CERTIFICATION TEST REPORT

Report Number. : 12726917-E5V2

Applicant	:	Samsung Electronics Co., Ltd. 129 Samsung-Ro, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 16677, Korea
Model	:	SM-A705W
FCC ID	:	A3LSMA705W
EUT Description	:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, ANT+ and NFC
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART E (EXCEPT DFS)

Date Of Issue:
May 09, 2019

Prepared by:
UL Verification Services Inc.
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NVLAP Lab code: 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	5/6/2019	Initial Issue	
V2	5/9/2019	Updated Section 2.4	Steven Tran

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	Samsung Electronics Co., Ltd. 129 Samsung-Ro, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 16677, Korea
EUT DESCRIPTION:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, ANT+ and NFC
MODEL:	SM-A705W
SERIAL NUMBER:	Radiated (Original): R38M10NPF1Y, R38M10CSH8Z Conducted (Original): R38M10CT1JE Radiated (Spot Check): R38M20ETXCL
DATE TESTED:	February 19 to March 21, 2019 (Original) April 02, 2019 (Spot Check)

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

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

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 the U.S. government.

Approved & Released For
UL Verification Services Inc. By:

Dan Coronia
Operations Leader
Consumer Technology Division
UL Verification Services Inc.

Reviewed By:

Steven Tran
Project Engineer
Consumer Technology Division
UL Verification Services Inc.

2. INTRODUCTION OF TEST DATA REUSE

2.1. INTRODUCTION

According to the manufacturer, FCC ID: A3LSMA705FN and FCC ID: A3LSMA705W non-licensed radios are electrically identical. The FCC ID: A3LSMA705FN test data shall remain representative of FCC ID: A3LSMA705W.

The applicant takes full responsibility that the test data as referenced in this section represents compliance for this FCC ID.

2.2. DIFFERENCES

The FCC ID: A3LSMA705FN, shares the same enclosure and circuit board as FCC ID: A3LSMA705W. The UNII WLAN antennas and surrounding circuitry and layout are identical between two models.

After confirming through preliminary radiated emissions that the performance of the FCC ID: A3LSMG705FN remains representative of FCC ID: A3LSMA705W. The test data of FCC ID: A3LSMG705FN being submitted for this application to cover UNII WLAN features.

2.3. SPOT CHECK VERIFICATION RESULTS SUMMARY

Spot check verification has been done on device A3LSMA705W for radiated harmonic spurious and radiated band-edge. The data from the application has been verified through appropriate spot checks to demonstrate compliance for this device in accordance to FCC public KDB 484596 D01 as shown in the summary below.

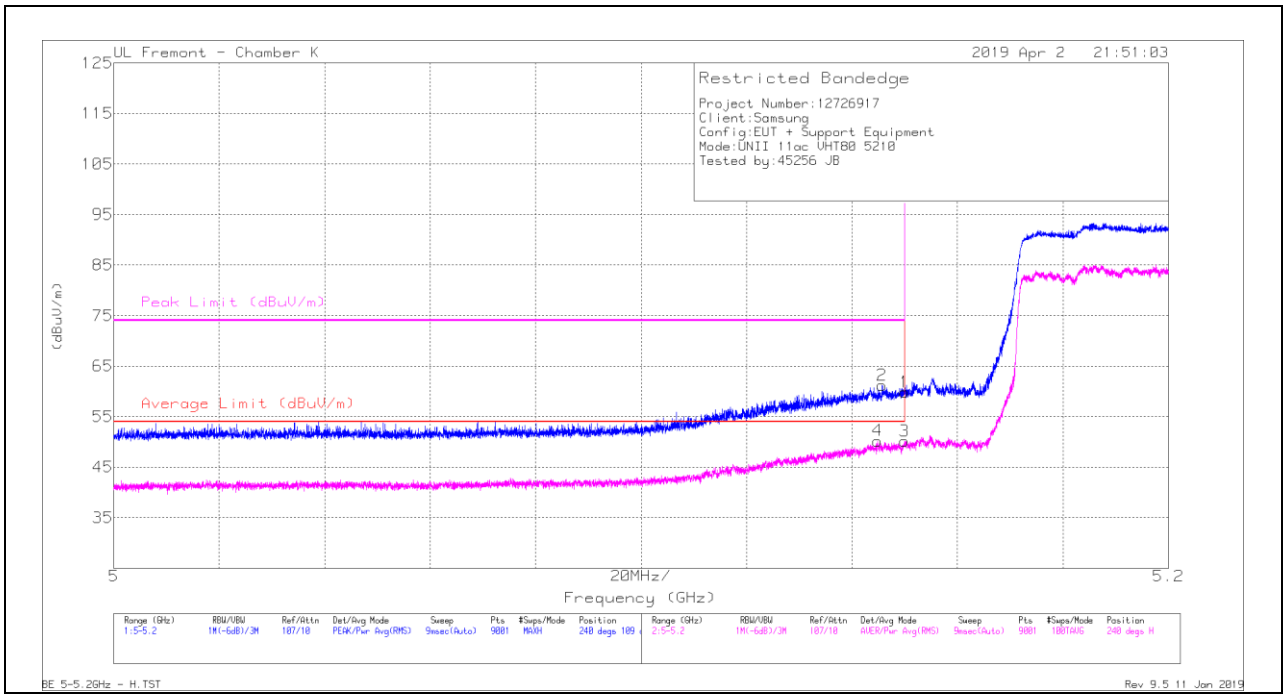
A3LSMA705W SPOT CHECK RESULTS										
Technology	Mode	Test Item	Channel	Measured	Original model		Spot check model		Delta (dB)	
					SM-A705FN/DS		SM-A705W			
					A3LSMA705FN		A3LSMA705W			
				Frequency	Peak	Ave	Peak	Ave	Peak	Ave
UNII	11ac VHT80	RBE	42	5149 MHz	62.84	51.89	61.17	50.23	-1.67	-1.66
	11a	RSE	165	5825MHz	54.42	46.85	53.91	46.9	-0.51	0.05

Comparison of the models, upper deviation is within 3dB range and all tests are under FCC Technical Limits.

SPOT CHECK DATA

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

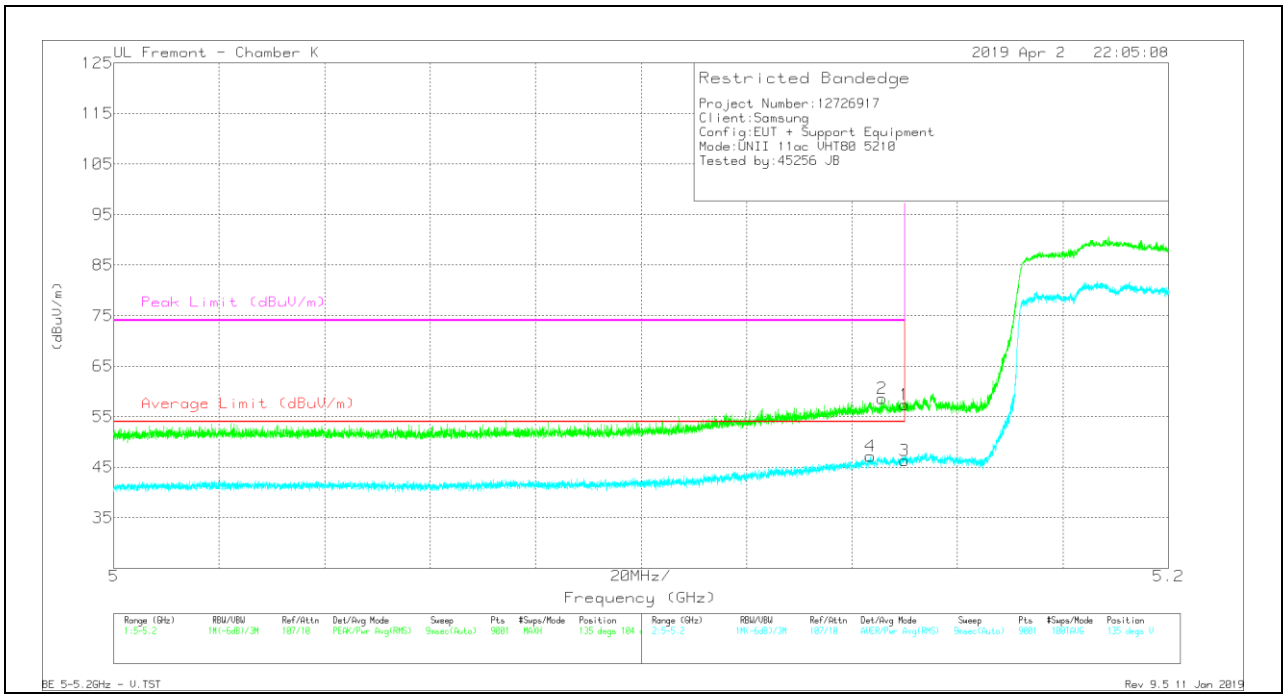


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	45.51	Pk	34.4	-20.1	0	59.81	-	-	74	-14.19	240	109	H
2	* 5.146	46.97	Pk	34.4	-20.2	0	61.17	-	-	74	-12.83	240	109	H
3	* 5.15	35.4	RMS	34.4	-20.1	.44	50.14	54	-3.86	-	-	240	109	H
4	* 5.145	35.59	RMS	34.4	-20.2	.44	50.23	54	-3.77	-	-	240	109	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



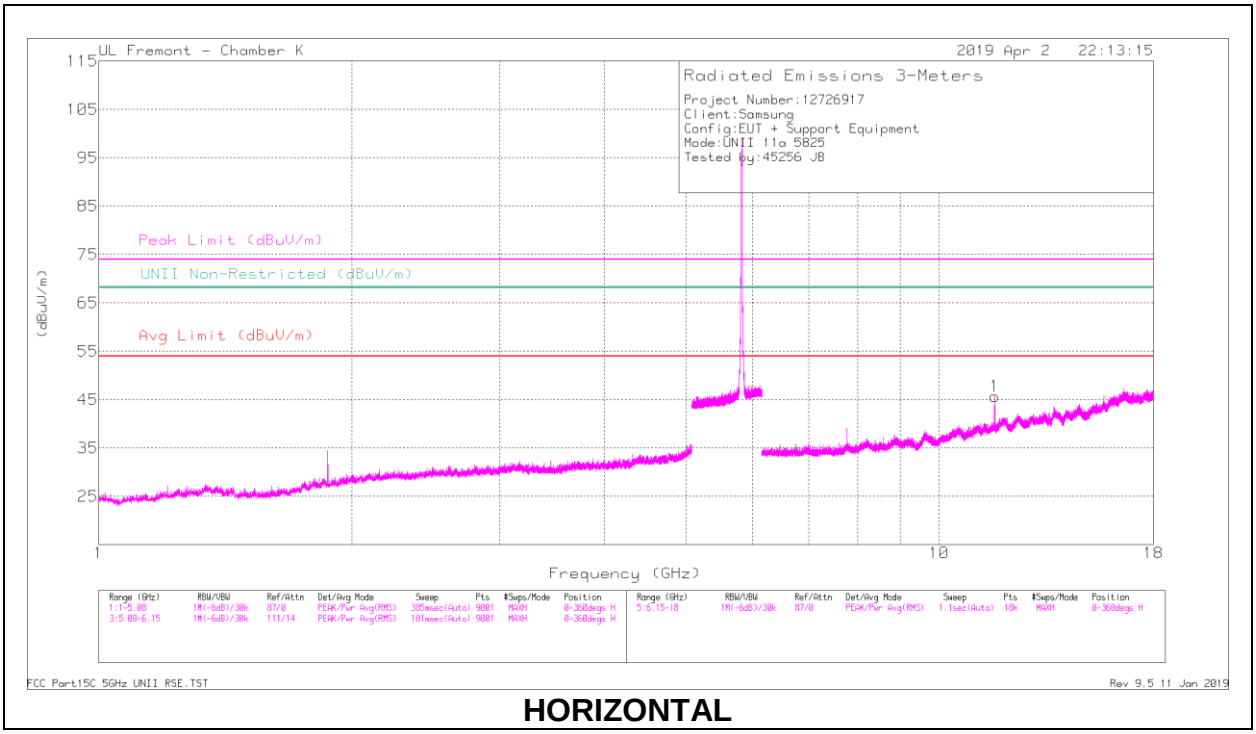
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	43.07	Pk	34.4	-20.1	0	57.37	-	-	74	-16.63	135	104	V
2	* 5.146	44.39	Pk	34.4	-20.2	0	58.59	-	-	74	-15.41	135	104	V
3	* 5.15	31.62	RMS	34.4	-20.1	.44	46.36	54	-7.64	-	-	135	104	V
4	* 5.143	32.58	RMS	34.4	-20.2	.44	47.22	54	-6.78	-	-	135	104	V

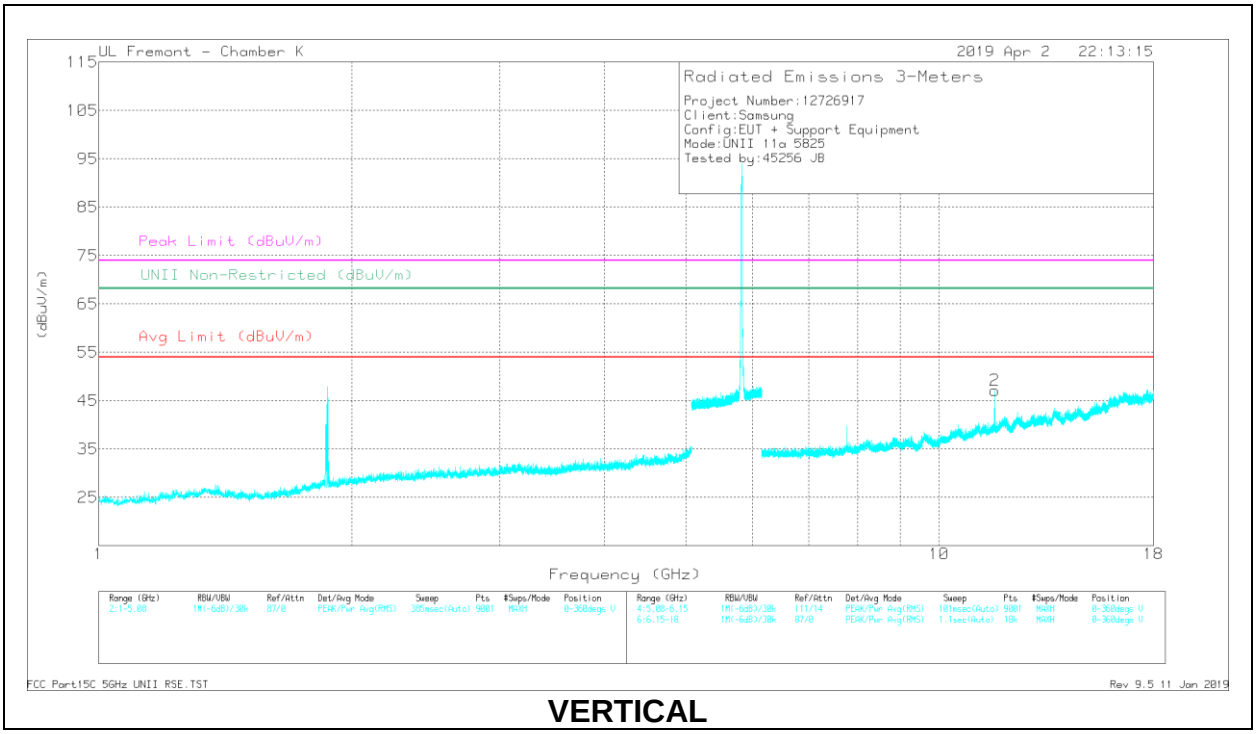
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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	* 11.65	36.77	PK-U	38.2	-20.8	0	54.17	-	-	74	-19.83	-	-	323	108	H
	* 11.65	26.39	ADR	38.2	-20.8	.09	43.88	54	-10.12	-	-	-	-	323	108	H
2	* 11.65	36.51	PK-U	38.2	-20.8	0	53.91	-	-	74	-20.09	-	-	339	101	V
	* 11.65	29.41	ADR	38.2	-20.8	.09	46.9	54	-7.1	-	-	-	-	339	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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2.4. REFERENCE DETAIL

Reference application that contains the reused reference data

Equipment Class	Reference FCC ID	Type Grant/ Permissive Change	Reference Application	Folder Test/RF Exposure	Report Title/Section
NII	A3LSMA705FN	Grant	12726900-E5	Test	FCC Report UNII WLAN / All sections

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3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 14-30, FCC KDB 905462 D02 v02/D03 v01r02/D06 v02, FCC KDB 789033 D02 v02r01, ANSI C63.10-2013, FCC 06-96.

4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, 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	47658 Kato Rd
☒ Chamber A	☐ Chamber D	☒ Chamber I
☐ Chamber B	☐ Chamber E	☒ Chamber J
☐ Chamber C	☐ Chamber F	☒ Chamber K
	☐ Chamber G	☐ Chamber L
	☐ Chamber H	

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0

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5. CALIBRATION AND UNCERTAINTY

5.1. 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.

5.2. SAMPLE CALCULATION

RADIATED EMISSIONS

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

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.52 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	4.88 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.24 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.37 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.17 dB

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

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, ANT+ and NFC. The model SM-A705FN/DS was used for final testing and is representative of the results in this report. The test report addresses the UNII WLAN operational mode.

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

5.2 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.2 GHz band, 1TX			
5180-5240	802.11a	17.94	62.23
5180-5240	802.11n HT20	18.83	76.38
5190-5230	802.11n HT40	17.76	59.70
5210	802.11ac VHT80	15.22	33.27

5.3 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.3 GHz band, 1TX			
5260 - 5320	802.11a	17.66	58.34
5260 - 5320	802.11n HT20	18.83	76.38
5270 - 5310	802.11n HT40	17.83	60.67
5290	802.11ac VHT80	15.80	38.02

5.6 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.6 GHz band, 1TX			
5500-5720	802.11a	17.68	58.61
5500-5720	802.11n HT20	18.72	74.47
5510-5710	802.11n HT40	17.87	61.24
5530-5690	802.11ac VHT80	15.82	38.19

5.8 GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5.8 GHz band, 1TX			
5745-5825	802.11a	17.79	60.12
5745-5825	802.11n HT20	18.85	76.74
5755-5795	802.11n HT40	17.60	57.54
5775	802.11ac VHT80	15.89	38.82

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of:

Frequency (GHz)	Peak Antenna Gain (dBi)
5180-5240	-5.92
5260-5320	-6.50
5500-5720	-5.92
5745-5825	-4.33

6.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was A705FN.001

6.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

Worst-case data rates as provided by the client were:

802.11a mode: 6 Mbps
802.11n HT20mode: MCS0
802.11n HT40mode: MCS0
802.11ac VHT80 mode: MCS0

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6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Samsung	EP-TA50EWE	DW3J719AS/A-E	N/A
Earphone	Samsung	N/A	N/A	N/A

I/O CABLES (CONDUCTED TEST)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Antenna	1	RF	Shielded	0.2	To spectrum Analyzer
2	USB	1	USB	Un-shielded	1	EUT to AC Mains

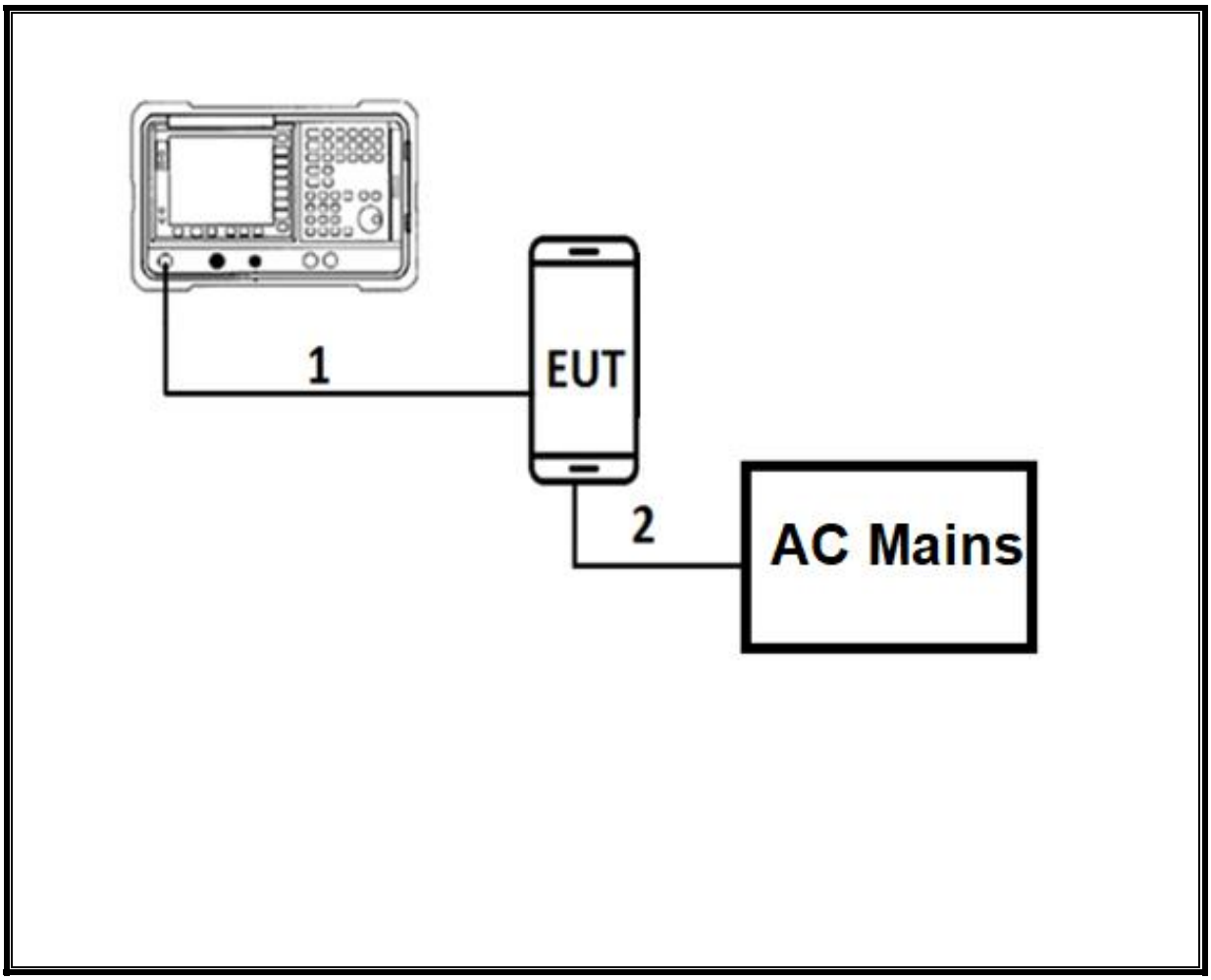
I/O CABLES (RADIATED AND CONDUCTED EMISSIONS)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB	1	USB	Shielded	1	N/A
2	Earphone	1	3.5mm	Un-shielded	1	N/A

TEST SETUP

The EUT is a stand alone unit. Test software exercised the radio card.

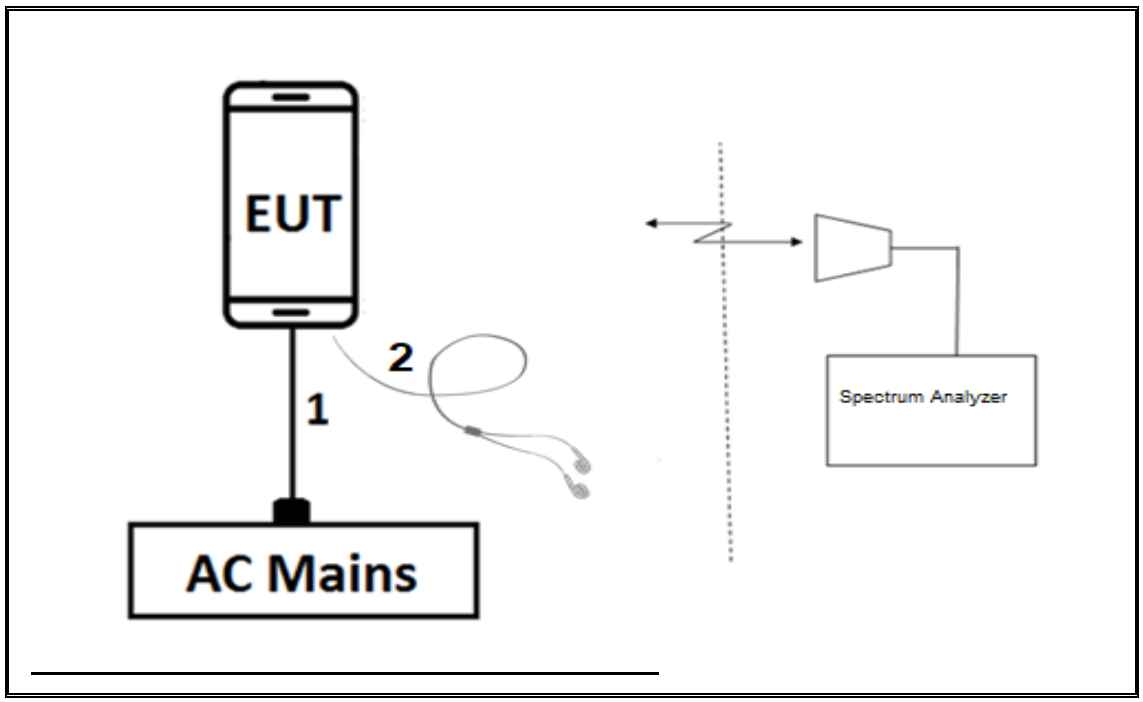
CONDUCTED TEST SETUP DIAGRAM



TEST SETUP

For conducted tests: the EUT was stand alone. The test software exercises the radio.

RADIATED AND AC LINE CONDUCTED EMISSIONS SETUP DIAGRAM



TEST SETUP

For radiated tests, the EUT is stand alone unit and the test software exercises the radio.

7. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 789033 D02 v02r01, Section II.B.

6 dB Emission BW: KDB 789033 D02 v02r01, Section II.C.2.

26 dB Emission BW: KDB 789033 D02 v02r01, Section II.C.1.

Conducted Output Power: KDB 789033 D02 v02r01, Sections II.E.3.b (Method PM-G) & II.E.2.b (Method SA-1).

Power Spectral Density: KDB 789033 D02 v02r01, Section II F

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2013 Section 6.4

Unwanted emissions: KDB 789033 D02 v02r01, Sections II.G.3 – II.G.6.

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

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8. 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**	**ID Num**	**Cal Due**	**Last Cal**
Power Meter, P-series single channel	Agilent (Keysight) Technologies	N1911A	T1271	07/26/2019	07/26/2018
Power Sensor, P-series, 50MHz to 18GHz, Wideband	Agilent (Keysight) Technologies	N1921A	T1224	10/09/2019	10/09/2018
Antenna, Active Loop 9kHz-30MHz	ETS-Lindgren	6502	T757	09/25/2019	09/25/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T344	04/30/2019	04/30/2018
Amplifier, 1 to18GHz, 35dB	AMOLICAL	AMP1G18-35	T1569	06/03/2019	06/03/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T862	05/25/2019	05/25/2018
Antenna, Horn 1-18GHz	ETS Lindgren	3117	AT0067	03/06/2019	03/06/2018
Amplifier, 1 to 18GHz	Amplical	AMP1G18-35	T1571	07/30/2019	07/30/2018
Amplifier, 1 to18GHz,	MITEQ	AFS42-00101800-25-S-42	PRE018078	08/01/2019	08/01/2018
EMI Test Receiver	Rohde & Schwarz	ESW44	PRE0179367	04/25/2019	04/25/2018
EMI Test Receiver	Rohde & Schwarz	ESW44	PRE0179375	05/08/2019	05/08/2018
EMI Test Receiver	Rohde&Schwarz	ESW44	PRE0179372	05/04/2019	05/04/2018
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T908	01/23/2020	01/23/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T341	09/26/2019	09/26/2018
Amplifier, 100kHz to 1GHz, 32 dB	Agilent (Keysight) Technologies	8447D	T15	10/20/2019	10/20/2018
Hybrid Antenna, 30MHz to 3GHz	SunAR rf motion	JB3	PRE0181574	08/01/2019	08/01/2018
Antenna, Horn 18 to 26.5GHz	ARA	MWH-1826/B	T447	06/16/2019	06/16/2018
Pre-Amp, 1-26.5GHz	Agilent	8449B	T404	03/09/2019	03/09/2018
Antenna Horn, 26 to 40GHz	ARA	MWH-2640	T90	03/11/2019	03/11/2018
Pre-Amp 26-40GHz	MITEQ	NSTTA2640-35-HG	T1864	03/09/2019	03/09/2018
AC Line Conducted					
EMI Receiver	Rohde & Schwarz	ESR	T1436	02/14/2020	02/14/2019
LISN for Conducted Emissions CISPR-16	FCC INC.	FCC LISN 50/250	T1310	06/15/2019	06/15/2018
Test Software List					
Radiated Software	UL	UL EMC		Ver 9.5, June 22, 2018	
Antenna Port Software	UL	UL RF		Ver 9.3.2, Jan. 07, 2019	
AC Line Conducted Software	UL	UL EMC		Ver 9.5, May 26, 2015	

NOTES:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

9. ANTENNA PORT TEST RESULTS

9.1. 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	1.435	1.465	0.980	97.95%	0.09	0.697
802.11n HT20	1.345	1.375	0.978	97.82%	0.10	0.743
802.11n HT40	0.669	0.699	0.957	95.65%	0.19	1.495
802.11ac VHT80	0.333	0.369	0.904	90.37%	0.44	3.002

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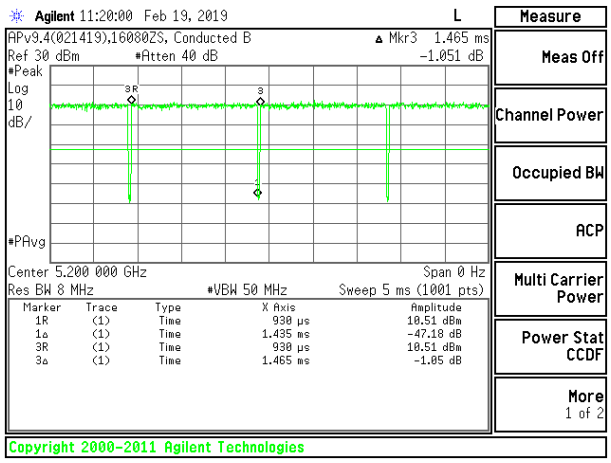
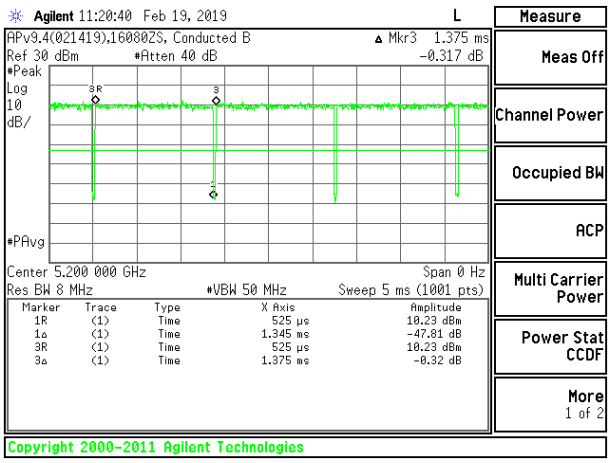
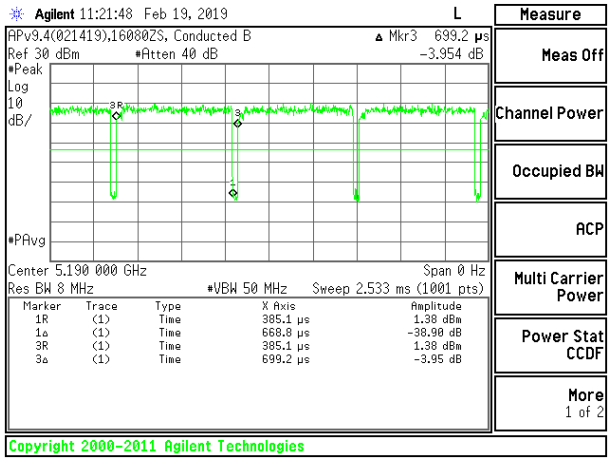
DUTY CYCLE PLOTS



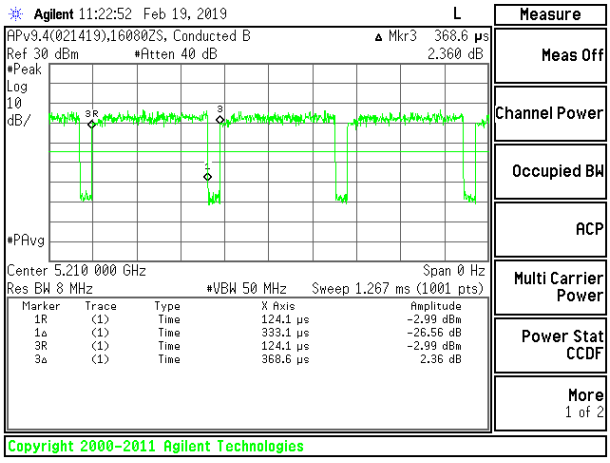
DUTY CYCLE 802.11a



DUTY CYCLE 802.11n HT20



DUTY CYCLE 802.11n HT40



DUTY CYCLE 802.11ac VHT80

9.2. 26 dB BANDWIDTH

LIMITS

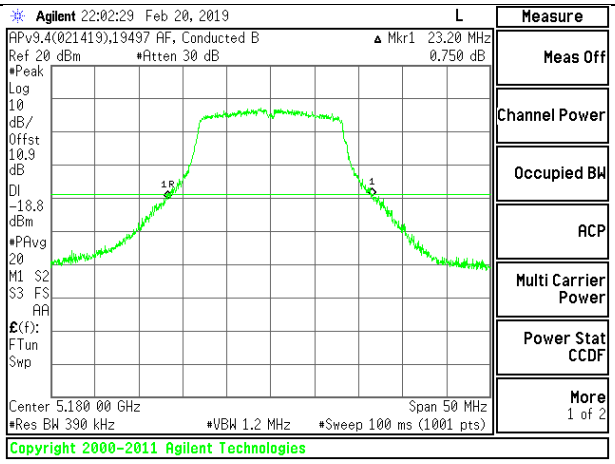
None; for reporting purposes only.

RESULTS

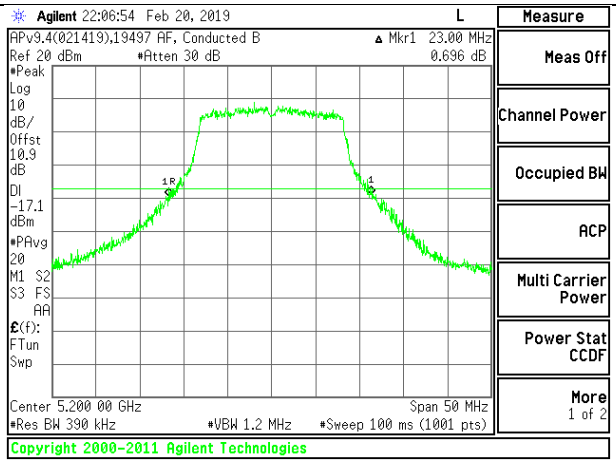
9.2.1. 802.11a MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

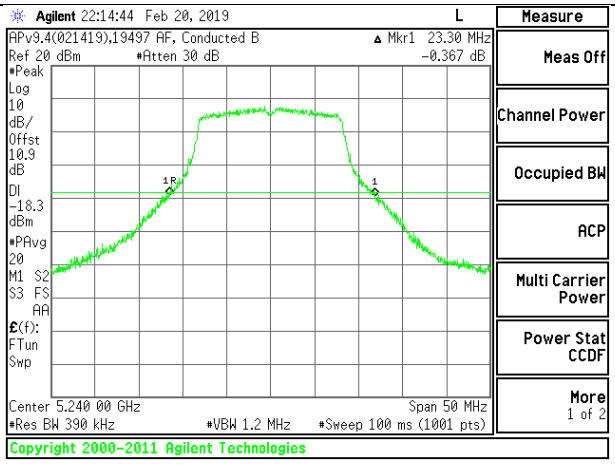
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	23.20
Mid	5200	23.00
High	5240	23.30



LOW CHANNEL



MID CHANNEL

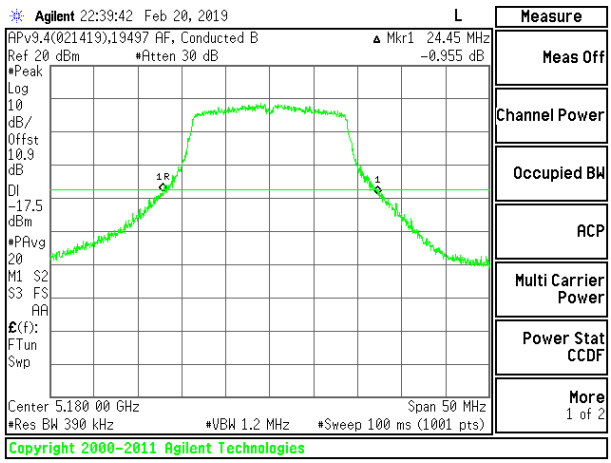


HIGH CHANNEL

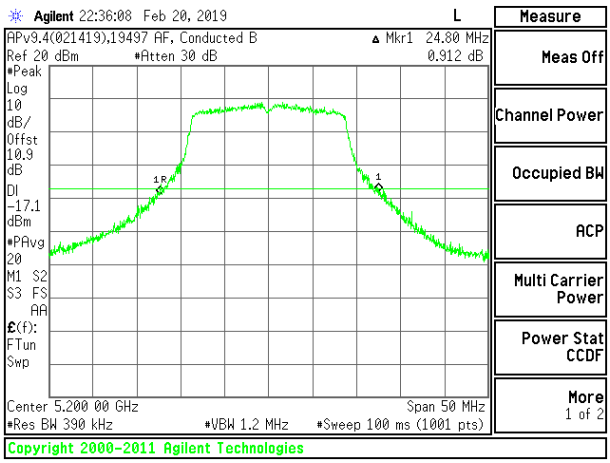
9.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

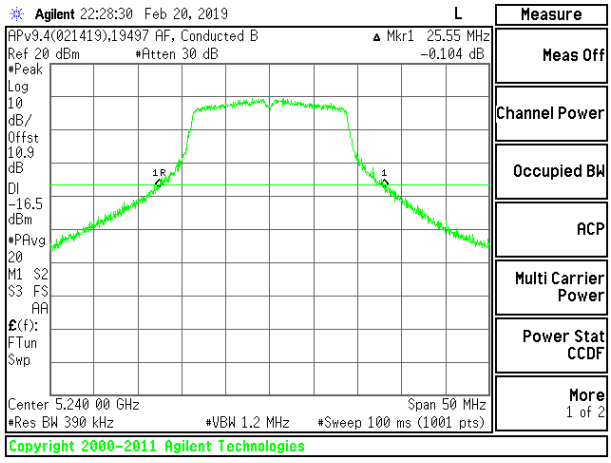
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	24.45
Mid	5200	24.80
High	5240	25.55



LOW CHANNEL



MID CHANNEL

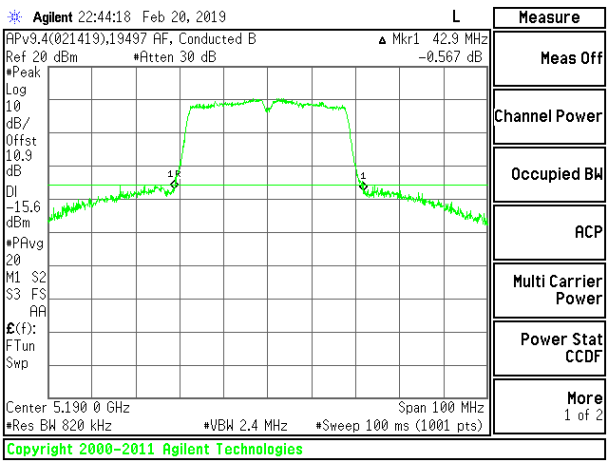


HIGH CHANNEL

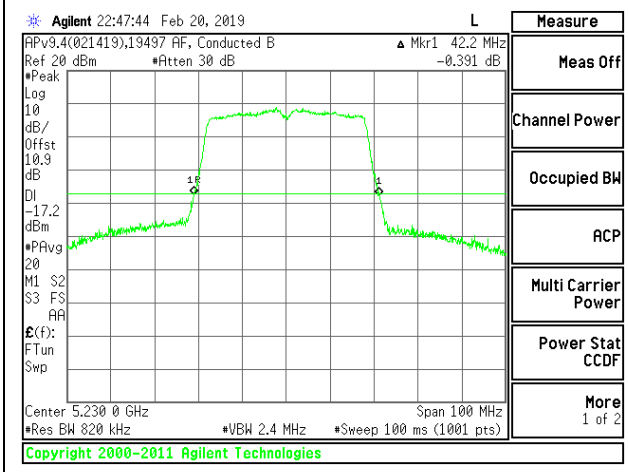
9.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)
Low	5190	42.90
High	5230	42.20



LOW CHANNEL

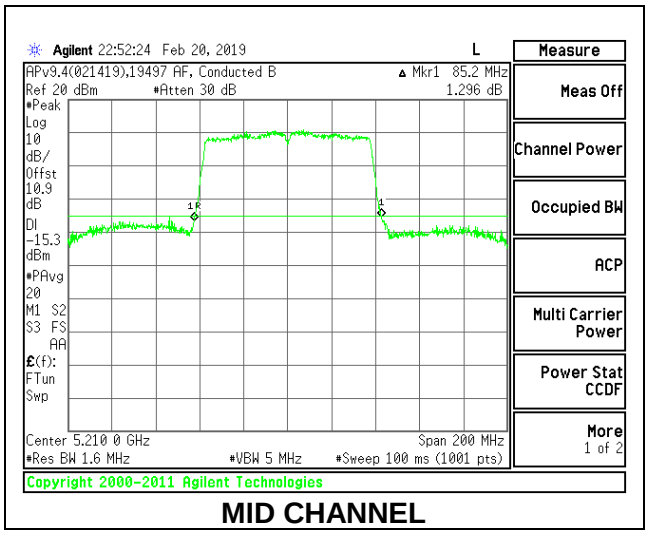


HIGH CHANNEL

9.2.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5210	85.20

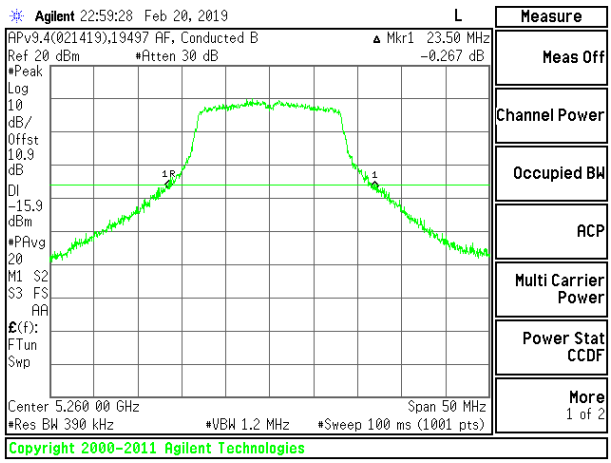


MID CHANNEL

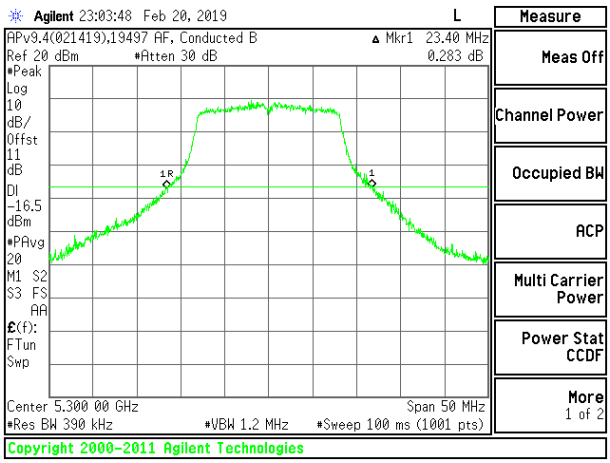
9.2.5. 802.11a MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

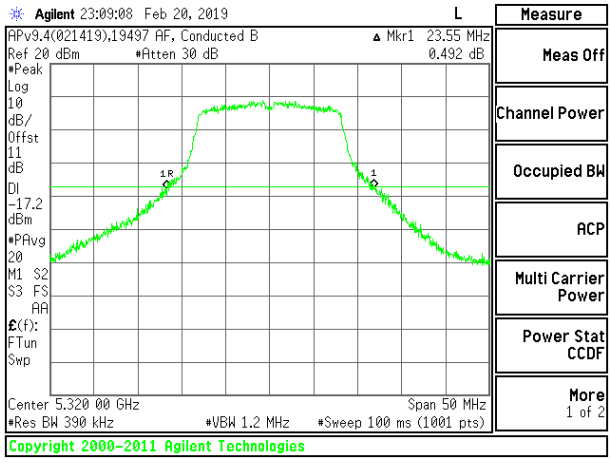
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	23.50
Mid	5300	23.40
High	5320	23.55



LOW CHANNEL



MID CHANNEL

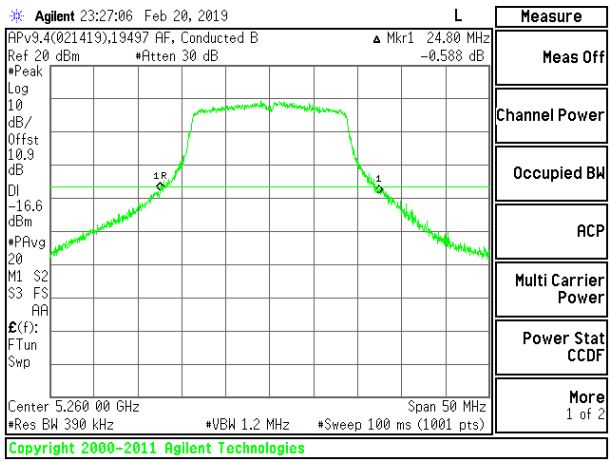


HIGH CHANNEL

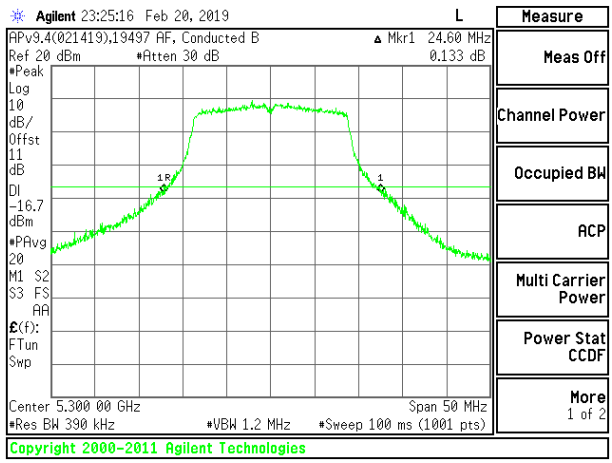
9.2.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

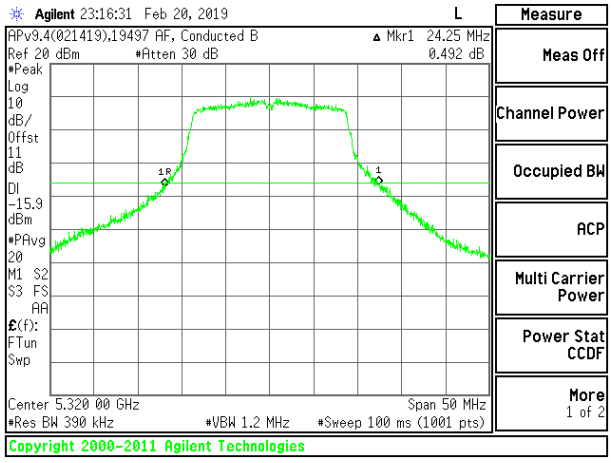
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	24.80
Mid	5300	24.60
High	5320	24.25



LOW CHANNEL



MID CHANNEL

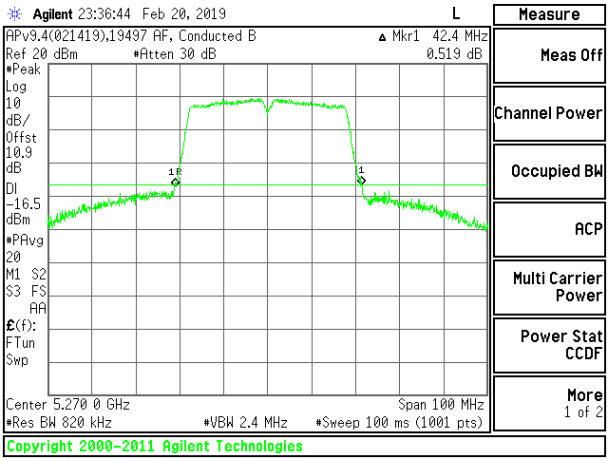


HIGH CHANNEL

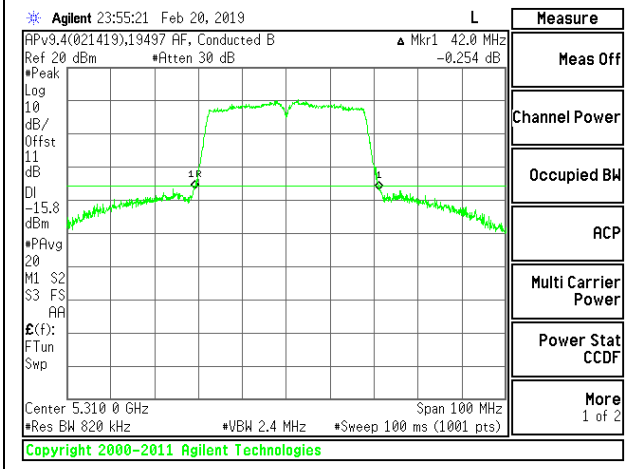
9.2.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)
Low	5270	42.40
High	5310	42.00



LOW CHANNEL

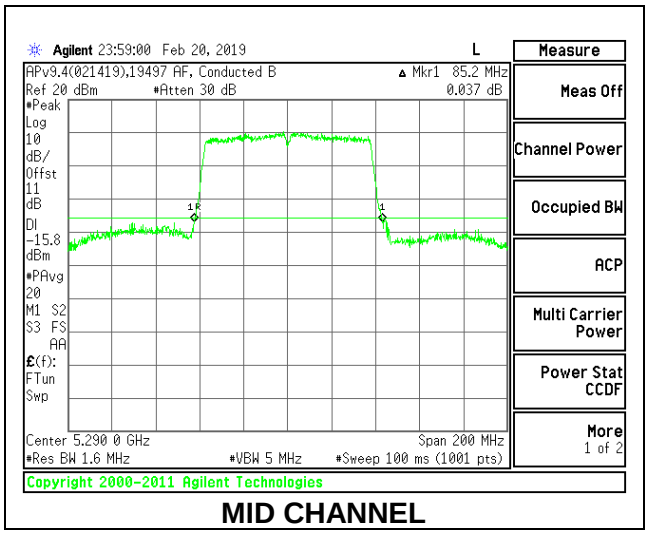


HIGH CHANNEL

9.2.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5290	85.20

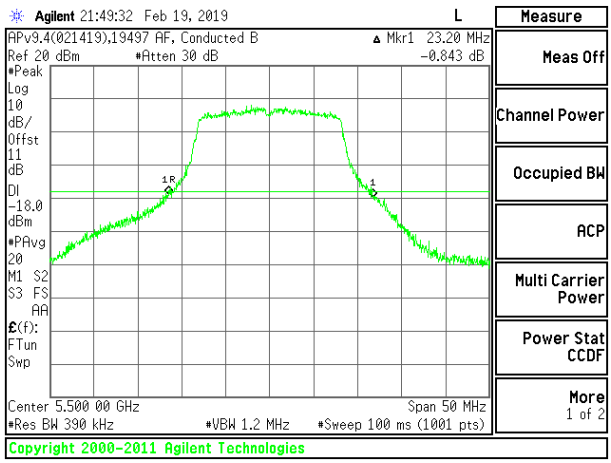


MID CHANNEL

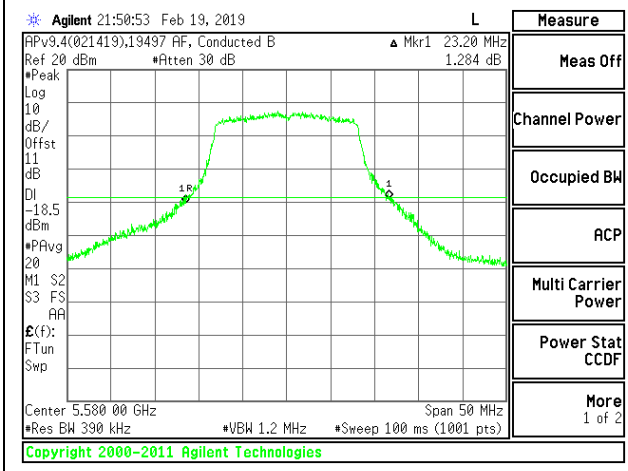
9.2.9. 802.11a MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

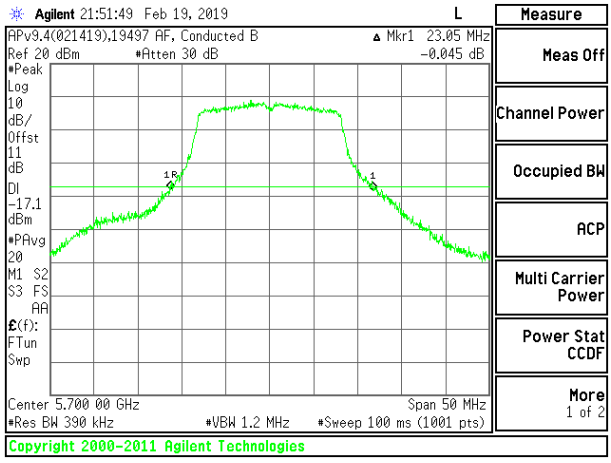
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	23.20
Mid	5580	23.20
High	5700	23.05
144	5720	22.85



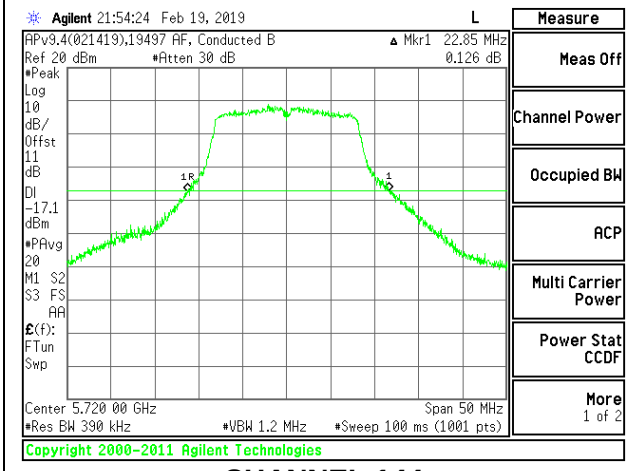
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

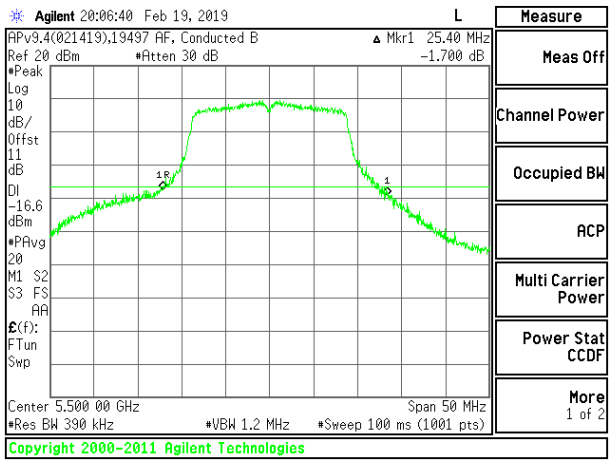


CHANNEL 144

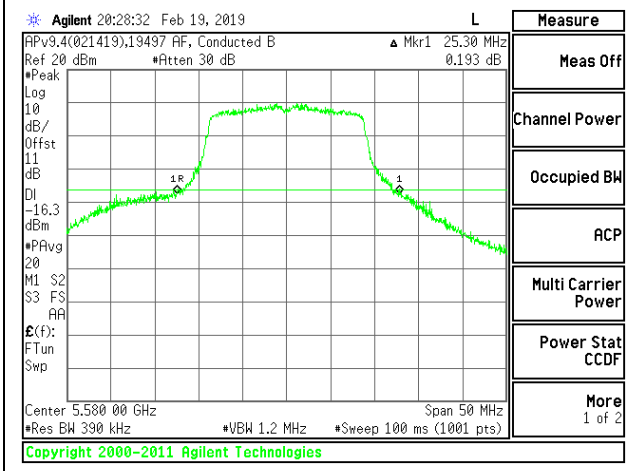
9.2.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

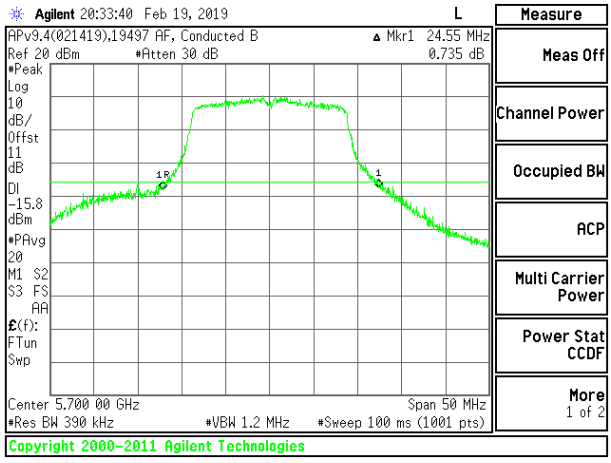
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	25.40
Mid	5580	25.30
High	5700	24.55
144	5720	25.20



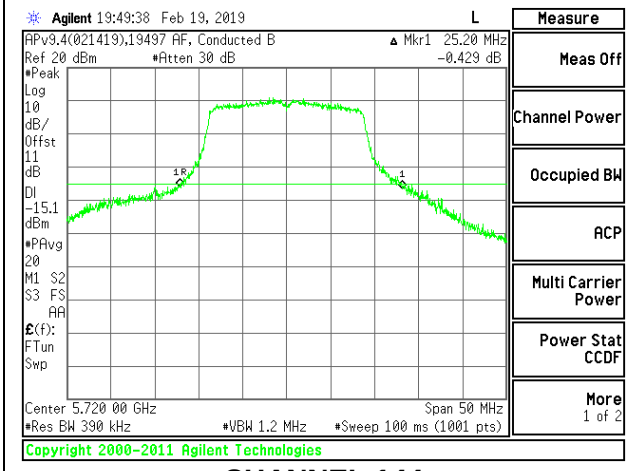
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

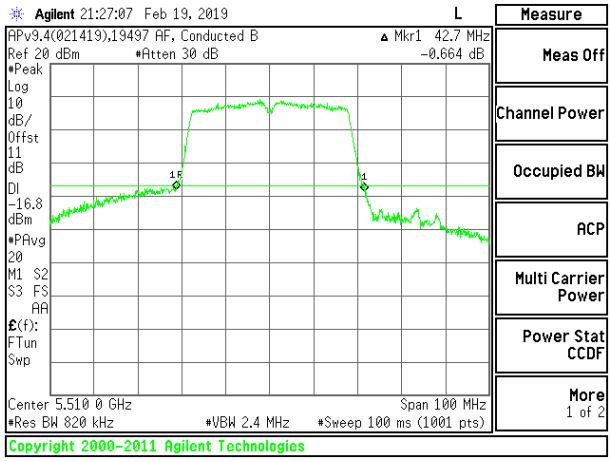


CHANNEL 144

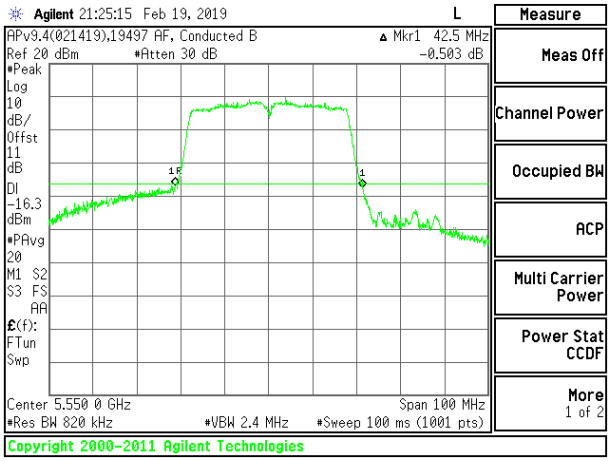
9.2.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

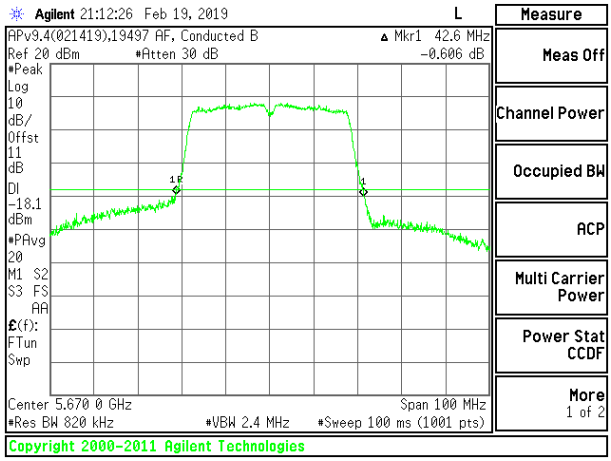
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5510	42.70
Mid	5550	42.50
High	5670	42.60
142	5710	42.50



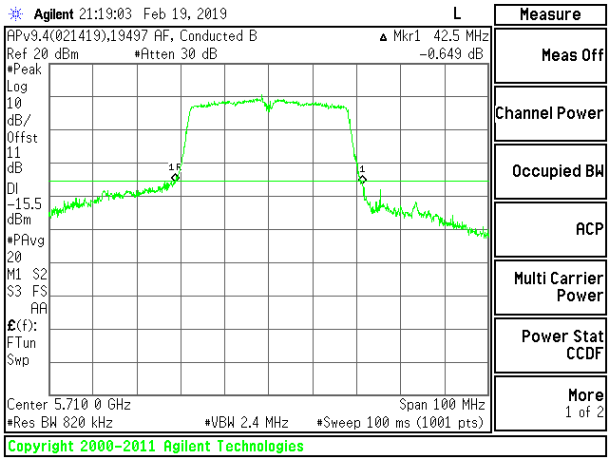
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

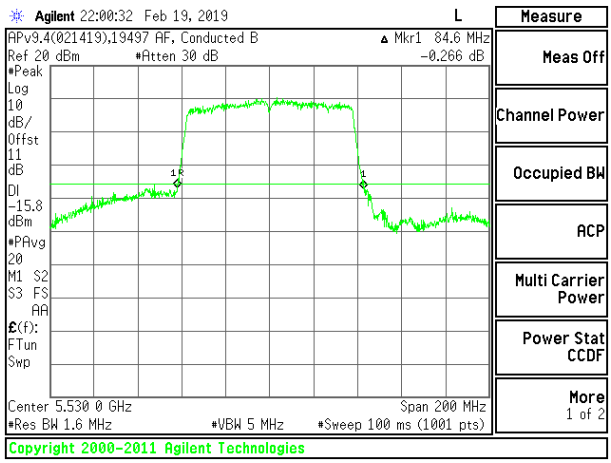


CHANNEL 142

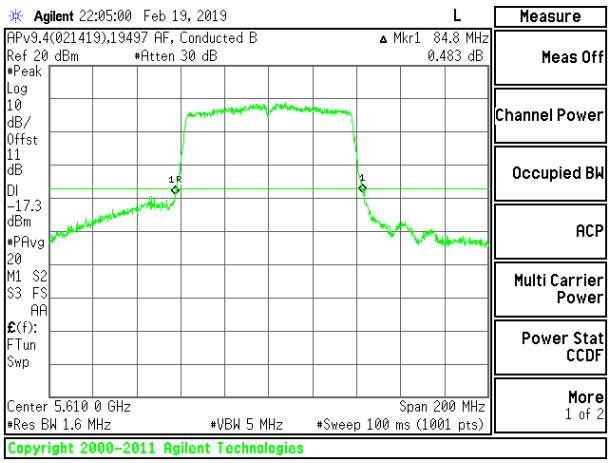
9.2.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE

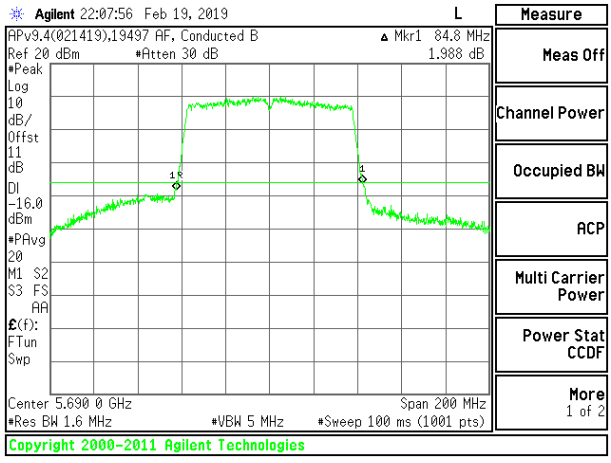
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5530	84.60
High	5610	84.80
138	5690	84.80



LOW CHANNEL



HIGH CHANNEL

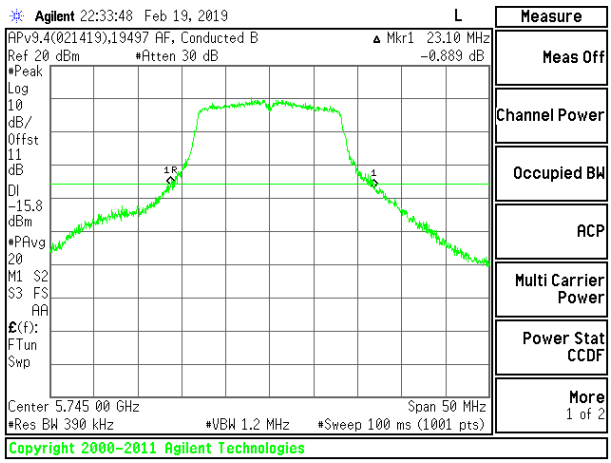


CHANNEL 138

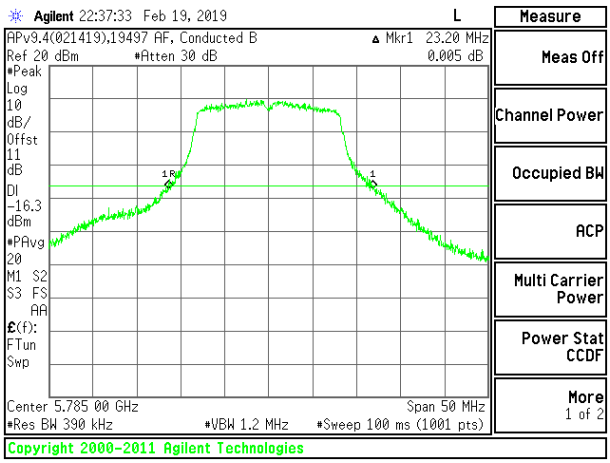
9.2.13. 802.11a MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

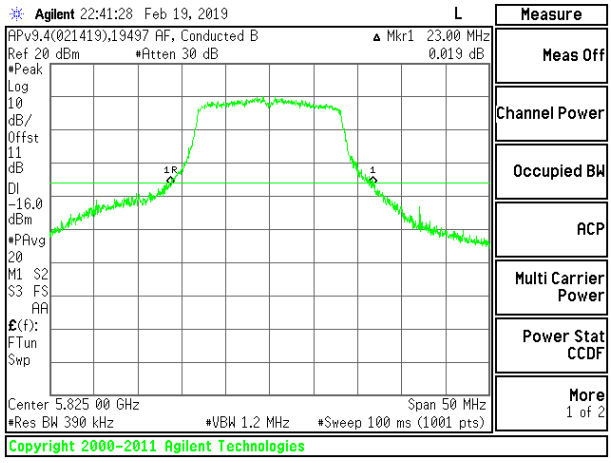
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5745	23.10
Mid	5785	23.20
High	5825	23.00



LOW CHANNEL



MID CHANNEL

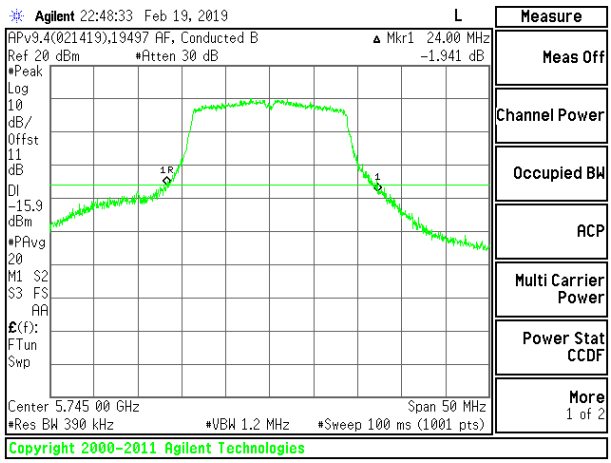


HIGH CHANNEL

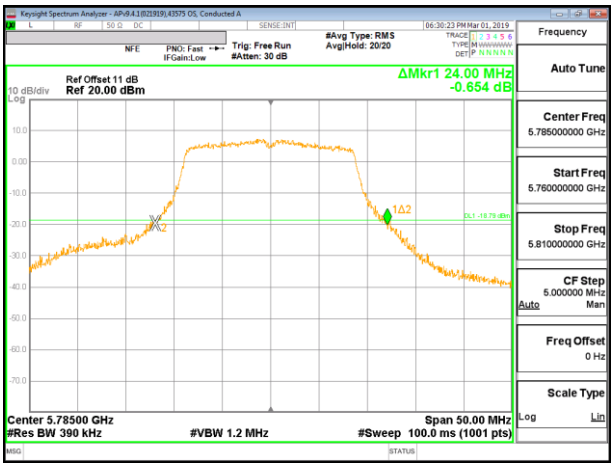
9.2.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

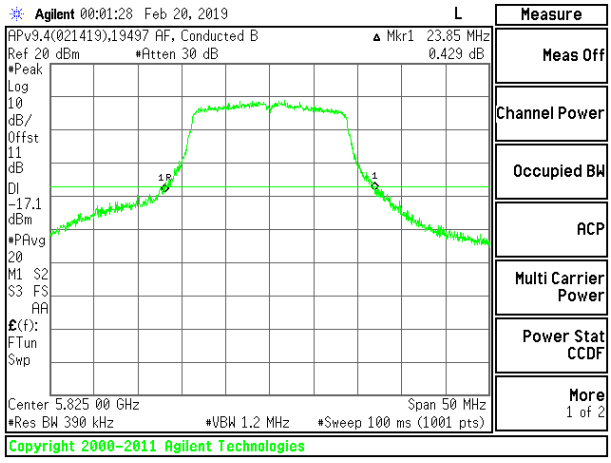
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5745	24.00
Mid	5785	24.00
High	5825	23.85



LOW CHANNEL



MID CHANNEL

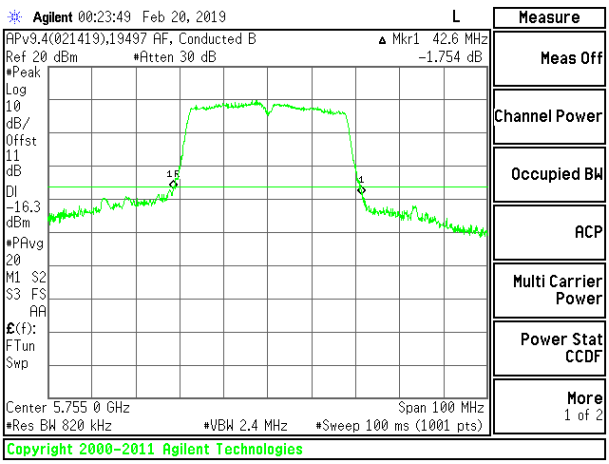


HIGH CHANNEL

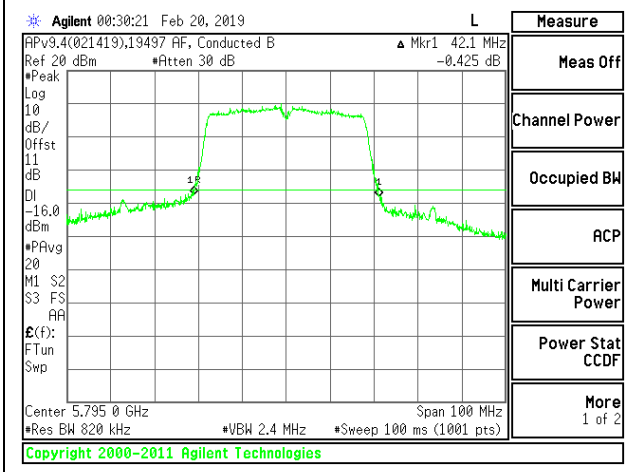
9.2.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	26dB Bandwidth (MHz)
Low	5755	42.60
High	5795	42.10



LOW CHANNEL

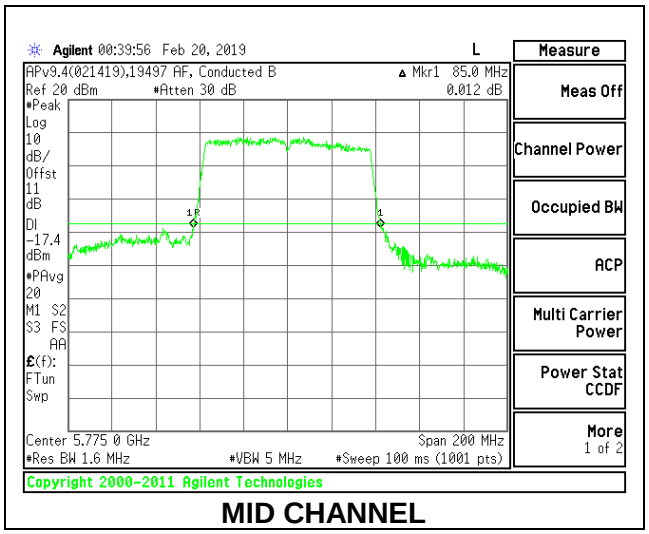


HIGH CHANNEL

9.2.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5775	85.00



MID CHANNEL

9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.407 (e)

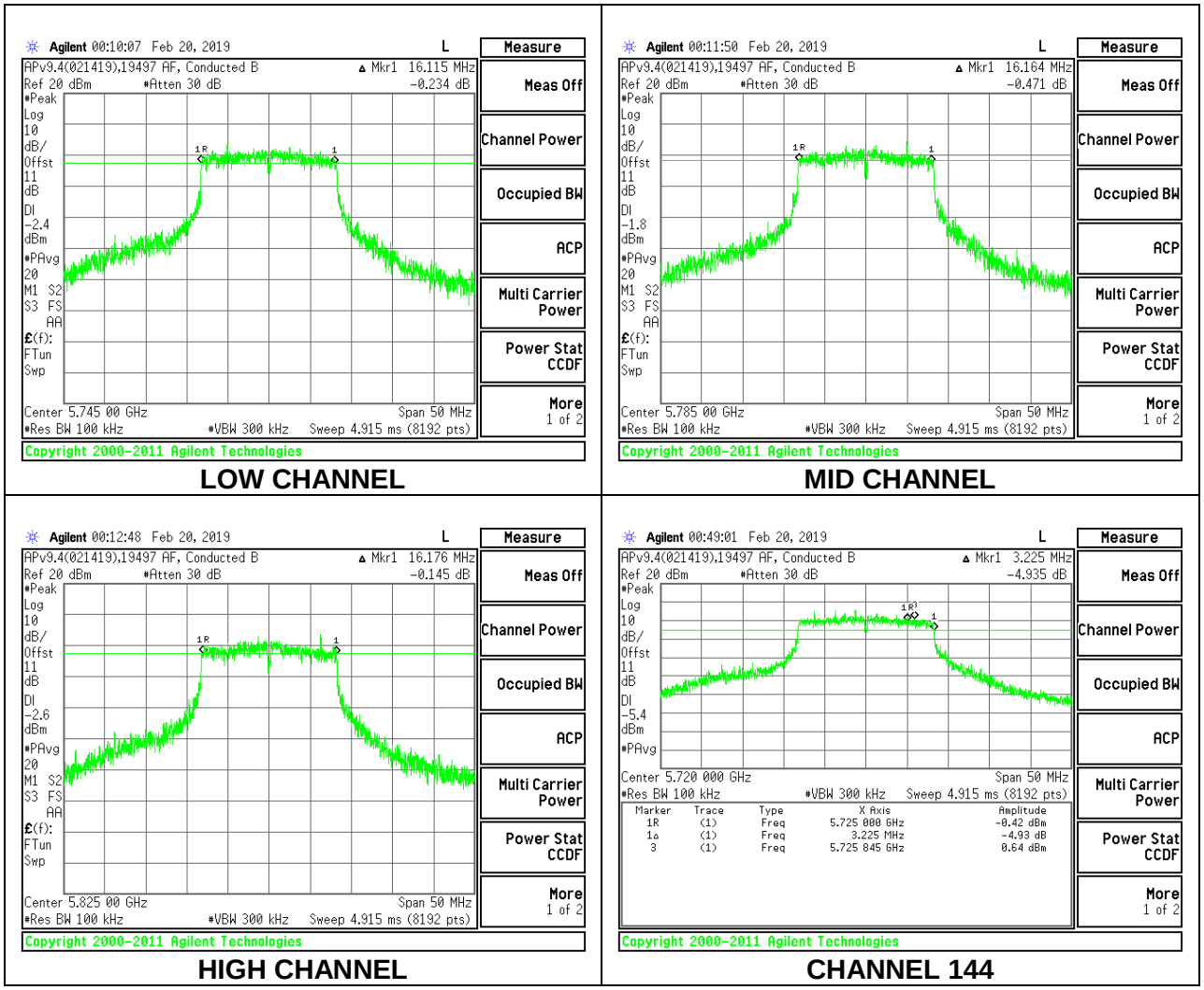
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

9.3.1. 802.11a MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

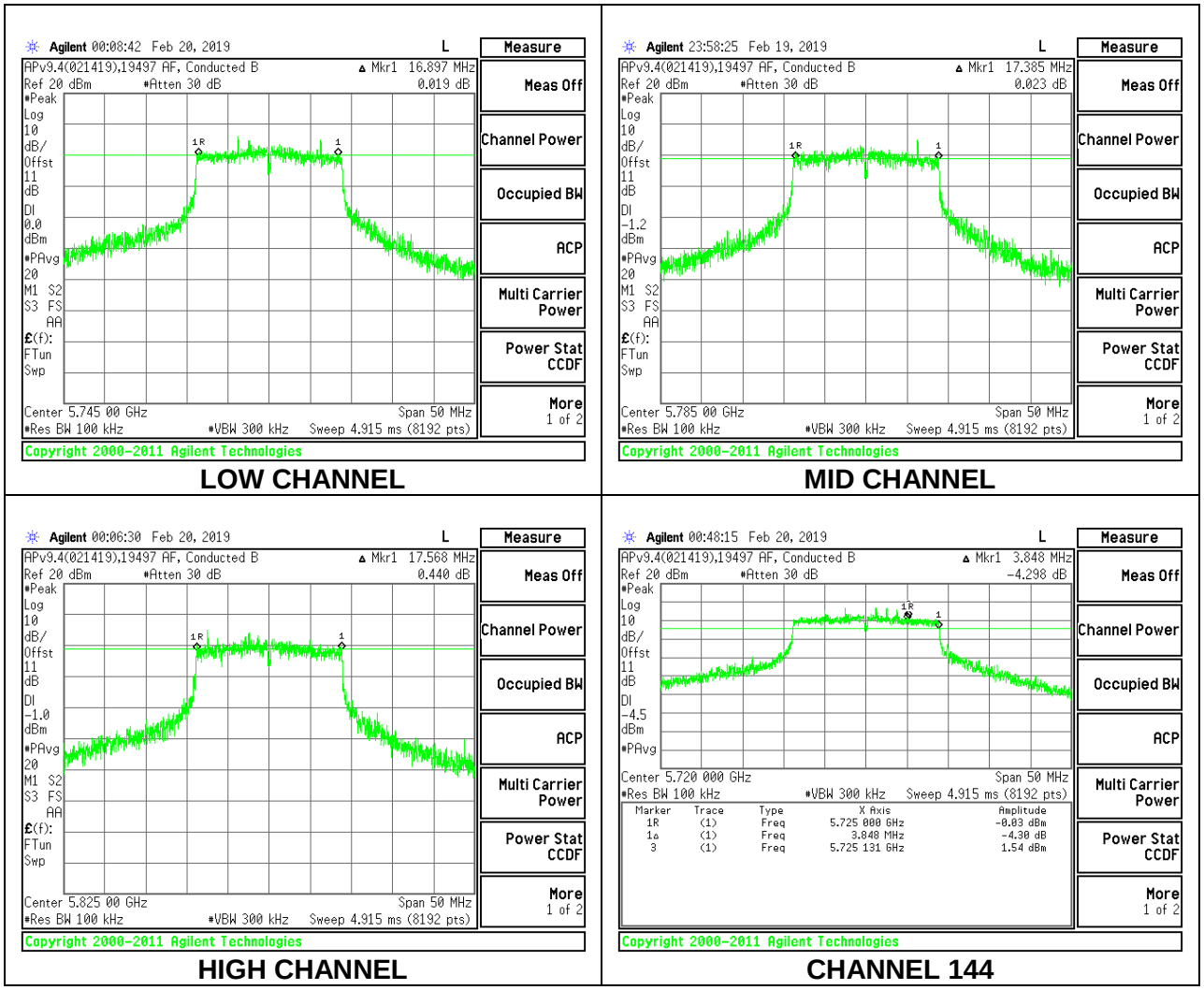
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	16.1150	0.5
Mid	5785	16.1640	0.5
High	5825	16.1760	0.5
144	5720	3.2250	0.5



9.3.2. 802.11n HT20 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

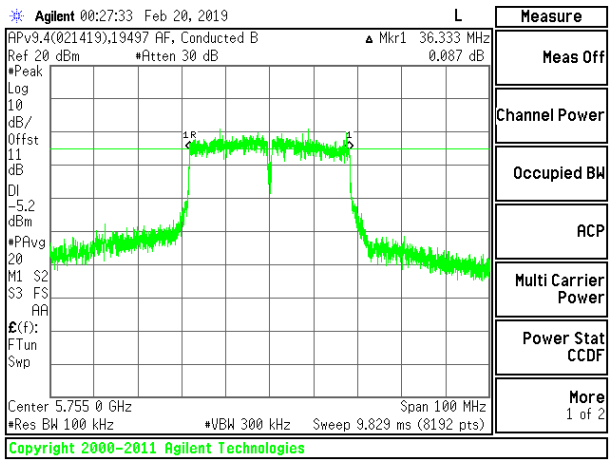
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	16.8970	0.5
Mid	5785	17.3850	0.5
High	5825	17.5680	0.5
144	5720	3.8480	0.5



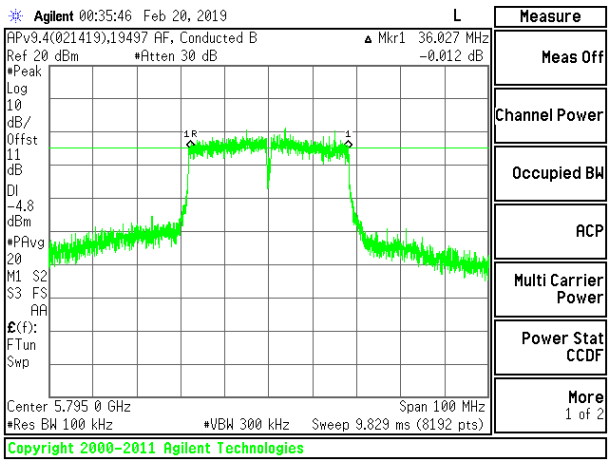
9.3.3. 802.11n HT40 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

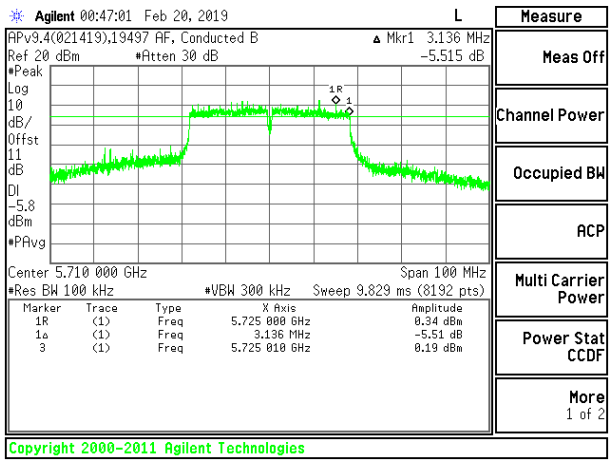
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5755	36.3330	0.5
High	5795	36.0270	0.5
142	5710	3.1360	0.5



LOW CHANNEL



HIGH CHANNEL

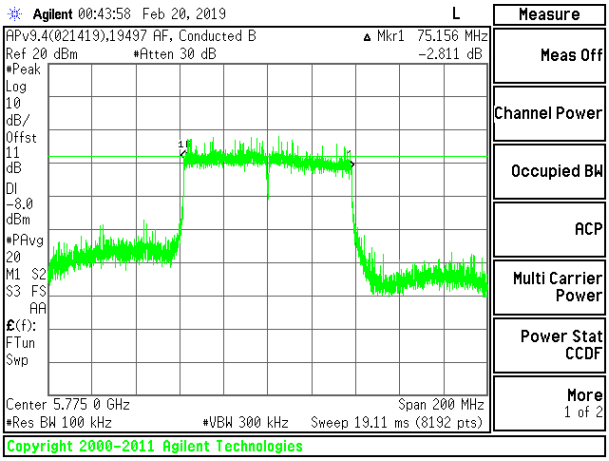


CHANNEL 142

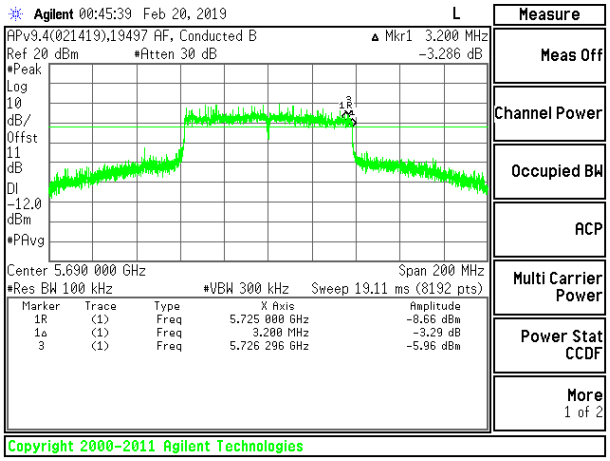
9.3.4. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Mid	5775	75.1560	0.5
138	5690	3.2000	0.5



MID CHANNEL



CHANNEL 138

9.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407

Band 5.15–5.25 GHz

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Bands 5.25-5.35 GHz and 5.47-5.725 GHz

The maximum conducted output power over the frequency bands 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 megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Band 5.725-5.85 GHz

The maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information.

TEST PROCEDURE

The measurement method used for output power is KDB 789033 D02 v02r01, Section II.E.3.b (Method PM-G) and for straddles channels KDB 789033 D02 v02r01, Section II.E.2.b (Method SA-1) was used.

The measurement method used for power spectral density is KDB 789033 D02 v02r01, Section F.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Tester	19497 AF
Date	2/26/2019 – 3/8/2019

9.4.1. 802.11a MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE (FCC) MOBILE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5180	-5.92	24.00	11.00
Mid	5200	-5.92	24.00	11.00
High	5240	-5.92	24.00	11.00

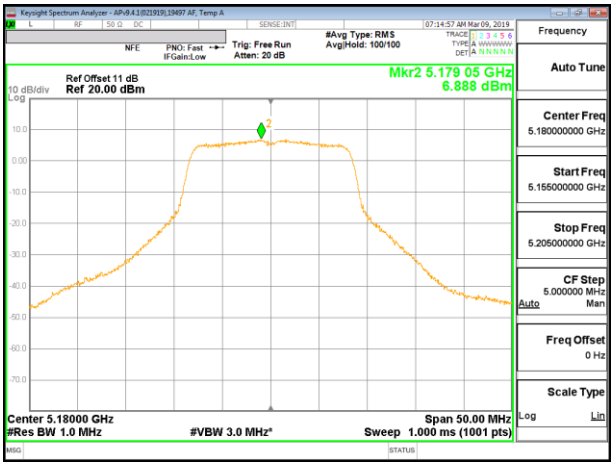
Duty Cycle CF (dB)	0.09	Included in Calculations of Corr'd PSD

Output Power Results

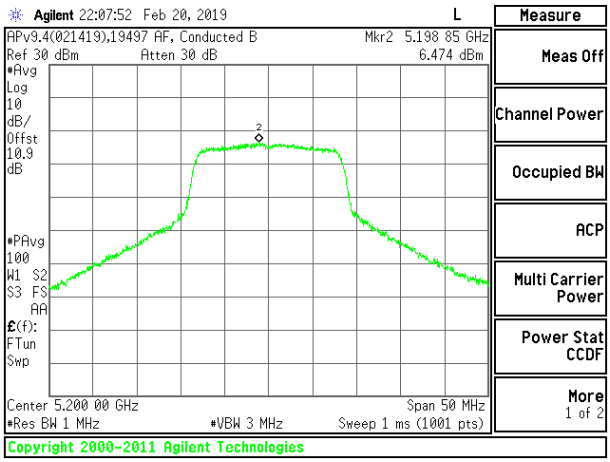
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	17.65	17.65	24.00	-6.35
Mid	5200	17.94	17.94	24.00	-6.06
High	5240	17.71	17.71	24.00	-6.29

PSD Results

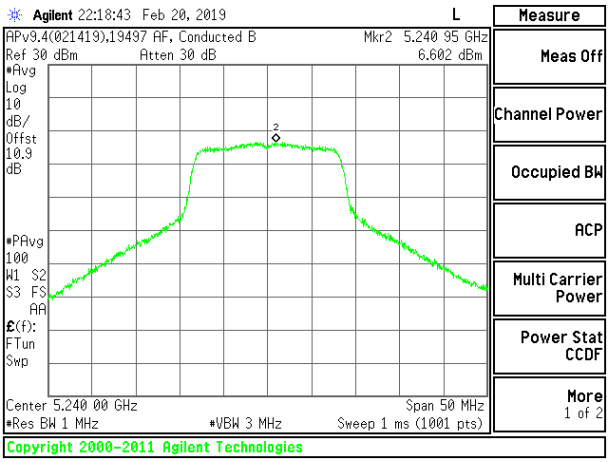
Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5180	6.888	6.98	11.00	-4.02
Mid	5200	6.474	6.56	11.00	-4.44
High	5240	6.602	6.69	11.00	-4.31



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.4.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE (FCC) MOBILE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5180	-5.92	24.00	11.00
Mid	5200	-5.92	24.00	11.00
High	5240	-5.92	24.00	11.00

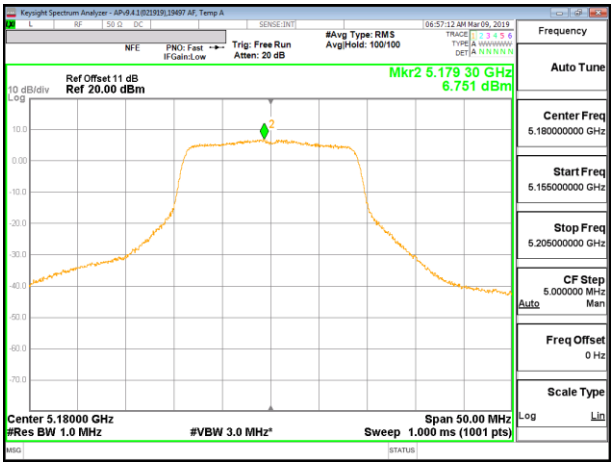
Duty Cycle CF (dB)	0.10	Included in Calculations of Corr'd PSD

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	18.48	18.48	24.00	-5.52
Mid	5200	18.58	18.58	24.00	-5.42
High	5240	18.83	18.83	24.00	-5.17

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5180	6.751	6.85	11.00	-4.15
Mid	5200	6.391	6.49	11.00	-4.51
High	5240	6.827	6.93	11.00	-4.07



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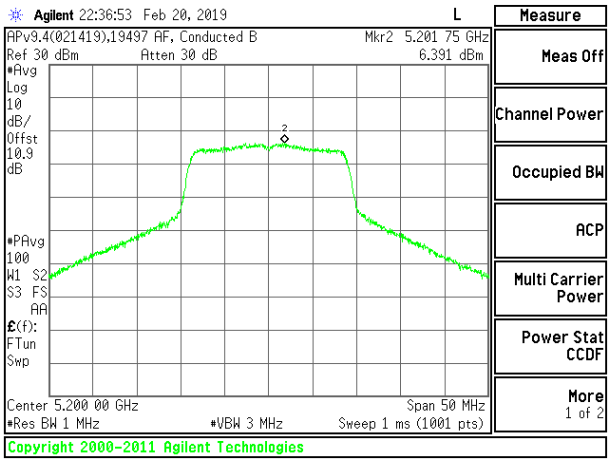
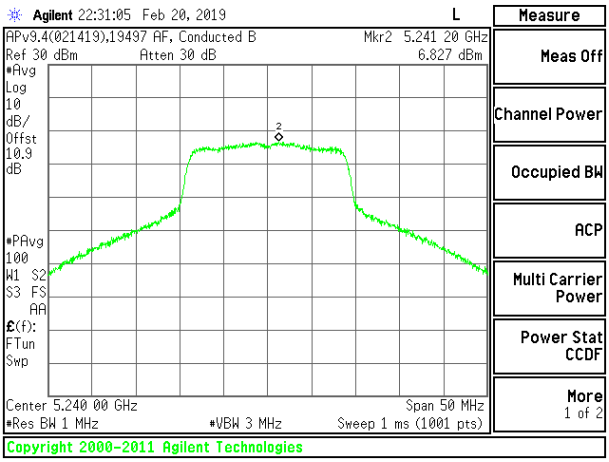


MID CHANNEL



HIGH CHANNEL

9.4.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE (FCC) MOBILE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5190	-5.92	24.00	11.00
High	5230	-5.92	24.00	11.00

Duty Cycle CF (dB)	0.19	Included in Calculations of Corr'd PSD

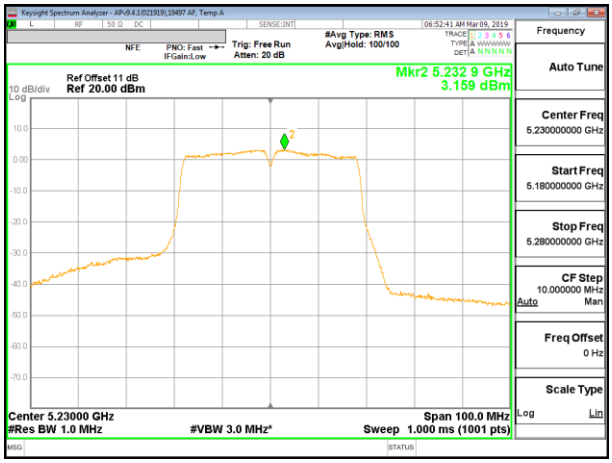
Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	15.97	15.97	24.00	-8.03
High	5230	17.76	17.76	24.00	-6.24

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5190	3.298	3.49	11.00	-7.51
High	5230	3.159	3.35	11.00	-7.65

LOW CHANNEL



HIGH CHANNEL

9.4.4. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE (FCC) MOBILE

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Mid	5210	-5.92	24.00	11.00

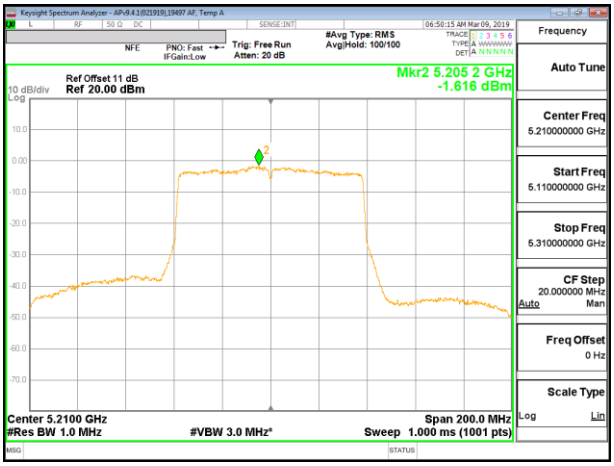
Duty Cycle CF (dB)	0.44	Included in Calculations of Corr'd PSD

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	15.22	15.22	24.00	-8.78

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Mid	5210	-1.616	-1.18	11.00	-12.18



MID CHANNEL

9.4.5. 802.11a MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE (FCC)

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5260	23.50	-6.50	24.00	11.00
Mid	5300	23.40	-6.50	24.00	11.00
High	5320	23.55	-6.50	24.00	11.00

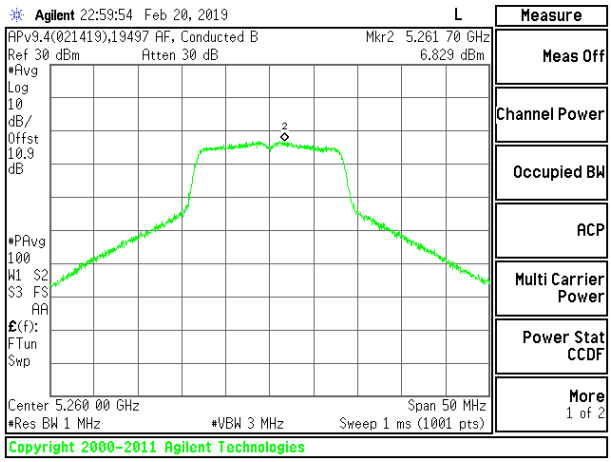
Duty Cycle CF (dB)	0.09	Included in Calculations of Corr'd PSD

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	17.51	17.51	24.00	-6.49
Mid	5300	17.66	17.66	24.00	-6.34
High	5320	17.58	17.58	24.00	-6.42

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5260	6.829	6.92	11.00	-4.08
Mid	5300	6.922	7.01	11.00	-3.99
High	5320	6.845	6.94	11.00	-4.07



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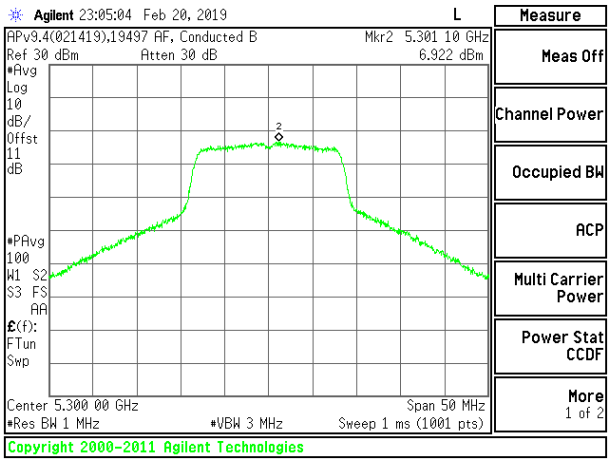

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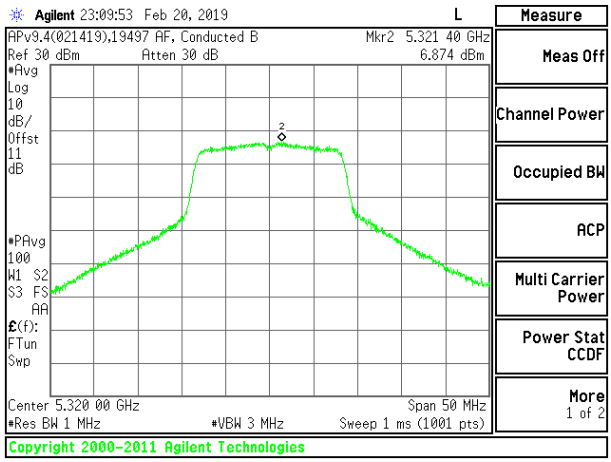


HIGH CHANNEL

9.4.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE (FCC)

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5260	24.80	-6.50	24.00	11.00
Mid	5300	24.60	-6.50	24.00	11.00
High	5320	24.25	-6.50	24.00	11.00

Duty Cycle CF (dB)	0.10	Included in Calculations of Corr'd PSD

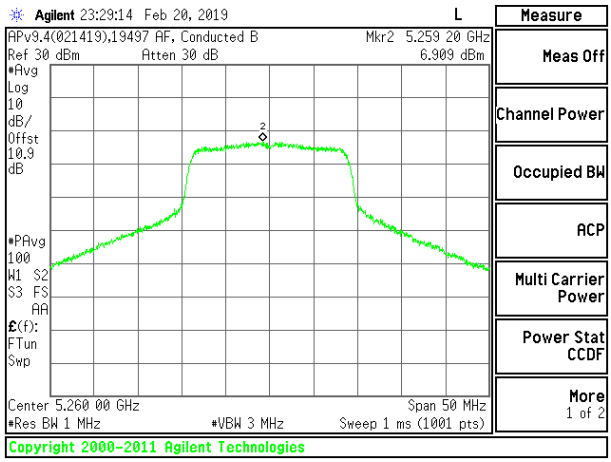
Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	18.52	18.52	24.00	-5.48
Mid	5300	18.69	18.69	24.00	-5.31
High	5320	18.83	18.83	24.00	-5.17

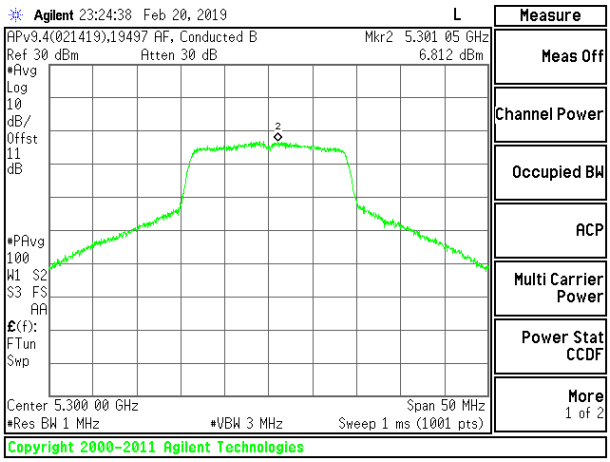
PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5260	6.909	7.01	11.00	-3.99
Mid	5300	6.812	6.91	11.00	-4.09
High	5320	7.022	7.12	11.00	-3.88

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888



LOW CHANNEL



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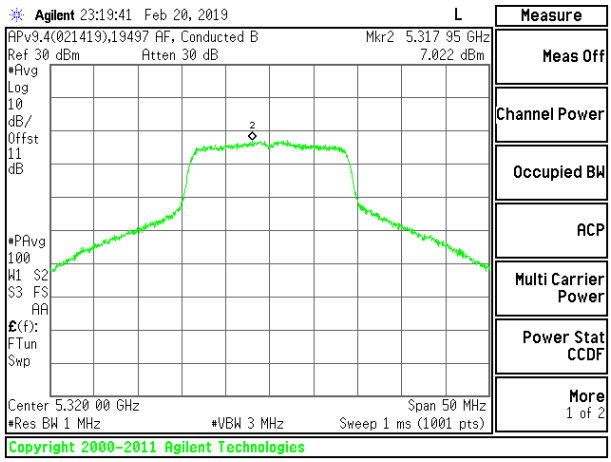


HIGH CHANNEL

9.4.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE (FCC)

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Low	5270	42.40	-6.50	24.00	11.00
High	5310	42.00	-6.50	24.00	11.00

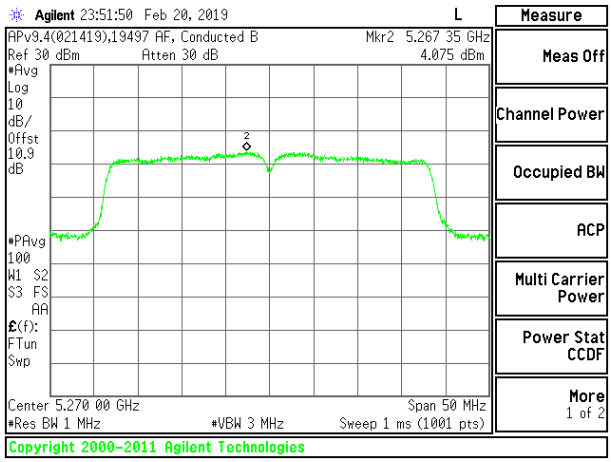
Duty Cycle CF (dB)	0.19	Included in Calculations of Corr'd PSD

Output Power Results

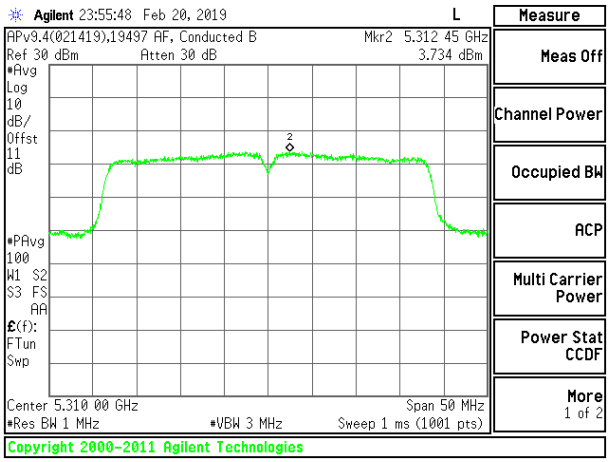
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	17.83	17.83	24.00	-6.17
High	5310	17.71	17.71	24.00	-6.29

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Low	5270	4.075	4.27	11.00	-6.74
High	5310	3.734	3.92	11.00	-7.08



LOW CHANNEL



HIGH CHANNEL

9.4.8. 802.11ac VHT80 MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE (FCC)

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/1MHz)
Mid	5290	85.20	-6.50	24.00	11.00

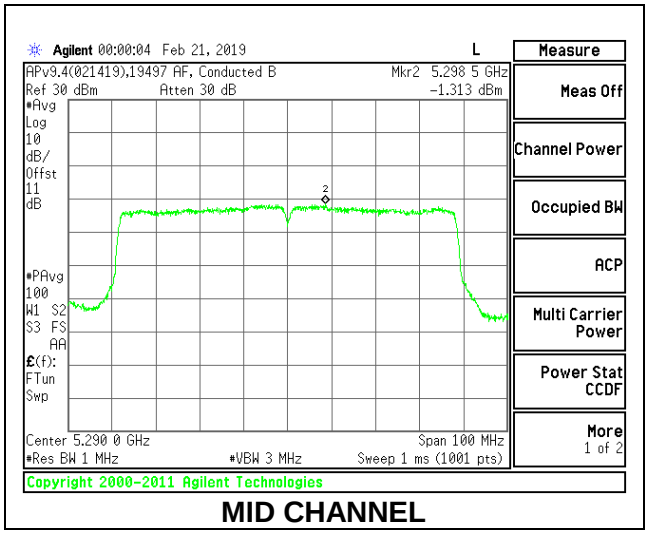
Duty Cycle CF (dB)	0.44	Included in Calculations of Corr'd PSD

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	15.80	15.80	24.00	-8.20

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/1MHz)	Total Corr'd PSD (dBm/1MHz)	PSD Limit (dBm/1MHz)	PSD Margin (dB)
Mid	5290	-1.313	-0.87	11.00	-11.87



MID CHANNEL

9.4.9. 802.11a MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE (FCC)

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5500	23.20	-5.92	24.00	11.00
Mid	5580	23.20	-5.92	24.00	11.00
High	5700	23.05	-5.92	24.00	11.00
144	5720	22.85	-5.92	24.00	11.00

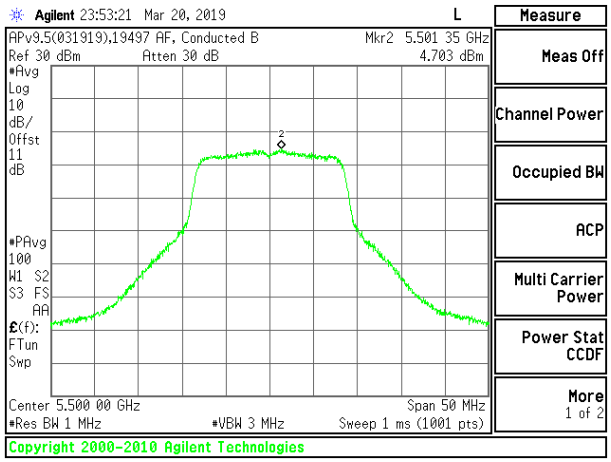
Duty Cycle CF (dB)	0.09	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	14.75	14.75	24.00	-9.25
Mid	5580	17.45	17.45	24.00	-6.55
High	5700	17.68	17.68	24.00	-6.32
144	5720	17.56	17.56	24.00	-6.44

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5500	4.703	4.79	11.00	-6.21
Mid	5580	5.848	5.94	11.00	-5.06
High	5700	5.923	6.01	11.00	-4.99
144	5720	6.374	6.46	11.00	-4.54



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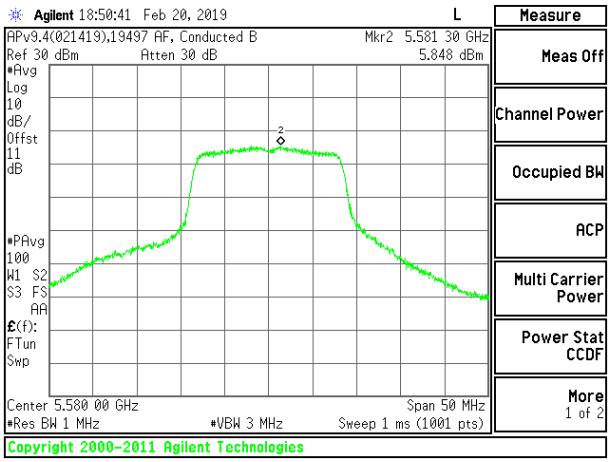

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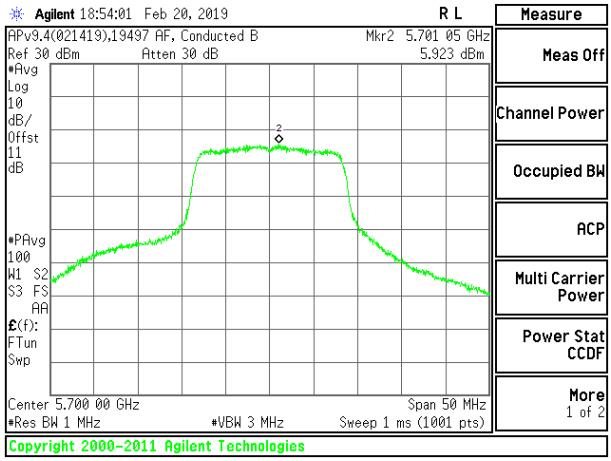
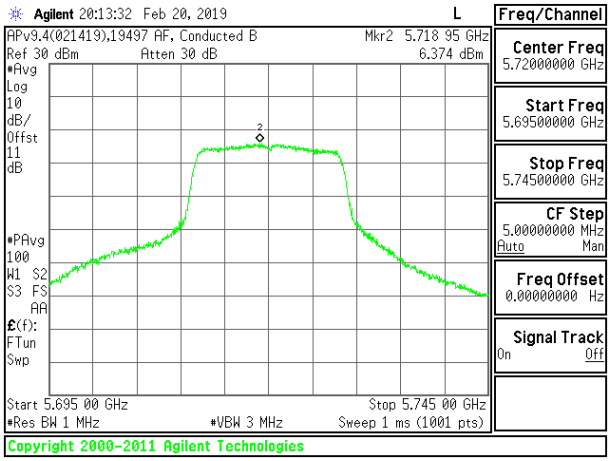


HIGH CHANNEL



CHANNEL 144

9.4.10. 802.11n HT20 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE (FCC)

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5500	25.40	-5.92	24.00	11.00
Mid	5580	25.30	-5.92	24.00	11.00
High	5700	24.55	-5.92	24.00	11.00
144	5720	25.20	-5.92	24.00	11.00

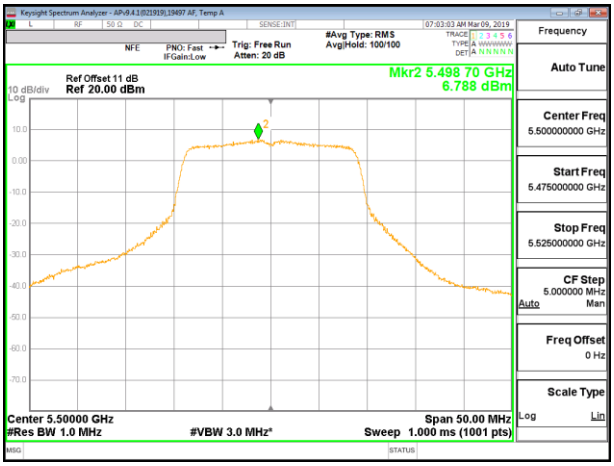
Duty Cycle CF (dB)	0.10	Included in Calculations of Corr'd Power & PSD

Output Power Results

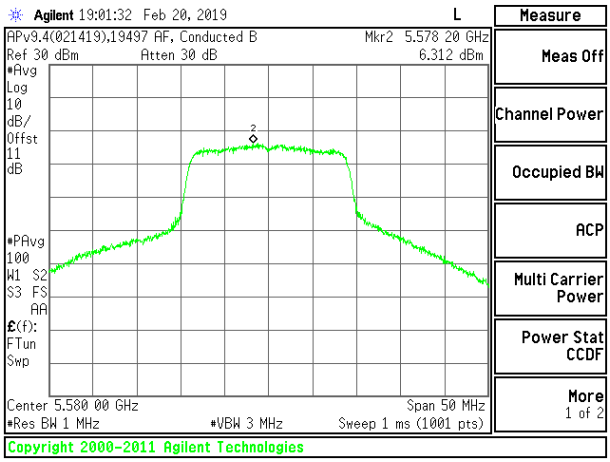
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	18.66	18.66	24.00	-5.34
Mid	5580	18.46	18.46	24.00	-5.54
High	5700	18.69	18.69	24.00	-5.31
144	5720	18.72	18.72	24.00	-5.28

PSD Results

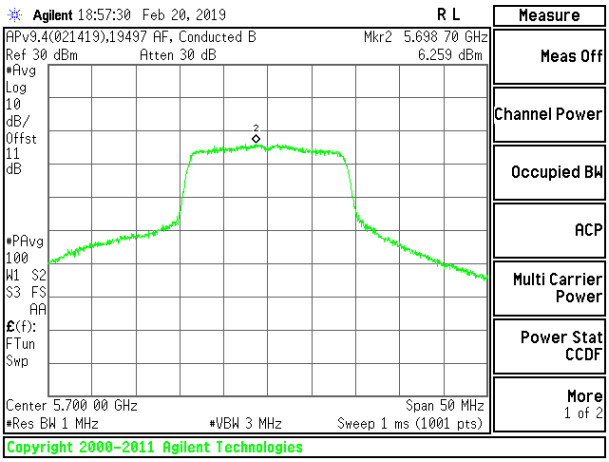
Channel	Frequency (MHz)	Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5500	6.788	6.89	11.00	-4.11
Mid	5580	6.312	6.41	11.00	-4.59
High	5700	6.259	6.36	11.00	-4.64
144	5720	6.672	6.77	11.00	-4.23



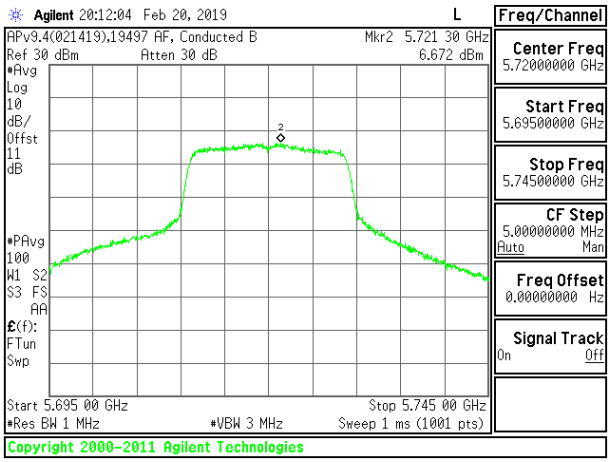
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



CHANNEL 144

9.4.11. 802.11n HT40 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE (FCC)

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5510	42.70	-5.92	24.00	11.00
Mid	5550	42.50	-5.92	24.00	11.00
High	5670	42.60	-5.92	24.00	11.00
142	5710	42.50	-5.92	24.00	11.00

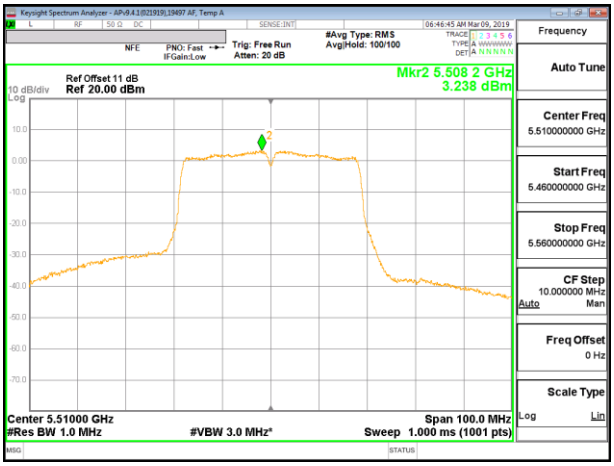
Duty Cycle CF (dB)	0.19	Included in Calculations of Corr'd Power & PSD

Output Power Results

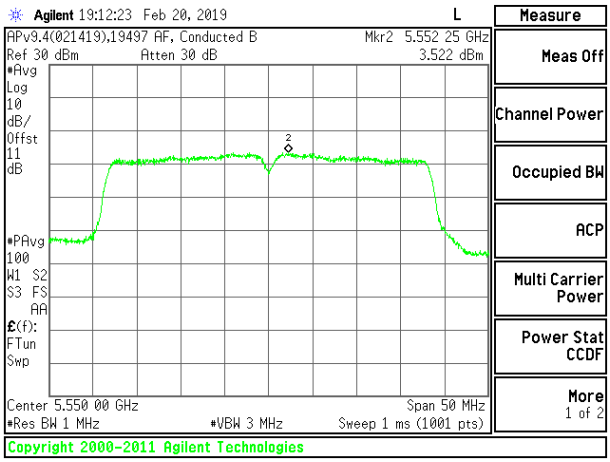
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	15.98	15.98	24.00	-8.02
Mid	5550	17.80	17.80	24.00	-6.20
High	5670	17.87	17.87	24.00	-6.13
142	5710	17.68	17.68	24.00	-6.32

PSD Results

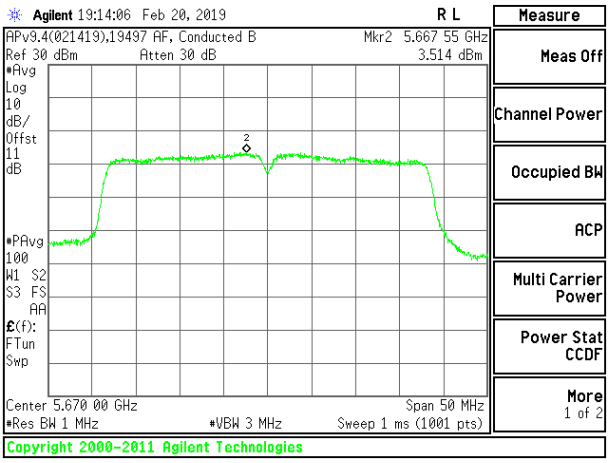
Channel	Frequency (MHz)	Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5510	3.238	3.43	11.00	-7.57
Mid	5550	3.522	3.71	11.00	-7.29
High	5670	3.514	3.70	11.00	-7.30
142	5710	2.344	2.53	11.00	-8.47



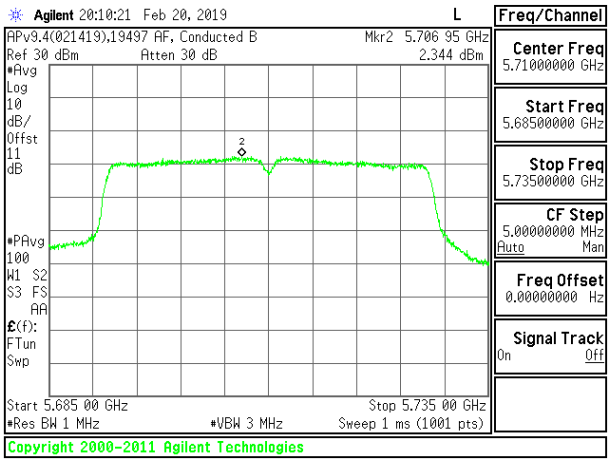
LOW CHANNEL



MID CHANNEL



HIGH CHANNEL



CHANNEL 142

9.4.12. 802.11ac VHT80 MODE IN THE 5.6 GHz BAND

1TX Antenna 1 MODE (FCC)

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Low	5530	84.60	-5.92	24.00	11.00
High	5610	84.80	-5.92	24.00	11.00
138	5690	84.80	-5.92	24.00	11.00

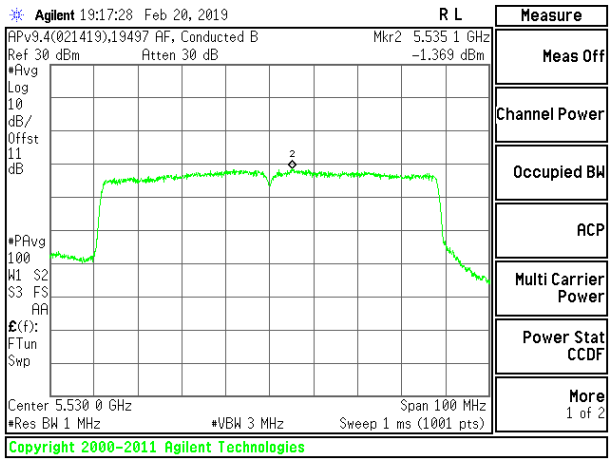
Duty Cycle CF (dB)	0.44	Included in Calculations of Corr'd Power & PSD

Output Power Results

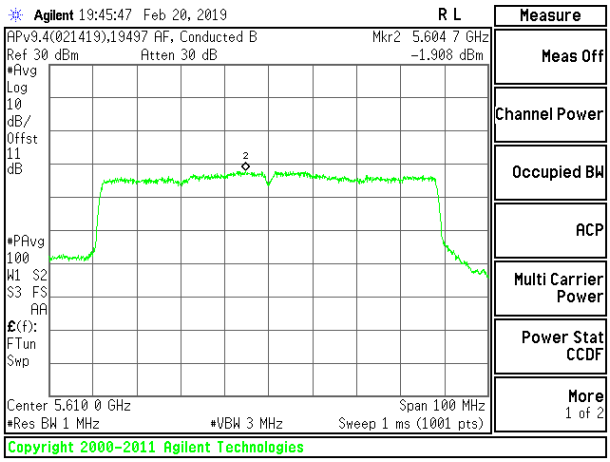
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5530	15.51	15.51	24.00	-8.49
High	5610	15.82	15.82	24.00	-8.18
138	5690	15.58	15.58	24.00	-8.42

PSD Results

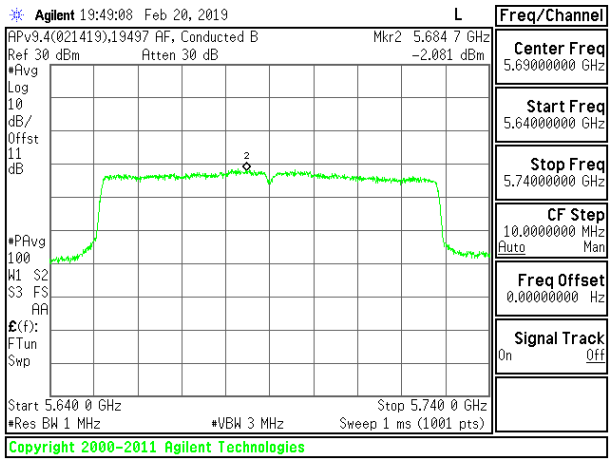
Channel	Frequency (MHz)	Meas PSD (dBm/ 1MHz)	Total Corr'd PSD (dBm/ 1MHz)	PSD Limit (dBm/ 1MHz)	PSD Margin (dB)
Low	5530	-1.369	-0.93	11.00	-11.93
High	5610	-1.908	-1.47	11.00	-12.47
138	5690	-2.081	-1.64	11.00	-12.64



LOW CHANNEL



HIGH CHANNEL



CHANNEL 138

9.4.13. 802.11a MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE (FCC)

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 500KHz)
Low	5745	-4.33	30.00	30.00
Mid	5785	-4.33	30.00	30.00
High	5825	-4.33	30.00	30.00

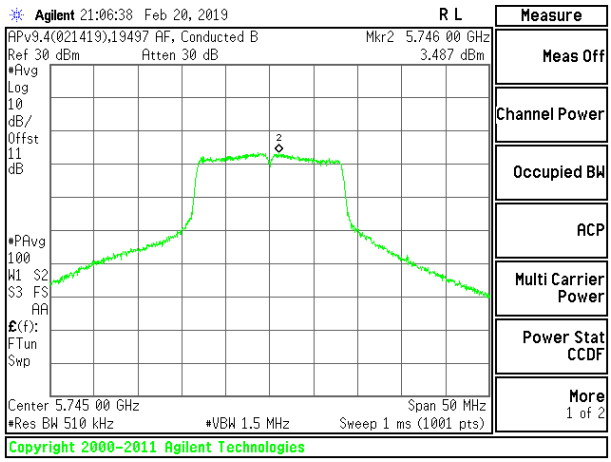
Duty Cycle CF (dB)	0.09	Included in Calculations of Corr'd PSD

Output Power Results

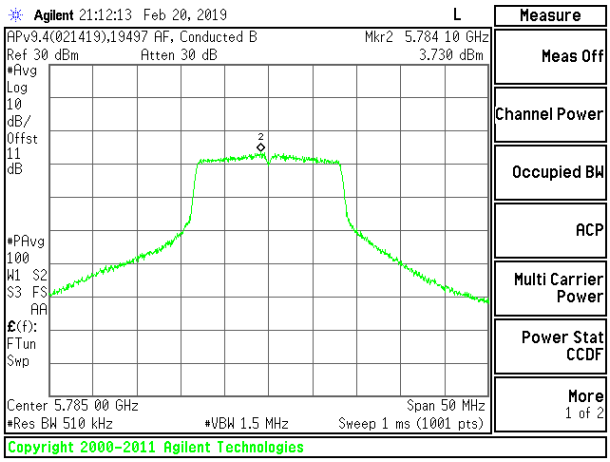
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	17.79	17.79	30.00	-12.21
Mid	5785	17.65	17.65	30.00	-12.35
High	5825	17.78	17.78	30.00	-12.22

PSD Results

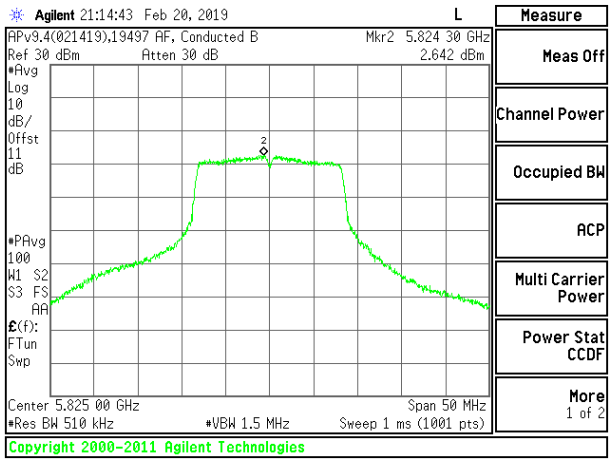
Channel	Frequency (MHz)	Meas PSD (dBm/ 500KHz)	Total Corr'd PSD (dBm/ 500KHz)	PSD Limit (dBm/ 500KHz)	PSD Margin (dB)
Low	5745	3.487	3.577	30.00	-26.42
Mid	5785	3.730	3.820	30.00	-26.18
High	5825	2.642	2.732	30.00	-27.27



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.4.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE (FCC)

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 500KHz)
Low	5745	-4.33	30.00	30.00
Mid	5785	-4.33	30.00	30.00
High	5825	-4.33	30.00	30.00

Duty Cycle CF (dB)	0.10	Included in Calculations of Corr'd PSD

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	18.85	18.85	30.00	-11.15
Mid	5785	18.79	18.79	30.00	-11.21
High	5825	18.49	18.49	30.00	-11.51

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/ 500KHz)	Total Corr'd PSD (dBm/ 500KHz)	PSD Limit (dBm/ 500KHz)	PSD Margin (dB)
Low	5745	3.879	3.979	30.00	-26.02
Mid	5785	3.276	3.376	30.00	-26.62
High	5825	3.270	3.370	30.00	-26.63

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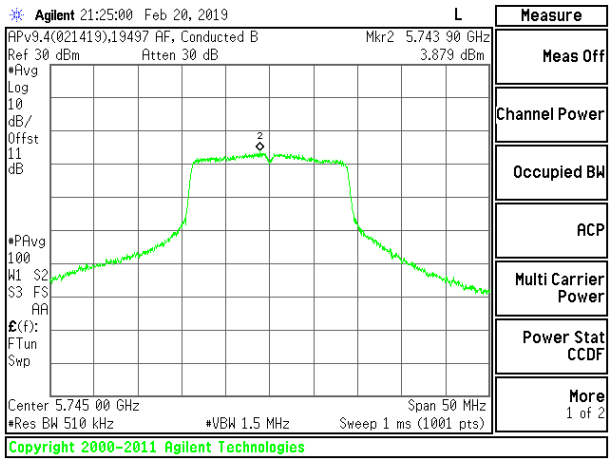
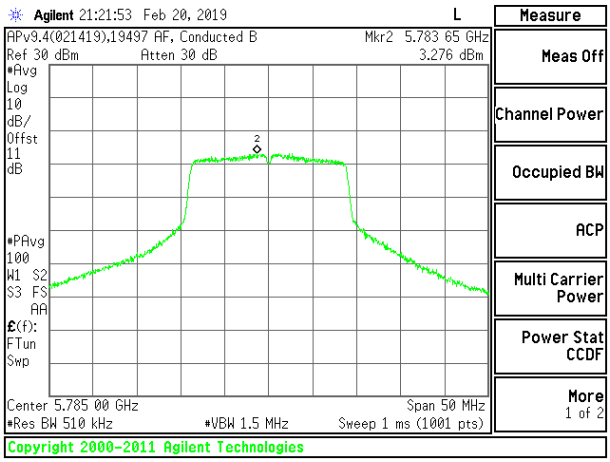
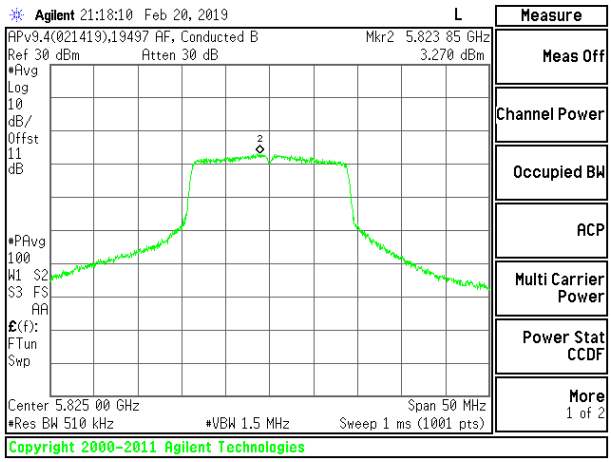


LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.4.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE (FCC)

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 500KHz)
Low	5755	-4.33	30.00	30.00
High	5795	-4.33	30.00	30.00

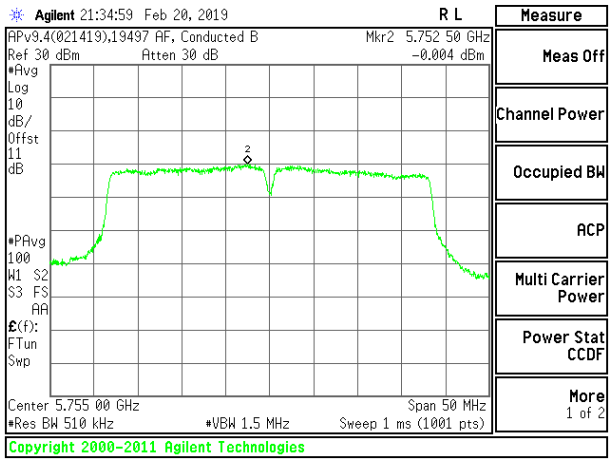
Duty Cycle CF (dB)	0.19	Included in Calculations of Corr'd PSD

Output Power Results

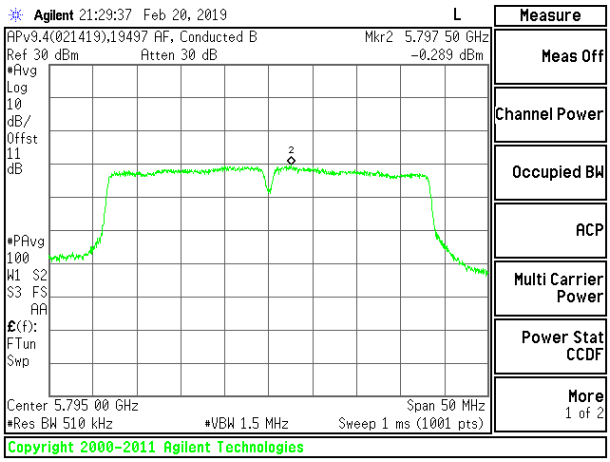
Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5755	17.51	17.51	30.00	-12.49
High	5795	17.60	17.60	30.00	-12.40

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/ 500KHz)	Total Corr'd PSD (dBm/ 500KHz)	PSD Limit (dBm/ 500KHz)	PSD Margin (dB)
Low	5755	-0.004	0.186	30.00	-29.81
High	5795	-0.289	-0.099	30.00	-30.10



LOW CHANNEL



HIGH CHANNEL

9.4.16. 802.11ac VHT80 MODE IN THE 5.8 GHz BAND

1TX Antenna 1 MODE (FCC)

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm/ 1MHz)
Mid	5775	-4.33	30.00	30.00

Duty Cycle CF (dB)	0.44	Included in Calculations of Corr'd PSD

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5775	15.89	15.89	30.00	-14.11

PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/ 500KHz)	Total Corr'd PSD (dBm/ 500KHz)	PSD Limit (dBm/ 500KHz)	PSD Margin (dB)
Mid	5775	-5.409	-4.969	30.00	-34.97

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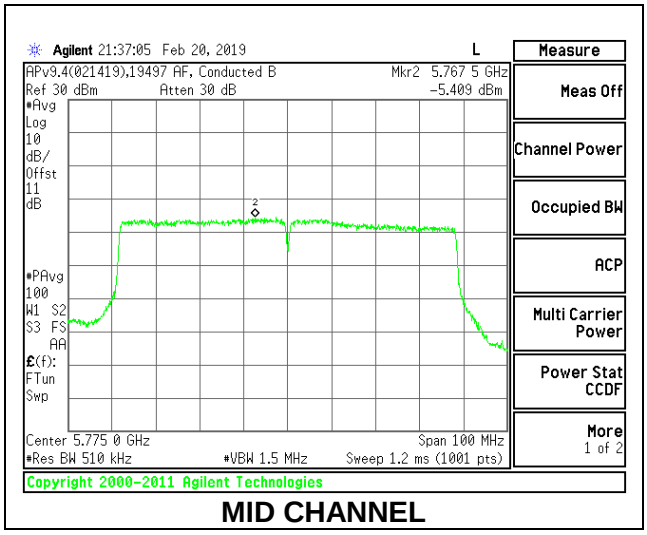

MID CHANNEL

10. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209 -Restriced bands

FCC §15.407(b)(1-3) -Un-Restriced bands

After January 01, 2019 for Outside of the Restricted Bands Emissions

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

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

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

The spectrum from 30 MHz to 1GHz and 18GHz to 40 GHz is investigated with the transmitter set to transmit at the channel with highest output power as worst-case scenario. 1GHz to 18GHz was set to the lowest, middle, and highest channels in the 5 GHz bands.

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

2D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

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KDB 414788 OFS and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

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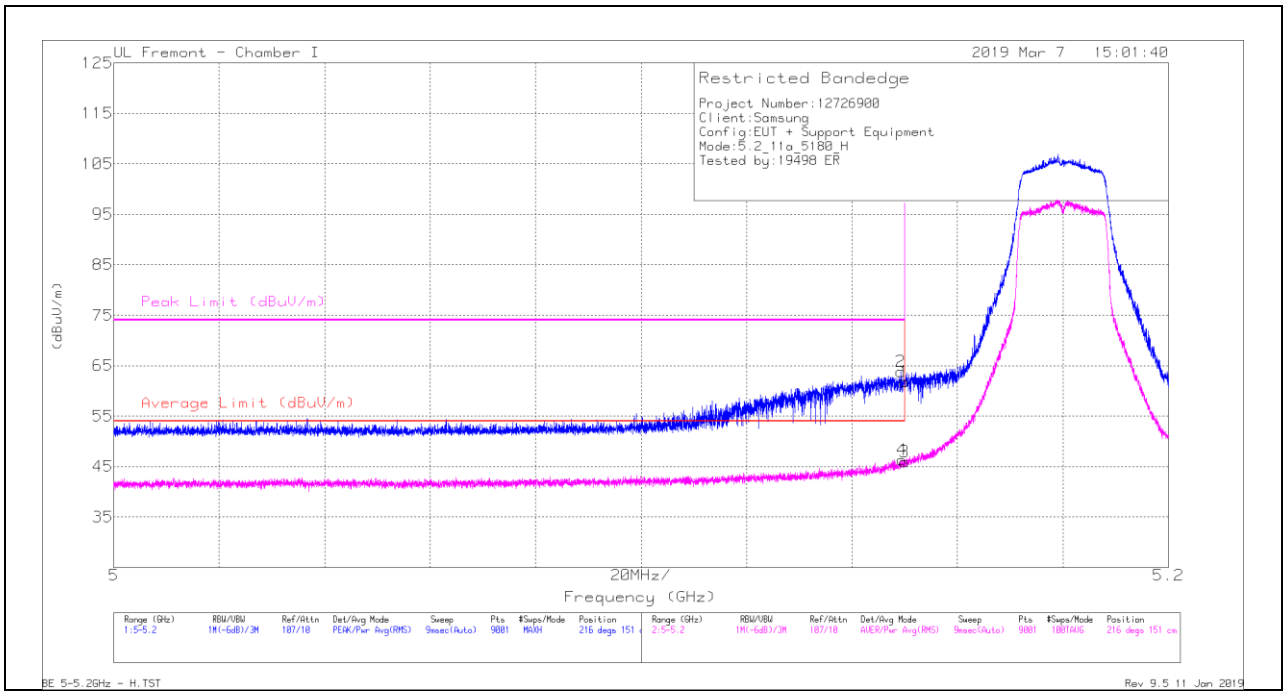
10.1. TRANSMITTER ABOVE 1 GHz

10.1.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

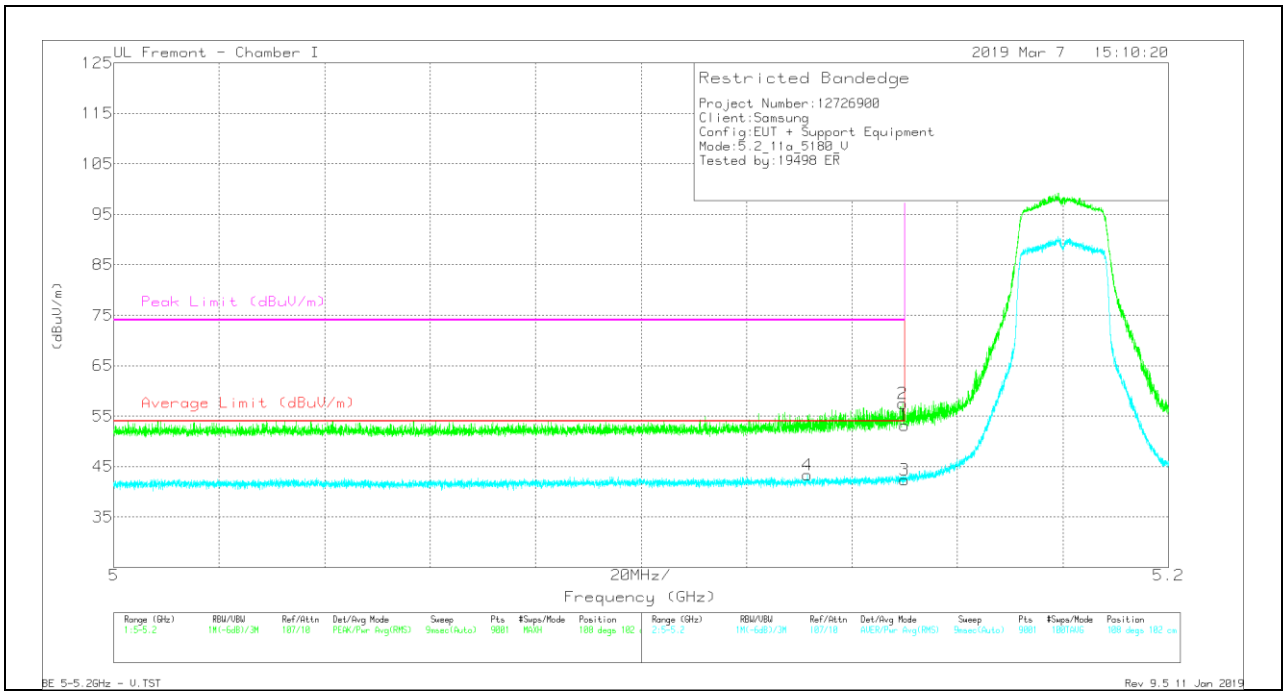


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	46.42	Pk	34.4	-19	0	61.82	-	-	74	-12.18	216	151	H
2	* 5.149	48.39	Pk	34.4	-19	0	63.79	-	-	74	-10.21	216	151	H
3	* 5.15	30.48	RMS	34.4	-19	.09	45.97	54	-8.03	-	-	216	151	H
4	* 5.15	30.78	RMS	34.4	-19	.09	46.27	54	-7.73	-	-	216	151	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



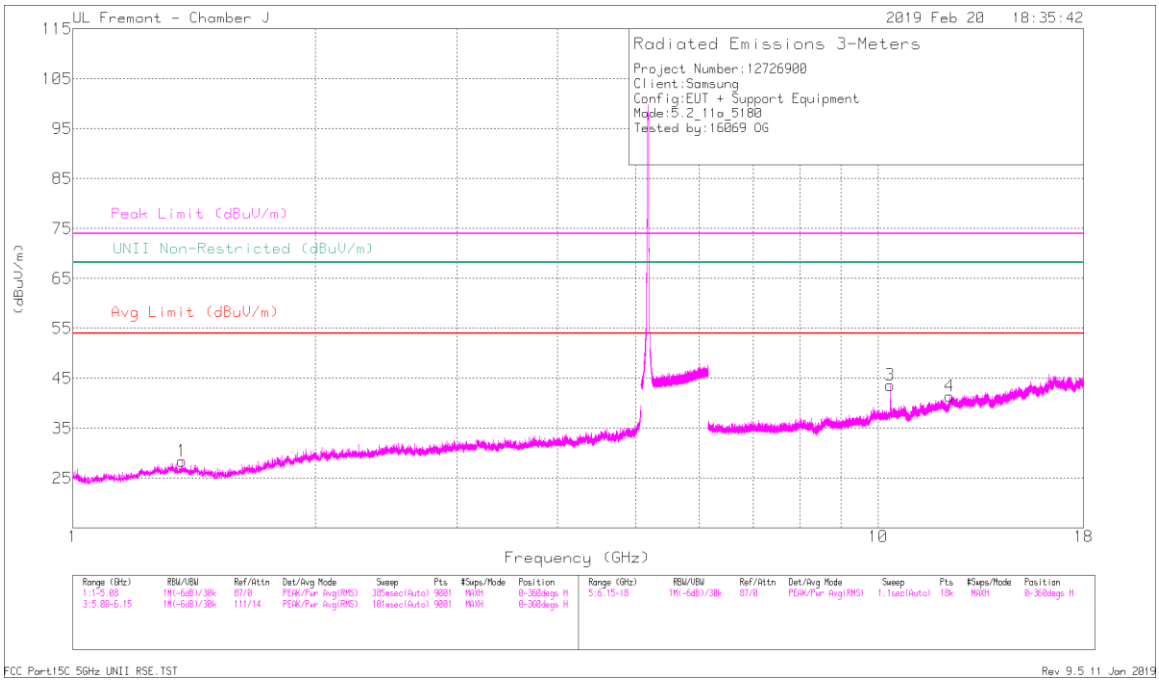
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	37.73	Pk	34.4	-19	0	53.13	-	-	74	-20.87	108	102	V
2	* 5.15	42.06	Pk	34.4	-19	0	57.46	-	-	74	-16.54	108	102	V
3	* 5.15	26.83	RMS	34.4	-19	.09	42.32	54	-11.68	-	-	108	102	V
4	* 5.132	27.93	RMS	34.3	-19	.09	43.32	54	-10.68	-	-	108	102	V

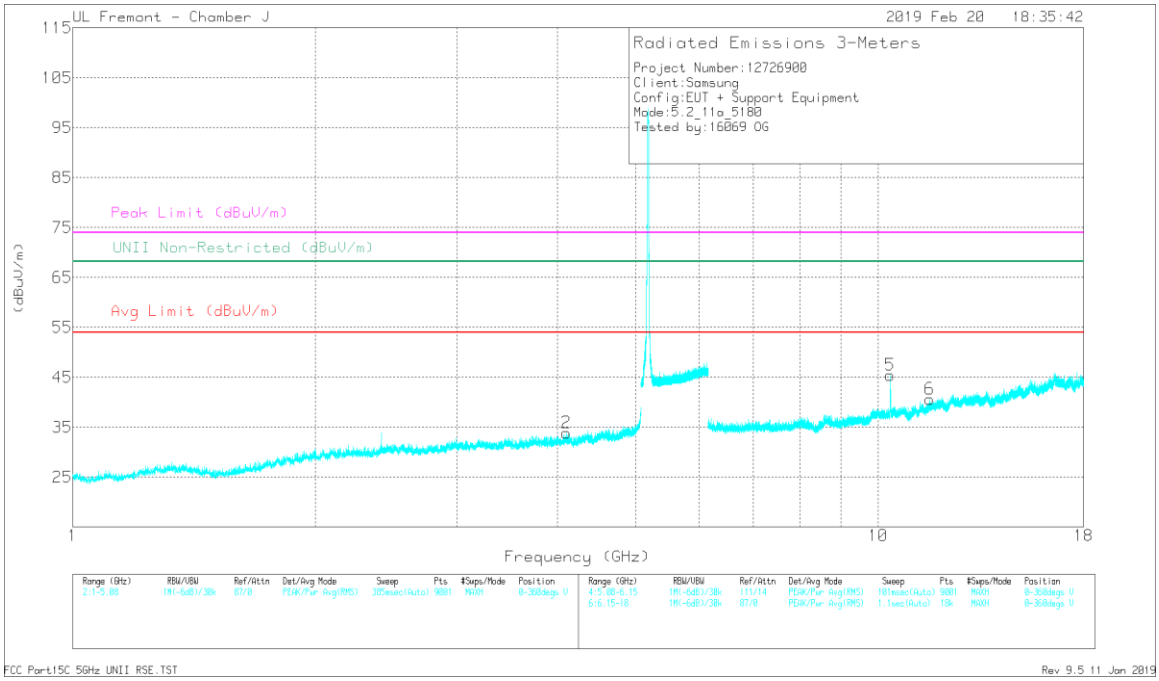
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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
* 1.365	41.91	PK-U	29.2	-35.9	0	35.21	-	-	74	-38.79	-	-	19	171	H
* 1.366	31.63	ADR	29.2	-35.9	.09	25.02	54	-28.98	-	-	-	-	19	171	H
* 4.103	39.46	PK-U	33.6	-32.1	0	40.96	-	-	74	-33.04	-	-	48	258	V
* 4.102	29.47	ADR	33.6	-32.1	.09	31.06	54	-22.94	-	-	-	-	48	258	V
10.36	34.78	PK-U	37.5	-25.5	0	46.78	-	-	-	-	68.2	-21.42	48	104	H
* 12.281	32.35	PK-U	38.8	-22.9	0	48.25	-	-	74	-25.75	-	-	4	309	H
* 12.284	22.54	ADR	38.8	-22.9	.09	38.53	54	-15.47	-	-	-	-	4	309	H
10.36	38.98	PK-U	37.5	-25.5	0	50.98	-	-	-	-	68.2	-17.22	166	130	V
* 11.594	33.06	PK-U	38.4	-23.4	0	48.06	-	-	74	-25.94	-	-	306	296	V
* 11.597	22.87	ADR	38.4	-23.4	.09	37.96	54	-16.04	-	-	-	-	306	296	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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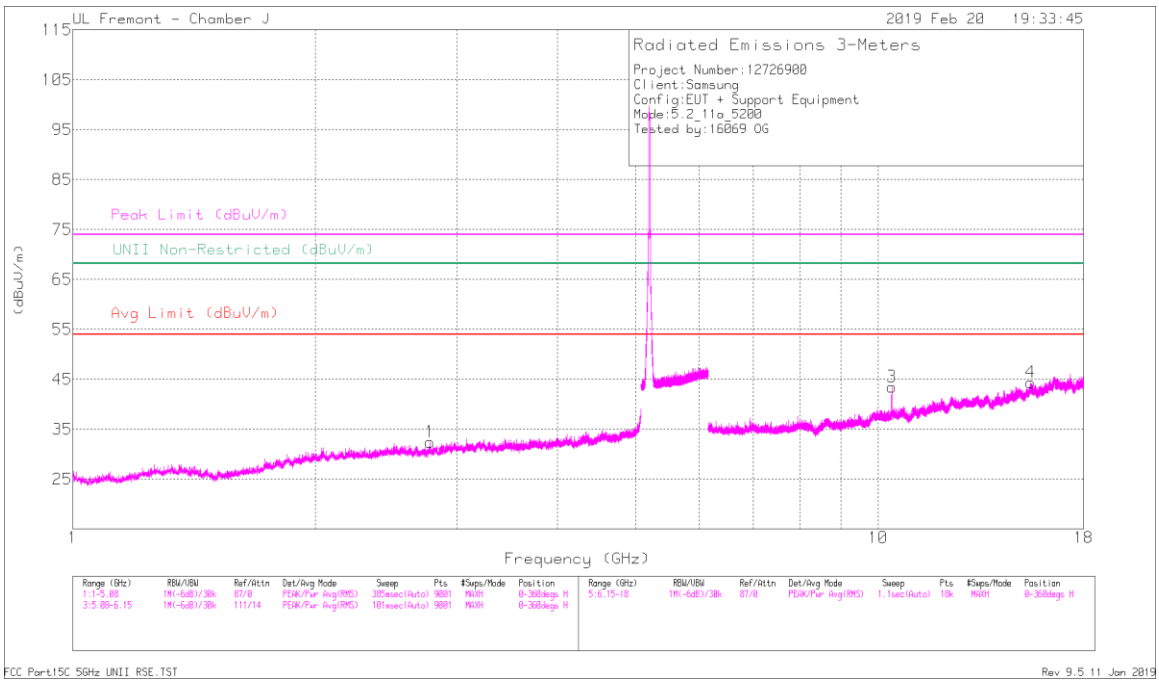
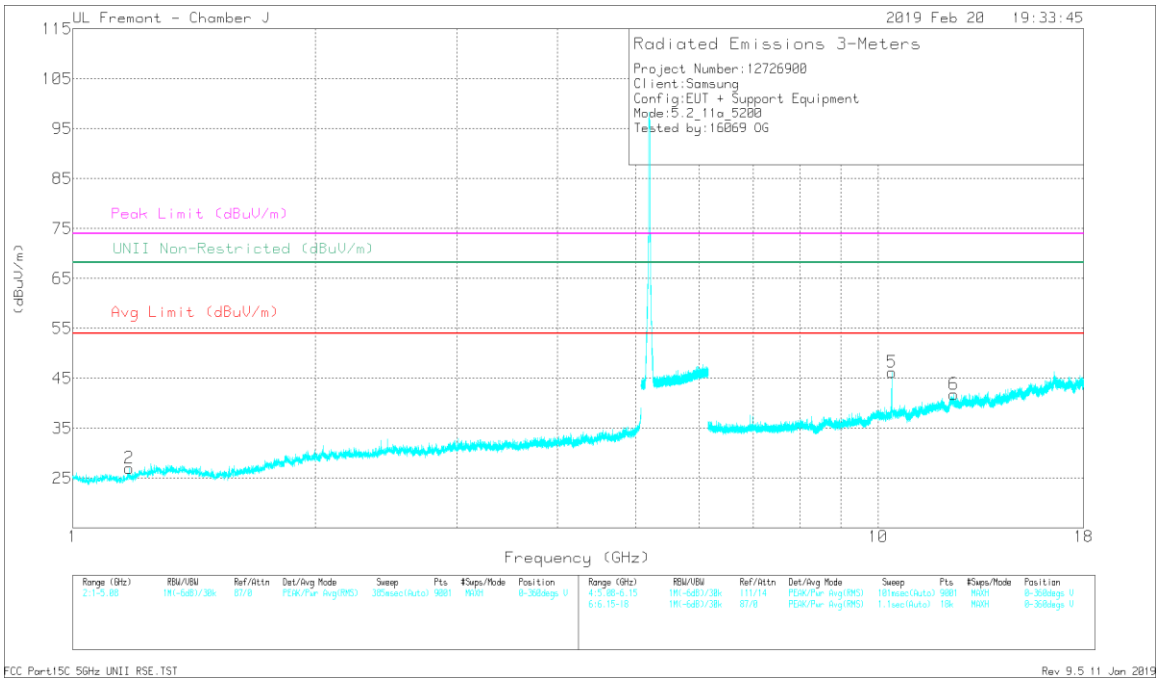
MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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
* 2.779	41.7	PK-U	32.4	-35	0	39.1	-	-	74	-34.9	-	-	7	176	H
* 2.777	32	ADR	32.4	-35	.09	29.49	54	-24.51	-	-	-	-	7	176	H
* 1.176	41.86	PK-U	27.9	-35.8	0	33.96	-	-	74	-40.04	-	-	227	250	V
* 1.174	31.47	ADR	27.9	-35.8	.09	23.66	54	-30.34	-	-	-	-	227	250	V
* 15.474	31.21	PK-U	40.1	-20	0	51.31	-	-	74	-22.69	-	-	115	146	H
* 15.471	20.91	ADR	40.1	-20	.09	41.1	54	-12.9	-	-	-	-	115	146	H
10.399	33.65	PK-U	37.5	-25.3	0	45.85	-	-	-	-	68.2	-22.35	2	189	H
* 12.424	32.31	PK-U	38.9	-22.8	0	48.41	-	-	74	-25.59	-	-	136	252	V
* 12.425	22.05	ADR	38.9	-22.8	.09	38.24	54	-15.76	-	-	-	-	136	252	V
10.4	33.93	PK-U	37.5	-25.3	0	46.13	-	-	-	-	68.2	-22.07	202	147	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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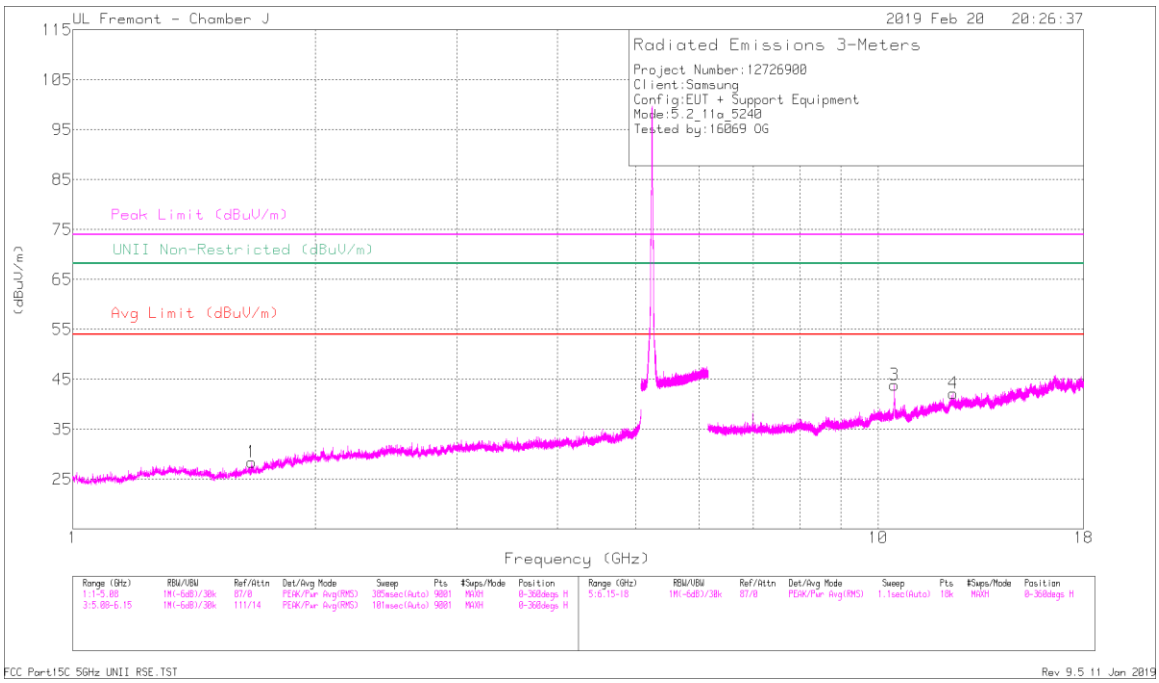
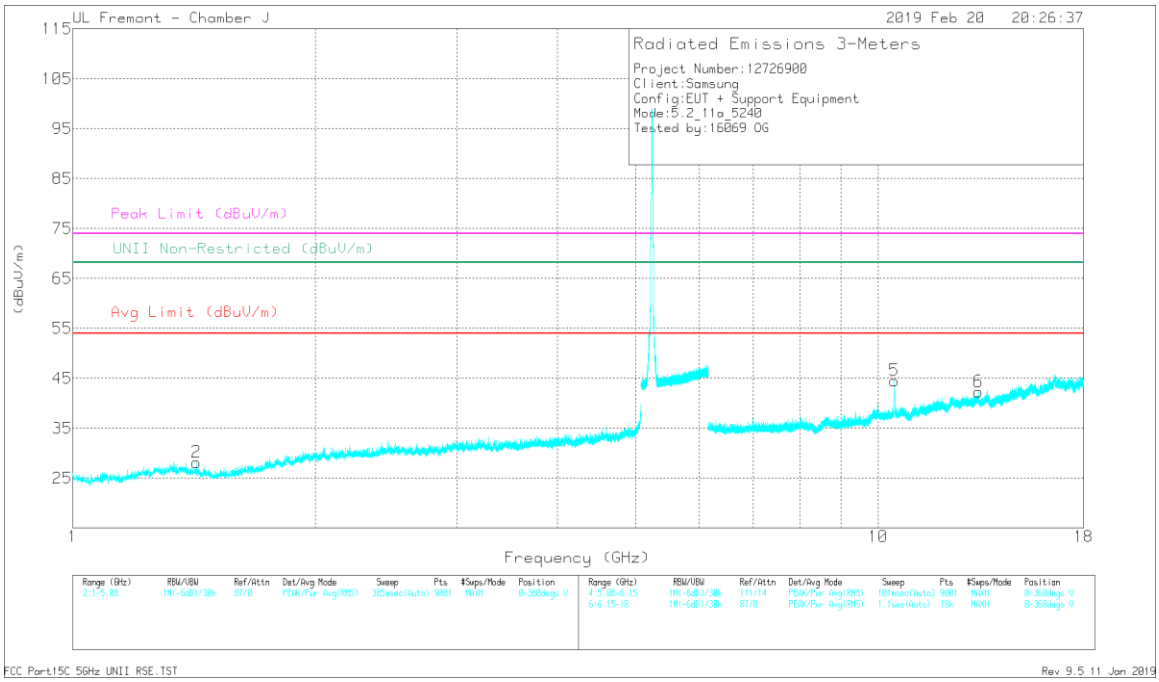
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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
* 1.666	42.18	PK-U	28.9	-35.9	0	35.18	-	-	74	-38.82	-	-	326	344	H
* 1.665	31.47	ADR	28.9	-35.9	.09	24.56	54	-29.44	-	-	-	-	326	344	H
* 1.425	42.19	PK-U	28.7	-35.9	0	34.99	-	-	74	-39.01	-	-	161	235	V
* 1.425	31.68	ADR	28.7	-35.9	.09	24.57	54	-29.43	-	-	-	-	161	235	V
* 12.391	32.65	PK-U	38.8	-22.7	0	48.75	-	-	74	-25.25	-	-	269	373	H
* 12.39	22.92	ADR	38.8	-22.7	.09	39.11	54	-14.89	-	-	-	-	269	373	H
10.479	40.35	PK-U	37.5	-25.3	0	52.55	-	-	-	-	68.2	-15.65	165	106	H
* 13.334	31.42	PK-U	39	-21.9	0	48.52	-	-	74	-25.48	-	-	124	150	V
* 13.332	21.44	ADR	39	-21.8	.09	38.73	54	-15.27	-	-	-	-	124	150	V
10.479	41.83	PK-U	37.5	-25.3	0	54.03	-	-	-	-	68.2	-14.17	179	109	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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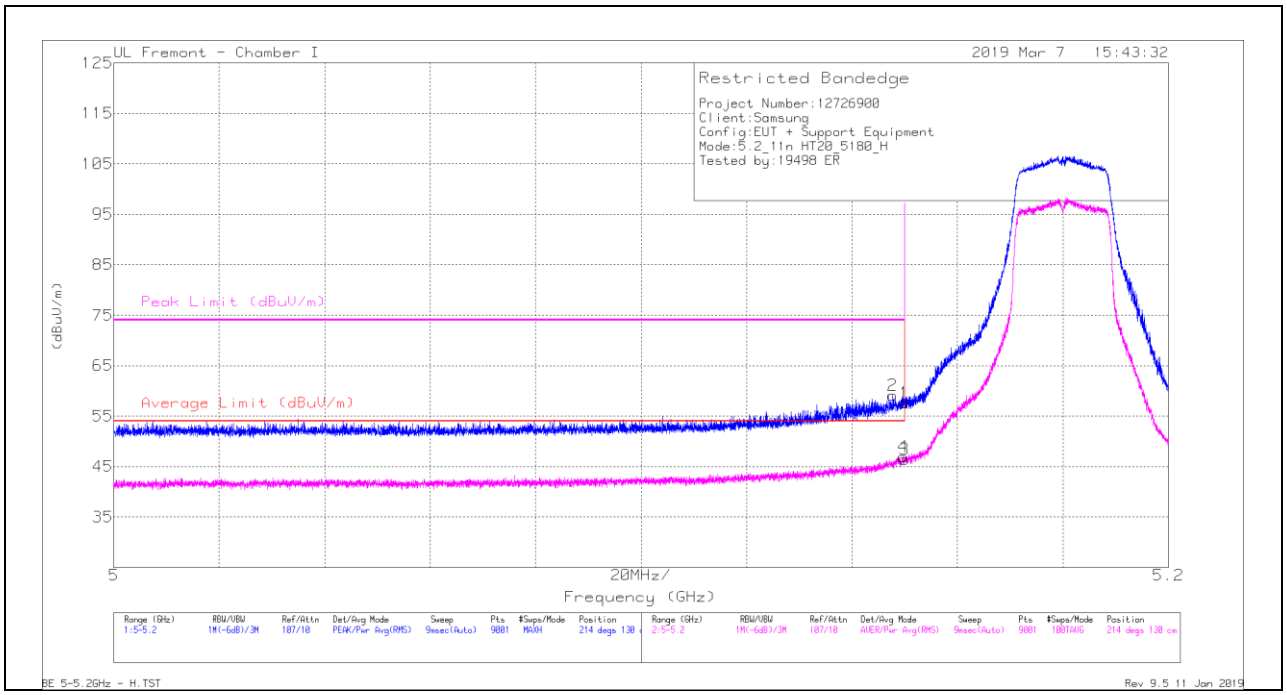
10.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

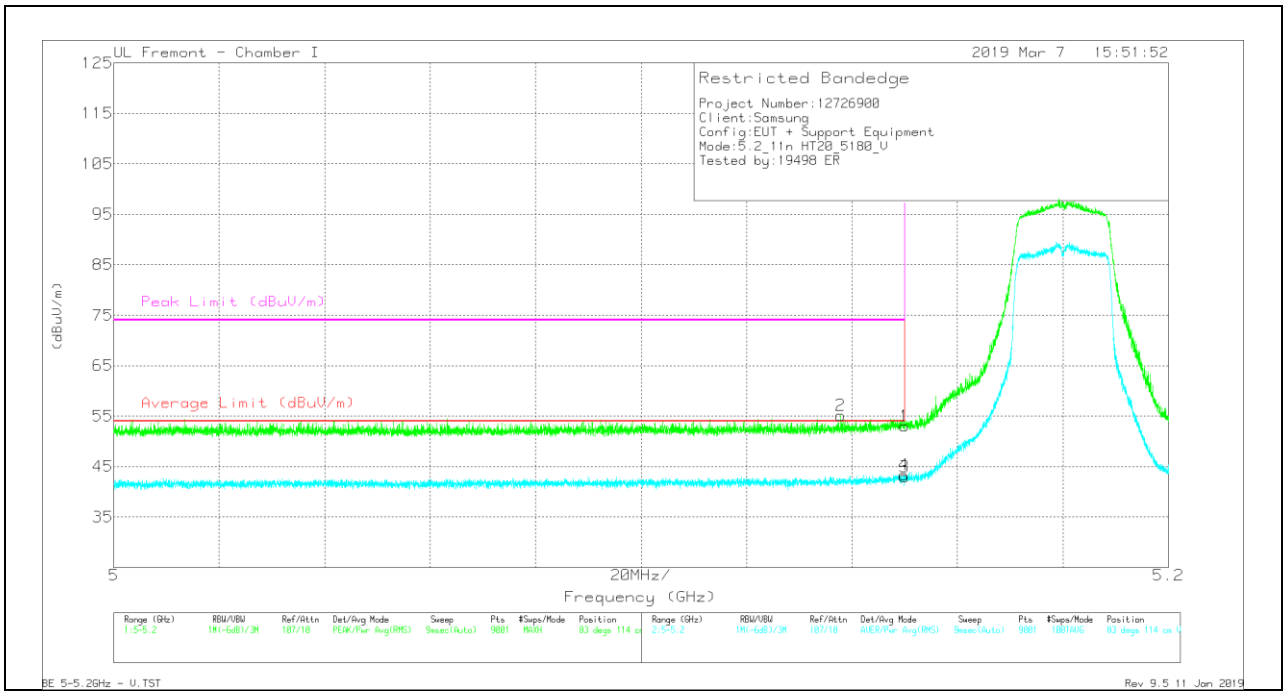


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	42.2	Pk	34.4	-19	0	57.6	-	-	74	-16.4	214	130	H
2	* 5.148	43.76	Pk	34.4	-19	0	59.16	-	-	74	-14.84	214	130	H
3	* 5.15	30.95	RMS	34.4	-19	.1	46.45	54	-7.55	-	-	214	130	H
4	* 5.15	31.41	RMS	34.4	-19	.1	46.91	54	-7.09	-	-	214	130	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



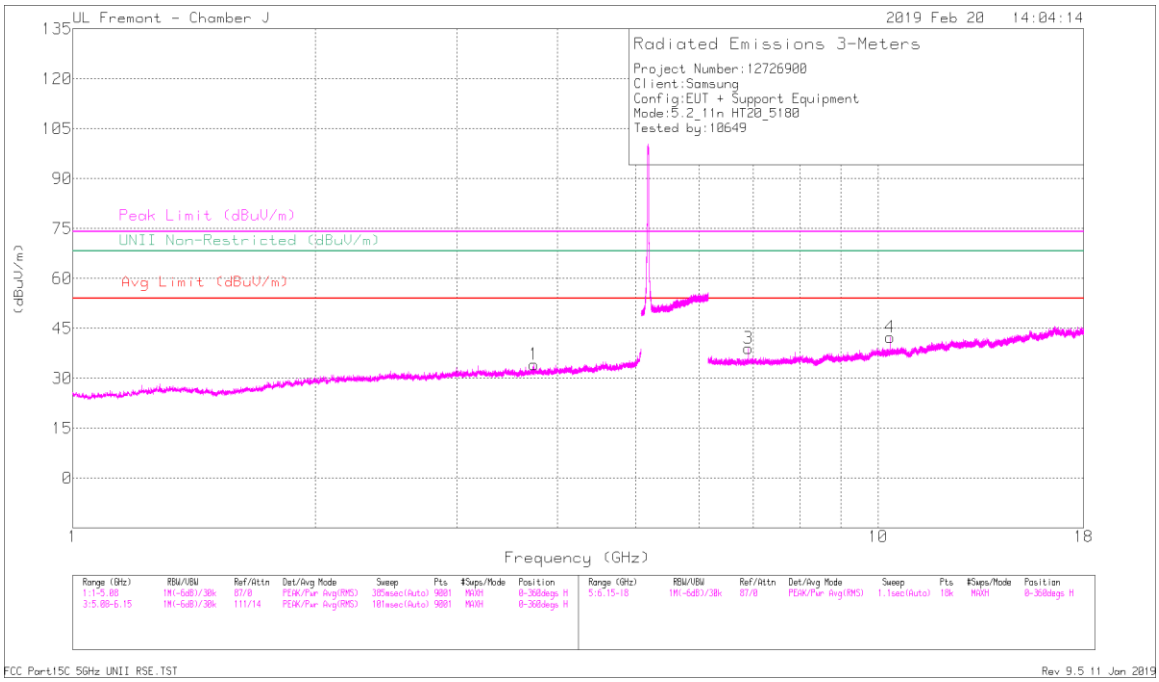
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	37.63	Pk	34.4	-19	0	53.03	-	-	74	-20.97	83	114	V
2	* 5.138	39.78	Pk	34.4	-19	0	55.18	-	-	74	-18.82	83	114	V
3	* 5.15	27.49	RMS	34.4	-19	.1	42.99	54	-11.01	-	-	83	114	V
4	* 5.15	27.86	RMS	34.4	-19	.1	43.36	54	-10.64	-	-	83	114	V

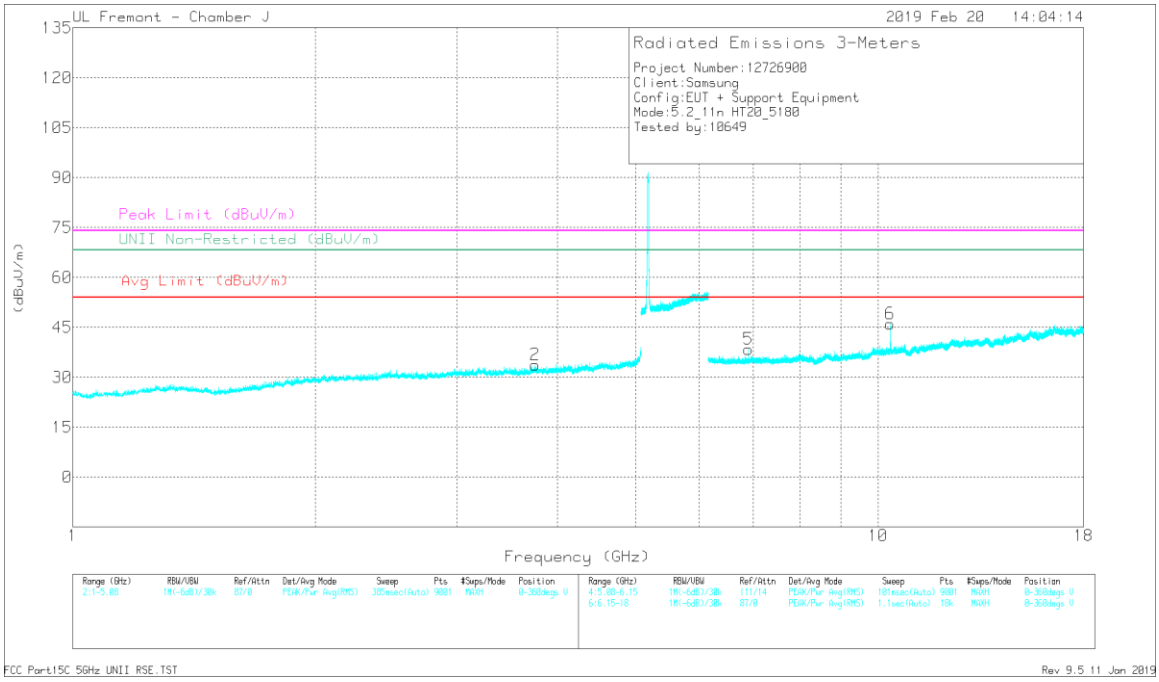
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Ampl/Cbl/Fltr/Pad (dB)	DC Corr (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	* 3.741	40.26	PK-U	33.4	-33.2	0	40.46	-	-	74	-33.54	-	-	314	130	H
	* 3.739	29.99	ADR	33.4	-33.2	.1	30.29	54	-23.71	-	-	-	-	314	130	H
2	* 3.752	40.33	PK-U	33.4	-33.1	0	40.63	-	-	74	-33.37	-	-	283	276	V
	* 3.75	30.36	ADR	33.4	-33.1	.1	30.76	54	-23.24	-	-	-	-	283	276	V
3	6.907	37.01	PK-U	35.6	-27.7	0	44.91	-	-	-	-	68.2	-23.29	204	108	H
4	10.36	36.36	PK-U	37.5	-25.5	0	48.36	-	-	-	-	68.2	-19.84	321	125	H
5	6.907	36.76	PK-U	35.6	-27.7	0	44.66	-	-	-	-	68.2	-23.54	342	117	V
6	10.36	39.92	PK-U	37.5	-25.5	0	51.92	-	-	-	-	68.2	-16.28	38	105	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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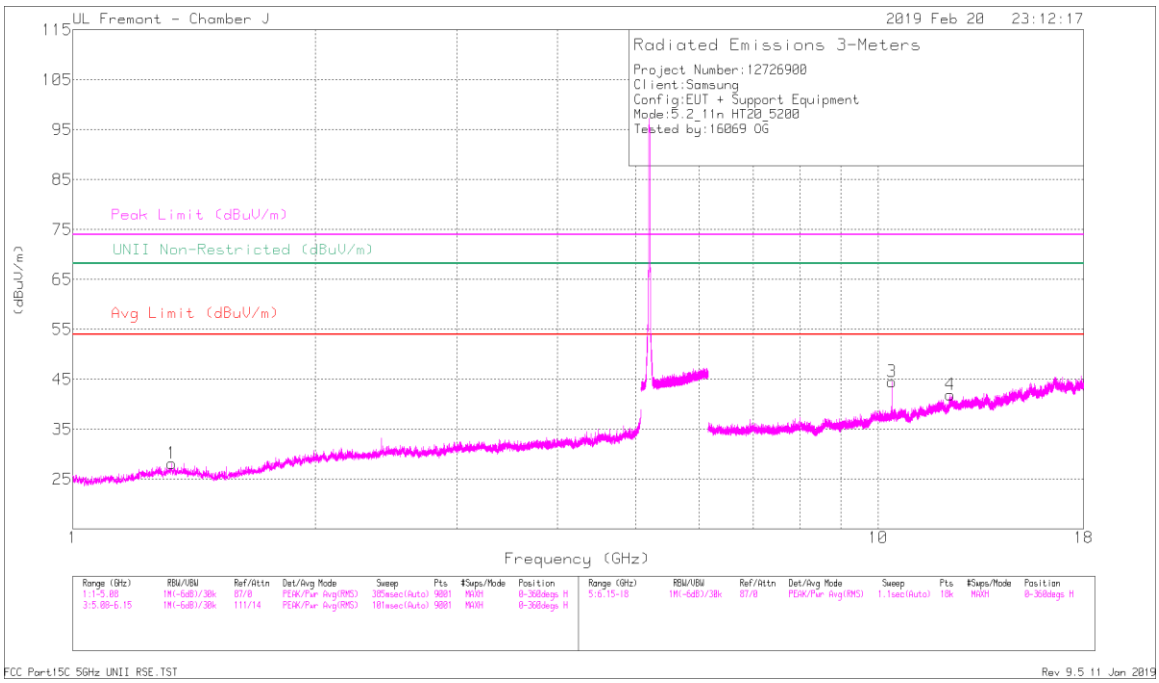
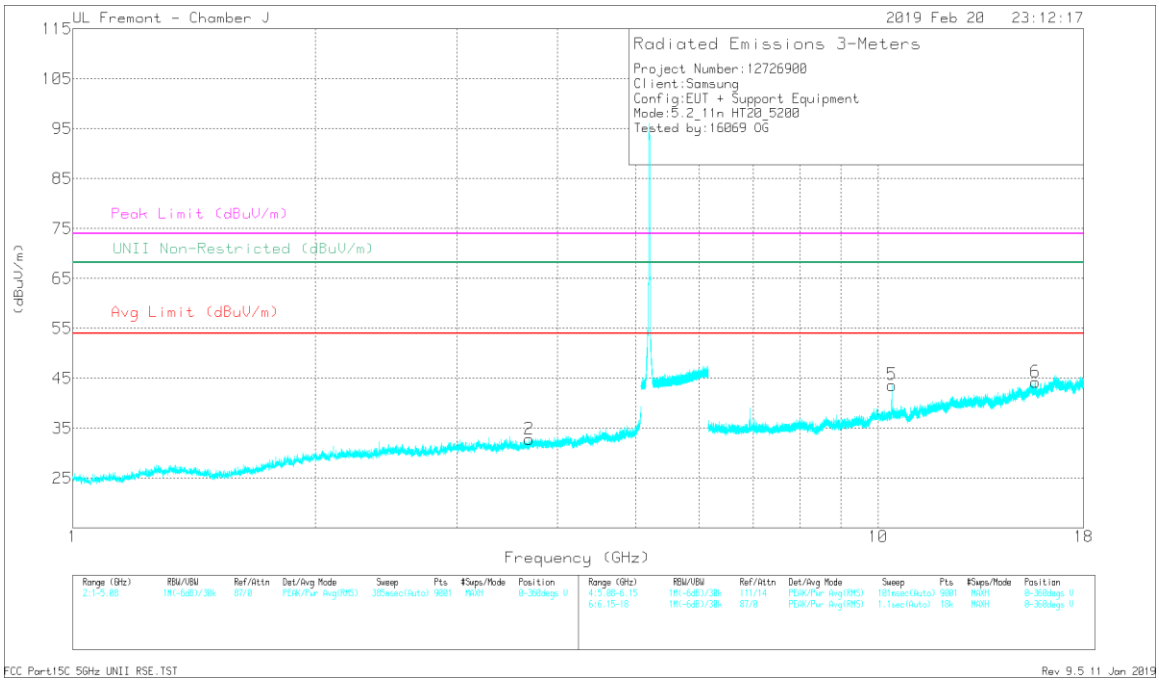
MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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
* 1.326	41.38	PK-U	29.3	-35.8	0	34.88	-	-	74	-39.12	-	-	348	184	H
* 1.327	32.15	ADR	29.3	-35.8	.1	25.75	54	-28.25	-	-	-	-	348	184	H
* 3.69	40.72	PK-U	33.3	-33.5	0	40.52	-	-	74	-33.48	-	-	138	369	V
* 3.688	30.28	ADR	33.2	-33.5	.1	30.08	54	-23.92	-	-	-	-	138	369	V
* 12.301	32.68	PK-U	38.8	-22.8	0	48.68	-	-	74	-25.32	-	-	294	258	H
* 12.301	21.84	ADR	38.8	-22.8	.1	37.94	54	-16.06	-	-	-	-	294	258	H
10.4	37.89	PK-U	37.5	-25.3	0	50.09	-	-	-	-	68.2	-18.11	329	106	H
* 15.698	31.55	PK-U	40.4	-20.3	0	51.65	-	-	74	-22.35	-	-	214	224	V
* 15.698	20.95	ADR	40.4	-20.3	.1	41.15	54	-12.85	-	-	-	-	214	224	V
10.4	37.61	PK-U	37.5	-25.3	0	49.81	-	-	-	-	68.2	-18.39	156	111	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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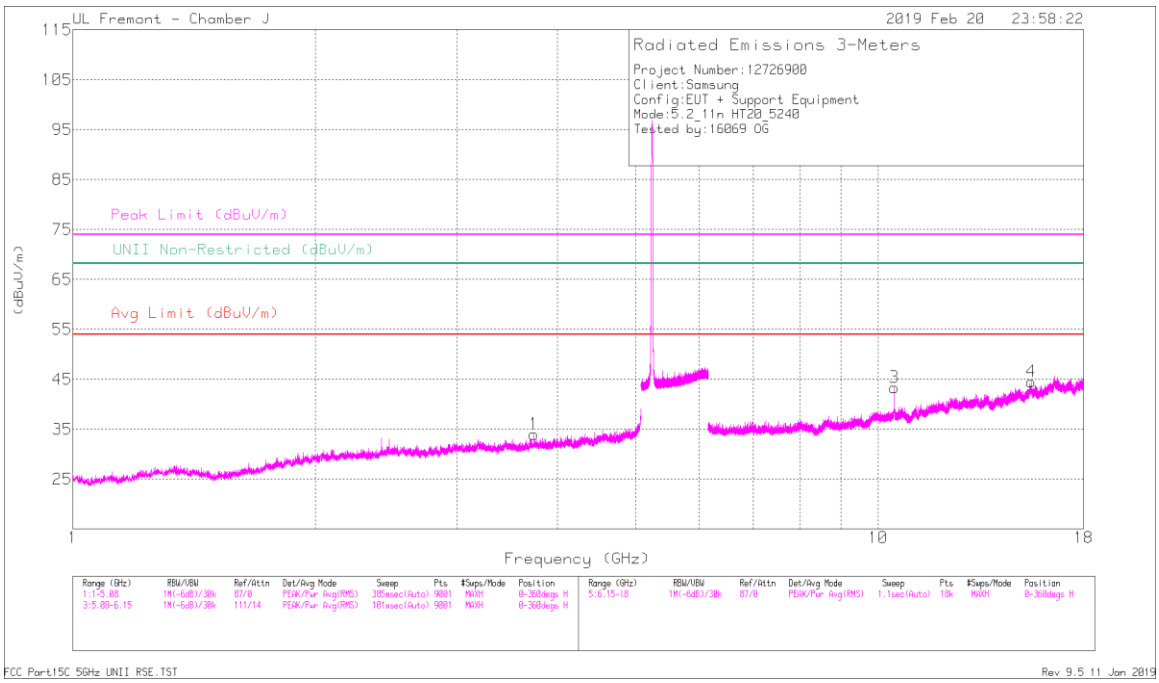
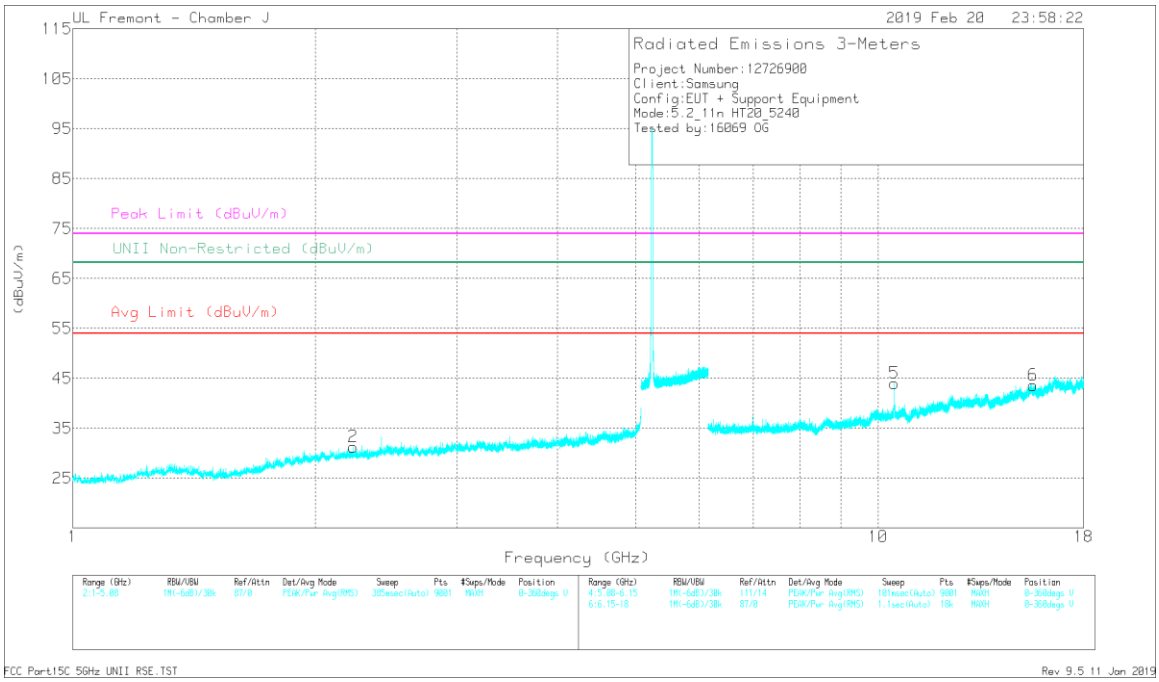
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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
* 3.74	40.55	PK-U	33.4	-33.2	0	40.75	-	-	74	-33.25	-	-	360	182	H
* 3.74	30.28	ADR	33.4	-33.2	.1	30.58	54	-23.42	-	-	-	-	360	182	H
* 2.23	41.96	PK-U	31.9	-35.6	0	38.26	-	-	74	-35.74	-	-	139	122	V
* 2.228	31.85	ADR	31.9	-35.6	.1	28.25	54	-25.75	-	-	-	-	139	122	V
* 15.496	31.77	PK-U	40.1	-20	0	51.87	-	-	74	-22.13	-	-	66	178	H
* 15.496	21.03	ADR	40.1	-20	.1	41.23	54	-12.77	-	-	-	-	66	178	H
10.48	37.26	PK-U	37.5	-25.3	0	49.46	-	-	-	-	68.2	-18.74	330	109	H
* 15.571	32.33	PK-U	40.2	-20.5	0	52.03	-	-	74	-21.97	-	-	293	110	V
* 15.572	21.14	ADR	40.2	-20.5	.1	40.94	54	-13.06	-	-	-	-	293	110	V
10.48	37.88	PK-U	37.5	-25.3	0	50.08	-	-	-	-	68.2	-18.12	26	122	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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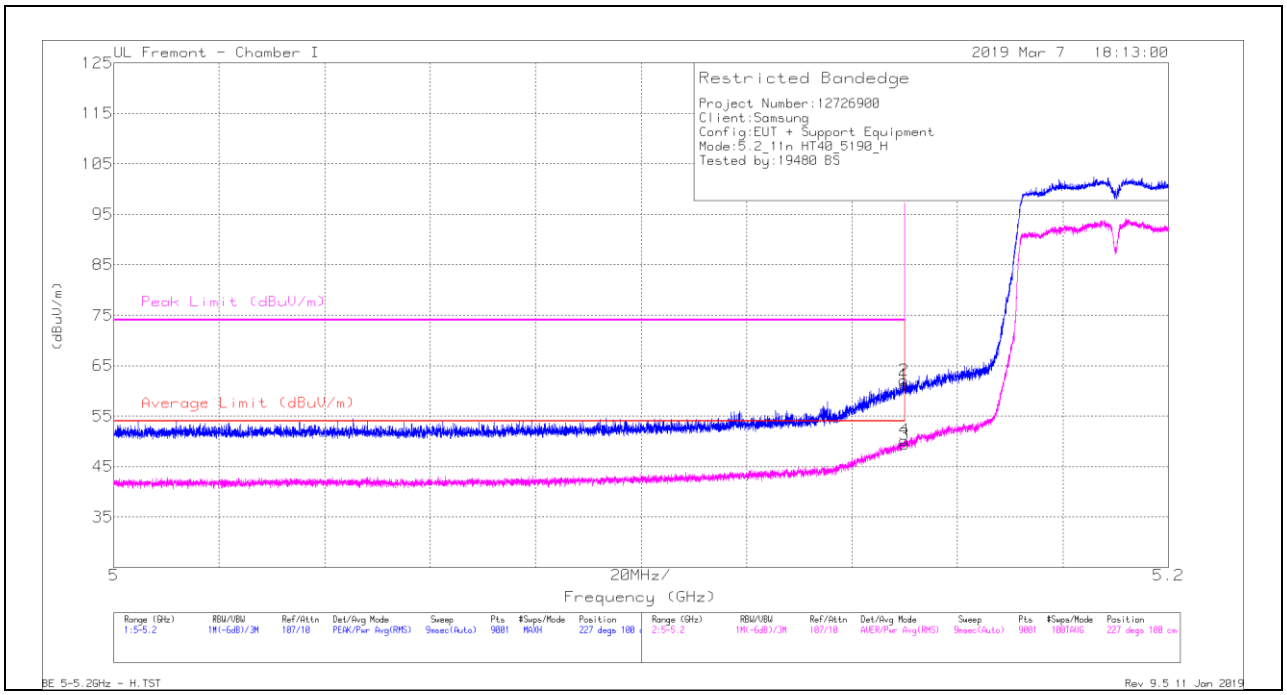
10.1.3. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

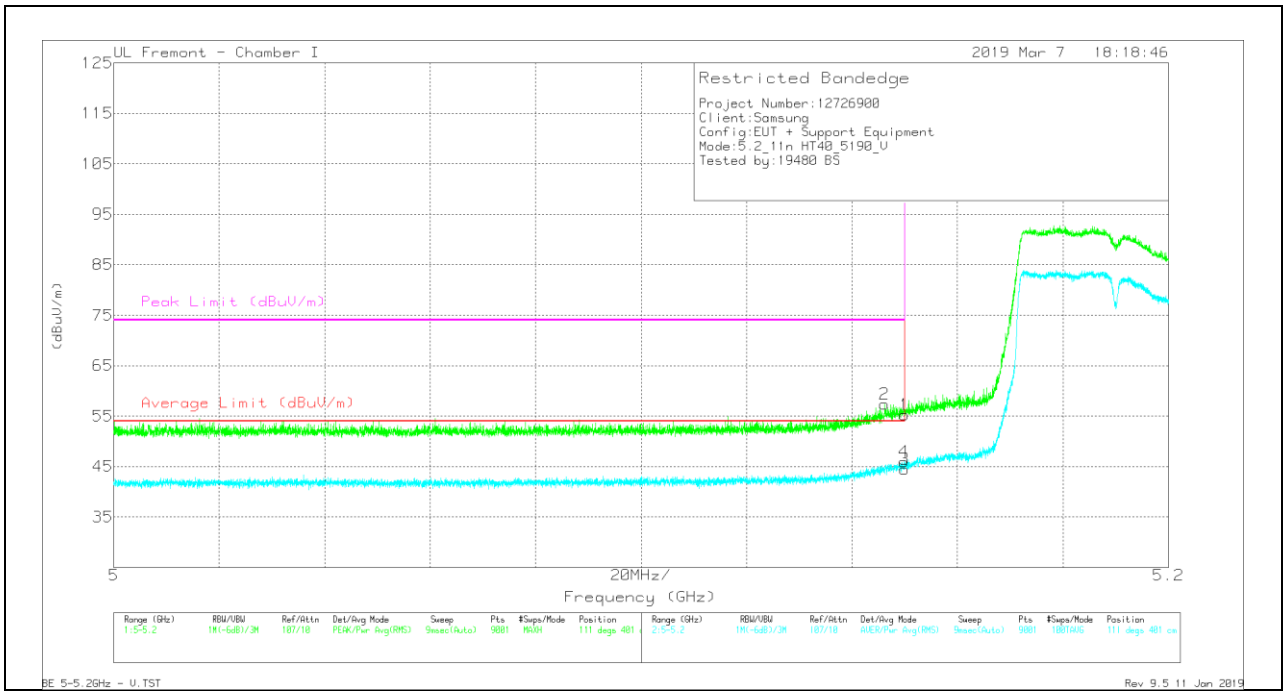


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	45.87	Pk	34.4	-19	0	61.27	-	-	74	-12.73	227	100	H
2	* 5.15	46.68	Pk	34.4	-19	0	62.08	-	-	74	-11.92	227	100	H
3	* 5.15	33.8	RMS	34.4	-19	.19	49.39	54	-4.61	-	-	227	100	H
4	* 5.15	34.64	RMS	34.4	-19	.19	50.23	54	-3.77	-	-	227	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



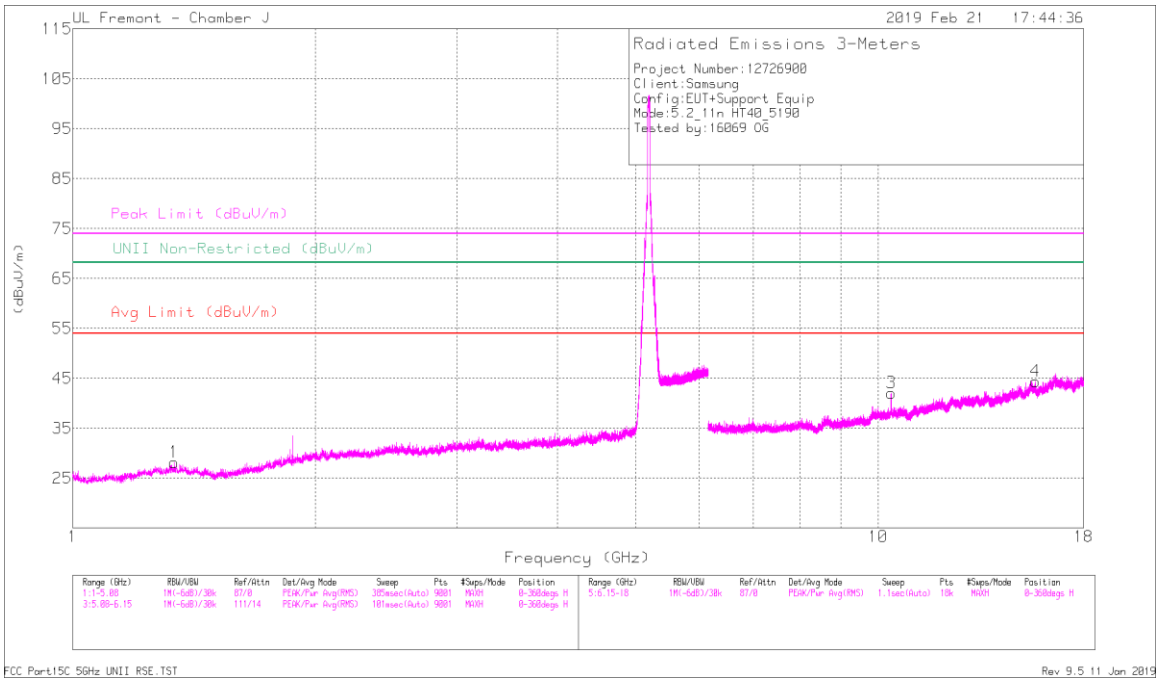
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	39.84	Pk	34.4	-19	0	55.24	-	-	74	-18.76	111	401	V
2	* 5.146	41.99	Pk	34.4	-19	0	57.39	-	-	74	-16.61	111	401	V
3	* 5.15	28.82	RMS	34.4	-19	.19	44.41	54	-9.59	-	-	111	401	V
4	* 5.15	30.32	RMS	34.4	-19	.19	45.91	54	-8.09	-	-	111	401	V

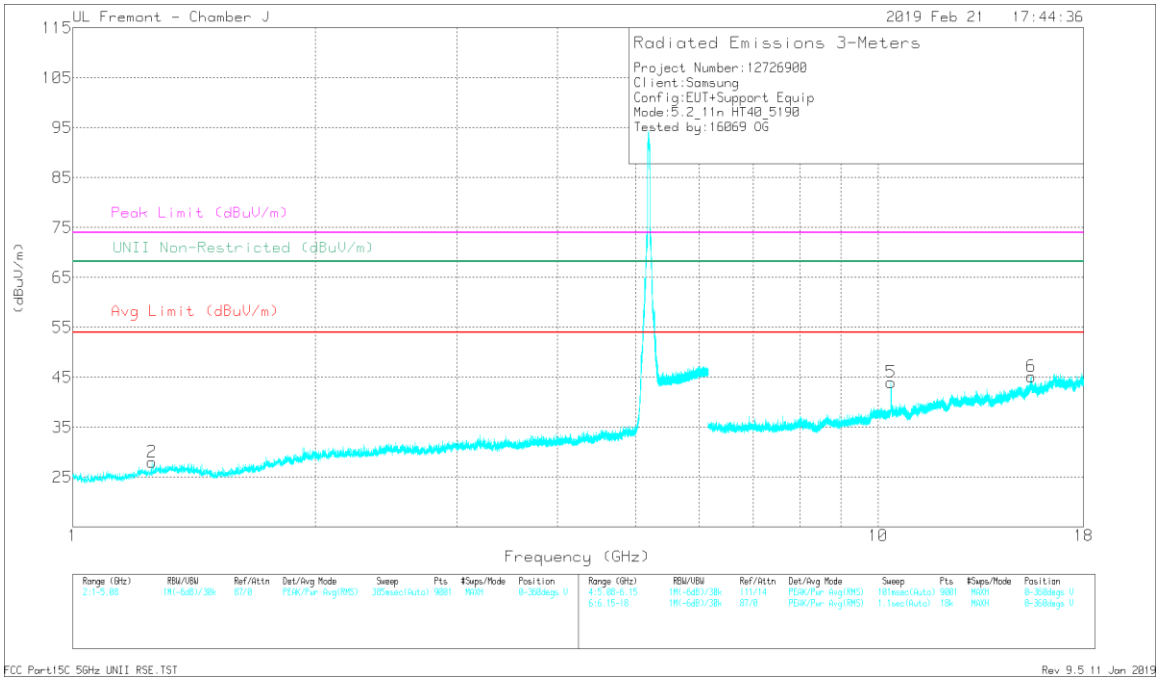
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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
* 1.336	41.81	PK-U	29.3	-35.8	0	35.31	-	-	74	-38.69	-	-	334	305	H
* 1.339	31.13	ADR	29.3	-35.9	.19	24.72	54	-29.28	-	-	-	-	334	305	H
* 1.252	41.46	PK-U	29	-35.8	0	34.66	-	-	74	-39.34	-	-	136	277	V
* 1.253	31.55	ADR	29	-35.8	.19	24.94	54	-29.06	-	-	-	-	136	277	V
* 15.687	31.36	PK-U	40.3	-20.4	0	51.26	-	-	74	-22.74	-	-	67	199	H
* 15.685	21.55	ADR	40.3	-20.5	.19	41.54	54	-12.46	-	-	-	-	67	199	H
10.38	36.51	PK-U	37.5	-25.3	0	48.71	-	-	-	-	68.2	-19.49	332	103	H
* 15.51	31.13	PK-U	40.2	-20	0	51.33	-	-	74	-22.67	-	-	329	239	V
* 15.51	21.18	ADR	40.2	-20	.19	41.57	54	-12.43	-	-	-	-	329	239	V
10.38	37.46	PK-U	37.5	-25.3	0	49.66	-	-	-	-	68.2	-18.54	39	114	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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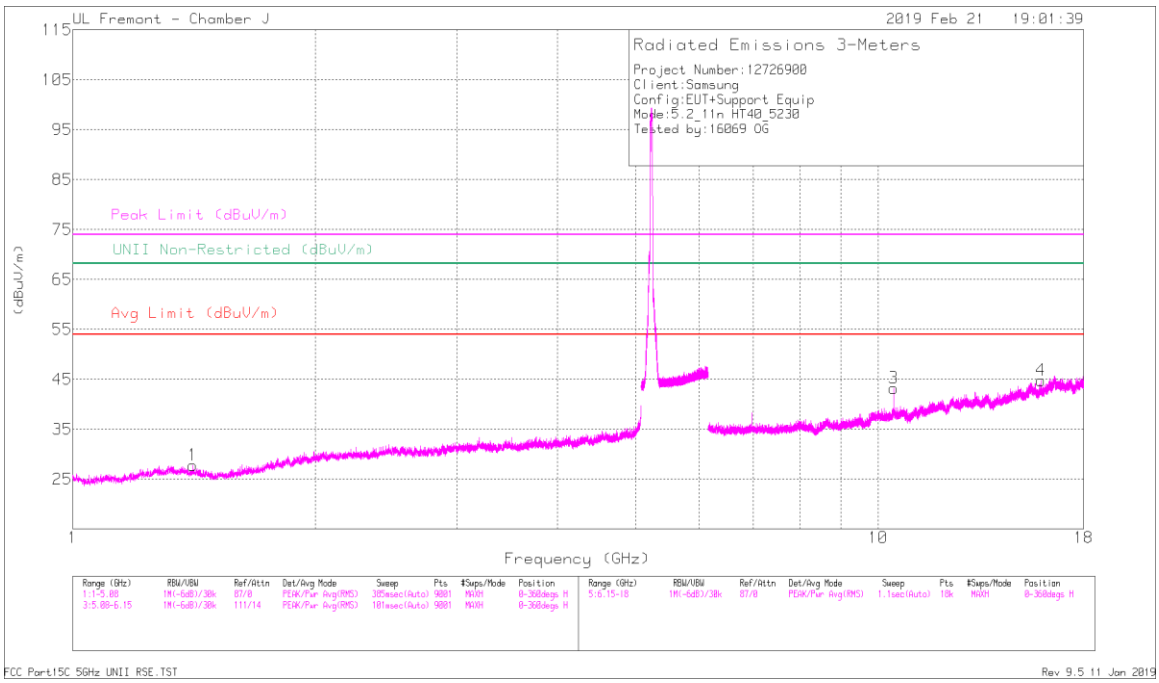
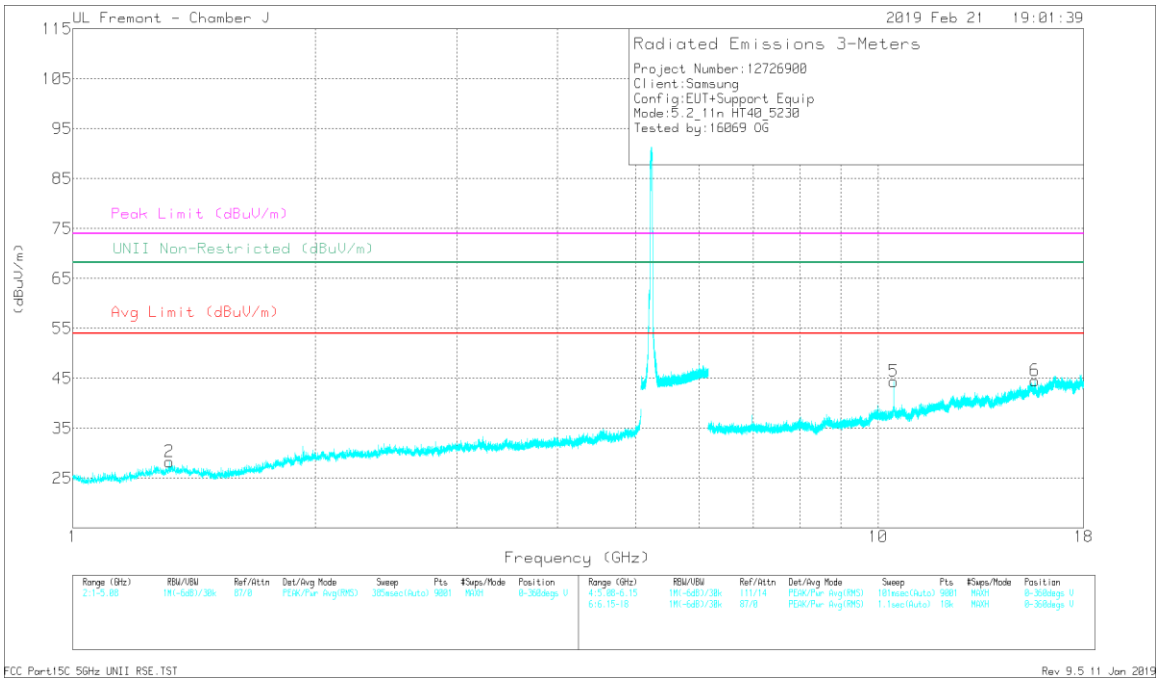
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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
* 1.408	42.54	PK-U	28.9	-35.9	0	35.54	-	-	74	-38.46	-	-	110	371	H
* 1.41	31.8	ADR	28.8	-35.9	.19	24.89	54	-29.11	-	-	-	-	110	371	H
* 1.318	41.89	PK-U	29.3	-35.9	0	35.29	-	-	74	-38.71	-	-	345	208	V
* 1.317	31.61	ADR	29.3	-35.9	.19	25.2	54	-28.8	-	-	-	-	345	208	V
* 15.921	32.16	PK-U	40.4	-19.8	0	52.76	-	-	74	-21.24	-	-	218	309	H
* 15.925	20.53	ADR	40.4	-19.9	.19	41.22	54	-12.78	-	-	-	-	218	309	H
10.46	35.85	PK-U	37.5	-25.1	0	48.25	-	-	-	-	68.2	-19.95	283	127	H
* 15.667	31.08	PK-U	40.3	-20.3	0	51.08	-	-	74	-22.92	-	-	230	225	V
* 15.664	21.05	ADR	40.3	-20.3	.19	41.24	54	-12.76	-	-	-	-	230	225	V
10.46	36.94	PK-U	37.5	-25.1	0	49.34	-	-	-	-	68.2	-18.86	21	117	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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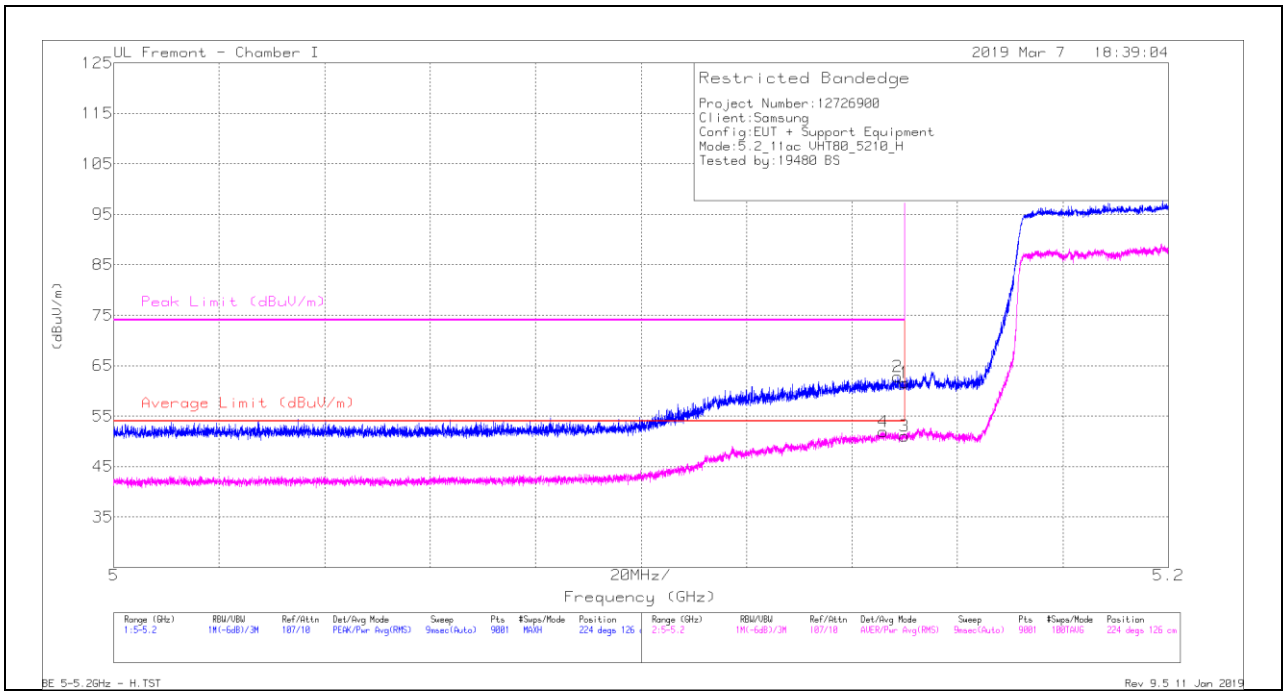
10.1.4. TX ABOVE 1 GHz 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

1TX Antenna 1 MODE

BANDEDGE (MID CHANNEL)

HORIZONTAL RESULT

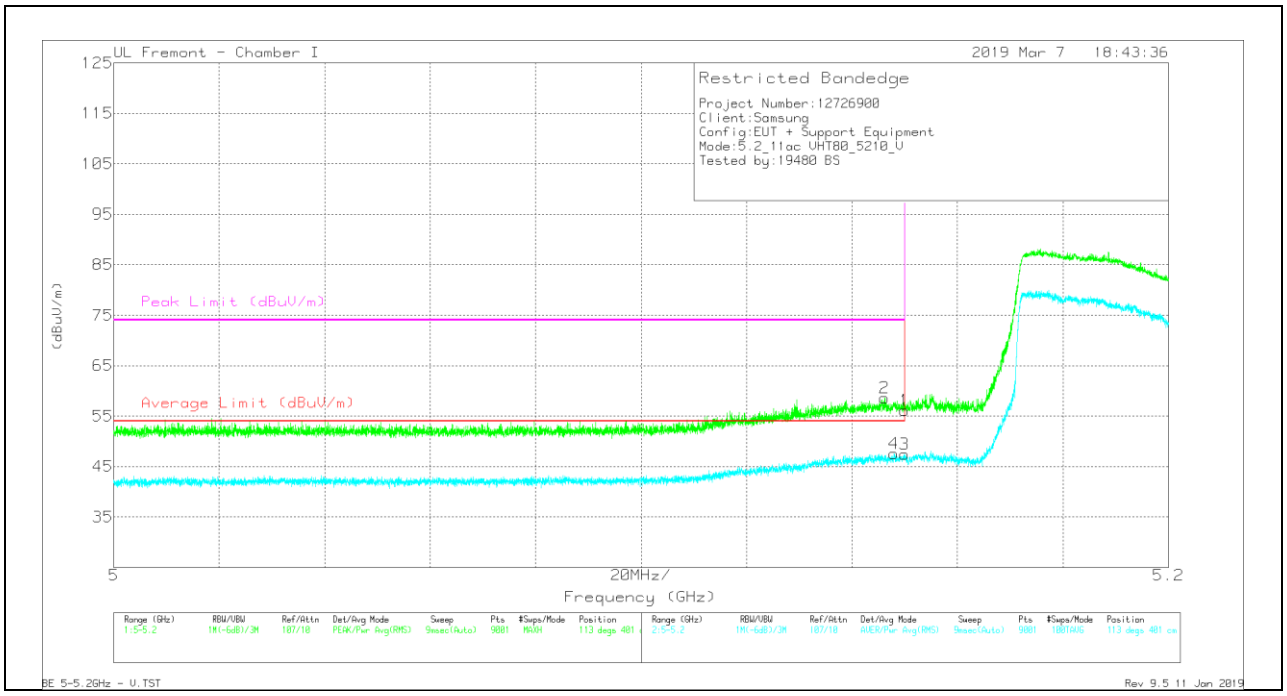


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	46.17	Pk	34.4	-19	0	61.57	-	-	74	-12.43	224	126	H
2	* 5.149	47.44	Pk	34.4	-19	0	62.84	-	-	74	-11.16	224	126	H
3	* 5.15	35.22	RMS	34.4	-19	.44	51.06	54	-2.94	-	-	224	126	H
4	* 5.146	36.05	RMS	34.4	-19	.44	51.89	54	-2.11	-	-	224	126	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



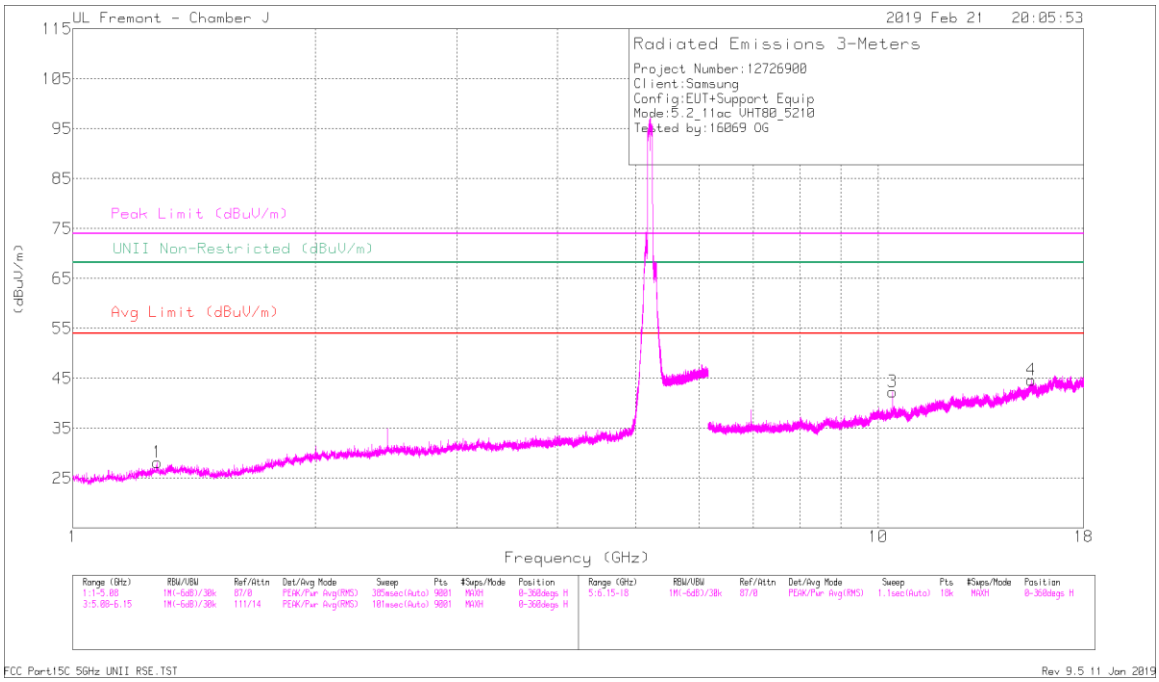
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.15	40.74	Pk	34.4	-19	0	56.14	-	-	74	-17.86	113	401	V
2	* 5.146	43.23	Pk	34.4	-19	0	58.63	-	-	74	-15.37	113	401	V
3	* 5.15	31.62	RMS	34.4	-19	.44	47.46	54	-6.54	-	-	113	401	V
4	* 5.148	31.67	RMS	34.4	-19	.44	47.51	54	-6.49	-	-	113	401	V

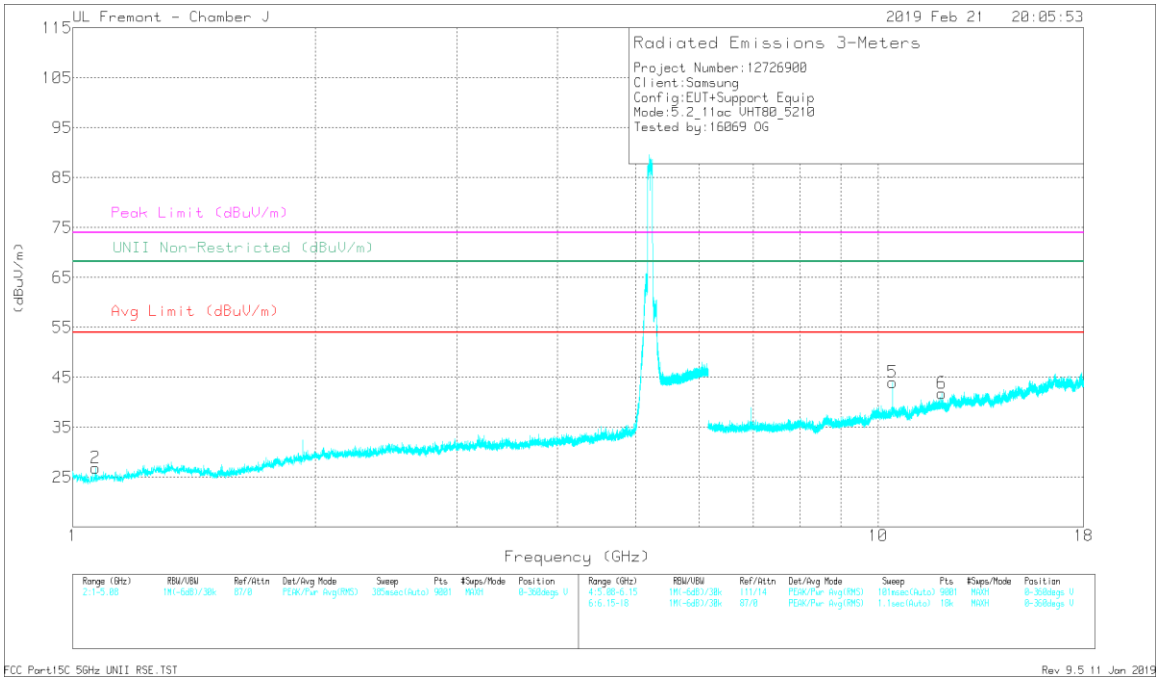
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF AT0067 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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
* 1.272	41.52	PK-U	29.1	-35.8	0	34.82	-	-	74	-39.18	-	-	153	155	H
* 1.276	32.02	ADR	29.1	-35.9	.44	25.66	54	-28.34	-	-	-	-	153	155	H
* 1.066	41.52	PK-U	27.3	-35.6	0	33.22	-	-	74	-40.78	-	-	278	318	V
* 1.067	31.52	ADR	27.3	-35.6	.44	23.66	54	-30.34	-	-	-	-	278	318	V
* 15.503	30.92	PK-U	40.2	-19.9	0	51.22	-	-	74	-22.78	-	-	52	328	H
* 15.503	21.22	ADR	40.2	-19.9	.44	41.96	54	-12.04	-	-	-	-	52	328	H
10.42	37.17	PK-U	37.5	-25.2	0	49.47	-	-	-	-	68.2	-18.73	222	112	H
* 12.006	32.68	PK-U	38.7	-22.8	0	48.58	-	-	74	-25.42	-	-	16	146	V
* 12.008	22	ADR	38.7	-22.7	.44	38.44	54	-15.56	-	-	-	-	16	146	V
10.42	36.63	PK-U	37.5	-25.2	0	48.93	-	-	-	-	68.2	-19.27	208	103	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK-U - U-NII: Maximum Peak
ADR - U-NII AD primary method, RMS average

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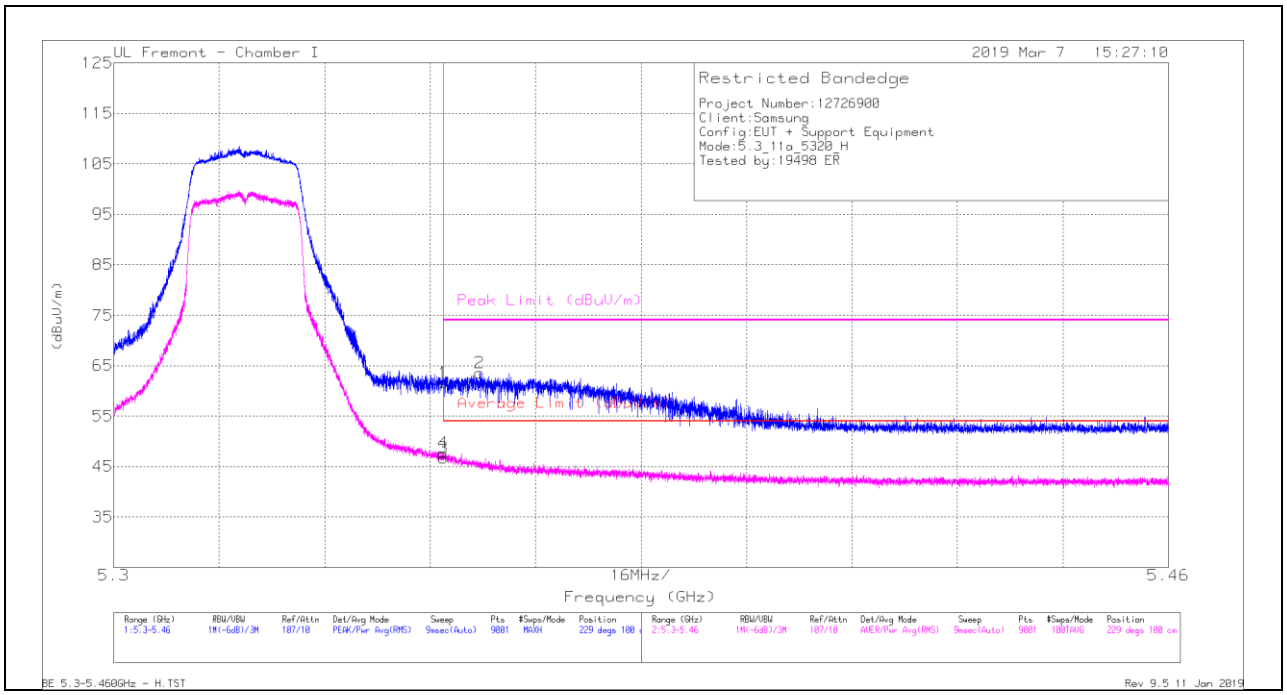
10.1.5. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND

1TX Antenna 1 MODE

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.35	45.38	Pk	34.5	-18.3	0	61.58	-	-	74	-12.42	229	100	H
2	* 5.356	47.41	Pk	34.4	-18.2	0	63.61	-	-	74	-10.39	229	100	H
3	* 5.35	30.41	RMS	34.5	-18.3	.09	46.7	54	-7.3	-	-	229	100	H
4	* 5.35	31.38	RMS	34.5	-18.3	.09	47.67	54	-6.33	-	-	229	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection