



Report No.: TW2104268-01E File reference No.: 2021-06-21

Applicant: Shenzhen Micronet Force Information Technology Co., Ltd.

Product: WI-FI 6 New-Gen Super Router

Model No.: W20, V20, T20, A-1800T

Trademark: N/A

Test Standards: FCC Part 15.247

Test result:

It is herewith confirmed and found to comply with the

requirements set up by ANSI C63.10, FCC Part 15.247 for the

evaluation of electromagnetic compatibility

Approved By

Jack Chung

Manager

Dated: June 21, 2021

Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com

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Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAL-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

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Test Report Conclusion

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1.0 General Details

1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le

Village, Nanshan District, Shenzhen, China

Telephone: (755) 83448688 Fax: (755) 83442996

Site Listed with Federal Communications commission (FCC)

Registration Number:744189 For 3m Anechoic Chamber

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A

For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: Shenzhen Micronet Force Information Technology Co., Ltd.

Address: Room 808, Block B, Fu'an Science and Technology Building, No. 013, Gao Xin Nan Yi,

Nanshan District, Shenzhen

Telephone: -Fax: --

1.3 Description of EUT

Product: WI-FI 6 New-Gen Super Router

Manufacturer: Shenzhen Micronet Force Information Technology Co., Ltd.

Address: Room 808, Block B, Fu'an Science and Technology Building, No. 013, Gao Xin

Nan Yi, Nanshan District, Shenzhen

Brand Name: N/A Model Number: W20

Additional Model Number: V20, T20, A-1800T

Hardware Version: V1
Software Version: V1.0.0

Serial No.: WWLH180006000001

Type of Modulation IEEE 802.11b: DSSS (CCK, QPSK, DBPSK)

IEEE 802.11g/n (HT20, HT40): OFDM (64QAM, 16QAM, QPSK, BPSK)

IEEE 802.11ax (HEW20): OFDM (1024QAM, 256QAM,64QAM, 16QAM, QPSK,

BPSK)

Frequency range IEEE 802.11b/g/n (HT20)/ax (HEW20): 2412-2462MHz;

IEEE 802.11n HT40: 2422-2452MHz

Channel Spacing 5MHz for IEEE 802.11b/g/n (HT20, HT40)/ax (HEW20)

The report refers only to the sample tested and does not apply to the bulk.

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Air Data Rate IEEE 802.11b: 11, 5.5, 2, 1 Mbps

IEEE 802.11g: 54, 48,36, 24, 18, 12, 9, 6 Mbps

IEEE 802.11n HT20/HT40: mcs0-mcs7 IEEE 802.11ax HEW20: mcs0-mcs11

Frequency Selection By software

Channel Number IEEE 802.11b/g/n (HT20)/ax (HEW20): 11 Channels;

IEEE 802.11n (HT40): 7 Channels;

Antenna: Two alternative types antennas provided to the EUT: External Dipole and Internal

PCB antenna.

1. Dipole antennas. The gain of the antennas is 5.0dBi for each one. (Get from the

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antenna specification provided the applicant)

2. PCB antennas. The gain of the antennas is 4.0dBi for each one. (Get from the

antenna specification provided the applicant)

Input Voltage: DC12V, 1A

Power Adapter Model: MAUS-1201001202;

Input: 100-240V, 50/60Hz, 0.35A; Output: 12V, 1.0A

1.4 Submitted Sample: 15 Samples

1.5 Test Duration

2021-04-19 to 2021-06-18

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty =5%

Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

1.7 Test Engineer

Terry Tang

The sample tested by

Print Name: Terry Tang

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2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2020-06-23	2021-06-22
LISN	R&S	EZH3-Z5	100294	2020-06-23	2021-06-22
LISN	R&S	EZH3-Z5	100253	2020-06-23	2021-06-22
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2020-06-23	2021-06-22
Loop Antenna	EMCO	6507	00078608	2018-06-25	2021-06-24
Spectrum	R&S	FSIQ26	100292	2020-06-23	2021-06-22
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2020-06-23	2021-06-22
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-07-09	2021-07-08
Power meter	Anritsu	ML2487A	6K00003613	2020-06-23	2021-06-22
Power sensor	Anritsu	MA2491A	32263	2020-06-23	2021-06-22
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2018-07-04	2021-07-03
9*6*6 Anechoic			N/A	2020-07-06	2021-07-05
EMI Test Receiver	RS	ESVB	826156/011	2020-06-23	2021-06-22
EMI Test Receiver	RS	ESH3	860904/006	2020-06-23	2021-06-22
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2020-06-23	2021-06-22
Spectrum	HP/Agilent	E4407B	MY50441392	2020-06-23	2021-06-22
Spectrum	RS	FSP	1164.4391.38	2021-01-15	2021-01-14
RF Cable	Zhengdi	ZT26-NJ-NJ-8		2020-06-23	2021-06-22
	_	M/FA			
RF Cable	Zhengdi	7m		2020-06-23	2021-06-22
RF Switch	EM	EMSW18	060391	2020-06-23	2021-06-22
Pre-Amplifier	Schwarebeck	BBV9743	#218	2020-06-23	2021-06-22
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2020-06-23	2021-06-22
LISN	SCHAFFNER	NNB42	00012	2021-01-06	2022-01-05

2.2 Automation Test Software

For Conducted Emission Test

Name	Version
EZ-EMC	Ver.EMC-CON 3A1.1

For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

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3. DESCRIPTION OF TEST MODES

IEEE 802.11b, 802.11g, 802.11n (HT20), 802.11ax (HEW20) mode

The EUT had been tested under operating condition. There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode: 1Mbps data rate (worst case) was chosen for full testing. IEEE 802.11g mode: 6Mbps data rate (worst case) was chosen for full testing. IEEE 802.11n (HT20) mode: mcs0 (worst case) were chosen for full testing; IEEE 802.11ax (HEW20) mode: mcs0 (worst case) were chosen for full testing

IEEE 802.11n (HT40) mode

The EUT had been tested under operating condition. There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2422
Middle	2437
High	2452

IEEE 802.11n (HT40) mode: mcs0 data rate (worst case) were chosen for full testing

Note: During the test, the duty cycle was set up to >98%

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3.0 **Technical Details**

3.1 Summary of test results

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph15.203	Antenna Requirement	Pass	Complies
FCC Part 15, Paragraph15.207	Conducted Emission Test	Pass	Complies
	Spectrum bandwidth of a	Pass	Complies
ECC Dout 15 Culmont C	Orthogonal Frequency		
FCC Part 15 Subpart C	Division Multiplex System		
Paragraph 15.247(a)(2) Limit	Limit: 6dB		
	bandwidth>500kHz		
ECC Deat 15 Dears and b	Maximum peak output	Pass	
FCC Part 15, Paragraph	power		Complies
15.247(b)	Limit: max. 30dBm		
FCC Part 15, Paragraph	Transmitter Radiated	Pass	Complies
15.109,15.205 & 15.209	Emission		
	Limit: Table 15.209		
FCC Part 15, Paragraph	Power Spectral Density	Pass	Complies
15.247(e)	Limit: max. 8dBm		
FCC Part 15, Paragraph	Out of Band Emission and	Pass	Complies
15.247(d)	Restricted Band		
	Radiation		
	Limit: 20dB less than		
	peak value of fundamental		
	frequency		
	Restricted band limit:		
	Table 15.209		

3.2 **Test Standards**

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

4.0 **EUT Modification**

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

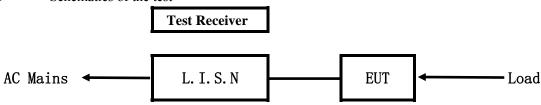
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5.0 Power Line Conducted Emission Test

5.1 Schematics of the test

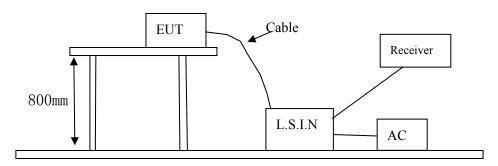


EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10-2013.

Test Voltage: 120V~, 60Hz Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

Device	Device Manufacturer		FCC ID
WI-FI 6 New-Gen Super	Shenzhen Micronet Force	W20, V20, T20,	2AYCEWWLHW20T
Router	Information Technology Co., Ltd.	A-1800T	ZAICEWWLHW201

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable

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5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013.

- A Setup the EUT and simulators as shown on follow
- B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency	Limits (c	lB μV)
(MHz)	Quasi-peak Level	Average Level
$0.15 \sim 0.50$	66.0~56.0*	56.0~46.0*
$0.50 \sim 5.00$	56.0	46.0
5.00 ~ 30.00	60.0	50.0

Notes:

- 1. *Decreasing linearly with logarithm of frequency.
- 2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

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A: Conducted Emission on Live Terminal (150kHz to 30MHz)

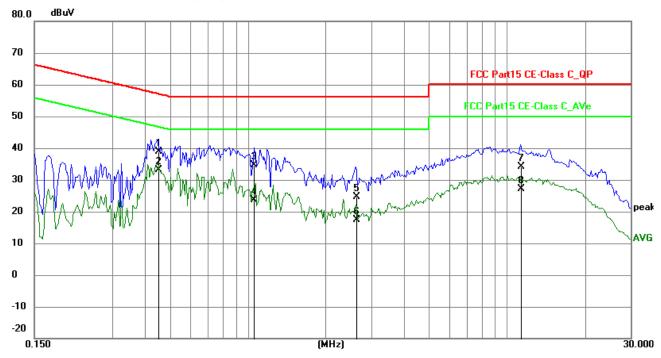
EUT Operating Environment

Temperature: 26℃ Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Keep WIFI Transmitting

Results: PASS

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.4503	29.01	9.77	38.78	56.87	-18.09	QP	Р
2	0.4503	23.38	9.77	33.15	46.87	-13.72	AVG	Р
3	1.0548	24.88	9.79	34.67	56.00	-21.33	QP	Р
4	1.0548	13.96	9.79	23.75	46.00	-22.25	AVG	Р
5	2.6109	14.85	9.83	24.68	56.00	-31.32	QP	Р
6	2.6109	7.55	9.83	17.38	46.00	-28.62	AVG	Р
7	11.2836	23.90	10.22	34.12	60.00	-25.88	QP	Р
8	11.2836	17.03	10.22	27.25	50.00	-22.75	AVG	Р

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B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

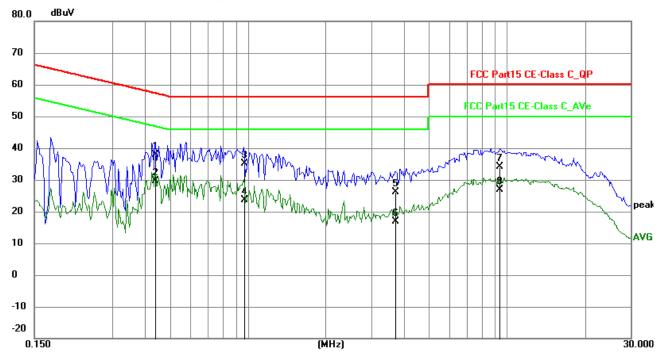
EUT Operating Environment

Humidity: 65%RH Atmospheric Pressure: 101 kPa Temperature: 26°C

EUT set Condition: Keep WIFI Transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.4386	28.19	9.77	37.96	57.09	-19.13	QP	Р
2	0.4386	19.97	9.77	29.74	47.09	-17.35	AVG	Р
3	0.9651	25.28	9.79	35.07	56.00	-20.93	QP	Р
4	0.9651	13.88	9.79	23.67	46.00	-22.33	AVG	Р
5	3.7176	16.29	9.87	26.16	56.00	-29.84	QP	Р
6	3.7176	7.06	9.87	16.93	46.00	-29.07	AVG	Р
7	9.3531	23.96	10.13	34.09	60.00	-25.91	QP	Р
8	9.3531	16.63	10.13	26.76	50.00	-23.24	AVG	Р

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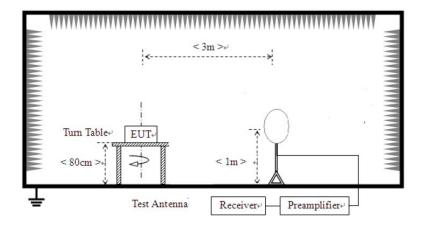


6 Radiated Emission Test

- 6.1 Test Method and test Procedure:
- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. F For measurement above 1GHz, peak values with RBW=1MHz VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization: Vertical polarization and Horizontal polarization.

Block diagram of Test setup

For radiated emissions from 9kHz to 30MHz



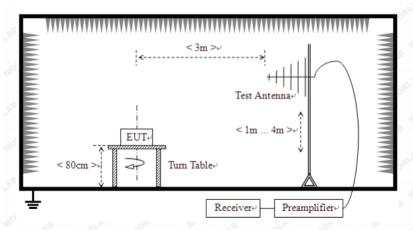
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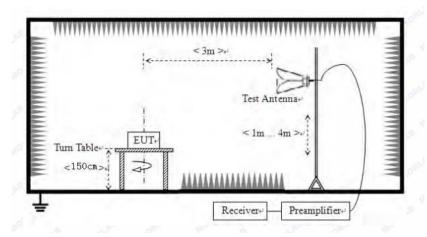
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For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



- 6.2 Configuration of The EUT
 Same as section 5.3 of this report
- 6.3 EUT Operating Condition
 Same as section 5.4 of this report.
- 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

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Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1. RF Voltage $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 2. In the Above Table, the higher limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
- 4. Worse case were recorded in the test report. 802.11g was the worst case.

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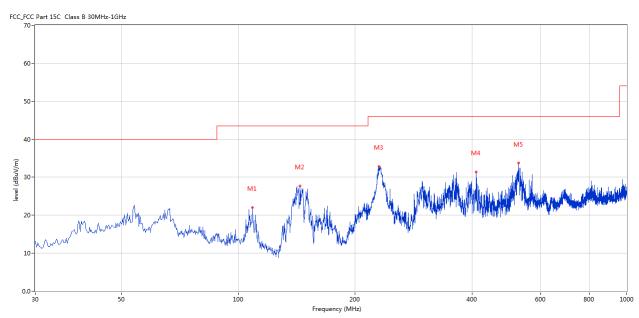
Test Data for Dipole Antenna

Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Transmitting



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	108.793	21.96	-13.50	43.5	-21.54	Peak	21.00	100	Horizontal	Pass
2	144.189	27.68	-17.09	43.5	-15.82	Peak	165.00	200	Horizontal	Pass
3	230.497	32.80	-12.67	46.0	-13.20	Peak	0.00	200	Horizontal	Pass
4	409.903	31.43	-8.49	46.0	-14.57	Peak	282.00	100	Horizontal	Pass
5	527.486	33.69	-6.59	46.0	-12.31	Peak	282.00	200	Horizontal	Pass

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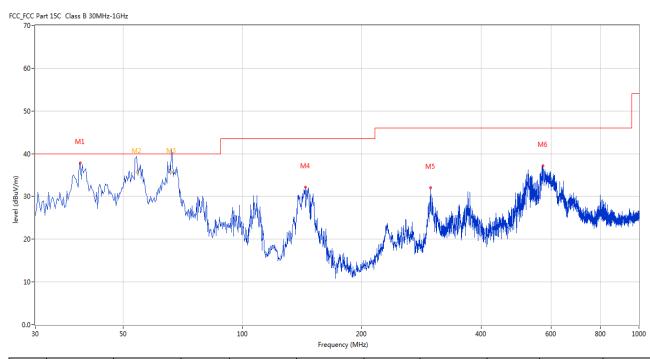
Date: 2021-06-21



Test result General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: **Keep Transmitting**



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	38.970	37.28	-12.59	40.0	-2.72	Peak	0.00	200	Vertical	Pass
2	54.152	39.12	-11.54	40.0	-0.88	Peak	350.00	103	Vertical	Pass
2*	54.152	35.77	-11.54	40.0	-4.23	QP	350.00	103	Vertical	Pass
3	66.213	39.87	-13.97	40.0	-0.13	Peak	356.00	109	Vertical	Pass
3*	66.213	35.78	-13.97	40.0	-4.22	QP	356.00	109	Vertical	Pass
4	143.947	32.18	-17.10	43.5	-11.32	Peak	0.00	200	Vertical	Pass
5	297.896	32.09	-11.15	46.0	-13.91	Peak	175.00	200	Vertical	Pass
6	572.094	37.22	-5.85	46.0	-8.78	Peak	9.00	100	Vertical	Pass

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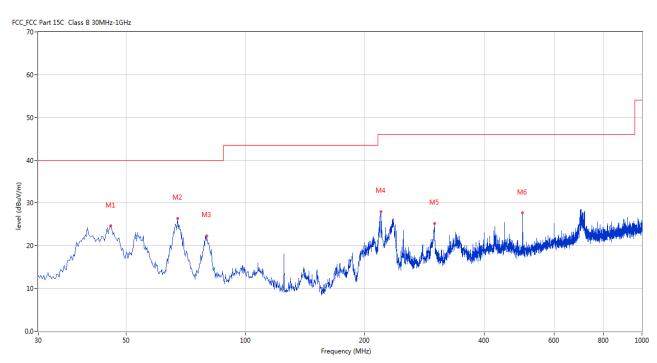
Test Data for PCB Antenna

Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

Keep Transmitting EUT set Condition:



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	45.759	24.59	-11.40	40.0	-15.41	Peak	169.00	100	Horizontal	Pass
2	67.336	26.41	-14.40	40.0	-13.59	Peak	5.00	100	Horizontal	Pass
3	79.943	22.31	-17.44	40.0	-17.69	Peak	15.00	100	Horizontal	Pass
4	219.345	28.00	-13.32	46.0	-18.00	Peak	0.00	100	Horizontal	Pass
5	299.835	25.19	-11.03	46.0	-20.81	Peak	113.00	100	Horizontal	Pass
6	500.090	27.62	-6.91	46.0	-18.38	Peak	207.00	100	Horizontal	Pass

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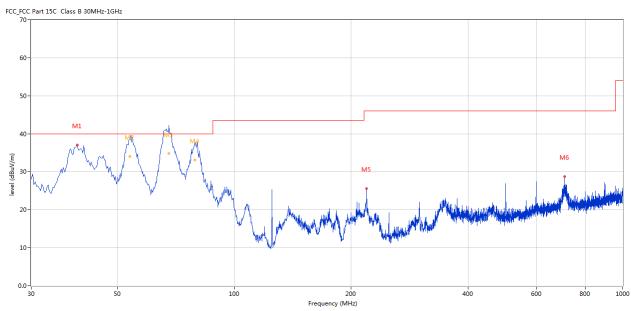
Date: 2021-06-21



Test result General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: **Keep Transmitting**



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	39.455	37.01	-12.52	40.0	-2.99	Peak	360.00	100	Vertical	Pass
2	53.893	39.60	-11.54	40.0	-0.40	Peak	284.00	100	Vertical	Pass
2*	53.893	34.07	-11.54	40.0	-5.93	QP	284.00	100	Vertical	Pass
3	67.760	39.23	-14.55	40.0	-0.77	Peak	284.00	200	Vertical	Pass
3*	67.760	34.74	-14.55	40.0	-5.26	QP	284.00	200	Vertical	Pass
4	79.215	38.08	-17.46	40.0	-1.92	Peak	241.00	100	Vertical	Pass
4*	79.215	33.08	-17.46	40.0	-6.92	QP	241.00	100	Vertical	Pass
5	219.103	25.59	-13.33	46.0	-20.41	Peak	265.00	100	Vertical	Pass
6	709.558	28.76	-4.04	46.0	-17.24	Peak	288.00	100	Vertical	Pass

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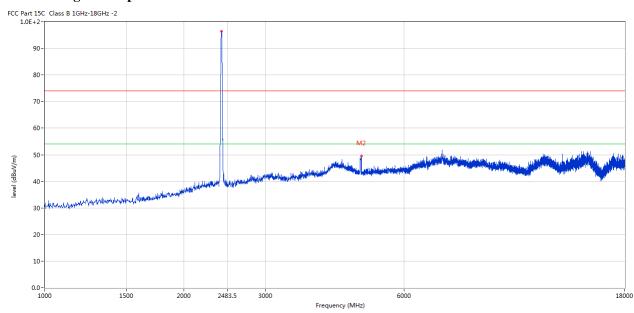
Date: 2021-06-21



Test Data for Dipole Antenna

Please refer to the following test plots for details:

CH01 for 11g at 6Mbps: Horizontal



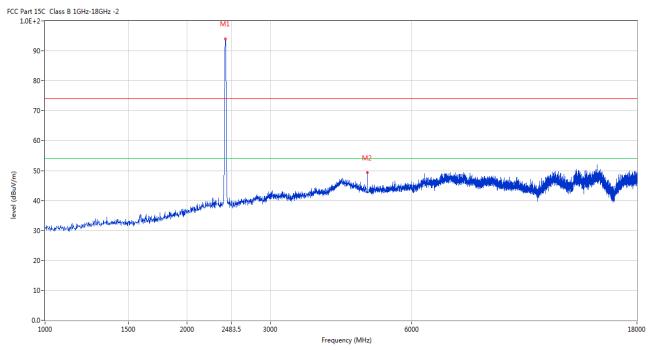
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
2	4824.522	49.30	3.15	74.0	-24.7	Peak	114.00	100	Horizontal	Pass

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CH01 for 11g at 6Mbps: Vertical



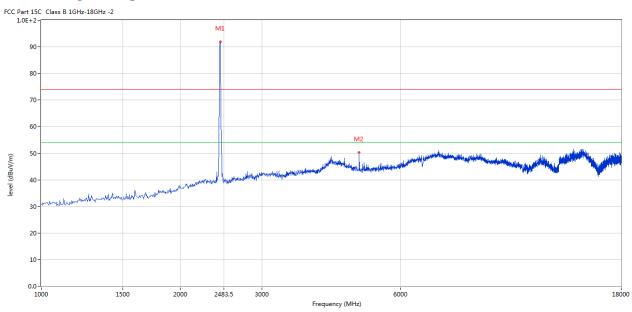
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
2	4824.522	49.32	3.15	74.0	-24.68	Peak	152.00	100	Vertical	Pass

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CH06 for 11g at 6Mbps: Vertical



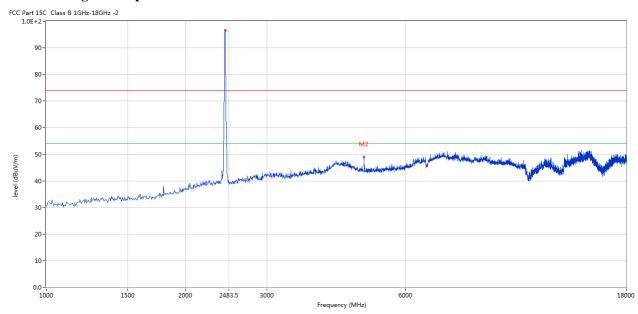
Ī	No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
	2	4875.031	50.30	3.19	74.0	-23.70	Peak	153.00	100	Vertical	Pass

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CH06 for 11g at 6Mbps: Horizontal



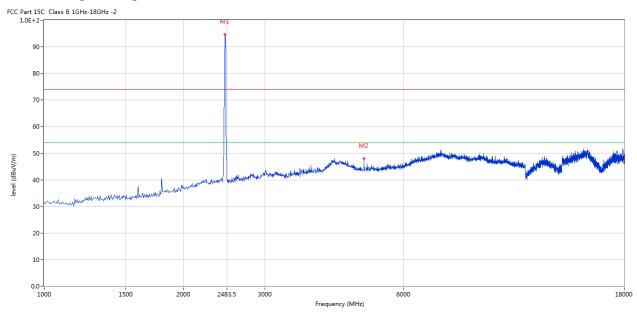
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
2	4875.031	49.90	3.19	74.0	-24.1	Peak	294.00	100	Horizontal	Pass

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CH11 for 11g at 6Mbps: Vertical



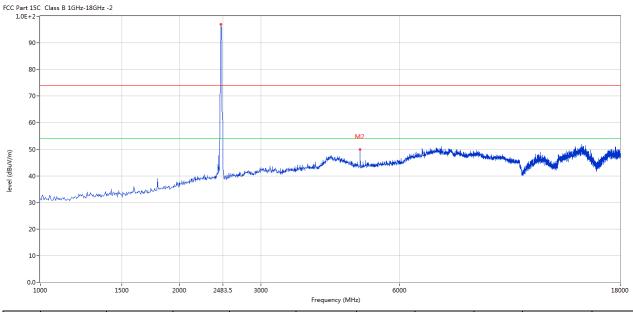
	No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
-	2	4921.770	48.00	3.27	74.0	-25.00	Peak	154.00	100	Vertical	Pass

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CH11 for 11g at 6Mbps: Horizontal



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)			(cm)		
2	4921.770	50.86	3.27	74.0	-23.14	Peak	288.00	100	Horizontal	Pass

Note: 1. Result Level = Reading + Factor

- 2. Factor= AF + Cable Loss- Preamp
- 3. Margin = Result– Limit
- 4. For radiated Emissions from 18-25GHz and below 30MHz, it is only the floor noise.
- 5. Note: the final peak measurement results less than the AV limit. No necessary to take down the final AV measurement result

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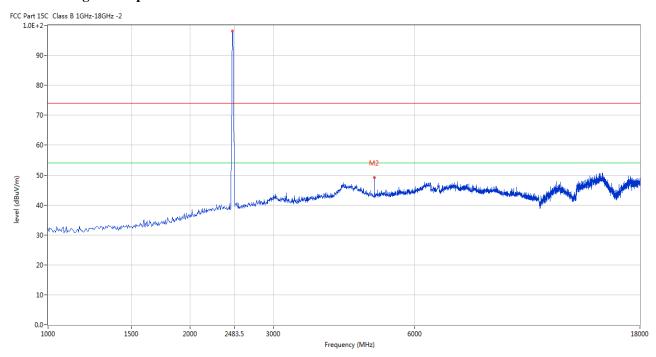
Date: 2021-06-21



Test Data for PCB Antenna

Please refer to the following test plots for details:

CH01 for 11g at 6Mbps: Horizontal



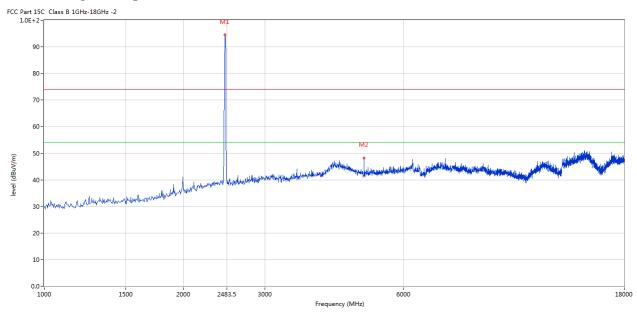
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
2	4921.770	49.15	3.27	74.0	-24.85	Peak	219.00	100	Horizontal	Pass

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CH01 for 11g at 6Mbps: Vertical



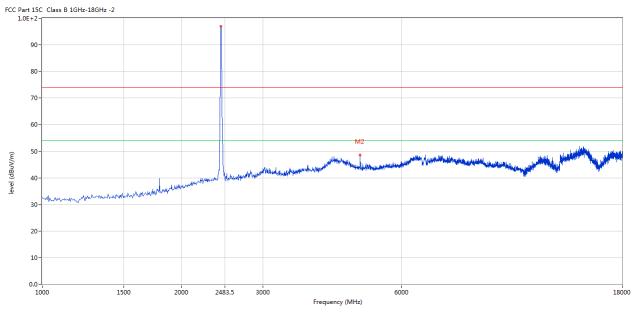
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
2	4921.770	48.21	3.27	74.0	-25.79	Peak	342.00	100	Vertical	Pass

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CH06 for 11g at 6Mbps: Vertical



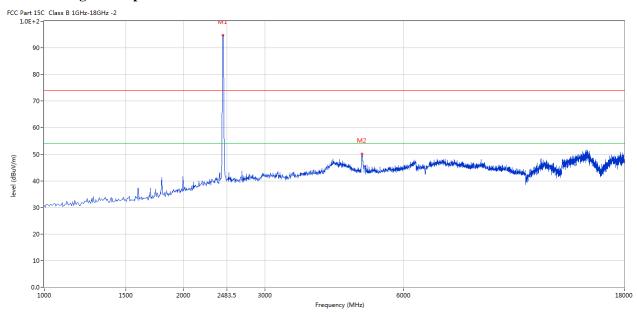
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
2	4875.031	48.59	3.19	74.0	-25.41	Peak	115.00	100	Horizontal	Pass

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CH06 for 11g at 6Mbps: Horizontal



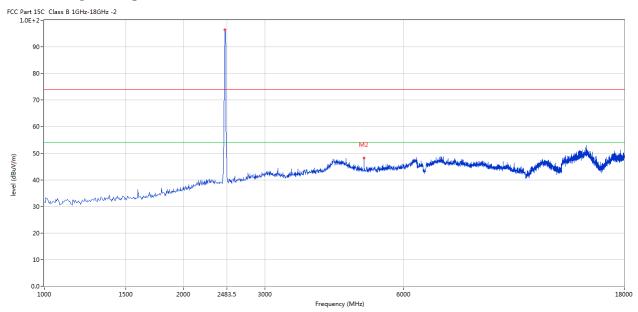
No	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
2	4875.031	50.71	3.19	74.0	-23.29	Peak	126.00	100	Vertical	Pass

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CH11 for 11g at 6Mbps: Vertical



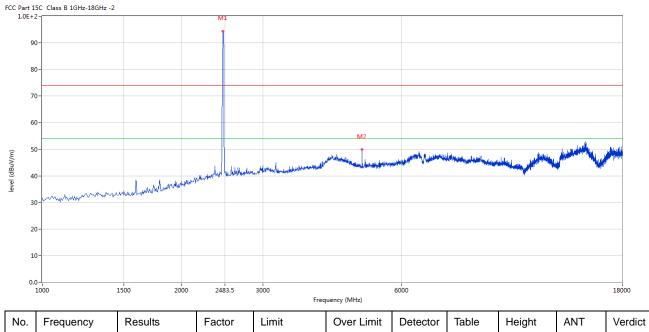
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
2	4921.770	48.27	3.27	74.0	-25.73	Peak	217.00	100	Horizontal	Pass

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CH11 for 11g at 6Mbps: Horizontal



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
2	4921.770	49.88	3.27	74.0	-24.12	Peak	161.00	100	Vertical	Pass

Note: 1. Result Level = Reading + Factor

- 2. Factor= AF + Cable Loss- Preamp
- 3. Margin = Result– Limit
- 4. For radiated Emissions from 18-25GHz and below 30MHz, it is only the floor noise.
- 5. Note: the final peak measurement results less than the AV limit. No necessary to take down the final AV measurement result

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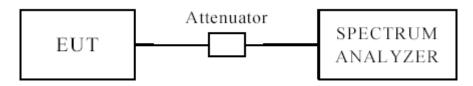
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7.0 6dB Bandwidth Measurement

7.1 Test Setup



7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500 kHz

7.3 Test Procedure

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

7.4 Test Result

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6dB Occupied Bandwidth

EUT		WI-FI 6 New	-Gen Supe	r Router	Model		W	720
Mode		8	302.11b	.11b		Test Voltage		0V~
Temperat	ure	24	4 deg. C,		Humidity	,	56% RH	
Channel		el Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)		Pass/ Fail
1		2412	1	10.04			0.5	Pass
6		2437	1	10	0.04 0.5 0.04 0.5		0.5	Pass
11		2462	1	10			0.5	Pass
1		2412	11	11	.36		0.5	Pass
6		2437		11.36		36 0.5		Pass
11		2462	11	11	.36		0.5	Pass

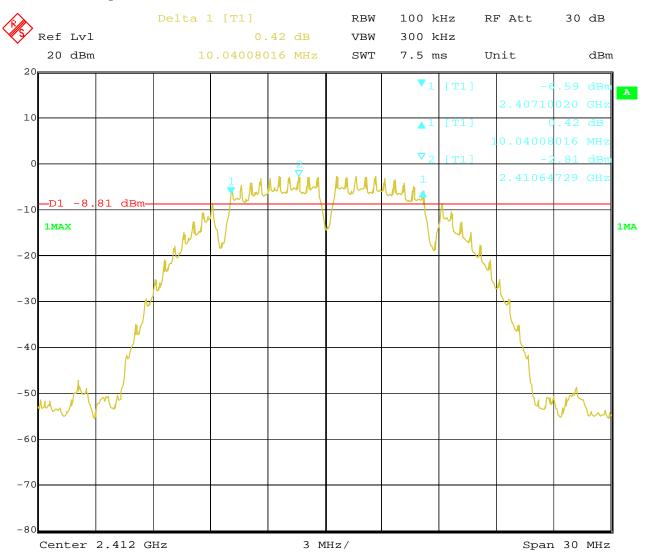
Note: Two antennas were tested and only the worst cased was recorded in the test report. J21 was the worst case.

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1. 802.11b at 1Mbps of CH01



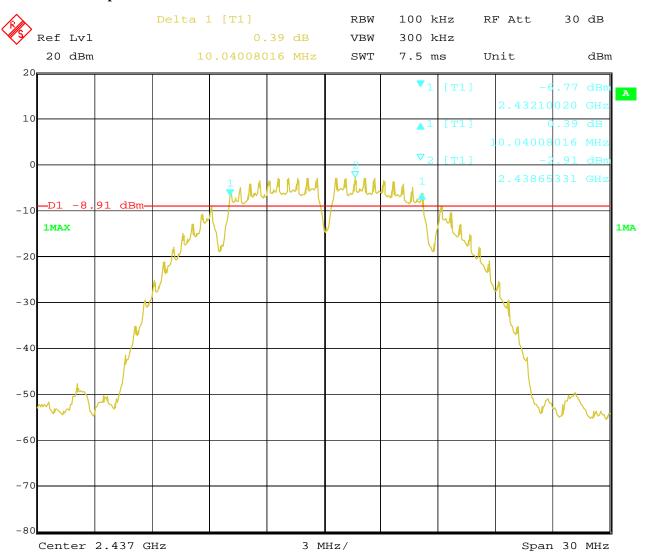
22.MAY.2021 14:46:44 Date:

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2. 802.11b at 1Mbps of CH06



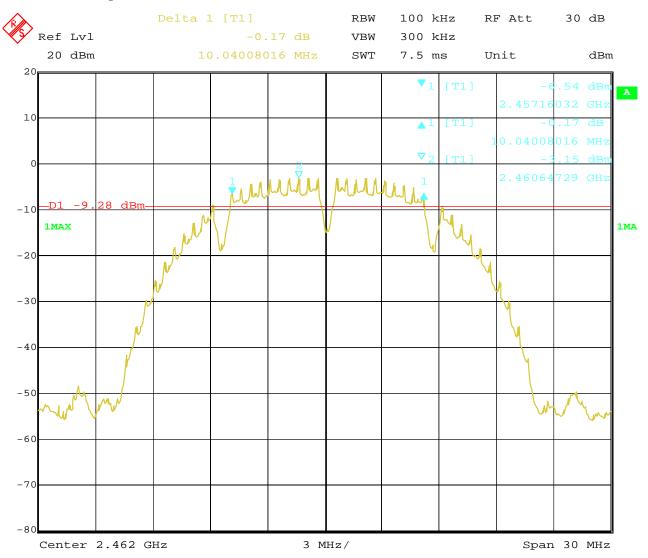
22.MAY.2021 14:39:51 Date:

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3. 802.11b at 1Mbps of CH11



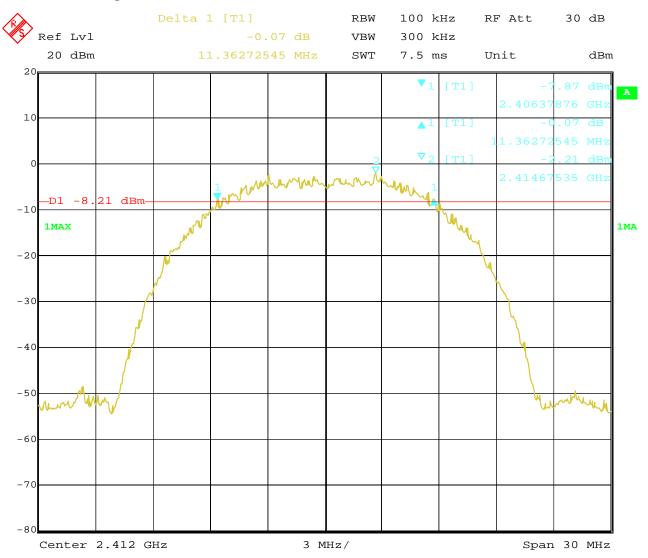
22.MAY.2021 14:31:44 Date:

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4. 802.11b at 11Mbps of CH01



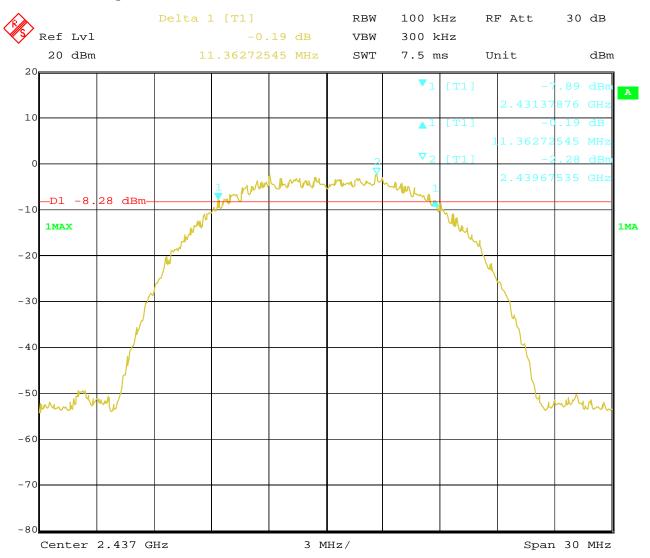
22.MAY.2021 14:44:25 Date:

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5. 802.11b at 11Mbps of CH06



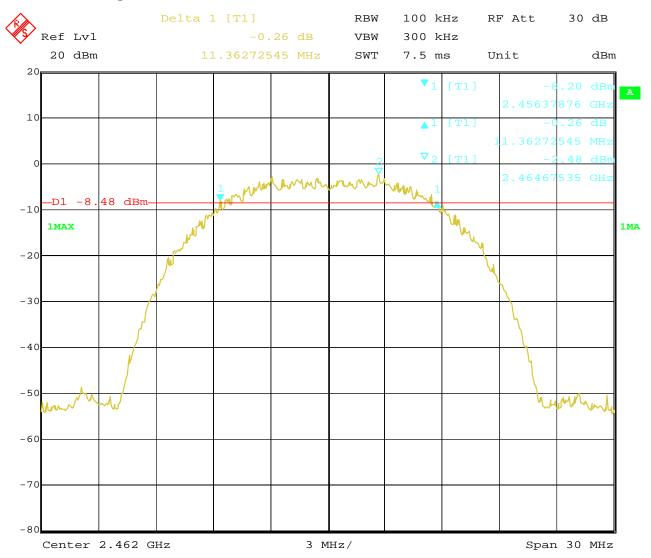
22.MAY.2021 14:42:25 Date:

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6. 802.11b at 11Mbps of CH11



22.MAY.2021 14:33:20 Date:

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6dB Occupied Bandwidth

EUT		WI-FI 6 New	v-Gen Supe	r Router	Model			W20
Mode		8	302.11g		Test Volta	ige		120V~
Temperat	Temperature 2		4 deg. C,		Humidity		5	6% RH
Channel	Channel Frequency (MHz)		Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)			mum Limit MHz)	Pass/ Fail
1		2412	6	16	.35		0.5	Pass
6		2437	6	16	.35		0.5	Pass
11	2462		6	16.35		0.5		Pass

Note: Two antennas were tested and only the worst cased was recorded in the test report. J21 was the worst case.

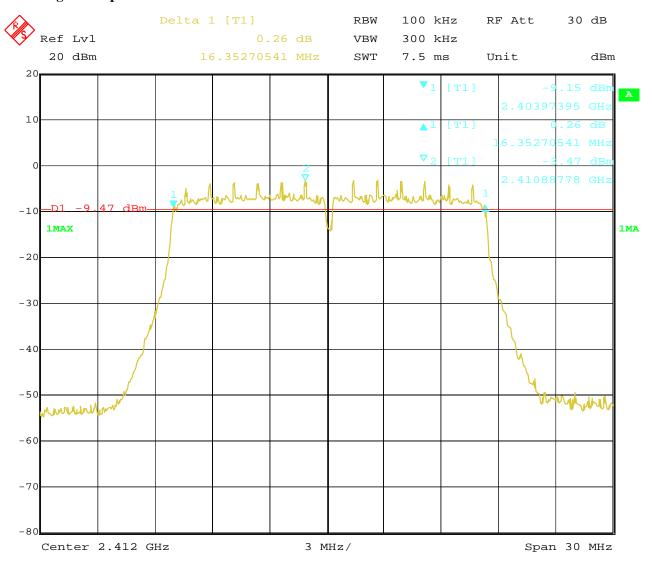
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Test Plots:

1. 802.11g at 6Mbps of CH01

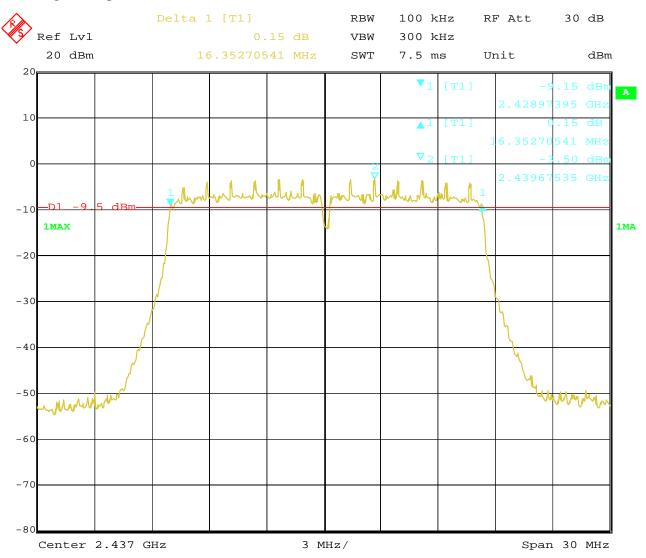


Date: 22.MAY.2021 14:48:06 Report No.: TW2104268-01E Page 42 of 129

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2. 802.11g at 6Mbps of CH06

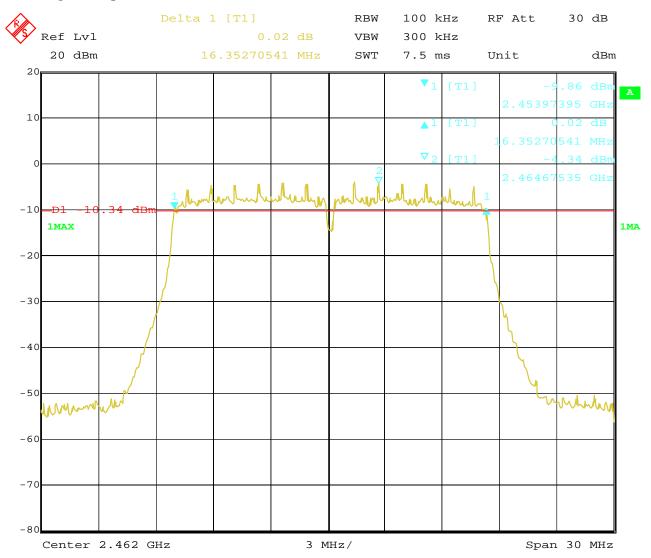


22.MAY.2021 Date: 14:36:51 Report No.: TW2104268-01E Page 43 of 129

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3. 802.11g at 6Mbps of CH11



22.MAY.2021 Date: 14:34:51

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6dB Occupied Bandwidth

EUT		WI-FI 6 New	v-Gen Supe	r Router	Model		W20	
Mode		802	.11n HT20		Test Voltage		120V~	
Temperat	Temperature		24 deg. C,			Humidity 56		
Channel	Channel Frequency (MHz)		Data Transfer Rate (Mbps)		indwidth Hz)		mum Limit MHz)	Pass/ Fail
1		2412	mcs0	mcs0 17			0.5	Pass
6		2437	mcs0	17	.56	56 0		Pass
11		2462		17	.56	0.5		Pass

Note: Two antennas were tested and only the worst cased was recorded in the test report. J21 was the worst case.

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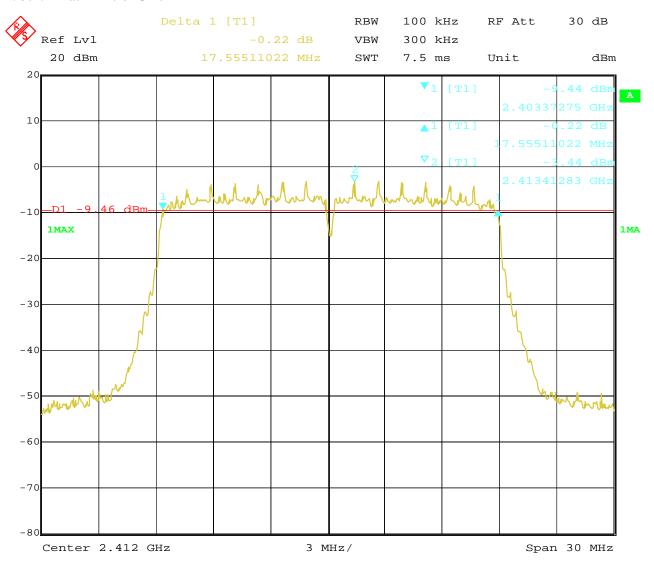
Report No.: TW2104268-01E

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Test Plots:

1. 802.11n at HT20 of CH01

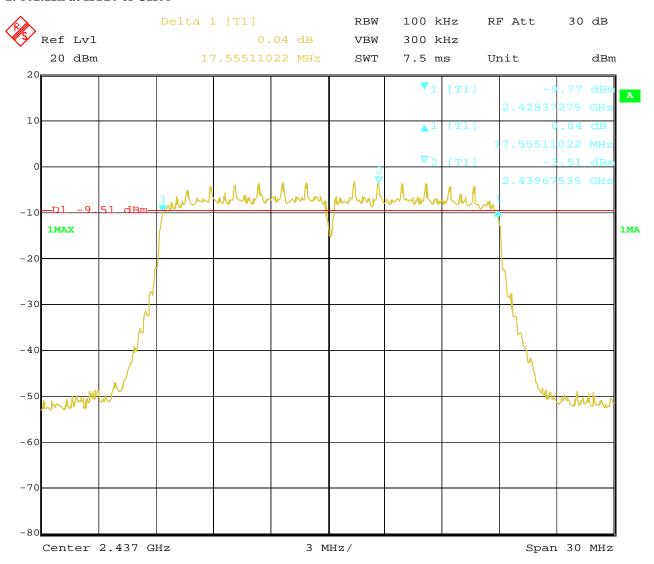


Date: 22.MAY.2021 14:26:43 Report No.: TW2104268-01E Page 46 of 129

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2. 802.11n at HT20 of CH06

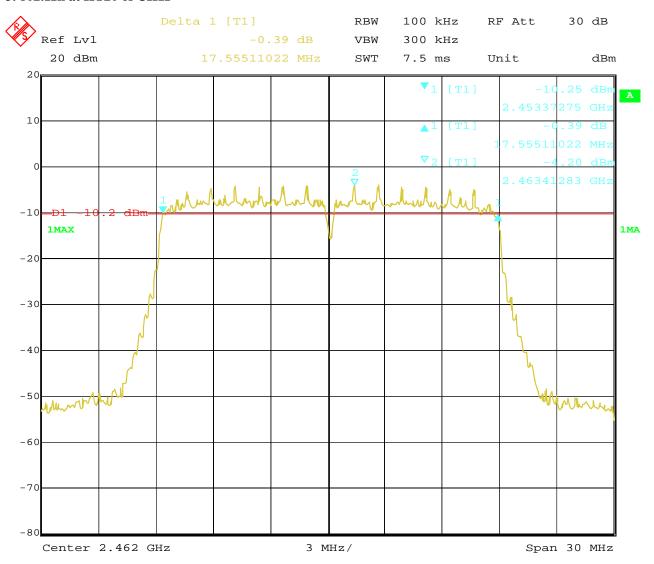


22.MAY.2021 Date: 14:28:54 Report No.: TW2104268-01E Page 47 of 129

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3. 802.11n at HT20 of CH11



22.MAY.2021 14:30:36 Date:

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6dB Occupied Bandwidth

EUT		WI-FI 6 New	v-Gen Supe	r Router	Model		W20	
Mode		802	.11n HT40		Test Voltage		120V~	
Temperat	ure	24	4 deg. C,		Humidity 56			6 RH
Channel	Channel Frequency (MHz)		Data Transfer Rate (Mbps)	0 0	ndwidth Hz)		mum Limit MHz)	Pass/ Fail
3		2422	mcs0	mcs0 36			0.5	Pass
6		2437	mcs0	36.17			0.5	Pass
9	2452		mcs0	36	.17		0.5	Pass

Note: Two antennas were tested and only the worst cased was recorded in the test report. J21 was the worst case.

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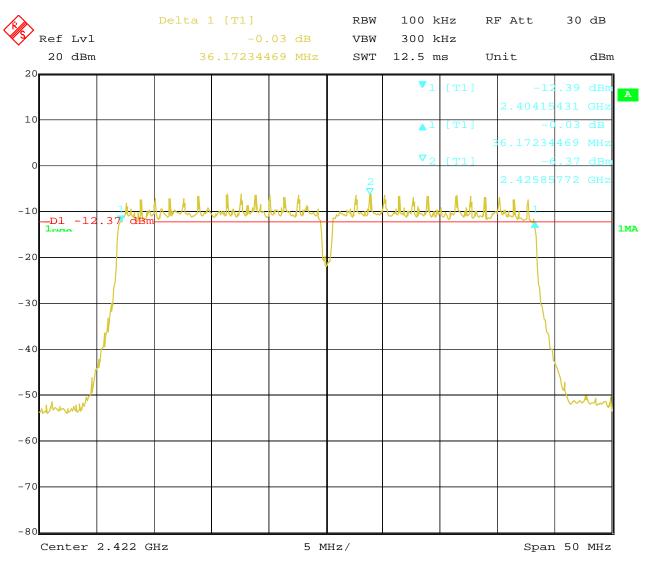
Report No.: TW2104268-01E

Date: 2021-06-21



Test Plots:

1. 802.11n at HT40 of CH03

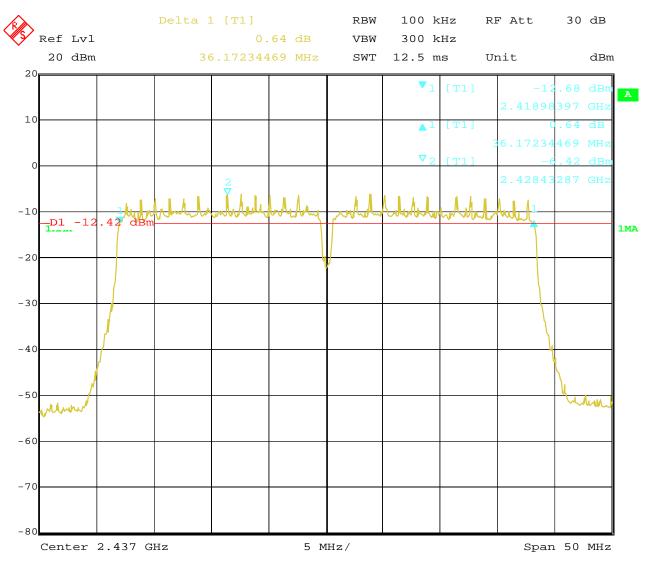


Date: 22.MAY.2021 14:25:10 Report No.: TW2104268-01E Page 50 of 129

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2. 802.11n at HT40 of CH06

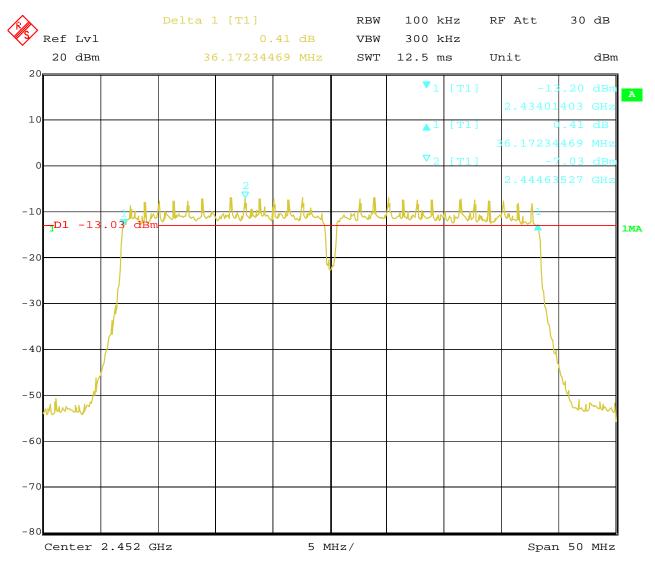


22.MAY.2021 Date: 14:12:34 Report No.: TW2104268-01E Page 51 of 129

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3. 802.11n at HT40 of CH09



22.MAY.2021 14:08:23 Date:

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6dB Occupied Bandwidth

EUT		WI-FI 6 New	v-Gen Supe	r Router	Model		W20	
Mode		802.1	1ax HEW2	0	Test Voltage		120V~	
Temperature		24		Humidity		56%	6 RH	
Channel	Channel Frequency (MHz)		Data Transfer Rate (Mbps)		ndwidth Hz)		mum Limit MHz)	Pass/ Fail
1		2412	mcs0	18	.76		0.5	Pass
6		2437	mcs0	18	.76		0.5	Pass
11	2462		mcs0	18	.76 0.5		0.5	Pass

Note: Two antennas were tested and only the worst cased was recorded in the test report. J21 was the worst case.

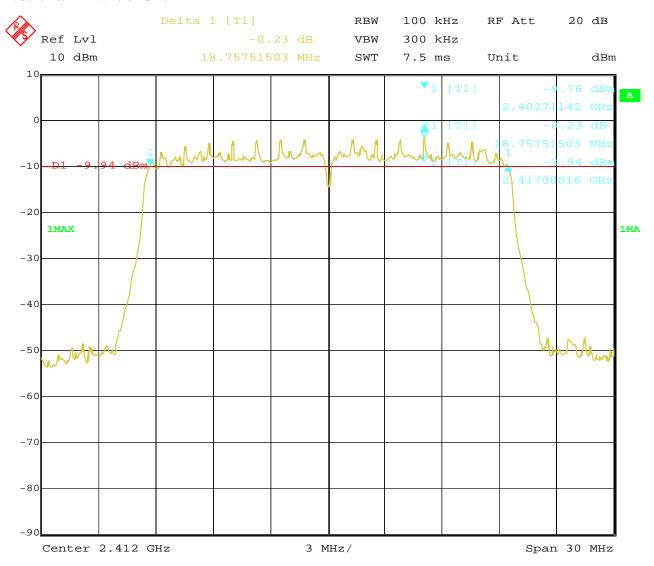
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Test Plots:

1.802.11ax HEW20 of CH01



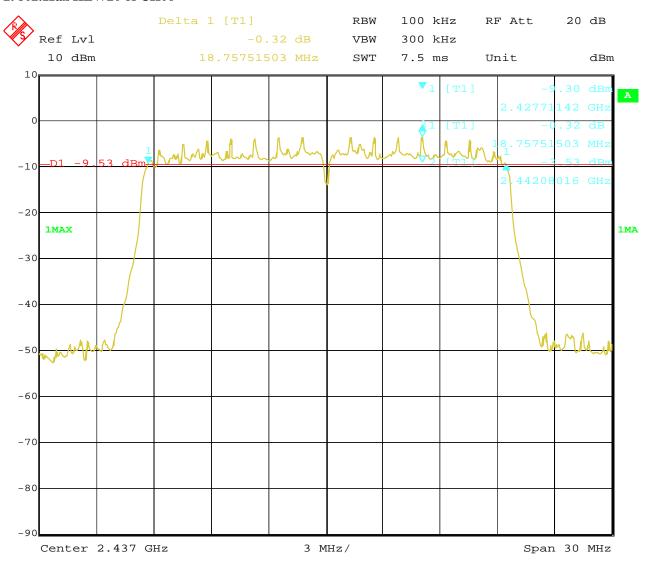
18.JUN.2021 10:32:46 Date:

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2. 802.11ax HEW20 of CH06

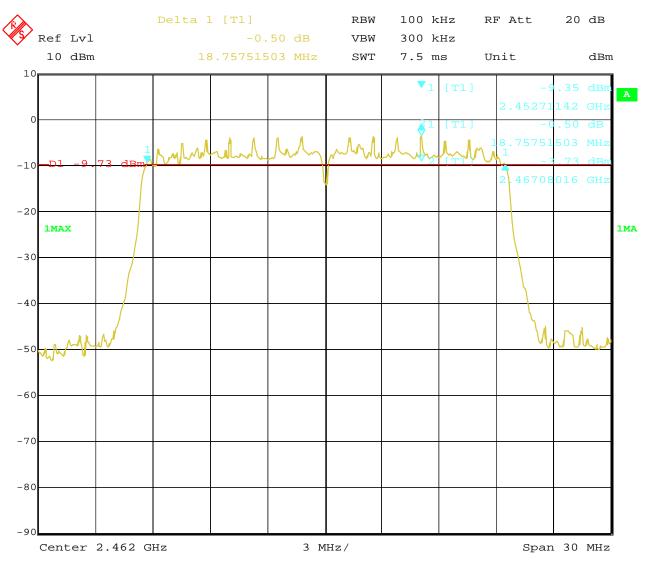


Date: 18.JUN.2021 10:38:51 Report No.: TW2104268-01E Page 55 of 129

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3. 802.11ax HEW20 of CH11



Date: 18.JUN.2021 10:45:20 Report No.: TW2104268-01E

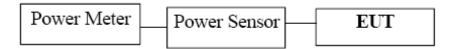
Date: 2021-06-21



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8. Maximum Output Power

8.1 Test Setup



8.2 Limits of Maximum Output Power

The Maximum Output Power Measurement is 30dBm.

8.3 Test Procedure

The RF power output was measured with a Power meter connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: The Peak power was measured

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8.4Test Results

EUT		WI-	FI 6 Nev	v-Gen Sup	er	Mo	del	W2	20	
			Rou	ıter						
Mode			802.	11b		Test V	oltage	120V~		
Temperature			24 de	eg. C,		Hum	idity	56% RH		
Channel	Channel Frequenc		J21 Power J22			ower	Total Max. Power	Power Limit	Pass/ Fail	
Chamier	(MH	z)	dBm	mW	dBm	mW	Output (dBm)	(dBm)	1 433/ 1 411	
1	2412		13.08	20.32	12.79	19.01	15.95	30	Pass	
6	2437	,	13.06	20.23	12.65	18.41	15.87	30	Pass	
11	2462		12.86	19.32	12.51	18.20	15.74	30	Pass	

Note: 1. At finial test to get the worst-case emission at 1Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow: Power Output = Power Reading + Cable loss + Attenuator

3. The worse case was recorded

EUT		WI-	FI 6 Nev	v-Gen Sup	er	Mo	del	W2	20	
			Rou	ıter						
Mode			802.	.11g		Test V	oltage	120V~		
Temperature			24 de	eg. C,		Hum	idity	56% RH		
Channel	Freq	Frequency J2		J21 Power J22		ower	Total Max. Power	Power Limit	Pass/ Fail	
Chamier	(MH	z)	dBm	mW	dBm	mW	Output (dBm)	(dBm)	1 435/ 1 411	
1	2412	,	15.86	38.55	15.62	36.48	18.75	30	Pass	
6	2437	37 15.86 38.55		15.54	35.81	18.71	30	Pass		
11	2462	,	15.15	32.73	14.93	31.12	18.05	30	Pass	

Note: 1. At finial test to get the worst-case emission at 6Mbps for CH01, CH06 and CH11

- 2. The result basic equation calculation as follow: Power Output = Power Reading + Cable loss + Attenuator
- 3. The worse case was recorded

The report refers only to the sample tested and does not apply to the bulk.

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EUT		WI-	FI 6 Nev	v-Gen Supe	er	Mo	del	W2	20	
			Rot	ıter						
Mode			802.11n	(HT20)		Test V	oltage	120V~		
Temperature			24 de	g. C,		Hum	idity	56% RH		
Channel	Channel		Frequency J21 Po		J22 P	ower	Total Max. Power	Power Limit	Pass/ Fail	
	(MH	z)	dBm	mW	dBm	mW	Output (dBm)	(dBm)		
1	2412	,	16.07	40.46	15.89	38.82	18.99	30	Pass	
6	2437	1	16.02	39.99	15.76	37.67	18.90	30	Pass	
11	2462		15.35	34.28	15.11	32.43	18.24	30	Pass	

Note: 1. At finial test to get the worst-case emission at mcs0 of 11n HT20 for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

Power Output = Power Reading + Cable loss + Attenuator

3. The worse case was recorded

EUT		WI-	FI 6 Nev	v-Gen Sup	er	Mo	del	W2	20	
			Rou	ıter						
Mode			802.11n	(HT40)		Test V	oltage	120V~		
Temperature			24 de	eg. C,		Hum	idity	56% RH		
Channel	Channel Frequen		ncy J21 Power J2			ower	Total Max. Power	Power Limit	Pass/ Fail	
Chamer	(MH	z)	dBm	mW	dBm	mW	Output (dBm)	(dBm)	1 435/ 1 411	
3	2422	,	16.20	41.69	16.05	40.27	19.14	30	Pass	
6	2437	,	16.10	40.74	15.90	38.90	19.01	30	Pass	
9	2452	,	15.49	35.40	15.22	33.27	18.37	30	Pass	

Note: 1. At finial test to get the worst-case emission at msc0 of 11n HT40 for CH03, CH06 and CH09

- 2. The result basic equation calculation as follow:
 - Power Output = Power Reading + Cable loss + Attenuator
- 3. The worse case was recorded

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EUT		WI-	FI 6 New	v-Gen Sup	er	Mo	del	W2	20	
			Rou	ıter						
Mode		8	302.11ax	HEW20		Test V	oltage	120V~		
Temperature			24 de	g. C,		Hum	idity	56% RH		
Channel	Freq	uency J21 Power		wer	J22 Po	ower	Total Max. Power	Power Limit	Pass/ Fail	
Chamier	(MH	z)	dBm	mW	dBm	mW	Output (dBm)	(dBm)	1 855/ 1 811	
1	2412	,	15.66	36.81	15.39	34.59	18.54	30	Pass	
6	2437	7 16.05 40.27 15		15.92	39.08	19.00	30	Pass		
11	2462	2 15.90 38.90		15.78	37.84	18.85	30	Pass		

Note: 1. At finial test to get the worst-case emission at mcs0 of 11n HT20 for CH01, CH06 and CH11

2. The result basic equation calculation as follow: Power Output = Power Reading + Cable loss + Attenuator

3. The worse case was recorded

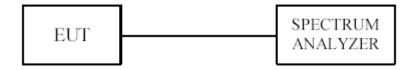
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9. Power Spectral Density Measurement

9.1 Test Setup



9.2 Limits of Power Spectral Density Measurement

The Maximum Power Spectral Density Measurement is 8dBm/3kHz.

9.3 Test Procedure

- 1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
- 2. Set the RBW = 10 kHz.
- 3. Set the VBW \geq 30 kHz.
- 4. Set the span to 1.5 times the DTS channel bandwidth.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
- 11. The resulting peak PSD level must be $\leq 8 \text{ dBm/3kHz}$.

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9.4Test Result

EUT		WI-	FI 6 New-Gen Supe	er	N	Model		W20		
			Router							
Mode	:	802.11b 11Mbps			Test	Voltage	120V~			
Temperat	ure	24 deg. C,			Hu	ımidity	56% RH			
Channel	Freq	quency J21 Power		F	actor	Total Pow	er Spectral	Limit	Pass/ Fail	
	(M	IHz)	Spectral Density			Density (d	Bm/10kHz)	(dBm/3kHz)		
1	24	412	-11.38		3.01	-8	.37	8	Pass	
6	24	-11.45			3.01	-8	.44	8	Pass	
1	24	.462 -11.75			3.01 -8		.74	8	Pass	

Note: 1. Total Power Spectral Density = Ant1 Power Spectral Density + Factor

2. Factor=10log2=3.01

3. J21 and J22 were tested and J21 was the worst case

EUT		WI-	FI 6 New-Gen Supe	er	N	Model	W20		
			Router						
Mode		802.11b 1Mbps			Test Voltage		120V~		
Temperat	ure	24 deg. C,			Humidity		56% RH		
Channel	Freq	quency J21 Power I		F	actor	Total Pow	er Spectral	Limit	Pass/ Fail
	(M	(Hz)	Spectral Density			Density (d	Bm/10kHz)	(dBm/3kHz)	
1	24	412	-12.38	3.01		-9	.37	8	Pass
6	24	-12.39			3.01	-9	.38	8	Pass
1	24	-12.60			3.01	-9	.59	8	Pass

Note: 1. Total Power Spectral Density = Ant1 Power Spectral Density + Factor

2. Factor=10log2=3.01

3. J21 and J22 were tested and J21 was the worst case

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EUT		WI-	FI 6 New-Gen Supe	er	N	Model		W20	
			Router						
Mode		802.11g 6Mbps			Test	Voltage		120V~	
Temperat	ure	24 deg. C,			Нι	ımidity	56% RH		
Channel	Freq	quency J21 Power I			Factor	Total Pow	er Spectral	Limit	Pass/ Fail
	(M	(Hz)	Spectral Density			Density (d	Bm/10kHz)	(dBm/3kHz)	
1	24	412	-12.76	3.01		-9	.75	8	Pass
6	24	437 -12.85			3.01	-9	.84	8	Pass
1	24	462	-13.43		3.01 -10		-10.42		Pass

Note: 1. Total Power Spectral Density = Ant1 Power Spectral Density + Factor

2. Factor=10log2=3.01

3. J21 and J22 were tested and J21 was the worst case

EUT		WI-FI 6 New-Gen Super			Model		W20		
		Router							
Mode		802.11n HT20 mcs0			Test Voltage		120V~		
Temperature			24 deg. C,	Hi		midity		56% RH	
Channel	Freq	uency	J21 Power	F	actor	Total Pow	er Spectral	Limit	Pass/ Fail
	(M	IHz)	Spectral Density			Density (d	Bm/10kHz)	(dBm/3kHz)	
1	24	412	-13.16		3.01	-10.15		8	Pass
6	24	437	-13.27		3.01	-10	0.26	8	Pass
1	24	462	-14.20		3.01	-11	.19	8	Pass

Note: 1. Total Power Spectral Density = Ant1 Power Spectral Density + Factor

2. Factor=10log2=3.01

3. J21 and J22 were tested and J21 was the worst case

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EUT		WI-FI 6 New-Gen Super			Model		W20		
		Router							
Mode		80	802.11n HT40 mcs0			Voltage	120V~		
Temperature			24 deg. C,	Humidity		56% RH			
Channel	Freq	uency	J21 Power	F	actor	Total Power Spectral		Limit	Pass/ Fail
	(M	(Hz)	Spectral Density			Density (d	Bm/10kHz)	(dBm/3kHz)	
3	24	122	-16.49		3.01	-13.48		8	Pass
6	24	137	-16.45		3.01	-13.44		8	Pass
9	2452		-17.13	3.01		-14.12		8	Pass

Note: 1. Total Power Spectral Density = Ant1 Power Spectral Density + Factor

2. Factor=10log2=3.01

3. J21 and J22 were tested and J21 was the worst case

EUT		WI-FI 6 New-Gen Super			Model		W20		
		Router							
Mode		802.11ax HEW20			Test Voltage		120V~		
Temperat	Temperature		24 deg. C,	Н		ımidity		56% RH	
Channel	Freq	uency	J21 Power	Factor		Total Pow	Total Power Spectral		Pass/ Fail
	(M	(Hz)	Spectral Density			Density (d	Bm/10kHz)	(dBm/3kHz)	
1	24	412	-14.49		3.01	-11.48		8	Pass
6	24	437	-13.96		3.01	-10).95	8	Pass
1	24	162	-14.23		3.01	-11	1.22	8	Pass

Note: 1. Total Power Spectral Density = Ant1 Power Spectral Density + Factor

2. Factor=10log2=3.01

3. J21 and J22 were tested and J21 was the worst case

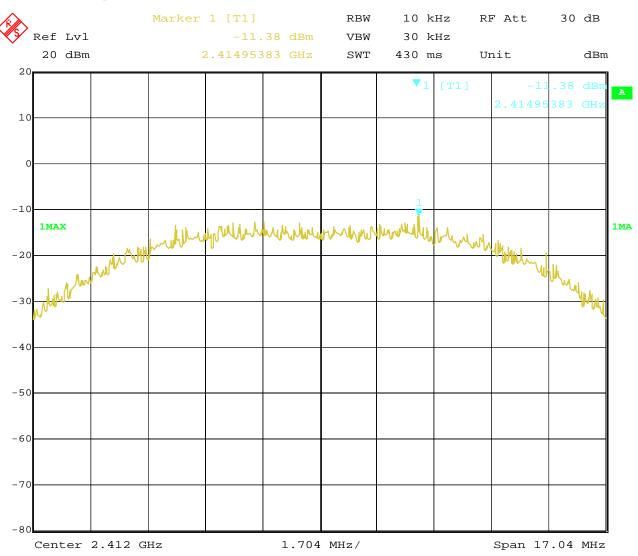
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9.5 Photo of Power Spectral Density Measurement

1.802.11b at 11Mbps of CH01



Date: 22.MAY.2021 15:56:05

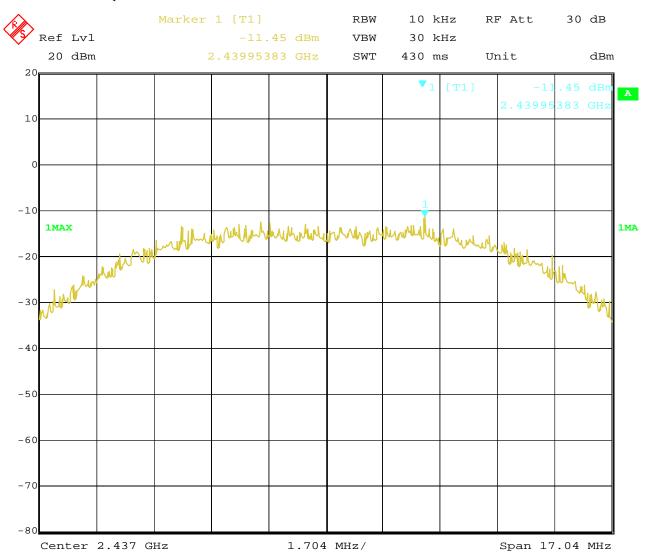
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2. 802.11b at 11Mbps at CH06



22.MAY.2021 15:57:28 Date:

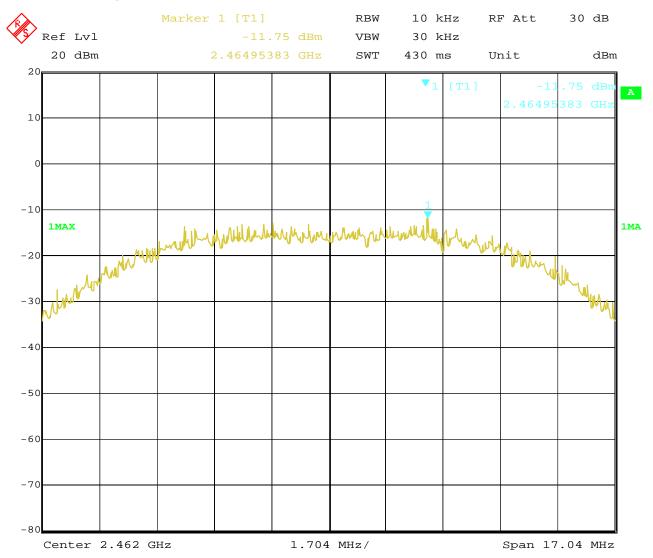
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3. 802.11b at 11Mbps of CH11



22.MAY.2021 15:58:17 Date:

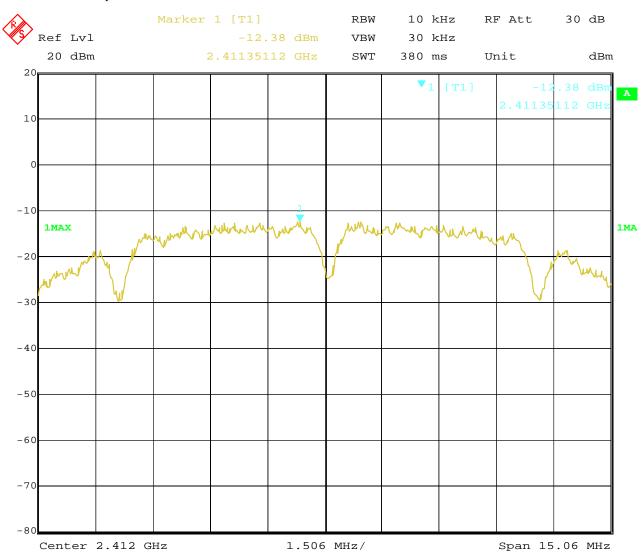
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4. 802.11b at 1Mbps of CH1



22.MAY.2021 15:54:35 Date:

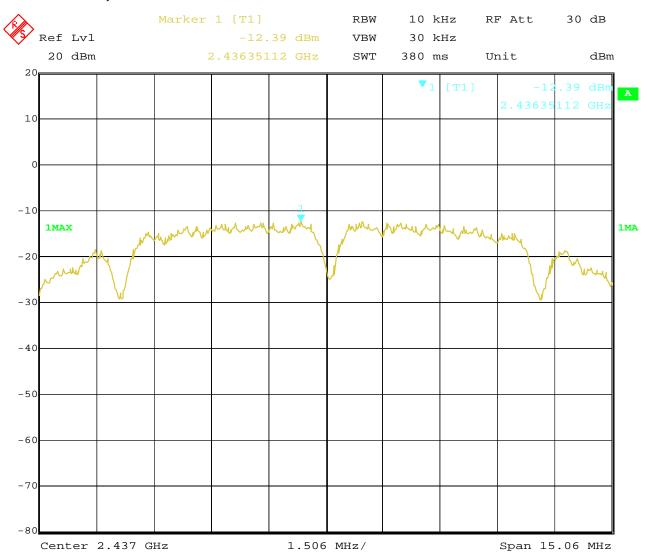
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5. 802.11b at 1Mbps of CH6



22.MAY.2021 15:52:41 Date:

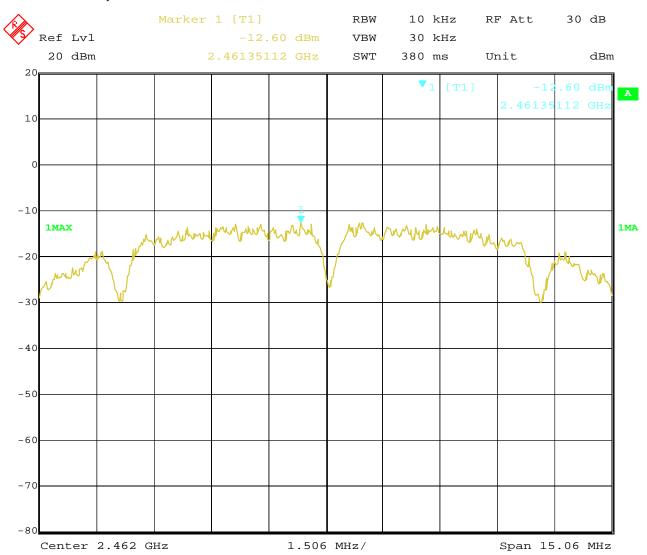
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6. 802.11b at 1Mbps of CH11



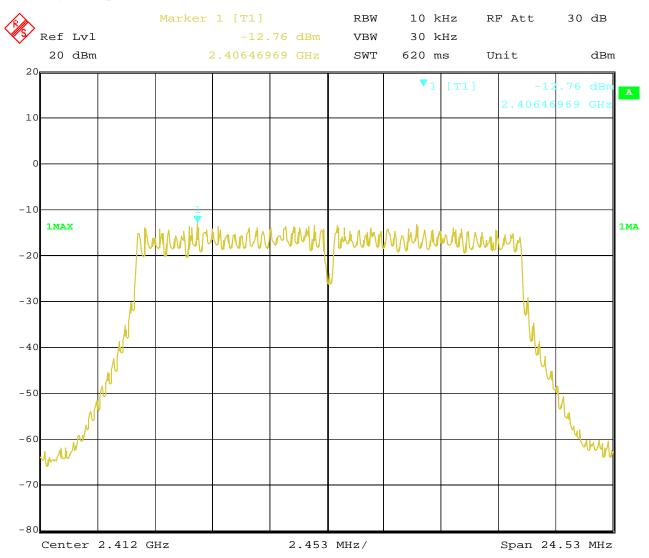
22.MAY.2021 15:48:01 Date:

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7. 802.11g at 6Mbps of CH1



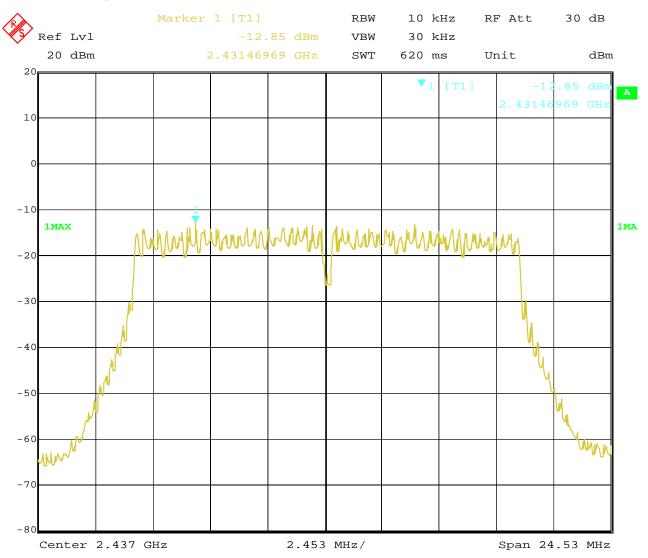
22.MAY.2021 16:03:11 Date:

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8. 802.11g at 6Mbps of CH6



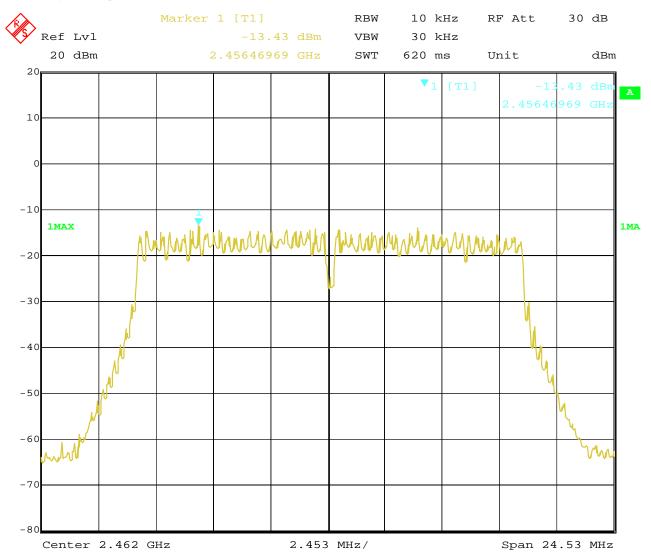
22.MAY.2021 16:01:11 Date:

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9. 802.11g at 6Mbps of CH11



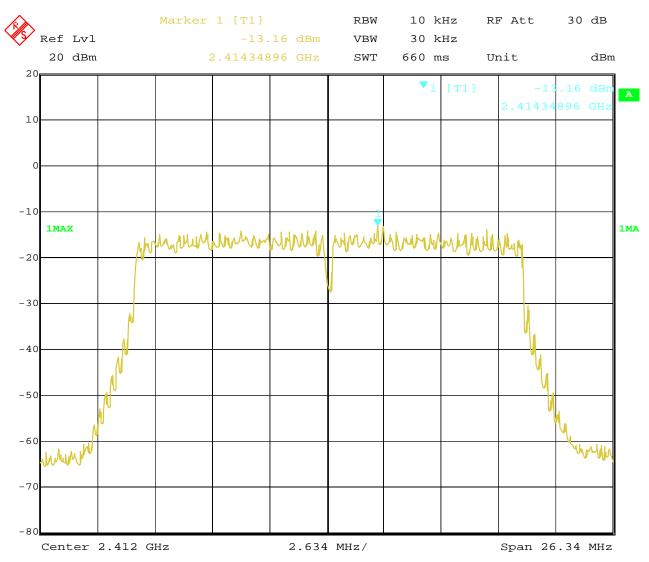
22.MAY.2021 16:00:20 Date:

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10. 802.11n at HT20 of CH01



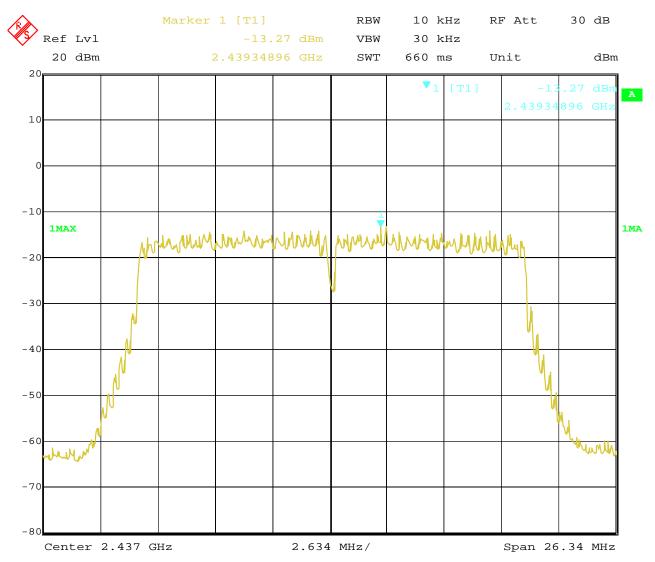
22.MAY.2021 15:44:02 Date:

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11. 802.11n at HT20 of CH06



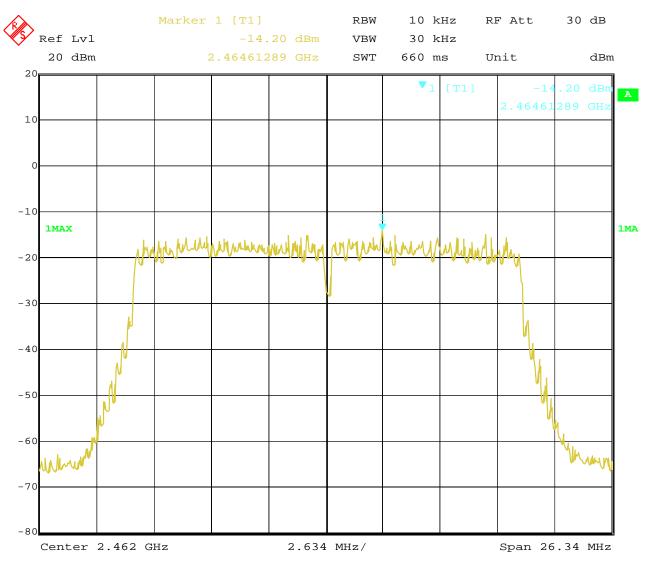
22.MAY.2021 15:46:05 Date:

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12. 802.11n at HT20 of CH11



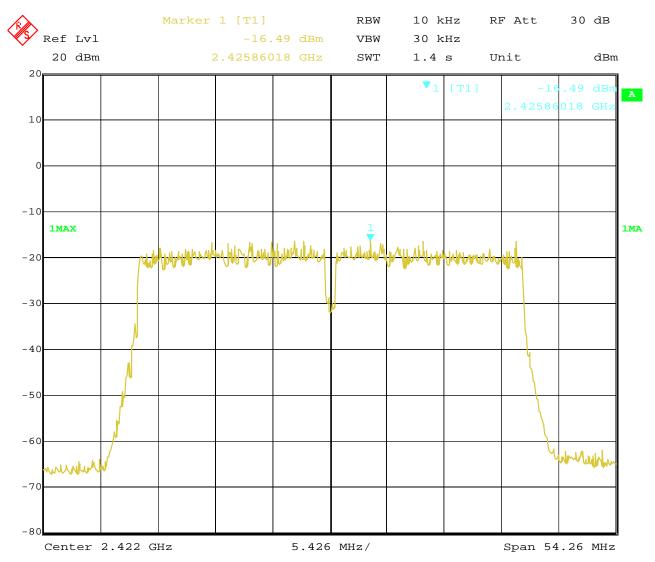
22.MAY.2021 15:46:35 Date:

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13. 802.11n at HT40 of CH01



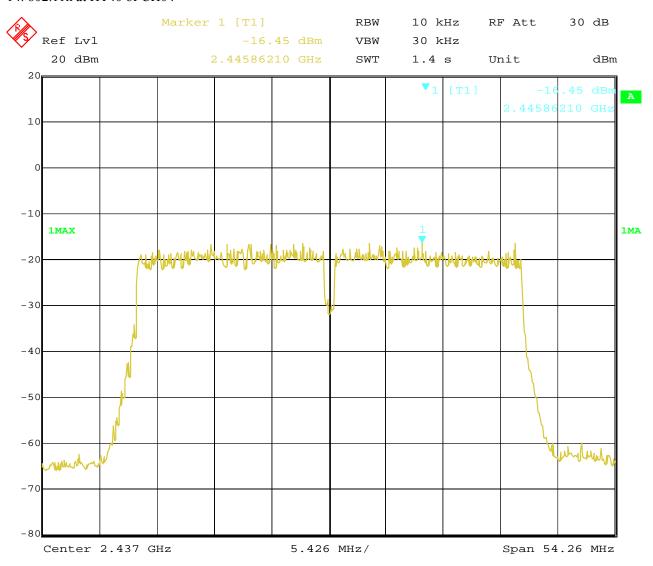
22.MAY.2021 15:42:04 Date:

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14. 802.11n at HT40 of CH04



22.MAY.2021 15:40:46 Date:

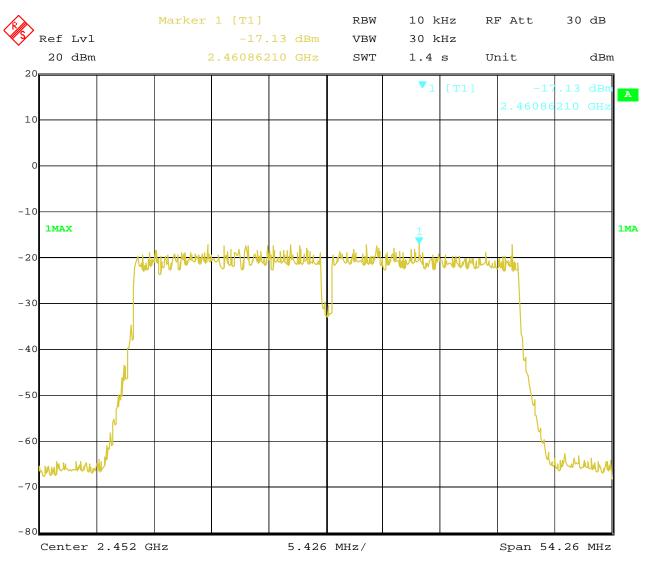
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15. 802.11n at HT40 of CH07



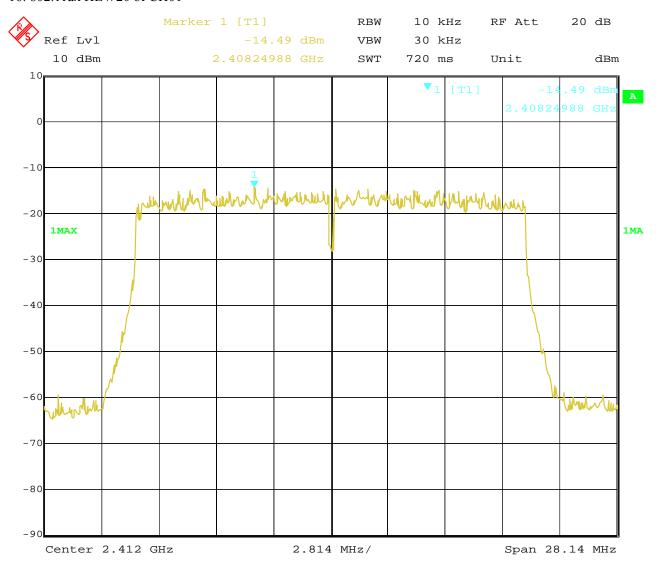
22.MAY.2021 15:31:41 Date:

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16. 802.11ax HEW20 of CH01



Date: 18.JUN.2021 10:58:48

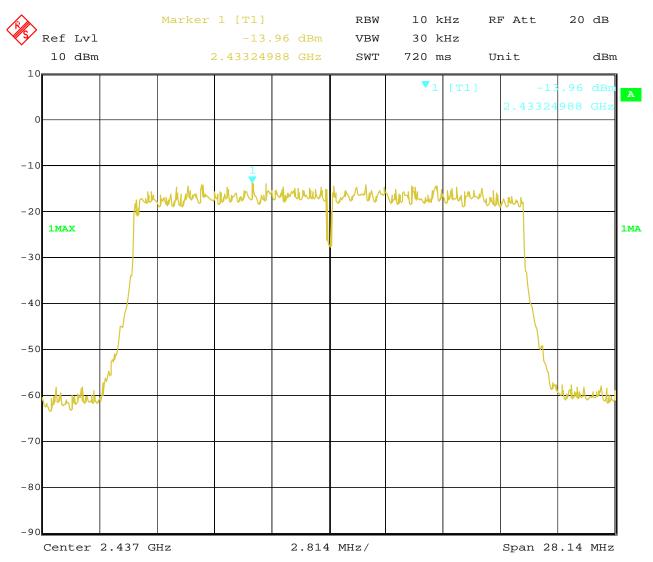
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17. 802.11ax HEW20 of CH06

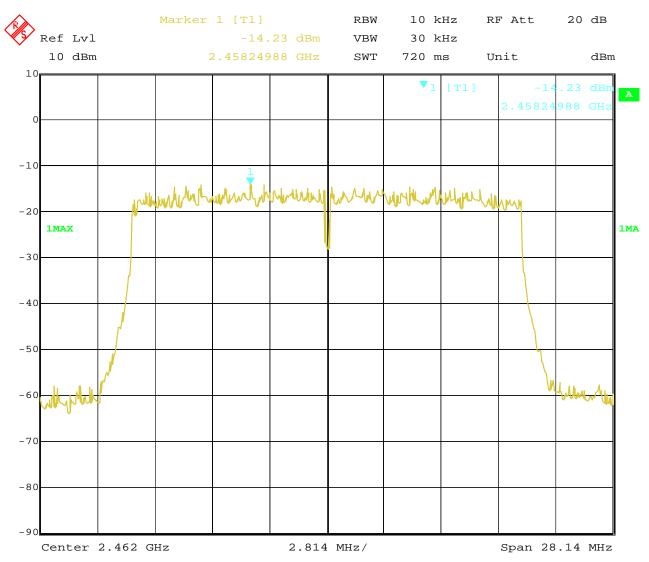


Date: 18.JUN.2021 11:01:39 Report No.: TW2104268-01E Page 81 of 129

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18. 802.11ax HEW20 of CH11



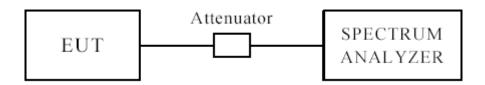
Date: 18.JUN.2021 11:02:28 Report No.: TW2104268-01E

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10 Out of Band Measurement 10.1 Test Setup for band edge



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

10.2 Limits of Out of Band Emissions Measurement

- 1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
- 2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

10.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test. (Peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector)

For bandage test, the spectrum set as follows: RBW=100, VBW=300 kHz. A conducted measurement used

10.4 Test Result

Please see next pages

Note: 1. for band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.

- 2. Two antennas were tested and only the worst cased was recorded in the test report. J21 was the worst case.
- 3. for restrict band measurement, dipole antenna and PCB antenna were tested and only the worst cases were recorded in the test report. Dipole antenna was the worst case.

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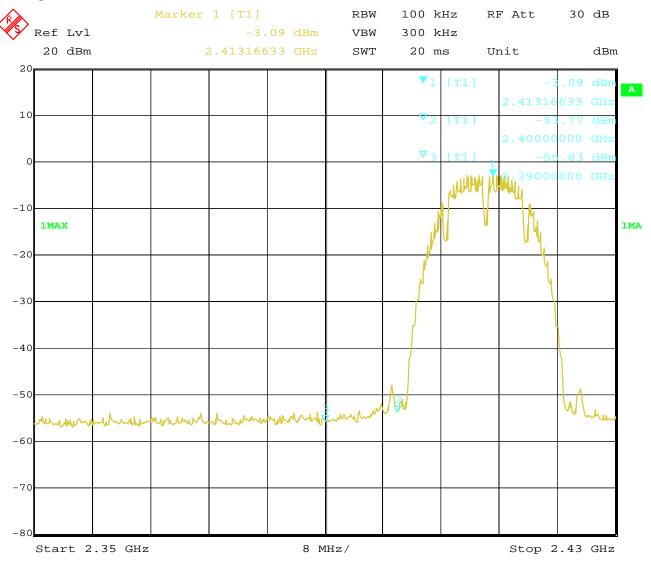
For 802.11b mode

CH01 at 1Mbps

10.4 Band-edge Measurement

EUT	WI-FI 6 New-Gen Super Router	Model	W20
Mode	Keeping Transmitting	Test Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



22.MAY.2021 16:04:55 Date:

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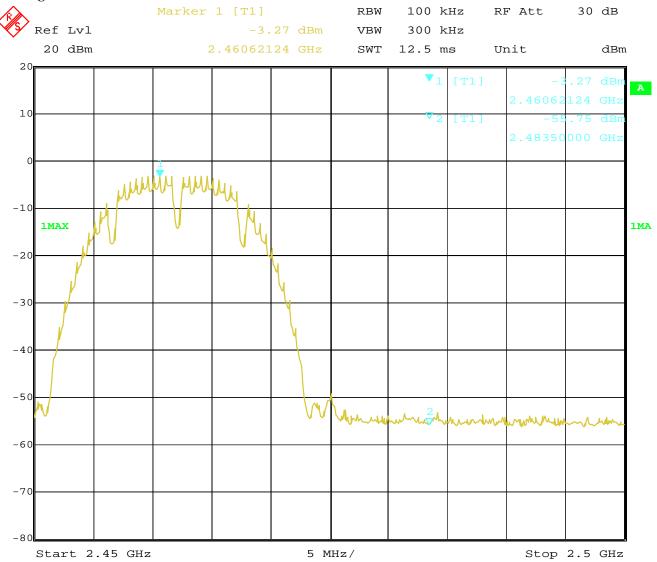


CH11 at 1Mbps

10.4 Band-edge Measurement

EUT	WI-FI 6 New-Gen Super Router	Model	W20
Mode	Keeping Transmitting	Test Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



22.MAY.2021 16:15:07 Date:

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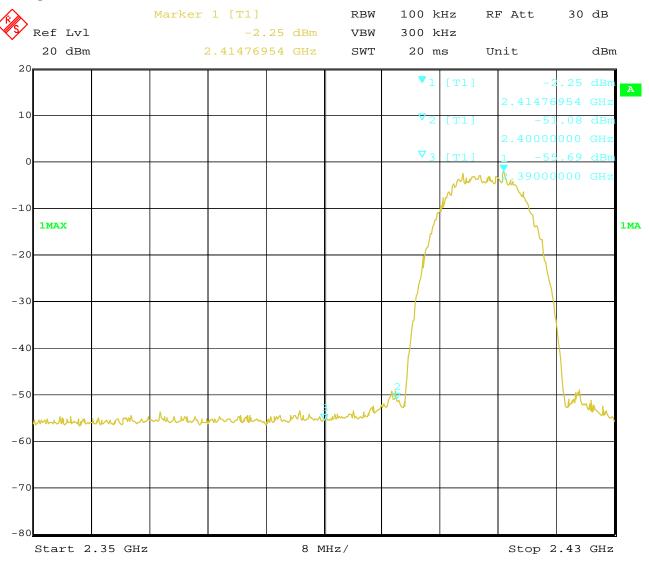
For 802.11b mode

CH01 at 11Mbps

10.4 Band-edge Measurement

EUT	WI-FI 6 New-Gen Super Router	Model	W20
Mode	Keeping Transmitting	Test Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 22.MAY.2021 16:06:42

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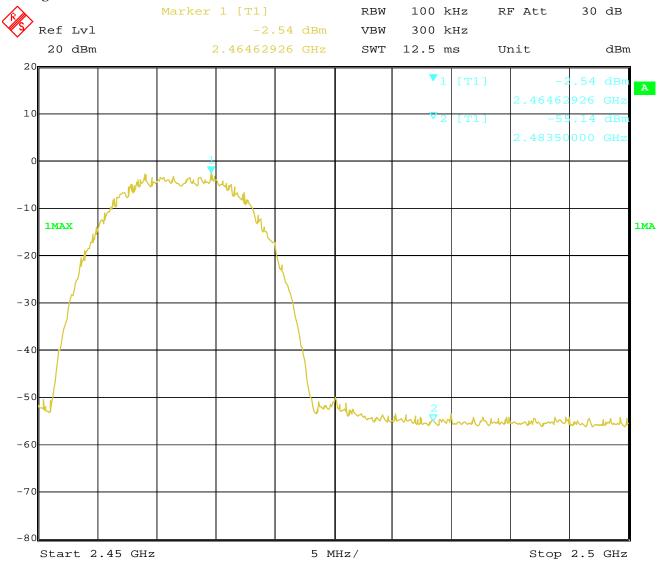


CH11 at 11Mbps

10.4 Band-edge Measurement

EUT	WI-FI 6 New-Gen Super Router	Model	W20
Mode	Keeping Transmitting	Test Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



22.MAY.2021 16:17:57 Date:

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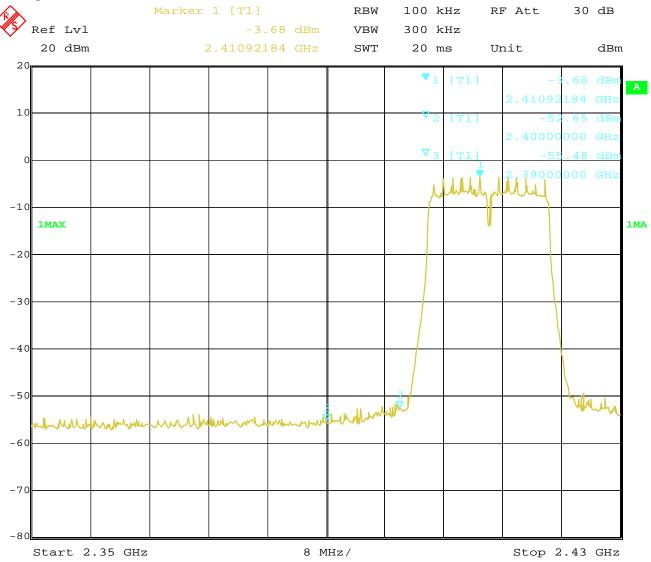
For 802.11g mode

CH01 at 6Mbps

10.4 Band-edge Measurement

EUT	WI-FI 6 New-Gen Super Router	Model	W20
Mode	Keeping Transmitting	Test Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



22.MAY.2021 16:03:58 Date:

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Date: 2021-06-21

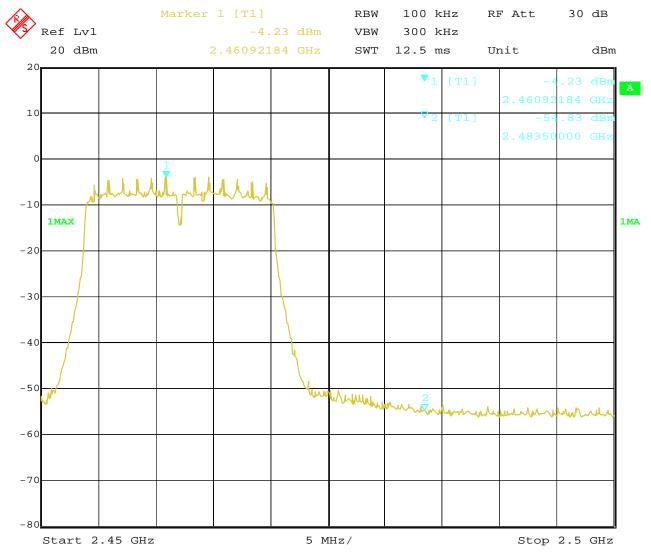


CH11 at 6Mbps

10.4 Band-edge Measurement

EUT	WI-FI 6 New-Gen Super Router	Model	W20
Mode	Keeping Transmitting	Test Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



22.MAY.2021 16:13:13 Date:

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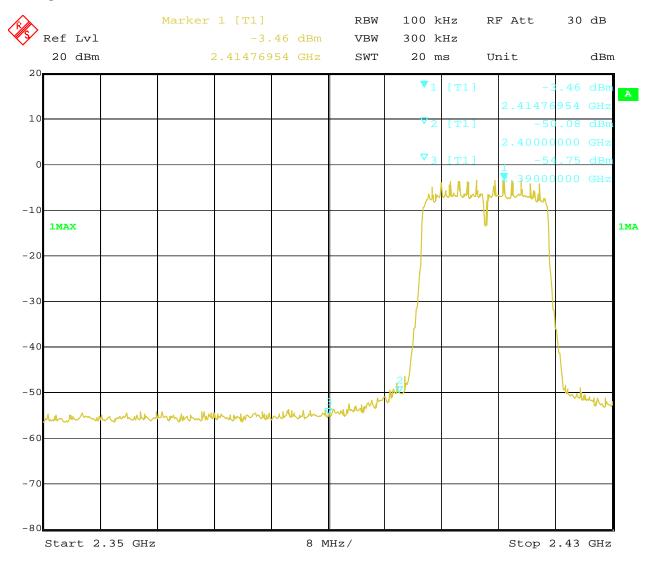
For 802.11n (HT20) mode

CH01 at mcs0

10.4 Band-edge Measurement

EUT	WI-FI 6 New-Gen Super Router	Model	W20
Mode	Keeping Transmitting	Test Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 22.MAY.2021 16:08:34

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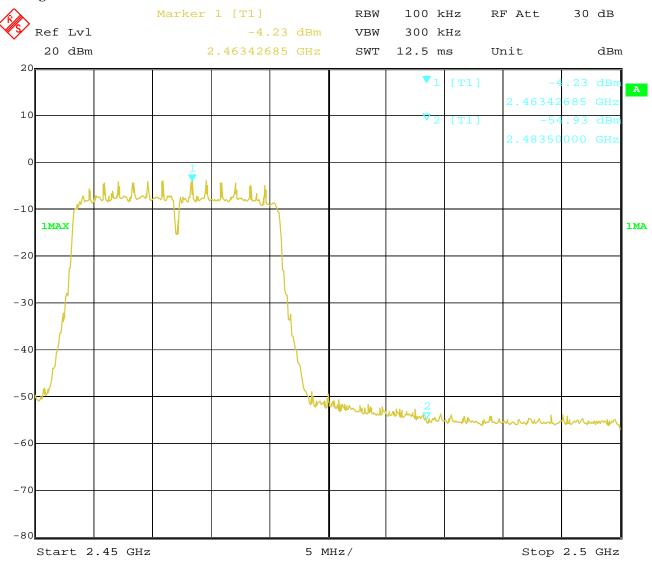


CH11 at mcs0

10.4 Band-edge Measurement

EUT	WI-FI 6 New-Gen Super Router	Model	W20
Mode	Keeping Transmitting	Test Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



22.MAY.2021 16:10:50 Date:

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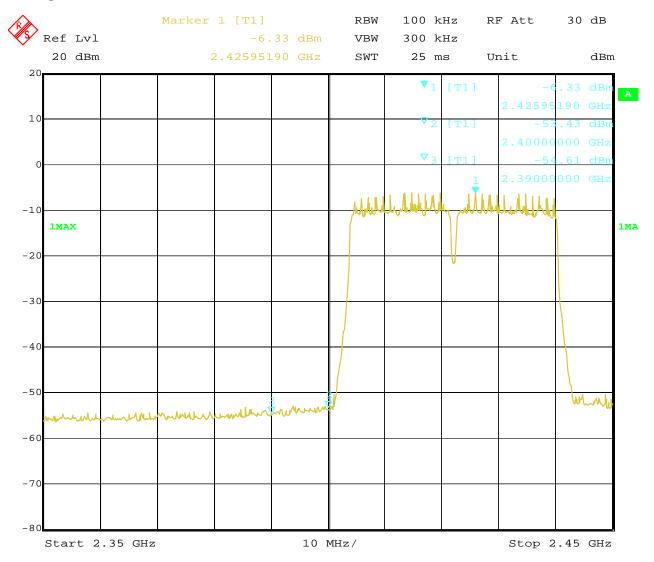
For 802.11n (HT40) mode

CH03 at msc0

10.4 Band-edge and Restricted band Measurement

EUT	WI-FI 6 New-Gen Super Router	Model	W20
Mode	Keeping Transmitting	Test Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 22.MAY.2021 16:20:12

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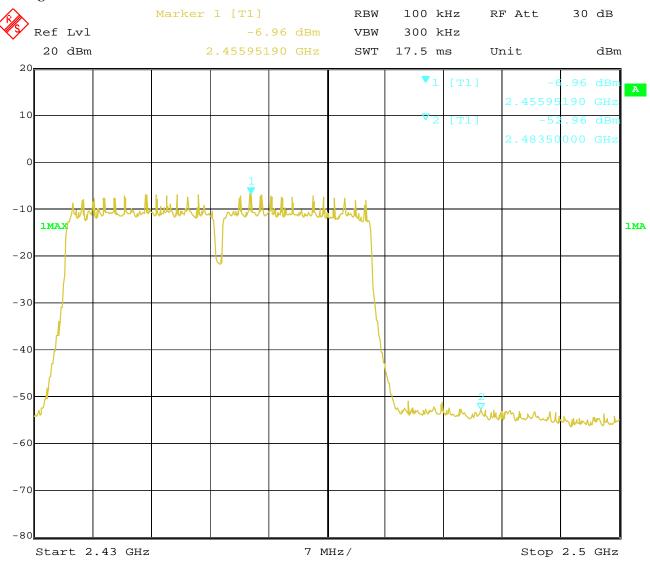


CH09 at msc0

10.4 Band-edge and Restricted band Measurement

EUT	WI-FI 6 New-Gen Super Router	Model	W20
Mode	Keeping Transmitting	Test Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 22.MAY.2021 16:22:21

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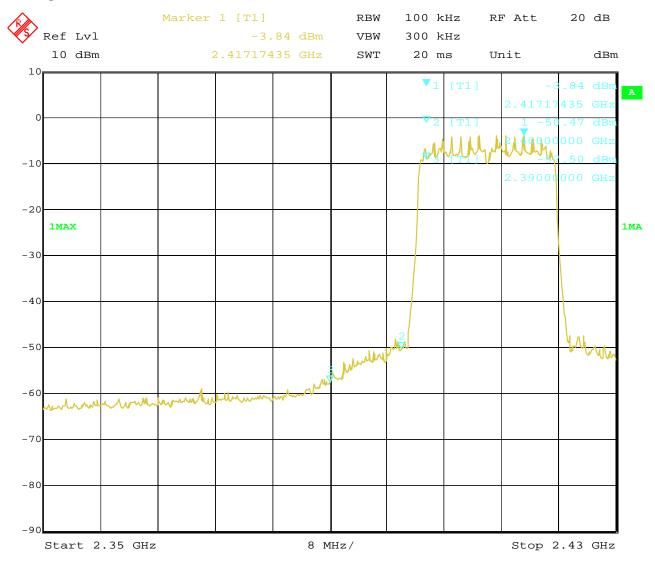
For 802.11ax (HEW20) mode

CH01 at mcs0

10.4 Band-edge Measurement

EUT	WI-FI 6 New-Gen Super Router	Model	W20
Mode	Keeping Transmitting	Test Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 18.JUN.2021 11:11:38

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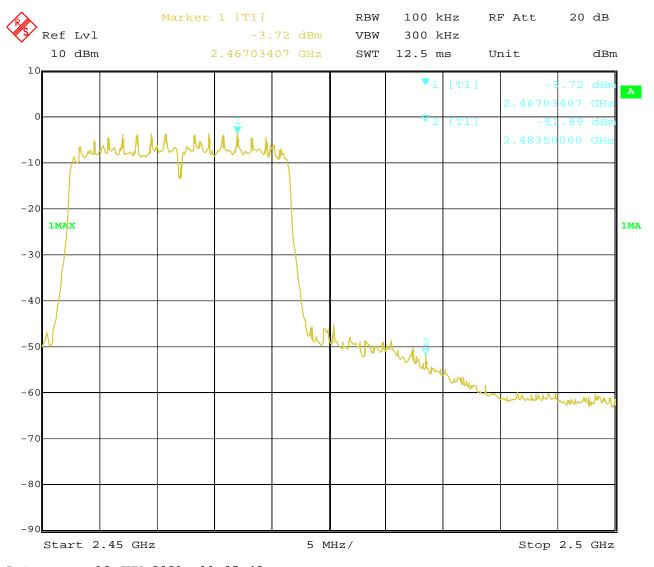


CH11 at mcs0

10.4 Band-edge Measurement

EUT	WI-FI 6 New-Gen Super Router	Model	W20
Mode	Keeping Transmitting	Test Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



18.JUN.2021 Date: 11:05:48 Report No.: TW2104268-01E Page 95 of 129

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10.5 Restricted band Measurement

EUT	WI-FI 6 New	-Gen Super Router	Model	W20						
Mode	Keeping	Transmitting	Test Voltage	120V~						
Temperature	24	deg. C,	Humidity	56% RH						
Test Result:		Pass	Detector	PK						
802.11b mode, Low Channel, Horizontal										
2390	PK (dBµV/m)	57.39	T ::4	$74(dB\mu V/m)$						
	AV (dBμV/m)	42.28	Limit	54(dBμV/m)						
	802.11b mode, Vertical									
2390	PK (dBμV/m)	52.30	Limit	74(dBμV/m)						
	AV (dBμV/m)	38.76	Limit	$54(dB\mu V/m)$						

10.5 Restricted to	band wicasuremen	10							
EUT	WI-FI 6 New	-Gen Super Router	Model	W20					
Mode	Keeping	g Transmitting	Test Voltage	120V~					
Temperature	24	deg. C,	Humidity	56% RH					
Test Result:		Pass	Detector	PK					
802.11b mode, High Channel, Horizontal									
2483.5	PK (dBµV/m)	55.38	T ::4	$74(dB\mu V/m)$					
	AV (dBμV/m)	40.22	Limit	$54(dB\mu V/m)$					
	802.11b mode, High Channel, Vertical								
2483.5	PK (dBμV/m)	53.61	T 10014	74(dBμV/m)					
	AV (dBμV/m)	39.58	Limit	$54(dB\mu V/m)$					

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10.5 Restricted band Measurement

EUT	WI-FI 6 New	-Gen Super Router	Model	W20					
Mode	Keeping	Transmitting	Test Voltage	120V~					
Temperature	24	deg. C,	Humidity	56% RH					
Test Result:		Pass	Detector	PK					
802.11g mode, Low Channel, Horizontal									
2390	PK (dBµV/m)	61.65		$74(dB\mu V/m)$					
	AV (dBμV/m)	45.46	Limit	54(dBμV/m)					
		802.11g mod	e, Vertical						
2390	PK (dBμV/m)	56.12		74(dBμV/m)					
	AV (dBμV/m)	44.17	Limit	$54(dB\mu V/m)$					

10.5 Restricted	ound ivicusuremen	•							
EUT	WI-FI 6 New	-Gen Super Router	Model	W20					
Mode	Keeping	Transmitting	Test Voltage	120V~					
Temperature	24	deg. C,	Humidity	56% RH					
Test Result:		Pass	Detector	PK					
802.11g mode, High Channel, Horizontal									
2483.5	PK (dBµV/m)	60.92	T ::4	$74(dB\mu V/m)$					
	AV (dBμV/m)	45.08	Limit	$54(dB\mu V/m)$					
	802.11g mode, High Channel, Vertical								
2483.5	PK (dBµV/m)	58.83	T ::4	74(dBμV/m)					
	AV (dBμV/m)	44.53	Limit	$54(dB\mu V/m)$					

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10.5 Restricted band Measurement

EUT	WI-FI 6 New	-Gen Super Router	Model	W20					
Mode	Keeping	g Transmitting	Test Voltage	120V~					
Temperature	24	deg. C,	Humidity	56% RH					
Test Result:		Pass	Detector	PK					
802.11n HT20 mode, Low Channel, Horizontal									
2390	PK (dBμV/m)	63.48	T ::4	74(dBµV/m)					
	AV (dBμV/m)	46.89	Limit	54(dBµV/m)					
		302.11n HT20 mode, Lo	ow Channel, Vertice	cal					
2390	PK (dBμV/m)	57.26	Limit	74(dBμV/m)					
	AV (dBμV/m)	45.36	Limit	54(dBµV/m)					

EUT	WI-FI 6 New	-Gen Super Router	Model	W20				
Mode	Keeping	Transmitting	Test Voltage	120V~				
Temperature	24	deg. C,	Humidity	56% RH				
Test Result:		Pass	Detector	PK				
802.11n HT20 mode, High Channel, Horizontal								
2483.5	PK (dBμV/m)	62.69	Limit	$74(dB\mu V/m)$				
	AV (dBμV/m)	46.26	Limit	$54(dB\mu V/m)$				
	8	02.11n HT20 mode, Hi	igh Channel, Vertic	cal				
2483.5	PK (dBμV/m)	60.08	Limit	$74(dB\mu V/m)$				
	AV (dBμV/m)	45.31	Lillit	$54(dB\mu V/m)$				

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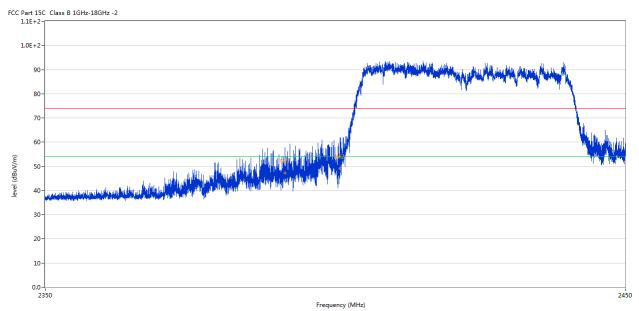
Date: 2021-06-21



10.5 Restricted band Measurement

EUT	WI-FI 6 New	-Gen Super Router	Model	W20					
Mode	Keeping	g Transmitting	Test Voltage	120V~					
Temperature	24	deg. C,	Humidity	56% RH					
Test Result:		Pass	Detector	PK					
802.11n HT40 mode, Low Channel, Horizontal									
2390	PK (dBμV/m)	65.12	T ::4	$74(dB\mu V/m)$					
	AV (dBμV/m)	48.90	Limit	54(dBµV/m)					
		802.11n HT40 mode, L	ow Channel Vertic	al					
2390	PK (dBμV/m)	57.75	Limit	74(dBμV/m)					
	AV (dBμV/m)	47.31	Limit	$54(dB\mu V/m)$					

Test Plots



No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)			(cm)		
1	2408.168	93.52	-3.57	74.0	19.52	Peak	154.00	100	Vertical	N/A
2	2400.331	61.86	-3.57	74.0	-12.14	Peak	154.00	100	Vertical	Pass
2**	2400.331	49.09	-3.57	54.0	-4.91	AV	154.00	100	Vertical	Pass
3	2390.820	57.75	-3.53	74.0	-16.25	Peak	116.00	100	Vertical	Pass
3**	2390.820	47.31	-3.53	54.0	-6.69	AV	116.00	100	Vertical	Pass

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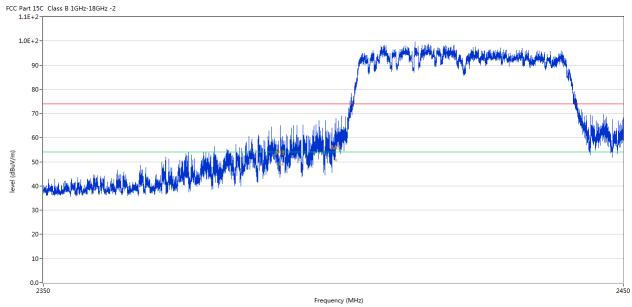
adopt any other remedies which may be appropriate.

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No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)			(cm)		
1	2413.605	99.57	-3.57	74.0	25.57	Peak	116.00	100	Horizontal	N/A
2	2399.969	68.02	-3.57	74.0	-5.98	Peak	297.00	100	Horizontal	Pass
2**	2399.969	50.78	-3.57	54.0	-3.22	AV	297.00	100	Horizontal	Pass
3	2390.420	65.12	-3.53	74.0	-8.88	Peak	116.00	100	Horizontal	Pass
3**	2390.420	48.90	-3.53	54.0	-5.10	AV	116.00	100	Horizontal	Pass

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EUT	WI-FI 6 New	-Gen Super Router	Model	W20						
Mode	Keeping	g Transmitting	Test Voltage	120V~						
Temperature	24	4 deg. C,	Humidity	56% RH						
Test Result:		Pass	Detector	PK						
802.11n HT40 mode, High Channel, Horizontal										
2483.5	PK (dBµV/m)	64.77	T 114	$74(dB\mu V/m)$						
	AV ($dB\mu V/m$)	48.81	Limit	$54(dB\mu V/m)$						
	802.11n HT40 mode, High Channel, Vertical									
2483.5	PK (dBμV/m)	62.13	T ::4	74(dBµV/m)						
	AV (dBμV/m)	47.76	Limit	$54(dB\mu V/m)$						



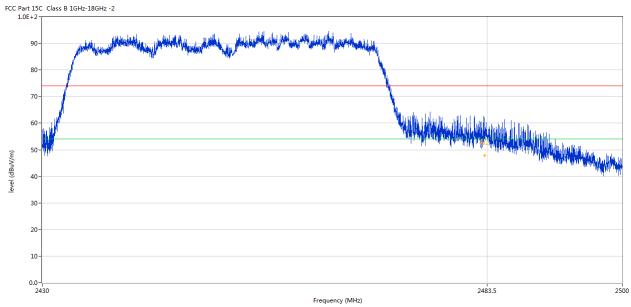
No.	Frequency	Results	Factor	Limit	Over	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)			(cm)		
1	2446.201	97.35	-3.57	74.0	23.35	Peak	292.00	100	Horizontal	N/A
2	2481.945	64.77	-3.57	74.0	-9.23	Peak	95.00	100	Horizontal	Pass
2**	2481.945	48.81	-3.57	54.0	-5.19	AV	95.00	100	Horizontal	Pass

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No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2456.506	94.56	-3.57	74.0	20.56	Peak	183.00	100	Vertical	N/A
2	2483.204	62.13	-3.57	74.0	-11.87	Peak	5.00	100	Vertical	Pass
2**	2483.204	47.76	-3.57	54.0	-6.24	AV	5.00	100	Vertical	Pass

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10.5 Restricted band Measurement

EUT	WI-FI 6 New-Gen Super Router		Model	W20			
Mode	Keeping Transmitting		Test Voltage	120V~			
Temperature	24 deg. C,		Humidity	56% RH			
Test Result:	Pass		Detector	PK			
802.11ax HEW20 mode, Low Channel, Horizontal							
2390	PK (dBµV/m)	63.95	Limit	$74(dB\mu V/m)$			
	AV (dBμV/m)	47.33		54(dBµV/m)			
802.11ax HEW20 mode, Low Channel, Vertical							
2390	PK (dBμV/m)	57.71	Limit	74(dBμV/m)			
	AV (dBμV/m)	45.80		54(dBμV/m)			

EUT	WI-FI 6 New-Gen Super Router		Model	W20			
Mode	Keeping Transmitting		Test Voltage	120V~			
Temperature	24 deg. C,		Humidity	56% RH			
Test Result:	Pass		Detector	PK			
802.11ax HEW20 mode, High Channel, Horizontal							
2483.5	PK (dBµV/m)	63.05	Limit	$74(dB\mu V/m)$			
	AV ($dB\mu V/m$)	46.58		54(dBμV/m)			
802.11ax HEW20, High Channel, Vertical							
2483.5	PK (dBµV/m)	60.55	Limit	$74(dB\mu V/m)$			
	AV (dBμV/m)	45.90		$54(dB\mu V/m)$			

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11.0 Antenna Requirement

11.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

11.2 Antenna Connected construction

Two alternative types antennas provided to the EUT: External Dipole and Internal PCB antenna.

- 1. Dipole antennas. The gain of the antennas is 5.0dBi for each one. (Get from the antenna specification provided the applicant)
- 2. PCB antennas. The gain of the antennas is 4.0dBi for each one. (Get from the antenna specification provided the applicant)

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12.0 FCC ID Label

FCC ID: 2AYCEWWLHW20T

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



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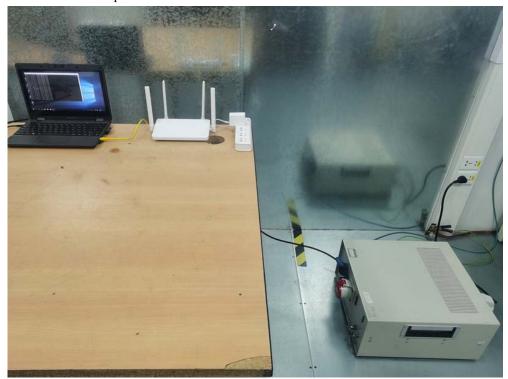
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13.0 Photo of testing

Conducted Emission Test Setup:



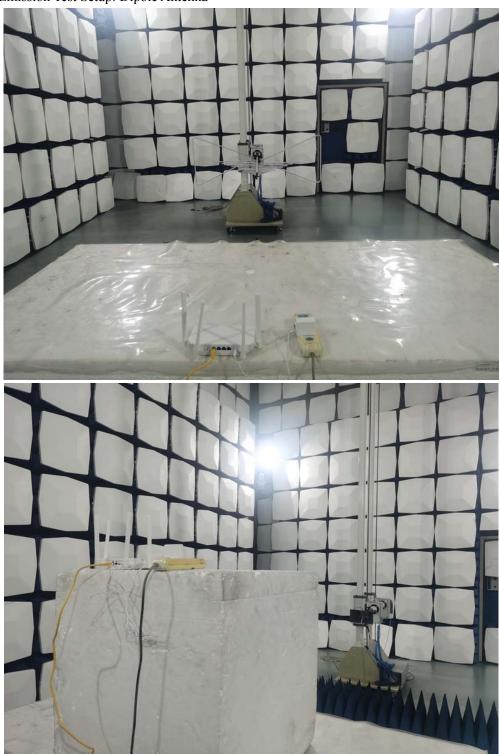
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Radiated Emission Test Setup: Dipole Antenna



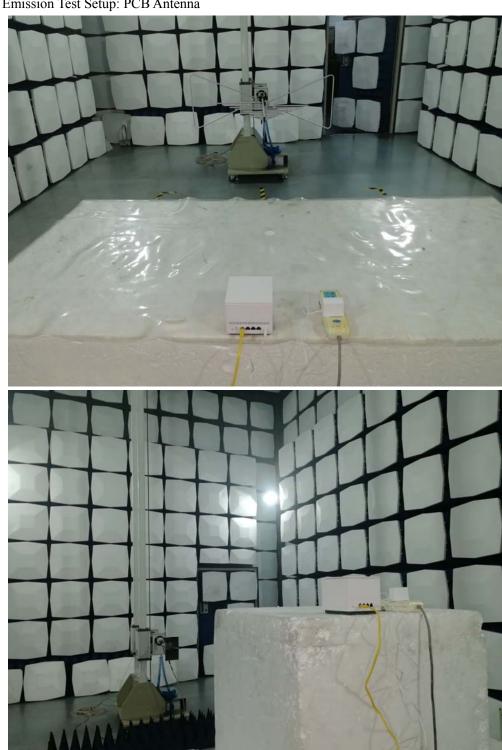
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Radiated Emission Test Setup: PCB Antenna



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Photographs - EUT

Outside View-EUT with dipole antenna



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Outside View-EUT with dipole antenna



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Outside View-EUT with dipole antenna-different appearance





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Outside View-EUT with dipole antenna-different appearance





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Outside View-EUT with dipole antenna-different appearance





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Outside View-EUT with dipole antenna-different appearance





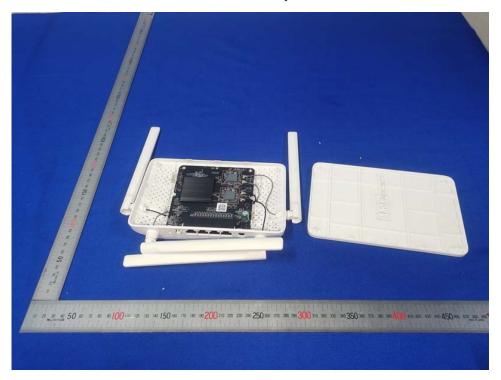
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Inside view-EUT with dipole antenna





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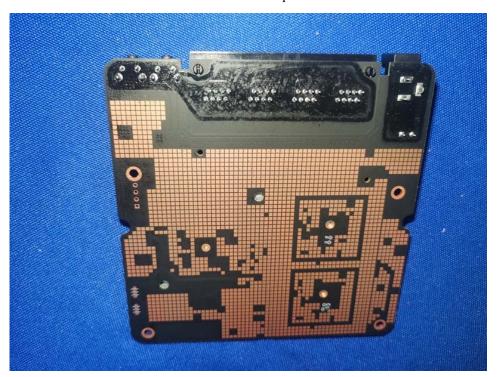
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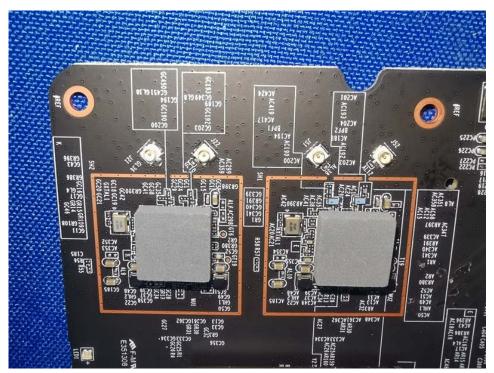
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Inside view-EUT with dipole antenna





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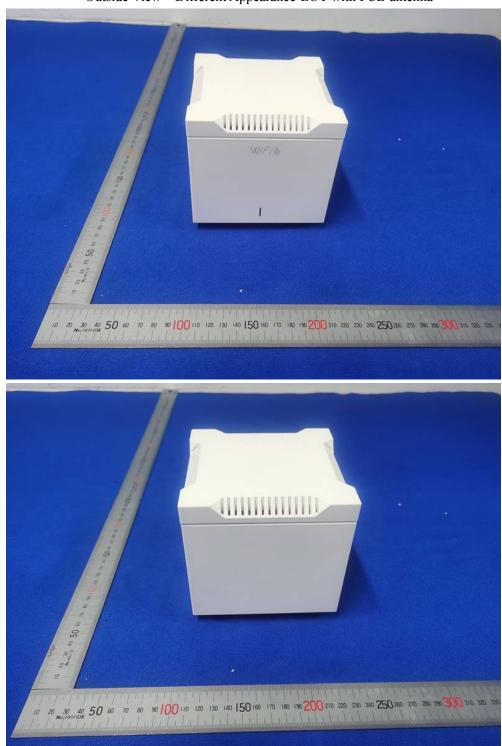
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Outside View—Different Appearance-EUT with PCB antenna



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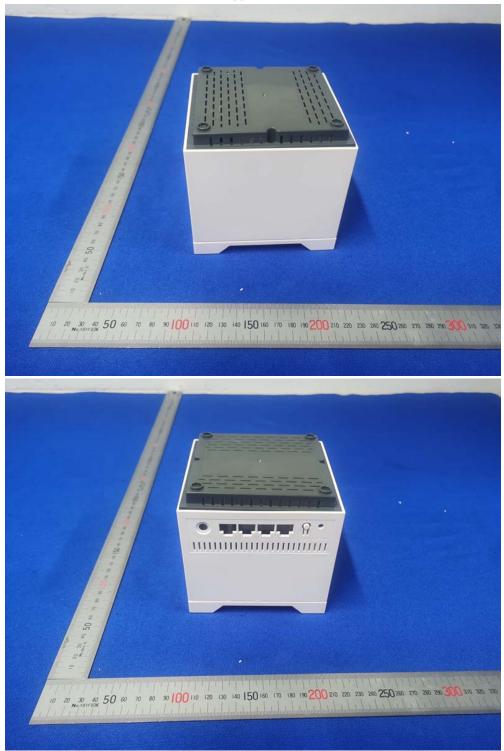
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Outside View—Different Appearance-EUT with PCB antenna



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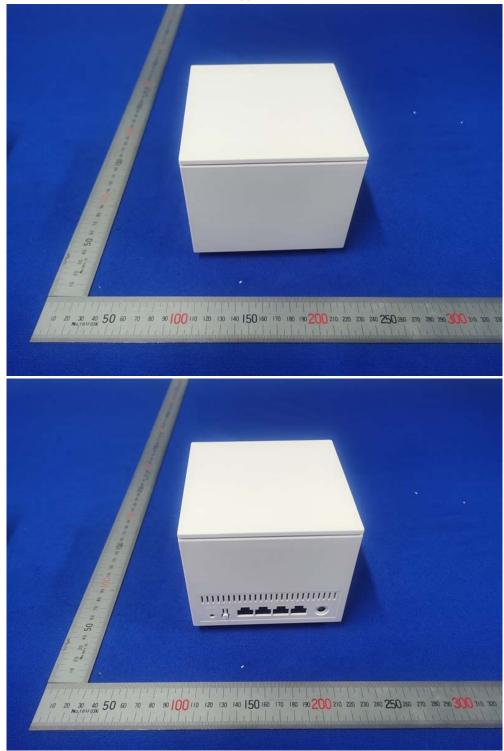
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Outside View—Different Appearance-EUT with PCB antenna



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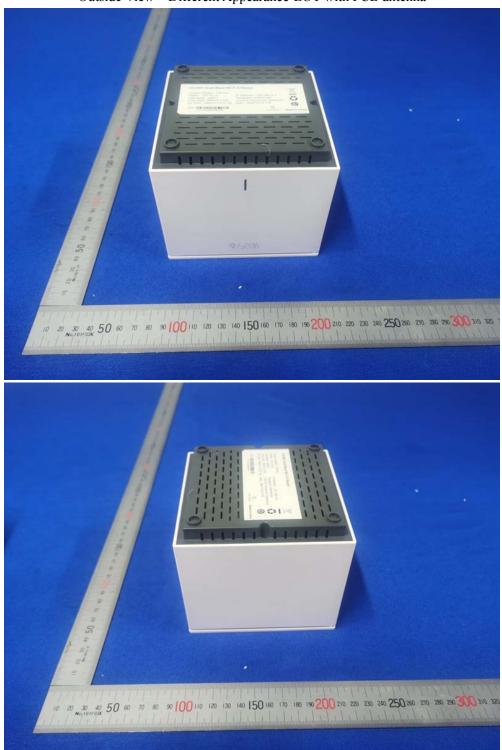
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Outside View—Different Appearance-EUT with PCB antenna



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Outside View—Different Appearance-EUT with PCB antenna



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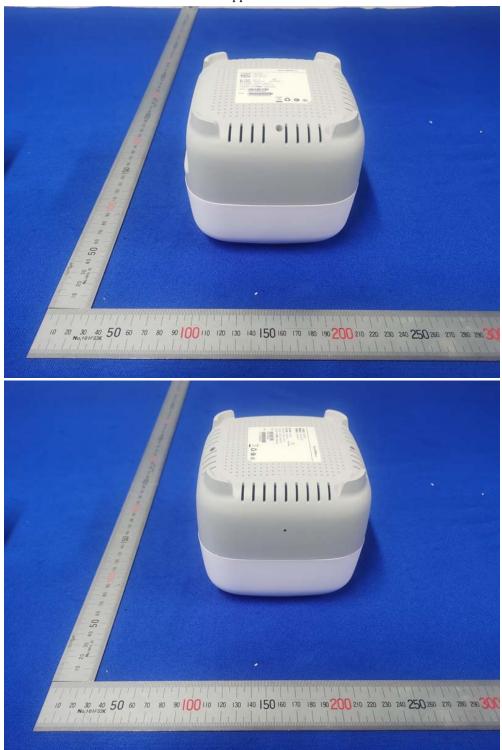
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Outside View—Different Appearance-EUT with PCB antenna



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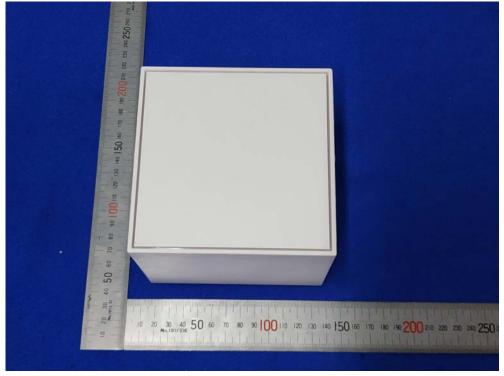
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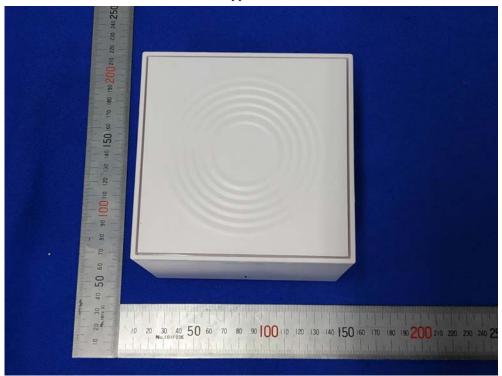
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Outside View—Different Appearance-EUT with PCB antenna





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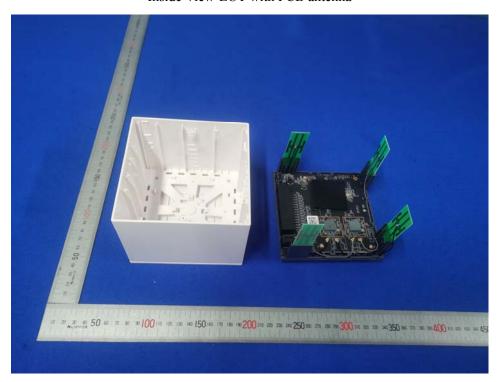
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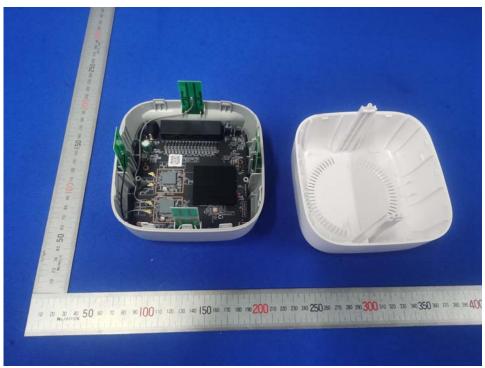
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Inside View-EUT with PCB antenna





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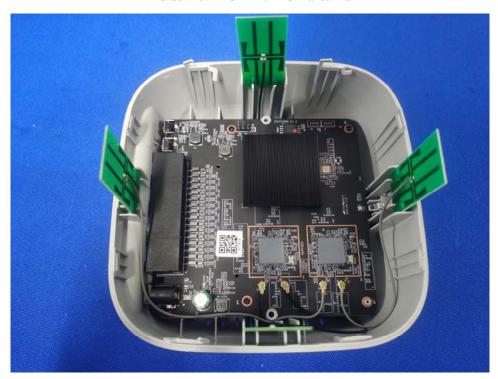
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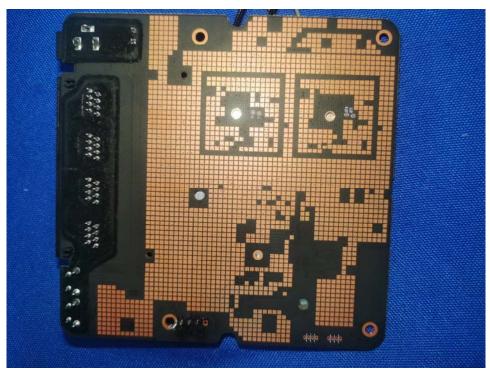
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Inside view-EUT with PCB antenna





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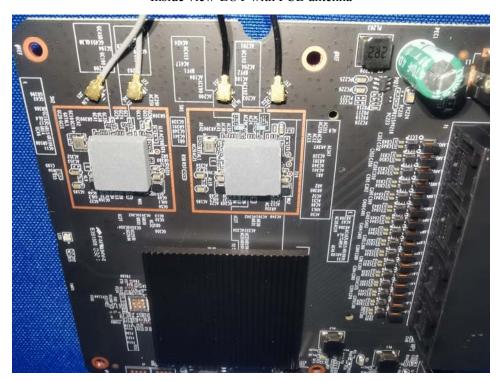
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Inside view-EUT with PCB antenna



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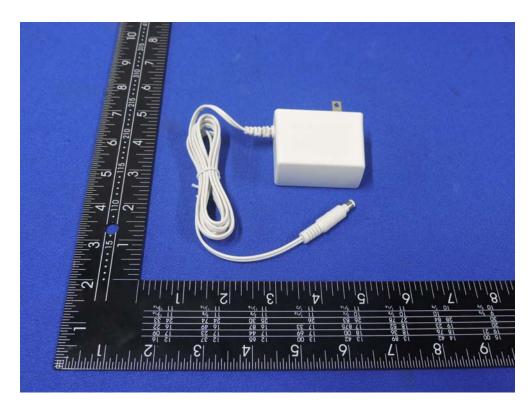
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Power Supply





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Power Supply





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Power Supply





-End of the report-

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