



FCC RADIO TEST REPORT

FCC ID: LNQSBWD100B

Product : ScreenBeam Pro Wireless Display Receiver

Trade Name : Actiontec

Model Name : SBWD100B

Serial Model : N/A

Report No. : NTEK-2014NT0515718F3

Prepared for

Actiontec Electronics, Inc.

760 North Mary Ave., Sunnyvale, California 94085 United States

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name Actiontec Electronics, Inc.

Address 760 North Mary Ave., Sunnyvale, California 94085 United States

Manufacturer's Name... Actiontec Electronics, Inc.

Address 760 North Mary Ave., Sunnyvale, California 94085 United States

Product description

Product name ScreenBeam Pro Wireless Display Receiver

Model and/or type reference SBWD100B

Serial Model N/A

Standards FCC Part15.247

Test procedure ANSI C63.4-2003 and KDB 558074: April 9, 2013

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test

Date (s) of performance of tests 15 May 2014 ~27 May 2014

Date of Issue..... 27 May 2014

Test Result..... **Pass**

Testing Engineer : Kyle Xu
(Kyle Xu)

Technical Manager : Brown Lu
(Brown Lu)

Authorized Signatory : Bill Yao
(Bill Yao)

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Power Spectral Density	PASS	
15.205	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd
 Add.:1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.
 FCC Registration No.:238937; IC Registration No.:9270A-1
 CNAS Registration No.:L5516

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	ScreenBeam Pro Wireless Display Receiver	
Trade Name	Actiontec	
Model Name	SBWD100B	
Product Description	The EUT is a ScreenBeam Pro Wireless Display Receiver	
	Operation Frequency:	802.11b/g/n(20MHz):2412~2462 MHz 802.11n(40MHz):2422~2452 MHz
	Modulation Type:	CCK/OFDM/DBPSK/DAPSK
	Bit Rate of Transmitter	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n(20MHz):150/144.44/130/117/115.56/104/86.67/78/52/6.5Mbps 802.11n(40MHz):300/270/240/180/150/120/108/90/54 Mbps
	Number Of Channel	802.11b/g/n20MHz:11CH 802.11n40MHz:7CH
	Max.Output Power(Conducted):	18.04 dBm
	Operation Frequency:	5725 MHz ~ 5850 MHz
	Modulation Type:	OFDM (BPSK / QPSK / 16QAM / 64QAM)
	Max.Output Power(Conducted):	15.75dBm
	Antenna Designation:	Please see Note 3.
	Antenna Gain (dBi)	Please see Note 3.
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.	
	Channel List	Please refer to the Note 2.
Ratings	Adapter 1: DC 5V,2A Adapter 2: DC 5V,1A	
Adapter	Adapter 1: Mode: WA-10P05FU Input: 100-240V~, 50/60Hz, 0.3A Max Output: 5V $\overline{\text{---}}$, 2A Adapter 2: Mode: MU06-E050100-A1 Input: 100-240V~, 50/60Hz, 0.2A Output: 5V $\overline{\text{---}}$, 1A	
Battery	N/A	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2. 2.4GHz

Channel List for 802.11b/g/n(20 MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452	-	-

Channel List for 802.11n(40MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
03	2422	06	2437	09	2452	-	-
04	2427	07	2442	-	-	-	-
05	2432	08	2447	-	-	-	-

5GHz

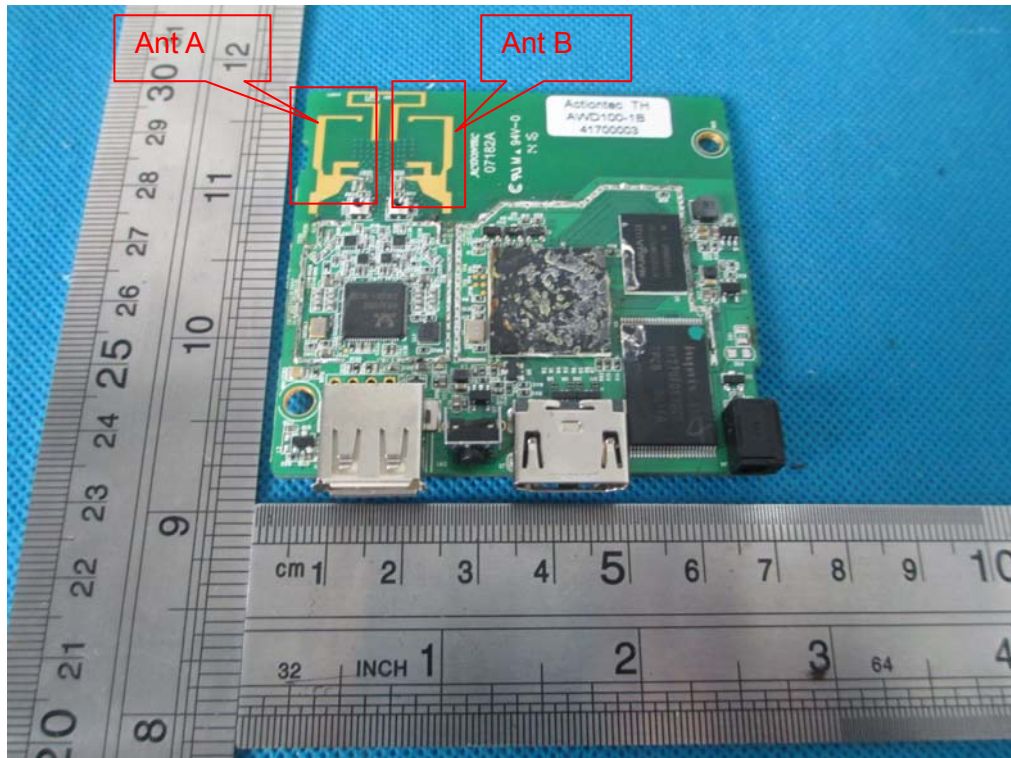
802.11a/n20 MHz Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	153	5765	157	5785	161	5805
165	5825	-	-	-	-	-	-

802.11n 40MHzCarrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	155	5775	159	5795	-	-

3.

Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Gain (dBi)	NOTE
A	N/A	N/A	PCB antenna	2.4G/5G:3.6	Wifi Antenna
B	N/A	N/A	PCB antenna	2.4G/5G:3.6	Wifi Antenna



The Control software(tool_WIFI.exe) can control antenna A/ B ,

For 2.4GHz mode, antenna A/ B are transmitting, two antennas simultaneously transmit. And the data is recorded for radiated emission and band edge.

For 5GHz mode, antenna A B are transmitting ,Two antennas simultaneously transmit. And the data is recorded for radiated emission, and band edge.

For MIMO mode , Directional gain= $G_{ANT} + 10\log(N)$ dbi =6.61dbi in 2.4GHz

Directional gain= $G_{ANT} + 10\log(N)$ dbi =6.61dbi in 5GHz
802.11a/b/g/n 2.4GHz & 5GHz has MIMO mode.

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n20 CH1/ CH6/ CH11
Mode 4	802.11n40 CH3/ CH6/ CH9
Mode 5	Link Mode
Mode 6	802.11a /n 20 CH149/ CH157/ CH 165
Mode 7	802.11n40 CH 151 / CH 159

For Conducted Emission	
Final Test Mode	Description
Mode 5	Link Mode

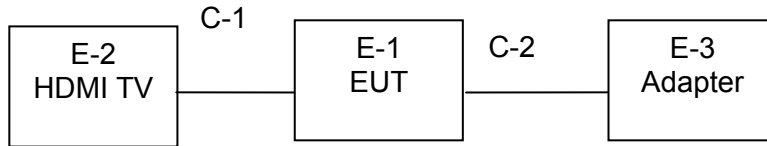
For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n20 CH1/ CH6/ CH11
Mode 4	802.11n40 CH3/ CH6/ CH 9
Mode 5	Link Mode
Mode 6	802.11a /n20 CH149/ CH157/ CH165
Mode 7	802.11n40 CH151 / CH159

Note:

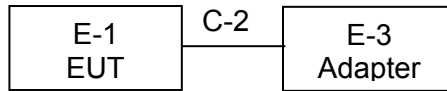
- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission Test



Radiated Emission Test



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	ScreenBeam Pro Wireless Display Receiver	Actiontec	SBWD100B	N/A	EUT
E-2	TV	SONY	KDL-24EX520	N/A	
E-3	Adapter 1	Actiontec	WA-10P05FU	N/A	
E-3	Adapter 2	Actiontec	MU06-E050100-A1	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	100cm	
C-2	NO	NO	80cm	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2013.07.06	2014.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2014.06.06	2015.06.05	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2013.07.06	2014.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2014.06.06	2015.06.05	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2014.06.06	2015.06.05	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2013.07.06	2014.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2013.07.06	2014.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2013.12.22	2014.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2014.06.06	2015.06.05	1 year
10	Power Meter	R&S	NRVS	100696	2013.07.06	2014.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2013.07.06	2014.07.05	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2014.06.06	2015.06.05	1 year
2	LISN	R&S	ENV216	101313	2013.08.24	2014.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2014.06.06	2015.06.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2014.06.06	2015.06.05	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2014.06.06	2015.06.05	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2014.06.06	2015.06.05	1 year

1	Attenuation	MCE	24-10-34	BN9258	2014.06.06	2015.06.05	1 year
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3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

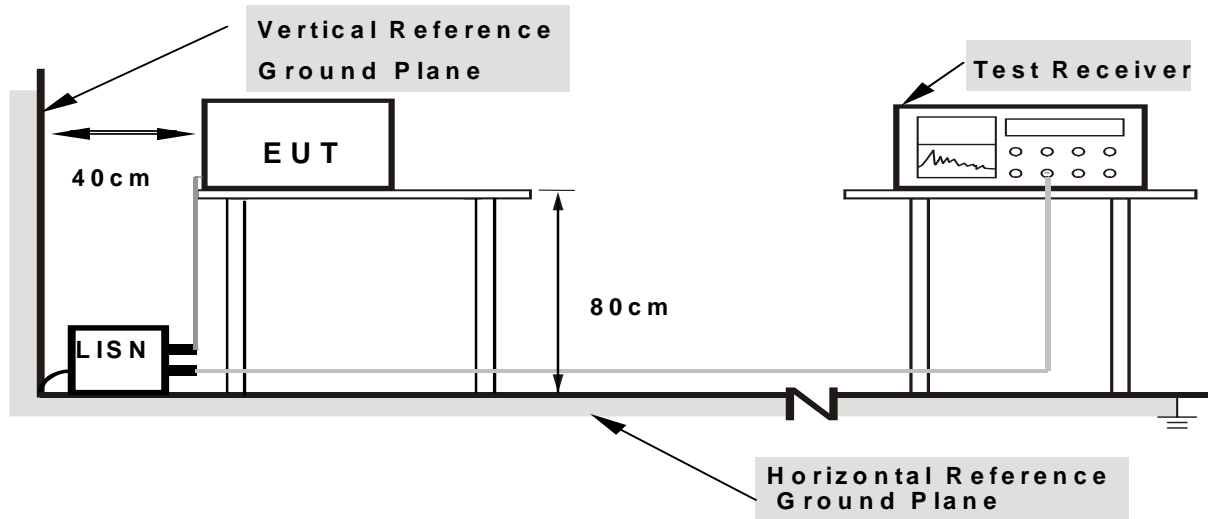
3.1.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



- Note:**
- 1. Support units were connected to second LISN.
 - 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

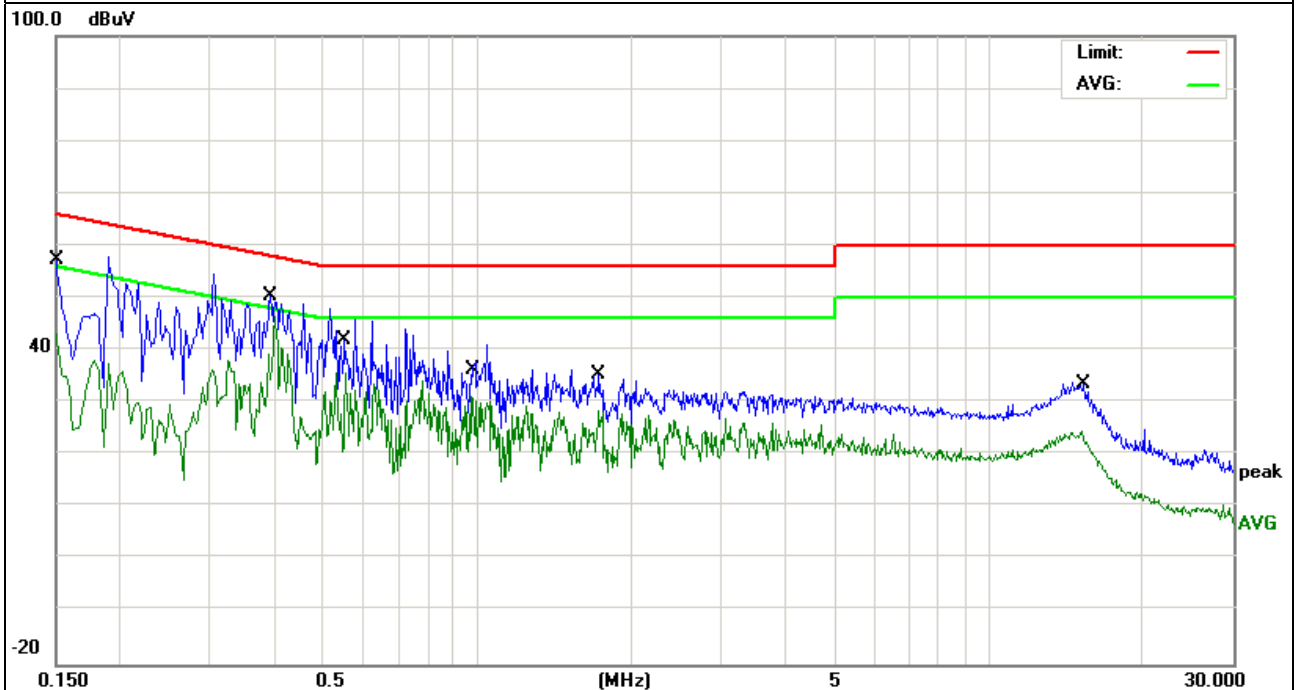
3.1.6 TEST RESULTS

EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name. :	SBWD100B
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5V From adapter AC120V/60Hz	Test Mode :	Mode 5- Adapter 1

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector Type
0.1500	45.63	9.66	55.29	65.99	-10.70	QP
0.1500	33.64	9.66	43.30	55.99	-12.69	AVG
0.3899	37.17	9.52	46.69	58.06	-11.37	QP
0.3899	29.64	9.52	39.16	48.06	-8.90	AVG
0.5540	28.95	9.53	38.48	56.00	-17.52	QP
0.5540	26.24	9.53	35.77	46.00	-10.23	AVG
0.9699	25.65	9.55	35.20	56.00	-20.80	QP
0.9699	21.50	9.55	31.05	46.00	-14.95	AVG
1.7339	25.76	9.56	35.32	56.00	-20.68	QP
1.7339	18.94	9.56	28.50	46.00	-17.50	AVG
15.1979	22.62	9.85	32.47	60.00	-27.53	QP
15.1979	14.56	9.85	24.41	50.00	-25.59	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

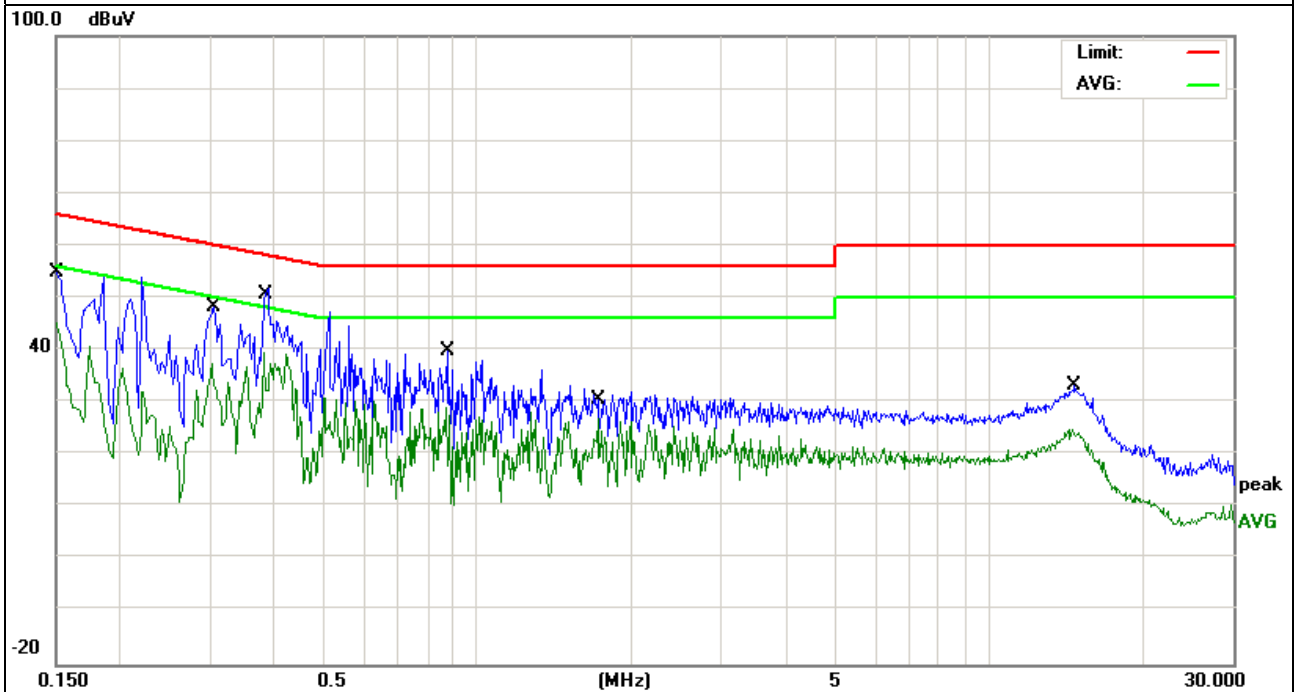


EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name. :	SBWD100B
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5V From adapter AC120V/60Hz	Test Mode :	Mode 5- Adapter 1

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector Type
0.1500	44.88	9.66	54.54	65.99	-11.45	QP
0.1500	35.69	9.66	45.35	55.99	-10.64	AVG
0.3020	37.70	9.51	47.21	60.19	-12.98	QP
0.3020	28.00	9.51	37.51	50.19	-12.68	AVG
0.3820	38.80	9.52	48.32	58.23	-9.91	QP
0.3820	29.97	9.52	39.49	48.23	-8.74	AVG
0.8700	24.27	9.55	33.82	56.00	-22.18	QP
0.8700	19.48	9.55	29.03	46.00	-16.97	AVG
1.7180	20.92	9.56	30.48	56.00	-25.52	QP
1.7180	17.28	9.56	26.84	46.00	-19.16	AVG
14.5259	22.47	9.83	32.30	60.00	-27.70	QP
14.5259	15.10	9.83	24.93	50.00	-25.07	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

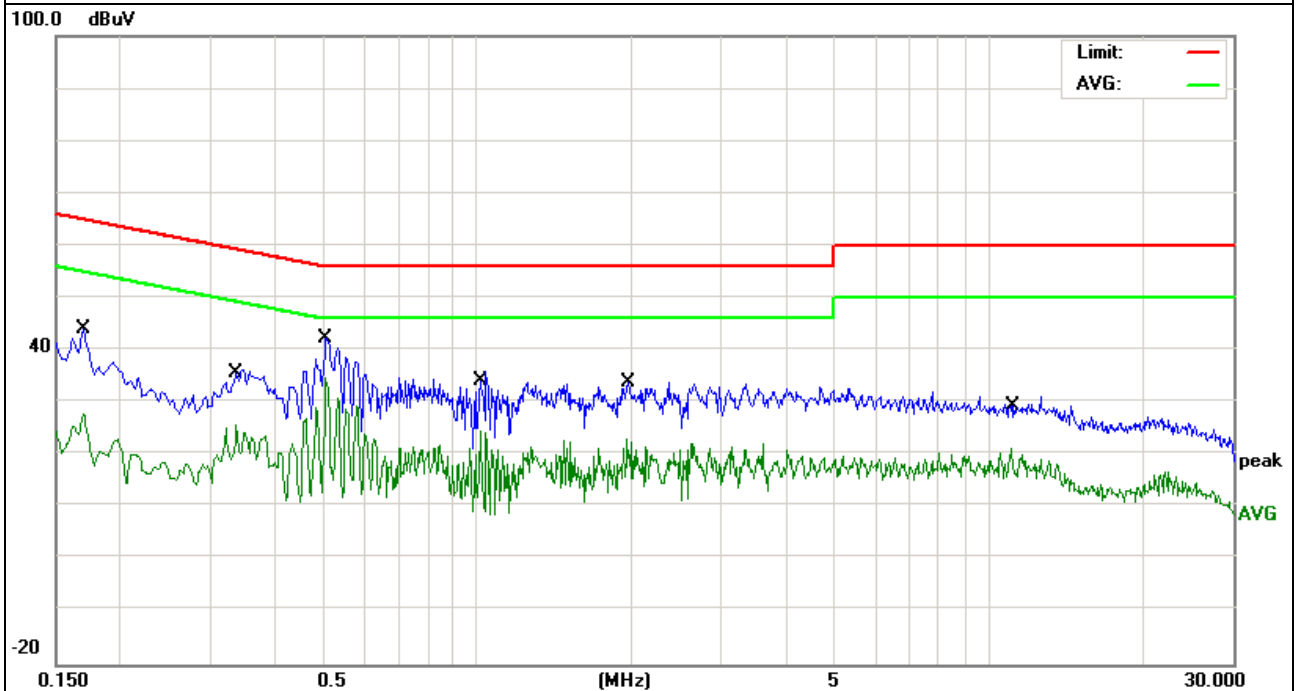


EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name. :	SBWD100B
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5V From adapter AC120V/60Hz	Test Mode :	Mode 5- Adapter 2

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector Type
0.1700	34.37	9.57	43.94	64.96	-21.02	QP
0.1700	18.41	9.57	27.98	54.96	-26.98	AVG
0.3379	26.25	9.50	35.75	59.25	-23.50	QP
0.3379	16.11	9.50	25.61	49.25	-23.64	AVG
0.5060	32.72	9.51	42.23	56.00	-13.77	QP
0.5060	25.28	9.51	34.79	46.00	-11.21	AVG
1.0140	24.54	9.53	34.07	56.00	-21.93	QP
1.0140	15.14	9.53	24.67	46.00	-21.33	AVG
1.9619	23.49	9.55	33.04	56.00	-22.96	QP
1.9619	13.41	9.55	22.96	46.00	-23.04	AVG
11.0739	19.47	9.75	29.22	60.00	-30.78	QP
11.0739	11.52	9.75	21.27	50.00	-28.73	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

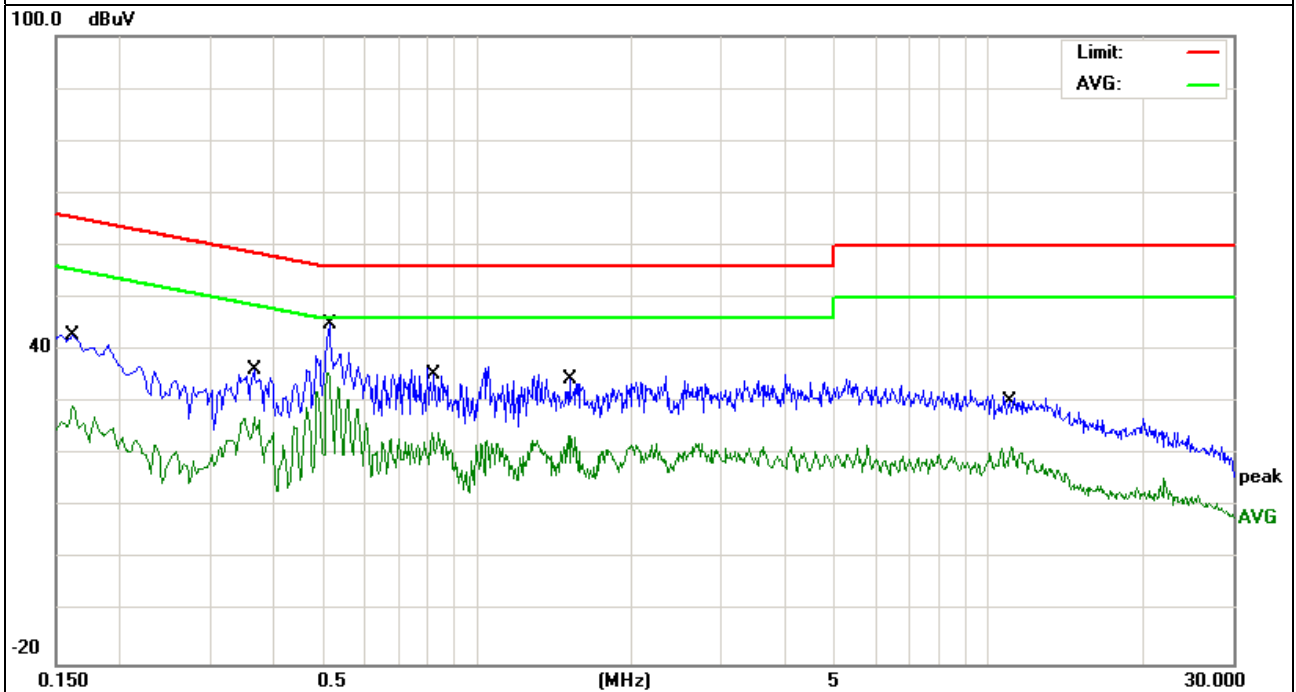


EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name. :	SBWD100B
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5V From adapter AC120V/60Hz	Test Mode :	Mode 5- Adapter 2

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector Type
0.1620	33.15	9.62	42.77	65.36	-22.59	QP
0.1620	19.76	9.62	29.38	55.36	-25.98	AVG
0.3659	26.86	9.52	36.38	58.59	-22.21	QP
0.3659	17.74	9.52	27.26	48.59	-21.33	AVG
0.5100	32.09	9.53	41.62	56.00	-14.38	QP
0.5100	26.14	9.53	35.67	46.00	-10.33	AVG
0.8139	20.90	9.54	30.44	56.00	-25.56	QP
0.8139	14.78	9.54	24.32	46.00	-21.68	AVG
1.5260	20.75	9.56	30.31	56.00	-25.69	QP
1.5260	14.20	9.56	23.76	46.00	-22.24	AVG
11.0739	18.25	9.76	28.01	60.00	-31.99	QP
11.0739	11.93	9.76	21.69	50.00	-28.31	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	dBuV/m@at 3M	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

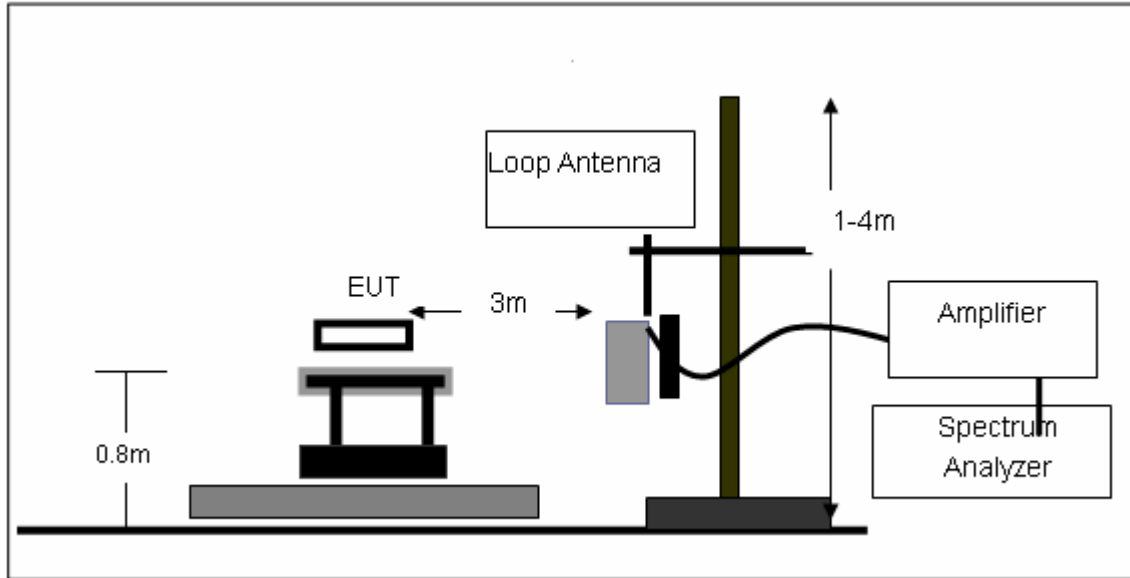
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	Peak	100 kHz	100 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

3.2.3 DEVIATION FROM TEST STANDARD

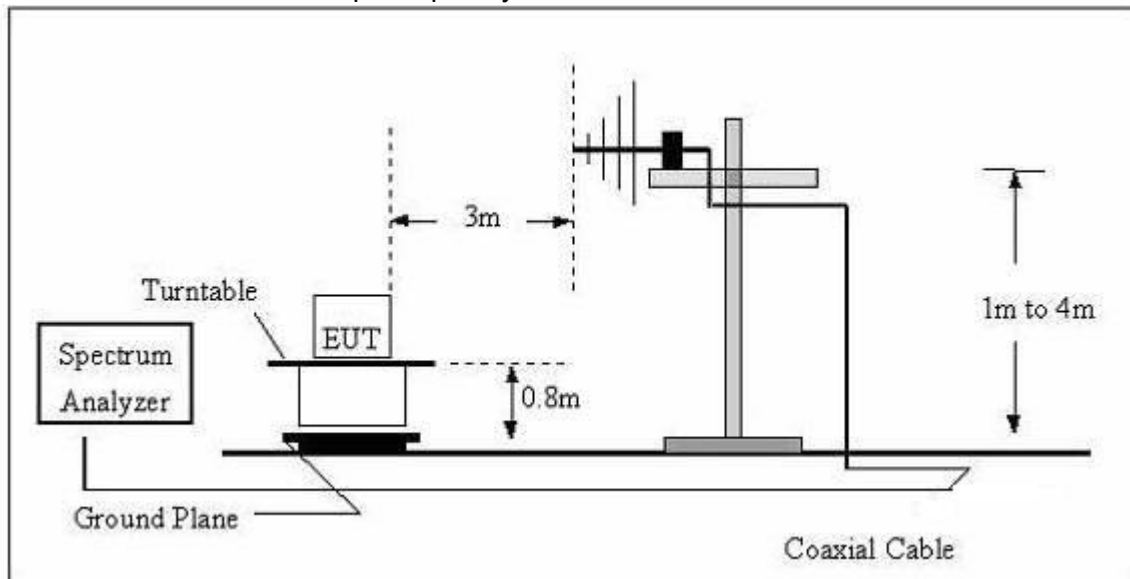
No deviation

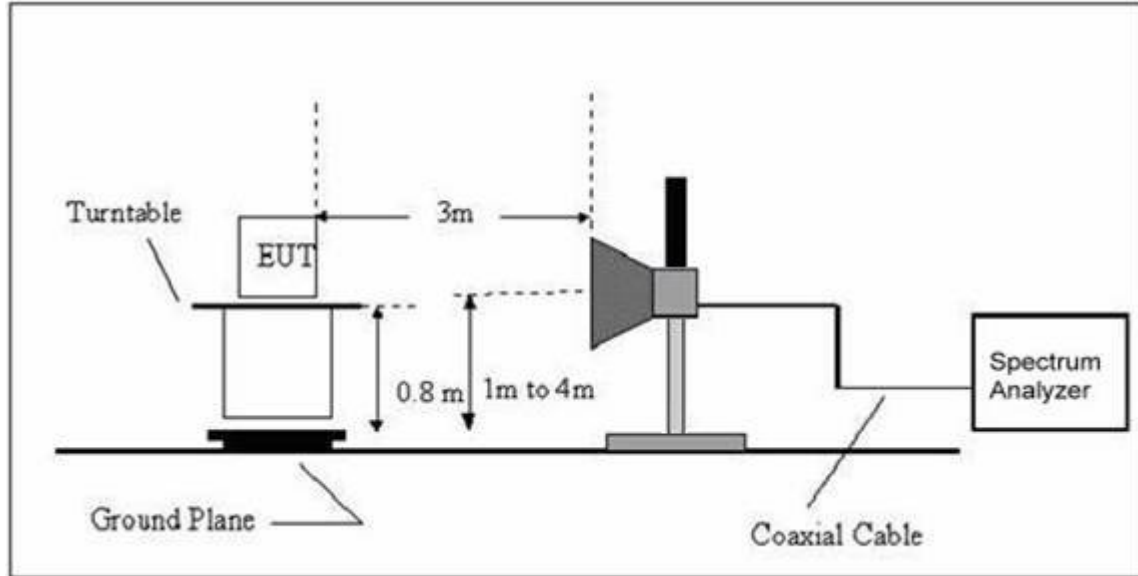
3.2.4 TEST SETUP

(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz**3.2.5 EUT OPERATING CONDITIONS**

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT:	ScreenBeam Pro Wireless Display Receiver	Model Name. :	SBWD100B
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	N/A
--	--	--	--	N/A

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})(\text{dB})$;

Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX (2.4G) -Adapter 1		

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Detector Type	Comment
Low Channel (2412 MHz)-Below 1G							
133.2342	15.73	12.25	27.98	43.50	-15.52	QP	Vertical
235.4655	16.84	11.65	28.49	46.00	-17.51	QP	Vertical
267.0332	17.33	14.62	31.95	46.00	-14.05	QP	Vertical
315.4806	16.98	15.26	32.24	46.00	-13.76	QP	Vertical
528.2458	16.12	21.12	37.24	46.00	-8.76	QP	Vertical
263.8190	16.81	14.62	31.43	46.00	-14.57	QP	Horizontal
432.5457	17.64	18.82	36.46	46.00	-9.54	QP	Horizontal
528.2097	17.68	21.12	38.80	46.00	-7.20	QP	Horizontal
721.7259	10.54	25.59	36.13	46.00	-9.87	QP	Horizontal
815.2377	11.15	26.46	37.61	46.00	-8.39	QP	Horizontal

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX (2.4G) -Adapter 2		

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Detector Type	Comment
Low Channel (2412 MHz)-Below 1G							
83.4277	21.52	9.03	30.55	40.00	-9.45	QP	Vertical
141.0368	17.98	11.93	29.91	43.50	-13.59	QP	Vertical
299.4562	22.37	14.58	36.95	46.00	-9.05	QP	Vertical
897.9823	12.04	25.59	37.63	46.00	-8.37	QP	Vertical
87.0522	22.11	9.08	31.19	43.50	-12.31	QP	Horizontal
141.3785	23.54	11.93	35.47	43.50	-8.03	QP	Horizontal
315.0234	23.07	14.61	37.68	46.00	-8.32	QP	Horizontal
233.3156	21.62	10.63	32.25	46.00	-13.75	QP	Horizontal

Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX(5.0G) - Adapter 1		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Vertical	115.0234	17.81	12.03	29.84	43.50	-13.66	QP
Vertical	233.7409	16.22	11.65	27.87	46.00	-18.13	QP
Vertical	401.0240	17.19	18.53	35.72	46.00	-10.28	QP
Vertical	493.4544	15.56	20.56	36.12	46.00	-9.88	QP
Vertical	524.2269	15.68	21.12	36.80	46.00	-9.20	QP
Vertical	802.9012	10.08	26.43	36.51	46.00	-9.49	QP
Horizontal	115.0355	15.32	12.21	27.53	43.50	-15.97	QP
Horizontal	164.9071	15.73	10.81	26.54	43.50	-16.96	QP
Horizontal	287.9904	16.74	14.30	31.04	46.00	-14.96	QP
Horizontal	524.2632	16.11	21.12	37.23	46.00	-8.77	QP
Horizontal	701.7765	9.68	25.59	35.27	46.00	-10.73	QP
Horizontal	802.0336	10.46	26.43	36.89	46.00	-9.11	QP

EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX(5.0G) - Adapter 2		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Vertical	35.8746	18.59	15.43	34.02	40.00	-5.98	QP
Vertical	55.6094	21.42	6.10	27.52	40.00	-12.48	QP
Vertical	73.6170	20.41	6.60	27.01	40.00	-12.99	QP
Vertical	128.5629	24.89	12.20	37.09	43.50	-6.41	QP
Vertical	147.9214	25.50	11.86	37.36	43.50	-6.14	QP
Vertical	286.9823	16.69	14.25	30.94	46.00	-15.06	QP
Horizontal	75.1821	25.53	6.85	32.38	40.00	-7.62	QP
Horizontal	130.3788	21.21	12.20	33.41	43.50	-10.09	QP
Horizontal	148.4410	25.21	11.83	37.04	43.50	-6.46	QP
Horizontal	260.1444	11.02	14.93	25.95	46.00	-20.05	QP
Horizontal	390.7225	12.86	17.78	30.64	46.00	-15.36	QP
Horizontal	912.8618	6.64	28.34	34.98	46.00	-11.02	QP

3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX (2.4G)		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (2412 MHz)-Above 1G							
4824.012	47.87	10.44	58.31	74	-15.69	Pk	Vertical
4824.012	38.11	10.44	48.55	54	-5.45	AV	Vertical
7236.000	39.12	12.39	51.51	74	-22.49	pk	Vertical
4824.012	45.74	10.44	56.18	74	-17.82	pk	Horizontal
4824.012	37.54	10.44	47.98	54	-6.02	AV	Horizontal
7236.000	30.54	12.39	42.93	74	-31.07	pk	Horizontal
Mid Channel (2437 MHz)-Above 1G							
4874.043	47.19	10.40	57.59	74	-16.41	pk	Vertical
4874.043	37.76	10.40	48.16	54	-5.84	AV	Vertical
7311.147	36.87	12.75	49.62	74	-24.38	Pk	Vertical
4874.043	47.31	10.40	57.71	74	-16.29	Pk	Horizontal
4874.043	38.11	10.40	48.51	54	-5.49	AVk	Horizontal
7311.147	30.23	12.75	42.98	74	-31.02	Pk	Horizontal
High Channel (2462 MHz)- Above 1G							
4924.124	49.12	10.39	59.51	74	-14.49	pk	Vertical
4924.124	37.99	10.39	48.38	54	-5.62	AV	Vertical
7386.076	39.13	12.68	51.81	74	-22.19	pk	Vertical
4924.124	47.15	10.39	57.54	74	-16.46	pk	Horizontal
4924.124	35.42	10.39	45.81	54	-8.19	AV	Horizontal
7386.033	31.56	12.68	44.24	74	-29.76	pk	Horizontal

Note: "802.11b" mode is the worst mode. When PK value is lower than the Average value limit, average didn't record.

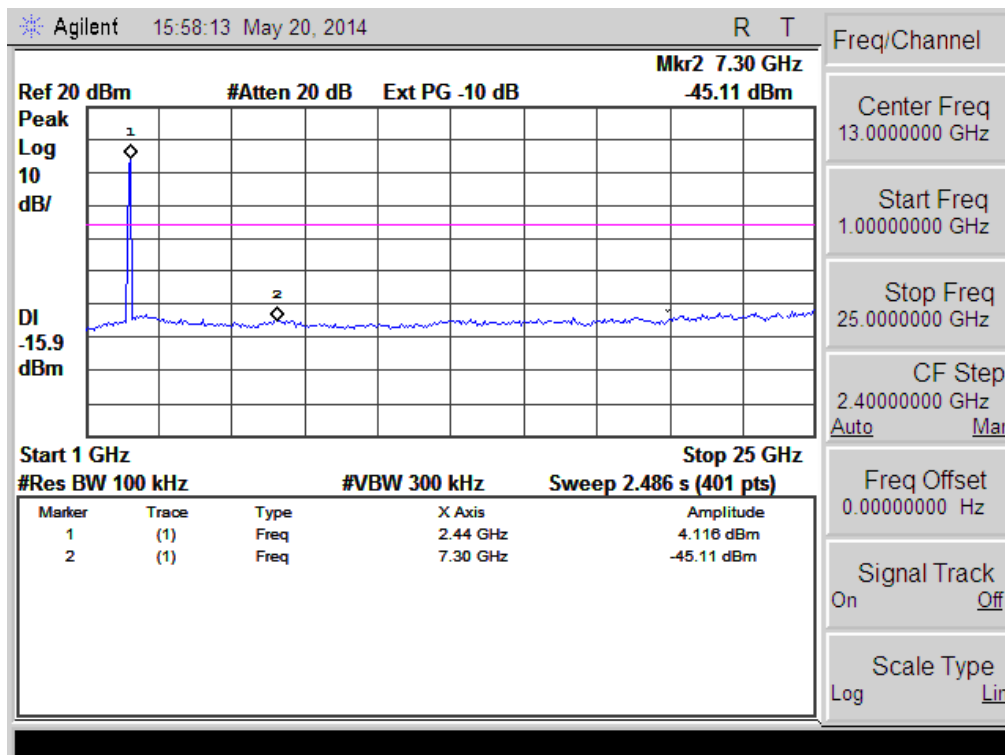
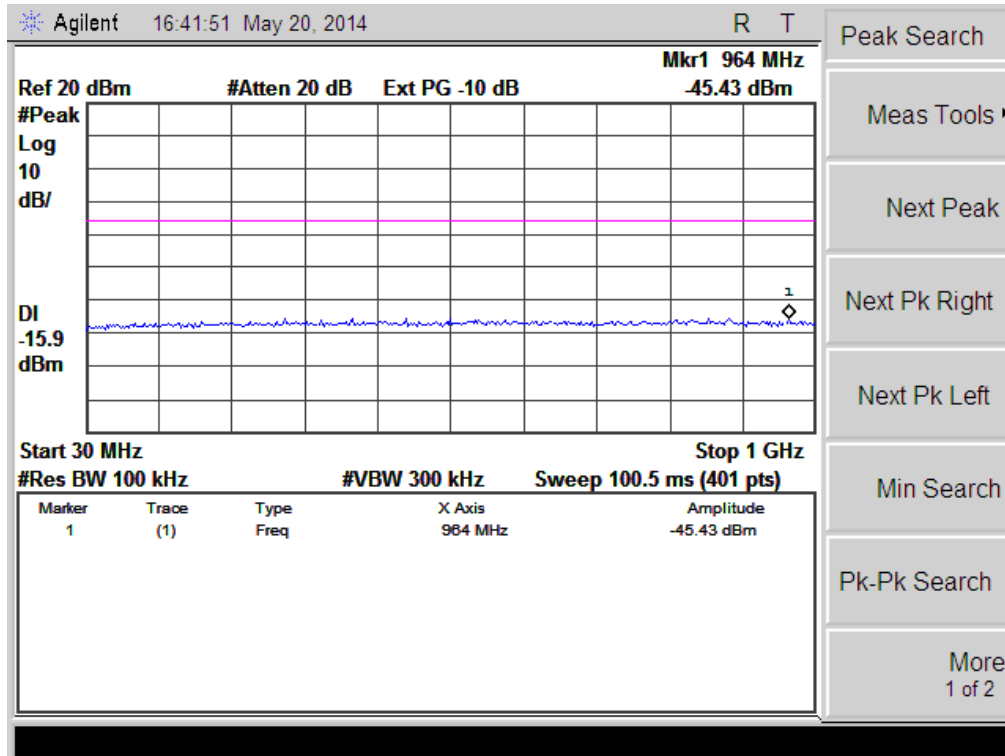
EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX (5.0G)		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G							
11490.000	35.95	14.21	50.16	74	-23.84	Pk	Vertical
17235.000	34.13	16.09	50.22	74	-23.78	Pk	Vertical
11490.000	35.46	14.21	49.67	74	-24.33	Pk	Horizontal
17235.000	30.35	16.09	46.44	74	-27.56	Pk	Horizontal
middle Channel (5785 MHz)-Above 1G							
11570.000	35.67	14.51	50.18	74	-23.82	Pk	Vertical
17355.000	33.69	16.15	49.84	74	-24.16	Pk	Vertical
11570.000	35.56	14.51	50.07	74	-23.93	Pk	Horizontal
17355.000	32.12	16.15	48.27	74	-25.73	Pk	Horizontal
High Channel (5825 MHz)-Above 1G							
11590.206	37.12	14.55	51.67	74	-22.33	Pk	Vertical
17385.924	36.83	16.18	53.01	74	-20.99	Pk	Vertical
11591.728	33.93	14.56	48.49	74	-25.51	Pk	Horizontal
17386.114	34.01	16.19	50.2	74	-23.80	Pk	Horizontal

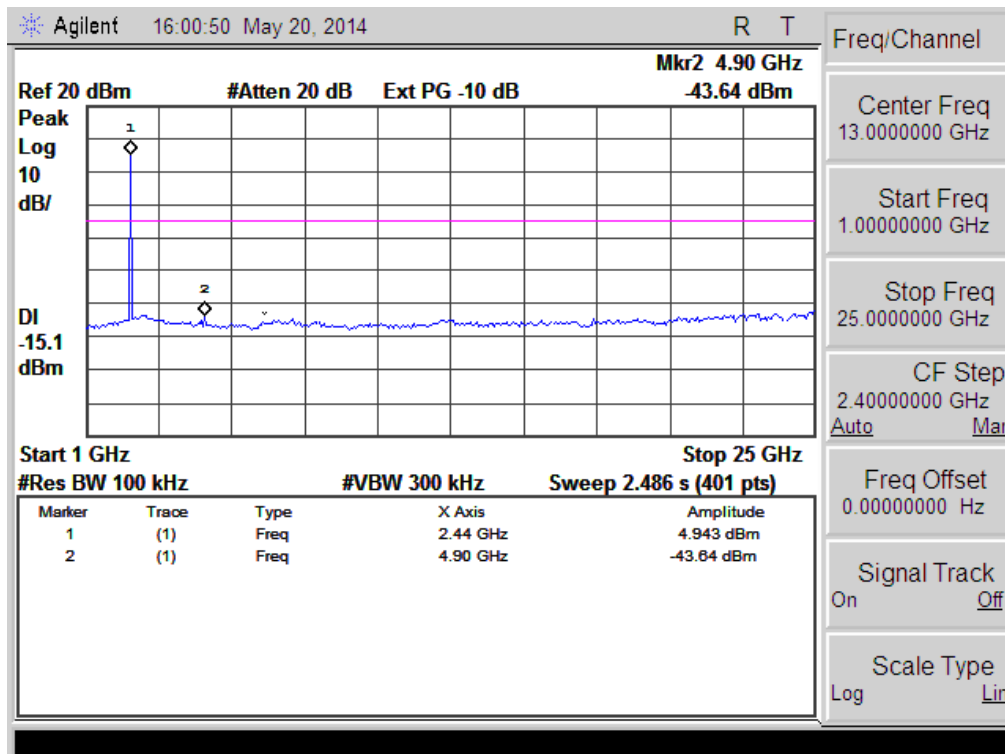
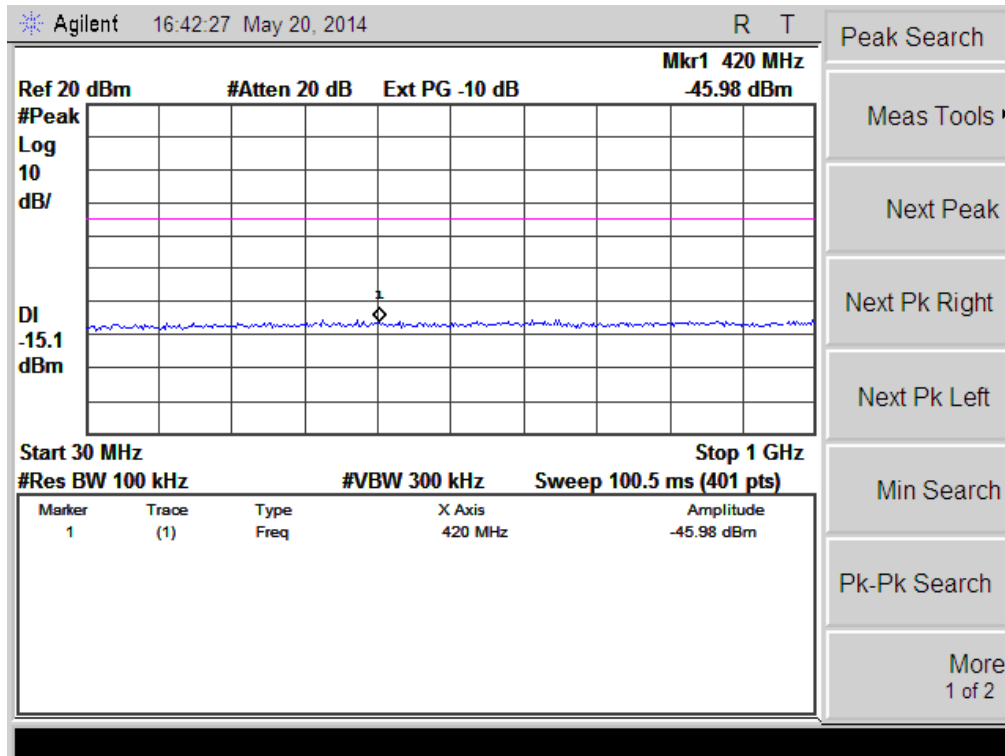
Note: "802.11N(20)(5G)" mode is the worst mode. PK value is lower than the Average value limit, So average didn't record.

Conducted Spurious Emissions at Antenna Port:

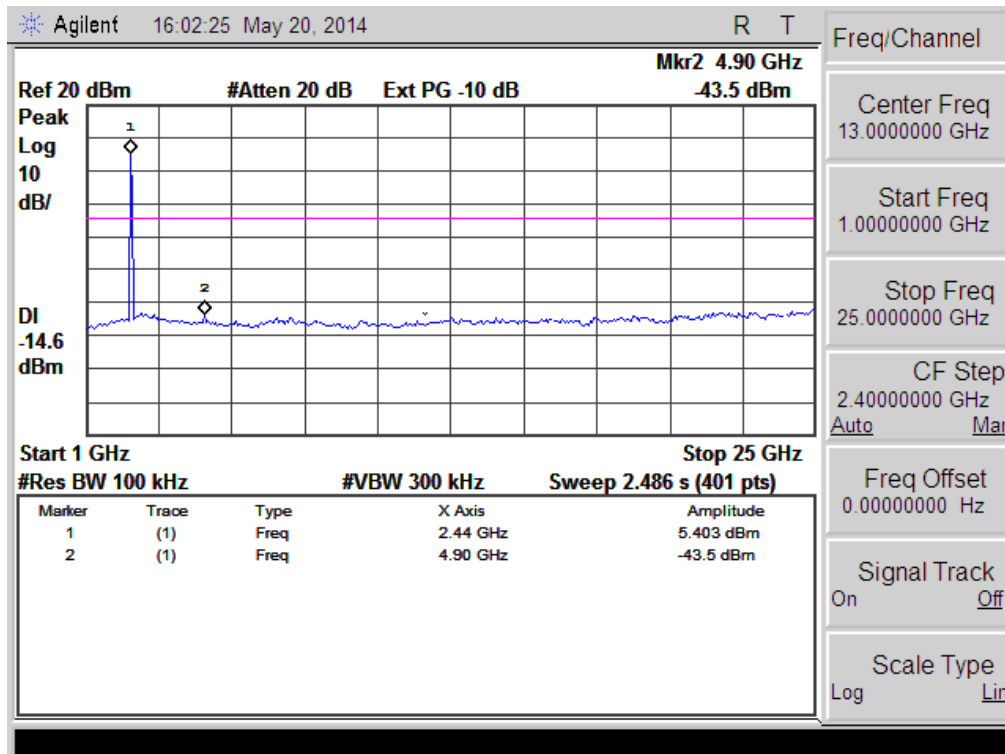
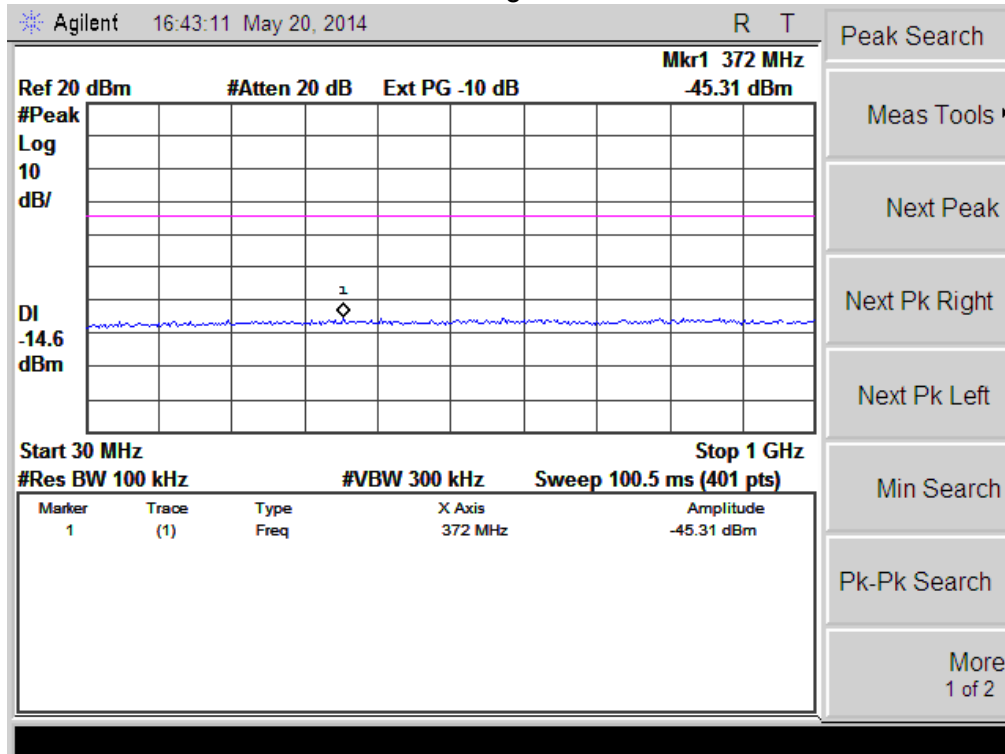
802.11b Low Channel



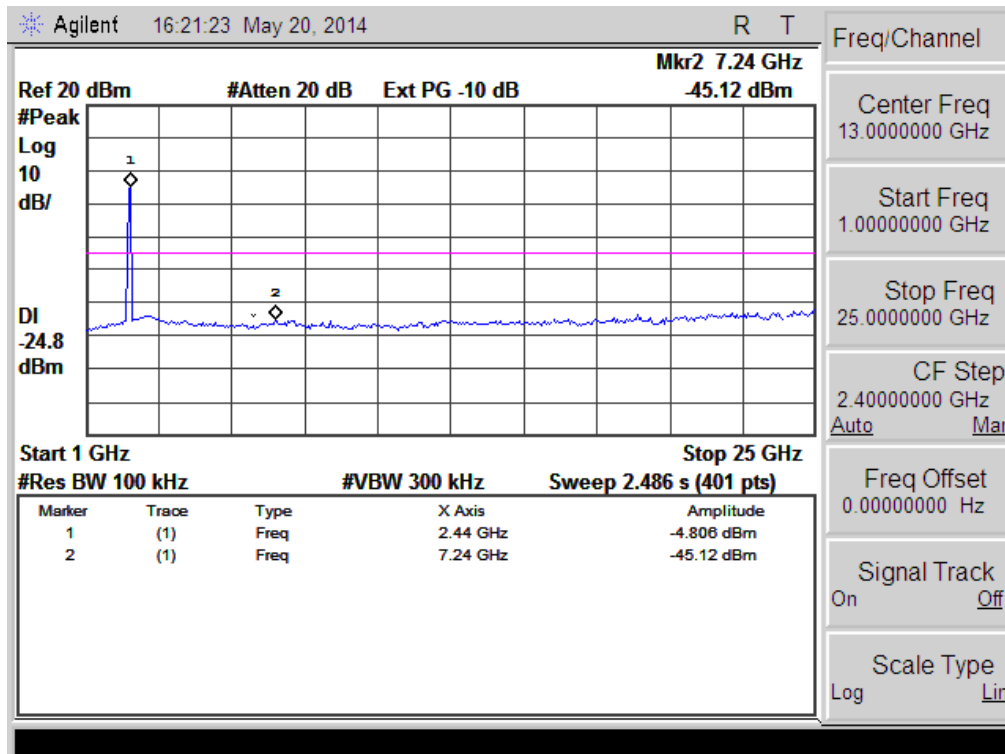
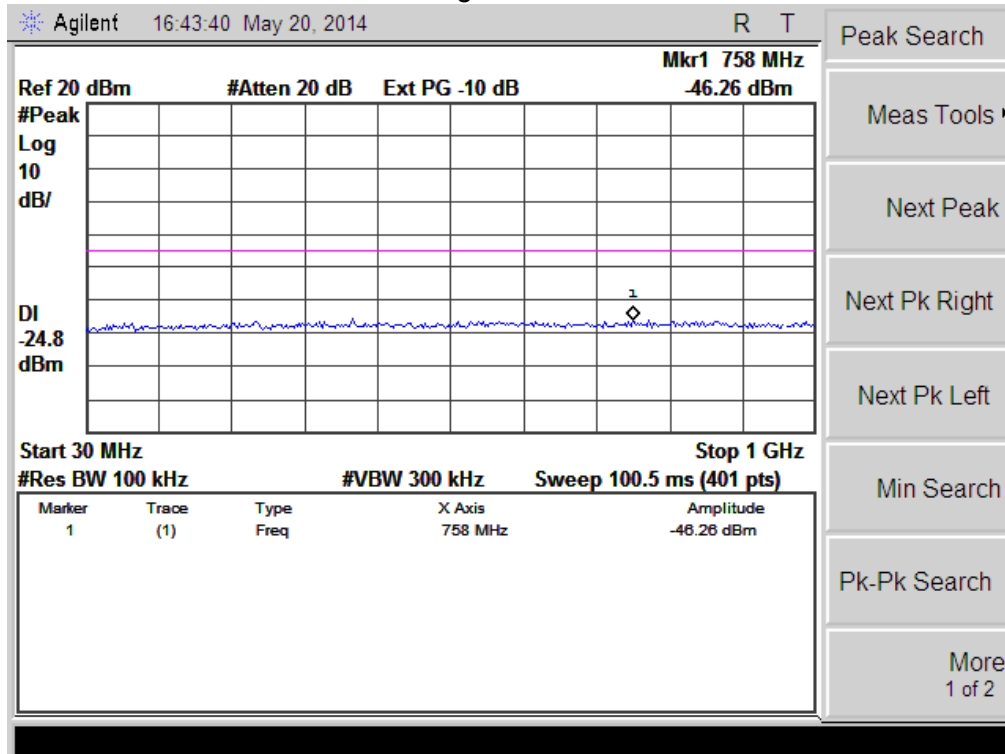
802.11b Middle Channel



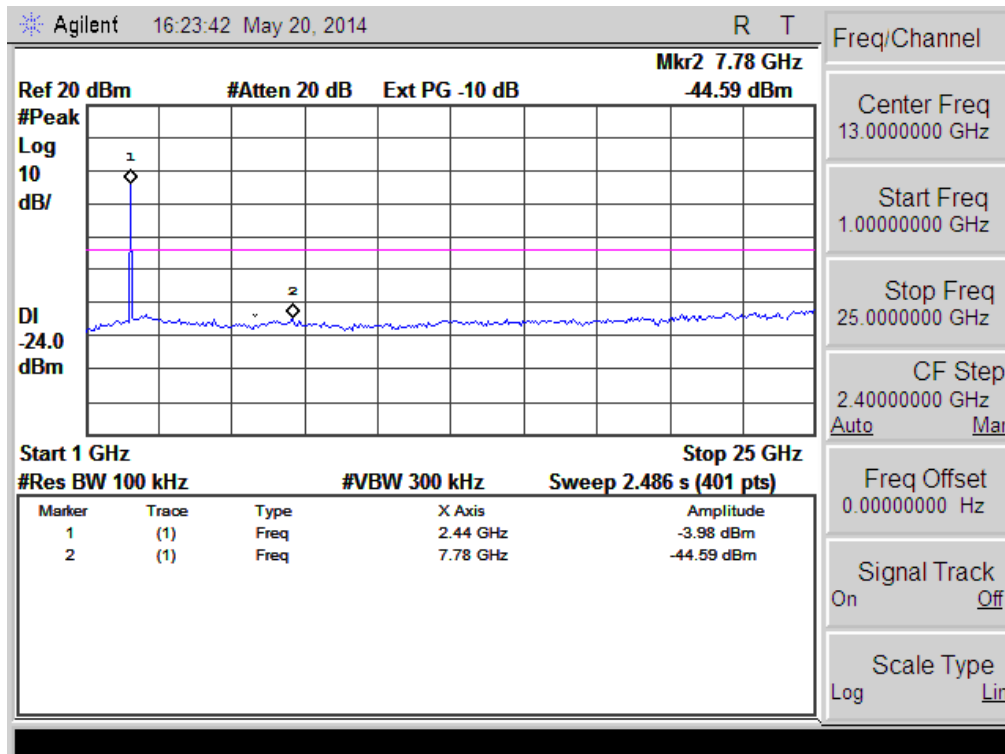
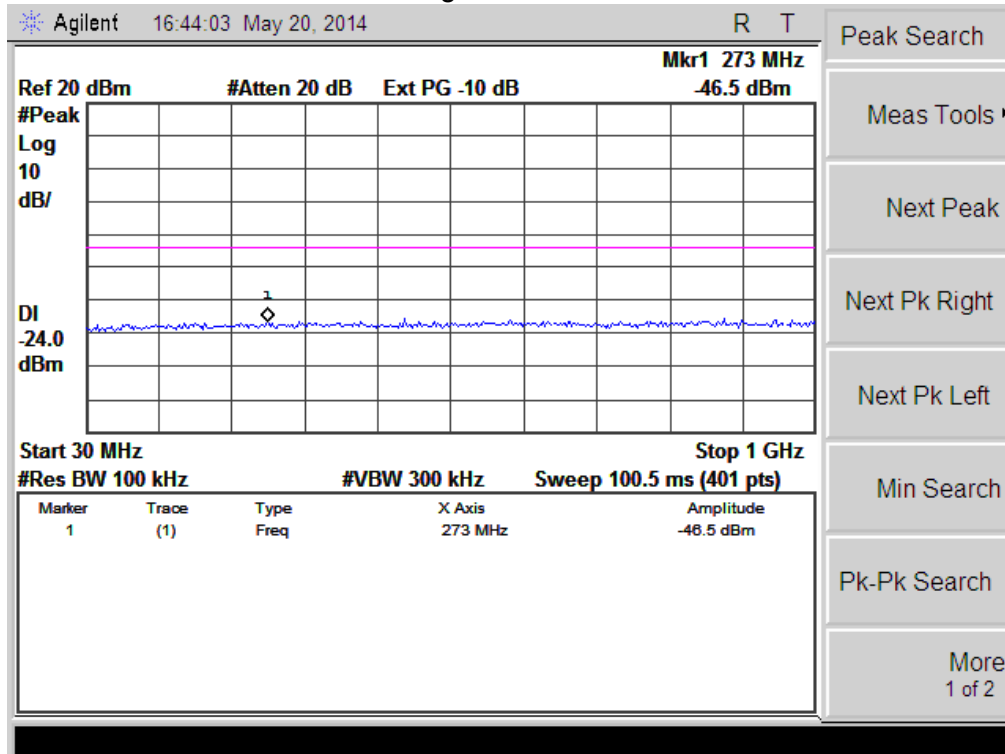
802.11b High Channel



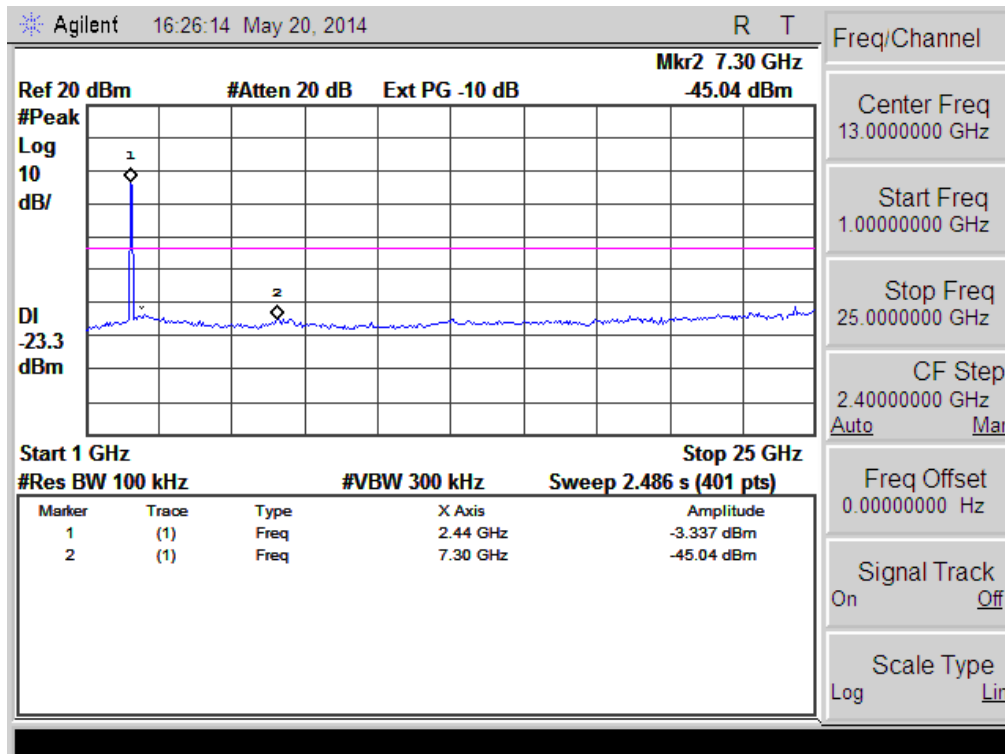
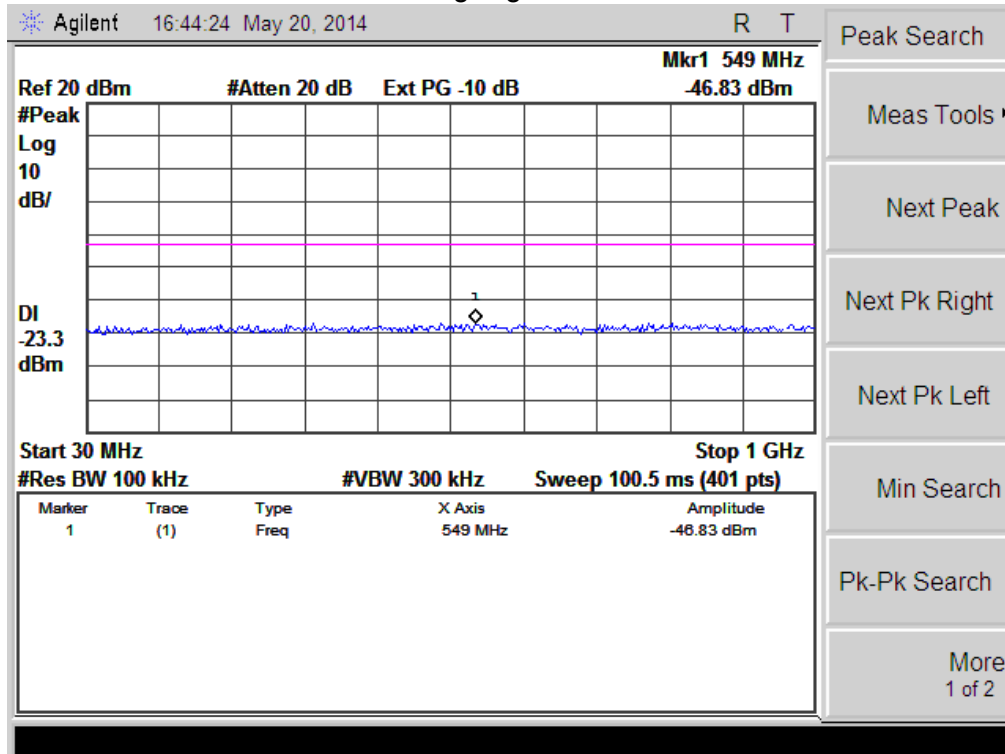
802.11g Low Channel



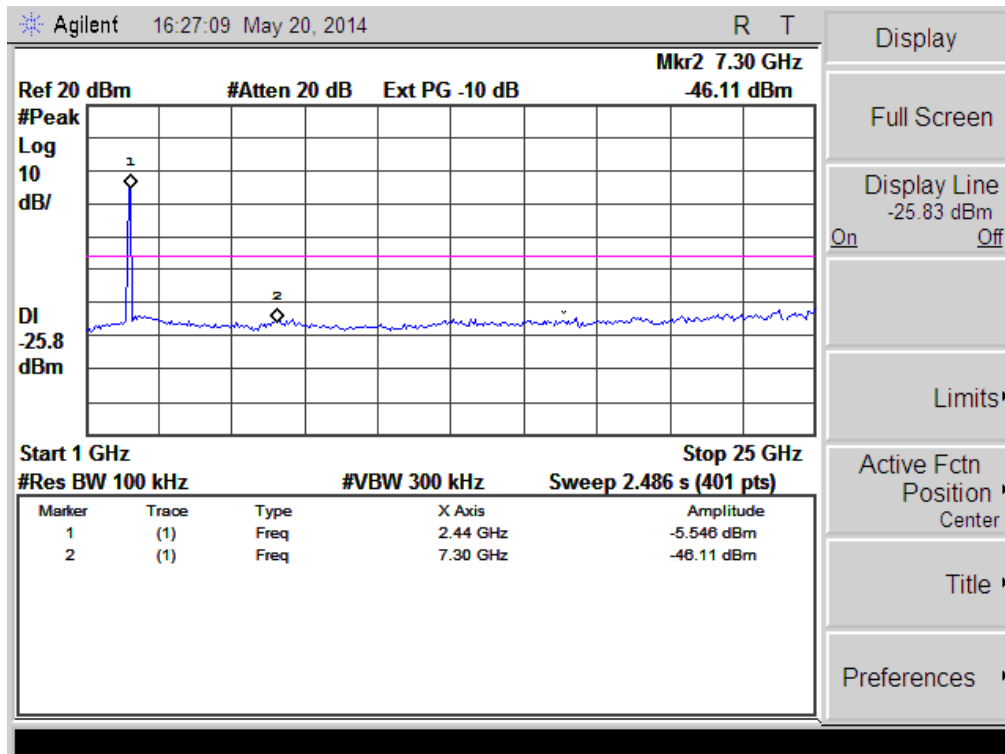
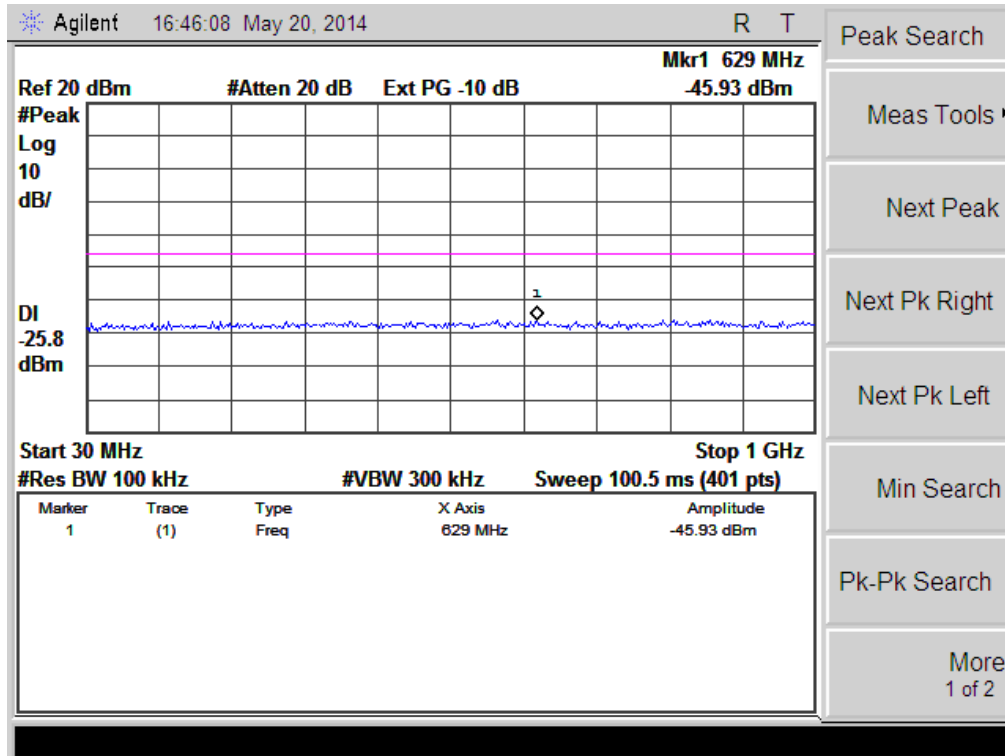
802.11g Middle Channel



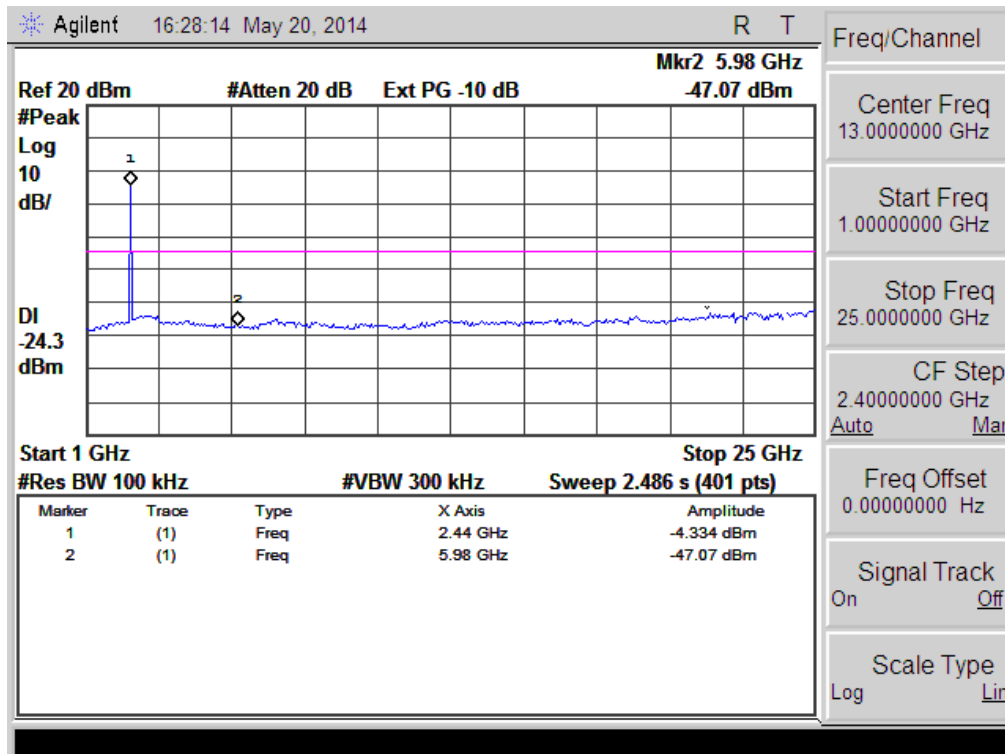
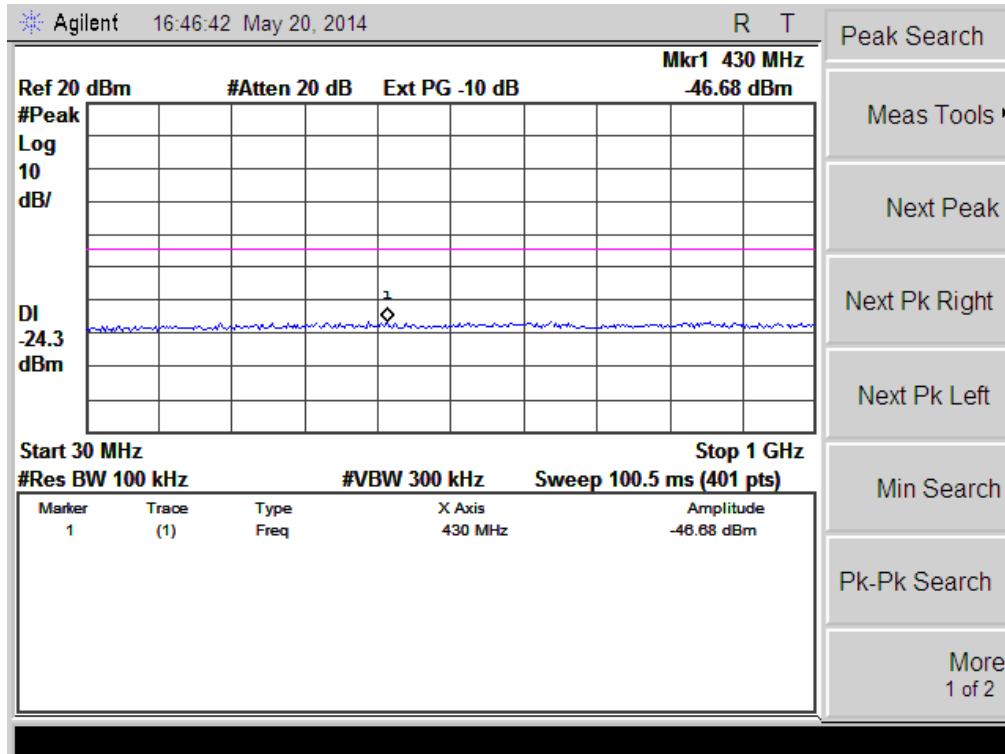
802.11g High Channel



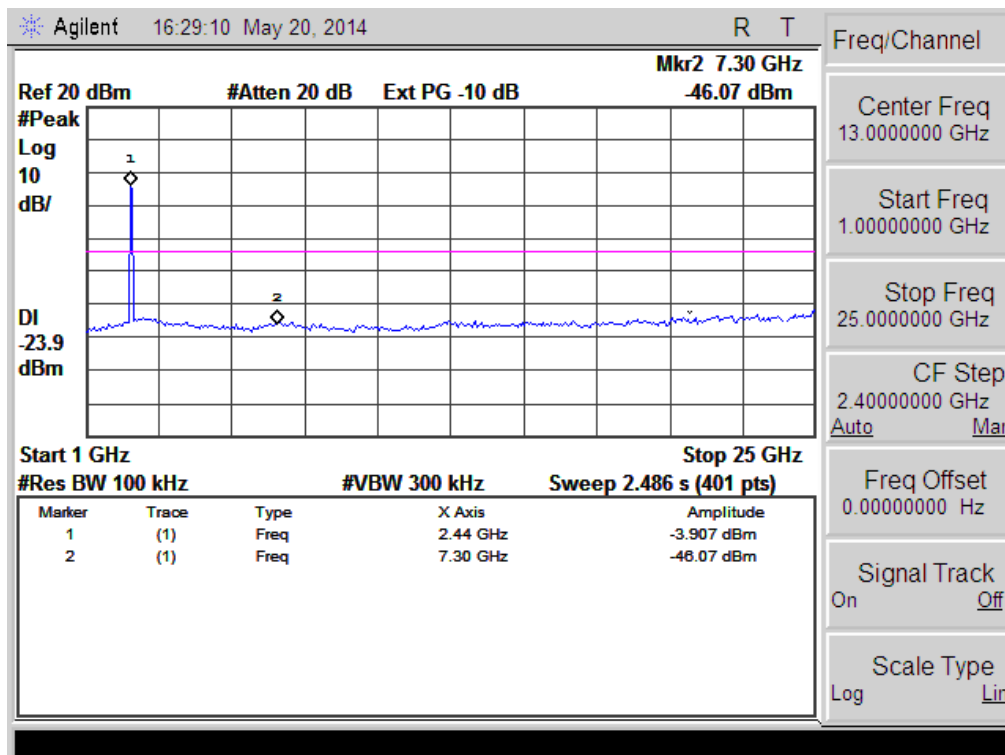
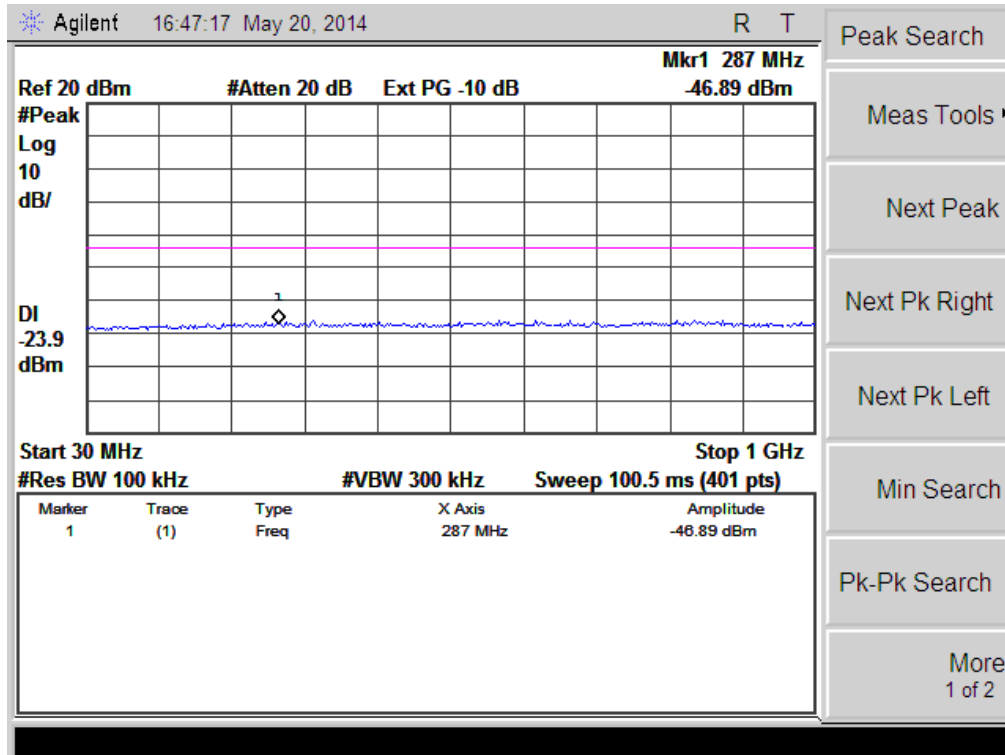
802.11n-HT20 Low Channel



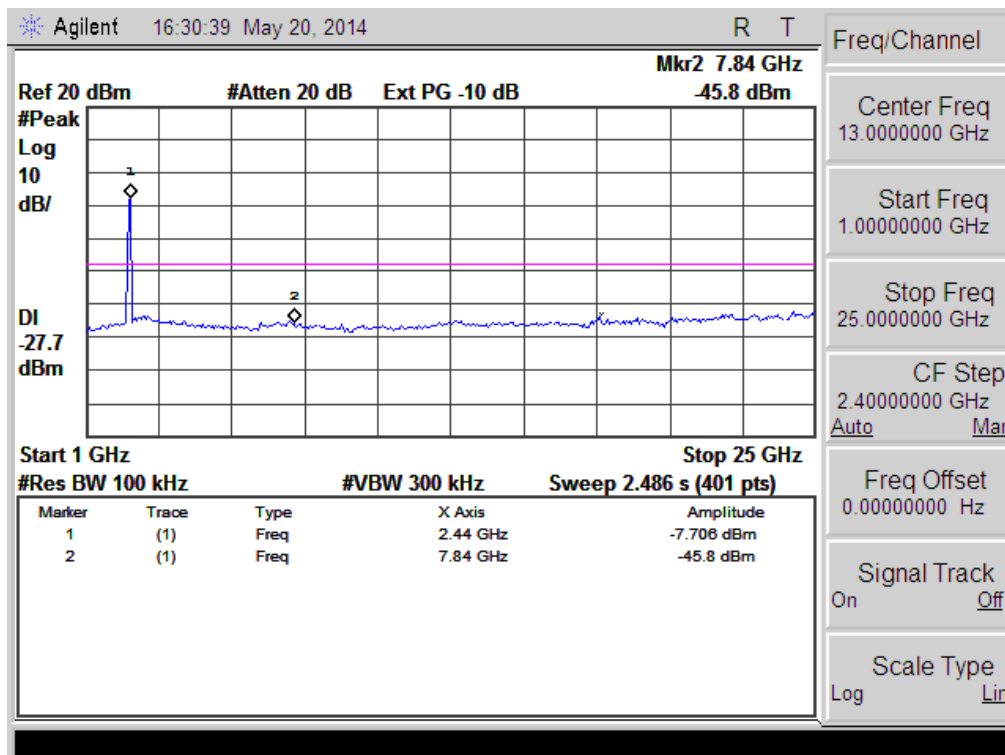
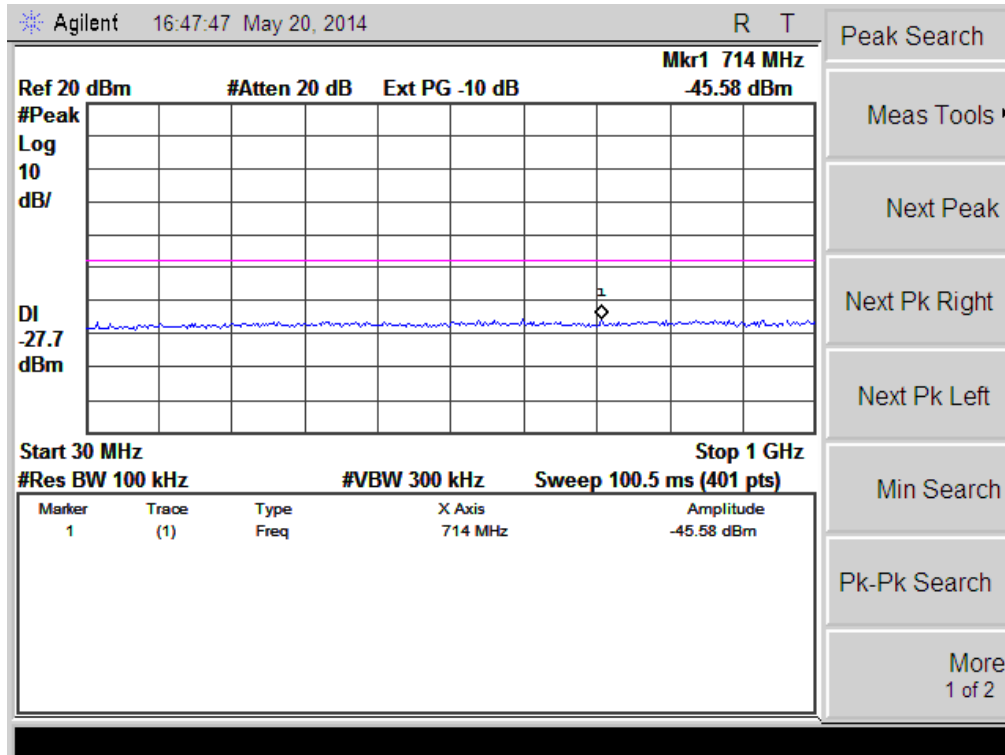
802.11n-HT20 Middle Channel



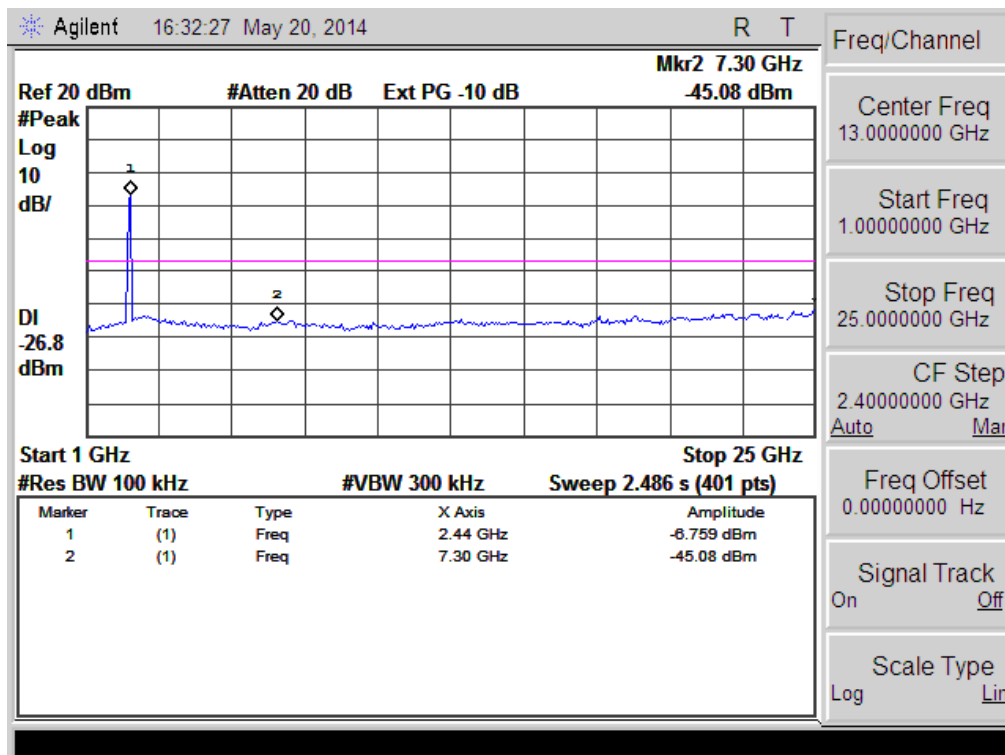
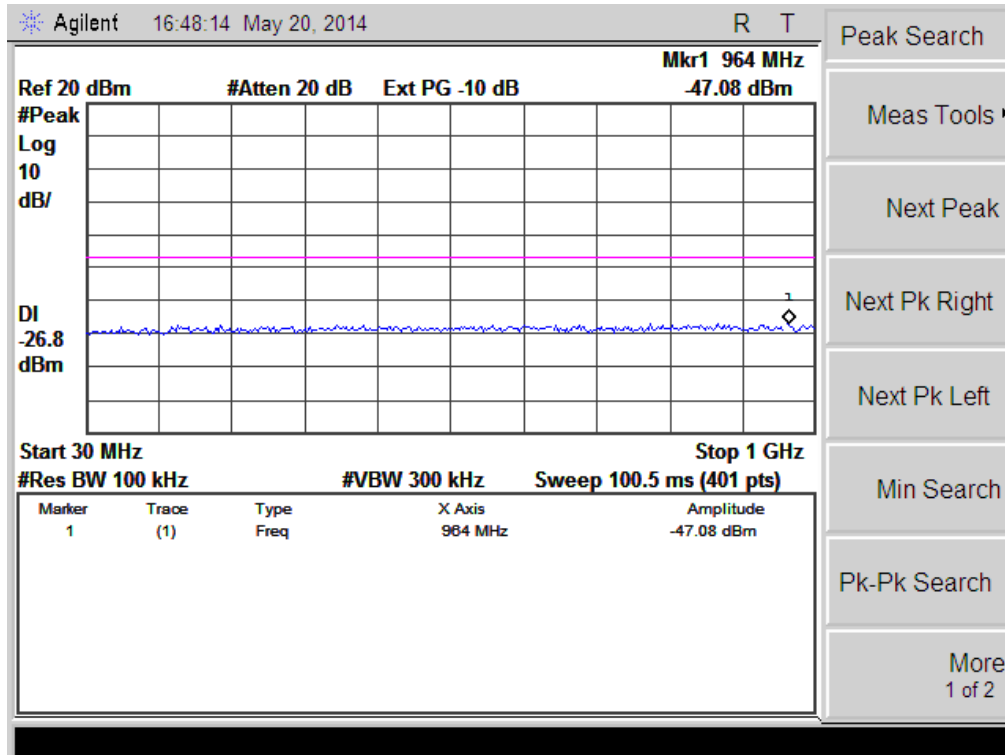
802.11n-HT20 High Channel



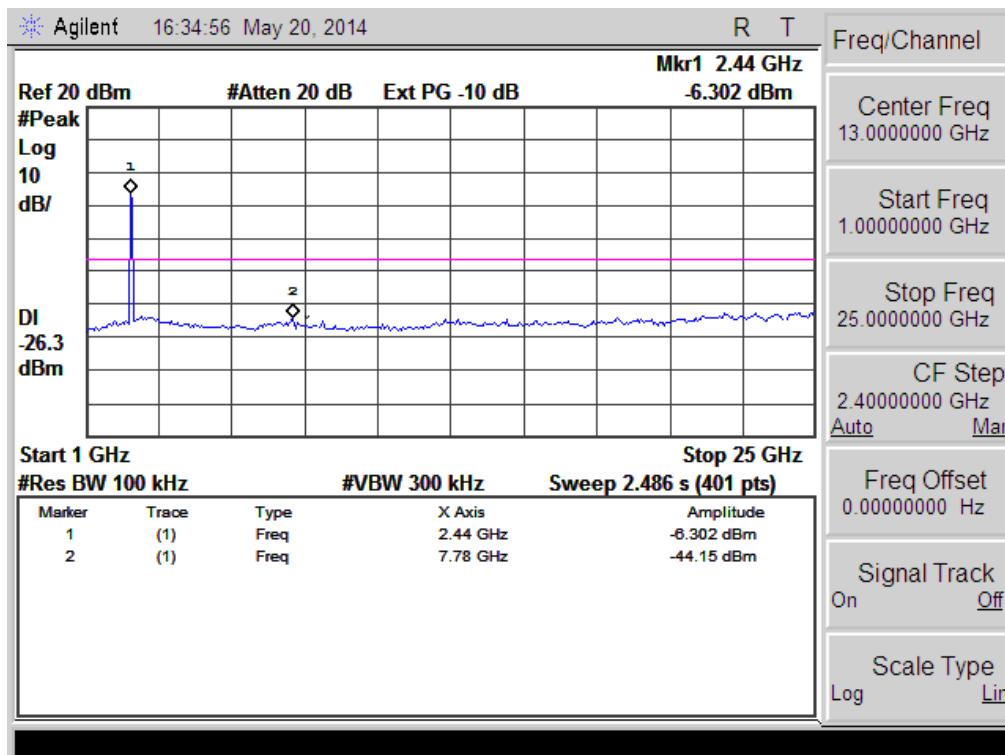
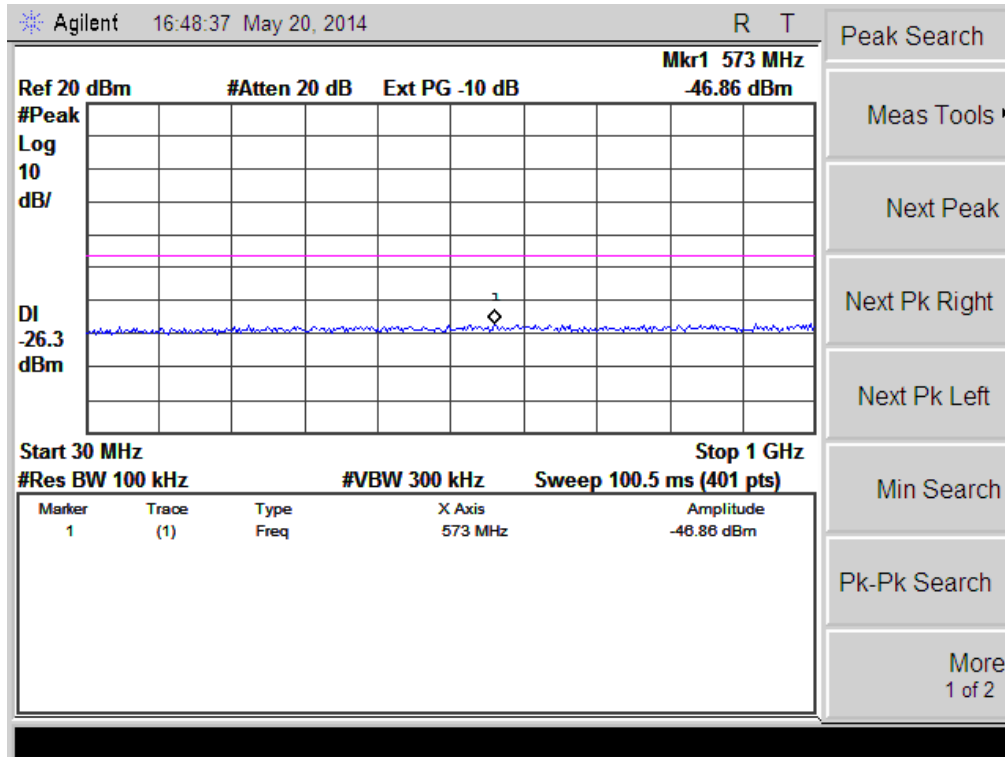
802.11n-HT40 Low Channel



802.11n-HT40 Middle Channel

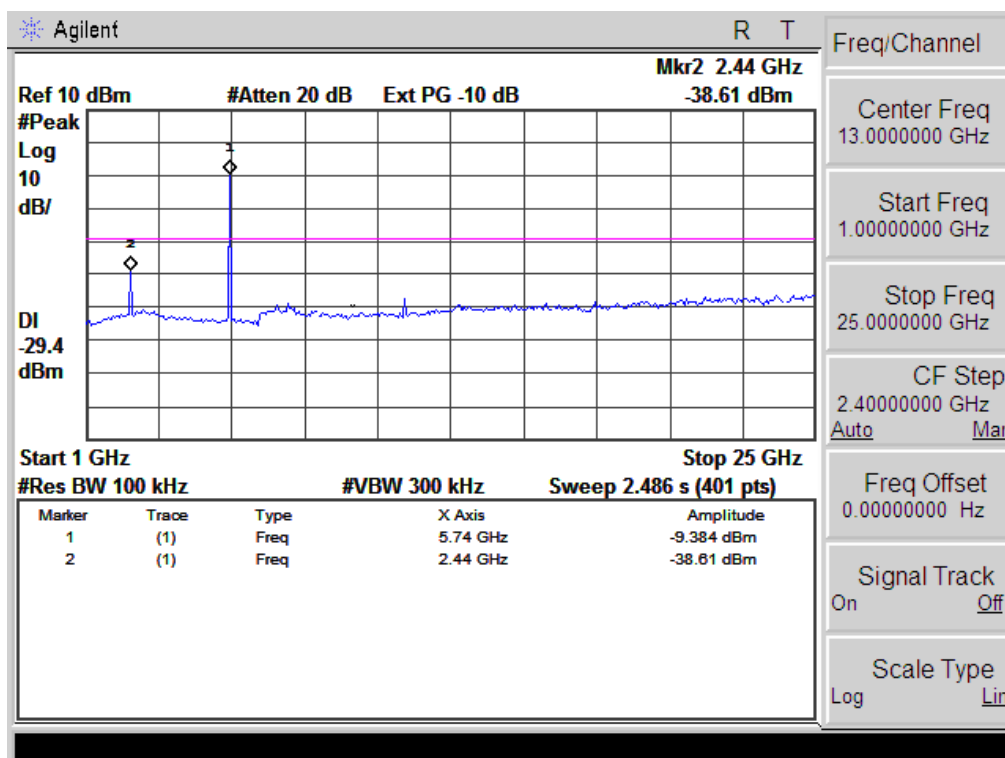
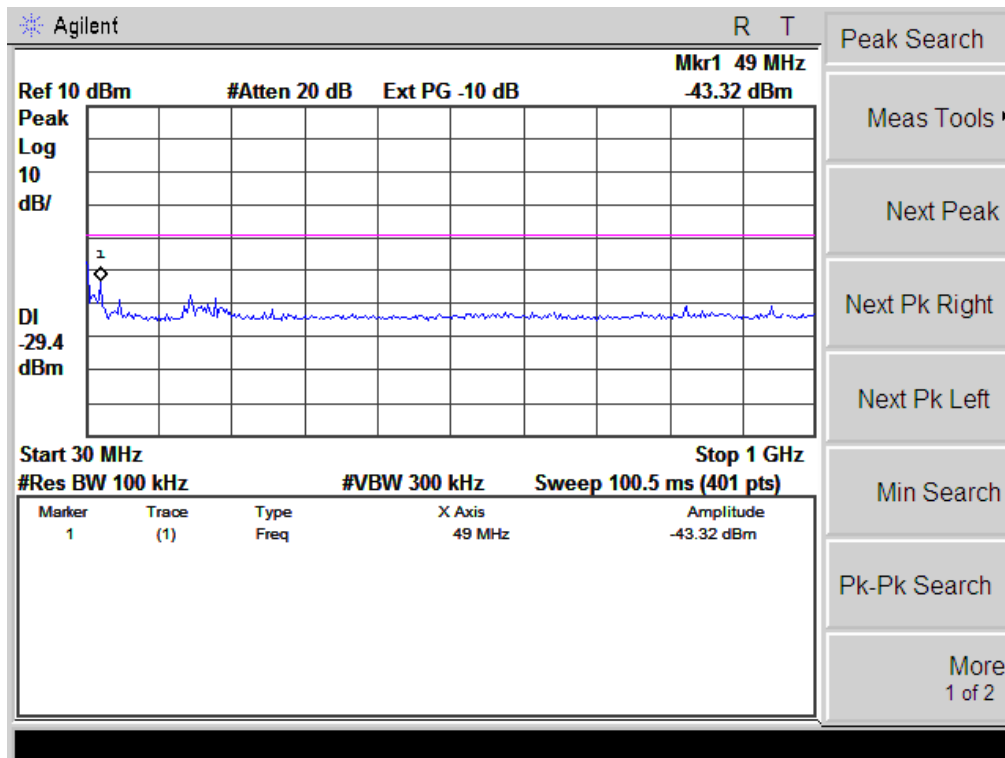


802.11n-HT40 High Channel



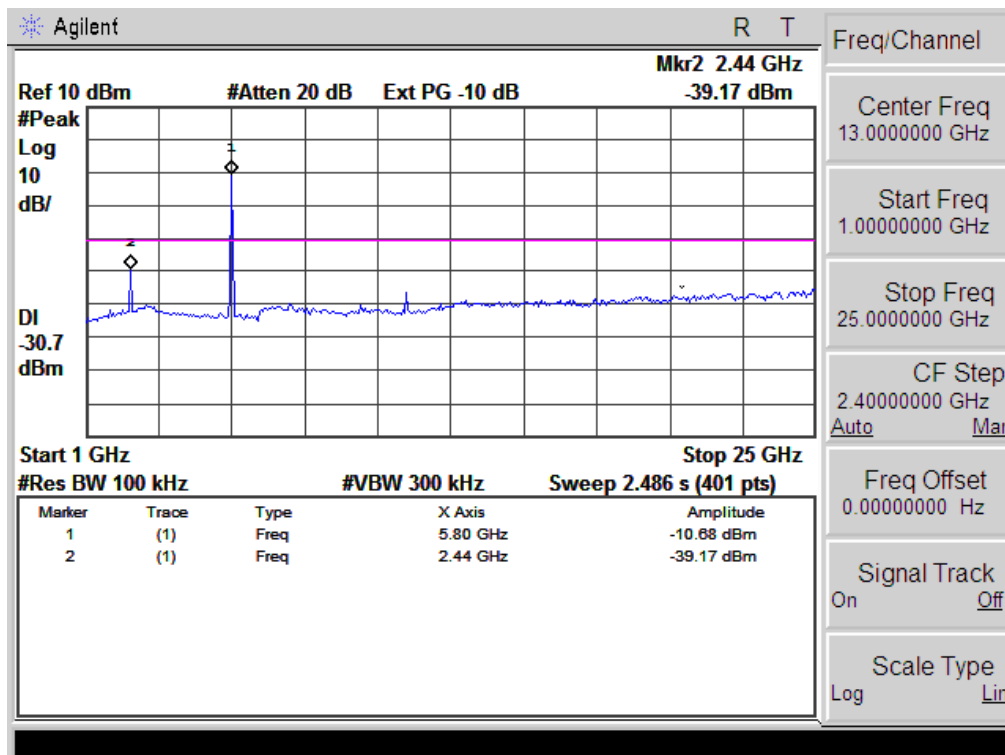
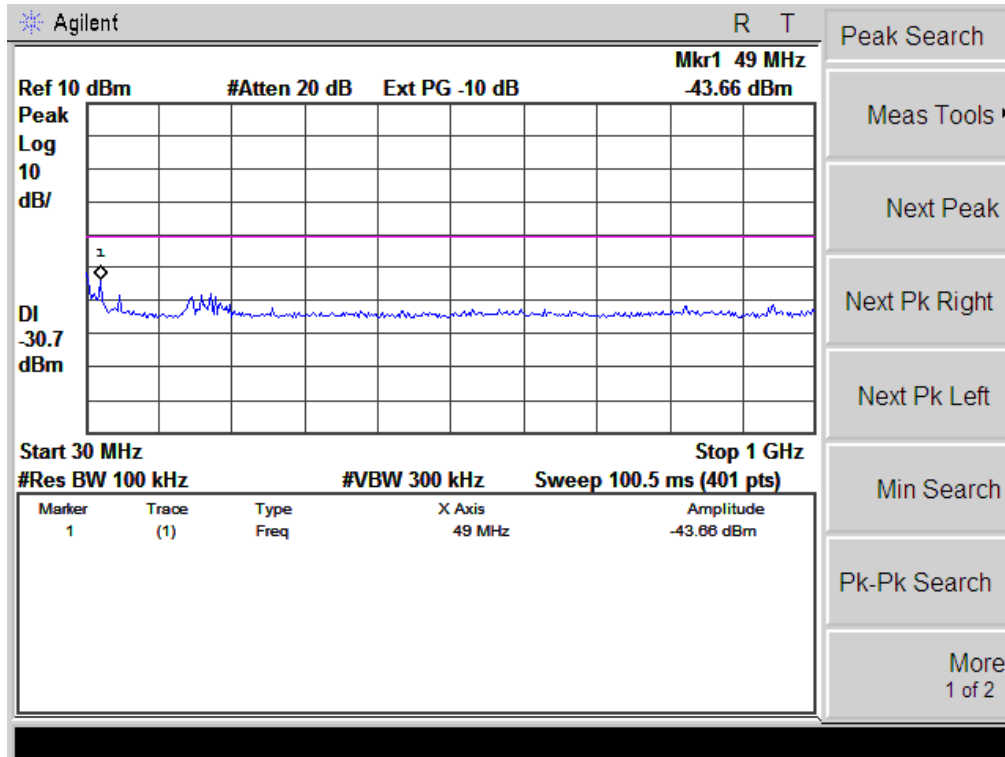
5GHz:

802.11a Low Channel



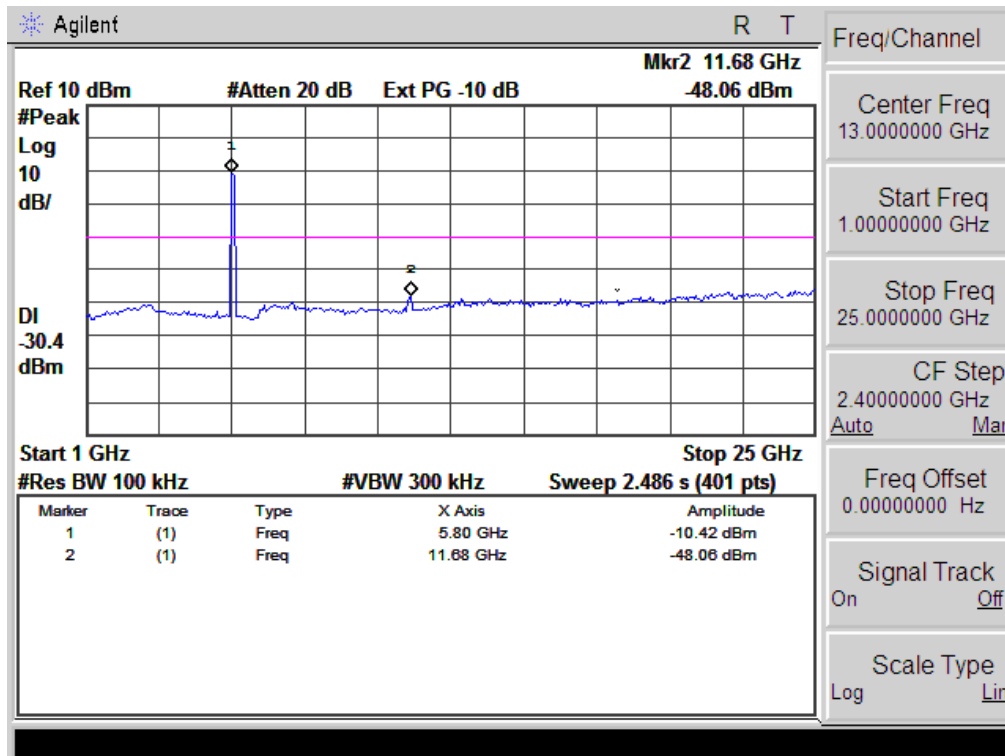
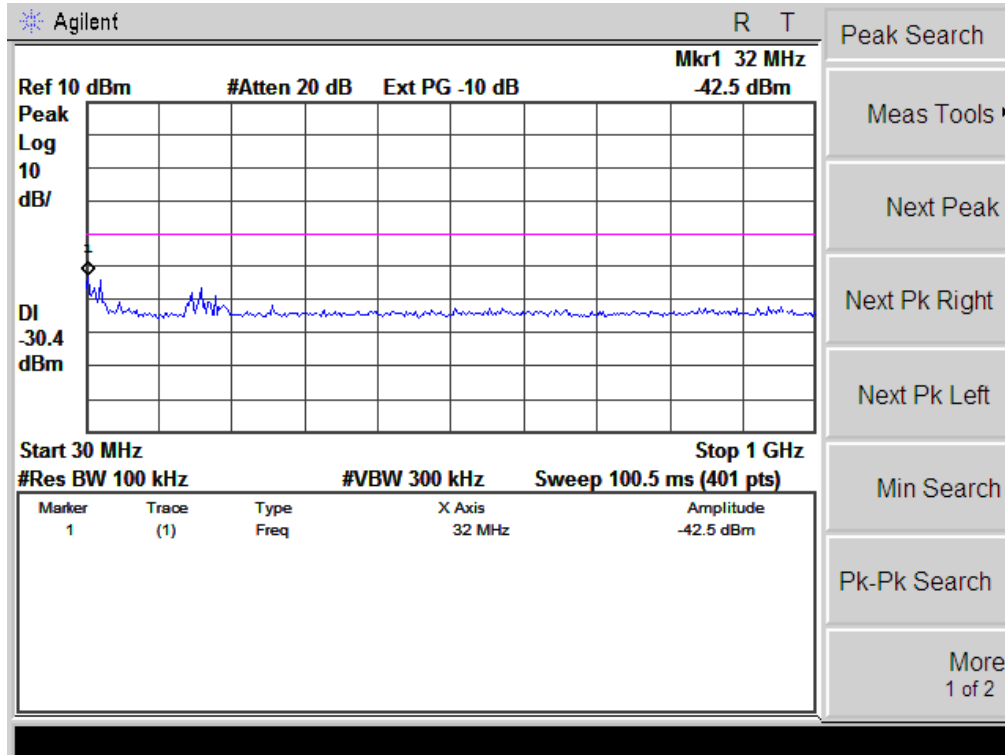
Note: No emission detected above 25GHz

802.11a Middle Channel



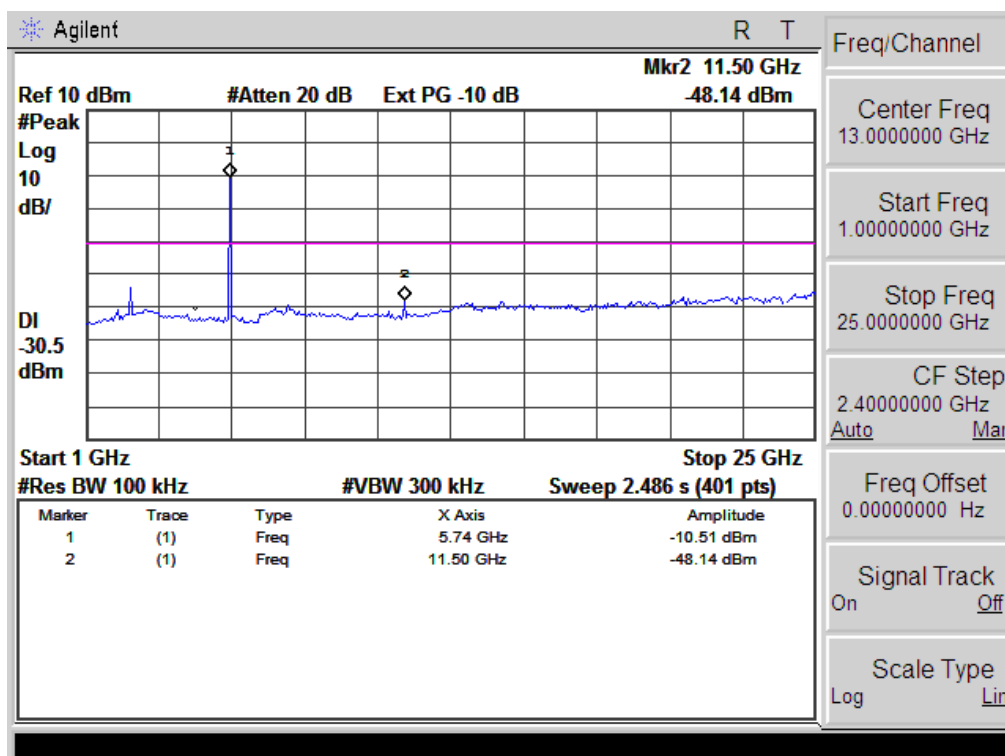
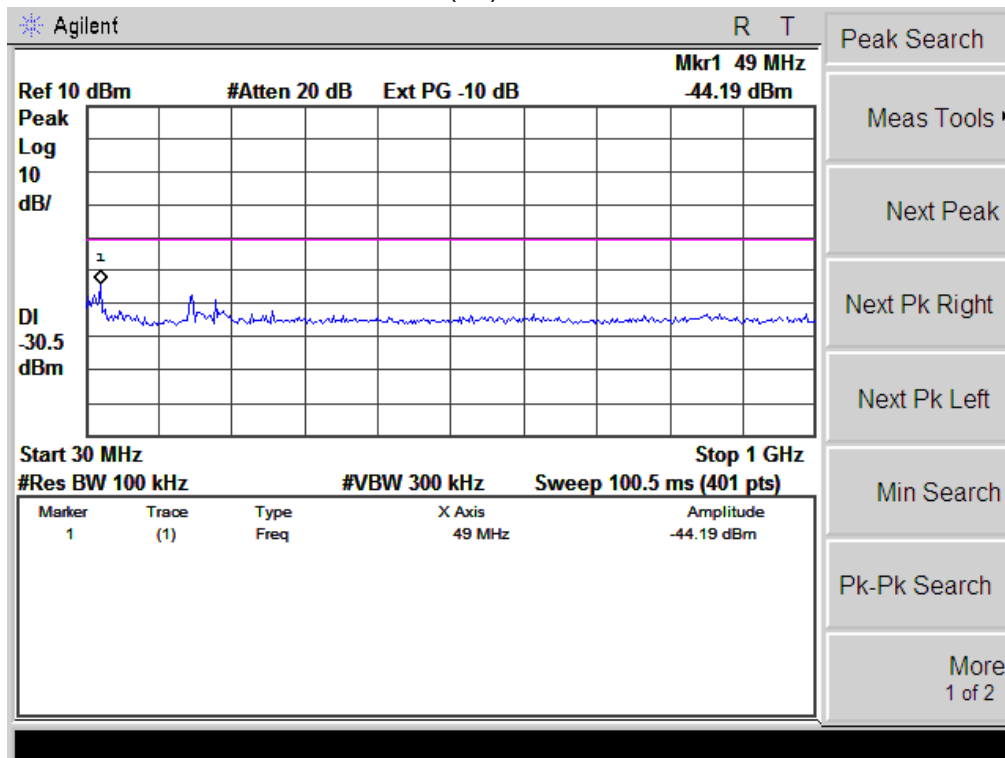
Note: No emission detected above 25GHz

802.11a High Channel



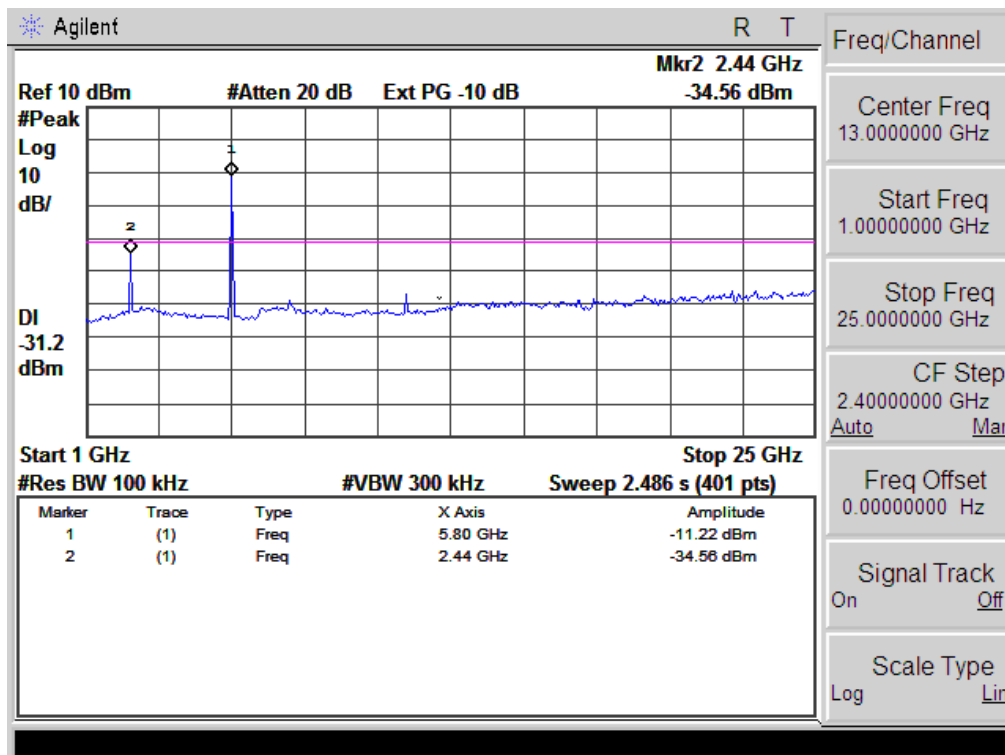
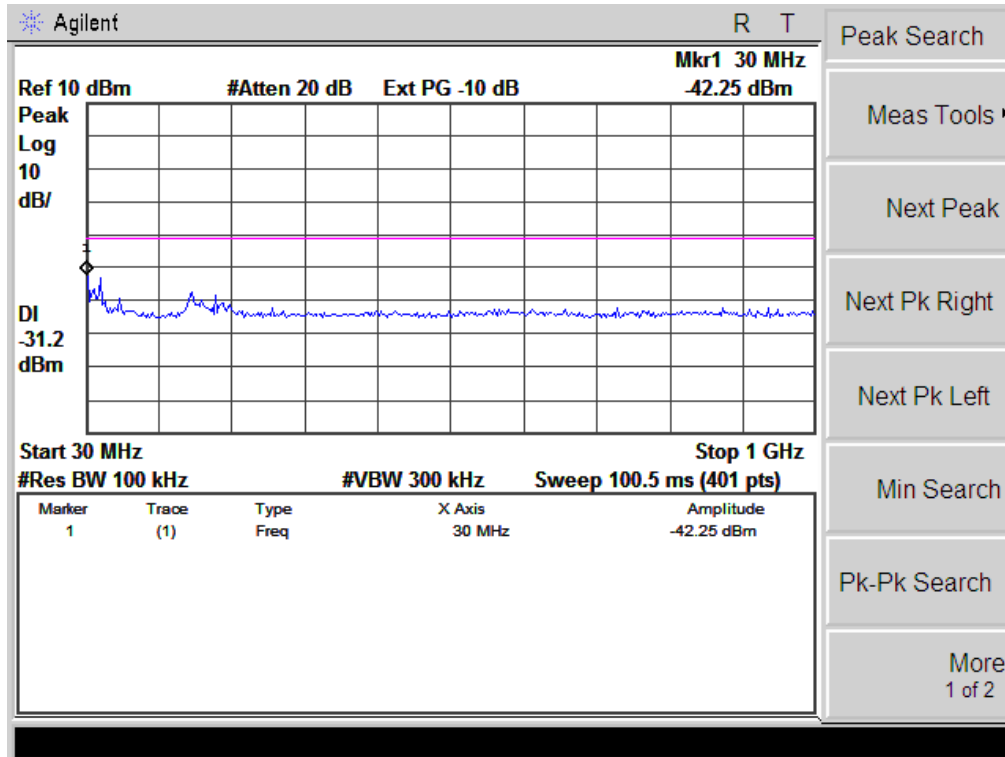
Note: No emission detected above 25GHz

802.11n(20) Low Channel



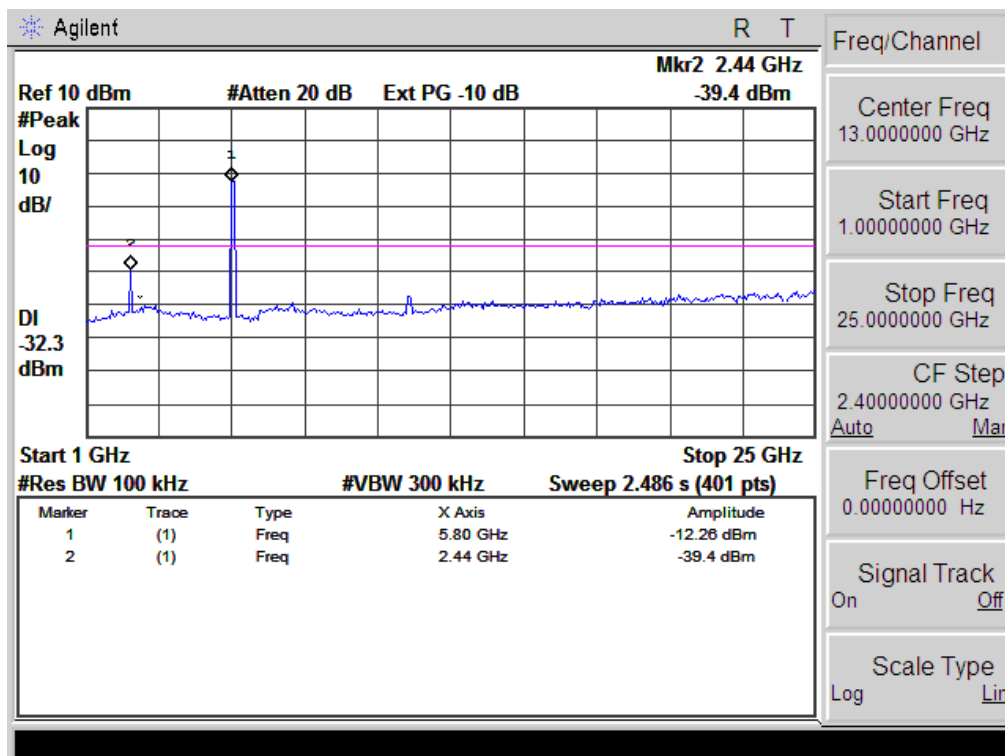
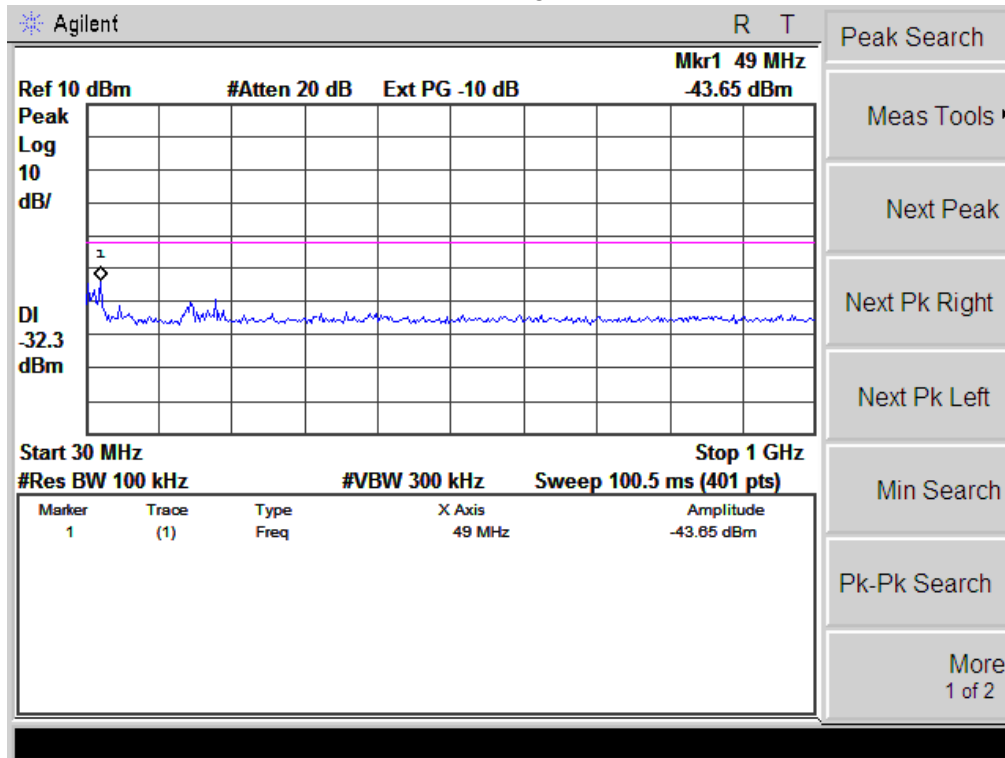
Note: No emission detected above 25GHz

802.11n(20) Middle Channel



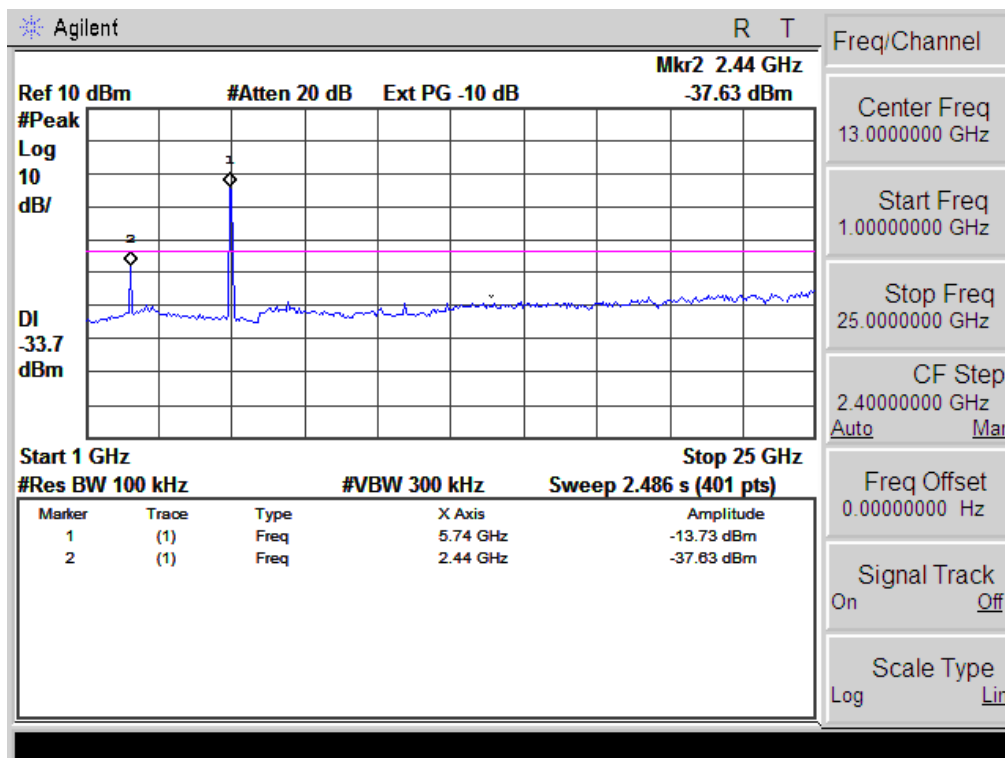
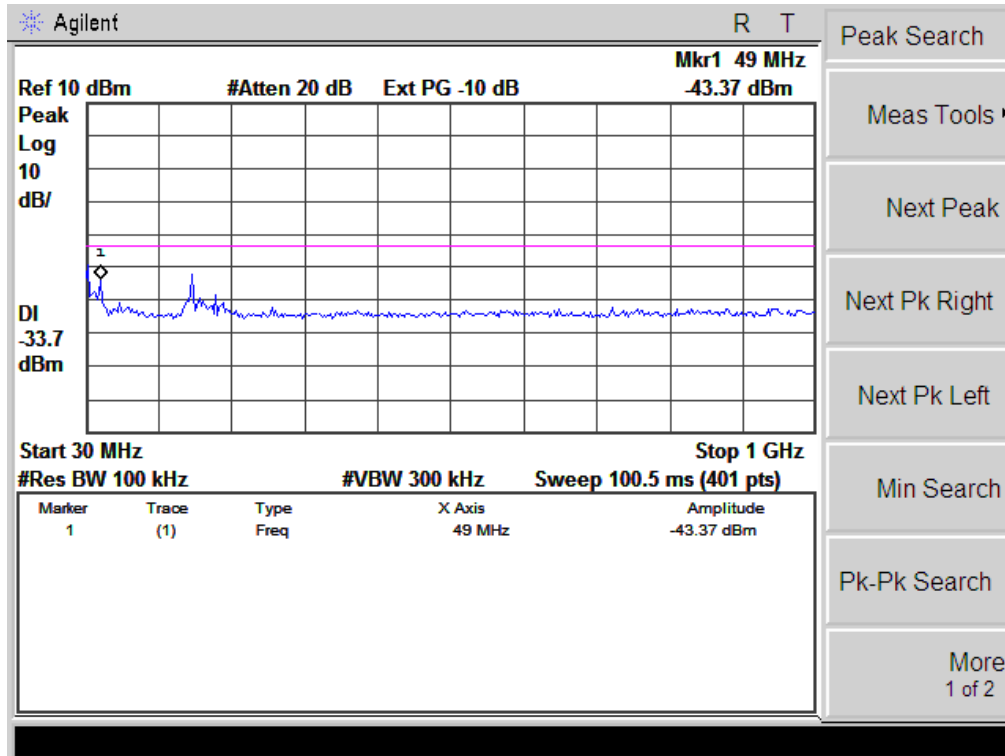
Note: No emission detected above 25GHz

802.11n(20) High Channel



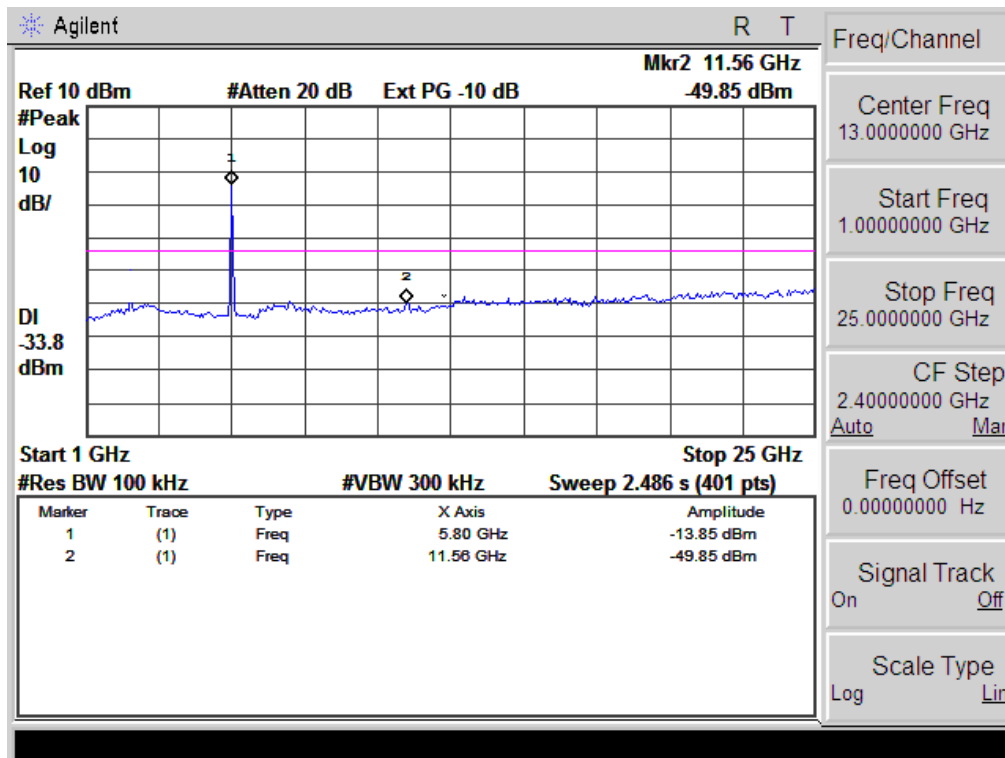
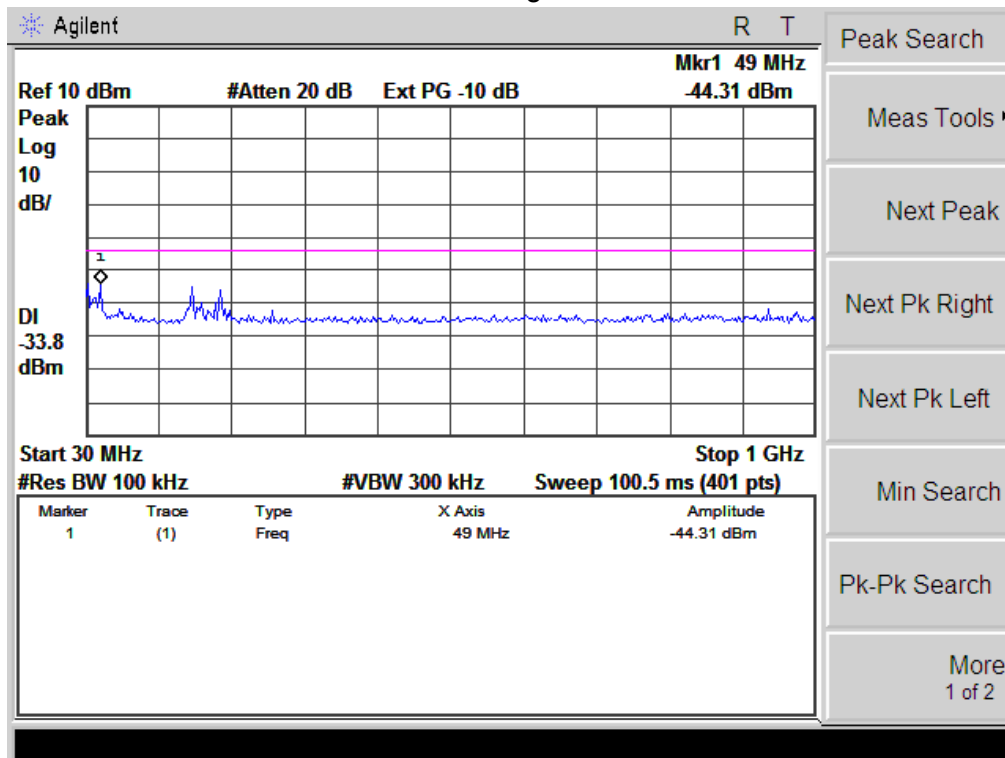
Note: No emission detected above 25GHz

802.11n 40 Low Channel



Note: No emission detected above 25GHz

802.11n 40 High Channel



Note: No emission detected above 25GHz

4. POWER SPECTRAL DENSITY TEST

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

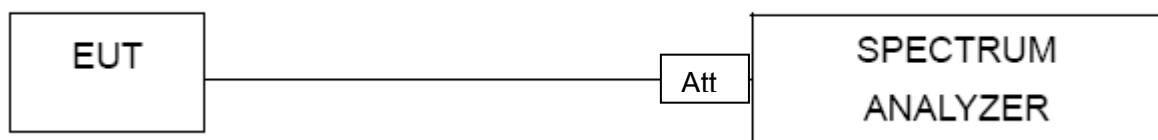
4.1.1 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. 3 kHz ≤Set the RBW≤100 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

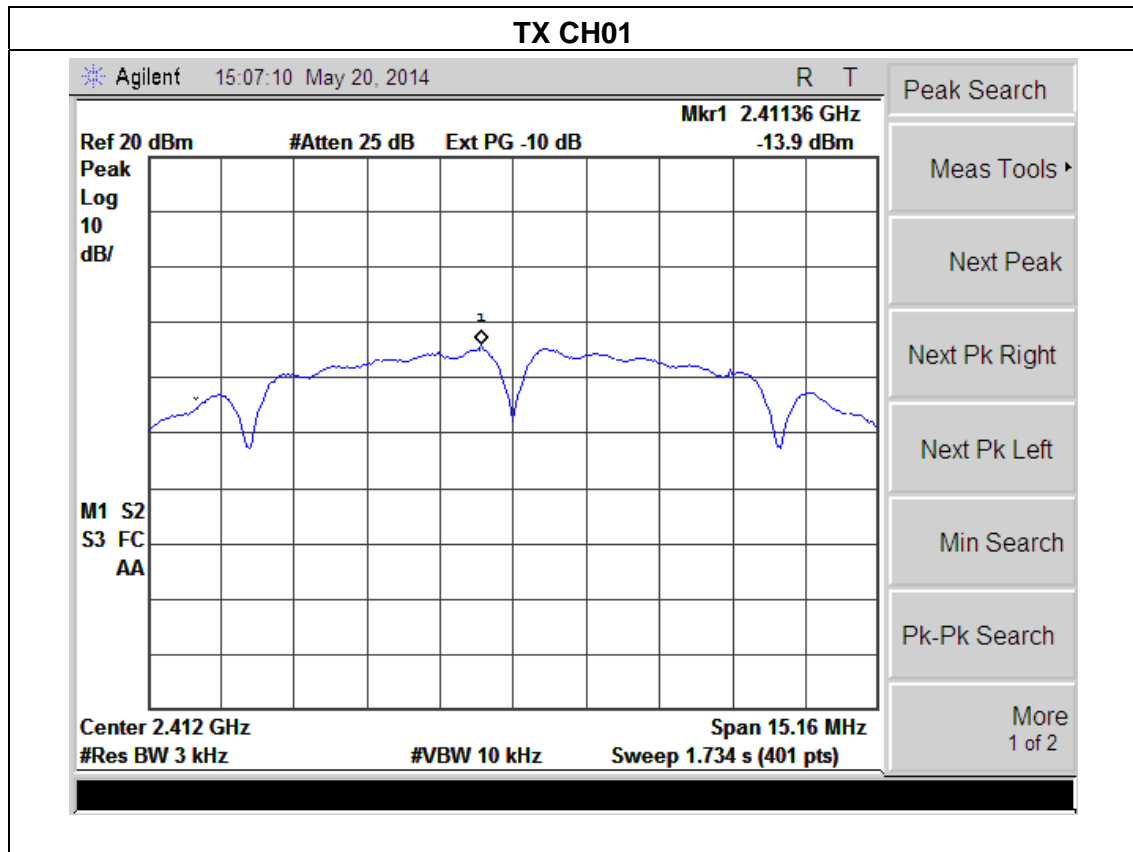
4.1.5 TEST RESULTS

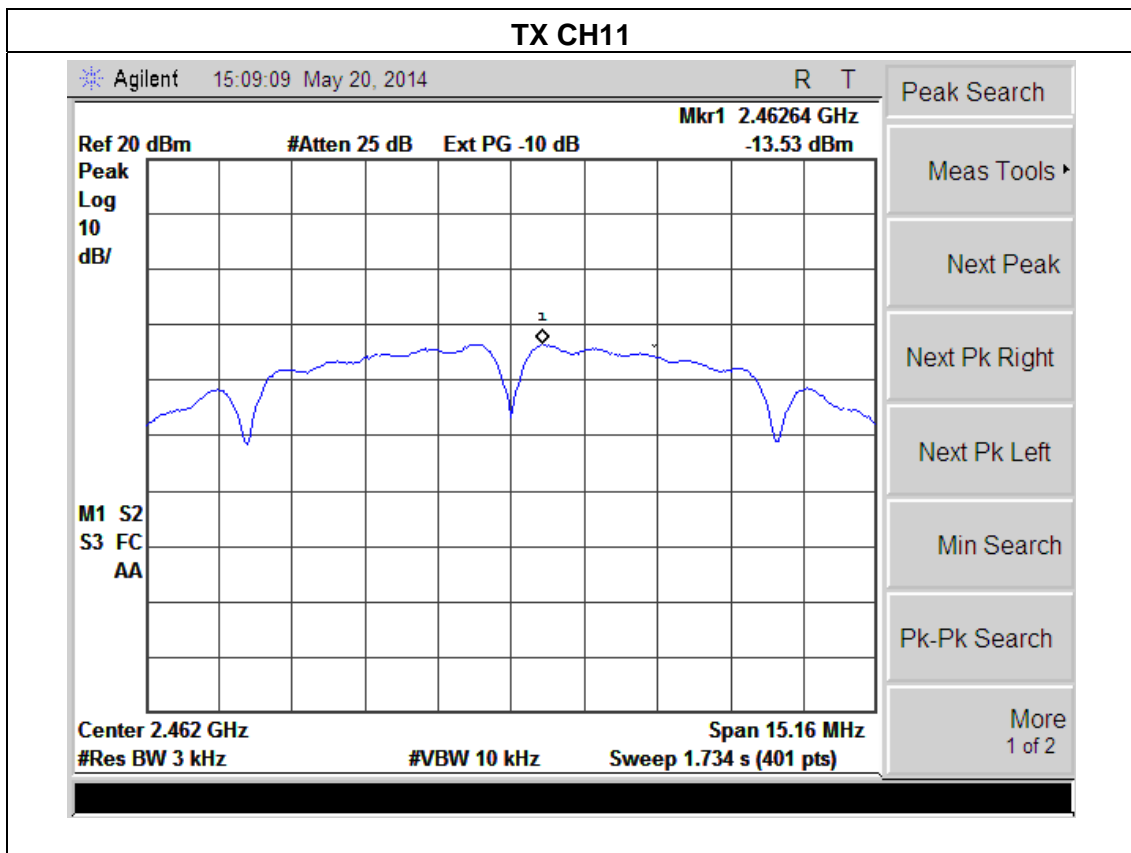
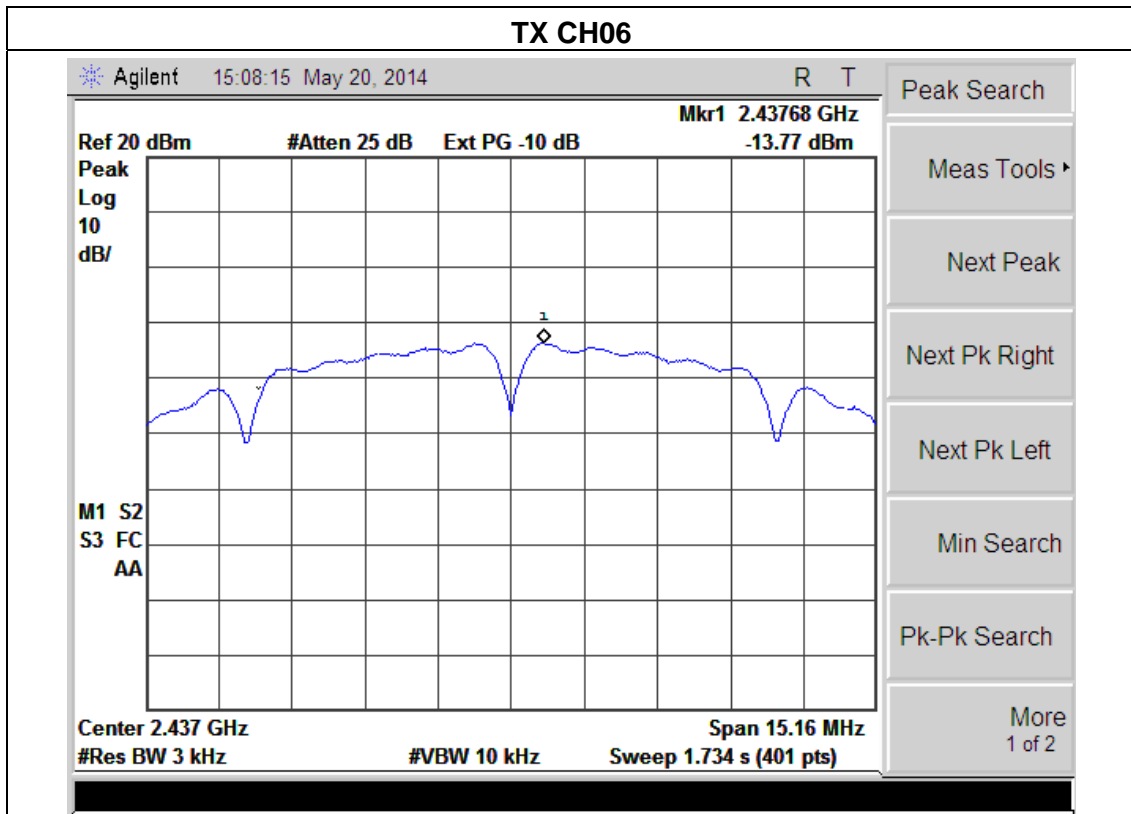
EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1015 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX b Mode /CH01, CH06, CH11		

Frequency	Power Density A (dBm)	Power Density B (dBm)	total power density (dBm)	Limit (dBm)	Result
2412 MHz	-13.90	-14.15	-11.01	7.39	PASS
2437 MHz	-13.77	-14.37	-11.12	7.39	PASS
2462 MHz	-13.53	-14.06	-10.78	7.39	PASS

NOTE: A(B) Represent the value of antenna A and B, The worst data is A Antenna a , only shown Antenna A Plot.

For 2.4G mode , Limit =8-6.61+6=7.39dBm for output power.



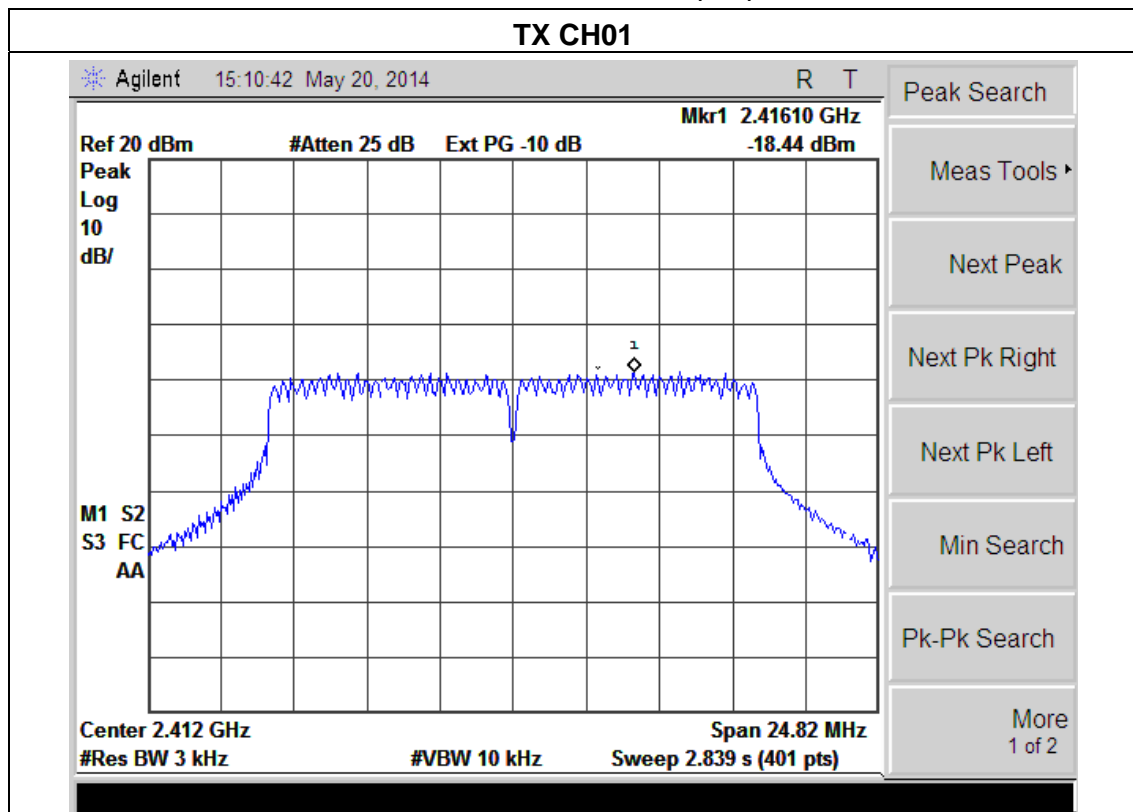


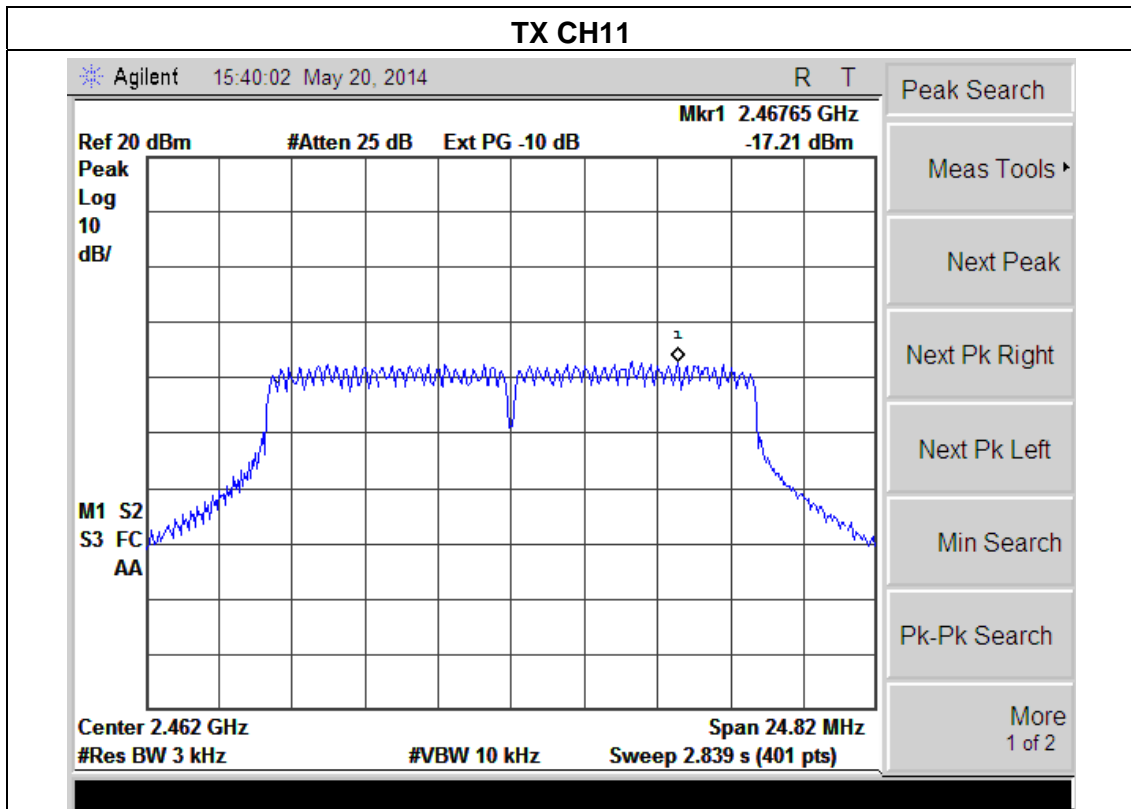
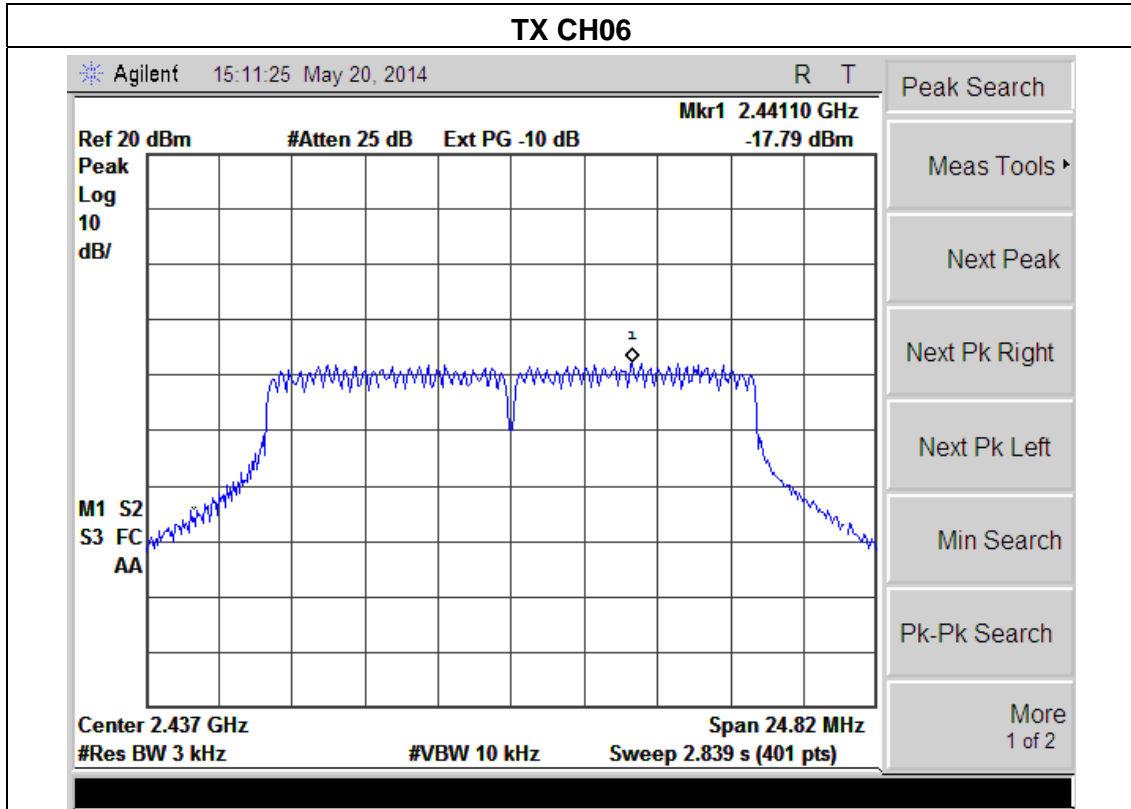
EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1015 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX g Mode /CH01, CH06, CH11		

Frequency	Power Density A (dBm)	Power Density B (dBm)	total power density (dBm)	Limit (dBm)	Result
2412 MHz	-18.44	-18.56	-15.49	7.39	PASS
2437 MHz	-17.79	-17.93	-15.17	7.39	PASS
2462 MHz	-17.21	-17.62	-14.40	7.39	PASS

NOTE: A(B) Represent the value of antenna A and B, The worst data is A Antenna , only shown Antenna A Plot.

For 2.4G mode , Limit =8-6.61+6=7.39dBm for output power.



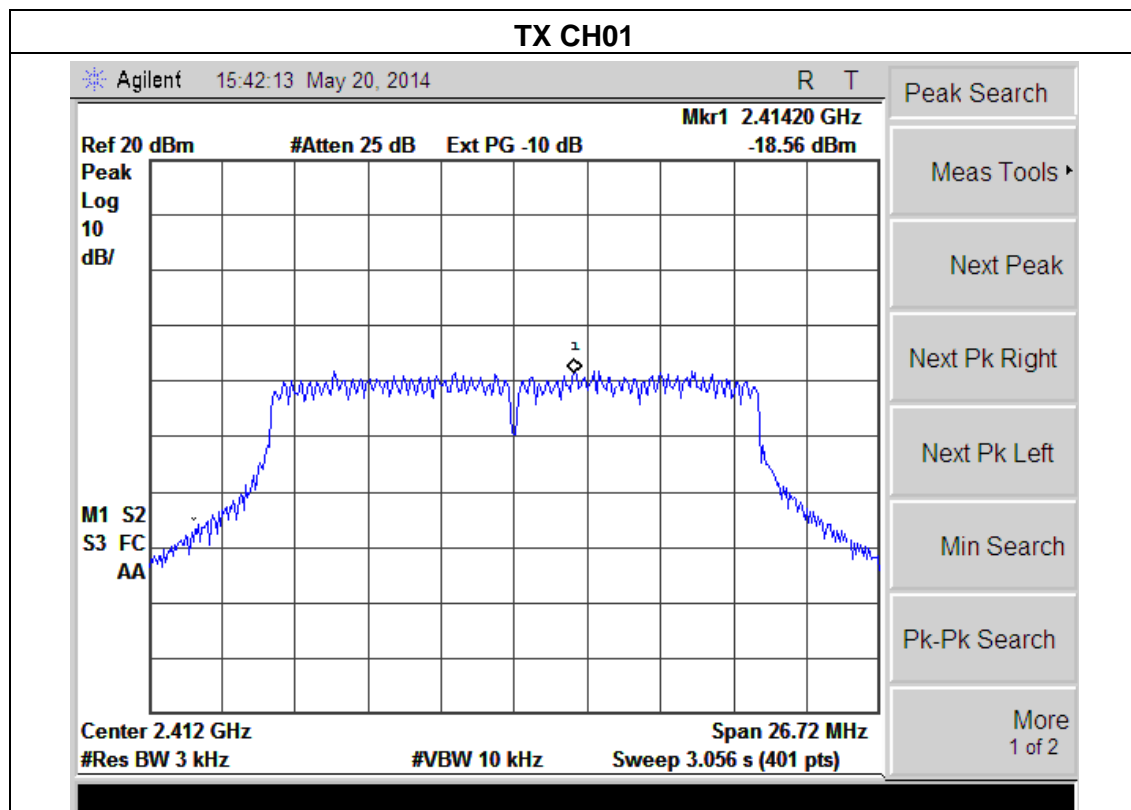


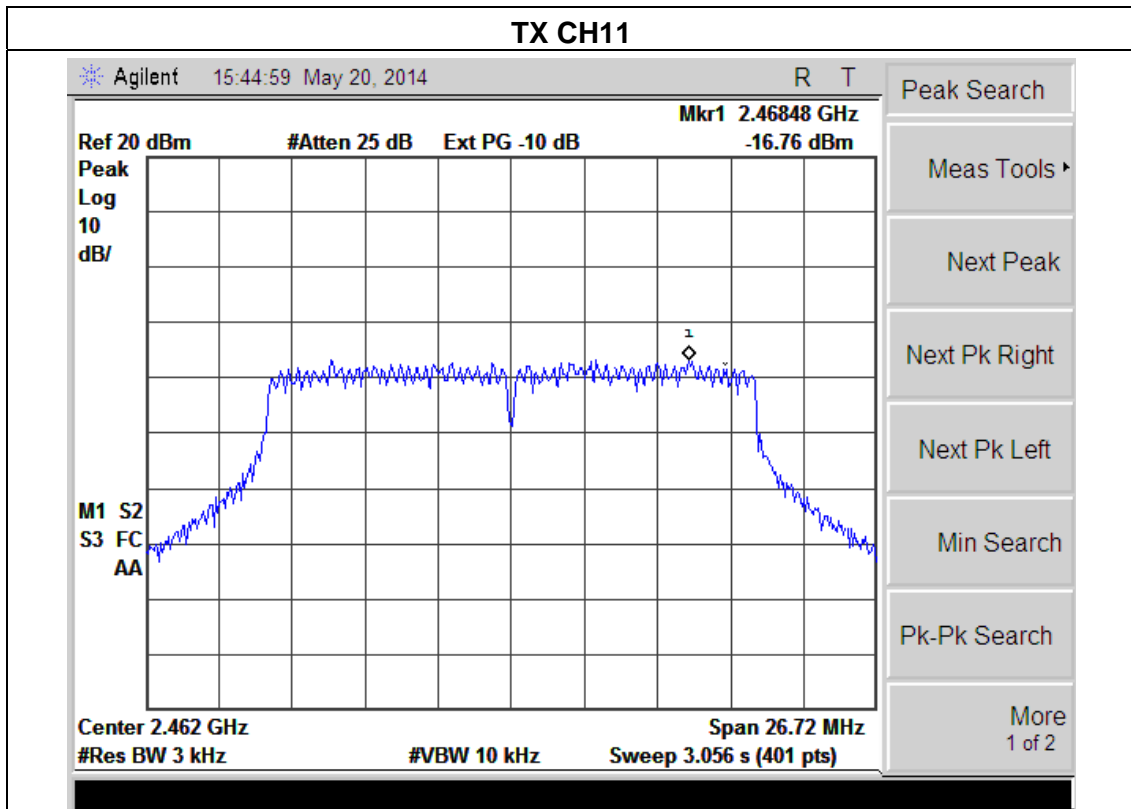
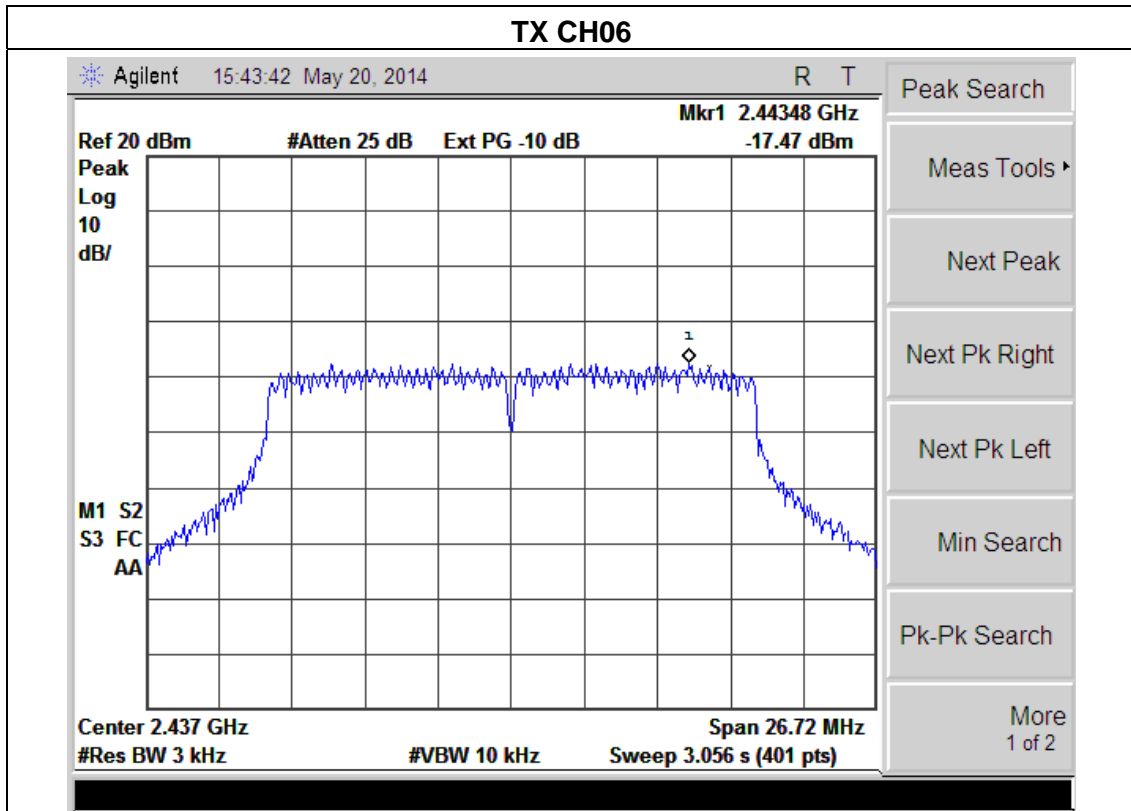
EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1015 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX n Mode (20MHz)/CH01, CH06, CH11		

Frequency	Power Density A (dBm)	Power Density B (dBm)	total power density (dBm)	Limit (dBm)	Result
2412 MHz	-18.56	-18.89	-15.71	7.39	PASS
2437 MHz	-17.47	-17.69	-15.09	7.39	PASS
2462 MHz	-16.76	-16.91	-13.82	7.39	PASS

NOTE: A(B) Represent the value of antenna A and B, The worst data is A Antenna a ,only shown Antenna A Plot.

For 2.4G mode , Limit =8-6.61+6=7.39dBm for output power.



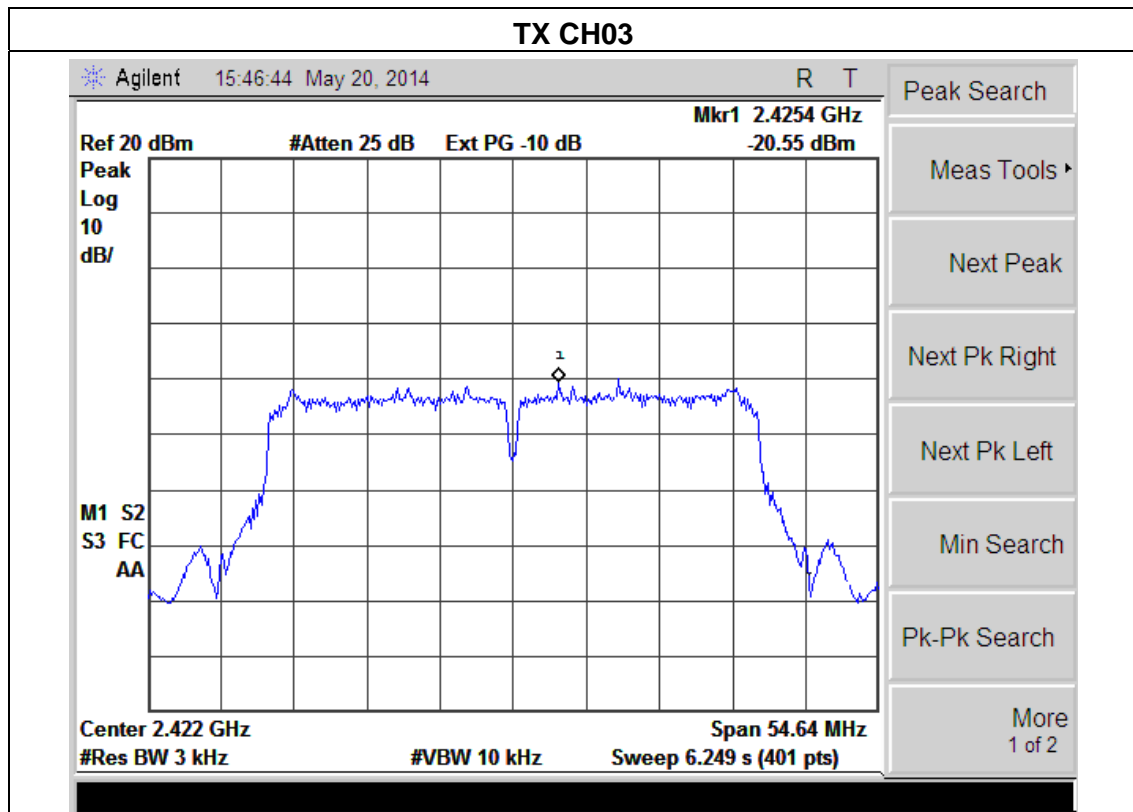


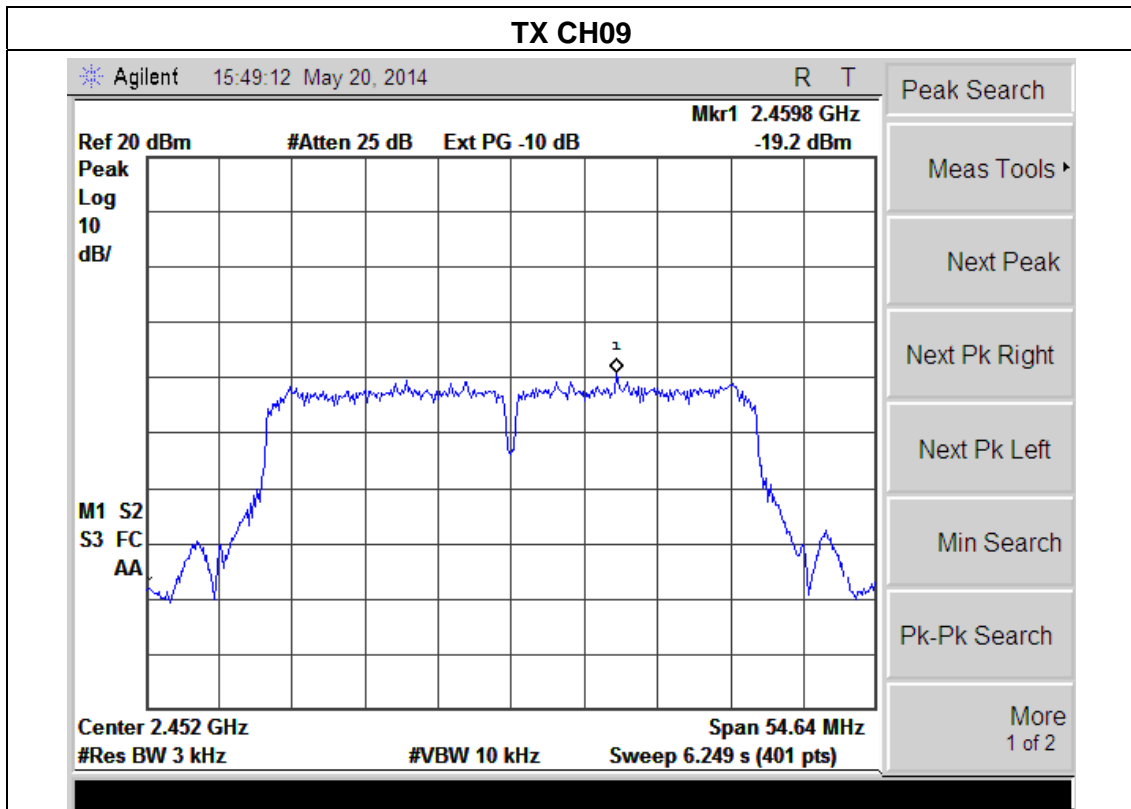
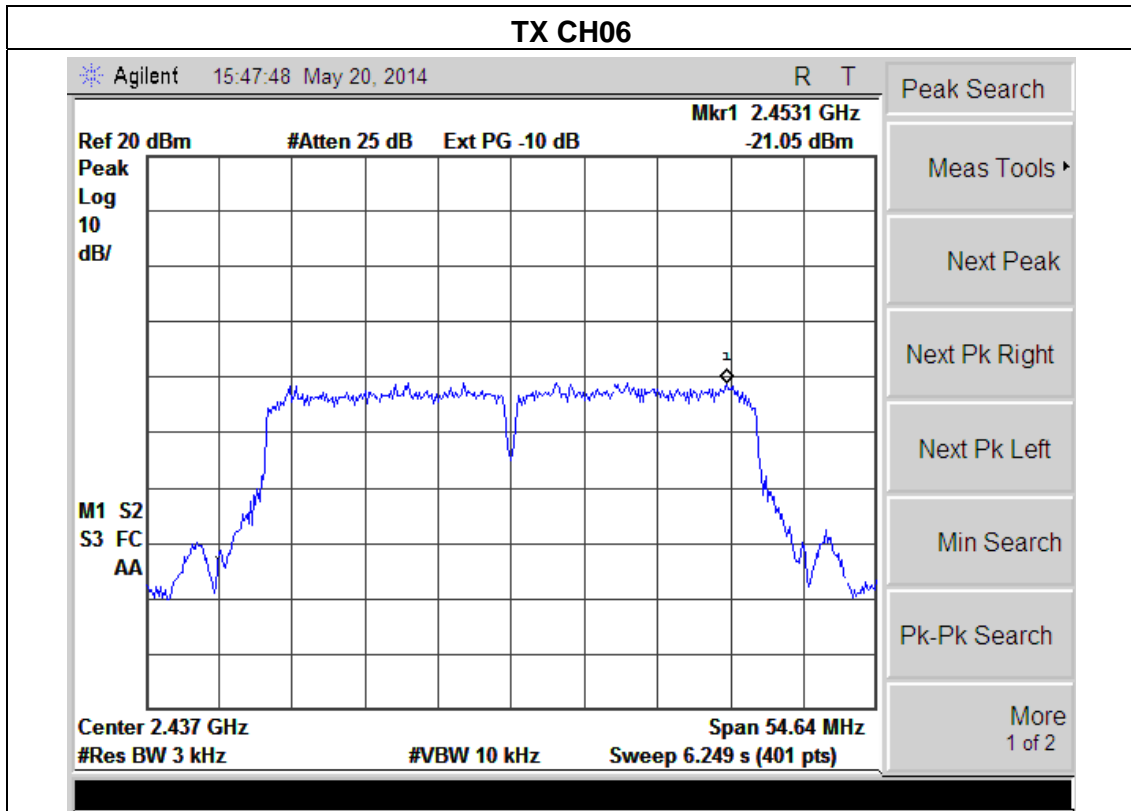
EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1015 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX n Mode (40MHz)/CH03, CH06, CH09		

Frequency	Power Density A (dBm)	Power Density B (dBm)	total power density (dBm)	Limit (dBm)	Result
2422 MHz	-20.55	-20.87	-17.70	7.39	PASS
2437 MHz	-21.05	-21.63	-18.05	7.39	PASS
2452 MHz	-19.20	-19.37	-16.27	7.39	PASS

NOTE: A(B) Represent the value of antenna A and B, The worst data is A Antenna a ,only shown Antenna A Plot.

. For 2.4G mode , Limit =8-6.61+6=7.39dBm for output power.



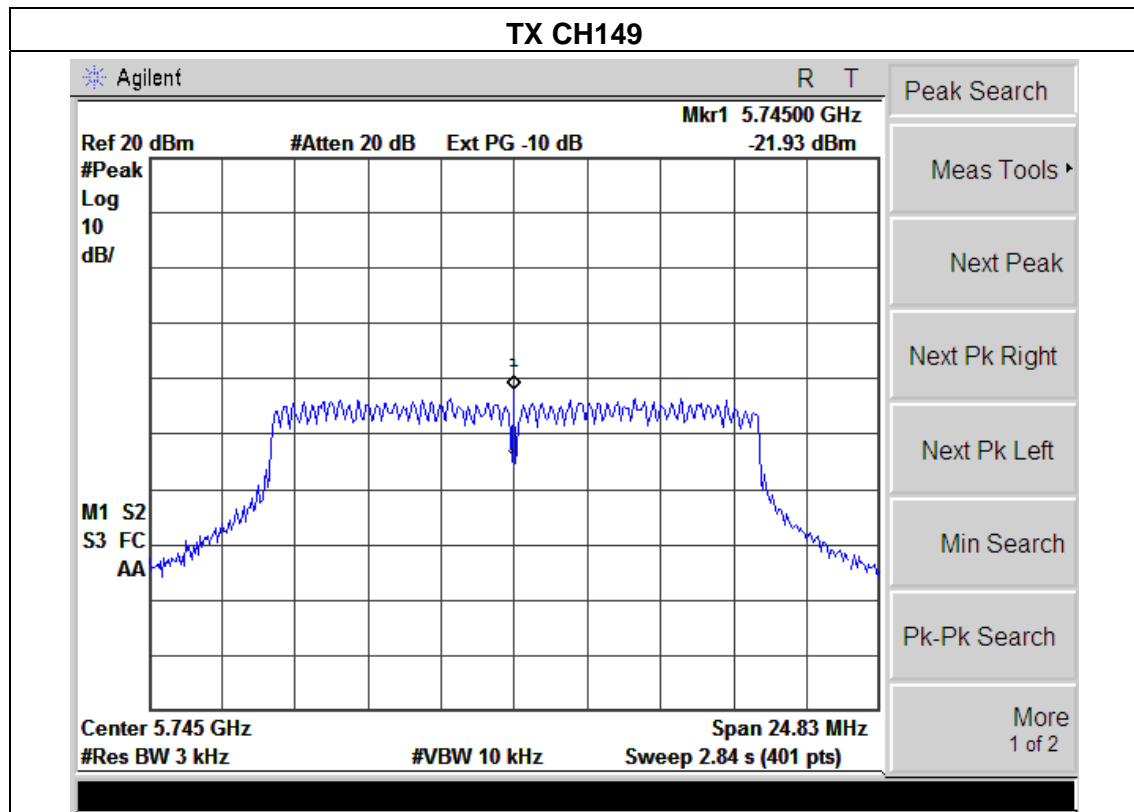


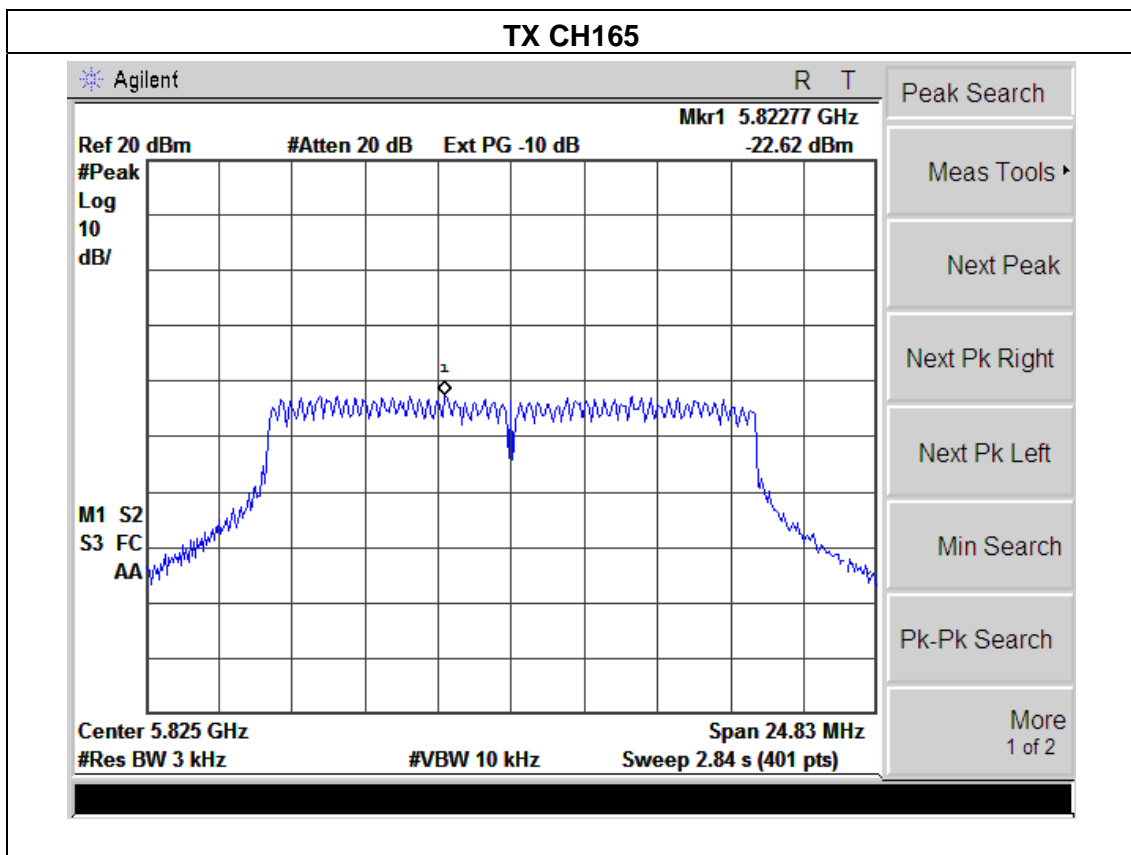
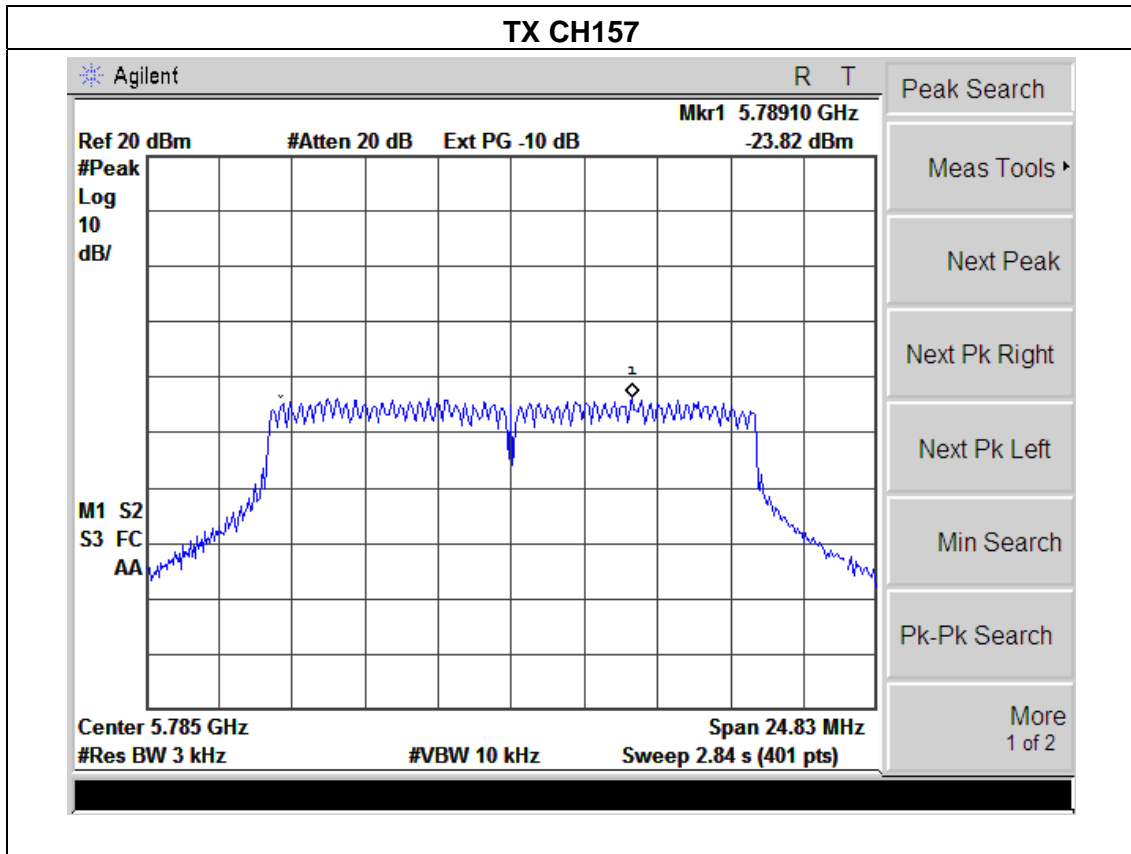
EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1015 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX a Mode /CH149, CH157, CH165		

Frequency	Power Density A (dBm)	Power Density B (dBm)	total power density (dBm)	Limit (dBm)	Result
5745MHz	-21.93	-22.16	-19.03	7.39	PASS
5785 MHz	-23.82	-24.15	-19.89	7.39	PASS
5825 MHz	-22.62	-23.24	-19.91	7.39	PASS

Note: A (B) Represent the value of antenna A and B, The worst data is A Antenna a ,only shown Antenna A Plot.

For 5G mode , Limit =8-6.61+6=7.39dBm for output power.



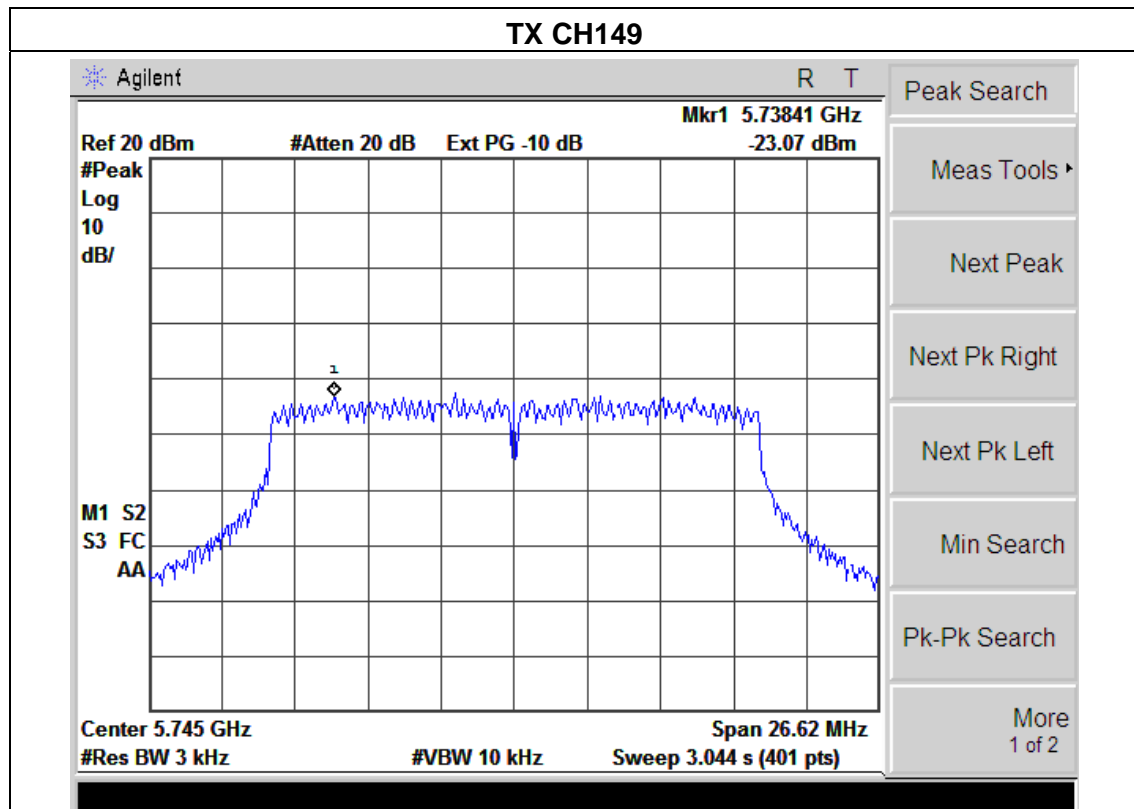


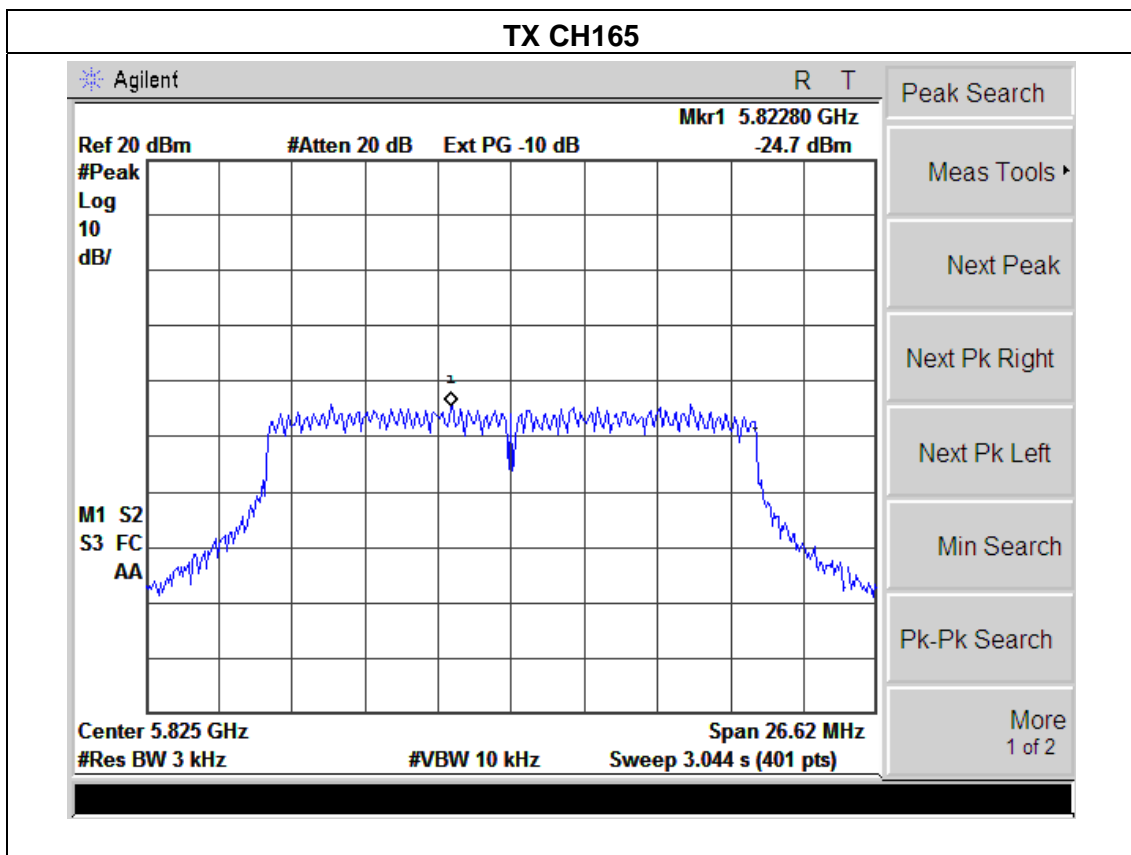
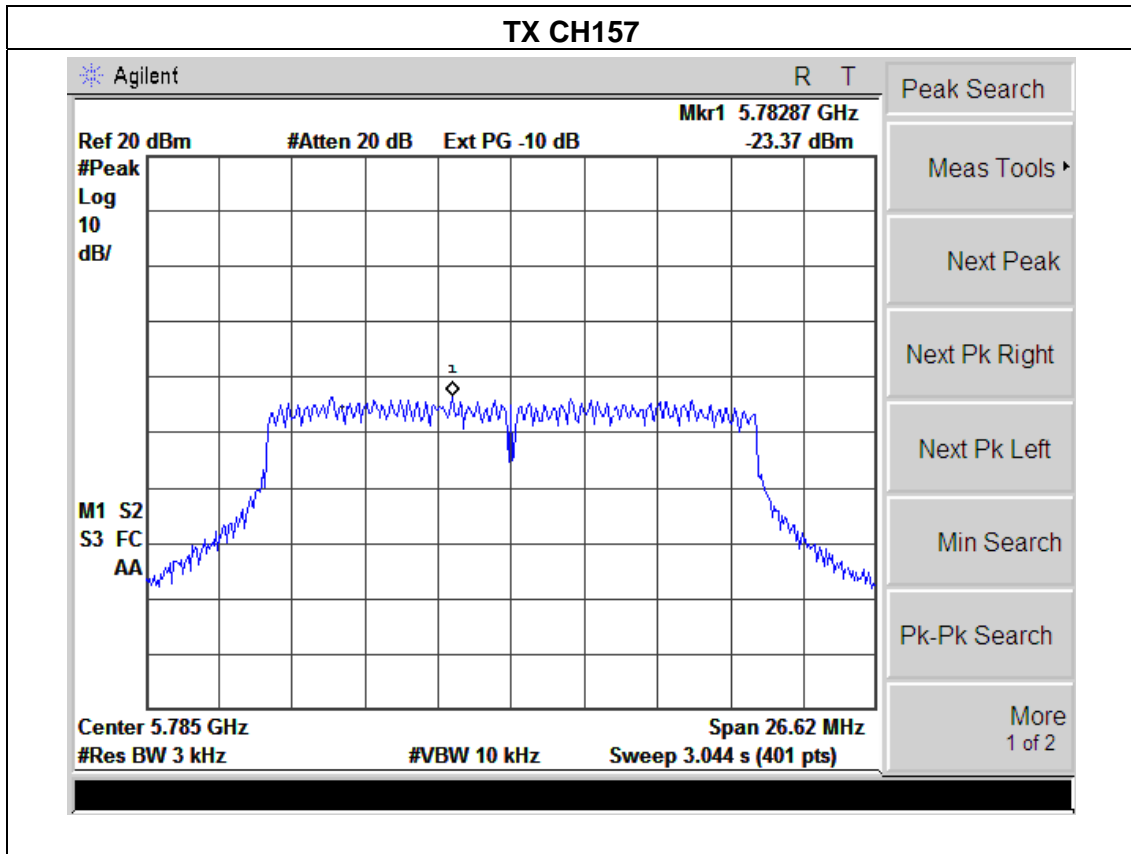
EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1015 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX n(20) Mode(5G) /CH149, CH157, CH165		

Frequency	Power Density A (dBm)	Power Density B (dBm)	total power density (dBm)	Limit (dBm)	Result
5745MHz	-23.07	-24.18	-20.58	7.39	PASS
5785 MHz	-23.37	-24.24	-20.61	7.39	PASS
5825 MHz	-24.70	-25.12	-21.89	7.39	PASS

Note: A (B) Represent the value of antenna A and B, The worst data is A Antenna a ,only shown Antenna A Plot.

For 5G mode , Limit = $8-6.61+6=7.39$ dBm for output power.



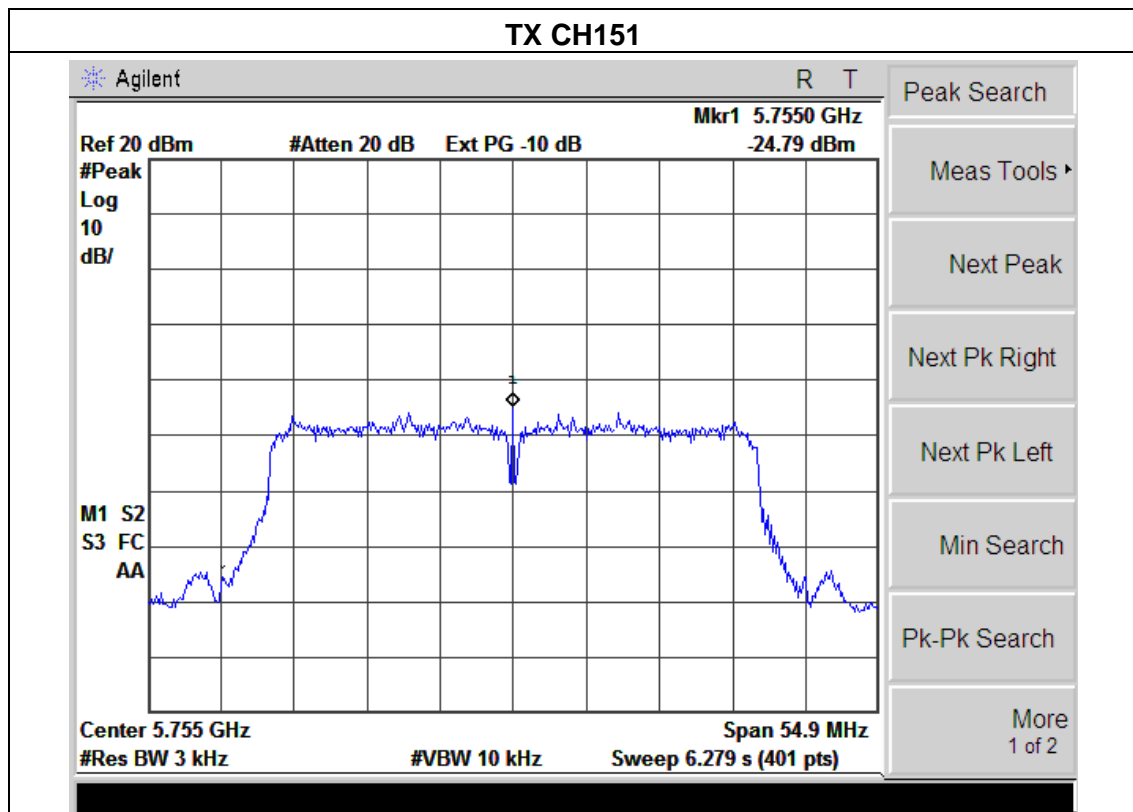


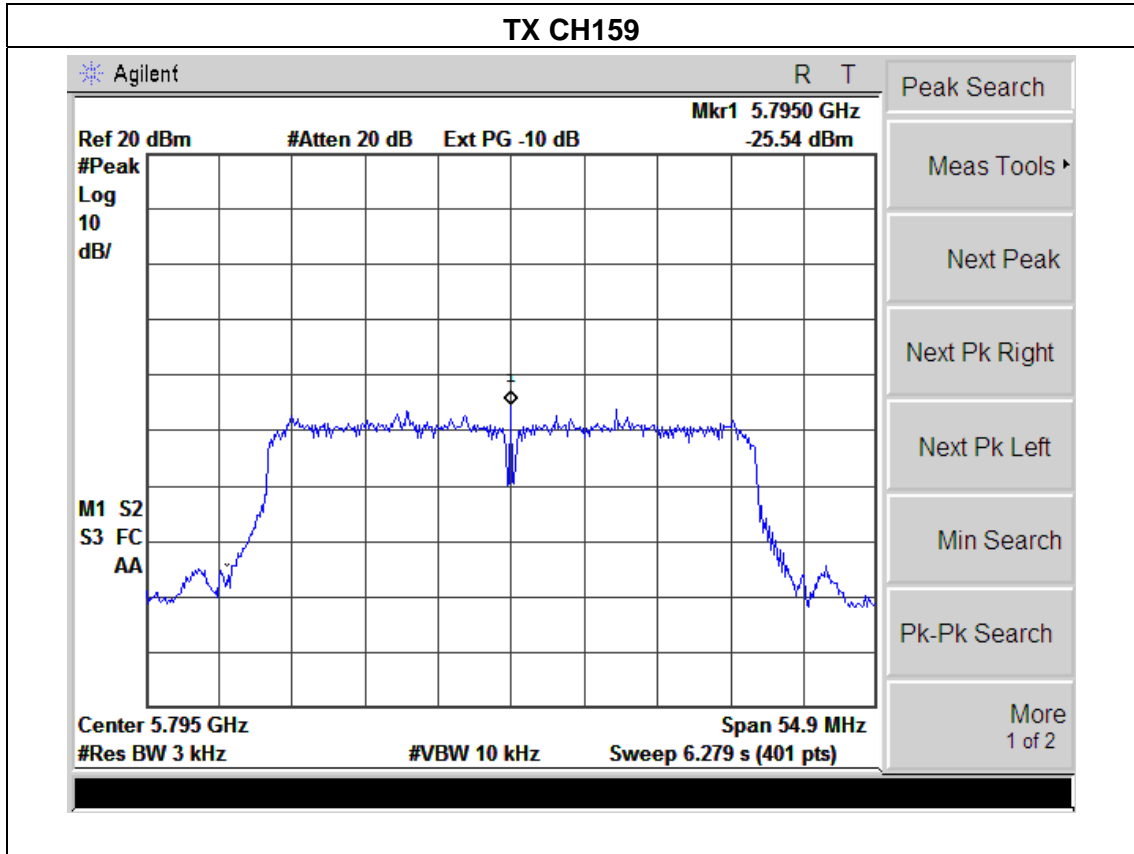
EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1015 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX n40 Mode(5G) /CH151, CH159		

Frequency	Power Density A (dBm)	Power Density B (dBm)	total power density (dBm)	Limit (dBm)	Result
5755 MHz	-24.79	-26.25	-22.45	7.39	PASS
5795 MHz	-25.54	-26.98	-22.74	7.39	PASS

Note: A (B) Represent the value of antenna A and B, The worst data is A Antenna a ,only shown Antenna A Plot.

For5G mode , Limit =8-6.61+6=7.39dBm for output power.





5. BANDWIDTH TEST

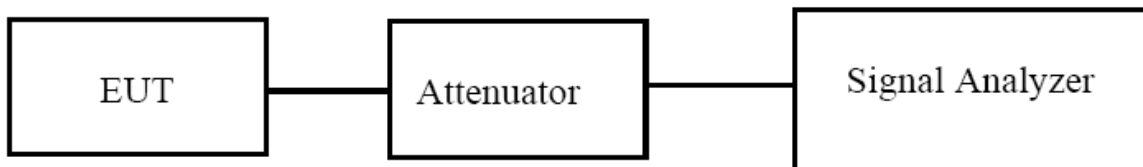
5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

5.1.1 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST SETUP



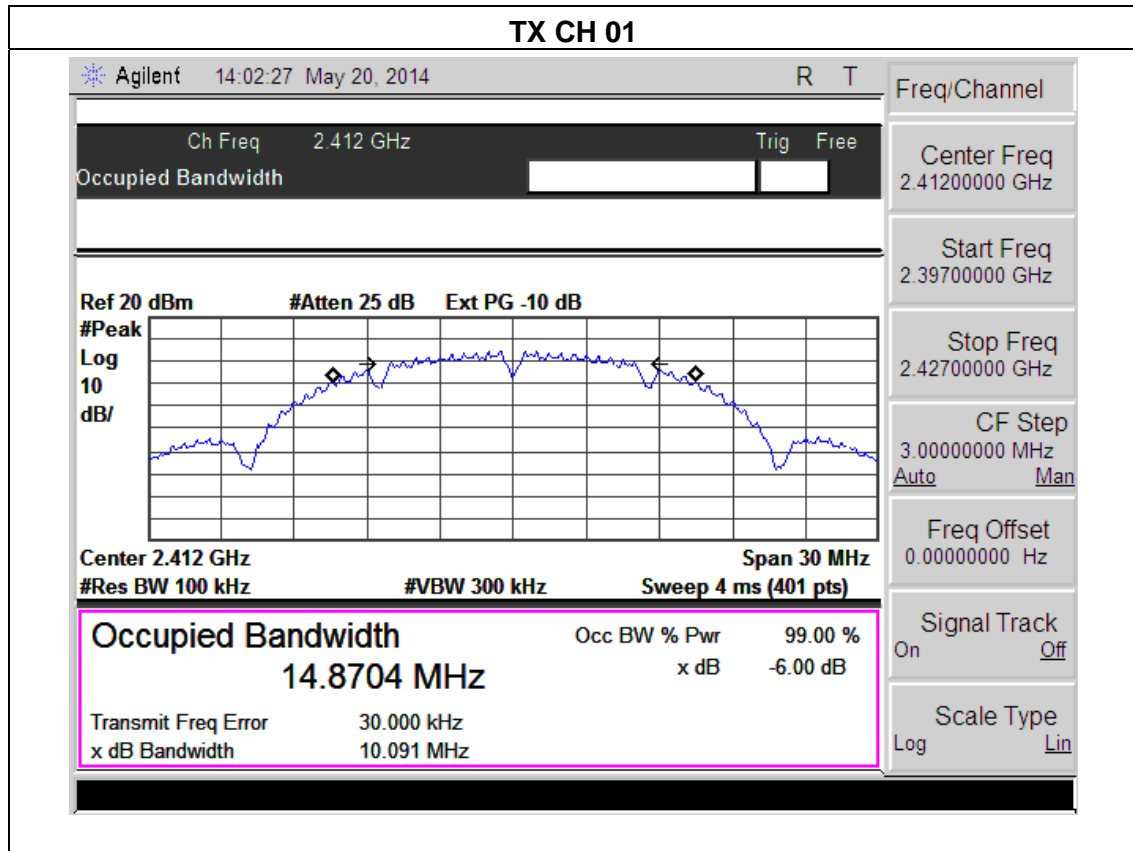
5.1.2 EUT OPERATION CONDITIONS

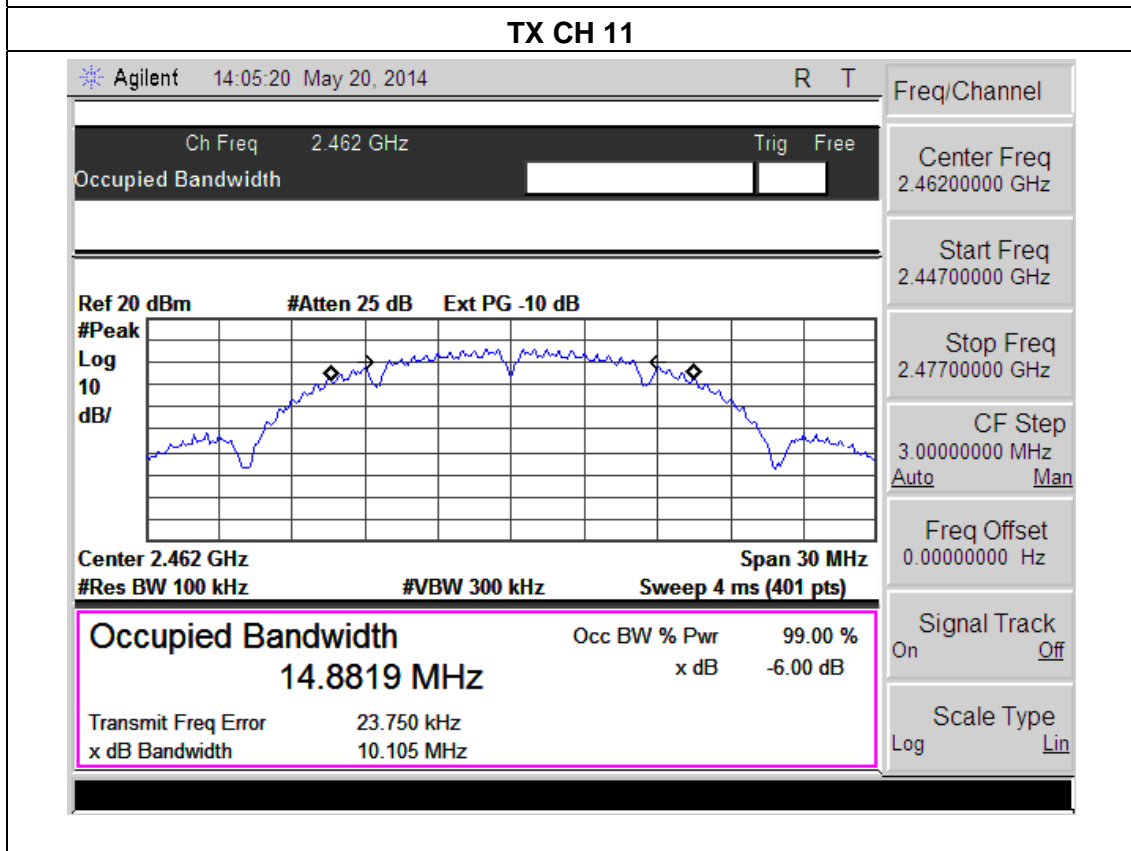
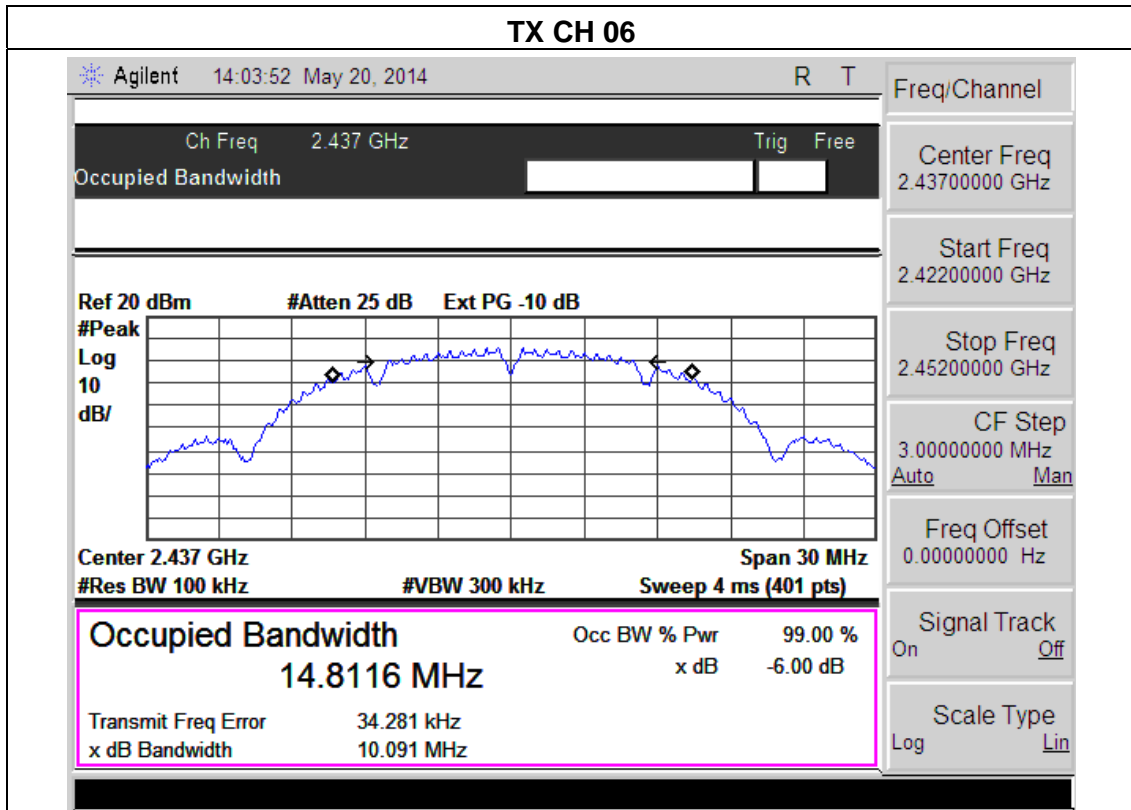
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.3 TEST RESULTS

EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1012 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX b Mode /CH01, CH06, CH11		

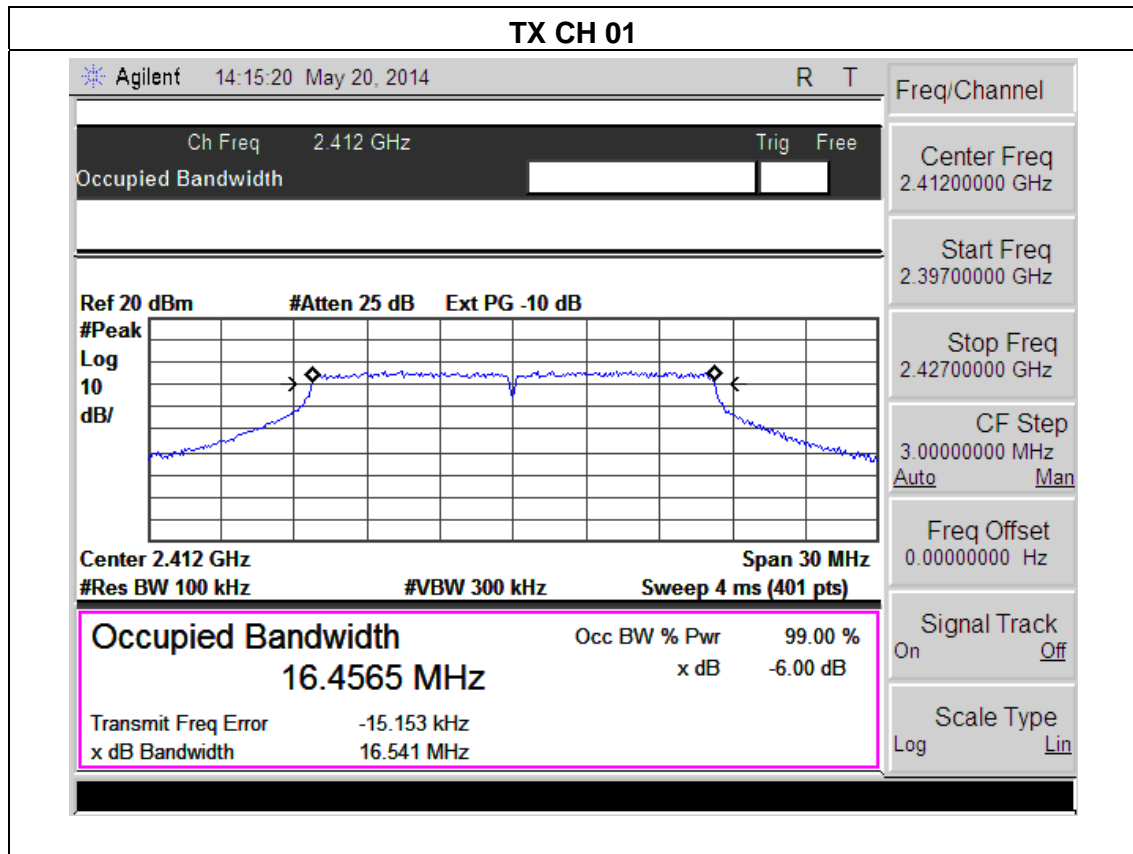
Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	10.091	500	Pass
Middle	2437	10.091	500	Pass
High	2462	10.105	500	Pass

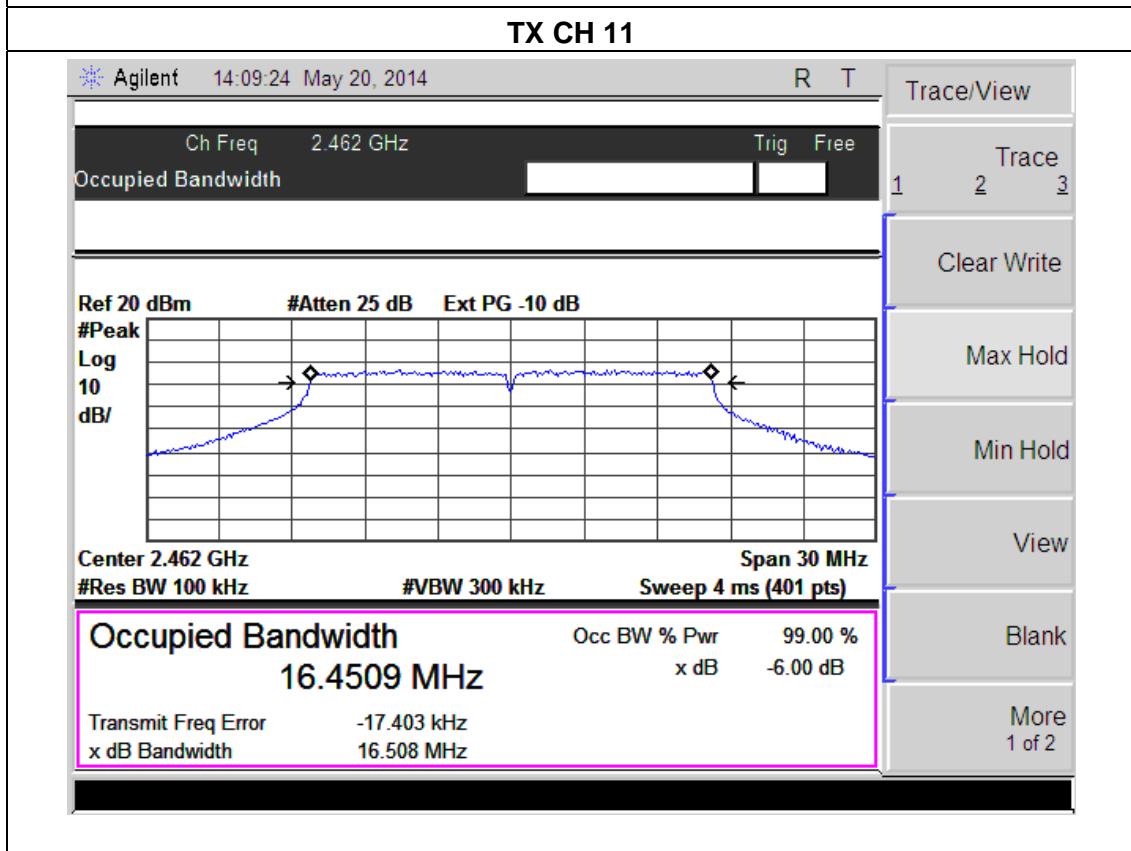
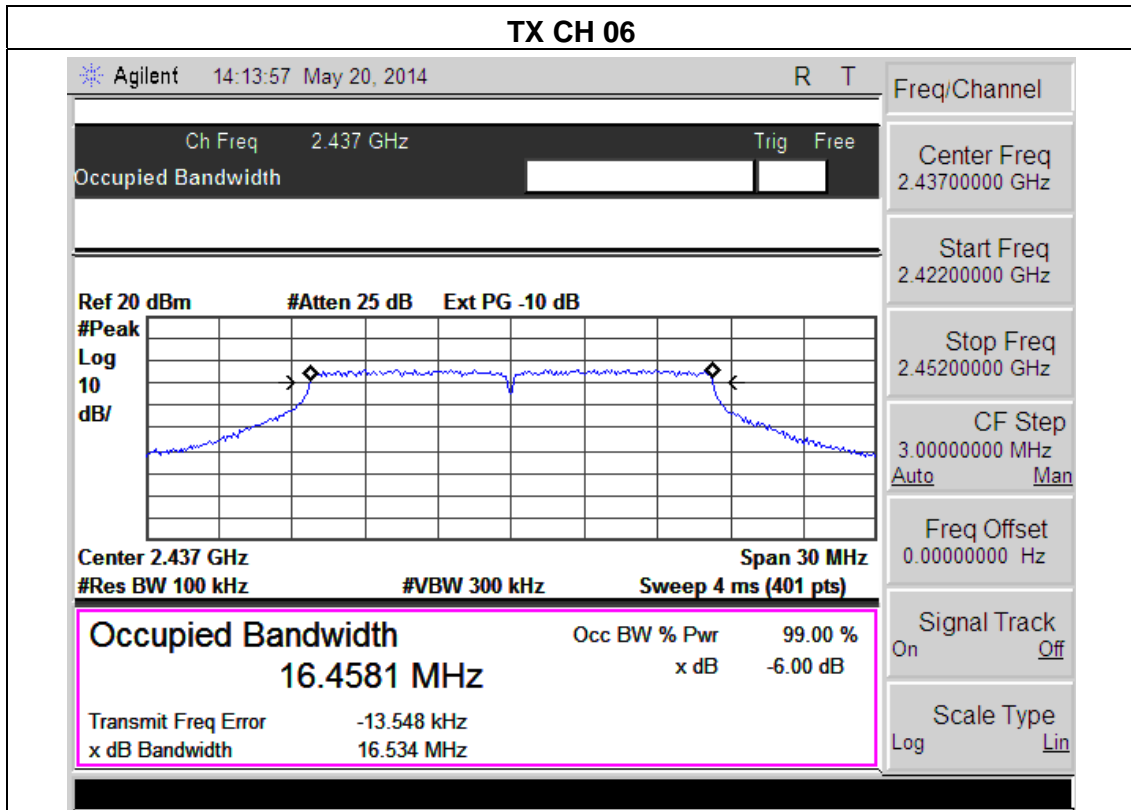




EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX g Mode /CH01, CH06, CH11		

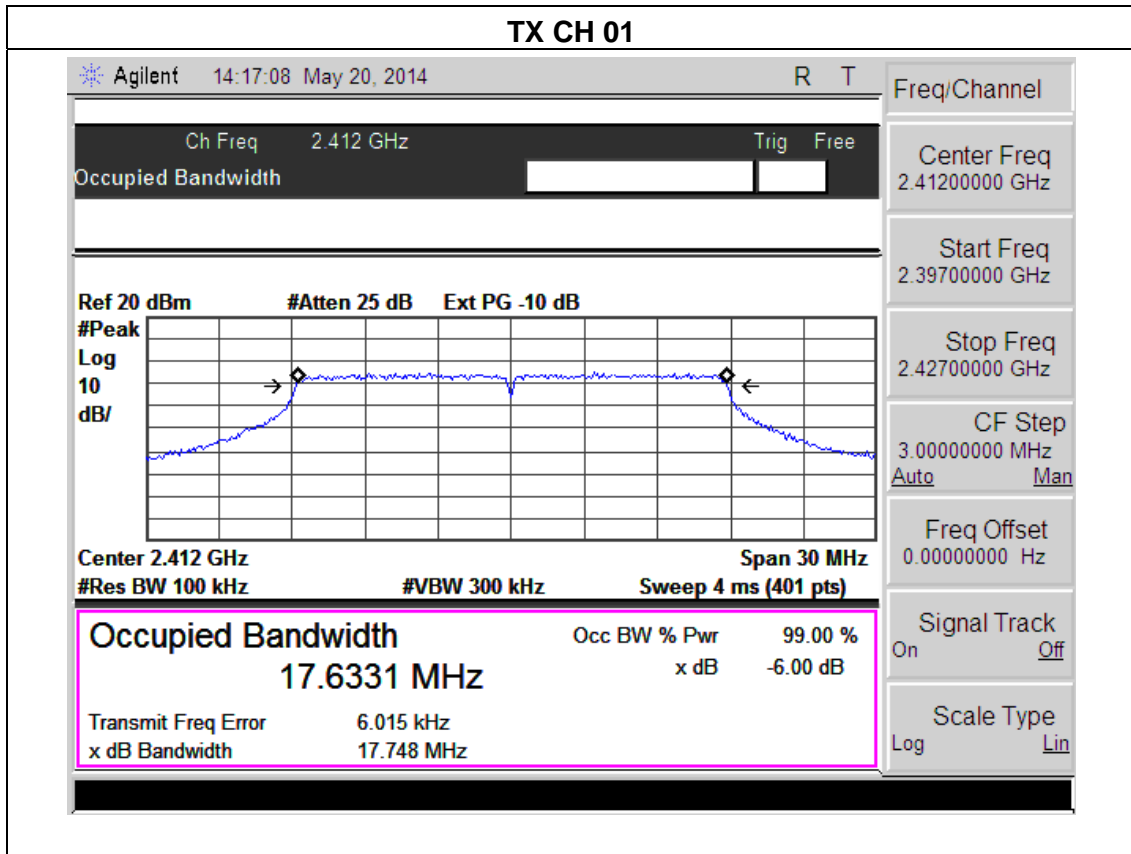
Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.541	500	Pass
Middle	2437	16.534	500	Pass
High	2462	16.508	500	Pass

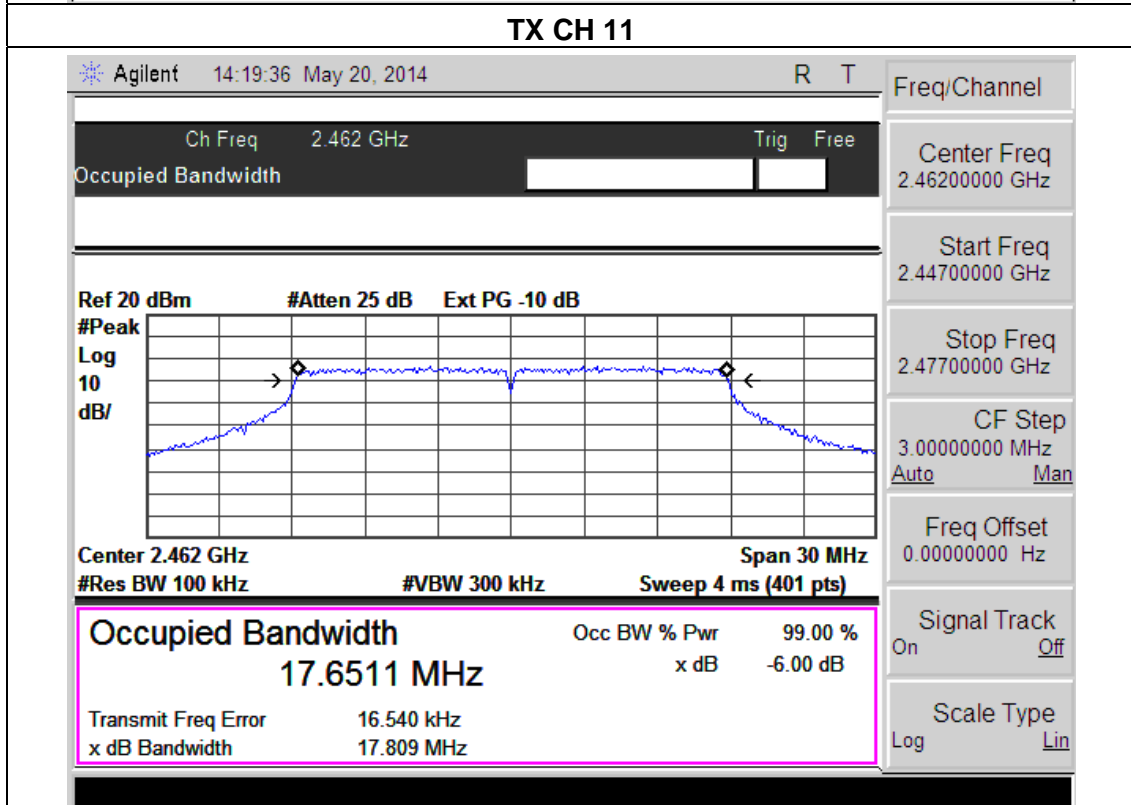
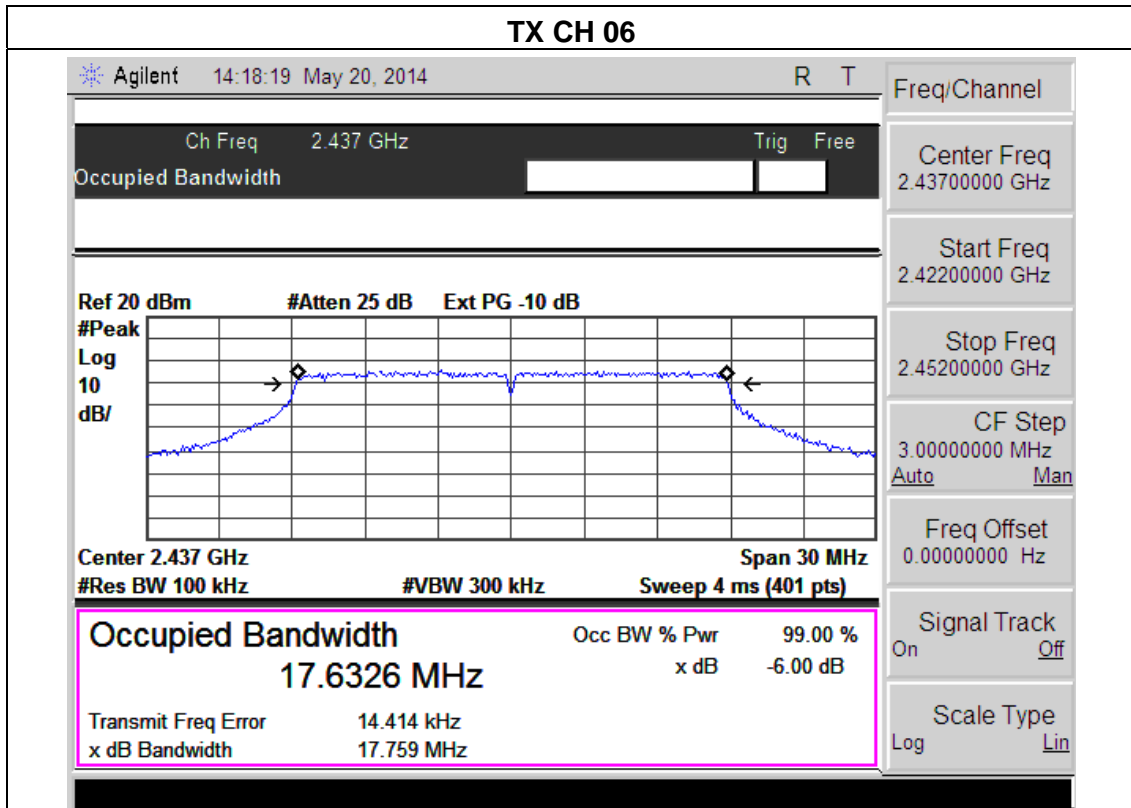




EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1012 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX n Mode(20M) /CH01, CH06, CH11		

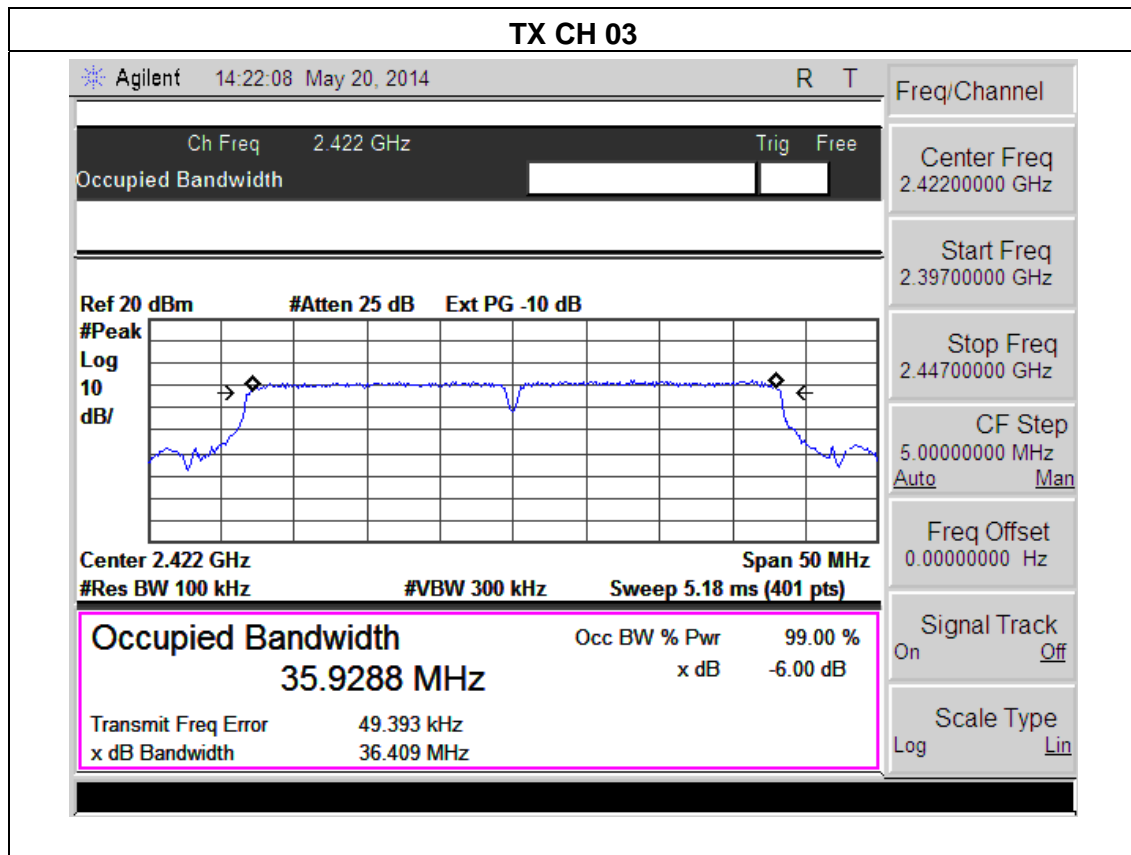
Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	17.748	500	Pass
Middle	2437	17.759	500	Pass
High	2462	17.809	500	Pass

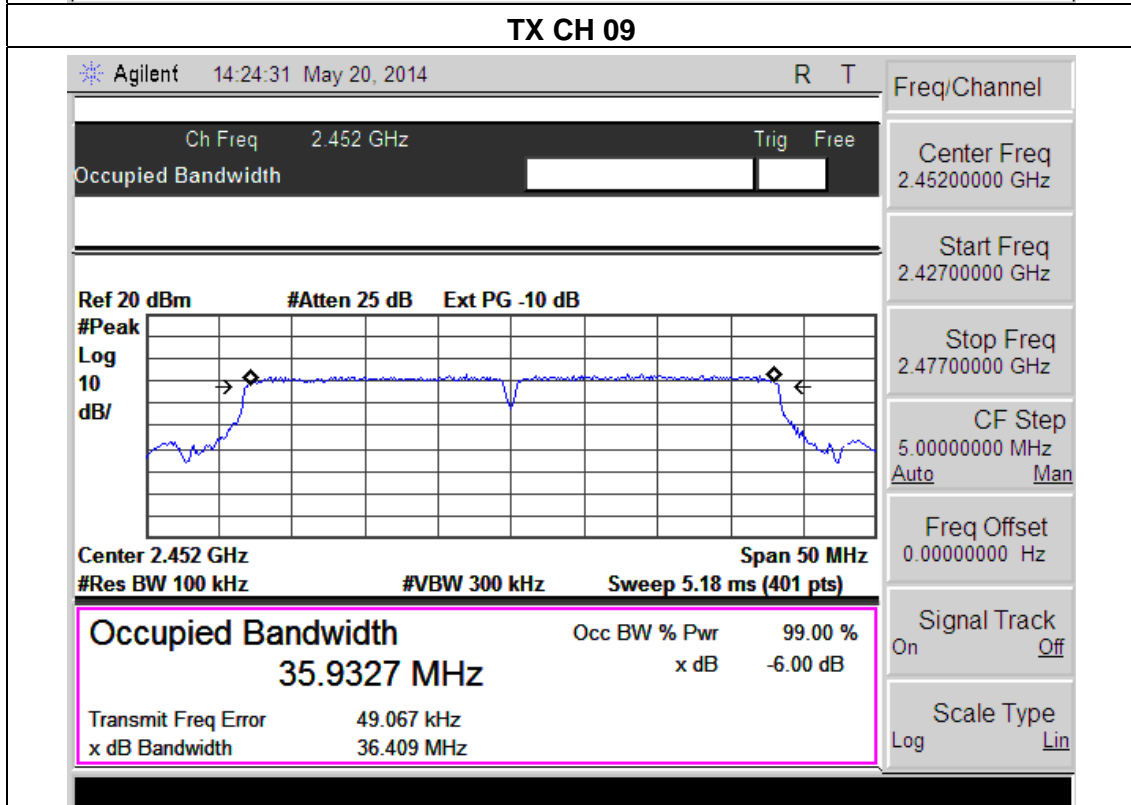
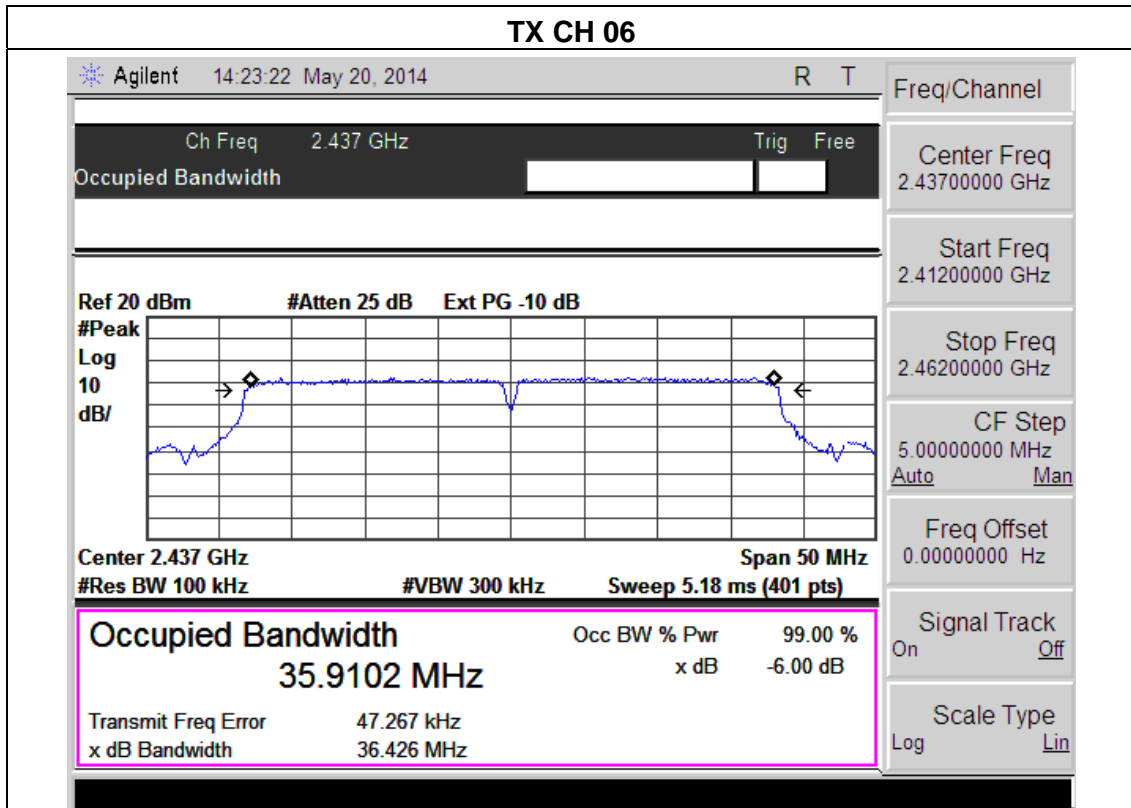




EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1012 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX n Mode(40M) /CH03, CH06, CH09		

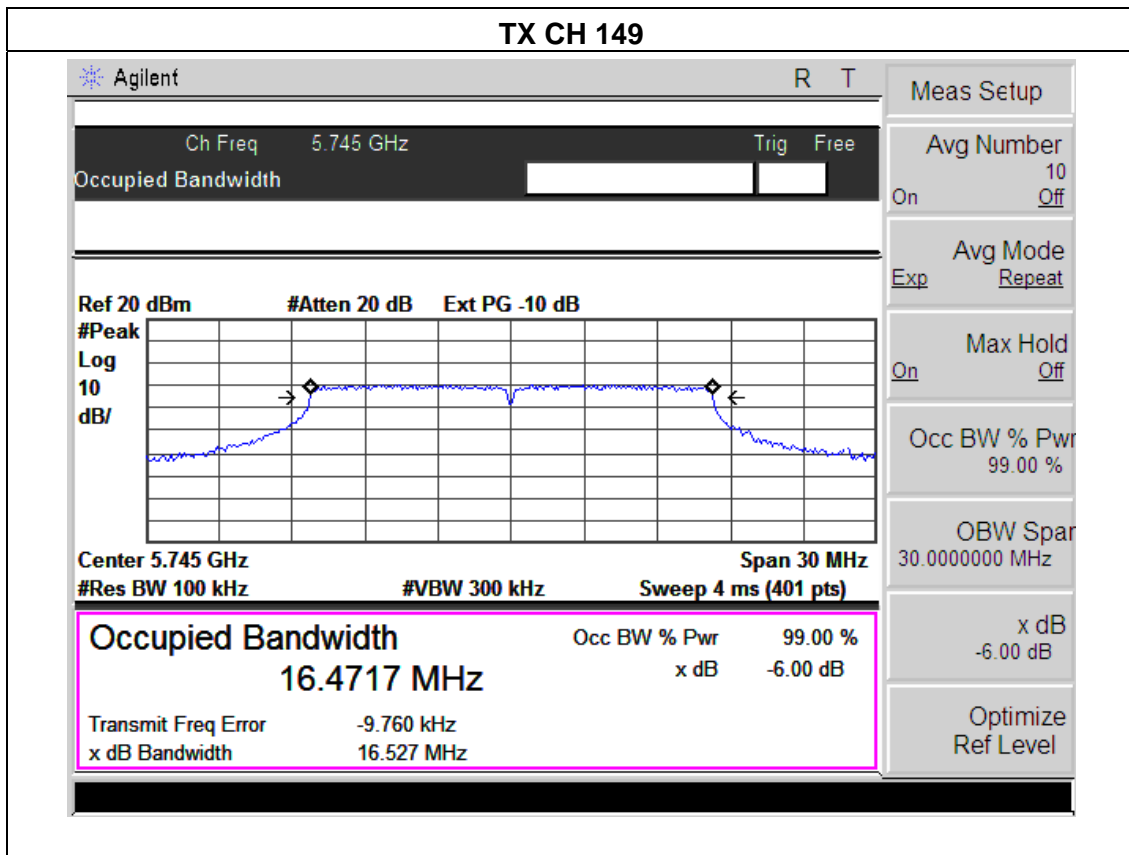
Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2422	36.409	500	Pass
Middle	2437	36.426	500	Pass
High	2452	36.409	500	Pass





EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1012 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX a Mode /CH149, CH157, CH165		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	5745	16.527	500	Pass
Middle	5785	16.519	500	Pass
High	5825	16.551	500	Pass



TX CH 157

Agilent
R T

Ch Freq 5.785 GHz
Trig Free

Occupied Bandwidth

Ref 20 dBm
#Atten 20 dB
Ext PG -10 dB

#Peak
Log
10
dB/

Center 5.785 GHz Span 30 MHz

#Res BW 100 kHz #VBW 300 kHz

Occupied Bandwidth

16.4418 MHz

Transmit Freq Error -20.644 kHz

x dB Bandwidth 16.519 MHz

Freq/Channel

Center Freq 5.78500000 GHz

Start Freq 5.77000000 GHz

Stop Freq 5.80000000 GHz

CF Step 3.00000000 MHz
Auto Man

Freq Offset 0.00000000 Hz

Signal Track On Off

Scale Type Log Lin

TX CH 165

Agilent
R T

Ch Freq 5.825 GHz
Trig Free

Occupied Bandwidth

Ref 20 dBm
#Atten 20 dB
Ext PG -10 dB

#Peak
Log
10
dB/

Center 5.825 GHz Span 30 MHz

#Res BW 100 kHz #VBW 300 kHz

Occupied Bandwidth

16.4640 MHz

Transmit Freq Error -12.904 kHz

x dB Bandwidth 16.551 MHz

Freq/Channel

Center Freq 5.82500000 GHz

Start Freq 5.81000000 GHz

Stop Freq 5.84000000 GHz

CF Step 3.00000000 MHz
Auto Man

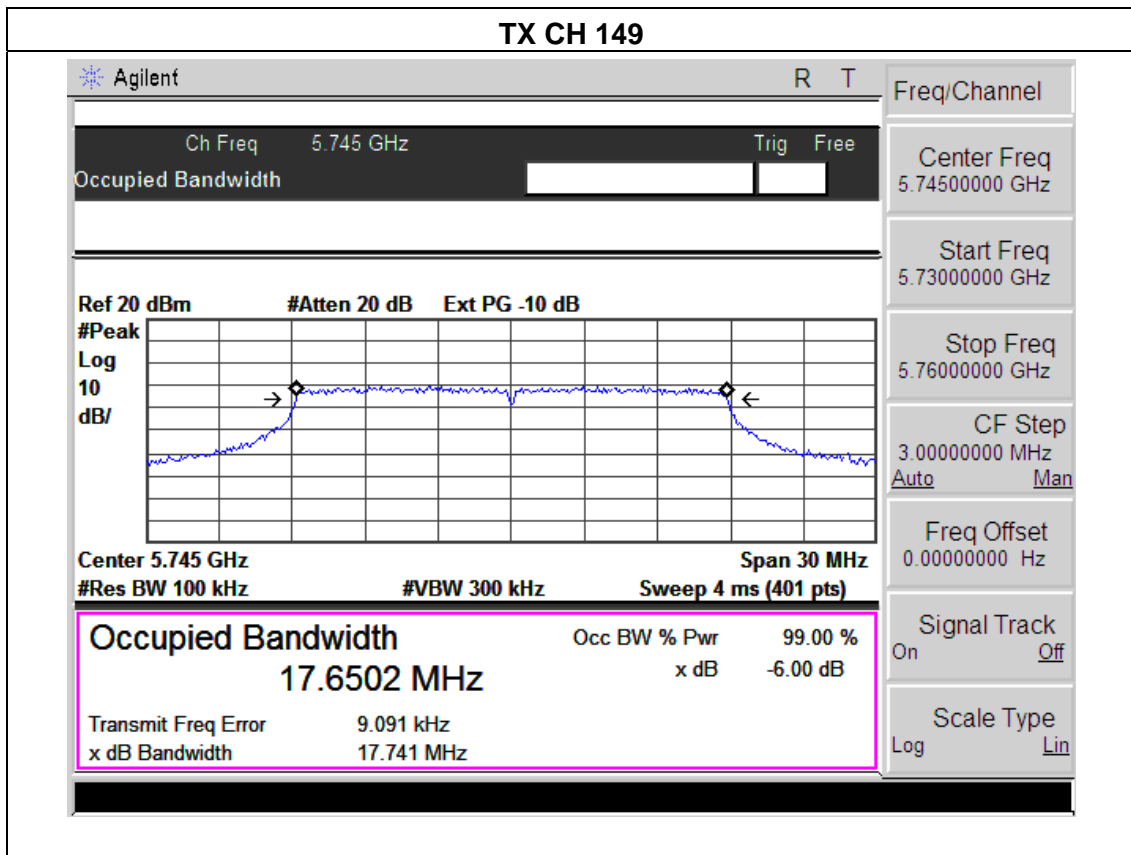
Freq Offset 0.00000000 Hz

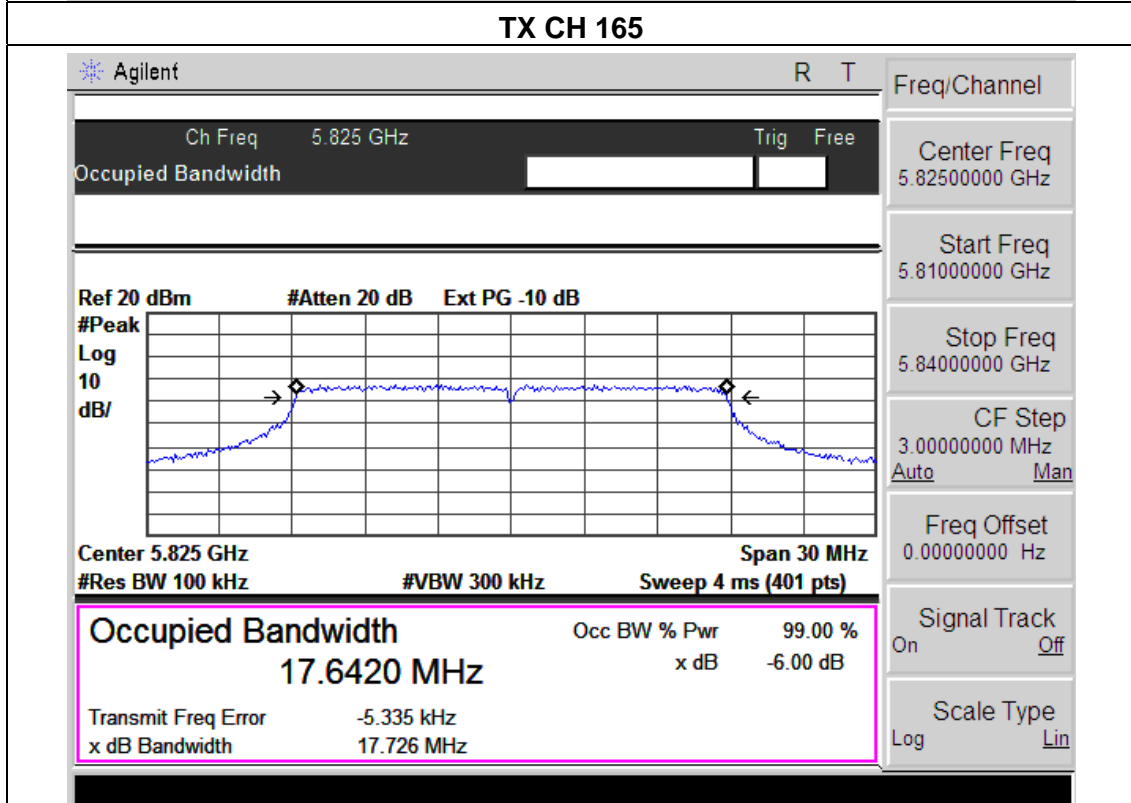
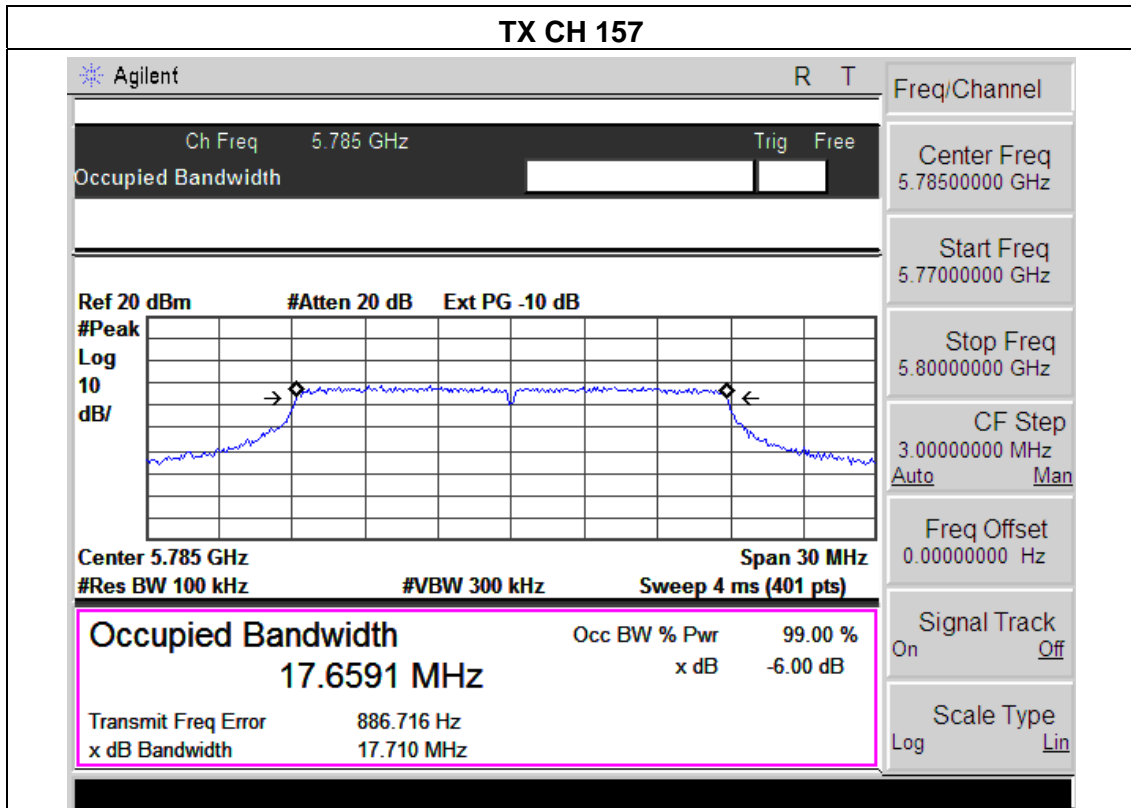
Signal Track On Off

Scale Type Log Lin

EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1012 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX n(20) Mode(5G) /CH149, CH157, CH165		

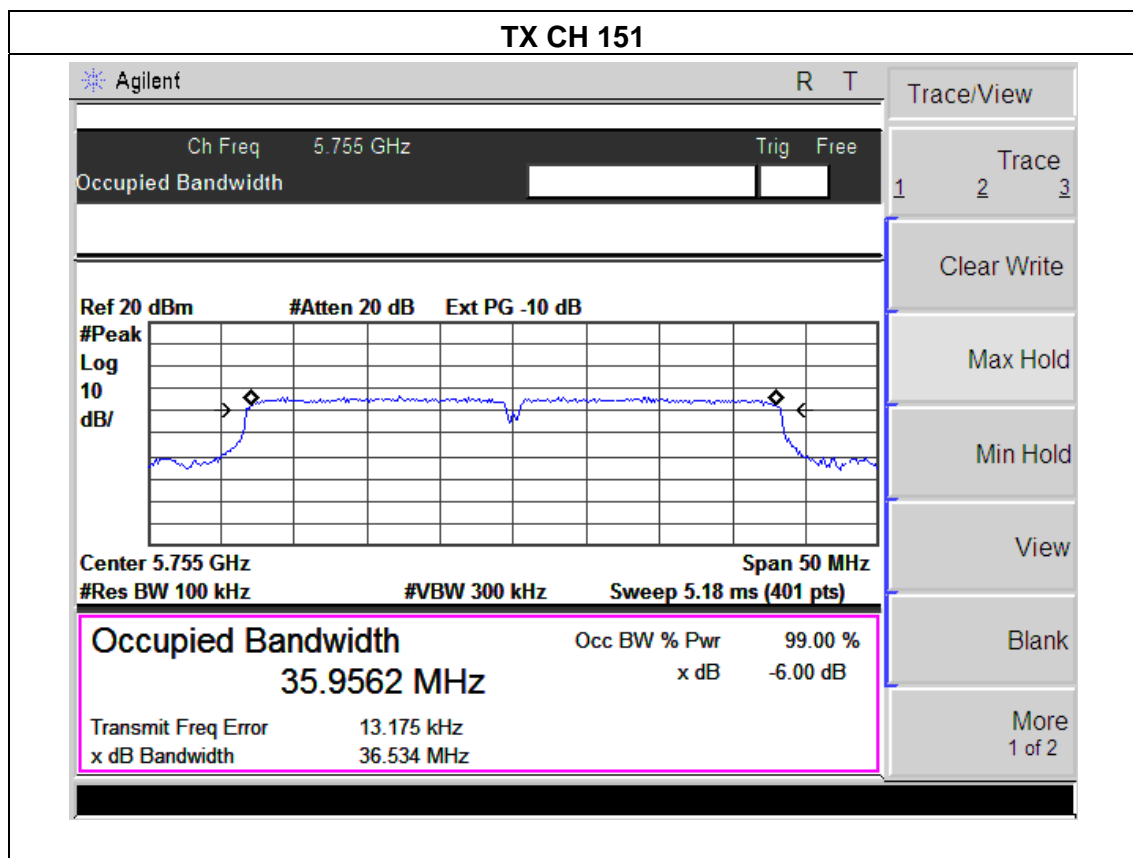
Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	5745	17.741	500	Pass
Middle	5785	17.710	500	Pass
High	5825	17.726	500	Pass





EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1012 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX n40 Mode(5G) /CH151, CH159		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	5755	36.534	500	Pass
High	5795	36.495	500	Pass



TX CH 159

Agilent
R T

Ch Freq 5.795 GHz
Trig Free

Occupied Bandwidth

Ref 20 dBm
#Atten 20 dB
Ext PG -10 dB

#Peak
Log
10
dB/

Center 5.795 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 5.18 ms (401 pts)

Span 50 MHz

Occupied Bandwidth

35.9663 MHz

Transmit Freq Error 3.484 kHz

x dB Bandwidth 36.495 MHz

Occ BW % Pwr 99.00 %

x dB -6.00 dB

Freq/Channel

Center Freq 5.79500000 GHz

Start Freq 5.77000000 GHz

Stop Freq 5.82000000 GHz

CF Step 5.00000000 MHz

Auto Man

Freq Offset 0.00000000 Hz

Signal Track On Off

Scale Type Log Lin

6. PEAK OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

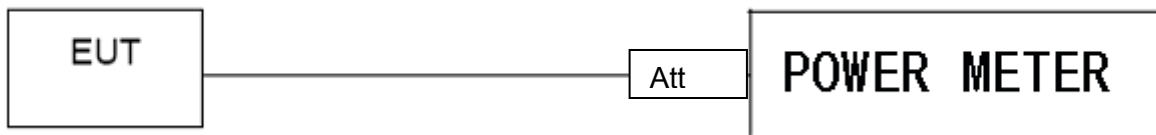
6.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the Power meter

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX b/g/n(20M, 40M) Mode		

Test Channel	Frequency (MHz)	Maximum output power. Antenna port				Total Power		LIMIT dBm
		(PK) (dBm)		(AV) (dBm)		(PK)	(AV)	
		ANT A	ANT B	ANT A	ANT B	dBm	dBm	
TX 802.11b Mode								
CH01	2412	15.31	14.64	12.08	11.14	18.00	14.65	29.39
CH06	2437	15.23	14.73	12.15	11.15	18.04	14.65	29.39
CH11	2462	15.41	14.47	12.42	11.28	17.98	14.90	29.39
TX 802.11g Mode								
CH01	2412	13.25	12.32	10.12	9.21	15.82	12.70	29.39
CH06	2437	13.42	12.41	10.09	9.41	15.86	12.79	29.39
CH11	2462	13.31	12.52	10.24	9.32	15.94	12.81	29.39
TX 802.11n/20M Mode								
CH01	2412	12.11	11.21	9.04	8.34	14.69	11.71	29.39
CH06	2437	12.23	11.32	9.13	8.15	14.74	11.63	29.39
CH11	2462	12.09	11.07	9.21	8.02	14.62	11.67	29.39
TX 802.11n/40M Mode								
CH03	2422	10.13	9.46	6.37	5.18	12.82	8.83	29.39
CH06	2437	10.47	9.34	6.75	5.53	12.76	8.98	29.39
CH09	2452	10.14	9.42	6.42	5.58	12.81	9.03	29.39

For 2.4G mode , Limit =30-6.61+6=29.39dBm for output power.

For 5G mode,Limit =30-6.61+6=29.39 dBm for output power

EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz
Test Mode :	TX a/n(5G) Mode		

Test Channel	Frequency	Maximum output power. Antenna port				Total Power		LIMIT
		(PK) (dBm)		(AV) (dBm)		(PK)	(AV)	
	(MHz)	ANT A	ANT B	ANT A	ANT B	dBm	dBm	dBm
TX 802.11a Mode								
CH149	5745	13.56	11.72	9.34	7.84	15.75	11.66	29.39
CH157	5785	13.71	11.51	9.51	7.79	15.67	11.64	29.39
CH165	5825	13.49	11.34	9.24	7.76	15.56	11.57	29.39
TX 802.11 n20M Mode								
CH149	5745	11.45	9.11	7.38	5.17	13.45	9.42	29.39
CH157	5785	11.73	9.34	7.43	5.13	13.53	9.41	29.39
CH165	5825	11.59	9.23	7.29	5.31	13.58	9.42	29.39
TX 802.11 n40M Mode								
CH151	5755	11.13	8.77	7.17	5.23	13.12	9.32	29.39
CH159	5795	11.04	8.43	7.13	5.37	13.00	9.37	29.39

For 2.4G mode , Limit =30-6.61+6=29.39dBm for output power.

For 5G mode,Limit =30-6.61+6=29.39 dBm for output power

7. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

APPLICABLE STANDARD

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. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

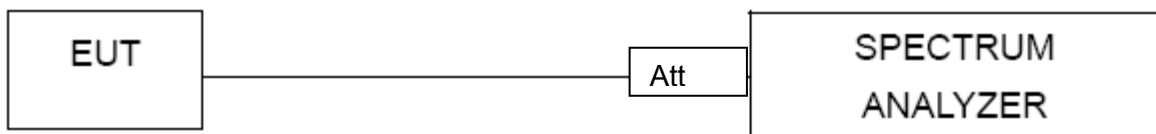
TEST PROCEDURE

- a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b) Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- c) Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- e) Repeat above procedures until all measured frequencies were complete.

7.1 DEVIATION FROM STANDARD

No deviation.

7.2 TEST SETUP



7.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.4 TEST RESULTS

EUT :	ScreenBeam Pro Wireless Display Receiver	Model Name :	SBWD100B
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1012 hPa	Test Voltage :	DC 5V From adapter AC120V/60Hz

Frequency Band	Delta Peak to band emission (dBc)	> Limit (dBc)	Result
802.11b mode			
Left-band	38.291	20	Pass
Right-band	52.995	20	Pass
802.11g mode			
Left-band	29.727	20	Pass
Right-band	43.425	20	Pass
802.11n-HT20 mode			
Left-band	29.660	20	Pass
Right-band	42.546	20	Pass
802.11n-HT40 mode			
Left-band	29.789	20	Pass
Right-band	40.005	20	Pass

Frequency Band	Delta Peak to band emission (dBc)	> Limit (dBc)	Result
802.11a mode			
Left-band	37.571	20	Pass
Right-band	37.400	20	Pass
802.11n20 mode			
Left-band	36.775	20	Pass
Right-band	37.100	20	Pass
802.11n40 mode			
Left-band	32.83	20	Pass
Right-band	34.21	20	Pass

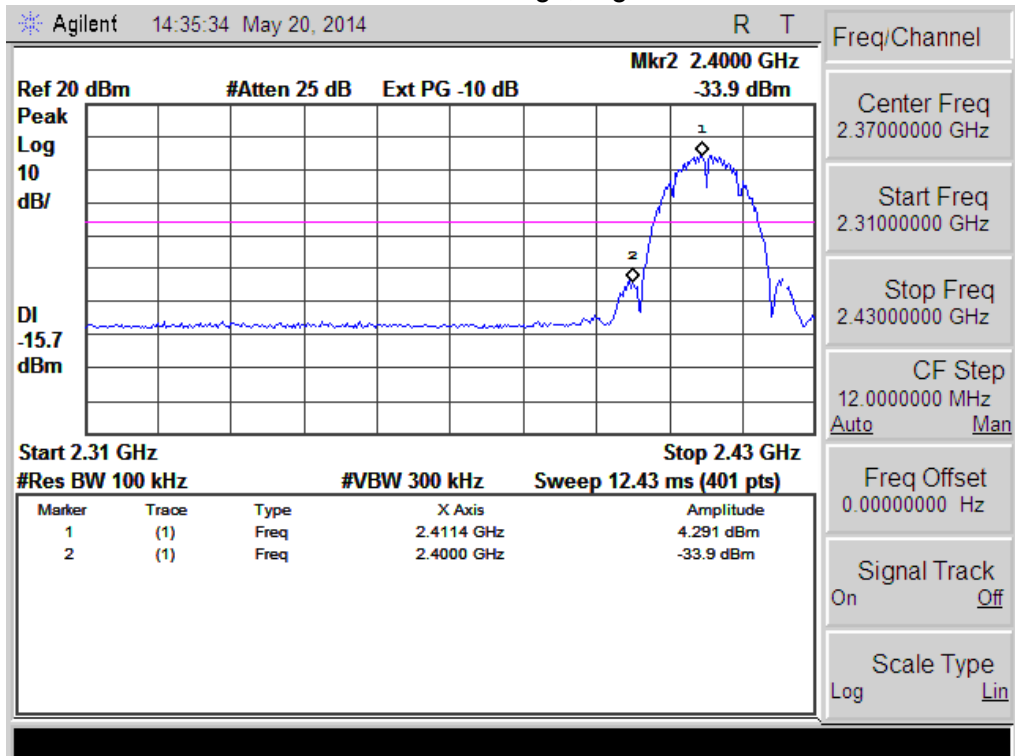
Radiated band edge:

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Detector Type	Comment
802.11b							
2390	54.14	-13.06	41.08	74	-32.92	peak	Vertical
2390	53.45	-13.06	40.39	74	-33.61	peak	Horizontal
2483.5	54.18	-12.78	41.4	74	-32.60	peak	Vertical
2483.5	55.76	-12.78	42.98	74	-31.02	peak	Horizontal
802.11g							
2390	52.31	-13.06	39.25	74	-34.75	peak	Vertical
2390	53.88	-13.06	40.82	74	-33.18	peak	Horizontal
2483.5	52.47	-12.78	39.69	74	-34.31	peak	Vertical
2483.5	55.13	-12.78	42.35	74	-31.65	peak	Horizontal
802.11n (20)							
2390	50.98	-13.06	37.92	74	-36.08	peak	Vertical
2390	51.76	-13.06	38.7	74	-35.3	peak	Horizontal
2483.5	52.21	-12.78	39.43	74	-34.57	peak	Vertical
2483.5	53.76	-12.78	40.98	74	-33.02	peak	Horizontal
802.11n (40)							
2390	55.76	-13.06	42.7	74	-31.3	peak	Vertical
2390	54.19	-13.06	41.13	74	-32.87	peak	Horizontal
2483.5	56.23	-12.78	43.45	74	-30.55	peak	Vertical
2483.5	51.24	-12.78	38.46	74	-35.54	peak	Horizontal

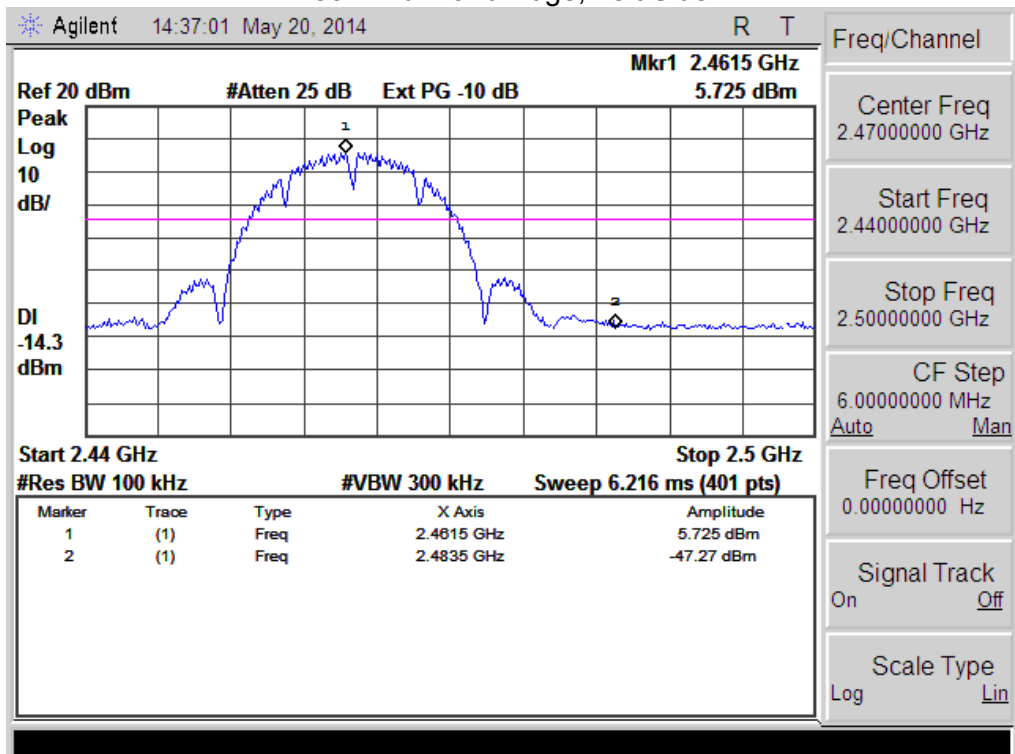
Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Detector Type	Comment
802.11a-5G							
5725	52.56	-3.9	48.66	74	-25.34	peak	Vertical
5725	49.94	-3.9	46.04	74	-27.96	peak	Horizontal
5850	49.77	-4.05	45.72	74	-28.28	peak	Vertical
5850	55.13	-4.05	51.08	74	-22.92	peak	Horizontal
802.11n20-5G							
5725	54.25	-3.9	50.35	74	-23.65	peak	Vertical
5725	47.43	-3.9	43.53	74	-30.47	peak	Horizontal
5850	48.45	-4.05	44.4	74	-29.6	peak	Vertical
5850	54.98	-4.05	50.93	74	-23.07	peak	Horizontal
802.11n40-5G							
5725	55.11	-3.9	51.21	74	-22.79	peak	Vertical
5725	49.24	-3.9	45.34	74	-28.66	peak	Horizontal
5850	49.24	-4.05	45.19	74	-28.81	peak	Vertical
5850	54.11	-4.05	50.06	74	-23.94	peak	Horizontal

Note: Test method to see chapter 3.2 . When PK value is lower than the Average value limit, average not record.

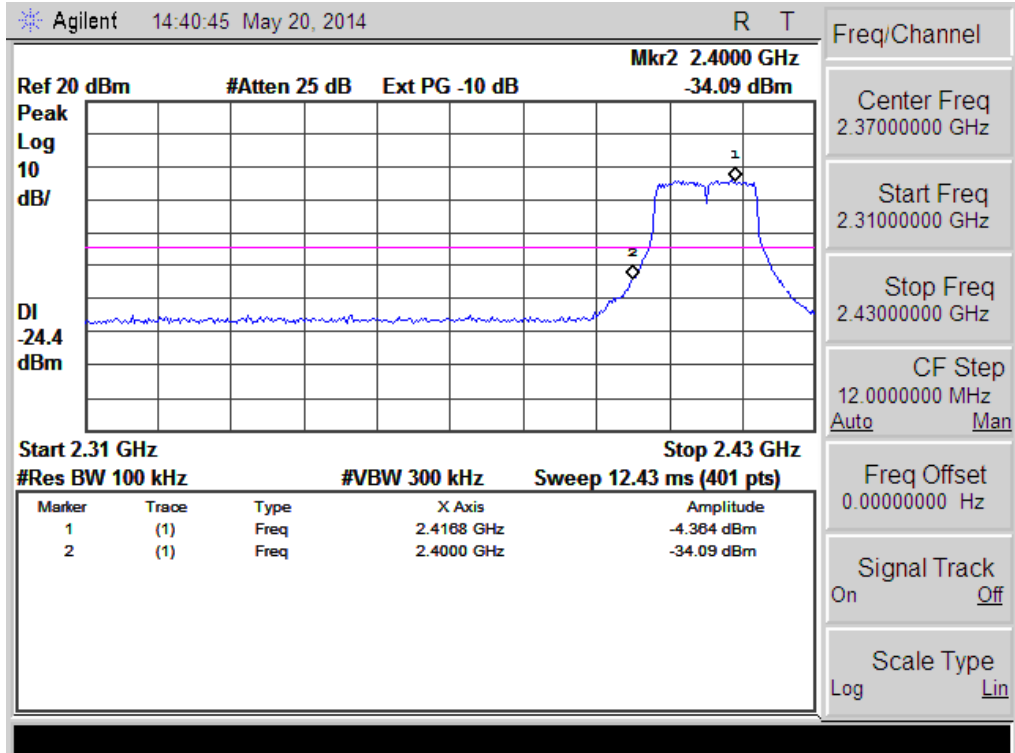
802.11b: Band Edge, Right Side



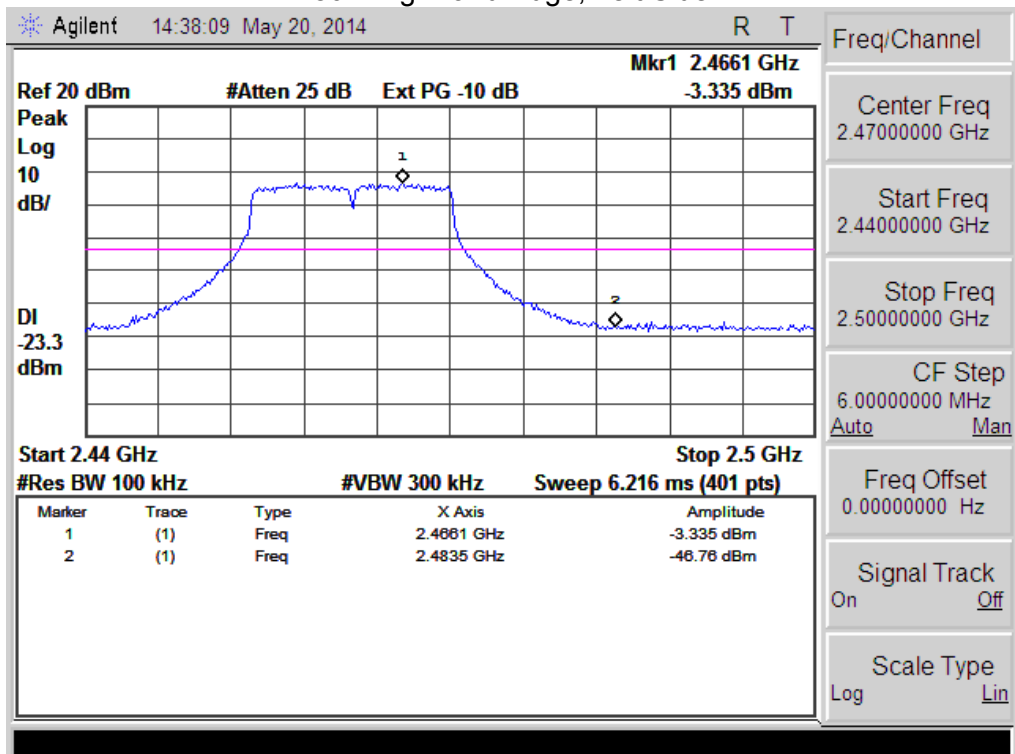
802.11b: Band Edge, Left Side



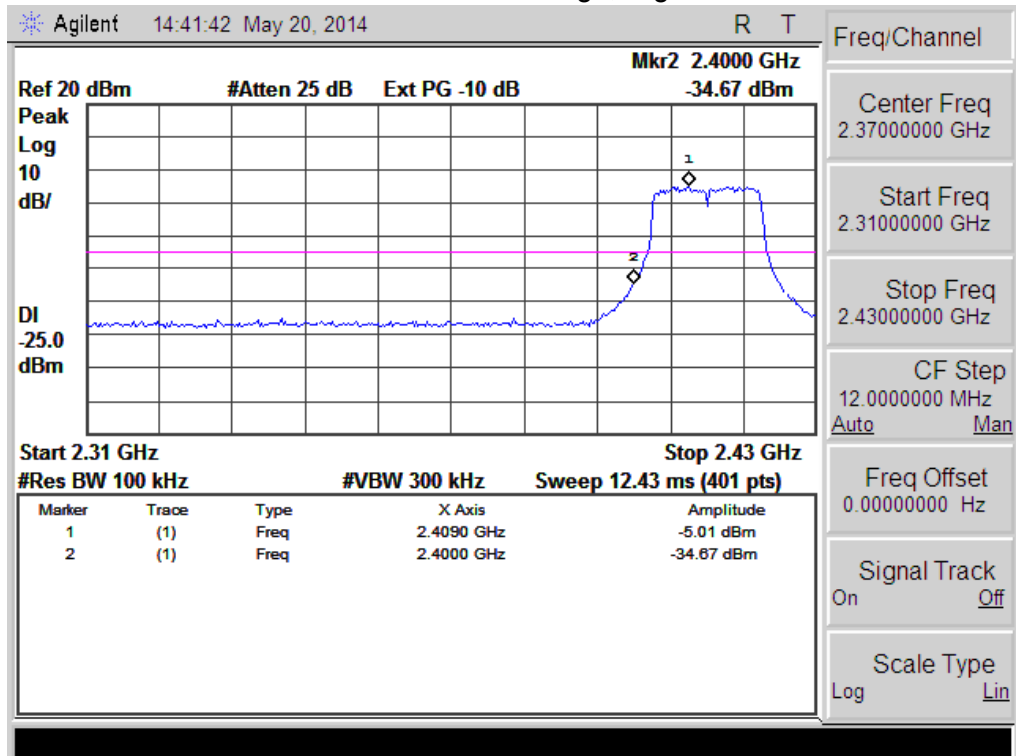
802.11g: Band Edge, Right Side



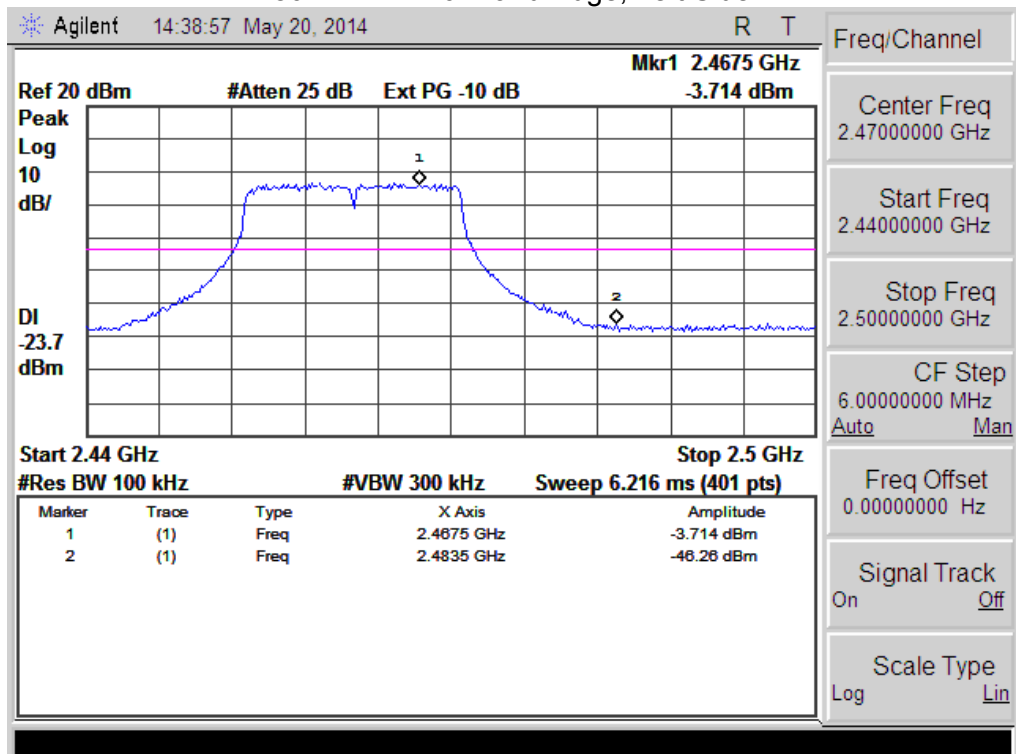
802.11g: Band Edge, Left Side



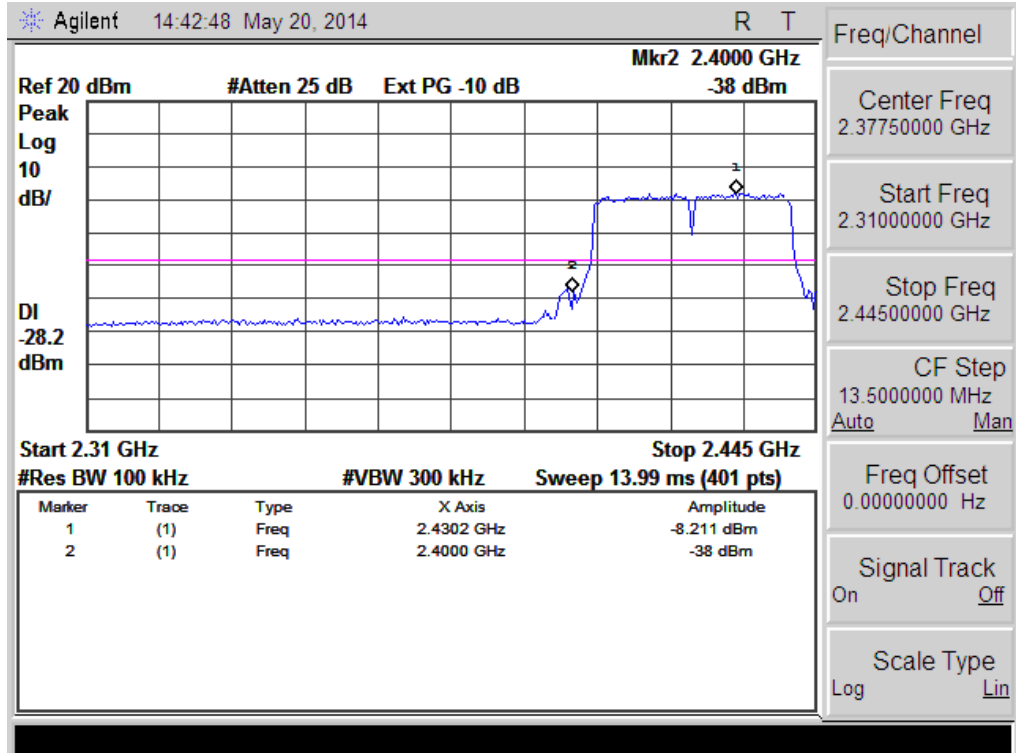
802.11n-HT20: Band Edge, Right Side



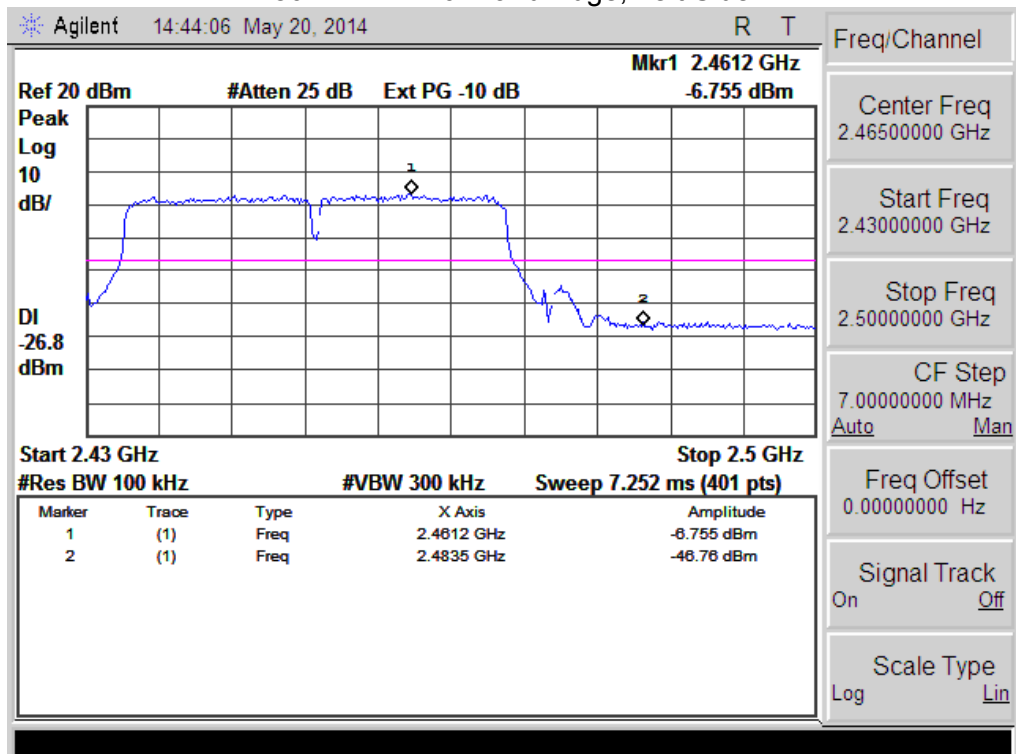
802.11n-HT20: Band Edge, Left Side



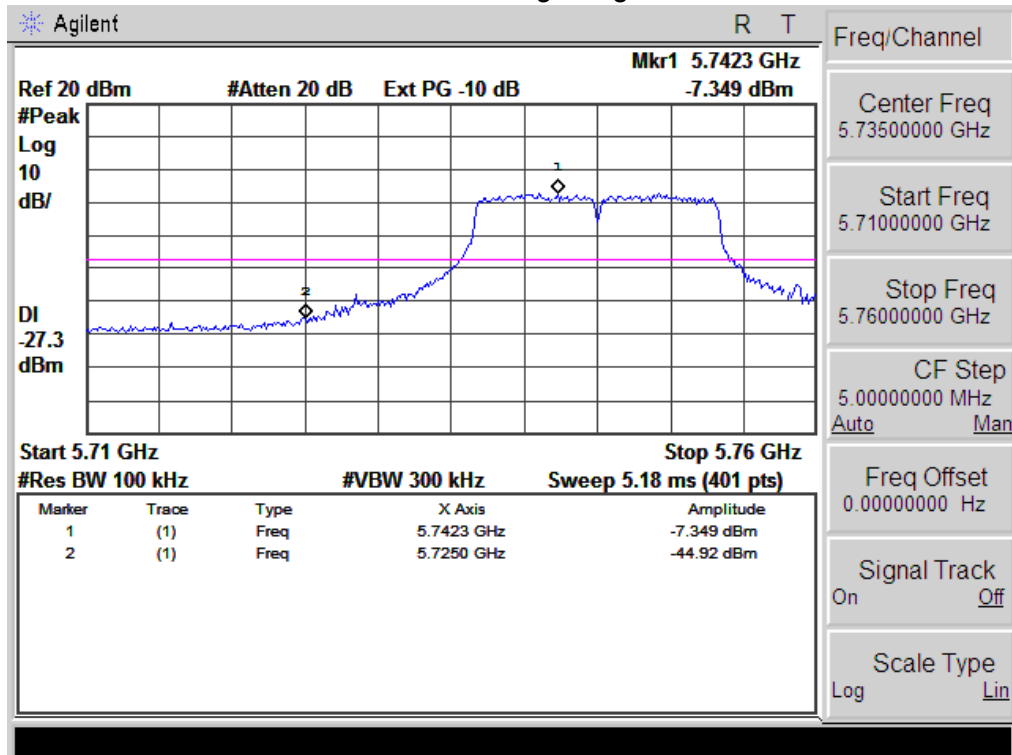
802.11n-HT40: Band Edge, Right Side



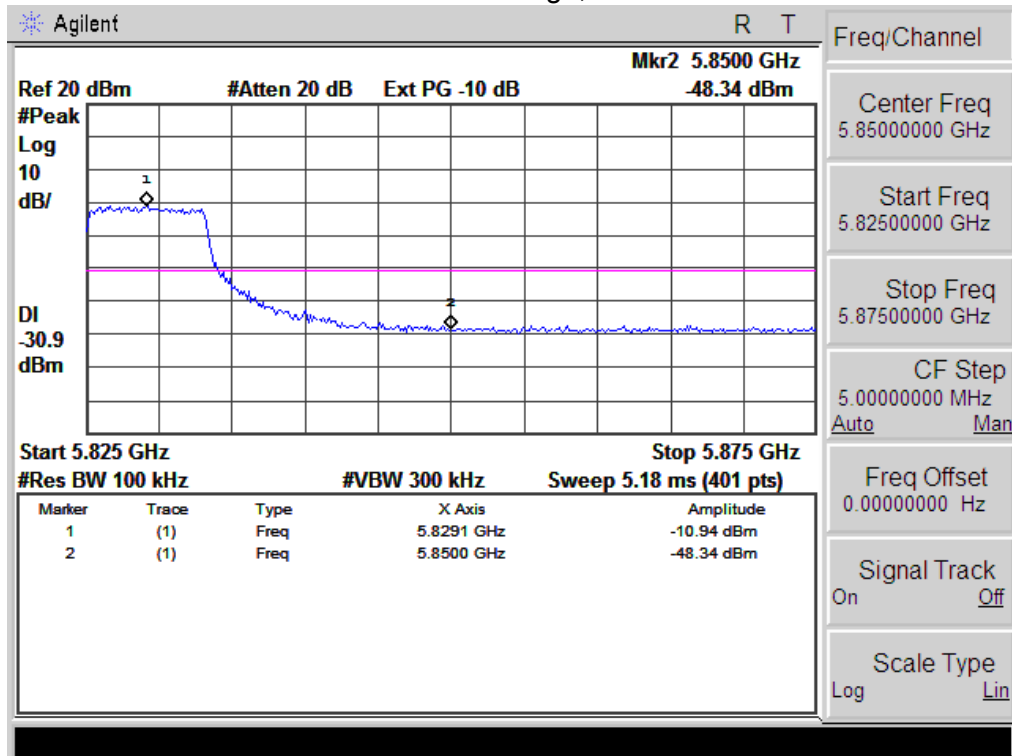
802.11n-HT40: Band Edge, Left Side



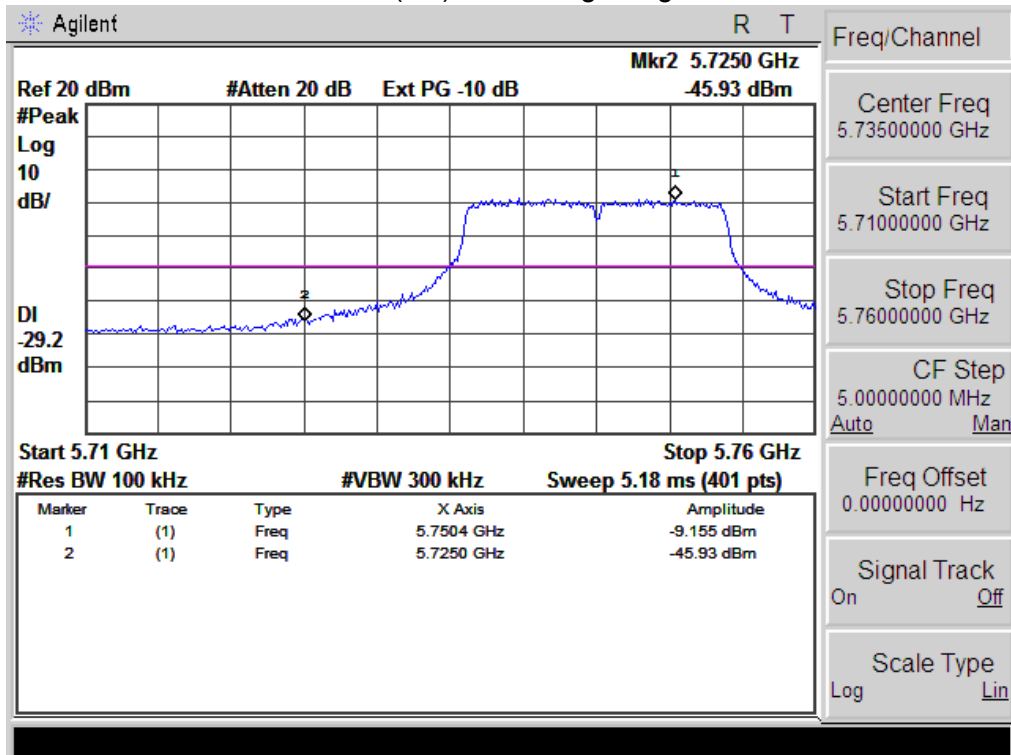
802.11a: Band Edge, Right Side



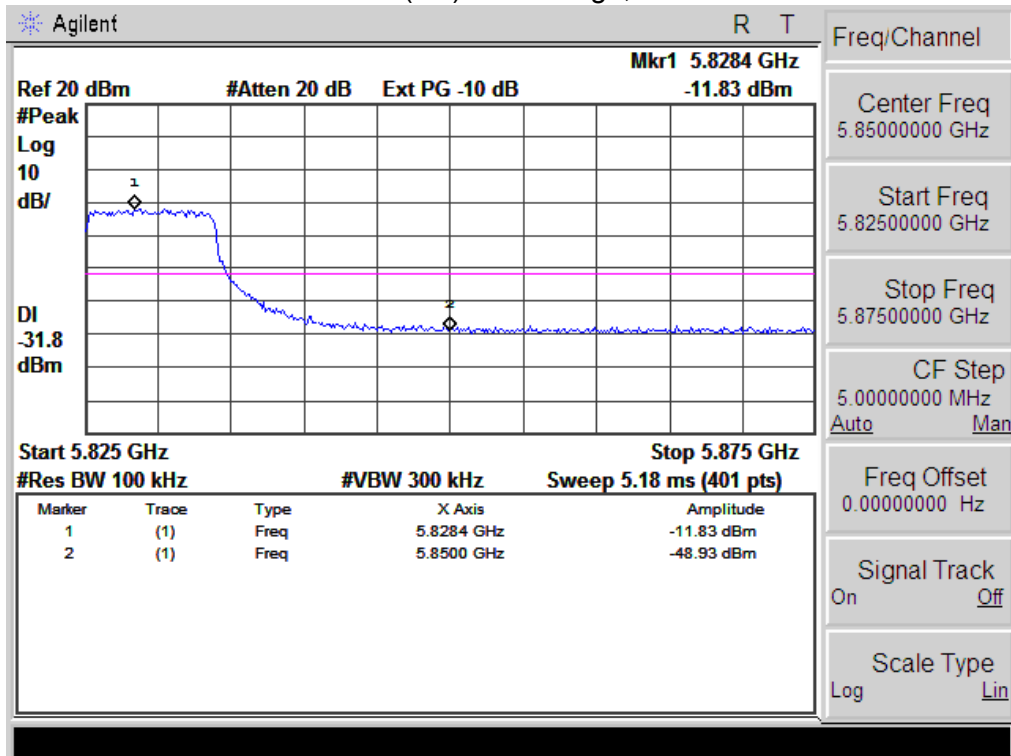
802.11a: Band Edge, Left Side



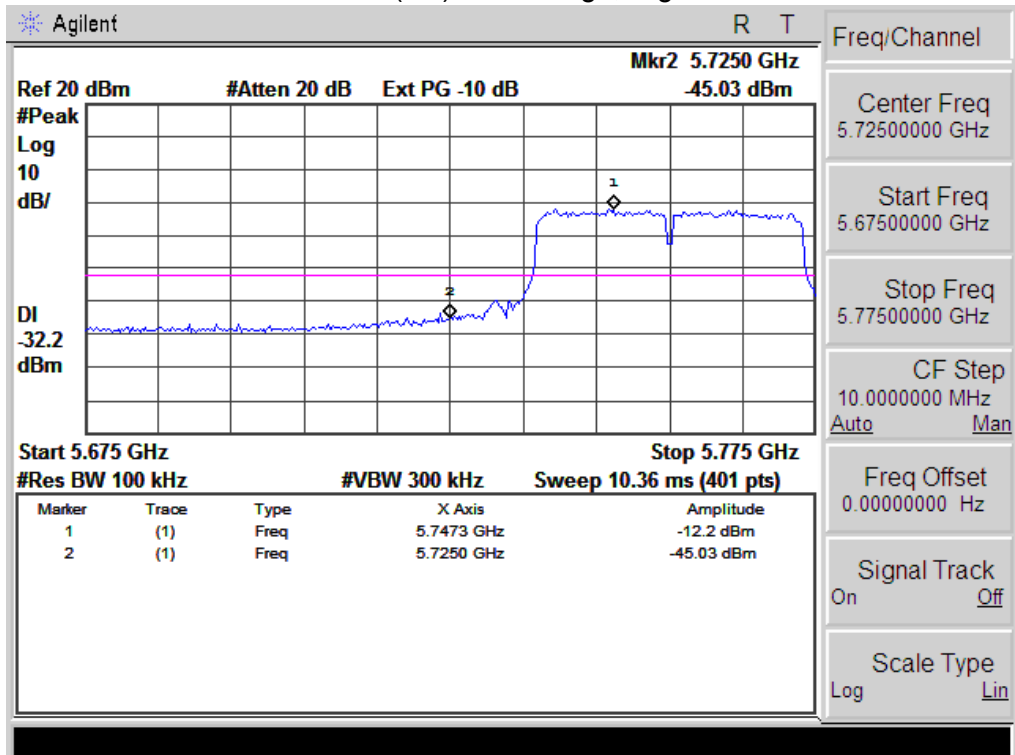
802.11n20(5G): Band Edge, Right Side



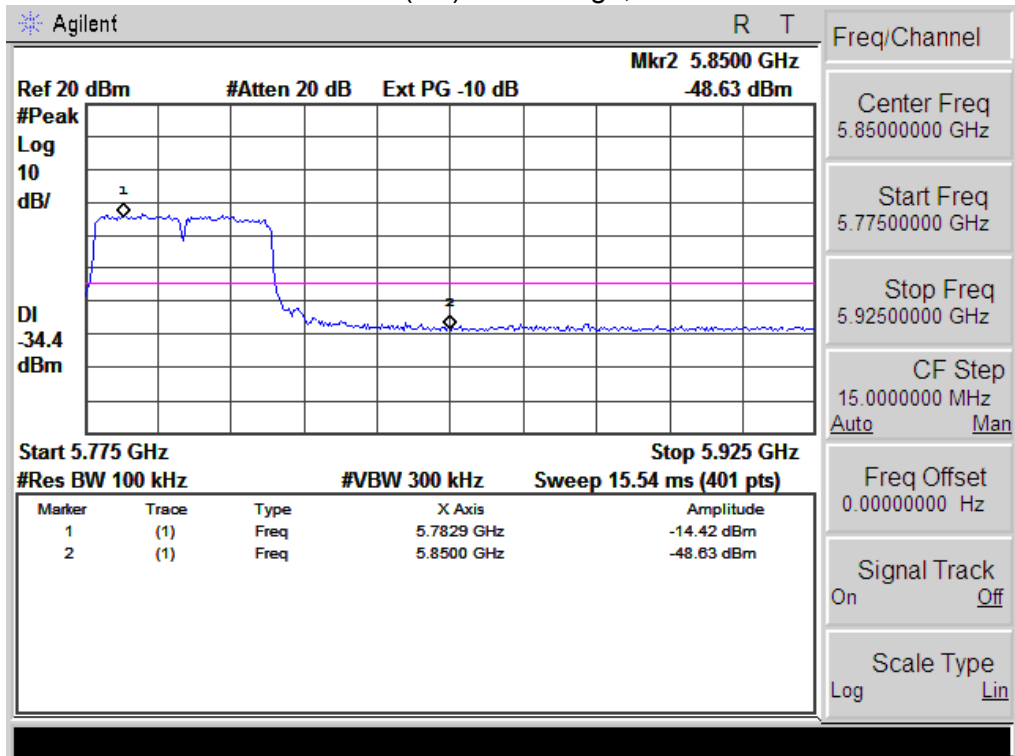
802.11n20(5G): Band Edge, Left Side



802.11n40(5G): Band Edge, Right Side



802.11n40(5G): Band Edge, Left Side



8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

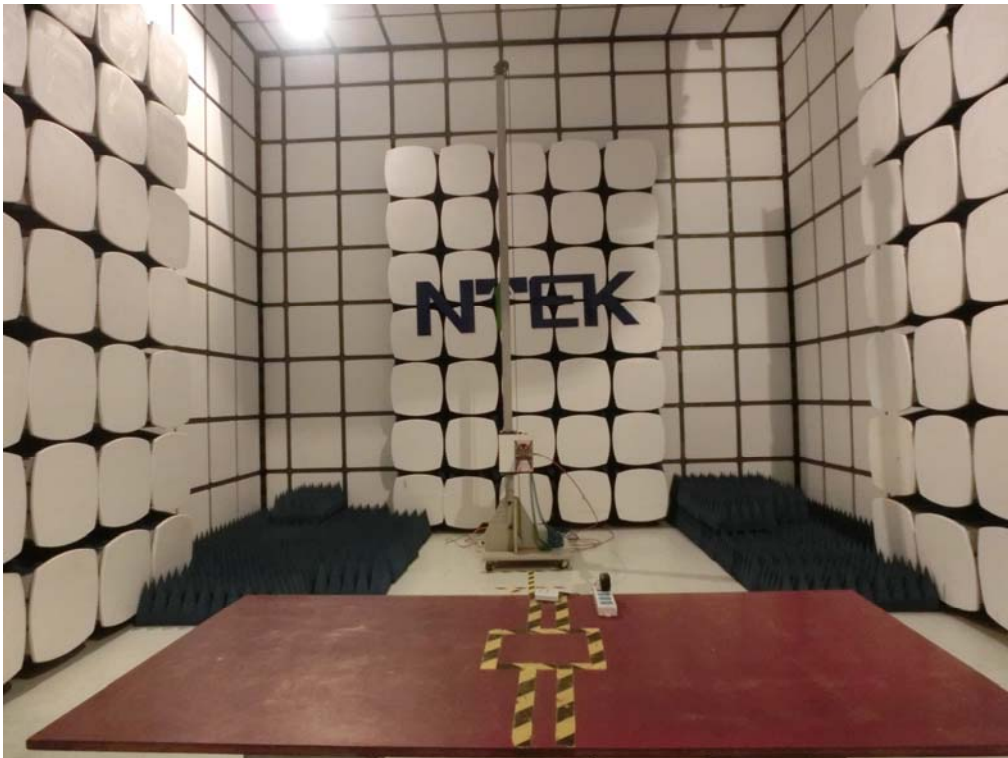
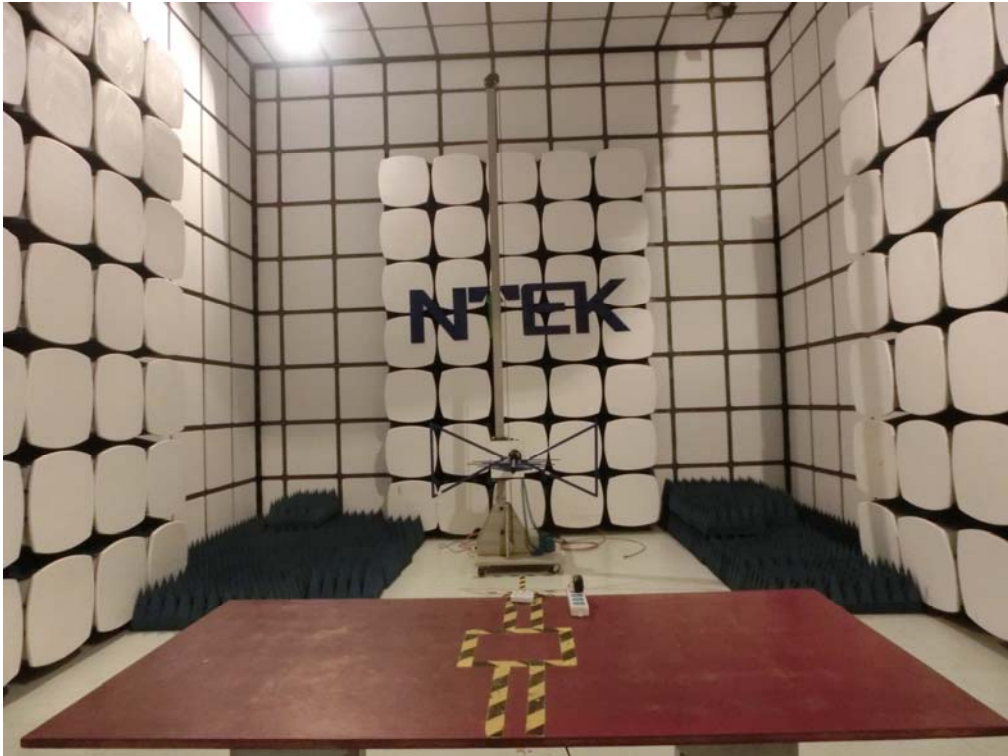
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

8.2 EUT ANTENNA

The EUT antenna is PCB antenna. It comply with the standard requirement.

9. EUT TEST PHOTO

Radiated Measurement Photos



Conducted Measurement Photos

