FCC 47 CFR PART 15 SUBPART E
INDUSTRY CANADA RSS-247 ISSUE 1

UNII

CERTIFICATION TEST REPORT

FOR

ARTIK-0530

MODEL NUMBER : SIP005AFS30

FCC ID: A3LSIP005AFS30
IC ID : 649E-SIP005AFS30

REPORT NUMBER: 16K23791-E4V3

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Prepared for
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ACCREDITED
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Revision History

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V1	09/29/16	Initial issue	Junwhan Lee
V2	10/06/16	Revised section 11	Junwhan Lee
V3	10/12/16	Added AC conducted emission data	Junwhan Lee

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: ARTIK-0530

MODEL NUMBER: SIP005AFS30

SERIAL NUMBER: 530MWB8R00300078, 530MWB8R00300066 (RADIATED); 530MWB8R00300099 (CONDUCTED)

DATE TESTED: SEP 05, 2016 - OCT 12, 2016

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart E	Pass
INDUSTRY CANADA RSS-247 Issue 1	Pass
INDUSTRY CANADA RSS-GEN Issue 4	Pass

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

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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, FCC 06-96, FCC KDB 789033 D02 v01r02, ANSI C63.10-2013 , RSS-247 Issue 1, RSS-GEN Issue 4.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro
☒ Chamber 1
☒ Chamber 2

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4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	2.32 dB
Radiated Disturbance, Below 1GHz	4.14 dB
Radiated Disturbance, Above 1 GHz	5.97 dB

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

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a ARTIK-0530.
This test report addresses the NII (UNII) operational mode.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted average output power as follows:

Frequency Range [MHz]	Mode	Output Power [dBm]	Output Power [mW]
5180 - 5240	802.11a	13.14	20.61
	802.11n HT20	13.14	20.60
5190 - 5230	802.11n HT40	13.08	20.31
5260 - 5320	802.11a	13.27	21.21
	802.11n HT20	13.44	22.07
5270 - 5310	802.11n HT40	13.42	21.98
5500 - 5720	802.11a	13.03	20.07
	802.11n HT20	13.14	20.63
5510 - 5710	802.11n HT40	13.45	22.15
5745 - 5825	802.11a	9.94	9.87
	802.11n HT20	10.00	10.00
5755 - 5795	802.11n HT40	10.01	10.02

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5.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

Frequency Range [MHz]		Antenna Gain [dBi]
UNII 1 5150 – 5250	5180	-0.05
	5240	-1.51
UNII 2A 5250 – 5350	5260	-1.48
	5320	0.91
UNII 2C 5470 – 5725	5500	0.69
	5620	-0.79
UNII 3 5725 – 5825	5745	-2.39
	5805	-1.52

5.4. WORST-CASE CONFIGURATION AND MODE

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

Radiated emission above 1GHz was performed with the EUT set to transmit low/mid/high channels.

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

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

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

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5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Evaluation Kit	SAMSUNG	SIPKITNXD00	N/A	N/A
ADAPTER	Shenzhen Fujia Appliance CO,. LTD	FJ-SW0505000T	N/A	N/A

TEST SETUP

The EUT is a stand-alone unit during the tests.
Test software exercised the EUT to enable NII mode.

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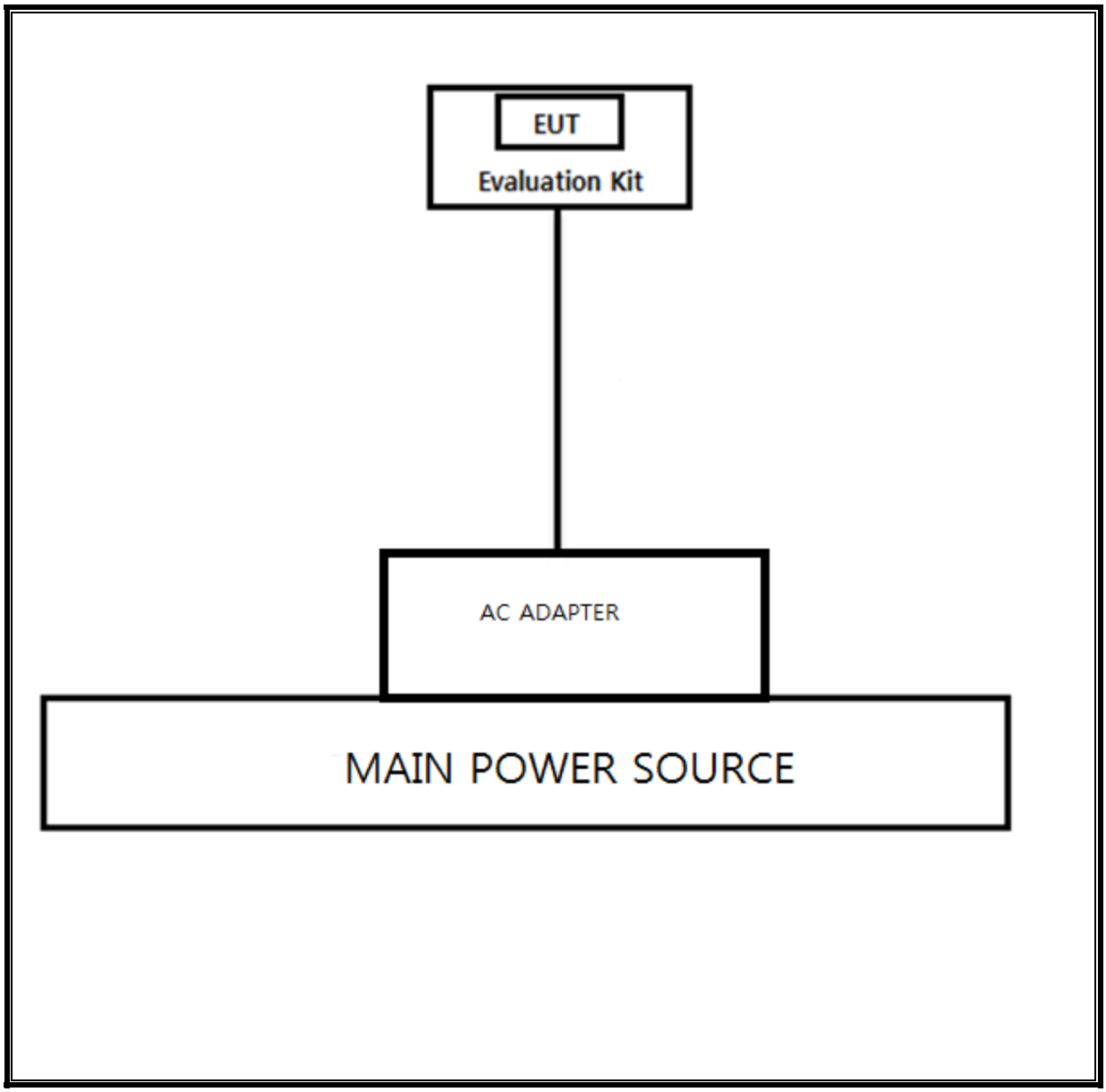
SETUP DIAGRAM FOR TESTS



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6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	**Manufacturer**	**Model**	**S/N**	**Cal Due**
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	11-17-16
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	04-25-17
Antenna, Horn, 18 GHz	ETS	3115	00161451	05-17-17
Antenna, Horn, 18 GHz	ETS	3117	00168724	06-17-17
Antenna, Horn, 18 GHz	ETS	3117	00168717	06-17-17
Antenna, Horn, 40 GHz	ETS	3116C	00166155	11-30-17
Antenna, Horn, 40 GHz	ETS	3116C-PA	00168841	12-15-17
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-17-17
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-16-17
Preamplifier	ETS	3115-PA	00167475	08-17-17
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-16-17
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	08-17-17
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	08-16-17
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	11-25-17
Average Power Sensor	R&S	NRZ-Z91	102681	08-16-17
Average Power Sensor	Agilent / HP	U2000	MY54270007	08-17-17
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-17-17
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-16-17
EMI Test Receive, 3 GHz	R&S	ESR3	101832	08-16-17
Attenuator / Switch driver	HP	11713A	3748A04272	N/A
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	08-17-17
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	015	08-16-17
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	08-17-17
High Pass Filter 3GHz	Micro-Tronics	HPM17543	015	08-16-17
High Pass Filter 6GHz	Micro-Tronics	HPM17542	009	08-17-17
High Pass Filter 6GHz	Micro-Tronics	HPM17542	016	08-16-17
LISN	R&S	ENV-216	101836	08-16-17
LISN	R&S	ENV-216	101837	08-16-17
Attenuator	PASTERNACK	PE7087-10	A009	08-16-17
DC Power Supply	Agilent / HP	E3640A	MY54226395	08-16-17

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7. SUMMARY TABLE

FCC Part Section	RSS Section	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.407 (a)	-	Occupied Band width (26dB)	N/A	Conducted	Pass	40.56 MHz
15.407	RSS-247 6.4.1(1)	6dB Band width (5.8Ghz)	500KHz		Pass	3.224 MHz (Straddle)
15.407 (a)(2)	RSS-247 6.2.1(2) 6.2.2(2) 6.2.3(2)	TX Cond. Power 5.15-2.25, 5.25-5.35 & 5.47-5.725	<24dBm or 11+10Log(OBW)		Pass	13.45 dBm
15.407 (a)(3)	RSS-247 6.2.4(2)	TX Cond. Power 5.725-5.825	< 30dBm or 17+10Log(OBW)		Pass	10.01 dBm
15.407 (a)(5)	RSS-247 6.2.1(2) 6.2.2(2) 6.2.3(2)	PSD (5.2,5.3,5.5GHz)	<10dBm		Pass	3.01 dBm
15.407 (a)(5)	RSS-247 6.2.4(2)	PSD (5.8GHz)	30dBm per 500kHz		Pass	-3.08 dBm
15.407 (b) & 15.209	RSS-GEN Clause 7 & 8.9	Radiated Spurious Emission	< 54dBuV/m		Pass	51.99 dBuV/m (Av)
15.407 (h)(2)	RSS-247 6.3	Dynamic Frequency Selection	N/A	Radiated / Condcuted	Pass	N/A

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8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

PROCEDURE

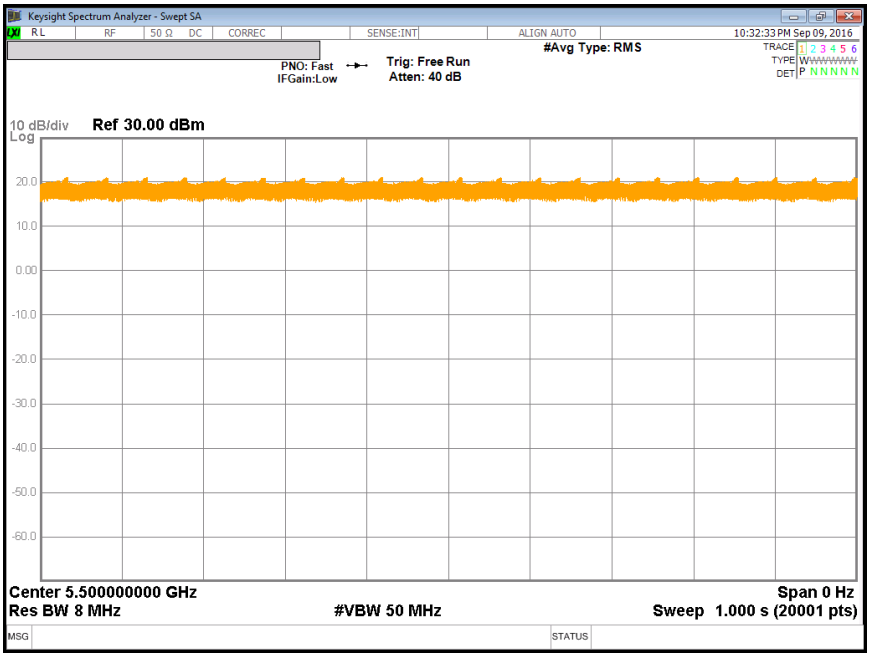
KDB 789033 D02 v01r02 Zero-Span Spectrum Analyzer Method.

8.1. ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B [msec)	Period [msec]	Duty Cycle x [linear]	Duty Cycle [%]	Duty Cycle Correction Factor [dB]	1/T Minimum VBW [kHz]
802.11a	1.000	1.000	1.000	100.0%	0.00	0.010
802.11n HT20	1.000	1.000	1.000	100.0%	0.00	0.010
802.11n HT40	1.000	1.000	1.000	100.0%	0.00	0.010

8.2. DUTY CYCLE PLOTS

DUTY CYCLE 802.11a MODE



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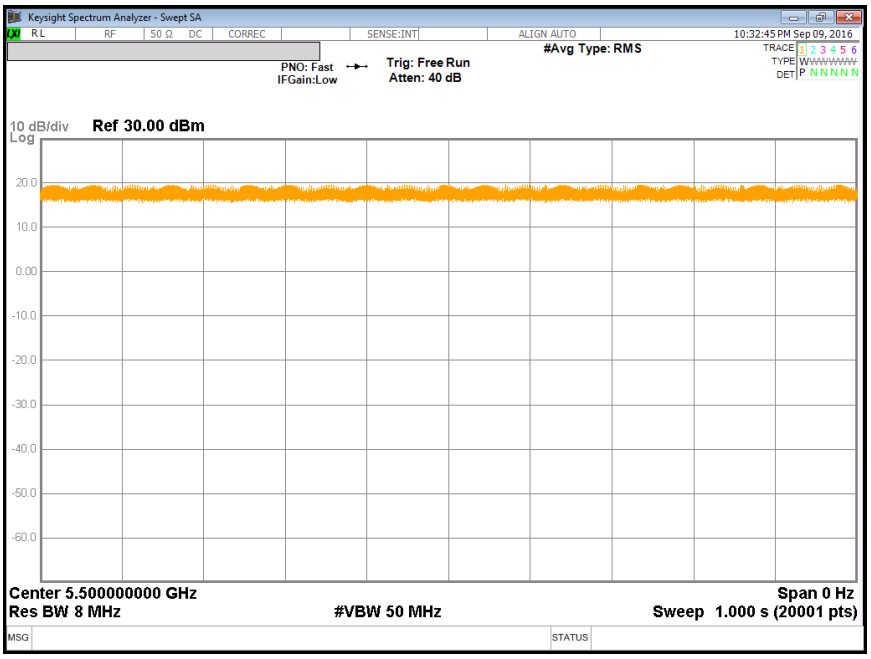
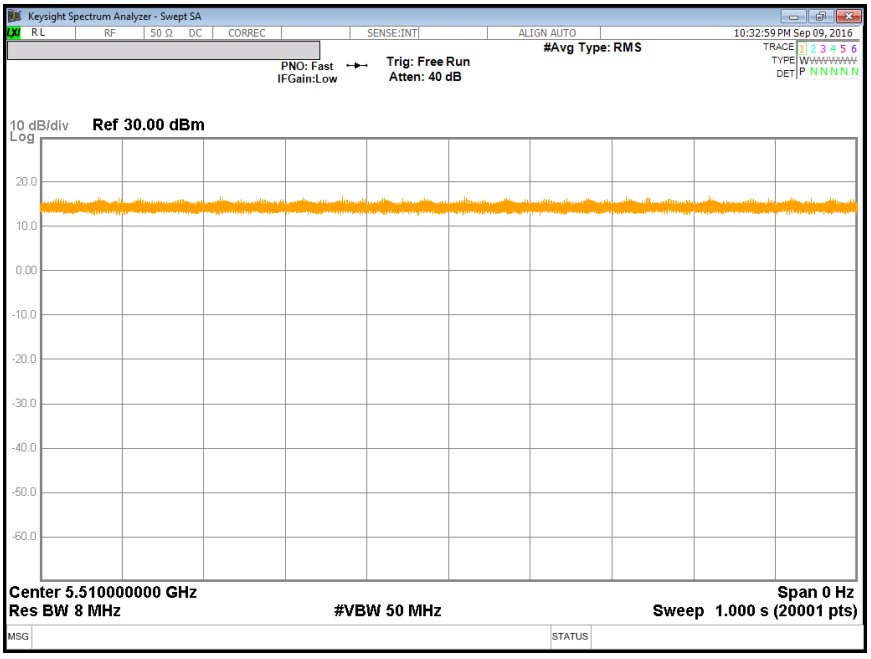
DUTY CYCLE 802.11n HT20 MODE



DUTY CYCLE 802.11n HT40 MODE



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9. MEASUREMENT METHOD

KDB 789033 D02 General UNII Test Procedures New Rules v01r02
KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02
KDB 905462 D03 UNII Clients Without Radar Detection New Rules v01r01

The Duty Cycle is less than 98% and consistent therefore KDB 789033 Method SA-2 is used for power and PPSD

The Duty Cycle is less than 98% and consistent, KDB 789033 Method AD with Power RMS Averaging and duty cycle correction is used.

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10. ANTENNA PORT TEST RESULTS

10.1. 6 dB BANDWIDTH

LIMITS

FCC §15.407
RSS-247 §6.2.4 (1)

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

TEST PROCEDURE

Reference to 789033 D02 General UNII Test Procedures New Rules v01r02: The transmitter output is connected to a spectrum analyzer with the RBW set to100KHz, the VBW >= 3 x RBW, peak detector and max hold.

NOTE

- Calculation for 6dB Bandwidth of UNII-3 Straddle Channel

ex) 802.11a mode
  - Fundamental frequency : 5720MHz
  - 6dB BW : 16.350MHz
  - Starting Frequency of UNII-3 band : 5725MHz
  - 6dB Bandwidth of UNII-3 band Portion
    = (5720 + (16.350 / 2) -5725) = 3.175 MHz

RESULTS

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10.1.1. 802.11a MODE IN THE 5.8 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Straddle	5720	3.276	0.5
Low	5745	16.565	0.5
Mid	5785	16.559	0.5
High	5825	16.559	0.5
Worst		3.276	

10.1.2. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Straddle	5720	3.819	0.5
Low	5745	17.780	0.5
Mid	5785	17.679	0.5
High	5825	17.728	0.5
Worst		3.819	

10.1.3. 802.11n HT40 MODE IN THE 5.8 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	Minimum Limit [MHz]
Straddle	5710	3.224	0.5
Low	5755	36.390	0.5
High	5795	36.393	0.5
Worst		3.224	

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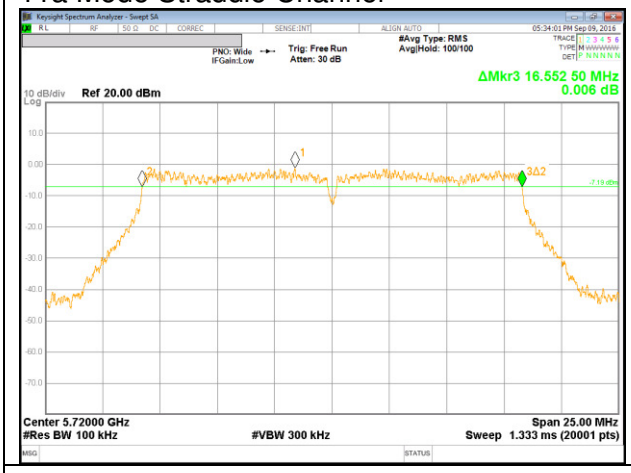
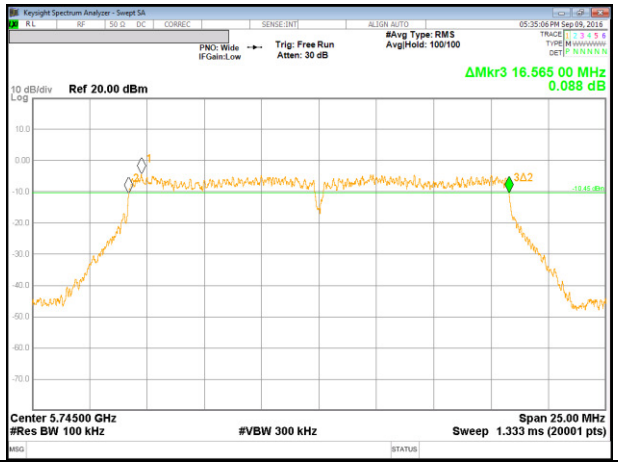
10.1.4. 6 dB BANDWIDTH PLOTS

IEEE 802.11a mode

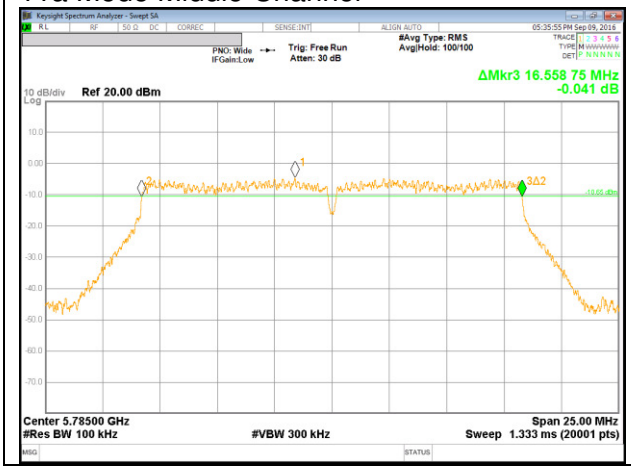
11a Mode Straddle Channel



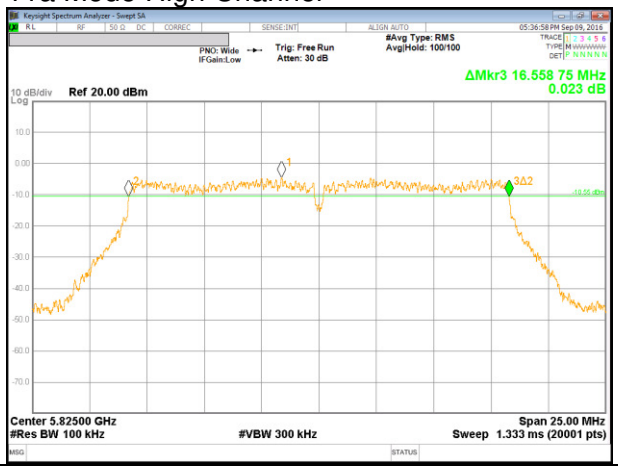
11a Mode Low Channel



11a Mode Middle Channel



11a Mode High Channel



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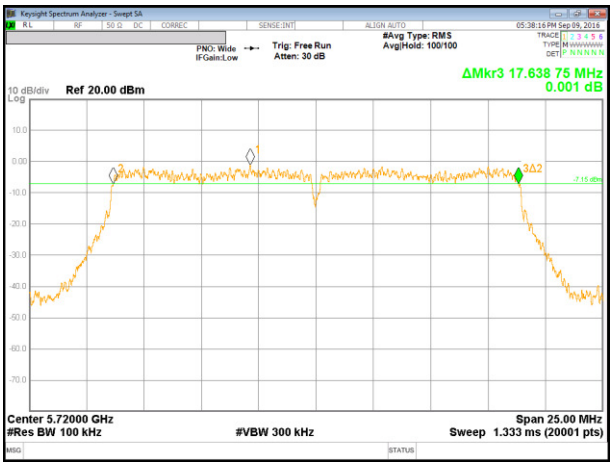
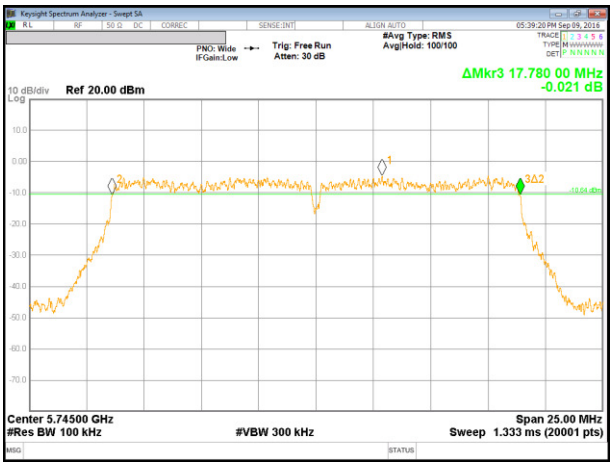
IEEE 802.11n HT20 mode

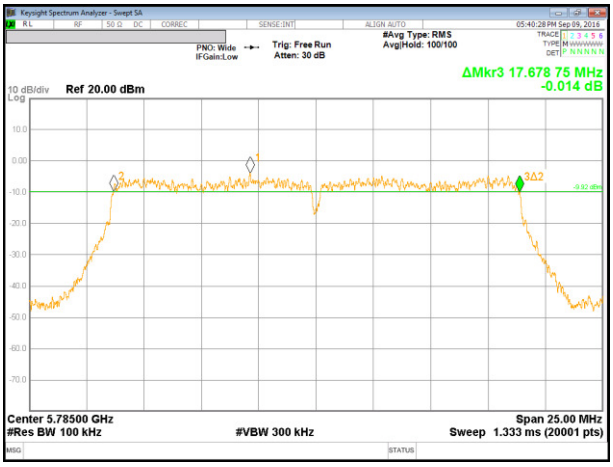
11n HT20 Mode Straddle Channel



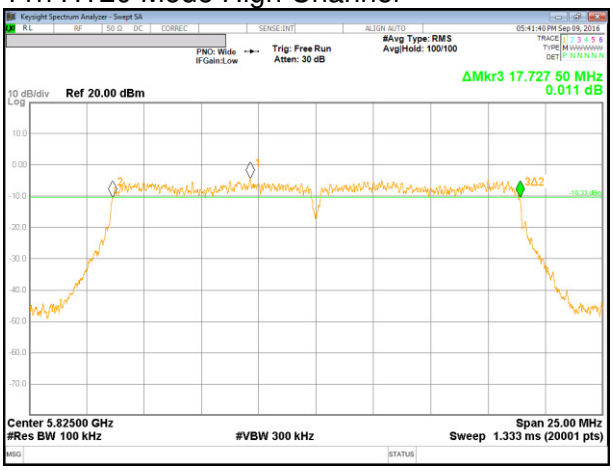
11n HT20 Mode Low Channel



11n HT20 Mode Middle Channel



11n HT20 Mode High Channel



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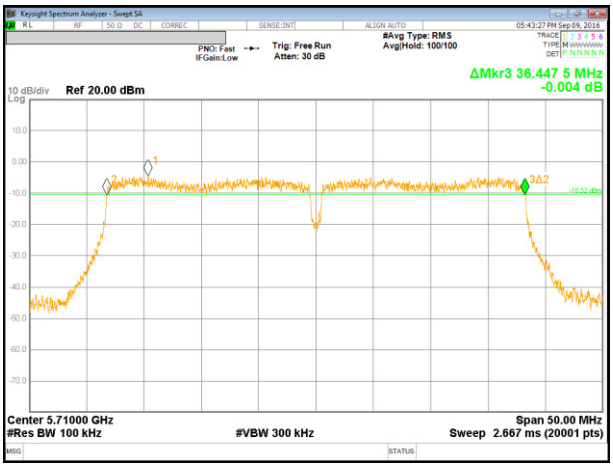
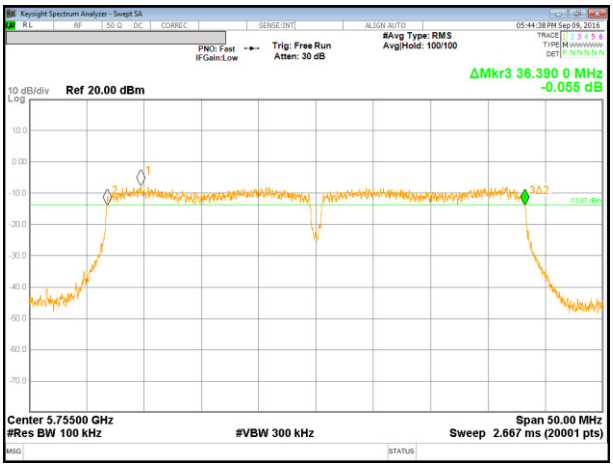
IEEE 802.11n HT40 mode

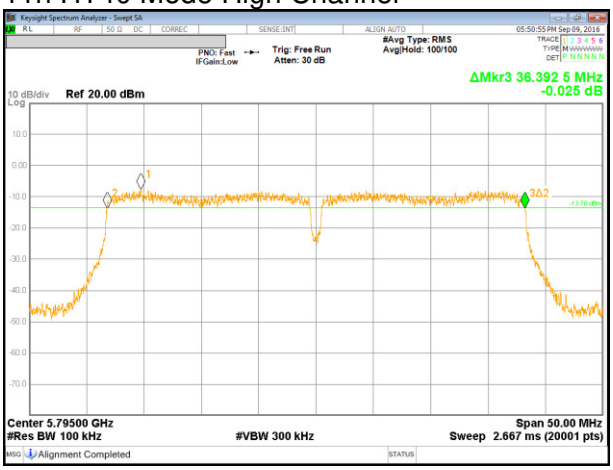
11n HT40 Mode Straddle Channel



11n HT40 Mode Low Channel



11n HT40 Mode High Channel



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10.2. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

NOTE

- Calculation for 26dB Bandwidth of UNII-2C and UNII-3 Straddle Channel

ex) 802.11a mode
- Fundamental frequency : 5720MHz
- 26dB BW : 21.00MHz
- Turning Frequency : 5725MHz
- 26dB Bandwidth of UNII-2C band Portion
  = (5725 – (5720 - (21.00 / 2)) = 15.50 MHz
- 26dB Bandwidth of UNII-3 band Portion
  = (5720 + (21.00 / 2) -5725) = 5.50 MHz

RESULTS

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10.2.1. 802.11a MODE IN THE 5.2 GHz BAND

Channel	Frequency [MHz]	26 dB Bandwidth [MHz]
Low	5180	19.41
Mid	5200	19.55
High	5240	19.66
Worst		19.66

10.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

Channel	Frequency [MHz]	26 dB Bandwidth [MHz]
Low	5180	19.90
Mid	5200	19.70
High	5240	19.66
Worst		19.90

10.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

Channel	Frequency [MHz]	26 dB Bandwidth [MHz]
Low	5190	40.44
High	5230	40.39
Worst		40.44

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10.2.4. 802.11a MODE IN THE 5.3 GHz BAND

Channel	Frequency [MHz]	26 dB Bandwidth [MHz]
Low	5260	19.52
Mid	5300	19.63
High	5320	19.51
Worst		19.63

10.2.5. 802.11n HT20 MODE IN THE 5.3 GHz BAND

Channel	Frequency [MHz]	26 dB Bandwidth [MHz]
Low	5260	19.74
Mid	5300	19.78
High	5320	19.91
Worst		19.91

10.2.6. 802.11n HT40 MODE IN THE 5.3 GHz BAND

Channel	Frequency [MHz]	26 dB Bandwidth [MHz]
Low	5270	40.31
High	5310	40.35
Worst		40.35

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10.2.7. 802.11a MODE IN THE 5.5 GHz BAND

Channel	Frequency [MHz]	26 dB Bandwidth [MHz]
Low	5500	19.60
Mid	5580	19.75
High	5700	19.68
Straddle	5720	14.84
Worst		19.75

10.2.8. 802.11n HT20 MODE IN THE 5.5 GHz BAND

Channel	Frequency [MHz]	26 dB Bandwidth [MHz]
Low	5500	19.92
Mid	5580	19.87
High	5700	19.78
Straddle	5720	14.94
Worst		19.92

10.2.9. 802.11n HT40 MODE IN THE 5.5 GHz BAND

Channel	Frequency [MHz]	26 dB Bandwidth [MHz]
Low	5510	40.34
Mid	5550	39.97
High	5670	40.56
Straddle	5710	35.01
Worst		40.56

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10.2.10. 802.11a MODE IN THE 5.8 GHz BAND

Channel	Frequency [MHz]	26 dB Bandwidth [MHz]
Straddle	5720	4.84
Low	5745	19.29
Mid	5785	19.60
High	5825	19.58
Worst		19.60

10.2.11. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Channel	Frequency [MHz]	26 dB Bandwidth [MHz]
Straddle	5720	4.94
Low	5745	19.73
Mid	5785	19.85
High	5825	19.93
Worst		19.93

10.2.12. 802.11n HT40 MODE IN THE 5.8 GHz BAND

Channel	Frequency [MHz]	26 dB Bandwidth [MHz]
Straddle	5710	5.01
Low	5755	40.35
High	5795	40.36
Worst		40.36

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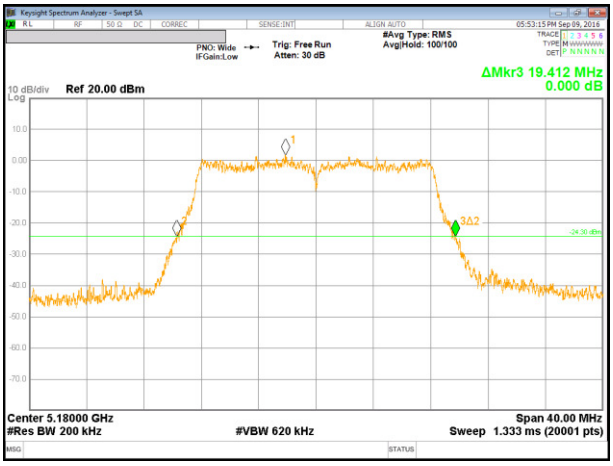
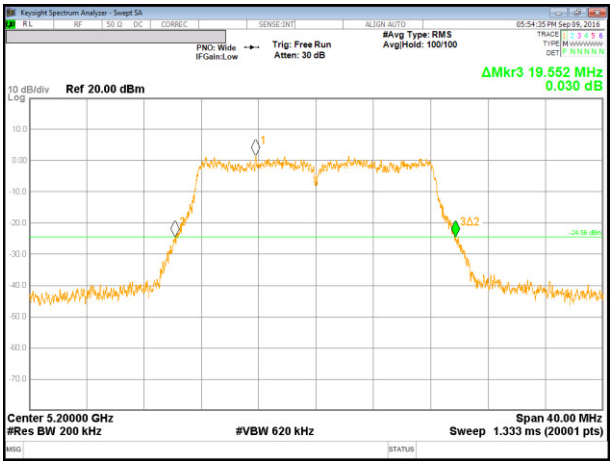
10.2.13. 26 dB BANDWIDTH PLOTS

UNII 5.2 GHz IEEE 802.11a mode

11a Mode Low Channel



11a Mode Middle Channel



11a Mode High Channel

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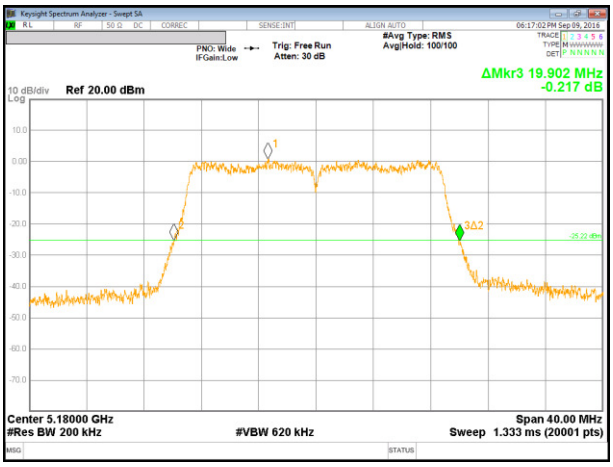
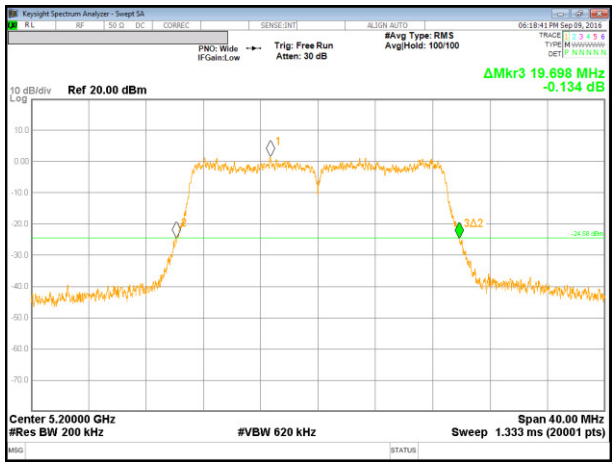
UNII 5.2 GHz IEEE 802.11n HT20 mode

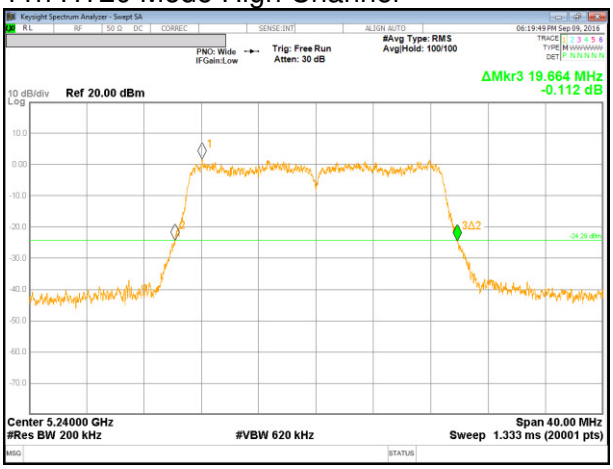
11n HT20 Mode Low Channel



11n HT20 Mode Middle Channel



11n HT20 Mode High Channel



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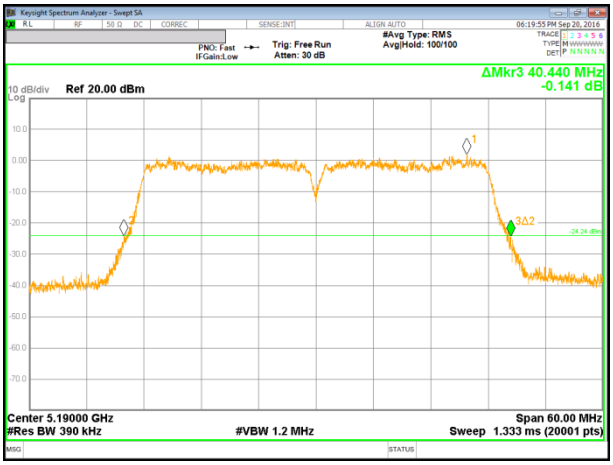
UNII 5.2 GHz IEEE 802.11n HT40 mode

11n HT40 Mode Low Channel



11n HT40 Mode High Channel

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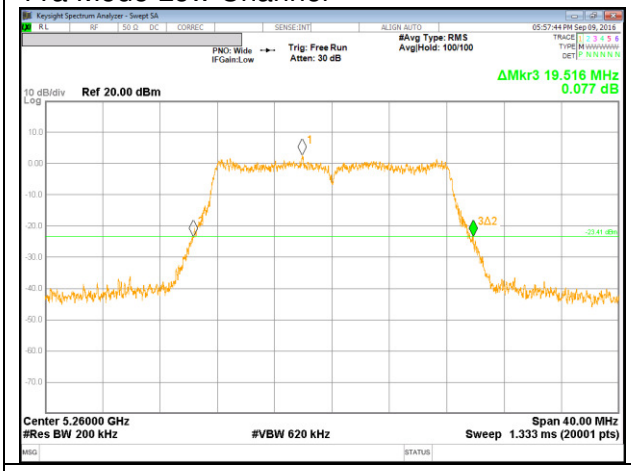
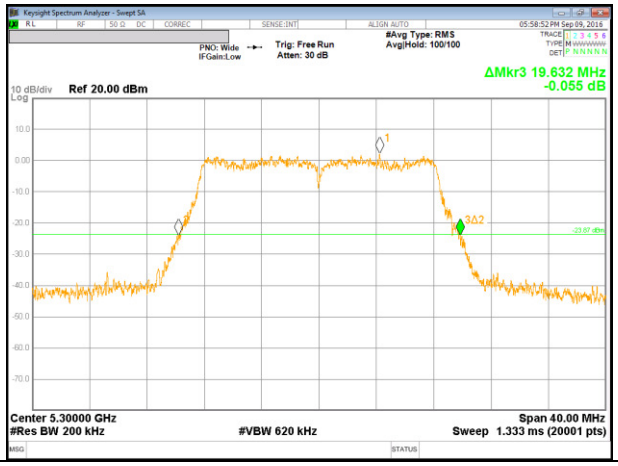
UNII 5.3 GHz IEEE 802.11a mode

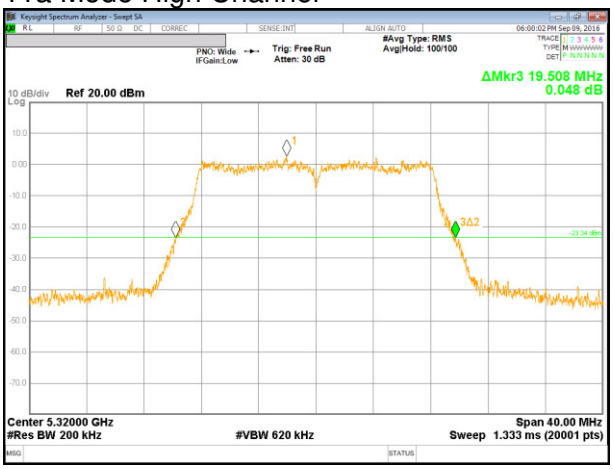
11a Mode Low Channel



11a Mode Middle Channel



11a Mode High Channel



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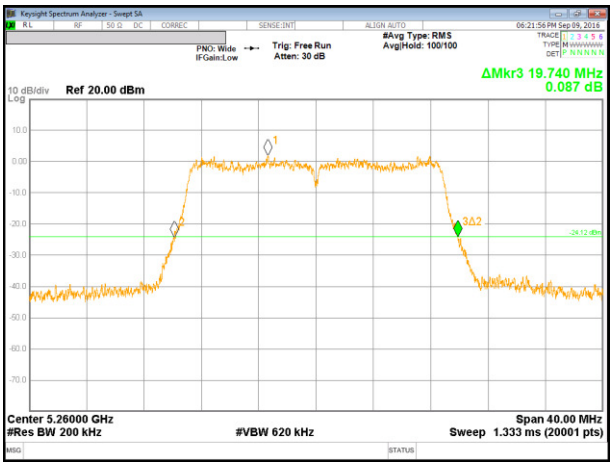
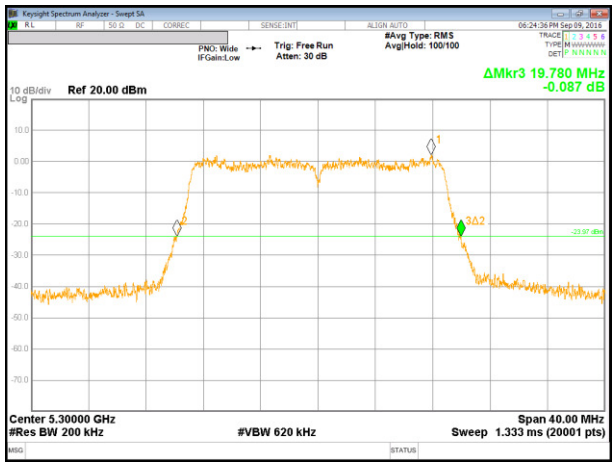
UNII 5.3 GHz IEEE 802.11n HT20 mode

11n HT20 Mode Low Channel



11n HT20 Mode Middle Channel



11n HT20 Mode High Channel

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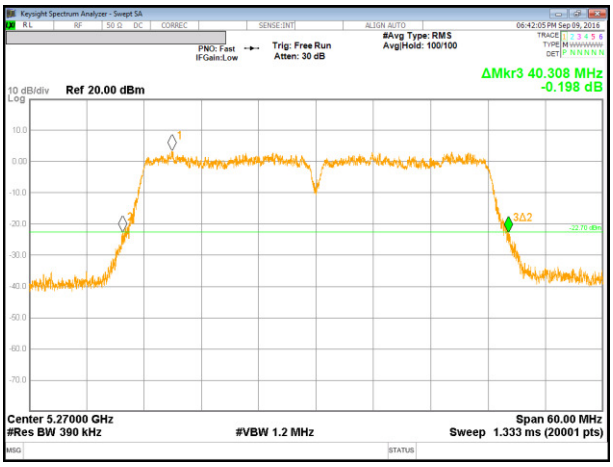
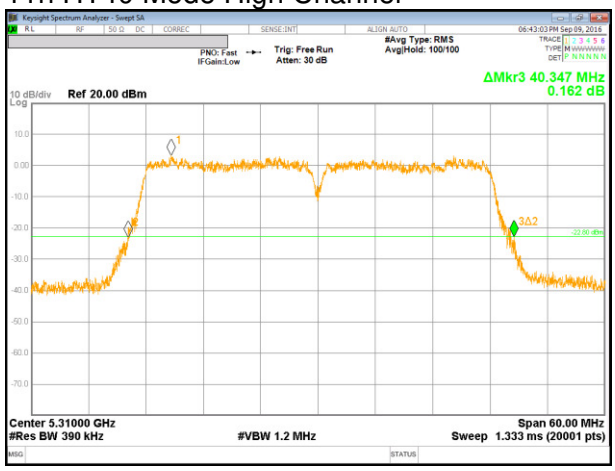
UNII 5.3 GHz IEEE 802.11n HT40 mode

11n HT40 Mode Low Channel



11n HT40 Mode High Channel



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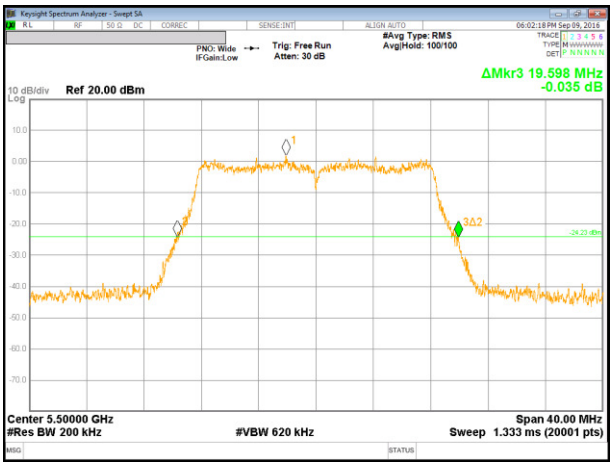
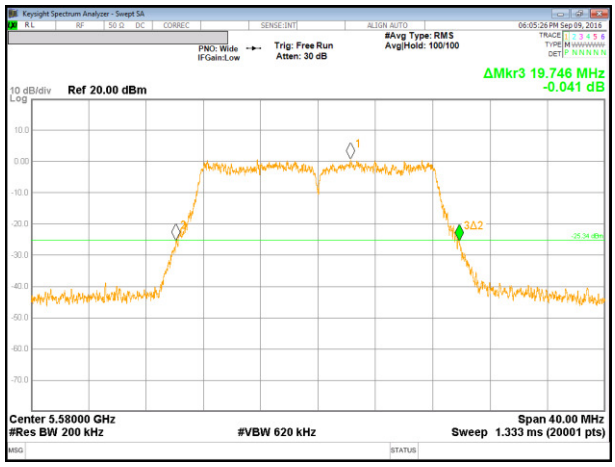
UNII 5.5 GHz IEEE 802.11a mode

11a Mode Low Channel

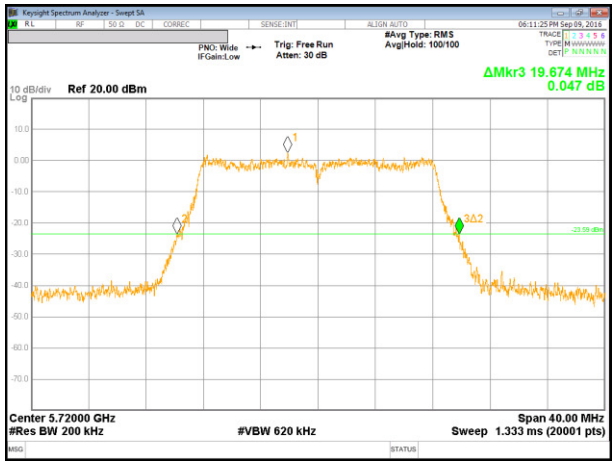


11a Mode Middle Channel



11a Mode High Channel

11a Mode Straddle Channel



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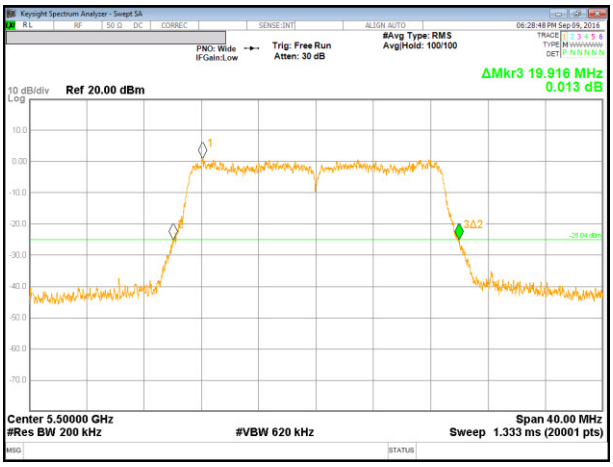
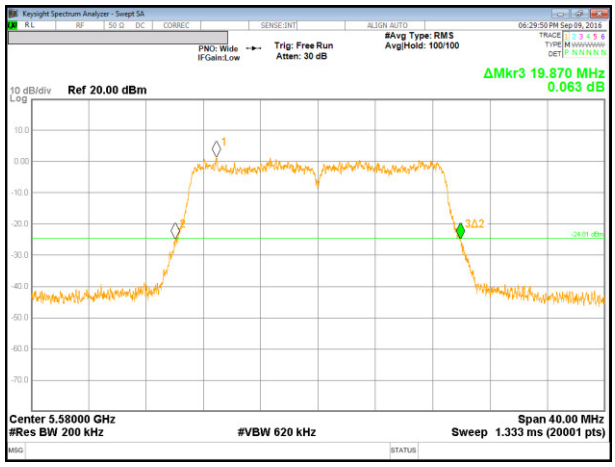
UNII 5.5 GHz IEEE 802.11n HT20 mode

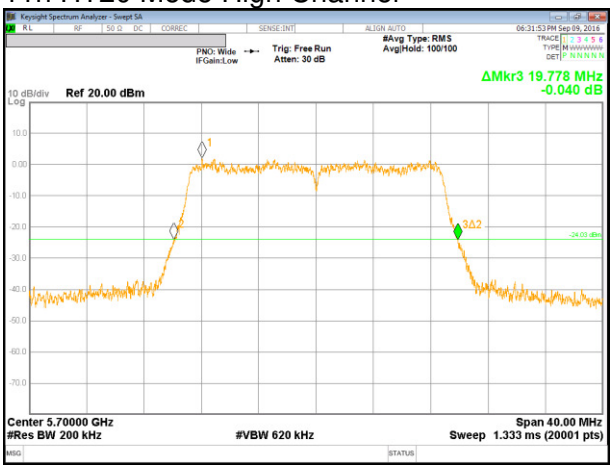
11n HT20 Mode Low Channel



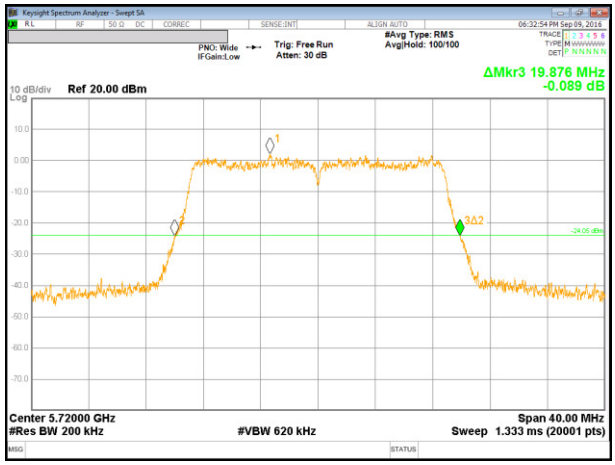
11n HT20 Mode Middle Channel



11n HT20 Mode High Channel



11n HT20 Mode Straddle Channel



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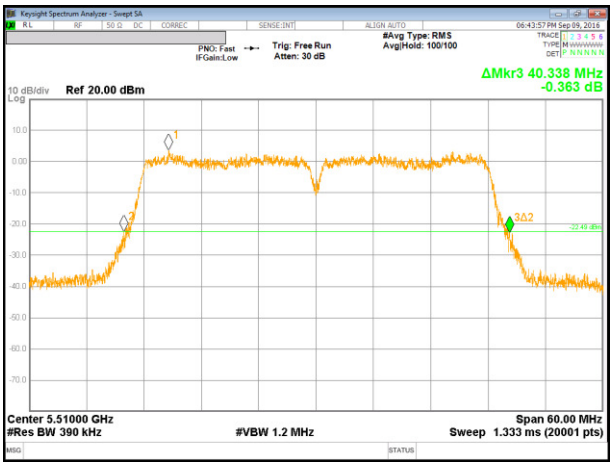
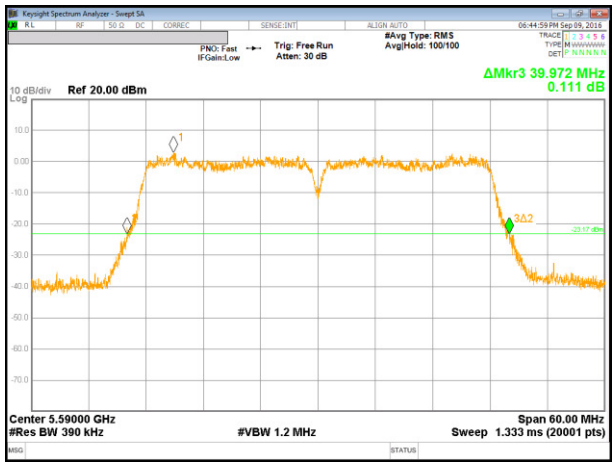
UNII 5.5 GHz IEEE 802.11n HT40 mode

11n HT40 Mode Low Channel

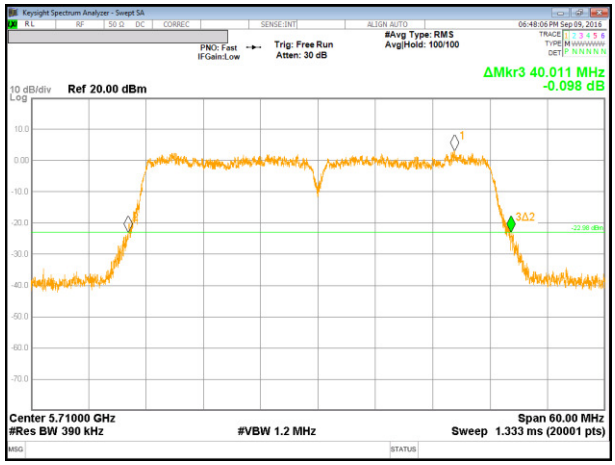


11n HT40 Mode Middle Channel



11n HT40 Mode High Channel

11n HT40 Mode Straddle Channel



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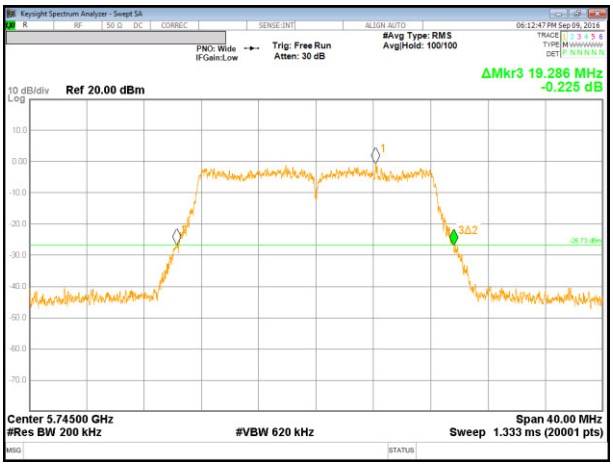
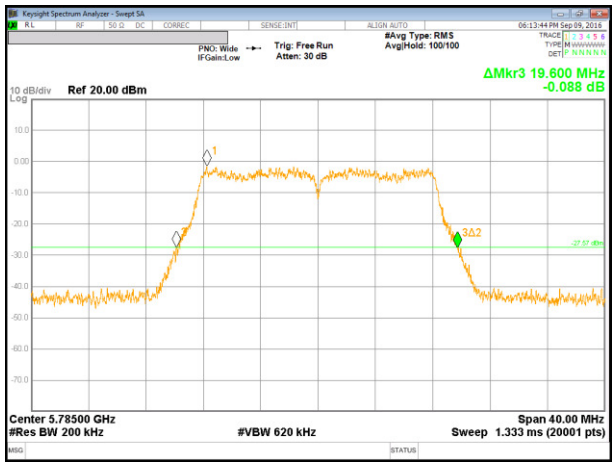
UNII 5.8 GHz IEEE 802.11a mode

11a Mode Low Channel



11a Mode Middle Channel



11a Mode High Channel

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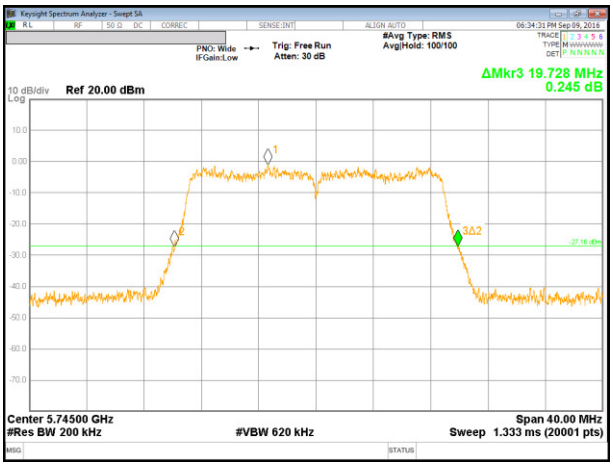
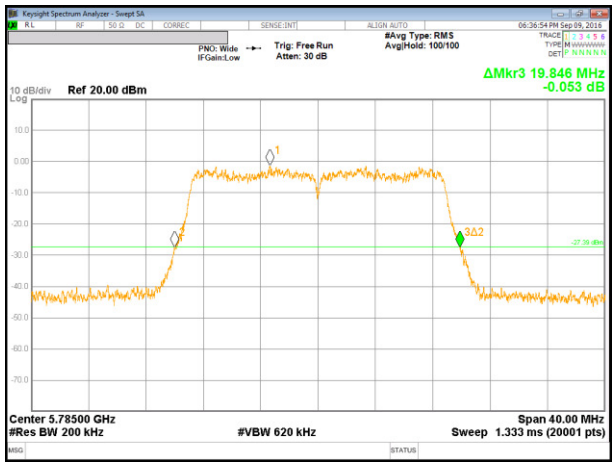
UNII 5.8 GHz IEEE 802.11n HT20 mode

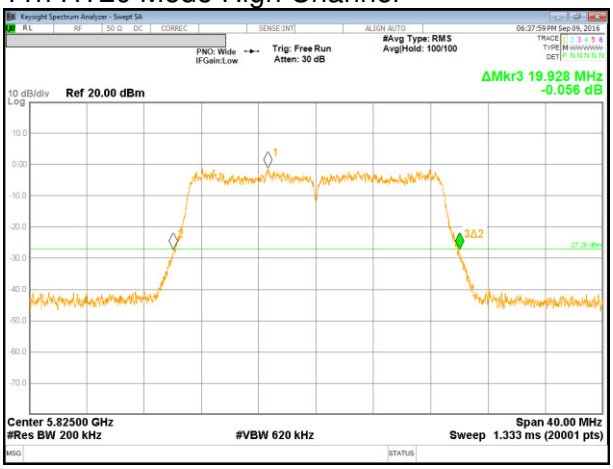
11n HT20 Mode Low Channel



11n HT20 Mode Middle Channel



11n HT20 Mode High Channel



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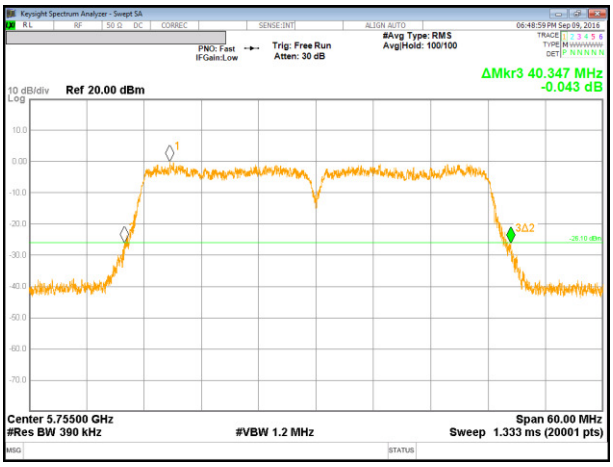
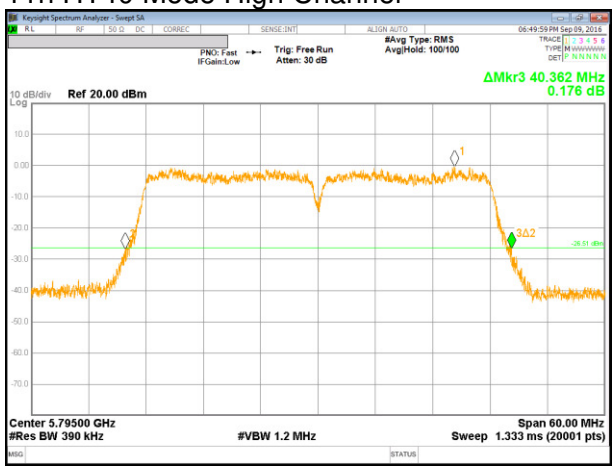
UNII 5.8 GHz IEEE 802.11n HT40 mode

11n HT40 Mode Low Channel



11n HT40 Mode High Channel



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10.3. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

NOTE

- Calculation for 99% Bandwidth of UNII-2C and UNII-3 Straddle Channel

ex) 802.11a mode
  - Fundamental frequency : 5720MHz
  - 99% BW : 16.459MHz
  - Turning Frequency : 5725MHz
  - 99% Bandwidth of UNII-2C band Portion
    = (5725 – (5720 - (16.459 / 2)) = 13.229 MHz
  - 99% Bandwidth of UNII-3 band Portion
    = (5720 + (16.459 / 2) -5725) = 3.230 MHz

RESULTS

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10.3.1. 802.11a MODE IN THE 5.2 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	5180	16.548
Mid	5200	16.550
High	5240	16.537
Worst		16.550

10.3.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	5180	17.688
Mid	5200	17.682
High	5240	17.678
Worst		17.688

10.3.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	5190	36.161
High	5230	36.246
Worst		36.246

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10.3.4. 802.11a MODE IN THE 5.3 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	5260	16.538
Mid	5300	16.530
High	5320	16.548
Worst		16.548

10.3.5. 802.11n HT20 MODE IN THE 5.3 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	5260	17.687
Mid	5300	17.694
High	5320	17.705
Worst		17.705

10.3.6. 802.11n HT40 MODE IN THE 5.3 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	5270	36.169
High	5310	36.170
Worst		36.170

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10.3.7. 802.11a MODE IN THE 5.5 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	5500	16.530
Mid	5580	16.541
High	5700	16.545
Straddle	5720	13.269
Worst		16.545

10.3.8. 802.11n HT20 MODE IN THE 5.5 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	5500	17.695
Mid	5580	17.683
High	5700	17.698
Straddle	5720	13.845
Worst		17.698

10.3.9. 802.11n HT40 MODE IN THE 5.5 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Low	5510	36.178
Mid	5550	36.199
High	5670	36.198
Straddle	5710	33.097
Worst		36.199

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10.3.10. 802.11a MODE IN THE 5.8 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Straddle	5720	3.269
Low	5745	16.549
Mid	5785	16.547
High	5825	16.541
Worst		16.549

10.3.11. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Straddle	5720	3.845
Low	5745	17.695
Mid	5785	17.684
High	5825	17.692
Worst		17.695

10.3.12. 802.11n HT40 MODE IN THE 5.8 GHz BAND

Channel	Frequency [MHz]	99% Bandwidth [MHz]
Straddle	5710	3.097
Low	5755	36.192
High	5795	36.184
Worst		36.192

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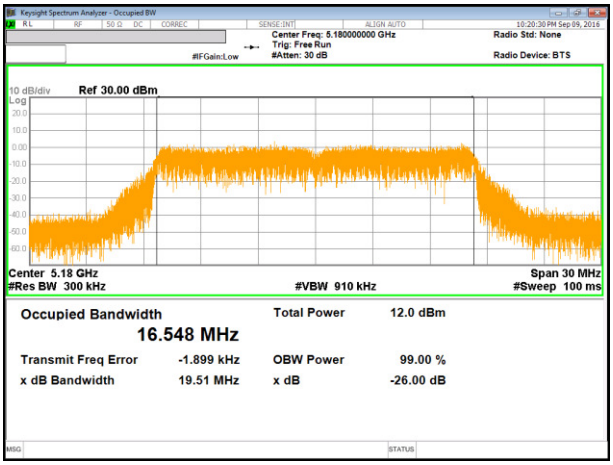
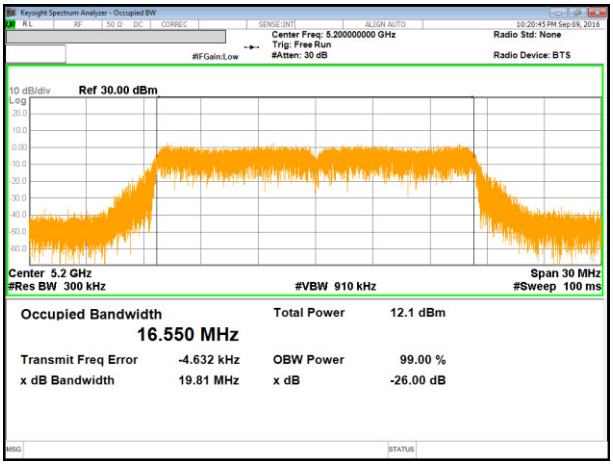
10.3.13. 99% BANDWIDTH PLOTS

UNII 5.2 GHz IEEE 802.11a mode

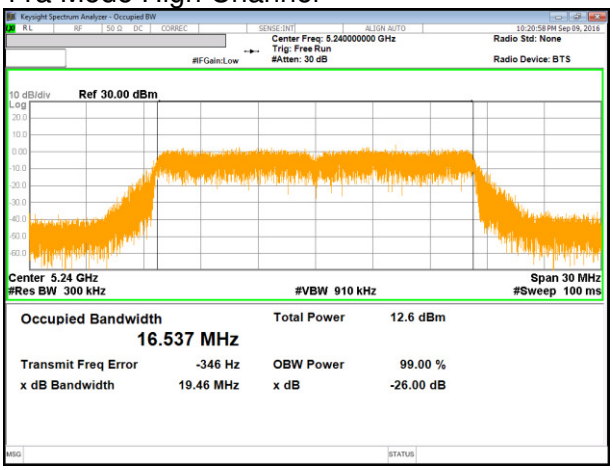
11a Mode Low Channel



11a Mode Middle Channel



11a Mode High Channel



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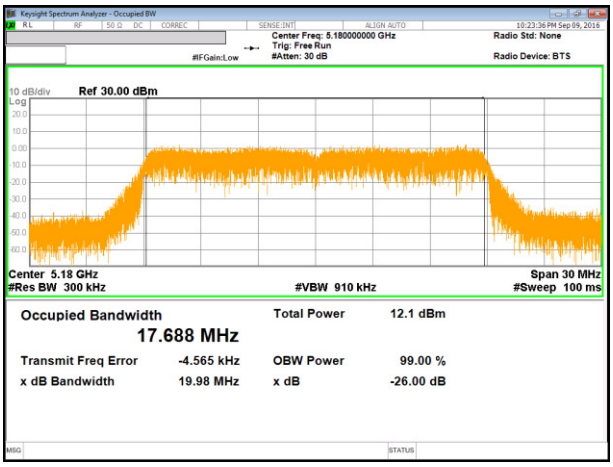
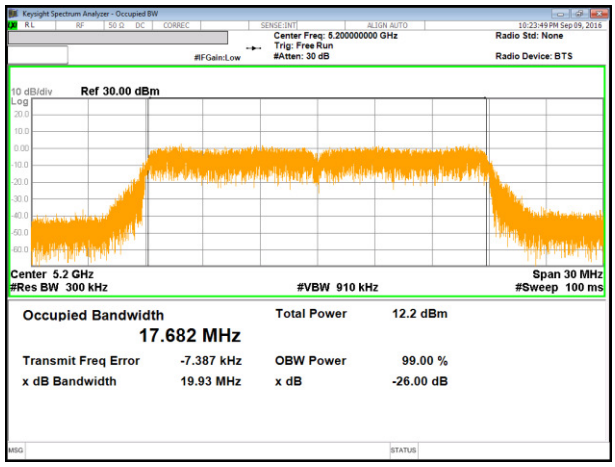
UNII 5.2 GHz IEEE 802.11n HT20 mode

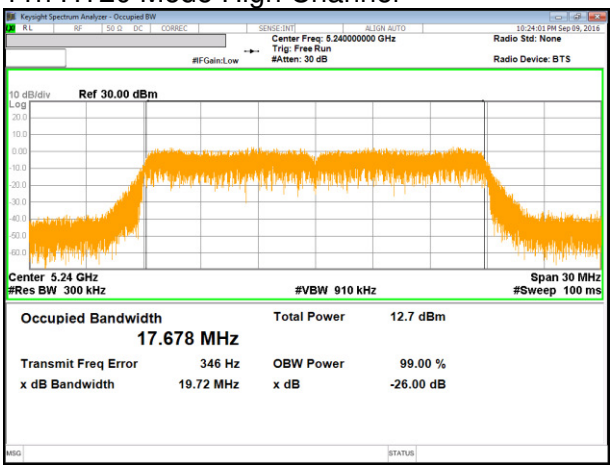
11n HT20 Mode Low Channel



11n HT20 Mode Middle Channel



11n HT20 Mode High Channel



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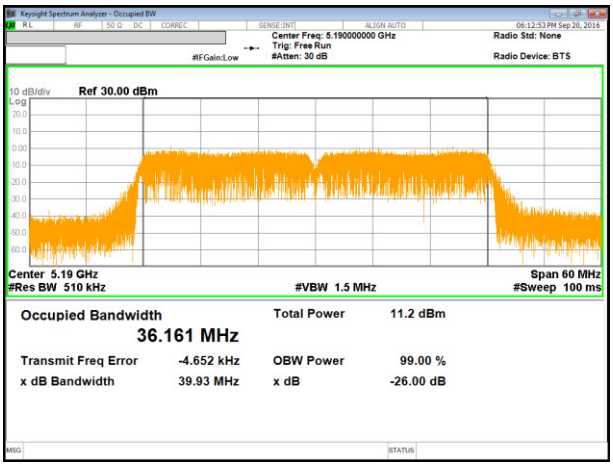
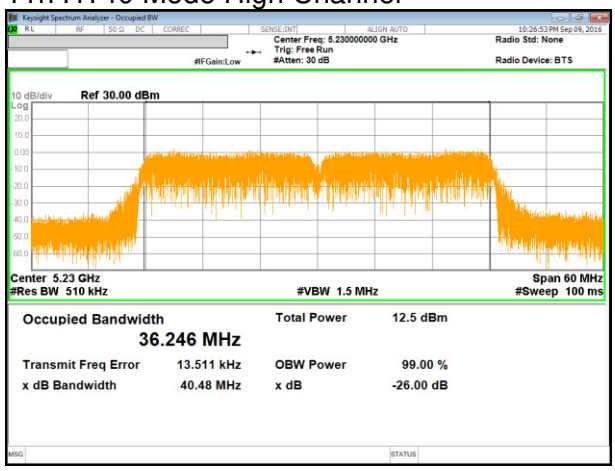
UNII 5.2 GHz IEEE 802.11n HT40 mode

11n HT40 Mode Low Channel



11n HT40 Mode High Channel



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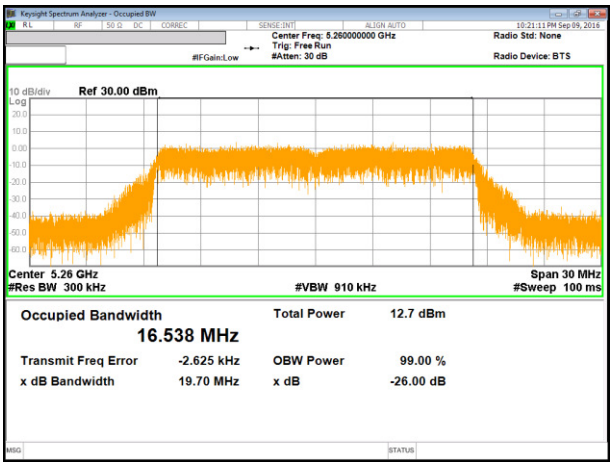
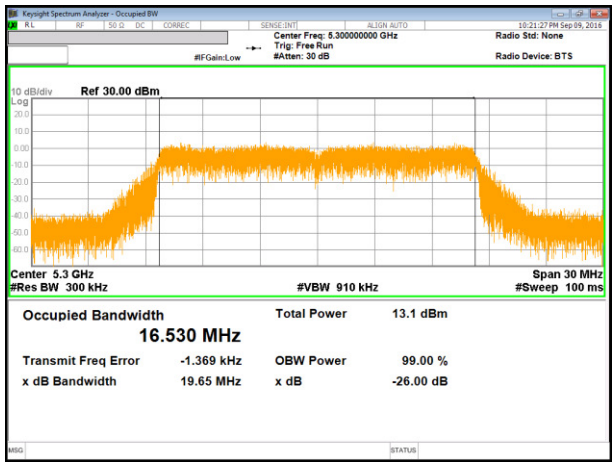
UNII 5.3 GHz IEEE 802.11a mode

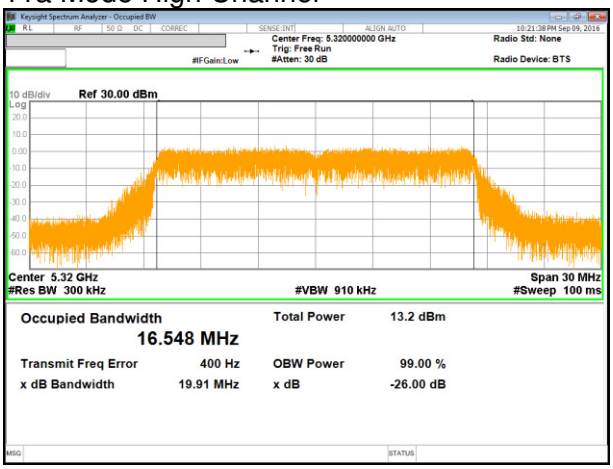
11a Mode Low Channel



11a Mode Middle Channel



11a Mode High Channel



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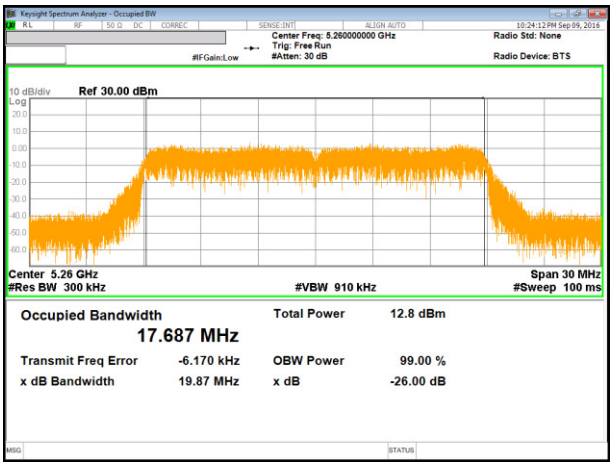
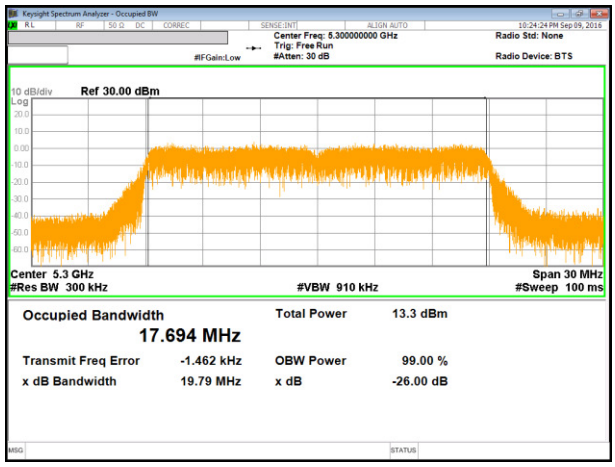
UNII 5.3 GHz IEEE 802.11n HT20 mode

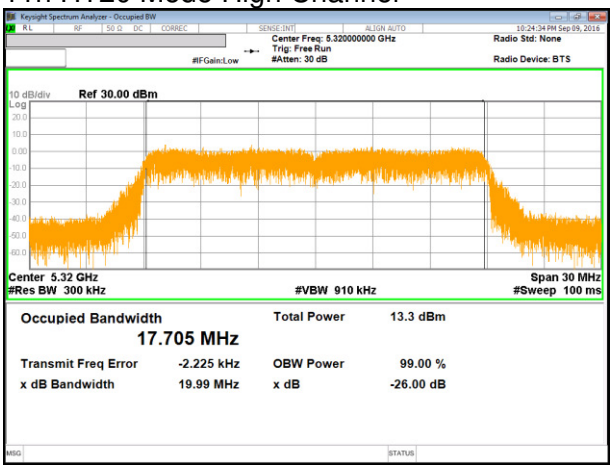
11n HT20 Mode Low Channel



11n HT20 Mode Middle Channel



11n HT20 Mode High Channel



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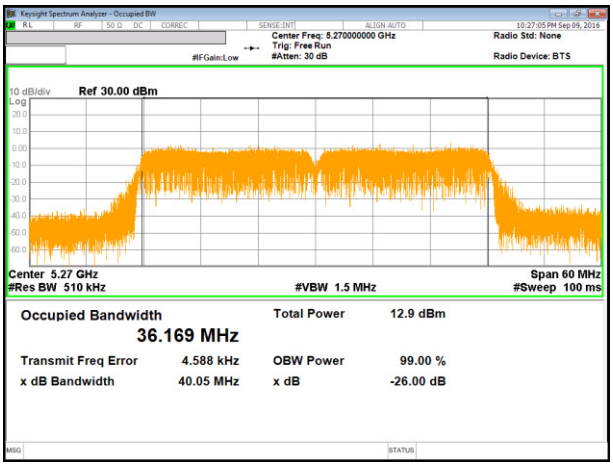
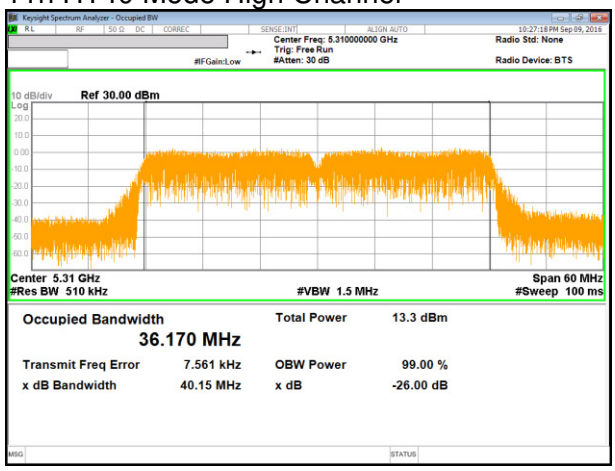
UNII 5.3 GHz IEEE 802.11n HT40 mode

11n HT40 Mode Low Channel



11n HT40 Mode High Channel



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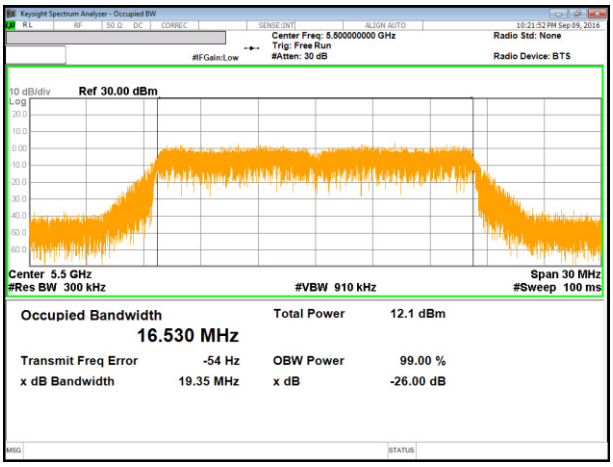
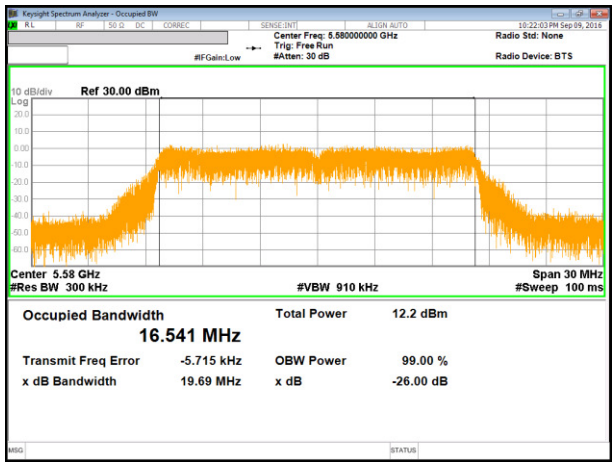
UNII 5.5 GHz IEEE 802.11a mode

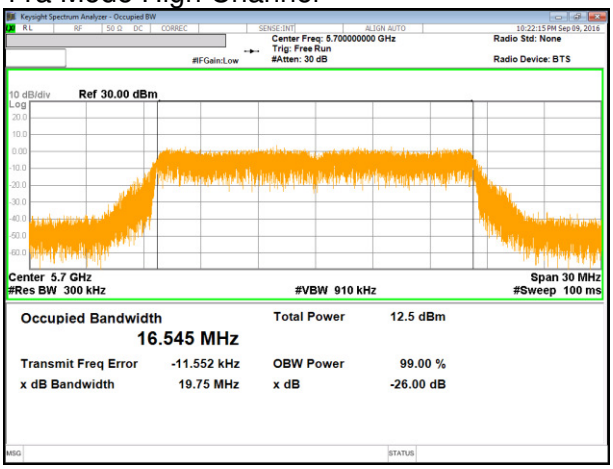
11a Mode Low Channel



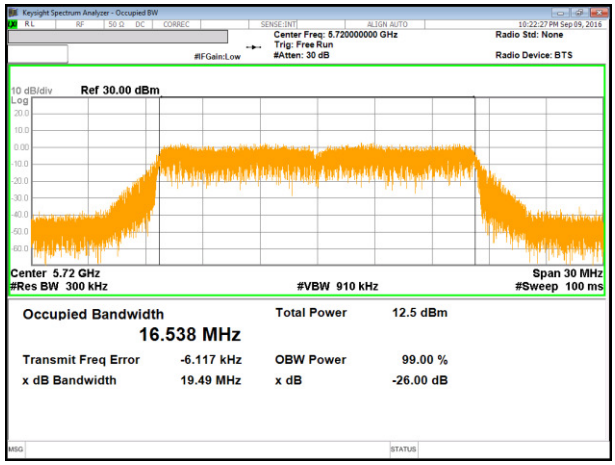
11a Mode Middle Channel



11a Mode High Channel



11a Mode Straddle Channel



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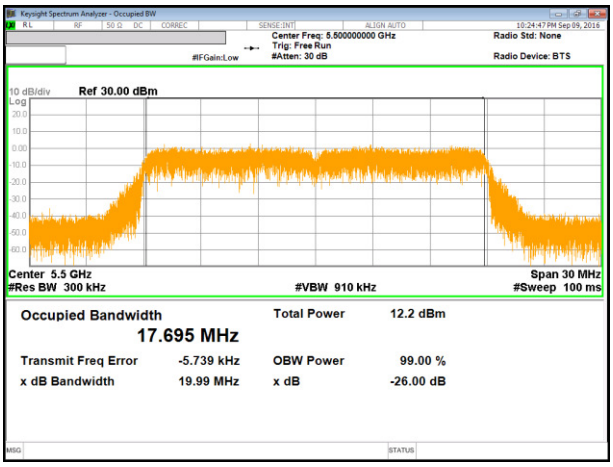
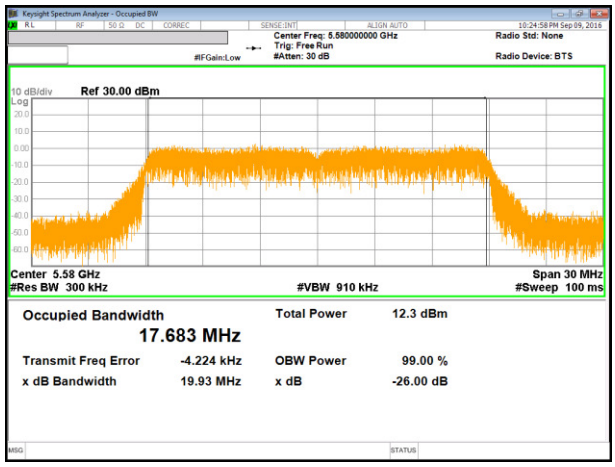
UNII 5.5 GHz IEEE 802.11n HT20 mode

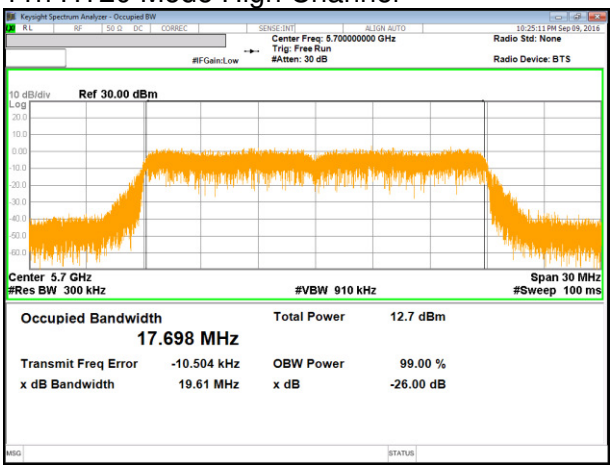
11n HT20 Mode Low Channel



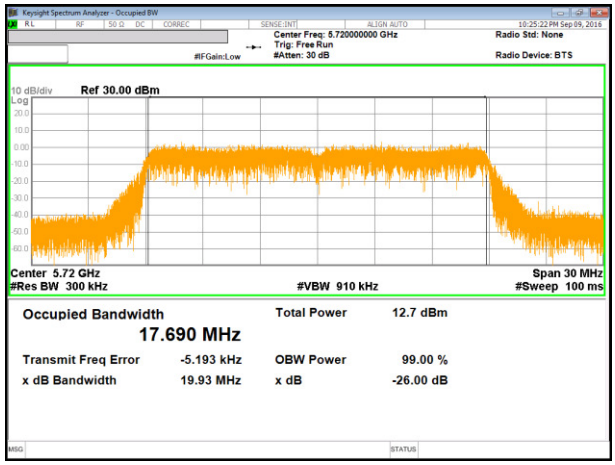
11n HT20 Mode Middle Channel



11n HT20 Mode High Channel



11n HT20 Mode Straddle Channel



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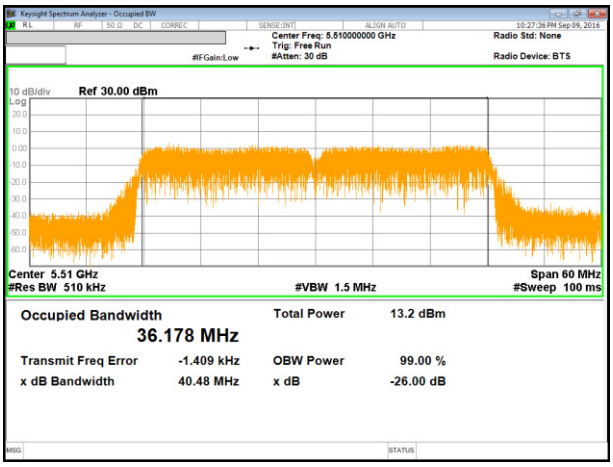
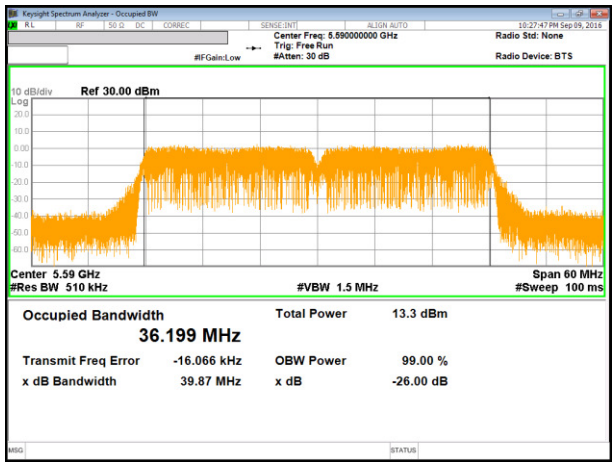
UNII 5.5 GHz IEEE 802.11n HT40 mode

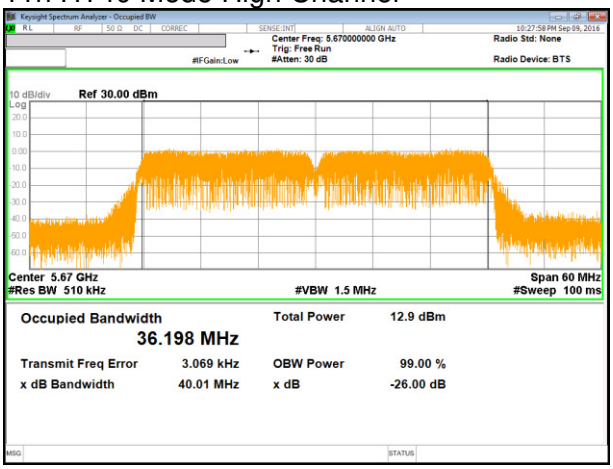
11n HT40 Mode Low Channel



11n HT40 Mode Middle Channel



11n HT40 Mode High Channel



11n HT40 Mode Straddle Channel

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