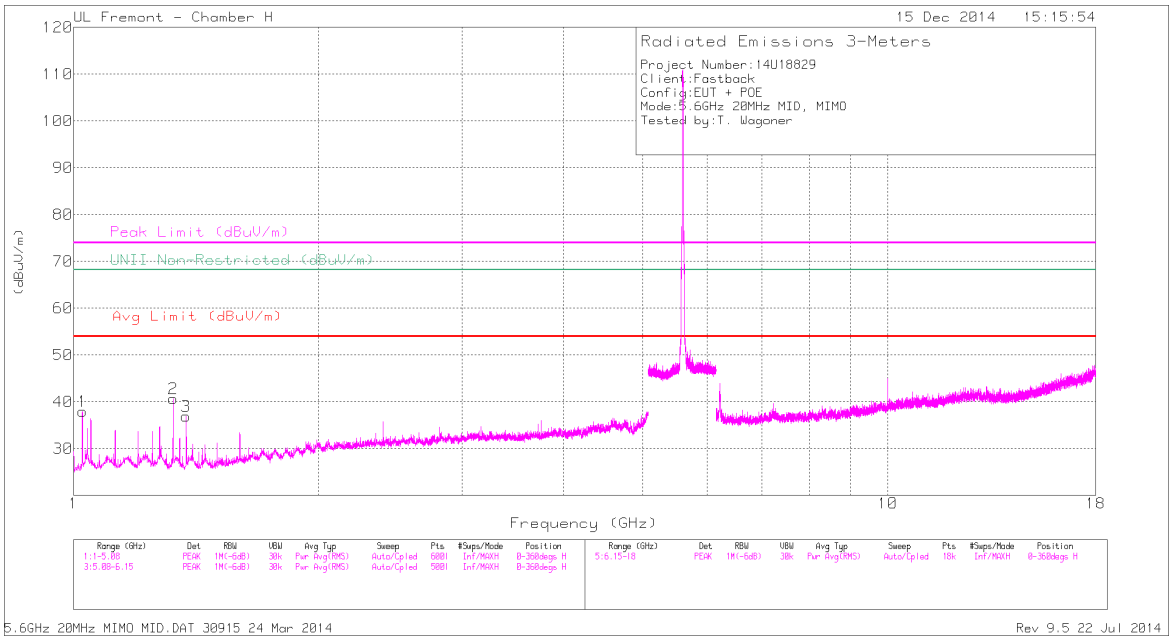
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.025	50.75	PK1	27.8	-35.5	43.05	-	-	74	-30.95	-	-	296	116	H
1	* 1.025	44.67	AD1	27.8	-35.5	36.97	54	-17.03	-	-	-	-	296	116	H
2	* 1.325	49.91	PK1	28.6	-35.7	42.81	-	-	74	-31.19	-	-	352	152	H
2	* 1.325	44.3	AD1	28.6	-35.7	37.2	54	-16.8	-	-	-	-	352	152	H
3	* 1.375	48.36	PK1	28.3	-35.3	41.36	-	-	74	-32.64	-	-	330	213	H
3	* 1.375	42.53	AD1	28.3	-35.3	35.53	54	-18.47	-	-	-	-	330	213	H
4	* 1.6	44.55	PK1	28.5	-35	38.05	-	-	74	-35.95	-	-	188	342	V
4	* 1.6	36.16	AD1	28.5	-35	29.66	54	-24.34	-	-	-	-	188	342	V
6	* 3.751	42.6	PK1	33.2	-33.1	42.7	-	-	74	-31.3	-	-	2	173	V
6	* 3.75	33.55	AD1	33.2	-33.1	33.65	54	-20.35	-	-	-	-	2	173	V
5	2.4	43.29	PK1	32	-34	41.29	-	-	-	-	68.2	-26.91	348	246	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

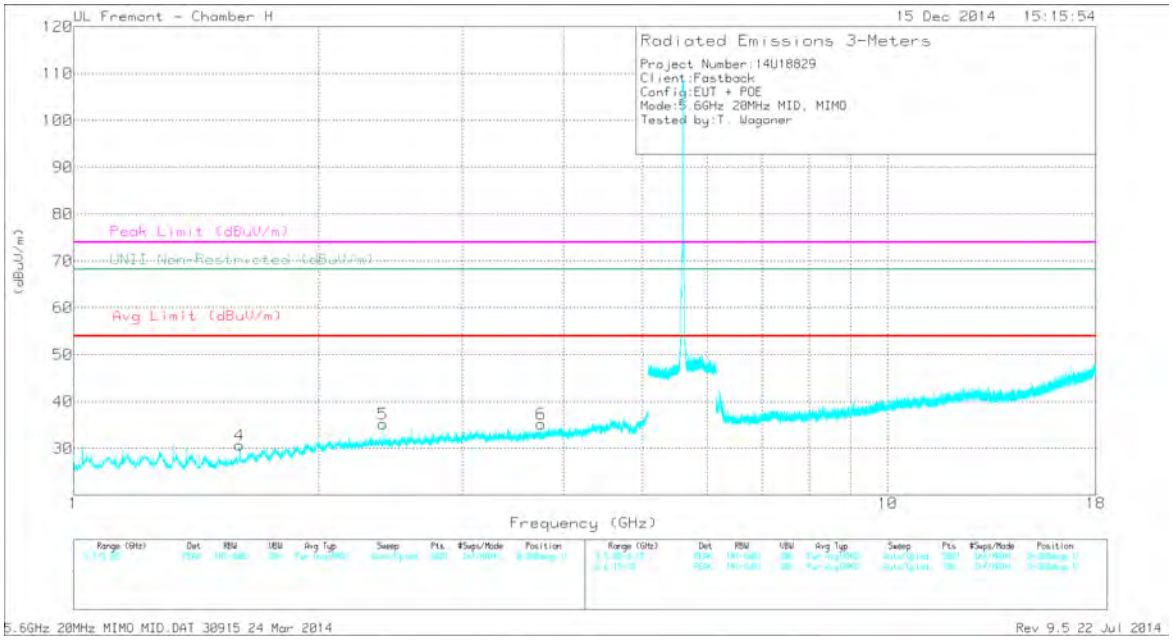
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

MID CHANNEL HORIZONTAL PLOT



MID CHANNEL VERTICAL PLOT



DATA

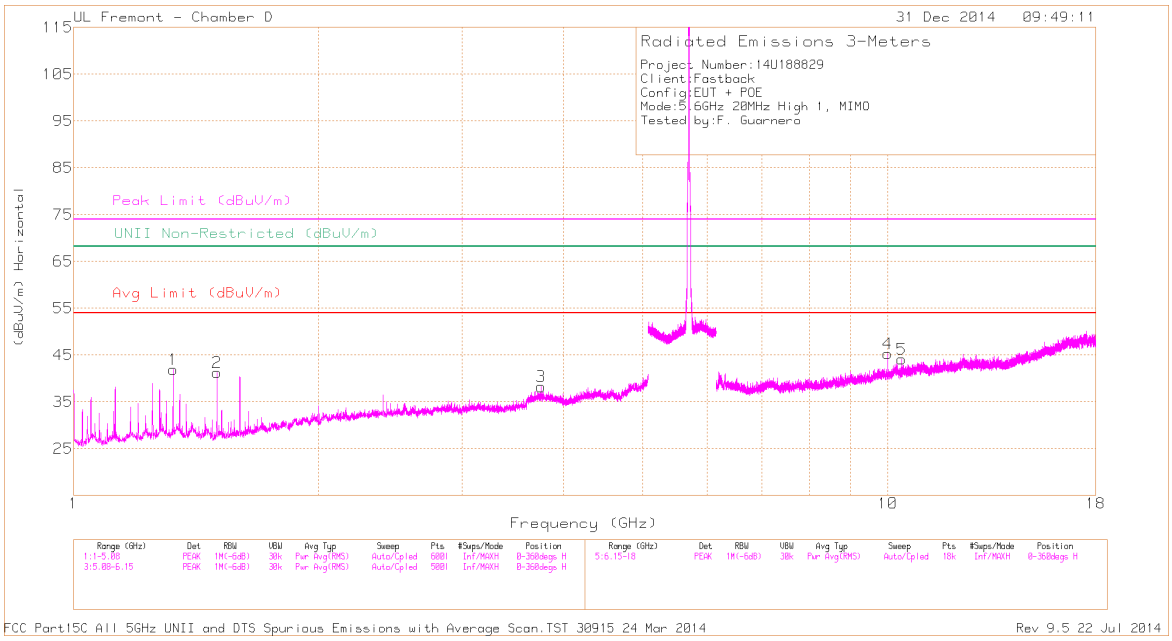
Markers	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.025	47.13	PK1	27.8	-35.5	39.43	-	-	74	-34.57	-	-	307	109	H
1	* 1.025	44.65	AD1	27.8	-35.5	36.95	54	-17.05	-	-	-	-	307	109	H
2	* 1.325	50.34	PK1	28.6	-35.7	43.24	-	-	74	-30.76	-	-	342	154	H
2	* 1.325	44.58	AD1	28.6	-35.7	37.48	54	-16.52	-	-	-	-	342	154	H
3	* 1.375	48.06	PK1	28.3	-35.3	41.06	-	-	74	-32.94	-	-	331	204	H
3	* 1.375	41.55	AD1	28.4	-35.3	34.65	54	-19.35	-	-	-	-	331	204	H
4	* 1.6	45.61	PK1	28.5	-35	39.11	-	-	74	-34.89	-	-	179	355	V
4	* 1.6	36.22	AD1	28.5	-35	29.72	54	-24.28	-	-	-	-	179	355	V
6	* 3.75	43.21	PK1	33.2	-33.1	43.31	-	-	74	-30.69	-	-	4	232	V
6	* 3.75	34.24	AD1	33.2	-33.1	34.34	54	-19.66	-	-	-	-	4	232	V
5	2.4	43.13	PK1	32	-34	41.13	-	-	-	-	68.2	-27.07	10	245	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

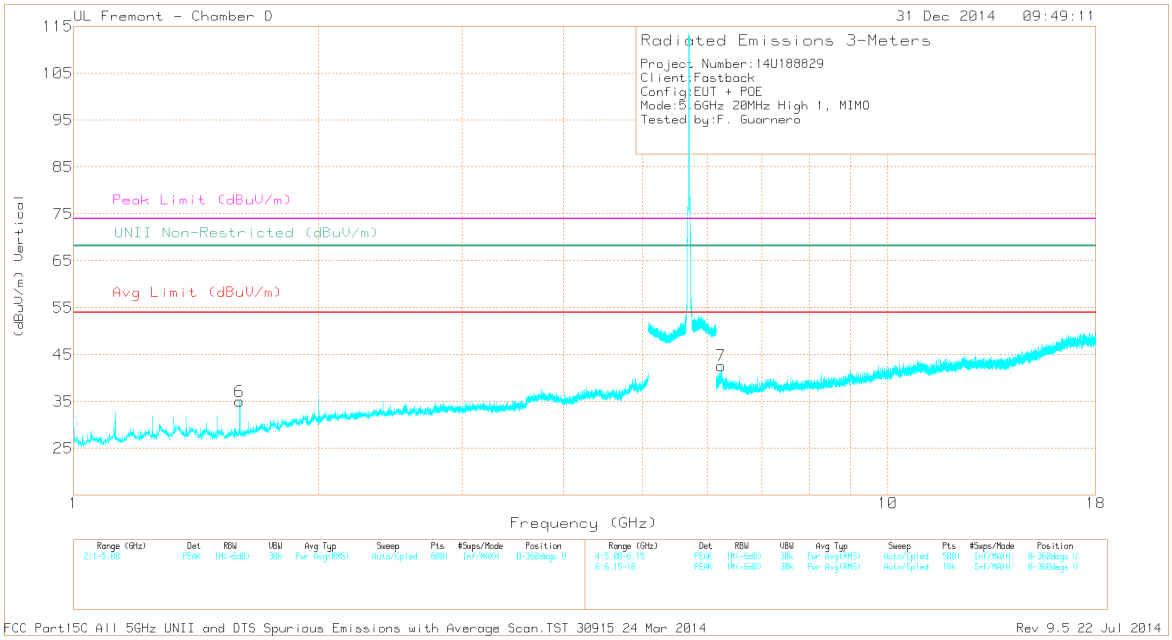
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

HIGH 1 CHANNEL HORIZONTAL PLOT



HIGH 1 CHANNEL VERTICAL PLOT



DATA

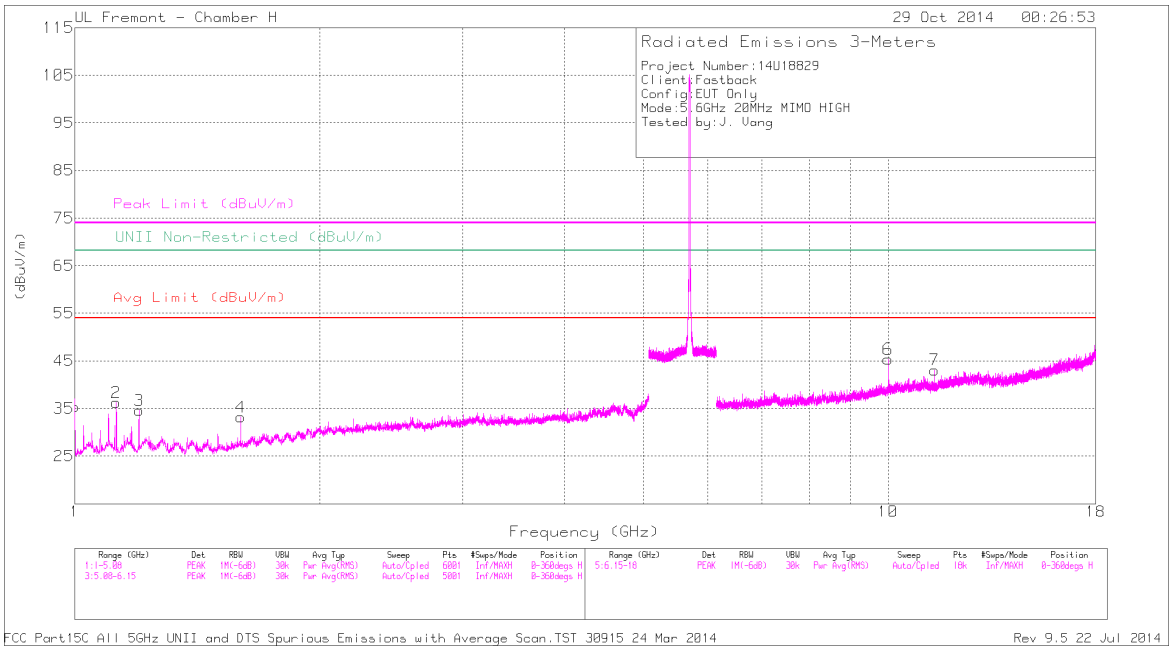
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.325	46.45	PK1	28.8	-31.4	43.85	-	-	74	-30.15	-	-	62	101	H
1	* 1.325	39.59	AD1	28.8	-31.3	37.09	54	-16.91	-	-	-	-	62	101	H
2	* 1.5	46.76	PK1	28.1	-31.5	43.36	-	-	74	-30.64	-	-	0	111	H
2	* 1.5	40.53	AD1	28.1	-31.5	37.13	54	-16.87	-	-	-	-	0	111	H
3	* 3.75	41.05	PK1	33.3	-28.6	45.75	-	-	74	-28.25	-	-	14	109	H
3	* 3.75	30.81	AD1	33.3	-28.7	35.41	54	-18.59	-	-	-	-	14	109	H
6	* 1.6	45.39	PK1	28.2	-31.6	41.99	-	-	74	-32.01	-	-	38	215	V
6	* 1.6	39.29	AD1	28.2	-31.6	35.89	54	-18.11	-	-	-	-	38	215	V
7	6.24	41.12	PK1	35.5	-26.5	50.12	-	-	-	-	68.2	-18.08	32	101	V
4	10	38.4	PK1	37.1	-22.1	53.4	-	-	-	-	68.2	-14.8	218	114	H
5	10.4	36.96	PK1	37.5	-22.1	52.36	-	-	-	-	68.2	-15.84	5	230	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

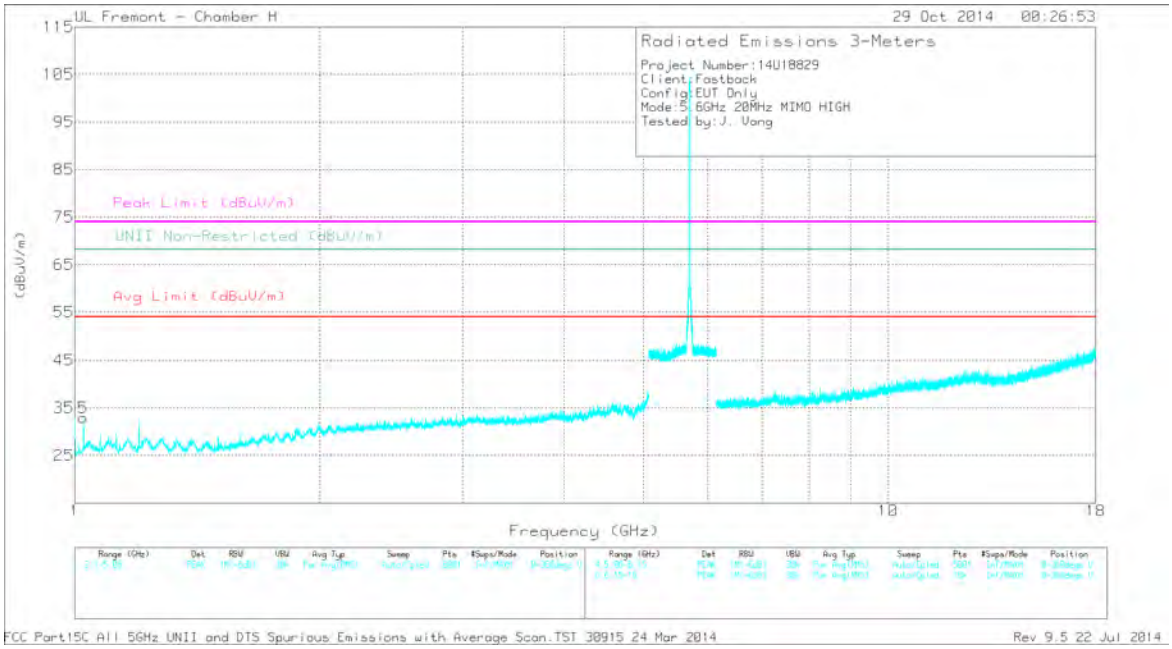
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

HIGH 2 CHANNEL HORIZONTAL PLOT



HIGH 2 CHANNEL VERTICAL PLOT



DATA

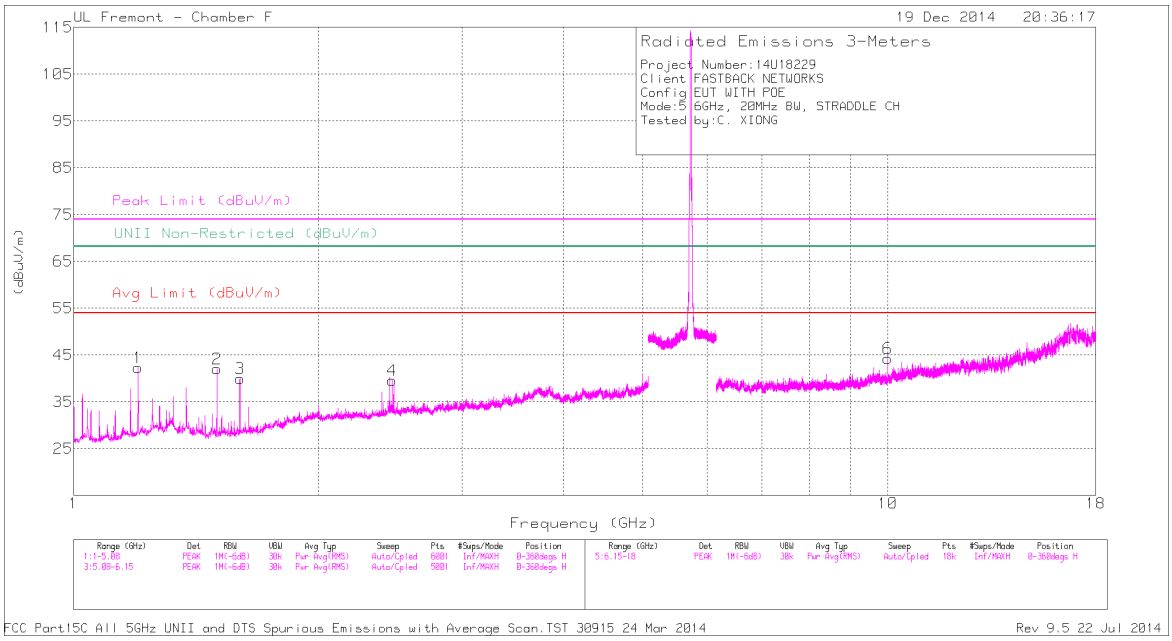
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1	49.08	PK1	27.7	-35.6	41.18	-	-	74	-32.82	-	-	68	119	H
1	* 1	42.35	AD1	27.7	-35.6	34.45	54	-19.55	-	-	-	-	68	119	H
2	* 1.125	48.19	PK1	28.4	-35.6	40.99	-	-	74	-33.01	-	-	347	121	H
2	* 1.125	41.31	AD1	28.4	-35.6	34.11	54	-19.89	-	-	-	-	347	121	H
3	* 1.2	46.39	PK1	28.7	-35.6	39.49	-	-	74	-34.51	-	-	11	104	H
3	* 1.2	39.87	AD1	28.7	-35.6	32.97	54	-21.03	-	-	-	-	11	104	H
4	* 1.6	45.67	PK1	28.5	-35	39.17	-	-	74	-34.83	-	-	48	193	H
4	* 1.6	38.48	AD1	28.5	-35	31.98	54	-22.02	-	-	-	-	48	193	H
5	* 1.025	46.52	PK1	27.8	-35.5	38.82	-	-	74	-35.18	-	-	328	194	V
5	* 1.025	37.76	AD1	27.8	-35.5	30.06	54	-23.94	-	-	-	-	328	194	V
7	* 11.4	36.18	PK1	38	-25.6	48.58	-	-	74	-25.42	-	-	32	212	H
7	* 11.4	26.7	AD1	38	-25.6	39.1	54	-14.9	-	-	-	-	32	212	H
6	10	40.33	PK1	37.3	-26.3	51.33	-	-	-	-	68.2	-16.87	190	112	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

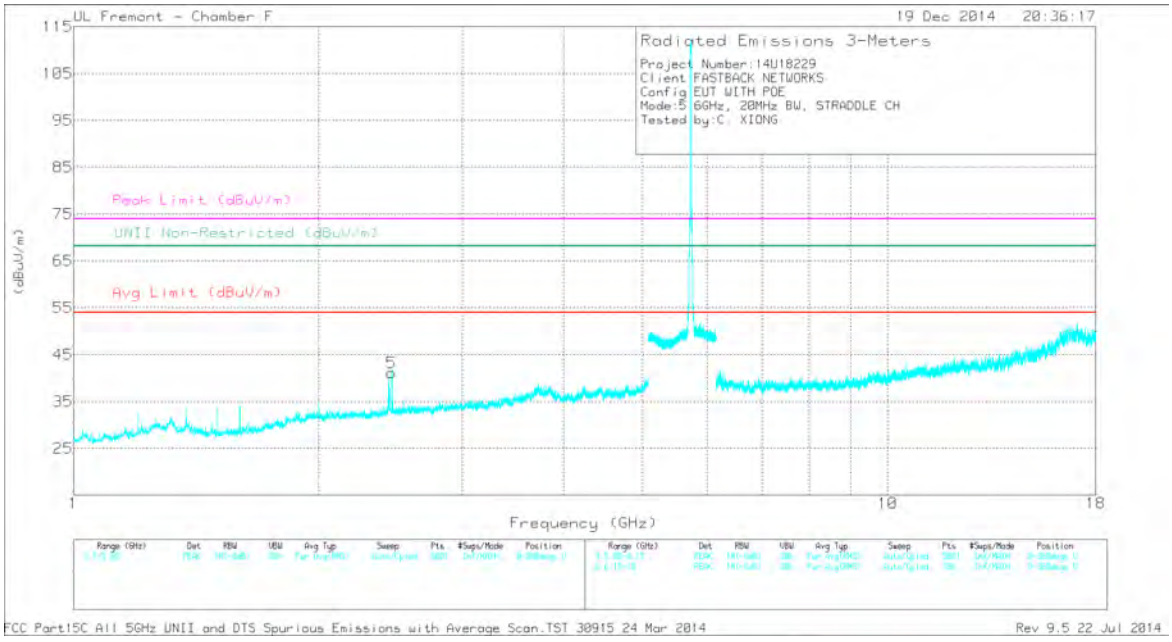
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

STRADDLE CHANNEL HORIZONTAL PLOT



STRADDLE CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.2	48.95	PK1	29	-32.5	45.45	-	-	74	-28.55	-	-	7	108	H
1	* 1.2	44.9	AD1	29	-32.5	41.4	54	-12.6	-	-	-	-	7	108	H
2	* 1.5	49.26	PK1	28.3	-32.1	45.46	-	-	74	-28.54	-	-	337	118	H
2	* 1.5	44.46	AD1	28.3	-32.1	40.66	54	-13.34	-	-	-	-	337	118	H
3	* 1.6	47.04	PK1	28.5	-31.7	43.84	-	-	74	-30.16	-	-	333	123	H
3	* 1.6	41.99	AD1	28.5	-31.7	38.79	54	-15.21	-	-	-	-	333	123	H
5	2.46	39.95	PK1	32.5	-30.8	41.65	-	-	-	-	68.2	-26.55	157	253	H
4	2.461	40.08	PK1	32.5	-30.8	41.78	-	-	-	-	68.2	-26.42	217	200	V
6	10	36.25	PK1	37.2	-22.3	51.15	-	-	-	-	68.2	-17.05	181	104	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

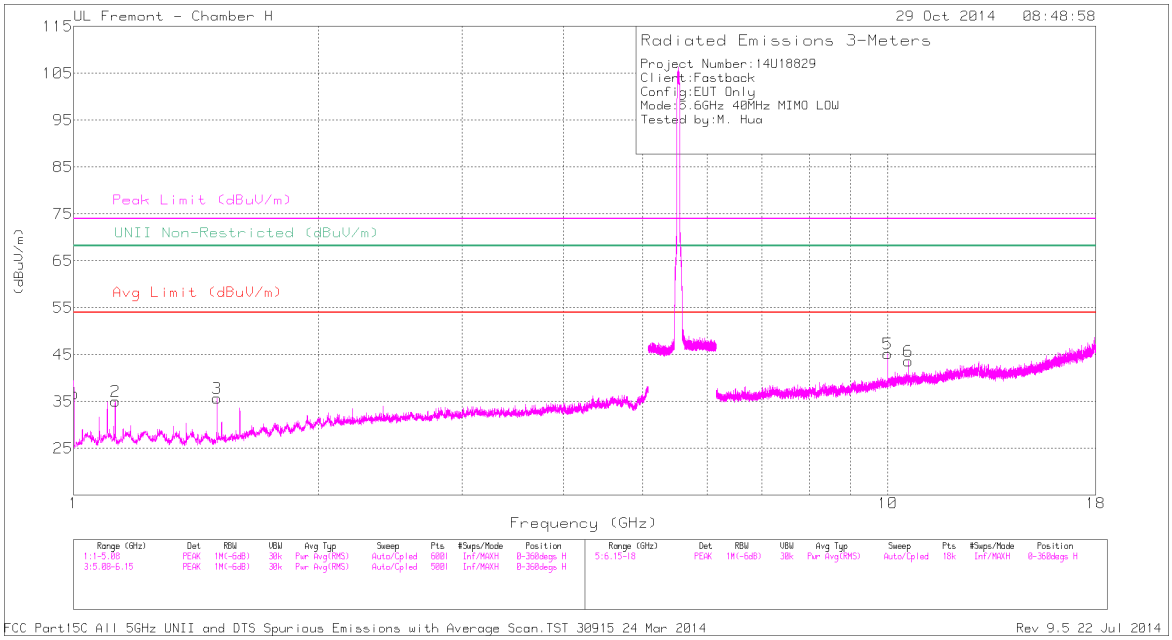
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

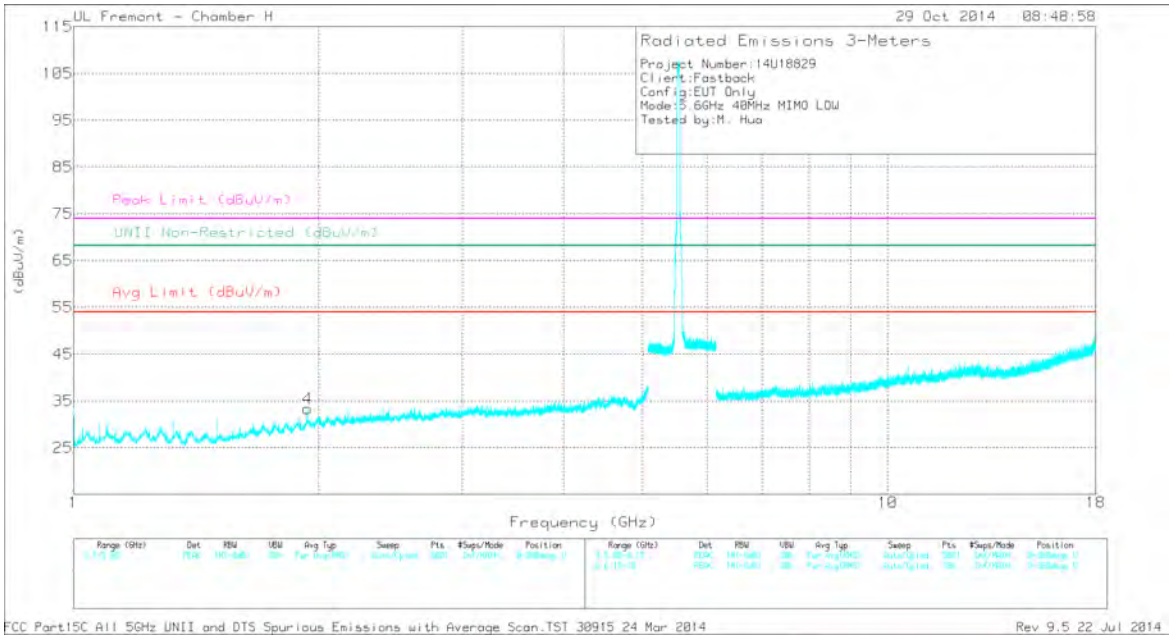
9.2.3. TX ABOVE 1 GHz 40MHz 2 TX MODE IN THE 5.6 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

LOW 1 CHANNEL HORIZONTAL PLOT



LOW 1 CHANNEL VERTICAL PLOT



DATA

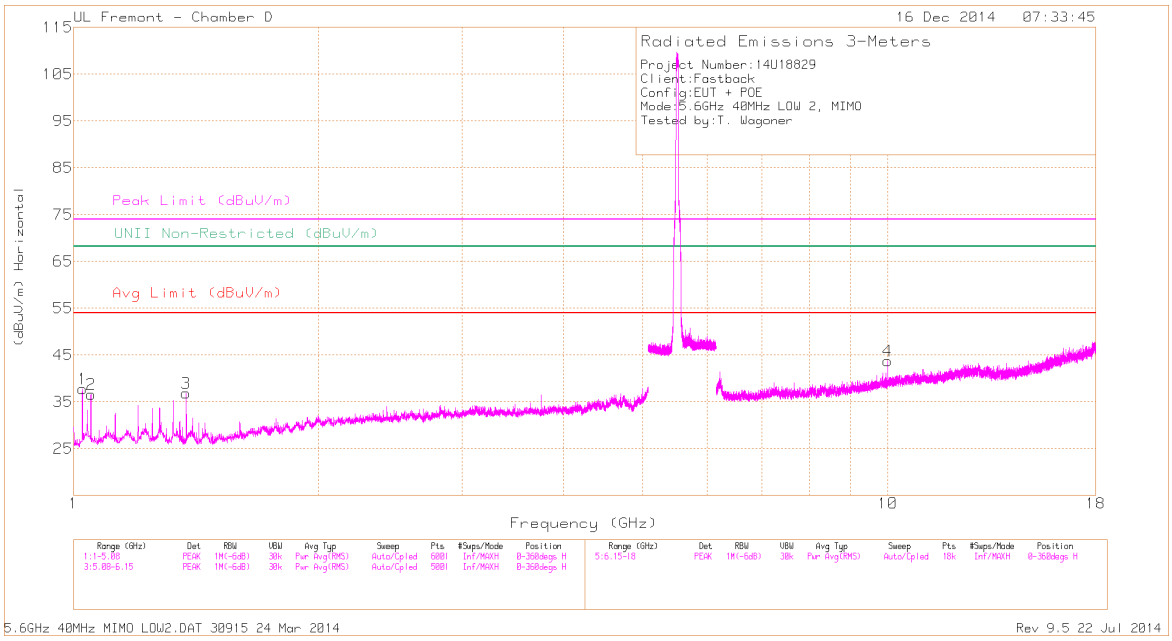
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1	49.35	PK1	27.7	-35.6	41.45	-	-	74	-32.55	-	-	61	284	H
1	* 1	41.93	AD1	27.7	-35.6	34.03	54	-19.97	-	-	-	-	61	284	H
2	* 1.125	47.04	PK1	28.3	-35.6	39.74	-	-	74	-34.26	-	-	346	193	H
2	* 1.125	39.06	AD1	28.4	-35.6	31.86	54	-22.14	-	-	-	-	346	193	H
3	* 1.5	44.98	PK1	27.7	-35.2	37.48	-	-	74	-36.52	-	-	280	128	H
3	* 1.5	34.79	AD1	27.7	-35.2	27.29	54	-26.71	-	-	-	-	280	128	H
4	1.938	43.58	PK1	30.9	-34.6	39.88	-	-	-	-	68.2	-28.32	207	119	V
5	10	40.31	PK1	37.3	-26.3	51.31	-	-	-	-	68.2	-16.89	187	122	H
6	10.599	36.49	PK1	37.6	-25.5	48.59	-	-	-	-	68.2	-19.61	187	122	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

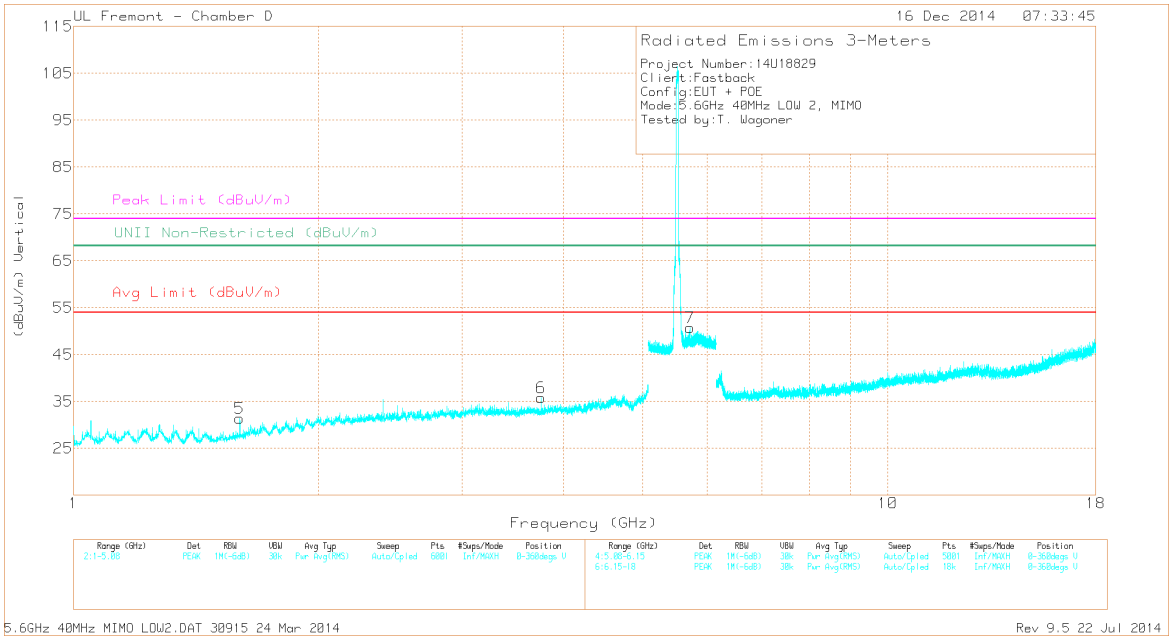
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

LOW 2 CHANNEL HORIZONTAL PLOT



LOW 2 CHANNEL VERTICAL PLOT



DATA

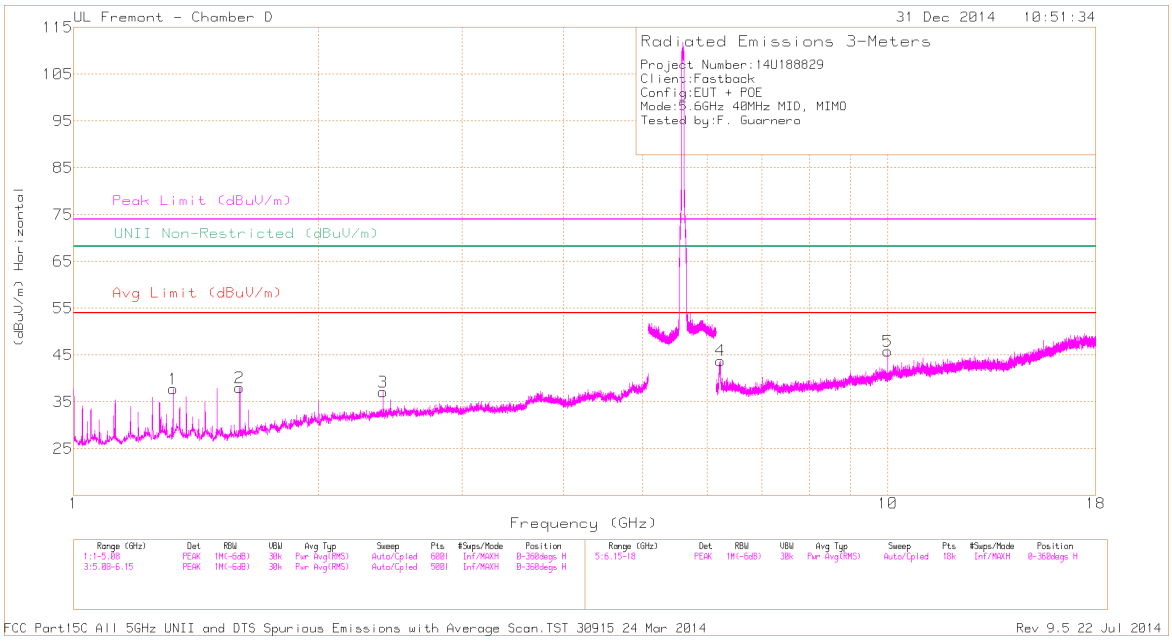
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.025	50.68	PK1	27.8	-35.5	42.98	-	-	74	-31.02	-	-	306	111	H
1	* 1.025	44.53	AD1	27.8	-35.5	36.83	54	-17.17	-	-	-	-	306	111	H
2	* 1.05	46.55	PK1	28	-35.5	39.05	-	-	74	-34.95	-	-	350	134	H
2	* 1.05	37.85	AD1	28	-35.5	30.35	54	-23.65	-	-	-	-	350	134	H
3	* 1.375	46.8	PK1	28.3	-35.3	39.8	-	-	74	-34.2	-	-	323	193	H
3	* 1.375	40.63	AD1	28.3	-35.3	33.63	54	-20.37	-	-	-	-	323	193	H
5	* 1.6	44.62	PK1	28.5	-35	38.12	-	-	74	-35.88	-	-	170	359	V
5	* 1.6	35.93	AD1	28.5	-35	29.43	54	-24.57	-	-	-	-	170	359	V
6	* 3.75	35.36	Avg	33.2	-33.1	35.46	54	-18.54	-	-	-	-	11	151	V
6	* 3.75	38.56	PK1	33.2	-33.1	38.66	-	-	74	-35.34	-	-	11	151	V
6	* 3.75	32.35	AD1	33.2	-33.1	32.45	54	-21.55	-	-	-	-	11	151	V
7	5.72	41.37	PK1	35	-22.4	53.97	-	-	-	-	68.2	-14.23	351	108	V
7	5.72	34.66	AD1	35	-22.4	47.26	-	-	-	-	-	-	351	108	V
4	10	32.91	PK	37.3	-26.4	43.81	-	-	-	-	68.2	-24.39	0-360	100	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

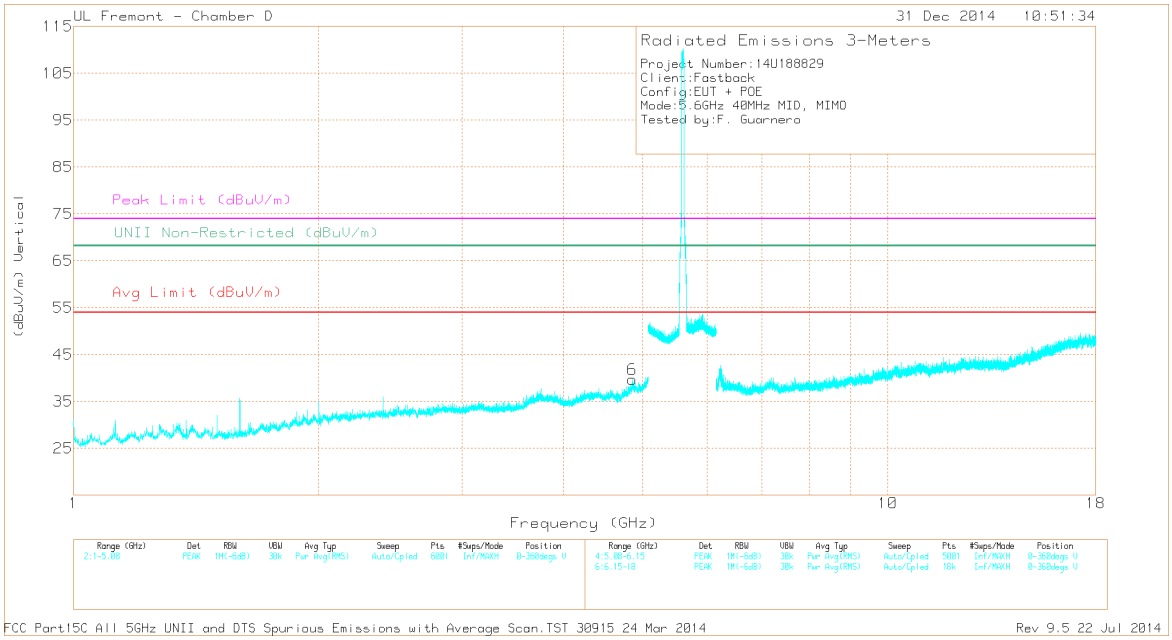
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

MID CHANNEL HORIZONTAL PLOT



MID CHANNEL VERTICAL PLOT



DATA

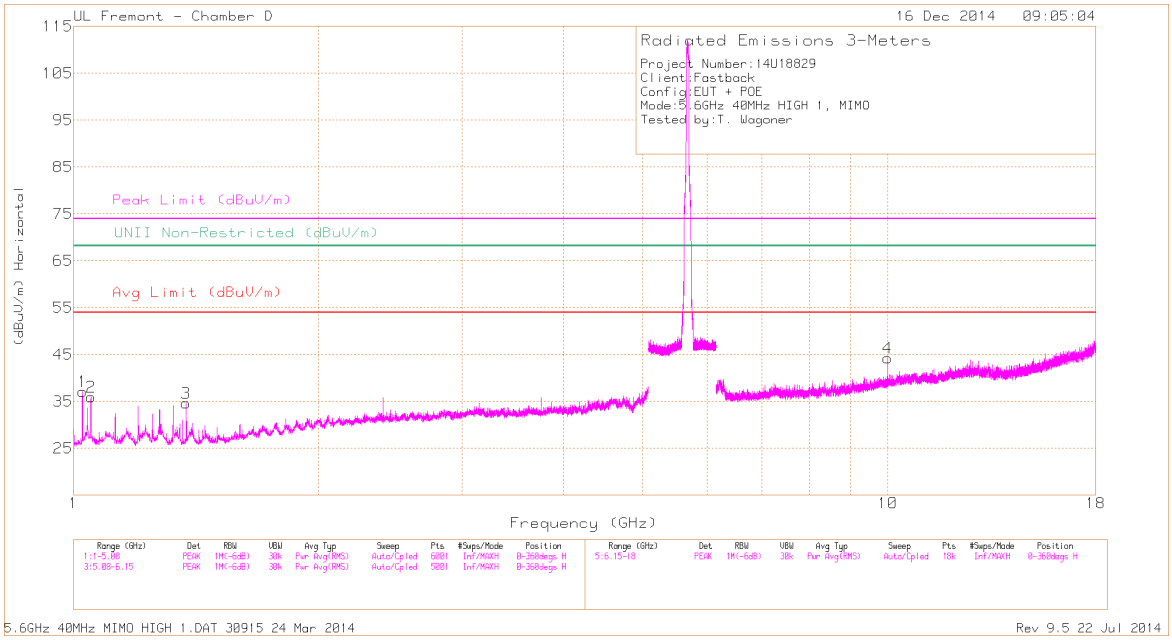
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.325	45.08	PK1	28.8	-31.3	42.58	-	-	74	-31.42	-	-	4	100	H
1	* 1.325	37.36	AD1	28.8	-31.3	34.86	54	-19.14	-	-	-	-	4	100	H
2	* 1.6	45.78	PK1	28.2	-31.6	42.38	-	-	74	-31.62	-	-	3	122	H
2	* 1.6	39.86	AD1	28.2	-31.6	36.46	54	-17.54	-	-	-	-	3	122	H
6	* 4.859	37.5	PK1	34.2	-25.7	46	-	-	74	-28	-	-	135	378	V
6	* 4.857	25.56	AD1	34.2	-25.7	34.06	54	-19.94	-	-	-	-	135	378	V
3	2.4	42.13	PK1	32.1	-30.4	43.83	-	-	-	-	68.2	-24.37	56	119	H
4	6.228	43.27	PK1	35.5	-26.5	52.27	-	-	-	-	68.2	-15.93	40	101	H
5	10	38.41	PK1	37.1	-22.1	53.41	-	-	-	-	68.2	-14.79	215	116	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

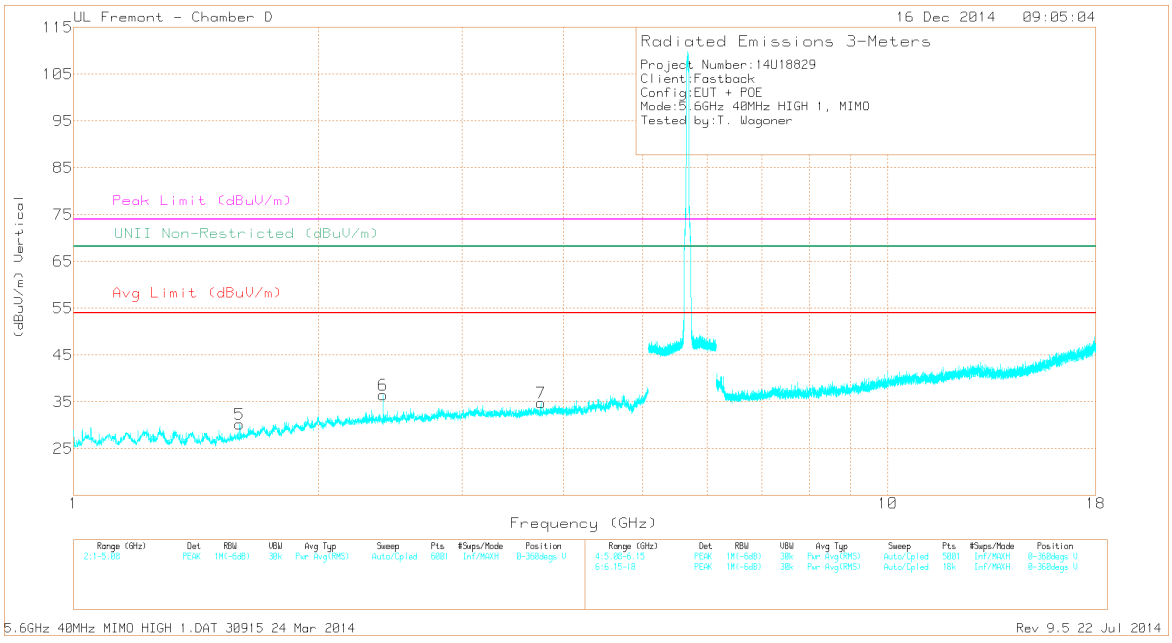
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

HIGH 1 CHANNEL HORIZONTAL PLOT



HIGH 1 CHANNEL VERTICAL PLOT



DATA

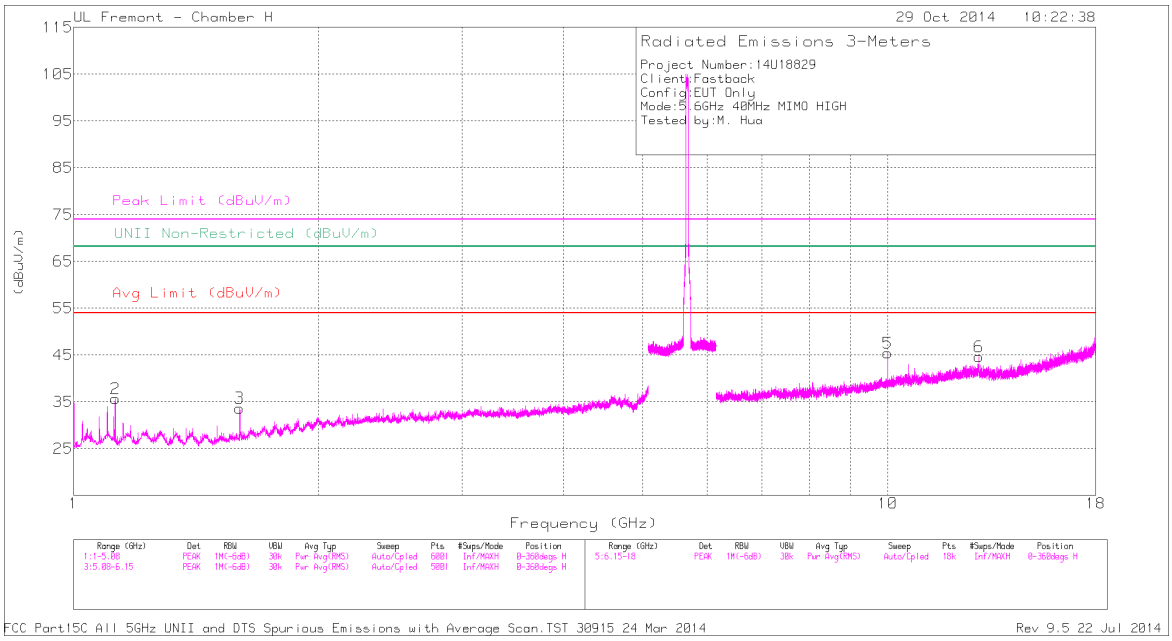
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.025	48.9	PK1	27.8	-35.5	41.2	-	-	74	-32.8	-	-	298	112	H
1	* 1.025	41.52	AD1	27.8	-35.5	33.82	54	-20.18	-	-	-	-	298	112	H
2	* 1.05	42.8	PK1	28	-35.5	35.3	-	-	74	-38.7	-	-	351	138	H
2	* 1.05	38.2	AD1	28	-35.5	30.7	54	-23.3	-	-	-	-	351	138	H
3	* 1.375	45.43	PK1	28.3	-35.3	38.43	-	-	74	-35.57	-	-	319	239	H
3	* 1.375	38.32	AD1	28.3	-35.3	31.32	54	-22.68	-	-	-	-	319	239	H
5	* 1.6	44.3	PK1	28.5	-35	37.8	-	-	74	-36.2	-	-	178	329	V
5	* 1.6	35.31	AD1	28.5	-35	28.81	54	-25.19	-	-	-	-	178	329	V
7	* 3.75	40.24	PK1	33.2	-33.1	40.34	-	-	74	-33.66	-	-	346	159	V
7	* 3.75	34.88	AD1	33.2	-33.1	34.98	54	-19.02	-	-	-	-	346	159	V
4	10	40.53	PK1	37.3	-26.3	51.53	-	-	-	-	68.2	-16.67	199	120	H
6	2.4	38.51	PK	32	-34	36.51	-	-	-	-	68.2	-31.69	0-360	201	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

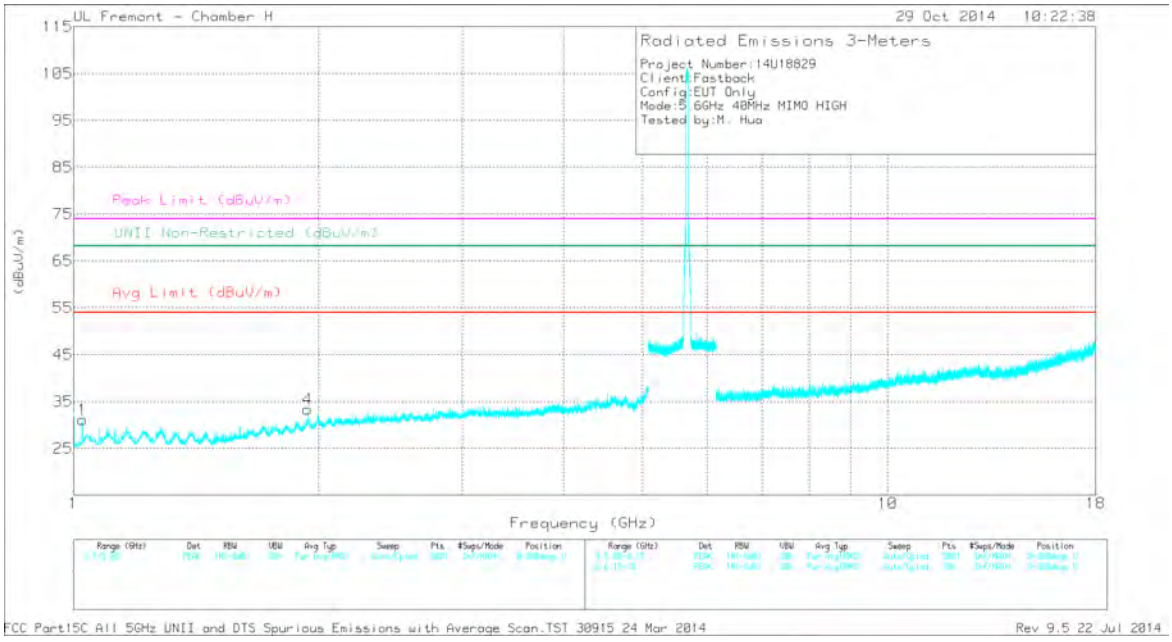
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

HIGH 2 CHANNEL HORIZONTAL PLOT



HIGH 2 CHANNEL VERTICAL PLOT



DATA

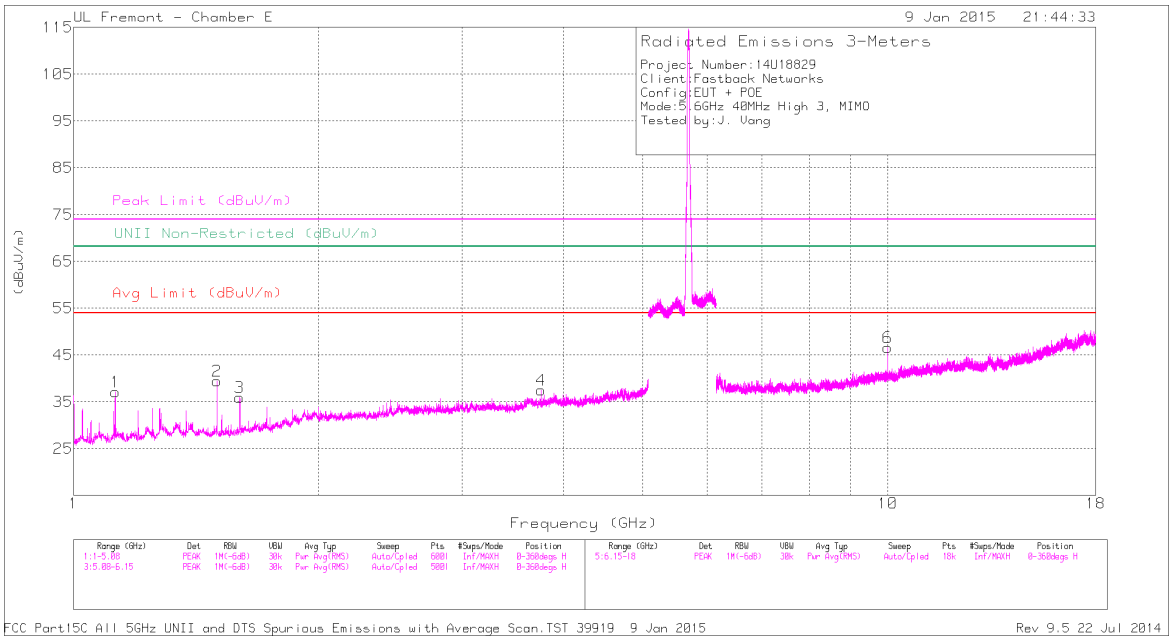
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 1.125	47.88	PK1	28.3	-35.6	40.58	-	-	74	-33.42	-	-	353	193	H
2	* 1.125	40.36	AD1	28.4	-35.6	33.16	54	-20.84	-	-	-	-	353	193	H
3	* 1.6	45.87	PK1	28.5	-35	39.37	-	-	74	-34.63	-	-	57	266	H
3	* 1.6	38.03	AD1	28.5	-35	31.53	54	-22.47	-	-	-	-	57	266	H
1	* 1.025	46.11	PK1	27.8	-35.5	38.41	-	-	74	-35.59	-	-	330	204	V
1	* 1.025	36.58	AD1	27.8	-35.5	28.88	54	-25.12	-	-	-	-	330	204	V
4	1.938	44.49	PK1	30.9	-34.6	40.79	-	-	-	-	68.2	-27.41	217	155	V
5	10	40.31	PK1	37.3	-26.3	51.31	-	-	-	-	68.2	-16.89	188	120	H
6	12.929	36.87	PK1	39.2	-24.8	51.27	-	-	-	-	68.2	-16.93	309	124	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

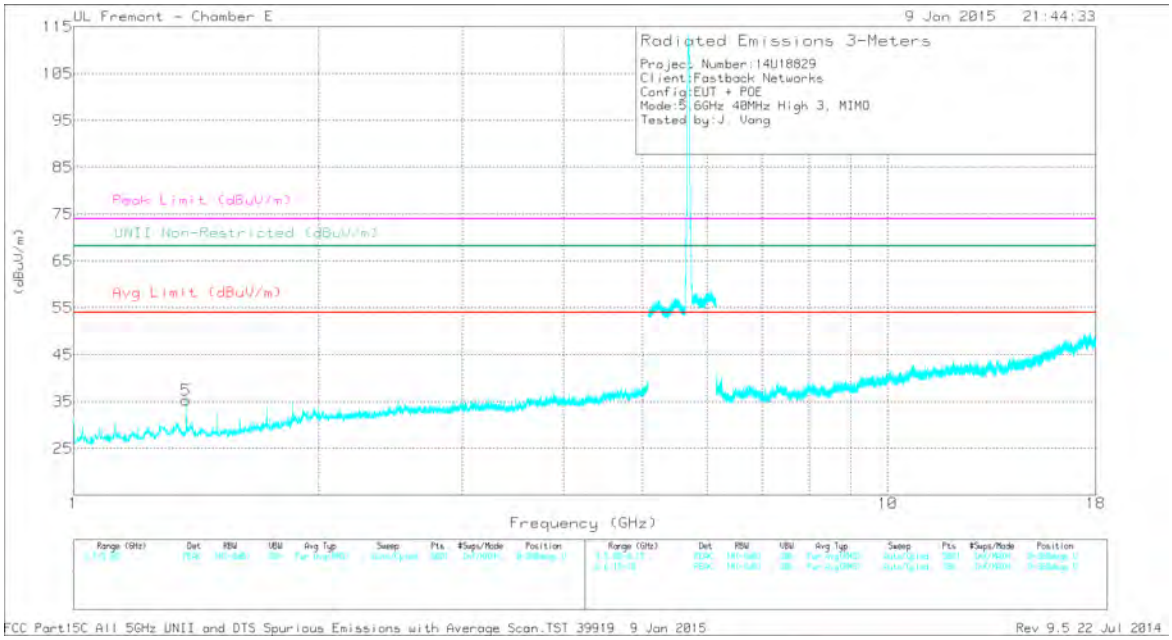
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

HIGH 3 CHANNEL HORIZONTAL PLOT



HIGH 3 CHANNEL VERTICAL PLOT



DATA

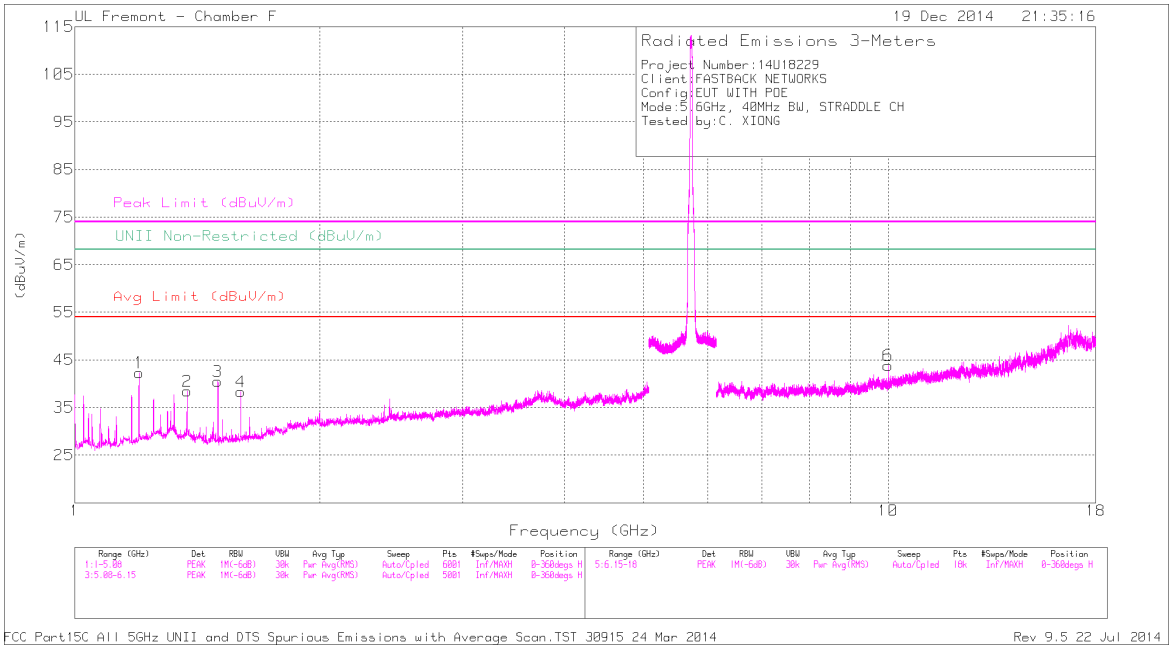
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.125	49.74	PK1	27.7	-34.8	42.64	-	-	74	-31.36	-	-	279	124	H
	* 1.125	42.45	AD1	27.7	-34.8	35.35	54	-18.65	-	-	-	-	279	124	H
2	* 1.5	50.39	PK1	28.3	-34.4	44.29	-	-	74	-29.71	-	-	284	193	H
	* 1.5	44.22	AD1	28.3	-34.4	38.12	54	-15.88	-	-	-	-	284	193	H
3	* 1.6	49.07	PK1	28.4	-33.7	43.77	-	-	74	-30.23	-	-	299	251	H
	* 1.6	40.68	AD1	28.4	-33.7	35.38	54	-18.62	-	-	-	-	299	251	H
4	* 3.75	43.09	PK1	33.4	-32.1	44.39	-	-	74	-29.61	-	-	256	213	H
	* 3.75	33.05	AD1	33.4	-32.1	34.35	54	-19.65	-	-	-	-	256	213	H
5	* 1.375	45.95	PK1	28.9	-34.2	40.65	-	-	74	-33.35	-	-	161	107	V
	* 1.375	37.75	AD1	28.9	-34.2	32.45	54	-21.55	-	-	-	-	161	107	V
6	10	40.71	PK1	37.1	-24.8	53.01	-	-	-	-	68.2	-15.19	152	135	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

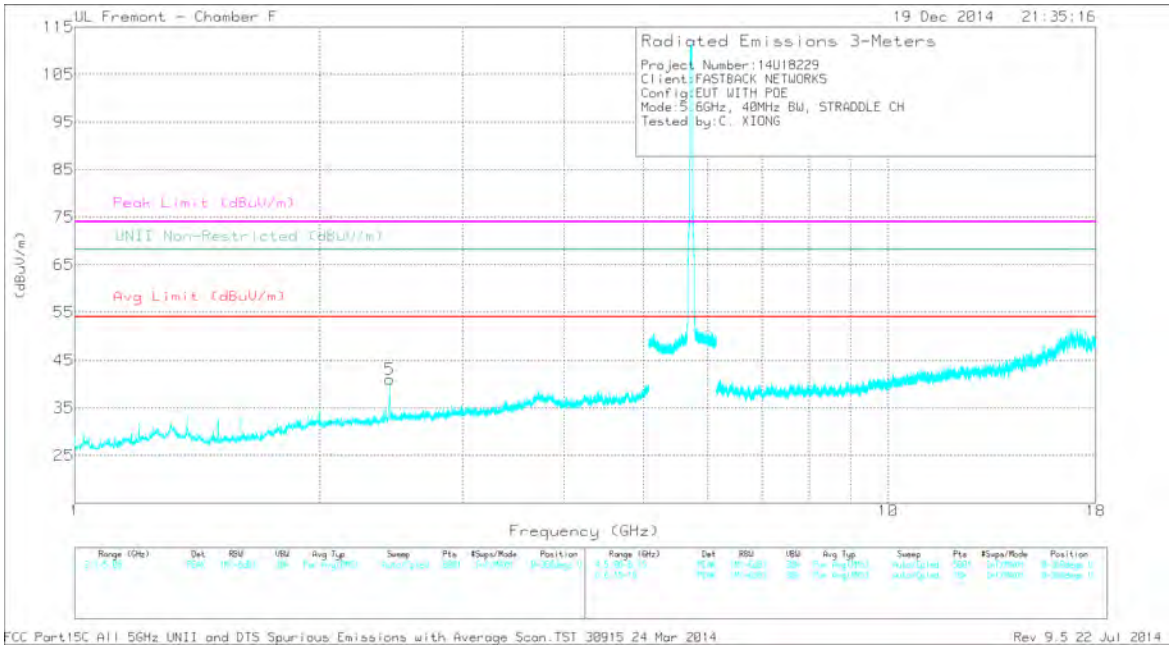
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

STRADDLE CHANNEL HORIZONTAL PLOT



STRADDLE CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T120 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.2	48.98	PK1	29	-32.5	45.48	-	-	74	-28.52	-	-	10	108	H
1	* 1.2	45.15	AD1	29	-32.5	41.65	54	-12.35	-	-	-	-	10	108	H
2	* 1.375	45.47	PK1	29.4	-31.9	42.97	-	-	74	-31.03	-	-	350	151	H
2	* 1.375	39.61	AD1	29.4	-31.9	37.11	54	-16.89	-	-	-	-	350	151	H
3	* 1.5	48.88	PK1	28.3	-32.1	45.08	-	-	74	-28.92	-	-	338	124	H
3	* 1.5	44.17	AD1	28.3	-32.1	40.37	54	-13.63	-	-	-	-	338	124	H
4	* 1.6	47.4	PK1	28.5	-31.7	44.2	-	-	74	-29.8	-	-	332	120	H
4	* 1.6	41.79	AD1	28.5	-31.7	38.59	54	-15.41	-	-	-	-	332	120	H
5	2.438	41.47	PK1	32.4	-30.9	42.97	-	-	-	-	68.2	-25.23	215	206	V
6	10	35.94	PK1	37.2	-22.3	50.84	-	-	-	-	68.2	-17.36	177	107	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

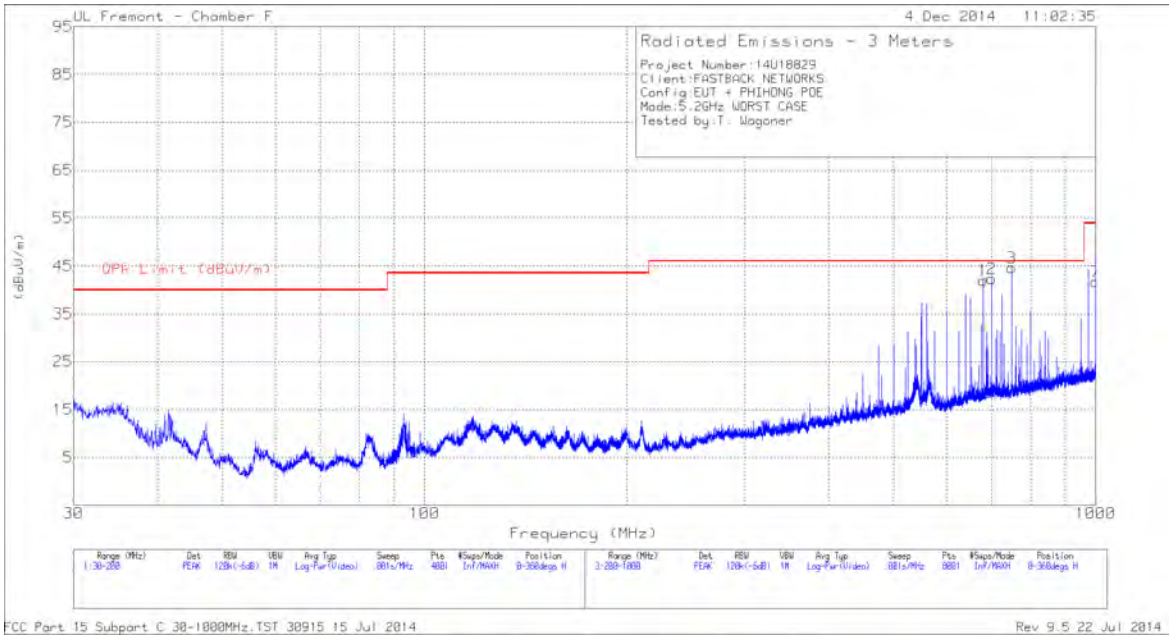
PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average

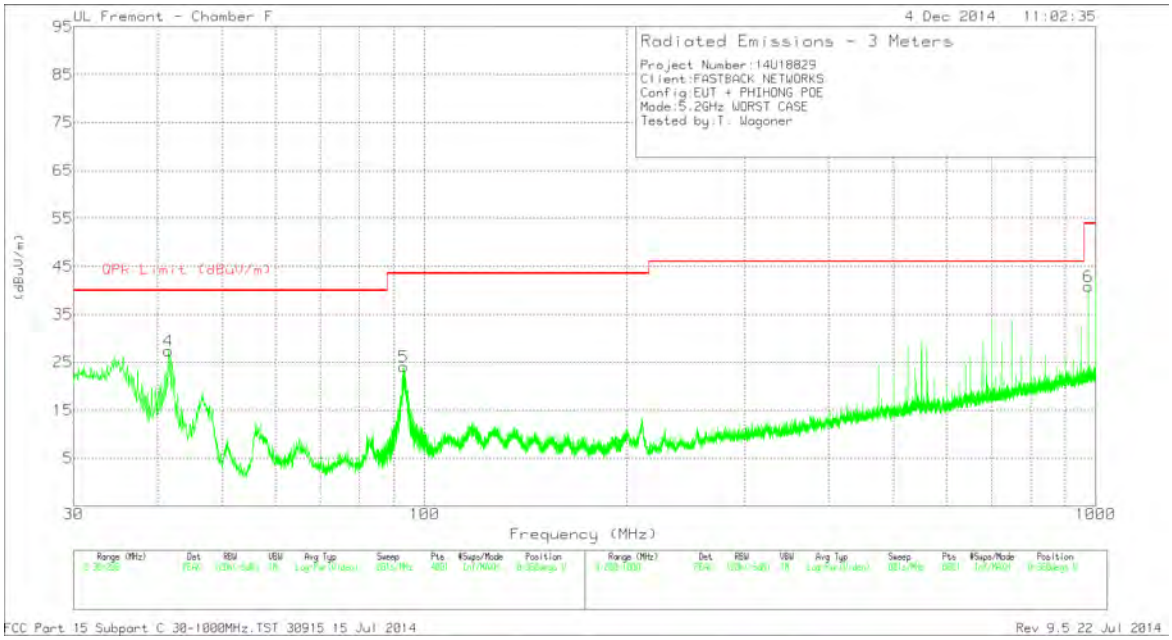
9.3. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T122 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	41.56	46.71	PK	12.7	-32	27.41	40	-12.59	0-360	100	V
5	93.07	47.27	PK	8.4	-31.6	24.07	43.52	-19.45	0-360	100	V
1	680	51.71	PK	20	-29.7	42.01	46.02	-4.01	0-360	100	H
	679.999	51.94	QP	20	-29.7	42.24	46.02	-3.78	328	106	H
2	700	51.8	PK	20.3	-29.7	42.4	46.02	-3.62	0-360	100	H
	700.004	54.87	QP	20.3	-29.7	45.47	46.02	-.55	286	104	H
3	750	53.45	PK	20.8	-29.6	44.65	46.02	-1.37	0-360	100	H
	750.005	50.33	QP	20.8	-29.6	41.53	46.02	-4.49	268	101	H
7	* 999.9	45.85	PK	23.4	-27.5	41.75	53.97	-12.22	0-360	201	H
6	* 975	45.56	PK	23.1	-27.8	40.86	53.97	-13.11	0-360	100	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

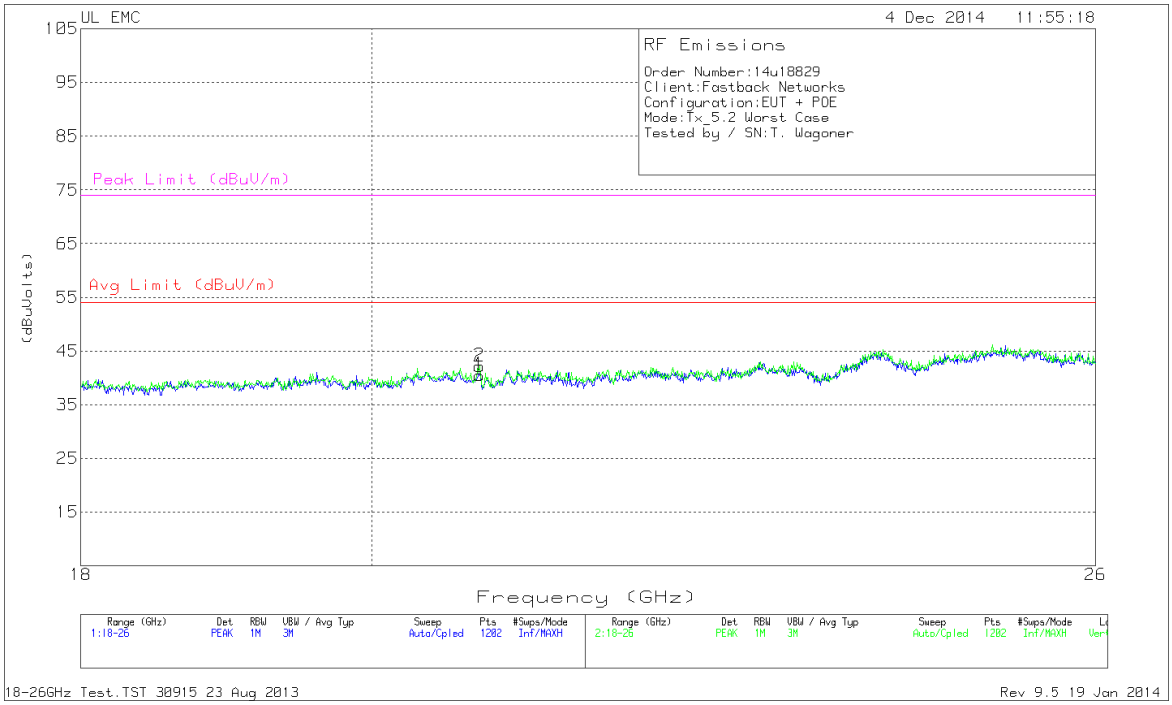
PK - Peak detector

QP - Quasi-Peak detector

9.4. WORST-CASE 18 to 26 GHz

SPURIOUS EMISSIONS 18000 TO 26000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL & VERTICAL)

HORIZONTAL & VERTICAL PLOT



HORIZONTAL & VERTICAL DATA

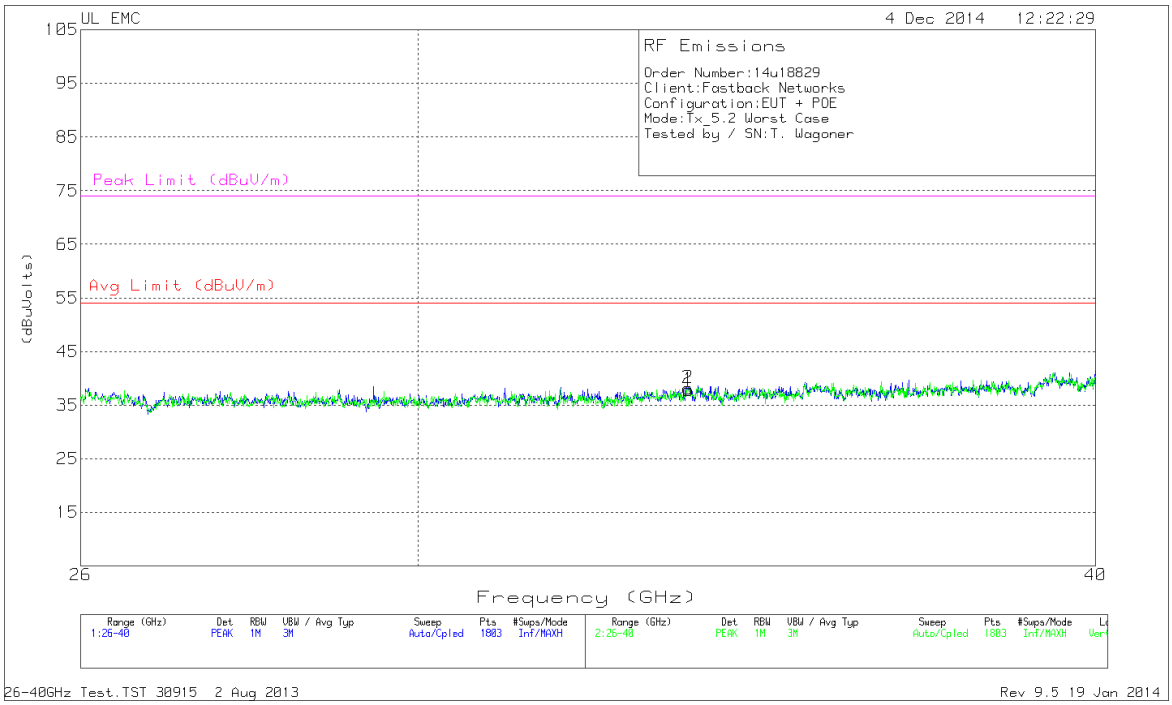
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T125 (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	20.798	41.3	PK	33.1	-24.4	-9.5	40.5	54	-13.5	74	-33.5
2	20.798	42.97	PK	33.1	-24.4	-9.5	42.167	54	-11.833	74	-31.833

PK - Peak detector

9.5. WORST-CASE 26 to 40 GHz

SPURIOUS EMISSIONS 26 TO 40 GHz (WORST-CASE CONFIGURATION, HORIZONTAL & VERTICAL)

HORIZONTAL & VERTICAL PLOT



HORIZONTAL & VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T90 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	33.653	47.33	PK	36.9	-36.9	-9.5	37.833	54	-16.167	74	-36.167
2	33.645	47.57	PK	36.9	-36.8	-9.5	38.167	54	-15.833	74	-35.833

PK - Peak detector

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

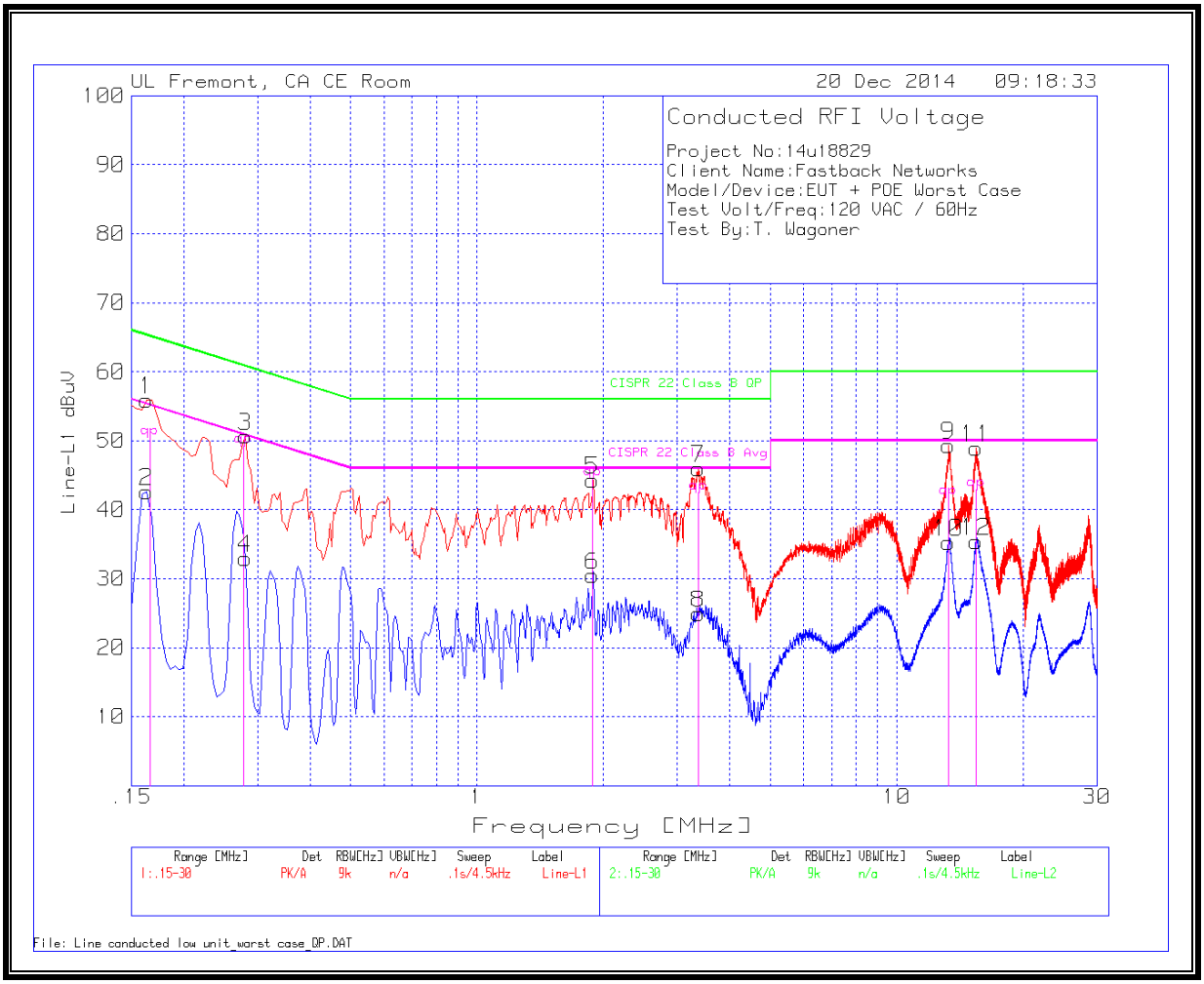
FCC §15.207 (a)

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

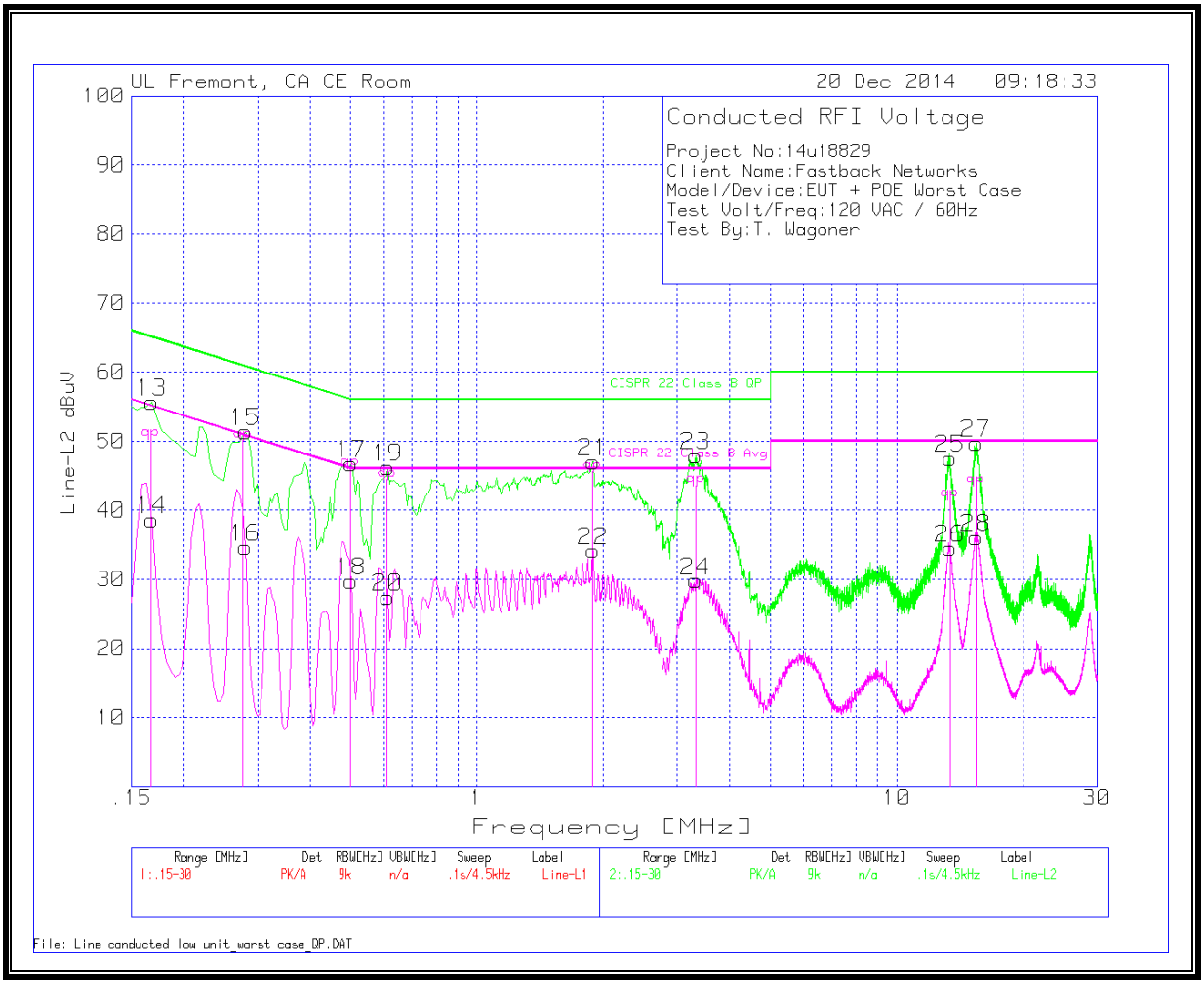
* Decreases with the logarithm of the frequency.

WORST CASE RESULTS

LINE 1 RESULTS



LINE 2 RESULTS



DATA

Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
1	.1635	54.72	PK	1.2	0	55.92	65.3	-9.38	-	-
2	.1635	41.45	Av	1.2	0	42.65	-	-	55.3	-12.65
3	.2805	50.08	PK	.6	0	50.68	60.8	-10.12	-	-
4	.2805	32.33	Av	.6	0	32.93	-	-	50.8	-17.87
5	1.887	43.98	PK	.2	.1	44.28	56	-11.72	-	-
6	1.887	30.15	Av	.2	.1	30.45	-	-	46	-15.55
7	3.372	45.72	PK	.2	.1	46.02	56	-9.98	-	-
8	3.372	24.61	Av	.2	.1	24.91	-	-	46	-21.09
9	13.272	48.94	PK	.2	.2	49.34	60	-10.66	-	-
10	13.272	34.83	Av	.2	.2	35.23	-	-	50	-14.77
11	15.45	48.5	PK	.3	.2	49	60	-11	-	-
12	15.45	34.94	Av	.3	.2	35.44	-	-	50	-14.56

Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
13	.168	54.33	PK	1.3	0	55.63	65.1	-9.47	-	-
14	.168	37.38	Av	1.3	0	38.68	-	-	55.1	-16.42
15	.2805	50.79	PK	.6	0	51.39	60.8	-9.41	-	-
16	.2805	34.01	Av	.6	0	34.61	-	-	50.8	-16.19
17	.501	46.39	PK	.4	0	46.79	56	-9.21	-	-
18	.501	29.34	Av	.4	0	29.74	-	-	46	-16.26
19	.6135	45.97	PK	.3	0	46.27	56	-9.73	-	-
20	.6135	27.12	Av	.3	0	27.42	-	-	46	-18.58
21	1.8915	46.74	PK	.2	.1	47.04	56	-8.96	-	-
22	1.8915	33.88	Av	.2	.1	34.18	-	-	46	-11.82
23	3.3225	47.63	PK	.2	.1	47.93	56	-8.07	-	-
24	3.3225	29.5	Av	.2	.1	29.8	-	-	46	-16.2
25	13.3845	47	PK	.3	.2	47.5	60	-12.5	-	-
26	13.3845	34	Av	.3	.2	34.5	-	-	50	-15.5
27	15.432	49.19	PK	.3	.2	49.69	60	-10.31	-	-
28	15.432	35.61	Av	.3	.2	36.11	-	-	50	-13.89

11. DYNAMIC FREQUENCY SELECTION

11.1. OVERVIEW

11.1.1. LIMITS

INDUSTRY CANADA

IC RSS-210 is closely harmonized with FCC Part 15 DFS rules. The deviations are as follows:

RSS-210 Issue 8 A9.3

Note: For the band 5600–5650 MHz, no operation is permitted.

Until further notice, devices subject to this annex shall not be capable of transmitting in the band 5600–5650 MHz. This restriction is for the protection of Environment Canada weather radars operating in this band.

FCC

§15.407 (h), FCC KDB 905462 D02 “COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION” and KDB 905462 D03 “U-NII CLIENT DEVICES WITHOUT RADAR DETECTION CAPABILITY”.

Table 1: Applicability of DFS requirements prior to use of a channel

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client (with radar detection)
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master	Client **(without DFS)**	Client **(with DFS)**
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar DFS	Client (without DFS)
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in all 20 MHz channel blocks and a null frequencies between the bonded 20 MHz channel blocks.		

Table 3: Interference Threshold values, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	Value (see notes)
E.I.R.P. ≥ 200 milliwatt	-64 dBm
E.I.R.P. < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
E.I.R.P. < 200 milliwatt that do not meet power spectral density requirement	-64 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.
Note 3: E.I.R.P. is based on the highest antenna gain. For MIMO devices refer to KDB publication 662911 D01.

Table 4: DFS Response requirement values

Parameter	Value
Non-occupancy period	30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds (See Note 1)
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 second period. (See Notes 1 and 2)
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. (See Note 3)

Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.
Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.
Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (usec)	PRI (usec)	Pulses	Minimum Percentage of Successful Detection	Minimum Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in table 5a	Roundup: {(1/360) x (19 x 10^6 PRI_{usec})}	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 usec. With a minimum increment of 1 usec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Note 1: Short Pulse Radar Type 0 should be used for the *Detection Bandwidth* test, *Channel Move Time*, and *Channel Closing Time* tests.

Table 6 – Long Pulse Radar Test Signal

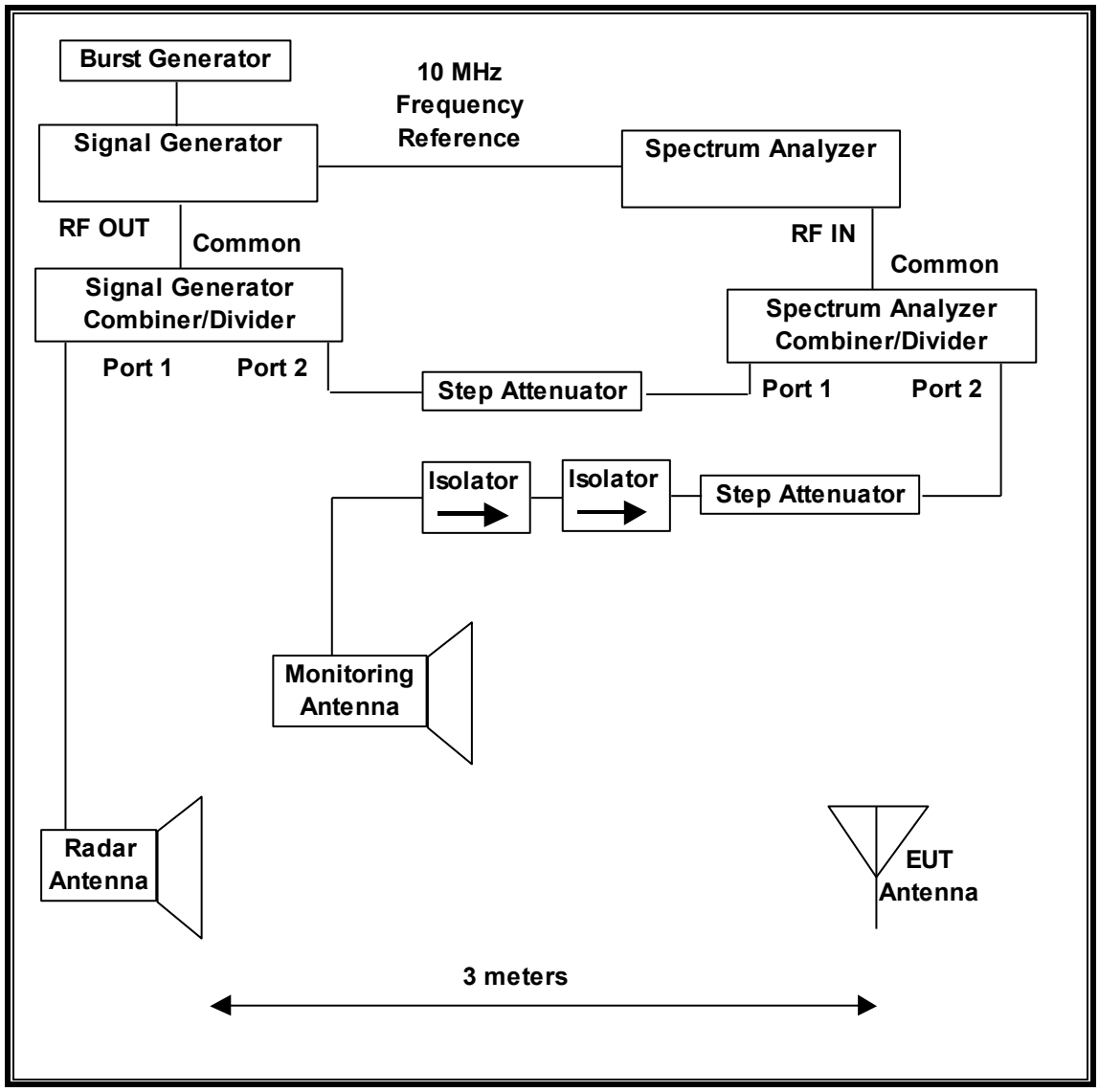
Radar Waveform Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 7 – Frequency Hopping Radar Test Signal

Radar Waveform Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	0.333	300	70%	30

11.1.2. TEST AND MEASUREMENT SYSTEM

RADIATED METHOD SYSTEM BLOCK DIAGRAM



SYSTEM OVERVIEW

The short pulse and long pulse signal generating system utilizes the NTIA software. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

The short pulse types 1, 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of KDB 905462 D02. The frequency of the signal generator is incremented in 1 MHz steps from F_L to F_H for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold.

SYSTEM CALIBRATION

A 50-ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to a horn antenna via a coaxial cable, with the reference level offset set to (horn antenna gain – coaxial cable loss). The signal generator is set to CW mode. The amplitude of the signal generator is adjusted to yield a level of –64 dBm as measured on the spectrum analyzer.

Without changing any of the instrument settings, the spectrum analyzer is reconnected to the Common port of the Spectrum Analyzer Combiner/Divider. The Reference Level Offset of the spectrum analyzer is adjusted so that the displayed amplitude of the signal is –64 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –64 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL

A link is established between the Master and Slave and the distance between the units is adjusted as needed to provide a suitable received level at the Master and Slave devices. The video test file is streamed to generate WLAN traffic. The monitoring antenna is adjusted so that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold.

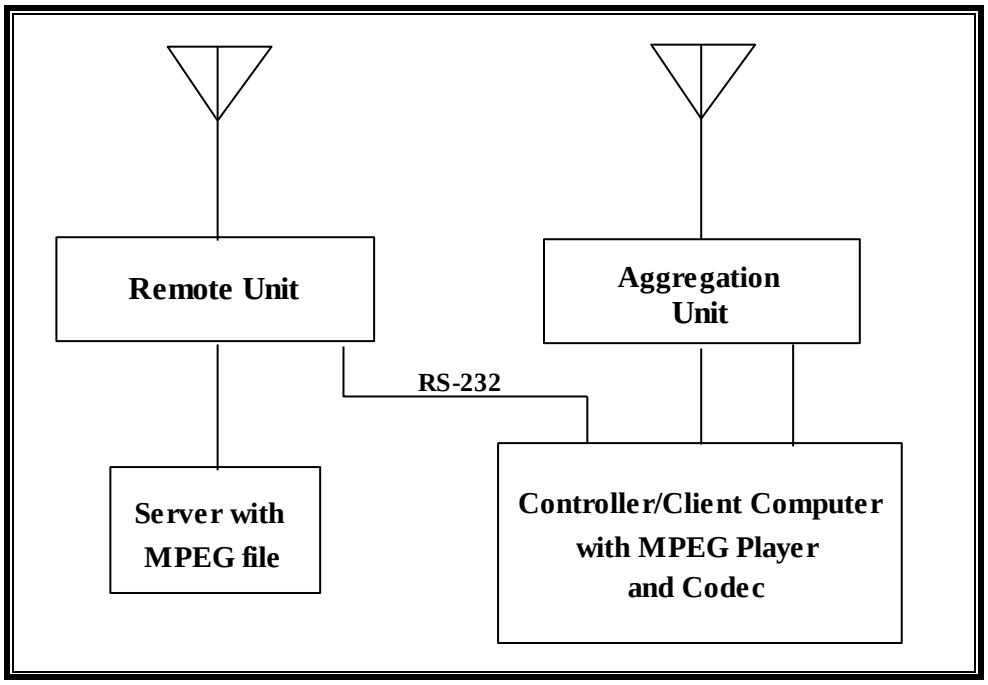
TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset Number**	**Cal Due**
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	09/05/15
Vector Signal Generator, 20GHz	Agilent / HP	E8267C	C01066	09/03/15
Arbitrary Waveform Generator	Agilent / HP	33220A	C01146	04/03/15

11.1.3. RADIATED METHOD EUT SETUP

CONFIGURATION 1:

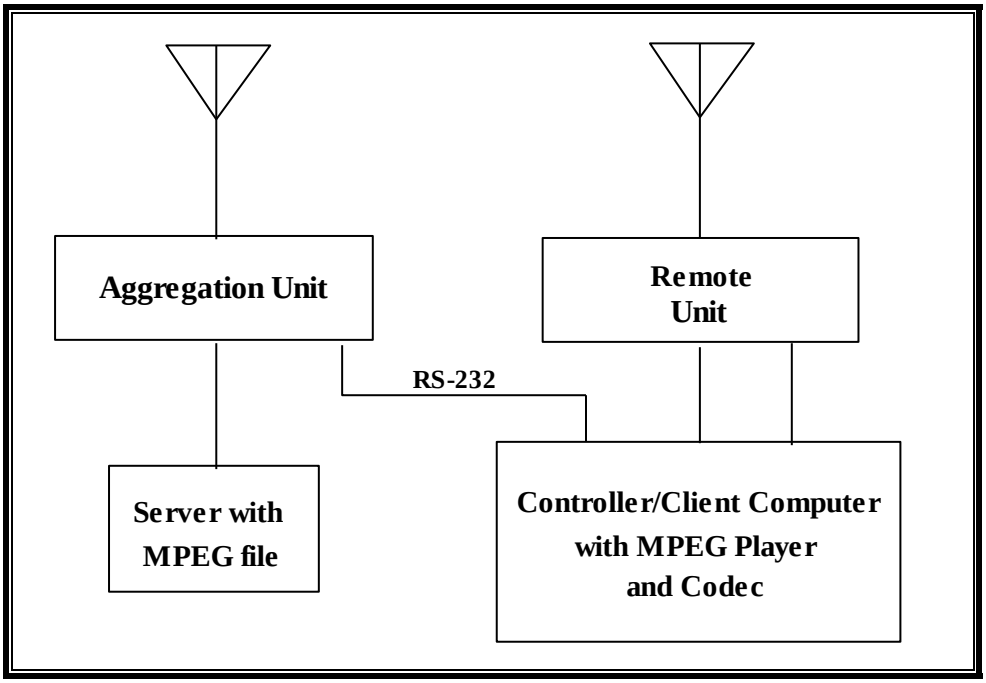


SUPPORT EQUIPMENT

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

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
P.O.E. Injector (Aggregation Unit)	Phihong	POE36U-1AT-R	P30300384D1	DoC
Notebook PC (Controller/Client)	Lenovo	Type 20BG-0014US	R9-013NYV 14/03	DoC
AC Adapter (Controller/Client PC)	Lenovo	ADL170NLC1A	11S45N0375Z1ZS9 G41P4H9	DoC
Point to Point Outdoor Radio (Remote Unit)	Fastback Networks	40314380094	40314380094	2AAEH-104
P.O.E. Injector (Remote Unit)	Blackbox	LPJ001A-T	P21002705D1	DoC
Notebook PC (Server PC)	Lenovo	Type 4276-37U	R9-H8Y3C 11/10	DoC
AC Adapter (Server PC)	Lenovo	45N0113	11S45N0113Z1ZHX 819P0FN	DoC

CONFIGURATION 2:



SUPPORT EQUIPMENT

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

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
P.O.E. Injector (Remote Unit)	Blackbox	LPJ001A-T	P21002705D1	DoC
Notebook PC (Controller/Client)	Lenovo	Type 20BG-0014US	R9-013NYV 14/03	DoC
AC Adapter (Controller/Client PC)	Lenovo	ADL170NLC1A	11S45N0375Z1ZS9G41P4H9	DoC
Point to Point Outdoor Radio (Aggregation Unit)	Fastback Networks	4031439002	40314390020	2AAEH-104
P.O.E. Injector (Aggregation Unit)	Phihong	POE36U-1AT-R	P30300384D1	DoC
Notebook PC (Server PC)	Lenovo	Type 4276-37U	R9-H8Y3C 11/10	DoC
AC Adapter (Server PC)	Lenovo	45N0113	11S45N0113Z1ZHX819P0FN	DoC

11.1.4. DESCRIPTION OF EUT

The EUT is a Master Receive only Device employing two DFS detector radio modules in the 5250-5350 MHz range.

Note: The DFS detection circuitry (include antenna) is independent from the EUT's transmitter per information provided by manufacturer.

The EUT does not transmit in the 5250-5350 MHz range. Transmit frequency range is 5470-5725 MHz.

The only antenna assembly utilized with the EUT has a gain of 0 dBi.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is –64 dBm. After correction for procedural adjustments, the required radiated threshold at the antenna port is –64 + 1 = -63 dBm.

The calibrated radiated DFS Detection Threshold level is set to –64 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

The EUT uses two transmitter/receiver chains connected to the antenna to perform radiated tests.

The Slave transmit device associated with the EUT during these tests does not have radar detection capability.

WLAN traffic is generated by streaming the video file TestFile.mp2 "6 ½ Magic Hours" from the Slave Transmitter to the Master Receiver in full motion video mode using the media player with the V2.61 Codec package.

TPC is required since the maximum EIRP is greater than 500 mW (27 dBm).

The EUT is a Frame-based system. The Frame timing is set to a listen / talk ratio of 100%.

Three nominal channel bandwidths are implemented: 10 MHz, 20 MHz and 40 MHz.

The EUT always starts using a channel bandwidth of 10 MHz. After it has entered the operational phase when traffic can be passed it may select 10 MHz, 20 MHz or 40 MHz channel bandwidths depending on channel conditions.

The DFS sensor bandwidth is always wider than the widest nominal channel bandwidth. Therefore, 40 MHz CAC testing covers all nominal channel bandwidths.

The In-Service monitoring tests were performed for each of the operational bandwidths.

The software installed in the access point is revision 1.6.1.

UNIFORM CHANNEL SPREADING

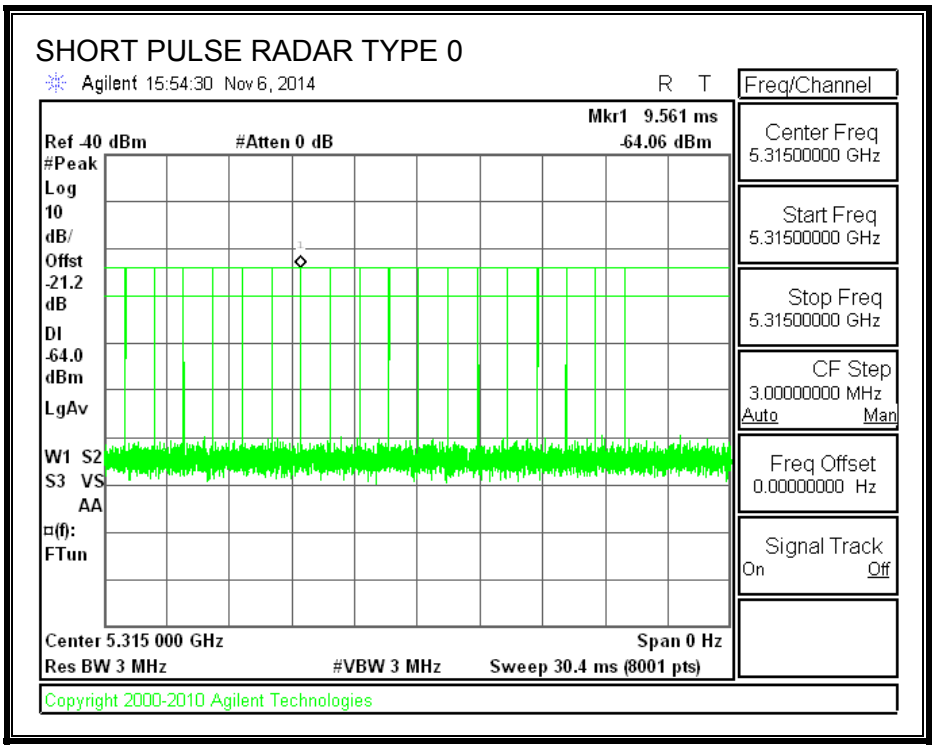
This function is not required per KDB 905462.

11.2. PRIMARY SENSOR UPPER HALF-BAND TEST CHANNEL

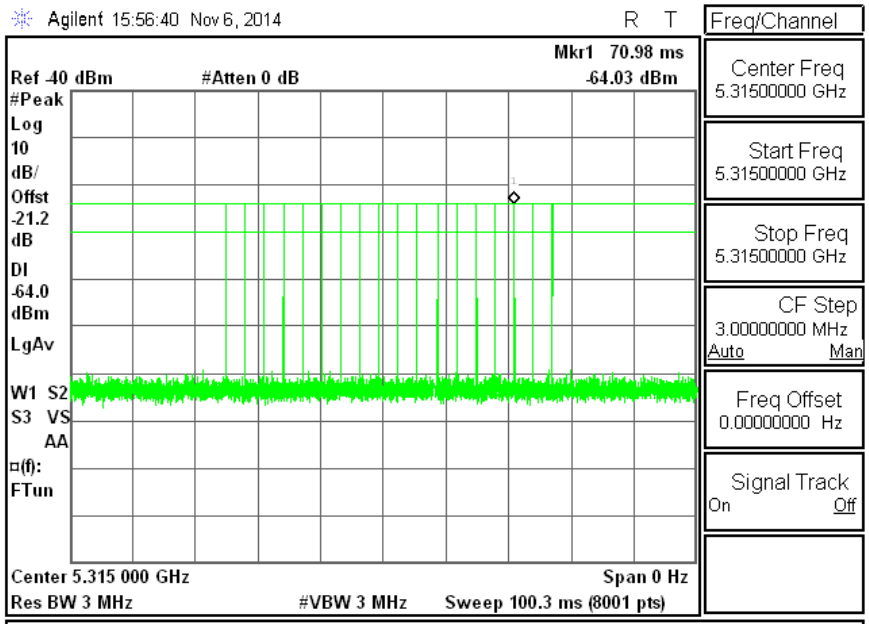
All tests were performed at a channel center frequency of 5315 MHz.

11.2.1. RADAR WAVEFORMS

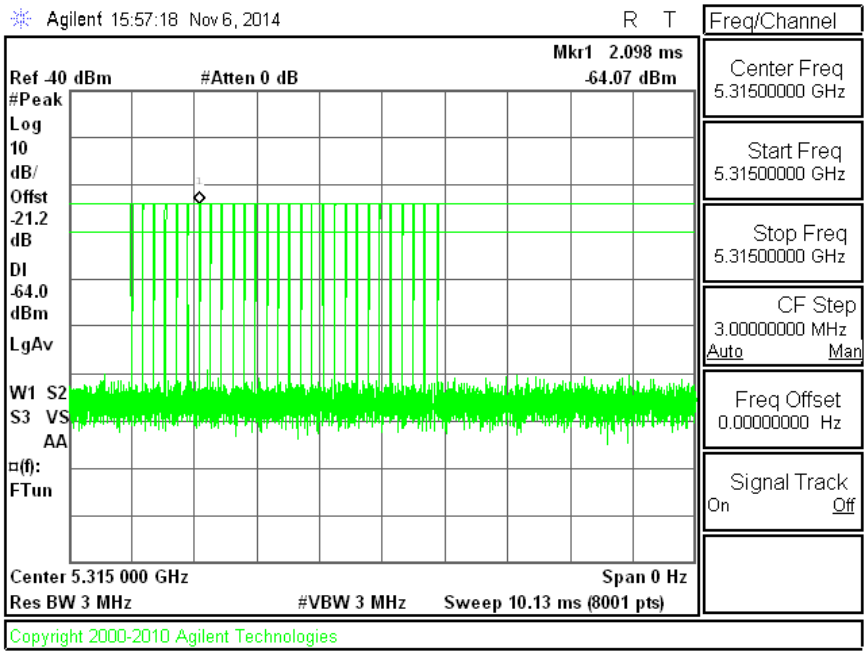
RADAR WAVEFORMS



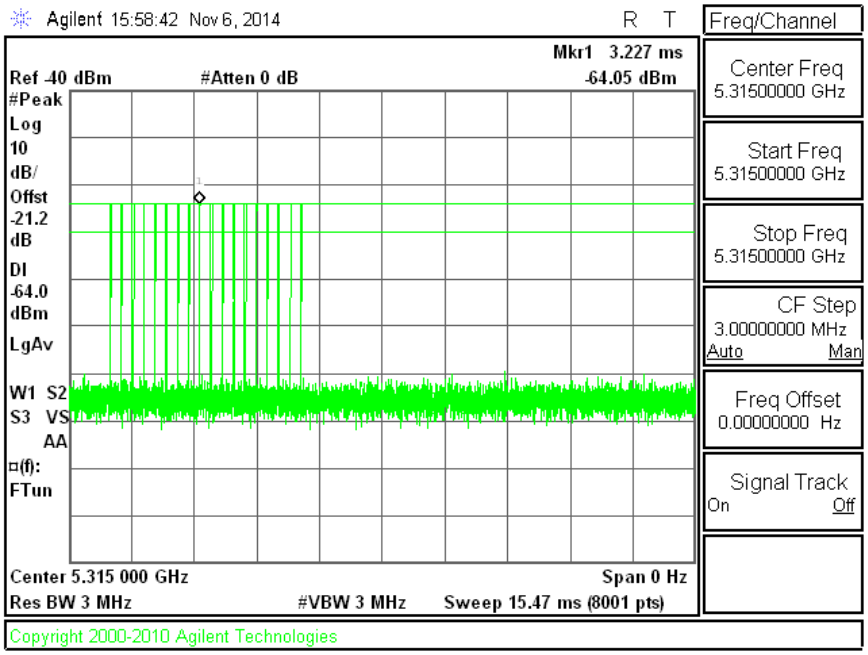
SAMPLE OF RADAR TYPE 1



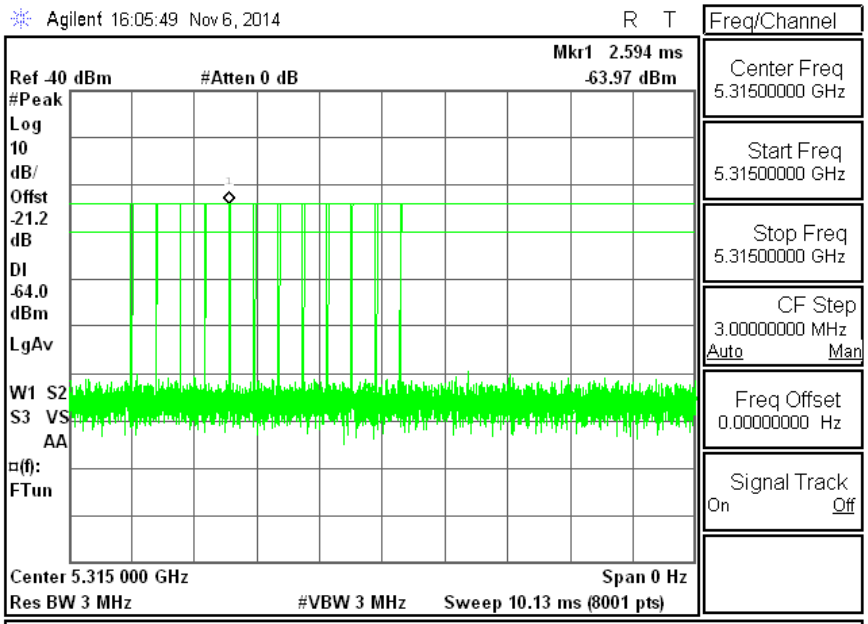
SAMPLE OF RADAR TYPE 2



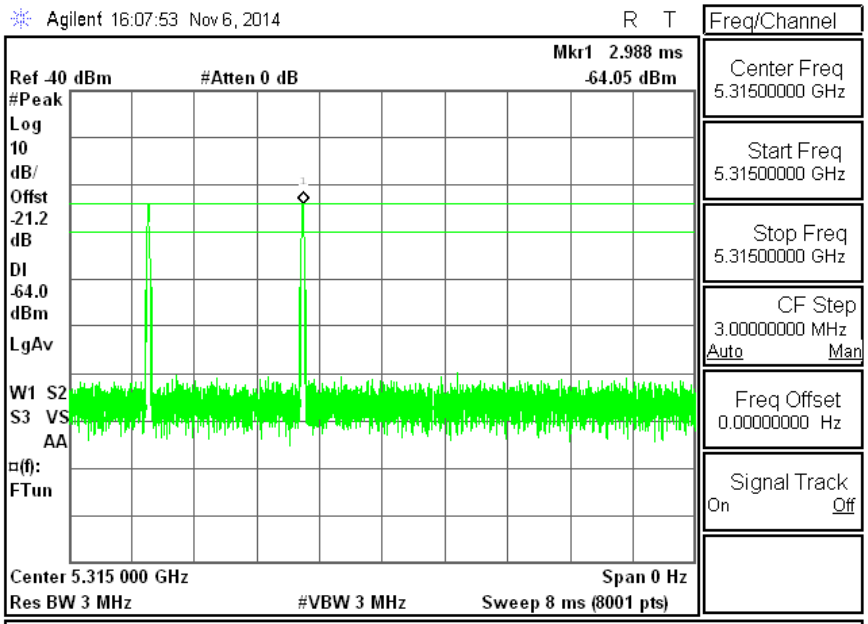
SAMPLE OF RADAR TYPE 3



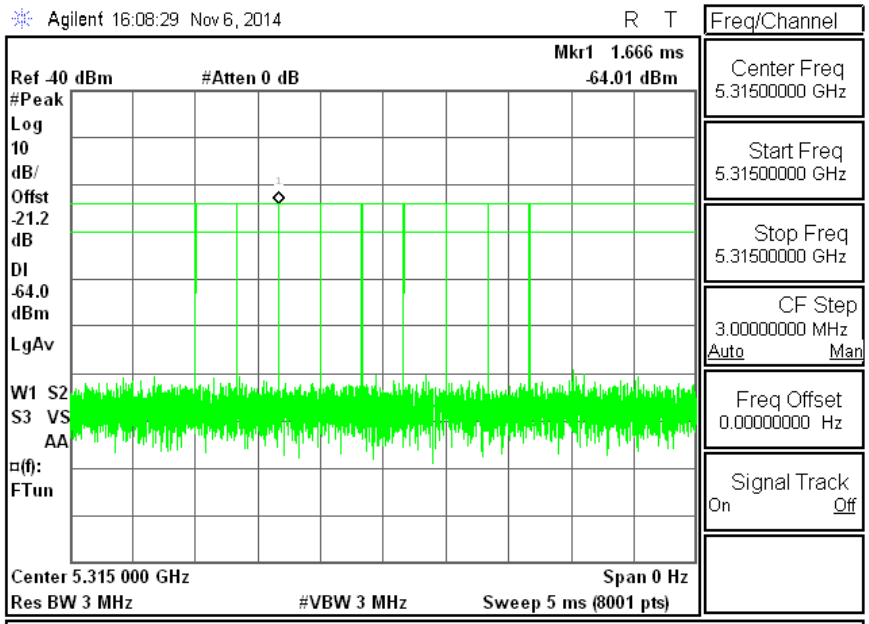
SAMPLE OF RADAR TYPE 4



SAMPLE OF SINGLE BURST OF RADAR TYPE 5

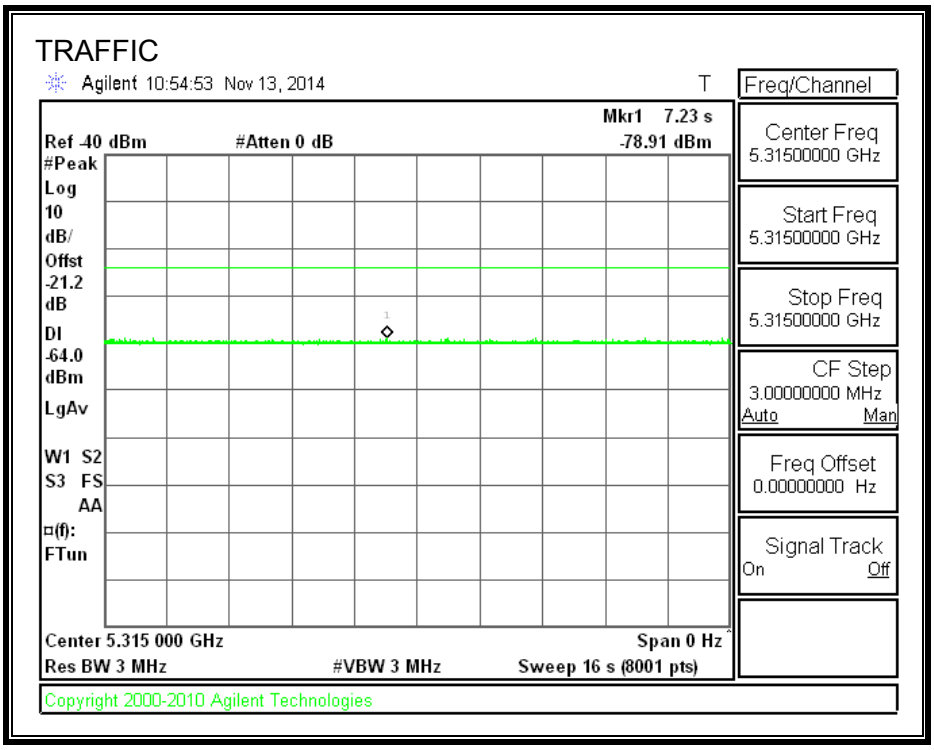


SINGLE BURST OF RADAR TYPE 6



11.3. RESULTS FOR 10 MHz BANDWIDTH

11.3.1. TRAFFIC



11.3.2. CHANNEL AVAILABILITY CHECK TIME

The DFS sensor bandwidth is always wider than the widest nominal channel bandwidth. Therefore, 40 MHz CAC testing covers all nominal channel bandwidths and this test was not performed for this channel bandwidth.

11.3.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

11.3.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

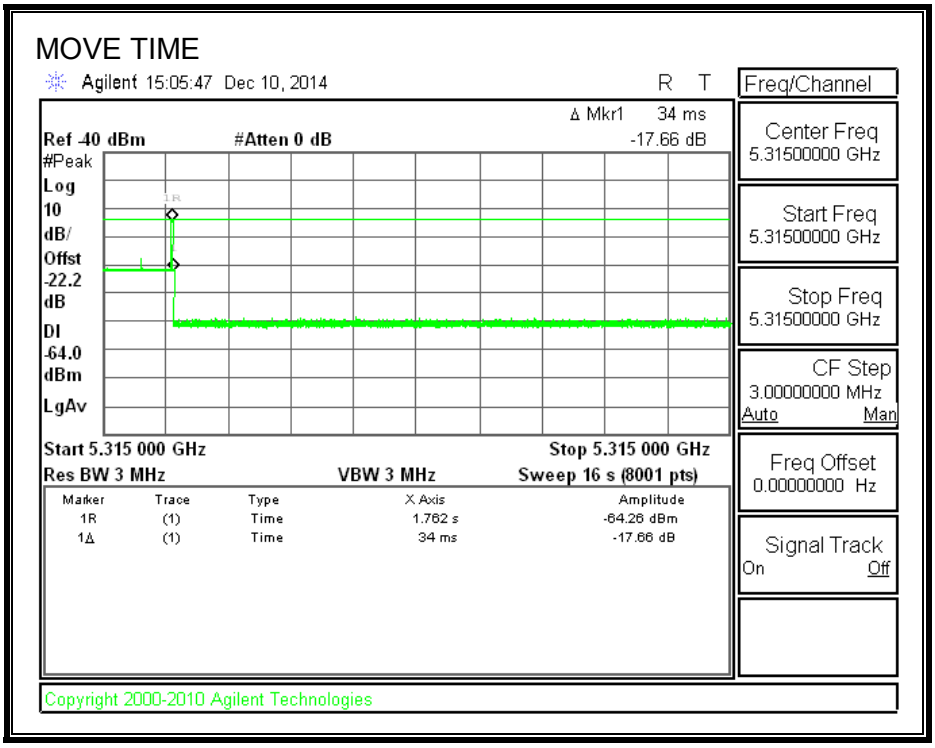
The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

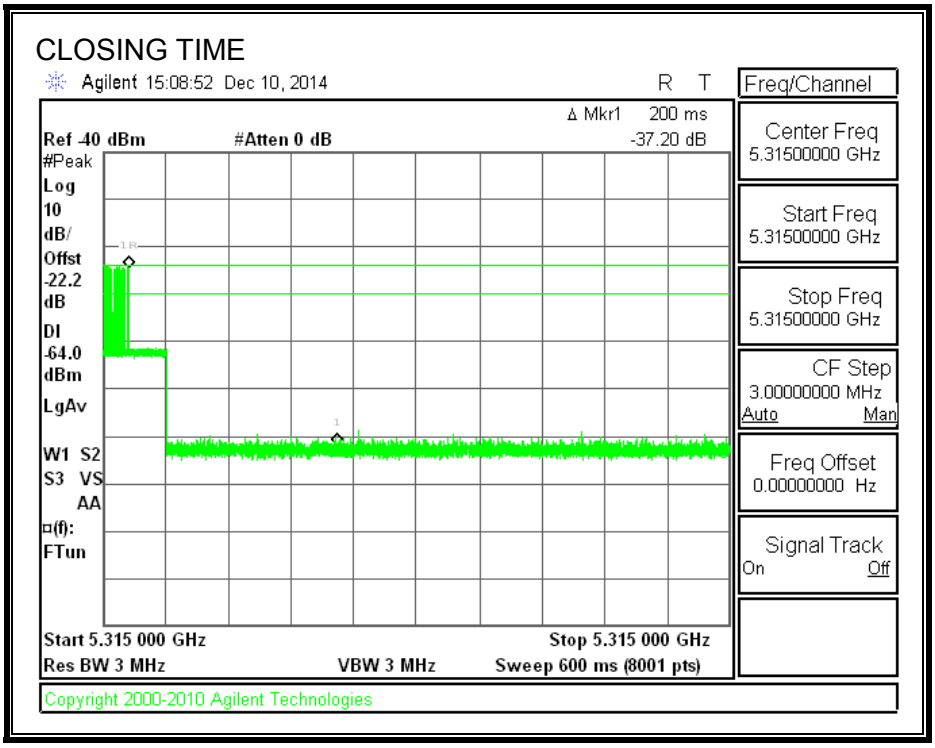
Channel Move Time (sec)	Limit (sec)
0.034	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
0.0	60

MOVE TIME



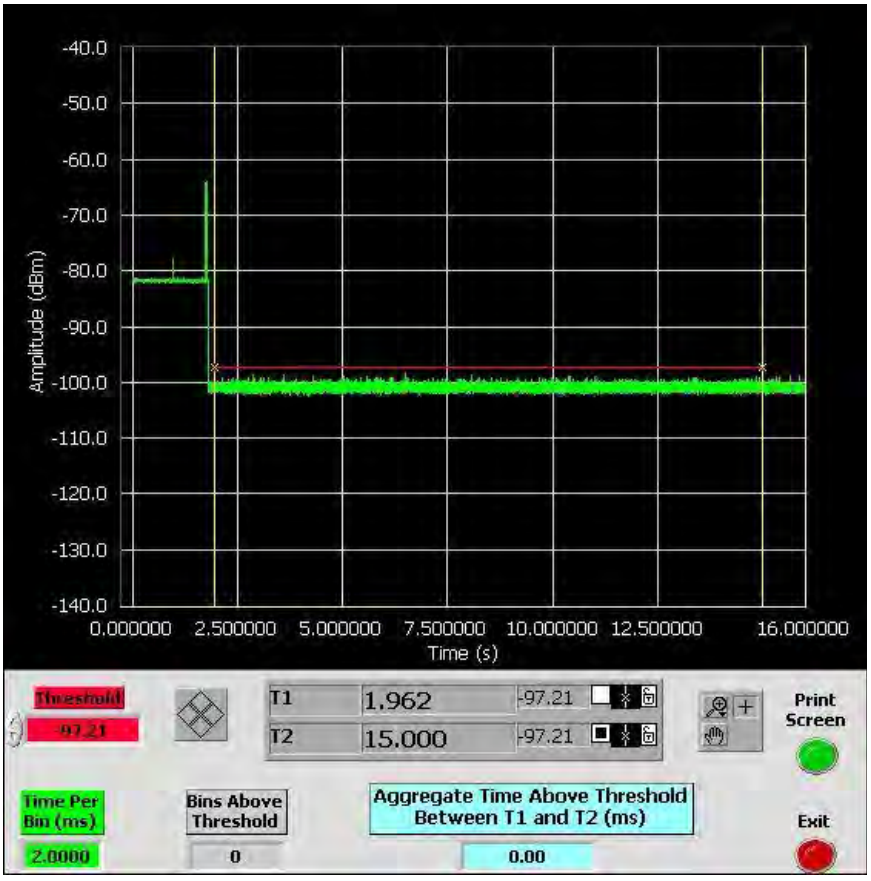
CHANNEL CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

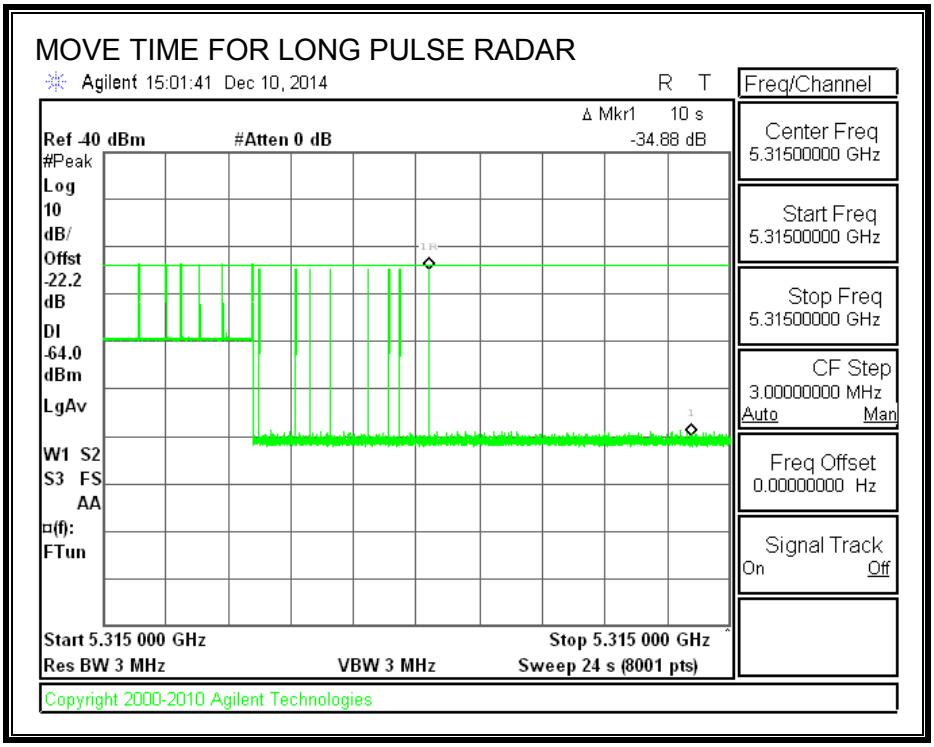
No transmissions are observed during the aggregate monitoring period.

AGGREGATE CLOSING TIME



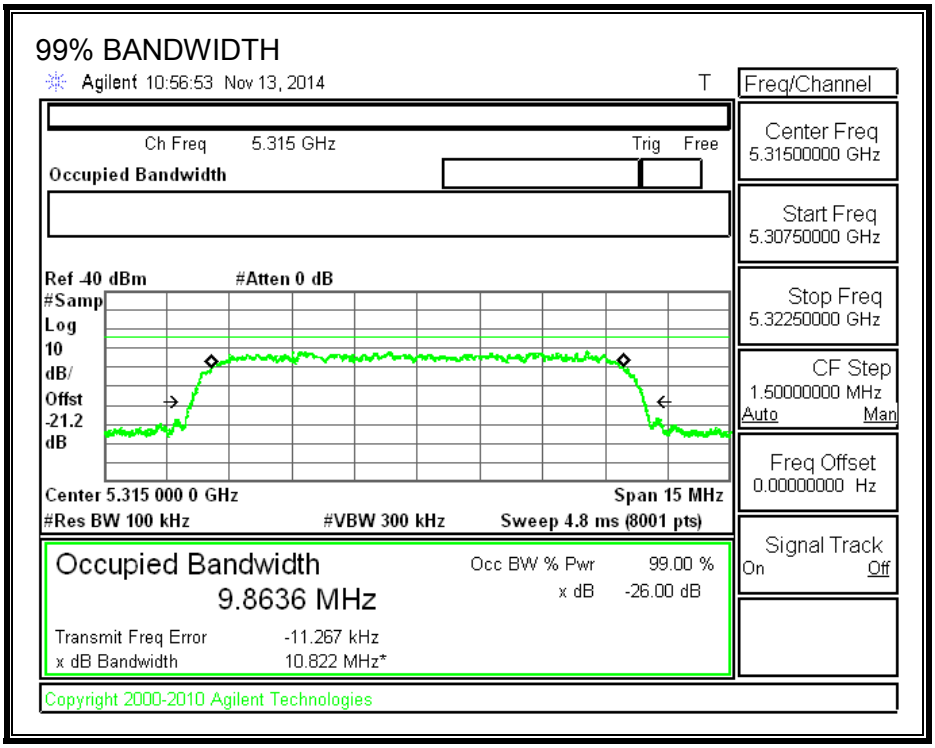
LONG PULSE CHANNEL MOVE TIME

The traffic ceases prior to 10 seconds after the end of the radar waveform.



11.3.5. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

FL (MHz)	FH (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5310	5320	10	9.864	101.4	100

DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

Detection Bandwidth Test Results				
FCC Type 0 Waveform: 1 us Pulse Width, 1428 us PRI, 18 Pulses per Burst				
Frequency (MHz)	Number of Trials	Number Detected	Detection (%)	Mark
5310	10	10	100	FL
5315	10	10	100	
5320	10	10	100	FH

11.3.6. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary				
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail
FCC Short Pulse Type 1	30	100.00	60	Pass
FCC Short Pulse Type 2	30	100.00	60	Pass
FCC Short Pulse Type 3	30	100.00	60	Pass
FCC Short Pulse Type 4	30	100.00	60	Pass
Aggregate		100.00	80	Pass
FCC Long Pulse Type 5	30	90.00	80	Pass
FCC Hopping Type 6	33	90.91	70	Pass

TYPE 1 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 1				
1 us Pulse Width				
Waveform	PRI (us)	Pulses Per Burst	Test (A/B)	Successful Detection (Yes/No)
1001	3066	18	A	Yes
1002	678	78	A	Yes
1003	578	92	A	Yes
1004	598	89	A	Yes
1005	838	63	A	Yes
1006	898	59	A	Yes
1007	718	74	A	Yes
1008	818	65	A	Yes
1009	918	58	A	Yes
1010	638	83	A	Yes
1011	738	72	A	Yes
1012	938	57	A	Yes
1013	518	102	A	Yes
1014	758	70	A	Yes
1015	558	95	A	Yes
1016	798	67	B	Yes
1017	1774	30	B	Yes
1018	3042	18	B	Yes
1019	1355	39	B	Yes
1020	2953	18	B	Yes
1021	1813	30	B	Yes
1022	1505	36	B	Yes
1023	1442	37	B	Yes
1024	1093	49	B	Yes
1025	724	73	B	Yes
1026	1545	35	B	Yes
1027	865	62	B	Yes
1028	2279	24	B	Yes
1029	1061	50	B	Yes
1030	752	71	B	Yes

TYPE 2 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 2				
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Successful Detection (Yes/No)
2001	3.9	183.00	28	Yes
2002	2.1	211.00	24	Yes
2003	3.3	185.00	28	Yes
2004	4.7	211.00	26	Yes
2005	1.1	203.00	24	Yes
2006	1.6	151.00	24	Yes
2007	3.3	174.00	25	Yes
2008	1.7	218.00	29	Yes
2009	4.5	196.00	29	Yes
2010	1.9	193.00	25	Yes
2011	2.4	171.00	23	Yes
2012	3.9	162.00	23	Yes
2013	4.8	194.00	26	Yes
2014	1.5	207.00	29	Yes
2015	1.6	178.00	29	Yes
2016	4.1	191.00	27	Yes
2017	4.3	165.00	27	Yes
2018	2.5	213.00	23	Yes
2019	1.1	199.00	28	Yes
2020	2	176.00	27	Yes
2021	1.4	156.00	26	Yes
2022	4.6	166.00	28	Yes
2023	3.8	179.00	28	Yes
2024	1.8	222.00	29	Yes
2025	2.1	173.00	28	Yes
2026	4.2	203.00	23	Yes
2027	2.7	172.00	28	Yes
2028	1.5	230.00	23	Yes
2029	4.9	166.00	24	Yes
2030	4.2	192.00	26	Yes

TYPE 3 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 3				
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Successful Detection (Yes/No)
3001	7.7	278.00	18	Yes
3002	6.5	388.00	18	Yes
3003	7.8	341.00	18	Yes
3004	6.4	372.00	18	Yes
3005	5	285.00	18	Yes
3006	8.1	303.00	16	Yes
3007	6.9	346.00	18	Yes
3008	8.7	349.00	16	Yes
3009	5.8	283.00	17	Yes
3010	5.1	277.00	16	Yes
3011	5.5	500.00	16	Yes
3012	7.7	393.00	18	Yes
3013	7.7	432.00	17	Yes
3014	5	380.00	17	Yes
3015	5.9	388.00	16	Yes
3016	8.2	394.00	18	Yes
3017	5.8	313.00	16	Yes
3018	7.8	496.00	16	Yes
3019	6.2	392.00	18	Yes
3020	6.3	385.00	18	Yes
3021	6.2	366.00	18	Yes
3022	8.4	495.00	16	Yes
3023	5.8	460.00	18	Yes
3024	7.1	299.00	18	Yes
3025	9.3	416.00	17	Yes
3026	8.1	403.00	16	Yes
3027	6.7	491.00	17	Yes
3028	5.8	472.00	16	Yes
3029	5.8	295	17	Yes
3030	7.6	271	17	Yes

TYPE 4 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 4				
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Successful Detection (Yes/No)
4001	14.4	397.00	12	Yes
4002	10	269.00	16	Yes
4003	19.4	383.00	16	Yes
4004	18.8	307.00	16	Yes
4005	17.8	324.00	15	Yes
4006	16.2	340.00	12	Yes
4007	16	349.00	16	Yes
4008	16.9	269.00	16	Yes
4009	16.9	283.00	15	Yes
4010	11.9	361.00	12	Yes
4011	16	316.00	13	Yes
4012	17.1	266.00	15	Yes
4013	17.6	263.00	12	Yes
4014	15.6	271.00	12	Yes
4015	10.8	276.00	13	Yes
4016	12.5	489.00	16	Yes
4017	12	499.00	13	Yes
4018	16.4	469.00	15	Yes
4019	17.9	495.00	13	Yes
4020	17.6	363.00	13	Yes
4021	11.4	406.00	15	Yes
4022	15.1	443.00	16	Yes
4023	14.7	410.00	13	Yes
4024	14.5	366.00	12	Yes
4025	19.8	304.00	15	Yes
4026	14.4	406.00	12	Yes
4027	19.1	416.00	15	Yes
4028	19.4	470.00	15	Yes
4029	12.7	483.00	12	Yes
4030	14.3	407.00	16	Yes

TYPE 5 DETECTION PROBABILITY

Data Sheet for FCC Long Pulse Radar Type 5	
Trial	Successful Detection (Yes/No)
1	No
2	Yes
3	Yes
4	Yes
5	Yes
6	Yes
7	Yes
8	Yes
9	Yes
10	Yes
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	Yes
17	Yes
18	No
19	Yes
20	Yes
21	Yes
22	Yes
23	Yes
24	No
25	Yes
26	Yes
27	Yes
28	Yes
29	Yes
30	Yes

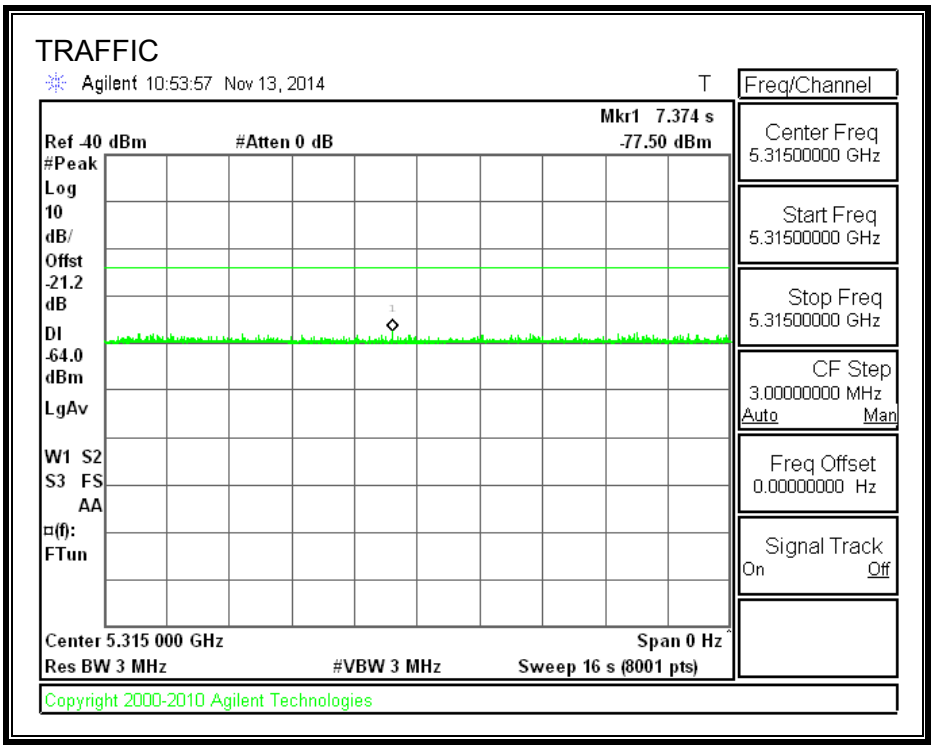
Note: Randomized parameters for the Type 5 In-Service Monitoring testing performed on 11/06/14 are shown in a separate document.

TYPE 6 DETECTION PROBABILITY

Data Sheet for FCC Hopping Radar Type 6				
1 us Pulse Width, 333 us PRI, 9 Pulses per Burst, 1 Burst per Hop				
NTIA August 2005 Hopping Sequence				
Trial	Starting Index Within Sequence	Signal Generator Frequency (MHz)	Hops within Detection BW	Successful Detection (Yes/No)
1	128	5310	2	Yes
2	603	5311	2	No
3	1078	5312	3	Yes
4	1553	5313	2	Yes
5	2503	5314	3	Yes
6	2978	5315	3	Yes
7	3453	5316	1	Yes
8	3928	5317	5	Yes
9	4403	5318	3	Yes
10	4878	5319	5	Yes
11	5353	5320	3	Yes
12	5828	5310	2	Yes
13	6303	5311	5	No
14	6778	5312	3	Yes
15	7253	5313	2	Yes
16	7728	5314	2	Yes
17	8203	5315	1	Yes
18	9153	5316	3	Yes
19	9628	5317	1	Yes
20	10103	5318	2	Yes
21	10578	5319	1	Yes
22	11053	5320	4	Yes
23	11528	5310	1	No
24	12003	5311	5	Yes
25	12478	5312	2	Yes
26	12953	5313	3	Yes
27	13428	5314	3	Yes
28	13903	5315	2	Yes
29	14378	5316	2	Yes
30	14853	5317	2	Yes
31	15328	5318	1	Yes
32	15803	5319	2	Yes
33	16278	5320	2	Yes

11.4. RESULTS FOR 20 MHz BANDWIDTH

11.4.1. TRAFFIC



11.4.2. CHANNEL AVAILABILITY CHECK TIME

The DFS sensor bandwidth is always wider than the widest nominal channel bandwidth. Therefore, 40 MHz CAC testing covers all nominal channel bandwidths and this test was not performed for this channel bandwidth.

11.4.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

11.4.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

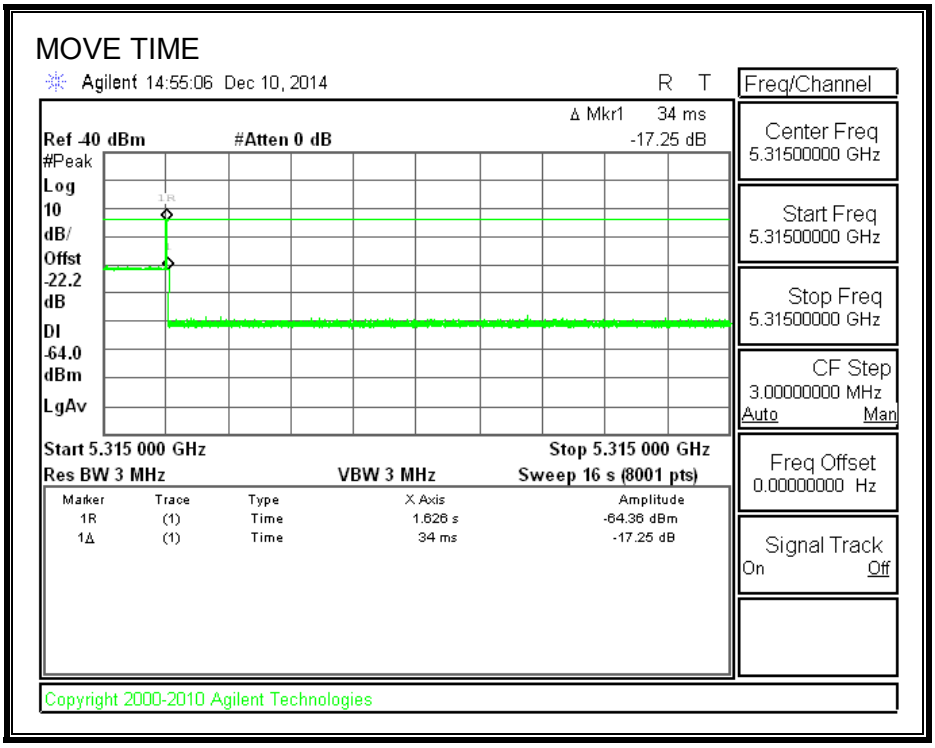
The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

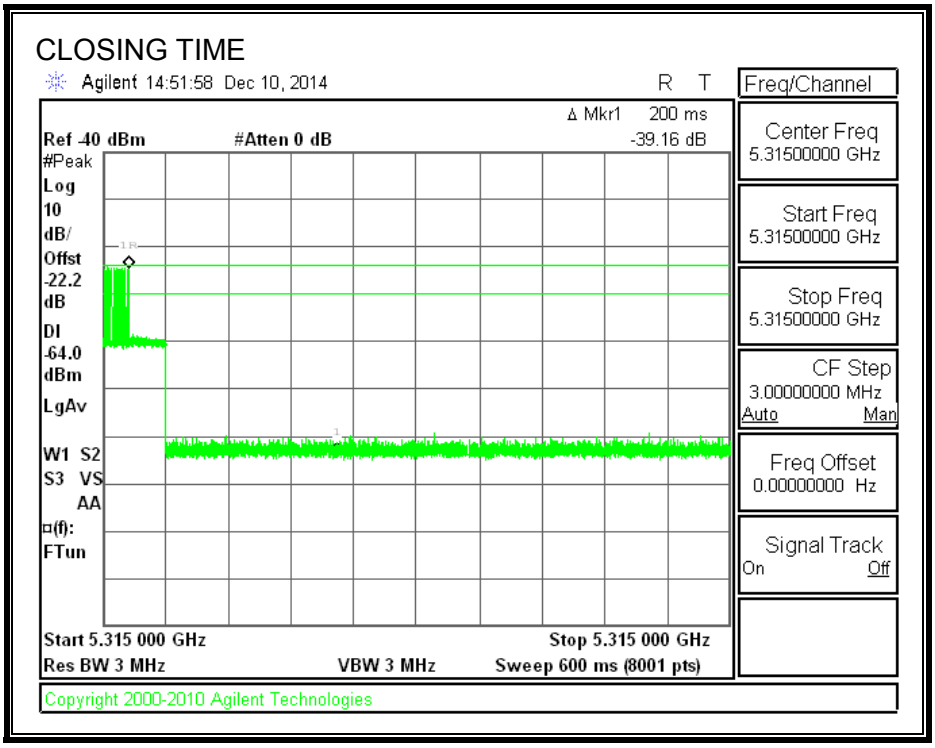
Channel Move Time (sec)	Limit (sec)
0.034	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
0.0	60

MOVE TIME



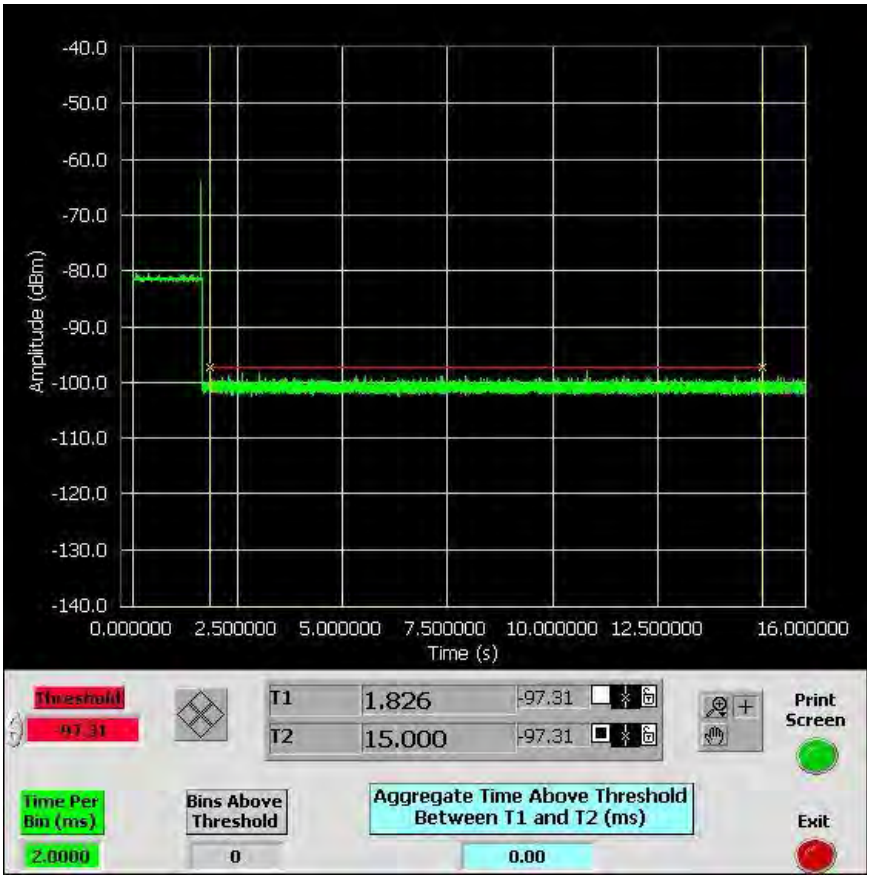
CHANNEL CLOSING TIME



AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

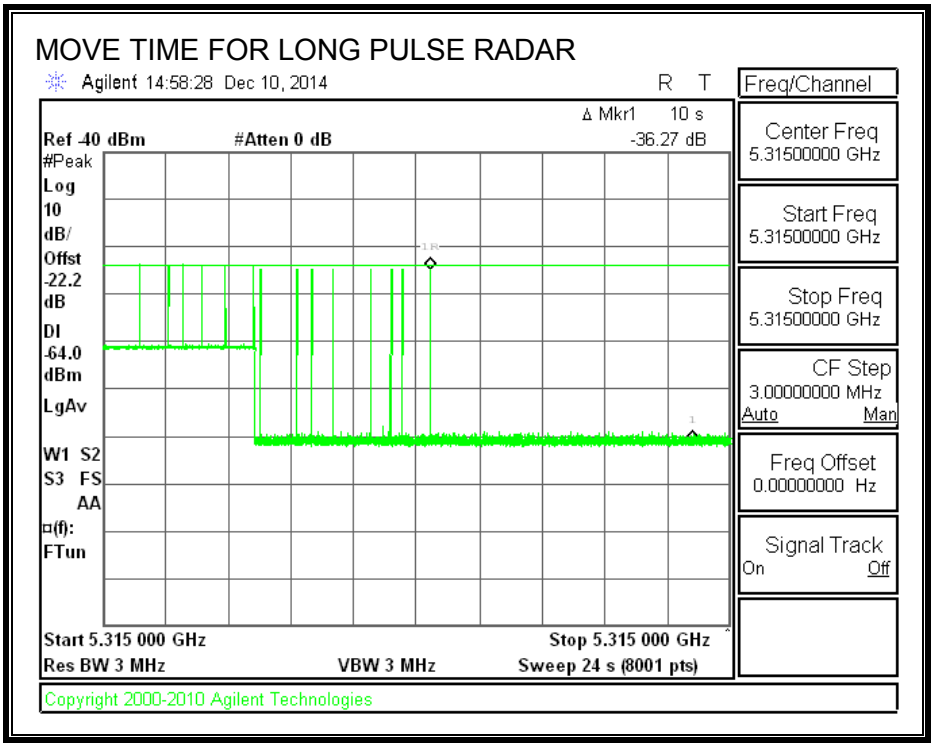
No transmissions are observed during the aggregate monitoring period.

AGGREGATE CLOSING TIME



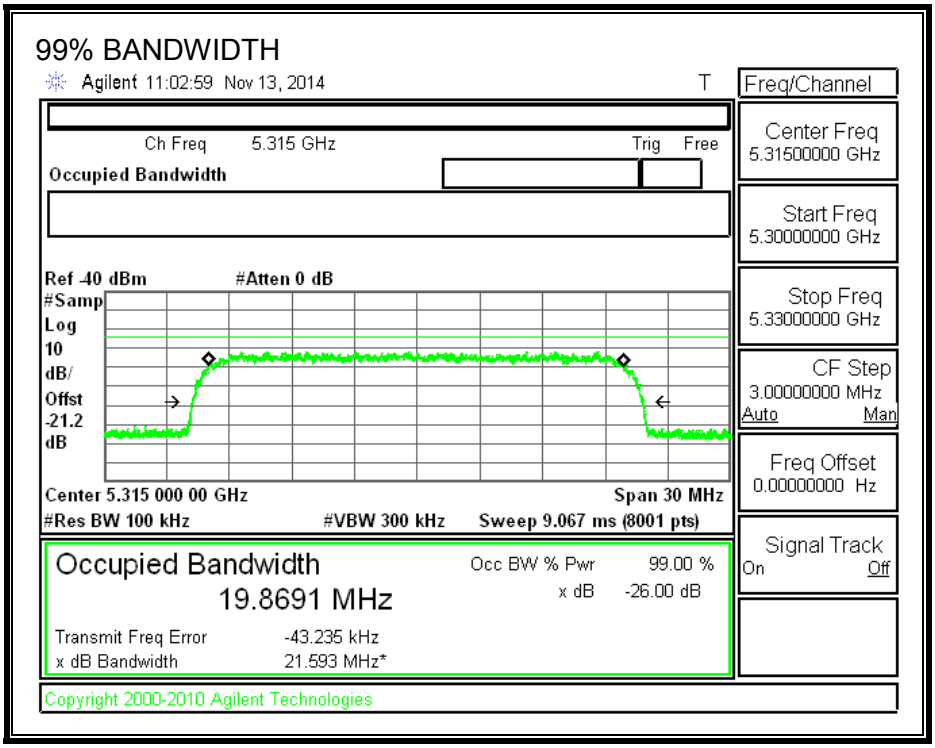
LONG PULSE CHANNEL MOVE TIME

The traffic ceases prior to 10 seconds after the end of the radar waveform.



11.4.5. DETECTION BANDWIDTH

REFERENCE PLOT OF 99% POWER BANDWIDTH



RESULTS

FL (MHz)	FH (MHz)	Detection Bandwidth (MHz)	99% Power Bandwidth (MHz)	Ratio of Detection BW to 99% Power BW (%)	Minimum Limit (%)
5305	5325	20	19.869	100.7	100

DETECTION BANDWIDTH PROBABILITY

DETECTION BANDWIDTH PROBABILITY RESULTS

Detection Bandwidth Test Results				
FCC Type 0 Waveform: 1 us Pulse Width, 1428 us PRI, 18 Pulses per Burst				
Frequency (MHz)	Number of Trials	Number Detected	Detection (%)	Mark
5305	10	10	100	FL
5310	10	10	100	
5315	10	10	100	
5320	10	10	100	
5325	10	10	100	FH

11.4.6. IN-SERVICE MONITORING

RESULTS

FCC Radar Test Summary				
Signal Type	Number of Trials	Detection (%)	Limit (%)	Pass/Fail
FCC Short Pulse Type 1	30	93.33	60	Pass
FCC Short Pulse Type 2	30	100.00	60	Pass
FCC Short Pulse Type 3	30	96.67	60	Pass
FCC Short Pulse Type 4	30	100.00	60	Pass
Aggregate		97.50	80	Pass
FCC Long Pulse Type 5	30	93.33	80	Pass
FCC Hopping Type 6	42	88.10	70	Pass

TYPE 1 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 1				
1 us Pulse Width				
Waveform	PRI (us)	Pulses Per Burst	Test (A/B)	Successful Detection (Yes/No)
1001	3066	18	A	Yes
1002	678	78	A	Yes
1003	578	92	A	Yes
1004	598	89	A	Yes
1005	838	63	A	Yes
1006	898	59	A	No
1007	718	74	A	Yes
1008	818	65	A	Yes
1009	918	58	A	Yes
1010	638	83	A	Yes
1011	738	72	A	Yes
1012	938	57	A	Yes
1013	518	102	A	Yes
1014	758	70	A	Yes
1015	558	95	A	Yes
1016	798	67	B	Yes
1017	1774	30	B	Yes
1018	3042	18	B	Yes
1019	1355	39	B	Yes
1020	2953	18	B	Yes
1021	1813	30	B	Yes
1022	1505	36	B	Yes
1023	1442	37	B	No
1024	1093	49	B	Yes
1025	724	73	B	Yes
1026	1545	35	B	Yes
1027	865	62	B	Yes
1028	2279	24	B	Yes
1029	1061	50	B	Yes
1030	752	71	B	Yes

TYPE 2 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 2				
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Successful Detection (Yes/No)
2001	3.9	183.00	28	Yes
2002	2.1	211.00	24	Yes
2003	3.3	185.00	28	Yes
2004	4.7	211.00	26	Yes
2005	1.1	203.00	24	Yes
2006	1.6	151.00	24	Yes
2007	3.3	174.00	25	Yes
2008	1.7	218.00	29	Yes
2009	4.5	196.00	29	Yes
2010	1.9	193.00	25	Yes
2011	2.4	171.00	23	Yes
2012	3.9	162.00	23	Yes
2013	4.8	194.00	26	Yes
2014	1.5	207.00	29	Yes
2015	1.6	178.00	29	Yes
2016	4.1	191.00	27	Yes
2017	4.3	165.00	27	Yes
2018	2.5	213.00	23	Yes
2019	1.1	199.00	28	Yes
2020	2	176.00	27	Yes
2021	1.4	156.00	26	Yes
2022	4.6	166.00	28	Yes
2023	3.8	179.00	28	Yes
2024	1.8	222.00	29	Yes
2025	2.1	173.00	28	Yes
2026	4.2	203.00	23	Yes
2027	2.7	172.00	28	Yes
2028	1.5	230.00	23	Yes
2029	4.9	166.00	24	Yes
2030	4.2	192.00	26	Yes

TYPE 3 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 3				
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Successful Detection (Yes/No)
3001	7.7	278.00	18	Yes
3002	6.5	388.00	18	Yes
3003	7.8	341.00	18	Yes
3004	6.4	372.00	18	Yes
3005	5	285.00	18	Yes
3006	8.1	303.00	16	No
3007	6.9	346.00	18	Yes
3008	8.7	349.00	16	Yes
3009	5.8	283.00	17	Yes
3010	5.1	277.00	16	Yes
3011	5.5	500.00	16	Yes
3012	7.7	393.00	18	Yes
3013	7.7	432.00	17	Yes
3014	5	380.00	17	Yes
3015	5.9	388.00	16	Yes
3016	8.2	394.00	18	Yes
3017	5.8	313.00	16	Yes
3018	7.8	496.00	16	Yes
3019	6.2	392.00	18	Yes
3020	6.3	385.00	18	Yes
3021	6.2	366.00	18	Yes
3022	8.4	495.00	16	Yes
3023	5.8	460.00	18	Yes
3024	7.1	299.00	18	Yes
3025	9.3	416.00	17	Yes
3026	8.1	403.00	16	Yes
3027	6.7	491.00	17	Yes
3028	5.8	472.00	16	Yes
3029	5.8	295	17	Yes
3030	7.6	271	17	Yes

TYPE 4 DETECTION PROBABILITY

Data Sheet for FCC Short Pulse Radar Type 4				
Waveform	Pulse Width (us)	PRI (us)	Pulses Per Burst	Successful Detection (Yes/No)
4001	14.4	397.00	12	Yes
4002	10	269.00	16	Yes
4003	19.4	383.00	16	Yes
4004	18.8	307.00	16	Yes
4005	17.8	324.00	15	Yes
4006	16.2	340.00	12	Yes
4007	16	349.00	16	Yes
4008	16.9	269.00	16	Yes
4009	16.9	283.00	15	Yes
4010	11.9	361.00	12	Yes
4011	16	316.00	13	Yes
4012	17.1	266.00	15	Yes
4013	17.6	263.00	12	Yes
4014	15.6	271.00	12	Yes
4015	10.8	276.00	13	Yes
4016	12.5	489.00	16	Yes
4017	12	499.00	13	Yes
4018	16.4	469.00	15	Yes
4019	17.9	495.00	13	Yes
4020	17.6	363.00	13	Yes
4021	11.4	406.00	15	Yes
4022	15.1	443.00	16	Yes
4023	14.7	410.00	13	Yes
4024	14.5	366.00	12	Yes
4025	19.8	304.00	15	Yes
4026	14.4	406.00	12	Yes
4027	19.1	416.00	15	Yes
4028	19.4	470.00	15	Yes
4029	12.7	483.00	12	Yes
4030	14.3	407.00	16	Yes

TYPE 5 DETECTION PROBABILITY

Data Sheet for FCC Long Pulse Radar Type 5	
Trial	Successful Detection (Yes/No)
1	Yes
2	Yes
3	Yes
4	Yes
5	No
6	Yes
7	Yes
8	Yes
9	Yes
10	Yes
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes
16	Yes
17	Yes
18	Yes
19	Yes
20	Yes
21	Yes
22	No
23	Yes
24	Yes
25	Yes
26	Yes
27	Yes
28	Yes
29	Yes
30	Yes

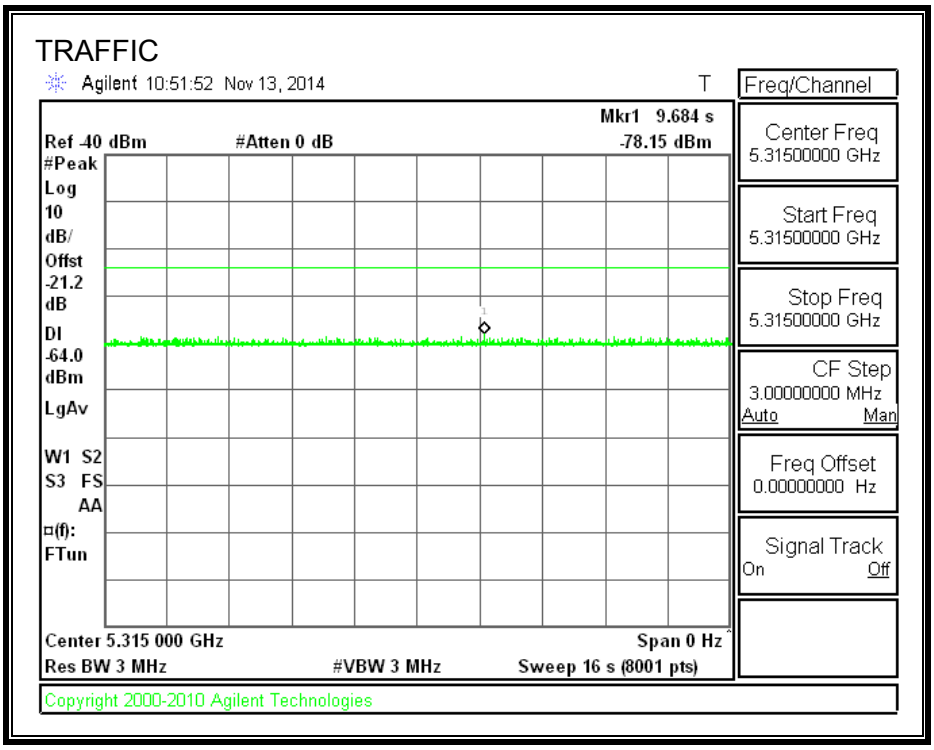
Note: Randomized parameters for the Type 5 In-Service Monitoring testing performed on 11/06/14 are shown in a separate document.

TYPE 6 DETECTION PROBABILITY

Data Sheet for FCC Hopping Radar Type 6				
1 us Pulse Width, 333 us PRI, 9 Pulses per Burst, 1 Burst per Hop				
NTIA August 2005 Hopping Sequence				
Trial	Starting Index Within Sequence	Signal Generator Frequency (MHz)	Hops within Detection BW	Successful Detection (Yes/No)
1	276	5305	6	Yes
2	751	5306	3	Yes
3	1226	5307	3	Yes
4	1701	5308	3	Yes
5	2176	5309	9	Yes
6	2651	5310	5	Yes
7	3126	5311	6	No
8	3601	5312	2	Yes
9	4076	5313	4	Yes
10	4551	5314	4	Yes
11	5026	5315	4	Yes
12	5501	5316	4	Yes
13	5976	5317	5	Yes
14	6451	5318	5	Yes
15	6926	5319	1	Yes
16	7401	5320	3	Yes
17	7876	5321	5	Yes
18	8351	5322	8	Yes
19	8826	5323	4	Yes
20	9301	5324	3	Yes
21	9776	5325	6	No
22	10251	5305	4	Yes
23	10726	5306	5	No
24	11201	5307	4	Yes
25	11676	5308	4	Yes
26	12151	5309	2	Yes
27	12626	5310	6	No
28	13101	5311	3	Yes
29	13576	5312	5	No
30	14051	5313	5	Yes
31	14526	5314	4	Yes
32	15001	5315	3	Yes
33	15476	5316	4	Yes
34	15951	5317	6	Yes
35	16426	5318	3	Yes
36	16901	5319	5	Yes
37	17376	5320	6	Yes
38	17851	5321	4	Yes
39	18326	5322	8	Yes
40	18801	5323	5	Yes
41	19276	5324	6	Yes
42	19751	5325	5	Yes

11.5. RESULTS FOR 40 MHz BANDWIDTH

11.5.1. TRAFFIC



11.5.2. CHANNEL AVAILABILITY CHECK TIME

PROCEDURE TO DETERMINE TEST CHANNEL CYCLE TIME

The AC power was toggled off and then on to re-boot the EUT while a spectrum analyzer sweep was started to monitor the test channel (5315 MHz) and a log file was generated. Upon completion of the CAC period on the test channel the 5.8 GHz downlink (which includes the 5.7 GHz DFS band) begins a "discovery phase" while the 5.3 GHz (which includes the 5.2 GHz non-DFS band) In-Service Monitoring continues. When the 5.8 GHz downlink connects the 5.3 GHz Uplink Transmitter is enabled. The 5.3 GHz Receive Radio then associates to the 5.3 GHz Transmit Radio. After the association process was complete, transmissions began on the test channel. The elapsed time between the end of the CAC period and the start of transmissions on the test channel is the discovery time and association period. This reference measurement and the time stamps within the log file were used to determine when radar bursts were to be triggered at the beginning and end of the CAC period.

PROCEDURE FOR TIMING OF RADAR BURST

The AC power was toggled off and then on to re-boot the EUT while a spectrum analyzer sweep was started to monitor the test channel (5315 MHz) and a log file was generated. A radar signal was triggered on the test channel between 0 to 6 seconds after the beginning of the CAC period and transmissions on the test channel were monitored on the spectrum analyzer.

The AC power was then again toggled off and then on to re-boot the EUT while a spectrum analyzer sweep was started to monitor the test channel (5315 MHz) and a log file was generated. A radar signal was triggered on the test channel between 54 to 60 seconds after the beginning of the CAC period and transmissions on the test channel were monitored on the spectrum analyzer.

The log file recorded the timing of these events. The time from the beginning of the CAC on the test channel to the detection of the radar burst on the test channel was measured.

APPROXIMATE QUANTITATIVE RESULTS BASED ON RF MARKERS

NO RADAR TRIGGERED ON THE TEST CHANNEL

The time between the beginning of the CAC period and the start of transmissions on the test channel minus the elapsed time for the Receive Radio to associate to the Transmit Radio is the CAC time.

RADAR TRIGGERED ON THE TEST CHANNEL

The time from the beginning of the CAC period to the radar burst on the test channel was measured as the approximate relative time from the start of the CAC.

No Radar Triggered

Start of CAC at 5315 MHz (sec)	End of CAC at 5315 MHz (sec)	CAC Time (sec)
145.7	206.7	61.0

Radar Near Beginning of CAC

Start of CAC at 5315 MHz (sec)	Timing of Radar Burst at 5315 MHz (sec)	Radar Relative to Start of CAC at 5315 MHz (sec)
144.9	148.9	4.0

Radar Near End of CAC

Start of CAC at 5315 MHz (sec)	Timing of Radar Burst at 5315 MHz (sec)	Radar Relative to Start of CAC at 5315 MHz (sec)
149.5	207.5	58.0