



TEST REPORT



KCTL Eurofins KCTL Co.Ltd.

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Report No.:
KR24-SRF0144
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1. Client

- Name : Samsung Electronics Co., Ltd.
- Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
- Date of Receipt : 2024-09-02

2. Use of Report : Certification

3. Name of Product / Model : Wi-Fi/BLE combo module / ACAU711R

4. Manufacturer / Country of Origin : Samsung Electronics Co., Ltd. / Korea

5. FCC ID : A3LACAU711R

6. IC Certificate No. : 649E-ACAU711R

7. Date of Test : 2024-09-09 to 2024-10-23

8. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing (Address: 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea)

9. Test method used : FCC Part 15 Subpart E, 15.407 RSS-247 Issue 3 August 2023 RSS-Gen Issue 5 February 2021

10. Test Result : Refer to the test result in the test report

This laboratory is not accredited for the test results marked. *

Affirmation	Tested by	Technical Manager
	Name : Minki Kim (Signature)	Name : Heesu Ahn (Signature)

The above testing certificate is the accredited test result by Korea Laboratory Accreditation Scheme, which signed the ILAC-MRA.

2024-10-25

Accredited by KOLAS, Republic of KOREA

Eurofins KCTL Co.,Ltd.

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REPORT REVISION HISTORY

Date	Revision	Page No
2024-10-25	Originally issued	-

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General remarks for test reports

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the testing laboratory that conducted the testing.

☒ Statement not required by the standard or client used for type testing

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1. General information

Client : Samsung Electronics Co., Ltd.
 Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
 Manufacturer : Samsung Electronics Co., Ltd.
 Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
 Factory : Chengdu Xuguang Technology Co., Ltd
 Address : No.86 2nd Section, Park Road, Longquanyi District, Chengdu City, Sichuan Province, P.R. China
 Laboratory : Eurofins KCTL Co., Ltd.
 Address : 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
 Accreditations : FCC Site Designation No: KR0040, FCC Site Registration No: 687132
 VCCI Registration No. : R-20080, G-20078, C-20059, T-20056
 CAB Identifier: KR0040
 ISED Number: 8035A
 KOLAS No.: KT231

2. Device information

Equipment under test : Wi-Fi/BLE combo module
 Model : ACAU711R
 Modulation technique : Bluetooth(BDR/EDR)_GFSK, $\pi/4$ DQPSK, 8DPSK
 Bluetooth(BLE)_GFSK
 WLAN(802.11b/g/n/ac/ax_HT20/VHT20/HE20)_DSSS, OFDM, OFDMA
 Number of channels : BT/LE : Bluetooth(BDR/EDR)_79 ch, Bluetooth(BLE)_40 ch
 2.400 GHz band : 802.11b/g/n/ac/ax_HT20/HE20_13 ch (20 MHz)
 UNII-1 : 802.11a/n/ac/ax_HT20/VHT20/HE20_4 ch (20 MHz)
 UNII-2A : 802.11a/n/ac/ax_HT20/VHT20/HE20_4 ch (20 MHz)
 UNII-2C : 802.11a/n/ac/ax_HT20/VHT20/HE20_12 ch (20 MHz)
 UNII-3 : 802.11a/n/ac/ax_HT20/VHT20/HE20_5 ch (20 MHz)
 Power source : DC 5 V, DC 12 V
 Antenna type : PCB Chip antenna
 Antenna gain : 2.400 GHz band : -0.10 dBi
 UNII-1 : 0.90 dBi
 UNII-2A : 0.20 dBi
 UNII-2C : -0.40 dBi
 UNII-3 : -0.70 dBi
 Frequency range : 2.400 GHz band : 2 402 MHz ~ 2 480 MHz (Bluetooth/BLE)
 2 412 MHz ~ 2 472 MHz (802.11b/g/n/ac/ax_HT20/HE20)
 UNII-1 : 5 180 MHz ~ 5 240 MHz (802.11a/n/ac/ax_HT20/VHT20/HE20)
 UNII-2A : 5 260 MHz ~ 5 320 MHz (802.11a/n/ac/ax_HT20/VHT20/HE20)
 UNII-2C : 5 500 MHz ~ 5 720 MHz (802.11a/n/ac/ax_HT20/VHT20/HE20)
 UNII-3 : 5 745 MHz ~ 5 825 MHz (802.11a/n/ac/ax_HT20/VHT20/HE20)
 Software version : v1.0
 Hardware version : v1.0
 Test device serial No. : Conducted: 9C443D587B34
 Radiated: 9C443D587B24
 Operation temperature : -20 °C ~ 85 °C

2.1. Frequency/channel operations

This device contains the following capabilities:

WLAN 2.4 GHz_802.11b/g/n(HT20)/ax(HE20), Bluetooth(BDR, EDR),

Bluetooth Low Energy(1 Mbps, 2 Mbps, 125 kbps, 500 kbps),

WLAN 5 GHz_802.11a/n(HT20)/ac(VHT20)/ax(HE20)

UNII-1		UNII-2A		UNII-2C		UNII-3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
36	5 180	52	5 260	100	5 500	149	5 745
40	5 200	56	5 280	120	5 600	157	5 785
48	5 240	64	5 320	140	5 700	165	5 825
				144	5 720		

Table 2.1.1. WLAN 5 GHz(802.11a/n HT20/ac VHT20)

2.2. RF power setting in TEST SW

[DC 5 V]

Test Program	Test mode
AmebaSmart_mptool_8V0	802.11a/n HT20/ac VHT20

Mode	RU Type		Frequency	RF Power setting value
	RU Tone	RU offset	[MHz]	
802.11a	N/A	N/A	5 180	14.75
			5 200	14.75
			5 240	14.75
			5 260	14.75
			5 280	14.75
			5 320	14.75
			5 500	14.75
			5 600	14.75
			5 700	14.75
			5 720	16.50
			5 745	14.50
			5 785	14.50
			5 825	14.50

Mode	RU Type		Frequency	RF Power setting value
	RU Tone	RU offset	[MHz]	
802.11n_HT20	N/A	N/A	5 180	13.75
			5 200	13.75
			5 240	13.75
			5 260	13.75
			5 280	13.75
			5 320	13.75
			5 500	13.75
			5 600	13.75
			5 700	13.75
			5 720	15.50
			5 745	14.75
			5 785	15.00
			5 825	15.25
802.11ac_VHT20	N/A	N/A	5 180	13.75
			5 200	13.75
			5 240	13.75
			5 260	13.75
			5 280	13.75
			5 320	13.75
			5 500	13.75
			5 600	13.75
			5 700	13.75
			5 720	15.50
			5 745	14.75
			5 785	15.00
			5 825	15.25

[DC 12 V]

Test Program	Test mode
AmebaSmart_mptool_8V0	802.11a/n HT20/ac VHT20

Mode	RU Type		Frequency	RF Power setting value
	RU Tone	RU offset	[MHz]	
802.11a	N/A	N/A	5 180	14.75
			5 200	14.75
			5 240	14.75
			5 260	14.75
			5 280	14.75
			5 320	14.75
			5 500	14.75
			5 600	14.75
			5 700	14.75
			5 720	16.50
			5 745	14.50
			5 785	14.50
			5 825	14.50

Mode	RU Type		Frequency	RF Power setting value
	RU Tone	RU offset	[MHz]	
802.11n_HT20	N/A	N/A	5 180	13.75
			5 200	13.75
			5 240	13.75
			5 260	13.75
			5 280	13.75
			5 320	13.75
			5 500	13.75
			5 600	13.75
			5 700	13.75
			5 720	15.50
			5 745	14.75
			5 785	15.00
			5 825	15.25
Mode	RU Type		Frequency	RF Power setting value
	RU Tone	RU offset	[MHz]	
802.11ac_VHT20	N/A	N/A	5 180	13.75
			5 200	13.75
			5 240	13.75
			5 260	13.75
			5 280	13.75
			5 320	13.75
			5 500	13.75
			5 600	13.75
			5 700	13.75
			5 720	15.50
			5 745	14.75
			5 785	15.00
			5 825	15.25

2.3. Duty Cycle Factor

[DC 5 V]

Test mode	Period (ms)	T _{On} time (ms)	Duty cycle		Duty Cycle Factor (dB)
			(Linear)	(%)	
802.11a	2.113 2	2.009 7	0.951 0	95.10	0.218 1
802.11n_HT20	1.796 0	1.692 8	0.942 5	94.25	0.257 0
802.11ac_VHT20	1.800 0	1.696 8	0.942 7	94.27	0.256 4

Notes:

1. Duty cycle (Linear) = T_{On} time / Period
2. DCF(Duty cycle factor) = 10log(1/duty cycle)
3. DCF is not compensated to average result if the duty cycle is more than 98%



[DC 12 V]

Test mode	Period (ms)	T _{On} time (ms)	Duty cycle		Duty Cycle Factor (dB)
			(Linear)	(%)	
802.11a	2.113 2	2.010 6	0.951 4	95.14	0.216 1
802.11n_HT20	1.796 0	1.692 8	0.942 5	94.25	0.257 0
802.11ac_VHT20	1.800 0	1.696 8	0.942 7	94.27	0.256 4

Notes:

1. Duty cycle (Linear) = T_{On} time / Period
2. DCF(Duty cycle factor) = 10log(1/duty cycle)
3. DCF is not compensated to average result if the duty cycle is more than 98%



3. Antenna requirement

Requirement of FCC part 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. 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.

Requirement of RSS-Gen Section 6.8:

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

- The transmitter has permanently attached PCB Chip Antenna (Internal antenna) on board.
- The E.U.T Complies with the requirement of §15.203, §15.247, §15.407.

4. Summary of tests

FCC Part section(s)	IC Rule Reference	Parameter	Test Condition	Test results
15.407(a)	RSS-247 Issue 2, 6.2	Maximum conducted output power	Conducted	Pass
15.407(a)	RSS-247 Issue 2, 6.2	Maximum power spectral density		Pass
15.407(a)	RSS-Gen Issue 5, 6.7	26 dB Channel Bandwidth		Pass
15.407(e)	RSS-247 Issue 2, 6.2.4	6 dB Channel Bandwidth		Pass
-	RSS-Gen Issue 5, 6.7	Occupied Bandwidth		Pass
15.407(g)	RSS-247 Issue2, 6	Frequency Stability		Pass
15.207(a)	RSS-Gen Issue 5, 8.8	AC Conducted Emissions		Pass
15.407(b), 15.205(a), 15.209(a)	RSS-Gen Issue 5, 8.9, 8.10 RSS-247 Issue 2, 6.2	Spurious emission	Radiated	Pass
		Band-edge, restricted band		Pass

Notes:

1. All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
2. According to exploratory test no any obvious emission were detected from 9 kHz to 30 MHz. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30 m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.
3. EUT was investigated in three orthogonal orientations X, Y and Z. it was determined that **X** orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in **X** orientation.
4. All configurations have been performed (Stand-alone, Stand-alone with TA, With accessories).
Worst case: Stand-alone with TA
5. The test procedure(s) in this report were performed in accordance as following.
 - ANSI C63.10-2013
 - KDB 662911 D01 v02r01
 - KDB 789033 D02 v02r01
6. The analysis of the overall rate output in the 5 GHz WLAN band showed that the lowest rate had the highest output, so the RF test was conducted using this lowest rate
7. Based on the baseline scan, the worst-case data rates were:
 - 802.11a mode: 6Mbps
 - 802.11n_HT20 mode: MCS0
 - 802.11ac_VHT20 mode: MCS0

5. Measurement uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of $k=2$ to indicated a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded uncertainty ($\pm$)	
Maximum Peak Output Power	0.9 dB	
Peak Power Spectral Density	1.0 dB	
6 dB Channel Bandwidth	0.1 %	
Occupied Bandwidth	0.1 %	
Conducted spurious emission	1.9 dB	
Radiated spurious Emissions (Bandedge, restricted band)	Below 30 MHz	2.3 dB
	30 MHz to 1 000 MHz	2.5 dB
	1 000 MHz to 18 000 MHz	4.7 dB
	Above 18 000 MHz	4.8 dB
Conducted Emissions	150 kHz to 30 MHz	2.8 dB

6. Measurement results explanation example

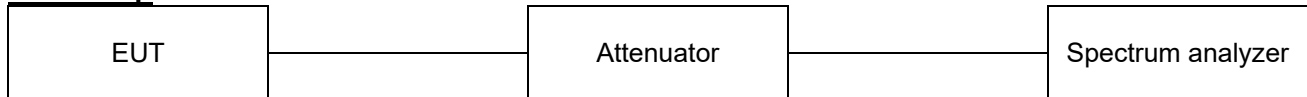
The offset level is set in the spectrum analyzer to compensate the RF cable loss factor between EUT conducted output port and spectrum analyzer.

With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Frequency (MHz)	Factor(dB)	Frequency (MHz)	Factor(dB)
30	10.03	9 000	12.84
50	10.07	10 000	12.92
100	10.17	11 000	13.01
200	10.29	12 000	13.14
300	10.38	13 000	13.33
400	10.47	14 000	13.42
500	10.54	15 000	13.54
600	10.59	16 000	13.88
700	10.65	17 000	13.56
800	10.71	18 000	13.81
900	10.76	19 000	14.12
1 000	10.79	20 000	14.16
2 000	11.19	21 000	14.26
3 000	11.48	22 000	14.75
4 000	11.72	23 000	14.70
5 000	11.98	24 000	14.40
6 000	11.99	25 000	14.59
7 000	12.14	26 000	14.83
8 000	12.58	26 500	14.72

Notes:

Offset(dB) = RF cable loss(dB) + Attenuator(dB)

7. Test results**7.1. Maximum conducted output power****Test setup****Limit**

According to §15.407(a), RSS-247(6.2)

FCC

Band	EUT category	Conducted output power limit
UNII-1	Outdoor access point	1 W (30 dBm)
	Indoor access point	
	Fixed point-to-point access point	
	✓ Client device	250 mW (23.98 dBm)
UNII-2A	✓	250 mW or 11 dBm + 10logB ¹⁾
UNII-2C	✓	250 mW or 11 dBm + 10logB ¹⁾
UNII-3	✓	1 W (30 dBm)

IC

Band	Maximum e.i.r.p. limit
UNII-1	200 mW or 10 + 10 logB ²⁾ , dBm
UNII-2A	1 W or 17 dBm + 10logB ²⁾
UNII-2C	1 W or 17 dBm + 10logB ²⁾
UNII-3	1 W (30 dBm)

Note:

- 1) Conducted output power limit B is the 26 dB emission bandwidth.
- 2) Maximum e.i.r.p. limit B is the 99% emission bandwidth.

Test procedure

ANSI C63.10-2013-Section 12.3.2.4 or 12.3.3.1, 14.2

KDB 789033 D02 v02r01 - Section E.2.d) or E.3.a)

KDB 662911 D01 v02r01 – Section E).1) and Section F)

Test settings**Used test method is Section E.2.d)****◆ KDB 789033 D02 v02r01****Section E.2.d)****Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction):**

- (i) Measure the duty cycle, x , of the transmitter output signal as described in II.B..
- (ii) Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- (iii) Set $RBW = 1 \text{ MHz}$
- (iv) Set $RBW \geq 3 \text{ MHz}$
- (v) Number of points in sweep $\geq 2 \times \text{span} / RBW$. (This ensures that bin-to-bin spacing is $\leq RBW/2$, so that narrowband signals are not lost between frequency bins.)
- (vi) Sweep time = auto.
- (vii) Detector = power averaging (rms), if available. Otherwise use sample detector mode.
- (viii) Do not use sweep triggering. Allow the sweep to "free run."
- (ix) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.
- (x) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- (xi) Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add $10 \log(1/0.25) = 6 \text{ dB}$ if the duty cycle is 25%.

Test results**[DC 5 V]**

Test mode	Band	Frequency (MHz)	Measured output power				
			Conducted output power (dBm)	FCC Limit (dBm)	ANT gain (dBi)	MAX e.i.r.p (dBm)	MAX e.i.r.p Limit (dBm)
802.11a	UNII-1	5 180	16.82	23.98	0.90	17.72	22.14
		5 200	16.75			17.65	
		5 240	16.66			17.56	
	UNII-2A	5 260	16.42	23.71	0.20	16.62	29.14
		5 280	16.41			16.61	
		5 320	16.23			16.43	
	UNII-2C	5 500	16.11	23.70	-0.40	15.71	29.16
		5 600	15.60			15.20	
		5 700	15.07			14.67	
	UNII-3	5 745	13.91	30.00	-0.70	13.21	30.00
		5 785	13.70			13.00	
		5 825	13.49			12.79	
802.11n HT20	UNII-1	5 180	15.77	23.98	0.90	16.67	22.43
		5 200	15.78			16.68	
		5 240	15.55			16.45	
	UNII-2A	5 260	15.43	23.92	0.20	15.63	29.43
		5 280	15.30			15.50	
		5 320	15.14			15.34	
	UNII-2C	5 500	15.15	23.93	-0.40	14.75	29.44
		5 600	14.58			14.18	
		5 700	14.07			13.67	
	UNII-3	5 745	14.22	30.00	-0.70	13.52	30.00
		5 785	14.24			13.54	
		5 825	14.29			13.59	

Test mode	Band	Frequency (MHz)	Measured output power				
			Conducted output power (dBm)	FCC Limit (dBm)	ANT gain (dBi)	MAX e.i.r.p (dBm)	MAX e.i.r.p Limit (dBm)
802.11ac VHT20	UNII-1	5 180	15.81	23.98	0.90	16.71	22.41
		5 200	15.79			16.69	
		5 240	15.57			16.47	
	UNII-2A	5 260	15.35	23.92	0.20	15.55	29.43
		5 280	15.34			15.54	
		5 320	15.16			15.36	
	UNII-2C	5 500	15.12	23.94	-0.40	14.72	29.44
		5 600	14.59			14.19	
		5 700	14.14			13.74	
	UNII-3	5 745	14.17	30.00	-0.70	13.47	30.00
		5 785	14.23			13.53	
		5 825	14.22			13.52	

Notes:

1. Conducted output power (dBm) = Average power (dBm) + D.C.F (dB)
2. e.i.r.p. Calculation: e.i.r.p. (dBm) = Conducted output power (dBm) + Antenna gain (dBi)

[DC 12 V]

Test mode	Band	Frequency (MHz)	Measured output power				
			Conducted output power (dBm)	FCC Limit (dBm)	ANT gain (dBi)	MAX e.i.r.p (dBm)	MAX e.i.r.p Limit (dBm)
802.11a	UNII-1	5 180	16.80	23.98	0.90	17.70	22.14
		5 200	16.79			17.69	
		5 240	16.60			17.50	
	UNII-2A	5 260	16.44	23.71	0.20	16.64	29.14
		5 280	16.35			16.55	
		5 320	16.20			16.40	
	UNII-2C	5 500	16.16	23.70	-0.40	15.76	29.16
		5 600	15.58			15.18	
		5 700	15.11			14.71	
	UNII-3	5 745	14.00	30.00	-0.70	13.30	30.00
		5 785	13.67			12.97	
		5 825	13.45			12.75	
802.11n HT20	UNII-1	5 180	15.84	23.98	0.90	16.74	22.43
		5 200	15.78			16.68	
		5 240	15.62			16.52	
	UNII-2A	5 260	15.36	23.92	0.20	15.56	29.43
		5 280	15.29			15.49	
		5 320	15.21			15.41	
	UNII-2C	5 500	15.10	23.93	-0.40	14.70	29.44
		5 600	14.57			14.17	
		5 700	14.04			13.64	
	UNII-3	5 745	14.25	30.00	-0.70	13.55	30.00
		5 785	14.19			13.49	
		5 825	14.25			13.55	

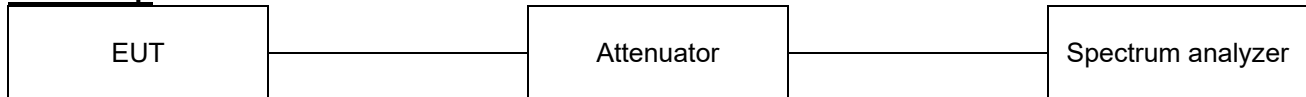
Test mode	Band	Frequency (MHz)	Measured output power				
			Conducted output power (dBm)	FCC Limit (dBm)	ANT gain (dBi)	MAX e.i.r.p (dBm)	MAX e.i.r.p Limit (dBm)
802.11ac VHT20	UNII-1	5 180	15.78	23.98	0.90	16.68	22.43
		5 200	15.79			16.69	
		5 240	15.65			16.55	
	UNII-2A	5 260	15.44	23.92	0.20	15.64	29.43
		5 280	15.37			15.57	
		5 320	15.24			15.44	
	UNII-2C	5 500	15.15	23.94	-0.40	14.75	29.44
		5 600	14.62			14.22	
		5 700	14.06			13.66	
	UNII-3	5 745	14.21	30.00	-0.70	13.51	30.00
		5 785	14.28			13.58	
		5 825	14.27			13.57	

Notes:

1. Conducted output power (dBm) = Average power (dBm) + D.C.F (dB)
2. e.i.r.p. Calculation: e.i.r.p. (dBm) = Conducted output power (dBm) + Antenna gain (dBi)

7.2. Maximum Power Spectral Density

Test setup



Limit

According to §15.407(a), RSS-247(6.2)

Band	EUT category		Limit
UNII-1		Outdoor access point	17dBm/MHz
		Indoor access point	
		Fixed point-to-point access point	
	√	Client device	11 dBm /MHz
UNII-2A		√	11 dBm /MHz
UNII-2C		√	11 dBm /MHz
UNII-3		√	30 dBm /500 kHz

Test procedure

ANSI C63.10-2013 Section 12.3.2.2, 14.3.2.2

KDB 789033 D02 v02r01 – Section E and F

KDB 662911 D01 v02r01 - Section E). 2) and Section F)

Test settings

Section F

The rules requires “maximum power spectral density” measurements where the intent is to measure the maximum value of the time average of the power spectral density measured during a period of continuous transmission. Refer to III.A for additional guidance for devices that use channel aggregation.

- Create an average power spectrum for the EUT operating mode being tested by following the instructions in 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.)
- Search function on the instrument to find the peak of the spectrum and record its value.
- Adjustments to the peak value of the spectrum, if applicable:
 - 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.
 - If Method SA-3 Alternative was used and the linear mode was used in II.E.2.g) (viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
- The result is the Maximum PSD over 1MHz reference bandwidth
- For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the preceding procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in Section 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of RBWs less than 1MHz, or 500 kHz, “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 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

- a) Set $RBW \geq 1/T$, where T is defined in II.B.I.a).
- b) Set $VBW \geq 3$ RBW.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10 \log (500 \text{ kHz} / RBW)$ to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10 \log (1 \text{ MHz} / RBW)$ to the measured result, whereas RBW (< 1 MHz) 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 kHz for the II.F.5.c) and II.F.5.d), since $RBW = 100 \text{ kHz}$ is available on nearly all spectrum analyzers.
- Method SA-2 is used.

Test results**[DC 5 V]**

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/MHz)	DCF (dB)	Maximum PSD (dB m/MHz)	Limit (dBm/MHz)
802.11a	UNII-1	5 180	5.21	0.22	5.43	11.00
		5 200	5.07		5.29	
		5 240	5.18		5.40	
	UNII-2A	5 260	5.05		5.27	11.00
		5 280	5.33		5.55	
		5 320	5.44		5.66	
	UNII-2C	5 500	5.08		5.30	11.00
		5 600	4.33		4.55	
		5 700	3.62		3.84	
802.11n HT20	UNII-1	5 180	3.82	0.26	4.08	11.00
		5 200	4.06		4.32	
		5 240	3.84		4.10	
	UNII-2A	5 260	3.89		4.15	11.00
		5 280	4.11		4.37	
		5 320	4.22		4.48	
	UNII-2C	5 500	3.98		4.24	11.00
		5 600	2.94		3.20	
		5 700	2.34		2.60	
802.11ac VHT20	UNII-1	5 180	3.94	0.26	4.20	11.00
		5 200	3.94		4.20	
		5 240	3.97		4.23	
	UNII-2A	5 260	4.19		4.45	11.00
		5 280	3.94		4.20	
		5 320	4.28		4.54	
	UNII-2C	5 500	4.05		4.31	11.00
		5 600	3.13		3.39	
		5 700	2.46		2.72	

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/500 kHz)	DCF (dB)	Maximum PSD (dBm /500 kHz)	Limit (dBm /500 kHz)
802.11a	UNII-3	5 745	-0.76	0.22	-0.54	30.00
		5 785	-0.77		-0.55	
		5 825	-1.27		-1.05	
802.11n HT20		5 745	-0.45	0.26	-0.19	
		5 785	-0.39		-0.13	
		5 825	-0.34		-0.08	
802.11ac VHT20		5 745	-0.48	0.26	-0.22	
		5 785	-0.32		-0.06	
		5 825	-0.53		-0.27	

Note:

- Maximum PSD(dB m/MHz) = Reading (dB m/MHz) + DCF(dB)
- The Unit of UNII-2C is (dB m / MHz) and Unit of UNII-3 is (dB m / 500kHz)

[DC 12 V]

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/MHz)	DCF (dB)	Maximum PSD (dB m/MHz)	Limit (dBm/MHz)
802.11a	UNII-1	5 180	5.20	0.22	5.42	11.00
		5 200	5.26		5.48	
		5 240	5.38		5.60	
	UNII-2A	5 260	4.92		5.14	11.00
		5 280	4.30		4.52	
		5 320	4.45		4.67	
	UNII-2C	5 500	5.33		5.55	11.00
		5 600	4.40		4.62	
		5 700	3.75		3.97	
802.11n HT20	UNII-1	5 180	3.79	0.26	4.05	11.00
		5 200	3.94		4.20	
		5 240	4.08		4.34	
	UNII-2A	5 260	4.29		4.55	11.00
		5 280	4.29		4.55	
		5 320	4.17		4.43	
	UNII-2C	5 500	4.13		4.39	11.00
		5 600	3.29		3.55	
		5 700	2.73		2.99	
802.11ac VHT20	UNII-1	5 180	3.91	0.26	4.17	11.00
		5 200	4.08		4.34	
		5 240	3.69		3.95	
	UNII-2A	5 260	4.36		4.62	11.00
		5 280	4.54		4.80	
		5 320	4.46		4.72	
	UNII-2C	5 500	4.18		4.44	11.00
		5 600	3.16		3.42	
		5 700	2.69		2.95	

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/500 kHz)	DCF (dB)	Maximum PSD (dBm /500 kHz)	Limit (dBm /500 kHz)
802.11a	UNII-3	5 745	-0.42	0.22	-0.20	30.00
		5 785	0.76		0.98	
		5 825	-0.98		-0.76	
802.11n HT20		5 745	-0.49	0.26	-0.23	
		5 785	0.04		0.30	
		5 825	-0.10		0.16	
802.11ac VHT20		5 745	-0.57	0.26	-0.31	
		5 785	-0.36		-0.10	
		5 825	-0.40		-0.14	

Note:

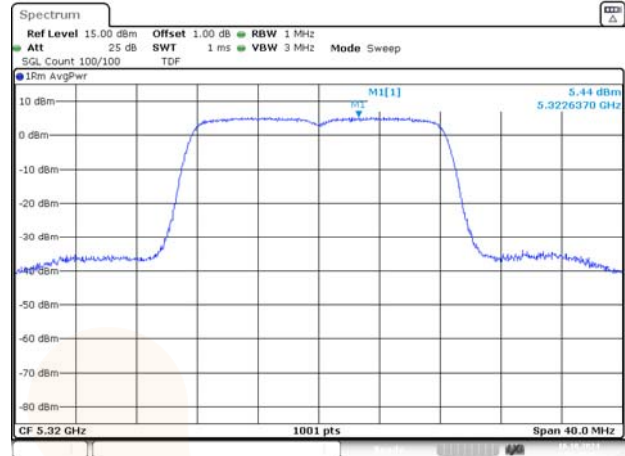
1. Maximum PSD(dB m/MHz) = Reading (dB m/MHz) + DCF(dB)
2. The Unit of UNII-2C is (dB m / MHz) and Unit of UNII-3 is (dB m / 500kHz)

In order to simplify the report, attached plots were the worst case per band
[DC 5 V]

UNII-1 / 802.11a / Low ch.



UNII-2A / 802.11a / High ch.



UNII-2C / 802.11a / Low ch.

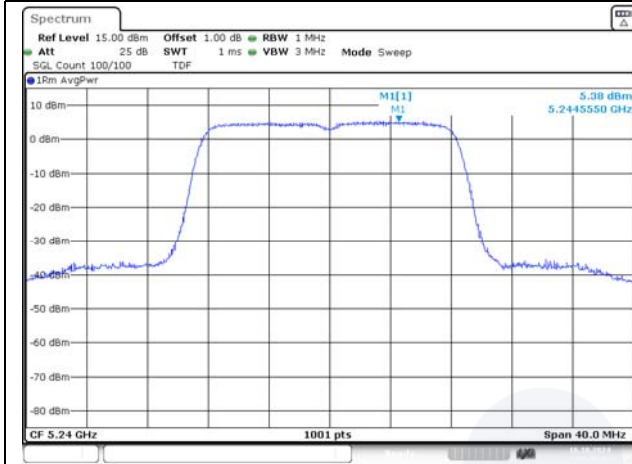


UNII-3 / 802.11ac_VHT20 / Mid ch.

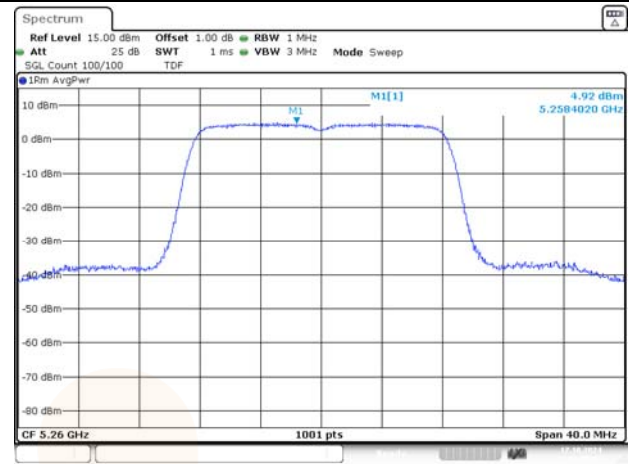


[DC 12 V]

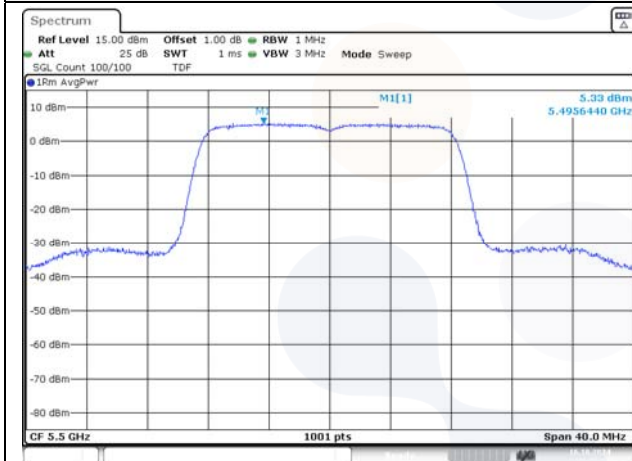
UNII-1 / 802.11a / High ch.



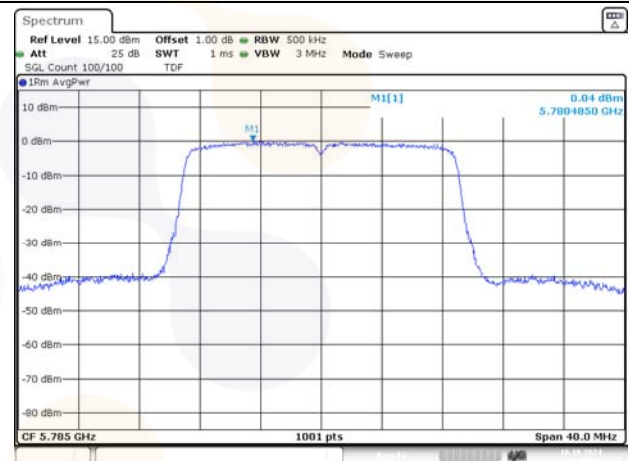
UNII-2A / 802.11a / Low ch.



UNII-2C / 802.11a / Low ch.

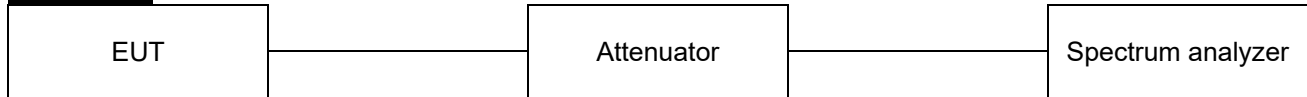


UNII-3 / 802.11n_HT20 / Mid ch.



7.3. 26 dB Bandwidth & 99% Bandwidth

Test setup



Limit

N/A

Test procedure

ANSI C63.10-2013 Section 12.4

KDB 789033 D02 v02r01 - Section C.1 (26dB bandwidth)

KDB 789033 D02 v02r01 - Section D (99% bandwidth)

Test settings

1. 26 dB Bandwidth

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- Measure the maximum width of the emission that is 26 dB down from the maximum 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%.

2. 99% Occupied Bandwidth

- Set center frequency to the nominal EUT channel center frequency.
- Set span = 1.5 times to 5.0 times the OBW.
- Set RBW = 1% to 5% of the OBW
- Set VBW $\geq 3 \times$ RBW
- Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- Use the 99% power bandwidth function of the instrument (if available).
- 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.

Test results**[DC 5 V]**

Test mode	Band	Frequency(MHz)	26 dB bandwidth (MHz)	99% bandwidth (MHz)
802.11a	UNII-1	5 180	18.58	16.43
		5 200	18.68	16.38
		5 240	18.63	16.43
	UNII-2A	5 260	18.68	16.38
		5 280	18.68	16.38
		5 320	18.73	16.38
	UNII-2C	5 500	18.68	16.43
		5 600	18.68	16.43
		5 700	18.63	16.43
802.11n HT20	UNII-1	5 180	19.53	17.48
		5 200	19.63	17.48
		5 240	19.63	17.48
	UNII-2A	5 260	19.63	17.48
		5 280	19.58	17.48
		5 320	19.68	17.48
	UNII-2C	5 500	19.68	17.53
		5 600	19.63	17.53
		5 700	19.68	17.53
802.11ac VHT20	UNII-1	5 180	19.58	17.48
		5 200	19.58	17.48
		5 240	19.58	17.43
	UNII-2A	5 260	19.63	17.48
		5 280	19.63	17.48
		5 320	19.58	17.48
	UNII-2C	5 500	19.68	17.53
		5 600	19.68	17.98
		5 700	19.78	17.53

[DC 12 V]

Test mode	Band	Frequency(MHz)	26 dB bandwidth (MHz)	99% bandwidth (MHz)
802.11a	UNII-1	5 180	18.68	17.48
		5 200	18.58	16.38
		5 240	18.63	16.38
	UNII-2A	5 260	18.68	16.43
		5 280	18.68	16.38
		5 320	18.68	16.38
	UNII-2C	5 500	18.73	16.43
		5 600	18.63	16.43
		5 700	18.68	16.43
802.11n HT20	UNII-1	5 180	19.58	17.53
		5 200	19.58	17.48
		5 240	19.58	17.48
	UNII-2A	5 260	19.63	17.48
		5 280	19.58	17.48
		5 320	19.63	17.48
	UNII-2C	5 500	19.68	17.53
		5 600	19.63	17.53
		5 700	19.63	17.53
802.11ac VHT20	UNII-1	5 180	19.58	17.48
		5 200	19.58	17.48
		5 240	19.63	17.48
	UNII-2A	5 260	19.58	17.48
		5 280	19.63	17.48
		5 320	19.63	17.48
	UNII-2C	5 500	19.68	17.53
		5 600	19.73	17.58
		5 700	19.73	17.68

In order to simplify the report, only a mode test plots are attached.

[DC 5 V]

26 dB bandwidth

UNII-1 / 802.11a / Low ch.



UNII-2A / 802.11a / Low ch.



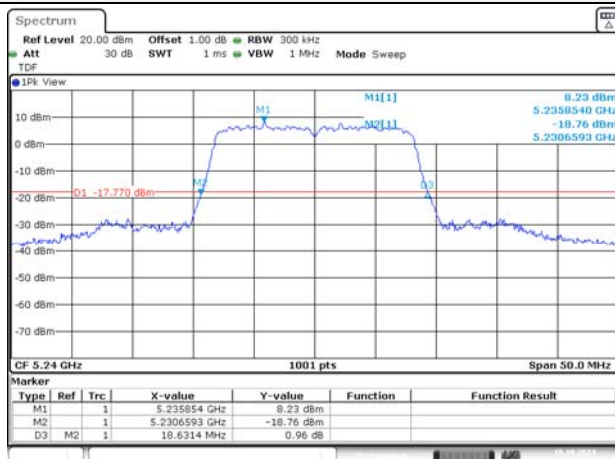
UNII-1 / 802.11a / Mid ch.



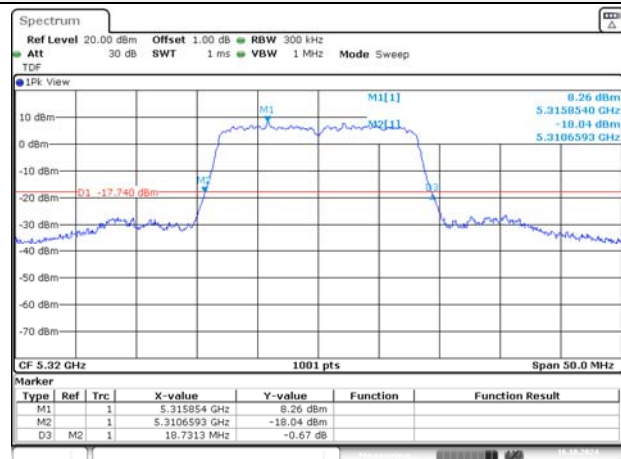
UNII-2A / 802.11a / Mid ch.



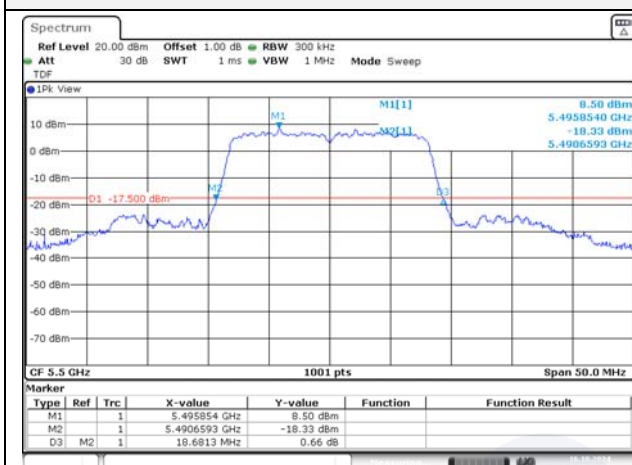
UNII-1 / 802.11a / High ch.



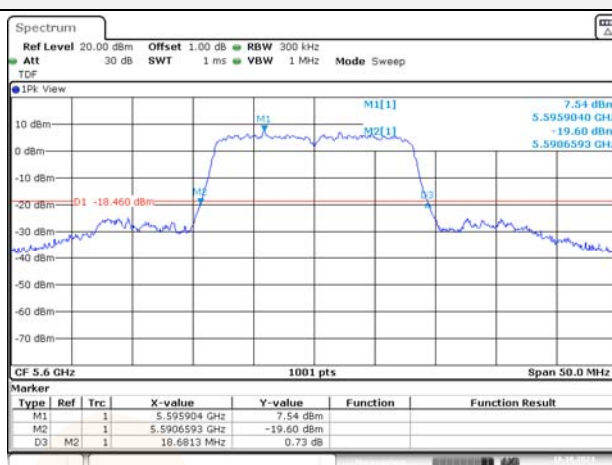
UNII-2A / 802.11a / High ch.



UNII-2C / 802.11a / Low ch.



UNII-2C / 802.11a / Mid ch.



UNII-2C / 802.11a / High ch.



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[DC 12 V]

26 dB bandwidth

UNII-1 / 802.11a / Low ch.



UNII-2A / 802.11a / Low ch.



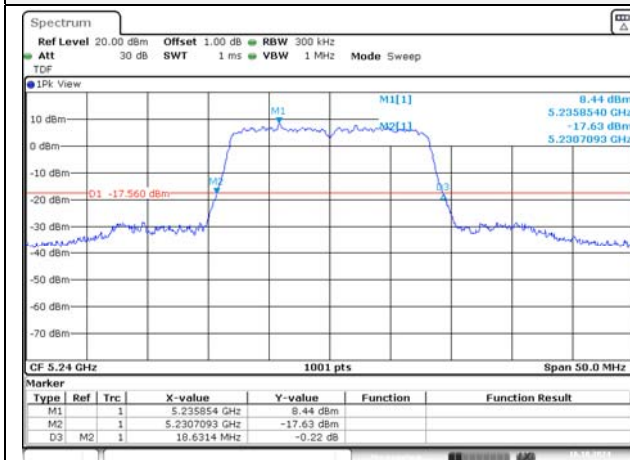
UNII-1 / 802.11a / Mid ch.



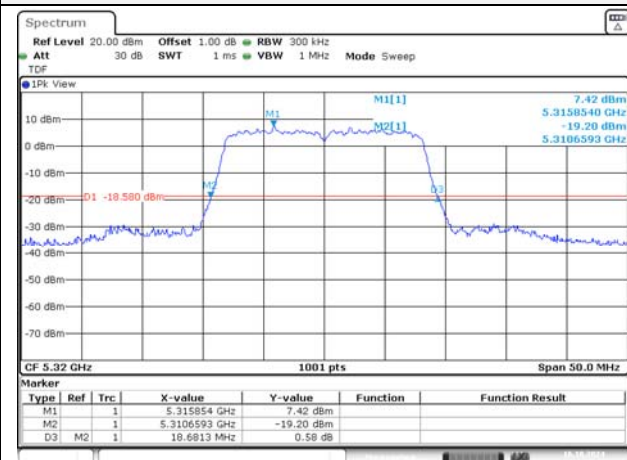
UNII-2A / 802.11a / Mid ch.



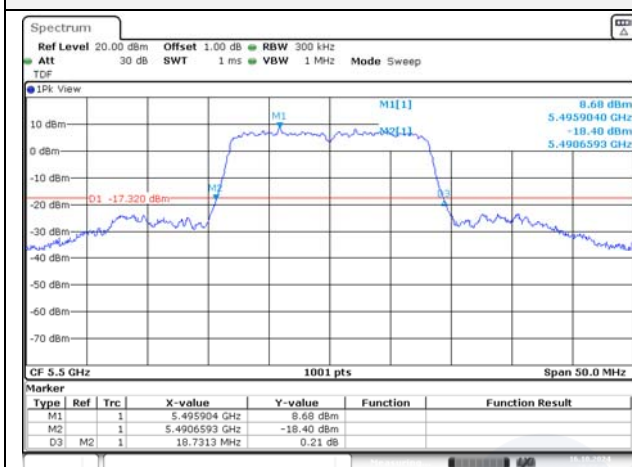
UNII-1 / 802.11a / High ch.



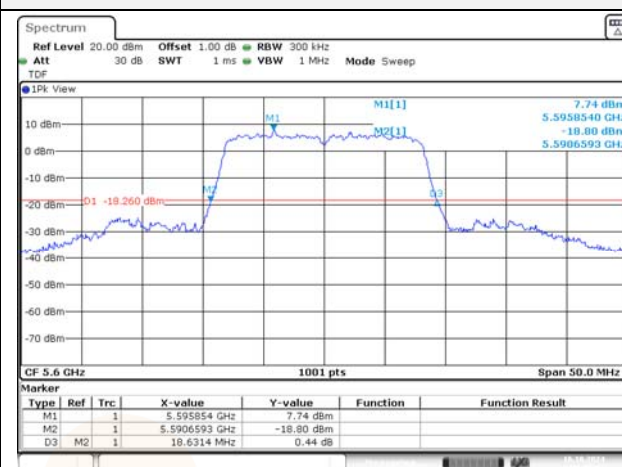
UNII-2A / 802.11a / High ch.



UNII-2C / 802.11a / Low ch.



UNII-2C / 802.11a / Mid ch.



UNII-2C / 802.11a / High ch.



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In order to simplify the report, only ac mode test plots are attached.

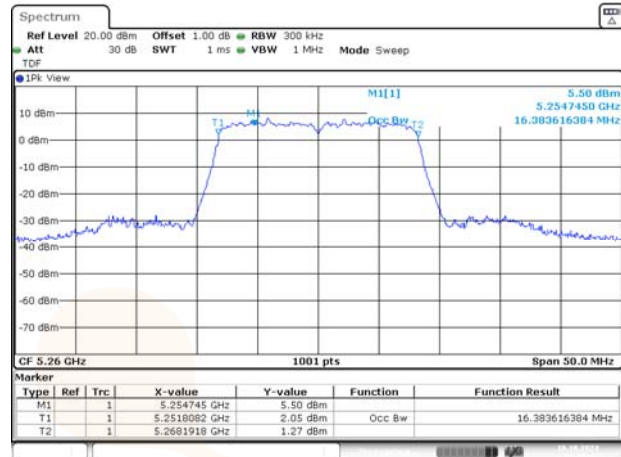
[DC 5 V]

99% bandwidth

UNII-1 / 802.11a / Low ch.



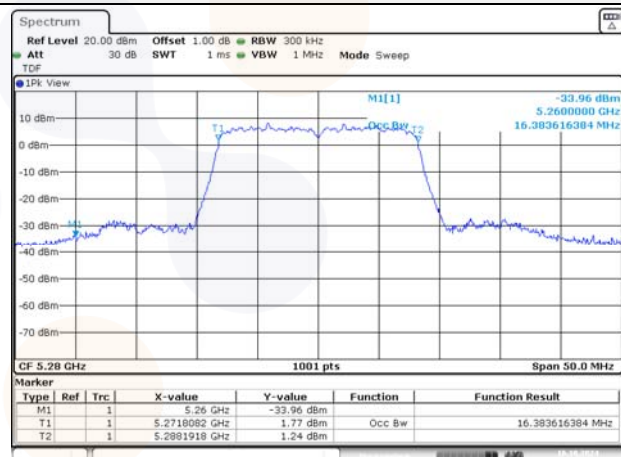
UNII-2A / 802.11a / Low ch.



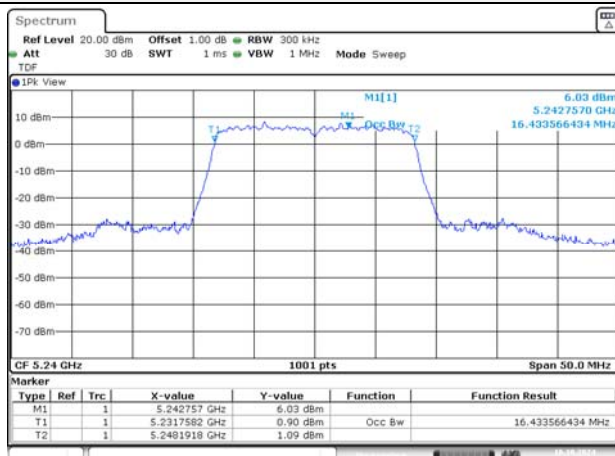
UNII-1 / 802.11a / Mid ch.



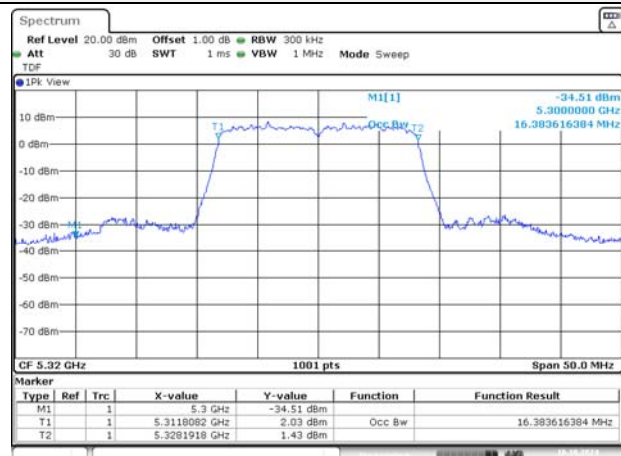
UNII-2A / 802.11a / Mid ch.



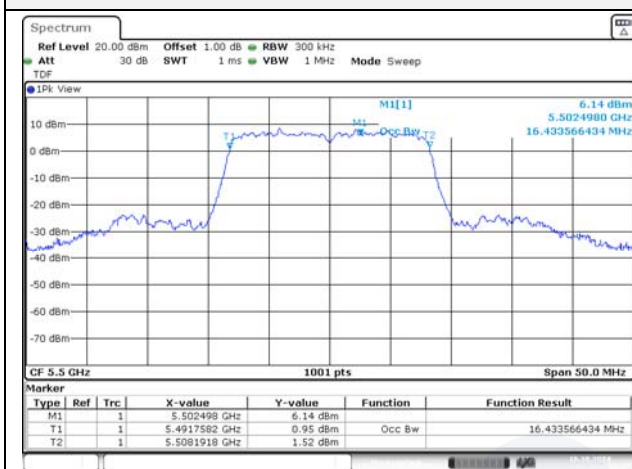
UNII-1 / 802.11a / High ch.



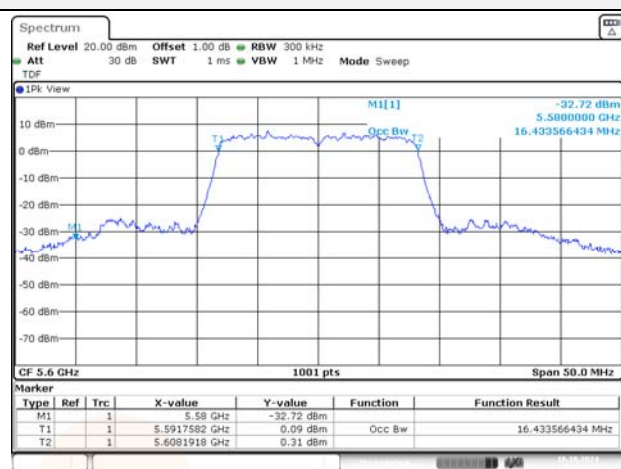
UNII-2A / 802.11a / High ch.



UNII-2C / 802.11a / Low ch.



UNII-2C / 802.11a / Mid ch.



UNII-2C / 802.11a / High ch.

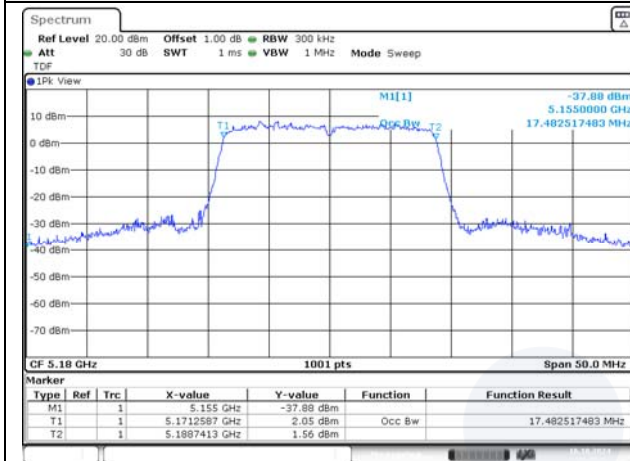


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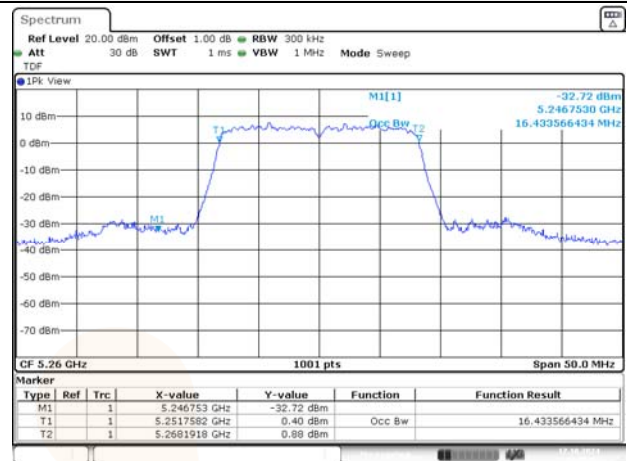
[DC 12 V]

99% bandwidth

UNII-1 / 802.11a / Low ch.



UNII-2A / 802.11a / Low ch.



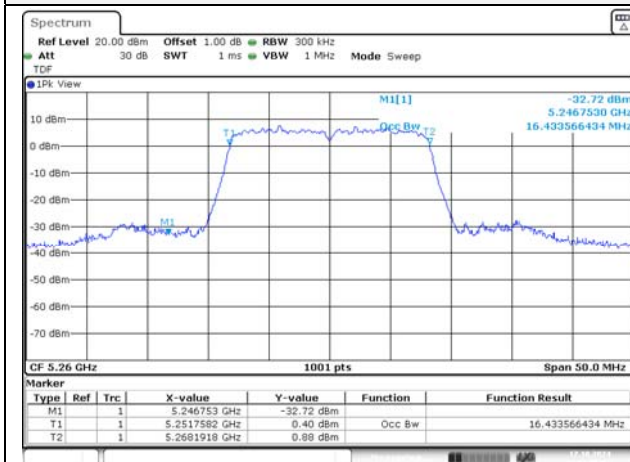
UNII-1 / 802.11a / Mid ch.



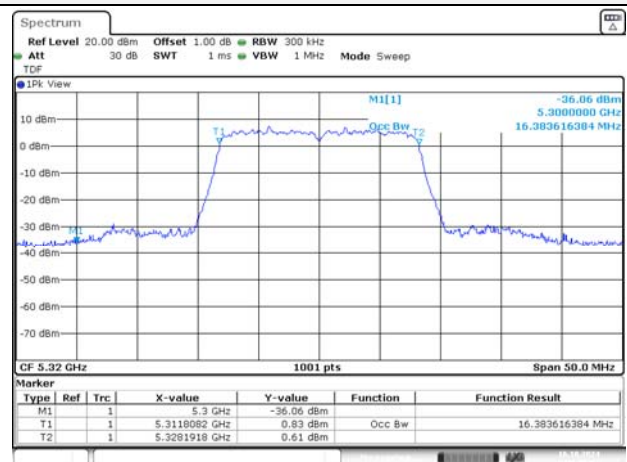
UNII-2A / 802.11a / Mid ch.



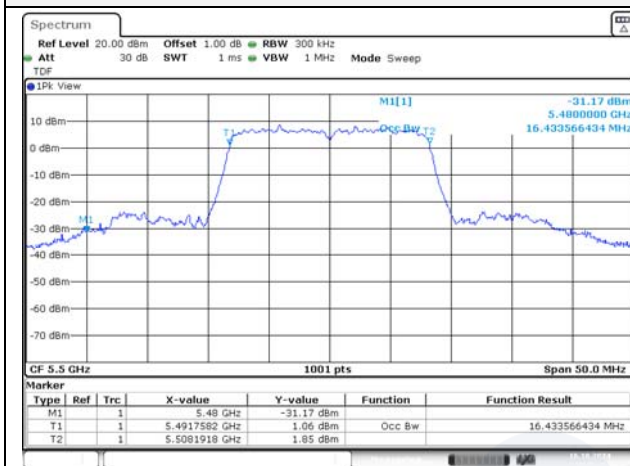
UNII-1 / 802.11a / High ch.



UNII-2A / 802.11a / High ch.



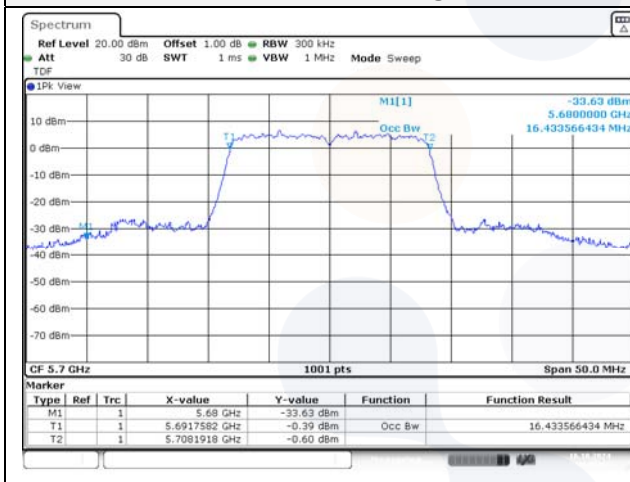
UNII-2C / 802.11a / Low ch.



UNII-2C / 802.11a / Mid ch.



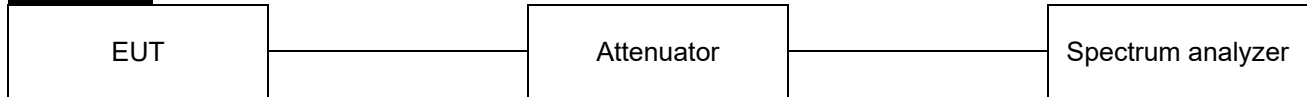
UNII-2C / 802.11a / High ch.



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7.4. 6 dB Bandwidth & 99% Bandwidth

Test setup



Limit

According to §15.407(e), Within the 5.725-5.850 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500kHz.

Test procedure

ANSI C63.10-2013 Section 6.9.2

KDB 789033 D02 v02r01 - Section C.2

Test settings

Minimum Emission Bandwidth for the band 5.725–5.85 GHz.

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 kHz for the band 5.725–5.85 GHz band. The following procedure shall be used for measuring this Bandwidth:

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

Test results**[DC 5 V]**

Test mode	Band	Frequency (MHz)	6dB bandwidth (MHz)	Limit (MHz)	99% bandwidth (MHz)
802.11a	UNII-3	5 745	16.38	0.50	16.43
		5 785	16.38	0.50	16.43
		5 825	16.33	0.50	16.43
802.11n HT20	UNII-3	5 745	16.93	0.50	17.48
		5 785	17.43	0.50	17.48
		5 825	17.23	0.50	17.48
802.11ac VHT20	UNII-3	5 745	16.98	0.50	17.48
		5 785	17.33	0.50	17.48
		5 825	17.18	0.50	17.93

[DC 12 V]

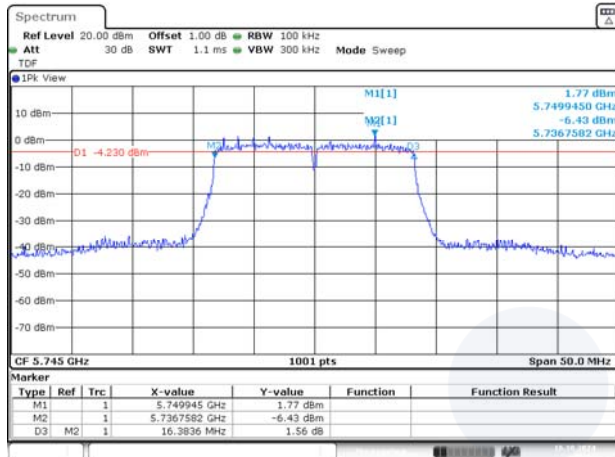
Test mode	Band	Frequency (MHz)	6dB bandwidth (MHz)	Limit (MHz)	99% bandwidth (MHz)
802.11a	UNII-3	5 745	16.08	0.50	16.43
		5 785	16.38	0.50	16.43
		5 825	16.33	0.50	16.43
802.11n HT20	UNII-3	5 745	16.98	0.50	17.48
		5 785	17.08	0.50	17.48
		5 825	17.23	0.50	17.48
802.11ac VHT20	UNII-3	5 745	17.48	0.50	17.48
		5 785	16.98	0.50	17.48
		5 825	17.18	0.50	17.48

In order to simplify the report, only a mode test plots are attached.

[DC 5 V]

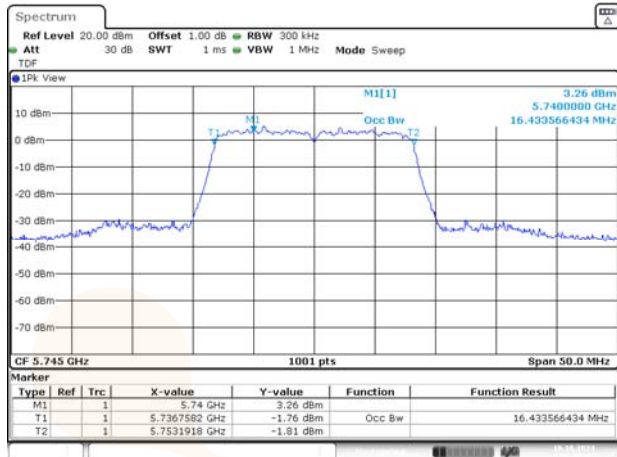
6 dB bandwidth

UNII-3 / 802.11a / Low ch.

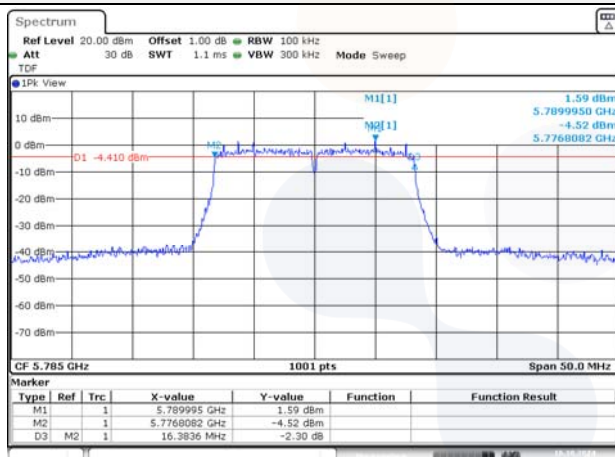


99% bandwidth

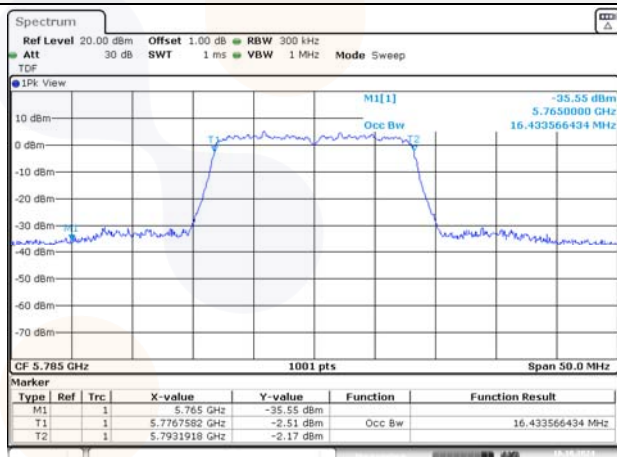
UNII-3 / 802.11a / Low ch.



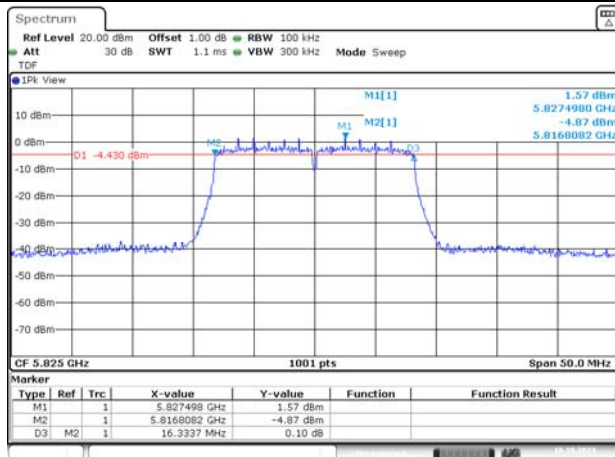
UNII-3 / 802.11a / Mid ch.



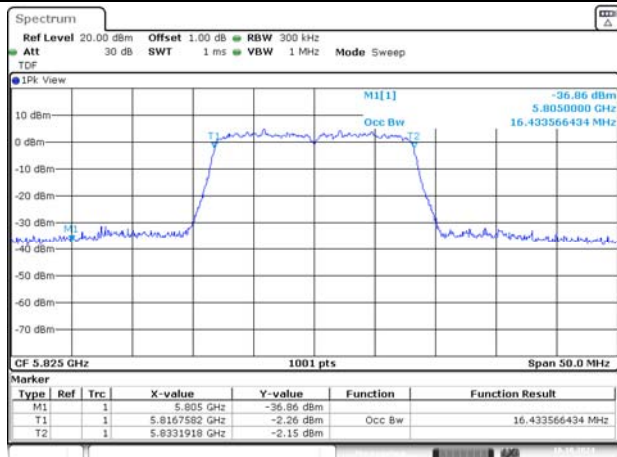
UNII-3 / 802.11a / Mid ch.



UNII-3 / 802.11a / High ch.



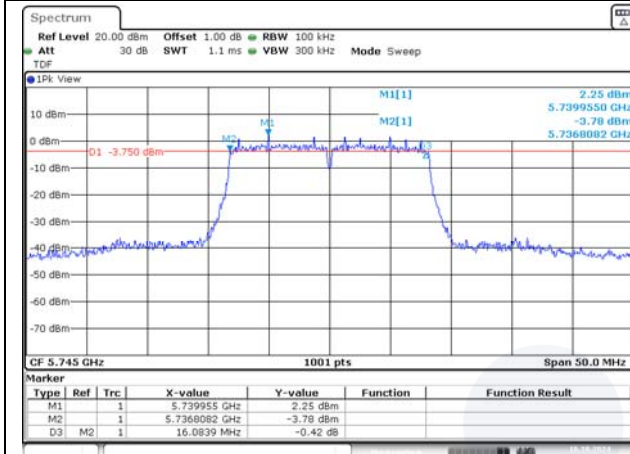
UNII-3 / 802.11a / High ch.



DC 12 V

6 dB bandwidth

UNII-3 / 802.11a / Low ch.

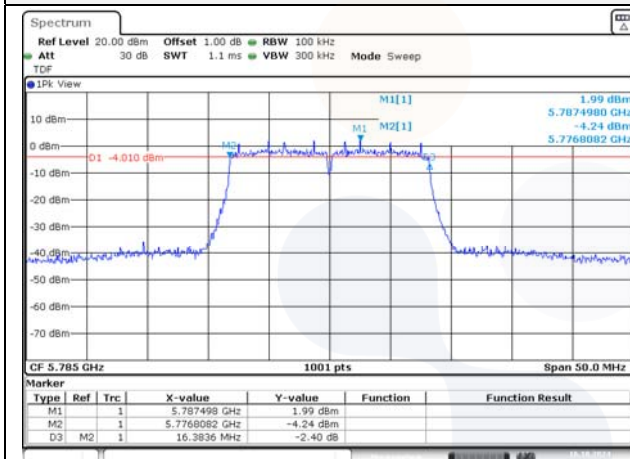


99% bandwidth

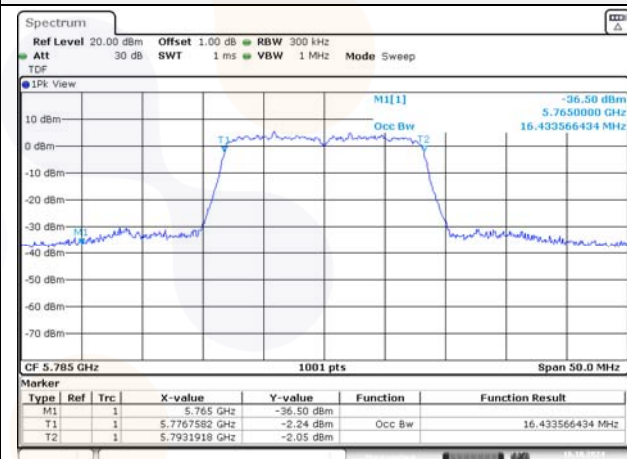
UNII-3 / 802.11a / Low ch.



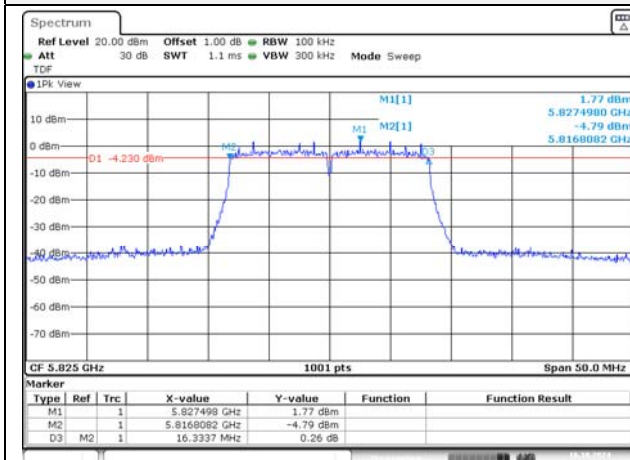
UNII-3 / 802.11a / Mid ch.



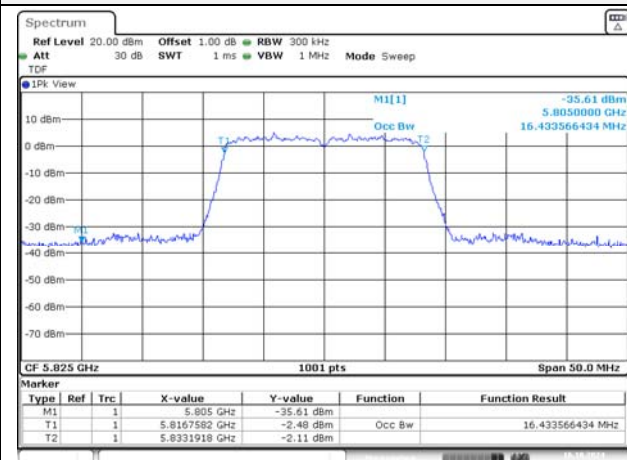
UNII-3 / 802.11a / Mid ch.



UNII-3 / 802.11a / High ch.



UNII-3 / 802.11a / High ch.



7.5. Straddle channel**[DC 5 V]**

Test mode	Band	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11a	UNII-2C	5 720	14.29	16.43
802.11n_HT20			14.89	17.53
802.11ac_VHT20			14.89	17.53
802.11a	UNII-3	5 720	4.34	-
802.11n_HT20			4.74	-
802.11ac_VHT20			4.89	-

Notes:

- For 99% Bandwidth, measured 99% occupied bandwidth is separated as below.
 - For UNII band 2C = 5 725 MHz – T1 (Measured frequency on the marker table)
 - For UNII band 3 = T2 (Measured frequency on the marker table) – 5 725 MHz

[DC 12 V]

Test mode	Band	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11a	UNII-2C	5 720	14.34	16.43
802.11n_HT20			14.89	17.53
802.11ac_VHT20			14.89	17.53
802.11a	UNII-3	5 720	4.34	-
802.11n_HT20			4.74	-
802.11ac_VHT20			4.79	-

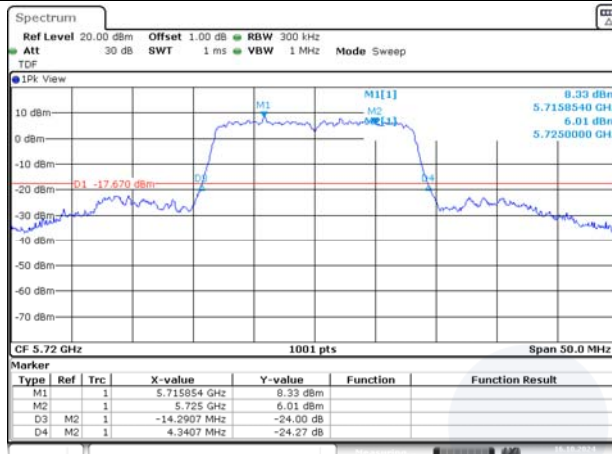
Notes:

- For 99% Bandwidth, measured 99% occupied bandwidth is separated as below.
 - For UNII band 2C = 5 725 MHz – T1 (Measured frequency on the marker table)
 - For UNII band 3 = T2 (Measured frequency on the marker table) – 5 725 MHz

[DC 5 V]

26 dB bandwidth

802.11a

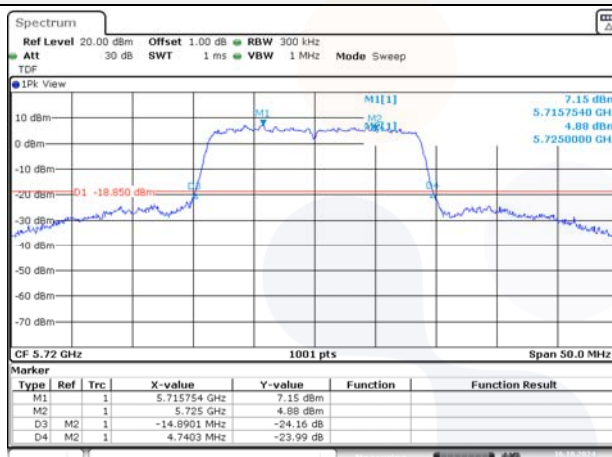


99% bandwidth

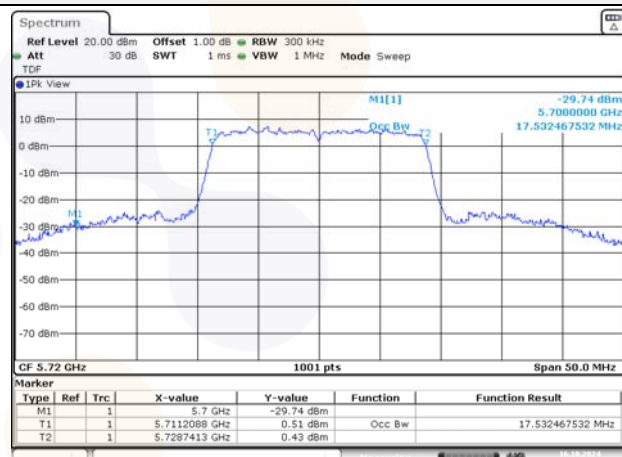
802.11a



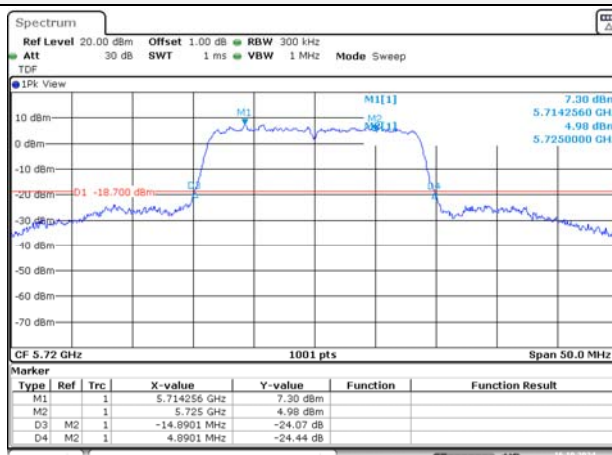
802.11n_HT20



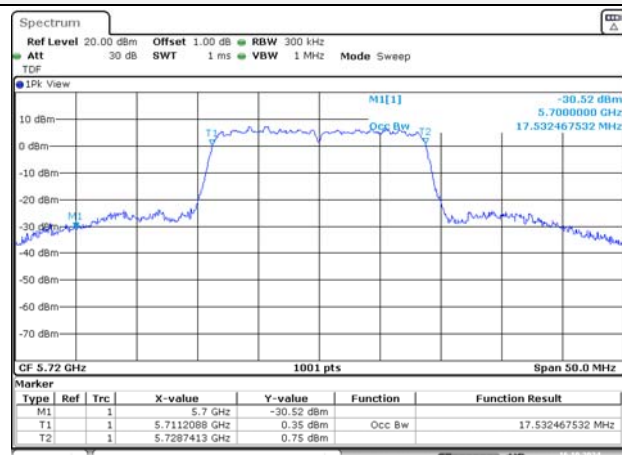
802.11n_HT20



802.11ac_VHT20



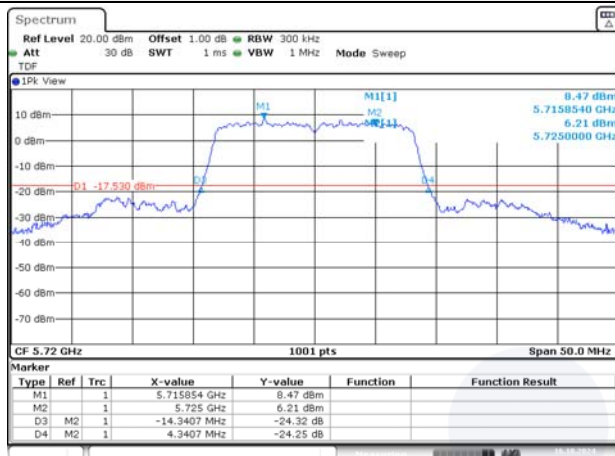
802.11ac_VHT20



[DC 12 V]

26 dB bandwidth

802.11a

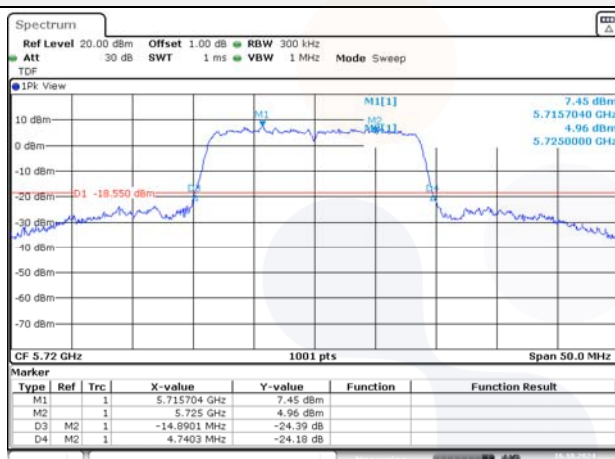


99% bandwidth

802.11a



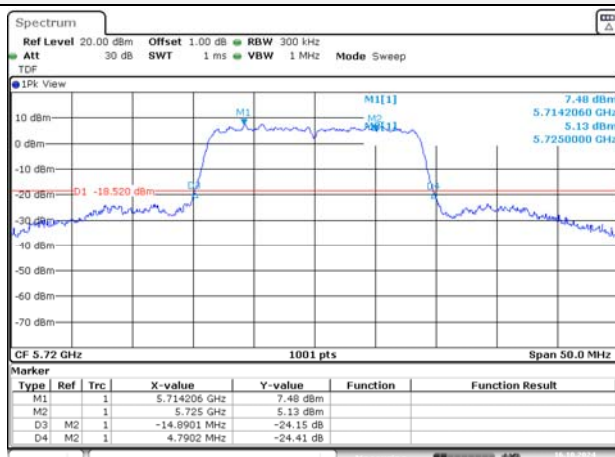
802.11n_HT20



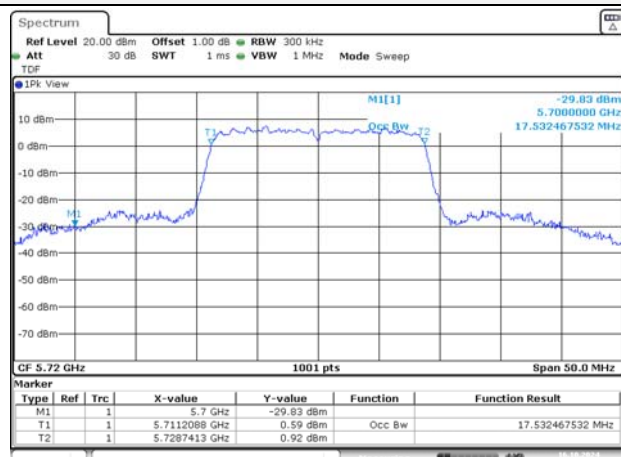
802.11n_HT20



802.11ac_VHT20



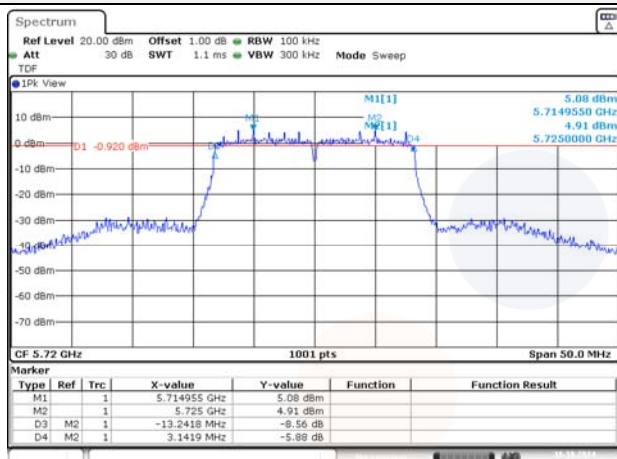
802.11ac_VHT20



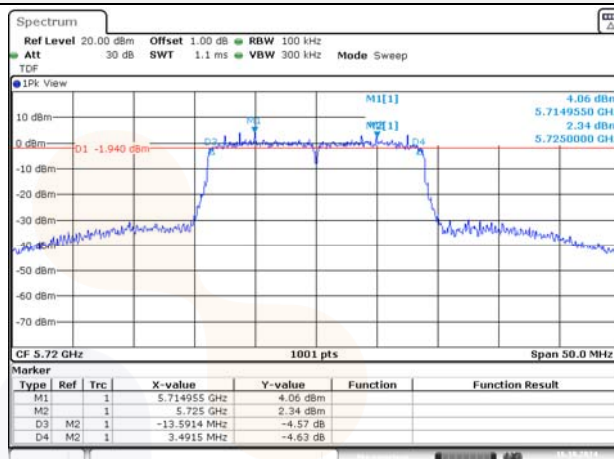
[DC 5 V]

Test mode	Band	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
802.11a	UNII-3	5 720	3.14	0.50
802.11n_HT20			3.49	0.50
802.11ac_VHT20			3.64	0.50

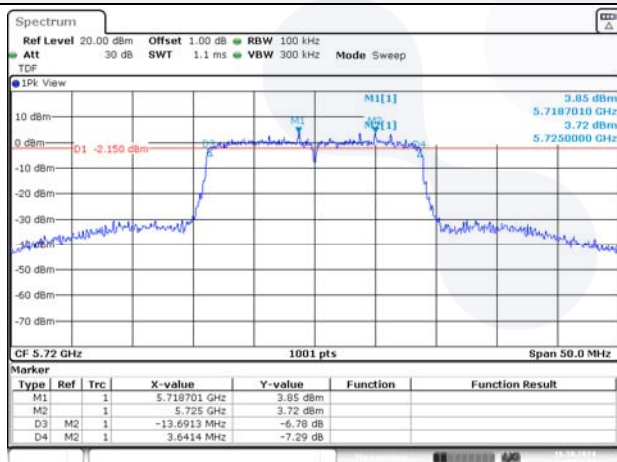
802.11a



802.11n_HT20



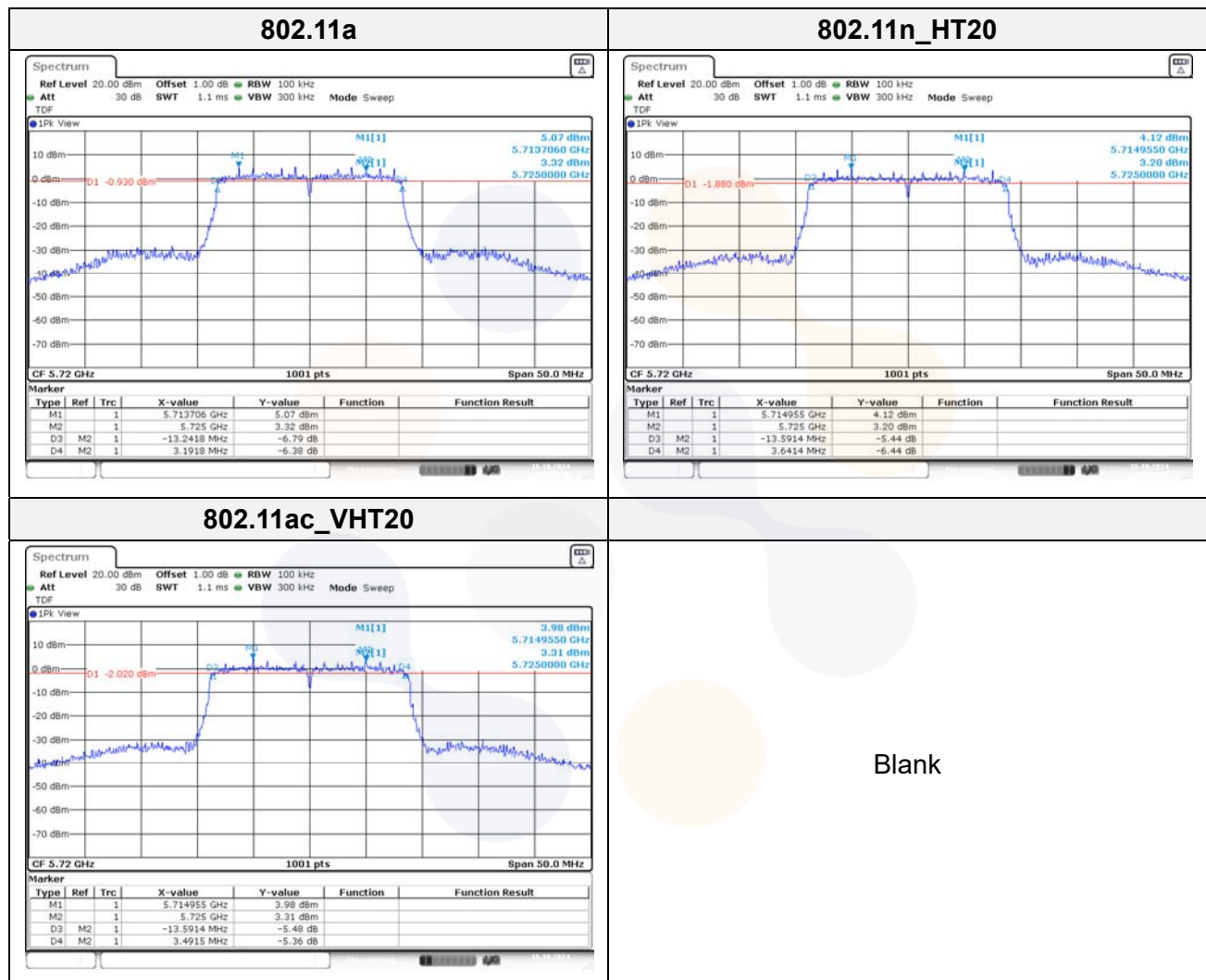
802.11ac_VHT20



Blank

[DC 12 V]

Test mode	Band	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
802.11a	UNII-3	5 720	3.19	0.50
802.11n_HT20			3.64	0.50
802.11ac_VHT20			3.49	0.50

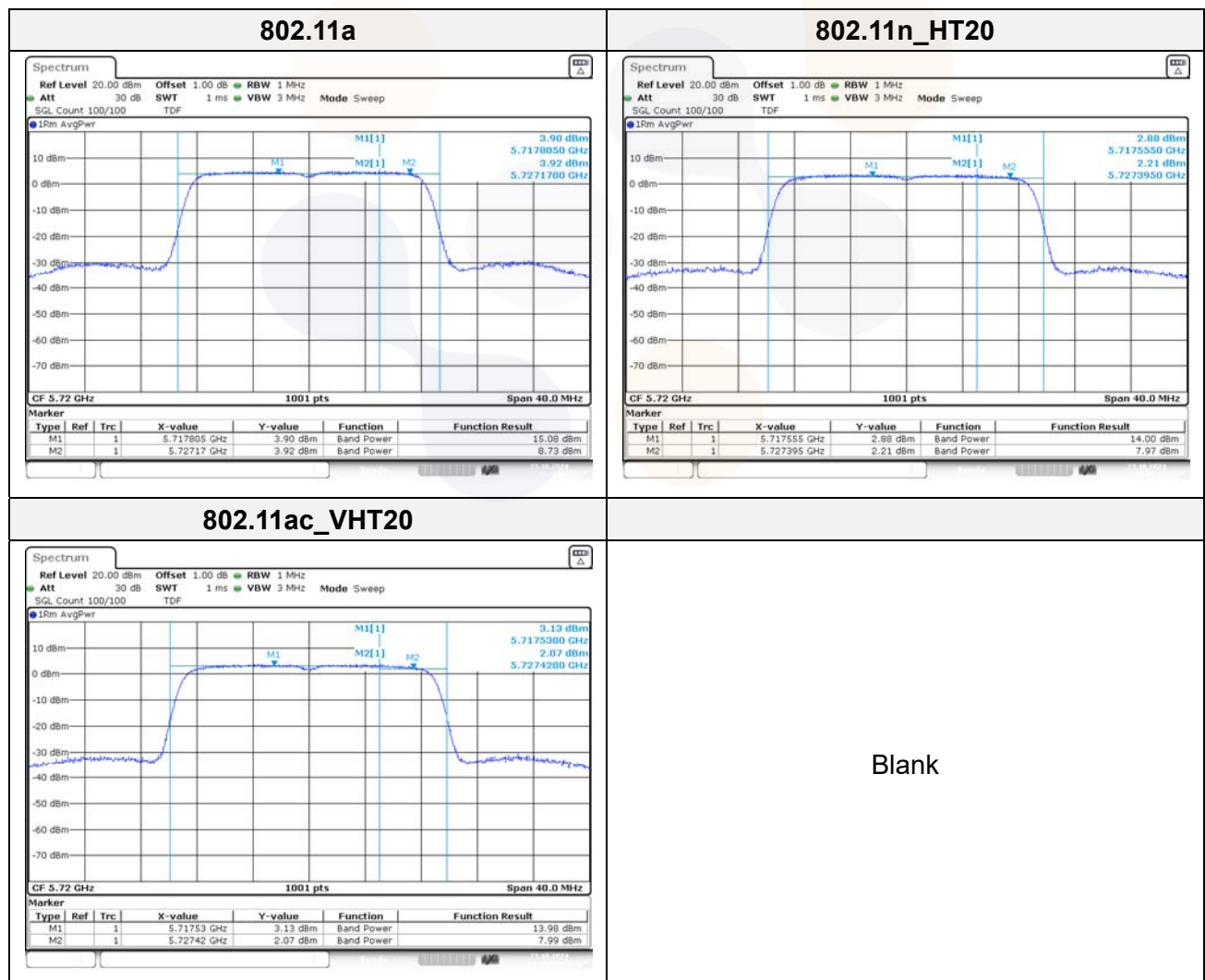


DC 5 V

Test mode	Band	Frequency (MHz)	Measured output power				
			Conducted Output Power (dBm)	FCC Limit (dBm)	ANT gain (dB)	MAX e.i.r.p (dBm)	MAX e.i.r.p Limit (dBm)
802.11a	UNII-2C	5 720	15.30	23.70	-0.40	14.90	29.16
802.11n_HT20			14.26	23.93		13.86	29.44
802.11ac_VHT20			14.24	23.94		13.84	29.44
802.11a	UNII-3	5 720	8.95	30.00	-0.70	8.25	30.00
802.11n_HT20			8.25	30.00		7.55	30.00
802.11ac_VHT20			8.23	30.00		7.53	30.00

Notes:

- Conducted output power (dBm) = Average power (dBm) + D.C.F (dB)
- e.i.r.p. Calculation: e.i.r.p. (dBm) = Conducted output power (dBm) + Antenna gain (dBi)

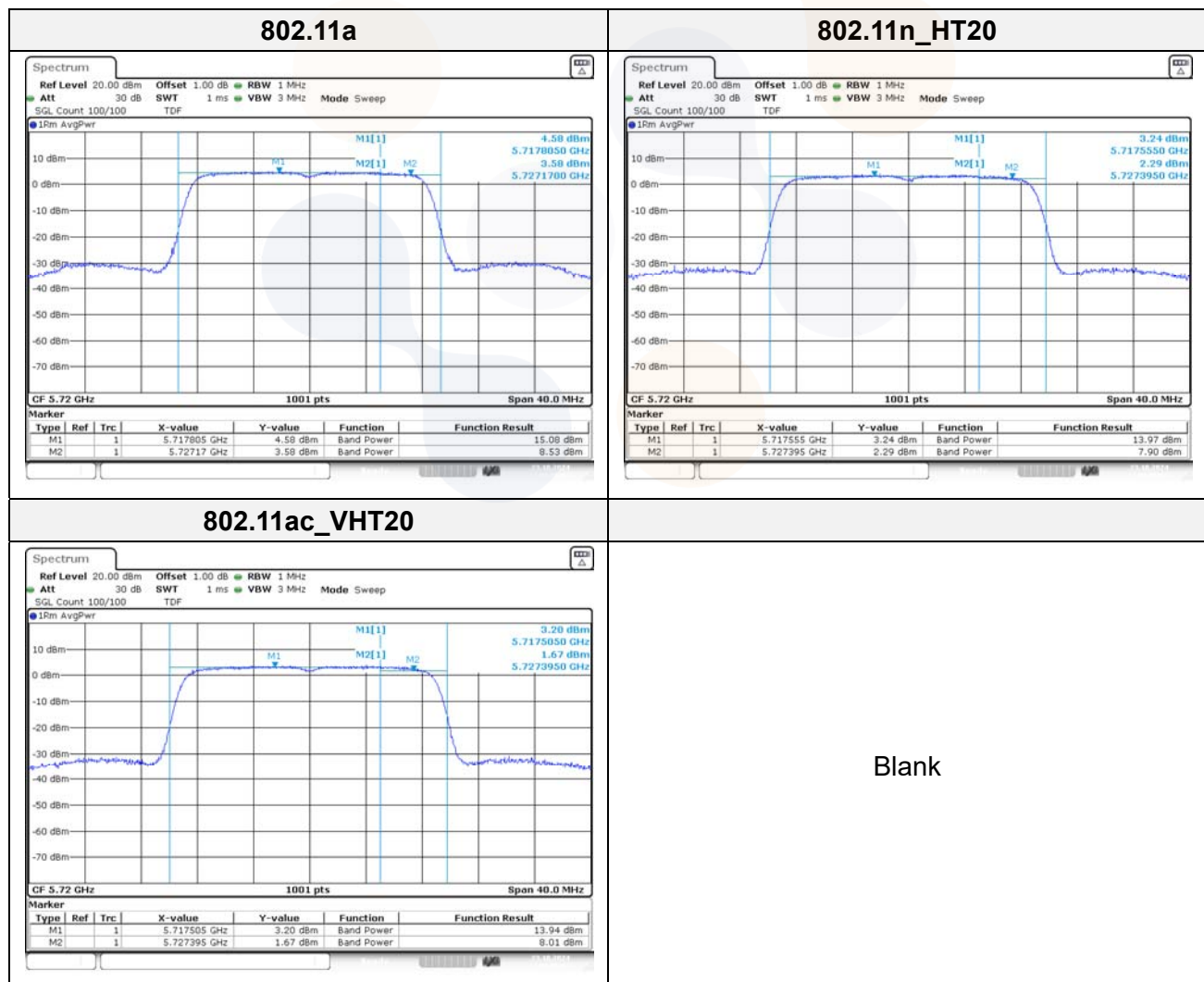


[DC 12 V]

Test mode	Band	Frequency (MHz)	Measured output power				
			Conducted Output Power (dBm)	FCC Limit (dBm)	ANT gain (dB)	MAX e.i.r.p (dBm)	MAX e.i.r.p Limit (dBm)
802.11a	UNII-2C	5 720	15.30	23.70	-0.40	14.90	29.16
802.11n_HT20			14.23	23.93		13.83	29.44
802.11ac_VHT20			14.20	23.94		13.80	29.44
802.11a	UNII-3	5 720	8.75	30.00	-0.70	8.05	29.44
802.11n_HT20			8.27	30.00		7.57	29.44
802.11ac_VHT20			8.16	30.00		7.46	29.44

Notes:

- Conducted output power (dBm) = Average power (dBm) + D.C.F (dB)
- e.i.r.p. Calculation: e.i.r.p. (dBm) = Conducted output power (dBm) + Antenna gain (dBi)



[DC 5 V]

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/MHz)	DCF (dB)	Maximum PSD (dB m/MHz)	Limit (dBm/MHz)
802.11a	UNII-2C	5 720	5.43	0.22	5.65	11.00
802.11n_HT20			4.21	0.26	4.47	
802.11ac_VHT20			4.63	0.26	4.89	

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/MHz)	DCF (dB)	Maximum PSD (dB m/MHz)	Limit (dBm/MHz)
802.11a	UNII-3	5 720	2.19	0.22	2.41	11.00
802.11n_HT20			1.16	0.26	1.42	
802.11ac_VHT20			1.27	0.26	1.53	

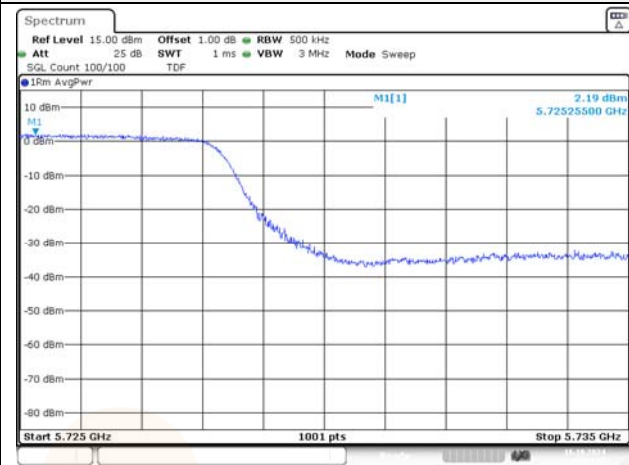
Note:

- Maximum PSD(dB m/MHz) = Reading (dB m/MHz) + DCF(dB)
- The Unit of UNII-2C is (dB m / MHz) and Unit of UNII-3 is (dB m / 500kHz)

UNII-2C / 802.11a



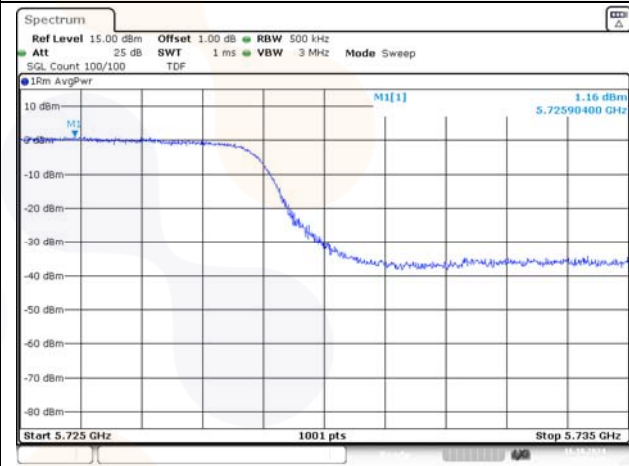
UNII-3 / 802.11a



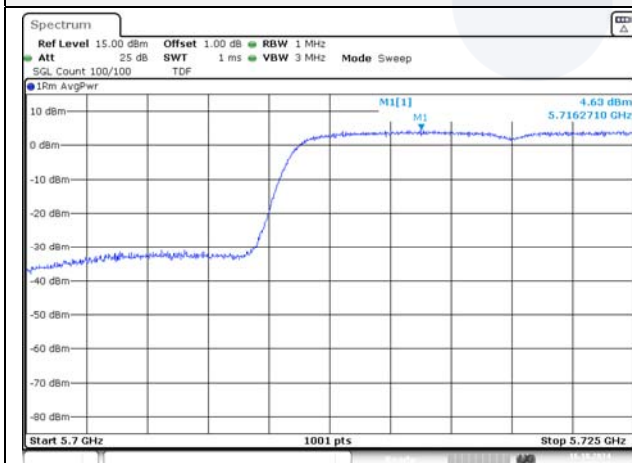
UNII-2C / 802.11n_HT20



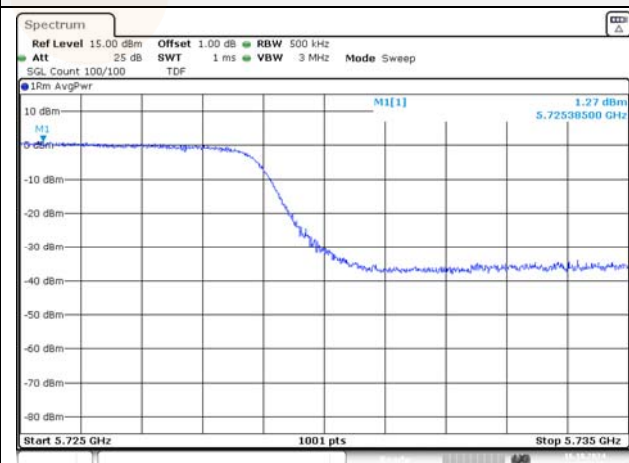
UNII-3 / 802.11n_HT20



UNII-2C / 802.11ac_VHT20



UNII-3 / 802.11ac_VHT20



[DC 12 V]

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/MHz)	DCF (dB)	Maximum PSD (dB m/MHz)	Limit (dBm/MHz)
802.11a	UNII-2C	5 720	5.74	0.22	5.96	11.00
802.11n_HT20			4.40	0.26	4.66	
802.11ac_VHT20			4.40	0.26	4.66	

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/MHz)	DCF (dB)	Maximum PSD (dB m/MHz)	Limit (dBm/MHz)
802.11a	UNII-3	5 720	2.44	0.22	2.66	11.00
802.11n_HT20			1.14	0.26	1.40	
802.11ac_VHT20			1.16	0.26	1.42	

Note:

- Maximum PSD(dB m/MHz) = Reading (dB m/MHz) + DCF(dB)
- The Unit of UNII-2C is (dB m / MHz) and Unit of UNII-3 is (dB m / 500kHz)