CERTIFICATION TEST REPORT

Report Number. : 12132879-E4V2

Applicant	:	SONY MOBILE COMMUNICATIONS, INC. 4-12-3 HIGASHI-SHINAGAWA, SHINAGAWA -KU, TOKYO, 140-0002, JAPAN
FCC ID	:	PY7-70663E
EUT Description	:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac & NFC
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C

Date Of Issue:

March 23, 2018

Prepared by:

UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888

NVLAP TESTING
NVLAP LAB CODE 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	3/20/2018	Initial Issue	Dan Coronia
V2	3/23/2018	Updated Section 5.2, 5.5, & 6	Kiya Kedida

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SONY MOBILE COMMUNICATIONS, INC. 4-12-3 HIGASHI-SHINAGAWA, SHINAGAWA -KU, TOKYO, 140-0002, JAPAN
EUT DESCRIPTION:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac & NFC
SERIAL NUMBER:	BH9000ARBG; BH9000JPBG (RADIATED) BH9000BCBC; BH9000HPBC (CONDUCTED)
DATE TESTED:	FEBURARY 23 – MARCH 12, 2018

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

UL Verification Services Inc. 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 Verification Services Inc. 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 Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By:

Dan Coronia
CONSUMER TECHNOLOGY DIVISION
Operations Leader
UL Verification Services Inc.

Reviewed By:

Kiya Kedida
CONSUMER TECHNOLOGY DIVISION
Project Engineer
UL Verification Services Inc

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, KDB 558074 D01 v4, ANSI C63.10-2013

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☒ Chamber A (ISED:2324B-1)	☐ Chamber D (ISED:22541-1)
☒ Chamber B (ISED:2324B-2)	☐ Chamber E (ISED:22541-2)
☐ Chamber C (ISED:2324B-3)	☐ Chamber F (ISED:22541-3)
	☐ Chamber G (ISED:22541-4)
	☒ Chamber H (ISED:22541-5)

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through C are covered under ISED company address code 2324B with site numbers 2324B -1 through 2324B-3, respectively. Chambers D through H are covered under ISED Canada company address code 22541 with site numbers 22541 -1 through 22541-5, respectively.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.45 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.24 dB

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

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5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac & NFC.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2Tx			
2412 - 2472	802.11b	16.36	43.25
2412 - 2472	802.11g	16.41	43.75
2412 - 2472	802.11n HT20	16.26	42.27

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a loop antenna for chain 0, and a monopole antenna for chain 1 with maximum gain as below table:

Frequency Band (GHz)	Chain 0	Chain 1
	Antenna Gain (dBi)	Antenna Gain (dBi)
2402-2480	-2.65	-9.93

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was s_atp_XXX_0_ 00375_A_19
The test utility software used during testing was Tera Term Ver 4.79

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 30MHz, 1GHz, above 18GHz, and AC power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Band edge Harmonics and Radiated Emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the low, middle and high channels.

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

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

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20mode: MCS0

The simultaneous mode (SISO 2.4GHz Chain 0 and 5GHz chain 1) was checked and stand-alone (MIMO) 2.4 GHz / 5GHz remain the worst case.

NOTE: SISO mode is covered by MIMO mode due to same maximum tune-up limit (power).

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	20B7S0A200	PC015REW	NA
AC Adapter	SONY	UCH12	4016W40310044	NA
DC Power Supply	Ametek	XT 15-4	T463	N/A

I/O CABLES (CONDUCTED TEST)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Antenna	1	RF	Shielded	0.2	To spectrum Analyzer
2	USB	1	USB	Shielded	1	N/A
3	DC	1	DC	Shielded	0.3	N/A

I/O CABLES (RADIATED AND CONDUCTED EMISSIONS)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB	1	USB	Shielded	3	N/A

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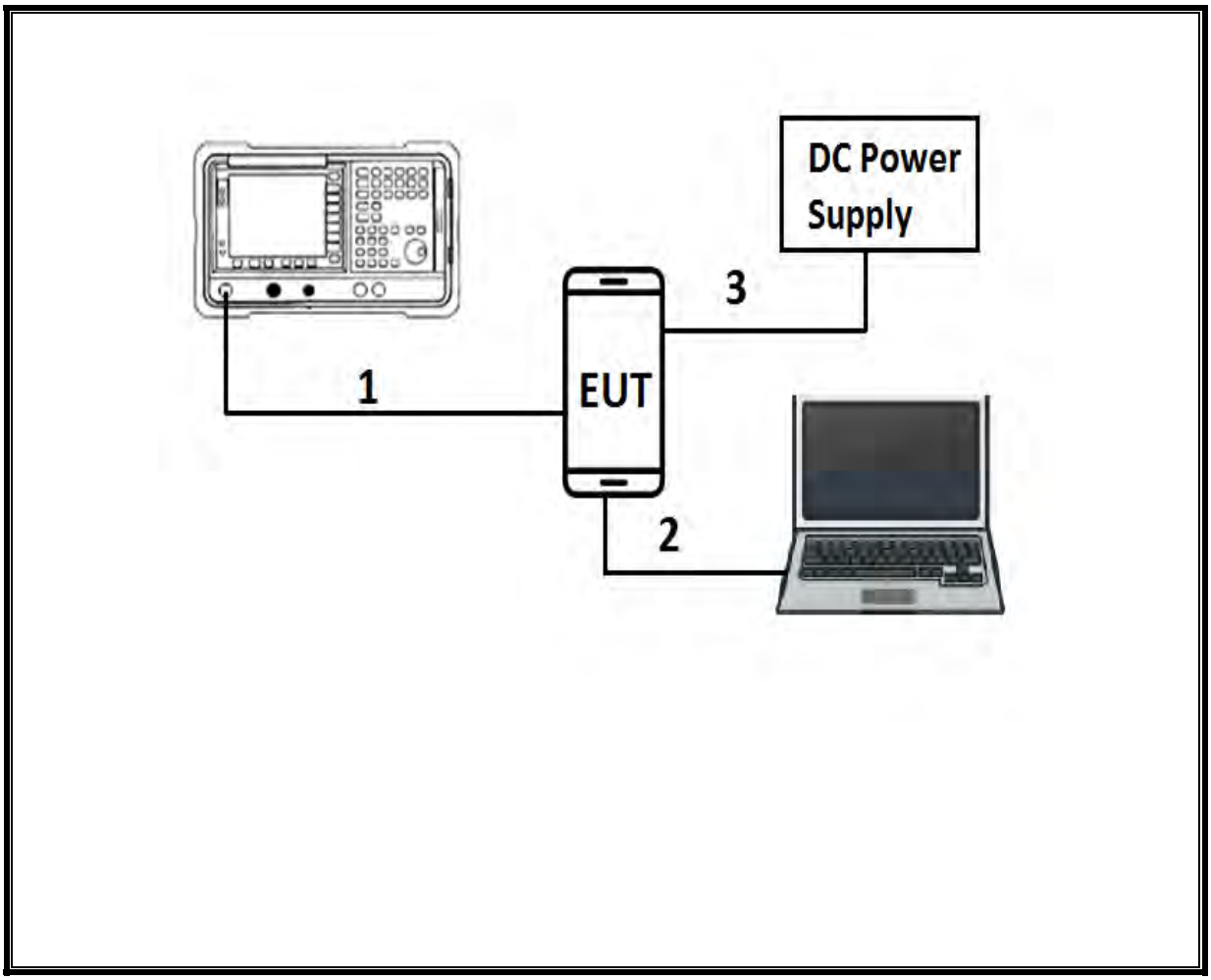
CONDCUTED TEST SETUP DIAGRAM



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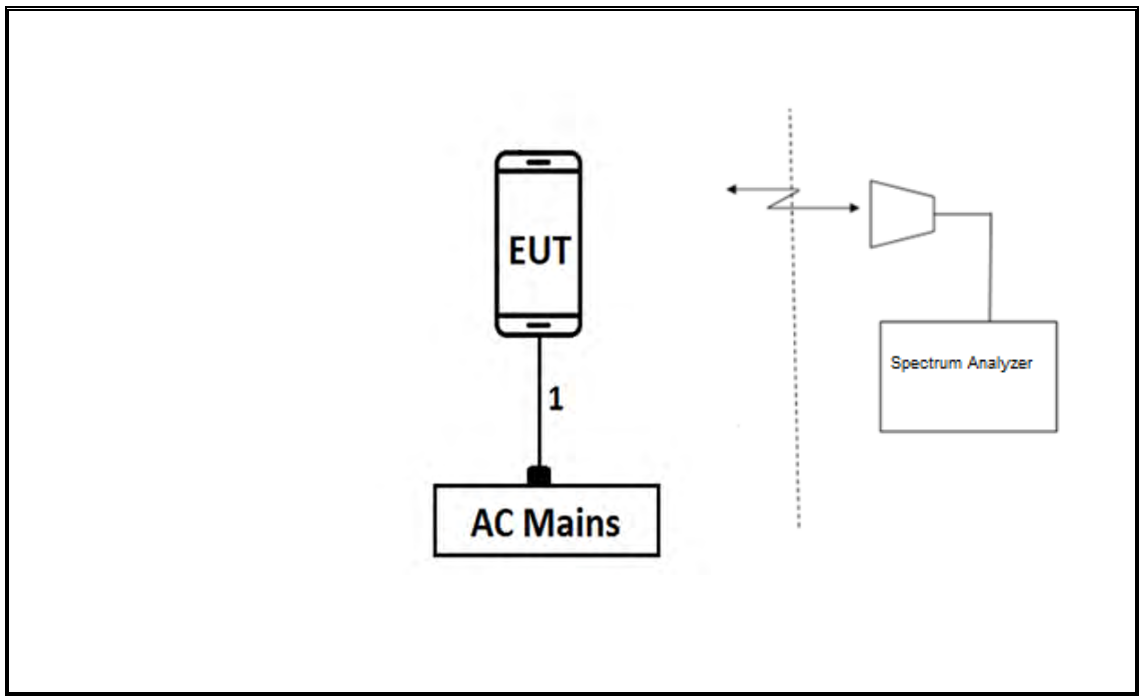
RADIATED AND AC LINE CONDUCTED EMISSIONS SETUP DIAGRAM



6. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 558074 D01 v04, Section 6.

6 dB BW: KDB 558074 D01 v04, Section 8.1.

99% BW: ANSI C63.10-2013, Section 6.9.3.

Output Power: KDB 558074 D01 v04, Section 9.2.3.2.

Power Spectral Density: KDB 558074 D01 v04, Section 10.3 & 10.5.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v04, Section 11.1 (b).

Out-of-band emissions in restricted bands: KDB 558074 D01 v04, Section 12.1.

Band-edge: KDB 558074 D01 v04, Section 12.1.

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

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7. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
Amplifier, 1 - 18GHz	Miteq	AFS42-00101800-25-S-42	T493	06/23/2018	06/23/2017
Amplifier, 1 - 18GHz	Miteq	AFS42-00101800-25-S-42	T1165	11/25/2018	11/25/2017
RF Preamplifier, 1 - 26GHz	Agilent	8449B	T404	07/23/2018	07/23/2017
Amplifier, 10KHz to 1GHz, 32dB	Sonoma Instrument	310N	T835	06/24/2018	06/24/2017
Antenna, Broadband Hybrid 30MHz to 2000MHz	Sunol Science	JB1	T185	03/30//2018	03/30/2017
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T863	06/09/2018	06/09/2017
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T862	06/09/2018	06/09/2017
Antenna, Horn 18-26.5GHz	ARA	MWH-1826	T449	01/04/2019	01/04/2018
Power Meter, P-series single channel	Agilent (Keysight) Technologies	N1911A	T1269	03/29/2018	03/29/2017
Power Sensor, P - series, 50MHz to 18GHz, Wideband	All	N1921A	T1224	03/29/2018	03/29/2017
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1113	12/21/2018	12/21/2017
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1466	04/11/2018	04/11/2017
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1454	01/08/2019	01/08/2018
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T917	06/29/2018	06/29/2017
Antenna, Active Loop 9kHz-30MHz	Com-Power Corp.	AL-130R	T1866	10/10/2018	10/10/2017
Test Receiver, EMI, 10Hz-7GHz	Rhode&Schwarz	ESR	T1436	01/06/2019	01/06/2018
LISN	FISCHER	FCC-LISN-50/250-25-2-01	T1310	01/17/2019	01/17/2018

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Ver 9.5, December 1, 2016
Antenna Port Software	UL	UL RF	Ver 9.1, January 25, 2018

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
802.11b 1TX	12.212	12.300	0.993	99.28%	0.00	0.010
802.11g 1TX	2.027	2.065	0.982	98.16%	0.00	0.010
802.11n HT20 1TX	2.509	2.568	0.977	97.70%	0.10	0.399

DUTY CYCLE PLOTS

LOW CHANNEL

MID CHANNEL

HIGH CHANNEL

8.2. 99% BANDWIDTH

LIMITS

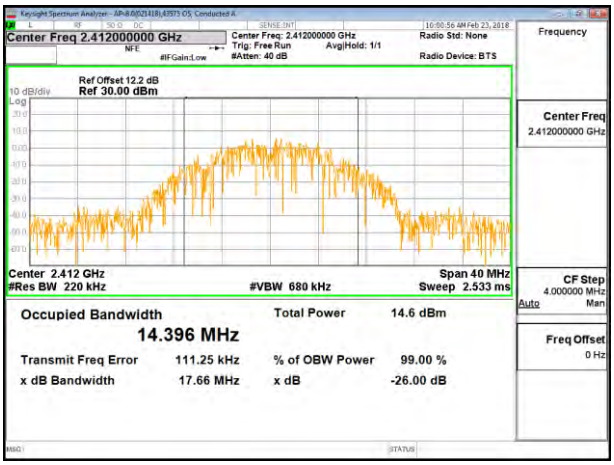
None; for reporting purposes only.

RESULTS

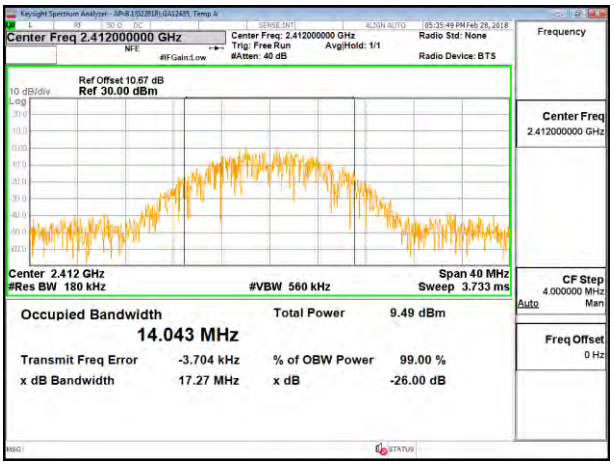
8.2.1. 802.11b MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	**14.3960**	14.0430
Mid 6	2437	14.3410	14.0460
High 11	2462	13.7510	13.9560
High 12	2467	13.9060	**14.4910**
High 13	2472	14.2390	13.8300

LOW CHANNEL 1

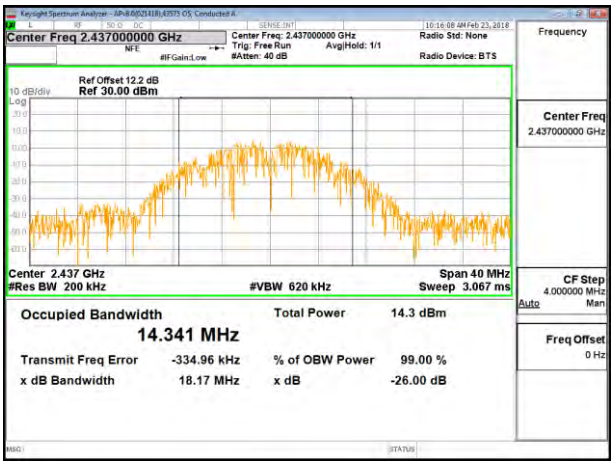


LOW CHANNEL 1 CHAIN 0

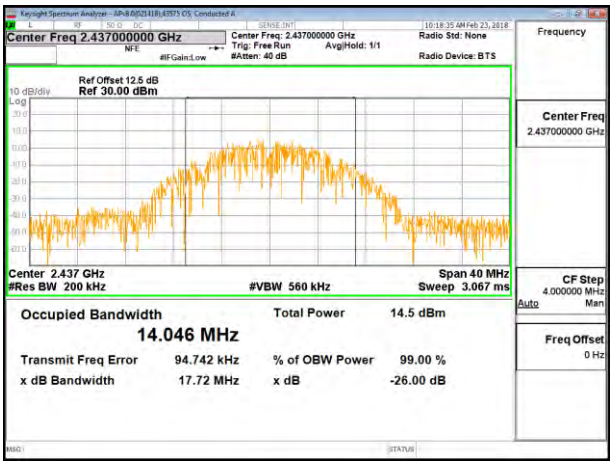


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

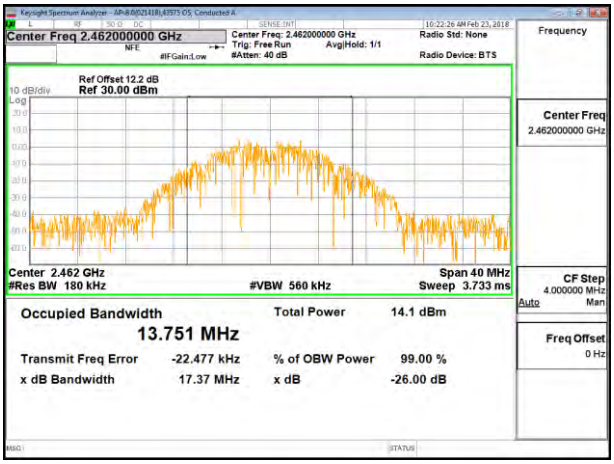


MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11



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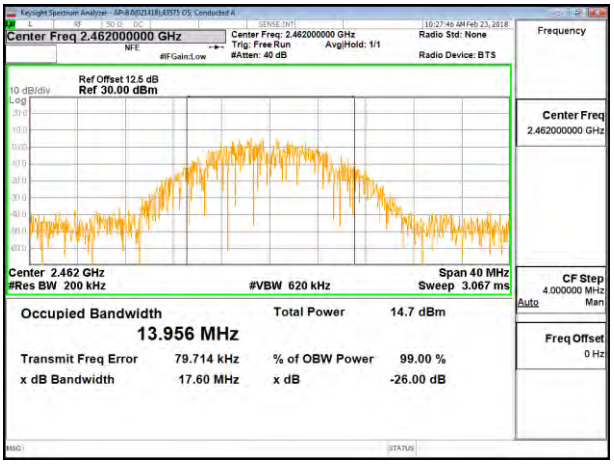
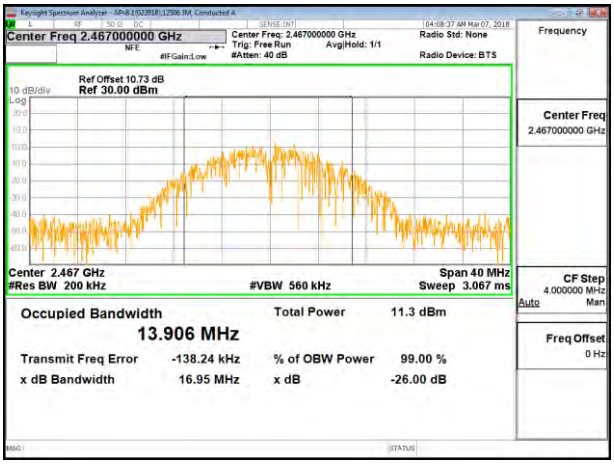
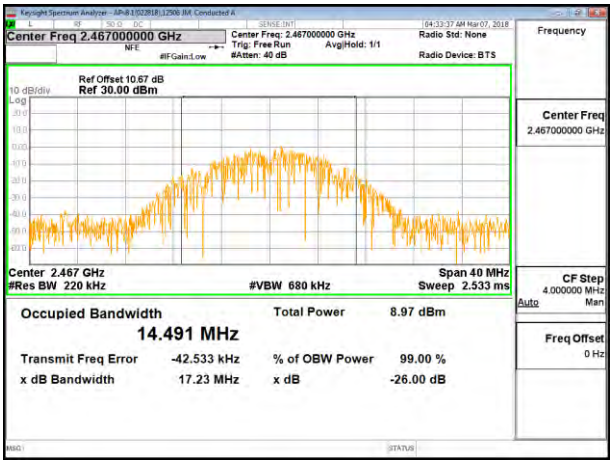


HIGH CHANNEL 11 CHAIN 1

HIGH CHANNEL 12

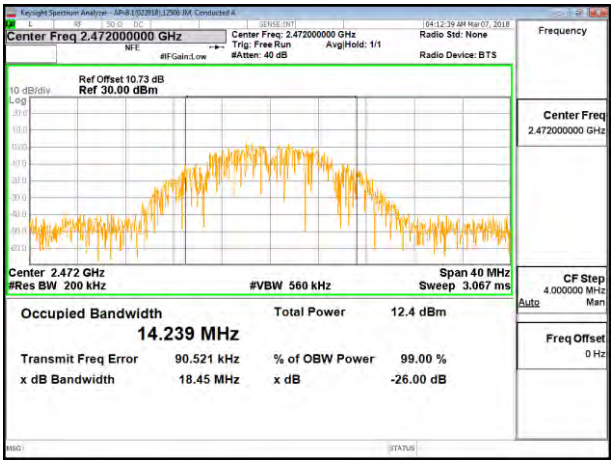


HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



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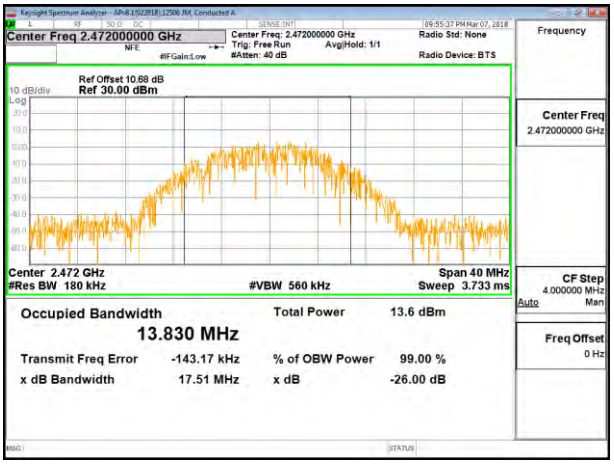


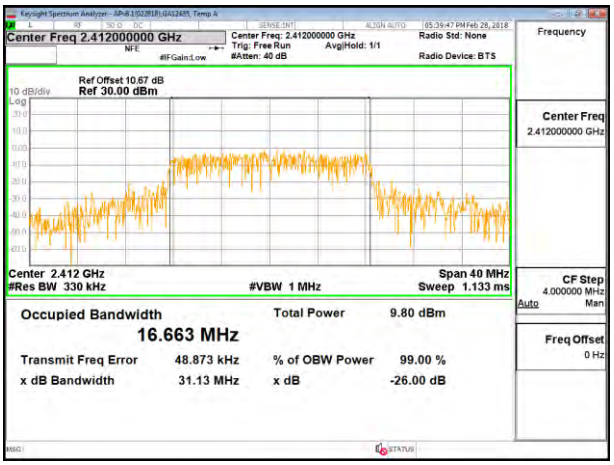
HIGH CHANNEL 13 CHAIN 1

8.2.2. 802.11g MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	16.4860	**16.6630**
Mid 6	2437	**16.4980**	16.4990
High 11	2462	16.3660	16.4760
High 12	2467	16.4500	16.5510
High 13	2472	16.4820	16.5570

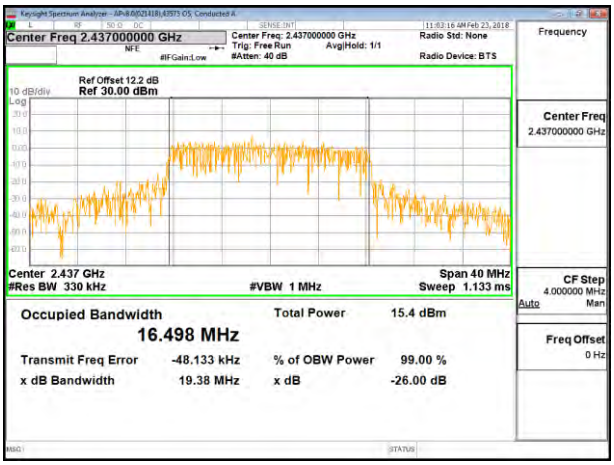
LOW CHANNEL 1

LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6



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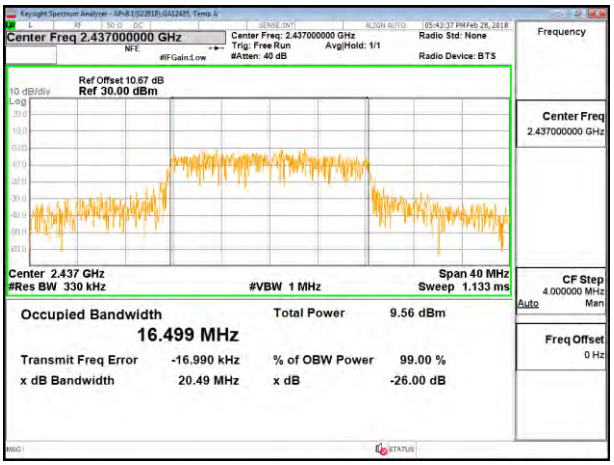
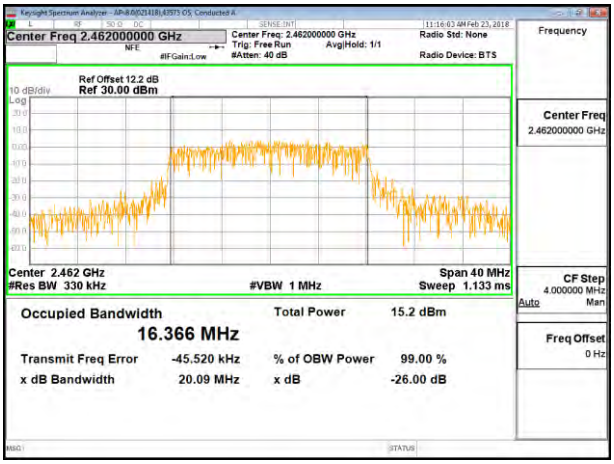
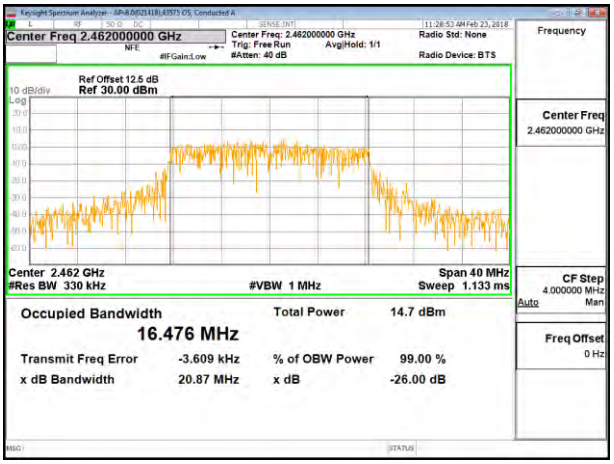


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11

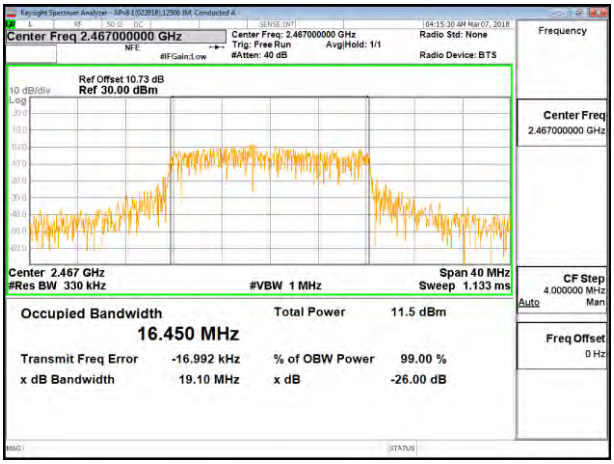


HIGH CHANNEL 11 CHAIN 0

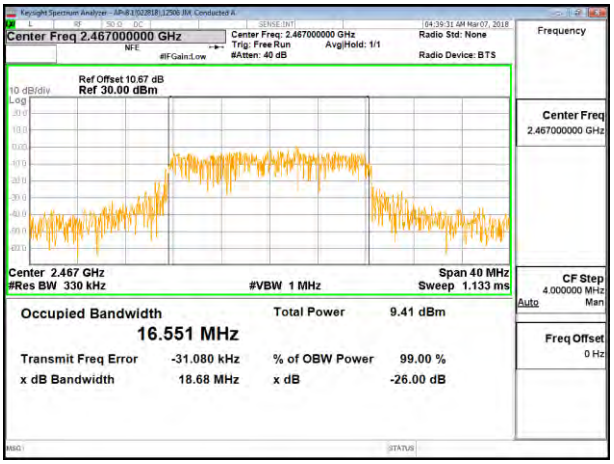


HIGH CHANNEL 11 CHAIN 1

HIGH CHANNEL 12



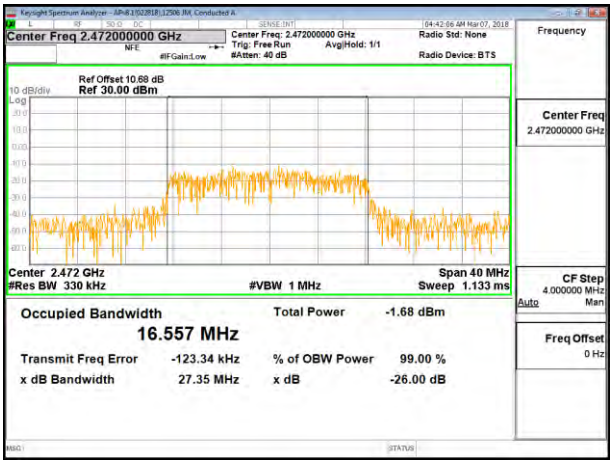
HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13

HIGH CHANNEL 13 CHAIN 0



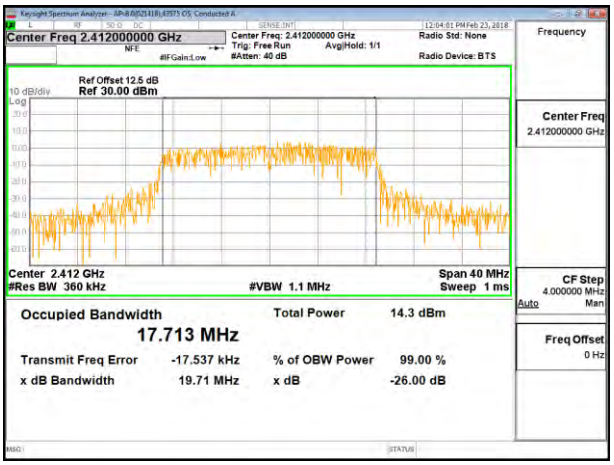
HIGH CHANNEL 13 CHAIN 1

8.2.3. 802.11n HT20 MODE

Channel	Frequency (MHz)	99% Bandwidth Chain 0 (MHz)	99% Bandwidth Chain 1 (MHz)
Low 1	2412	17.8320	17.7130
Mid 6	2437	**17.8800**	17.8290
High 11	2462	17.5700	17.7000
High 12	2467	17.7400	17.6450
High 13	2472	17.7370	**17.8380**

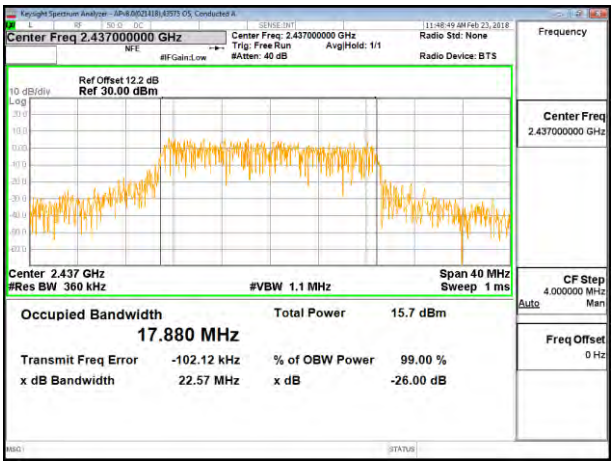
LOW CHANNEL 1

LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

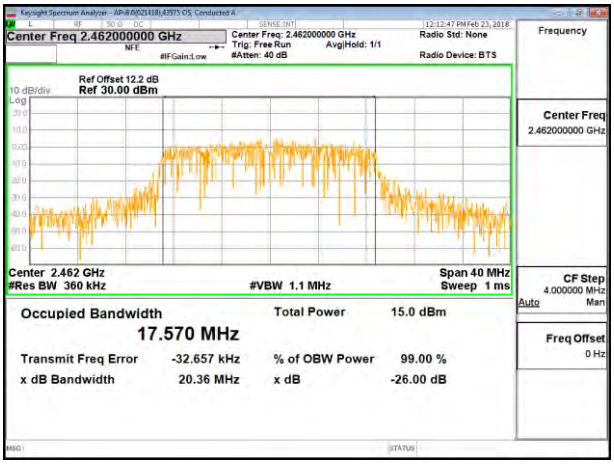
MID CHANNEL 6



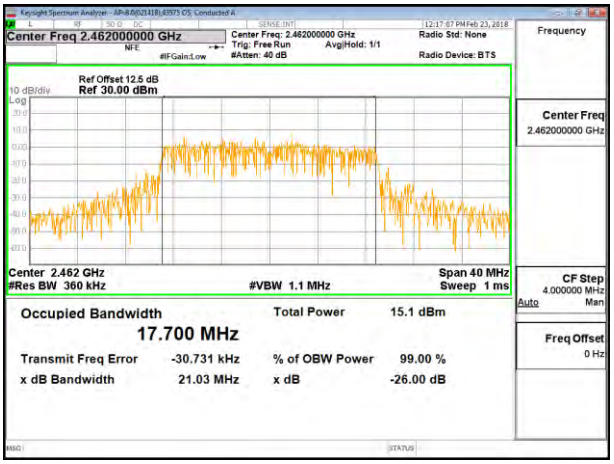
MID CHANNEL 6 CHAIN 0

MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11

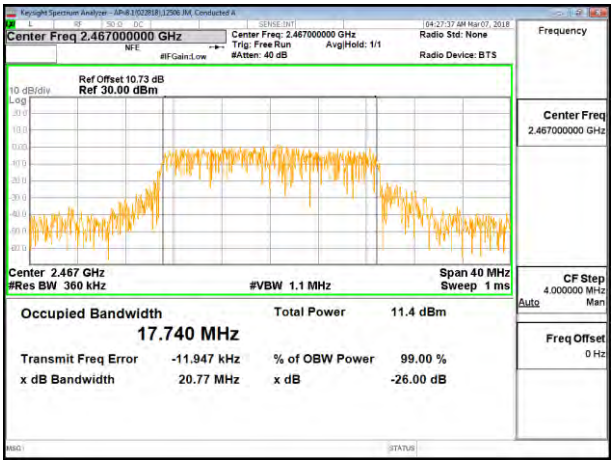


HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 11 CHAIN 1

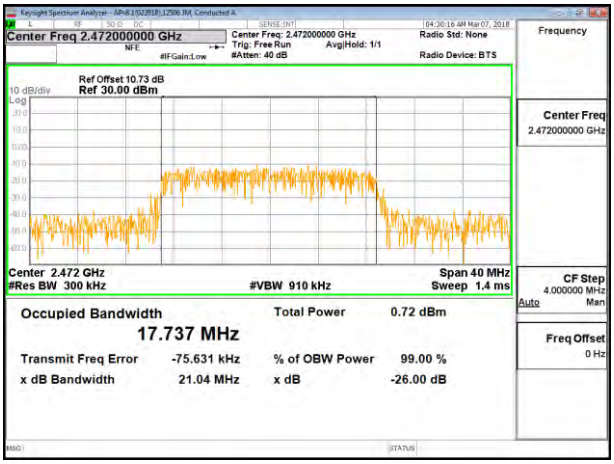
HIGH CHANNEL 12



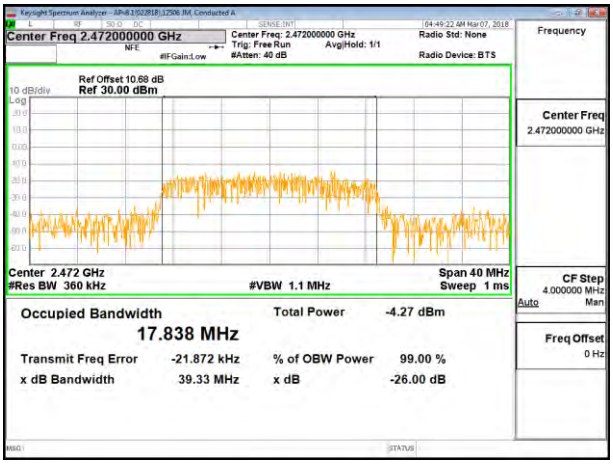
HIGH CHANNEL 12 CHAIN 0

HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

8.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

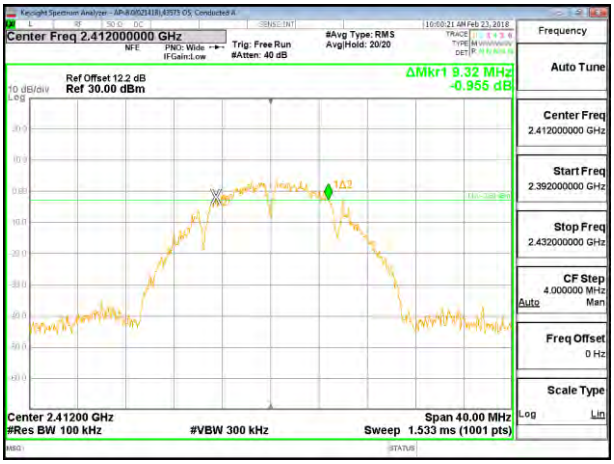
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

8.3.1. 802.11b MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	**9.3200**	7.3600	0.5
Mid 6	2437	9.0400	7.8800	0.5
High 11	2462	7.8000	7.1200	0.5
High 12	2467	8.2800	**8.4800**	0.5
High 13	2472	9.0400	7.1600	0.5

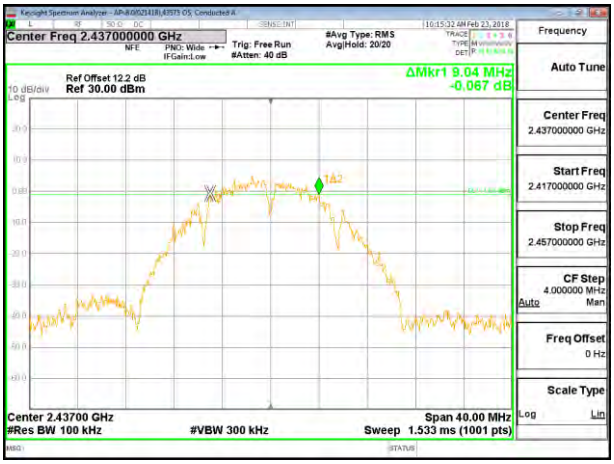
LOW CHANNEL 1



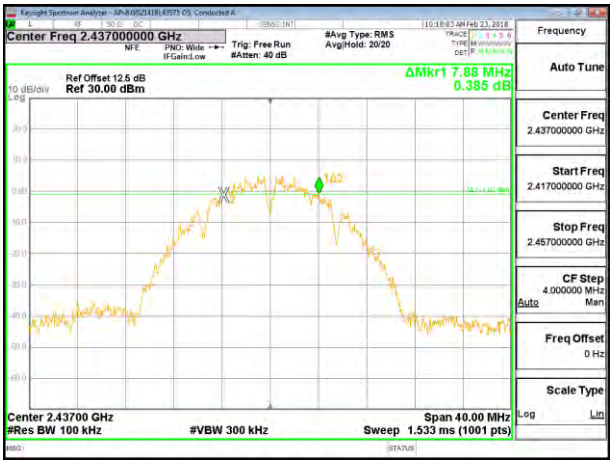
LOW CHANNEL 1 CHAIN 0

LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

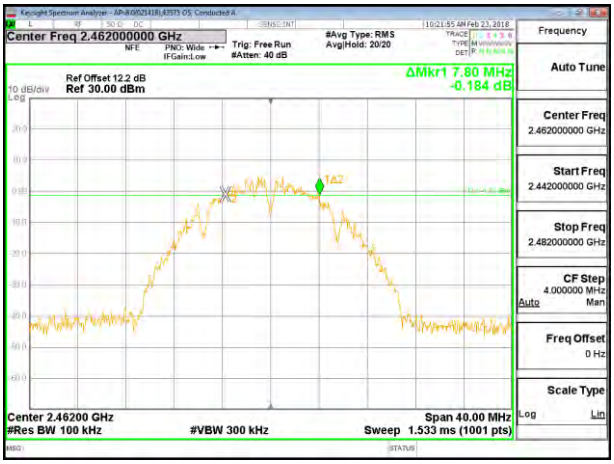


MID CHANNEL 6 CHAIN 0



MID CHANNEL 6 CHAIN 1

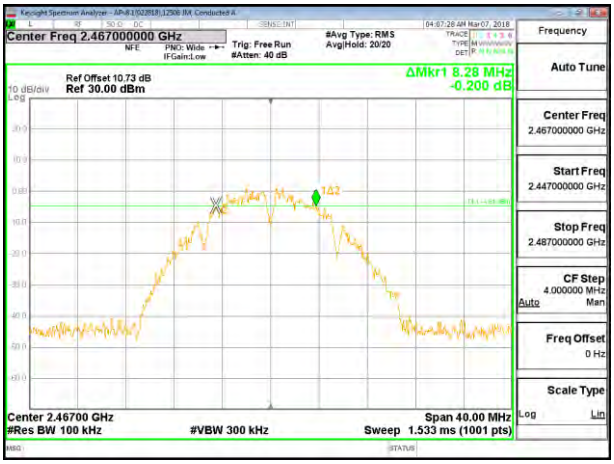
HIGH CHANNEL 11



HIGH CHANNEL 11 CHAIN 0

HIGH CHANNEL 11 CHAIN 1

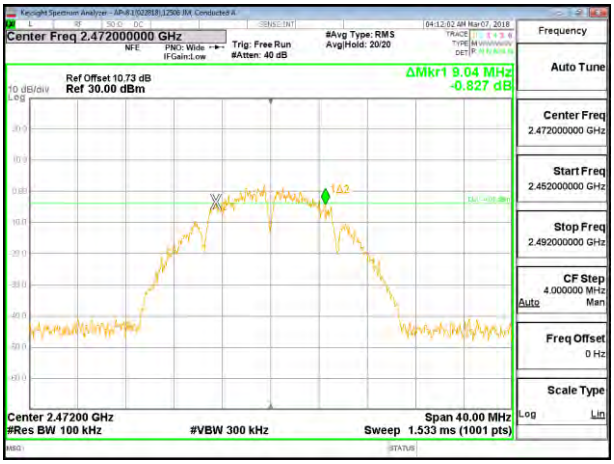
HIGH CHANNEL 12



HIGH CHANNEL 12 CHAIN 0

HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



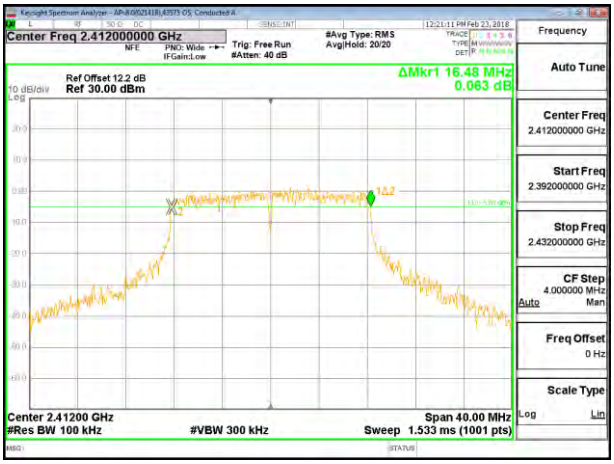
HIGH CHANNEL 13 CHAIN 0

HIGH CHANNEL 13 CHAIN 1

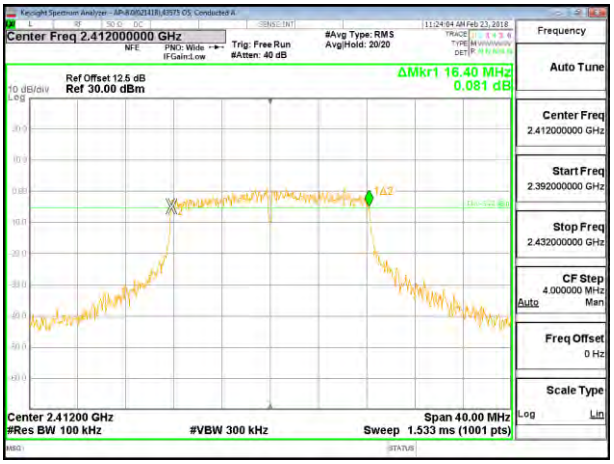
8.3.2. 802.11g MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	**16.4800**	**16.4000**	0.5
Mid 6	2437	16.4400	16.4000	0.5
High 11	2462	16.3600	16.4000	0.5
High 12	2467	16.3600	16.4400	0.5
High 13	2472	16.4400	16.4000	0.5

LOW CHANNEL 1

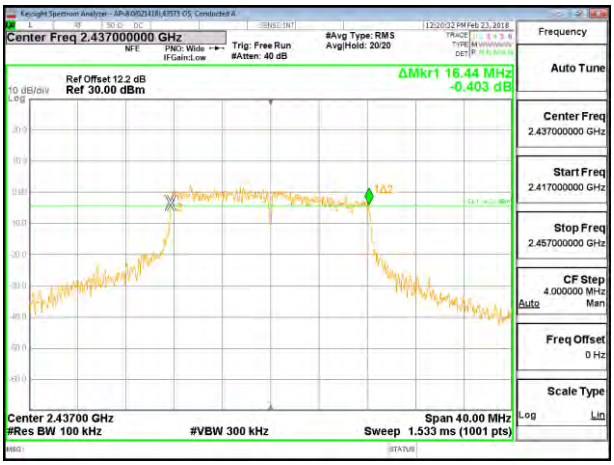


LOW CHANNEL 1 CHAIN 0

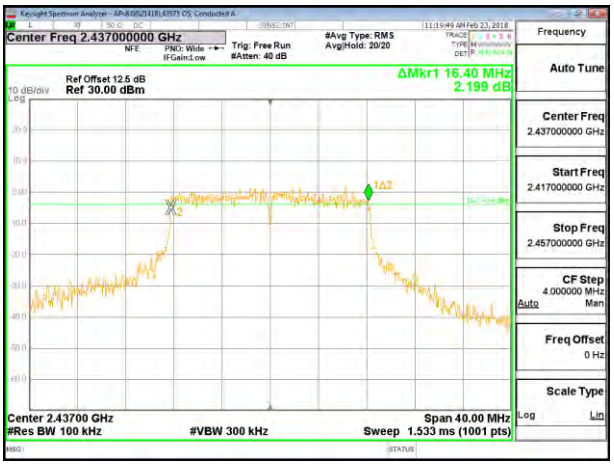


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

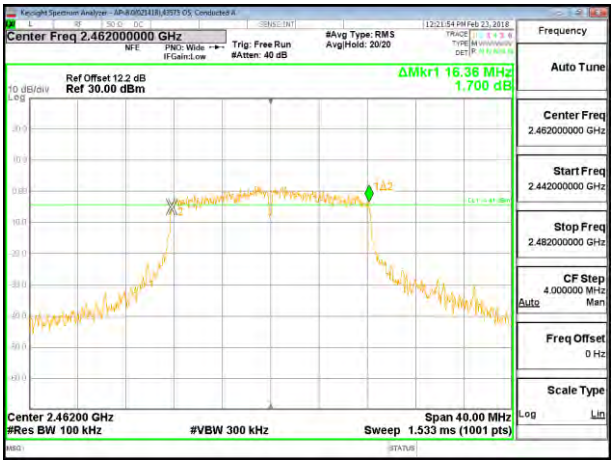


MID CHANNEL 6 CHAIN 0

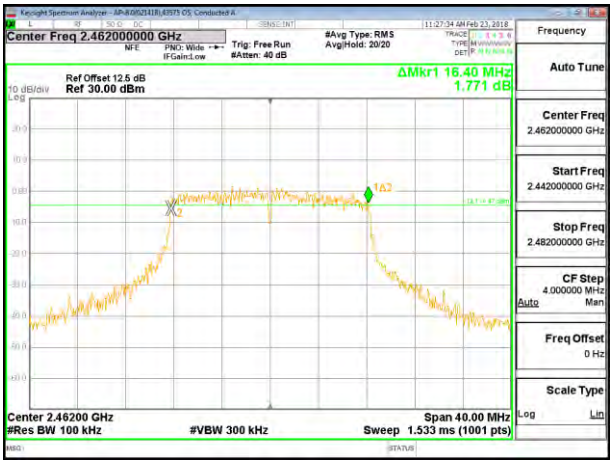


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11

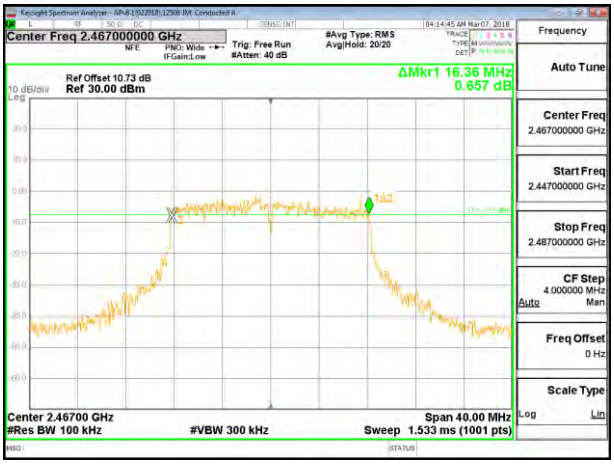


HIGH CHANNEL 11 CHAIN 0

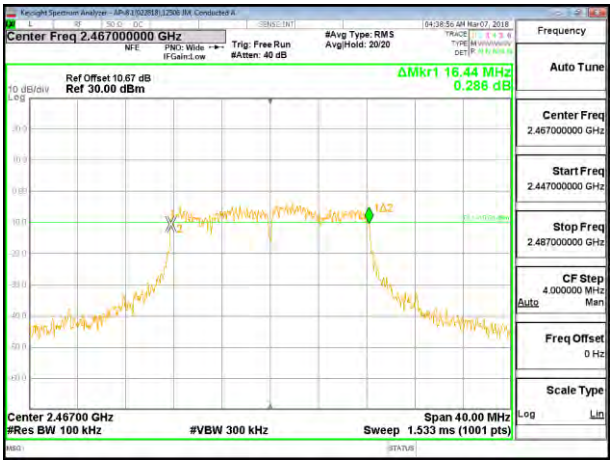


HIGH CHANNEL 11 CHAIN 1

HIGH CHANNEL 12

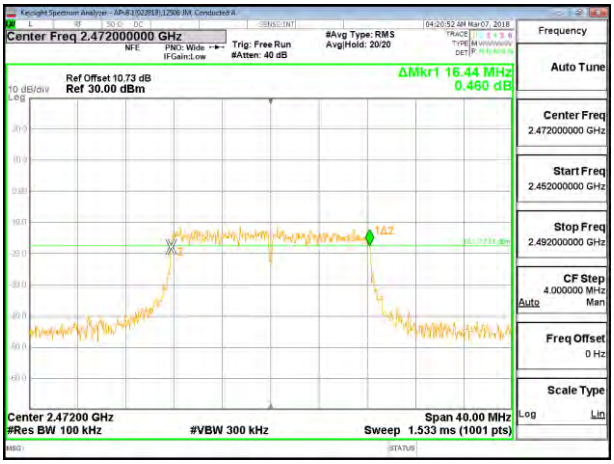


HIGH CHANNEL 12 CHAIN 0

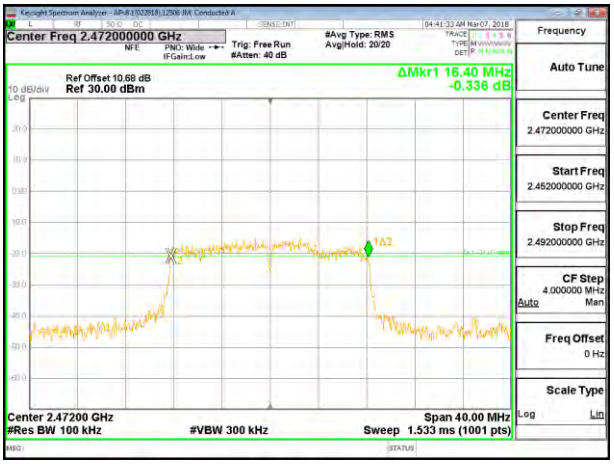


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0

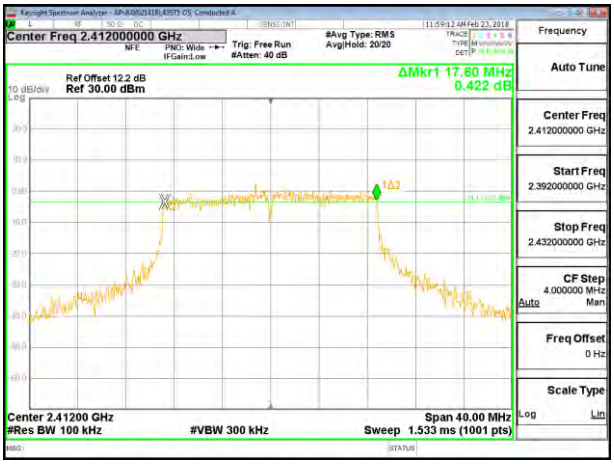


HIGH CHANNEL 13 CHAIN 1

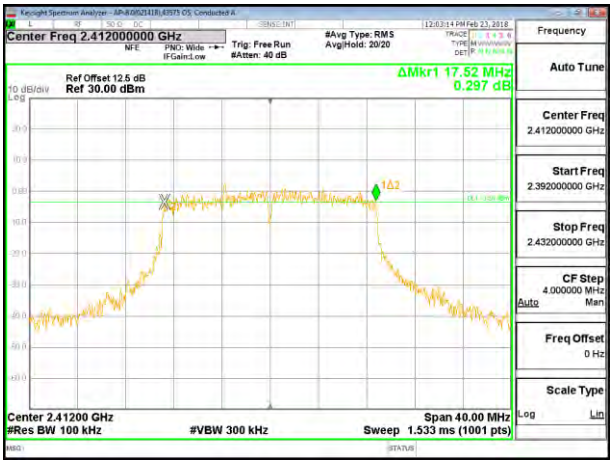
8.3.3. 802.11n HT20 MODE

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low 1	2412	17.6000	17.5200	0.5
Mid 6	2437	**17.7200**	**17.6400**	0.5
High 11	2462	17.3600	17.6000	0.5
High 12	2467	13.8000	17.0800	0.5
High 13	2472	17.6800	17.6400	0.5

LOW CHANNEL 1

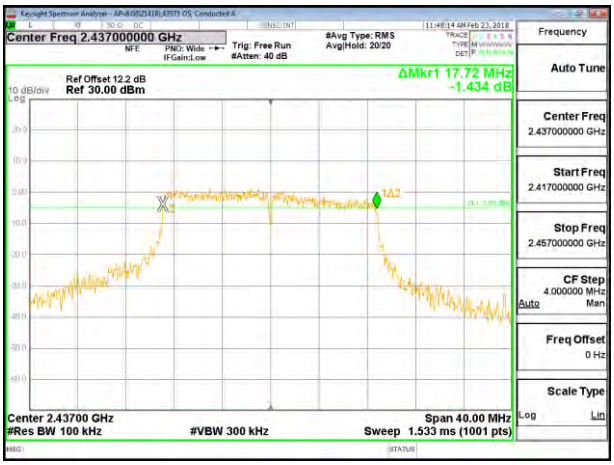


LOW CHANNEL 1 CHAIN 0

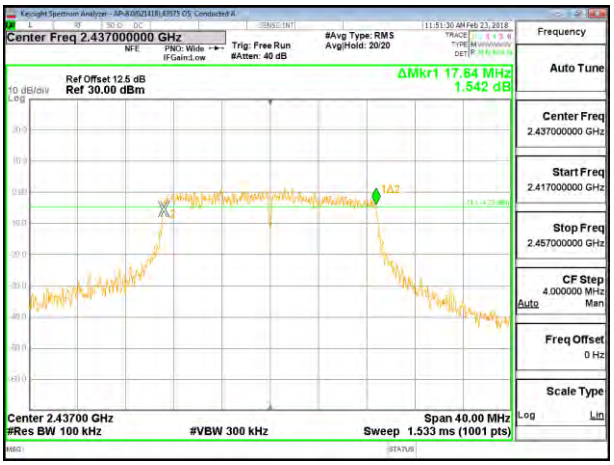


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

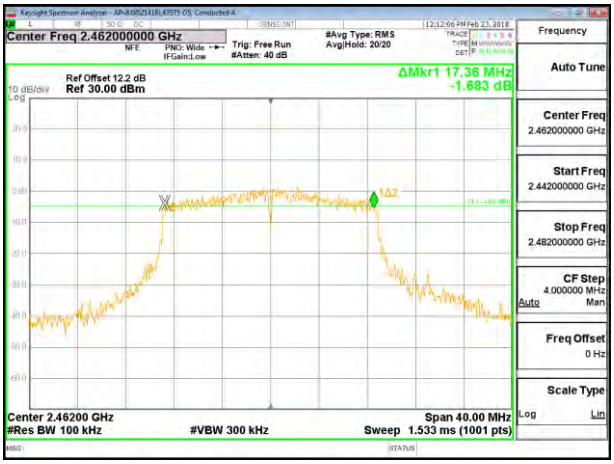


MID CHANNEL 6 CHAIN 0

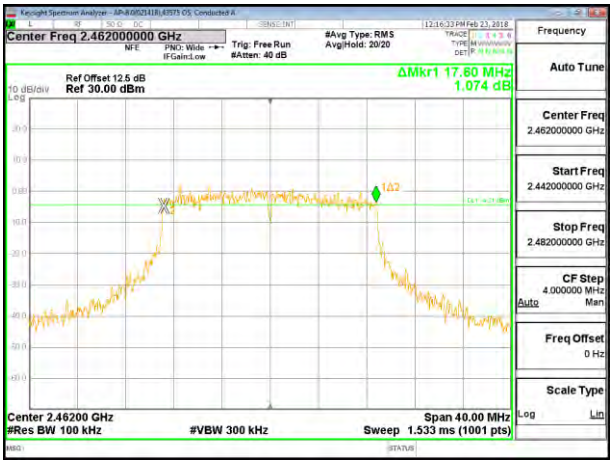


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11

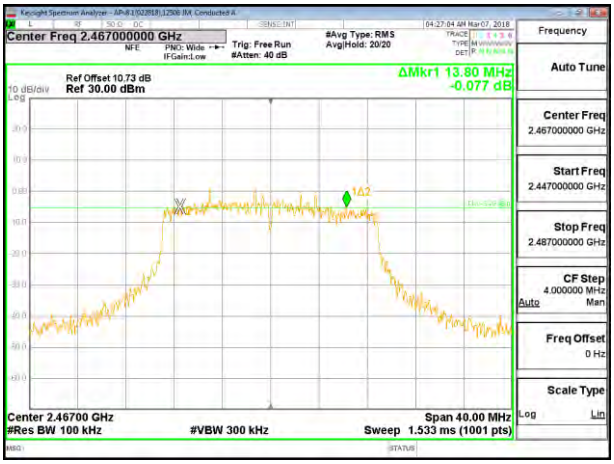


HIGH CHANNEL 11 CHAIN 0

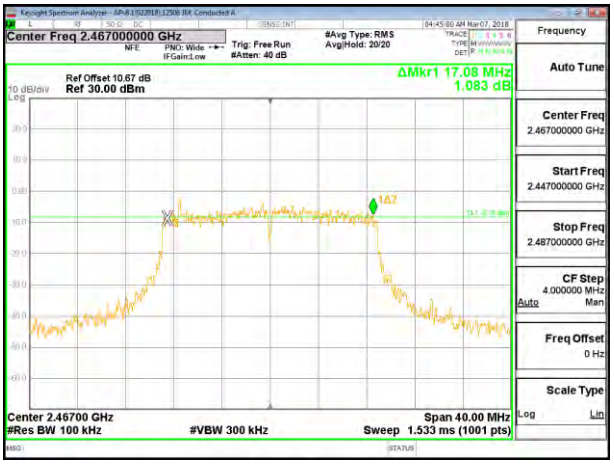


HIGH CHANNEL 11 CHAIN 1

HIGH CHANNEL 12

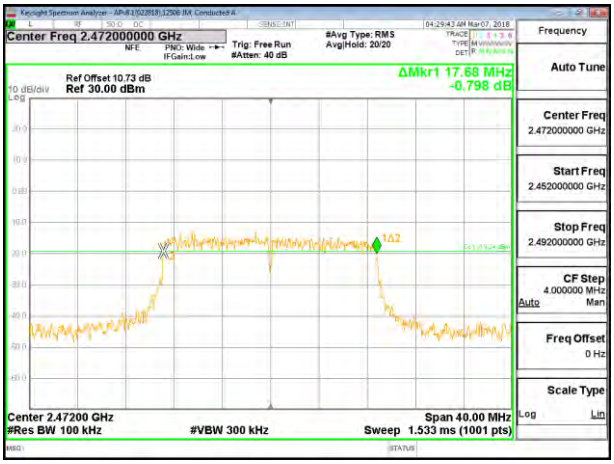


HIGH CHANNEL 12 CHAIN 0



HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0

HIGH CHANNEL 13 CHAIN 1

8.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The transmitter output is connected to a power meter. The cable assembly insertion loss was entered as an offset in the power meter to allow for a gated Average reading of power.

UL VERIFICATION SERVICES INC.
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888

8.4.1. 802.11b MODE

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-2.65	-9.93	-4.92

RESULTS

ID:	GE43578	Date:	02/17/18

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
CH1	2412	-4.92	30.00	30	36	30.00
CH6	2437	-4.92	30.00	30	36	30.00
CH11	2462	-4.92	30.00	30	36	30.00
CH12	2467	-4.92	30.00	30	36	30.00
CH13	2472	-4.92	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
CH1	2412	**11.56**	14.42	16.23	30.00	-13.77
CH6	2437	11.25	**14.76**	**16.36**	30.00	-13.64
CH11	2462	11.37	14.44	16.18	30.00	-13.82
CH12	2467	11.51	14.39	16.19	30.00	-13.81
CH13	2472	11.18	14.31	16.03	30.00	-13.97

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

8.4.2. 802.11g MODE

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-2.65	-9.93	-4.92

RESULTS

ID:	GE43578	Date:	02/17/18

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
CH1	2412	-4.92	30.00	30	36	30.00
CH6	2437	-4.92	30.00	30	36	30.00
CH11	2462	-4.92	30.00	30	36	30.00
CH12	2467	-4.92	30.00	30	36	30.00
CH13	2472	-4.92	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
CH1	2412	**11.57**	14.64	16.38	30.00	-13.62
CH6	2437	11.49	**14.72**	**16.41**	30.00	-13.59
CH11	2462	11.37	14.67	16.34	30.00	-13.66
CH12	2467	11.45	14.50	16.25	30.00	-13.75
CH13	2472	2.98	3.27	6.14	30.00	-23.86

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

8.4.3. 802.11n HT20 MODE

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-2.65	-9.93	-4.92

RESULTS

ID:	GE43578	Date:	02/17/18

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
CH1	2412	-4.92	30.00	30	36	30.00
CH6	2437	-4.92	30.00	30	36	30.00
CH11	2462	-4.92	30.00	30	36	30.00
CH12	2467	-4.92	30.00	30	36	30.00
CH13	2472	-4.92	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
CH1	2412	11.61	14.27	16.15	30.00	-13.85
CH6	2437	11.58	**14.45**	**16.26**	30.00	-13.74
CH11	2462	**11.73**	14.35	16.24	30.00	-13.76
CH12	2467	11.45	14.43	16.20	30.00	-13.80
CH13	2472	0.67	1.02	3.86	30.00	-26.14

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

8.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

8.5.1. 802.11b MODE

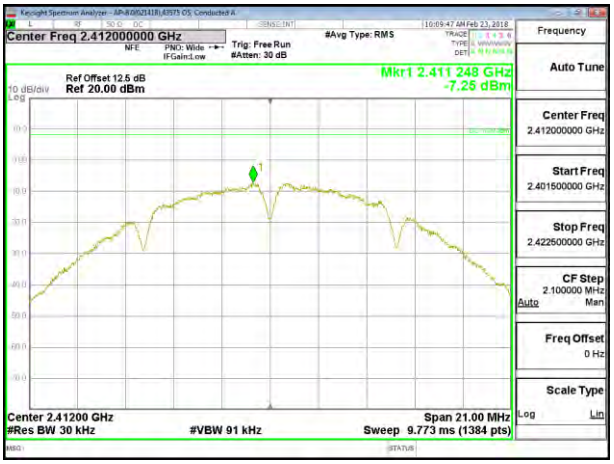
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-7.41	-7.25	-4.32	8.0	-12.3
Mid 6	2437	**-6.91**	-6.81	**-3.85**	8.0	-11.8
High 11	2462	-7.64	**-6.47**	-4.01	8.0	-12.0
High 12	2467	-10.65	-12.90	-8.62	8.0	-16.6
High 13	2472	-10.28	-11.38	-7.78	8.0	-15.8

LOW CHANNEL 1

LOW CHANNEL 1 CHAIN 0



LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

MID CHANNEL 6 CHAIN 0

MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11

HIGH CHANNEL 11 CHAIN 0

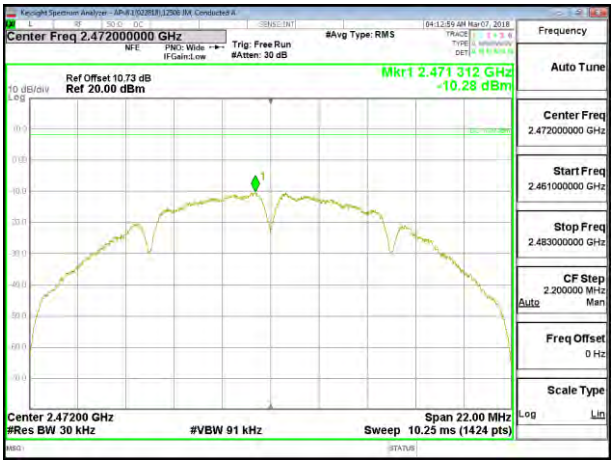
HIGH CHANNEL 11 CHAIN 1

HIGH CHANNEL 12

HIGH CHANNEL 12 CHAIN 0

HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0

HIGH CHANNEL 13 CHAIN 1

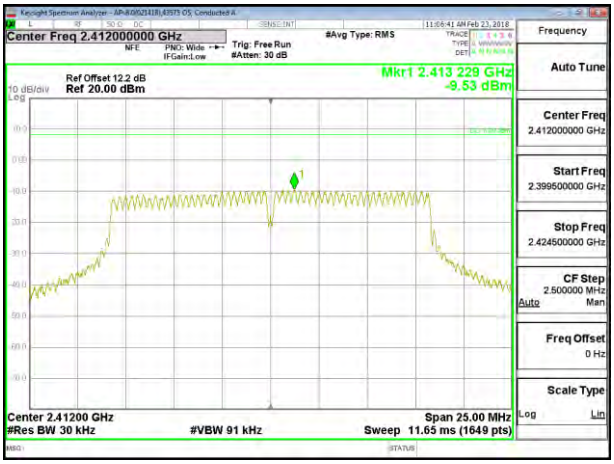
8.5.2. 802.11g MODE

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

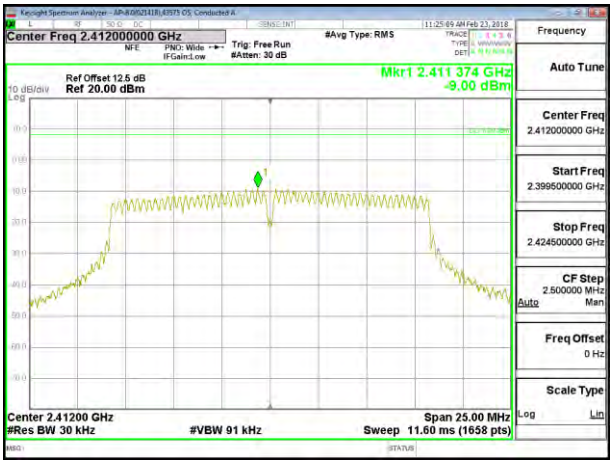
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-9.53	**-9.00**	-6.25	8.0	-14.2
Mid 6	2437	-8.93	-9.07	-5.99	8.0	-14.0
High 11	2462	**-8.12**	-9.37	**-5.69**	8.0	-13.7
High 12	2467	-11.95	-13.99	-9.84	8.0	-17.8
High 13	2472	-21.45	-24.68	-19.76	8.0	-27.8

LOW CHANNEL 1

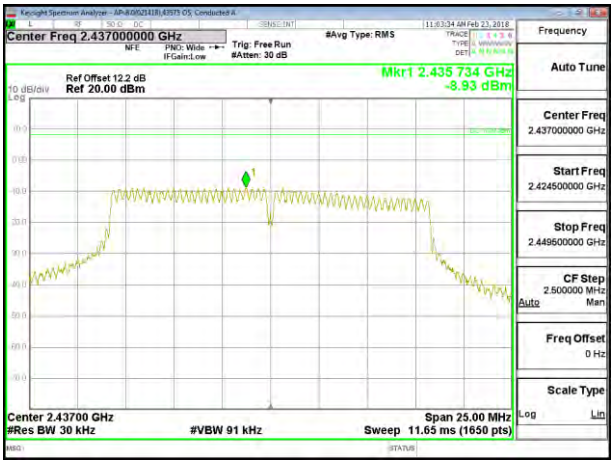


LOW CHANNEL 1 CHAIN 0

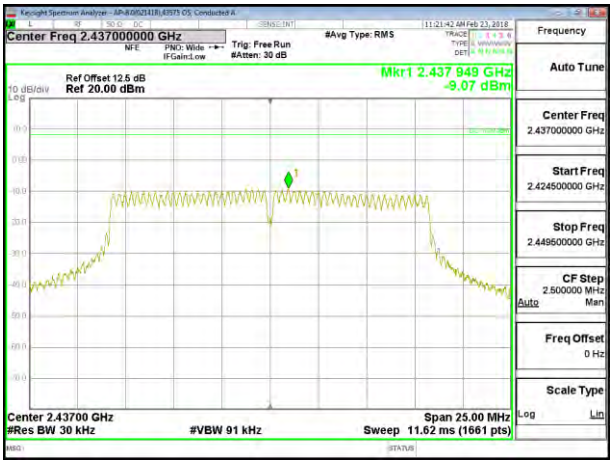


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

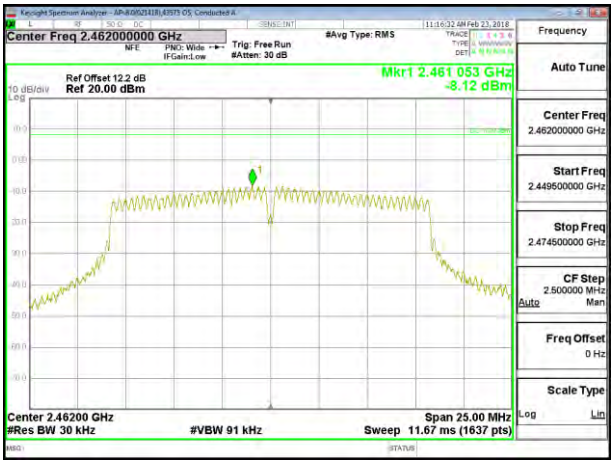


MID CHANNEL 6 CHAIN 0

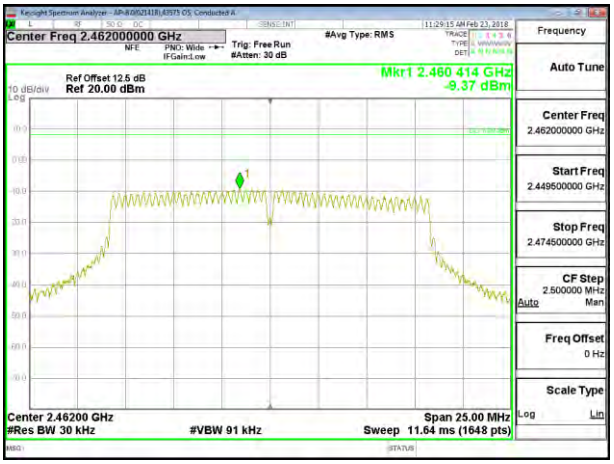


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11

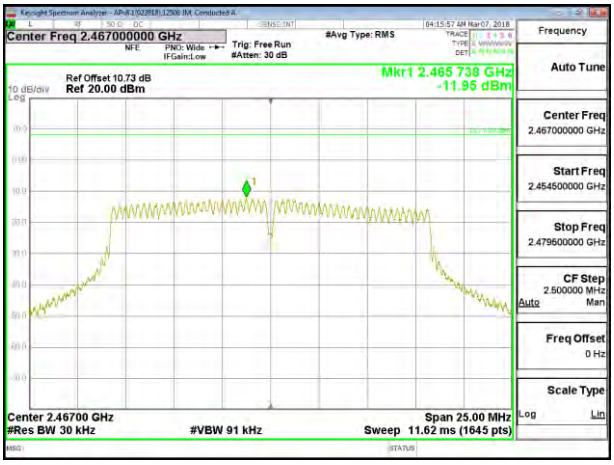


HIGH CHANNEL 11 CHAIN 0

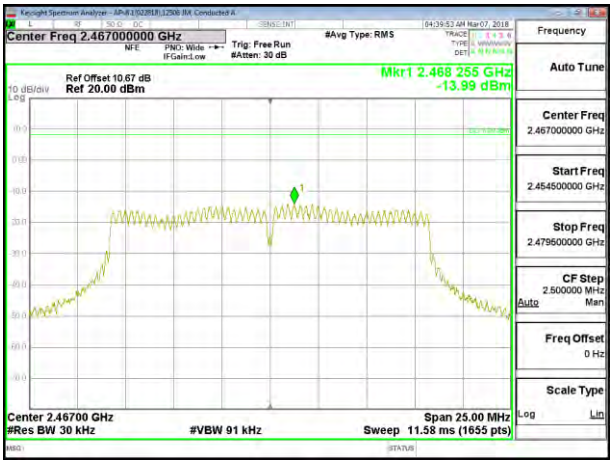


HIGH CHANNEL 11 CHAIN 1

HIGH CHANNEL 12

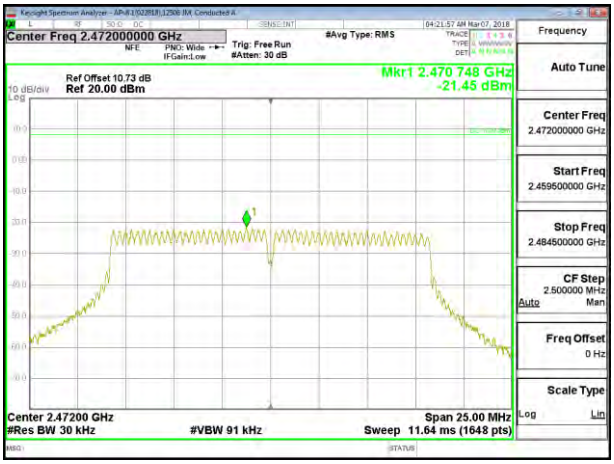


HIGH CHANNEL 12 CHAIN 0

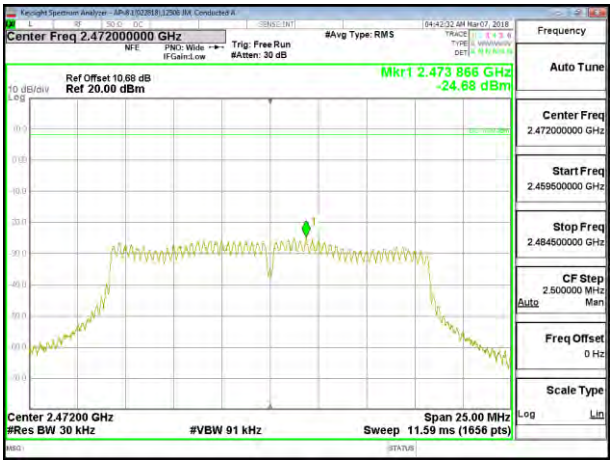


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

8.5.3. 802.11n HT20 MODE

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

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Chain 1 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-9.77	-9.47	-6.51	8.0	-14.5
Mid 6	2437	**-8.61**	-9.51	-5.93	8.0	-13.9
High 11	2462	-9.06	**-9.29**	**-6.06**	8.0	-14.1
High 12	2467	-12.43	-14.72	-10.32	8.0	-18.3
High 13	2472	-24.22	-27.39	-22.41	8.0	-30.4

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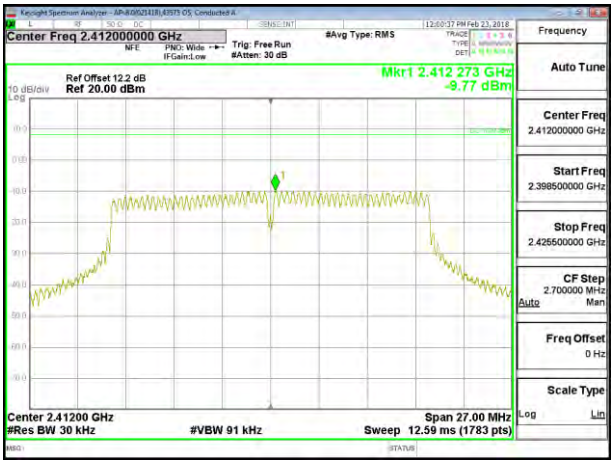
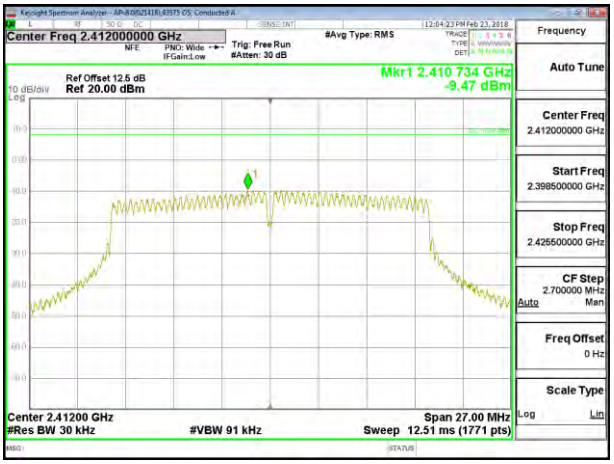
LOW CHANNEL 1

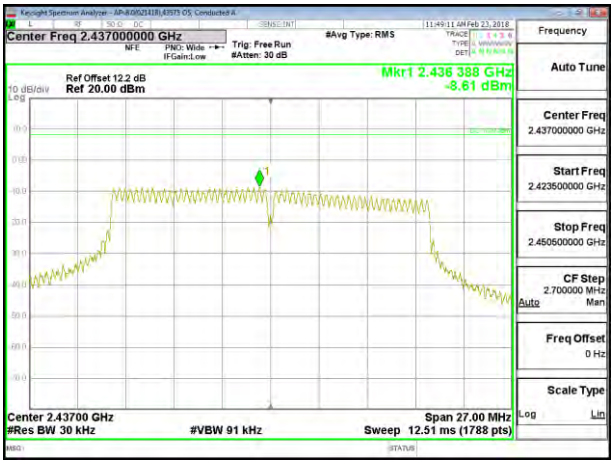


LOW CHANNEL 1 CHAIN 0

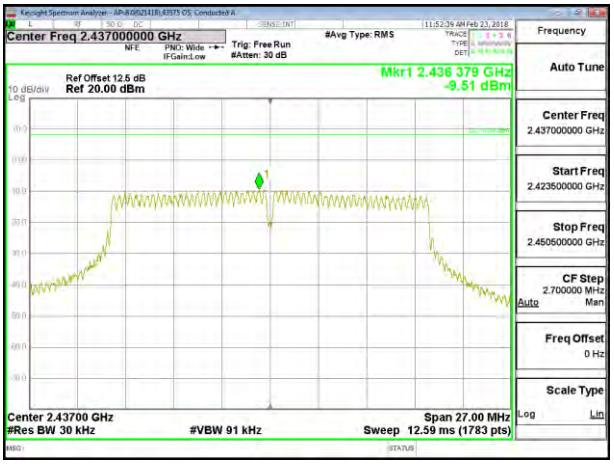


LOW CHANNEL 1 CHAIN 1

MID CHANNEL 6

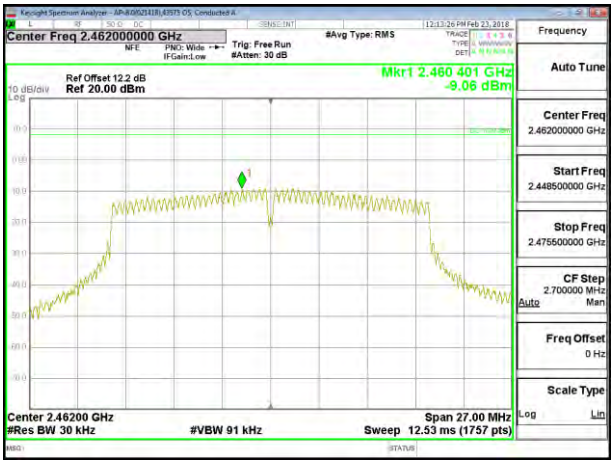


MID CHANNEL 6 CHAIN 0

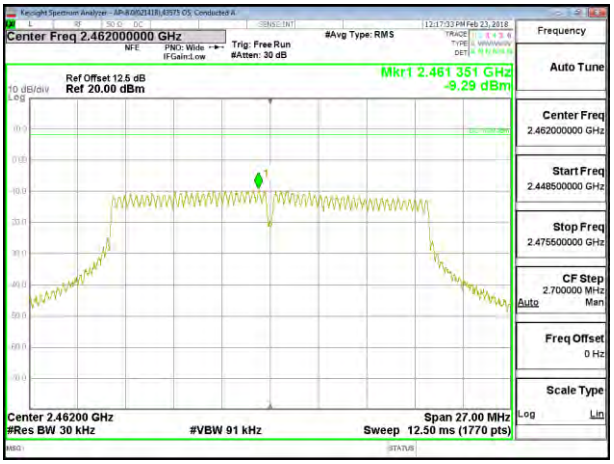


MID CHANNEL 6 CHAIN 1

HIGH CHANNEL 11

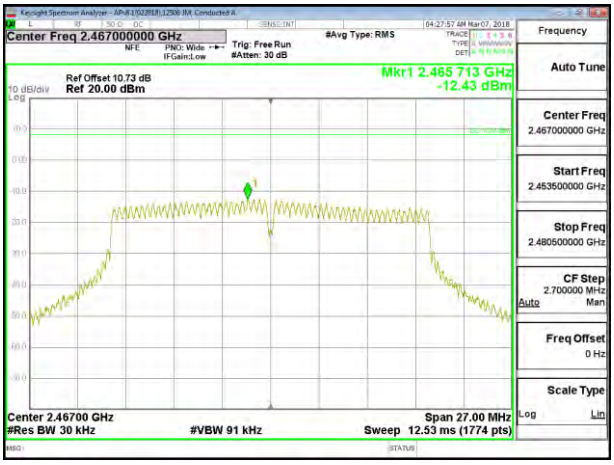


HIGH CHANNEL 11 CHAIN 0

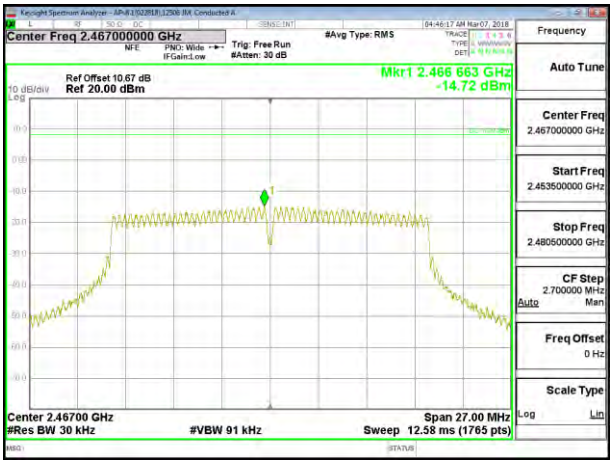


HIGH CHANNEL 11 CHAIN 1

HIGH CHANNEL 12

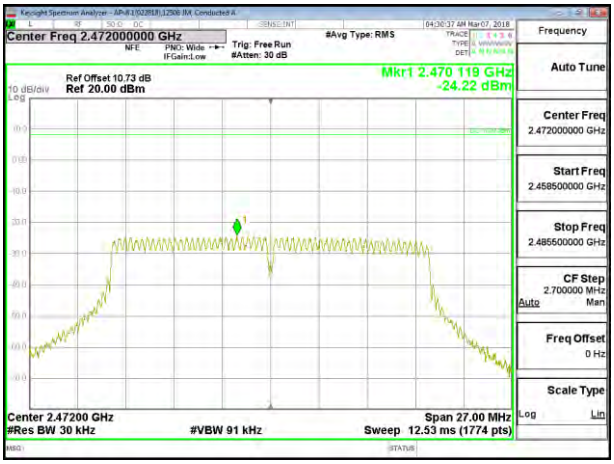


HIGH CHANNEL 12 CHAIN 0

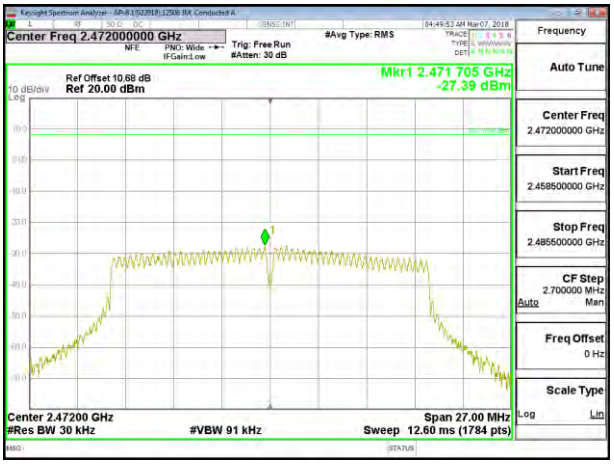


HIGH CHANNEL 12 CHAIN 1

HIGH CHANNEL 13



HIGH CHANNEL 13 CHAIN 0



HIGH CHANNEL 13 CHAIN 1

8.6. CONDUCTED SPURIOUS EMISSIONS

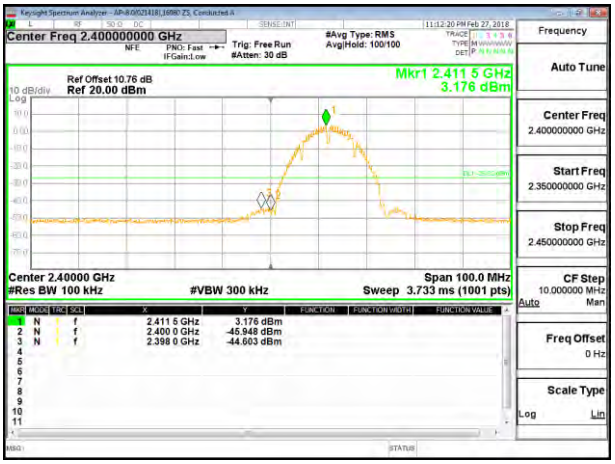
LIMITS

FCC §15.247 (d)

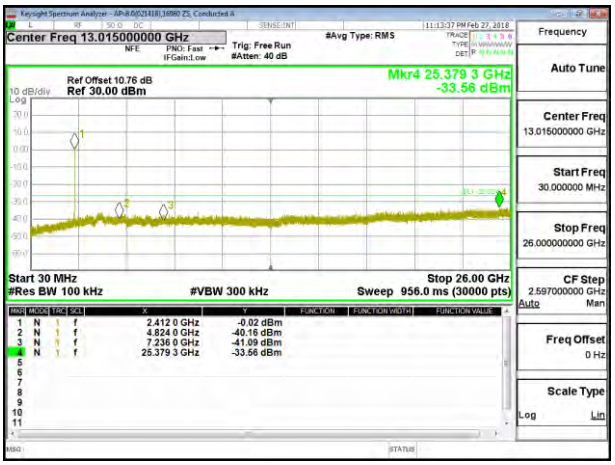
Output power was measured based on the use of Average measurement, therefore the required attenuation is 30 dB.

RESULTS

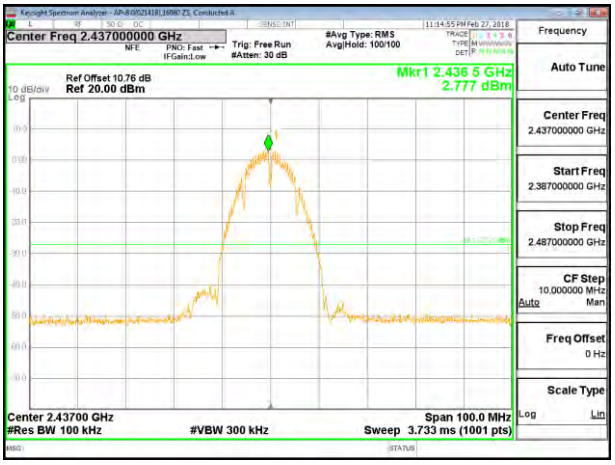
8.6.1. 802.11b MODE



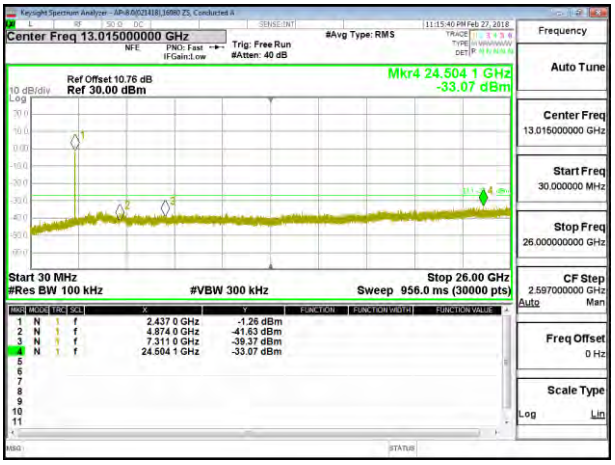
LOW CHANNEL 1 BANDEDGE CHAIN 0



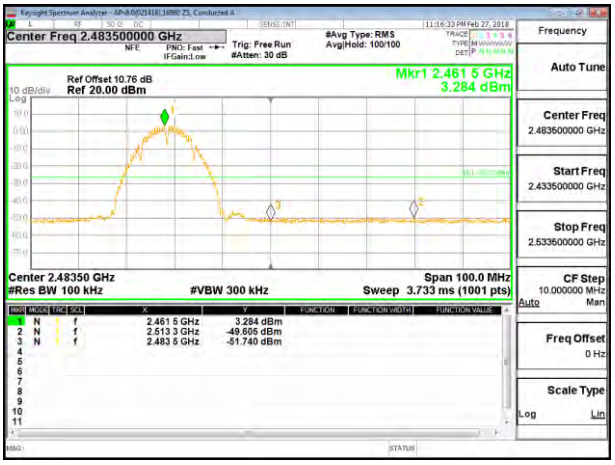
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



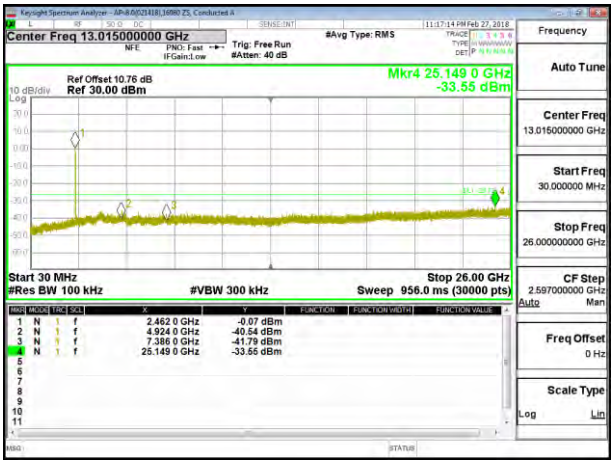
IN-BAND REFERENCE LEVEL CHAIN 0



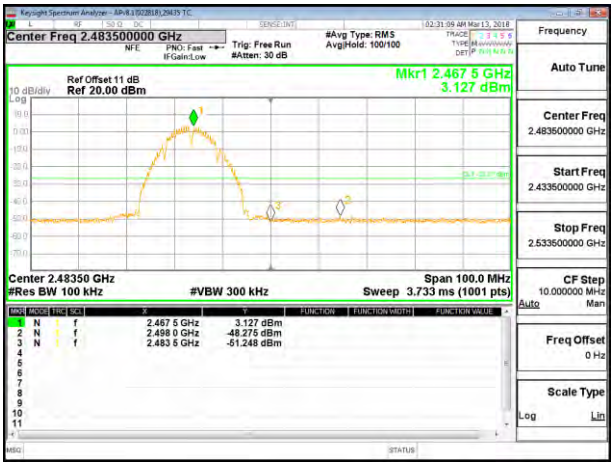
OUT-OF-BAND MID CHANNEL CHAIN 0



HIGH CHANNEL 11 BANDEDGE CHAIN 0

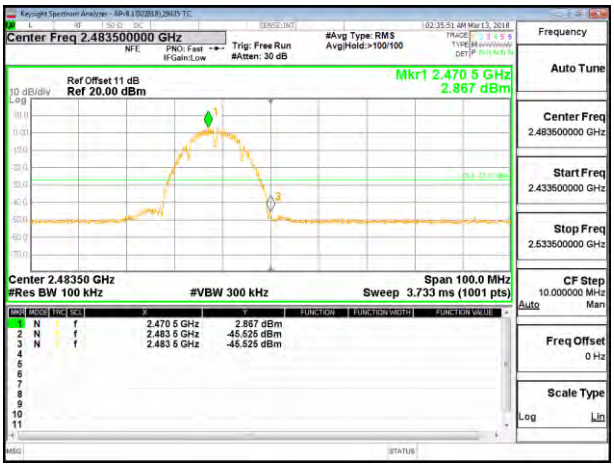


OUT-OF-BAND HIGH CHANNEL 11 CHAIN 0



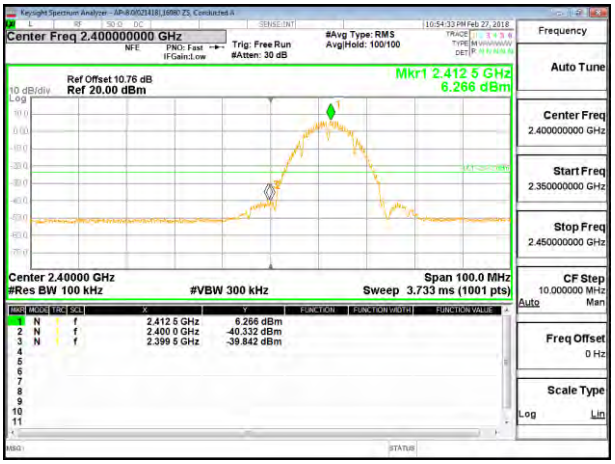
HIGH CHANNEL 12 BANDEDGE CHAIN 0

OUT-OF-BAND HIGH CHANNEL 12 CHAIN 0

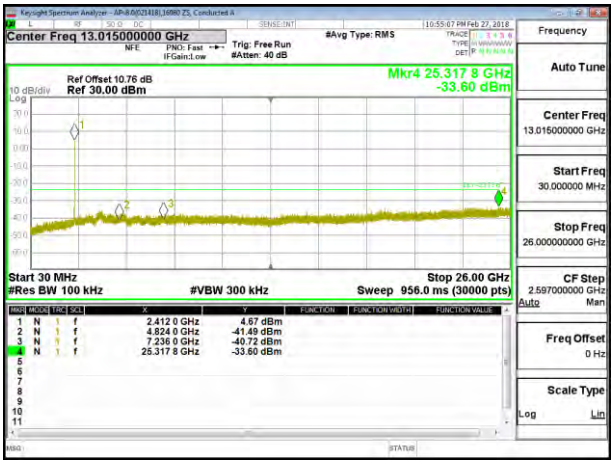


HIGH CHANNEL 13 BANDEDGE CHAIN 0

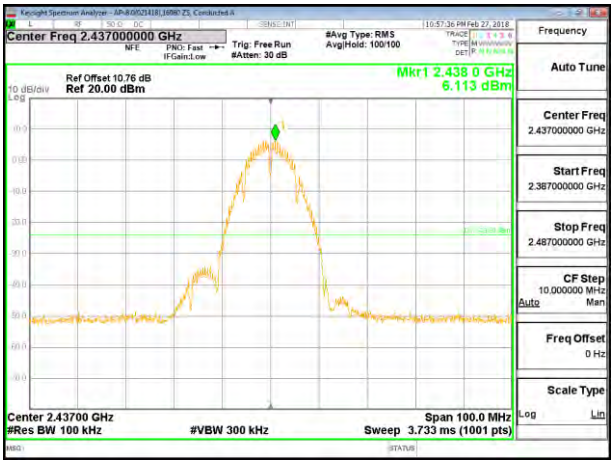
OUT-OF-BAND HIGH CHANNEL 13 CHAIN 0



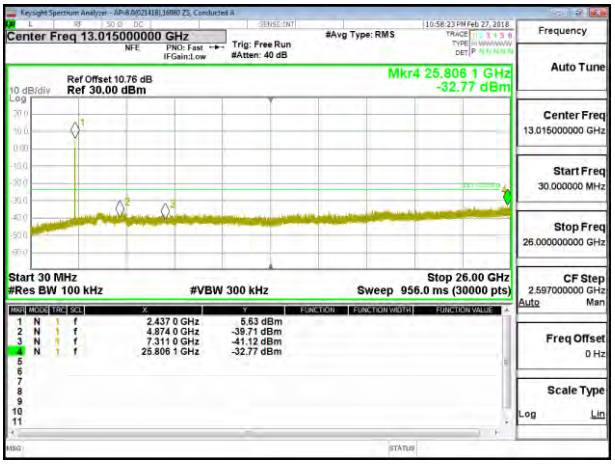
LOW CHANNEL 1 BANDEDGE CHAIN 1



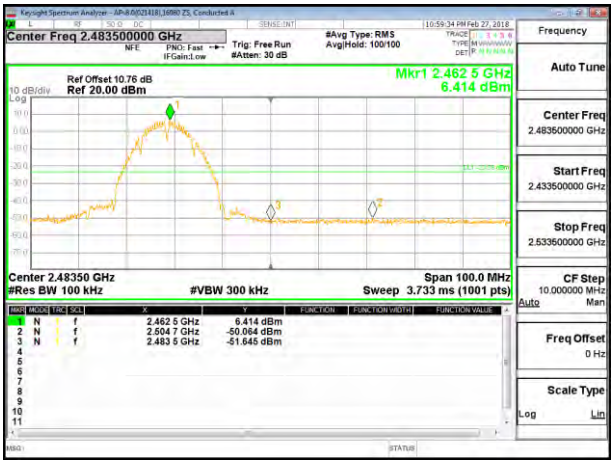
OUT-OF-BAND LOW CHANNEL 1 CHAIN 1



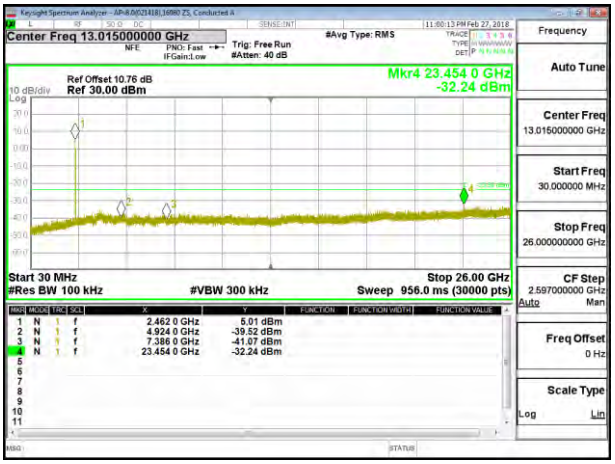
IN-BAND REFERENCE LEVEL CHAIN 1



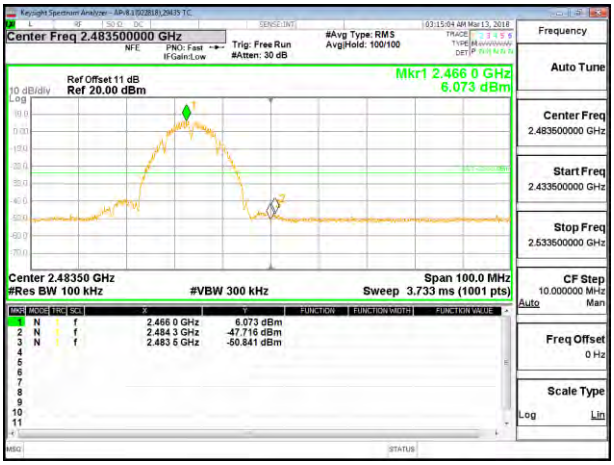
OUT-OF-BAND MID CHANNEL CHAIN 1



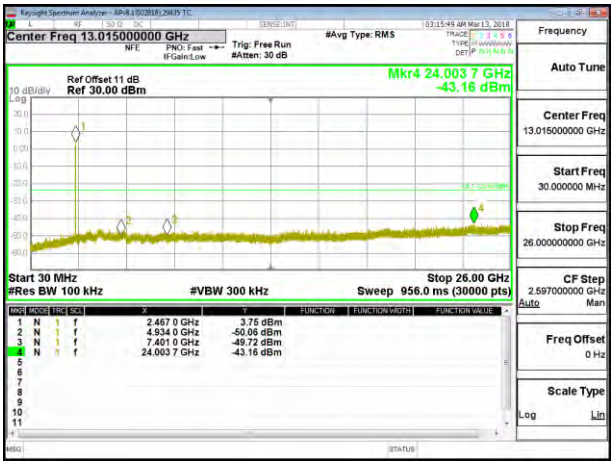
HIGH CHANNEL 11 BANDEDGE CHAIN 1



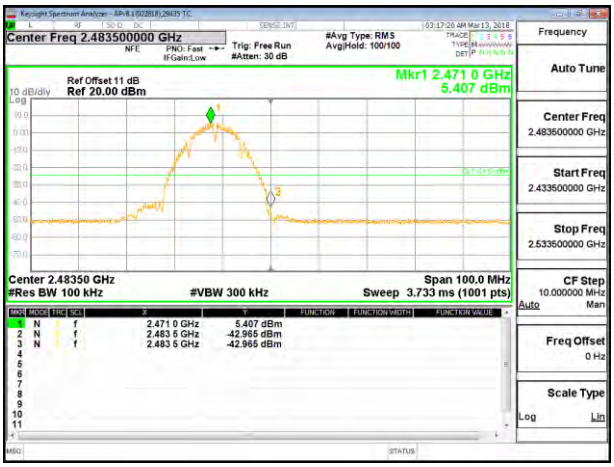
OUT-OF-BAND HIGH CHANNEL 11 CHAIN 1



HIGH CHANNEL 12 BANDEDGE CHAIN 1



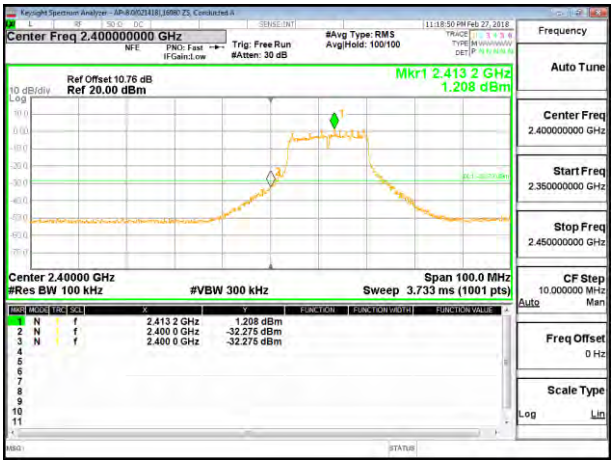
OUT-OF-BAND HIGH CHANNEL 12 CHAIN 1



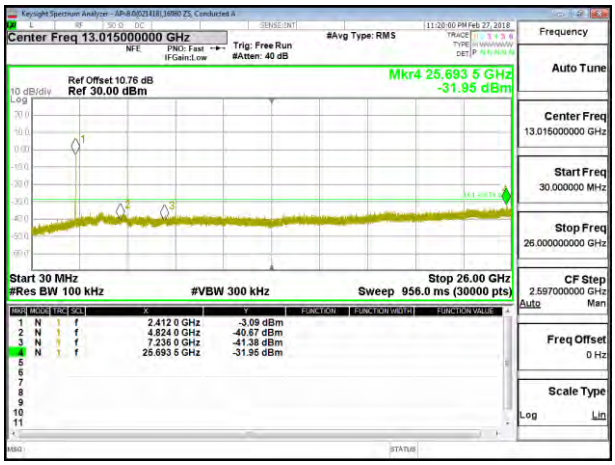
HIGH CHANNEL 13 BANDEDGE CHAIN 1

OUT-OF-BAND HIGH CHANNEL 13 CHAIN 1

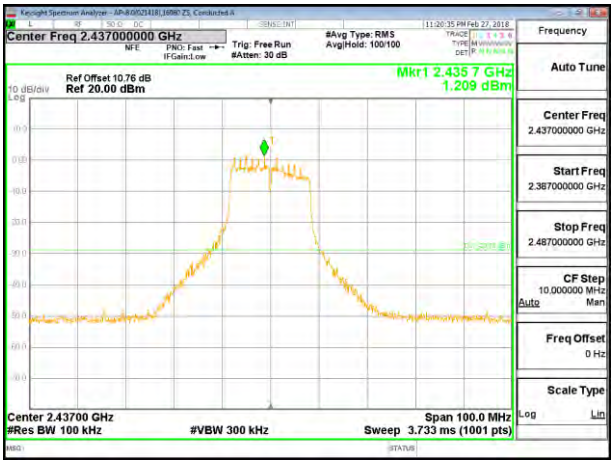
8.6.2. 802.11g MODE



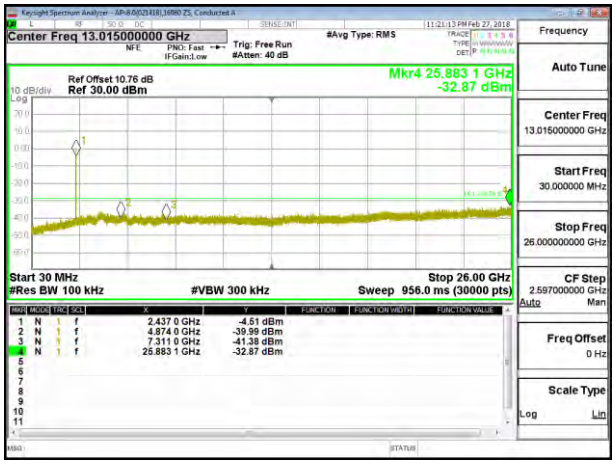
LOW CHANNEL 1 BANDEDGE CHAIN 0



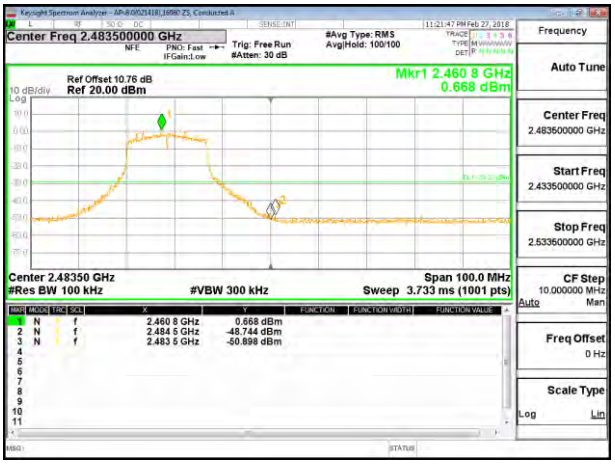
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



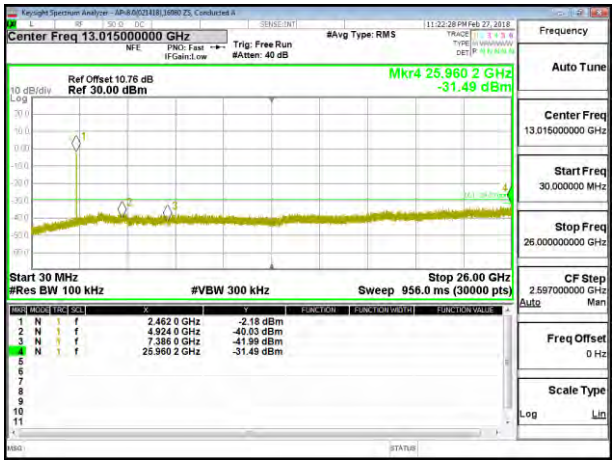
IN-BAND REFERENCE LEVEL CHAIN 0



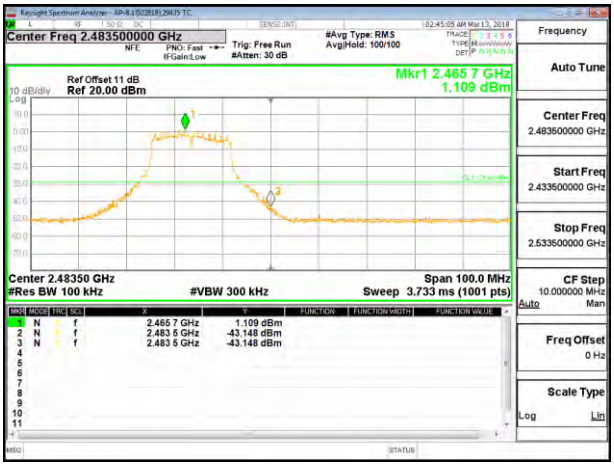
OUT-OF-BAND MID CHANNEL CHAIN 0



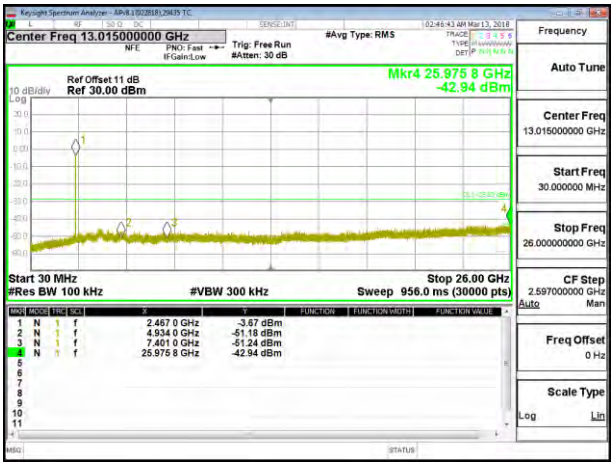
HIGH CHANNEL 11 BANDEDGE CHAIN 0



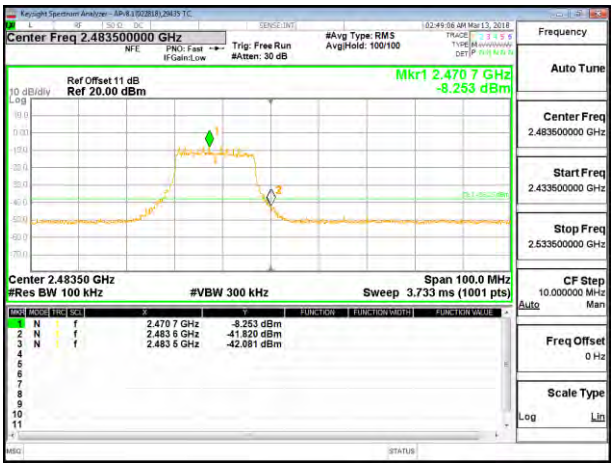
OUT-OF-BAND HIGH CHANNEL 11 CHAIN 0



HIGH CHANNEL 12 BANDEDGE CHAIN 0

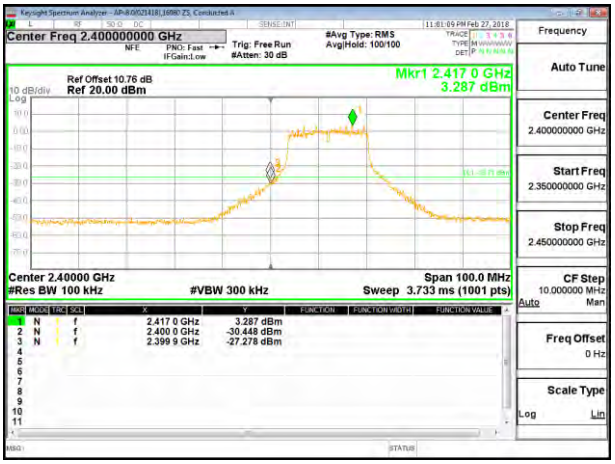


OUT-OF-BAND HIGH CHANNEL 12 CHAIN 0

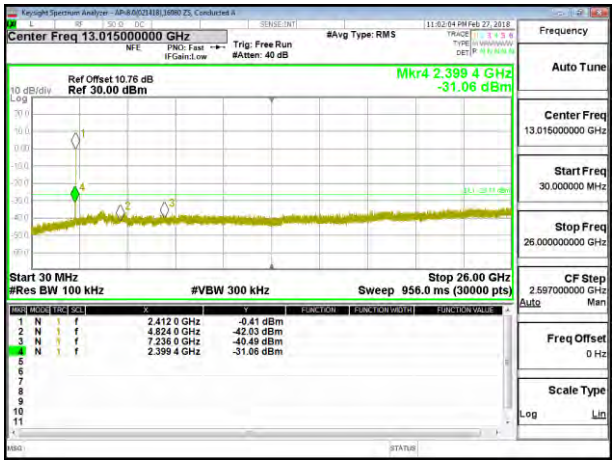


HIGH CHANNEL 13 BANDEDGE CHAIN 0

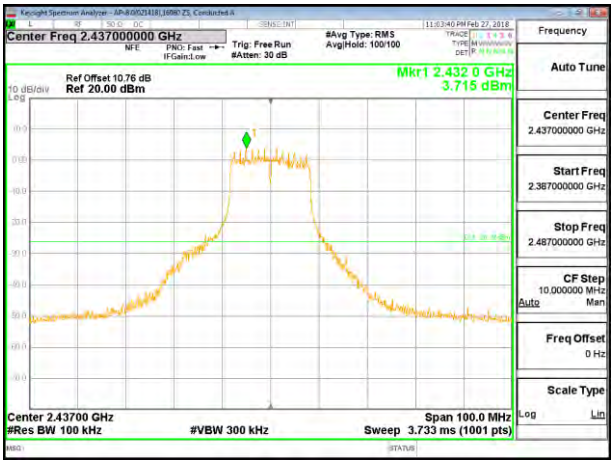
OUT-OF-BAND HIGH CHANNEL 13 CHAIN 0



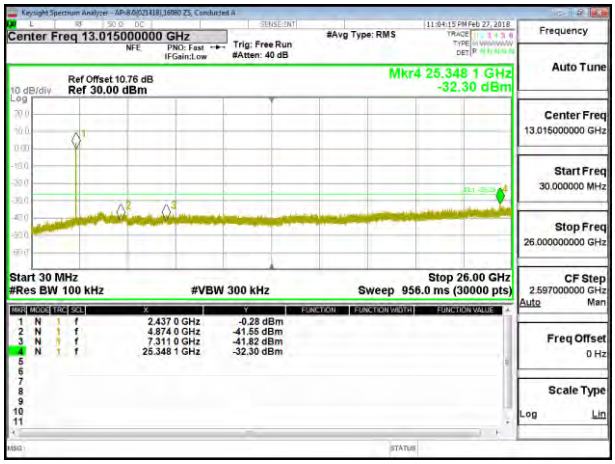
LOW CHANNEL 1 BANDEDGE CHAIN 1



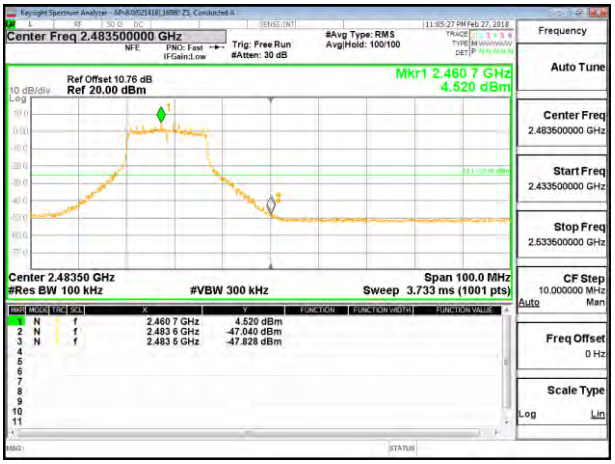
OUT-OF-BAND LOW CHANNEL 1 CHAIN 1



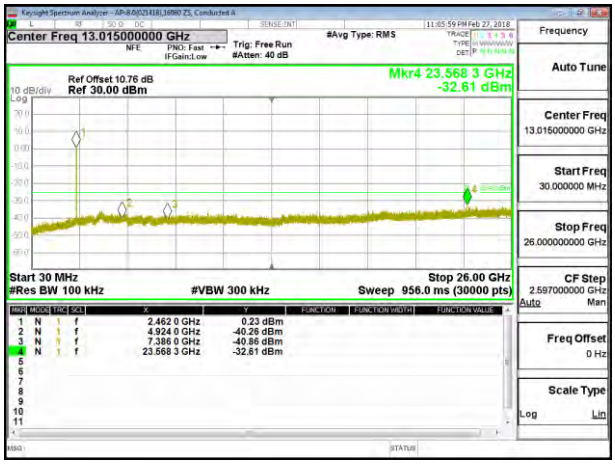
IN-BAND REFERENCE LEVEL CHAIN 1



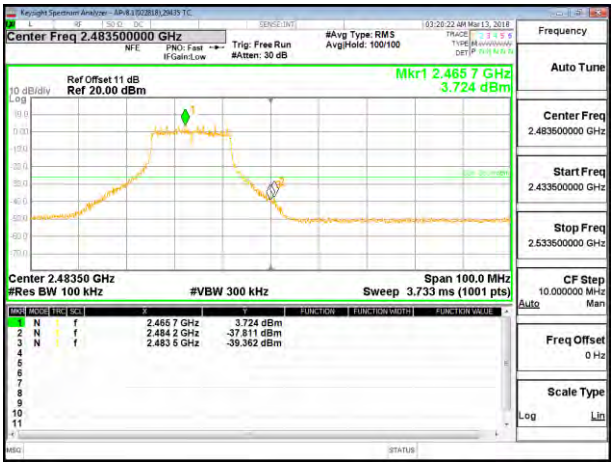
OUT-OF-BAND MID CHANNEL CHAIN 1



HIGH CHANNEL 11 BANDEDGE CHAIN 1

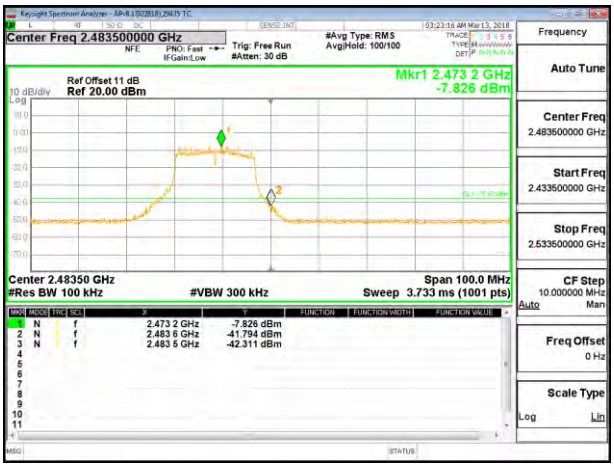


OUT-OF-BAND HIGH CHANNEL 11 CHAIN 1



HIGH CHANNEL 12 BANDEDGE CHAIN 1

OUT-OF-BAND HIGH CHANNEL 12 CHAIN 1



HIGH CHANNEL 13 BANDEDGE CHAIN 1

OUT-OF-BAND HIGH CHANNEL 13 CHAIN 1

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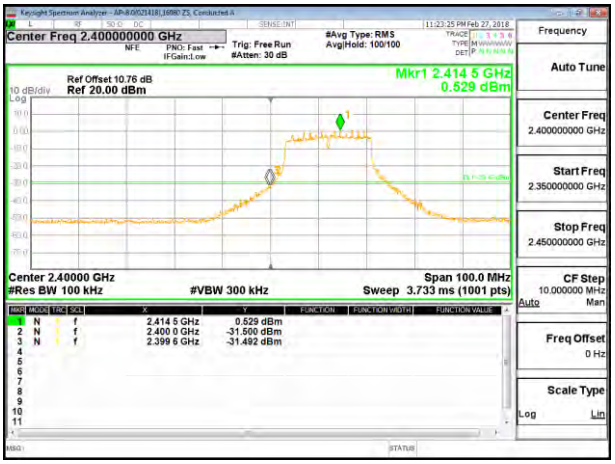
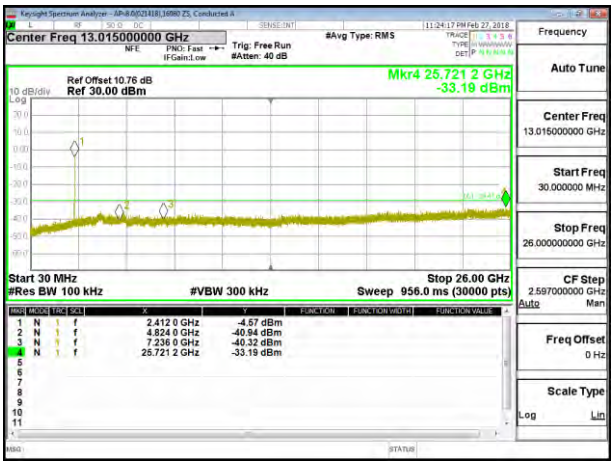
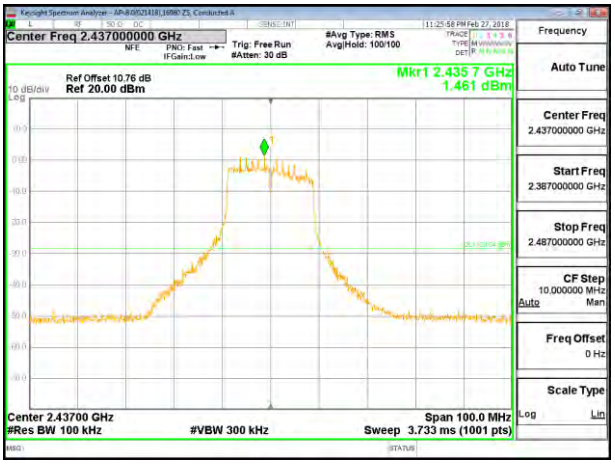
8.6.3. 802.11n HT20 MODE



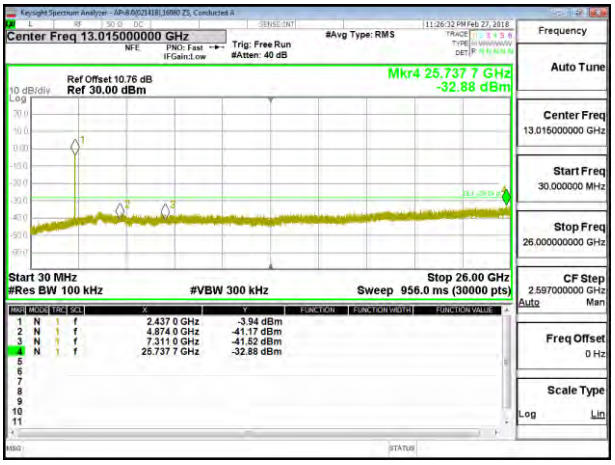
LOW CHANNEL 1 BANDEDGE CHAIN 0



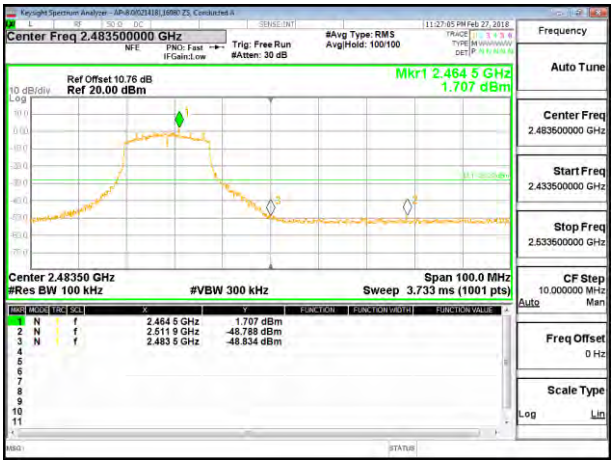
OUT-OF-BAND LOW CHANNEL 1 CHAIN 0



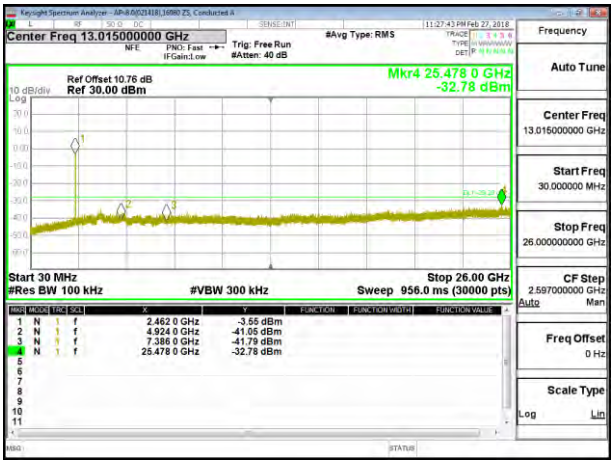
IN-BAND REFERENCE LEVEL CHAIN 0



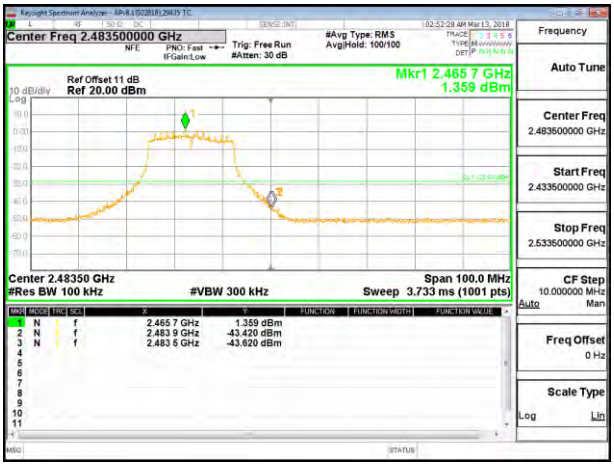
OUT-OF-BAND MID CHANNEL CHAIN 0



HIGH CHANNEL 11 BANDEDGE CHAIN 0

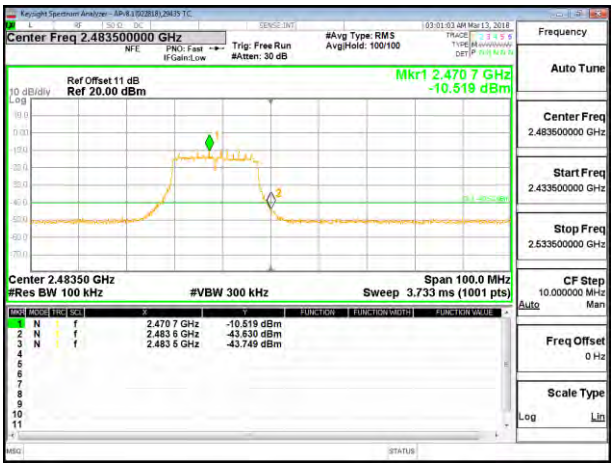


OUT-OF-BAND HIGH CHANNEL 11 CHAIN 0



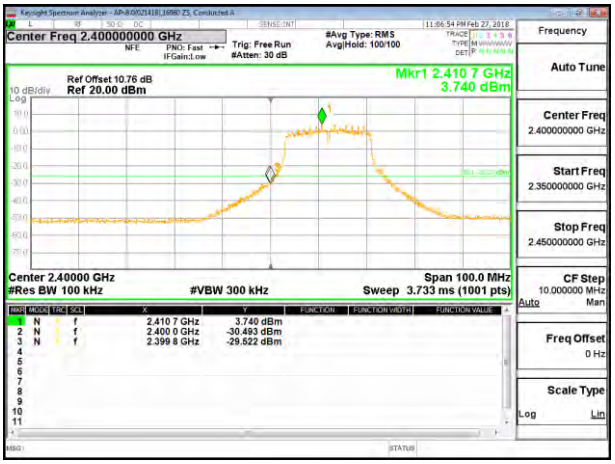
HIGH CHANNEL 12 BANDEDGE CHAIN 0

OUT-OF-BAND HIGH CHANNEL 12 CHAIN 0

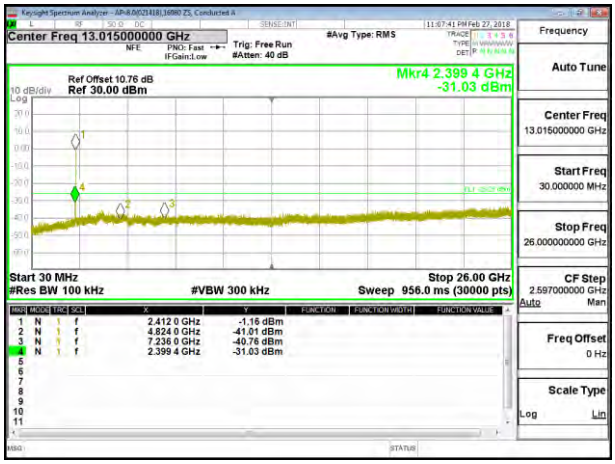


HIGH CHANNEL 13 BANDEDGE CHAIN 0

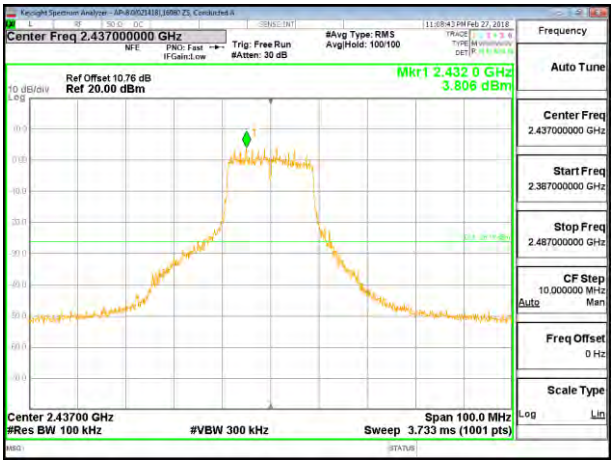
OUT-OF-BAND HIGH CHANNEL 13 CHAIN 0



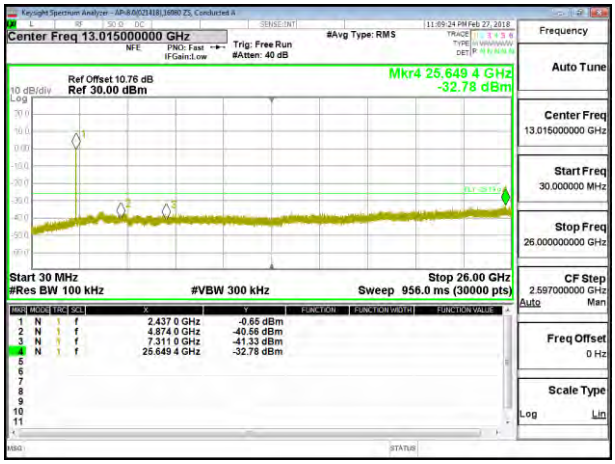
LOW CHANNEL 1 BANDEDGE CHAIN 1



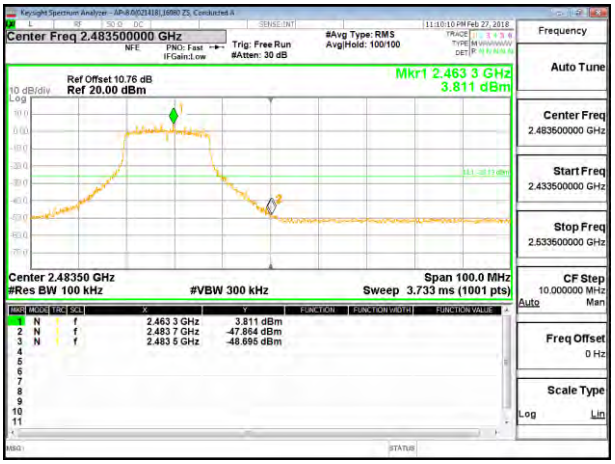
OUT-OF-BAND LOW CHANNEL 1 CHAIN 1



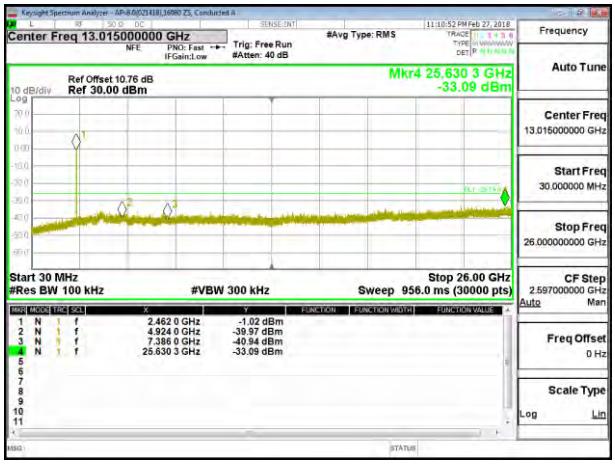
IN-BAND REFERENCE LEVEL CHAIN 1



OUT-OF-BAND MID CHANNEL CHAIN 1



HIGH CHANNEL 11 BANDEDGE CHAIN 1



OUT-OF-BAND HIGH CHANNEL 11 CHAIN 1