



TEST REPORT

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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 : 2026-07-22

2. Use of Report : Certification

3. Name of Product / Model : Wi-Fi/BT Transceiver / CCAW710B

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

5. FCC ID : A3LCCA710B

6. IC Certificate No. : 649E-CCA710B

7. Date of Test : 2026-08-04 to 2026-09-09

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 4 July 2025
 RSS-Gen Issue 5 February 2021

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

Affirmation	Tested by Name : Jaehyun Park (Signature)	Technical Manager Name : Bobae Lee (Signature)
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2026-10-14

Eurofins KCTL Co.,Ltd.

As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by Eurofins KCTL Co.,Ltd.

REPORT REVISION HISTORY

Date	Revision	Page No
2026-09-18	Originally issued	-
2026-10-14	Updated the Power RF power setting in TEST SW, Measurement equipment, Summary of tests	6-7, 11, 162

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Note. The report No. KR26-SRF0168 is superseded by the report No. KR26-SRF0168-A.

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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2.1. Frequency/channel operations

This device contains the following capabilities:

WLAN (11a/n/ac)

UNII 1

Ch.	Frequency (MHz)
36	5 180
40	5 200
48	5 240

UNII 2A

Ch.	Frequency (MHz)
52	5 260
56	5 280
64	5 320

UNII 2C

Ch.	Frequency (MHz)
100	5 500
120	5 600
140	5 700
144	5 720

UNII 3

Ch.	Frequency (MHz)
149	5 745
157	5 785
165	5 825

Table 2.1-1. 802.11a/n/ac HT20/VHT20 mode

UNII 1

Ch.	Frequency (MHz)
38	5 190
46	5 230

UNII 2A

Ch.	Frequency (MHz)
54	5 270
62	5 310

UNII 2C

Ch.	Frequency (MHz)
102	5 510
118	5 590
134	5 670
142	5 710

UNII 3

Ch.	Frequency (MHz)
151	5 755
159	5 795

Table 2.1-2 . 802.11n/ac HT40/VHT40 mode

Note:

1. The device supports DFS bands in both UNII 2A and UNII 2C and operates as a slave device without radar detection, under the control of a master device.

2.2. RF power setting in TEST SW

Mode	RU Type		Frequency (MHz)	Power Setting	
	RU Tone	RU offset		DC 5 V	DC 12 V
802.11a	N/A	N/A	5 180	85	85
			5 200	85	85
			5 240	85	85
			5 260	85	85
			5 280	85	85
			5 320	85	85
			5 500	87	87
			5 600	89	89
			5 700	93	93
			5 720	93	93
			5 745	95	95
			5 785	97	97
			5 825	99	99
802.11n HT20	N/A	N/A	5 180	81	81
			5 200	81	81
			5 240	81	81
			5 260	81	81
			5 280	81	81
			5 320	81	81
			5 500	83	83
			5 600	85	85
			5 700	89	89
			5 720	89	89
			5 745	91	91
			5 785	93	93
			5 825	95	95
802.11n HT40	N/A	N/A	5 190	76	76
			5 230	76	76
			5 270	76	76
			5 310	76	76
			5 510	78	78
			5 590	80	80
			5 670	83	83
			5 710	84	84
			5 755	86	86
			5 795	89	89

Mode	RU Type		Frequency (MHz)	Power Setting	
	RU Tone	RU offset		DC 5 V	DC 12 V
802.11ac VHT20	N/A	N/A	5 180	81	81
			5 200	81	81
			5 240	81	81
			5 260	81	81
			5 280	81	81
			5 320	81	81
			5 500	83	83
			5 600	85	85
			5 700	89	89
			5 720	89	89
			5 745	91	91
			5 785	93	93
			5 825	95	95
802.11ac VHT40	N/A	N/A	5 190	76	76
			5 230	76	76
			5 270	76	76
			5 310	76	76
			5 510	78	78
			5 590	80	80
			5 670	83	83
			5 710	84	84
			5 755	86	86
			5 795	89	89

2.3. Duty Cycle Factor

[DC 5 V]

Test mode	Period (ms)	Ton time (ms)	Duty cycle		Duty cycle factor (dB)
			(Linear)	(%)	
802.11a	1.412 4	1.392 0	0.985 6	98.56	0.06
802.11n_HT20	1.318 8	1.300 2	0.985 9	98.59	0.06
802.11n_HT40	0.660 0	0.648 0	0.981 8	98.18	0.08

Notes:

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

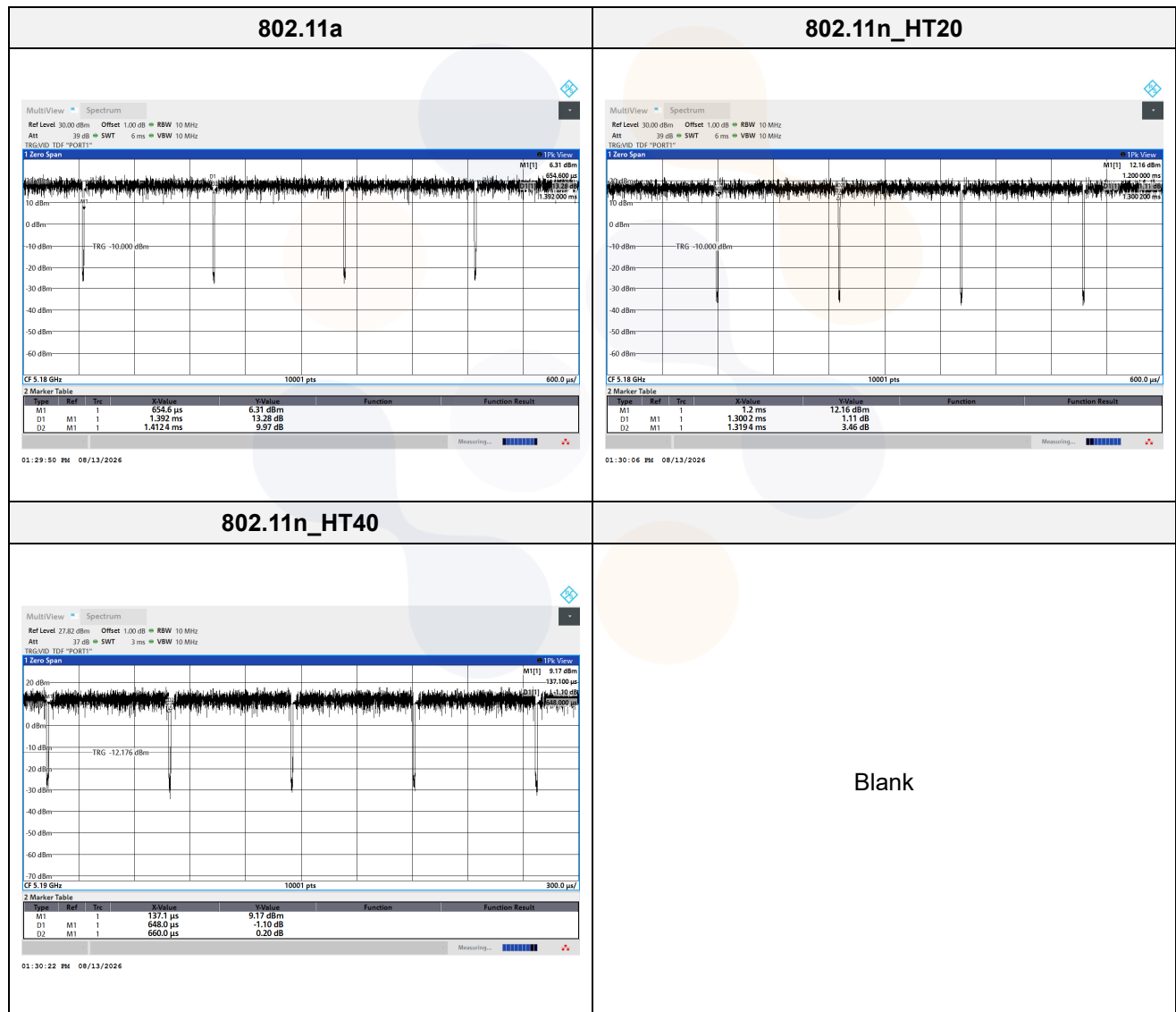


[DC 12 V]

Test mode	Period (ms)	Ton time (ms)	Duty cycle		Duty cycle factor (dB)
			(Linear)	(%)	
802.11a	1.412 4	1.392 0	0.985 6	98.56	0.06
802.11n_HT20	1.319 4	1.300 2	0.985 4	98.54	0.06
802.11n_HT40	0.660 0	0.648 0	0.981 8	98.18	0.08

Notes:

1. Duty cycle (Linear) = Ton time / Period
2. DCF(Duty cycle factor) = $10\log(1/\text{duty cycle})$
3. DCF is not compensated to average result if 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 Chip Antenna (Internal antenna) on board.
- The E.U.T Complies with the requirement of §15.203, §15.407.

4. Summary of tests

FCC Part section(s)	IC Rule Reference	Parameter	Test Condition	Test results
15.407(a)	RSS-247 (7.3)	Maximum conducted output power	Conducted	Pass ^(Note7,8)
15.407(a)	RSS-247 (7.3)	Maximum power spectral density		Pass ^(Note7,8)
15.407(a)	RSS-Gen (6.7)	26 dB Channel Bandwidth		Pass ^(Note7,8)
15.407(e)	RSS-247 (7.3)	6 dB Channel Bandwidth		Pass ^(Note7,8)
-	RSS-Gen (6.7)	Occupied Bandwidth		Pass ^(Note7,8)
15.407(g)	RSS-Gen (8.8)	Frequency Stability		Pass
15.207(a)	RSS-Gen (8.8)	AC Conducted Emissions		Pass
15.407(h)	RSS-247 (7.3.6)	DFS		Pass ^(Note5,9)
15.407(b), 15.205(a), 15.209(a)	RSS-Gen (8.9), (8.10) RSS-247 (7.3)	Spurious emission	Radiated	Pass ^(Note7,8)
		Band-edge, restricted band		Pass ^(Note7,8)

Notes:

- All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst-case emissions.
- 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.
- 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.
- The device does not support radar detection feature.
- The test procedure(s) in this report were performed in accordance as following.
 - ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024
 - KDB 789033 D02 v02r01
 - KDB 905462 D02 UNII DFS compliance procedure new rules.
 - KDB 905462 D03 UNII client without radar detection new rules.
- Based on the baseline scan, the worst-case data rates were:
 802.11a mode: 6Mbps
 802.11n HT20 mode: MCS0
 802.11n HT40 mode: MCS0
- Measurement mode for worst-case configuration with the highest power in 802.11n/ac

Mode	Bandwidth (MHz)
11n	20
11n	40
- Since 802.11n and 802.11ac mode has the same power setting, and the power in 802.11n mode is higher than 802.11ac mode. So, 802.11n mode was tested representative as worst case in 20/40 MHz bandwidth.
- The device is a Client Without Radar detection

5. Measurement uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2020.

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	1.4 dB	
Channel Bandwidth	0.9 %	
Occupied Bandwidth	0.9 %	
Conducted spurious emission	1.7 dB	
Radiated spurious Emissions (Bandedge, restricted band)	Below 30 MHz	2.4 dB
	30 MHz ~ 1 000 MHz	2.6 dB
	1 000 MHz ~ 18 000 MHz	4.7 dB
	Above 18 000 MHz	4.8 dB
AC Conducted Emissions	150 kHz ~ 30 kHz	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	9.89	9 000	11.72
50	9.94	10 000	11.97
100	10.11	11 000	11.91
200	10.26	12 000	11.99
300	10.19	13 000	12.01
400	10.37	14 000	12.09
500	10.35	15 000	12.18
600	10.43	16 000	12.18
700	10.58	17 000	12.33
800	10.61	18 000	12.40
900	10.70	19 000	12.23
1 000	10.75	20 000	12.30
2 000	10.89	21 000	12.44
3 000	11.15	22 000	12.79
4 000	11.31	23 000	13.06
5 000	11.26	24 000	13.08
6 000	11.29	25 000	13.05
7 000	11.43	26 000	13.20
8 000	11.64	26 500	13.01

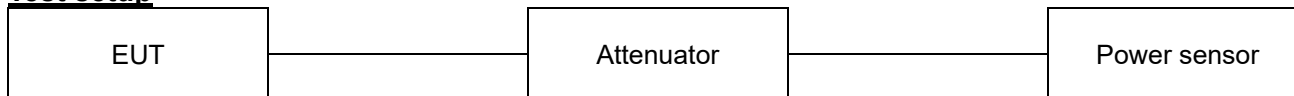
Note:

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),

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)

Note:

1) Conducted output power limit B is the 26 dB emission bandwidth.

According to RSS-247(7.3),

Band	Power limits	
	Maximum conducted output power	Maximum e.i.r.p
UNII 1	-	200 mW or 10 + 10 logB ¹⁾ , dBm
UNII 2A	250 mW or 11 dBm + 10logB ¹⁾	1 W or 17 dBm + 10logB ¹⁾
UNII 2C	250 mW or 11 dBm + 10logB ¹⁾	1 W or 17 dBm + 10logB ¹⁾
UNII 3	1 W (30 dBm)	-

Note:

1) Limit B is the 99% emission bandwidth.

Test procedure

ANSI C63.10 - Section 12.4.2.2

KDB 789033 D02 v02r01 - Section E.2.d)

Test settings

Used test method is Section E.3.a)

◆ KDB 789033 D02 v02r01

Section E.3.a)

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 following conditions 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 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%).



Test results

[DC 5 V]

Conducted Output Power

Test mode	Band	Frequency (MHz)	Measured output power			FCC Limit (dBm)	IC Limit (dBm)
			Reading (dBm)	DCF (dB)	Result (dBm)		
802.11a	UNII 1	5 180	15.92	-	15.92	23.98	-
		5 200	15.91		15.91		
		5 240	16.87		16.87		
	UNII 2A	5 260	16.75		16.75	23.98	23.17
		5 280	16.67		16.67		
		5 320	16.30		16.30		
	UNII 2C	5 500	15.53		15.53	23.98	23.15
		5 600	15.54		15.54		
		5 700	15.94		15.94		
	UNII 3	5 745	16.11		16.11	30.00	30.00
		5 785	16.06		16.06		
		5 825	16.03		16.03		
802.11n HT20	UNII 1	5 180	15.77	-	15.77	23.98	-
		5 200	15.68		15.68		
		5 240	15.64		15.64		
	UNII 2A	5 260	15.78		15.78	23.98	23.42
		5 280	15.80		15.80		
		5 320	15.52		15.52		
	UNII 2C	5 500	14.33		14.33	23.98	23.42
		5 600	14.39		14.39		
		5 700	14.75		14.75		
	UNII 3	5 745	15.14		15.14	30.00	30.00
		5 785	15.14		15.14		
		5 825	15.17		15.17		
802.11n HT40	UNII 1	5 190	13.04	-	13.04	23.98	-
		5 230	13.50		13.50		
	UNII 2A	5 270	13.80		13.80	23.98	26.52
		5 310	13.75		13.75		
	UNII 2C	5 510	13.23		13.23	23.98	26.53
		5 590	13.26		13.26		
		5 670	13.65		13.65		
	UNII 3	5 755	13.94		13.94	30.00	30.00
		5 795	13.90		13.90		

Note:

1. Result (dBm) = Reading (dBm) + D.C.F (dB)

e.i.r.p.

Test mode	Band	Frequency (MHz)	Measured output power			MAX e.i.r.p Limit (dBm)
			Conducted output Power (dBm)	ANT gain (dBi)	MAX e.i.r.p (dBm)	
802.11a	UNII 1	5 180	15.92	1.92	17.84	22.16
		5 200	15.91		17.83	
		5 240	16.87		18.79	
	UNII 2A	5 260	16.75	1.96	18.71	29.17
		5 280	16.67		18.63	
		5 320	16.30		18.26	
	UNII 2C	5 500	15.53	1.98	17.51	29.15
		5 600	15.54		17.52	
		5 700	15.94		17.92	
802.11n HT20	UNII 1	5 180	15.77	1.92	17.69	22.42
		5 200	15.68		17.60	
		5 240	15.64		17.56	
	UNII 2A	5 260	15.78	1.96	17.74	29.42
		5 280	15.80		17.76	
		5 320	15.52		17.48	
	UNII 2C	5 500	14.33	1.98	16.31	29.42
		5 600	14.39		16.37	
		5 700	14.75		16.73	
802.11n HT40	UNII 1	5 190	13.04	1.92	14.96	23.01
		5 230	13.50		15.42	
	UNII 2A	5 270	13.80	1.96	15.76	30.00
		5 310	13.75		15.71	
	UNII 2C	5 510	13.23	1.98	15.21	30.00
		5 590	13.26		15.24	
		5 670	13.65		15.63	

Note:

1. E.I.R.P. Calculation: E.I.R.P. (dBm) = Conducted output power (dBm) + Antenna gain (dBi)

[DC 12 V]

Conducted Output Power

Test mode	Band	Frequency (MHz)	Measured output power			FCC Limit (dBm)	IC Limit (dBm)
			Reading (dBm)	DCF (dB)	Result (dBm)		
802.11a	UNII 1	5 180	15.94	-	15.94	23.98	-
		5 200	15.93		15.93		
		5 240	16.89		16.89		
	UNII 2A	5 260	16.76		16.76	23.98	23.17
		5 280	16.71		16.71		
		5 320	16.30		16.30		
	UNII 2C	5 500	15.56		15.56	23.98	23.15
		5 600	15.56		15.56		
		5 700	15.97		15.97		
	UNII 3	5 745	16.15		16.15	30.00	30.00
		5 785	16.12		16.12		
		5 825	16.07		16.07		
802.11n HT20	UNII 1	5 180	15.83	-	15.83	23.98	-
		5 200	15.73		15.73		
		5 240	15.70		15.70		
	UNII 2A	5 260	15.80		15.80	23.98	23.42
		5 280	15.82		15.82		
		5 320	15.54		15.54		
	UNII 2C	5 500	14.35		14.35	23.98	23.42
		5 600	14.42		14.42		
		5 700	14.78		14.78		
	UNII 3	5 745	15.17		15.17	30.00	30.00
		5 785	15.19		15.19		
		5 825	15.20		15.20		
802.11n HT40	UNII 1	5 190	13.07	-	13.07	23.98	-
		5 230	13.52		13.52		
	UNII 2A	5 270	13.85		13.85	23.98	26.53
		5 310	13.77		13.77		
	UNII 2C	5 510	13.27		13.27	23.98	26.53
		5 590	13.28		13.28		
		5 670	13.67		13.67		
	UNII 3	5 755	13.95		13.95	30.00	30.00
		5 795	13.95		13.95		

Note:

- Result (dBm) = Reading (dBm) + D.C.F (dB)

e.i.r.p.

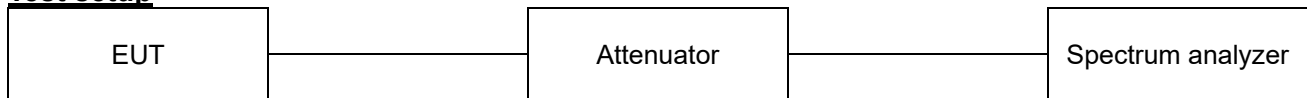
Test mode	Band	Frequency (MHz)	Measured output power			MAX e.i.r.p Limit (dBm)
			Conducted output Power (dBm)	ANT gain (dBi)	MAX e.i.r.p (dBm)	
802.11a	UNII 1	5 180	15.94	1.92	17.86	22.16
		5 200	15.93		17.85	
		5 240	16.89		18.81	
	UNII 2A	5 260	16.76	1.96	18.72	29.17
		5 280	16.71		18.67	
		5 320	16.30		18.26	
	UNII 2C	5 500	15.56	1.98	17.54	29.15
		5 600	15.56		17.54	
		5 700	15.97		17.95	
802.11n HT20	UNII 1	5 180	15.83	1.92	17.75	22.42
		5 200	15.73		17.65	
		5 240	15.70		17.62	
	UNII 2A	5 260	15.80	1.96	17.76	29.42
		5 280	15.82		17.78	
		5 320	15.54		17.50	
	UNII 2C	5 500	14.35	1.98	16.33	29.42
		5 600	14.42		16.40	
		5 700	14.78		16.76	
802.11n HT40	UNII 1	5 190	13.07	1.92	14.99	23.01
		5 230	13.52		15.44	
	UNII 2A	5 270	13.85	1.96	15.81	30.00
		5 310	13.77		15.73	
	UNII 2C	5 510	13.27	1.98	15.25	30.00
		5 590	13.28		15.26	
		5 670	13.67		15.65	

Note:

1. 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),

Band	EUT category		Limit
UNII-1		Outdoor access point	17 dBm/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

According to RSS-247(7.3),

Band	e.i.r.p. spectral density	Limit
UNII 1	√	10 dBm/MHz

Band	Power spectral density	Limit
UNII 2A	√	11 dBm /MHz
UNII 2C	√	11 dBm /MHz
UNII 3	√	30 dBm /500 kHz

Notes:

When using transmitting antennas with a directional gain exceeding 6 dBi, the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceed 6 dBi

Test procedure

ANSI C63.10 - Section 12.6, 12.4.2.2

KDB 789033 D02 v02r01 - Section E and F

Test settings (12.6)

Notwithstanding that some regulatory requirements refer to peak power spectral density (PPSD), in some cases the intent is to measure the maximum value of the time average of the power spectral density during a period of continuous transmission. The procedure for this method is as follows:

- Create an average power spectrum for the EUT operating mode being tested by following the instructions in 12.4.2 for measuring maximum conducted output power using a spectrum analyzer or EMI receiver; that is, select the appropriate test method (SA-1, SA-2, SA-3, or their respective alternatives) 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 the power meter method PM.)
- Use the peak search function on the instrument to find the peak of the spectrum.
- Make the following corrections to the peak value of the spectrum, if applicable:
 - If method SA-2 or SA-2A was used, then add $[10 \log (1 / D)]$, where D is the duty cycle, to the peak of the spectrum.
 - If method SA-3A was used and the linear mode was used in step h) of 12.4.2.7, add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.

- d) The result is the PPSD.
- e) The procedure in item a) through item c) requires the use of 1 MHz resolution bandwidth to satisfy the 1 MHz measurement bandwidth specified by some regulatory authorities.⁸⁵ This requirement also permits use of resolution bandwidths less than 1 MHz “provided that the measured power is integrated to show the total power over the measurement bandwidth” (i.e., 1 MHz). If measurements are performed using a reduced resolution bandwidth and integrated over 1 MHz bandwidth, the following adjustments to the procedures apply:
 - 1) Set $RBW \geq 1 / T$, where T is defined in 12.2 a).
 - 2) Set $VBW \geq [3 \times RBW]$.
 - 3) Care shall be taken such that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Test settings (12.4.2.2)

Method SA-1 uses trace averaging with the EUT transmitting at full power throughout each sweep. The procedure for this method is as follows:

- a) Set span to encompass the entire 99% OBW of the signal.
- b) Set $RBW = 1 \text{ MHz}$.
- c) Set $VBW \geq 3 \text{ MHz}$.
- d) Number of points in sweep $\geq [2 \times \text{span} / RBW]$. (This gives bin-to-bin spacing $\leq RBW / 2$, so that narrowband signals are not lost between frequency bins.)
- e) Sweep time = auto.
- f) Detector = Power averaging (rms), if available. Otherwise, use sample detector mode.
- g) If transmit duty cycle < 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. The transmitter shall operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no OFF intervals) or at duty cycle $\geq 98\%$, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run.”
- h) Trace average at least 100 traces in power averaging (rms) mode.
- i) Compute power by integrating the spectrum across the 99% OBW of the signal using the instrument’s band-power measurement function, with band limits set equal to the OBW band edges. If the instrument does not have a band-power function, then sum the spectrum levels (in power units) at 1 MHz intervals extending across the 99% OBW of the spectrum.

Test results

[DC 5 V]

Power spectral density

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	6.06	-	6.06	11.00
		5 200	5.85		5.85	
		5 240	5.96		5.96	
	UNII 2A	5 260	6.03		6.03	11.00
		5 280	5.79		5.79	
		5 320	5.61		5.61	
	UNII 2C	5 500	4.60		4.60	11.00
		5 600	4.66		4.66	
		5 700	4.99		4.99	
802.11n HT20	UNII 1	5 180	4.44	-	4.44	11.00
		5 200	4.46		4.46	
		5 240	4.59		4.59	
	UNII 2A	5 260	4.63		4.63	11.00
		5 280	4.44		4.44	
		5 320	4.30		4.30	
	UNII 2C	5 500	3.39		3.39	11.00
		5 600	3.40		3.40	
		5 700	3.92		3.92	
802.11n HT40	UNII 1	5 190	-0.22	-	-0.22	11.00
		5 230	0.51		0.51	
	UNII 2A	5 270	0.58		0.58	11.00
		5 310	0.30		0.30	
	UNII 2C	5 510	-0.29		-0.29	11.00
		5 590	-0.59		-0.59	
		5 670	-0.17		-0.17	

Note:

- Maximum PSD(dBm/MHz) = Reading (dBm/MHz) + DCF(dB)

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/500kHz)	DCF (dB)	Maximum PSD (dB m/500 kHz)	Limit (dBm/500kHz)
802.11a	UNII 3	5 745	2.19	-	2.19	30.00
		5 785	2.15		2.15	
		5 825	2.22		2.22	
802.11n HT20		5 745	1.11	-	1.11	30.00
		5 785	0.98		0.98	
		5 825	0.76		0.76	
802.11n HT40		5 755	-2.76	-	-2.76	30.00
		5 795	-2.53		-2.53	

Note:

- Maximum PSD(dB m/500 kHz) = Reading (dB m/500 kHz) + DCF(dB)

e.i.r.p spectral density

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/MHz)	DCF (dB)	Maximum PSD (dBm/MHz)	ANT Gain (dBi)	E.I.R.P. PSD (dBm/MHz)	Limit (dBm/MHz)
802.11a	UNII 1	5 180	6.06	-	6.06	1.92	7.98	10.00
		5 200	5.85		5.85		7.77	
		5 240	5.96		5.96		7.88	
802.11n HT20		5 180	4.44	-	4.44	1.92	6.36	10.00
		5 200	4.46		4.46		6.38	
		5 240	4.59		4.59		6.51	
802.11n HT40		5 190	-0.22	-	-0.22	1.92	1.70	10.00
		5 230	0.51		0.51		2.43	

Notes:

- Maximum PSD (dB m/MHz) = Measured PSD (dB m/MHz) + DCF (dB)
- E.I.R.P PSD (dB m/MHz) = Maximum PSD (dB m/MHz) + Antenna gain (dB i)

[DC 12 V]

Power spectral density

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	6.26	-	6.26	11.00
		5 200	6.06		6.06	
		5 240	6.64		6.64	
	UNII 2A	5 260	6.14		6.14	11.00
		5 280	6.15		6.15	
		5 320	5.94		5.94	
	UNII 2C	5 500	4.87		4.87	11.00
		5 600	4.61		4.61	
		5 700	5.36		5.36	
802.11n HT20	UNII 1	5 180	4.63	-	4.63	11.00
		5 200	4.82		4.82	
		5 240	4.73		4.73	
	UNII 2A	5 260	4.83		4.83	11.00
		5 280	4.63		4.63	
		5 320	4.62		4.62	
	UNII 2C	5 500	3.35		3.35	11.00
		5 600	3.34		3.34	
		5 700	3.69		3.69	
802.11n HT40	UNII 1	5 190	0.22	-	0.22	11.00
		5 230	0.58		0.58	
	UNII 2A	5 270	0.58		0.58	11.00
		5 310	0.20		0.20	
	UNII 2C	5 510	-0.23		-0.23	11.00
		5 590	-0.41		-0.41	
		5 670	-0.33		-0.33	

Note:

- Maximum PSD(dBm/MHz) = Reading (dBm/MHz) + DCF(dB)

Test mode	Band	Frequency (MHz)	Measured PSD (dBm/500kHz)	DCF (dB)	Maximum PSD (dB m/500 kHz)	Limit (dBm/500kHz)
802.11a	UNII 3	5 745	2.29	-	2.29	30.00
		5 785	2.50		2.50	
		5 825	2.25		2.25	
802.11n HT20		5 745	0.97	-	0.97	30.00
		5 785	1.13		1.13	
		5 825	0.65		0.65	
802.11n HT40		5 755	-3.06	-	-3.06	30.00
		5 795	-2.58		-2.58	

Note:

- Maximum PSD (dB m/500 kHz) = Reading (dB m/500 kHz) + DCF (dB)

e.i.r.p spectral density

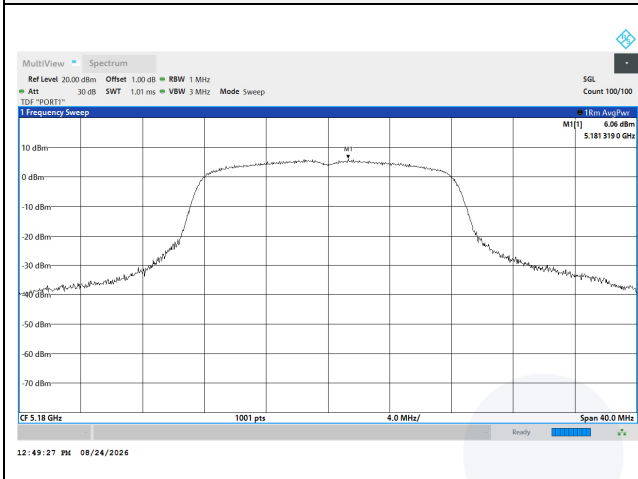
Test mode	Band	Frequency (MHz)	Measured PSD (dBm/MHz)	DCF (dB)	Maximum PSD (dBm/MHz)	ANT Gain (dBi)	E.I.R.P. PSD (dBm/MHz)	Limit (dBm/MHz)
802.11a	UNII 1	5 180	6.26	-	6.26	1.92	8.18	10.00
		5 200	6.06		6.06		7.98	
		5 240	6.64		6.64		8.56	
802.11n HT20		5 180	4.63	-	4.63	1.92	6.55	10.00
		5 200	4.82		4.82		6.74	
		5 240	4.73		4.73		6.65	
802.11n HT40		5 190	0.22	-	0.22	1.92	2.14	10.00
		5 230	0.58		0.58		2.50	

Notes:

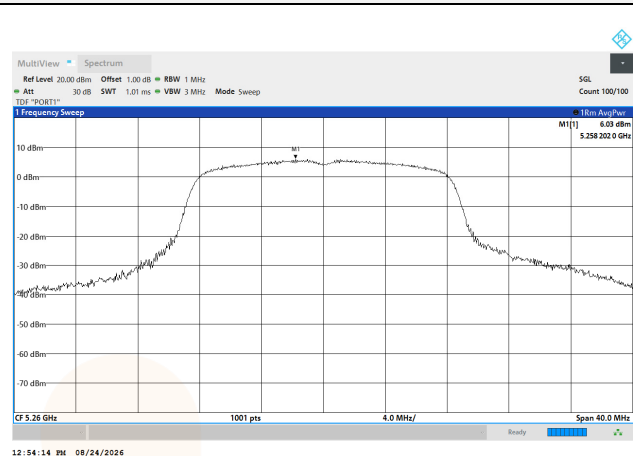
- Maximum PSD (dB m/MHz) = Measured PSD (dB m/MHz) + DCF (dB)
- E.I.R.P PSD (dB m/MHz) = Maximum PSD (dB m/MHz) + Antenna gain (dB i)

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

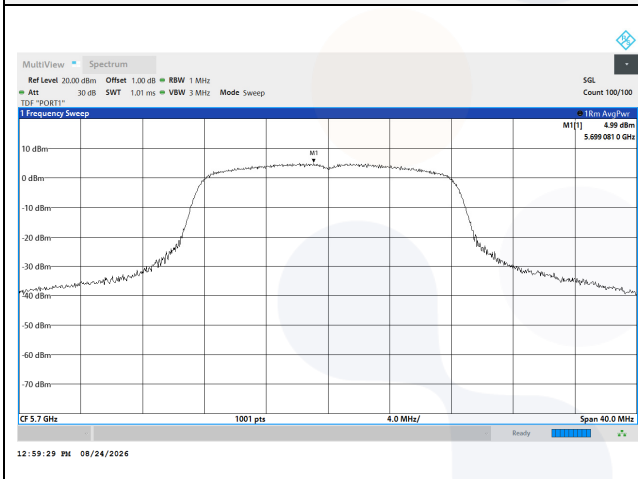
UNII-1 / 802.11a / Low ch.



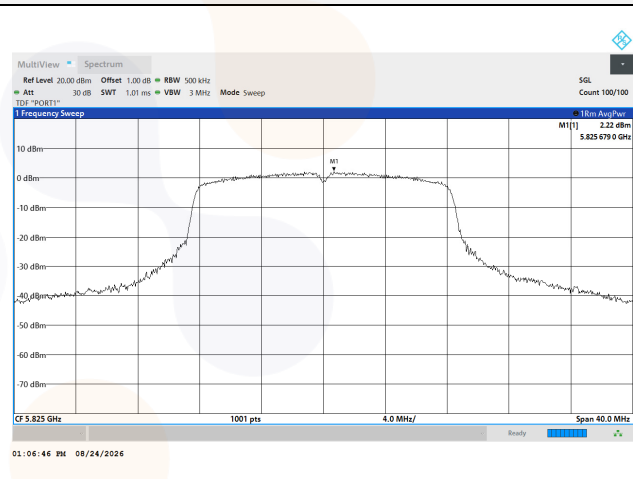
UNII-2A / 802.11a / Low ch.



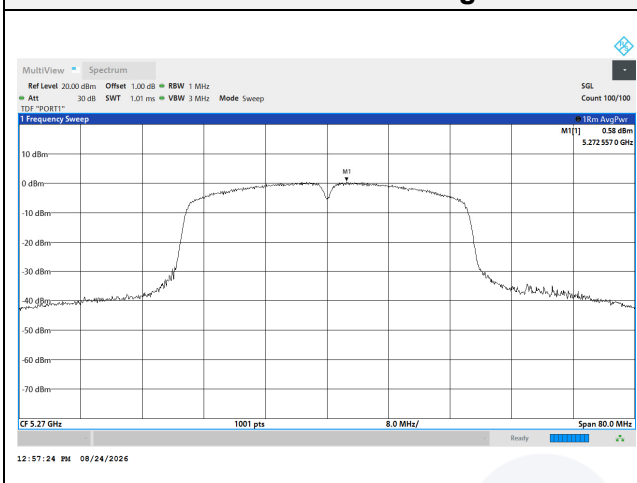
UNII-2C / 802.11a / High ch.



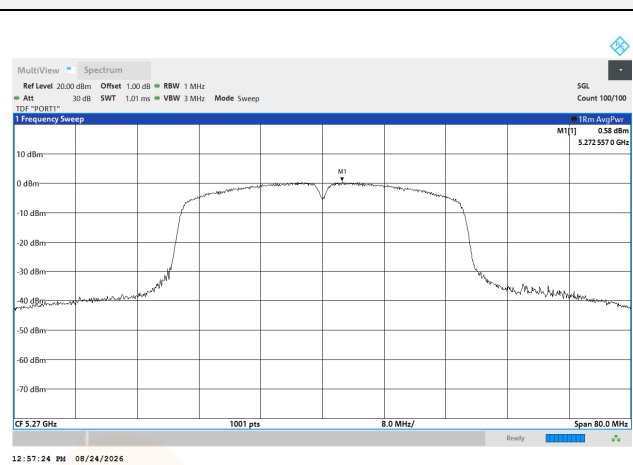
UNII-3 / 802.11a / High ch.



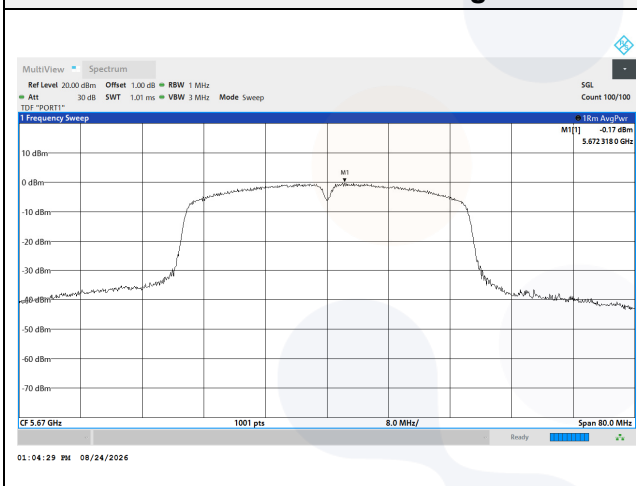
UNII-1 / 802.11n HT40 / High ch.



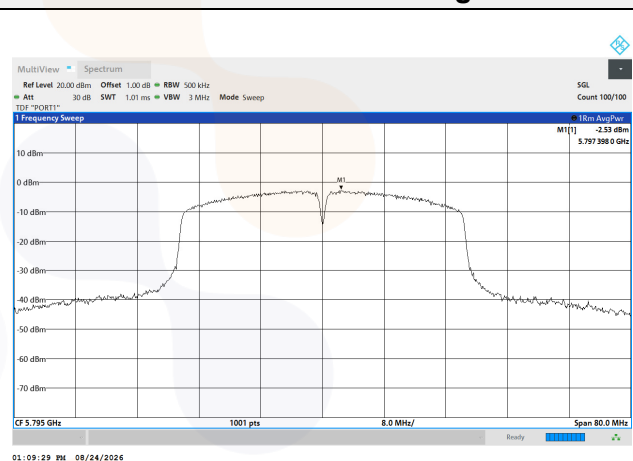
UNII-2A / 802.11n HT40 / Low ch.



UNII-2C / 802.11n HT40 / High ch.

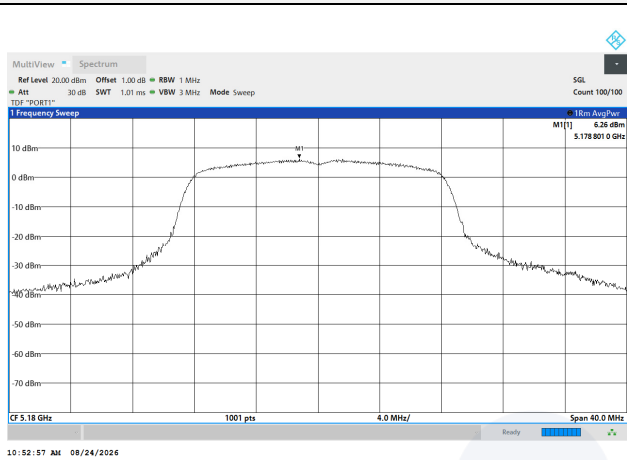


UNII-3 / 802.11n HT40 / High ch.

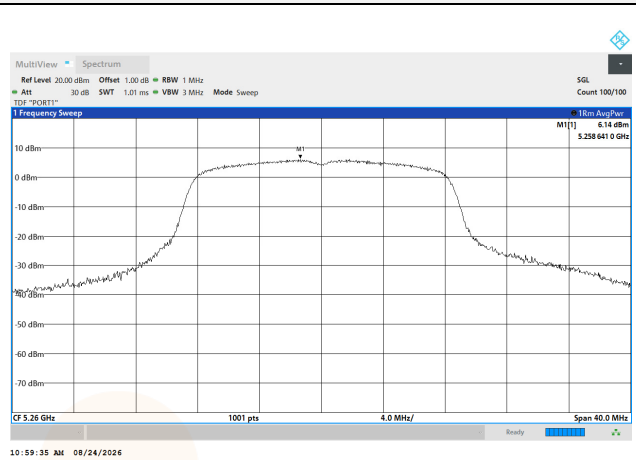


[DC 12 V]

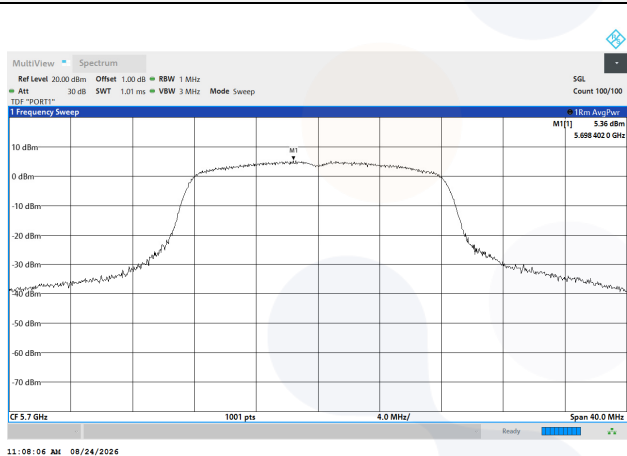
UNII-1 / 802.11a / Low ch.



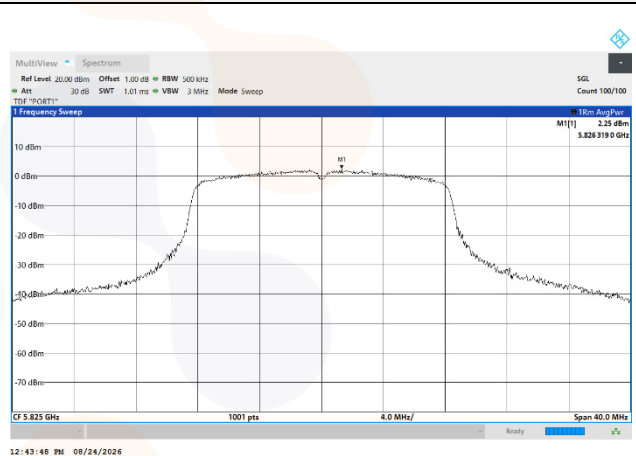
UNII-2A / 802.11a / Low ch.



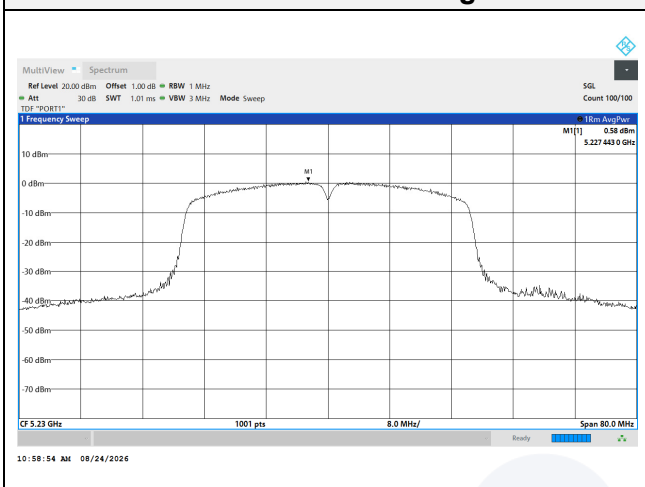
UNII-2C / 802.11a / High ch.



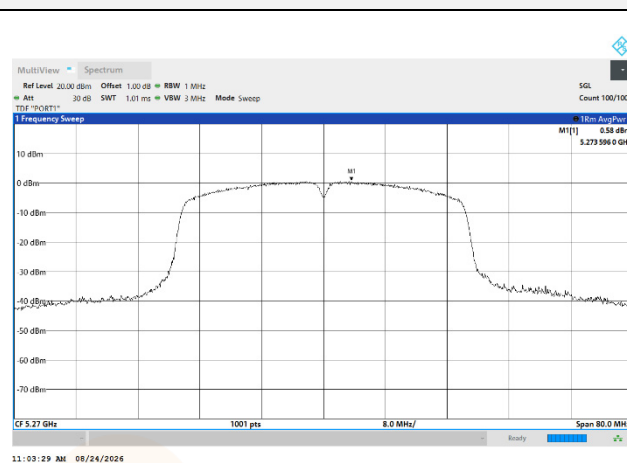
UNII-3 / 802.11a / High ch.



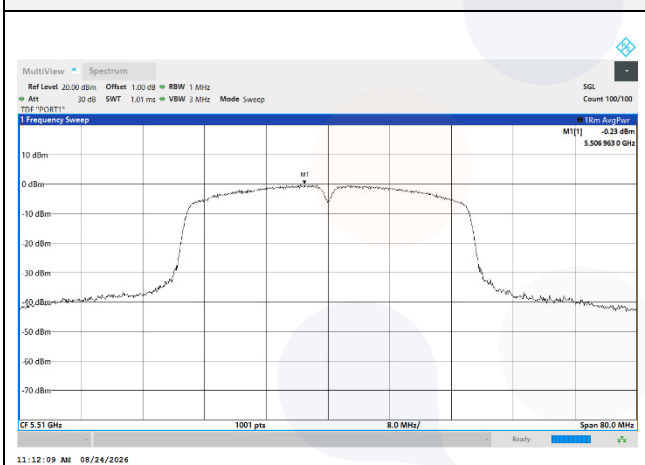
UNII-1 / 802.11n HT40 / High ch.



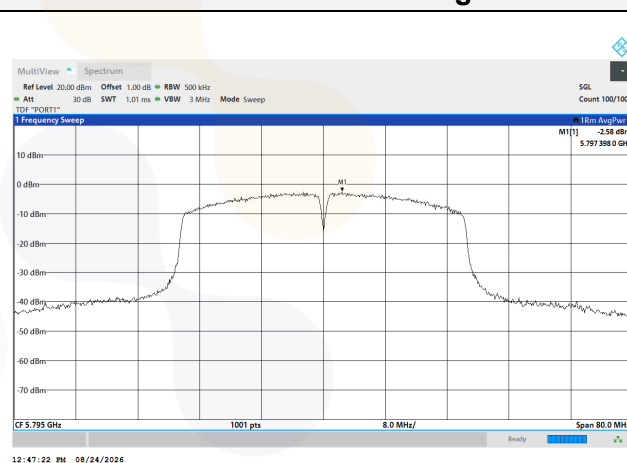
UNII-2A / 802.11n HT40 / Low ch.



UNII-2C / 802.11n HT40 / Low ch.

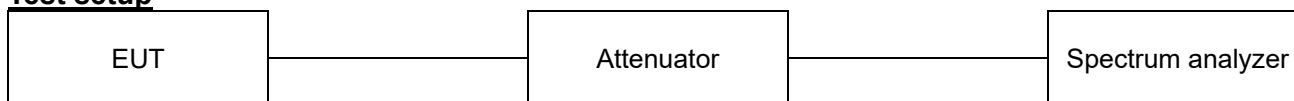


UNII-3 / 802.11n HT40 / High ch.



7.3. 26 dB Bandwidth & 99% Bandwidth

Test setup



Limit

N/A

Test procedure

ANSI C63.10 - Section 12.5.2, 6.9.3

KDB 789033 D02 v02r01 - Section C.1 (26 dB bandwidth), Section D (99% bandwidth)

Test settings

Emission bandwidth for all other bands (or 26 dB Bandwidth)

- Set RBW = Shall be in the range of 1% to 5% 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 peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is in the range of 1% to 5%.

Occupied bandwidth (or 99% Occupied Bandwidth)

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

The following procedure shall be used for measuring 99% power bandwidth:

- The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be at least three times the RBW, unless otherwise specified by the applicable requirement.
- Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.6.2.
- Step a) through step c) might require iteration to adjust within the specified range.
- 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) and report the measured bandwidth.
- If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. 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% power bandwidth is the difference between these two frequencies.
- The occupied bandwidth shall be reported by providing spectral plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Test results

[DC 5 V]

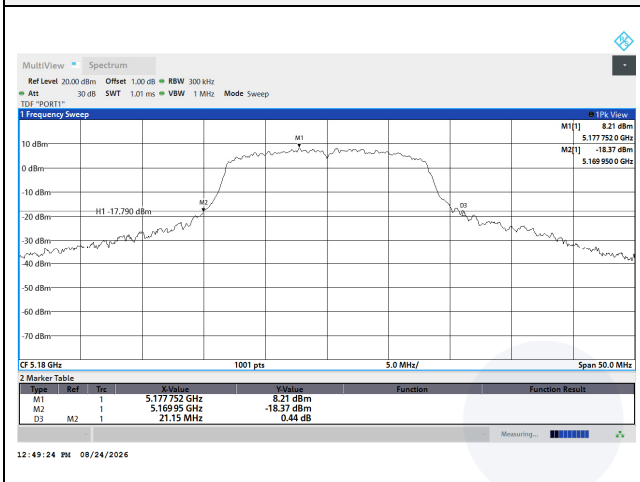
Test mode	Band	Frequency(MHz)	26 dB bandwidth (MHz)	99% bandwidth (MHz)
802.11a	UNII 1	5 180	21.150	16.451
		5 200	21.150	16.475
		5 240	21.150	16.491
	UNII 2A	5 260	21.200	16.489
		5 280	21.200	16.494
		5 320	21.100	16.463
	UNII 2C	5 500	20.250	16.422
		5 600	20.300	16.429
		5 700	20.650	16.436
802.11n HT20	UNII 1	5 180	20.900	17.468
		5 200	20.900	17.469
		5 240	21.100	17.476
	UNII 2A	5 260	21.100	17.484
		5 280	21.150	17.470
		5 320	21.050	17.475
	UNII 2C	5 500	20.800	17.464
		5 600	20.800	17.463
		5 700	20.900	17.467
802.11n HT40	UNII 1	5 190	40.600	35.734
		5 230	40.500	35.776
	UNII 2A	5 270	40.460	35.782
		5 310	40.300	35.681
	UNII 2C	5 510	40.500	35.770
		5 590	40.400	35.728
		5 670	40.400	35.788

[DC 12 V]

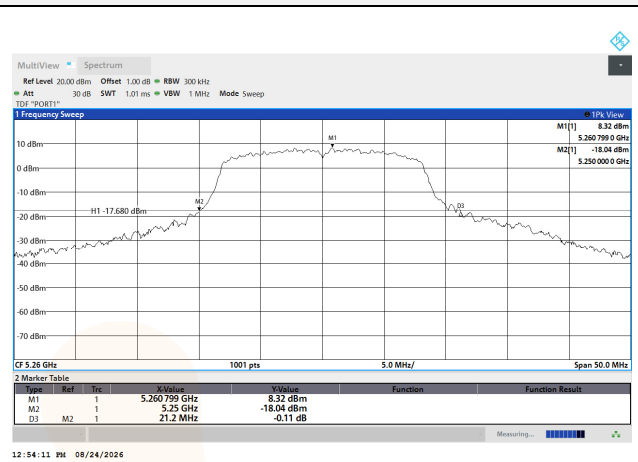
Test mode	Band	Frequency(MHz)	26 dB bandwidth (MHz)	99% bandwidth (MHz)
802.11a	UNII 1	5 180	21.100	16.462
		5 200	21.150	16.454
		5 240	21.200	16.481
	UNII 2A	5 260	21.150	16.503
		5 280	21.150	16.491
		5 320	21.200	16.478
	UNII 2C	5 500	20.250	16.418
		5 600	20.250	16.424
		5 700	20.600	16.440
802.11n HT20	UNII 1	5 180	21.000	17.471
		5 200	20.900	17.466
		5 240	21.050	17.482
	UNII 2A	5 260	21.050	17.474
		5 280	20.950	17.481
		5 320	20.900	17.474
	UNII 2C	5 500	20.800	17.459
		5 600	20.850	17.467
		5 700	20.850	17.463
802.11n HT40	UNII 1	5 190	40.600	35.737
		5 230	40.600	35.766
	UNII 2A	5 270	40.400	35.752
		5 310	40.300	35.692
	UNII 2C	5 510	40.400	35.750
		5 590	40.500	35.704
		5 670	40.500	35.745

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

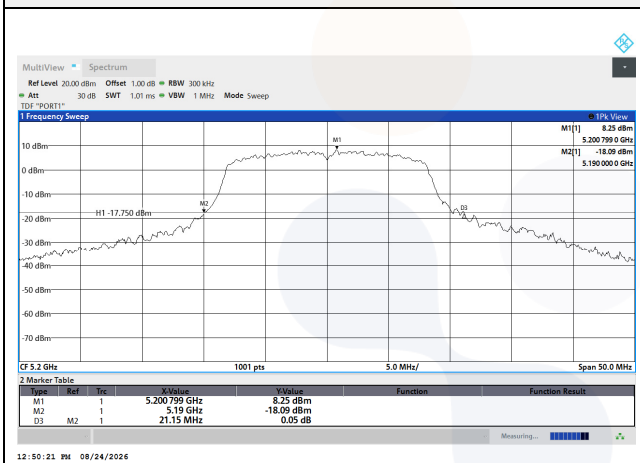
UNII 1 / 802.11a / Low ch.



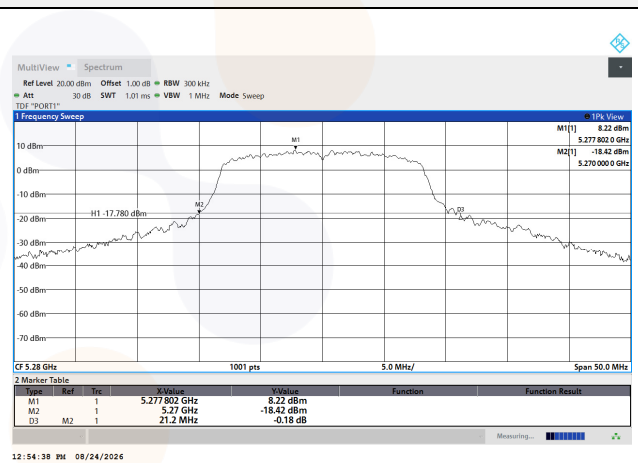
UNII 2A / 802.11a / Low ch.



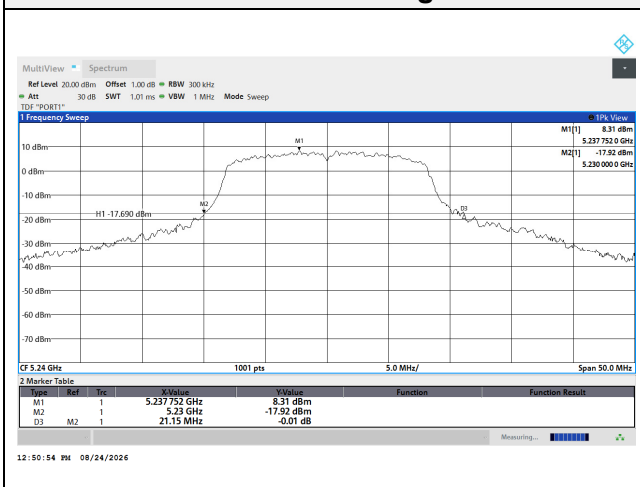
UNII 1 / 802.11a / Mid ch.



UNII 2A / 802.11a / Mid ch.



UNII 1 / 802.11a / High ch.



UNII 2A / 802.11a / High ch.

