FCC Test Report

Product Name	HD Digital Satellite Receiver
Model No	TELE-P6
FCC ID.	2AR5S-TELE-P6

Applicant	KIWISAT LLC
Address	1111 Pennsylvania Avenue, NW Washington, District of Columbia 20004, United States

Date of Receipt	Dec. 28, 2018
Issue Date	Jan 31, 2019
Report No.	18C0554R-RFUSP26V00
Report Version	V1.0

Testing Laboratory
3023

Test Report

Issue Date: Jan 31, 2019
Report No.: 18C0554R-RFUSP26V00

Product Name	HD Digital Satellite Receiver
Applicant	KIWISAT LLC
Address	1111 Pennsylvania Avenue, NW Washington, District of Columbia 20004, United States
Manufacturer	TELE System Communications Pte. Ltd.
Model No.	TELE-P6
FCC ID.	2AR5S-TELE-P6
EUT Rated Voltage	AC 100-240V, 50/60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	Kiwisat
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2017 ANSI C63.4: 2014, ANSI C63.10: 2013 KDB 558074 D01 15.247 Meas Guidance v05
Test Result	Complied

Documented By : Elephant Chen

(Adm. Assistant / Elephant Chen)

Tested By : Jay Su

(Engineer / Jay Su)

Approved By :

(Director / Vincent Lin)

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	HD Digital Satellite Receiver
Trade Name	Kiwisat
Model No.	TELE-P6
FCC ID.	2AR5S-TELE-P6
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW, 2422-2452MHz for 802.11n-40BW
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 150Mbps
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	PCB Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
Power Adapter	MFR: DEE VAN, M/N: DSA-12PFU-12 FUS 120100 Input: AC 100-240V~50/60Hz, 0.5A Output: 12V⎓1A Cable Out: Non-Shielded, 1.5m

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	SHIFENG ELECTRONIC CO., LTD	EAN00EE008Y1	PCB Antenna	-4.3 dBi for 2.4 GHz

Note:

1. The antenna of EUT conforms to FCC 15.203.

802.11b/g/n-20MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

802.11n-40MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 03:	2422 MHz	Channel 04:	2427 MHz	Channel 05:	2432 MHz	Channel 06:	2437 MHz
Channel 07:	2442 MHz	Channel 08:	2447 MHz	Channel 09:	2452 MHz		

Note:

1. The EUT is a HD Digital Satellite Receiver with a built-in WLAN.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps、802.11g is 6Mbps、802.11n(20M-BW) is 7.2Mbps and 802.11n(40M-BW) is 15Mbps).
4. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

1.2. Operational Description

The EUT is a HD Digital Satellite Receiver, This device provided four kinds of transmitting speed 1, 2, 5.5 and 11Mbps and the device of RF carrier is DBPSK, DQPSK and CCK (IEEE 802.11b). The device provided of eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11g).

The device provided of eight kinds of transmitting speed 7.2,14.4,21.7,28.9,43.3,57.8,65 and 72.2Mbps in 802.11n(20M-BW) mode and 15,30,45,60,90,120,135 and 150 Mbps (40M-BW) the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11n), The IEEE 802.11n is Single In, Single Out" (SISO) technology and one antennas to support 1(Transmit) * 1(Receive) SISO technology.

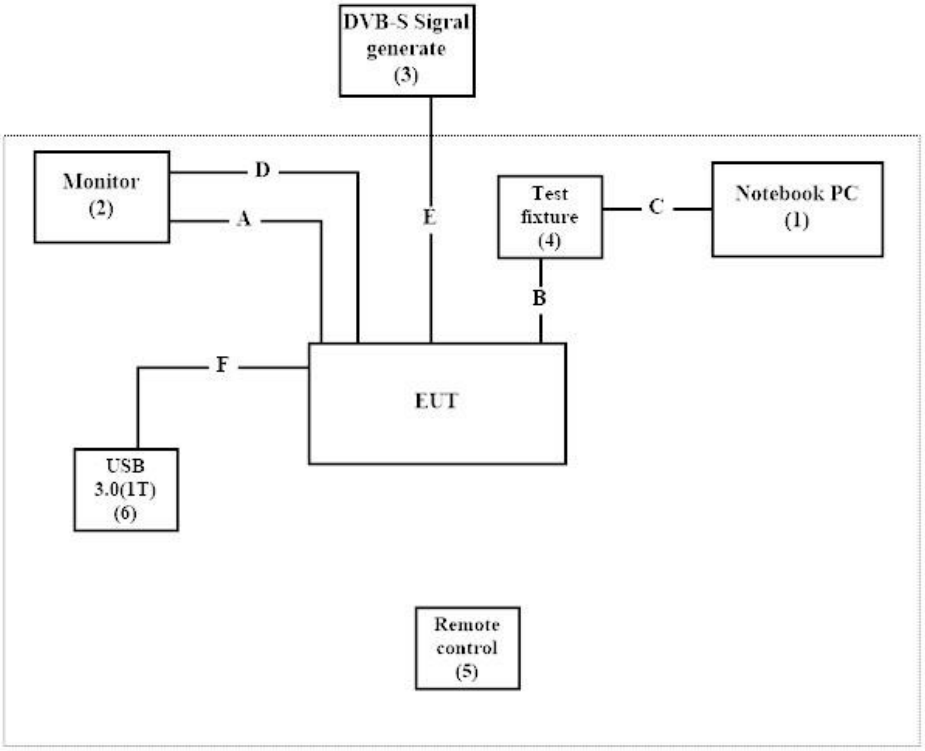
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Latitude E5440	FS9TK32	Non-Shielded, 0.8m
2	Monitor	PHILIPS	24PFH4200196	KT2A1703000484	N/A
3	DVB-S Signal generate	R&S	TS-9980	N/A	N/A
4	Test fixture	KIWISAT LLC	N/A	N/A	N/A
5	Remote control	KIWISAT LLC	N/A	N/A	N/A
6	USB 3.0(1T)	Transcend	TS1TSJ25M3	C13890-3746	N/A

Signal Cable Type		Signal cable Description
A	HDMI Cable	Non-Shielded, 1.8m
B	Signal Cable	Non-Shielded, 0.2m
C	USB Cable	Non-Shielded, 1.8m
D	RCA Cable	Non-Shielded, 1.4m
E	Coaxial Cable	Non-Shielded, 1.8m
F	USB Cable	Non-Shielded, 0.5m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software “eUpLoader, Version 5.0.9” on the EUT.
3. Configure the test mode, the test channel, and the data rate.
4. Press “OK” to start the continuous Transmit.
5. Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:
http://www.dekra.com.tw/english/about/certificates.aspx?bval=5
The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw/index_en.aspx

Site Description: Accredited by TAF
Accredited Number: 3023

Site Name: DEKRA Testing and Certification Co., Ltd
Site Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : info.tw@dekra.com

FCC Accreditation Number: TW3023

1.7. List of Test Equipment

For Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2018/02/12	2019/02/11
X	Spectrum Analyzer	Agilent	N9010A	MY48030495	2018/10/13	2019/10/12
X	Peak Power Analyzer	Keysight	8990B	MY51000410	2018/08/01	2019/07/31
X	Wideband Power Sensor	Keysight	N1923A	MY56080003	2018/07/25	2019/07/24
X	Wideband Power Sensor	Keysight	N1923A	MY56080004	2018/07/25	2019/07/24
	EMI Test Receiver	R&S	ESCS 30	100369	2018/11/07	2019/11/06
	LISN	R&S	ESH3-Z5	836679/017	2018/02/09	2019/02/08
	LISN	R&S	ENV216	100097	2018/02/09	2019/02/08
	Coaxial Cable	DEKRA	RG 400	LC018-RG	2018/06/21	2019/06/20

For Radiated measurements /Site3/CB8

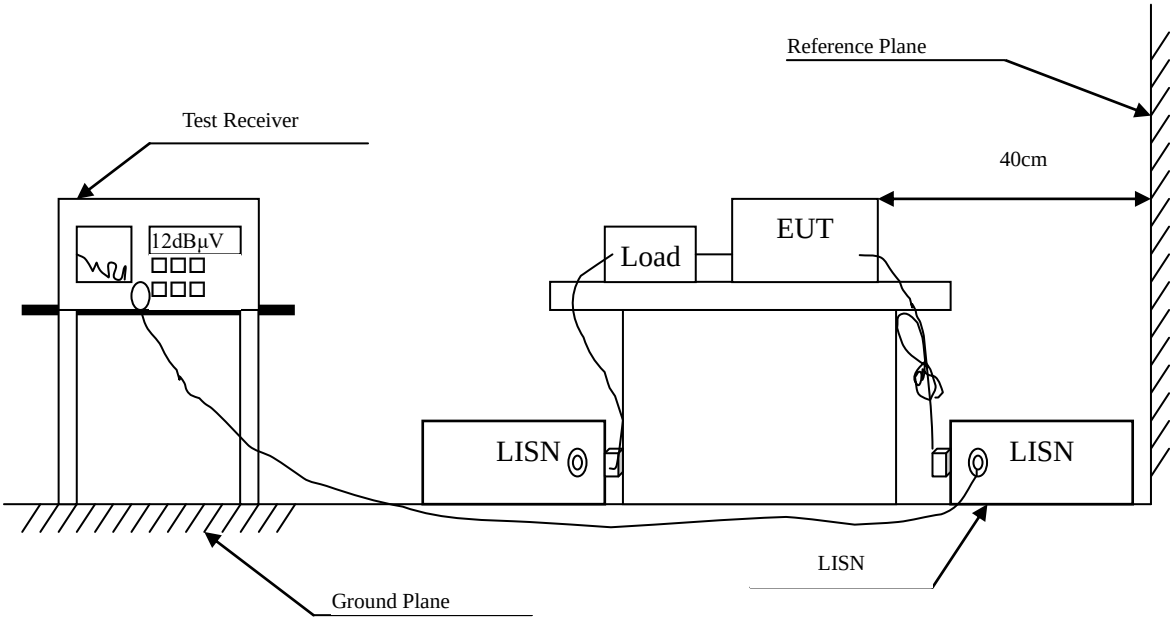
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
X	Spectrum Analyzer	R&S	FSP40	100170	2018/03/12	2019/03/11
X	Loop Antenna	Teseq	HLA6121	37133	2018/10/13	2019/10/12
X	Bilog Antenna	Schaffner Chase	CBL6112B	2707	2018/06/24	2019/06/23
X	Coaxial Cable	DEKRA	RG 214	LC003-RG	2018/06/14	2019/06/13
X	Pre-Amplifier	Jet-Power	JPA-10M1G33	170101000330 010	2018/06/14	2019/06/13
X	Horn Antenna	ETS-Lindgren	3117	00135205	2018/05/03	2019/05/02
X	Horn Antenna	SCHWARZBECK	9120D	576	2018/11/30	2019/11/29
X	Pre-Amplifier	EMCI	EMC012630SE	980210	2018/04/10	2019/04/09
	Horn Antenna	Com-Power	AH-840	101043	2019/01/09	2020/01/08
	Amplifier + Cable	EMCI	EMC184045SE	980370	2018/03/21	2019/03/20
X	Filter	MICRO-TRONICS	BRM50702	G270	2018/08/06	2019/08/05
	Filter	MICRO-TRONICS	BRM50716	G196	2018/08/06	2019/08/05

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version :QuieTek EMI 2.0 V2.1.113.

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit		
Frequency MHz	Limits	
	QP	AVG
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Uncertainty

± 2.26 dB

2.5. Test Result of Conducted Emission

Product : HD Digital Satellite Receiver
Test Item : Conducted Emission Test
Power Line : Line 1
Test Date : 2019/01/23
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBµV	dBµV	dB	dBµV
Line 1					
Quasi-Peak					
0.205	9.738	28.960	38.698	-25.731	64.429
0.236	9.739	36.200	45.939	-17.604	63.543
0.326	9.743	32.940	42.683	-18.288	60.971
0.591	9.754	23.940	33.694	-22.306	56.000
1.318	9.794	15.460	25.254	-30.746	56.000
20.755	10.249	21.720	31.969	-28.031	60.000
Average					
0.205	9.738	14.720	24.458	-29.971	54.429
0.236	9.739	13.900	23.639	-29.904	53.543
0.326	9.743	13.820	23.563	-27.408	50.971
0.591	9.754	6.640	16.394	-29.606	46.000
1.318	9.794	6.050	15.844	-30.156	46.000
20.755	10.249	12.750	22.999	-27.001	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : HD Digital Satellite Receiver
Test Item : Conducted Emission Test
Power Line : Line 2
Test Date : 2019/01/23
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBµV	dBµV	dB	dBµV
Line 2					
Quasi-Peak					
0.240	9.739	36.960	46.699	-16.730	63.429
0.255	9.740	36.680	46.420	-16.580	63.000
0.486	9.740	26.500	36.240	-20.160	56.400
0.814	9.763	19.580	29.343	-26.657	56.000
1.220	9.780	23.020	32.800	-23.200	56.000
21.158	10.392	25.100	35.492	-24.508	60.000
Average					
0.240	9.739	14.450	24.189	-29.240	53.429
0.255	9.740	13.820	23.560	-29.440	53.000
0.486	9.740	10.460	20.200	-26.200	46.400
0.814	9.763	6.560	16.323	-29.677	46.000
1.220	9.780	16.950	26.730	-19.270	46.000
21.158	10.392	14.180	24.572	-25.428	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Peak Power Output

3.1. Test Setup

3.2. Limits

The maximum peak power shall be less 1 Watt.

3.3. Test Procedure

Tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using KDB 558074 section 8.3.1.3 PKPM1 Peak power meter method. The maximum average conducted output power using KDB 558074 section 8.3.2.3 Method (Measurement using a gated RF average-reading power meter)

3.4. Uncertainty

± 1.19 dB

3.5. Test Result of Peak Power Output

Product : HD Digital Satellite Receiver
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2019/01/25
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11	1		
		Measurement Level (dBm)						
01	2412	13.37	--	--	--	15.54	<30dBm	Pass
06	2437	13.16	13.03	12.96	12.81	14.92	<30dBm	Pass
11	2462	12.47	--	--	--	14.19	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : HD Digital Satellite Receiver
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2019/01/25
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	10.3	--	--	--	--	--	--	--	19.29	<30dBm	Pass
06	2437	10.69	10.63	10.47	10.33	10.18	10.08	9.91	9.77	19.83	<30dBm	Pass
11	2462	9.65	--	--	--	--	--	--	--	18.46	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : HD Digital Satellite Receiver
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2019/01/25
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		HT0	HT1	HT2	HT3	HT4	HT5	HT6	HT7	HT0		
		Measurement Level (dBm)										
01	2412	9.68	--	--	--	--	--	--	--	19.3	<30dBm	Pass
06	2437	9.57	9.51	9.43	9.27	9.16	9.01	8.94	8.87	18.62	<30dBm	Pass
11	2462	8.65	--	--	--	--	--	--	--	18.36	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : HD Digital Satellite Receiver
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2019/01/25
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

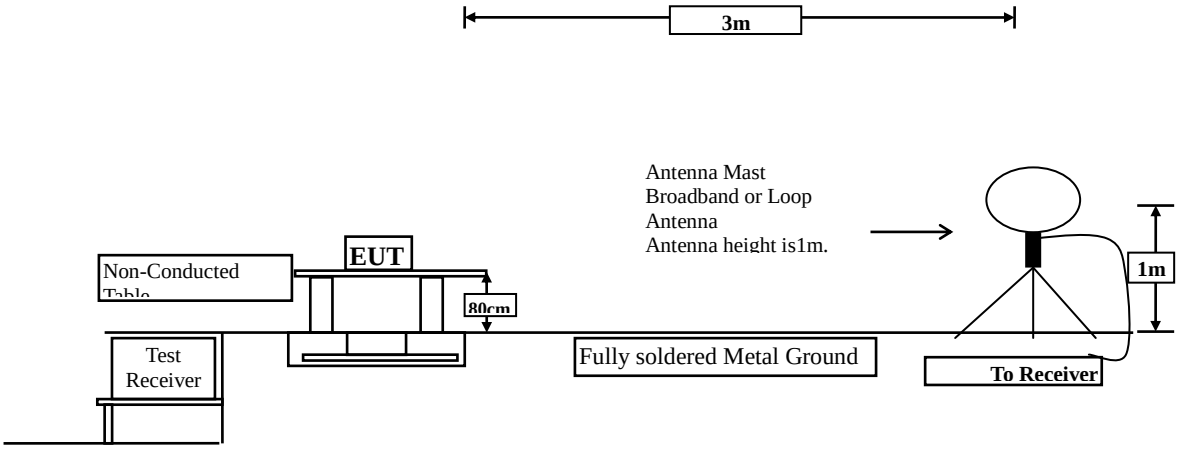
Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		HT0	HT1	HT2	HT3	HT4	HT5	HT6	HT7	HT0		
		Measurement Level (dBm)										
03	2422	9.48	--	--	--	--	--	--	--	19.09	<30dBm	Pass
06	2437	9.43	9.34	9.22	9.13	9.00	8.84	8.69	8.61	18.91	<30dBm	Pass
09	2452	9.47	--	--	--	--	--	--	--	19.19	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

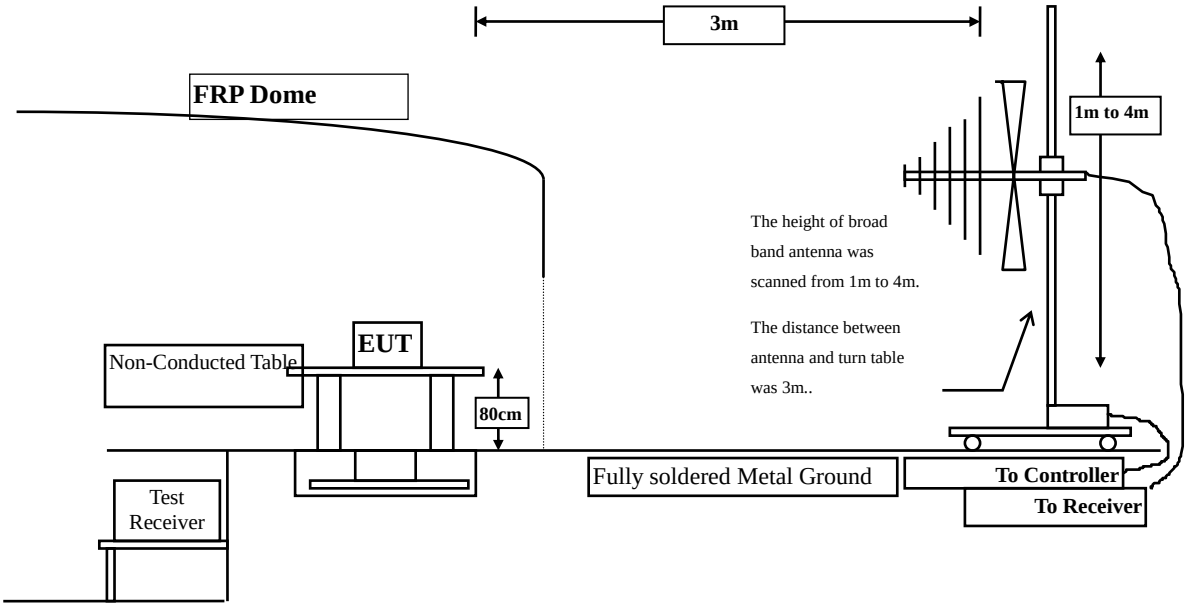
4. Radiated Emission

4.1. Test Setup

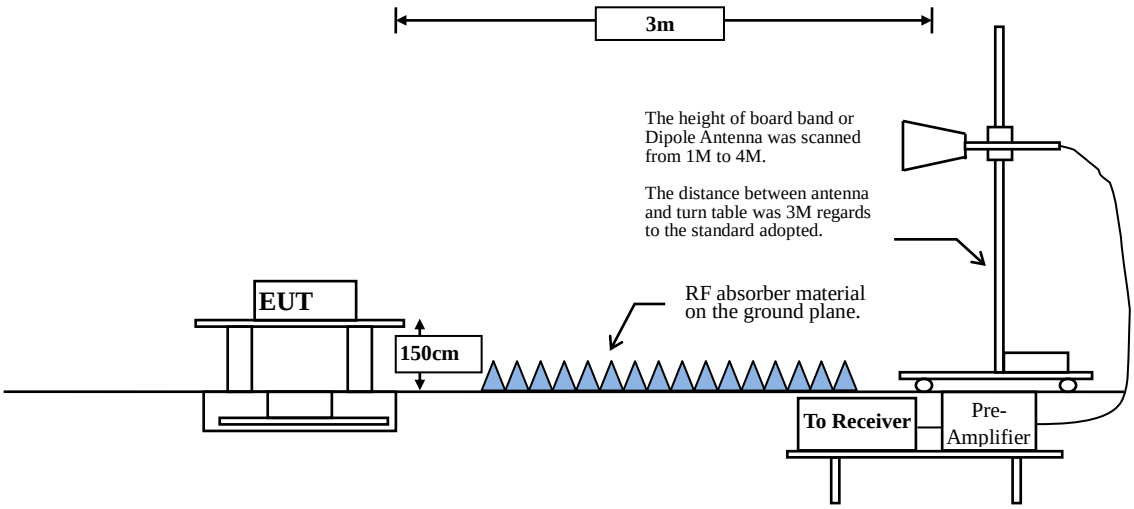
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.2. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dBμV/m) = 20 log E field strength (uV/m)

4.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground,when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

RBW and VBW Parameter setting:

According to KDB 558074 Peak power measurement procedure

RBW = as specified in Table 1.

VBW ≥ 3 x RBW.

Table 1 —RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to KDB 558074 Average power measurement procedure

RBW = 1MHz.

VBW = 10Hz, when duty cycle ≥ 98 %

VBW ≥ 1/T, when duty cycle < 98 %

(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

2.4GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11b	97.69	4.4880	223	300
802.11g	48.18	5.2280	191	200
802.11n20	61.17	6.3980	156	200
802.11n40	38.51	4.1780	239	300

Note: Duty Cycle Refer to Section 9.

4.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

4.5. Test Result of Radiated Emission

Product : HD Digital Satellite Receiver
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/29
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4824.000	18.937	27.384	46.322	-27.678	74.000
7236.000	23.970	16.352	40.322	-33.678	74.000
9648.000	25.184	15.313	40.497	-33.503	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	18.937	33.215	52.153	-21.847	74.000
7236.000	23.970	16.466	40.436	-33.564	74.000
9648.000	25.184	16.223	41.407	-32.593	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : HD Digital Satellite Receiver
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/29
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	19.020	26.618	45.638	-28.362	74.000
7311.000	23.949	16.871	40.821	-33.179	74.000
9748.000	25.528	13.788	39.316	-34.684	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	19.020	33.223	52.243	-21.757	74.000
7311.000	23.949	17.716	41.666	-32.334	74.000
9748.000	25.528	14.788	40.316	-33.684	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : HD Digital Satellite Receiver
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/29
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4925.000	19.107	25.791	44.898	-29.102	74.000
7386.000	23.942	15.329	39.271	-34.729	74.000
9848.000	25.332	15.160	40.493	-33.507	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	19.102	31.459	50.561	-23.439	74.000
7386.000	23.942	16.156	40.098	-33.902	74.000
9848.000	25.332	16.205	41.538	-32.462	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	HD Digital Satellite Receiver
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/29
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4824.000	18.937	22.654	41.592	-32.408	74.000
7236.000	23.970	16.072	40.042	-33.958	74.000
9648.000	25.184	15.123	40.307	-33.693	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	18.937	29.955	48.893	-25.107	74.000
7236.000	23.970	14.256	38.226	-35.774	74.000
9648.000	25.184	15.093	40.277	-33.723	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : HD Digital Satellite Receiver
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/29
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	19.020	22.658	41.678	-32.322	74.000
7311.000	23.949	16.971	40.921	-33.079	74.000
9748.000	25.528	13.418	38.946	-35.054	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	19.020	29.173	48.193	-25.807	74.000
7311.000	23.949	17.456	41.406	-32.594	74.000
9748.000	25.528	14.248	39.776	-34.224	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : HD Digital Satellite Receiver
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/29
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4924.000	19.102	21.776	40.878	-33.122	74.000
7386.000	23.942	15.039	38.981	-35.019	74.000
9848.000	25.332	15.110	40.443	-33.557	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	19.102	27.829	46.931	-27.069	74.000
7386.000	23.942	16.126	40.068	-33.932	74.000
9848.000	25.332	16.475	41.808	-32.192	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : HD Digital Satellite Receiver
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/29
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4824.000	18.937	21.654	40.592	-33.408	74.000
7236.000	23.970	16.502	40.472	-33.528	74.000
9648.000	25.184	15.343	40.527	-33.473	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	18.937	28.125	47.063	-26.937	74.000
7236.000	23.970	16.576	40.546	-33.454	74.000
9648.000	25.184	16.073	41.257	-32.743	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	HD Digital Satellite Receiver
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/29
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	19.020	20.948	39.968	-34.032	74.000
7311.000	23.949	16.731	40.681	-33.319	74.000
9748.000	25.528	13.198	38.726	-35.274	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	19.020	27.543	46.563	-27.437	74.000
7311.000	23.949	17.676	41.626	-32.374	74.000
9748.000	25.528	14.208	39.736	-34.264	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : HD Digital Satellite Receiver
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/29
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4934.000	19.151	20.165	39.316	-34.684	74.000
7386.000	23.942	14.989	38.931	-35.069	74.000
9848.000	25.332	15.210	40.543	-33.457	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	19.102	25.699	44.801	-29.199	74.000
7386.000	23.942	16.276	40.218	-33.782	74.000
9848.000	25.332	17.255	42.588	-31.412	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : HD Digital Satellite Receiver
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/29
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2422MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4844.000	18.972	19.739	38.711	-35.289	74.000
7266.000	23.889	16.807	40.696	-33.304	74.000
9688.000	25.273	14.436	39.709	-34.291	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4844.000	18.972	25.115	44.087	-29.913	74.000
7266.000	23.889	17.707	41.596	-32.404	74.000
9688.000	25.273	16.140	41.413	-32.587	74.000
Average Detector:					
--					

Note:
1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : HD Digital Satellite Receiver
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/29
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	19.020	18.338	37.358	-36.642	74.000
7311.000	23.949	16.751	40.701	-33.299	74.000
9748.000	25.528	14.408	39.936	-34.064	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	19.020	24.103	43.123	-30.877	74.000
7311.000	23.949	17.036	40.986	-33.014	74.000
9748.000	25.528	13.708	39.236	-34.764	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : HD Digital Satellite Receiver
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/29
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2452 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4904.000	19.081	16.956	36.038	-37.962	74.000
7356.000	23.842	15.433	39.275	-34.725	74.000
9808.000	25.250	14.264	39.514	-34.486	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4904.000	19.081	24.242	43.324	-30.676	74.000
7306.000	23.965	16.671	40.636	-33.364	74.000
9808.000	25.250	14.070	39.320	-34.680	74.000
Average Detector:					
--					

Note:
1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : HD Digital Satellite Receiver
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/30
Test Mode : Mode 1: Transmit (802.11b 1Mbps)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
168.349	-13.592	44.647	31.055	-12.445	43.500
244.519	-10.052	47.495	37.443	-8.557	46.000
452.821	-3.865	41.010	37.145	-8.855	46.000
630.032	0.116	38.128	38.244	-7.756	46.000
842.997	3.929	34.128	38.058	-7.942	46.000
968.910	6.315	31.179	37.494	-16.506	54.000
Vertical					
211.875	-12.234	50.645	38.411	-5.089	43.500
264.728	-8.658	42.928	34.270	-11.730	46.000
421.931	-4.318	37.558	33.240	-12.760	46.000
567.853	-1.131	33.345	32.214	-13.786	46.000
698.429	0.932	32.623	33.555	-12.445	46.000
897.404	4.634	33.432	38.066	-7.934	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : HD Digital Satellite Receiver
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/30
Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
134.151	-11.805	40.959	29.154	-14.346	43.500
214.981	-12.243	48.086	35.843	-7.657	43.500
359.551	-6.116	41.509	35.393	-10.607	46.000
455.929	-3.793	39.210	35.417	-10.583	46.000
630.032	0.116	39.652	39.768	-6.232	46.000
821.234	3.380	32.721	36.101	-9.899	46.000
Vertical					
134.151	-11.805	43.771	31.966	-11.534	43.500
210.321	-12.237	50.376	38.139	-5.361	43.500
460.593	-3.681	35.970	32.289	-13.711	46.000
659.567	0.560	34.119	34.679	-11.321	46.000
816.571	3.273	31.566	34.839	-11.161	46.000
933.157	5.570	32.462	38.032	-7.968	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : HD Digital Satellite Receiver
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/30
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
216.538	-12.242	49.587	37.345	-8.655	46.000
356.442	-6.231	41.592	35.361	-10.639	46.000
449.712	-3.928	41.923	37.995	-8.005	46.000
603.606	-0.348	38.379	38.031	-7.969	46.000
760.609	2.297	33.944	36.241	-9.759	46.000
889.631	4.541	32.627	37.169	-8.831	46.000
Vertical					
135.705	-11.883	43.769	31.886	-11.614	43.500
208.766	-12.297	50.429	38.132	-5.368	43.500
256.955	-8.715	45.193	36.478	-9.522	46.000
459.038	-3.715	35.998	32.283	-13.717	46.000
729.519	1.663	32.268	33.931	-12.069	46.000
958.029	6.142	32.081	38.223	-7.777	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : HD Digital Satellite Receiver
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2019/01/30
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
134.151	-11.805	41.168	29.363	-14.137	43.500
211.875	-12.234	48.366	36.132	-7.368	43.500
392.196	-4.900	40.098	35.198	-10.802	46.000
449.712	-3.928	40.790	36.862	-9.138	46.000
633.141	0.173	37.691	37.864	-8.136	46.000
796.362	2.805	33.443	36.248	-9.752	46.000
Vertical					
207.212	-12.372	49.917	37.545	-5.955	43.500
263.173	-8.544	43.138	34.594	-11.406	46.000
432.612	-4.165	38.501	34.336	-11.664	46.000
647.131	0.419	33.088	33.507	-12.493	46.000
844.551	3.963	33.659	37.622	-8.378	46.000
930.048	5.480	33.971	39.451	-6.549	46.000

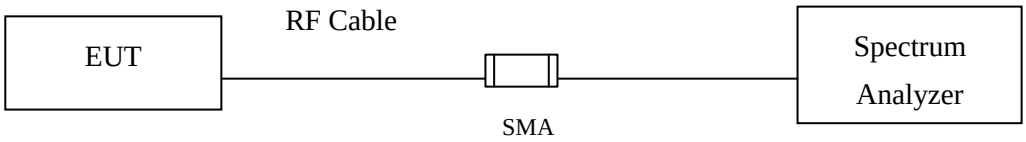
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

5. RF antenna conducted test

5.1. Test Setup

RF antenna Conducted Measurement:



5.2. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.3. Test Procedure

Tested according to DTS test procedure of KDB558074 section 8.5 DTS emissions in non-restricted frequency bands for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

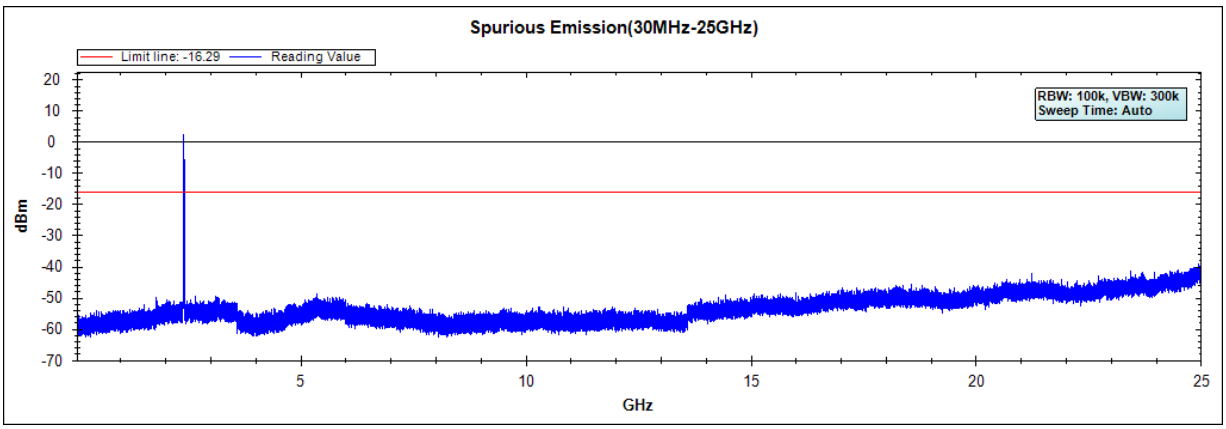
5.4. Uncertainty

The measurement uncertainty
Conducted is defined as ± 1.20dB

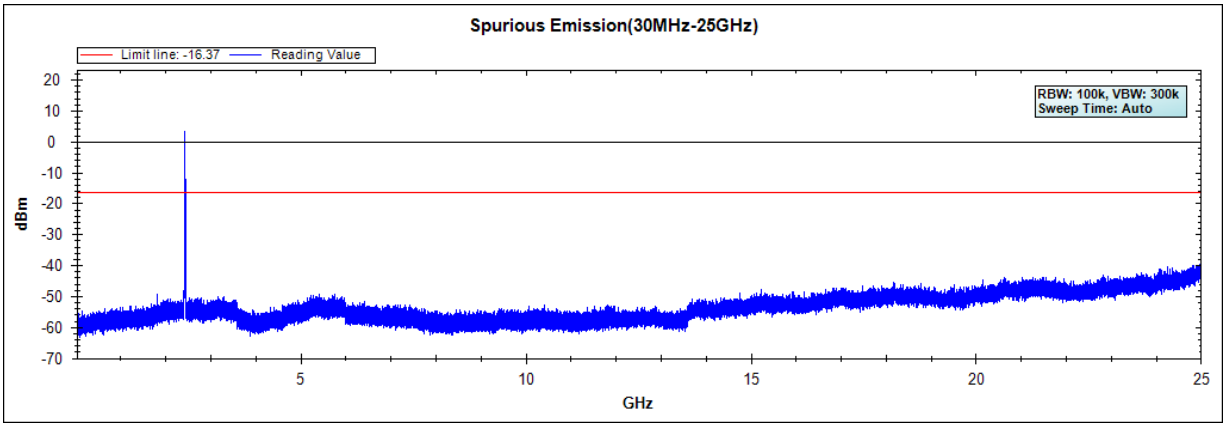
5.5. Test Result of RF antenna conducted test

Product	:	HD Digital Satellite Receiver
Test Item	:	RF antenna conducted test
Test Site	:	No.3 OATS
Test Date	:	2019/01/25
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

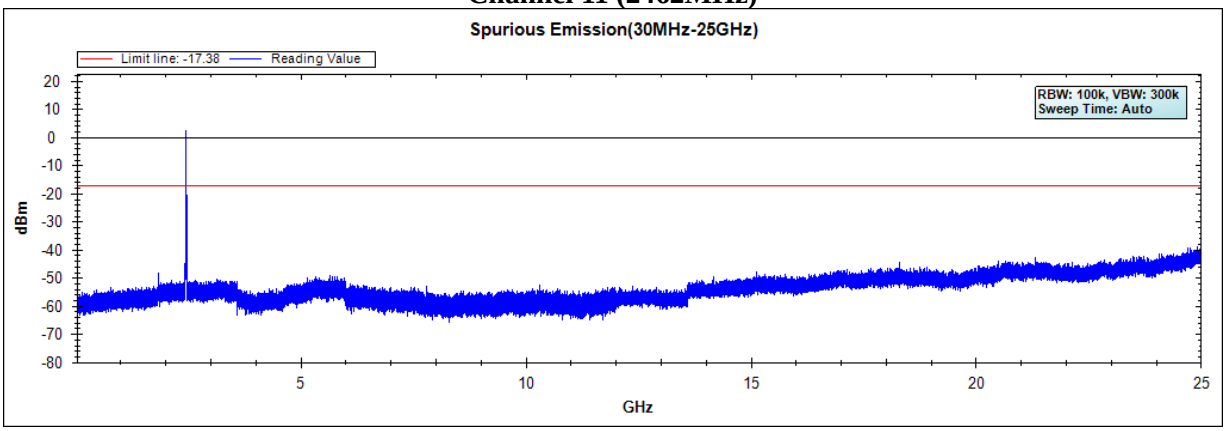
Channel 01 (2412MHz)



Channel 06 (2437MHz)



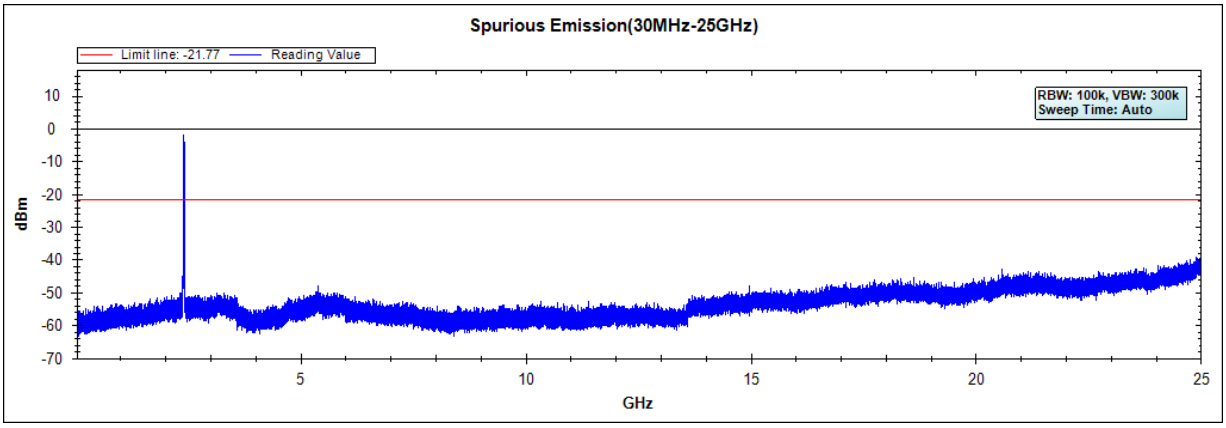
Channel 11 (2462MHz)



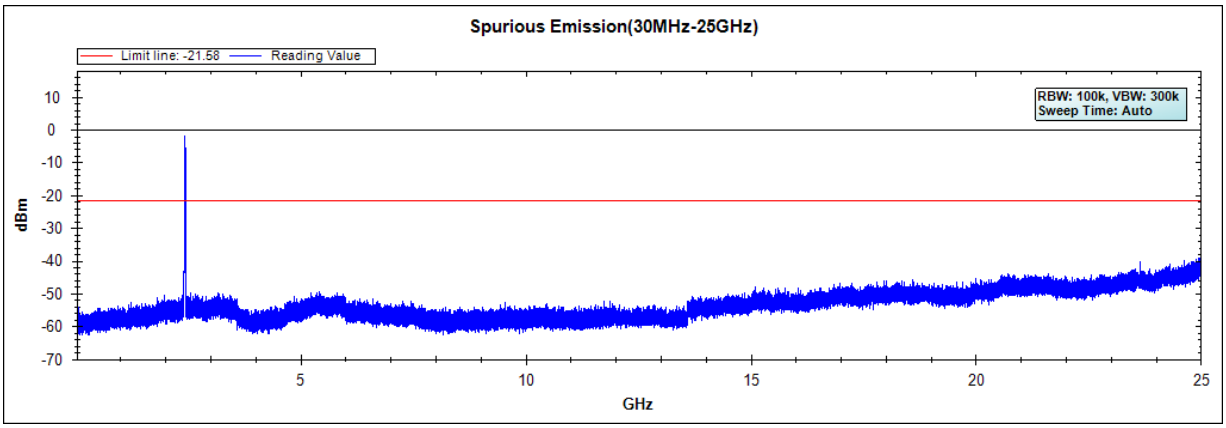
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	HD Digital Satellite Receiver
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	No.3 OATS
Test Date	:	2019/01/25
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

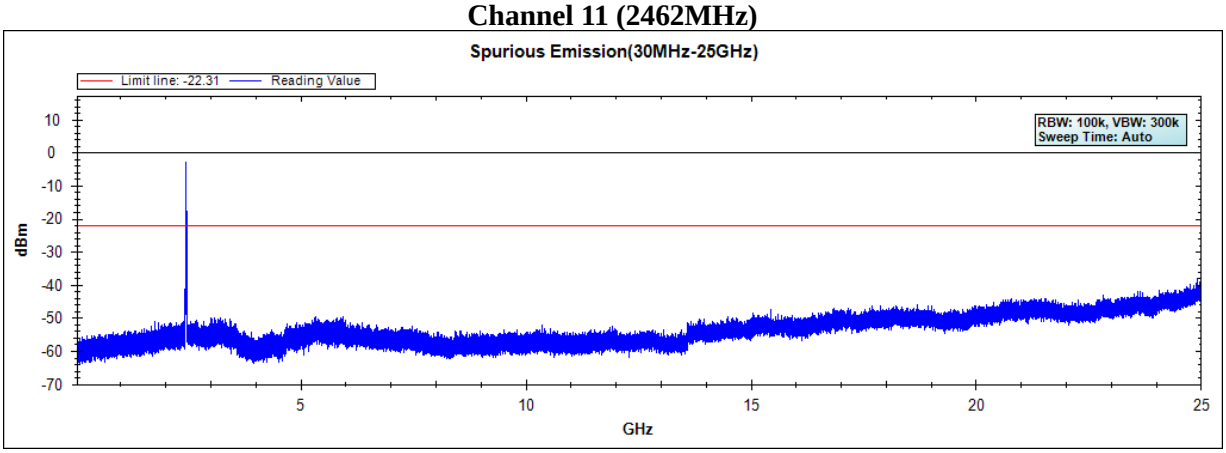
Channel 01 (2412MHz)



Channel 06 (2437MHz)



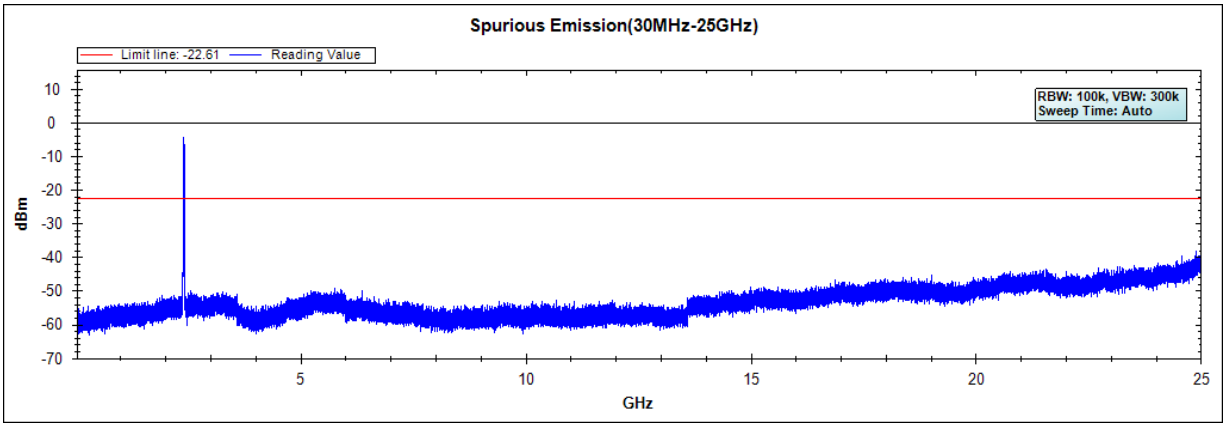
Channel 11 (2462MHz)



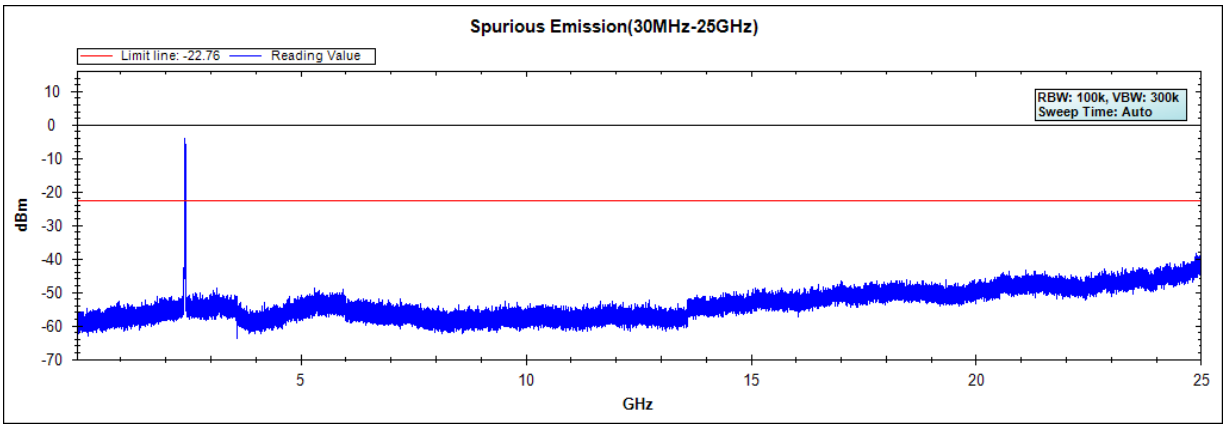
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	HD Digital Satellite Receiver
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	No.3 OATS
Test Date	:	2019/01/25
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

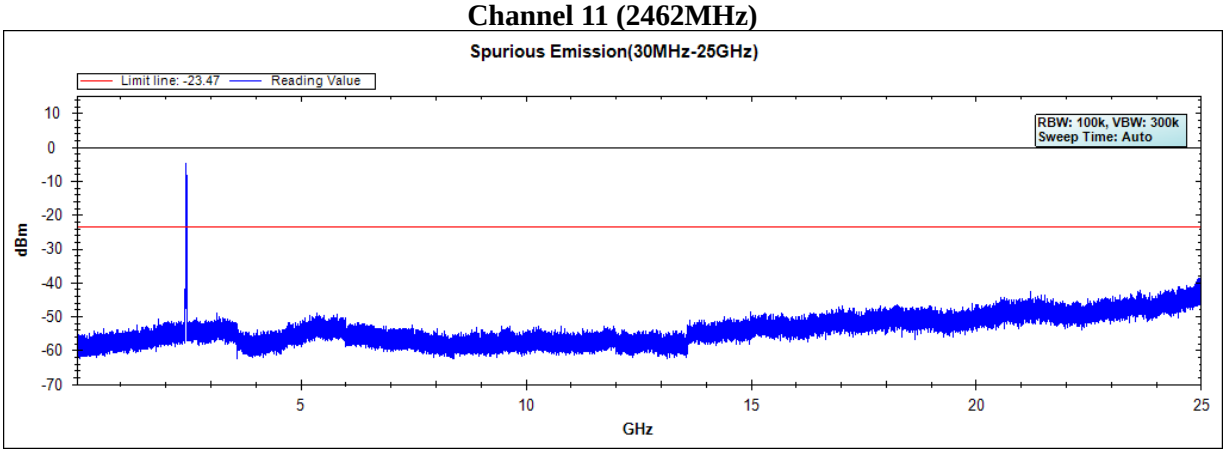
Channel 01 (2412MHz)



Channel 06 (2437MHz)



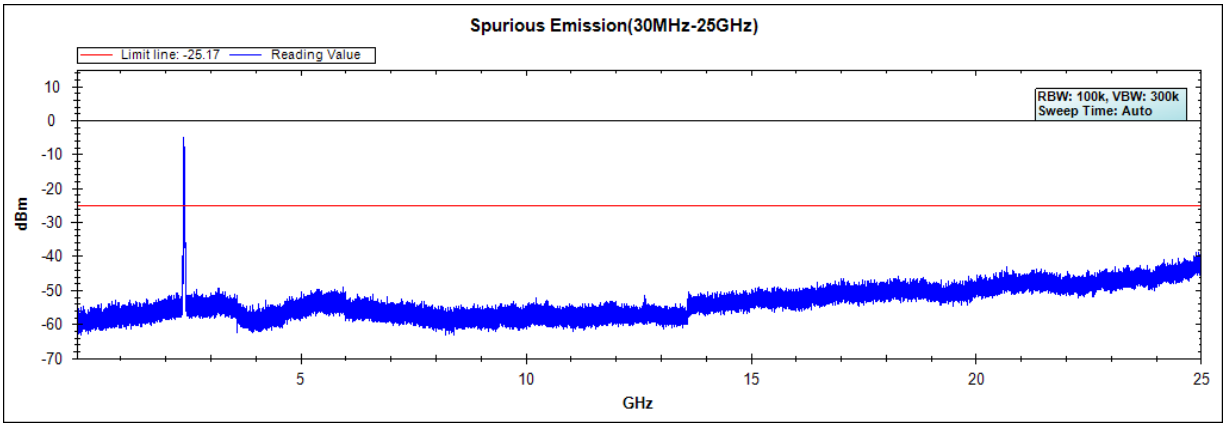
Channel 11 (2462MHz)



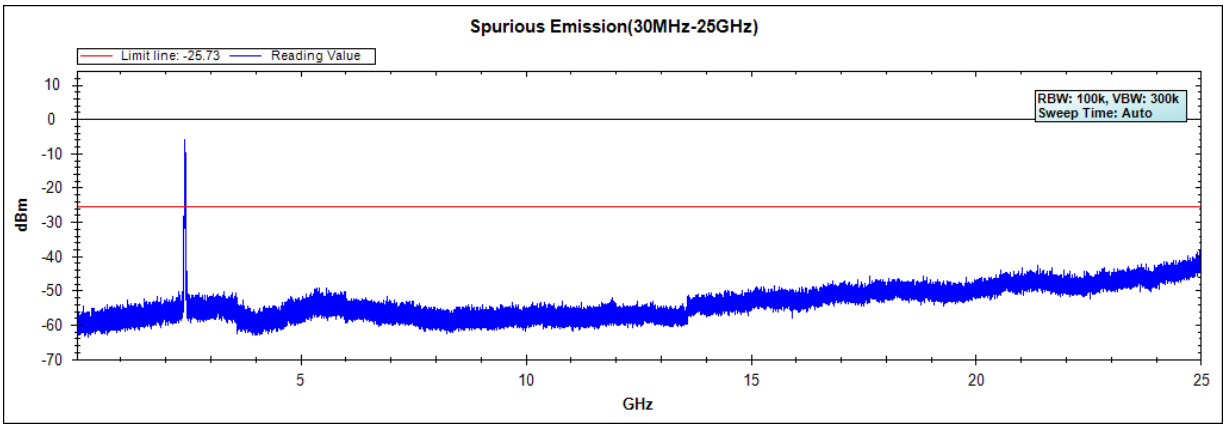
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	HD Digital Satellite Receiver
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	No.3 OATS
Test Date	:	2019/01/25
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

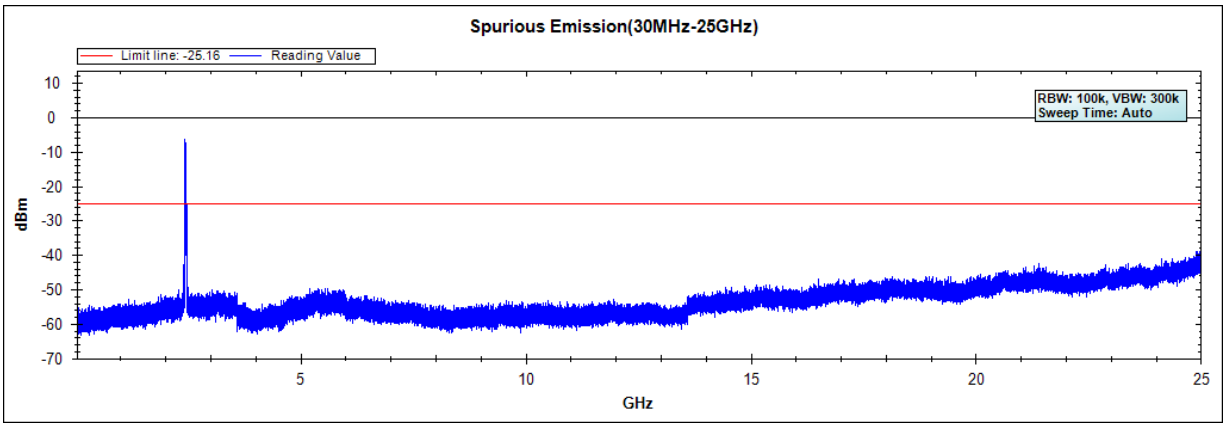
Channel 01 (2422MHz)



Channel 04 (2437MHz)



Channel 07 (2452MHz)

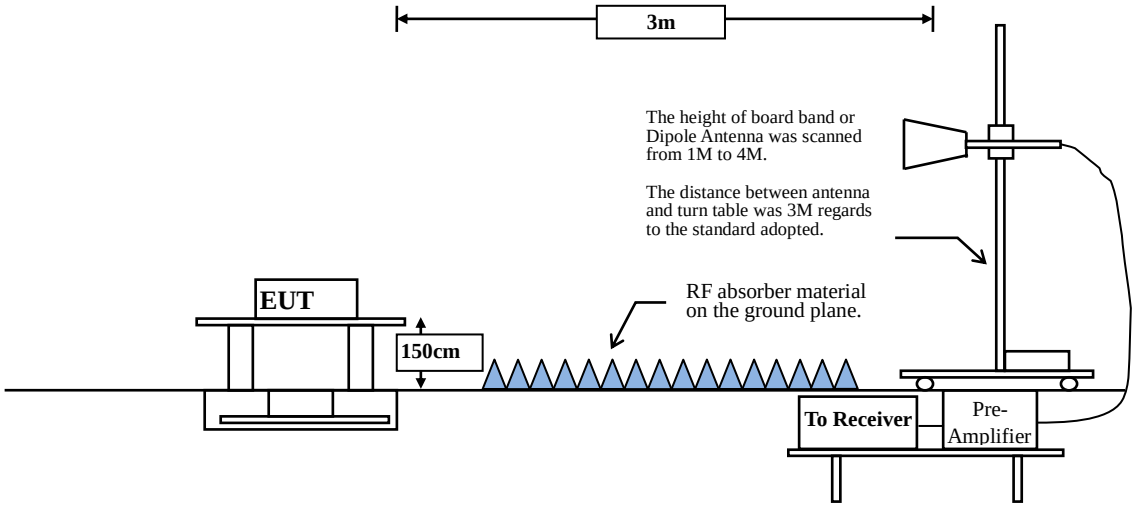


Note: The above test pattern is synthesized by multiple of the frequency range.

6. Band Edge

6.1. Test Setup

RF Radiated Measurement:



6.2. Limits

According to FCC Section 15.247(d). 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 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, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.
The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.

RBW and VBW Parameter setting:

According to KDB 558074 Peak power measurement procedure

RBW = as specified in Table 1.

VBW ≥ 3 x RBW.

Table 1 —RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to KDB 558074 Average power measurement procedure

RBW = 1MHz.

VBW = 10Hz, when duty cycle ≥ 98 %

VBW ≥ 1/T, when duty cycle < 98 %

(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

2.4GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11b	97.69	4.4880	223	300
802.11g	48.18	5.2280	191	200
802.11n20	61.17	6.3980	156	200
802.11n40	38.51	4.1780	239	300

Note: Duty Cycle Refer to Section 9.

6.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

6.5. Test Result of Band Edge

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2389.855	-2.687	63.813	61.126	74.00	54.00	Pass
01 (Peak)	2390.000	-2.687	62.785	60.098	74.00	54.00	Pass
01 (Peak)	2411.014	-2.644	101.959	99.315	--	--	--
01 (Average)	2386.957	-2.701	40.477	37.777	74.00	54.00	Pass
01 (Average)	2390.000	-2.687	36.982	34.295	74.00	54.00	Pass
01 (Average)	2411.304	-2.643	98.318	95.675	--	--	--

Figure Channel 01: Horizontal (Peak)

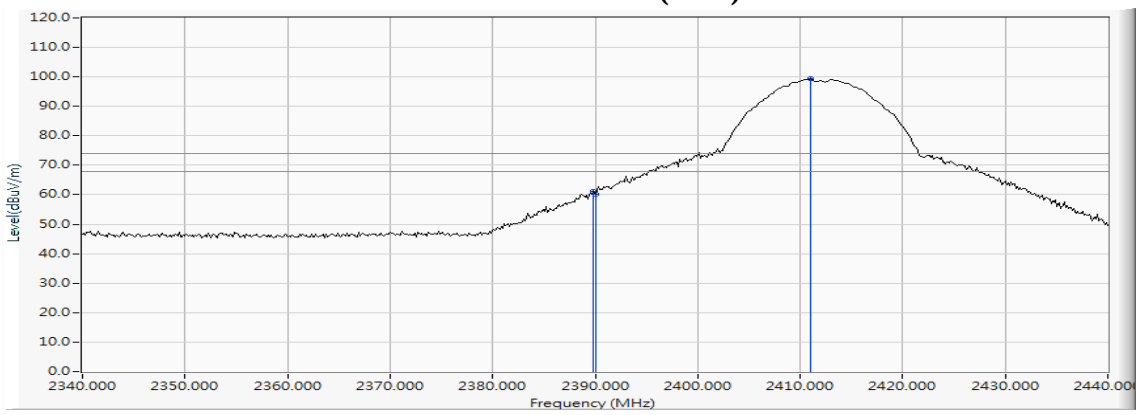
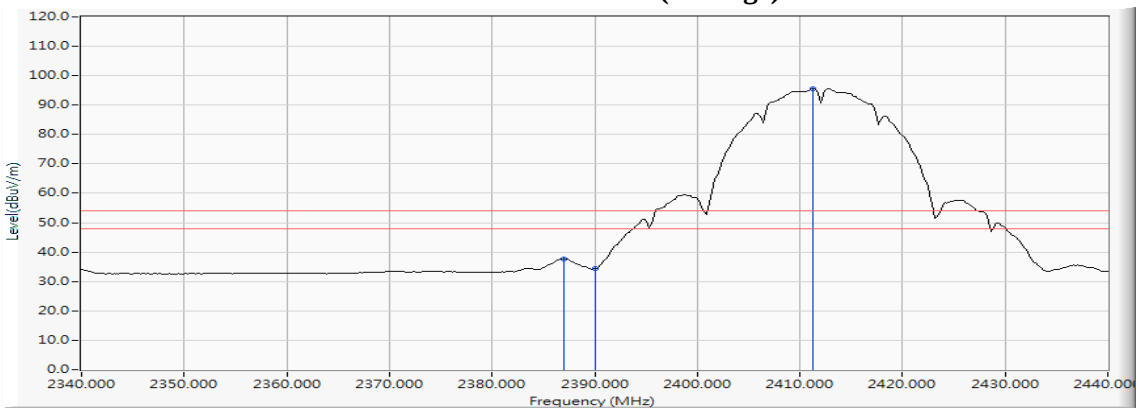


Figure Channel 01: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2390.000	-4.159	70.530	66.371	74.00	54.00	Pass
01 (Peak)	2411.014	-4.169	103.262	99.094	--	--	--
01 (Average)	2386.812	-4.148	42.165	38.017	74.00	54.00	Pass
01 (Average)	2390.000	-4.159	38.033	33.874	74.00	54.00	Pass
01 (Average)	2411.304	-4.167	100.186	96.018	--	--	--

Figure Channel 01: VERTICAL (Peak)

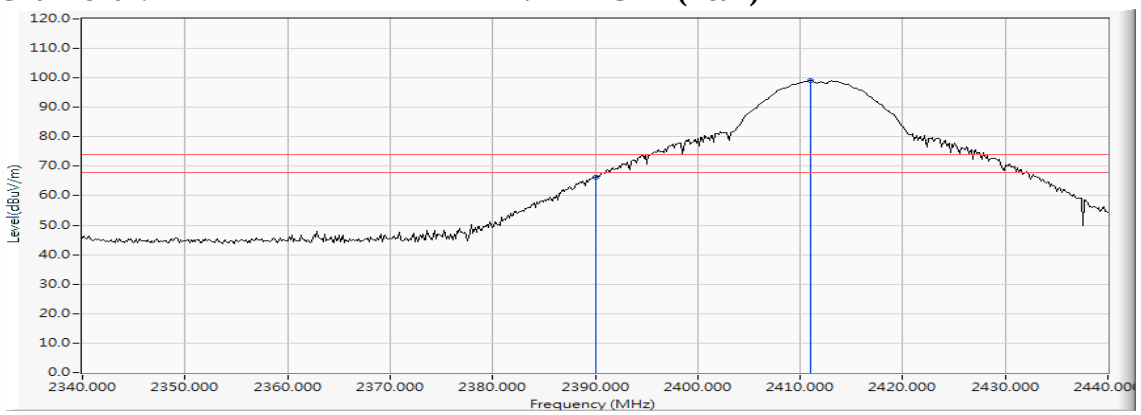
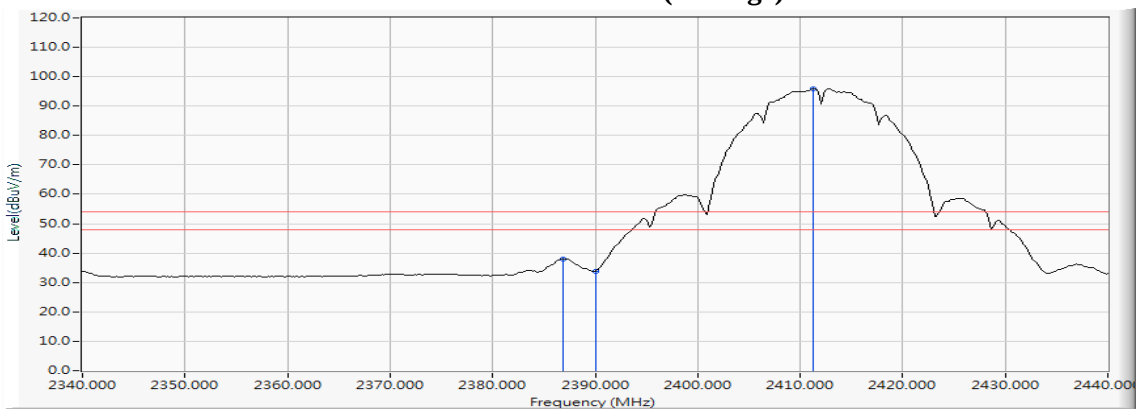


Figure Channel 01: VERTICAL (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2463.065	-2.622	101.746	99.124	--	--	--
11 (Peak)	2483.500	-2.601	68.579	65.977	74.00	54.00	Pass
11 (Average)	2462.775	-2.622	98.666	96.044	--	--	--
11 (Average)	2483.500	-2.601	38.019	35.417	74.00	54.00	Pass
11 (Average)	2487.123	-2.599	39.965	37.366	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

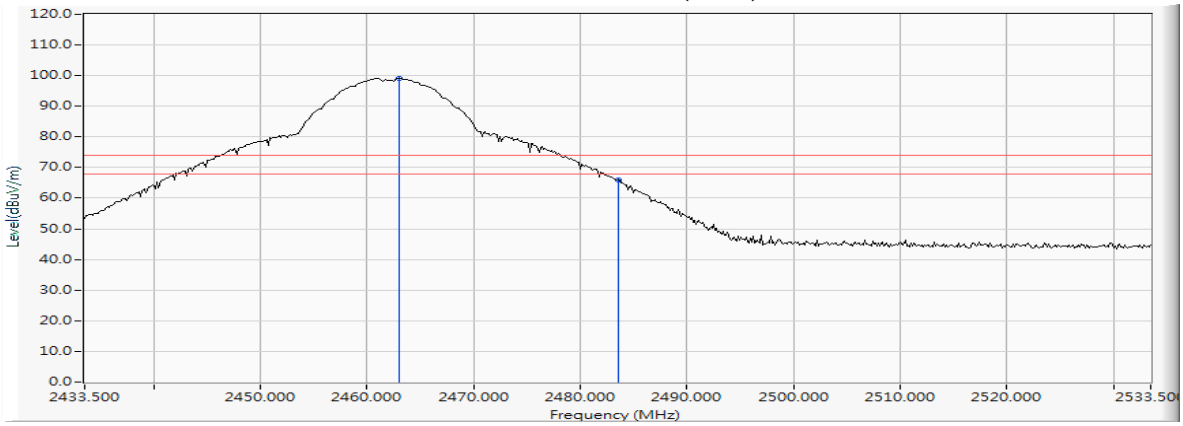
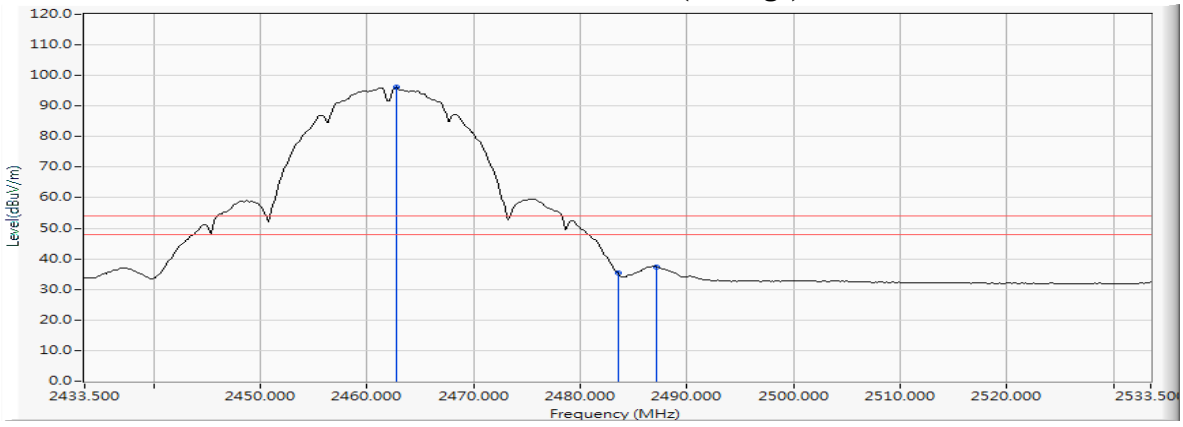


Figure Channel 11: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2460.891	-4.037	104.400	100.362	--	--	--
11 (Peak)	2483.500	-3.966	66.493	62.526	74.00	54.00	Pass
11 (Average)	2461.181	-4.037	100.501	96.464	--	--	--
11 (Average)	2483.500	-3.966	39.096	35.129	74.00	54.00	Pass
11 (Average)	2486.688	-3.956	41.545	37.588	74.00	54.00	Pass

Figure Channel 11: VERTICAL (Peak)

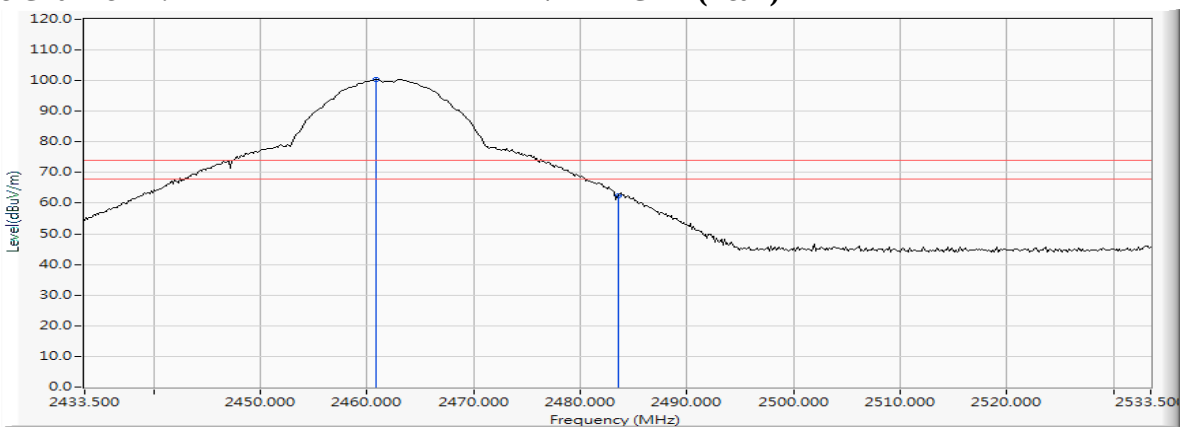
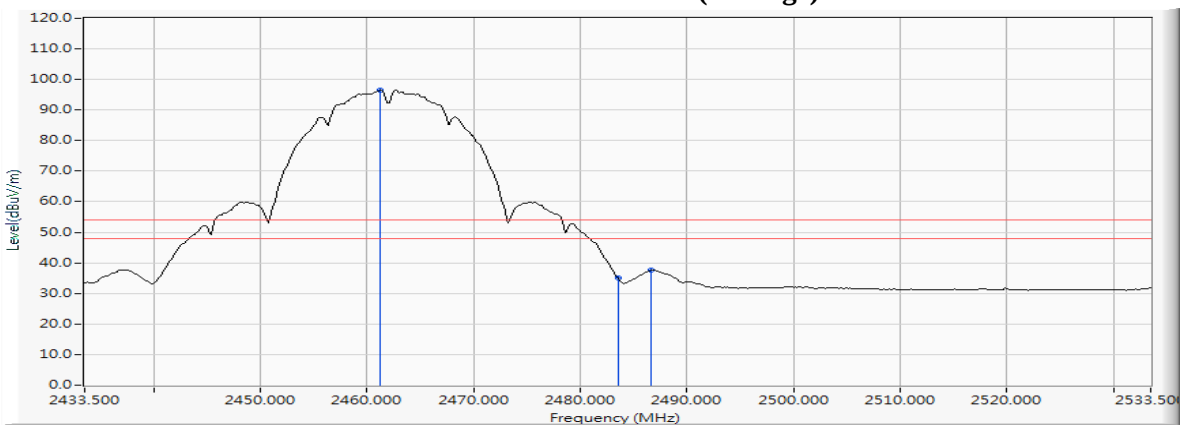


Figure Channel 11: VERTICAL (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2390.000	-2.687	70.544	67.857	74.00	54.00	Pass
01 (Peak)	2405.652	-2.652	101.135	98.483	--	--	--
01 (Average)	2390.000	-2.687	44.575	41.888	74.00	54.00	Pass
01 (Average)	2406.667	-2.650	85.837	83.187	--	--	--

Figure Channel 01: Horizontal (Peak)

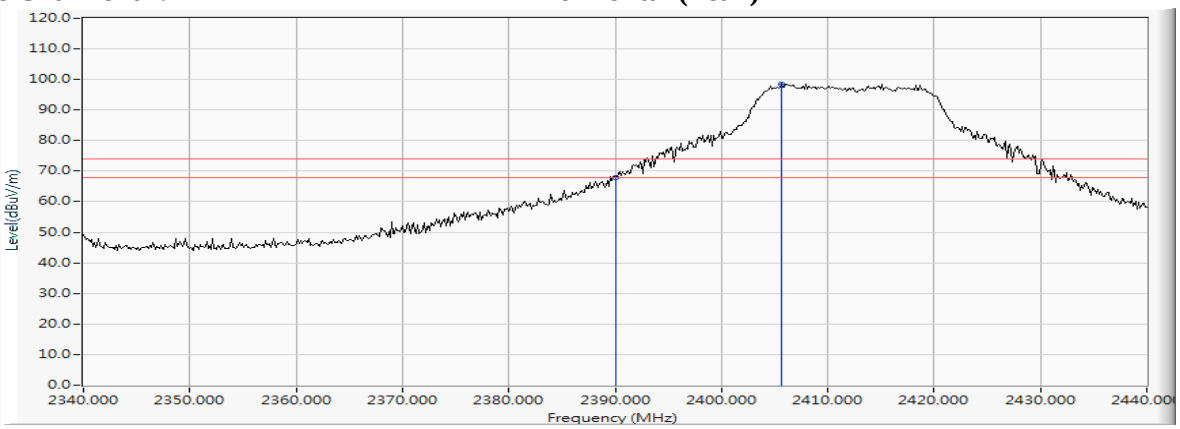
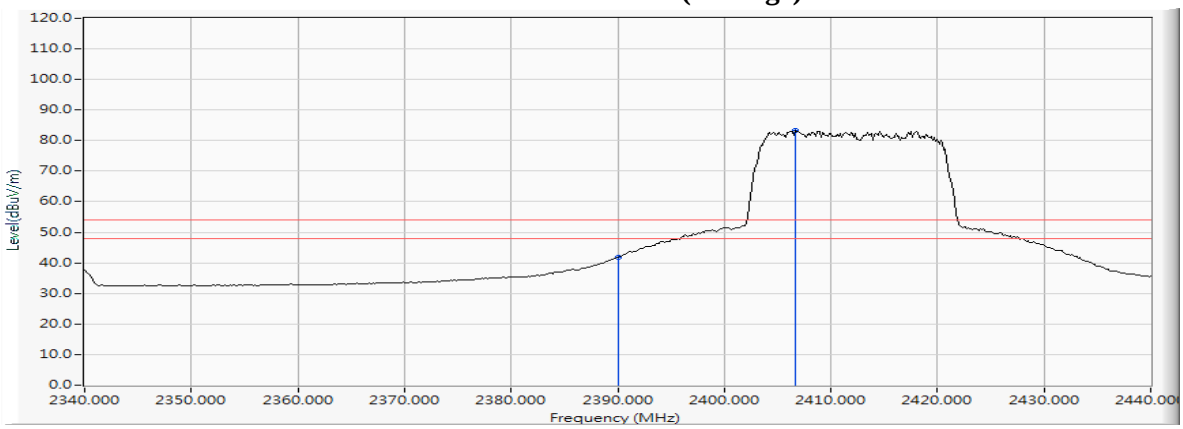


Figure Channel 01: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2390.000	-4.159	72.963	68.804	74.00	54.00	Pass
01 (Peak)	2406.812	-4.170	103.076	98.906	--	--	--
01 (Average)	2390.000	-4.159	46.036	41.877	74.00	54.00	Pass
01 (Average)	2409.565	-4.168	87.882	83.713	--	--	--

Figure Channel 01: VERTICAL (Peak)

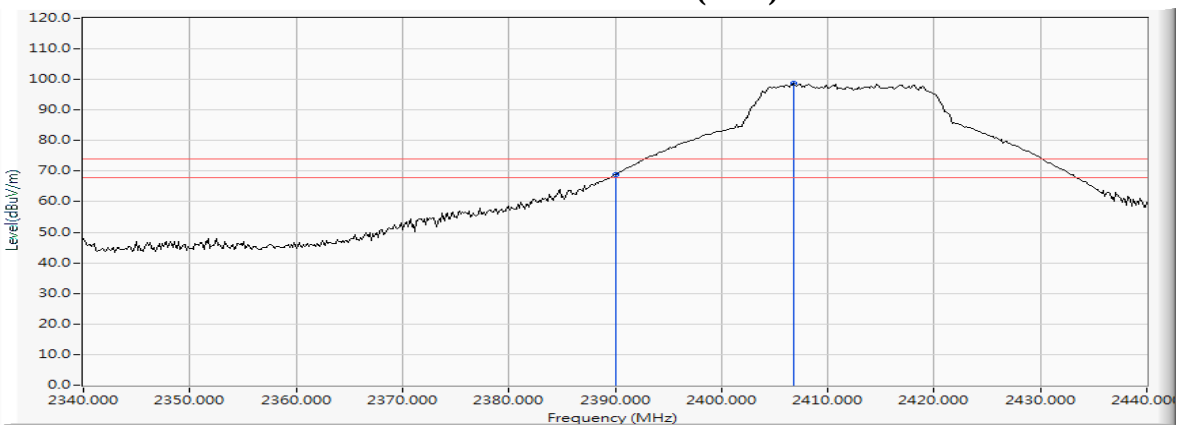
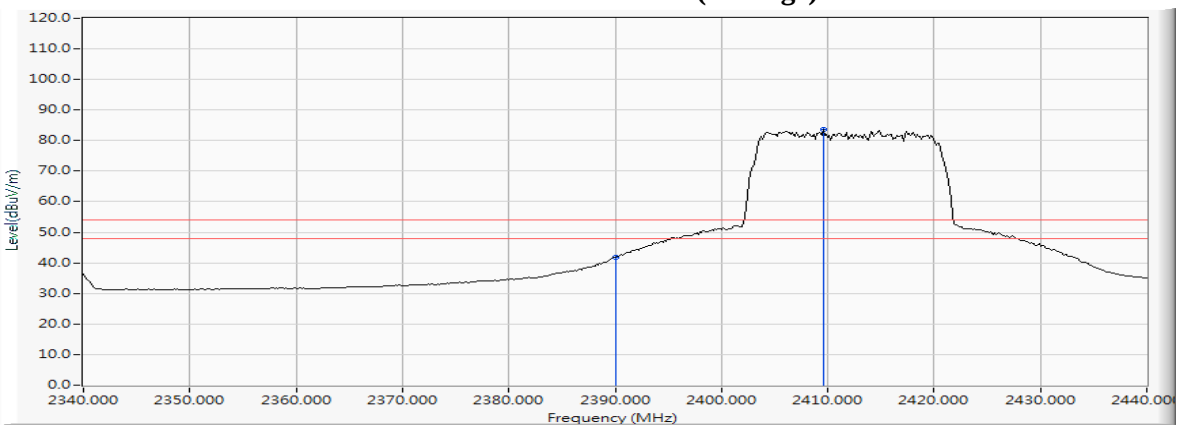


Figure Channel 01: VERTICAL (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2468.283	-2.616	103.074	100.457	--	--	--
11 (Peak)	2483.500	-2.601	71.926	69.324	74.00	54.00	Pass
11 (Average)	2456.109	-2.627	87.501	84.874	--	--	--
11 (Average)	2483.500	-2.601	45.371	42.769	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

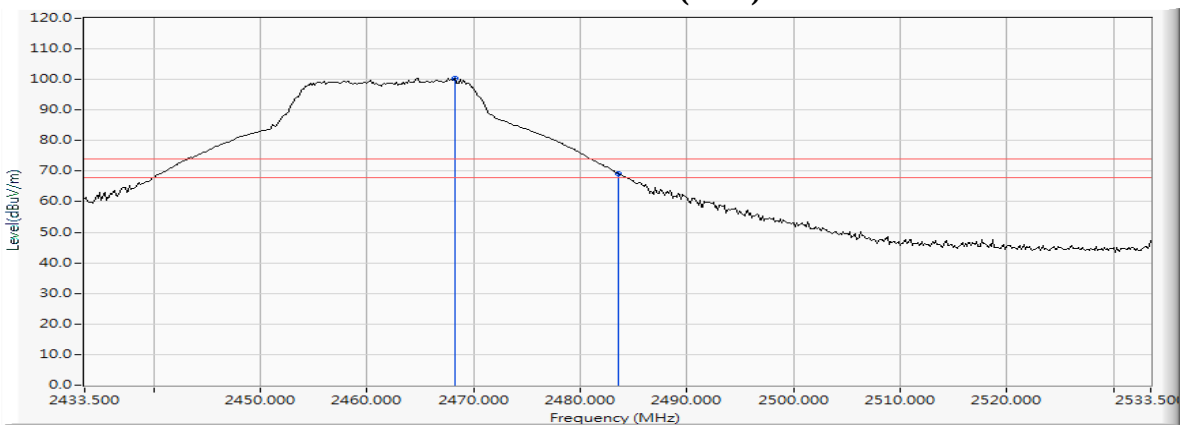
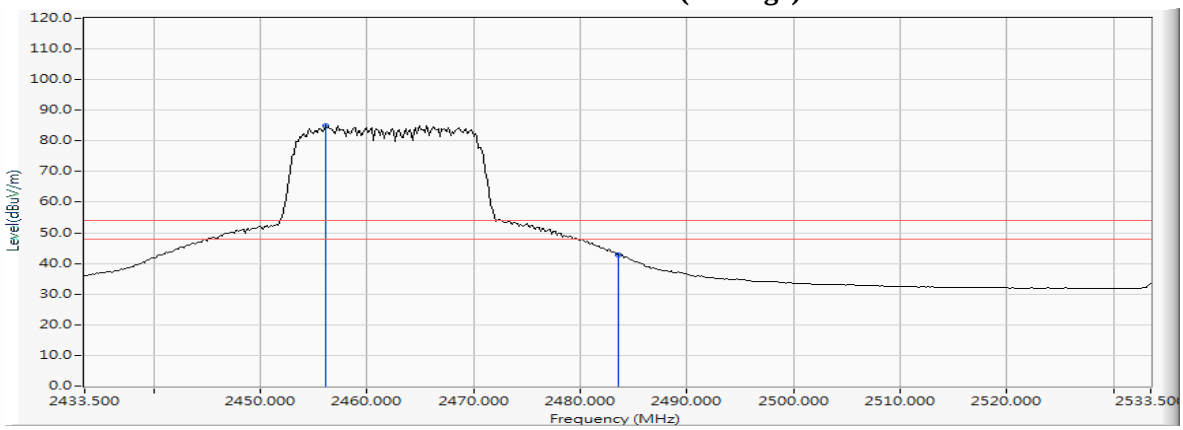


Figure Channel 11: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2468.428	-4.015	104.873	100.859	--	--	--
11 (Peak)	2483.500	-3.966	73.926	69.959	74.00	54.00	Pass
11 (Average)	2459.877	-4.042	88.819	84.778	--	--	--
11 (Average)	2483.500	-3.966	47.332	43.365	74.00	54.00	Pass

Figure Channel 11: VERTICAL (Peak)

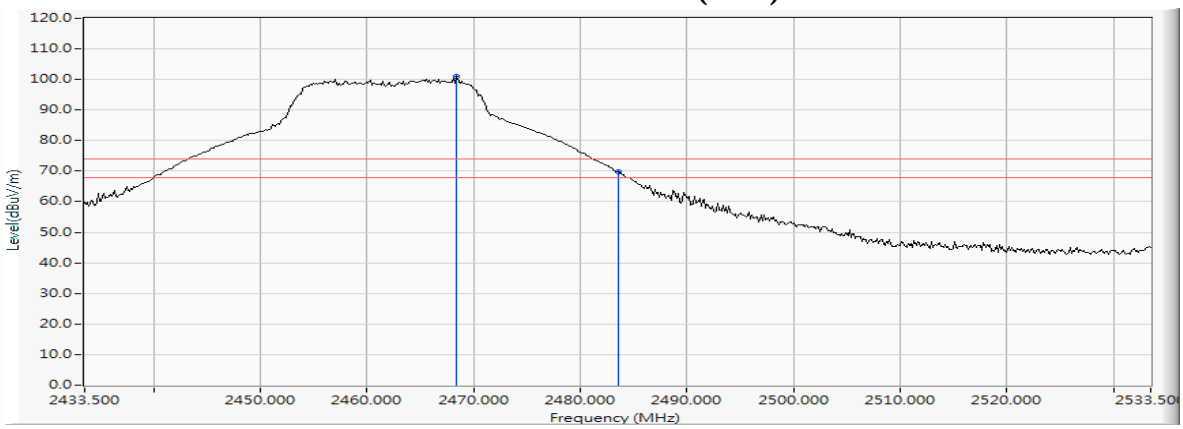
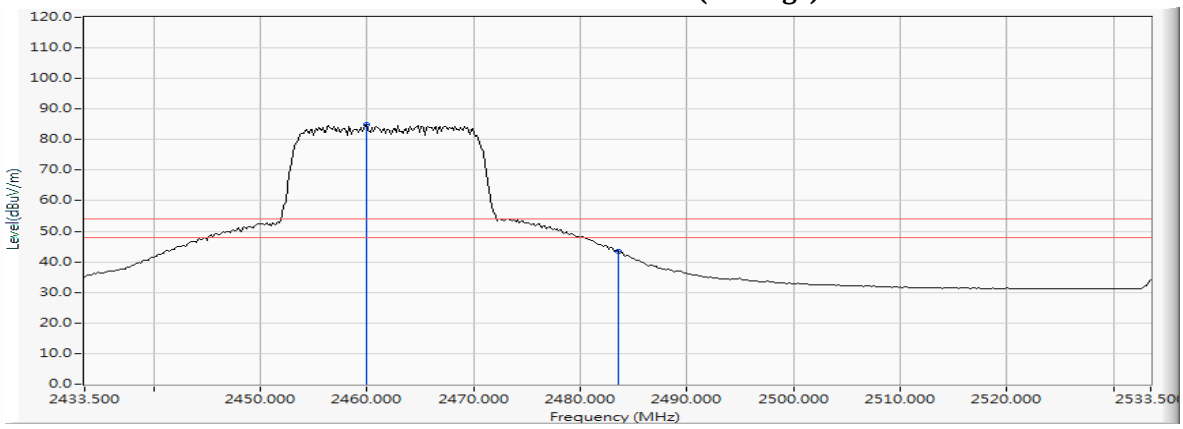


Figure Channel 11: VERTICAL (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2390.000	-2.687	71.320	68.633	74.00	54.00	Pass
01 (Peak)	2404.493	-2.653	100.905	98.251	--	--	--
01 (Average)	2390.000	-2.687	45.561	42.874	74.00	54.00	Pass
01 (Average)	2409.420	-2.645	87.733	85.087	--	--	--

Figure Channel 01: Horizontal (Peak)

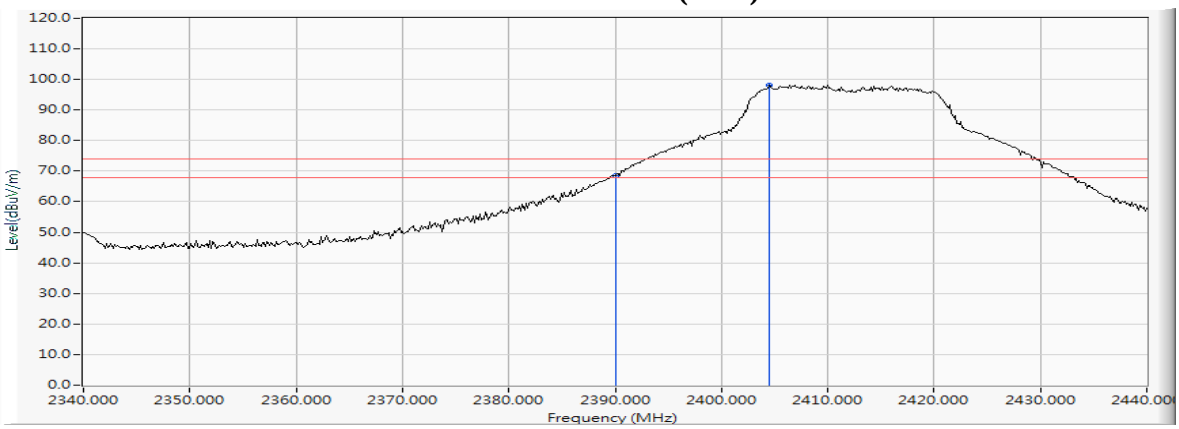
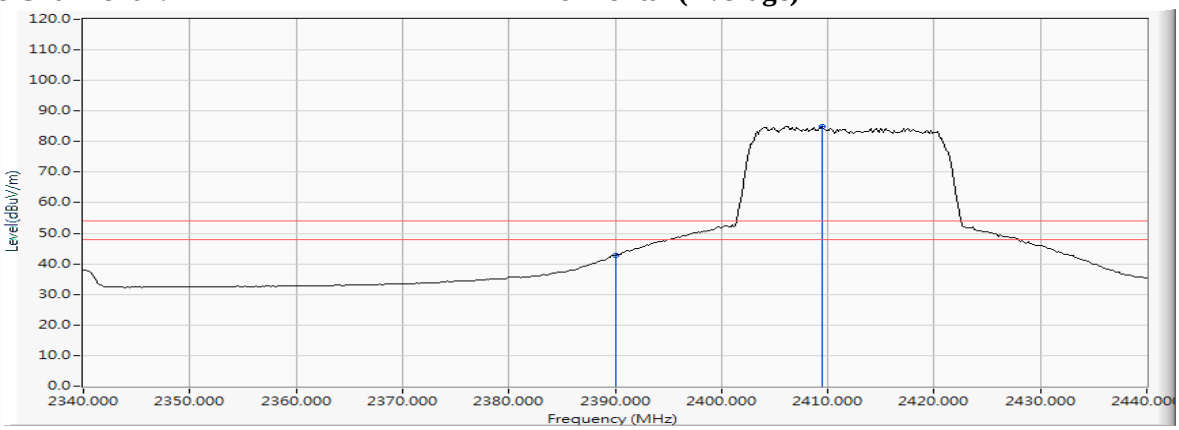


Figure Channel 01: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2390.000	-4.159	72.553	68.394	74.00	54.00	Pass
01 (Peak)	2405.652	-4.170	101.846	97.676	--	--	--
01 (Average)	2390.000	-4.159	46.481	42.322	74.00	54.00	Pass
01 (Average)	2406.667	-4.169	88.878	84.708	--	--	--

Figure Channel 01: VERTICAL (Peak)

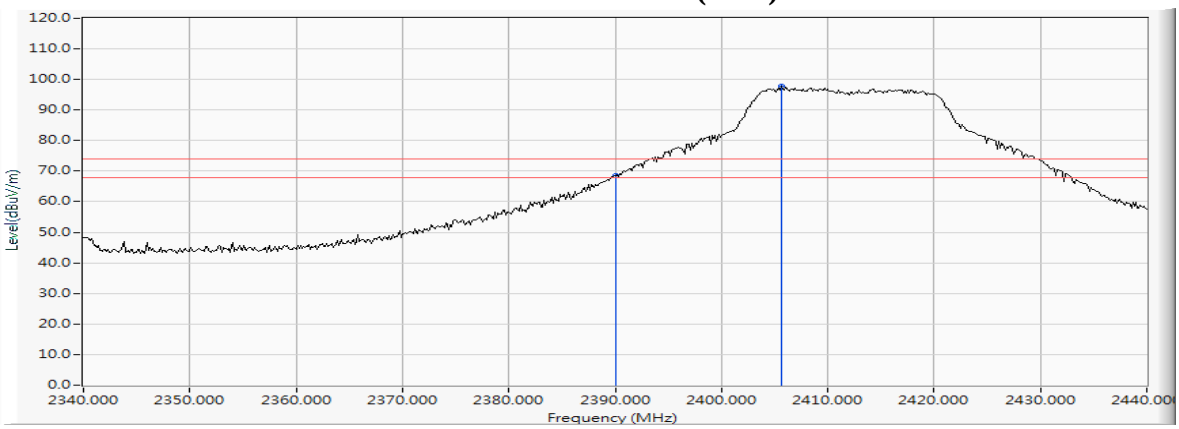
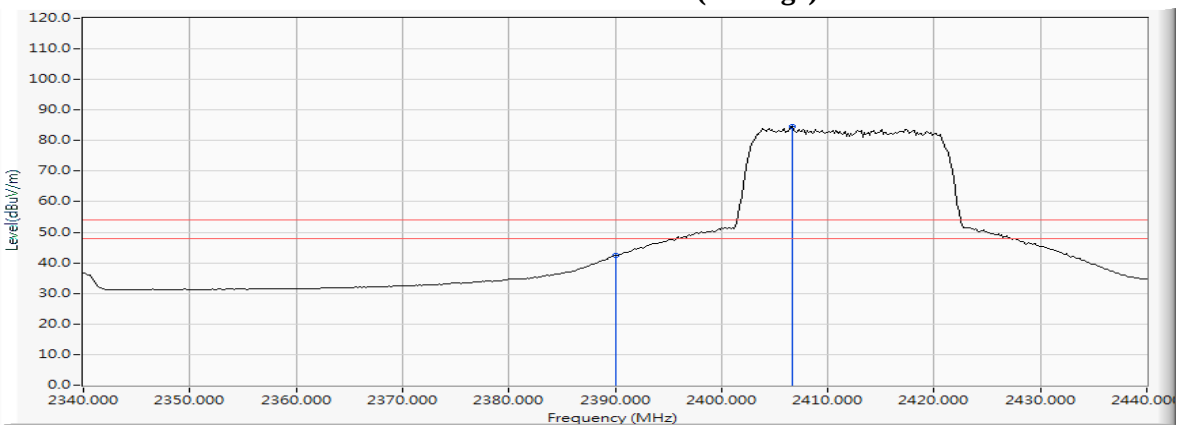


Figure Channel 01: VERTICAL (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Average Limit (dBµV/m)	Result
11 (Peak)	2456.254	-2.627	100.877	98.250	--	--	--
11 (Peak)	2483.500	-2.601	68.971	66.369	74.00	54.00	Pass
11 (Peak)	2483.790	-2.601	70.145	67.543	74.00	54.00	Pass
11 (Average)	2465.529	-2.619	87.404	84.785	--	--	--
11 (Average)	2483.500	-2.601	45.364	42.762	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

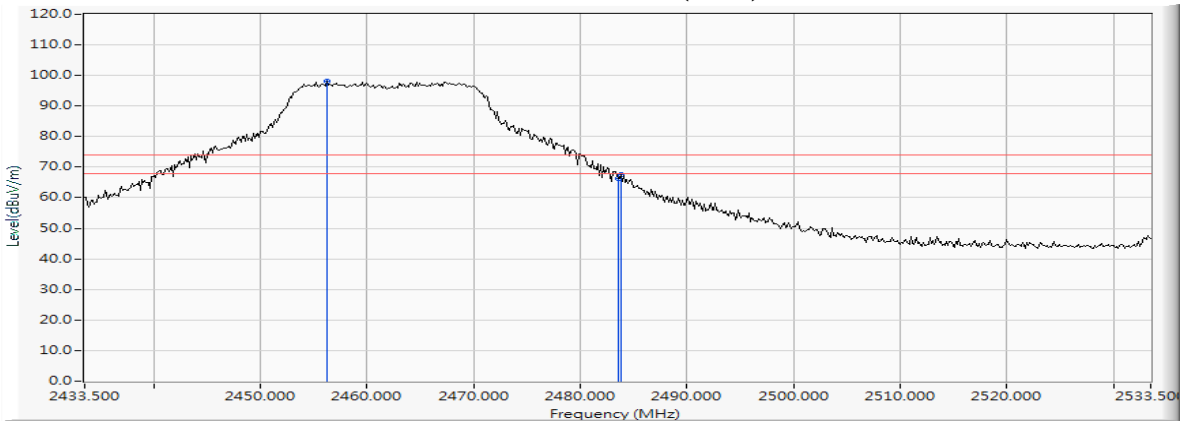
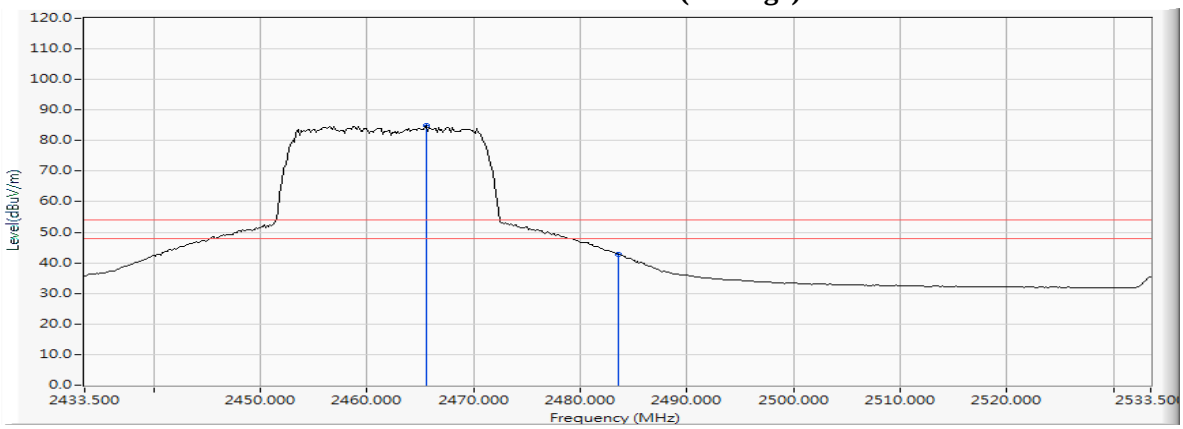


Figure Channel 11: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2466.254	-4.021	102.989	98.968	--	--	--
11 (Peak)	2483.500	-3.966	71.398	67.431	74.00	54.00	Pass
11 (Average)	2457.123	-4.049	89.296	85.247	--	--	--
11 (Average)	2483.500	-3.966	47.815	43.848	74.00	54.00	Pass

Figure Channel 11: VERTICAL (Peak)

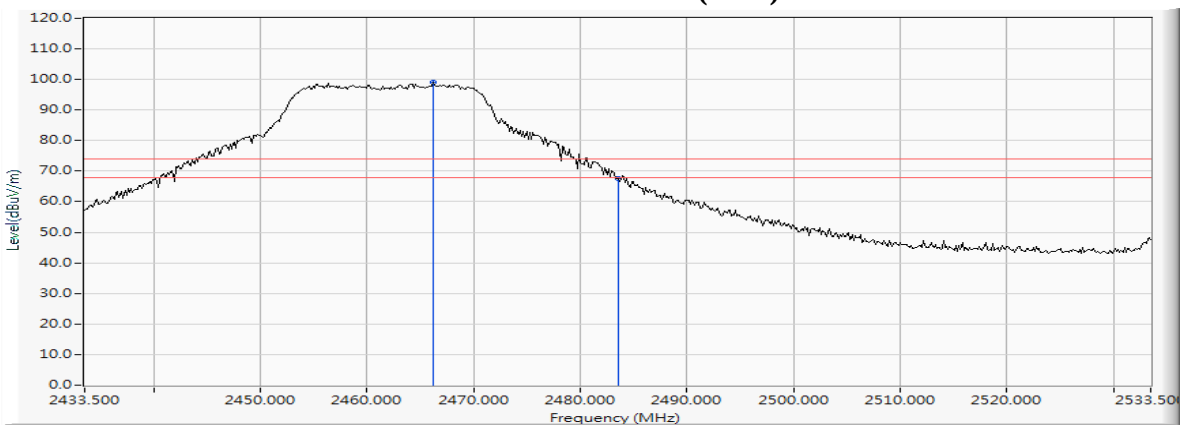
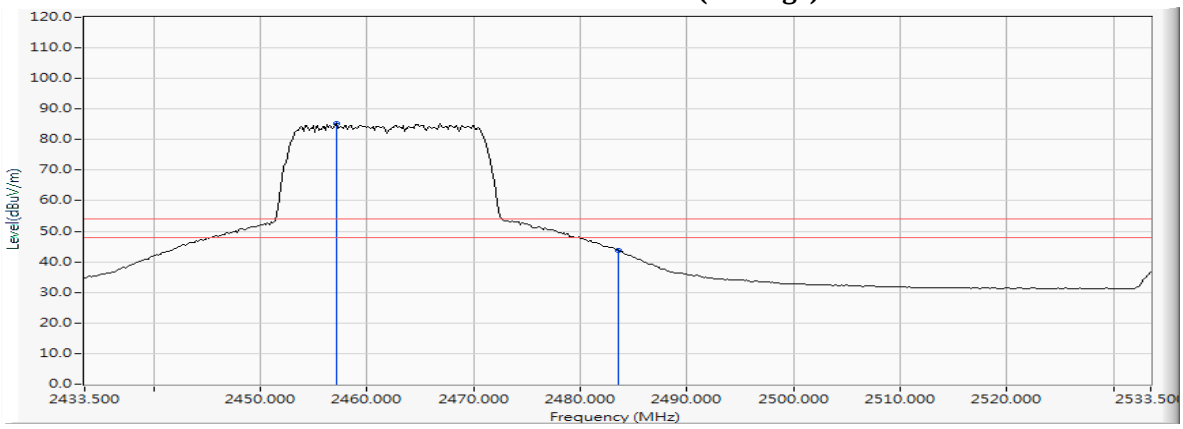


Figure Channel 11: VERTICAL (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : HD Digital Satellite Receiver
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2019/01/23
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
03 (Peak)	2390.000	-2.687	70.688	68.001	74.00	54.00	Pass
03 (Peak)	2409.565	-2.645	98.595	95.949	--	--	--
03 (Average)	2390.000	-2.687	48.858	46.171	74.00	54.00	Pass
03 (Average)	2405.797	-2.652	83.463	80.811	--	--	--

Figure Channel 03: Horizontal (Peak)

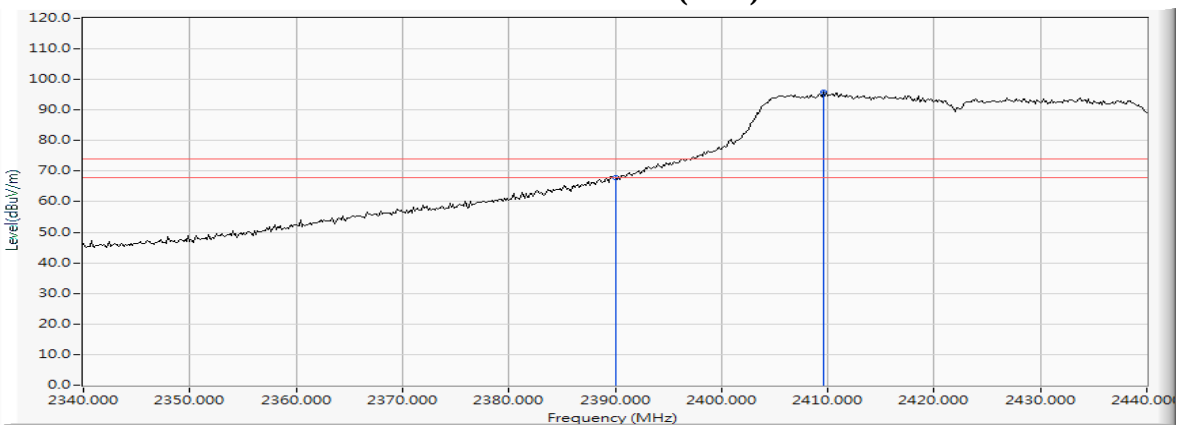
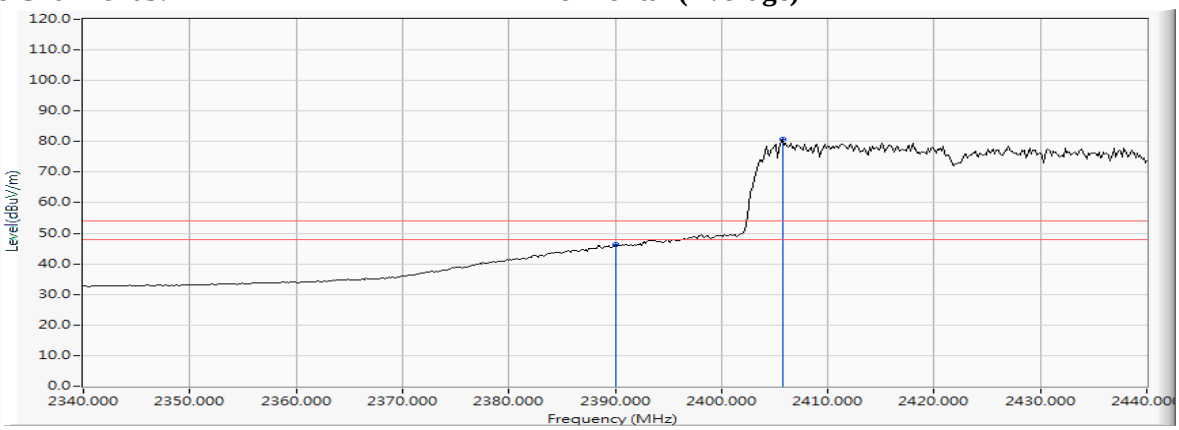


Figure Channel 03: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : HD Digital Satellite Receiver
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2019/01/23
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Average Limit (dBµV/m)	Result
03 (Peak)	2390.000	-4.159	71.511	67.352	74.00	54.00	Pass
03 (Peak)	2414.638	-4.160	98.691	94.531	--	--	--
03 (Average)	2390.000	-4.159	49.685	45.526	74.00	54.00	Pass
03 (Average)	2406.957	-4.170	83.617	79.447	--	--	--

Figure Channel 03: VERTICAL (Peak)

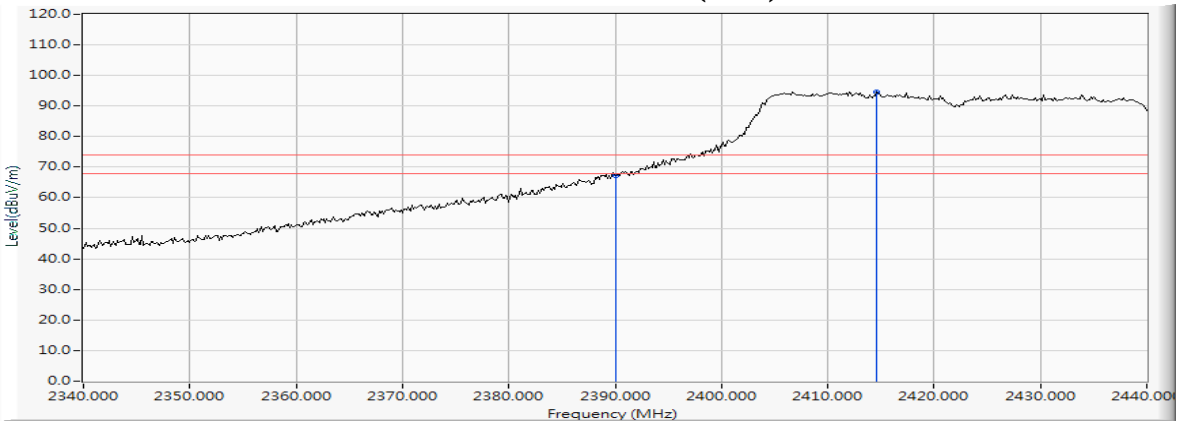
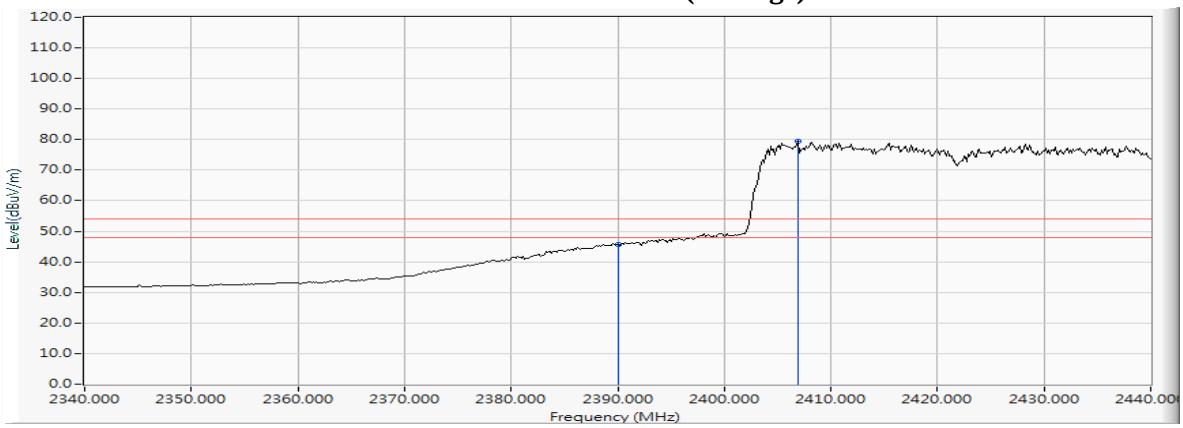


Figure Channel 03: VERTICAL (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
09 (Peak)	2463.645	-2.621	97.570	94.949	--	--	--
09 (Peak)	2483.500	-2.601	69.304	66.702	74.00	54.00	Pass
09 (Peak)	2484.080	-2.602	69.586	66.985	74.00	54.00	Pass
09 (Average)	2468.428	-2.617	82.326	79.710	--	--	--
09 (Average)	2483.500	-2.601	48.975	46.373	74.00	54.00	Pass

Figure Channel 09: Horizontal (Peak)

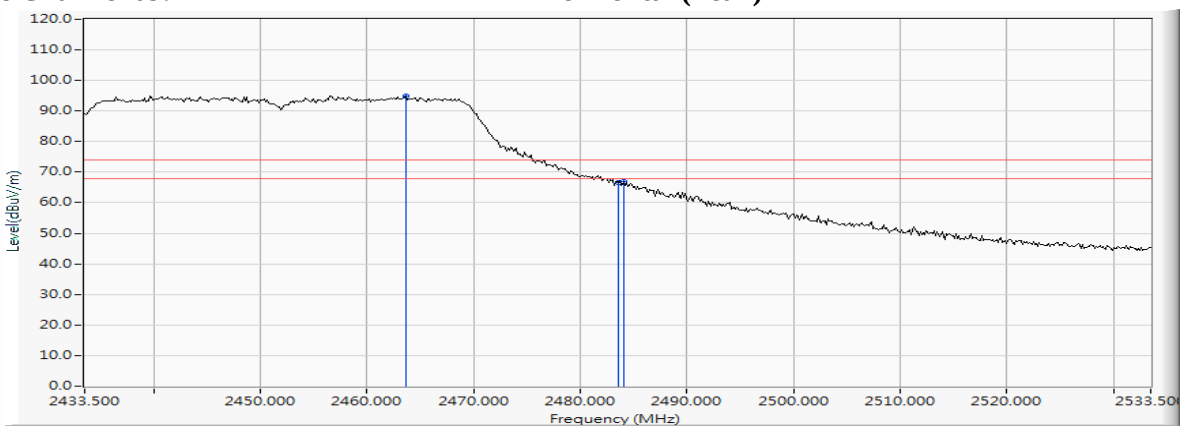
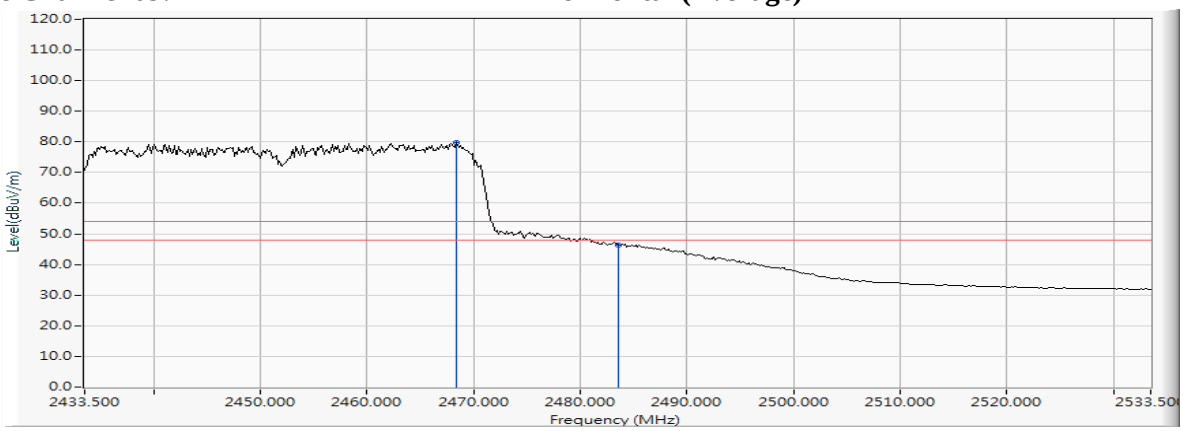


Figure Channel 09: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	HD Digital Satellite Receiver
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2019/01/23
Test Mode	:	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Peak Limit (dBµV/m)	Average Limit (dBµV/m)	Result
09 (Peak)	2441.471	-4.096	99.277	95.182	--	--	--
09 (Peak)	2483.500	-3.966	70.312	66.345	74.00	54.00	Pass
09 (Peak)	2487.123	-3.956	71.911	67.956	74.00	54.00	Pass
09 (Average)	2445.384	-4.085	83.788	79.702	--	--	--
09 (Average)	2483.500	-3.966	49.826	45.859	74.00	54.00	Pass

Figure Channel 09: VERTICAL (Peak)

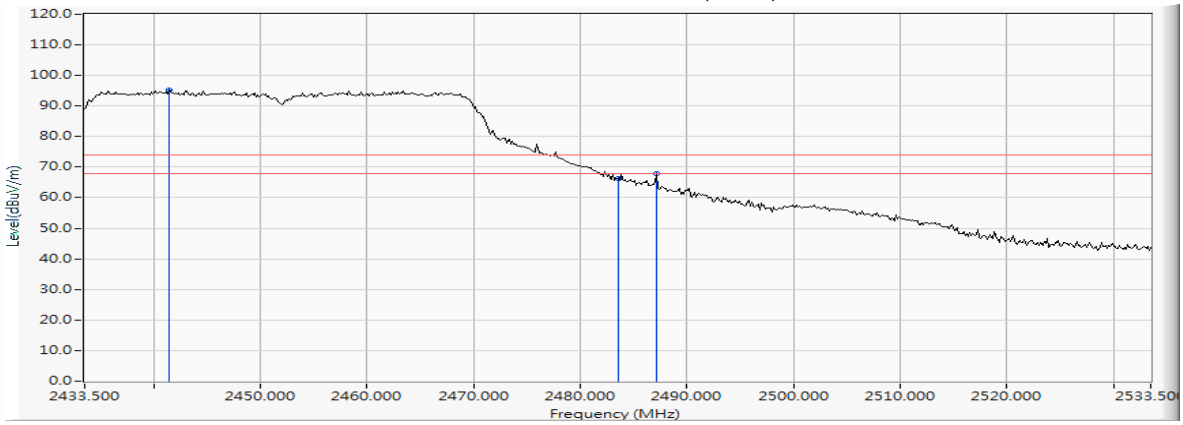
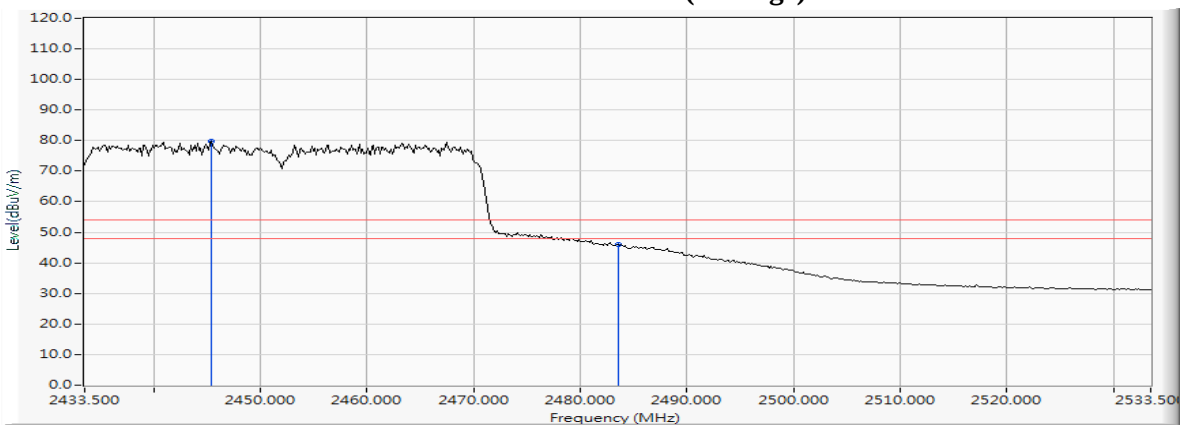


Figure Channel 09: VERTICAL (Average)

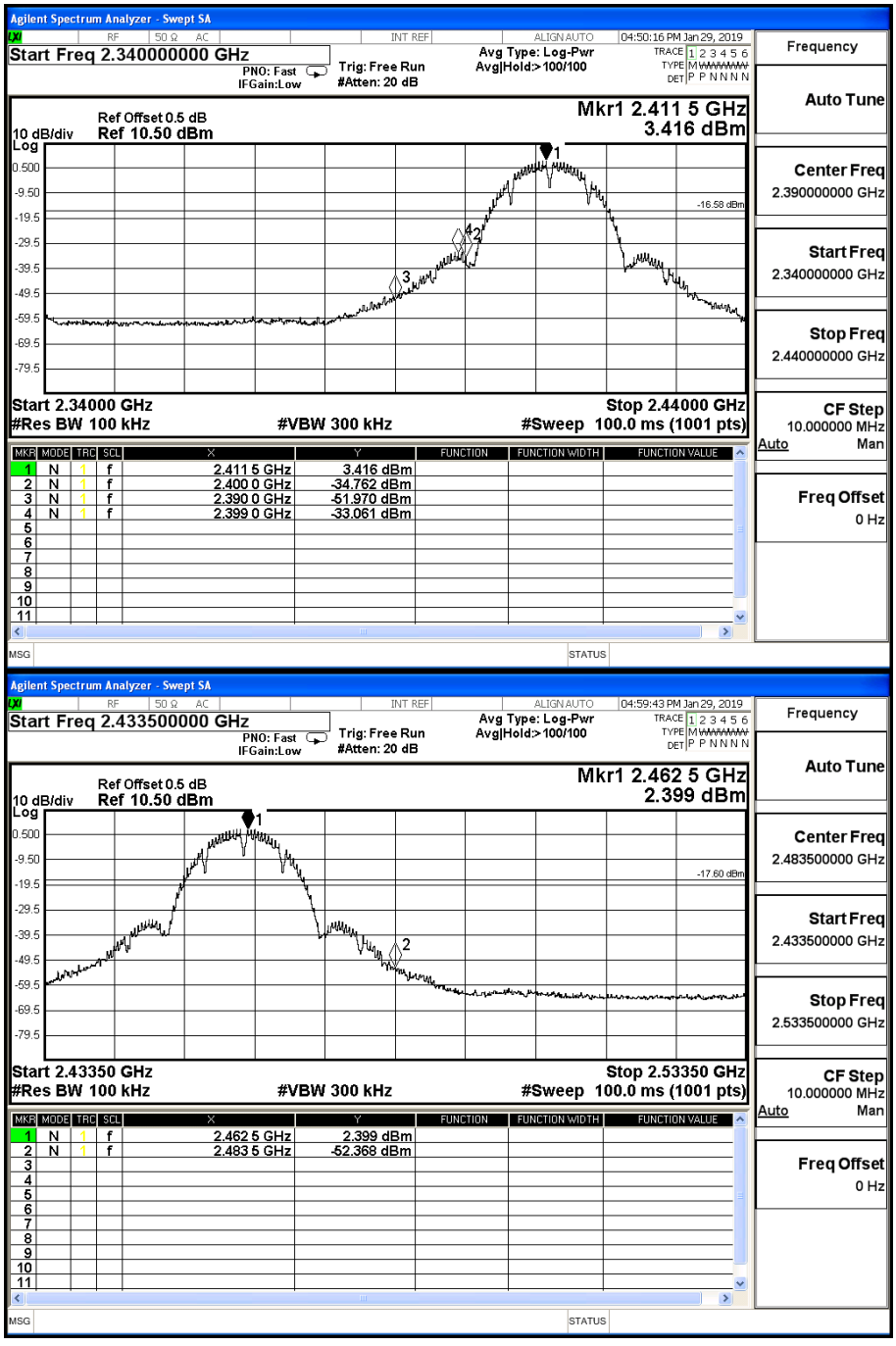


Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

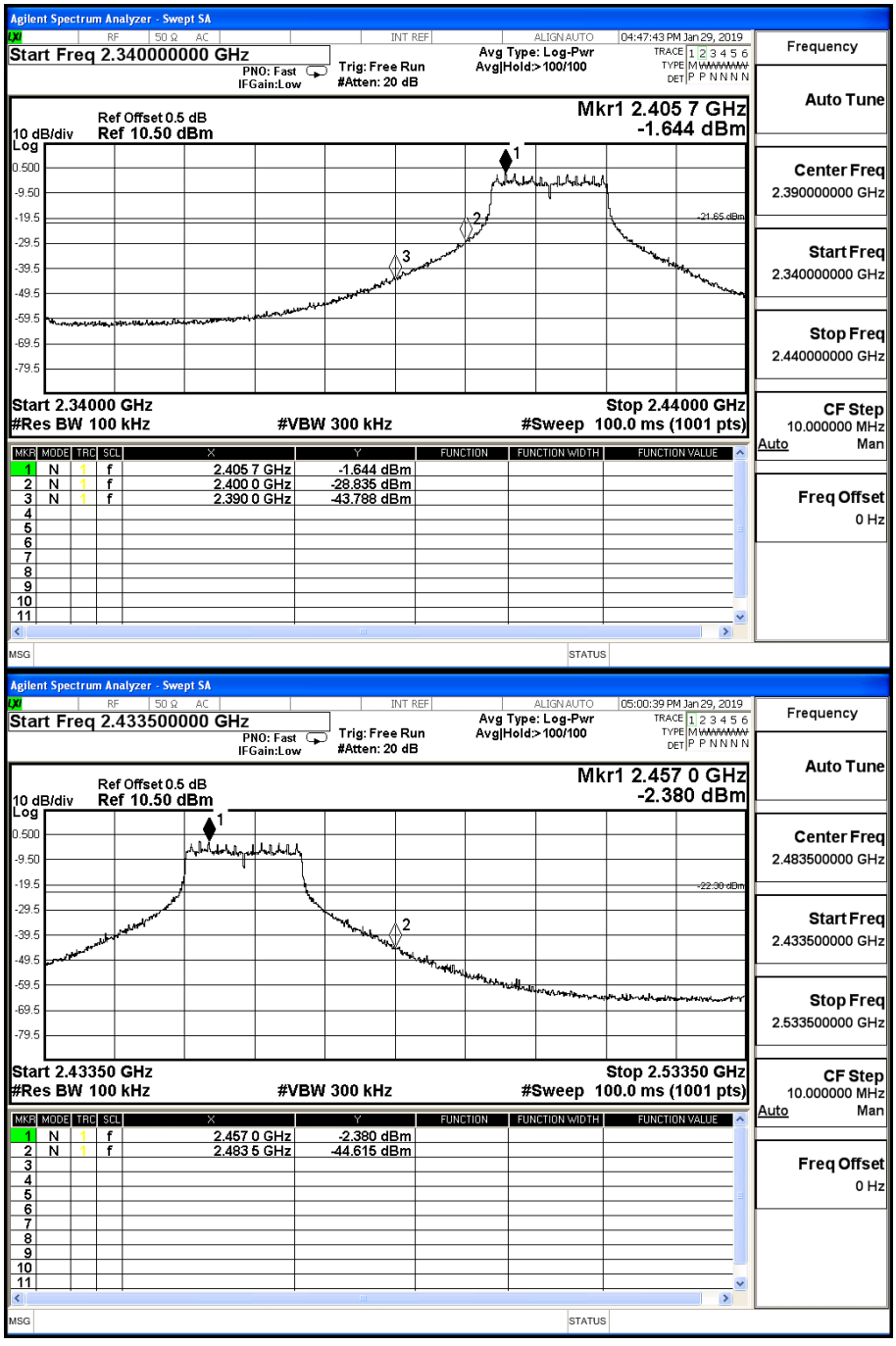
Product : HD Digital Satellite Receiver
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
2412	36.48	>20	PASS
2462	54.77	>20	PASS



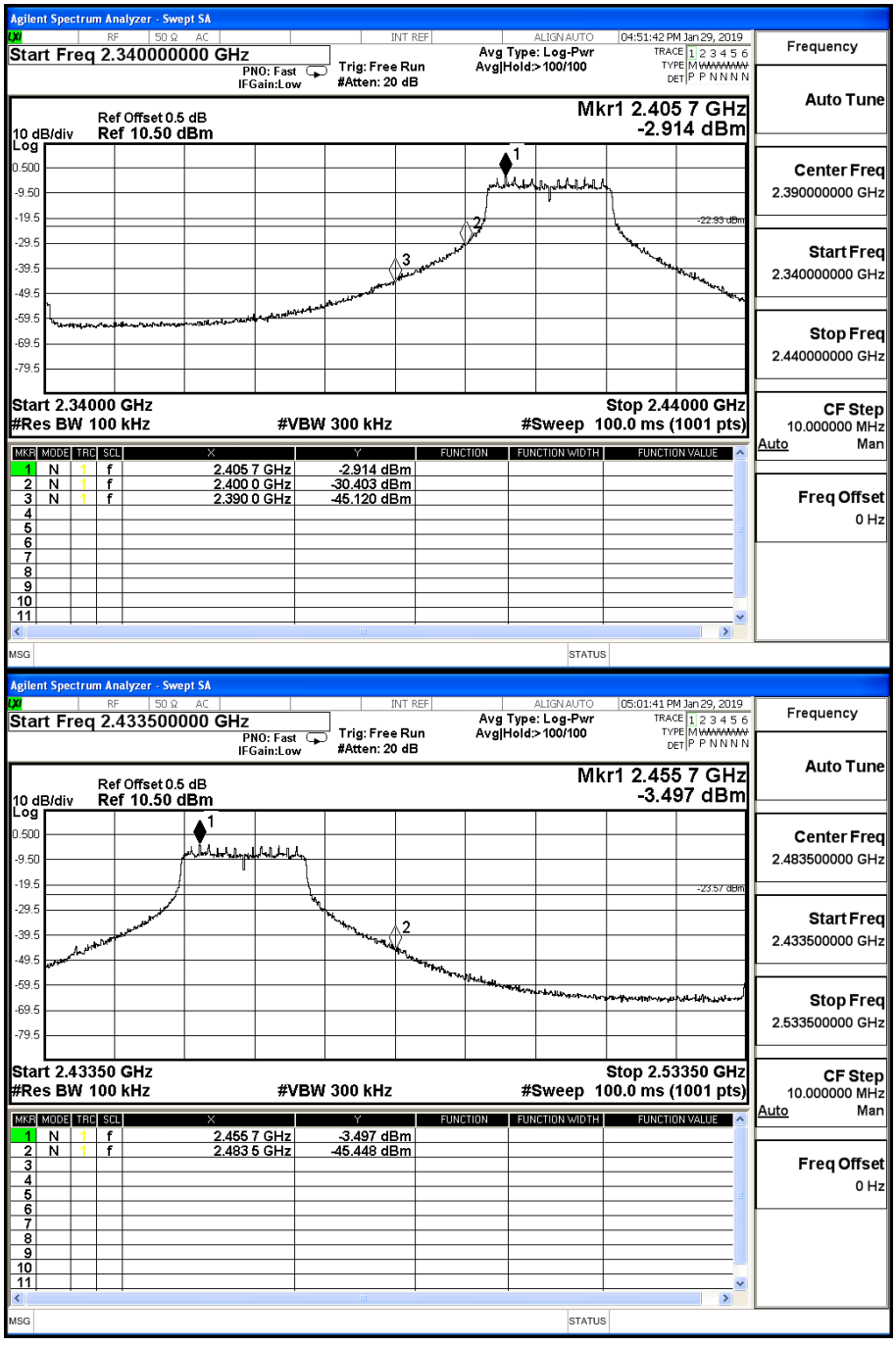
Product : HD Digital Satellite Receiver
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
2412	27.19	>20	PASS
2462	42.24	>20	PASS



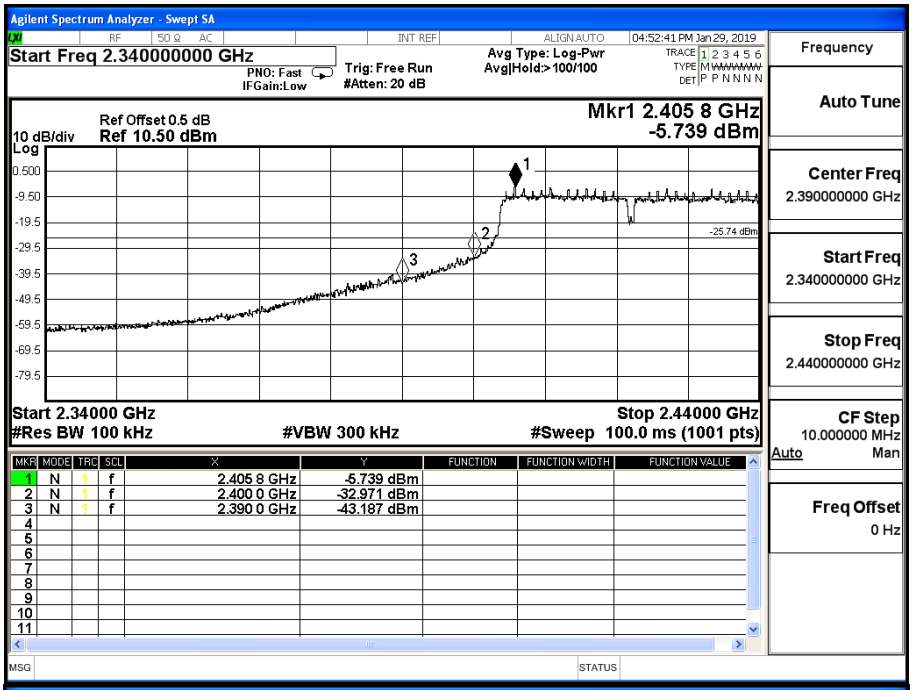
Product : HD Digital Satellite Receiver
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

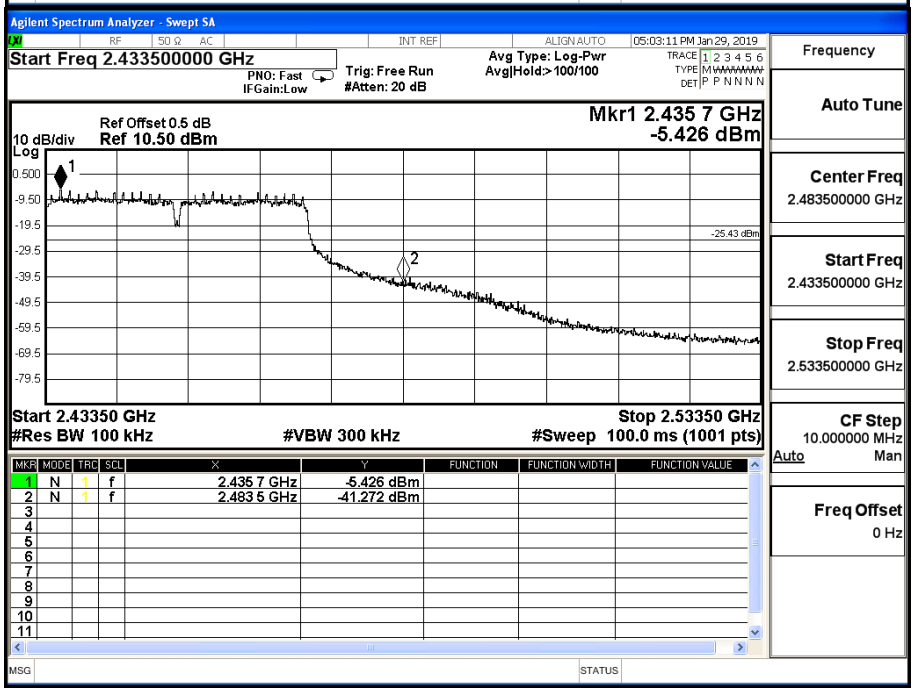
Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
2412	27.49	>20	PASS
2462	41.95	>20	PASS



Product : HD Digital Satellite Receiver
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

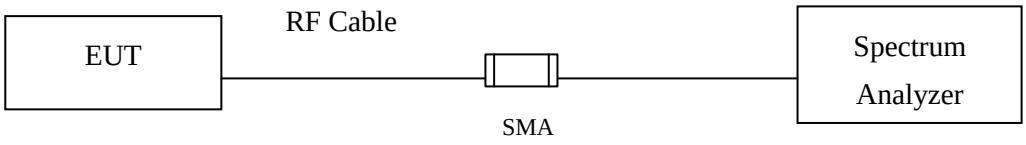
Test Frequency (MHz)	Measurement Level Δ (dB)	Limit Δ (dB)	Result
2422	27.23	>20	PASS
2452	35.85	>20	PASS





7. 6dB Bandwidth

7.1. Test Setup



7.2. Limits

The minimum bandwidth shall be at least 500 kHz.

7.3. Test Procedure

Tested according to DTS test procedure of KDB558074 section 8.2 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 1-5% of the emission bandwidth, VBW≥3*RBW

7.4. Uncertainty

± 283Hz

7.5. Test Result of 6dB Bandwidth

Product : HD Digital Satellite Receiver
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	10100	>500	Pass
06	2437	10150	>500	Pass
11	2462	10150	>500	Pass

Figure Channel 01:

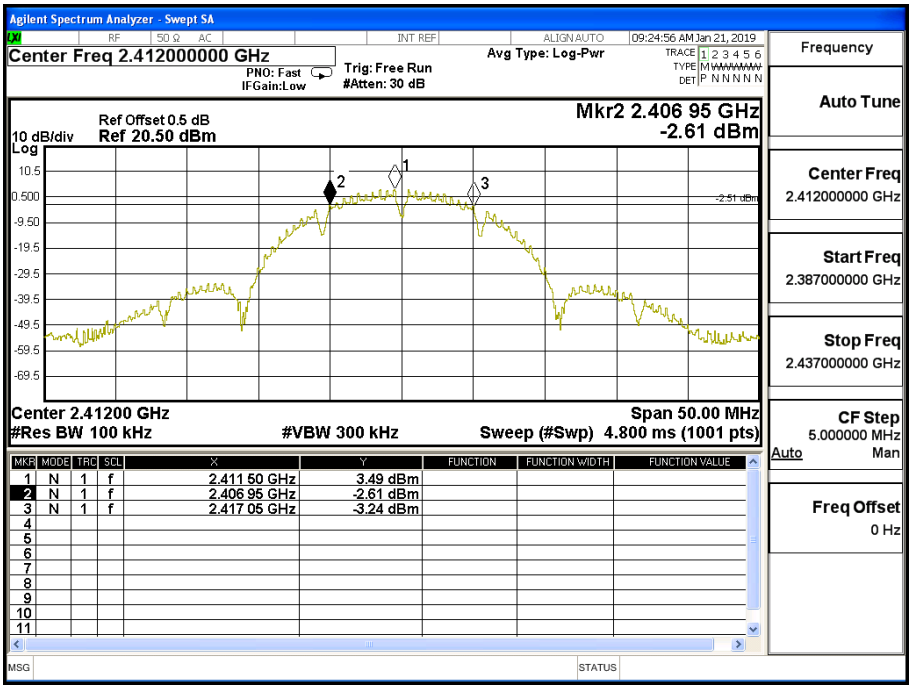


Figure Channel 06:

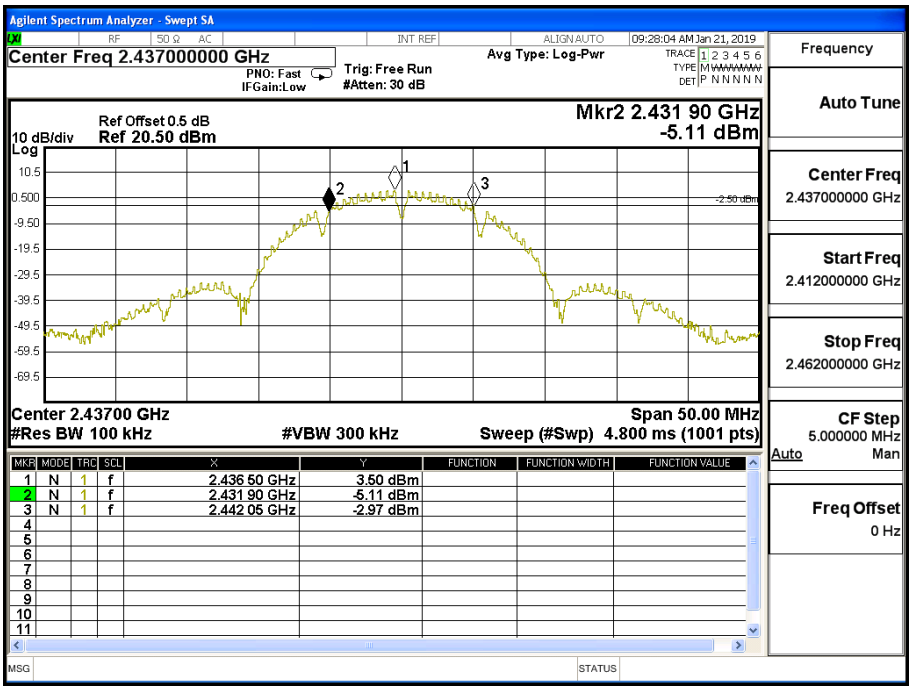
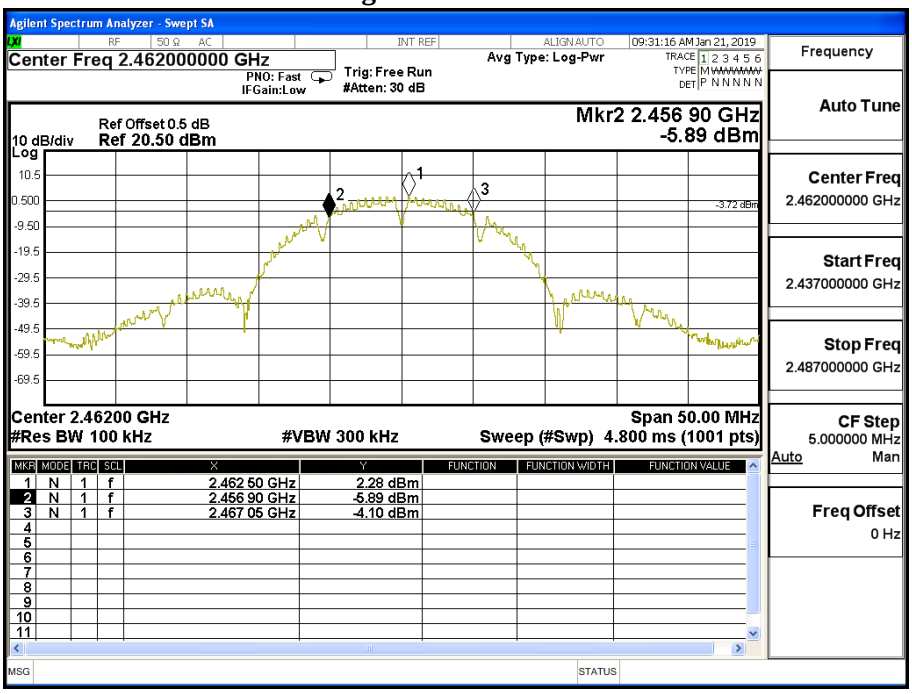


Figure Channel 11:



Product : HD Digital Satellite Receiver
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	16450	>500	Pass
06	2437	16450	>500	Pass
11	2462	16500	>500	Pass

Figure Channel 01:

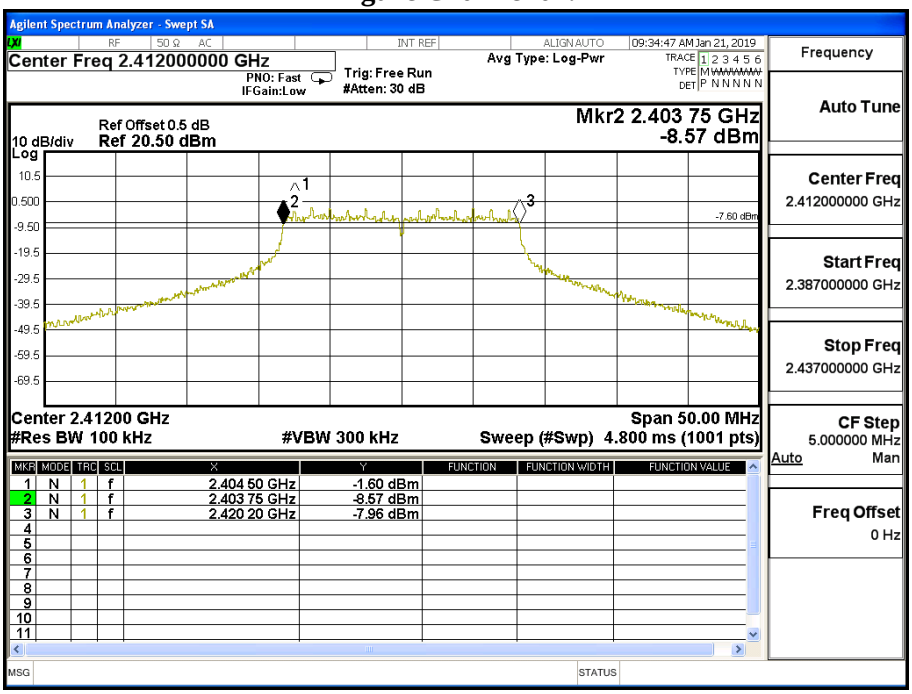


Figure Channel 06:

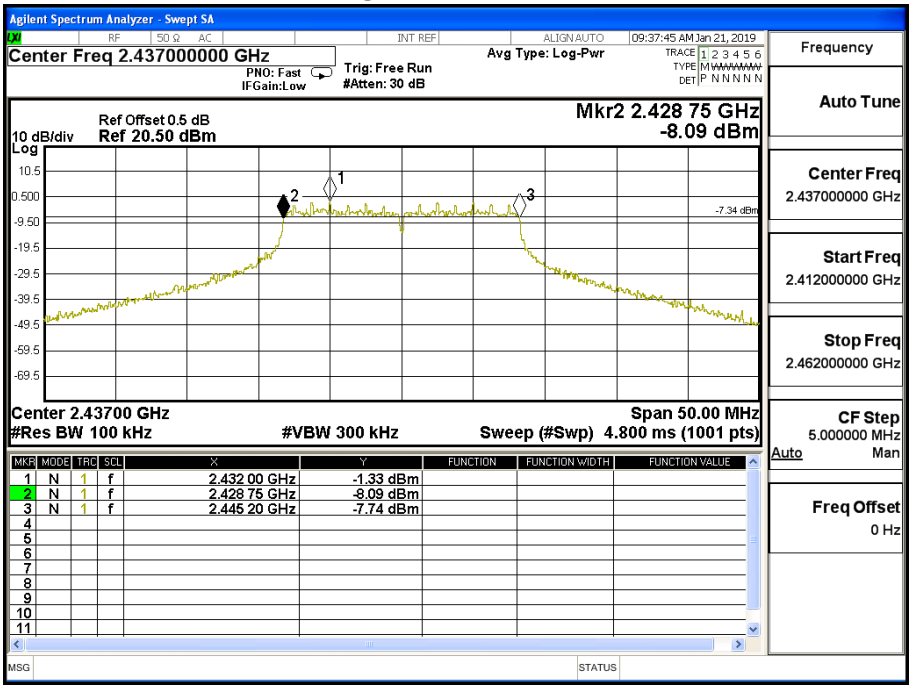
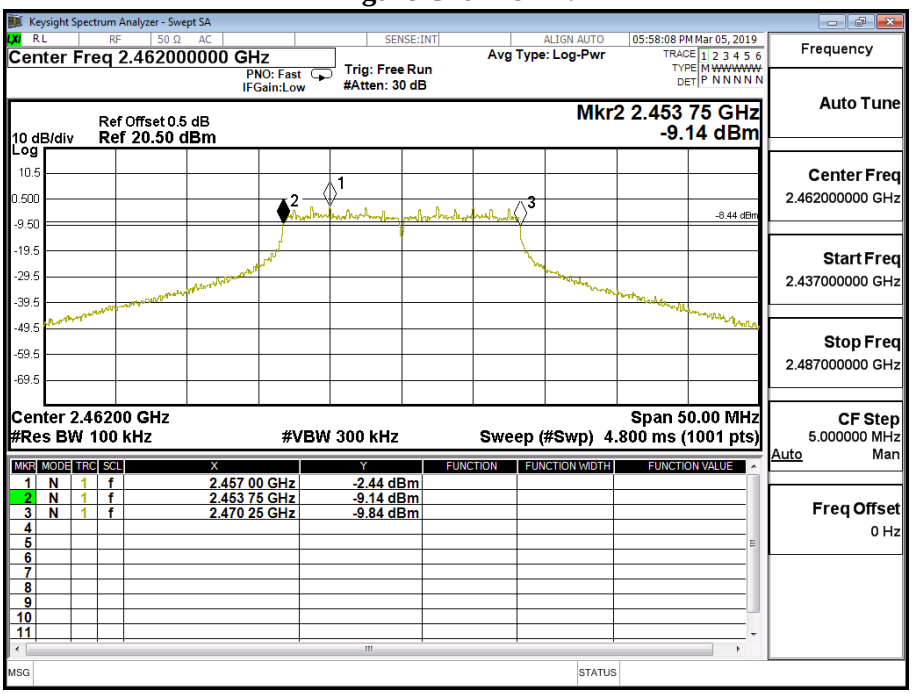


Figure Channel 11:



Product : HD Digital Satellite Receiver
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	17650	>500	Pass
06	2437	17650	>500	Pass
11	2462	17650	>500	Pass

Figure Channel 01:

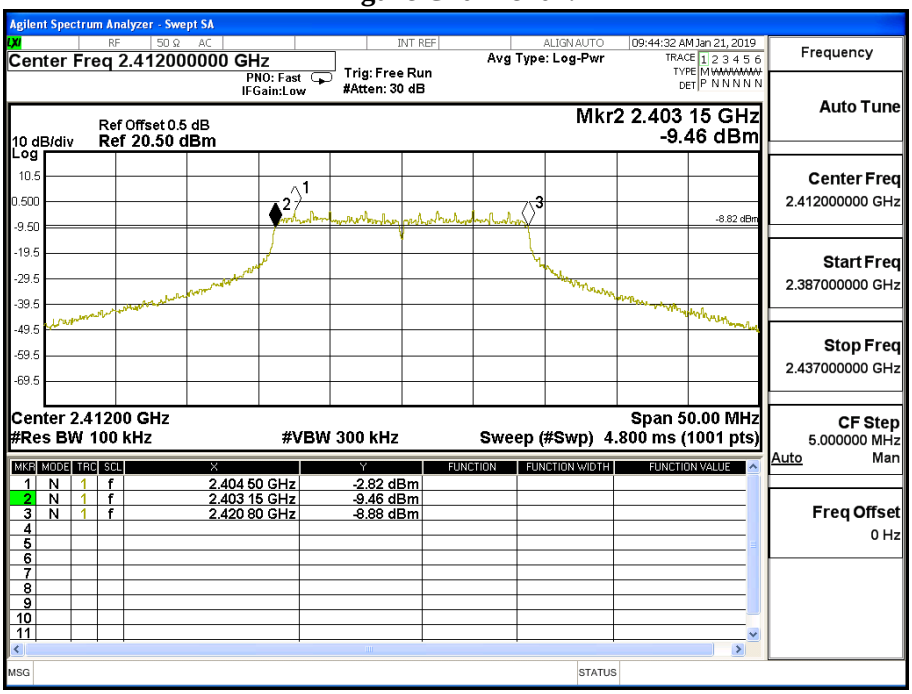


Figure Channel 06:

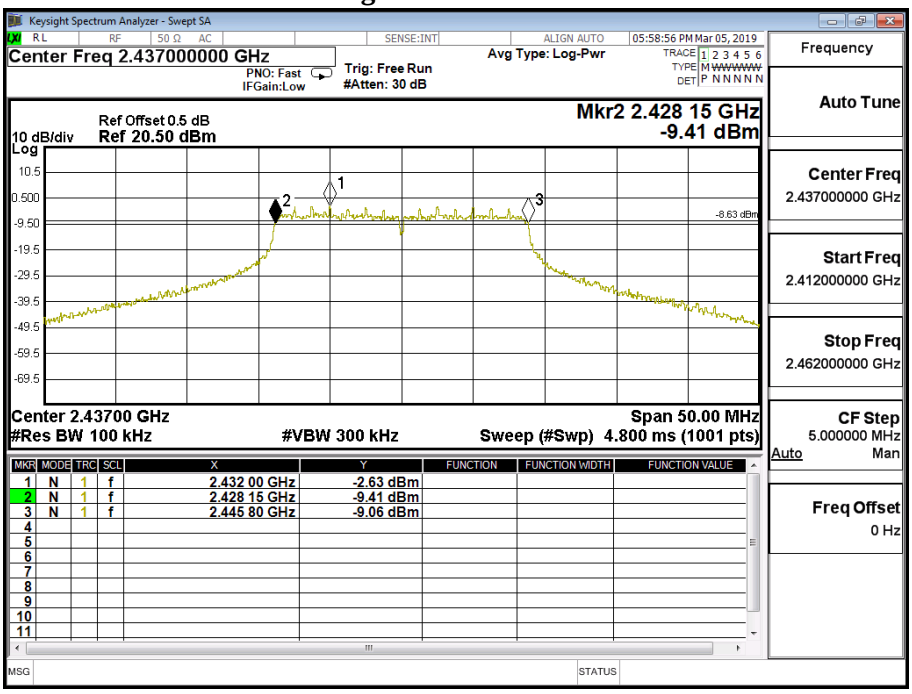
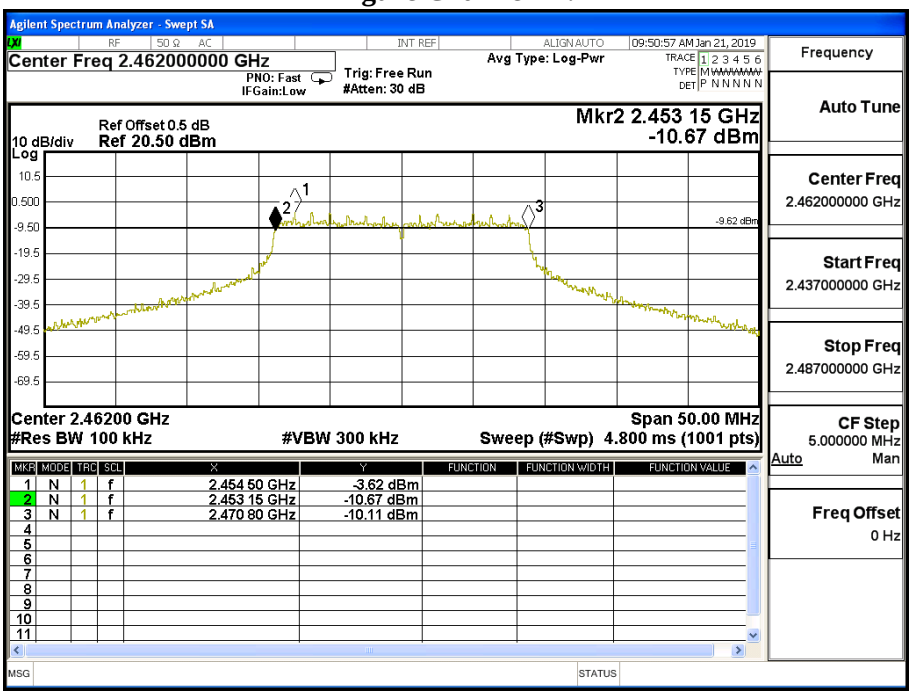


Figure Channel 11:



Product : HD Digital Satellite Receiver
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	35700	>500	Pass
06	2437	36600	>500	Pass
09	2452	35700	>500	Pass

Figure Channel 03:

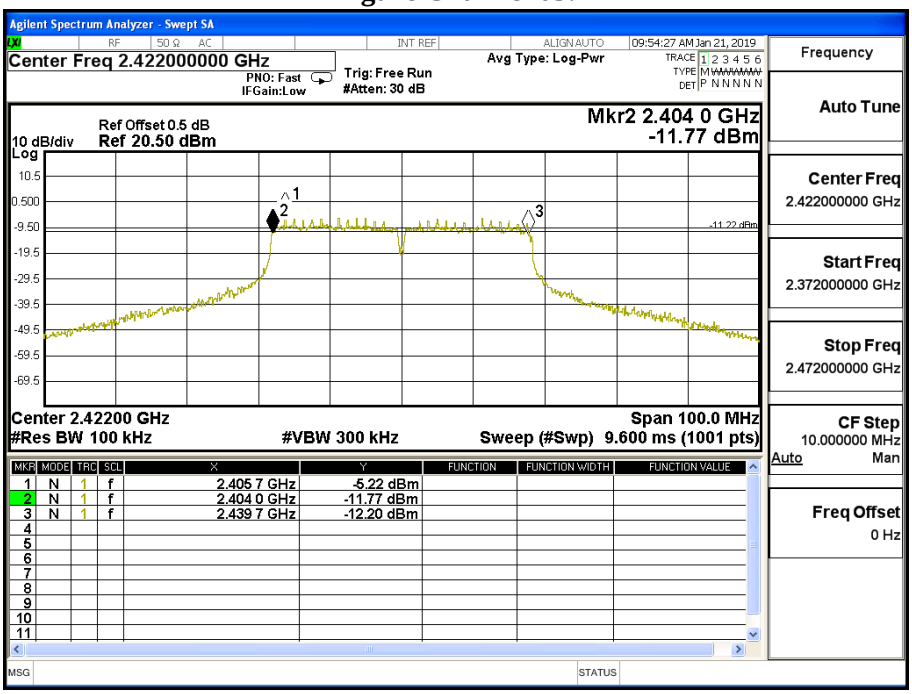


Figure Channel 06:

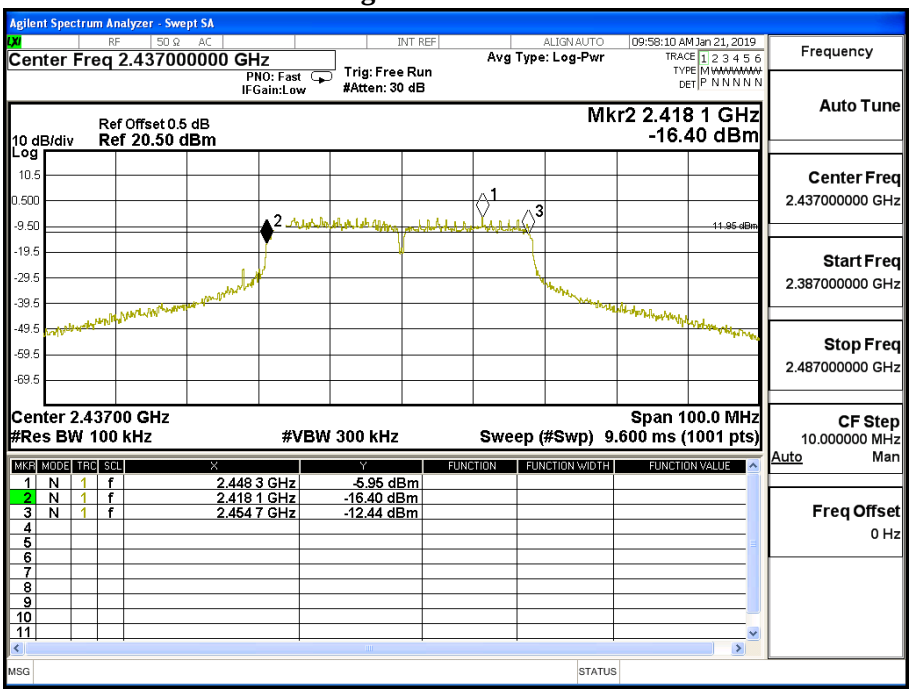
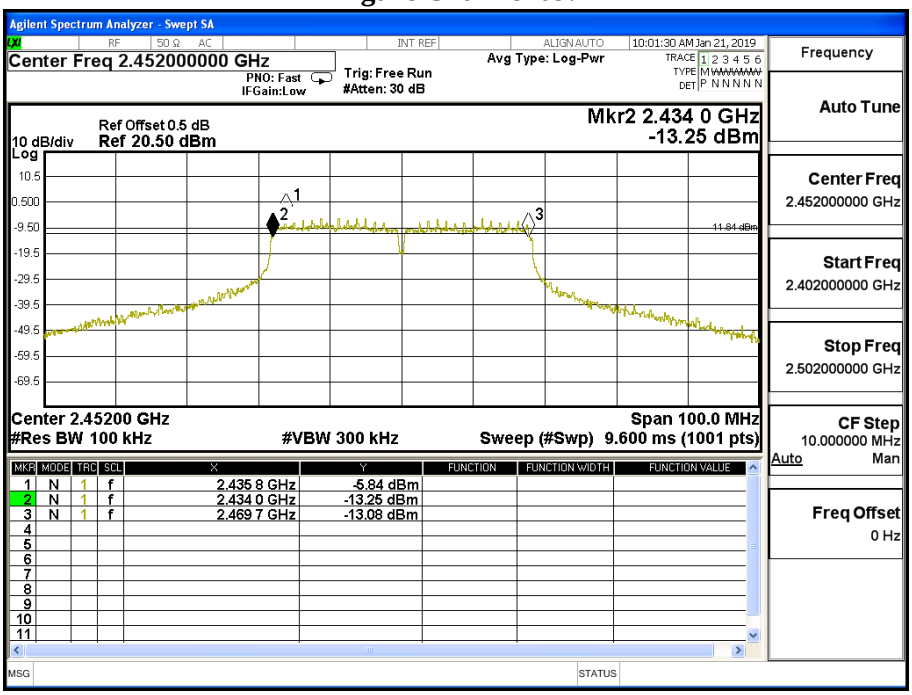
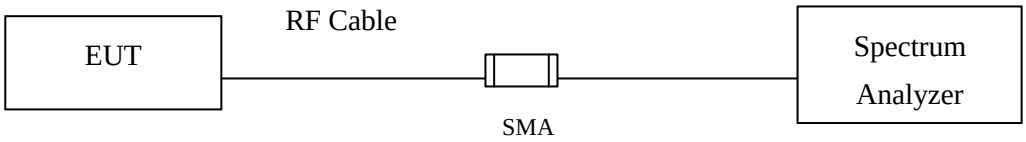


Figure Channel 09:



8. Power Density

8.1. Test Setup



8.2. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

8.3. Test Procedure

Tested according to DTS test procedure of KDB558074 section 8.4 for compliance to FCC 47CFR 15.247 requirements.

8.4. Uncertainty

± 1.20 dB

8.5. Test Result of Power Density

Product : HD Digital Satellite Receiver
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	3.700	≦8dBm	Pass
06	2437	3.630	≦8dBm	Pass
11	2462	2.620	≦8dBm	Pass

Figure Channel 01:

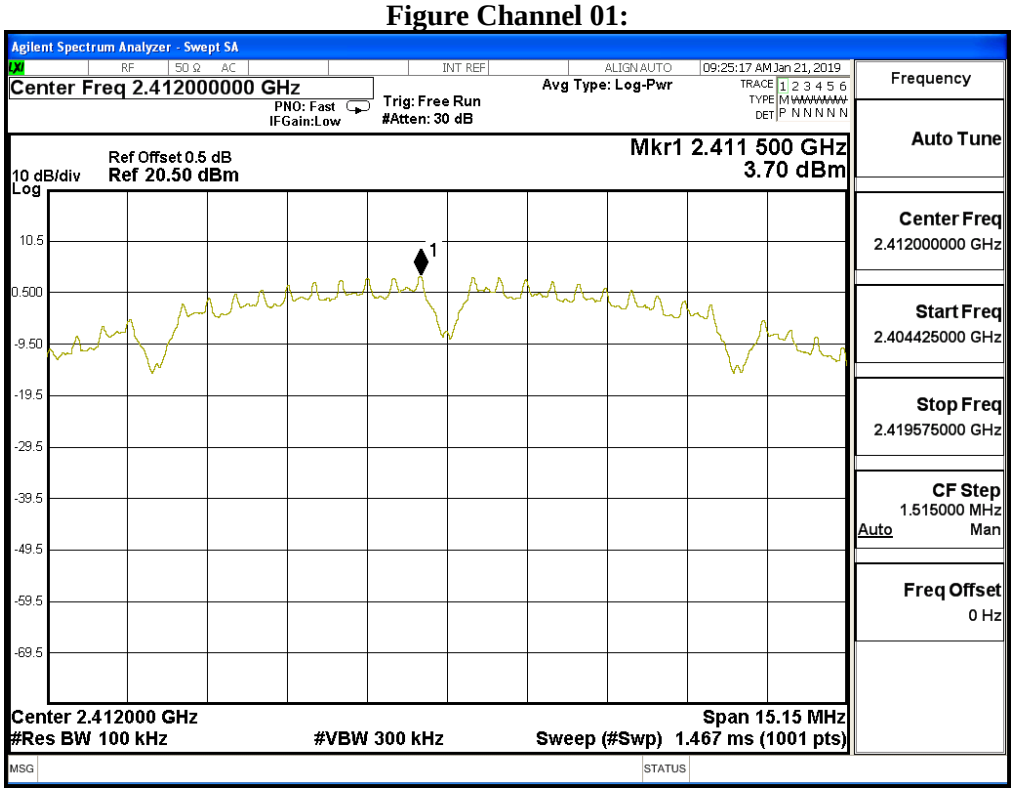


Figure Channel 06:

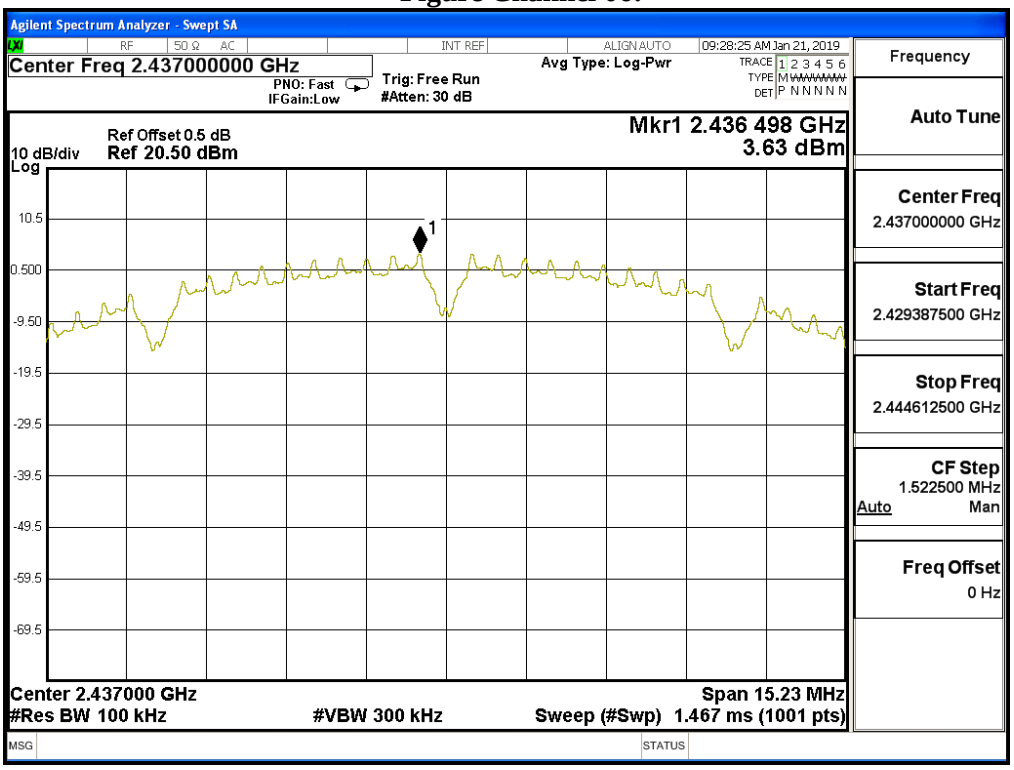
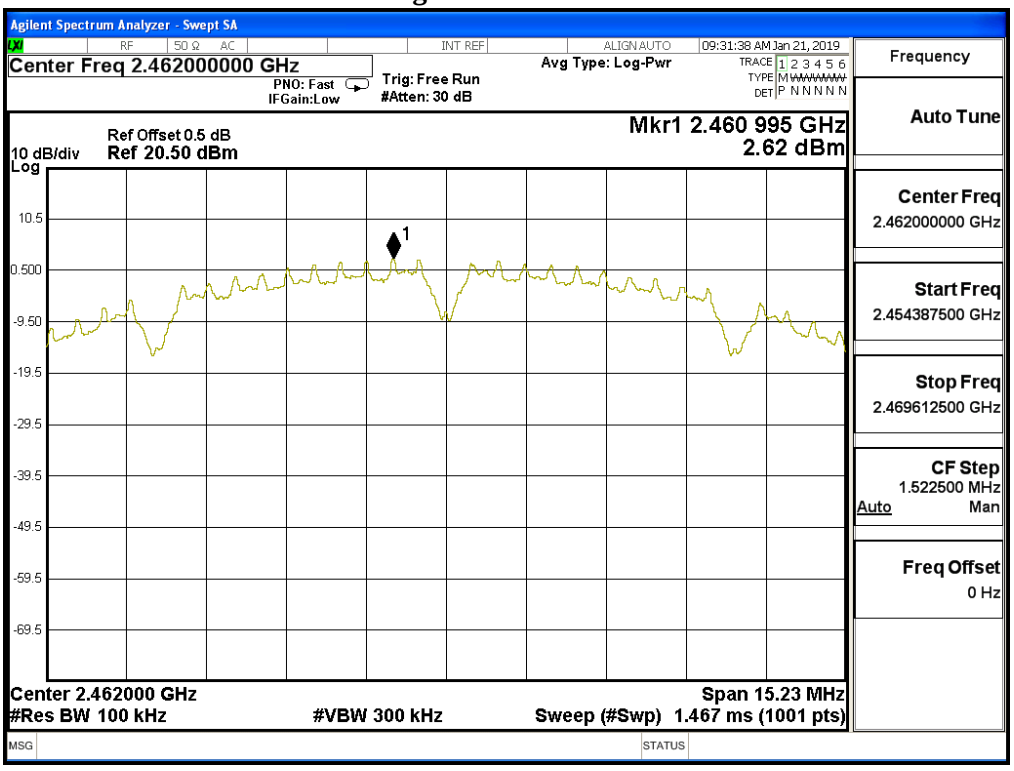


Figure Channel 11:



Product : HD Digital Satellite Receiver
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	-1.770	≦8dBm	Pass
06	2437	-1.580	≦8dBm	Pass
11	2462	-2.310	≦8dBm	Pass

Figure Channel 01:

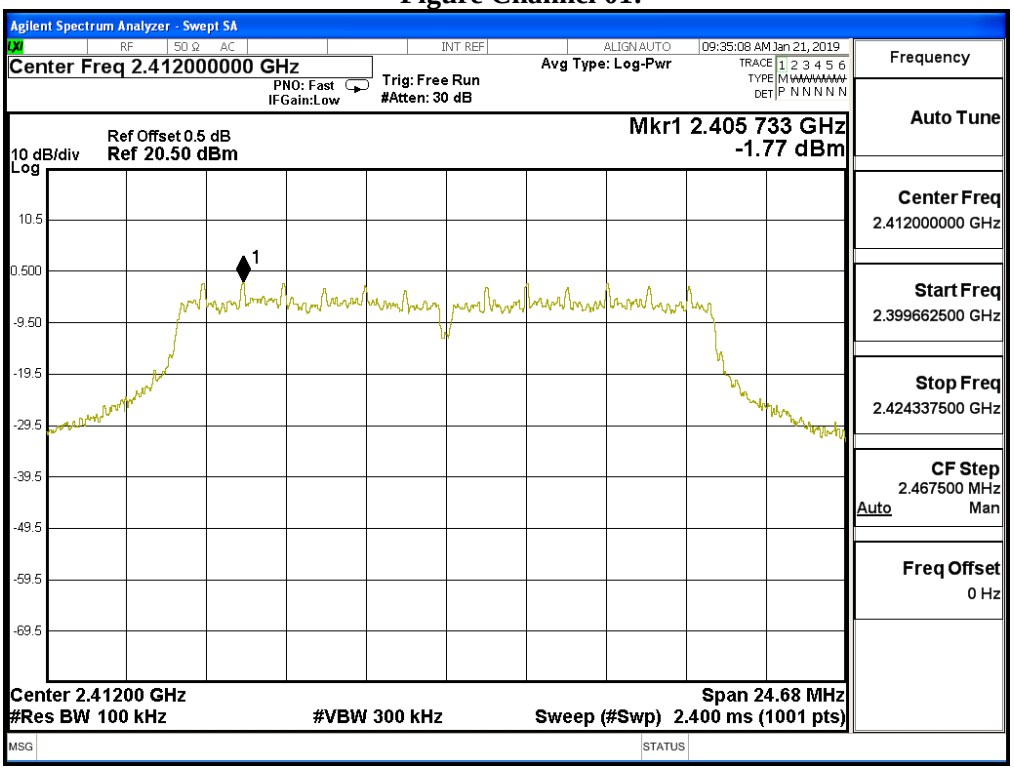


Figure Channel 06:

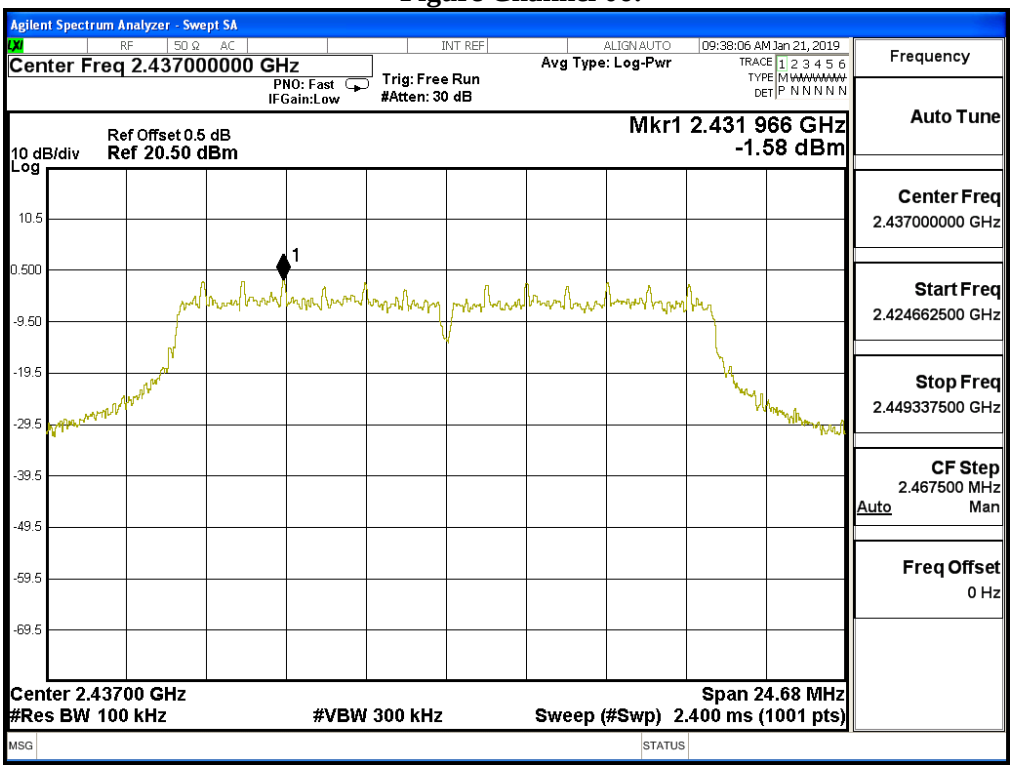
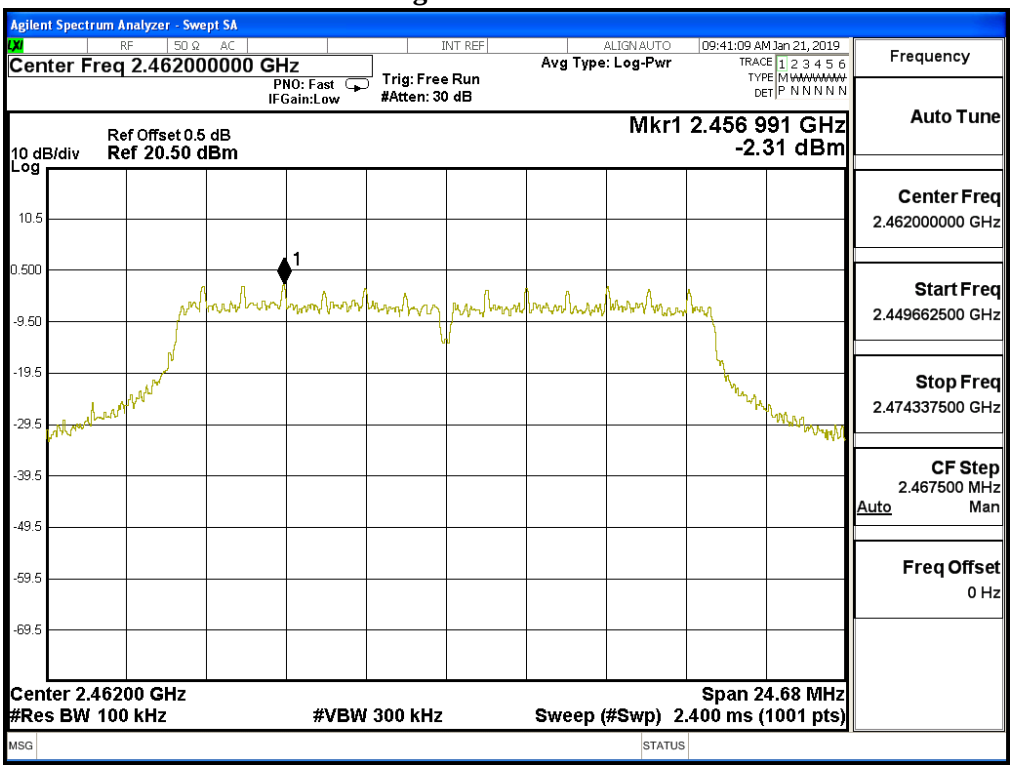


Figure Channel 11:



Product : HD Digital Satellite Receiver
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	-2.610	≦8dBm	Pass
06	2437	-2.760	≦8dBm	Pass
11	2462	-3.470	≦8dBm	Pass

Figure Channel 01:

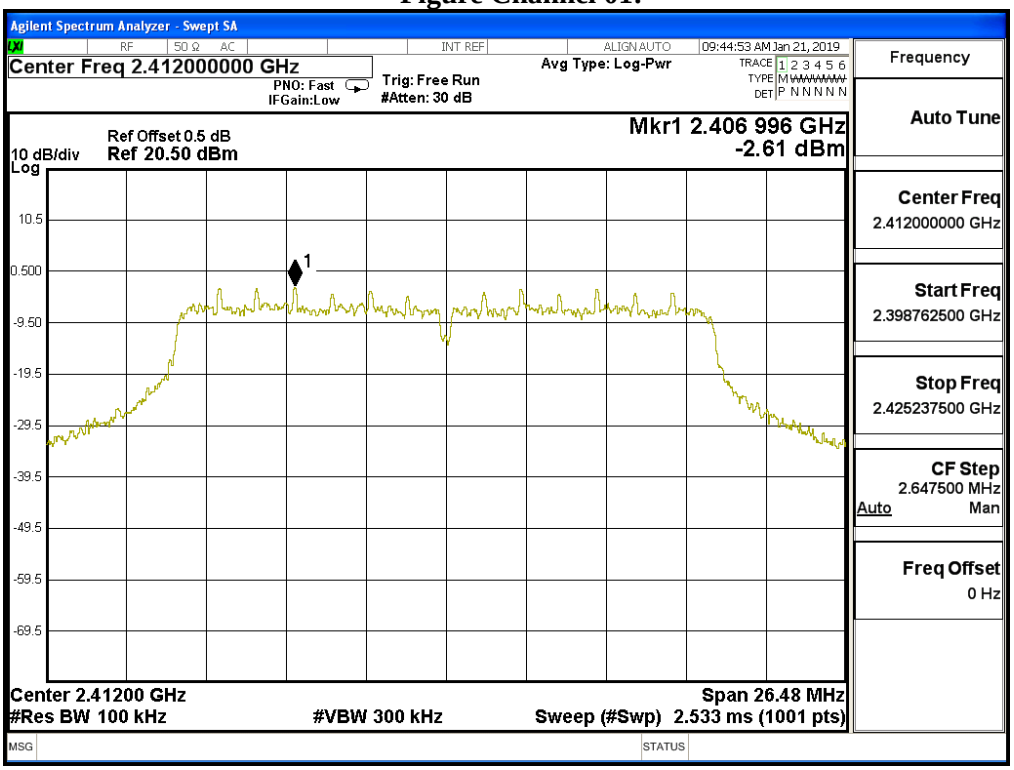


Figure Channel 06:

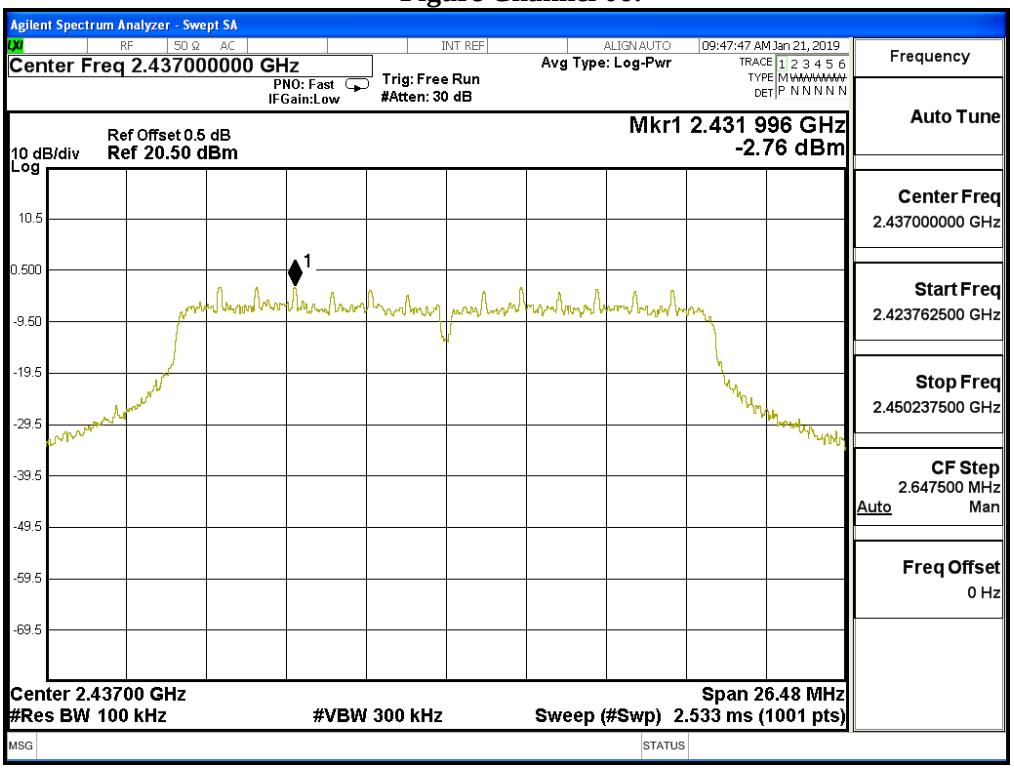
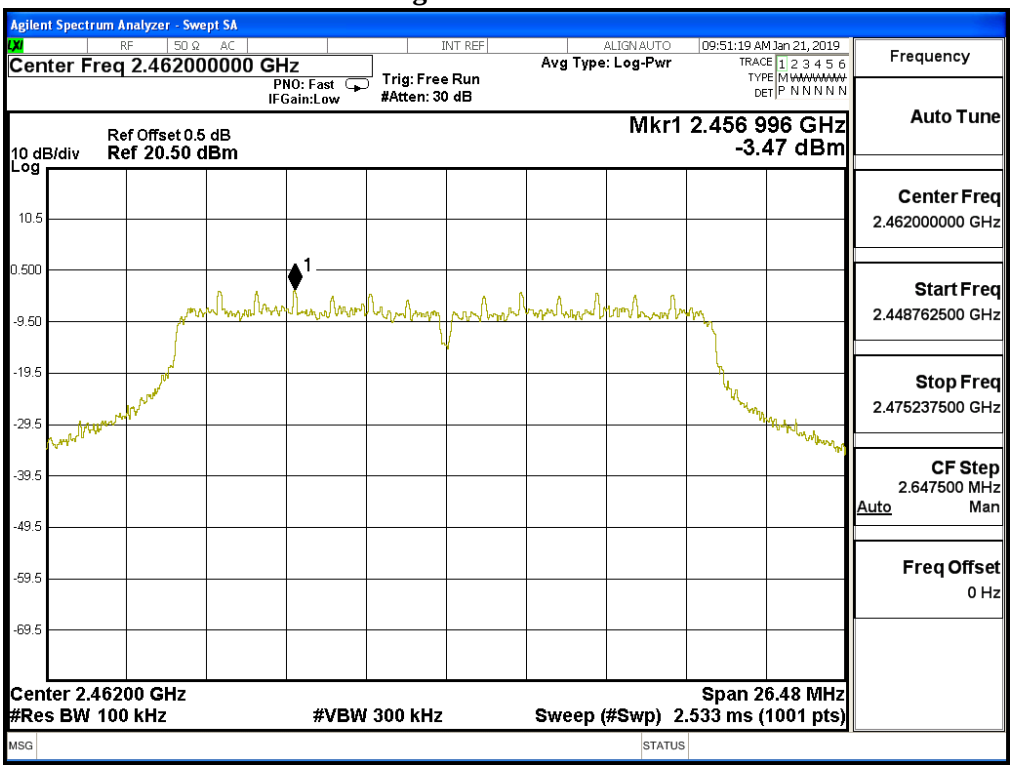


Figure Channel 11:



Product : HD Digital Satellite Receiver
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
03	2422	-5.170	≦8dBm	Pass
06	2437	-5.730	≦8dBm	Pass
09	2452	-5.160	≦8dBm	Pass

Figure Channel 03:

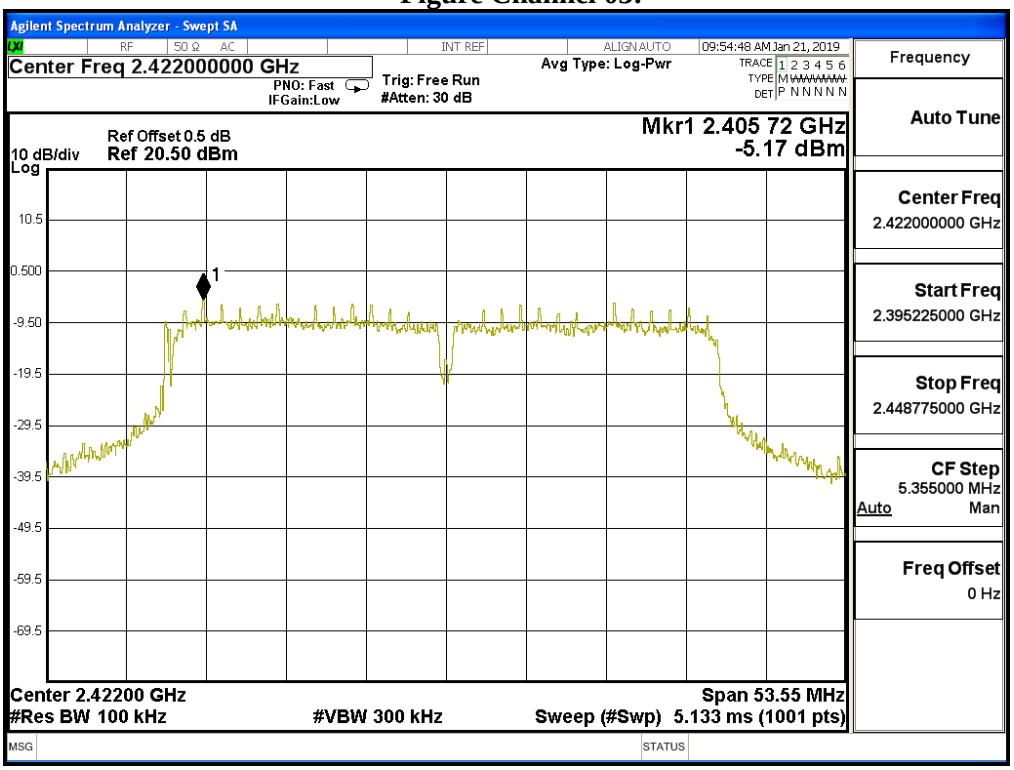


Figure Channel 06:

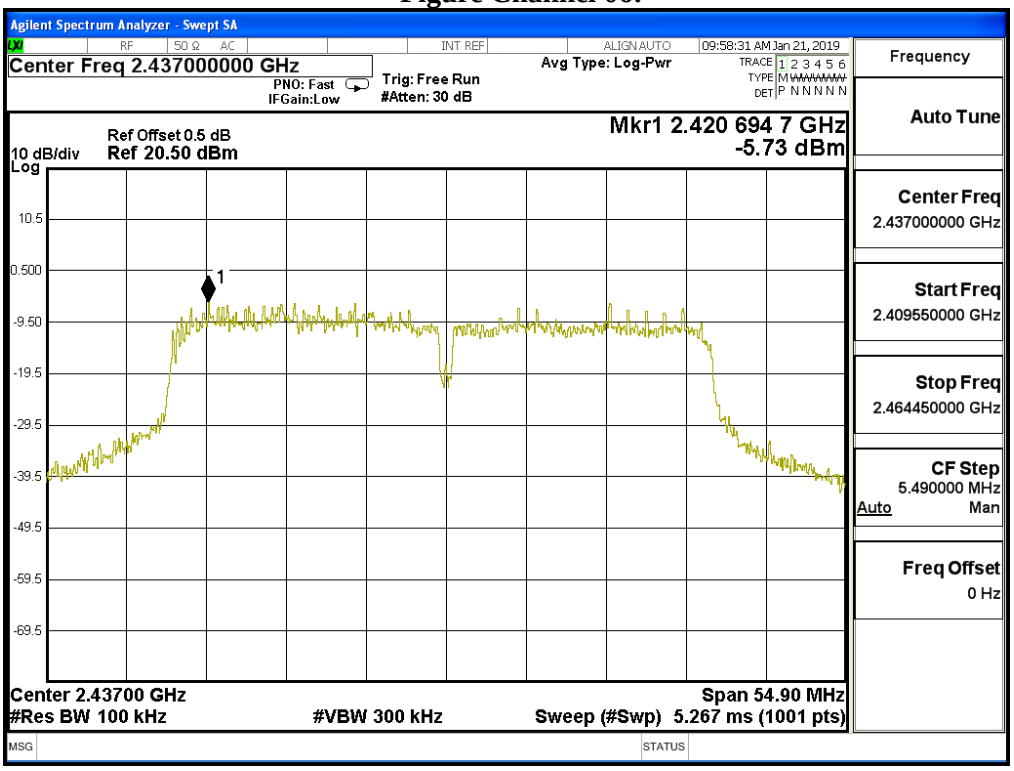
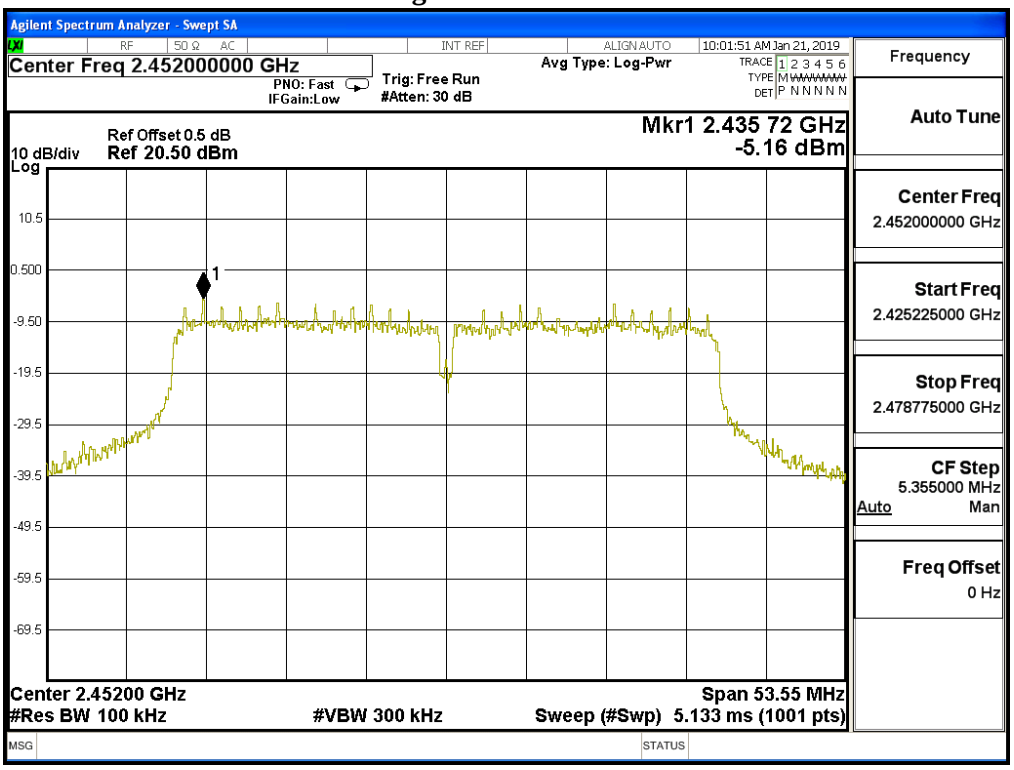
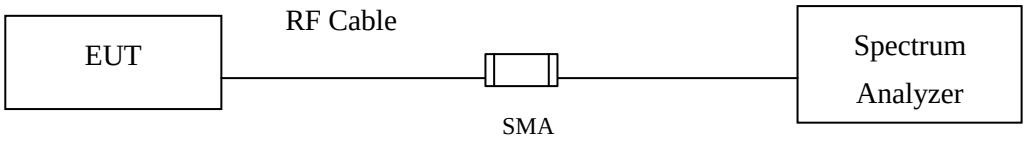


Figure Channel 09:



9. Duty Cycle

9.1. Test Setup



9.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

9.3. Uncertainty

± 2.31msec

9.4. Test Result of Duty Cycle

Product : HD Digital Satellite Receiver
Test Item : Duty Cycle
Test Mode : Transmit

Duty Cycle Formula:

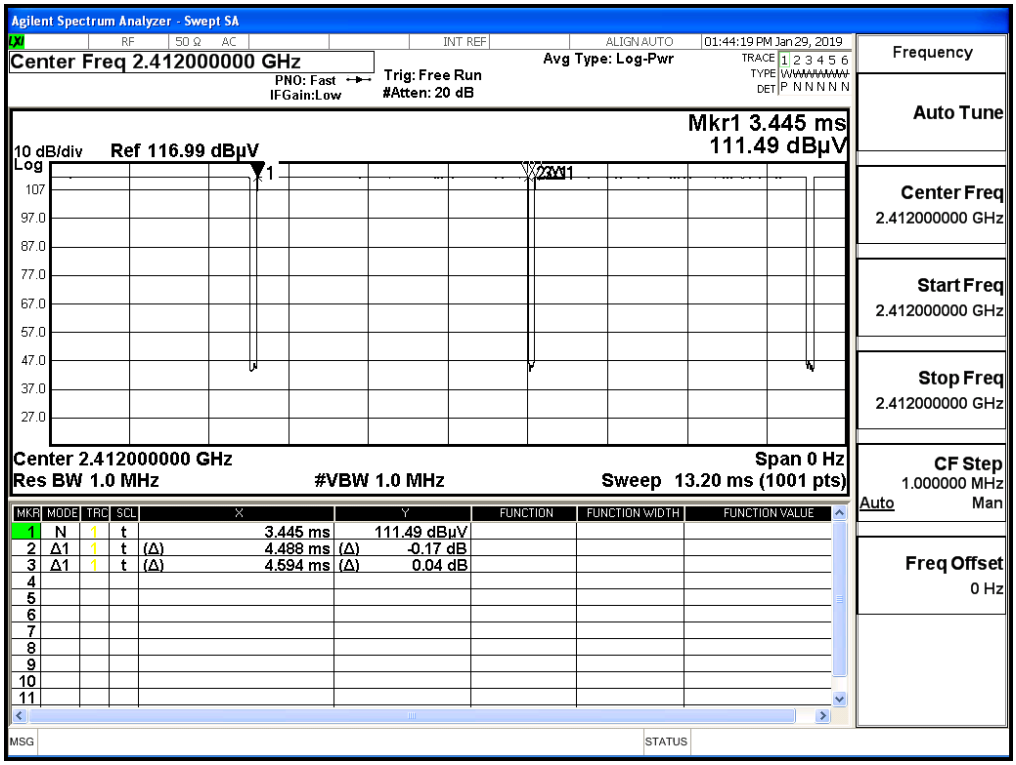
Duty Cycle = Ton / (Ton + Toff)

Duty Factor = 10 Log (1/Duty Cycle)

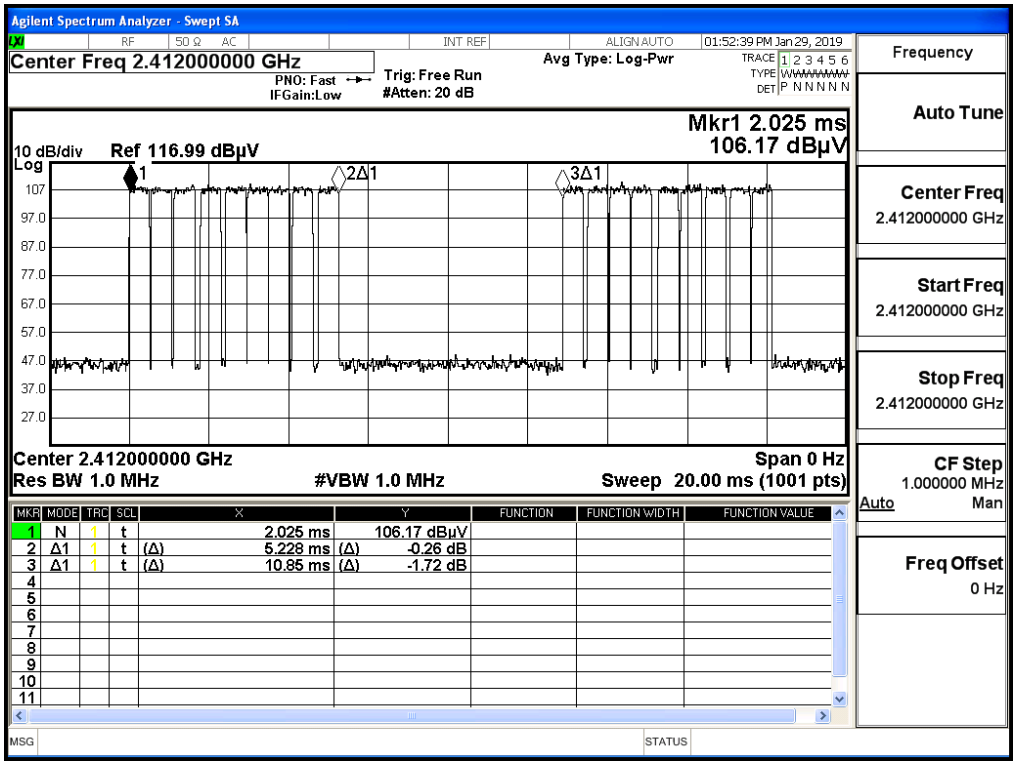
Results:

2.4GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11b	4.4880	4.5940	97.69	0.10
802.11g	5.2280	10.8500	48.18	3.17
802.11n20	6.3980	10.4600	61.17	2.13
802.11n40	4.1780	10.8500	38.51	4.14

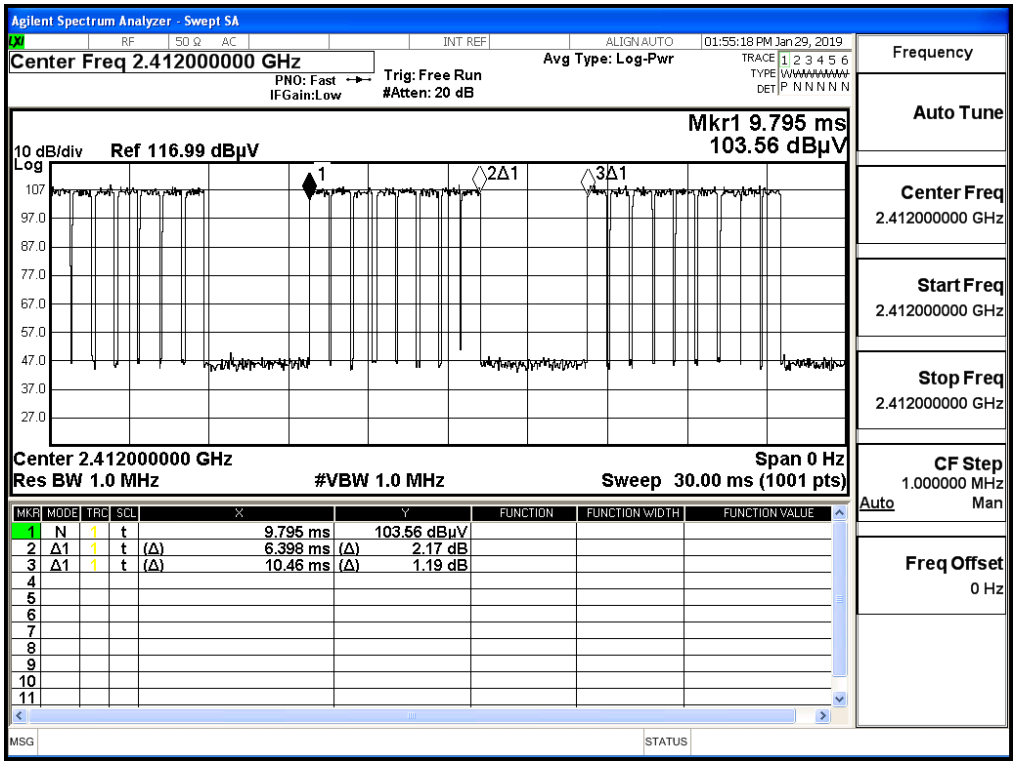
802.11b



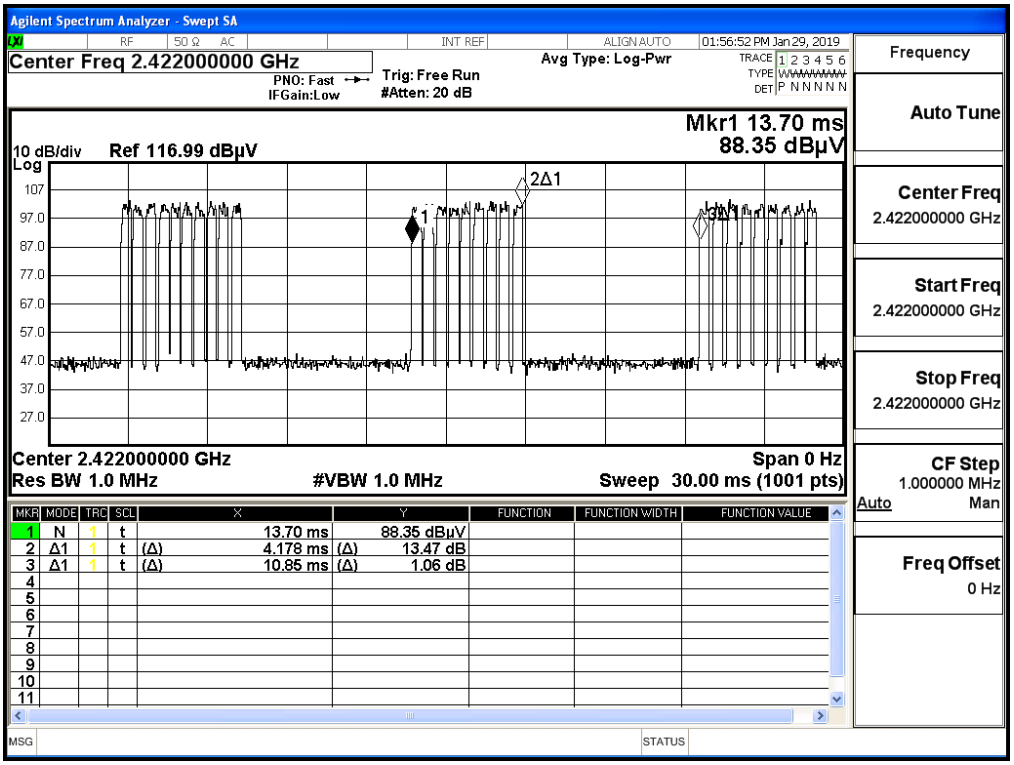
802.11g



802.11n20



802.11n40


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω
AC
INT REF
ALIGN AUTO
01:56:52 PM Jan 29, 2019
Center Freq 2.422000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE WWWWWW
DET P N N N N N
Mkr1 13.70 ms
88.35 dBµV
10 dB/div
Log
Ref 116.99 dBµV
107
97.0
87.0
77.0
67.0
57.0
47.0
37.0
27.0
2Δ1
1
3Δ1
Center 2.422000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 30.00 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 t 13.70 ms 88.35 dBµV
2 Δ1 1 t (Δ) 4.178 ms (Δ) 13.47 dB
3 Δ1 1 t (Δ) 10.85 ms (Δ) 1.06 dB
4
5
6
7
8
9
10
11
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.422000000 GHz
Start Freq
2.422000000 GHz
Stop Freq
2.422000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz

10. EMI Reduction Method During Compliance Testing

No modification was made during testing.