Test report No.: 2380950R-RFNAV02S-B

TEST REPORT
(Class II Permissive Change)

Product Name	TCx EDGE Cam+
Trademark	TOSHIBA
Model and /or type reference	6260-002
FCC ID	2AW3T-6260-002
Applicant´s name / address	Toshiba Global Commerce Solutions, Inc. 3901 South Miami Blvd., Durham,North Carolina United States 27703
Manufacturer´s name	Toshiba Global Commerce Solutions, Inc.
Test method requested, standard	FCC CFR Title 47 Part 15 Subpart E ANSI C63.4: 2014, ANSI C63.10: 2013 KDB Publication 789033
Verdict Summary	IN COMPLIANCE
Documented By (Senior Project Specialist / Ida Tung)	Ida Tung
Tested By (Senior Engineer / Bill Lin)	Bill Lin
Approved By (Senior Engineer / Alan Chen)	Alan Chen
Date of Receipt	2023/08/31
Date of Issue	2023/10/16
Report Version	V1.0

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Competences and Guarantees

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

General conditions

1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Revision History

Report No.	Version	Description	Issued Date
2380950R-RFNAV02S-B	V1.0	Initial issue of report.	2023/10/16

1. General Information

1.1. EUT Description

Product Name	TCx EDGE Cam+
Trade Name	TOSHIBA
Model No.	6260-002
EUT Rated Voltage	PoE, 48-57V⎓/ 25.5W max USB 12V⎓2.25A / 9V⎓3A / 27W max
EUT Test Voltage	DC 12V (by USB-Type C) DC 48V (by PoE)
Frequency Range	802.11a/n/ac/ax-20 MHz: 5180-5320 MHz, 5500-5700 MHz, 5720 MHz, 5745-5825 MHz 802.11n/ac/ax-40 MHz: 5190-5310 MHz, 5510-5670 MHz, 5710 MHz, 5755-5795 MHz 802.11ac/ax-80 MHz: 5210-5290 MHz, 5530-5690 MHz, 5775 MHz
Number of Channels	802.11a/n/ac/ax-20 MHz: 25 CH 802.11n/ac/ax-40 MHz: 12 CH 802.11ac/ax-80 MHz: 6 CH
Data Rate	802.11a: 6-54 Mbps 802.11n: up to 300 Mbps 802.11ac: up to 866.7 Mbps 802.11ax: up to 1201 Mbps
Type of Modulation	802.11a/n/ac/ax: OFDM, OFDMA, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM
Channel Control	Auto
USB Cable	Shielded, 2.5m
RJ45 Cable	Non-Shielded, 4.3m
Mounting Pipe	N/A

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Pulse	TZ2531W (Main)	PIFA	7.3 dBi for 5150~5250 MHz 7.6 dBi for 5250~5350 MHz 7.2 dBi for 5470~5725 MHz 6.4 dBi for 5725~5850 MHz
		TZ2530W (Aux)		7.9 dBi for 5150~5250 MHz 7.9 dBi for 5250~5350 MHz 7.9 dBi for 5470~5725 MHz 6.6 dBi for 5725~5850 MHz

Note: The antenna of EUT is conforming to FCC 15.203.

For power CDD Directional gain	For power Beamforming Directional gain
7.9 dBi for 5150-5250MHz	10.91 dBi for 5150-5250MHz
7.9 dBi for 5250-5350MHz	10.91 dBi for 5250-5350MHz
7.9 dBi for 5470-5725MHz	10.91 dBi for 5470-5725MHz
6.6 dBi for 5725-5850MHz	9.61 dBi for 5725-5850MHz

For CDD mode:

5150MHz-5250MHz: Directional gain = 7.9 dBi

5250MHz-5350MHz: Directional gain = 7.9 dBi

5470MHz-5725MHz: Directional gain = 7.9 dBi

5725MHz-5850MHz: Directional gain = 6.6 dBi

(Directional gain = $G_{ANT\ MAX}$ + Array Gain, Array Gain = 0 dB for $N_{ANT} \leq 4$)

For Beamforming mode:

5150MHz-5250MHz: Directional gain = 10.91 dBi

5250MHz-5350MHz: Directional gain = 10.91 dBi

5470MHz-5725MHz: Directional gain = 10.91 dBi

5725MHz-5850MHz: Directional gain = 9.61 dBi

Directional gain = $G_{ANT\ MAX}$ + Array Gain, Array Gain = 10*log(2) = 3.01 dB)

For Power Density Directional gain

5150MHz-5250MHz: Directional gain = 10.62 dBi

5250MHz-5350MHz: Directional gain = 10.76 dBi

5470MHz-5725MHz: Directional gain = 10.57 dBi

5725MHz-5850MHz: Directional gain = 9.51 dBi

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / N_{ANT}]$ dBi

802.11a/n/ac/ax-20 MHz Center Working Frequency of Each Channel:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
036	5180	040	5200	044	5220	048	5240
052	5260	056	5280	060	5300	064	5320
100	5500	104	5520	108	5540	112	5560
116	5580	120	5600	124	5620	128	5640
132	5660	136	5680	140	5700	144	5720
149	5745	153	5765	157	5785	161	5805
165	5825	--	--	--	--	--	--

802.11n/ac/ax-40 MHz Center Working Frequency of Each Channel:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
038	5190	046	5230	054	5270	062	5310
102	5510	110	5550	118	5590	126	5630
134	5670	142	5710	151	5755	159	5795

802.11ac/ax-80 MHz Center Working Frequency of Each Channel:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
042	5210	058	5290	106	5530	122	5610
138	5690	155	5775	--	--	--	--

Note:

1. This device is a TCx EDGE Cam+ with built-in WLAN and Bluetooth transceiver, this report for 5GHz WLAN.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report.
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
5. DEKRA has evaluated each test mode. Only the worst case is shown in the report.
6. This device does not support partial RU function, only support full RU function.
7. The CDD mode and Beamforming mode are presented in the power output test item. For other test items, CDD mode is the worst case for the final test and shown in this report.
8. This is to request a Class II permissive change.
   The major change filed under this application is:
   Change #1: Enable CDD and Beamforming function by software(SW version: v0.1630_Perf) and test Output power, verify Radiated Emission, Band Edge and Duty Cycle.
9. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance of transmitter with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.

Test Mode	Mode 1	Transmit (802.11a)-CDD
		Transmit (802.11ax-20 MHz)-CDD
		Transmit (802.11ax-40 MHz)-CDD
		Transmit (802.11ax-80 MHz)-CDD
		Transmit (802.11ax-20BW)-Beamforming
		Transmit (802.11ax-40BW)-Beamforming
		Transmit (802.11ax-80BW)-Beamforming

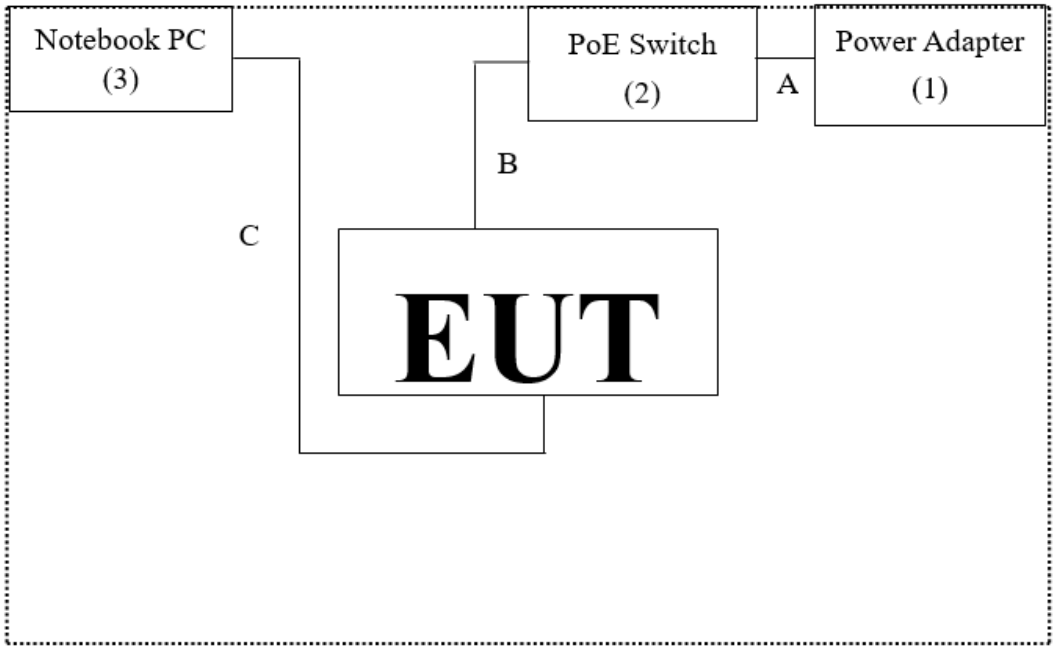
1.2. Tested System Datails

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Power Adapter	NETGEAR	2ACL068S	N/A	N/A
2	PoE Switch	NETGEAR	GS305Pv2	N/A	N/A
3	Notebook PC	DELL	Latitude E5440	FS9TK32	N/A

Cable Type		Cable Description
A	Power Cable	Non-shielded, 1.5m
B	LAN Cable	Non-shielded, 4.2m
C	USB-Type C Cable	Shielded, 2.5m

1.3. Configuration of tested System



1.4. EUT Exercise Software

1	Setup the EUT as shown in Section 1.3.
2	Execute software “QRCT Ver. 4.0.210.0” on the Notebook PC.
3	Configure the test mode, the test channel, and the data rate.
4	Press “OK” to start the continuous transmit.
5	Verify that the EUT works properly.

1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Radiated Emission	Temperature (°C)	10~40 °C	23.4 °C
	Humidity (%RH)	10~90 %	66.8 %
Conductive	Temperature (°C)	10~40 °C	22.0 °C
	Humidity (%RH)	10~90 %	61.0 %

USA	FCC Registration Number: TW0033
Canada	CAB Identifier Number: TW3023 / Company Number: 26930

Site Description	Accredited by TAF
	Accredited Number: 3023

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
	Linkou Laboratory
Address	No.5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan, R.O.C
Performed Location	No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan, R.O.C.
Phone Number	+886-3-275-7255
Fax Number	+886-3-327-8031

1.6. List of Test Equipment

For Conduction Measurements / HY-SR01

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
	EMI Test Receiver	R&S	ESR7	101601	2023/06/20	2024/06/19
	Two-Line V-Network	R&S	ENV216	101306	2023/03/16	2024/03/15
	Two-Line V-Network	R&S	ENV216	101307	2023/08/17	2024/08/16
	Coaxial Cable	SUHNER	RG400_BNC	RF001	2023/01/10	2024/01/09

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "V" are used to measure the final test results.
3. Test Software Version: e3 230303 dekra V9.

For Conducted Measurements / HY-SR02

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	Spectrum Analyzer	R&S	FSV30	103466	2022/12/22	2023/12/21
V	Spectrum Analyzer	KEYSIGHT	N9010A	MY53470892	2022/11/7	2023/11/06
V	Peak Power Analyzer	KEYSIGHT	8990B	MY51000539	2023/05/15	2024/05/14
V	Wideband Power Sensor	KEYSIGHT	N1923A	MY59240002	2023/05/18	2024/05/18
V	Wideband Power Sensor	KEYSIGHT	N1923A	MY59240003	2023/05/18	2024/05/17

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "V" are used to measure the final test results.
3. Test Software Version: RF Conducted Test Tools R3 V3.0.0.14.

For Radiated Measurements /HY-CB01

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
V	Loop Antenna	AMETEK	HLA6121	56736	2023/05/23	2024/05/24
V	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-0675	2023/08/09	2025/08/08
V	Horn Antenna	RF SPIN	DRH18-E	210802A18ES	2023/03/23	2024/03/22
V	Horn Antenna	Com-Power	AH-840	101101	2021/11/30	2023/11/29
V	Pre-Amplifier	SGH	0301	20211007-7	2023/01/10	2024/01/09
V	Pre-Amplifier	EMCI	EMC051845SE	980632	2023/01/10	2024/01/09
V	Pre-Amplifier	EMCI	EMC05820SE	980362	2023/01/10	2024/01/09
V	Pre-Amplifier	EMCI	EMC184045SE	980369	2023/01/10	2024/01/09
	Coaxial Cable	EMCI	EMC102-KM-KM-600	1160314		
	Coaxial Cable	EMCI	EMC102-KM-KM-7000	170242		
	Filter	MICRO TRONICS	BRM50702	G251	2023/01/05	2024/01/04
V	Filter	MICRO TRONICS	BRM50716	067	2023/01/05	2024/01/04
V	EMI Test Receiver	R&S	ESR3	102792	2022/12/29	2023/12/28
V	Spectrum Analyzer	R&S	FSV3044	101115	2023/01/06	2024/01/05
V	Coaxial Cable	SUHNER	SUCOFLEX 106	25450/6	2023/01/10	2024/01/09
	Coaxial Cable	SGH	HA800	GD20110222-8		
	Coaxial Cable	SGH	SGH18	2021003-8		
	Coaxial Cable	EMCI	EMC106	151113		

Note:

1. Bi-Log Antenna and Horn Antenna(AH-840) is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with "V" are used to measure the final test results.
3. Test Software Version: e3 230303 dekra V9.

1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document.

The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

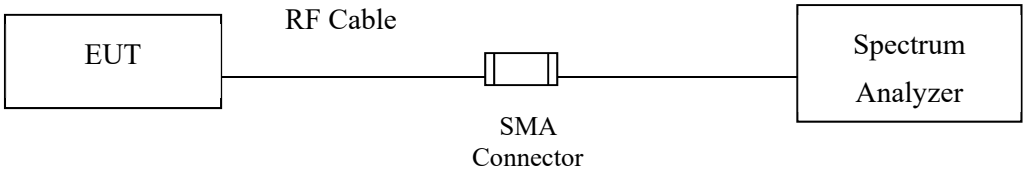
Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test item	**Uncertainty**
Maximum conducted output power	Spectrum Analyzer: ±2.14 dB Power Meter: ±1.05 dB
Peak Power Spectral Density	±2.14 dB
Radiated Emission	9 kHz~30 MHz: ±3.88 dB 30 MHz~1 GHz: ±4.42 dB 1 GHz~18 GHz: ±4.28 dB 18 GHz~40 GHz: ±3.90 dB
Band Edge	9 kHz~30 MHz: ±3.88 dB 30 MHz~1 GHz: ±4.42 dB 1 GHz~18 GHz: ±4.28 dB 18 GHz~40 GHz: ±3.90 dB
Duty Cycle	±0.53 %

2. Maximun conducted output power

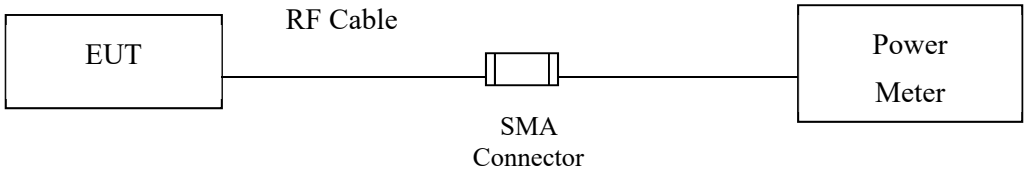
2.1. Test Setup

26dB Occupied Bandwidth

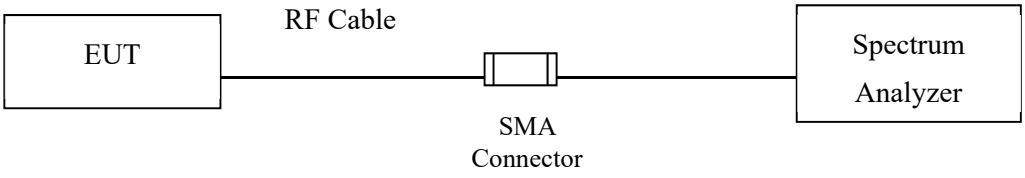


Conduction Power Measurement

Conduction Power Measurement (for 802.11an)



Conduction Power Measurement (for 802.11ac/ax)



2.2. Limits

For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-topoint U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable 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. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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 26dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

2.3. Test Procedure

As an alternative to FCC KDB-789033, the EUT maximum conducted output power was measured with an average power meter employing a video bandwidth greater the 6dB BW of the emission under test. Maximum conducted output power was read directly from the meter across all data rates, and across three channels within each sub-band. Special care was used to make sure that the EUT was transmitting in continuous mode. This method exceeds the limitations of FCC KDB-789033, and provides more accurate measurements.

802.11an (BW≦40MHz) Maximum conducted output power using KDB 789033 section E)3)b) Method PM-G (Measurement using a gated RF average power meter)
Note: the power meter have a video bandwidth that is greater than or equal to the measurement bandwidth, (Anritsu/ MA2411B video bandwidth: 65MHz)

802.11ac (BW=80MHz) Maximum conducted output power using KDB 789033 section E)2)b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep).

When transmitted signals consist of two or more non-contiguous spectrum segments (e.g., 80+80 MHz mode) or when a single spectrum segment of a transmission crosses the boundary between two adjacent U-NII bands, KDB 644545 D03 section D) procedure is used for measurements.

2.4. Test Result of Maximum conducted output power

Product : TCx EDGE Cam+
Test Item : Maximum conducted output power
Test Mode : Transmit (802.11a)-CDD
Test Date : 2023/09/07

Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Duty factor (dB)	Output Power (dBm)	Output Power Limit	
							(dBm)	dBm+10log(BW)
36	5180	--	11.39	11.70	--	14.56	22.1	--
44	5220	--	11.27	11.56	--	14.43	22.1	--
48	5240	--	11.33	11.80	--	14.58	22.1	--
52	5260	19.06	11.16	11.65	--	14.42	22.1	23.80
60	5300	19.26	11.31	11.76	--	14.55	22.1	23.85
64	5320	19.18	11.26	11.63	--	14.46	22.1	23.83
100	5500	19.02	11.30	11.70	--	14.51	22.1	23.79
116	5580	19.42	11.49	11.72	--	14.62	22.1	23.88
140	5700	19.18	11.23	11.85	--	14.56	22.1	23.83
144(U-NII-2C)	5720	14.43	10.16	10.85	0.34	13.87	22.1	22.59
144(U-NII-3)	5720	--	3.98	4.56	0.34	7.63	29.4	--
149	5745	--	11.35	11.83	--	14.61	29.4	--
157	5785	--	11.16	11.68	--	14.44	29.4	--
165	5825	--	11.06	11.77	--	14.44	29.4	--

Note:
1. Output Power Value (dBm) = 10*LOG (Chain A(mW) + Chain B(mW)) + Duty factor.
2. 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.

Product : TCx EDGE Cam+
Test Item : Maximum conducted output power
Test Mode : Transmit (802.11ax-20 MHz)-CDD
Test Date : 2023/09/07

Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Duty factor (dB)	Output Power (dBm)	Output Power Limit	
							(dBm)	dBm+10log(BW)
36	5180	--	11.26	11.60	--	14.44	22.1	--
44	5220	--	11.42	11.82	--	14.63	22.1	--
48	5240	--	11.30	11.61	--	14.47	22.1	--
52	5260	21.10	11.35	11.81	--	14.60	22.1	24.24
60	5300	21.10	11.07	11.62	--	14.36	22.1	24.24
64	5320	20.90	11.21	11.56	--	14.40	22.1	24.20
100	5500	20.98	11.08	11.59	--	14.35	22.1	24.22
116	5580	20.90	11.33	11.70	--	14.53	22.1	24.20
140	5700	20.86	11.13	11.56	--	14.36	22.1	24.19
144(U-NII-2C)	5720	15.47	10.02	10.63	0.00	13.35	22.1	22.89
144(U-NII-3)	5720	--	4.21	4.78	0.00	7.51	29.4	--
149	5745	--	11.15	11.74	--	14.47	29.4	--
157	5785	--	11.20	11.65	--	14.44	29.4	--
165	5825	--	11.21	12.05	--	14.66	29.4	--

Note:
1. Output Power Value (dBm) = 10*LOG (Chain A(mW) + Chain B(mW)) + Duty factor.
2. 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.

Product : TCx EDGE Cam+
Test Item : Maximum conducted output power
Test Mode : Transmit (802.11ax-40 MHz)-CDD
Test Date : 2023/09/07

Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Duty factor (dB)	Output Power (dBm)	Output Power Limit	
							(dBm)	dBm+10log(BW)
38	5190	--	11.52	11.72	--	14.63	22.1	--
46	5230	--	11.42	11.90	--	14.68	22.1	--
54	5270	40.20	11.33	11.91	--	14.64	22.1	27.04
62	5310	40.04	11.22	11.68	--	14.47	22.1	27.02
102	5510	40.04	11.14	11.54	--	14.35	22.1	27.02
110	5550	39.96	11.01	11.75	--	14.41	22.1	27.02
134	5670	39.88	11.39	11.79	--	14.60	22.1	27.01
142(U-NII-2C)	5710	35.14	10.78	11.20	0.00	14.01	22.1	26.46
142(U-NII-3)	5710	4.98	0.21	1.07	0.00	3.67	29.4	17.97
151	5755	--	11.03	11.68	--	14.38	29.4	--
159	5795	--	11.07	11.90	--	14.52	29.4	--

Note:
1. Output Power Value (dBm) = 10*LOG (Chain A(mW) + Chain B(mW)) + Duty factor.
2. 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.
3.99% Bandwidth for Band 1.

Product : TCx EDGE Cam+
Test Item : Maximum conducted output power
Test Mode : Transmit (802.11ax-80 MHz)-CDD
Test Date : 2023/09/07

Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Duty factor (dB)	Output Power (dBm)	Output Power Limit	
							(dBm)	dBm+10log(BW)
42	5210	--	11.27	11.56	--	14.43	22.1	--
58	5290	81.36	11.20	11.67	--	14.45	22.1	30.10
106	5530	80.72	11.14	11.78	--	14.48	22.1	30.07
122	5610	81.36	11.14	11.72	--	14.45	22.1	30.10
138(U-NII-2C)	5690	75.60	10.96	11.55	0.00	14.28	22.1	29.79
138(U-NII-3)	5690	--	-3.48	-2.23	0.00	0.20	29.4	--
155	5775	--	11.15	11.74	--	14.47	29.4	--

Note:
1. Output Power Value (dBm) = 10*LOG (Chain A(mW) + Chain B(mW))
2. 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.

Product : TCx EDGE Cam+
Test Item : Maximum conducted output power
Test Mode : Transmit (802.11ax-20BW)-Beamforming
Test Date : 2023/09/07

Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Duty factor (dB)	Output Power (dBm)	Output Power Limit	
							(dBm)	dBm+10log(BW)
36	5180	--	8.25	8.59	--	11.43	19.09	--
44	5220	--	8.41	8.81	--	11.62	19.09	--
48	5240	--	8.29	8.60	--	11.46	19.09	--
52	5260	21.10	8.34	8.80	--	11.59	19.09	24.24
60	5300	21.10	8.06	8.61	--	11.35	19.09	24.24
64	5320	20.90	8.20	8.55	--	11.39	19.09	24.20
100	5500	20.98	8.07	8.58	--	11.34	19.09	24.22
116	5580	20.90	8.32	8.69	--	11.52	19.09	24.20
140	5700	20.86	8.12	8.55	--	11.35	19.09	24.19
144(U-NII-2C)	5720	15.47	7.01	7.62	0.00	10.34	19.09	22.89
144(U-NII-3)	5720	--	1.20	1.77	0.00	4.50	26.39	--
149	5745	--	8.14	8.73	--	11.46	26.39	--
157	5785	--	8.19	8.64	--	11.43	26.39	--
165	5825	--	8.20	9.04	--	11.65	26.39	--

Note:
1. Output Power Value (dBm) = 10*LOG (Chain A(mW) + Chain B(mW)) + Duty factor.
2. 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.

Product : TCx EDGE Cam+
Test Item : Maximum conducted output power
Test Mode : Transmit (802.11ax-40BW)-Beamforming
Test Date : 2023/09/07

Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Duty factor (dB)	Output Power (dBm)	Output Power Limit	
							(dBm)	dBm+10log(BW)
38	5190	--	8.51	8.71	--	11.62	19.09	--
46	5230	--	8.41	8.89	--	11.67	19.09	--
54	5270	40.20	8.32	8.90	--	11.63	19.09	27.04
62	5310	40.04	8.21	8.67	--	11.46	19.09	27.02
102	5510	40.04	8.13	8.53	--	11.34	19.09	27.02
110	5550	39.96	8.00	8.74	--	11.40	19.09	27.02
134	5670	39.88	8.38	8.78	--	11.59	19.09	27.01
142(U-NII-2C)	5710	35.14	7.77	8.19	0.00	11.00	19.09	26.46
142(U-NII-3)	5710	4.98	-2.80	-1.94	0.00	0.66	26.39	17.97
151	5755	--	8.02	8.67	--	11.37	26.39	--
159	5795	--	8.06	8.89	--	11.51	26.39	--

Note:
1. Output Power Value (dBm) = 10*LOG (Chain A(mW) + Chain B(mW)) + Duty factor.
2. 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.
3.99% Bandwidth for Band 1.

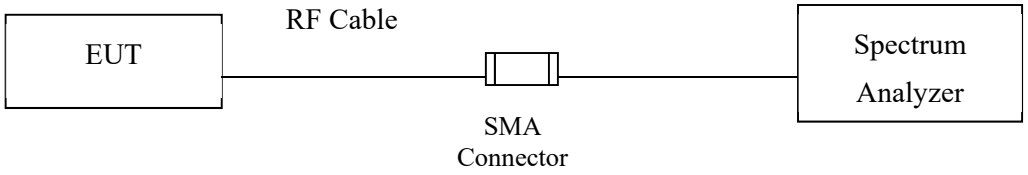
Product : TCx EDGE Cam+
Test Item : Maximum conducted output power
Test Mode : Transmit (802.11ax-80BW)-Beamforming
Test Date : 2023/09/07

Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Duty factor (dB)	Output Power (dBm)	Output Power Limit	
							(dBm)	dBm+10log(BW)
42	5210	--	8.26	8.55	--	11.42	19.09	--
58	5290	81.36	8.19	8.66	--	11.44	19.09	30.10
106	5530	80.72	8.13	8.77	--	11.47	19.09	30.07
122	5610	81.36	8.13	8.71	--	11.44	19.09	30.10
138(U-NII-2C)	5690	75.60	7.95	8.54	0.00	11.27	19.09	29.79
138(U-NII-3)	5690	--	-6.49	-5.24	0.00	-2.81	26.39	--
155	5775	--	8.14	8.73	--	11.46	26.39	--

Note:
1. Output Power Value (dBm) = 10*LOG (Chain A(mW) + Chain B(mW))
2. 26dB Bandwidth is the bandwidth of chain A or B whichever is less bandwidth, output power limitation is more stringent.

3. Peak Power Spectral Density

3.1. Test Setup



3.2. Limits

For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-topoint U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, 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, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, 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, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

3.3. Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

The Peak Power Spectral Density using KDB 789033 section F) procedure, Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer.

SA-1 method is selected to run the test.

3.4. Test Result of Peak Power Spectral Density

Product : TCx EDGE Cam+
Test Item : Peak Power Spectral Density
Test Mode : Transmit (802.11a)-CDD
Test Date : 2023/10/11

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD/MHz (dBm)	Duty factor (dB)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
36	5180	6	A	-1.89	0.34	1.46	<6.38	Pass
			B	-1.37	0.34	1.98		Pass
44	5220	6	A	-1.20	0.34	2.15	<6.38	Pass
			B	-0.65	0.34	2.70		Pass
48	5240	6	A	-1.02	0.34	2.33	<6.38	Pass
			B	-0.65	0.34	2.70		Pass
52	5260	6	A	-0.77	0.34	2.58	<6.24	Pass
			B	-0.66	0.34	2.69		Pass
60	5300	6	A	-1.12	0.34	2.23	<6.24	Pass
			B	-0.68	0.34	2.67		Pass
64	5320	6	A	-0.93	0.34	2.42	<6.24	Pass
			B	-0.66	0.34	2.69		Pass
100	5500	6	A	-1.42	0.34	1.93	<6.43	Pass
			B	-1.37	0.34	1.98		Pass
116	5580	6	A	-1.14	0.34	2.21	<6.43	Pass
			B	-0.61	0.34	2.74		Pass
140	5700	6	A	-0.65	0.34	2.70	<6.43	Pass
			B	-0.12	0.34	3.23		Pass
144 (U-NII-2C)	5720	6	A	-0.95	0.34	2.40	<6.43	Pass
			B	-0.18	0.34	3.17		Pass

Note:

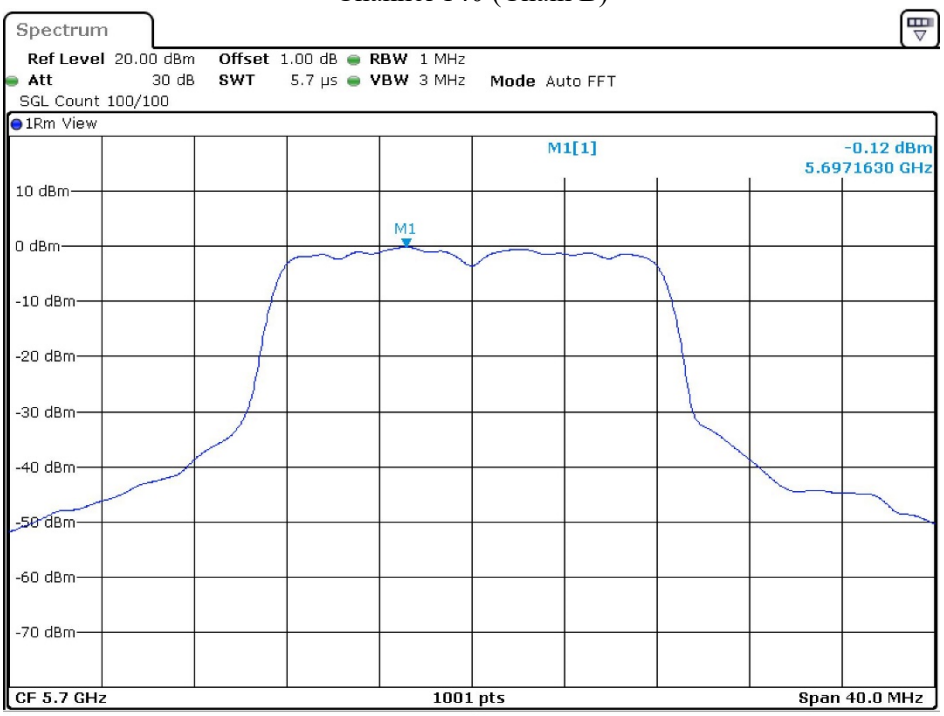
1. Total PPSD/MHz = PPSD/MHz +10*log 2 (two antennas)+Duty factor.
2. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD (dBm)	Duty factor (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
144 (U-NII-3)	5720	6	A	-4.89	0.34	-1.54	<26.49	Pass
			B	-4.32	0.34	-0.97		Pass
149	5745	6	A	-3.95	0.34	-0.60	<26.49	Pass
			B	-2.72	0.34	0.63		Pass
157	5785	6	A	-3.80	0.34	-0.45	<26.49	Pass
			B	-3.24	0.34	0.11		Pass
165	5825	6	A	-4.75	0.34	-1.40	<26.49	Pass
			B	-3.66	0.34	-0.31		Pass

Note:

1. Total PPSD/MHz = PPSD/MHz +10*log 2 (two antennas)+Duty factor.
2. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel 140 (Chain B)



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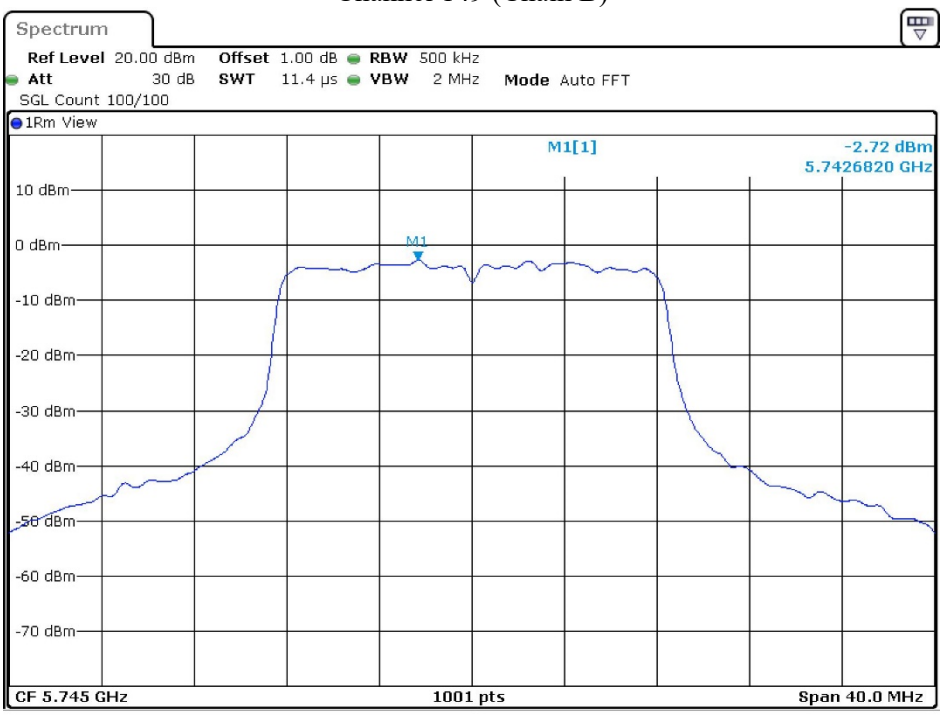
Channel 149 (Chain B)



Date: 11.OCT.2023 15:44:35

Product : TCx EDGE Cam+
Test Item : Peak Power Spectral Density
Test Mode : Transmit (802.11ax-20 MHz)-CDD
Test Date : 2023/10/11

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD/MHz (dBm)	Duty factor (dB)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
36	5180	MCS0	A	-1.07	--	1.94	<6.38	Pass
			B	-0.46	--	2.55		Pass
44	5220	MCS0	A	-0.67	--	2.34	<6.38	Pass
			B	0.20	--	3.21		Pass
48	5240	MCS0	A	-0.58	--	2.43	<6.38	Pass
			B	-0.33	--	2.68		Pass
52	5260	MCS0	A	-0.68	--	2.33	<6.24	Pass
			B	0.05	--	3.06		Pass
60	5300	MCS0	A	-0.72	--	2.29	<6.24	Pass
			B	-0.49	--	2.52		Pass
64	5320	MCS0	A	-0.56	--	2.45	<6.24	Pass
			B	-0.51	--	2.50		Pass
100	5500	MCS0	A	-1.73	--	1.28	<6.43	Pass
			B	-1.03	--	1.98		Pass
116	5580	MCS0	A	-0.96	--	2.05	<6.43	Pass
			B	-0.74	--	2.27		Pass
140	5700	MCS0	A	-0.81	--	2.20	<6.43	Pass
			B	-0.53	--	2.48		Pass
144 (U-NII-2C)	5720	MCS0	A	-1.01	--	2.00	<6.43	Pass
			B	-0.56	--	2.45		Pass

Note:

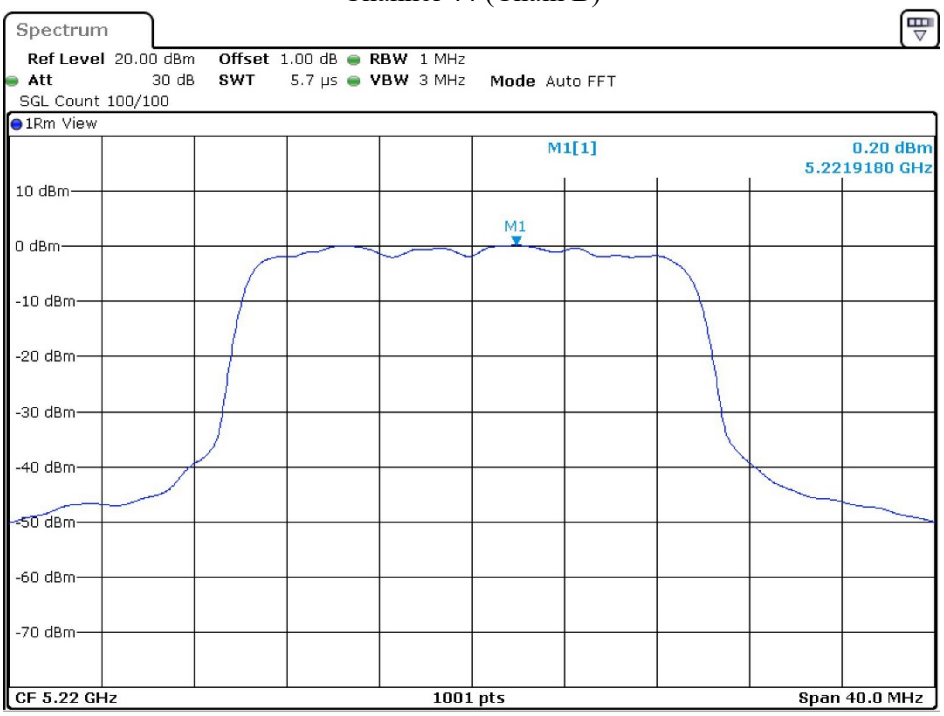
1. Total PPSD/MHz = PPSD/MHz +10*log 2 (two antennas)+Duty factor.
2. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD (dBm)	Duty factor (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
144 (U-NII-3)	5720	MCS0	A	-4.80	--	-1.79	<26.49	Pass
			B	-4.25	--	-1.24		Pass
149	5745	MCS0	A	-3.32	--	-0.31	<26.49	Pass
			B	-3.13	--	-0.12		Pass
157	5785	MCS0	A	-4.12	--	-1.11	<26.49	Pass
			B	-3.08	--	-0.07		Pass
165	5825	MCS0	A	-4.07	--	-1.06	<26.49	Pass
			B	-3.35	--	-0.34		Pass

Note:

1. Total PPSD/MHz = PPSD/MHz +10*log 2 (two antennas)+Duty factor.
2. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel 44 (Chain B)



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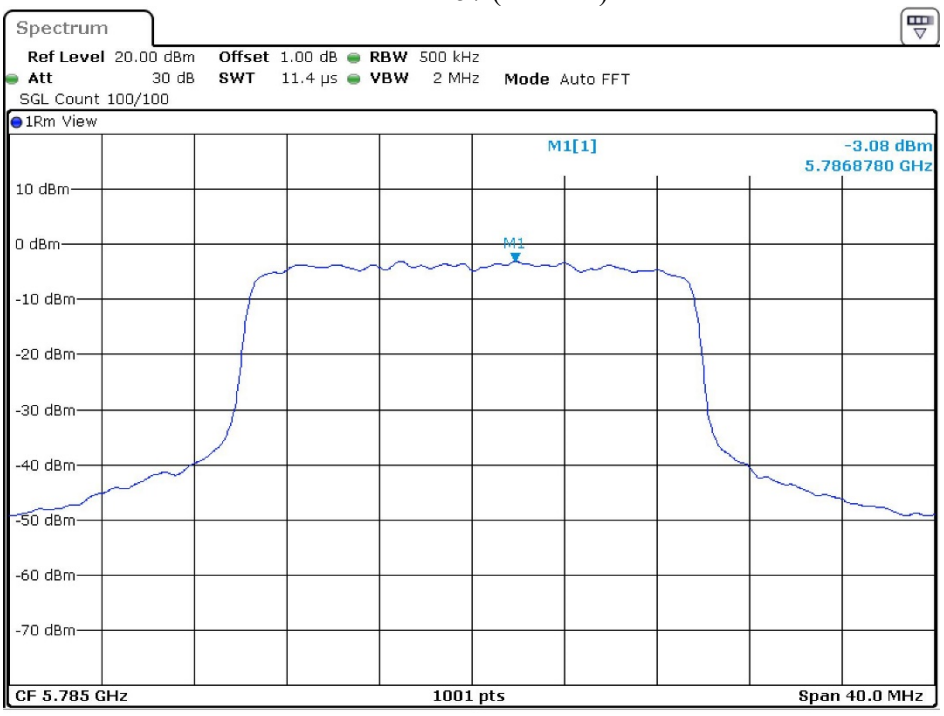
Channel 157 (Chain B)



Date: 11.OCT.2023 17:28:10

Product : TCx EDGE Cam+
Test Item : Peak Power Spectral Density
Test Mode : Transmit (802.11ax-40 MHz)-CDD
Test Date : 2023/04/18

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD/MHz (dBm)	Duty factor (dB)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
38	5190	MCS0	A	-2.69	--	0.32	<6.38	Pass
			B	-2.61	--	0.40		Pass
46	5230	MCS0	A	-2.62	--	0.39	<6.38	Pass
			B	-2.95	--	0.06		Pass
54	5270	MCS0	A	-3.61	--	-0.60	<6.24	Pass
			B	-2.93	--	0.08		Pass
62	5310	MCS0	A	-3.24	--	-0.23	<6.24	Pass
			B	-2.99	--	0.02		Pass
102	5510	MCS0	A	-4.39	--	-1.38	<6.43	Pass
			B	-4.12	--	-1.11		Pass
110	5550	MCS0	A	-4.43	--	-1.42	<6.43	Pass
			B	-3.33	--	-0.32		Pass
134	5670	MCS0	A	-3.60	--	-0.59	<6.43	Pass
			B	-3.03	--	-0.02		Pass
142 (U-NII-2C)	5710	MCS0	A	-4.07	--	-1.06	<6.43	Pass
			B	-4.54	--	-1.53		Pass

Note:

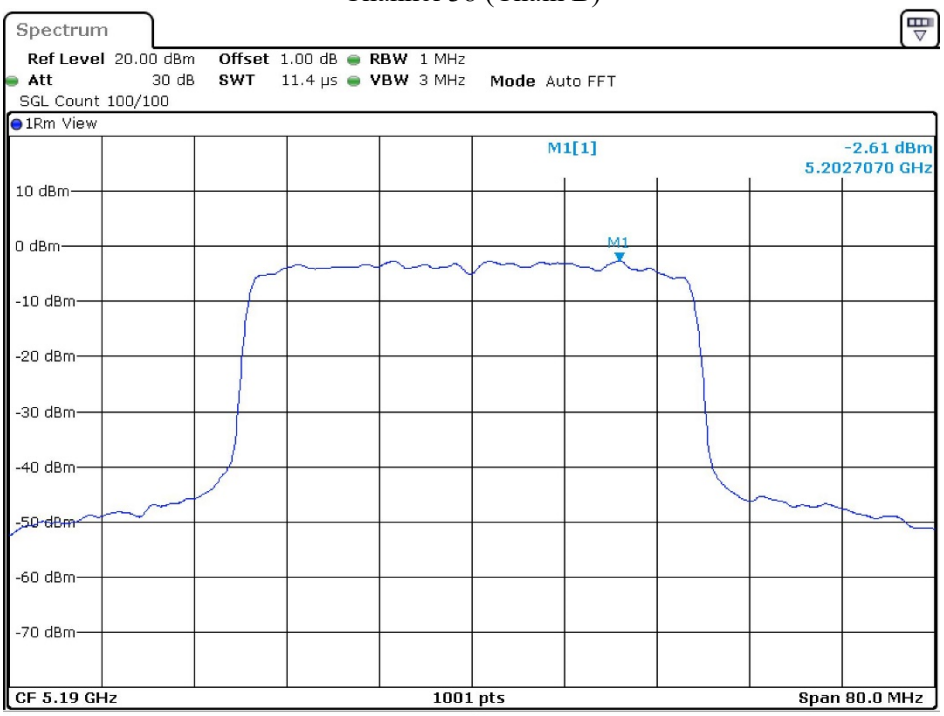
1. Total PPSD/MHz = PPSD/MHz +10*log 2 (two antennas)+Duty factor.
2. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD (dBm)	Duty factor (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
142 (U-NII-3)	5710	MCS0	A	-9.06	--	-6.05	<26.49	Pass
			B	-9.56	--	-6.55		Pass
151	5755	MCS0	A	-6.42	--	-3.41	<26.49	Pass
			B	-5.63	--	-2.62		Pass
159	5795	MCS0	A	-6.64	--	-3.63	<26.49	Pass
			B	-5.23	--	-2.22		Pass

Note:

1. Total PPSD/MHz = PPSD/MHz +10*log 2 (two antennas)+Duty factor.
2. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel 38 (Chain B)



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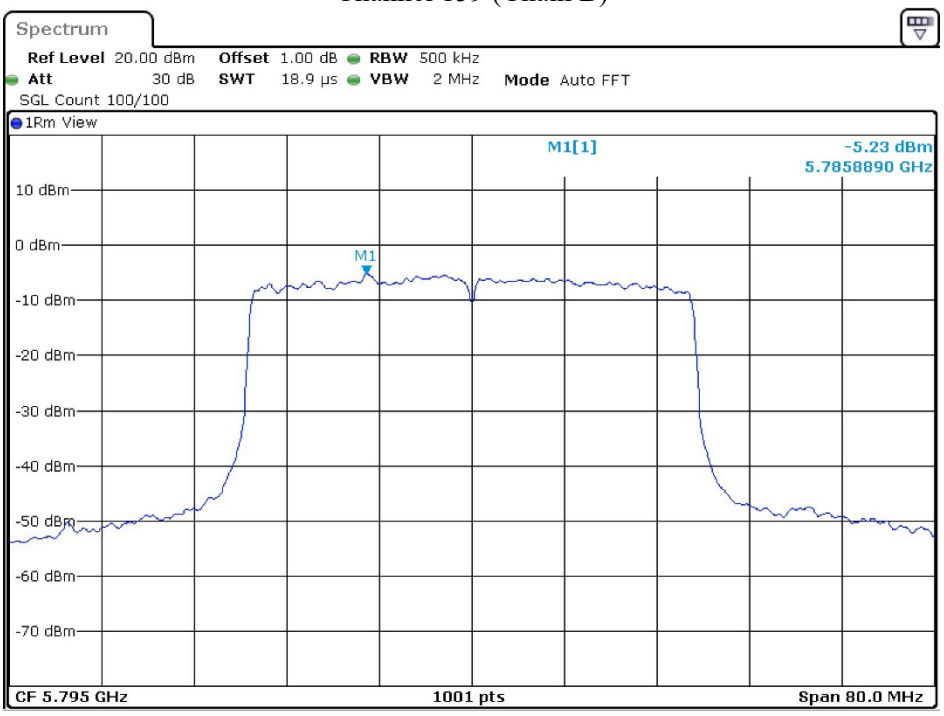
Channel 159 (Chain B)



Date: 11.OCT.2023 18:02:17

Product : TCx EDGE Cam+
Test Item : Peak Power Spectral Density
Test Mode : Transmit (802.11ax-80 MHz)-CDD
Test Date : 2023/10/11

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD/MHz (dBm)	Duty factor (dB)	Total PPSD/MHz (dBm)	Required Limit (dBm)	Result
42	5210	MCS0	A	-6.74	--	-3.73	<6.38	Pass
			B	-6.33	--	-3.32		Pass
58	5290	MCS0	A	-6.65	--	-3.64	<6.24	Pass
			B	-5.95	--	-2.94		Pass
106	5530	MCS0	A	-7.35	--	-4.34	<6.43	Pass
			B	-7.73	--	-4.72		Pass
122	5610	MCS0	A	-7.50	--	-4.49	<6.43	Pass
			B	-7.55	--	-4.54		Pass
138 (U-NII-3)	5690	MCS0	A	-7.13	--	-4.12	<6.43	Pass
			B	-6.65	--	-3.64		Pass

Note:

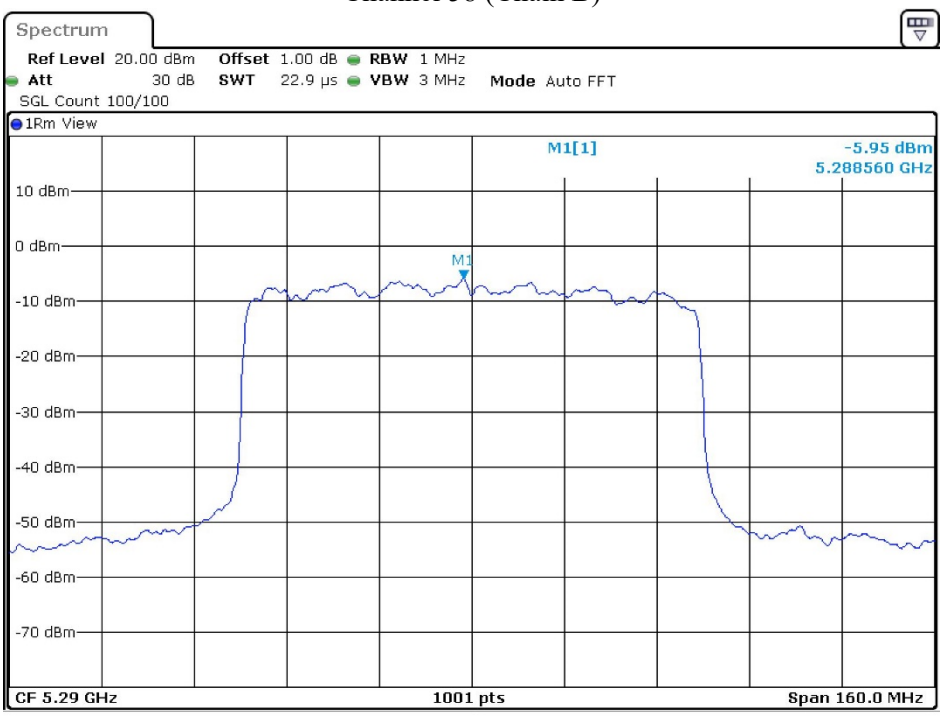
1. Total PPSD/MHz = PPSD/MHz +10*log 2 (two antennas)+Duty factor.
2. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel No.	Frequency (MHz)	Data Rate (Mbps)	Chain	PPSD (dBm)	Duty factor (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
138 (U-NII-3)	5690	MCS0	A	-12.33	--	-9.32	<26.49	Pass
			B	-11.91	--	-8.90		Pass
155	5775	MCS0	A	-9.52	--	-6.51	<26.49	Pass
			B	-9.29	--	-6.28		Pass

Note:

1. Total PPSD/MHz = PPSD/MHz +10*log 2 (two antennas)+Duty factor.
2. The quantity 10*log 2 (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel 58 (Chain B)



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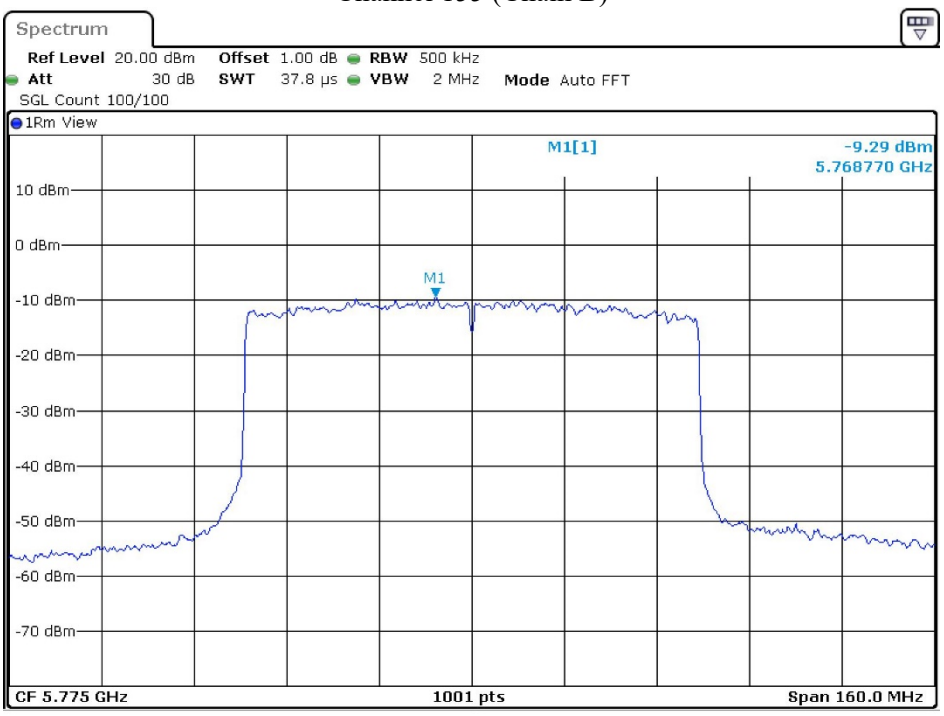
Channel 155 (Chain B)



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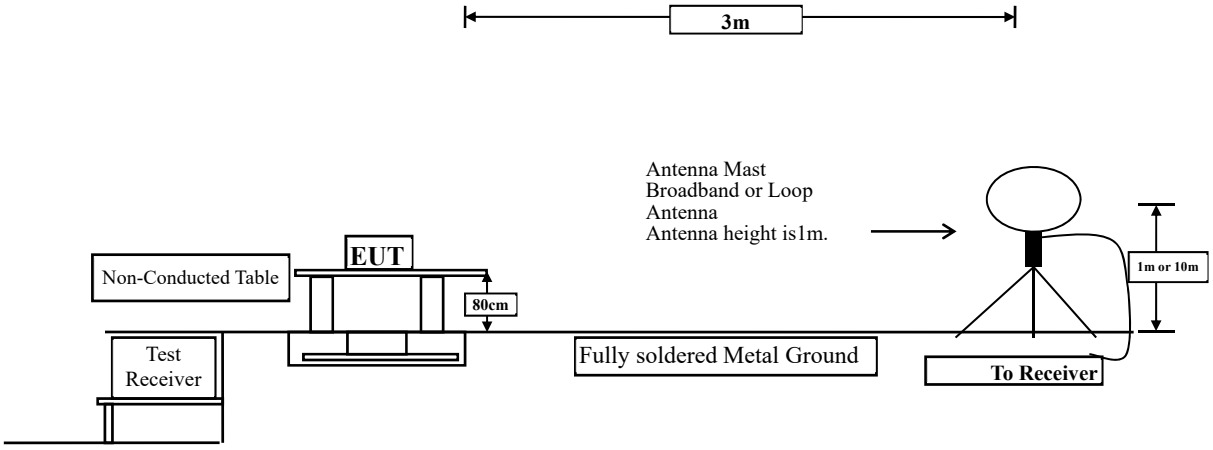
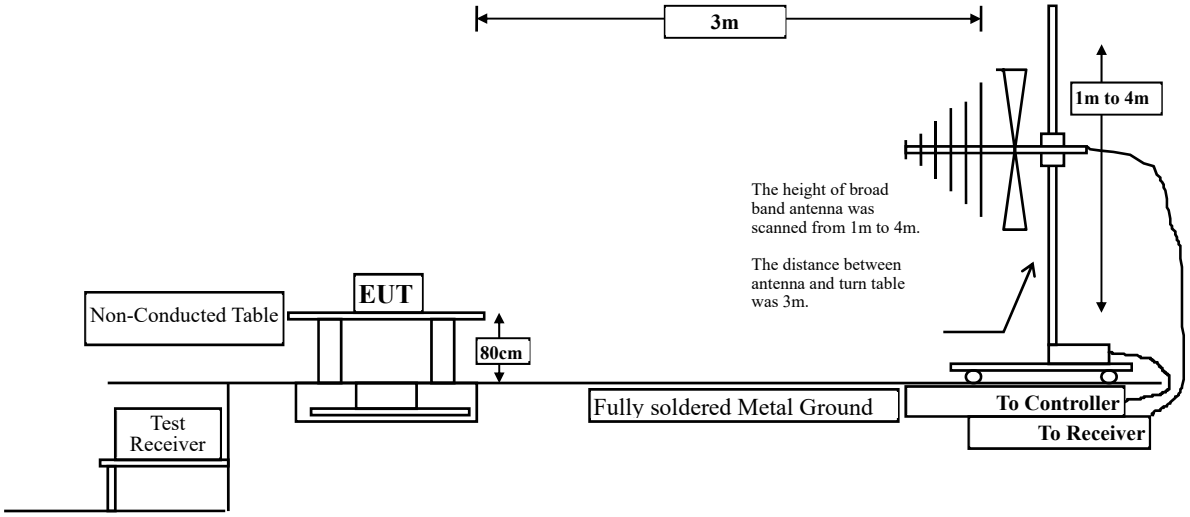
4. Radiated Emission

4.1. Test Setup

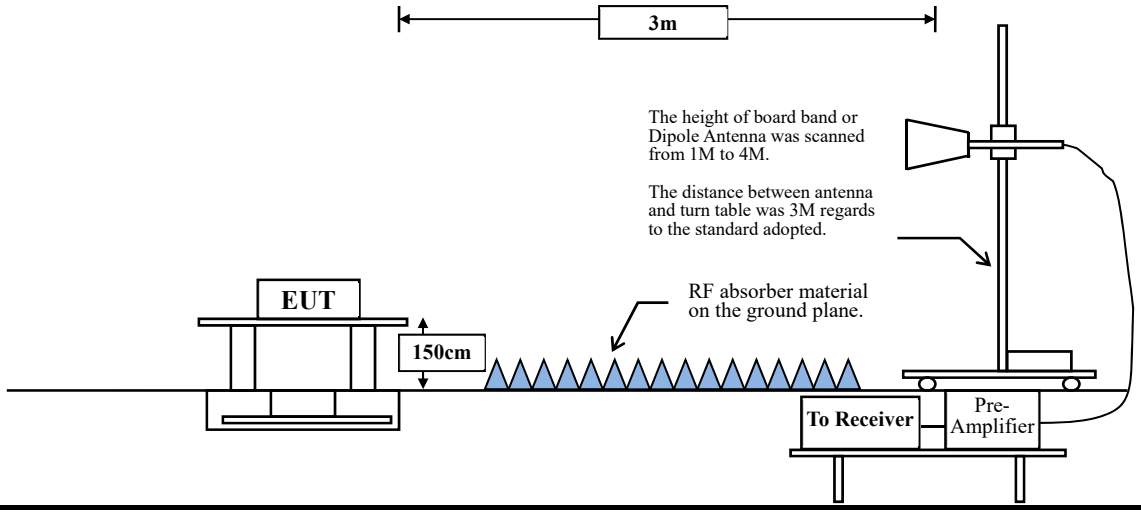
Radiated Emission Under 30 MHz



Radiated Emission Below 1 GHz



Radiated Emission Above 1 GHz



4.2. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dBμV/m) = 20 log E field strength (μV/m)

- 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.
- 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 e.i.r.p. of −27 dBm/MHz.
- For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
- For transmitters operating in the 5.725-5.85 GHz band:
  All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of −27 dBm/MHz.

Based on ANSI C63.10-2013 Section 12.7.3 d) provides the conversion formula between field strength and EIRP, if distance is 3m, -27dBm is equivalent to 68.22dBuV/m.

4.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to FCC KDB-789033 test procedure for compliance to FCC 47CFR 15. 407 requirements.
Measuring the frequency range below 1 GHz, the EUT is placed on a turn table which is 0.8 meter above ground,when measuring the frequency range above 1 GHz, the EUT is placed on a turn table which is 1.5 meter above ground.
The turn table is rotated 360 degrees to determine the position of the maximum emission level.
The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.
The resolution bandwidth below 30 MHz setting on the field strength meter is 9kHz and
30 MHz~1 GHz is 120 kHz and above 1 GHz is 1 MHz.
Radiated emission measurements below 30 MHz are made using Loop Antenna and 30 MHz~1 GHz are made using broadband Bilog antenna and above 1 GHz are made using Horn Antennas.
The measurement is divided into the Preliminary Measurement and the Final Measurement.
The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.
The measurement frequency range form 9 kHz - 10th Harmonic of fundamental was investigated.

RBW and VBW Parameter setting:
According to KDB 789033 section II.G.5 Procedure for Unwanted Maximum Emissions Measurements above 1000 MHz.
RBW = 1 MHz.
VBW ≥ 3 MHz.

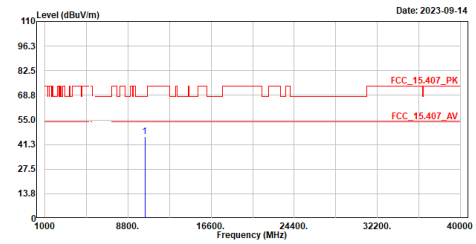
According to KDB 789033 section II.G.6 Procedures for Average Unwanted Emissions Measurements above 1000 MHz.
RBW = 1 MHz.
VBW = 10 Hz, when duty cycle ≥ 98 %
VBW ≥ 1/T, when duty cycle < 98 %
(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

5 GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11ax-40 MHz	99.54	5.4348	184	10

Note: Duty Cycle Refer to Section 5.

4.4. Test Result of Radiated Emission

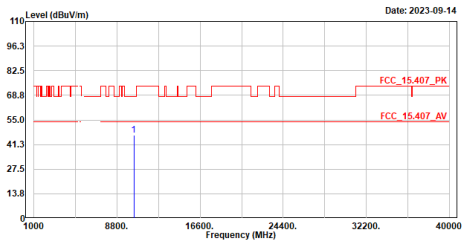
Site :HY-CB01
Condition :3m ,HORIZONTAL
Mode :TX_ax40_5190MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10380.000	45.56	68.22	-22.66	54.59	-9.03	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

Site :HY-CB01
Condition :3m ,VERTICAL
Mode :TX_ax40_5190MHz
TEST BY :Sam



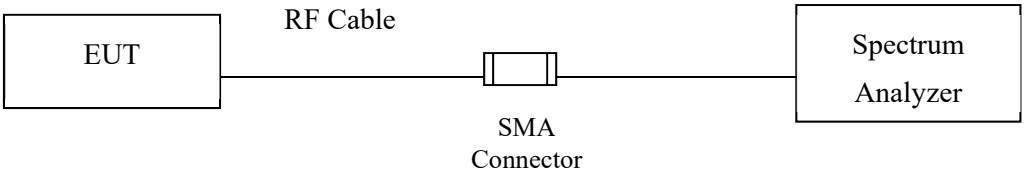
No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	10380.000	46.43	68.22	-21.79	55.46	-9.03	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

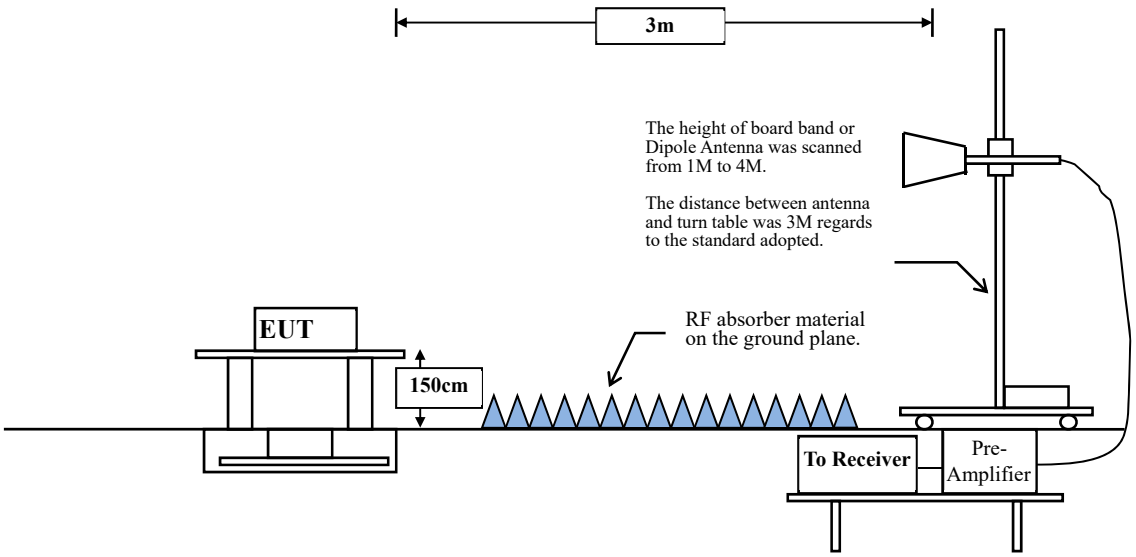
5. Band Edge

5.1. Test Setup

RF Conducted Measurement:



RF Radiated Measurement:



5.2. Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section. Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	μV/m @3m	dBμV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks : 1. RF Voltage (dBμV) = 20 log RF Voltage (μV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

- 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.
- 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 e.i.r.p. of −27 dBm/MHz.
- For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
- For transmitters operating in the 5.725-5.85 GHz band:
  All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of −27 dBm/MHz.

Based on ANSI C63.10-2013 Section 12.7.3 d) provides the conversion formula between field strength and EIRP, if distance is 3m, -27dBm is equivalent to 68.22dBuV/m.

5.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.

The bandwidth below 1 GHz setting on the field strength meter is 120 kHz, above 1 GHz are 1 MHz.

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

RBW and VBW Parameter setting:

According to KDB 789033 section II.G.5 Procedure for Unwanted Maximum Emissions Measurements above 1000 MHz.

RBW = 1 MHz.

VBW ≥ 3 MHz.

According to KDB 789033 section II.G.6 Procedures for Average Unwanted Emissions Measurements above 1000 MHz.

RBW = 1 MHz.

VBW = 10 Hz, when duty cycle ≥ 98 %

VBW ≥ 1/T, when duty cycle < 98 %

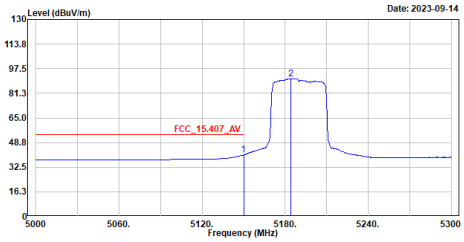
(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

5 GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11ax-40 MHz	99.54	5.4348	184	10

Note: Duty Cycle Refer to Section 5.

5.4. Test Result of Band Edge

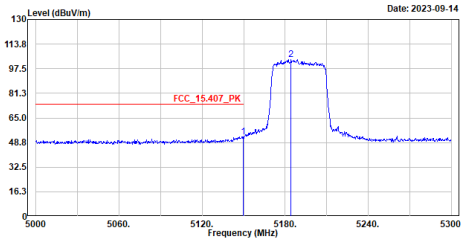
Site :HY-CB01
Condition :3m ,Horizontal
Mode :TX_ax40_5190MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5150.000	40.54	54.00	-13.46	25.76	14.78	Average
2	5183.900	90.80	------	------	75.99	14.81	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

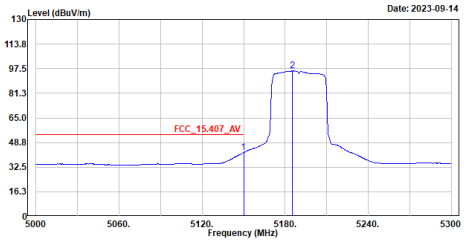
Site :HY-CB01
Condition :3m ,Horizontal
Mode :TX_ax40_5190MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5149.700	52.59	74.00	-21.41	37.81	14.78	Peak
2	5184.200	103.53	------	------	88.72	14.81	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

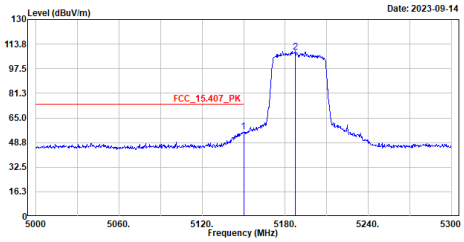
Site :HY-CB01
Condition :3m ,Vertical
Mode :TX_ax40_5190MHz
TEST BY :Sam



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5150.000	42.12	54.00	-11.88	27.34	14.78	Average
2	5185.400	95.98	------	------	81.17	14.81	Average

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

Site :HY-CB01
Condition :3m ,Vertical
Mode :TX_ax40_5190MHz
TEST BY :Sam

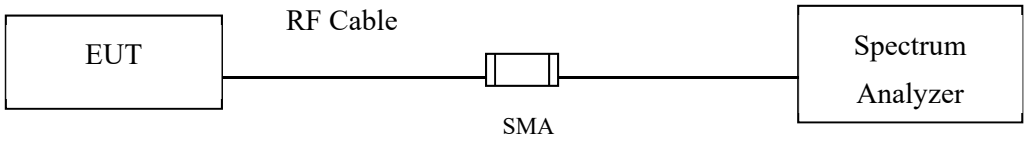


No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	5150.000	56.05	74.00	-17.95	41.27	14.78	Peak
2	5187.200	108.54	------	------	93.72	14.82	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

6. Duty Cycle

6.1. Test Setup



6.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to U-NII test procedure of KDB789033 for compliance to FCC 47CFR 15.407 requirements.

6.3. Test Result of Duty Cycle

Product : TCx EDGE Cam+
Test Item : Duty Cycle
Test Mode : Transmit

Duty Cycle Formula:
Duty Cycle = Ton / (Ton + Toff)
Duty Factor = 10 Log (1/Duty Cycle)
Results:

5 GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11a	0.2310	0.2500	92.40	0.34
802.11ax-20 MHz	5.4400	5.4700	99.45	0.02
802.11ax-40 MHz	5.4348	5.4600	99.54	0.02
802.11ax-80 MHz	5.4348	5.4600	99.54	0.02