

TEST REPORT

Reference No. : WTU17S0887320E
FCC ID..... : 2AHAK-WE55UDT108
Applicant : KUNSHAN KONKA ELECTRONIC CO., LTD
Address : No.189 East Qianjin Road, KUNSHAN, JIANGSU, China.
Manufacturer : KUNSHAN KONKA ELECTRONIC CO., LTD
Address : No.189 East Qianjin Road, KUNSHAN, JIANGSU, China.
Product Name : LCD TV
Model No. : WE55UDT108
Standards..... : FCC CFR47 Part 15 C Section 15.247:2016
Date of Receipt sample.. : 2017-08-11
Date of Test..... : 2017-08-12 to 2017-09-05
Date of Issue : 2017-09-08
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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2 Laboratories Introduction

Waltek Services Test Group Ltd. is one of the largest and the most comprehensive third party testing organizations in China, our headquarter located in Shenzhen (CNAS Registration No. L3110, A2LA Certificate Number: 4243.01) and have branches in Foshan (CNAS Registration No. L6478), Dongguan (CNAS Registration No. L9950), Zhongshan, Suzhou (CNAS Registration No. L7754), Ningbo and Hong Kong, Our test capability covered four large fields: safety test. Electronic Magnetic Compatibility(EMC), reliability and energy performance, Chemical test. Meanwhile, Waltek has got recognition as registration and accreditation laboratory from EMSD (Electrical and Mechanical Services Department), and American Energy star, FCC(The Federal Communications Commission), CPSC(Consumer Product Safety Commission), CEC(California energy efficiency), IC(Industry Canada) and ELI(Efficient Lighting Initiative). It's the strategic partner and data recognition laboratory of international authoritative organizations, such as UL, Intertek(ETL-SEMKO), CSA, TÜV Rheinland, TÜV SÜD, etc. As a professional, comprehensive, justice international test organization, we still keep the scientific and rigorous work attitude to help each client satisfy the international standards and assist their product enter into globe market smoothly.

Waltek Services (Shenzhen) Co., Ltd.

A. Accreditations for Conformity Assessment (International)

Country/Region	Accreditation Body	Scope	Note
USA	CNAS (Registration No.: L3110) A2LA (Certificate No.: 4243.01)	FCC ID \ DOC \ VOC	1
Canada		IC ID \ VOC	2
Japan		MIC-T \ MIC-R	-
Europe		EMCD \ RED	-
Taiwan		NCC	-
Hong Kong		OFCA	-
Australia		RCM	-
India		International Services	WPC
Thailand	NTC		-
Singapore	IDA		-
Note: 1. FCC Designation No.: CN1201. Test Firm Registration No.: 523476. 2. IC Canada Registration No.: 7760A			

B. TCBs and Notify Bodies Recognized Testing Laboratory.

Recognized Testing Laboratory of ...	Notify body number
TUV Rheinland	Optional.
Intertek	
TUV SUD	
SGS	
Phoenix Testlab GmbH	0700
Element Materials Technology Warwick Ltd	0891
Timco Engineering, Inc.	1177
Eurofins Product Service GmbH	0681

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4 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTU17S0887320E	2017-08-11	2017-08-12 to 2017-09-05	2017-09-08	original	-	Valid

5 General Information

5.1 General Description of E.U.T.

Product Name:	LCD TV
Model No.:	WE55UDT108
Operation Frequency:	802.11b/g/n HT20: 2412MHz ~ 2462MHz, 802.11n HT40: 2422MHz~2452MHz
Antenna Gain:	ANT A 2.4GHz Wi-Fi: 2.0 dBi ANT B 2.4GHz Wi-Fi: 2.0 dBi
Type of modulation:	IEEE 802.11b: DQPSK/DBPSK/DSSS/CCK IEEE 802.11g: QPSK/BPSK/16QAM/64QAM/OFDM IEEE 802.11n: QPSK/BPSK/16QAM/64QAM/OFDM
Hardware version :	CV6488H-A-20
Software version :	Jul-27-201712:37:44
Number of transmitter chains:	Wi-Fi:2T2R (MIMO)

The device supports MIMO 2T2R, and the MIMO works with STBC(Space-Time Block Coding).

The antenna is omnidirectional, does not support any directional gain in any modes.

TX power for MIMO rate, the Wi-Fi chip has a power/rate table that controls TX power from chipout, it's preset in nvram, FW don't need to calculate it again when MIMO rate is fixed. Of course the real radiation power is also related to antenna efficient.

Two transmitter signals are not correlated with each other.

5.2 Details of E.U.T

Ratings:	Input: AC 120V~ 50/60Hz, 130W
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5.3 Channel List

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2412	2	2417	3	2422	4	2427
5	2432	6	2437	7	2442	8	2447
9	2452	10	2457	11	2462	12	-

5.4 Test Mode

Table 1 Tests Carried Out Under FCC part 15.247

Test Items	Mode	Data Rate	Channel	TX/RX
Maximum conducted (average) output power	802.11b	1 Mbps	1/6/11	TX
	802.11g	6 Mbps	1/6/11	TX
	802.11n HT20	MCS0	1/6/11	TX
	802.11n HT40	MCS0	3/6/9	TX
Power Spectral Density	802.11b	1 Mbps	1/6/11	TX
	802.11g	6 Mbps	1/6/11	TX
	802.11n HT20	MCS0	1/6/11	TX
	802.11n HT40	MCS0	3/6/9	TX
Bandwidth	802.11b	1 Mbps	1/6/11	TX
	802.11g	6 Mbps	1/6/11	TX
	802.11n HT20	MCS0	1/6/11	TX
	802.11n HT40	MCS0	3/6/9	TX
Band Edge	802.11b	1 Mbps	1/11	TX
	802.11g	6 Mbps	1/11	TX
	802.11n HT20	MCS0	1/11	TX
	802.11n HT40	MCS0	3/9	TX
Transmitter Spurious Emissions	802.11b	1 Mbps	1/6/11	TX
	802.11g	6 Mbps	1/6/11	TX
	802.11n HT20	MCS0	1/6/11	TX
	802.11n HT40	MCS0	3/6/9	TX

Note :Parameters set by test software during channel & power tests, the software provided by the customer was used to set the operating channels as well as the output power level. The RF output power set is the power expected by the manufacturer and is going to be fixed on the firmware of the final product .

6 Equipment Used during Test

6.1 Equipment's List

Conducted Emissions Test Site						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	101155	2016-09-12	2017-09-11
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	2016-09-12	2017-09-11
3.	Limiter	York	MTS-IMP-136	261115-001-0024	2016-09-12	2017-09-11
4.	Cable	LARGE	RF300	-	2016-09-12	2017-09-11
3m Semi-anechoic Chamber for Radiation Emissions						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	Spectrum Analyzer	R&S	FSP	100091	2017-04-29	2018-04-28
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	2017-04-09	2018-04-08
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2017-04-09	2018-04-08
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2016-09-12	2017-09-11
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2017-04-09	2018-04-08
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2017-04-09	2018-04-08
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2017-04-13	2018-04-12
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	2017-04-13	2018-04-12
3m Semi-anechoic Chamber for Radiation Emissions						
Item	Equipment	Manufacturer	Model No.	Serial No	Last Calibration Date	Calibration Due Date
1	Test Receiver	R&S	ESCI	101296	2017-04-13	2018-04-12
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2017-04-09	2018-04-08
3	Amplifier	Compliance pirection systems inc	PAP-0203	22024	2017-04-13	2018-04-12
4	Cable	HUBER+SUHNER	CBL2	525178	2017-04-13	2018-04-12
RF Conducted Testing						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	2016-09-12	2017-09-11
2.	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	2016-09-12	2017-09-11

6.2 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-6}$
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (30M~1000MHz)
	± 5.47 dB (1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)

6.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by GUANG ZHOU GRG METROLOGY & TEST CO., LTD. address is No.163, Pingyun Rd. West of Huangpu Ave, Tianhe District, Guangzhou, Guangdong, China.

7 Test Summary

Test Items	Test Requirement	Result
Radiated Spurious Emissions	15.247(d) 15.205(a) 15.209(a)	C
Conducted Spurious Emissions	15.247(a)	C
Conducted Emissions	15.207(a)	C
Bandwidth	15.247(a)(2)	C
Maximum conducted (average) output power	15.247(b)(3),(4)	C
Power Spectral Density	15.247(e)	C
Band Edge	15.247(d)	C
Antenna Requirement	15.203	C
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	C
Note: C=Compliance; NC=Not Compliance; NT=Not Tested; N/A=Not Applicable.		

8 Conducted Emission

Test Requirement: FCC CFR 47 Part 15 Section 15.207

Test Method: ANSI C63.10:2013, ANSI C63.4:2014

Test Result: PASS

Frequency Range: 150kHz to 30MHz

Class/Severity: Class B

Limit:

Frequency (MHz)	Limit (dB μ V)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

8.1 E.U.T. Operation

Operating Environment :

Temperature: 21.5 °C

Humidity: 51.9 % RH

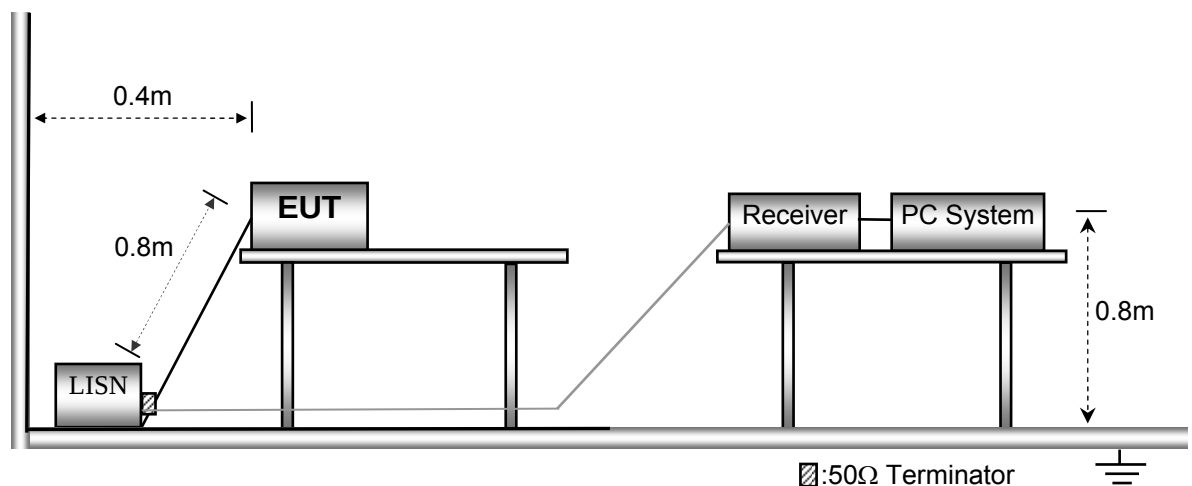
Atmospheric Pressure: 101.2kPa

EUT Operation :

The test was performed in Wi-Fi Transmitting mode, the worst test data (Wi-Fi b mode low channel for Antenna A) were shown in the report.

8.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.



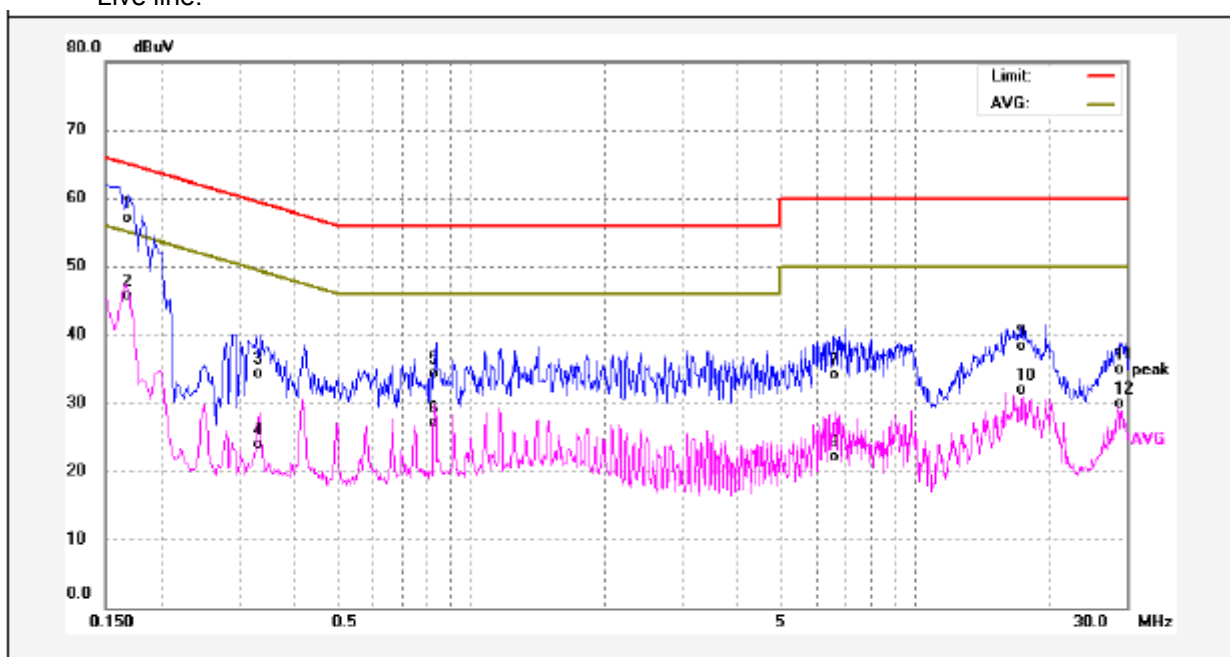
8.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

8.4 Conducted Emission Test Result

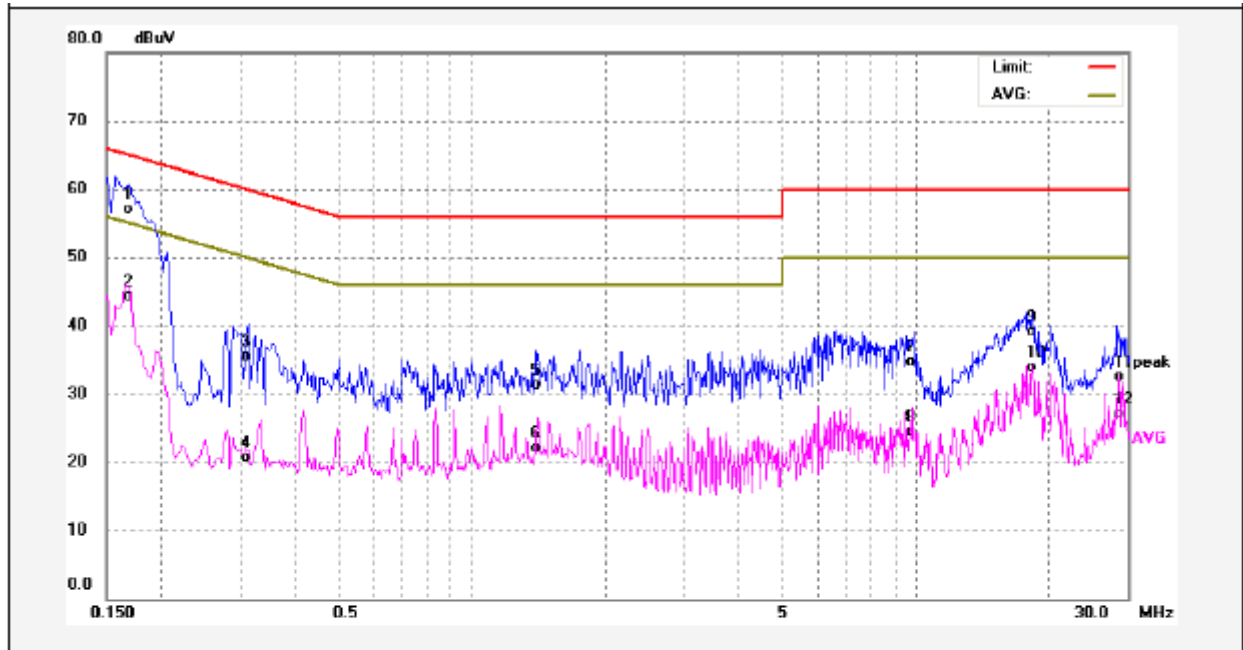
An initial pre-scan was performed on the live and neutral lines.

Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Remark
1	0.1700	47.31	9.86	57.17	64.96	-7.79	QP	
2	0.1700	35.90	9.86	45.76	54.96	-9.20	AVG	
3	0.3379	24.21	10.04	34.25	59.25	-25.00	QP	
4	0.3379	13.94	10.04	23.98	49.25	-25.27	AVG	
5	0.8380	24.27	10.09	34.36	56.00	-21.64	QP	
6	0.8380	17.02	10.09	27.11	46.00	-18.89	AVG	
7	6.5420	23.83	10.27	34.10	60.00	-25.90	QP	
8	6.5420	11.75	10.27	22.02	50.00	-27.98	AVG	
9	17.3900	27.90	10.42	38.32	60.00	-21.68	QP	
10	17.3900	21.43	10.42	31.85	50.00	-18.15	AVG	
11	29.2380	24.29	10.65	34.94	60.00	-25.06	QP	
12	29.2380	19.23	10.65	29.88	50.00	-20.12	AVG	

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1700	47.29	9.86	57.15	64.96	-7.81	QP	
2	0.1700	34.40	9.86	44.26	54.96	-10.70	AVG	
3	0.3140	25.47	10.00	35.47	59.86	-24.39	QP	
4	0.3140	10.61	10.00	20.61	49.86	-29.25	AVG	
5	1.3980	21.02	10.24	31.26	56.00	-24.74	QP	
6	1.3980	11.90	10.24	22.14	46.00	-23.86	AVG	
7	9.8660	24.37	10.37	34.74	60.00	-25.26	QP	
8	9.8660	14.20	10.37	24.57	50.00	-25.43	AVG	
9	18.3060	28.57	10.44	39.01	60.00	-20.99	QP	
10	18.3060	23.51	10.44	33.95	50.00	-16.05	AVG	
11	28.3220	21.84	10.63	32.47	60.00	-27.53	QP	
12	28.3220	16.57	10.63	27.20	50.00	-22.80	AVG	

9 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: ANSI C63.10:2013,ANSI C63.4:2014

Test Result: PASS

Measurement Distance: 3m

Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

9.1 EUT Operation

Operating Environment :

Temperature: 23.5 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 101.2kPa

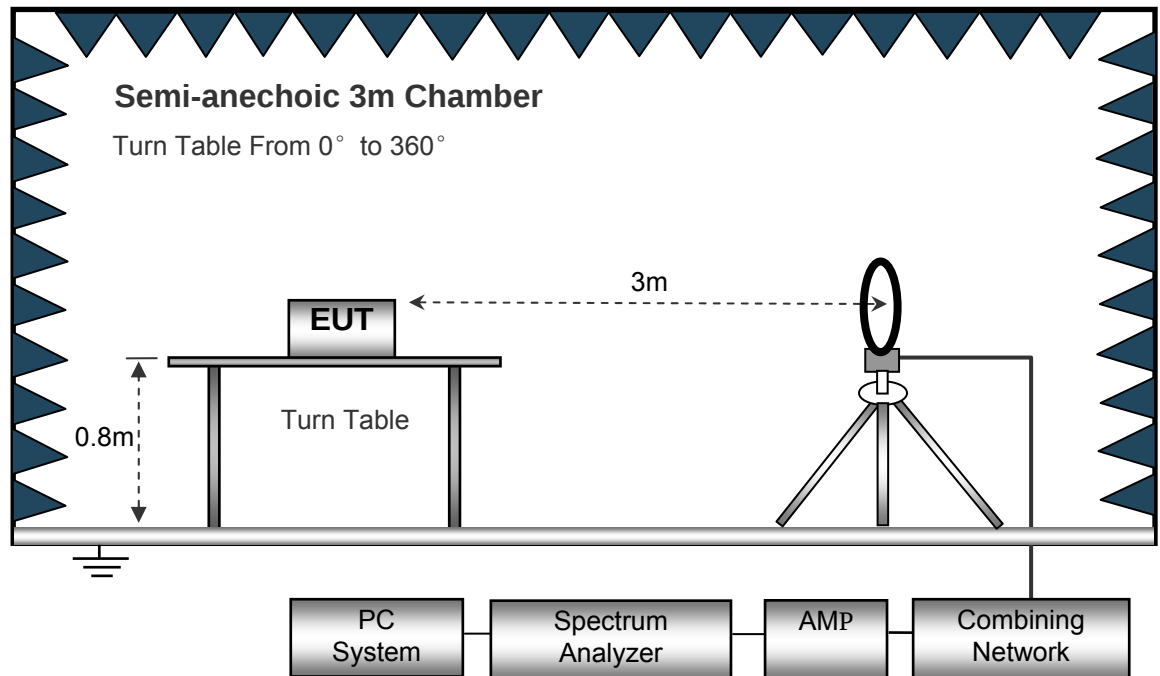
EUT Operation :

The test was performed in Wi-Fi Transmitting mode, the test data were shown in the report.

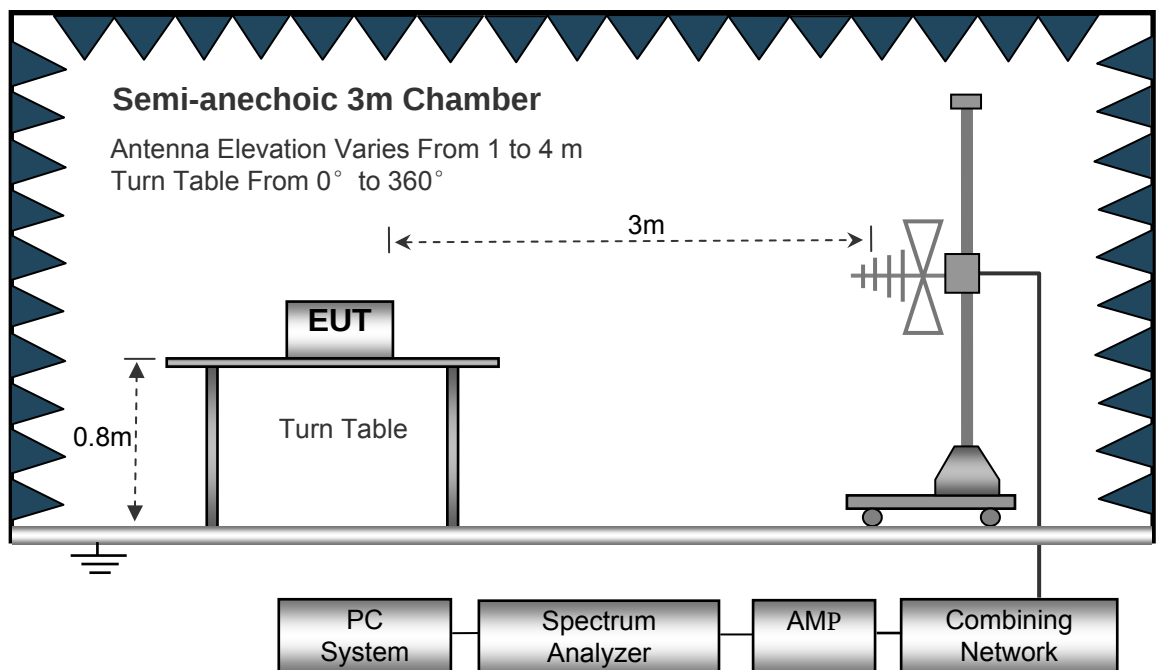
9.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10:2013.

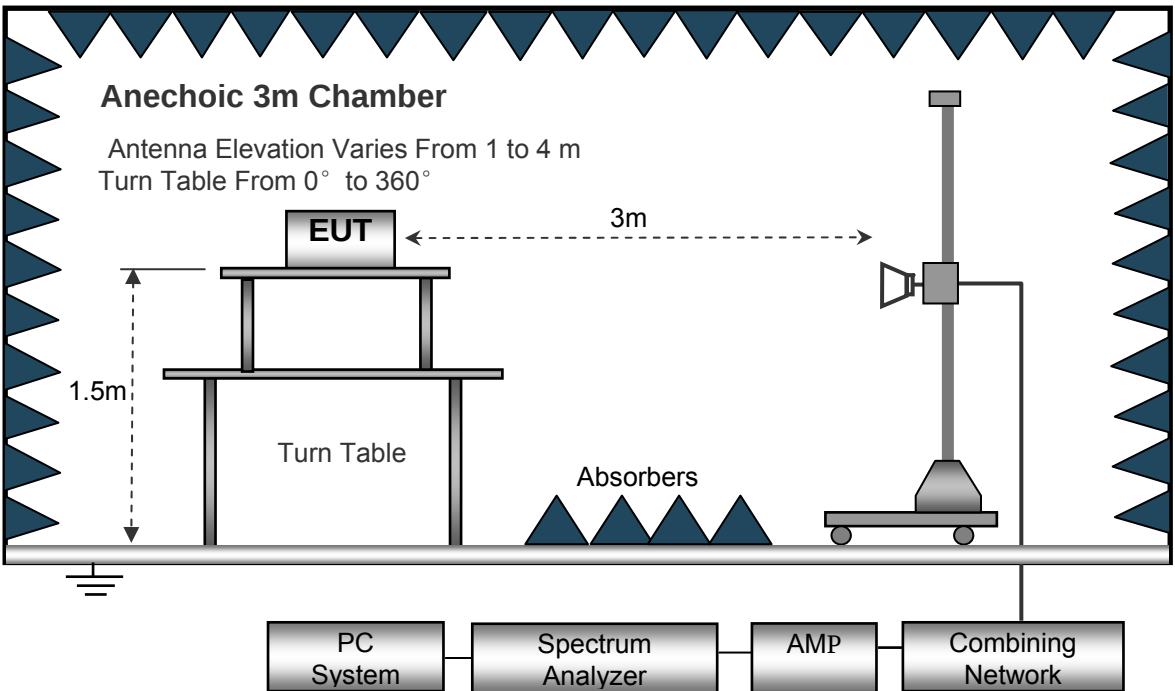
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



9.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed Auto
IF Bandwidth.....10kHz
Video Bandwidth.....10kHz
Resolution Bandwidth.....10kHz

30MHz ~ 1GHz

Sweep Speed Auto
DetectorPK
Resolution Bandwidth.....100kHz
Video Bandwidth.....300kHz

Above 1GHz

Sweep Speed Auto
DetectorPK
Resolution Bandwidth.....1MHz
Video Bandwidth.....3MHz
DetectorAve.
Resolution Bandwidth.....1MHz
Video Bandwidth.....10Hz

9.4 Test Procedure

1. The EUT is placed on a turntable. For below 1GHz, the EUT is 0.8m above ground plane;
For above 1GHz, the EUT is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the eut in X axis,so the worst data were shown as follow.
8. A 2.4GHz high -pass filter is used during radiated emissions above 1GHz measurement.

9.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$

9.6 Summary of Test Results

Test Frequency : 9KHz to 30MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency : 30MHz ~ 18GHz

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTA 11b: Low Channel 2412MHz									
223.45	41.05	QP	332.58	1.28	H	11.62	29.43	46.00	-16.57
223.45	39.25	QP	53.52	1.03	V	11.62	27.63	46.00	-18.37
4824.00	46.25	PK	61.67	1.94	V	1.06	45.19	74.00	-28.81
4824.00	44.25	Ave	61.67	1.94	V	1.06	43.19	54.00	-10.81
7236.00	41.07	PK	343.98	1.03	H	1.33	42.40	74.00	-31.60
7236.00	41.51	Ave	343.98	1.03	H	1.33	42.84	54.00	-11.16
2328.15	46.15	PK	147.47	1.52	V	13.19	32.96	74.00	-41.04
2328.15	37.94	Ave	147.47	1.52	V	13.19	24.75	54.00	-29.25
2351.18	44.22	PK	202.76	1.38	H	13.14	31.08	74.00	-42.92
2351.18	37.37	Ave	202.76	1.38	H	13.14	24.23	54.00	-29.77
2493.51	42.41	PK	320.38	1.27	V	13.08	29.33	74.00	-44.67
2493.51	38.04	Ave	320.38	1.27	V	13.08	24.96	54.00	-29.04

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTA 11b: Middle Channel 2437MHz									
223.45	40.89	QP	229.82	1.08	H	11.62	29.27	46.00	-16.73
223.45	39.27	QP	265.44	1.15	V	11.62	27.65	46.00	-18.35
4874.00	47.04	PK	133.55	1.12	V	0.62	46.42	74.00	-27.58
4874.00	43.90	Ave	133.55	1.12	V	0.62	43.28	54.00	-10.72
7311.00	42.38	PK	318.94	1.84	H	2.21	44.59	74.00	-29.41
7311.00	41.37	Ave	318.94	1.84	H	2.21	43.58	54.00	-10.42
2312.06	46.20	PK	51.58	1.90	V	13.19	33.01	74.00	-40.99
2312.06	38.26	Ave	51.58	1.90	V	13.19	25.07	54.00	-28.93
2369.90	44.88	PK	227.33	1.15	H	13.14	31.74	74.00	-42.26
2369.90	36.32	Ave	227.33	1.15	H	13.14	23.18	54.00	-30.82
2487.26	43.94	PK	250.77	1.70	V	13.08	30.86	74.00	-43.14
2487.26	37.04	Ave	250.77	1.70	V	13.08	23.96	54.00	-30.04

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTA 11b: High Channel 2462MHz									
223.45	41.70	QP	282.82	1.27	H	11.62	30.08	46.00	-15.92
223.45	38.48	QP	111.90	1.62	V	11.62	26.86	46.00	-19.14
4924.00	46.66	PK	1.84	1.88	V	0.24	46.42	74.00	-27.58
4924.00	43.39	Ave	1.84	1.88	V	0.24	43.15	54.00	-10.85
7386.00	42.41	PK	0.16	1.35	H	2.84	45.25	74.00	-28.75
7386.00	41.09	Ave	0.16	1.35	H	2.84	43.93	54.00	-10.07
2342.05	45.18	PK	355.24	1.78	V	13.19	31.99	74.00	-42.01
2342.05	39.71	Ave	355.24	1.78	V	13.19	26.52	54.00	-27.48
2381.08	43.52	PK	18.67	1.45	H	13.14	30.38	74.00	-43.62
2381.08	37.66	Ave	18.67	1.45	H	13.14	24.52	54.00	-29.48
2498.62	44.34	PK	282.76	1.79	V	13.08	31.26	74.00	-42.74
2498.62	38.89	Ave	282.76	1.79	V	13.08	25.81	54.00	-28.19

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTB 11b: Low Channel 2412MHz									
223.45	42.02	QP	233.63	1.54	H	11.62	30.40	46.00	-15.60
223.45	40.34	QP	290.93	1.73	V	11.62	28.72	46.00	-17.28
4824.00	41.02	PK	3.46	1.54	V	1.06	39.96	74.00	-34.04
4824.00	43.79	Ave	3.46	1.54	V	1.06	42.73	54.00	-11.27
7236.00	41.34	PK	79.58	1.93	H	1.33	42.67	74.00	-31.33
7236.00	41.07	Ave	79.58	1.93	H	1.33	42.40	54.00	-11.60
2344.99	45.64	PK	344.16	1.19	V	13.19	32.45	74.00	-41.55
2344.99	38.95	Ave	344.16	1.19	V	13.19	25.76	54.00	-28.24
2360.95	42.07	PK	200.78	1.20	H	13.14	28.93	74.00	-45.07
2360.95	38.00	Ave	200.78	1.20	H	13.14	24.86	54.00	-29.14
2490.84	44.03	PK	330.41	1.36	V	13.08	30.95	74.00	-43.05
2490.84	36.91	Ave	330.41	1.36	V	13.08	23.83	54.00	-30.17

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTB 11b: Middle Channel 2437MHz									
223.45	40.57	QP	160.44	1.65	H	11.62	28.95	46.00	-17.05
223.45	39.61	QP	215.34	1.17	V	11.62	27.99	46.00	-18.01
4874.00	39.62	PK	132.17	1.40	V	0.62	39.00	74.00	-35.00
4874.00	43.20	Ave	132.17	1.40	V	0.62	42.58	54.00	-11.42
7311.00	42.67	PK	14.59	1.21	H	2.21	44.88	74.00	-29.12
7311.00	40.31	Ave	14.59	1.21	H	2.21	42.52	54.00	-11.48
2349.70	46.23	PK	195.11	1.55	V	13.19	33.04	74.00	-40.96
2349.70	39.28	Ave	195.11	1.55	V	13.19	26.09	54.00	-27.91
2386.27	44.42	PK	266.32	1.10	H	13.14	31.28	74.00	-42.72
2386.27	37.89	Ave	266.32	1.10	H	13.14	24.75	54.00	-29.25
2494.64	44.31	PK	260.68	1.88	V	13.08	31.23	74.00	-42.77
2494.64	36.84	Ave	260.68	1.88	V	13.08	23.76	54.00	-30.24

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTB 11b: High Channel 2462MHz									
223.45	40.56	QP	346.61	1.06	H	11.62	28.94	46.00	-17.06
223.45	38.82	QP	301.71	1.09	V	11.62	27.20	46.00	-18.80
4924.00	38.19	PK	304.55	1.20	V	0.24	37.95	74.00	-36.05
4924.00	43.78	Ave	304.55	1.20	V	0.24	43.54	54.00	-10.46
7386.00	42.34	PK	281.59	1.59	H	2.84	45.18	74.00	-28.82
7386.00	39.37	Ave	281.59	1.59	H	2.84	42.21	54.00	-11.79
2315.90	46.97	PK	238.68	1.31	V	13.19	33.78	74.00	-40.22
2315.90	37.63	Ave	238.68	1.31	V	13.19	24.44	54.00	-29.56
2353.50	42.84	PK	347.63	1.32	H	13.14	29.70	74.00	-44.30
2353.50	36.56	Ave	347.63	1.32	H	13.14	23.42	54.00	-30.58
2496.85	42.12	PK	1.35	1.63	V	13.08	29.04	74.00	-44.96
2496.85	38.10	Ave	1.35	1.63	V	13.08	25.02	54.00	-28.98

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTA 11g: Low Channel 2412MHz									
223.45	42.67	QP	281.05	1.36	H	11.62	31.05	46.00	-14.95
223.45	38.35	QP	128.36	1.20	V	11.62	26.73	46.00	-19.27
4824.00	47.81	PK	341.08	1.02	V	1.06	46.75	74.00	-27.25
4824.00	43.50	Ave	341.08	1.02	V	1.06	42.44	54.00	-11.56
7236.00	43.60	PK	235.04	1.05	H	1.33	44.93	74.00	-29.07
7236.00	40.69	Ave	235.04	1.05	H	1.33	42.02	54.00	-11.98
2335.98	46.23	PK	57.51	1.23	V	13.19	33.04	74.00	-40.96
2335.98	39.02	Ave	57.51	1.23	V	13.19	25.83	54.00	-28.17
2372.55	42.91	PK	129.20	1.08	H	13.14	29.77	74.00	-44.23
2372.55	37.94	Ave	129.20	1.08	H	13.14	24.80	54.00	-29.20
2489.34	43.41	PK	225.39	1.65	V	13.08	30.33	74.00	-43.67
2489.34	37.58	Ave	225.39	1.65	V	13.08	24.50	54.00	-29.50

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTA 11g: Middle Channel 2437MHz									
223.45	41.54	QP	101.74	1.09	H	11.62	29.92	46.00	-16.08
223.45	39.81	QP	230.31	1.29	V	11.62	28.19	46.00	-17.81
4874.00	48.52	PK	61.88	1.12	V	0.62	47.90	74.00	-26.10
4874.00	43.99	Ave	61.88	1.12	V	0.62	43.37	54.00	-10.63
7311.00	43.88	PK	199.90	1.78	H	2.21	46.09	74.00	-27.91
7311.00	39.83	Ave	199.90	1.78	H	2.21	42.04	54.00	-11.96
2310.56	45.02	PK	271.13	1.08	V	13.19	31.83	74.00	-42.17
2310.56	39.02	Ave	271.13	1.08	V	13.19	25.83	54.00	-28.17
2360.51	44.34	PK	87.68	1.62	H	13.14	31.20	74.00	-42.80
2360.51	37.23	Ave	87.68	1.62	H	13.14	24.09	54.00	-29.91
2486.79	42.23	PK	75.73	1.77	V	13.08	29.15	74.00	-44.85
2486.79	36.23	Ave	75.73	1.77	V	13.08	23.15	54.00	-30.85

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTA 11g: High Channel 2462MHz									
223.45	40.40	QP	53.92	1.97	H	11.62	28.78	46.00	-17.22
223.45	39.09	QP	251.17	1.95	V	11.62	27.47	46.00	-18.53
4924.00	48.59	PK	145.37	1.48	V	0.24	48.35	74.00	-25.65
4924.00	44.81	Ave	145.37	1.48	V	0.24	44.57	54.00	-9.43
7386.00	44.85	PK	339.92	1.12	H	2.84	47.69	74.00	-26.31
7386.00	38.38	Ave	339.92	1.12	H	2.84	41.22	54.00	-12.78
2340.67	46.78	PK	273.83	1.10	V	13.19	33.59	74.00	-40.41
2340.67	39.11	Ave	273.83	1.10	V	13.19	25.92	54.00	-28.08
2359.12	45.00	PK	199.37	1.11	H	13.14	31.86	74.00	-42.14
2359.12	37.39	Ave	199.37	1.11	H	13.14	24.25	54.00	-29.75
2490.23	44.39	PK	21.83	1.23	V	13.08	31.31	74.00	-42.69
2490.23	38.05	Ave	21.83	1.23	V	13.08	24.97	54.00	-29.03

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTB 11g: Low Channel 2412MHz									
223.45	41.97	QP	195.60	1.22	H	11.62	30.35	46.00	-15.65
223.45	39.86	QP	167.13	1.90	V	11.62	28.24	46.00	-17.76
4824.00	38.21	PK	251.08	1.88	V	1.06	37.15	74.00	-36.85
4824.00	45.27	Ave	251.08	1.88	V	1.06	44.21	54.00	-9.79
7236.00	41.62	PK	193.38	1.74	H	1.33	42.95	74.00	-31.05
7236.00	39.30	Ave	193.38	1.74	H	1.33	40.63	54.00	-13.37
2326.19	45.41	PK	58.10	1.63	V	13.19	32.22	74.00	-41.78
2326.19	38.93	Ave	58.10	1.63	V	13.19	25.74	54.00	-28.26
2361.68	43.78	PK	256.03	1.58	H	13.14	30.64	74.00	-43.36
2361.68	37.29	Ave	256.03	1.58	H	13.14	24.15	54.00	-29.85
2494.16	43.85	PK	128.32	1.18	V	13.08	30.77	74.00	-43.23
2494.16	37.46	Ave	128.32	1.18	V	13.08	24.38	54.00	-29.62

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTB 11g: Middle Channel 2437MHz									
223.45	41.14	QP	212.51	2.00	H	11.62	29.52	46.00	-16.48
223.45	39.50	QP	317.79	1.00	V	11.62	27.88	46.00	-18.12
4874.00	39.19	PK	41.51	1.81	V	0.62	38.57	74.00	-35.43
4874.00	44.79	Ave	41.51	1.81	V	0.62	44.17	54.00	-9.83
7311.00	42.39	PK	31.71	1.28	H	2.21	44.60	74.00	-29.40
7311.00	38.64	Ave	31.71	1.28	H	2.21	40.85	54.00	-13.15
2317.95	46.20	PK	66.88	1.36	V	13.19	33.01	74.00	-40.99
2317.95	39.40	Ave	66.88	1.36	V	13.19	26.21	54.00	-27.79
2376.25	43.17	PK	243.56	1.04	H	13.14	30.03	74.00	-43.97
2376.25	36.87	Ave	243.56	1.04	H	13.14	23.73	54.00	-30.27
2487.58	42.55	PK	278.21	1.95	V	13.08	29.47	74.00	-44.53
2487.58	38.02	Ave	278.21	1.95	V	13.08	24.94	54.00	-29.06

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTB 11g: High Channel 2462MHz									
223.45	40.50	QP	131.54	1.28	H	11.62	28.88	46.00	-17.12
223.45	39.69	QP	128.53	1.89	V	11.62	28.07	46.00	-17.93
4924.00	38.08	PK	115.44	1.82	V	0.24	37.84	74.00	-36.16
4924.00	44.81	Ave	115.44	1.82	V	0.24	44.57	54.00	-9.43
7386.00	42.05	PK	276.19	1.51	H	2.84	44.89	74.00	-29.11
7386.00	38.63	Ave	276.19	1.51	H	2.84	41.47	54.00	-12.53
2330.56	45.05	PK	254.82	1.52	V	13.19	31.86	74.00	-42.14
2330.56	37.44	Ave	254.82	1.52	V	13.19	24.25	54.00	-29.75
2382.26	43.59	PK	99.23	1.73	H	13.14	30.45	74.00	-43.55
2382.26	37.15	Ave	99.23	1.73	H	13.14	24.01	54.00	-29.99
2489.64	44.75	PK	65.56	1.54	V	13.08	31.67	74.00	-42.33
2489.64	36.74	Ave	65.56	1.54	V	13.08	23.66	54.00	-30.34

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTA+ANTB n20: Low Channel 2412MHz									
223.45	40.61	QP	6.46	1.84	H	11.62	28.99	46.00	-17.01
223.45	38.96	QP	82.48	1.46	V	11.62	27.34	46.00	-18.66
4824.00	49.15	PK	8.40	1.28	V	1.06	48.09	74.00	-25.91
4824.00	45.07	Ave	8.40	1.28	V	1.06	44.01	54.00	-9.99
7236.00	46.11	PK	298.98	1.44	H	1.33	47.44	74.00	-26.56
7236.00	39.54	Ave	298.98	1.44	H	1.33	40.87	54.00	-13.13
2316.44	46.05	PK	85.17	1.60	V	13.19	32.86	74.00	-41.14
2316.44	37.52	Ave	85.17	1.60	V	13.19	24.33	54.00	-29.67
2370.91	43.46	PK	272.97	1.28	H	13.14	30.32	74.00	-43.68
2370.91	37.28	Ave	272.97	1.28	H	13.14	24.14	54.00	-29.86
2494.24	44.54	PK	18.64	1.43	V	13.08	31.46	74.00	-42.54
2494.24	38.36	Ave	18.64	1.43	V	13.08	25.28	54.00	-28.72

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTA+ANTB n20: Middle Channel 2437MHz									
223.45	41.72	QP	8.63	1.82	H	11.62	30.10	46.00	-15.90
223.45	39.79	QP	243.80	1.65	V	11.62	28.17	46.00	-17.83
4874.00	49.09	PK	87.57	1.52	V	0.62	48.47	74.00	-25.53
4874.00	46.28	Ave	87.57	1.52	V	0.62	45.66	54.00	-8.34
7311.00	47.17	PK	215.44	1.80	H	2.21	49.38	74.00	-24.62
7311.00	38.68	Ave	215.44	1.80	H	2.21	40.89	54.00	-13.11
2336.82	45.30	PK	257.81	1.70	V	13.19	32.11	74.00	-41.89
2336.82	39.37	Ave	257.81	1.70	V	13.19	26.18	54.00	-27.82
2372.92	43.37	PK	158.41	1.95	H	13.14	30.23	74.00	-43.77
2372.92	38.25	Ave	158.41	1.95	H	13.14	25.11	54.00	-28.89
2496.87	42.49	PK	310.79	1.16	V	13.08	29.41	74.00	-44.59
2496.87	36.37	Ave	310.79	1.16	V	13.08	23.29	54.00	-30.71

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTA+ANTB n20: High Channel 2462MHz									
223.45	40.91	QP	166.61	1.04	H	11.62	29.29	46.00	-16.71
223.45	40.18	QP	42.84	1.50	V	11.62	28.56	46.00	-17.44
4924.00	48.64	PK	20.00	1.72	V	0.24	48.40	74.00	-25.60
4924.00	45.40	Ave	20.00	1.72	V	0.24	45.16	54.00	-8.84
7386.00	47.74	PK	114.08	1.11	H	2.84	50.58	74.00	-23.42
7386.00	39.38	Ave	114.08	1.11	H	2.84	42.22	54.00	-11.78
2335.02	46.73	PK	75.18	1.64	V	13.19	33.54	74.00	-40.46
2335.02	38.48	Ave	75.18	1.64	V	13.19	25.29	54.00	-28.71
2380.65	44.82	PK	225.83	1.57	H	13.14	31.68	74.00	-42.32
2380.65	36.43	Ave	225.83	1.57	H	13.14	23.29	54.00	-30.71
2486.82	43.88	PK	148.23	1.89	V	13.08	30.80	74.00	-43.20
2486.82	38.08	Ave	148.23	1.89	V	13.08	25.00	54.00	-29.00

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTA+ANTB n40: Low Channel 2422MHz									
223.45	41.26	QP	294.52	1.69	H	11.62	29.64	46.00	-16.36
223.45	39.91	QP	295.50	1.43	V	11.62	28.29	46.00	-17.71
4844.00	46.26	PK	342.45	1.96	V	1.06	45.20	74.00	-28.80
4844.00	42.72	Ave	342.45	1.96	V	1.06	41.66	54.00	-12.34
7266.00	46.31	PK	27.90	1.81	H	1.33	47.64	74.00	-26.36
7266.00	37.14	Ave	27.90	1.81	H	1.33	38.47	54.00	-15.53
2338.63	46.70	PK	260.74	1.28	V	13.19	33.51	74.00	-40.49
2338.63	37.23	Ave	260.74	1.28	V	13.19	24.04	54.00	-29.96
2384.85	42.06	PK	182.30	1.20	H	13.14	28.92	74.00	-45.08
2384.85	36.95	Ave	182.30	1.20	H	13.14	23.81	54.00	-30.19
2484.14	43.31	PK	77.50	1.61	V	13.08	30.23	74.00	-43.77
2484.14	36.21	Ave	77.50	1.61	V	13.08	23.13	54.00	-30.87

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTA+ANTB n40: Middle Channel 2437MHz									
223.45	41.48	QP	133.49	1.35	H	11.62	29.86	46.00	-16.14
223.45	40.68	QP	303.89	1.83	V	11.62	29.06	46.00	-16.94
4874.00	46.79	PK	138.98	1.74	V	0.62	46.17	74.00	-27.83
4874.00	42.53	Ave	138.98	1.74	V	0.62	41.91	54.00	-12.09
7311.00	45.55	PK	278.51	1.65	H	2.21	47.76	74.00	-26.24
7311.00	36.22	Ave	278.51	1.65	H	2.21	38.43	54.00	-15.57
2342.12	45.98	PK	247.24	1.97	V	13.19	32.79	74.00	-41.21
2342.12	37.15	Ave	247.24	1.97	V	13.19	23.96	54.00	-30.04
2363.37	44.35	PK	356.89	1.08	H	13.14	31.21	74.00	-42.79
2363.37	37.49	Ave	356.89	1.08	H	13.14	24.35	54.00	-29.65
2493.72	42.36	PK	171.48	1.98	V	13.08	29.28	74.00	-44.72
2493.72	37.32	Ave	171.48	1.98	V	13.08	24.24	54.00	-29.76

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANTA+ANTB n40: High Channel 2452MHz									
223.45	41.29	QP	93.28	1.22	H	11.62	29.67	46.00	-16.33
223.45	41.31	QP	283.59	1.12	V	11.62	29.69	46.00	-16.31
4904.00	47.01	PK	237.81	1.64	V	0.24	46.77	74.00	-27.23
4904.00	42.34	Ave	237.81	1.64	V	0.24	42.10	54.00	-11.90
7356.00	45.68	PK	36.44	1.36	H	2.84	48.52	74.00	-25.48
7356.00	35.50	Ave	36.44	1.36	H	2.84	38.34	54.00	-15.66
2329.16	45.26	PK	37.62	1.95	V	13.19	32.07	74.00	-41.93
2329.16	39.79	Ave	37.62	1.95	V	13.19	26.60	54.00	-27.40
2377.82	44.75	PK	45.02	1.73	H	13.14	31.61	74.00	-42.39
2377.82	37.77	Ave	45.02	1.73	H	13.14	24.63	54.00	-29.37
2499.20	44.31	PK	98.46	1.66	V	13.08	31.23	74.00	-42.77
2499.20	37.67	Ave	98.46	1.66	V	13.08	24.59	54.00	-29.41

Test Frequency: 18GHz~25GHz

The measurements were more than 20 dB below the limit and not reported.

10 Conducted Spurious Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: KDB 558074 D01 DTS Meas Guidance v04, April 5, 2017
Test Result: PASS
Limit:

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 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)).

10.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer:
RBW = 100kHz, VBW = 300kHz, Sweep = auto
Detector function = peak, Trace = max hold

10.2 Test Result

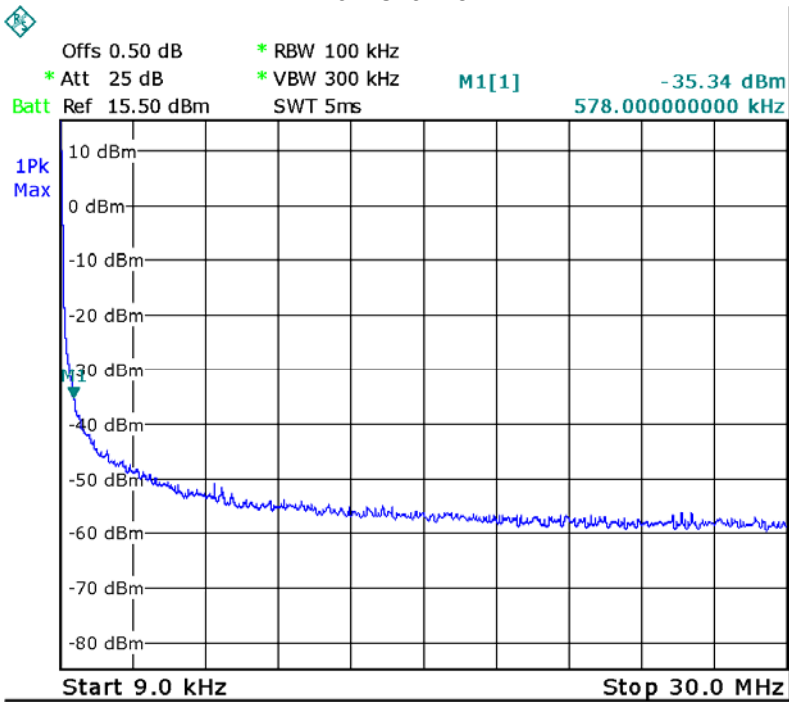
the worst test data (Wi-Fi Transmitting mode for Antenna A) were shown in the report.

Antenna A

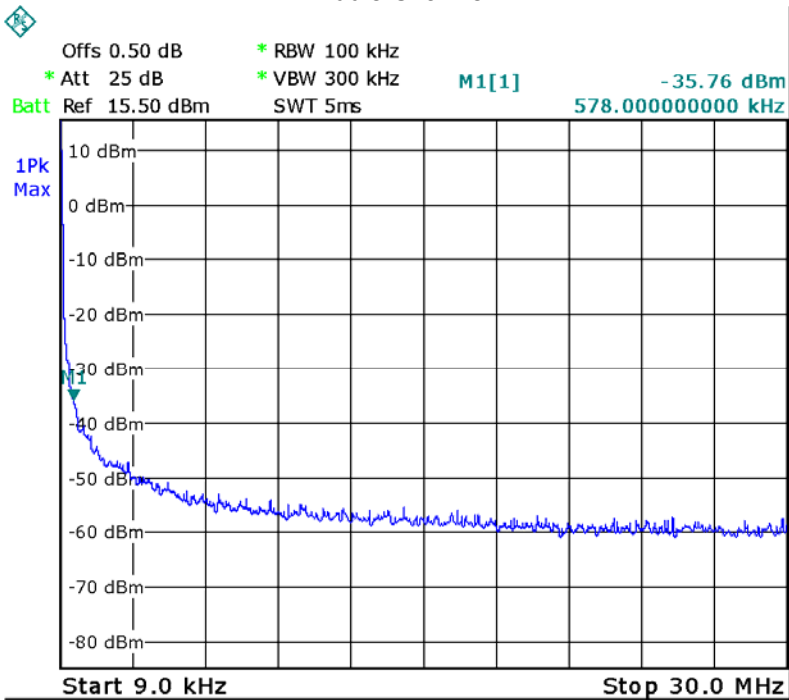
9 KHz – 30MHz

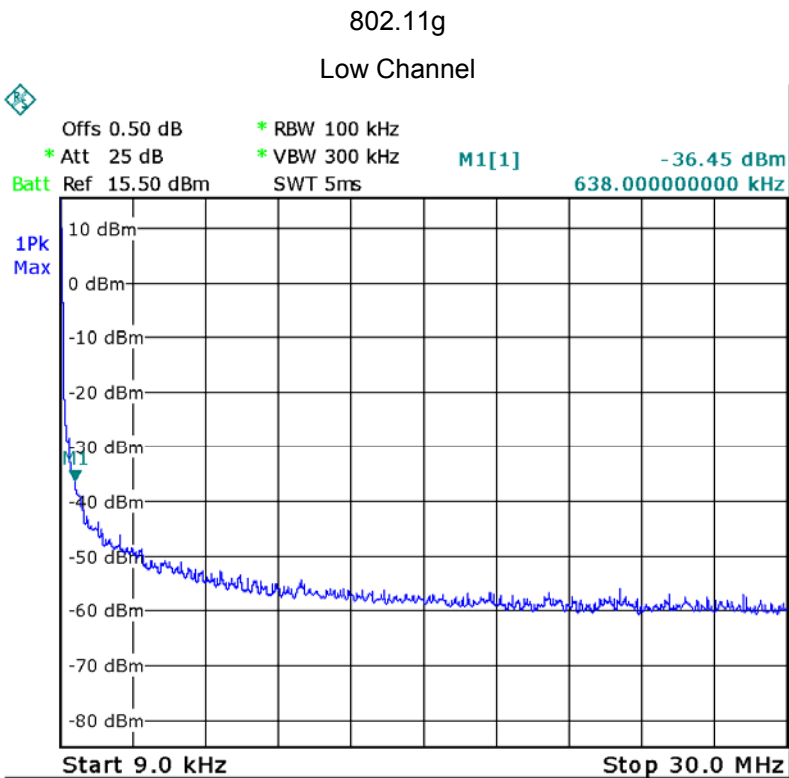
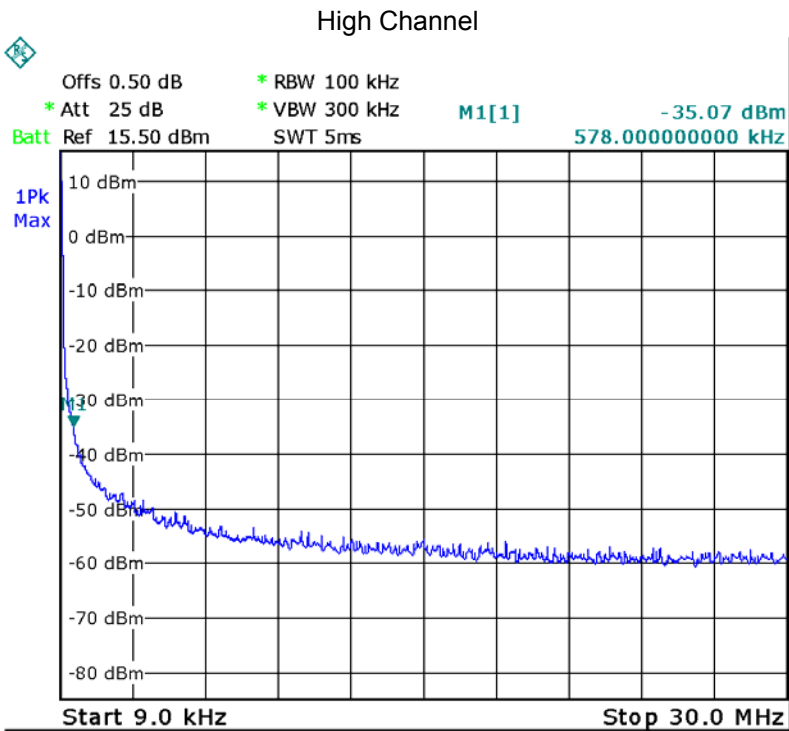
802.11b

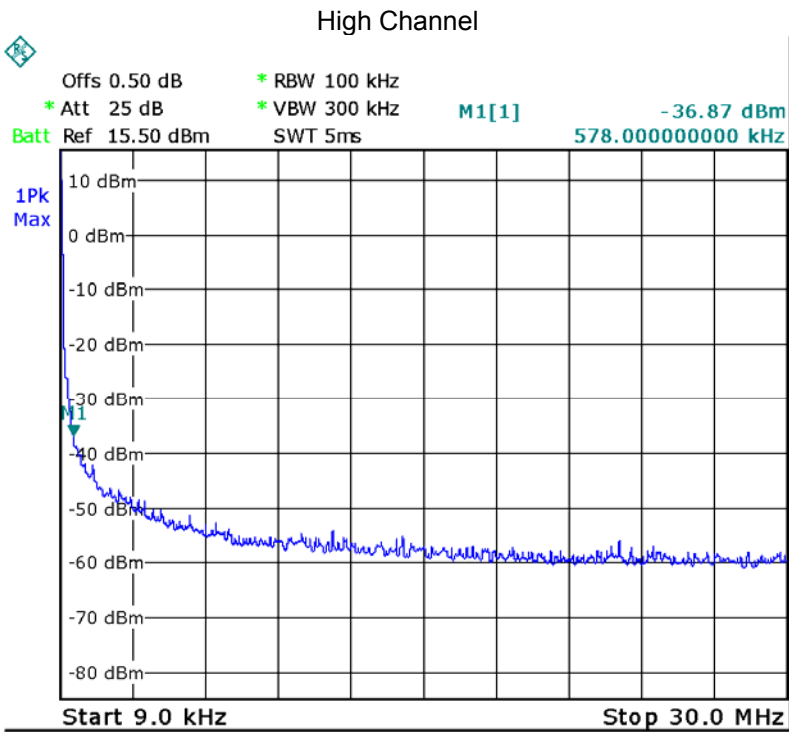
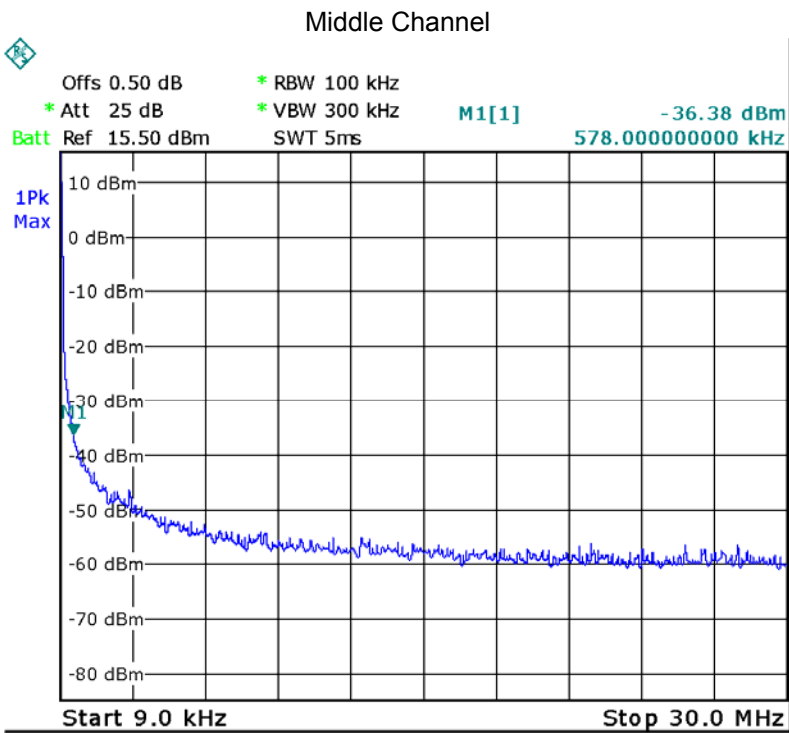
Low Channel



Middle Channel

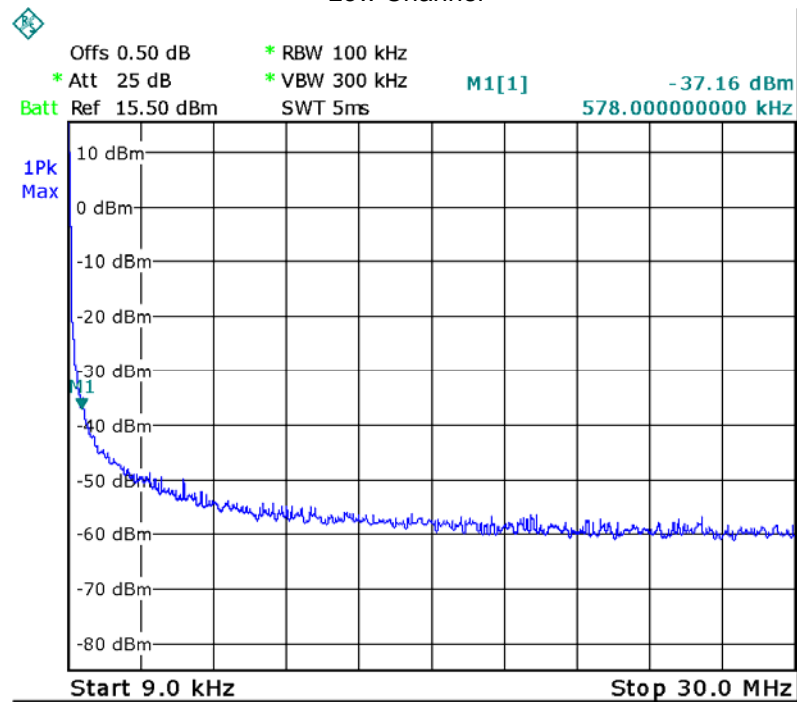




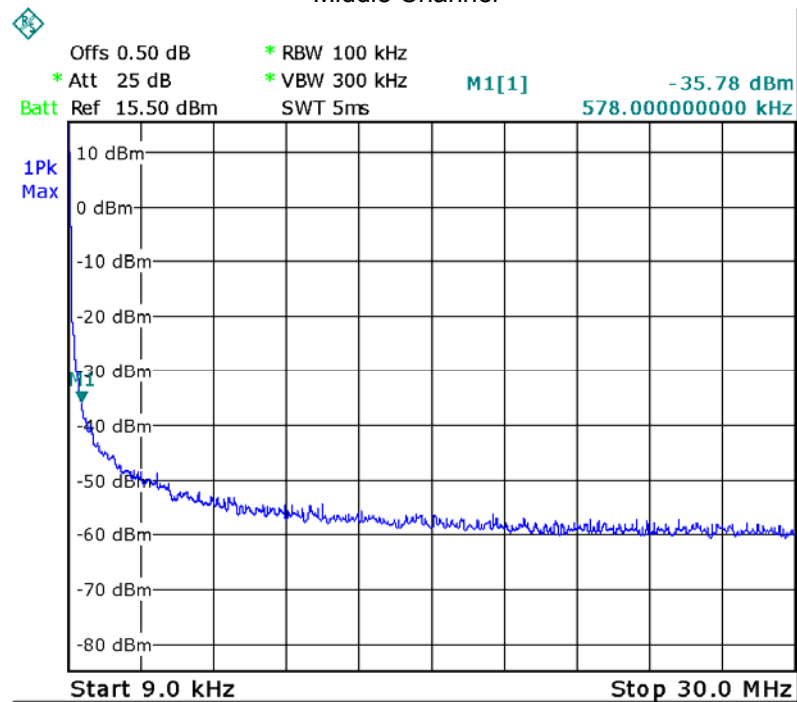


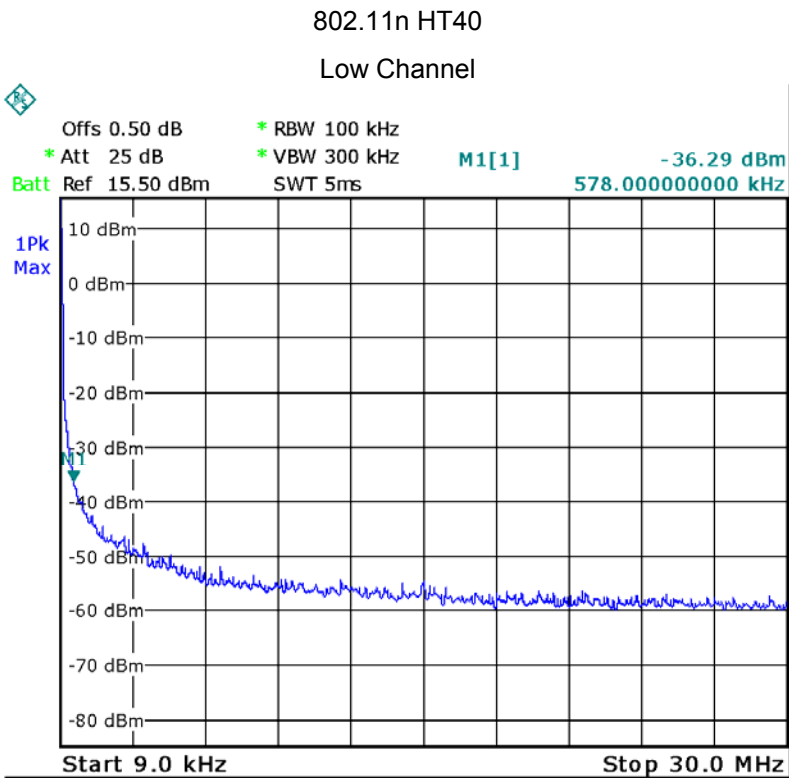
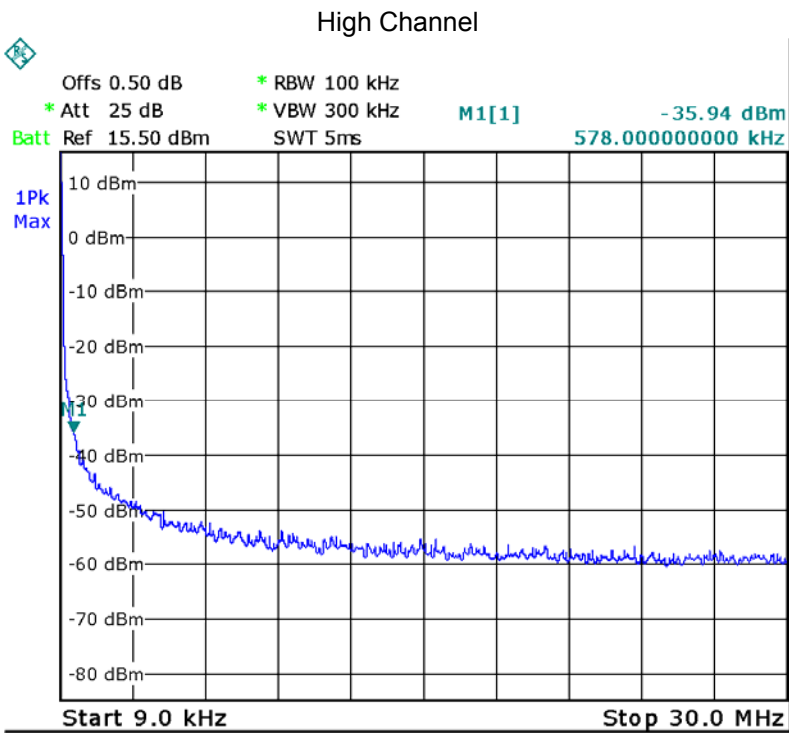
802.11n HT20

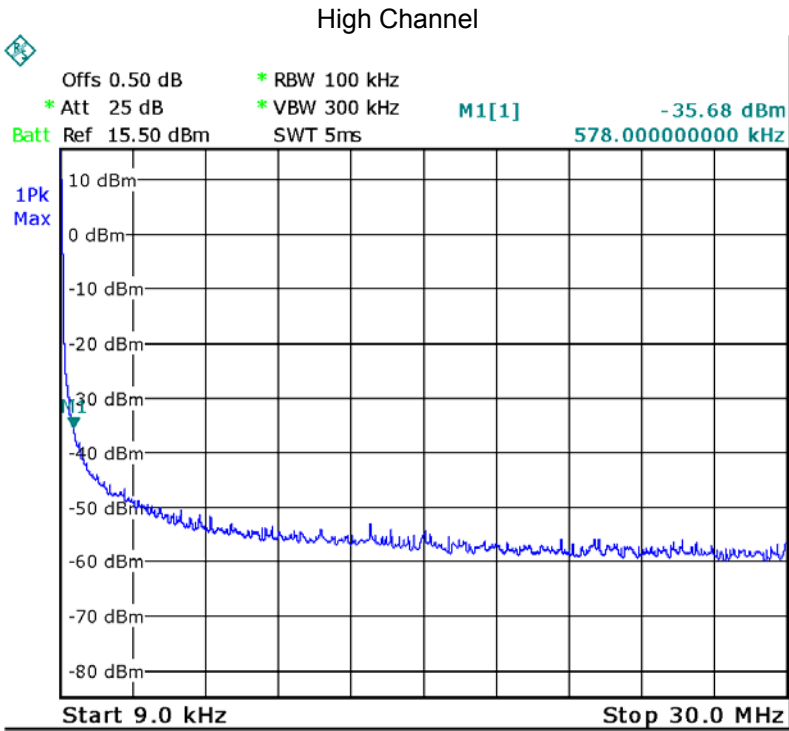
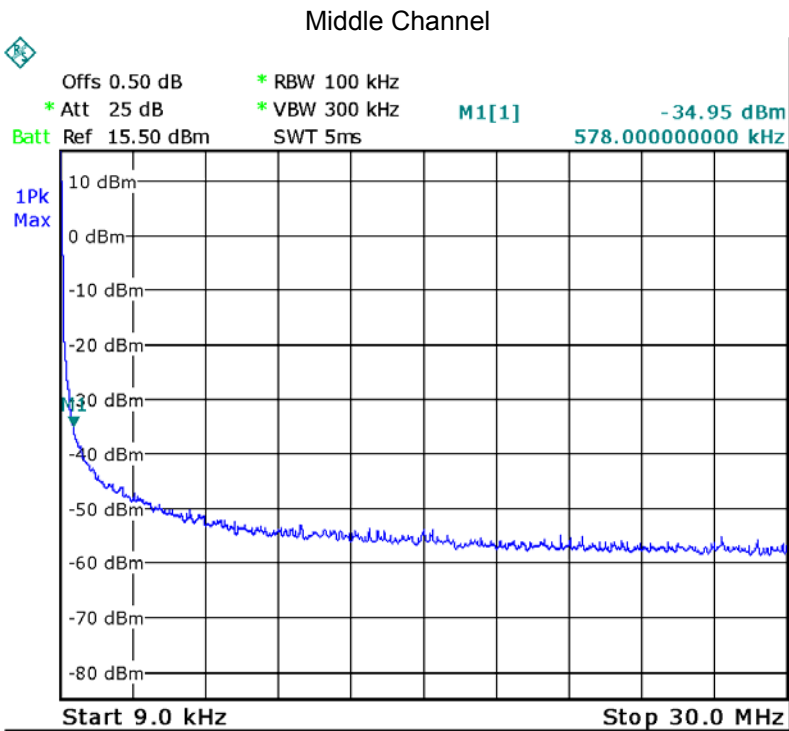
Low Channel



Middle Channel

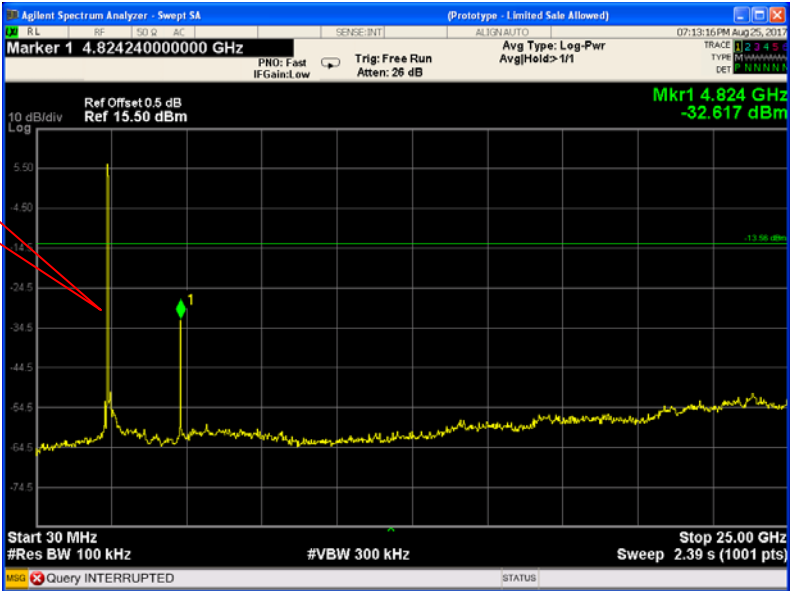






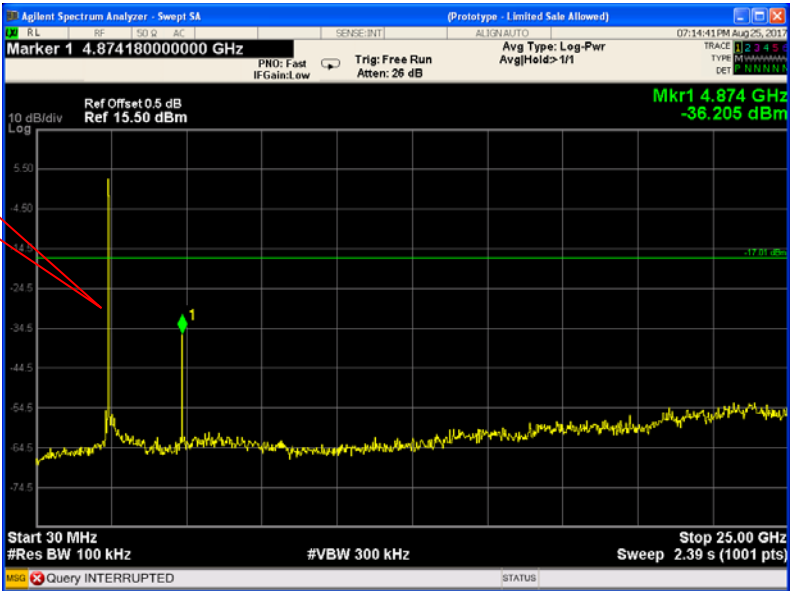
Above 30MHz
802.11b
Low Channel

Fundamental



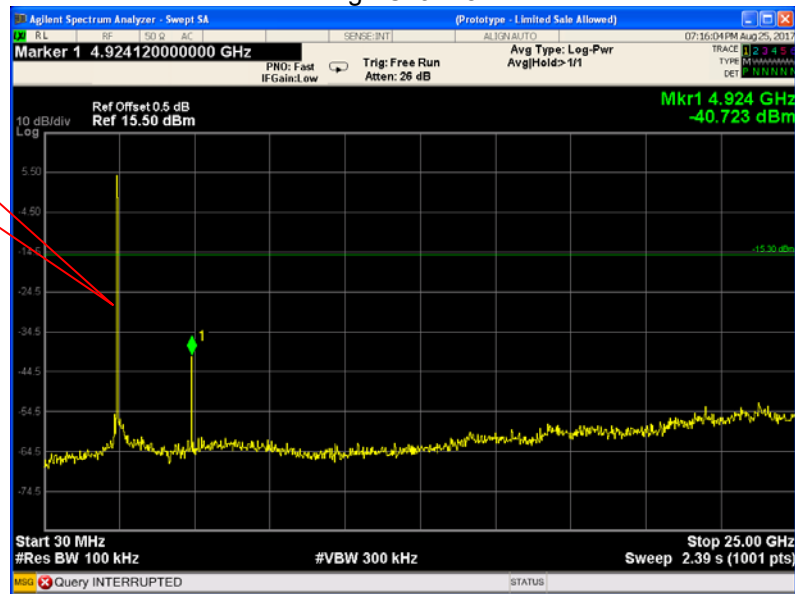
Middle Channel

Fundamental



High Channel

Fundamental



802.11g

Low Channel

Fundamental



Middle Channel

Fundamental



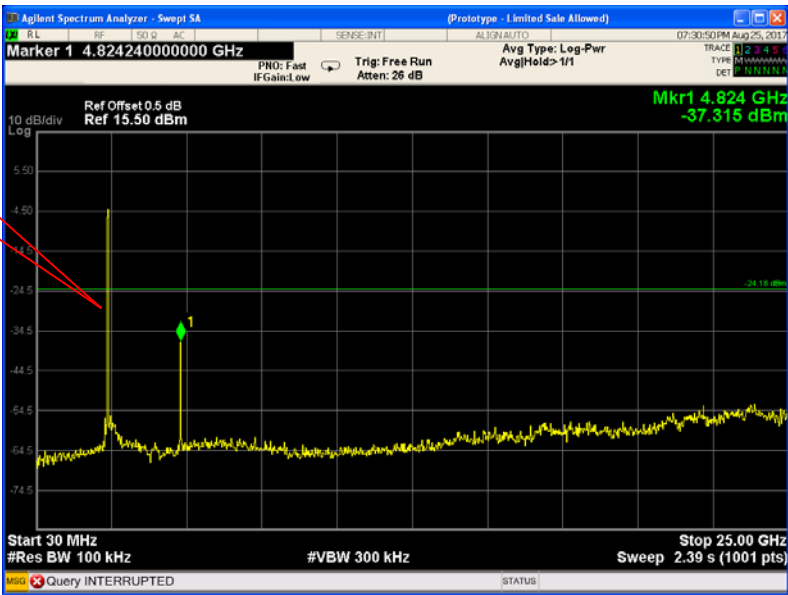
High Channel

Fundamental



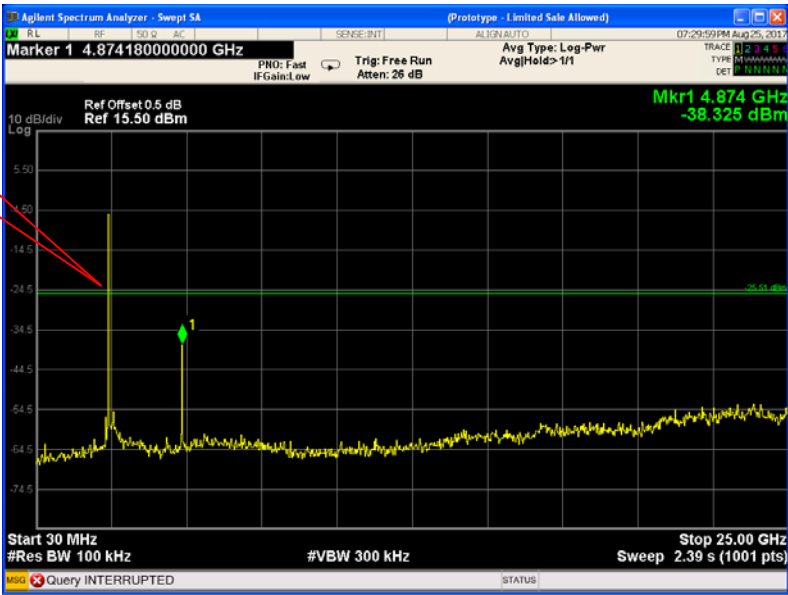
802.11n HT20
Low Channel

Fundamental



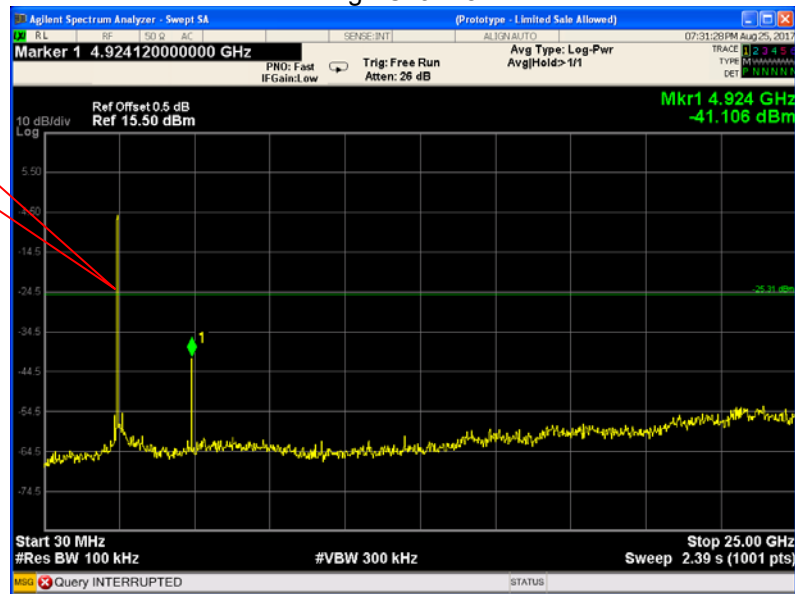
Middle Channel

Fundamental



High Channel

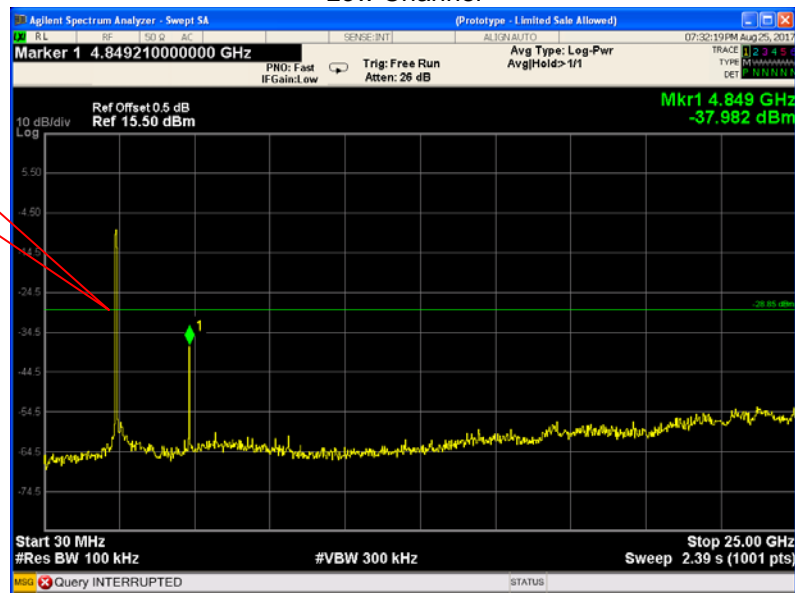
Fundamental



802.11n HT40

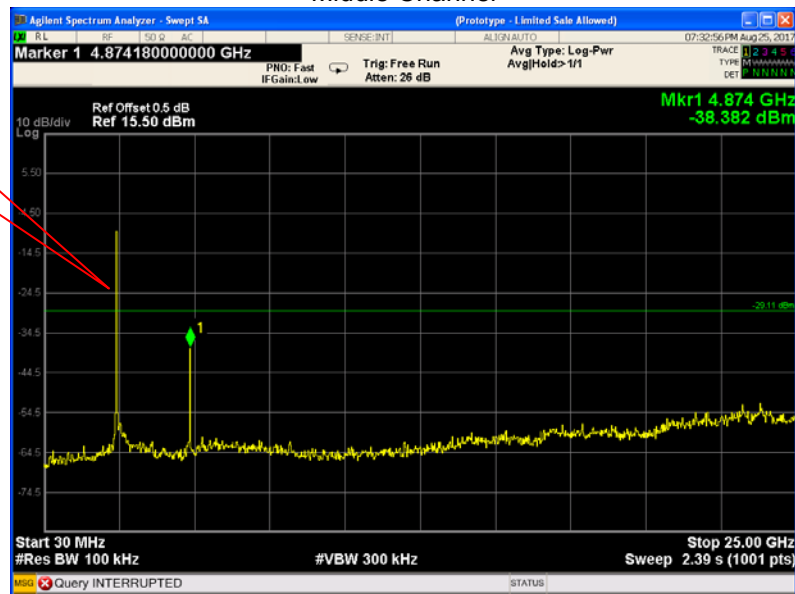
Low Channel

Fundamental



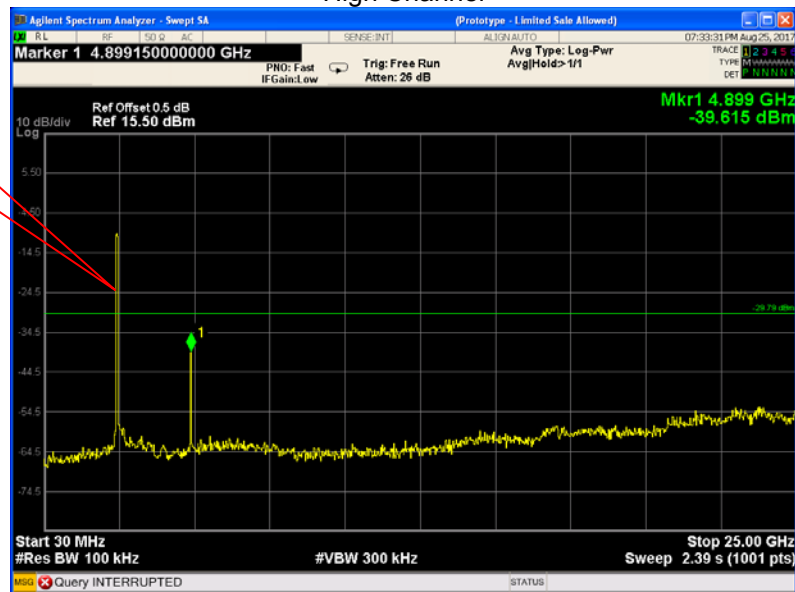
Middle Channel

Fundamental



High Channel

Fundamental



11 Band Edge Measurement

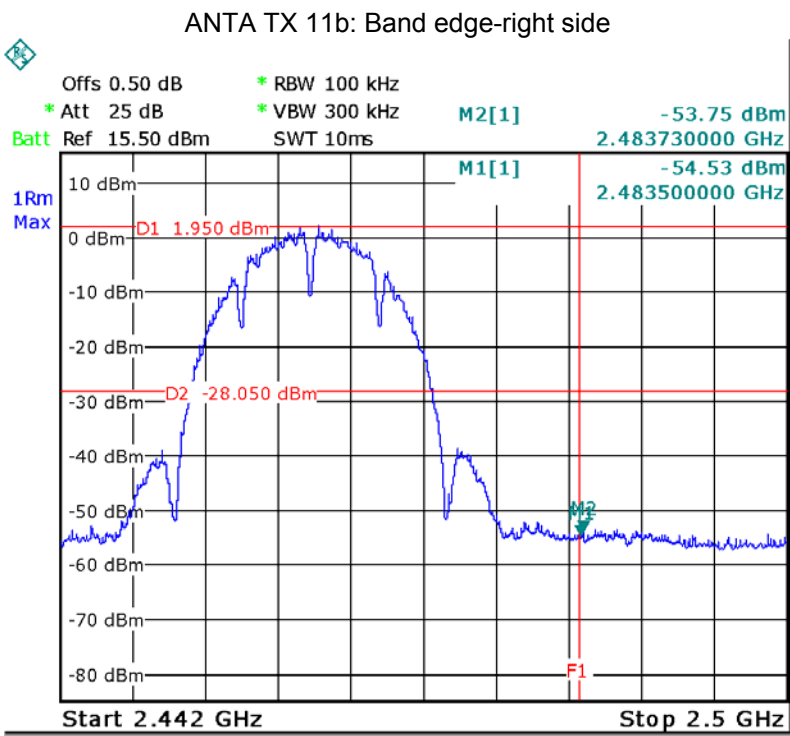
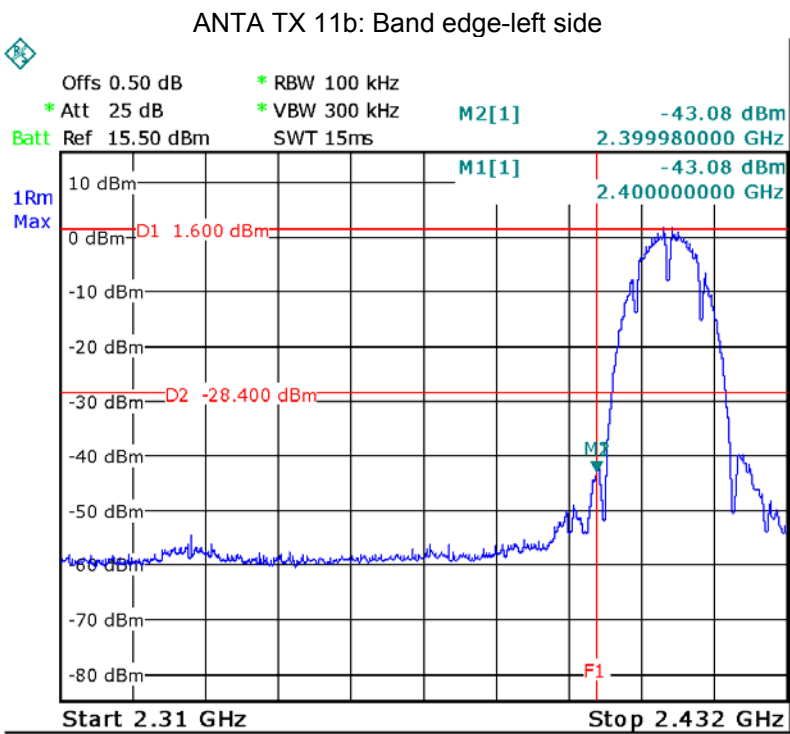
Test Requirement:	FCC CFR47 Part 15 Section 15.247
Test Method:	558074 D01 DTS Meas Guidance V04
Test Limit:	Regulation 15.247 (d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that 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 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 Mode:	Transmitting

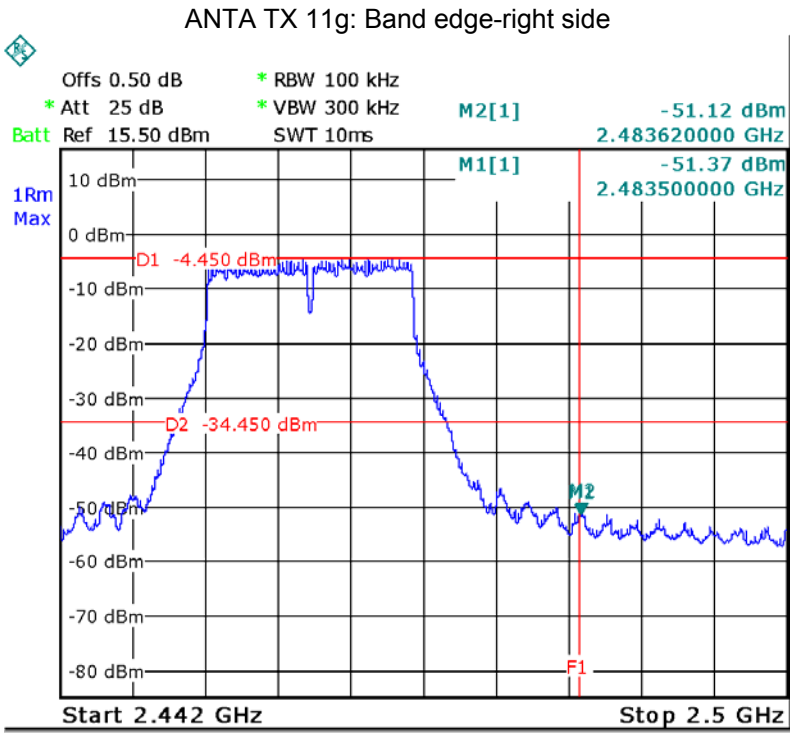
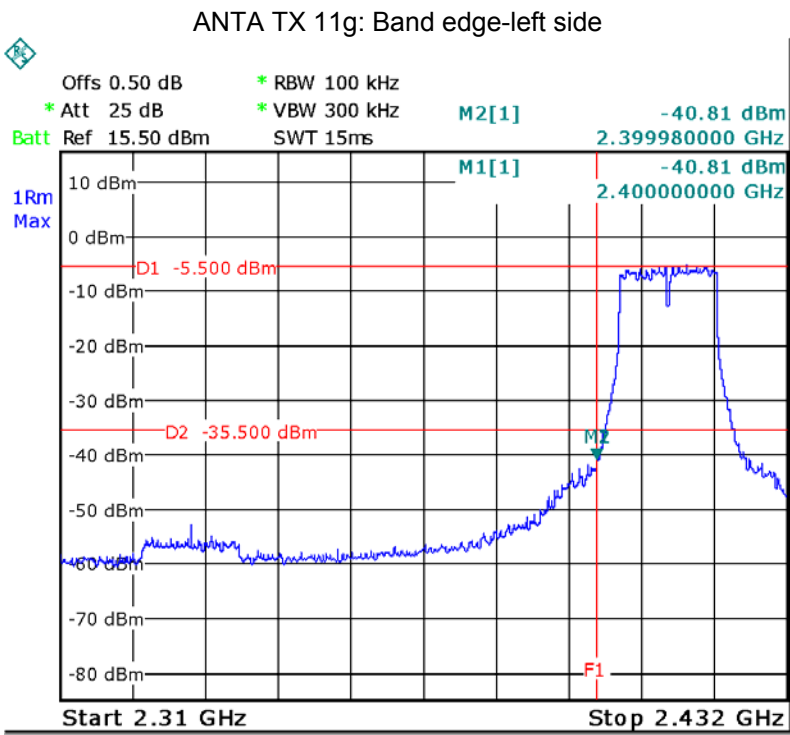
11.1 Test Produce

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. 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.
3. 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.
4. 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.
5. Repeat above procedures until all measured frequencies were complete.

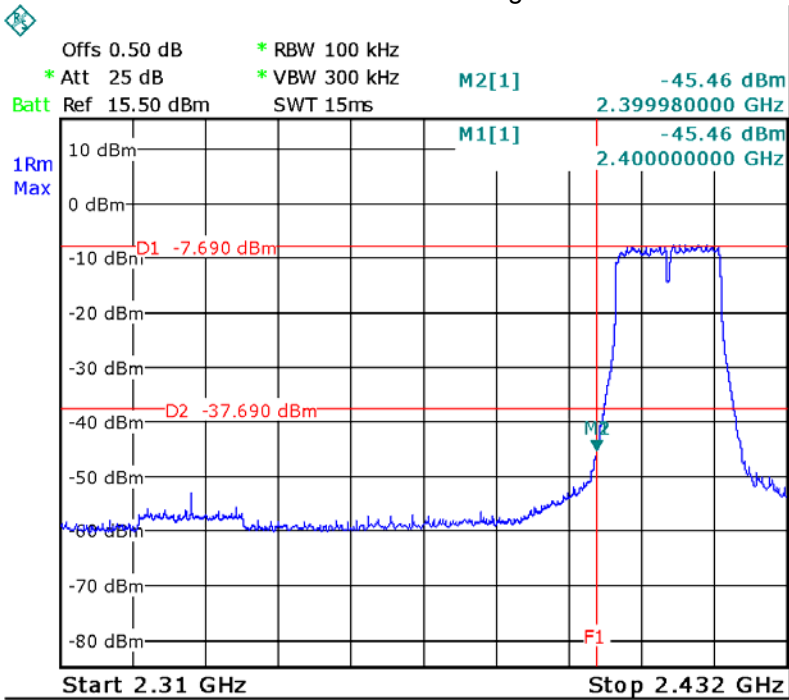
11.2 Test Result

Test result plots shown as follows:

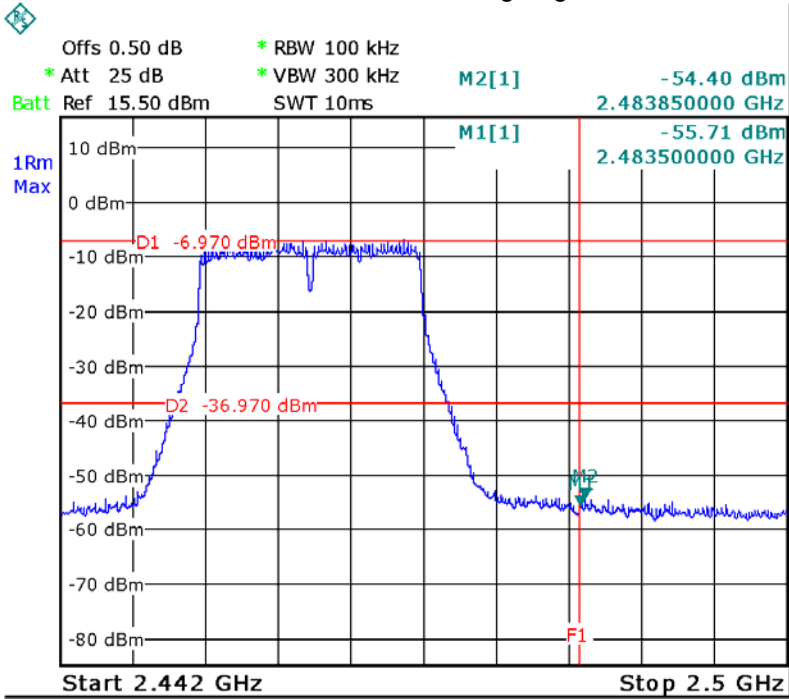


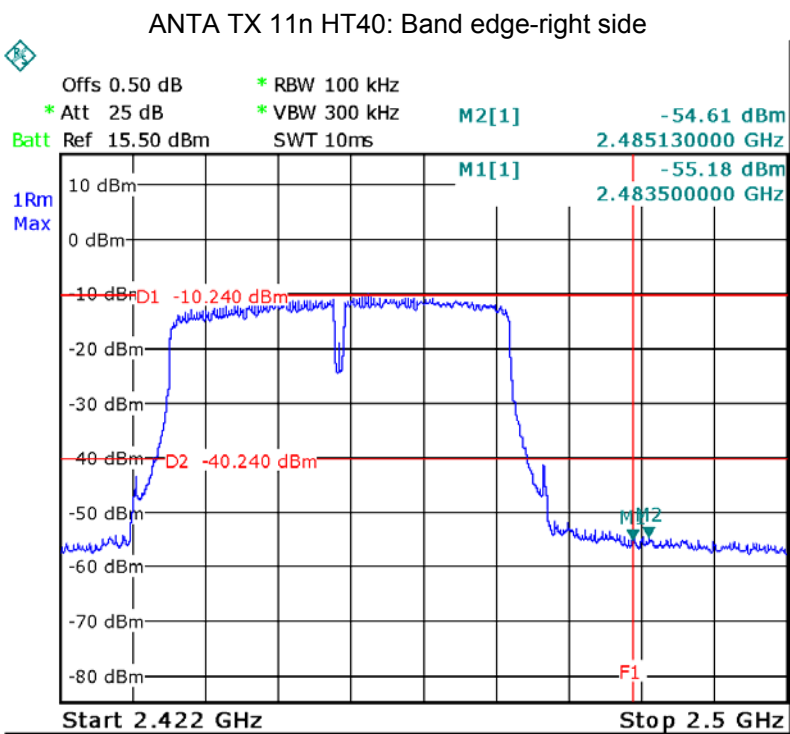
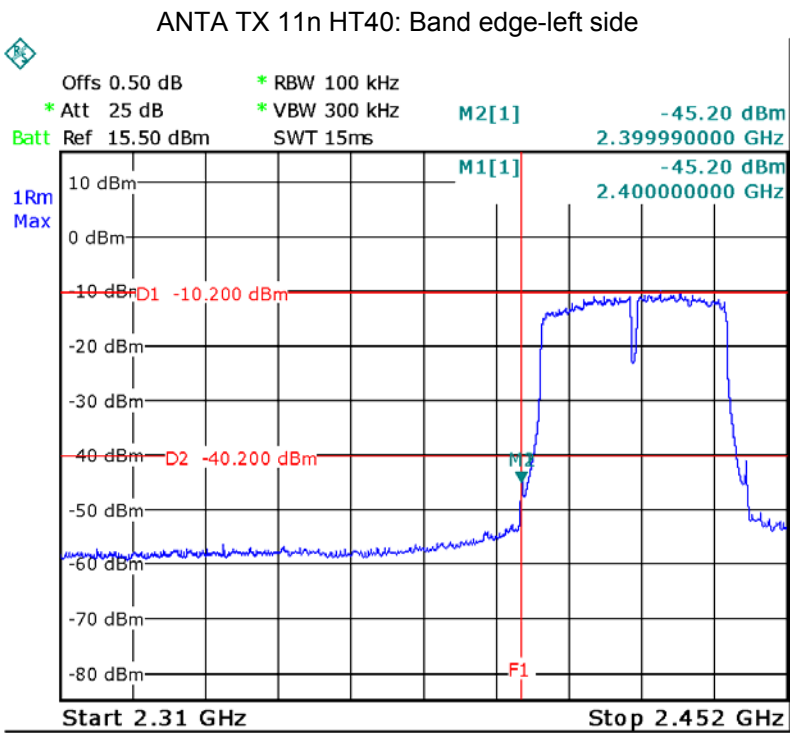


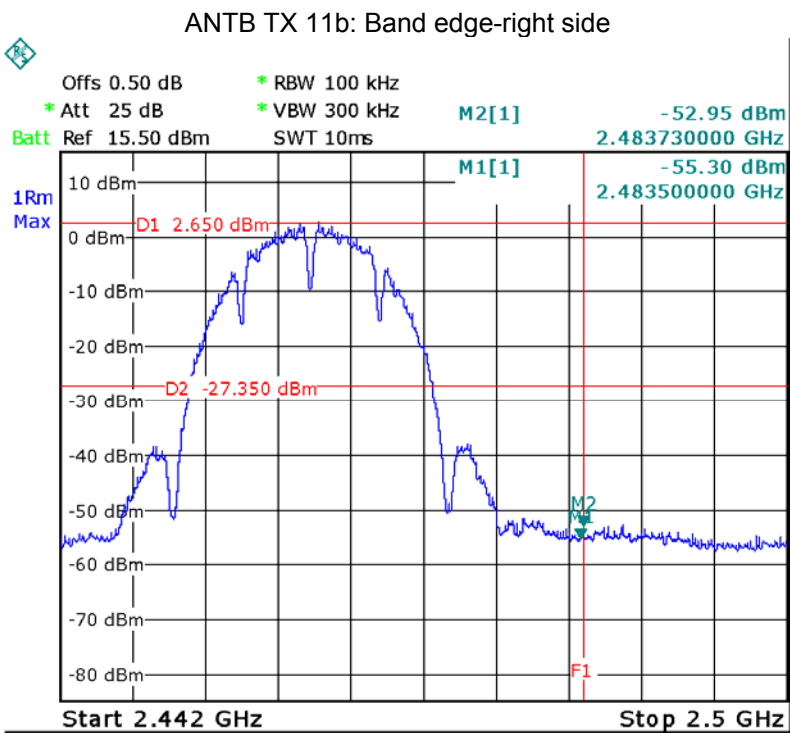
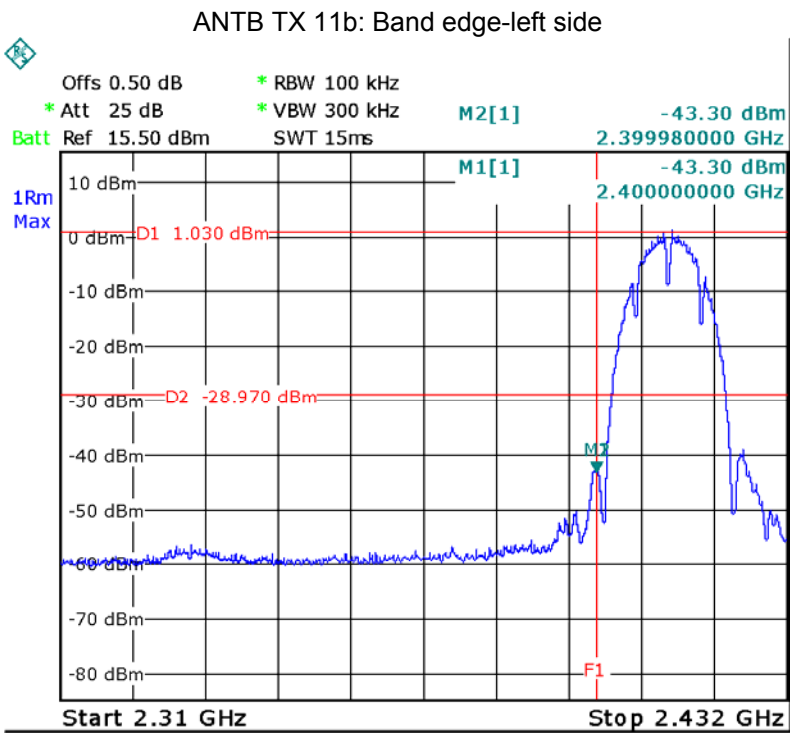
ANTA TX 11n HT20: Band edge-left side

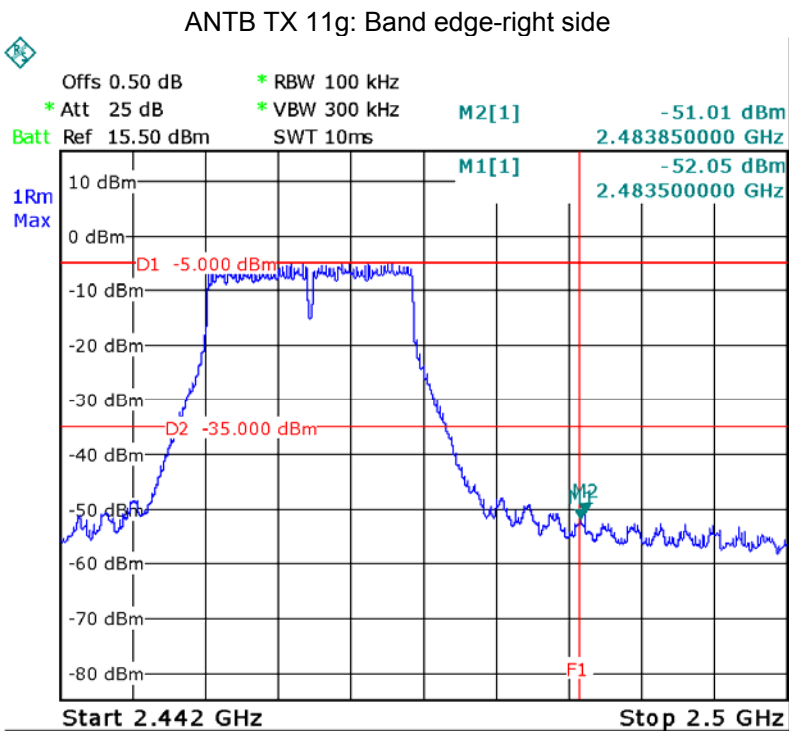
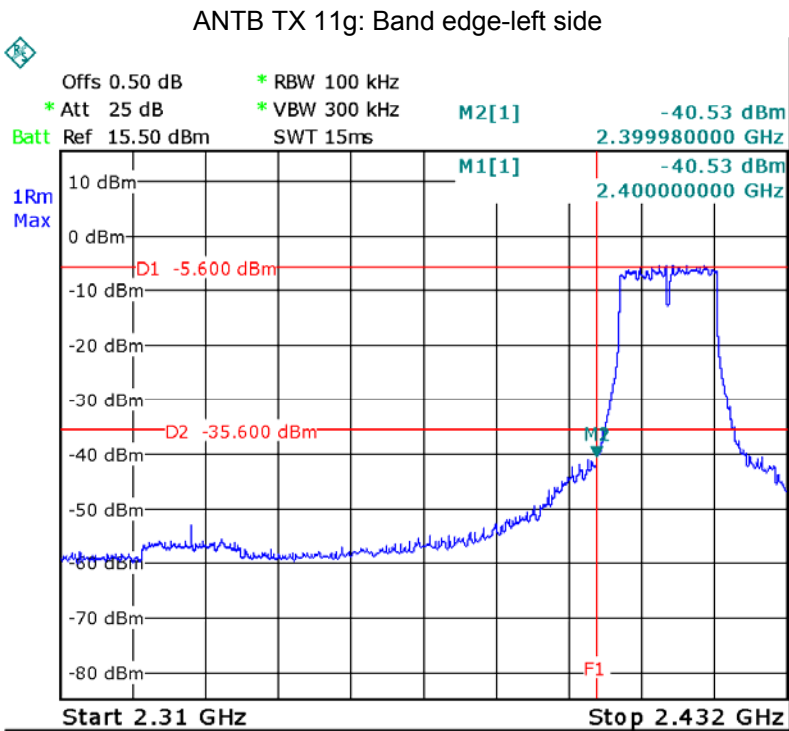


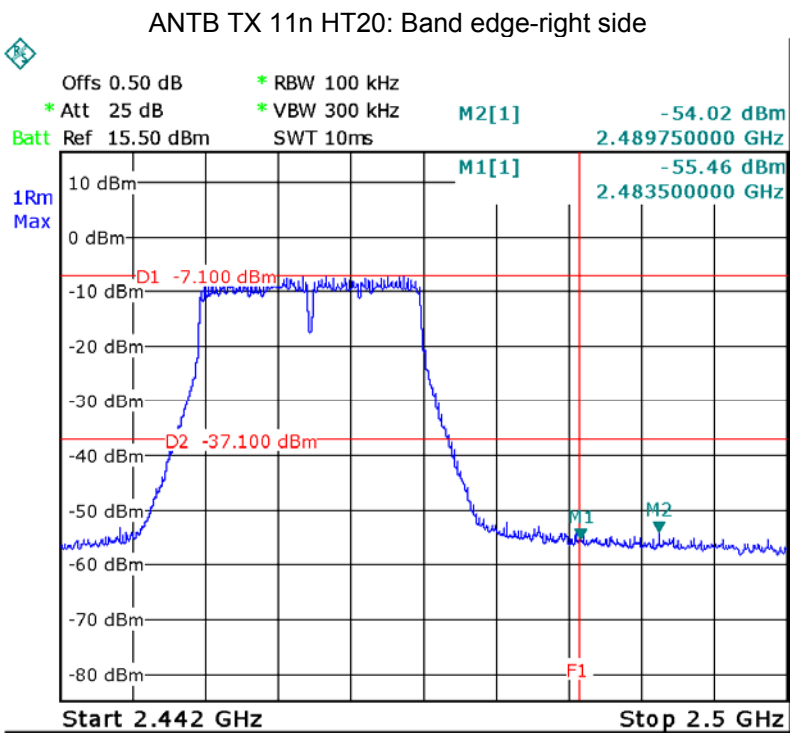
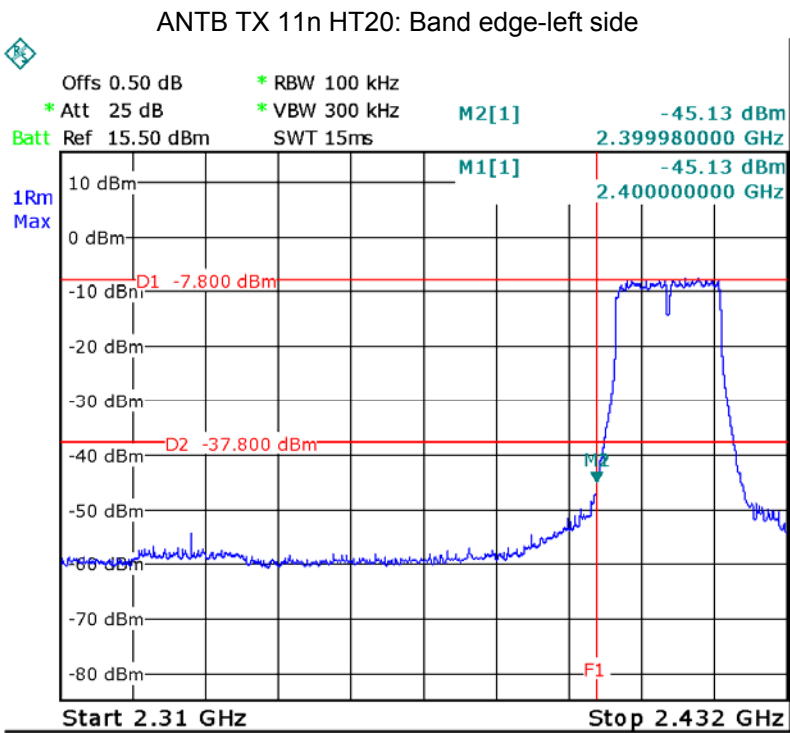
ANTA TX 11n HT20: Band edge-right side

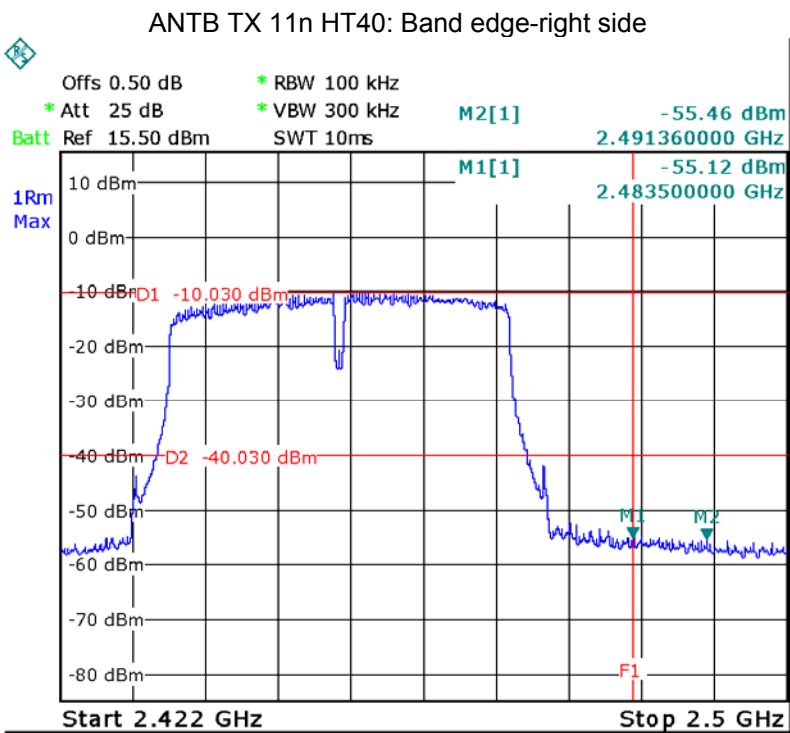
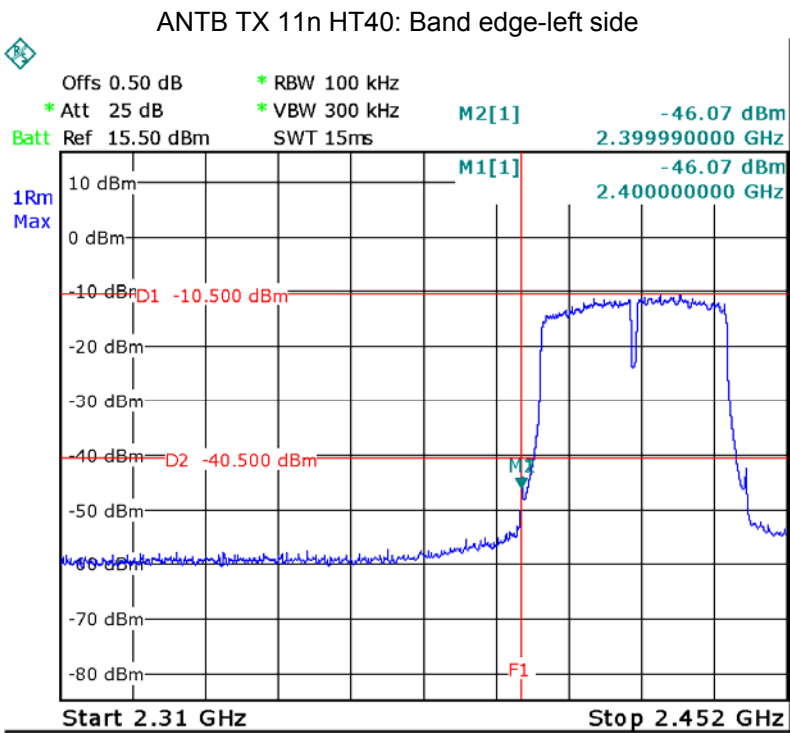












12 Bandwidth Measurement

Test Requirement:

FCC CFR47 Part 15 Section 15.247

Test Method:

558074 D01 DTS Meas Guidance V04

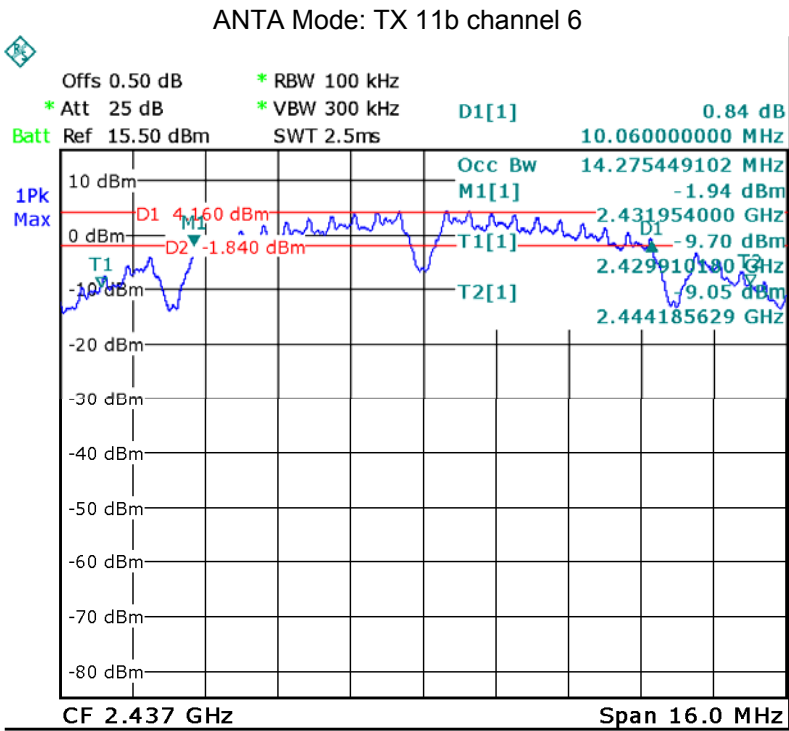
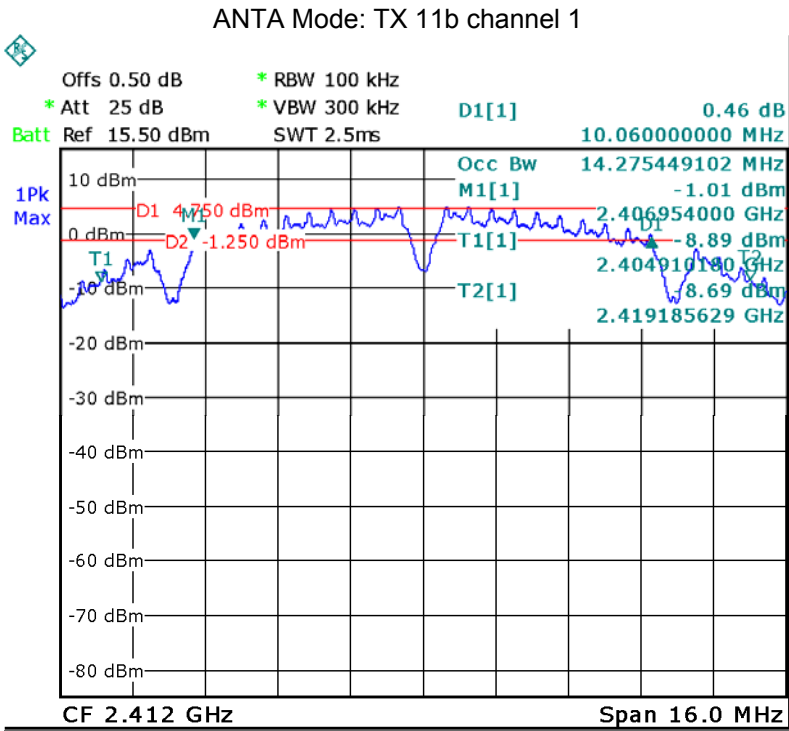
12.1 Test Procedure:

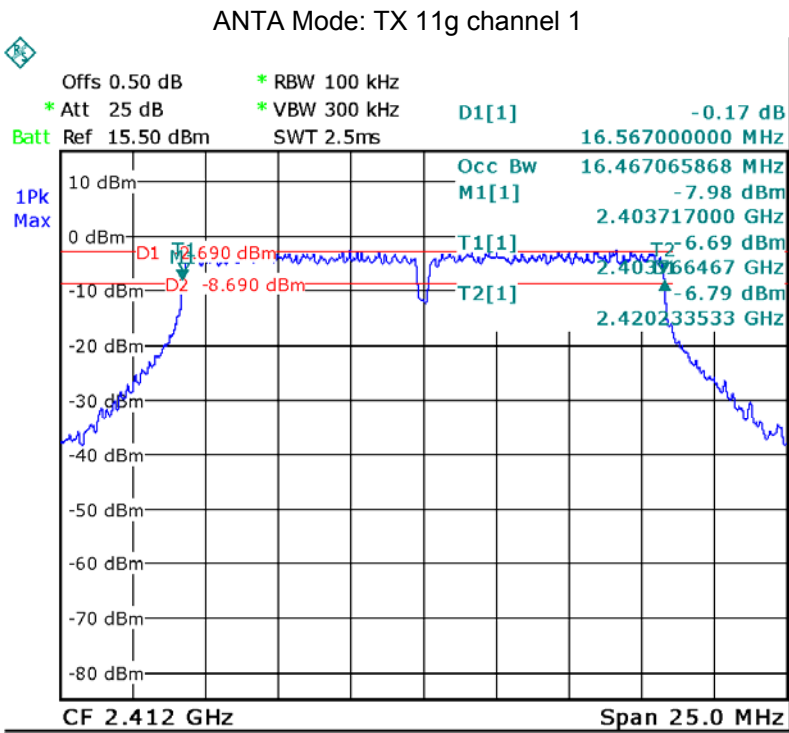
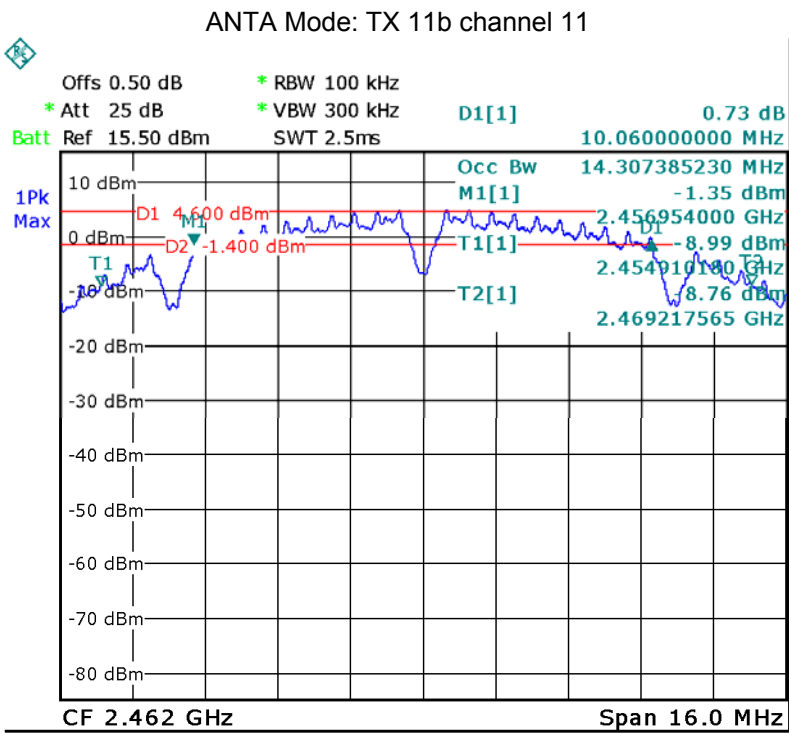
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

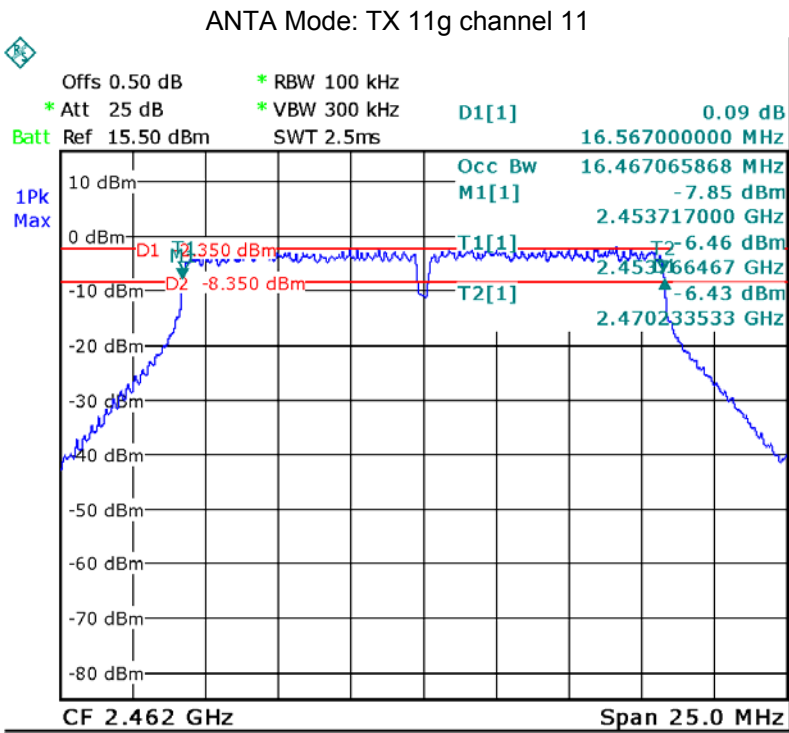
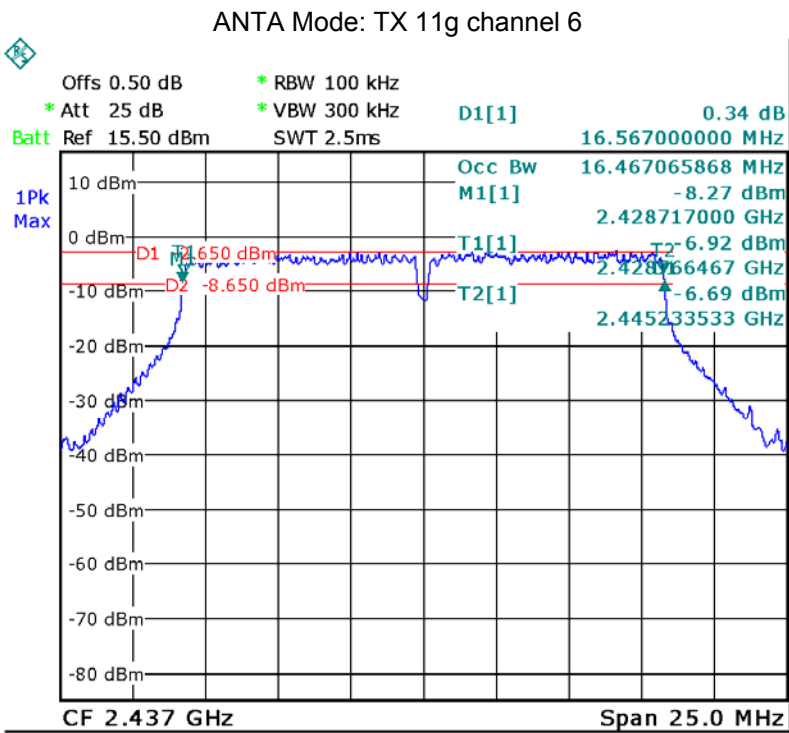
12.2 Test Result:

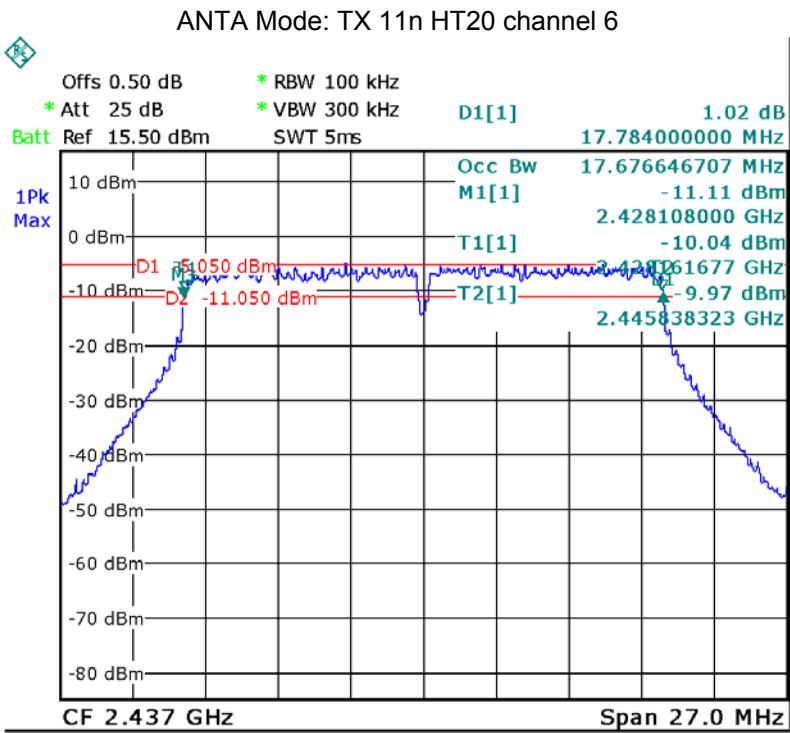
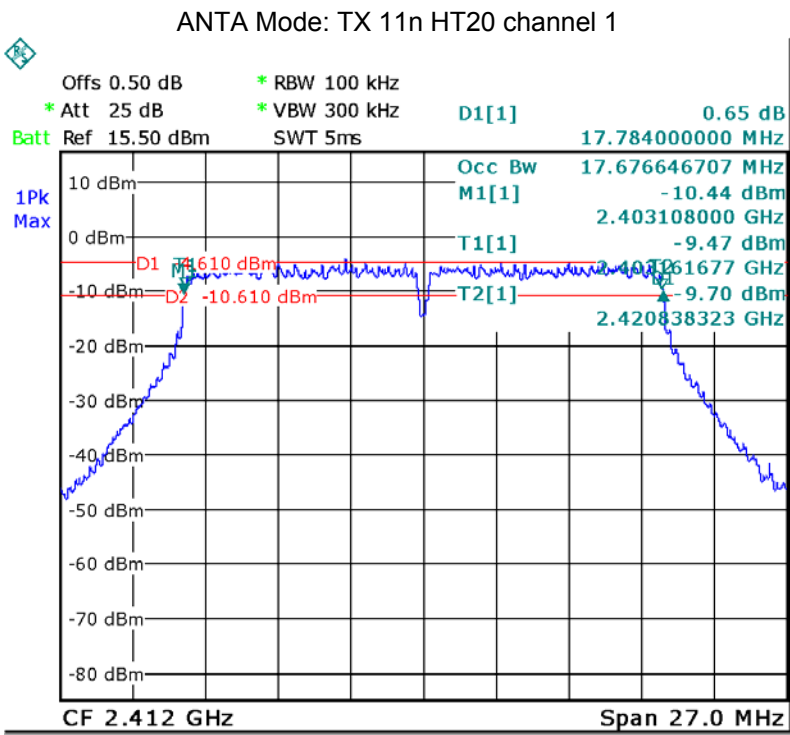
ANT	Operation mode	6dB Bandwidth (MHz)		
ANTA	TX 11b	Channel 1	Channel 6	Channel 11
		10.060	10.060	10.060
	TX 11g	Channel 1	Channel 6	Channel 11
		16.567	16.567	16.567
	TX 11n HT20	Channel 1	Channel 6	Channel 11
		17.784	17.784	17.784
	TX 11n HT40	Channel 3	Channel 6	Channel 9
		36.340	36.340	36.340
ANTB	TX 11b	Channel 1	Channel 6	Channel 11
		10.060	10.060	10.060
	TX 11g	Channel 1	Channel 6	Channel 11
		16.567	16.567	16.567
	TX 11n HT20	Channel 1	Channel 6	Channel 11
		17.784	17.784	17.784
	TX 11n HT40	Channel 3	Channel 6	Channel 9
		36.340	36.340	36.340

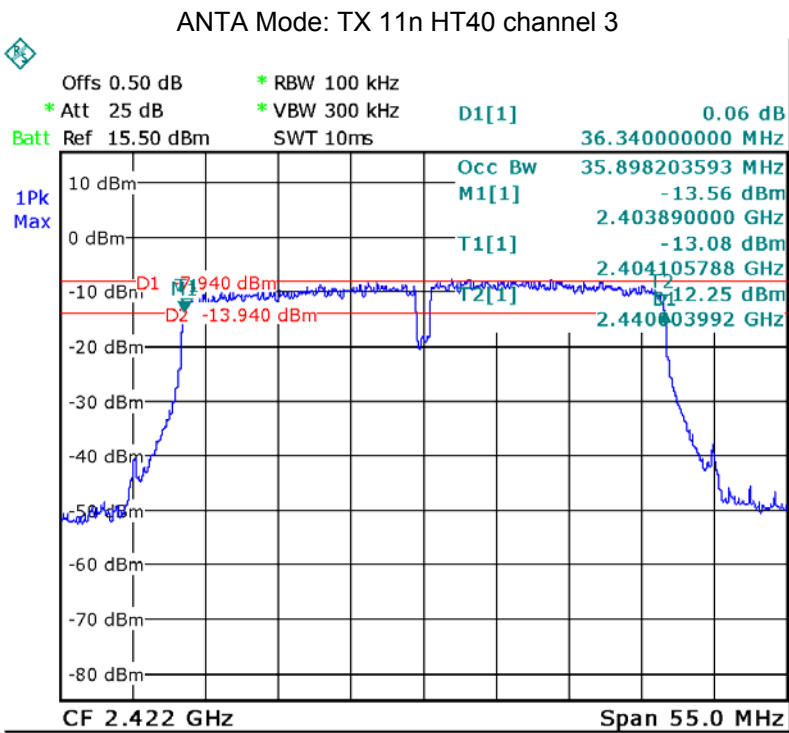
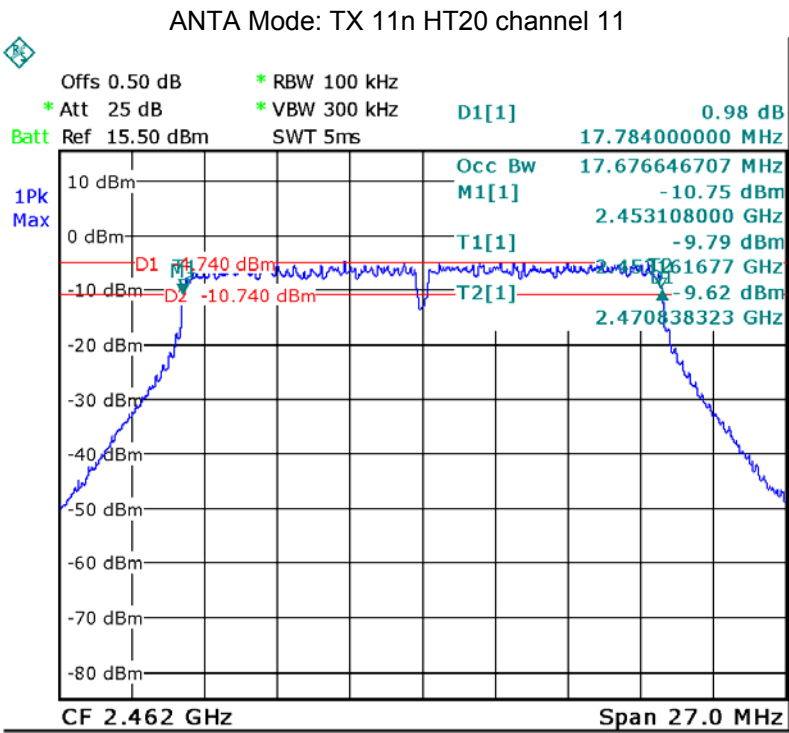
Test result plot as follows:

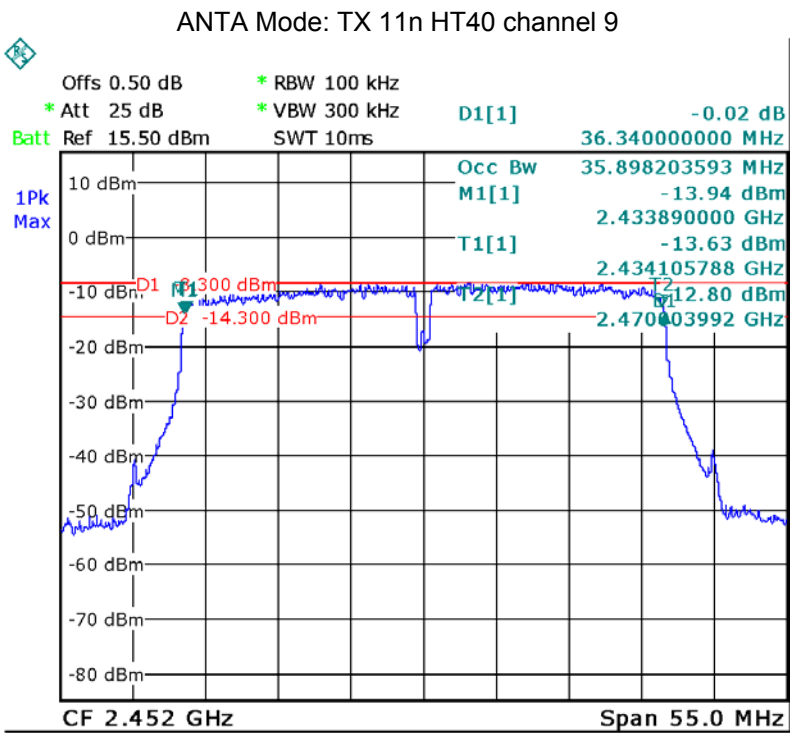
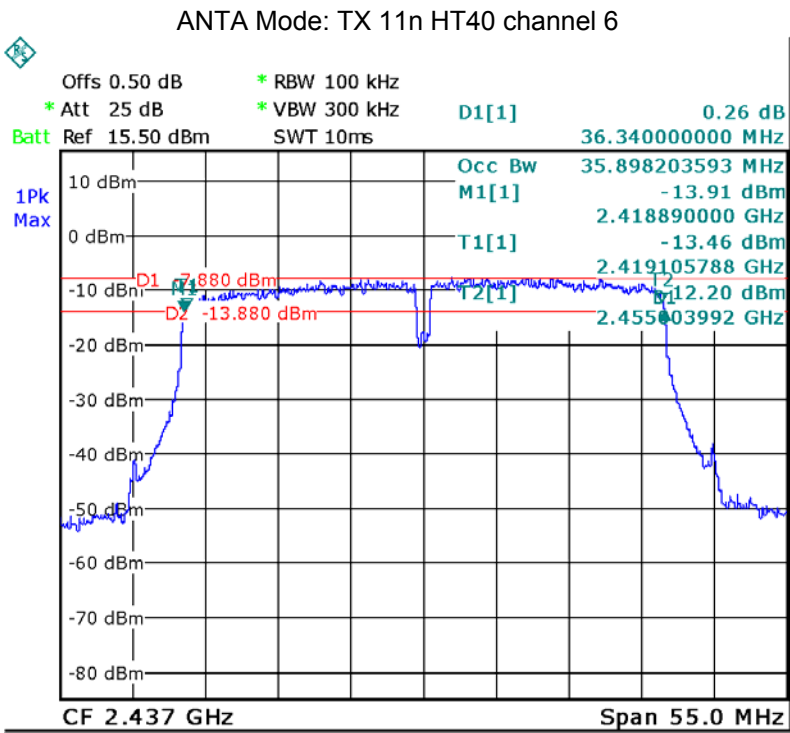


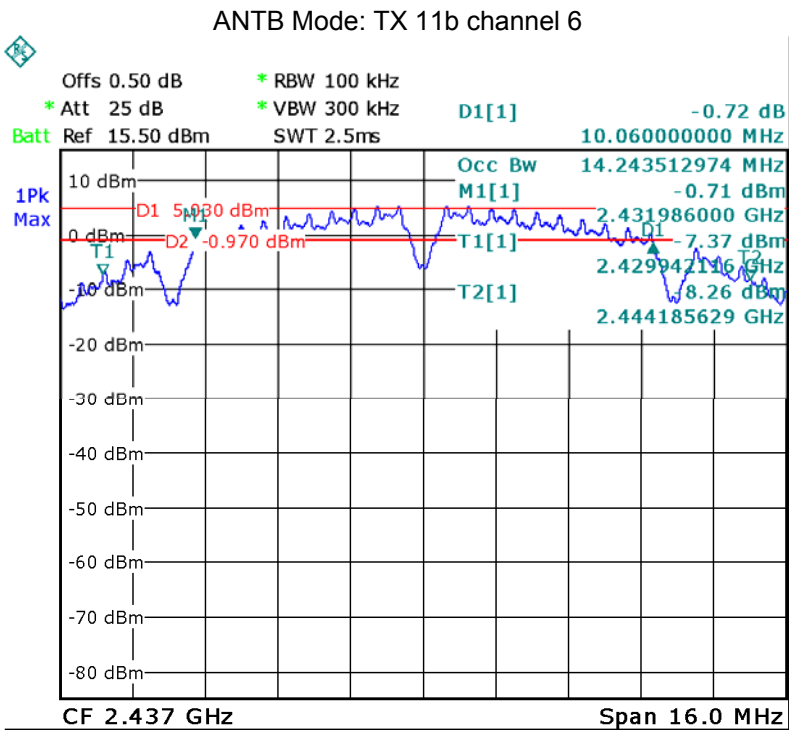
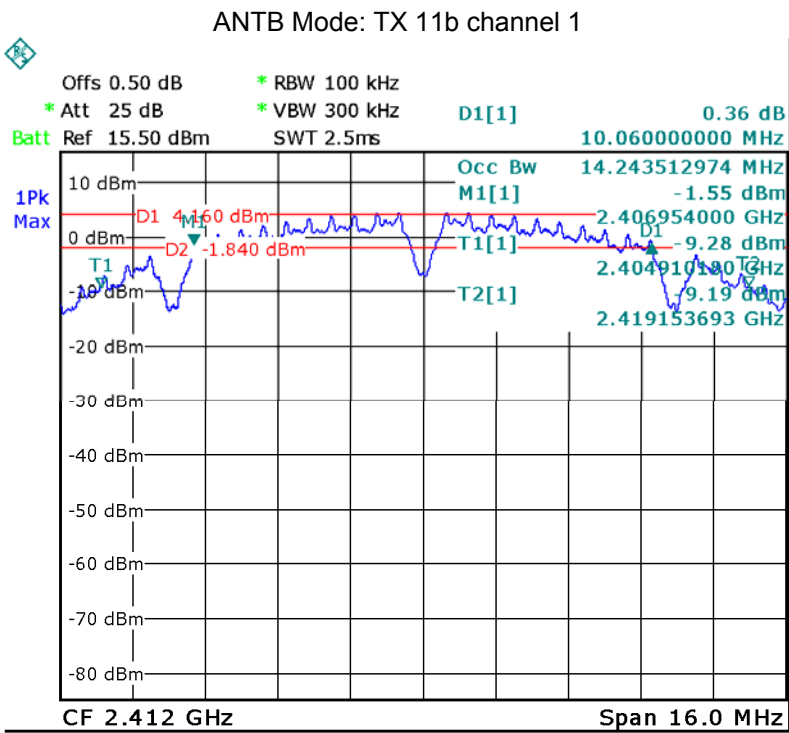


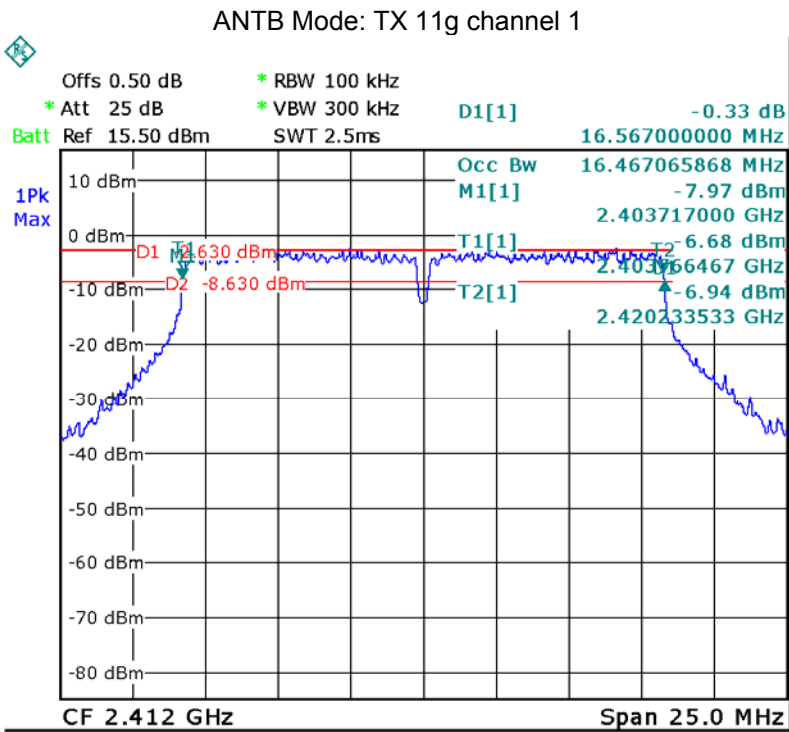
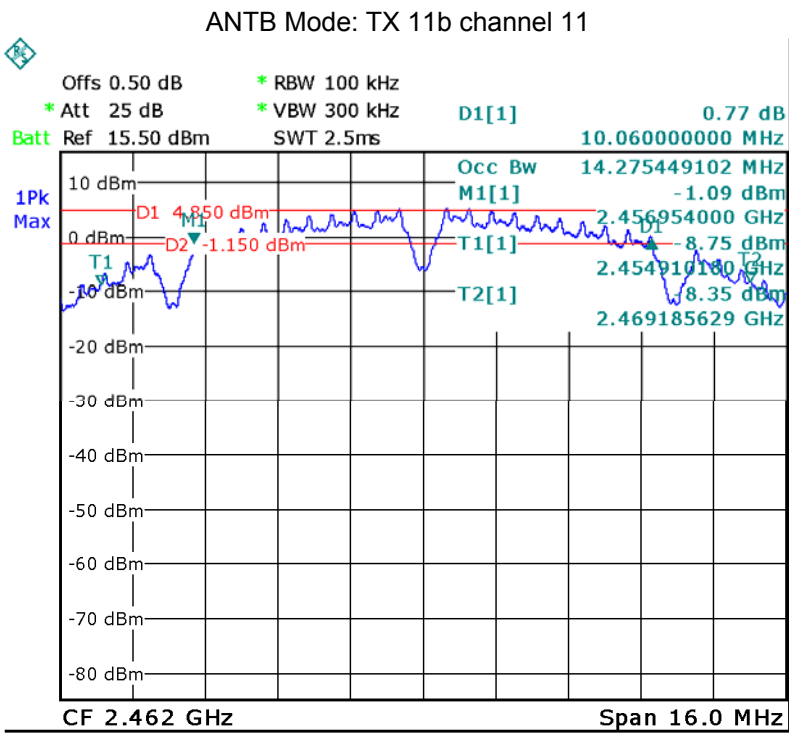


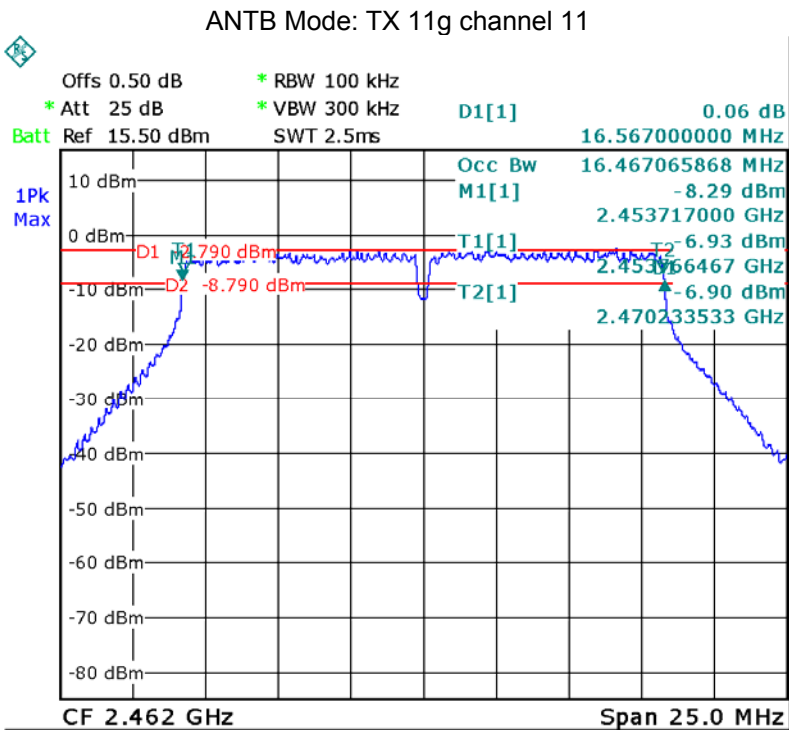
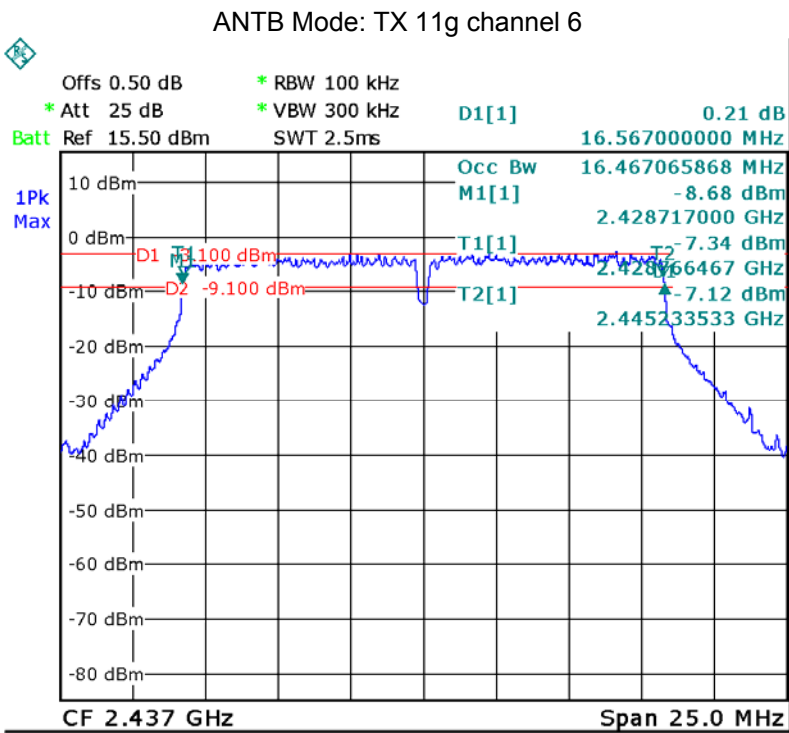


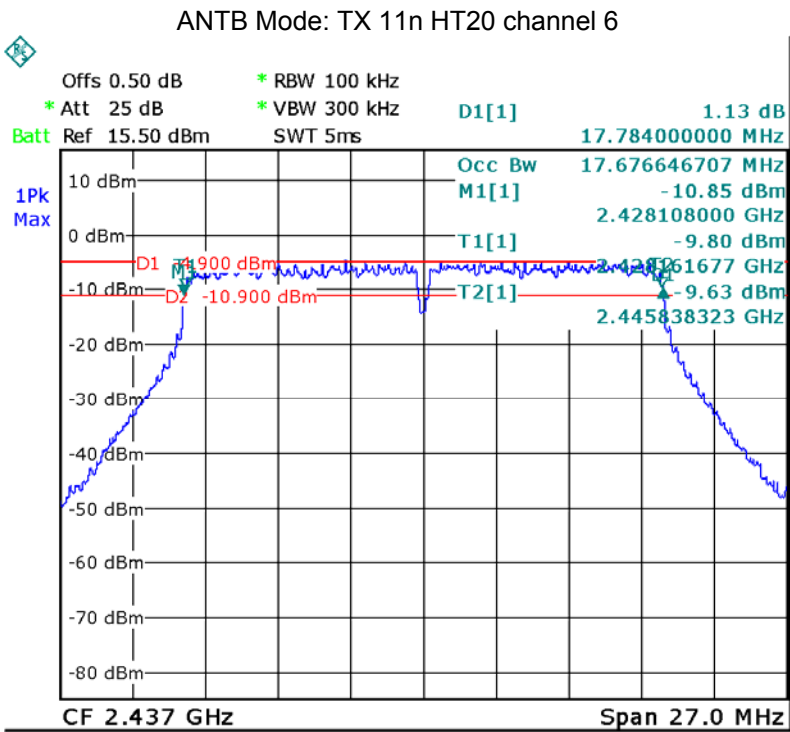
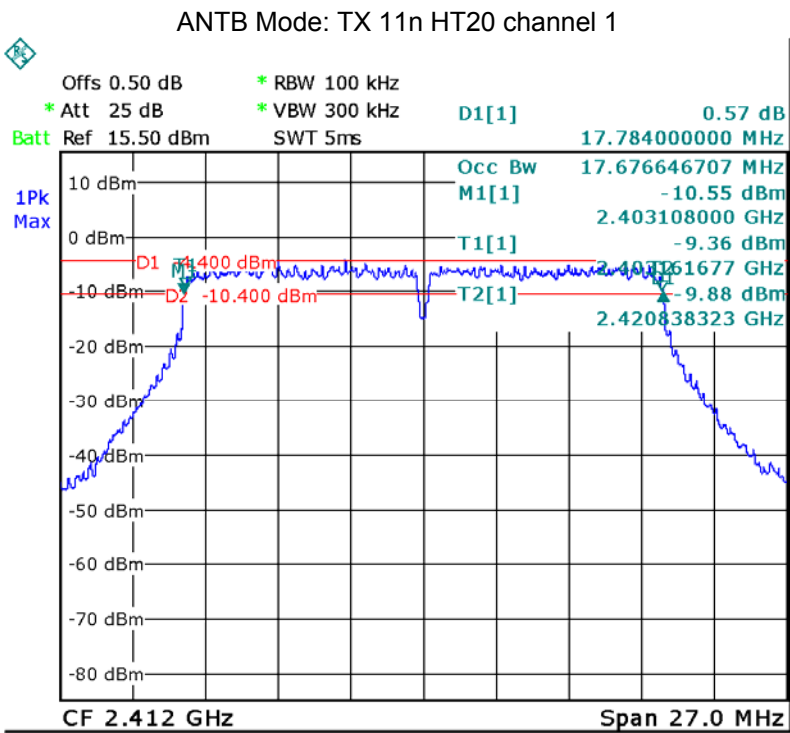


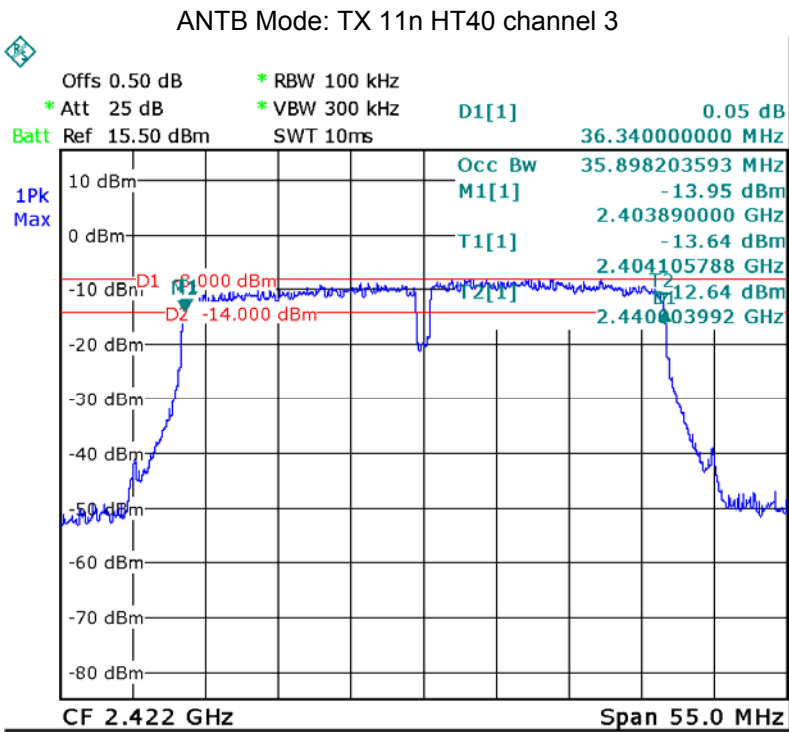
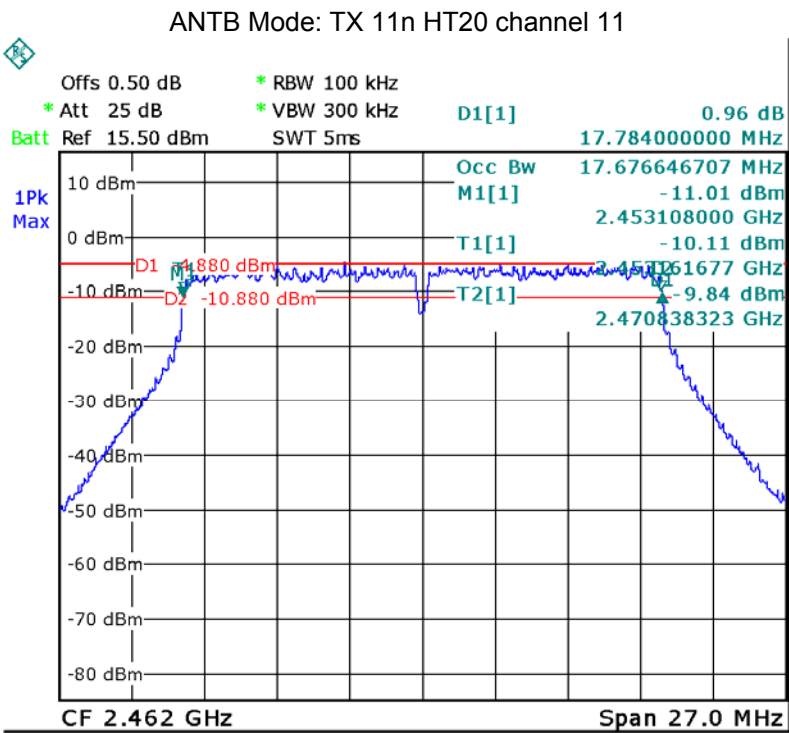


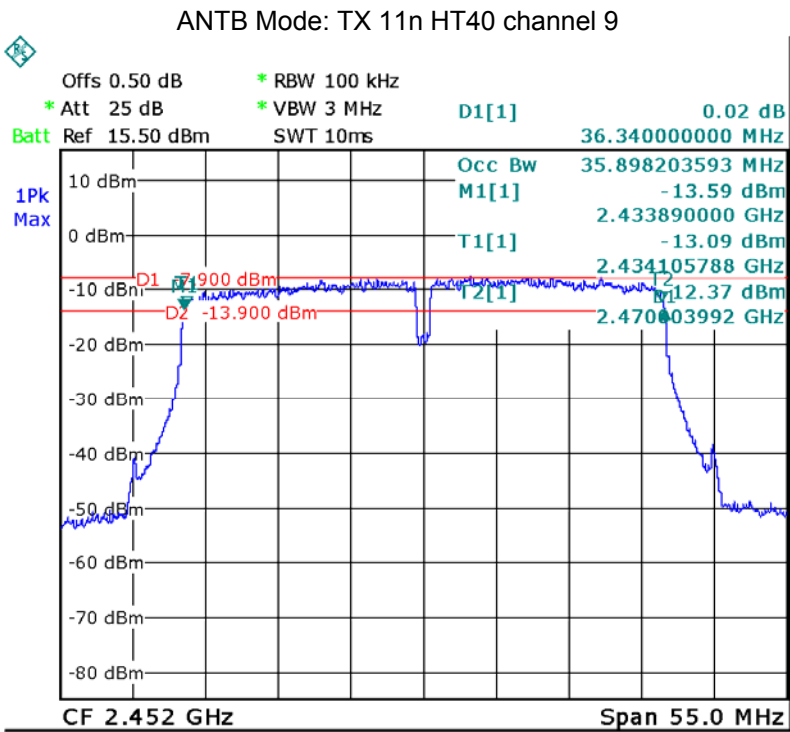
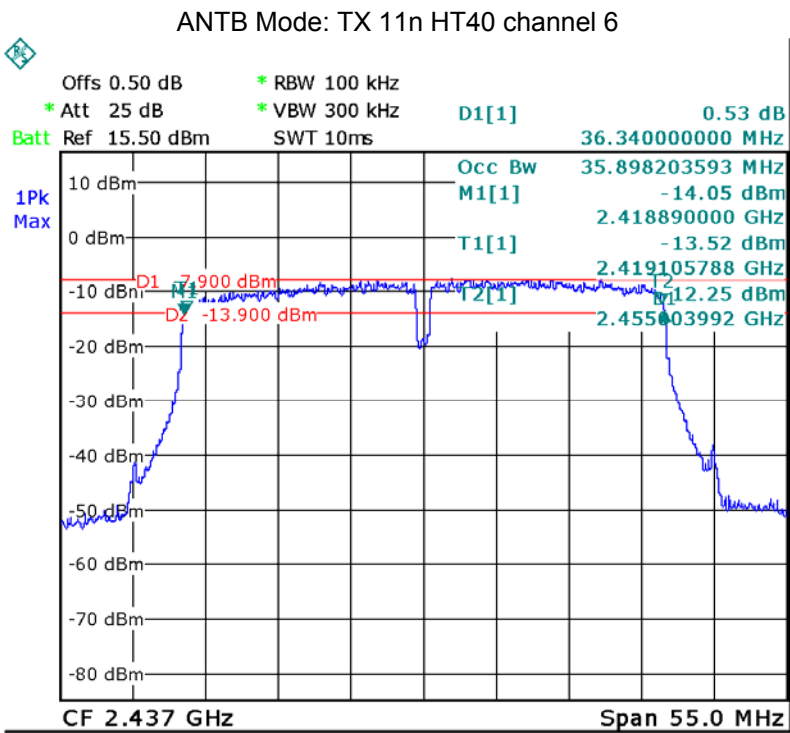












13 Maximum conducted (average) output power

Test Requirement:

FCC CFR47 Part 15 Section 15.247

Test Method:

558074 D01 DTS Meas Guidance V04

13.1 Test Procedure:

558074 D01 DTS Meas Guidance V04

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 1 MHz. VBW = 3 MHz. Sweep = auto; Detector Function = RMS, Set the span to fully encompass the DTS bandwidth.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

13.2 Test Result:

ANTA

Test mode :TX 11b		
Maximum conducted (average) output power (dBm)		
2412MHz	2437MHz	2462MHz
15.33	15.39	15.14
Limit: 1W/30dBm		

Test mode :TX 11g		
Maximum conducted (average) output power (dBm)		
2412MHz	2437MHz	2462MHz
13.35	13.80	13.81
Limit: 1W/30dBm		

Test mode :TX 11n HT20		
Maximum conducted (average) output power (dBm)		
2412MHz	2437MHz	2462MHz
11.43	11.33	11.55
Limit: 1W/30dBm		

Test mode : TX 11n HT40		
Maximum conducted (average) output power (dBm)		
2422MHz	2437MHz	2452MHz
11.37	11.35	11.09
Limit: 1W/30dBm		

ANTB

Test mode :TX 11b		
Maximum conducted (average) output power (dBm)		
2412MHz	2437MHz	2462MHz
15.28	15.35	15.35
Limit: 1W/30dBm		

Test mode :TX 11g		
Maximum conducted (average) output power (dBm)		
2412MHz	2437MHz	2462MHz
13.45	13.13	13.41
Limit: 1W/30dBm		

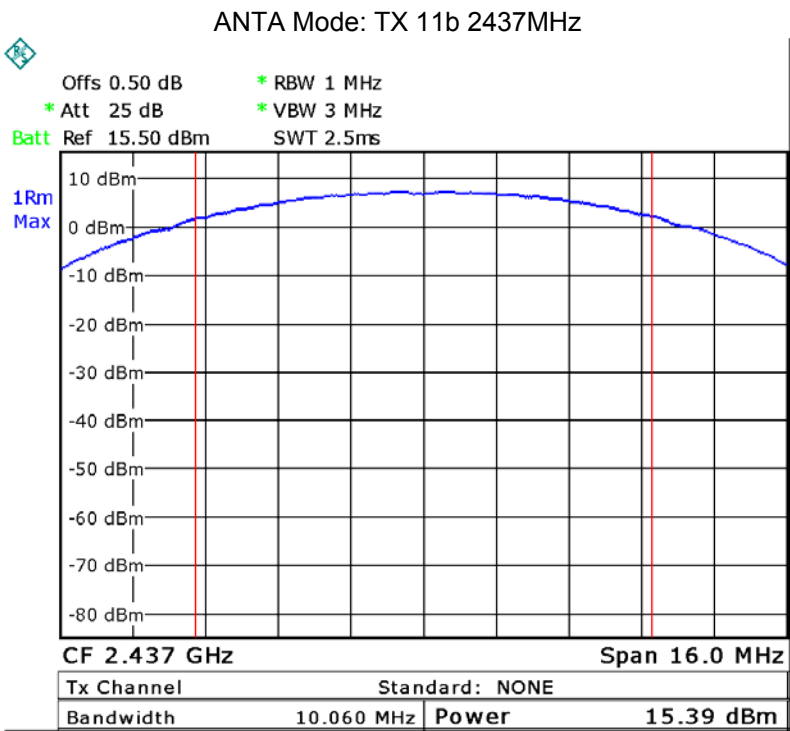
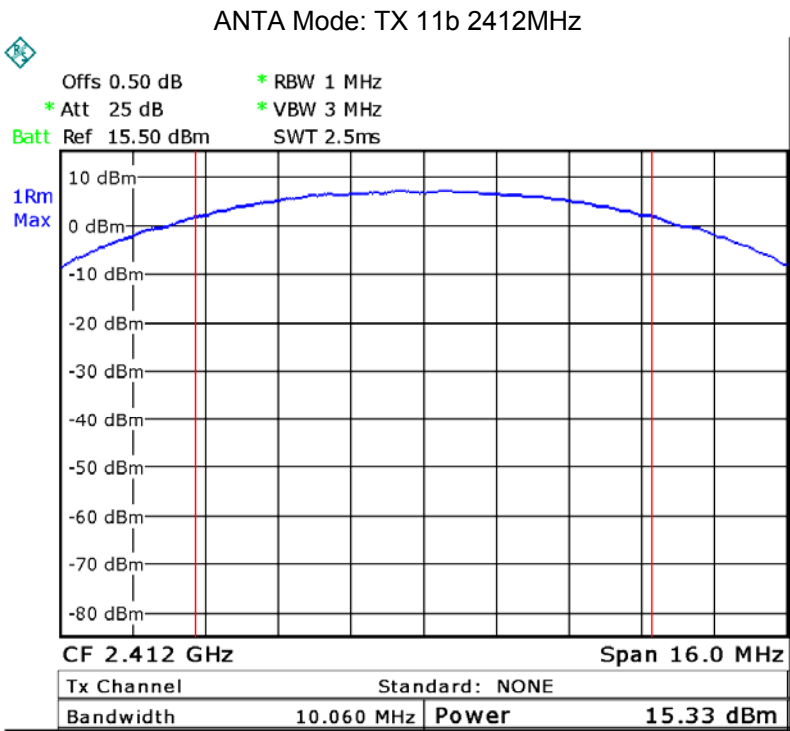
Test mode :TX 11n HT20		
Maximum conducted (average) output power (dBm)		
2412MHz	2437MHz	2462MHz
11.27	11.58	11.32
Limit: 1W/30dBm		

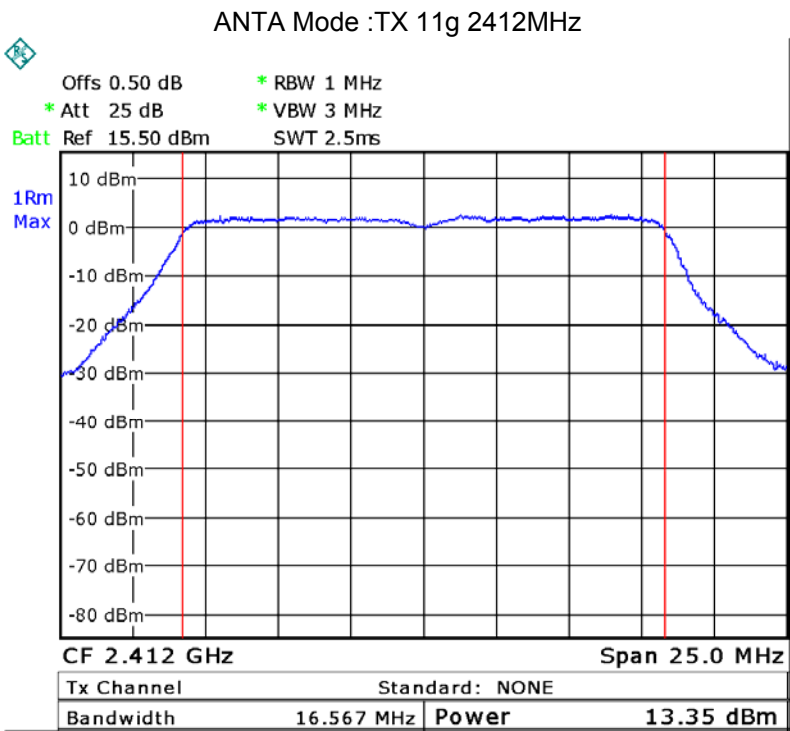
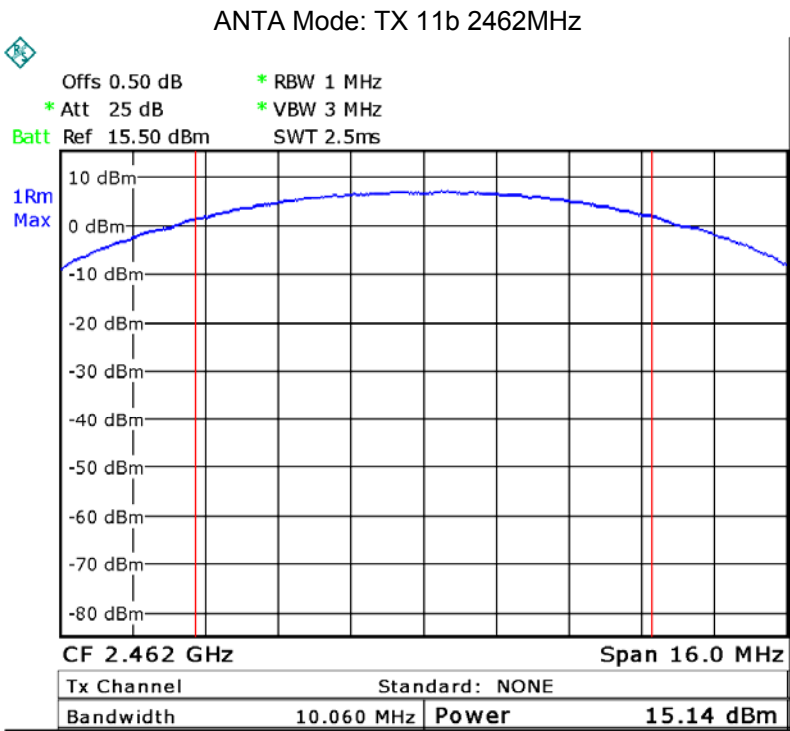
Test mode : TX 11n HT40		
Maximum conducted (average) output power (dBm)		
2422MHz	2437MHz	2452MHz
11.55	11.48	11.39
Limit: 1W/30dBm		

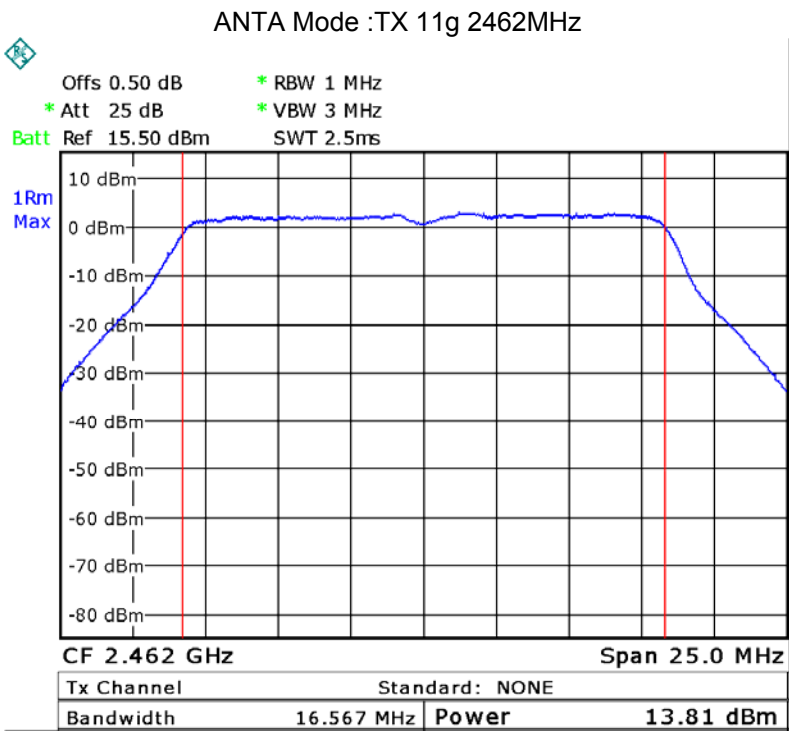
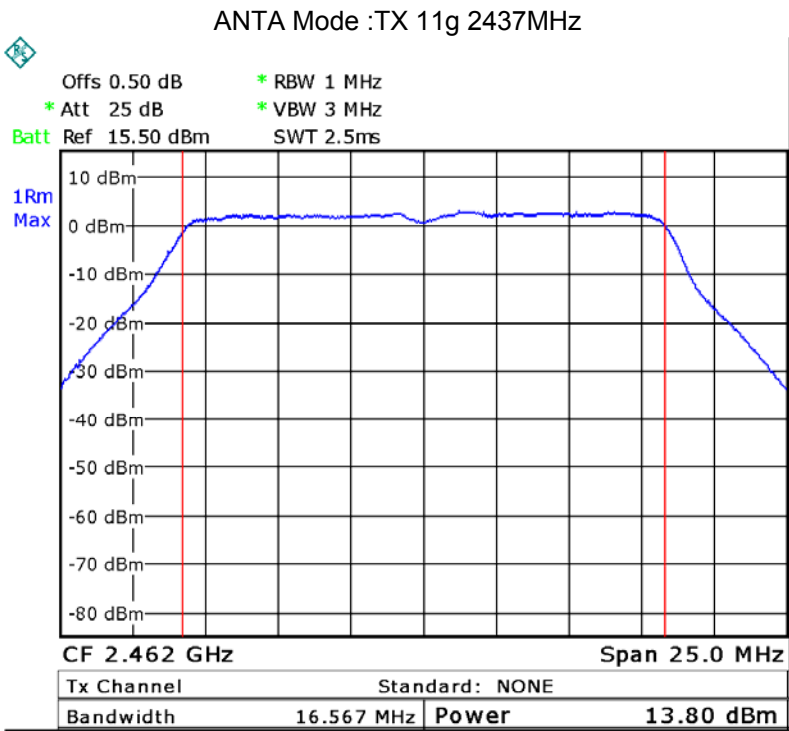
ANTA+ANTB

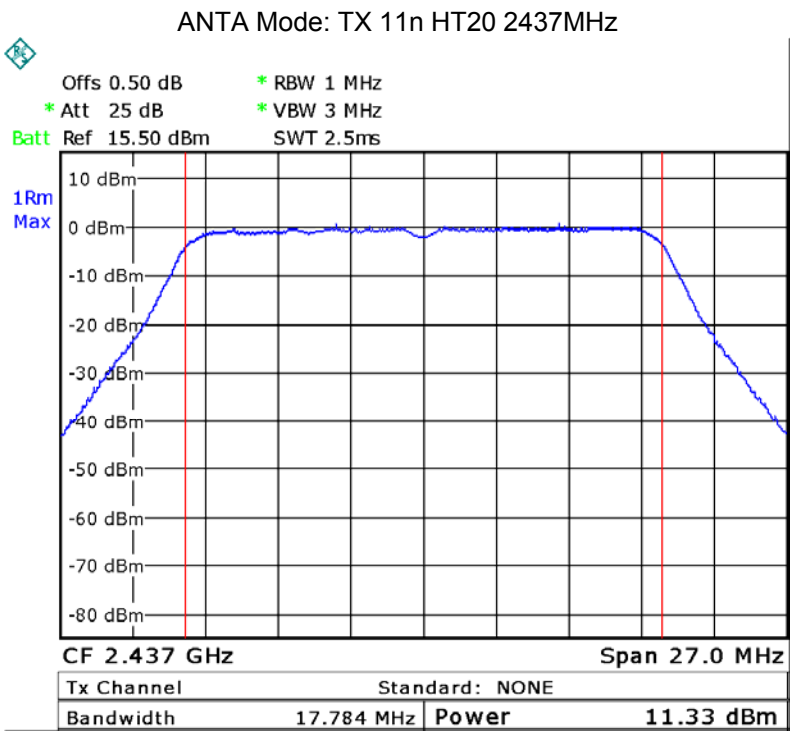
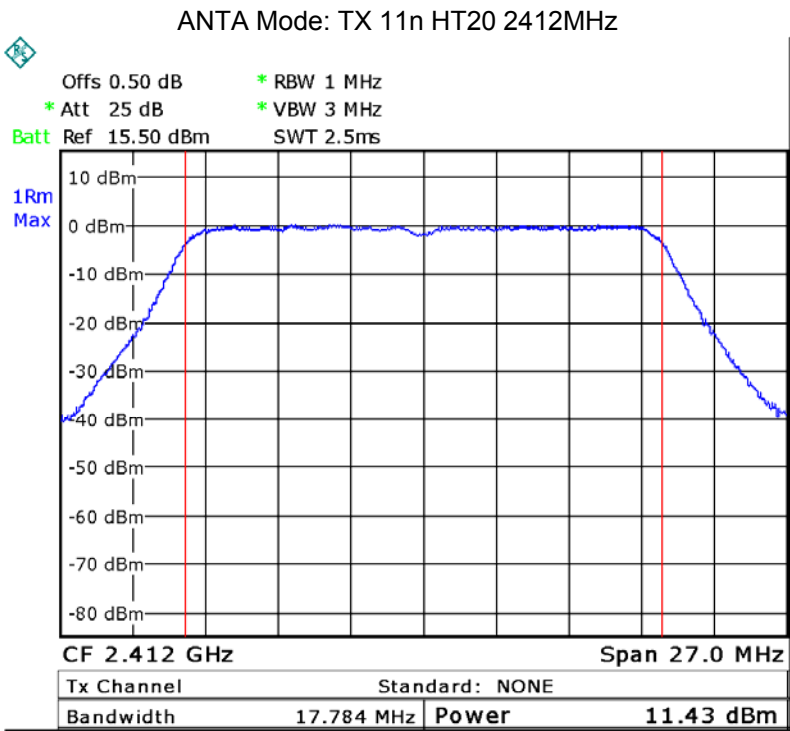
Test mode :TX 11n HT20		
Maximum conducted (average) output power (dBm)		
2412MHz	2437MHz	2462MHz
14.36	14.47	14.45
Limit: 1W/30dBm		

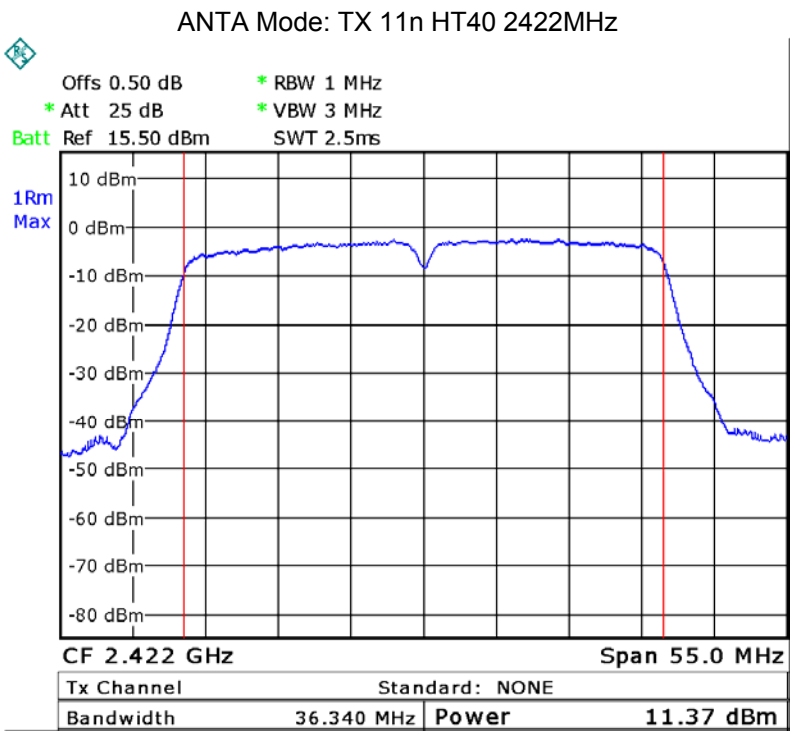
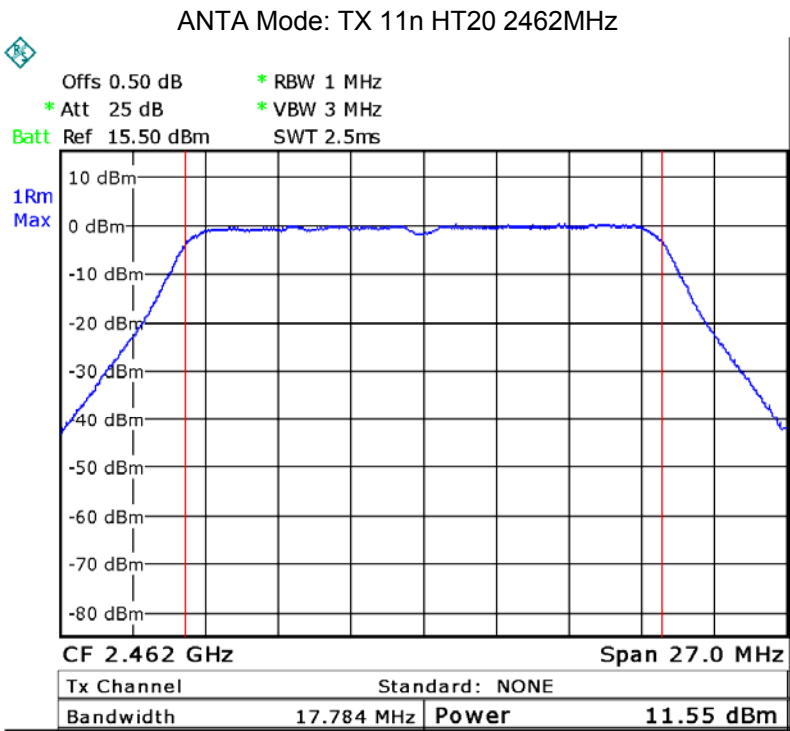
Test mode : TX 11n HT40		
Maximum conducted (average) output power (dBm)		
2422MHz	2437MHz	2452MHz
14.47	14.43	14.25
Limit: 1W/30dBm		

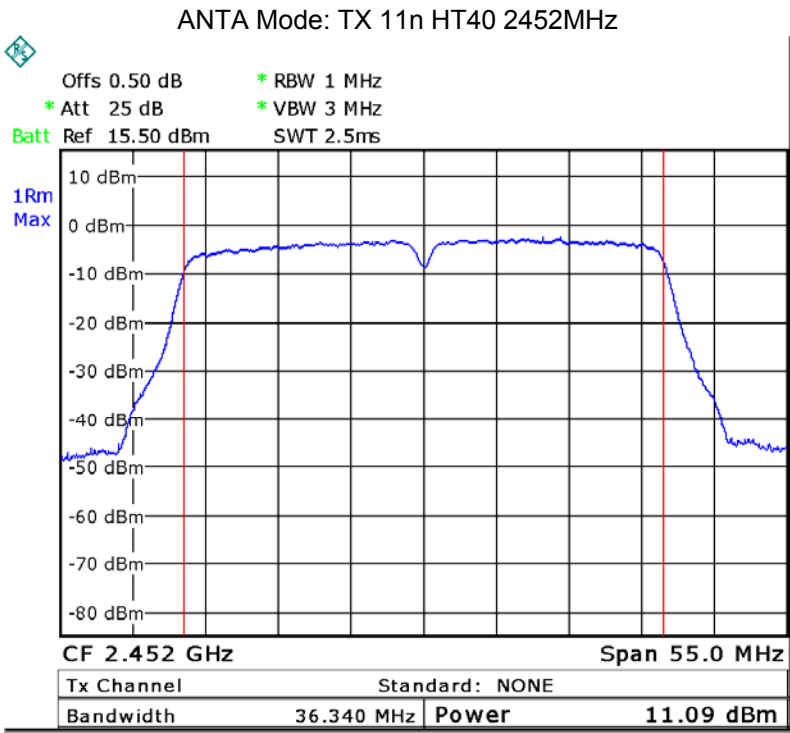
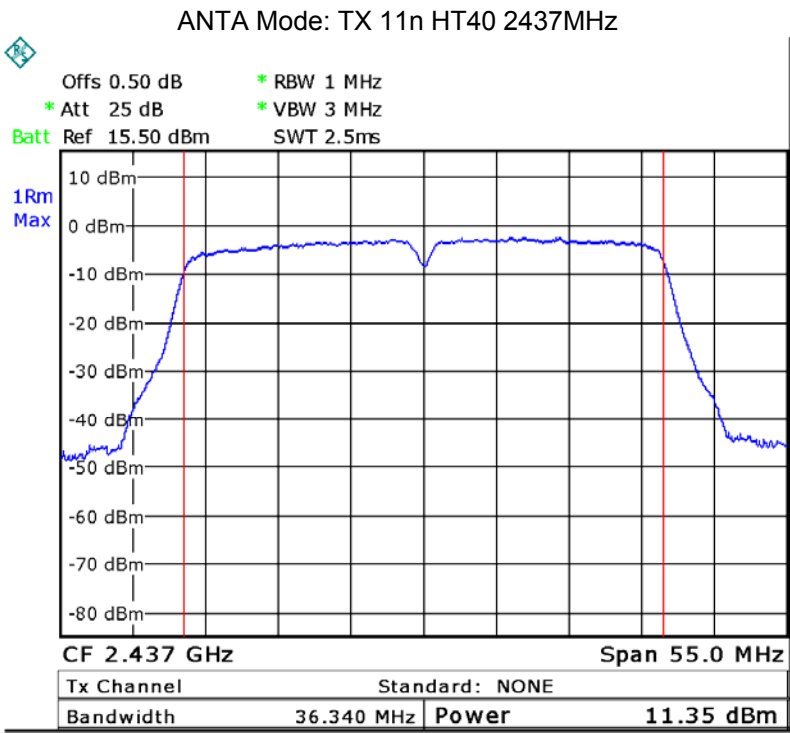


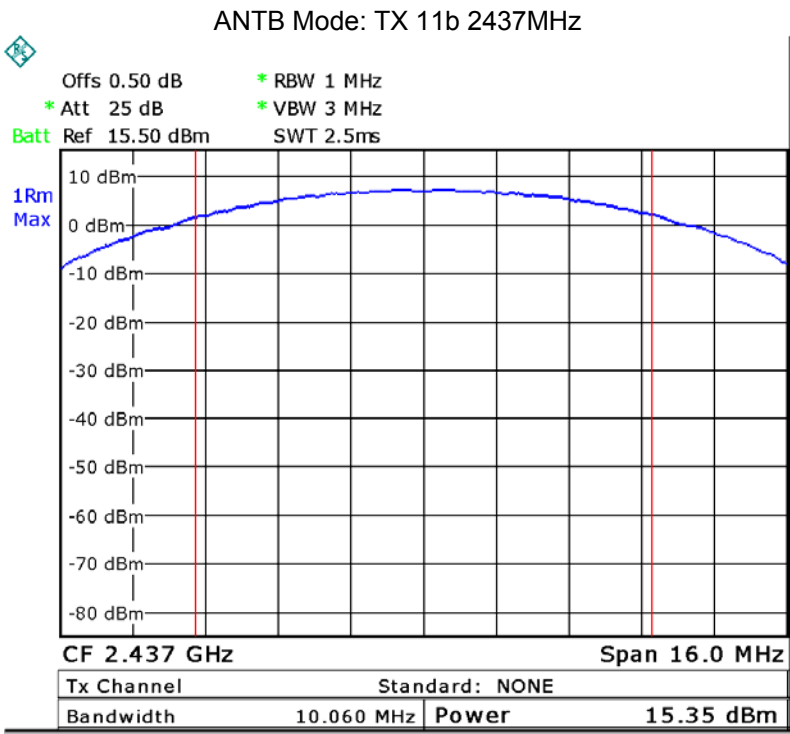
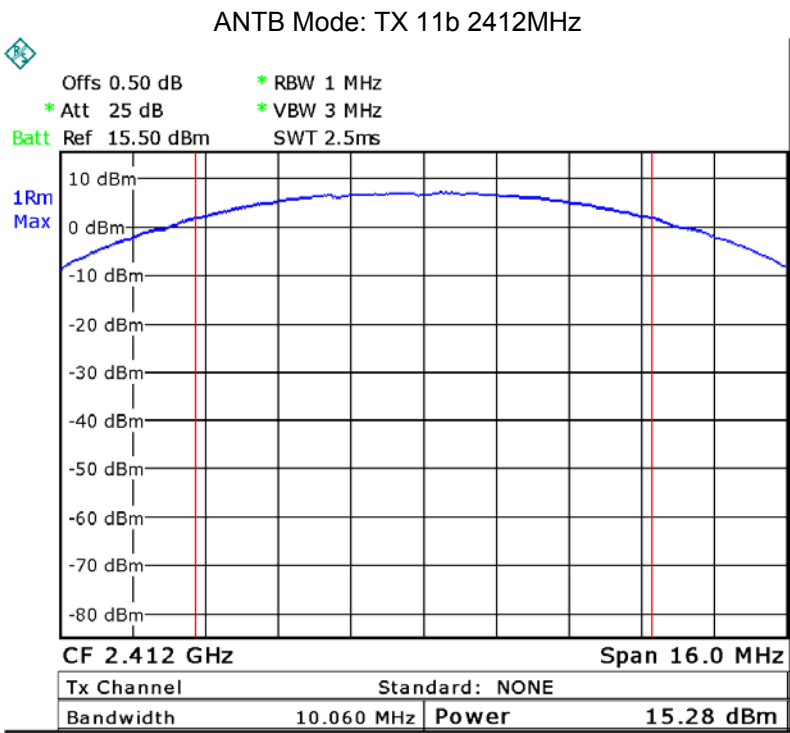


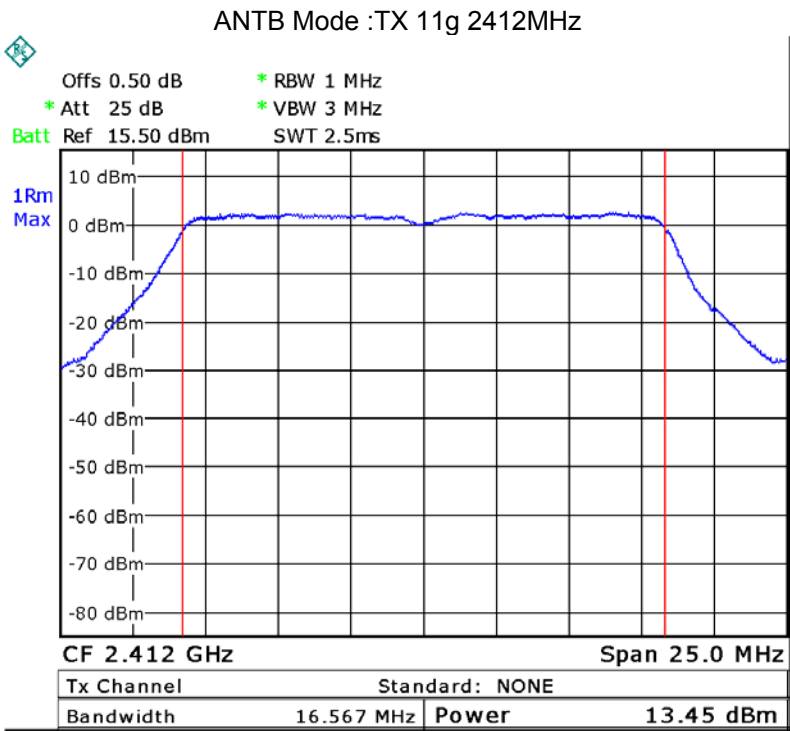
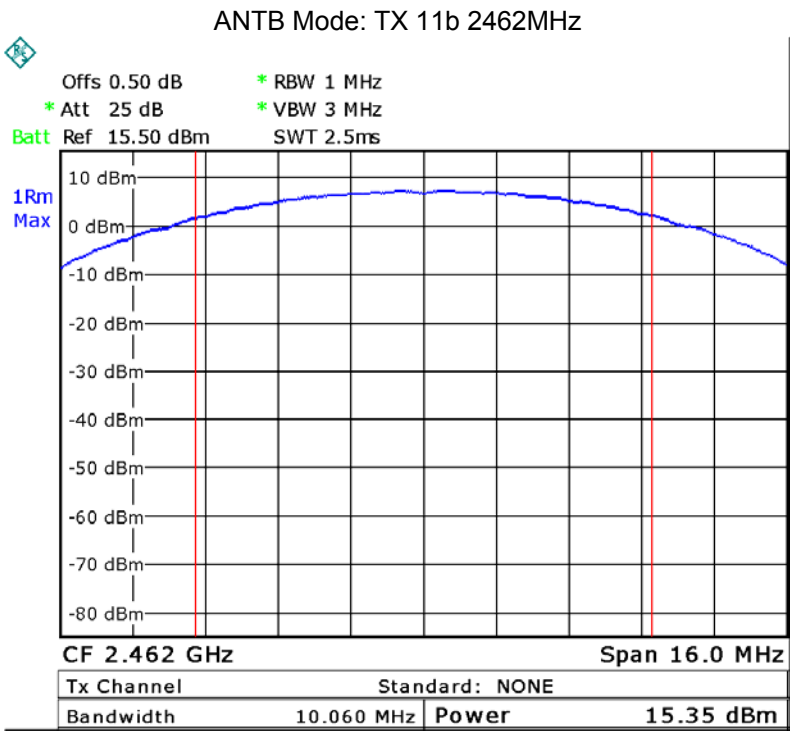


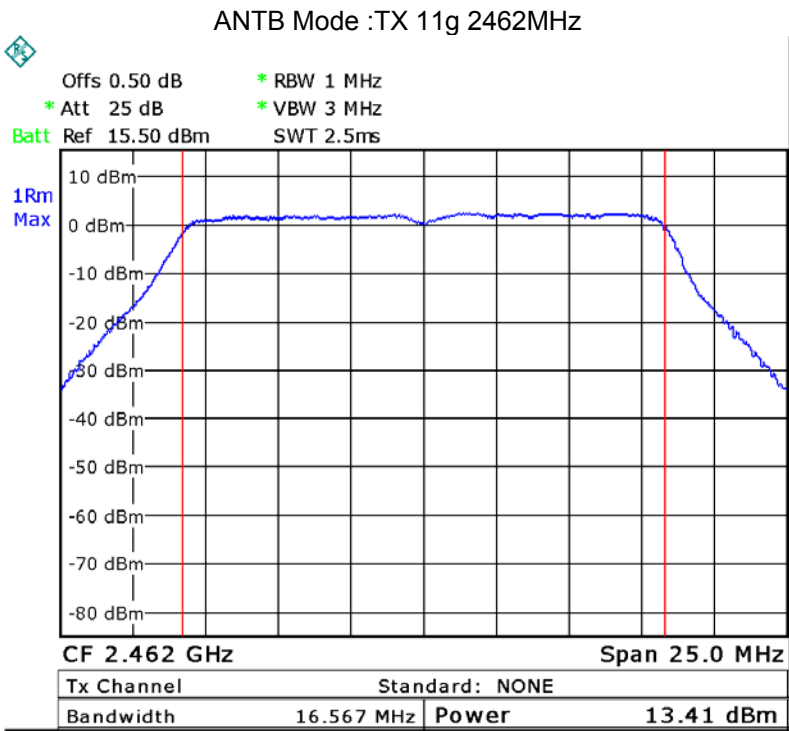
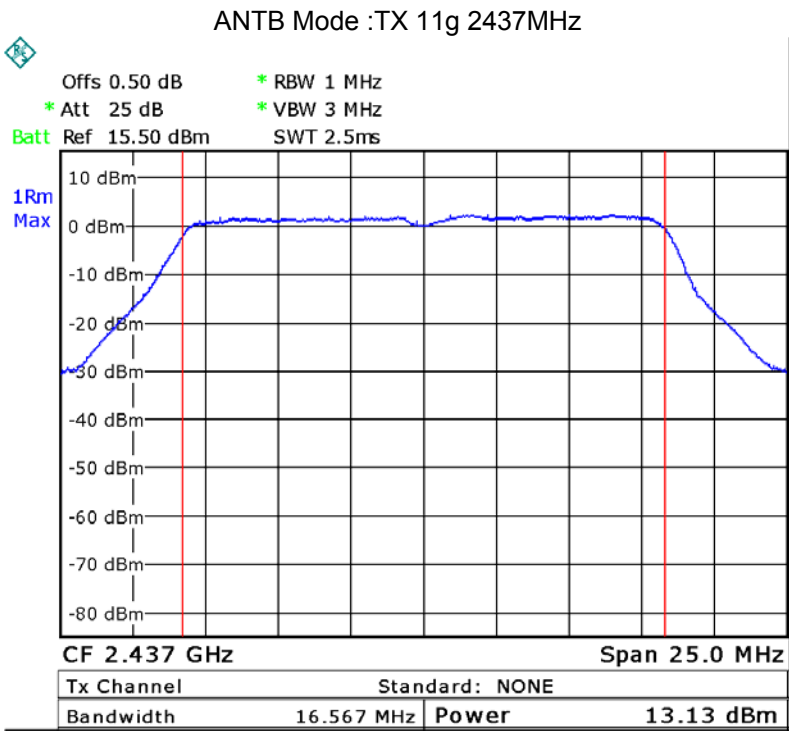


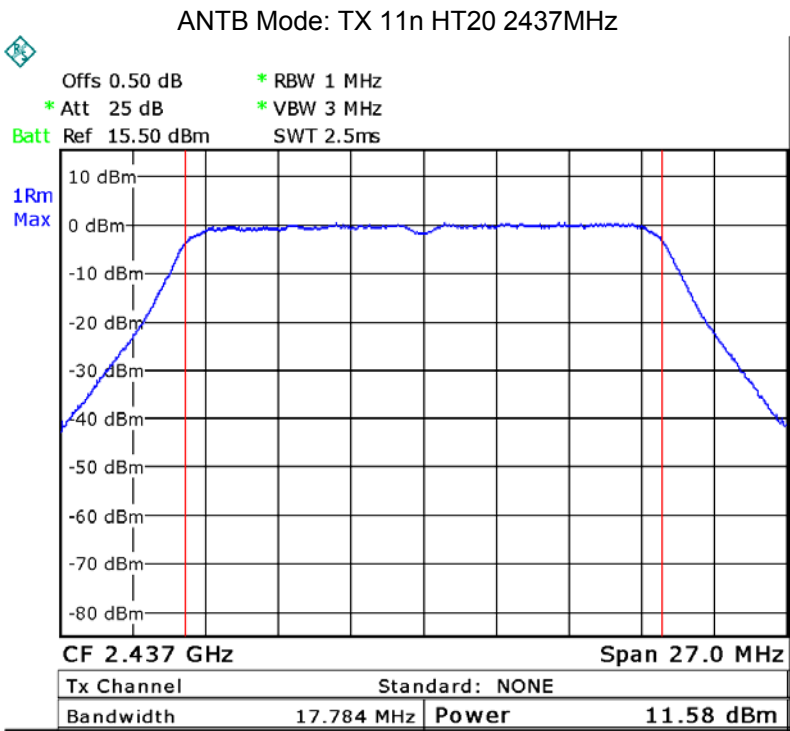
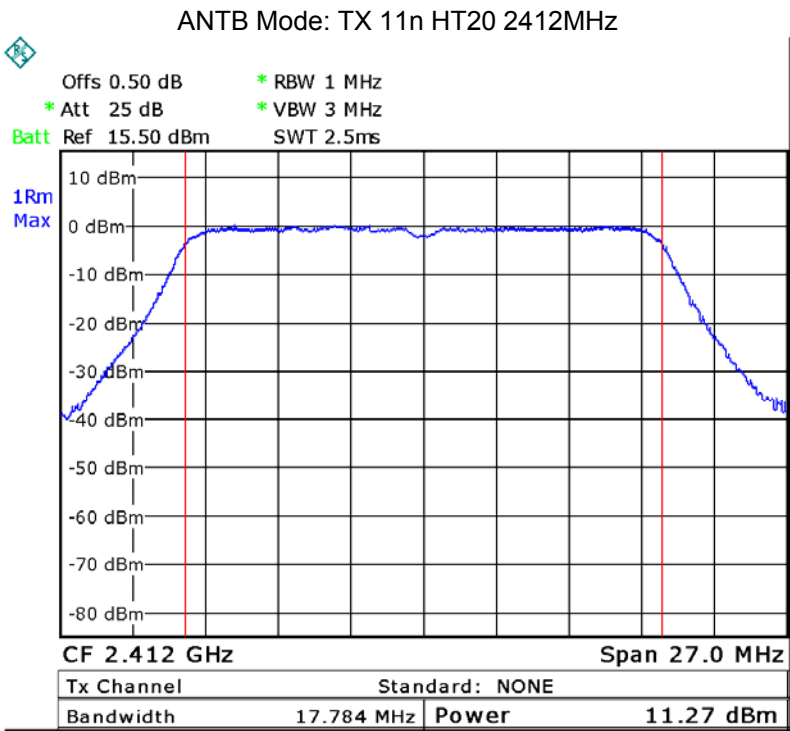


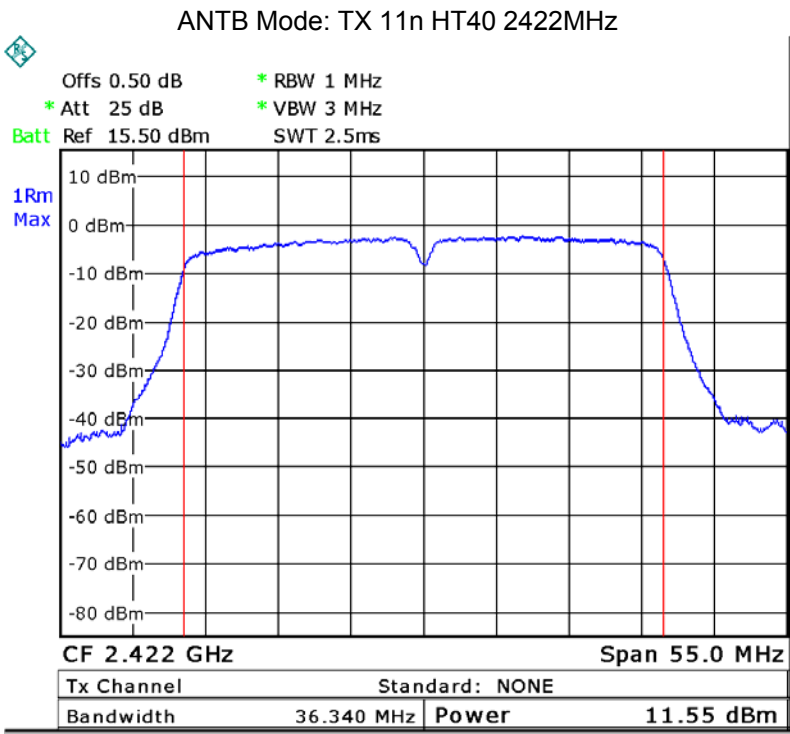
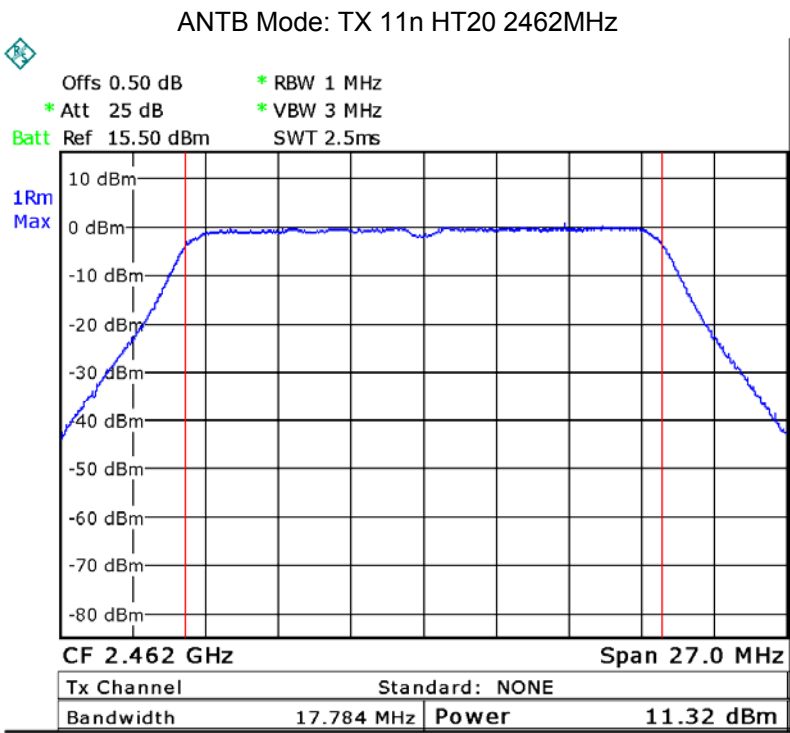


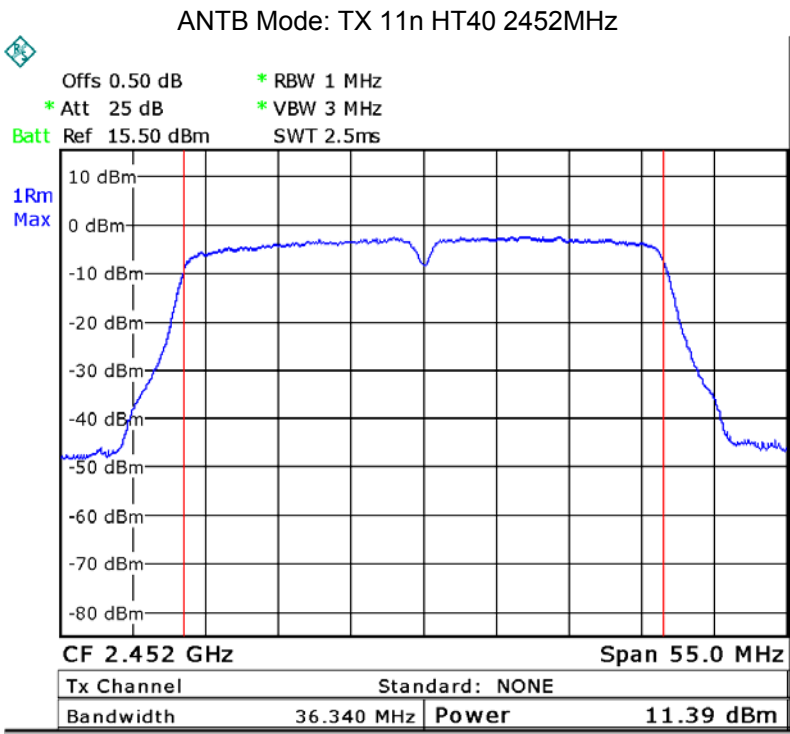
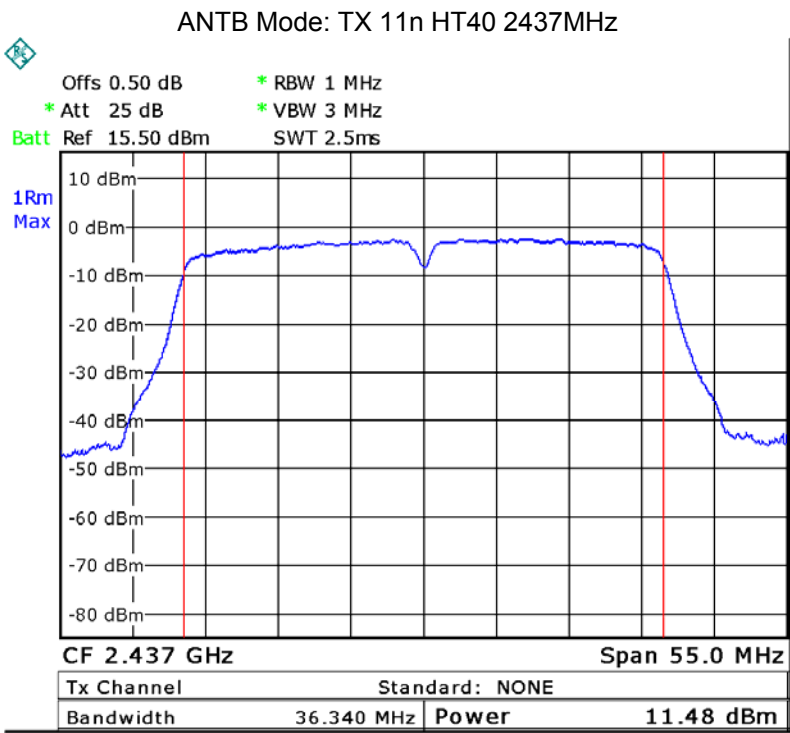












14 Power Spectral density

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 DTS Meas Guidance V04

14.1 Test Procedure:

558074 D01 DTS Meas Guidance V04

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section
Submit this plot.

14.2 Test Result:

ANTA

Test mode :TX 11b		
Power Spectral (dBm per 3kHz)		
2412MHz	2437MHz	2462MHz
-15.13	-16.04	-14.86
Limit: 8dBm per 3kHz		

Test mode :TX 11g		
Power Spectral (dBm per 3kHz)		
2412MHz	2437MHz	2462MHz
-16.96	-17.82	-16.69
Limit: 8dBm per 3kHz		

Test mode :TX 11n HT20		
Power Spectral (dBm per 3kHz)		
2412MHz	2437MHz	2462MHz
-18.79	-19.56	-19.25
Limit: 8dBm per 3kHz		

Test mode : TX 11n HT40		
Power Spectral (dBm per 3kHz)		
2422MHz	2437MHz	2452MHz
-20.97	-20.13	-21.79
Limit: 8dBm per 3kHz		

ANTB

Test mode :TX 11b		
Power Spectral (dBm per 3kHz)		
2412MHz	2437MHz	2462MHz
-15.89	-15.58	-15.30
Limit: 8dBm per 3kHz		

Test mode :TX 11g		
Power Spectral (dBm per 3kHz)		
2412MHz	2437MHz	2462MHz
-17.19	-18.16	-17.27
Limit: 8dBm per 3kHz		

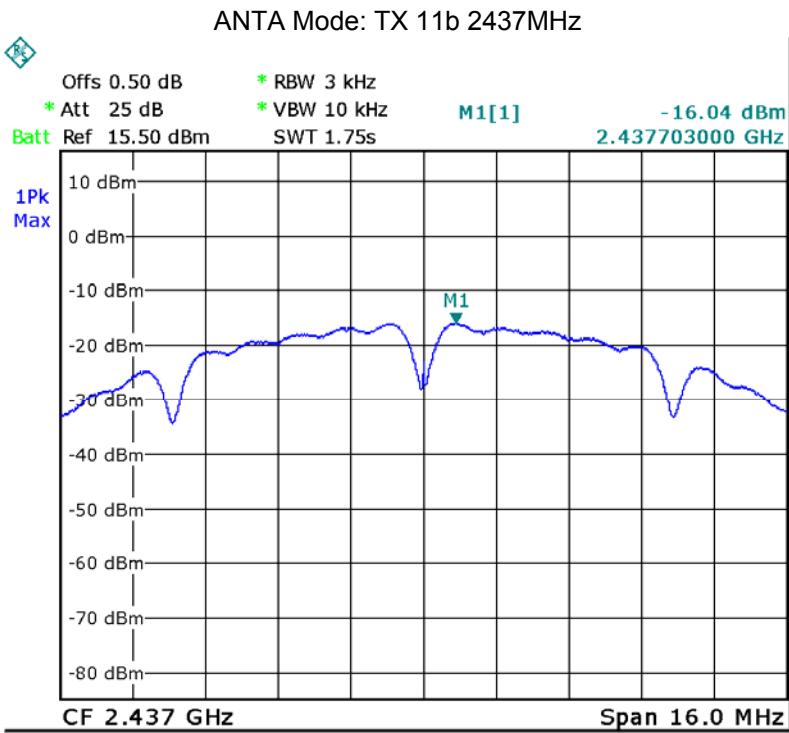
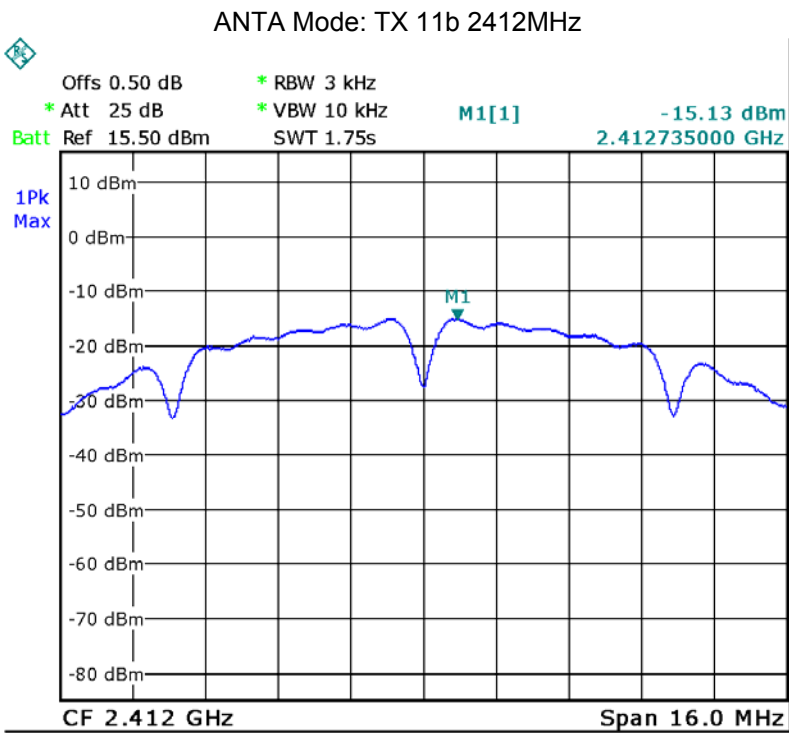
Test mode :TX 11n HT20		
Power Spectral (dBm per 3kHz)		
2412MHz	2437MHz	2462MHz
-18.88	-19.54	-19.38
Limit: 8dBm per 3kHz		

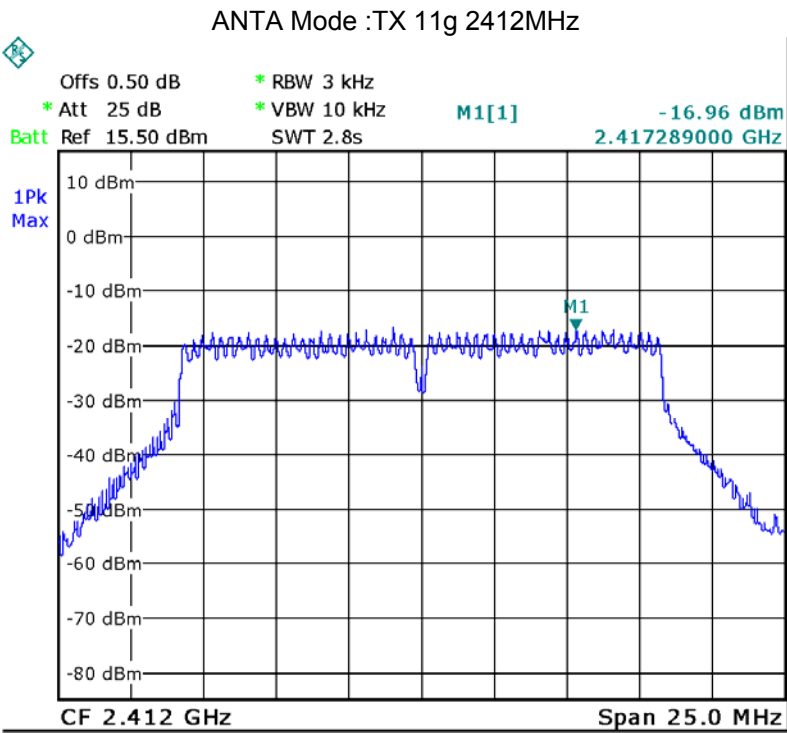
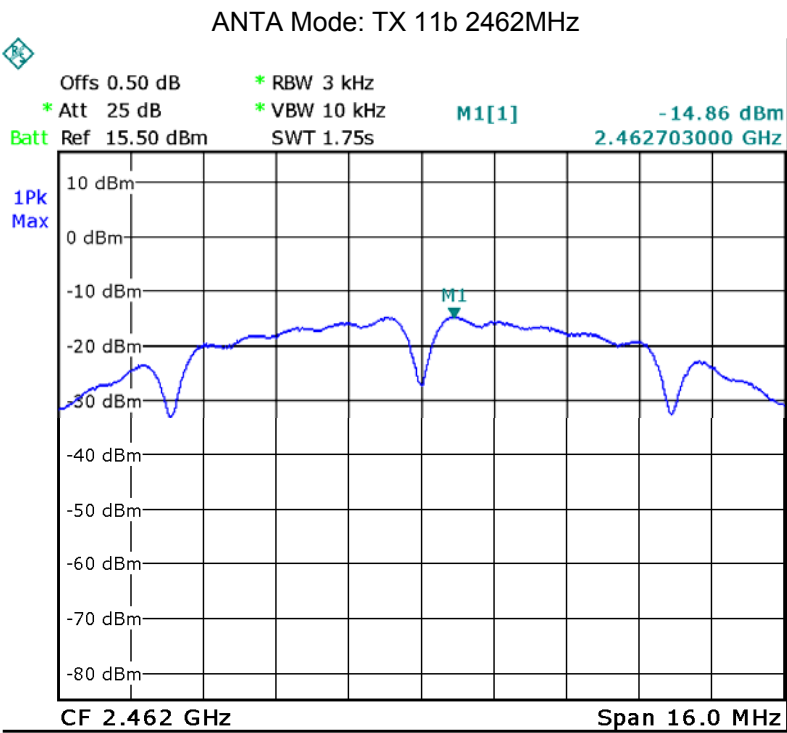
Test mode : TX 11n HT40		
Power Spectral (dBm per 3kHz)		
2422MHz	2437MHz	2452MHz
-20.21	-21.08	-19.79
Limit: 8dBm per 3kHz		

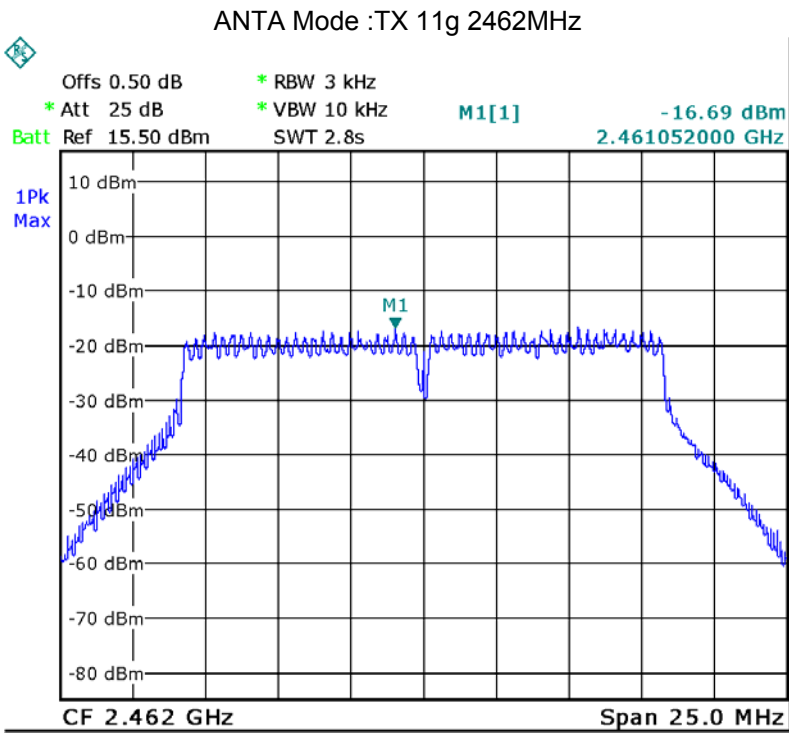
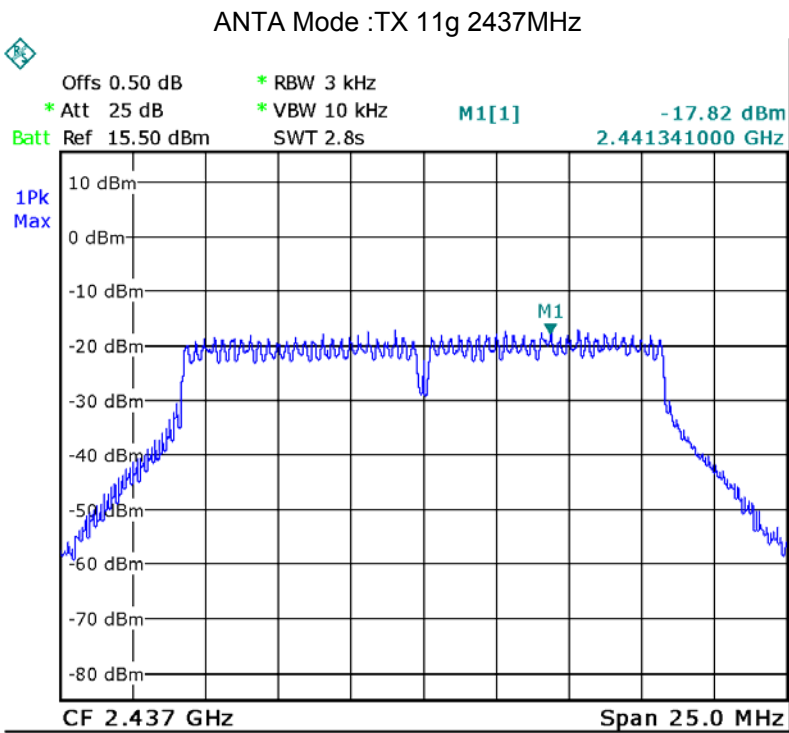
ANTA+ANTB

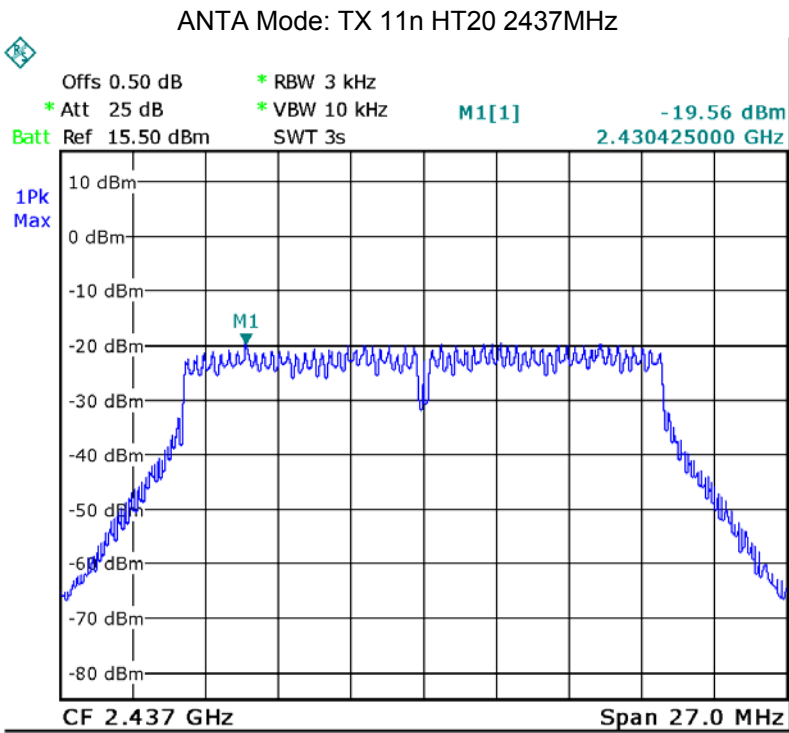
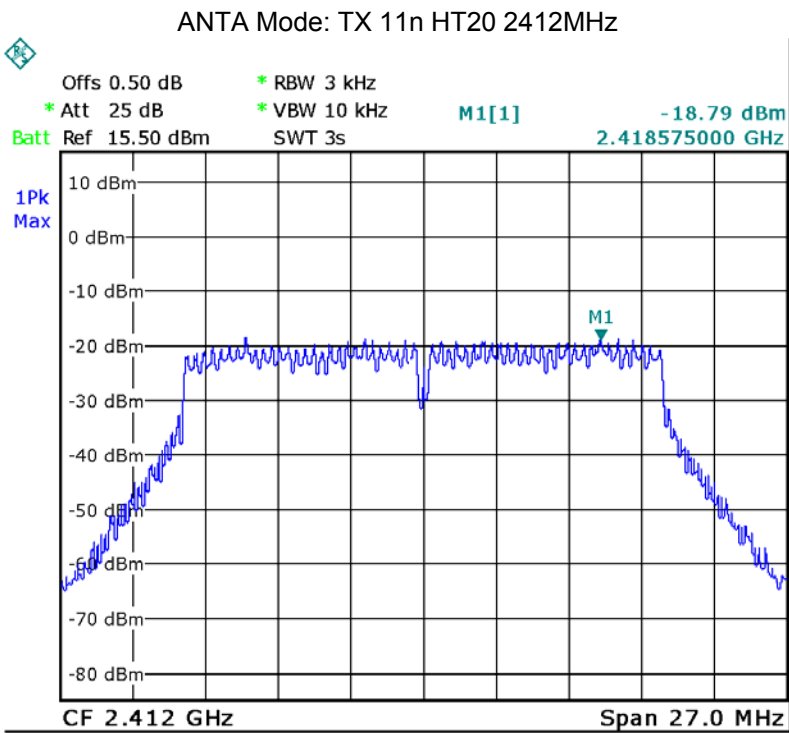
Test mode :TX 11n HT20		
Power Spectral (dBm per 3kHz)		
2412MHz	2437MHz	2462MHz
-15.82	-16.54	-16.30
Limit: 8dBm per 3kHz		

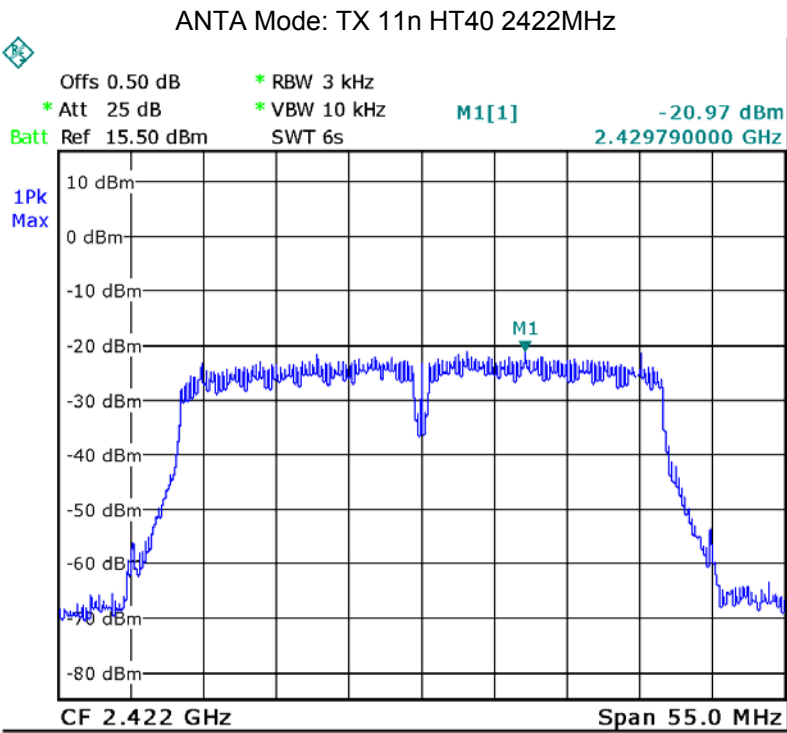
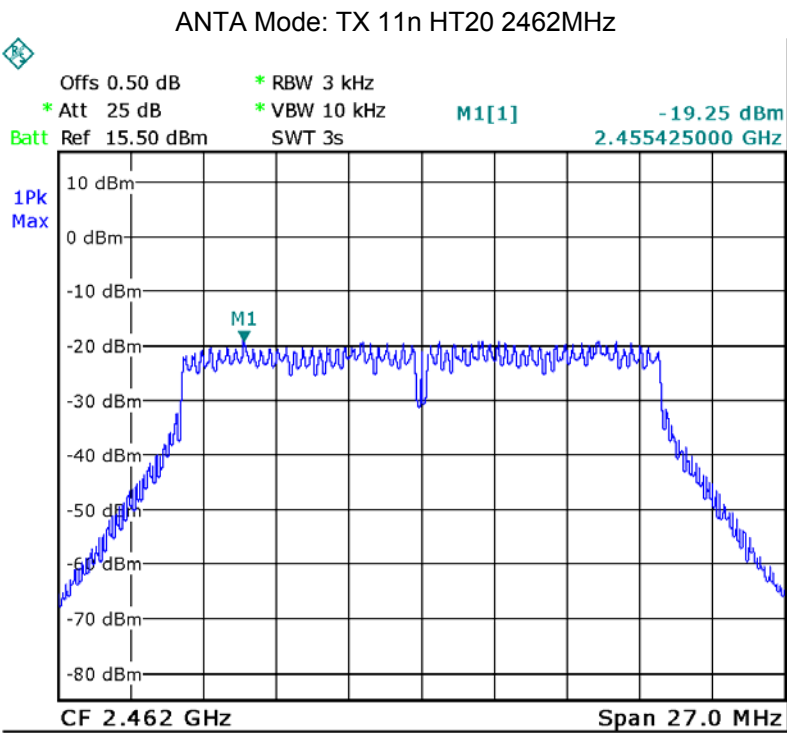
Test mode : TX 11n HT40		
Power Spectral (dBm per 3kHz)		
2422MHz	2437MHz	2452MHz
-17.56	-17.57	-17.67
Limit: 8dBm per 3kHz		

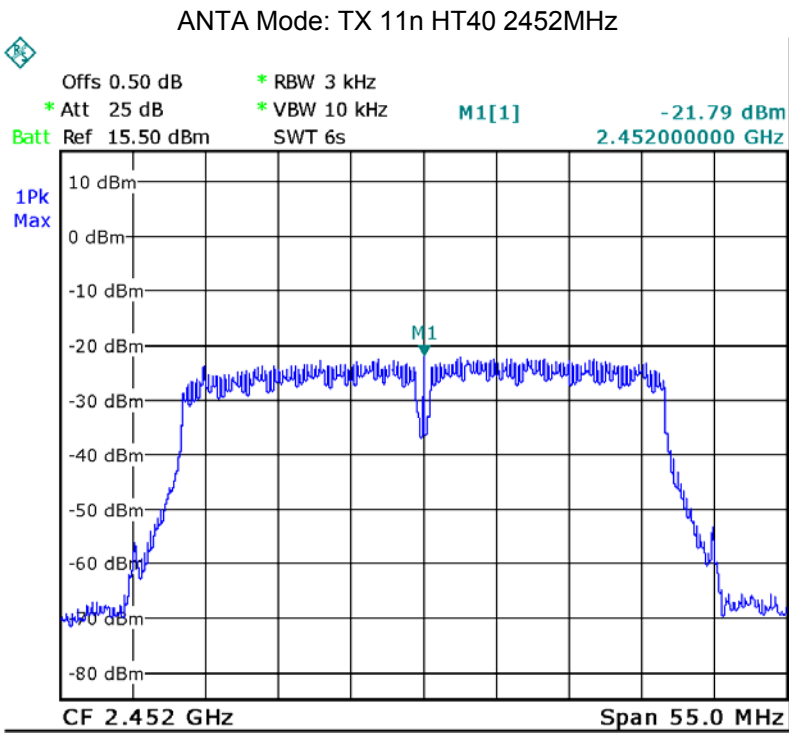
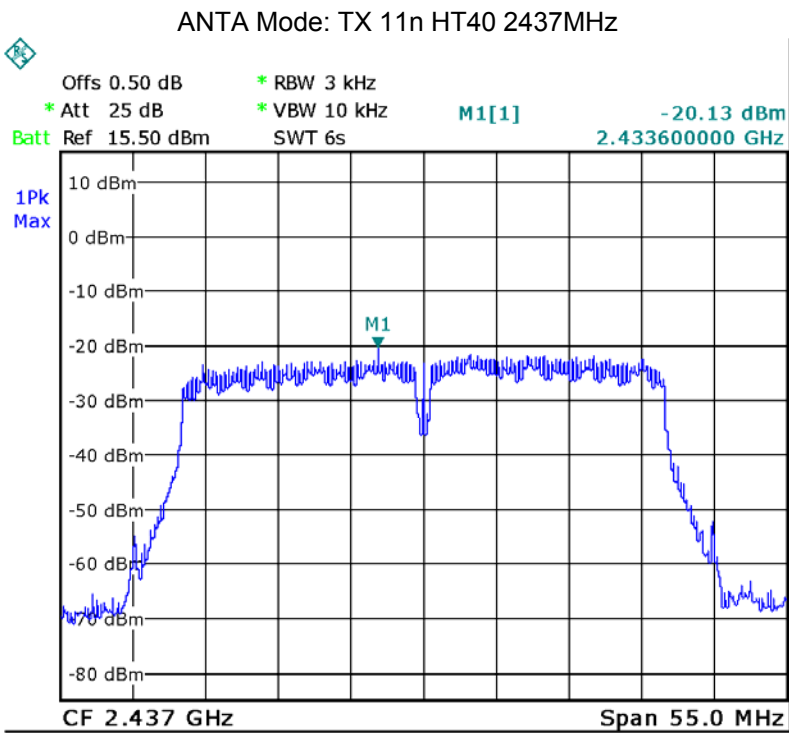


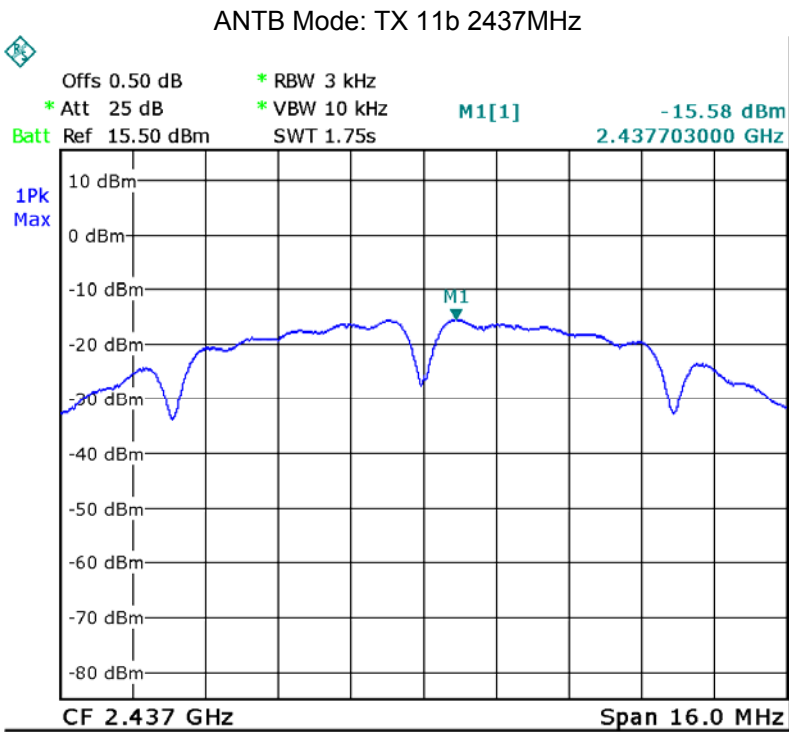
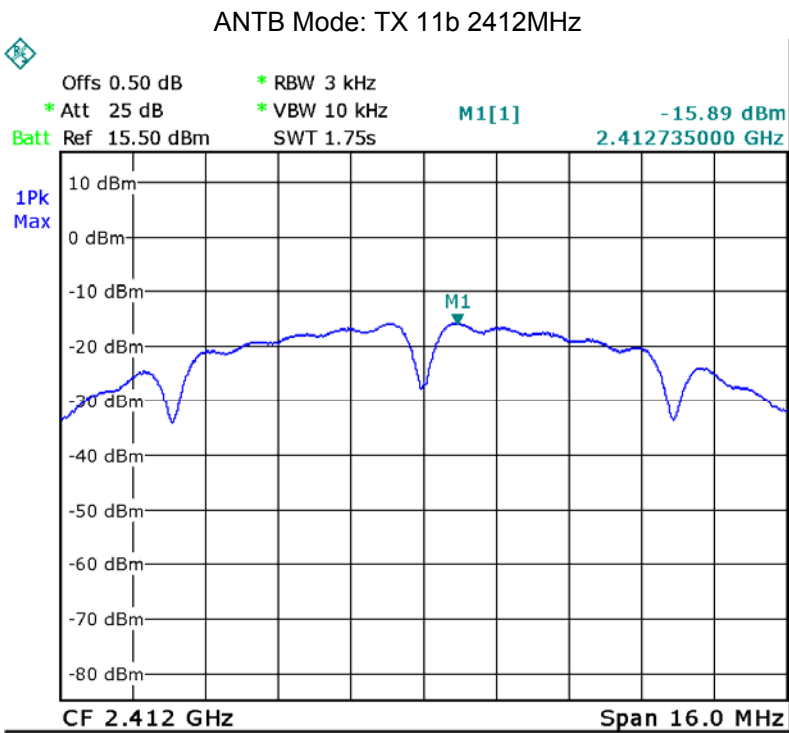


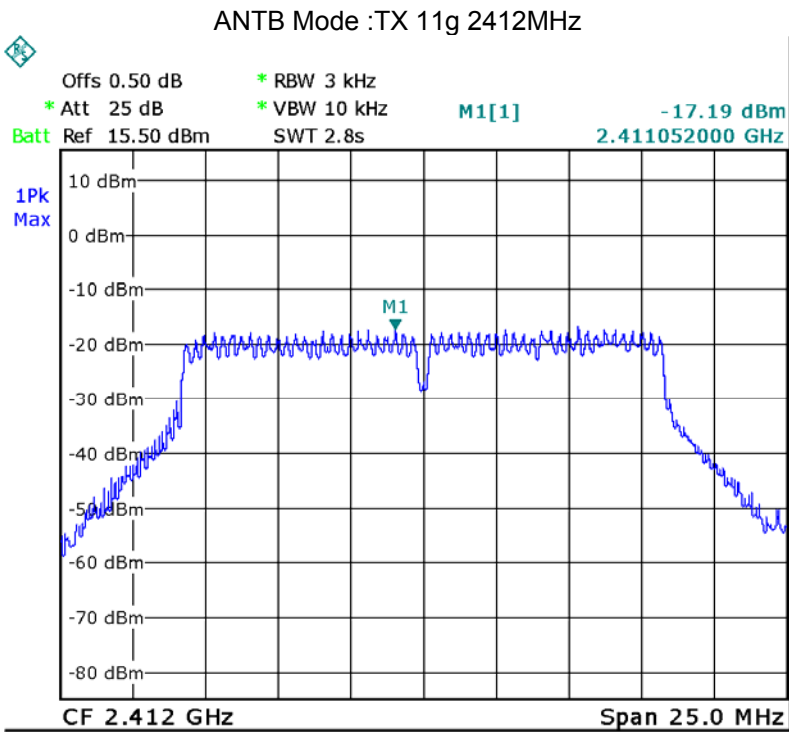
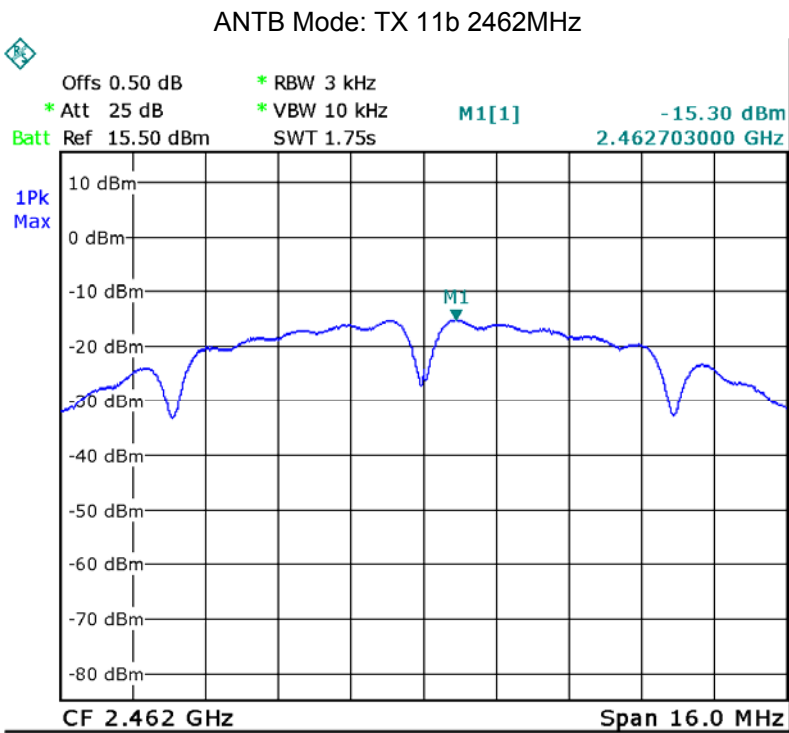


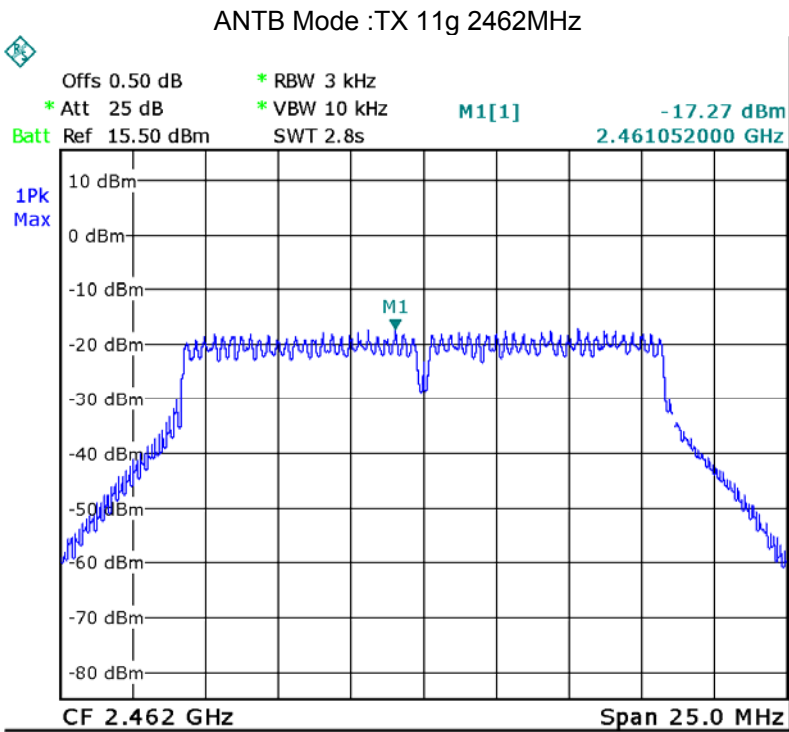
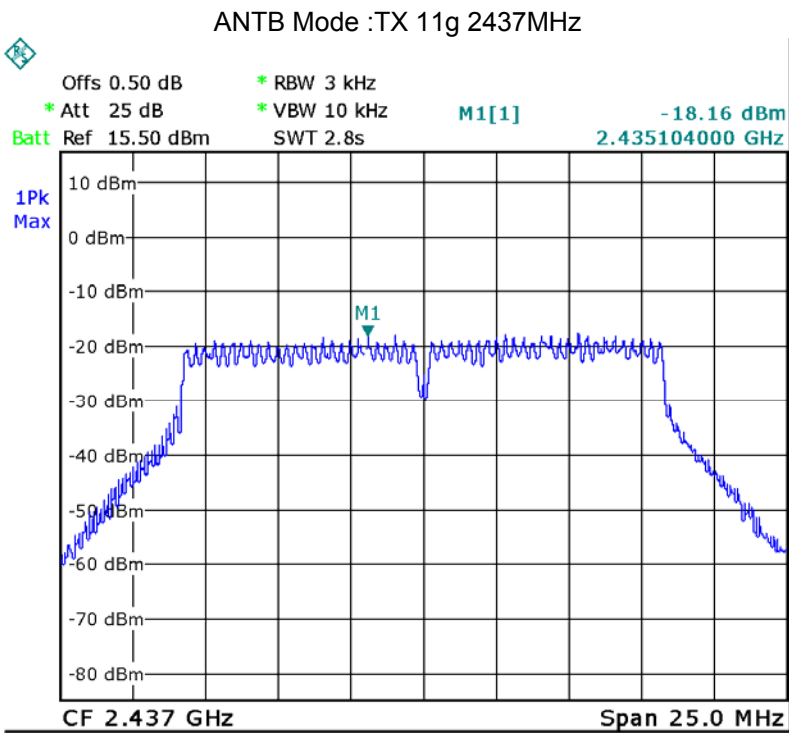


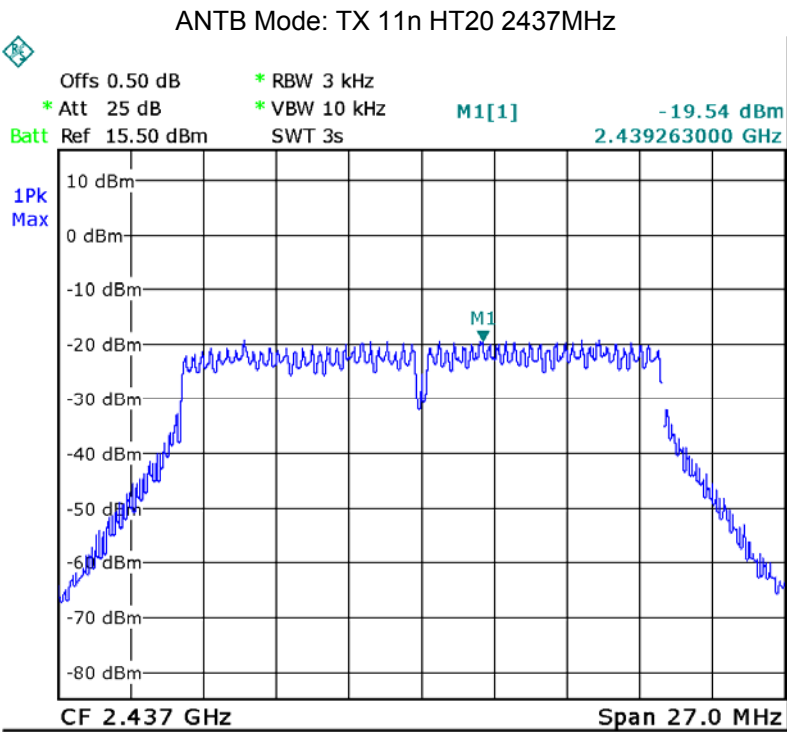
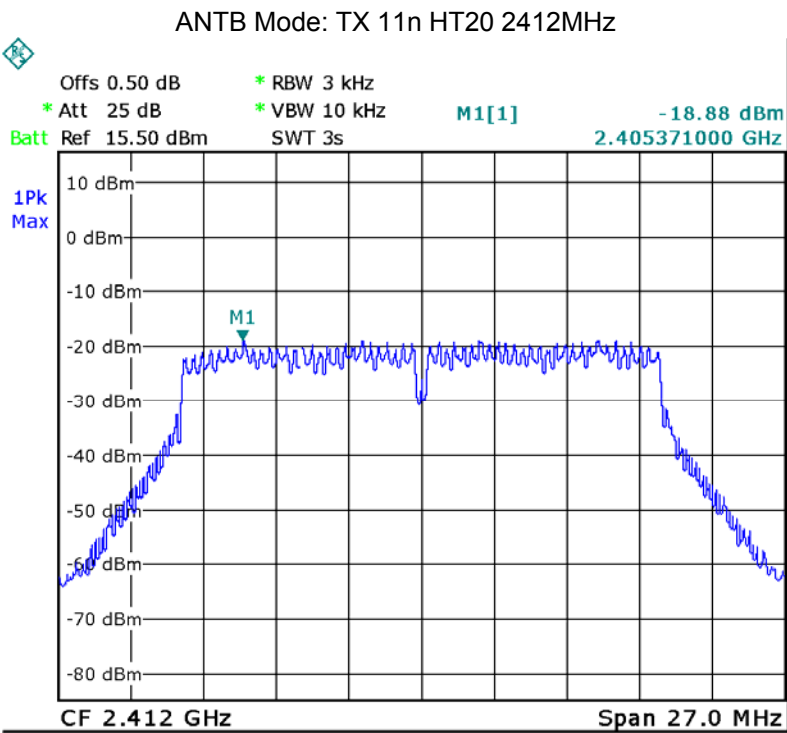


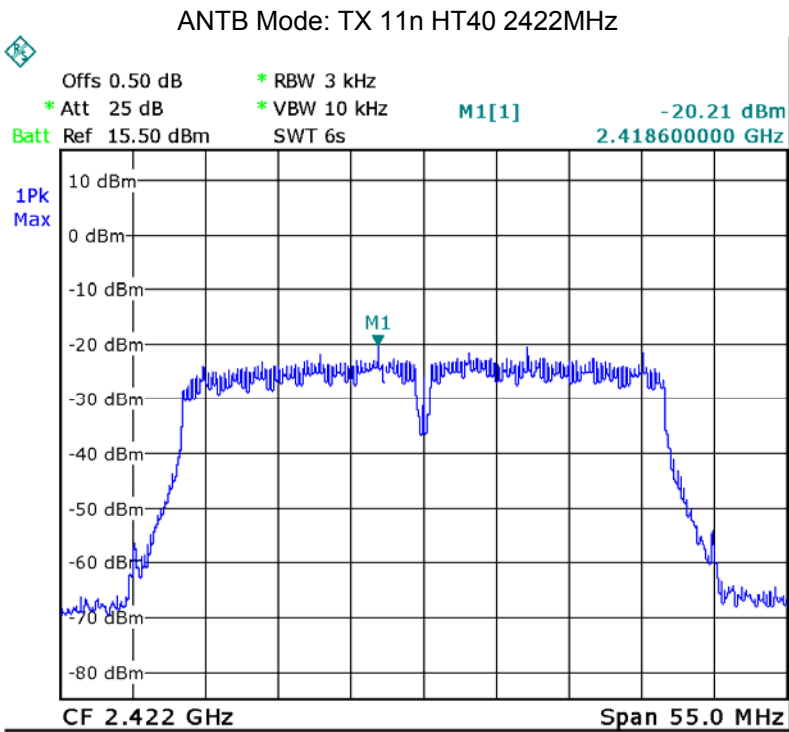
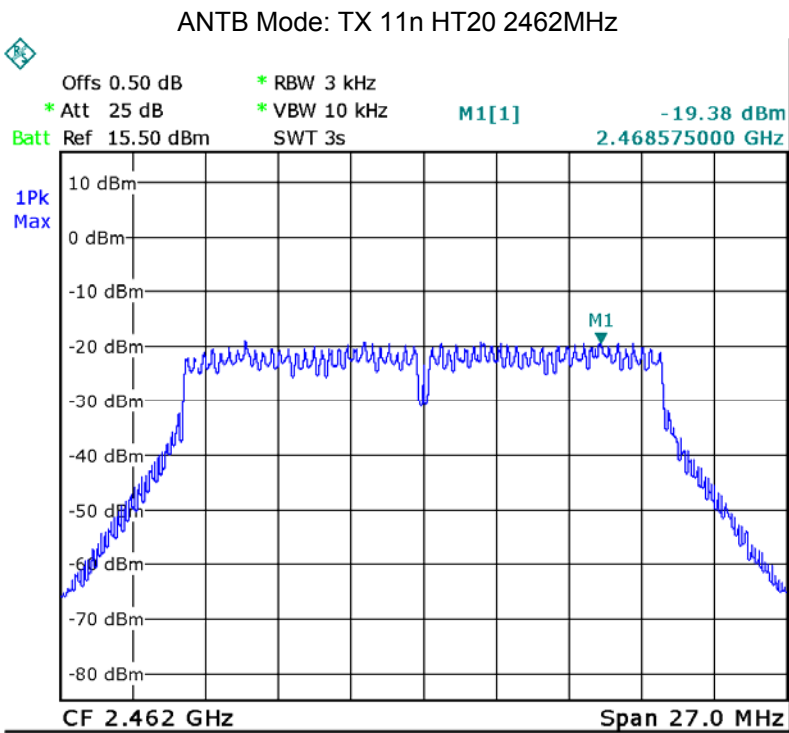


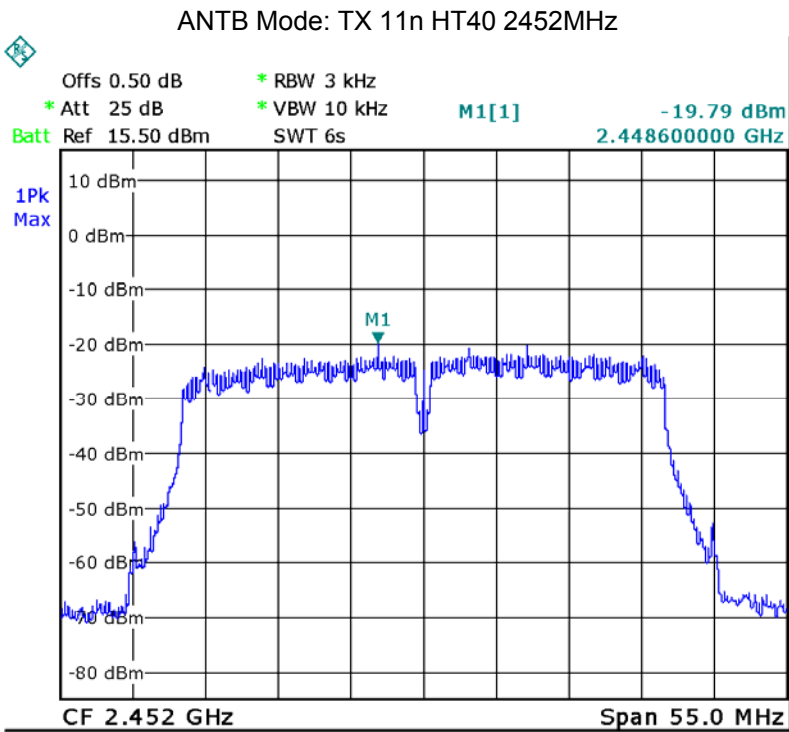
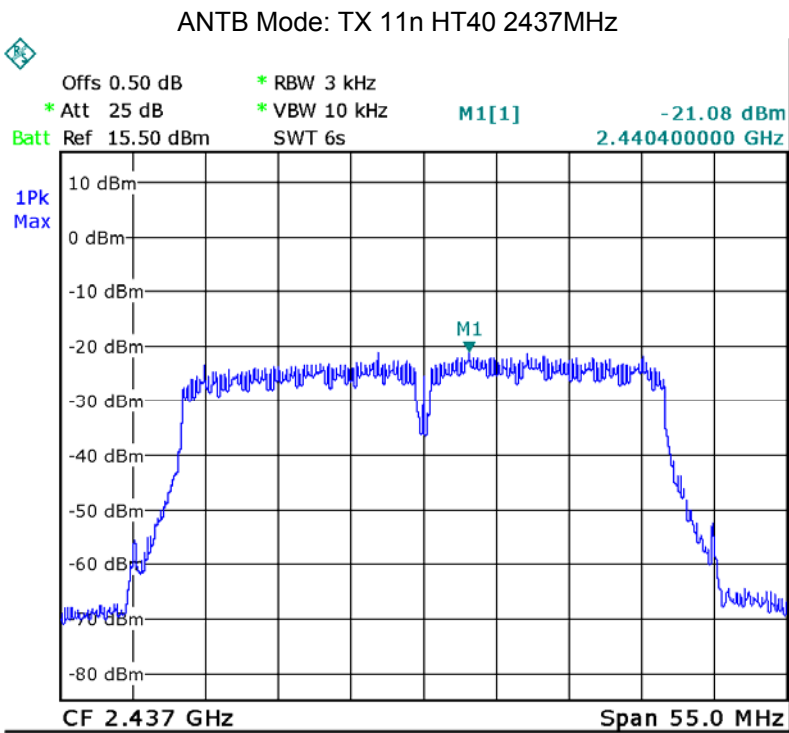












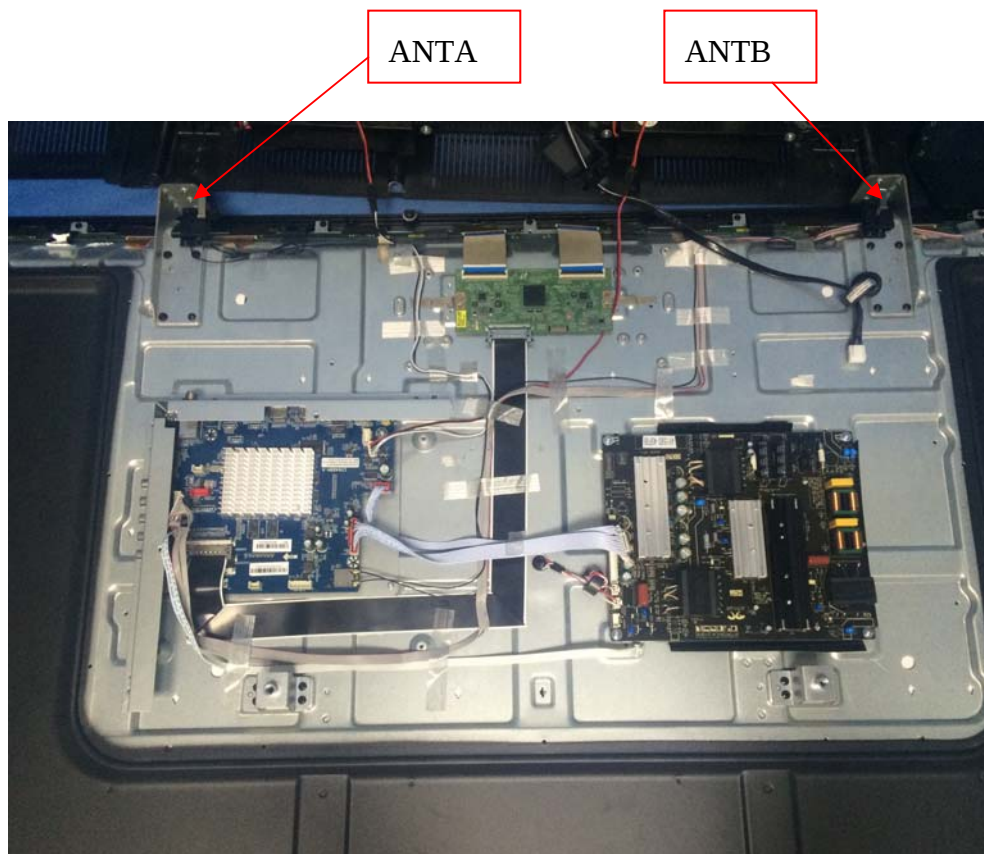
15 Antenna Requirement

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 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.

Result:

The EUT has two Internal Metal Antenna, meets the requirements of FCC 15.203.



16 RF Exposure

Test Requirement: FCC Part 1.1307

Evaluation Method: FCC Part 2.1091 & KDB 447498 D01 General RF Exposure Guidance v06

16.1 Requirements

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

16.2 The procedures / limit

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

16.3 MPE Calculation Method

$$S = \frac{P \times G}{4 \times \pi \times R^2}$$

S = power density (in appropriate units, e.g. mW/cm²)

P = output power to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

From the peak EUT RF output power, the minimum mobile separation distance, R=20cm, as well as the gain of the used antenna, the RF power density can be obtained

ANTA

Antenna Gain (dBi)	Antenna Gain (numeric)	Maximum conducted (average) output power (dBm)	Peak Output Power (mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)	Result
2.00	1.585	15.39	34.59	0.0109	1	Compliance

ANTB

Antenna Gain (dBi)	Antenna Gain (numeric)	Maximum conducted (average) output power (dBm)	Peak Output Power (mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)	Result
2.00	1.585	15.35	34.28	0.0108	1	Compliance

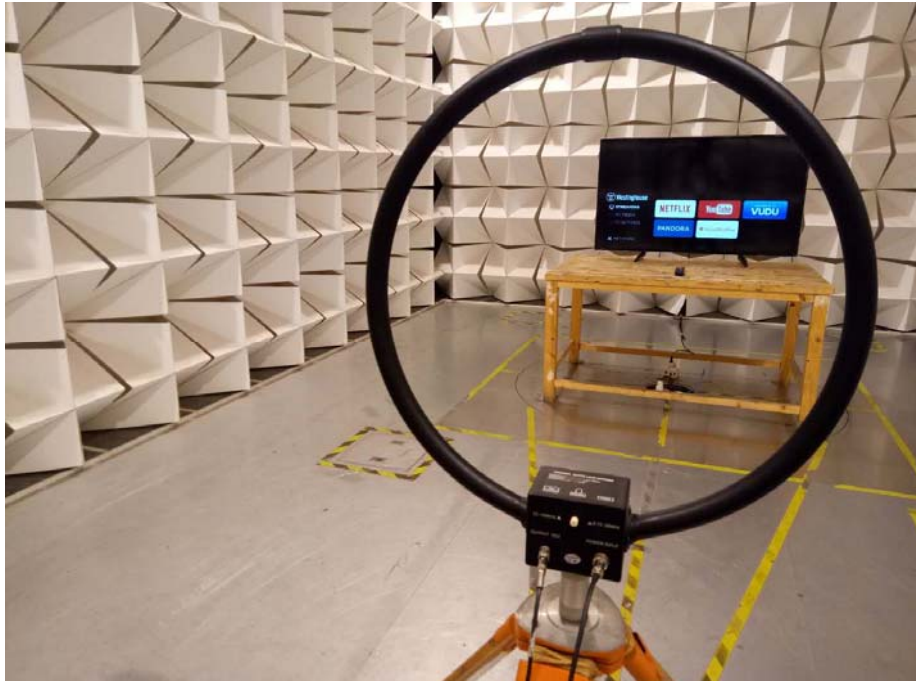
ANTA+ANTB

Antenna Gain (dBi)	Antenna Gain (numeric)	Maximum conducted (average) output power (dBm)	Peak Output Power (mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)	Result
2.00	1.585	14.47	27.99	0.0088	1	Compliance

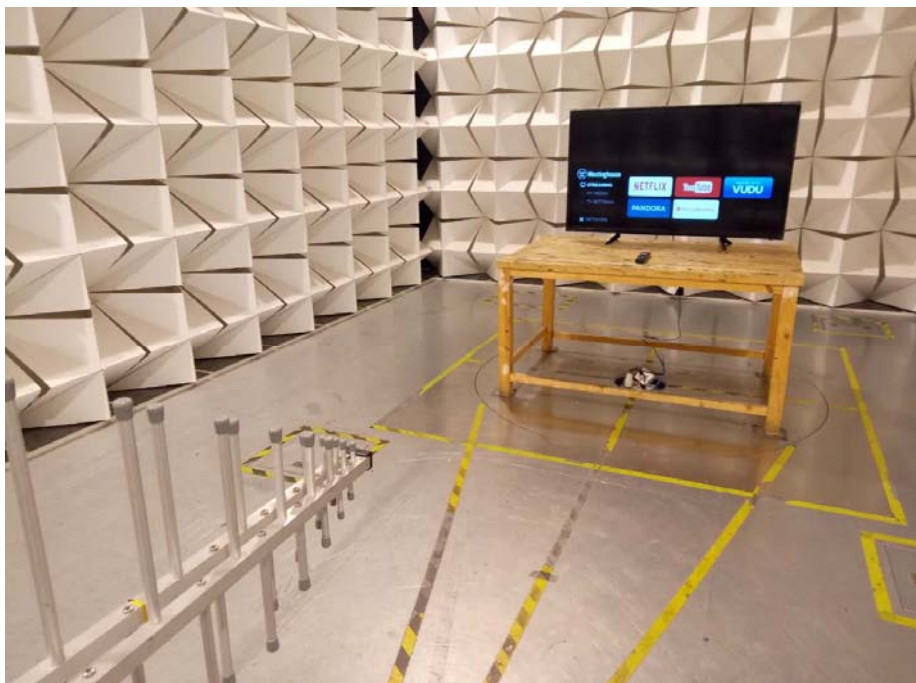
17 Photographs – Model WE55UDT108 Test Setup

17.1 Radiated Emission

Test frequency Below 30MHz



Test frequency from 30MHz to 1GHz



Test frequency above 1GHz



17.2 Conducted Emission



18 Photographs - Constructional Details

18.1 Model WE55UDT108-External Photos





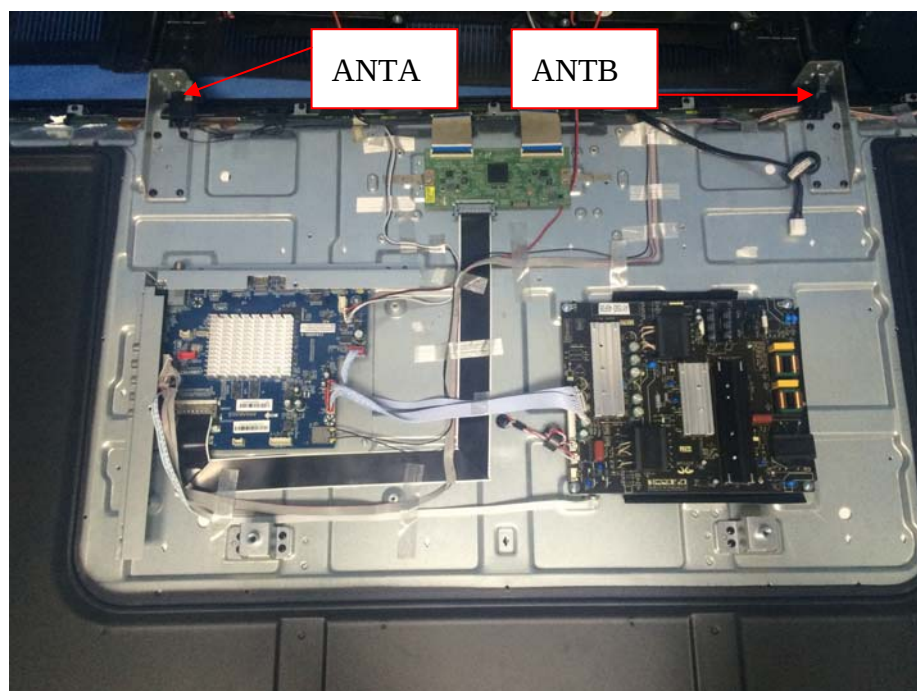


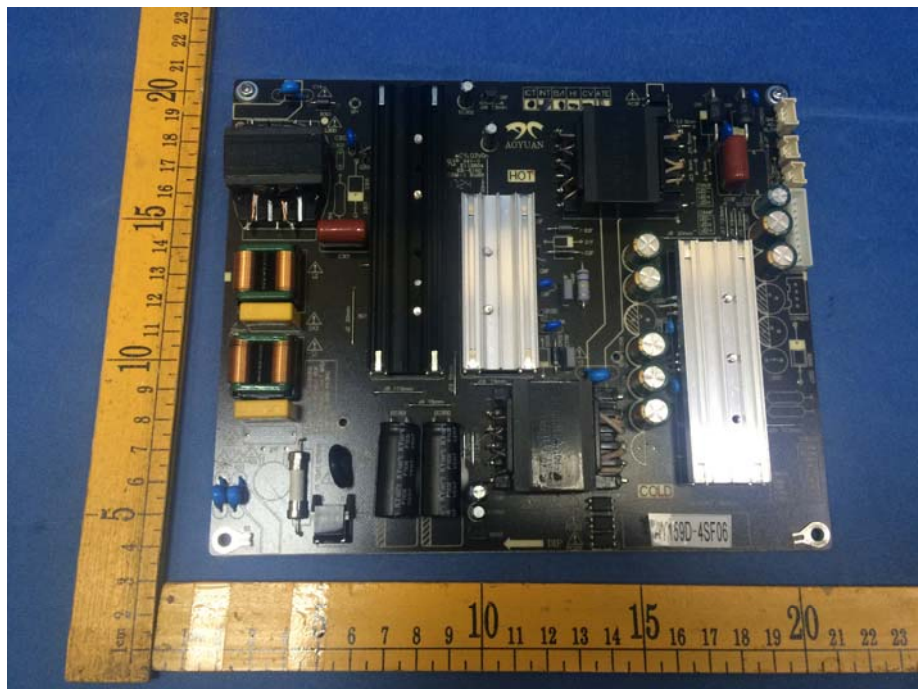


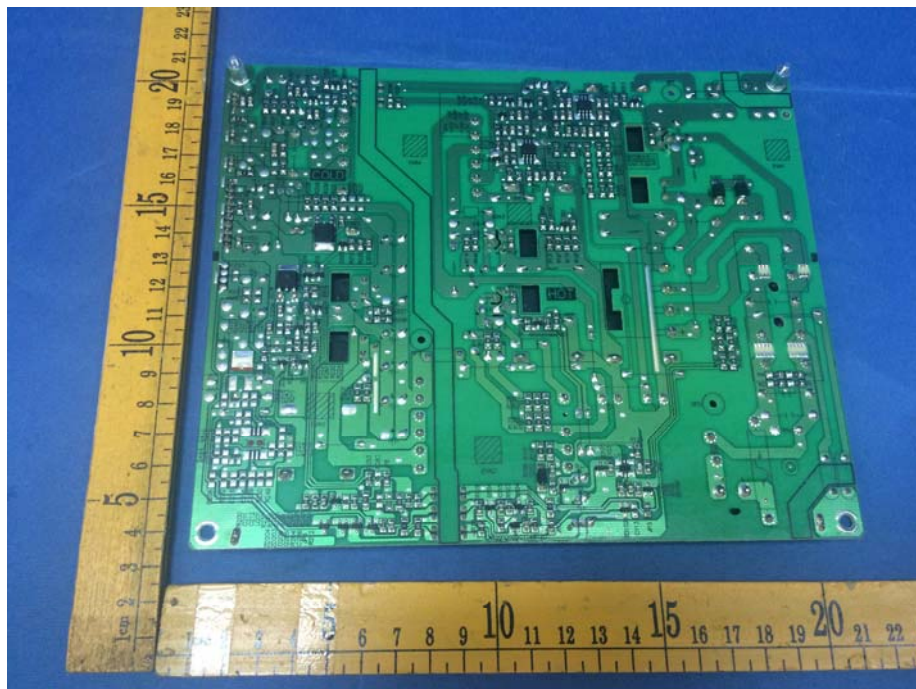
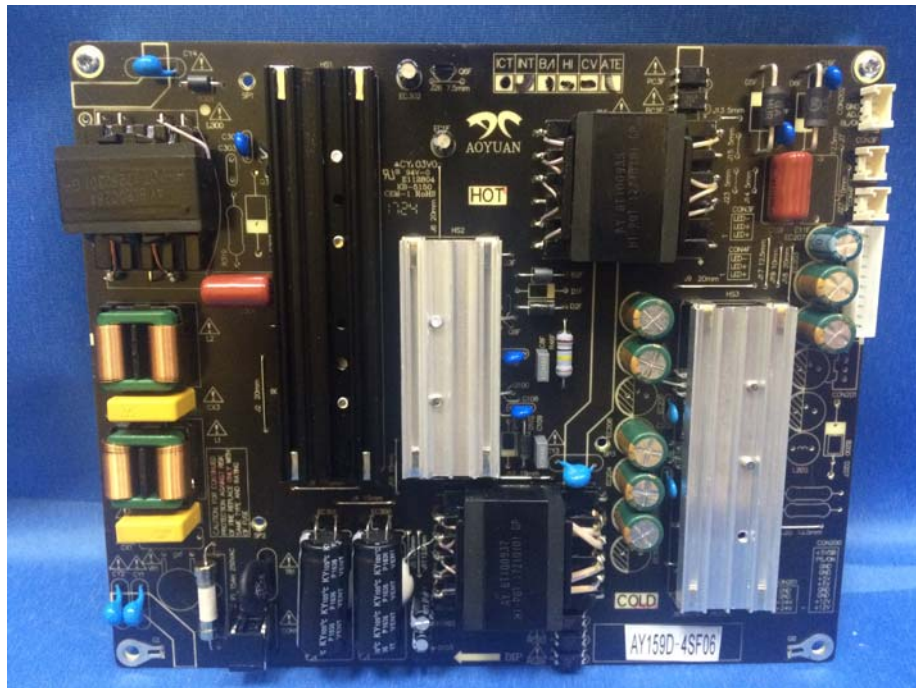


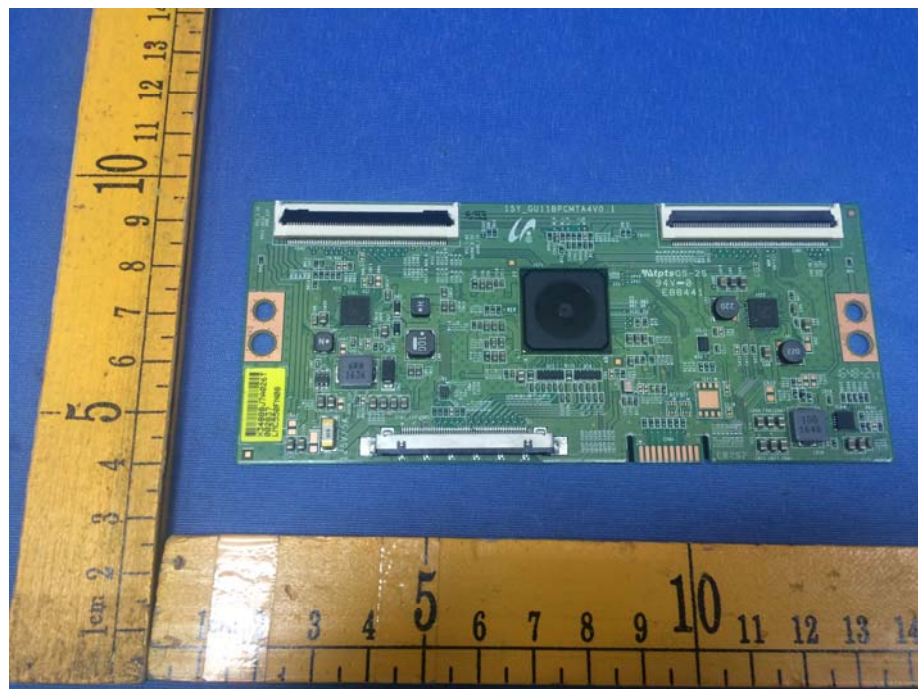


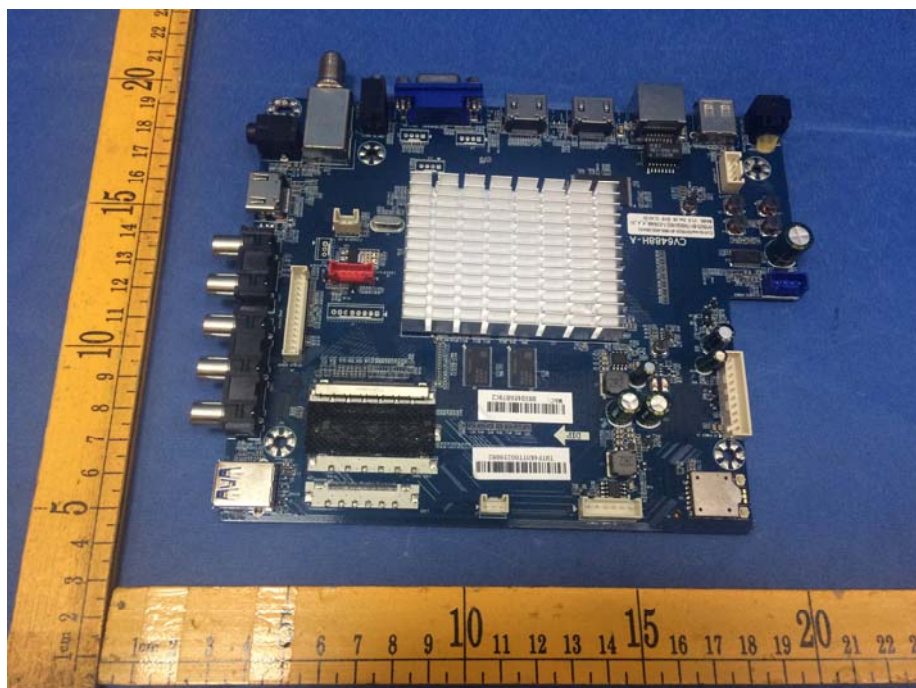
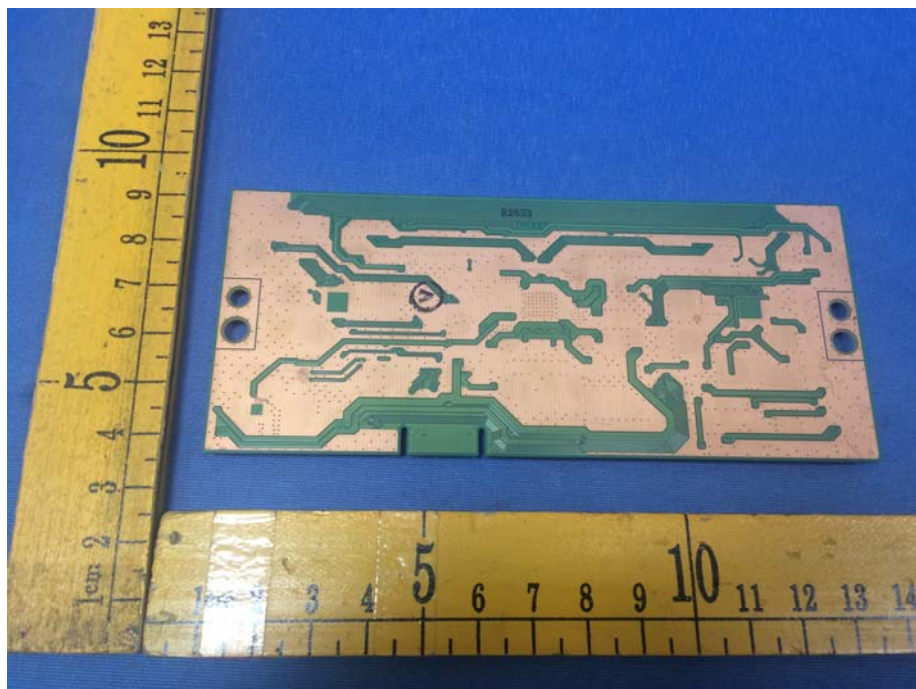
18.2 Model WE55UDT108-Internal Photos

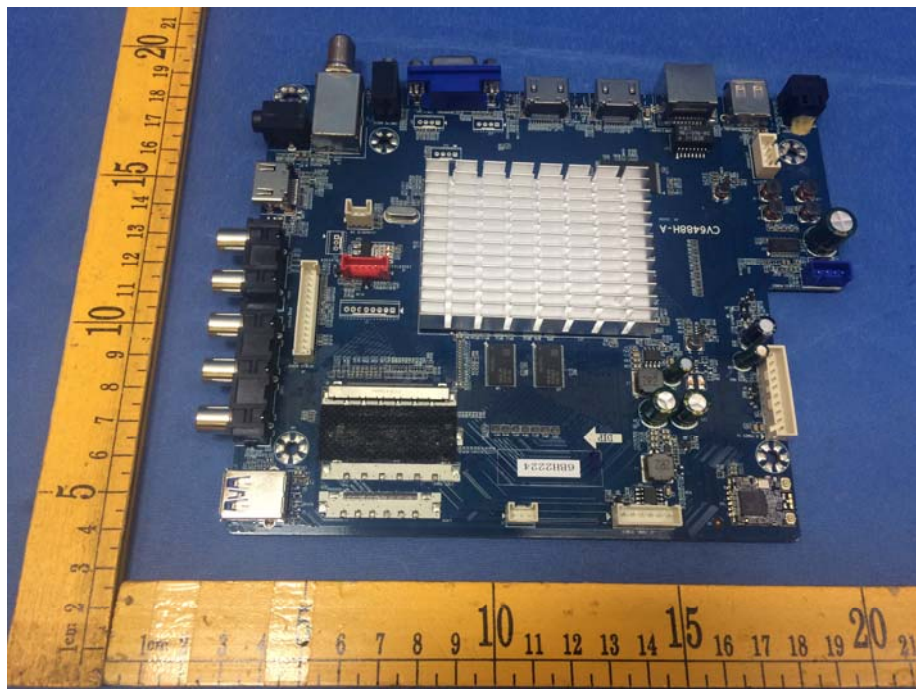
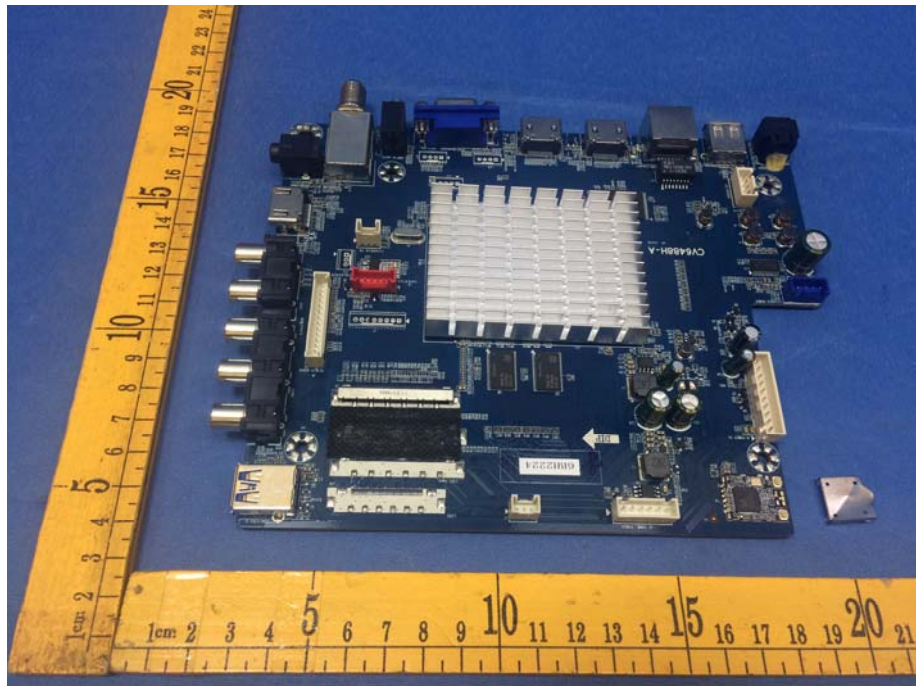


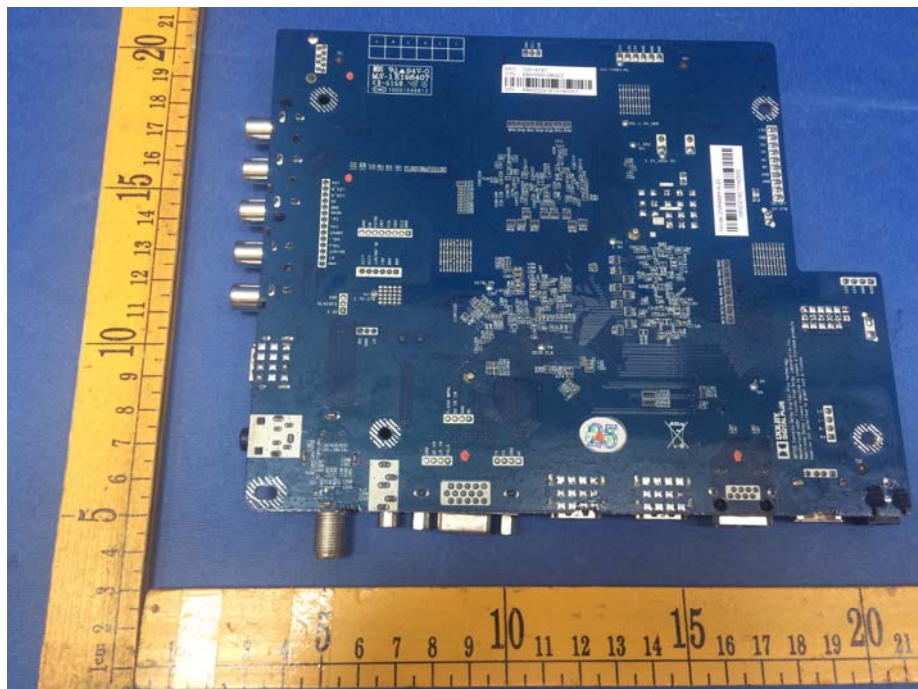
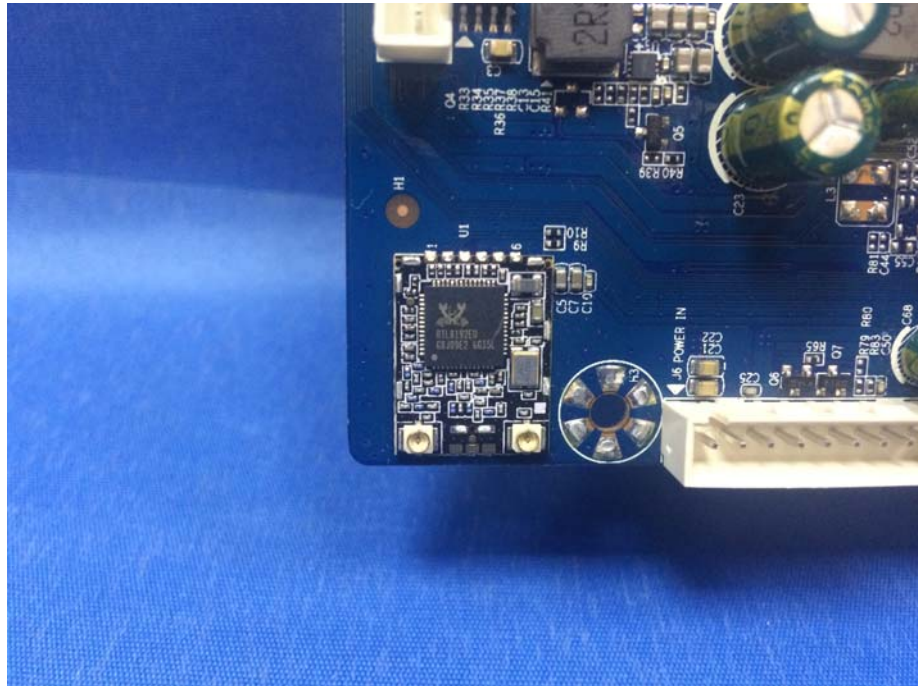












=====End of Report=====