

TEST REPORT

EUT Description	WLAN and BT, 2x2 PCIe M.2 2230 adapter card
Brand Name	Intel® Wi-Fi 6E AX210
Model Name	AX210NGW
FCC ID	PD9AX210NG
Date of Test Start/End	2020-07-20 /2020-08-06
Features	802.11ax, Dual Band, 2x2 Wi-Fi 6 + Bluetooth® 5.2 (see section 5)

Applicant	Intel Mobile Communications
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Reference Standards	FCC CFR Title 47 Part 15 E (see section 1)
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Test Report identification	200611-03.TR01
Revision Control	Rev. 01 This test report revision replaces any previous test report revision (see section 8)

The test results relate only to the samples tested.
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1. Standards, reference documents and applicable test methods

1. FCC Title 47 CFR part 15 – Subpart E – Unlicensed National Information Infrastructure Devices. 2019-10-01 Edition
2. FCC Title 47 CFR part 15 - Subpart C – §15.209 Radiated emission limits; general requirements. 2019-10-01 Edition
3. FCC OET KDB 789033 D02 v02r01 General U-NII Test Procedures New Rules – Guidelines for compliance testing of Unlicensed National Information Infrastructure (U-NII) Devices (Part 15, Subpart E).
4. FCC OET KDB 662911 D01 v02r01 - Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
5. ANSI C63.10-2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

2. General conditions, competences and guarantees

- ✓ 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 declines any responsibility with respect to the identified information provided by the customer and that may affect the validity of results.
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3. Environmental Conditions

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

Temperature	24.5°C ± 2°C
Humidity	59% ± 15%

4. Test samples

Sample	Control #	Description	Model	Serial #	Date of receipt	Note
#01	200611-03.S03	Module	AX210NGW	WFM:9C297662CA0A	2020-07-15	Used for 1-6.4 GHz RSE tests except sample#02
	170209-01.S16	Laptop	Dell Latitude E5470	C1HTPF2	2017-05-24	
	200226-02.S04	Extender	ADEXELEC	-	2020-04-30	
	200611-03.S13	Main Antenna	Skycross	-	2020-07-15	
	200611-03.S14	Aux Antenna	Skycross	-	2020-07-15	
#02	200611-03.S03	Module	AX210NGW	WFM:9C297662CA0A	2020-07-15	Used for 1-6.4 GHz RSE tests for the following configurations: 802.11n 20 ch48 Chain A, B, A+B 802.11ax 20 ch48 Chain A+B
	170000-01.S01	Laptop	Dell Latitude E5470	DBPLMC2	2017-03-28	
	200611-03.S26	Extender	ADEXELEC	416	2020-07-01	
	200611-03.S20	Main Antenna	Skycross	-	2020-07-01	
	200611-03.S21	Aux Antenna	Skycross	-	2020-07-01	
#03	200611-03.S01	Module	AX210NGW	WFM:9C297662CA5F	2020-07-15	Used for 30MHz – 1GHz & 18 – 26.5 GHz RSE tests
	200504-04.S07	Laptop	Latitude 5401	SN:BVHLK13	2020-06-02	
	200504-04.S07	Extender	-	-	2020-06-02	
	200611-03.S11	Main Antenna	Skycross	-	2020-07-15	
	200611-03.S12	Aux Antenna	Skycross	-	2020-07-15	
#04	200611-03.S03	Module	AX210NGW	WFM:9C297662CA0A	2020-07-15	Used for 6.4GHz –18 GHz RSE tests
	170000-01.S01	Laptop	Dell Latitude E5470	DBPLMC2	2017-03-28	
	200611-03.S26	Extender	ADEXELEC	416	2020-07-01	
	200611-03.S11	Main Antenna	Skycross	-	2020-07-15	
	200611-03.S12	Aux Antenna	Skycross	-	2020-07-15	
#05	200611-03.S10	Module	AX210NGW	WFM:9C297662C6BD	2020-07-15	RF Conducted
	170000-01.S02	Laptop	Latitude E5450	21HTPF2	2017-03-28	
	170524-01.S13	Extender	PCB00495	4955013-032	2017-05-29	

5. EUT Features

The herein information is provided by the customer

Brand Name	Intel® Wi-Fi 6E AX210		
Model Name	AX210NGW		
Software Version	DRTU version: OEM_DRTU_CommonApp_00830_99_3500_51W DRTU version: OEM_DRTU_CommonApp_01299_99_3500_51W used for 802.11ax RU test on output power and band edges measurements		
Driver Version	99.0.55.2 V0.13.2.15 99.0.55.2 V0.13.2.16 for used for 802.11ax RU test on output power and band edges measurements		
Prototype / Production	Production		
Supported Radios	802.11b/g/n/ax 2.4GHz (2400.0 – 2483.5 MHz) 802.11a/n/ac/ax 5.2GHz (5150.0 – 5350.0 MHz) 5.6GHz (5470.0 – 5725.0 MHz) 5.8GHz (5725.0 – 5895.0 MHz) Bluetooth 5.2 2.4GHz (2400.0 – 2483.5 MHz)		
Antenna Information	Transmitter	Chain A (Main)	Chain B (Aux)
	Manufacturer	SkyCross	Skycross
	Antenna type	PIFA antenna	PIFA antenna
	Part number	N/A	N/A
	Declared Antenna gain (dBi)	+5	+5
Document	Filename		Date of receipt
	Intel_Ref_Antenna data_HMC-M2 Ant_Spec_Universe_SkyCross Antenna		2013-01-28

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 802.11 mode and test case have been reported excepted for band edge measurements where all plots were 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 – U-NII-1

FCC part	Test name	Verdict
15.407 (a) (1)	Power Limits. Maximum output power	P
15.407 (a) (1)	Power spectral density	P
15.407 (b) (1) 15.209	Undesirable emissions limits: Band Edge (conducted)	P
15.407 (b) (1) 15.209	Undesirable emissions limits (radiated)	P

7.2. 802.11 a/n/ac/ax – U-NII-2A

FCC part	Test name	Verdict
15.407 (a) (2)	Power Limits. Maximum output power	P
15.407 (a) (2)	Power spectral density	P
15.407 (b) (2) 15.209	Undesirable emissions limits: Band Edge (conducted)	P
15.407 (b) (2) 15.209	Undesirable emissions limits (radiated)	P

P: Pass
F: Fail
NM: Not Measured
NA: Not Applicable

8. Document Revision History

Revision #	Modified by	Revision Details
Rev. 00	I.Kharrat	First Issue
Rev. 01	Z.OUACHICHA	Modification of EUT features section. Addition of frequency column on table results.

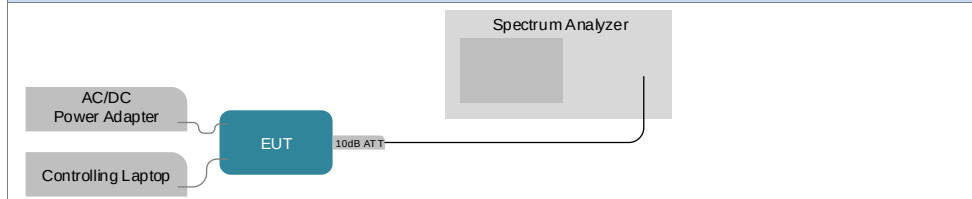
Annex A. Test & System Description

A.1 Measurement System

Measurements were performed using the following setups, made in accordance to the general provisions of FCC OET KDB 789033 D02 General UNII Test Procedures.

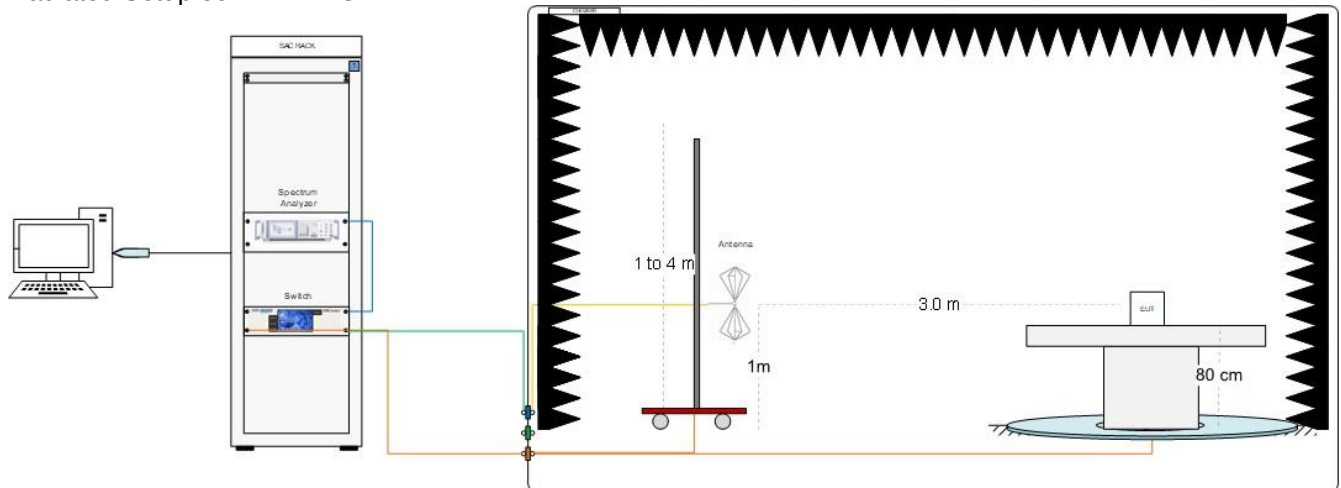
The DUT was installed in a test fixture and this test fixture is connected to a laptop computer and AC/DC power adapter. The laptop computer was used to configure the EUT to continuously transmit at a specified output power using all different modes and modulation schemes, using the Intel proprietary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

Conducted test setup

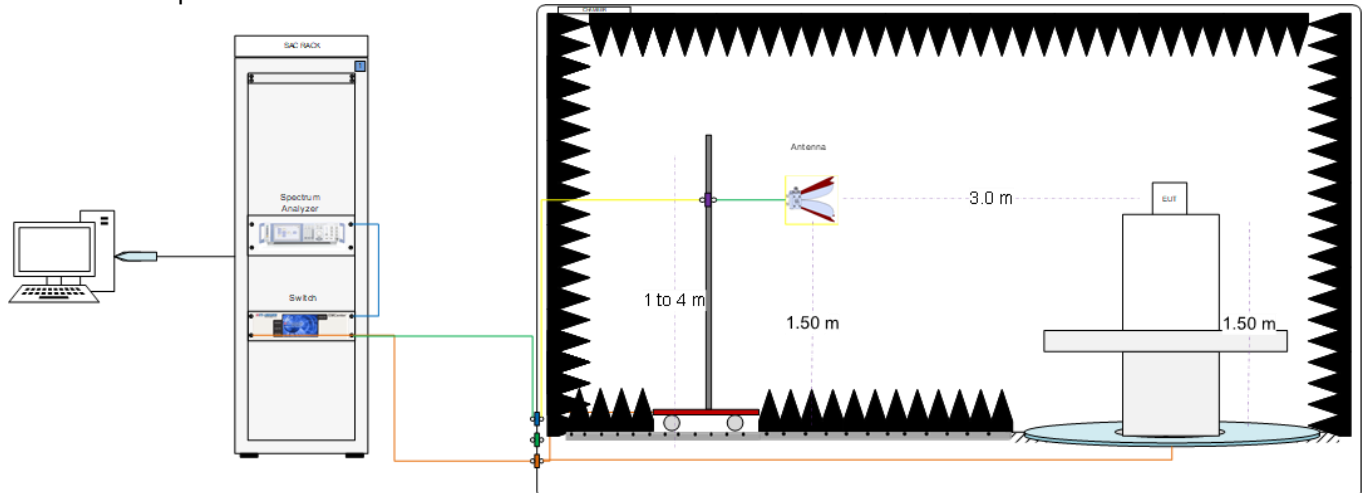


Radiated test setup

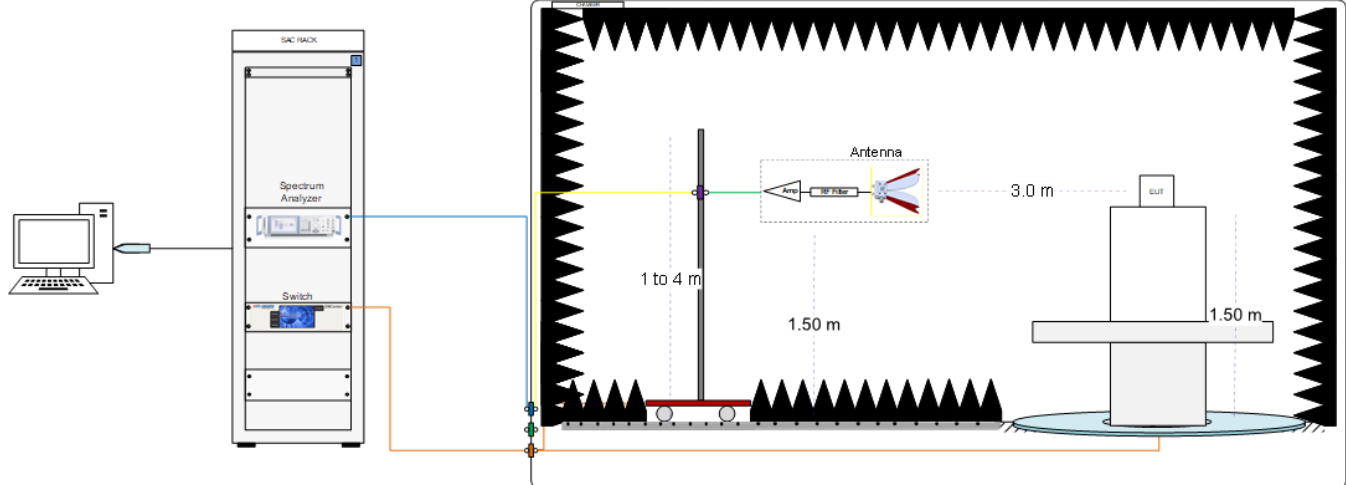
Radiated Setup 30 MHz - 1 GHz



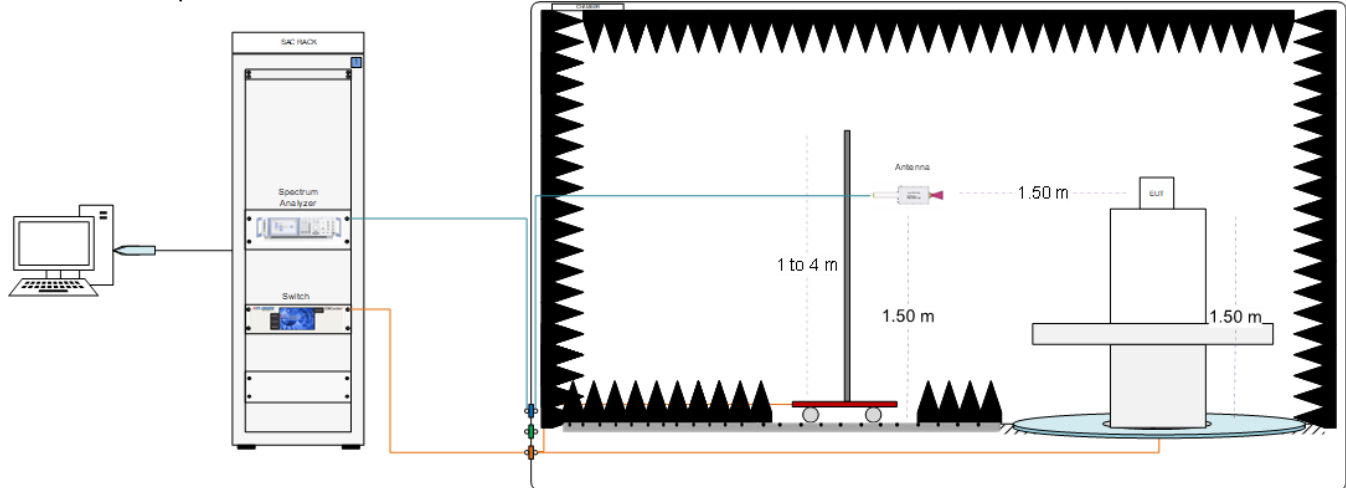
Radiated Setup 1 GHz – 6.4 GHz



Radiated Setup 6.4 GHz - 18 GHz



Radiated Setup 18 GHz – 40 GHz



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:

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

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

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
0316	Spectrum Analyzer	FSV30	103309	Rohde & Schwarz	2019-09-02	2021-09-02
0443	RF cable 100cm	Coax 2.92mm Male To 2.92mm Male	N/A	PASTERNAK	N/A	N/A
1044	10dB Attenuator + MH4	N/A	N/A	N/A	N/A	N/A
0583	Temp & Humidity Logger	RA12E-TH1-RAS	RA12-B9D6E	AVTECH	2019-09-06	2021-09-06
1002	Measurement SW v1.4.10.8	Octopi	N/A	Step AT	N/A	N/A

N/A: Not applicable

Radiated Setup #1

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
0135	Anechoic Chamber	FACT3	5720	ETS-Lindgren	2020-07-06	2022-07-06
0136	Turn Table	ETS	-	ETS-Lindgren	N/A	N/A
0147	Switch & Positioning systems	EMC Center	00159757	ETS-Lindgren	N/A	N/A
0420	Spectrum Analyzer	FSV40	101556	Rohde & Schwarz	2020-05-25	2022-05-25
0530	Measurement SW, v10.40.10	EMC32	100623	Rohde & Schwarz	N/A	N/A
0141	Horn Antenna 3117 + Amplifier + HPF6.4	3117	00157736	ETS-Lindgren	2020-04-01	2022-04-01
0334	Double-Ridged Waveguide Horn with Pre-Amplifier 18 GHz to 40 GHz	3116C+PA	00169308bis + 00196308	ETS-Lindgren	2019-07-24	2021-07-24
0202	Cable 1m - 30MHz to 18 GHz	UFB311A-0-3360-50U300	MFR 64639223229-001	Micro-coax	N/A	N/A
0206	Cable 1.2m – 18 to 40 GHz	UFA147A-0-0480-200200	MFR 64639223720-003	Micro-coax	N/A	N/A
0263	Cable 1m - 1GHz to 18GHz	UFA147A	-	Utilflex	N/A	N/A
0325	Horn antenna 3117	3117	00157734	ETS-Lindgren	2019-08-12	2021-08-12
0371	Cable 1m – 30 MHz - 18GHz	UFB311A-0-0590-50U50U	MFR 64639 223230-001	Micro-coax	N/A	N/A
0758	Cable 7.5m - 30MHz to 18GHz	0501051057000GX	18.23.181	Radiall	N/A	N/A
0797	Temp & Humidity Logger	RA12E-TH1-RAS	RA12-D0EB1A	Avtech	2019-07-04	2021-07-04
0809	Cable 7m - 18GHz to 40GHz	R286304009	-	Radiall	N/A	N/A
0859	Cable 2.5m - 30MHz to 18GHz	0500990992500KE	19.23.395	Radiall	N/A	N/A
0993	Biconical antenna 30 MHz – 1 GHz	UBAA9115 + BBVU9135 + DGA9552N	0286 + CH 9044	Schwarzbeck	2019-11-22	2021-11-22
1033	Boresight antenna mast	BAM 4.0-P	P/278/2890.01	Maturo	N/A	N/A

N/A: Not Applicable

Radiated Setup #2

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
0337	Anechoic chamber	RFD-FA-100	5996	ETS Lindgren	2020-07-06	2022-07-06
0238	Switch & Positioner	EMCenter	00151232	ETS Lindgren	N/A	N/A
0382	Antenna Tower	2171B-3.0M	00150123	ETS Lindgren	N/A	N/A
0383	Turntable	-	-	ETS Lindgren	N/A	N/A
0329	Measurement SW, v10.50.10	EMC32	100401	Rohde & Schwarz	N/A	N/A
0419	Spectrum Analyzer	FSW67	103266	Rohde & Schwarz	2019-02-04	2021-02-04
0133	Spectrum Analyzer	FSV40	101358	Rohde & Schwarz	2020-02-25	2022-02-25
0138	Double Ridge Horn (1- 18GHz)	3117	00152266	ETS Lindgren	2020-03-08	2022-03-08
0860	RF Cable 1-18GHz, 1.2 m	2301761761200PJ	12.22.1104	Radiall	N/A	N/A
0275	RF Cable 1-18GHz - 6.5m	140-8500-11-51	001	Spectrum	N/A	N/A
0684	RF Cable 1GHz-18GHz 1.5m	-	-	Spirent	N/A	N/A
0796	Temp & Humidity Logger	RA12E-TH1-RAS	RA12-D4F316	Avtech	2019-07-05	2021-07-05

N/A: Not Applicable

Shared Radiated Equipment

ID#	Device	Type/Model	Serial #	Manufacturer	Cal. Date	Cal. Due Date
0616	Power Sensor	NRP-Z81	104385	Rohde & Schwarz	2020-04-08	2022-04-08
0617	Power Sensor	NRP-Z81	104386	Rohde & Schwarz	2020-04-08	2022-04-08
0618	Power Sensor	NRP-Z81	104382	Rohde & Schwarz	2020-04-08	2022-04-08

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 Spurious Emission <26.5 GHz	± 2.90	dB
Radiated tests <1GHz	± 2.95	dB
Radiated tests 1GHz – 40 GHz	± 5.02	dB

Annex B. Test Results U-NII-1 & U-NII-2A

The herein test results were performed by:

Test case measurement	Test Engineer
26dB & 99% bandwidth	Cedric Requin
Power Limits. Maximum output power	Cedric Requin
Maximum power spectral density	Cedric Requin
Undesirable emissions limits: Out of band (conducted)	Cedric Requin
Undesirable emissions limits: spurious emissions (radiated)	R. Luciani N. Bui A. Lounes I. Kharrat N. Nachabe

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 & 802.11ax20 (20 MHz channel bandwidth), 802.11n40 & 802.11ax40 (40MHz channel bandwidth), 802.11ac80 & 802.11ax80 (80MHz channel bandwidth) and 802.11ac160 & 802.11ax160 (160MHz channel bandwidth) modes the EUT can transmit at both CHAIN A and CHAIN B RF outputs individually, and also simultaneously.

The conducted RF output power at each chain was adjusted according to the client's supplied target values (see following table) using the Intel DRTU tool and measuring the power by using a spectrum analyser with the channel integration method according to section II) E) 2) e) (Method SA-2 Alternative) of Guidance 789033 D02.

Measured values for adjustment were within +/- 0.25 dB from the declared target values.

UNII-1					Conducted Power, Target Value (dBm)		
Mode	BW (MHz)	Data Rate	CH #	Freq. (MHz)	SISO Chain A	SISO Chain B	MIMO at both ports A and B
802.11a	20	6Mbps	36	5180	19.75	19.50	-
			40	5200	21.50	21.00	-
			48	5240	21.50	21.00	-
802.11n	20	HT0 HT8*	36	5180	19.75	19.00	18.00
			40	5200	21.50	21.00	19.00
			48	5240	21.25	21.00	19.00
802.11n	40	HT0 HT8*	38	5190	18.00	17.75	17.00
			46	5230	21.00	20.75	20.25
802.11ac	80	VHT0	42	5210	19.00	19.00	15.50
802.11ac	160	VHT0	50	5250	15.75	15.50	13.50
802.11ax	20	HE0	36	5180	19.50	19.00	18.25
			40	5200	21.25	21.00	19.25
			48	5240	21.50	21.00	19.25
802.11ax	40	HE0	38	5190	17.75	17.00	16.75
			46	5230	21.25	20.50	20.25
802.11ax	80	HE0	42	5210	18.25	18.08	16.75
802.11ax	160	HE0	50	5250	15.50	15.25	14.25

* Note: HT8 for MIMO modes only

UNII-2A					Conducted Power, Target Value (dBm)		
Mode	BW (MHz)	Data Rate	CH #	Freq. (MHz)	SISO Chain A	SISO Chain B	MIMO at both ports A and B
802.11a	20	6Mbps	52	5260	21.50	21.25	-
			56	5280	21.50	21.25	-
			64	5320	20.00	20.00	-
802.11n	20	HT0 HT8*	52	5260	21.50	21.00	19.00
			56	5280	21.50	21.00	19.00
			64	5320	20.00	19.50	18.25
802.11n	40	HT0 HT8*	54	5270	21.50	20.25	19.00
			62	5310	18.00	17.25	17.00
802.11ac	80	VHT0	58	5290	18.25	18.00	16.50
802.11ax	20	HE0	52	5260	21.75	21.50	19.00
			56	5280	22.00	21.50	19.25
			64	5320	20.25	19.75	18.25
802.11ax	40	HE0	54	5270	21.75	21.50	19.00
			62	5310	17.75	16.75	16.75
802.11ax	80	HE0	58	5290	17.50	17.50	15.50

* Note: HT8 for MIMO modes only

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	VHT0
		160	VHT0
	802.11ax	20	HE0
		40	HE0
		80	HE0
		160	HE0
MIMO	802.11n	20/40	HT8
	802.11ac	80/160	VHT0
	802.11ax	20/40/80/160	HE0

Alternative channels to the lowest and highest channels per band have been also tested for Band Edge compliance.

B.2 Test Results Tables U-NII-1

B.2.1 26dB & 99% Bandwidth

Test procedure

The conducted setup shown in section *Test & System Description* was used to measure the 26dB & 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

Antenna	Mode	Channel	Frequency [MHz]	Rate	RU config.	26dB BW [MHz]	99% BW [MHz]
SISO A	802.11a	36	5180	6Mbps	NA	24.05	16.68
SISO A	802.11a	40	5200	6Mbps	NA	23.75	16.84
SISO A	802.11a	48	5240	6Mbps	NA	23.8	16.64
SISO A	802.11n20	36	5180	HT0	NA	23.95	17.68
SISO A	802.11n20	40	5200	HT0	NA	24.45	17.72
SISO A	802.11n20	48	5240	HT0	NA	24.75	17.76
SISO A	802.11n40	38F	5190	HT0	NA	43.56	36.16
SISO A	802.11n40	46F	5230	HT0	NA	44.46	36.16
SISO A	802.11ac80	42ac80	5210	VHT0	NA	88.16	75.24
SISO A	802.11ac160	50ac160	5250	VHT0	NA	163.68	153.2
SISO A	802.11ax20	36	5180	HE0	FullBW	24.65	19.04
SISO A	802.11ax20	36	5180	HE0	26/0	20.5	18.48
SISO A	802.11ax20	36	5180	HE0	52/37	21.7	18.44
SISO A	802.11ax20	36	5180	HE0	106/53	22.5	18.32
SISO A	802.11ax20	40	5200	HE0	FullBW	24.4	18.92
SISO A	802.11ax20	48	5240	HE0	FullBW	24.7	19.04
SISO A	802.11ax40	38F	5190	HE0	FullBW	42.39	37.6
SISO A	802.11ax40	38F	5190	HE0	242/61	28.89	18.8
SISO A	802.11ax40	46F	5230	HE0	FullBW	43.65	37.52
SISO A	802.11ax80	42ac80	5210	HE0	FullBW	84.55	76.68
SISO A	802.11ax80	42ac80	5210	HE0	484/65	49.02	37.8
SISO A	802.11ax160	50ac160	5250	HE0	FullBW	163.35	154.6
SISO A	802.11ax160	50ac160	5250	HE0	996/67	92.73	77
SISO A	802.11ax160	50ac160	5250	HE0	996/S67	93.06	77.2

Antenna	Mode	Channel	Frequency [MHz]	Rate	RU config.	26dB BW [MHz]	99% BW [MHz]
SISO B	802.11a	36	5180	6Mbps	NA	23.95	16.64
SISO B	802.11a	40	5200	6Mbps	NA	24.35	16.76
SISO B	802.11a	48	5240	6Mbps	NA	23.35	16.72
SISO B	802.11n20	36	5180	HT0	NA	24.3	17.68
SISO B	802.11n20	40	5200	HT0	NA	24.15	17.76
SISO B	802.11n20	48	5240	HT0	NA	24.6	17.8
SISO B	802.11n40	38F	5190	HT0	NA	42.75	36.08
SISO B	802.11n40	46F	5230	HT0	NA	44.82	36.08
SISO B	802.11ac80	42ac80	5210	VHT0	NA	87.02	75.12
SISO B	802.11ac160	50ac160	5250	VHT0	NA	163.68	153
SISO B	802.11ax20	36	5180	HE0	FullBW	24.05	18.88
SISO B	802.11ax20	36	5180	HE0	26/0	20.6	18.36

SISO B	802.11ax20	36	5180	HE0	52/37	20.75	18.4
SISO B	802.11ax20	36	5180	HE0	106/53	22.6	18.36
SISO B	802.11ax20	40	5200	HE0	FullBW	23.8	18.92
SISO B	802.11ax20	48	5240	HE0	FullBW	23.75	18.92
SISO B	802.11ax40	38F	5190	HE0	FullBW	43.38	37.44
SISO B	802.11ax40	38F	5190	HE0	242/61	26.91	18.96
SISO B	802.11ax40	46F	5230	HE0	FullBW	43.74	37.36
SISO B	802.11ax80	42ac80	5210	HE0	FullBW	83.6	76.8
SISO B	802.11ax80	42ac80	5210	HE0	484/65	49.78	37.8
SISO B	802.11ax16 0	50ac160	5250	HE0	FullBW	163.35	154.6
SISO B	802.11ax16 0	50ac160	5250	HE0	996/67	89.43	77
SISO B	802.11ax16 0	50ac160	5250	HE0	996/S67	92.4	77

Antenna	Mode	Channel	Frequency [MHz]	Rate	RU config.	26dB BW [MHz]	99% BW [MHz]
MIMO A	802.11n20	36	5180	HT8	NA	24.55	17.8
MIMO A	802.11n20	40	5200	HT8	NA	24.55	17.76
MIMO A	802.11n20	48	5240	HT8	NA	24.25	17.76
MIMO A	802.11n40	38F	5190	HT8	NA	43.74	36.08
MIMO A	802.11n40	46F	5230	HT8	NA	44.64	36.08
MIMO A	802.11ac80	42ac80	5210	VHT0	NA	86.64	75.12
MIMO A	802.11ac16 0	50ac160	5250	VHT0	NA	163.35	153
MIMO A	802.11ax20	36	5180	HE0	FullBW	24.7	18.88
MIMO A	802.11ax20	36	5180	HE0	26/0	20.35	18.2
MIMO A	802.11ax20	36	5180	HE0	52/37	20.95	18.32
MIMO A	802.11ax20	36	5180	HE0	106/53	22.05	18.28
MIMO A	802.11ax20	40	5200	HE0	FullBW	24.5	18.92
MIMO A	802.11ax20	48	5240	HE0	FullBW	24.35	18.96
MIMO A	802.11ax40	38F	5190	HE0	FullBW	43.02	37.52
MIMO A	802.11ax40	38F	5190	HE0	242/61	26.46	18.8
MIMO A	802.11ax40	46F	5230	HE0	FullBW	43.29	37.6
MIMO A	802.11ax80	42ac80	5210	HE0	FullBW	83.03	76.56
MIMO A	802.11ax80	42ac80	5210	HE0	484/65	49.59	37.8
MIMO A	802.11ax16 0	50ac160	5250	HE0	FullBW	163.35	154.6
MIMO A	802.11ax16 0	50ac160	5250	HE0	996/67	88.77	77.2
MIMO A	802.11ax16 0	50ac160	5250	HE0	996/S67	87.78	76.8

Antenna	Mode	Channel	Frequency [MHz]	Rate	RU config.	26dB BW [MHz]	99% BW [MHz]
MIMO B	802.11n20	36	5180	HT8	NA	23.8	17.72
MIMO B	802.11n20	40	5200	HT8	NA	23.6	17.68

MIMO B	802.11n20	48	5240	HT8	NA	23.95	17.72
MIMO B	802.11n40	38F	5190	HT8	NA	42.48	36.08
MIMO B	802.11n40	46F	5230	HT8	NA	42.66	36.16
MIMO B	802.11ac80	42ac80	5210	VHT0	NA	85.88	75
MIMO B	802.11ac160	50ac160	5250	VHT0	NA	163.35	152.8
MIMO B	802.11ax20	36	5180	HE0	FullBW	24.2	18.88
MIMO B	802.11ax20	36	5180	HE0	26/0	20.35	18.28
MIMO B	802.11ax20	36	5180	HE0	52/37	20.8	18.28
MIMO B	802.11ax20	36	5180	HE0	106/53	20.75	18.16
MIMO B	802.11ax20	40	5200	HE0	FullBW	22.8	18.88
MIMO B	802.11ax20	48	5240	HE0	FullBW	23.4	18.92
MIMO B	802.11ax40	38F	5190	HE0	FullBW	42.48	37.68
MIMO B	802.11ax40	38F	5190	HE0	242/61	27	18.72
MIMO B	802.11ax40	46F	5230	HE0	FullBW	43.11	37.44
MIMO B	802.11ax80	42ac80	5210	HE0	FullBW	83.41	76.56
MIMO B	802.11ax80	42ac80	5210	HE0	484/65	48.64	37.68
MIMO B	802.11ax160	50ac160	5250	HE0	FullBW	163.68	154.6
MIMO B	802.11ax160	50ac160	5250	HE0	996/67	88.77	77
MIMO B	802.11ax160	50ac160	5250	HE0	996/S67	90.09	77

Max Value

See Section B.4.1 and Section B.4.2 for the screenshot results.

B.2.2 Power Limits. Maximum Output power & Maximum power spectral density

Test limits

FCC part	Limits
15.407 (a) (1) (iv)	For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test procedure

The Maximum Conducted Output Power was measured using the channel integration method according to section E) 2) e) (Method SA-2 Alternative) of FCC OET KDB 789033 D02

The maximum power spectral density (PSD) was measured using the method according to section F) (Method SA-2 Alternative) of FCC OET KDB 789033 D02

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 declared maximum antenna gain is +5dBi.

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	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
802.11a	6Mbps	SISO A	2.08	2.14	96.95%
		SISO B	2.08	2.14	96.95%
802.11n20	HT0	SISO A	3.97	4.03	98.60%
		SISO B	3.97	4.03	98.60%
	HT8	MIMO A	3.97	4.03	98.51%
		MIMO B	3.97	4.03	98.51%
802.11ax20	HE0	SISO A	3.95	4.01	98.48%
		SISO B	3.95	4.01	98.48%
		MIMO A	3.95	4.01	98.54%
		MIMO B	3.95	4.01	98.54%
802.11n40	HT0	SISO A	3.94	4.02	98.01%
		SISO B	3.94	4.02	98.01%
	HT8	MIMO A	3.93	4.02	97.82%
		MIMO B	3.93	4.02	97.82%
802.11ax40	HE0	SISO A	3.93	4.00	98.32%
		SISO B	3.93	4.00	98.32%
		MIMO A	3.94	4.01	98.21%
		MIMO B	3.94	4.01	98.21%
802.11ac80	VHT0	SISO A	3.95	4.01	98.46%
		SISO B	3.95	4.01	98.46%
		MIMO A	3.94	4.01	98.32%
		MIMO B	3.94	4.01	98.32%
802.11ax80	HE0	SISO A	3.94	4.04	97.62%
		SISO B	3.94	4.04	97.62%
		MIMO A	3.94	4.01	98.32%
		MIMO B	3.94	4.01	98.32%
802.11ac160	VTH0	SISO A	3.96	4.01	98.73%
		SISO B	3.96	4.01	98.73%
		MIMO A	2.25	2.33	96.84%
		MIMO B	2.25	2.33	96.84%
802.11ax160	HE0	SISO A	3.93	4.01	98.00%
		SISO B	3.93	4.01	98.00%
		MIMO A	2.25	2.33	96.84%
		MIMO B	2.25	2.33	96.84%

Maximum output power

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Average Conducte d Ouput Power [dBm]	Avg Max* Conducte d Ouput Power [dBm]	Avg Max*. EIRP [dBm]	Avg Max* Conducte d Power [mW]
SISO A	802.11a20	36	5180	6Mbps	NA	19.76	19.89	24.89	97.50
SISO A	802.11a20	40	5200	6Mbps	NA	21.51	21.64	26.64	145.88
SISO A	802.11a20	48	5240	6Mbps	NA	21.40	21.53	26.53	142.23
SISO A	802.11n20	36	5180	HT0	NA	19.75	19.75	24.75	94.41
SISO A	802.11n20	40	5200	HT0	NA	21.45	21.45	26.45	139.64
SISO A	802.11n20	48	5240	HT0	NA	21.29	21.29	26.29	134.59
SISO A	802.11n40	38	5190	HT0	NA	17.89	17.89	22.89	61.52
SISO A	802.11n40	46	5230	HT0	NA	21.08	21.08	26.08	128.23
SISO A	802.11ac80	42	5210	VHT0	NA	19.06	19.06	24.06	80.54
SISO A	802.11ac160	50	5250	VHT0	NA	15.78	15.78	20.78	37.84
SISO A	802.11ax20	36	5180	HE0	FullBW	19.55	19.55	24.55	90.16
SISO A	802.11ax20	36	5180	HE0	26/0	13.15	13.15	18.15	20.66
SISO A	802.11ax20	36	5180	HE0	52/37	17.00	17.00	22.00	50.12
SISO A	802.11ax20	36	5180	HE0	106/53	19.93	19.93	24.93	98.40
SISO A	802.11ax20	40	5200	HE0	FullBW	21.26	21.26	26.26	133.66
SISO A	802.11ax20	48	5240	HE0	FullBW	21.49	21.49	26.49	140.93
SISO A	802.11ax40	38	5190	HE0	FullBW	17.72	17.72	22.72	59.16
SISO A	802.11ax40	38	5190	HE0	242/61	18.80	18.80	23.80	75.86
SISO A	802.11ax40	46	5230	HE0	FullBW	21.21	21.21	26.21	132.13
SISO A	802.11ax80	42	5210	HE0	FullBW	18.07	18.17	23.17	65.61
SISO A	802.11ax80	42	5210	HE0	484/65	13.61	13.71	18.71	23.50
SISO A	802.11ax160	50	5250	HE0	FullBW	15.57	15.66	20.66	36.81
SISO A	802.11ax160	50	5250	HE0	996/67	16.17	16.26	21.26	42.27
SISO A	802.11ax160	50	5250	HE0	996/S67	15.34	15.43	20.43	34.91

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Average Conducte d Ouput Power [dBm]	Avg Max* Conducte d Ouput Power [dBm]	Avg Max*. EIRP [dBm]	Avg Max* Conducte d Power [mW]
SISO B	802.11a20	36	5180	6Mbps	NA	19.38	19.51	24.51	89.33
SISO B	802.11a20	40	5200	6Mbps	NA	21.09	21.22	26.22	132.43
SISO B	802.11a20	48	5240	6Mbps	NA	21.05	21.18	26.18	131.22
SISO B	802.11n20	36	5180	HT0	NA	18.85	18.85	23.85	76.74
SISO B	802.11n20	40	5200	HT0	NA	21.00	21.00	26.00	125.89
SISO B	802.11n20	48	5240	HT0	NA	21.00	21.00	26.00	125.89
SISO B	802.11n40	38	5190	HT0	NA	17.63	17.63	22.63	57.94
SISO B	802.11n40	46	5230	HT0	NA	20.65	20.65	25.65	116.14
SISO B	802.11ac80	42	5210	VHT0	NA	18.80	18.80	23.80	75.86
SISO B	802.11ac160	50	5250	VHT0	NA	15.38	15.38	20.38	34.51
SISO B	802.11ax20	36	5180	HE0	FullBW	19.12	19.12	24.12	81.66
SISO B	802.11ax20	36	5180	HE0	26/0	13.96	13.96	18.96	24.90
SISO B	802.11ax20	36	5180	HE0	52/37	16.81	16.81	21.81	47.97
SISO B	802.11ax20	36	5180	HE0	106/53	19.59	19.59	24.59	90.99
SISO B	802.11ax20	40	5200	HE0	FullBW	20.83	20.83	25.83	121.06
SISO B	802.11ax20	48	5240	HE0	FullBW	21.03	21.03	26.03	126.77
SISO B	802.11ax40	38	5190	HE0	FullBW	16.77	16.77	21.77	47.53
SISO B	802.11ax40	38	5190	HE0	242/61	18.18	18.18	23.18	65.77
SISO B	802.11ax40	46	5230	HE0	FullBW	20.41	20.41	25.41	109.90
SISO B	802.11ax80	42	5210	HE0	FullBW	18.08	18.18	23.18	65.77
SISO B	802.11ax80	42	5210	HE0	484/65	13.03	13.13	18.13	20.56
SISO B	802.11ax160	50	5250	HE0	FullBW	15.20	15.29	20.29	33.81
SISO B	802.11ax160	50	5250	HE0	996/67	14.66	14.75	19.75	29.85
SISO B	802.11ax160	50	5250	HE0	996/S67	13.98	14.07	19.07	25.53

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Average Conducted Output Power [dBm]	Avg Max* Conducted Output Power [dBm]	Avg Max*. EIRP [dBm]	Avg Max* Conducted Power [mW]
MIMO A	802.11n20	36	5180	HT8	NA	18.01	18.01	23.01	63.24
MIMO A	802.11n20	40	5200	HT8	NA	18.87	18.87	23.87	77.16
MIMO A	802.11n20	48	5240	HT8	NA	18.97	18.97	23.97	78.75
MIMO A	802.11n40	38	5190	HT8	NA	16.94	17.04	22.04	50.58
MIMO A	802.11n40	46	5230	HT8	NA	20.18	20.28	25.28	106.66
MIMO A	802.11ac80	42	5210	VHT0	NA	15.61	15.61	20.61	36.39
MIMO A	802.11ac160	50	5250	VHT0	NA	13.54	13.68	18.68	23.33
MIMO A	802.11ax20	36	5180	HE0	FullBW	18.13	18.13	23.13	65.01
MIMO A	802.11ax20	36	5180	HE0	26/0	10.24	10.24	15.24	10.56
MIMO A	802.11ax20	36	5180	HE0	52/37	14.07	14.07	19.07	25.55
MIMO A	802.11ax20	36	5180	HE0	106/53	12.09	12.09	17.09	16.18
MIMO A	802.11ax20	40	5200	HE0	FullBW	19.27	19.27	24.27	84.47
MIMO A	802.11ax20	48	5240	HE0	FullBW	19.16	19.16	24.16	82.39
MIMO A	802.11ax40	38	5190	HE0	FullBW	16.88	16.88	21.88	48.75
MIMO A	802.11ax40	38	5190	HE0	242/61	16.37	16.37	21.37	43.35
MIMO A	802.11ax40	46	5230	HE0	FullBW	20.32	20.32	25.32	107.65
MIMO A	802.11ax80	42	5210	HE0	FullBW	16.68	16.68	21.68	46.56
MIMO A	802.11ax80	42	5210	HE0	484/65	13.25	13.25	18.25	21.13
MIMO A	802.11ax160	50	5250	HE0	FullBW	14.14	14.28	19.28	26.79
MIMO A	802.11ax160	50	5250	HE0	996/67	14.74	14.88	19.88	30.76
MIMO A	802.11ax160	50	5250	HE0	996/S67	14.68	14.82	19.82	30.34

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Average Conducted Output Power [dBm]	Avg Max* Conducted Output Power [dBm]	Avg Max*. EIRP [dBm]	Avg Max* Conducted Power [mW]
MIMO B	802.11n20	36	5180	HT8	NA	17.44	17.44	22.44	55.46
MIMO B	802.11n20	40	5200	HT8	NA	18.98	18.98	23.98	79.08
MIMO B	802.11n20	48	5240	HT8	NA	18.79	18.79	23.79	75.73
MIMO B	802.11n40	38	5190	HT8	NA	16.34	16.44	21.44	44.06
MIMO B	802.11n40	46	5230	HT8	NA	19.50	19.60	24.60	91.20
MIMO B	802.11ac80	42	5210	VHT0	NA	15.97	15.97	20.97	39.54
MIMO B	802.11ac160	50	5250	VHT0	NA	13.29	13.43	18.43	22.03
MIMO B	802.11ax20	36	5180	HE0	FullBW	17.43	17.43	22.43	55.34
MIMO B	802.11ax20	36	5180	HE0	26/0	11.23	11.23	16.23	13.27
MIMO B	802.11ax20	36	5180	HE0	52/37	14.01	14.01	19.01	25.18
MIMO B	802.11ax20	36	5180	HE0	106/53	12.30	12.30	17.30	16.98
MIMO B	802.11ax20	40	5200	HE0	FullBW	19.03	19.03	24.03	79.98
MIMO B	802.11ax20	48	5240	HE0	FullBW	19.22	19.22	24.22	83.63
MIMO B	802.11ax40	38	5190	HE0	FullBW	13.66	13.66	18.66	23.23
MIMO B	802.11ax40	38	5190	HE0	242/61	13.60	13.60	18.60	22.91
MIMO B	802.11ax40	46	5230	HE0	FullBW	19.61	19.61	24.61	91.41
MIMO B	802.11ax80	42	5210	HE0	FullBW	16.35	16.35	21.35	43.15
MIMO B	802.11ax80	42	5210	HE0	484/65	12.56	12.56	17.56	18.03
MIMO B	802.11ax160	50	5250	HE0	FullBW	13.64	13.78	18.78	23.88
MIMO B	802.11ax160	50	5250	HE0	996/67	14.60	14.74	19.74	29.79
MIMO B	802.11ax160	50	5250	HE0	996/S67	14.64	14.78	19.78	30.06

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Average Conducted Output Power [dBm]	Avg Max* Conducted Output Power [dBm]	Avg Max*. EIRP [dBm]	Avg Max* Conducted Power [mW]
Combined A+B	802.11n20	36	5180	HT8	NA	20.74	20.74	25.74	118.70
Combined A+B	802.11n20	40	5200	HT8	NA	21.94	21.94	26.94	156.16
Combined A+B	802.11n20	48	5240	HT8	NA	21.89	21.89	26.89	154.57
Combined A+B	802.11n40	38	5190	HT8	NA	19.66	19.76	24.76	94.64
Combined A+B	802.11n40	46	5230	HT8	NA	22.86	22.96	27.96	197.86
Combined A+B	802.11ac80	42	5210	VHT0	NA	18.80	18.80	23.80	75.93
Combined A+B	802.11ac160	50	5250	VHT0	NA	16.43	16.57	21.57	45.36
Combined A+B	802.11ax20	36	5180	HE0	FullBW	20.80	20.80	25.80	120.35
Combined A+B	802.11ax20	36	5180	HE0	26/0	13.77	13.77	18.77	23.84
Combined A+B	802.11ax20	36	5180	HE0	52/37	17.05	17.05	22.05	50.70
Combined A+B	802.11ax20	36	5180	HE0	106/53	15.21	15.21	20.21	33.16
Combined A+B	802.11ax20	40	5200	HE0	FullBW	22.16	22.16	27.16	164.51
Combined A+B	802.11ax20	48	5240	HE0	FullBW	22.20	22.20	27.20	165.97
Combined A+B	802.11ax40	38	5190	HE0	FullBW	18.57	18.57	23.57	71.98
Combined A+B	802.11ax40	38	5190	HE0	242/61	18.21	18.21	23.21	66.26
Combined A+B	802.11ax40	46	5230	HE0	FullBW	22.99	22.99	27.99	199.06
Combined A+B	802.11ax80	42	5210	HE0	FullBW	19.53	19.53	24.53	89.71
Combined A+B	802.11ax80	42	5210	HE0	484/65	15.93	15.93	20.93	39.17
Combined A+B	802.11ax160	50	5250	HE0	FullBW	16.91	17.05	22.05	50.67
Combined A+B	802.11ax160	50	5250	HE0	996/67	17.68	17.82	22.82	60.55
Combined A+B	802.11ax160	50	5250	HE0	996/S67	17.67	17.81	22.81	60.40

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

Max Value

Min Value

Maximum power spectral Density (PSD)

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Average conducted PSD [dBm/MHz]	Maximum* conducted PSD [dBm/MHz]
SISO A	802.11a20	36	5180	6Mbps	NA	8.95	9.08
SISO A	802.11a20	40	5200	6Mbps	NA	10.70	10.83
SISO A	802.11a20	48	5240	6Mbps	NA	10.60	10.73
SISO A	802.11n20	36	5180	HT0	NA	8.75	8.75
SISO A	802.11n20	40	5200	HT0	NA	10.46	10.46
SISO A	802.11n20	48	5240	HT0	NA	10.29	10.29
SISO A	802.11n40	38	5190	HT0	NA	3.46	3.46
SISO A	802.11n40	46	5230	HT0	NA	6.61	6.61
SISO A	802.11ac80	42	5210	VHT0	NA	1.59	1.59
SISO A	802.11ac160	50	5250	VHT0	NA	-4.60	-4.60
SISO A	802.11ax20	36	5180	HE0	FullBW	8.34	8.34
SISO A	802.11ax20	36	5180	HE0	26/0	10.02	10.02
SISO A	802.11ax20	36	5180	HE0	52/37	10.91	10.91
SISO A	802.11ax20	36	5180	HE0	106/53	10.88	10.88
SISO A	802.11ax20	40	5200	HE0	FullBW	10.07	10.07
SISO A	802.11ax20	48	5240	HE0	FullBW	10.30	10.30
SISO A	802.11ax40	38	5190	HE0	FullBW	3.14	3.14
SISO A	802.11ax40	38	5190	HE0	242/61	7.54	7.54
SISO A	802.11ax40	46	5230	HE0	FullBW	6.57	6.57
SISO A	802.11ax80	42	5210	HE0	FullBW	0.48	0.58
SISO A	802.11ax80	42	5210	HE0	484/65	-0.76	-0.66
SISO A	802.11ax160	50	5250	HE0	FullBW	-4.89	-4.80
SISO A	802.11ax160	50	5250	HE0	996/67	-1.42	-1.33
SISO A	802.11ax160	50	5250	HE0	996/S67	-2.17	-2.08

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Average conducted PSD [dBm/MHz]	Maximum* conducted PSD [dBm/MHz]
SISO B	802.11a20	36	5180	6Mbps	NA	8.60	8.73
SISO B	802.11a20	40	5200	6Mbps	NA	10.27	10.4
SISO B	802.11a20	48	5240	6Mbps	NA	10.22	10.35
SISO B	802.11n20	36	5180	HT0	NA	7.84	7.84
SISO B	802.11n20	40	5200	HT0	NA	9.99	9.99
SISO B	802.11n20	48	5240	HT0	NA	9.97	9.97
SISO B	802.11n40	38	5190	HT0	NA	3.16	3.16
SISO B	802.11n40	46	5230	HT0	NA	6.21	6.21
SISO B	802.11ac80	42	5210	VHT0	NA	1.28	1.28
SISO B	802.11ac160	50	5250	VHT0	NA	-4.99	-4.99
SISO B	802.11ax20	36	5180	HE0	FullBW	7.92	7.92
SISO B	802.11ax20	36	5180	HE0	26/0	10.92	10.92
SISO B	802.11ax20	36	5180	HE0	52/37	10.74	10.74
SISO B	802.11ax20	36	5180	HE0	106/53	10.54	10.54
SISO B	802.11ax20	40	5200	HE0	FullBW	9.62	9.62
SISO B	802.11ax20	48	5240	HE0	FullBW	9.80	9.80
SISO B	802.11ax40	38	5190	HE0	FullBW	2.14	2.14
SISO B	802.11ax40	38	5190	HE0	242/61	6.93	6.93
SISO B	802.11ax40	46	5230	HE0	FullBW	5.76	5.76
SISO B	802.11ax80	42	5210	HE0	FullBW	0.49	0.59
SISO B	802.11ax80	42	5210	HE0	484/65	-1.36	-1.26
SISO B	802.11ax160	50	5250	HE0	FullBW	-5.26	-5.17
SISO B	802.11ax160	50	5250	HE0	996/67	-2.86	-2.77
SISO B	802.11ax160	50	5250	HE0	996/S67	-3.47	-3.38

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Average conducted PSD [dBm/MHz]	Maximum* conducted PSD [dBm/MHz]
MIMO A	802.11n20	36	5180	HT8	NA	7.00	7.00
MIMO A	802.11n20	40	5200	HT8	NA	7.85	7.85
MIMO A	802.11n20	48	5240	HT8	NA	7.95	7.95
MIMO A	802.11n40	38	5190	HT8	NA	2.56	2.66
MIMO A	802.11n40	46	5230	HT8	NA	5.73	5.83
MIMO A	802.11ac80	42	5210	VHT0	NA	-1.89	-1.89
MIMO A	802.11ac160	50	5250	VHT0	NA	-6.83	-6.69
MIMO A	802.11ax20	36	5180	HE0	FullBW	6.93	6.93
MIMO A	802.11ax20	36	5180	HE0	26/0	7.19	7.19
MIMO A	802.11ax20	36	5180	HE0	52/37	7.99	7.99
MIMO A	802.11ax20	36	5180	HE0	106/53	3.09	3.09
MIMO A	802.11ax20	40	5200	HE0	FullBW	8.07	8.07
MIMO A	802.11ax20	48	5240	HE0	FullBW	7.94	7.94
MIMO A	802.11ax40	38	5190	HE0	FullBW	2.34	2.34
MIMO A	802.11ax40	38	5190	HE0	242/61	5.23	5.23
MIMO A	802.11ax40	46	5230	HE0	FullBW	5.67	5.67
MIMO A	802.11ax80	42	5210	HE0	FullBW	-0.91	-0.91
MIMO A	802.11ax80	42	5210	HE0	484/65	-1.15	-1.15
MIMO A	802.11ax160	50	5250	HE0	FullBW	-6.36	-6.22
MIMO A	802.11ax160	50	5250	HE0	996/67	-2.76	-2.62
MIMO A	802.11ax160	50	5250	HE0	996/S67	-2.82	-2.68

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Average conducted PSD [dBm/MHz]	Maximum* conducted PSD [dBm/MHz]
MIMO B	802.11n20	36	5180	HT8	NA	6.50	6.50
MIMO B	802.11n20	40	5200	HT8	NA	7.97	7.97
MIMO B	802.11n20	48	5240	HT8	NA	7.77	7.77
MIMO B	802.11n40	38	5190	HT8	NA	1.90	2.00
MIMO B	802.11n40	46	5230	HT8	NA	5.02	5.12
MIMO B	802.11ac80	42	5210	VHT0	NA	-1.44	-1.44
MIMO B	802.11ac160	50	5250	VHT0	NA	-7.09	-6.95
MIMO B	802.11ax20	36	5180	HE0	FullBW	6.22	6.22
MIMO B	802.11ax20	36	5180	HE0	26/0	8.27	8.27
MIMO B	802.11ax20	36	5180	HE0	52/37	7.90	7.90
MIMO B	802.11ax20	36	5180	HE0	106/53	3.29	3.29
MIMO B	802.11ax20	40	5200	HE0	FullBW	7.81	7.81
MIMO B	802.11ax20	48	5240	HE0	FullBW	8.01	8.01
MIMO B	802.11ax40	38	5190	HE0	FullBW	-0.92	-0.92
MIMO B	802.11ax40	38	5190	HE0	242/61	-0.95	-0.95
MIMO B	802.11ax40	46	5230	HE0	FullBW	4.97	4.97
MIMO B	802.11ax80	42	5210	HE0	FullBW	-1.13	-1.13
MIMO B	802.11ax80	42	5210	HE0	484/65	-1.90	-1.90
MIMO B	802.11ax160	50	5250	HE0	FullBW	-6.82	-6.68
MIMO B	802.11ax160	50	5250	HE0	996/67	-3.02	-2.88
MIMO B	802.11ax160	50	5250	HE0	996/S67	-2.91	-2.77

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Combined Maximum* conducted PSD [dBm/MHz]
Combined A+B	802.11n20	36	5180	HT8	NA	9.77
Combined A+B	802.11n20	40	5200	HT8	NA	10.92
Combined A+B	802.11n20	48	5240	HT8	NA	10.87
Combined A+B	802.11n40	38	5190	HT8	NA	5.35
Combined A+B	802.11n40	46	5230	HT8	NA	8.50
Combined A+B	802.11ac80	42	5210	VHT0	NA	1.35
Combined A+B	802.11ac160	50	5250	VHT0	NA	-3.81
Combined A+B	802.11ax20	36	5180	HE0	FullBW	9.60
Combined A+B	802.11ax20	36	5180	HE0	26/0	10.77
Combined A+B	802.11ax20	36	5180	HE0	52/37	10.96
Combined A+B	802.11ax20	36	5180	HE0	106/53	6.20
Combined A+B	802.11ax20	40	5200	HE0	FullBW	10.95
Combined A+B	802.11ax20	48	5240	HE0	FullBW	10.99
Combined A+B	802.11ax40	38	5190	HE0	FullBW	4.02
Combined A+B	802.11ax40	38	5190	HE0	242/61	6.17
Combined A+B	802.11ax40	46	5230	HE0	FullBW	8.34
Combined A+B	802.11ax80	42	5210	HE0	FullBW	1.99
Combined A+B	802.11ax80	42	5210	HE0	484/65	1.50
Combined A+B	802.11ax160	50	5250	HE0	FullBW	-3.43
Combined A+B	802.11ax160	50	5250	HE0	996/67	0.26
Combined A+B	802.11ax160	50	5250	HE0	996/S67	0.29

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

See Section B.4.3 for the screenshot results.

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

Test limits

FCC part	Limits																				
15.407 (b) (1)	For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.																				
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): <table><tr><th>Freq Range (MHz)</th><th>Field Strength (μV/m)</th><th>Field Strength (dBμV/m)</th><th>Meas. Distance (m)</th></tr><tr><td>30-88</td><td>100</td><td>40</td><td>3</td></tr><tr><td>88-216</td><td>150</td><td>43.5</td><td>3</td></tr><tr><td>216-960</td><td>200</td><td>46</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>54</td><td>3</td></tr></table> The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and 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.	Freq Range (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Meas. Distance (m)	30-88	100	40	3	88-216	150	43.5	3	216-960	200	46	3	Above 960	500	54	3
Freq Range (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Meas. Distance (m)																		
30-88	100	40	3																		
88-216	150	43.5	3																		
216-960	200	46	3																		
Above 960	500	54	3																		

Test procedure

The conducted setup shown in section *Test & System Description* was used to measure undesirable emissions on the out of band 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 out of band measurements on the lower side, Integration method was used according to section (paragraph II.G.3.d) of FCC OET KDB 789033 D02

In case of out of band measurements falling in restricted bands, the declared Antenna Gain is also compensated in the graph. The declared maximum antenna gain is +5dBi.

For out of band measurements falling in restricted bands, the following limits in dBm were applied for the average detector after the conversion from the limits detailed above in dBμV/m, according to FCC 47 CFR part 15 - Subpart C – §15.209(a). The limits in dBm for peak detector are 20dB above the indicated values in the table.

§15.209(a)			Converted values	
Freq Range (MHz)	Distance (m)	Field strength (microvolts/meter)	Field strength (dB microvolts/meter)	Power (dBm)
Above 960	3	500	54.0	-41.2

See Section B.4.4 for the screenshot results.

B.2.4 Radiated spurious emission

Standard references

FCC part	Limits																																
15.407 (b) (1)	For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.																																
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): <table><tr><th>Freq Range (MHz)</th><th>Field Strength (μV/m)</th><th>Field Strength (dBμV/m)</th><th>Meas. Distance (m)</th></tr><tr><td>0.009-0.490</td><td>2400/f(kHz)</td><td>-</td><td>300</td></tr><tr><td>0.490-1.705</td><td>24000/f(kHz)</td><td>-</td><td>300</td></tr><tr><td>1.705-30.0</td><td>30</td><td>-</td><td>30</td></tr><tr><td>30-88</td><td>100</td><td>40</td><td>3</td></tr><tr><td>88-216</td><td>150</td><td>43.5</td><td>3</td></tr><tr><td>216-960</td><td>200</td><td>46</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>54</td><td>3</td></tr></table> The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and 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.	Freq Range (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Meas. Distance (m)	0.009-0.490	2400/f(kHz)	-	300	0.490-1.705	24000/f(kHz)	-	300	1.705-30.0	30	-	30	30-88	100	40	3	88-216	150	43.5	3	216-960	200	46	3	Above 960	500	54	3
Freq Range (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Meas. Distance (m)																														
0.009-0.490	2400/f(kHz)	-	300																														
0.490-1.705	24000/f(kHz)	-	300																														
1.705-30.0	30	-	30																														
30-88	100	40	3																														
88-216	150	43.5	3																														
216-960	200	46	3																														
Above 960	500	54	3																														

Test procedure

The radiated setup shown in section *Test & System Description* was 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 section B.1 and using the low, middle and high channels.

For 802.11ax20, 802.11ax40, 802.11ax80 and 802.11ax160 modes the worst case in terms of spurious emissions found among the low, mid and high channels tested on chain A and B separately is used to perform the test in MIMO mode (Chain A+B).

For 802.11n20, 802.11n40, 802.11ac80 and 802.11ac160 modes the worst case in terms of spurious emissions found among the low, mid and high channels tested on 802.11ax20, 802.11ax40, 802.11ax80 and 802.11ax160 is used to perform the test in chain A, B ,and A+B modes.

Test Results

Radiated spurious - 30 MHz – 1 GHz

Radiated Spurious – All modes

Frequency	QuasiPeak	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dB	
267.5	29.1	46.0	16.9	H
384.0	38.7	68.2	29.5	H

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

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

Radiated Spurious – CH36

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 386.0	58.8	---	68.2	9.4	V
17 860.8	50.7	---	74.0	23.3	V
17 860.8	---	40.3	54.0	13.7	H
25 918.2	47.8	---	68.2	20.4	V
39 853.8	58.2	---	68.2	10.0	V

Radiated Spurious – CH40

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 388.5	58.7	---	68.2	9.5	H
17 980.7	51.5	---	74.0	22.6	V
17 980.7	---	41.1	54.0	12.9	V
25 251.4	48.8	---	68.2	19.4	H
39 853.8	57.9	---	68.2	10.4	H

Radiated Spurious – CH48

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 366.5	58.7	---	68.2	9.5	V
17 834.2	50.3	---	74.0	23.7	V
17 834.2	---	40.6	54.0	13.4	V
25 251.4	48.9	---	68.2	19.3	V
39 859.8	58.3	---	68.2	9.9	H

1 GHz – 40 GHz, 802.11a, 6Mbps, Chain B
Radiated Spurious – CH36

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 374.5	58.8	---	68.2	9.4	H
17 986.0	51.0	---	74.0	23.0	H
17 986.0	---	41.0	54.0	13.0	V
25 600.9	47.6	---	68.2	20.6	V
39 845.5	58.2	---	68.2	10.0	H

Radiated Spurious – CH40

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 392.0	58.8	---	68.2	9.4	V
17 987.4	53.3	---	74.0	20.7	H
17 987.4	---	41.5	54.0	12.5	H
25 248.6	48.2	---	68.2	20.0	H
39 850.0	57.5	---	68.2	10.7	V

Radiated Spurious – CH48

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 393.0	58.4	---	68.2	9.8	V
17 989.8	51.9	---	74.0	22.2	H
17 989.8	---	41.4	54.0	12.6	V
25 251.9	48.5	---	68.2	19.7	H
39 850.8	57.9	---	68.2	10.4	V

1 GHz – 40 GHz, 802.11n20, HT0, Chain A
Radiated Spurious – CH48

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 349.5	57.3	---	74.0	16.7	H
10 284.1	48.8	---	68.2	19.4	V
17 494.0	51.9	---	68.2	16.3	V
24 951.6	47.7	---	68.2	20.5	H
39 858.2	58.6	---	68.2	9.6	V

1 GHz – 40 GHz, 802.11n20, HT0, Chain B
Radiated Spurious – CH48

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 390.0	57.7	---	68.2	10.5	H
17 519.1	51.5	---	68.2	16.7	V
25 924.8	48.5	---	68.2	19.7	H
39 851.5	58.1	---	68.2	10.1	H

1 GHz – 40 GHz, 802.11n20, HT8, Chain A+B

Radiated Spurious – CH48

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 385.5	58.2	---	68.2	10.0	V
15 711.9	52.9	---	74.0	21.1	V
15 712.4	---	40.2	54.0	13.8	V
25 251.0	48.5	---	68.2	19.7	H
39 850.8	58.0	---	68.2	10.3	V

1 GHz – 40 GHz, 802.11ax20, HE0, Chain A

Radiated Spurious – CH36

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 385.0	59.0	---	68.2	9.2	V
6 466.7	45.5	---	68.2	22.7	H
15 515.2	47.7	---	74.0	26.3	V
15 515.2	---	38.29	54.0	15.71	V
25 234.0	47.3	---	74.0	26.7	H
25 234.0	---	36.5	54.0	17.5	H
39 655.8	57.2	---	68.2	11	H

Radiated Spurious – CH40

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 397.5	59.1	---	68.2	9.1	V
15 575.1	47.6	---	74.0	26.4	V
15 575.1	---	38.6	54.0	15.4	V
26 182.7	47.9	---	68.2	20.3	H
39 859.8	58.3	---	68.2	9.9	H

Radiated Spurious – CH48

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 316.5	59.6	---	68.2	8.6	H
15 694.5	---	39.0	54.0	15.1	V
15 694.5	48.7	---	74.0	25.3	V
25 619.3	47.8	---	68.2	20.4	H
39 848.5	57.0	---	68.2	11.2	V

1 GHz – 40 GHz, 802.11ax20, HE0, Chain B
Radiated Spurious – CH36

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 388.5	58.1	---	68.2	10.1	H
6 466.7	45.6	---	68.2	22.6	H
25 254.3	48.5	---	68.2	19.7	V
39 845.5	57.0	---	68.2	11.2	V

Radiated Spurious – CH40

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 195.0	59.8	---	68.2	8.4	H
17 838.6	51.2	---	74.0	22.8	H
17 838.6	---	40.7	54.0	13.3	V
24 949.7	47.0	---	68.2	21.2	H
39 862.0	57.9	---	68.2	16.110.3	V

Radiated Spurious – CH48

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 231.0	59.1	---	68.2	9.1	V
17 876.3	50.0	---	74.0	24.0	H
17 876.3	---	40.7	54.0	13.3	V
25 948.0	48.0	---	68.2	20.2	H
39 862.8	57.1	---	68.2	11.1	V

1 GHz – 40 GHz, 802.11ax20, HE0, Chain A+B
Radiated Spurious – CH48

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
4 991.5	51.3	---	74.0	22.7	V
4 991.5	---	41.29	54.0	12.71	V
5 471.5	51.0	---	68.2	17.2	V
10 463.4	52.8	---	68.2	15.4	H
15 695.0	53.9	---	74.0	20.1	V
15 695.0	---	42.14	54.0	11.86	V
26 227.1	48.2	---	68.2	20.0	V
39 850.8	58.2	---	68.2	10.0	V

1 GHz – 40 GHz, 802.11n40, HT0, Chain A
Radiated Spurious – CH38

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 189.5	59.0	---	68.2	9.2	H
17 999.5	53.2	---	74.0	20.8	H
17 999.5	---	41.6	54.0	12.4	H
25 245.8	48.2	---	68.2	20	H
39 857.5	58.4	---	68.2	9.8	H

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

Radiated Spurious – CH38

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 291.5	59.2	---	68.2	9.0	V
17 832.8	50.5	---	74.0	23.6	H
17 832.8	---	40.4	54.0	13.6	H
25 246.2	48.2	---	68.2	20.0	V
39 844.8	57.8	---	68.2	10.4	V

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

Radiated Spurious – CH38

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 104.0	59.5	---	68.2	8.8	H
17 999.0	51.8	---	74.0	22.2	V
17 999.0	---	41.7	54.0	12.3	V
25 902.2	48.6	---	68.2	19.6	V
39 854.5	58.9	---	68.2	9.3	H

1 GHz – 40 GHz, 802.11ax40, HE0, Chain A

Radiated Spurious – CH38F

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
2 563.0	59.0	---	68.2	9.2	V
15 516.1	48.7	---	74.0	25.3	V
15 516.1	---	38.8	54.0	15.2	V
25 249.1	47.3	---	68.2	20.9	H
39 843.2	57.3	---	68.2	10.9	H

Radiated Spurious – CH46

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 203.5	59.8	---	68.2	8.4	H
6 519.4	45.6	---	68.2	22.6	H
15 637.0	47.0	---	74.0	27.0	V
24 894.0	47.0	---	68.2	21.2	H
39 844.0	58.2	---	68.2	10.0	V

1 GHz – 40 GHz, 802.11ax40, HE0, Chain B
Radiated Spurious – CH38

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 176.0	59.4	---	68.2	8.8	H
6 465.7	46.0	---	68.2	22.2	H
25 920.1	48.7	---	68.2	19.5	V
39 863.5	57.2	---	68.2	11	V

Radiated Spurious – CH46

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 044.0	59.0	---	68.2	9.3	V
17 964.7	50.1	---	74.0	23.9	H
17 964.7	---	40.8	54.0	13.3	V
25 252.9	48.2	---	68.2	20	V
39 850.8	58.6	---	68.2	9.6	H

1 GHz – 40 GHz, 802.11ax40, HE0, Chain A+B

Radiated Spurious – CH38

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 187.5	60.1	---	68.2	8.1	H
15 516.1	47.1	---	74.0	26.9	H
15 516.1	---	38.6	54.0	15.4	V
25 929.1	48.3	---	68.2	19.9	V
39 858.2	57.7	---	68.2	10.5	V

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

Radiated Spurious – CH42

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 350.0	57.7	---	74.0	16.3	H
3 350.0	---	45.9	54.0	8.1	H
17 994.7	51.5	---	74.0	22.5	H
17 994.7	---	41.3	54.0	12.7	V
25 621.7	48.8	---	68.2	19.4	V
39 846.2	57.5	---	68.2	10.7	H

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

Radiated Spurious – CH42

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 092.5	59.2	---	68.2	9.0	V
17 999.5	51.5	---	74.0	22.5	V
17 999.5	---	41.4	54.0	12.7	H
25 241.5	47.5	---	68.2	20.7	V
39 865.8	58.5	---	68.2	9.7	V

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

Radiated Spurious – CH42

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
2 955.0	59.4	---	68.2	8.8	H
17 493.0	51.3	---	68.2	16.9	V
24 880.3	46.8	---	68.2	21.5	V
39 849.2	59.3	---	68.2	8.9	V

1 GHz – 40 GHz, 802.11ax80, HE0, Chain A

Radiated Spurious – CH42

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 243.0	59.8	---	68.2	8.4	V
17 999.5	---	41.4	54.0	12.6	V
17 999.5	52.9	---	74.0	21.1	H
25 247.7	47.7	---	68.2	20.5	V
39 848.5	57.6	---	68.2	10.6	H

1 GHz – 40 GHz, 802.11ax80, HE0, Chain B

Radiated Spurious – CH42

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 185.5	60.0	---	68.2	8.2	H
6 469.1	47.6	---	68.2	20.6	V
25 247.7	48.0	---	68.2	20.2	H
39 851.5	58.2	---	68.2	10.0	H

1 GHz – 40 GHz, 802.11ax80, HE0, Chain A+B

Radiated Spurious – CH42

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 145.5	59.3	---	68.2	8.9	V
6 469.1	46.9	---	68.2	21.3	H
25 255.7	48.2	---	68.2	20.0	V
39 855.2	57.9	---	68.2	10.3	H

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

Radiated Spurious – CH50

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 353.5	---	46.0	54.0	8.0	H
3 353.5	58.3	---	74.0	15.7	V
17 999.5	52.8	---	74.0	21.2	V
17 999.5	---	41.3	54.0	12.7	V
25 241.5	47.7	---	68.2	20.5	V
39 843.2	58.4	---	68.2	9.8	H

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

Radiated Spurious – CH50

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 349.0	---	45.9	54.0	8.1	H
3 349.0	59.3	---	74.0	14.7	V
17 839.0	50.1	---	74.0	23.9	V
17 839.0	---	41.0	54.0	13.0	V
25 258.1	49.0	---	68.2	19.2	H
39 845.5	57.7	---	68.2	10.5	H

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

Radiated Spurious – CH50

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 352.0	---	45.9	54.0	8.1	H
3 352.0	57.9	---	74.0	16.1	H
17 349.9	51.8	---	68.2	16.4	V
25 245.3	48.3	---	68.2	19.9	H
39 858.2	57.7	---	68.2	10.5	H

1 GHz – 40 GHz, 802.11ax160, HE0, Chain A

Radiated Spurious – CH50

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 395.0	59.2	---	68.2	9.0	V
6 473.5	48.1	---	68.2	20.1	H
6 816.1	49.5	---	68.2	18.7	V
25 258.5	47.7	---	68.2	20.5	H
39 867.2	60.2	---	68.2	8.0	H

1 GHz – 40 GHz, 802.11ax160, HE0, Chain B

Radiated Spurious – CH50

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 251.5	59.5	---	68.2	8.7	V
3 898.2	51.9	---	74.0	22.1	H
3 898.2	---	37.9	54.0	16.1	V
6 473.9	---	39.5	54.0	14.5	V
6 473.9	48.1	---	68.2	20.1	V
25 622.1	48.1	---	68.2	20.1	V
39 854.5	58.2	---	68.2	10.0	V

1 GHz – 40 GHz, 802.11ax160, HE0, Chain A+B

Radiated Spurious – CH50

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 324.0	59.4	---	68.2	8.8	H
6 473.9	47.5	---	68.2	20.7	V
25 249.1	48.1	---	68.2	20.1	H
39 857.5	58.4	---	68.2	9.9	H

B.3 Test Results Tables U-NII-2A

B.3.1 26dB & 99% Bandwidth

Test procedure

The conducted setup shown in section *Test & System Description* was used to measure the 26dB & 99% Bandwidth. The antenna terminal of the EUT is connected to the spectrum through an attenuator, and the spectrum analyzer reading is compensated to include the RF path loss.

Results tables

Antenna	Mode	Channel	Rate	RU config.	26dB BW [MHz]	99% BW [MHz]
SISO A	802.11a20	52	6Mbps	NA	24.10	16.56
SISO A	802.11a20	56	6Mbps	NA	24.10	16.64
SISO A	802.11a20	64	6Mbps	NA	24.00	16.56
SISO A	802.11n20	52	HT0	NA	24.20	17.76
SISO A	802.11n20	56	HT0	NA	24.15	17.72
SISO A	802.11n20	64	HT0	NA	24.25	17.64
SISO A	802.11n40	54	HT0	NA	44.46	36.16
SISO A	802.11n40	62	HT0	NA	43.38	36.24
SISO A	802.11ac80	58	VHT0	NA	85.69	75.00
SISO A	802.11ac160	50	VHT0	NA	163.68	153.20
SISO A	802.11ax20	52	HE0	FullBW	24.65	18.96
SISO A	802.11ax20	56	HE0	FullBW	25.70	18.96
SISO A	802.11ax20	64	HE0	FullBW	23.85	18.92
SISO A	802.11ax20	64	HE0	26/8	21.25	18.68
SISO A	802.11ax20	64	HE0	52/40	22.20	18.72
SISO A	802.11ax20	64	HE0	106/54	23.70	18.40
SISO A	802.11ax40	54	HE0	FullBW	43.74	37.52
SISO A	802.11ax40	62	HE0	FullBW	42.30	37.60
SISO A	802.11ax40	62	HE0	242/62	24.30	18.80
SISO A	802.11ax80	58	HE0	FullBW	83.22	76.68
SISO A	802.11ax80	58	HE0	484/66	52.44	38.16
SISO A	802.11ax160	50	HE0	FullBW	163.35	154.60
SISO A	802.11ax160	50	HE0	996/67	92.73	77.00
SISO A	802.11ax160	50	HE0	996/S67	93.06	77.20

Antenna	Mode	Channel	Rate	RU config.	26dB BW [MHz]	99% BW [MHz]
SISO B	802.11a20	52	6Mbps	NA	24.35	16.68
SISO B	802.11a20	56	6Mbps	NA	24.40	16.76
SISO B	802.11a20	64	6Mbps	NA	23.40	16.68
SISO B	802.11n20	52	HT0	NA	24.05	17.76
SISO B	802.11n20	56	HT0	NA	24.00	17.72
SISO B	802.11n20	64	HT0	NA	23.70	17.64
SISO B	802.11n40	54	HT0	NA	43.29	36.16
SISO B	802.11n40	62	HT0	NA	43.11	36.08
SISO B	802.11ac80	58	VHT0	NA	84.55	75.00
SISO B	802.11ac160	50	VHT0	NA	163.68	153.00
SISO B	802.11ax20	52	HE0	FullBW	24.85	18.96
SISO B	802.11ax20	56	HE0	FullBW	25.20	18.96
SISO B	802.11ax20	64	HE0	FullBW	23.70	18.84
SISO B	802.11ax20	64	HE0	26/8	21.25	18.68
SISO B	802.11ax20	64	HE0	52/40	22.40	18.48
SISO B	802.11ax20	64	HE0	106/54	23.25	18.48
SISO B	802.11ax40	54	HE0	FullBW	43.83	37.60

SISO B	802.11ax40	62	HE0	FullBW	42.57	37.44
SISO B	802.11ax40	62	HE0	242/62	26.91	19.20
SISO B	802.11ax80	58	HE0	FullBW	83.98	76.68
SISO B	802.11ax80	58	HE0	484/66	53.01	38.28
SISO B	802.11ax160	50	HE0	FullBW	163.35	154.6
SISO B	802.11ax160	50	HE0	996/67	89.43	77.00
SISO B	802.11ax160	50	HE0	996/S67	92.40	77.00
Antenna	Mode	Channel	Rate	RU config.	26dB BW [MHz]	99% BW [MHz]
MIMO A	802.11n20	52	HT8	NA	24.45	17.80
MIMO A	802.11n20	56	HT8	NA	24.40	17.72
MIMO A	802.11n20	64	HT8	NA	24.25	17.72
MIMO A	802.11n40	54	HT8	NA	44.19	36.08
MIMO A	802.11n40	62	HT8	NA	43.38	36.08
MIMO A	802.11ac80	58	VHT0	NA	86.07	75.00
MIMO A	802.11ac160	50	VHT0	NA	163.35	153.00
MIMO A	802.11ax20	52	HE0	FullBW	24.95	18.88
MIMO A	802.11ax20	56	HE0	FullBW	24.40	18.92
MIMO A	802.11ax20	64	HE0	FullBW	24.10	18.92
MIMO A	802.11ax20	64	HE0	26/8	21.20	18.84
MIMO A	802.11ax20	64	HE0	52/40	21.70	18.52
MIMO A	802.11ax20	64	HE0	106/54	23.45	18.56
MIMO A	802.11ax40	54	HE0	FullBW	43.29	37.60
MIMO A	802.11ax40	62	HE0	FullBW	42.93	37.52
MIMO A	802.11ax40	62	HE0	242/62	26.82	18.88
MIMO A	802.11ax80	58	HE0	FullBW	83.60	76.68
MIMO A	802.11ax80	58	HE0	484/66	49.59	37.92
MIMO A	802.11ax160	50	HE0	FullBW	163.35	154.60
MIMO A	802.11ax160	50	HE0	996/67	88.77	77.20
MIMO A	802.11ax160	50	HE0	996/S67	87.78	76.80

Antenna	Mode	Channel	Rate	RU config.	26dB BW [MHz]	99% BW [MHz]
MIMO B	802.11n20	52	HT8	NA	23.80	17.64
MIMO B	802.11n20	56	HT8	NA	23.45	17.72
MIMO B	802.11n20	64	HT8	NA	23.95	17.64
MIMO B	802.11n40	54	HT8	NA	43.29	36.00
MIMO B	802.11n40	62	HT8	NA	42.39	36.00
MIMO B	802.11ac80	58	VHT0	NA	85.69	75.00
MIMO B	802.11ac160	50	VHT0	NA	163.35	152.80
MIMO B	802.11ax20	52	HE0	FullBW	23.20	18.88
MIMO B	802.11ax20	56	HE0	FullBW	22.70	18.88
MIMO B	802.11ax20	64	HE0	FullBW	23.80	19.00
MIMO B	802.11ax20	64	HE0	26/8	20.45	18.28
MIMO B	802.11ax20	64	HE0	52/40	20.45	18.16
MIMO B	802.11ax20	64	HE0	106/54	23.05	18.20
MIMO B	802.11ax40	54	HE0	FullBW	42.93	37.52
MIMO B	802.11ax40	62	HE0	FullBW	42.84	37.60
MIMO B	802.11ax40	62	HE0	242/62	26.10	18.80
MIMO B	802.11ax80	58	HE0	FullBW	83.22	76.68
MIMO B	802.11ax80	58	HE0	484/66	48.64	37.68
MIMO B	802.11ax160	50	HE0	FullBW	163.68	154.60
MIMO B	802.11ax160	50	HE0	996/67	88.77	77.00
MIMO B	802.11ax160	50	HE0	996/S67	90.09	77.00

Max Value

See Section B.5.1 and Section B.5.2 for the screenshot results.

B.3.2 Power Limits. Maximum Output power & Maximum power spectral density

Test limits

FCC part	Limits
15.407 (a) (2)	For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band.

Test procedure

The Maximum Conducted Output Power was measured using the channel integration method according to section E) 2) e) (Method SA-2 Alternative) of FCC OET KDB 789033 D02

The maximum power spectral density (PSD) was measured using the method according to section F) (Method SA-2 Alternative) of FCC OET KDB 789033 D02

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 declared maximum antenna gain is +5dBi.

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	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
802.11a	6Mbps	SISO A	2.08	2.14	96.95%
		SISO B	2.08	2.14	96.95%
802.11n20	HT0	SISO A	3.97	4.03	98.60%
		SISO B	3.97	4.03	98.60%
	HT8	MIMO A	3.97	4.03	98.51%
		MIMO B	3.97	4.03	98.51%
802.11ax20	HE0	SISO A	3.95	4.01	98.48%
		SISO B	3.95	4.01	98.48%
		MIMO A	3.95	4.01	98.54%
		MIMO B	3.95	4.01	98.54%
802.11n40	HT0	SISO A	3.94	4.02	98.01%
		SISO B	3.94	4.02	98.01%
	HT8	MIMO A	3.93	4.02	97.82%
		MIMO B	3.93	4.02	97.82%
802.11ax40	HE0	SISO A	3.93	4.00	98.32%
		SISO B	3.93	4.00	98.32%
		MIMO A	3.94	4.01	98.21%
		MIMO B	3.94	4.01	98.21%
802.11ac80	VHT0	SISO A	3.95	4.01	98.46%
		SISO B	3.95	4.01	98.46%
		MIMO A	3.94	4.01	98.32%
		MIMO B	3.94	4.01	98.32%
802.11ax80	HE0	SISO A	3.94	4.04	97.62%
		SISO B	3.94	4.04	97.62%
		MIMO A	3.94	4.01	98.32%
		MIMO B	3.94	4.01	98.32%
802.11ac160	VTH0	SISO A	3.96	4.01	98.73%
		SISO B	3.96	4.01	98.73%
		MIMO A	2.25	2.33	96.84%
		MIMO B	2.25	2.33	96.84%
802.11ax160	HE0	SISO A	3.93	4.01	98.00%
		SISO B	3.93	4.01	98.00%
		MIMO A	2.25	2.33	96.84%
		MIMO B	2.25	2.33	96.84%

Maximum output power

Antenna	Mode	Channel	Freq [MHz]	Rate	RU config.	Average Conducted Ouput Power [dBm]	Avg Max* Conducted Ouput Power [dBm]	Avg Max*. EIRP [dBm]	Avg Max* Conducted Power [mW]
SISO A	802.11a20	52	5260	6Mbps	NA	21.50	21.63	26.63	145.55
SISO A	802.11a20	56	5280	6Mbps	NA	21.60	21.73	26.73	148.94
SISO A	802.11a20	64	5320	6Mbps	NA	19.97	20.10	25.10	102.33
SISO A	802.11n20	52	5260	HT0	NA	21.43	21.43	26.43	139.00
SISO A	802.11n20	56	5280	HT0	NA	21.48	21.48	26.48	140.60
SISO A	802.11n20	64	5320	HT0	NA	19.96	19.96	24.96	99.08
SISO A	802.11n40	54	5270	HT0	NA	21.54	21.54	26.54	142.56
SISO A	802.11n40	62	5310	HT0	NA	18.11	18.11	23.11	64.71
SISO A	802.11ac80	58	5290	VHT0	NA	18.12	18.12	23.12	64.86
SISO A	802.11ac160	50	5250	VHT0	NA	15.78	15.78	20.78	37.84
SISO A	802.11ax20	52	5260	HE0	FullBW	21.72	21.72	26.72	148.77
SISO A	802.11ax20	56	5280	HE0	FullBW	22.14	22.14	27.14	163.68
SISO A	802.11ax20	64	5320	HE0	FullBW	20.21	20.21	25.21	104.95
SISO A	802.11ax20	64	5320	HE0	26/8	13.75	13.75	18.75	23.73
SISO A	802.11ax20	64	5320	HE0	52/40	16.88	16.88	21.88	48.79
SISO A	802.11ax20	64	5320	HE0	106/54	19.81	19.81	24.81	95.72
SISO A	802.11ax40	54	5270	HE0	FullBW	21.78	21.78	26.78	150.66
SISO A	802.11ax40	62	5310	HE0	FullBW	17.62	17.62	22.62	57.81
SISO A	802.11ax40	62	5310	HE0	242/62	18.46	18.46	23.46	70.15
SISO A	802.11ax80	58	5290	HE0	FullBW	17.58	17.68	22.68	58.61
SISO A	802.11ax80	58	5290	HE0	484/66	14.89	14.99	19.99	31.55
SISO A	802.11ax160	50	5250	HE0	FullBW	15.57	15.66	20.66	36.81
SISO A	802.11ax160	50	5250	HE0	996/67	16.17	16.26	21.26	42.27
SISO A	802.11ax160	50	5250	HE0	996/S67	15.34	15.43	20.43	34.91

Antenna	Mode	Channel	Freq [MHz]	Rate	RU config.	Average Conducted Ouput Power [dBm]	Avg Max* Conducted Ouput Power [dBm]	Avg Max*. EIRP [dBm]	Avg Max* Conducted Power [mW]
SISO B	802.11a20	52	5260	6Mbps	NA	21.13	21.26	26.26	133.66
SISO B	802.11a20	56	5280	6Mbps	NA	21.16	21.29	26.29	134.59
SISO B	802.11a20	64	5320	6Mbps	NA	19.84	19.97	24.97	99.31
SISO B	802.11n20	52	5260	HT0	NA	21.03	21.03	26.03	126.77
SISO B	802.11n20	56	5280	HT0	NA	21.07	21.07	26.07	127.94
SISO B	802.11n20	64	5320	HT0	NA	19.61	19.61	24.61	91.41
SISO B	802.11n40	54	5270	HT0	NA	20.33	20.33	25.33	107.89
SISO B	802.11n40	62	5310	HT0	NA	17.21	17.21	22.21	52.60
SISO B	802.11ac80	58	5290	VHT0	NA	17.89	17.89	22.89	61.52
SISO B	802.11ac160	50	5250	VHT0	NA	15.38	15.38	20.38	34.51
SISO B	802.11ax20	52	5260	HE0	FullBW	21.82	21.82	26.82	152.05
SISO B	802.11ax20	56	5280	HE0	FullBW	21.70	21.70	26.70	147.91
SISO B	802.11ax20	64	5320	HE0	FullBW	19.82	19.82	24.82	95.94
SISO B	802.11ax20	64	5320	HE0	26/8	13.88	13.88	18.88	24.44
SISO B	802.11ax20	64	5320	HE0	52/40	16.97	16.97	21.97	49.84
SISO B	802.11ax20	64	5320	HE0	106/54	19.39	19.39	24.39	86.90
SISO B	802.11ax40	54	5270	HE0	FullBW	21.34	21.34	26.34	136.14
SISO B	802.11ax40	62	5310	HE0	FullBW	16.78	16.78	21.78	47.64
SISO B	802.11ax40	62	5310	HE0	242/62	16.88	16.88	21.88	48.75
SISO B	802.11ax80	58	5290	HE0	FullBW	17.31	17.41	22.41	55.08
SISO B	802.11ax80	58	5290	HE0	484/66	14.64	14.74	19.74	29.79
SISO B	802.11ax160	50	5250	HE0	FullBW	15.20	15.29	20.29	33.81

SISO B	802.11ax160	50	5250	HE0	996/67	14.66	14.75	19.75	29.85
SISO B	802.11ax160	50	5250	HE0	996/S67	13.98	14.07	19.07	25.53

Antenna	Mode	Channel	Freq [MHz]	Rate	RU config.	Average Conducted Ouput Power [dBm]	Avg Max* Conducted Ouput Power [dBm]	Avg Max*. EIRP [dBm]	Avg Max* Conducted Power [mW]
MIMO A	802.11n20	52	5260	HT8	NA	18.95	18.95	23.95	78.52
MIMO A	802.11n20	56	5280	HT8	NA	18.91	18.91	23.91	77.80
MIMO A	802.11n20	64	5320	HT8	NA	18.81	18.81	23.81	76.03
MIMO A	802.11n40	54	5270	HT8	NA	19.06	19.16	24.16	82.41
MIMO A	802.11n40	62	5310	HT8	NA	17.07	17.17	22.17	52.12
MIMO A	802.11ac80	58	5290	VHT0	NA	16.46	16.46	21.46	44.26
MIMO A	802.11ac160	50	5250	VHT0	NA	13.54	13.68	18.68	23.33
MIMO A	802.11ax20	52	5260	HE0	FullBW	19.12	19.12	24.12	81.66
MIMO A	802.11ax20	56	5280	HE0	FullBW	19.21	19.21	24.21	83.37
MIMO A	802.11ax20	64	5320	HE0	FullBW	18.74	18.74	23.74	74.82
MIMO A	802.11ax20	64	5320	HE0	26/8	11.61	11.61	16.61	11.50
MIMO A	802.11ax20	64	5320	HE0	52/40	14.17	14.17	19.17	26.12
MIMO A	802.11ax20	64	5320	HE0	106/54	16.28	16.28	21.28	42.46
MIMO A	802.11ax40	54	5270	HE0	FullBW	19.07	19.07	24.07	80.72
MIMO A	802.11ax40	62	5310	HE0	FullBW	16.69	16.69	21.69	46.67
MIMO A	802.11ax40	62	5310	HE0	242/62	16.50	16.50	21.50	44.67
MIMO A	802.11ax80	58	5290	HE0	FullBW	15.39	15.39	20.39	34.59
MIMO A	802.11ax80	58	5290	HE0	484/66	14.15	14.15	19.15	26.00
MIMO A	802.11ax160	50	5250	HE0	FullBW	14.14	14.28	19.28	26.79
MIMO A	802.11ax160	50	5250	HE0	996/67	14.74	14.88	19.88	30.76
MIMO A	802.11ax160	50	5250	HE0	996/S67	14.68	14.82	19.82	30.34

Antenna	Mode	Channel	Freq [MHz]	Rate	RU config.	Average Conducted Ouput Power [dBm]	Avg Max* Conducted Ouput Power [dBm]	Avg Max*. EIRP [dBm]	Avg Max* Conducted Power [mW]
MIMO B	802.11n20	52	5260	HT8	NA	18.97	18.97	23.97	78.89
MIMO B	802.11n20	56	5280	HT8	NA	19.01	19.01	24.01	79.62
MIMO B	802.11n20	64	5320	HT8	NA	18.18	18.18	23.18	65.77
MIMO B	802.11n40	54	5270	HT8	NA	18.41	18.51	23.51	70.96
MIMO B	802.11n40	62	5310	HT8	NA	15.90	16.00	21.00	39.81
MIMO B	802.11ac80	58	5290	VHT0	NA	15.99	15.99	20.99	39.72
MIMO B	802.11ac160	50	5250	VHT0	NA	13.29	13.43	18.43	22.03
MIMO B	802.11ax20	52	5260	HE0	FullBW	19.07	19.07	24.07	80.72
MIMO B	802.11ax20	56	5280	HE0	FullBW	19.13	19.13	24.13	81.85
MIMO B	802.11ax20	64	5320	HE0	FullBW	18.14	18.14	23.14	65.16
MIMO B	802.11ax20	64	5320	HE0	26/8	11.06	11.06	16.06	12.76
MIMO B	802.11ax20	64	5320	HE0	52/40	13.62	13.62	18.62	23.01
MIMO B	802.11ax20	64	5320	HE0	106/54	15.75	15.75	20.75	37.58
MIMO B	802.11ax40	54	5270	HE0	FullBW	18.46	18.46	23.46	70.15
MIMO B	802.11ax40	62	5310	HE0	FullBW	15.75	15.75	20.75	37.58
MIMO B	802.11ax40	62	5310	HE0	242/62	15.85	15.85	20.85	38.46
MIMO B	802.11ax80	58	5290	HE0	FullBW	13.57	13.57	18.57	22.77
MIMO B	802.11ax80	58	5290	HE0	484/66	14.76	14.76	19.76	29.92
MIMO B	802.11ax160	50	5250	HE0	FullBW	13.64	13.78	18.78	23.88
MIMO B	802.11ax160	50	5250	HE0	996/67	14.60	14.74	19.74	29.79
MIMO B	802.11ax160	50	5250	HE0	996/S67	14.64	14.78	19.78	30.06

Antenna	Mode	Channel	Freq [MHz]	Rate	RU config.	Average Conducted Output Power [dBm]	Avg Max* Conducted Output Power [dBm]	Avg Max*. EIRP [dBm]	Avg Max* Conducted Power [mW]
Combined A+B	802.11n20	52	5260	HT8	NA	21.97	21.97	26.97	157.41
Combined A+B	802.11n20	56	5280	HT8	NA	21.97	21.97	26.97	157.42
Combined A+B	802.11n20	64	5320	HT8	NA	21.52	21.52	26.52	141.80
Combined A+B	802.11n40	54F	5270	HT8	NA	21.76	21.86	26.86	153.37
Combined A+B	802.11n40	62F	5310	HT8	NA	19.53	19.63	24.63	91.93
Combined A+B	802.11ac80	58ac80	5290	VHT0	NA	19.24	19.24	24.24	83.98
Combined A+B	802.11ac160	50ac160	5250	VHT0	NA	16.43	16.57	21.57	45.36
Combined A+B	802.11ax20	52	5260	HE0	FullBW	22.11	22.11	27.11	162.38
Combined A+B	802.11ax20	56	5280	HE0	FullBW	22.18	22.18	27.18	165.21
Combined A+B	802.11ax20	64	5320	HE0	FullBW	21.46	21.46	26.46	139.98
Combined A+B	802.11ax20	64	5320	HE0	26/8	14.35	14.35	19.35	27.25
Combined A+B	802.11ax20	64	5320	HE0	52/40	16.91	16.91	21.91	49.14
Combined A+B	802.11ax20	64	5320	HE0	106/54	19.03	19.03	24.03	80.05
Combined A+B	802.11ax40	54F	5270	HE0	FullBW	21.79	21.79	26.79	150.87
Combined A+B	802.11ax40	62F	5310	HE0	FullBW	19.26	19.26	24.26	84.25
Combined A+B	802.11ax40	62F	5310	HE0	242/62	19.20	19.20	24.20	83.13
Combined A+B	802.11ax80	58ac80	5290	HE0	FullBW	17.58	17.58	22.58	57.34
Combined A+B	802.11ax80	58ac80	5290	HE0	484/66	17.48	17.48	22.48	55.92
Combined A+B	802.11ax160	50ac160	5250	HE0	FullBW	16.91	17.05	22.05	50.67
Combined A+B	802.11ax160	50ac160	5250	HE0	996/67	17.68	17.82	22.82	60.55
Combined A+B	802.11ax160	50ac160	5250	HE0	996/S6 7	17.67	17.81	22.81	60.40

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

Max Value

Min Value

Maximum Power Spectral Density (PSD)

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Average conducted PSD [dBm/MHz]	Maximum* conducted PSD [dBm/MHz]
SISO A	802.11a20	52	5260	6Mbps	NA	10.70	10.83
SISO A	802.11a20	56	5280	6Mbps	NA	10.79	10.92
SISO A	802.11a20	64	5320	6Mbps	NA	9.15	9.28
SISO A	802.11n20	52	5260	HT0	NA	10.43	10.43
SISO A	802.11n20	56	5280	HT0	NA	10.47	10.47
SISO A	802.11n20	64	5320	HT0	NA	8.95	8.95
SISO A	802.11n40	54	5270	HT0	NA	7.07	7.07
SISO A	802.11n40	62	5310	HT0	NA	3.69	3.69
SISO A	802.11ac80	58	5290	VHT0	NA	0.64	0.64
SISO A	802.11ac160	50	5250	VHT0	NA	-4.60	-4.60
SISO A	802.11ax20	52	5260	HE0	FullBW	10.52	10.52
SISO A	802.11ax20	56	5280	HE0	FullBW	10.94	10.94
SISO A	802.11ax20	64	5320	HE0	FullBW	8.99	8.99
SISO A	802.11ax20	64	5320	HE0	26/8	10.74	10.74
SISO A	802.11ax20	64	5320	HE0	52/40	10.82	10.82
SISO A	802.11ax20	64	5320	HE0	106/54	10.73	10.73
SISO A	802.11ax40	54	5270	HE0	FullBW	7.16	7.16
SISO A	802.11ax40	62	5310	HE0	FullBW	3.02	3.02
SISO A	802.11ax40	62	5310	HE0	242/62	7.25	7.25
SISO A	802.11ax80	58	5290	HE0	FullBW	0.02	0.12
SISO A	802.11ax80	58	5290	HE0	484/66	0.42	0.52
SISO A	802.11ax160	50	5250	HE0	FullBW	-4.89	-4.80
SISO A	802.11ax160	50	5250	HE0	996/67	-1.42	-1.33
SISO A	802.11ax160	50	5250	HE0	996/S67	-2.17	-2.08

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Average conducted PSD [dBm/MHz]	Maximum* conducted PSD [dBm/MHz]
SISO B	802.11a20	52	5260	6Mbps	NA	10.30	10.43
SISO B	802.11a20	56	5280	6Mbps	NA	10.32	10.45
SISO B	802.11a20	64	5320	6Mbps	NA	9.00	9.13
SISO B	802.11n20	52	5260	HT0	NA	10.01	10.01
SISO B	802.11n20	56	5280	HT0	NA	10.06	10.06
SISO B	802.11n20	64	5320	HT0	NA	8.60	8.60
SISO B	802.11n40	54	5270	HT0	NA	5.88	5.88
SISO B	802.11n40	62	5310	HT0	NA	2.87	2.87
SISO B	802.11ac80	58	5290	VHT0	NA	0.47	0.47
SISO B	802.11ac160	50	5250	VHT0	NA	-4.99	-4.99
SISO B	802.11ax20	52	5260	HE0	FullBW	10.62	10.62
SISO B	802.11ax20	56	5280	HE0	FullBW	10.49	10.49
SISO B	802.11ax20	64	5320	HE0	FullBW	8.60	8.60
SISO B	802.11ax20	64	5320	HE0	26/8	10.84	10.84
SISO B	802.11ax20	64	5320	HE0	52/40	10.90	10.90
SISO B	802.11ax20	64	5320	HE0	106/54	10.32	10.32
SISO B	802.11ax40	54	5270	HE0	FullBW	6.73	6.73
SISO B	802.11ax40	62	5310	HE0	FullBW	2.22	2.22
SISO B	802.11ax40	62	5310	HE0	242/62	5.66	5.66
SISO B	802.11ax80	58	5290	HE0	FullBW	-0.24	-0.14
SISO B	802.11ax80	58	5290	HE0	484/66	0.20	0.30
SISO B	802.11ax160	50	5250	HE0	FullBW	-5.26	-5.17
SISO B	802.11ax160	50	5250	HE0	996/67	-2.86	-2.77
SISO B	802.11ax160	50	5250	HE0	996/S67	-3.47	-3.38

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Average conducted PSD [dBm/MHz]	Maximum* conducted PSD [dBm/MHz]
MIMO A	802.11n20	52	5260	HT8	NA	7.92	7.92
MIMO A	802.11n20	56	5280	HT8	NA	7.89	7.89
MIMO A	802.11n20	64	5320	HT8	NA	7.86	7.86
MIMO A	802.11n40	54	5270	HT8	NA	4.61	4.71
MIMO A	802.11n40	62	5310	HT8	NA	2.67	2.77
MIMO A	802.11ac80	58	5290	VHT0	NA	-0.99	-0.99
MIMO A	802.11ac160	50	5250	VHT0	NA	-6.83	-6.69
MIMO A	802.11ax20	52	5260	HE0	FullBW	7.91	7.91
MIMO A	802.11ax20	56	5280	HE0	FullBW	8.00	8.00
MIMO A	802.11ax20	64	5320	HE0	FullBW	7.51	7.51
MIMO A	802.11ax20	64	5320	HE0	26/8	7.53	7.53
MIMO A	802.11ax20	64	5320	HE0	52/40	8.09	8.09
MIMO A	802.11ax20	64	5320	HE0	106/54	7.25	7.25
MIMO A	802.11ax40	54	5270	HE0	FullBW	4.45	4.45
MIMO A	802.11ax40	62	5310	HE0	FullBW	2.09	2.09
MIMO A	802.11ax40	62	5310	HE0	242/62	5.27	5.27
MIMO A	802.11ax80	58	5290	HE0	FullBW	-2.17	-2.17
MIMO A	802.11ax80	58	5290	HE0	484/66	-0.30	-0.30
MIMO A	802.11ax160	50	5250	HE0	FullBW	-6.36	-6.22
MIMO A	802.11ax160	50	5250	HE0	996/67	-2.76	-2.62
MIMO A	802.11ax160	50	5250	HE0	996/S67	-2.82	-2.68

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Average conducted PSD [dBm/MHz]	Maximum* conducted PSD [dBm/MHz]
MIMO B	802.11n20	52	5260	HT8	NA	7.95	7.95
MIMO B	802.11n20	56	5280	HT8	NA	8.00	8.00
MIMO B	802.11n20	64	5320	HT8	NA	7.17	7.17
MIMO B	802.11n40	54	5270	HT8	NA	3.94	4.04
MIMO B	802.11n40	62	5310	HT8	NA	1.55	1.65
MIMO B	802.11ac80	58	5290	VHT0	NA	-1.45	-1.45
MIMO B	802.11ac160	50	5250	VHT0	NA	-7.09	-6.95
MIMO B	802.11ax20	52	5260	HE0	FullBW	7.84	7.84
MIMO B	802.11ax20	56	5280	HE0	FullBW	7.97	7.97
MIMO B	802.11ax20	64	5320	HE0	FullBW	6.91	6.91
MIMO B	802.11ax20	64	5320	HE0	26/8	8.07	8.07
MIMO B	802.11ax20	64	5320	HE0	52/40	7.51	7.51
MIMO B	802.11ax20	64	5320	HE0	106/54	6.74	6.74
MIMO B	802.11ax40	54	5270	HE0	FullBW	3.83	3.83
MIMO B	802.11ax40	62	5310	HE0	FullBW	1.18	1.18
MIMO B	802.11ax40	62	5310	HE0	242/62	4.65	4.65
MIMO B	802.11ax80	58	5290	HE0	FullBW	-3.93	-3.93
MIMO B	802.11ax80	58	5290	HE0	484/66	0.28	0.28
MIMO B	802.11ax160	50	5250	HE0	FullBW	-6.82	-6.68
MIMO B	802.11ax160	50	5250	HE0	996/67	-3.02	-2.88
MIMO B	802.11ax160	50	5250	HE0	996/S67	-2.91	-2.77

Antenna	Mode_BW	Channel	Freq [MHz]	Rate	RU config.	Combined Maximum* conducted PSD [dBm/MHz]
Combined A+B	802.11n20	52	5260	HT8	NA	10.95
Combined A+B	802.11n20	56	5280	HT8	NA	10.96
Combined A+B	802.11n20	64	5320	HT8	NA	10.54
Combined A+B	802.11n40	54	5270	HT8	NA	7.40
Combined A+B	802.11n40	62	5310	HT8	NA	5.26
Combined A+B	802.11ac80	58	5290	VHT0	NA	1.80
Combined A+B	802.11ac160	50	5250	VHT0	NA	-3.81
Combined A+B	802.11ax20	52	5260	HE0	FullBW	10.89
Combined A+B	802.11ax20	56	5280	HE0	FullBW	11.00
Combined A+B	802.11ax20	64	5320	HE0	FullBW	10.23
Combined A+B	802.11ax20	64	5320	HE0	26/8	10.82
Combined A+B	802.11ax20	64	5320	HE0	52/40	10.82
Combined A+B	802.11ax20	64	5320	HE0	106/54	10.01
Combined A+B	802.11ax40	54	5270	HE0	FullBW	7.16
Combined A+B	802.11ax40	62	5310	HE0	FullBW	4.67
Combined A+B	802.11ax40	62	5310	HE0	242/62	7.98
Combined A+B	802.11ax80	58	5290	HE0	FullBW	0.05
Combined A+B	802.11ax80	58	5290	HE0	484/66	3.01
Combined A+B	802.11ax160	50	5250	HE0	FullBW	-3.43
Combined A+B	802.11ax160	5	5250	HE0	996/67	0.26
Combined A+B	802.11ax160	50	5250	HE0	996/S67	0.29

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

See Section B.5.3 for the screenshot results.

B.3.3 Undesirable emissions limits : out of band (Conducted)

Test limits

FCC part	Limits																				
15.407 (b) (2)	For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz.																				
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): <table><tr><th>Freq Range (MHz)</th><th>Field Strength (μV/m)</th><th>Field Strength (dBμV/m)</th><th>Meas. Distance (m)</th></tr><tr><td>30-88</td><td>100</td><td>40</td><td>3</td></tr><tr><td>88-216</td><td>150</td><td>43.5</td><td>3</td></tr><tr><td>216-960</td><td>200</td><td>46</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>54</td><td>3</td></tr></table> The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and 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.	Freq Range (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Meas. Distance (m)	30-88	100	40	3	88-216	150	43.5	3	216-960	200	46	3	Above 960	500	54	3
Freq Range (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Meas. Distance (m)																		
30-88	100	40	3																		
88-216	150	43.5	3																		
216-960	200	46	3																		
Above 960	500	54	3																		

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 the upper side of the out of band, the integration method was used as defined in the out of band measurements section (paragraph II.G.3.d) of FCC OET KDB 789033 D02

In case of out of band measurements falling in restricted bands, the declared Antenna Gain is also compensated in the graph. The declared maximum antenna gain is +5dBi.

For out of band measurements falling in restricted bands, the following limits in dBm were applied for the average detector after the conversion from the limits detailed above in dBμV/m, according to FCC 47 CFR part 15 - Subpart C – §15.209(a). The limits in dBm for peak detector are 20dB above the indicated values in the table.

§15.209(a)			Converted values	
Freq Range (MHz)	Distance (m)	Field strength (microvolts/meter)	Field strength (dB microvolts/meter)	Power (dBm)
960-25000	3	500	53.98	-41.2

See Section B.5.4 for the screenshot results.

B.3.4 Radiated spurious emission

Standard references

FCC part	Limits																				
15.407 (a) (2)	For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band.																				
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): <table><tr><th>Freq Range (MHz)</th><th>Field Strength (μV/m)</th><th>Field Strength (dBμV/m)</th><th>Meas. Distance (m)</th></tr><tr><td>30-88</td><td>100</td><td>40</td><td>3</td></tr><tr><td>88-216</td><td>150</td><td>43.5</td><td>3</td></tr><tr><td>216-960</td><td>200</td><td>46</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>54</td><td>3</td></tr></table> The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and 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.	Freq Range (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Meas. Distance (m)	30-88	100	40	3	88-216	150	43.5	3	216-960	200	46	3	Above 960	500	54	3
Freq Range (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Meas. Distance (m)																		
30-88	100	40	3																		
88-216	150	43.5	3																		
216-960	200	46	3																		
Above 960	500	54	3																		

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 section B.1 and using the low, middle and high channels.

For 802.11ax20, 802.11ax40, 802.11ax80 and 802.11ax160 modes the worst case in terms of spurious emissions found among the low, mid and high channels tested on chain A and B separately is used to perform the test in MIMO mode (Chain A+B).

For 802.11n20, 802.11n40, 802.11ac80 and 802.11ac160 modes the worst case in terms of spurious emissions found among the low, mid and high channels tested on 802.11ax20, 802.11ax40, 802.11ax80 and 802.11ax160 is used to perform the test in chain A, B ,and A+B modes.

Test Results

Radiated spurious - 30 MHz to 1 GHz

Frequency	MaxPeak	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dB	
262.4	29.5	46.0	16.5	H
384.0	39.4	68.2	28.8	H

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

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

Radiated Spurious – CH52

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3388.0	59.2	---	68.2	9.0	V
3557.9	50.9	---	68.2	17.3	H
17998.1	51.2	---	74.0	22.8	H
17998.1	---	41.5	54.0	12.5	H
25609.9	48.6	---	68.2	19.6	H
39852.2	58.8	---	68.2	9.4	H

Radiated Spurious – CH56

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 293.0	59.2	---	68.2	9.0	V
17 995.7	51.9	---	74.0	22.1	H
17 995.7	---	41.6	54.0	12.4	H
25 614.6	48.2	---	68.2	20.0	H
39 840.2	59.3	---	68.2	8.9	H

Radiated Spurious – CH64

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 074.5	59.4	---	68.2	8.9	H
17 998.1	51.1	---	74.0	22.9	H
17 998.1	---	41.5	54.0	12.5	H
25 242.5	47.6	---	68.2	20.6	V
39 838.8	58.8	---	68.2	9.4	H

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

Radiated Spurious – CH52

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 037.5	59.5	---	68.2	8.7	V
17 995.7	51.2	---	74.0	22.8	H
17 995.7	---	41.4	54.0	12.6	H
25 258.5	47.8	---	68.2	20.4	H
39 837.2	58.8	---	68.2	9.4	H

Radiated Spurious – CH56

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 210.5	59.3	---	68.2	8.9	V
17 998.1	52.5	---	74.0	21.5	V
17 998.1	---	41.6	54.0	12.4	H
25 242.5	48.2	---	68.2	20.0	H
39 835.8	59.4	---	68.2	8.8	H

Radiated Spurious – CH64

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 061.5	59.2	---	68.2	9.0	H
17 995.2	51.2	---	74.0	22.8	H
17 995.2	---	41.2	54.0	12.8	H
25 253.3	48.4	---	68.2	19.8	H
39 879.2	58.9	---	68.2	9.3	H

1 GHz – 40 GHz, 802.11n20, HT0, Chain A
Radiated Spurious – CH52

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 388.0	59.9	---	68.2	8.3	H
17 999.5	52.0	---	74.0	22.0	V
17 999.5	---	41.7	54.0	12.3	V
25 926.7	48.5	---	68.2	19.7	H
39 855.2	58.8	---	68.2	9.4	V

1 GHz – 40 GHz, 802.11n20, HT0, Chain B
Radiated Spurious – CH52

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 195.5	59.0	---	68.2	9.2	V
17 995.2	50.7	---	74.0	23.3	H
17 995.2	---	41.4	54.0	12.7	V
25 964.0	48.7	---	68.2	19.5	H
39 850.8	58.4	---	68.2	9.8	V

1 GHz – 40 GHz, 802.11n20, HT8, Chain A+B

Radiated Spurious – CH52

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 312.0	59.2	---	68.2	9.0	V
15 778.6	---	41.4	54.0	12.6	V
15 780.5	52.8	---	74.0	21.2	V
25 933.3	48.5	---	68.2	19.7	V
39 843.2	58.6	---	68.2	9.6	V

1 GHz – 40 GHz, 802.11ax20, HE0, Chain A

Radiated Spurious – CH52

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 329.0	59.1	---	68.2	9.1	V
17 972.5	50.4	---	74.0	23.6	V
17 972.5	---	41.0	54.0	13.0	H
25 258.5	48.0	---	68.2	20.2	H
39 857.5	57.6	---	68.2	10.6	V

Radiated Spurious – CH56

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 159.5	58.9	---	68.2	9.3	H
10 543.1	45.6	---	68.2	22.6	H
25 253.8	48.1	---	68.2	20.1	V
39 850.8	58.7	---	68.2	9.5	H

Radiated Spurious – CH64

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 058.5	58.8	---	68.2	9.4	H
17 961.8	50.5	---	74.0	23.5	H
17 961.8	---	41.1	54.0	12.9	H
25 616.5	47.7	---	68.2	20.5	H
39 850.8	57.2	---	68.2	11.0	V

1 GHz – 40 GHz, 802.11ax20, HE0, Chain B
Radiated Spurious – CH52

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 245.0	59.5	---	68.2	8.7	H
17 978.2	51.4	---	74.0	22.6	H
17 978.2	---	41.3	54.0	12.7	V
25 248.6	48.7	---	68.2	19.5	V
39 859.8	56.9	---	68.2	11.3	V

Radiated Spurious – CH56

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 247.5	59.3	---	68.2	8.9	H
17 965.2	50.9	---	74.0	23.1	H
17 965.2	---	40.9	54.0	13.1	H
21 086.9	46.5	---	74.0	27.5	H
21 086.9	---	36.5	54.0	17.5	V

Radiated Spurious – CH64

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 323.0	58.5	---	68.2	9.7	V
17 997.1	51.7	---	74.0	22.3	H
17 997.1	---	41.4	54.0	12.6	V
25 246.2	48.5	---	68.2	19.7	H
39 846.2	57.8	---	68.2	10.4	V

1 GHz – 40 GHz, 802.11ax20, HE0, Chain A+B
Radiated Spurious – CH52

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 350.0	---	46.6	54.0	7.4	V
3 350.0	58.4	---	74.0	15.6	V
17 999.5	52.0	---	74.0	22.1	H
17 999.5	---	41.4	54.0	12.6	H
25 249.1	47.6	---	68.2	20.6	V
39 853.8	57.7	---	68.2	10.5	V

1 GHz – 40 GHz, 802.11n40, HT0, Chain A
Radiated Spurious – CH54

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 344.5	57.9	---	68.2	10.3	H
17 458.7	52.1	---	68.2	16.1	V
25 250.0	47.9	---	68.2	20.3	V
35 314.0	52.0	---	68.2	16.2	H

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

Radiated Spurious – CH54

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 378.0	57.5	---	68.2	10.7	H
10 536.4	50.0	---	68.2	18.2	H
15 795.0	54.4	---	74.0	19.6	V
15 805.6	---	43.7	54.0	10.3	V
20 271.9	45.6	---	74.0	28.4	H
20 271.9	---	35.8	54.0	18.2	V

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

Radiated Spurious – CH54

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 396.0	58.0	---	68.2	10.2	V
15 797.0	50.7	---	74.0	23.3	V
15 805.2	---	40.2	54.0	13.8	V
25 270.8	49.5	---	68.2	18.7	V
39 031.0	56.7	---	68.2	11.5	H

1 GHz – 40 GHz, 802.11ax40, HE0, Chain A

Radiated Spurious – CH54

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 264.0	58.1	---	74.0	15.9	V
3 264.0	---	46.1	54.0	7.9	H
10 504.0	48.5	---	68.2	19.7	H
15 756.4	51.3	---	74.0	22.7	H
15 756.4	---	41.3	54.0	12.7	H
25 246.7	48.4	---	68.2	19.8	H
39 857.5	57.9	---	68.2	10.3	H

Radiated Spurious – CH62

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 396.5	60.2	---	68.2	8.0	V
10 584.2	46.4	---	68.2	21.9	H
15 876.2	49.4	---	74.0	24.7	V
15 876.2	---	38.63	54.0	15.4	V
25 243.4	48.1	---	68.2	20.1	V
39 856.8	58.0	---	68.2	10.2	H

1 GHz – 40 GHz, 802.11ax40, HE0, Chain B

Radiated Spurious – CH54

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 108.5	59.4	---	68.2	8.8	V
17 998.5	52.8	---	74.0	21.2	V
17 998.5	---	41.5	54.0	12.5	V
25 619.8	48.1	---	68.2	20.1	V
39 853.0	57.5	---	68.2	10.7	V

Radiated Spurious – CH62

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 327.0	59.4	---	68.2	8.8	H
17 996.1	50.9	---	74.0	23.1	V
17 996.1	---	41.6	54.0	12.4	H
25 971.6	48.1	---	68.2	20.1	H
39 850.0	58.1	---	68.2	10.1	H

1 GHz – 40 GHz, 802.11ax40, HE0, Chain A+B
Radiated Spurious – CH54

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 342.5	57.6	---	68.2	10.6	V
15 756.9	---	38.8	54.0	15.2	V
15 757.8	58.7	---	74.0	15.3	V
25 244.8	50.0	---	68.2	18.2	H
39 057.2	56.1	---	68.2	12.1	V

1 GHz – 40 GHz, 802.11ac80, HT0, Chain A

Radiated Spurious – CH58

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
2 961.0	59.3	---	68.2	8.9	V
17 995.7	51.9	---	74.0	22.1	V
17 995.7	---	41.5	54.0	12.5	H
25 606.1	47.9	---	68.2	20.3	H
39 859.0	59.5	---	68.2	8.8	H

1 GHz – 40 GHz, 802.11ac80, HT0, Chain B

Radiated Spurious – CH58

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 269.5	59.5	---	68.2	8.7	V
17 997.6	51.0	---	74.0	23.0	V
17 997.6	---	41.6	54.0	12.4	H
25 262.8	47.6	---	68.2	20.6	H
39 849.2	58.3	---	68.2	9.9	V

1 GHz – 40 GHz, 802.11ac80, HT8, Chain A+B

Radiated Spurious – CH58

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 351.5	---	46.5	54.0	7.5	V
3 351.5	58.5	---	74.0	15.5	H
17 441.3	52.0	---	68.2	16.2	H
25 244.4	48.4	---	68.2	19.8	H
39 848.5	57.5	---	68.2	10.7	V

1 GHz – 40 GHz, 802.11ax80, HE0, Chain A

Radiated Spurious – CH58

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 391.5	58.8	---	68.2	9.4	H
6 569.6	45.5	---	68.2	22.7	H
25 252.4	48.8	---	68.2	19.4	H
39 850.8	57.8	---	68.2	10.4	V

1 GHz – 40 GHz, 802.11ax80, HE0, Chain B

Radiated Spurious – CH58

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
3 392.5	58.4	---	68.2	9.8	H
6 569.6	45.3	---	68.2	22.9	V
24 936.5	47.3	---	68.2	20.9	V
39 851.5	57.8	---	68.2	10.4	V

1 GHz – 40 GHz, 802.11ax80, HE0, Chain A+B

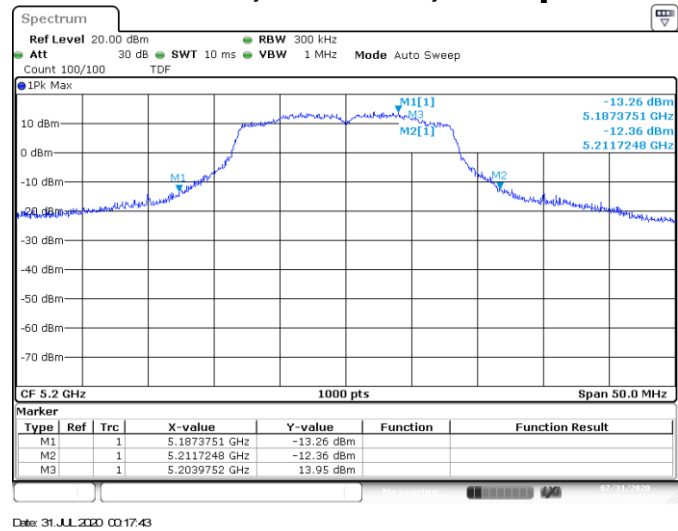
Radiated Spurious – CH58

Frequency	MaxPeak	Avg	Limit	Margin	Polarization
MHz	dBμV/m	dBμV/m	dBμV/m	dB	
4 977.8	---	46.7	54.0	7.3	V
4 978.0	58.5	---	74.0	15.6	V
6 569.6	45.4	---	68.2	22.8	V
25 249.6	47.3	---	68.2	20.9	H
39 852.2	57.7	---	68.2	10.5	V

B.4 Test Results Screenshot U-NII-1

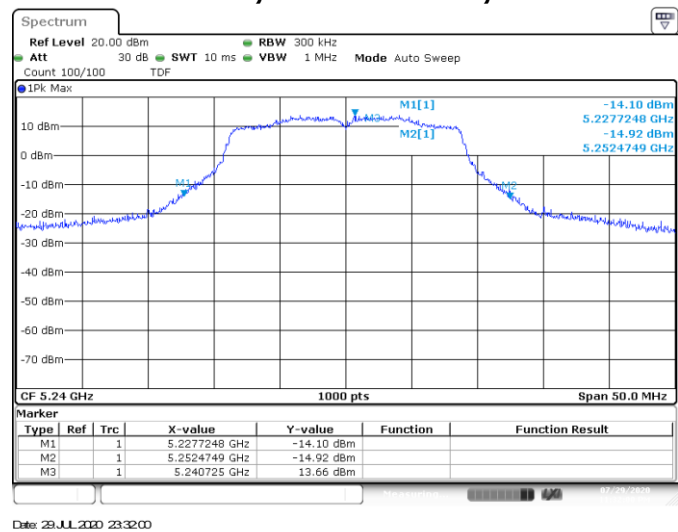
B.4.1 26dB Bandwidth

SISO-B, 802.11a, 6Mbps



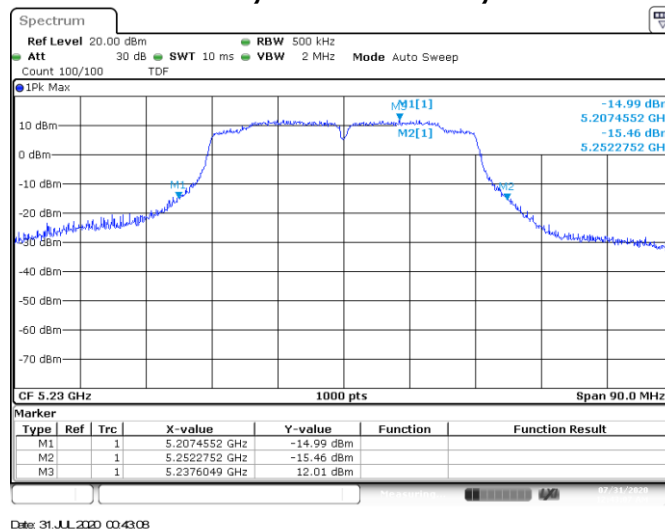
Channel 40

SISO-A, 802.11n20, HT0



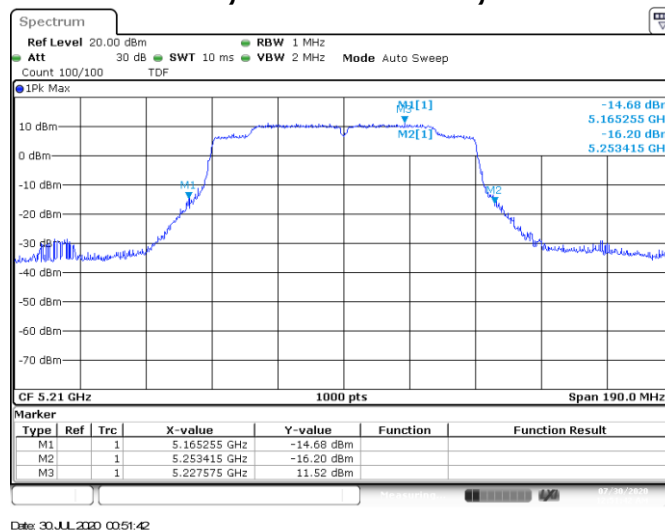
Channel 48

SISO-B, 802.11n40, HT0



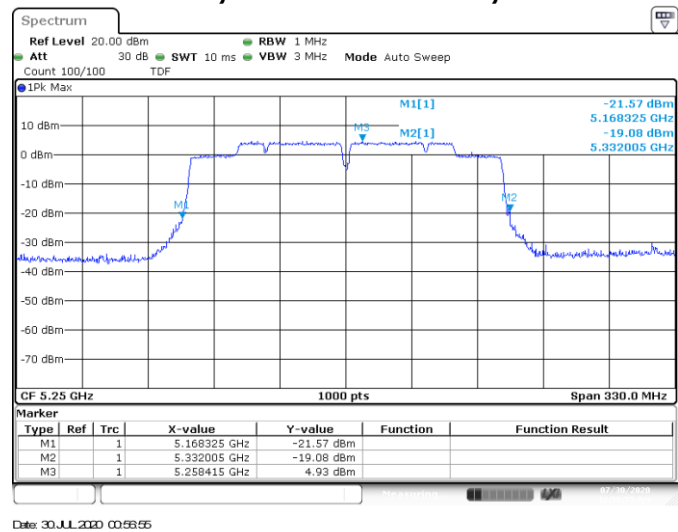
Channel 46F

SISO-A, 802.11ac80, VHT0



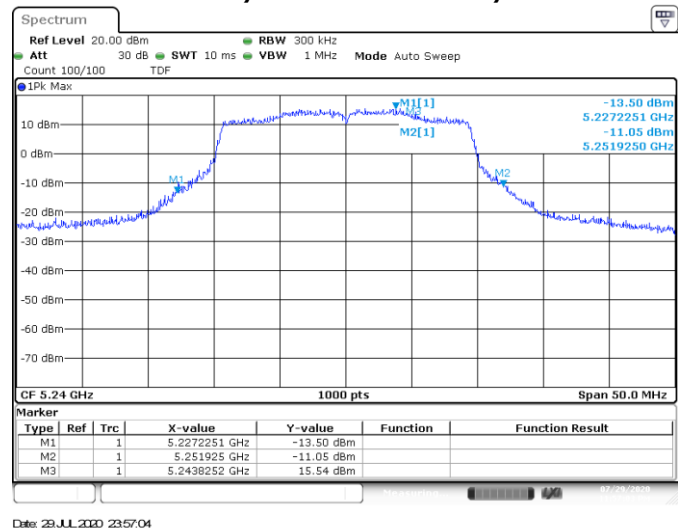
Channel 42

SISO-A, 802.11ac160, VHT0



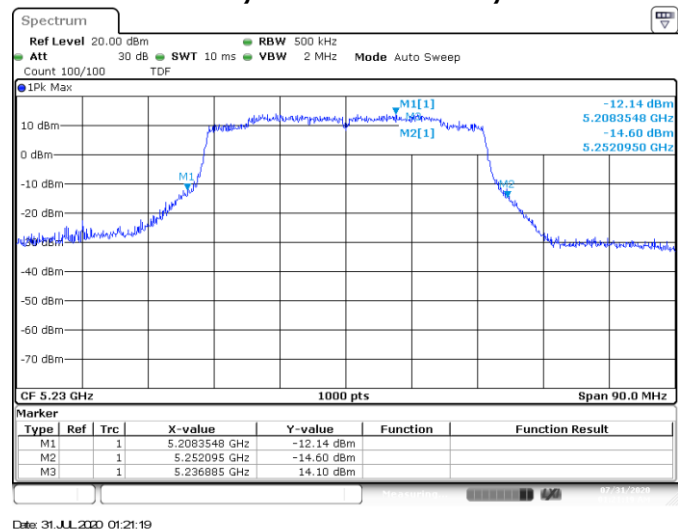
Channel 50

SISO-A, 802.11ax20, HE0



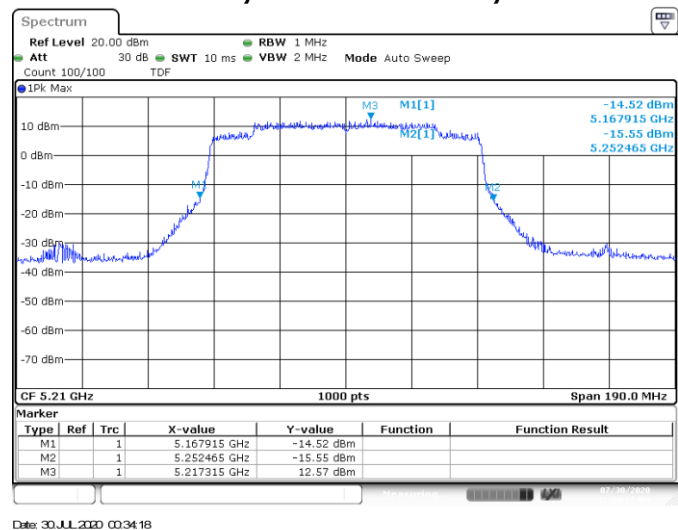
Channel 48

SISO-B, 802.11ax40, HE0



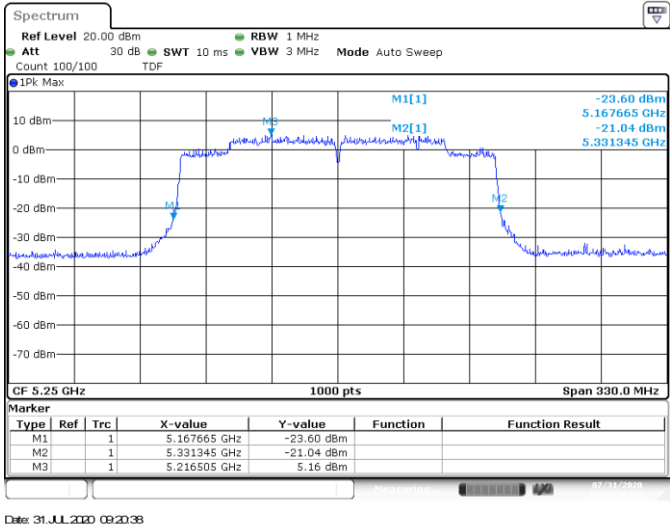
Channel 46F

SISO-A, 802.11ax80, HE0



Channel 42ac80

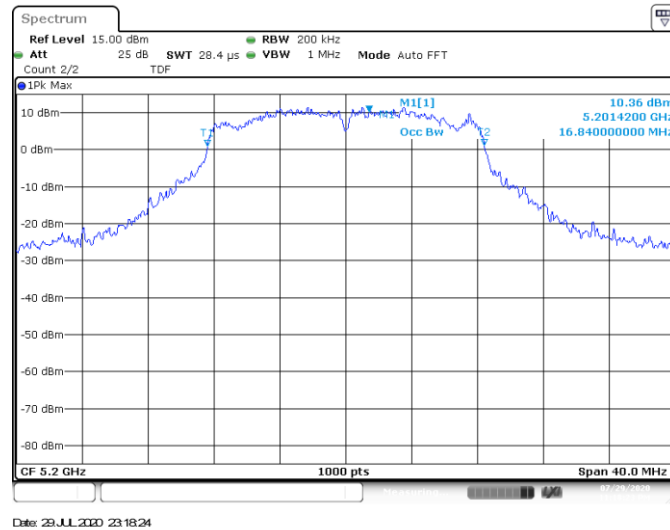
MIMO-B, 802.11ax160, HE0



Channel 50ac160

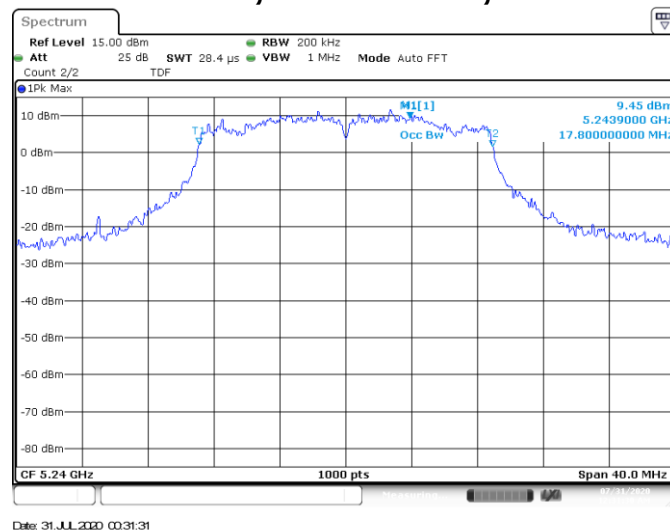
B.4.2 99% Bandwidth

SISO-A, 802.11a, 6Mbps



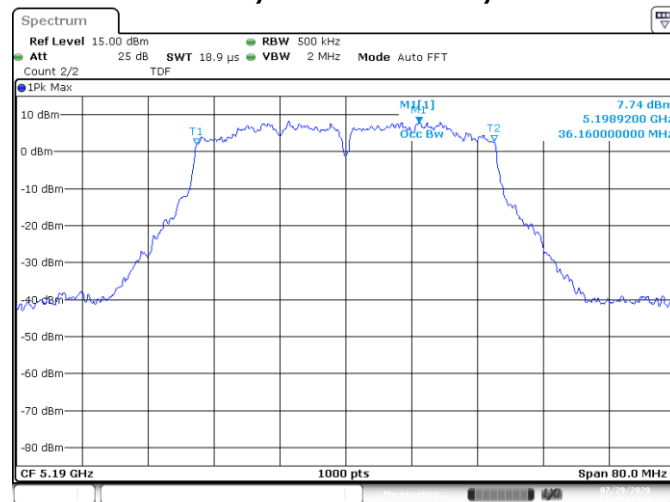
Channel 40

SISO-B, 802.11n20, HT0



Channel 48

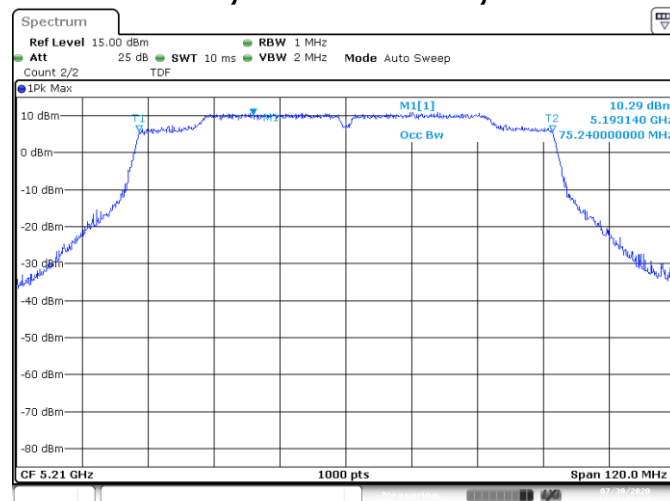
SISO-A, 802.11n40, HT0



Date: 29.JUL.2020 23:42:42

Channel 38F

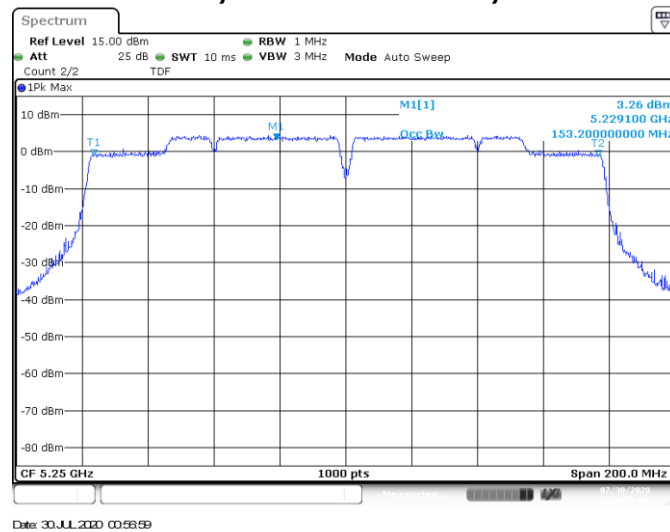
SISO-A, 802.11ac80, VHT0



Date: 30.JUL.2020 00:51:45

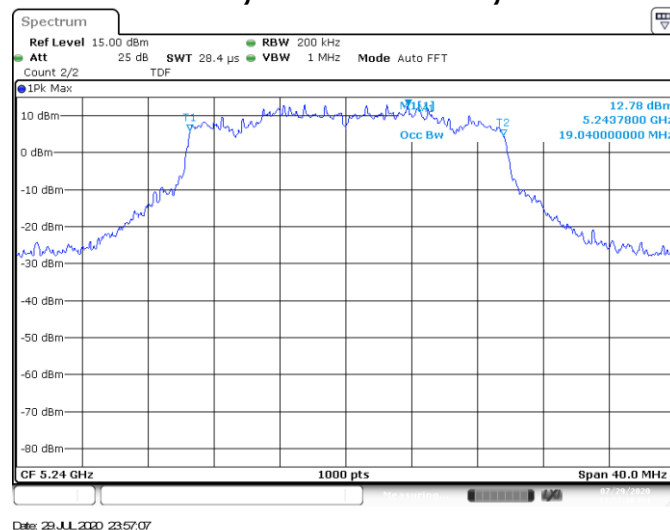
Channel 42

SISO-A, 802.11ac160, VHT0



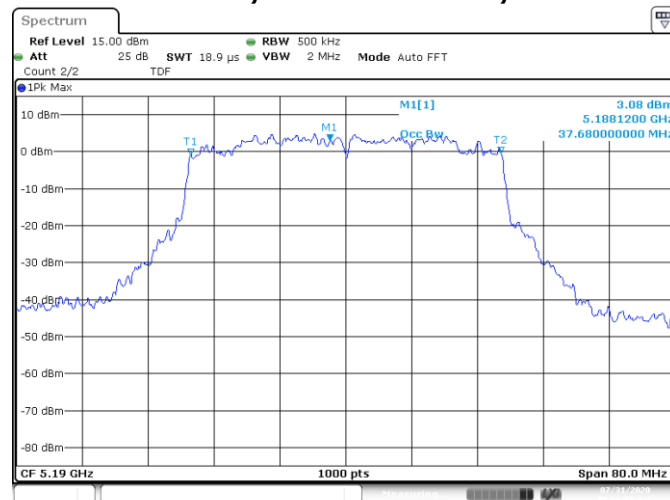
Channel 50

SISO-A, 802.11ax20, HE0



Channel 48

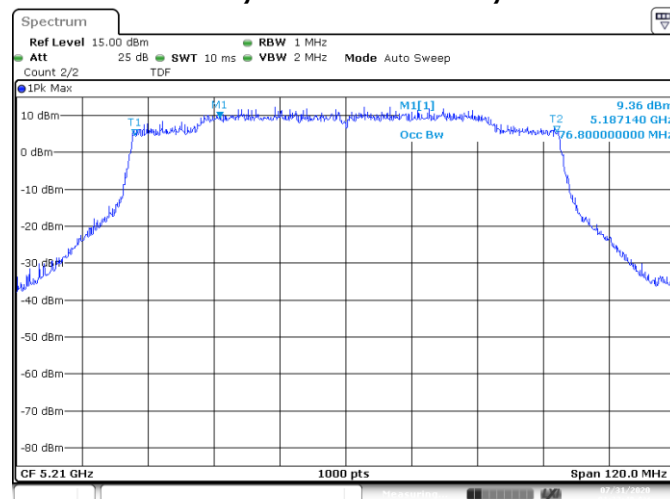
MIMO-B, 802.11ax40, HE0



Date: 31.JUL.2020 08:58:08

Channel 38F

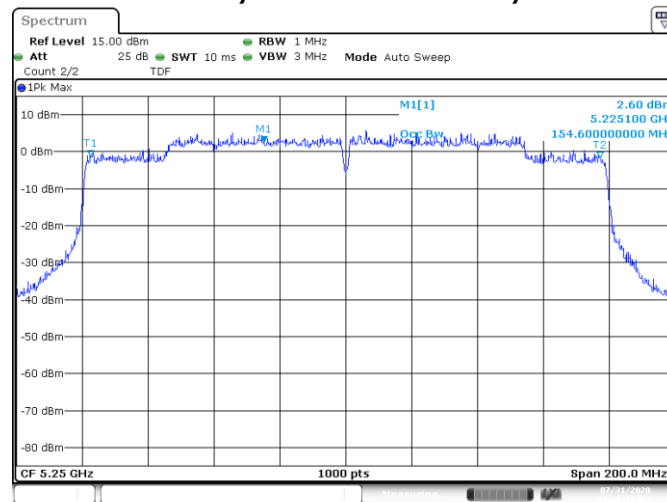
SISO-B, 802.11ax80, HE0



Date: 31.JUL.2020 01:33:49

Channel 42ac80

MIMO-B, 802.11ax160, HE0

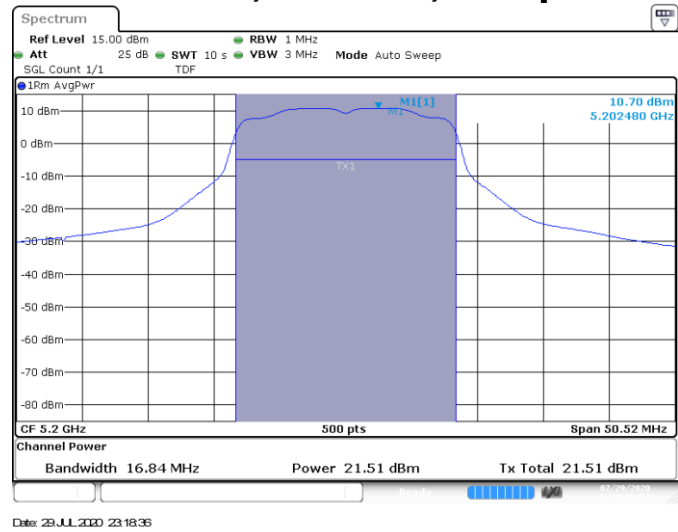


Date: 31.JUL.2020 09:20:41

Channel 50ac160

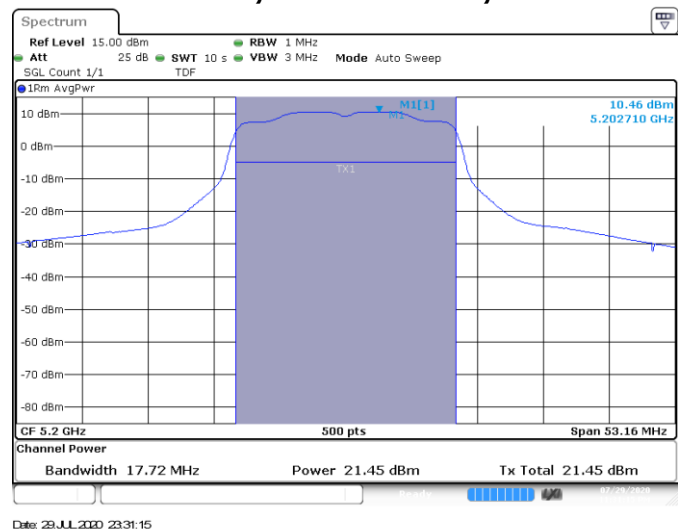
B.4.3 Power Limits. Maximum Output power & Maximum power spectral density

SISO-A, 802.11a, 6Mbps



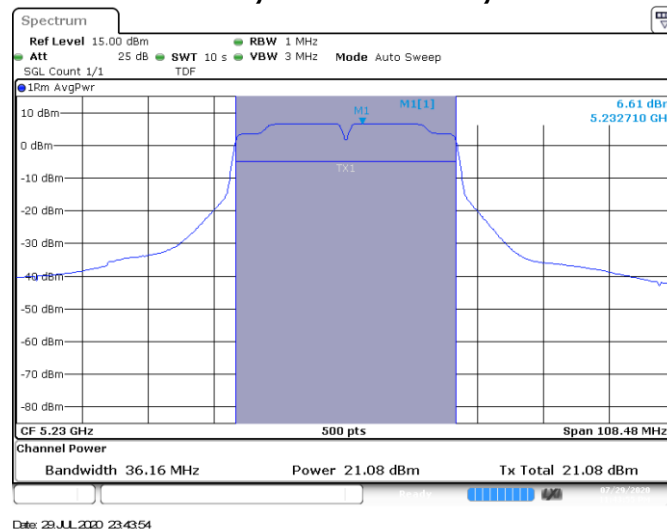
Channel 40

SISO-A, 802.11n20, HT0



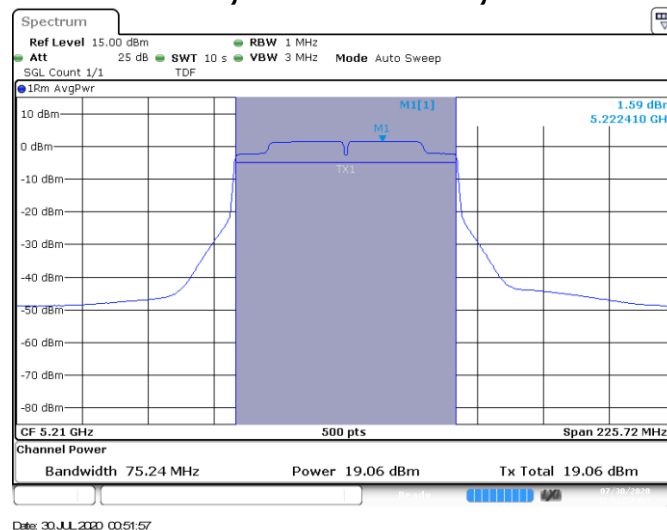
Channel 40

SISO-A, 802.11n40, HT0



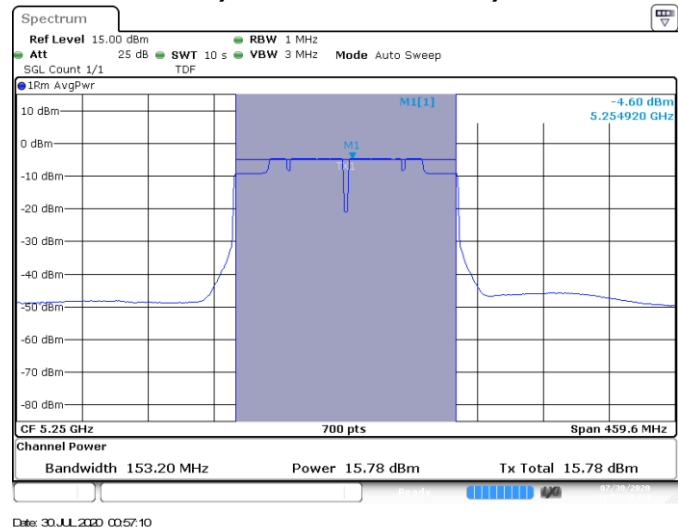
Channel 46F

SISO-A, 802.11ac80, VHT0



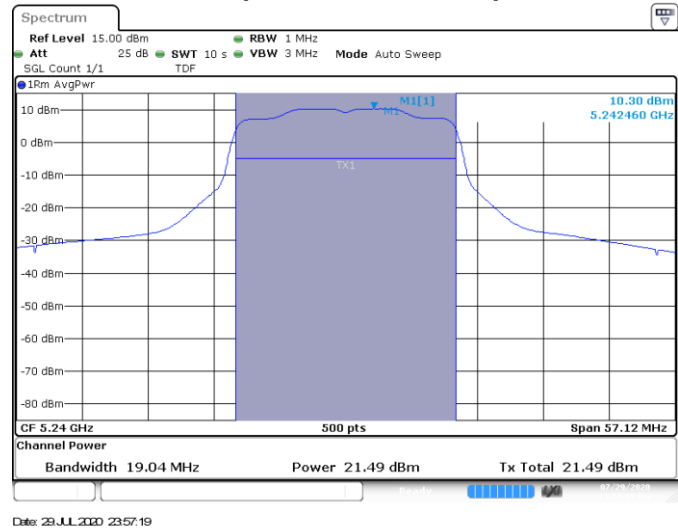
Channel 42ac80

SISO-A, 802.11ac160, VHT0



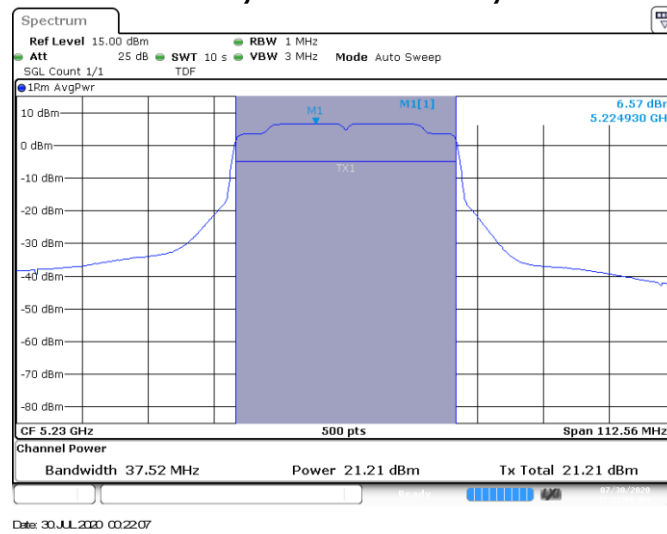
Channel 50ac160

SISO-A, 802.11ax20, HE0



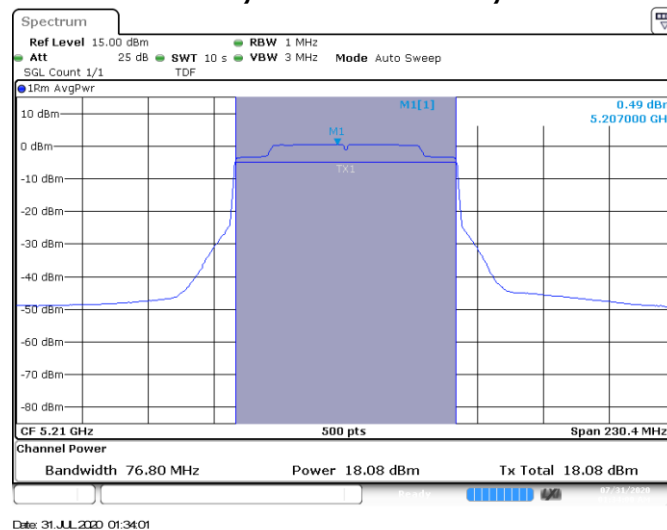
Channel 48

SISO-A, 802.11ax40, HE0



Channel 46F

SISO-B, 802.11ax80, HE0



Channel 42ac80