



RADIO TEST REPORT

For

MODEL NO.:1843

FCC ID: C3K1843

IC ID: 3048A-1843

Test Report No. R-TR525-FCCISED-UNII-2

Issue Date: May 5, 2019

FCC CFR47 Part 15 Subpart E
Innovation, Science and Economic Development
Canada RSS-247 Issue 2

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TESTING CERT #3472.01

1 Record of Revisions

Revision	Date	Section	Page(s)	Summary of Changes	Author/Revised By:
1.0	04/26/2019	All	All	Version 1.0	Jems Pradhan
2.0	05/03/2019	4	6	Included measurement uncertainty up to 40 GHz	Daniel Salinas
		7	13	Included equipment calibration note	
		8.1	13	Included note on site equivalence for measurements below 30 MHz	

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Test Report Attestation

Microsoft Corporation**Model:** 1793**FCC ID:** C3K1793**ISED ID:** 3048A-1793**Applicable Standards**

Specification	Test Result
FCC CFR47 Rule Parts 15.207, 15.209, 15.407	Pass
Innovation, Science and Economic Development Canada RSS-247 Issue 2, RSS-GEN Issue 5	Pass

Microsoft EMC Laboratory attests that the product model identified in this report has been tested to and meets the requirements identified in the above standards. The test results in this report solely pertain to the specific sample tested, under the conditions and operating modes as provided by the customer.

This report shall not be used to claim product certification, approval, or endorsement by A2LA or any agency of any Government. Reproduction, duplication or publication of extracts from this test report is prohibited and requires prior written approval of Microsoft EMC Laboratory.

This report replaces report R-TR525-FCCISED-UNII1 issued on 04/26/2019



Written By:
Jems Pradhan
Radio Test Engineer



Reviewed/ Issued By: Daniel Salinas
RF Compliance Lab Technical Manager

2 Deviations from Standards

None.

3 Facilities and Accreditations

3.1 Test Facility

All test facilities used to collect the test data are located at
Microsoft EMC Laboratory,
17760 NE 67th Ct,
Redmond WA, 98052, USA

3.2 Accreditations

The lab is established and follows procedures as outlined in IEC/ISO 17025 and A2LA accreditation requirements.

A2LA Accredited Testing Certificate Number: 3472.01

FCC Registration Number: US1141

IC Site Registration Numbers: 3048A-3, 3048A-4

3.3 Test Equipment

The site and related equipment are constructed in conformance with the requirements of ANSI C63.4:2014 and other equivalent applicable standards.

Test site requirements for measurements above 1 GHz are in accordance with ANSI C63.4:2014.

ANSI C63.10:2013 and the appropriate KDB test methods were followed.

4 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the product, as specified in ETSI TR 100 028. This represents an expanded uncertainty expressed at 95% confidence level using a coverage factor $k=2$. These levels are for reference only and not included to determine product compliance.

Expanded uncertainty calculations are available upon request.

Test item	Uncertainty	Unit
Radiated disturbance (9 kHz to 30 MHz)	5.32	dB
Radiated disturbance (30 MHz to 1 GHz)	5.99	dB
Radiated disturbance (1 GHz to 18 GHz)	5.12	dB
Radiated disturbance (18 GHz to 26.5 GHz)	4.86	dB
Radiated disturbance (26.5 GHz to 40 GHz)	5.13	dB
Conducted Disturbance at Mains Port	3.31	dB
Uncertainty for Conducted Power test	1.277	dB
Uncertainty for Conducted Spurious emission test	2.742	dB
Uncertainty for Bandwidth test	178	kHz
Uncertainty for DC power test	0.05	%
Uncertainty for test site temperature	0.5	°C
Uncertainty for test site Humidity	3	%
Uncertainty for time	0.189	%

5 Product Description

Company Name:	Microsoft Corporation
Address:	One Microsoft Way
City, State, Zip:	Redmond, WA 98052-6399
Customer Contact:	Choon Sian Ooi
Functional Description of the EUT:	Smart display w/ 802.11 a/b/g/n/ac 20/40/80/160 MHz, BTLE, Bluetooth 5.0, and Proximity Detection radios
Model:	1843
FCC ID:	C3K1843
IC ID:	3048A-11843
Radio under test:	IEEE 802.11a/n/ac supporting 20/40/80/160 MHz Bandwidths 5150- 5250 MHz, 5250-5350 MHz, 5470-5725 MHz and 5725- 5850 MHz. This device supports the straddle channels that overlap the 5470 - 5725MHz and 5725-5850 MHz bands.
Modulation(s):	OFDM – BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
EUT Classification:	UNII
Equipment Design State:	Prototype/Production Equivalent
Equipment Condition:	Good
Test Sample Details:	RF Conducted Test Sample Asset no.: R-525-012219-01, S/N: 17566293000013M RF Radiated Test Sample Asset no.: R-525-021419-01, S/N: 000059790462 Asset no.: R-525-021419-02, S/N: 000052790462

5.1 Test Configurations

Test software “DRTU” (V11.1904.0-09154) provided by the chipset vendor was used to program the EUT to transmit continuously.

All modes of operation were investigated initially, and full testing performed on the worst-case modes as described below-

802.11a: 6Mbps SISO and MIMO

802.11n HT20: HT0 SISO & HT8 MIMO

802.11n HT40: HT0 SISO & HT8 MIMO

802.11ac VHT80: VHT0 SISO & MIMO

802.11ac VHT160: VHT0 SISO & MIMO

5.2 Environmental Conditions

Ambient air temperature of the test site was within the range of 10 °C to 40 °C (50 °F to 104 °F) unless the EUT specified testing over a different temperature range. Humidity levels were in the range of 10% to 90% relative humidity. Testing conditions were within tolerance, and any deviations required from the EUT are reported.

5.3 Antenna Requirements and Gain Information

The antennas are internal, permanently attached and there are no provisions for connection to an external antenna.

Antenna Gain		
Frequency Band (MHz)	Chain A MIMO Wi-Fi Antenna Peak Gain (dBi)	Chain B Main Antenna Wi-Fi Peak Gain (dBi)
UNII Band 1- 5150 to 5250	4.7	4.2
UNII Band 2a – 5250 to 5350	5.0	4.7
UNII Band 2c – 5470 to 5725	4.9	4.5
UNII Band 3 – 5725 to 5850	4.3	3.6

Simultaneous transmission on both transmit chains was observed to be the worst-case mode of operation for all test cases. Since transmit signals in CSD modes are correlated only over small bandwidths, and not over the entire signal bandwidth, the combined in-band gain for total power is considered as uncorrelated and calculated using the following formula as specified in KDB 662911 D01 Multiple Transmitter Output v02r01:

Uncorrelated Directional gain = $10\log [(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10})/N_{ANT}]$ dBi

Since transmit signals in CSD modes are correlated over small bandwidths, the total gain will influence PSD measurements. The combined gain for PSD is considered to be correlated and calculated using the following formula as specified in KDB 662911 D01 Multiple Transmitter Output v02r01:

Correlated Directional gain = $10\log [(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/N_{ANT}]$ dBi

Combined Directional Antenna Gain		
Frequency Band (MHz)	Uncorrelated Directional Gain (dBi)	Correlated Directional Gain (dBi) (for PSD only)
UNII Band 1- 5150 to 5250	4.46	7.46
UNII Band 2a – 5250 to 5350	4.85	7.86
UNII Band 2c – 5470 to 5725	4.70	7.71
UNII Band 3 – 5725 to 5850	3.96	6.97

5.4 Equipment Modifications

No modifications were made during testing.

5.5 Dates of Testing

Testing was performed from January 28th, 2019 to April 3rd, 2019.

6 Test Results Summary

Test Description	Applicable Bands (GHz)	FCC CFR 47/ISED Rule Part	Limit	Test Result
26dB Emission Bandwidth	5.15 – 5.25 5.25 – 5.35 5.47 – 5.725	15.407 (a) RSS-247 [6.2.1]	Reporting and Measurement Purposes	NA
99% bandwidth	5.15 – 5.25 5.25 – 5.35 5.47 – 5.725	RSS-247 [6.2]	Reporting and Measurement Purposes	NA
6 dB Bandwidth	5.725 – 5.85	15.407 (e) RSS-247 [6.2.4]	$\geq 500\text{kHz}$	Pass
Output Power	5.15 – 5.25	15.407 (a)(1)(iv)	$\leq 250\text{ mW}$ or $10 + 10 \log_{10} B^*$ whichever is less	Pass
		RSS-247 [6.2.1]	$\leq 200\text{ mW}$ or $10 + 10 \log_{10} B^*$ e.i.r.p whichever is less	Pass
	5.25 – 5.35 5.47 – 5.725	15.407 (a)(2) RSS-247 [6.2]	$\leq 250\text{ mW}$ or $11 + 10 \log_{10} B^*$ whichever is less $\leq 1\text{ W}$ or $17 + 10 \log_{10} B^*$ e.i.r.p whichever is less	Pass
	5.725 – 5.85	15.407 (a)(3) RSS-247 [6.2]	$\leq 1000\text{ mW}$	Pass
Power Spectral Density	5.15 – 5.25	15.407 (a)(1)(iv)	$\leq 11\text{dBm/MHz}$	Pass
		RSS-247 [6.2]	$\leq 10\text{dBm/MHz}$ e.i.r.p.	Pass
	5.25 – 5.35 5.47 – 5.725	15.407 (a)(2) RSS-247 [6.2]	$\leq 11\text{dBm/MHz}$	Pass
	5.725 – 5.85	15.407 (a)(3) RSS-247 [6.2]	$\leq 30\text{dBm/500kHz}$	Pass
Radiated Spurious Emissions/ Restricted Band Emissions	5.15 – 5.25 5.25 – 5.35 5.47 – 5.725 5.725 – 5.85	15.407 (b), 15.205, 15.209, RSS-Gen [8.9]	FCC CFR 47 15.209 limits RSS-Gen [8.9]	Pass

AC Power Line Conducted Emissions	5.15 – 5.25 5.25 – 5.35 5.47 – 5.725 5.725 – 5.85	15.407 (b), 15.207 RSS-Gen [8.8]	FCC CFR 47 15.207 limits RSS-Gen [8.8]	Pass
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* Note: **B-** FCC references 26dB bandwidth and ISED references 99% bandwidth.

7 Test Equipment List

Equipment used for Radiated and Conducted Measurements				
Manufacturer	Description	Model #	Asset #	Calibration Due
Agilent	Spectrum Analyzer	N9030A	EMC-370	10/19/2019
Rohde & Schwarz	EMI Test Receiver	ESU40	RF-192	4/8/2019
Rohde & Schwarz	EMI Test Receiver	ESR26	RF-568	4/11/2019
Rohde & Schwarz	Open Switch and Control Unit	OSP130	RF-018	N/A
Rohde & Schwarz	Open Switch and Control Unit	OSP130	RF-019	N/A
Rohde & Schwarz	Open Switch and Control Unit	OSP130	RF-569	N/A
Rohde & Schwarz	Custom Filter Bank	SFUNIT RX	RF-322	N/A
ETS-Lindgren	Antenna - Double-Ridged Guide	3117-PA	EMC-858	10/8/2019
ETS-Lindgren	Antenna - Standard Gain	3160-09	RF-179	7/30/2019
ETS-Lindgren	Antenna - Standard Gain	3160-10	EMC-602	6/5/2019
Sunol Sciences	Antenna - Broadband Hybrid	JB6	EMC-639	8/17/2019
Pasternack	6dB Attenuator	PE7004-6	EMC-950	8/17/2019
Pasternack	10dB Attenuator	PE7087-10	EMC-653	1/21/2020
Pasternack	10dB Attenuator	PE7087-10	RF-125	9/18/2019
Utiflex	RF Cable	OSP120/DUT3	RF-872	10/4/2019
Utiflex	RF Cable	OSP120/DUT8	RF-869	10/4/2019
Mouser	RF Cable	CabS02	RF-937	11/15/2019

Equipment used for Radiated and Conducted Measurements				
Manufacturer	Description	Model #	Asset #	Calibration Due
Huber and Suhner	RF Cable	Sucoflex 100	RF-452	N/A
Micro-Coax	RF Cable	UFA210A-Q-2755-3005GU	EMC-648	N/A
Micro-Coax	RF Cable	UFB311A-1-0787-50U50U	EMC-351	N/A
Micro-Coax	RF Cable	UTI Flex	RF-359	N/A
Micro-Coax	RF Cable	UTI Flex	RF-647	N/A
Micro-Coax	RF Cable	UTI Flex	RF-646	N/A
Huber & Suhner	RF Cable	Sucoflex 102A	RF-269	N/A
Rohde & Schwarz	Pre-Amplifier	TS-PR26	RF-199	11/29/2019
Rohde & Schwarz	Pre-Amplifier	TS-PR40	RF-200	11/29/2019
PCE	Climate Meter	PCE-THB 40	EMC-1206	9/28/2019
Madge Tech	THP Monitor	PRHTemp2000	EMC-838	3/5/2019*
Madge Tech	THP Monitor	PRHTemp2000	EMC-170	10/18/2019

Equipment used for AC Line Conducted Emissions Measurement				
Manufacturer	Description	Model #	Asset #	Calibration Due
Rohde & Schwarz	Analyzer/Receiver	ESR3	EMC-669	4/8/2019
Teseq	EUT LISN	NNB 051	EMC-056	6/7/2019
Teseq	EUT LISN	NNB 051	EMC-057	8/9/2019
Micro-Coax	Cable	UFA210A-1-1800-50U50U	EMC-367	N/A
ETS-Lindgren	TILE Profile	Version 7.3.1.27	EMC-985	N/A
Fluke	Multimeter	87V	EMC-192	10/18/2019
MadgeTech	Environmental Monitor	PRHTemp2000	EMC-680	11/16/2019
Chroma	AC Power Source	61602	EMC-055	N/A

Note: Items with Calibration Due data marked as N/A are characterized before test, where applicable.

Note*: Equipment was in calibration during time of test.

8 Test Site Description

8.1 Radiated Emissions Test Site

Radiated measurements are performed in a 3m semi-anechoic chamber, which meets NSA requirements for the frequency range of 30MHz to 1000MHz. For measurements above 1 GHz, absorbers are laid out on the ground plane between the receiving antenna and the EUT to meet Site VSWR requirements in accordance with ANSI C63.4:2014. Measurements below 30 MHz were performed on a site demonstrating equivalence to an open field site per KDB 414788 D01.

8.1.1 Radiated Measurements in 9kHz- 30 MHz

The EUT is positioned as a floor standing device. A loop antenna is positioned at 3m from the EUT periphery at 1m height from the ground. The turntable is rotated 360 degrees to determine the highest emissions. This is repeated for two orientations of the measurement antenna- parallel and perpendicular. The two possible orientations of the EUT were investigated for emissions and the landscape orientation was identified as the worst-case configuration.

8.1.2 Radiated Measurements in 30 MHz - 1000 MHz

The EUT is positioned as a floor standing device. A linearly polarized broadband antenna is positioned at 3m from the EUT periphery. The turntable is rotated 360 degrees and the antenna height varied from 1m to 4m to determine the highest emissions. This is repeated for both Horizontal and Vertical polarizations of the measurement antenna. All possible orientations of the EUT were investigated for emissions and the landscape standing mode was identified as the worst-case configuration.

8.1.3 Radiated Measurements above 1GHz

The EUT is positioned as a floor standing device. A linearly polarized antenna is positioned at 3m from the EUT periphery. Guidelines in ANSI C63.10:2013 were followed with respect to maximizing the emissions. The turntable is rotated 360 degrees and the antenna height varied from 1m to 4m to determine the highest emissions. This is repeated for both Horizontal and Vertical polarizations of the measurement antenna. Measurements above 18GHz were performed at a 3m distance.

8.2 Antenna port conducted measurements

All antenna port conducted measurements were performed on a bench-top setup consisting of a spectrum analyzer, power meter (as necessary), splitters/combiners (as necessary), attenuators, and pre-characterized RF cables.

The correction factors between the EUT and the spectrum analyzer were added internally in the analyzer settings, where applicable. The plots displayed takes into account of these correction factors.

8.3 Test Setup Diagrams

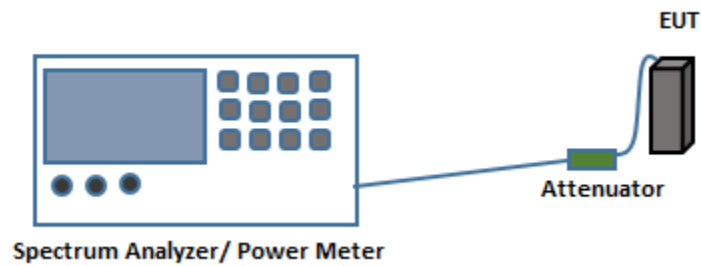


Figure 8-1. Test Setup for Antenna port conducted measurements

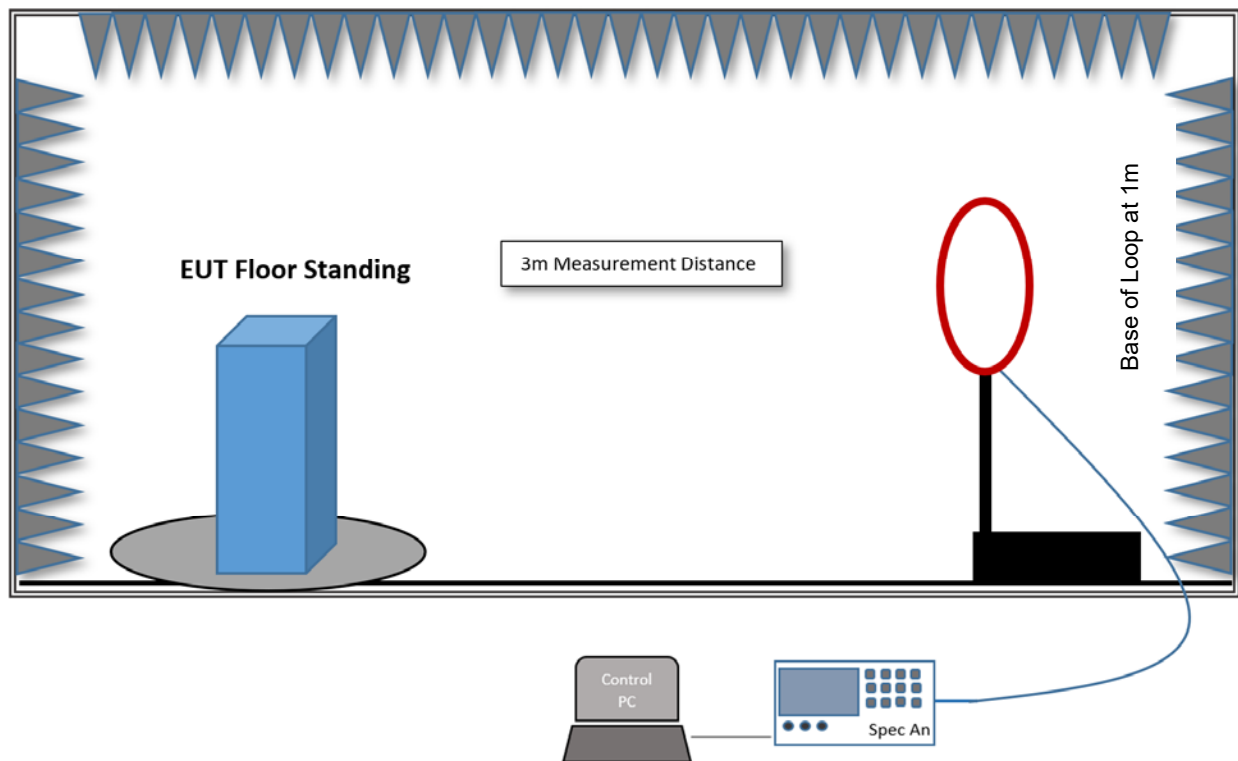


Figure 8-2. Test Setup for Radiated measurements in 9kHz - 30MHz Range

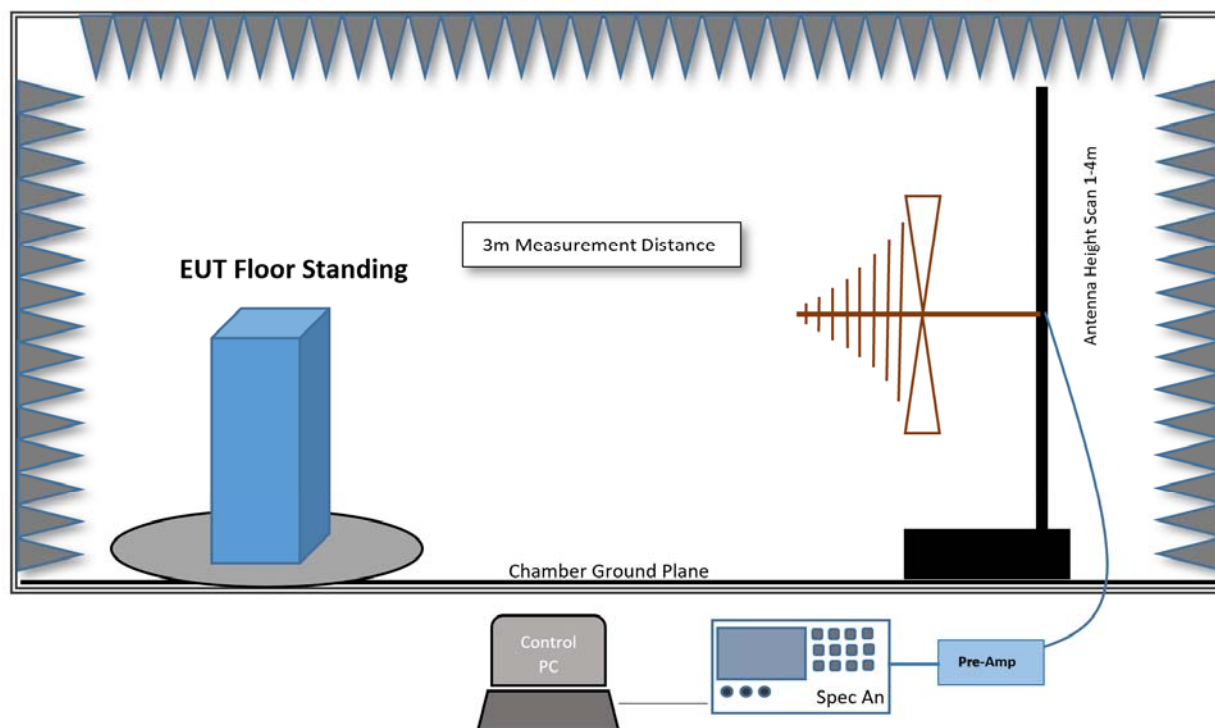


Figure 8-3. Test Setup for Radiated measurements in 30MHz- 1GHz Range

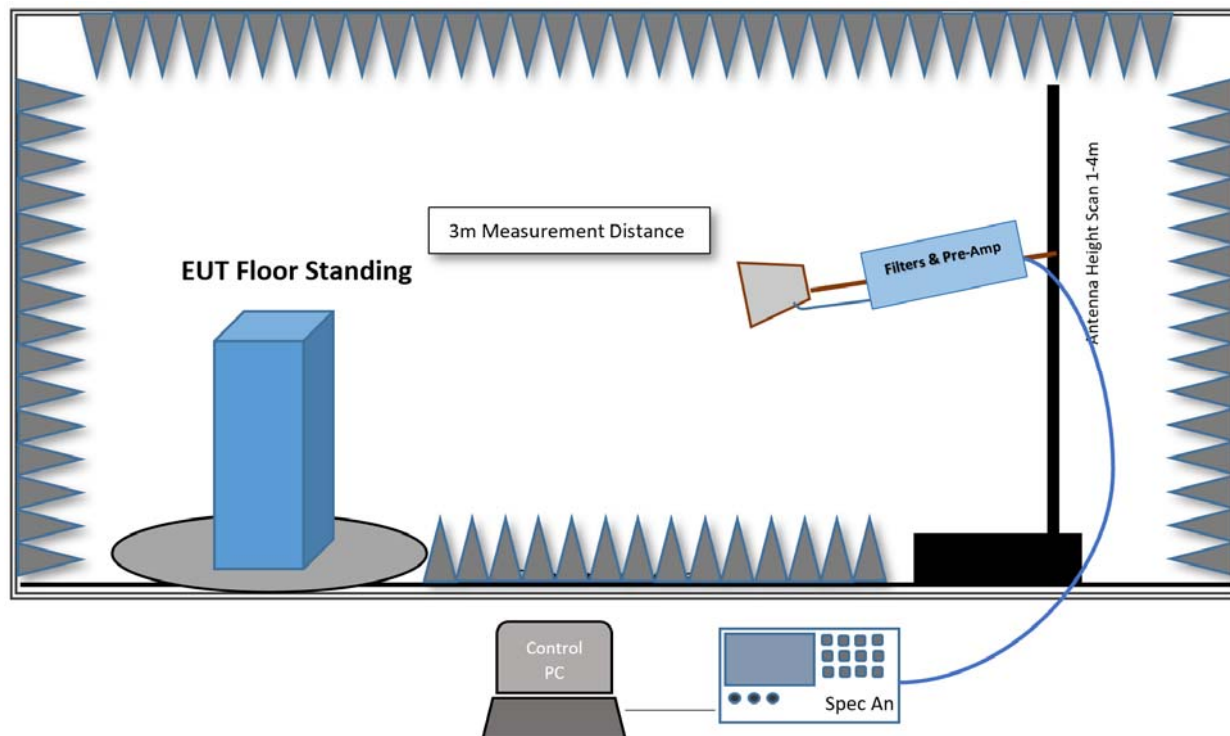


Figure 8-4. Test Setup for Radiated measurements in 1GHz- 18GHz Range

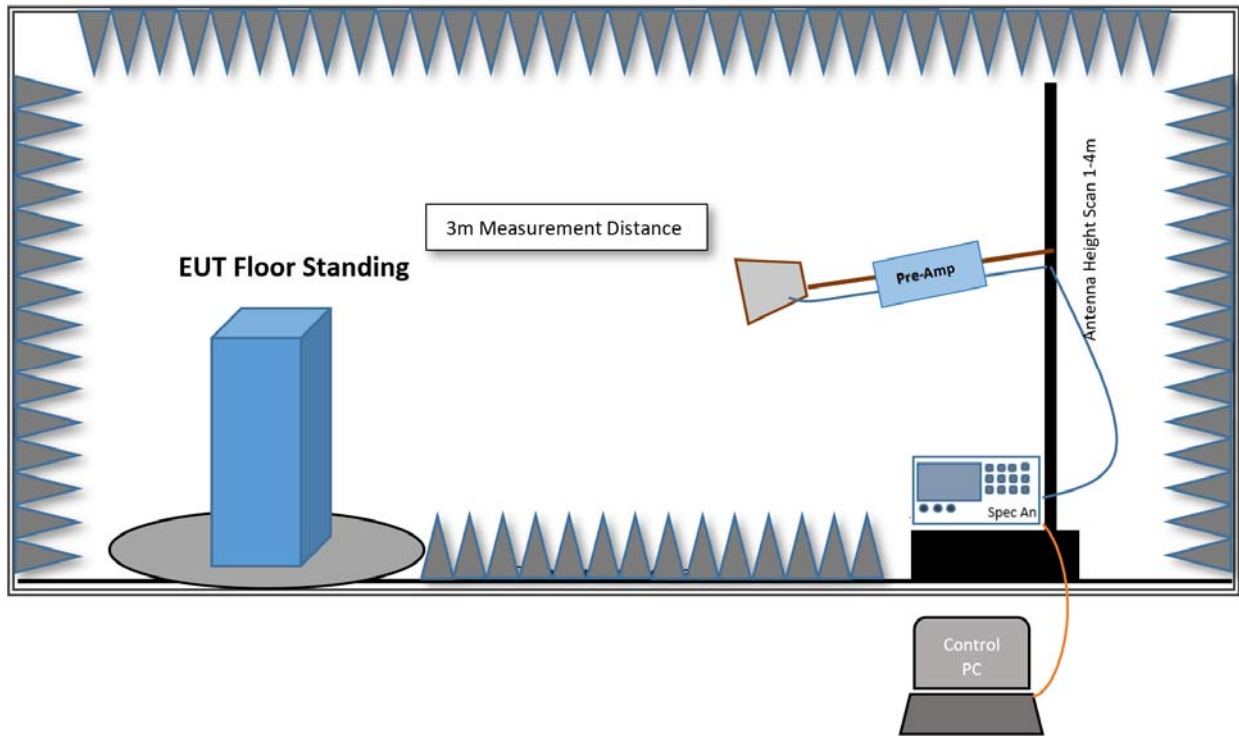


Figure 8-5. Test Setup for Radiated measurements >18GHz

9 Test Results- Conducted

9.1 26-dB Emission Bandwidth

9.1.1 Test Requirement:

FCC CFR 47 Rule Part 15.407 (a)
ISED RSS-247 [6.2.1]

9.1.2 Test Method:

Measurements were performed according to the procedures defined in KDB 789033- General UNII Test Procedures New Rules v02r01 and ANSI C63.10:2013.

Spectrum Analyzer settings:

RBW = approximately 1% of the Emissions Bandwidth

VBW $\geq$ 3xRBW

Trace Mode= Peak Detector (Max Hold)

Sweep time= Auto

The in-built functionality of the Spectrum Analyzer is used to measure the 26-dB emission bandwidth.

9.1.3 Limits:

Reporting and measurement purposes only.

9.1.4 Test Results:

See Section 9.2.5.

9.2 99% Occupied Bandwidth

9.2.1 Test Requirement:

ISED RSS-247 [6.2]

9.2.2 Test Method:

Measurements were performed according to the procedures defined in KDB 789033- General UNII Test Procedures New Rules v02r01 and ANSI C63.10 2013.

Spectrum Analyzer settings:

Set the center frequency to the nominal EUT channel center frequency

Span = 1.5 to 5.0 times the 99% Occupied Bandwidth

RBW = 1% to 5% of the 99% Occupied Bandwidth

VBW $\geq$ 3xRBW

Trace Mode= Peak Detector (Max Hold)

Sweep time= Auto

The built-in functionality of the Spectrum Analyzer is used to measure the 99% Occupied Bandwidth.

9.2.3 Limits:

Reporting and measurement purposes only.

9.2.4 Test Results:

See Section 9.2.5.

9.2.5 Test Data:

9.2.5.1 SISO Chain A 802.11a 26-dB Emission Bandwidth

SISO Chain A 802.11a 26-dB Emission Bandwidth				
Band	Channel No.	Frequency (MHz)	26-dB Emission Bandwidth (MHz)	99% Occupied BW (MHz)
UNII-1	36	5180	23.50	16.87
	44	5220	23.83	16.89
	48	5240	23.83	16.83
UNII-2A	52	5260	24.50	16.84
	60	5300	23.57	16.81
	64	5320	23.40	16.80
UNII-2C	100	5500	23.58	16.85
	116	5580	24.15	16.82
	140	5700	24.26	16.79
Straddle	144	5720	24.17	16.84
UNII-3	149	5745	24.05	16.90
	157	5785	24.06	16.86
	165	5825	24.06	16.87



Figure 9-1 26-dB Emission Bandwidth and 99% OBW SISO Chain A 802.11a (Ch. 48)

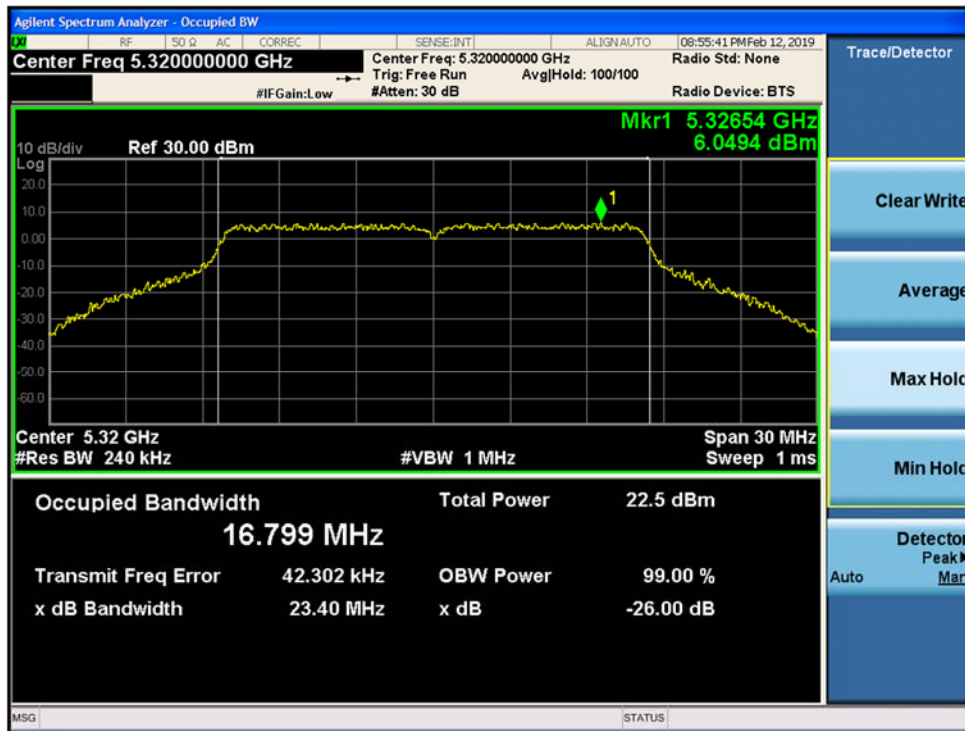


Figure 9-2 26-dB Emission Bandwidth and 99% OBW SISO Chain A 802.11a (Ch. 64)

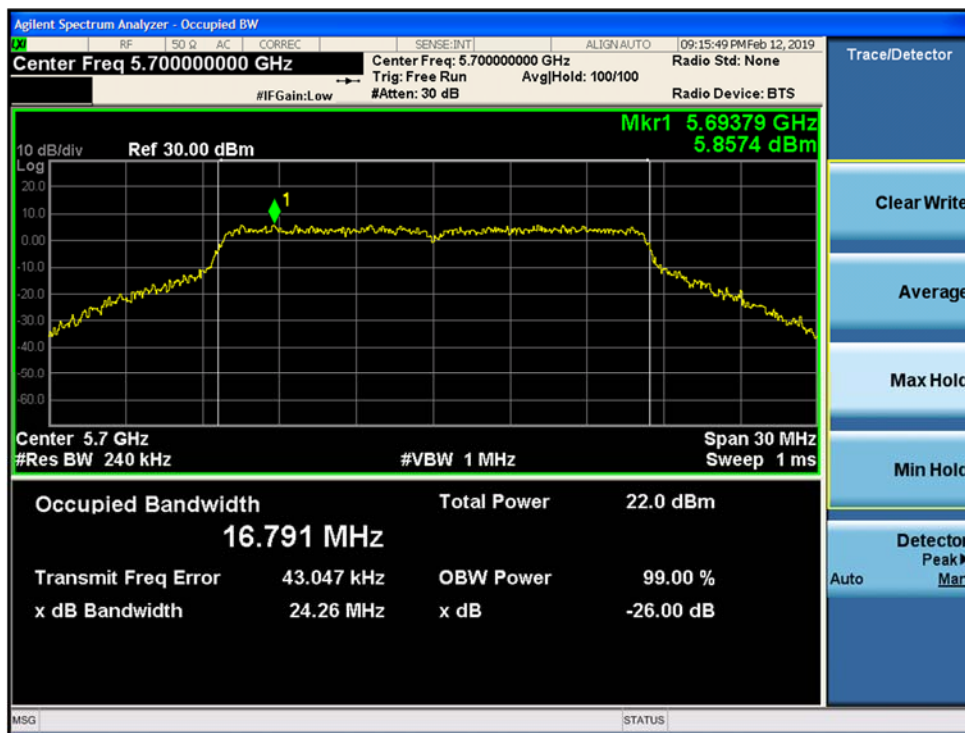


Figure 9-3 26-dB Emission Bandwidth and 99% OBW SISO Chain A 802.11a (Ch. 140)

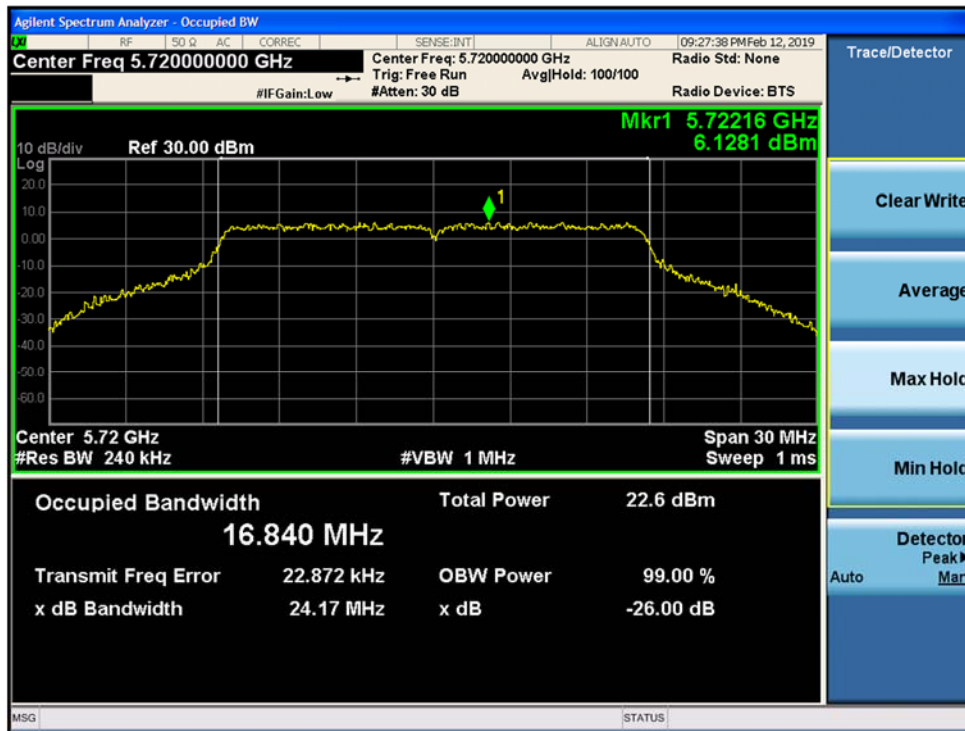


Figure 9-4 26-dB Emission Bandwidth and 99% OBW SISO Chain A 802.11a (Ch. 144)

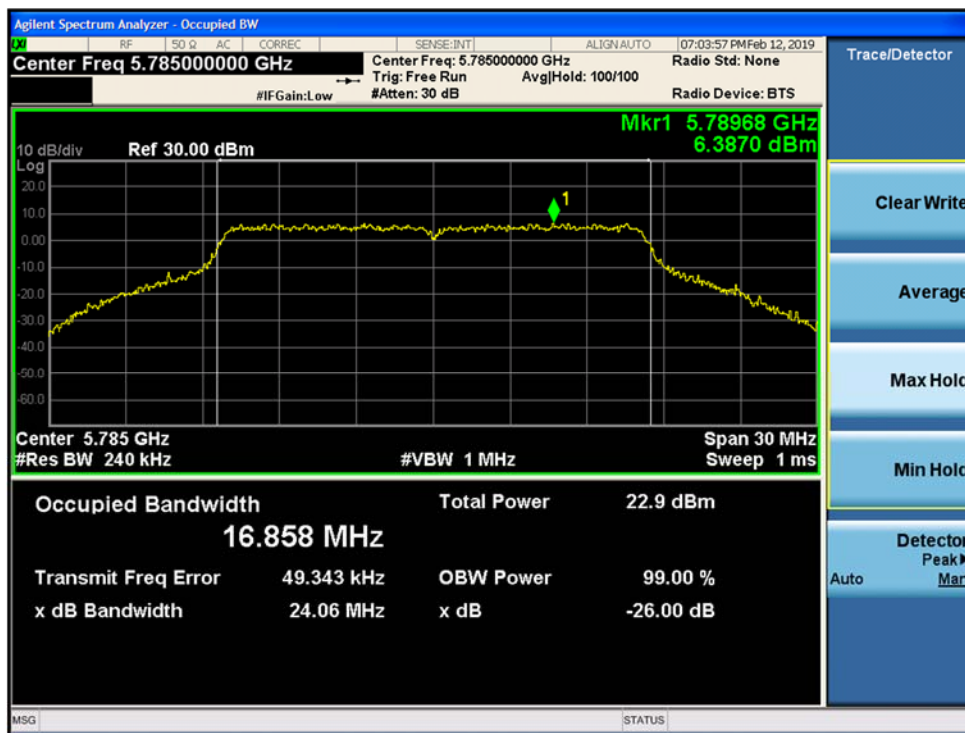


Figure 9-5 26-dB Emission Bandwidth and 99% OBW SISO Chain A 802.11a (Ch. 157)

9.2.5.2 SISO Chain B 802.11a 26-dB Emission Bandwidth

SISO Chain B 802.11a 26-dB Emission Bandwidth				
Band	Channel No.	Frequency (MHz)	26-dB Emission Bandwidth (MHz)	99% Occupied BW (MHz)
UNII-1	36	5180	24.03	16.87
	44	5220	23.83	16.85
	48	5240	23.64	16.87
UNII-2A	52	5260	23.82	16.79
	60	5300	23.69	16.83
	64	5320	23.65	16.83
UNII-2C	100	5500	23.68	16.79
	116	5580	24.07	16.78
	140	5700	24.40	16.93
Straddle	144	5720	23.84	16.85
UNII-3	149	5745	24.38	16.82
	157	5785	24.06	16.85
	165	5825	23.75	16.80

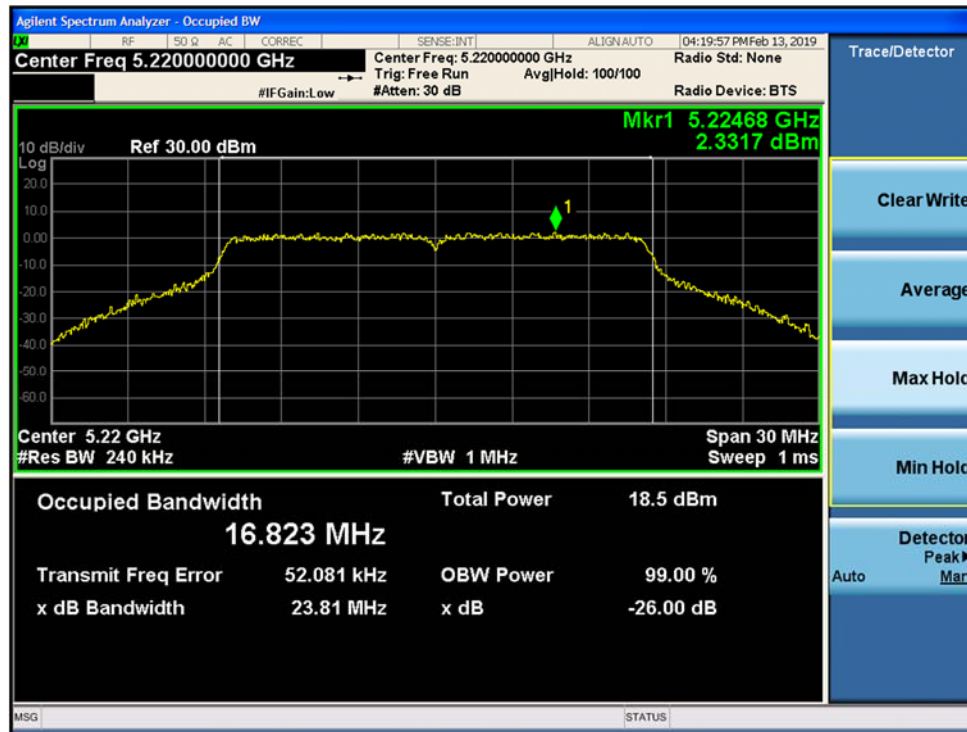


Figure 9-6 26-dB Emission Bandwidth and 99% OBW SISO Chain B 802.11a (Ch. 44)

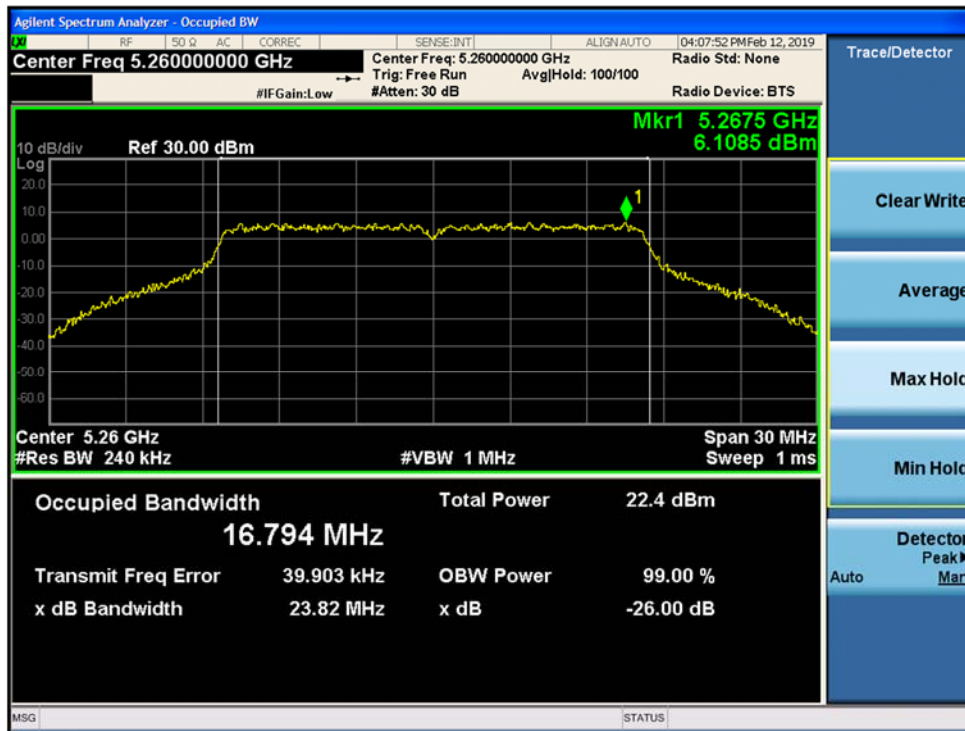


Figure 9-7 26-dB Emission Bandwidth and 99% OBW SISO Chain B 802.11a (Ch. 52)

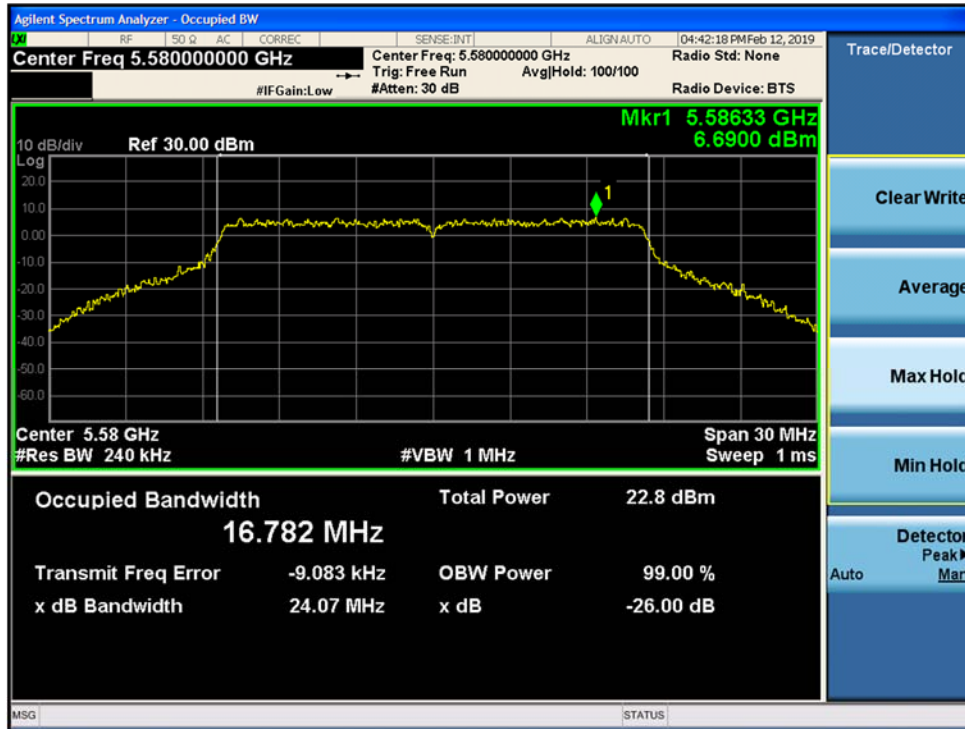


Figure 9-8 26-dB Emission Bandwidth and 99% OBW SISO Chain B 802.11a (Ch. 116)

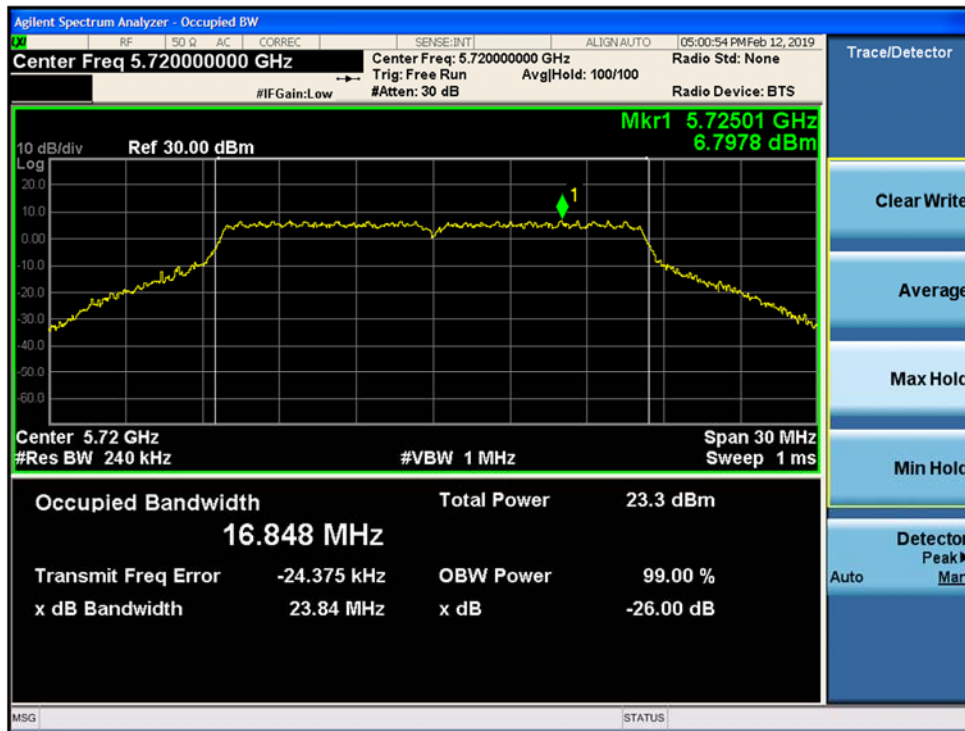


Figure 9-9 26-dB Emission Bandwidth and 99% OBW SISO Chain B 802.11a (Ch. 144)

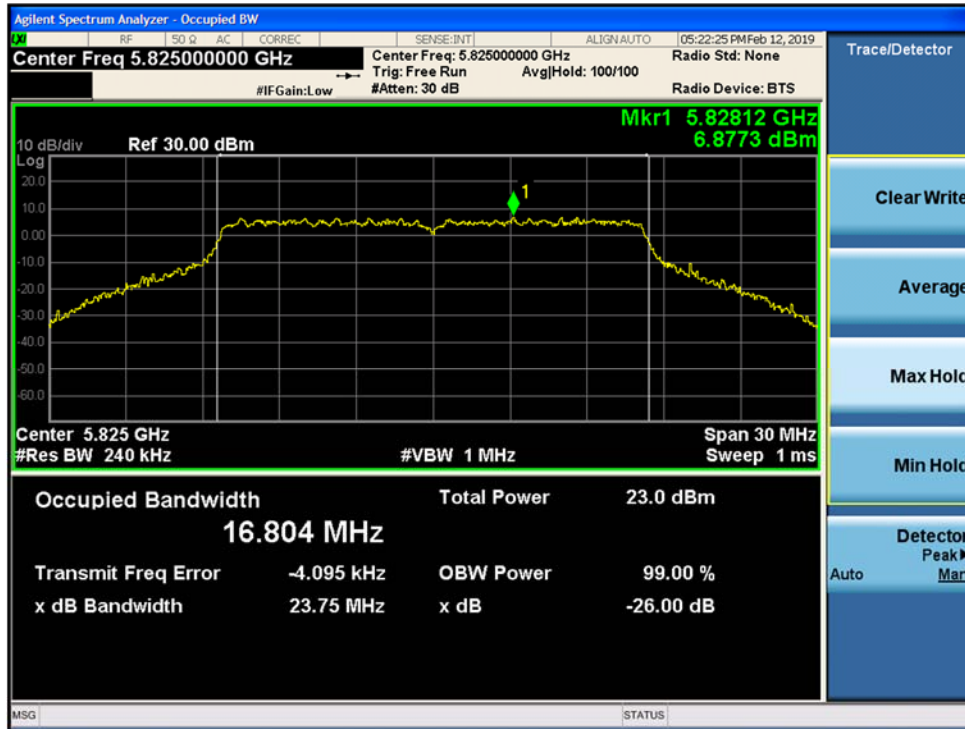


Figure 9-10 26-dB Emission Bandwidth and 99% OBW SISO Chain B 802.11a (Ch. 165)

9.2.5.3 MIMO Chain A 802.11a 26-dB Emission Bandwidth

MIMO Chain A 802.11a 26-dB Emission Bandwidth				
Band	Channel No.	Frequency (MHz)	26-dB Emission Bandwidth (MHz)	99% Occupied BW (MHz)
UNII-1	36	5180	24.30	16.94
	44	5220	24.38	16.85
	48	5240	24.61	16.91
UNII-2A	52	5260	24.14	16.85
	60	5300	23.69	16.84
	64	5320	23.92	16.86
UNII-2C	100	5500	23.39	16.87
	116	5580	24.27	16.82
	140	5700	24.15	16.90
Straddle	144	5720	23.89	16.84
UNII-3	149	5745	24.74	17.00
	157	5785	23.76	16.86
	165	5825	24.38	16.89

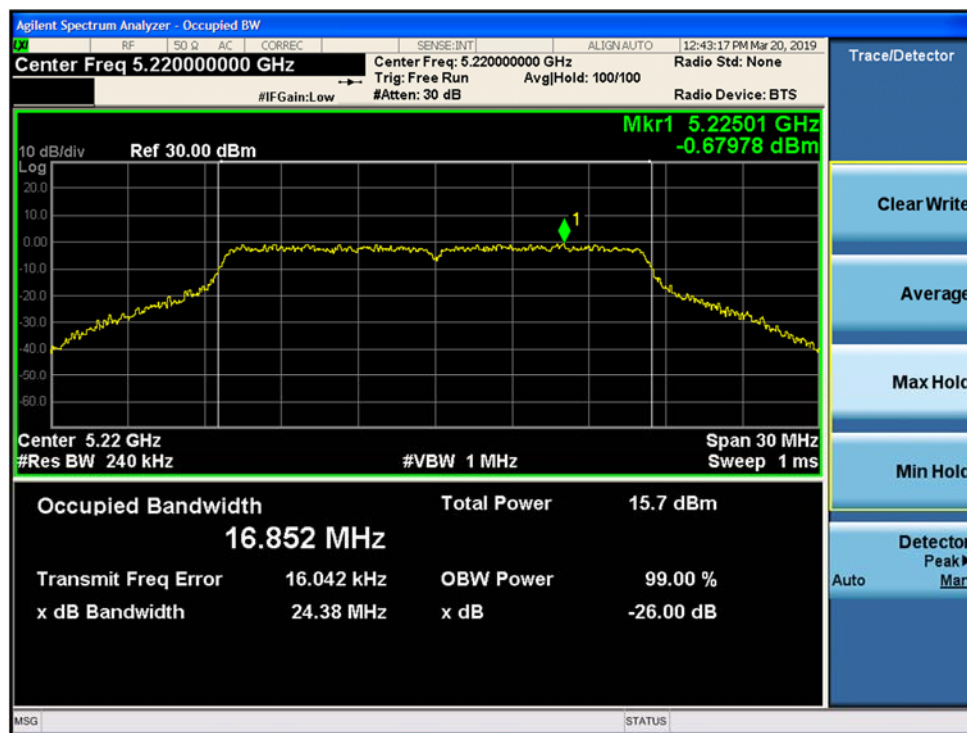


Figure 9-11 Emission Bandwidth and 99% OBW MIMO Chain A 802.11a (Ch. 44)

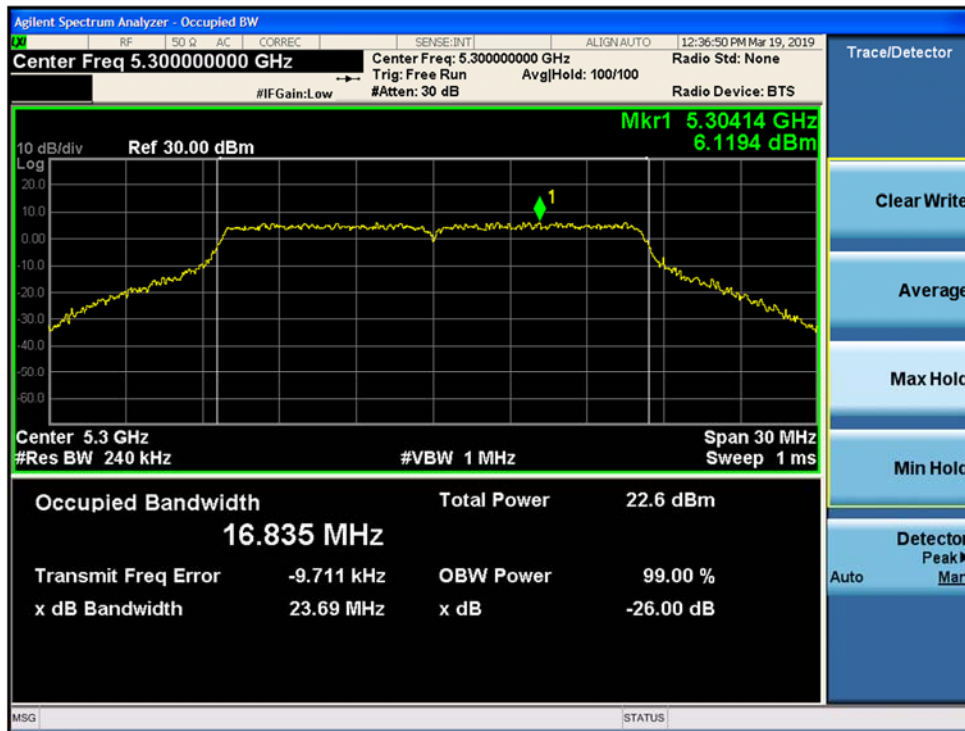


Figure 9-12 Emission Bandwidth and 99% OBW MIMO Chain A 802.11a (Ch. 60)

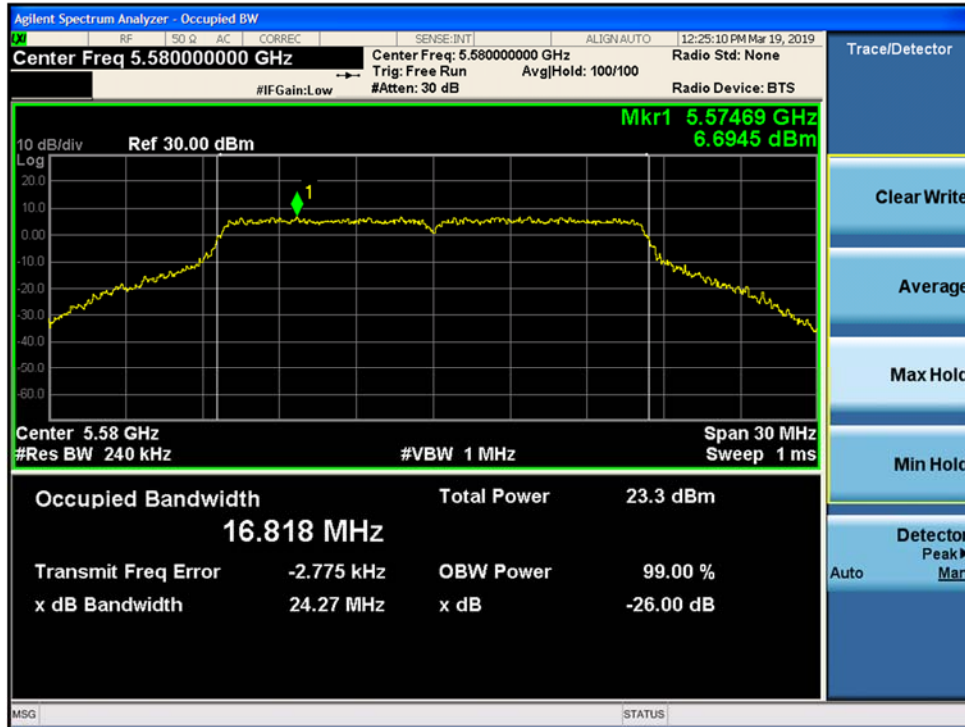


Figure 9-13 Emission Bandwidth and 99% OBW MIMO Chain A 802.11a (Ch. 116)

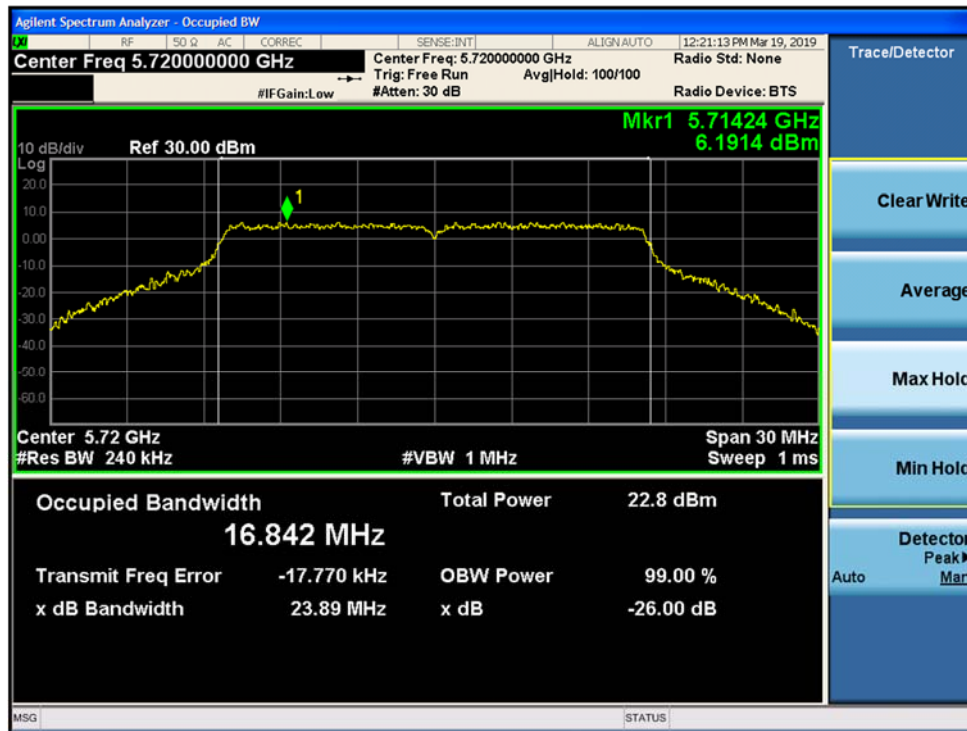


Figure 9-14 Emission Bandwidth and 99% OBW MIMO Chain A 802.11a (Ch. 144)

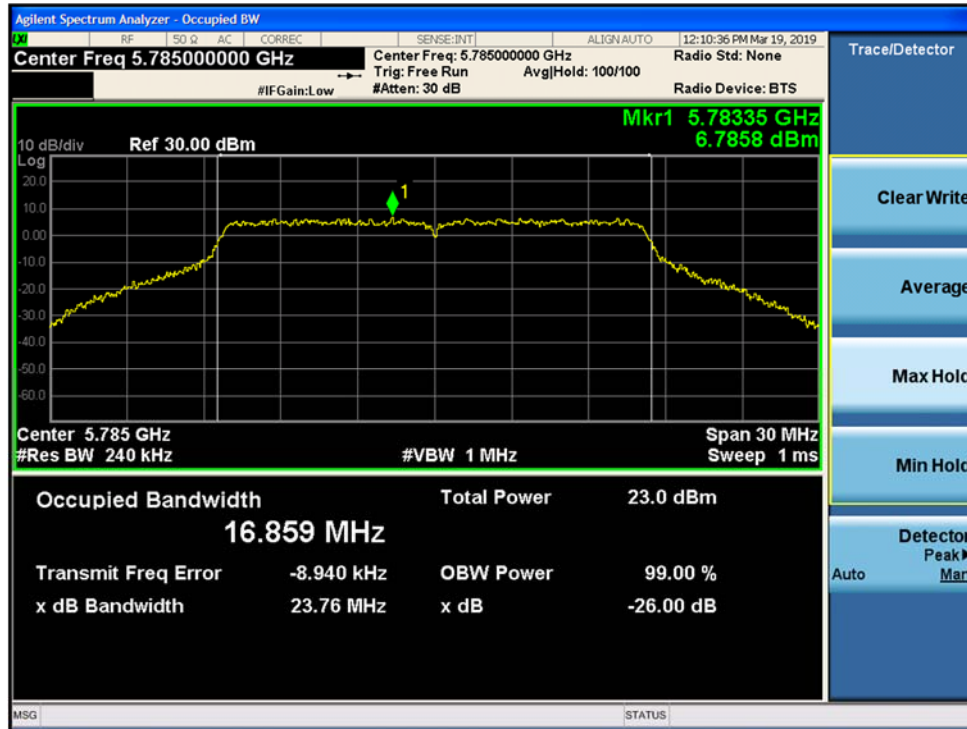


Figure 9-15 Emission Bandwidth and 99% OBW MIMO Chain A 802.11a (Ch. 157)

9.2.5.4 MIMO Chain B 802.11a 26-dB Emission Bandwidth

MIMO Chain B 802.11a 26-dB Emission Bandwidth				
Band	Channel No.	Frequency (MHz)	26-dB Emission Bandwidth (MHz)	99% Occupied BW (MHz)
UNII-1	36	5180	23.84	16.88
	44	5220	24.14	16.85
	48	5240	24.45	16.84
UNII-2A	52	5260	24.36	16.85
	60	5300	23.59	16.83
	64	5320	23.89	16.88
UNII-2C	100	5500	24.09	16.86
	116	5580	24.18	16.82
	140	5700	23.80	16.84
Straddle	144	5720	24.18	16.88
UNII-3	149	5745	24.09	16.86
	157	5785	24.10	16.86
	165	5825	24.65	16.88

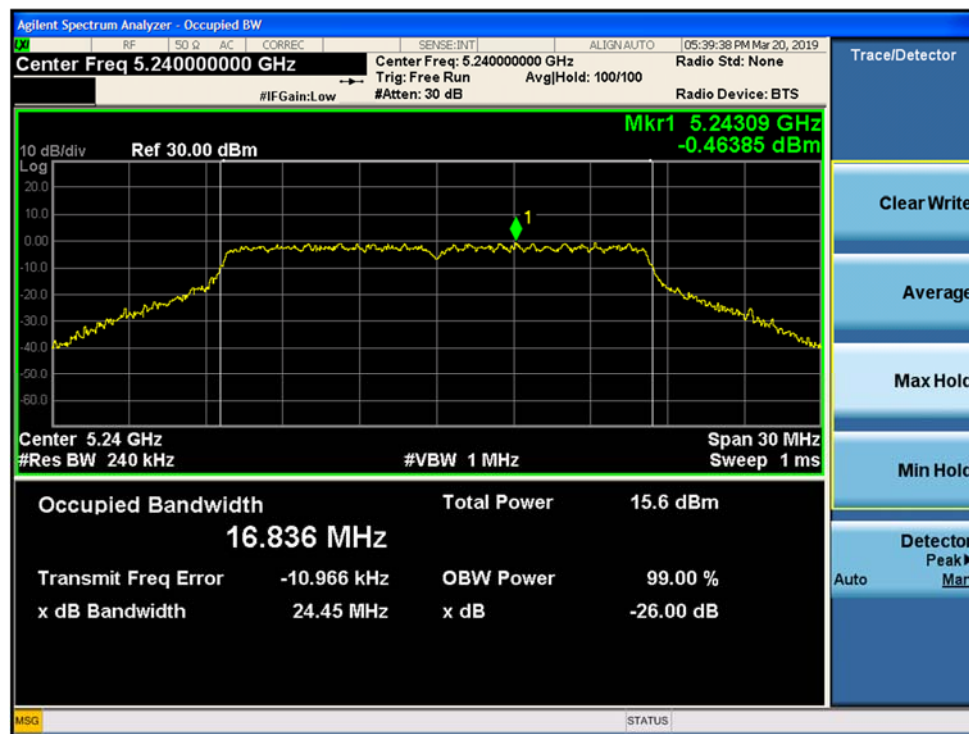


Figure 9-16 Emission Bandwidth and 99% OBW MIMO Chain B 802.11a (Ch. 48)

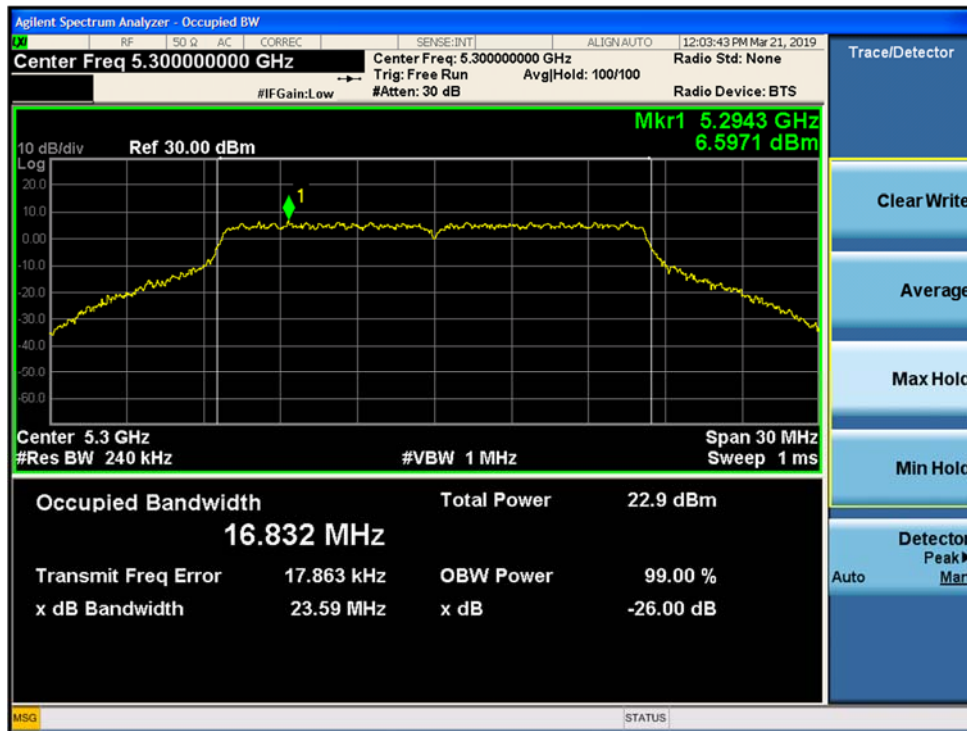


Figure 9-17 Emission Bandwidth and 99% OBW MIMO Chain B 802.11a (Ch. 60)

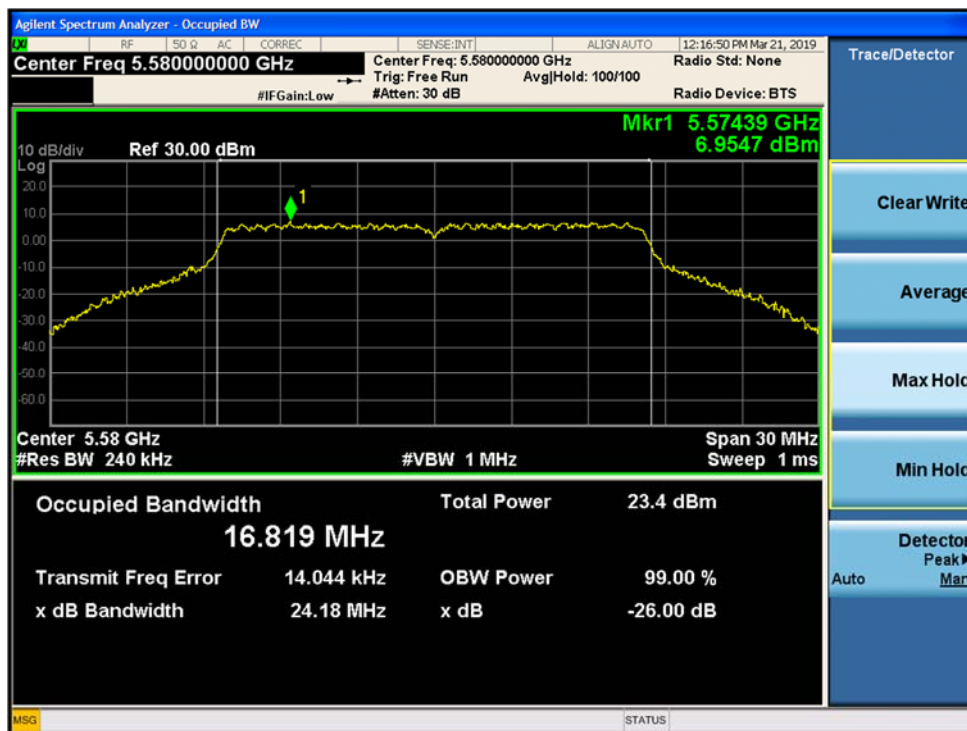


Figure 9-18 Emission Bandwidth and 99% OBW MIMO Chain B 802.11a (Ch. 116)

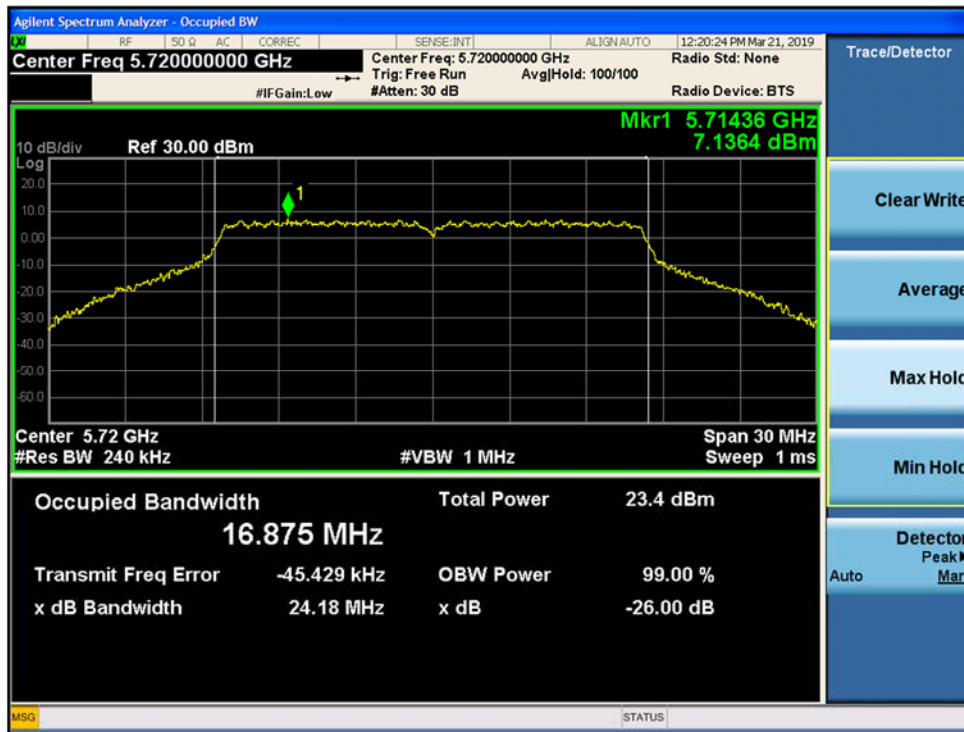


Figure 9-19 Emission Bandwidth and 99% OBW MIMO Chain B 802.11a (Ch. 144)

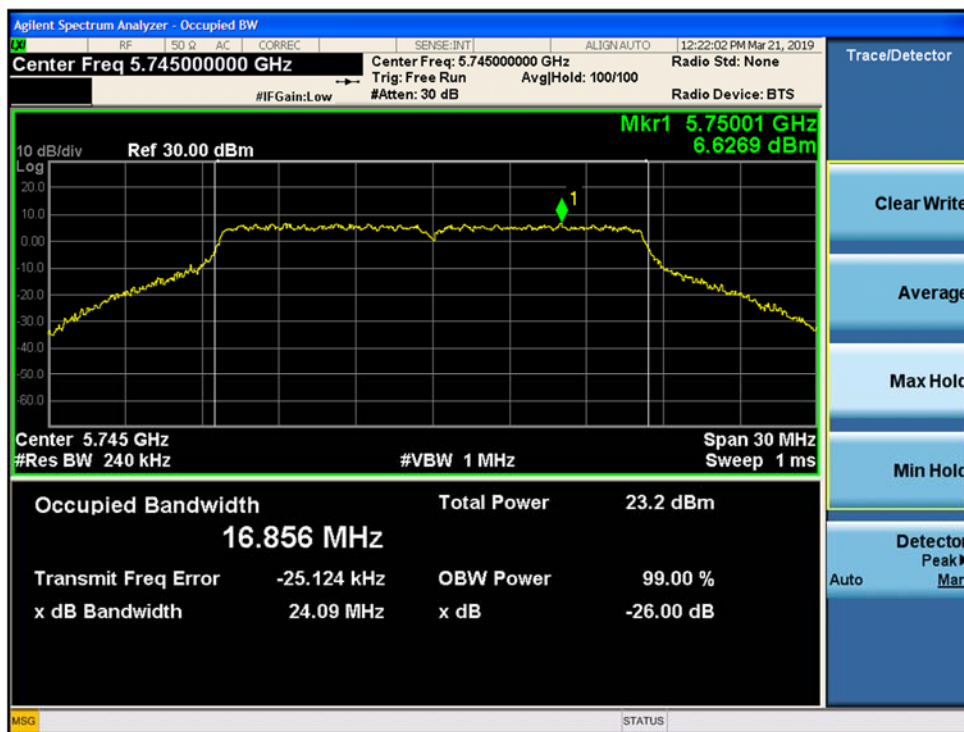


Figure 9-20 Emission Bandwidth and 99% OBW MIMO Chain B 802.11a (Ch. 149)

9.2.5.5 SISO Chain A 802.11n HT20 26-dB Emission Bandwidth

SISO Chain A 802.11n HT20 26-dB Emission Bandwidth				
Band	Channel No.	Frequency (MHz)	26-dB Emission Bandwidth (MHz)	99% Occupied BW (MHz)
UNII-1	36	5180	23.99	17.93
	44	5220	24.06	17.96
	48	5240	24.09	17.97
UNII-2A	52	5260	24.18	17.98
	60	5300	23.99	17.98
	64	5320	24.04	17.95
UNII-2C	100	5500	24.27	17.94
	116	5580	23.68	17.93
	140	5700	23.84	17.92
Straddle	144	5720	23.60	17.96
UNII-3	149	5745	24.34	17.91
	157	5785	24.47	17.98
	165	5825	24.49	17.96



Figure 9-21. 26-dB Emission Bandwidth and 99% OBW SISO Chain A 802.11n HT20 (Ch. 36)

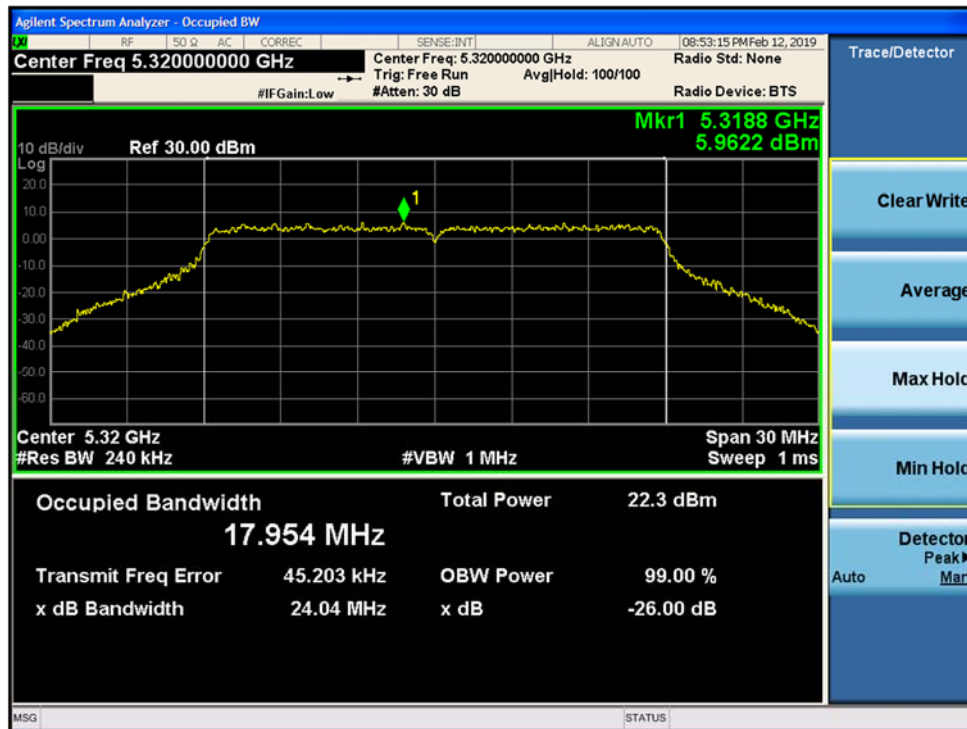


Figure 9-22. 26-dB Emission Bandwidth and 99% OBW SISO Chain A 802.11n HT20 (Ch. 64)

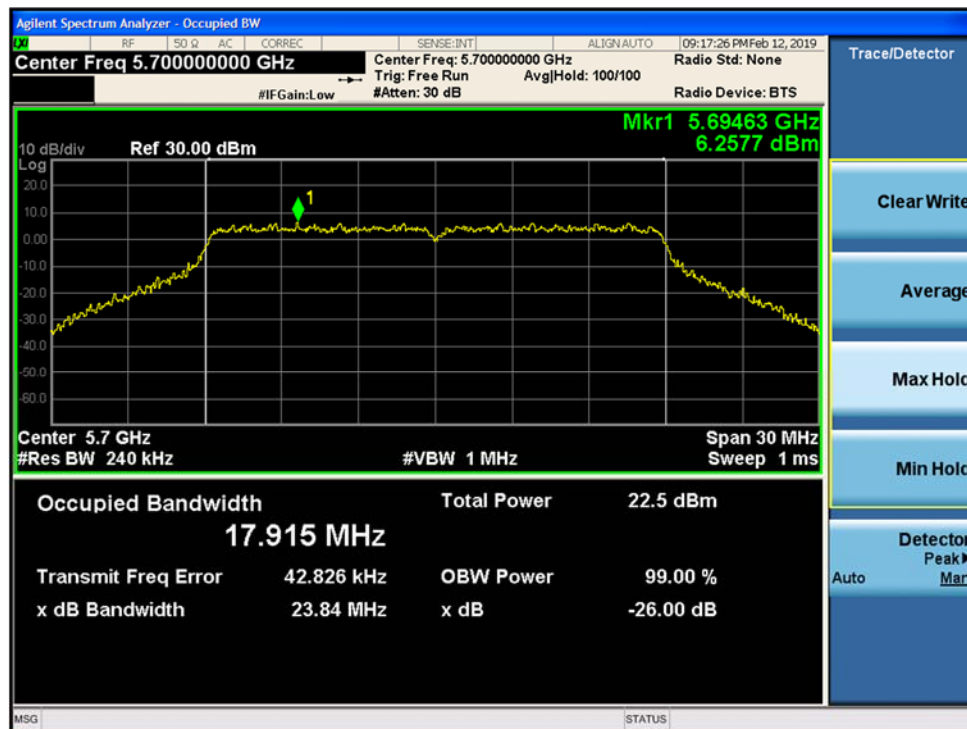


Figure 9-23. 26-dB Emission Bandwidth and 99% OBW SISO Chain A 802.11n HT20 (Ch. 140)

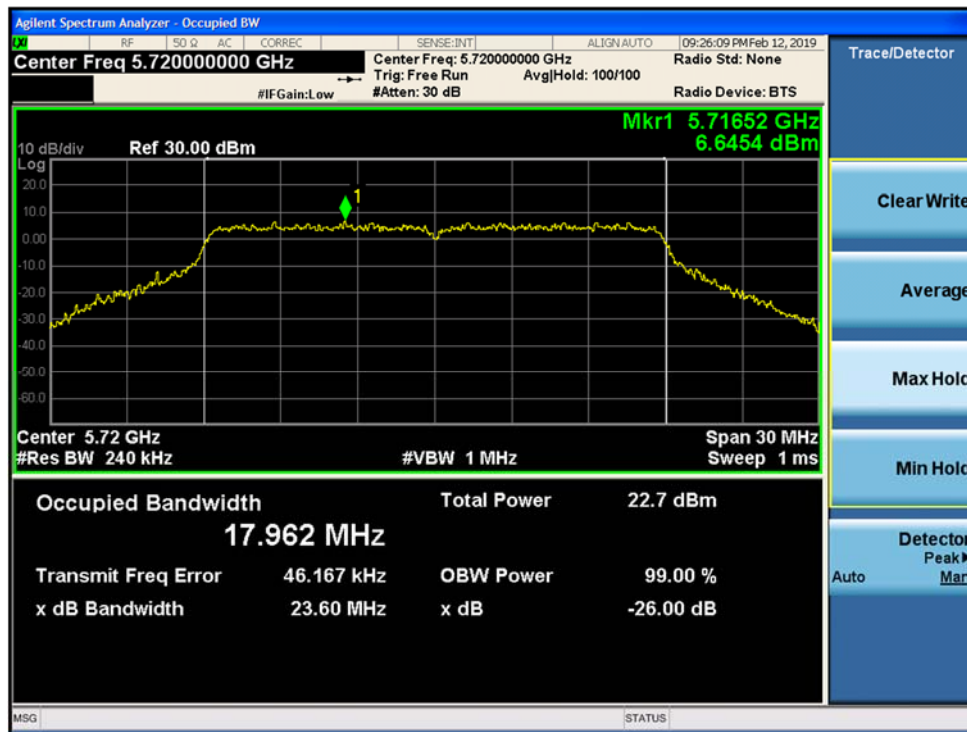


Figure 9-24. 26-dB Emission Bandwidth and 99% OBW SISO Chain A 802.11n HT20 (Ch. 144)

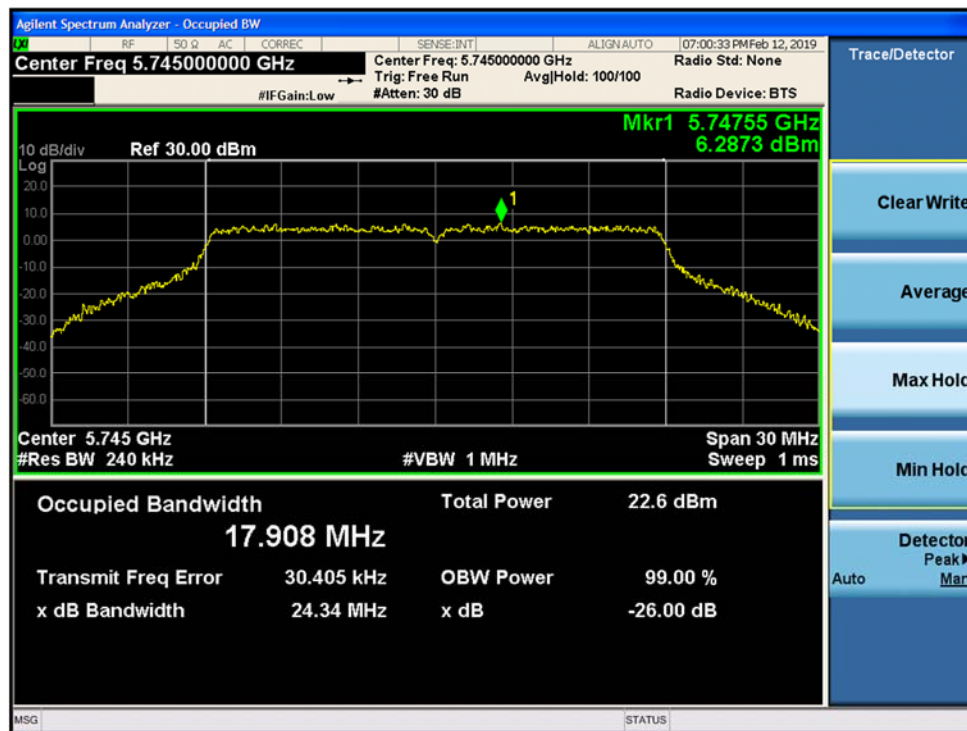


Figure 9-25. 26-dB Emission Bandwidth and 99% OBW SISO Chain A 802.11n HT20 (Ch. 149)

9.2.5.6 SISO Chain B 802.11n HT20 26-dB Emission Bandwidth

SISO Chain B 802.11n HT20 26-dB Emission Bandwidth				
Band	Channel No.	Frequency (MHz)	26-dB Emission Bandwidth (MHz)	99% Occupied BW (MHz)
UNII-1	36	5180	24.34	17.97
	44	5220	23.75	17.94
	48	5240	23.81	17.93
UNII-2A	52	5260	24.20	17.95
	60	5300	23.94	17.94
	64	5320	24.40	17.96
UNII-2C	100	5500	24.17	17.93
	116	5580	23.89	17.93
	140	5700	23.68	17.92
Straddle	144	5720	24.69	17.94
UNII-3	149	5745	24.12	17.97
	157	5785	23.70	17.96
	165	5825	24.32	17.92



Figure 9-26. 26-dB Emission Bandwidth and 99% OBW SISO Chain B 802.11n HT20 (Ch. 48)

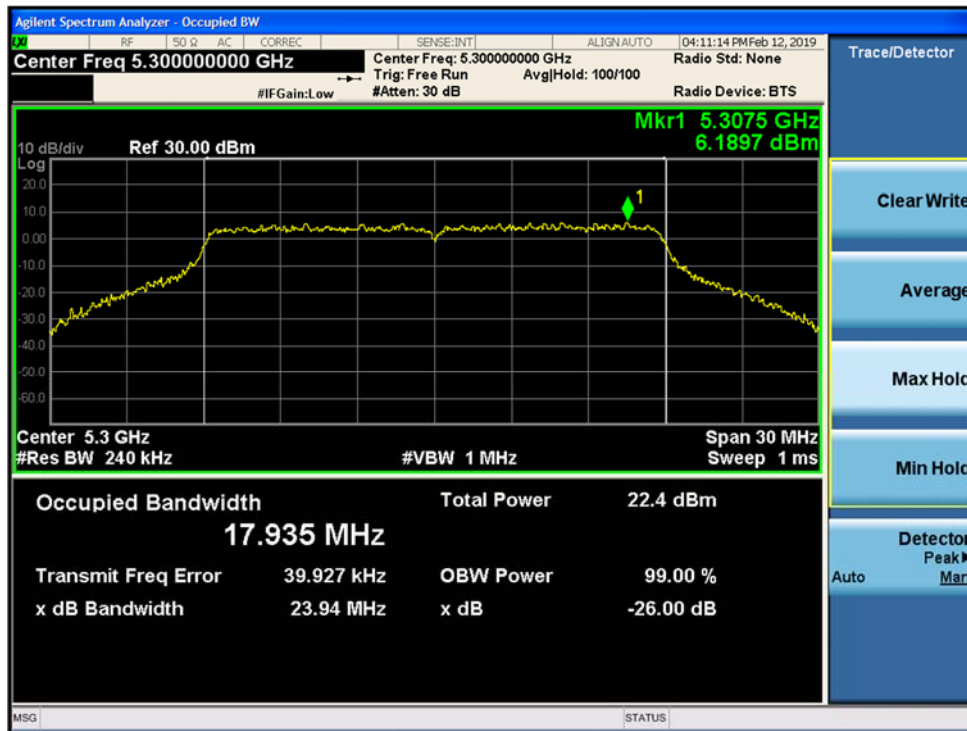


Figure 9-27. 26-dB Emission Bandwidth and 99% OBW SISO Chain B 802.11n HT20 (Ch. 60)

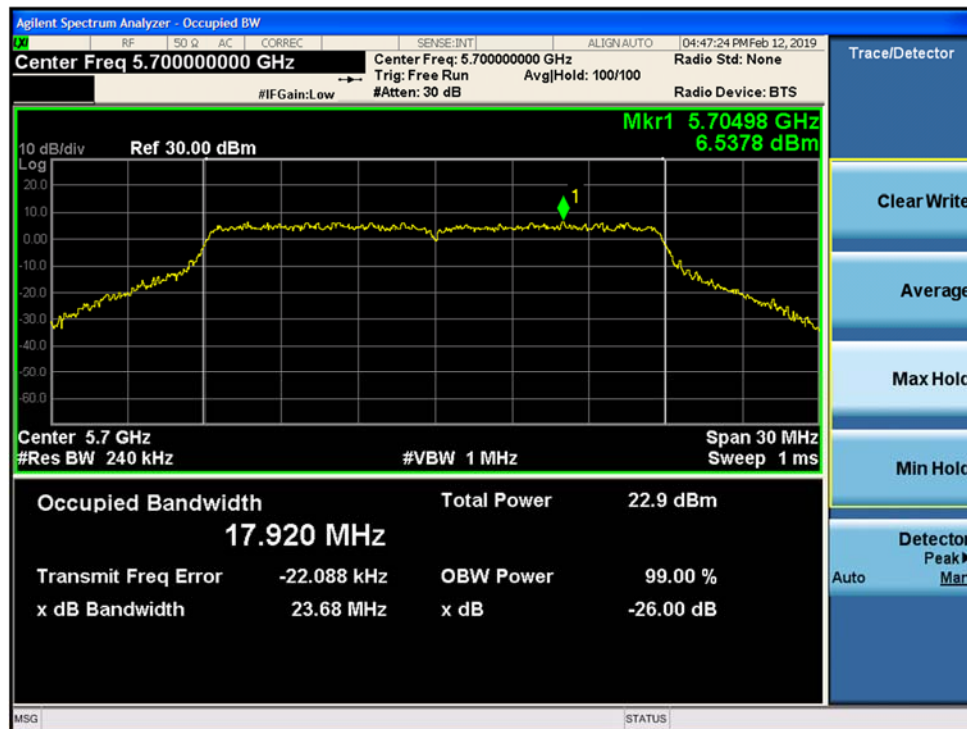


Figure 9-28. 26-dB Emission Bandwidth and 99% OBW SISO Chain B 802.11n HT20 (Ch. 140)

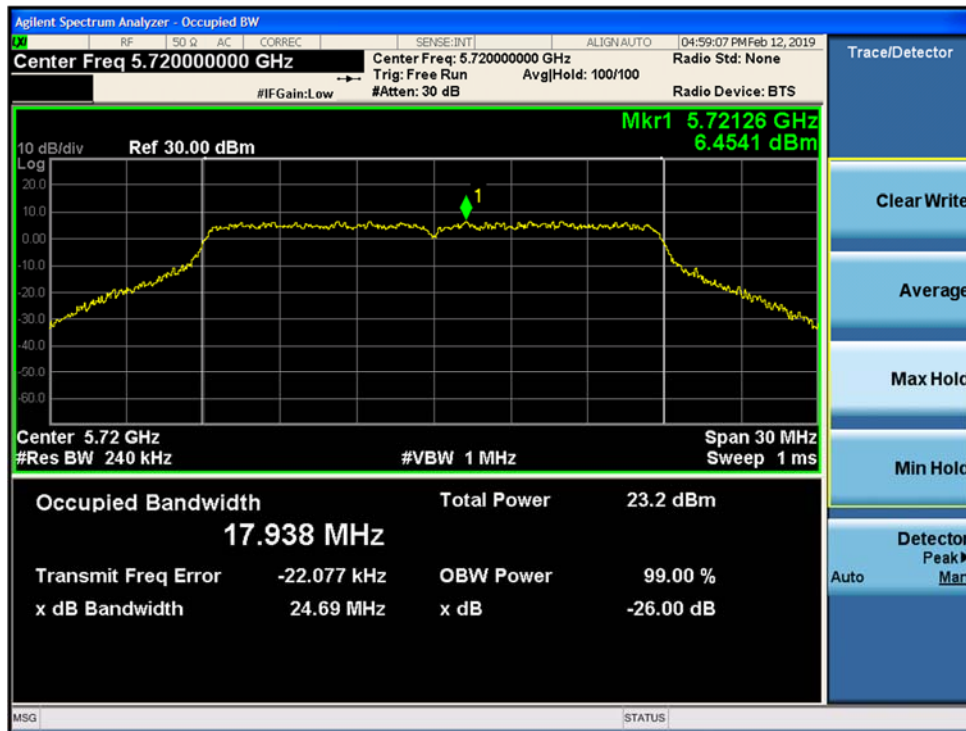


Figure 9-29. 26-dB Emission Bandwidth and 99% OBW SISO Chain B 802.11n HT20 (Ch. 144)

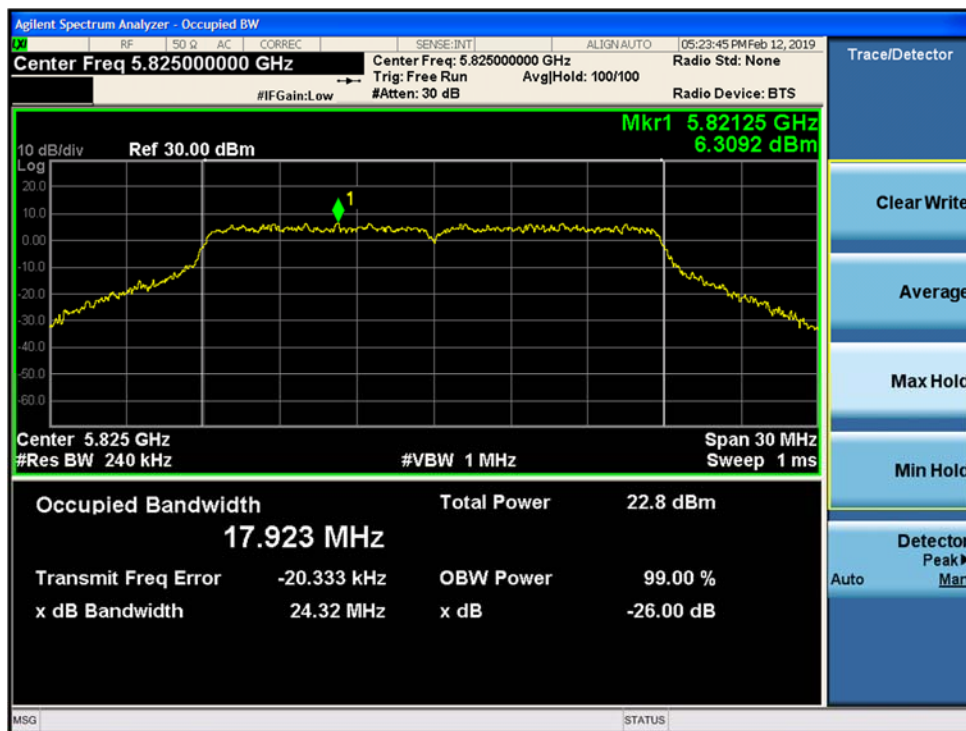


Figure 9-30. 26-dB Emission Bandwidth and 99% OBW SISO Chain B 802.11n HT20 (Ch. 165)

9.2.5.7 MIMO Chain A 802.11n HT20 26-dB Emission Bandwidth

MIMO Chain A 802.11n HT20 26-dB Emission Bandwidth				
Band	Channel No.	Frequency (MHz)	26-dB Emission Bandwidth (MHz)	99% Occupied BW (MHz)
UNII-1	36	5180	24.42	17.96
	44	5220	24.46	17.95
	48	5240	24.50	17.94
UNII-2A	52	5260	24.18	17.93
	60	5300	23.93	17.91
	64	5320	23.89	17.89
UNII-2C	100	5500	23.63	17.92
	116	5580	24.12	17.94
	140	5700	24.23	17.94
Straddle	144	5720	24.13	17.92
UNII-3	149	5745	24.61	17.92
	157	5785	24.37	17.96
	165	5825	24.04	17.93

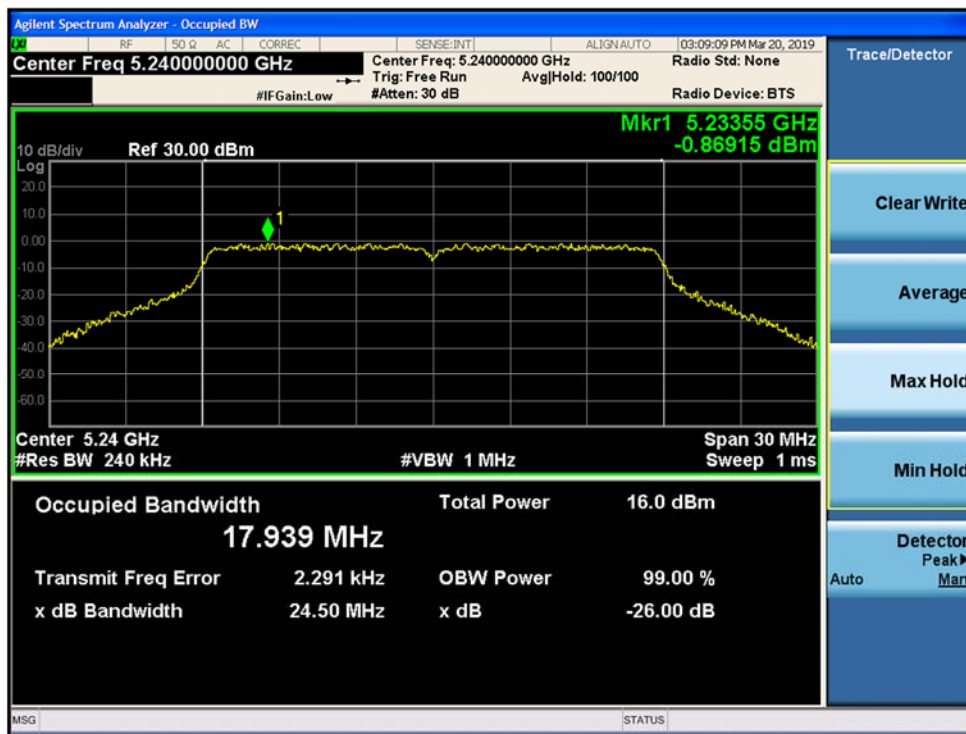


Figure 9-31. 26-dB Emission Bandwidth and 99% OBW MIMO Chain A 802.11n HT20 (Ch. 48)

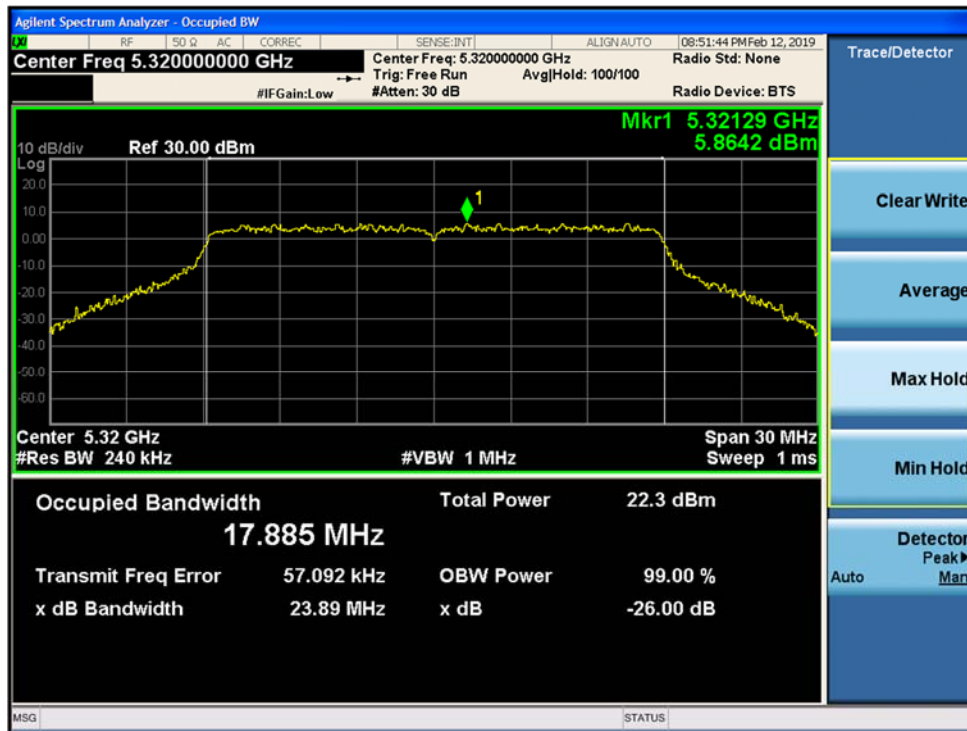


Figure 9-32. 26-dB Emission Bandwidth and 99% OBW MIMO Chain A 802.11n HT20 (Ch. 64)

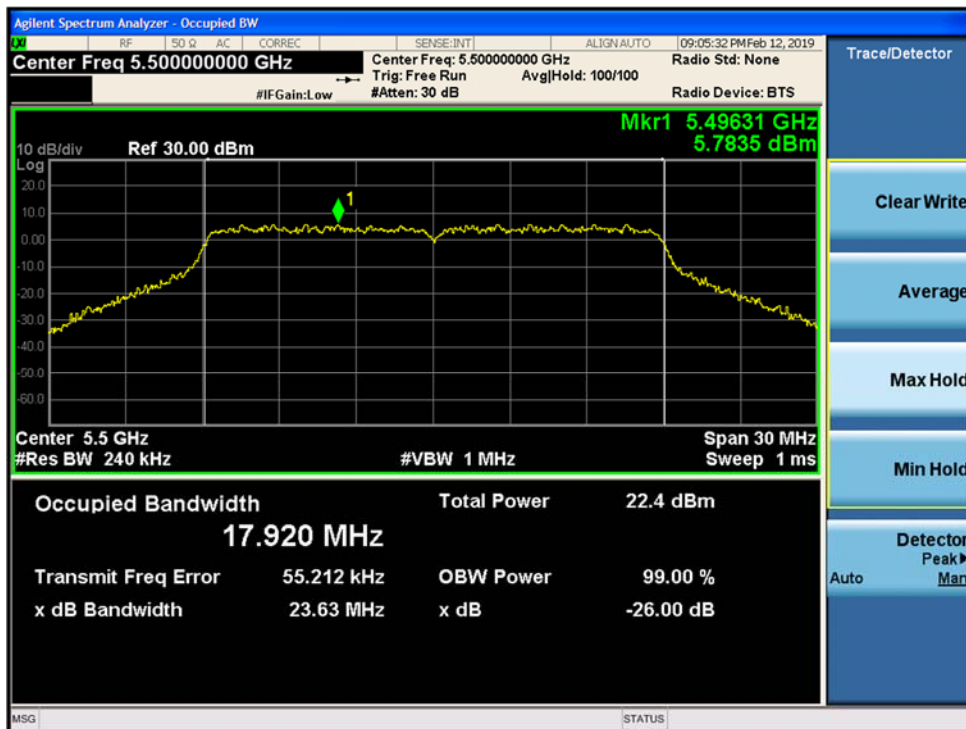


Figure 9-33. 26-dB Emission Bandwidth and 99% OBW MIMO Chain A 802.11n HT20 (Ch. 100)

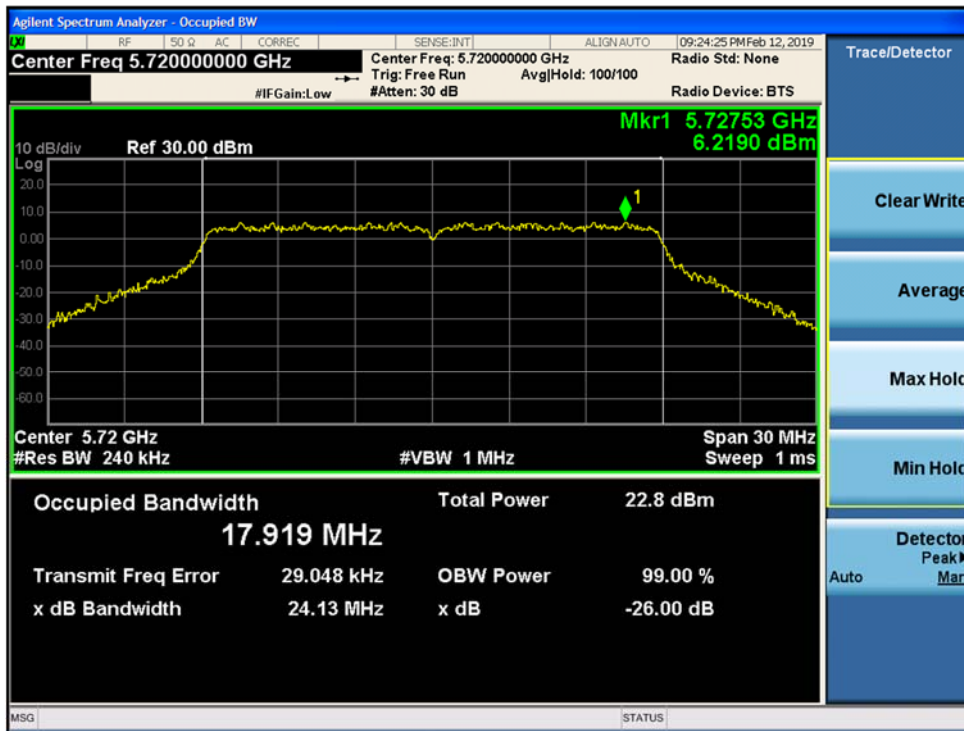


Figure 9-34. 26-dB Emission Bandwidth and 99% OBW MIMO Chain A 802.11n HT20 (Ch. 144)

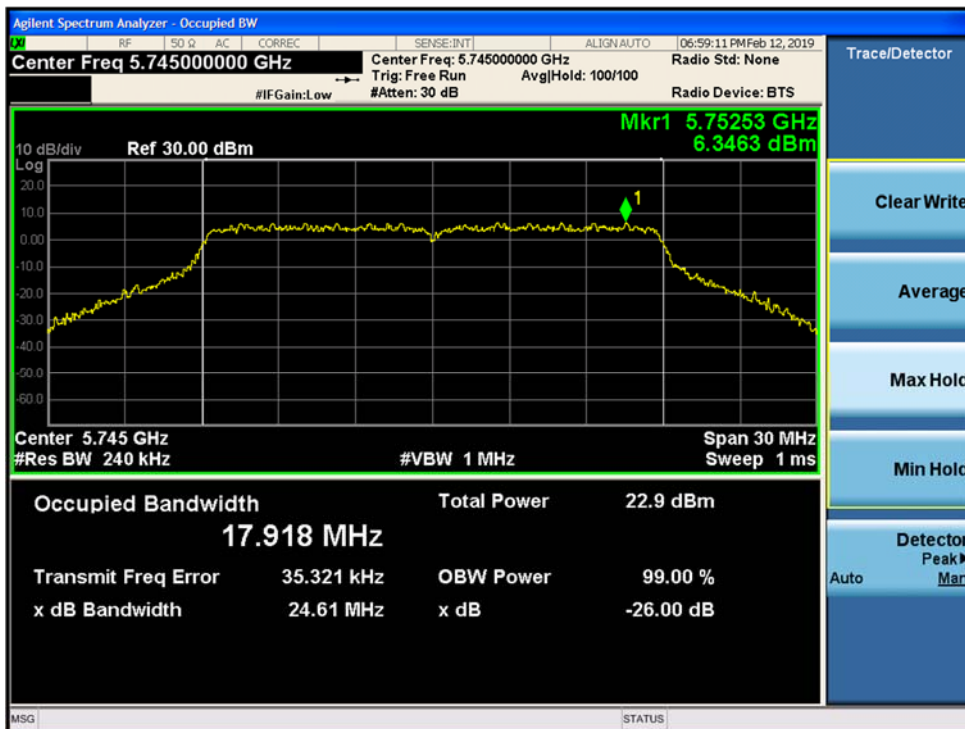


Figure 9-35. 26-dB Emission Bandwidth and 99% OBW MIMO Chain A 802.11n HT20 (Ch. 149)

9.2.5.8 MIMO Chain B 802.11n HT20 26-dB Emission Bandwidth

MIMO Chain B 802.11n HT20 26-dB Emission Bandwidth				
Band	Channel No.	Frequency (MHz)	26-dB Emission Bandwidth (MHz)	99% Occupied BW (MHz)
UNII-1	36	5180	24.21	17.92
	44	5220	24.06	17.88
	48	5240	24.45	17.89
UNII-2A	52	5260	23.90	17.88
	60	5300	23.91	17.89
	64	5320	24.25	17.86
UNII-2C	100	5500	23.96	17.87
	116	5580	23.62	17.88
	140	5700	24.19	17.85
Straddle	144	5720	23.98	17.85
UNII-3	149	5745	24.70	17.90
	157	5785	24.14	17.90
	165	5825	23.82	17.88

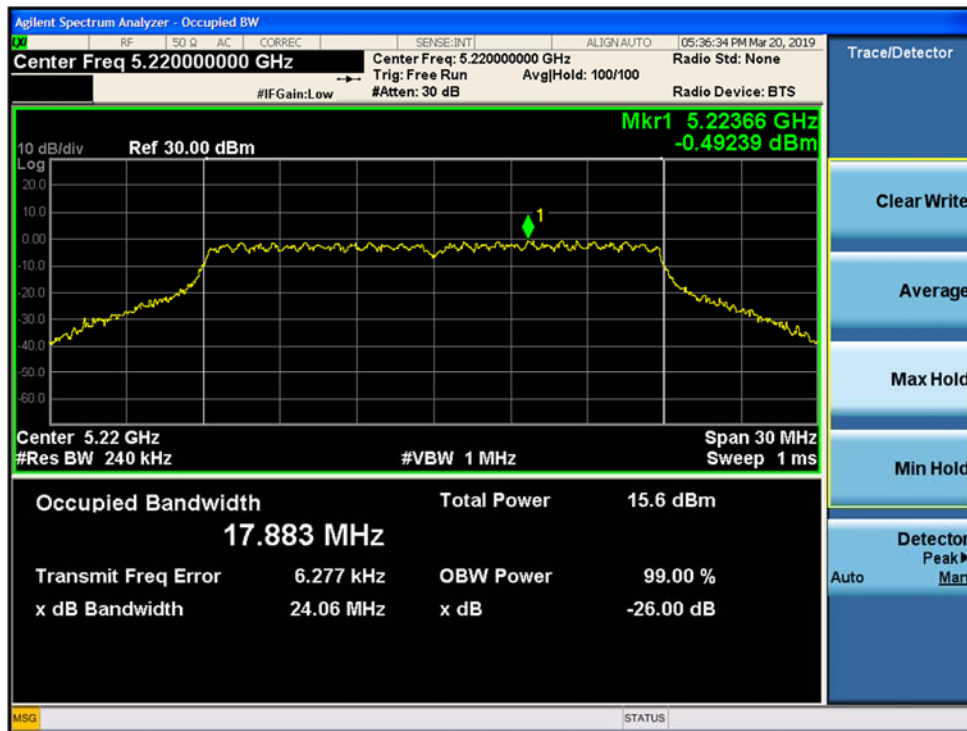


Figure 9-36. 26-dB Emission Bandwidth and 99% OBW MIMO Chain B 802.11n HT20 (Ch. 44)