



Test report No. : 4788166493A-US-R4-V0
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Issued date : 2017/11/24
FCC ID : A43-WISP5

RADIO TEST REPORT

Applicant : **Portwell, Inc.**
Model No. : **WiSP**
FCC ID : **A43-WISP5**
Test regulation : **FCC 47 CFR Part 15 Subpart E (Section 15.407)**
Test Result : **Complied**

Date of test: 2017/10/22~2017/11/24

Sample received Date: 2017/9/29

Representative test engineer:

Wayne Chen

Approved by:

Edith Chen



Testing Laboratory

3398

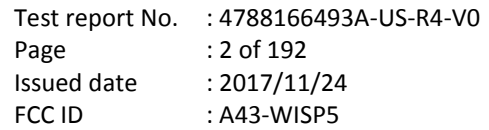
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Original Test Report No.: 4788166493A-US-R4-V0

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1. Attestation of Test Results

Applicant

Company Name: Portwell, Inc.
Address: No. 242, Bo-Ai St., Shu-Lin Dist., New Taipei City 238, Taiwan
Model Name WiSP

Manufacturer

Company Name: Portwell, Inc.
Address: No. 242, Bo-Ai St., Shu-Lin Dist., New Taipei City 238, Taiwan
Model Name WiSP

APPLICABLE STANDARDS	
STANDARD	Test Results
FCC 47 CFR PART 15 Subpart E (Section 15.407)	PASS

1. This test report shall not be reproduced in full or partial, without the written approval of UL Taiwan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.

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2. Test Methodology

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15.407, KDB662911 D01 v02r01, KDB789033 D02 v01r04 and ANSI C63.10-2013.

3. Facilities and Accreditation

Test Location	UL Verification Services Taiwan Co., Ltd
Address	Building B & E, No.372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan (R.O.C.)
Accreditation Certificate	UL Verification Services Inc. is accredited by TAF, Laboratory Code 3398. The full scope of accreditation can be viewed at http://www.taftw.org.tw/wSite/sp?xdUrl=/wSite/taf/lalab.jsp&mp=1

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4. Measurement Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k=2$.

Test Item	Frequency Range	K	U(dB)
Conducted disturbance at mains terminals ports	0.15MHz ~ 30MHz	2	2.6
RF Conducted	9 kHz - 40GHz	2	0.94
Radiated disturbance below 30MHz	9 kHz - 30 MHz	2	2.4
Radiated disturbance below 1 GHz	30MHz ~ 1GHz	2	5.5
Radiated disturbance above 1GHz	1GHz ~ 40GHz	2	5.0

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5. Equipment under Test

5.1. Description of EUT

Product	Wireless Service Platform	
Model Name	WiSP	
Power Supply	1. EUT power Rating : 100-240V 2. Internal Battery Rating:11.1V, 2500mAh / 28Wh	
Operating Frequency	802.11a/n HT20	5260~5320 MHz
		5500~5700 MHz (exclude 5600~5650MHz)
	802.11n HT40	5270~5310 MHz
		5510~5670 MHz (exclude 5600~5650MHz)
Data rate	802.11a	6, 9, 12, 18, 24, 36, 48, 54 Mbps
	802.11n HT20/HT40	MCS 0~15
Type of Modulation	802.11a/n : OFDM(BPSK,QPSK,16-QAM,64-QAM)	
Number of channels	802.11a / HT20 : 12 Channels 802.11n HT40: 5 Channels	

Modulaton	Chain 0	Chain 1
802.11a	V	X
802.11n HT20	V	V
802.11n HT40	V	V

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Modulation	Channel	Frequency(MHz)	Power Setting
802.11a Chain 0	52	5260	06
	60	5300	07
	64	5320	08
	100	5500	09
	116	5580	09
	140	5700	0A

Modulation	Channel	Frequency(MHz)	Power Setting	
			Chain 0	Chain 1
802.11n HT20	52	5260	06	07
	60	5300	07	08
	64	5320	08	08
	100	5500	09	08
	116	5580	0A	09
	140	5700	0B	0A
802.11n HT40	54	5270	08	08
	62	5310	08	08
	102	5510	09	08
	110	5550	0A	09
	134	5670	0B	0A

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5.2. Test Condition

Test Item	Test Site No.	Environmental Condition	Input Power
Antenna Port Conducted Measurement	SR4	24°C / 60%RH	120Vac / 60Hz
Radiated Spurious Emission	966-2	22°C / 58%RH	120Vac / 60Hz
AC power Line Conducted Emission	SR1	24°C / 60%RH	120Vac / 60Hz

5.3. Description Of Available Antennas

Frequency Band (GHz)	Brand Name	Model Name	Antenna Type	Antenna Gain(dBi)	
				Chain 0	Chain 1
5	Aristotle	RFA-25-L2M2	Dipole Antenna	2	2

5.4. Software And Firmware

The software installed in the EUT during testing was “Ralink QA test program Version 17”.

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5.5. Operating Mode and Worst Case of EUT

For below 1G radiated emission and AC power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case.

The fundamental of the EUT was investigated in three orthogonal axes X/Y/Z, it was determined that X axis was worst-case . Therefore, all final radiated testing was performed with the EUT in X axis.

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

802.11a mode: 6 Mbps

802.11n HT20mode: MCS0

802.11n HT40mode: MCS0

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6. Test Equipment

Test Equipment List					
Equipment	Manufacturer	Model No.	Serial No.	Cal.	Cal. Interval
Radiated Spurious Emission					
Spectrum Analyzer	Keysight	N9010A	MY56070821	Nov. 21, 2016	1 year
Loop Antenna	ETS lindgren	6502	00213440	Dec. 13, 2016	1 year
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	VULB9168-733	Jan. 17, 2017	1 year
Horn Antenna (1G~18GHz)	Schwarzbeck	BBHA 9120D	BBHA 9120D-01686	Jan. 12, 2017	1 year
Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	BBHA9170#759	Jan.12, 2017	1 year
Preamplifier (30-1000MHz)	EMCI	RMC330E	980405	Jan. 25, 2017	1 year
Preamplifier (1-18GHz)	EMCI	EMC051835BE	908044	Jan. 25, 2017	1 year
Preamplifier (18-40GHz)	EMCI	EMC184045SE	980407	Apr. 18, 2017	1 year
RF Cable (9K~18G)	emci	EMC106-NMNM-7000	170102	July 10, 2017	1 year
RF Cable (9K~18G)	emci	EMC106-NMSM-2500	170219	July 10, 2017	1 year
RF Cable (9K~18G)	emci	EMC106-NMNM-4000	170221	July 10, 2017	1 year
RF Cable (18G~40G)	Rosnol	K1K50-UP0264-K1K50-2500	170214-1	July 10, 2017	1 year
RF Cable (18G~40G)	Rosnol	K1K50-UP0264-K1K50-3500	170214-2	July 10, 2017	1 year
RF Cable (18G~40G)	Rosnol	K1K50-UP0264-K1K50-2500	170214-3	July 10, 2017	1 year
Antenna Port Conducted Measurement					
Spectrum Analyzer	Keysight	N9010A	MY56070834	Nov. 21, 2016	1 year
Spectrum Analyzer	Keysight	N9010A	MY56070821	Nov. 20, 2017	1 year
Power meter	Anrisu	MA2411B	1531202	Dec. 13, 2016	1 year
Power sensor	Anrisu	ML2495A	1645002	Dec. 13, 2016	1 year
Signal Generator	Keysight	N5182B	MY56200244	Dec. 19, 2016	1 year

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AC power Line Conducted Emission					
EMI Test Receiver	Rohde & Schwarz	ESR7	101753	Nov. 4, 2016	1 year
Two-Line V- Network	Rohde & Schwarz	ENV216	102136	Nov. 16, 2016	1 year
Four-Line V- Network	Rohde & Schwarz	ENV432	101298	Dec. 7, 2016	1 year
RF Cable-CON	Huber+Suhner	RG214/U	FCC-BCICF-4_RF	Mar. 23, 2017	1 year

UL Software

Software	Test Item	Version
EMC-RI	Radiated measurement	1.0.0.0
Keysight.TestSystem	Conducted measurement	1.0.0.0
EZ_EMG	AC power Line Conducted Emission	1.1.4.2

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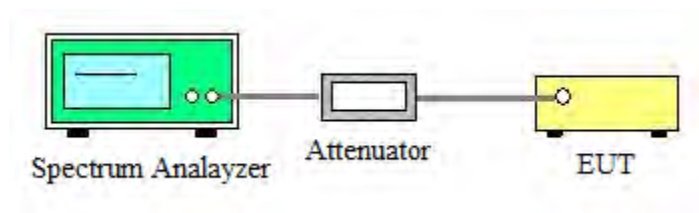
7. Test Result

7.1. Duty Cycle

Requirements

N/A

Test Setup



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Test Data

Mode	On time (ms)	Period (ms)	Duty cycle	Duty Cycle factor
802.11a Chain 0	1	1	100%	0.000
802.11n HT20 Chain 0	1	1	100%	0.000
802.11n HT20 Chain 1	1	1	100%	0.000
802.11n HT40 Chain 0	1	1	100%	0.000
802.11n HT40 Chain 1	1	1	100%	0.000

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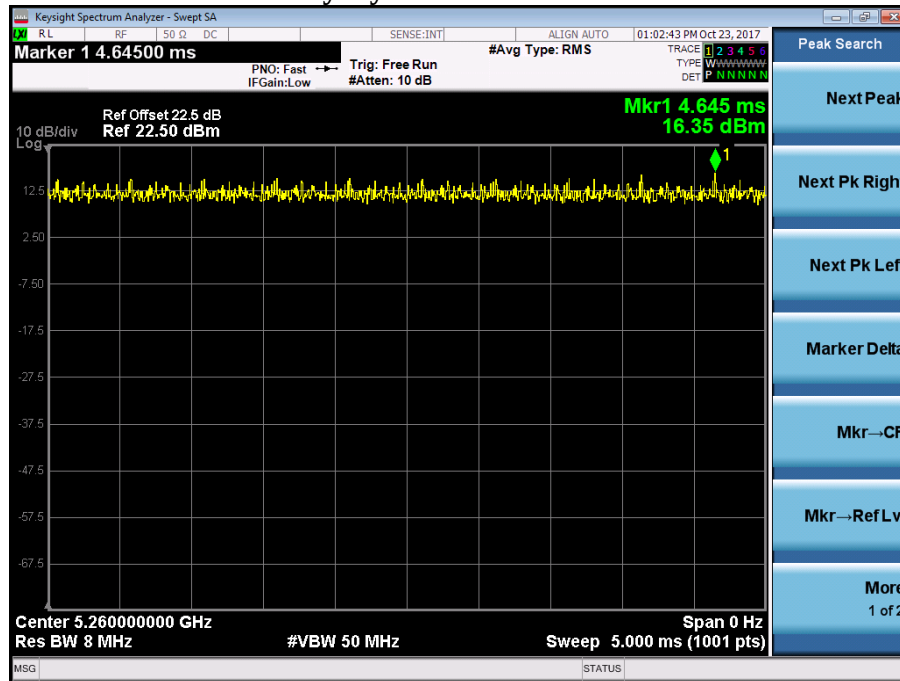
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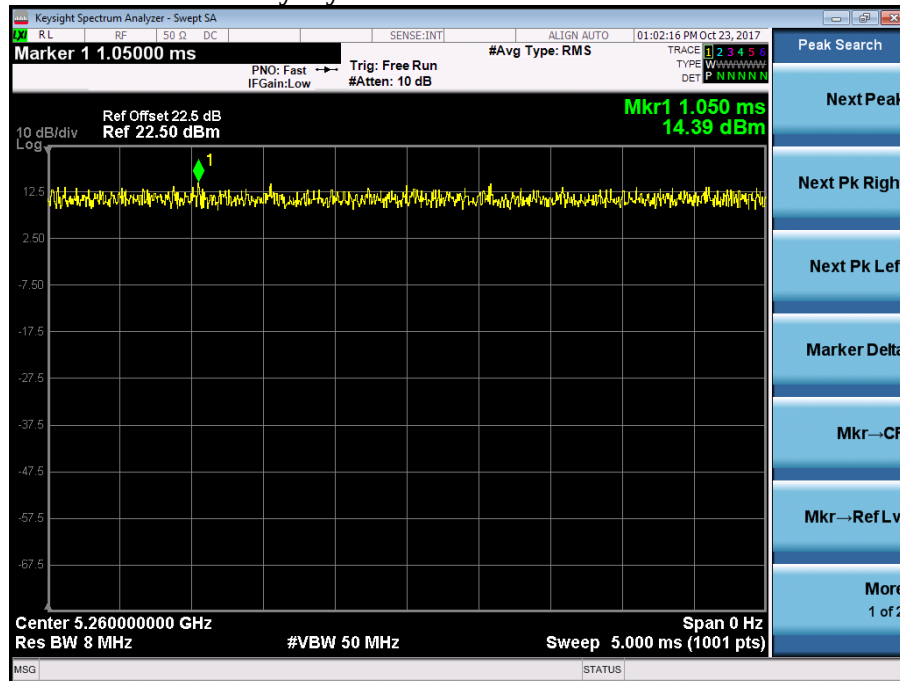


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Duty Cycle 802.11a Chain 0



Duty Cycle 802.11n HT20 Chain 0



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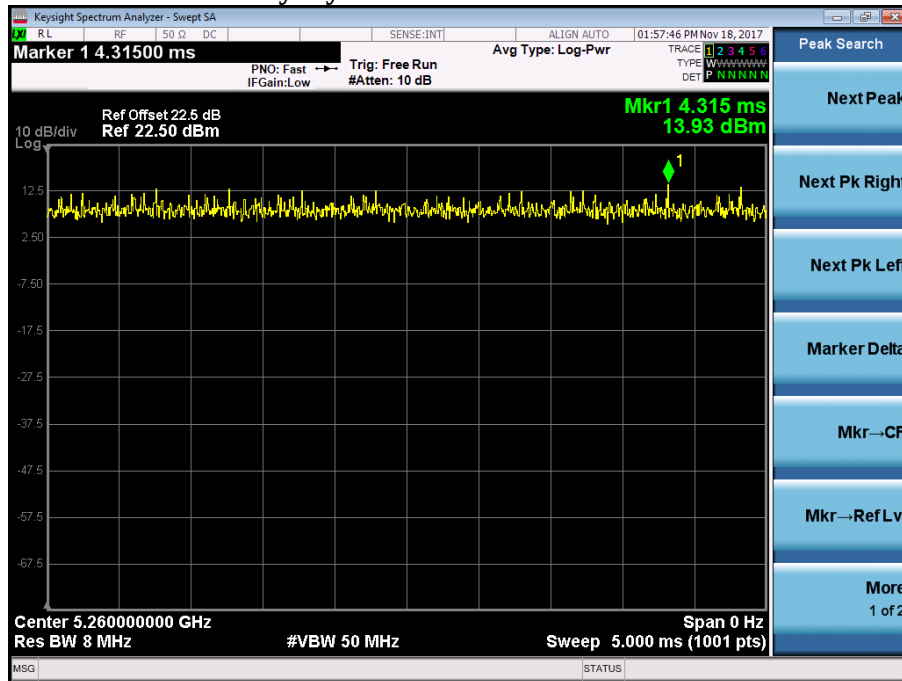
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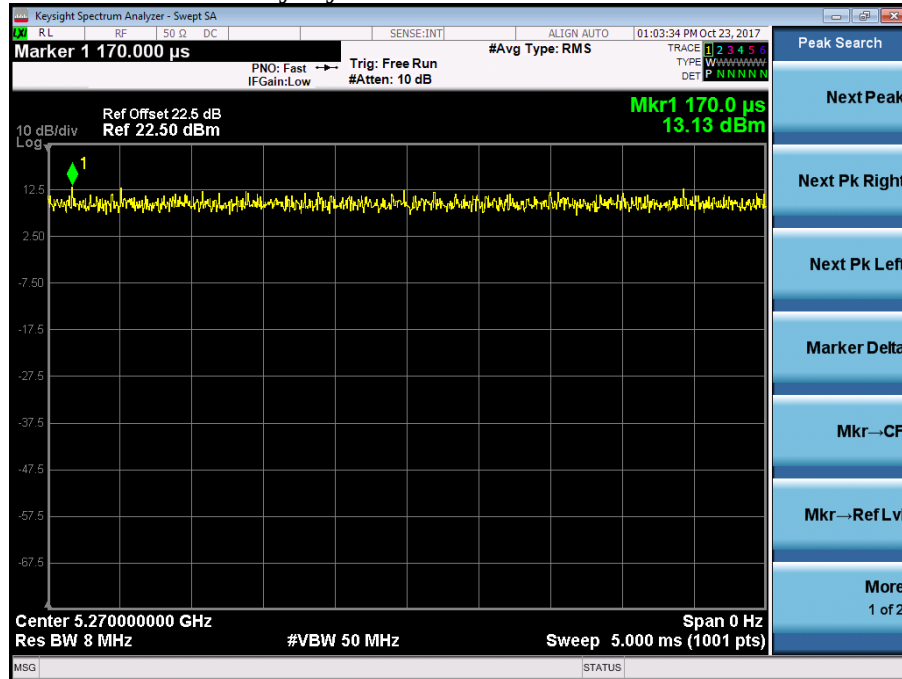


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Duty Cycle 802.11n HT20 Chain 1



Duty Cycle 802.11n HT40 Chain 0



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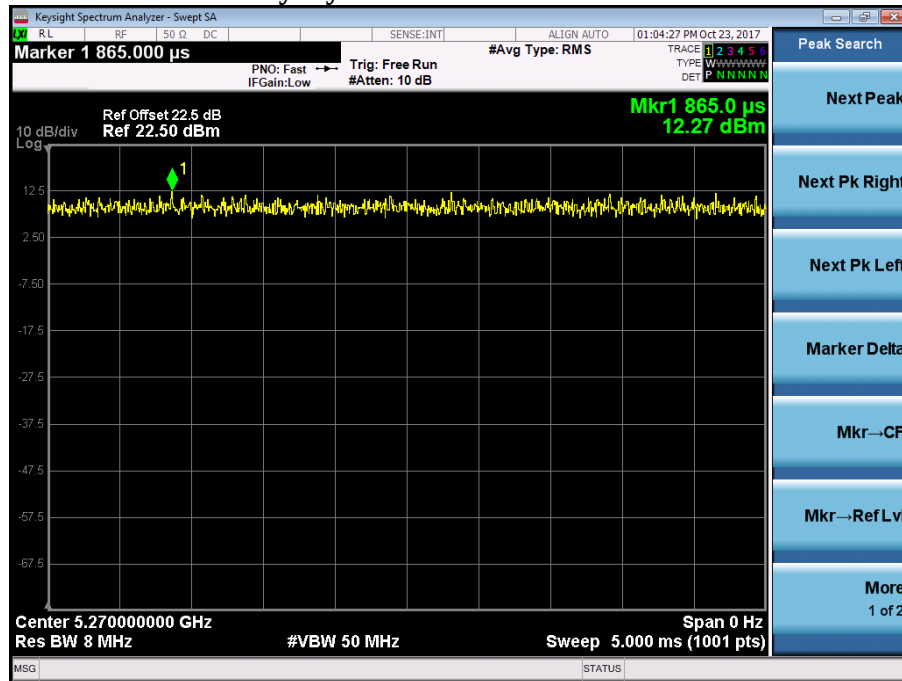
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Duty Cycle 802.11n HT40 Chain 1



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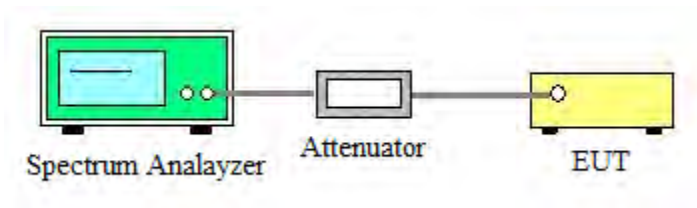


7.2. 26 dB Bandwidth

Requirements

For reporting purpose only.

Test Setup



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Test Data

Mode	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
802.11a Chain0	52	5260	19.65
	60	5300	19.37
	64	5320	19.5
	100	5500	19.55
	116	5580	19.44
	140	5700	19.61
802.11n HT20 Chain 0	52	5260	19.84
	60	5300	19.76
	64	5320	19.89
	100	5500	19.67
	116	5580	20
	140	5700	20.05
802.11n HT20 Chain 1	52	5260	19.8
	60	5300	19.69
	64	5320	19.81
	100	5500	19.82
	116	5580	19.81
	140	5700	20.06
802.11n HT40 Chain 0	54	5270	40.36
	62	5310	39.93
	102	5510	40.39
	110	5550	40.37
	134	5670	40.07
802.11n HT40 Chain 1	54	5270	39.54
	62	5310	40.07
	102	5510	40.37
	110	5550	40.4
	134	5670	39.96

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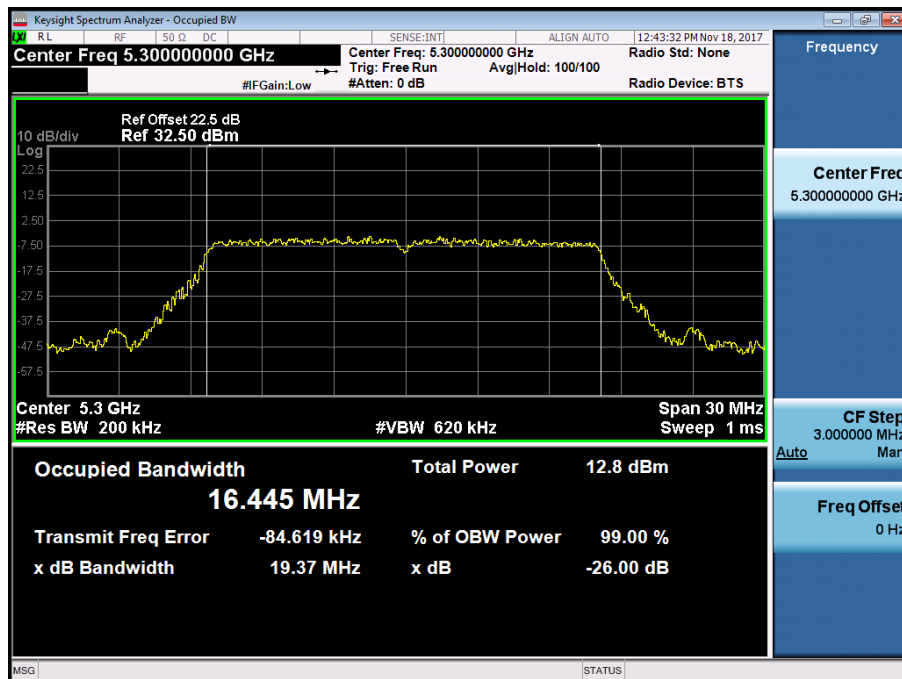
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26dB Bandwidth 802.11a Chain 0 Ch 52 5260MHz



26dB Bandwidth 802.11a Chain 0 Ch 60 5300MHz



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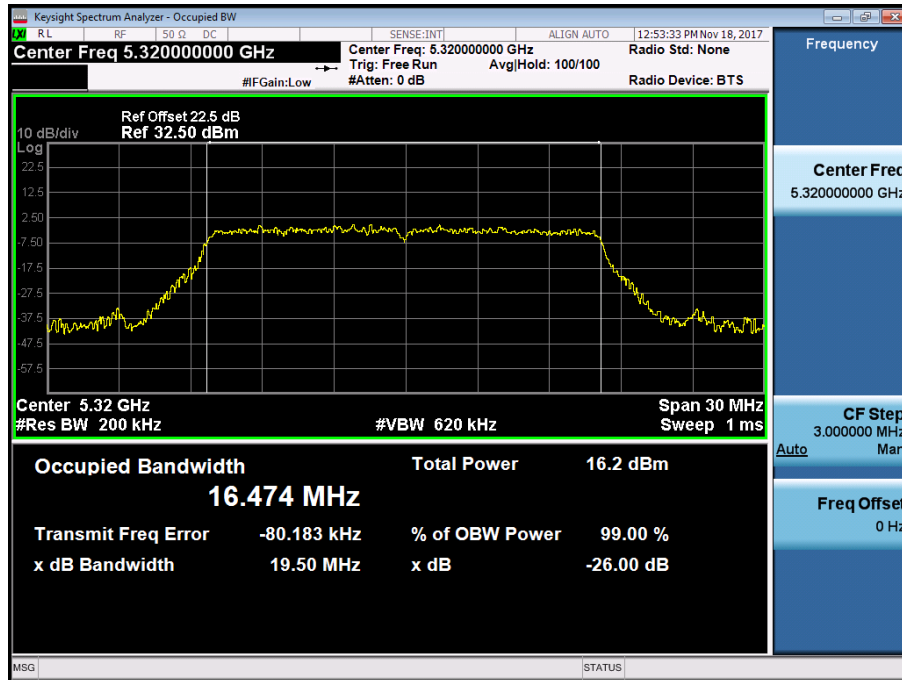
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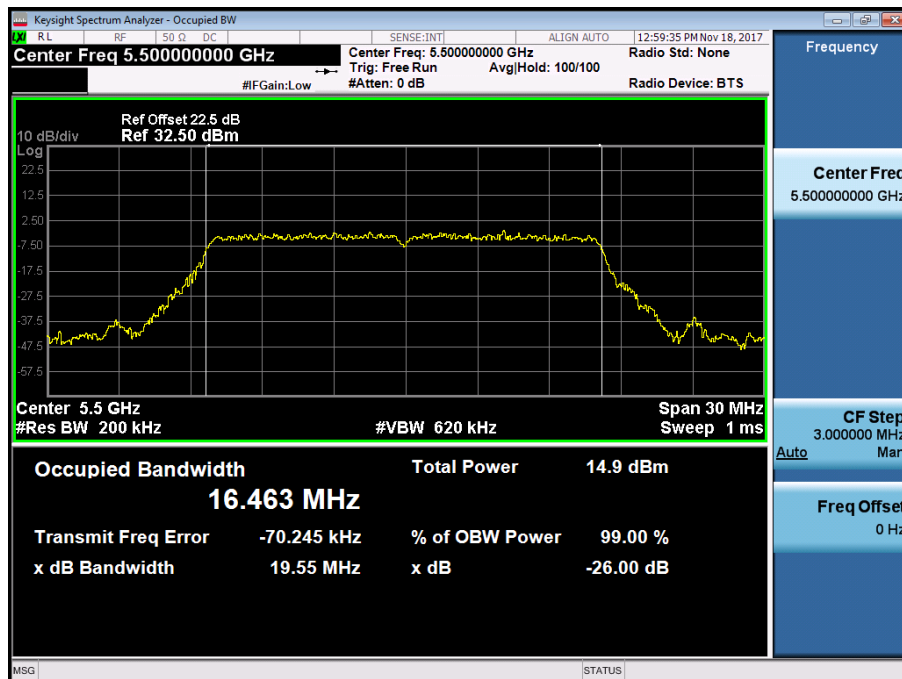


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26dB Bandwidth 802.11a Chain 0 Ch 64 5320MHz



26dB Bandwidth 802.11a Chain 0 Ch 100 5500MHz



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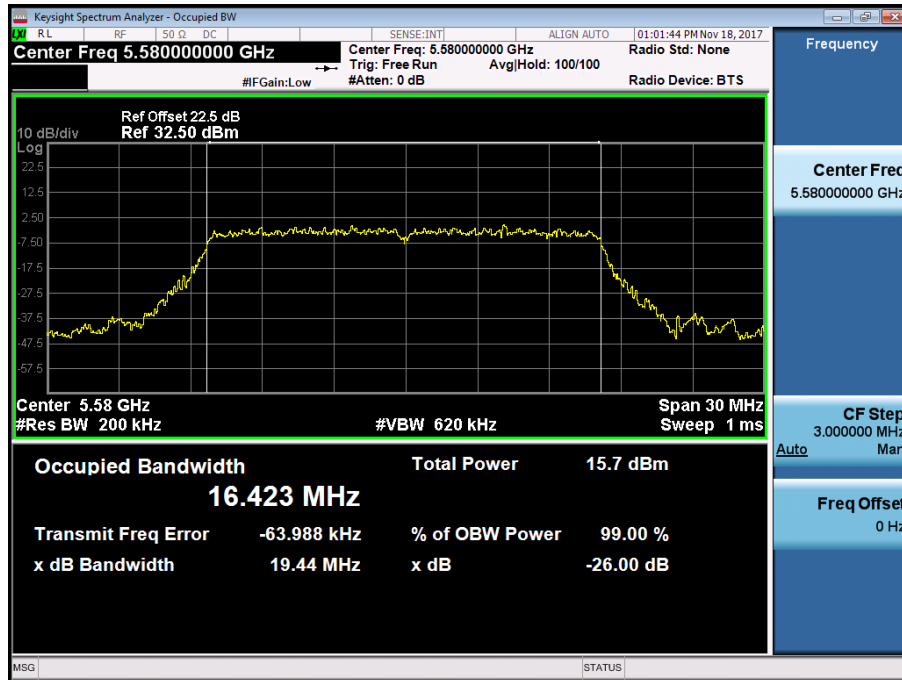
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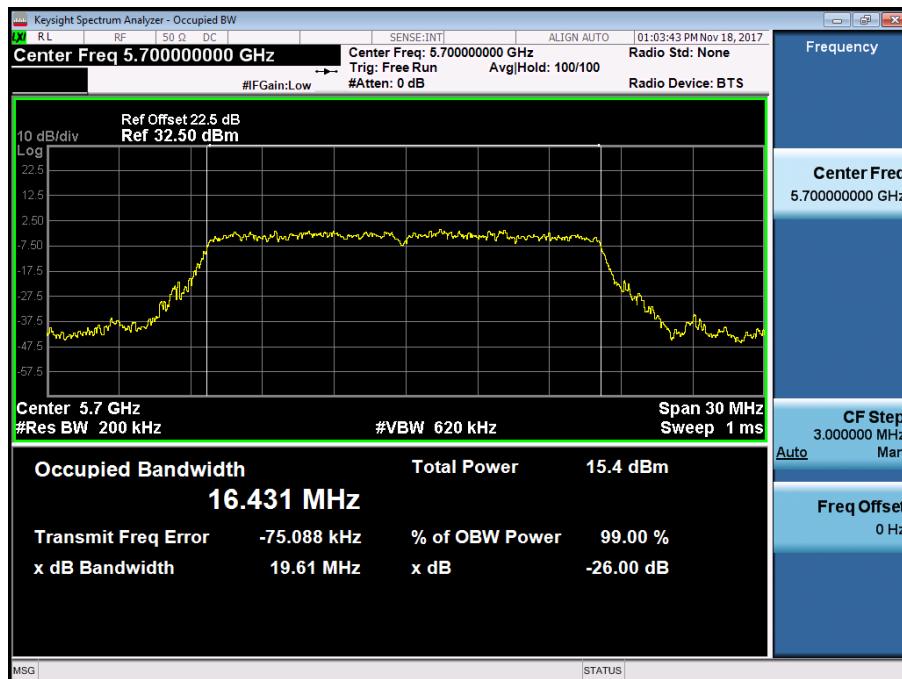


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26dB Bandwidth 802.11a Chain 0 Ch 116 5580MHz



26dB Bandwidth 802.11a Chain 0 Ch 140 5700MHz



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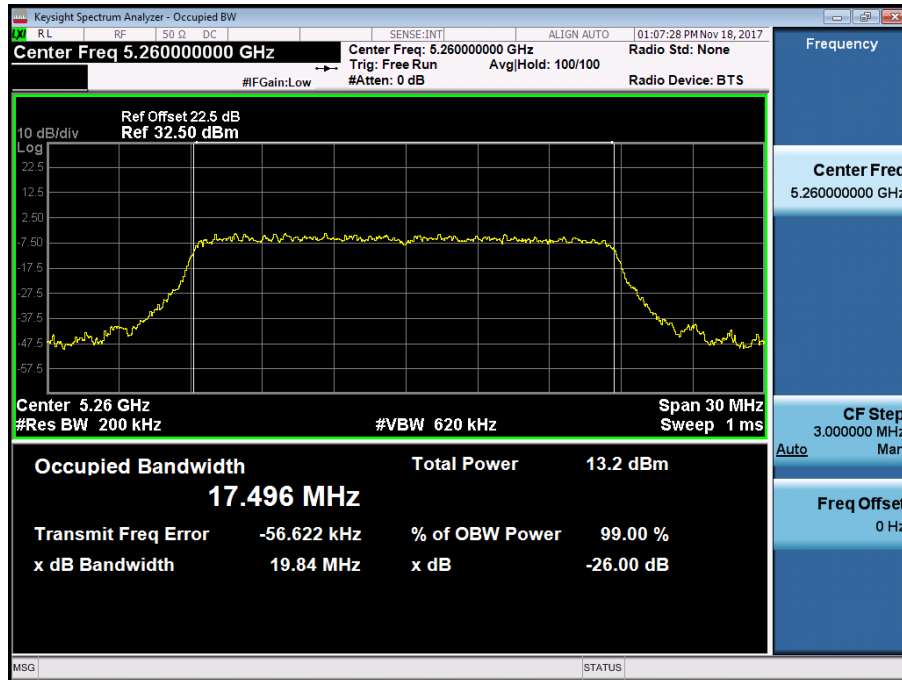
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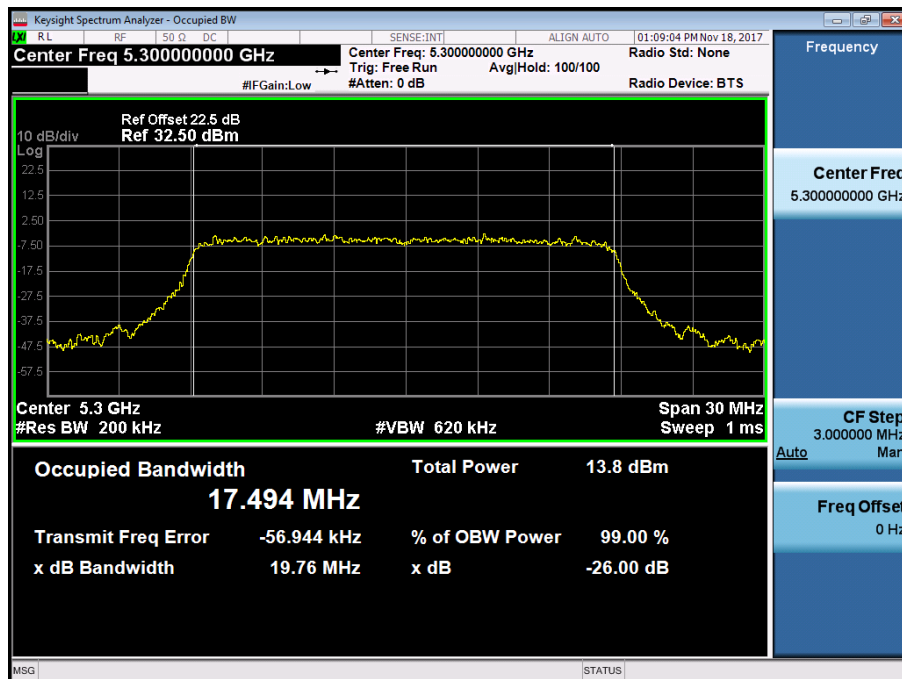


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26dB Bandwidth 802.11n HT20 Chain 0 Ch 52 5260MHz



26dB Bandwidth 802.11n HT20 Chain 0 Ch 60 5300MHz



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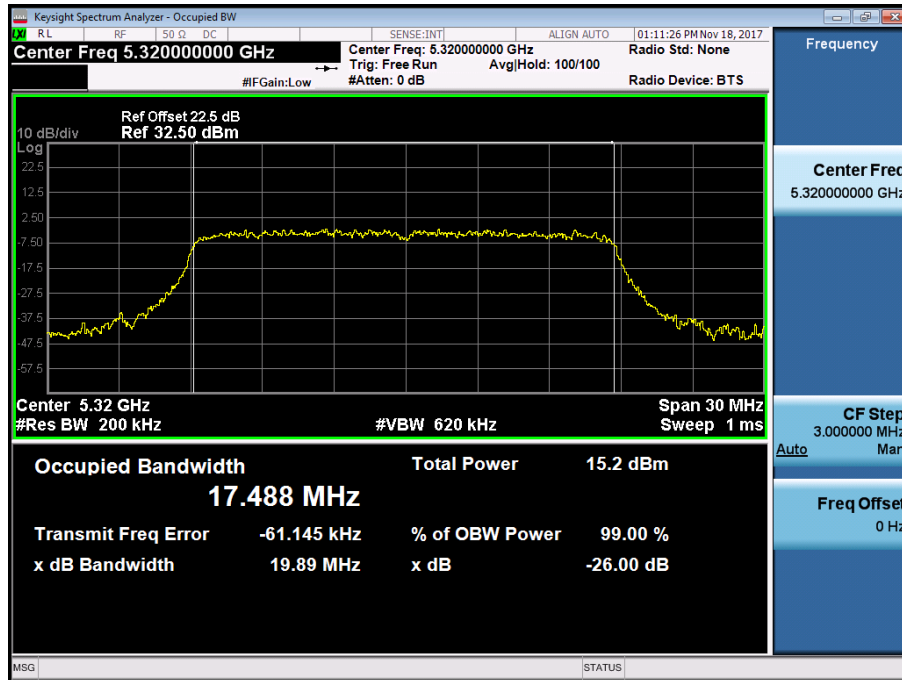
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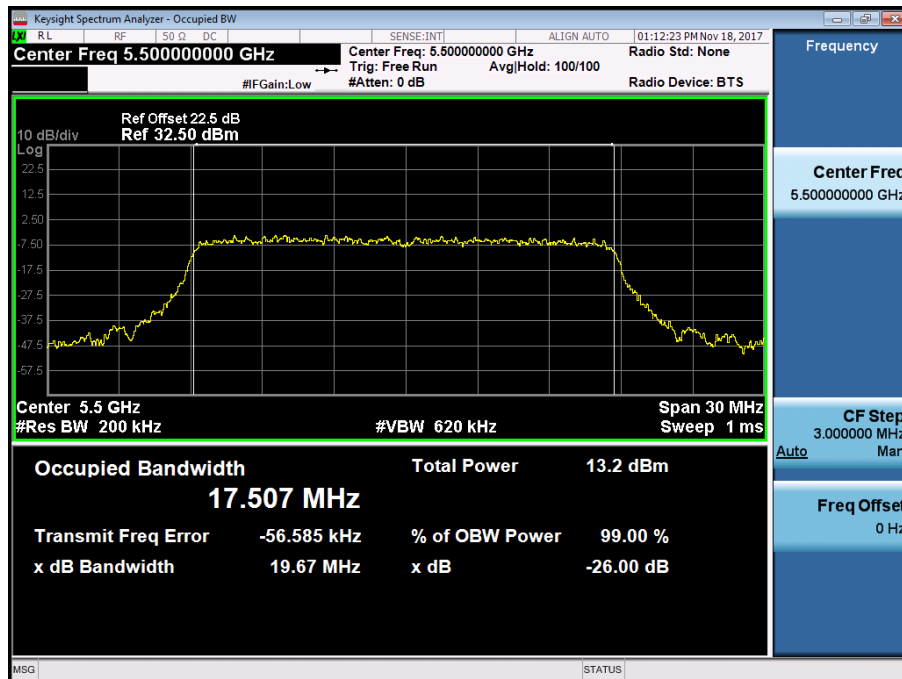


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26dB Bandwidth 802.11n HT20 Chain 0 Ch 64 5320MHz



26dB Bandwidth 802.11n HT20 Chain 0 Ch 100 5500MHz



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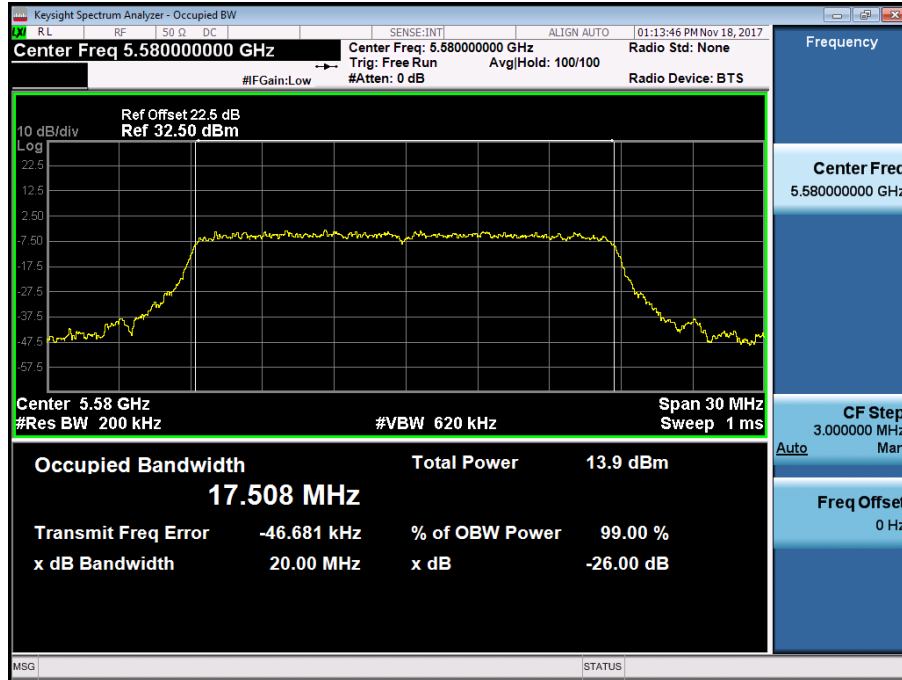
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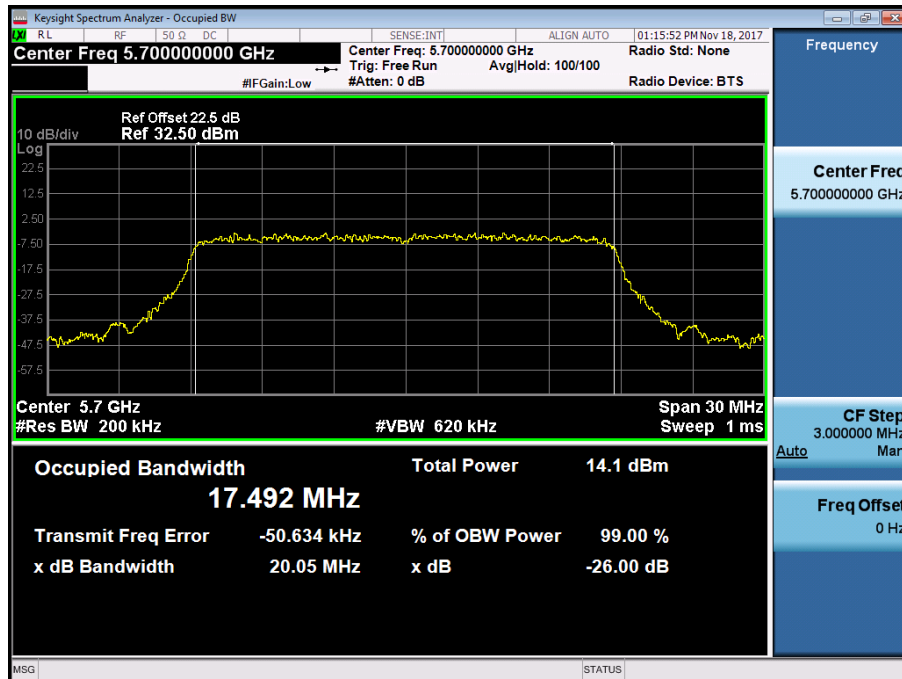


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26dB Bandwidth 802.11n HT20 Chain 0 Ch 116 5580MHz



26dB Bandwidth 802.11n HT20 Chain 0 Ch 140 5700MHz



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Facsimile (FAX) :+886-2-7737-3610

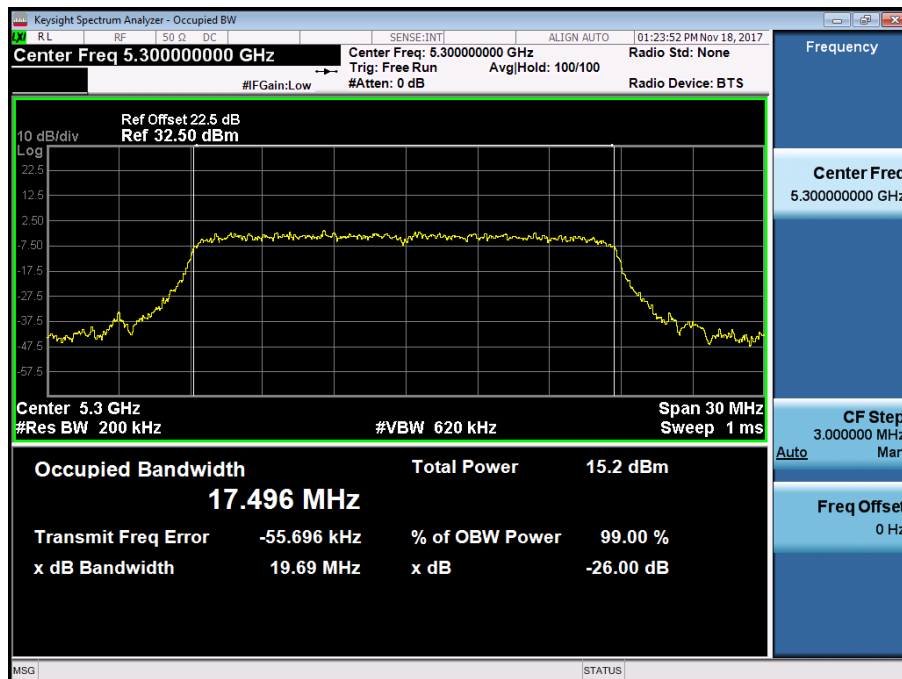


Test report No. : 4788166493A-US-R4-V0
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Issued date : 2017/11/24
FCC ID : A43-WISP5

26dB Bandwidth 802.11n HT20 Chain 1 Ch 52 5260MHz



26dB Bandwidth 802.11n HT20 Chain 1 Ch 60 5300MHz



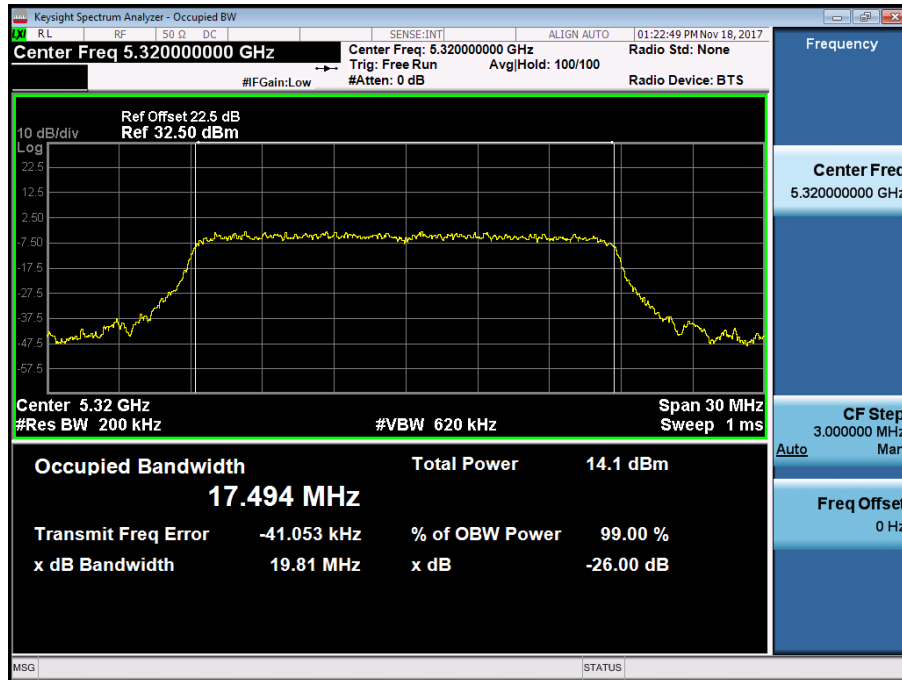
EMC Lab.

Underwriters Laboratories Taiwan Co., Ltd.

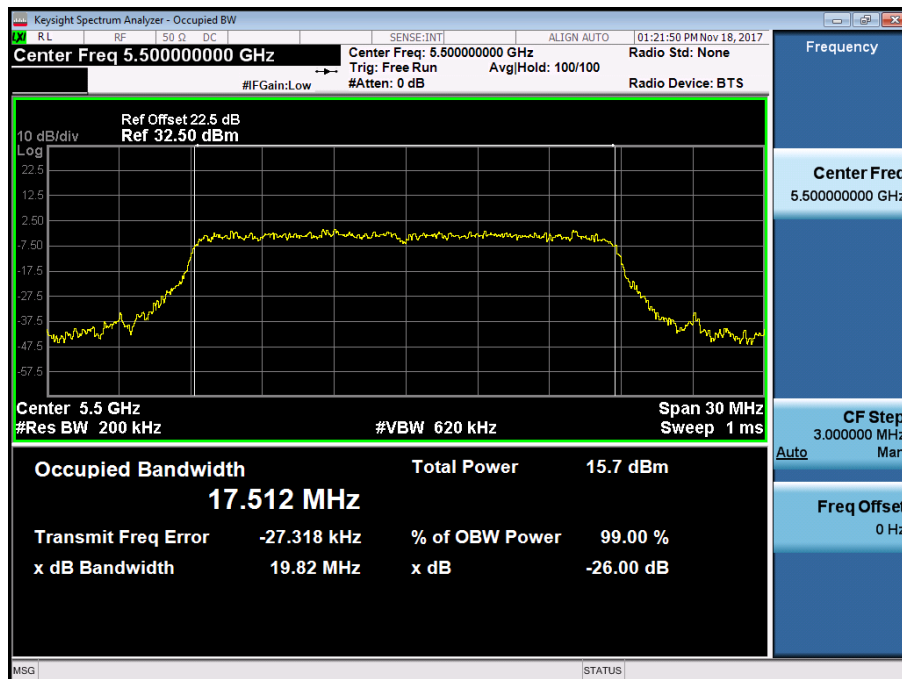
Building B and Building E, No.372-7 Hsinchu County, Taiwan, Sec. 4, Zhongxing Rd., Zhudong Township,
Telephone : +886-2-7737-3000
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26dB Bandwidth 802.11n HT20 Chain 1 Ch 64 5320MHz



26dB Bandwidth 802.11n HT20 Chain 1 Ch 100 5500MHz



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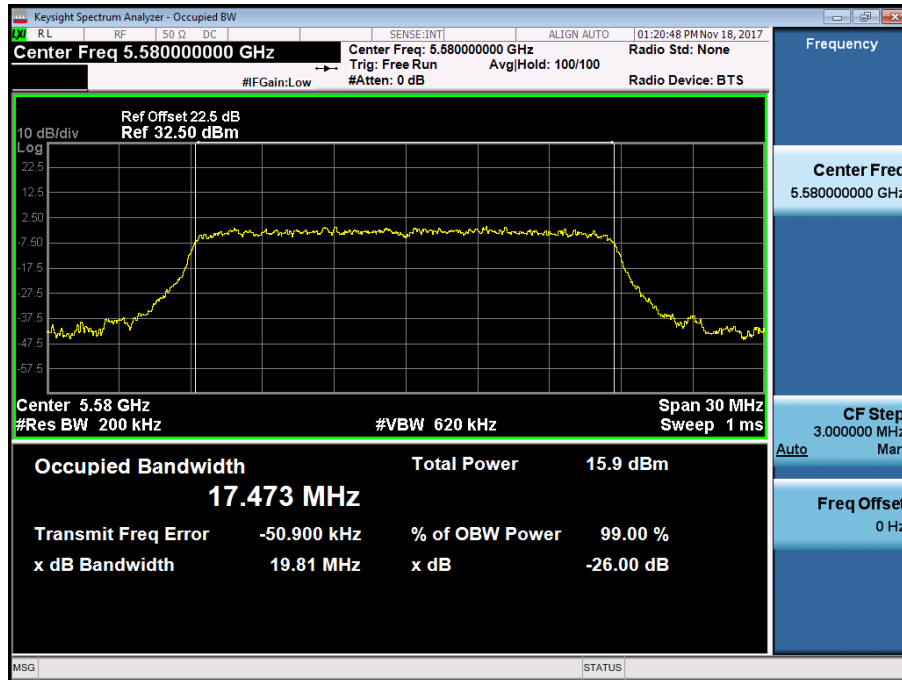
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-2-7737-3610

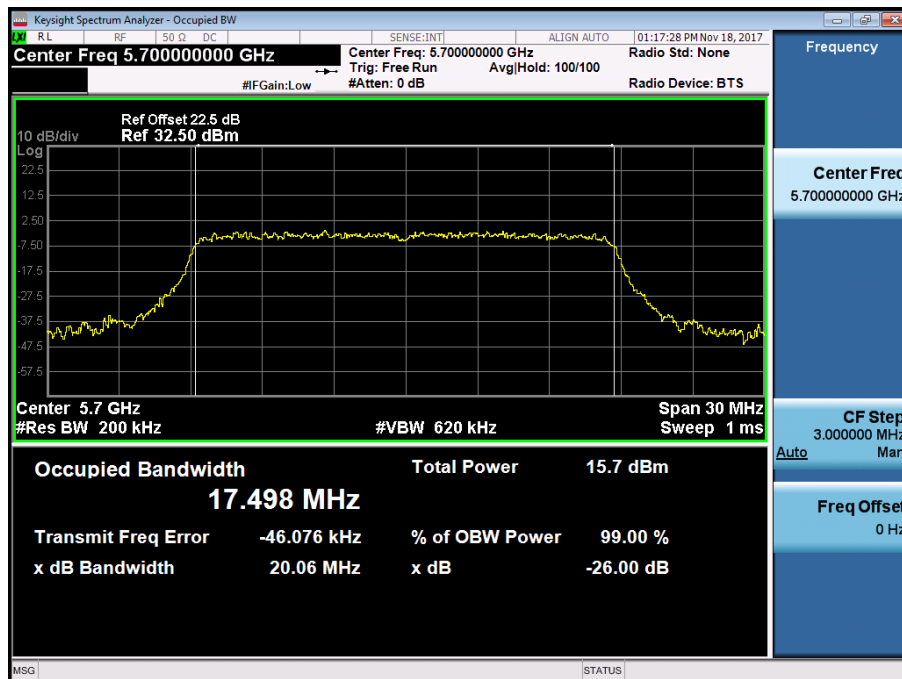


Test report No. : 4788166493A-US-R4-V0
Page : 28 of 192
Issued date : 2017/11/24
FCC ID : A43-WISP5

26dB Bandwidth 802.11n HT20 Chain 1 Ch 116 5580MHz



26dB Bandwidth 802.11n HT20 Chain 1 Ch 140 5700MHz



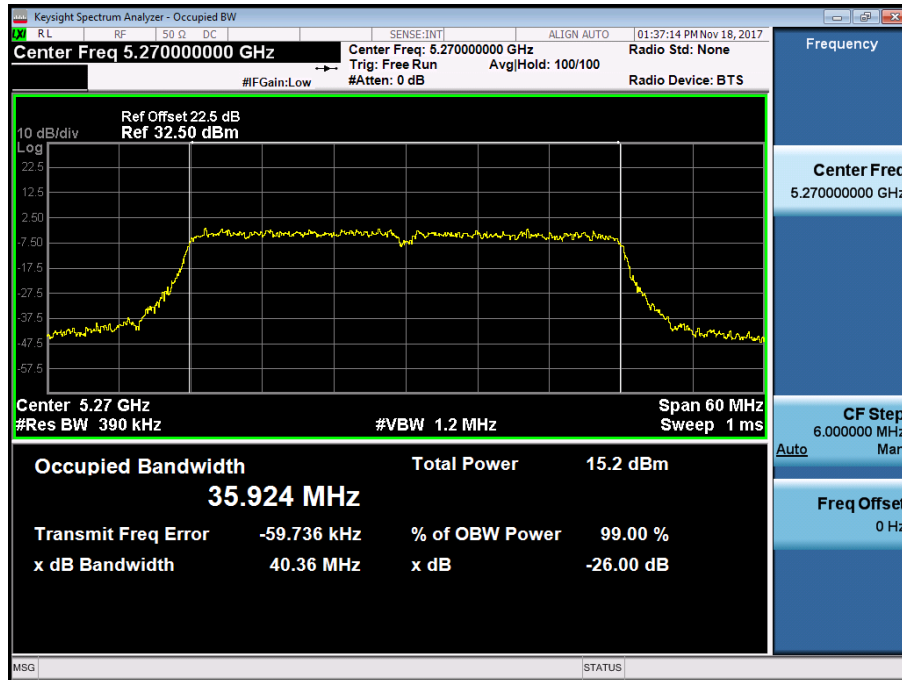
EMC Lab.

Underwriters Laboratories Taiwan Co., Ltd.

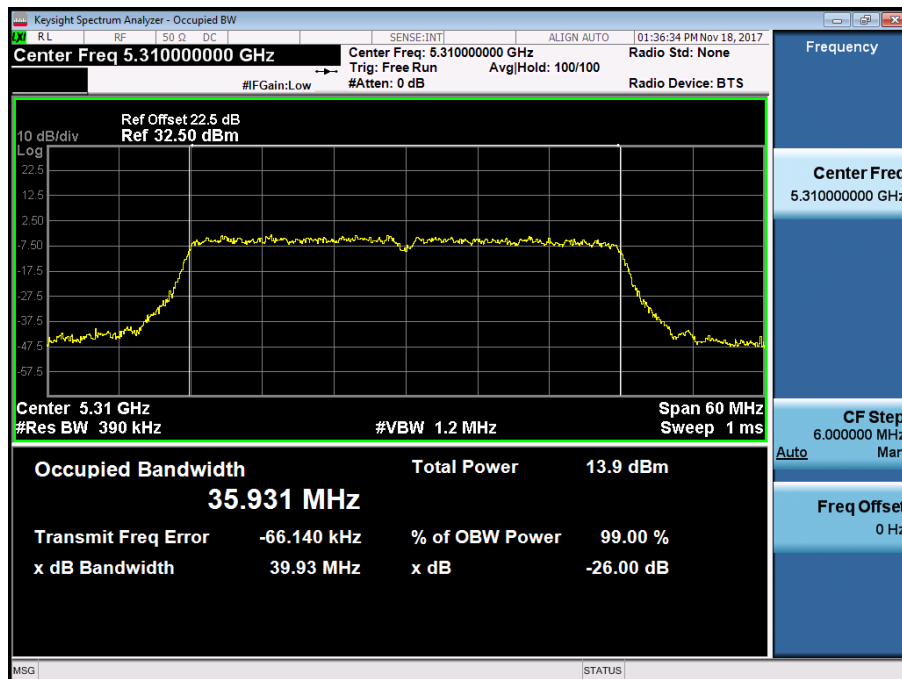
Building B and Building E, No.372-7 Hsinchu County, Taiwan, Sec. 4, Zhongxing Rd., Zhudong Township,
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26dB Bandwidth 802.11n HT40 Chain 0 Ch 54 5270MHz



26dB Bandwidth 802.11n HT40 Chain 0 Ch 62 5310MHz



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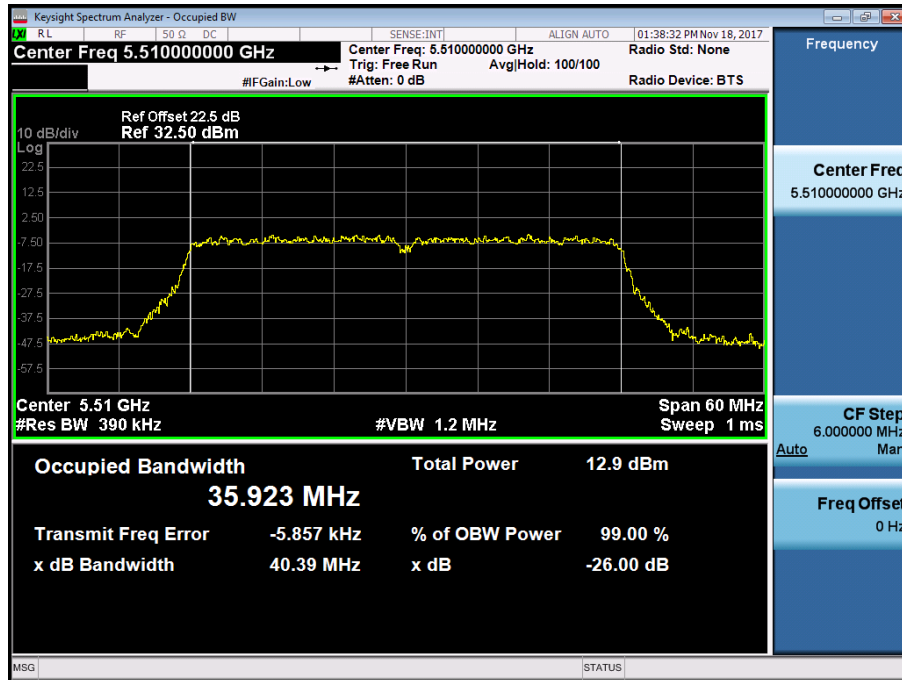
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-2-7737-3610

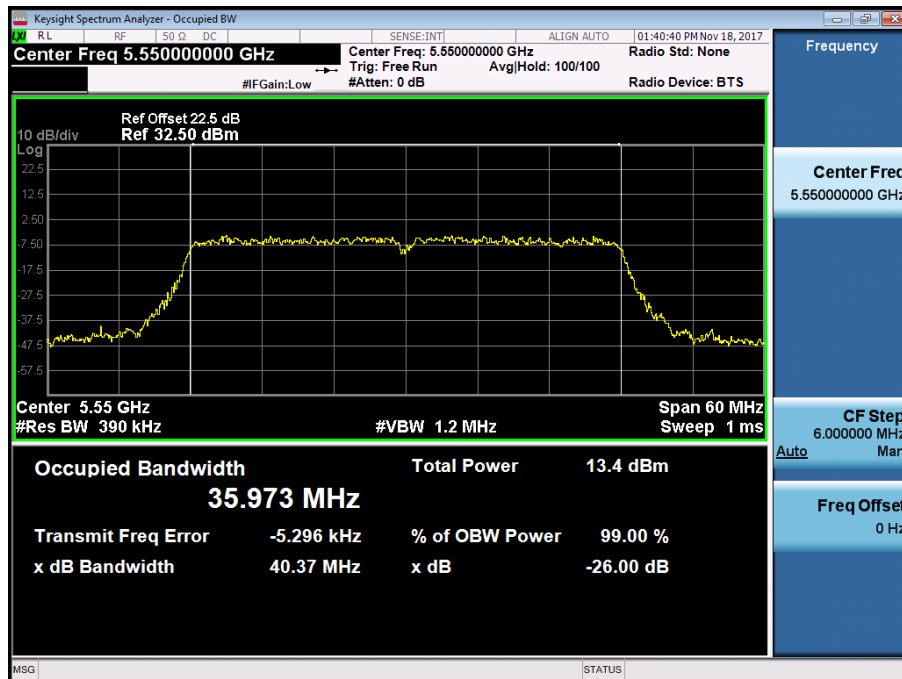


Test report No. : 4788166493A-US-R4-V0
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Issued date : 2017/11/24
FCC ID : A43-WISP5

26dB Bandwidth 802.11n HT40 Chain 0 Ch 102 5510MHz



26dB Bandwidth 802.11n HT40 Chain 0 Ch 110 5550MHz



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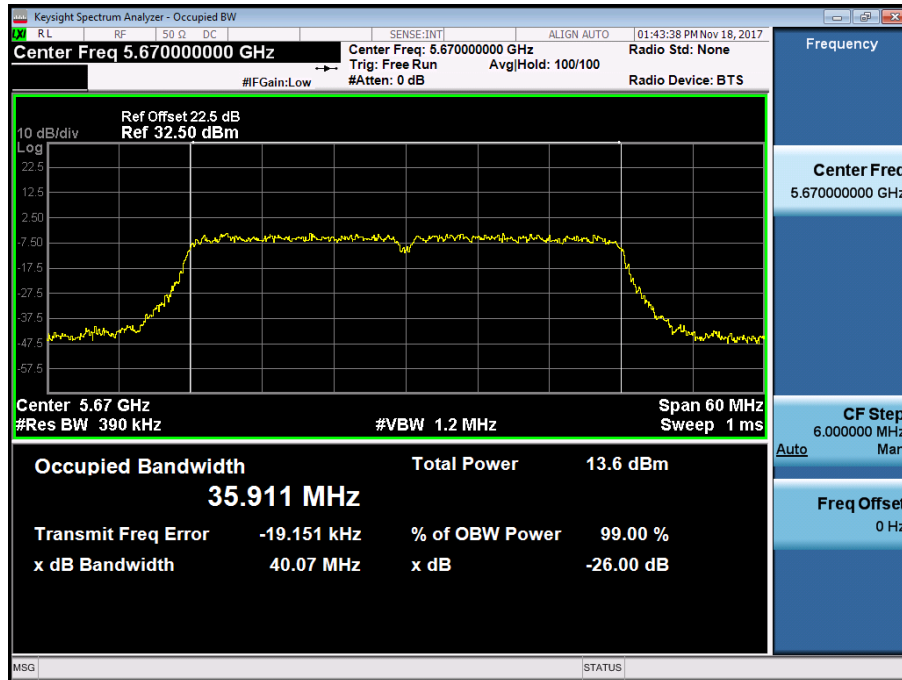
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-2-7737-3610

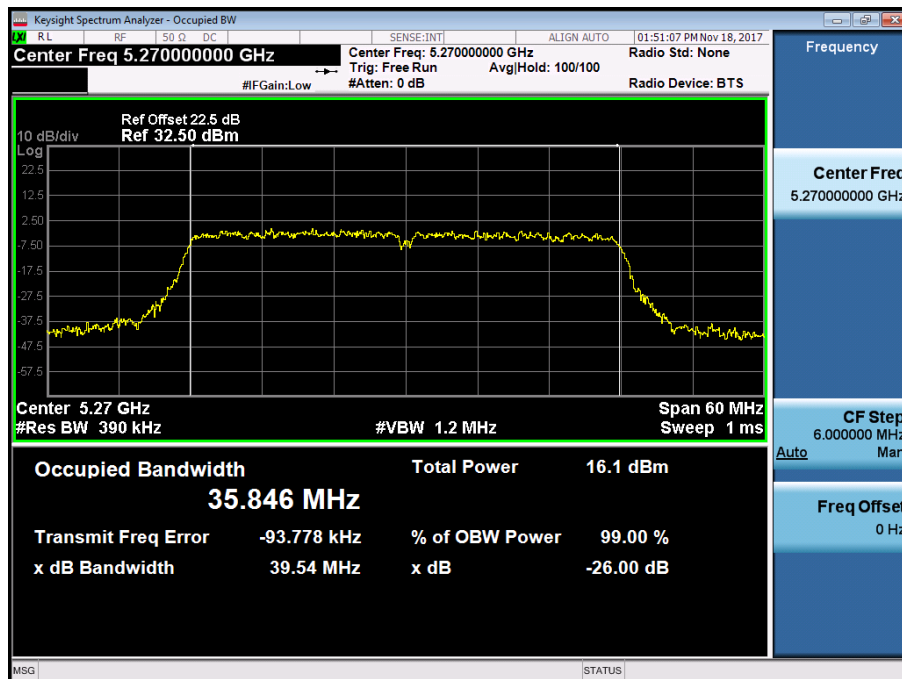


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Issued date : 2017/11/24
FCC ID : A43-WISP5

26dB Bandwidth 802.11n HT40 Chain 0 Ch 134 5670MHz



26dB Bandwidth 802.11n HT40 Chain 1 Ch 54 5270MHz



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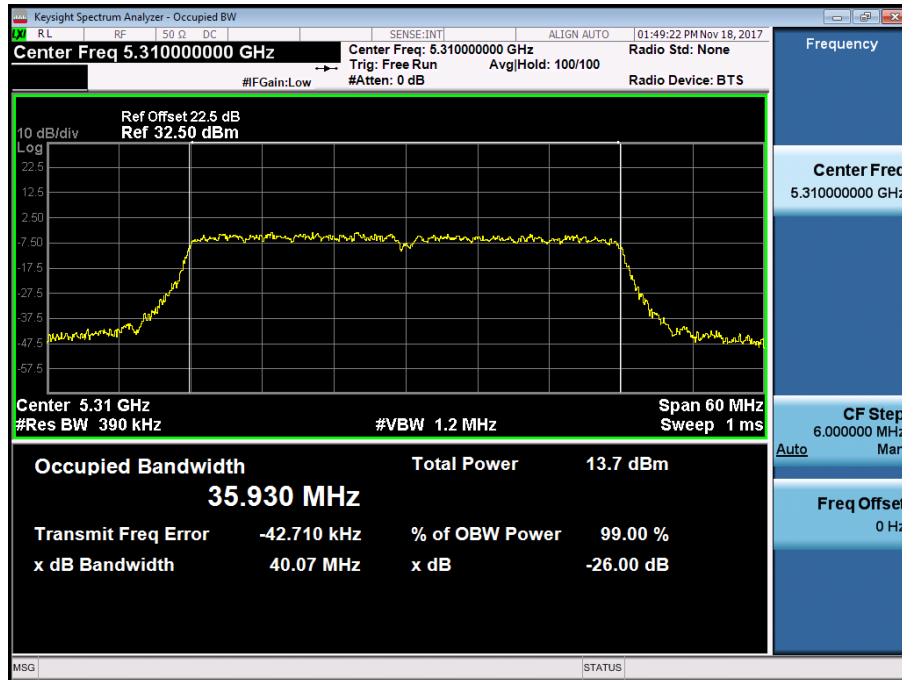
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-2-7737-3610

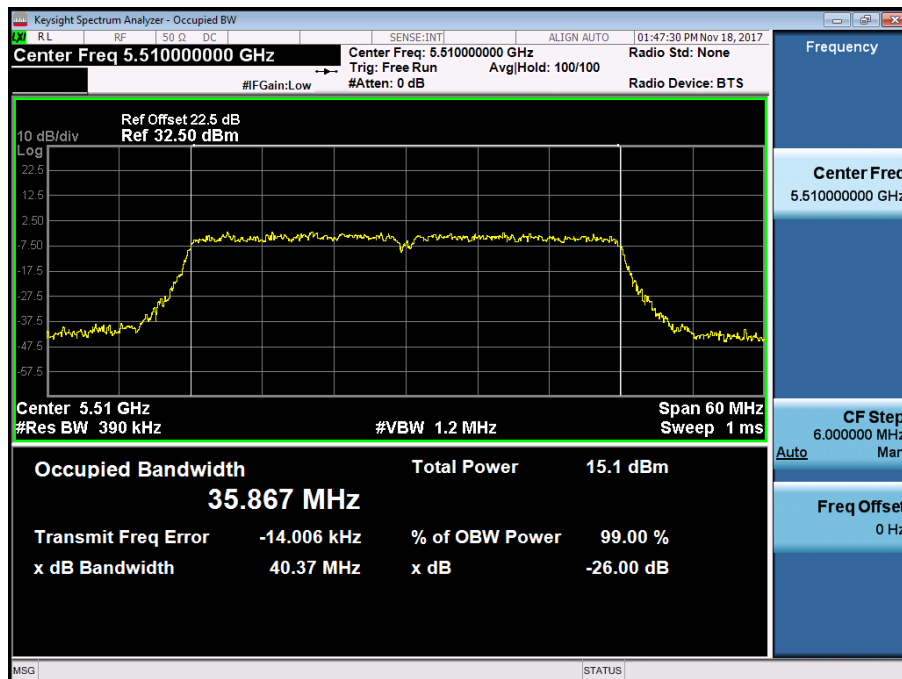


Test report No. : 4788166493A-US-R4-V0
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Issued date : 2017/11/24
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26dB Bandwidth 802.11n HT40 Chain 1 Ch 62 5310MHz



26dB Bandwidth 802.11n HT40 Chain 1 Ch 102 5510MHz



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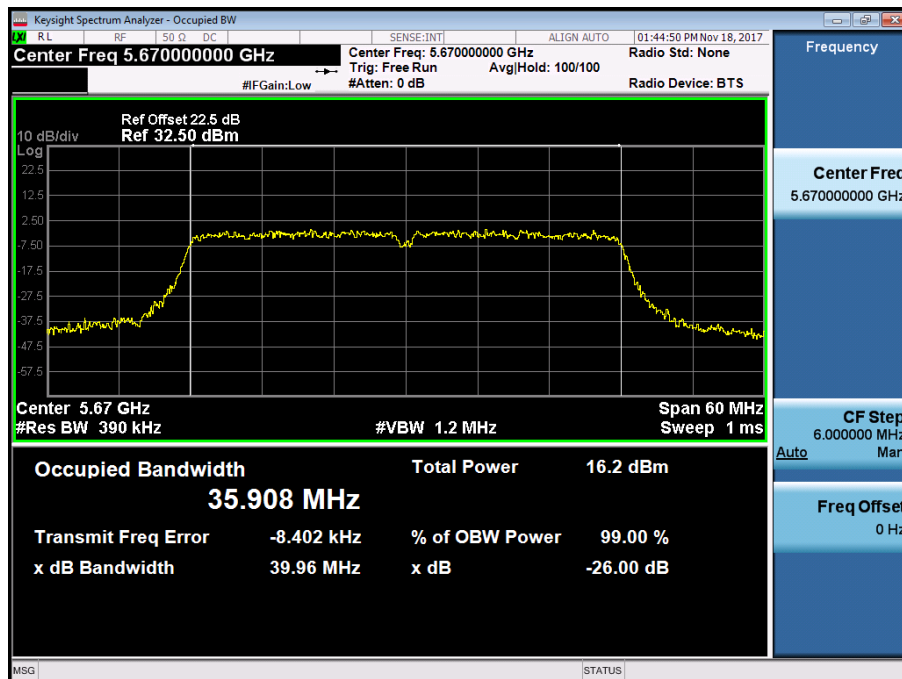


Test report No. : 4788166493A-US-R4-V0
Page : 33 of 192
Issued date : 2017/11/24
FCC ID : A43-WISP5

26dB Bandwidth 802.11n HT40 Chain 1 Ch 110 5550MHz



26dB Bandwidth 802.11n HT40 Chain 1 Ch 134 5670MHz



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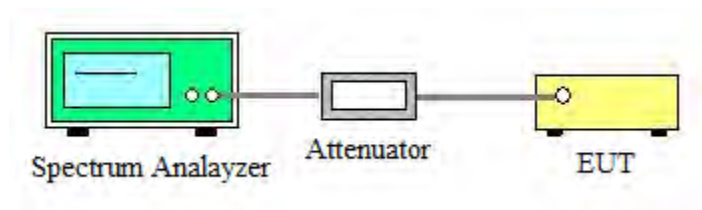


7.3. 99% Bandwidth

Requirements

For reporting purpose only.

Test Setup



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Test Data

Mode	Channel	Frequency (MHz)	99% Bandwidth (MHz)
802.11a Chain0	52	5260	16.462
	60	5300	16.445
	64	5320	16.474
	100	5500	16.463
	116	5580	16.423
	140	5700	16.431
802.11n HT20 Chain 0	52	5260	17.496
	60	5300	17.494
	64	5320	17.488
	100	5500	17.507
	116	5580	17.508
	140	5700	17.492
802.11n HT20 Chain 1	52	5260	17.46
	60	5300	17.496
	64	5320	17.494
	100	5500	17.512
	116	5580	17.473
	140	5700	17.498
802.11n HT40 Chain 0	54	5270	35.924
	62	5310	35.931
	102	5510	35.923
	110	5550	35.973
	134	5670	35.911
802.11n HT40 Chain 1	54	5270	35.846
	62	5310	35.930
	102	5510	35.867
	110	5550	35.986
	134	5670	35.908

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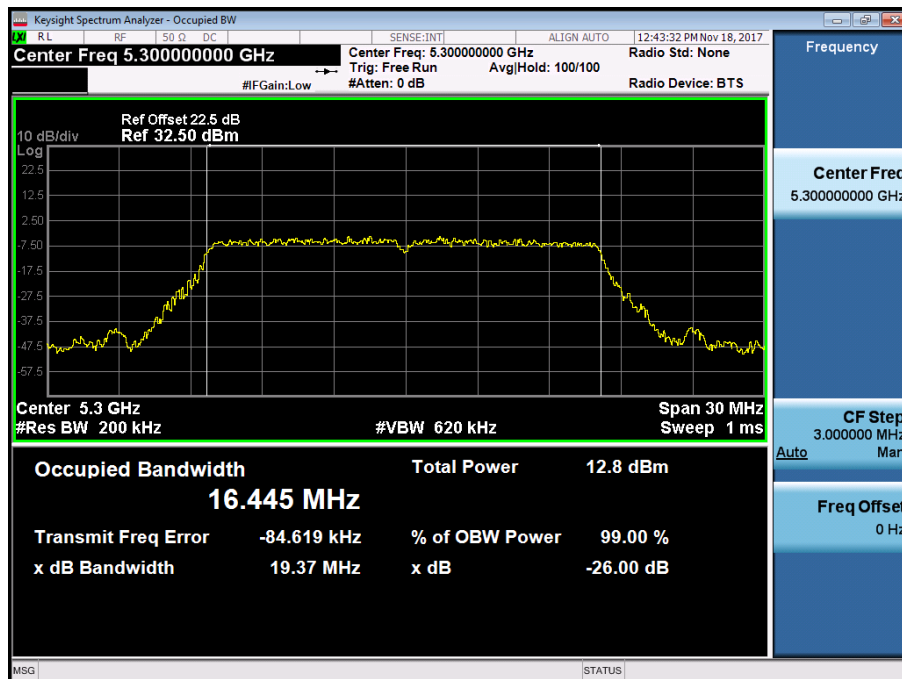


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Issued date : 2017/11/24
FCC ID : A43-WISP5

99% Bandwidth 802.11a Chain 0 Ch 52 5260MHz



99% Bandwidth 802.11a Chain 0 Ch 60 5300MHz



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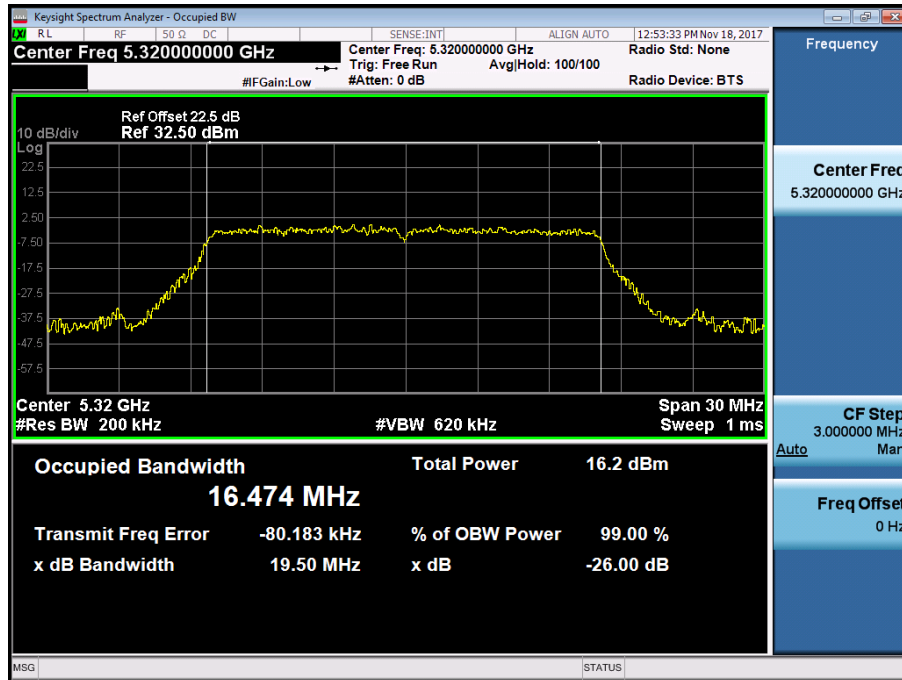
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-2-7737-3610

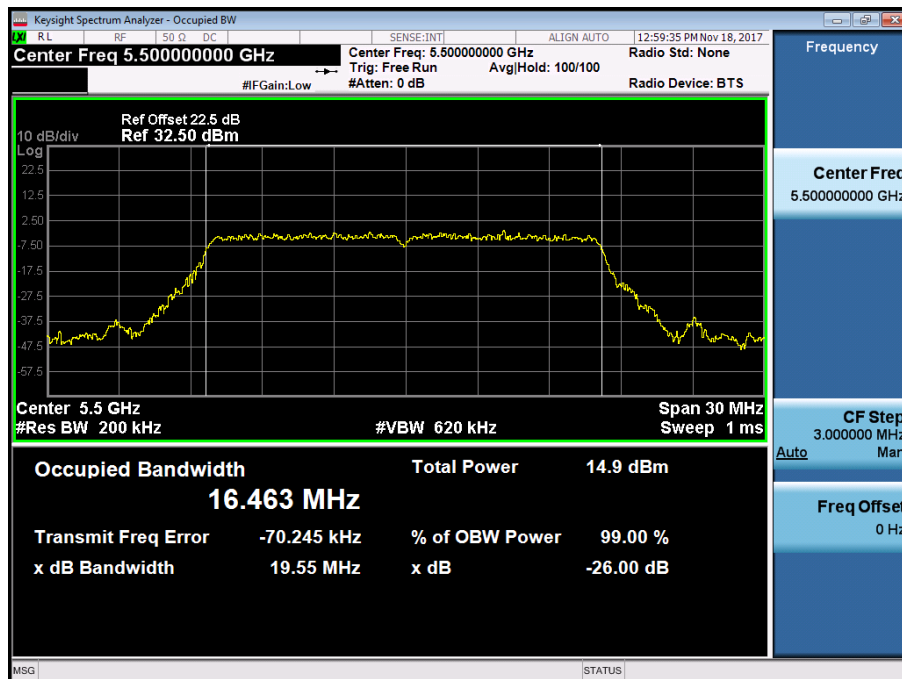


Test report No. : 4788166493A-US-R4-V0
Page : 37 of 192
Issued date : 2017/11/24
FCC ID : A43-WISP5

99% Bandwidth 802.11a Chain 0 Ch 64 5320MHz



99% Bandwidth 802.11a Chain 0 Ch 100 5500MHz



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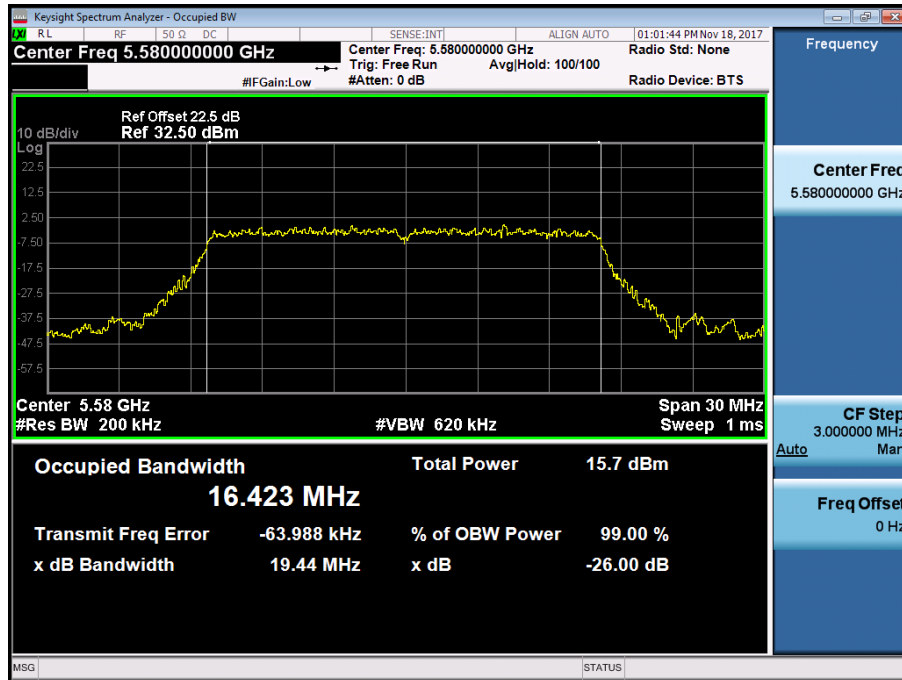
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-2-7737-3610

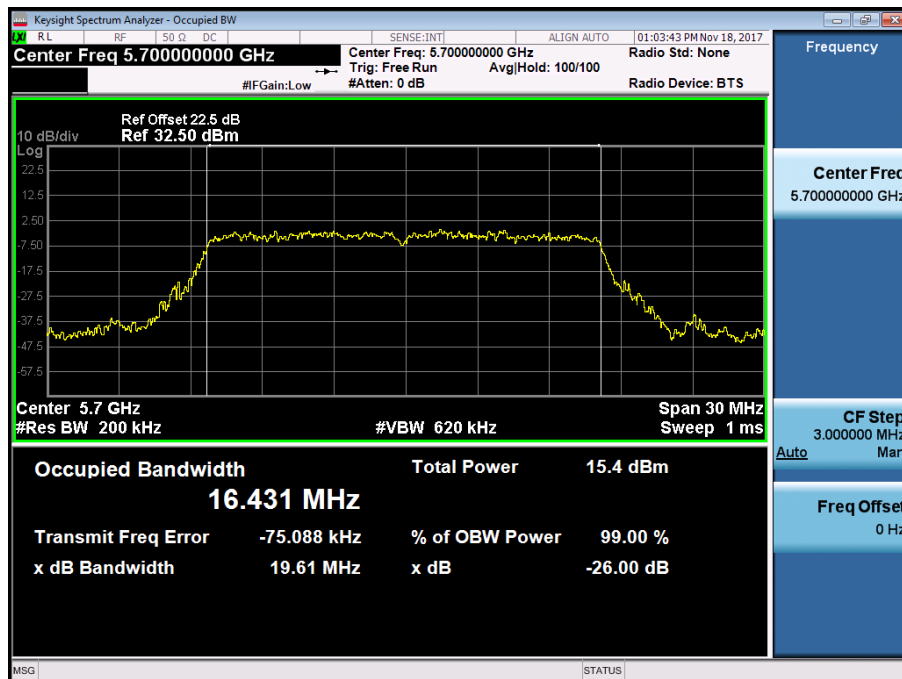


Test report No. : 4788166493A-US-R4-V0
Page : 38 of 192
Issued date : 2017/11/24
FCC ID : A43-WISP5

99% Bandwidth 802.11a Chain 0 Ch 116 5580MHz



99% Bandwidth 802.11a Chain 0 Ch 140 5700MHz



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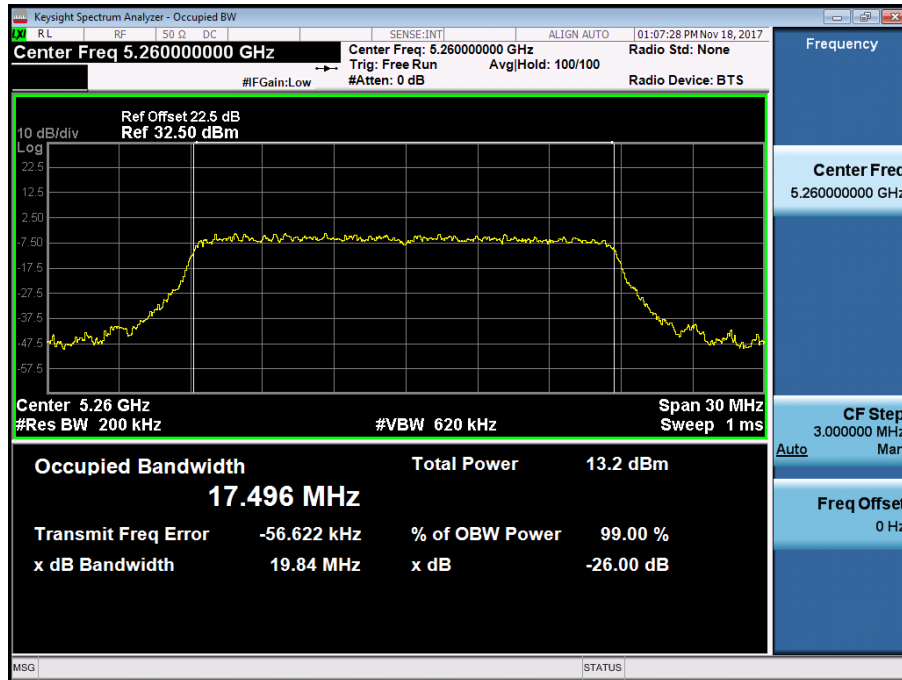
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-2-7737-3610

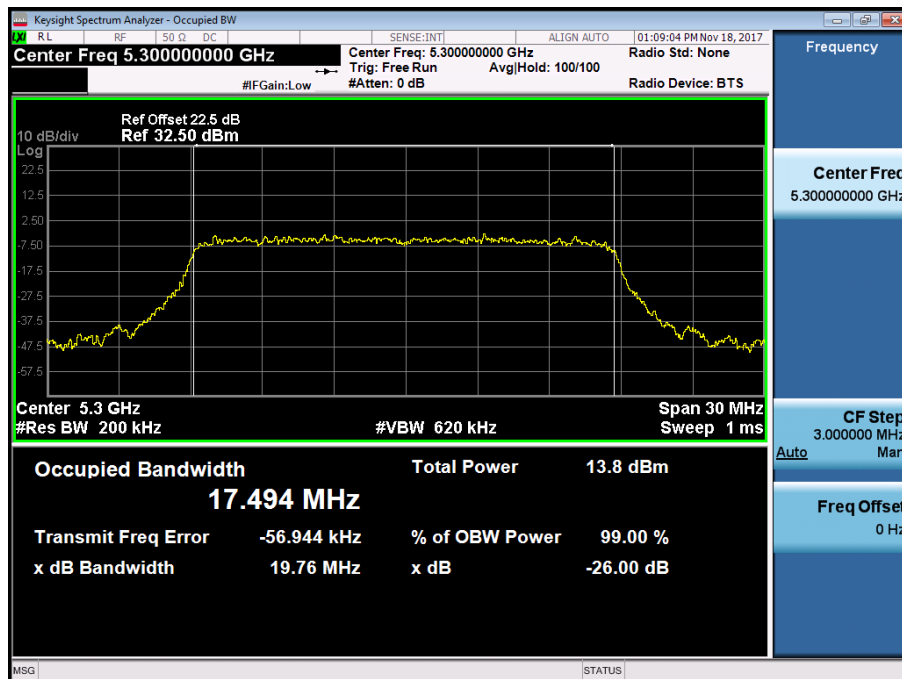


Test report No. : 4788166493A-US-R4-V0
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Issued date : 2017/11/24
FCC ID : A43-WISP5

99% Bandwidth 802.11n HT20 Chain 0 Ch 52 5260MHz



99% Bandwidth 802.11n HT20 Chain 0 Ch 60 5300MHz



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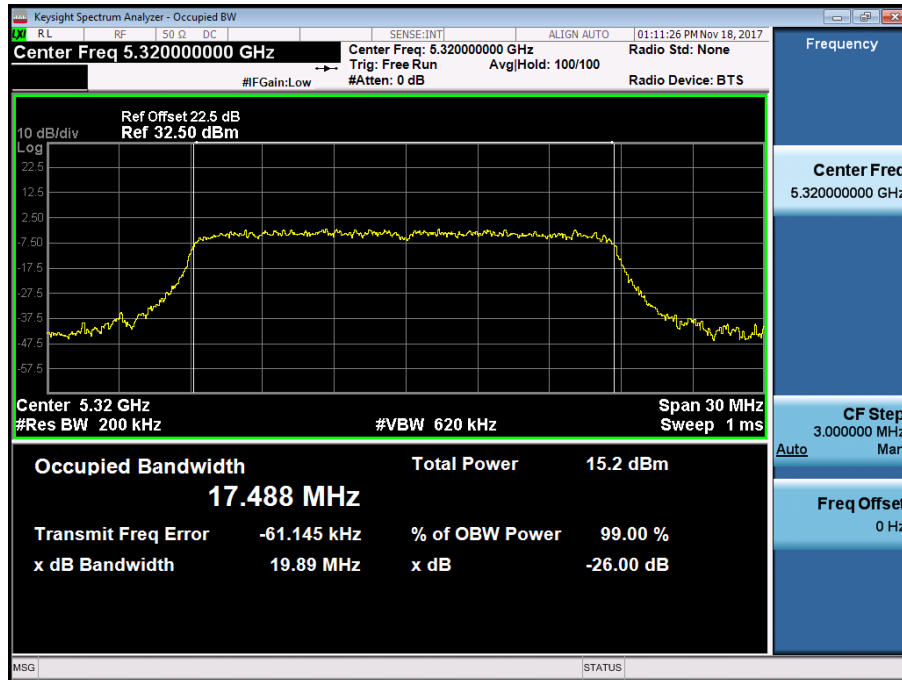
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-2-7737-3610

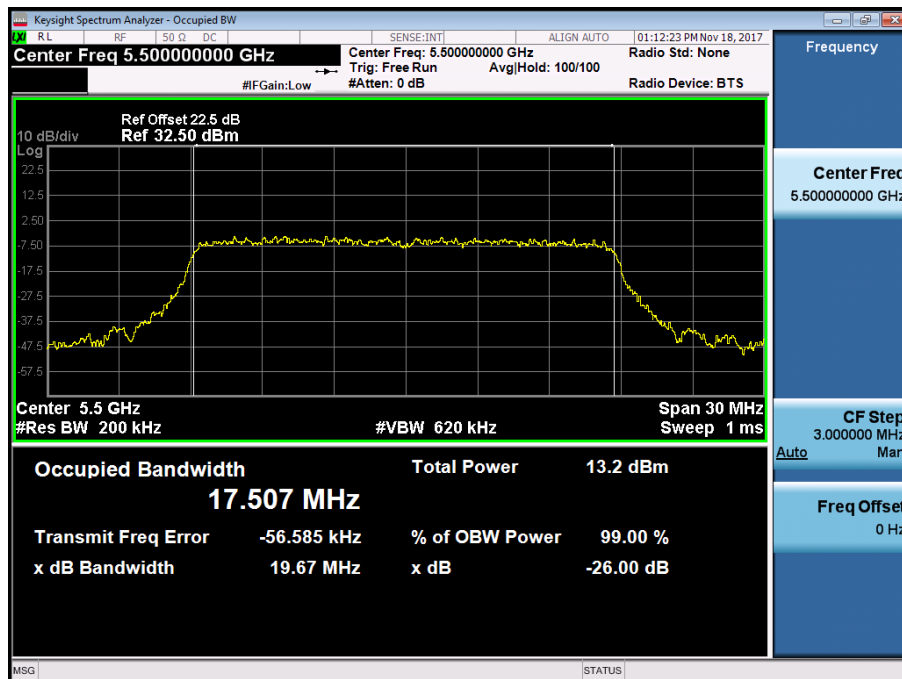


Test report No. : 4788166493A-US-R4-V0
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Issued date : 2017/11/24
FCC ID : A43-WISP5

99% Bandwidth 802.11n HT20 Chain 0 Ch 64 5320MHz



99% Bandwidth 802.11n HT20 Chain 0 Ch 100 5500MHz



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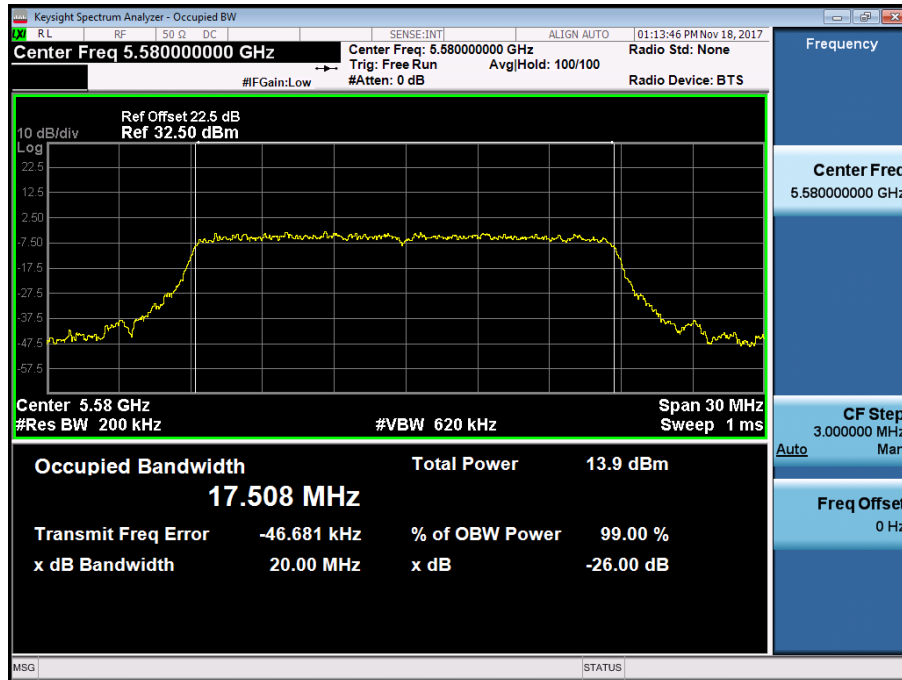
Telephone :+886-2-7737-3000

Facsimile (FAX) :+886-2-7737-3610

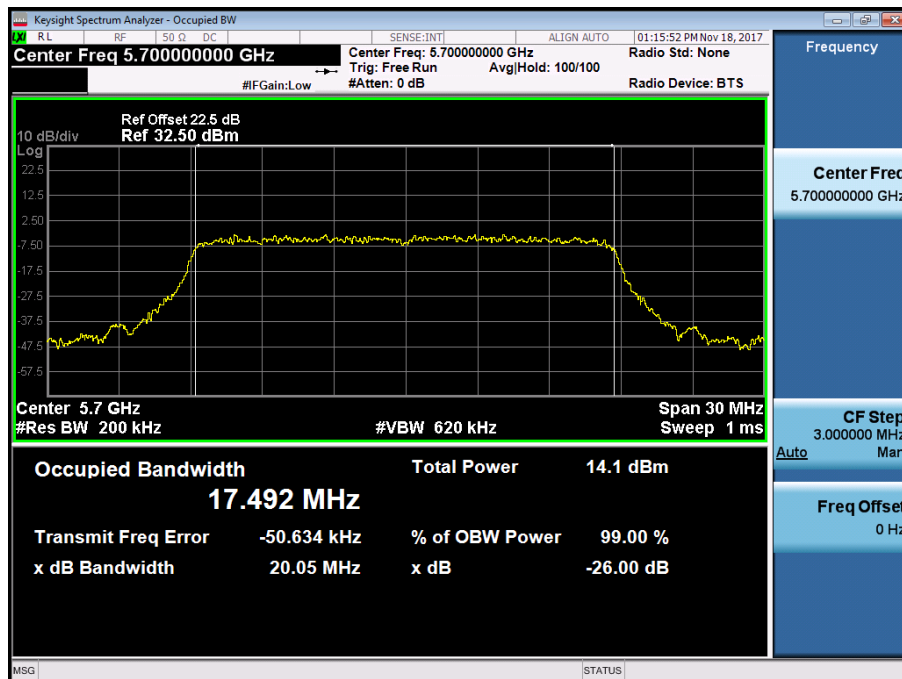


Test report No. : 4788166493A-US-R4-V0
Page : 41 of 192
Issued date : 2017/11/24
FCC ID : A43-WISP5

99% Bandwidth 802.11n HT20 Chain 0 Ch 116 5580MHz



99% Bandwidth 802.11n HT20 Chain 0 Ch 140 5700MHz



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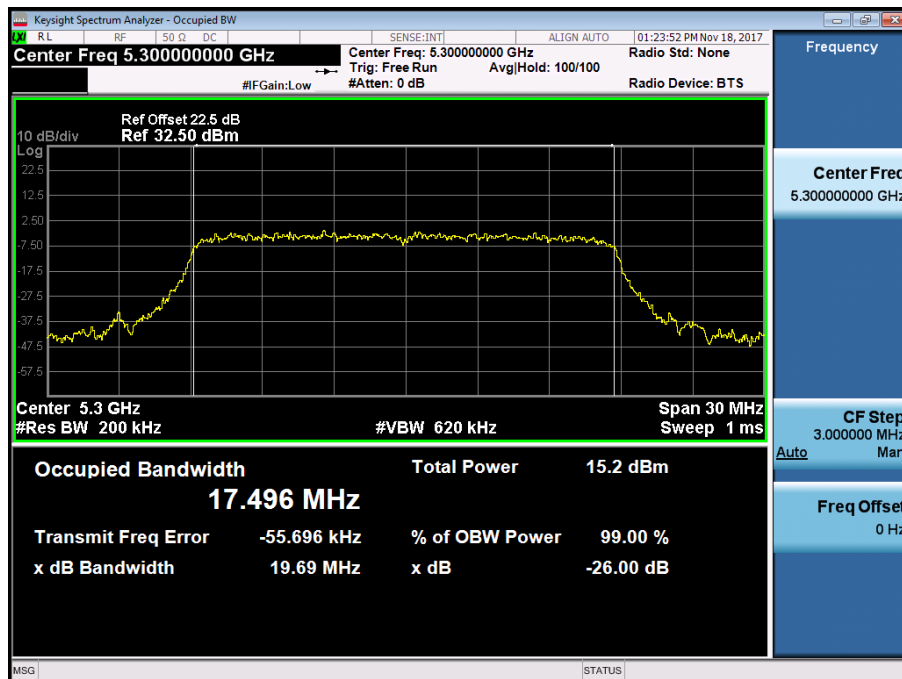


Test report No. : 4788166493A-US-R4-V0
Page : 42 of 192
Issued date : 2017/11/24
FCC ID : A43-WISP5

99% Bandwidth 802.11n HT20 Chain 1 Ch 52 5260MHz



99% Bandwidth 802.11n HT20 Chain 1 Ch 60 5300MHz



EMC Lab.

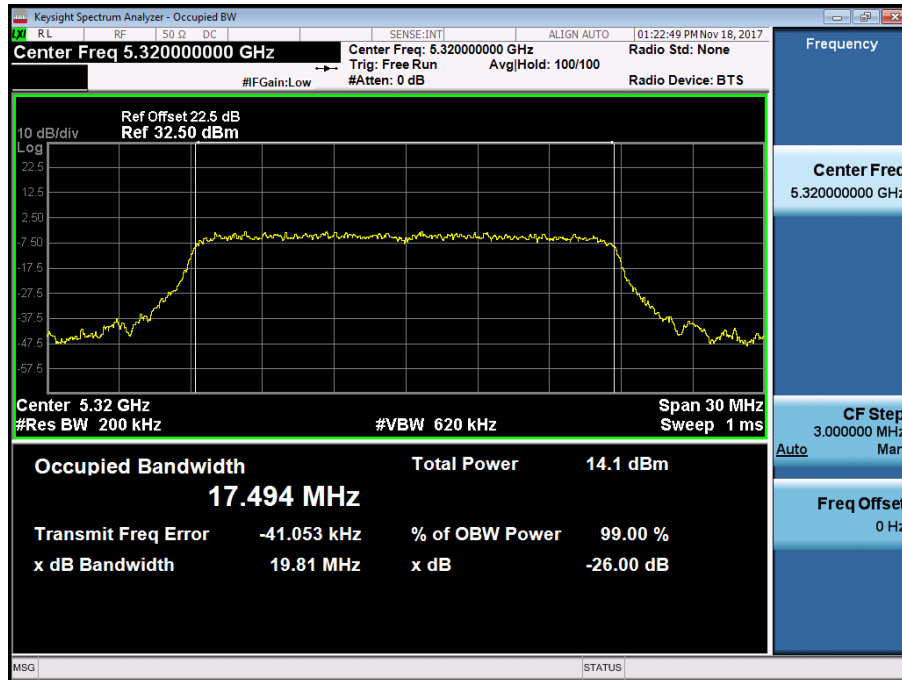
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Telephone : +886-2-7737-3000
Facsimile (FAX) : +886-2-7737-3610

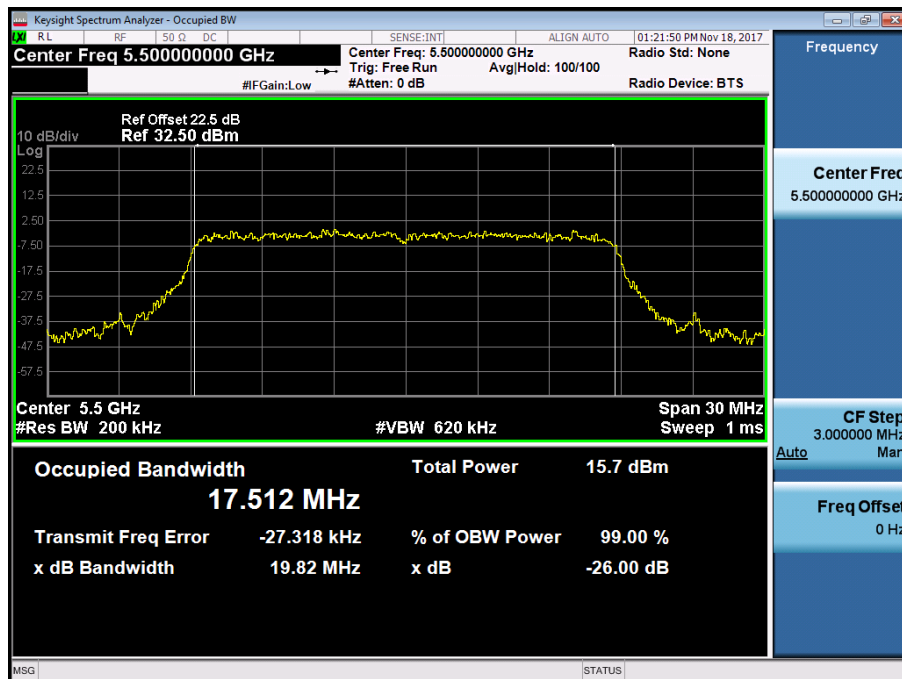


Test report No. : 4788166493A-US-R4-V0
Page : 43 of 192
Issued date : 2017/11/24
FCC ID : A43-WISP5

99% Bandwidth 802.11n HT20 Chain 1 Ch 64 5320MHz



99% Bandwidth 802.11n HT20 Chain 1 Ch 100 5500MHz



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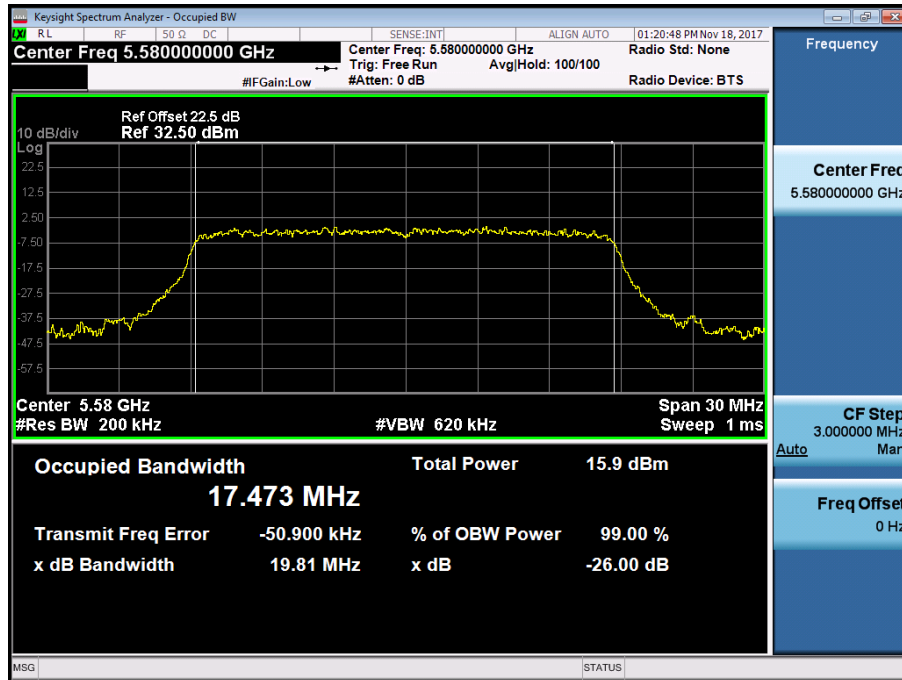
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-2-7737-3610

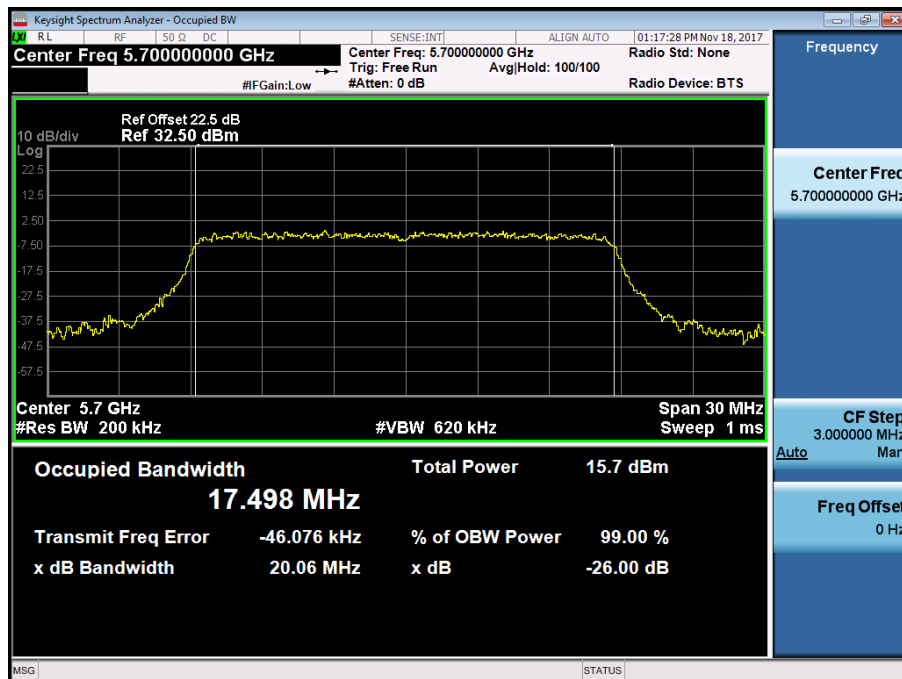


Test report No. : 4788166493A-US-R4-V0
Page : 44 of 192
Issued date : 2017/11/24
FCC ID : A43-WISP5

99% Bandwidth 802.11n HT20 Chain 1 Ch 116 5580MHz



99% Bandwidth 802.11n HT20 Chain 1 Ch 140 5700MHz



EMC Lab.

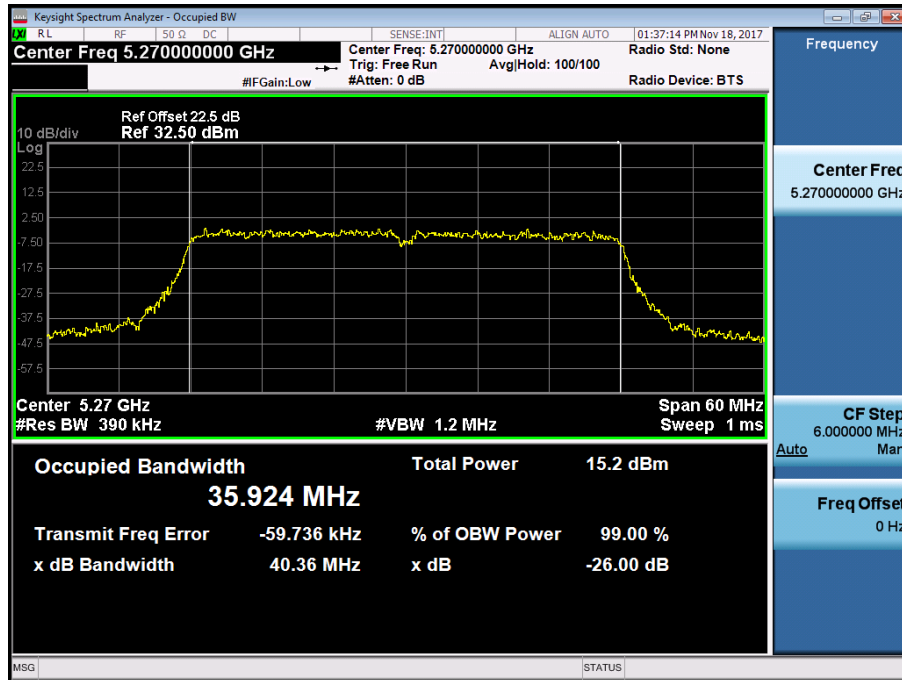
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Facsimile (FAX) : +886-2-7737-3610

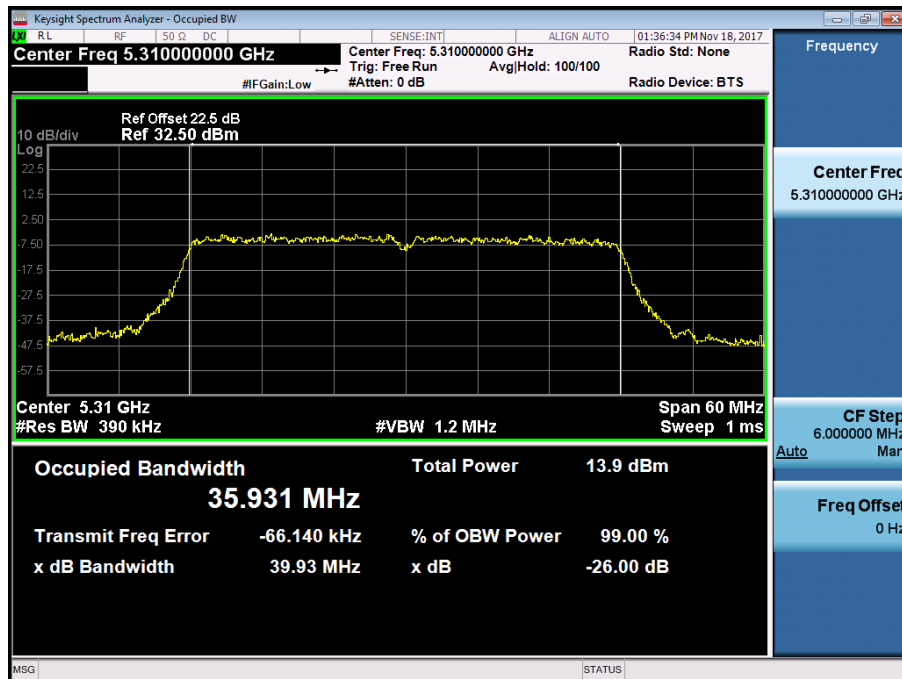


Test report No. : 4788166493A-US-R4-V0
Page : 45 of 192
Issued date : 2017/11/24
FCC ID : A43-WISP5

99% Bandwidth 802.11n HT40 Chain 0 Ch 54 5270MHz



99% Bandwidth 802.11n HT40 Chain 0 Ch 62 5310MHz



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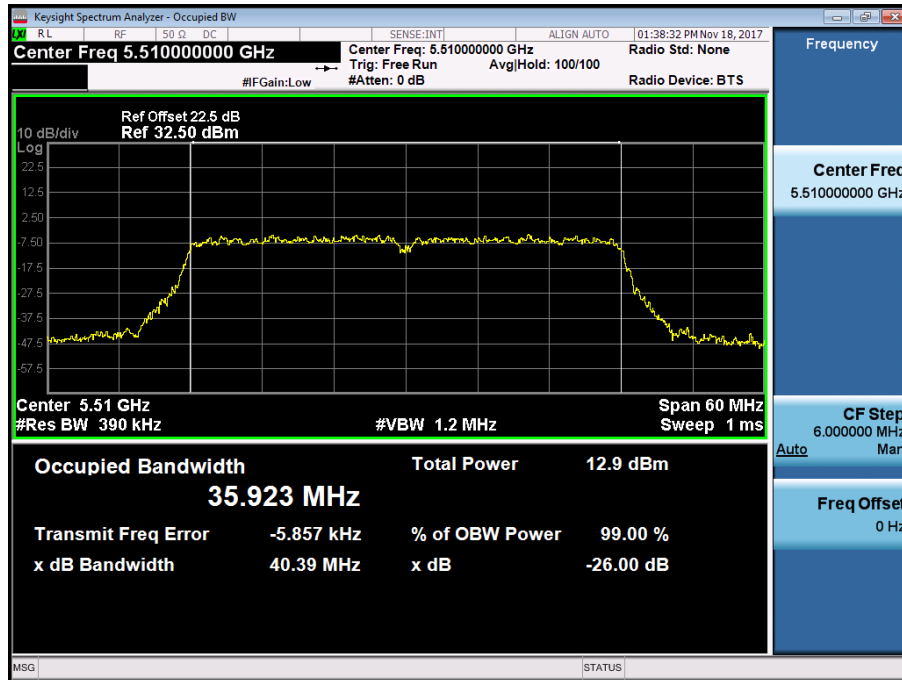
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-2-7737-3610

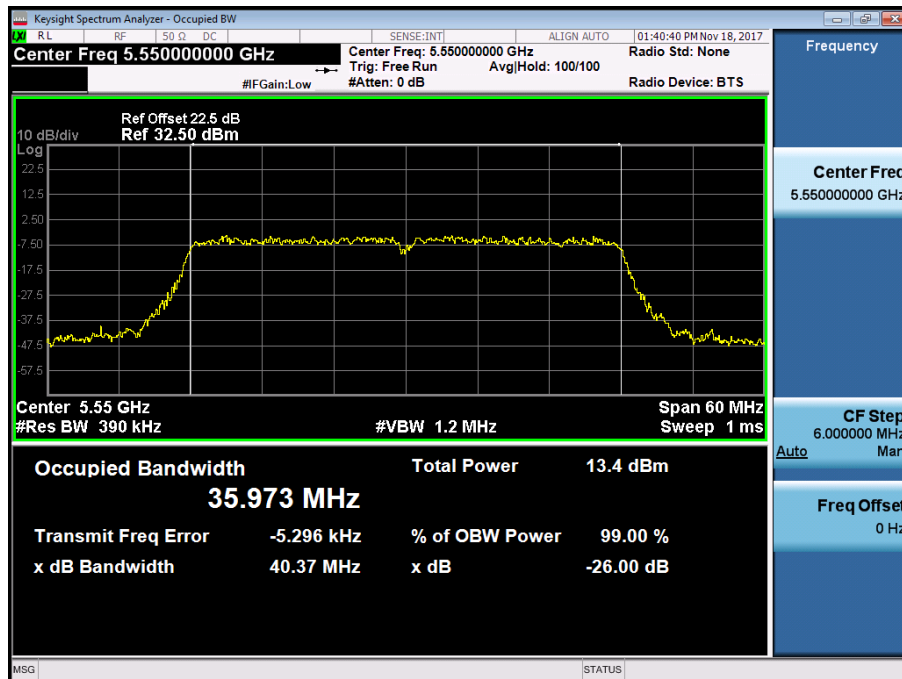


Test report No. : 4788166493A-US-R4-V0
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Issued date : 2017/11/24
FCC ID : A43-WISP5

99% Bandwidth 802.11n HT40 Chain 0 Ch 102 5510MHz



99% Bandwidth 802.11n HT40 Chain 0 Ch 110 5550MHz



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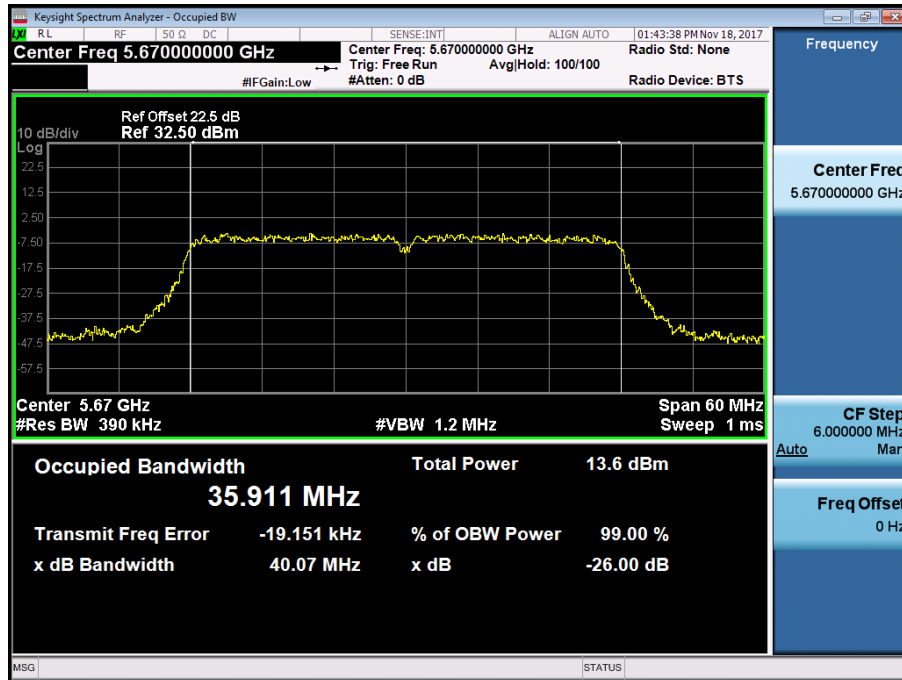
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-2-7737-3610

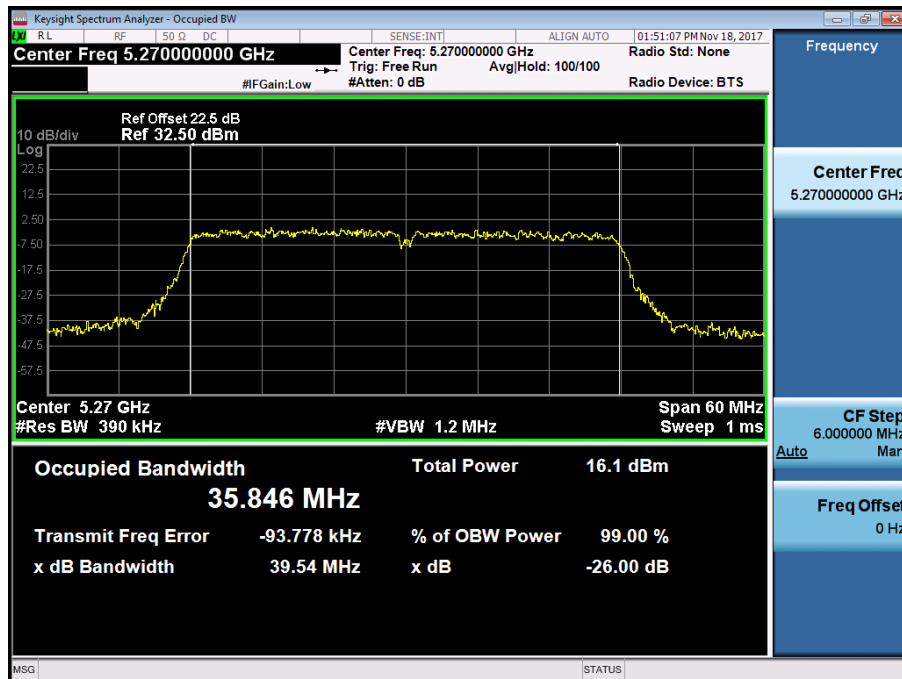


Test report No. : 4788166493A-US-R4-V0
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FCC ID : A43-WISP5

99% Bandwidth 802.11n HT40 Chain 0 Ch 134 5670MHz



99% Bandwidth 802.11n HT40 Chain 1 Ch 54 5270MHz



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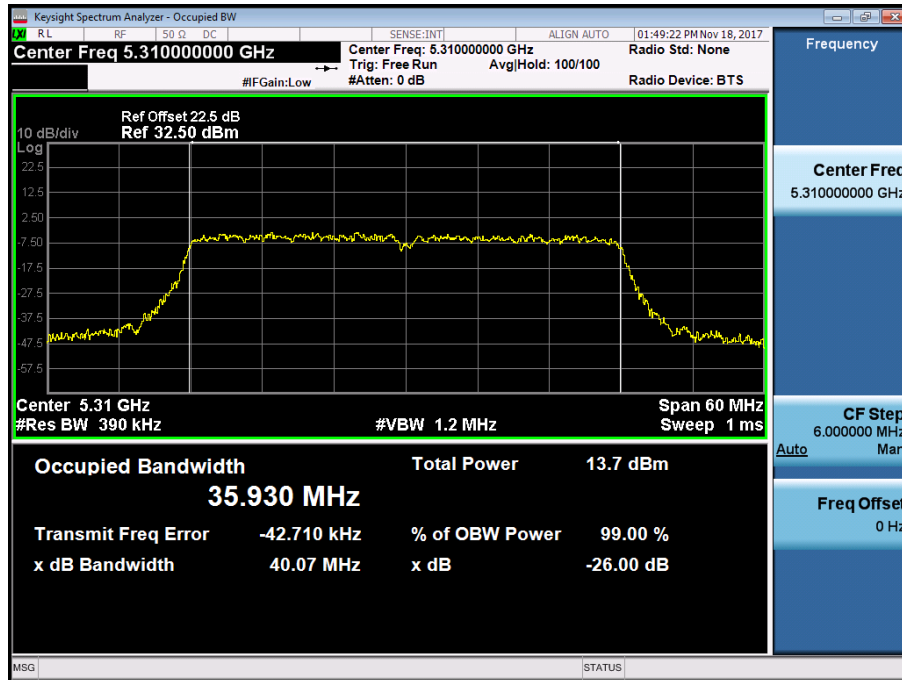
Telephone : +886-2-7737-3000

Facsimile (FAX) : +886-2-7737-3610

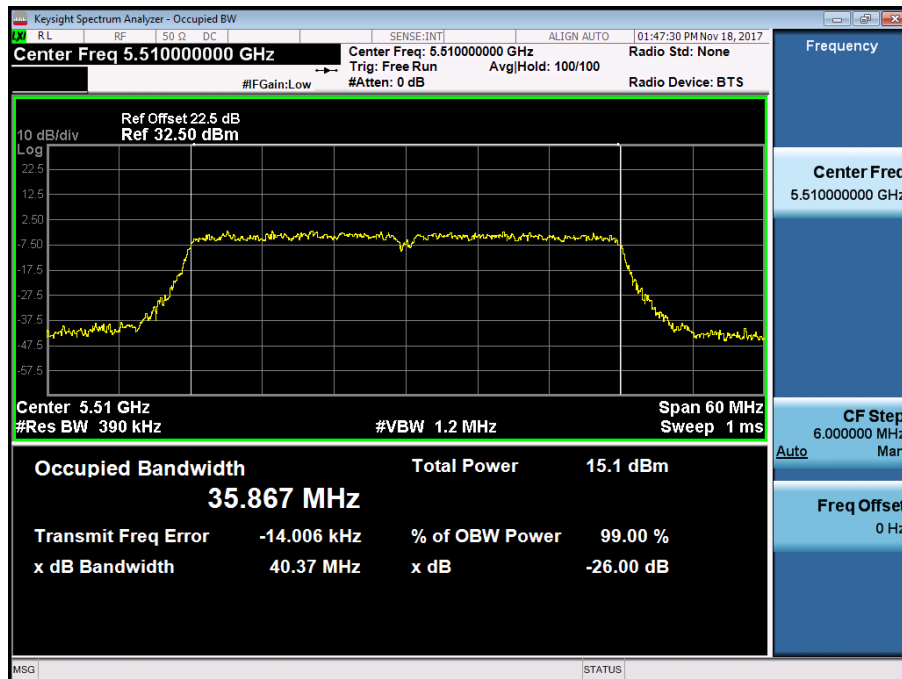


Test report No. : 4788166493A-US-R4-V0
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Issued date : 2017/11/24
FCC ID : A43-WISP5

99% Bandwidth 802.11n HT40 Chain 1 Ch 62 5310MHz



99% Bandwidth 802.11n HT40 Chain 1 Ch 102 5510MHz



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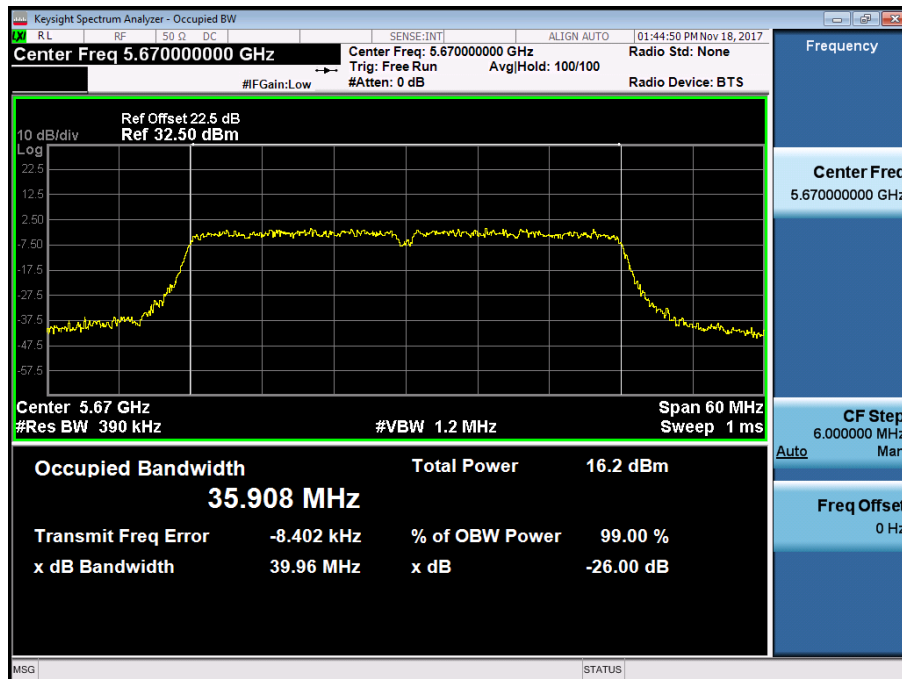


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Issued date : 2017/11/24
FCC ID : A43-WISP5

99% Bandwidth 802.11n HT40 Chain 1 Ch 110 5550MHz



99% Bandwidth 802.11n HT40 Chain 1 Ch 134 5670MHz



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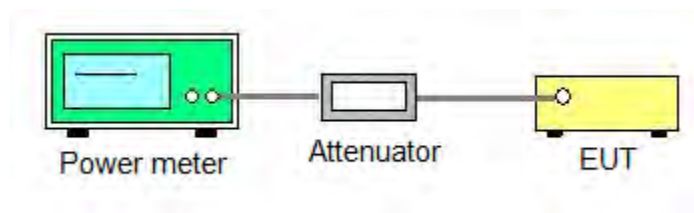


7.4. Maximum Conducted Output Power

Requirements

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

Test Setup



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Test Data

Mode	Channel	Frequency (MHz)	Output Power (dBm)	Duty Cycle Factor (dB)	Total Power (dBm)	Output Power Limit (dBm)	Margin (dB)
802.11a Chain 0	52	5260	11.28	0	11.28	23.93	-12.65
	60	5300	11.20	0	11.20	23.87	-12.67
	64	5320	11.83	0	11.80	23.90	-12.10
	100	5500	11.53	0	11.53	23.91	-12.38
	116	5580	11.19	0	11.19	23.89	-12.70
	140	5700	11.25	0	11.25	23.92	-12.67

Mode	Channel	Frequency (MHz)	Output Power (dBm)		Output Power (mW)		Duty Cycle Factor (dB)	Total Power (dBm)	Output Power Limit (dBm)	Margin (dB)
			Chain 0	Chain 1	Chain 0	Chain 1				
802.11n HT20	52	5260	8.59	8.29	7.23	6.75	0	11.45	23.97	-12.52
	60	5300	8.54	8.65	7.14	7.33	0	11.61	23.94	-12.33
	64	5320	8.94	8.34	7.83	6.82	0	11.66	23.97	-12.31
	100	5500	8.36	8.45	6.85	7.00	0	11.42	23.94	-12.52
	116	5580	8.67	8.57	7.36	7.19	0	11.63	23.97	-12.34
	140	5700	8.47	8.36	7.03	6.85	0	11.43	23.98	-12.55

Mode	Channel	Frequency (MHz)	Output Power (dBm)		Output Power (mW)		Duty Cycle Factor (dB)	Total Power (dBm)	Output Power Limit (dBm)	Margin (dB)
			Chain 0	Chain 1	Chain 0	Chain 1				
802.11n HT40	54	5270	8.46	8.5	7.01	7.08	0	11.49	23.98	-12.49
	62	5310	8.71	8.17	7.43	6.56	0	11.46	23.98	-12.52
	102	5510	8.14	8.05	6.52	6.38	0	11.11	23.98	-12.87
	110	5550	8.77	8.16	7.53	6.55	0	11.49	23.98	-12.49
	134	5670	8.68	8.36	7.38	6.85	0	11.53	23.98	-12.45

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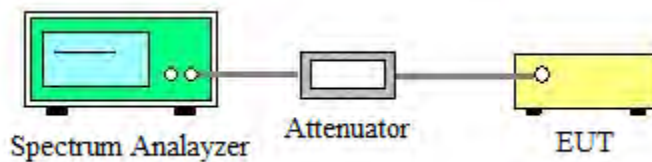


7.5. Power Spectral Density

Requirements

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band

Test Setup



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Test Data

Mode	Channel	Frequency (MHz)	PSD (dBm)	Duty Cycle Factor (dB)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
802.11a Chain 0	52	5260	-2.537	0.00	-2.537	11	-13.54
	60	5300	-2.496	0.00	-2.496	11	-13.50
	64	5320	-1.392	0.00	-1.392	11	-12.39
	100	5500	-1.641	0.00	-1.641	11	-12.64
	116	5580	-2.048	0.00	-2.048	11	-13.05
	140	5700	-2.226	0.00	-2.226	11	-13.23

Mode	Channel	Frequency (MHz)	PSD (dBm)		PSD (mW)		Duty Cycle Factor (dB)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
			Chain 0	Chain 1	Chain 0	Chain 1				
802.11n HT20	52	5260	-4.031	-2.848	0.40	0.52	0.00	-0.39	11	-11.39
	60	5300	-4.184	-2.32	0.38	0.59	0.00	-0.14	11	-11.14
	64	5320	-2.924	-2.509	0.51	0.56	0.00	0.30	11	-10.70
	100	5500	-3.503	-2.241	0.45	0.60	0.00	0.18	11	-10.82
	116	5580	-3.066	-1.826	0.49	0.66	0.00	0.61	11	-10.39
	140	5700	-3.33	-2.522	0.46	0.56	0.00	0.10	11	-10.90

Mode	Channel	Frequency (MHz)	PSD (dBm)		PSD (mW)		Duty Cycle Factor (dB)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
			Chain 0	Chain 1	Chain 0	Chain 1				
802.11n HT40	54	5270	-3.043	-4.376	0.50	0.37	0.00	-0.65	11	-11.65
	62	5310	-4.525	-4.936	0.35	0.32	0.00	-1.72	11	-12.72
	102	5510	-6.563	-5.684	0.22	0.27	0.00	-3.09	11	-14.09
	110	5550	-5.866	-4.683	0.26	0.34	0.00	-2.22	11	-13.22
	134	5670	-5.905	-4.84	0.26	0.33	0.00	-2.33	11	-13.33

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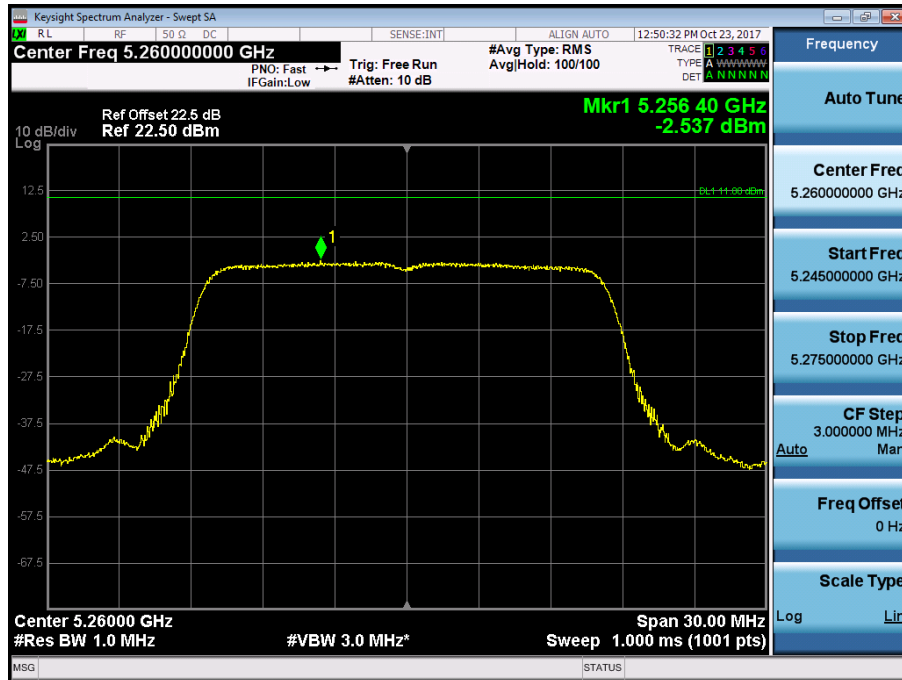
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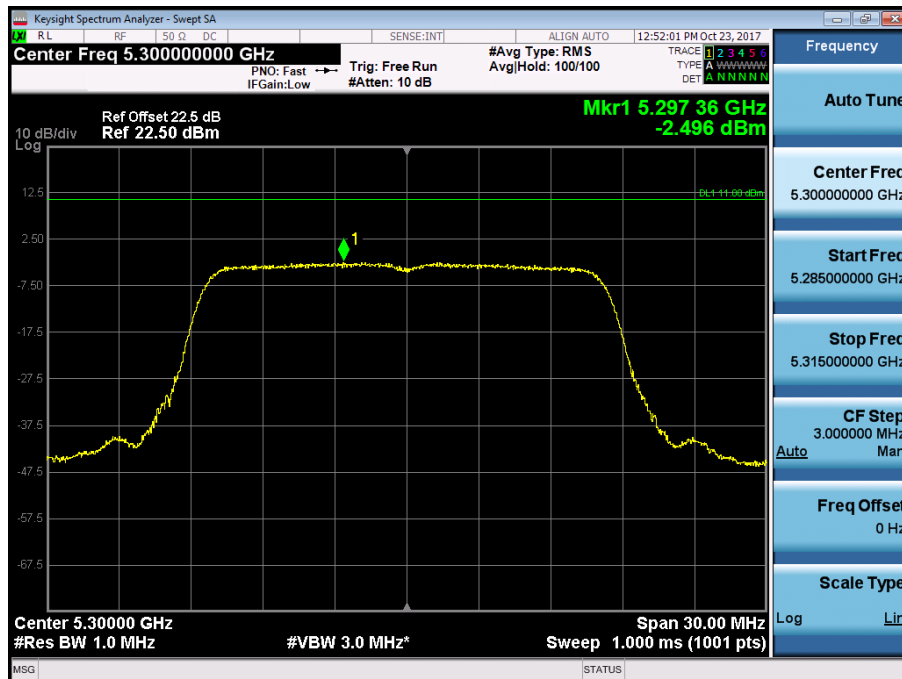


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Power Spectral Density 802.11a Chain 0 Ch 52 5260MHz



Power Spectral Density 802.11a Chain 0 Ch 60 5300MHz



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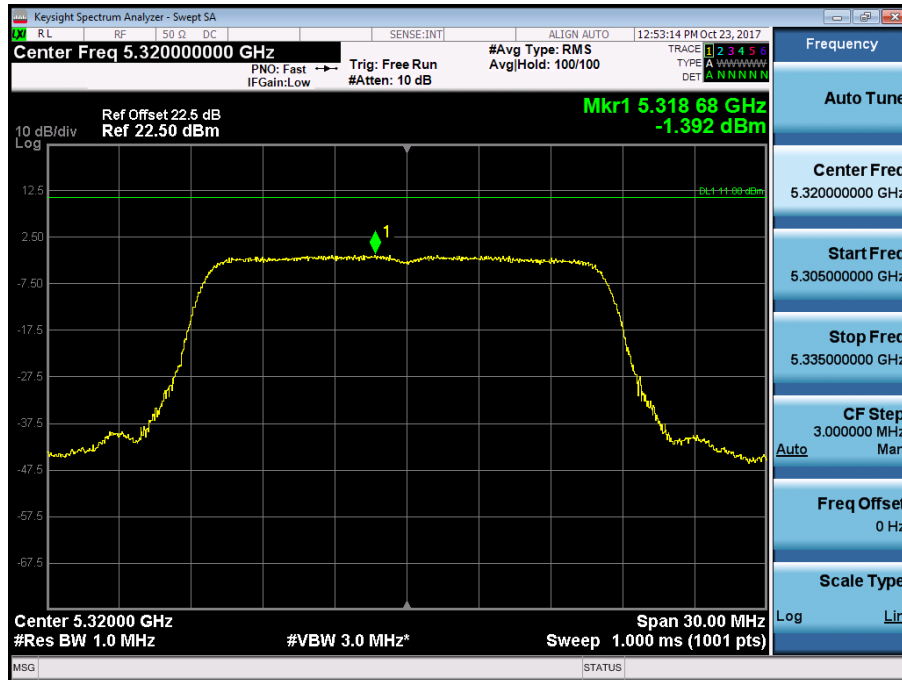
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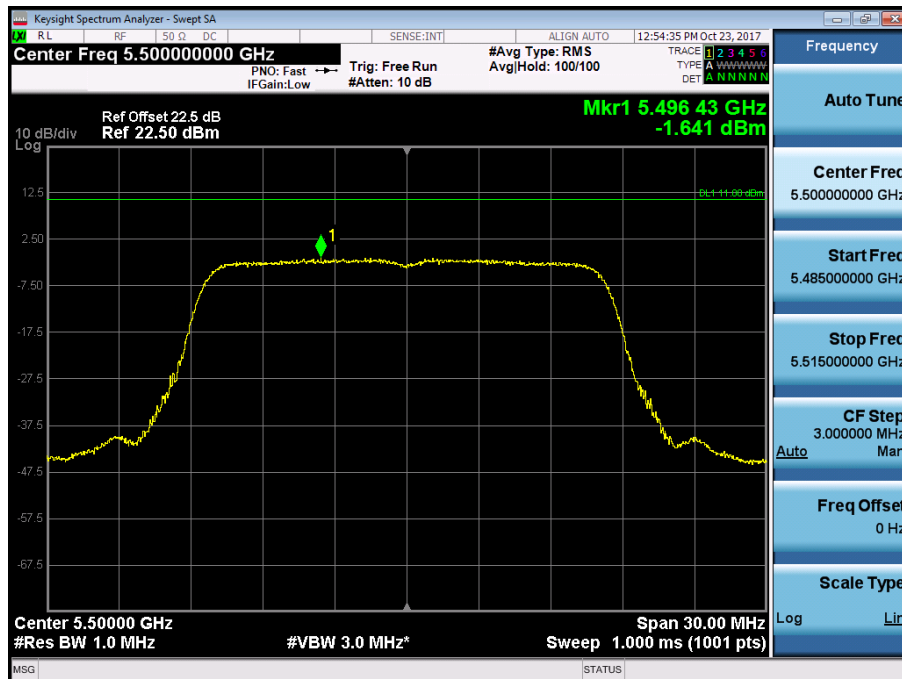


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Power Spectral Density 802.11a Chain 0 Ch 64 5320MHz



Power Spectral Density 802.11a Chain 0 Ch 100 5500MHz



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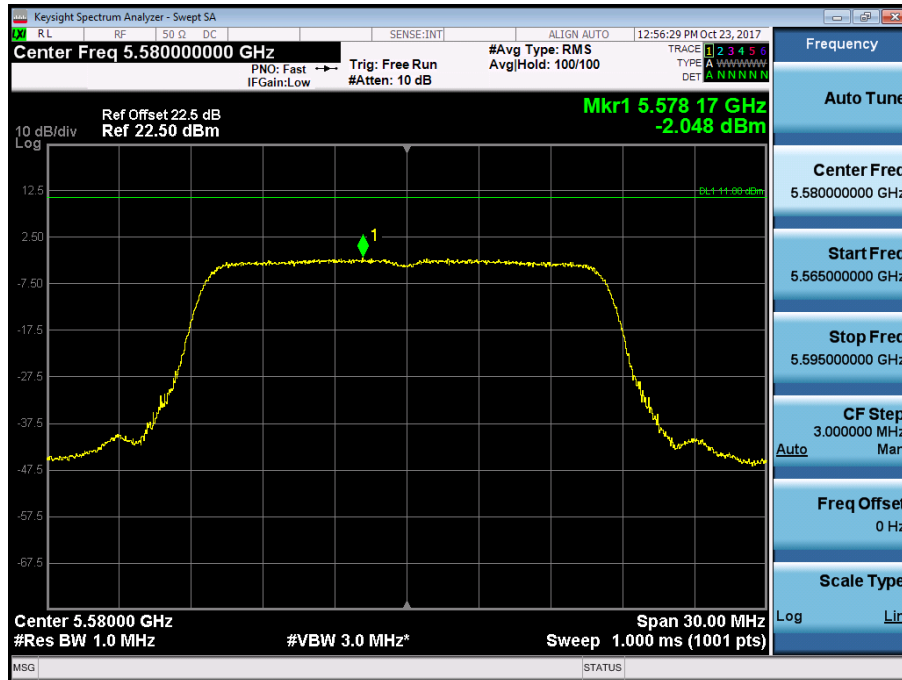
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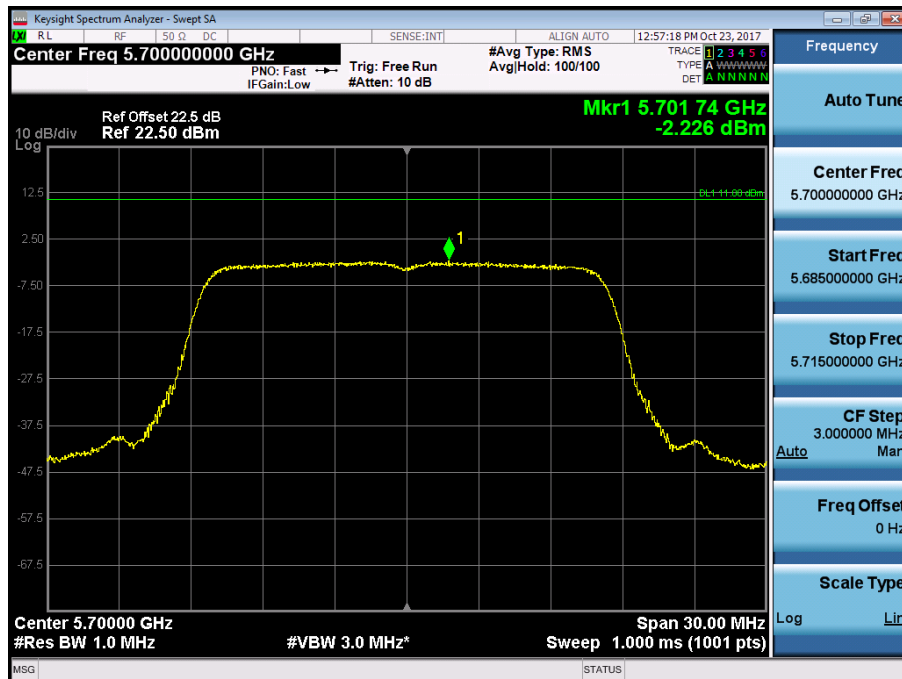


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Power Spectral Density 802.11a Chain 0 Ch 116 5580MHz



Power Spectral Density 802.11a Chain 0 Ch 140 5700MHz



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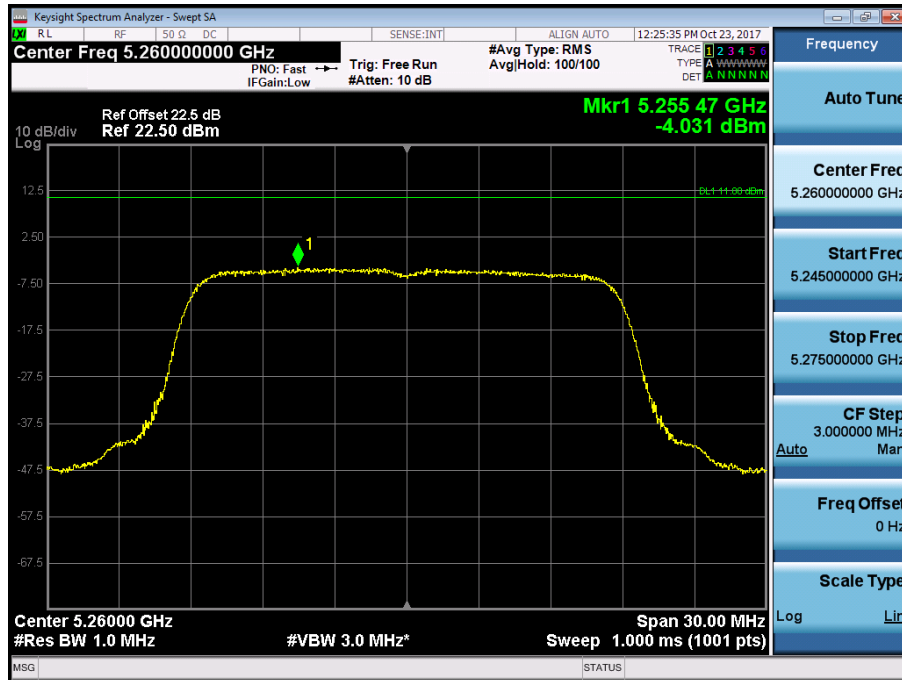
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Facsimile (FAX) : +886-2-7737-3610

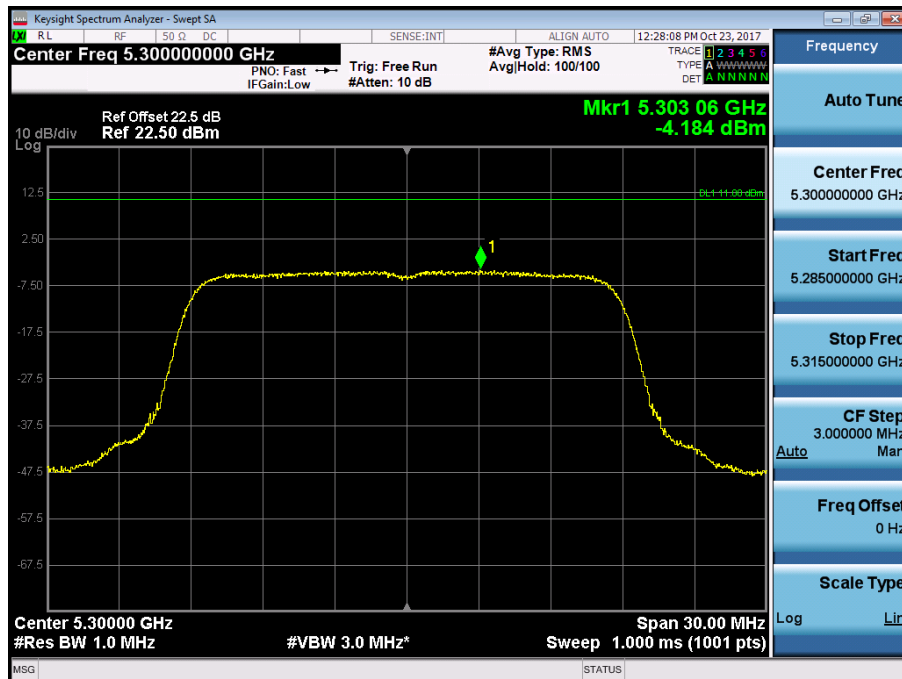


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Power Spectral Density 802.11n HT20 Chain 0 Ch 52 5260MHz



Power Spectral Density 802.11n HT20 Chain 0 Ch 60 5300MHz



EMC Lab.

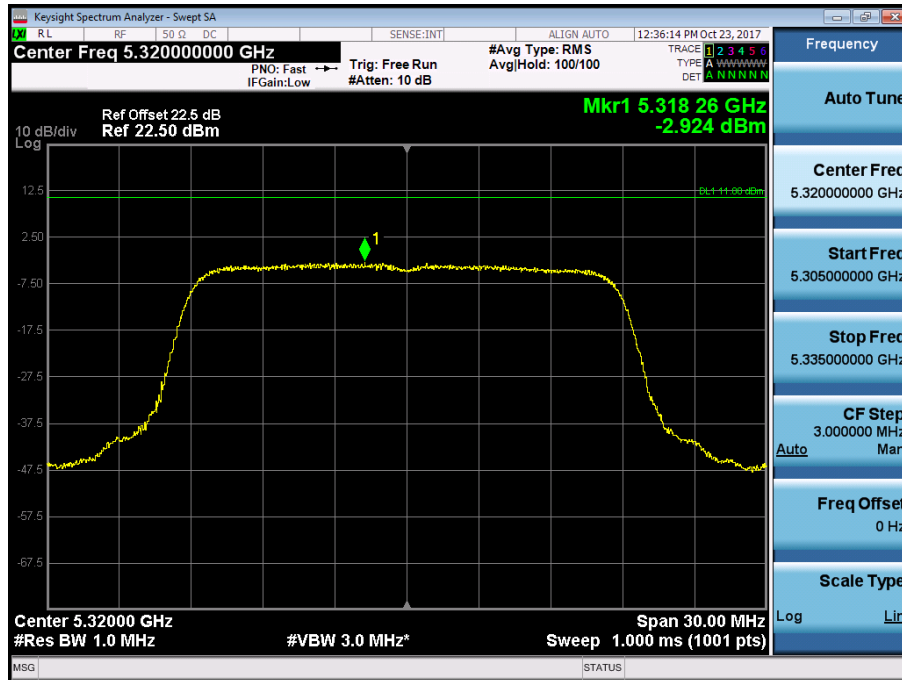
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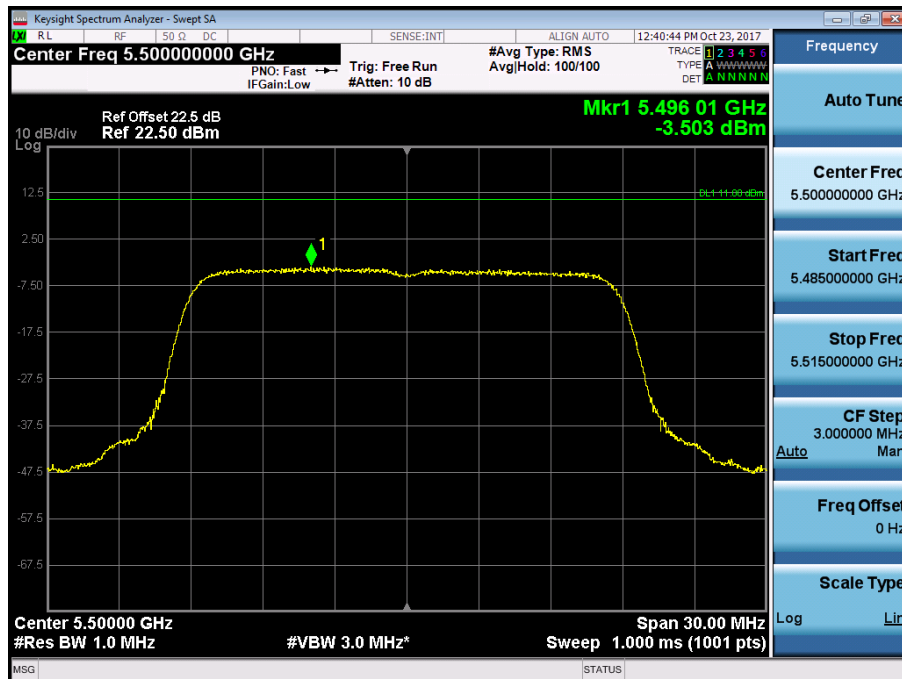


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Power Spectral Density 802.11n HT20 Chain 0 Ch 64 5320MHz



Power Spectral Density 802.11n HT20 Chain 0 Ch 100 5500MHz



EMC Lab.

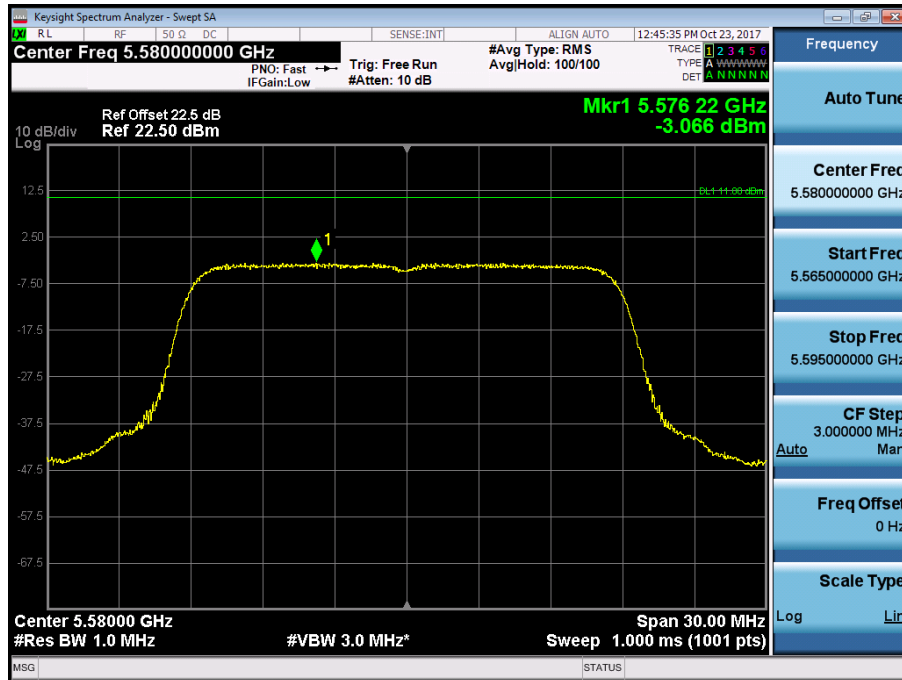
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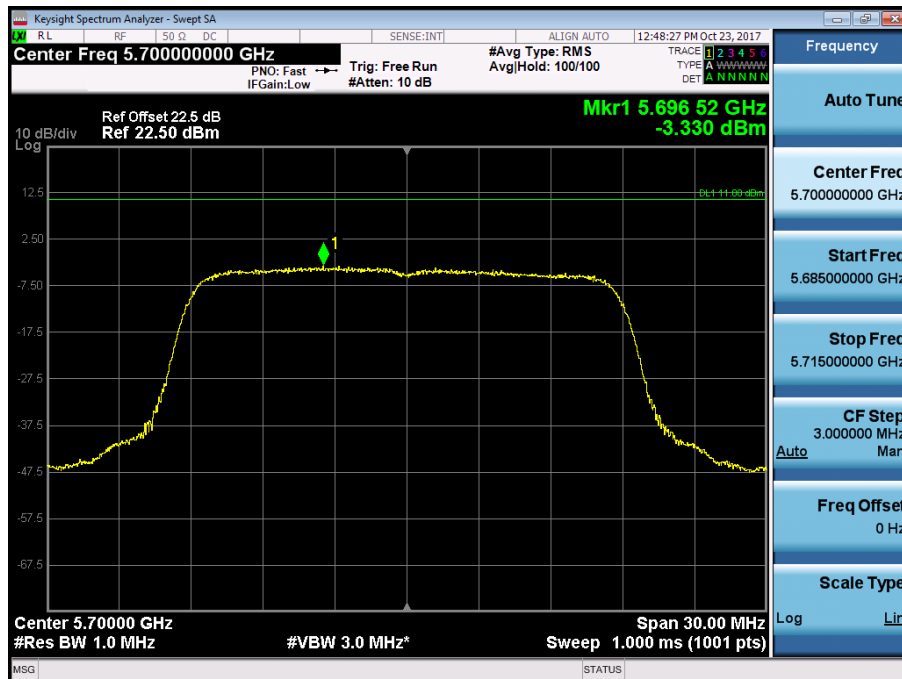


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Power Spectral Density 802.11n HT20 Chain 0 Ch 116 5580MHz



Power Spectral Density 802.11n HT20 Chain 0 Ch 140 5700MHz



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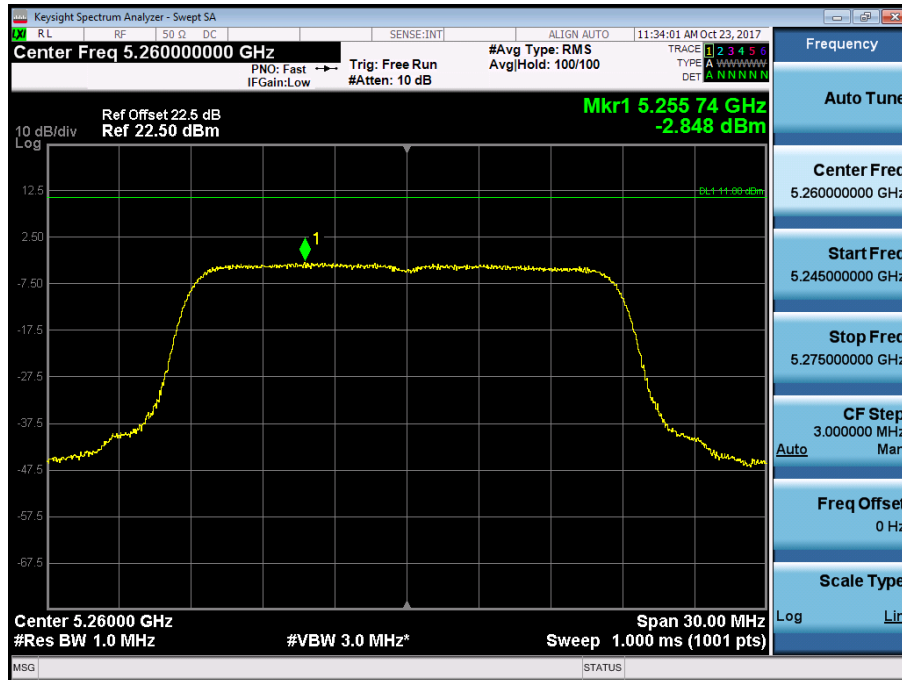
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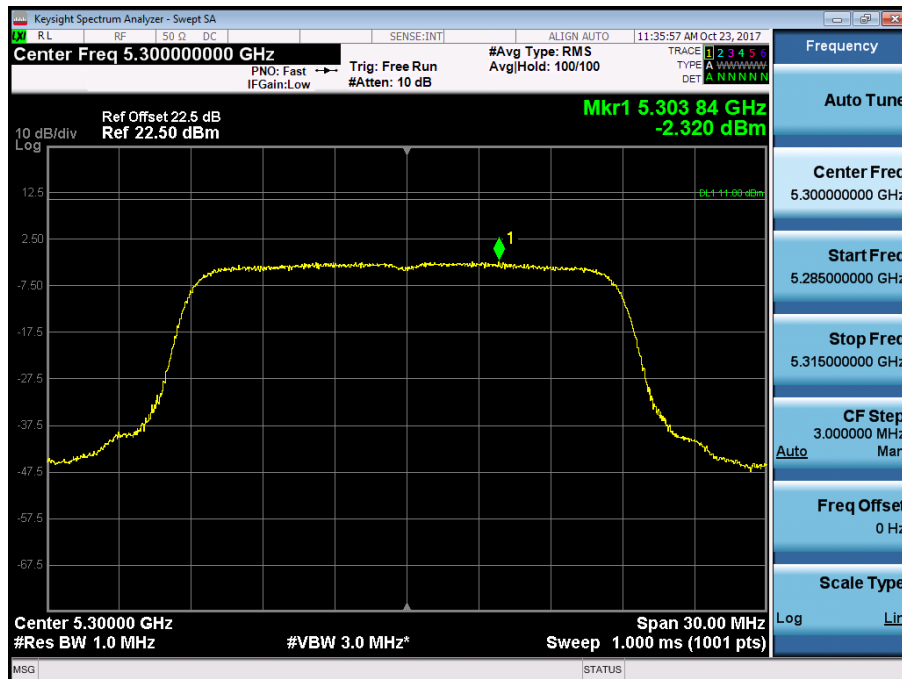


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Power Spectral Density 802.11n HT20 Chain 1 Ch 52 5260MHz



Power Spectral Density 802.11n HT20 Chain 1 Ch 60 5300MHz



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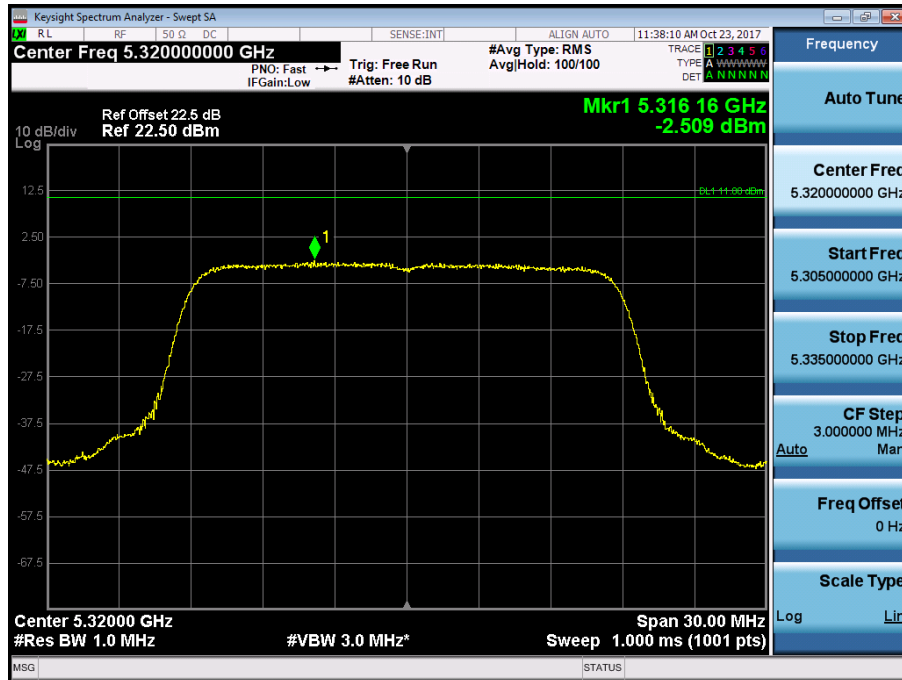
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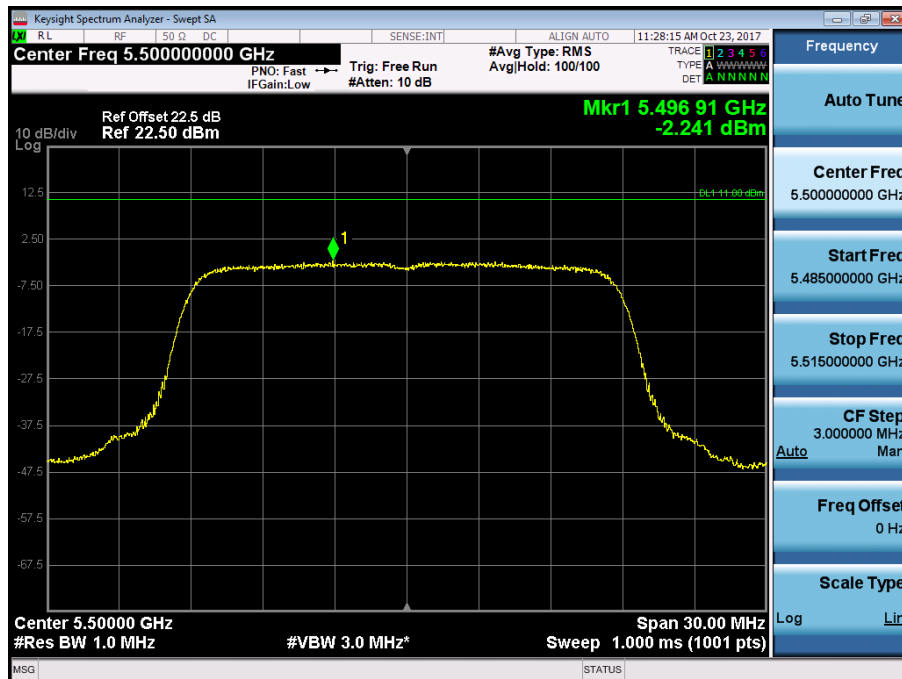


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Power Spectral Density 802.11n HT20 Chain 1 Ch 64 5320MHz



Power Spectral Density 802.11n HT20 Chain 1 Ch 100 5500MHz



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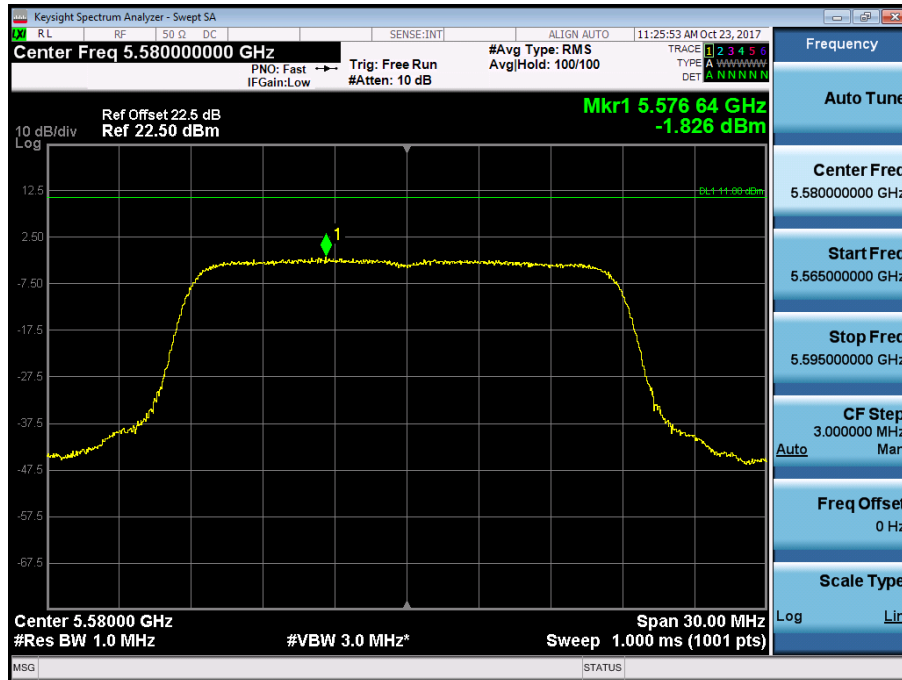
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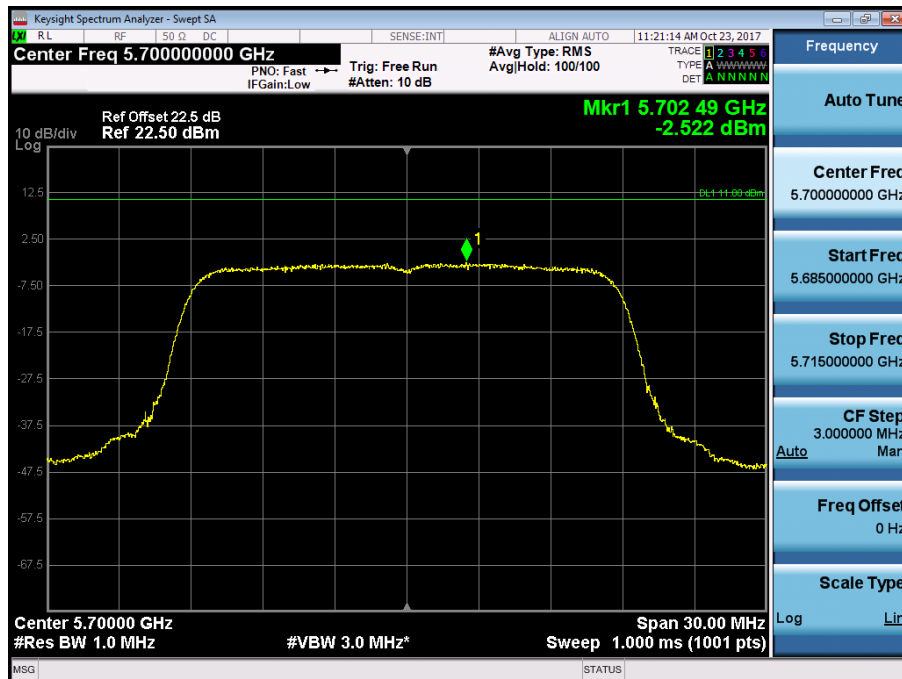


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Power Spectral Density 802.11n HT20 Chain 1 Ch 116 5580MHz



Power Spectral Density 802.11n HT20 Chain 1 Ch 140 5700MHz



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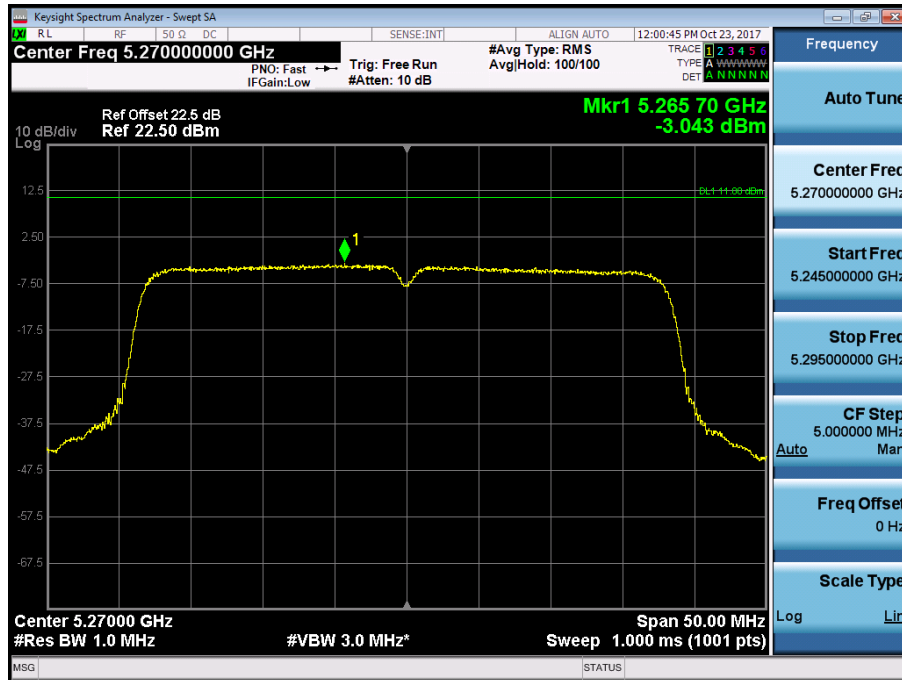
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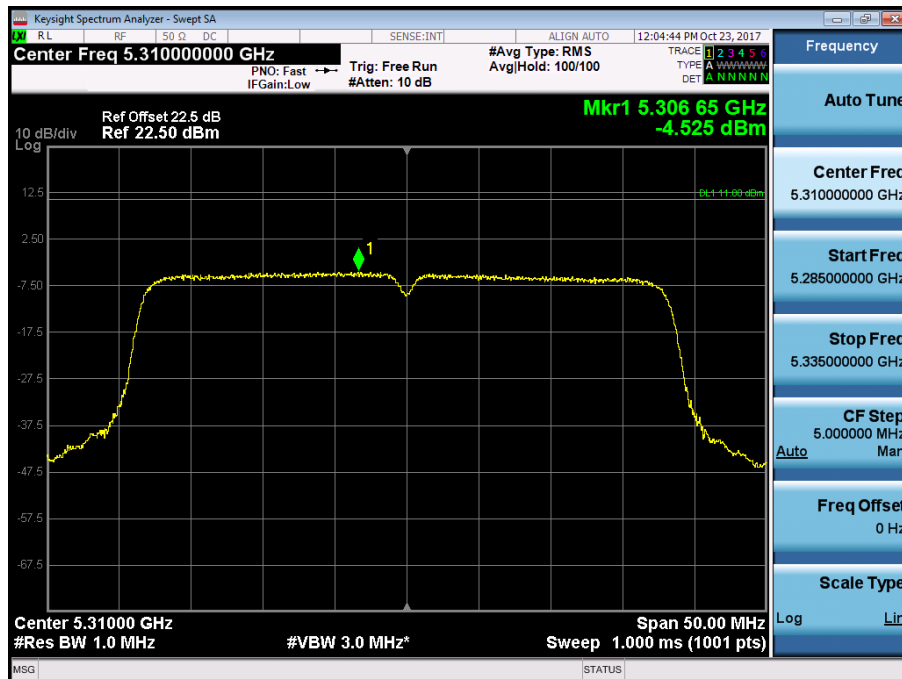


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Power Spectral Density 802.11n HT40 Chain 0 Ch 54 5270MHz



Power Spectral Density 802.11n HT40 Chain 0 Ch 62 5310MHz



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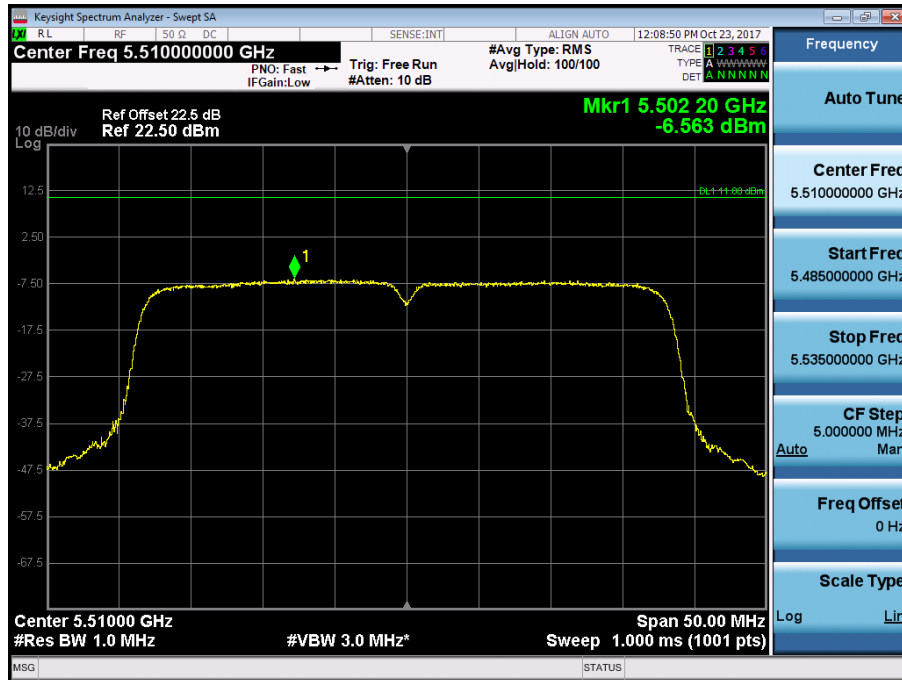
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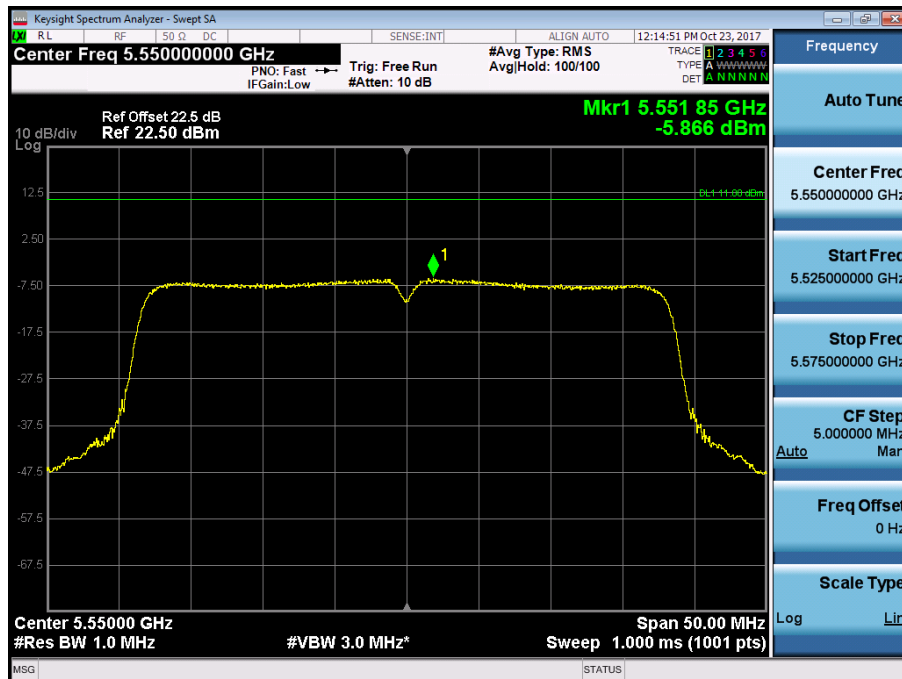


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Power Spectral Density 802.11n HT40 Chain 0 Ch 102 5510MHz



Power Spectral Density 802.11n HT40 Chain 0 Ch 110 5550MHz



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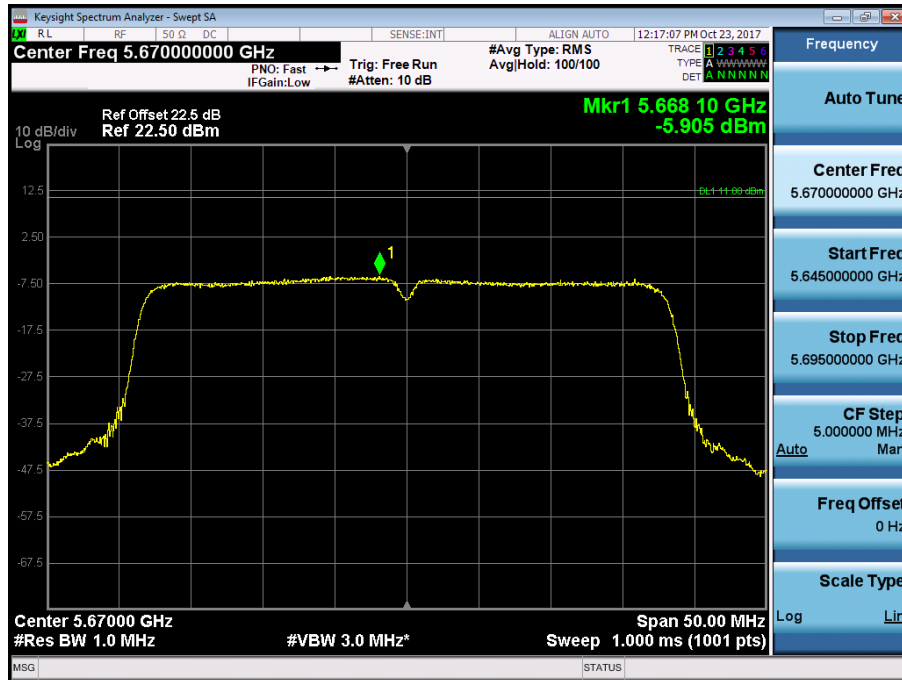
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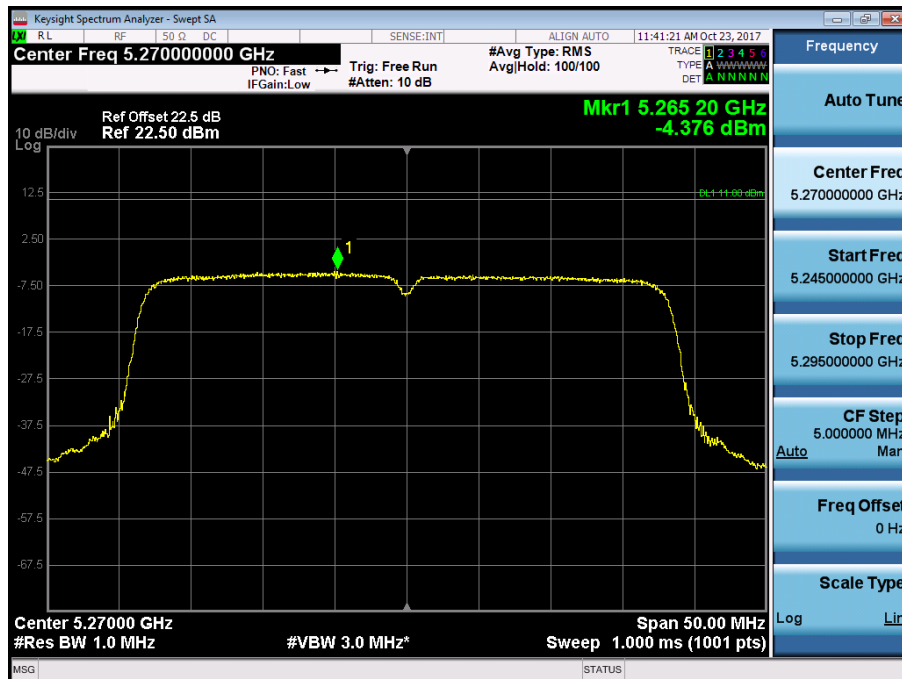


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Power Spectral Density 802.11n HT40 Chain 0 Ch 134 5670MHz



Power Spectral Density 802.11n HT40 Chain 1 Ch 54 5270MHz



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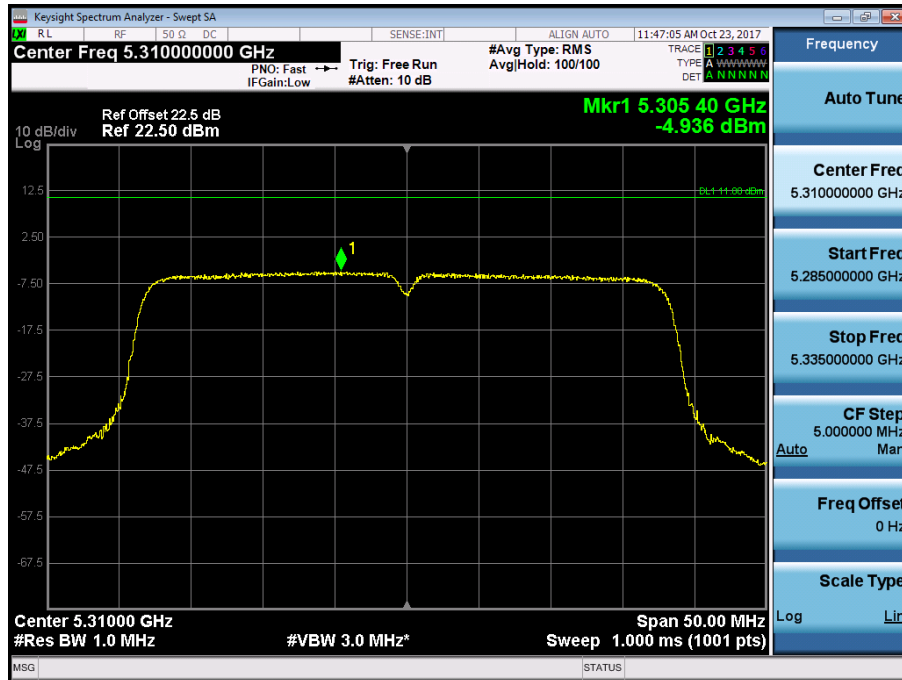
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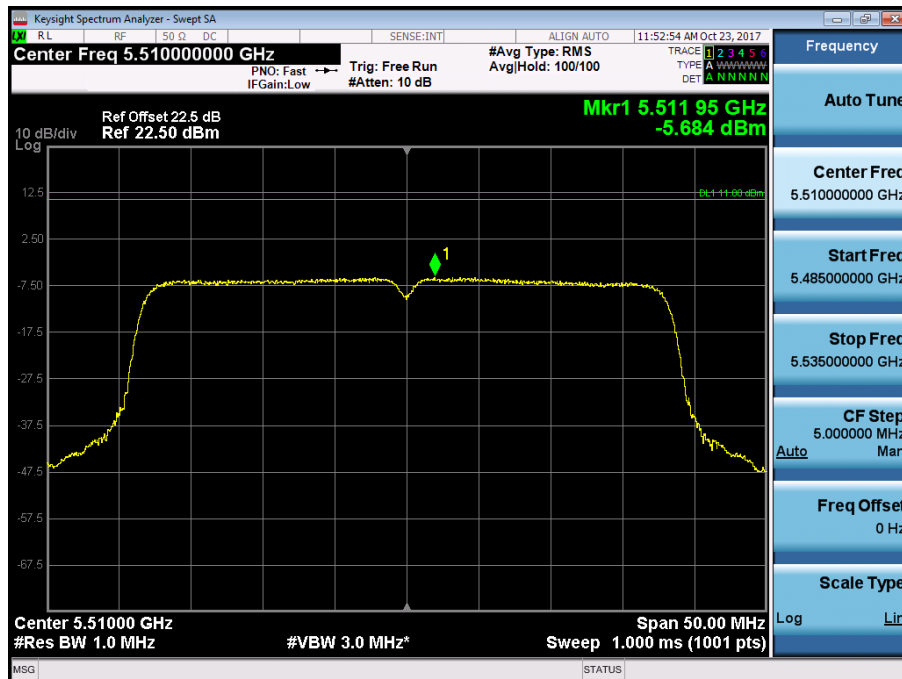


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Power Spectral Density 802.11n HT40 Chain 1 Ch 62 5310MHz



Power Spectral Density 802.11n HT40 Chain 1 Ch 102 5510MHz



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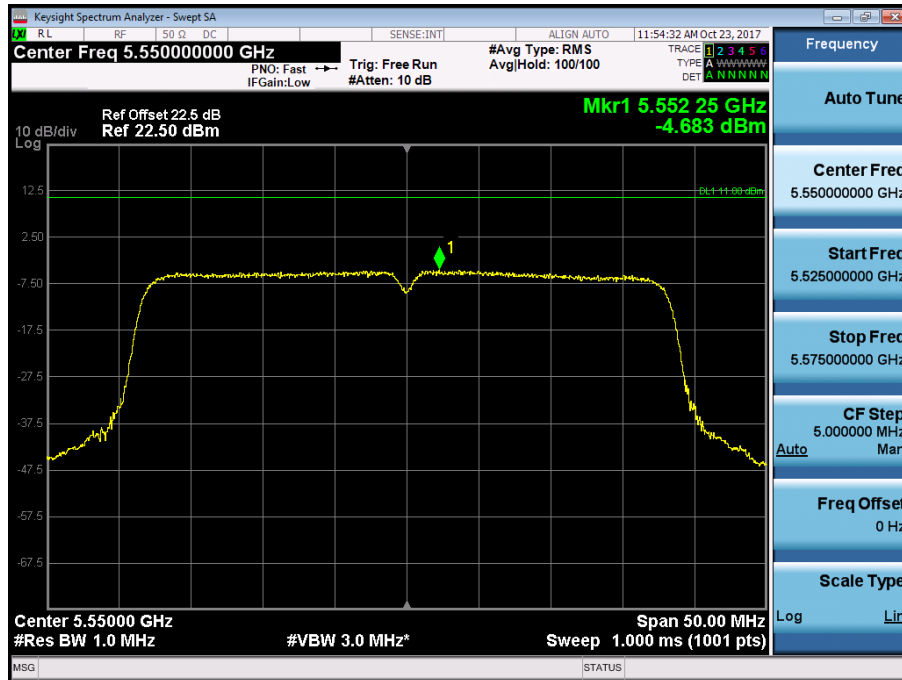
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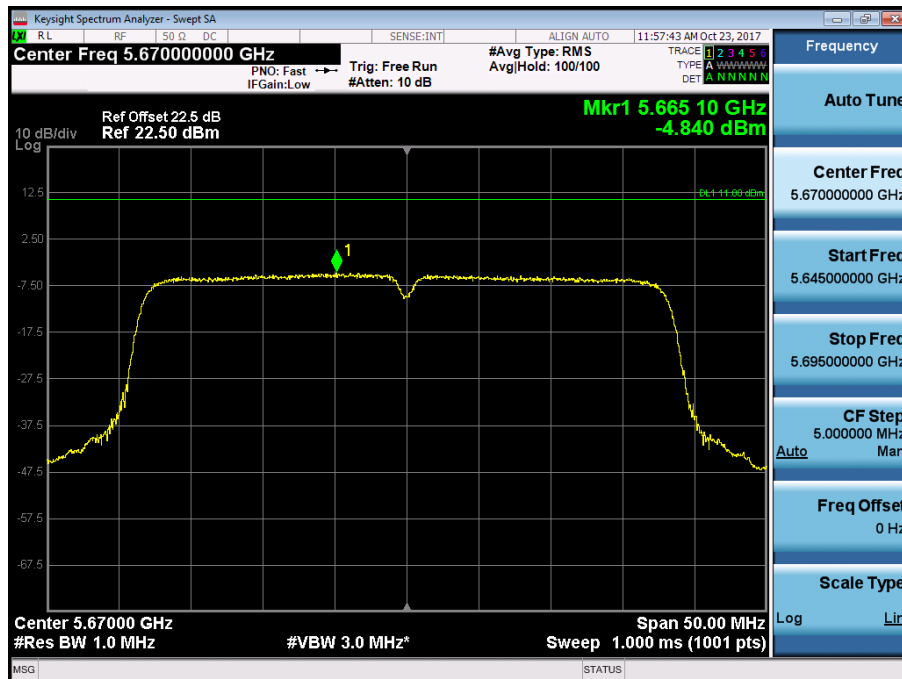


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Power Spectral Density 802.11n HT40 Chain 1 Ch 110 5550MHz



Power Spectral Density 802.11n HT40 Chain 1 Ch 134 5670MHz



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