



# **CERTIFICATION TEST REPORT**

**Report Number. :** 12356844-E3V1

**Applicant :** GOOGLE LLC  
1600 AMPHITHEATRE PARKWAY  
MOUNTAIN VIEW, CA 94043, U.S.A.

**Model :** H1A

**FCC ID :** A4RH1A

**IC :** 10395A-H1A

**EUT Description :** INTERACTIVE VIDEO STREAMING DEVICE

**Test Standard(s) :** FCC 47 CFR PART 15 SUBPART C  
ISED RSS-247 ISSUE 2  
ISED RSS-GEN ISSUE 5

**Date Of Issue:**  
August 10, 2018

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



## REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	8/10/2018	Initial Issue	---
V2	8/27/2018	Updated Section 5.5, corrected typo and updated description about simultaneous transmission	F. de Anda

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** GOOGLE LLC  
1600 AMPHITHEATRE PARKWAY  
MOUNTAIN VIEW, CA 94043, U.S.A.

**EUT DESCRIPTION:** INTERACTIVE VIDEO STREAMING DEVICE

**MODEL:** H1A

**SERIAL NUMBER:** G1424638 (CONDUCTED)  
G1421457 (RADIATED)


**DATE TESTED:** July 18, 2018 –July 31, 2018

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
ISED RSS-247 Issue 2	Pass
ISED RSS-GEN Issue 5	Pass

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:



Francisco de Anda  
CONSUMER TECHNOLOGY DIVISION  
Operations Leader  
UL Verification Services Inc.

Prepared By:



Eric Yu  
CONSUMER TECHNOLOGY DIVISION  
Test 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, RSS-GEN Issue 5, and RSS-247 Issue 2.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, 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	47658 Kato Rd
<input type="checkbox"/> Chamber A (ISED:2324B-1)	<input type="checkbox"/> Chamber D (ISED:22541-1)	<input checked="" type="checkbox"/> Chamber K (ISED:2324A-1)
<input checked="" type="checkbox"/> Chamber B (ISED:2324B-2)	<input type="checkbox"/> Chamber E (ISED:22541-2)	<input type="checkbox"/> Chamber L (ISED:2324A-3)
<input type="checkbox"/> Chamber C (ISED:2324B-3)	<input type="checkbox"/> Chamber F (ISED:22541-3)	
	<input type="checkbox"/> Chamber G (ISED:22541-4)	
	<input type="checkbox"/> Chamber H (ISED:22541-5)	

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0.

## 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:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

### 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%.

## 5. EQUIPMENT UNDER TEST

### 5.1. EUT DESCRIPTION

The EUT is an Internet Video Streaming Device

### 5.2. MAXIMUM OUTPUT POWER

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

#### 2.4GHz BAND

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
<b>1Tx</b>			
2412 - 2472	802.11b	19.06	80.54
2412 - 2472	802.11g	19.40	87.10
2412 - 2472	802.11n HT20	19.25	84.14
2422 - 2462	802.11n HT40	14.47	27.99

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of 4dBi.

### 5.4. SOFTWARE AND FIRMWARE

The EUT firmware and utility software during testing was version 127694.



## 5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and 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 and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

EUT can only be set up in desktop orientation; therefore, all radiated testing was performed with the EUT in desktop orientation.

Simultaneous transmission for BT/BLE radios and 2.4GHz WLAN radios was investigated, no additional noticeable emissions were found.

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

802.11b mode: 1 Mbps

802.11g mode: 6 Mbps

802.11n HT20mode: MCS0

802.11n HT40mode: MCS0

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop AC/DC adapter	Lenovo	ADLX65NCT2A	11S36200293ZZ10049556E	NA
Laptop	Lenovo	X220	R9-P89W3	NA
AC adapter	Google	NA	W015R007q	NA

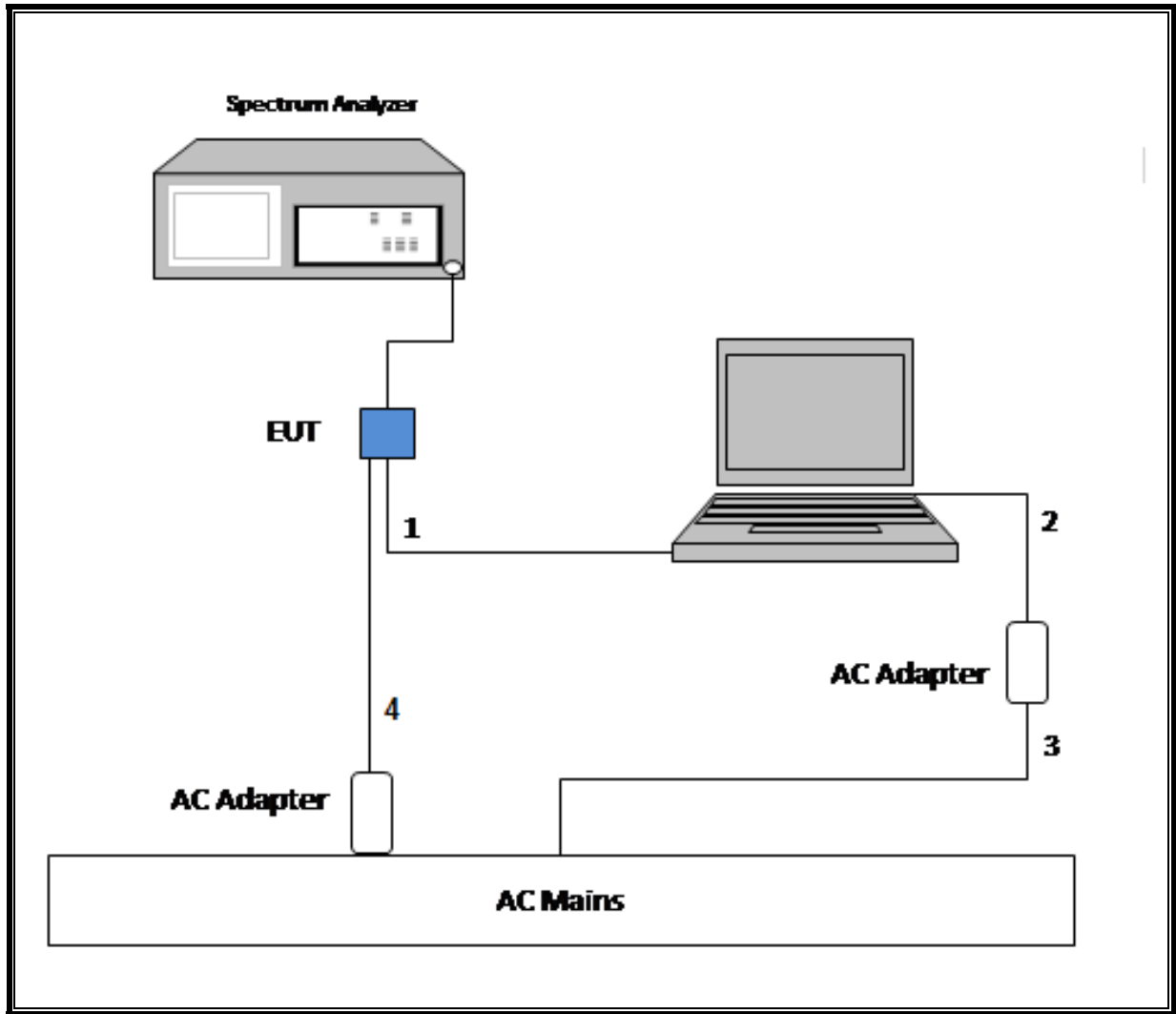
### I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB	1	micro USB	Shielded	1	
2	DC	1	DC connector	Unshielded	1.75	
3	AC	1	2-Prong	Unshielded	1	
4	DC	1	DC connector	Unshielded	1.75	

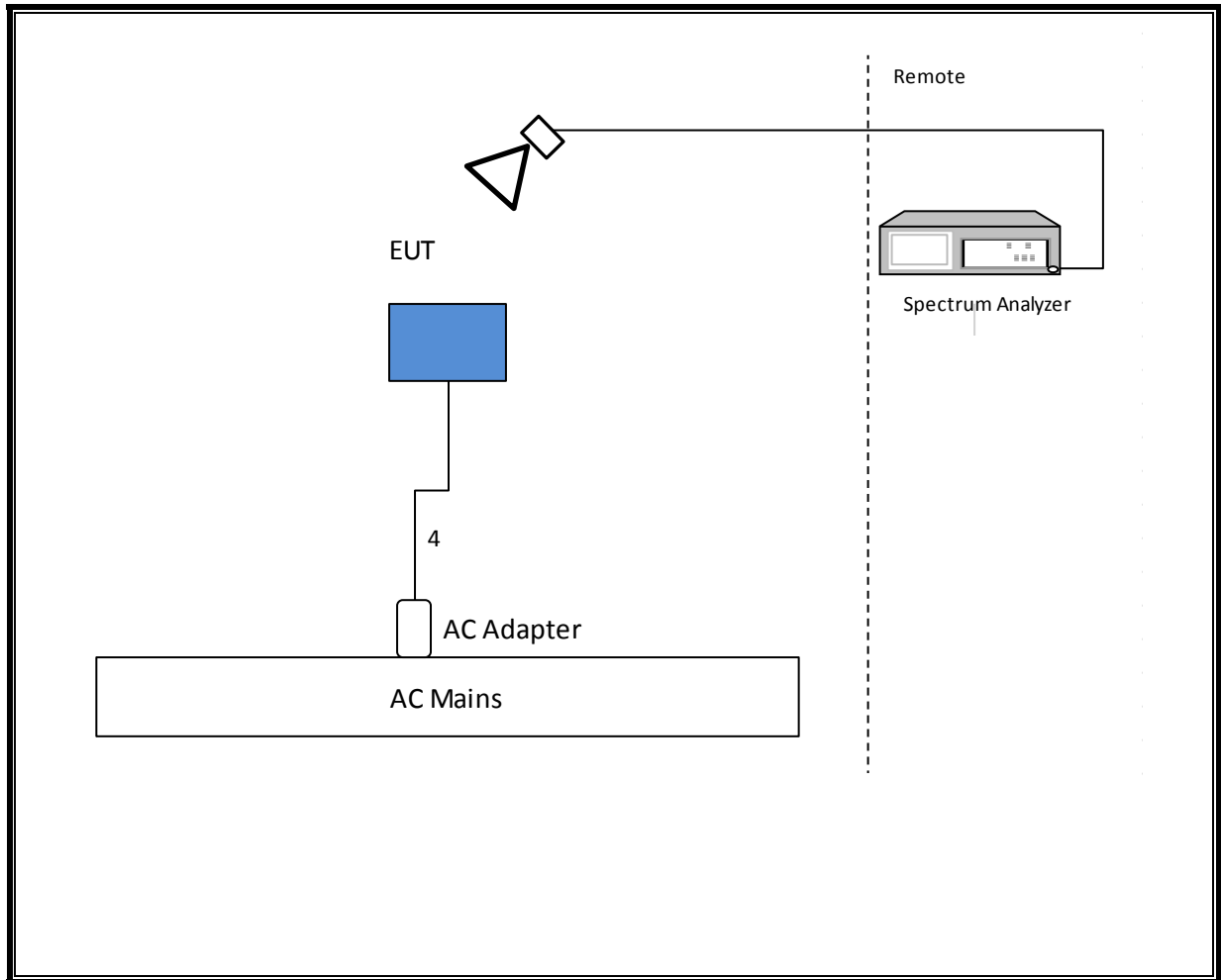
### TEST SETUP

The EUT was connected to a host Laptop via USB cable. Test software exercised the EUT.

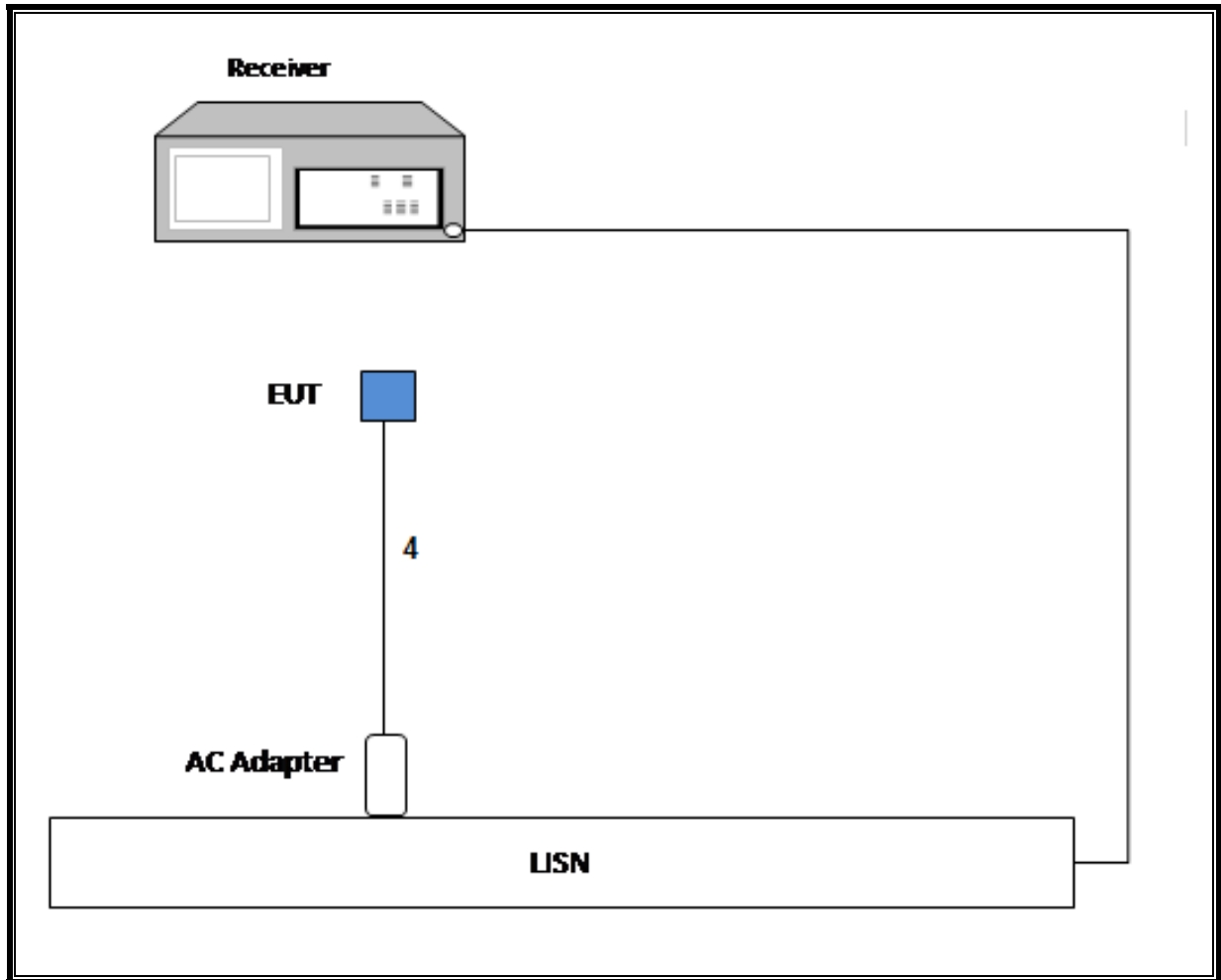
**SETUP DIAGRAM FOR ANTENNA PORT CONDUCTED TESTS**



**SETUP DIAGRAM FOR RADIATED TESTS**



**SETUP DIAGRAM FOR AC LINE CONDUCTED TESTS**



## 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.

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.

## 7. TEST AND MEASUREMENT EQUIPMENT

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

<b>TEST EQUIPMENT LIST</b>				
<b>Description</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Asset</b>	<b>Cal Due</b>
Amplifier	Hewlett Packard	8447D	T64	02/14/2019
Amplifier, 1 - 18GHz	MITEQ	AFS42-00101800-25-S-42	T931	09/20/2018
Amplifier, 1 - 18GHz	Amplical	AMP1G18-35	T1569	06/03/2019
RF Preamplifier, 1 - 26GHz	Agilent	8449B	T404	03/09/2019
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	T407	05/10/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T863	06/21/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T344	04/30/2019
Antenna Horn, 18 to 26GHz	ARA	MWH-1826/B	T488	10/04/2018
Power Meter, P-series single channel	Keysight	N1912A	T1271	07/26/2019
Power Sensor	Keysight	N1921A	T1225	04/10/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1466	04/16/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1454	01/08/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1113	12/21/2018
EMI Test Receiver	Rohde & Schwarz	ESW44	PRE0179367	04/28/2019
<b>AC Line Conducted</b>				
EMI Test Receiver 9Khz-7GHz	Rohde & Schwarz	ESC17	T1124	11/07/2018
LISN for Conducted Emissions CISPR-16	Fischer	50/250-25-2	EMC4385	01/31/2019
Power Cable, Line Conducted Emissions	UL	PG1	T861	08/31/2018
<b>UL AUTOMATION SOFTWARE</b>				
Radiated Software	UL	UL EMC	Ver 9.5, Dec 01, 2016	
Antenna Port Software	UL	UL EMC	Ver 7.9, Jan 24, 2018	
AC Line Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015	

**NOTES:**

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing was completed before equipment expiration date.

## 8. ANTENNA PORT TEST RESULTS

### 8.1. ON TIME AND DUTY CYCLE

#### LIMITS

None; for reporting purposes only.

#### PROCEDURE

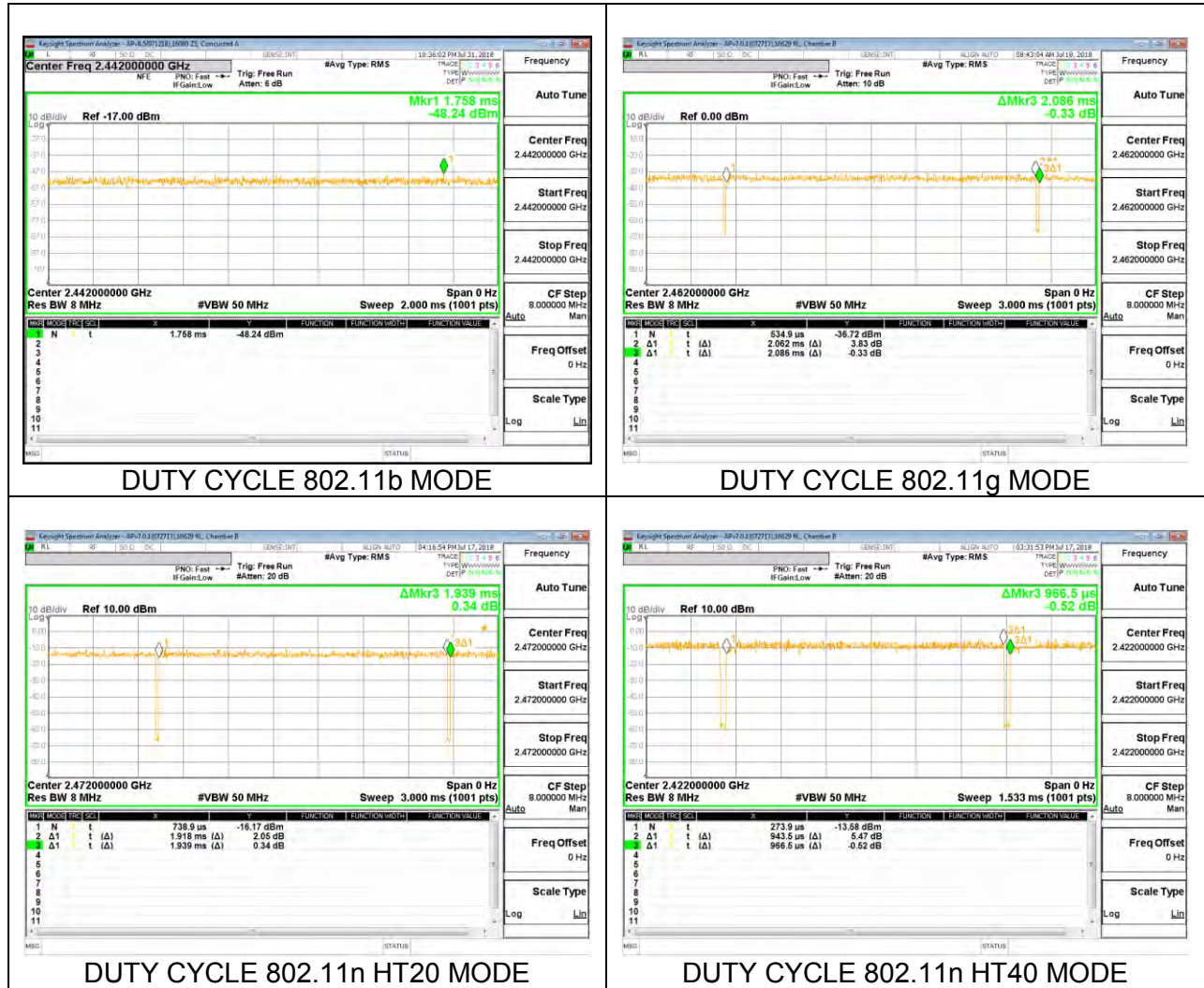
KDB 789033 Zero-Span Spectrum Analyzer Method.

#### 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)
<b>2.4GHz Band</b>						
802.11b 1TX	2.000	2.000	1.000	100.00%	0.00	0.010
802.11g 1TX	2.062	2.086	0.988	98.85%	0.00	0.010
802.11n HT20 1TX	1.918	1.939	0.989	98.92%	0.00	0.010
802.11n HT40 1TX	0.944	0.967	0.976	97.62%	0.10	1.060



DUTY CYCLE PLOTS



## 8.2. 99% BANDWIDTH

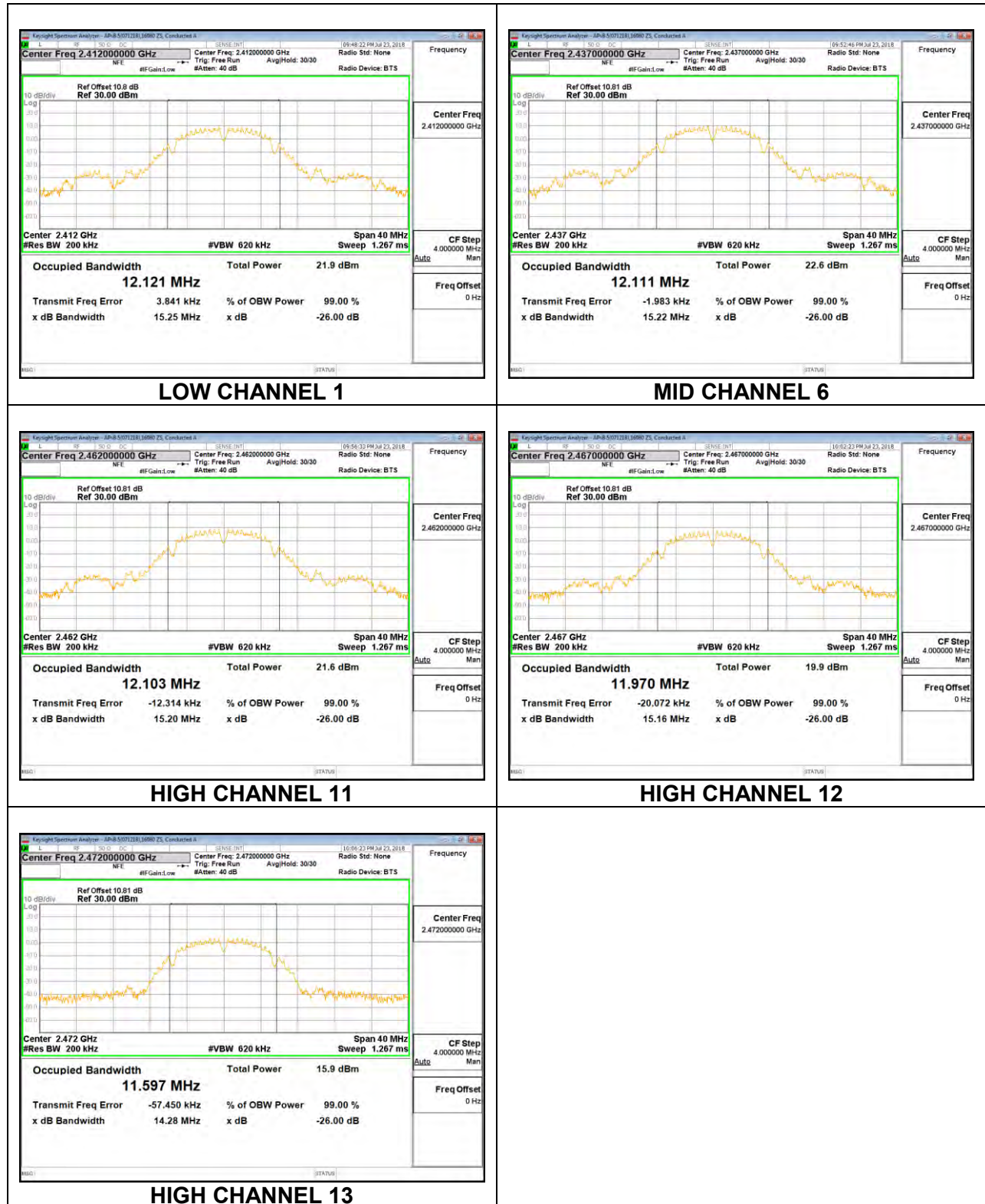
### LIMITS

None; for reporting purposes only.

### RESULTS

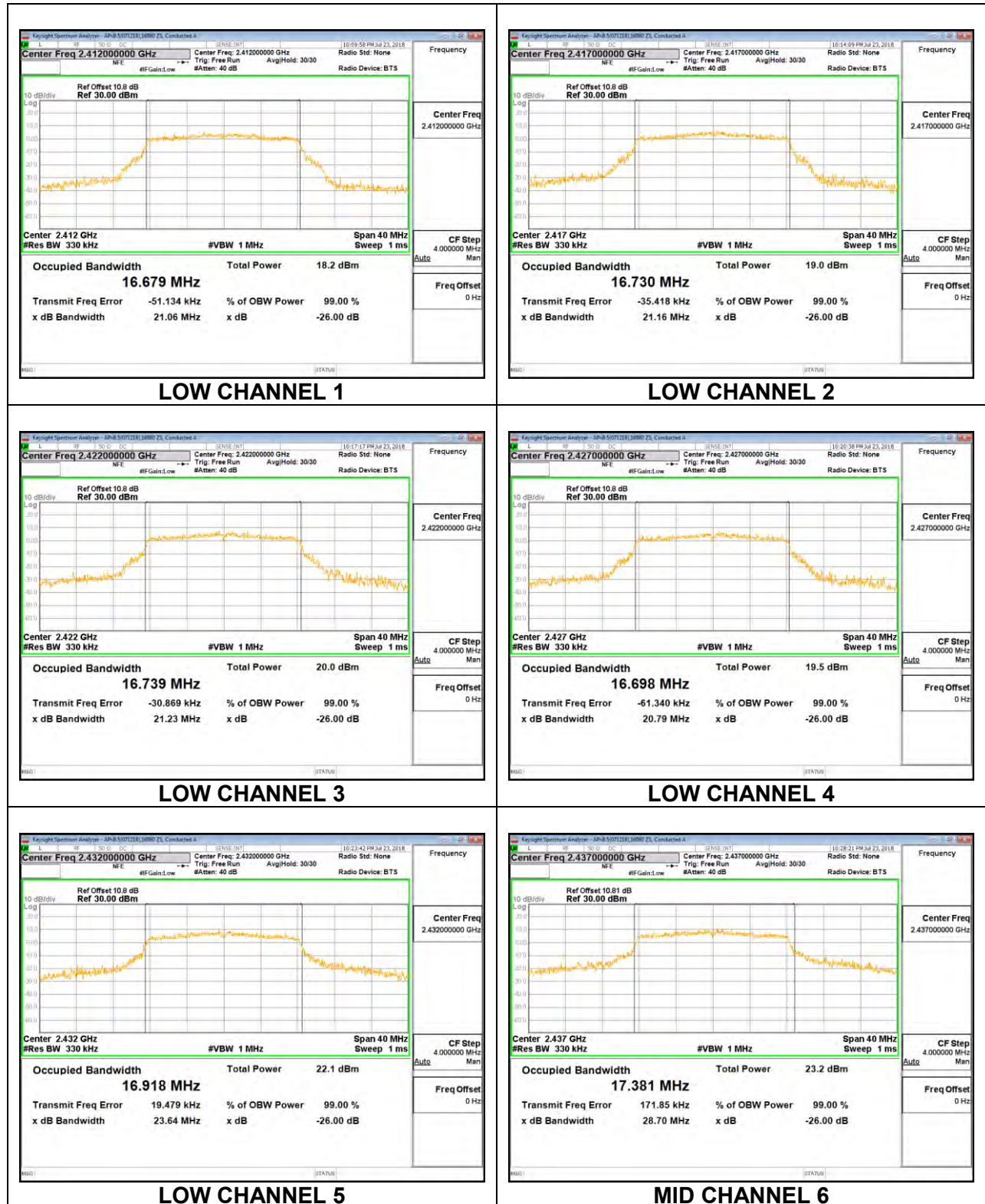
#### 8.2.1. 802.11b MODE

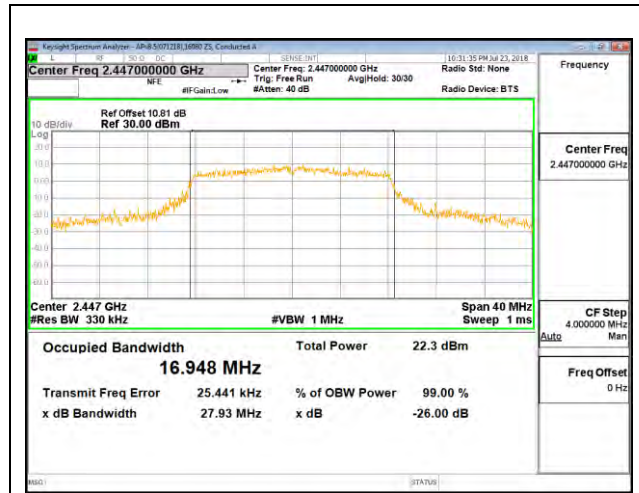
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	12.1210
Mid 6	2437	12.1110
High 11	2462	12.1030
High 12	2467	11.9700
High 13	2472	11.5970



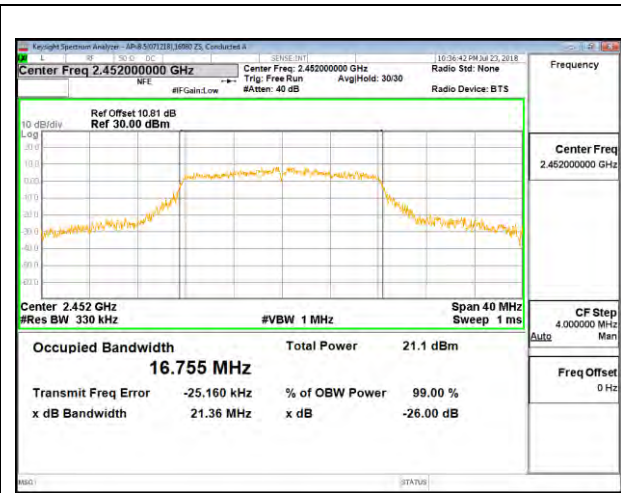
### 8.2.2. 802.11g MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	16.6790
Low 2	2417	16.7300
Low 3	2422	16.7390
Low 4	2427	16.6980
Low 5	2432	16.9180
Mid 6	2437	17.3810
High 8	2447	16.9480
High 9	2452	16.7550
High 10	2457	16.7330
High 11	2462	16.5600
High 12	2467	16.7270
High 13	2472	16.7050

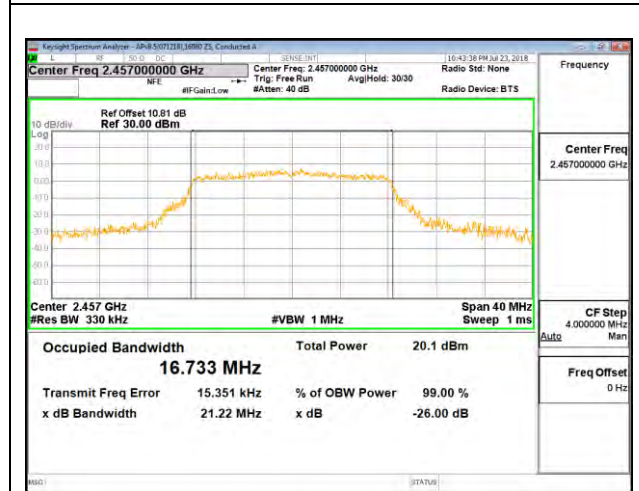




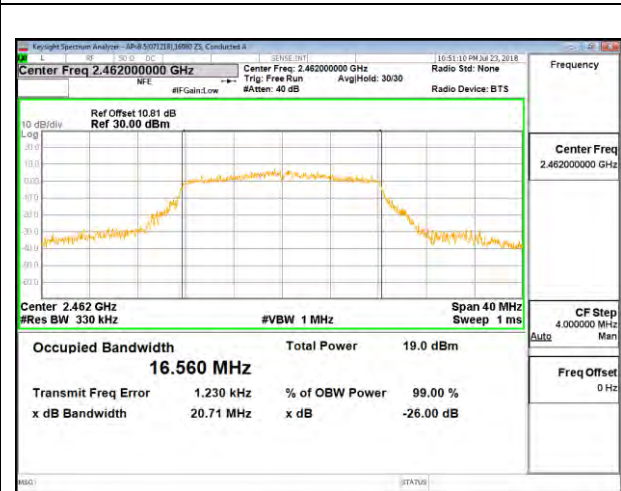
**HIGH CHANNEL 8**



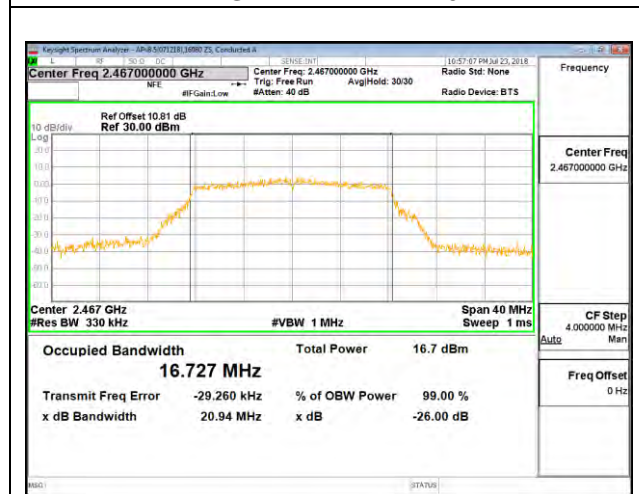
**HIGH CHANNEL 9**



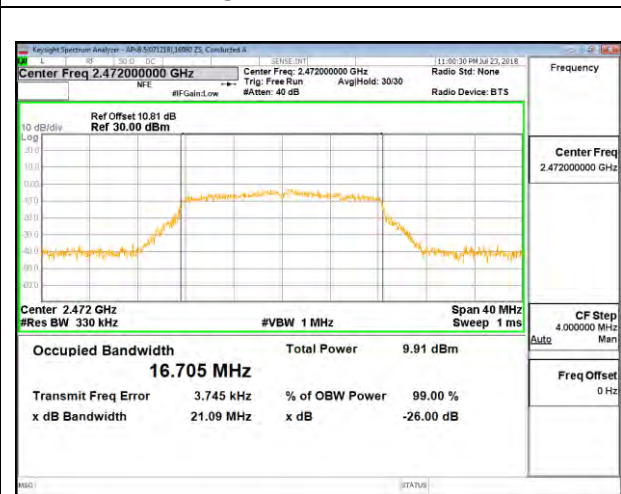
**HIGH CHANNEL 10**



**HIGH CHANNEL 11**



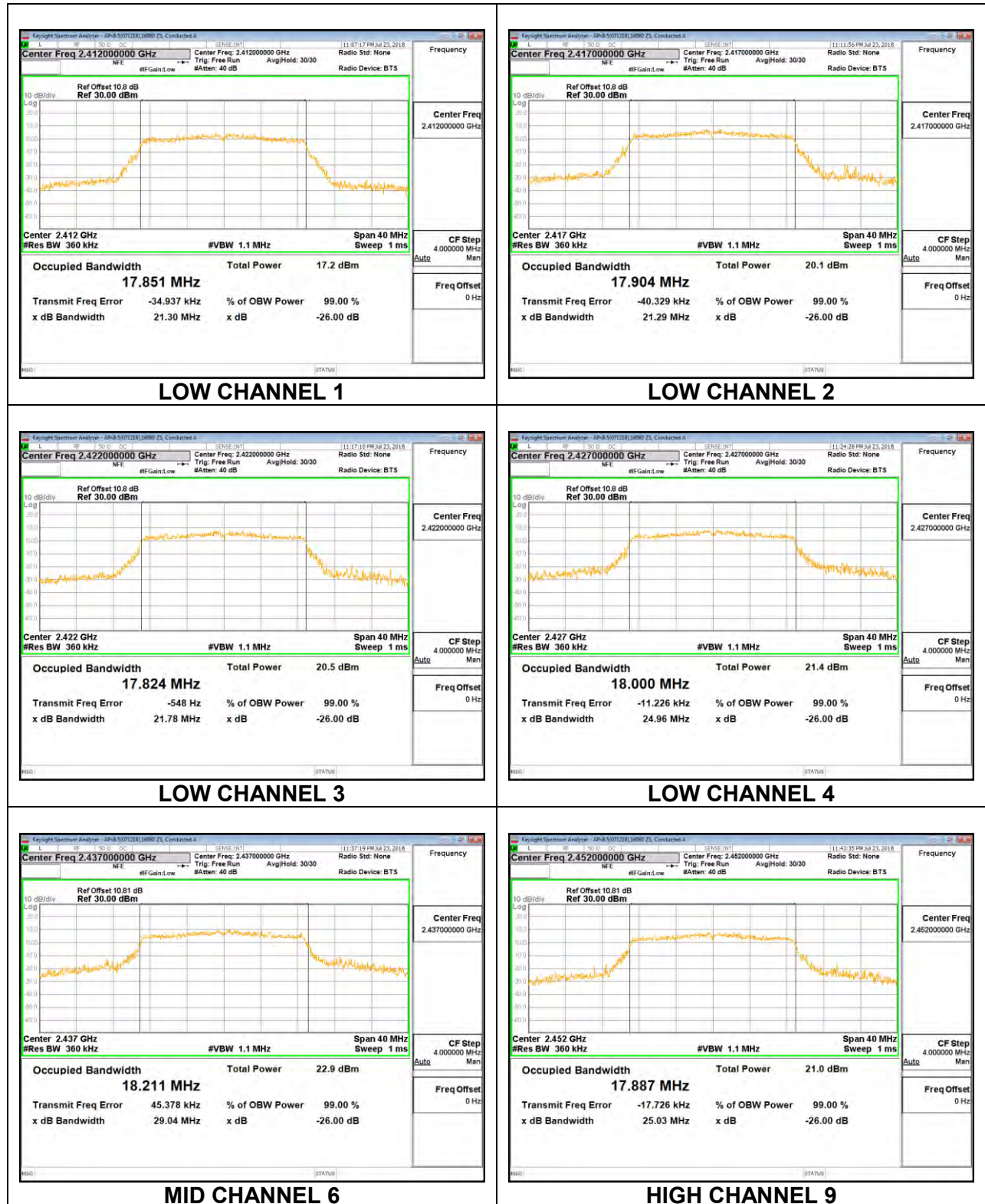
**HIGH CHANNEL 12**



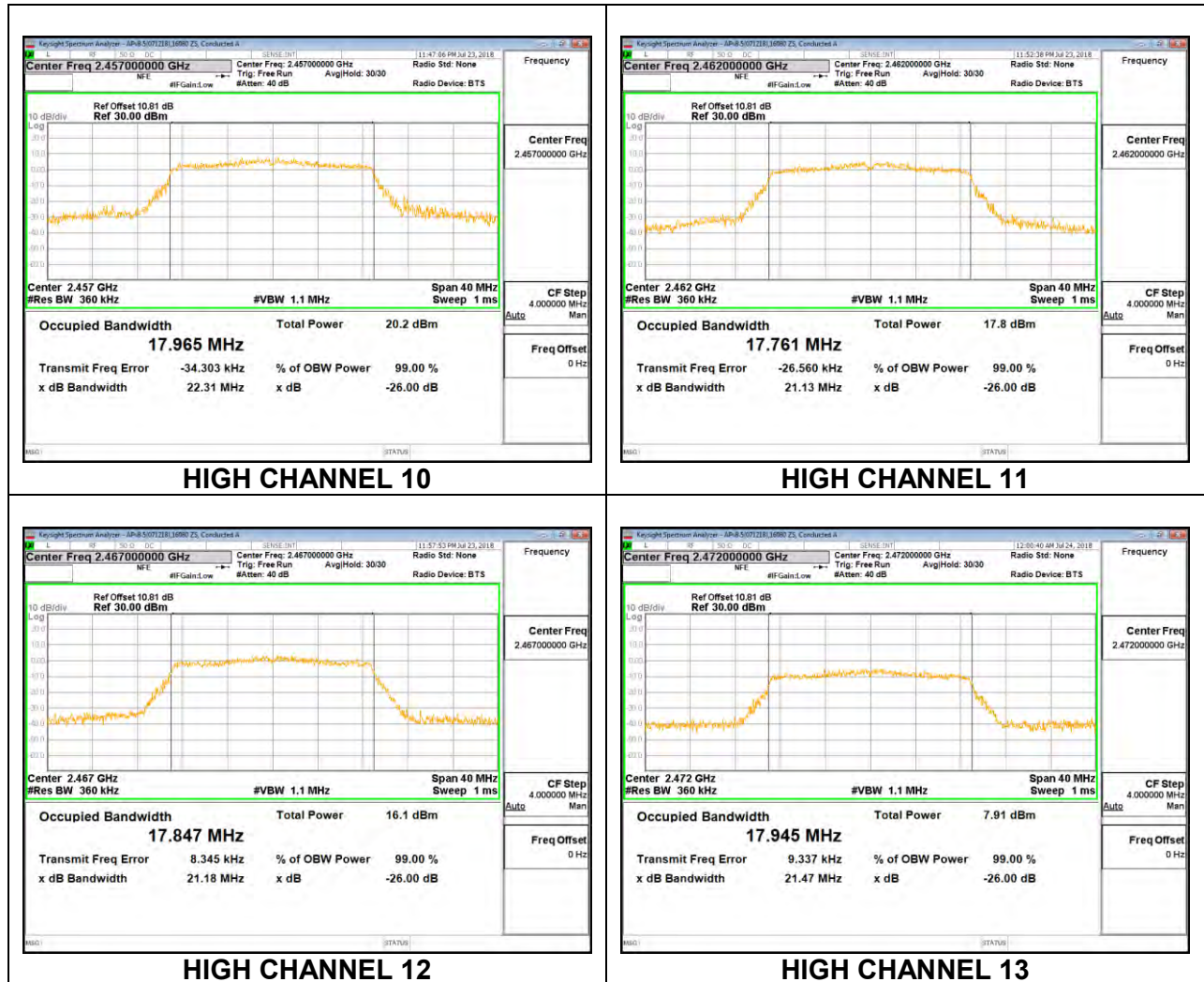
**HIGH CHANNEL 13**

### 8.2.3. 802.11n HT20 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 1	2412	17.8510
Low 2	2417	17.9040
Low 3	2422	17.8240
Low 4	2427	18.0000
Mid 6	2437	18.2110
High 9	2452	17.8870
High 10	2457	17.9650
High 11	2462	17.7610
High 12	2467	17.8470
High 13	2472	17.9450

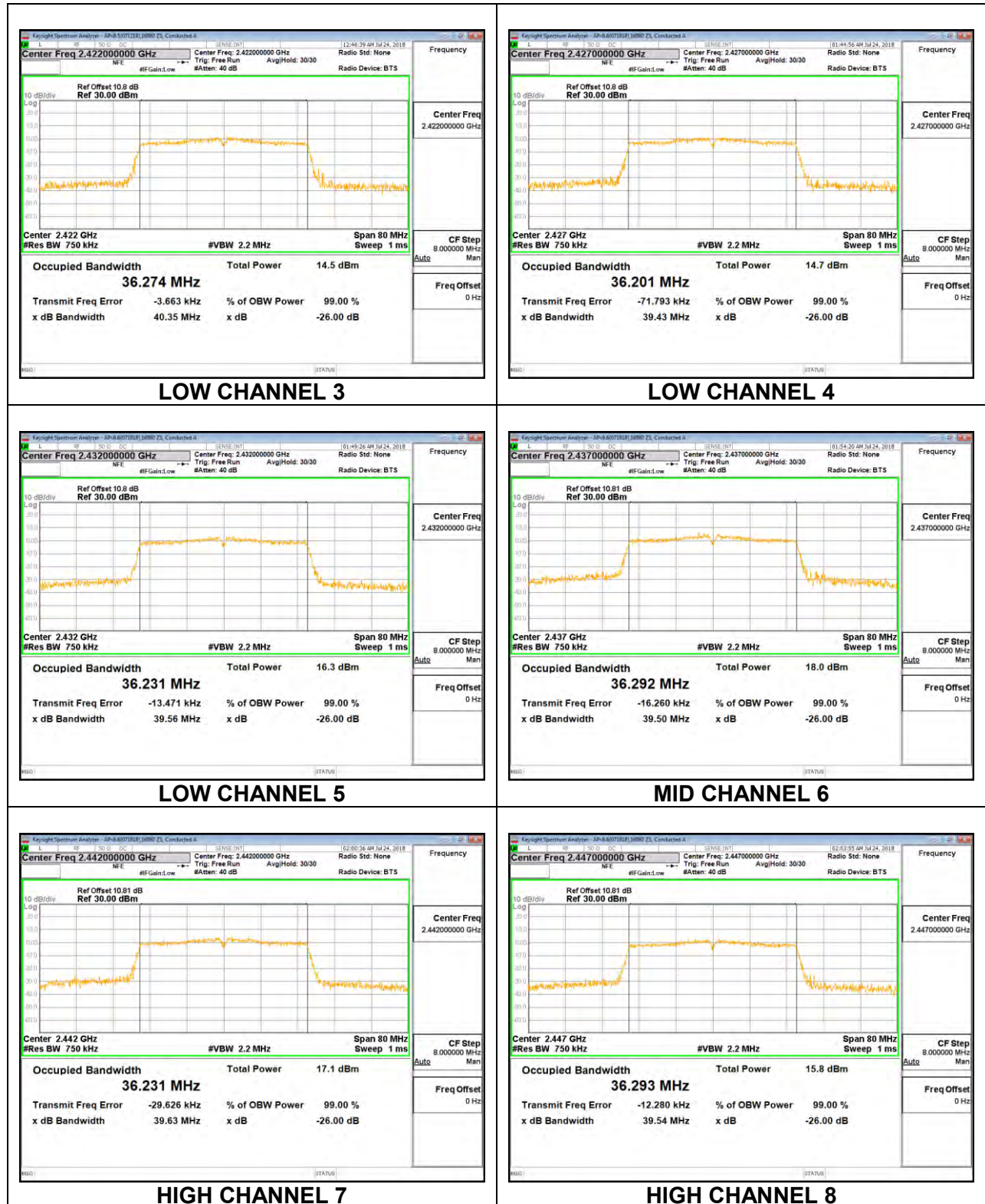


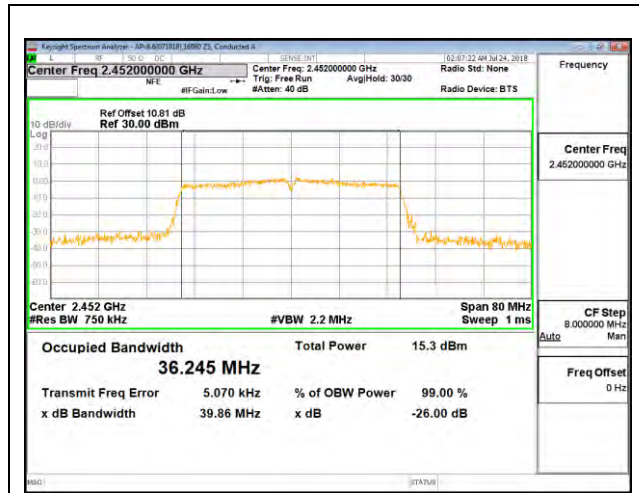




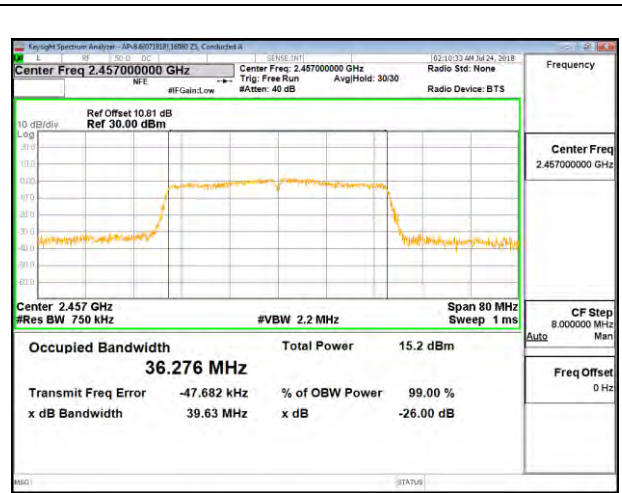
### 8.2.4. 802.11n HT40 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 3	2422	36.2740
Low 4	2427	36.2010
Low 5	2432	36.2310
Mid 6	2437	36.2920
High 7	2442	36.2310
High 8	2447	36.2930
High 9	2452	36.2450
High 10	2457	36.2760
High 11	2462	36.2250

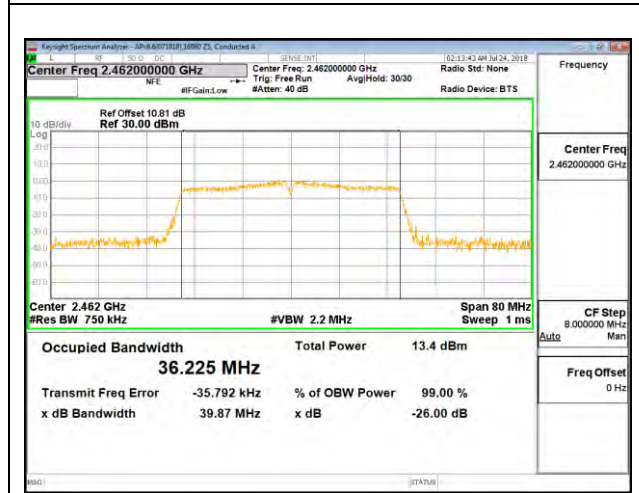




**HIGH CHANNEL 9**



**HIGH CHANNEL 10**



**HIGH CHANNEL 11**

### 8.3. 6 dB BANDWIDTH

#### LIMITS

FCC §15.247 (a) (2)

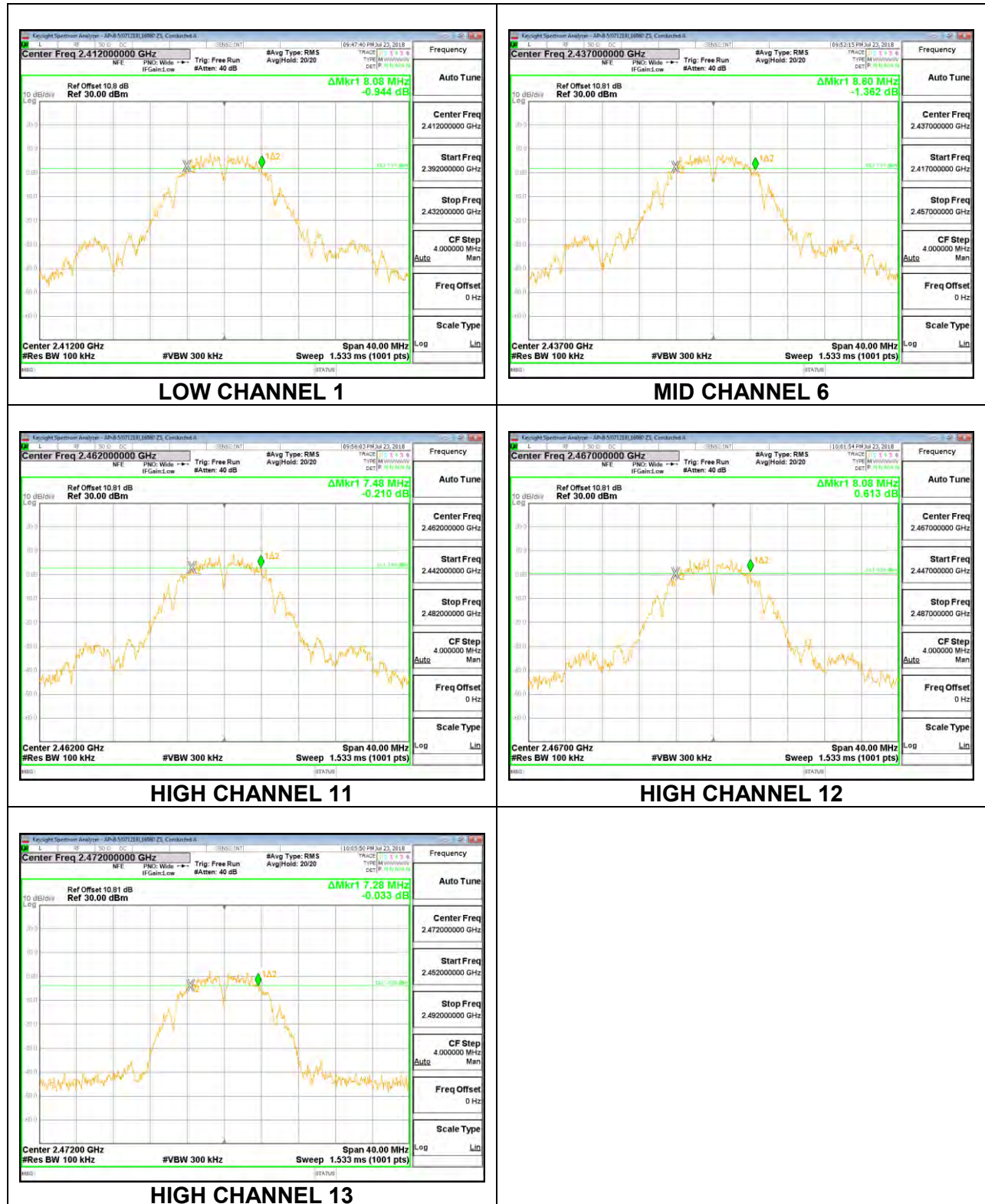
RSS-247 5.2 (a)

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

#### RESULTS

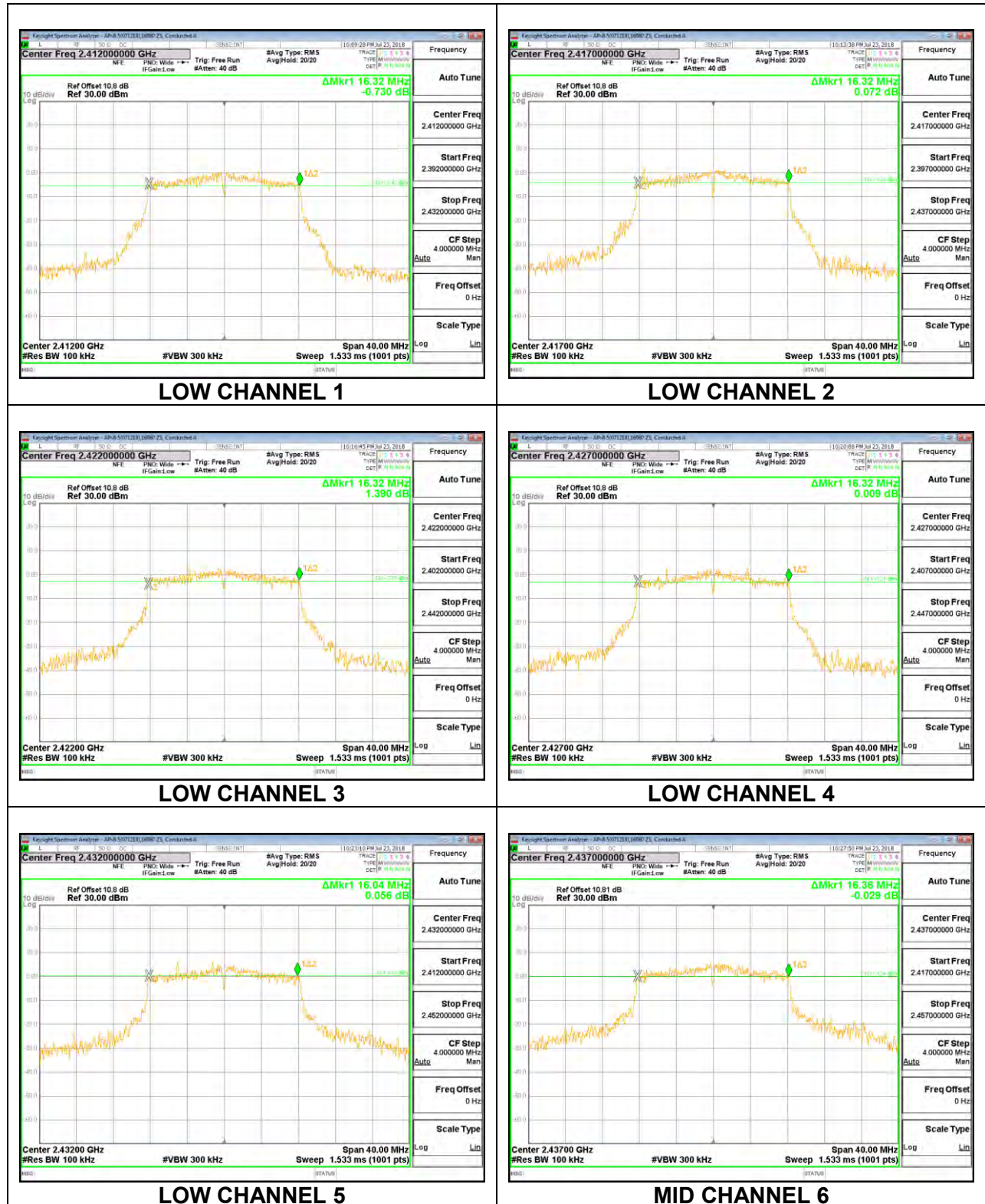
##### 8.3.1. 802.11b MODE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	8.0800	0.5
Mid 6	2437	8.6000	0.5
High 11	2462	7.4800	0.5
High 12	2467	8.0800	0.5
High 13	2472	7.2800	0.5

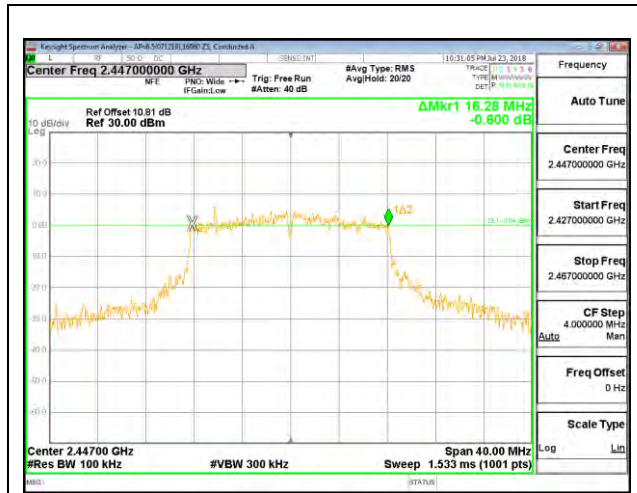


### 8.3.2. 802.11g MODE

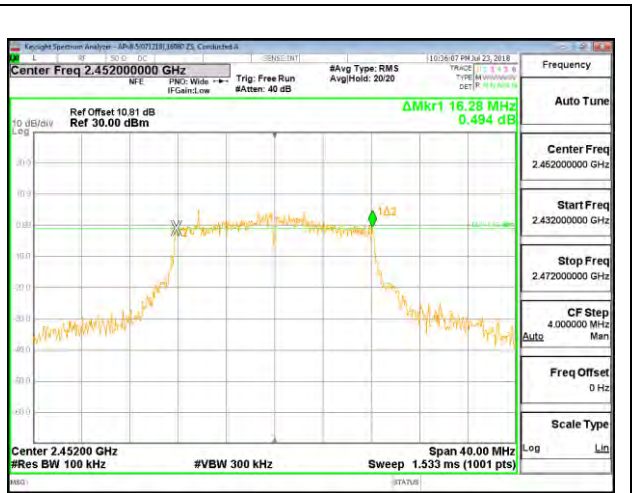
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	16.3200	0.5
Low 2	2417	16.3200	0.5
Low 3	2422	16.3200	0.5
Low 4	2427	16.3200	0.5
Low 5	2432	16.0400	0.5
Mid 6	2437	16.3600	0.5
High 8	2447	16.2800	0.5
High 9	2452	16.2800	0.5
High 10	2457	16.3600	0.5
High 11	2462	16.0800	0.5
High 12	2467	16.3200	0.5
High 13	2472	16.3200	0.5



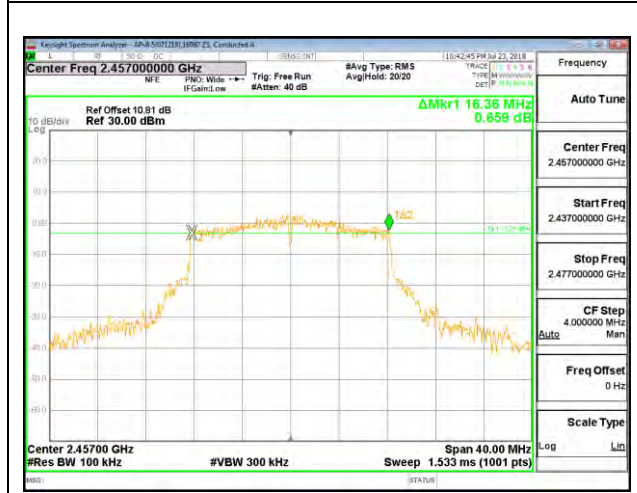




**HIGH CHANNEL 8**



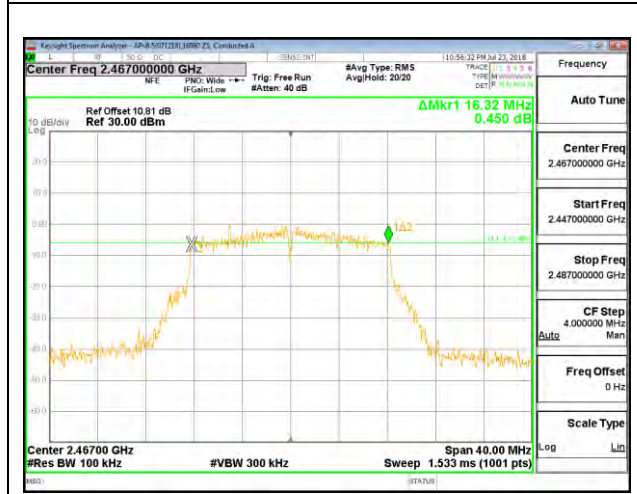
**HIGH CHANNEL 9**



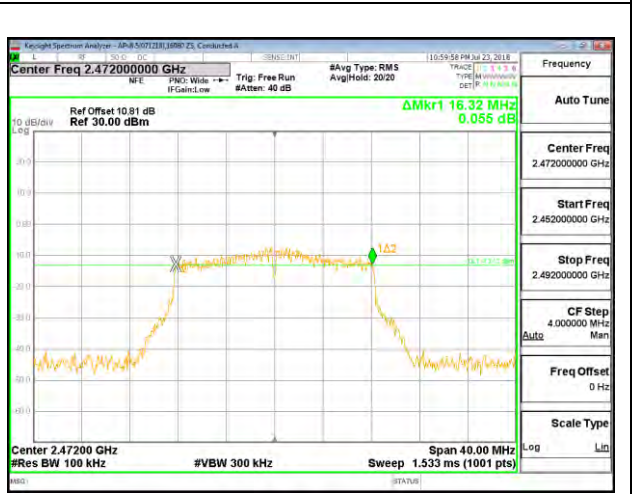
**HIGH CHANNEL 10**



**HIGH CHANNEL 11**



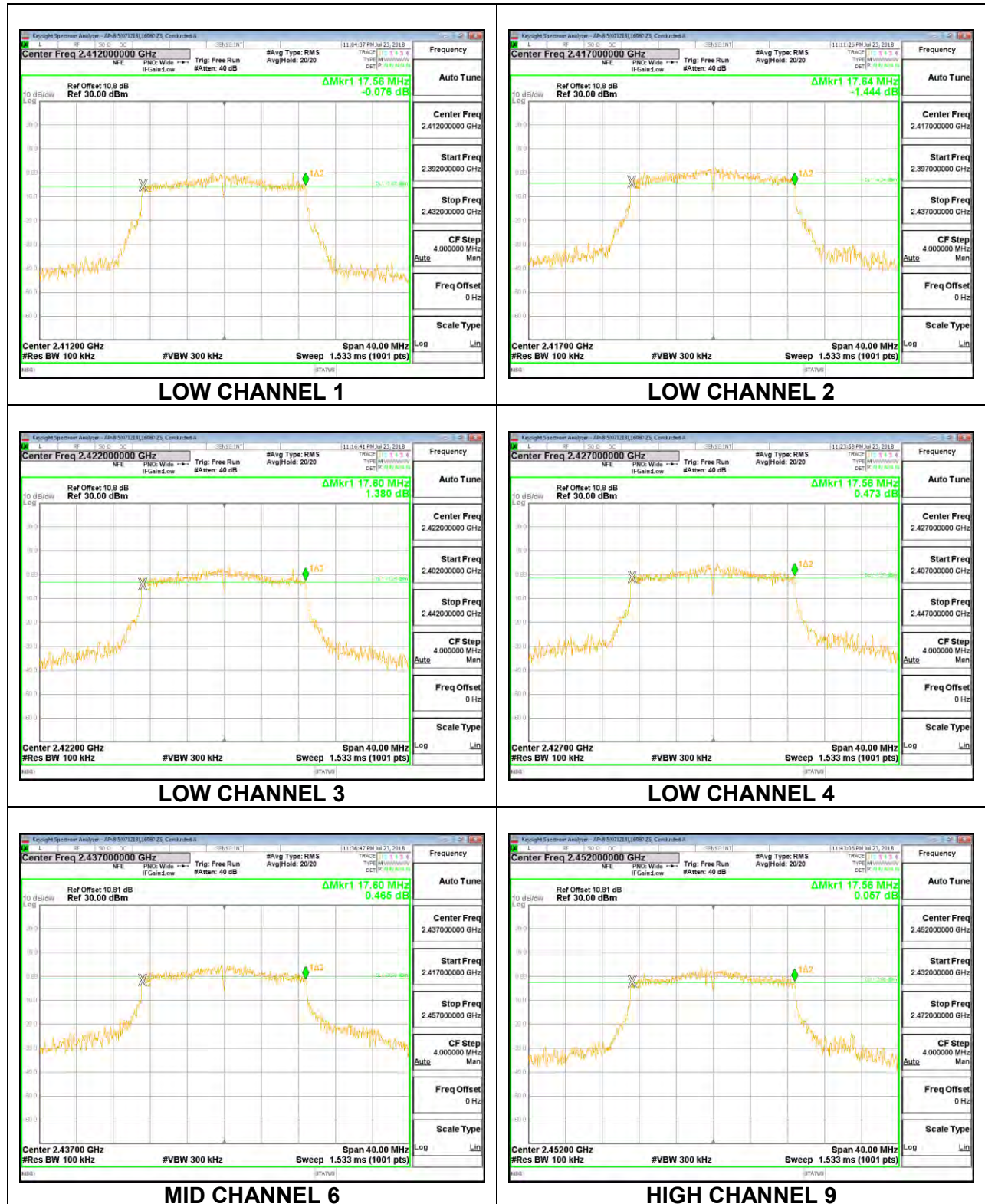
**HIGH CHANNEL 12**

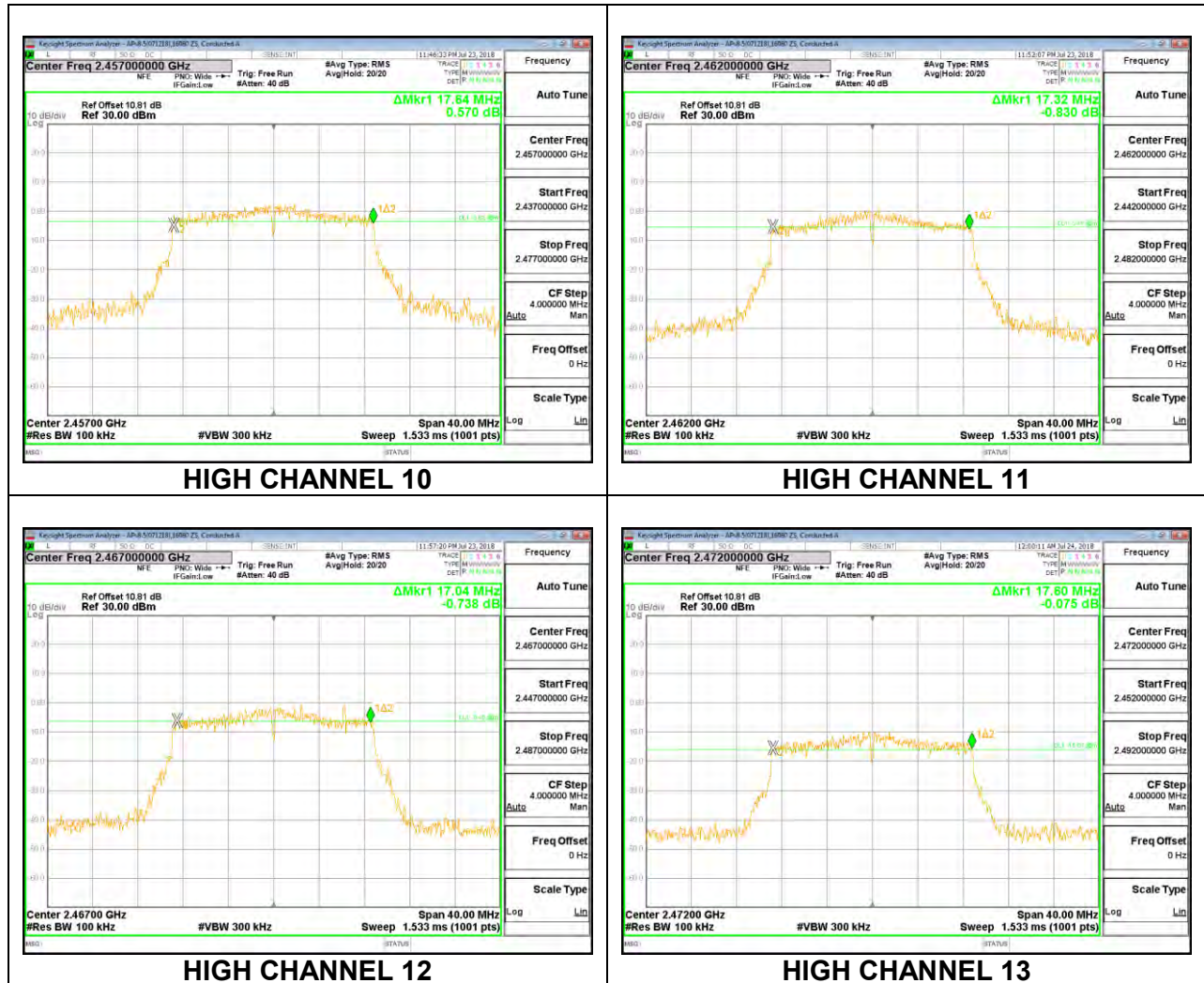


**HIGH CHANNEL 13**

### 8.3.3. 802.11n HT20 MODE

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 1	2412	17.5600	0.5
Low 2	2417	17.6400	0.5
Low 3	2422	17.6000	0.5
Low 4	2427	17.5600	0.5
Mid 6	2437	17.6000	0.5
High 9	2452	17.5600	0.5
High 10	2457	17.6400	0.5
High 11	2462	17.3200	0.5
High 12	2467	17.0400	0.5
High 13	2472	17.6000	0.5



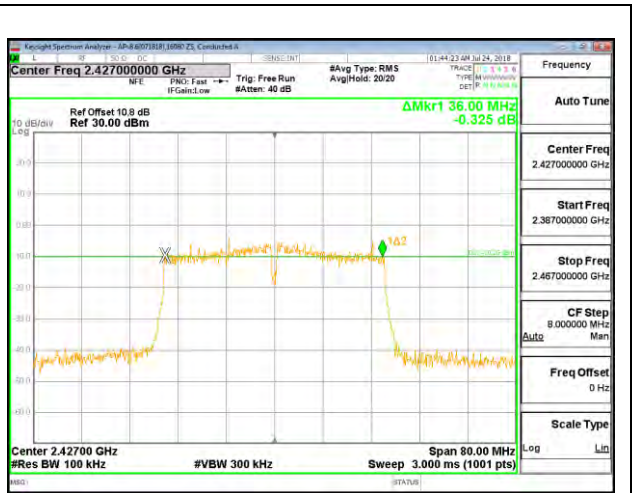


### 8.3.4. 802.11n HT40 MODE

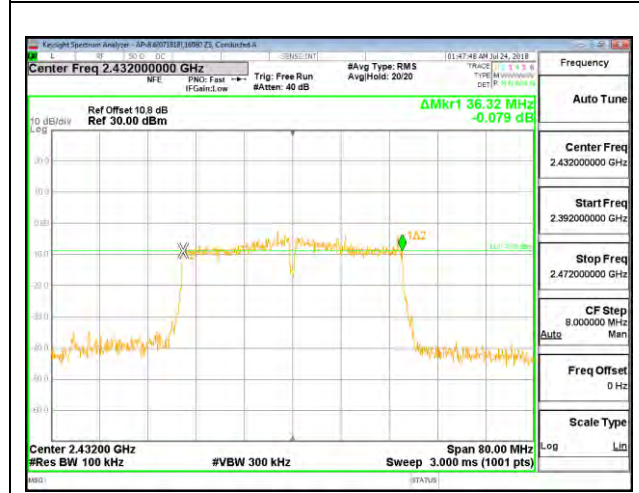
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 3	2422	35.6800	0.5
Low 4	2427	36.0000	0.5
Low 5	2432	36.3200	0.5
Mid 6	2437	35.6800	0.5
High 7	2442	36.3200	0.5
High 8	2447	35.3600	0.5
High 9	2452	36.0000	0.5
High 10	2457	36.0800	0.5
High 11	2462	36.0800	0.5



LOW CHANNEL 3



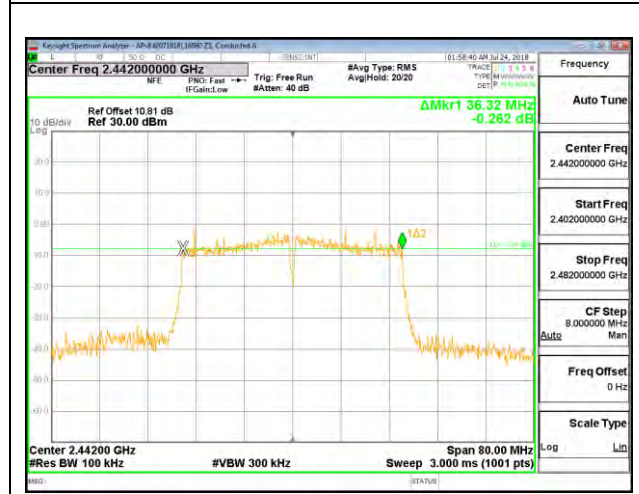
LOW CHANNEL 4



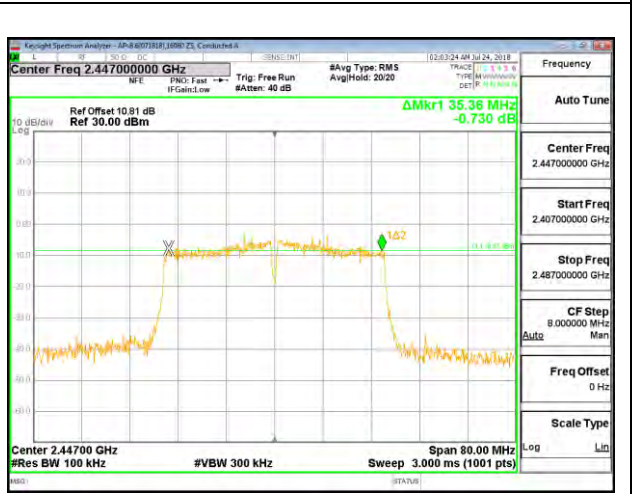
LOW CHANNEL 5



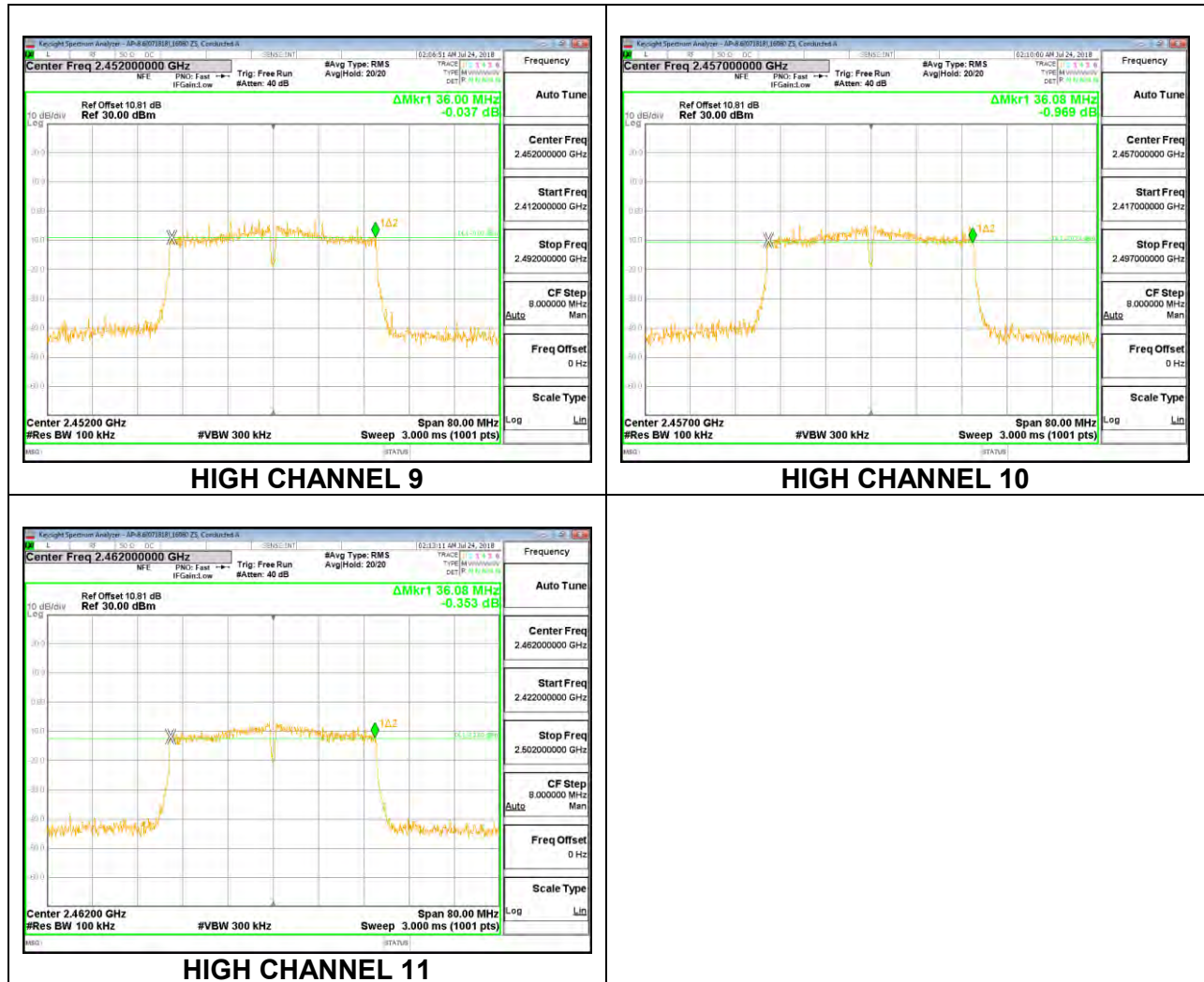
MID CHANNEL 6



HIGH CHANNEL 7



HIGH CHANNEL 8



## 8.4. OUTPUT POWER

### LIMITS

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

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 for a gated average reading of power.

### DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

### RESULTS

<b>Tested By:</b>	16080 ZS
<b>Date:</b>	07/25/2018



### 8.4.1. 802.11b MODE

#### Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	4.00	30.00	30	36	30.00
Mid 6	2437	4.00	30.00	30	36	30.00
High 11	2462	4.00	30.00	30	36	30.00
High 12	2467	4.00	30.00	30	36	30.00
High 13	2472	4.00	30.00	30	36	30.00

#### Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	18.84	18.84	30.00	-11.16
Mid 6	2437	19.06	19.06	30.00	-10.94
High 11	2462	17.97	17.97	30.00	-12.03
High 12	2467	16.09	16.09	30.00	-13.91
High 13	2472	12.02	12.02	30.00	-17.98

### 8.4.2. 802.11g MODE

#### Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	4.00	30.00	30	36	30.00
Low 2	2417	4.00	30.00	30	36	30.00
Low 3	2422	4.00	30.00	30	36	30.00
Low 4	2427	4.00	30.00	30	36	30.00
Low 5	2432	4.00	30.00	30	36	30.00
Mid 6	2437	4.00	30.00	30	36	30.00
High 8	2447	4.00	30.00	30	36	30.00
High 9	2452	4.00	30.00	30	36	30.00
High 10	2457	4.00	30.00	30	36	30.00
High 11	2462	4.00	30.00	30	36	30.00
High 12	2467	4.00	30.00	30	36	30.00
High 13	2472	4.00	30.00	30	36	30.00

#### Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	13.56	13.56	30.00	-16.44
Low 2	2417	15.03	15.03	30.00	-14.97
Low 3	2422	16.40	16.40	30.00	-13.60
Low 4	2427	17.59	17.59	30.00	-12.41
Low 5	2432	18.82	18.82	30.00	-11.18
Mid 6	2437	19.40	19.40	30.00	-10.60
High 8	2447	18.26	18.26	30.00	-11.74
High 9	2452	17.15	17.15	30.00	-12.85
High 10	2457	16.38	16.38	30.00	-13.62
High 11	2462	14.96	14.96	30.00	-15.04
High 12	2467	12.87	12.87	30.00	-17.13
High 13	2472	6.18	6.18	30.00	-23.82

### 8.4.3. 802.11n HT20 MODE

#### 1TX Antenna 1 MODE

##### Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	4.00	30.00	30	36	30.00
Low 2	2417	4.00	30.00	30	36	30.00
Low 3	2422	4.00	30.00	30	36	30.00
Low 4	2427	4.00	30.00	30	36	30.00
Mid 6	2437	4.00	30.00	30	36	30.00
High 9	2452	4.00	30.00	30	36	30.00
High 10	2457	4.00	30.00	30	36	30.00
High 11	2462	4.00	30.00	30	36	30.00
High 12	2467	4.00	30.00	30	36	30.00
High 13	2472	4.00	30.00	30	36	30.00

##### Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	13.65	13.65	30.00	-16.35
Low 2	2417	16.45	16.45	30.00	-13.55
Low 3	2422	16.99	16.99	30.00	-13.01
Low 4	2427	18.12	18.12	30.00	-11.88
Mid 6	2437	19.25	19.25	30.00	-10.75
High 9	2452	17.37	17.37	30.00	-12.63
High 10	2457	16.52	16.52	30.00	-13.48
High 11	2462	13.90	13.90	30.00	-16.10
High 12	2467	12.35	12.35	30.00	-17.65
High 13	2472	4.16	4.16	30.00	-25.84

### 8.4.4. 802.11n HT40 MODE

#### 1TX Antenna 1 MODE

##### Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 3	2422	4.00	30.00	30	36	30.00
Low 4	2427	4.00	30.00	30	36	30.00
Low 5	2432	4.00	30.00	30	36	30.00
Mid 6	2437	4.00	30.00	30	36	30.00
High 7	2442	4.00	30.00	30	36	30.00
High 8	2447	4.00	30.00	30	36	30.00
High 9	2452	4.00	30.00	30	36	30.00
High 10	2457	4.00	30.00	30	36	30.00
High 11	2462	4.00	30.00	30	36	30.00

##### Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 3	2422	11.12	11.12	30.00	-18.88
Low 4	2427	11.71	11.71	30.00	-18.29
Low 5	2432	12.91	12.91	30.00	-17.09
Mid 6	2437	14.47	14.47	30.00	-15.53
High 7	2442	13.78	13.78	30.00	-16.22
High 8	2447	12.55	12.55	30.00	-17.45
High 9	2452	11.98	11.98	30.00	-18.02
High 10	2457	11.93	11.93	30.00	-18.07
High 11	2462	10.04	10.04	30.00	-19.96

## 8.5. POWER SPECTRAL DENSITY

### LIMITS

FCC §15.247 (e)

RSS-247 (5.2) (b)

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.

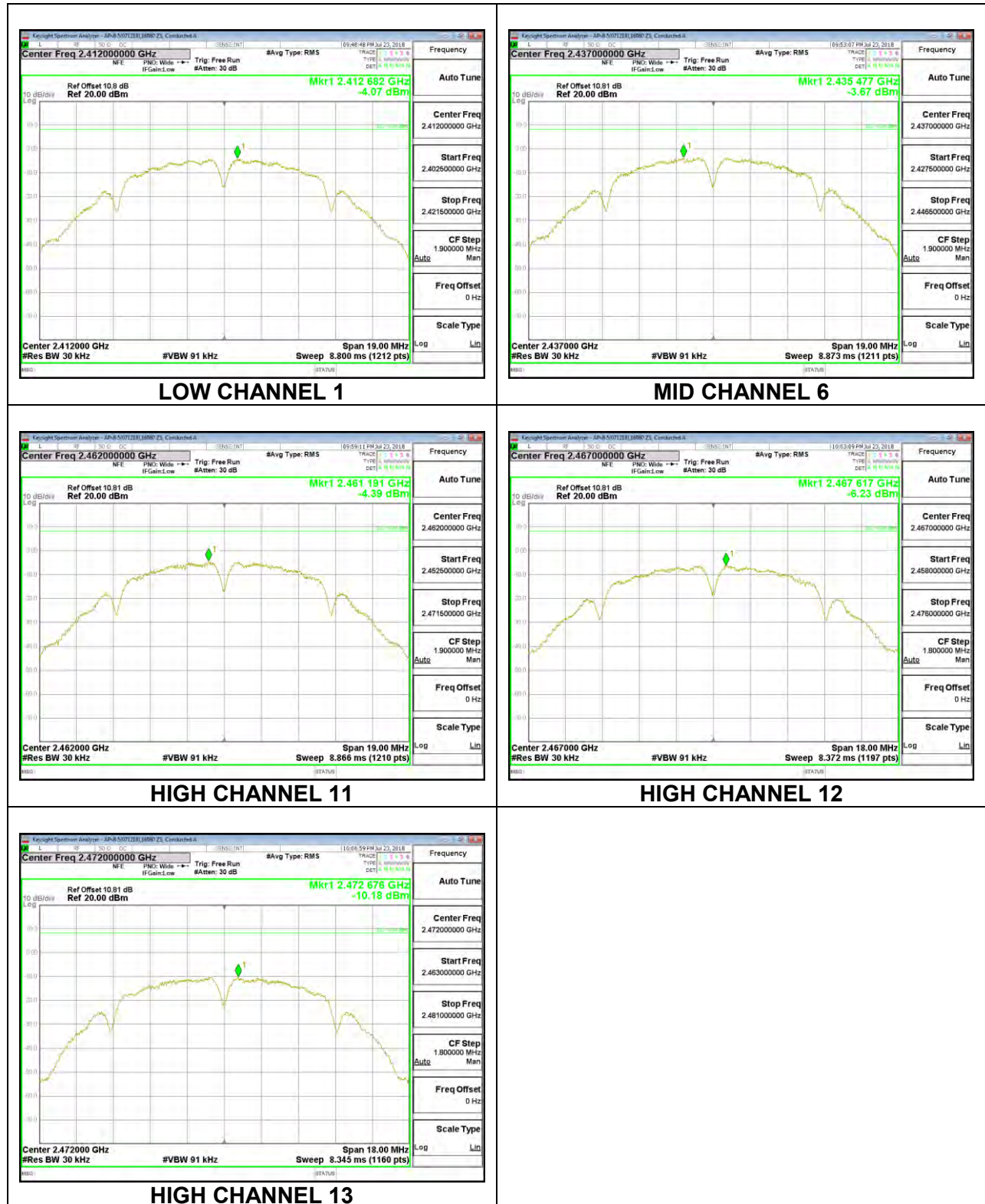
### RESULTS

#### 8.5.1. 802.11b MODE

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

Channel	Frequency (MHz)	Chain 0 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-4.07	-4.07	8.0	-12.1
Mid 6	2437	-3.67	-3.67	8.0	-11.7
High 11	2462	-4.39	-4.39	8.0	-12.4
High 12	2467	-6.23	-6.23	8.0	-14.2
High 13	2472	-10.18	-10.18	8.0	-18.2

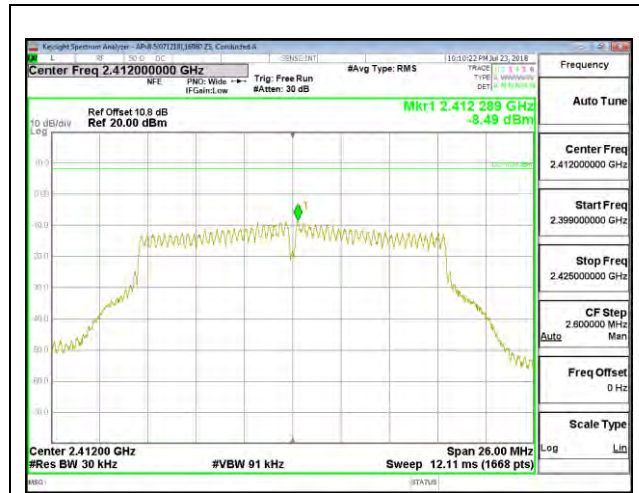


**8.5.2. 802.11g MODE**

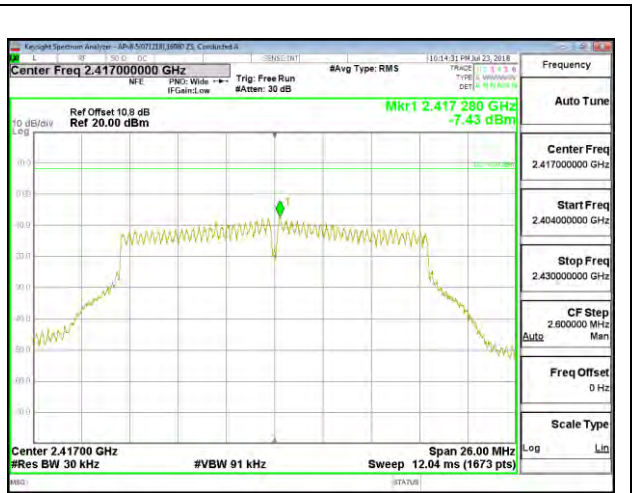
<b>Duty Cycle CF (dB)</b>	0.00	<b>Included in Calculations of Corr'd PSD</b>
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**PSD Results**

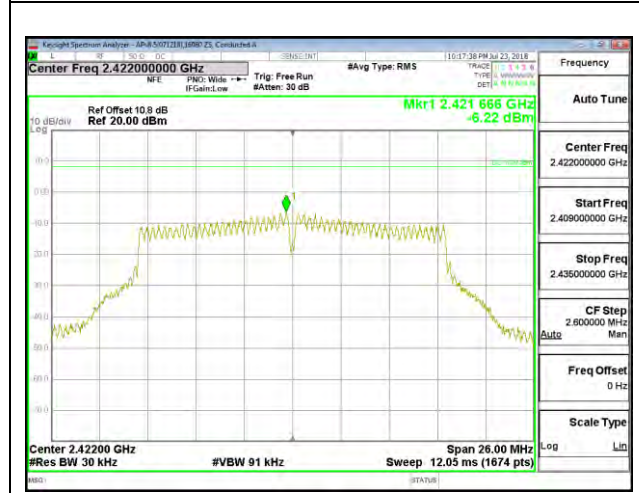
<b>Channel</b>	<b>Frequency (MHz)</b>	<b>Chain 0 Meas (dBm/ 3kHz)</b>	<b>Total Corr'd PSD (dBm/ 3kHz)</b>	<b>Limit (dBm/ 3kHz)</b>	<b>Margin (dB)</b>
Low 1	2412	-8.49	-8.49	8.0	-16.5
Low 2	2417	-7.43	-7.43	8.0	-15.4
Low 3	2422	-6.22	-6.22	8.0	-14.2
Low 4	2427	-7.06	-7.06	8.0	-15.1
Low 5	2432	-4.45	-4.45	8.0	-12.5
Mid 6	2437	-3.74	-3.74	8.0	-11.7
High 8	2447	-4.08	-4.08	8.0	-12.1
High 9	2452	-5.70	-5.70	8.0	-13.7
High 10	2457	-6.42	-6.42	8.0	-14.4
High 11	2462	-6.97	-6.97	8.0	-15.0
High 12	2467	-9.92	-9.92	8.0	-17.9
High 13	2472	-17.05	-17.05	8.0	-25.1



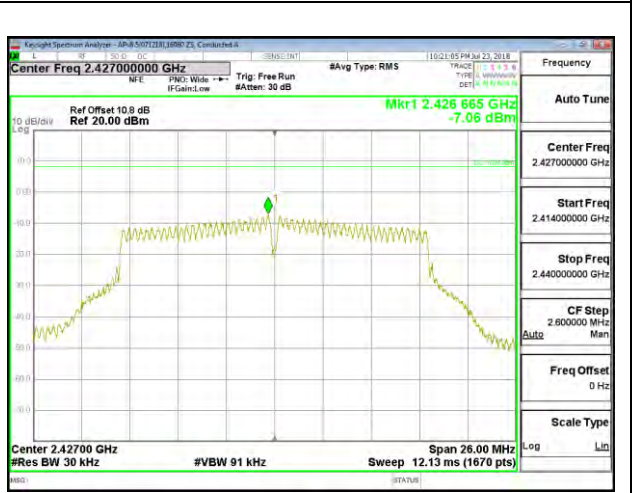
LOW CHANNEL 1



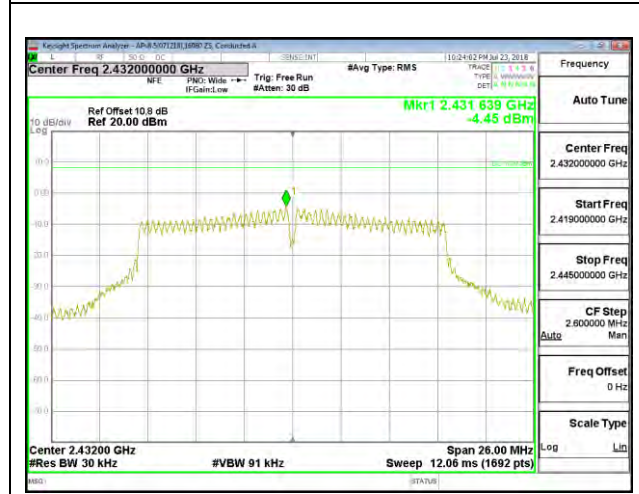
LOW CHANNEL 2



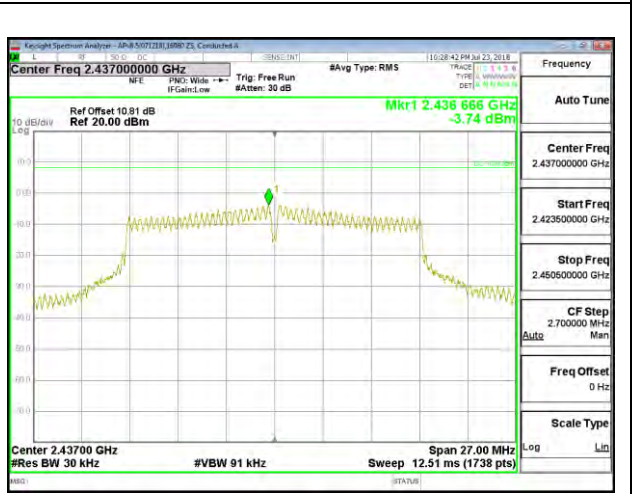
LOW CHANNEL 3



LOW CHANNEL 4

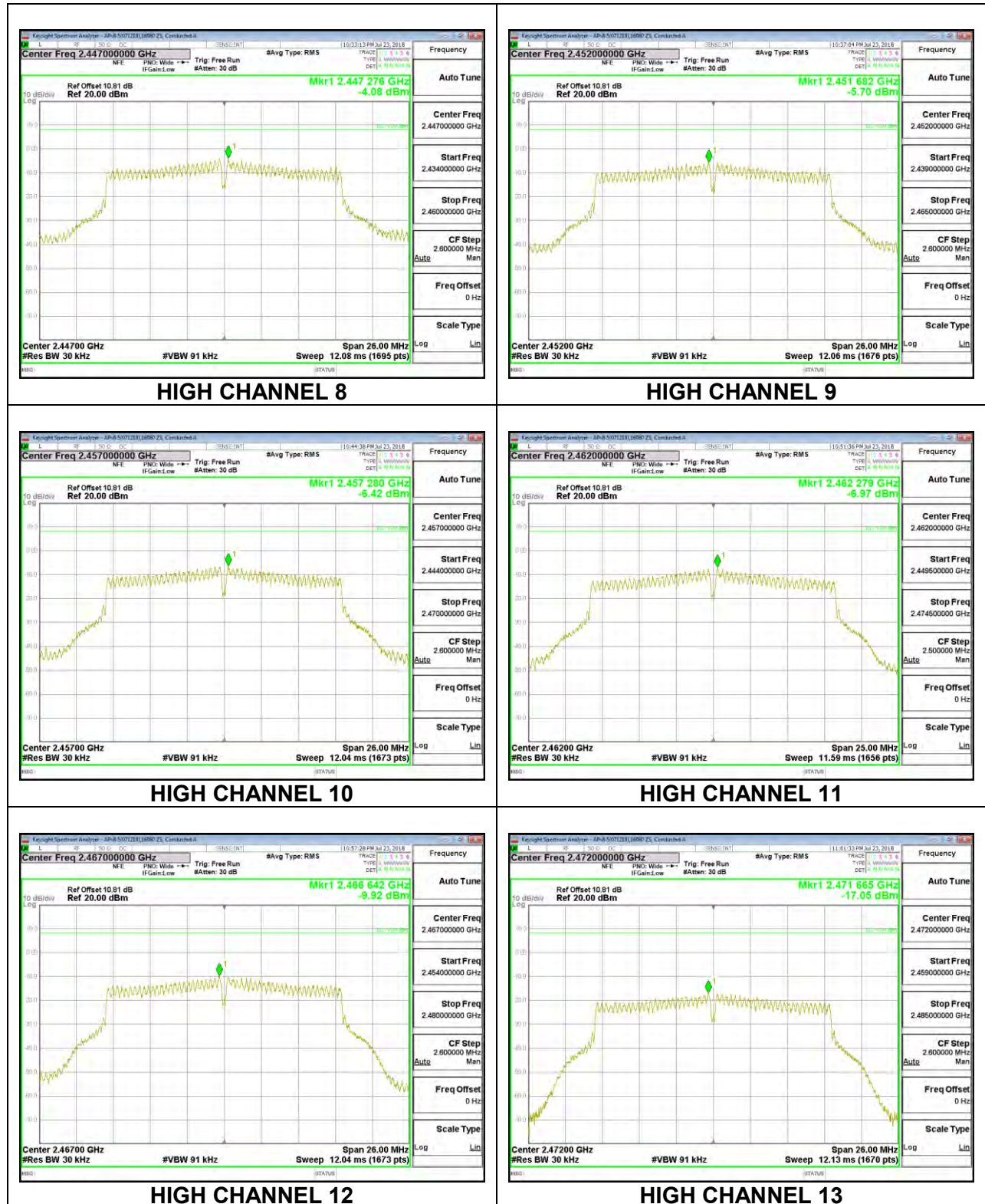


LOW CHANNEL 5



MID CHANNEL 6



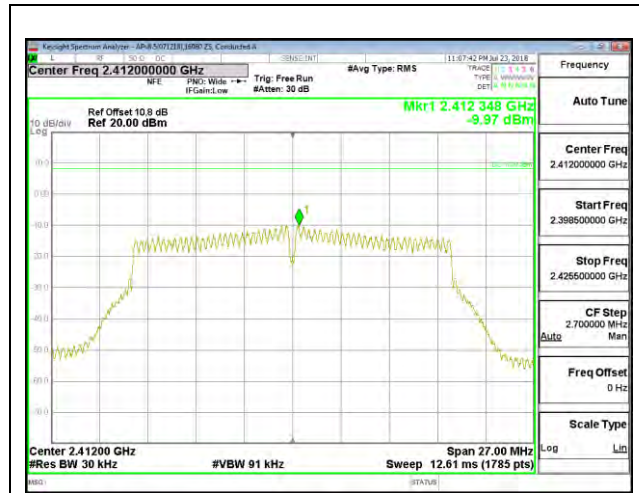


**8.5.3. 802.11n HT20 MODE**

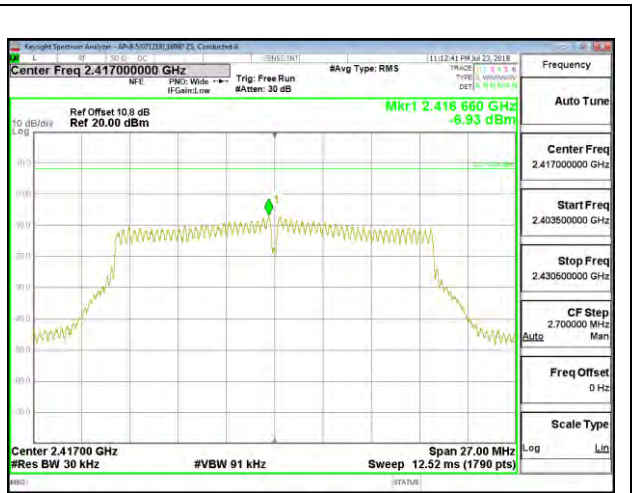
<b>Duty Cycle CF (dB)</b>	0.00	<b>Included in Calculations of Corr'd PSD</b>
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**PSD Results**

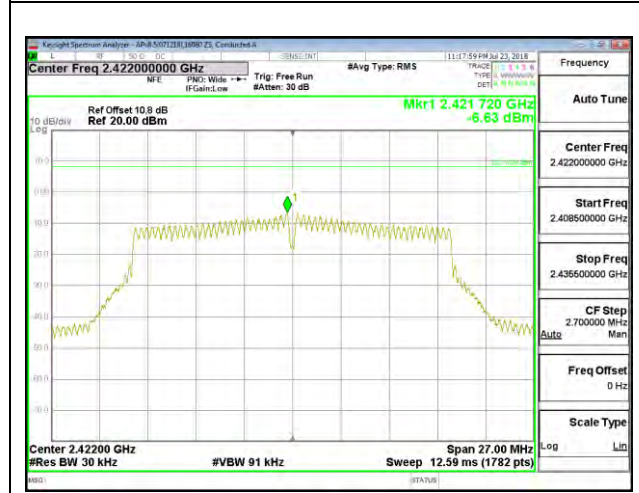
<b>Channel</b>	<b>Frequency (MHz)</b>	<b>Chain 0 Meas (dBm/ 3kHz)</b>	<b>Total Corr'd PSD (dBm/ 3kHz)</b>	<b>Limit (dBm/ 3kHz)</b>	<b>Margin (dB)</b>
Low 1	2412	-9.97	-9.97	8.0	-18.0
Low 2	2417	-6.93	-6.93	8.0	-14.9
Low 3	2422	-6.63	-6.63	8.0	-14.6
Low 4	2427	-5.84	-5.84	8.0	-13.8
Mid 6	2437	-3.96	-3.96	8.0	-12.0
High 9	2452	-5.86	-5.86	8.0	-13.9
High 10	2457	-6.85	-6.85	8.0	-14.9
High 11	2462	-8.85	-8.85	8.0	-16.9
High 12	2467	-10.65	-10.65	8.0	-18.7
High 13	2472	-19.11	-19.11	8.0	-27.1



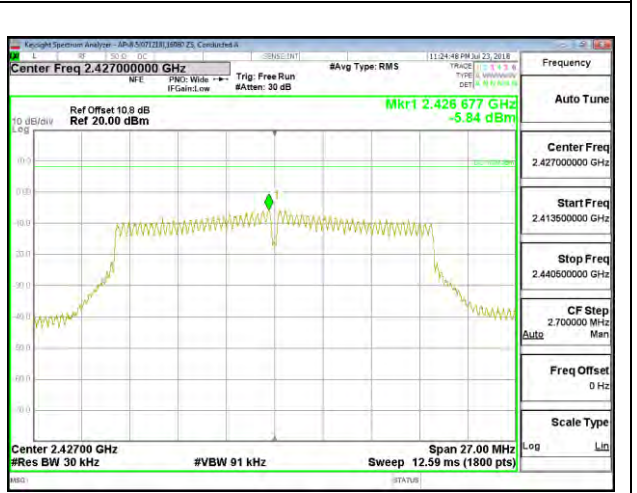
LOW CHANNEL 1



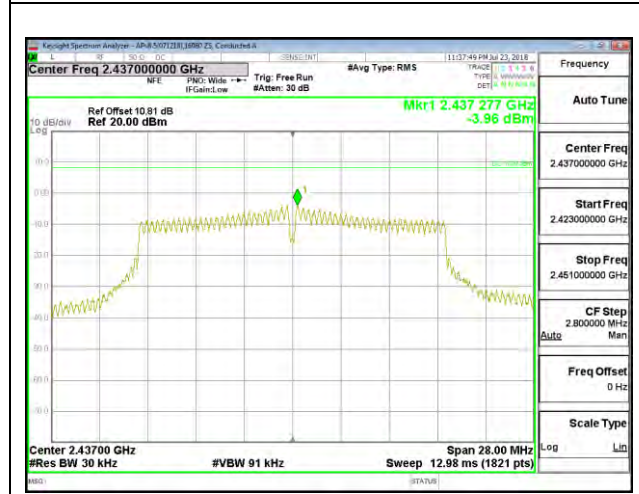
LOW CHANNEL 2



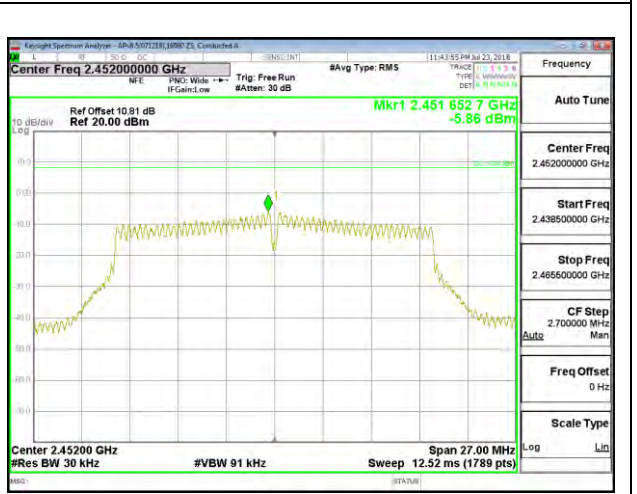
LOW CHANNEL 3



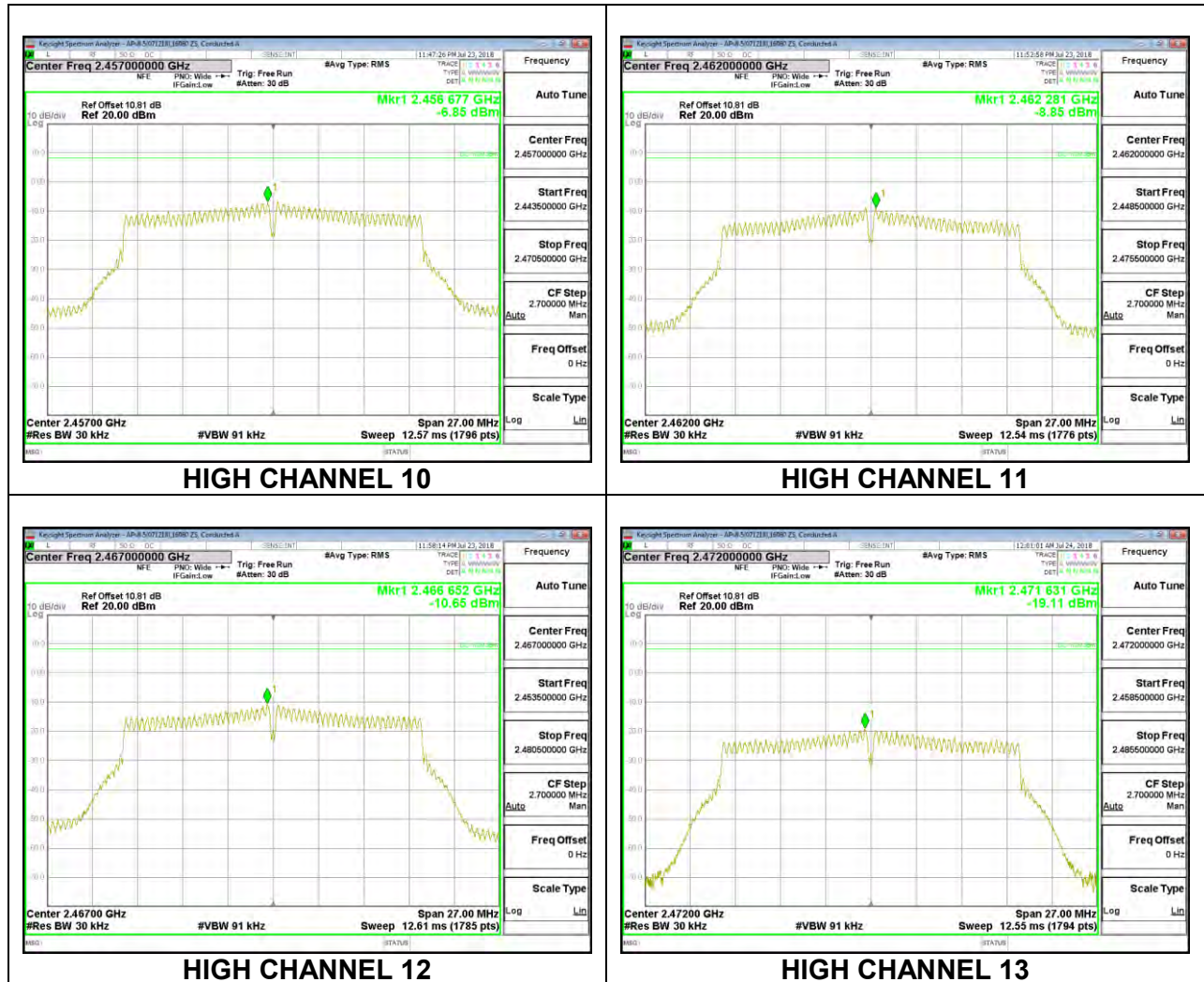
LOW CHANNEL 4



MID CHANNEL 6



HIGH CHANNEL 9

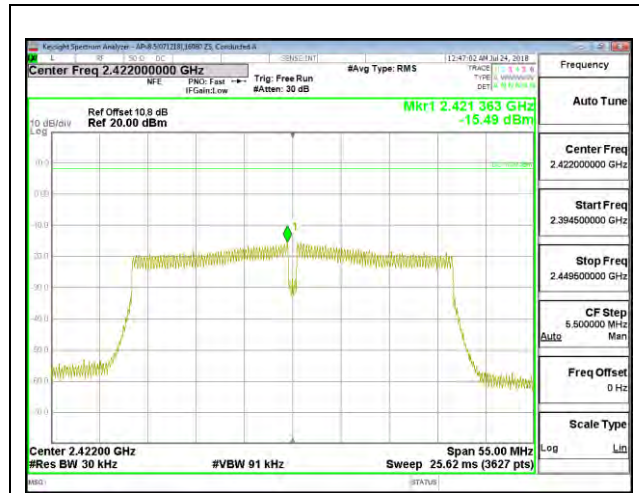


**8.5.4. 802.11n HT40 MODE**

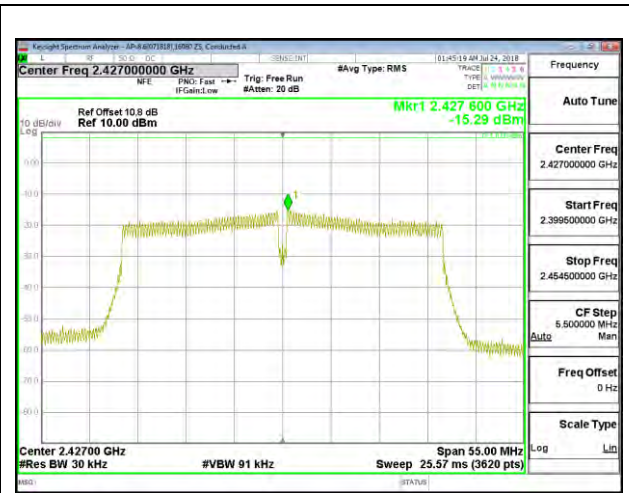
<b>Duty Cycle CF (dB)</b>	0.10	<b>Included in Calculations of Corr'd PSD</b>
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**PSD Results**

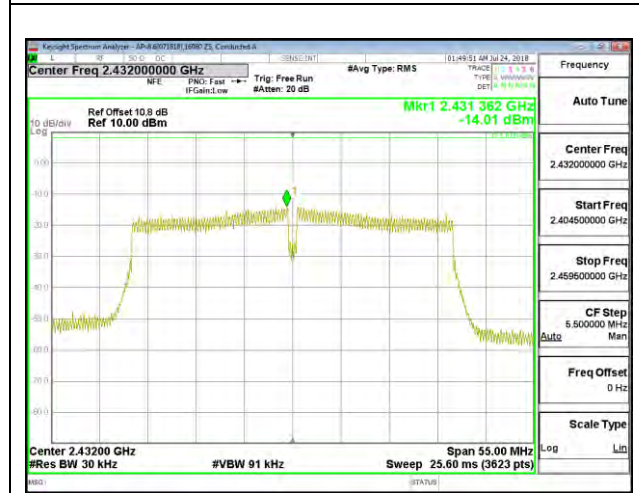
<b>Channel</b>	<b>Frequency (MHz)</b>	<b>Chain 0 Meas (dBm/ 3kHz)</b>	<b>Total Corr'd PSD (dBm/ 3kHz)</b>	<b>Limit (dBm/ 3kHz)</b>	<b>Margin (dB)</b>
Low 3	2422	-15.49	-15.39	8.0	-23.4
Low 4	2427	-15.29	-15.19	8.0	-23.2
Low 5	2432	-14.01	-13.91	8.0	-21.9
Mid 6	2437	-11.75	-11.65	8.0	-19.7
High 7	2442	-13.17	-13.07	8.0	-21.1
High 8	2447	-13.96	-13.86	8.0	-21.9
High 9	2452	-14.65	-14.55	8.0	-22.6
High 10	2457	-14.83	-14.73	8.0	-22.7
High 11	2462	-16.79	-16.69	8.0	-24.7



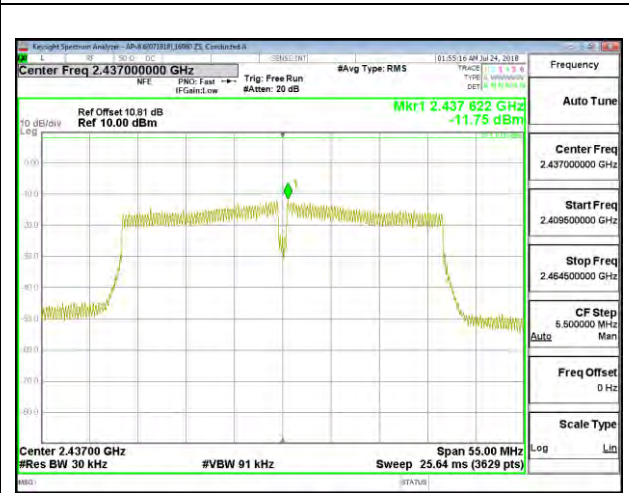
LOW CHANNEL 3



LOW CHANNEL 4



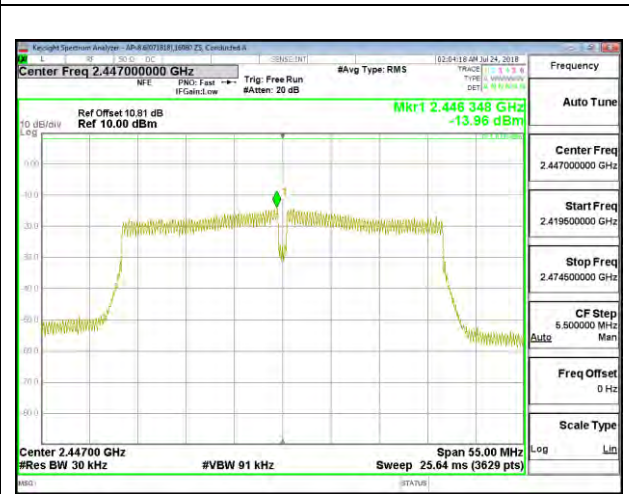
LOW CHANNEL 5



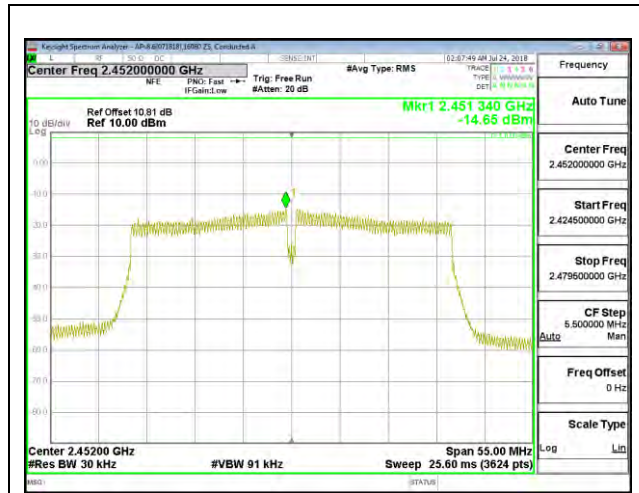
MID CHANNEL 6



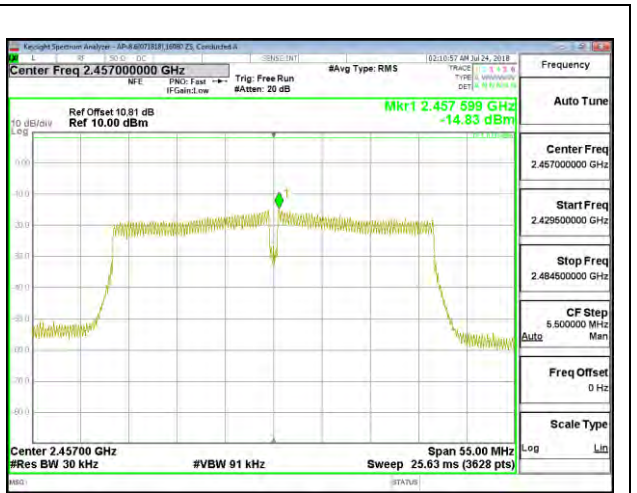
HIGH CHANNEL 7



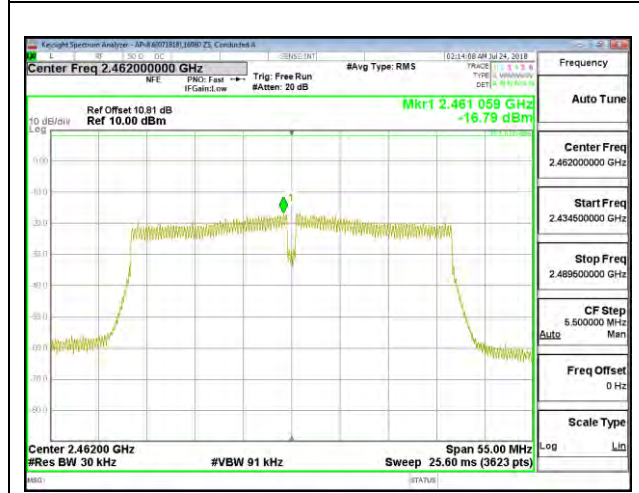
HIGH CHANNEL 8



**HIGH CHANNEL 9**



**HIGH CHANNEL 10**



**HIGH CHANNEL 11**

## **8.6. CONDUCTED SPURIOUS EMISSIONS**

### **LIMITS**

FCC §15.247 (d)

RSS-247 5.5

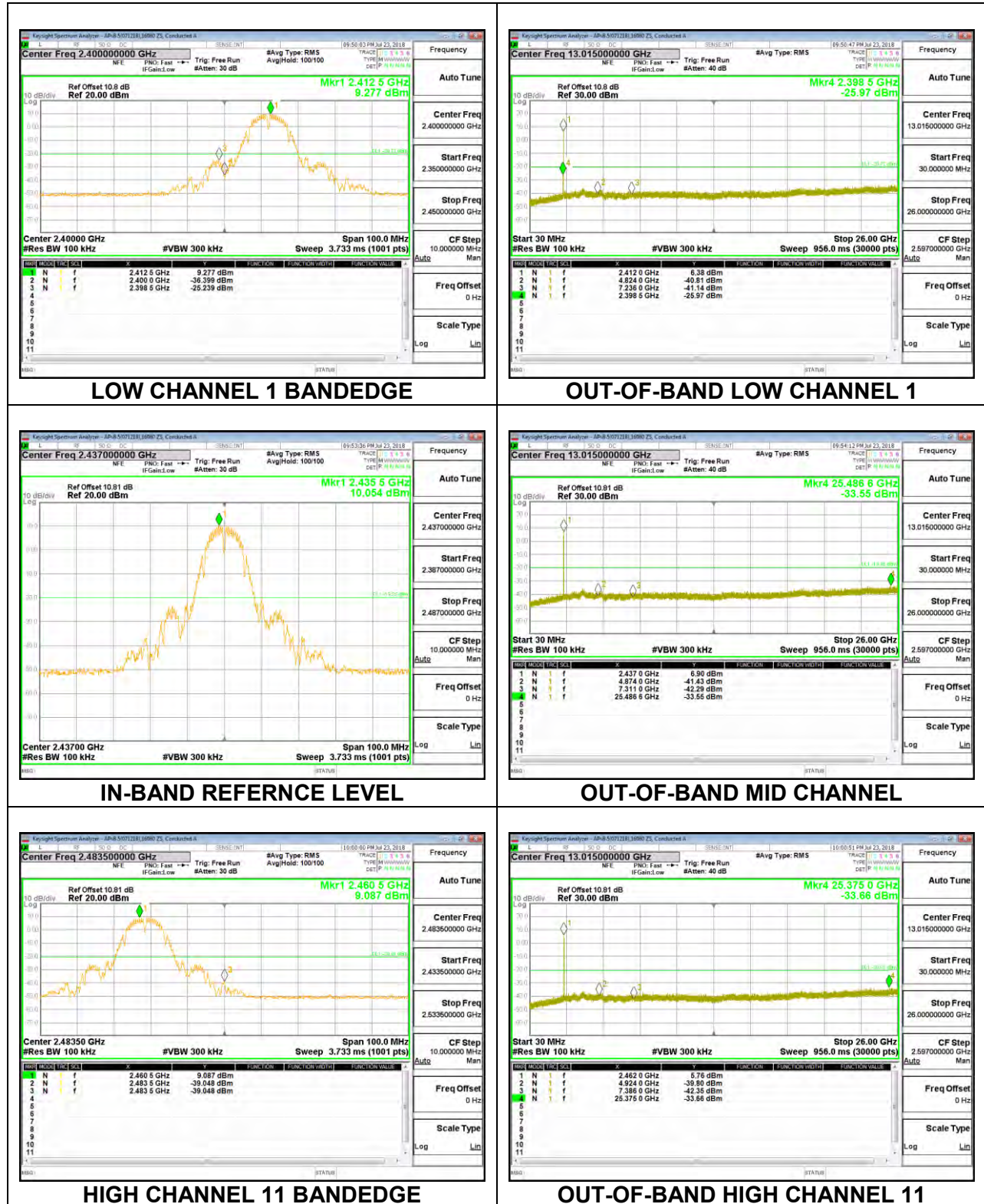
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

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

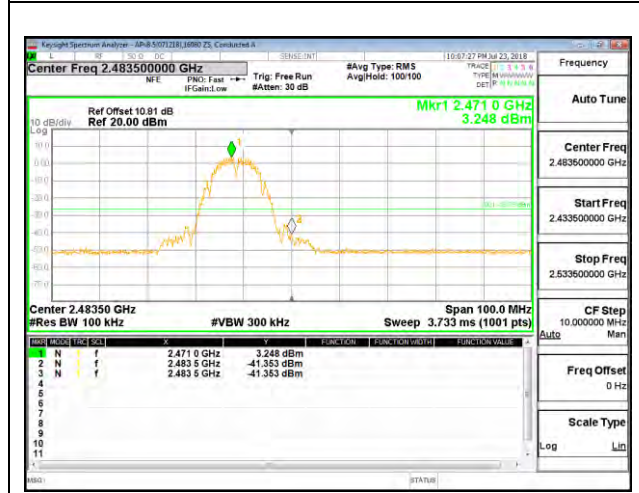




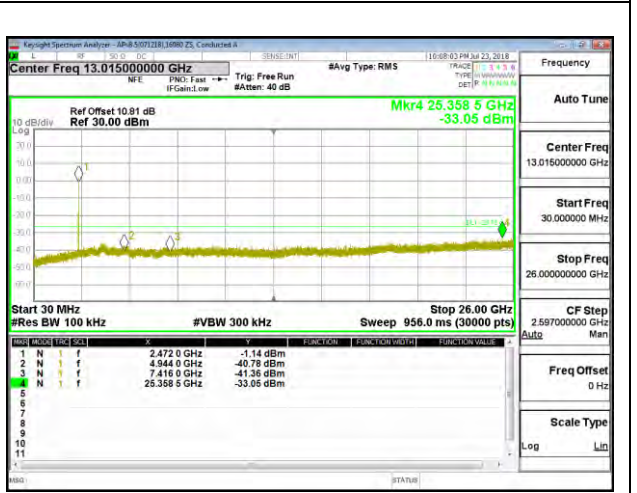
**HIGH CHANNEL 12 BANDEDGE**



**OUT-OF-BAND HIGH CHANNEL 12**



**HIGH CHANNEL 13 BANDEDGE**

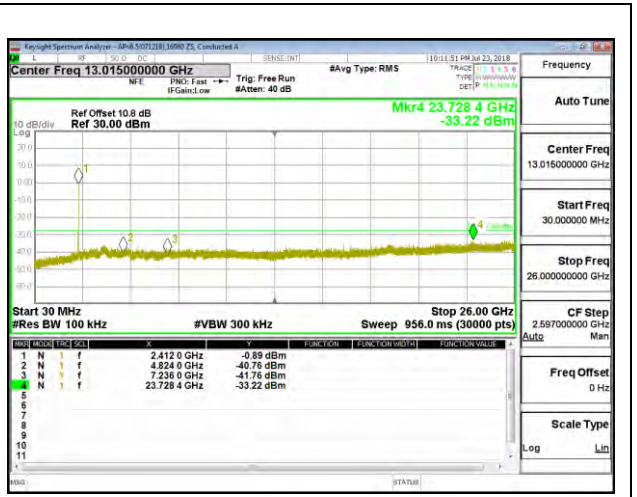


**OUT-OF-BAND HIGH CHANNEL 13**

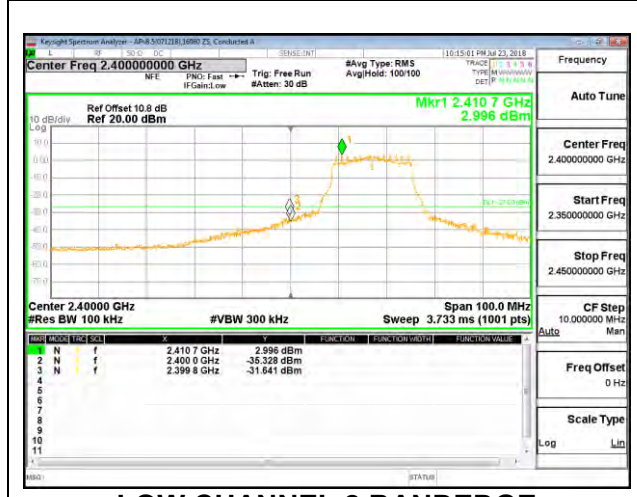
### 8.6.2. 802.11g MODE



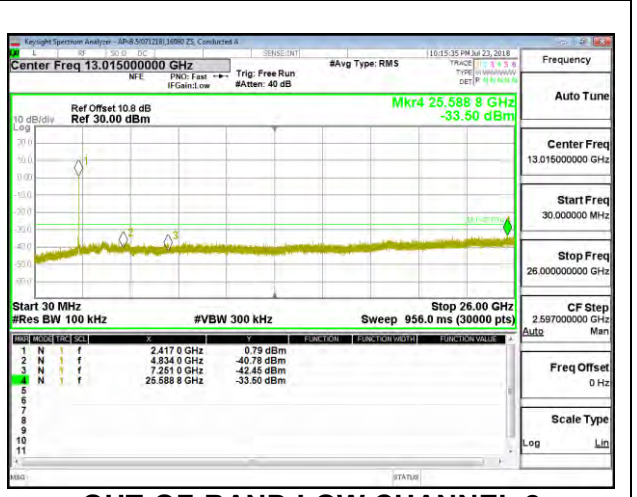
**LOW CHANNEL 1 BANDEDGE**



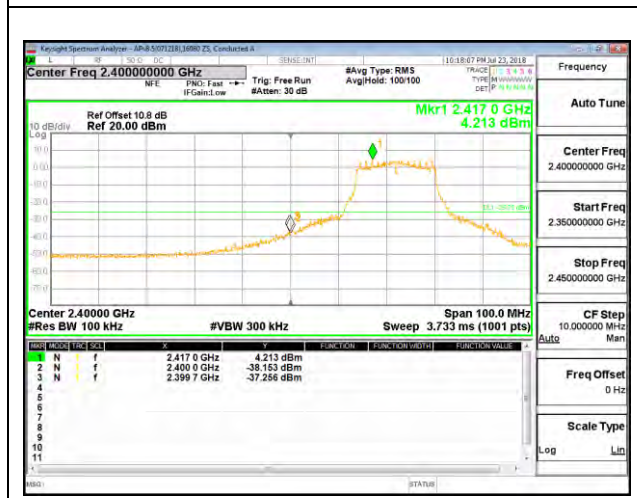
**OUT-OF-BAND LOW CHANNEL 1**



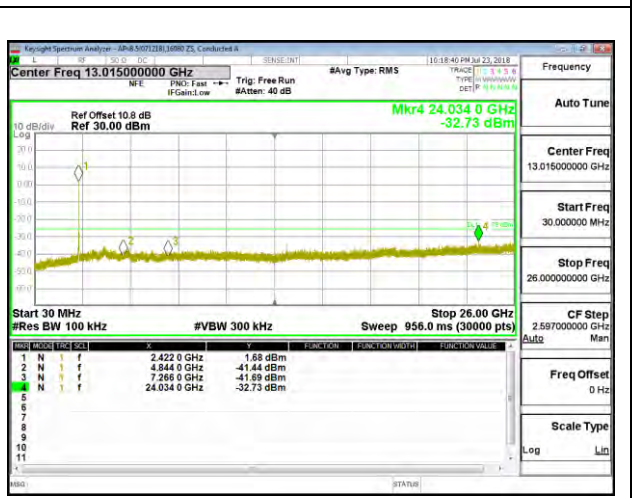
**LOW CHANNEL 2 BANDEDGE**



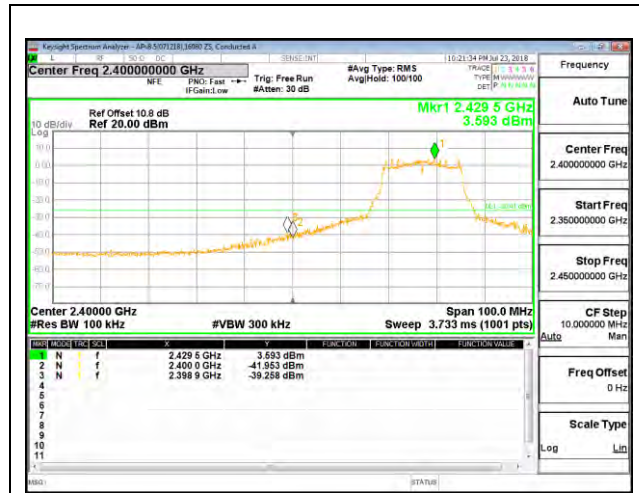
**OUT-OF-BAND LOW CHANNEL 2**



**LOW CHANNEL 3 BANDEDGE**



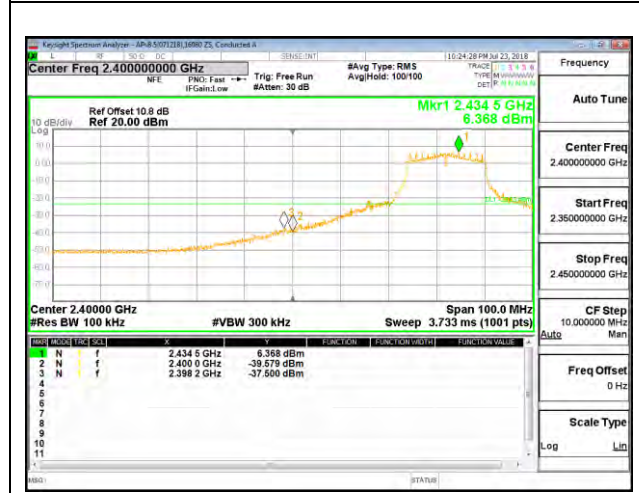
**OUT-OF-BAND LOW CHANNEL 3**



LOW CHANNEL 4 BANDEDGE



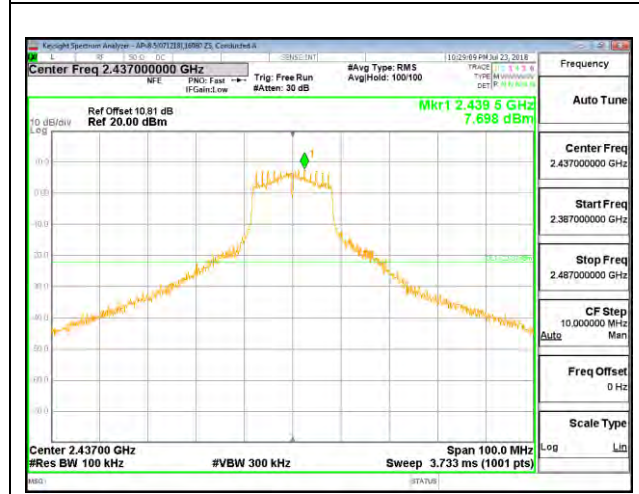
OUT-OF-BAND LOW CHANNEL 4



LOW CHANNEL 5 BANDEDGE



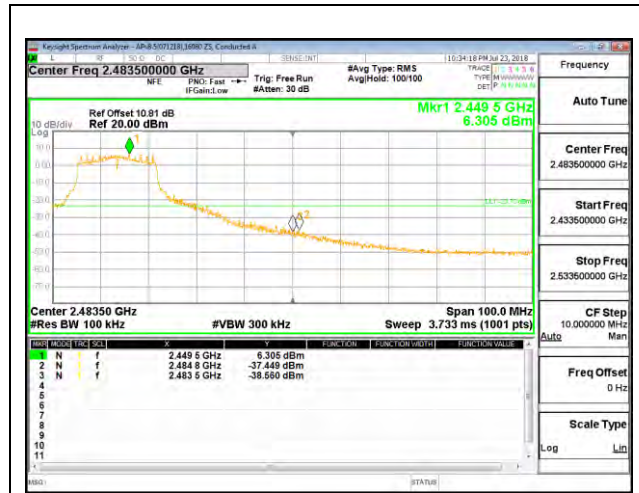
OUT-OF-BAND LOW CHANNEL 5



IN-BAND REFERENCE LEVEL



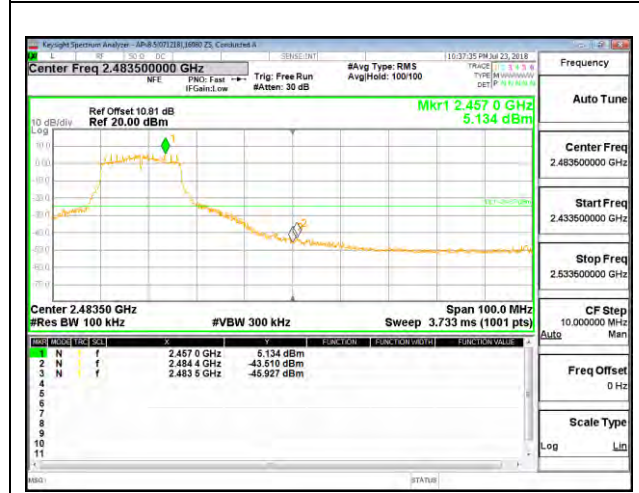
OUT-OF-BAND MID CHANNEL



**HIGH CHANNEL 8 BANDEDGE**



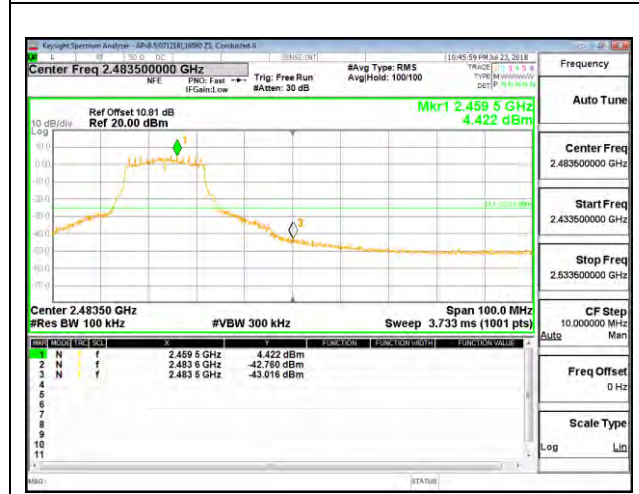
**OUT-OF-BAND HIGH CHANNEL 8**



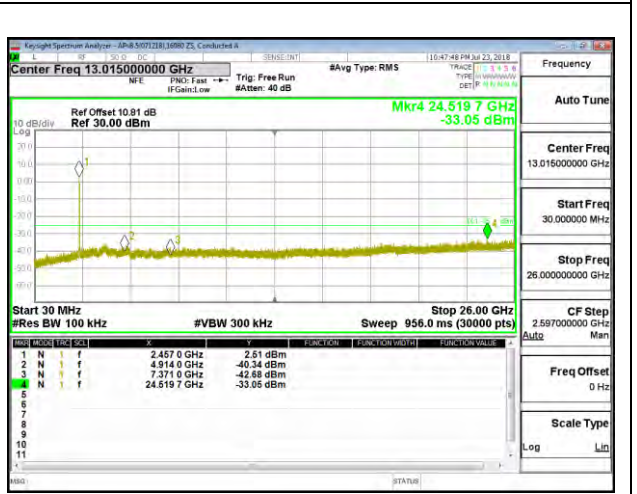
**HIGH CHANNEL 9 BANDEDGE**



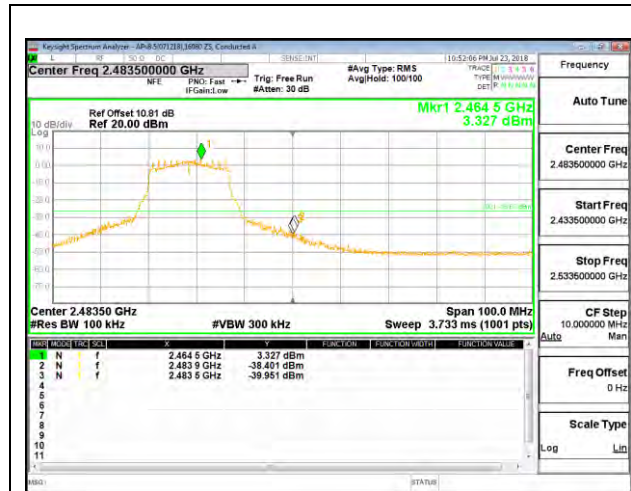
**OUT-OF-BAND HIGH CHANNEL 9**



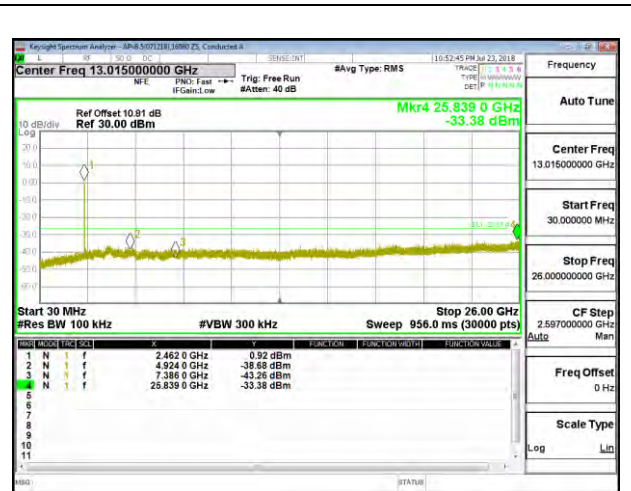
**HIGH CHANNEL 10 BANDEDGE**



**OUT-OF-BAND HIGH CHANNEL 10**



**HIGH CHANNEL 11 BANDEDGE**



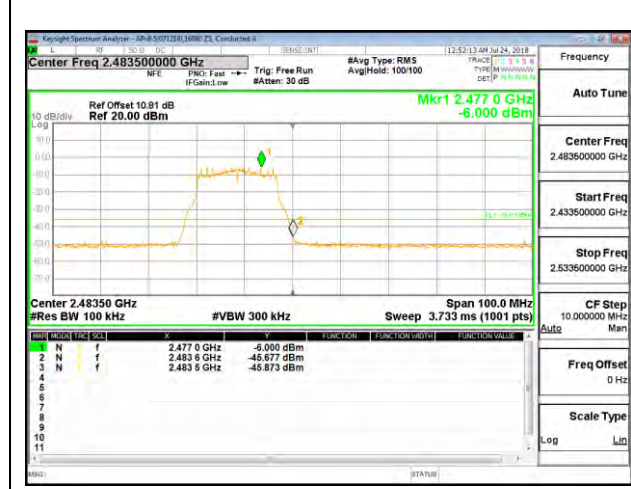
**OUT-OF-BAND HIGH CHANNEL 11**



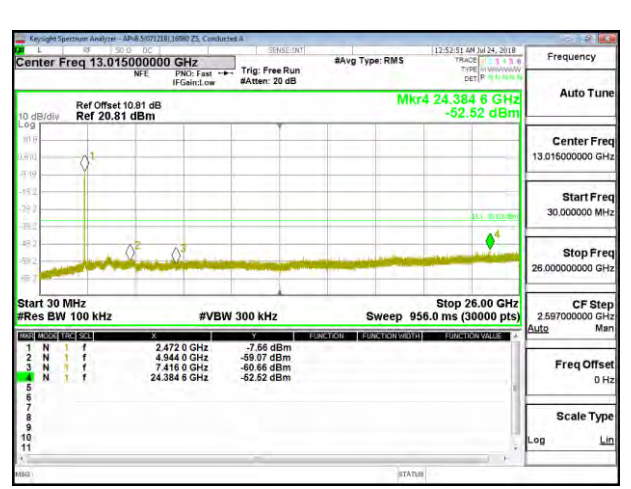
**HIGH CHANNEL 12 BANDEDGE**



**OUT-OF-BAND HIGH CHANNEL 12**



**HIGH CHANNEL 13 BANDEDGE**

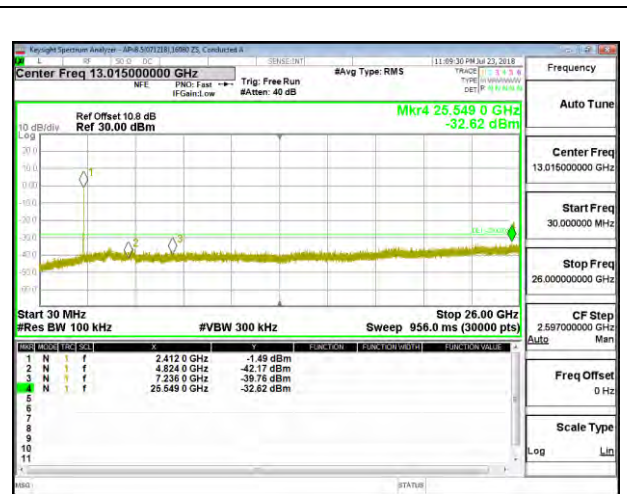


**OUT-OF-BAND HIGH CHANNEL 13**

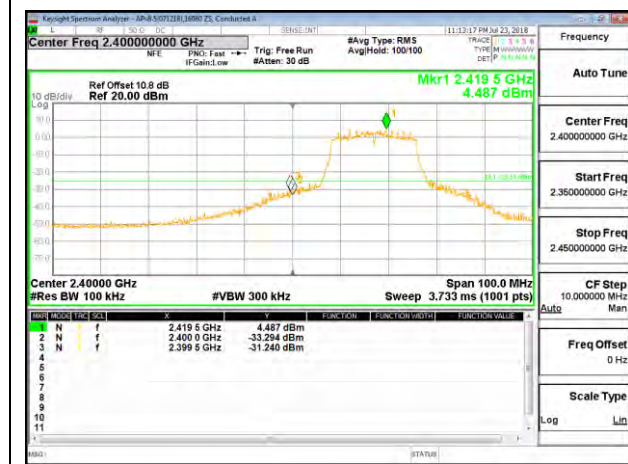
### 8.6.3. 802.11n HT20 MODE



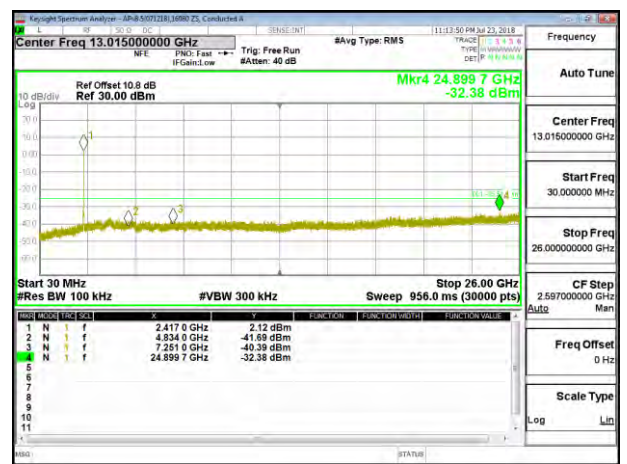
**LOW CHANNEL 1 BANDEDGE**



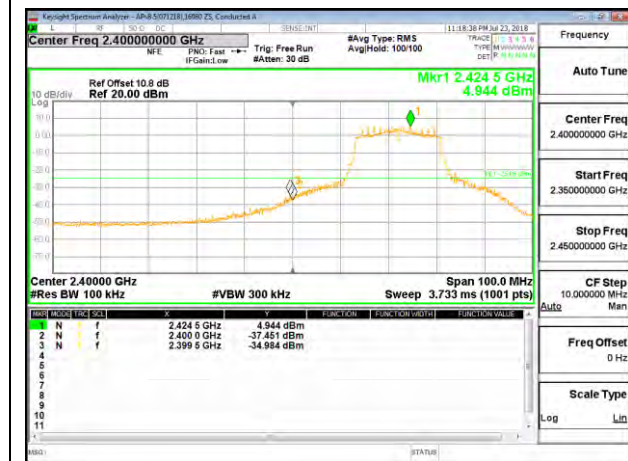
**OUT-OF-BAND LOW CHANNEL 1**



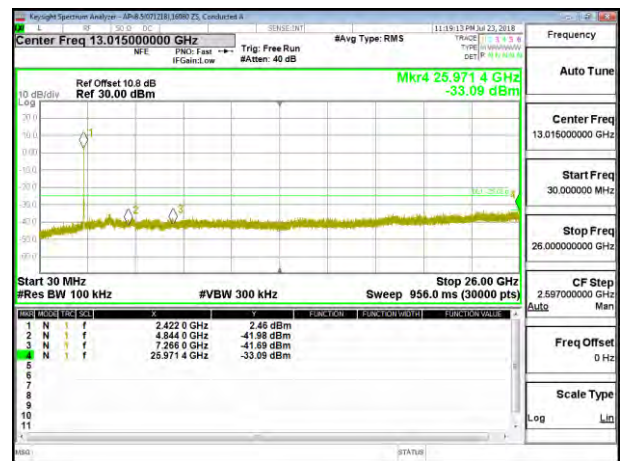
**LOW CHANNEL 2 BANDEDGE**



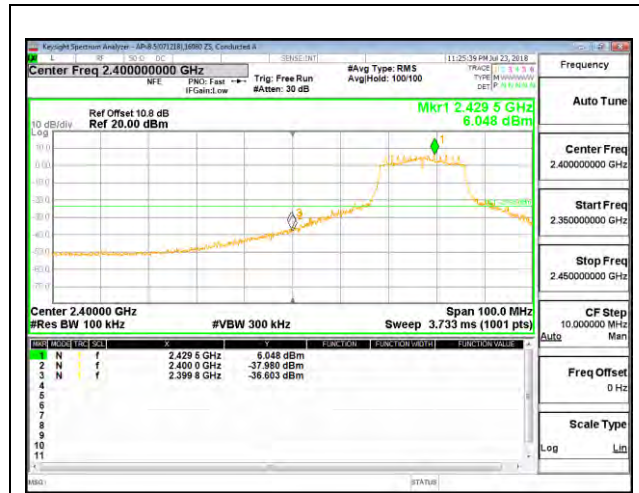
**OUT-OF-BAND LOW CHANNEL 2**



**LOW CHANNEL 3 BANDEDGE**



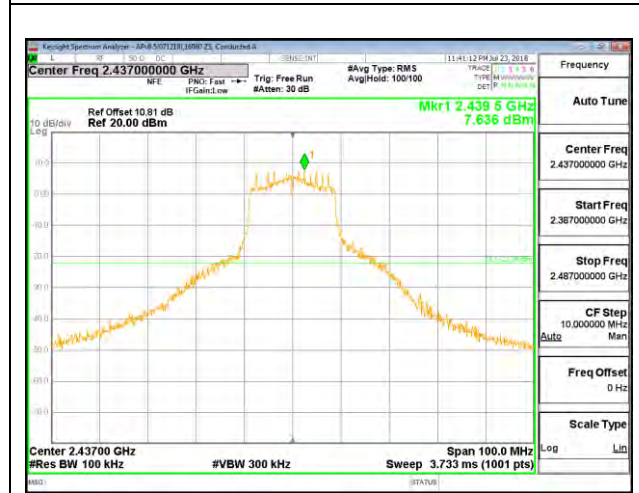
**OUT-OF-BAND LOW CHANNEL 3**



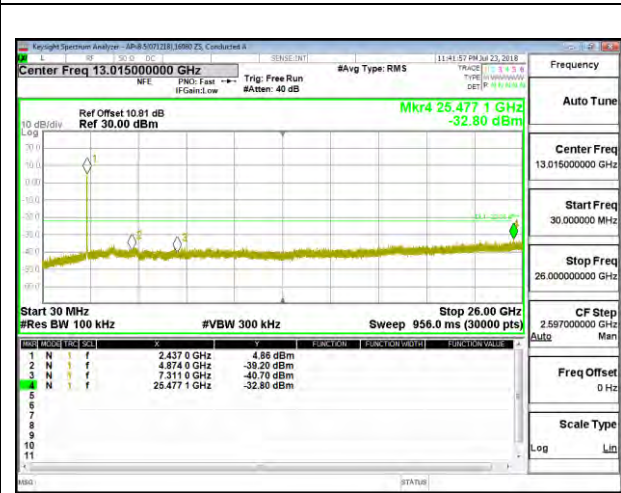
**LOW CHANNEL 4 BANDEDGE**



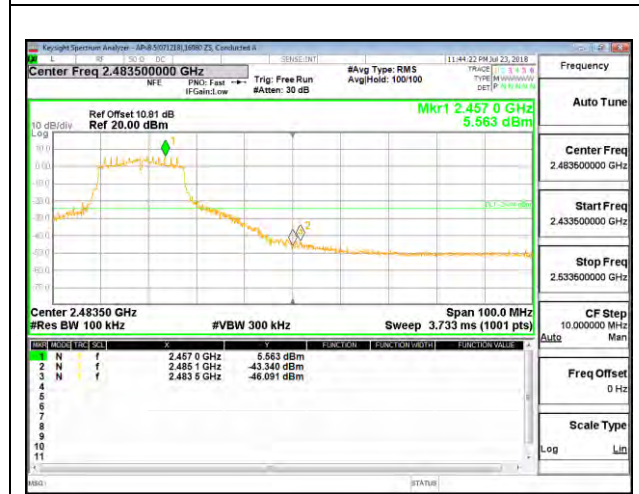
**OUT-OF-BAND LOW CHANNEL 4**



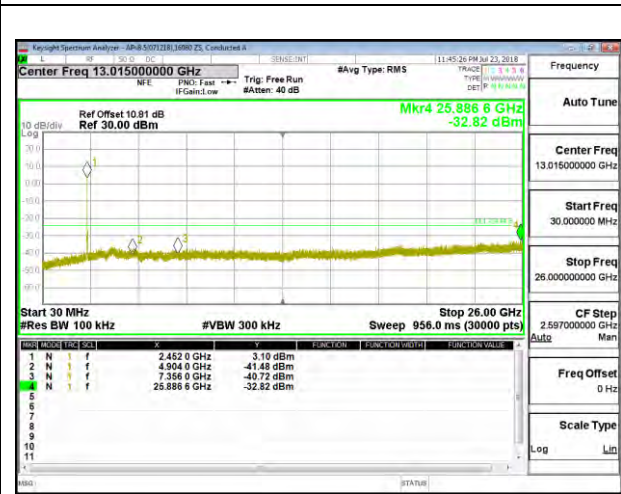
**IN-BAND REFERENCE LEVEL**



**OUT-OF-BAND MID CHANNEL**



**HIGH CHANNEL 9 BANDEDGE**

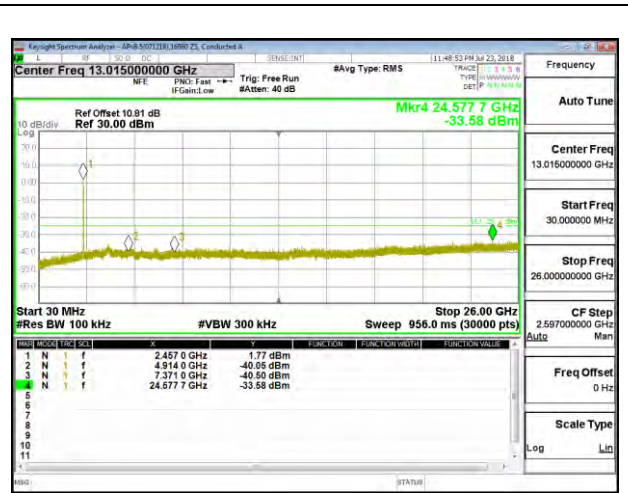


**OUT-OF-BAND HIGH CHANNEL 9**





**HIGH CHANNEL 10 BANDEDGE**



**OUT-OF-BAND HIGH CHANNEL 10**



**HIGH CHANNEL 11 BANDEDGE**



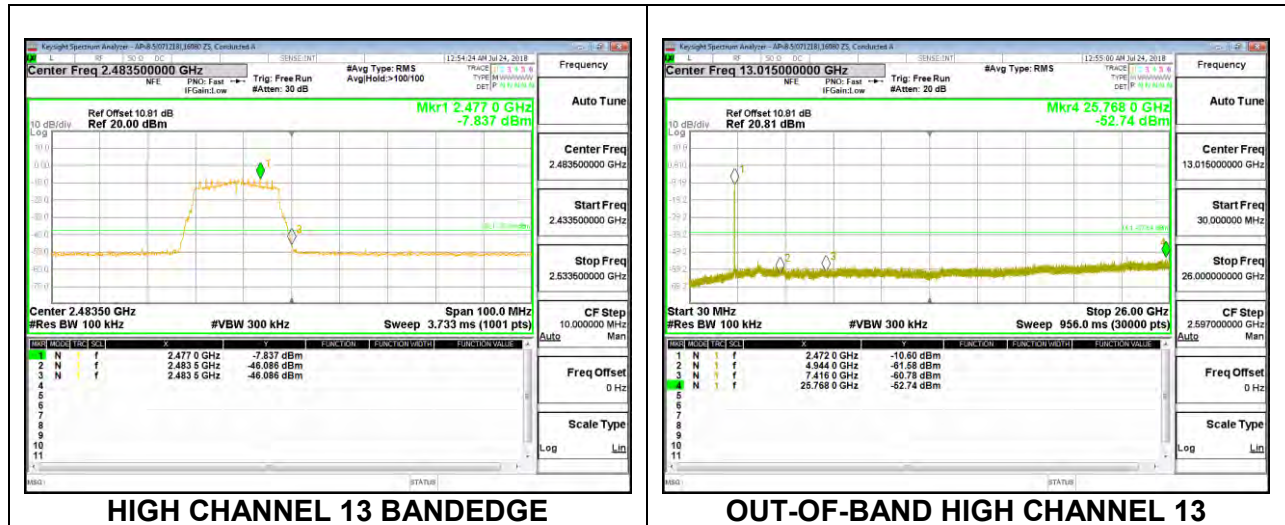
**OUT-OF-BAND HIGH CHANNEL 11**



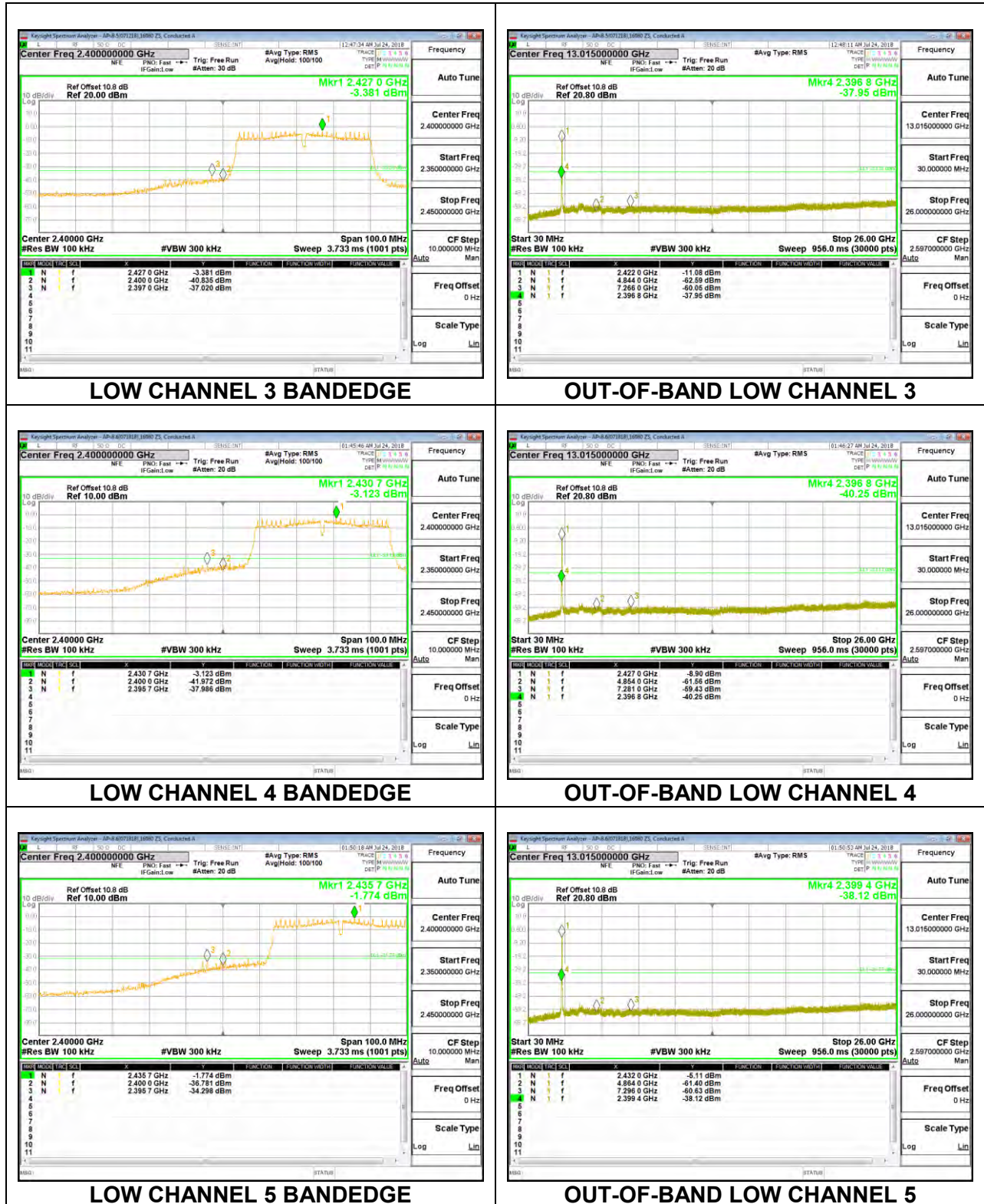
**HIGH CHANNEL 12 BANDEDGE**

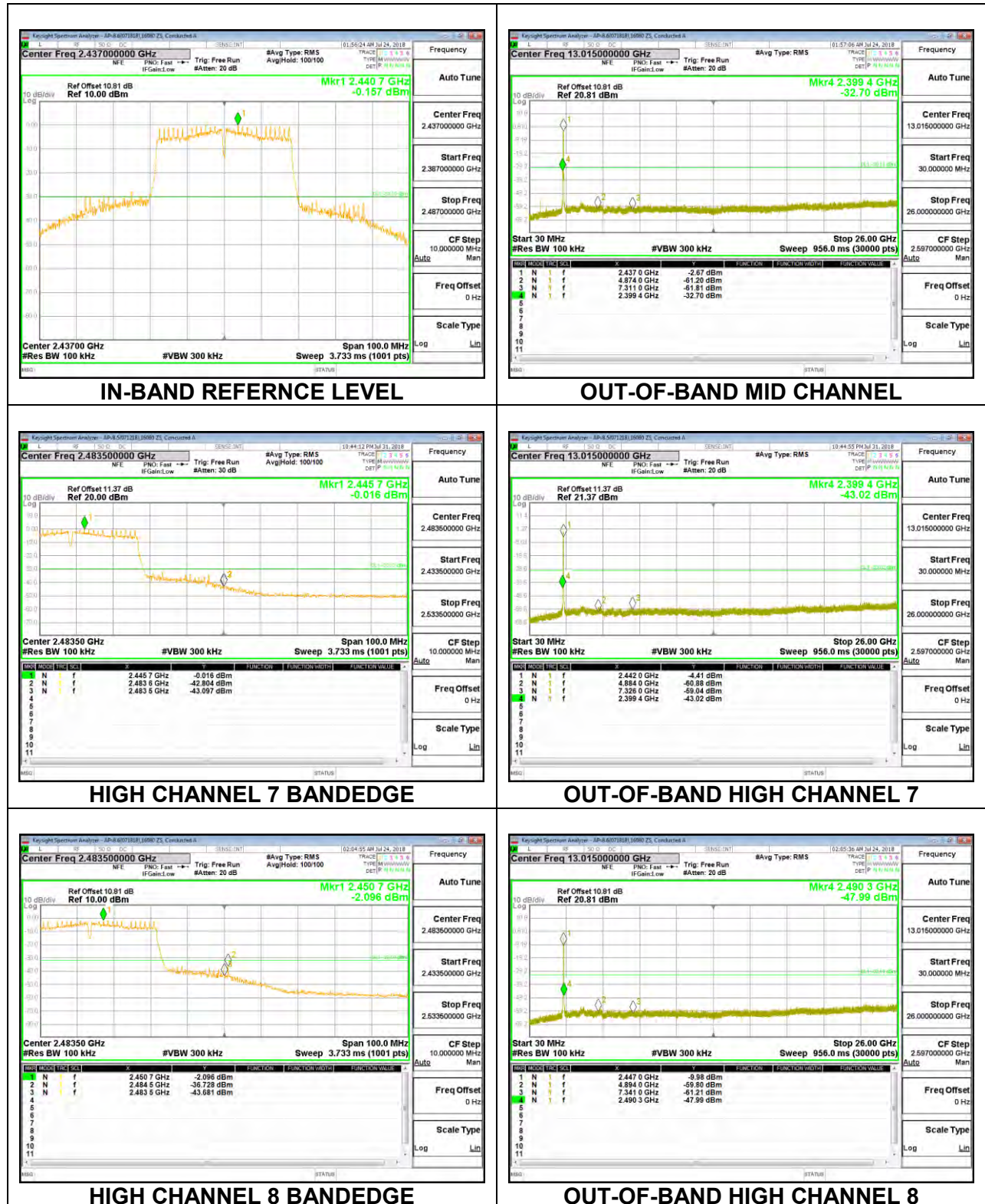


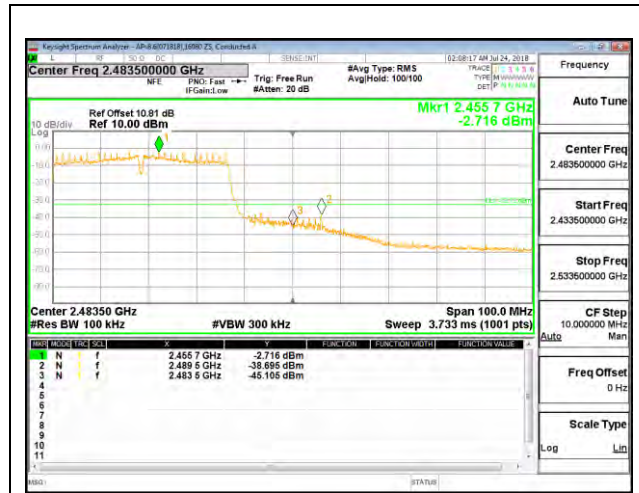
**OUT-OF-BAND HIGH CHANNEL 12**



### 8.6.4. 802.11n HT40 MODE







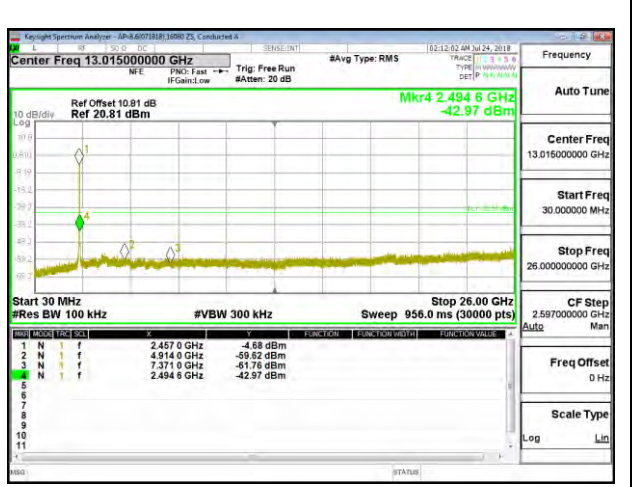
**HIGH CHANNEL 9 BANDEDGE**



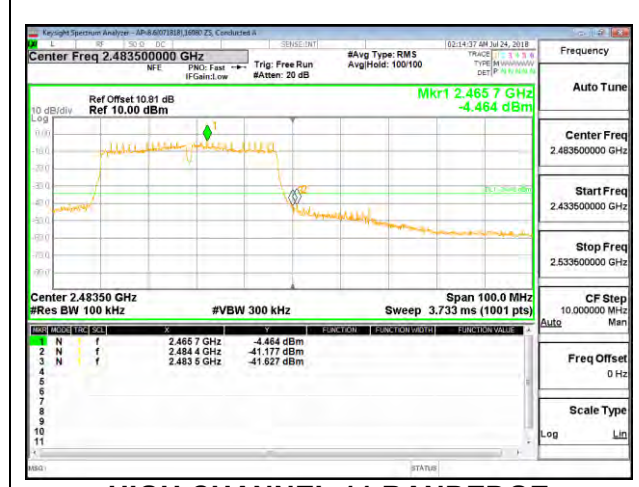
**OUT-OF-BAND HIGH CHANNEL 9**



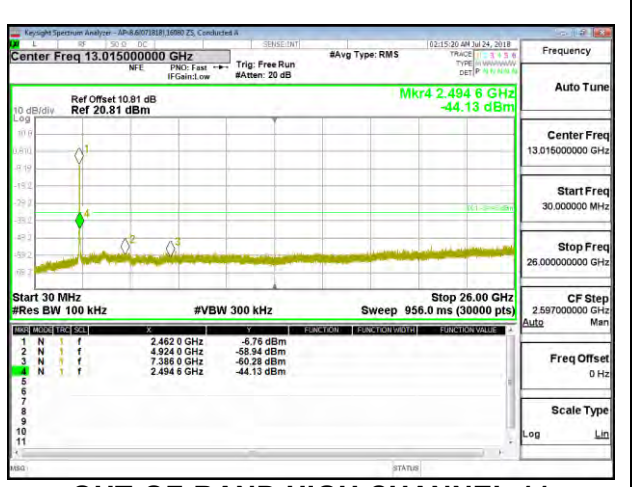
**HIGH CHANNEL 10 BANDEDGE**



**OUT-OF-BAND HIGH CHANNEL 10**



**HIGH CHANNEL 11 BANDEDGE**



**OUT-OF-BAND HIGH CHANNEL 11**

## 9. RADIATED TEST RESULTS

### LIMITS

FCC §15.205 and §15.209

RSS-GEN, Section 8.9 and 8.10

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

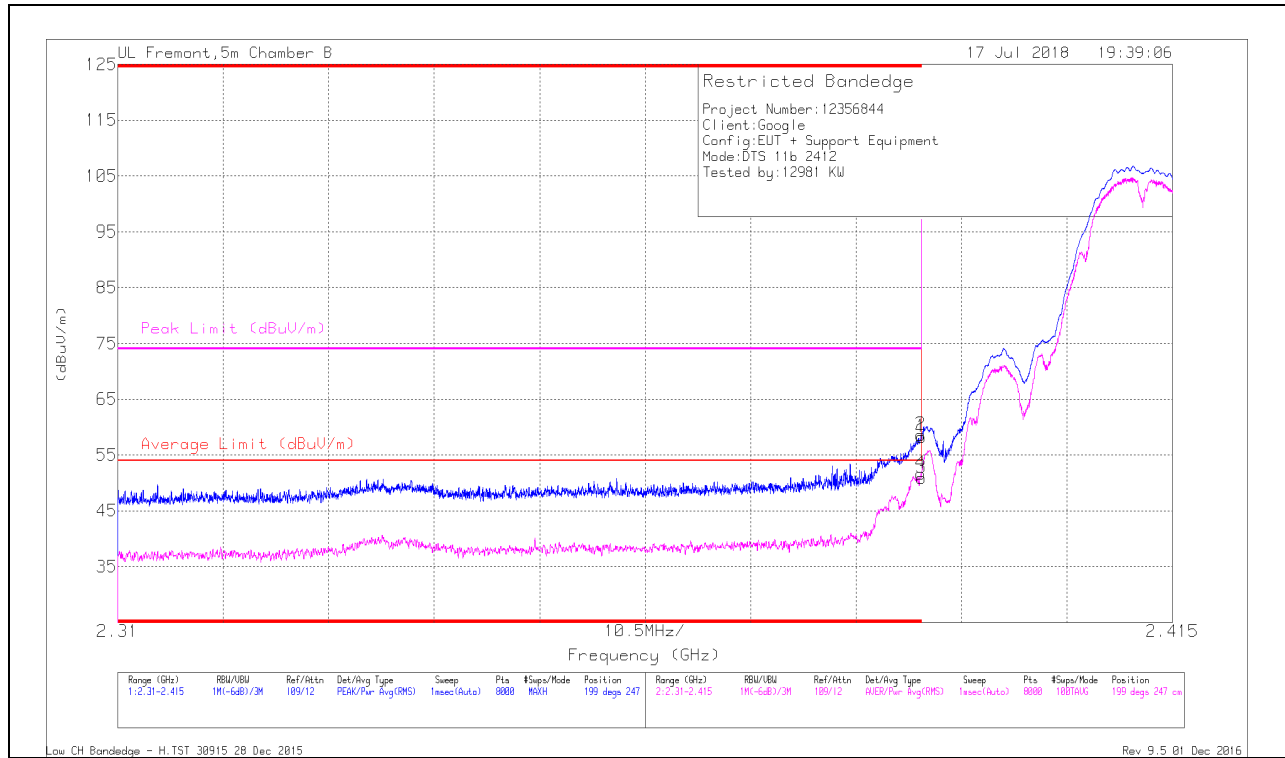
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

## 9.1. TRANSMITTER ABOVE 1 GHz

### 9.1.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

#### BANDEDGE (LOW CHANNEL, CH 1)

#### HORIZONTAL RESULT



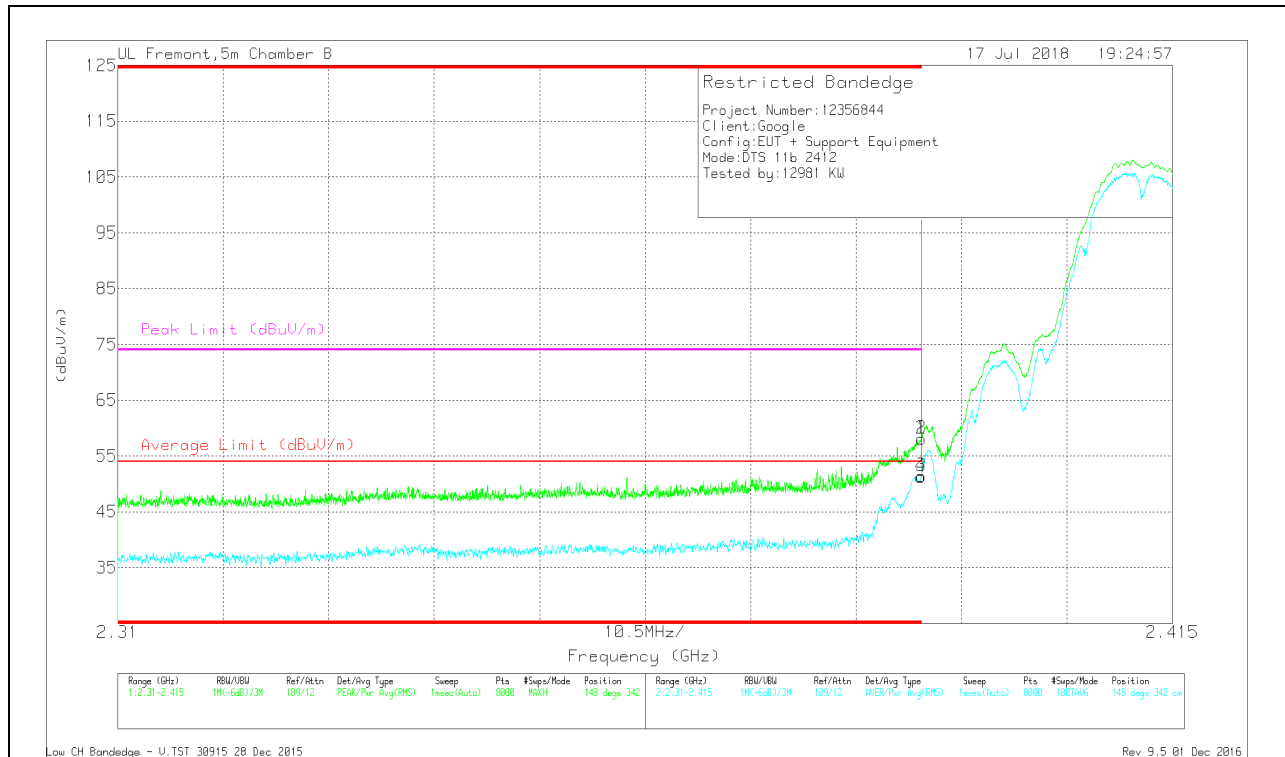
Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Correcte d Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	47.46	Pk	32.3	-21.5	58.26	-	-	74	-15.74	199	247	H
2	* 2.39	47.82	Pk	32.3	-21.5	58.62	-	-	74	-15.38	199	247	H
3	* 2.39	40.09	RMS	32.3	-21.5	50.89	54	-3.11	-	-	199	247	H
4	* 2.39	40.83	RMS	32.3	-21.5	51.63	54	-2.37	-	-	199	247	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

### VERTICAL RESULT



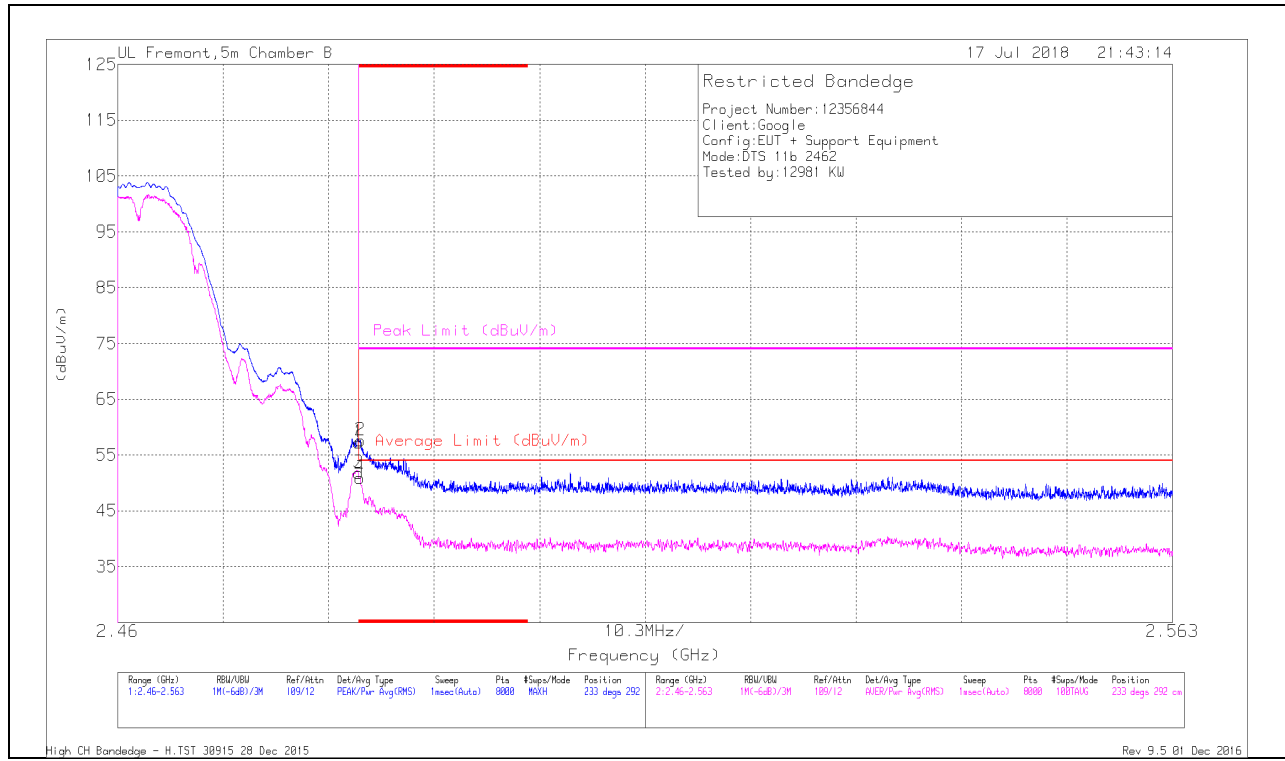
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	47.33	Pk	32.3	-21.5	58.13	-	-	74	-15.87	149	342	V
2	* 2.39	47.26	Pk	32.3	-21.5	58.06	-	-	74	-15.94	149	342	V
3	* 2.39	40.64	RMS	32.3	-21.5	51.44	54	-2.56	-	-	149	342	V
4	* 2.39	40.54	RMS	32.3	-21.5	51.34	54	-2.66	-	-	149	342	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection



**BANEDGE (HIGH CHANNEL, CH 11)**

**HORIZONTAL RESULT**



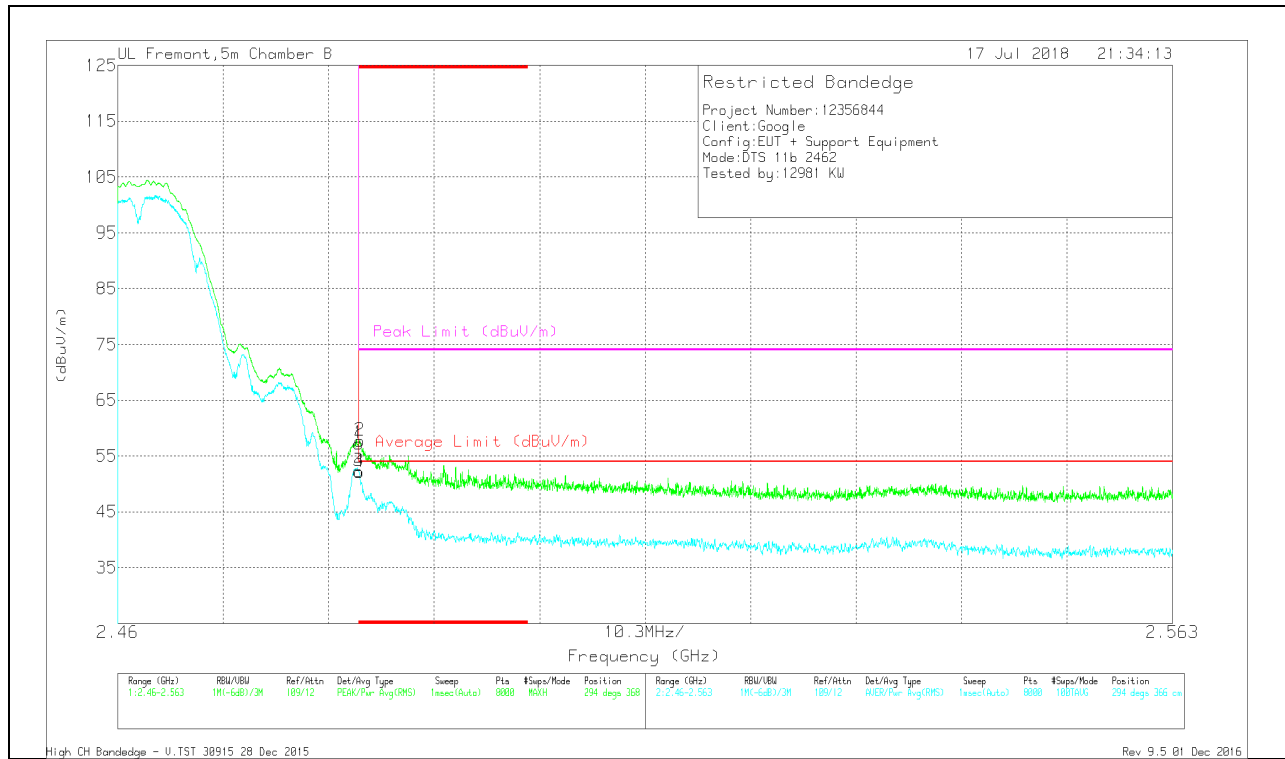
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	46.16	Pk	32.6	-21.5	57.26	-	-	74	-16.74	233	292	H
2	* 2.484	46.52	Pk	32.6	-21.5	57.62	-	-	74	-16.38	233	292	H
3	* 2.484	40.71	RMS	32.6	-21.5	51.81	54	-2.19	-	-	233	292	H
4	* 2.484	39.87	RMS	32.6	-21.5	50.97	54	-3.03	-	-	233	292	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

### VERTICAL RESULT

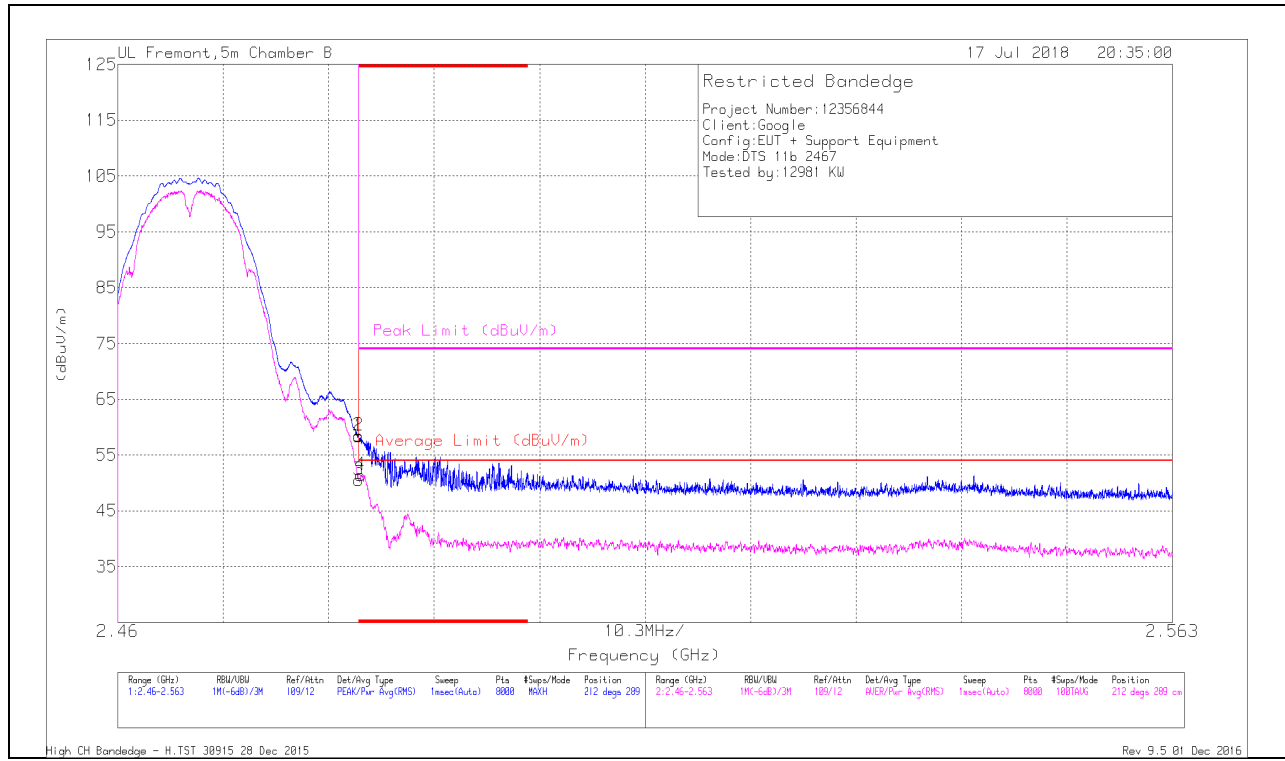


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	46.11	Pk	32.6	-21.5	57.21	-	-	74	-16.79	294	368	V
2	* 2.484	46.68	Pk	32.6	-21.5	57.78	-	-	74	-16.22	294	368	V
3	* 2.484	41.23	RMS	32.6	-21.5	52.33	54	-1.67	-	-	294	366	V
4	* 2.484	41.01	RMS	32.6	-21.5	52.11	54	-1.89	-	-	294	366	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

**BANEDGE (HIGH CHANNEL, CH 12)**

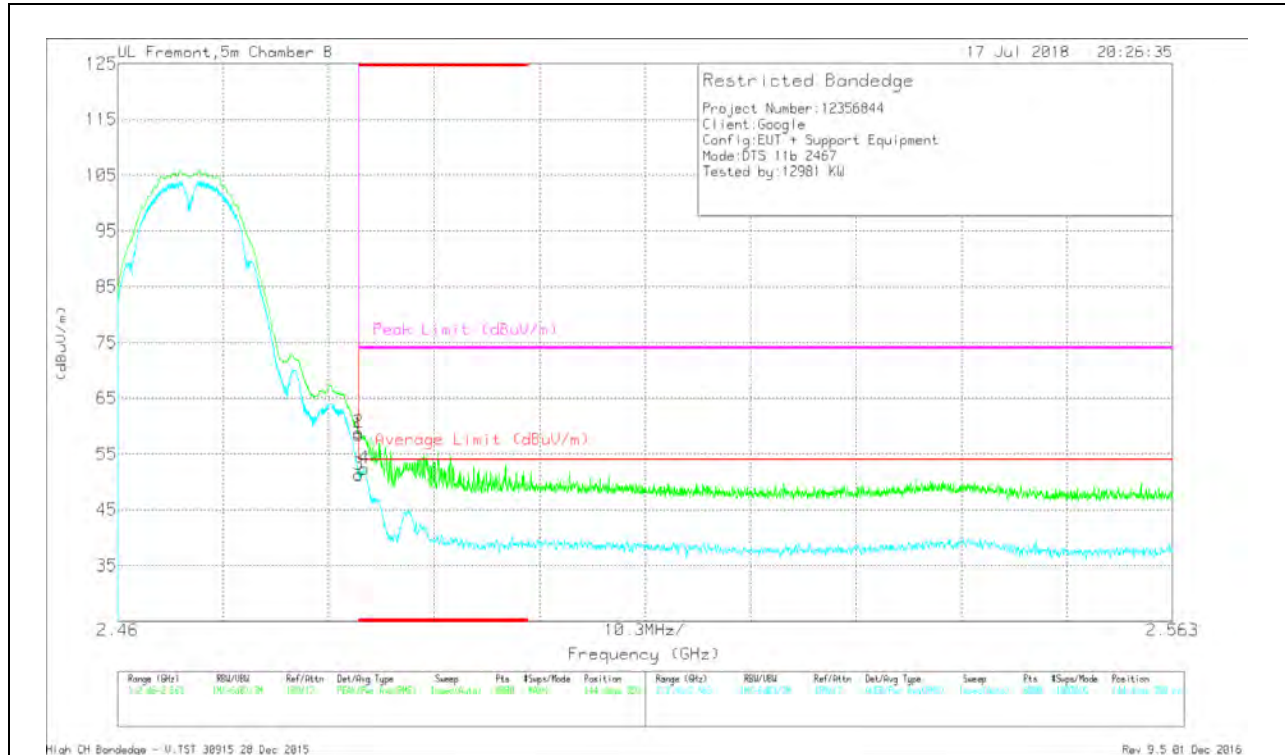
**HORIZONTAL RESULT**



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	47.26	Pk	32.6	-21.5	58.36	-	-	74	-15.64	212	289	H
2	* 2.484	47.34	PK	32.6	-21.5	58.44	-	-	74	-15.56	212	289	H
3	* 2.484	39.45	RMS	32.6	-21.5	50.55	54	-3.45	-	-	212	289	H
4	* 2.484	40.32	RMS	32.6	-21.5	51.42	54	-2.58	-	-	212	289	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

### VERTICAL RESULT

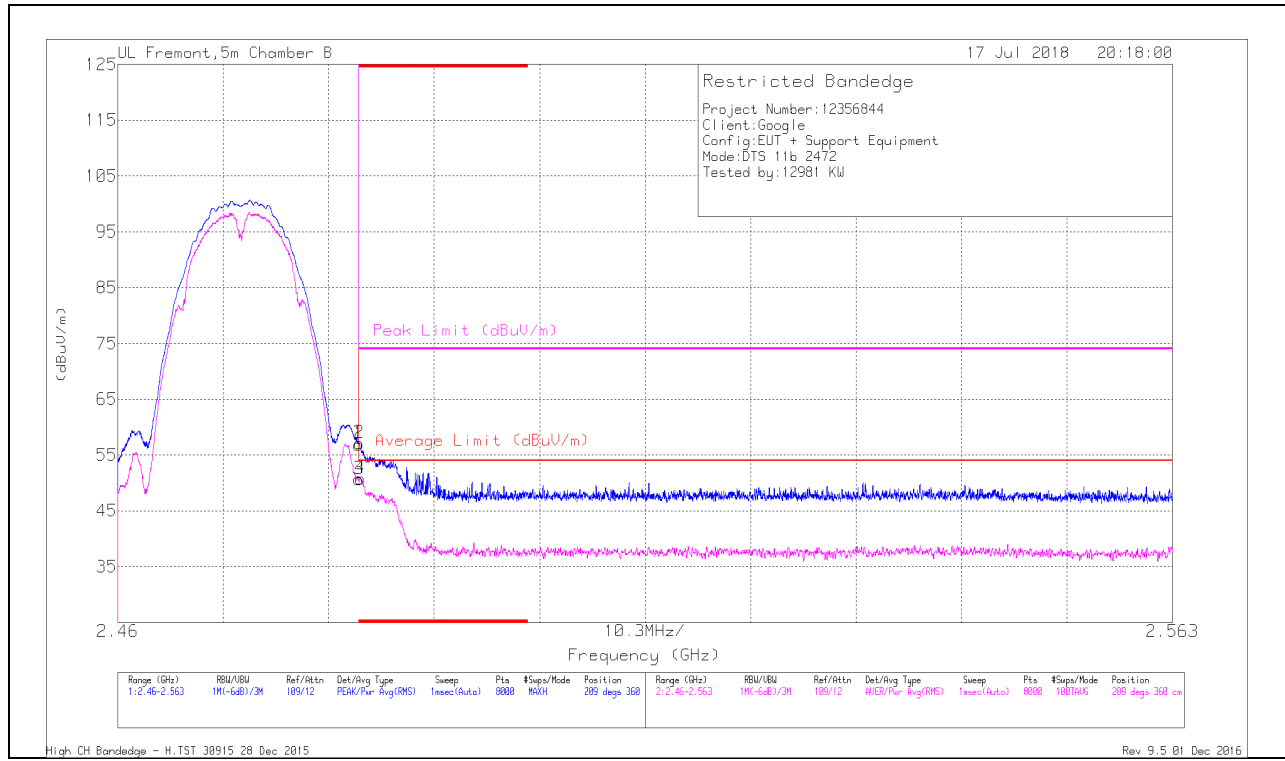


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	47.42	Pk	32.6	-21.5	58.52	-	-	74	-15.48	144	359	V
2	* 2.484	47.74	Pk	32.6	-21.5	58.84	-	-	74	-15.16	144	359	V
3	* 2.484	40.2	RMS	32.6	-21.5	51.3	54	-2.7	-	-	144	359	V
4	* 2.484	41.25	RMS	32.6	-21.5	52.35	54	-1.65	-	-	144	359	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

**BANDEDGE (HIGH CHANNEL, CH 13)**

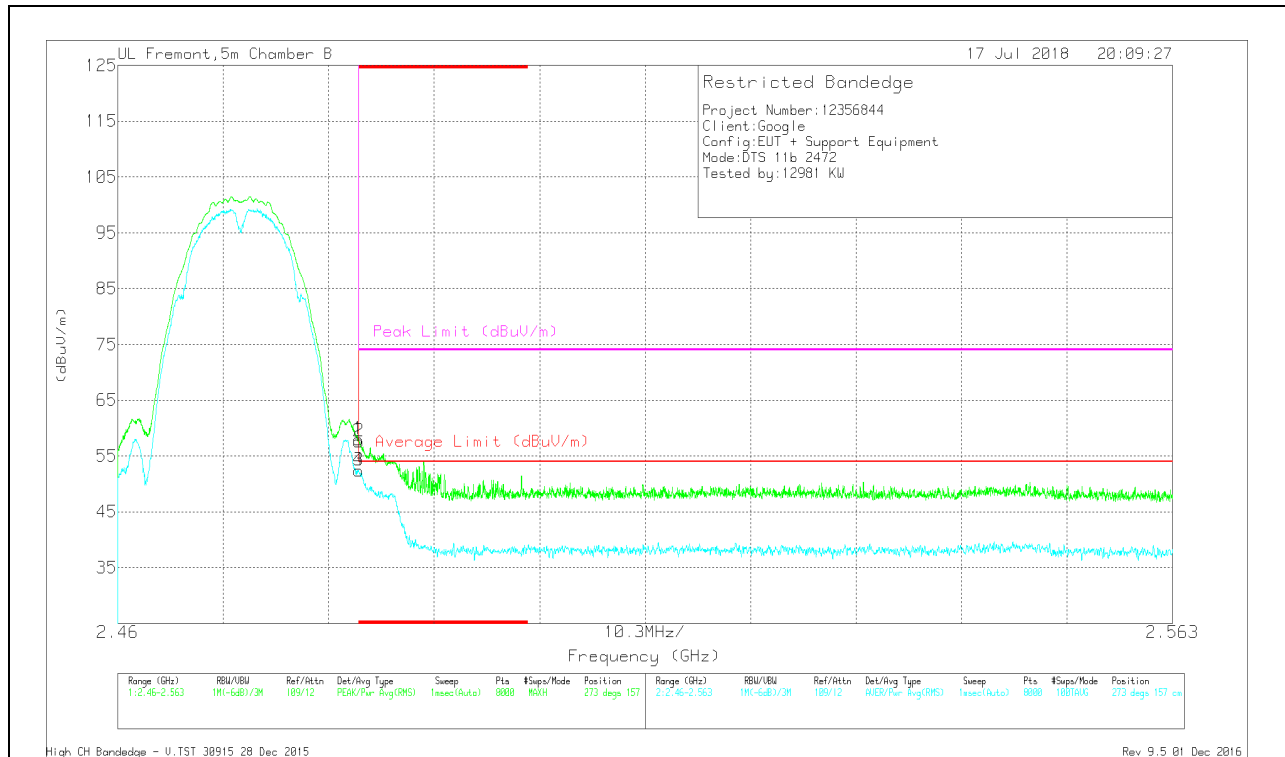
**HORIZONTAL RESULT**



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.83	Pk	32.6	-21.5	56.93	-	-	74	-17.07	209	360	H
2	* 2.484	45.99	Pk	32.6	-21.5	57.09	-	-	74	-16.91	209	360	H
3	* 2.484	39.62	RMS	32.6	-21.5	50.72	54	-3.28	-	-	209	360	H
4	* 2.484	39.69	RMS	32.6	-21.5	50.79	54	-3.21	-	-	209	360	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

### VERTICAL RESULT

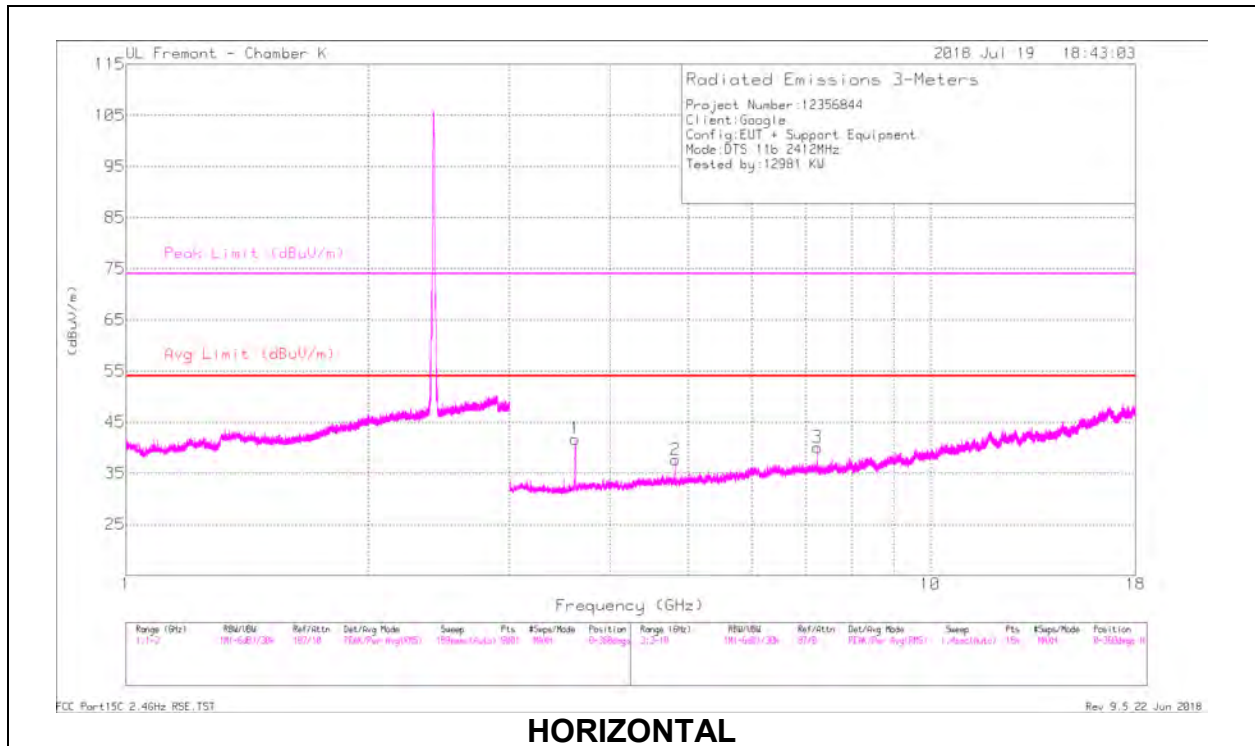


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	46.86	Pk	32.6	-21.5	57.96	-	-	74	-16.04	273	157	V
2	* 2.484	46.52	Pk	32.6	-21.5	57.62	-	-	74	-16.38	273	157	V
3	* 2.484	41.34	RMS	32.6	-21.5	52.44	54	-1.56	-	-	273	157	V
4	* 2.484	41.35	RMS	32.6	-21.5	52.45	54	-1.55	-	-	273	157	V

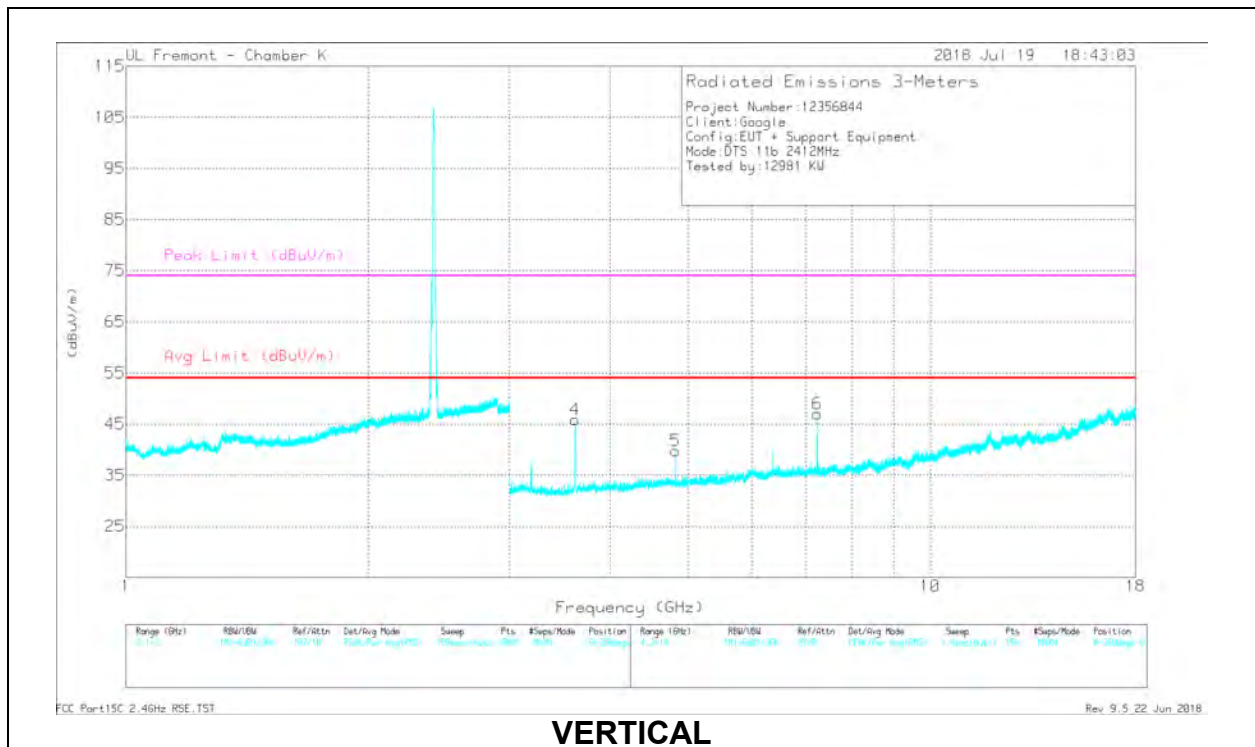
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL, CH 1 RESULTS



HORIZONTAL



VERTICAL

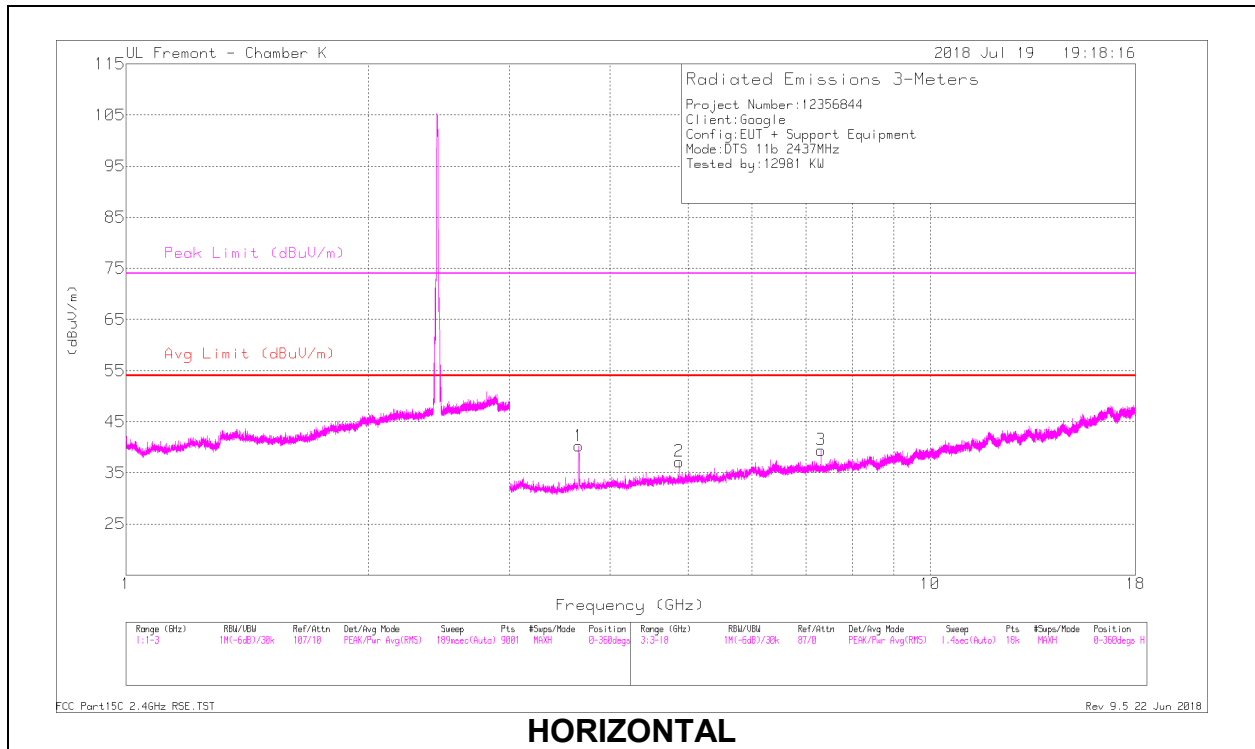
**RADIATED EMISSIONS**

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cb/Filtr/ Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.617	46.07	PK2	33	-32.2	46.87	-	-	74	-27.13	101	317	H
* 3.617	38.82	MAv1	33	-32.2	39.62	54	-14.38	-	-	101	317	H
* 4.824	39.17	PK2	34.1	-30.4	42.87	-	-	74	-31.13	123	103	H
* 4.824	32.02	MAv1	34.1	-30.4	35.72	54	-18.28	-	-	123	103	H
* 3.62	48.96	PK2	33	-32.3	49.66	-	-	74	-24.34	117	102	V
* 3.619	44.57	MAv1	33	-32.2	45.37	54	-8.63	-	-	117	102	V
* 4.824	42.08	PK2	34.1	-30.4	45.78	-	-	74	-28.22	135	198	V
* 4.824	35.97	MAv1	34.1	-30.4	39.67	54	-14.33	-	-	135	198	V

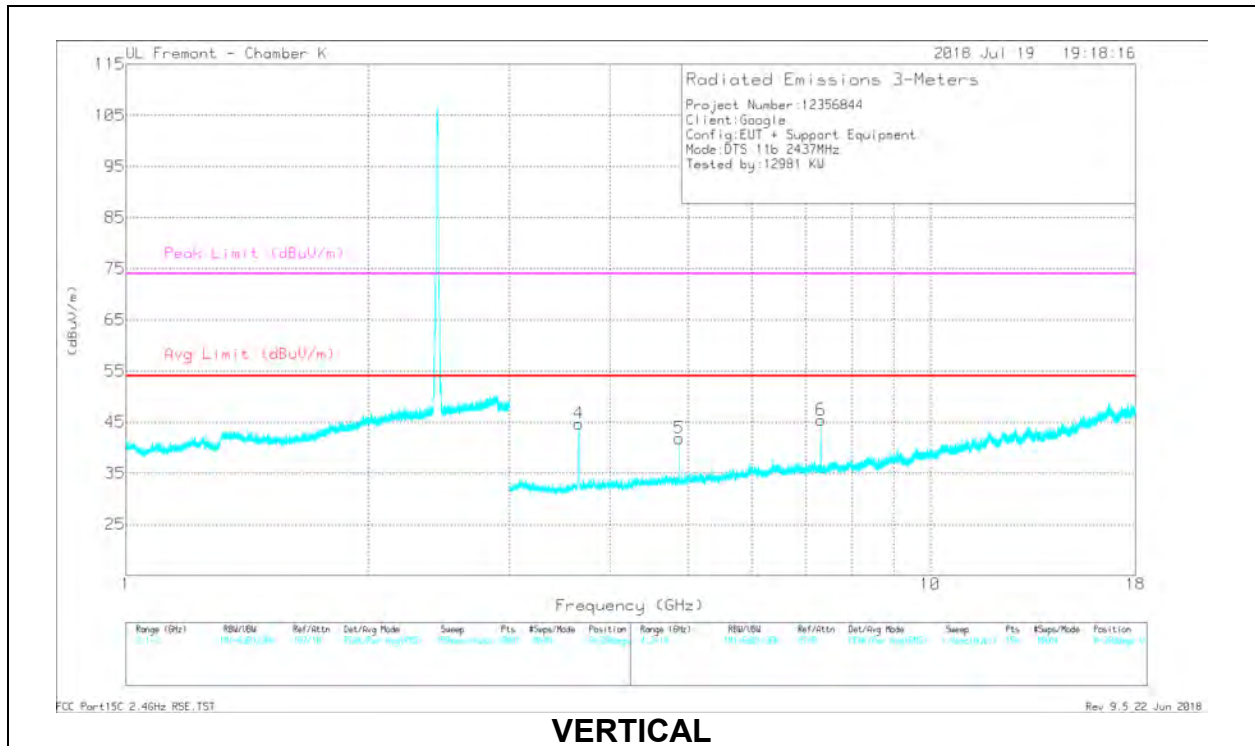
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average



### MID CHANNEL, CH 6 RESULTS



**HORIZONTAL**



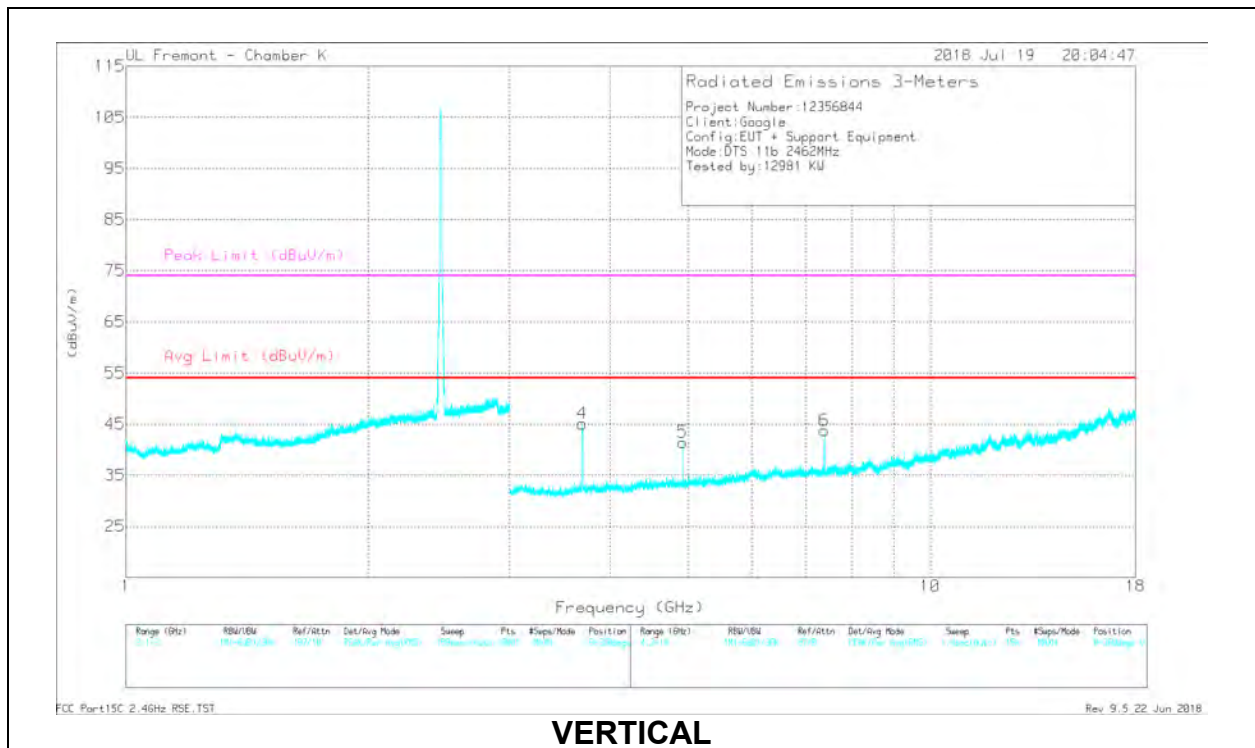
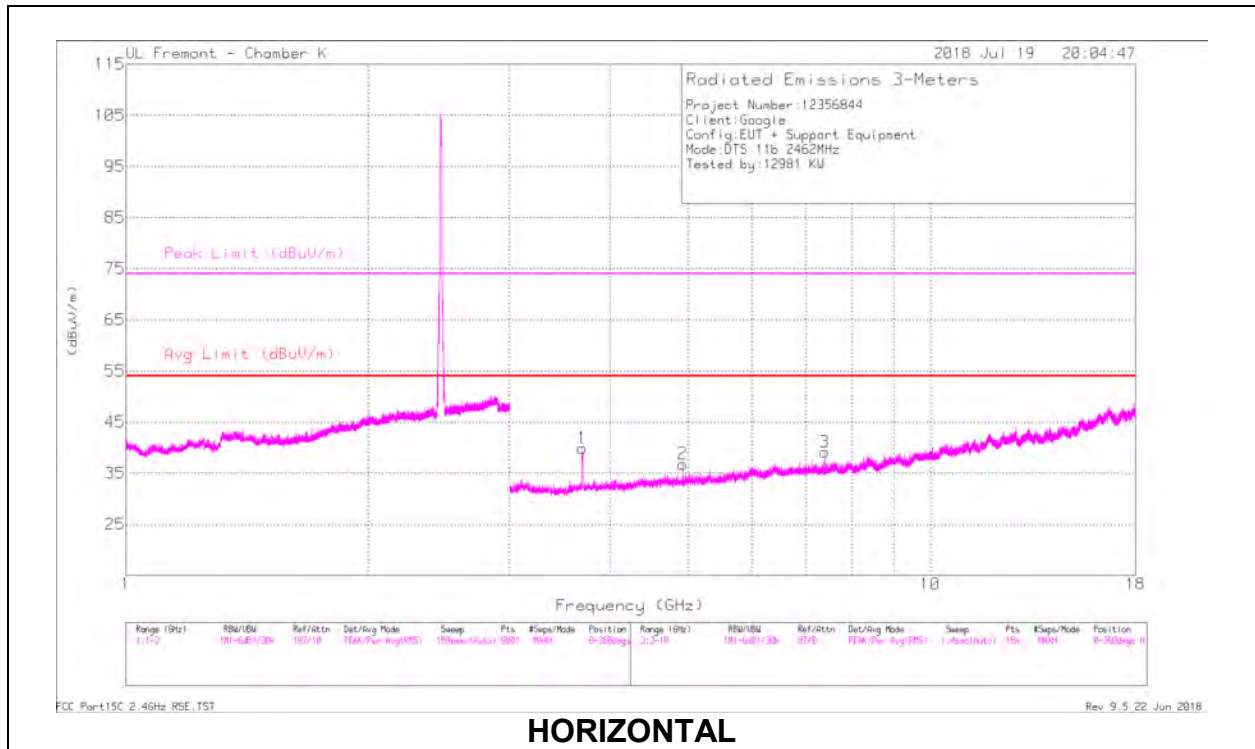
**VERTICAL**

**RADIATED EMISSIONS**

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cb/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.657	44.51	PK2	33	-32	45.51	-	-	74	-28.49	103	170	H
* 3.656	38.14	MAv1	33	-32	39.14	54	-14.86	-	-	103	170	H
* 4.874	39.84	PK2	34.1	-30.5	43.44	-	-	74	-30.56	154	175	H
* 4.874	33.09	MAv1	34.1	-30.5	36.69	54	-17.31	-	-	154	175	H
* 7.313	37.4	PK2	35.5	-26.3	46.6	-	-	74	-27.4	177	169	H
* 7.312	30.63	MAv1	35.5	-26.3	39.83	54	-14.17	-	-	177	169	H
* 3.654	48.01	PK2	32.9	-32.1	48.81	-	-	74	-25.19	141	130	V
* 3.654	43.5	MAv1	32.9	-32.1	44.3	54	-9.7	-	-	141	130	V
* 4.874	41.37	PK2	34.1	-30.5	44.97	-	-	74	-29.03	156	159	V
* 4.874	36.34	MAv1	34.1	-30.5	39.94	54	-14.06	-	-	156	159	V
* 7.309	40.52	PK2	35.5	-26.3	49.72	-	-	74	-24.28	225	232	V
* 7.31	35.39	MAv1	35.5	-26.3	44.59	54	-9.41	-	-	225	232	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average

### HIGH CHANNEL, CH 11 RESULTS



**RADIATED EMISSIONS**

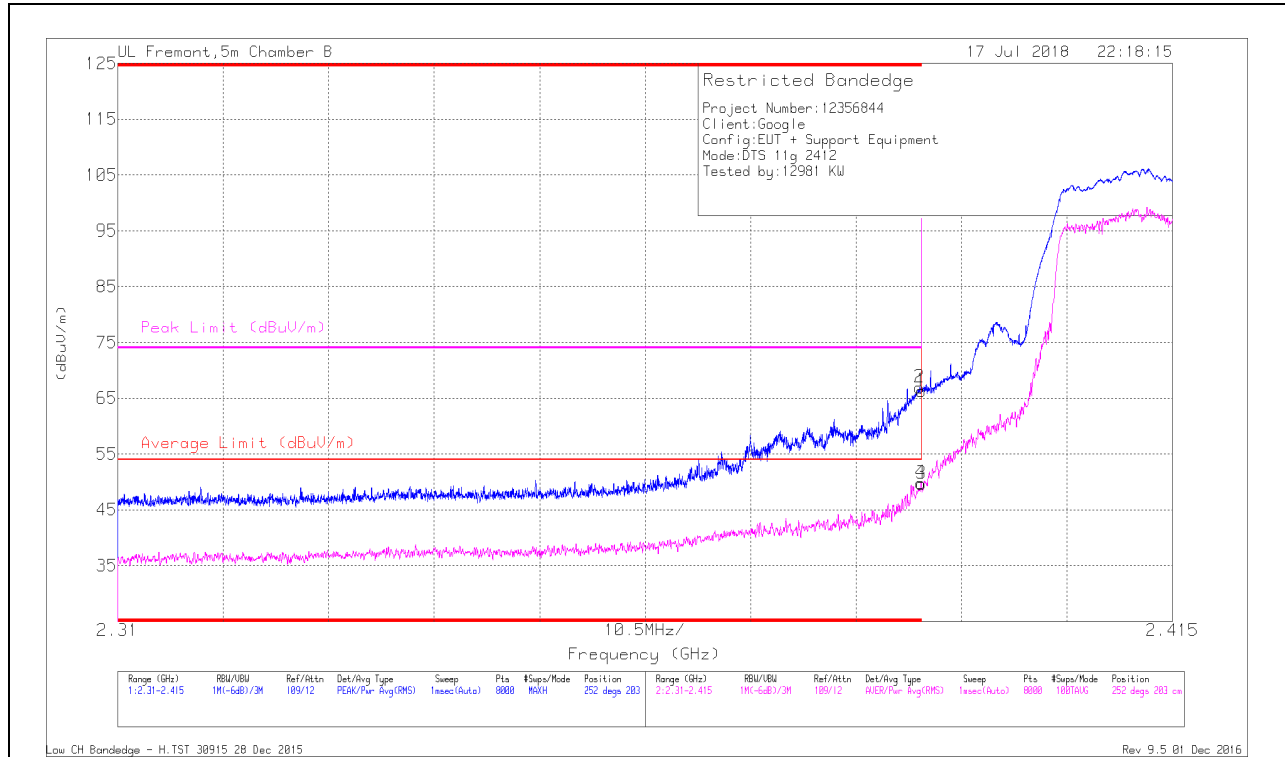
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cb/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.692	45.32	PK2	33.1	-32	46.42	-	-	74	-27.58	120	193	H
* 3.691	39.17	MAv1	33.1	-31.9	40.37	54	-13.63	-	-	120	193	H
* 4.924	39.89	PK2	34.2	-30.6	43.49	-	-	74	-30.51	143	163	H
* 4.924	33.71	MAv1	34.2	-30.6	37.31	54	-16.69	-	-	143	163	H
* 7.386	34.9	PK2	35.5	-26.5	43.9	-	-	74	-30.1	38	138	H
* 7.388	24.72	MAv1	35.5	-26.5	33.72	54	-20.28	-	-	38	138	H
* 3.692	47.9	PK2	33.1	-32	49	-	-	74	-25	129	131	V
* 3.692	43.36	MAv1	33.1	-32	44.46	54	-9.54	-	-	129	131	V
* 4.924	42	PK2	34.2	-30.6	45.6	-	-	74	-28.4	126	192	V
* 4.924	37.21	MAv1	34.2	-30.6	40.81	54	-13.19	-	-	126	192	V
* 7.385	39.97	PK2	35.5	-26.5	48.97	-	-	74	-25.03	220	229	V
* 7.384	33.79	MAv1	35.5	-26.5	42.79	54	-11.21	-	-	220	229	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 PK2 - KDB558074 Method: Maximum Peak  
 MAv1 - KDB558074 Option 1 Maximum RMS Average

### 9.1.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

#### BANDEDGE (LOW CHANNEL, CH 1)

#### HORIZONTAL RESULT



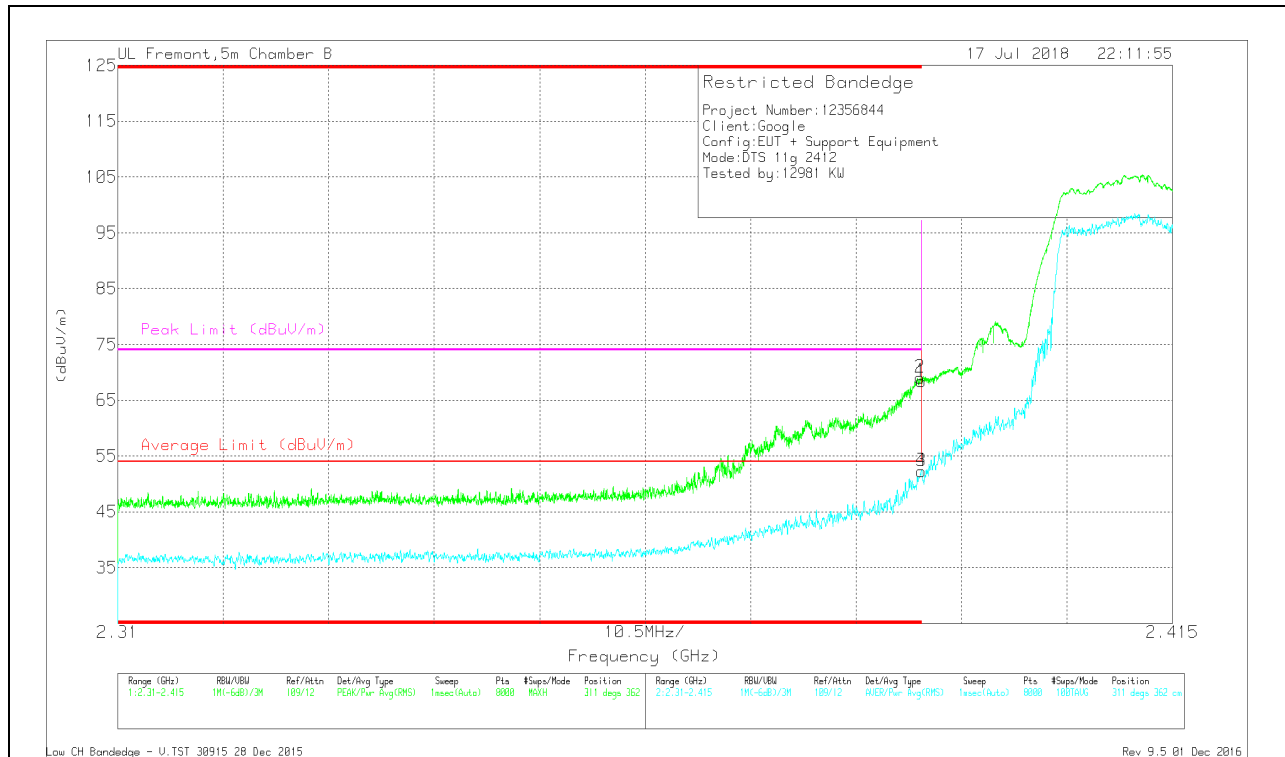
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dBm)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	55.55	Pk	32.3	-21.5	66.35	-	-	74	-7.65	252	203	H
2	* 2.39	56.17	Pk	32.3	-21.5	66.97	-	-	74	-7.03	252	203	H
3	* 2.39	38.82	RMS	32.3	-21.5	49.62	54	-4.38	-	-	252	203	H
4	* 2.39	39.04	RMS	32.3	-21.5	49.84	54	-4.16	-	-	252	203	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

### VERTICAL RESULT

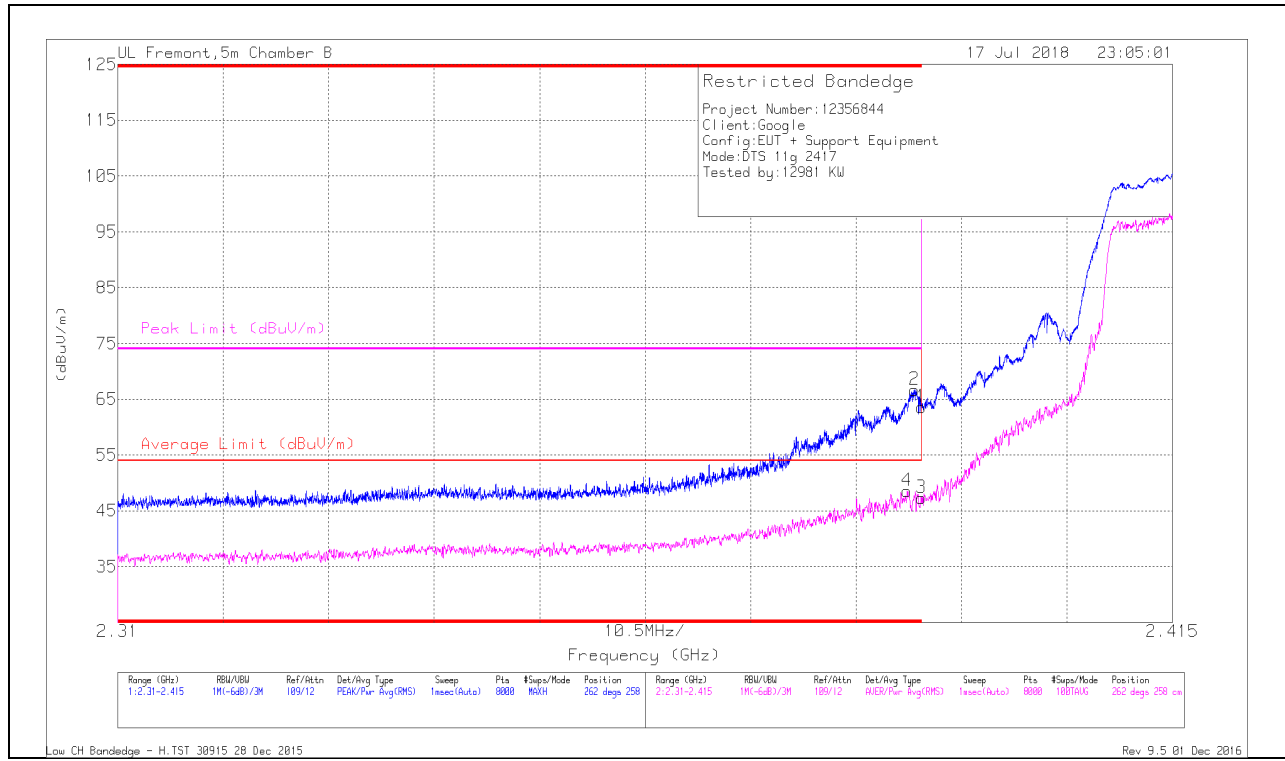


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	57.63	Pk	32.3	-21.5	68.43	-	-	74	-5.57	311	362	V
2	* 2.39	58.22	Pk	32.3	-21.5	69.02	-	-	74	-4.98	311	362	V
3	* 2.39	41.53	RMS	32.3	-21.5	52.33	54	-1.67	-	-	311	362	V
4	* 2.39	41.46	RMS	32.3	-21.5	52.26	54	-1.74	-	-	311	362	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

# BANDEDGE (LOW CHANNEL, CH 2)

## HORIZONTAL RESULT



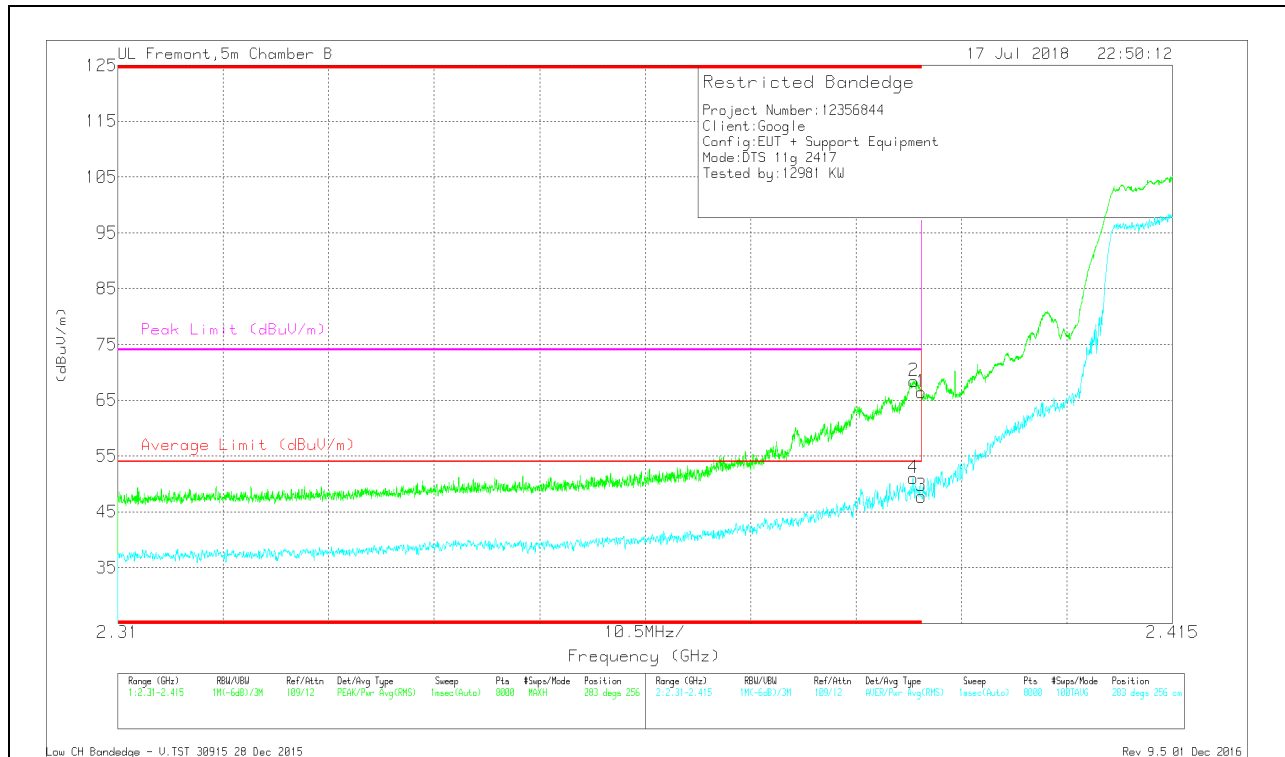
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.389	55.87	Pk	32.3	-21.5	66.67	-	-	74	-7.33	262	258	H
4	* 2.389	37.77	RMS	32.3	-21.5	48.57	54	-5.43	-	-	262	258	H
1	* 2.39	52.8	Pk	32.3	-21.5	63.6	-	-	74	-10.4	262	258	H
3	* 2.39	36.49	RMS	32.3	-21.5	47.29	54	-6.71	-	-	262	258	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

### VERTICAL RESULT



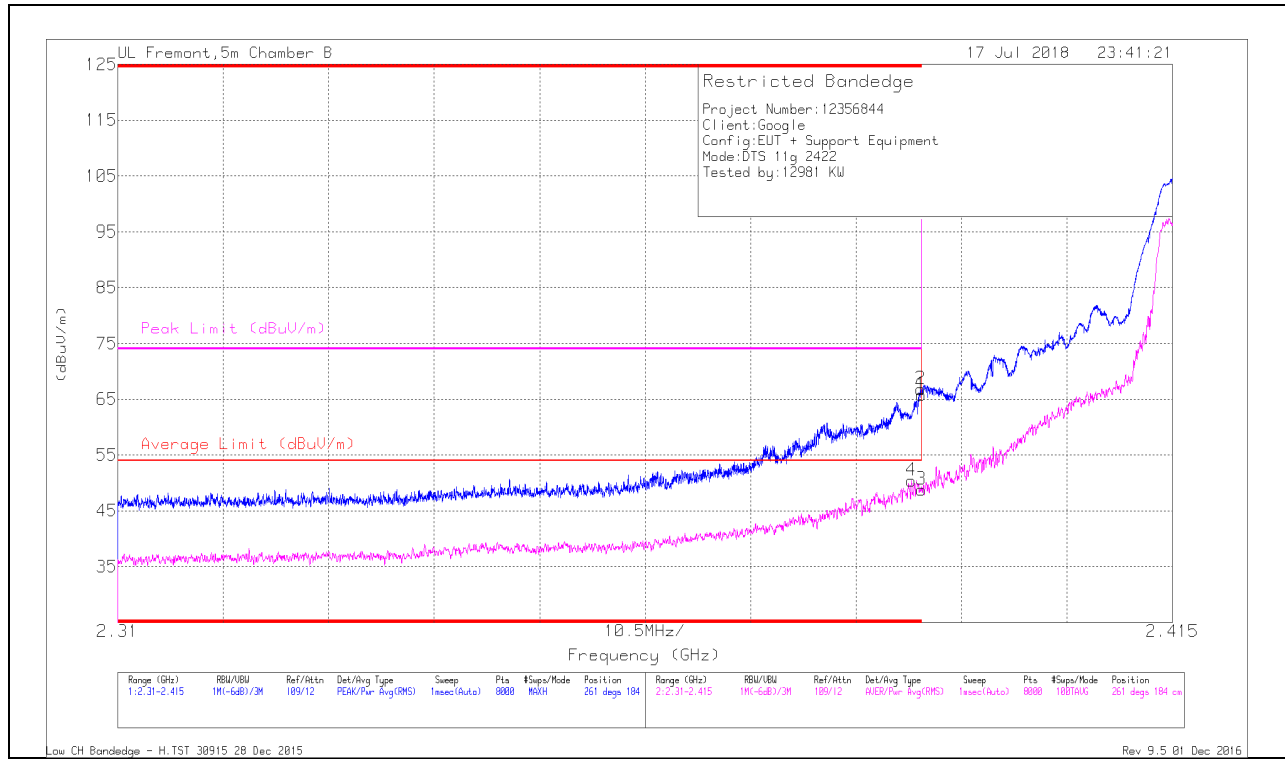
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.389	57.63	Pk	32.3	-21.5	68.43	-	-	74	-5.57	283	256	V
4	* 2.389	40.19	RMS	32.3	-21.5	50.99	54	-3.01	-	-	283	256	V
1	* 2.39	55.6	Pk	32.3	-21.5	66.4	-	-	74	-7.6	283	256	V
3	* 2.39	36.95	RMS	32.3	-21.5	47.75	54	-6.25	-	-	283	256	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection



**BANDEDGE (LOW CHANNEL, CH 3)**

**HORIZONTAL RESULT**



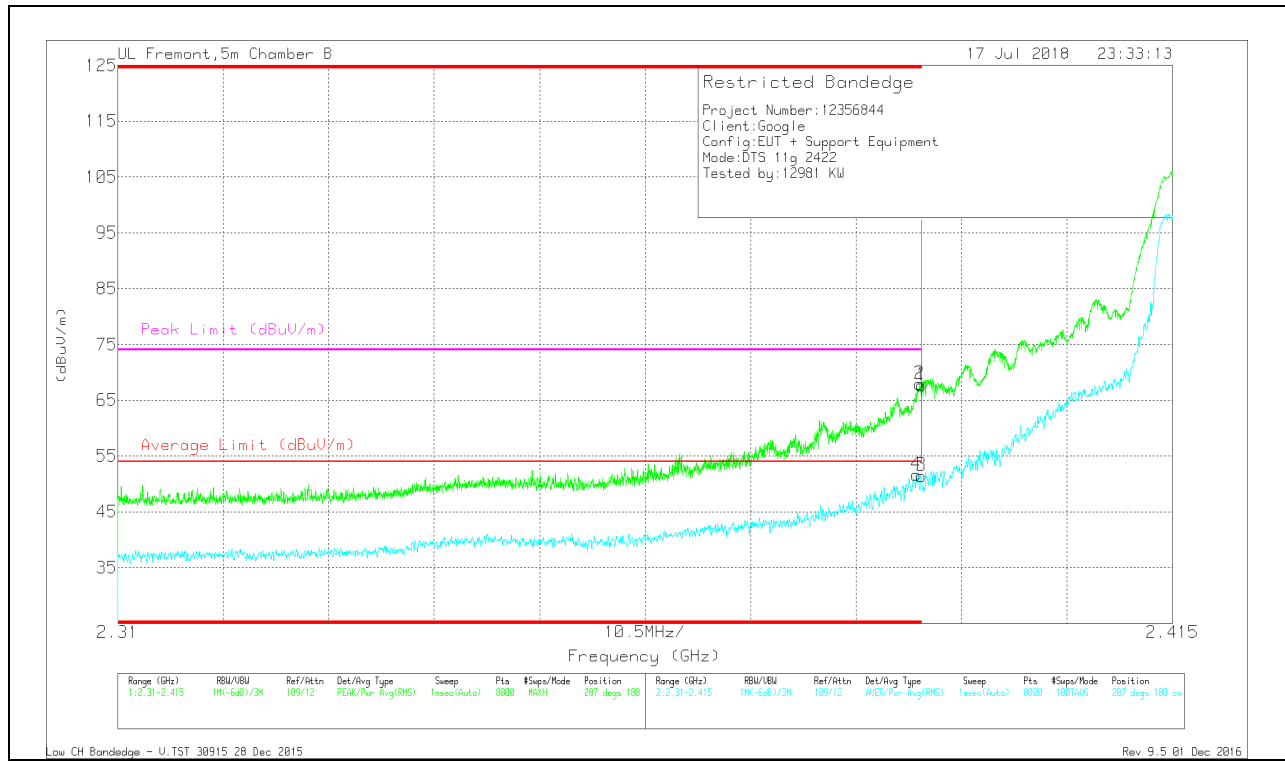
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 2.389	39.67	RMS	32.3	-21.5	50.47	54	-3.53	-	-	261	184	H
1	* 2.39	54.96	Pk	32.3	-21.5	65.76	-	-	74	-8.24	261	184	H
2	* 2.39	55.99	Pk	32.3	-21.5	66.79	-	-	74	-7.21	261	184	H
3	* 2.39	38.02	RMS	32.3	-21.5	48.82	54	-5.18	-	-	261	184	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

### VERTICAL RESULT

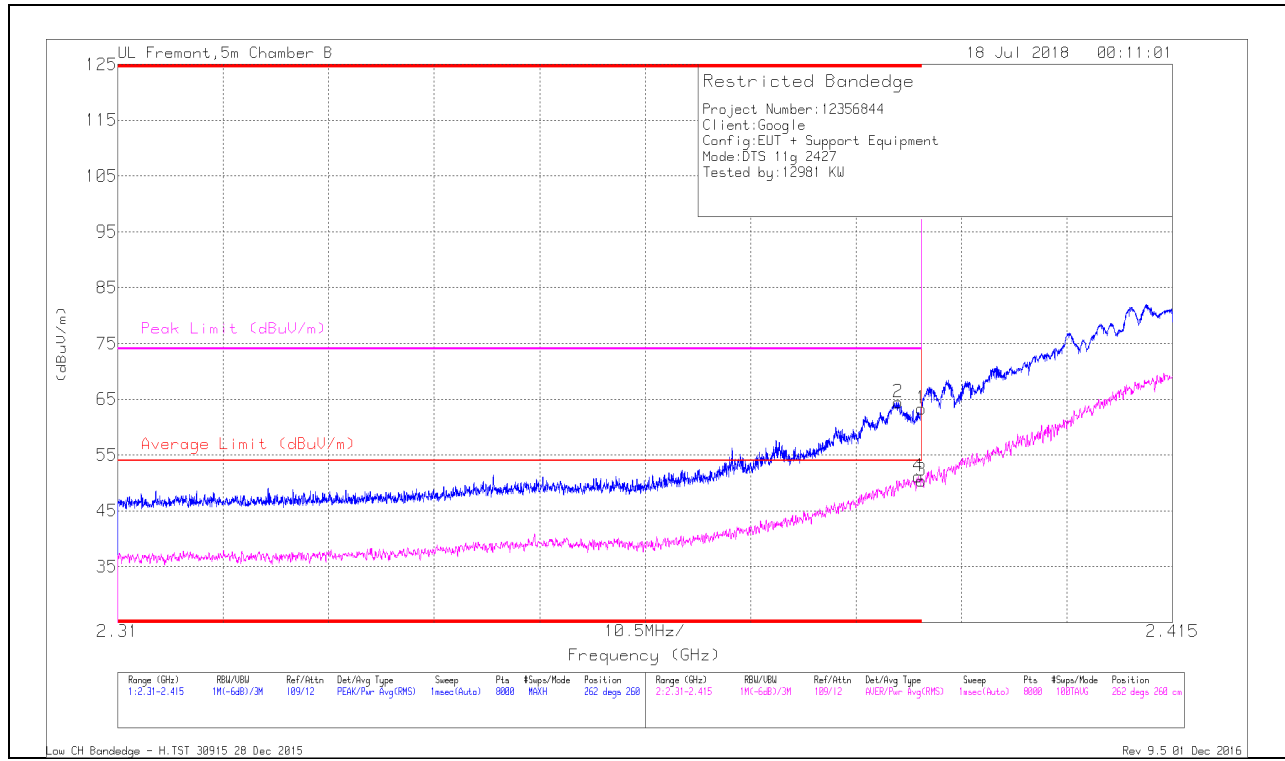


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dBm)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 2.389	40.83	RMS	32.3	-21.5	51.63	54	-2.37	-	-	287	180	V
1	* 2.39	56.84	Pk	32.3	-21.5	67.64	-	-	74	-6.36	287	180	V
2	* 2.39	57.12	Pk	32.3	-21.5	67.92	-	-	74	-6.08	287	180	V
3	* 2.39	40.67	RMS	32.3	-21.5	51.47	54	-2.53	-	-	287	180	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

**BANDEDGE (LOW CHANNEL, CH 4)**

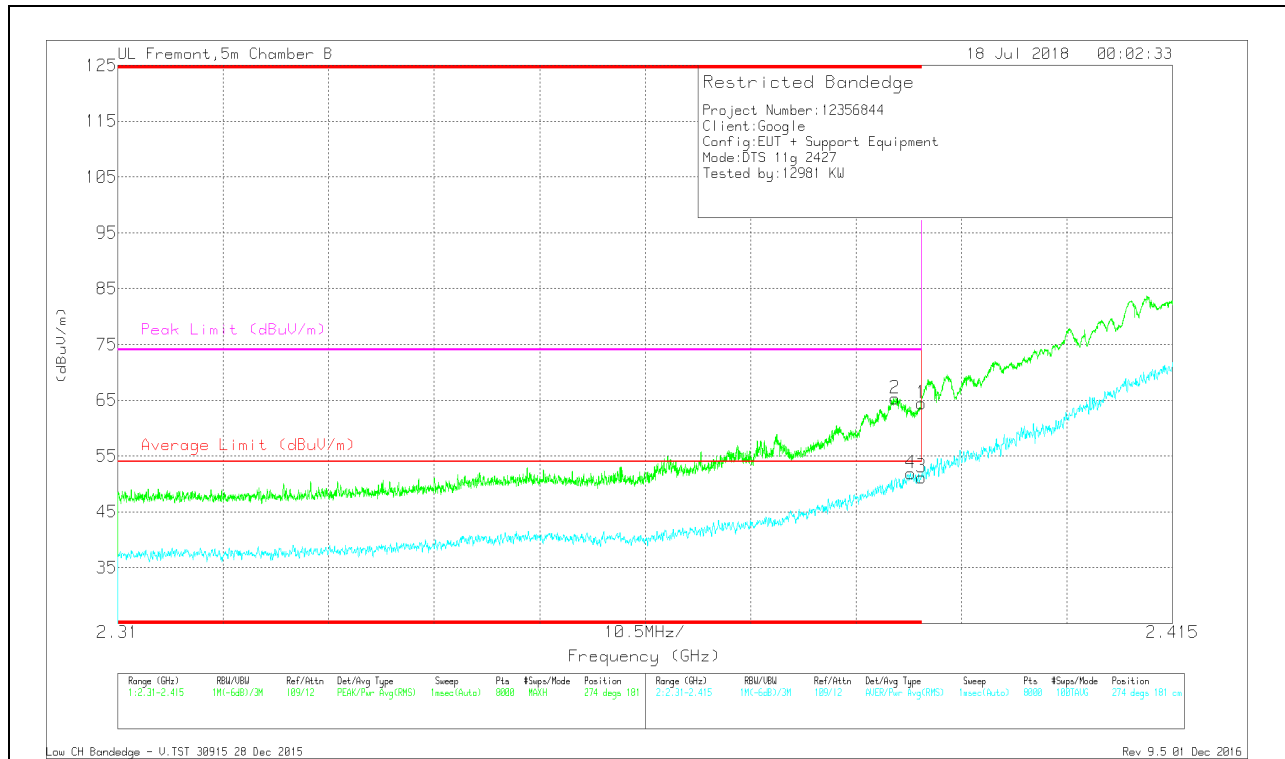
**HORIZONTAL RESULT**



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.388	53.66	Pk	32.3	-21.5	64.46	-	-	74	-9.54	262	260	H
1	* 2.39	52.48	Pk	32.3	-21.5	63.28	-	-	74	-10.72	262	260	H
3	* 2.39	39.65	RMS	32.3	-21.5	50.45	54	-3.55	-	-	262	260	H
4	* 2.39	40.34	RMS	32.3	-21.5	51.14	54	-2.86	-	-	262	260	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

### VERTICAL RESULT

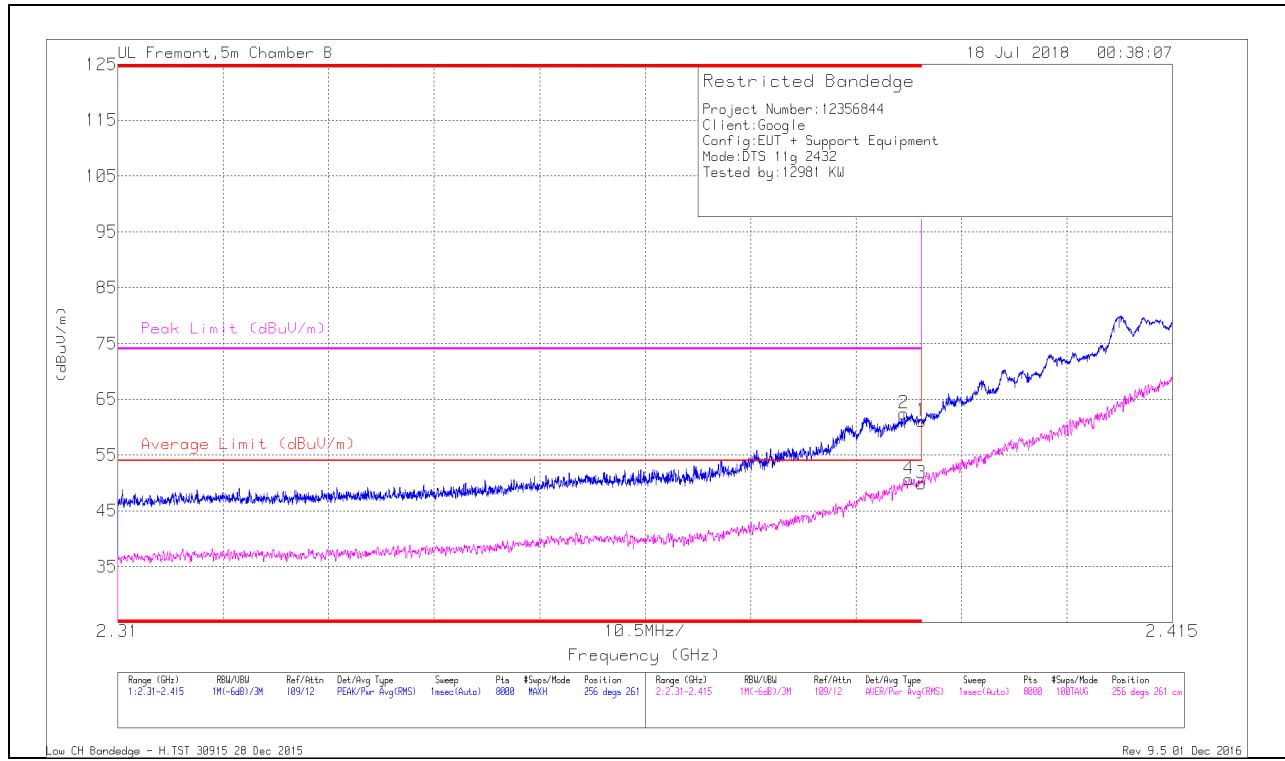


Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T863 (dBm)	Amp/Cbl/Filtr/Pad (dB)	Correcte d Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.387	54.55	Pk	32.3	-21.5	65.35	-	-	74	-8.65	274	181	V
4	* 2.389	41.14	RMS	32.3	-21.5	51.94	54	-2.06	-	-	274	181	V
1	* 2.39	53.64	Pk	32.3	-21.5	64.44	-	-	74	-9.56	274	181	V
3	* 2.39	40.42	RMS	32.3	-21.5	51.22	54	-2.78	-	-	274	181	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

**BANEDGE (LOW CHANNEL, CH 5)**

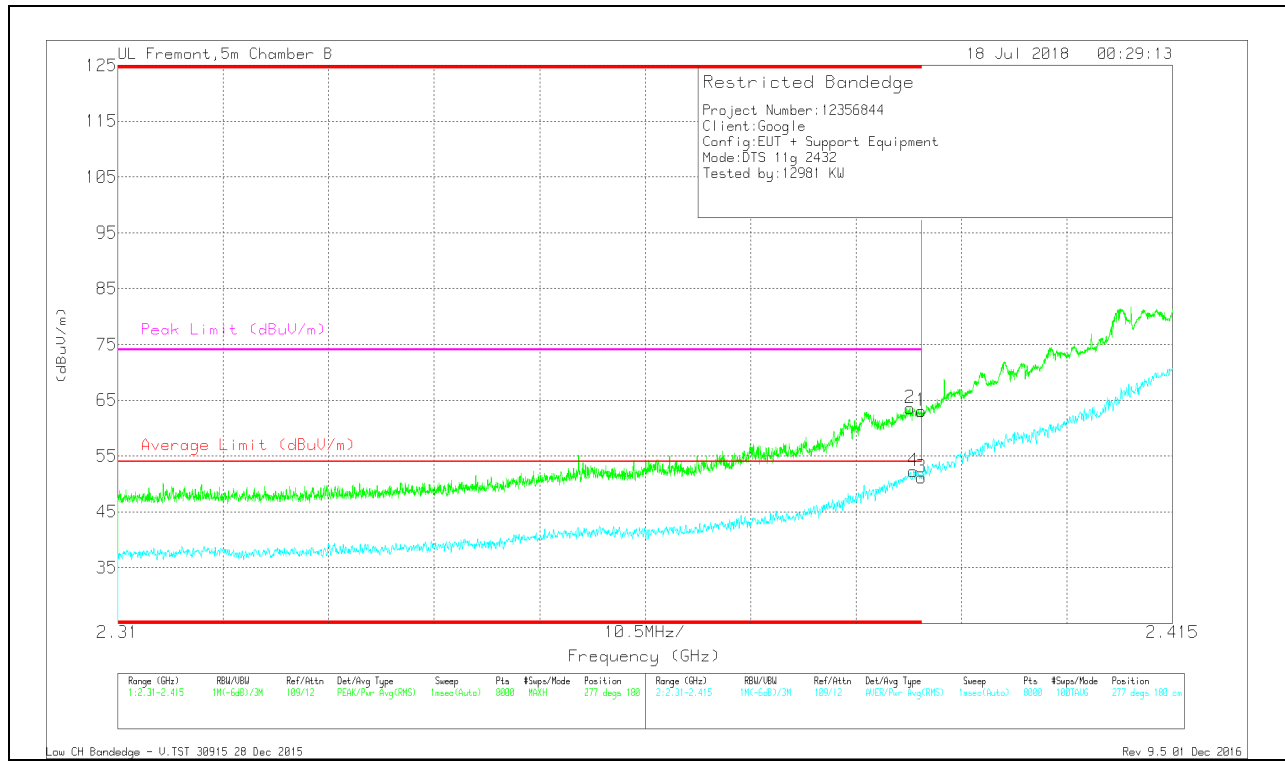
**HORIZONTAL RESULT**



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.388	51.71	Pk	32.3	-21.5	62.51	-	-	74	-11.49	256	261	H
4	* 2.389	39.92	RMS	32.3	-21.5	50.72	54	-3.28	-	-	256	261	H
1	* 2.39	50.27	Pk	32.3	-21.5	61.07	-	-	74	-12.93	256	261	H
3	* 2.39	39.13	RMS	32.3	-21.5	49.93	54	-4.07	-	-	256	261	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

### VERTICAL RESULT

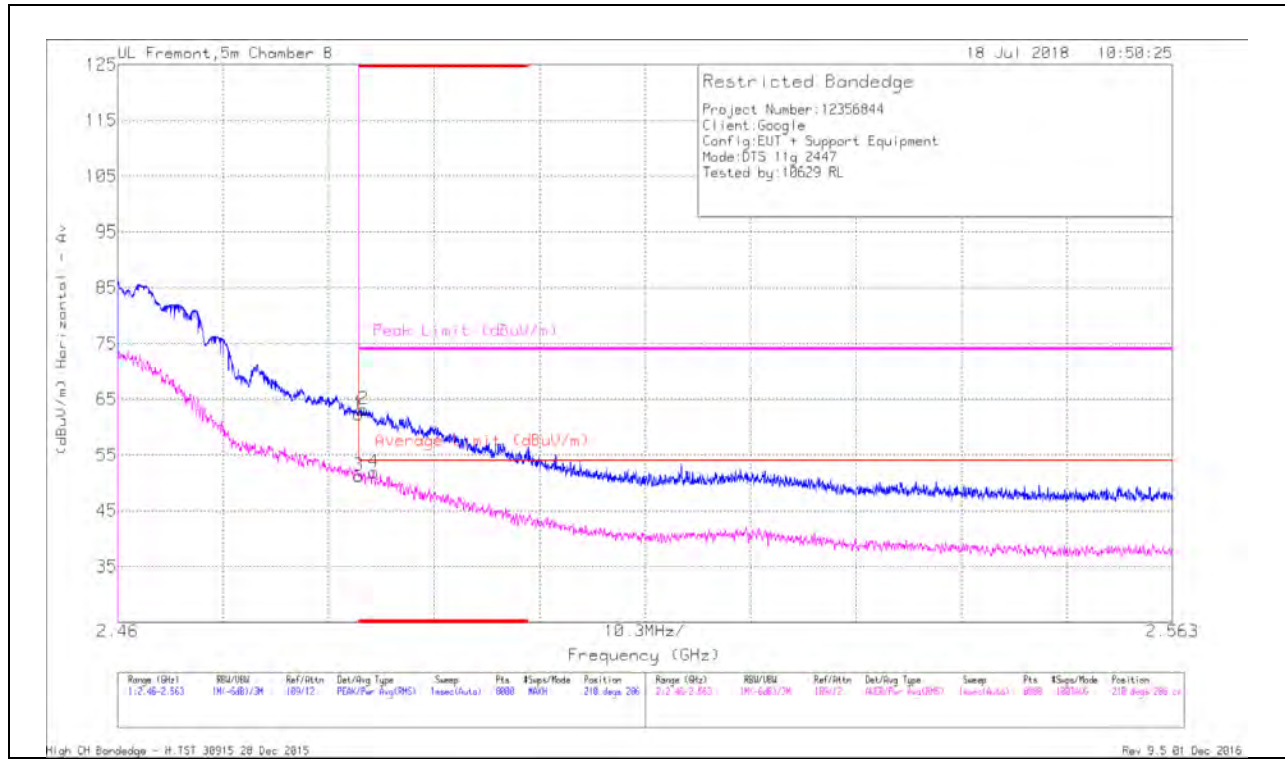


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dBm)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.389	52.82	Pk	32.3	-21.5	63.62	-	-	74	-10.38	277	180	V
4	* 2.389	41.5	RMS	32.3	-21.5	52.3	54	-1.7	-	-	277	180	V
1	* 2.39	52.28	Pk	32.3	-21.5	63.08	-	-	74	-10.92	277	180	V
3	* 2.39	40.32	RMS	32.3	-21.5	51.12	54	-2.88	-	-	277	180	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

**BANEDGE (HIGH CHANNEL, CH 8)**

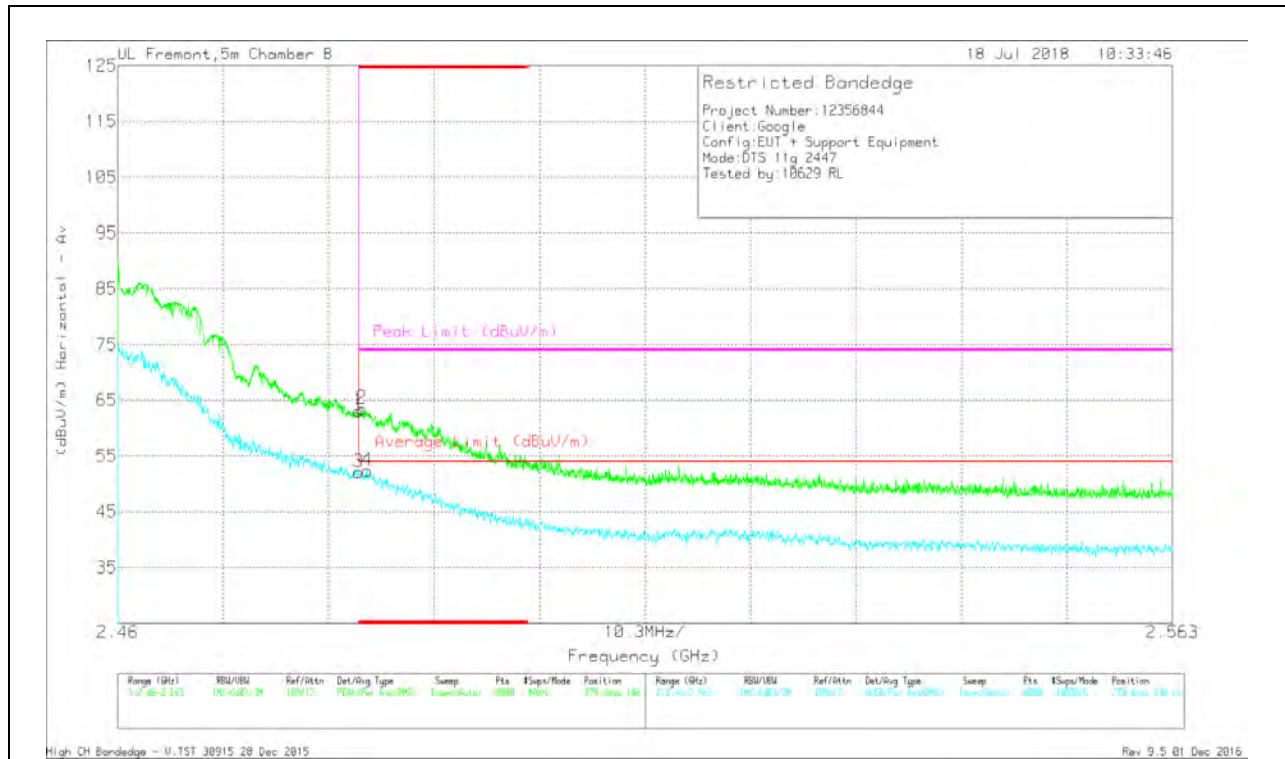
**HORIZONTAL RESULT**



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	51.29	Pk	32.6	-21.5	62.39	-	-	74	-11.61	210	286	H
2	* 2.484	52.15	PK	32.6	-21.5	63.25	-	-	74	-10.75	210	286	H
3	* 2.484	40.15	RMS	32.6	-21.5	51.25	54	-2.75	-	-	210	286	H
4	* 2.485	40.83	RMS	32.6	-21.5	51.93	54	-2.07	-	-	210	286	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	51.95	Pk	32.6	-21.5	63.05	-	-	74	-10.95	279	148	V
2	* 2.484	52.41	Pk	32.6	-21.5	63.51	-	-	74	-10.49	279	148	V
3	* 2.484	41.02	RMS	32.6	-21.5	52.12	54	-1.88	-	-	279	148	V
4	* 2.484	41.31	RMS	32.6	-21.5	52.41	54	-1.59	-	-	279	148	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

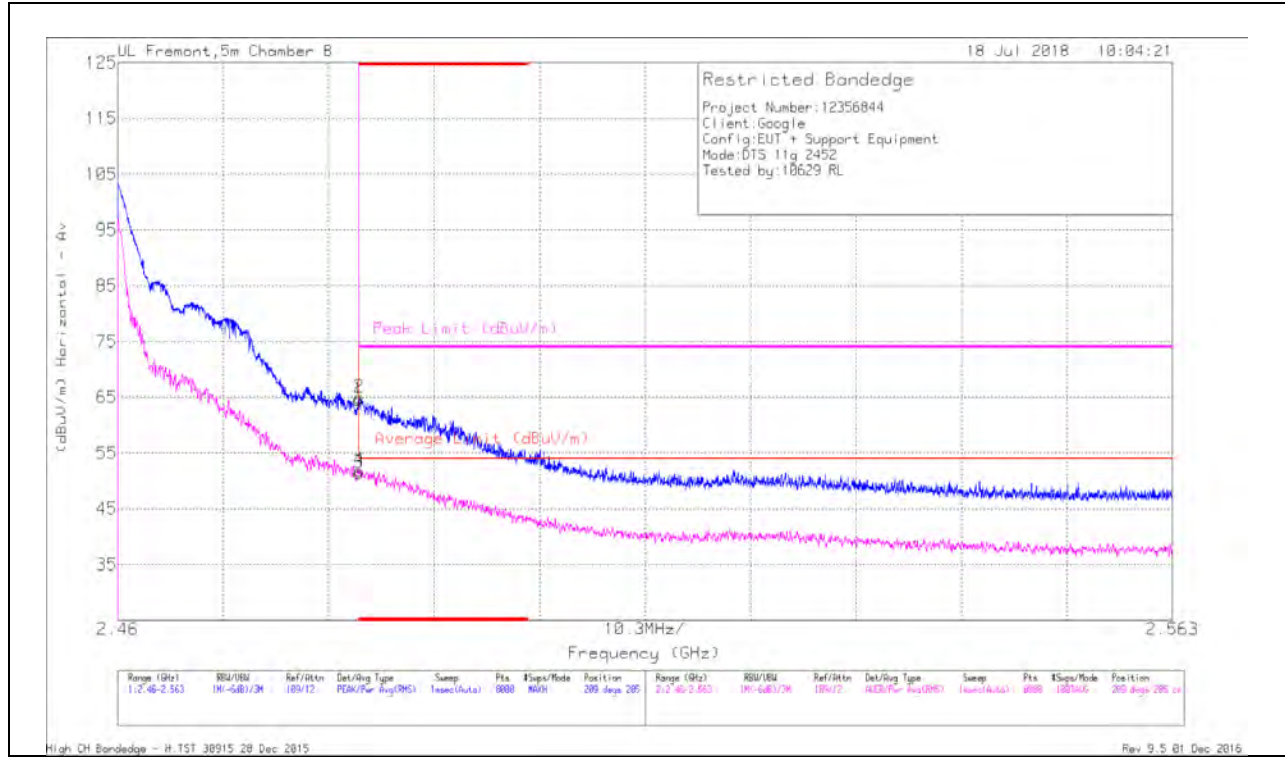
Pk - Peak detector

RMS - RMS detection



**BANEDGE (HIGH CHANNEL, CH 9)**

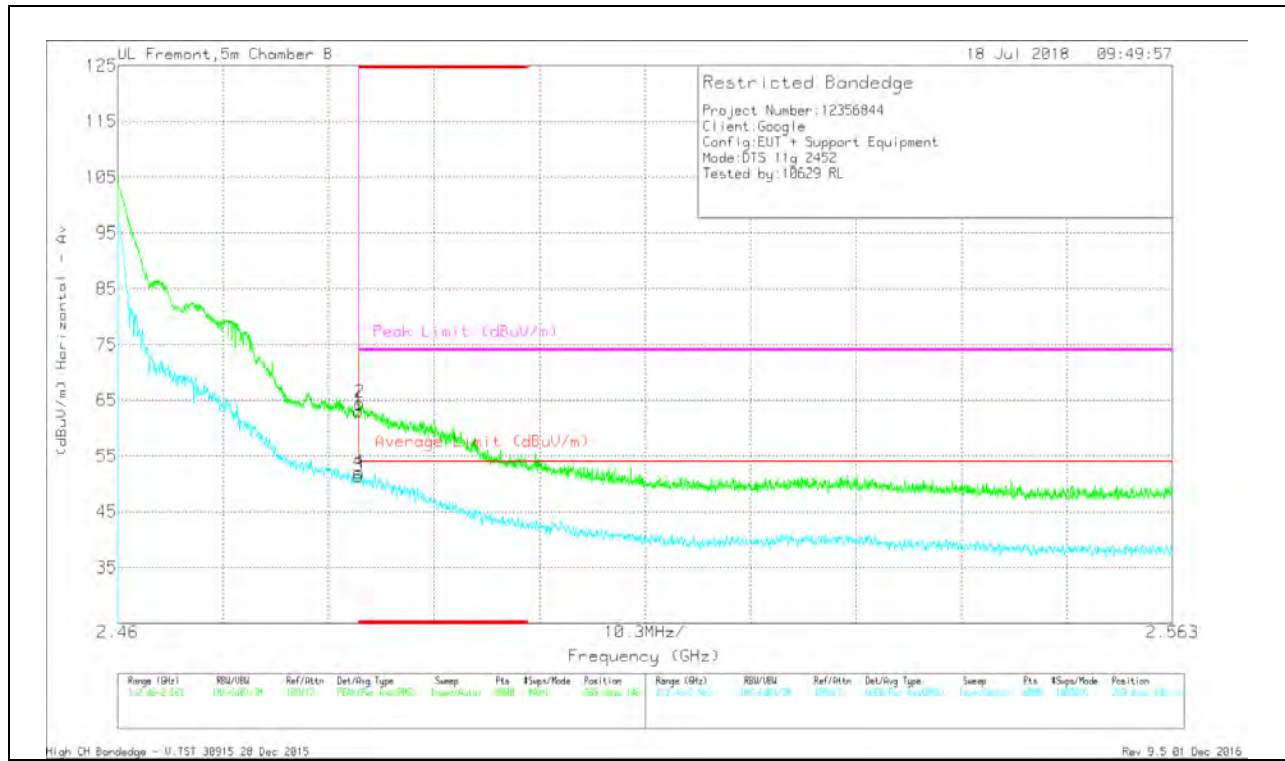
**HORIZONTAL RESULT**



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	53.48	Pk	32.6	-21.5	64.58	-	-	74	-9.42	209	285	H
2	* 2.484	53.82	PK	32.6	-21.5	64.92	-	-	74	-9.08	209	285	H
3	* 2.484	40.27	RMS	32.6	-21.5	51.37	54	-2.63	-	-	209	285	H
4	* 2.484	40.74	RMS	32.6	-21.5	51.84	54	-2.16	-	-	209	285	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dBm)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	51.97	Pk	32.6	-21.5	63.07	-	-	74	-10.93	269	146	V
2	* 2.484	53.41	Pk	32.6	-21.5	64.51	-	-	74	-9.49	269	146	V
3	* 2.484	40.26	RMS	32.6	-21.5	51.36	54	-2.64	-	-	269	146	V
4	* 2.484	40.92	RMS	32.6	-21.5	52.02	54	-1.98	-	-	269	146	V

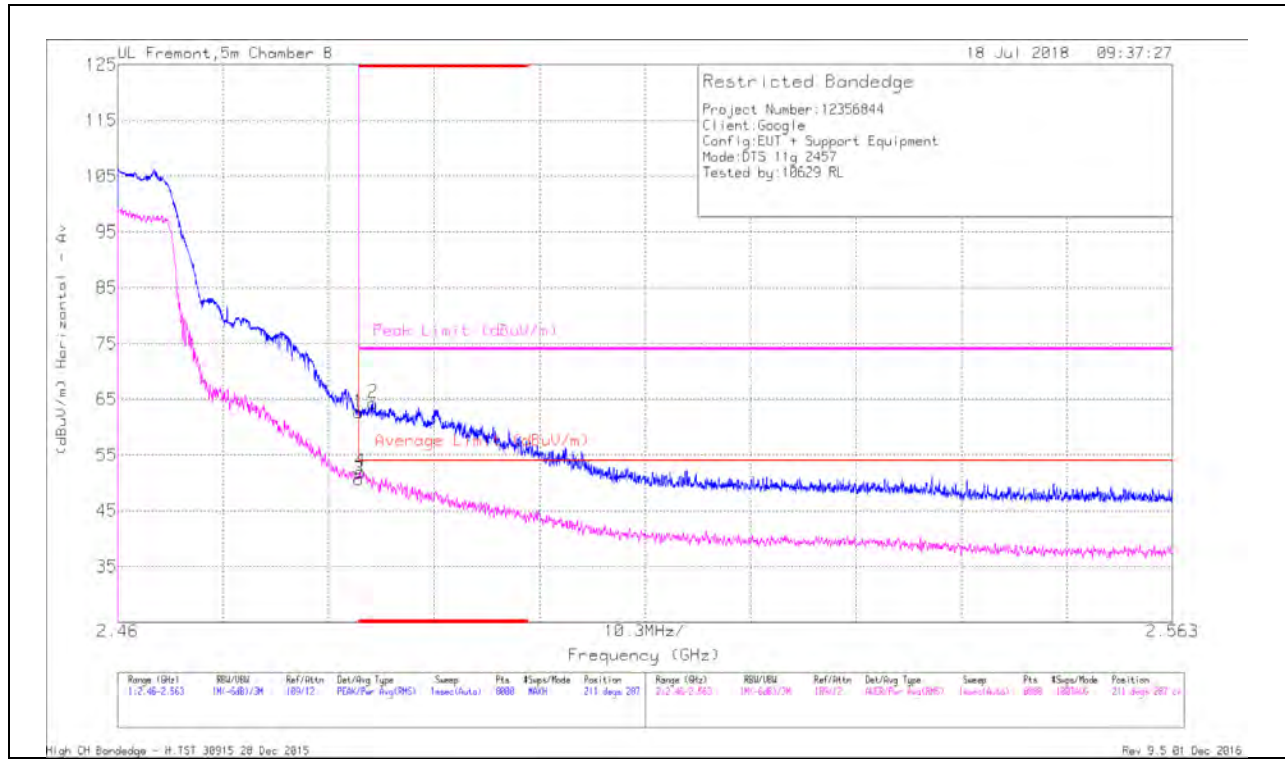
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

**BANDEDGE (HIGH CHANNEL, CH 10)**

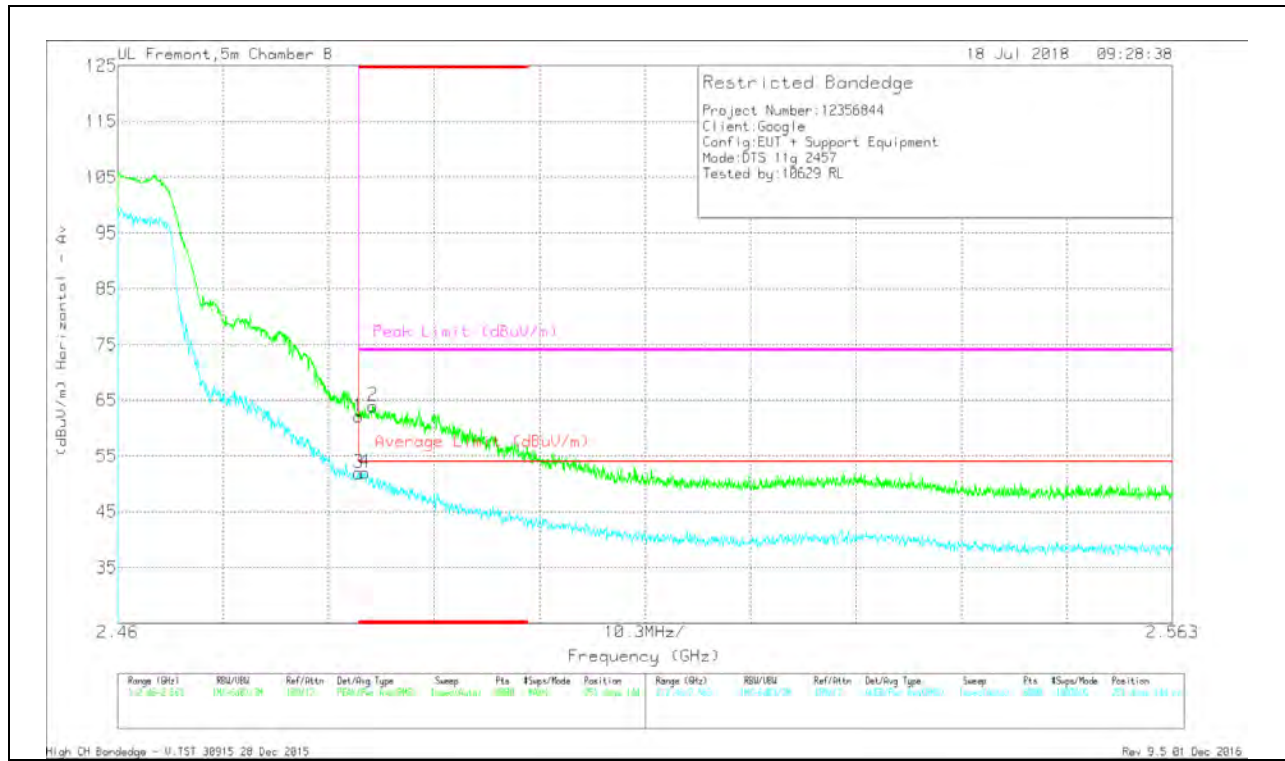
**HORIZONTAL RESULT**



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	51.62	Pk	32.6	-21.5	62.72	-	-	74	-11.28	211	287	H
3	* 2.484	39.58	RMS	32.6	-21.5	50.68	54	-3.32	-	-	211	287	H
4	* 2.484	40.89	RMS	32.6	-21.5	51.99	54	-2.01	-	-	211	287	H
2	* 2.485	53.28	Pk	32.6	-21.5	64.38	-	-	74	-9.62	211	287	H

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band  
 Pk - Peak detector  
 RMS - RMS detection

### VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	50.93	Pk	32.6	-21.5	62.03	-	-	74	-11.97	251	144	V
2	* 2.485	52.91	Pk	32.6	-21.5	64.01	-	-	74	-9.99	251	144	V
3	* 2.484	40.87	RMS	32.6	-21.5	51.97	54	-2.03	-	-	251	144	V
4	* 2.484	40.95	RMS	32.6	-21.5	52.05	54	-1.95	-	-	251	144	V

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection