

Johnson Health Tech. Co., Ltd.

TEST REPORT

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Radio Spectrum TEST REPORT

Applicant:	Johnson Health Tech. Co., Ltd. No.999, Sec. 2, Dongda Rd., Daya Dist Taichung City 428, Taiwan
Product:	Console for Exercise Machine
Model No.:	Target Training Console
Brand Name:	Matrix Fitness
FCC ID:	TN7PHOENIX
Test Method/ Standard:	47 CFR FCC Part 15.407 KDB 789033 D02 v01r02 ANSI C63.10 2013 KDB 662911 D01 v02r01
Test By:	Intertek Testing Services Taiwan Ltd., Hsinchu Laboratory No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li, Shiang-Shan District, Hsinchu City, Taiwan



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Revision History

Report No.	Issue Date	Revision Summary
180200311TWN-001	May 25, 2018	Original report

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Summary of Test Data

Test Requirement	Applicable Rule (Section 15.407)	Result
Maximum Conducted Output Power	15.407 (a)(1)/(2)/(3) KDB 789033 D02 v01r02	Pass
Power Spectrum Density	15.407 (a)(1)/(2)/(3) KDB 789033 D02 v01r02	Pass
Minimum Emission Bandwidth	15.407(a)(5), 15.407(e) KDB 789033 D02 v01r02	Pass
Emissions In Restricted Frequency Bands (Radiated emission measurements)	15.407(b), 15.209	Pass
Emission on The Band Edge	15.407(b), 15.209	Pass
AC Line Conducted Emission	15.407(b)(6) 15.207	Pass
Antenna requirement	15.203	Pass

1. General Information

1.1 Identification of the EUT

Product:	Console for Exercise Machine
Model No.:	Target Training Console
Radio Module:	AP62X2
Operating Frequency:	1. 5180 MHz ~ 5240 MHz for 802.11a, 802.11n(HT20) 2. 5190 MHz ~ 5230 MHz for 802.11n (HT40) 3. 5745 MHz ~ 5825 MHz for 802.11a, 802.11n (HT20) 4. 5755 MHz ~ 5795 MHz for 802.11n (HT40)
Channel Number:	1. 4 channels for 5180 MHz ~ 5240 MHz for 802.11a,802.11n (HT20) 2. 2 channels for 5190 MHz ~ 5230 MHz for 802.11n (HT40) 3. 5 channels for 5745 MHz ~ 5825 MHz for 802.11a, 802.11n (HT20) 4. 2 channels for 5755 MHz ~ 5795 MHz for 802.11n (HT40)
Access scheme:	OFDM
Modulation:	64QAM, 16QAM, QPSK, BPSK for OFDM
Rated Power:	DC 5V
Power Cord:	N/A
Sample receiving date:	Mar. 01, 2018
Sample condition:	Workable
Test Date(s):	Apr. 10 ~ Apr. 25, 2018

1.2 Description of the EUT

Modulation mode	Transmit path	
	Chain 0 / Main	Chain 1 / AUX
802.11a	V	V
802.11 n (HT20)	V	V
802.11 n (HT40)	V	V

1.3 Antenna description

Antenna 1

The antenna is affixed to the EUT using a unique connector, which allows for replacement of a broken antenna, but DOES NOT use a standard antenna jack or electrical connector.

Antenna Gain : 4.12 dBi max

Antenna Type : PIFA antenna

Connector Type : I-PEX

Antenna 2

The antenna is affixed to the EUT using a unique connector, which allows for replacement of a broken antenna, but DOES NOT use a standard antenna jack or electrical connector.

Antenna Gain : 4.12 dBi max

Antenna Type : PIFA antenna

Connector Type : I-PEX

1.4 Peripherals equipment

Peripherals	Brand	Model No.	Serial No.	Data cable
Adapter	LITEON	PA-1041-0	N/A	N/A

1.5 Operation mode

TX-MODE is based on a specific test program "AMPAK RFTTestTool.apk", and the program can select different frequency and modulation.

With individual verifying, the maximum output power were found out 6 Mbps data rate for 802.11a mode, 6.5 Mbps data rate for 802.11n(HT20) mode and, 13.5 Mbps data rate for 802.11n(HT40) mode the final tests were executed under these conditions recorded in this report individually.

SISO
SISO

802.11a ch44 chain0		802.11a ch44 chain1	
Data rate	AV (dBm)	Data rate	AV (dBm)
6	9.08	6	9.61
9	9.01	9	9.54
12	8.98	12	9.37
18	8.97	18	9.22
24	8.91	24	9.19
36	8.90	36	9.11
48	8.89	48	8.92
54	8.86	54	8.79

SISO
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SISO
SISO

802.11n HT20 ch44 chain0		802.11n HT20 ch44 chain1		802.11n HT40 ch46 chain0		802.11n HT40 ch46 chain1	
Data rate	AV (dBm)	Data rate	AV (dBm)	Data rate	AV (dBm)	Data rate	AV (dBm)
6.5	7.72	6.5	8.32	13.5	7.38	13.5	6.31
13	7.63	13	8.14	27	7.11	27	6.11
19.5	7.51	19.5	8.02	40.5	7.02	40.5	6.02
26	7.32	26	7.95	54	6.98	54	5.92
39	7.22	39	7.84	81	6.87	81	5.85
52	7.11	52	7.63	108	6.71	108	5.74
58.5	6.92	58.5	7.33	121	6.58	121	5.51
65	6.84	65	7.19	135	6.42	135	5.37

MIMO

MIMO

802.11n HT20 ch44 chain0+1		802.11n HT40 ch46 chain0+1	
Data rate	AV (dBm)	Data rate	AV (dBm)
13	12.71	6	9.61
26	12.60	9	9.54
39	12.44	12	9.37
52	12.32	18	9.22
78	12.18	24	9.19
104	12.07	36	9.11
117	11.99	48	8.92
130	11.87	54	8.79

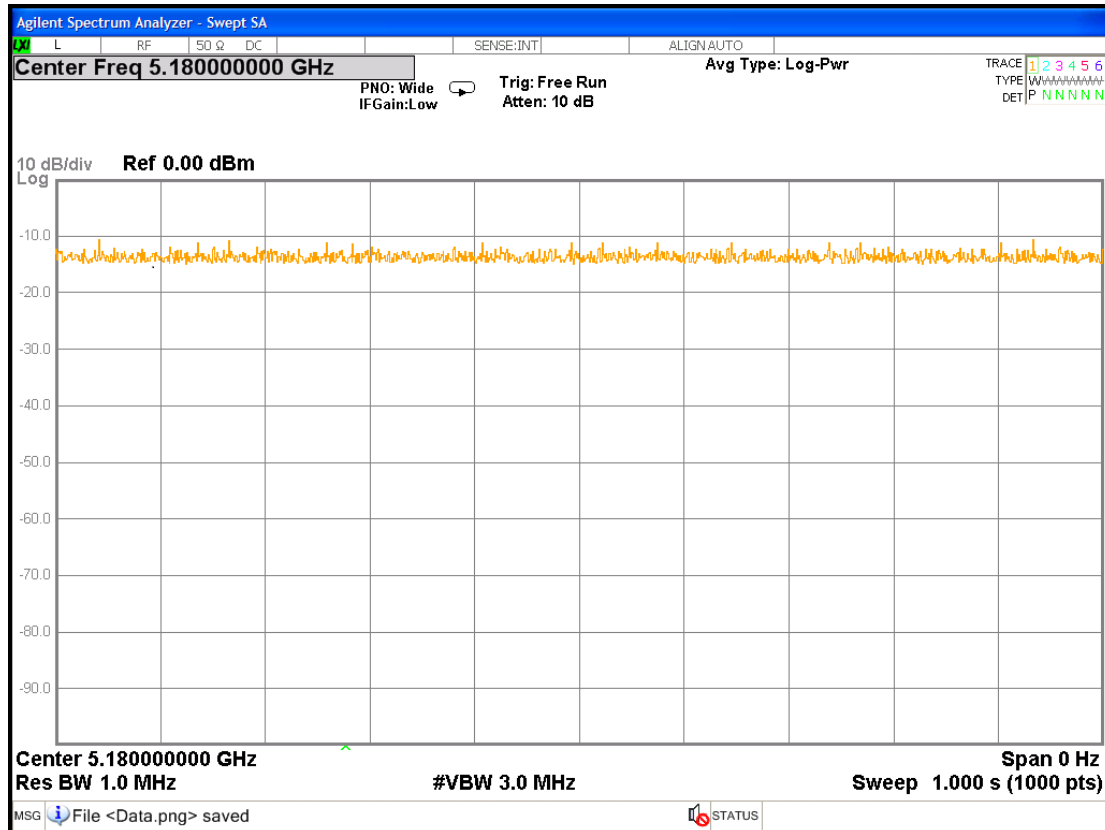
1.6 Applied test modes and channels

Test items	Mode		Data Rate (Mbps)	Channel	Antenna
Maximum Conducted Output Power	U-NII-1	802.11a	6	36, 44, 48	Chain0/Chain1
		802.11 n (HT20)	6.5	36, 44, 48	Chain0/Chain1
		802.11 n (HT40)	13.5	38, 46	Chain0/Chain1
	U-NII-3	802.11a	6	149,157,165	Chain0/Chain1
		802.11 n (HT20)	6.5	149,157,165	Chain0/Chain1
		802.11 n (HT40)	13.5	151,159	Chain0/Chain1
Power Spectrum Density	U-NII-1	802.11a	6	36, 44, 48	Chain0/Chain1
		802.11 n (HT20)	6.5	36, 44, 48	Chain0/Chain1
		802.11 n (HT40)	13.5	38, 46	Chain0/Chain1
	U-NII-3	802.11a	6	149,157,165	Chain0/Chain1
		802.11 n (HT20)	6.5	149,157,165	Chain0/Chain1
		802.11 n (HT40)	13.5	151,159	Chain0/Chain1
Emission BW	U-NII-1	802.11a	6	36, 44, 48	Chain0/Chain1
		802.11 n (HT20)	6.5	36, 44, 48	Chain0/Chain1
		802.11 n (HT40)	13.5	38, 46	Chain0/Chain1
	U-NII-3	802.11a	6	149,157,165	Chain0/Chain1
		802.11 n (HT20)	6.5	149,157,165	Chain0/Chain1
		802.11 n (HT40)	13.5	151,159	Chain0/Chain1
Radiated spurious Emission 9kHz~1GHz	Worst Case				
Emissions In Restricted Frequency Bands (Radiated emission measurements)	U-NII-1	802.11a	6	36, 44, 48	Chain0/Chain1
		802.11 n (HT20)	13	36, 44, 48	Chain0+1
		802.11 n (HT40)	27	38, 46	Chain0+1
	U-NII-3	802.11a	6	149,157,165	Chain0/Chain1
		802.11 n (HT20)	13	149,157,165	Chain0+1
		802.11 n (HT40)	27	151,159	Chain0+1
Emission on The Band Edge	U-NII-1	802.11a	6	36, 44, 48	Chain0/Chain1
		802.11 n (HT20)	13	36, 44, 48	Chain0+1
		802.11 n (HT40)	27	38, 46	Chain0+1
	U-NII-3	802.11a	6	149,157,165	Chain0/Chain1
		802.11 n (HT20)	13	149,157,165	Chain0+1
		802.11 n (HT40)	27	151,159	Chain0+1
AC Line Conducted Emission	Worst Case				

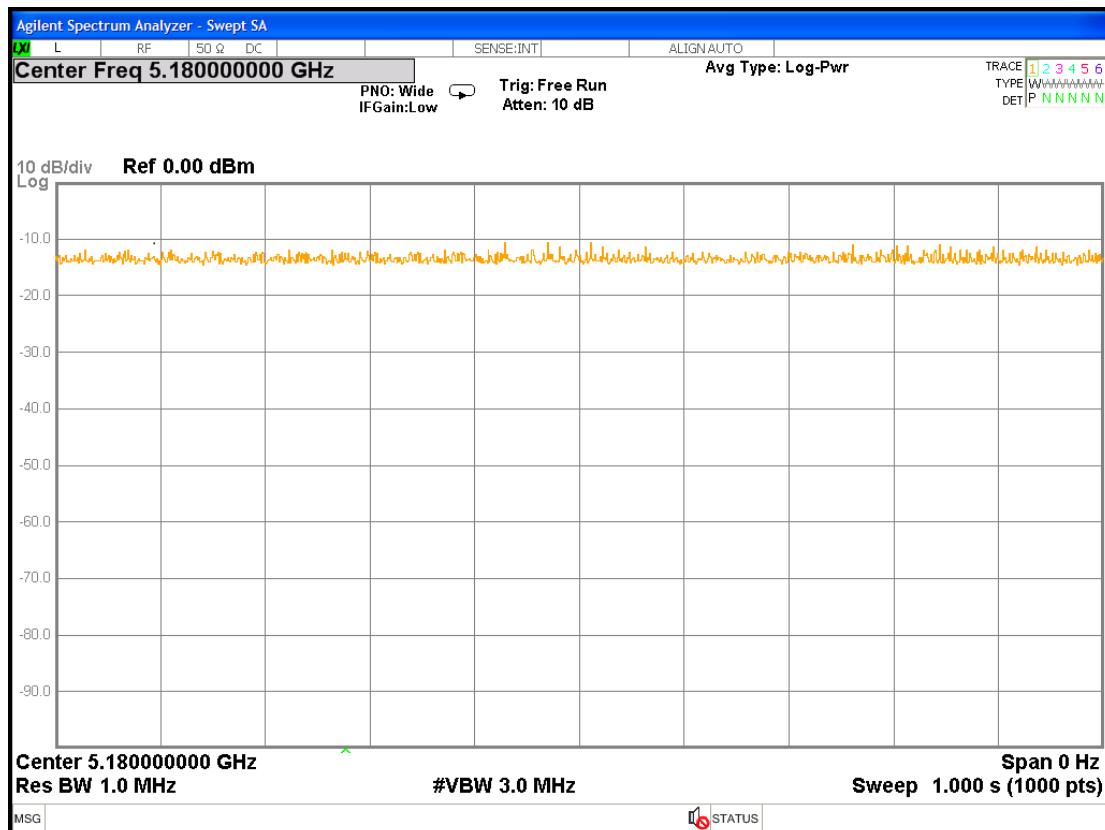
1.7 Power setting of test software

Mode	Chain	Channel	Frequency (MHz)	Data rate(Mbps)	Signal on time(s)	Total signal transmit time(s)	Duty cycle	Duty Cycle factor
802.11a	Chain 0	36	5180	6	1	1	1.000	0.000
802.11n(HT20)	Chain 0+1	36	5180	13	1	1	1.000	0.000
802.11n(HT40)	Chain 0+1	38	5190	27	1	1	1.000	0.000
802.11a	Chain 0	149	5745	6	1	1	1.000	0.000
802.11n(HT20)	Chain 0+1	149	5745	13	1	1	1.000	0.000
802.11n(HT40)	Chain 0+1	151	5755	27	1	1	1.000	0.000

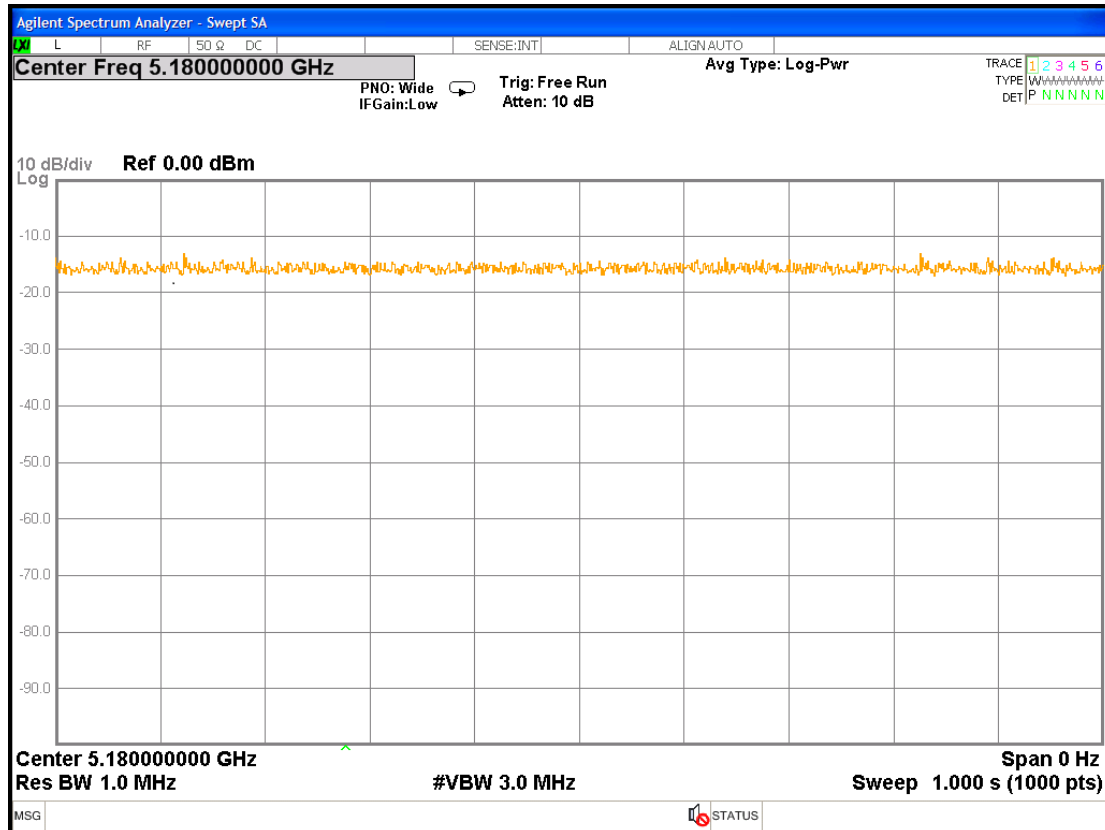
Chain0 : Duty cycle @ 802.11a mode Ch 36



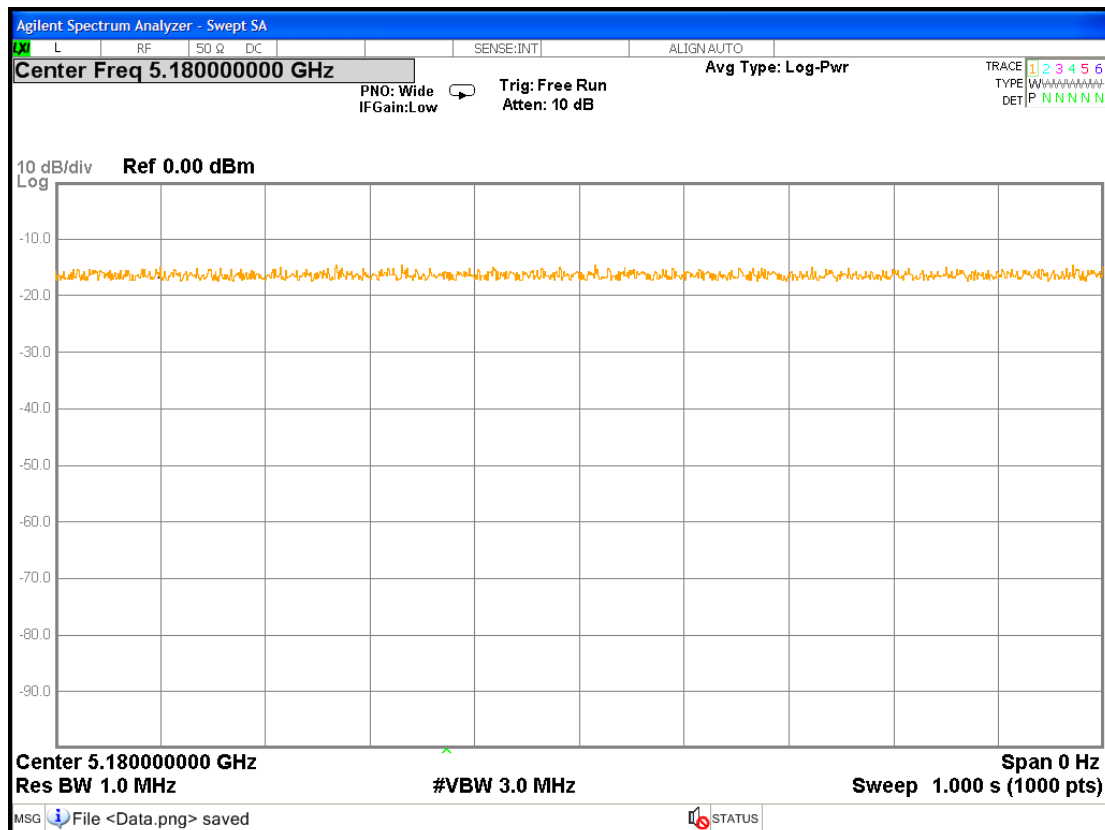
Chain1 : Duty cycle @ 802.11a mode Ch 36



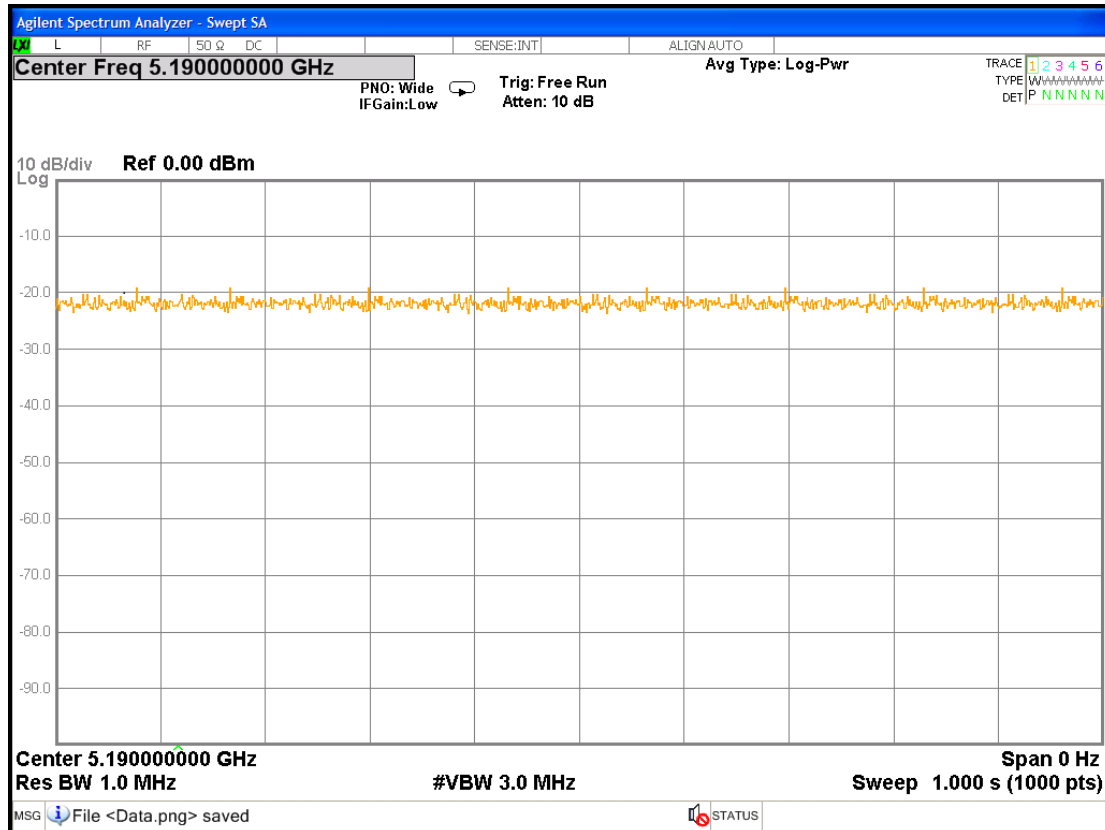
Chain0 : Duty cycle @ 802.11n(HT20) mode Ch 36



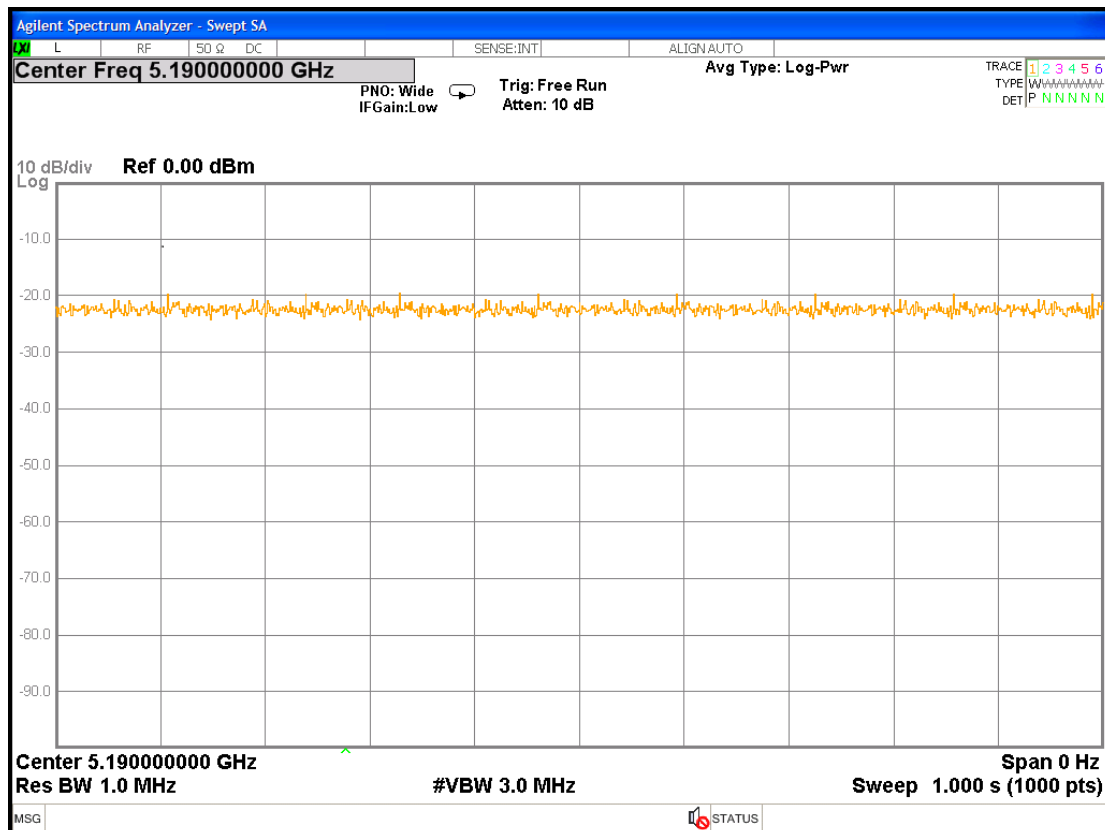
Chain1 : Duty cycle @ 802.11n(HT20) mode Ch 36



Chain0 : Duty cycle @ 802.11n(HT40) mode Ch 38



Chain1 : Duty cycle @ 802.11n(HT40) mode Ch 38



2. Maximum Conducted Output Power

2.1 Operating environment

Temperature:	25	°C
Relative Humidity:	50	%
Atmospheric Pressure	1008	hPa
Channel number	36,44,48,149,157,165 for 20MHz 38,46,151,159 for 40MHz	

2.2 Limit for maximum output power

Operating Frequency (MHz)	Conducted output power limit
5150~5250	< 0.25 W (24 dBm)
5725~5850	< 1 W (30 dBm)

Operating Frequency (MHz)	Maximum E.I.R.P. limit
5150~5250	< 1 W (30 dBm)
5725~5850	< 4 W (36 dBm)

2.3 Measuring instrument setting

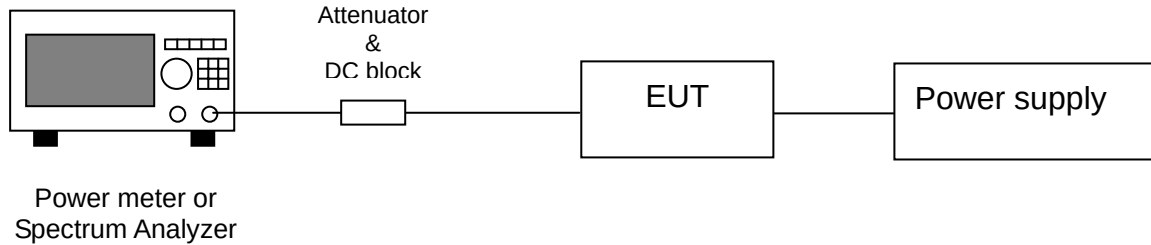
Power meter for Nominal Bandwidth less than 65MHz	
Power meter	Setting
Bandwidth	65MHz bandwidth is greater than the EUT emission bandwidth
Detector	Average

2.4 Test procedure

Test procedures refer to clause E) 3) b) measurement using a gated RF average power meter of KDB 789033 D02 v01r02

Test procedures refer to clause E) 2) b) Method SA-1 of KDB 789033 D02 v01r02

2.5 Test diagram



2.6 Test results

UNII-1

SISO

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Output Power (AV)		Antenna Gain (dBi)	E.I.R.P. (dBm)	Limit of Conducted Power (dBm)	Margin (dB)	Limit of E.I.R.P. (dBm)	Margin (dB)
				dBm	mW						
802.11a Chain0	36	5180	6	8.651	7.33	4.12	12.77	24.00	-15.35	30.00	-17.23
	44	5220		9.075	8.08	4.12	13.20	24.00	-14.93	30.00	-16.81
	48	5240		9.239	8.39	4.12	13.36	24.00	-14.76	30.00	-16.64
802.11a Chain1	36	5180	6	9.583	9.08	4.12	13.70	24.00	-14.42	30.00	-16.30
	44	5220		9.607	9.13	4.12	13.73	24.00	-14.39	30.00	-16.27
	48	5240		9.76	9.46	4.12	13.88	24.00	-14.24	30.00	-16.12

MIMO

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Output Power (AV)		Total Power (AV)		Antenna0 Gain (dBi)	Antenna1 Gain (dBi)	Caculated E.I.R.P. (dBm)	Limit of Conducted Power (dBm)	Margin (dB)	Limit of E.I.R.P. (dBm)	Margin (dB)
				Chain 0	Chain 1									
				dBm	dBm	mW	dBm							
802.11n (HT 20)	36	5180	13	7.95	8.08	12.66	11.03	4.12	4.12	15.15	24.00	-12.97	30.00	-14.85
	44	5220		7.72	8.32	12.71	11.04	4.12	4.12	15.16	24.00	-12.96	30.00	-14.84
	48	5240		7.709	8.251	12.59	11.00	4.12	4.12	15.12	24.00	-13.00	30.00	-14.88
802.11n (HT 40)	38	5190	27	7.717	6.583	10.46	10.20	4.12	4.12	14.32	24.00	-13.80	30.00	-15.68
	46	5230		7.376	6.307	9.74	9.88	4.12	4.12	14.00	24.00	-14.12	30.00	-16.00

UNII-3

SISO

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Output Power (AV)		Antenna Gain (dBi)	E.I.R.P. (dBm)	Limit of Conducted Power (dBm)	Margin (dB)	Limit of E.I.R.P. (dBm)	Margin (dB)
				dBm	mW						
802.11a Chain0	149	5745	6	7.865	6.12	4.12	11.99	30.00	-22.14	36.00	-24.02
	157	5785		8.862	7.69	4.12	12.98	30.00	-21.14	36.00	-23.02
	165	5825		8.466	7.02	4.12	12.59	30.00	-21.53	36.00	-23.41
802.11a Chain1	149	5745	6	9.025	7.99	4.12	13.15	30.00	-20.98	36.00	-22.86
	157	5785		10.145	10.34	4.12	14.27	30.00	-19.86	36.00	-21.74
	165	5825		10.03	10.07	4.12	14.15	30.00	-19.97	36.00	-21.85

MIMO

Mode	Channel	Frequency (MHz)	Data Rate (Mbps)	Output Power (AV)		Total Power (AV)		Antenna0 Gain (dBi)	Antenna1 Gain (dBi)	Calculated E.I.R.P. (dBm)	Limit of Conducted Power (dBm)	Margin (dB)	Limit of E.I.R.P. (dBm)	Margin (dB)
				Chain 0	Chain 1									
				dBm	dBm	mW	dBm							
802.11n (HT 20)	149	5745	13	6.375	7.27	9.67	9.86	4.12	4.12	13.98	30.00	-20.14	36.00	-22.02
	157	5785		7.502	8.269	12.34	10.91	4.12	4.12	15.03	30.00	-19.09	36.00	-20.97
	165	5825		6.997	8.225	11.65	10.66	4.12	4.12	14.78	30.00	-19.34	36.00	-21.22
802.11n (HT 40)	151	5755	27	4.944	5.665	6.81	8.33	4.12	4.12	12.45	30.00	-21.67	36.00	-23.55
	159	5795		6.006	6.914	8.90	9.49	4.12	4.12	13.61	30.00	-20.51	37.00	-23.39

3. Power Spectrum Density

3.1 Operating environment

Temperature:	25	°C
Relative Humidity:	50	%
Atmospheric Pressure	1008	hPa
Channel number	36,44,48,149,157,165 for 20MHz 38,46,151,159 for 40MHz	

3.2 Limit for power spectrum density

Operating Frequency (MHz)	Power density limit
5150~5250	< 11 dBm/1MHz
5725~5850	< 30 dBm/500kHz

3.3 Measuring instrument setting

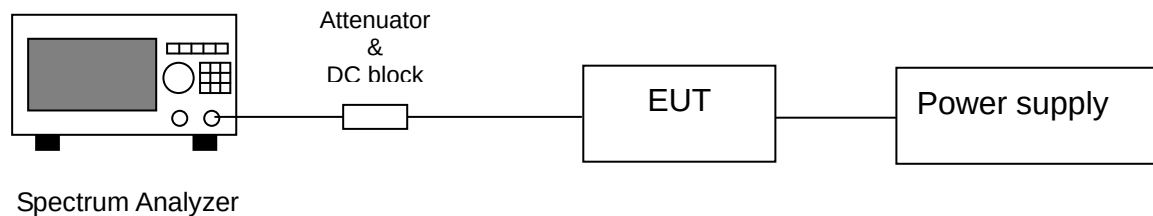
Spectrum analyzer settings (5150~5250MHz)	
Spectrum Analyzer function	Setting
Detector	RMS
RBW	=1MHz
VBW	≥ 3 MHz
Sweep	Auto couple
Trace	Average
Span	Encompass the 26 dB EBW
Attenuation	Auto
Sweep point	≥ 2 Span / RBW

Spectrum analyzer settings (5725~5850MHz)	
Spectrum Analyzer function	Setting
Detector	RMS
RBW	=100kHz
VBW	≥ 300 kHz
Sweep	Auto couple
Trace	Average
Span	Encompass the 6 dB EBW
Attenuation	Auto
Sweep point	≥ 2 Span / RBW

3.4 Test procedure

1. Set relevant parameter according to clause 4.3.
2. Trace average at least 100 traces in power averaging mode.
3. Compute power by integrating the spectrum across the 26 dB or 6dB EBW of the signal using the instrument's band power measurement function with band limits set equal to the EBW band edges
4. If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/\text{RBW})$ to the measured result, whereas $\text{RBW} (< 500 \text{ KHz})$ is the reduced resolution bandwidth of the spectrum analyzer set during measurement. The RBW is 100 kHz. So, we will add 6.989 to the results.

3.5 Test diagram



3.6 Test results

UNII-1 SISO

Mode	Channel	Frequency (MHz)	PSD		Result	Limit (dBm)	Margin (dB)
			(dBm)	(mw)			
802.11a Chain0	36	5180	-1.638	0.69	-1.638	11	-12.64
	44	5220	-0.939	0.81	-0.939	11	-11.94
	48	5240	-0.926	0.81	-0.926	11	-11.93
802.11a Chain1	36	5180	-0.662	0.86	-0.662	11	-11.66
	44	5220	-0.462	0.90	-0.462	11	-11.46
	48	5240	-0.309	0.93	-0.309	11	-11.31

Note: The values of 802.11a Chain1 have modified with Reference level Offset($36.99 \text{ dB} = 30(\text{cable loss}) + 10\log(500/100)$).

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Mode	Channel	Frequency (MHz)	PSD (dBm)		Total PSD		MIMO	Result	Limit (dBm)	Margin (dB)
			chain0	chain1	mW	dBm	Correction			
802.11n (HT 20)	36	5180	-2.419	-2.122	1.19	0.74	3.01	3.75	11	-7.25
	44	5220	-2.516	-2.103	1.18	0.71	3.01	3.72	11	-7.28
	48	5240	-2.607	-1.944	1.19	0.75	3.01	3.76	11	-7.24
802.11n (HT 40)	38	5190	-6.086	-7.182	0.44	-3.59	3.01	-0.58	11	-11.58
	46	5230	-5.805	-6.931	0.47	-3.32	3.01	-0.31	11	-11.31

Note: MIMO Correction: $10\log(Nant)$

RBW Correction: $10\log(500\text{kHz}/1\text{MHz})$ or $10\log(500\text{kHz}/100\text{kHz})$

Note: The values of 802.11a Chain1 have modified with Reference level Offset (36.99 dB=30(cable loss) + $10\log(500/100)$).

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SISO

Mode	Channel	Frequency (MHz)	PSD		Result	Limit (dBm)	Margin (dB)
			(dBm)	(mw)			
802.11a Chain0	149	5745	-4.558	0.35	-4.558	30	-34.56
	157	5785	-3.329	0.46	-3.329	30	-33.33
	165	5825	-3.653	0.43	-3.653	30	-33.65
802.11a Chain1	149	5745	-3.596	0.44	-3.596	30	-33.60
	157	5785	-2.121	0.61	-2.121	30	-32.12
	165	5825	-1.969	0.64	-1.969	30	-31.97

Note: The values of 802.11a Chain1 have modified with Reference level Offset(36.99 dB=30(cable loss) + $10\log(500/100)$).

MIMO

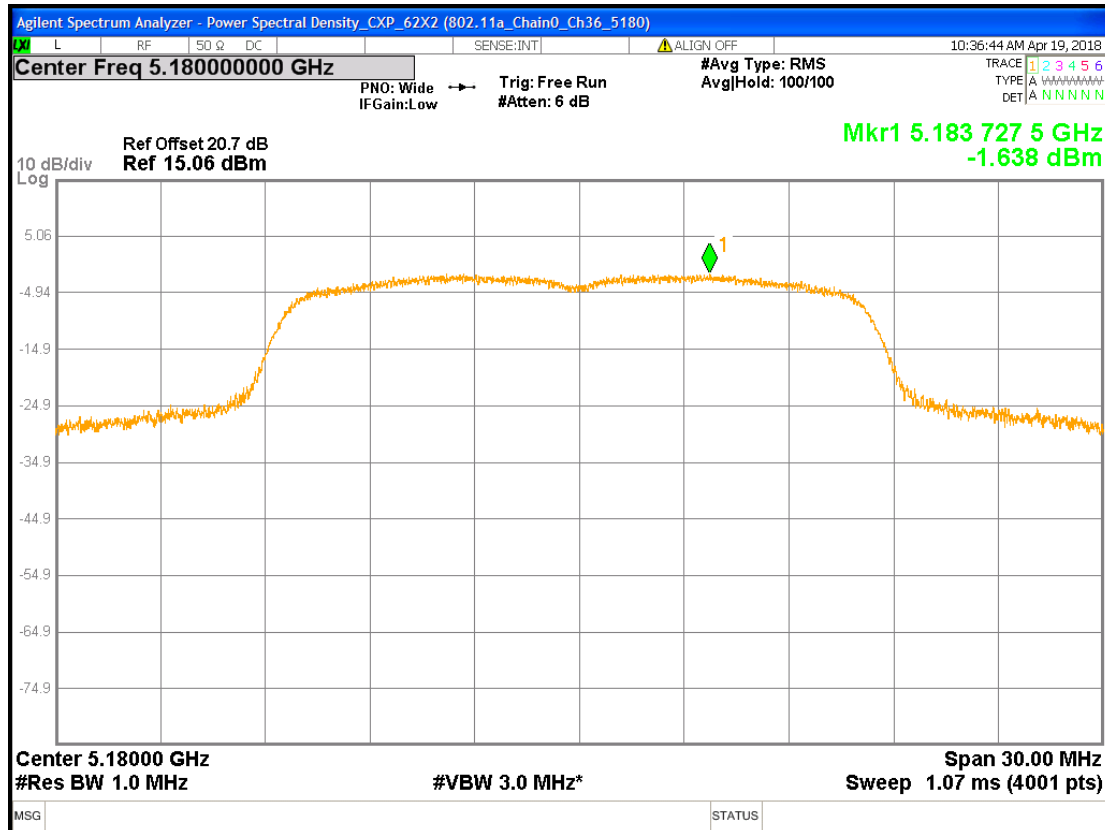
Mode	Channel	Frequency (MHz)	PSD (dBm)		Total PSD		MIMO	Result	Limit (dBm)	Margin (dB)
			chain0	chain1	mW	dBm	Correction			
802.11n (HT 20)	149	5745	-6.256	-4.943	0.56	-2.54	3.01	0.47	30	-29.53
	157	5785	-5.084	-4.22	0.69	-1.62	3.01	1.39	30	-28.61
	165	5825	-5.458	-4.38	0.65	-1.88	3.01	1.13	30	-28.87
802.11n (HT 40)	151	5755	-8.975	-8.709	0.26	-5.83	3.01	-2.82	30	-32.82
	159	5795	-8.758	-7.473	0.31	-5.06	3.01	-2.05	30	-32.05

Note: MIMO Correction: $10\log(Nant)$

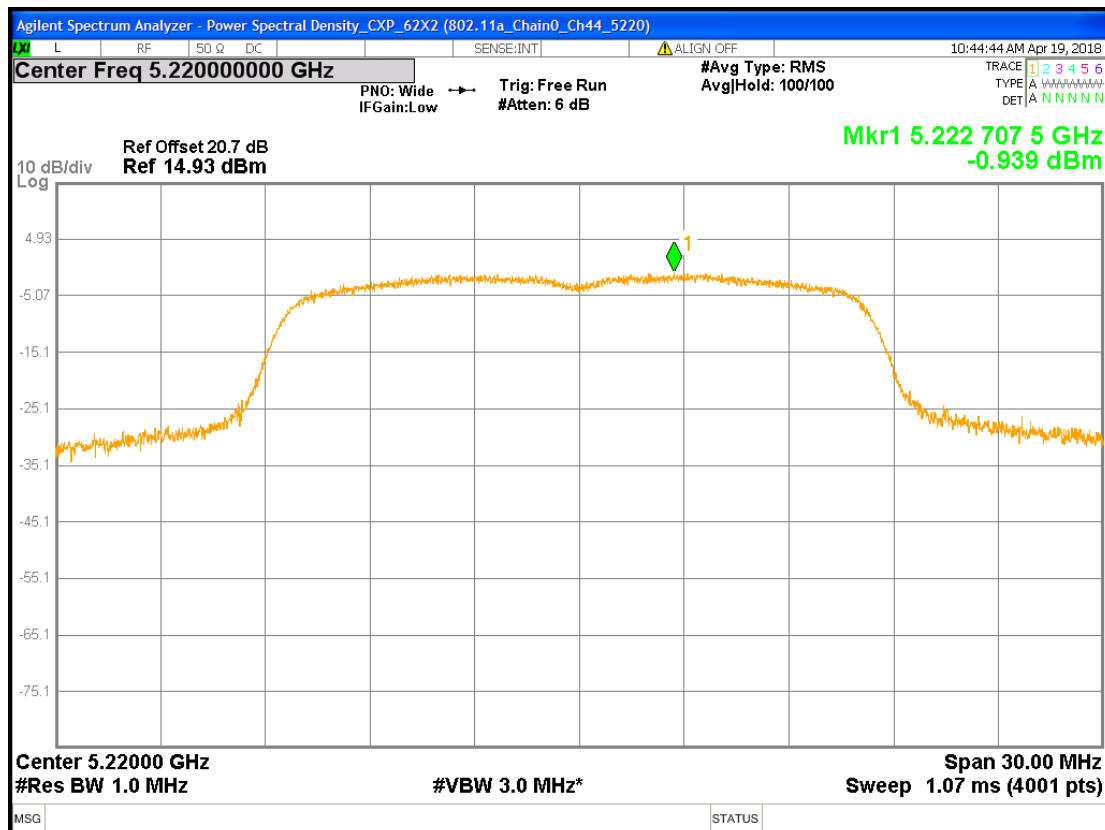
RBW Correction: $10\log(500\text{kHz}/1\text{MHz})$ or $10\log(500\text{kHz}/100\text{kHz})$

Note: The values of 802.11a Chain1 have modified with Reference level Offset(36.99 dB=30(cable loss) + $10\log(500/100)$).

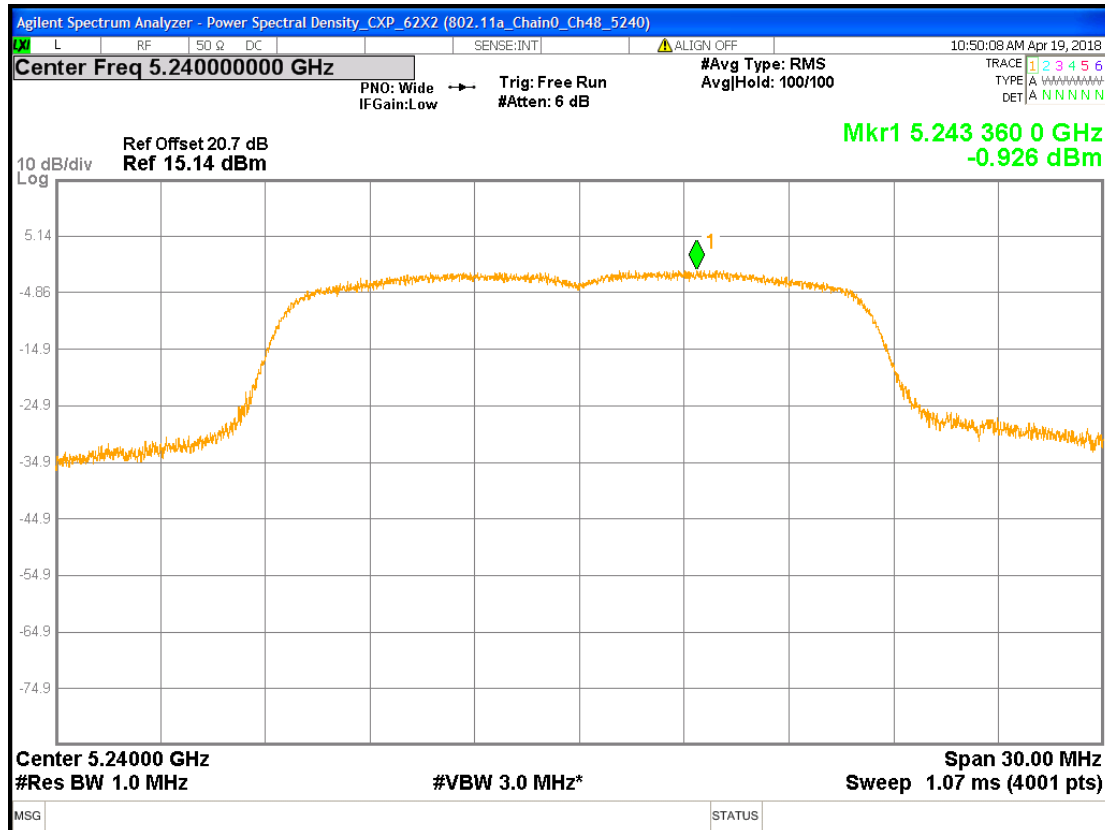
Chain0 : Power Spectral Density @ 802.11a mode Ch36



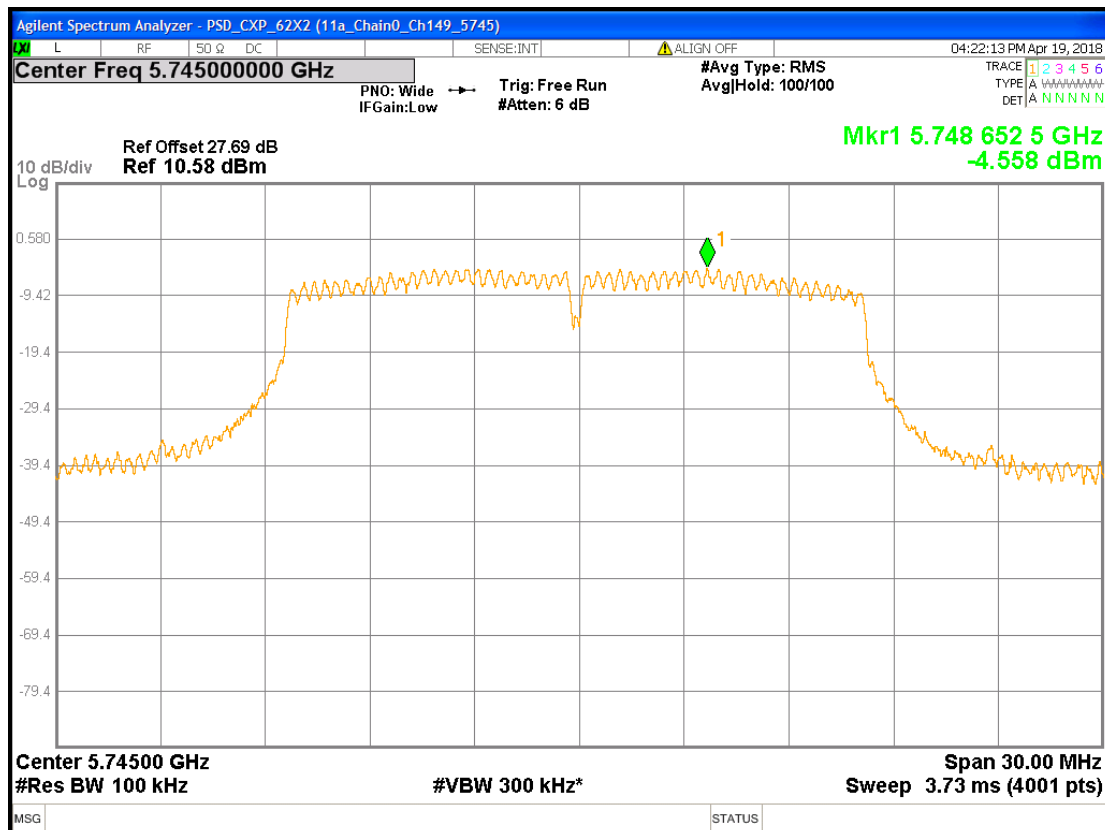
Chain0 : Power Spectral Density @ 802.11a mode Ch44



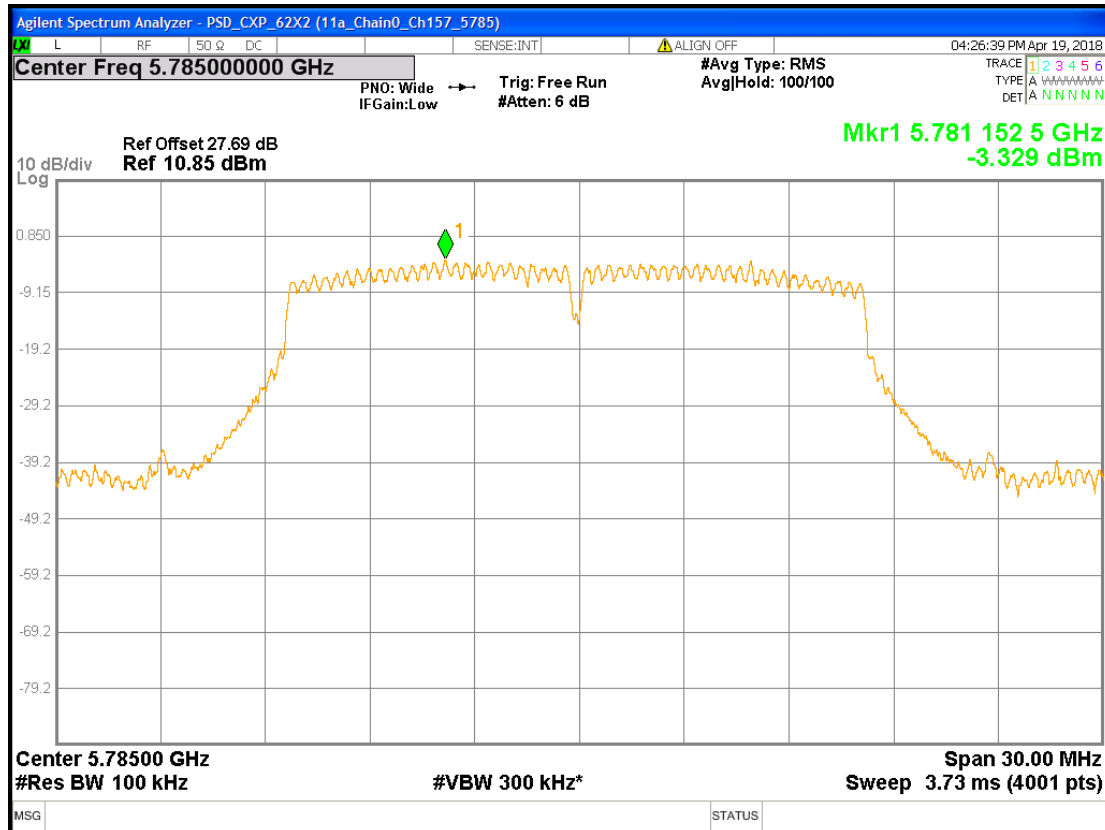
Chain0 : Power Spectral Density @ 802.11a mode Ch48



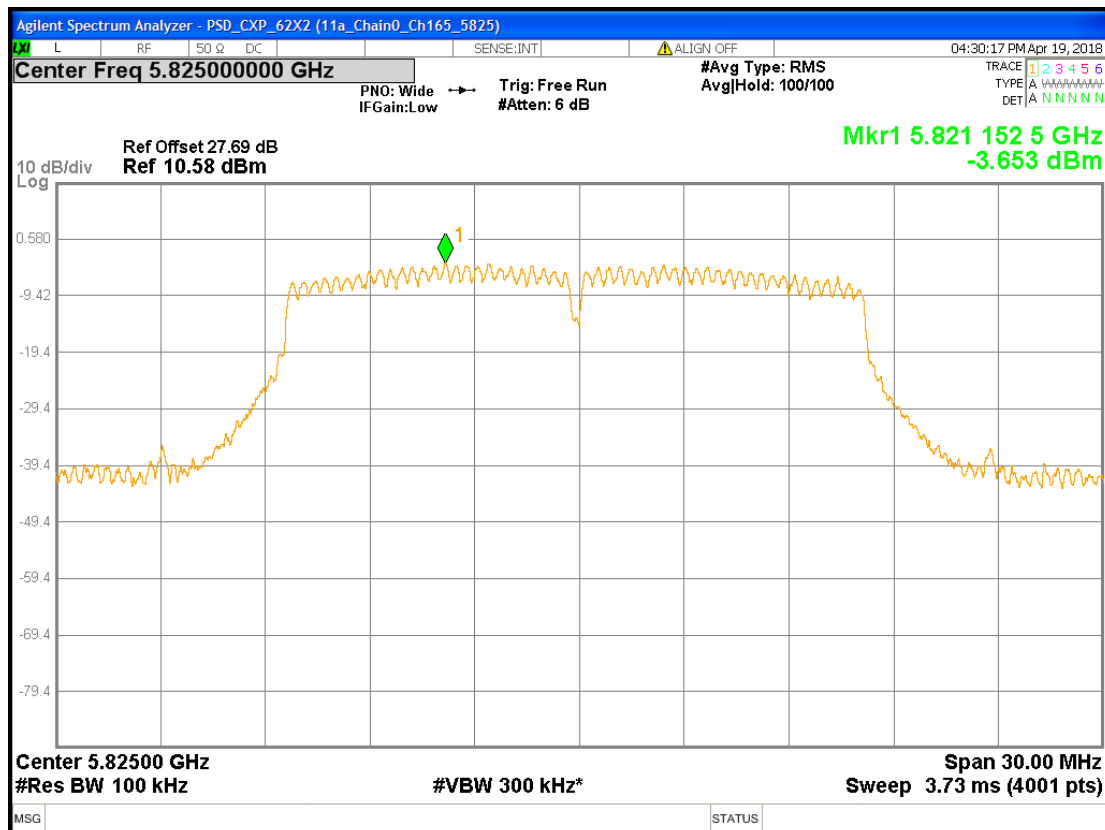
Chain0 : Power Spectral Density @ 802.11a mode Ch149



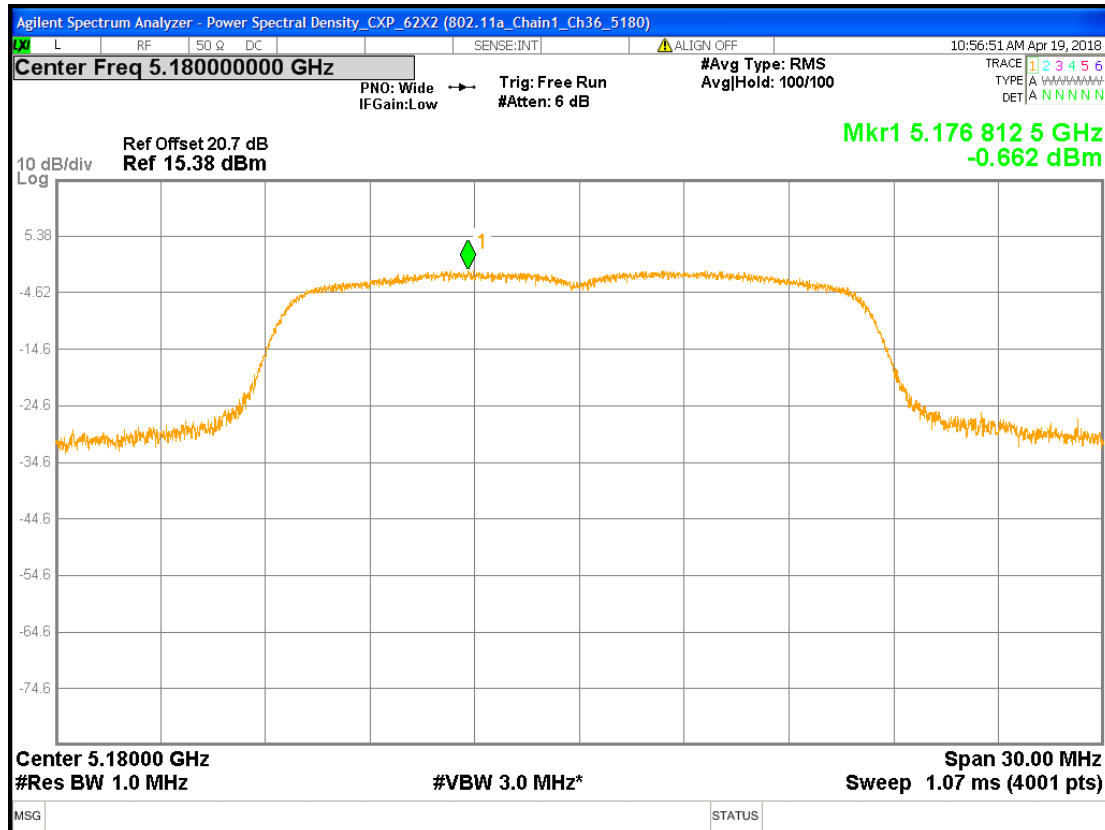
Chain0 : Power Spectral Density @ 802.11a mode Ch157



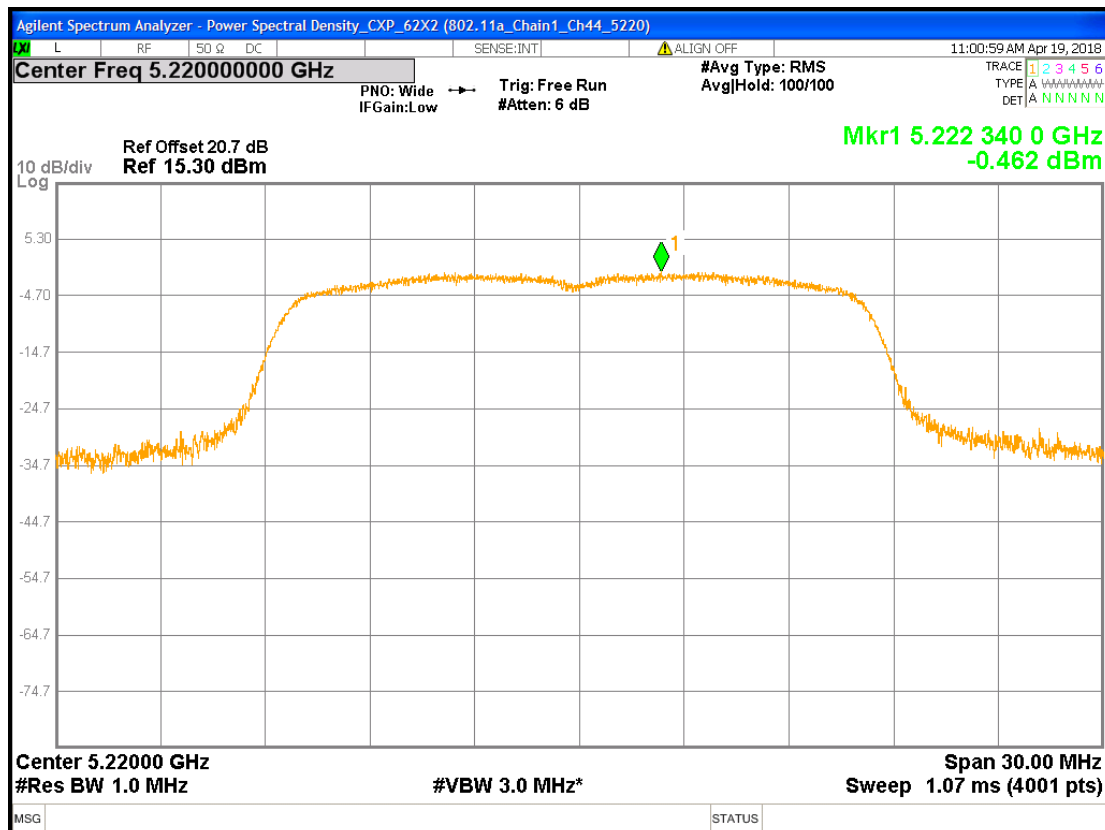
Chain0 : Power Spectral Density @ 802.11a mode Ch165



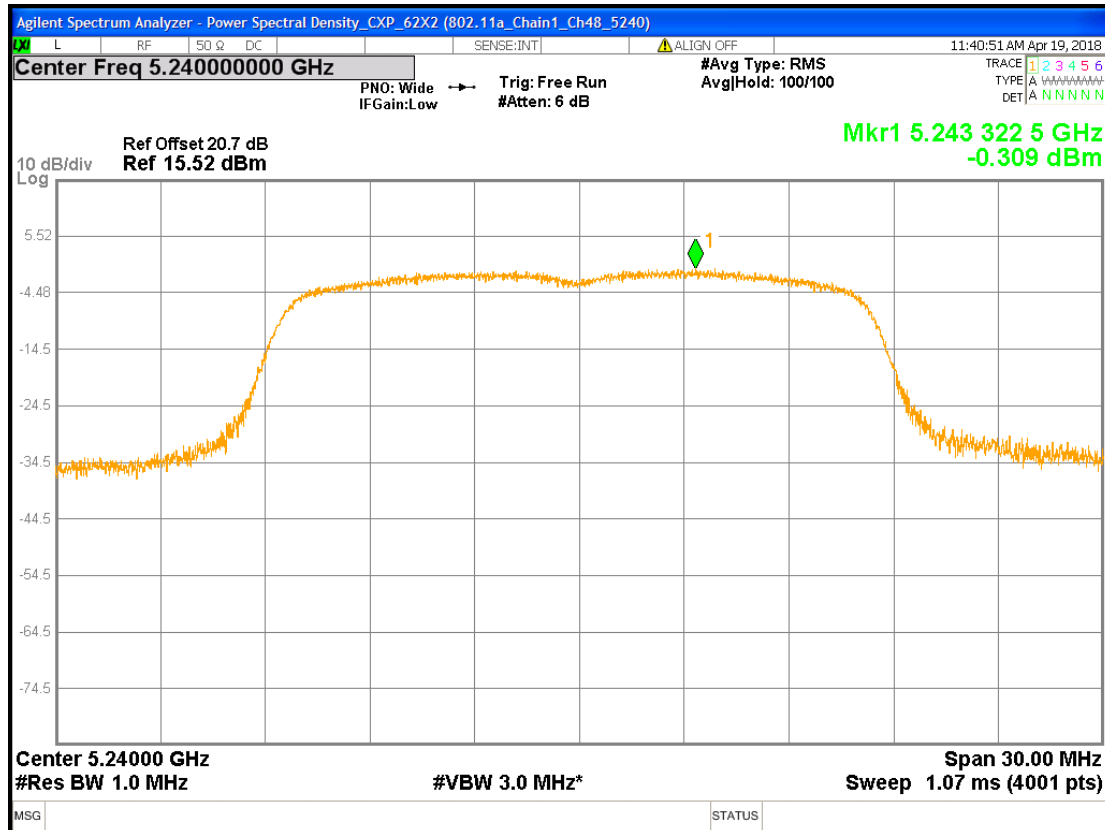
Chain1 : Power Spectral Density @ 802.11a mode Ch36



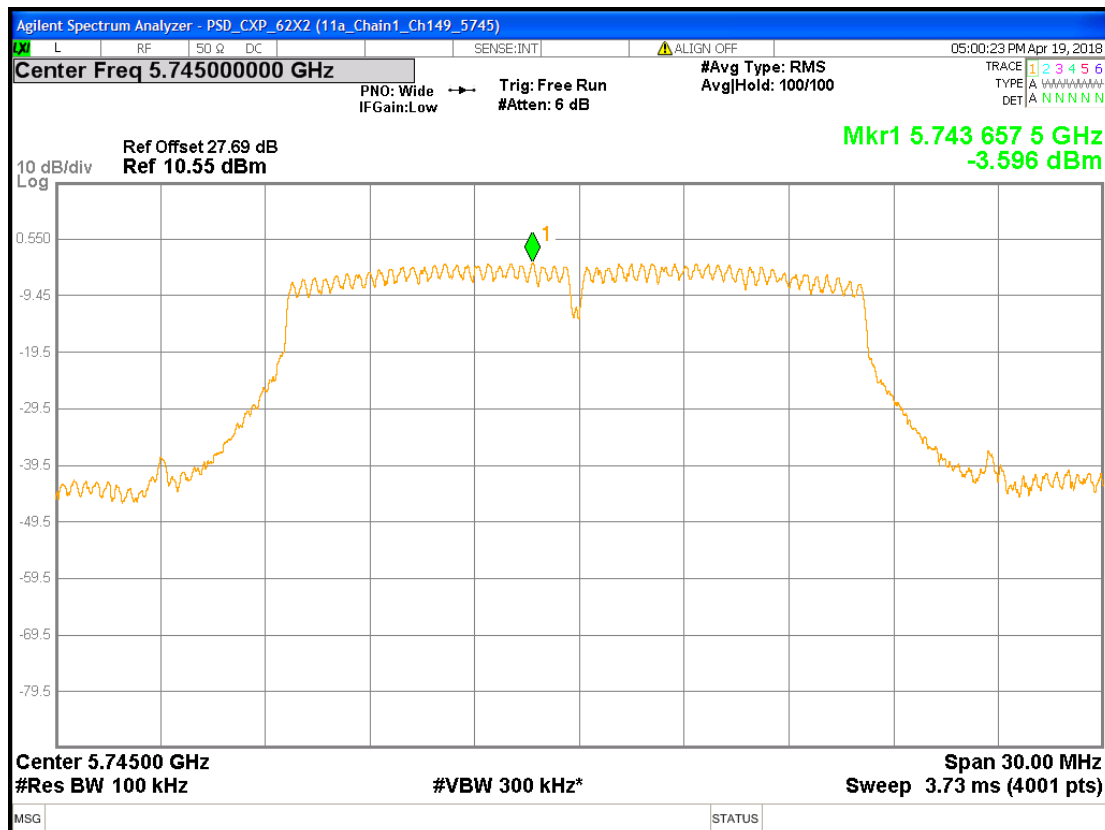
Chain1 : Power Spectral Density @ 802.11a mode Ch44



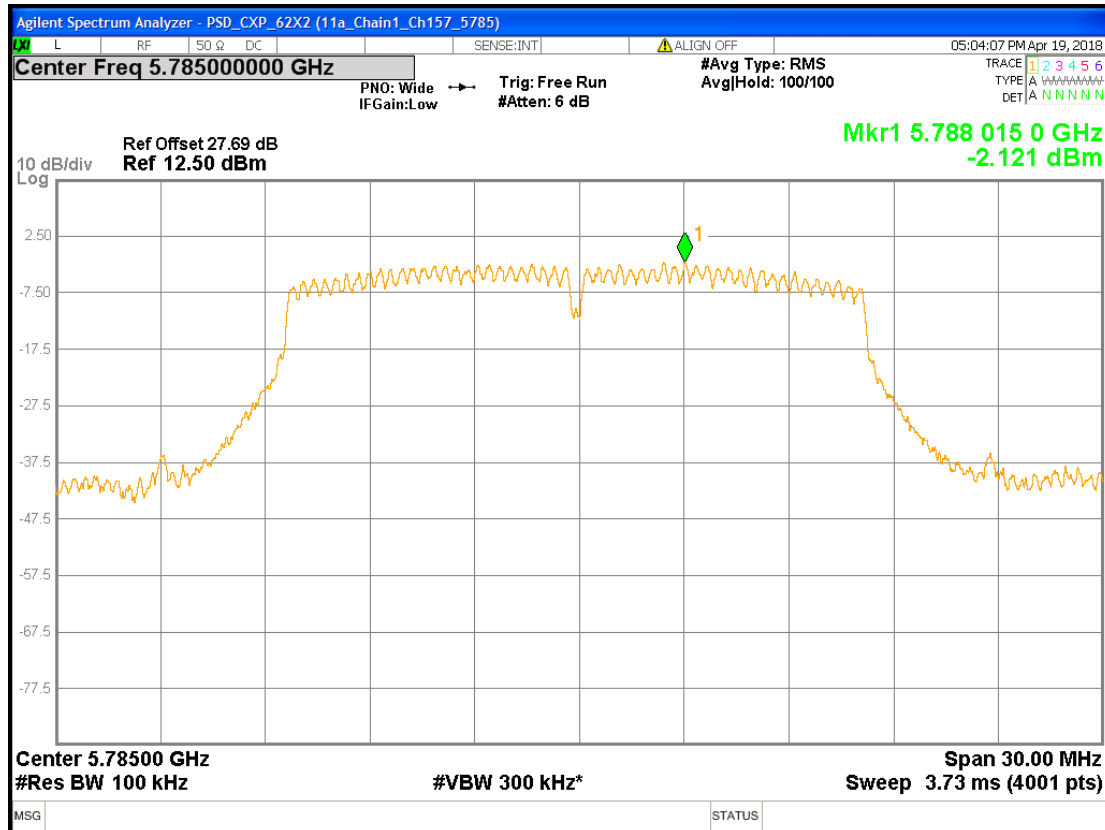
Chain1 : Power Spectral Density @ 802.11a mode Ch48



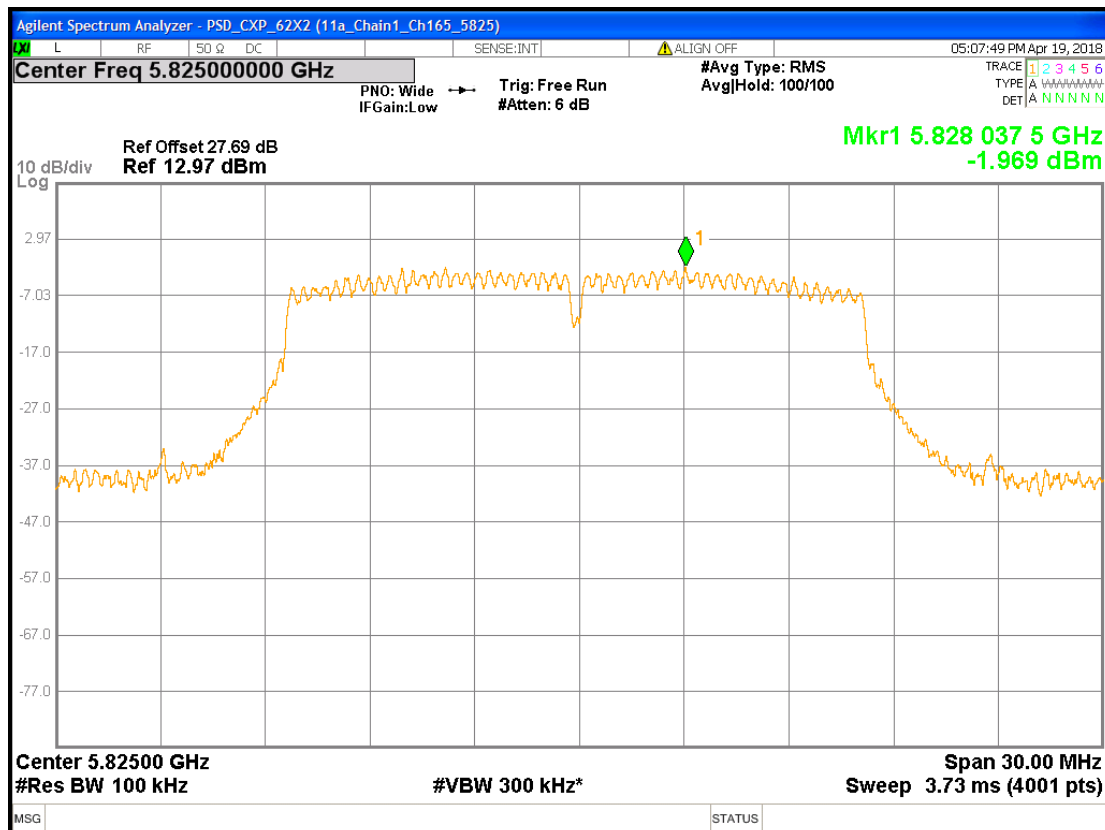
Chain1 : Power Spectral Density @ 802.11a mode Ch149



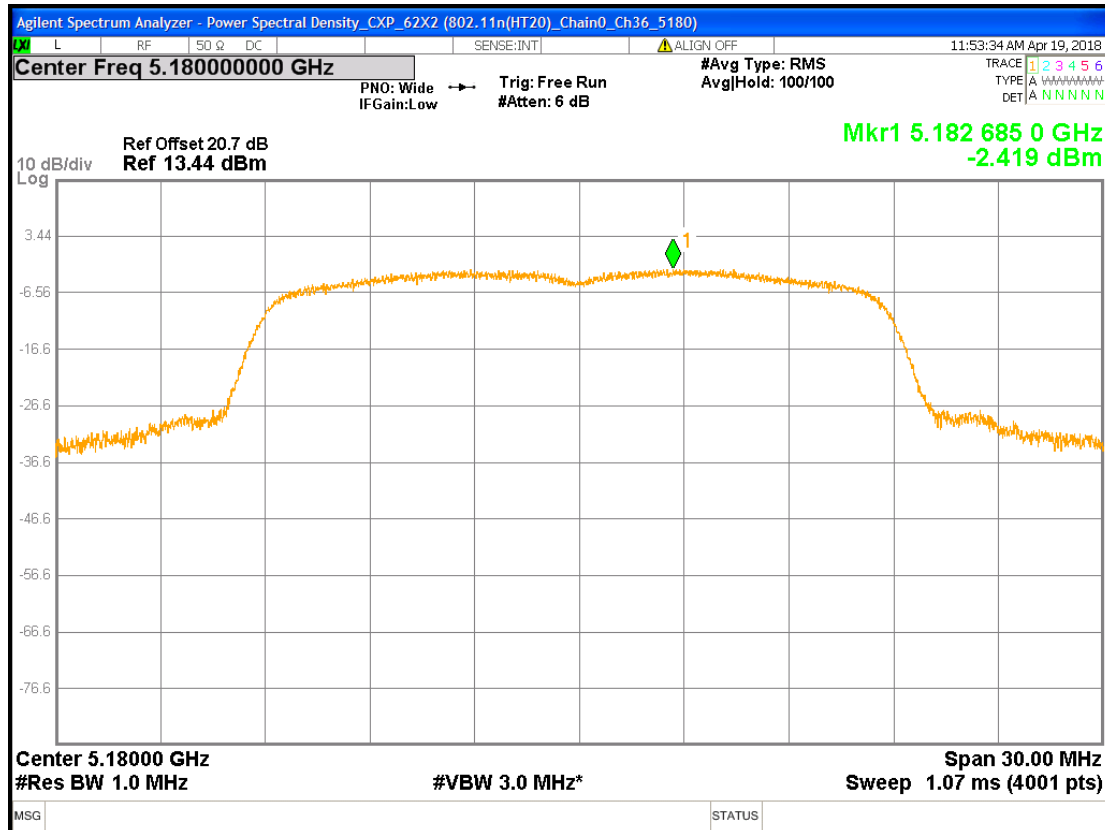
Chain1 : Power Spectral Density @ 802.11a mode Ch157



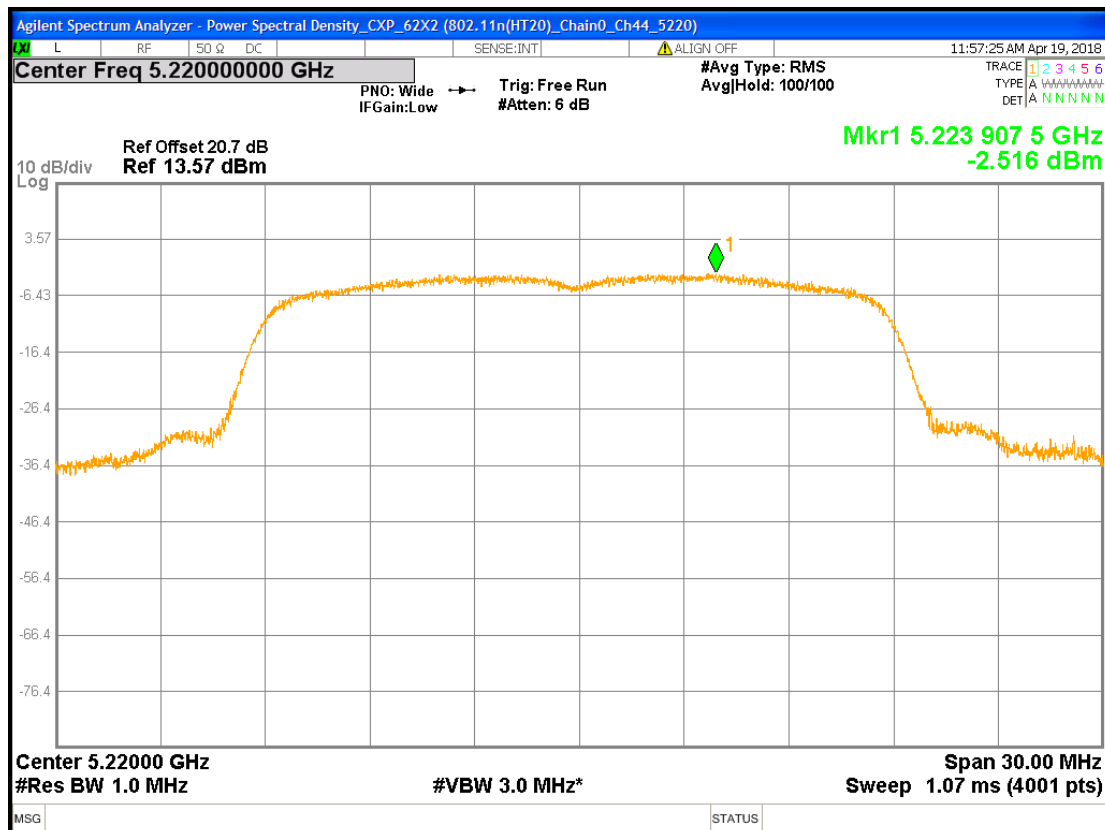
Chain1 : Power Spectral Density @ 802.11a mode Ch165



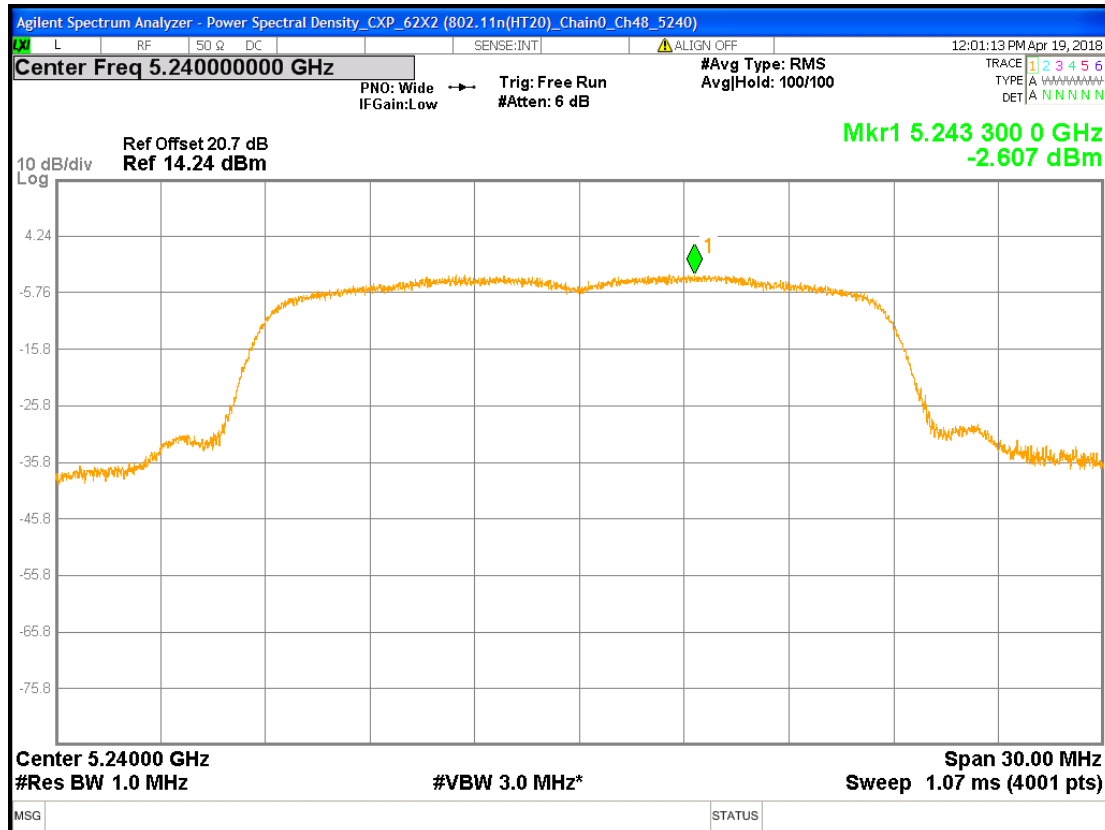
Chain0 : Power Spectral Density @ 802.11n(HT20) mode Ch36



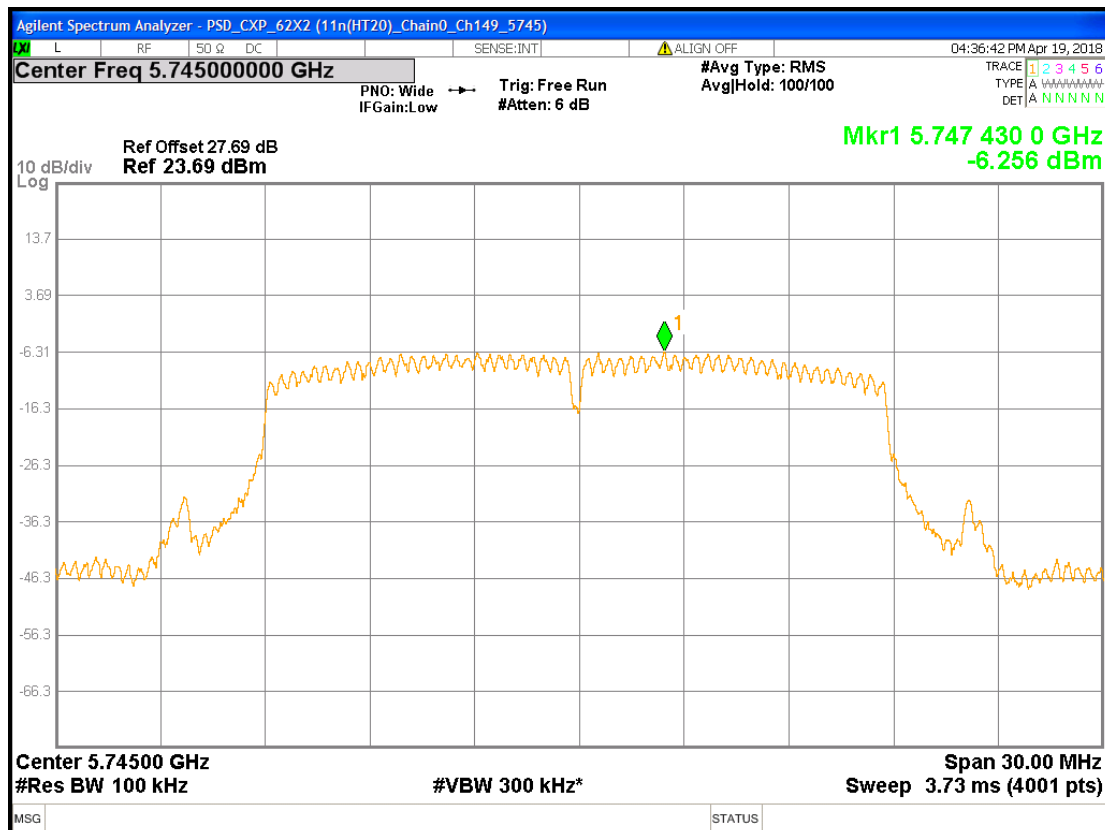
Chain0 : Power Spectral Density @ 802.11n(HT20) mode Ch44



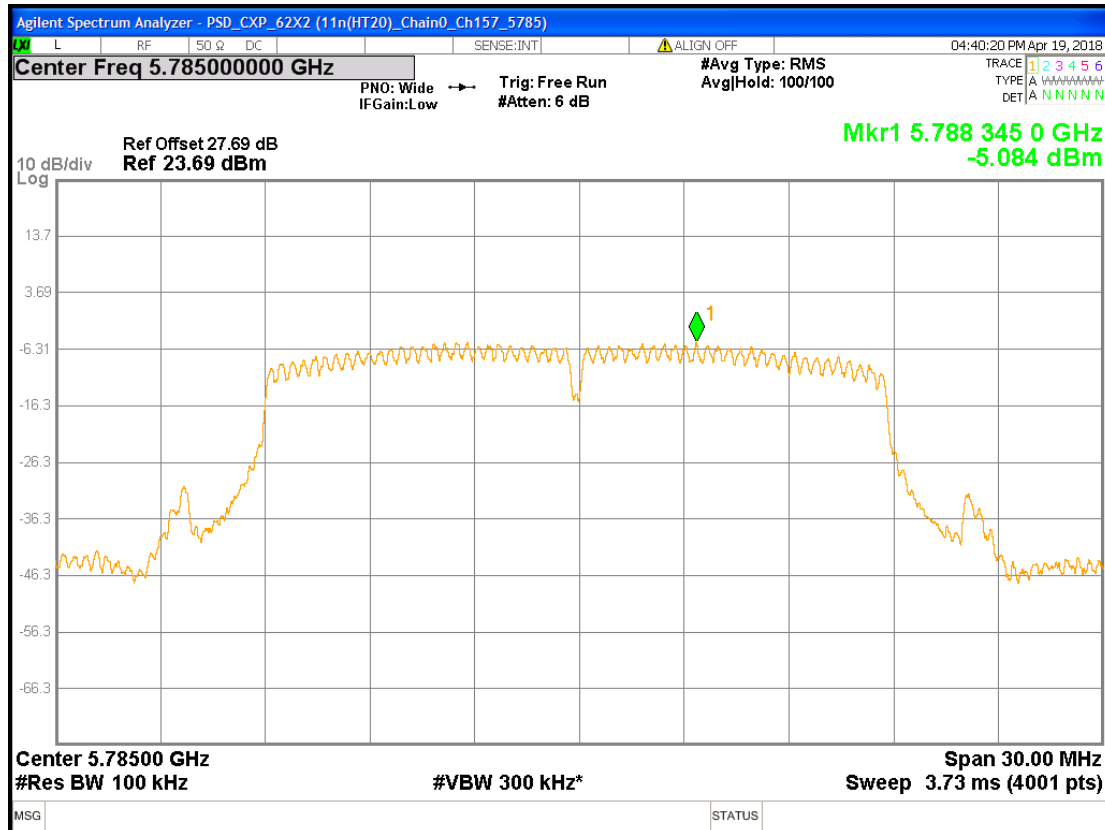
Chain0 : Power Spectral Density @ 802.11n(HT20) mode Ch48



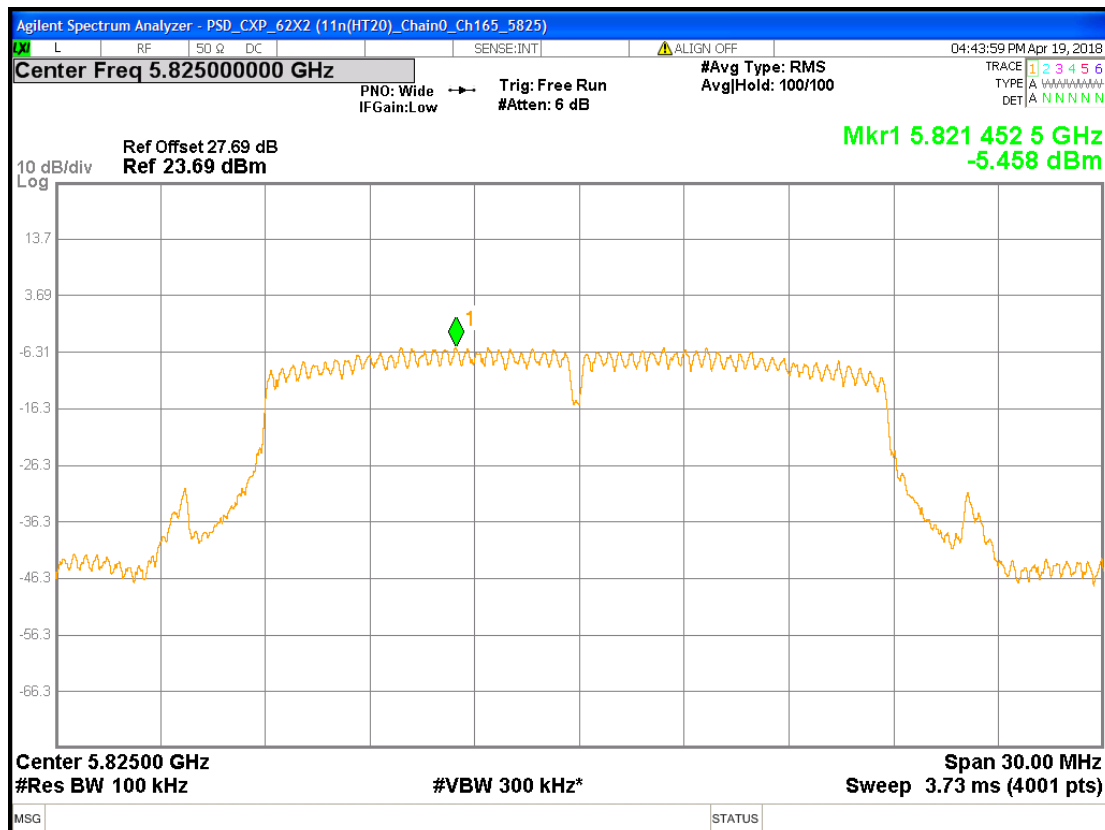
Chain0 : Power Spectral Density @ 802.11n(HT20) mode Ch149



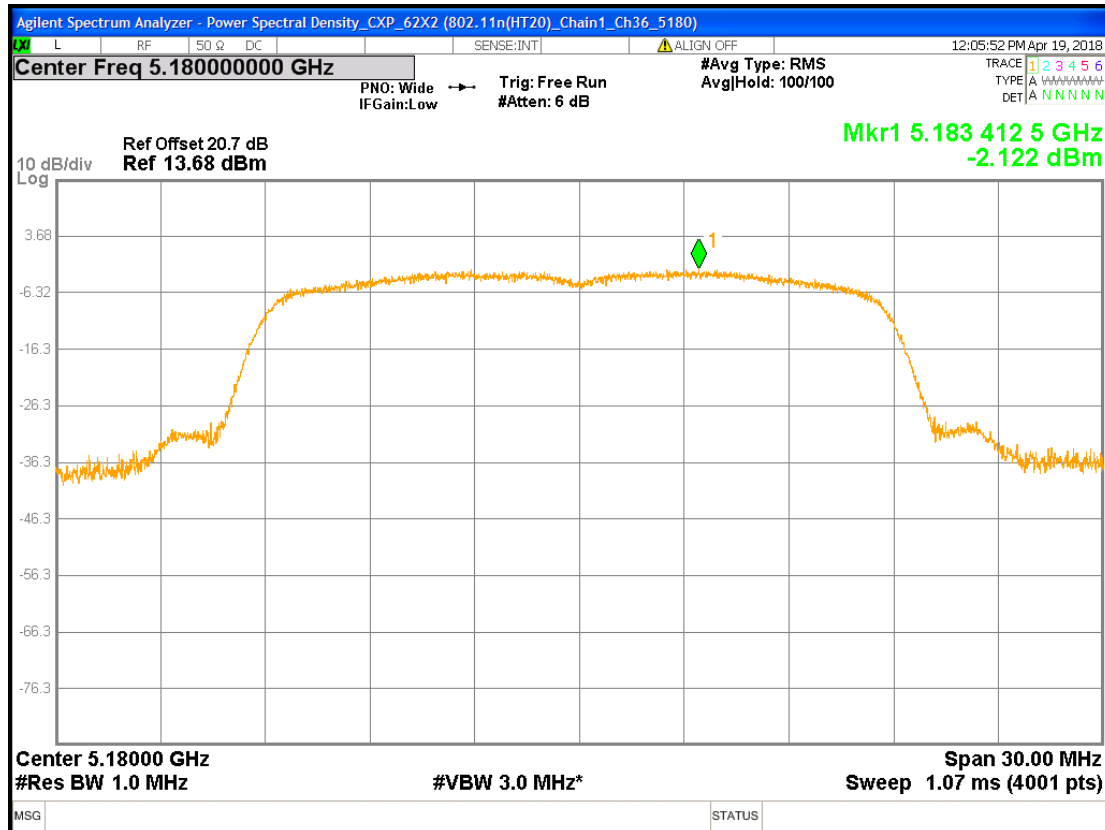
Chain0 : Power Spectral Density @ 802.11n(HT20) mode Ch157



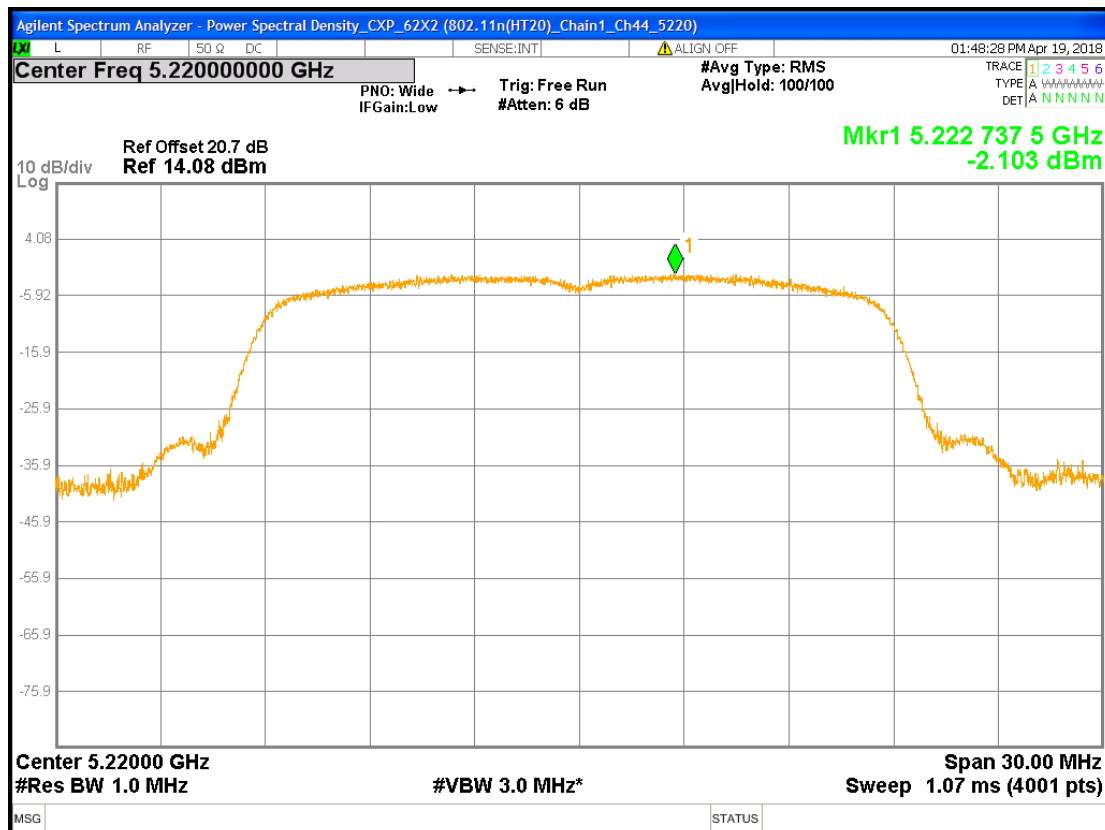
Chain0 : Power Spectral Density @ 802.11n(HT20) mode Ch165



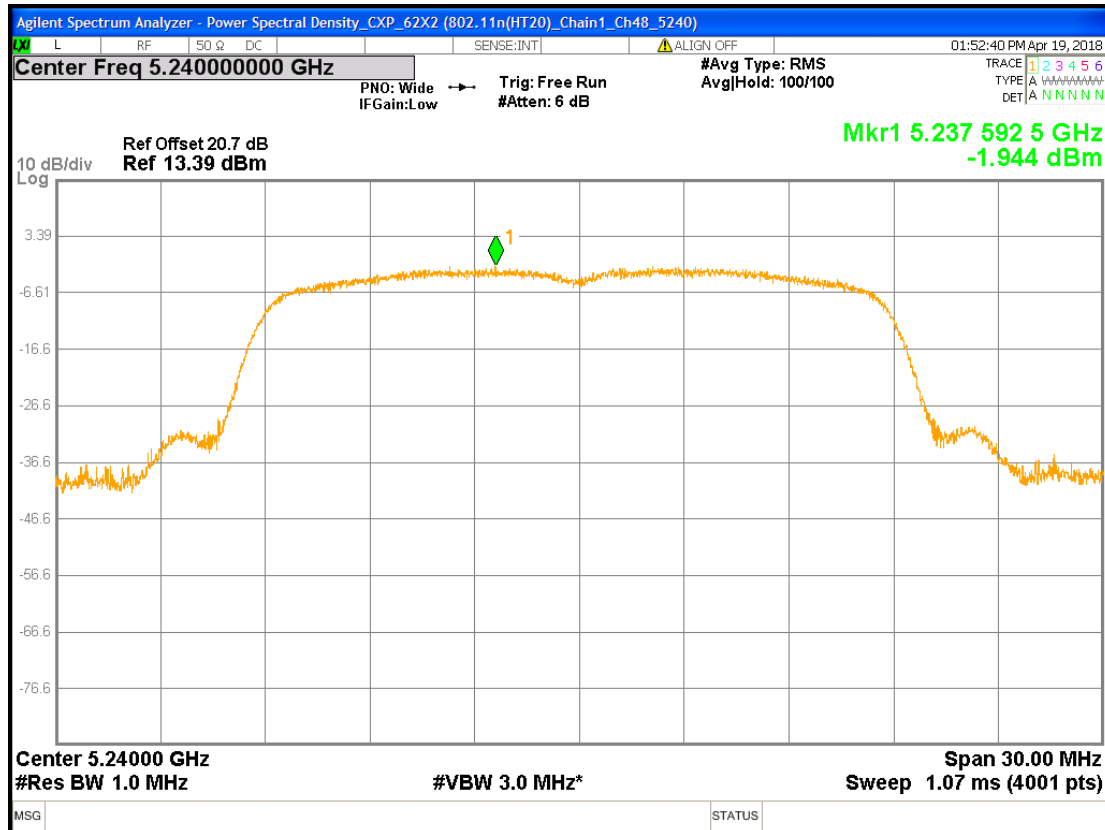
Chain1 : Power Spectral Density @ 802.11n(HT20) mode Ch36



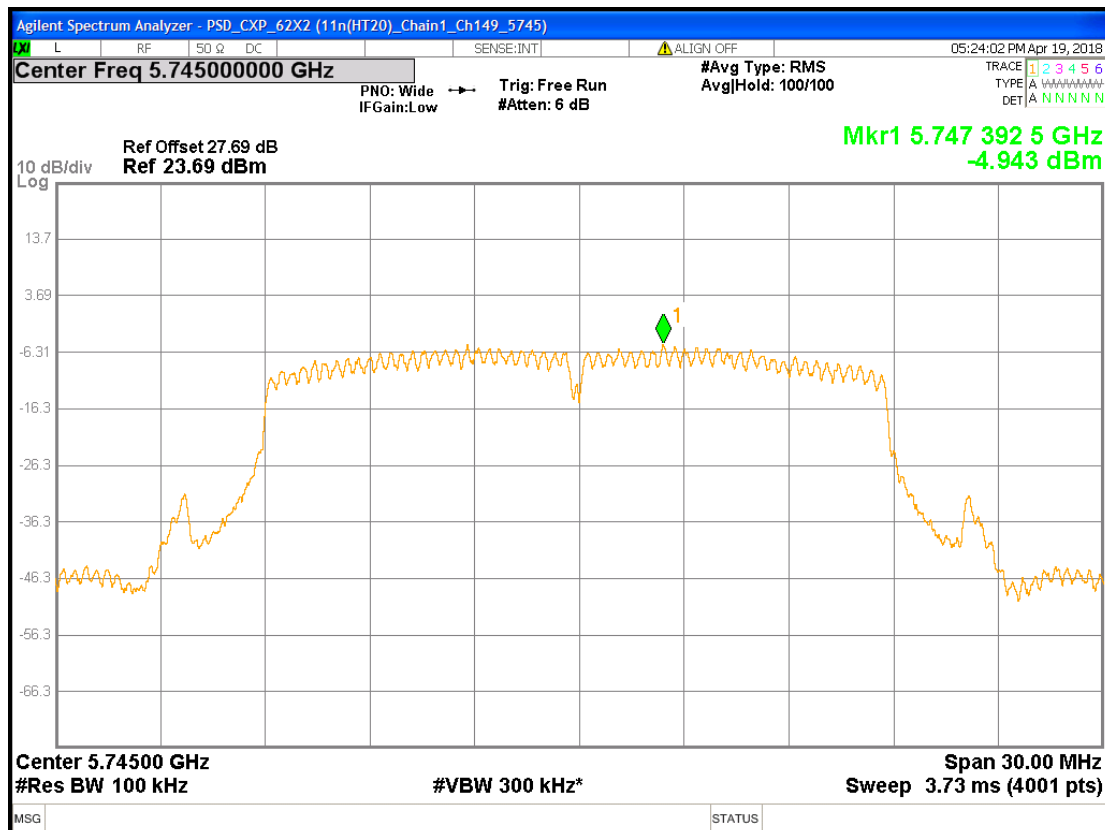
Chain1 : Power Spectral Density @ 802.11n(HT20) mode Ch44



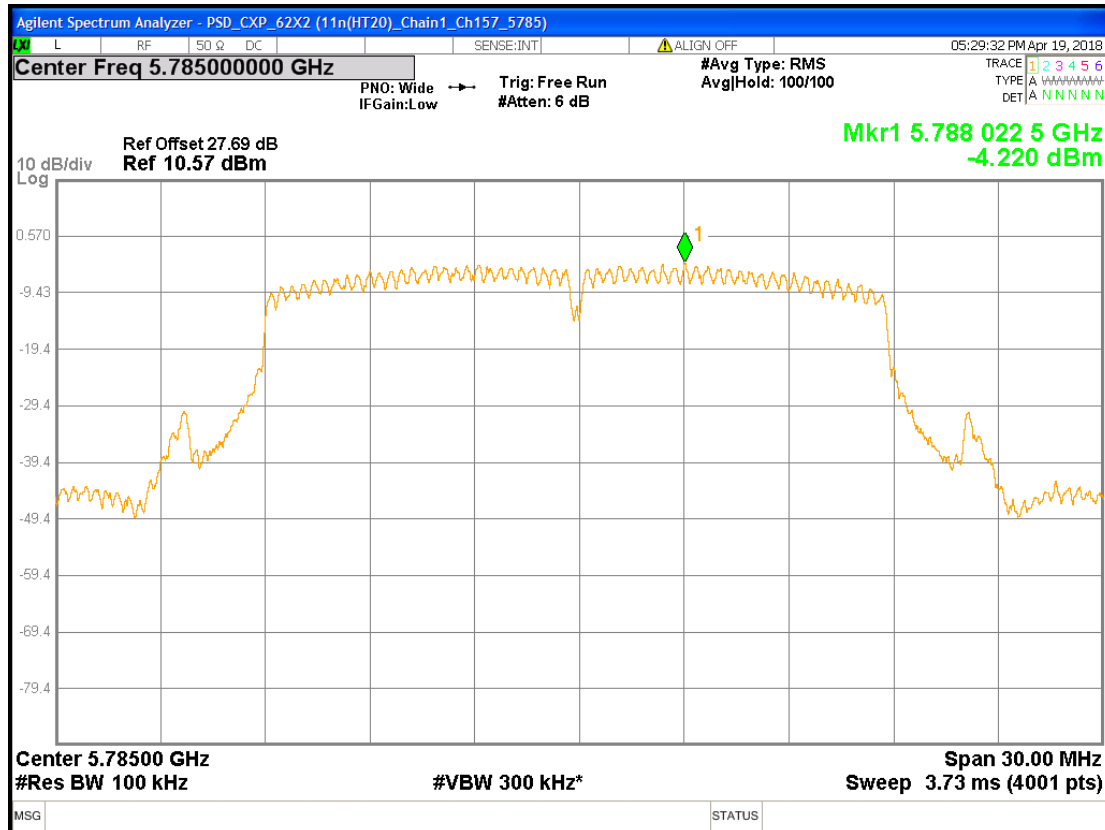
Chain1 : Power Spectral Density @ 802.11n(HT20) mode Ch48



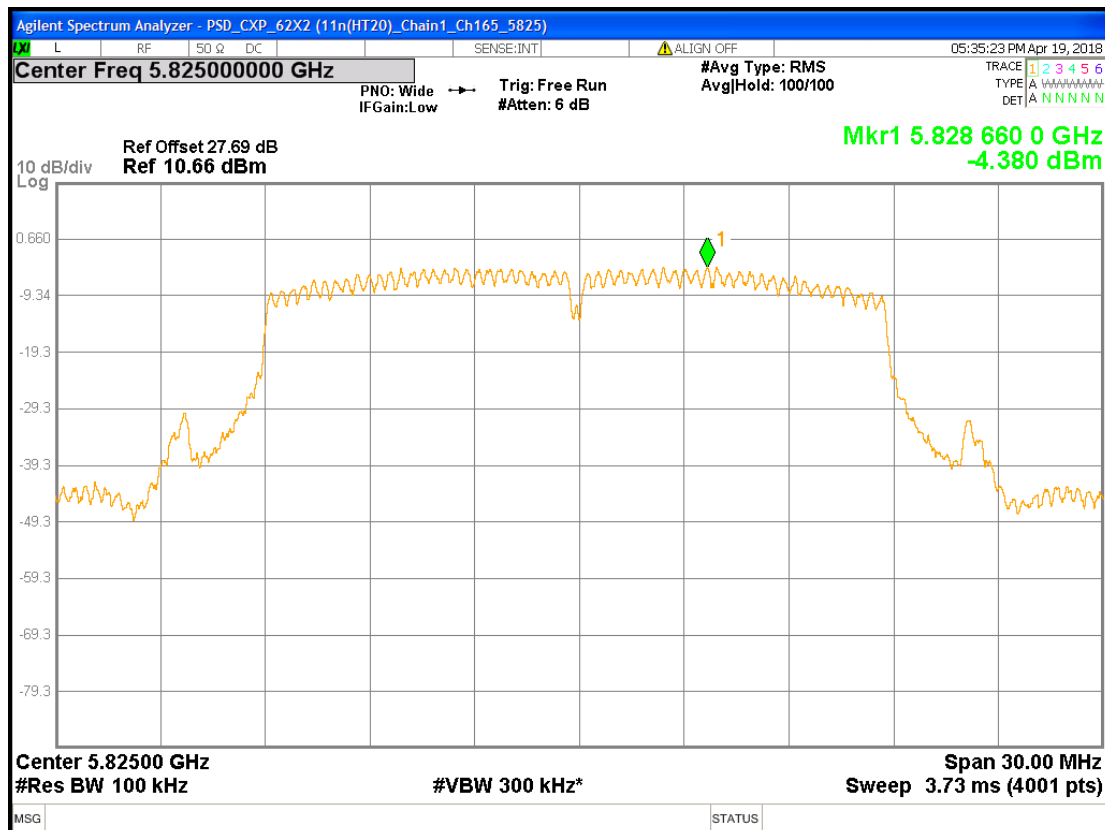
Chain1 : Power Spectral Density @ 802.11n(HT20) mode Ch149



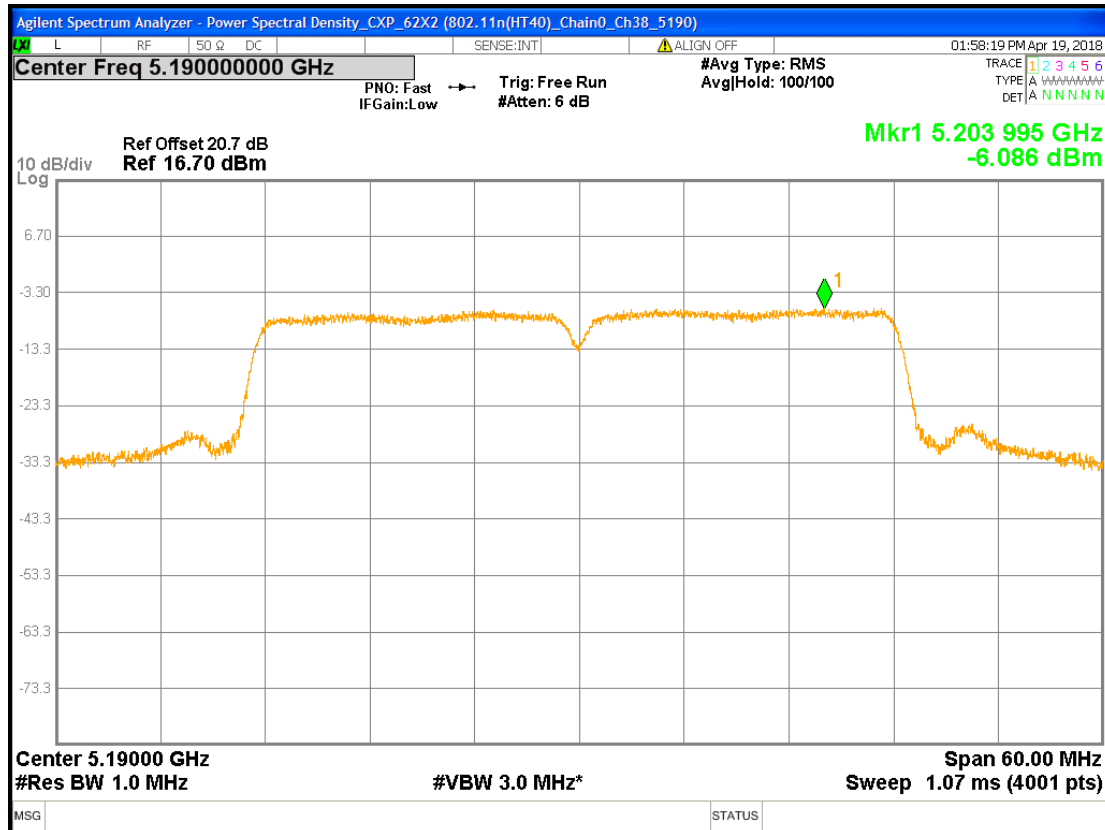
Chain1 : Power Spectral Density @ 802.11n(HT20) mode Ch157



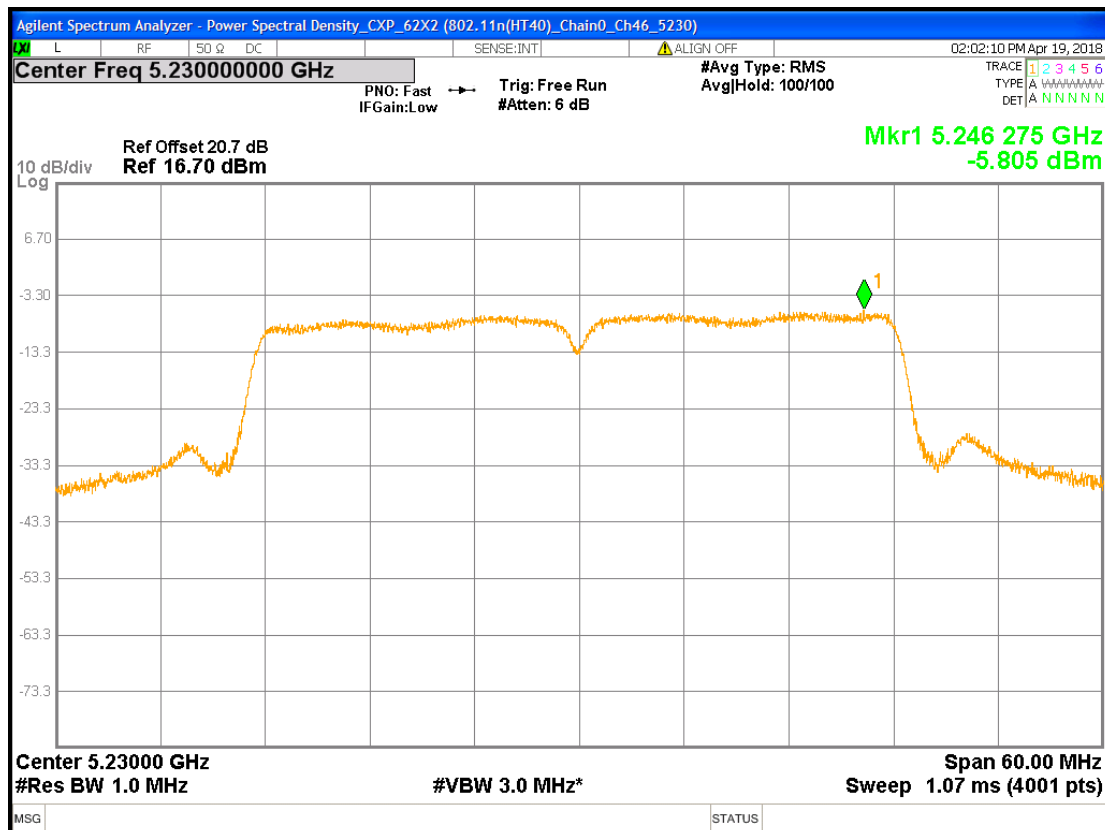
Chain1 : Power Spectral Density @ 802.11n(HT20) mode Ch165



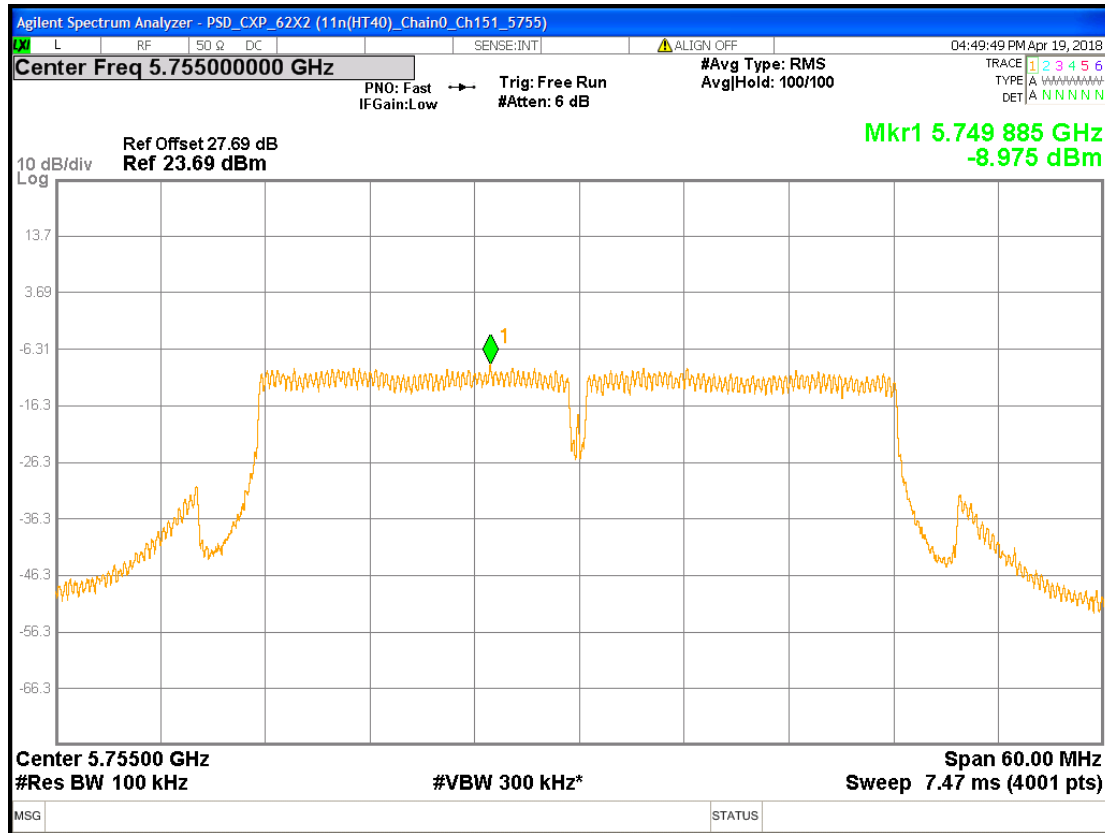
Chain0 : Power Spectral Density @ 802.11n(HT40) mode Ch38



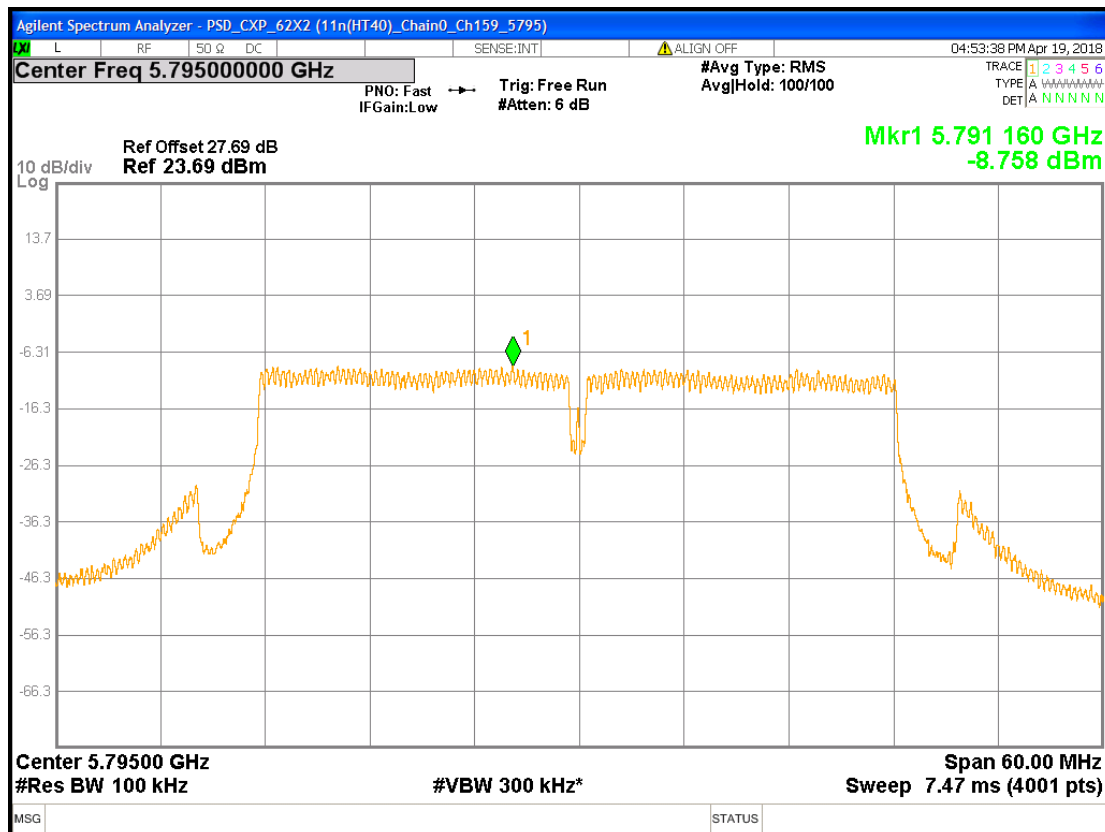
Chain0 : Power Spectral Density @ 802.11n(HT40) mode Ch46



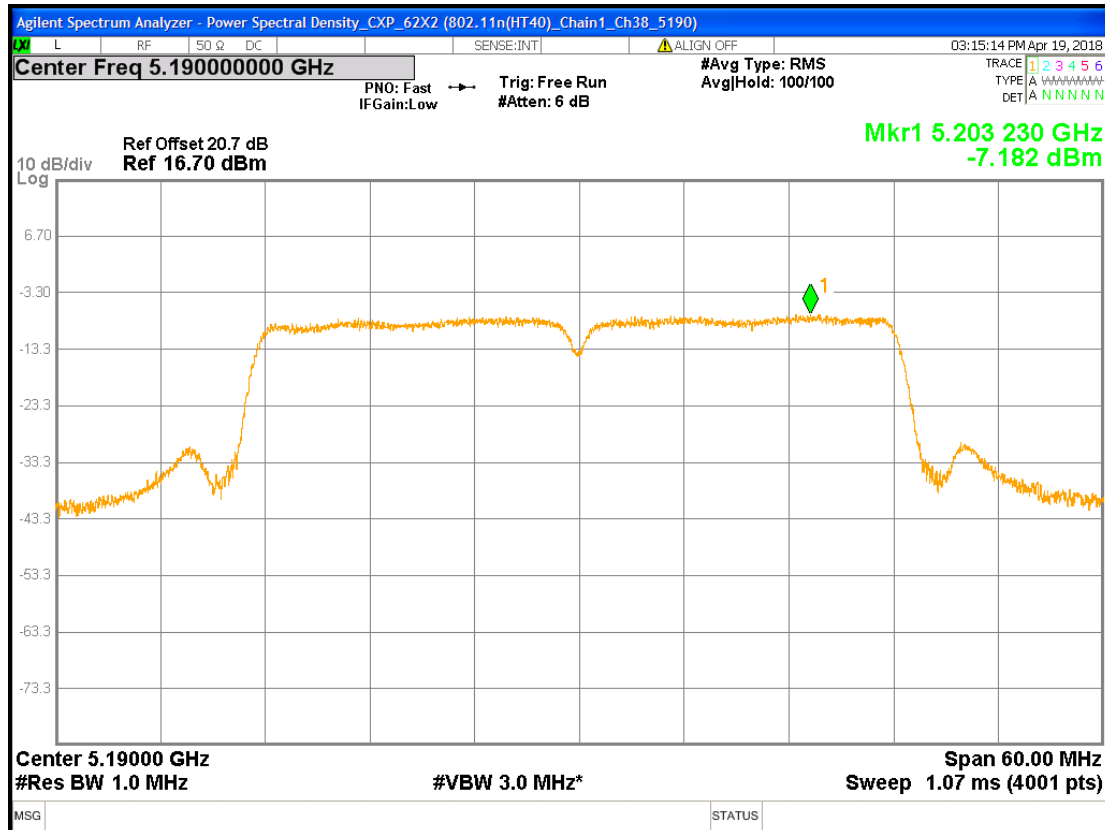
Chain0 : Power Spectral Density @ 802.11n(HT40) mode Ch151



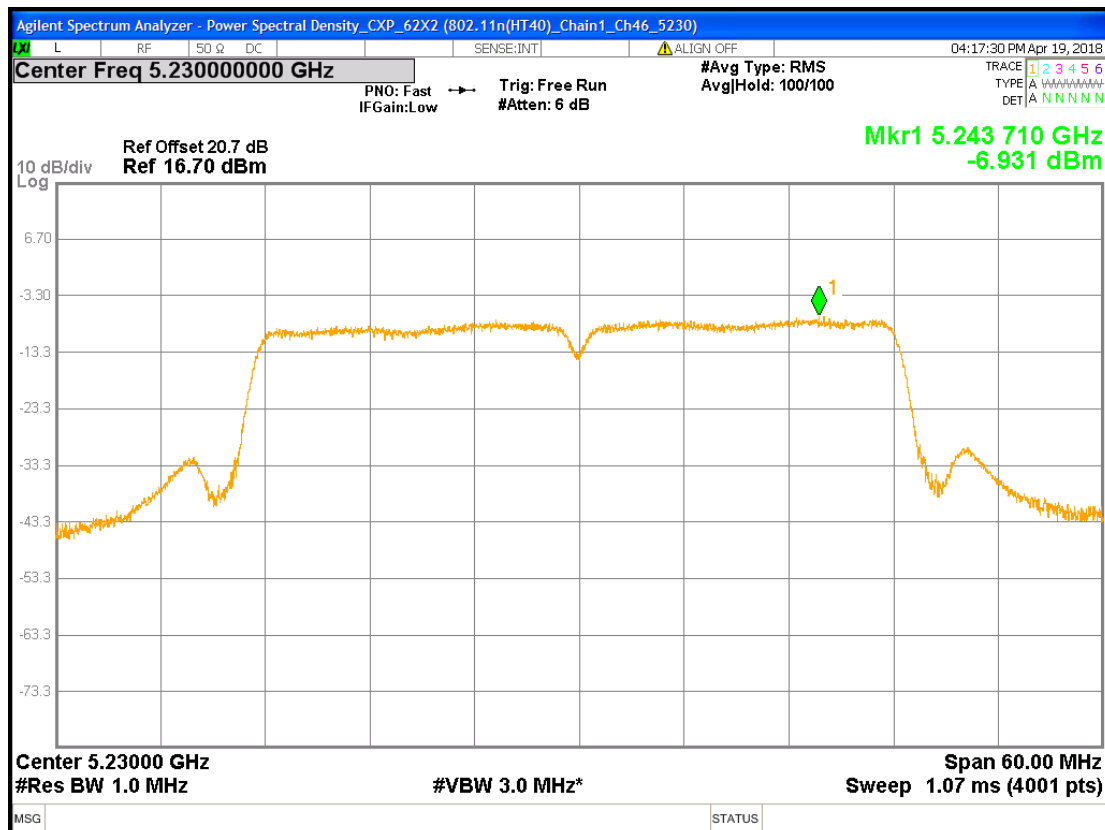
Chain0 : Power Spectral Density @ 802.11n(HT40) mode Ch159



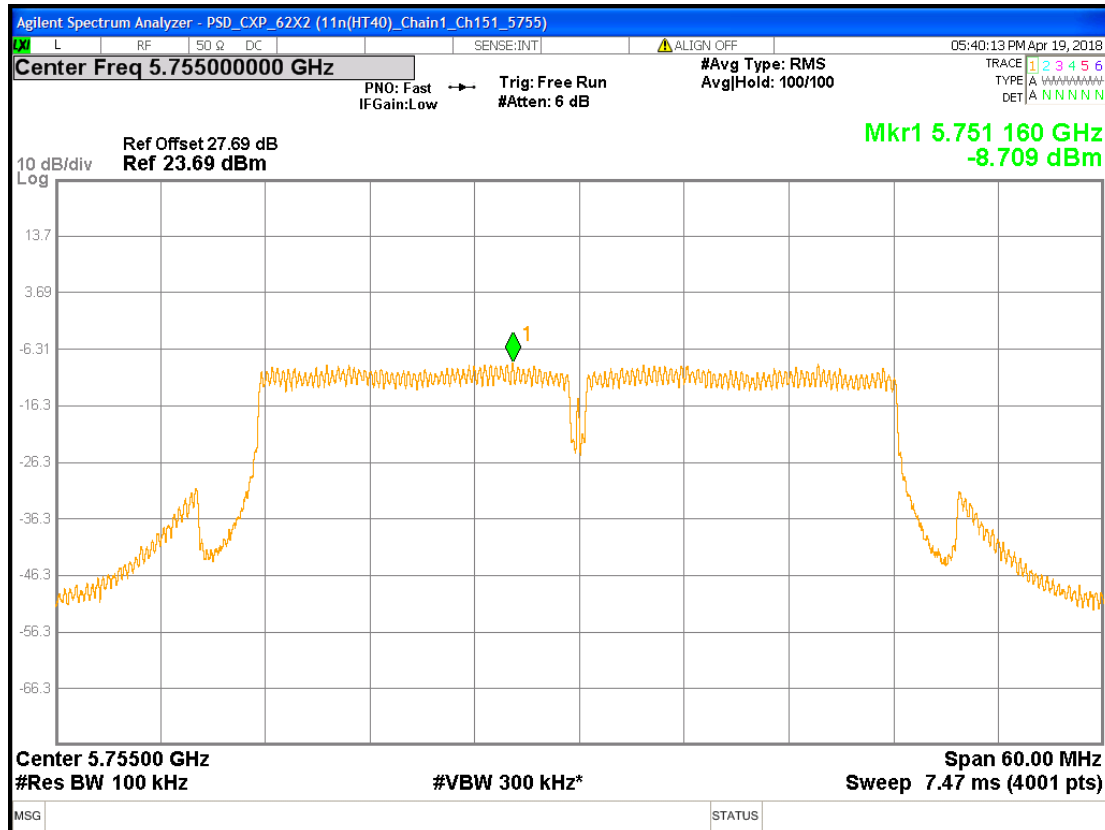
Chain1 : Power Spectral Density @ 802.11n(HT40) mode Ch38



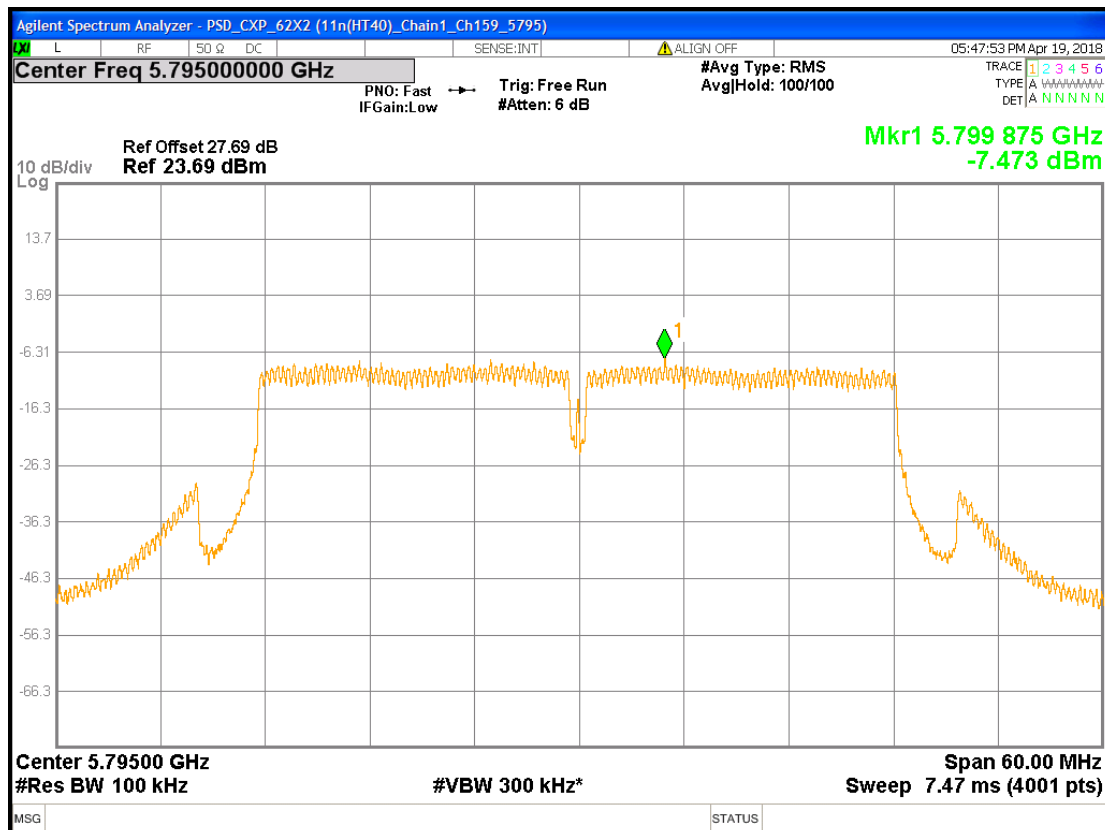
Chain1 : Power Spectral Density @ 802.11n(HT40) mode Ch46



Chain1 : Power Spectral Density @ 802.11n(HT40) mode Ch151



Chain1 : Power Spectral Density @ 802.11n(HT40) mode Ch159



4. Minimum Bandwidth

4.1 Operating environment

Temperature:	25	°C
Relative Humidity:	50	%
Atmospheric Pressure	1008	hPa
Requirement & Test method	15.407(a)(5) 15.407(e) KDB 789033 D02 v01r02	

4.2 Limit for minimum emission bandwidth.

Within the 5.15-5.25 GHz, the 26 dB bandwidth is for reporting purpose only.

Within the 5.725-5.85 GHz, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz..

4.3 Measuring instrument setting

For 5.15-5.25 GHz

Spectrum analyzer settings	
Spectrum Analyzer function	Setting
Detector	Peak
RBW	Approximately 1% of the EBW
VBW	> RBW
Trace mode	Max hold

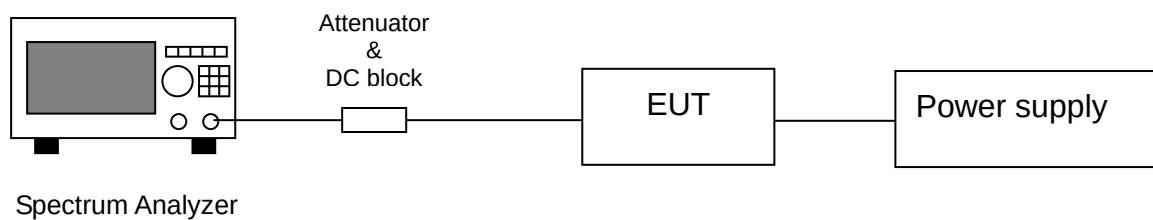
For 5.725-5.85 GHz

Spectrum analyzer settings	
Spectrum Analyzer function	Setting
Detector	Peak
RBW	100kHz
VBW	$\geq 3 \times$ RBW
Sweep	Auto couple
Trace mode	Max hold

4.4 Test procedure

1. The transmitter output was connected to the spectrum analyzer.
2. Test was performed in accordance with section C of KDB 789033 D02 v01r02.
3. For the 5.725-5.85 GHz, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
4. For the 5.15-5.25 GHz and 5.725-5.85 GHz, measure the maximum width of the emission that is 26 dB down from the maximum of the emission.

4.5 Test diagram



4.6 Test results

UNII-1

SISO

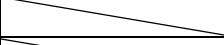
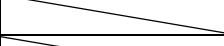
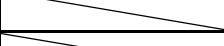
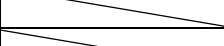
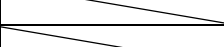
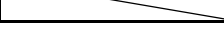
Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Pass/Fail
802.11a Chain0	36	5180		38.66	NA	Pass
	44	5220		34.72		Pass
	48	5240		30.79		Pass
802.11a Chain1	36	5180		35.96	NA	Pass
	44	5220		31.73		Pass
	48	5240		28.64		Pass

MIMO

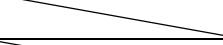
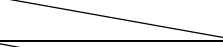
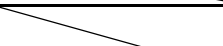
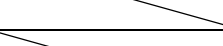
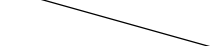
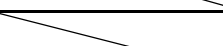
Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Pass/Fail
802.11n (HT 20) Chain0	36	5180		34.2	NA	Pass
	44	5220		27.57		Pass
	48	5240		30.04		Pass
802.11n (HT 20) Chain1	36	5180		29.56	NA	Pass
	44	5220		27.85		Pass
	48	5240		28.76		Pass
802.11n (HT 40) Chain0	38	5190		78.03	NA	Pass
	46	5230		66.22		Pass
802.11n (HT 40) Chain1	38	5190		63.25	NA	Pass
	46	5230		50.29		Pass

UNII-3

SISO

Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Pass/Fail
802.11a Chain0	149	5745	14.58		>0.5	Pass
	157	5785	15.9			Pass
	165	5825	15.65			Pass
802.11a Chain1	149	5745	15.46		>0.5	Pass
	157	5785	16.27			Pass
	165	5825	15.11			Pass

MIMO

Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit (MHz)	Pass/Fail
802.11n (HT 20) Chain0	149	5745	15.07		>0.5	Pass
	157	5785	15.44			Pass
	165	5825	14.29			Pass
802.11n (HT 20) Chain1	149	5745	15.03		>0.5	Pass
	157	5785	15.06			Pass
	165	5825	15.04			Pass
802.11n (HT 40) Chain0	151	5755	36.07		>0.5	Pass
	159	5795	36.03			Pass
802.11n (HT 40) Chain1	151	5755	36.29		>0.5	Pass
	159	5795	36.34			Pass

UNII-1

SISO

Mode	Channel	Frequency (MHz)	Data rate (Mbps)	99% Bandwidth (MHz)	lower Frequency (MHz)	lower limit
802.11a chain0	36	5180	6	16.949		
	44	5220		16.704		
	48	5240		16.568	5248.24	5250
802.11a chain1	36	5180	6	16.719		
	44	5220		16.461		
	48	5240		16.499	5248.2	5250

MIMO

Mode	Channel	Frequency (MHz)	Data rate (Mbps)	99% Bandwidth (MHz)	lower Frequency (MHz)	lower limit
802.11n (HT 20) chain0	36	5180	6.5	17.588		
	44	5220		17.558		
	48	5240		17.554	5248.72	5250
802.11n (HT 20) chain1	36	5180	13.5	17.52		
	44	5220		17.45		
	48	5240		17.434	5248.64	5250
802.11n (HT 40) chain0	38	5190	6.5	36.921		
	46	5230		36.617	5248.32	5250
802.11n (HT 40) chain1	38	5190	13.5	36.537		
	46	5230		36.384	5248.24	5250

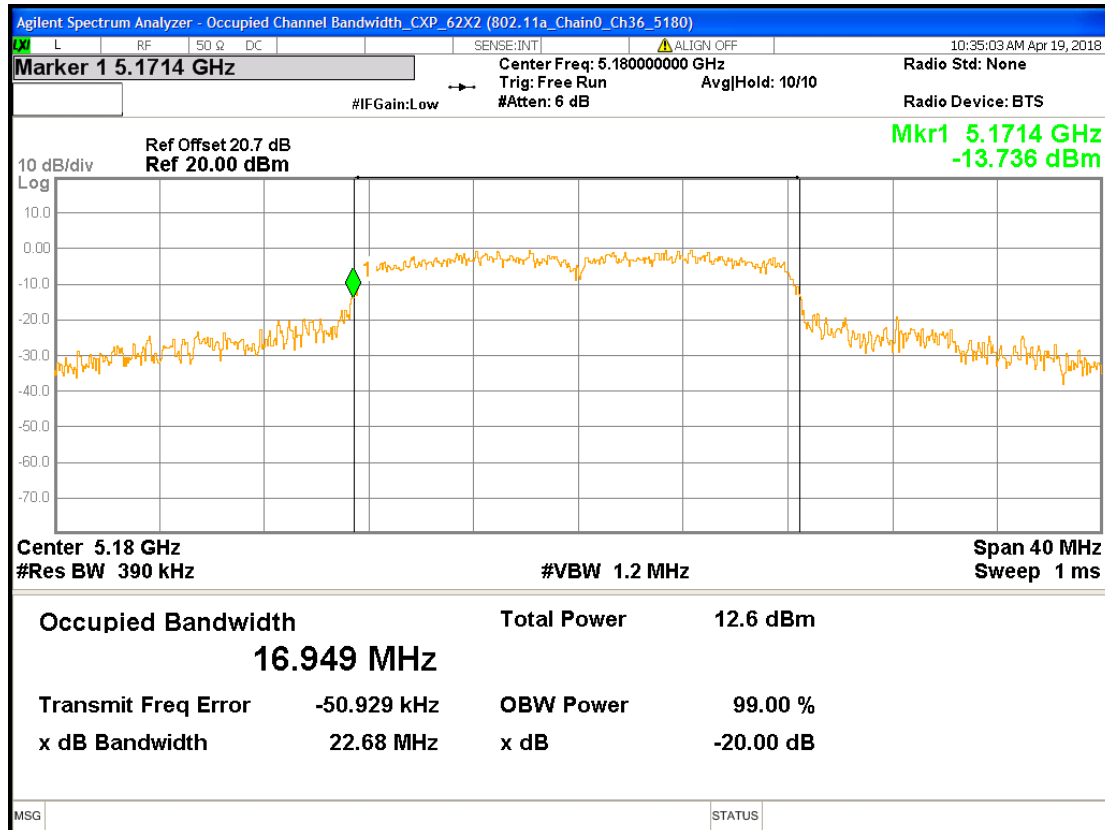
UNII-3
SISO

Mode	Channel	Frequency (MHz)	Data rate (Mbps)	99% Bandwidth (MHz)	lower Frequency (MHz)	lower limit
802.11a chain0	149	5745	6	16.444		
	157	5785		16.418		
	165	5825		16.491		
802.11a chain1	149	5745	6	16.458		
	157	5785		16.443		
	165	5825		16.516		

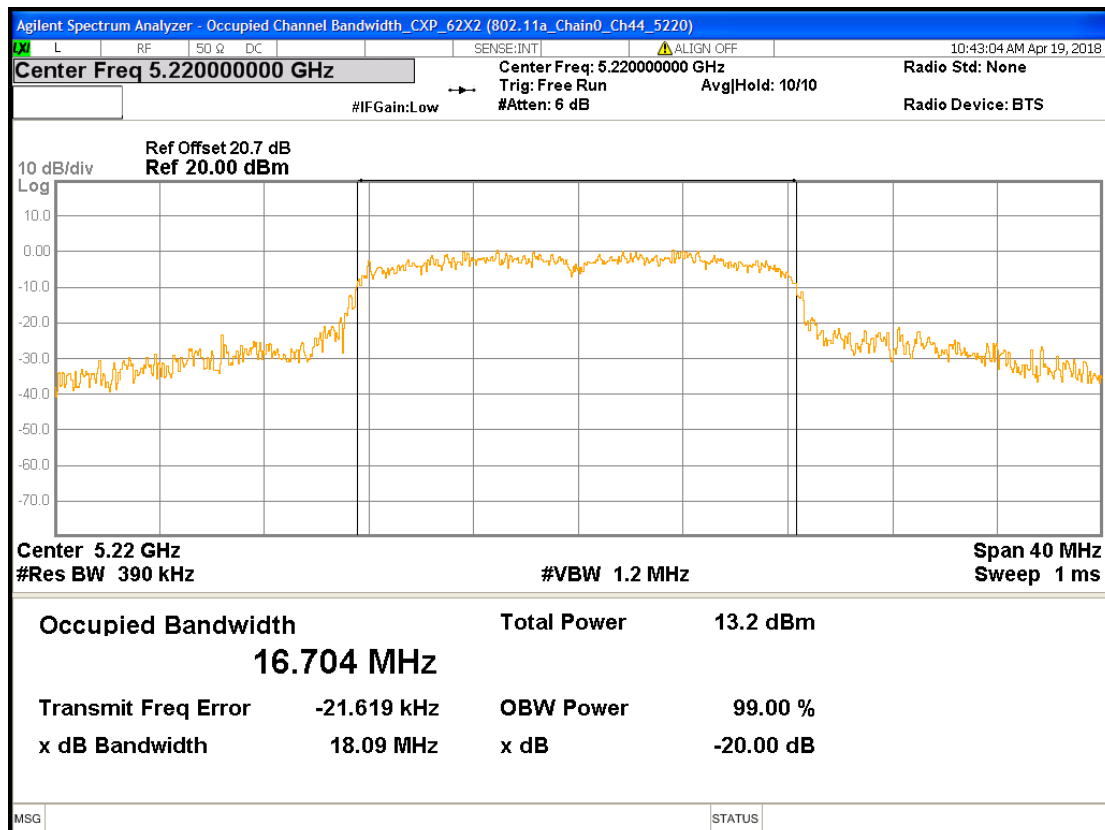
MIMO

Mode	Channel	Frequency (MHz)	Data rate (Mbps)	99% Bandwidth (MHz)	lower Frequency (MHz)	lower limit
802.11n (HT 20) chain0	149	5745	6.5	17.487		
	157	5785		17.546		
	165	5825		17.521		
802.11n (HT 20) chain1	149	5745	13.5	17.405		
	157	5785		17.454		
	165	5825		17.475		
802.11n (HT 40) chain0	151	5755	6.5	36.323		
	159	5795		36.431		
802.11n (HT 40) chain1	151	5755	13.5	36.361		
	159	5795		36.377		

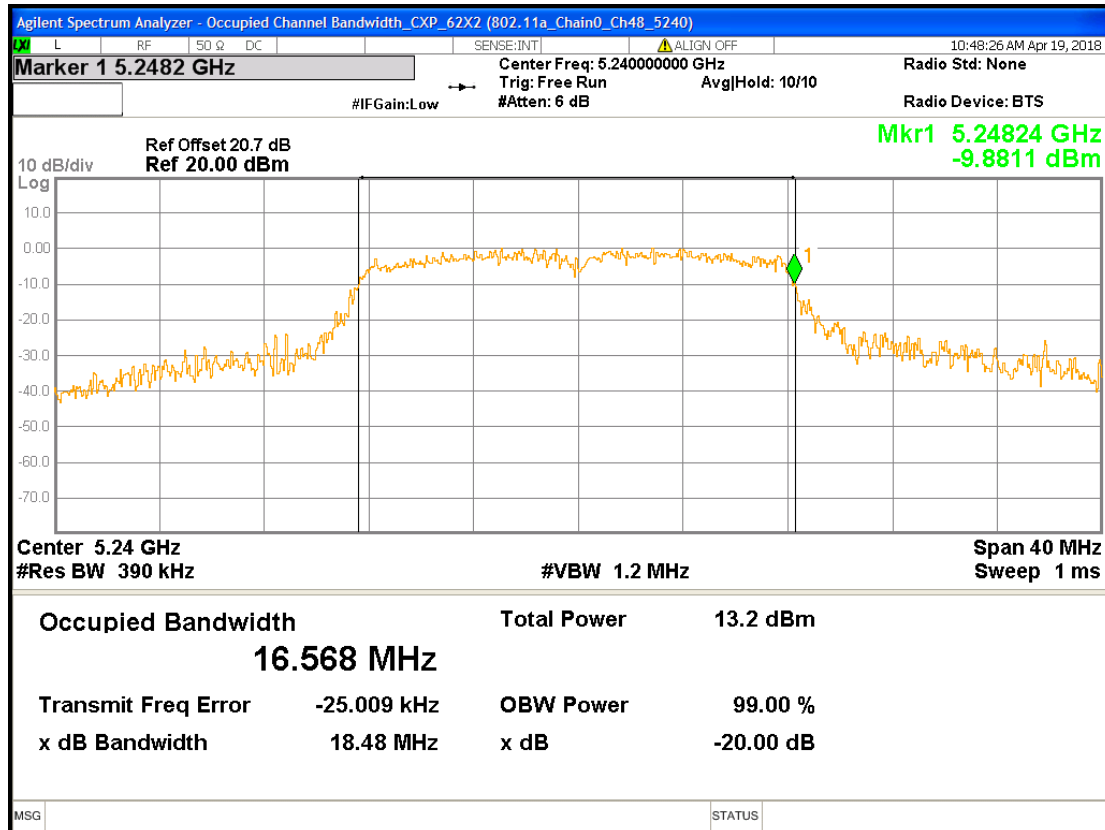
Chain0 : Occupied Channel Bandwidth @ 802.11a mode Ch36



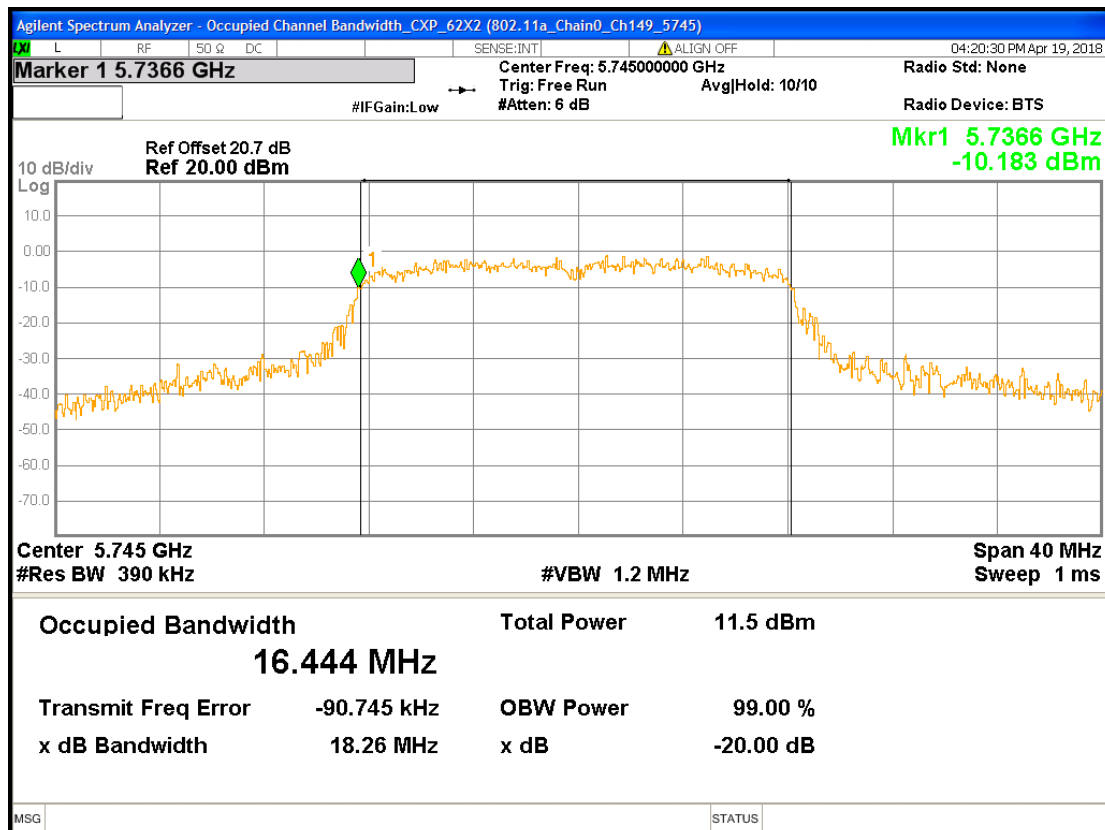
Chain0 : Occupied Channel Bandwidth @ 802.11a mode Ch44



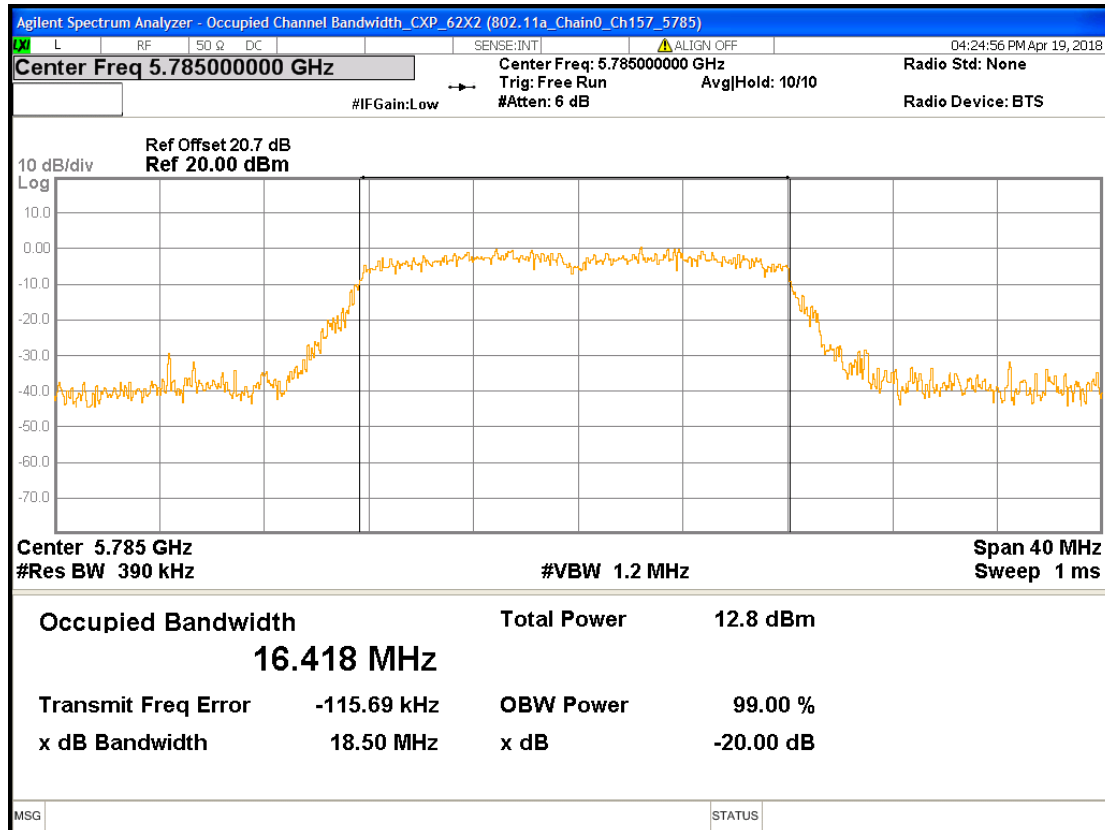
Chain0 : Occupied Channel Bandwidth @ 802.11a mode Ch48



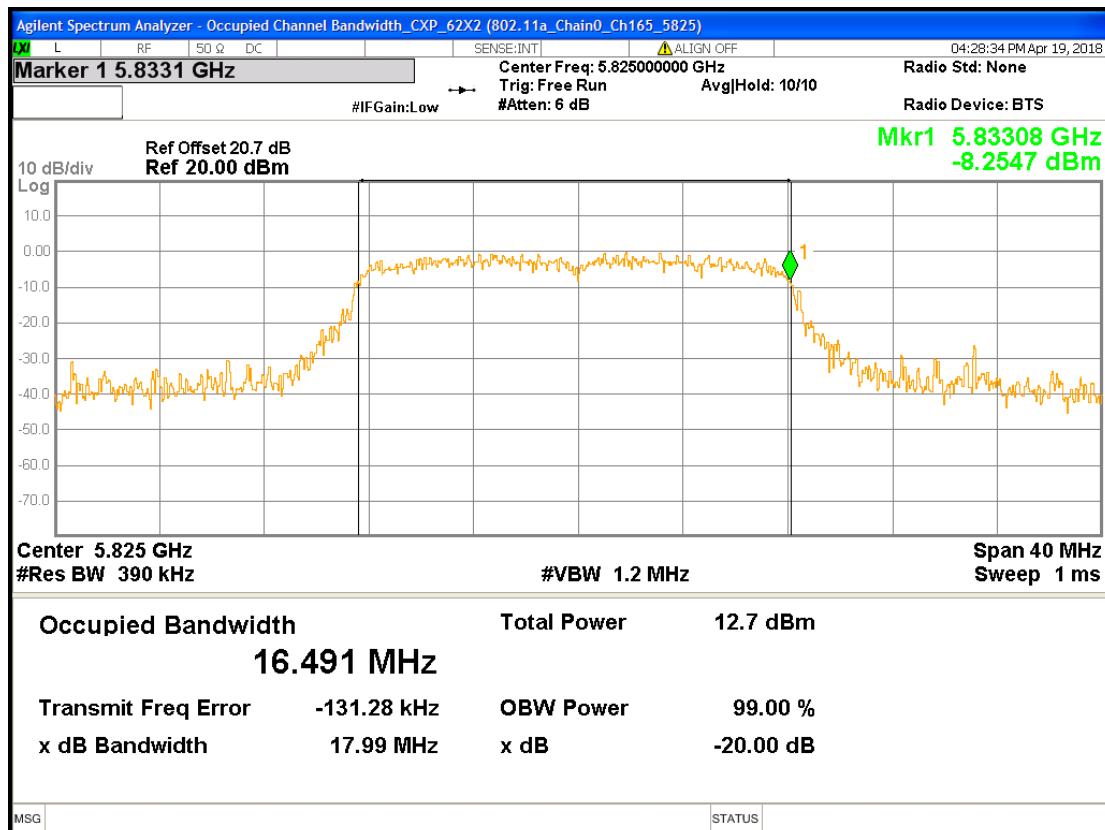
Chain0 : Occupied Channel Bandwidth @ 802.11a mode Ch149



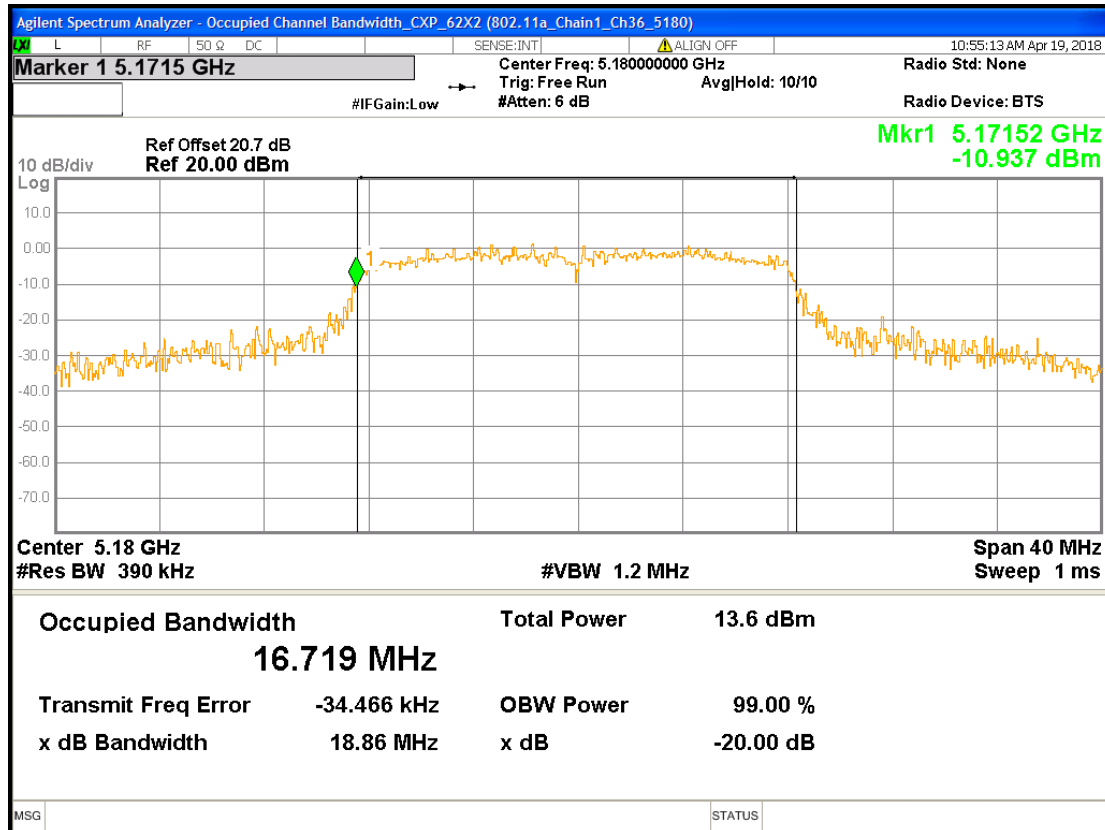
Chain0 : Occupied Channel Bandwidth @ 802.11a mode Ch157



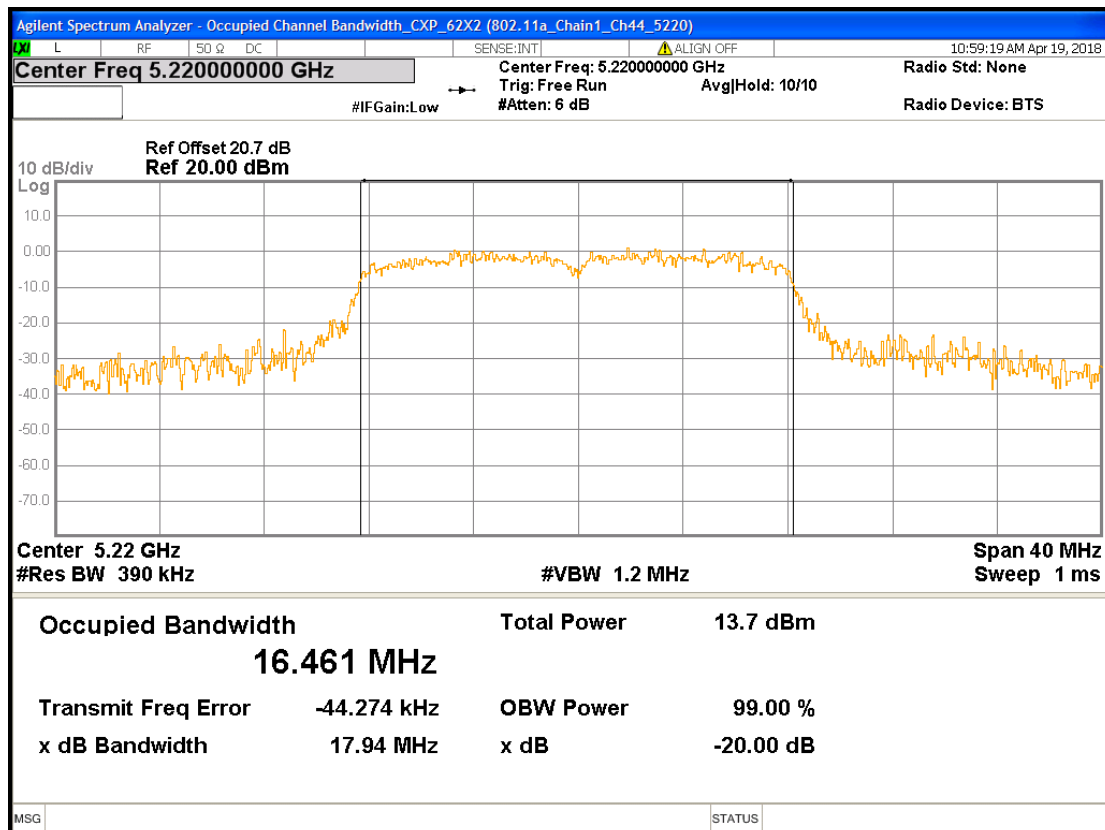
Chain0 : Occupied Channel Bandwidth @ 802.11a mode Ch165



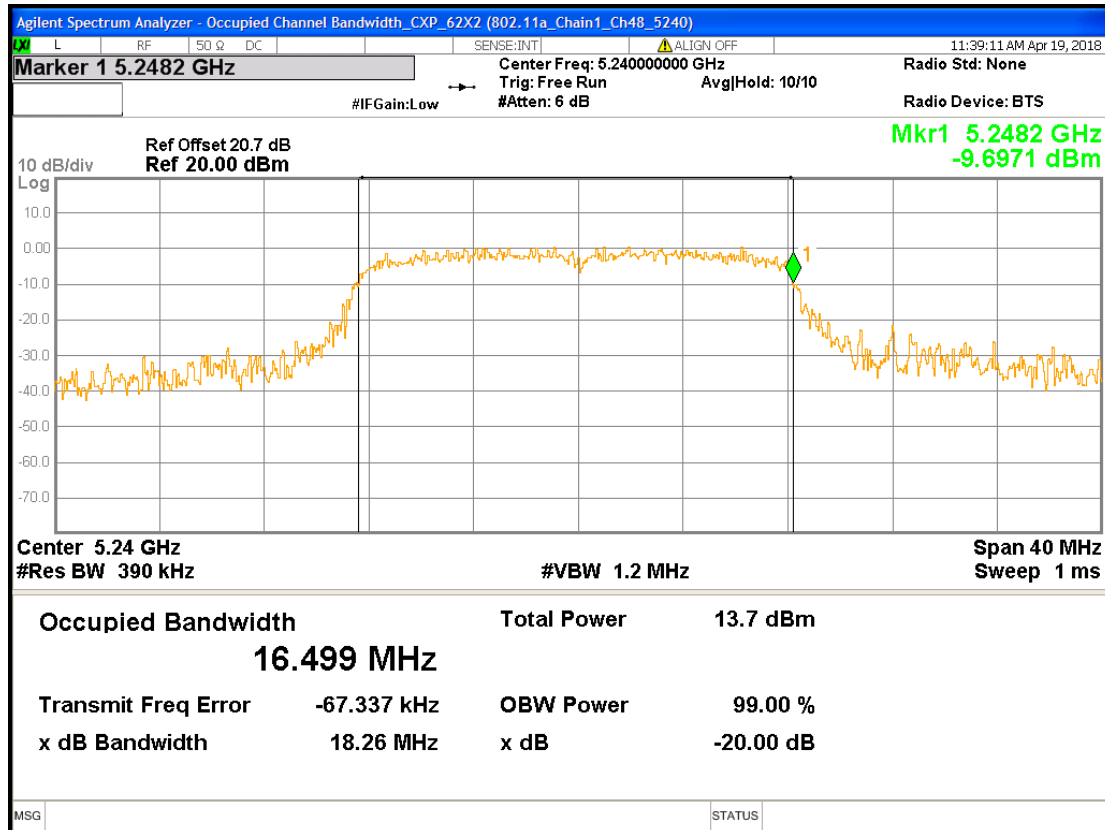
Chain1 : Occupied Channel Bandwidth @ 802.11a mode Ch36



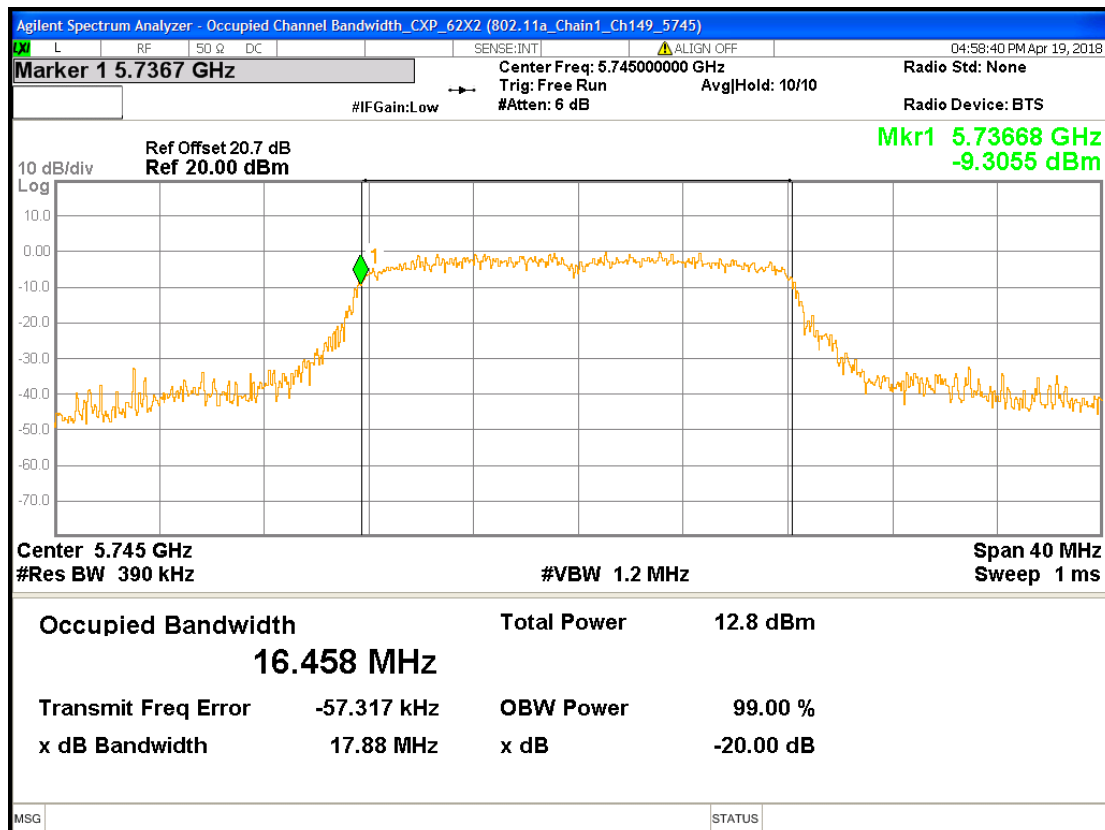
Chain1 : Occupied Channel Bandwidth @ 802.11a mode Ch44



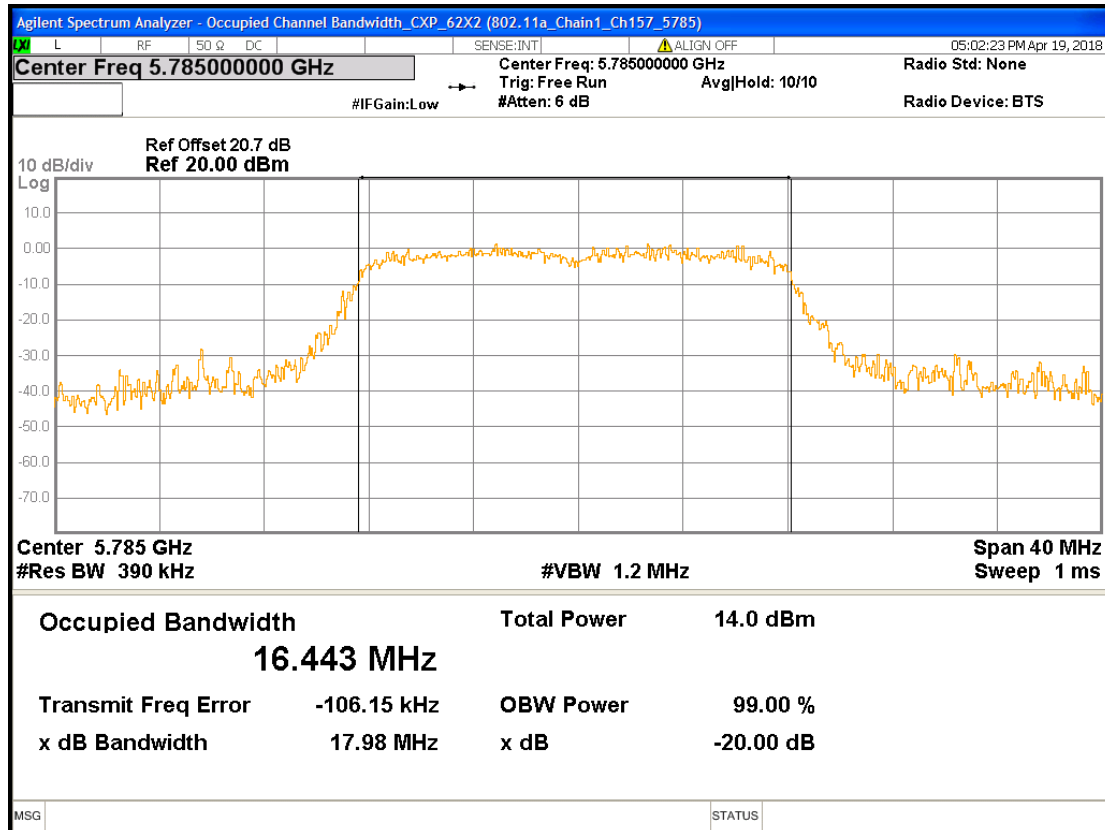
Chain1 : Occupied Channel Bandwidth @ 802.11a mode Ch48



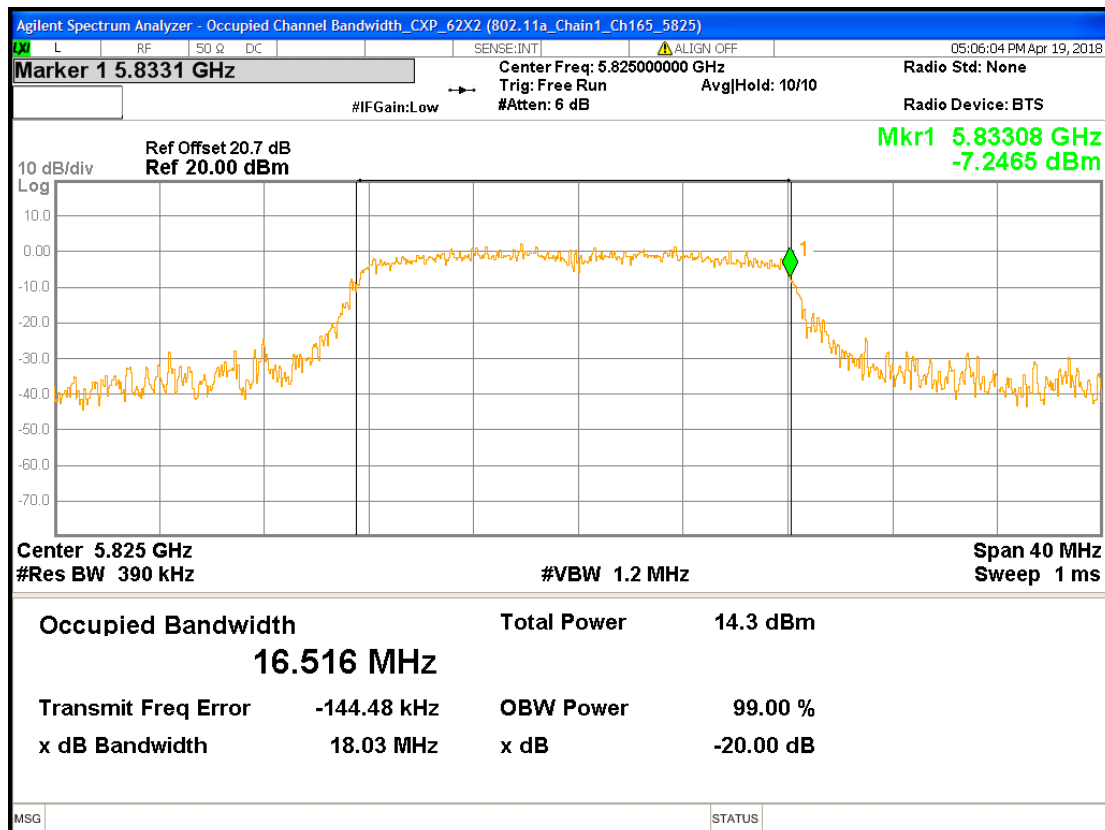
Chain1 : Occupied Channel Bandwidth @ 802.11a mode Ch149



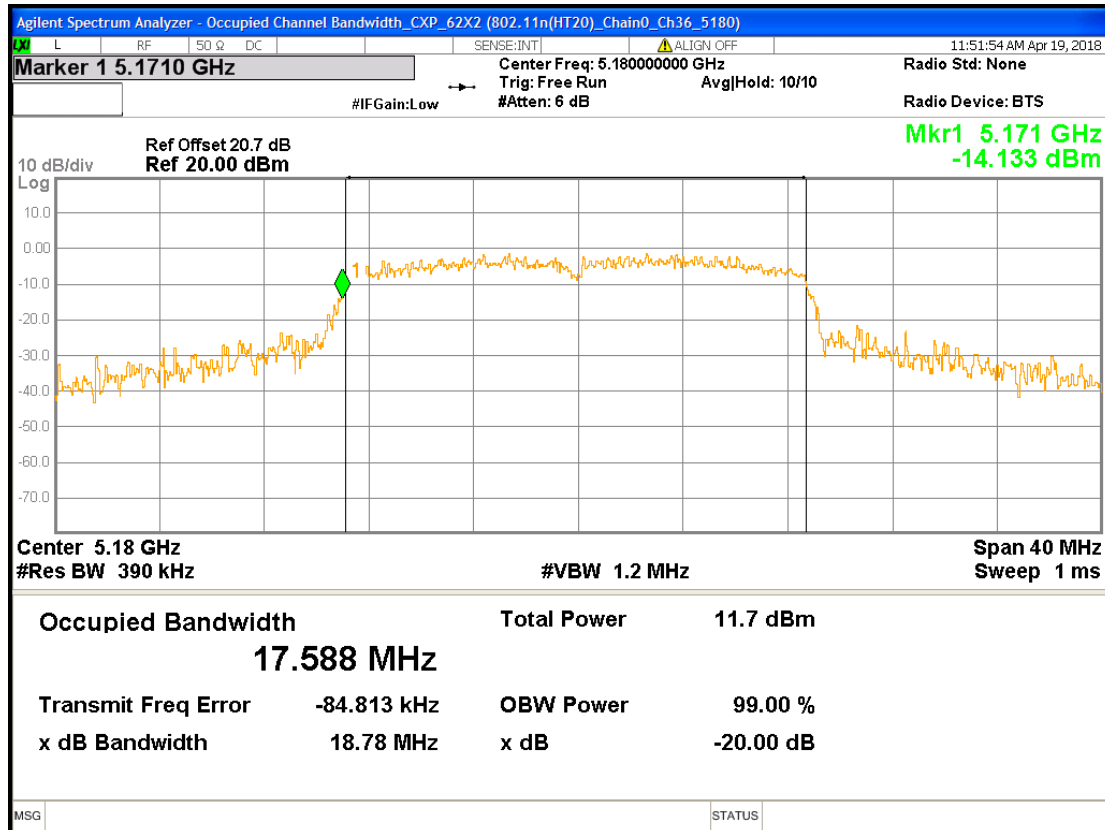
Chain1 : Occupied Channel Bandwidth @ 802.11a mode Ch157



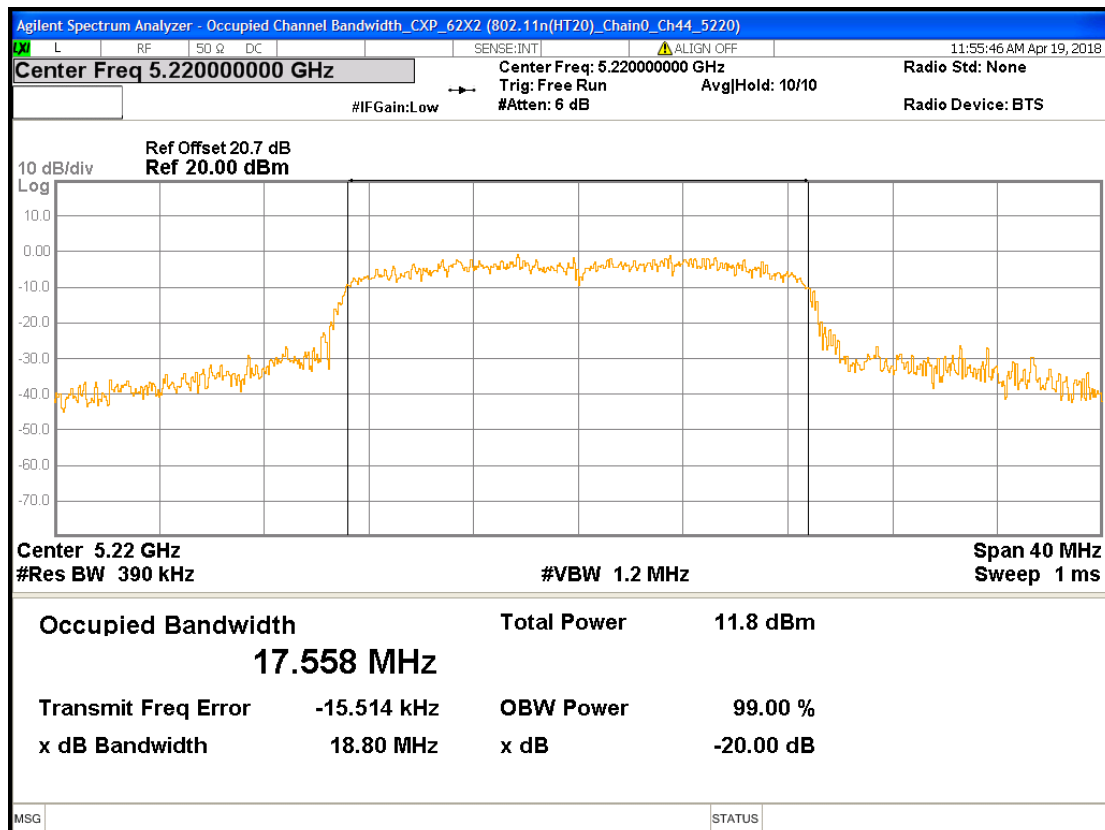
Chain1 : Occupied Channel Bandwidth @ 802.11a mode Ch165



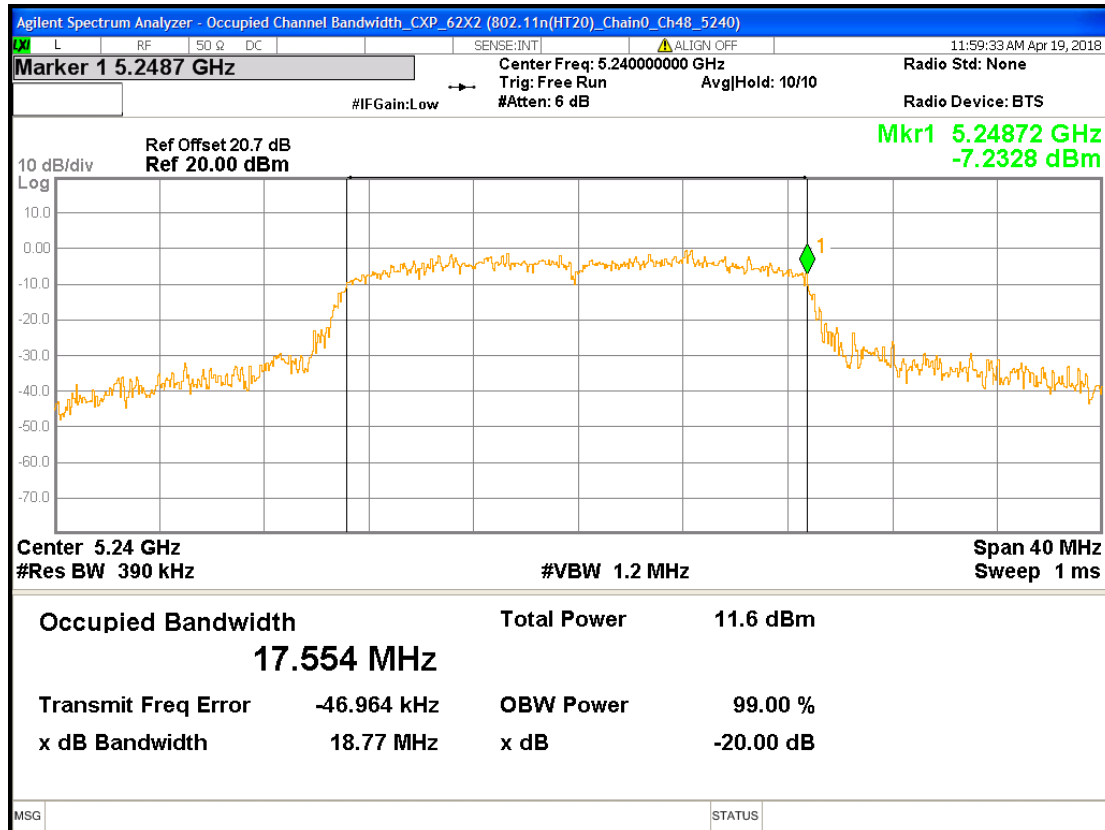
Chain0 : Occupied Channel Bandwidth @ 802.11n(HT20) mode Ch36



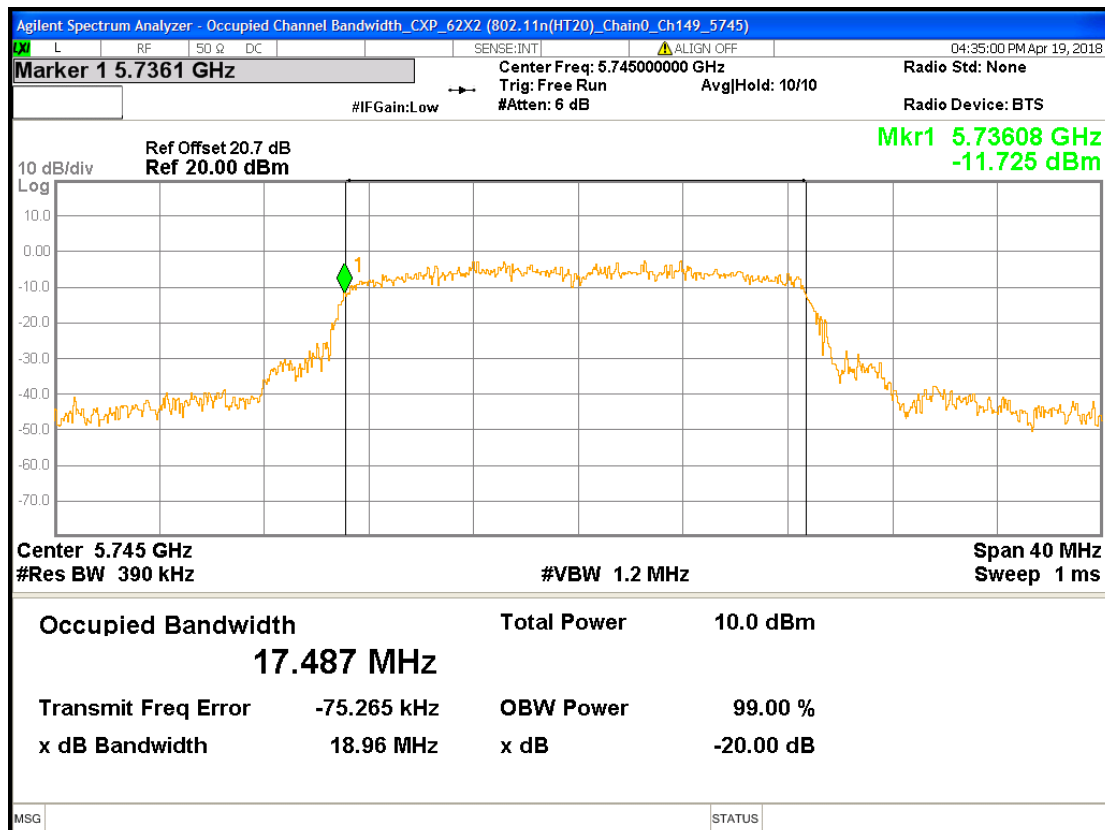
Chain0 : Occupied Channel Bandwidth @ 802.11n(HT20) mode Ch44



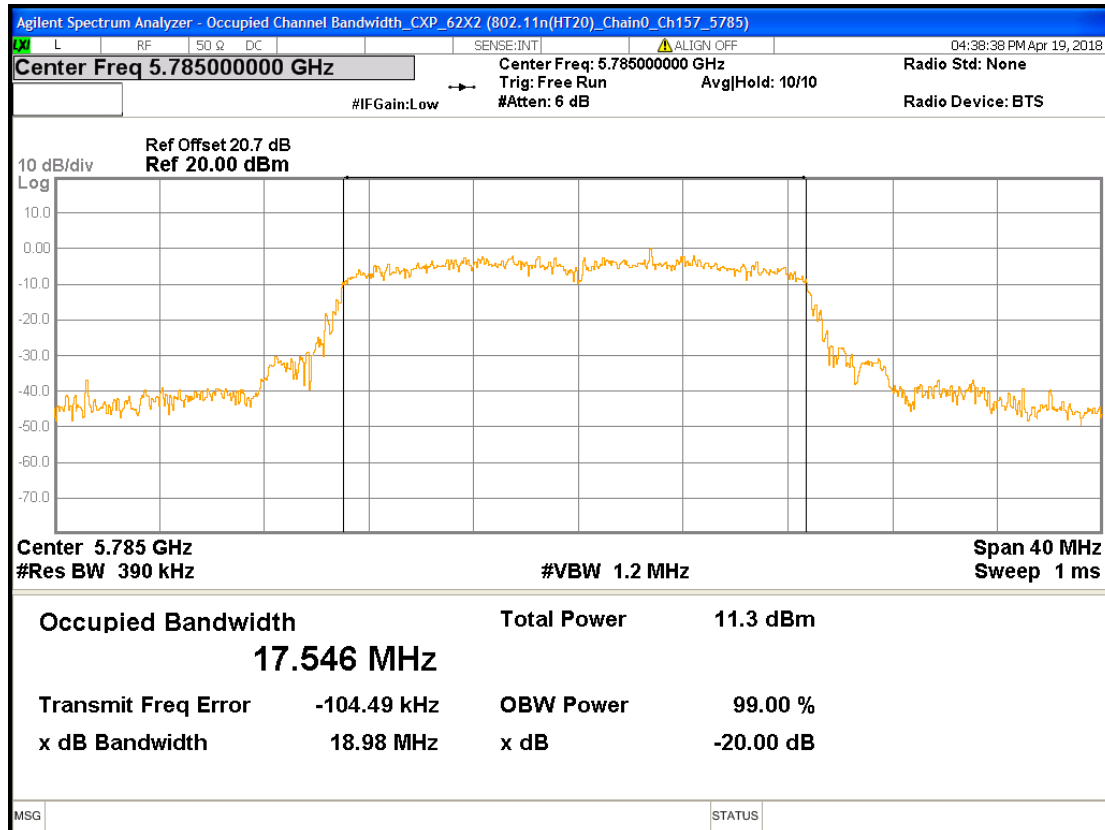
Chain0 : Occupied Channel Bandwidth @ 802.11n(HT20) mode Ch48



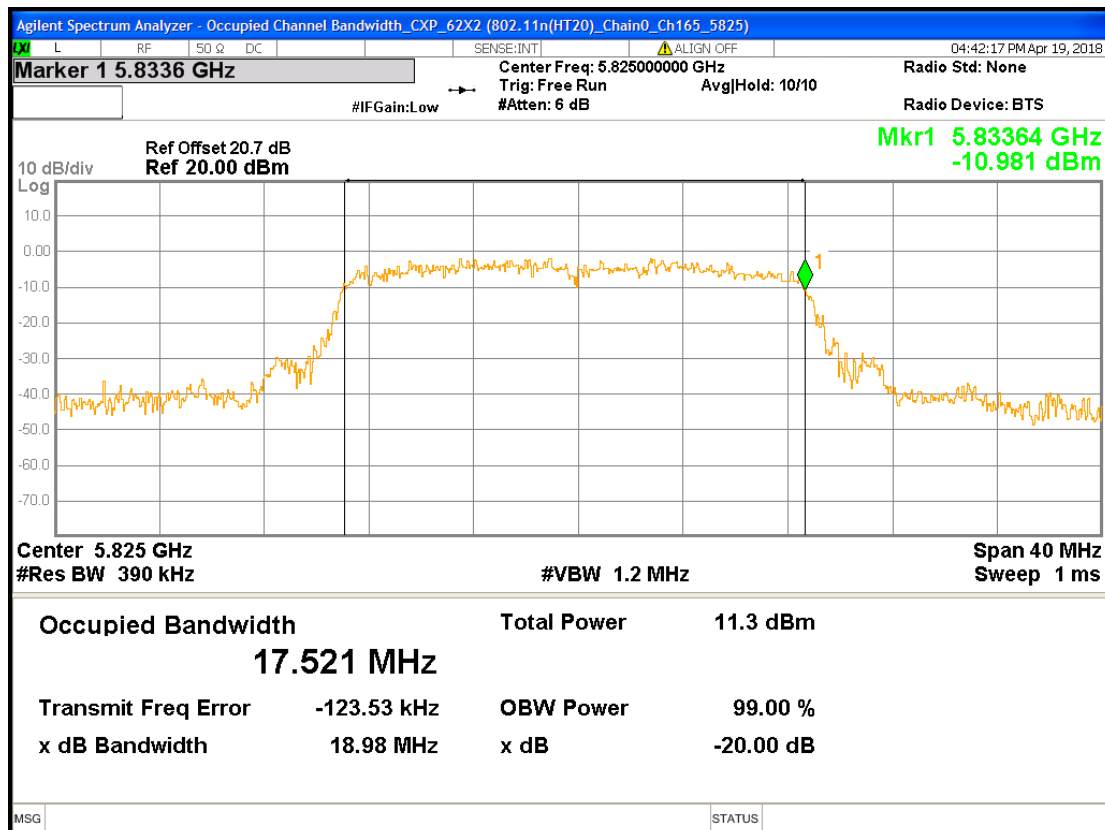
Chain0 : Occupied Channel Bandwidth @ 802.11n(HT20) mode Ch149



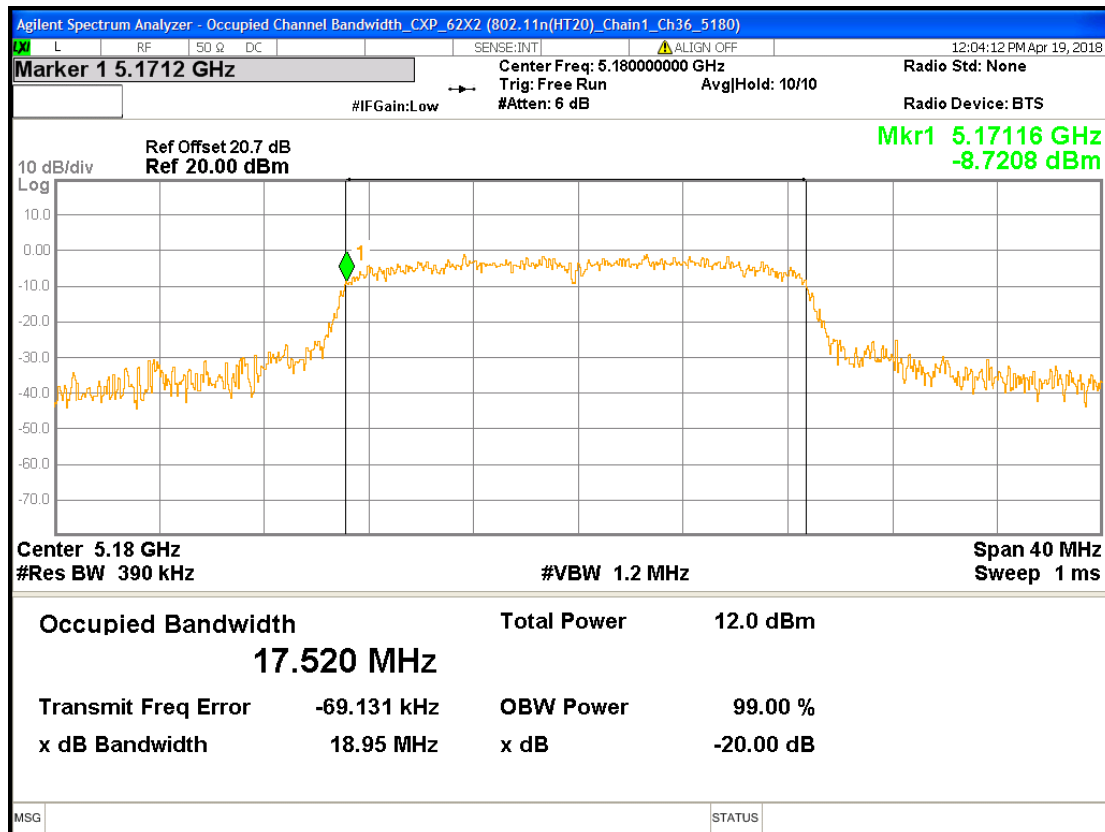
Chain0 : Occupied Channel Bandwidth @ 802.11n(HT20) mode Ch157



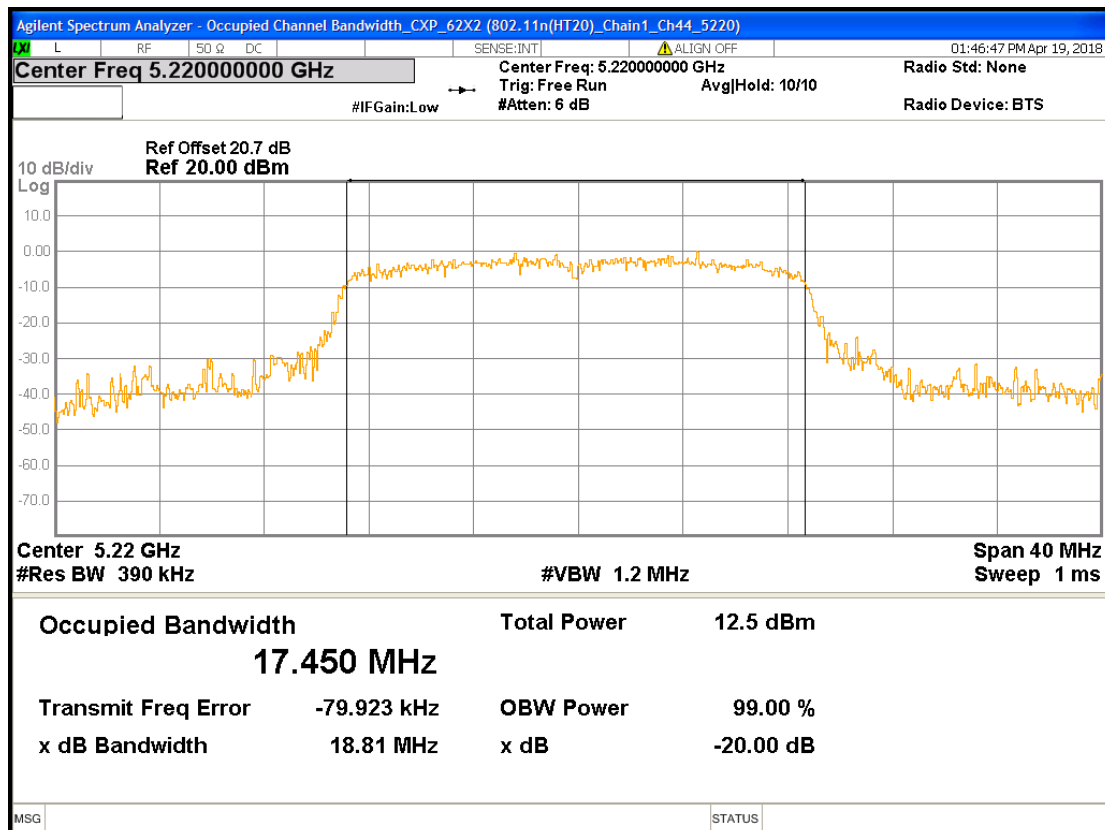
Chain0 : Occupied Channel Bandwidth @ 802.11n(HT20) mode Ch165



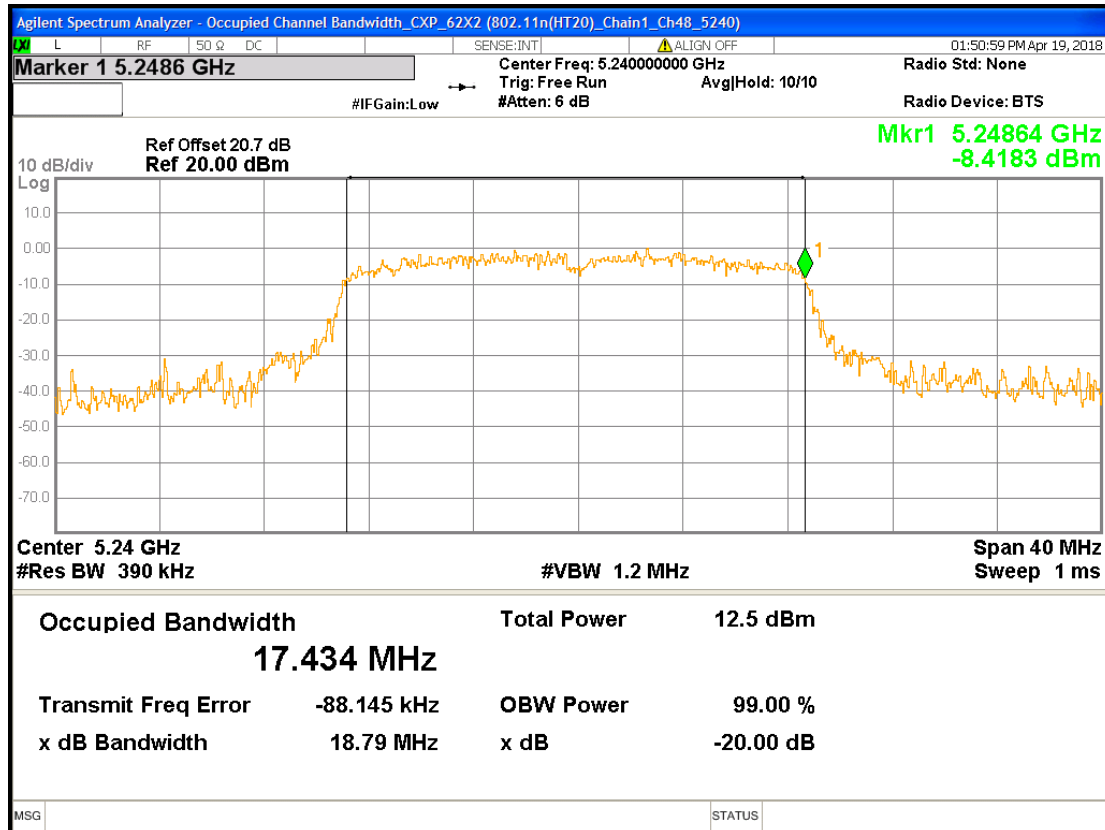
Chain1 : Occupied Channel Bandwidth @ 802.11n(HT20) mode Ch36



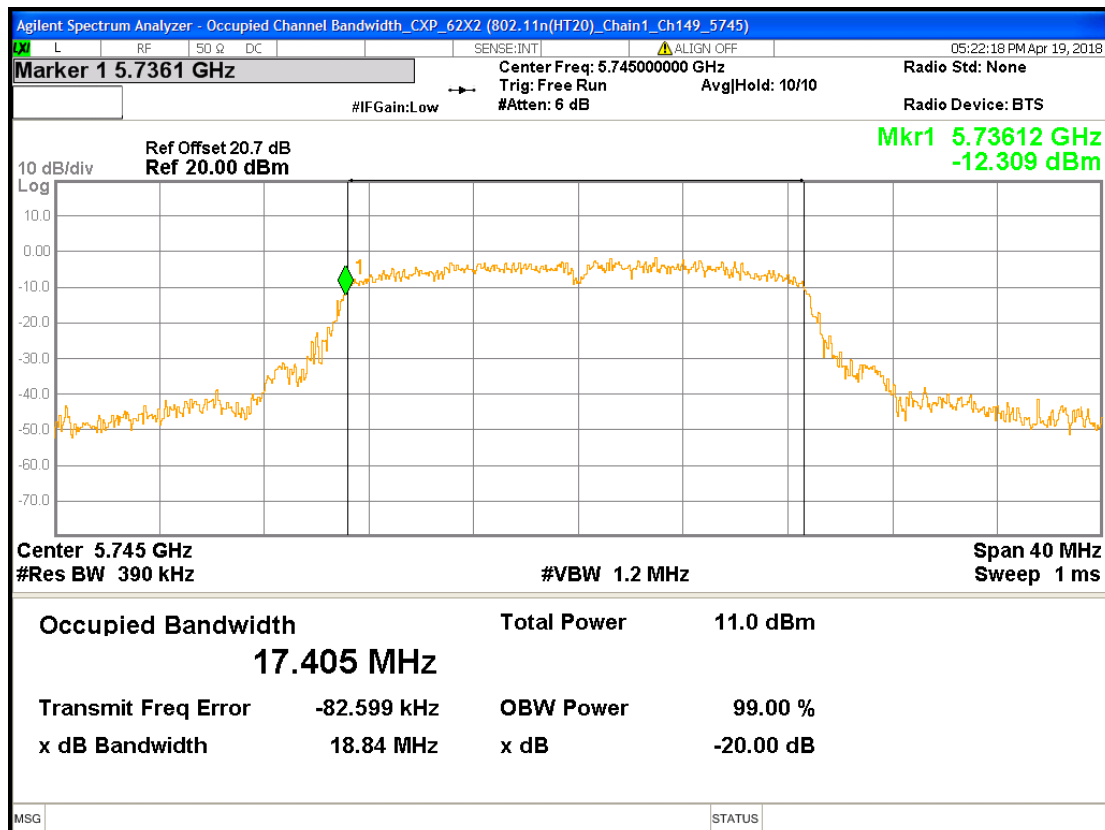
Chain1 : Occupied Channel Bandwidth @ 802.11n(HT20) mode Ch44



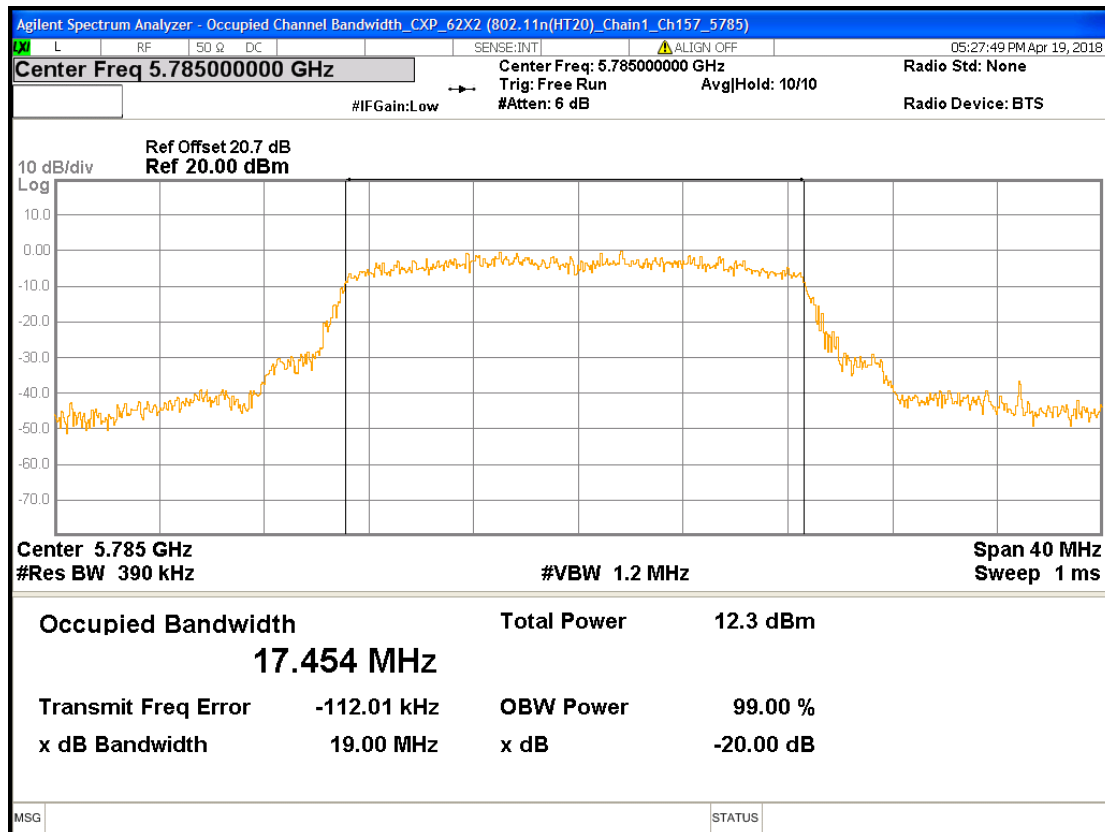
Chain1 : Occupied Channel Bandwidth @ 802.11n(HT20) mode Ch48



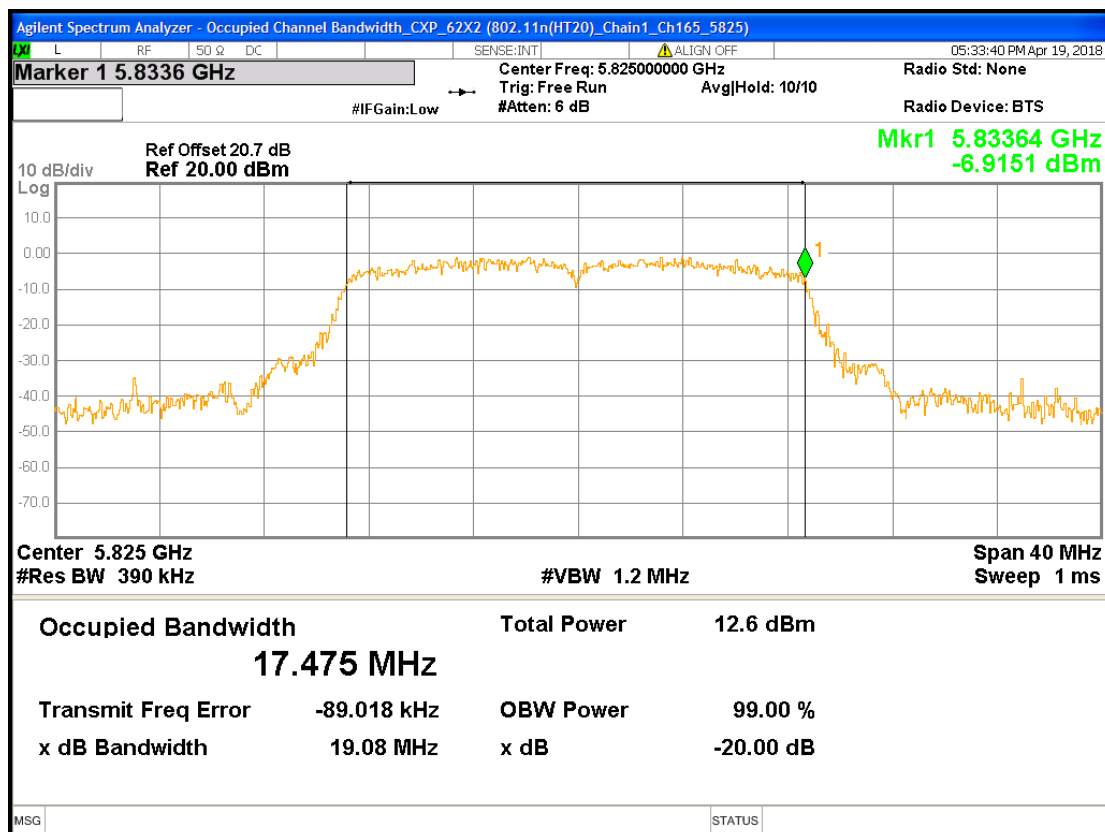
Chain1 : Occupied Channel Bandwidth @ 802.11n(HT20) mode Ch149



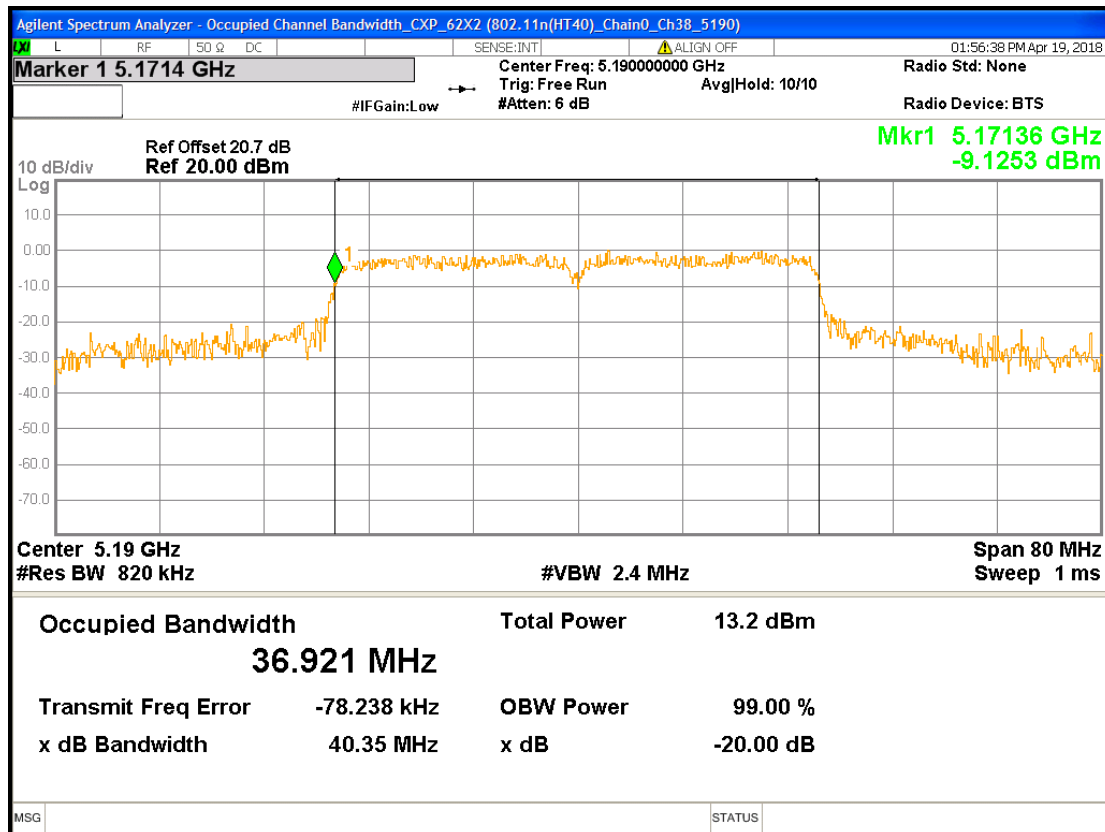
Chain1 : Occupied Channel Bandwidth @ 802.11n(HT20) mode Ch157



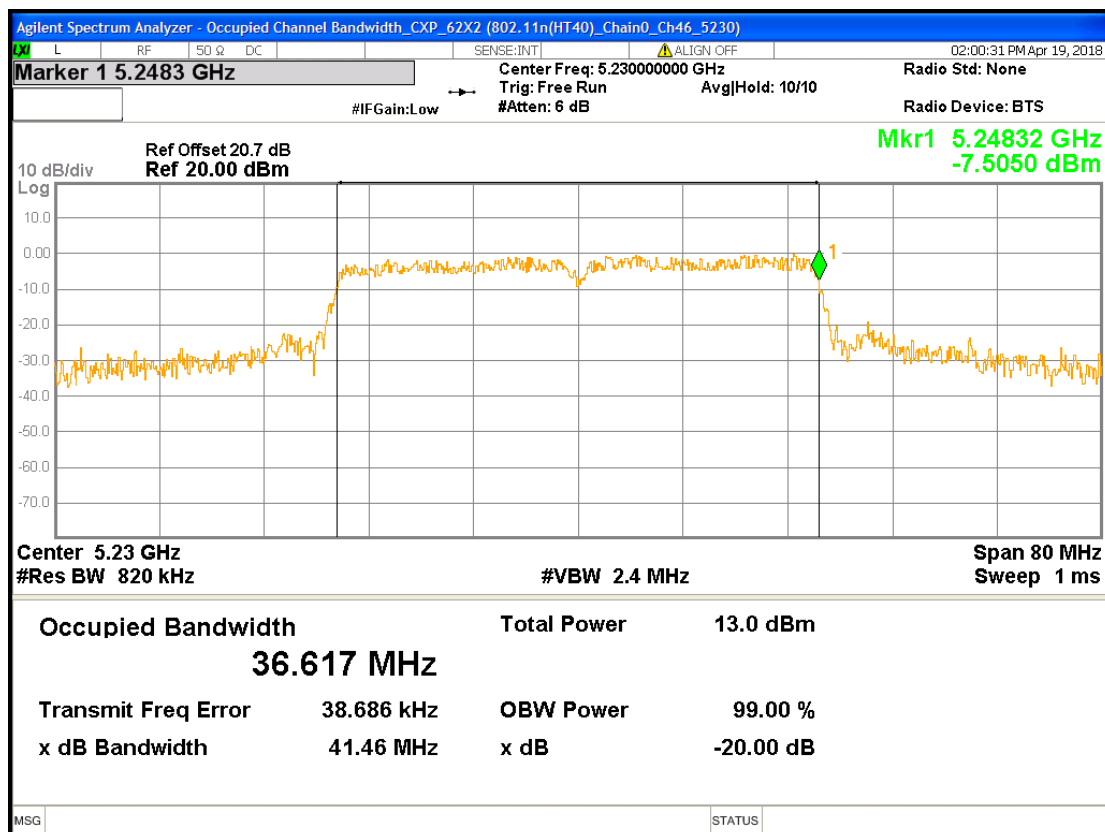
Chain1 : Occupied Channel Bandwidth @ 802.11n(HT20) mode Ch165



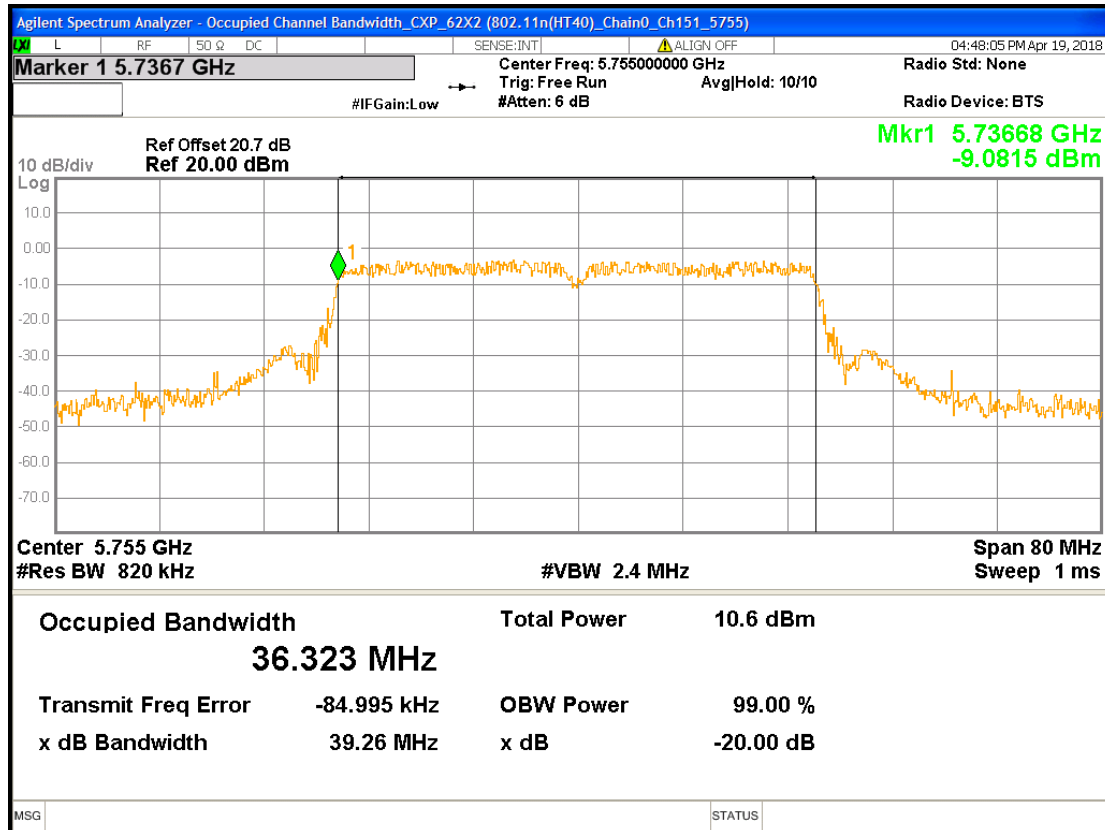
Chain0 : Occupied Channel Bandwidth @ 802.11n(HT40) mode Ch38



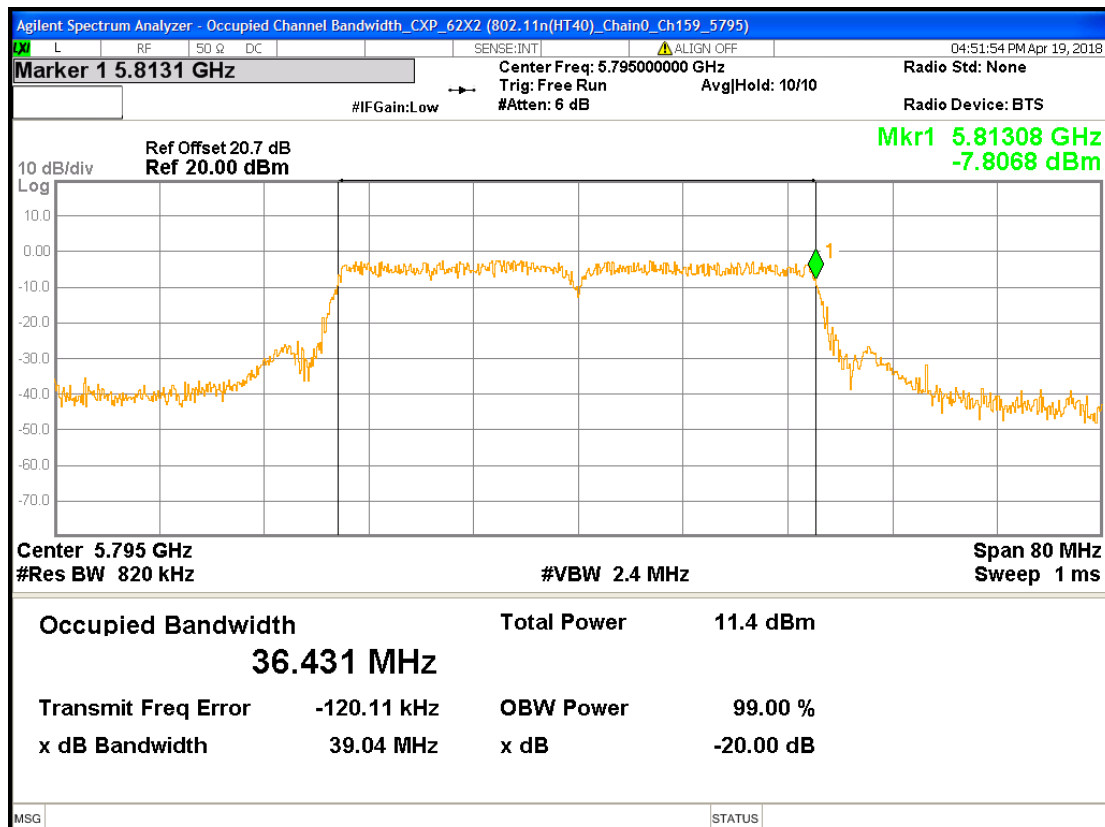
Chain0 : Occupied Channel Bandwidth @ 802.11n(HT40) mode Ch46



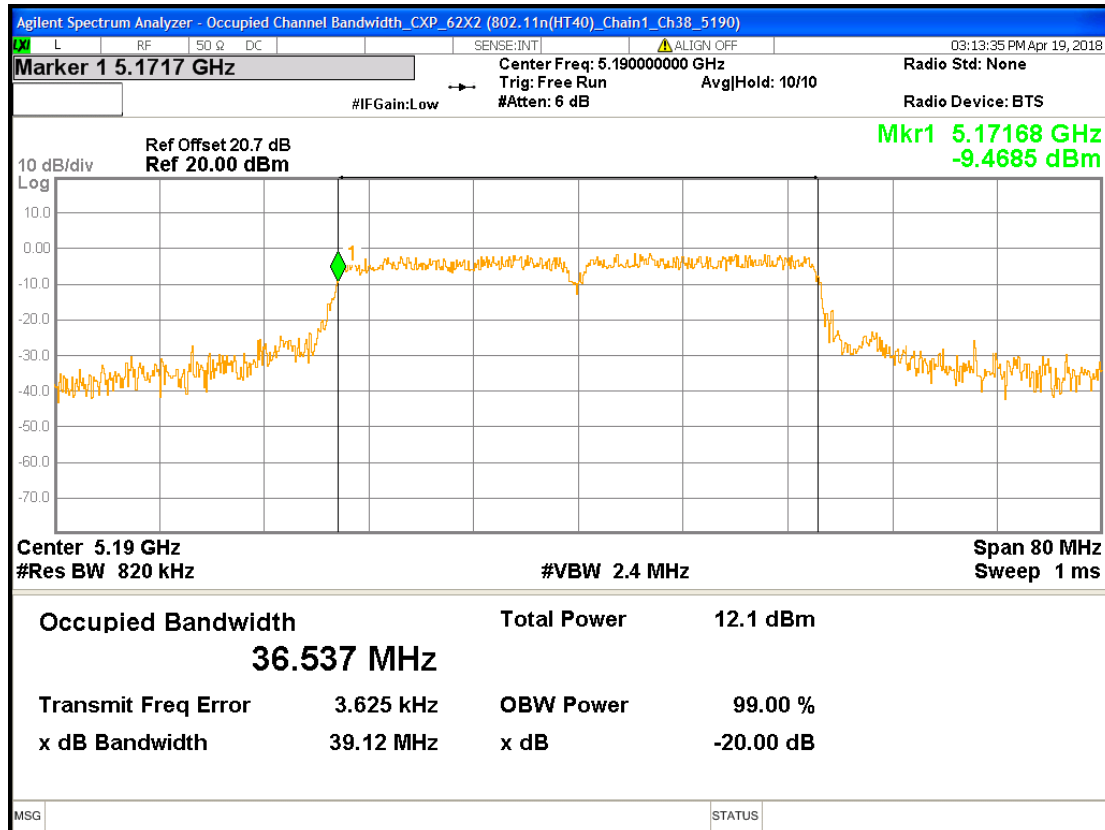
Chain0 : Occupied Channel Bandwidth @ 802.11n(HT40) mode Ch151



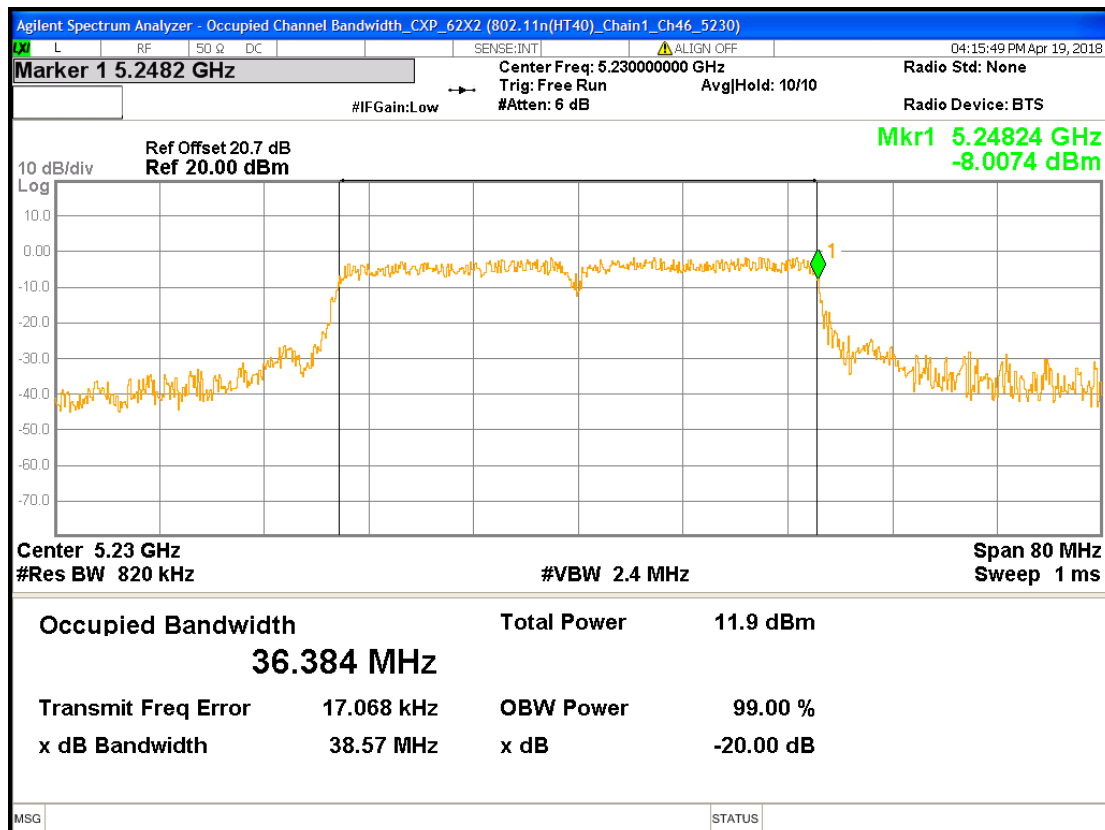
Chain0 : Occupied Channel Bandwidth @ 802.11n(HT40) mode Ch159



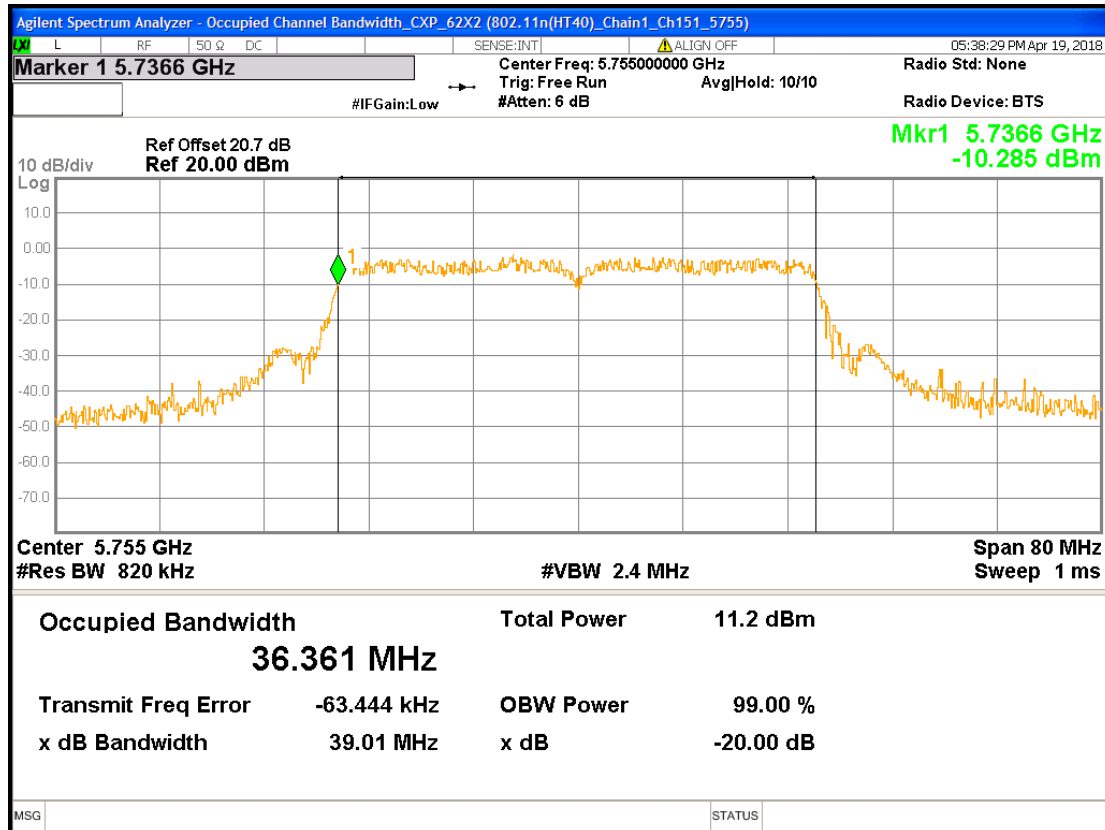
Chain1 : Occupied Channel Bandwidth @ 802.11n(HT40) mode Ch38



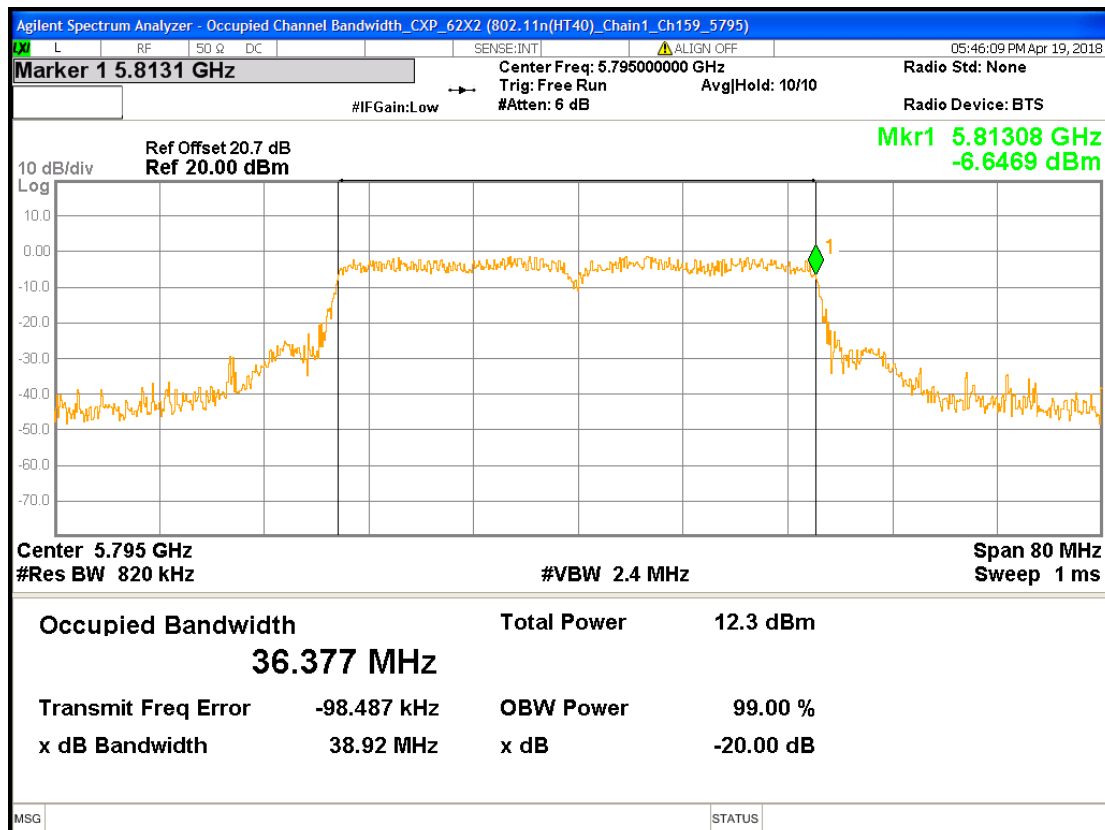
Chain1 : Occupied Channel Bandwidth @ 802.11n(HT40) mode Ch46



Chain1 : Occupied Channel Bandwidth @ 802.11n(HT40) mode Ch151



Chain1 : Occupied Channel Bandwidth @ 802.11n(HT40) mode Ch159



5. Emissions in Restricted Frequency Bands (Radiated emission measurements)

5.1 Operating environment

Temperature:	25	°C
Relative Humidity:	55	%
Atmospheric Pressure	1008	hPa
Channel number	36,44,48,149,157,161 for 20MHz 38,46,151,159 for 40MHz	

5.2 Limit for emission in restricted frequency bands (Radiated emission measurement)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	2400/F(kHz)	30
1.705~30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark:

1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

As specified in 15.407(b), For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(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.

(4) For transmitters operating in the 5.725-5.85 GHz band:

All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

5.3 Measuring instrument setting

Below 1GHz measurement

Receiver settings	
Receiver function	Setting
Detector	QP
RBW	9-150 kHz ; 200-300 Hz 0.15-30 MHz; 9-10 kHz 30-1000 MHz; 100-120 kHz
VBW	$\geq 3 \times$ RBW
Sweep	Auto couple
Attenuation	Auto

Above 1GHz measurement

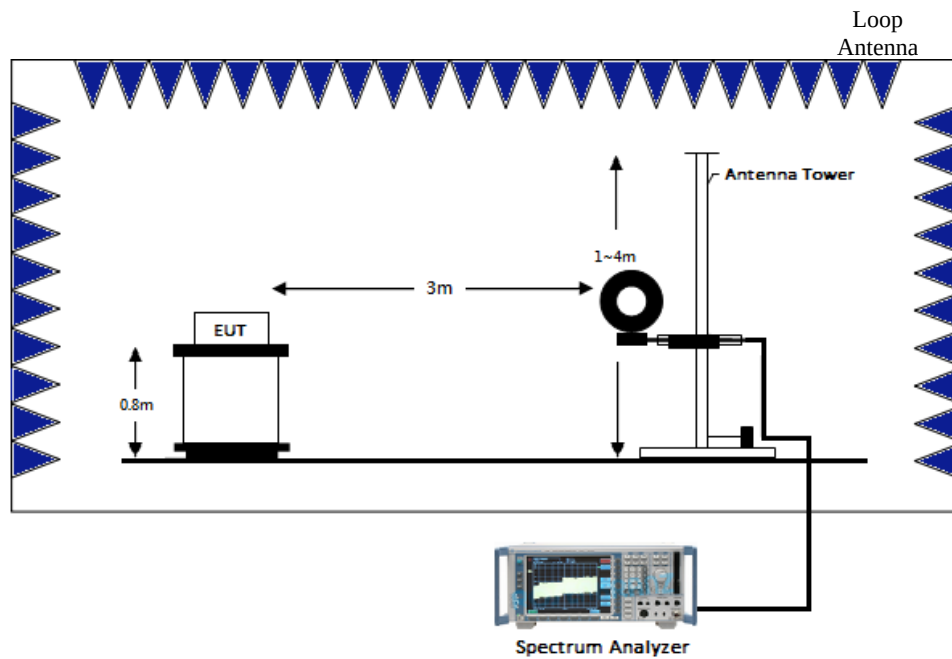
Spectrum analyzer settings	
Spectrum Analyzer function	Setting
Detector	Peak
RBW	1MHz
VBW	3MHz for Peak; 10Hz for Average
Sweep	Auto couple
Start Frequency	1GHz
Stop Frequency	Tenth harmonic
Attenuation	Auto

5.4 Test procedure

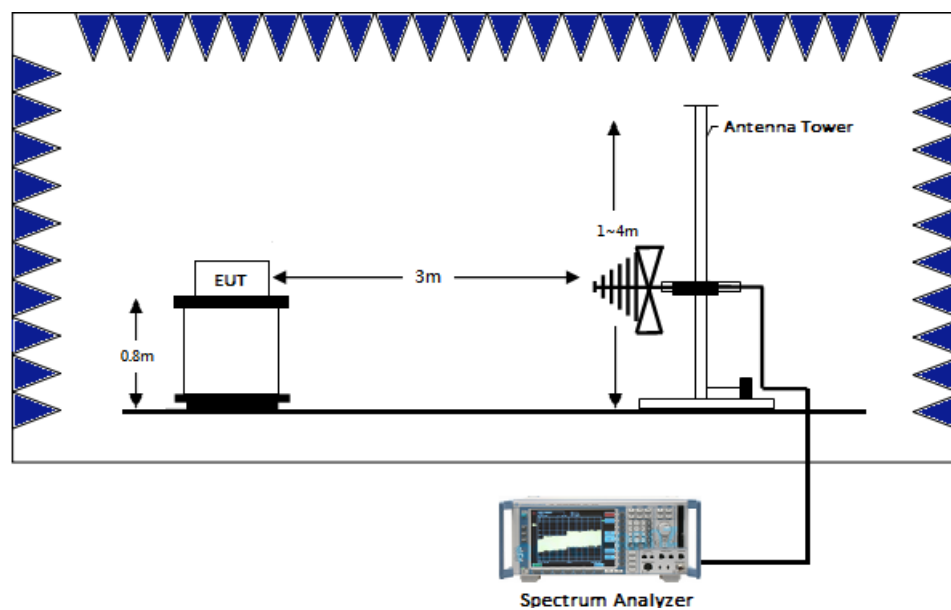
1. Configure the EUT according to ANSI C63.10: 2013 The EUT was placed on the top of the turntable 1.5 meter above ground for above 1GHz and placed on the top of the turntable 0.8 meter above ground for below 1GHz. The center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the companion devices. The turntable was rotated by 360 degree to find the position of the maximum emission level.
3. The height of the receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of the both horizontal and vertical polarization
4. If find the frequencies above the limit or below within 3dB, the antenna tower was scan (from 1m to 4m) and then the turntable was rotated to find the maximum reading.
5. Set the test-receiver system to peak or CISPR quasi-peak detector with specified bandwidth under maximum hold mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.
7. If the emissions level of the EUT in peak mode was 3dB lower than the average limit specified then testing will be stopped and peak values of the EUT will be reported. Otherwise, the emissions which do not have 3dB margin will be measured using the quasi-peak method for below 1GHz.
8. For testing above 1GHz, The emissions level of the EUT in peak mode was lower than average limit, then testing will be stopped and peak values of the EUT will be reported, otherwise, the emission will be measured in average mode again and reported.
9. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be quasi-peak measured by receiver.

5.5 Test configuration

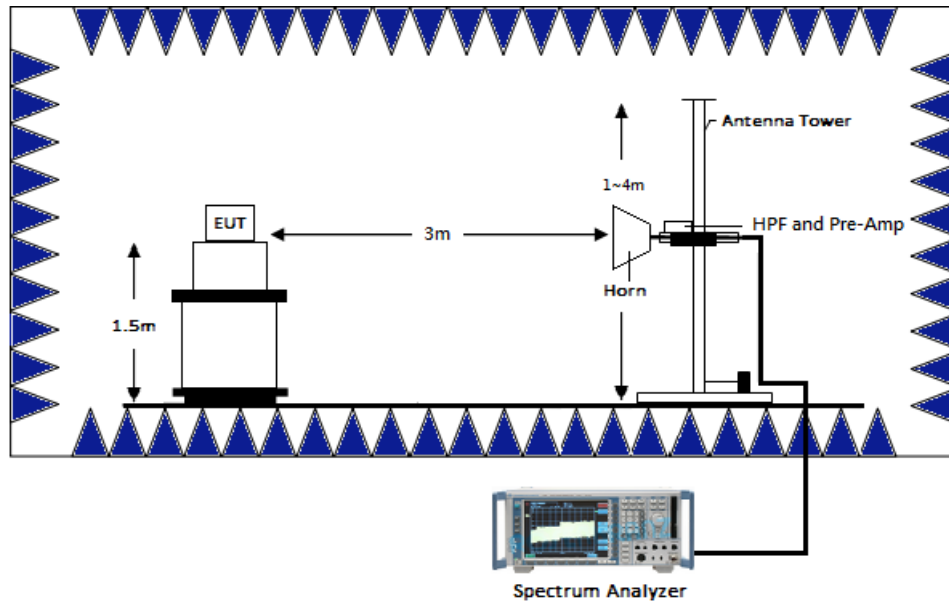
5.5.1 Radiated emission from 9 kHz to 30MHz using Loop Antenna



5.5.2 Radiated emission below 1GHz using Bilog Antenna



5.5.3 Radiated emission above 1GHz using Horn Antenna

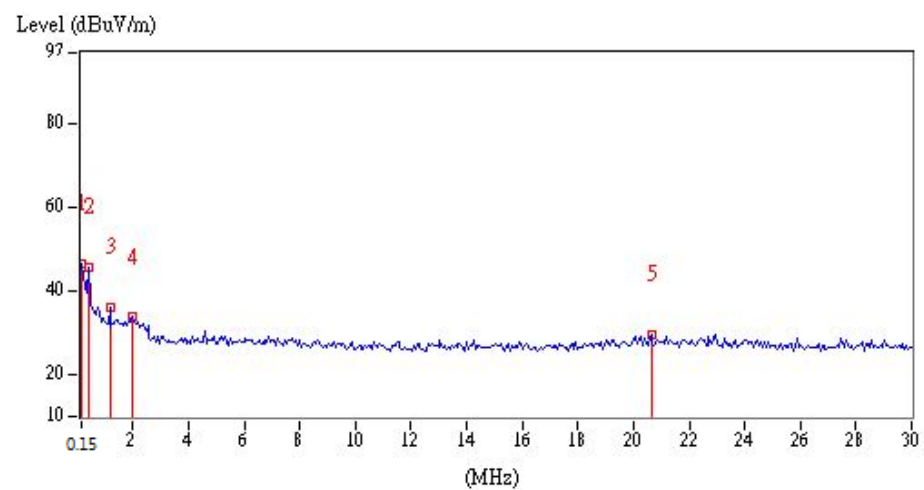
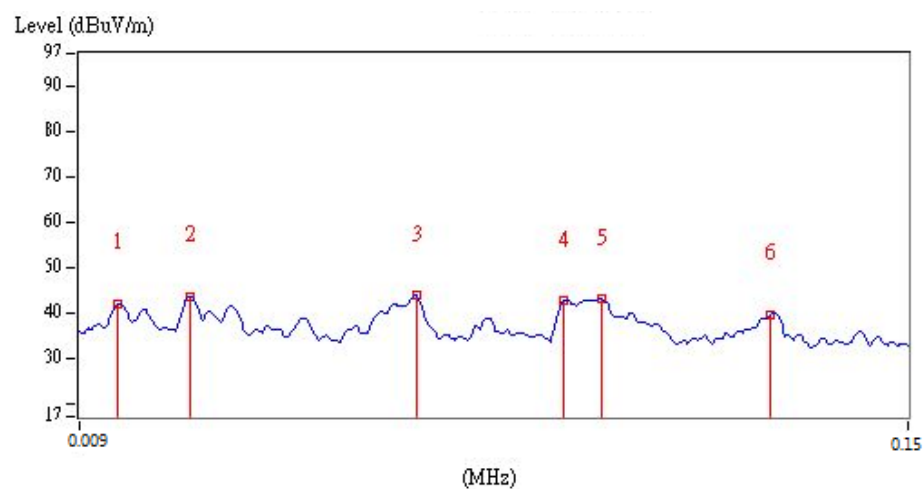


5.6 Test results

5.6.1 Measurement results: frequencies from 9 kHz to 30MHz

Frequency (MHz)	Detection value	factor (dB/m)	Reading (dBμV)	value (dBμV/m)	Limit @ 3m (dBμV/m)	Tolerance (dB)
0.02	PK	20.29	21.63	41.92	200.00	-158.08
0.03	PK	20.42	23.08	43.50	160.00	-116.50
0.07	PK	19.55	24.10	43.65	114.29	-70.64
0.09	PK	19.25	23.17	42.42	106.67	-64.25
0.10	QP	19.16	23.77	42.93	104.00	-61.07
0.13	PK	19.11	20.49	39.60	98.46	-58.86
0.15	PK	19.08	27.63	46.71	96.00	-49.29
0.39	PK	18.96	26.86	45.82	86.15	-40.33
1.16	QP	19.07	17.09	36.16	82.07	-45.91
2.00	QP	18.87	14.98	33.85	81.20	-47.35
20.63	QP	21.96	7.74	29.70	80.12	-50.42

Remark: Corr. Factor = Antenna Factor + Cable Loss - PreAmplifier Gain



5.6.2 Measurement results: frequencies from 30 MHz to 1GHz

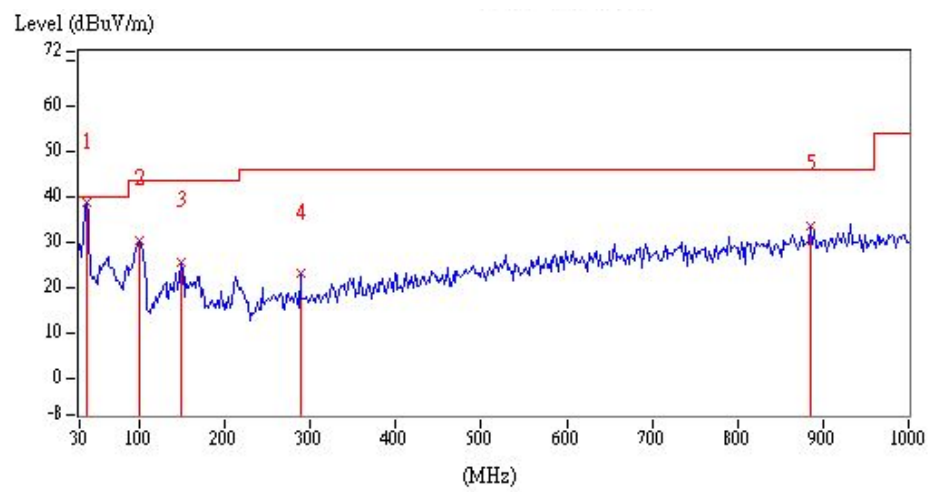
The test was performed on EUT under 802.11a/an continuously transmitting mode. The worst case occurred at 802.11a Tx channel 36.

Antenna Polariz. (V/H)	Freq. (MHz)	Receiver Detector	Corr. Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
Vertical	37.76	QP	16.09	22.54	38.63	40.00	-1.37
Vertical	99.84	QP	11.41	19.03	30.44	43.50	-13.06
Vertical	148.34	QP	16.45	9.15	25.60	43.50	-17.90
Vertical	288.02	QP	17.06	6.00	23.06	46.00	-22.94
Vertical	885.54	QP	28.44	5.18	33.62	46.00	-12.38
Horizontal	37.76	QP	13.31	10.01	23.32	40.00	-16.68
Horizontal	101.78	QP	14.43	16.63	31.06	43.50	-12.44
Horizontal	183.26	QP	15.86	18.03	33.89	43.50	-9.61
Horizontal	288.02	QP	17.70	16.95	34.65	46.00	-11.35
Horizontal	870.02	QP	27.91	6.43	34.34	46.00	-11.66

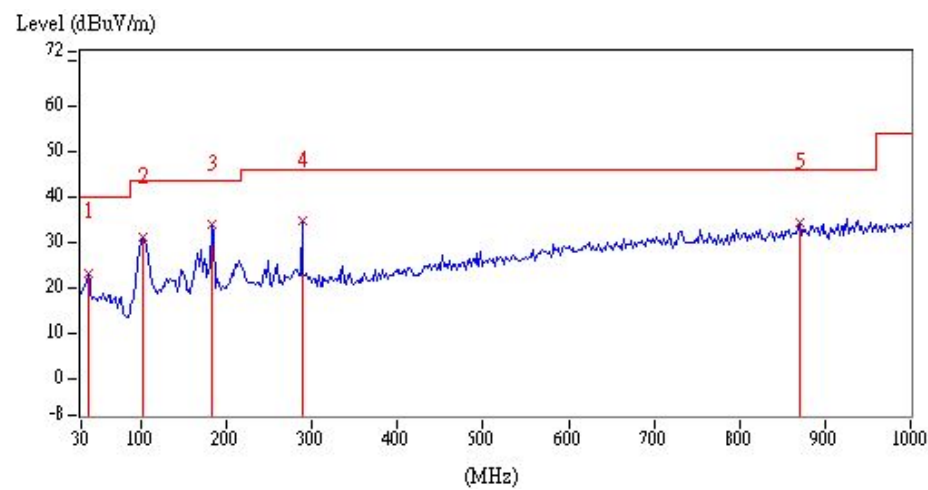
Remark:

1. Corr. Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Corr. Factor

Vertical



Horizontal



5.6.3 Measurement results: frequency above 1GHz to 40GHz

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
802.11a , Ch36 , Chain0	1583	PK	V	38.74	-6.39	55.44	49.05	74.00	-24.95
	3024	PK	V	39.73	0.50	48.10	48.60	74.00	-25.40
	3563	PK	V	40.06	1.37	61.09	62.46	74.00	-11.54
	3563	AV	V	40.06	1.37	50.12	51.49	54.00	-2.51
	6159	PK	V	38.24	7.98	40.91	48.89	74.00	-25.11
	3489	PK	V	40.01	9.09	42.27	51.36	74.00	-22.64
	10360	PK	V	38.95	19.98	27.71	47.69	74.00	-26.31
	15540	PK	V	38.21	22.39	22.90	45.29	74.00	-28.71
	2375	PK	H	39.01	-1.99	53.40	51.41	74.00	-22.59
	3024	PK	H	39.73	0.50	45.42	45.92	74.00	-28.08
	3563	PK	H	40.06	1.37	57.65	59.02	74.00	-14.98
	3563	AV	H	40.06	1.37	44.28	45.65	54.00	-8.35
	6159	PK	H	38.24	7.98	42.48	50.46	74.00	-23.54
	6489	PK	H	38.38	9.09	41.50	50.59	74.00	-23.41
	10360	PK	H	38.95	19.99	26.67	46.66	74.00	-27.34
	15540	PK	H	38.21	22.38	18.84	41.22	54.00	-12.78
802.11a , Ch44 , Chain0	1583	PK	V	38.74	-6.39	56.22	49.83	74.00	-24.17
	3090	PK	V	39.77	0.59	45.17	45.76	74.00	-28.24
	3629	PK	V	40.11	1.60	57.72	59.32	74.00	-14.68
	3633	AV	V	40.11	1.62	40.05	41.67	54.00	-12.33
	6236	PK	V	38.27	8.25	44.18	52.43	74.00	-21.57
	10440	PK	V	39.00	20.49	25.94	46.43	74.00	-27.57
	15660	PK	V	38.12	22.36	21.74	44.10	74.00	-29.90
	1583	PK	H	38.74	-6.39	47.09	40.70	74.00	-33.30
	2375	PK	H	39.01	-1.99	52.31	50.32	74.00	-23.68
	3629	PK	H	40.11	1.61	56.84	58.45	74.00	-15.55
	3633	AV	H	40.11	1.62	38.61	40.23	54.00	-13.77
	6236	PK	H	38.27	8.24	44.01	52.25	74.00	-21.75
	10440	PK	H	39.00	20.49	25.67	46.16	74.00	-27.84
	15660	PK	H	38.12	22.35	17.18	39.53	54.00	-14.47

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
802.11a , Ch48 , Chain0	1583	PK	V	38.74	-6.39	55.55	49.16	74.00	-24.84
	3123	PK	V	39.79	0.63	43.60	44.23	74.00	-29.77
	3650	AV	V	40.13	1.68	39.87	41.55	54.00	-12.45
	3651	PK	V	40.13	1.68	58.88	60.56	74.00	-13.44
	6280	PK	V	38.29	8.39	45.46	53.85	74.00	-20.15
	10480	PK	V	39.03	20.74	26.66	47.40	74.00	-26.60
	15720	PK	V	38.08	22.35	20.12	42.47	74.00	-31.53
	1583	PK	H	38.74	-6.39	46.46	40.07	74.00	-33.93
	2375	PK	H	39.01	-1.98	52.45	50.47	74.00	-23.53
	3650	AV	H	40.13	1.68	39.21	40.89	54.00	-13.11
	3651	PK	H	40.13	1.68	55.27	56.95	74.00	-17.05
	6280	PK	H	38.29	8.40	43.80	52.20	74.00	-21.80
	10480	PK	H	39.03	20.74	26.44	47.18	74.00	-26.82
	15720	PK	H	38.08	22.34	17.64	39.98	74.00	-34.02
802.11a , Ch149 , Chain0	1583	PK	V	38.74	-6.39	55.93	49.54	74.00	-24.46
	3167	PK	V	39.82	0.69	42.24	42.93	74.00	-31.07
	4410	PK	V	40.54	3.76	46.09	49.85	74.00	-24.15
	11490	PK	V	39.01	22.96	25.23	48.19	74.00	-25.81
	17235	PK	V	37.91	27.52	19.13	46.65	74.00	-27.35
	1583	PK	H	38.74	-6.39	45.67	39.28	74.00	-34.72
	2375	PK	H	39.01	-1.98	53.15	51.17	74.00	-22.83
	4960	PK	H	39.80	5.44	39.54	44.98	74.00	-29.02
	11490	PK	H	39.01	22.97	24.60	47.57	74.00	-26.43
	17235	PK	H	37.91	27.52	19.01	46.53	74.00	-27.47

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

TEST REPORT

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
802.11a , Ch157 , Chain0	1583	PK	V	38.74	-6.39	56.50	50.11	74.00	-23.89
	2375	PK	V	39.01	-1.99	45.01	43.02	74.00	-30.98
	4476	PK	V	40.57	3.89	45.32	49.21	74.00	-24.79
	11570	PK	V	38.98	22.87	25.04	47.91	74.00	-26.09
	17355	PK	V	37.97	27.88	19.30	47.18	74.00	-26.82
	1583	PK	H	38.74	-6.39	46.69	40.30	74.00	-33.70
	2375	PK	H	39.01	-1.98	52.22	50.24	74.00	-23.76
	4960	PK	H	39.80	5.44	40.06	45.50	74.00	-28.50
	5356	PK	H	38.63	5.80	38.54	44.34	74.00	-29.66
	11570	PK	H	38.98	22.87	26.86	49.73	74.00	-24.27
	17355	PK	H	37.97	27.88	18.19	46.07	74.00	-27.93
	1583	PK	V	38.74	-6.39	56.62	50.23	74.00	-23.77
802.11a , Ch165 , Chain0	2375	PK	V	39.01	-1.98	43.85	41.87	74.00	-32.13
	3167	PK	V	39.82	0.70	42.24	42.94	74.00	-31.06
	4531	PK	V	40.53	4.05	45.50	49.55	74.00	-24.45
	11650	PK	V	38.94	22.76	24.86	47.62	74.00	-26.38
	17475	PK	V	38.04	28.25	17.35	45.60	74.00	-28.40
	1583	PK	H	38.74	-6.39	47.24	40.85	74.00	-33.15
	2375	PK	H	39.01	-1.98	52.24	50.26	74.00	-23.74
	4960	PK	H	39.80	5.44	40.01	45.45	74.00	-28.55
	5400	PK	H	38.49	5.83	39.56	45.39	74.00	-28.61
	11650	PK	H	38.94	22.76	24.04	46.80	74.00	-27.20
	17475	PK	H	38.04	28.25	17.95	46.20	74.00	-27.80

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
802.11a , Ch36 , Chain1	1583	PK	V	38.74	-6.39	43.63	37.24	74.00	-36.76
	3563	PK	V	40.06	1.38	48.96	50.34	74.00	-23.66
	6159	PK	V	38.24	7.99	40.71	48.70	74.00	-25.30
	6489	PK	V	38.38	9.09	39.20	48.29	74.00	-25.71
	10360	PK	V	38.95	19.98	26.10	46.08	74.00	-27.92
	15540	PK	V	38.21	22.38	22.48	44.86	74.00	-29.14
	2375	PK	H	39.01	-1.98	48.36	46.38	74.00	-27.62
	3563	PK	H	40.06	1.37	46.74	48.11	74.00	-25.89
	6159	PK	H	38.24	7.99	40.62	48.61	74.00	-25.39
	6478	PK	H	38.37	9.06	37.85	46.91	74.00	-27.09
	10360	PK	H	38.95	19.98	27.06	47.04	74.00	-26.96
	15540	PK	H	38.21	22.38	22.96	45.34	74.00	-28.66
802.11a , Ch44 , Chain1	1583	PK	V	38.74	-6.40	43.80	37.40	74.00	-36.60
	3629	PK	V	40.11	1.60	46.93	48.53	74.00	-25.47
	6236	PK	V	38.27	8.24	40.94	49.18	74.00	-24.82
	10440	PK	V	39.00	20.49	26.19	46.68	74.00	-27.32
	15660	PK	V	38.12	22.36	19.67	42.03	74.00	-31.97
	2375	PK	H	39.01	-1.99	49.51	47.52	74.00	-26.48
	3629	PK	H	40.11	1.60	48.17	49.77	74.00	-24.23
	6236	PK	H	38.27	8.25	40.47	48.72	74.00	-25.28
	10440	PK	H	39.00	20.49	26.66	47.15	74.00	-26.85
	15660	PK	H	38.12	22.36	21.90	44.26	74.00	-29.74

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
802.11a , Ch48 , Chain1	1583	PK	V	38.74	-6.39	43.40	37.01	74.00	-36.99
	2375	PK	V	39.01	-1.98	41.76	39.78	74.00	-34.22
	6280	PK	V	38.29	8.39	39.69	48.08	74.00	-25.92
	10480	PK	V	39.03	20.74	26.98	47.72	74.00	-26.28
	15720	PK	V	38.08	22.34	18.84	41.18	74.00	-32.82
	2375	PK	H	39.01	-1.98	42.40	40.42	74.00	-33.58
	3651	PK	H	40.13	1.68	46.29	47.97	74.00	-26.03
	6280	PK	H	38.29	8.39	40.87	49.26	74.00	-24.74
	10480	PK	H	39.03	20.75	26.22	46.97	74.00	-27.03
	15720	PK	H	38.08	22.34	22.39	44.73	74.00	-29.27
802.11a , Ch149 , Chain1	1583	PK	V	38.74	-6.39	48.99	42.60	74.00	-31.40
	2375	PK	V	39.01	-1.98	51.72	49.74	74.00	-24.26
	3167	PK	V	39.82	0.69	41.50	42.19	74.00	-31.81
	11490	PK	V	39.01	22.96	25.29	48.25	74.00	-25.75
	17235	PK	V	37.91	27.52	18.62	46.14	74.00	-27.86
	2375	PK	H	39.01	-1.99	43.81	41.82	74.00	-32.18
	3167	PK	H	39.82	0.69	43.35	44.04	74.00	-29.96
	3277	PK	H	39.89	0.84	47.83	48.67	74.00	-25.33
	4421	PK	H	40.55	3.78	39.43	43.21	74.00	-30.79
	11490	PK	H	39.01	22.96	24.69	47.65	74.00	-26.35
	17235	PK	H	37.91	27.52	18.09	45.61	74.00	-28.39

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
802.11a , Ch157 , Chain1	1583	PK	V	38.74	-6.40	56.53	50.13	74.00	-23.87
	2375	PK	V	39.01	-1.98	45.22	43.24	74.00	-30.76
	3167	PK	V	39.82	0.69	42.21	42.90	74.00	-31.10
	4465	PK	V	40.57	3.87	47.10	50.97	74.00	-23.03
	3624	PK	V	40.11	8.54	37.80	46.34	74.00	-27.66
	11570	PK	V	38.98	22.88	24.59	47.47	74.00	-26.53
	17355	PK	V	37.97	27.88	18.98	46.86	74.00	-27.14
	1583	PK	H	38.74	-6.40	46.53	40.13	74.00	-33.87
	2375	PK	H	39.01	-1.99	52.27	50.28	74.00	-23.72
	4960	PK	H	39.80	5.44	39.58	45.02	74.00	-28.98
	11570	PK	H	38.98	22.87	24.47	47.34	74.00	-26.66
	17355	PK	H	37.97	27.88	18.42	46.30	74.00	-27.70
802.11a , Ch165 , Chain1	1583	PK	V	38.74	-6.39	56.24	49.85	74.00	-24.15
	3167	PK	V	39.82	0.70	43.07	43.77	74.00	-30.23
	4531	PK	V	40.53	4.05	43.97	48.02	74.00	-25.98
	11650	PK	V	38.94	22.76	24.36	47.12	74.00	-26.88
	17475	PK	V	38.04	28.24	18.05	46.29	74.00	-27.71
	2375	PK	H	39.01	-1.98	50.84	48.86	74.00	-25.14
	4531	PK	H	40.53	4.05	38.08	42.13	74.00	-31.87
	11650	PK	H	38.94	22.76	24.86	47.62	74.00	-26.38
	17475	PK	H	38.04	28.25	17.54	45.79	74.00	-28.21

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

TEST REPORT

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
802.11n(HT20) , Ch36	2375	PK	V	39.01	-1.98	47.44	45.46	74.00	-28.54
	3563	PK	V	40.06	1.37	58.60	59.97	74.00	-14.03
	3563	AV	V	40.06	1.37	41.30	42.67	54.00	-11.33
	6159	PK	V	38.24	7.99	42.90	50.89	74.00	-23.11
	6478	PK	V	38.37	9.05	40.49	49.54	74.00	-24.46
	10360	PK	V	38.95	19.99	25.59	45.58	74.00	-28.42
	15540	PK	V	38.21	22.38	25.44	47.82	74.00	-26.18
	1583	PK	H	38.74	-6.39	50.36	43.97	74.00	-30.03
	2375	PK	H	39.01	-1.98	51.32	49.34	74.00	-24.66
	3035	PK	H	39.74	0.51	43.66	44.17	74.00	-29.83
	3563	PK	H	40.06	1.37	58.04	59.41	74.00	-14.59
	3564	AV	H	40.06	1.37	41.19	42.56	54.00	-11.44
	6159	PK	H	38.24	7.98	41.41	49.39	74.00	-24.61
	6478	PK	H	38.37	9.05	40.78	49.83	74.00	-24.17
	10360	PK	H	38.95	19.98	25.78	45.76	74.00	-28.24
	15540	PK	H	38.21	22.39	23.11	45.50	74.00	-28.50
802.11n(HT20) , Ch44	2375	PK	V	39.01	-1.98	40.26	38.28	74.00	-35.72
	3618	PK	V	40.10	1.57	49.94	51.51	74.00	-22.49
	6247	PK	V	38.28	8.28	40.47	48.75	74.00	-25.25
	10440	PK	V	39.00	20.49	25.14	45.63	74.00	-28.37
	15660	PK	V	38.12	22.36	22.99	45.35	74.00	-28.65
	1583	PK	H	38.74	-6.39	49.61	43.22	74.00	-30.78
	2375	PK	H	39.01	-1.98	49.45	47.47	74.00	-26.53
	3629	PK	H	40.11	1.61	57.26	58.87	74.00	-15.13
	3629	AV	H	40.11	1.61	41.24	42.85	54.00	-11.15
	6236	PK	H	38.27	8.25	42.81	51.06	74.00	-22.94
	10440	PK	H	39.00	20.49	25.54	46.03	74.00	-27.97
	15660	PK	H	38.12	22.35	22.17	44.52	74.00	-29.48

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
802.11n(HT20) , Ch48	2375	PK	V	39.01	-1.99	43.14	41.15	74.00	-32.85
	3662	PK	V	40.13	1.72	46.40	48.12	74.00	-25.88
	6280	PK	V	38.29	8.39	42.37	50.76	74.00	-23.24
	10480	PK	V	39.03	20.74	24.78	45.52	74.00	-28.48
	15720	PK	V	38.08	22.34	21.41	43.75	74.00	-30.25
	1583	PK	H	38.74	-6.40	49.91	43.51	74.00	-30.49
	2375	PK	H	39.01	-1.98	47.97	45.99	74.00	-28.01
	3662	AV	H	40.13	1.72	40.61	42.33	54.00	-11.67
	3662	PK	H	40.13	1.72	55.29	57.01	74.00	-16.99
	6280	PK	H	38.29	8.39	43.48	51.87	74.00	-22.13
	10480	PK	H	39.03	20.75	25.51	46.26	74.00	-27.74
	15720	PK	H	38.08	22.35	21.39	43.74	74.00	-30.26
802.11n(HT20) , Ch149	1583	PK	V	38.74	-6.40	54.66	48.26	74.00	-25.74
	2375	PK	V	39.01	-1.98	42.86	40.88	74.00	-33.12
	3167	PK	V	39.82	0.69	41.48	42.17	74.00	-31.83
	4410	PK	V	40.54	3.76	43.34	47.10	74.00	-26.90
	11490	PK	V	39.01	22.97	23.71	46.68	74.00	-27.32
	17235	PK	V	37.91	27.52	18.96	46.48	74.00	-27.52
	1583	PK	H	38.74	-6.39	47.91	41.52	74.00	-32.48
	2375	PK	H	39.01	-1.98	48.64	46.66	74.00	-27.34
	4410	PK	H	40.54	3.76	41.49	45.25	74.00	-28.75
	4960	PK	H	39.80	5.44	39.17	44.61	74.00	-29.39
	11490	PK	H	39.01	22.97	24.31	47.28	74.00	-26.72
	17235	PK	H	37.91	27.52	19.31	46.83	74.00	-27.17

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
802.11n(HT20) , Ch157	1583	PK	V	38.74	-6.39	55.42	49.03	74.00	-24.97
	2375	PK	V	39.01	-1.99	42.85	40.86	74.00	-33.14
	4476	PK	V	40.57	3.90	46.74	50.64	74.00	-23.36
	6324	PK	V	38.31	8.54	39.51	48.05	74.00	-25.95
	11570	PK	V	38.98	22.87	24.16	47.03	74.00	-26.97
	17355	PK	V	37.97	27.89	19.77	47.66	74.00	-26.34
	1583	PK	H	38.74	-6.39	47.31	40.92	74.00	-33.08
	2375	PK	H	39.01	-1.98	49.78	47.80	74.00	-26.20
	4476	PK	H	40.57	3.90	43.06	46.96	74.00	-27.04
	4960	PK	H	39.80	5.44	39.61	45.05	74.00	-28.95
	11570	PK	H	38.98	22.87	24.90	47.77	74.00	-26.23
	17355	PK	H	37.97	27.88	19.47	47.35	74.00	-26.65
802.11n(HT20) , Ch165	1583	PK	V	38.74	-6.39	57.94	51.55	74.00	-22.45
	2375	PK	V	39.01	-1.98	43.92	41.94	74.00	-32.06
	4542	PK	V	40.51	4.08	47.73	51.81	74.00	-22.19
	6478	PK	V	38.37	9.05	39.30	48.35	74.00	-25.65
	11650	PK	V	38.94	22.76	23.96	46.72	74.00	-27.28
	17475	PK	V	38.04	28.24	17.82	46.06	74.00	-27.94
	1583	PK	H	38.74	-6.40	49.81	43.41	74.00	-30.59
	2375	PK	H	39.01	-1.99	50.58	48.59	74.00	-25.41
	4531	PK	H	40.53	4.04	46.23	50.27	74.00	-23.73
	11650	PK	H	38.94	22.76	24.85	47.61	74.00	-26.39
	17475	PK	H	38.04	28.24	18.28	46.52	74.00	-27.48

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
802.11n(HT40) , Ch38	1968	PK	V	38.42	-1.81	42.33	40.52	74.00	-33.48
	2375	PK	V	39.01	-1.99	43.53	41.54	74.00	-32.46
	3574	PK	V	40.07	1.41	46.18	47.59	74.00	-26.41
	6170	PK	V	38.25	8.03	38.27	46.30	74.00	-27.70
	10380	PK	V	38.96	20.11	25.86	45.97	74.00	-28.03
	15570	PK	V	38.19	22.38	19.50	41.88	74.00	-32.12
	2375	PK	H	39.01	-1.98	46.64	44.66	74.00	-29.34
	3585	PK	H	40.08	1.45	47.81	49.26	74.00	-24.74
	6181	PK	H	38.25	8.06	37.57	45.63	74.00	-28.37
	10380	PK	H	38.96	20.11	24.01	44.12	74.00	-29.88
	15570	PK	H	38.19	22.38	19.22	41.60	74.00	-32.40
802.11n(HT40) , Ch46	2375	PK	V	39.01	-1.99	43.08	41.09	74.00	-32.91
	3640	PK	V	40.12	1.65	45.08	46.73	74.00	-27.27
	6258	PK	V	38.28	8.32	38.38	46.70	74.00	-27.30
	10460	PK	V	39.01	20.62	27.08	47.70	74.00	-26.30
	15690	PK	V	38.10	22.35	20.18	42.53	74.00	-31.47
	1583	PK	H	38.74	-6.40	44.99	38.59	74.00	-35.41
	2375	PK	H	39.01	-1.99	41.73	39.74	74.00	-34.26
	3640	PK	H	40.12	1.65	42.17	43.82	74.00	-30.18
	6258	PK	H	38.28	8.32	37.69	46.01	74.00	-27.99
	10460	PK	H	39.01	20.62	25.97	46.59	74.00	-27.41
	15690	PK	H	38.10	22.35	17.57	39.92	74.00	-34.08

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
802.11n(HT40) , Ch151	1583	PK	V	38.74	-6.39	54.01	47.62	74.00	-26.38
	2375	PK	V	39.01	-1.98	43.15	41.17	74.00	-32.83
	4432	PK	V	40.55	3.81	40.55	44.36	74.00	-29.64
	11510	PK	V	39.01	22.95	24.10	47.05	74.00	-26.95
	17265	PK	V	37.92	27.61	19.66	47.27	74.00	-26.73
	1583	PK	H	38.74	-6.39	49.40	43.01	74.00	-30.99
	2375	PK	H	39.01	-1.98	49.55	47.57	74.00	-26.43
	4432	PK	H	40.55	3.81	41.66	45.47	74.00	-28.53
	11510	PK	H	39.01	22.96	25.05	48.01	74.00	-25.99
	17265	PK	H	37.92	27.61	19.58	47.19	74.00	-26.81
802.11n(HT40) , Ch159	1583	PK	V	38.74	-6.39	56.75	50.36	74.00	-23.64
	2375	PK	V	39.01	-1.98	44.37	42.39	74.00	-31.61
	4487	PK	V	40.57	3.92	40.35	44.27	74.00	-29.73
	11590	PK	V	38.97	22.85	24.07	46.92	74.00	-27.08
	17385	PK	V	37.99	27.97	18.10	46.07	74.00	-27.93
	1583	PK	H	38.74	-6.39	49.78	43.39	74.00	-30.61
	2375	PK	H	39.01	-1.99	50.40	48.41	74.00	-25.59
	4487	PK	H	40.57	3.92	40.49	44.41	74.00	-29.59
	11590	PK	H	38.97	22.84	24.40	47.24	74.00	-26.76
	17385	PK	H	37.99	27.97	18.54	46.51	74.00	-27.49

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

6. Emission on The Band Edge

6.1 Operating environment

Temperature:	25	°C
Relative Humidity:	50	%
Atmospheric Pressure	1008	hPa
Requirement	15.407(b), 15.209	
Channel	36, 38, 42, 46, 48 149, 157, 165, 151, 159, 155	

6.2 Measuring instrument setting

Spectrum analyzer settings	
Spectrum Analyzer function	Setting
Detector	Peak
RBW	1MHz
VBW	3MHz for Peak; 10Hz for Average
Sweep	Auto couple
Restrict bands	4500~5150MHz
	5350 ~5460MHz
Attenuation	Auto

Applicable to	Limit	
	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBμV/m)
5715-5725MHz	PK	PK
5850-5860MHz	-17	78.2

6.3 Test procedure

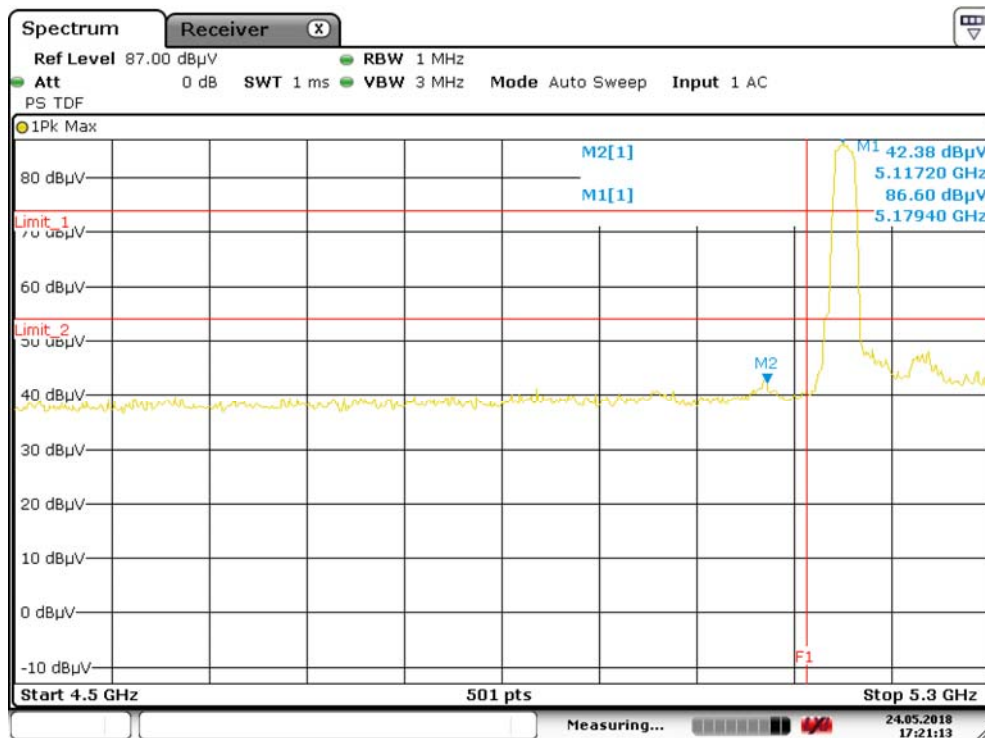
The test procedure is the same as clause 5.4

6.4 Test Result

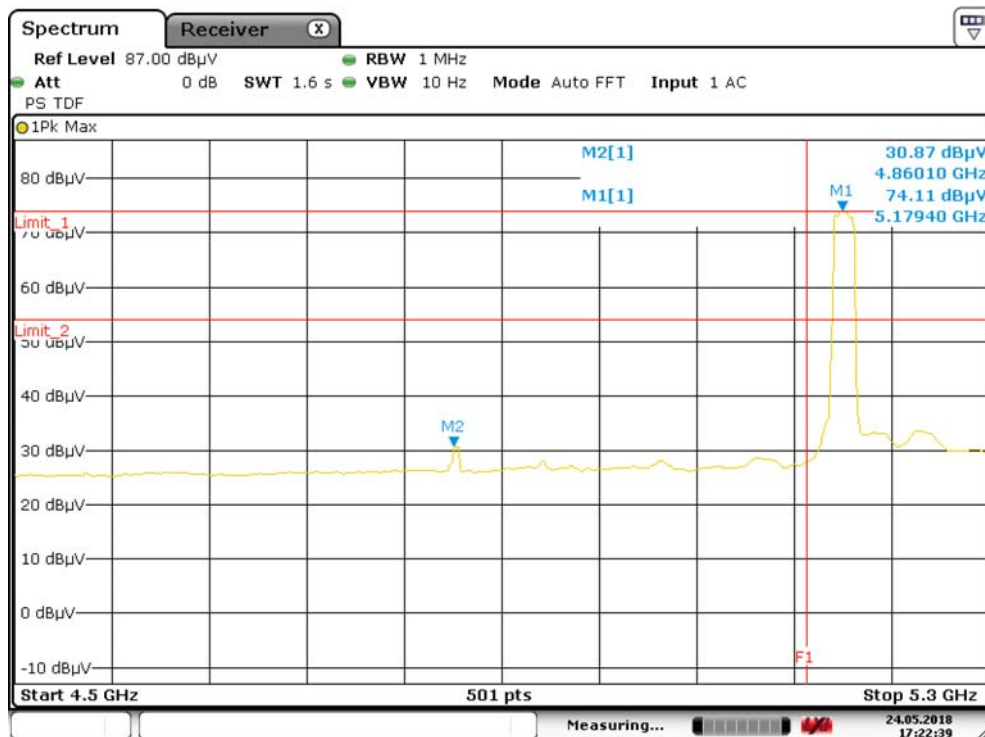
Mode	CH	Freq. (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)	Restricted band (MHz)
802.11a Chain 0	36	5150.00	PK	V	39.27	1.50	40.88	42.38	74	-31.62	4500~5150
		5150.00	AV	V	39.27	1.50	29.37	30.87	54	-23.13	
	48	5447.96	PK	V	38.34	3.30	33.41	36.71	74	-37.29	5350~5460
		5447.43	AV	V	38.34	3.30	23.36	26.66	54	-27.34	
802.11a Chain 1	36	5150.00	PK	V	39.27	1.50	41.47	42.97	74	-31.03	4500~5150
		5150.00	AV	V	39.27	1.50	29.36	30.86	54	-23.14	
	48	5391.83	PK	V	38.52	2.96	33.88	36.84	74	-37.16	5350~5460
		5385.36	AV	V	38.54	2.92	24.44	27.36	54	-26.64	
802.11n (HT20) Chain 0+1	36	5150.00	PK	V	39.27	1.50	37.08	38.58	74	-35.42	4500~5150
		4864.40	AV	V	39.96	0.16	30.36	30.52	54	-23.48	
	48	5386.44	PK	V	38.53	2.93	34.25	37.18	74	-36.82	5350~5460
		5447.34	AV	V	38.34	3.30	24.04	27.34	54	-26.66	
802.11n (HT40) Chain 0+1	38	5144.00	PK	V	39.28	1.46	43.36	44.82	74	-29.18	4500~5150
		5150.00	AV	V	39.27	1.50	28.97	30.47	54	-23.53	
	46	5449.82	PK	V	38.34	3.32	34.73	38.05	74	-35.95	5350~5460
		5447.03	AV	V	38.34	3.30	24.06	27.36	54	-26.64	

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

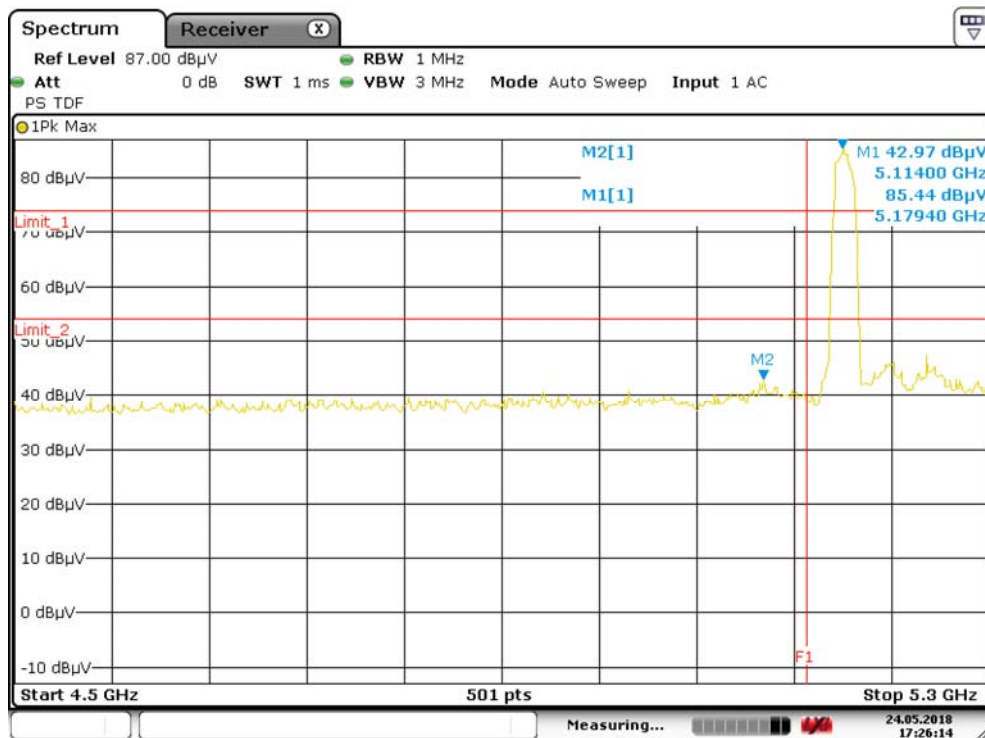
802.11a_Ch36_Chain0_Pk



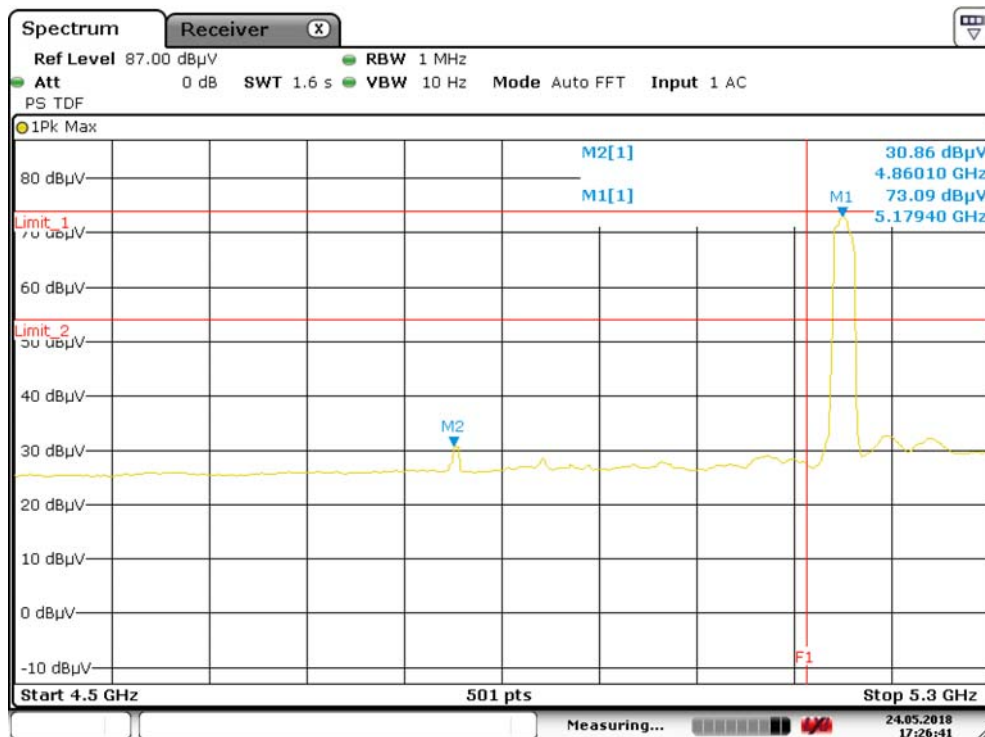
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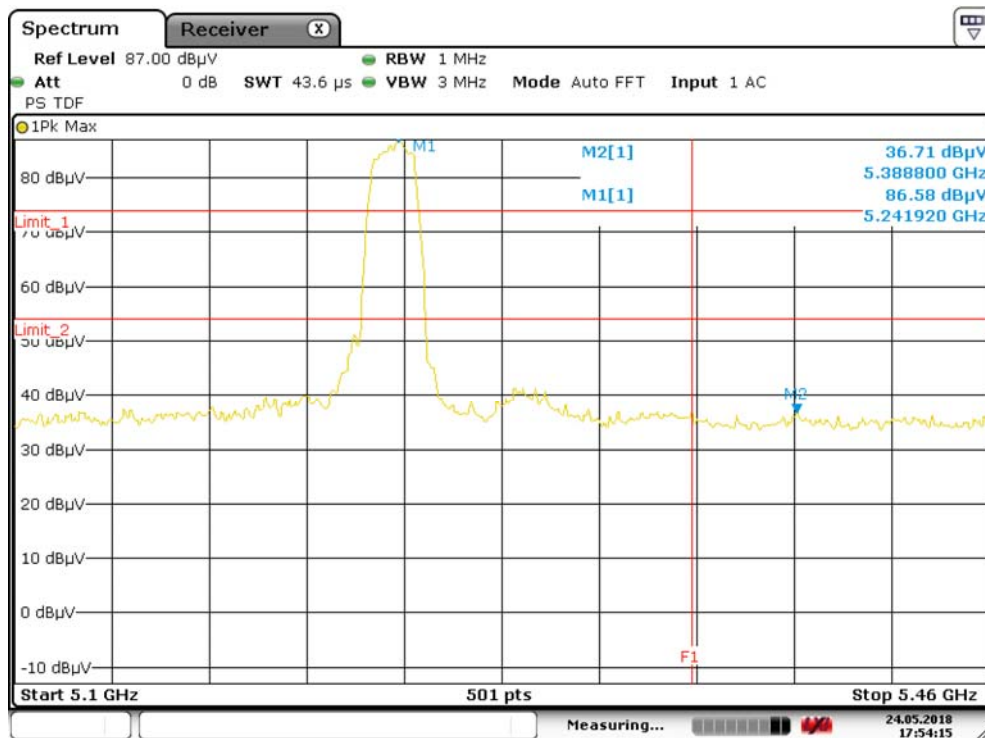
802.11a_Ch36_Chain1_Pk



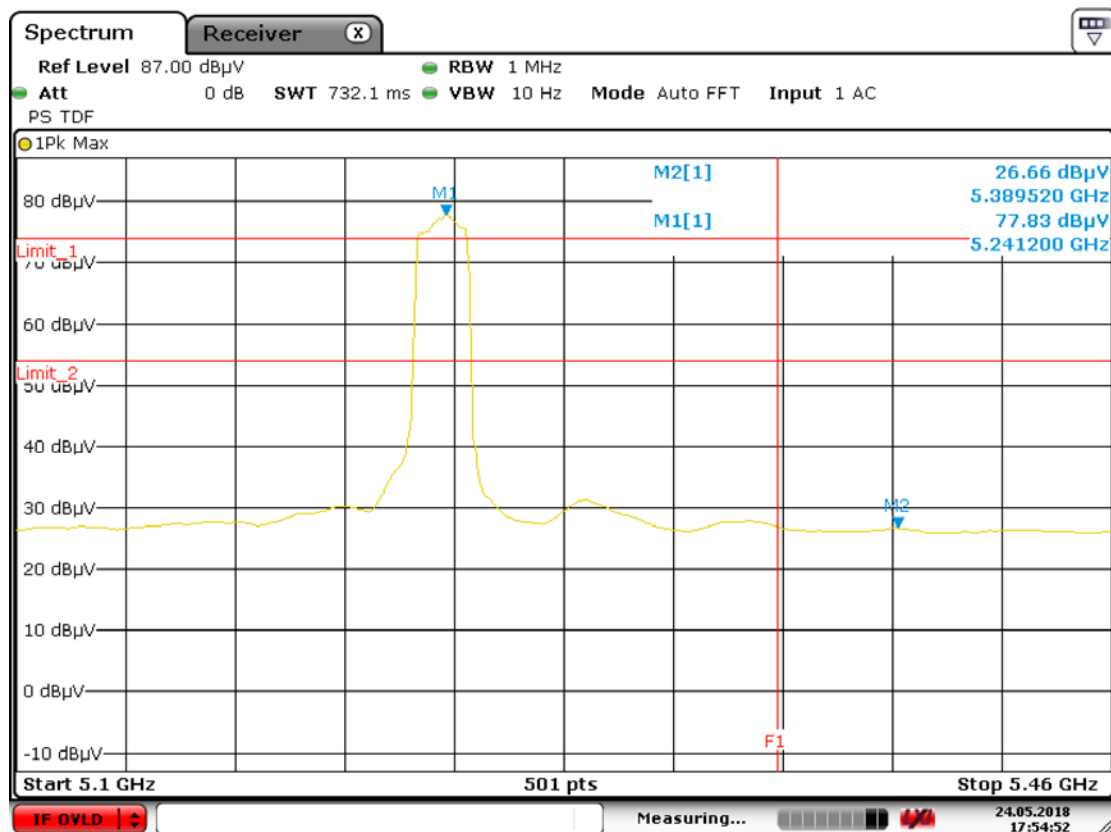
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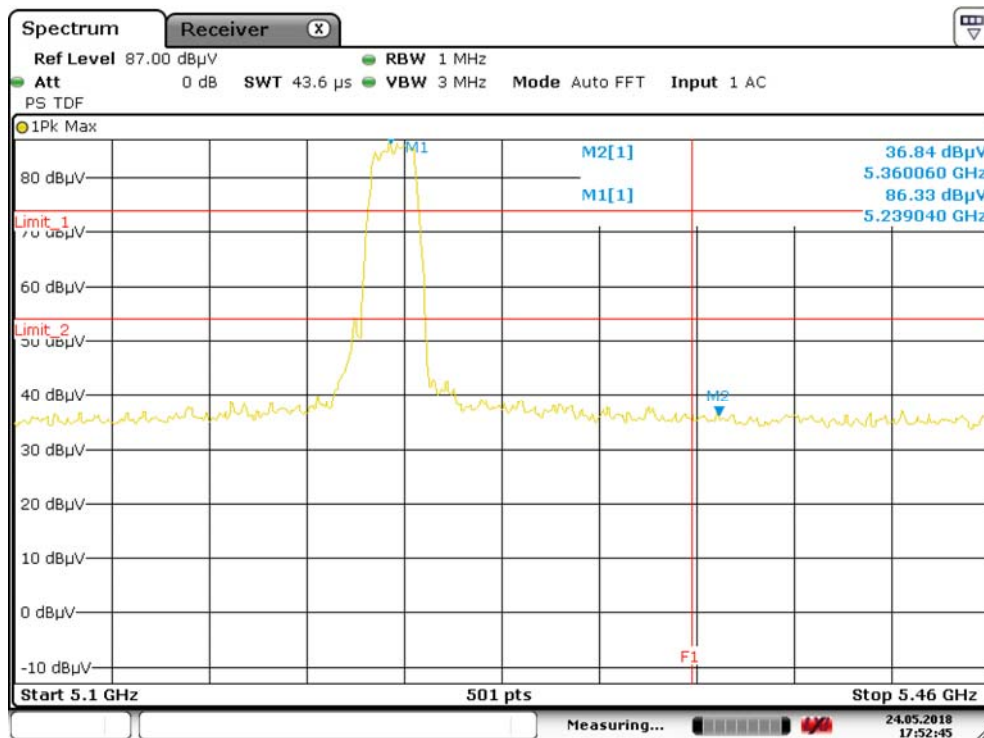
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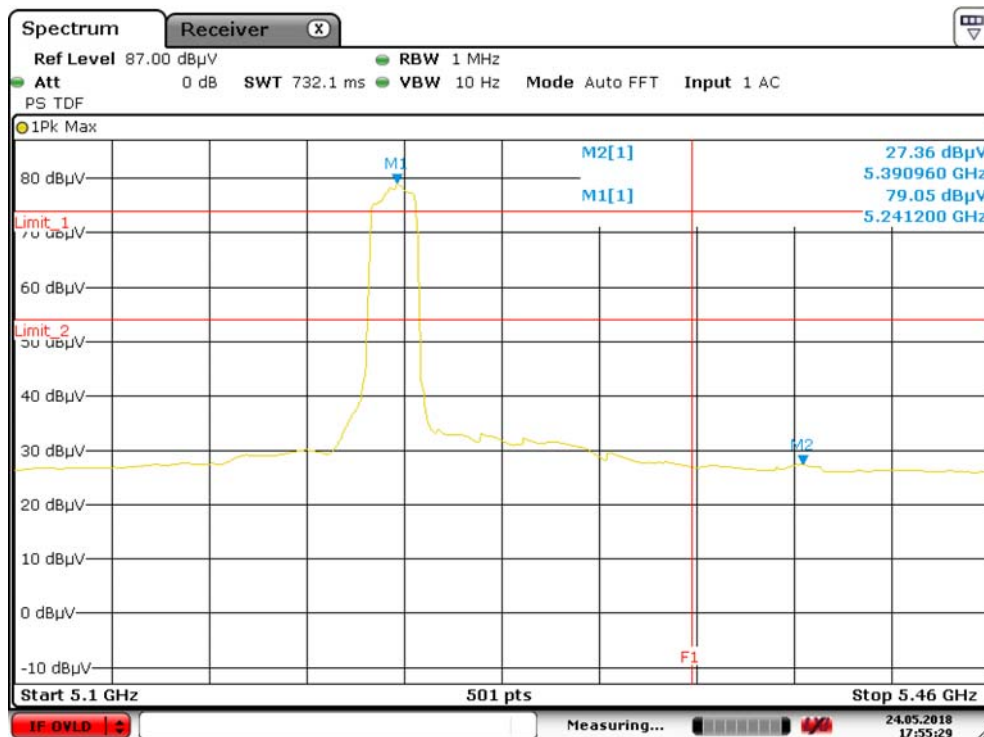
802.11a_Ch48_Chain0_Av



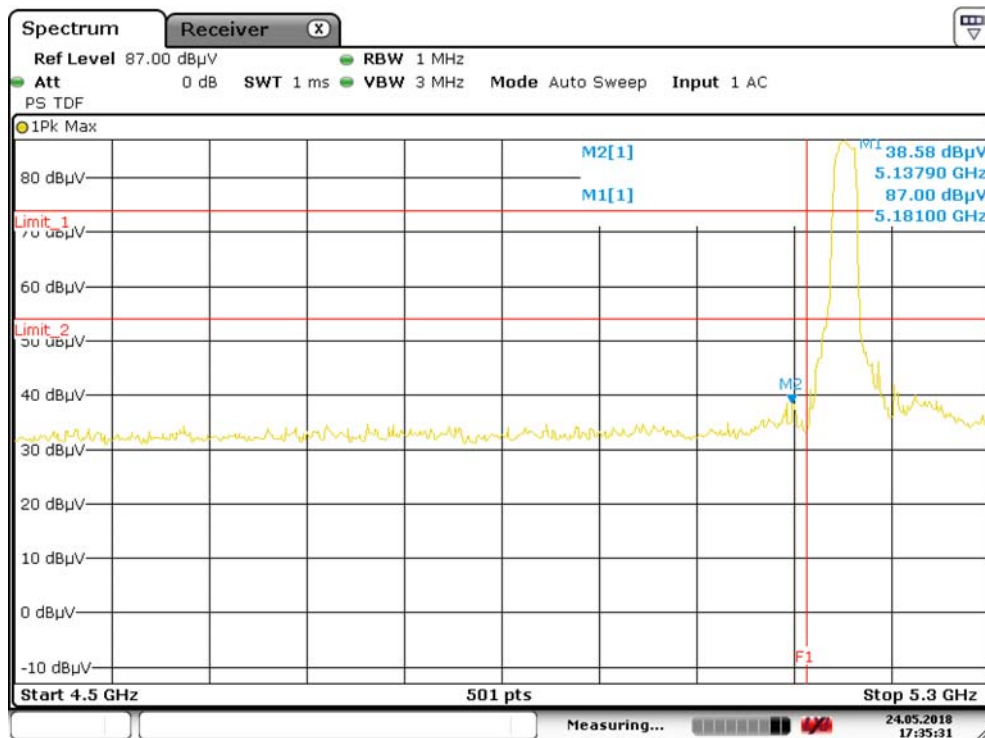
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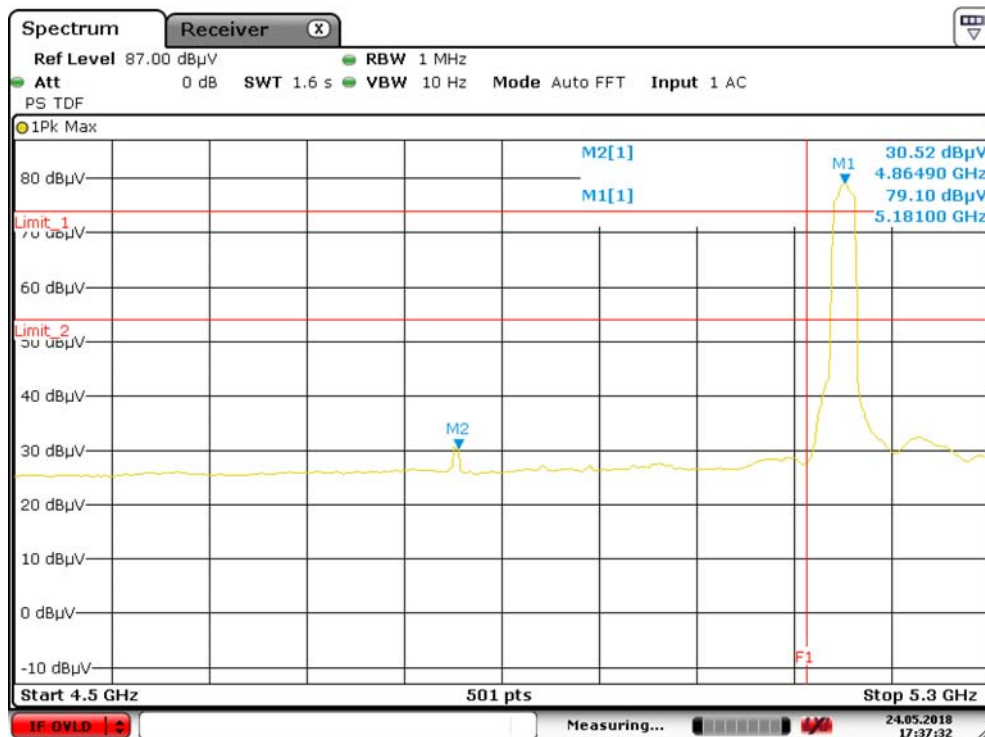
802.11a_Ch48_Chain1_Av



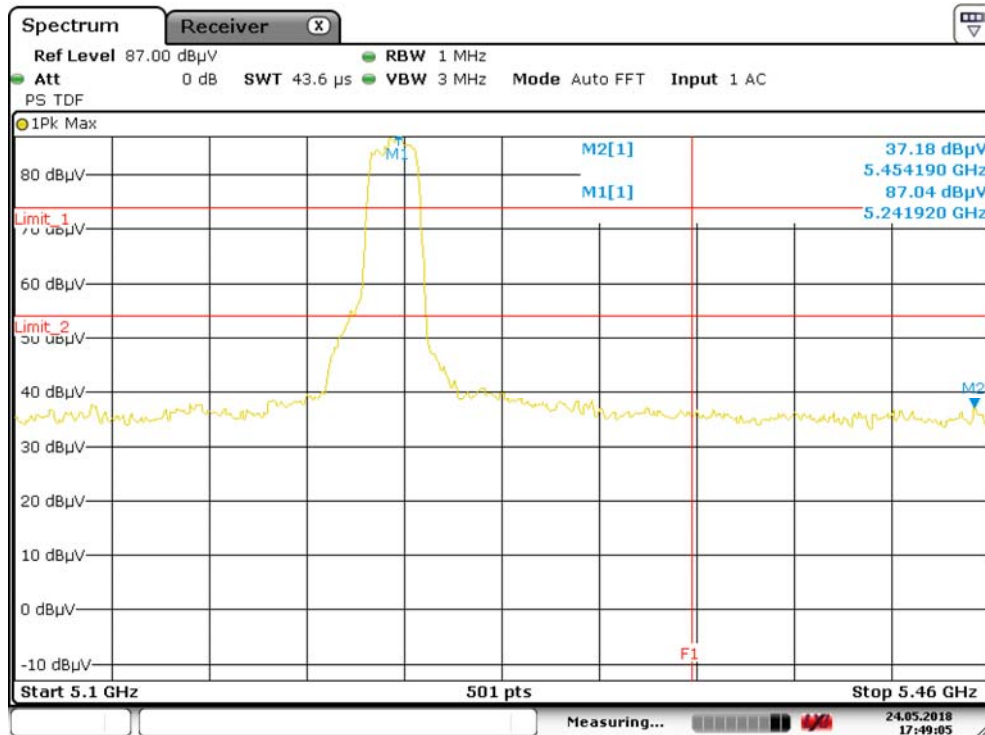
802.11n(HT20)_Ch36_Chain0+1_Pk



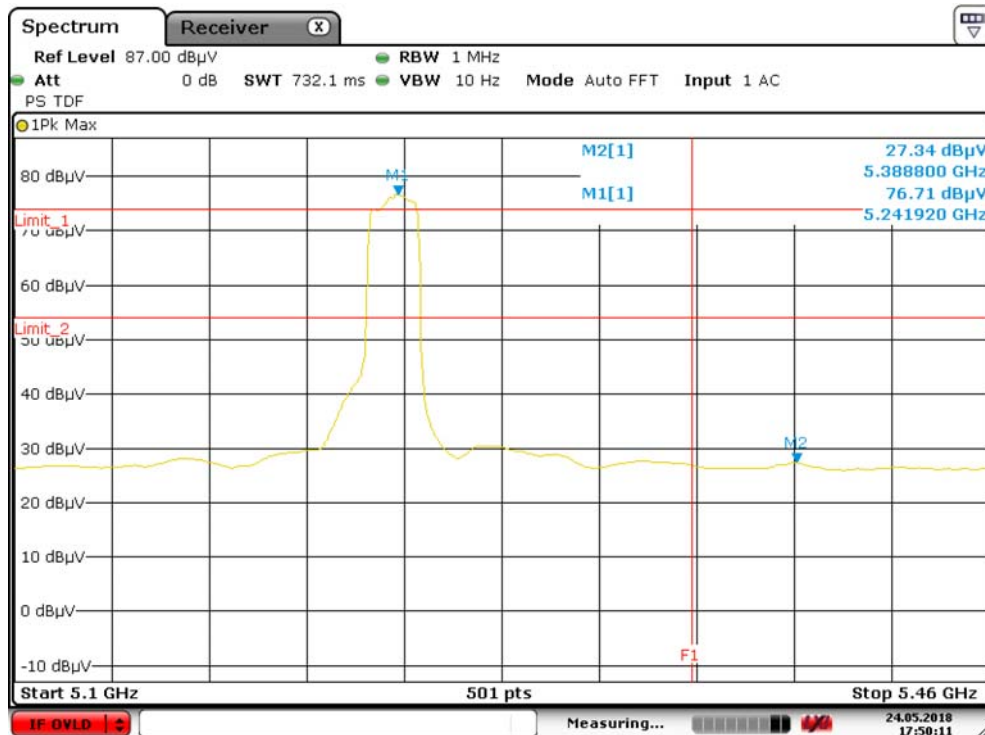
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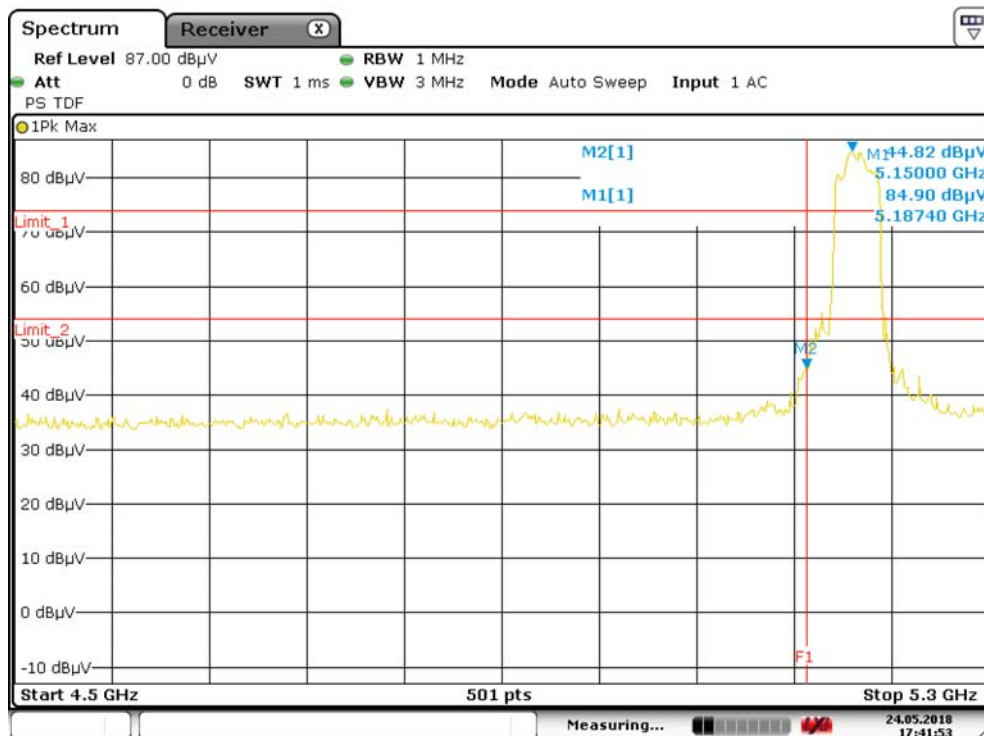
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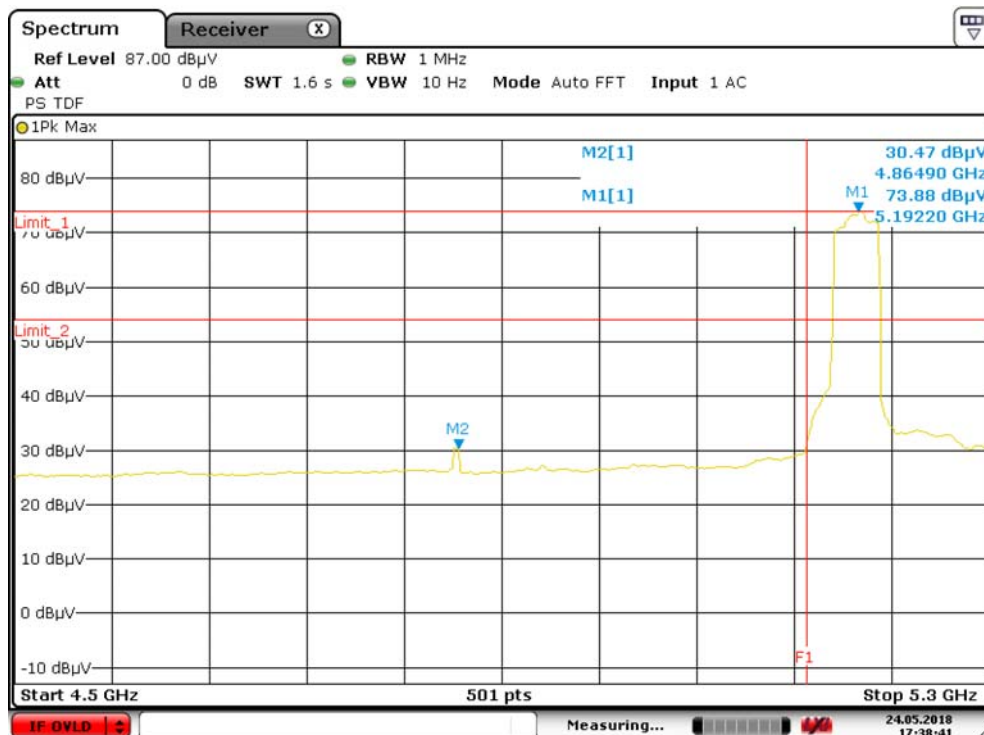
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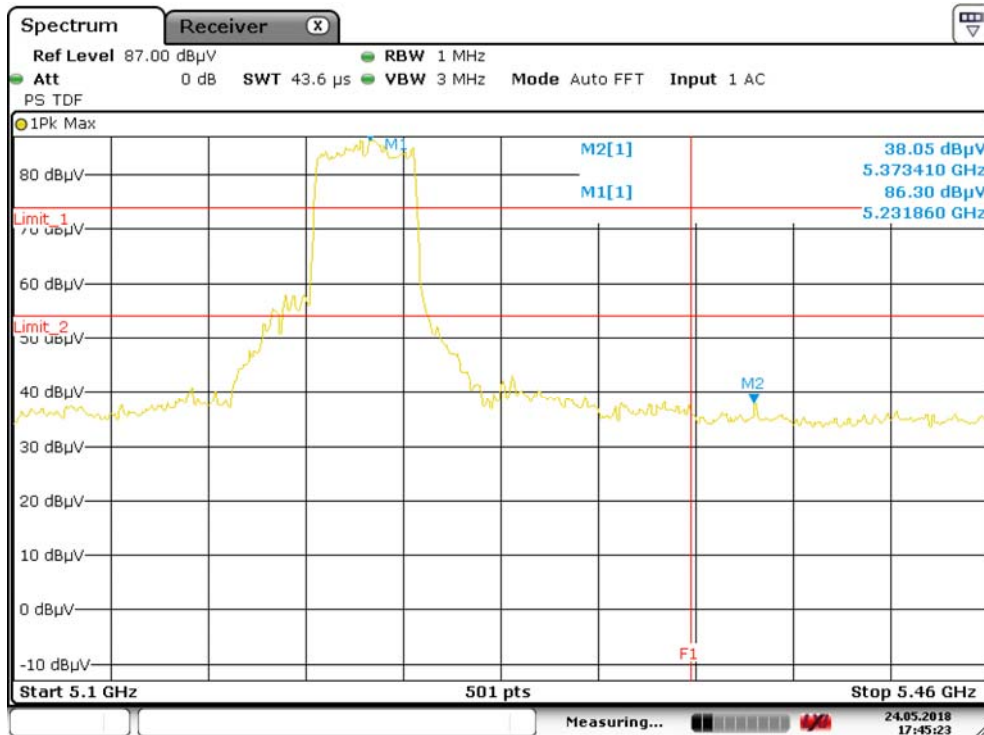
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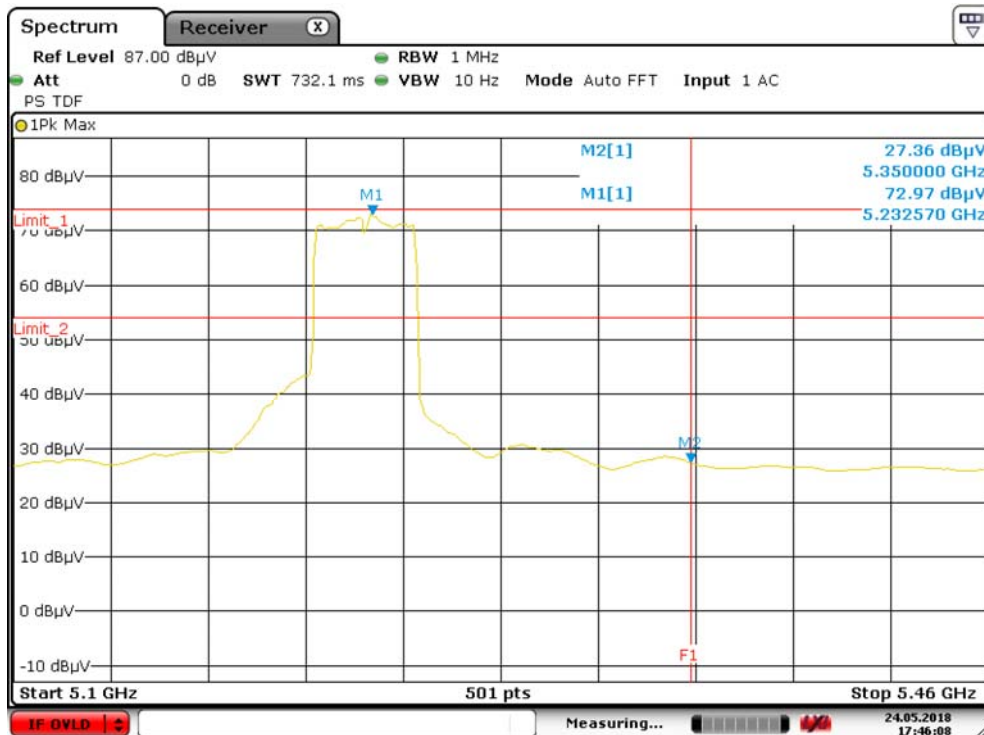
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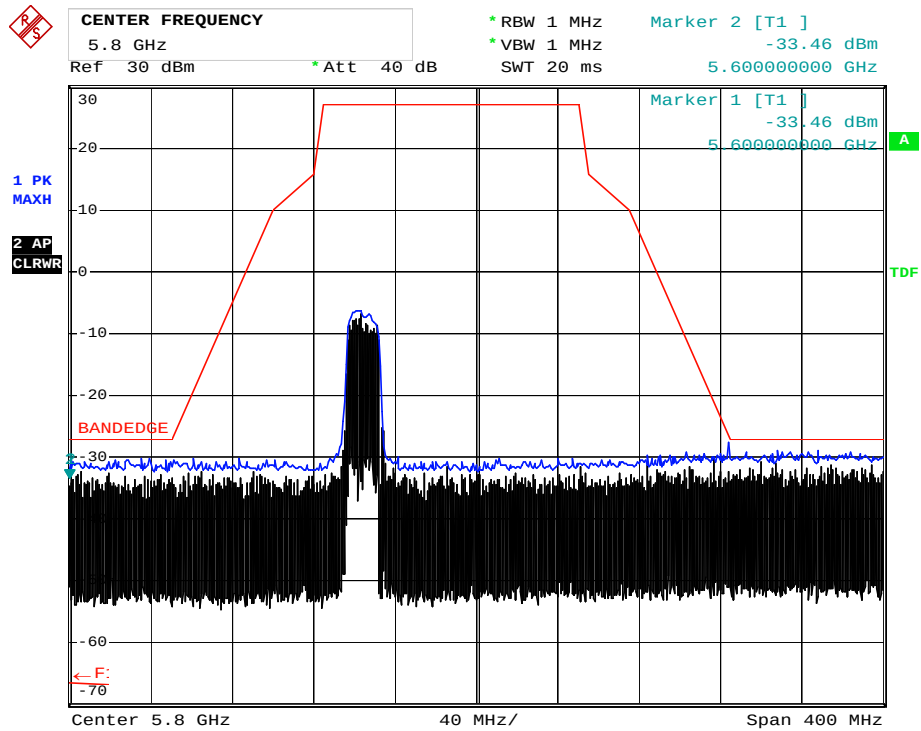
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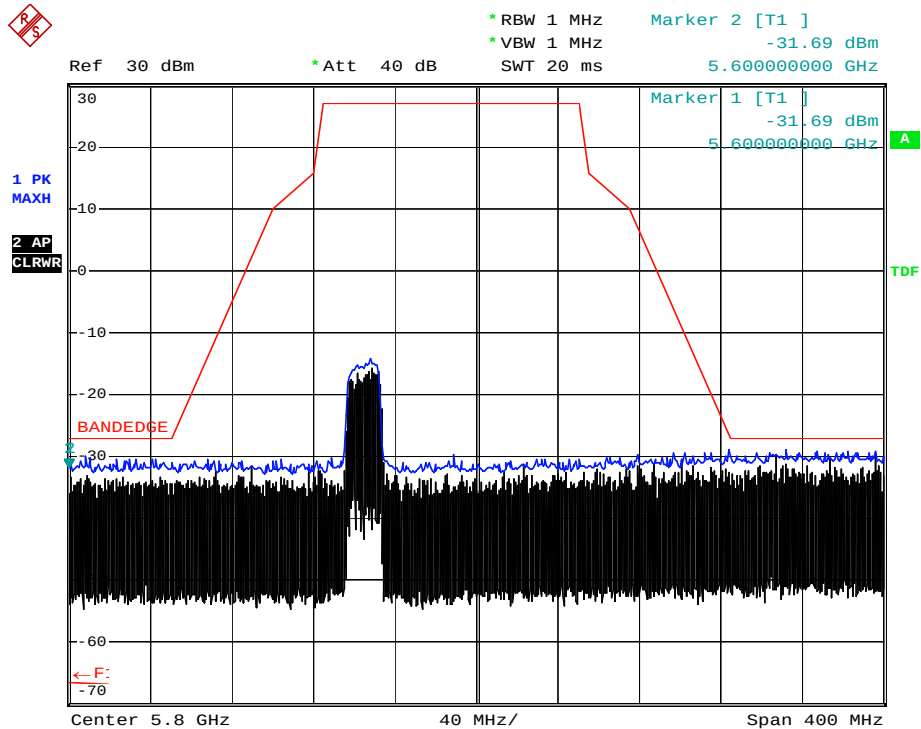
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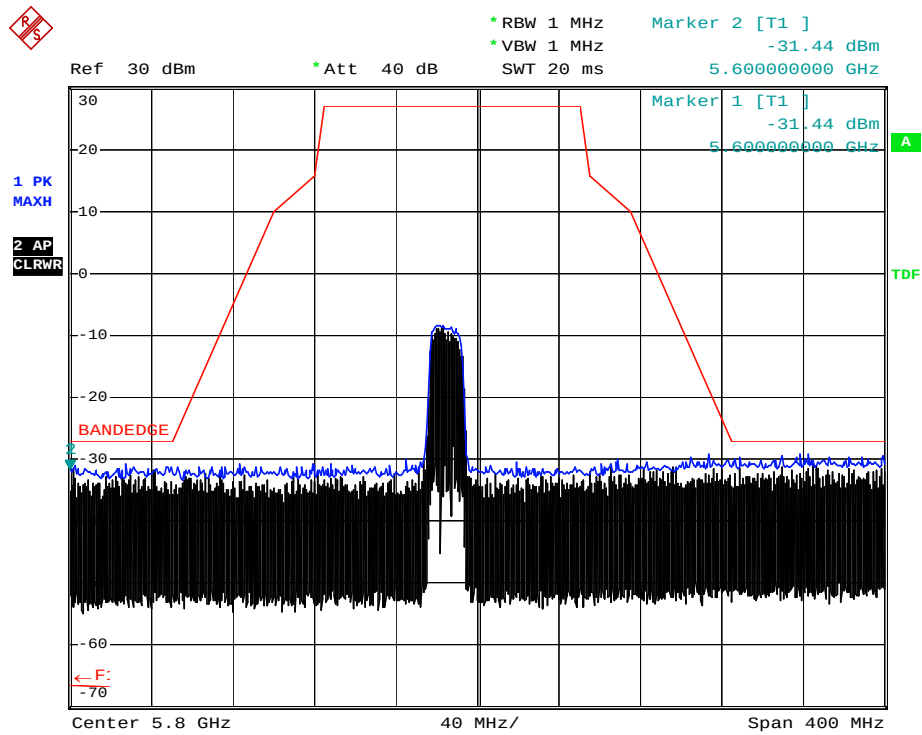
802.11a_Ch149_5745MHz_Chain0



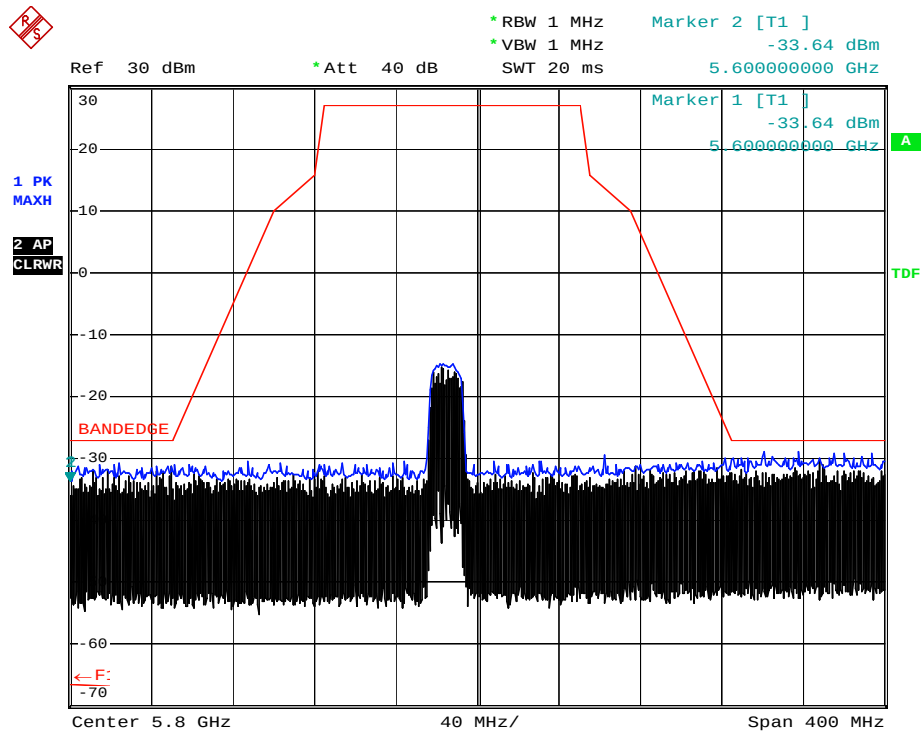
802.11a_Ch149_5745MHz_Chain1



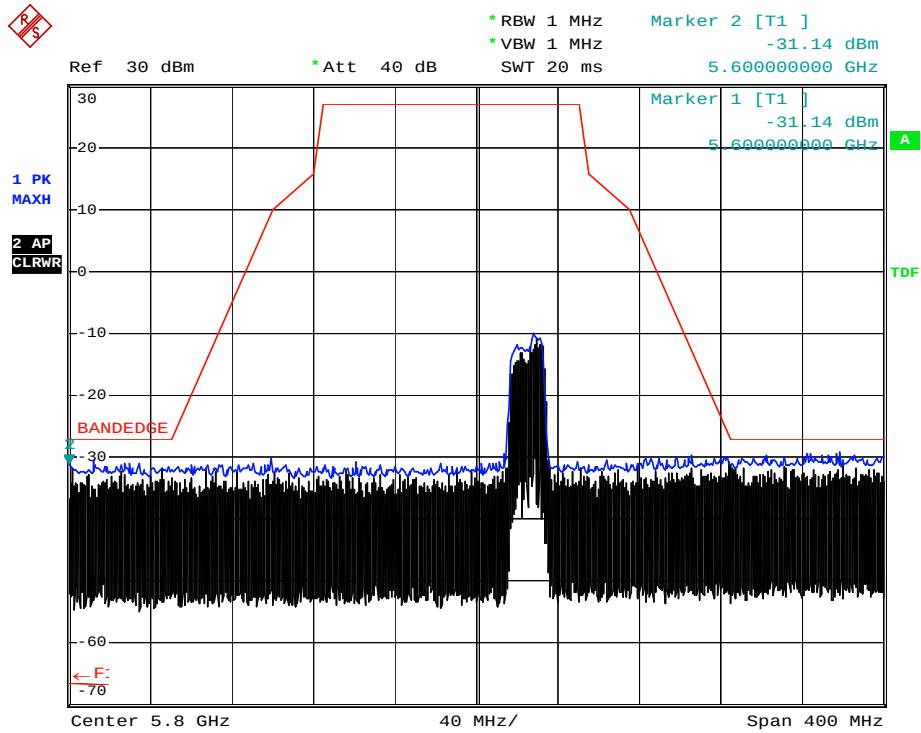
802.11a_Ch157_5785MHz_Chain0



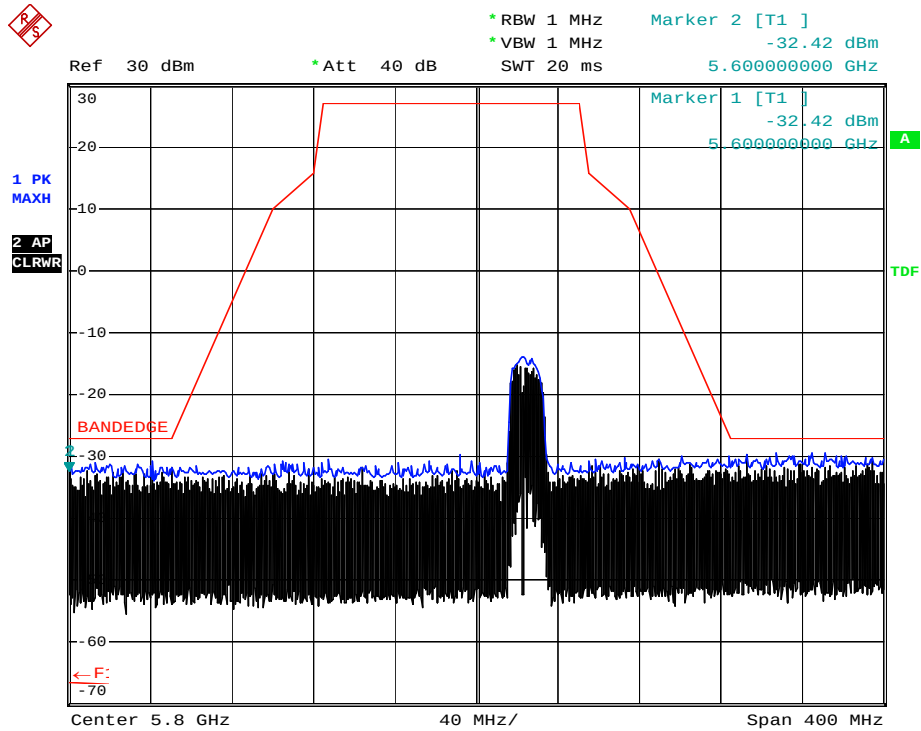
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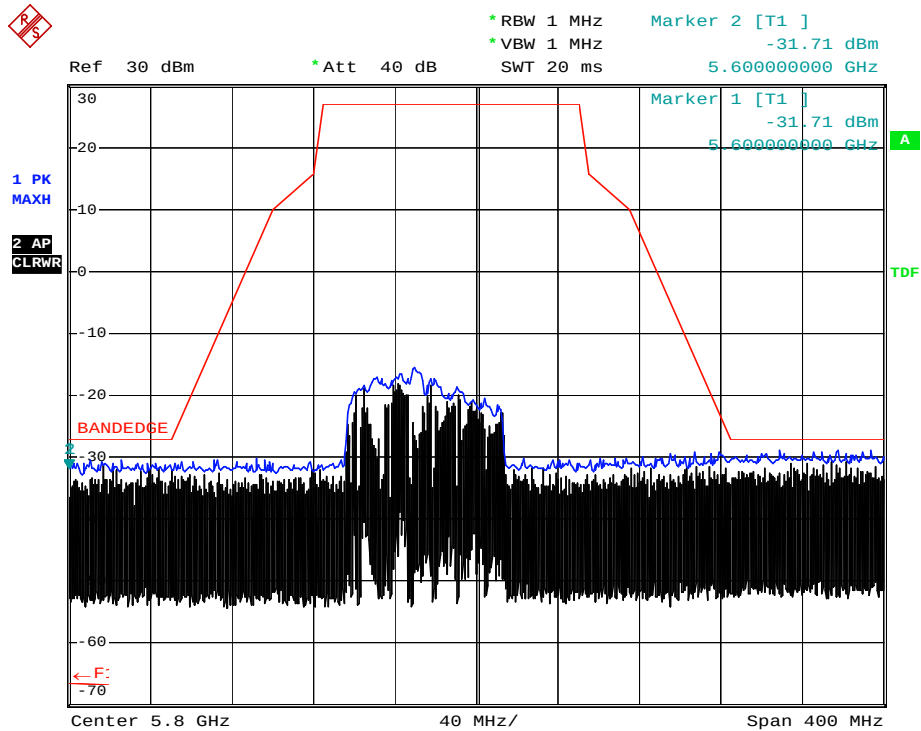
802.11a_Ch165_5825MHz_Chain0



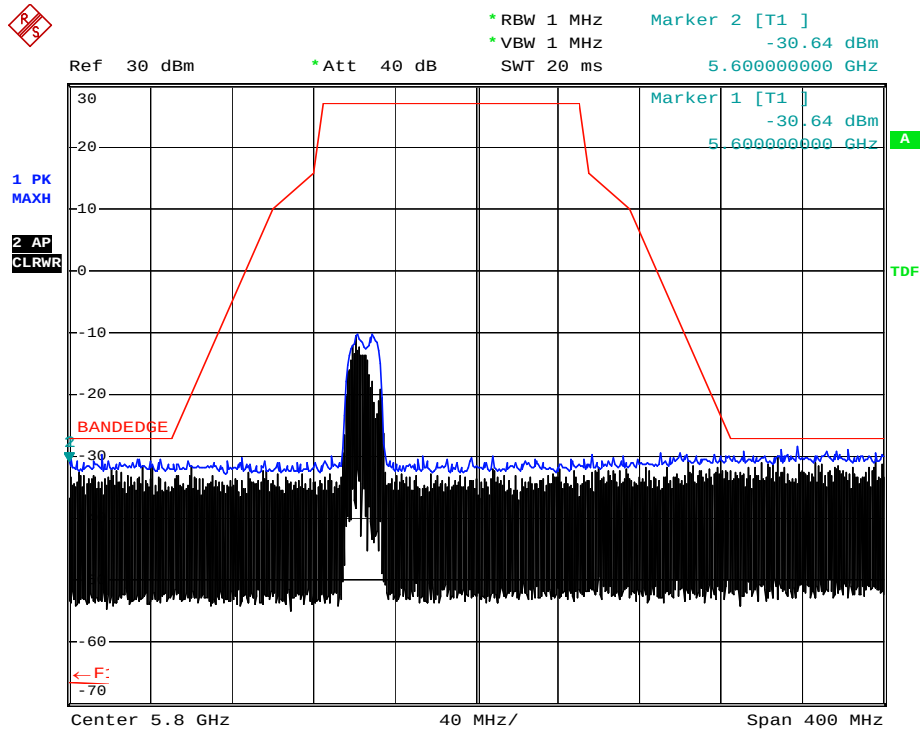
802.11a_Ch165_5825MHz_Chain1



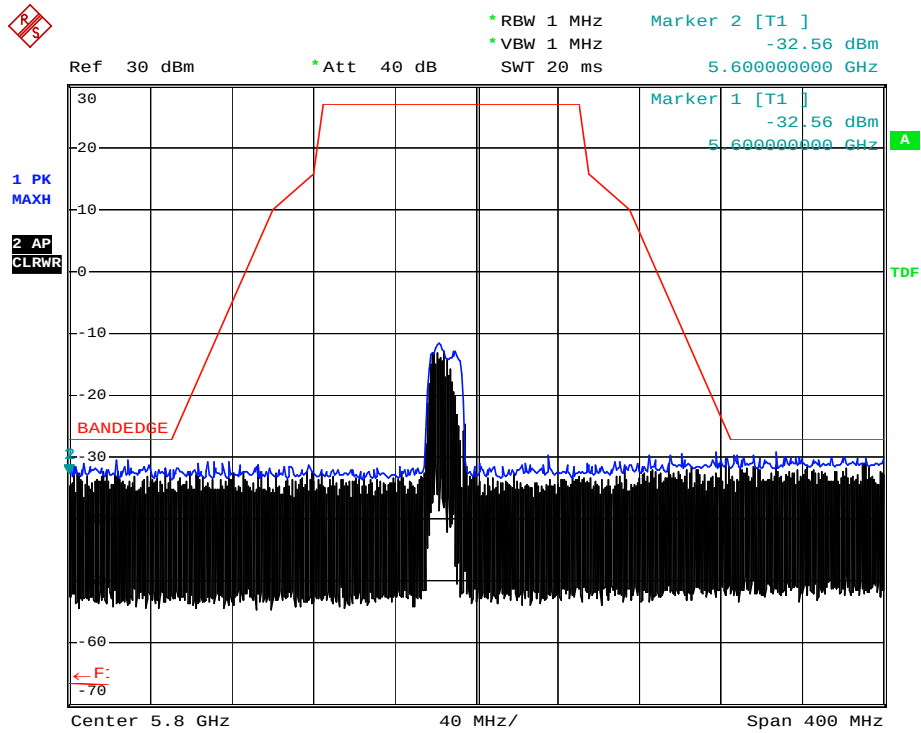
802.11ac(HT80)_Ch155_5775MHz_Chain0+1



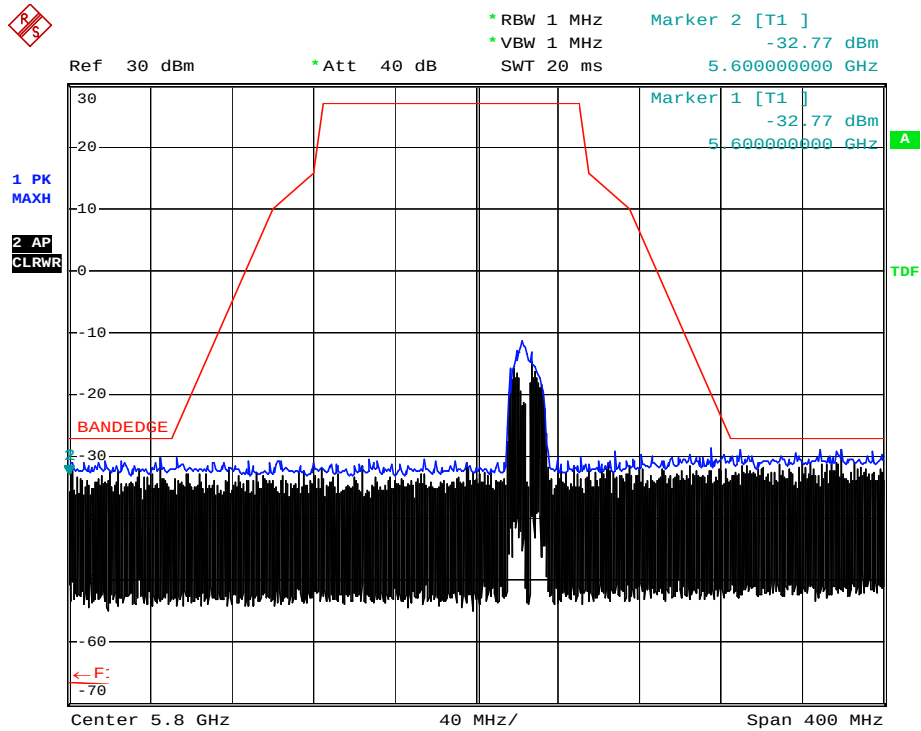
802.11n(HT20)_Ch149_5745MHz_Chain0+1



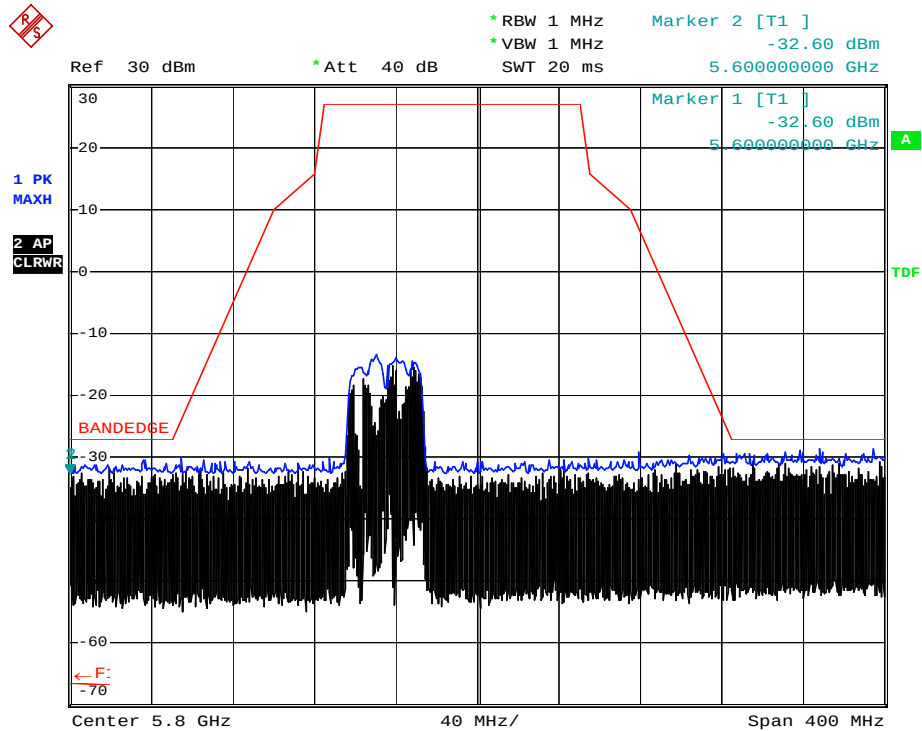
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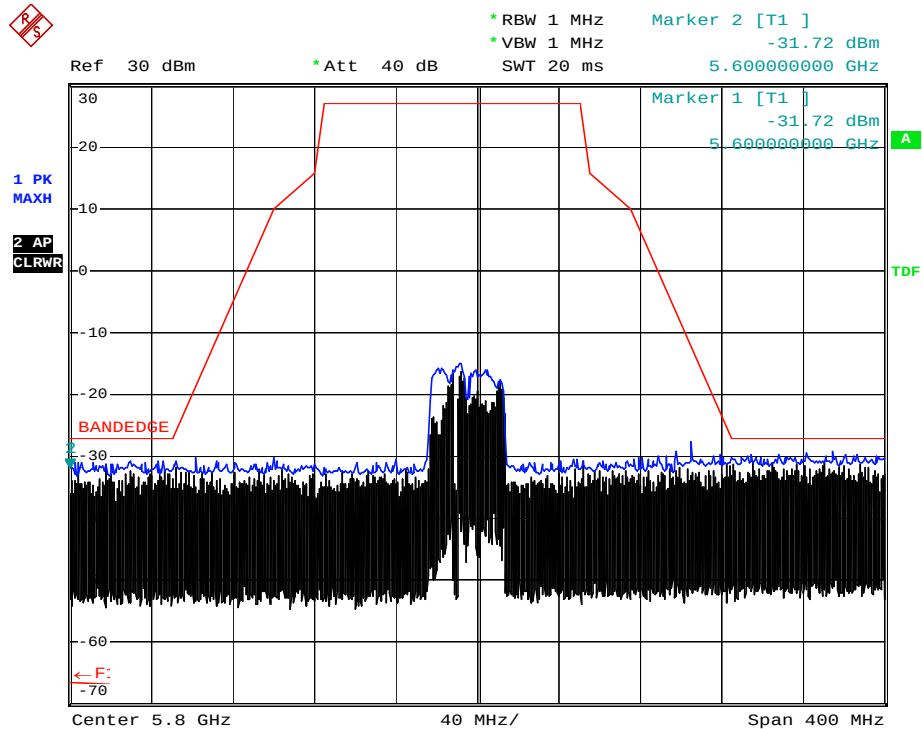
802.11n(HT20)_Ch165_5825MHz_Chain0+1



802.11n(HT40)_Ch151_5755MHz_Chain0+1



802.11n(HT40)_Ch159_5795MHz_Chain0+1



7. Power Line Conducted Emission

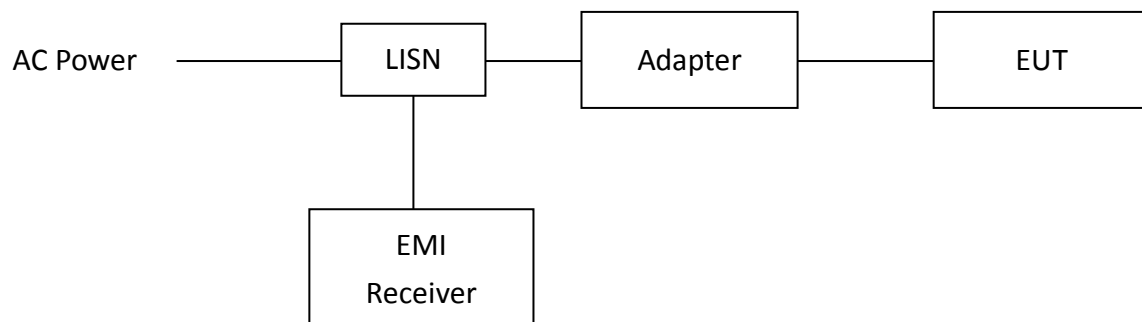
7.1 Measuring instrument setting

Receiver Function	Setting
Detector	QP
Start frequency	0.15MHz
Stop frequency	30MHz
IF bandwidth	9 kHz
Attenuation	10dB

7.2 Test Procedure

Step 1	Configure the EUT according to ANSI C63.10:2013. The EUT or host of EHT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
Step 2	Connect EUT or host of EUT to the power mains through a line impedance stabilization network.
Step 3	All the companion devices are connected to the other LISN. The LISN should provide 50U _h /50ohms coupling impedance.
Step 4	The frequency range from 150 kHz to 30MHz was searched.
Step 5	Set the test-receiver system to peak detector and specified bandwidth with maximum hold mode.
Step 6	The measurement has to be done between each power line and ground at the power terminal.

7.3 Test Diagram



7.4 Limit

Frequency (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56	56 – 46
0.50~5.00	56	46
5.00~30.0	60	50

7.5 Operating Environment Condition

Temperature (°C) :	26
Relative Humidity (%) :	52
Atmospheric Pressure (hPa) :	1005
Test Date :	2018/4/25

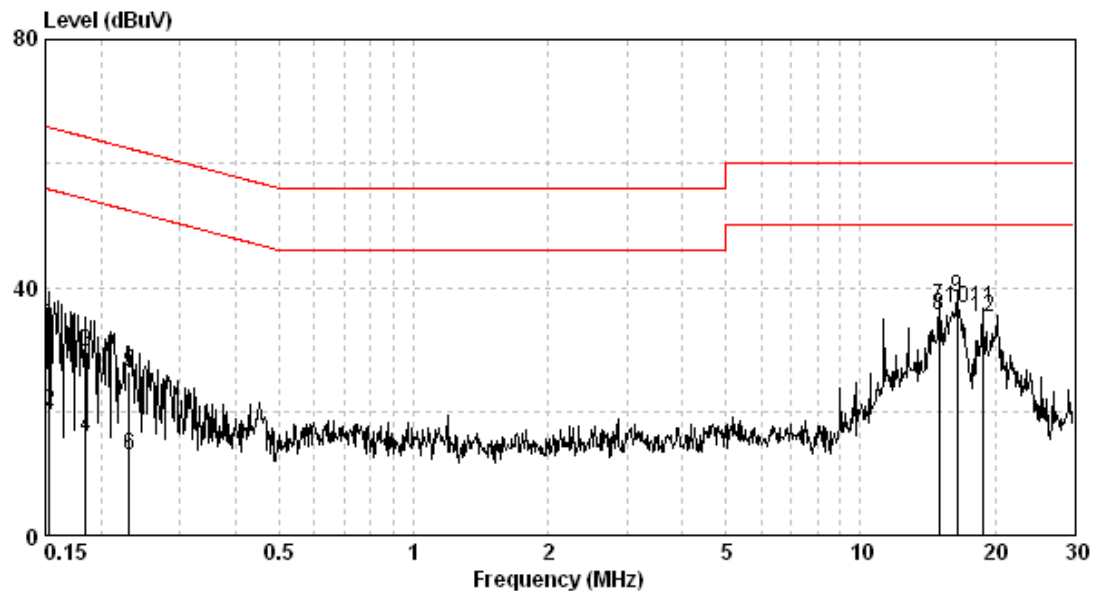
7.6 Test Results

Phase: Live Line
Model No.: Target Training Console
Test Condition: Tx mode

Frequency (MHz)	Corr. Factor (dB)	Reading QP (dBuV)	Level QP (dBuV)	Limit QP (dBuV)	Reading AV (dBuV)	Level AV (dBuV)	Limit AV (dBuV)	Margin (dB)	
								QP	AV
0.153	9.34	24.66	34.00	65.82	10.59	19.93	55.82	-31.83	-35.90
0.184	9.34	20.23	29.57	64.28	6.48	15.82	54.28	-34.71	-38.46
0.232	9.35	16.94	26.28	62.39	3.52	12.87	52.39	-36.11	-39.52
14.986	9.54	27.38	36.92	60.00	25.79	35.33	50.00	-23.08	-14.67
16.486	9.54	28.71	38.25	60.00	27.21	36.74	50.00	-21.75	-13.26
18.721	9.53	26.97	36.50	60.00	25.55	35.08	50.00	-23.50	-14.92

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)

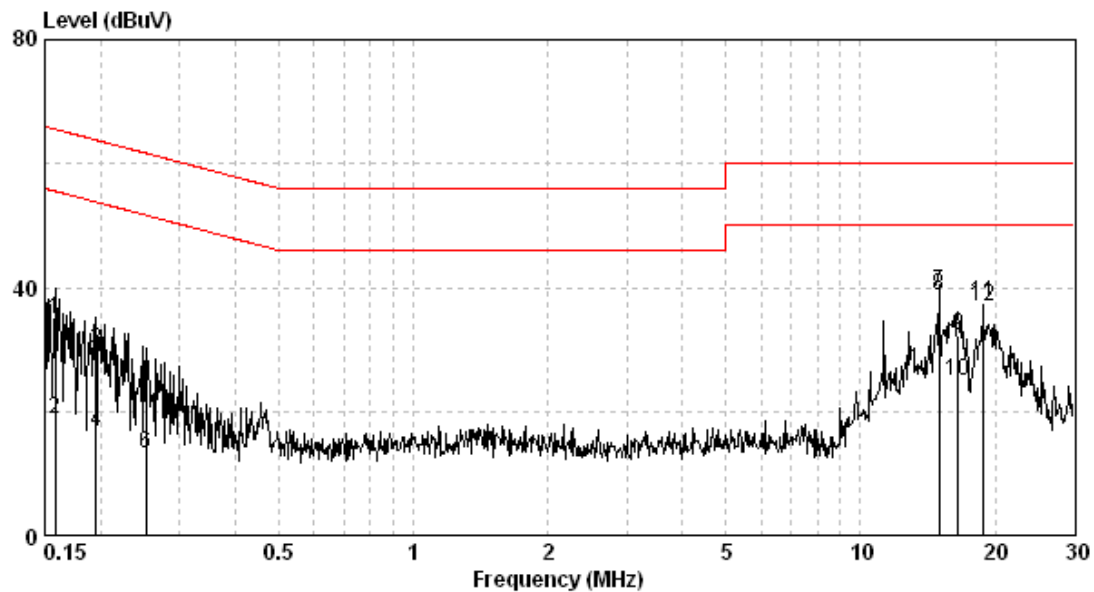


Phase: Neutral Line
Model No.: Target Training Console
Test Condition: Tx mode

Frequency (MHz)	Corr. Factor (dB)	Reading QP (dBuV)	Level QP (dBuV)	Limit QP (dBuV)	Reading AV (dBuV)	Level AV (dBuV)	Limit AV (dBuV)	Margin (dB)	
								QP	AV
0.158	9.60	25.15	34.75	65.56	9.12	18.72	55.56	-30.81	-36.84
0.195	9.60	20.27	29.87	63.80	6.96	16.56	53.80	-33.93	-37.24
0.252	9.61	14.75	24.36	61.69	3.71	13.31	51.69	-37.33	-38.38
14.986	9.85	29.48	39.33	60.00	28.73	38.58	50.00	-20.67	-11.42
16.573	9.86	22.44	32.29	60.00	14.93	24.79	50.00	-27.71	-25.21
18.721	9.87	27.77	37.63	60.00	27.02	36.89	50.00	-22.37	-13.11

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)



Appendix A: Test equipment list

Equipment	Brand	Model No.	Serial No.	Calibration Date	Next Calibration Date
ESCI EMI Test Receiver	Rohde & Schwarz	ESCI	100018	2017/11/21	2018/11/20
Spectrum Analyzer	Rohde & Schwarz	FSP30	100137	2017/08/09	2018/08/08
Horn Antenna (1-18G)	SHWARZBECK	BBHA 9120 D	9120D-456	2018/01/23	2019/01/22
Horn Antenna (14-42G)	SHWARZBECK	BBHA 9170	BBHA9170159	2017/09/04	2020/09/02
Broadband Antenna	SHWARZBECK	VULB 9168	9168-172	2017/04/05	2018/04/04
Broadband Antenna	SHWARZBECK	VULB 9168	9168-172	2018/04/23	2019/04/22
Pre-Amplifier	EMC Co.	EMC12635SE	980205	2017/11/28	2018/11/27
Pre-Amplifier	MITEQ	JS4-26004000--27-8A	828825	2017/08/23	2018/08/22
Power Meter	Anritsu	ML2495A	0844001	2017/10/18	2018/10/17
Power Sensor	Anritsu	MA2411B	0738452	2017/05/23	2018/05/22
Signal Analyzer	Agilent	N9030A	MY51380492	2017/08/29	2018/08/28
966-2(A) Cable 9kHz~26.5GHz	SUHNER	SMA / EX 100	N/A	2017/08/15	2018/08/14
966-2(B) Cable 9kHz~26.5GHz	SUHNER	SMA / SUCOFLEX 104P	CB0005	2017/08/15	2018/08/14

Note: No Calibration Required (NCR).

Equipment	Brand	Model No.	Serial No.	Calibration Date	Next Calibration Date
RF Cable 9kHz~26.5GHz	SUHNER	SUCOFLEX 102	CB0006	2017/05/04	2018/05/03
966-2_3m Semi-Anechoic Chamber	966_2	CEM-966_2	N/A	2018/03/28	2019/03/27
High Pass Filter	Reactel	7HS-3G/18G-S11	N/A	2017/06/02	2018/06/01
Active Loop Antenna	SCHWARZBECK MESS-ELEKTRONIC	FMZB1519	1519-067	2018/04/17	2019/04/16
EMI Test Receiver	Rohde & Schwarz	ESR-7	101232	2018/02/01	2019/01/31
Test software	ADT	Radiated test system	7.5.14	NCR	NCR

Note: No Calibration Required (NCR).

Test Equipment/ Test site	Brand	Model No.	Serial No.	Calibration Date	Next Calibration Date
EMI Receiver	R&S	ESCI	100059	2017/11/13	2018/11/12
Two-Line V-Network	R&S	ENV216	101159	2017/06/03	2018/06/02
Artificial Mains Network (LISN)	SCHAFFNER	MN2050D	1586	2017/05/31	2018/05/30
CON-1 Shielded Room	N/A	N/A	N/A	NCR	NCR
CON-1 Cable	SUHNER	SUCOFLEX-104	26438414	2017/05/04	2018/05/03
Test software	Audix	e3	4.20040112L	NCR	NCR

Note: No Calibration Required (NCR).

Appendix B: Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of $k=2$.

Item	Uncertainty
Vertically polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	5.14 dB
Horizontally polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	5.22 dB
Vertically polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m	3.64 dB
Horizontally polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m	3.64 dB
Vertically polarized Radiated disturbances from 18GHz~40GHz in a semi-anechoic chamber at a distance of 3m	2.68 dB
Horizontally polarized Radiated disturbances from 18GHz~40GHz in a semi-anechoic chamber at a distance of 3m	2.68 dB
Radiated disturbances from 9kHz~30MHz in a semi-anechoic chamber at a distance of 3m	3.54 dB
Emission on the Band Edge Test	3.64 dB
Minimum 6dB Bandwidth	0.85 dB
Maximum Conducted Output Power	0.42 dB
Power Spectral Density	0.85 dB
Emissions In Non-Restricted Frequency Bands	0.85 dB
AC Power Line Conducted Emission	2.48 dB