TEST REPORT

Part 15E & RSS-247 (Issue 2)

Equipment under test WISENET SMARTCAM

Model name SNH-P6415BN

Derivative model SNH-P6416BN

FCC ID NLMSNHP6415BN

IC 21482-SNHP6415BN

Applicant Hanwha Techwin Co., Ltd.

Manufacturer Hanwha Techwin(Tianjin) Co., Ltd

Date of test(s) 2017.12.26 ~ 2018.01.11

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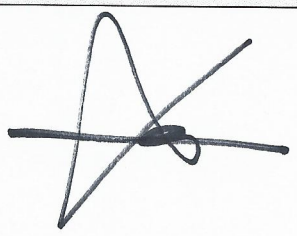	
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Revision history

Revision	Date of issue	Test report No.	Description
-	2018.01.15	KES-RF-18T0007	Initial

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1. General information

Applicant:	Hanwha Techwin Co., Ltd.
Applicant address:	1204, Changwon-daero, Seongsan-gu, Changwon-si Gyeongsangnam-do, South Korea
Test site:	KES Co., Ltd.
Test site address:	3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea 473-21, Gayeo-ro, Yeoju-si, Gyeonggi-do, Korea
Test Facility	FCC Accreditation Designation No.: KR0100, Registration No.: 444148 ISED Registration No.: 23298
FCC rule part(s):	15.247 / RSS-247
FCC ID:	NLMSNHP6415BN
IC Certification	21482-SNHP6415BN
Test device serial No.:	☒ Production ☐ Pre-production ☐ Engineering

1.1. EUT description

Equipment under test	WISENET SMARTCAM	
Frequency range		2 402 ㎒ ~ 2 480 ㎒ (LE)
		2 412 ㎒ ~ 2 462 ㎒ (11b/g/n_HT20)
		2 422 ㎒ ~ 2 452 ㎒ (11n_HT40)
	UNII-1	5 180 ㎒ ~ 5 240 ㎒ (11a/n_HT20, 11ac_VHT20)
		5 190 ㎒ ~ 5 230 ㎒ (11n_HT40 , 11ac_VHT40)
		5 210 ㎒ (11ac_VHT80)
	UNII-2A	5 260 ㎒ ~ 5 320 ㎒ (11a/n_HT20, 11ac_VHT20)
		5 270 ㎒ ~ 5 310 ㎒ (11n_HT40 , 11ac_VHT40)
		5 290 ㎒ (11ac_VHT80)
	UNII-2C	5 500 ㎒ ~ 5 720 ㎒ (11a/n_HT20, 11ac_VHT20)
		5 510 ㎒ ~ 5 710 ㎒ (11n_HT40 , 11ac_VHT40)
		5 530 ㎒ ~ 5 690 ㎒ (11ac_VHT80)
	UNII-3	5 745 ㎒ ~ 5 825 ㎒ (11a/n_HT20, 11ac_VHT20)
		5 755 ㎒ ~ 5 795 ㎒ (11n_HT40 , 11ac_VHT40)
		5 775 ㎒ (11ac_VHT80)
Model:	SNH-P6415BN	
Derivative model	SNH-P6416BN	
Modulation technique	WIFI : DSSS, OFDM	
	BT : GFSK	
Antenna specification	Antenna type(2.4㎓ WIFI) : Chip antenna, Peak gain : 3.50 ㏈i	
	Antenna type(BT, 5㎓ WIFI) : Chip antenna, Peak gain : 3.94 ㏈i	

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Power source	AC 120 V Adaptor (Output : DC 5.0V//2.0A)
Number of channels	2 402 ㎒ ~ 2 480 ㎒ (LE) : 40ch
	2 412 ㎒ ~ 2 462 ㎒ (11n_HT20) : 11ch
	2 422 ㎒ ~ 2 452 ㎒ (11n_HT40) : 7ch
	5 180 ㎒ ~ 5 240 ㎒ (11a/n_HT20, 11ac_VHT20) : 4ch
	5 190 ㎒ ~ 5 230 ㎒ (11a/n_HT40, 11ac_VHT40) : 2ch
	5 210 ㎒ (11ac_VHT80) : 1ch
	5 260 ㎒ ~ 5 320 ㎒ (11a/n_HT20, 11ac_VHT20) : 4ch
	5 270 ㎒ ~ 5 310 ㎒ (11a/n_HT20, 11ac_VHT40) : 2ch
	5 290 ㎒ (11ac_VHT80) : 1ch
	5 500 ㎒ ~ 5 720 ㎒ (11a/n_HT20, 11ac_VHT20) : 12ch
	5 510 ㎒ ~ 5 710 ㎒ (11a/n_HT20, 11ac_VHT40) : 6ch
	5 530 ㎒ ~ 5 690 ㎒ (11ac_VHT80) : 3ch
	5 745 ㎒ ~ 5 825 ㎒ (11a/n_HT20, 11ac_VHT20) : 5ch
	5 755 ㎒ ~ 5 795 ㎒ (11n_HT40 , 11ac_VHT40) : 2ch
	5 775 ㎒ (11ac_VHT80) : 1ch

1.2. Test configuration

The **Hanwha Techwin Co., Ltd. WISENET SMARTCAM FCC ID: NLMSNHP6415BN , IC: 21482-SNHP6415BN** was tested according to the specification of EUT, the EUT must comply with following standards and KDB documents.

FCC Part 15.407
IC RSS-247 Issue 2 and RSS-Gen Issue 4
KDB 789033 D02 v02r01
ANSI C63.10-2013

1.3. Information about derivative model

The difference between basic and derivative model is external color, the other circuit diagram and software are fundamentally the same.

- Basic model(SNH-P6415BN) : White color
- Derivative model(SNH-P6416BN) : Black color

1.4. Accessory information

Equipment	Manufacturer	Model	Serial No.	Power source
-	-	-	-	-

1.5. Software and Firmware description

The software and firmware installed in the EUT is version 1.00_180109.

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1.6. Measurement results explanation example

For all conducted test items :

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).
= 1.01 + 10 = 11.01 (dB)

1.7 Measurement Uncertainty

Test Item		Uncertainty
Uncertainty for Conduction emission test		2.62 dB
Uncertainty for Radiation emission test (include Fundamental emission)	9kHz - 30MHz	4.54 dB
	30MHz - 1GHz	4.36 dB
	Above 1GHz	5.00 dB
Note. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.		

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1.8 Frequency/channel operations

UNII-1		UNII-2A		UNII-2C		UNII-3	
Ch.	**Frequency (㎒)**	**Ch.**	**Frequency (㎒)**	**Ch.**	**Frequency (㎒)**	**Ch.**	**Frequency (㎒)**
36	5 180	52	5 260	100	5 500	149	5 745
44	5 220	56	5 280	120	5 600	157	5 785
48	5 240	64	5 320	144	5 720	165	5 825

Table 1.8-1. 802.11a/n/ac_HT20/VHT20 mode

UNII-1		UNII-2A		UNII-2C		UNII-3	
Ch.	**Frequency (㎒)**	**Ch.**	**Frequency (㎒)**	**Ch.**	**Frequency (㎒)**	**Ch.**	**Frequency (㎒)**
38	5 190	54	5 270	102	5 510	151	5 755
46	5 230	62	5 310	118	5 590	159	5 795
				142	5 710		

Table 1.8-2. 802.11a/n/ac_HT40/VHT40 mode

UNII-1		UNII-2A		UNII-2C		UNII-3	
Ch.	**Frequency (㎒)**	**Ch.**	**Frequency (㎒)**	**Ch.**	**Frequency (㎒)**	**Ch.**	**Frequency (㎒)**
42	5 210	58	5 290	106	5 530	155	5 775
				122	5 610		
				138	5 690		

Table 1.8-3 802.11ac_VHT80 mode

1.9. Maximum average output power

Refer to the average output power.

Note.

1. Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.
2. Worst-case data rates as provided by the client were:
   UNII-1 a : **54 Mbps** , n_HT20/40 : **MCS7**, ac_VHT20 : **MCS8**, ac_VHT40/80 : **MCS9**
   UNII-2A a : **54 Mbps** , n_HT20/40 : **MCS7**, ac_VHT20 : **MCS8**, ac_VHT40/80 : **MCS9**
   UNII-2C a : **54 Mbps** , n_HT20/40 : **MCS7**, ac_VHT20 : **MCS8**, ac_VHT40/80 : **MCS9**
   UNII-3 a : **54 Mbps** , n_HT20/40 : **MCS7**, ac_VHT20 : **MCS8**, ac_VHT40/80 : **MCS9**
3. This report contains the worst case data from the following mode of the test in 20/40/80 MHz signal bandwidth.

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2. Summary of tests

Section in FCC Part 15	Section in RSS-247 & Gen	Parameter	Test results
15.407(a)	RSS-Gen 6.6	26 dB bandwidth & 99 % bandwidth	Pass
15.407(e)	RSS-247 6.2.4	6 dB bandwidth (UNII-3)	Pass
15.407(a)	RSS-247 6.2	Maximum conducted output power	Pass
15.407(a)	RSS-247 6.2	Power spectral density	Pass
15.407(g)	RSS-Gen 6.11	Frequency stability	Pass
15.205 15.209 15.407(d)	RSS-247 6.2 RSS-Gen 8.9, 8.10	Radiated restricted band and emission	Pass
15.207	RSS-Gen 8.8	AC power line conducted emissions	Pass

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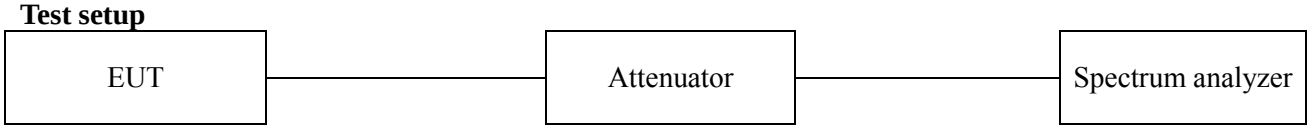
3. Test results

3.1. 26 dB bandwidth & 99% Occupied Bandwidth

Test setup



Test procedure

26 dB bandwidth

KDB 78903 3 D 02 v02r01– Section C.1

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Limit

N/A

99 % bandwidth

KDB 78903 3 D 02 v02r01– Section D

1. Set span = 1.5 times to 5.0 times the OBW.
2. Set RBW = 1% to 5% of the OBW
3. Set the VBW > 3 x RBW.
4. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak bandwidth function of the instrument (if available).
5. Use the 99% power bandwidth function of the instrument (if available).
6. If the instrument does not have a 99% power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

In the result,
-DFS requirements are not applicable in the 5 150 ㎒ ~ 5 250 ㎒.

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Test results

Band	Frequency(㎒)	Mode	26 ㏈ bandwidth(㎒)	99 % bandwidth(㎒)
UNII-1	5 180	a	19.899	16.643
	5 220		19.682	16.932
	5 240		20.188	16.860
UNII-2A	5 260		20.116	16.787
	5 280		19.754	16.715
	5 320		19.682	16.715
UNII-2C	5 500		21.491	17.004
	5 600		23.082	21.418
	5 720		20.478	16.860
UNII-3	5 745		20.260	16.787
	5 785		20.116	16.787
	5 825		20.333	16.787
UNII-1	5 180	HT20	20.405	17.873
	5 220		20.912	17.800
	5 240		20.767	17.800
UNII-2A	5 260		20.333	17.800
	5 280		20.188	17.728
	5 320		20.622	17.728
UNII-2C	5 500		20.767	17.800
	5 600		21.129	18.307
	5 720		20.839	17.728
UNII-3	5 745		20.260	17.728
	5 785		20.188	17.800
	5 825		20.043	17.728
UNII-1	5 190	HT40	41.790	36.700
	5 230		42.720	36.469
UNII-2A	5 270		41.790	36.585
	5 310		41.680	36.469
UNII-2C	5 510		42.720	36.932
	5 590		42.600	39.247
	5 710		42.140	36.469
UNII-3	5 755		43.650	36.469
	5 795		42.140	36.700

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Band	Frequency(㎒)	Mode	26 dB bandwidth(㎒)	99 % bandwidth(㎒)
UNII-1	5 180	VHT20	21.201	17.728
	5 220		20.550	17.945
	5 240		20.405	17.800
UNII-2A	5 260		20.550	17.800
	5 280		20.622	17.873
	5 320		20.912	17.800
UNII-2C	5 500		21.418	17.800
	5 600		21.563	18.379
	5 720		20.550	17.800
UNII-3	5 745		20.550	17.800
	5 785		21.056	17.800
	5 825		20.767	17.873
UNII-1	5 190	VHT40	42.140	36.700
	5 230		42.490	36.932
UNII-2A	5 270		42.370	37.048
	5 310		42.600	37.164
UNII-2C	5 510		42.840	36.816
	5 590		44.800	39.016
	5 710		43.530	37.279
UNII-3	5 755		41.100	37.048
	5 795		42.260	37.048
UNII-1	5 210	VHT80	81.790	75.543
UNII-2A	5 290		82.320	75.369
UNII-2C	5 530		83.700	75.716
	5 610		84.230	76.064
	5 690		82.490	75.369
UNII-3	5 775		81.970	75.195
UNII-2C (Band-crossing channel)	5 720	a	15.492	-
	5 720	HT20	15.058	-
	5 710	HT40	36.070	-
	5 720	VHT20	15.492	-
	5 710	VHT40	36.790	-
	5 690	VHT80	76.560	-

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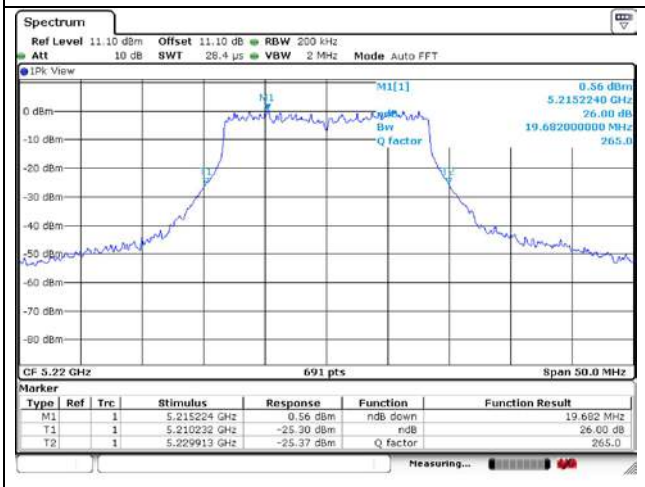
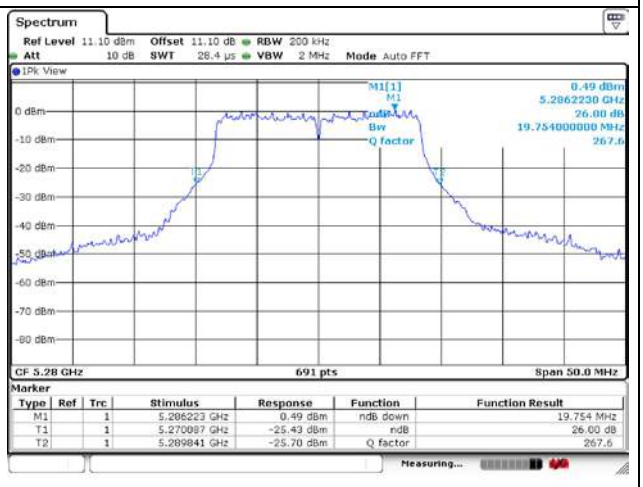
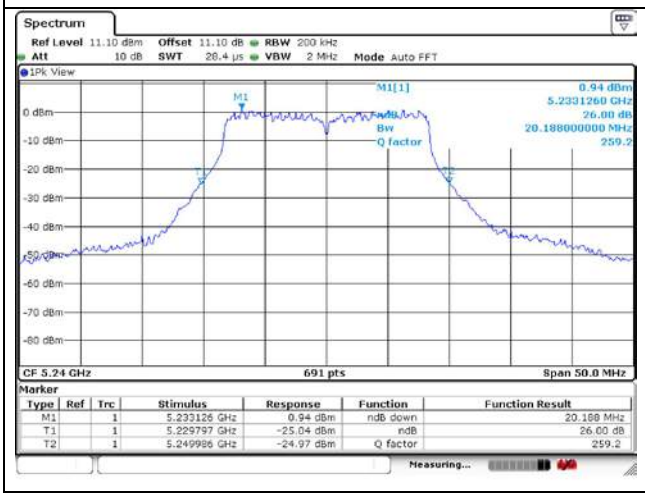
26 dB bandwidth

UNII-1_a	UNII-2A_a
	
	
	

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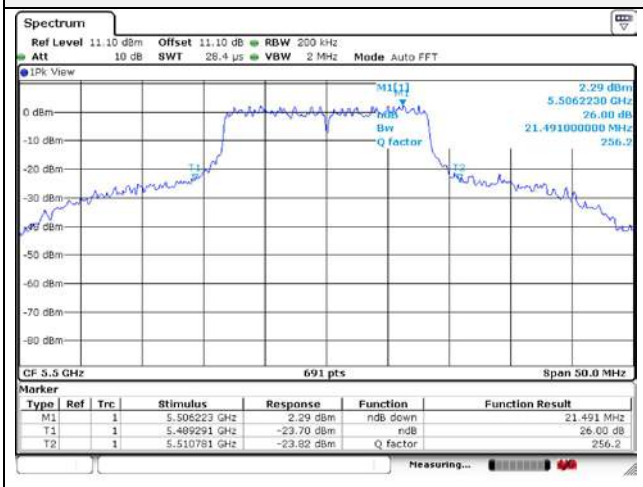	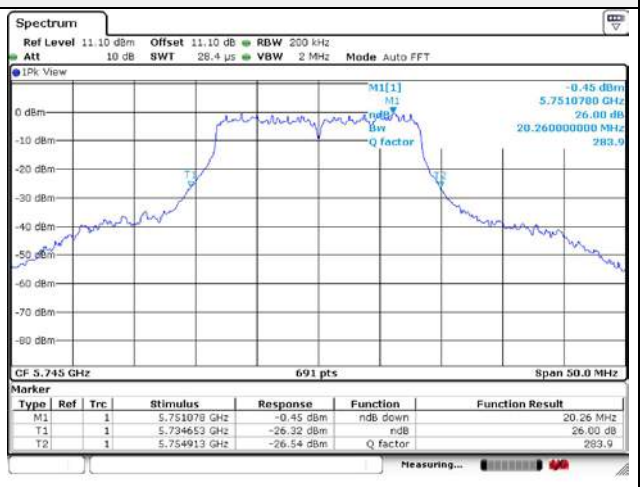
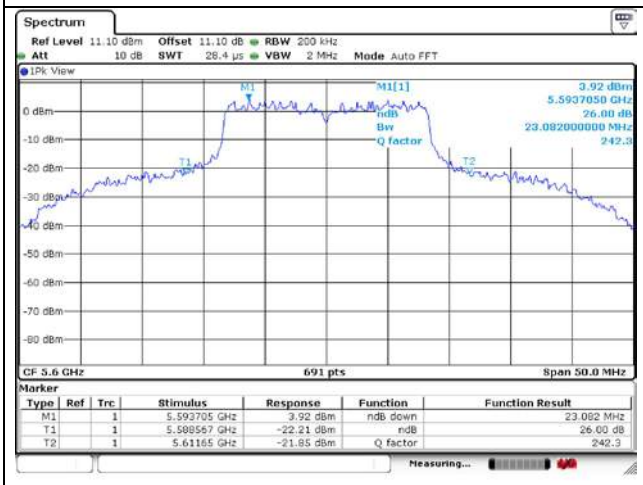	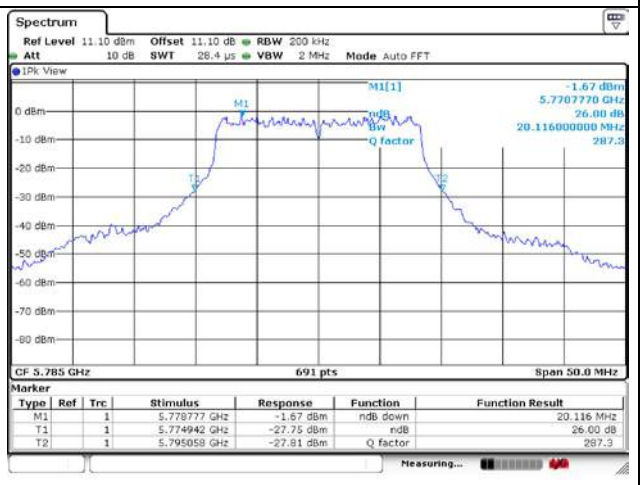
	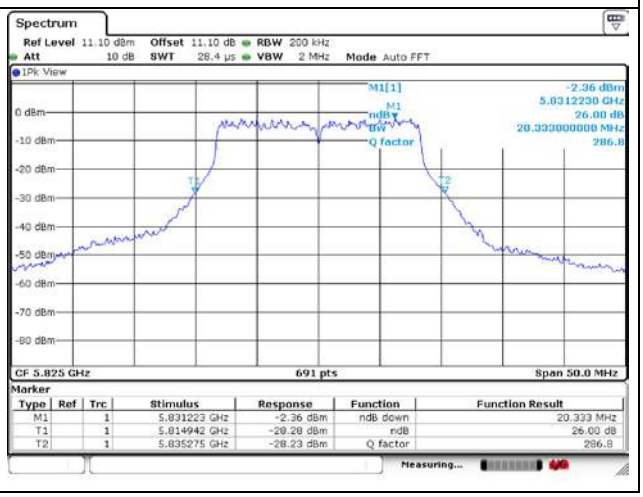

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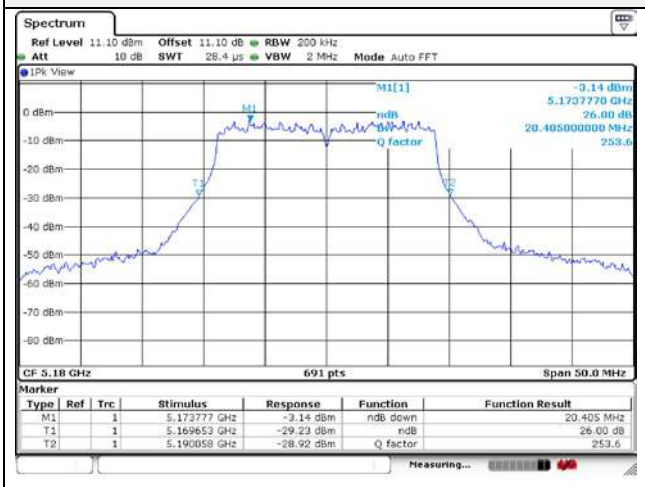
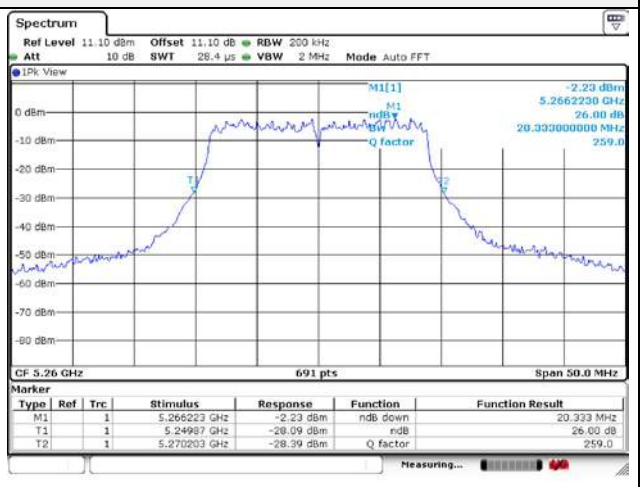
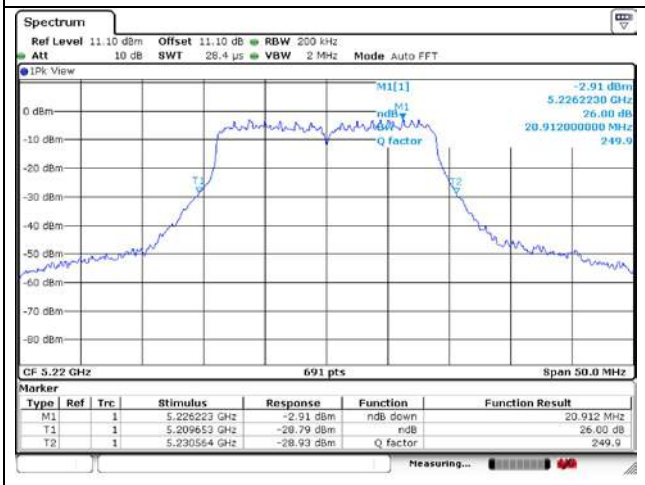
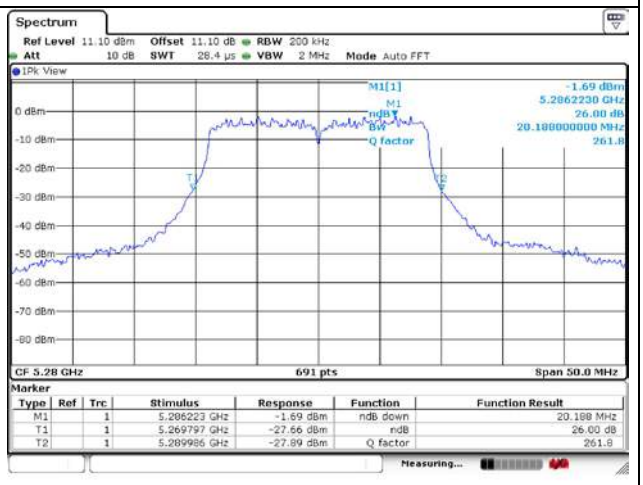
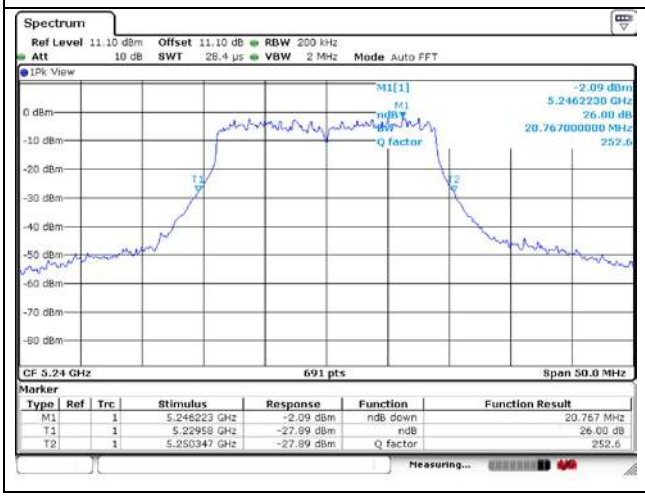
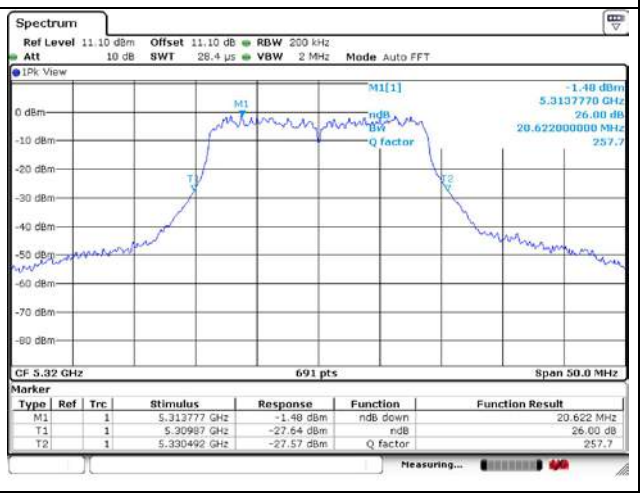
UNII-1_ HT20	UNII-2A_ HT20
	
	
	

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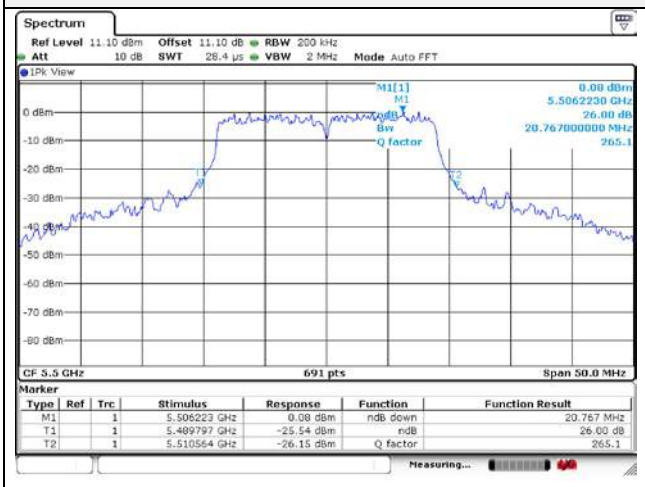	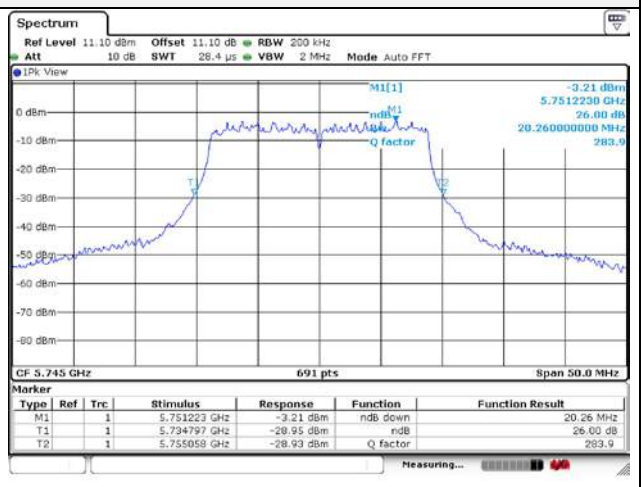
	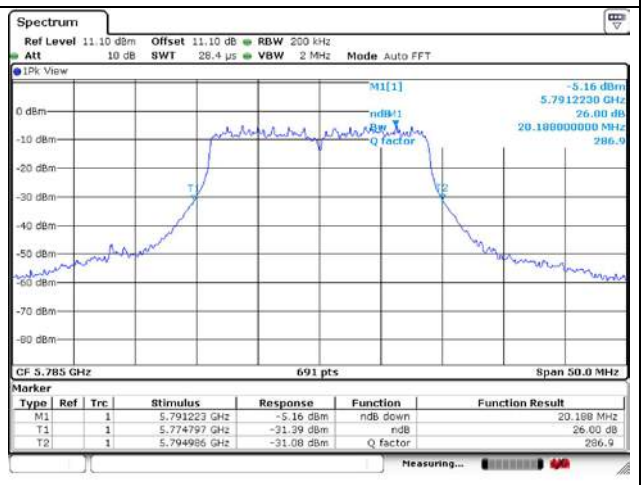
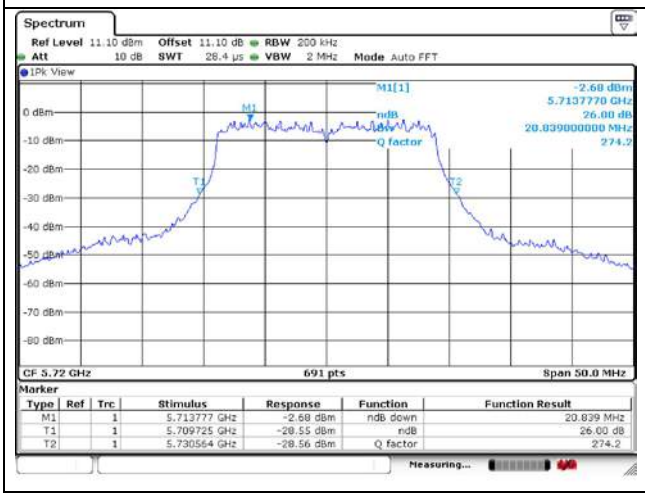	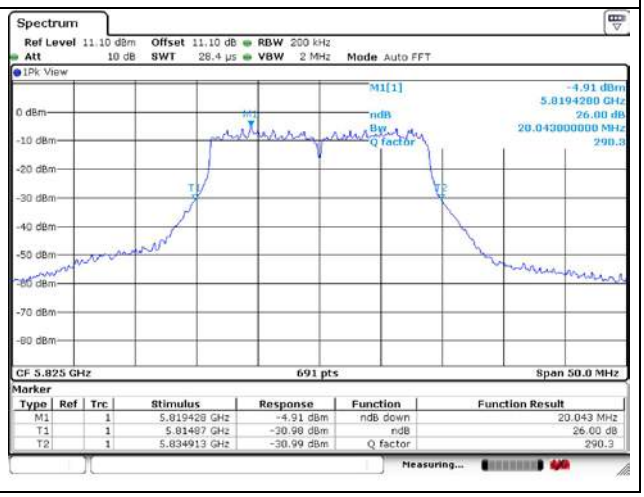

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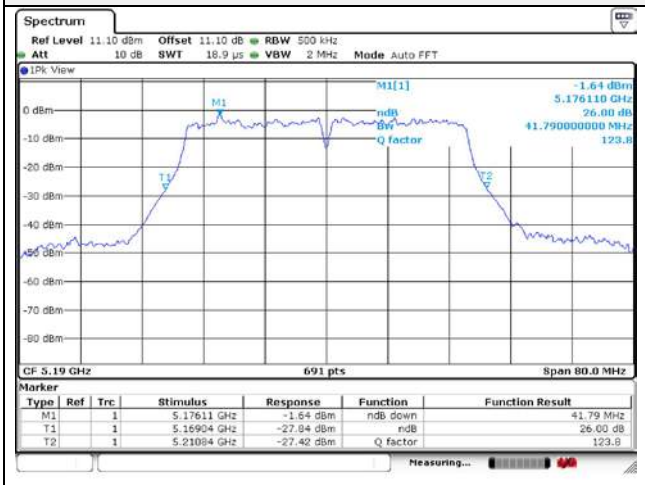
UNII-1_ HT40	UNII-2A_ HT40
	
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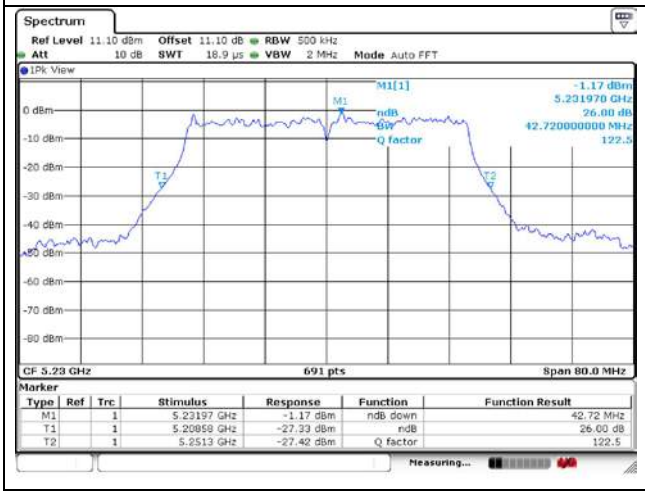
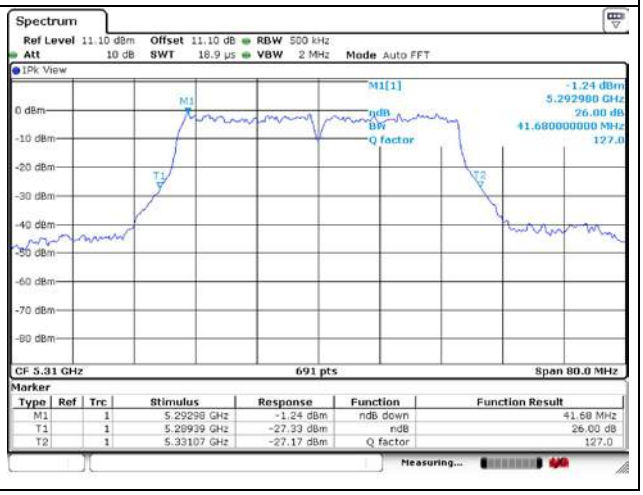
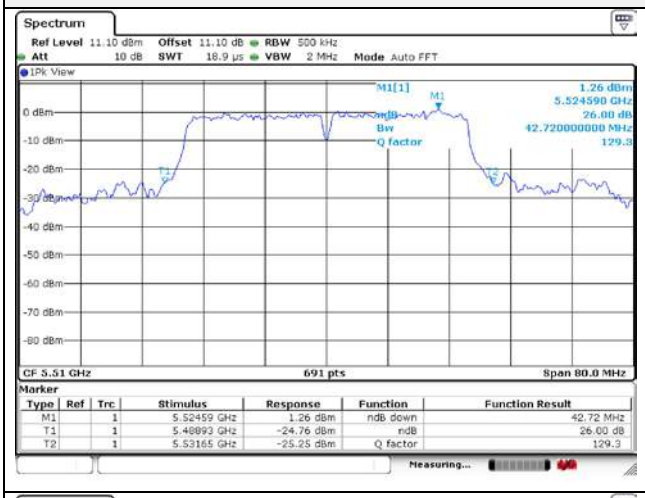
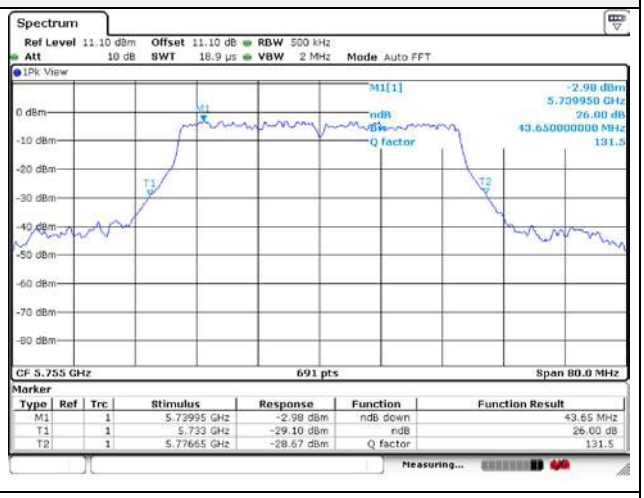
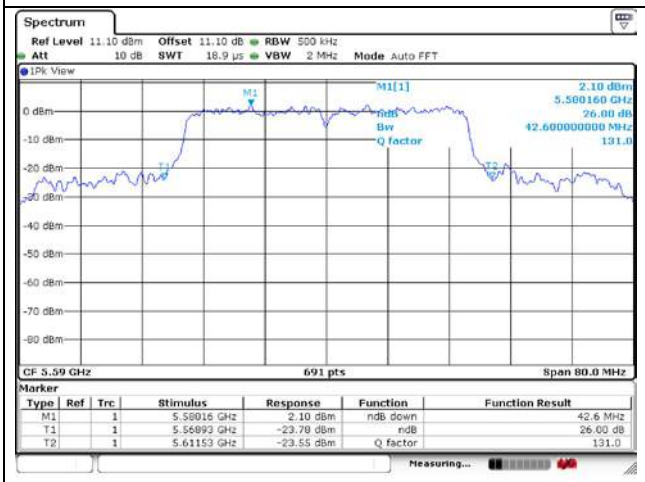
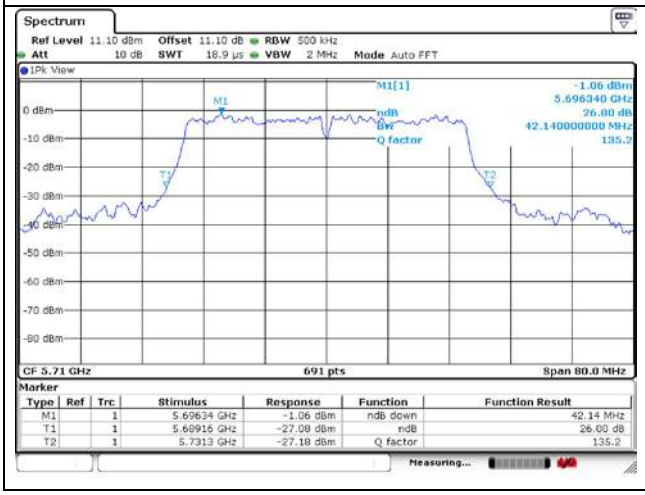
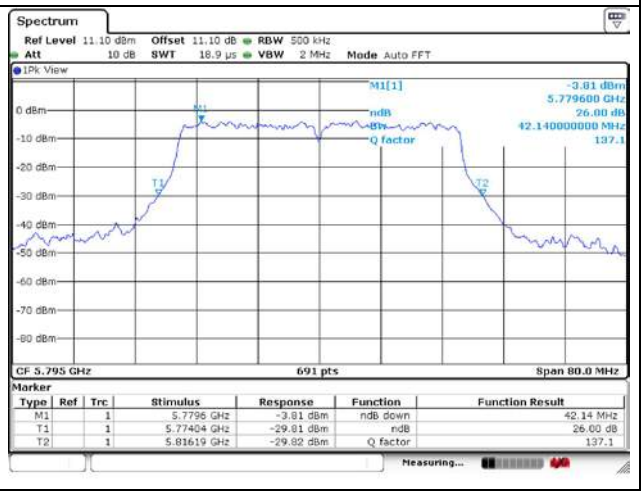
	

UNII-2C_HT40	UNII-3_ HT40
	
	Blank
	

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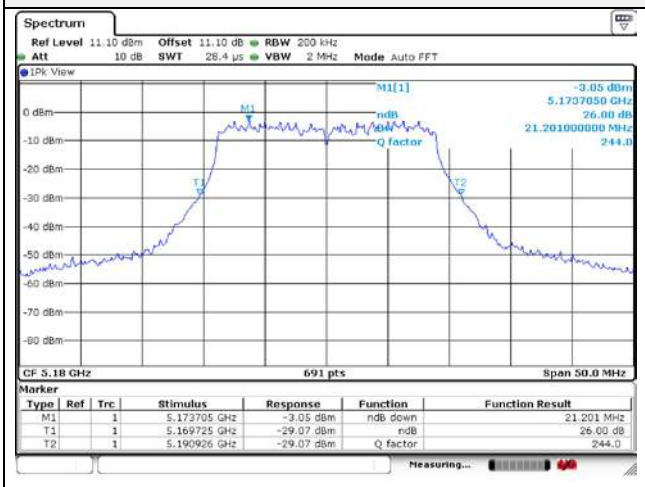
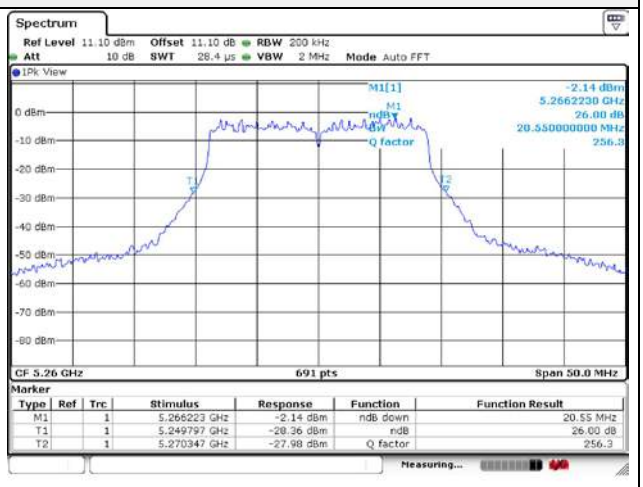
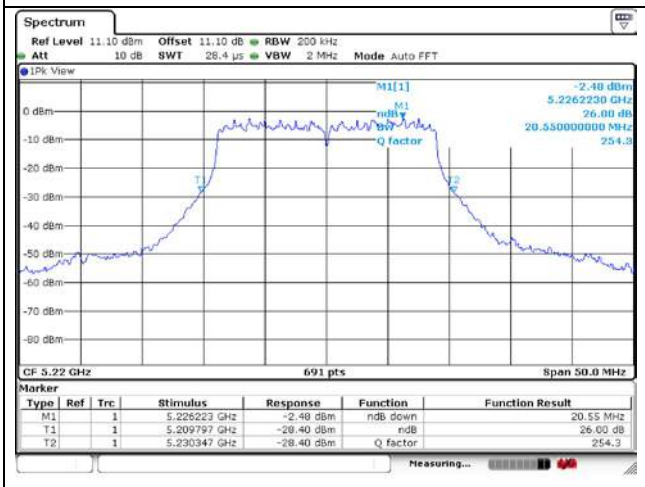
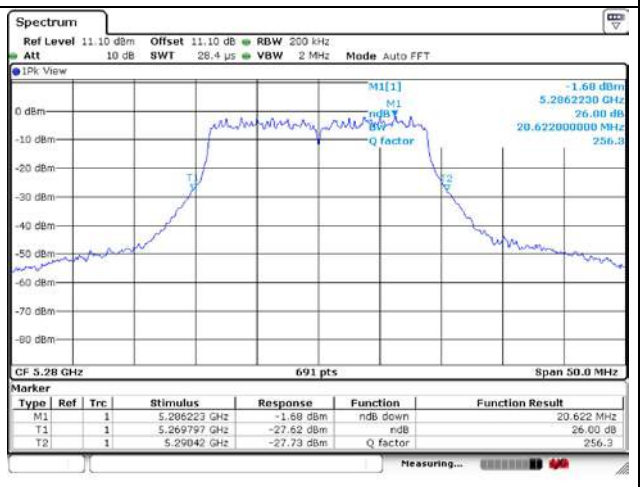
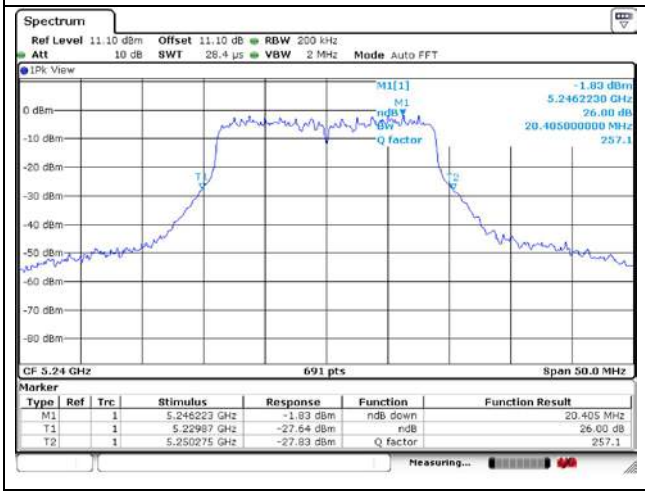
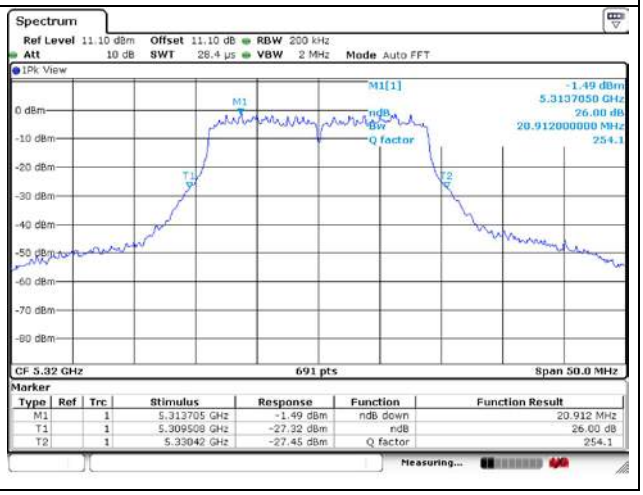
UNII-1_ VHT20	UNII-2A_ VHT20
	
	
	

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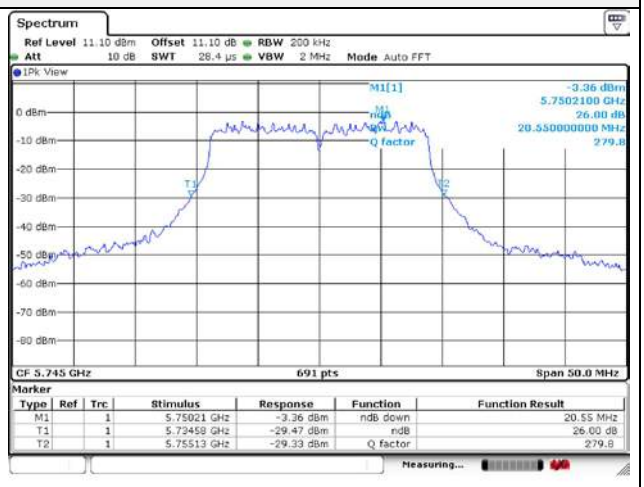
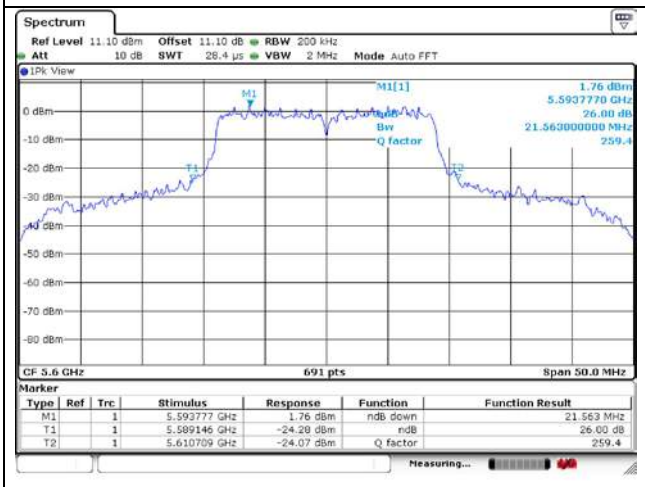
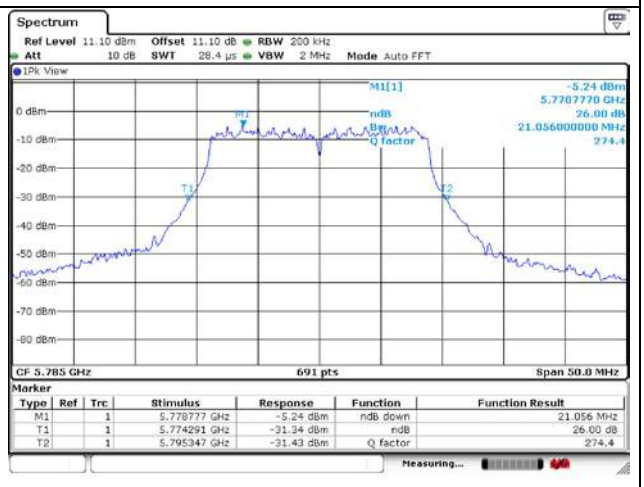
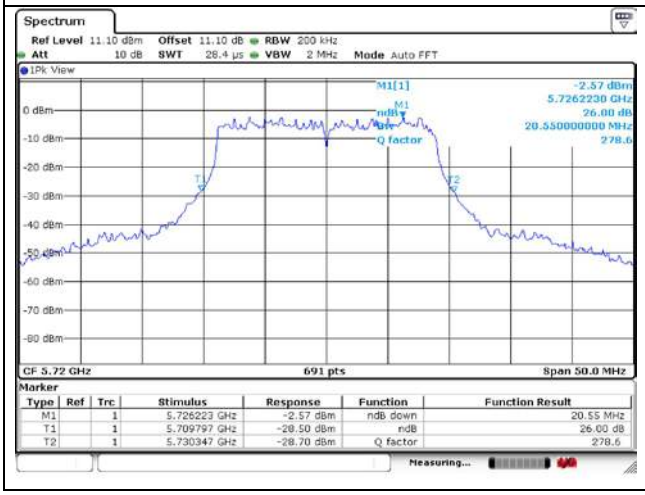
UNII-2C_VHT20	UNII-3_ VHT20
	
	
	

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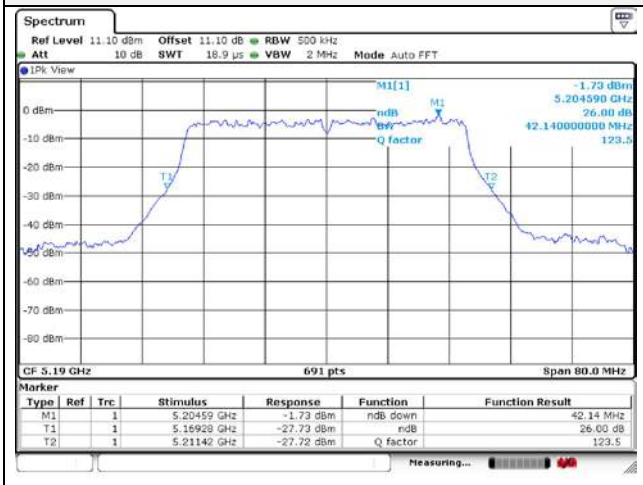
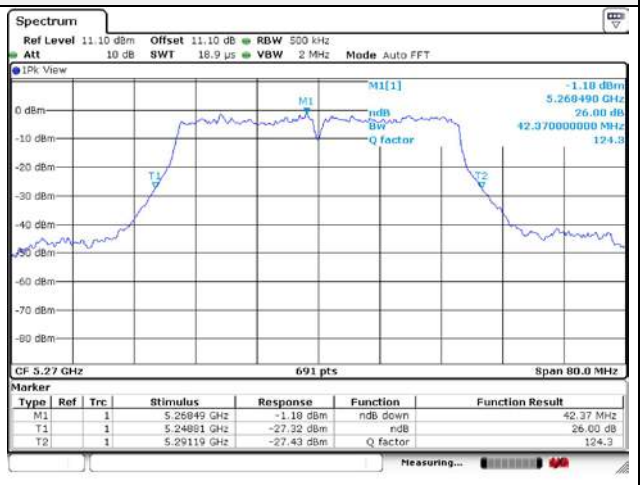
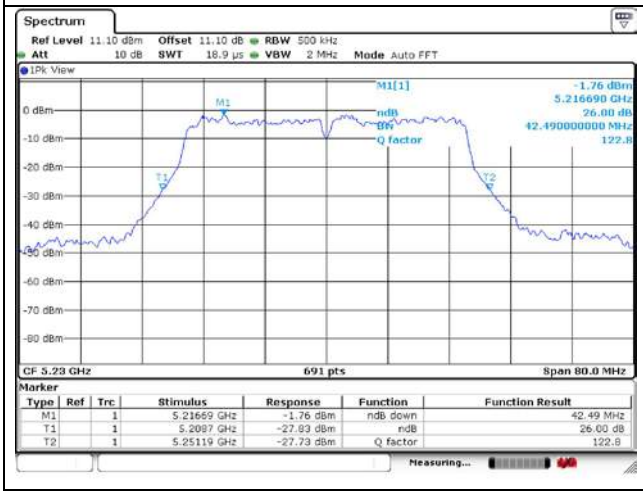
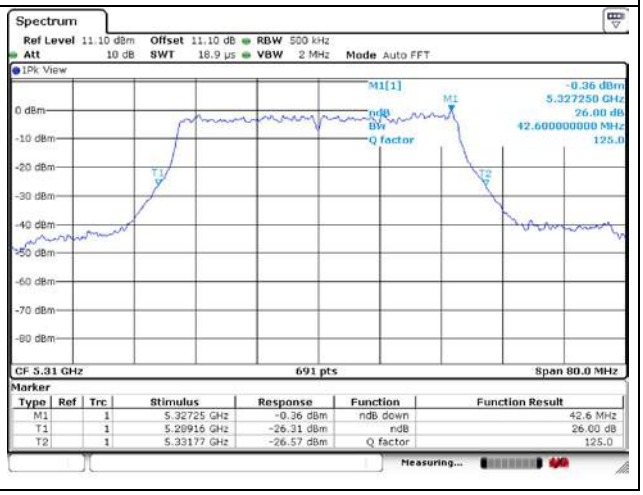
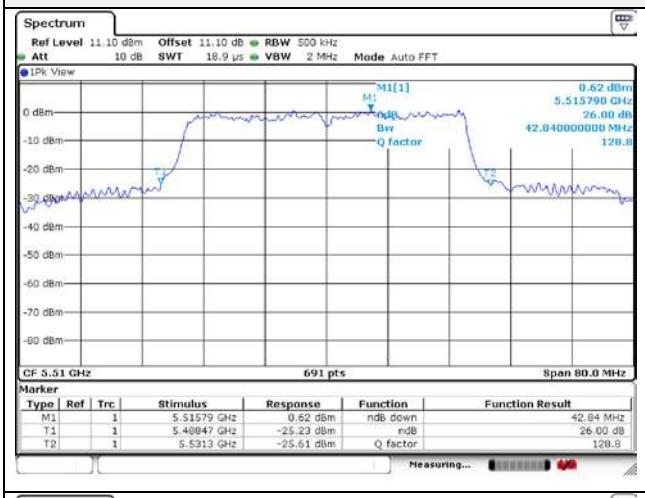
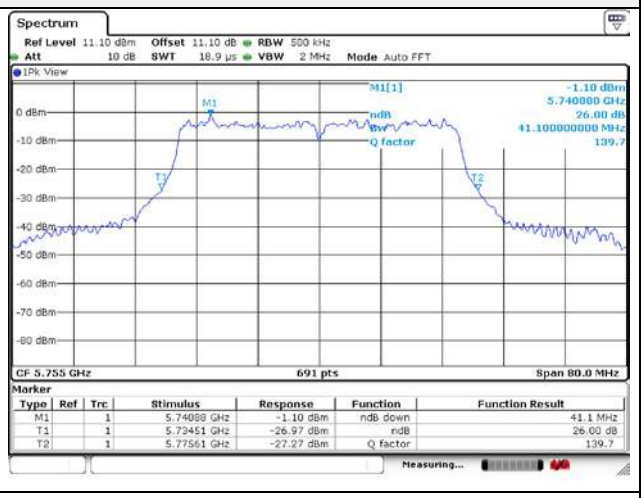
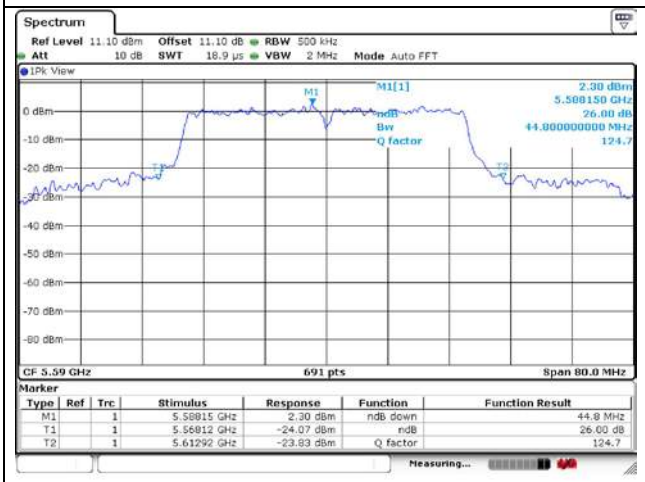
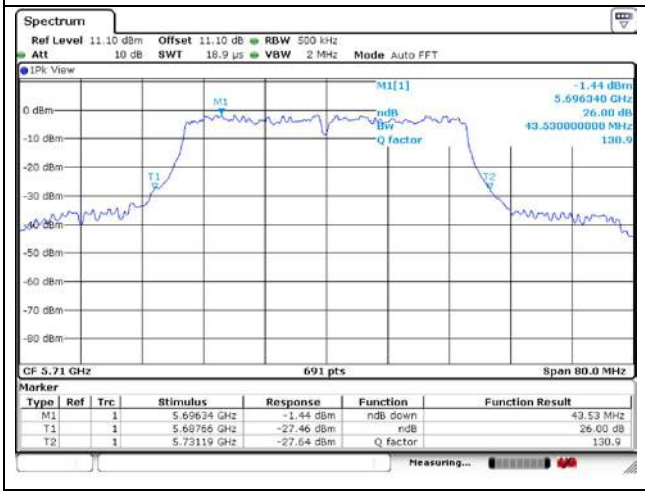
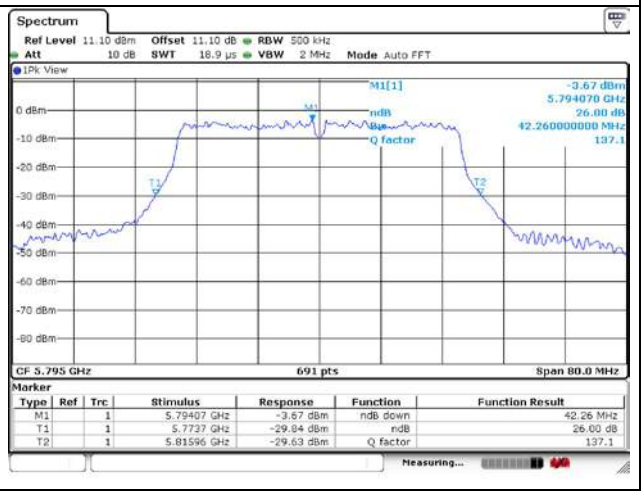
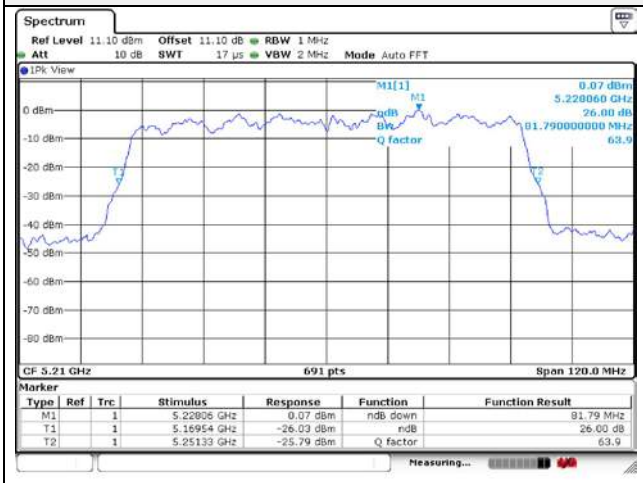
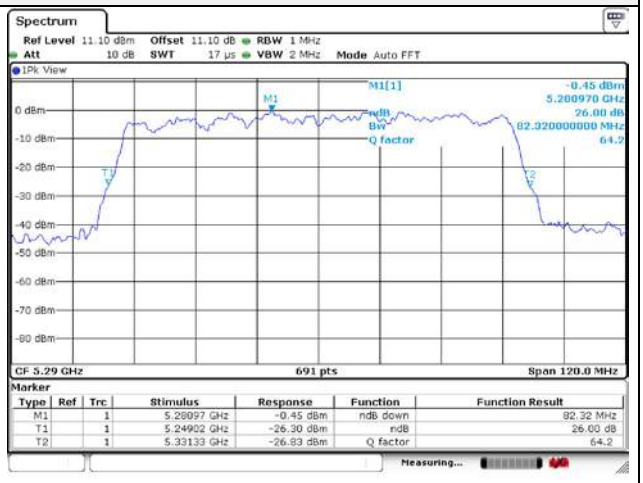
UNII-1_ VHT40	UNII-2A_ VHT40
	
Blank	Blank
	

UNII-2C_VHT40	UNII-3_ VHT40
	
	Blank
	

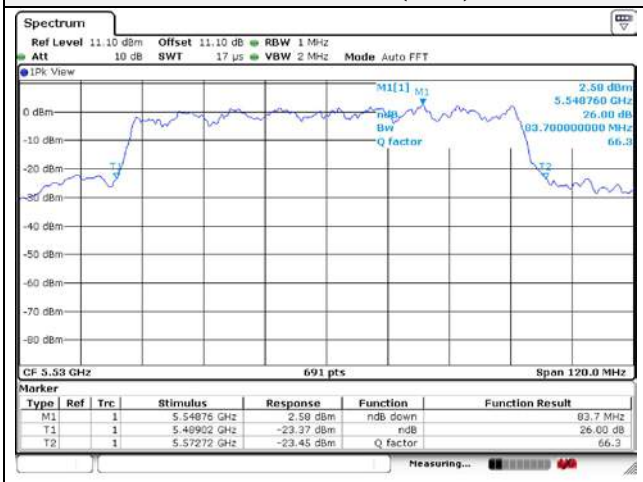
UNII-1_VHT80



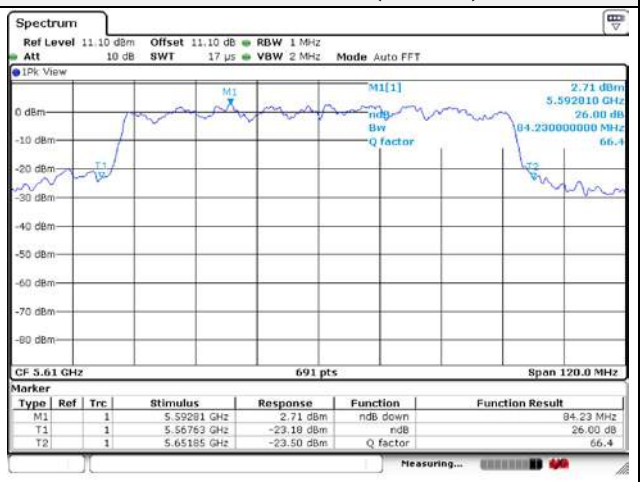
UNII-2A_ VHT80



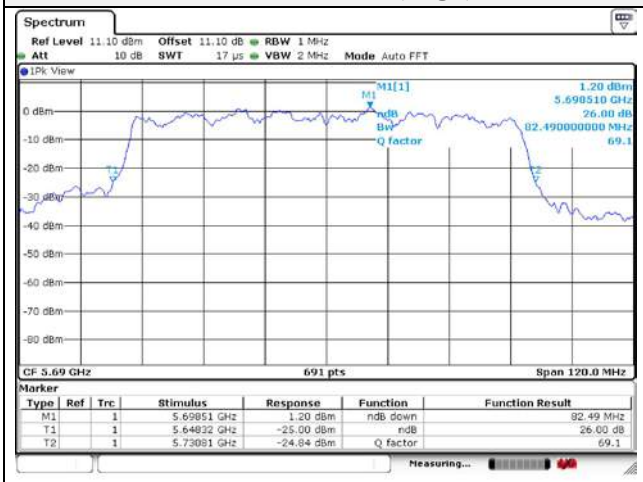
UNII-2C_VHT80(Low)



UNII-2C_VHT80(Middle)



UNII-2C_VHT80(High)



UNII-3_ VHT80

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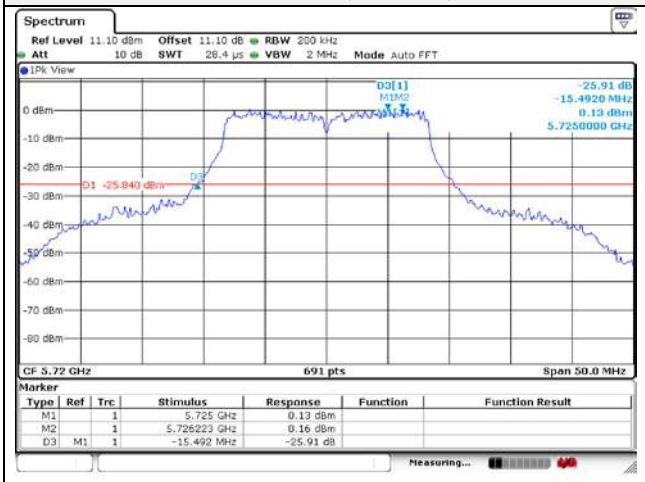
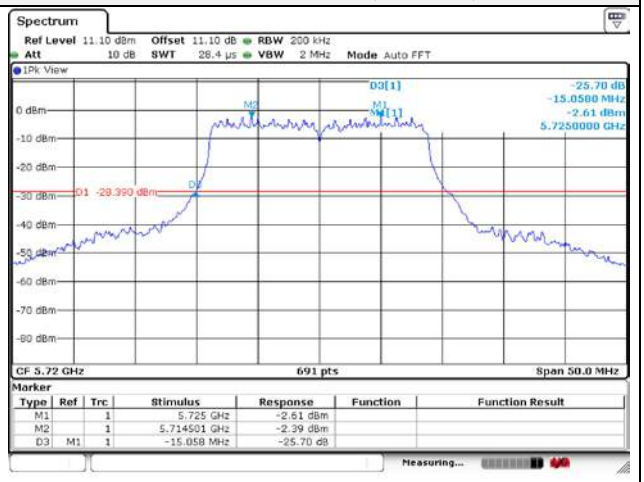
Band-crossing channels

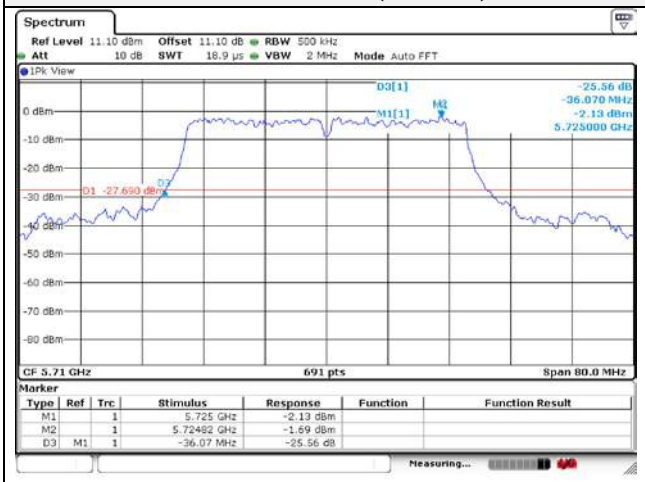
UNII-2C_a (Ch. 144)



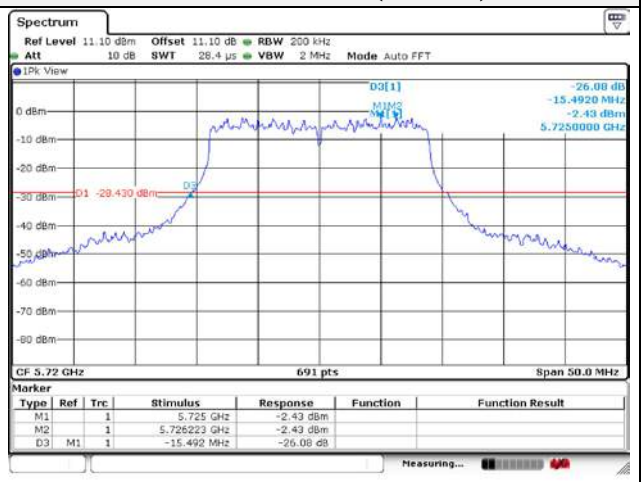
UNII-2C_ HT20 (Ch. 144)



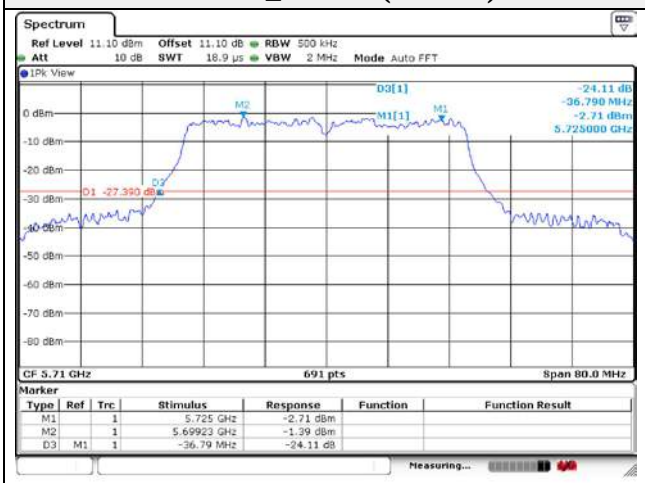
UNII-2C_ HT40 (Ch. 142)



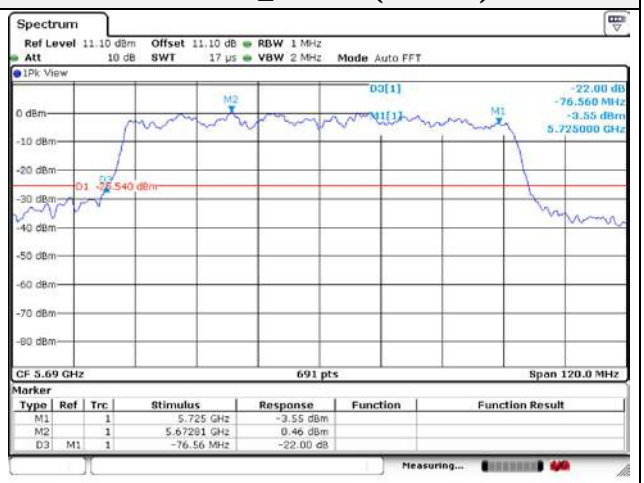
UNII-2C_VHT20 (Ch. 144)



UNII-2C_VHT40 (Ch. 142)



UNII-2C_VHT80 (Ch. 138)



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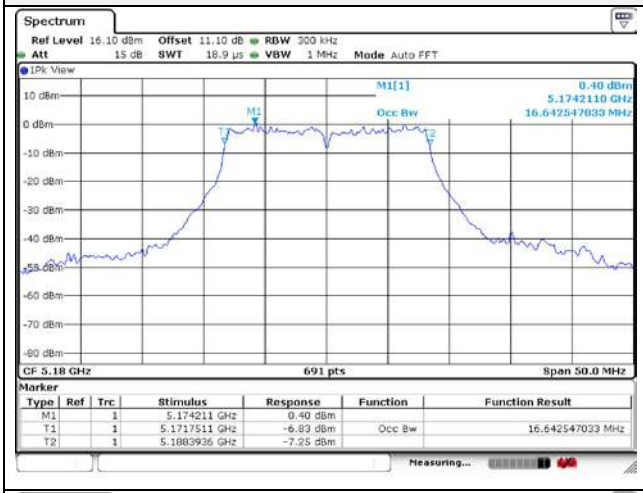
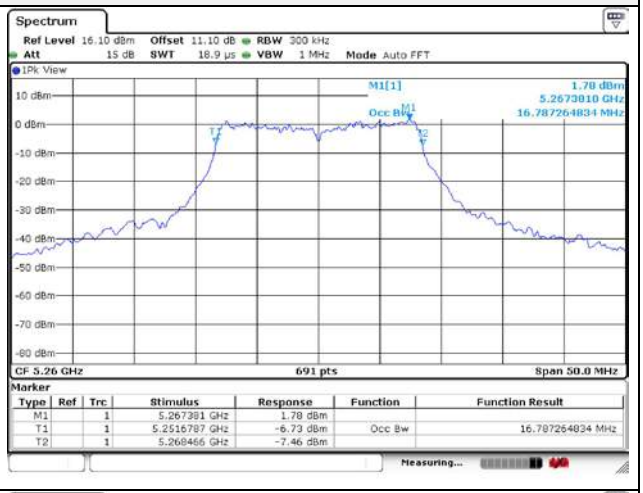
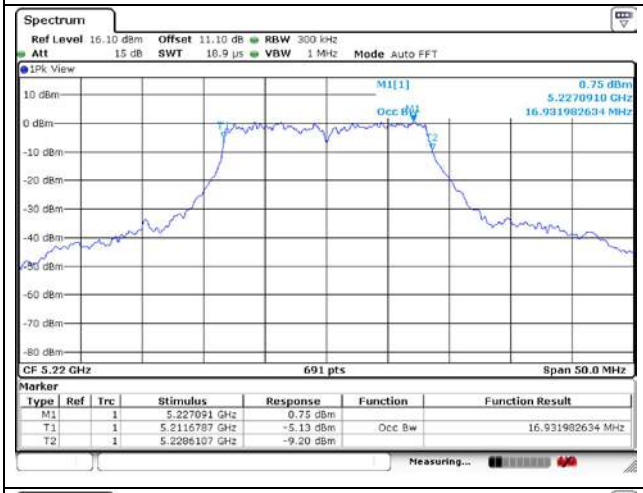
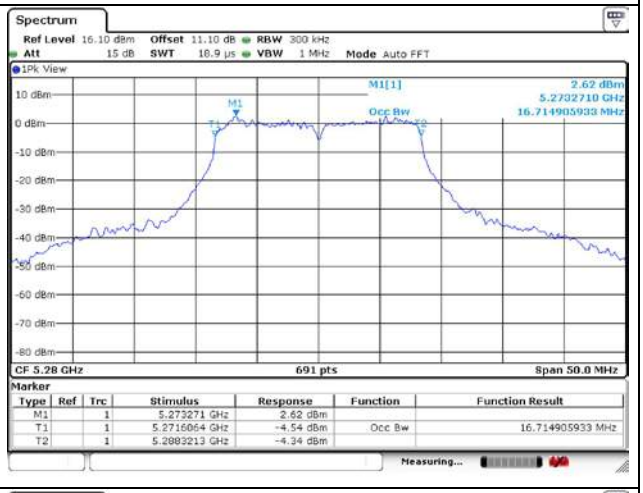
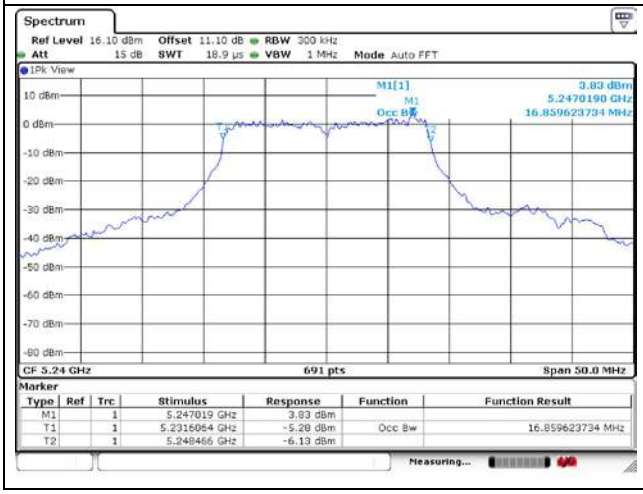
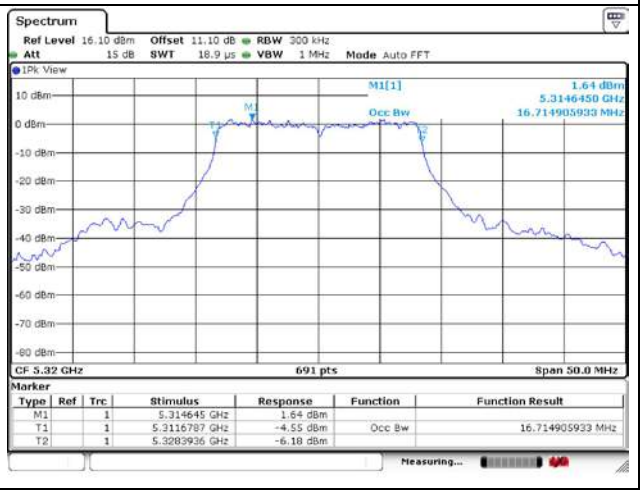
99% bandwidth

UNII-1_a	UNII-2A_a
	
	
	

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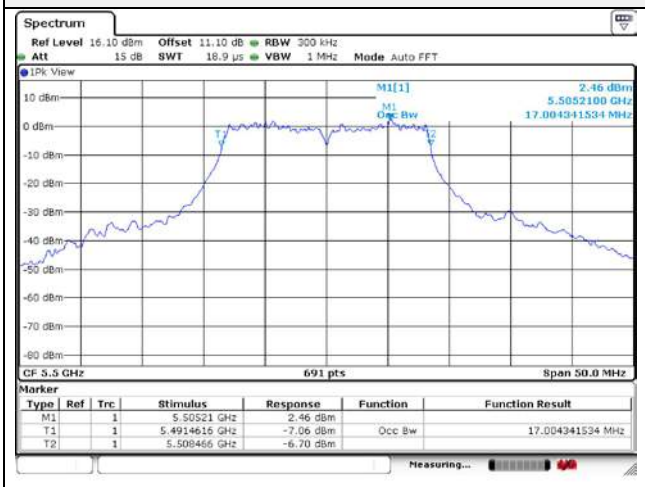
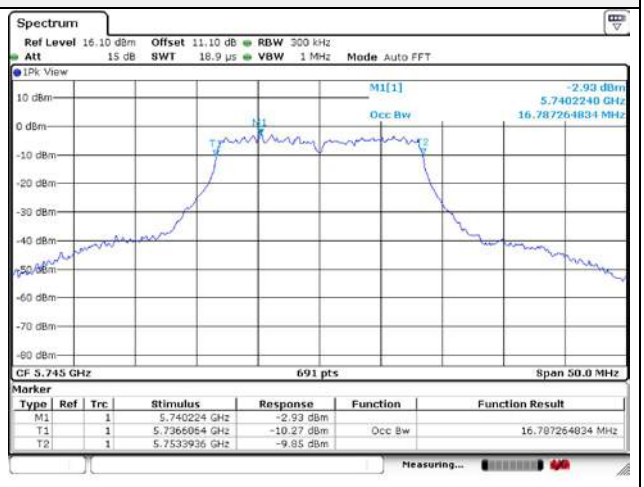
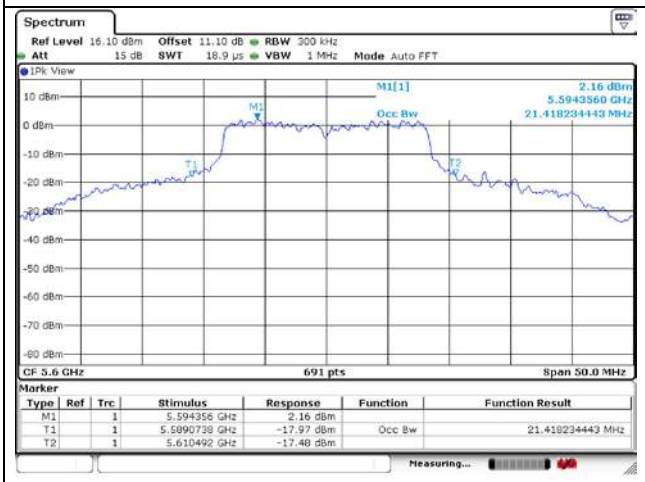
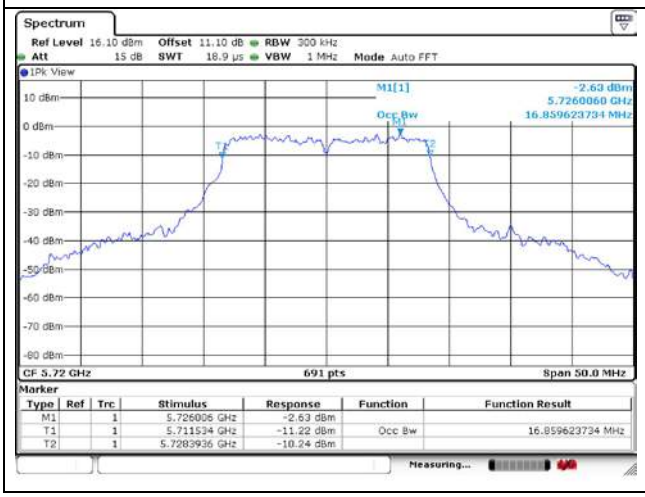
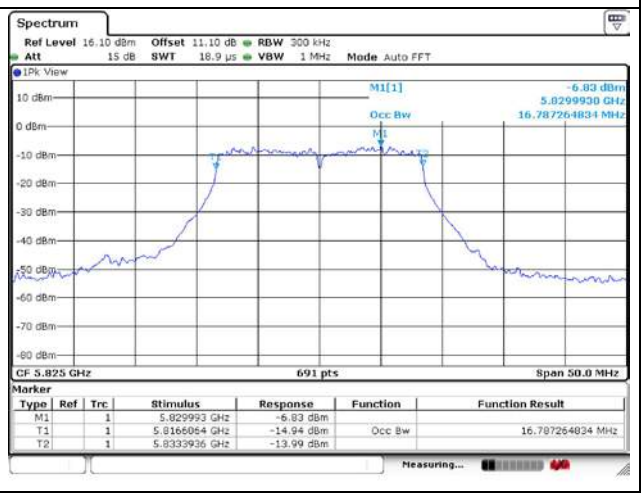
UNII-2C_a	UNII-3_a
	
	
	

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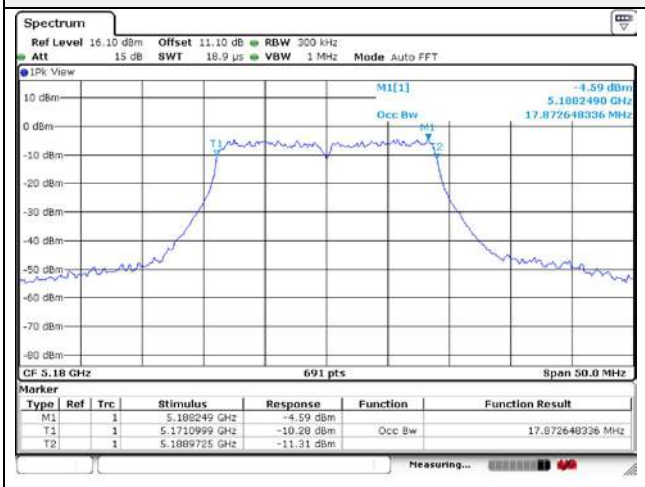
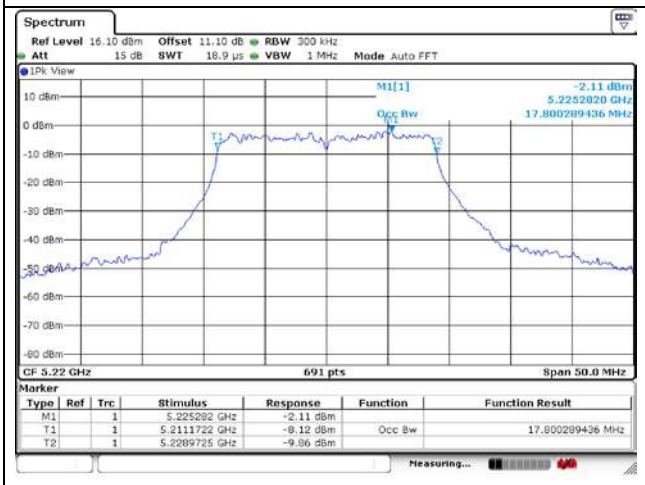
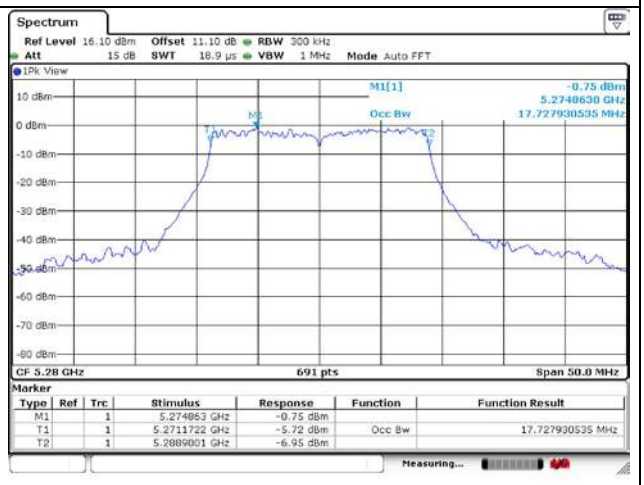
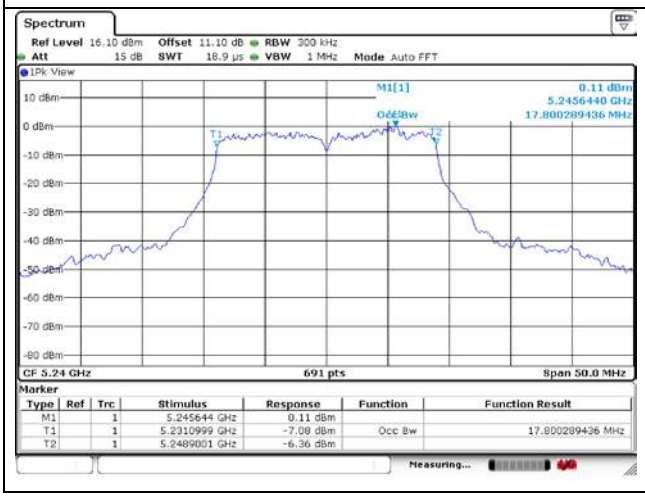
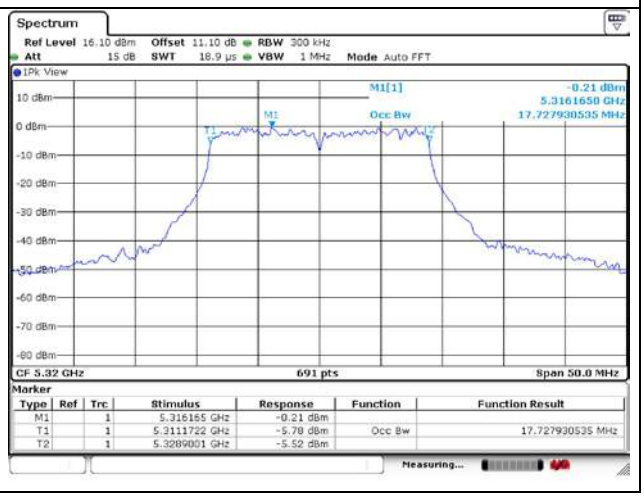
UNII-1_ HT20	UNII-2A_ HT20
	
	
	

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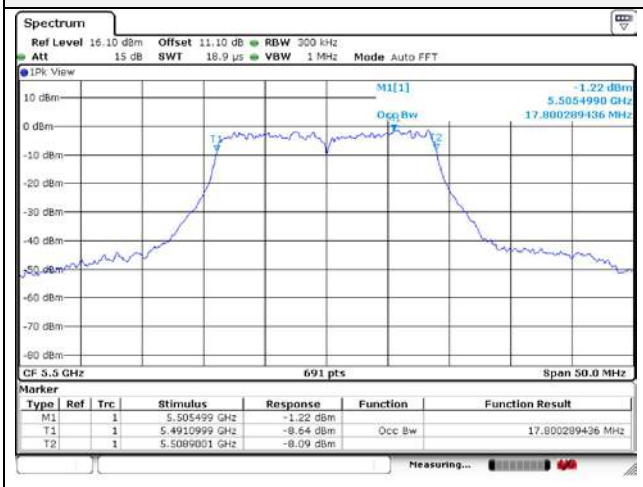
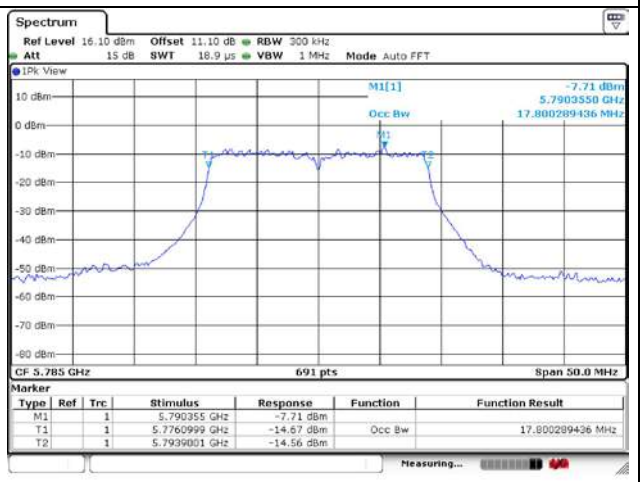
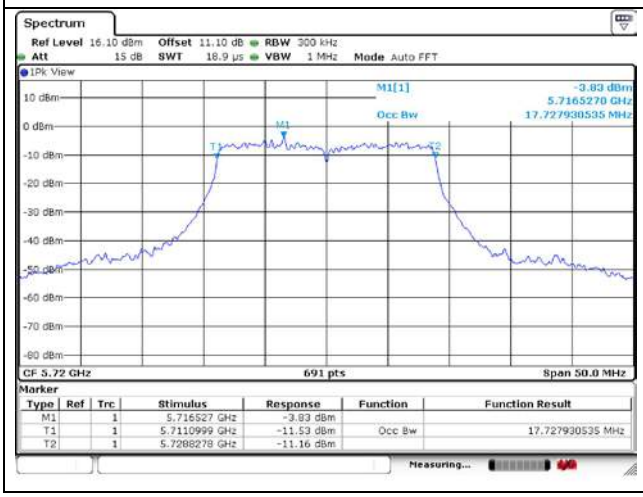
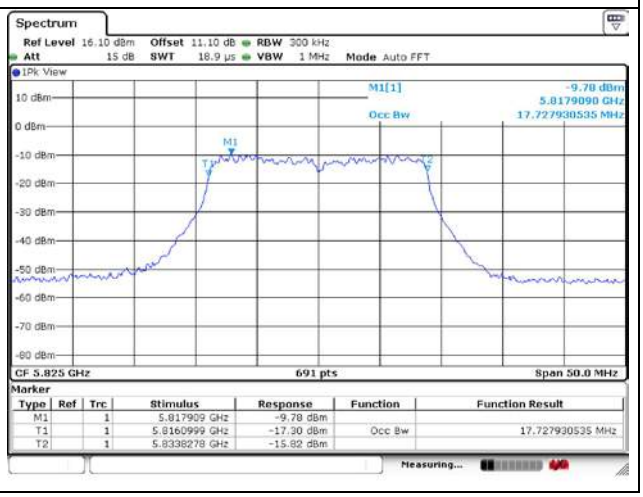
UNII-2C_HT20	UNII-3_ HT20
	
	
	

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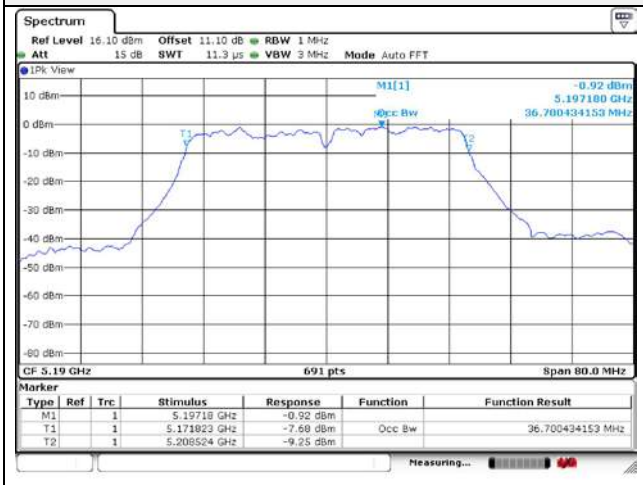
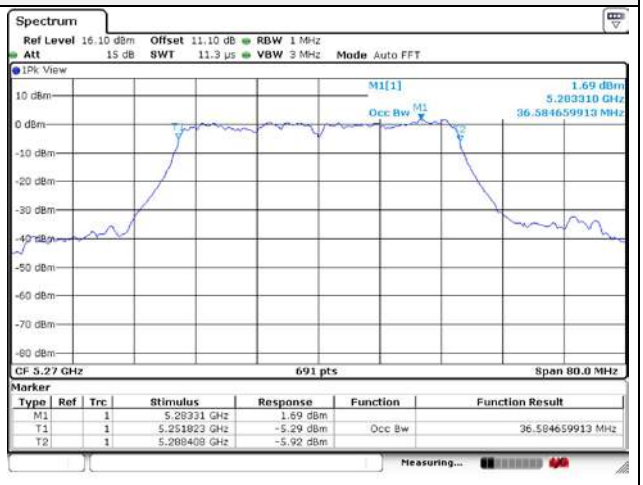
UNII-1_ HT40	UNII-2A_ HT40
	
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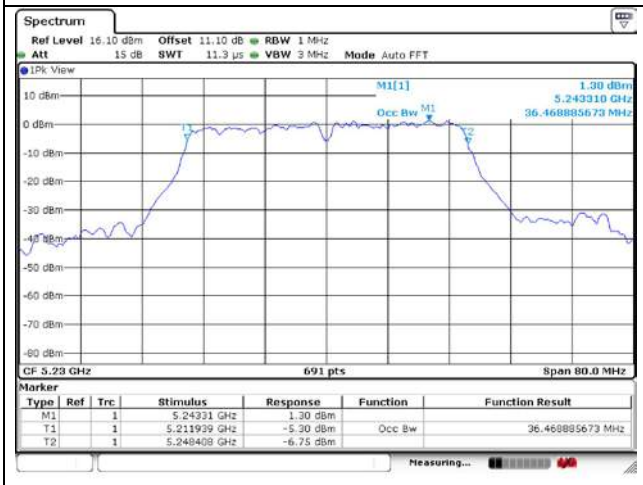	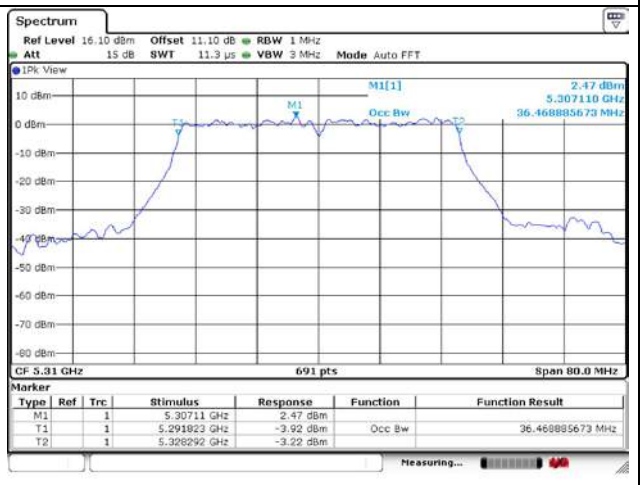

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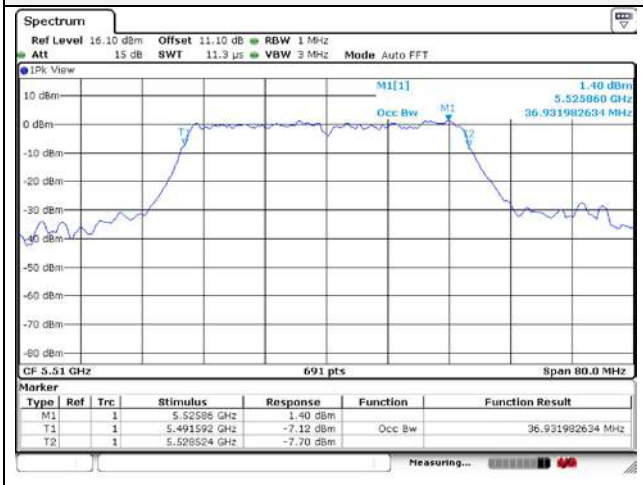
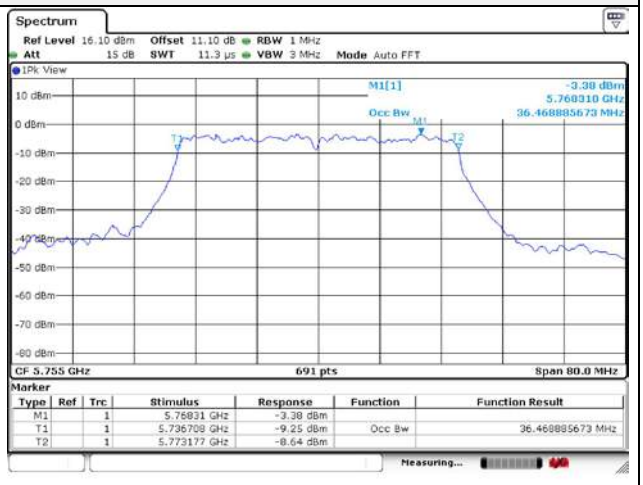
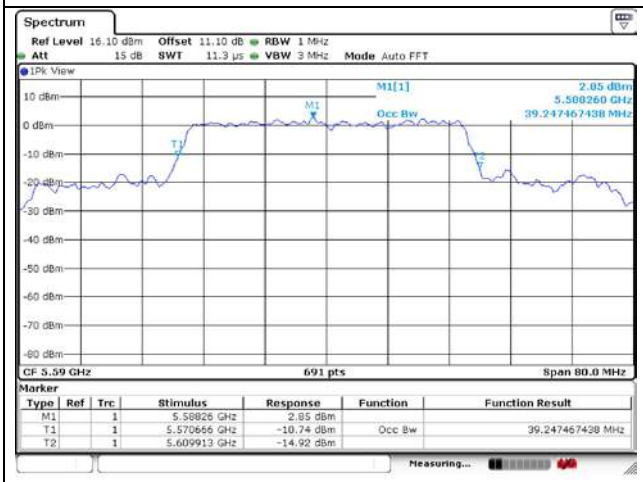
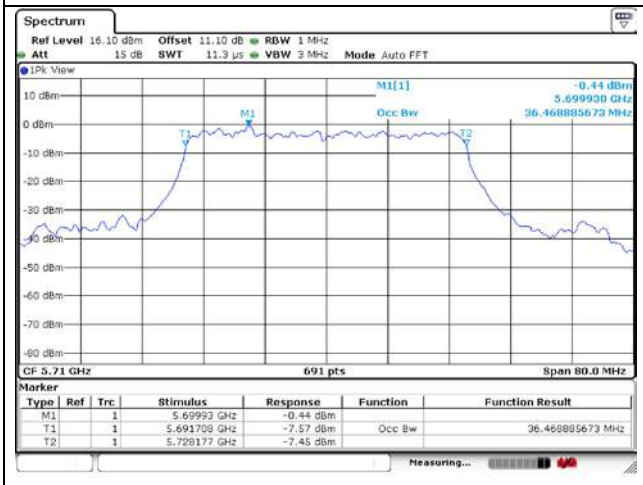
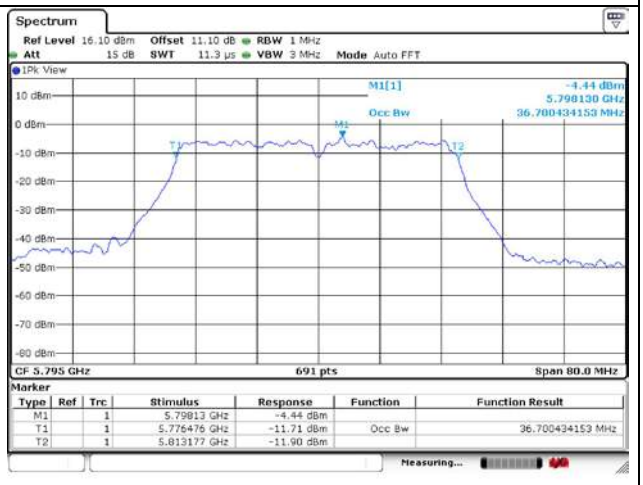
	
	Blank
	

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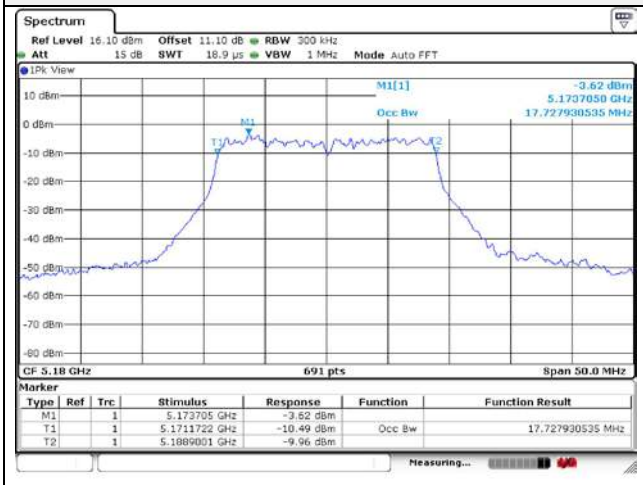
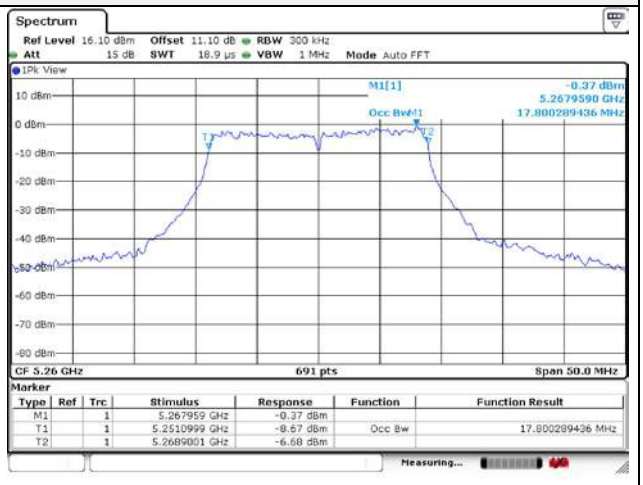
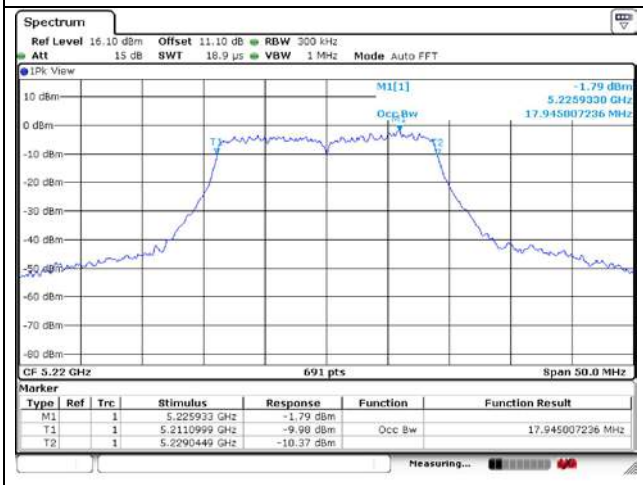
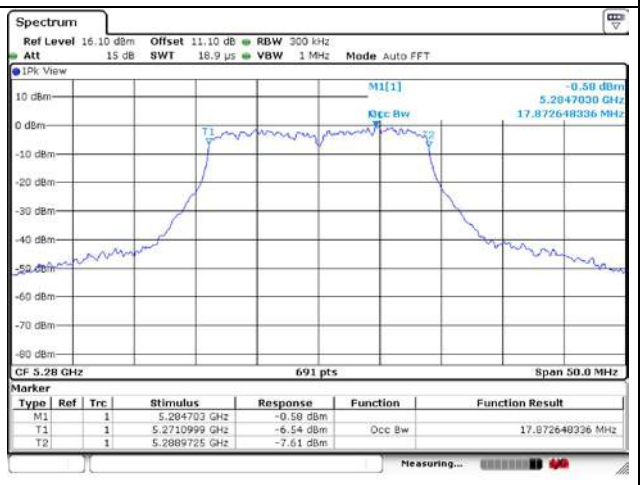
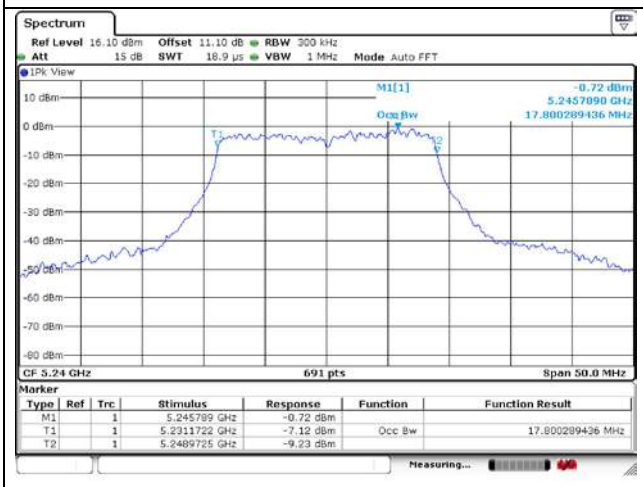
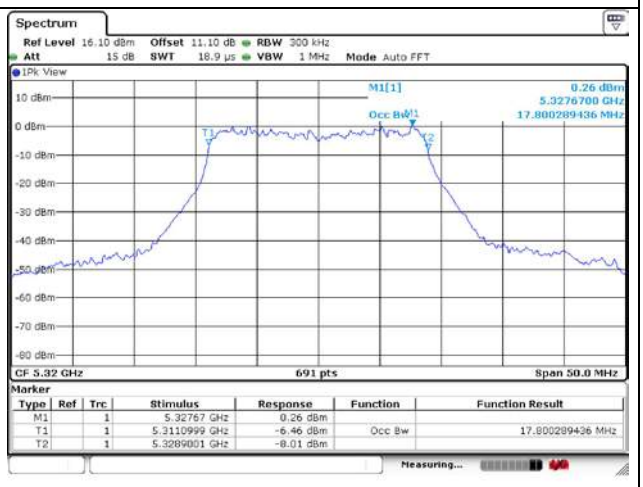
UNII-1_ VHT20	UNII-2A_ VHT20
	
	
	

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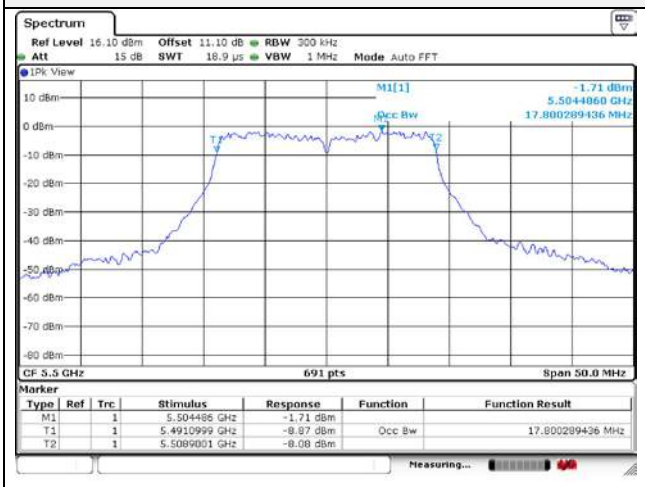
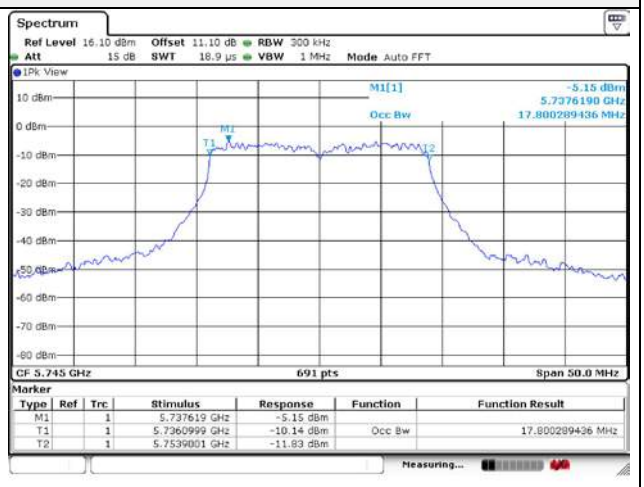
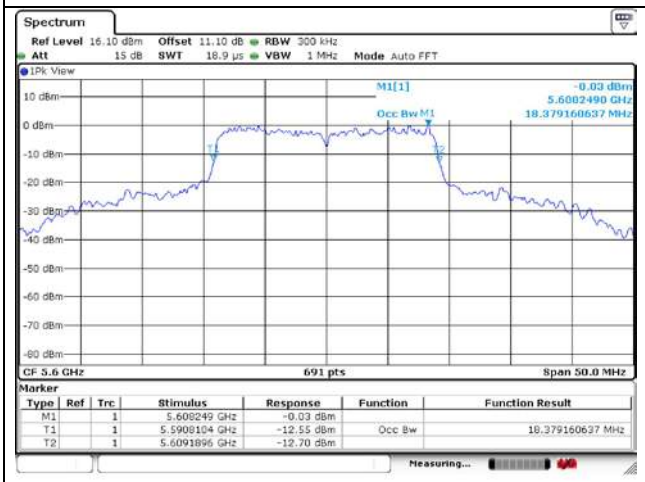
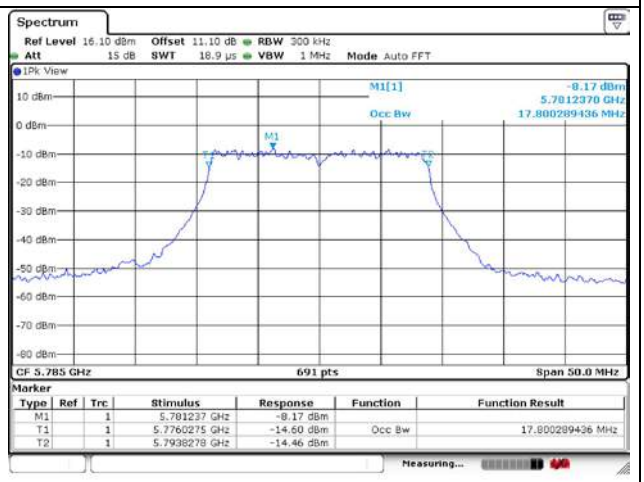
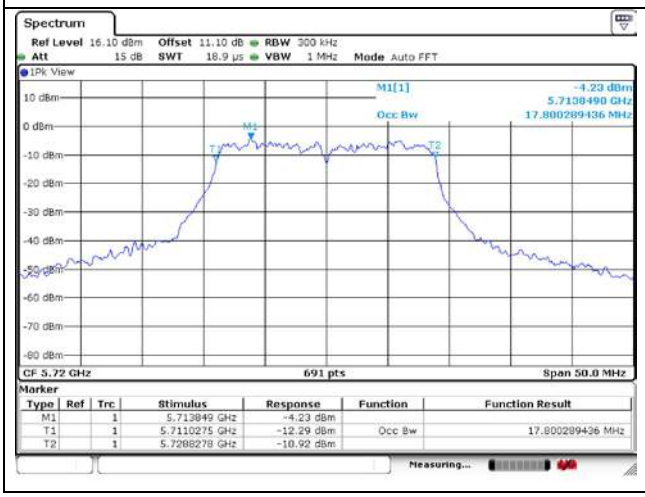
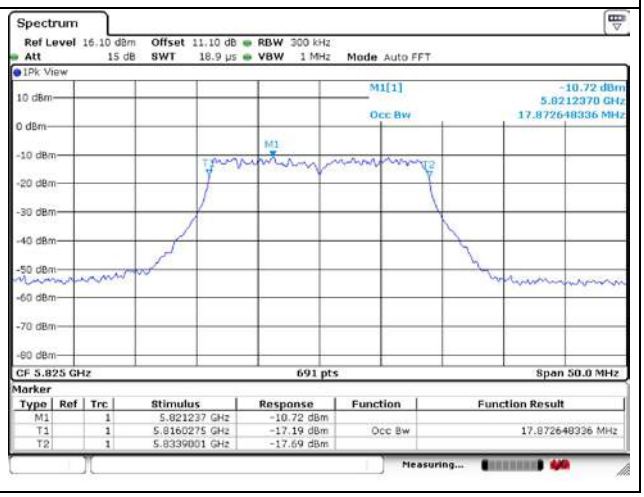
UNII-2C_VHT20	UNII-3_ VHT20
	
	
	

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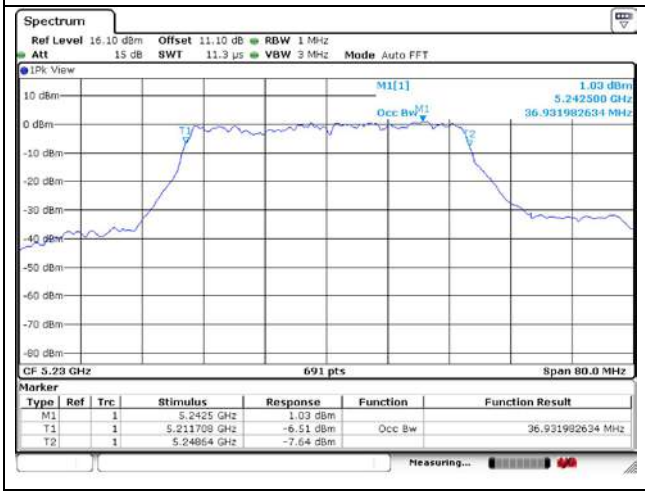
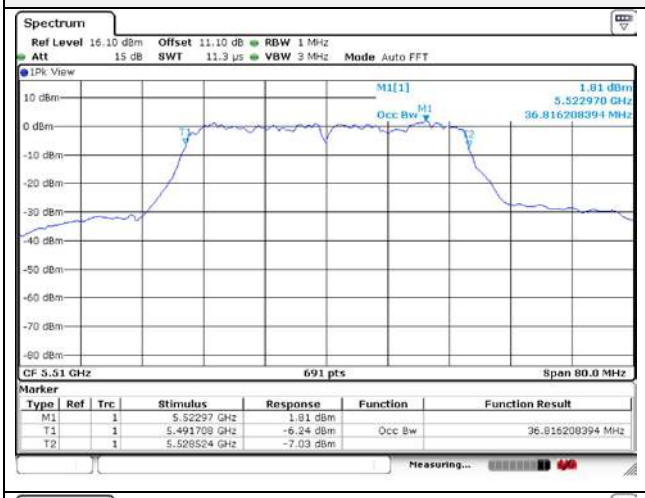
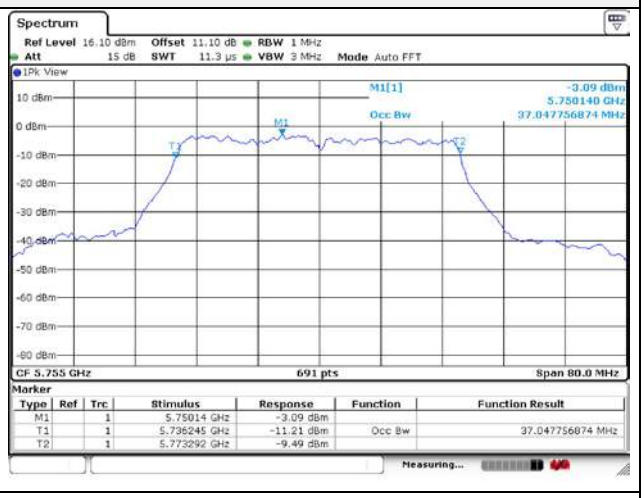
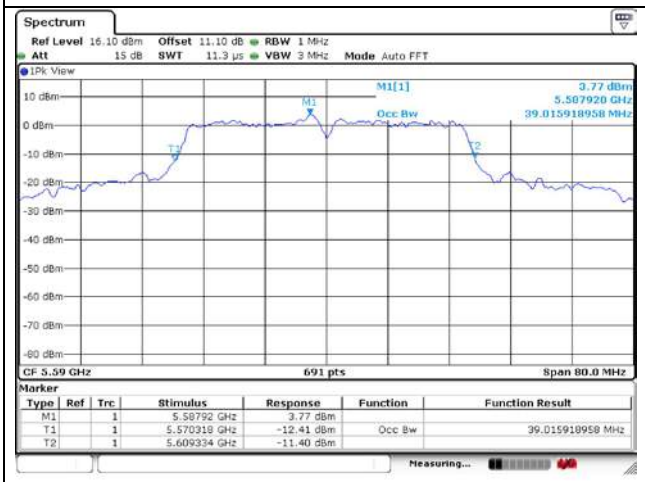
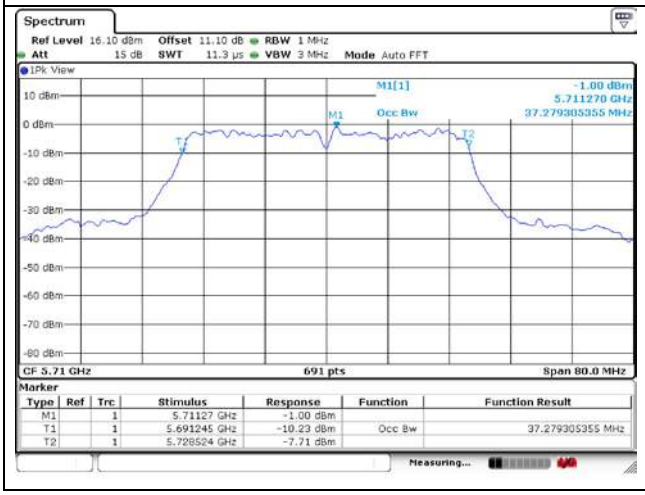
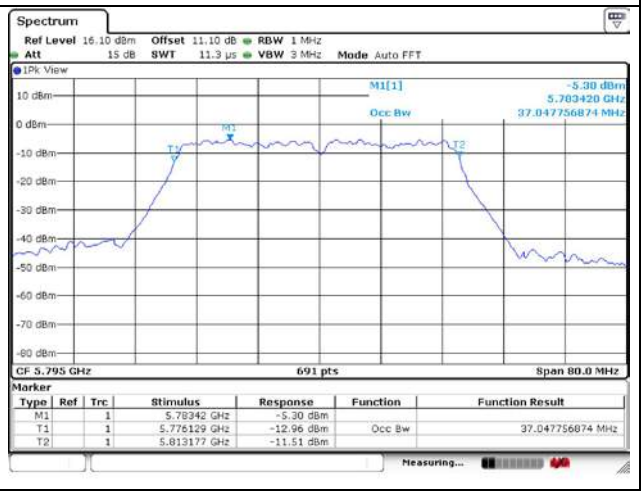
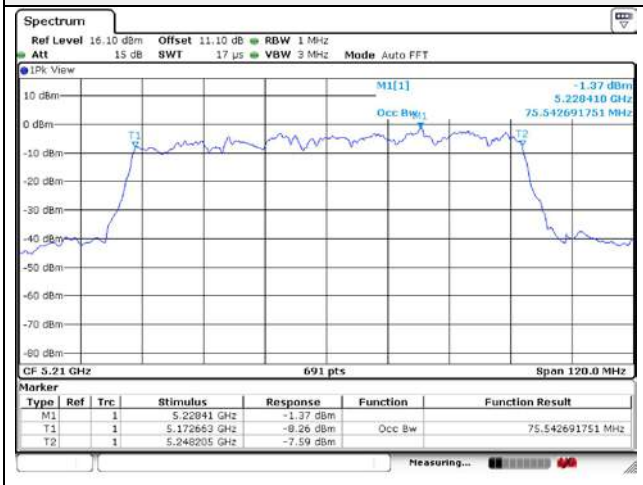
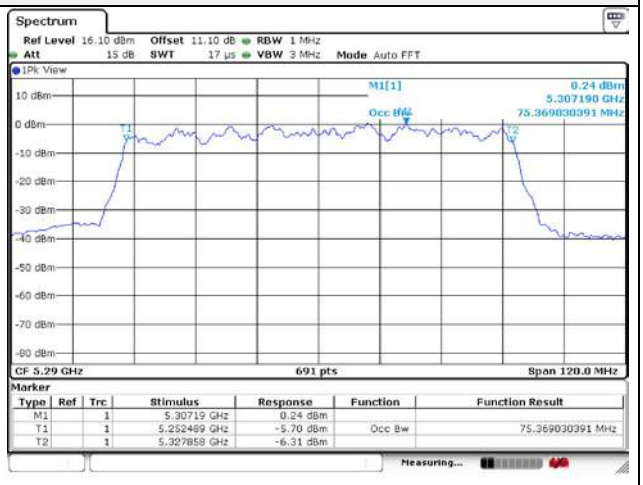
UNII-1_ VHT40	UNII-2A_ VHT40
	
Blank	Blank
	

UNII-2C_VHT40	UNII-3_ VHT40
	
	Blank
	

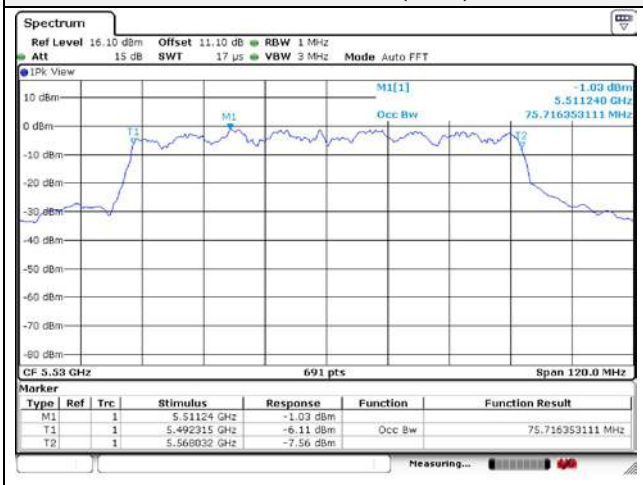
UNII-1_VHT80



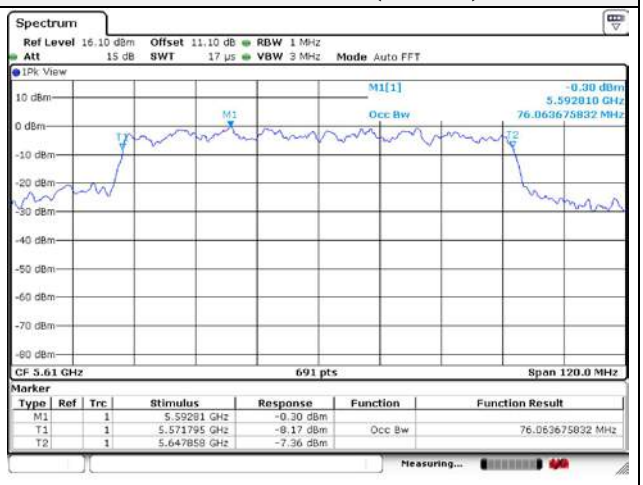
UNII-2A_ VHT80



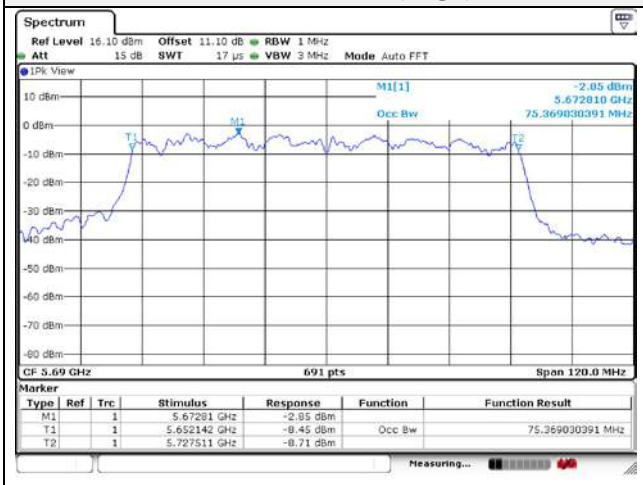
UNII-2C_VHT80(Low)



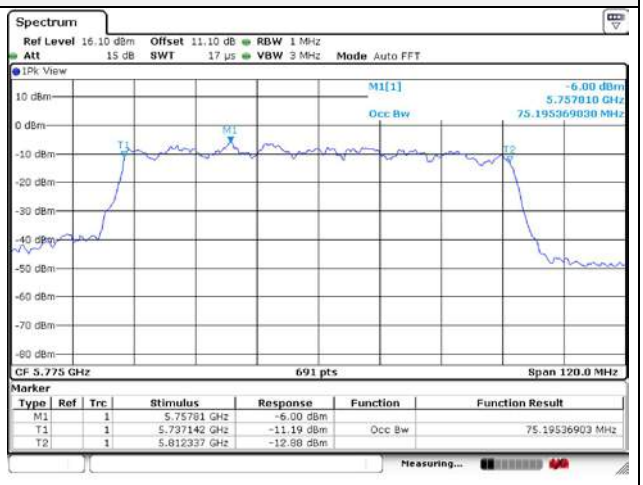
UNII-2C_VHT80(Middle)



UNII-2C_VHT80(High)



UNII-3_ VHT80



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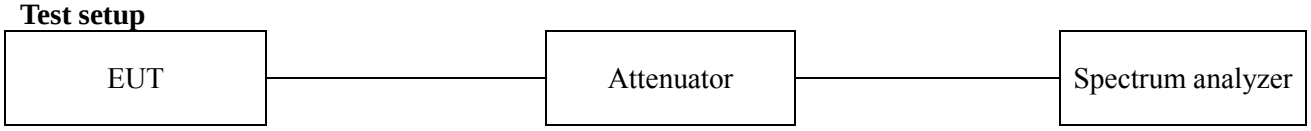
3.2. 6 dB bandwidth

Test procedure

KDB 789033 D02 v02r01– Section C.2

Test setup



Section C.2

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

Limit

Within the 5.725-5.85 ㎓ band, the minimum 6 ㏈ bandwidth of U-NII devices shall be at least 500 ㎑.

According to RSS-247 6.1 (1), equipment ope rating i n t he b and 5 725-5850 M Hz, t he m inimum 6 d B bandwidth shall be at least 500 kHz.

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Test results

Band	Frequency(㎒)	Mode	6 dB bandwidth(㎒)
UNII-3	5 745	a	16.425
	5 785		16.425
	5 825		16.498
	5 745	HT20	17.221
	5 785		17.438
	5 825		17.656
	5 755	HT40	36.010
	5 795		36.070
	5 745	VHT20	17.366
	5 785		17.511
	5 825		17.583
	5 755	VHT40	36.470
	5 795		36.300
	5 775	VHT80	74.240
UNII-3 (Band-crossing channels)	5 720	a	3.249
	5 720	HT20	3.466
	5 710	HT40	3.290
	5 720	VHT20	3.755
	5 710	VHT40	3.180
	5 690	VHT80	2.480

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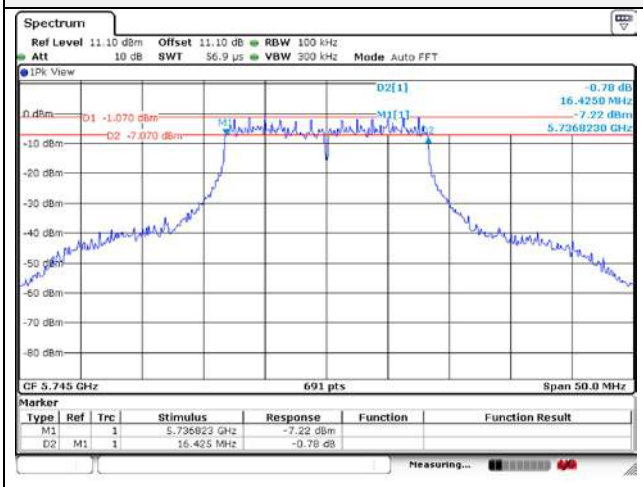
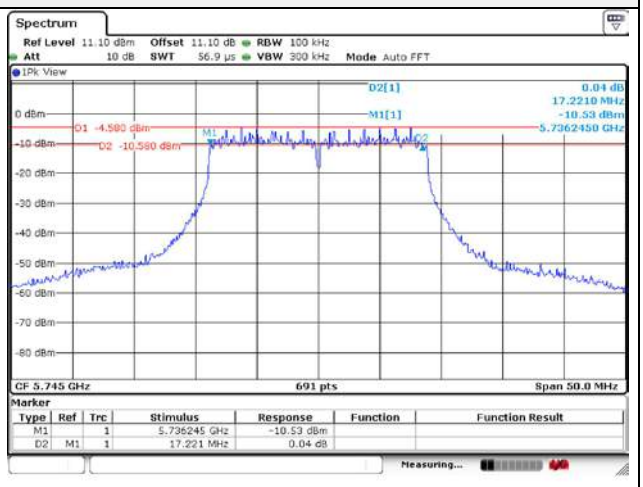
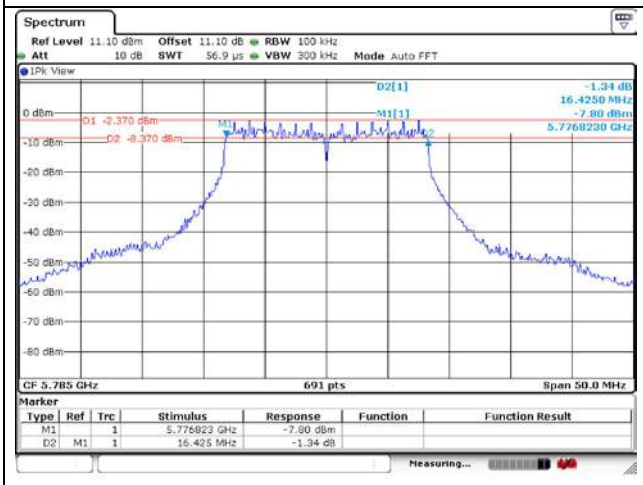
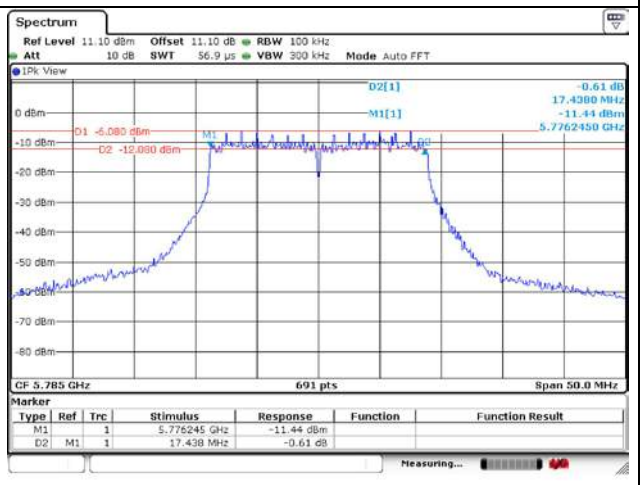
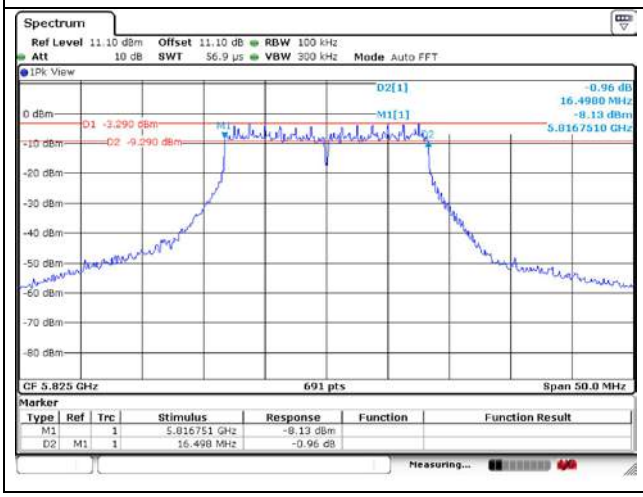
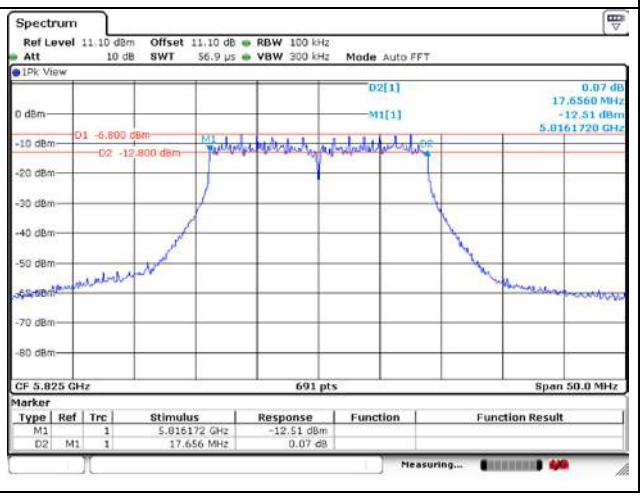
UNII-3_a	UNII-3_HT20
	
	
	

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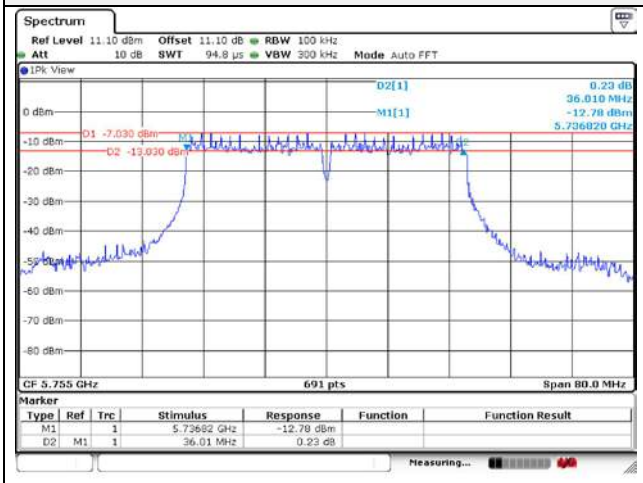
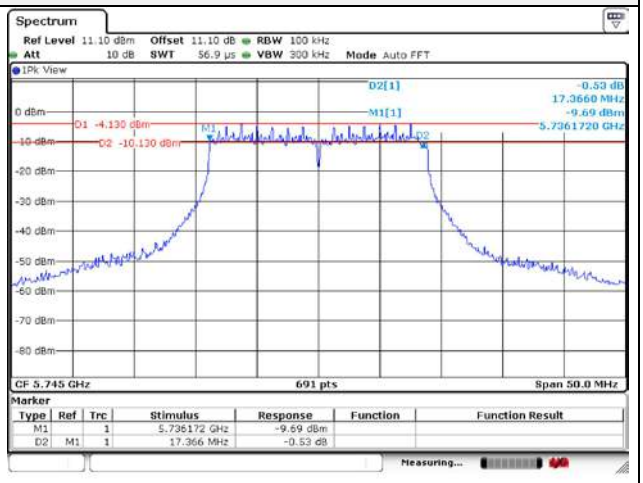
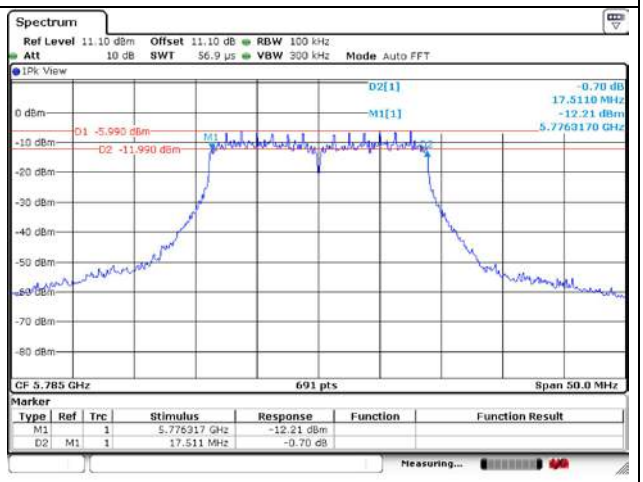
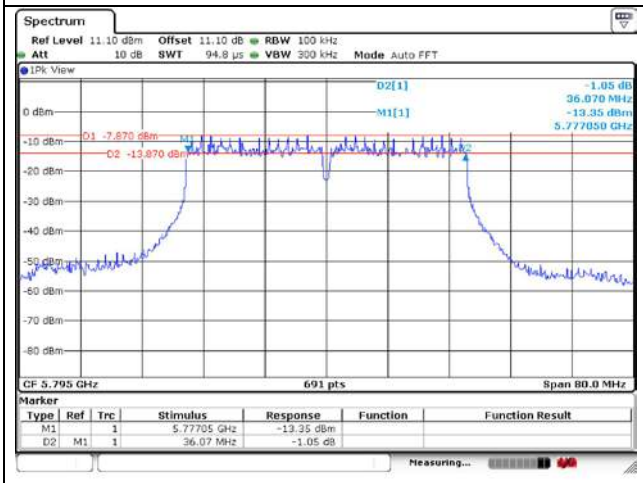
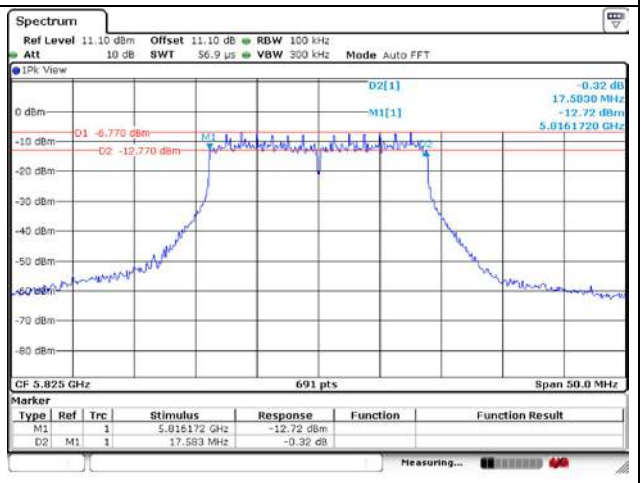
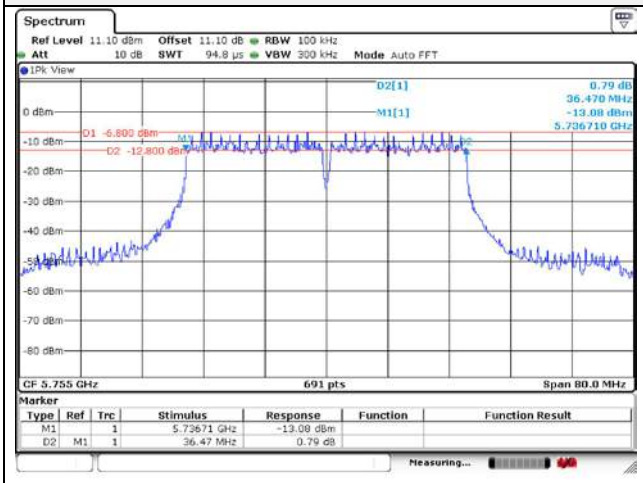
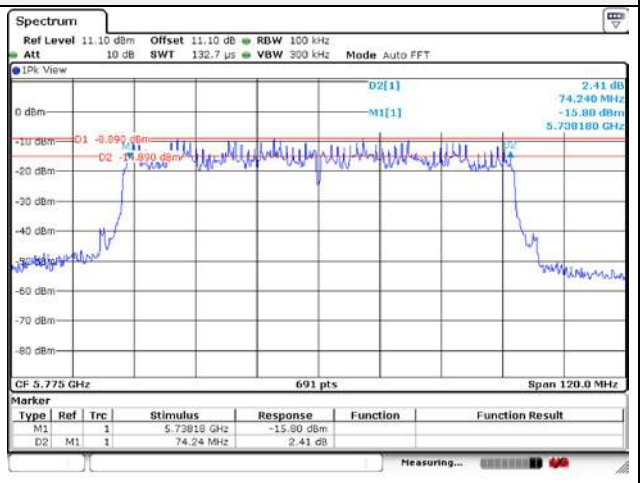
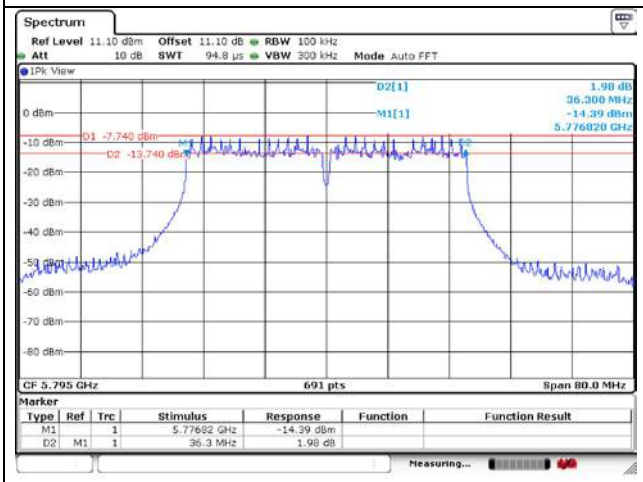
UNII-3_HT40	UNII-3_VHT20
	
Blank	
	

UNII-3_VHT40	UNII-3_VHT80
	
	Blank

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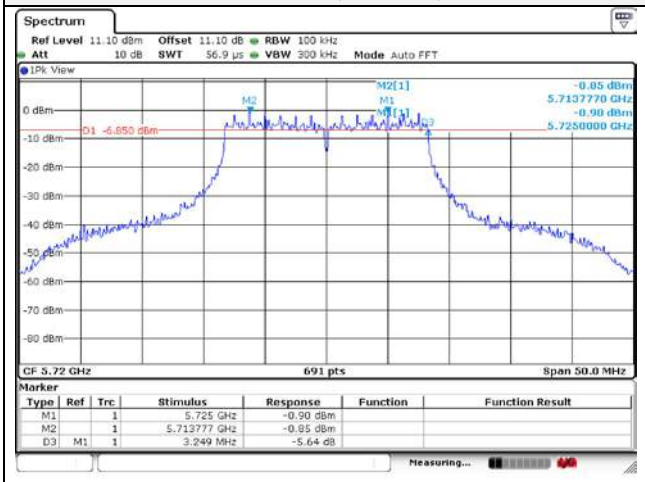
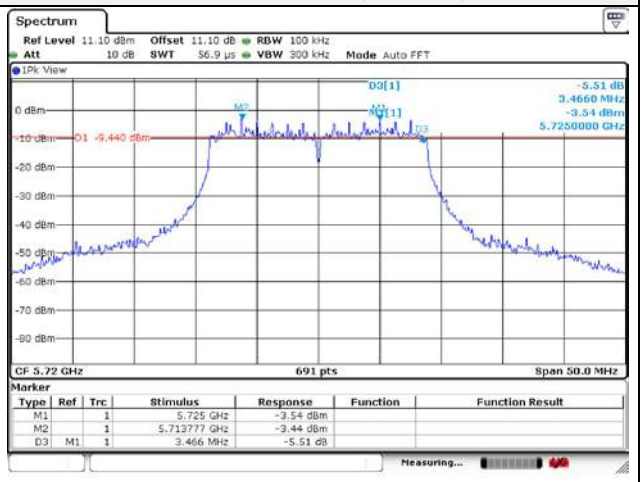
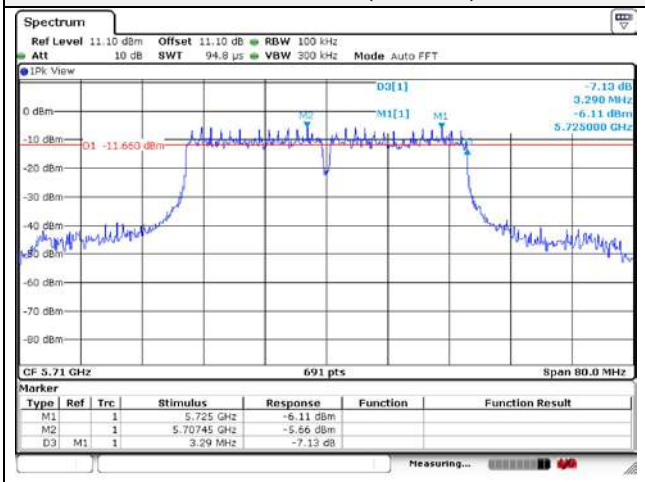
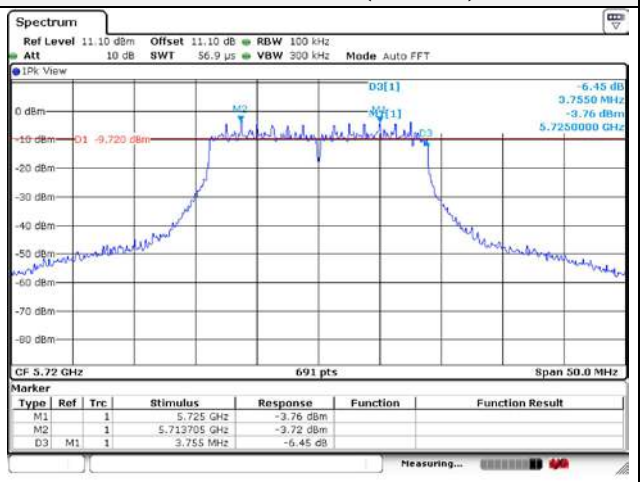
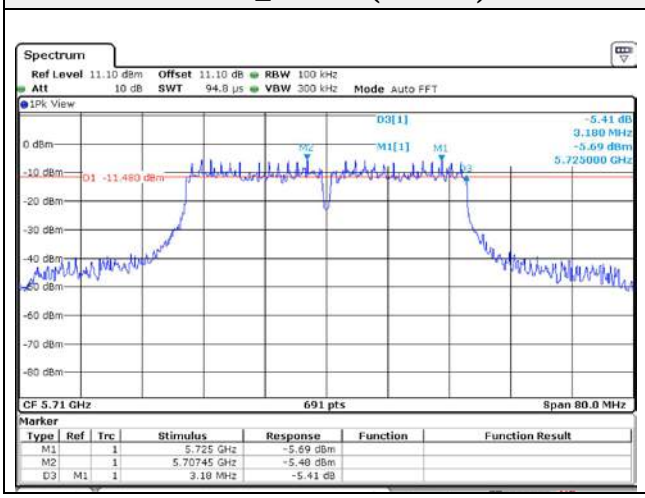
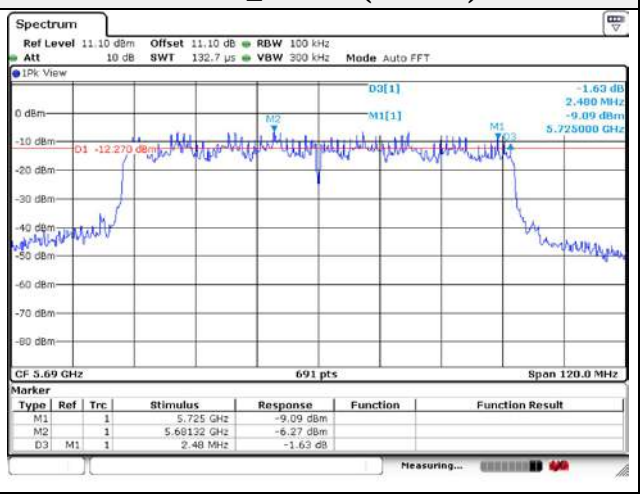
Band-crossing channels

UNII-3_a (Ch. 144)	UNII-3_ HT20 (Ch. 144)
	
UNII-3_ HT40 (Ch. 142)	**UNII-3_VHT20 (Ch. 144)**
	
UNII-3_VHT40 (Ch. 142)	**UNII-3_VHT80 (Ch. 138)**
	

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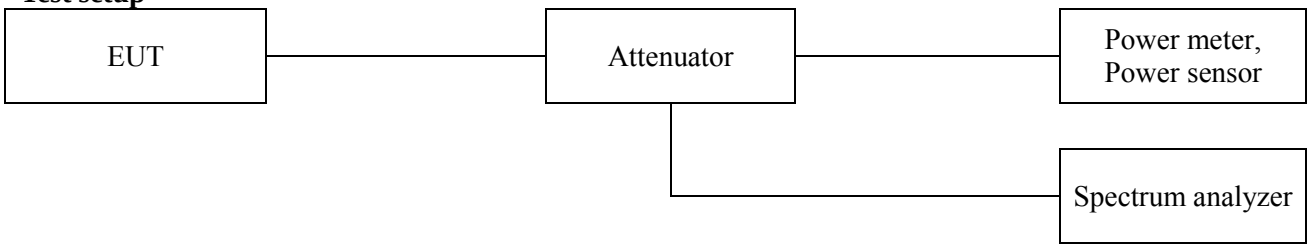
3.3. Maximum conducted output power

Test procedure

KDB 78903 3 D 02 v02r01– Section E .3.a) o r b)
Used test method is Section E.3.b)

Test setup



Section E.3.a)

Method PM (Measurement using an RF average power meter):

i. Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.
- The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
- At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
- The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

ii. If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section II.B.

iii. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

iv. Adjust the measurement in dBm by adding 10 log (1/x) where x is the duty cycle (e.g., 10 log (1/0.25) if the duty cycle is 25 %).

Section E.3.b)

Method PM-G (Measurement using a gated RF average power meter):

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

Limit

FCC

Band	EUT Category		Limit
UNII-1		Outdoor access point	1 W (30 dBm)
		Indoor access point	
		Fixed point-to-point access point	
	✓	Mobile and portable client device	250 ㎽(24 dBm)
UNII-2A	✓		250 ㎽ or 11 dBm + 10logB*
UNII-2C	✓		250 ㎽ or 11 dBm + 10logB*
UNII-3	✓		1 W (30 dBm)

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IC

Band	Limit
5150~5250 ㎒	EIRP shall not exceed 200 mW or 10+10logB*, ㏈m
5250~5350 ㎒	Conducted output power shall not exceed 250 ㎽ or 11 ㏈m + 10logB* EIRP shall not exceed 1.0 W or 17+10logB*, ㏈m
5470~5600 ㎒ and 5650~5725 ㎒	Conducted output power shall not exceed 250 ㎽ or 11 ㏈m + 10logB* EIRP shall not exceed 1.0 W or 17+10logB*, ㏈m
5725~5850 ㎒	Conducted output power shall not exceed 1 W

Note.

1. FCC Limit B is the 26 ㏈ emission bandwidth.
2. IC Limit B is the 99% emission bandwidth in megahertz.

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Test results

Band	Frequency (㎒)	Mode	Detector mode	Output power (dBm)	Limit (dBm)	
					FCC	IC
UNII-1	5 180	a	AV	9.70	24.00	22.21
	5 220		AV	9.92		22.29
	5 240		AV	10.40		22.27
UNII-2A	5 260		AV	9.69	24.00	22.25
	5 280		AV	10.17		22.25
	5 320		AV	10.85		22.23
UNII-2C	5 500		AV	12.20	24.00	23.31
	5 600		AV	13.25		24.00
	5 720		AV	8.09		23.27
UNII-3	5 745		AV	9.58	30.00	30.00
	5 785		AV	8.05		
	5 825		AV	7.78		

Band	Frequency (㎒)	Mode	Detector mode	Output power (dBm)	Limit (dBm)	
					FCC	IC
UNII-1	5 180	HT20	AV	6.69	24.00	22.52
	5 220		AV	7.41		22.50
	5 240		AV	8.12		22.50
UNII-2A	5 260		AV	7.60	24.00	23.50
	5 280		AV	8.26		23.49
	5 320		AV	8.80		23.49
UNII-2C	5 500		AV	10.04	24.00	23.50
	5 600		AV	11.54		23.63
	5 720		AV	7.51		23.49
UNII-3	5 745		AV	6.86	30.00	30.00
	5 785		AV	4.73		
	5 825		AV	4.11		

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Band	Frequency (㎒)	Mode	Detector mode	Output power (dBm)	Limit(dBm)	
					FCC	IC
UNII-1	5 190	HT40	AV	7.15	24.00	23.00
	5 230		AV	7.50		
UNII-2A	5 270		AV	7.88	24.00	24.00
	5 310		AV	8.66		
UNII-2C	5 510		AV	10.06	24.00	24.00
	5 590		AV	11.53		
	5 710		AV	7.93		
UNII-3	5 755		AV	6.50	30.00	30.00
	5 795		AV	5.82		

Band	Frequency (㎒)	Mode	Detector mode	Output power (dBm)	Limit(dBm)	
					FCC	IC
UNII-1	5 180	VHT20	AV	7.21	24.00	22.49
	5 220		AV	7.90		22.54
	5 240		AV	8.45		22.50
UNII-2A	5 260		AV	7.78	24.00	23.50
	5 280		AV	8.32		23.52
	5 320		AV	8.84		23.50
UNII-2C	5 500		AV	10.02	24.00	23.50
	5 600		AV	11.42		23.64
	5 720		AV	7.46		23.50
UNII-3	5 745		AV	6.75	30.00	30.00
	5 785		AV	4.67		
	5 825		AV	4.05		

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Band	Frequency (㎒)	Mode	Detector mode	Output power (dBm)	Limit(dBm)	
					FCC	IC
UNII-1	5 190	VHT40	AV	7.40	24.00	23.00
	5 230		AV	7.73		
UNII-2A	5 270		AV	7.99	24.00	24.00
	5 310		AV	8.69		
UNII-2C	5 510		AV	10.12	24.00	24.00
	5 590		AV	11.52		
	5 710		AV	7.95		
UNII-3	5 755		AV	6.73	30.00	30.00
	5 795		AV	5.97		

Band	Frequency (㎒)	Mode	Detector mode	Output power (dBm)	Limit(dBm)	
					FCC	IC
UNII-1	5 210	VHT80	AV	7.54	24.00	24.00
UNII-2A	5 290		AV	8.12	24.00	24.00
UNII-2C	5 530		AV	10.72	24.00	24.00
	5 610		AV	11.01		
	5 690		AV	9.13		
UNII-3	5 775		AV	5.98	30.00	30.00

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Band-crossing channels

Band	Frequency (㎒)	Mode	Detector mode	Output power (dBm)	Limit(dBm)	
					FCC	IC
UNII-2C	5 720	a	AV	6.73	22.90	23.27
	5 720	HT20	AV	4.37	22.78	23.49
	5 710	HT40	AV	4.91	24.00	24.00
	5 720	VHT20	AV	3.94	22.90	23.50
	5 710	VHT40	AV	3.92	24.00	24.00
	5 690	VHT80	AV	3.69	24.00	24.00
UNII-3	5 720	a	AV	0.57	30.00	30.00
	5 720	HT20	AV	-1.40		
	5 710	HT40	AV	-5.85		
	5 720	VHT20	AV	-1.05		
	5 710	VHT40	AV	-6.39		
	5 690	VHT80	AV	-12.77		

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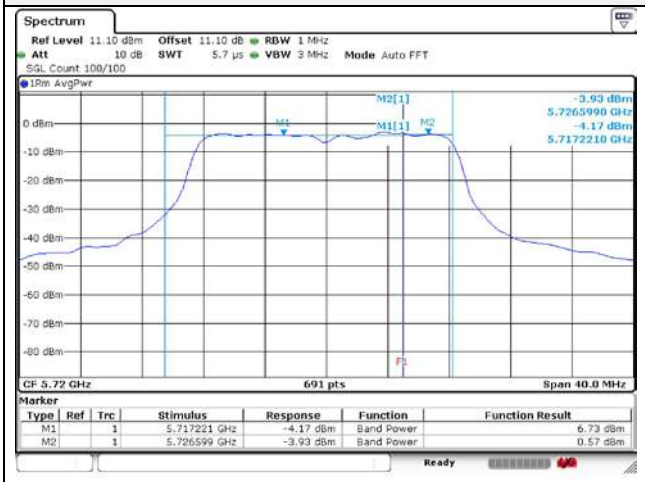
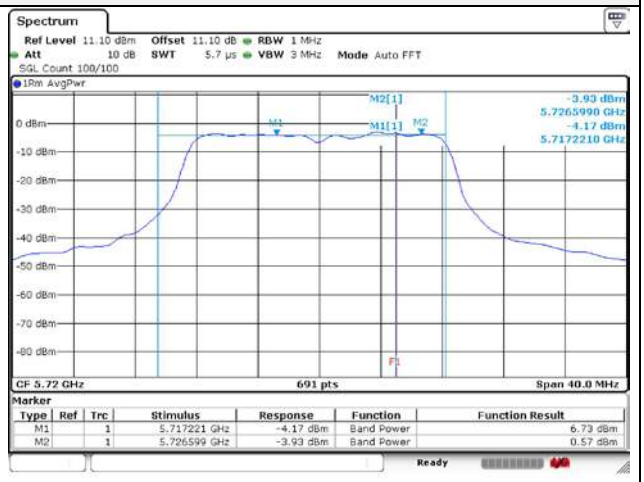
Band-crossing channels

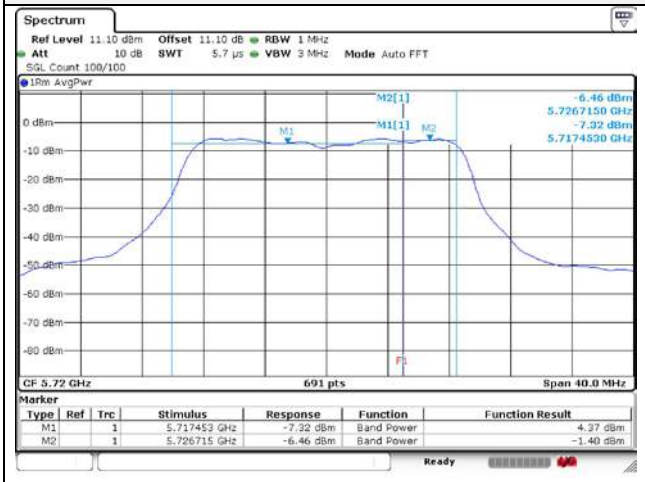
UNII-2C_a (Ch. 144)



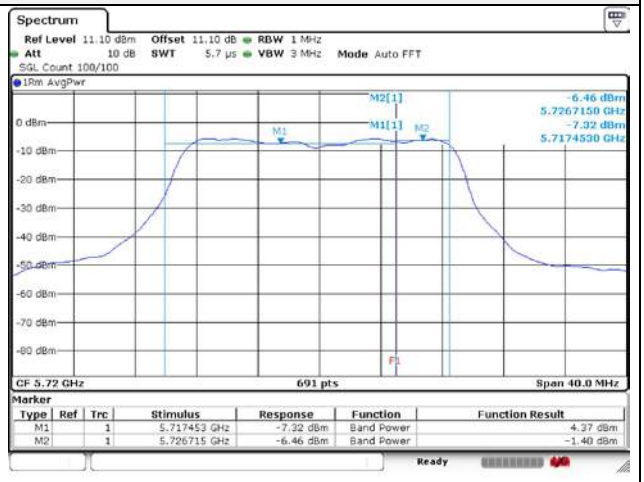
UNII-3_a (Ch. 144)



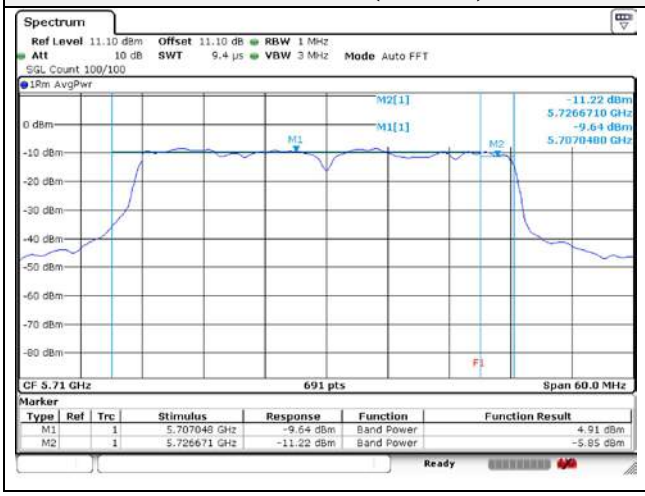
UNII-2C_HT20 (Ch. 144)



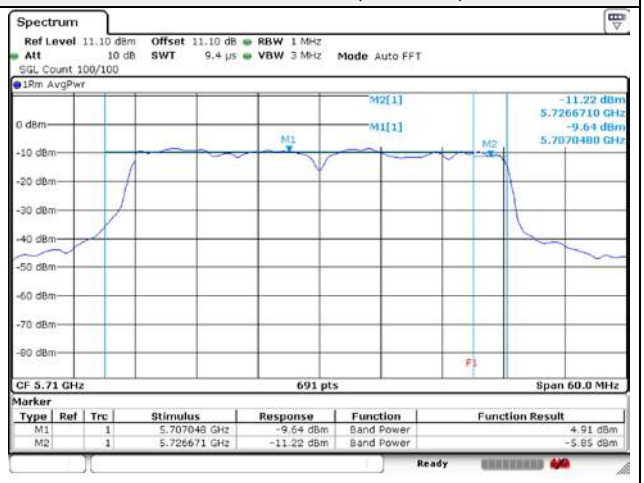
UNII-3_HT20 (Ch. 144)



UNII-2C_HT40 (Ch. 142)



UNII-3_HT40 (Ch. 142)



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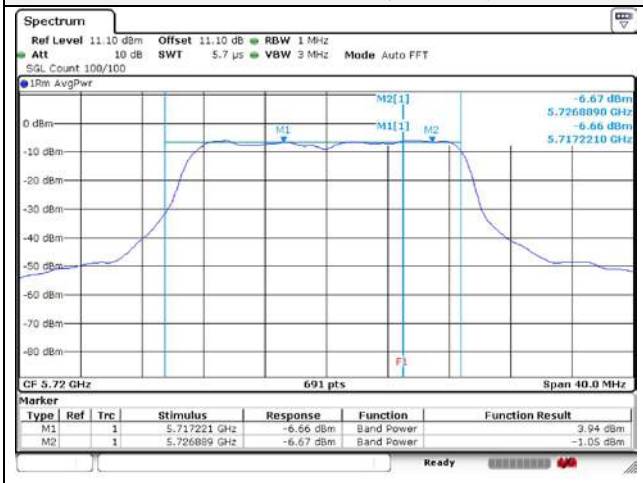
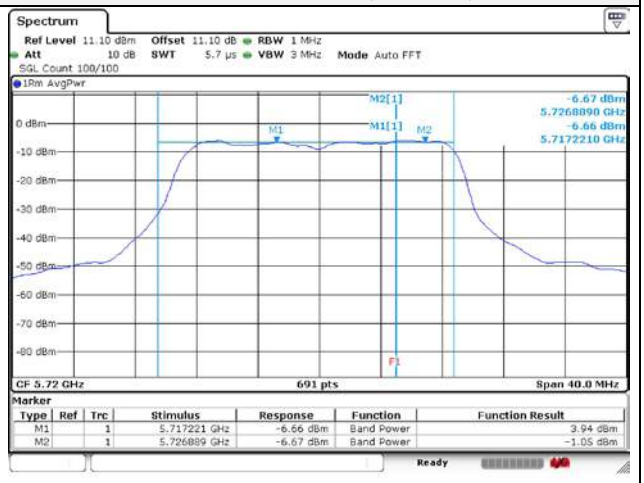
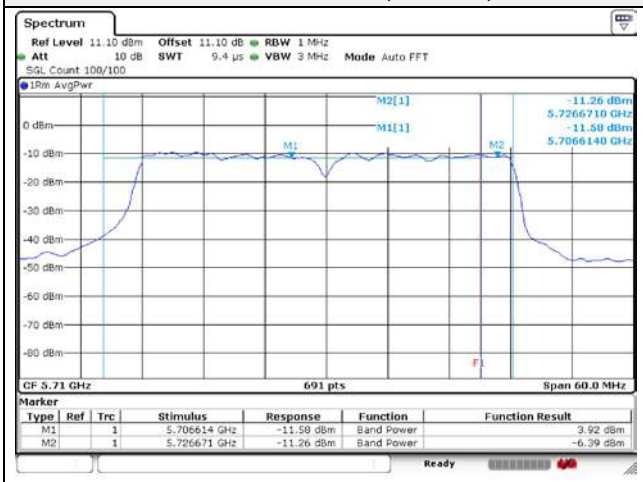
UNII-2C_VHT20 (Ch. 144)



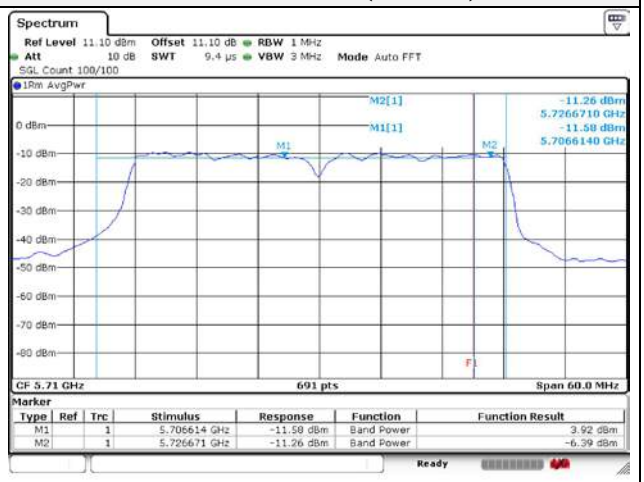
UNII-3_VHT20 (Ch. 144)



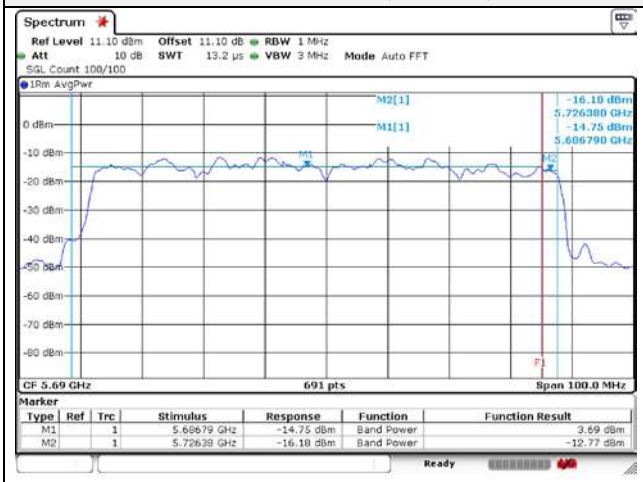
UNII-2C_VHT40 (Ch. 142)



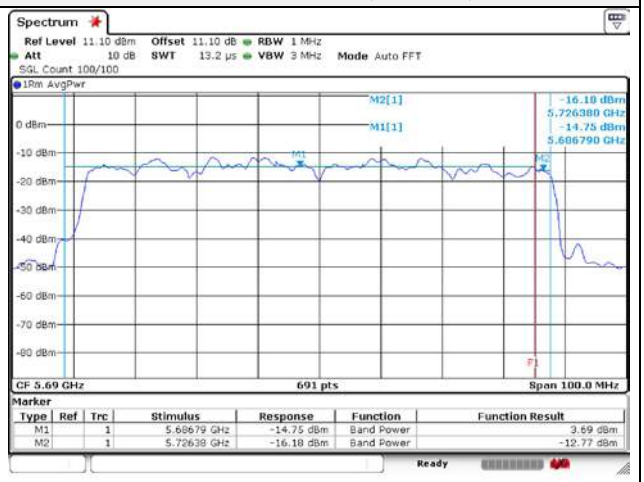
UNII-3_VHT40 (Ch. 142)



UNII-2C_VHT80 (Ch. 138)



UNII-3_VHT80 (Ch. 138)



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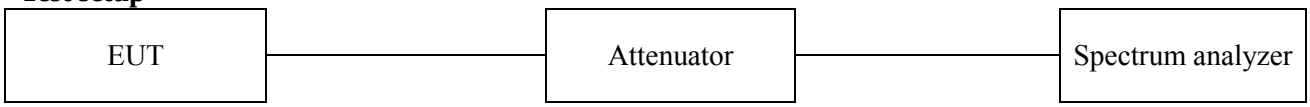
3.4. Power spectral density

Test procedure

KDB 78903 3 D 02 v02r01 – Section F

Test setup



Section F

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power…." (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)
2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
3. Make the following adjustments to the peak value of the spectrum, if applicable:
   a) If Method SA-2 or SA-2 Alternative was used, add 10 log (1/x), where x is the duty cycle, to the peak of the spectrum.
   b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
4. The result is the Maximum PSD over 1 ㎒ reference bandwidth.
5. For devices operating in the bands 5.15-5.25 ㎓, 5.25-5.35 ㎓, and 5.47-5.725 ㎓, the above procedures make use of 1 ㎒ RBW to satisfy directly the 1 ㎒ reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 ㎓, the rules specify a measurement bandwidth of 500 ㎑. Many spectrum analyzers do not have 500 ㎑ RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 ㎒, or 500 ㎑, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 ㎒, or 500 ㎑). If measurements are performed using a reduced resolution bandwidth (< 1 ㎒, or < 500 ㎑) and integrated over 1 ㎒, or 500 ㎑ bandwidth, the following adjustments to the procedures apply:

   a) Set RBW ≥ 1/T, where T is defined in section II.B.l.a)
   b) Set VBW ≥ 3 RBW.
   c) If measurement bandwidth of Maximum PSD is specified in 500 ㎑, add 10 log (500 ㎑/RBW) to the measured result, whereas RBW (< 500 ㎑) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
   d) If measurement bandwidth of Maximum PSD is specified in 1 ㎒, add 10 log (1 ㎒/RBW) to the measured result, whereas RBW (< 1 ㎒) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
   e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note.

As a practical matter, it is recommended to use reduced RBW of 100 ㎑ for the sections 5.c) and 5.d) above, since RBW=100 ㎑ is available on nearly all spectrum analyzers.

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Limit

FCC

Band	EUT Category		Limit
UNII-1		Outdoor access point	17 dBm/㎒
		Indoor access point	
		Fixed point-to-point access point	
	✓	Mobile and portable client device	11 dBm/㎒
UNII-2A	✓		11 dBm/㎒
UNII-2C	✓		11 dBm/㎒
UNII-3	✓		30 dBm/500 ㎑

IC

Band	Limit
5150~5250 ㎒	EIRP spectral density 10 dBm/㎒
5250~5350 ㎒	11 dBm/㎒
5470~5600 ㎒ and 5650~5725 ㎒	11 dBm/㎒
5725~5850 ㎒	30 dBm/500 ㎑

Note.

1. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceed 6 dBi.

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Test results

Band	Frequency (㎒)	Mode	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Sum Note3	Limit(dBm/㎒)	
							FCC	IC
UNII-1	5 180	a	-2.12	-	1.12	-1.00	11.00	11.00
	5 220		-1.04			0.08		
	5 240		-1.94			-0.82		
	5 180	HT20	-4.77		0.75	-4.02		
	5 220		-4.57			-3.82		
	5 240		-4.41			-3.66		
	5 190	HT40	-9.57		1.92	-7.65		
	5 230		-8.27			-6.35		
	5 180	VHT20	-5.35		1.76	-3.59		
	5 220		-5.42			-3.66		
	5 240		-4.50			-2.74		
	5 190	VHT40	-8.91		2.43	-6.48		
	5 230		-9.26			-6.83		
	5 210	VHT80	-12.21		7.92	-4.29		

Band	Frequency (㎒)	Mode	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Sum Note3	Limit(dBm/㎒)	
							FCC	IC
UNII-2A	5 260	a	-2.56	-	0.92	-1.64	11.00	11.00
	5 280		-1.74			-0.82		
	5 320		-1.11			-0.19		
	5 260	HT20	-4.80		1.38	-3.42		
	5 280		-4.51			-3.13		
	5 320		-2.89			-1.51		
	5 270	HT40	-8.53		2.76	-5.77		
	5 310		-7.82			-5.06		
	5 260	VHT20	-4.44		2.34	-2.10		
	5 280		-4.09			-1.75		
	5 320		-4.02			-1.68		
	5 270	VHT40	-9.22		3.52	-5.70		
	5 310		-8.33			-4.81		
	5 290	VHT80	-11.84		8.13	-3.71		

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Band	Frequency (㎒)	Mode	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Sum Note3	Limit(dBm/㎒)	
							FCC	IC
UNII-2C	5 500	a	0.25	-	0.92	1.17	11.00	11.00
	5 600		1.46			2.38		
	5 720		-2.16			-1.24		
	5 500	HT20	-1.84		0.97	-0.87		
	5 600		-0.87			0.10		
	5 720		-5.09			-4.12		
	5 510	HT40	-5.32		2.22	-3.10		
	5 590		-4.43			-2.21		
	5 710		-7.85			-5.63		
	5 500	VHT20	-2.39		1.09	-1.30		
	5 600		-0.73			0.36		
	5 720		-5.23			-4.14		
	5 510	VHT40	-6.31		3.28	-3.03		
	5 590		-5.12			-1.84		
	5 710		-8.48			-5.20		
	5 530	VHT80	-9.03		8.45	-0.58		
	5 610		-8.50			-0.05		
	5 690		-10.30			-1.85		

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Band	Frequency (㎒)	Mode	PSD (dBm/500㎑)	RBWF Note1	DCF Note2	Sum Note3	Limit(dBm/㎒)	
							FCC	IC
UNII-3	5 745	a	-5.42	-	1.50	-3.92	30.00	30.00
	5 785		-6.15			-4.65		
	5 825		-6.50			-5.00		
	5 745	HT20	-8.61		0.97	-7.64		
	5 785		-10.27			-9.30		
	5 825		-10.42			-9.45		
	5 755	HT40	-12.47		2.76	-9.71		
	5 795		-13.06			-10.30		
	5 745	VHT20	-8.56		1.55	-7.01		
	5 785		-9.97			-8.42		
	5 825		-10.58			-9.03		
	5 755	VHT40	-12.41		3.01	-9.40		
	5 795		-13.23			-10.22		
	5 775	VHT80	-15.31		7.16	-8.15		

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Band-crossing channels

Band	Frequency (㎒)	Mode	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Sum Note3	Limit(dBm/㎒)	
							FCC	IC
UNII-2C	5 720	a	-1.94	-	0.92	-1.02	11.00	11.00
	5 720	HT20	-4.70	-	0.97	-3.73		
	5 710	HT40	-7.38	-	0.22	-7.16		
	5 720	VHT20	-4.90	-	1.09	-3.81		
	5 710	VHT40	-8.14	-	3.28	-4.86		
	5 690	VHT80	-10.75	-	8.45	-2.30		

Band	Frequency (㎒)	Mode	PSD (dBm/500㎑)	RBWF Note1	DCF Note2	Sum Note3	Limit(dBm/500㎑)	
							FCC	IC
UNII-3	5 720	a	-5.21	-	1.50	-3.71	30.00	30.00
	5 720	HT20	-8.77	-	0.97	-7.80		
	5 710	HT40	-11.66	-	2.76	-8.90		
	5 720	VHT20	-8.52	-	1.56	-6.96		
	5 710	VHT40	-11.61	-	3.01	-8.60		
	5 690	VHT80	-17.35	-	7.16	-10.19		

Note.

1. UNII-1 = 10log(1 ㎒/1 ㎒)
   UNII-2A = 10log(1 ㎒/1 ㎒)
   UNII-2C = 10log(1 ㎒/1 ㎒)
   UNII-3 = 10log(500 ㎑ /500 ㎑)
2. Refer to the page 78 on this report.
3. Sum(dBm) = PSD(dBm) + RBWF + Duty correction factor (dB)

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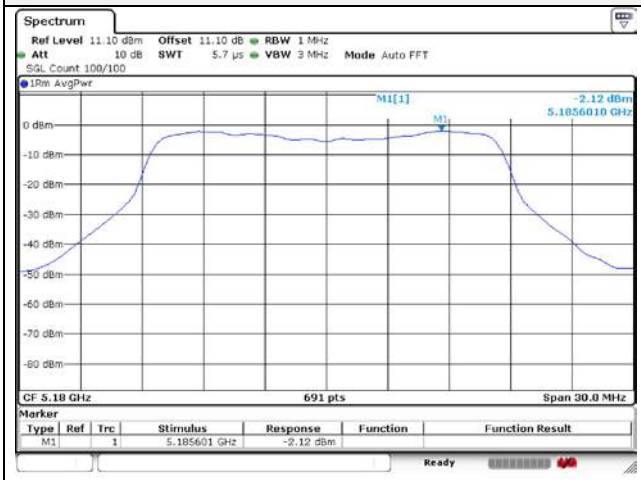
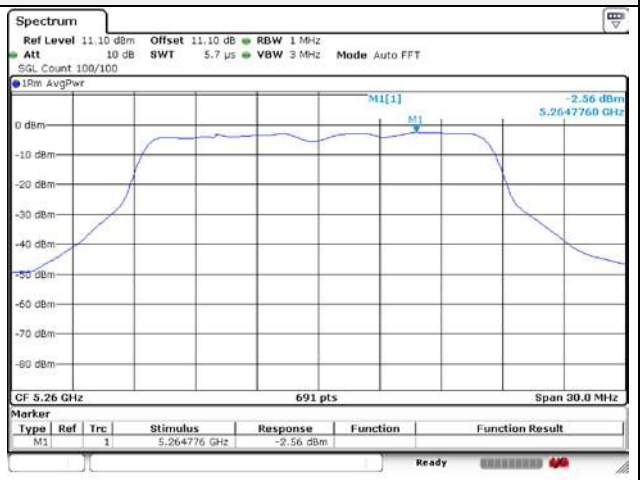
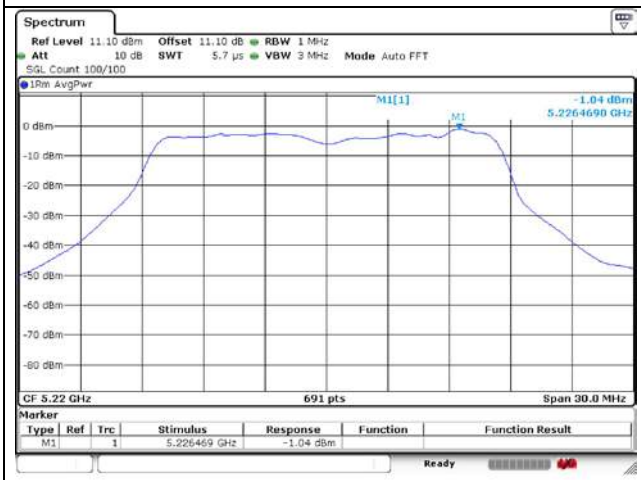
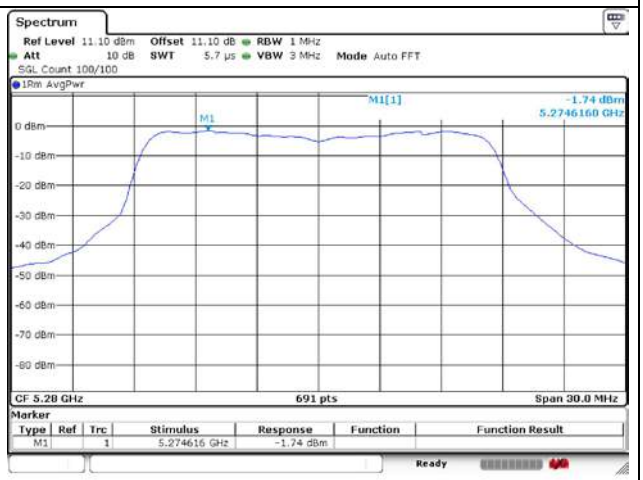
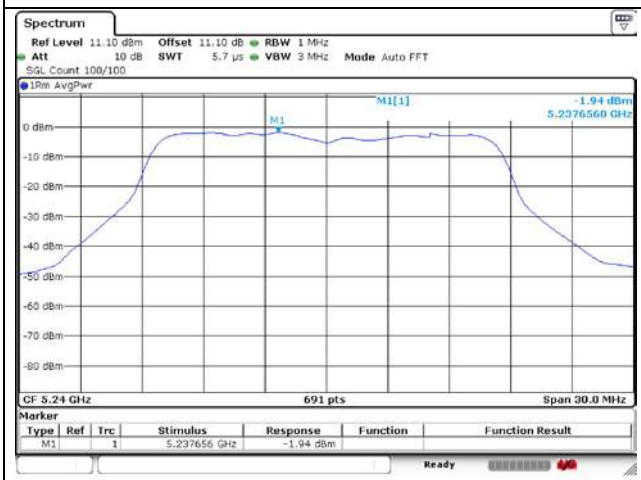
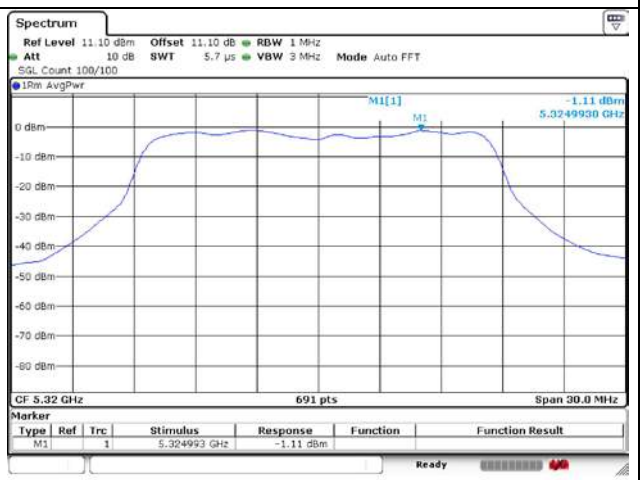
UNII-1_a	UNII-2A_a
	
	
	

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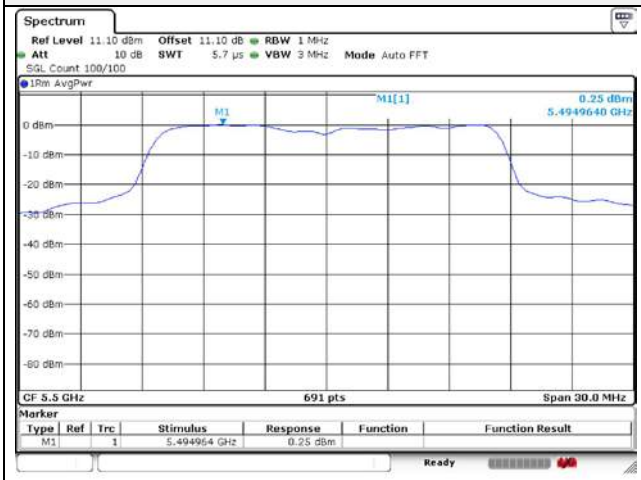
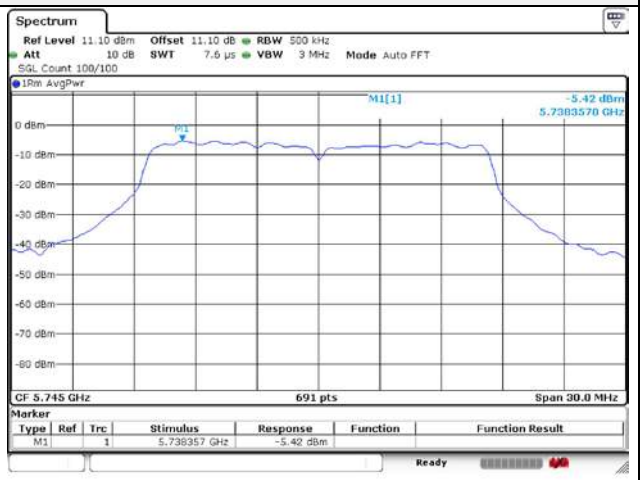
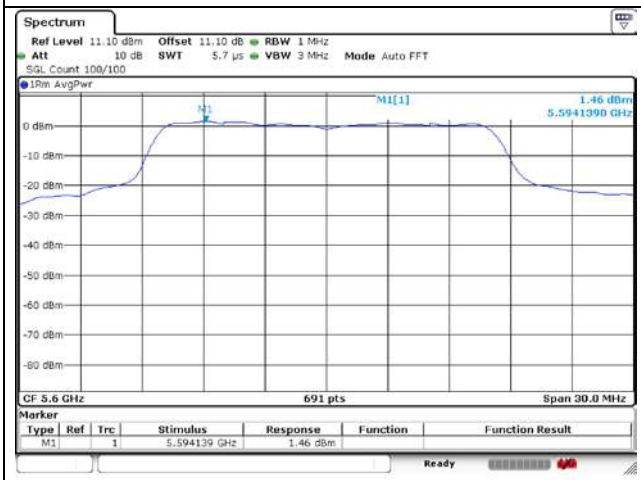
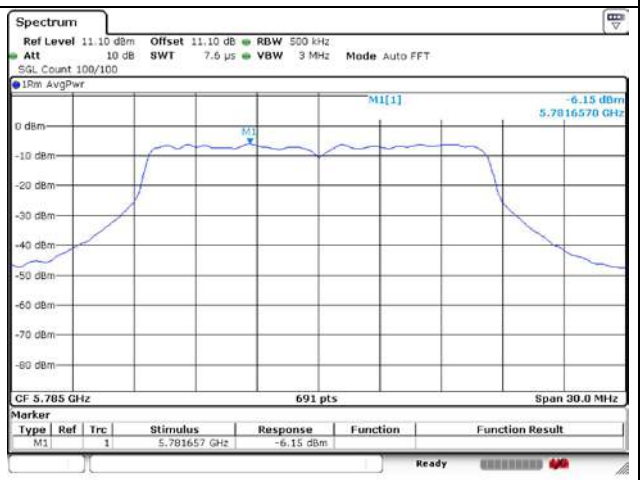
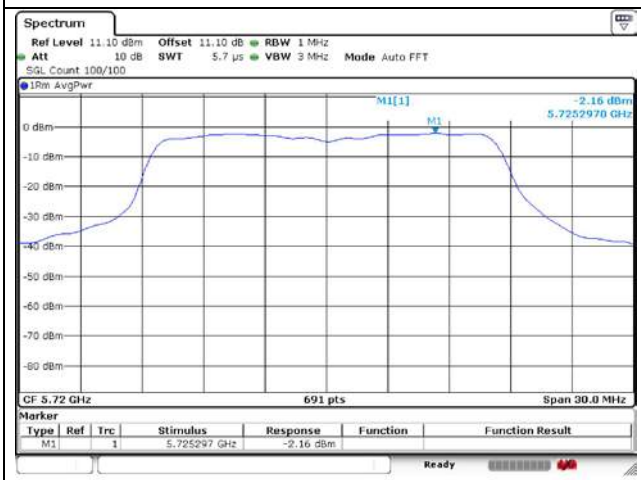
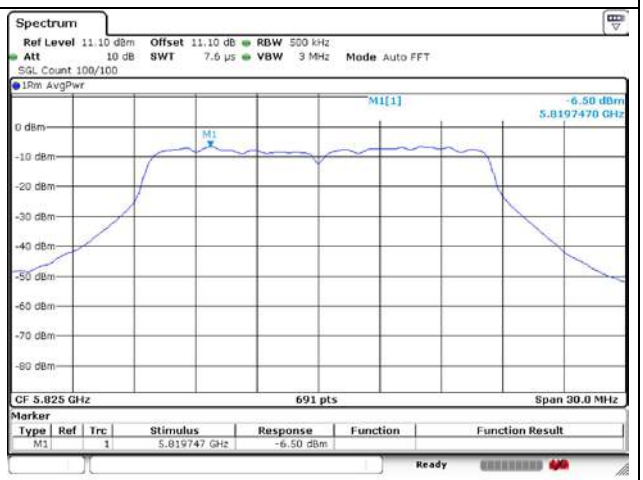
UNII-2C_a	UNII-3_a
	
	
	

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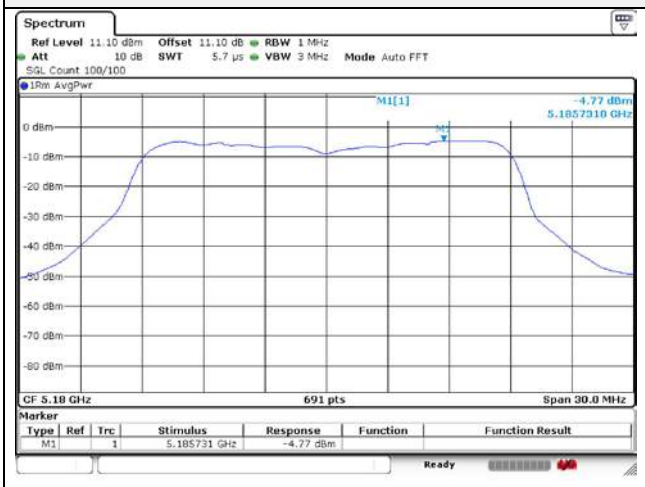
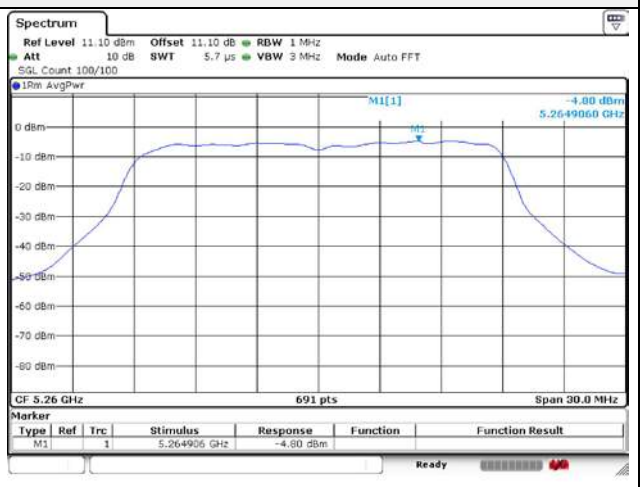
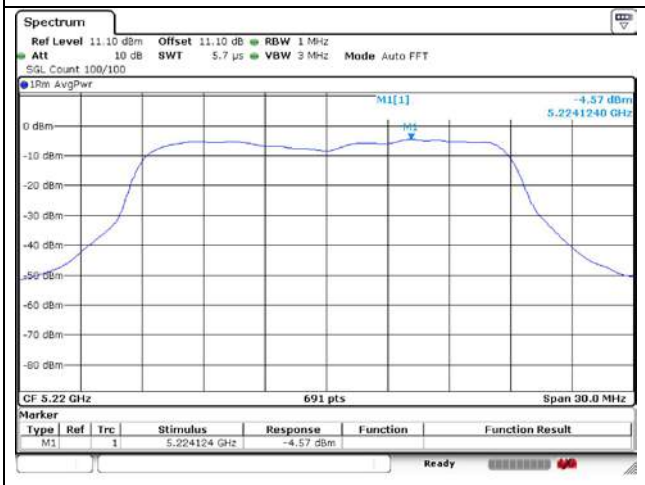
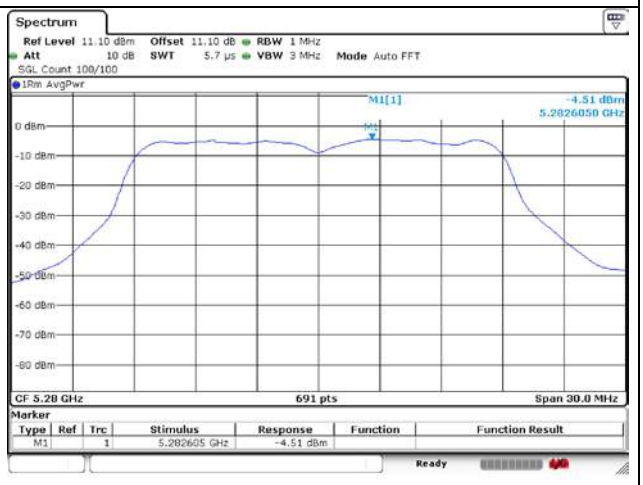
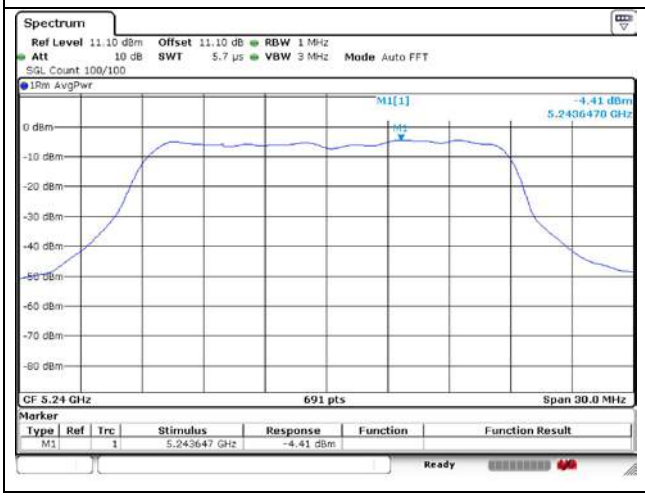
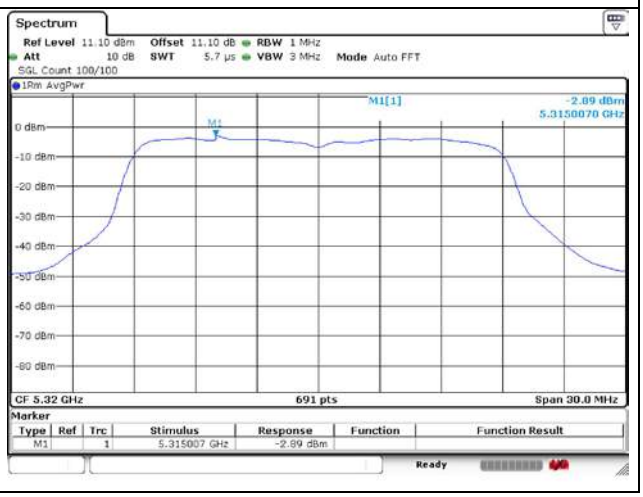
UNII-1_ HT20	UNII-2A_ HT20
	
	
	

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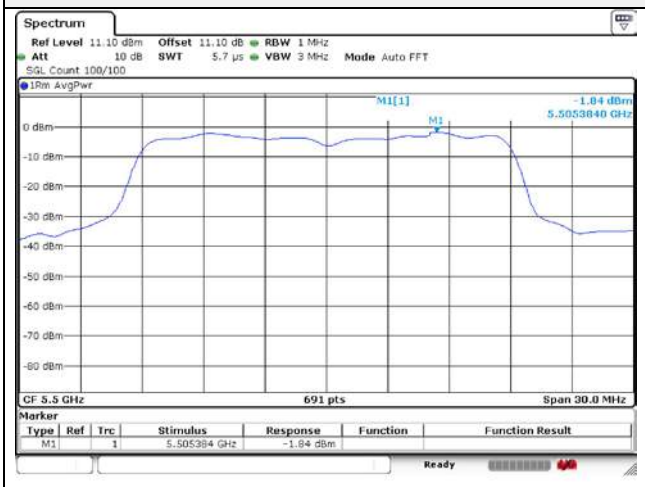
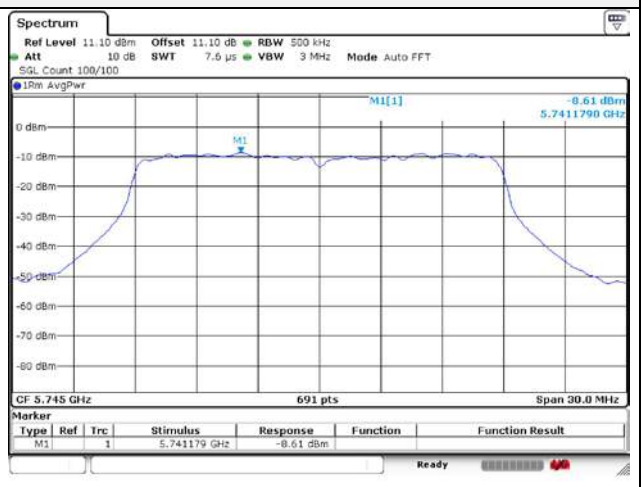
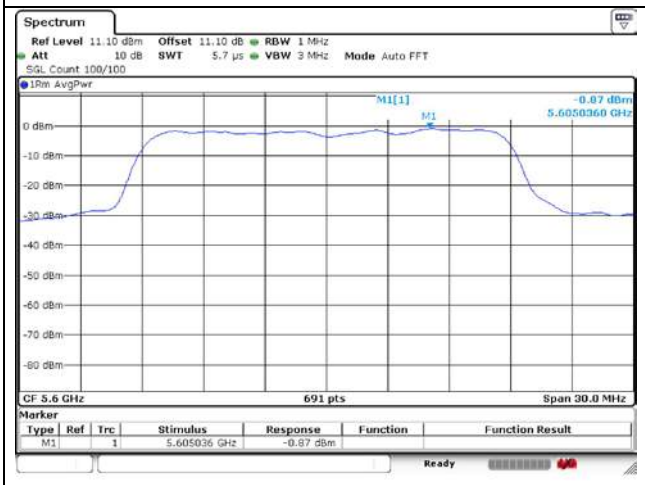
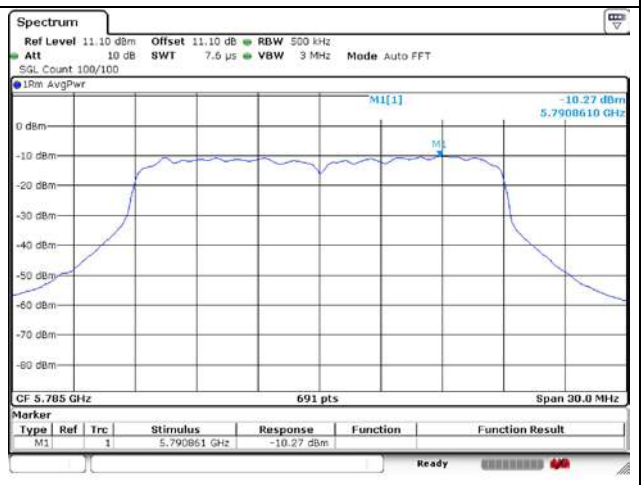
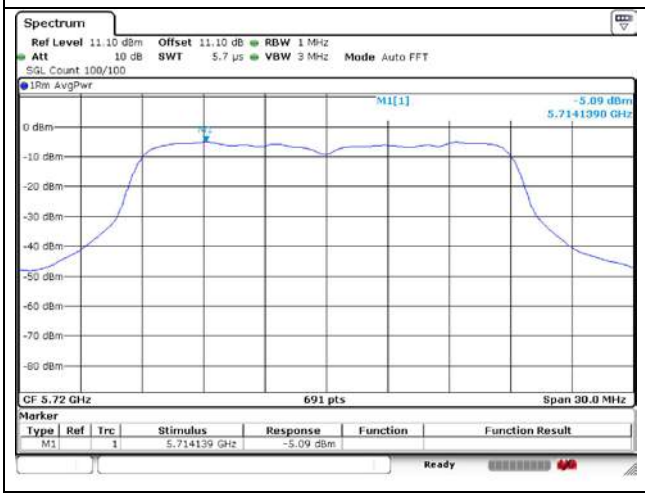
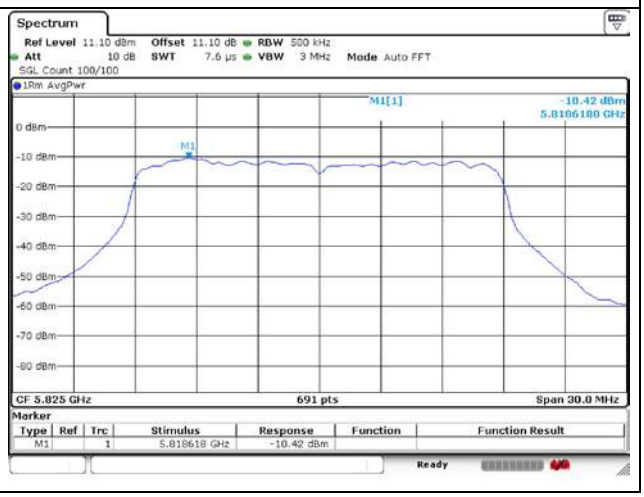
UNII-2C_HT20	UNII-3_ HT20
	
	
	

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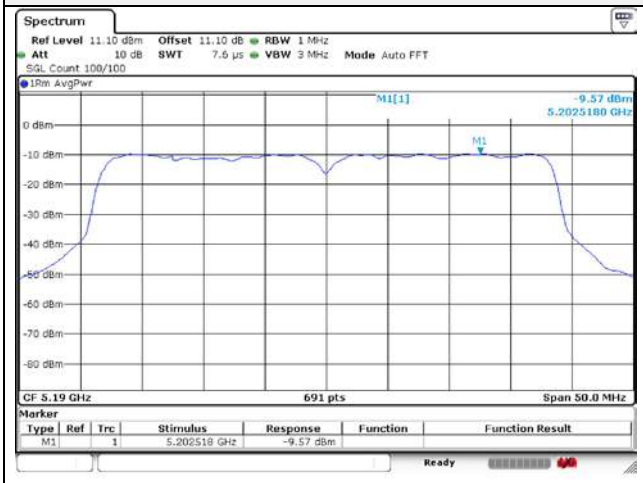
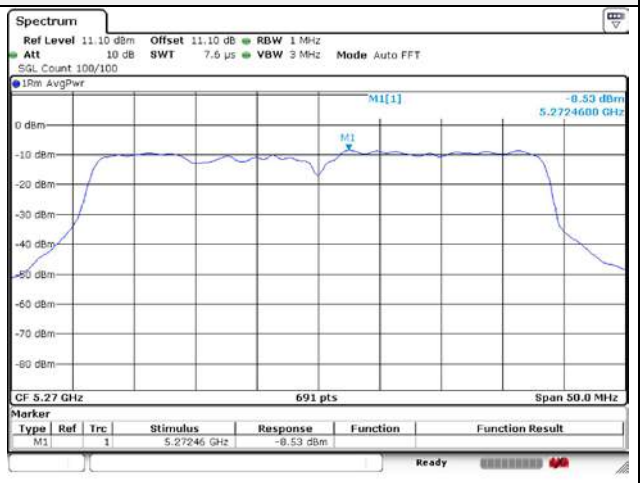
UNII-1_ HT40	UNII-2A_ HT40
	
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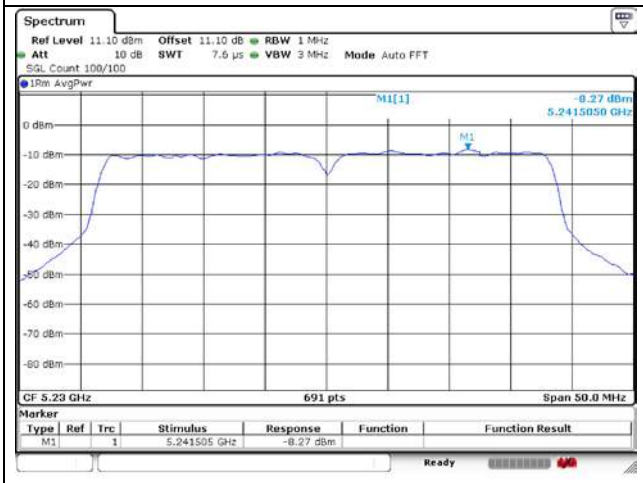	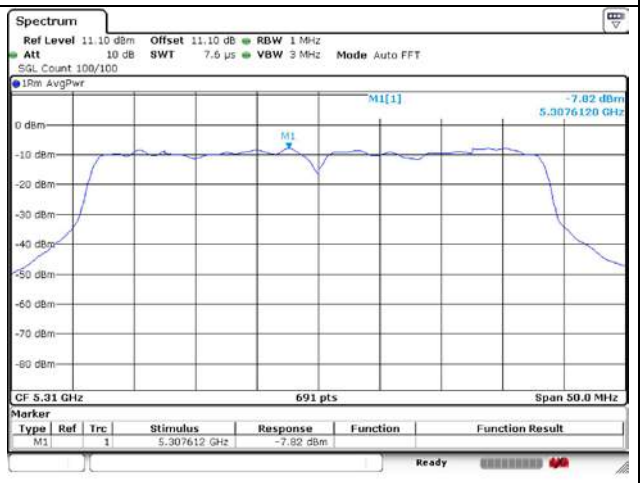

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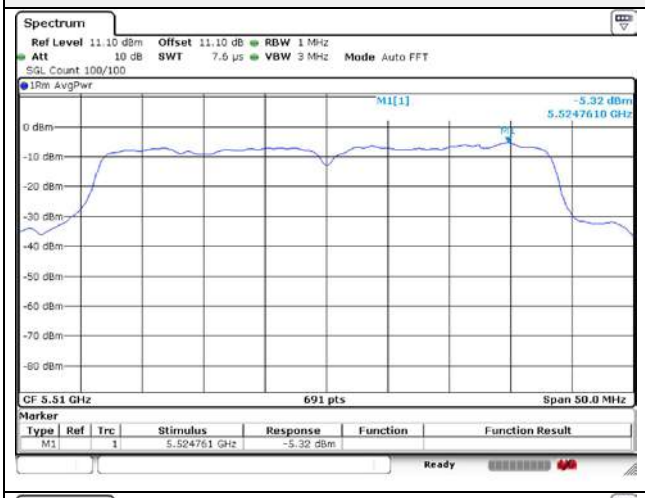
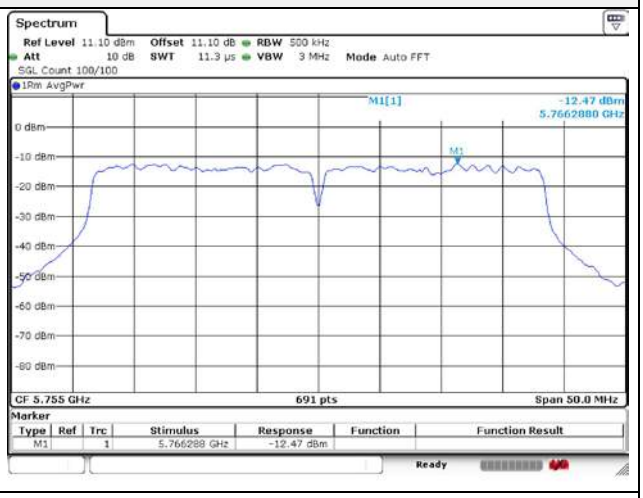
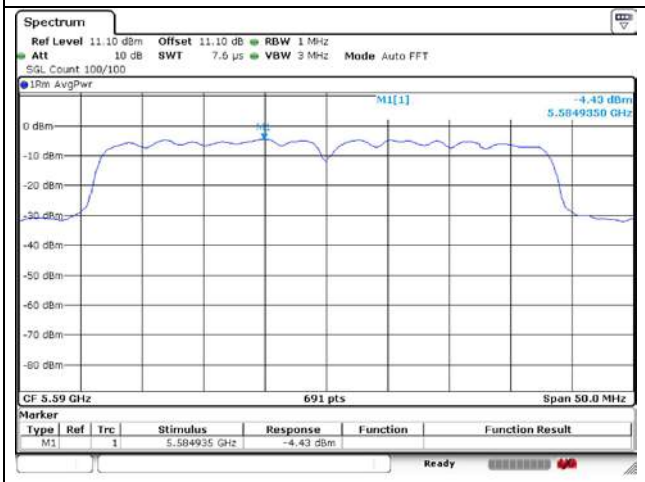
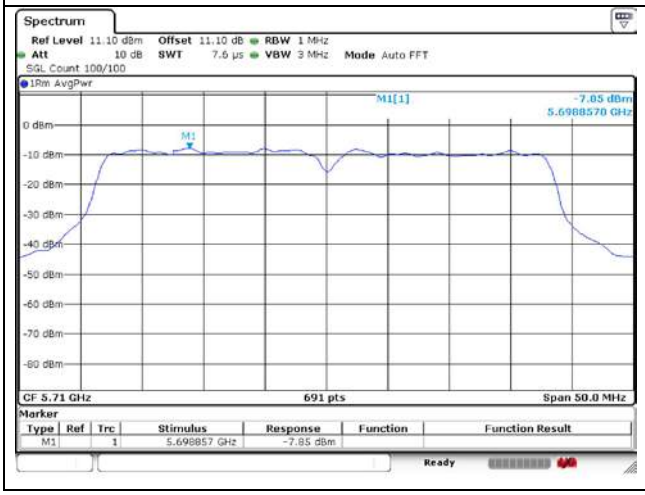
UNII-2C_HT40	UNII-3_ HT40
	
	Blank
	

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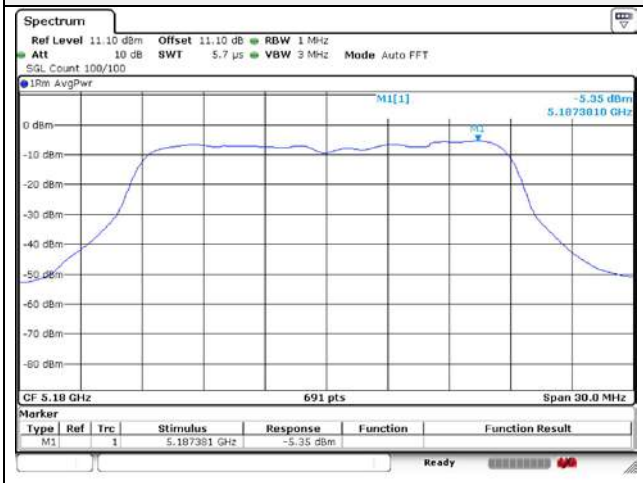
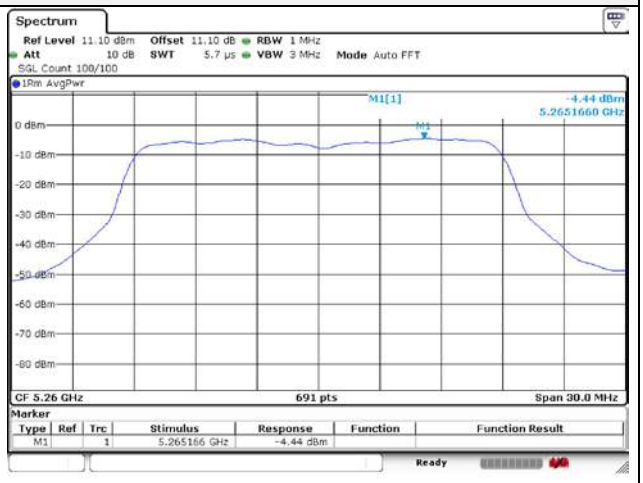
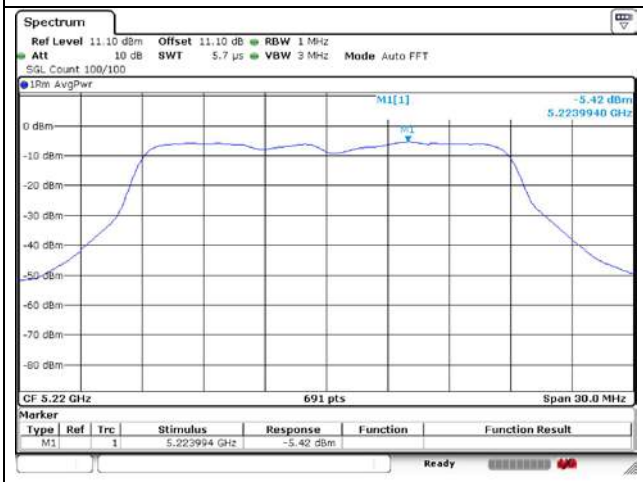
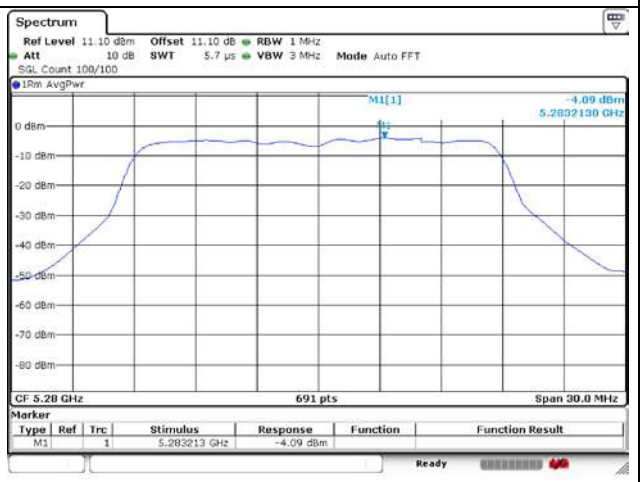
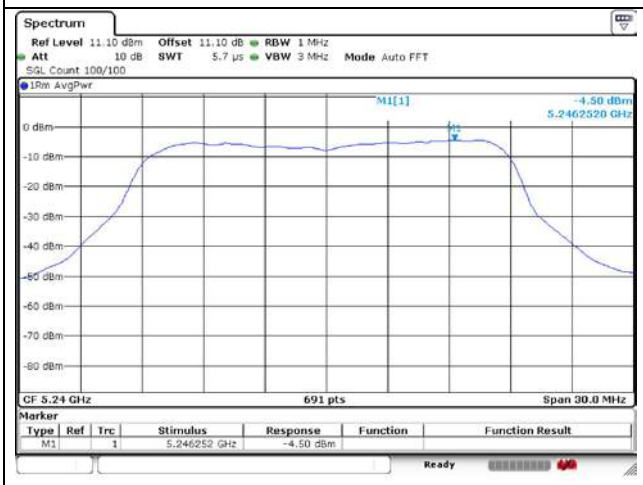
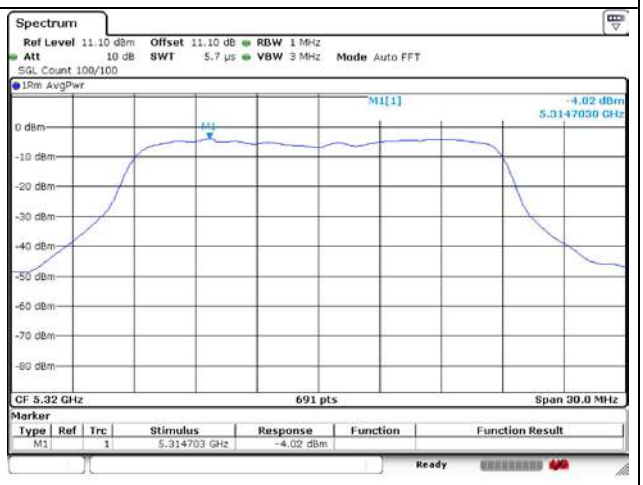
UNII-1_ VHT20	UNII-2A_ VHT20
	
	
	

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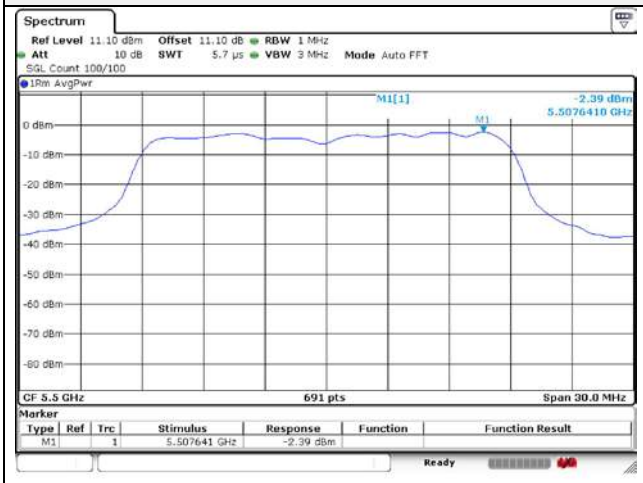
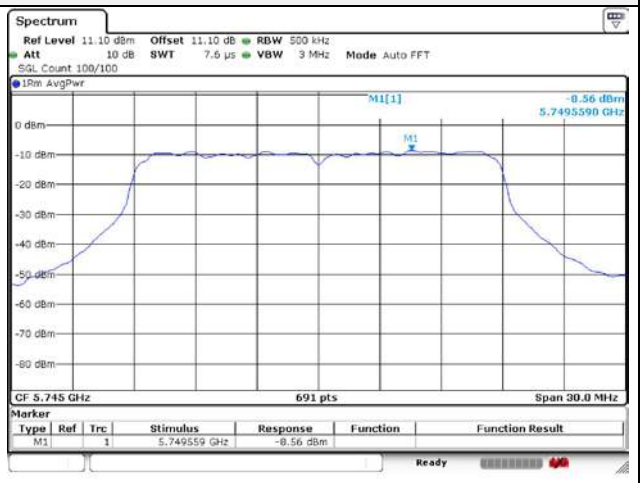
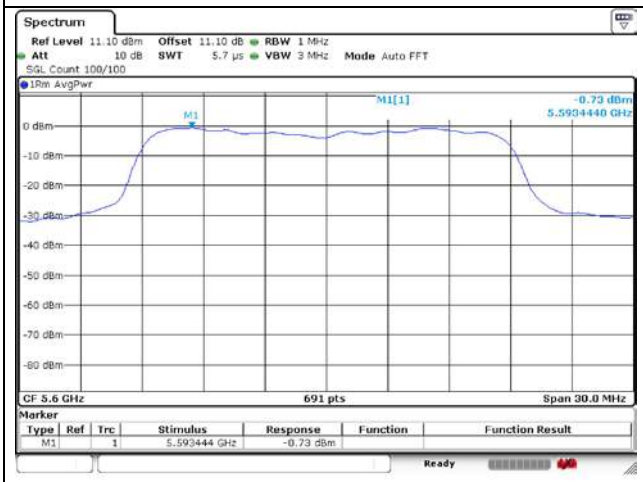
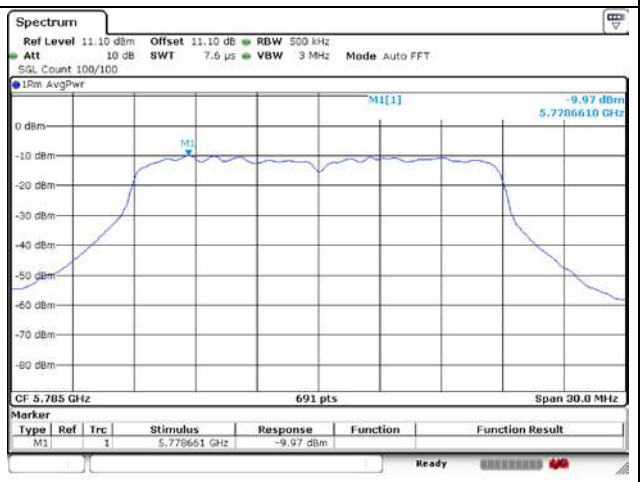
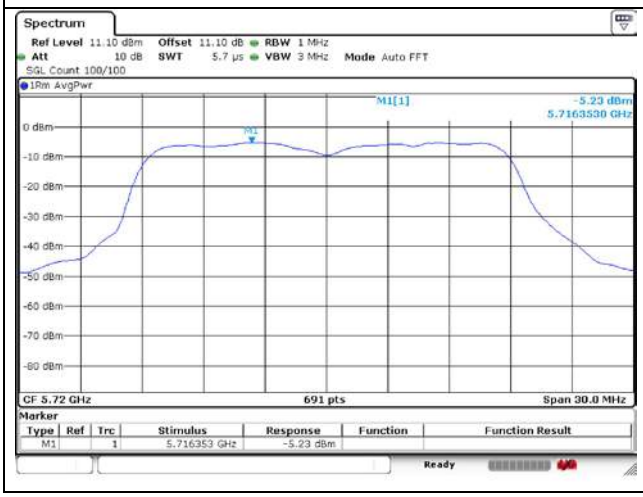
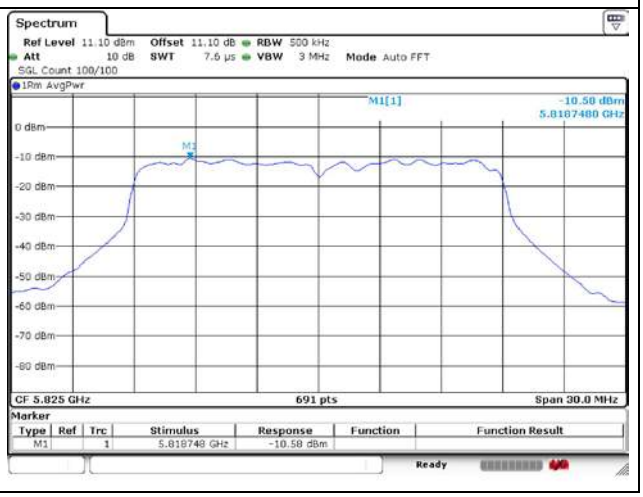
UNII-2C_VHT20	UNII-3_ VHT20
	
	
	

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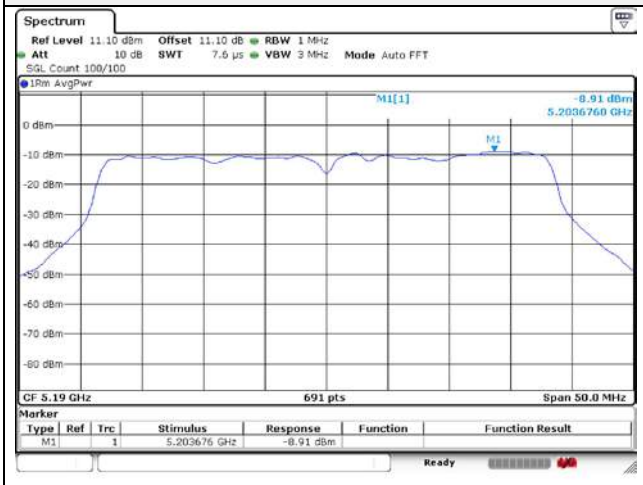
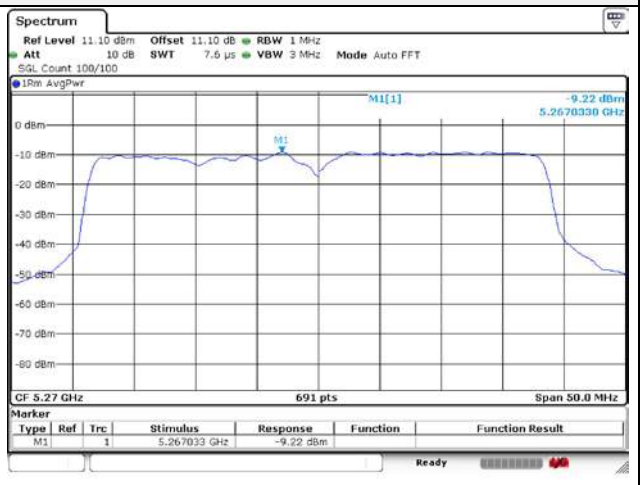
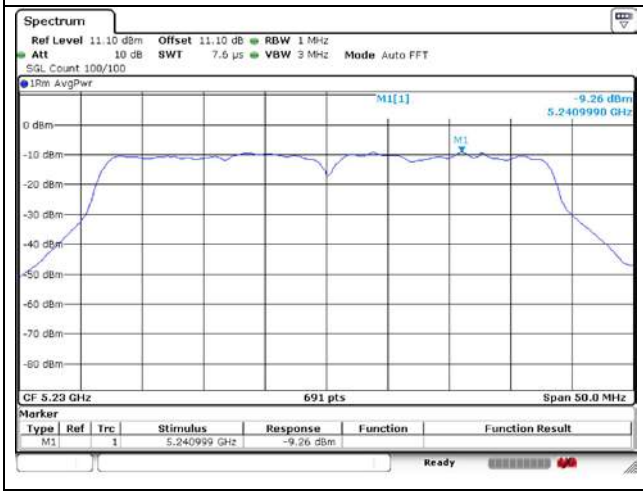
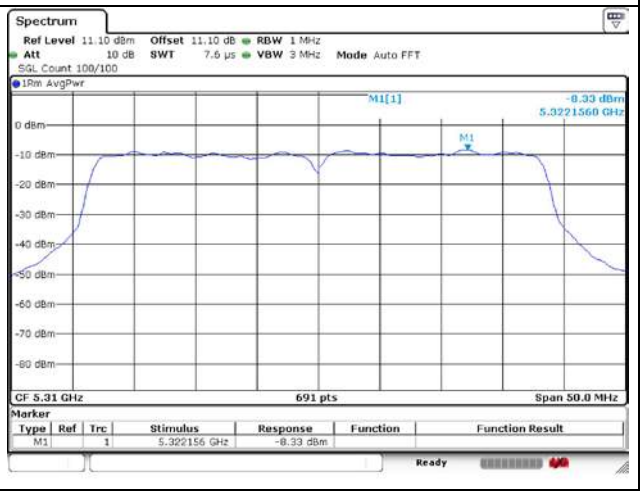
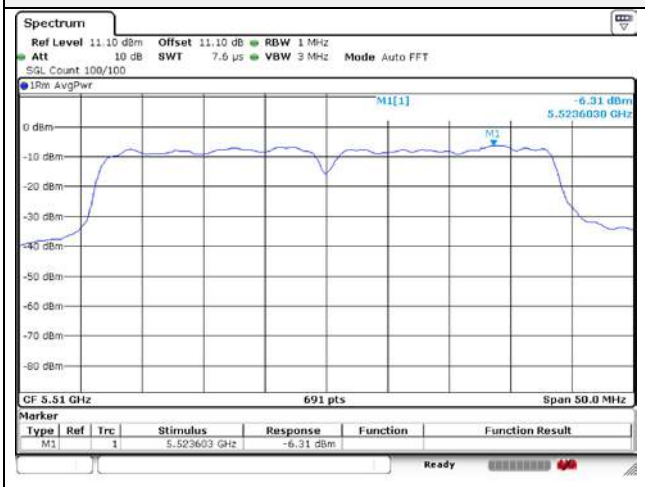
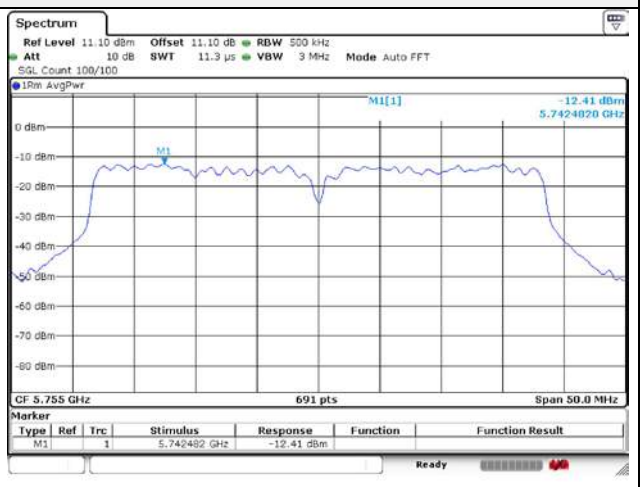
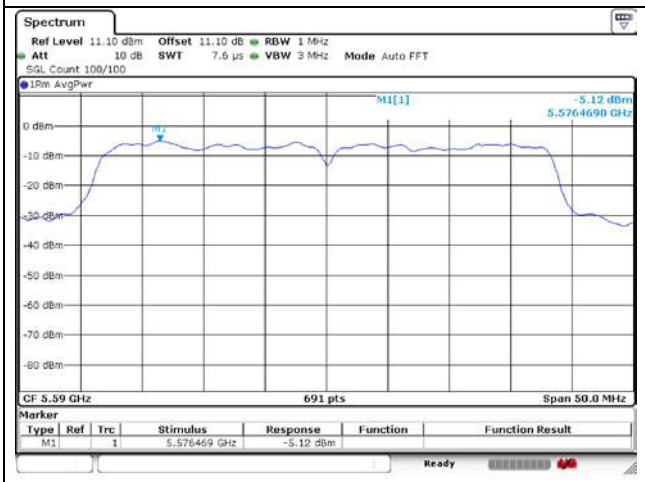
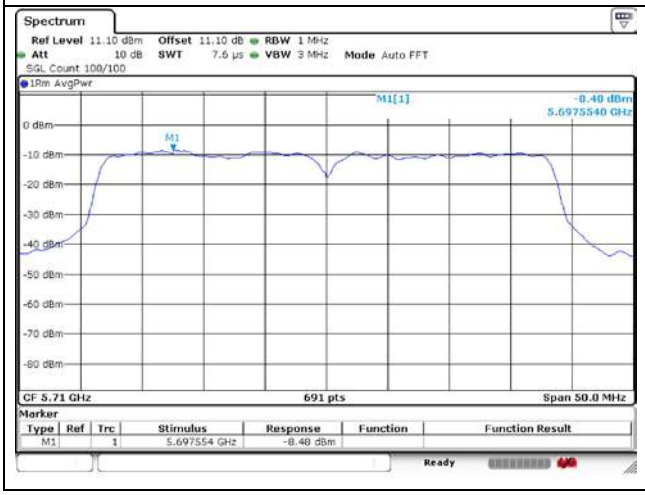
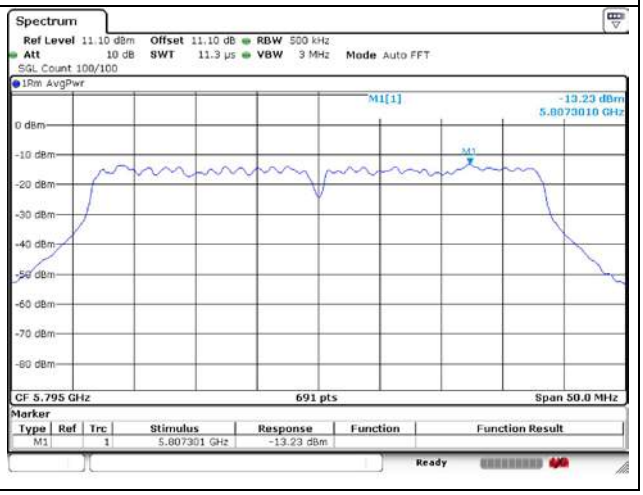
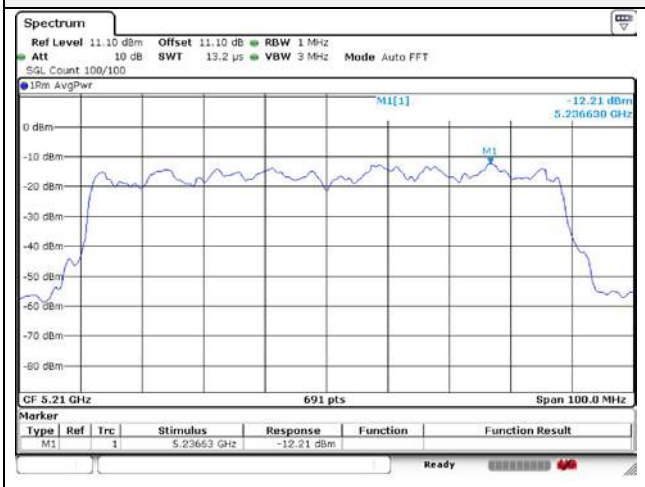
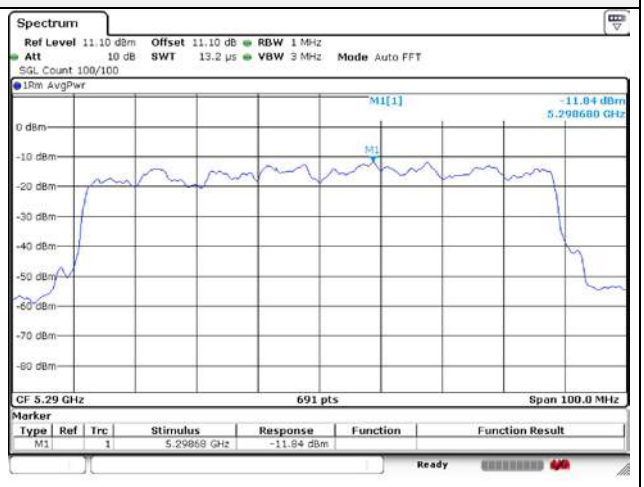
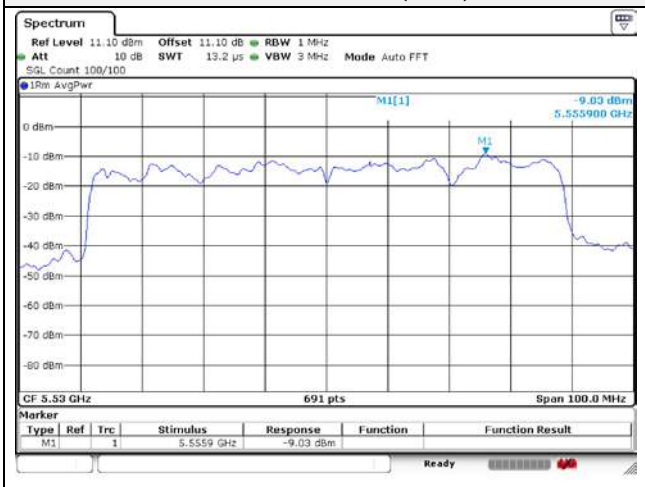
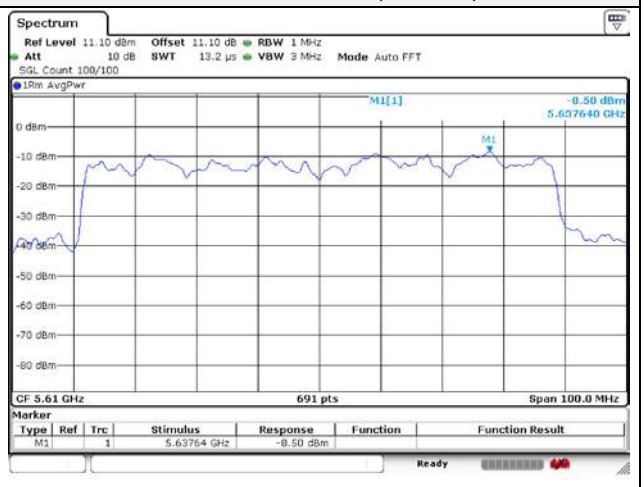
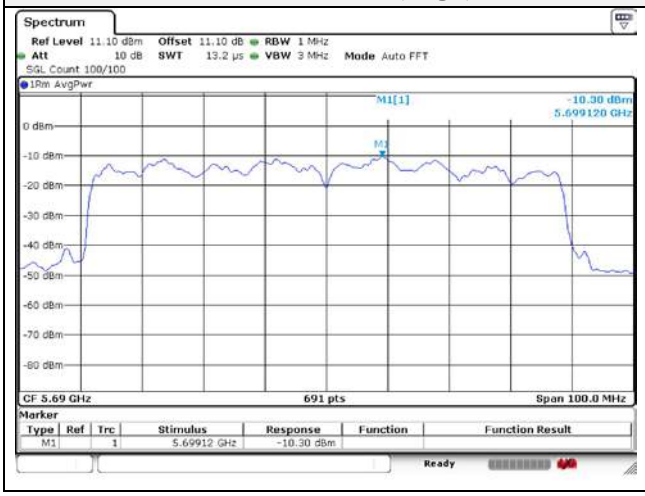
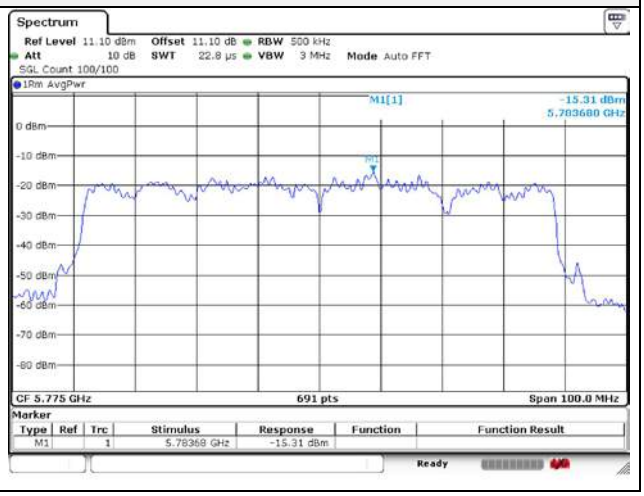
UNII-1_ VHT40	UNII-2A_ VHT40
	
Blank	Blank
	

UNII-2C_VHT40	UNII-3_ VHT40
	
	Blank
	

UNII-1_VHT80	UNII-2A_ VHT80
	
UNII-2C_VHT80(Low)	**UNII-2C_VHT80(Middle)**
	
UNII-2C_VHT80(High)	**UNII-3_ VHT80**
	

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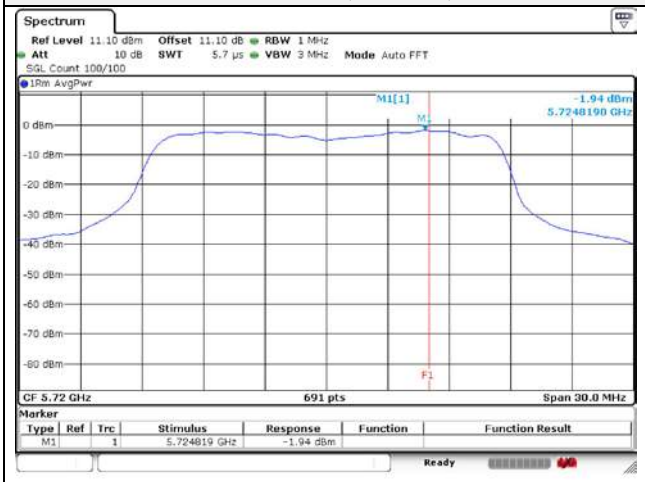
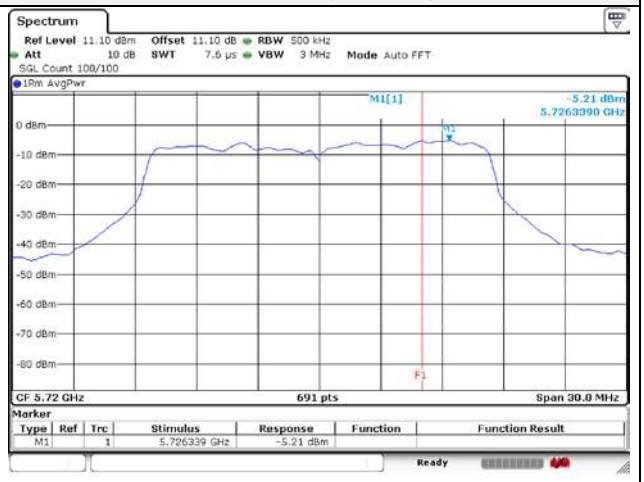
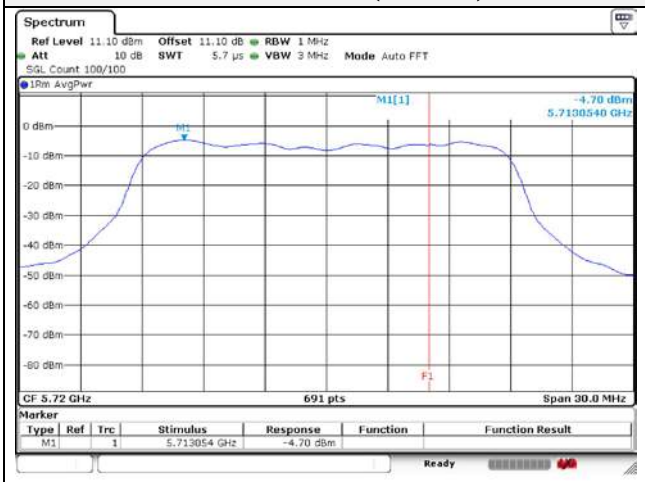
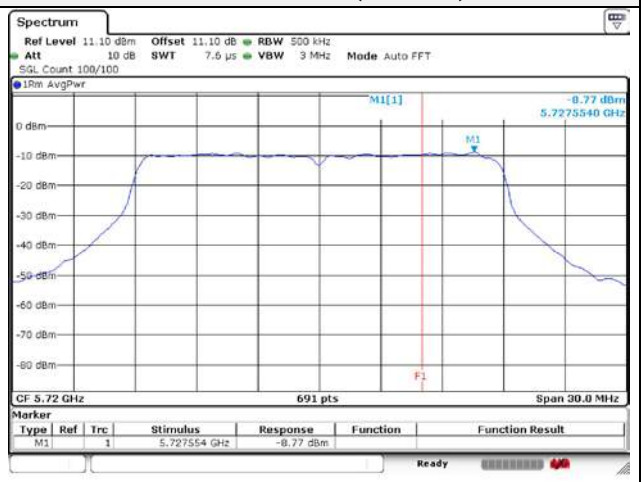
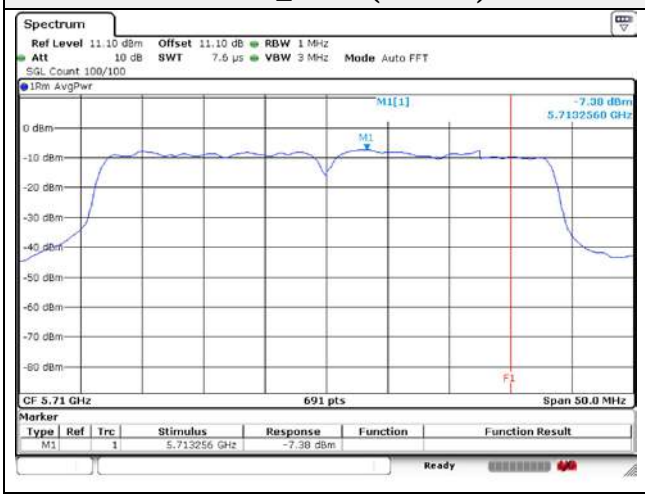
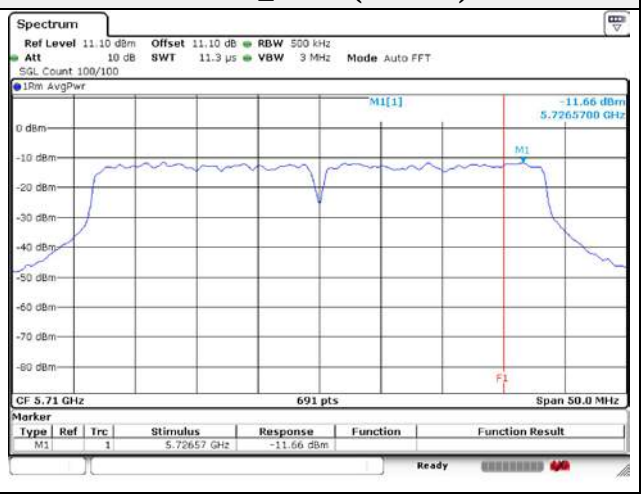
Band-crossing channels

UNII-2C_a (Ch. 144)	UNII-3_a (Ch. 144)
	
UNII-2C_HT20 (Ch. 144)	**UNII-3_HT20 (Ch. 144)**
	
UNII-2C_HT40 (Ch. 142)	**UNII-3_HT40 (Ch. 142)**
	

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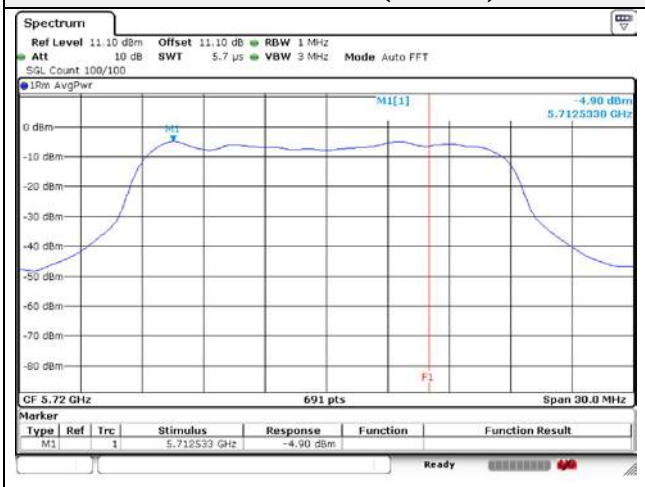
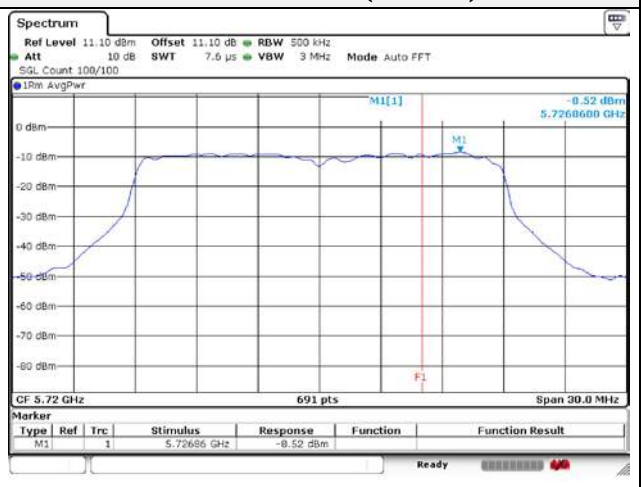
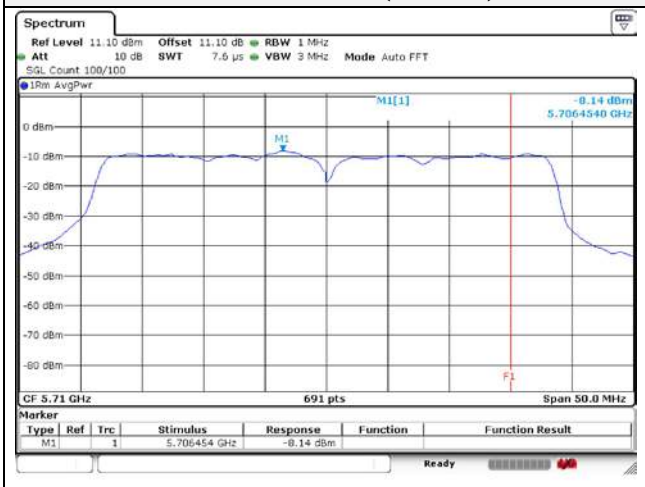
UNII-2C_VHT20 (Ch. 144)



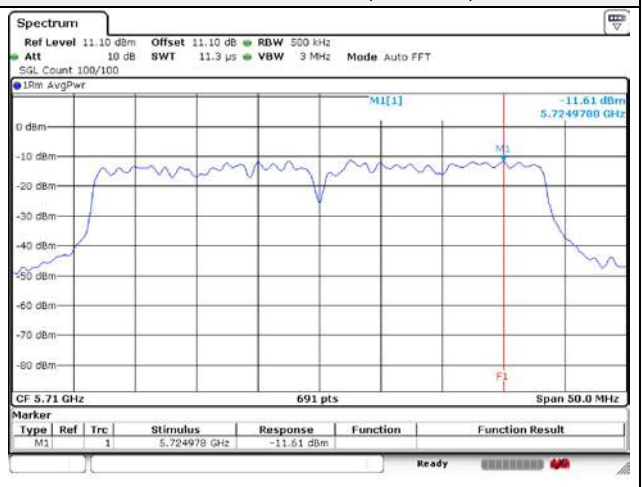
UNII-3_VHT20 (Ch. 144)



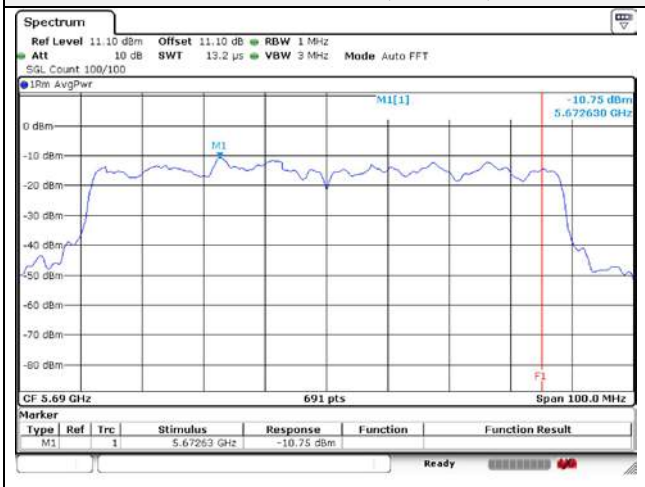
UNII-2C_VHT40 (Ch. 142)



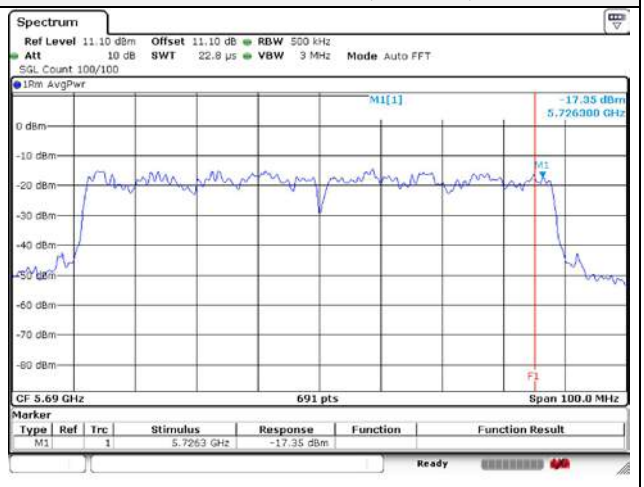
UNII-3_VHT40 (Ch. 142)



UNII-2C_VHT80 (Ch. 138)



UNII-3_VHT80 (Ch. 138)



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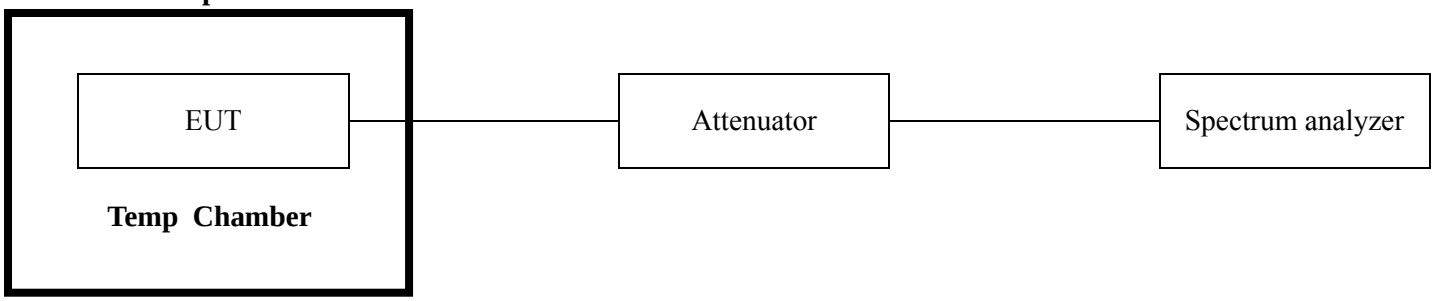
3.5. Frequency Stability

Test procedure

ANSI C63.10-2013, clause 6.8.1

Test setup



1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
7. While maintaining a constant temperature inside the environmental chamber, turn the EUT on and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

Limit

N/A

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Test results

Mode: UNII-1

Operating frequency: 5 180 ㎒

Test voltage (%)	Test voltage (V)	Temperature (℃)	Maintaining time	Measure frequency (㎒)	Frequency deviation (㎐)	Deviation (%)
100 %		0	Startup	5 179.996 190	-3 810	-0.000 074
			2 minutes	5 179.994 569	-5 431	-0.000 105
			5 minutes	5 179.993 903	-6 097	-0.000 118
			10 minutes	5 179.993 527	-6 473	-0.000 125
100 %		10	Startup	5 179.992 933	-7 007	-0.000 135
			2 minutes	5 179.992 790	-7 210	-0.000 139
			5 minutes	5 179.992 877	-7 123	-0.000 138
			10 minutes	5 179.993 138	-6 862	-0.000 132
100 %		20	Startup	5 179.992 528	-7 472	-0.000 144
			2 minutes	5 179.993 802	-6 198	-0.000 120
			5 minutes	5 179.994 207	-5 793	-0.000 112
			10 minutes	5 179.994 525	-5 475	-0.000 106
100 %		23.5	Startup	5 179.992 766	-7 234	-0.000 140
			2 minutes	5 179.991 464	-8 536	-0.000 165
			5 minutes	5 179.992 042	-7 958	-0.000 154
			10 minutes	5 179.992 940	-7 060	-0.000 136
100 %		30	Startup	5 180.005 114	5 144	0.000 099
			2 minutes	5 179.998 661	-1 339	-0.000 026
			5 minutes	5 179.995 159	-4 841	-0.000 093
			10 minutes	5 179.993 770	-6 230	-0.000 120
100 %		40	Startup	5 179.992 297	-7 703	-0.000 149
			2 minutes	5 179.992 644	-7 356	-0.000 142
			5 minutes	5 179.993 397	-6 603	-0.000 127
			10 minutes	5 179.993 860	-6 140	-0.000 119
85 %	AC 102	23.5	Startup	5 179.993 665	-6 335	-0.000 122
			2 minutes	5 179.993 010	-6 990	-0.000 135
			5 minutes	5 179.992 665	-7 336	-0.000 142
			10 minutes	5 179.992 421	-7 579	-0.000 146
115 %	AC 138	23.5	Startup	5 179.993 025	-6 975	-0.000 135
			2 minutes	5 179.992 883	-7 117	-0.000 137
			5 minutes	5 179.992 541	-7 460	-0.000 144
			10 minutes	5 179.992 153	-7 847	-0.000 151

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Mode: UNII-2A

Operating frequency: 5 260 ㎒

Test voltage (%)	Test voltage (V)	Temperature (℃)	Maintaining time	Measure frequency (㎒)	Frequency deviation (㎐)	Deviation (%)
100 %		0	Startup	5 259.995 630	-4 370	-0.000 083
			2 minutes	5 259.993 054	-6 946	-0.000 132
			5 minutes	5 259.992 967	-7 033	-0.000 134
			10 minutes	5 259.993 199	-6 801	-0.000 129
100 %		10	Startup	5 259.993 140	-6 860	-0.000 130
			2 minutes	5 259.992 677	-7 323	-0.000 139
			5 minutes	5 259.993 632	-6 368	-0.000 121
			10 minutes	5 259.994 269	-5 731	-0.000 109
100 %		20	Startup	5 260.004 151	4 151	0.000 079
			2 minutes	5 259.998 189	-1 811	-0.000 034
			5 minutes	5 259.995 121	-4 879	-0.000 093
			10 minutes	5 259.993 558	-6 442	-0.000 122
100 %		23.5	Startup	5 260.001 706	1 706	0.000 032
			2 minutes	5 260.005 469	5 469	0.000 104
			5 minutes	5 260.007 292	7 292	0.000 139
			10 minutes	5 260.008 826	8 826	0.000 168
100 %		30	Startup	5 259.994 403	-5 597	-0.000 106
			2 minutes	5 259.992 608	-7 392	-0.000 141
			5 minutes	5 259.992 405	-7 595	-0.000 144
			10 minutes	5 259.992 608	-7 392	-0.000 141
100 %		40	Startup	5 259.992 185	-7 815	-0.000 149
			2 minutes	5 259.993 401	-6 599	-0.000 125
			5 minutes	5 259.994 067	-5 933	-0.000 113
			10 minutes	5 259.994 906	-5 094	-0.000 097
85 %	AC 102	23.5	Startup	5 259.997 325	-2 675	-0.000 051
			2 minutes	5 259.995 143	-4 857	-0.000 092
			5 minutes	5 259.994 877	-5 123	-0.000 097
			10 minutes	5 259.993 259	-6 741	-0.000 128
115 %	AC 138	23.5	Startup	5 259.995 028	-4 972	-0.000 095
			2 minutes	5 259.994 885	-5 115	-0.000 097
			5 minutes	5 259.994 253	-5 747	-0.000 109
			10 minutes	5 259.993 669	-6 331	-0.000 120

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Mode: UNII-2C

Operating frequency: 5500 ㎒

Test voltage (%)	Test voltage (V)	Temperature (℃)	Maintaining time	Measure frequency (㎒)	Frequency deviation (㎐)	Deviation (%)
100 %		0	Startup	5 499.992 991	-7 009	-0.000 127
			2 minutes	5 499.992 904	-7 096	-0.000 129
			5 minutes	5 499.992 933	-7 067	-0.000 128
			10 minutes	5 499.992 412	-7 588	-0.000 138
100 %		10	Startup	5 500.001 944	11 944	0.000 217
			2 minutes	5 500.005 808	5 808	0.000 106
			5 minutes	5 500.002 711	2 711	0.000 049
			10 minutes	5 500.000 511	511	0.000 009
100 %		20	Startup	5 499.994 166	-5 834	-0.000 106
			2 minutes	5 499.993 268	-6 732	-0.000 122
			5 minutes	5 499.992 921	-7 079	-0.000 129
			10 minutes	5 499.992 718	-7 282	-0.000 132
100 %		23.5	Startup	5 499.995 539	-4 461	-0.000 081
			2 minutes	5 499.998 839	-1 161	-0.000 021
			5 minutes	5 550.001 647	1 647	-0.000 030
			10 minutes	5 500.003 297	3 297	-0.000 060
100 %		30	Startup	5 499.992 967	-7 033	-0.000 128
			2 minutes	5 499.992 359	-7 641	-0.000 139
			5 minutes	5 499.992 099	-7 901	-0.000 144
			10 minutes	5 499.990 912	-9 088	-0.000 165
100 %		40	Startup	5 499.992 103	-7 897	-0.000 144
			2 minutes	5 499.993 116	-6 884	-0.000 125
			5 minutes	5 499.993 492	-6 508	-0.000 118
			10 minutes	5 499.993 724	-6 276	-0.000 114
85 %	AC 102	23.5	Startup	5 499.994 338	-5 662	-0.000 103
			2 minutes	5 499.995 237	-4 763	-0.000 087
			5 minutes	5 499.993 647	-6 353	-0.000 116
			10 minutes	5 499.991 833	-8 167	-0.000 148
115 %	AC 138	23.5	Startup	5 499.995 236	-4 764	-0.000 087
			2 minutes	5 499.996 778	-3 222	-0.000 059
			5 minutes	5 499.993 522	-6 478	-0.000 118
			10 minutes	5 499.993 311	-6 689	-0.000 122

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Mode: UNII-3

Operating frequency: 5 745 ㎒

Test voltage (%)	Test voltage (V)	Temperature (℃)	Maintaining time	Measure frequency (㎒)	Frequency deviation (㎐)	Deviation (%)
100 %		0	Startup	5 745.007 177	7 177	0.000 125
			2 minutes	5 744.999 304	-696	-0.000 012
			5 minutes	5 744.995 802	-4 198	-0.000 073
			10 minutes	5 744.993 429	-6 571	-0.000 114
100 %		10	Startup	5 744.995 223	-4 777	-0.000 083
			2 minutes	5 744.992 242	-7 758	-0.000 135
			5 minutes	5 744.991 576	-8 424	-0.000 147
			10 minutes	5 744.991 489	-8 511	-0.000 148
100 %		20	Startup	5 744.991 806	-8 194	-0.000 143
			2 minutes	5 744.991 632	-8 368	-0.000 146
			5 minutes	5 744.993 080	-6 920	-0.000 120
			10 minutes	5 744.994 411	-5 589	-0.000 097
100 %		23.5	Startup	5 744.991 462	-8 538	-0.000 149
			2 minutes	5 744.997 830	-2 170	-0.000 038
			5 minutes	5 745.001 361	1 361	0.000 024
			10 minutes	5 745.004 487	4 487	0.000 078
100 %		30	Startup	5 744.991 346	-8 654	-0.000 151
			2 minutes	5 744.992 330	-7 670	-0.000 134
			5 minutes	5 744.993 835	-6 165	-0.000 107
			10 minutes	5 744.995 369	-4 631	-0.000 081
100 %		40	Startup	5 744.996 929	-3 071	-0.000 053
			2 minutes	5 744.992 038	-7 962	-0.000 139
			5 minutes	5 744.991 083	-8 917	-0.000 155
			10 minutes	5 744.991 662	-8 338	-0.000 145
85 %	AC 102	23.5	Startup	5 744.998 322	-1 6778	-0.000 029
			2 minutes	5 744.998 784	-1 216	-0.000 021
			5 minutes	5 745.001 155	1 155	-0.000 020
			10 minutes	5 745.001 733	1 733	0.000 030
115 %	AC 138	23.5	Startup	5 744.999 527	-473	-0.000 008
			2 minutes	5 744.999 883	-117	-0.000 002
			5 minutes	5 745.001 044	1 044	0.000 018
			10 minutes	5 745.001 327	1 327	0.000 023

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