

TEST REPORT

EUT Description	Wi-Fi 7 and BT, 2x2 M.2 2230 adapter card
Brand Name	Intel® BE200NGW
Model Name	BE200NGW
FCC ID	PD9BE200NG
Date of Test Start/End	2023-06-17 / 2023-07-31
Features	2x2 Wi-Fi - IEEE 802.11be - Bluetooth® (see section 5)

Applicant	Intel Corporation SAS
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Reference Standards	FCC CFR Title 47 Part 15 E (see section 1)
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Test Report identification	230526-08.TR11
Revision Control	Rev. 02 This test report revision replaces any previous test report revision (see section 8)

The test results relate only to the samples tested.
Reference to accreditation shall be used only by full reproduction of test report.

Issued by

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1. Standards, reference documents and applicable test methods

FCC	1. FCC Title 47 CFR part 15 – Subpart E – Unlicensed National Information Infrastructure Devices. 2021-10-01 Edition
	2. FCC Title 47 CFR part 15 – Subpart C – §15.209 Radiated emission limits; general requirements. 2021-10-01 Edition
	3. FCC OET KDB 662911 D01 v02r01 - Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
	4. FCC OET KDB 789033 D02 v02r01 - Guidelines for compliance testing of unlicensed national information infrastructure (U-NII) devices part 15, subpart E
	5. ANSI C63.10-2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.
	6. FCC OET KDB 291074 D01 v01 - General Requirements
	7. FCC OET KDB 291074 D02 v01 - EMC Measurement
	8. FCC OET KDB 291074 D03 v01 - QA General Questions and Answers
	9. FCC OET KDB 291074 D04 v01 – UN5GHz Checklist v01

2. General conditions, competences and guarantees

- ✓ Tests performed under FCC standards identified in section 1 are covered by A2LA accreditation.
- ✓ Intel Corporation SAS Wireless RF Lab (Intel WRF Lab) is an ISO/IEC 17025:2017 laboratory accredited by the American Association for Laboratory Accreditation (A2LA) with the certificate number 3478.01.
- ✓ Intel Corporation SAS Wireless RF Lab (Intel WRF Lab) is an Accredited Test Firm recognized by the FCC, with Designation Number FR0011.
- ✓ Intel WRF Lab only provides testing services and is committed to providing reliable, unbiased test results and interpretations.
- ✓ Intel WRF Lab is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.
- ✓ Intel WRF Lab has developed calibration and proficiency programs for its measurement equipment to ensure correlated and reliable results to its customers.
- ✓ This report is only referred to the item that has undergone the test.
- ✓ This report does not imply an approval of the product by the Certification Bodies or competent Authorities.

3. Environmental Conditions

- ✓ At the site where the measurements were performed the following limits were not exceeded during the tests:

Temperature	25.6 °C ± 1.8°C
Humidity	52.6% ± 4.6%

4. Test samples

Sample	Control #	Description	Model	Serial #	Date of receipt	Note
#01	230526-08.S26	WiFi 7 Module	BE200NGW	743AF47788AA	2023-06-13	RF Conducted
	230526-08.S95	WiFi 7 Module	BE200NGW	04E8B9D0FFB1	2023-07-24	
	200203-01.S09	Laptop	HP (HSN-I38C)	00095101LK	2023-04-24	
	230526-08.S67	GaP FmP MB Extender Board	PCB00887-00_A	2202207572	2023-06-22	
	230526-08.S68	GaP FmP CRF DB 2230 BNJ Extender Board	PCB00862-00_A	2202111228	2023-06-22	
#02	230526-08.S31	WiFi 7 Module	BE200NGW	743AF47788A5	2023-06-13	Used for Radiated Spurious Emissions tests
	220225-03.S07	Microwave Absorber	Eccosorb BSR-1	-	2022-03-14	
	200904-01.S14	Extender	ADEXELEC	12	2023-06-22	
	200525-02.S05	Laptop	HP (HSN-I41C-4)	00095000X0	2023-04-24	
	230223-02.S47	Triband Antenna	-	005	2023-04-20	
	230223-02.S48	Triband Antenna	-	006	2023-04-20	
#03	230526-08.S32	WiFi 7 Module	BE200NGW	743AF47788A0	2023-06-13	Used for Radiated Spurious Emissions tests
	220225-03.S07	Microwave Absorber	Eccosorb BSR-1	-	2022-03-14	
	220915-09.S01	Extender	ADEXELEC	-	2022-04-06	
	200611-03.S30	Laptop	Latitude 5401	6DJLK13	2020-08-19	
	230223-02.S49	Triband Antenna	-	007	2023-04-20	
	230223-02.S50	Triband Antenna	-	008	2023-04-20	
#04	230526-08.S32	WiFi 7 Module	BE200NGW	743AF47788A0	2023-06-13	Used for Radiated Spurious Emissions tests
	230526-08.S97	WiFi 7 Module	BE200NGW	04E8B9D101AA	2023-07-24	
	220225-03.S07	Microwave Absorber	Eccosorb BSR-1	-	2022-03-14	
	200904-01.S13	Extender	ADEXELEC	11	2023-06-22	
	200904-01.S12	Laptop	HP (HSN-I42C)	000075059J	2023-04-24	
	230223-02.S49	Triband Antenna	-	007	2023-04-20	
	230223-02.S50	Triband Antenna	-	008	2023-04-20	

5. EUT Features

The herein information is provided by the customer.

Intel WRF Lab declines any responsibility for the accuracy of the stated customer provided information, especially if it has any impact on the correctness of test results presented in this report.

Brand Name	Intel® BE200NGW		
Model Name	BE200NGW		
Software Version	DRTU.04832.99.0.81 DRTU.04902.99.0.82		
Driver Version	xVT 99.0.81.11 xVT 99.0.82.1		
Prototype / Production	Production		
Supported Radios	802.11b/g/n/ax/be 2.4GHz (2400.0 – 2483.5 MHz) 802.11a/n/ac/ax/be 5.2GHz (5150.0 – 5350.0 MHz) 5.6GHz (5470.0 – 5725.0 MHz) 5.8GHz (5725.0 – 5850.0 MHz) 5.9GHz (5850.0 – 5895.0 MHz) 6.0GHz (5925.0 - 7125.0MHz) Bluetooth 5.2 2.4GHz (2400.0 – 2483.5 MHz)		
Antenna Information	Transmitter	Main	Aux
	Manufacturer	Intel WRF Lab	Intel WRF Lab
	Antenna type	PIFA	PIFA
	Part number	WRF-Tri Band-Antenna	WRF-Tri Band-Antenna
	Declared Antenna peak gain (dBi)	+5.15	+5.15

6. Remarks and comments

1. No deviations were made from the test methods listed in section 1 of this report
2. Only the worst-case plot per BW and test case measurements have been reported excepted for band edge measurements where all plots are reported

7. Test Verdicts summary

The statement of conformity to applicable standards in the table below are based on the measured values, without taking into account the measurement uncertainties.

7.1. 802.11 a/n/ac/ax/be – U-NII- 4

FCC part	Test name	Verdict
15.407 (a) (3)	Maximum output power	P
14.407 (e)	6dB Emission Bandwidth	P
15.407 (a) (3)	Power spectral density	P
15.407 (b) (5)	Undesirable emissions limits: out of band (conducted)	P
15.407 (b) (3) 15.209	Undesirable emissions limits: Spurious emissions (radiated)	P

8. Document Revision History

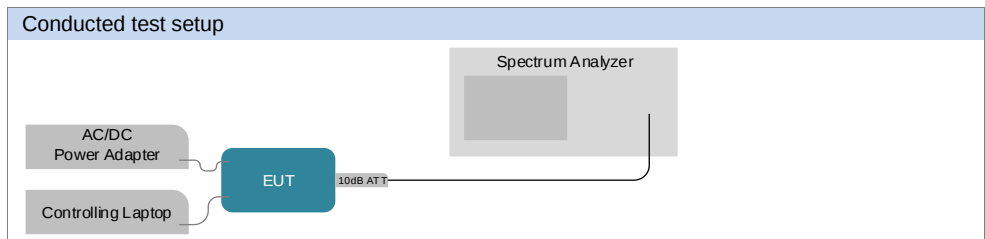
Revision #	Modified by	Revision Details
Rev. 00	Y HADDAD K.Khatib	First Issue
Rev. 01	C. REQUIN	PSD plots added in section B.3.4
Rev. 02	R. LUCIANI	Peak values added in section B.2.4

Annex A. Test & System Description

A.1 Measurement System

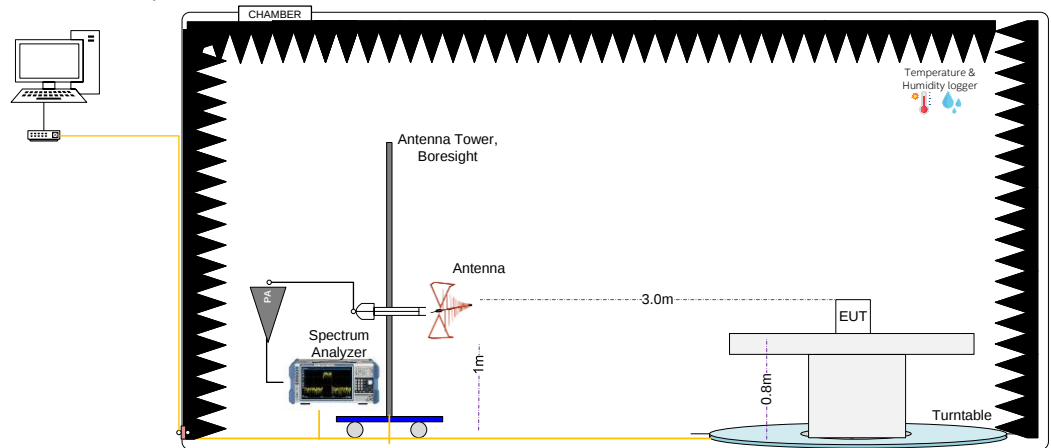
Measurements were performed using the following setups, made in accordance to the general provisions of ANSI C63.10 2013.

The DUT was installed in a test fixture and this test fixture is connected to a laptop computer and AC/DC power adapter. The laptop computer was used to configure the EUT to continuously transmit at a specified output power using all different modes and modulation schemes, using the Intel proprietary tool DRTU.

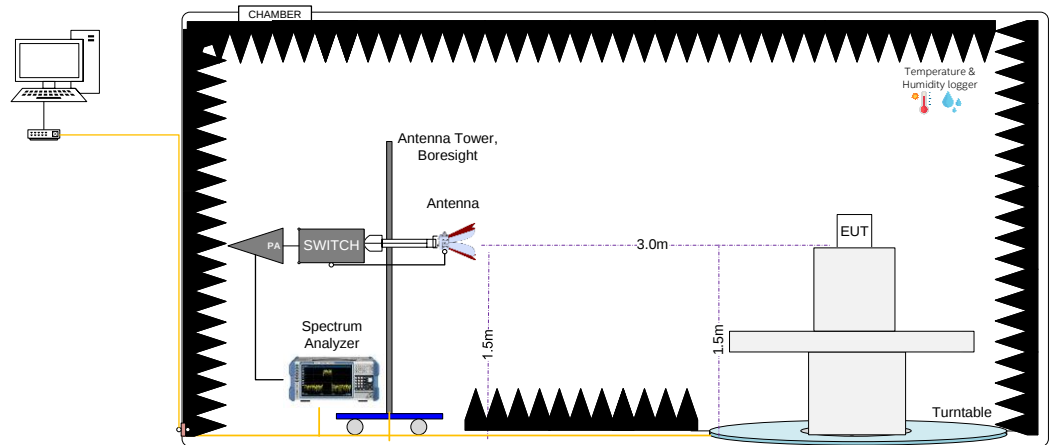


Radiated test setup

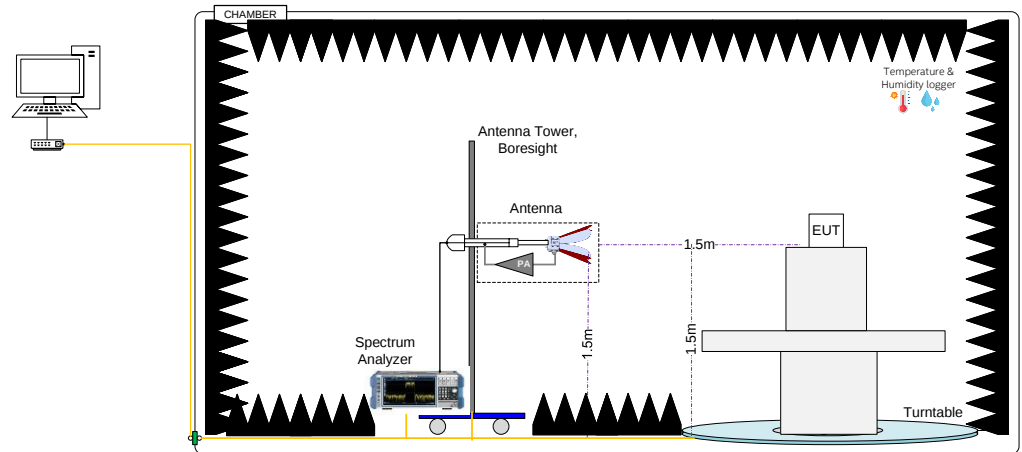
Radiated Setup 30MHz - 1GHz (Transmitter tests)



Radiated Setup 1GHz – 11GHz (Transmitter tests)



Radiated Setup 11GHz – 40GHz (Transmitter tests)



Sample Calculation

The spurious received voltage $V(\text{dB}\mu\text{V})$ in the spectrum Analyzer is converted to Electric field strength using the transducer factor F corresponding to the Rx path Loss:

$$F(\text{dB/m}) = \text{Rx Antenna Factor (dB/m)} + \text{Cable losses (dB)} - \text{Amplifiers Gain (dBi)}$$

$$E(\text{dB}\mu\text{V/m}) = V(\text{dB}\mu\text{V}) + F(\text{dB/m})$$

For field strength measurements made at other than the distance at which the applicable limit is specified, the field strength of the emission at the distance specified by the limit is deduced as follows:

$$E_{\text{SpecLimit}} = E_{\text{Meas}} + 20 \cdot \log(D_{\text{Meas}}/D_{\text{SpecLimit}})$$

where

$E_{\text{SpecLimit}}$ is the field strength of the emission at the distance specified by the limit, in $\text{dB}\mu\text{V/m}$

E_{Meas} is the field strength of the emission at the measurement distance, in $\text{dB}\mu\text{V/m}$

D_{Meas} is the measurement distance, in m

$D_{\text{SpecLimit}}$ is the distance specified by the limit, in m

A.2 Test Equipment List

Conducted setup

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
266-000	Spectrum Analyzer	FSV30	103307	Rohde & Schwarz	2022-04-26	2024-04-26
018-003	RF cable 50cm	PE360-50CM	N/A	PASTERNAK	2023-03-03	2024-03-03
018-001	10dB Attenuator + MH4	N/A	N/A	N/A	2023-03-03	2024-03-03
322-000	Temp & Humidity Logger	RA12E-TH1-RAS	RA12-B89702	AVITECH	2021-09-02	2023-09-02
413-000	Measurement SW v1.5.4.2	Octopi	N/A	Step AT	N/A	N/A

Radiated Setup #1

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
006-000	Anechoic Chamber	FACT3	5720	ETS-Lindgren	2022-01-21	2024-01-21
006-008	Measurement SW, v11.30	EMC32	100623	Rohde & Schwarz	N/A	N/A
259-000	Temp & Humidity Logger	RA12E-TH-RAS	RA12-B9BD70	Avtech	2022-06-27	2024-06-27
006-001	Turn Table	ETS	-	ETS-Lindgren	N/A	N/A
006-011	Boresight antenna mast	BAM 4.0-P	P/278/2890.01	Maturo	N/A	N/A
058-000	Double Horn Ridged antenna	3116C	157511	ETS-Lindgren	2022-10-21	2024-10-21
006-020	Horn antenna 3117	3117	00157734	ETS-Lindgren	2021-08-05	2023-08-05
006-061	Bi-Log Periodoc antenna	CBL6143A	61382	Teseq	2022-10-24	2024-10-24
147-000	Spectrum analyzer	FSW43	101847	Rohde & Schwarz	2022-11-30	2024-11-30
301-000	Amplifier 9kHz-1300MHz	8447F	3113A07440	HP	2023-03-03	2024-03-03
261-000	Amplifier 1GHz-18GHz	3117-PA	00157993	ETS-Lindgren	2023-02-20	2024-02-20
502-006	Amplifier 0.5GHz-40GHz	DEPA0540-43	2023A05	Diamond Engineering	2023-06-09	2024-06-09
006-059	Cable 7m – 25MHz to 40GHz	R286304174	20.46.369	Radiall	2023-02-20	2024-02-20
006-063	Cable 30cm – 1GHz to 40GHz	PE371-12	-	Pasternack	2023-02-27	2024-02-27
006-064	Cable 30cm – 1GHz to 40GHz	PE371-12	-	Pasternack	2023-02-27	2024-02-27
006-065	Cable 60cm – 25MHz to 1GHz	PE300-24	-	Pasternack	2023-06-02	2024-06-02

N/A: Not Applicable

Radiated Setup #2

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
127-000	Spectrum Analyzer	FSV40	101358	Rohde & Schwarz	2023-01-27	2025-01-27
007-007	Double Ridge Horn (1- 18GHz)	3117	00152266	ETS Lindgren	2022-03-29	2024-03-29
007-006	Switch & Positioner	EMCenter	00151232	ETS Lindgren	N/A	N/A
007-011	RF Cable 1-18GHz - 6.5m	140-8500-11-51	001	Atem	2023-02-15	2024-02-15
007-005	Measurement SW, v10.50.10	EMC32	100401	Rohde & Schwarz	N/A	N/A
007-000	Anechoic chamber	RFD-FA-100	5996	ETS Lindgren	2021-09-14	2023-09-14
007-003	Antenna Tower	2171B-3.0M	00150123	ETS Lindgren	N/A	N/A
007-002	Turntable	-	-	ETS Lindgren	N/A	N/A
007-014	RF Cable 18-40 GHz 6m	R286304009	1747364	Radiall	2023-02-16	2024-02-16
007-022	RF Cable 1-18GHz, 1.5m	0501050991200GX	19.23.493	Radiall	2023-02-13	2024-02-13
007-015	RF Cable 1GHz-18GHz 1.5m	-	-	Spirent	2023-02-13	2024-02-13
007-018	RF Cable 1-9.5GHz 1.2m	0500990991200KE	-	Radiall	2023-02-13	2024-02-13
007-020	RF Cable 1-18GHz, 1.2 m	2301761761200PJ	12.22.1104	Radiall	2023-02-15	2024-02-15
325-000	Temp & Humidity Logger	RA12E-TH1-RAS	RA12-B9B7C6	Avtech	2022-01-17	2024-01-17

N/A: Not Applicable

Shared Radiated Equipment

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
412-000	DRTU Power finder V2.1	-	-	Intel	NA	NA
139-000	Power Sensor	NRP-Z81	104383	Rohde & Schwarz	2023-04-21	2025-04-21
061-000	Power Sensor	NRP-Z81	104386	Rohde & Schwarz	2022-03-25	2024-03-25
140-000	Power Sensor	NRP-Z81	104382	Rohde & Schwarz	2022-03-25	2024-03-25
423-000	Power Sensor	NRP-Z81	101152	Rohde & Schwarz	2022-05-18	2024-05-18

N/A: Not Applicable

A.3 Measurement Uncertainty Evaluation

The system uncertainty evaluation is shown in the table below with a coverage factor of $k = 2$ to indicate a 95% level of confidence:

Measurement type	Uncertainty	Unit
Timing	± 0.12	%
Power Spectral density	± 1.47	dB
Occupied bandwidth	± 2.07	%
Conducted Power	± 1.03	dB
Conducted Out of Band Emission <7 GHz	± 1.67	dB
Radiated tests <1GHz	± 6.40	dB
Radiated tests 1GHz – 40 GHz	± 6.04	dB

Annex B. Test Results U-NII-4

The herein test results were performed by:

Test case measurement	Test Personnel
6dB and 99% Bandwidth	Y .HADDAD
Maximum output power & Maximum PSD	Y .HADDAD
Undesirable emission limits: out of band	Y .HADDAD
Radiated spurious emissions	K.Khatib, R.Simonini

B.1 Test Conditions

For 802.11a mode the EUT can transmit at both CHAIN A and CHAIN B RF outputs individually, but not simultaneously.

For 802.11n20 & 802.11ax/be20 (20 MHz channel bandwidth), 802.11n40 and 802.11ax/be40 (40MHz channel bandwidth) 802.11ac80 & 802.11ax/be80 (80MHz channel bandwidth), 802.11ac160 & 802.11ax/be160 (160MHz channel bandwidth) modes the EUT can transmit at both CHAIN A and CHAIN B RF outputs individually, and also simultaneously.

The following data rates were selected based on preliminary testing that identified those rates as the worst cases for output power and spurious levels at the band edges:

Transmission	Mode	Bandwidth (MHz)	Worst Case Data Rate
SISO	802.11a	20	6Mbps
	802.11n	20	HT0
		40	HT0
	802.11ac	80/160	VHT0
MIMO	802.11ax/be	20/40/80/160	MCS0
	802.11n	20/40	HT8
	802.11ac	80/160	VHT0
	802.11ax/be	20/40/80/160	MCS0

B.2 Test Results Tables

B.2.1 6dB & 99% Bandwidth

Test limits

FCC part	Limits
15.407 (e)	For equipment operating in the band 5725-5895 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.

Test procedure

The conducted setup shown in section *Test & System Description* was used to measure the 6dB & 99% Bandwidth. The antenna terminal of the EUT is connected to the spectrum analyzer through an attenuator, and the spectrum analyzer reading is compensated to include the RF path loss.

Results tables

Mode	Rate	Antenna	Channel	Freq [MHz]	6dB BW [MHz]	99% BW [MHz]
802.11a	6Mbps	SISO A	169	5845	15.11	16.72
			173	5865	15.09	16.72
			177	5885	15.03	16.72
		SISO B	169	5845	15.07	16.72
			173	5865	13.83	16.72
			177	5885	15.04	16.76
802.11n20	HT0	SISO A	169	5845	15.00	17.76
			173	5865	15.33	17.76
			177	5885	15.11	17.88
		SISO B	169	5845	16.25	17.76
			173	5865	14.44	17.76
			177	5885	13.75	17.80
	HT8	MIMO A	169	5845	15.15	17.76
			173	5865	15.10	17.80
			177	5885	15.40	17.80
		MIMO B	169	5845	15.69	17.76
			173	5865	15.72	17.80
			177	5885	15.03	17.72
802.11n40	HT0	SISO A	167	5835	34.97	36.24
			175	5875	33.35	36.08
		SISO B	167	5835	35.06	36.48
			175	5875	35.01	36.24
	HT8	MIMO A	167	5835	35.05	36.16
			175	5875	33.85	36.24
		MIMO B	167	5835	35.06	36.16
			175	5875	35.06	36.00
802.11ac80	VHT0	SISO A	171	5855	73.92	75.20
		SISO B			71.41	75.20
		MIMO A			75.15	75.20
		MIMO B			68.85	75.04
802.11ac160	VHT0	SISO A	163	5815	153.88	153.78
		SISO B			153.88	153.78
		MIMO A			151.43	153.92
		MIMO B			152.03	153.92

Max Value

Mode	Rate	Antenna	Channel	Freq [MHz]	6dB BW [MHz]	99% BW [MHz]
802.11ax/be20	MCS0	SISO A	169	5845	15.40	18.88
			173	5865	17.23	18.92
			177	5885	15.09	18.92
		SISO B	169	5845	15.07	18.92
			173	5865	15.33	18.92
			177	5885	15.79	18.96
		MIMO A	169	5845	16.10	18.92
			173	5865	15.55	19.00
			177	5885	14.24	18.96
		MIMO B	169	5845	18.08	18.96
			173	5865	15.08	18.88
			177	5885	15.07	18.92
802.11ax/be40	MCS0	SISO A	167	5835	36.31	37.68
			175	5875	35.08	37.76
		SISO B	167	5835	35.03	37.76
			175	5875	35.06	37.60
		MIMO A	167	5835	35.06	37.68
			175	5875	35.87	37.52
		MIMO B	167	5835	35.06	37.60
			175	5875	35.02	37.68
802.11ax/be80	MCS0	SISO A	171	5855	73.92	76.80
		SISO B			72.69	76.96
		MIMO A			70.08	76.64
		MIMO B			73.92	76.80
802.11ax/be160	MCS0	SISO A	163	5815	153.93	155.16
		SISO B			153.88	155.08
		MIMO A			153.93	155.20
		MIMO B			152.68	155.20

Max Value

See Section B.3.1, B.3.2 for the screenshot results.

B.2.2 Maximum output power & Maximum power spectral Density

Test limits

FCC part	Limits
15.407 (a) (3) (iii)	For client devices operating under the control of an indoor access point in the 5.850-5.895 GHz band, the maximum power spectral density must not exceed 14 dBm e.i.r.p. in any 1-megahertz band, and the maximum e.i.r.p. over the frequency band of operation must not exceed 30 dBm. Client devices operating on a channel that spans the 5.725-5.850 GHz and 5.850-5.895 GHz bands must not exceed an e.i.r.p. of 30 dBm.
15.407 (a) (12)	Power spectral density measurement: The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. Measurements in the 5.725-5.895 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less.

Test procedure

The Maximum Conducted Output Power was measured using the channel integration method over the entire 99% occupied bandwidth according to section E) 2) d) (Method SA-2) of KDB 789033

The maximum power spectral density (PSD) was measured using the method according to section F) of KDB 789033.

In the measure-and-sum approach for MIMO mode, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically in linear power units to determine the total emission level from the device.

The EIRP power (dBm) is calculated by adding the declared maximum antenna gain to the measured conducted power.

The conducted setup shown in section *Test & System Description* was used to measure the maximum conducted output power and power spectral density. The antenna terminal of the EUT is connected to the spectrum analyser through an attenuator, and the spectrum analyzer reading is compensated to include the RF path loss.

Results tables

Duty cycle

Mode	Rate	Antenna	Duty Cycle [%]
802.11a	6Mbps	SISO A	97.9
		SISO B	97.9
802.11n20	HT0	SISO A	98.9
		SISO B	98.9
	HT8	MIMO A	98.9
		MIMO B	98.9
802.11ax/be20	MCS0	SISO A	98.8
		SISO B	98.8
		MIMO A	99.4
		MIMO B	99.4
802.11n40	HT0	SISO A	98.9
		SISO B	98.9
	HT8	MIMO A	98.9
		MIMO B	98.9
802.11ax/be40	MCS0	SISO A	98.8
		SISO B	98.8
		MIMO A	99.4
		MIMO B	99.4
802.11ac80	VHT0	SISO A	98.9
		SISO B	98.9
		MIMO A	99.4
		MIMO B	99.4
802.11ax/be80	MCS0	SISO A	98.8
		SISO B	98.8
		MIMO A	99.4
		MIMO B	99.4
802.11ac160	VTH0	SISO A	98.9
		SISO B	98.9
		MIMO A	99.2
		MIMO B	99.2
802.11ax/be160	MCS0	SISO A	98.8
		SISO B	98.8
		MIMO A	99.3
		MIMO B	99.3

Maximum output power – U-NII-4 Channels

Mode	Rate	Channel	Freq [MHz]	Antenna	Average Conducted Ouput Power [dBm]	Avg Max* Conducted Ouput Power [dBm]	Avg Max*. EIRP [dBm]	Avg Max* Conducted Ouput Power [mW]
802.11a	6Mbps	169	5845	SISO A	19.45	19.54	24.69	89.99
				SISO B	19.31	19.40	24.55	87.14
		173	5865	SISO A	19.48	19.57	24.72	90.62
				SISO B	19.30	19.39	24.54	86.94
		177	5885	SISO A	19.41	19.50	24.65	89.17
				SISO B	19.52	19.61	24.76	91.46
802.11n20	HT0	169	5845	SISO A	19.53	19.53	24.68	89.74
				SISO B	19.63	19.63	24.78	91.83
		173	5865	SISO A	19.55	19.55	24.70	90.16
				SISO B	19.77	19.77	24.92	94.84
		177	5885	SISO A	19.71	19.71	24.86	93.54
				SISO B	19.79	19.79	24.94	95.28
	HT8	169	5845	MIMO A	16.90	16.90	22.05	48.98
				MIMO B	16.58	16.58	21.73	45.50
				Combined A+B	19.75	19.75	24.90	94.48
		173	5865	MIMO A	16.87	16.87	22.02	48.64
				MIMO B	16.75	16.75	21.90	47.32
				Combined A+B	19.82	19.82	24.97	95.96
		177	5885	MIMO A	16.73	16.73	21.88	47.10
				MIMO B	16.74	16.74	21.89	47.21
				Combined A+B	19.75	19.75	24.90	94.30
802.11n40	HT0	167	5835	SISO A	22.99	22.99	28.14	199.07
				SISO B	22.93	22.93	28.08	196.34
		175	5875	SISO A	22.38	22.38	27.53	172.98
				SISO B	22.68	22.68	27.83	185.35
	HT8	167	5835	MIMO A	20.14	20.14	25.29	103.28
				MIMO B	20.00	20.00	25.15	100.00
				Combined A+B	23.08	23.08	28.23	203.28
		175	5875	MIMO A	20.11	20.11	25.26	102.57
				MIMO B	20.24	20.24	25.39	105.68
				Combined A+B	23.19	23.19	28.34	208.25
802.11ac80	VHT0	171	5855	SISO A	22.06	22.06	27.21	160.69
				SISO B	22.18	22.18	27.33	165.20
				MIMO A	20.37	20.37	25.52	108.89
				MIMO B	20.58	20.58	25.73	114.29
				Combined A+B	23.49	23.49	28.64	223.18
802.11ac160	VHT0	163	5815	SISO A	19.65	19.65	24.80	92.26
				SISO B	19.08	19.08	24.23	80.91
				MIMO A	17.33	17.33	22.48	54.08
				MIMO B	17.41	17.41	22.56	55.08
				Combined A+B	20.38	20.38	25.53	109.16

* Maximum values are the duty cycle compensated values calculated from the average (measured)

Max Value

Min Value

Mode	Rate	Channel	Freq [MHz]	Antenna	Average Conducted Ouput Power [dBm]	Avg Max* Conducted Ouput Power [dBm]	Avg Max*. EIRP [dBm]	Avg Max* Conducted Ouput Power [mW]
802.11ax/be20	MCS0	169	5845	SISO A	19.81	19.81	24.96	95.72
				SISO B	19.91	19.91	25.06	97.95
				MIMO A	16.97	16.97	22.12	49.77
				MIMO B	16.91	16.91	22.06	49.09
				Combined A+B	19.95	19.95	25.10	98.86
		173	5865	SISO A	19.84	19.84	24.99	96.38
				SISO B	19.85	19.85	25.00	96.61
				MIMO A	17.01	17.01	22.16	50.23
				MIMO B	16.96	16.96	22.11	49.66
				Combined A+B	20.00	20.00	25.15	99.89
		177	5885	SISO A	18.97	18.97	24.12	78.89
				SISO B	19.74	19.74	24.89	94.19
802.11ax/be40	MCS0	167	5835	MIMO A	15.58	15.58	20.73	36.14
				MIMO B	15.59	15.59	20.74	36.22
				Combined A+B	18.60	18.60	23.75	72.37
		175	5875	SISO A	23.21	23.21	28.36	209.41
				SISO B	23.20	23.20	28.35	208.93
				MIMO A	20.29	20.29	25.44	106.91
				MIMO B	20.39	20.39	25.54	109.40
				Combined A+B	23.35	23.35	28.50	216.30
		175	5875	SISO A	22.47	22.47	27.62	176.60
				SISO B	22.67	22.67	27.82	184.93
802.1ax/be80	MCS0	171	5855	MIMO A	20.27	20.27	25.42	106.41
				MIMO B	20.38	20.38	25.53	109.14
				Combined A+B	23.34	23.34	28.49	215.56
		171	5855	SISO A	21.96	21.96	27.11	157.04
				SISO B	22.12	22.12	27.27	162.93
802.11ax/be160	MCS0	163	5815	MIMO A	20.23	20.23	25.38	105.44
				MIMO B	20.50	20.50	25.65	112.20
				Combined A+B	23.38	23.38	28.53	217.64
				SISO A	18.90	18.90	24.05	77.62
				SISO B	19.06	19.06	24.21	80.54
802.11ax/be160	MCS0	163	5815	MIMO A	17.24	17.24	22.39	52.97
				MIMO B	17.78	17.78	22.93	59.98
				Combined A+B	20.53	20.53	25.68	112.95

* Maximum values are the duty cycle compensated values calculated from the average (measured)

Max Value

Min Value

See Section B.3.3 for the screenshot results

Maximum Power Spectral Density (PSD) – U-NII-4 channels

Mode	Rate	Channel	Freq [MHz]	Antenna	Average conducted PSD [dBm/500kHz]	Max.* conducted PSD [dBm/500kHz]	Max.* conducted PSD [dBm/MHz]	EIRP PSD [dBm/MHz]
802.11a	6Mbps	169	5845	SISO A	5.54	5.63	8.64	13.64
				SISO B	5.44	5.53	8.54	13.54
		173	5865	SISO A	5.61	5.70	8.71	13.71
				SISO B	5.40	5.49	8.50	13.50
		177	5885	SISO A	5.50	5.59	8.60	13.60
				SISO B	5.58	5.67	8.68	13.68
802.11n20	HT0	169	5845	SISO A	5.42	5.42	8.43	13.43
				SISO B	5.57	5.57	8.58	13.58
		173	5865	SISO A	5.42	5.42	8.43	13.43
				SISO B	5.67	5.67	8.68	13.68
		177	5885	SISO A	5.56	5.56	8.57	13.57
				SISO B	5.66	5.66	8.67	13.67
	HT8	169	5845	MIMO A	2.79	2.79	5.80	10.80
				MIMO B	2.48	2.48	5.49	10.49
				Combined A+B	5.65	5.65	8.66	13.66
		173	5865	MIMO A	2.73	2.73	5.74	10.74
				MIMO B	2.61	2.61	5.62	10.62
				Combined A+B	5.68	5.68	8.69	13.69
		177	5885	MIMO A	2.57	2.57	5.58	10.58
				MIMO B	2.59	2.59	5.60	10.60
				Combined A+B	5.59	5.59	8.60	13.60
802.11n40	HT0	167	5835	SISO A	5.45	5.45	8.46	13.46
				SISO B	5.37	5.37	8.38	13.38
		175	5875	SISO A	4.78	4.78	7.79	12.79
				SISO B	5.07	5.07	8.08	13.08
	HT8	167	5835	MIMO A	2.59	2.59	5.60	10.60
				MIMO B	2.50	2.50	5.51	10.51
				Combined A+B	5.56	5.56	8.57	13.57
		175	5875	MIMO A	2.51	2.51	5.52	10.52
				MIMO B	2.69	2.69	5.70	10.70
				Combined A+B	5.61	5.61	8.62	13.62
802.11ac80	VHT0	171	5855	SISO A	1.39	1.39	4.40	9.40
				SISO B	1.51	1.51	4.52	9.52
				MIMO A	-0.30	-0.30	2.71	7.71
				MIMO B	-0.05	-0.05	2.96	7.96
				Combined A+B	2.84	2.84	5.85	10.85
802.11ac160	VHT0	163	5815	SISO A	-3.93	-3.93	-0.92	4.08
				SISO B	-4.52	-4.52	-1.51	3.49
				MIMO A	-6.33	-6.33	-3.32	1.68
				MIMO B	-6.17	-6.17	-3.16	1.84
				Combined A+B	-3.24	-3.24	-0.23	4.77

* Maximum values are the duty cycle compensated values calculated from the average (measured)

Mode	Rate	Channel	Freq [MHz]	Antenna	Average conducted PSD [dBm/500kHz]	Max.* conducted PSD [dBm/500kHz]	Max.* conducted PSD [dBm/MHz]	EIRP PSD [dBm/MHz]
802.11ax/be20	MCS0	169	5845	SISO A	5.47	5.47	8.48	13.48
				SISO B	5.63	5.63	8.64	13.64
				MIMO A	2.65	2.65	5.66	10.66
				MIMO B	2.64	2.64	5.65	10.65
				Combined A+B	5.66	5.66	8.67	13.67
		173	5865	SISO A	5.46	5.46	8.47	13.47
				SISO B	5.52	5.52	8.53	13.53
				MIMO A	2.64	2.64	5.65	10.65
				MIMO B	2.62	2.62	5.63	10.63
				Combined A+B	5.64	5.64	8.65	13.65
		177	5885	SISO A	4.68	4.68	7.69	12.69
				SISO B	5.41	5.41	8.42	13.42
				MIMO A	1.22	1.22	4.23	9.23
				MIMO B	2.67	2.67	5.68	10.68
				Combined A+B	5.62	5.62	8.63	13.63
802.11ax/be40	MCS0	167	5835	SISO A	5.54	5.54	8.55	13.55
				SISO B	5.52	5.52	8.53	13.53
				MIMO A	2.53	2.53	5.54	10.54
				MIMO B	2.65	2.65	5.66	10.66
				Combined A+B	5.60	5.60	8.61	13.61
		175	5875	SISO A	4.69	4.69	7.70	12.70
				SISO B	4.89	4.89	7.90	12.90
				MIMO A	2.54	2.54	5.55	10.55
				MIMO B	2.65	2.65	5.66	10.66
				Combined A+B	5.61	5.61	8.62	13.62
802.1ax/be80	MCS0	171	5855	SISO A	1.23	1.23	4.24	9.24
				SISO B	1.38	1.38	4.39	9.39
				MIMO A	-0.48	-0.48	2.53	7.53
				MIMO B	-0.20	-0.20	2.81	7.81
				Combined A+B	2.67	2.67	5.68	10.68
802.11ax/be160	MCS0	163	5815	SISO A	-4.82	-4.82	-1.81	3.19
				SISO B	-4.69	-4.69	-1.68	3.32
				MIMO A	-6.36	-6.36	-3.35	1.65
				MIMO B	-5.96	-5.96	-2.95	2.05
				Combined A+B	-3.15	-3.15	-0.13	4.87

* Maximum values are the duty cycle compensated values calculated from the average (measured)

Max Value

Note :PSD [dBm/500KHz] is the actual measurement done using RBW = 500KHz. To obtain the PSD [dBm/1MHz] a correction factor is applied: $10\log\left(\frac{1\text{MHz}}{500\text{kHz}}\right) = +3.01\text{dB}$

See Section B.3.4. for the screenshot results

B.2.3 Undesirable emission limits : out of band (Conducted)

Test limits

FCC part	Limits
15.407 (b) (4)	All emissions below 5.725 GHz shall not exceed an e.i.r.p of -27 dBm/MHz at 5.65GHz increasing linearly to 10dBm/MHz at 5.7 GHz, and from 5.7GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72GHz, and from 5.72 GHz increasing linearly to a level of 27dBm/MHz at 5.725GHz.
15.407 (b) (5) (ii)	All emissions at or above 5.895GHz shall not exceed an e.i.r.p of -5dBm/MHz and shall decrease linearly to an e.i.r.p of -27dBm/MHz at or above 5.925GHz.
15.35 (b)	Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz. When average radiated emission measurements are specified in this part, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. Unless otherwise specified, e.g., see §§ 15.250, 15.252, 15.253(d), 15.255, 15.256, and 15.509 through 15.519, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device, e.g., the total peak power level. Note that the use of a pulse desensitization correction factor may be needed to determine the total peak emission level. The instruction manual or application note for the measurement instrument should be consulted for determining pulse desensitization factors, as necessary.

Test procedure

The conducted setup shown in section *Test & System Description* was used to measure undesirable emissions on the Band Edge domain. The antenna terminal of the EUT is connected to the spectrum analyzer through an attenuator, and the spectrum analyzer reading is compensated to include the RF path loss and the declared antenna gain.

For lower OOBE, Peak detector is used according to FCC OET KDB 789033 D02 v02r01.

For upper OOBE, RMS detector is used according to FCC OET KDB 291074 D02 v01 - EMC Measurement

Band Edge measurements above 5895 MHz should also include Peak plots to show compliance with 15.35(b) where the peak emissions must be limited to no more than 20 dB above the average limit.

The RBW is set to 100KHz according to the integration method, the applicable limit is updated accordingly (Shifted by 10dB)

See Section B.3.5 for the screenshot results.

B.2.4 Radiated spurious emission

Standard references

FCC part	Limits
15.407 (b) (5) (iii)	For transmitters operating solely in the 5.850-5.895 GHz band or operating on a channel that spans across 5.725-5.895 GHz: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
15.407 (b) (5) (ii)	For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of −5 dBm/MHz and shall decrease linearly to an e.i.r.p. of −27 dBm/MHz at or above 5.925 GHz
15.209	Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a):
	The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. For average radiated emission measurements above 1000 MHz, there is also a limit specified when measuring with peak detector function, corresponding to 20 dB above the indicated values in the table.

Test procedure

The radiated setups shown in section *Test & System Description* were used to measure the radiated spurious emissions.

Depending of the frequency range and bands being tested, different antennas and filters were used.

The final measurement is done by varying the antenna height, the EUT azimuth over 360° and for both Vertical and Horizontal polarizations.

The radiated spurious emission was measured on the worst case configuration selected from the chapter B.1 and using the low, middle and high channels.

Test Results**Radiated spurious - 30 MHz to 1 GHz**

Frequency	Level	Detector	Limit	Margin	Polarization
MHz	dBμV/m	---	dBμV/m	dB	---
31.2	31.3	Quasi-Peak	40.0	8.7	V
50.0	32.4	Quasi-Peak	40.0	7.6	V
113.0	25.8	Quasi-Peak	43.5	17.7	V

Note 1: The spurious signals detected do not depend on either the operating channel or the modulation mode.

802.11a**1 GHz – 40 GHz, 802.11a, 6Mbps, Chain A****Radiated Spurious – CH169**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
8760.9	47.6	RMS	68.2	20.6	H
8765.5	58.3	Peak	88.2	29.9	H
23976.0	48.4	Peak	74.0	25.6	V
23976.0	40.9	Average	54.0	13.1	V
39079.2	48.0	Average	54.0	6.0	H
39079.7	56.6	Peak	74.0	17.4	V

Radiated Spurious – CH173

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
8800.8	47.6	RMS	68.2	20.6	H
8801.1	58.3	Peak	88.2	29.9	H
39223.8	56.1	Peak	74.0	17.9	H
39223.8	47.9	Average	54.0	6.1	H

Radiated Spurious – CH177

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
8820.7	47.4	RMS	68.2	20.8	H
8826.8	59.2	Peak	88.2	29.0	V
39230.1	55.4	Peak	74.0	18.6	V
39230.1	47.9	Average	54.0	6.1	V

1 GHz – 40 GHz, 802.11a, 6Mbps, Chain B

Radiated Spurious – CH169

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
8766.1	59.8	Peak	88.2	28.4	H
8767.0	48.1	RMS	68.2	20.1	H
23960.1	47.5	Peak	74.0	26.5	H
23960.1	41.0	Average	54.0	13.0	H
39063.3	56.8	Peak	74.0	17.2	H
39063.8	47.9	Average	54.0	6.1	H

Radiated Spurious – CH173

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10775.4	46.6	Average	54.0	7.4	H
10775.7	58.9	Peak	74.0	15.1	H
39211.2	56.3	Peak	74.0	17.7	V
39211.2	47.9	Average	54.0	6.1	H

Radiated Spurious – CH177

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10796.7	58.5	Peak	74.0	15.5	V
10796.7	46.9	Average	54.0	7.1	V
39074.4	47.9	Average	54.0	6.1	H
39074.9	56.4	Peak	74.0	17.6	V

802.11n

1 GHz – 40 GHz, 802.11n20, HT0, Chain A**Radiated Spurious – CH169**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
8766.7	57.2	Peak	88.2	30.9	H
8766.7	47.5	RMS	68.2	20.8	H
23971.2	50.1	Peak	74.0	23.9	V
23971.2	41.1	Average	54.0	12.9	V
38984.0	55.8	Peak	74.0	18.2	H
38984.0	47.9	Average	54.0	6.1	V

Radiated Spurious – CH173

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBµV/m	---	dBµV/m	dB	---
8797.6	57.2	Peak	88.2	31.0	H
8797.6	47.5	RMS	68.2	20.7	H
36667.9	51.4	Peak	88.2	36.8	V
36667.9	45.3	RMS	68.2	22.9	H

Radiated Spurious – CH177

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBµV/m	---	dBµV/m	dB	---
10839.3	47.9	Average	54.0	6.1	V
10840.5	59.6	Peak	74.0	14.4	V
38193.8	53.5	Peak	88.2	34.7	V
38193.8	46.7	RMS	68.2	21.5	V

1 GHz – 40 GHz, 802.11n20, HT0, Chain B**Radiated Spurious – CH169**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBµV/m	---	dBµV/m	dB	---
8768.5	57.9	Peak	88.2	30.3	V
8768.5	48.2	RMS	68.2	20.0	V
23979.0	48.5	Peak	74.0	25.5	V
23979.0	40.8	Average	54.0	13.2	H
38974.8	48.0	Average	54.0	6.0	V
38975.3	56.6	Peak	74.0	17.4	V

Radiated Spurious – CH173

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
8796.8	56.9	Peak	88.2	31.3	V
8796.8	47.3	RMS	68.2	20.9	V
31520.9	51.8	Peak	74.0	22.2	H
31520.9	44.6	Average	54.0	9.4	V

Radiated Spurious – CH177

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10769.3	59.2	Peak	74.0	14.8	V
10771.0	47.3	Average	54.0	6.7	V
34463.9	53.3	Peak	88.2	34.9	H
34463.9	46.4	RMS	68.2	21.8	V

1 GHz – 40 GHz, 802.11n20, HT8, Chain A+B**Radiated Spurious – CH169**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
8768.8	60.1	Peak	88.2	28.1	H
8768.8	49.5	RMS	68.2	18.7	H
23916.1	48.4	Peak	74.0	25.6	V
23916.1	41.4	Average	54.0	12.6	V
39058.9	55.6	Peak	74.0	18.4	V
39058.9	48.0	Average	54.0	6.0	V

Radiated Spurious – CH173

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBµV/m	---	dBµV/m	dB	---
8798.2	59.0	Peak	88.2	29.2	V
8798.2	49.2	RMS	68.2	19.0	V
38250.3	53.0	Peak	88.2	35.2	V
38250.3	46.8	RMS	68.2	21.4	V

Radiated Spurious – CH177

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10844.2	47.9	Average	54.0	6.1	V
10848.3	59.8	Peak	74.0	14.2	V
27391.8	50.7	Peak	88.2	37.5	V
27391.8	43.4	RMS	68.2	24.8	V

1 GHz – 40 GHz, 802.11n40, HT0, Chain A**Radiated Spurious – CH167**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
8741.9	56.3	Peak	88.2	31.9	H
8741.9	46.6	RMS	68.2	21.6	V
25185.8	49.2	Peak	88.2	39.0	V
25185.8	41.8	RMS	68.2	26.4	V
35234.3	53.1	Peak	88.2	35.0	V
35234.3	46.5	RMS	68.2	21.7	V

Radiated Spurious – CH175

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10774.8	59.5	Peak	74.0	14.4	V
10777.8	47.4	Average	54.0	6.7	H
38564.0	56.1	Peak	88.2	32.1	V
38564.0	47.6	RMS	68.2	20.6	V

1 GHz – 40 GHz, 802.11n40, HT0, Chain B

Radiated Spurious – CH167

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
8751.3	56.6	Peak	88.2	31.6	V
8751.3	47.3	RMS	68.2	20.9	V
24432.3	48.7	Peak	88.2	39.5	H
24432.3	41.7	RMS	68.2	26.5	H
38374.6	53.9	Peak	88.2	34.3	H
38374.6	46.9	RMS	68.2	21.3	V

Radiated Spurious – CH175

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10775.1	59.5	Peak	74.0	14.6	V
10776.9	47.6	Average	54.0	6.4	H
37686.8	53.7	Peak	88.2	34.5	H
37686.8	46.2	RMS	68.2	22.0	H

1 GHz – 40 GHz, 802.11n40, HT8, Chain A+B

Radiated Spurious – CH167

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
8746.9	58.5	Peak	88.2	29.7	H
8746.9	48.2	RMS	68.2	20.0	H
25892.0	51.0	Peak	88.2	37.2	V
25892.0	42.7	RMS	68.2	25.5	V
35337.8	53.5	Peak	88.2	34.8	H
35337.8	46.1	RMS	68.2	22.1	H

Radiated Spurious – CH175

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10777.8	47.4	Average	54.0	6.6	H
10781.5	58.8	Peak	74.0	15.2	H
29358.5	49.8	Peak	88.2	38.4	V
29358.5	43.9	RMS	68.2	24.3	H

802.11ax/be**1 GHz – 40 GHz, 802.11ax/be20, MCS0, Chain A****Radiated Spurious – CH169**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
8755.0	62.1	Peak	88.2	26.1	H
8755.0	52.1	RMS	68.2	16.1	H
23861.5	48.3	Peak	74.0	25.7	V
23861.5	40.6	Average	54.0	13.4	V
39078.3	55.5	Peak	74.0	18.5	H
39078.3	47.8	Average	54.0	6.2	H

Radiated Spurious – CH173

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
8784.8	63.5	Peak	88.2	24.7	V
8784.8	52.5	RMS	68.2	15.7	V
39001.4	47.9	Average	54.0	6.1	V
39001.9	57.0	Peak	74.0	17.0	V

Radiated Spurious – CH177

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10781.2	57.8	Peak	74.0	16.2	V
10781.2	47.9	Average	54.0	6.1	V
39016.9	48.0	Average	54.0	6.0	V
39017.9	56.3	Peak	74.0	17.7	H

1 GHz – 40 GHz, 802.11ax/be20, MCS0, Chain B**Radiated Spurious – CH169**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
5356.6	59.2	Peak	74.0	14.8	H
5356.6	50.4	Average	54.0	3.6	H
23820.4	47.4	Peak	74.0	26.6	V
23820.4	41.1	Average	54.0	12.9	V
39054.6	56.1	Peak	74.0	17.9	H
39054.6	48.0	Average	54.0	6.0	H

Radiated Spurious – CH173

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
5376.7	58.9	Peak	74.0	15.1	V
5376.7	50.5	Average	54.0	3.5	V
18289.2	45.3	Peak	74.0	28.7	H
18290.1	38.9	Average	54.0	15.1	H

Radiated Spurious – CH177

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBµV/m	---	dBµV/m	dB	---
10781.8	58.6	Peak	74.0	15.4	H
10781.8	48.0	Average	54.0	6.0	H
39018.8	47.9	Average	54.0	6.1	V
39019.3	57.2	Peak	74.0	16.8	V

1 GHz – 40 GHz, 802.11ax/be20, MCS0, Chain A+B**Radiated Spurious – CH169**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBµV/m	---	dBµV/m	dB	---
5357.2	59.7	Peak	74.0	14.3	V
5357.2	50.2	Average	54.0	3.8	H
23824.3	40.7	Average	54.0	13.3	H
23824.8	49.0	Peak	74.0	25.0	V
39027.1	56.0	Peak	74.0	18.0	H
39028.0	47.9	Average	54.0	6.1	H

Radiated Spurious – CH173

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBµV/m	---	dBµV/m	dB	---
5376.1	58.8	Peak	74.0	15.2	H
5376.1	50.3	Average	54.0	3.7	H
11712.9	36.8	Average	54.0	17.2	H
11713.9	45.2	Peak	74.0	28.8	H
23427.0	41.7	RMS	68.2	26.5	H
23428.4	50.4	Peak	88.2	37.9	H

Radiated Spurious – CH177

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBµV/m	---	dBµV/m	dB	---
10796.1	57.3	Peak	74.0	16.7	V
10796.1	48.0	Average	54.0	6.0	V
11751.6	44.1	Peak	74.0	29.9	H
11753.5	37.1	Average	54.0	16.9	H

1 GHz – 40 GHz, 802.11ax/be40, MCS0, Chain A

Radiated Spurious – CH167

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBµV/m	---	dBµV/m	dB	---
8738.1	52.0	RMS	68.2	16.2	H
8738.4	63.0	Peak	88.2	25.2	H
23929.2	48.2	Peak	74.0	25.8	H
23929.2	41.1	Average	54.0	12.9	V
38998.5	55.6	Peak	74.0	18.4	V
38998.5	47.9	Average	54.0	6.1	H

Radiated Spurious – CH175

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
8797.9	52.0	RMS	68.2	16.2	H
8798.2	62.7	Peak	88.2	25.5	H
39062.3	56.3	Peak	74.0	17.7	V
39062.3	48.0	Average	54.0	6.0	V

1 GHz – 40 GHz, 802.11ax/be40, MCS0, Chain B**Radiated Spurious – CH167**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
5344.7	58.2	Peak	88.2	30.0	V
5345.2	49.8	RMS	68.2	18.4	H
8738.1	53.4	RMS	68.2	14.8	H
8738.7	66.1	Peak	88.2	22.1	V
23895.8	49.2	Peak	74.0	24.8	V
23895.8	40.9	Average	54.0	13.1	H
39024.2	59.7	Peak	74.0	14.3	V
39024.2	47.9	Average	54.0	6.1	H

Radiated Spurious – CH175

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
5385.9	59.7	Peak	74.0	14.3	V
5385.9	50.4	Average	54.0	3.6	H
27165.1	49.6	Peak	88.2	38.5	V
27165.1	43.2	RMS	68.2	24.9	V

1 GHz – 40 GHz, 802.11ax/be40, MCS0, Chain A+B

Radiated Spurious – CH167

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
5345.2	60.3	Peak	88.2	27.9	V
5345.2	50.5	RMS	68.2	17.8	H
8738.7	56.3	RMS	68.2	11.9	H
8738.7	67.8	Peak	88.2	20.4	H
23917.6	49.4	Peak	74.0	24.6	V
23917.6	40.9	Average	54.0	13.1	H
38998.5	55.8	Peak	74.0	18.2	H
38999.5	47.9	Average	54.0	6.1	H

Radiated Spurious – CH175

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
5385.3	60.0	Peak	74.0	14.0	V
5385.3	50.5	Average	54.0	3.5	H
23459.8	49.1	Peak	88.2	39.1	H
23459.8	42.0	RMS	68.2	26.1	H

1 GHz – 40 GHz, 802.11ax/be80, MCS0, Chain A

Radiated Spurious – CH171

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
5353.4	56.9	Peak	74.0	17.1	H
5353.4	49.9	Average	54.0	4.1	H
23998.3	49.1	Peak	74.0	24.9	H
23998.3	41.1	Average	54.0	12.8	H
39057.5	56.7	Peak	74.0	17.3	V
39057.5	48.0	Average	54.0	6.0	V

1 GHz – 40 GHz, 802.11ax/be80, MCS0, Chain B**Radiated Spurious – CH171**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
5353.4	59.3	Peak	74.0	14.7	H
5353.4	50.0	Average	54.0	4.0	H
23936.4	48.7	Peak	74.0	25.3	V
23936.4	41.1	Average	54.0	12.9	V
38960.8	56.4	Peak	74.0	17.6	V
38960.8	47.9	Average	54.0	6.1	V

1 GHz – 40 GHz, 802.11ax/be80, MCS0, Chain A+B**Radiated Spurious – CH171**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
5353.4	59.2	Peak	74.0	14.8	V
5353.4	50.2	Average	54.0	3.8	V
23959.6	41.0	Average	54.0	13.0	H
23960.1	49.3	Peak	74.0	24.7	H
38982.6	56.2	Peak	74.0	17.8	V
38982.6	48.0	Average	54.0	6.0	H

1 GHz – 40 GHz, 802.11ax/be160, MCS0, Chain A

Radiated Spurious – CH163

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
5402.7	47.2	Average	54.0	6.8	H
5402.7	57.3	Peak	74.0	16.7	V
5522.4	57.4	Peak	88.2	30.8	V
5522.4	48.2	RMS	68.2	20.0	H
8643.0	61.9	Peak	88.2	26.3	H
8643.0	53.9	RMS	68.2	14.3	H
23982.8	49.8	Peak	74.0	24.2	H
23983.3	41.2	Average	54.0	12.8	V
38983.6	55.8	Peak	74.0	18.2	H
38983.6	48.0	Average	54.0	6.0	V

1 GHz – 40 GHz, 802.11ax/be160, MCS0, Chain B

Radiated Spurious – CH163

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
5282.4	58.5	Peak	88.2	29.7	V
5282.4	49.7	RMS	68.2	18.5	H
8643.9	62.8	Peak	88.2	25.4	H
8643.9	51.5	RMS	68.2	16.7	H
23973.2	48.2	Peak	74.0	25.8	V
23973.6	40.7	Average	54.0	13.3	H
38997.6	56.0	Peak	74.0	17.9	H
38997.6	47.9	Average	54.0	6.1	V

1 GHz – 40 GHz, 802.11ax/be160, MCS0, Chain A+B

Radiated Spurious – CH163

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
5281.9	59.4	Peak	88.2	28.8	V
5281.9	50.2	RMS	68.2	18.0	V
5522.9	57.0	Peak	88.2	31.2	H
5522.9	48.1	RMS	68.2	20.1	V
8643.3	65.6	Peak	88.2	22.6	V
8643.3	57.3	RMS	68.2	10.9	H
23793.8	47.8	Peak	74.0	26.2	V
23793.8	40.6	Average	54.0	13.4	V
28810.8	51.9	Peak	88.2	36.3	H
28810.8	44.1	RMS	68.2	24.1	H

802.11ac

1 GHz – 40 GHz, 802.11ac80, VHT0, Chain A

Radiated Spurious – CH171

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10779.5	57.6	Peak	74.0	16.4	H
10781.2	46.5	Average	54.0	7.5	V
23749.8	49.0	Peak	74.0	25.0	V
23749.8	40.3	Average	54.0	13.7	V
38972.4	57.1	Peak	74.0	16.9	H
38972.4	47.9	Average	54.0	6.1	V

1 GHz – 40 GHz, 802.11ac80, VHT0, Chain B

Radiated Spurious – CH171

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10794.4	58.2	Peak	74.0	15.8	V
10794.4	48.0	Average	54.0	6.0	V
15977.4	49.2	Peak	74.0	24.8	V
15977.4	38.6	Average	54.0	15.4	V

1 GHz – 40 GHz, 802.11ac80, VHT0, Chain A+B**Radiated Spurious – CH171**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10797.3	58.5	Peak	74.0	15.5	H
10797.3	48.0	Average	54.0	6.0	H
23976.0	47.8	Peak	74.0	26.2	V
23976.0	40.8	Average	54.0	13.2	H
39007.2	56.0	Peak	74.0	18.0	H
39007.2	47.9	Average	54.0	6.1	H

1 GHz – 40 GHz, 802.11ac160, VHT0, Chain A**Radiated Spurious – CH163**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10797.9	46.9	Average	54.0	7.1	H
10800.8	59.2	Peak	74.0	14.8	V
23956.7	47.9	Peak	74.0	26.1	H
23957.2	41.0	Average	54.0	13.0	H
39107.3	56.0	Peak	74.0	18.0	V
39107.3	47.9	Average	54.0	6.1	V

1 GHz – 40 GHz, 802.11ac160, VHT0, Chain B**Radiated Spurious – CH163**

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10795.8	59.0	Peak	74.0	15.0	V
10795.8	48.0	Average	54.0	6.0	H
23909.3	40.6	Average	54.0	13.4	H
23909.3	48.3	Peak	74.0	25.7	H
39123.7	55.6	Peak	74.0	18.4	H
39124.2	47.9	Average	54.0	6.1	V

1 GHz – 40 GHz, 802.11ac160, VHT0, Chain A+B

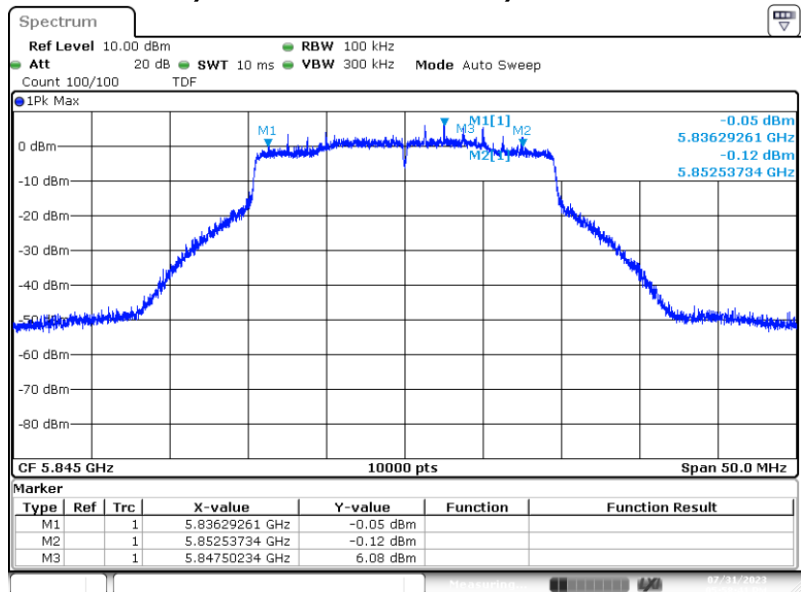
Radiated Spurious – CH163

Frequency	Level	Detector	Limit	Margin	Polar
MHz	dBμV/m	---	dBμV/m	dB	---
10776.3	58.2	Peak	74.0	15.8	V
10778.6	46.5	Average	54.0	7.5	V
23960.1	41.2	Average	54.0	12.8	H
23960.6	50.0	Peak	74.0	24.0	H
39111.6	55.8	Peak	74.0	18.2	H
39111.6	47.9	Average	54.0	6.1	H

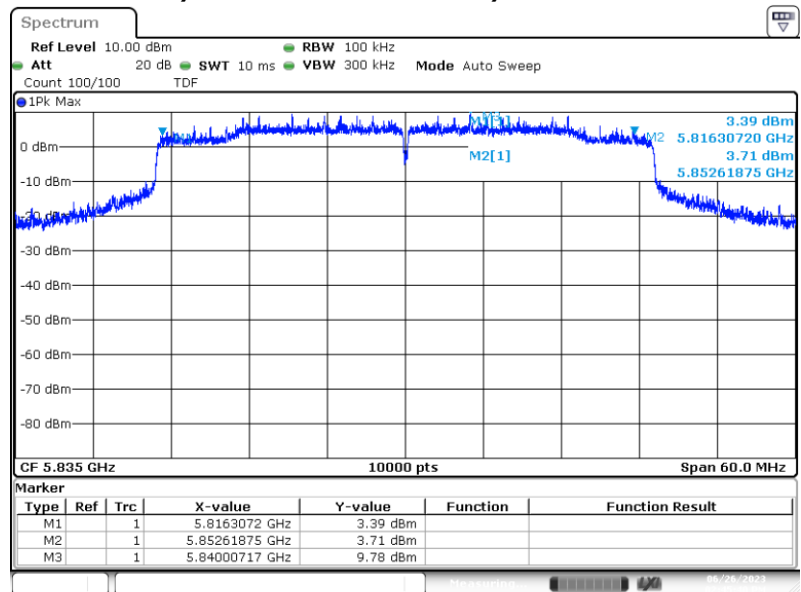
B.3 Test Results Screenshot

B.3.1 6dB Bandwidth

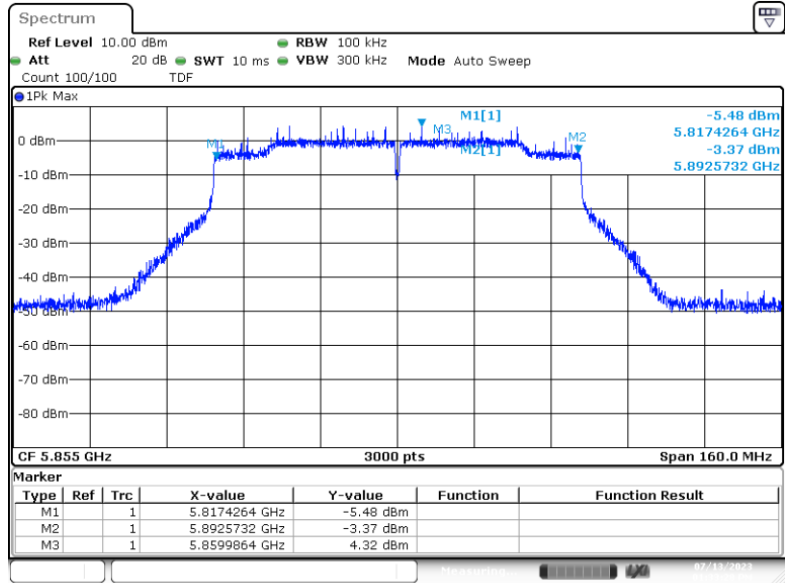
MIMO-B, 802.11ax/be20,MCS0-CH169



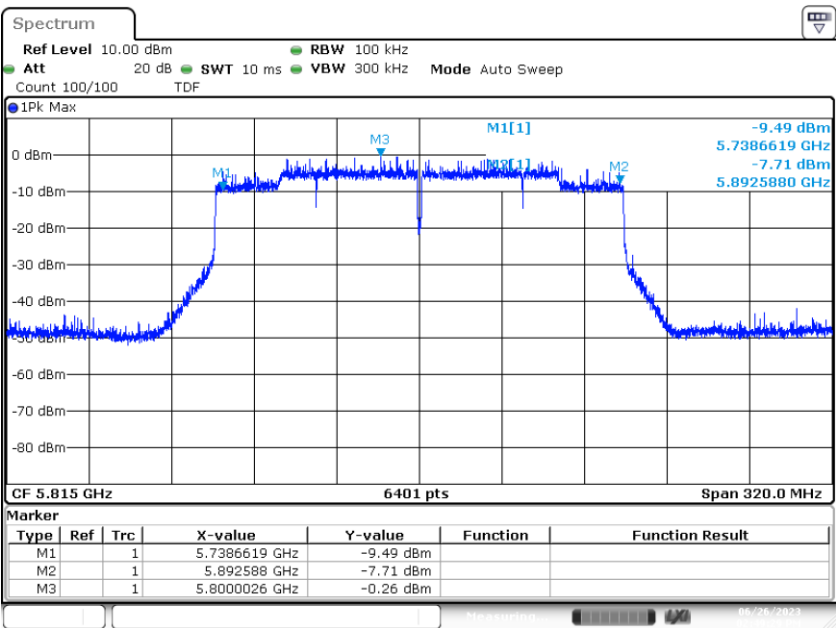
SISO-A, 802.11ax/be40, MCS0-CH167



MIMO-A, 802.11ac80, VHT0-CH171

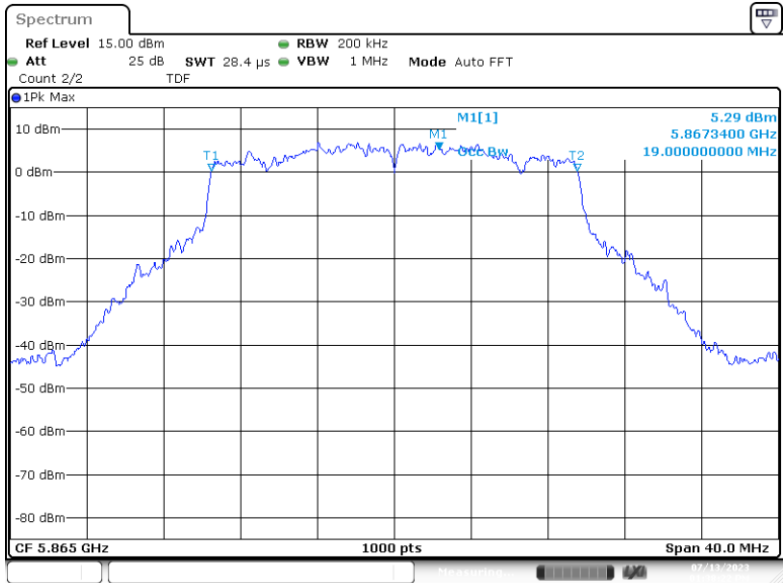


SISO-A, 802.11ax/be160, MCS0-CH163

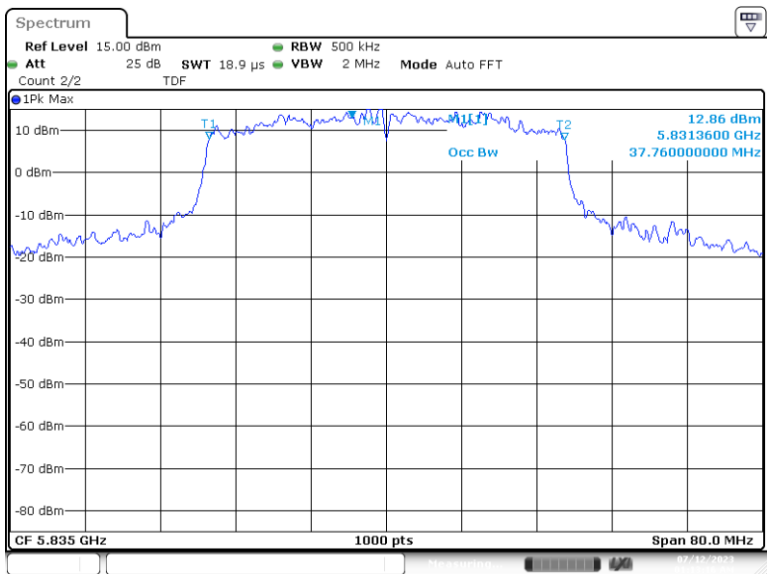


B.3.2 99% Bandwidth

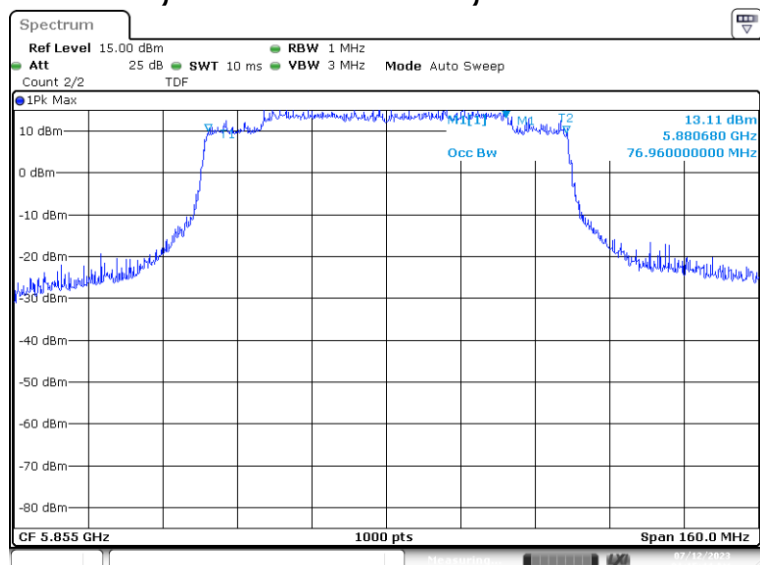
MIMO-A, 802.11ax/be20, MCS0-CH173



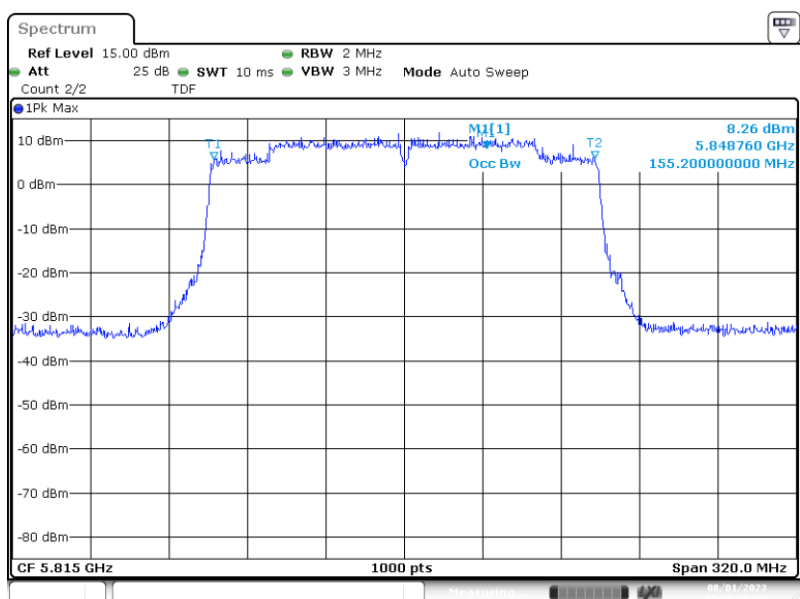
SISO-B, 802.11ax/be40, MCS0-CH167



SISO-B, 802.11ax/be80, MCS0-CH171

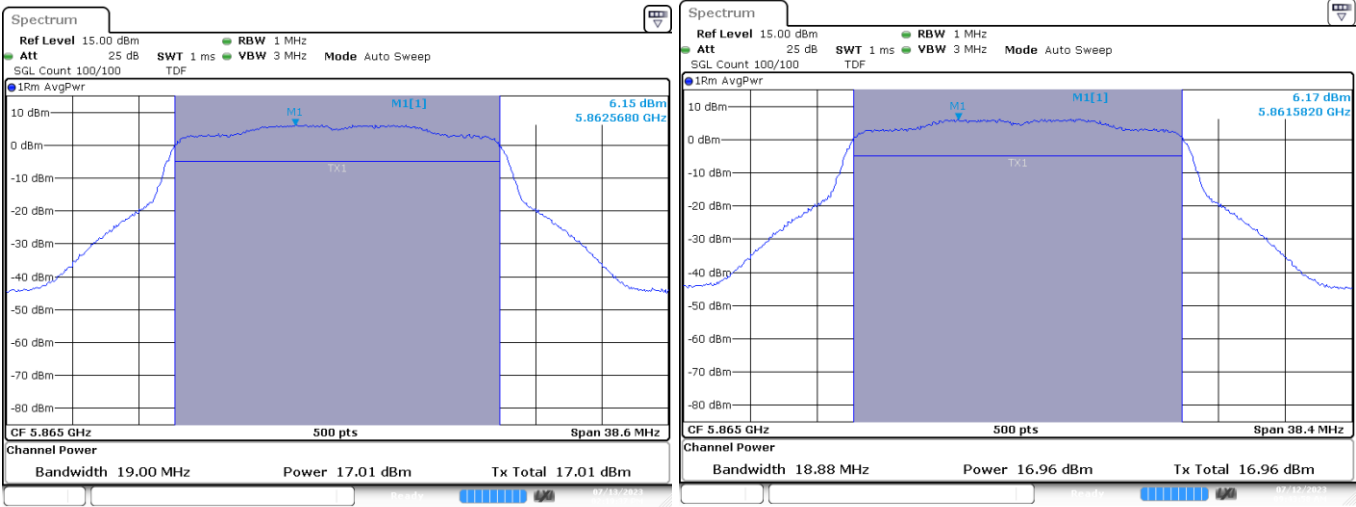


MIMO-A, 802.11ax/be160, MCS0-CH163

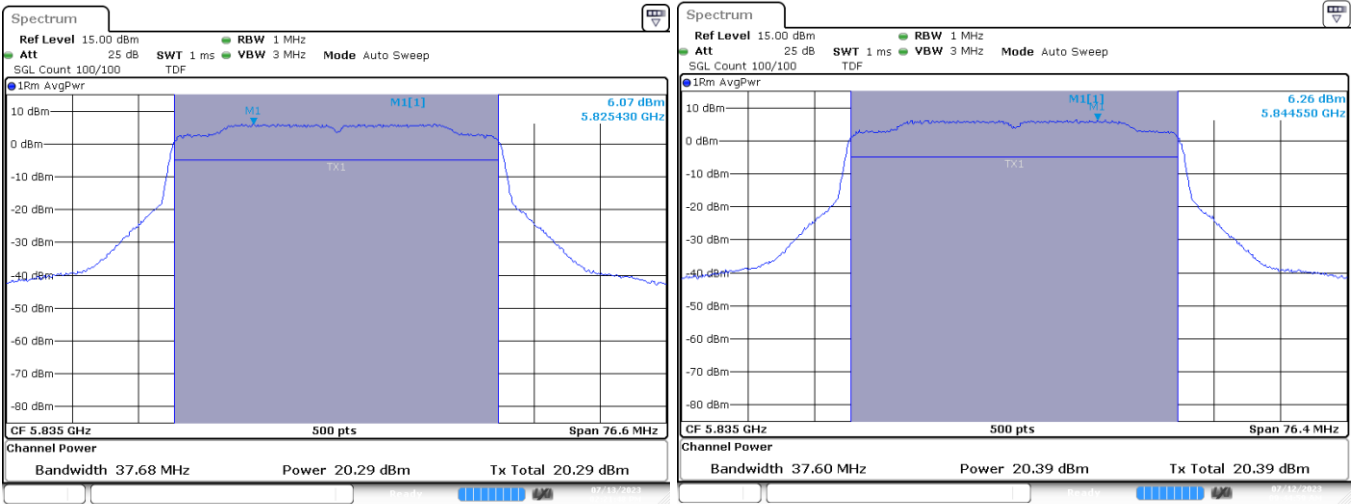


B.3.3 Maximum output power

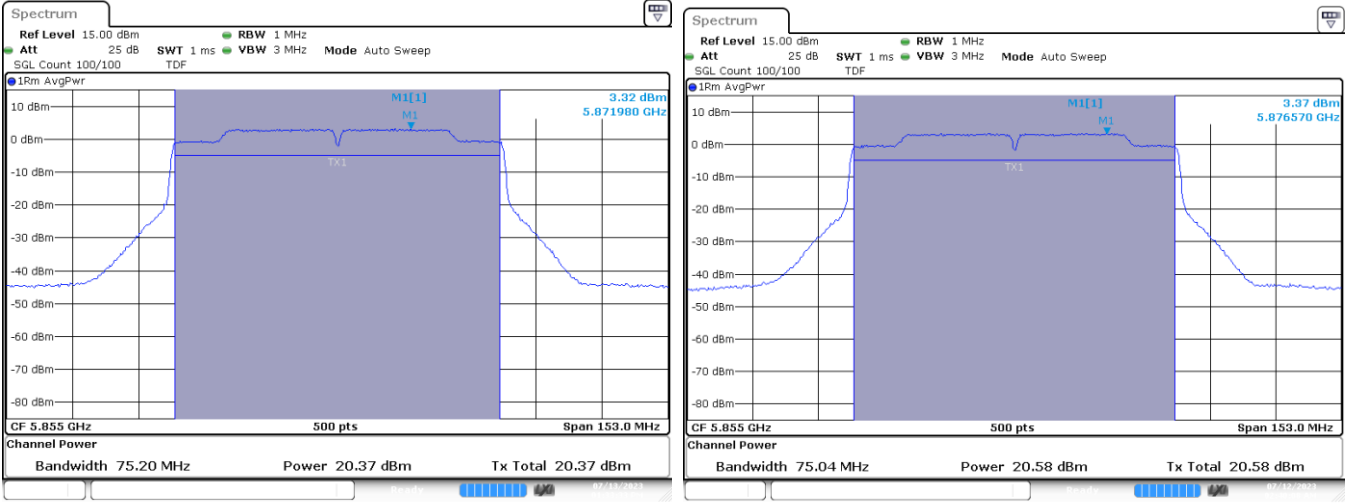
MIMO-A, 802.11ax/be20, MCS0-CH-173 MIMO-A, 802.11ax/be20, MCS0-CH-173



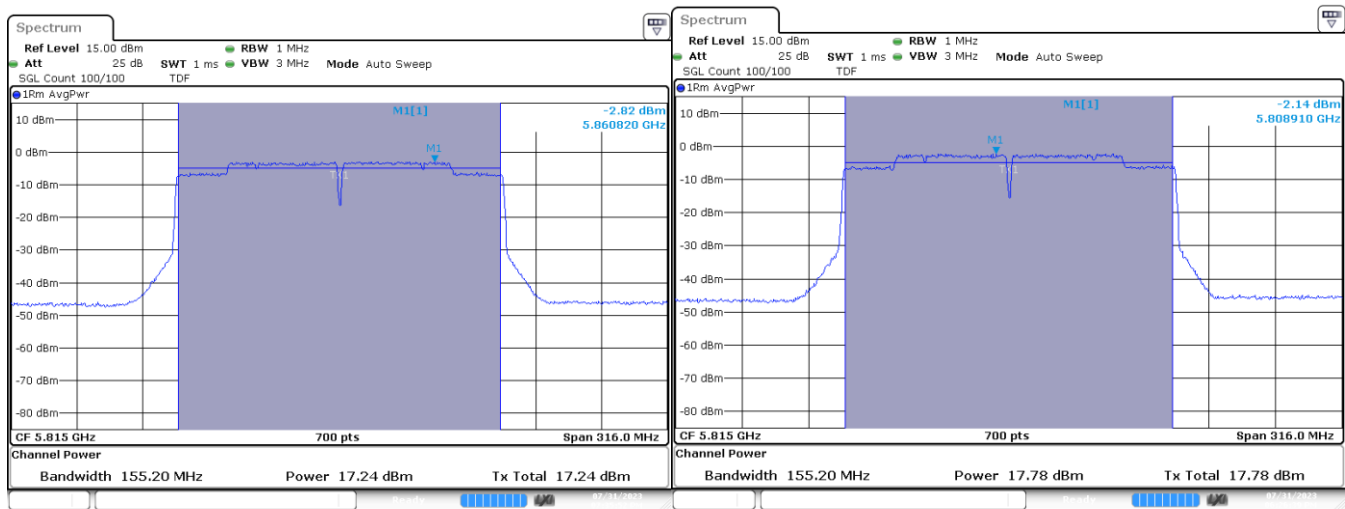
MIMO-A, 802.11ax/be40, MCS0-CH-167 MIMO-A, 802.11ax/be40, MCS0-CH-167



MIMO-A, 802.11ac80, VHT0-CH-171 MIMO-B, 802.11ac80, VHT0-CH-171

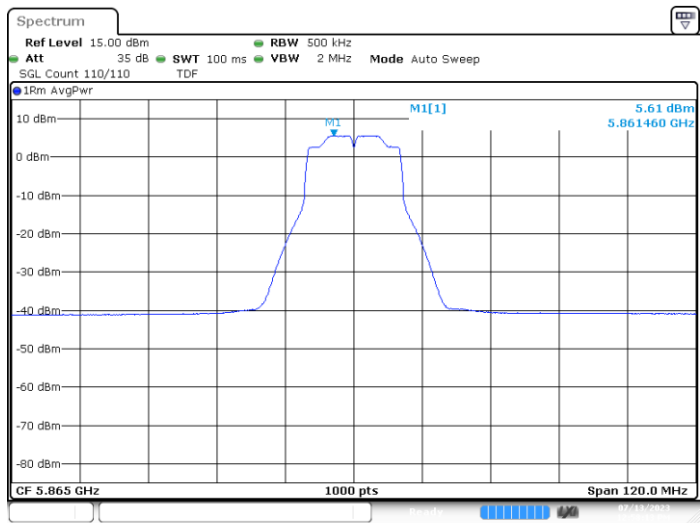


MIMO-A, 802.11ax/be160, MCS0-CH-163 MIMO-B, 802.11ax/be160, MCS0-CH-163

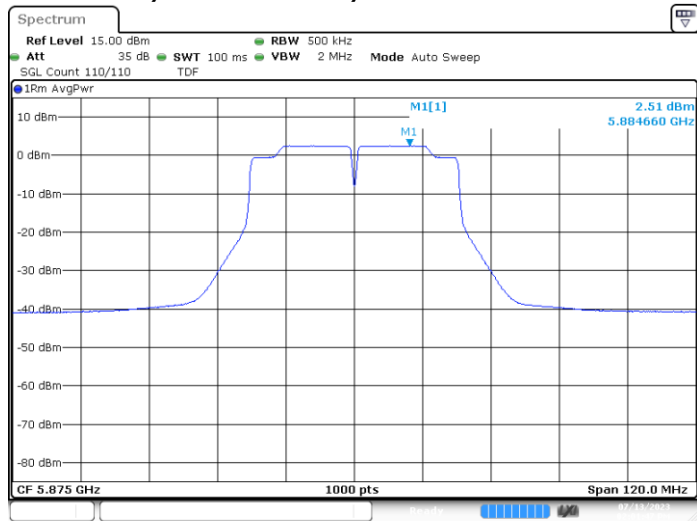


B.3.4 Maximum Power Spectral Density (PSD)

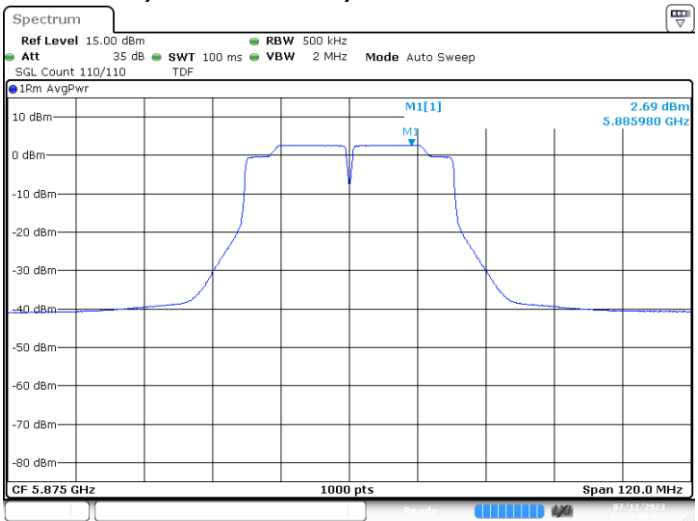
SISO-A, 802.11a, 6Mbps-CH-173



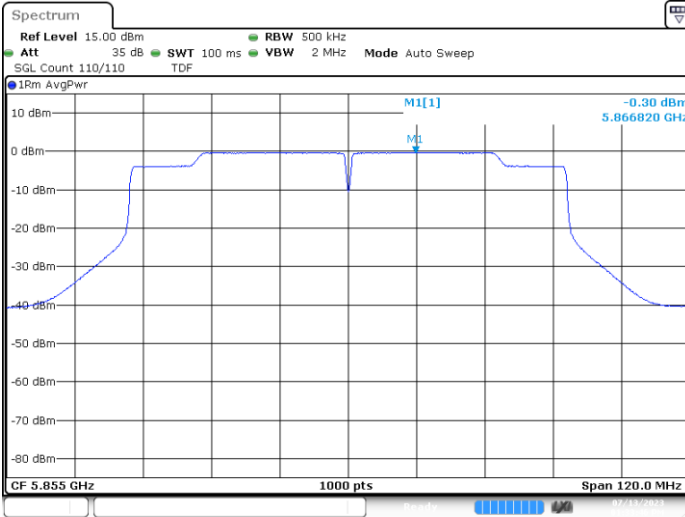
MIMO-A, 802.11n40, HT8-CH-175



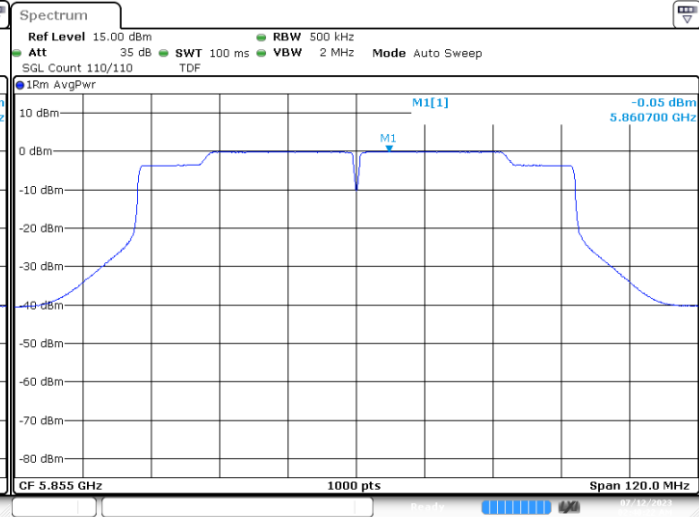
MIMO-B, 802.11n40, HT8-CH-175



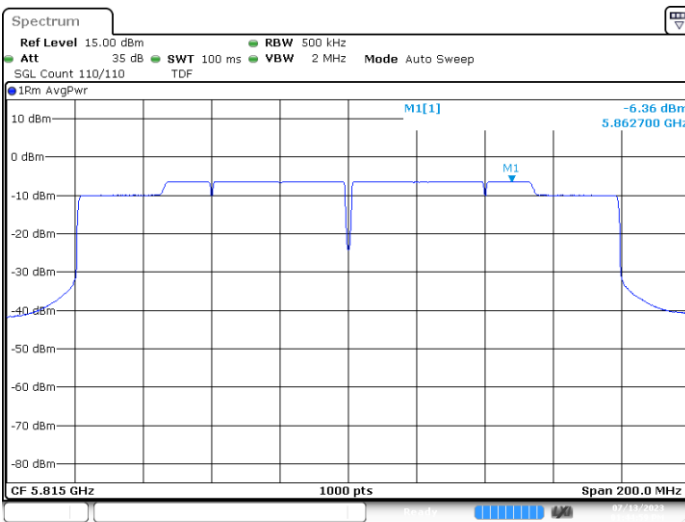
MIMO-A,802.11ac80, VHT0-CH171



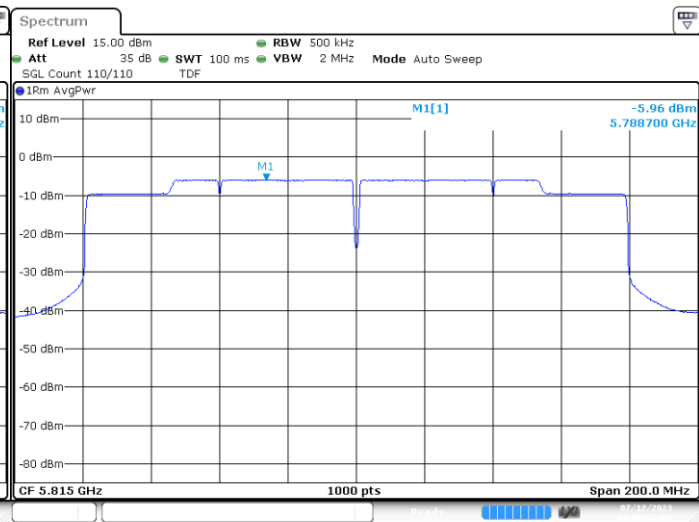
MIMO-B,802.11ac80, VHT0-CH171



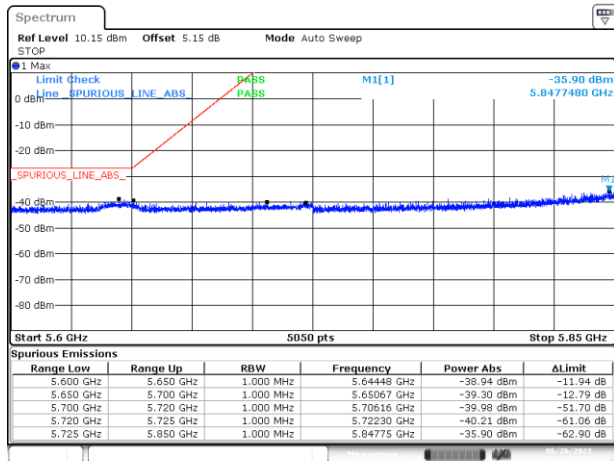
MIMO-A,802.11ax/be160,MCS0-CH163



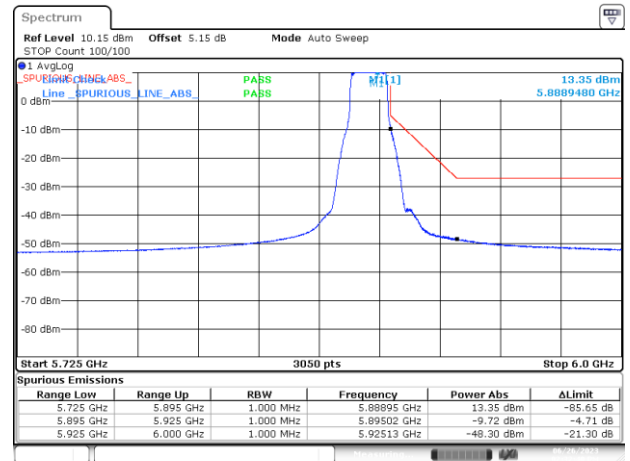
MIMO-B,802.11ax/be160,MCS0-CH163



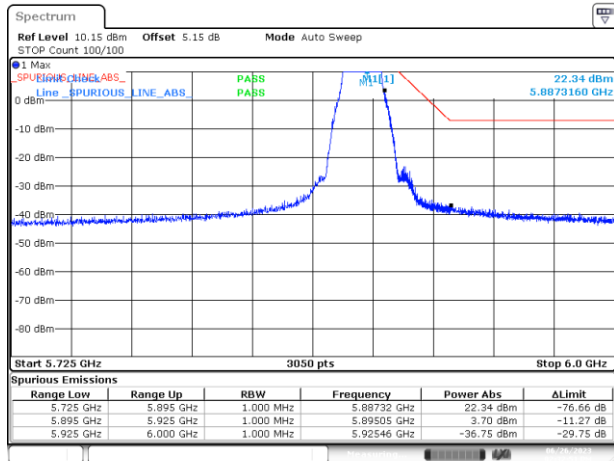
B.3.5 Undesirable emission limits : out of band (Conducted)



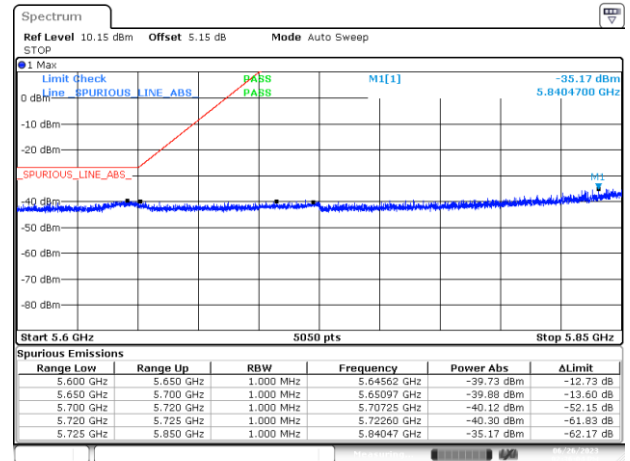
BE-NR-LOW, SISO-A, 802.11a20-6Mbps, Ch177



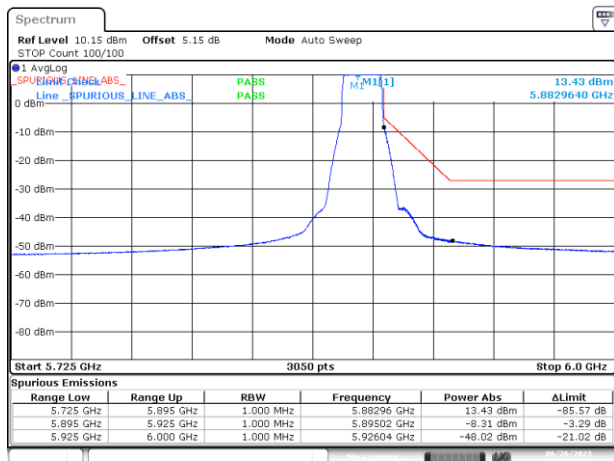
BE-NR-HIGH, SISO-A, 802.11a20-6Mbps, Ch177



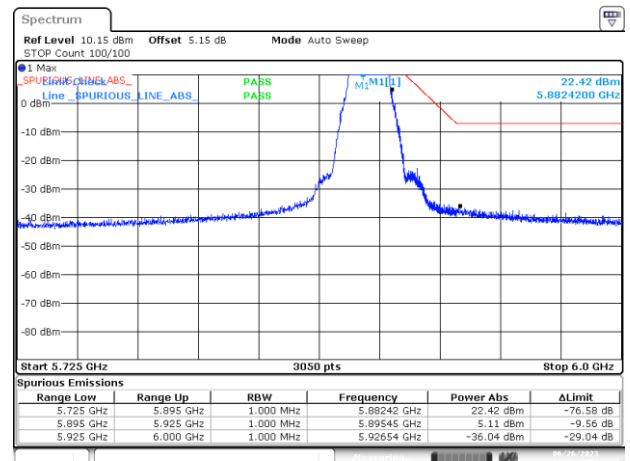
BE-NR-HIGH-PEAK, SISO-A, 802.11a20-6Mbps, Ch177



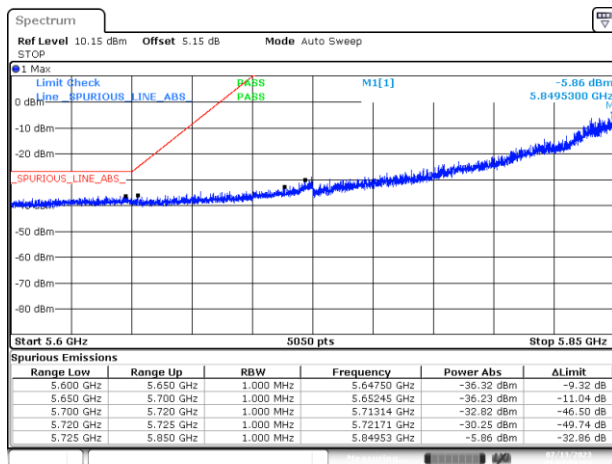
BE-NR-LOW, SISO-A, 802.11n20-HT0, Ch177



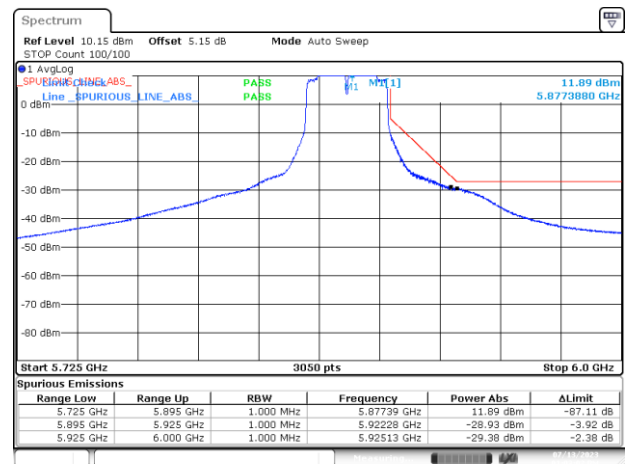
BE-NR-HIGH, SISO-A, 802.11n20-HT0, Ch177



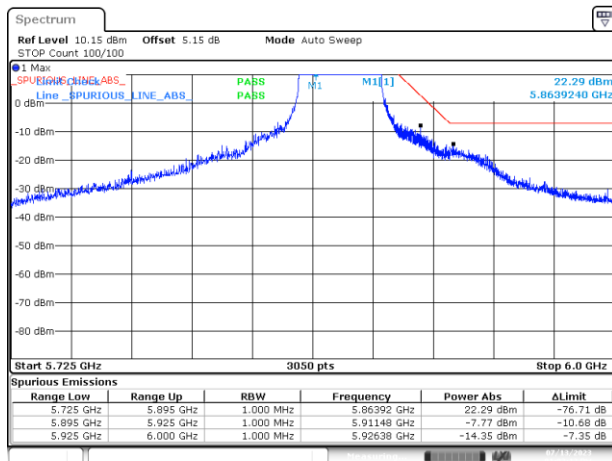
BE-NR-HIGH-PEAK, SISO-A, 802.11n20-HT0, Ch177



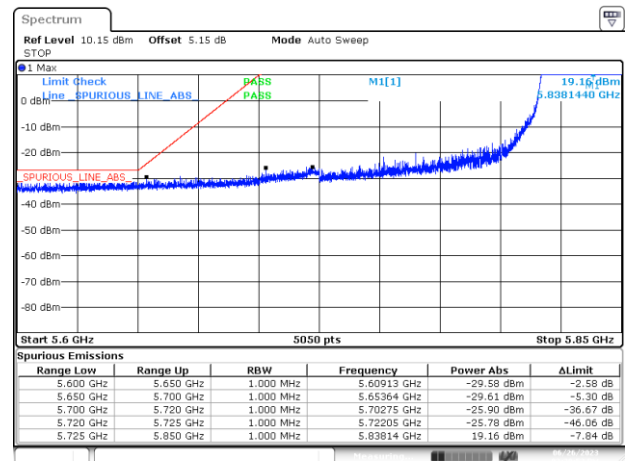
BE-NR-LOW, SISO-A, 802.11n40-HT0, Ch175



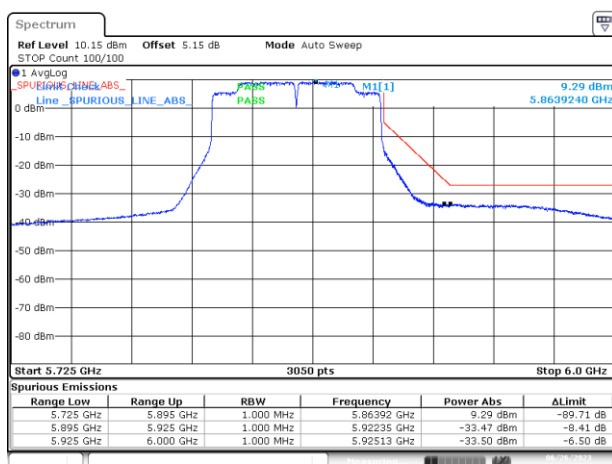
BE-NR-HIGH, SISO-A, 802.11n40-HT0, Ch175



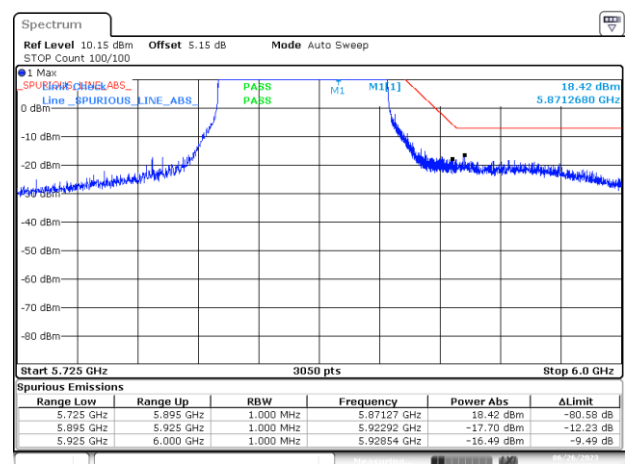
BE-NR-HIGH-PEAK, SISO-A, 802.11n40-HT0, Ch175



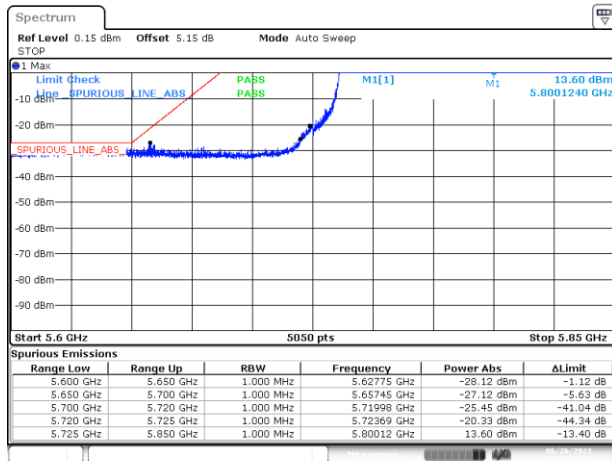
BE-NR-LOW, SISO-A, 802.11ac80-VHT0, Ch171



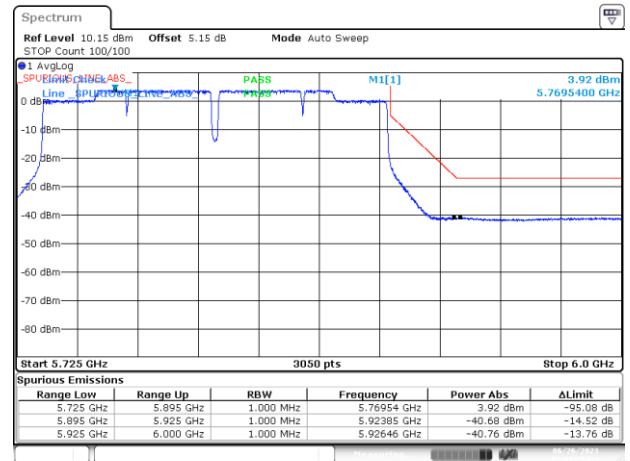
BE-NR-HIGH, SISO-A, 802.11ac80-VHT0, Ch171



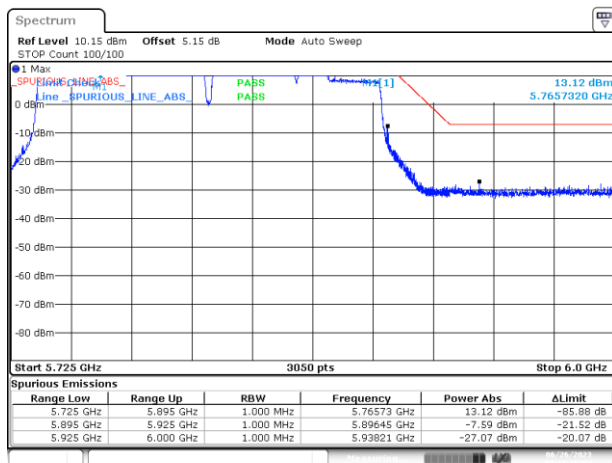
BE-NR-HIGH-PEAK, SISO-A, 802.11ac80-VHT0, Ch171



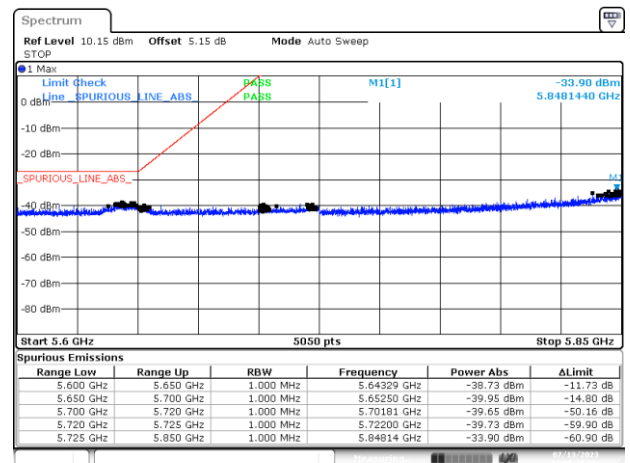
BE-NR-LOW, SISO-A, 802.11ac160-VHT0, Ch163



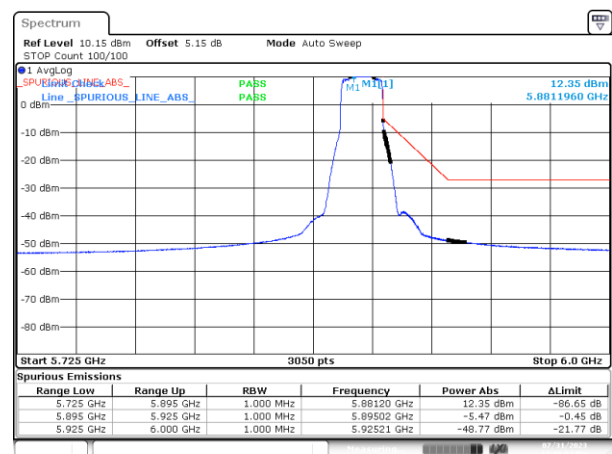
BE-NR-HIGH, SISO-A, 802.11ac160-VHT0, Ch163



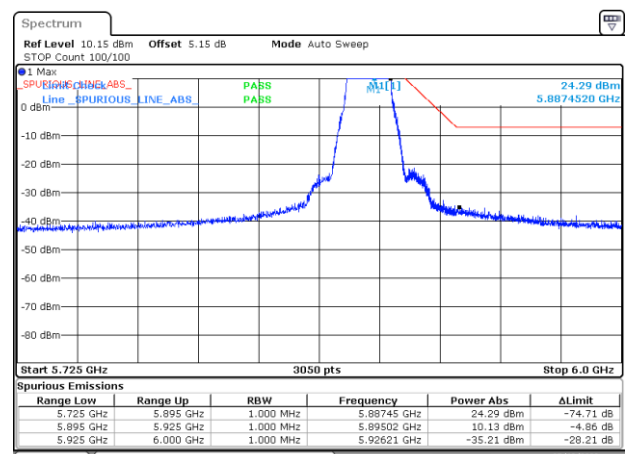
BE-NR-HIGH-PEAK, SISO-A, 802.11ac160-VHT0, Ch163



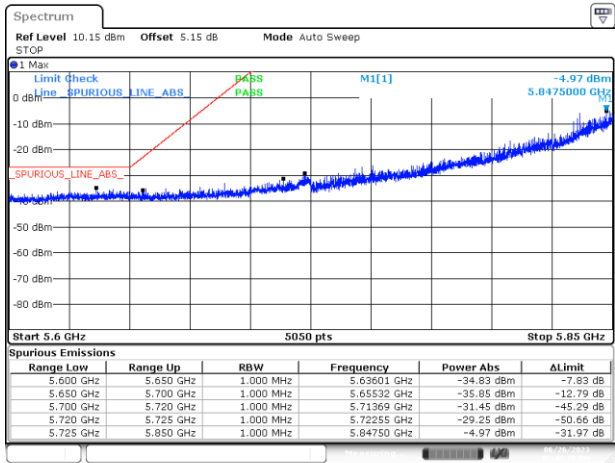
BE-NR-LOW, SISO-A, 802.11ax/be20-MCS0, Ch177



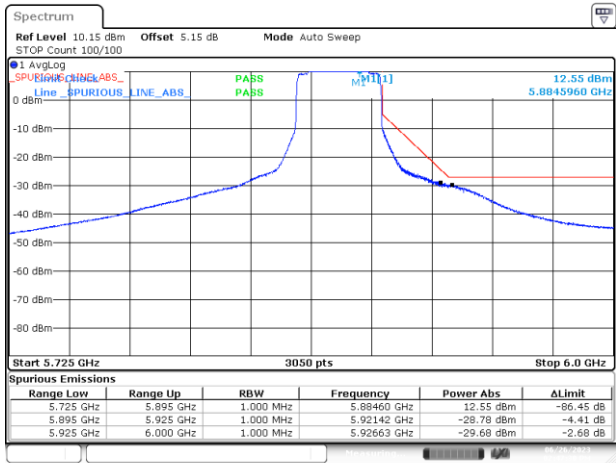
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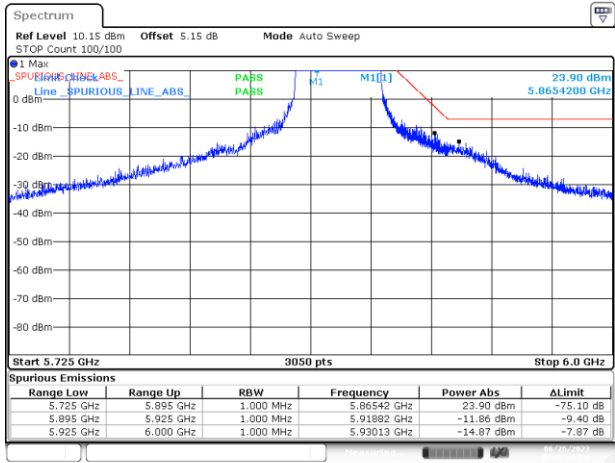
BE-NR-HIGH-PEAK, SISO-A, 802.11ax/be20-MCS0, Ch177



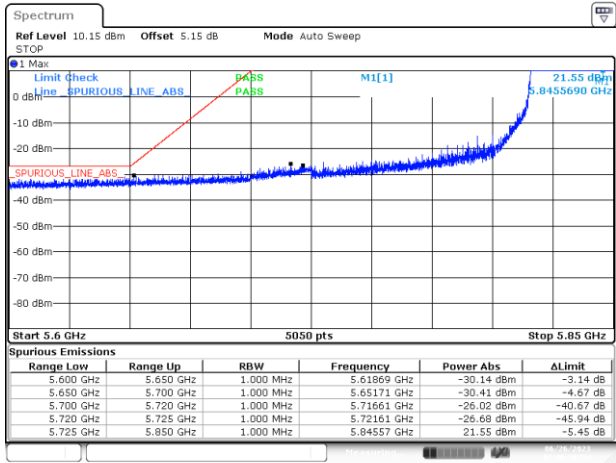
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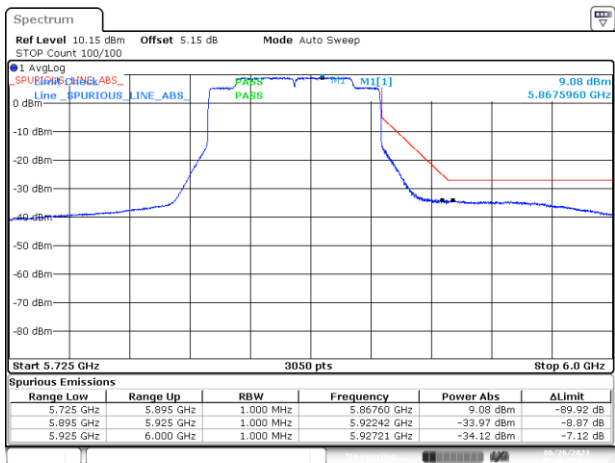
BE-NR-HIGH, SISO-A, 802.11ax/be40-MCS0, Ch175



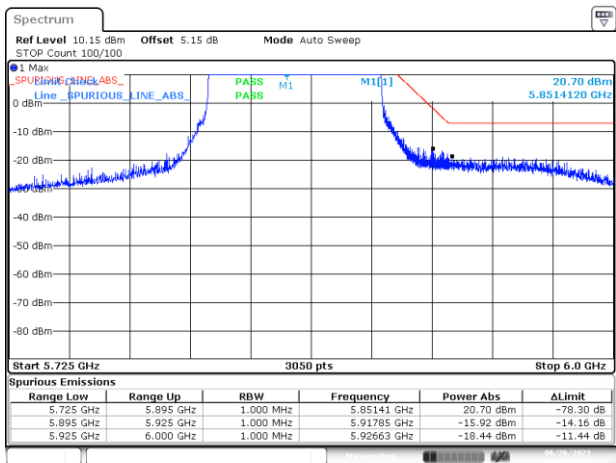
BE-NR-HIGH-PEAK, SISO-A, 802.11ax/be40-MCS0, Ch175



BE-NR-LOW, SISO-A, 802.11ax/be80-MCS0, Ch171



BE-NR-HIGH, SISO-A, 802.11ax/be80-MCS0, Ch171



BE-NR-HIGH-PEAK, SISO-A, 802.11ax/be80-MCS0, Ch171