FCC Part 15.407
RSS-247 Issue 2, February 2017
RSS-GEN Issue 5, February 2021 Amendment 2
TEST REPORT

For

YEALINK(XIAMEN) NETWORK TECHNOLOGY CO.,LTD.

No.666 Hu'an Rd,Huli District Xiamen City, Fujian, P.R. China

FCC ID: T2C-T34W
IC: 10741A-T34W

Report Type:	**Product Type:**
Original Report	Classic IP Phone

Report Producer : Coco Lin

Report Number : RXZ230919076RF03

Report Date : 2023-11-08

Reviewed By: Andy Shih

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Revision History

Revision	No.	Report Number	Issue Date	Description	Author/ Revised by
0.0	RXZ230919076	RXZ230919076RF03	2023-11-08	Original Report	Coco Lin

TABLE OF CONTENTS

1 General Information

1.1 Product Description for Equipment under Test (EUT)

Applicant	YEALINK(XIAMEN) NETWORK TECHNOLOGY CO.,LTD.
	No.666 Hu'an Rd,Huli District Xiamen City, Fujian, P.R. China
Brand(Trade) Name	Yealink
Product (Equipment) / PMN	Classic IP Phone
Main Model Name	SIP-T34W
HVIN	T34W
Frequency Range	5150 MHz ~ 5250 MHz, 5250 MHz ~ 5350 MHz 5470 MHz ~ 5725 MHz, 5725 MHz ~ 5850 MHz Note: frequency range 5600-5650MHz can`t be used in Canada
Maximum Conducted Average Output Power	5150-5250 MHz: 14.70 dBm 5250-5350 MHz: 13.38 dBm 5470-5725 MHz: 15.32 dBm 5725-5850 MHz: 15.37 dBm
Modulation Technique	IEEE 802.11a Mode: OFDM IEEE 802.11n HT20/ ac VHT20 Mode: OFDM IEEE 802.11n HT20/ ac VHT40 Mode: OFDM IEEE 802.11ac VHT80 Mode: OFDM
Power Operation (Voltage Range)	☒ AC 120V/60Hz ☒ Adapter I/P: 100-240V 50~60Hz 0.2A , O/P: 5Vdc, 1.2A ☐ By AC Power Cord ☒ PoE: DC 48V/ 0.27A
Received Date	2023/9/19
Date of Test	2023/9/20 ~ 2023/11/07

*All measurement and test data in this report was gathered from production sample serial number: RXZ230919076-1(Assigned by BACL, New Taipei Laboratory).

1.2 Objective

This report is prepared on behalf of YEALINK(XIAMEN) NETWORK TECHNOLOGY CO.,LTD. in accordance with Part 2, Subpart J, Part 15, Subparts A, and E of the Federal Communication Commission's rules and RSS-247 Issue 2, February 2017 and RSS-GEN Issue 5, February 2021 Amendment 2 of the Innovation, Science and Economic Development Canada.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. And RSS-247 Issue 2, February 2017 and RSS-GEN Issue 5, February 2021 Amendment 2 of the Innovation, Science and Economic Development Canada.
KDB 789033 D02 General UNII Test Procedures New Rules v02r01

1.4 Statement

Decision Rule: No, (The test results do not include MU judgment)

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
The determination of the test results does not require consideration of the uncertainty of the measurement, unless the assessment is required by customer agreement, regulation or standard document specification.
Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) is not responsible for the authenticity of the information provided by the applicant that affects the test results.

1.5 Measurement Uncertainty

Parameter		Uncertainty
AC Mains		+/- 2.53 dB
RF output power, conducted		+/- 3.74 dB
Power Spectral Density, conducted		+/- 0.62 dBm
Occupied Bandwidth		+/- 0.09 %
Unwanted Emissions, conducted		+/- 1.13 dBm
Emissions, radiated	30 MHz~1GHz	+/- 4.99 dB
	1 GHz~18 GHz	+/- 7.56 dB
	18 GHz~40 GHz	+/- 5.06 dB
Temperature		+/- 0.79 °C
Humidity		+/- 0.44 %

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

1.6 Environmental Conditions

Test Site	Test Data	Temperature (℃)	Relative Humidity (%)	ATM Pressure (hPa)	Test Engineer
AC Line Conducted Emissions	2023/9/24~2023/10/5	24.5~26.1	43~57	1010	Aaron
Radiation Spurious Emissions	2023/9/21~2023/11/7	24.1~25.5	48~66	1010	Aaron
26dB attenuated below the channel power	2023/9/20~2023/10/24	24.7~26.6	45~52	1010	Jing
Emission Bandwidth And Occupied Bandwidth	2023/9/20~2023/9/22	24.8~26.6	45~51	1010	Jing
Maximum Output Power	2023/9/20~2023/9/22	24.8~26.6	45~51	1010	Jing
Power Spectral Density	2023/9/20~2023/9/22	24.8~26.6	45~51	1010	Jing

1.7 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) to collect test data is located on

☒70, Lane 169, Sec. 2, Datong Road, Xizhi Dist., New Taipei City 22183, Taiwan, R.O.C.

Bay Area Compliance Laboratories Corp. (New Taipei Laboratory) is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3732) and the FCC designation No.TW3732 under the Mutual Recognition Agreement (MRA) in FCC Test.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: TW3732.

2 System Test Configuration

2.1 Description of Test Configuration

The system was configured for testing in an engineering mode, which is provided by manufacturer. The system support 802.11a/n ht20/n ht40/ac vht20/ac vht40/ac vht80, the 802.11n ht20/ht40 were reduced since the identical parameters with 802.11ac vht20 and vht40.

For 5150 ~ 5250MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
40	5200	48	5240

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
42	5210

802.11a/n20/ac20 mode Channel 36, 40, 48 were tested.
802.11n40/ac40 mode Channel 38, 46 were tested.
802.11ac80 mode Channel 42 was tested.

For 5250 ~ 5350MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
52	5260	60	5300
56	5280	64	5320

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270	62	5310

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
58	5290

802.11a/n20/ac20 mode Channel 52, 60, 64 were tested.
802.11n40/ac40 mode Channel 54, 62 were tested.
802.11ac80 mode Channel 58 was tested.

For 5470 ~ 5725MHz

Note: frequency range 5600-5650MHz can`t be used in Canada

11 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
100	5500	124	5620
104	5520	128	5640
108	5540	132	5660
112	5560	136	5680
116	5580	140	5700
120	5600	/	/

5 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
102	5510	126	5630
110	5550	134	5670
118	5590	/	/

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530	122	5610

802.11a/n20/ac20 mode Channel 100, 116, 140 were tested.

802.11n40/ac40 mode Channel 102, 118, 134 were tested.

802.11ac80 mode Channel 106, 122 was tested.

For 5725 ~ 5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	161	5805
153	5765	165	5825
157	5785	/	/

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
155	5775

802.11a/n20/ac20 mode Channel 149, 157, 165 were tested.

802.11n40/ac40 mode Channel 151, 159 were tested.

802.11ac80 mode Channel 155 was tested.

2.2 Equipment Modifications

No modification was made to the EUT.

2.3 EUT Exercise Software

The system was configured for testing in an engineering mode, which is provided by manufacturer.

The software was used "AuthenticTool_1.2.19.0".

UNII Band	Mode	Channel	Frequency (MHz)	Power setting
UNII-1	802.11a	36	5180	50
		40	5200	50
		48	5240	50
UNII-2A		52	5260	50
		60	5300	50
		64	5320	50
UNII-2C		100	5500	50
		116	5580	50
		140	5700	50
UNII-3		149	5745	50
		157	5785	50
		165	5825	50
UNII-1	802.11n HT20 /ac VHT20	36	5180	50
		40	5200	50
		48	5240	50
UNII-2A		52	5260	50
		60	5300	50
		64	5320	50
UNII-2C		100	5500	50
		116	5580	50
		140	5700	50
UNII-3		149	5745	50
		157	5785	50
		165	5825	50
UNII-1	802.11n HT40 /ac VHT40	38	5190	46
		46	5230	46
UNII-2A		54	5270	46
		62	5310	43
UNII-2C		102	5510	46
		118	5590	46
		134	5670	46
UNII-3		151	5755	46
		159	5795	46
UNII-1	802.11ac VHT80	42	5210	43
UNII-2A		58	5290	40
UNII-2C		106	5530	43
		122	5610	43
UNII-3		155	5775	43

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all data rates bandwidths, and modulations.

802.11a: 6Mbps

802.11ac VHT20: MCS0

802.11ac VHT40: MCS0

802.11ac VHT80: MCS0

2.4 Test Mode

Pre-scan

AC Line Conducted Emissions and Radiated Spurious Emissions

Mode 1: SIP-T34W + Adapter

Mode 2: SIP-T34W + PoE

Worst case is the SIP-T34W + Adapter.

Mode 1: SIP-T34W + Adapter tested all measure item.

Mode 2: SIP-T34W + PoE test Below 1GHz Radiated Spurious Emissions and AC Line Conducted Emissions.

2.5 Support Equipment List and Details

Description	Manufacturer	Model Number
Adapter	Yealink	YLPS051200B1-US
NB	DELL	E6410
AP Router	NETGEAR	R7800
Handset	Yealink	N/A
Handset	Yealink	N/A
USB Storage	Transcend	8GB
PoE	Cisco	SB-PWR-INJ2

2.6 External Cable List and Details

Description	Manufacturer	Model Number
RJ-45 Cable	BACL	8m
RJ-45 Cable	BACL	8m
RJ-11 Cable	BACL	0.5m
RJ-11 Cable	BACL	0.5m

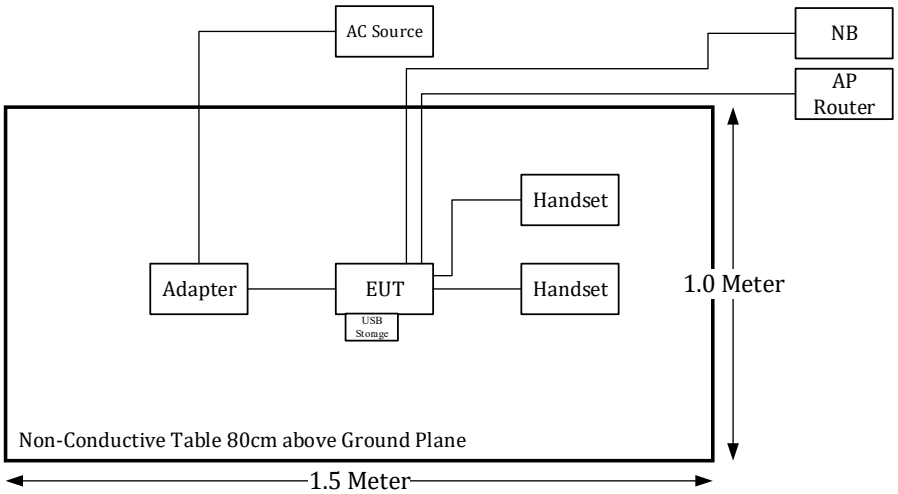
2.7 Block Diagram of Test Setup

See test photographs attached in setup photos for the actual connections between EUT and support equipment.

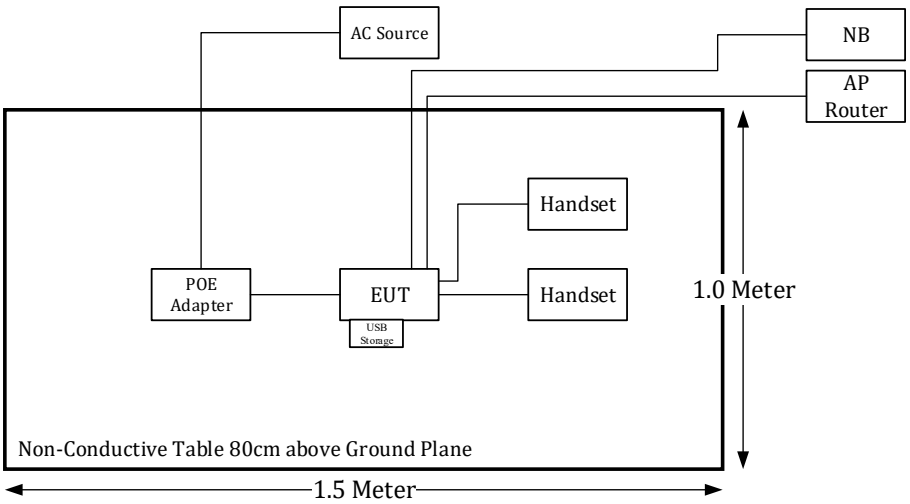
Radiation:

Below 1GHz

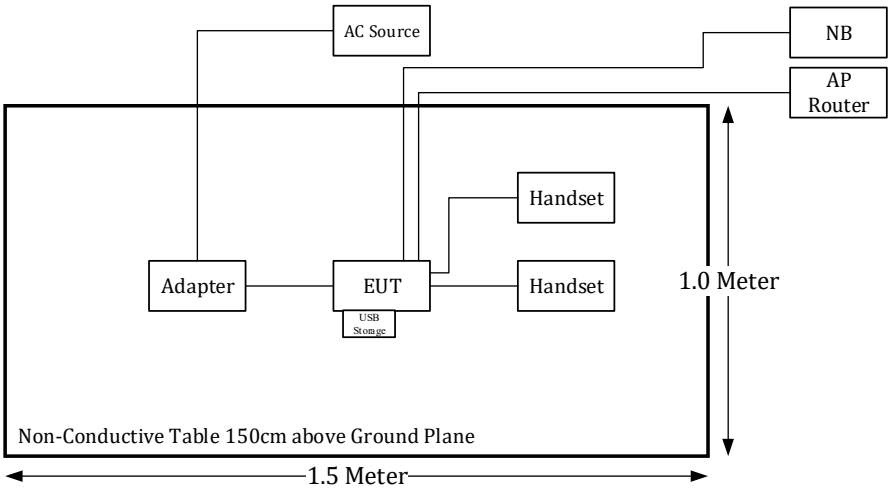
Adapter Mode:



PoE Mode:

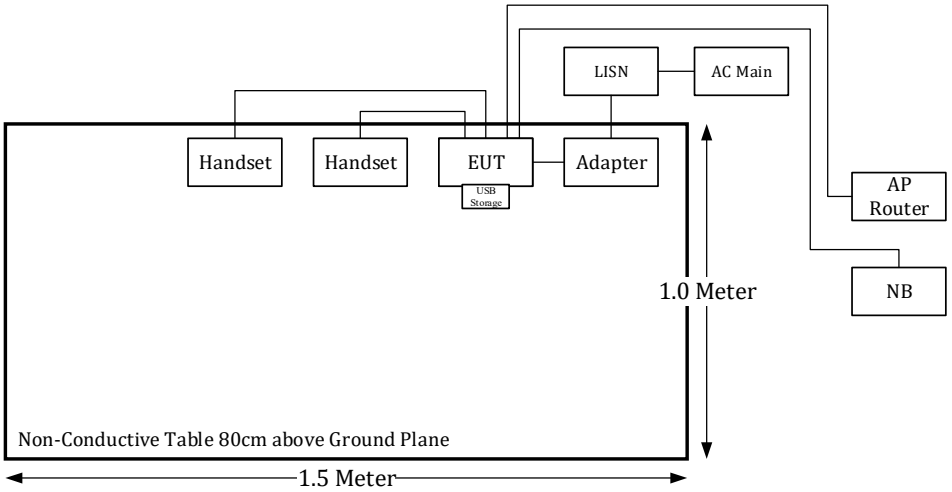


Above 1GHz:

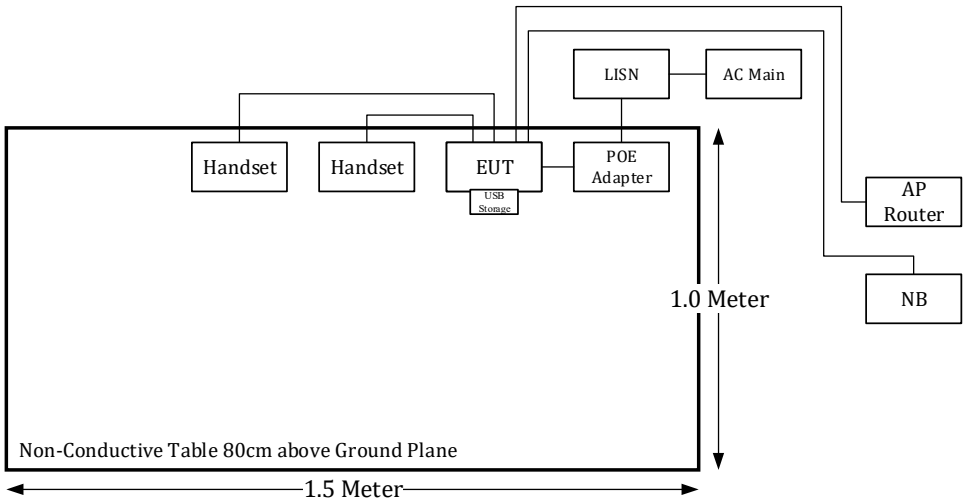


Conduction:

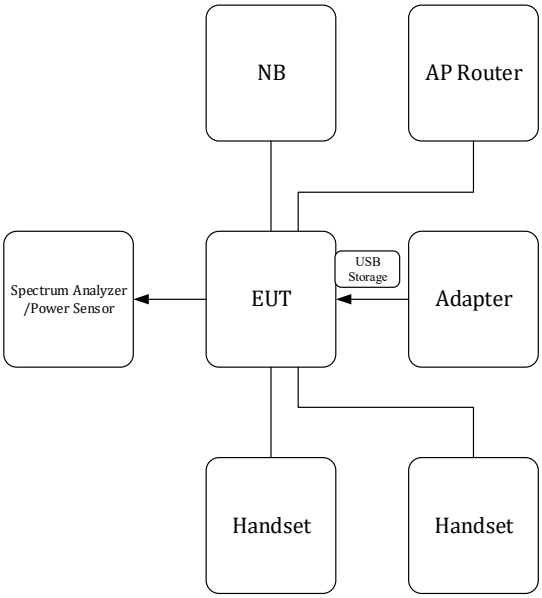
Adapter Mode:



PoE Mode:



Conducted:



2.8 Duty Cycle

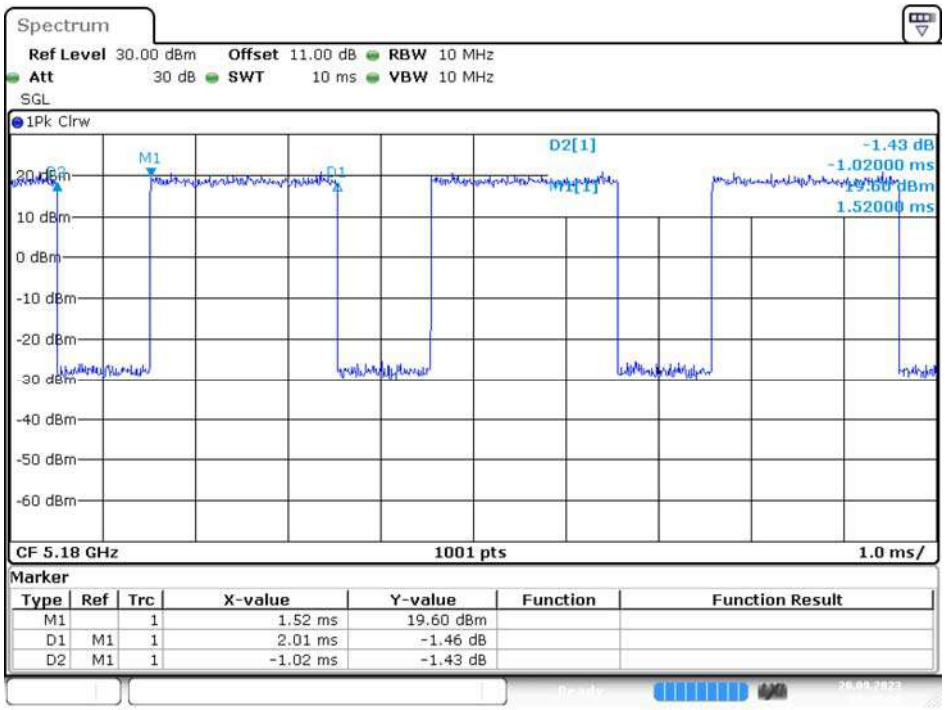
The duty cycle as below:

Radio Mode	On Time (ms)	Off Time (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T (kHz)	VBW Setting (kHz)
802.11a	2.01	1.02	66	1.80	0.50	0.5
802.11ac 20	1.86	1.04	64	1.94	0.54	1.0
802.11ac 40	0.905	1.03	47	3.28	1.10	2.0
802.11ac 80	0.45	1.01	31	5.09	2.22	3.0

Note: Duty Cycle Correction Factor = 10*log(1/duty cycle)

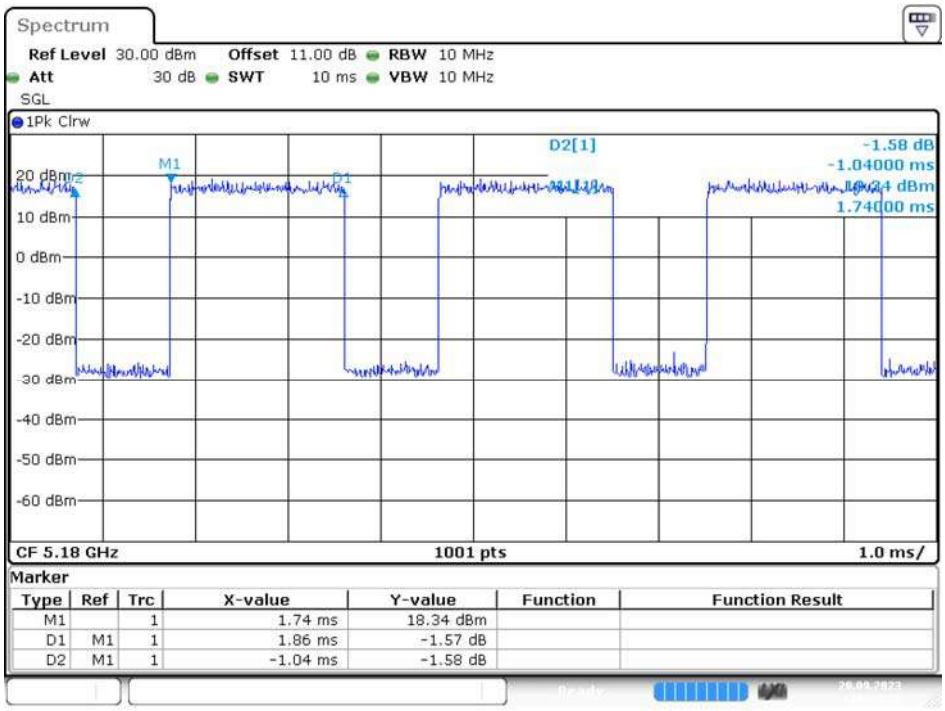
Please refer to the following plots.

802.11a Mode



Date: 20.SEP.2023 09:40:41

802.11ac VHT20 Mode



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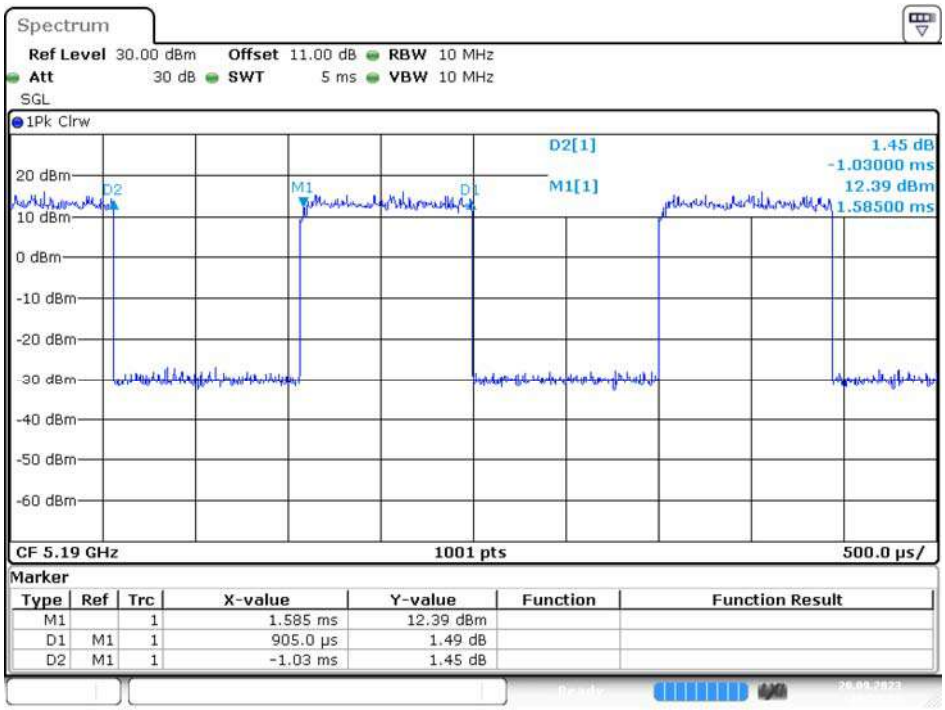
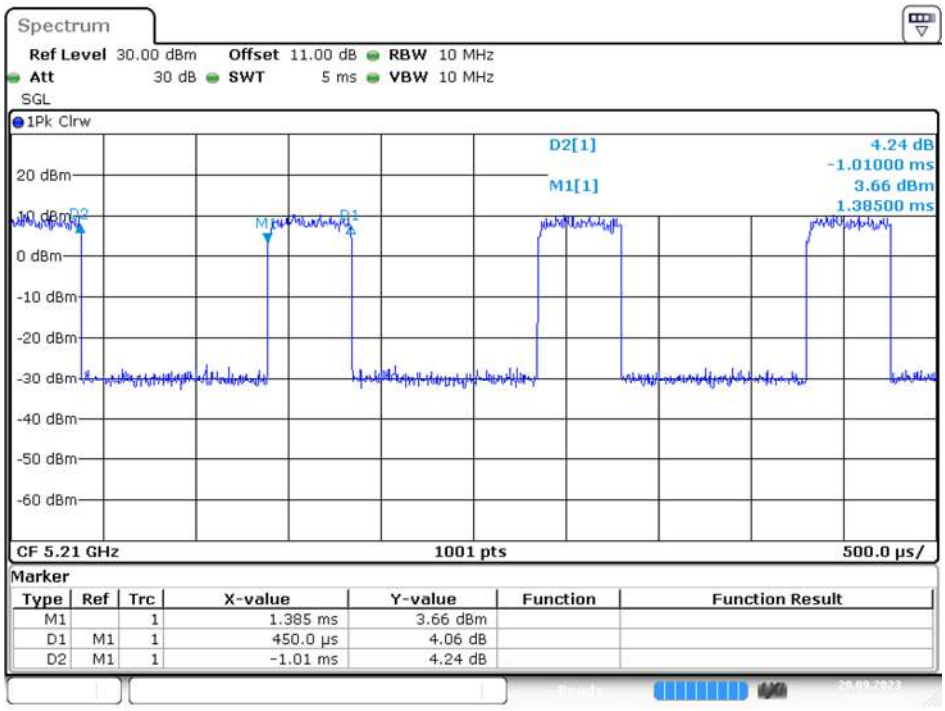
802.11ac VHT40 Mode



Date: 20.SEP.2023 10:53:23

802.11ac VHT80 Mode



Date: 20.SEP.2023 10:55:46

3 Summary of Test Results

Standard(s) Section	Description of Test	Results
§15.407(f), §1.1307(b)(3)(i)	RF Exposure	Compliance
RSS-102 §2.5.2	Exemption Limits For Routine Evaluation-RF Exposure Evaluation	Compliance
§15.203 RSS-GEN §6.8	Antenna Requirement	Compliance
§15.407(b)(9) & §15.207(a) RSS- GEN §8.8	AC Line Conducted Emissions	Compliance
§15.205 & §15.209 & §15.407(b) RSS-247 §6.2 RSS-GEN §8.9 RSS-GEN §8.10	Unwanted Emission	Compliance
RSS-247 §6.2.1.2	26dB Attenuated Below The Channel Power	Compliance
§15.407(a)(e) RSS-247 §6.2 RSS- GEN §6.7	Emission Bandwidth	Compliance
§15.407(a) RSS-247 §6.2	Conducted Transmitter Output Power	Compliance
§15.407(a) RSS-247 §6.2	Power Spectral Density	Compliance
RSS-247 §6.4	Additional requirements	Compliance

4 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conduction Room (CON-A)					
LISN	Rohde & Schwarz	ENV216	101612	2023/2/2	2024/2/1
EMI Test Receiver	Rohde & Schwarz	ESW8	100947	2023/5/22	2024/5/20
Pulse Limiter	Rohde & Schwarz	ESH3Z2	TXZEM104	2023/5/18	2024/5/16
RF Cable	EMEC	EM-CB5D	1	2023/6/6	2024/6/4
Software	AUDIX	E3	V9.150826k	N.C.R	N.C.R
Radiation 3M Room (966-A)					
Bilog Antenna with 6 dB Attenuator	SUNOL SCIENCES & MINI-CIRCUITS	JB6/UNAT-6+	A050115/15542_01	2023/2/2	2024/2/1
Horn Antenna	EMCO	SAS-571	1020	2023/5/18	2024/5/16
Horn Antenna	ETS-Lindgren	3116	62638	2023/8/25	2024/8/23
Preamplifier	Sonoma	310N	130602	2023/6/16	2024/6/14
Preamplifier	Channel	ERA-100M-18G-01D1748	EC2300051	2023/04/01	2024/03/30
Microware Preamplifier	EM Electronics Corporation	EM18G40G	60656	2023/1/6	2024/1/5
Spectrum Analyzer	Rohde & Schwarz	FSV40	101435	2023/2/1	2024/1/31
EMI Test Receiver	Rohde & Schwarz	ESR3	102099	2023/6/16	2024/6/14
Micro flex Cable	UTIFLEX	UFB197C-1-2362-70U-70U	225757-001	2023/1/24	2024/1/23
Coaxial Cable	COMMATE	PEWC	8Dr	2022/12/24	2023/12/23
Coaxial Cable	UTIFLEX	UFB311A-Q-1440-300300	220490-006	2023/1/24	2024/1/23
Coaxial Cable	JUNFLON	J12J102248-00-B-5	AUG-07-15-044	2022/12/24	2023/12/23
Cable	EMC	EMC105-SM-SM-10000	201003	2023/1/24	2024/1/23
Coaxial Cable	ROSNOL	K1K50-UP0264-K1K50-450CM	160309-1	2023/1/24	2024/1/23
Coaxial Cable	ROSNOL	K1K50-UP0264-K1K50-50CM	15120-1	2023/2/2	2024/2/1
Software	AUDIX	E3	18621a	N.C.R	N.C.R
Conducted Room					
Spectrum Analyzer	Rohde & Schwarz	FSV40	101140	2023/2/10	2024/2/9
Cable	UTIFLEX	UFA210A	9435	2022/10/3	2023/10/2
				2023/10/2	2024/9/30
Power Sensor	KEYSIGHT	U2021XA	MY54080018	2023/2/2	2024/2/1
Attenuator	MINI-CIRCUITS	BW-S10W5+	1419	2023/2/2	2024/2/1

***Statement of Traceability:** BACL Corp. attests that all of the calibrations on the equipment items listed above were traceable to the SI System of Units via the R.O.C. Center for Measurement Standards of the Electronics Testing Center, Taiwan (ETC) or to another internationally recognized National Metrology Institute (NMI), and were compliant with the current Taiwan Accreditation Foundation (TAF) requirements.

5 FCC §15.407(f), §1.1307(b)(3)(i) – RF Exposure

5.1 Applicable Standard

According to subpart 15.407(f) and subpart §1.1307(b)(3)(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

For single RF sources (*i.e.,* any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold *Pth* (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). *Pth* is given by:

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^x & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

5.2 RF Exposure Evaluation Result

Project info

Band	Freq (MHz)	Tune-up Power (dBm)	Ant Gain (dBi)	Distances (mm)	Tune-up Power (mW)	ERP (dBm)	ERP (mW)
WIFI 2.4GHz	2412-2462	19	-0.03	200	79.43	16.82	48.08
WIFI 5GHz	5180-5825	15.5	2.03	200	35.48	15.38	34.51

§ 1.1307(b)(3)(i)(A) methid is not applicable.

§ 1.1307(b)(3)(i)(C)

Band	λ/2π (mm)	Distances applies	ERP Limit (mW)	Result Option C
WIFI 2.4GHz	**19.39**	**apply**	**768.00**	**exempt**
WIFI 5GHz	**8.2**	**apply**	**768.00**	**exempt**

The minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates
ERP (watts) is no more than the calculated value prescribed for that frequency
R must be at least $\lambda/2\pi$
λ is the free-space operating wavelength in meters

Note: Wi-Fi 2.4G and Wi-Fi 5G can't transmit simultaneously.

Result: The device compliant the MPE-Based Exemption at 20cm distances.

6 RSS-102 §2.5.2 – EXEMPTION FROM ROUTINE EVALUATION LIMITS – RF EXPOSURE EVALUATION

6.1 Applicable Standard

According to RSS-102 2.5.2

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz[Footnote6] and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2}\ f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

6.2 RF Exposure Evaluation Result

Tune-up power = 15.5 dBm

EIRP Tune-up power = 17.53 dBm = 56.62 mW

Exemption from Routine Evaluation Limit is:

$1.31 \times 10^{-2}\ f^{0.6834} = 1.31 \times 10^{-2}\ 5180^{0.6834} = 4.52\text{W} > 56.62\text{mW}$

Result: The device meets the exemption requirement.

7 FCC §15.203 & RSS-GEN §6.8 – Antenna Requirements

7.1 Applicable Standard

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

According to RSS-Gen §6.8, The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. fo transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer. The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested. For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

7.2 Antenna Information

Manufacturer	Antenna Type	Antenna Gain (dBi)	Input impedance
YEALINK(XIAMEN) NETWORK TECHNOLOGY CO.,LTD.	PCB Antenna	5150~5250 MHz: -0.03 5250~5350 MHz: -0.08 5470~5725 MHz: 2.03 5725~5850 MHz: 1.86	50Ω

Result: Compliance

8 FCC §15.407(b)(9), §15.207(a) & RSS-GEN §8 – AC Line Conducted Emissions

8.1 Applicable Standard

As per FCC §15.407(b) (9)

Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207

RSS-Gen Clause 8.8

Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in table 4, as measured using a 50 μH / 50 Ω line impedance stabilization network. This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.

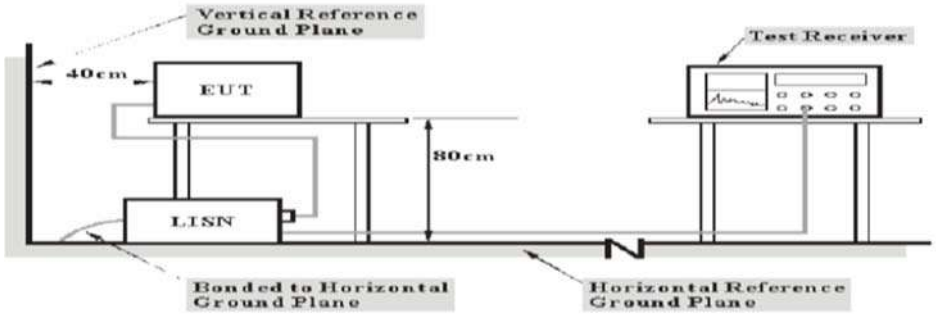
For an EUT that connects to the AC power lines indirectly, through another device, the requirement for compliance with the limits in table 4 shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at the boundary between the frequency ranges. The device used to power the EUT shall be representative of typical applications.

The lower limit applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56 Note 1	56 to 46 Note 1
0.5-5	56	46
5-30	60	50

Note 1: Decreases with the logarithm of the frequency.

8.2 EUT Setup



The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 and RSS-GEN limits.

8.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations

Frequency Range	IF B/W
150kHz – 30MHz	9kHz

8.4 Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

8.5 Corrected Factor & Margin Calculation

The factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Factor = LISN VDF + Cable Loss + Transient Limiter Attenuation

The “Over Limit” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit of -7 dB means the emission is 7 dB below the limit. The equation for Over Limit calculation is as follows:

Over Limit = Level – Limit Line

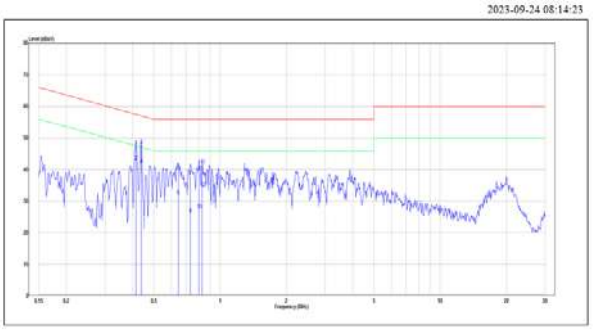
8.6 Test Results

Test Mode: Transmitting

Main: AC120 V, 60 Hz

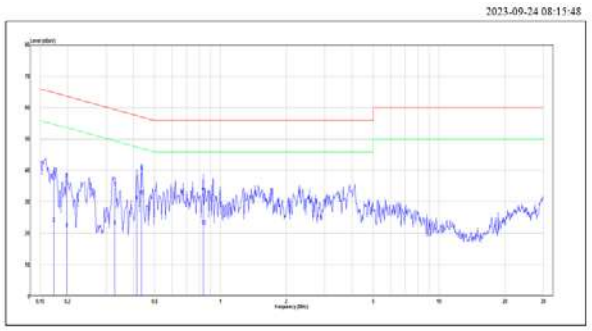
Adapter Mode: (Worst case is 802.11ac 80 Mode, 5775MHz)

Line



No.	Frequency (MHz)	Reading dBuV	Correct Factor(dB)	Result dBuV	Limit dBuV	Over limit (dB)	Remark	Phase
1	0.415	27.71	19.58	47.29	57.55	-10.26	QP	Line
2	0.415	22.89	19.58	42.48	47.55	-5.07	Average	Line
3	0.437	28.06	19.59	47.65	57.11	-9.46	QP	Line
4	0.437	22.03	19.59	41.63	47.11	-5.49	Average	Line
5	0.644	20.13	19.69	39.82	56.00	-16.18	QP	Line
6	0.644	11.88	19.69	31.57	46.00	-14.43	Average	Line
7	0.731	17.87	19.74	37.60	56.00	-18.40	QP	Line
8	0.731	6.19	19.74	25.93	46.00	-20.07	Average	Line
9	0.800	19.55	19.77	39.33	56.00	-16.67	QP	Line
10	0.800	7.38	19.77	27.15	46.00	-18.85	Average	Line
11	0.830	21.51	19.79	41.29	56.00	-14.71	QP	Line
12	0.830	14.22	19.79	34.01	46.00	-11.99	Average	Line

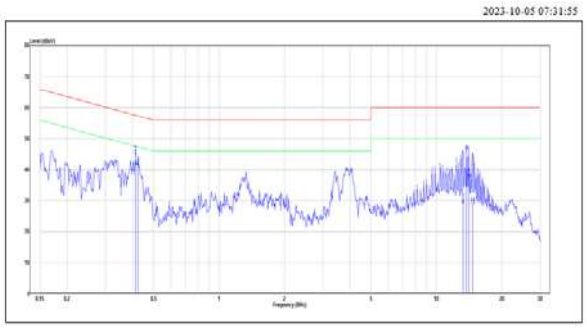
Neutral



No.	Frequency (MHz)	Reading dBuV	Correct Factor(dB)	Result dBuV	Limit dBuV	Over limit (dB)	Remark	Phase
1	0.173	18.43	19.50	37.93	64.81	-26.88	QP	Neutral
2	0.173	3.65	19.50	23.15	54.81	-31.66	Average	Neutral
3	0.198	17.84	19.50	37.34	63.71	-26.37	QP	Neutral
4	0.198	2.03	19.50	21.53	53.71	-32.18	Average	Neutral
5	0.329	14.93	19.56	34.49	59.49	-25.00	QP	Neutral
6	0.329	2.58	19.56	22.14	49.49	-27.35	Average	Neutral
7	0.415	18.71	19.59	38.30	57.55	-19.25	QP	Neutral
8	0.415	10.45	19.59	30.04	47.55	-17.51	Average	Neutral
9	0.435	19.90	19.60	39.50	57.15	-17.65	QP	Neutral
10	0.435	12.24	19.60	31.85	47.15	-15.31	Average	Neutral
11	0.835	12.83	19.79	32.63	56.00	-23.37	QP	Neutral
12	0.835	2.34	19.79	22.13	46.00	-23.87	Average	Neutral

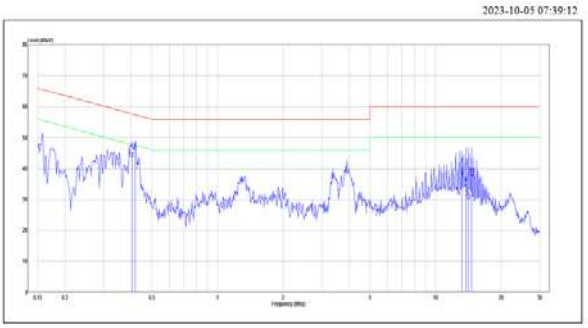
PoE Mode: (Worst case is 802.11ac 40 Mode, 5270MHz)

Line



No.	Frequency (MHz)	Reading dBuV	Correct Factor(dB)	Result dBuV	Limit dBuV	Over limit (dB)	Remark	Phase
1	0.413	24.25	19.56	43.83	57.59	-13.77	QP	Line
2	0.413	25.84	19.58	45.42	47.59	-2.17	Average	Line
3	0.424	22.57	19.59	42.16	57.37	-15.22	QP	Line
4	0.424	21.21	19.59	40.79	47.37	-6.58	Average	Line
5	13.267	10.21	20.22	30.43	60.00	-29.57	QP	Line
6	13.267	8.31	20.22	28.53	50.00	-21.47	Average	Line
7	13.766	24.90	20.24	45.13	60.00	-14.87	QP	Line
8	13.768	25.51	20.24	45.75	50.00	-4.25	Average	Line
9	14.063	18.14	20.25	38.38	60.00	-21.62	QP	Line
10	14.063	16.64	20.25	36.88	50.00	-13.12	Average	Line
11	14.672	8.72	20.26	28.98	60.00	-31.02	QP	Line
12	14.672	8.10	20.26	28.36	50.00	-21.64	Average	Line

Neutral



No.	Frequency (MHz)	Reading dBuV	Correct Factor(dB)	Result dBuV	Limit dBuV	Over limit (dB)	Remark	Phase
1	0.406	25.90	19.59	45.49	57.73	-12.23	QP	Neutral
2	0.406	23.56	19.59	43.15	47.73	-4.58	Average	Neutral
3	0.419	26.18	19.60	45.78	57.46	-11.68	QP	Neutral
4	0.419	27.37	19.60	46.96	47.46	-0.50	Average	Neutral
5	13.197	16.97	20.26	37.23	60.00	-22.77	QP	Neutral
6	13.197	21.41	20.26	41.66	50.00	-8.34	Average	Neutral
7	13.768	14.58	20.28	34.81	60.00	-25.19	QP	Neutral
8	13.768	14.91	20.28	35.19	50.00	-14.81	Average	Neutral
9	14.063	10.59	20.29	30.87	60.00	-29.13	QP	Neutral
10	14.063	9.35	20.29	29.64	50.00	-20.36	Average	Neutral
11	14.594	17.82	20.31	38.12	60.00	-21.88	QP	Neutral
12	14.594	16.80	20.31	37.11	50.00	-12.89	Average	Neutral

Note:

Level = Read Level + Factor

Over Limit = Level – Limit Line

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss + Attenuator

9 FCC §15.209, §15.205, §15.407(b) & RSS-247 §6.2, RSS-GEN §8.9, RSS-GEN §8.10 – Spurious Emissions

9.1 Applicable Standard

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	608 – 614	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	960 – 1240	5.35 – 5. 46
2.1735 – 2.1905	16.80425 – 16.80475	1300 – 1427	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1435 – 1626.5	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1645.5 – 1646.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1660 – 1710	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1718.8 – 1722.2	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	2200 – 2300	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2310 – 2390	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2483.5 – 2500	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2690 – 2900	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	3260 – 3267	22.01 – 23.12
8.41425 – 8.41475	162.0125 –167.17	3.332 – 3.339	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3 3458 – 3 358	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3.600 – 4.400	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4		Above 38.6
13.36 – 13.41	399.9 – 410		

As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (micro volts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500	3

Note 1: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As per FCC Part 15.407 (b)

- 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.

˙Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in § 15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

˙The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

˙Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

RSS-247 Clause 6.2

5.15-5.25 GHz

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS)and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

5.25-5.35 GHz

All emissions outside the band 5250-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p.; or

All emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. and its power shall comply with the spectral power density for operation within the band 5150-5250 MHz. The device, except devices installed in vehicles, shall be labelled or include in the user manual the following text “for indoor use only.”

5.47-5.725 GHz

Emissions outside the band 5470-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p. However, devices with bandwidth overlapping the band edge of 5725 MHz can meet the emission limit of -27 dBm/MHz e.i.r.p.at 5850 MHz instead of 5725 MHz.

5.725-5.850 GHz

Devices operating in the band 5725-5850 MHz with antenna gain greater than 10 dBi can

have unwanted emissions that comply with either the limits in this section or in section 5.5 until six (6) months after the publication date of this standard for certification. Certified devices that do not comply with emission limits in this section shall not be manufactured, imported, distributed, leased, offered for sale or sold after April 1, 2018.

Devices operating in the band 5725-5850 MHz with antenna gain of 10 dBi or less can have unwanted emissions that comply with either the limits in this section or in section 5.5 until April 1, 2018 for certification. Certified devices that do not comply with emission limits in this section shall not be manufactured, imported, distributed, leased, offered for sale or sold after April 1, 2020.

Devices operating in the band 5725-5850 MHz shall have e.i.r.p. of unwanted emissions comply with the following:

27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 Bm/MHz at 5 MHz above or below the band edges;

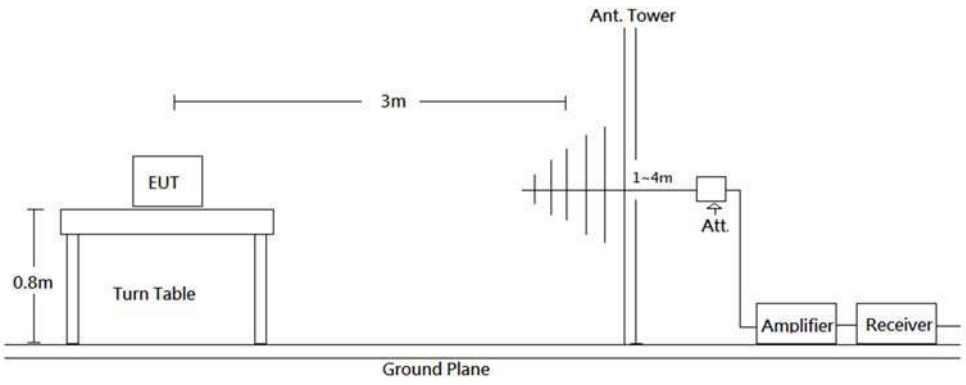
15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;

10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and

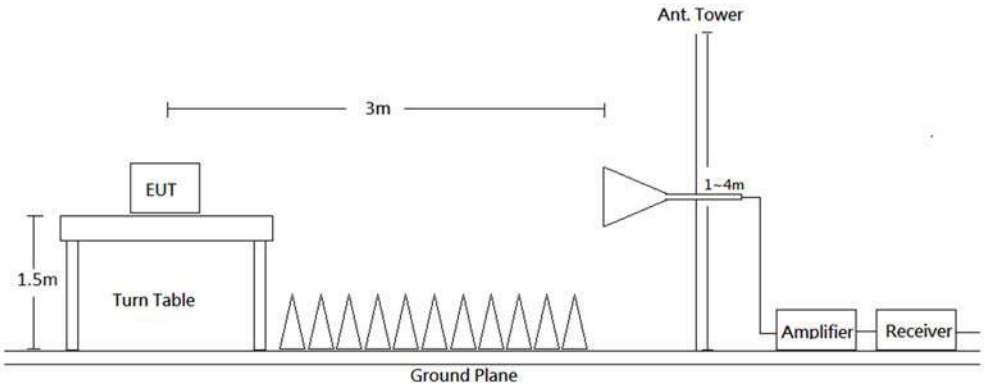
-27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

9.2 EUT Setup

Below 1 GHz:



Above 1 GHz:



Radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part 15.209, FCC 15.407, RSS-247, RSS-GEN Limits.

9.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz. During the radiated emission test, the EMI test receiver was set with the following configurations measurement method 6.3 in ANSI C63.10.

Frequency Range	RBW	VBW	Duty cycle	Measurement method
30-1000 MHz	120 kHz	/	/	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1 MHz	10 Hz	>98%	Ave
	1 MHz	1/T	<98%	Ave

Note: T is minimum transmission duration

9.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

According to C63.10, emission shall be computed as: E [dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

All emissions under the average limit and under the noise floor have not recorded in the report

9.5 Corrected Factor & Margin Calculation

The Correct Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Margin = Level – Limit

9.6 Test Results

Test Mode: Transmitting

(Pre-scan with three orthogonal axis, and worse case as Y axis.)

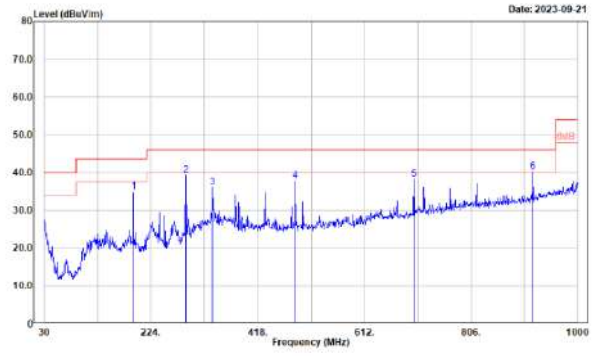
30MHz-1GHz:

Adapter Mode:

5150~5250 MHz

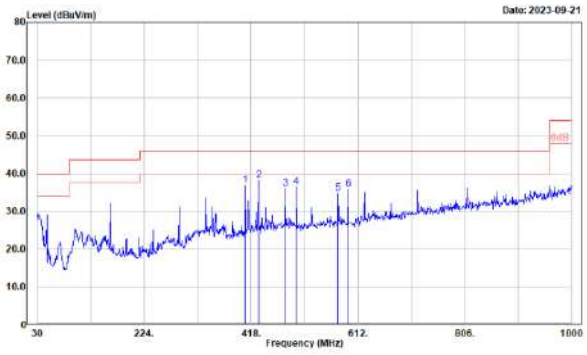
(Worst case is 802.11ac 40 Mdoe, 5190 MHz)

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
192.152	44.62	-9.82	34.80	43.50	-8.70	100	78	QP
287.307	46.58	-7.33	39.25	46.00	-6.75	100	134	QP
335.856	42.13	-6.24	35.89	46.00	-10.11	100	199	QP
486.356	39.84	-2.06	37.78	46.00	-8.22	100	44	QP
701.912	36.48	1.61	38.09	46.00	-7.91	100	165	QP
918.438	34.83	5.38	40.21	46.00	-5.79	100	360	QP

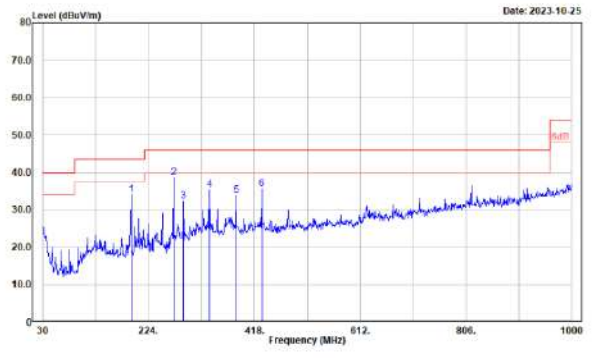
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
407.708	40.95	-4.01	36.94	46.00	-9.06	100	74	QP
431.982	41.70	-3.45	38.25	46.00	-7.75	100	74	QP
479.560	38.02	-2.10	35.92	46.00	-10.08	100	177	QP
499.950	38.46	-2.00	36.46	46.00	-9.54	100	124	QP
575.686	35.56	-0.79	34.77	46.00	-11.23	100	78	QP
594.134	36.82	-1.02	35.80	46.00	-10.20	100	173	QP

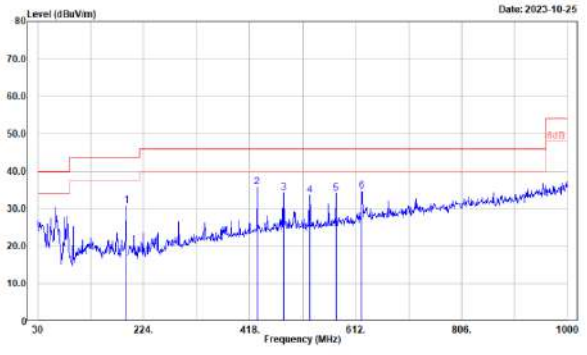
(Worst case is 802.11ac 40 Mdoe, 5230 MHz)

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
191.990	43.78	-9.83	33.95	43.50	-9.55	100	276	QP
269.590	46.26	-7.71	38.55	46.00	-7.45	100	195	QP
288.020	39.62	-7.33	32.29	46.00	-13.71	100	345	QP
335.550	41.62	-6.24	35.38	46.00	-10.62	100	180	QP
384.050	38.84	-5.10	33.74	46.00	-12.26	100	14	QP
431.580	38.98	-3.47	35.51	46.00	-10.49	100	349	QP

Vertical

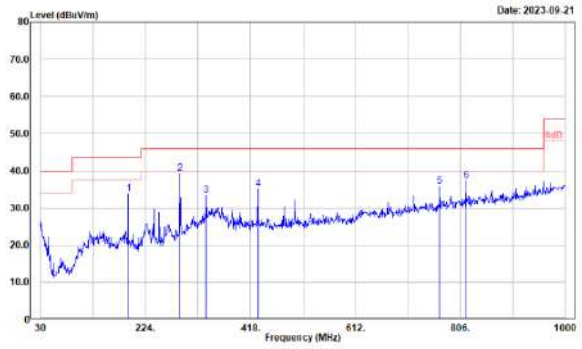


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
191.990	40.64	-9.83	30.81	43.50	-12.69	100	213	QP
431.580	39.24	-3.47	35.77	46.00	-10.23	100	241	QP
480.080	36.23	-2.08	34.15	46.00	-11.85	100	317	QP
527.610	35.19	-1.68	33.51	46.00	-12.49	100	317	QP
576.110	34.81	-0.78	34.03	46.00	-11.97	100	78	QP
623.640	34.33	0.30	34.63	46.00	-11.37	100	78	QP

5250~5350 MHz

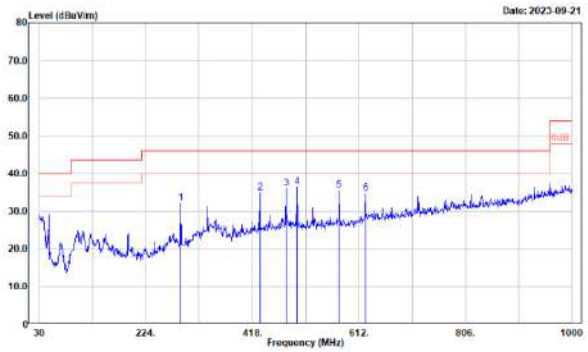
(Worst case is 802.11ac 40 Mdoe, 5270 MHz)

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
192.152	43.69	-9.82	33.87	43.50	-9.63	100	84	QP
287.307	46.66	-7.33	39.33	46.00	-6.67	100	352	QP
335.856	39.62	-6.24	33.38	46.00	-12.62	100	213	QP
431.982	38.54	-3.45	35.09	46.00	-10.91	100	291	QP
767.938	32.92	2.78	35.70	46.00	-10.30	100	358	QP
816.487	33.26	3.97	37.23	46.00	-8.77	100	325	QP

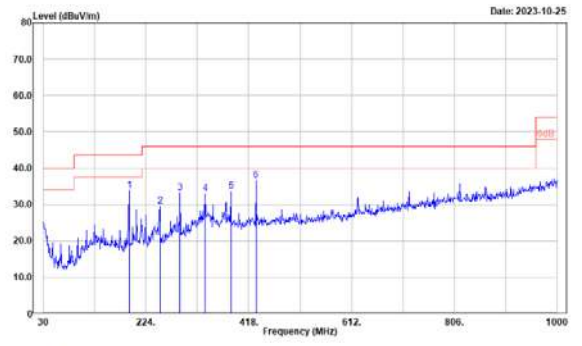
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
287.307	39.41	-7.33	32.08	46.00	-13.92	100	174	QP
431.982	38.30	-3.45	34.85	46.00	-11.15	100	144	QP
479.560	38.08	-2.10	35.98	46.00	-10.02	100	151	QP
499.950	38.33	-2.00	36.33	46.00	-9.67	100	116	QP
575.686	36.25	-0.79	35.46	46.00	-10.54	100	124	QP
624.234	34.34	0.33	34.67	46.00	-11.33	100	76	QP

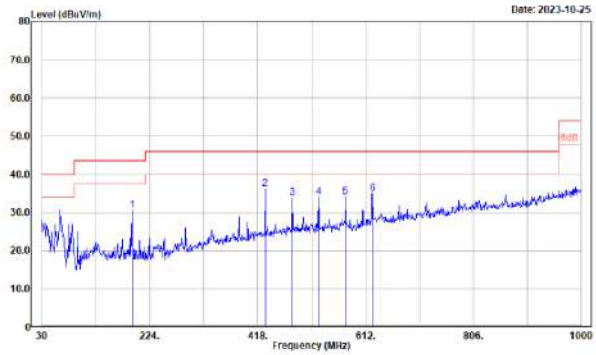
(Worst case is 802.11ac 40 Mdoe, 5310 MHz)

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
191.990	43.72	-9.83	33.89	43.50	-9.61	100	272	QP
250.190	38.85	-9.42	29.43	46.00	-16.57	100	213	QP
288.020	40.43	-7.33	33.10	46.00	-12.90	100	337	QP
335.550	39.25	-6.24	33.01	46.00	-12.99	100	186	QP
384.050	38.81	-5.10	33.71	46.00	-12.29	100	360	QP
431.580	40.18	-3.47	36.71	46.00	-9.29	100	349	QP

Vertical

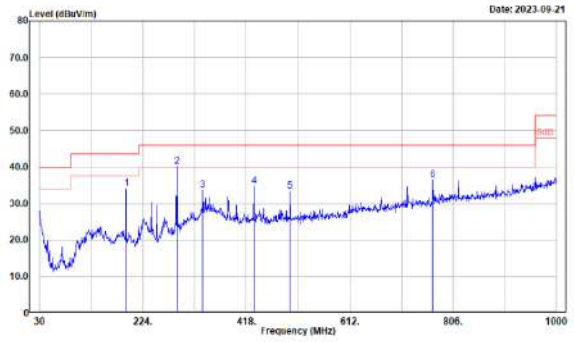


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
191.990	40.45	-9.83	30.62	43.50	-12.88	100	208	QP
431.580	39.68	-3.47	36.21	46.00	-9.79	100	253	QP
480.080	35.86	-2.08	33.78	46.00	-12.22	100	242	QP
527.610	35.72	-1.68	34.04	46.00	-11.96	100	306	QP
576.110	34.83	-0.78	34.05	46.00	-11.95	100	135	QP
624.610	34.57	0.34	34.91	46.00	-11.09	100	298	QP

5470~5725 MHz

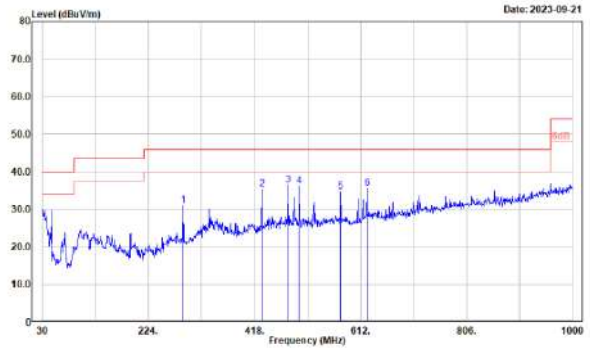
(Worst case is 802.11ac 80 Mdoe, 5530 MHz)

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
192.152	43.96	-9.82	34.14	43.50	-9.36	100	79	QP
287.307	47.51	-7.33	40.18	46.00	-5.82	100	358	QP
335.856	39.80	-6.24	33.56	46.00	-12.44	100	215	QP
431.982	38.12	-3.45	34.67	46.00	-11.33	100	296	QP
499.950	35.35	-2.00	33.35	46.00	-12.65	100	138	QP
767.938	33.63	2.78	36.41	46.00	-9.59	100	6	QP

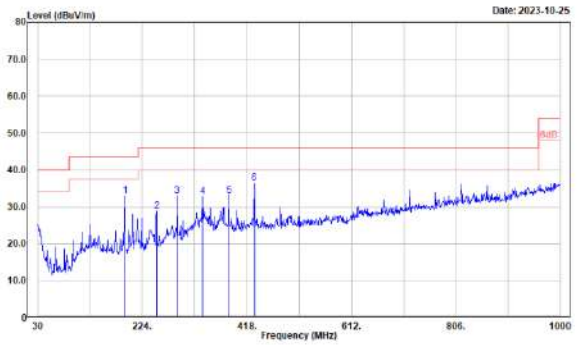
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
288.278	38.26	-7.32	30.94	46.00	-15.06	100	189	QP
431.982	38.76	-3.45	35.31	46.00	-10.69	100	84	QP
479.560	38.43	-2.10	36.33	46.00	-9.67	100	146	QP
499.950	38.15	-2.00	36.15	46.00	-9.85	100	53	QP
575.686	35.46	-0.79	34.67	46.00	-11.33	100	53	QP
624.234	35.13	0.33	35.46	46.00	-10.54	100	80	QP

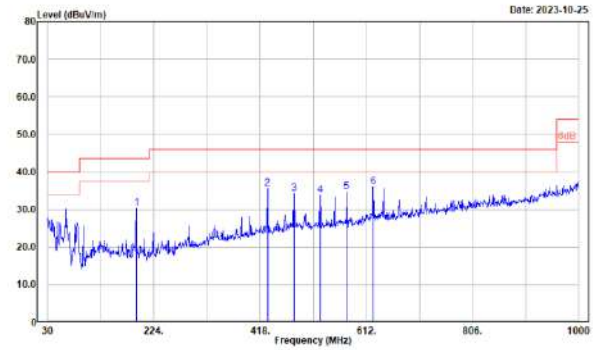
(Worst case is 802.11ac 80 Mdoe, 5610 MHz)

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
191.990	42.85	-9.83	33.02	43.50	-10.48	100	275	QP
250.190	38.23	-9.42	28.81	46.00	-17.19	100	228	QP
288.020	40.36	-7.33	33.03	46.00	-12.97	100	347	QP
335.550	39.01	-6.24	32.77	46.00	-13.23	100	324	QP
384.050	38.16	-5.10	33.06	46.00	-12.94	100	347	QP
431.580	39.97	-3.47	36.50	46.00	-9.50	100	350	QP

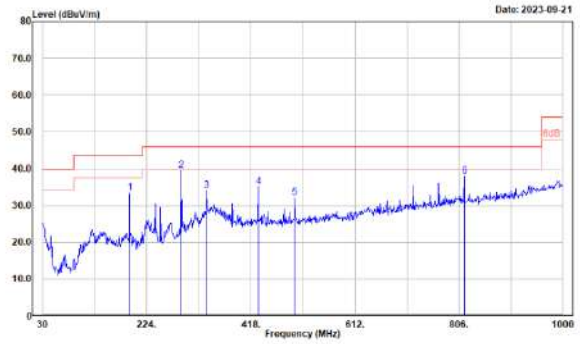
Vertical



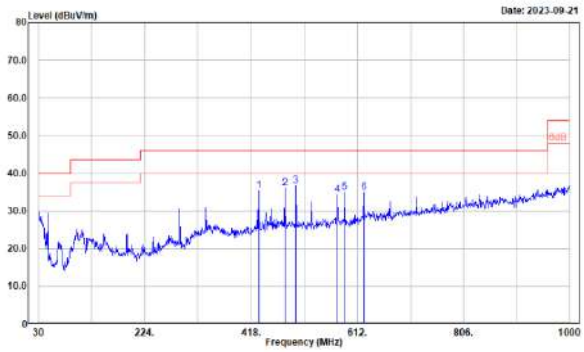
Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
191.990	40.23	-9.83	30.40	43.50	-13.10	100	201	QP
431.580	39.10	-3.47	35.63	46.00	-10.37	100	270	QP
480.080	36.30	-2.08	34.22	46.00	-11.78	100	278	QP
527.610	35.48	-1.68	33.80	46.00	-12.20	100	309	QP
576.110	35.48	-0.78	34.70	46.00	-11.30	100	124	QP
624.610	35.66	0.34	36.00	46.00	-10.00	100	74	QP

5725~5850 MHz

(Worst case is 802.11ac 80 Mdoe, 5775 MHz)	
Horizontal	**Vertical**



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
192.152	43.18	-9.82	33.36	43.50	-10.14	100	67	QP
287.307	46.83	-7.33	39.50	46.00	-6.50	100	0	QP
335.856	40.27	-6.24	34.03	46.00	-11.97	100	207	QP
431.982	38.61	-3.45	35.16	46.00	-10.84	100	300	QP
499.950	34.09	-2.00	32.09	46.00	-13.91	100	130	QP
816.487	33.97	3.97	37.94	46.00	-8.06	100	336	QP



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
431.982	38.76	-3.45	35.31	46.00	-10.69	100	146	QP
479.560	38.00	-2.10	35.90	46.00	-10.10	100	285	QP
499.950	38.57	-2.00	36.57	46.00	-9.43	100	48	QP
575.686	35.06	-0.79	34.27	46.00	-11.73	100	135	QP
589.279	35.83	-0.94	34.89	46.00	-11.11	100	293	QP
624.234	34.68	0.33	35.01	46.00	-10.99	100	131	QP

Level = Reading + Factor.

Margin = Level – Limit.

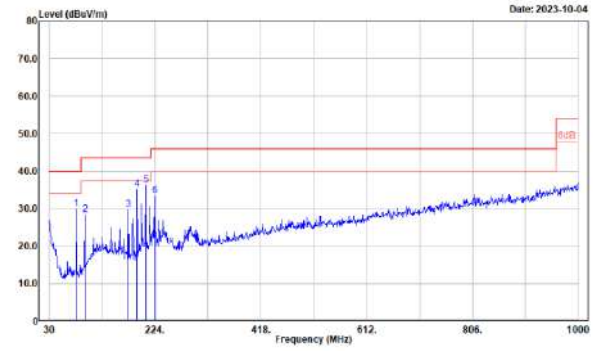
Factor = Antenna Factor + Cable Loss – Amplifier Gain.

PoE Mode:

5150~5250 MHz

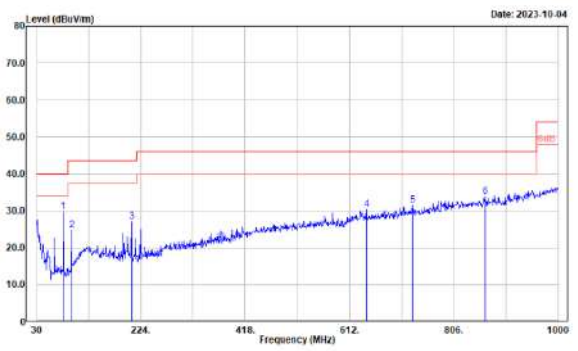
(Worst case is 802.11ac 40 Mdoe, 5190 MHz)

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
79.520	44.67	-14.65	30.02	40.00	-9.98	100	71	QP
95.055	41.48	-13.15	28.33	43.50	-15.17	100	90	QP
174.675	39.89	-10.09	29.80	43.50	-13.70	100	179	QP
191.181	45.13	-9.91	35.22	43.50	-8.28	100	172	QP
206.717	46.80	-10.55	36.25	43.50	-7.25	100	164	QP
223.223	43.63	-10.25	33.38	46.00	-12.62	100	152	QP

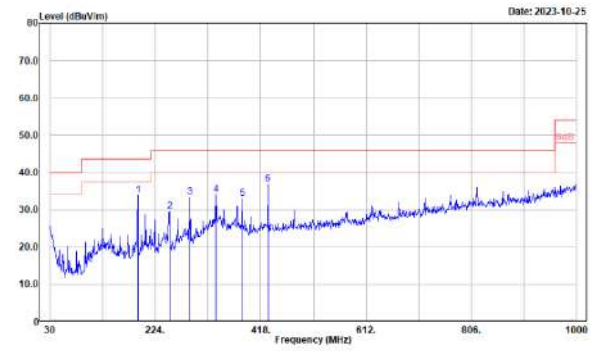
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
79.520	44.30	-14.65	29.65	40.00	-10.35	100	86	QP
95.055	37.86	-13.15	24.71	43.50	-18.79	100	0	QP
206.717	37.72	-10.55	27.17	43.50	-16.33	100	277	QP
643.654	29.51	0.79	30.30	46.00	-15.70	100	270	QP
729.099	29.19	2.22	31.41	46.00	-14.59	100	340	QP
864.064	29.45	4.43	33.88	46.00	-12.12	100	204	QP

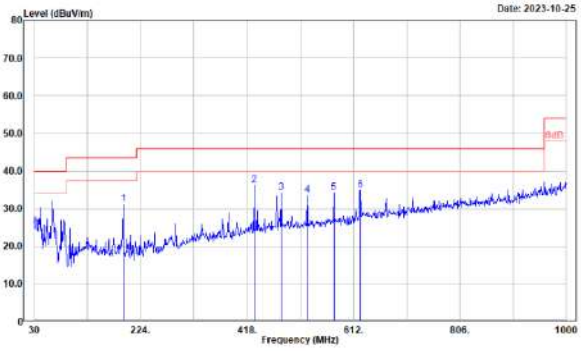
(Worst case is 802.11ac 40 Mdoe, 5230 MHz)

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
191.990	43.60	-9.83	33.77	43.50	-9.73	100	331	QP
250.190	38.99	-9.42	29.57	46.00	-16.43	100	208	QP
288.020	40.67	-7.33	33.34	46.00	-12.66	100	353	QP
335.550	40.37	-6.24	34.13	46.00	-11.87	100	342	QP
384.050	38.11	-5.10	33.01	46.00	-12.99	100	2	QP
431.580	40.24	-3.47	36.77	46.00	-9.23	100	346	QP

Vertical

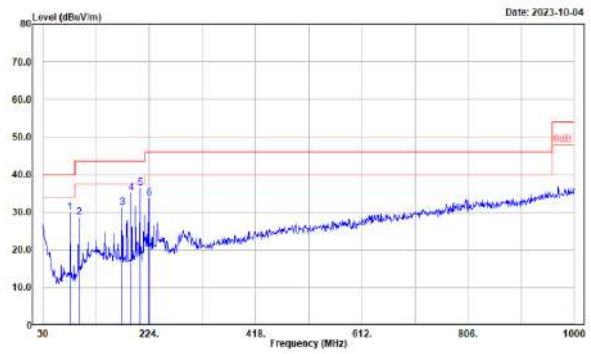


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
191.990	41.01	-9.83	31.18	43.50	-12.32	100	206	QP
431.580	39.57	-3.47	36.10	46.00	-9.90	100	256	QP
480.080	36.40	-2.08	34.32	46.00	-11.68	100	245	QP
527.610	35.22	-1.68	33.54	46.00	-12.46	100	305	QP
576.110	34.94	-0.78	34.16	46.00	-11.84	100	82	QP
624.610	34.52	0.34	34.86	46.00	-11.14	100	241	QP

5250~5350 MHz

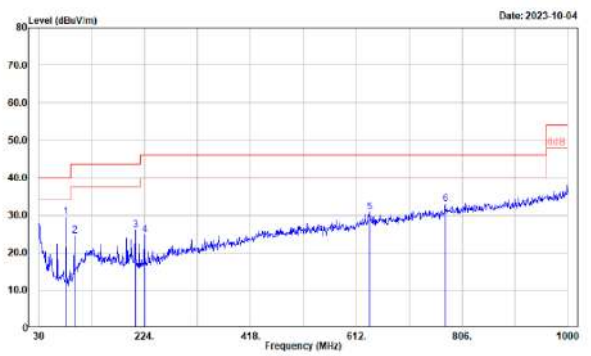
(Worst case is 802.11ac 40 Mdoe, 5270 MHz)

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
79.520	44.66	-14.65	30.01	40.00	-9.99	100	89	QP
95.055	41.72	-13.15	28.57	43.50	-14.93	100	78	QP
174.675	41.27	-10.09	31.18	43.50	-12.32	100	171	QP
191.181	44.93	-9.91	35.02	43.50	-8.48	100	171	QP
206.717	46.94	-10.55	36.39	43.50	-7.11	100	167	QP
223.223	43.85	-10.25	33.60	46.00	-12.40	100	156	QP

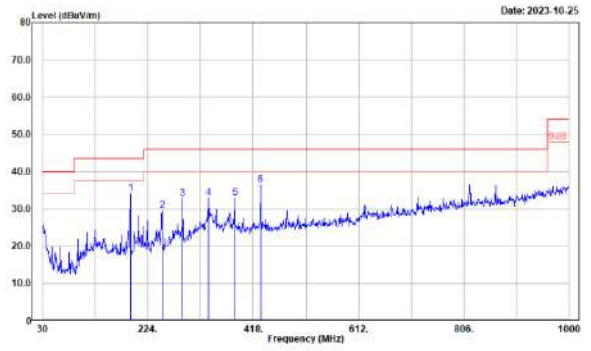
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
79.520	44.17	-14.65	29.52	40.00	-10.48	100	74	QP
95.055	37.68	-13.15	24.53	43.50	-18.97	100	344	QP
206.717	36.61	-10.55	26.06	43.50	-17.44	100	290	QP
223.223	35.07	-10.25	24.82	46.00	-21.18	100	282	QP
635.886	30.11	0.69	30.80	46.00	-15.20	100	125	QP
774.735	29.94	3.04	32.98	46.00	-13.02	100	196	QP

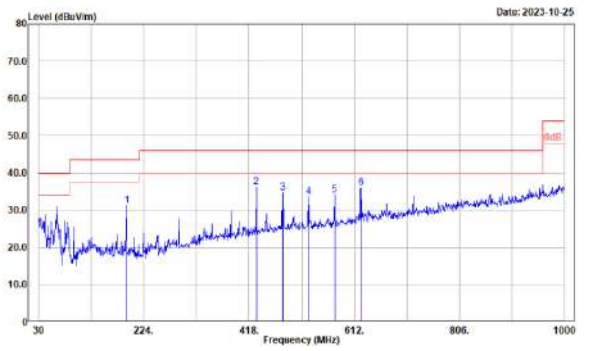
(Worst case is 802.11ac 40 Mdoe, 5310 MHz)

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
191.990	43.94	-9.83	34.11	43.50	-9.39	100	264	QP
250.190	38.97	-9.42	29.55	46.00	-16.45	100	199	QP
288.020	40.13	-7.33	32.80	46.00	-13.20	100	338	QP
335.550	39.13	-6.24	32.89	46.00	-13.11	100	353	QP
384.050	38.10	-5.10	33.00	46.00	-13.00	100	356	QP
431.580	39.81	-3.47	36.34	46.00	-9.66	100	338	QP

Vertical

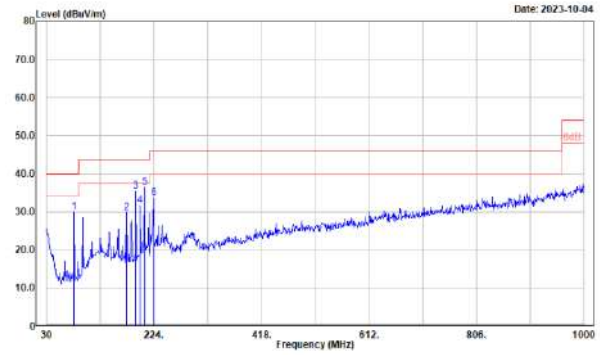


Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
191.990	41.15	-9.83	31.32	43.50	-12.18	100	222	QP
431.580	39.75	-3.47	36.28	46.00	-9.72	100	249	QP
480.080	36.73	-2.08	34.65	46.00	-11.35	100	326	QP
527.610	35.26	-1.68	33.58	46.00	-12.42	100	310	QP
576.110	34.88	-0.78	34.10	46.00	-11.90	100	145	QP
624.610	35.62	0.34	35.96	46.00	-10.04	100	237	QP

5470~5725 MHz

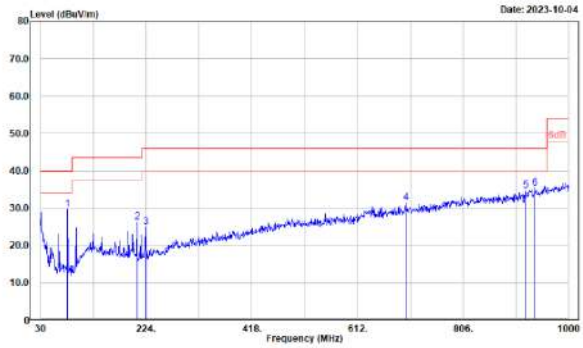
(Worst case is 802.11ac 80 Mdoe, 5530 MHz)

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
79.520	44.54	-14.65	29.89	40.00	-10.11	100	87	QP
174.675	39.90	-10.09	29.81	43.50	-13.69	100	174	QP
191.181	45.26	-9.91	35.35	43.50	-8.15	100	171	QP
198.949	40.62	-8.89	31.73	43.50	-11.77	100	171	QP
206.717	47.05	-10.55	36.50	43.50	-7.00	100	160	QP
223.223	43.82	-10.25	33.57	46.00	-12.43	100	160	QP

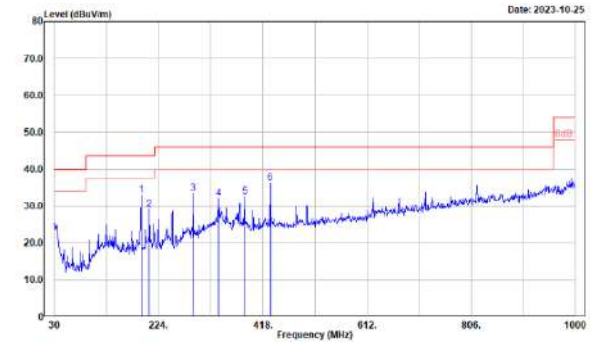
Vertical



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
79.520	44.28	-14.65	29.63	40.00	-10.37	100	84	QP
206.717	36.85	-10.55	26.30	43.50	-17.20	100	259	QP
223.223	35.17	-10.25	24.92	46.00	-21.08	100	270	QP
699.970	29.91	1.55	31.46	46.00	-14.54	100	227	QP
921.351	29.27	5.51	34.78	46.00	-11.22	100	267	QP
937.858	28.89	6.42	35.31	46.00	-10.69	100	96	QP

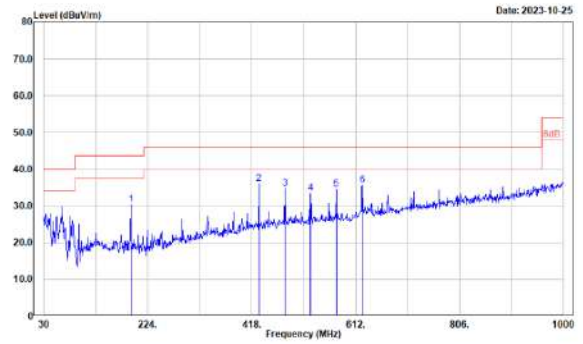
(Worst case is 802.11ac 80 Mdoe, 5610 MHz)

Horizontal



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
191.990	42.73	-9.83	32.90	43.50	-10.60	100	251	QP
206.540	39.48	-10.53	28.95	43.50	-14.55	100	86	QP
288.020	40.74	-7.33	33.41	46.00	-12.59	100	344	QP
335.550	38.41	-6.24	32.17	46.00	-13.83	100	194	QP
384.050	37.54	-5.10	32.44	46.00	-13.56	100	357	QP
431.580	39.63	-3.47	36.16	46.00	-9.84	100	344	QP

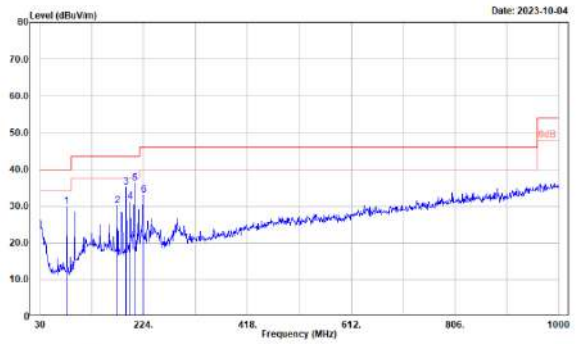
Vertical



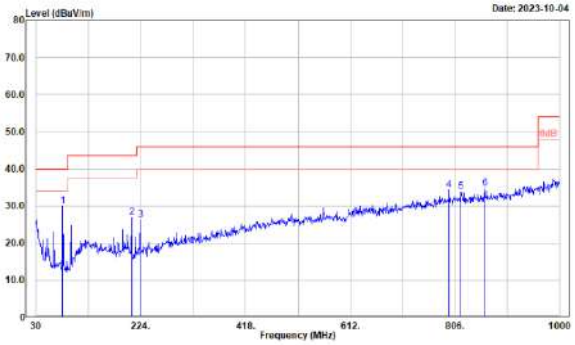
Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
191.990	40.27	-9.83	30.44	43.50	-13.06	100	218	QP
431.580	39.40	-3.47	35.93	46.00	-10.07	100	245	QP
480.080	36.87	-2.08	34.79	46.00	-11.21	100	237	QP
527.610	35.04	-1.68	33.36	46.00	-12.64	100	222	QP
576.110	35.29	-0.78	34.51	46.00	-11.49	100	215	QP
624.610	35.15	0.34	35.49	46.00	-10.51	100	293	QP

5725~5850 MHz

(Worst case is 802.11ac 80 Mdoe, 5775 MHz)	
Horizontal	**Vertical**



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
79.520	44.63	-14.65	29.98	40.00	-10.02	100	86	QP
174.675	40.21	-10.09	30.12	43.50	-13.38	100	176	QP
191.181	45.12	-9.91	35.21	43.50	-8.29	100	168	QP
198.949	40.07	-8.89	31.18	43.50	-12.32	100	153	QP
206.717	46.70	-10.55	36.15	43.50	-7.35	100	172	QP
223.223	43.15	-10.25	32.90	46.00	-13.10	100	172	QP



Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
79.520	44.49	-14.65	29.84	40.00	-10.16	100	280	QP
206.717	37.38	-10.55	26.83	43.50	-16.67	100	263	QP
223.223	36.49	-10.25	26.24	46.00	-19.76	100	276	QP
795.125	30.71	3.46	34.17	46.00	-11.83	100	119	QP
817.458	29.84	3.99	33.83	46.00	-12.17	100	139	QP
861.151	30.25	4.44	34.69	46.00	-11.31	100	236	QP

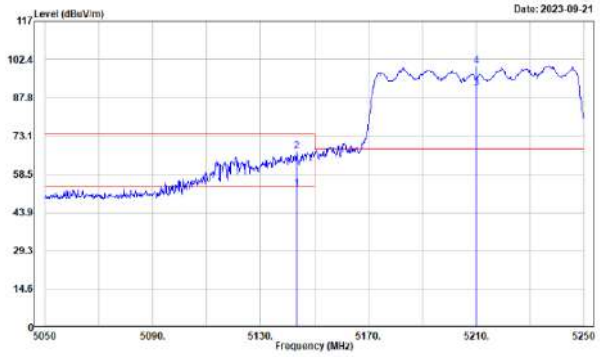
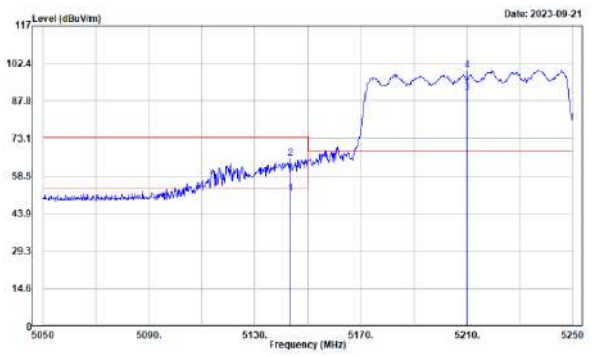
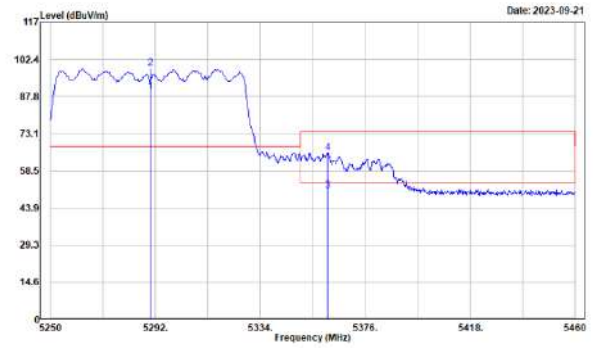
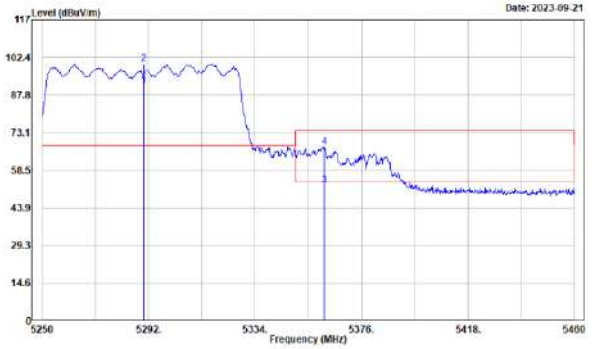
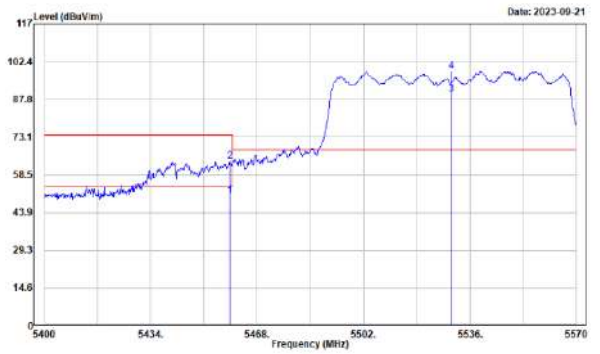
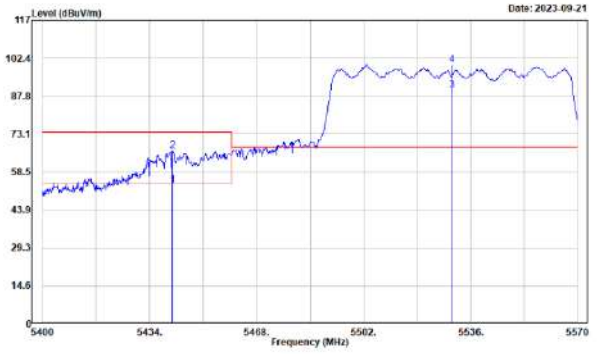
Level = Reading + Factor.

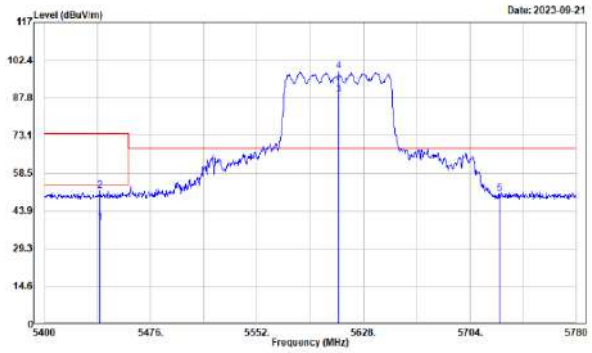
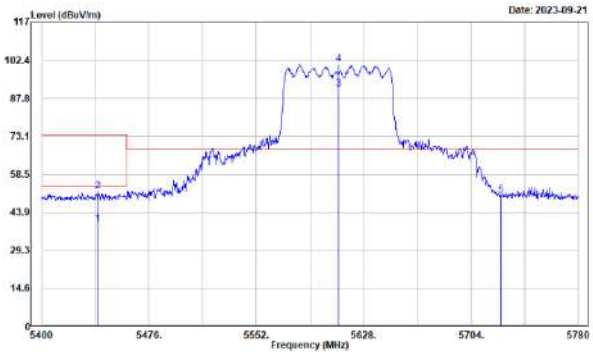
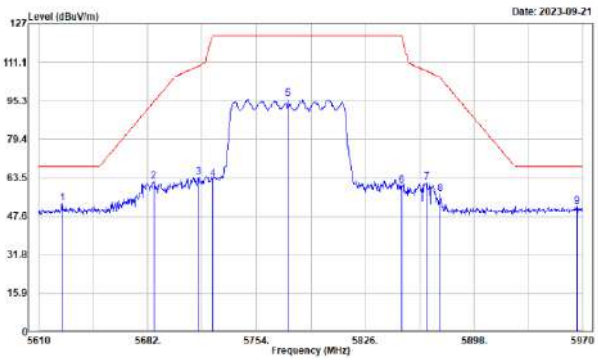
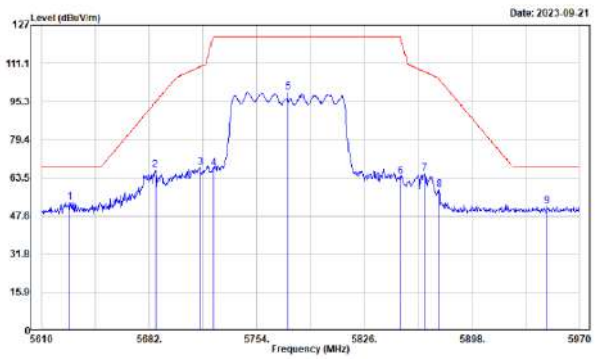
Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Band-Edge

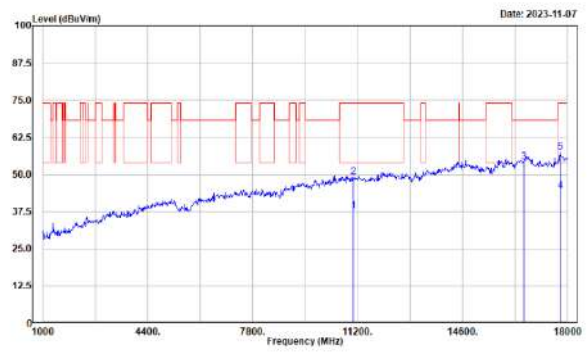
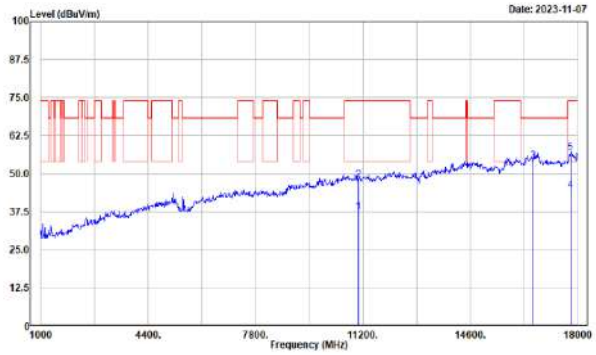
(Worst case is 802.11ac 80 Mdoe)

5210MHz	
Horizontal	**Vertical**
	
5290MHz	
Horizontal	**Vertical**
	
5530MHz	
Horizontal	**Vertical**
	

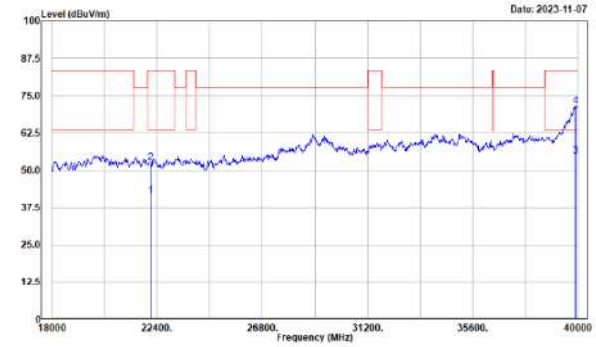
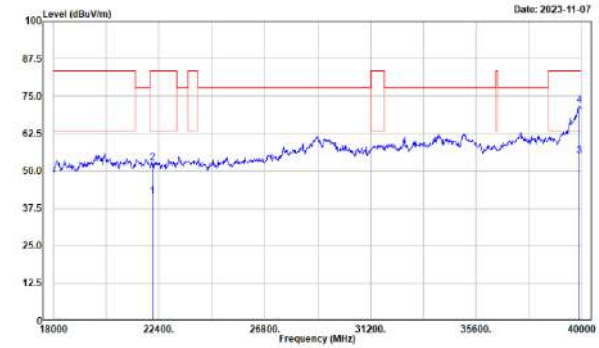
5610MHz	
Horizontal	**Vertical**
	
5775MHz	
Horizontal	**Vertical**
	

(Worst case is 802.11ac 80 Mdoe, 5530MHz)

1GHz-18GHz:

Horizontal	Vertical
	

18GHz-40GHz:

Horizontal	Vertical
	

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
22120.000	39.80	1.70	41.50	63.50	-22.00	150	356	Average
22120.000	50.75	1.70	52.45	83.50	-31.05	150	356	Peak
39889.890	38.88	15.74	54.62	63.50	-8.88	150	93	Average
39889.890	55.87	15.74	71.61	83.50	-11.89	150	93	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
22120.000	39.81	1.70	41.51	63.50	-21.99	150	47	Average
22120.000	50.84	1.70	52.54	83.50	-30.96	150	47	Peak
39911.910	38.83	16.06	54.89	63.50	-8.61	150	224	Average
39911.910	55.62	16.06	71.68	83.50	-11.82	150	224	Peak

Above 1GHz:

5150-5250MHz

802.11a Mode:

5180 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5149.900	45.23	-4.34	40.89	54.00	-13.11	220	344	Average
5149.900	63.66	-4.34	59.32	74.00	-14.68	220	344	Peak
5180.000	100.25	-4.47	95.78			220	344	Average
5180.000	110.60	-4.47	106.13			220	344	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10360.000	43.72	5.54	49.26	68.20	-18.94	114	14	Peak
15540.000	30.27	8.54	38.81	54.00	-15.19	156	260	Average
15540.000	42.36	8.54	50.90	74.00	-23.10	156	260	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5149.500	45.11	-4.34	40.77	54.00	-13.23	154	343	Average
5149.500	62.35	-4.34	58.01	74.00	-15.99	154	343	Peak
5180.000	100.37	-4.47	95.90			154	343	Average
5180.000	110.77	-4.47	106.30			154	343	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10360.000	41.19	5.54	46.73	68.20	-21.47	142	221	Peak
15540.000	30.16	8.54	38.70	54.00	-15.30	151	54	Average
15540.000	41.21	8.54	49.75	74.00	-24.25	151	54	Peak

5200 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5200.000	101.25	-4.57	96.68			225	341	Average
5200.000	111.25	-4.57	106.68			225	341	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10400.000	43.06	5.83	48.89	68.20	-19.31	119	145	Peak
15600.000	31.89	8.45	40.34	54.00	-13.66	153	235	Average
15600.000	43.46	8.45	51.91	74.00	-22.09	153	235	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5200.000	101.23	-4.57	96.66			166	345	Average
5200.000	111.47	-4.57	106.90			166	345	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10400.000	41.75	5.83	47.58	68.20	-20.62	142	42	Peak
15600.000	31.92	8.45	40.37	54.00	-13.63	158	195	Average
15600.000	42.97	8.45	51.42	74.00	-22.58	158	195	Peak

5240 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5240.000	101.51	-4.51	97.00			237	336	Average
5240.000	111.28	-4.51	106.77			237	336	Peak
5459.589	43.09	-5.18	37.91	54.00	-16.09	237	336	Average
5459.589	56.69	-5.18	51.51	74.00	-22.49	237	336	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10480.000	43.49	5.86	49.35	68.20	-18.85	114	2	Peak
15720.000	32.13	9.30	41.43	54.00	-12.57	154	277	Average
15720.000	42.89	9.30	52.19	74.00	-21.81	154	277	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5240.000	101.77	-4.51	97.26			154	344	Average
5240.000	112.06	-4.51	107.55			154	344	Peak
5377.507	43.43	-4.84	38.59	54.00	-15.41	154	344	Average
5377.507	56.81	-4.84	51.97	74.00	-22.03	154	344	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10480.000	41.84	5.86	47.70	68.20	-20.50	146	258	Peak
15720.000	32.16	9.30	41.46	54.00	-12.54	151	70	Average
15720.000	43.94	9.30	53.24	74.00	-20.76	151	70	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

802.11ac VHT20 Mode:

5180 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5148.899	46.31	-4.34	41.97	54.00	-12.03	219	347	Average
5148.899	64.39	-4.34	60.05	74.00	-13.95	219	347	Peak
5180.000	100.23	-4.47	95.76			219	347	Average
5180.000	110.37	-4.47	105.90			219	347	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10360.000	42.51	5.54	48.05	68.20	-20.15	117	33	Peak
15540.000	30.23	8.54	38.77	54.00	-15.23	152	110	Average
15540.000	41.07	8.54	49.61	74.00	-24.39	152	110	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5148.899	46.03	-4.34	41.69	54.00	-12.31	156	343	Average
5148.899	63.99	-4.34	59.65	74.00	-14.35	156	343	Peak
5180.000	100.62	-4.47	96.15			156	343	Average
5180.000	110.63	-4.47	106.16			156	343	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10360.000	40.81	5.54	46.35	68.20	-21.85	143	358	Peak
15540.000	30.24	8.54	38.78	54.00	-15.22	157	0	Average
15540.000	42.60	8.54	51.14	74.00	-22.86	157	0	Peak

5200 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5200.000	101.26	-4.57	96.69			232	339	Average
5200.000	111.30	-4.57	106.73			232	339	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10400.000	44.40	5.83	50.23	68.20	-17.97	119	8	Peak
15600.000	31.74	8.45	40.19	54.00	-13.81	152	151	Average
15600.000	44.05	8.45	52.50	74.00	-21.50	152	151	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5200.000	101.33	-4.57	96.76			168	345	Average
5200.000	111.15	-4.57	106.58			168	345	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10400.000	41.83	5.83	47.66	68.20	-20.54	146	317	Peak
15600.000	31.69	8.45	40.14	54.00	-13.86	158	76	Average
15600.000	44.21	8.45	52.66	74.00	-21.34	158	76	Peak

5240 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5240.000	101.49	-4.51	96.98			231	344	Average
5240.000	111.43	-4.51	106.92			231	344	Peak
5443.583	43.75	-5.17	38.58	54.00	-15.42	231	344	Average
5443.583	57.02	-5.17	51.85	74.00	-22.15	231	344	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10480.000	44.11	5.86	49.97	68.20	-18.23	144	11	Peak
15720.000	31.90	9.30	41.20	54.00	-12.80	155	96	Average
15720.000	43.69	9.30	52.99	74.00	-21.01	155	96	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5240.000	101.89	-4.51	97.38			147	343	Average
5240.000	112.03	-4.51	107.52			147	343	Peak
5353.293	44.01	-4.71	39.30	54.00	-14.70	147	343	Average
5353.293	56.44	-4.71	51.73	74.00	-22.27	147	343	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10480.000	42.80	5.86	48.66	68.20	-19.54	141	358	Peak
15720.000	32.13	9.30	41.43	54.00	-12.57	156	273	Average
15720.000	44.78	9.30	54.08	74.00	-19.92	156	273	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

802.11ac VHT40 Mode:

5190 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5149.299	57.15	-4.34	52.81	54.00	-1.19	230	340	Average
5149.299	75.06	-4.34	70.72	74.00	-3.28	230	340	Peak
5190.000	97.51	-4.52	92.99			230	340	Average
5190.000	107.41	-4.52	102.89			230	340	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10380.000	42.26	5.69	47.95	68.20	-20.25	113	275	Peak
15570.000	31.19	8.49	39.68	54.00	-14.32	155	2	Average
15570.000	42.50	8.49	50.99	74.00	-23.01	155	2	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5149.099	55.05	-4.34	50.71	54.00	-3.29	169	342	Average
5149.099	71.86	-4.34	67.52	74.00	-6.48	169	342	Peak
5190.000	96.83	-4.52	92.31			169	342	Average
5190.000	106.60	-4.52	102.08			169	342	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10380.000	42.66	5.69	48.35	68.20	-19.85	154	357	Peak
15570.000	31.24	8.49	39.73	54.00	-14.27	152	337	Average
15570.000	41.76	8.49	50.25	74.00	-23.75	152	337	Peak

5230 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5230.000	98.24	-4.52	93.72			230	341	Average
5230.000	107.45	-4.52	102.93			230	341	Peak
5363.554	44.47	-4.76	39.71	54.00	-14.29	230	341	Average
5363.554	56.47	-4.76	51.71	74.00	-22.29	230	341	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10460.000	42.16	5.86	48.02	68.20	-20.18	156	231	Peak
15690.000	31.89	9.06	40.95	54.00	-13.05	152	277	Average
15690.000	44.33	9.06	53.39	74.00	-20.61	152	277	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5230.000	98.14	-4.52	93.62			147	344	Average
5230.000	108.11	-4.52	103.59			147	344	Peak
5364.785	44.22	-4.77	39.45	54.00	-14.55	147	344	Average
5364.785	56.77	-4.77	52.00	74.00	-22.00	147	344	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10460.000	41.68	5.86	47.54	68.20	-20.66	157	253	Peak
15690.000	31.90	9.06	40.96	54.00	-13.04	154	356	Average
15690.000	43.44	9.06	52.50	74.00	-21.50	154	356	Peak

802.11ac VHT80 Mode:

5210 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5143.293	57.14	-4.34	52.80	54.00	-1.20	239	337	Average
5143.293	71.56	-4.34	67.22	74.00	-6.78	239	337	Peak
5210.000	95.77	-4.55	91.22			239	337	Average
5210.000	104.44	-4.55	99.89			239	337	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10420.000	41.49	5.84	47.33	68.20	-20.87	150	168	Peak
15630.000	31.39	8.65	40.04	54.00	-13.96	152	150	Average
15630.000	42.99	8.65	51.64	74.00	-22.36	152	150	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5143.293	56.05	-4.34	51.71	54.00	-2.29	168	344	Average
5143.293	69.71	-4.34	65.37	74.00	-8.63	168	344	Peak
5210.000	95.46	-4.55	90.91			168	344	Average
5210.000	104.17	-4.55	99.62			168	344	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10420.000	41.39	5.84	47.23	68.20	-20.97	154	265	Peak
15630.000	31.20	8.65	39.85	54.00	-14.15	155	136	Average
15630.000	43.15	8.65	51.80	74.00	-22.20	155	136	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

5250-5350MHz

802.11a Mode:

5260 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5140.701	42.98	-4.34	38.64	54.00	-15.36	244	339	Average
5140.701	56.48	-4.34	52.14	74.00	-21.86	244	339	Peak
5260.000	102.20	-4.50	97.70			244	339	Average
5260.000	112.15	-4.50	107.65			244	339	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10520.000	43.50	5.92	49.42	68.20	-18.78	118	0	Peak
15780.000	32.59	9.77	42.36	54.00	-11.64	155	15	Average
15780.000	43.86	9.77	53.63	74.00	-20.37	155	15	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5052.462	42.90	-4.82	38.08	54.00	-15.92	163	345	Average
5052.462	57.12	-4.82	52.30	74.00	-21.70	163	345	Peak
5260.000	102.88	-4.50	98.38			163	345	Average
5260.000	112.79	-4.50	108.29			163	345	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10520.000	41.60	5.92	47.52	68.20	-20.68	138	229	Peak
15780.000	32.48	9.77	42.25	54.00	-11.75	154	179	Average
15780.000	44.33	9.77	54.10	74.00	-19.90	154	179	Peak

5300 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5300.000	101.98	-4.52	97.46			224	341	Average
5300.000	112.17	-4.52	107.65			224	341	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10600.000	32.99	6.15	39.14	54.00	-14.86	128	0	Average
10600.000	43.80	6.15	49.95	68.20	-18.25	128	0	Peak
15900.000	31.23	9.90	41.13	54.00	-12.87	156	344	Average
15900.000	43.30	9.90	53.20	74.00	-20.80	156	344	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5300.000	103.27	-4.52	98.75			162	342	Average
5300.000	113.22	-4.52	108.70			162	342	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10600.000	31.17	6.15	37.32	54.00	-16.68	141	124	Average
10600.000	42.44	6.15	48.59	68.20	-19.61	141	124	Peak
15900.000	31.25	9.90	41.15	54.00	-12.85	152	276	Average
15900.000	44.18	9.90	54.08	74.00	-19.92	152	276	Peak

5320 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5320.000	101.31	-4.59	96.72			230	347	Average
5320.000	111.29	-4.59	106.70			230	347	Peak
5351.432	45.01	-4.69	40.32	54.00	-13.68	230	347	Average
5351.432	59.95	-4.69	55.26	74.00	-18.74	230	347	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10640.000	31.62	6.10	37.72	54.00	-16.28	134	0	Average
10640.000	43.17	6.10	49.27	74.00	-24.73	134	0	Peak
15960.000	30.75	10.13	40.88	54.00	-13.12	155	37	Average
15960.000	42.89	10.13	53.02	74.00	-20.98	155	37	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5320.000	102.88	-4.59	98.29			179	346	Average
5320.000	112.88	-4.59	108.29			179	346	Peak
5352.112	44.94	-4.69	40.25	54.00	-13.75	179	346	Average
5352.112	61.02	-4.69	56.33	74.00	-17.67	179	346	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10640.000	31.25	6.10	37.35	54.00	-16.65	134	360	Average
10640.000	43.36	6.10	49.46	74.00	-24.54	134	360	Peak
15960.000	30.88	10.13	41.01	54.00	-12.99	156	36	Average
15960.000	42.12	10.13	52.25	74.00	-21.75	156	36	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

802.11ac VHT20 Mode:

5260 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5146.446	43.41	-4.33	39.08	54.00	-14.92	256	338	Average
5146.446	55.88	-4.33	51.55	74.00	-22.45	256	338	Peak
5260.000	102.00	-4.50	97.50			256	338	Average
5260.000	112.13	-4.50	107.63			256	338	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10520.000	44.15	5.92	50.07	68.20	-18.13	115	6	Peak
15780.000	32.51	9.77	42.28	54.00	-11.72	150	69	Average
15780.000	44.04	9.77	53.81	74.00	-20.19	150	69	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5104.995	43.20	-4.39	38.81	54.00	-15.19	163	344	Average
5104.995	56.77	-4.39	52.38	74.00	-21.62	163	344	Peak
5260.000	102.49	-4.50	97.99			163	344	Average
5260.000	112.94	-4.50	108.44			163	344	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10520.000	41.81	5.92	47.73	68.20	-20.47	116	79	Peak
15780.000	32.07	9.77	41.84	54.00	-12.16	151	142	Average
15780.000	44.27	9.77	54.04	74.00	-19.96	151	142	Peak

5300 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5300.000	102.08	-4.52	97.56			275	344	Average
5300.000	112.06	-4.52	107.54			275	344	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10600.000	31.34	6.15	37.49	54.00	-16.51	116	2	Average
10600.000	42.62	6.15	48.77	68.20	-19.43	116	2	Peak
15900.000	31.26	9.90	41.16	54.00	-12.84	151	157	Average
15900.000	43.07	9.90	52.97	74.00	-21.03	151	157	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5300.000	102.98	-4.52	98.46			167	347	Average
5300.000	113.18	-4.52	108.66			167	347	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10600.000	31.09	6.15	37.24	54.00	-16.76	143	262	Average
10600.000	42.41	6.15	48.56	68.20	-19.64	143	262	Peak
15900.000	31.40	9.90	41.30	54.00	-12.70	157	52	Average
15900.000	43.29	9.90	53.19	74.00	-20.81	157	52	Peak

5320 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5320.000	101.52	-4.59	96.93			277	346	Average
5320.000	111.98	-4.59	107.39			277	346	Peak
5351.602	44.64	-4.69	39.95	54.00	-14.05	277	346	Average
5351.602	63.34	-4.69	58.65	74.00	-15.35	277	346	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10640.000	31.55	6.10	37.65	54.00	-16.35	119	40	Average
10640.000	43.17	6.10	49.27	74.00	-24.73	119	40	Peak
15960.000	30.81	10.13	40.94	54.00	-13.06	153	105	Average
15960.000	42.54	10.13	52.67	74.00	-21.33	153	105	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5320.000	102.44	-4.59	97.85			160	343	Average
5320.000	112.47	-4.59	107.88			160	343	Peak
5351.091	45.81	-4.69	41.12	54.00	-12.88	160	343	Average
5351.091	66.43	-4.69	61.74	74.00	-12.26	160	343	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10640.000	31.55	6.10	37.65	54.00	-16.35	145	248	Average
10640.000	42.72	6.10	48.82	74.00	-25.18	145	248	Peak
15960.000	31.15	10.13	41.28	54.00	-12.72	156	248	Average
15960.000	42.28	10.13	52.41	74.00	-21.59	156	248	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

802.11ac VHT40 Mode:

5270 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5087.347	43.88	-4.51	39.37	54.00	-14.63	255	337	Average
5087.347	56.57	-4.51	52.06	74.00	-21.94	255	337	Peak
5270.000	98.52	-4.51	94.01			255	337	Average
5270.000	108.11	-4.51	103.60			255	337	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10540.000	42.16	5.99	48.15	68.20	-20.05	154	130	Peak
15810.000	32.51	9.94	42.45	54.00	-11.55	156	324	Average
15810.000	43.99	9.94	53.93	74.00	-20.07	156	324	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5109.920	43.79	-4.38	39.41	54.00	-14.59	164	344	Average
5109.920	56.80	-4.38	52.42	74.00	-21.58	164	344	Peak
5270.000	99.25	-4.51	94.74			164	344	Average
5270.000	108.47	-4.51	103.96			164	344	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10540.000	41.53	5.99	47.52	68.20	-20.68	151	142	Peak
15810.000	32.55	9.94	42.49	54.00	-11.51	153	344	Average
15810.000	44.44	9.94	54.38	74.00	-19.62	153	344	Peak

5310 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5310.000	96.27	-4.56	91.71			231	347	Average
5310.000	105.41	-4.56	100.85			231	347	Peak
5355.345	54.64	-4.72	49.92	54.00	-4.08	231	347	Average
5355.345	73.68	-4.72	68.96	74.00	-5.04	231	347	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10620.000	31.72	6.13	37.85	54.00	-16.15	152	101	Average
10620.000	42.91	6.13	49.04	74.00	-24.96	152	101	Peak
15930.000	31.13	10.02	41.15	54.00	-12.85	151	202	Average
15930.000	44.00	10.02	54.02	74.00	-19.98	151	202	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5310.000	98.31	-4.56	93.75			163	344	Average
5310.000	107.46	-4.56	102.90			163	344	Peak
5355.175	57.50	-4.72	52.78	54.00	-1.22	163	344	Average
5355.175	76.10	-4.72	71.38	74.00	-2.62	163	344	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10620.000	31.14	6.13	37.27	54.00	-16.73	157	28	Average
10620.000	42.01	6.13	48.14	74.00	-25.86	157	28	Peak
15930.000	30.93	10.02	40.95	54.00	-13.05	154	312	Average
15930.000	42.02	10.02	52.04	74.00	-21.96	154	312	Peak

802.11ac VHT80 Mode:

5290 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5290.000	94.30	-4.52	89.78			222	346	Average
5290.000	103.44	-4.52	98.92			222	346	Peak
5360.991	55.44	-4.75	50.69	54.00	-3.31	222	346	Average
5360.991	70.52	-4.75	65.77	74.00	-8.23	222	346	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10580.000	43.00	6.10	49.10	68.20	-19.10	151	234	Peak
15870.000	31.63	9.91	41.54	54.00	-12.46	156	285	Average
15870.000	42.62	9.91	52.53	74.00	-21.47	156	285	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5290.000	95.72	-4.52	91.20			172	347	Average
5290.000	104.30	-4.52	99.78			172	347	Peak
5361.201	57.49	-4.75	52.74	54.00	-1.26	172	347	Average
5361.201	72.30	-4.75	67.55	74.00	-6.45	172	347	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10580.000	42.06	6.10	48.16	68.20	-20.04	154	354	Peak
15870.000	31.63	9.91	41.54	54.00	-12.46	151	1	Average
15870.000	42.49	9.91	52.40	74.00	-21.60	151	1	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

5470-5725MHz

802.11a Mode:

5500 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5459.729	43.93	-5.18	38.75	54.00	-15.25	246	338	Average
5459.729	59.17	-5.18	53.99	74.00	-20.01	246	338	Peak
5500.000	100.02	-5.13	94.89			246	338	Average
5500.000	111.30	-5.13	106.17			246	338	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11000.000	34.13	6.64	40.77	54.00	-13.23	155	15	Average
11000.000	44.37	6.64	51.01	74.00	-22.99	155	15	Peak
16500.000	42.69	11.52	54.21	68.20	-13.99	152	326	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5458.879	44.41	-5.18	39.23	54.00	-14.77	221	253	Average
5458.879	60.55	-5.18	55.37	74.00	-18.63	221	253	Peak
5500.000	102.88	-5.13	97.75			221	253	Average
5500.000	113.40	-5.13	108.27			221	253	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11000.000	30.06	6.64	36.70	54.00	-17.30	147	33	Average
11000.000	41.26	6.64	47.90	74.00	-26.10	147	33	Peak
16500.000	42.51	11.52	54.03	68.20	-14.17	153	103	Peak

5580 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5580.000	101.04	-5.02	96.02			217	336	Average
5580.000	111.52	-5.02	106.50			217	336	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11160.000	35.58	6.75	42.33	54.00	-11.67	100	15	Average
11160.000	50.80	6.75	57.55	74.00	-16.45	100	15	Peak
16740.000	43.94	11.82	55.76	68.20	-12.44	152	101	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5580.000	103.43	-5.02	98.41			219	253	Average
5580.000	113.92	-5.02	108.90			219	253	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11160.000	31.45	6.75	38.20	54.00	-15.80	169	309	Average
11160.000	44.81	6.75	51.56	74.00	-22.44	169	309	Peak
16740.000	44.18	11.82	56.00	68.20	-12.20	146	325	Peak

5700 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5700.000	100.64	-5.47	95.17			229	336	Average
5700.000	111.50	-5.47	106.03			229	336	Peak
5725.000	64.56	-5.46	59.10	68.20	-9.10	229	336	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11400.000	36.32	6.92	43.24	54.00	-10.76	174	16	Average
11400.000	50.15	6.92	57.07	74.00	-16.93	174	16	Peak
17100.000	41.43	11.67	53.10	68.20	-15.10	146	47	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5700.000	101.22	-5.47	95.75			189	347	Average
5700.000	111.82	-5.47	106.35			189	347	Peak
5725.000	63.52	-5.46	58.06	68.20	-10.14	189	347	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11400.000	33.25	6.92	40.17	54.00	-13.83	133	137	Average
11400.000	45.36	6.92	52.28	74.00	-21.72	133	137	Peak
17100.000	41.75	11.67	53.42	68.20	-14.78	154	299	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

802.11ac VHT20 Mode:

5500 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5458.368	43.80	-5.18	38.62	54.00	-15.38	244	337	Average
5458.368	63.86	-5.18	58.68	74.00	-15.32	244	337	Peak
5500.000	100.69	-5.13	95.56			244	337	Average
5500.000	111.12	-5.13	105.99			244	337	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11000.000	35.27	6.64	41.91	54.00	-12.09	202	18	Average
11000.000	50.49	6.64	57.13	74.00	-16.87	202	18	Peak
16500.000	42.91	11.52	54.43	68.20	-13.77	148	239	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5458.879	44.62	-5.18	39.44	54.00	-14.56	197	350	Average
5458.879	66.88	-5.18	61.70	74.00	-12.30	197	350	Peak
5500.000	101.79	-5.13	96.66			197	350	Average
5500.000	112.02	-5.13	106.89			197	350	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11000.000	31.66	6.64	38.30	54.00	-15.70	190	254	Average
11000.000	45.55	6.64	52.19	74.00	-21.81	190	254	Peak
16500.000	42.38	11.52	53.90	68.20	-14.30	147	13	Peak

5580 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5580.000	101.18	-5.02	96.16			236	335	Average
5580.000	111.31	-5.02	106.29			236	335	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11160.000	34.91	6.75	41.66	54.00	-12.34	160	360	Average
11160.000	49.01	6.75	55.76	74.00	-18.24	160	360	Peak
16740.000	42.88	11.82	54.70	68.20	-13.50	146	242	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5580.000	103.51	-5.02	98.49			217	251	Average
5580.000	113.85	-5.02	108.83			217	251	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11160.000	31.11	6.75	37.86	54.00	-16.14	155	360	Average
11160.000	42.38	6.75	49.13	74.00	-24.87	155	360	Peak
16740.000	42.93	11.82	54.75	68.20	-13.45	145	188	Peak

5700 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5700.000	99.03	-5.47	93.56			282	319	Average
5700.000	109.40	-5.47	103.93			282	319	Peak
5725.000	68.42	-5.46	62.96	68.20	-5.24	282	319	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11400.000	35.59	6.92	42.51	54.00	-11.49	178	15	Average
11400.000	49.70	6.92	56.62	74.00	-17.38	178	15	Peak
17100.000	42.89	11.67	54.56	68.20	-13.64	148	337	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5700.000	102.41	-5.47	96.94			228	236	Average
5700.000	112.84	-5.47	107.37			228	236	Peak
5725.000	72.37	-5.46	66.91	68.20	-1.29	228	236	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11400.000	32.08	6.92	39.00	54.00	-15.00	153	303	Average
11400.000	41.43	6.92	48.35	74.00	-25.65	153	303	Peak
17100.000	42.03	11.67	53.70	68.20	-14.50	148	98	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

802.11ac VHT40 Mode:

5510 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5459.900	49.86	-5.18	44.68	54.00	-9.32	238	337	Average
5459.900	66.55	-5.18	61.37	74.00	-12.63	238	337	Peak
5510.000	97.40	-5.11	92.29			238	337	Average
5510.000	107.41	-5.11	102.30			238	337	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11020.000	31.96	6.61	38.57	54.00	-15.43	154	356	Average
11020.000	44.71	6.61	51.32	74.00	-22.68	154	356	Peak
16530.000	42.71	11.69	54.40	68.20	-13.80	145	294	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5459.389	52.09	-5.18	46.91	54.00	-7.09	223	254	Average
5459.389	70.38	-5.18	65.20	74.00	-8.80	223	254	Peak
5510.000	99.86	-5.11	94.75			223	254	Average
5510.000	109.93	-5.11	104.82			223	254	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11020.000	30.89	6.61	37.50	54.00	-16.50	156	88	Average
11020.000	43.34	6.61	49.95	74.00	-24.05	156	88	Peak
16530.000	42.37	11.69	54.06	68.20	-14.14	146	256	Peak

5590 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5590.000	97.48	-5.02	92.46			236	338	Average
5590.000	106.97	-5.02	101.95			236	338	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11180.000	33.17	6.83	40.00	54.00	-14.00	162	29	Average
11180.000	46.85	6.83	53.68	74.00	-20.32	162	29	Peak
16770.000	42.72	11.74	54.46	68.20	-13.74	157	132	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5590.000	100.23	-5.02	95.21			218	246	Average
5590.000	109.51	-5.02	104.49			218	246	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11180.000	30.81	6.83	37.64	54.00	-16.36	161	198	Average
11180.000	43.41	6.83	50.24	74.00	-23.76	161	198	Peak
16770.000	42.91	11.74	54.65	68.20	-13.55	147	117	Peak

5670 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5670.000	97.19	-5.36	91.83			211	337	Average
5670.000	107.09	-5.28	101.81			211	337	Peak
5725.000	59.50	-5.46	54.04	68.20	-14.16	211	337	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11340.000	32.92	6.87	39.79	54.00	-14.21	163	148	Average
11340.000	46.44	6.87	53.31	74.00	-20.69	163	148	Peak
17010.000	41.63	11.47	53.10	68.20	-15.10	145	337	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5670.000	100.01	-5.28	94.73			220	244	Average
5670.000	109.37	-5.28	104.09			220	244	Peak
5725.000	63.96	-5.46	58.50	68.20	-9.70	220	244	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11340.000	30.60	6.87	37.47	54.00	-16.53	165	360	Average
11340.000	43.36	6.87	50.23	74.00	-23.77	165	360	Peak
17010.000	42.47	11.47	53.94	68.20	-14.26	148	3	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

802.11ac VHT80 Mode:

5530 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5459.219	55.57	-5.18	50.39	54.00	-3.61	200	337	Average
5459.219	68.97	-5.18	63.79	74.00	-10.21	200	337	Peak
5530.000	94.70	-5.04	89.66			200	337	Average
5530.000	103.57	-5.04	98.53			200	337	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11060.000	31.24	6.56	37.80	54.00	-16.20	155	180	Average
11060.000	42.39	6.56	48.95	74.00	-25.05	155	180	Peak
16590.000	42.16	12.04	54.20	68.20	-14.00	147	53	Peak
17761.760	31.58	12.78	44.36	54.00	-9.64	150	358	Average
17761.760	44.54	12.78	57.32	74.00	-16.68	150	358	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5441.181	58.44	-5.14	53.30	54.00	-0.70	170	349	Average
5441.181	71.80	-5.14	66.66	74.00	-7.34	170	349	Peak
5530.000	95.24	-5.04	90.20			170	349	Average
5530.000	104.96	-5.04	99.92			170	349	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11060.000	30.78	6.56	37.34	54.00	-16.66	161	276	Average
11060.000	41.37	6.56	47.93	74.00	-26.07	161	276	Peak
16590.000	42.05	12.04	54.09	68.20	-14.11	153	182	Peak
17778.780	31.65	12.86	44.51	54.00	-9.49	150	15	Average
17778.780	44.13	12.86	56.99	74.00	-17.01	150	15	Peak

5610 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5439.940	44.44	-5.14	39.30	54.00	-14.70	226	339	Average
5439.940	56.71	-5.14	51.57	74.00	-22.43	226	339	Peak
5610.000	93.89	-5.07	88.82			226	339	Average
5610.000	103.18	-5.07	98.11			226	339	Peak
5725.000	55.90	-5.46	50.44	68.20	-17.76	226	339	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11220.000	31.79	6.90	38.69	54.00	-15.31	159	330	Average
11220.000	41.59	6.90	48.49	74.00	-25.51	159	330	Peak
16830.000	42.64	11.56	54.20	68.20	-14.00	145	253	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5439.560	44.61	-5.14	39.47	54.00	-14.53	226	235	Average
5439.560	57.07	-5.14	51.93	74.00	-22.07	226	235	Peak
5610.000	96.42	-5.07	91.35			226	235	Average
5610.000	105.75	-5.07	100.68			226	235	Peak
5725.000	55.81	-5.46	50.35	68.20	-17.85	226	235	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11220.000	30.97	6.90	37.87	54.00	-16.13	165	256	Average
11220.000	42.27	6.90	49.17	74.00	-24.83	165	256	Peak
16830.000	44.00	11.56	55.56	68.20	-12.64	147	244	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

5725-5850MHz

802.11a Mode:

5745 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5644.595	55.86	-5.14	50.72	68.20	-17.48	227	338	Peak
5700.090	61.46	-5.47	55.99	105.23	-49.24	227	338	Peak
5714.144	66.71	-5.47	61.24	109.16	-47.92	227	338	Peak
5725.000	79.58	-5.46	74.12	122.20	-48.08	227	338	Peak
5745.000	109.02	-5.46	103.56	122.20	-18.64	227	338	Peak
5850.000	55.37	-5.39	49.98	122.20	-72.22	227	338	Peak
5855.405	56.72	-5.36	51.36	110.69	-59.33	227	338	Peak
5880.271	56.45	-5.18	51.27	101.29	-50.02	227	338	Peak
5930.360	56.27	-4.74	51.53	68.20	-16.67	227	338	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11490.000	33.34	6.95	40.29	54.00	-13.71	156	0	Average
11490.000	42.18	6.95	49.13	74.00	-24.87	156	0	Peak
17235.000	41.57	11.74	53.31	68.20	-14.89	151	145	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5621.532	58.00	-5.09	52.91	68.20	-15.29	219	235	Peak
5699.369	61.90	-5.47	56.43	104.74	-48.31	219	235	Peak
5714.144	68.96	-5.47	63.49	109.16	-45.67	219	235	Peak
5725.000	83.15	-5.46	77.69	122.20	-44.51	219	235	Peak
5745.000	112.05	-5.46	106.59	122.20	-15.61	219	235	Peak
5850.000	55.30	-5.39	49.91	122.20	-72.29	219	235	Peak
5872.703	56.52	-5.24	51.28	105.84	-54.56	219	235	Peak
5909.820	57.01	-4.93	52.08	79.40	-27.32	219	235	Peak
5948.378	55.92	-4.55	51.37	68.20	-16.83	219	235	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11490.000	30.45	6.95	37.40	54.00	-16.60	157	124	Average
11490.000	41.32	6.95	48.27	74.00	-25.73	157	124	Peak
17235.000	41.60	11.74	53.34	68.20	-14.86	154	302	Peak

5785 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5632.703	56.22	-5.12	51.10	68.20	-17.10	221	339	Peak
5680.271	56.08	-5.34	50.74	90.64	-39.90	221	339	Peak
5703.333	56.93	-5.46	51.47	106.13	-54.66	221	339	Peak
5725.000	55.76	-5.46	50.30	122.20	-71.90	221	339	Peak
5785.000	108.70	-5.45	103.25	122.20	-18.95	221	339	Peak
5850.000	54.79	-5.39	49.40	122.20	-72.80	221	339	Peak
5857.928	56.25	-5.34	50.91	109.98	-59.07	221	339	Peak
5882.072	56.93	-5.16	51.77	99.95	-48.18	221	339	Peak
5930.721	56.61	-4.74	51.87	68.20	-16.33	221	339	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11570.000	33.52	6.94	40.46	54.00	-13.54	154	15	Average
11570.000	44.41	6.94	51.35	74.00	-22.65	154	15	Peak
17355.000	41.28	12.29	53.57	68.20	-14.63	152	144	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5625.135	56.18	-5.09	51.09	68.20	-17.11	226	239	Peak
5684.595	56.89	-5.37	51.52	93.83	-42.31	226	239	Peak
5714.144	56.61	-5.47	51.14	109.16	-58.02	226	239	Peak
5725.000	55.32	-5.46	49.86	122.20	-72.34	226	239	Peak
5785.000	111.18	-5.45	105.73	122.20	-16.47	226	239	Peak
5850.000	55.47	-5.39	50.08	122.20	-72.12	226	239	Peak
5864.775	56.83	-5.29	51.54	108.06	-56.52	226	239	Peak
5880.631	57.52	-5.17	52.35	101.02	-48.67	226	239	Peak
5958.829	56.74	-4.48	52.26	68.20	-15.94	226	239	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11570.000	30.45	6.94	37.39	54.00	-16.61	155	126	Average
11570.000	41.41	6.94	48.35	74.00	-25.65	155	126	Peak
17355.000	42.45	12.29	54.74	68.20	-13.46	152	239	Peak

5825 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5642.793	55.88	-5.14	50.74	68.20	-17.46	207	336	Peak
5692.162	56.50	-5.42	51.08	99.42	-48.34	207	336	Peak
5710.541	56.52	-5.47	51.05	108.15	-57.10	207	336	Peak
5725.000	55.17	-5.46	49.71	122.20	-72.49	207	336	Peak
5825.000	109.12	-5.42	103.70	122.20	-18.50	207	336	Peak
5850.000	59.27	-5.39	53.88	122.20	-68.32	207	336	Peak
5857.928	57.71	-5.34	52.37	109.98	-57.61	207	336	Peak
5904.054	57.44	-5.00	52.44	83.66	-31.22	207	336	Peak
5963.153	55.97	-4.45	51.52	68.20	-16.68	207	336	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11650.000	32.61	6.97	39.58	54.00	-14.42	158	17	Average
11650.000	43.30	6.97	50.27	74.00	-23.73	158	17	Peak
17475.000	41.58	11.88	53.46	68.20	-14.74	153	273	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5648.559	56.23	-5.15	51.08	68.20	-17.12	220	238	Peak
5676.667	56.80	-5.32	51.48	87.97	-36.49	220	238	Peak
5707.658	56.42	-5.46	50.96	107.35	-56.39	220	238	Peak
5725.000	54.59	-5.46	49.13	122.20	-73.07	220	238	Peak
5825.000	111.23	-5.42	105.81	122.20	-16.39	220	238	Peak
5850.000	62.87	-5.39	57.48	122.20	-64.72	220	238	Peak
5861.171	57.72	-5.31	52.41	109.07	-56.66	220	238	Peak
5877.027	56.54	-5.20	51.34	103.69	-52.35	220	238	Peak
5933.964	56.78	-4.70	52.08	68.20	-16.12	220	238	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11650.000	30.34	6.97	37.31	54.00	-16.69	154	330	Average
11650.000	43.07	6.97	50.04	74.00	-23.96	154	330	Peak
17475.000	41.60	11.88	53.48	68.20	-14.72	151	29	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

802.11ac VHT20 Mode:

5745 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5620.811	56.07	-5.09	50.98	68.20	-17.22	219	320	Peak
5682.433	56.91	-5.35	51.56	92.24	-40.68	219	320	Peak
5719.910	66.26	-5.47	60.79	110.77	-49.98	219	320	Peak
5725.000	74.49	-5.46	69.03	122.20	-53.17	219	320	Peak
5745.000	107.88	-5.46	102.42	122.20	-19.78	219	320	Peak
5850.000	55.09	-5.39	49.70	122.20	-72.50	219	320	Peak
5872.703	56.35	-5.24	51.11	105.84	-54.73	219	320	Peak
5919.549	56.45	-4.84	51.61	72.22	-20.61	219	320	Peak
5930.721	56.92	-4.74	52.18	68.20	-16.02	219	320	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11490.000	33.31	6.95	40.26	54.00	-13.74	154	22	Average
11490.000	41.63	6.95	48.58	74.00	-25.42	154	22	Peak
17235.000	41.70	11.74	53.44	68.20	-14.76	156	53	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5626.937	56.96	-5.09	51.87	68.20	-16.33	221	237	Peak
5697.207	59.17	-5.45	53.72	103.14	-49.42	221	237	Peak
5719.910	69.81	-5.47	64.34	110.77	-46.43	221	237	Peak
5725.000	81.82	-5.46	76.36	122.20	-45.84	221	237	Peak
5745.000	111.60	-5.46	106.14	122.20	-16.06	221	237	Peak
5850.000	54.89	-5.39	49.50	122.20	-72.70	221	237	Peak
5858.648	56.38	-5.33	51.05	109.78	-58.73	221	237	Peak
5917.027	55.98	-4.87	51.11	74.08	-22.97	221	237	Peak
5927.838	56.62	-4.75	51.87	68.20	-16.33	221	237	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11490.000	30.11	6.95	37.06	54.00	-16.94	151	359	Average
11490.000	42.02	6.95	48.97	74.00	-25.03	151	359	Peak
17235.000	41.74	11.74	53.48	68.20	-14.72	153	18	Peak

5785 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5626.577	55.91	-5.09	50.82	68.20	-17.38	221	337	Peak
5654.324	56.64	-5.19	51.45	71.41	-19.96	221	337	Peak
5703.694	55.96	-5.46	50.50	106.24	-55.74	221	337	Peak
5725.000	55.13	-5.46	49.67	122.20	-72.53	221	337	Peak
5785.000	109.38	-5.45	103.93	122.20	-18.27	221	337	Peak
5850.000	54.86	-5.39	49.47	122.20	-72.73	221	337	Peak
5869.459	56.12	-5.25	50.87	106.75	-55.88	221	337	Peak
5900.090	56.64	-5.04	51.60	86.59	-34.99	221	337	Peak
5953.423	55.96	-4.51	51.45	68.20	-16.75	221	337	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11570.000	33.27	6.94	40.21	54.00	-13.79	152	327	Average
11570.000	43.84	6.94	50.78	74.00	-23.22	152	327	Peak
17355.000	40.54	12.29	52.83	68.20	-15.37	153	360	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5628.739	56.02	-5.10	50.92	68.20	-17.28	224	237	Peak
5655.405	56.39	-5.19	51.20	72.22	-21.02	224	237	Peak
5717.027	56.54	-5.47	51.07	109.97	-58.90	224	237	Peak
5725.000	54.85	-5.46	49.39	122.20	-72.81	224	237	Peak
5785.000	111.63	-5.45	106.18	122.20	-16.02	224	237	Peak
5850.000	55.54	-5.39	50.15	122.20	-72.05	224	237	Peak
5874.865	56.52	-5.22	51.30	105.24	-53.94	224	237	Peak
5922.072	56.32	-4.82	51.50	70.36	-18.86	224	237	Peak
5952.342	56.84	-4.53	52.31	68.20	-15.89	224	237	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11570.000	30.22	6.94	37.16	54.00	-16.84	156	324	Average
11570.000	41.59	6.94	48.53	74.00	-25.47	156	324	Peak
17355.000	40.14	12.29	52.43	68.20	-15.77	154	0	Peak

5825 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5627.658	56.42	-5.10	51.32	68.20	-16.88	209	338	Peak
5695.045	56.49	-5.44	51.05	101.55	-50.50	209	338	Peak
5718.108	56.25	-5.46	50.79	110.27	-59.48	209	338	Peak
5725.000	54.59	-5.46	49.13	122.20	-73.07	209	338	Peak
5825.000	108.41	-5.42	102.99	122.20	-19.21	209	338	Peak
5850.000	64.79	-5.39	59.40	122.20	-62.80	209	338	Peak
5857.207	58.45	-5.34	53.11	110.18	-57.07	209	338	Peak
5923.874	56.58	-4.80	51.78	69.03	-17.25	209	338	Peak
5951.982	56.37	-4.53	51.84	68.20	-16.36	209	338	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11650.000	32.64	6.97	39.61	54.00	-14.39	151	342	Average
11650.000	42.42	6.97	49.39	74.00	-24.61	151	342	Peak
17475.000	41.19	11.88	53.07	68.20	-15.13	156	210	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5626.577	56.27	-5.09	51.18	68.20	-17.02	223	230	Peak
5687.117	56.39	-5.38	51.01	95.70	-44.69	223	230	Peak
5708.739	56.33	-5.46	50.87	107.65	-56.78	223	230	Peak
5725.000	55.57	-5.46	50.11	122.20	-72.09	223	230	Peak
5825.000	110.58	-5.42	105.16	122.20	-17.04	223	230	Peak
5850.000	68.29	-5.39	62.90	122.20	-59.30	223	230	Peak
5856.126	60.54	-5.35	55.19	110.48	-55.29	223	230	Peak
5920.271	56.57	-4.84	51.73	71.69	-19.96	223	230	Peak
5969.279	55.62	-4.41	51.21	68.20	-16.99	223	230	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11650.000	30.23	6.97	37.20	54.00	-16.80	154	328	Average
11650.000	43.08	6.97	50.05	74.00	-23.95	154	328	Peak
17475.000	43.52	11.88	55.40	68.20	-12.80	155	211	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

802.11ac VHT40 Mode:

5755 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5636.306	56.00	-5.12	50.88	68.20	-17.32	297	320	Peak
5699.729	61.49	-5.47	56.02	105.00	-48.98	297	320	Peak
5719.910	72.92	-5.47	67.45	110.77	-43.32	297	320	Peak
5725.000	71.79	-5.46	66.33	122.20	-55.87	297	320	Peak
5755.000	104.38	-5.46	98.92	122.20	-23.28	297	320	Peak
5850.000	55.05	-5.39	49.66	122.20	-72.54	297	320	Peak
5872.703	56.71	-5.24	51.47	105.84	-54.37	297	320	Peak
5888.559	56.97	-5.12	51.85	95.14	-43.29	297	320	Peak
5962.433	56.93	-4.46	52.47	68.20	-15.73	297	320	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11510.000	29.93	6.95	36.88	54.00	-17.12	154	113	Average
11510.000	40.56	6.95	47.51	74.00	-26.49	154	113	Peak
17265.000	41.72	11.83	53.55	68.20	-14.65	155	357	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5620.811	56.71	-5.09	51.62	68.20	-16.58	210	237	Peak
5700.090	62.71	-5.47	57.24	105.23	-47.99	210	237	Peak
5719.549	77.17	-5.47	71.70	110.67	-38.97	210	237	Peak
5725.000	75.83	-5.46	70.37	122.20	-51.83	210	237	Peak
5755.000	107.81	-5.46	102.35	122.20	-19.85	210	237	Peak
5850.000	55.43	-5.39	50.04	122.20	-72.16	210	237	Peak
5860.811	57.11	-5.31	51.80	109.17	-57.37	210	237	Peak
5923.514	56.68	-4.80	51.88	69.30	-17.42	210	237	Peak
5960.991	56.00	-4.47	51.53	68.20	-16.67	210	237	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11510.000	29.53	6.95	36.48	54.00	-17.52	153	83	Average
11510.000	40.56	6.95	47.51	74.00	-26.49	153	83	Peak
17265.000	41.15	11.83	52.98	68.20	-15.22	156	170	Peak

5795 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5643.514	56.46	-5.14	51.32	68.20	-16.88	219	338	Peak
5656.126	56.33	-5.20	51.13	72.75	-21.62	219	338	Peak
5718.108	58.34	-5.46	52.88	110.27	-57.39	219	338	Peak
5725.000	56.74	-5.46	51.28	122.20	-70.92	219	338	Peak
5795.000	104.62	-5.45	99.17	122.20	-23.03	219	338	Peak
5850.000	55.78	-5.39	50.39	122.20	-71.81	219	338	Peak
5862.613	56.94	-5.31	51.63	108.67	-57.04	219	338	Peak
5923.153	56.35	-4.80	51.55	69.56	-18.01	219	338	Peak
5965.676	56.29	-4.44	51.85	68.20	-16.35	219	338	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11590.000	29.90	6.94	36.84	54.00	-17.16	157	327	Average
11590.000	41.21	6.94	48.15	74.00	-25.85	157	327	Peak
17385.000	41.61	12.49	54.10	68.20	-14.10	152	173	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5647.478	56.37	-5.14	51.23	68.20	-16.97	221	238	Peak
5673.784	56.32	-5.31	51.01	85.84	-34.83	221	238	Peak
5710.180	58.09	-5.47	52.62	108.05	-55.43	221	238	Peak
5725.000	60.31	-5.46	54.85	122.20	-67.35	221	238	Peak
5795.000	107.73	-5.45	102.28	122.20	-19.92	221	238	Peak
5850.000	55.49	-5.39	50.10	122.20	-72.10	221	238	Peak
5856.486	57.17	-5.35	51.82	110.38	-58.56	221	238	Peak
5882.072	57.54	-5.16	52.38	99.95	-47.57	221	238	Peak
5928.919	56.94	-4.75	52.19	68.20	-16.01	221	238	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11590.000	29.42	6.94	36.36	54.00	-17.64	154	44	Average
11590.000	40.92	6.94	47.86	74.00	-26.14	154	44	Peak
17385.000	40.93	12.49	53.42	68.20	-14.78	158	345	Peak

802.11ac VHT80 Mode:

5775 MHz

Horizontal

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5625.496	58.13	-5.09	53.04	68.20	-15.16	234	337	Peak
5686.036	67.50	-5.38	62.12	94.90	-32.78	234	337	Peak
5715.585	69.10	-5.47	63.63	109.57	-45.94	234	337	Peak
5725.000	68.57	-5.46	63.11	122.20	-59.09	234	337	Peak
5775.000	101.45	-5.46	95.99	122.20	-26.21	234	337	Peak
5850.000	65.65	-5.39	60.26	122.20	-61.94	234	337	Peak
5866.577	66.78	-5.28	61.50	107.56	-46.06	234	337	Peak
5875.585	62.04	-5.22	56.82	104.76	-47.94	234	337	Peak
5966.036	56.24	-4.44	51.80	68.20	-16.40	234	337	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11550.000	30.23	6.95	37.18	54.00	-16.82	152	191	Average
11550.000	41.46	6.95	48.41	74.00	-25.59	152	191	Peak
17325.000	41.96	12.08	54.04	68.20	-14.16	156	276	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5628.739	58.52	-5.10	53.42	68.20	-14.78	219	238	Peak
5686.036	72.11	-5.38	66.73	94.90	-28.17	219	238	Peak
5715.946	73.18	-5.47	67.71	109.67	-41.96	219	238	Peak
5725.000	73.06	-5.46	67.60	122.20	-54.60	219	238	Peak
5775.000	104.52	-5.46	99.06	122.20	-23.14	219	238	Peak
5850.000	69.44	-5.39	64.05	122.20	-58.15	219	238	Peak
5866.216	70.82	-5.28	65.54	107.66	-42.12	219	238	Peak
5875.946	63.67	-5.21	58.46	104.50	-46.04	219	238	Peak
5948.018	56.18	-4.55	51.63	68.20	-16.57	219	238	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11550.000	29.74	6.95	36.69	54.00	-17.31	151	119	Average
11550.000	40.95	6.95	47.90	74.00	-26.10	151	119	Peak
17325.000	40.76	12.08	52.84	68.20	-15.36	156	247	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

The other spurious emission which is 20dB to the limit or in noise floor was not recorded.

10 RSS-247 §6.2.1.2 – 26dB Attenuated Below The Channel Power

10.1 Applicable Standard

RSS-247 Clause 6.2.1.2

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

10.2 Test Procedure

1. Set RBW = 1%~5% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = RMS.
4. Trace mode = max hold
5. Measure the emission attenuated below the channel power

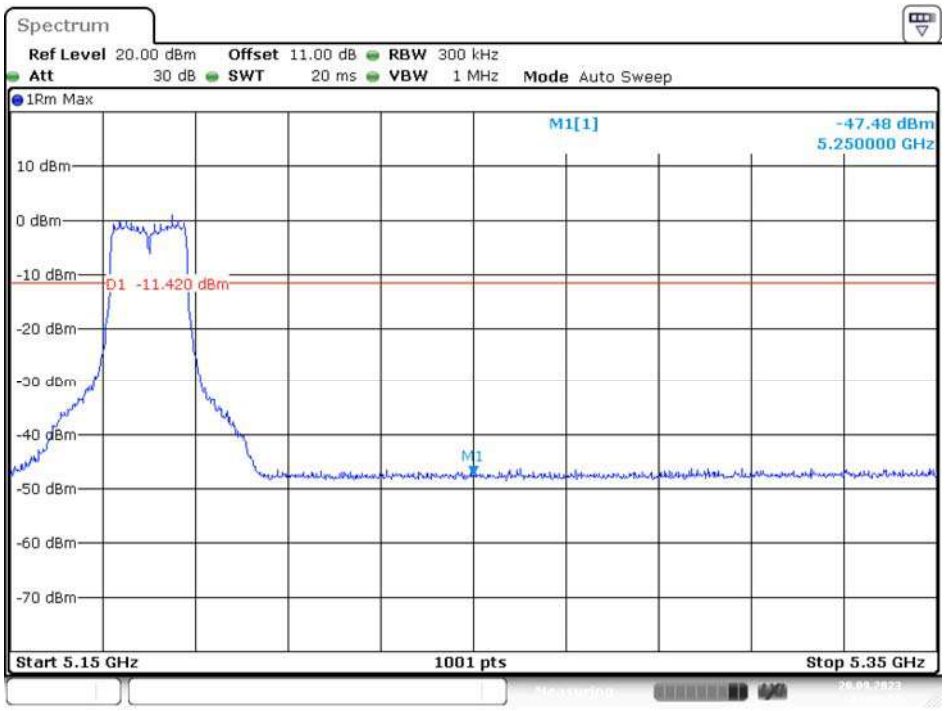
10.3 Test Results

The requirement is for 5150-5250 MHz band. The channel power please refer to the power test result in section 12.3.

Transmitting Mode:

IEEE 802.11a Mode / 5150 ~ 5250MHz

5180MHz



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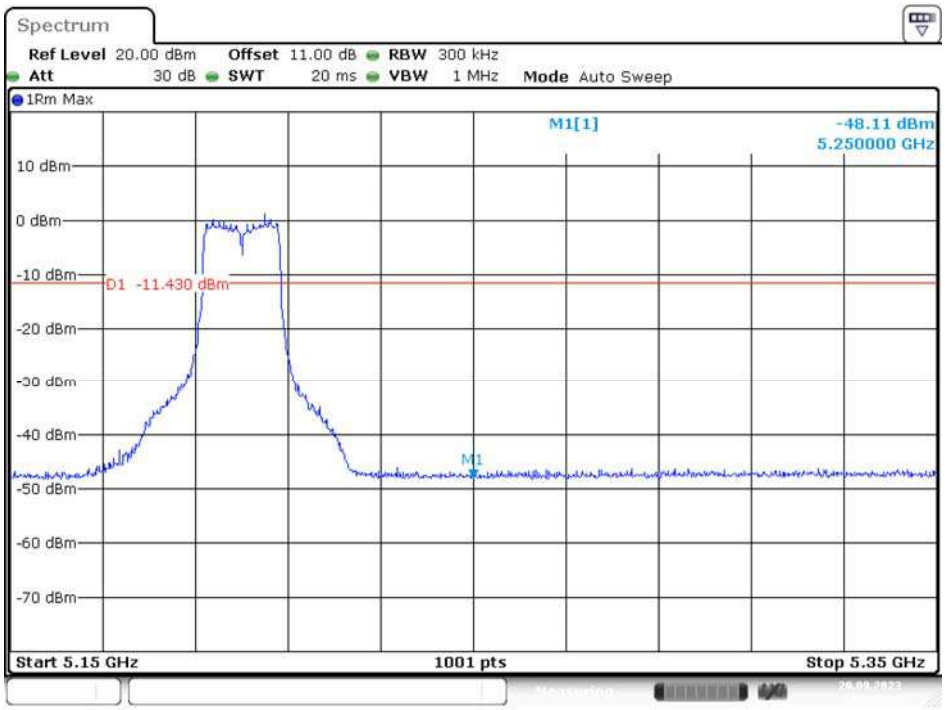
5200MHz



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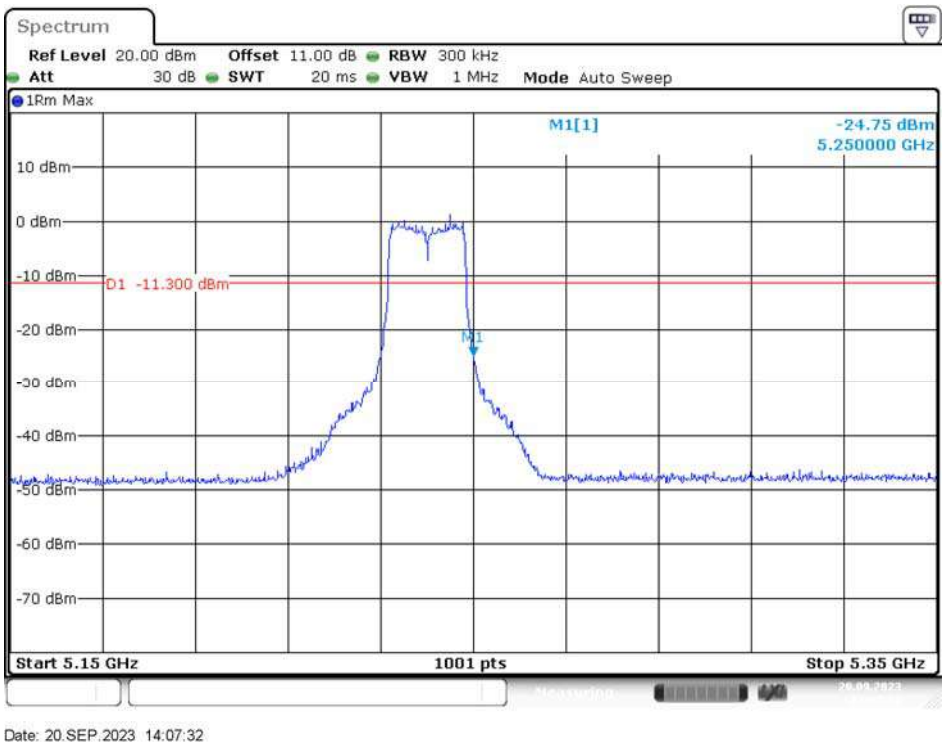
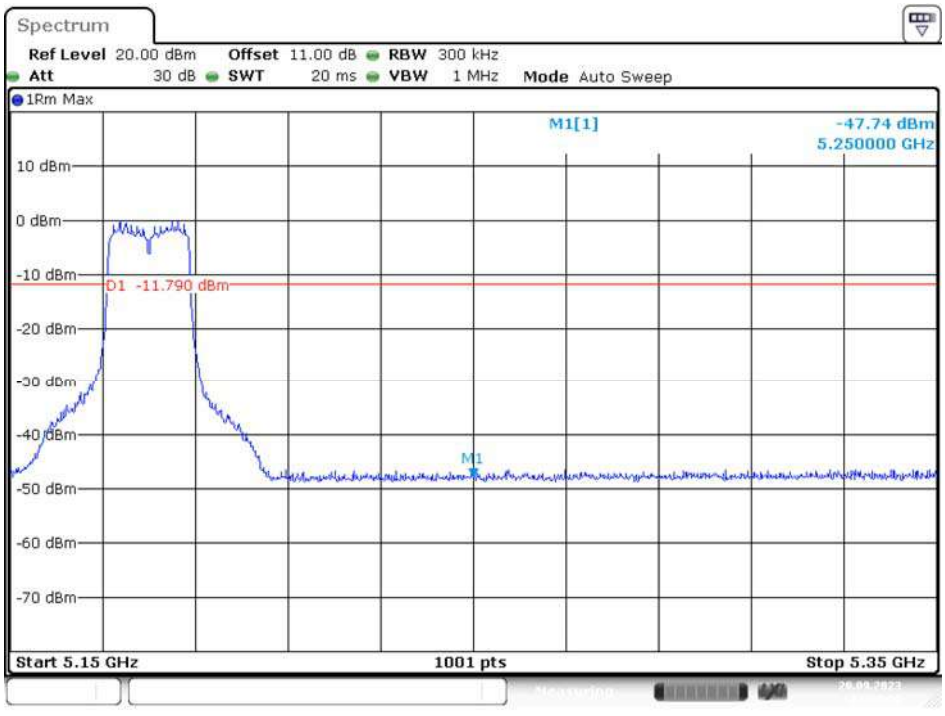
5240MHz



Date: 20.SEP.2023 14:07:32

IEEE 802.11ac VHT20 Mode / 5150 ~ 5250MHz

5180MHz



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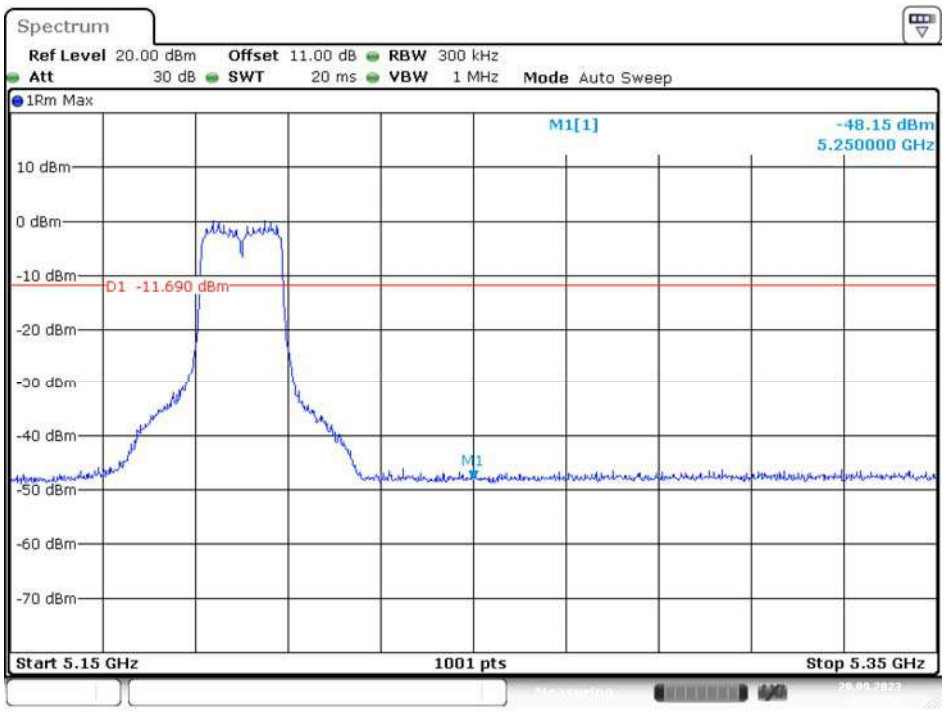
5200MHz



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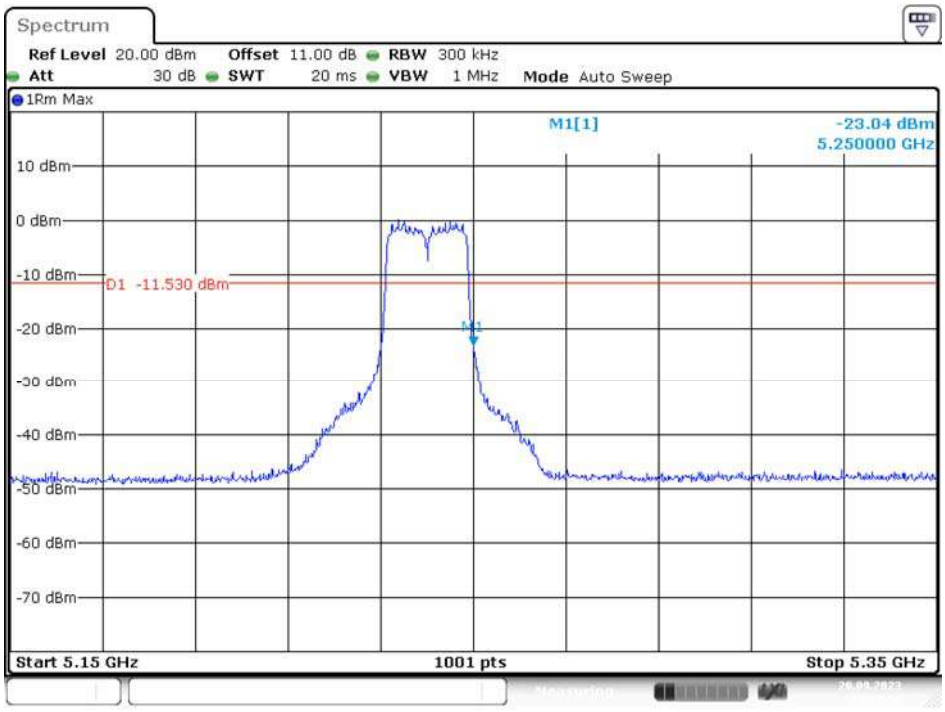
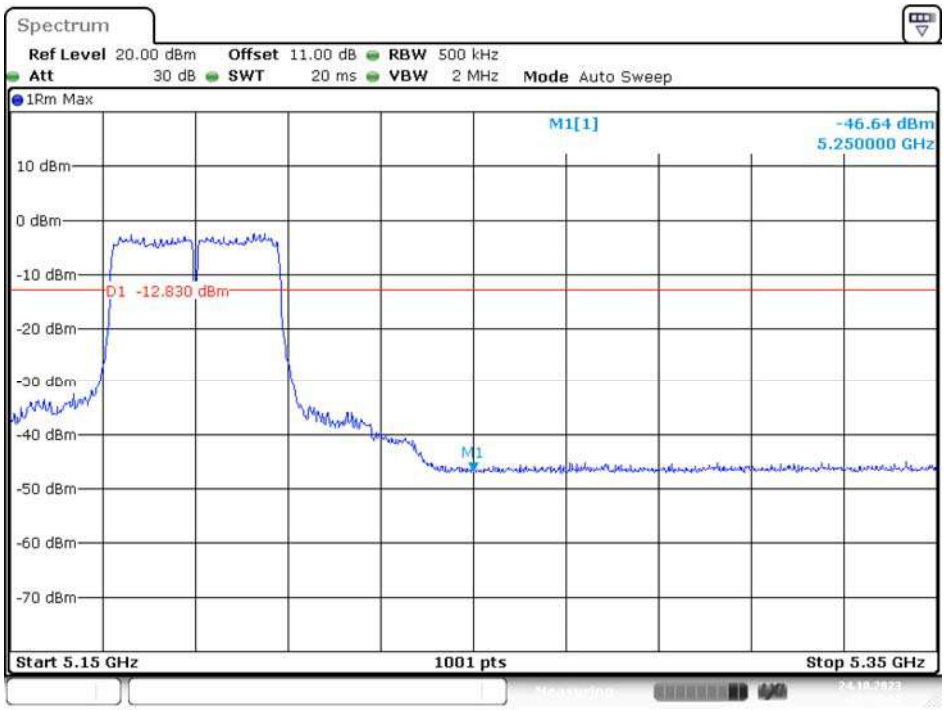
5240MHz



Date: 20.SEP.2023 14:12:55

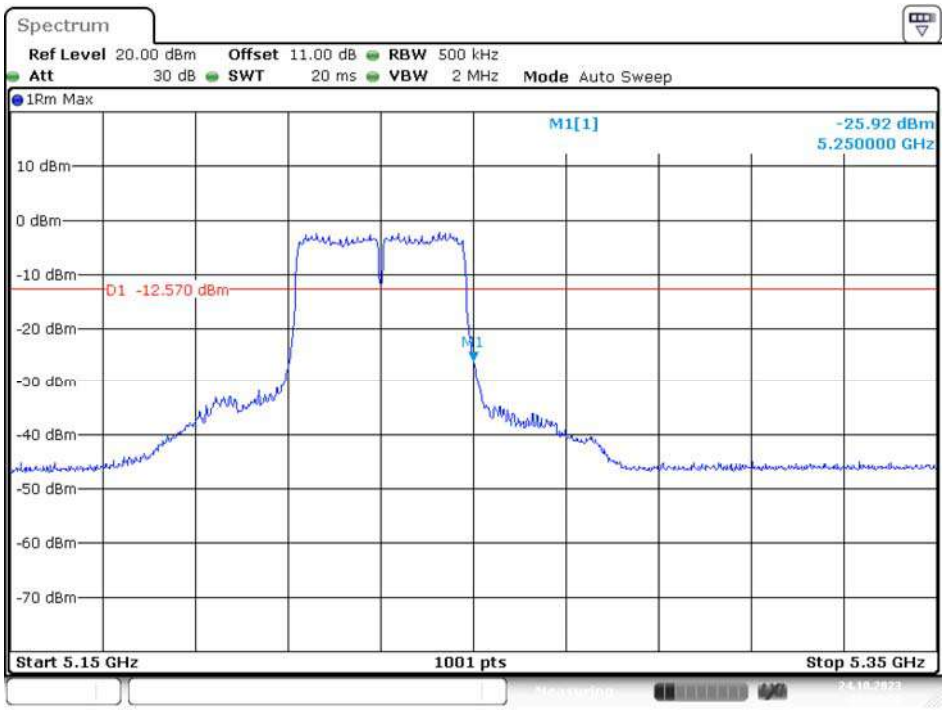
IEEE 802.11ac VHT40 Mode / 5150 ~ 5250MHz

5190MHz



Date: 24.OCT.2023 10:27:49

5230MHz



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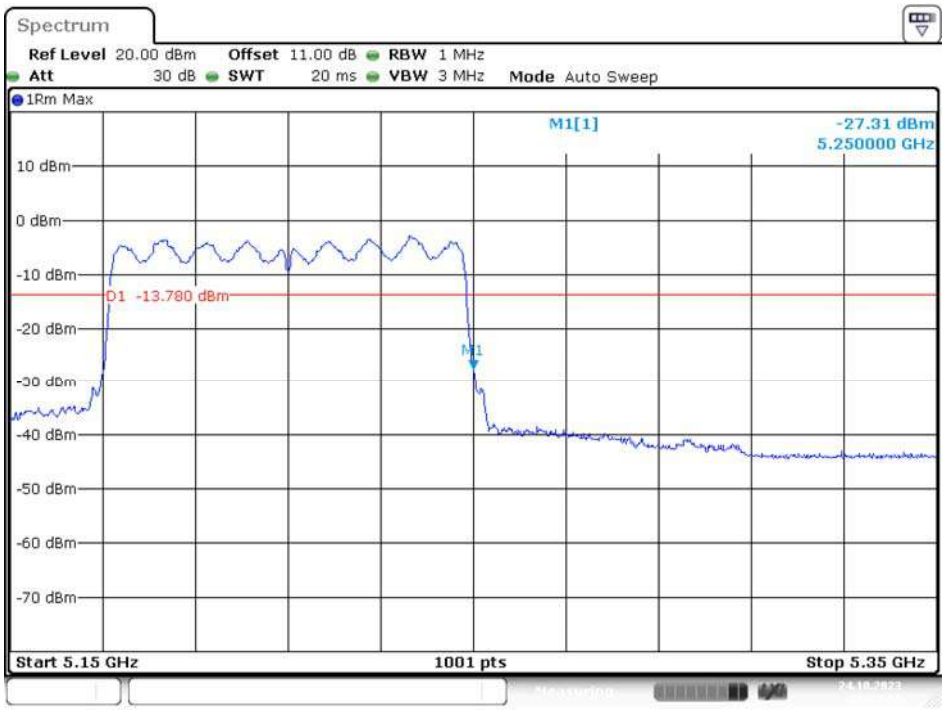
IEEE 802.11ac VHT80 Mode / 5150 ~ 5250MHz

5210MHz



Date: 24.OCT.2023 10:33:21

11 FCC §15.407(a)(e) & RSS-247 §6.2, RSS-GEN §6.7 – Emission Bandwidth And Occupied Bandwidth

11.1 Applicable Standard

As per FCC §15.407(a): The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

As per FCC §15.407(e): for equipment operating in the band 5725 – 5850 MHz, the minimum 6 dB bandwidth of U-NII devices shall be 500 kHz.

RSS-247 Clause 6.2.1.2

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

RSS-247 Clause 6.2.4.1

For equipment operating in the band 5725-5850 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.

11.2 Test Procedure

26dB Emission Bandwidth (EBW)

According to ANSI C63.10-2013 Section 12.4.1

a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Minimum Emission Bandwidth for the band 5.725-5.85 GHz

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

a) Set RBW = 100 kHz.

b) Set the video bandwidth (VBW) ≥ 3 × RBW.

c) Detector = Peak.

d) Trace mode = max hold.

e) Sweep = auto couple.

f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

99% Occupied Bandwidth:

According to ANSI C63.10-2013 Section 12.4.2&6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

d) Step a) through step c) might require iteration to adjust within the specified range.

e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

11.3 Test Results

Test mode: Transmitting

5150-5250MHz

UNII Band	Mode	Channel	Frequency (MHz)	26dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)
UNII-1	802.11a	36	5180	21.28	16.62
		40	5200	21.04	16.62
		48	5240	21.44	16.66
	802.11ac 20	36	5180	22.24	17.70
		40	5200	22.56	17.66
		48	5240	22.36	17.70
	802.11ac 40	38	5190	43.28	36.60
		46	5230	43.20	36.52
	802.11ac 80	42	5210	82.72	75.76

The 99% Occupied Bandwidth have not fallen into the band 5250-5350MHz, please refer to the test plots of 99% Occupied Bandwidth.

5250-5350MHz

UNII Band	Mode	Channel	Frequency (MHz)	26dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)
UNII-2A	802.11a	52	5260	21.32	16.66
		60	5300	20.96	16.62
		64	5320	21.20	16.62
	802.11ac 20	52	5260	22.44	17.58
		60	5300	21.48	17.70
		64	5320	22.36	17.66
	802.11ac 40	54	5270	42.96	36.52
		62	5310	42.88	36.44
	802.11ac 80	58	5290	83.04	75.76

5470-5725MHz

UNII Band	Mode	Channel	Frequency (MHz)	26dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)
UNII-2C	802.11a	100	5500	21.16	16.62
		116	5580	21.04	16.70
		140	5700	21.64	16.58
	802.11ac 20	100	5500	21.88	17.62
		116	5580	22.00	17.66
		140	5700	22.16	17.74
	802.11ac 40	102	5510	42.88	36.60
		118	5590	42.88	36.60
		134	5670	43.20	36.60
	802.11ac 80	106	5530	82.88	75.60
		122	5610	82.88	75.76

5725-5850MHz

UNII Band	Mode	Channel	Frequency (MHz)	6dB Emission Bandwidth (MHz)	99% Emission Bandwidth (MHz)	Limit (kHz)	Result
UNII-3	802.11a	149	5745	16.36	16.66	≥500	PASS
		157	5785	16.36	16.58	≥500	PASS
		165	5825	16.32	16.66	≥500	PASS
	802.11ac 20	149	5745	17.32	17.82	≥500	PASS
		157	5785	17.32	17.62	≥500	PASS
		165	5825	17.08	17.66	≥500	PASS
	802.11ac 40	151	5755	35.76	36.60	≥500	PASS
		159	5795	35.84	36.68	≥500	PASS
	802.11ac 80	155	5775	75.20	75.76	≥500	PASS

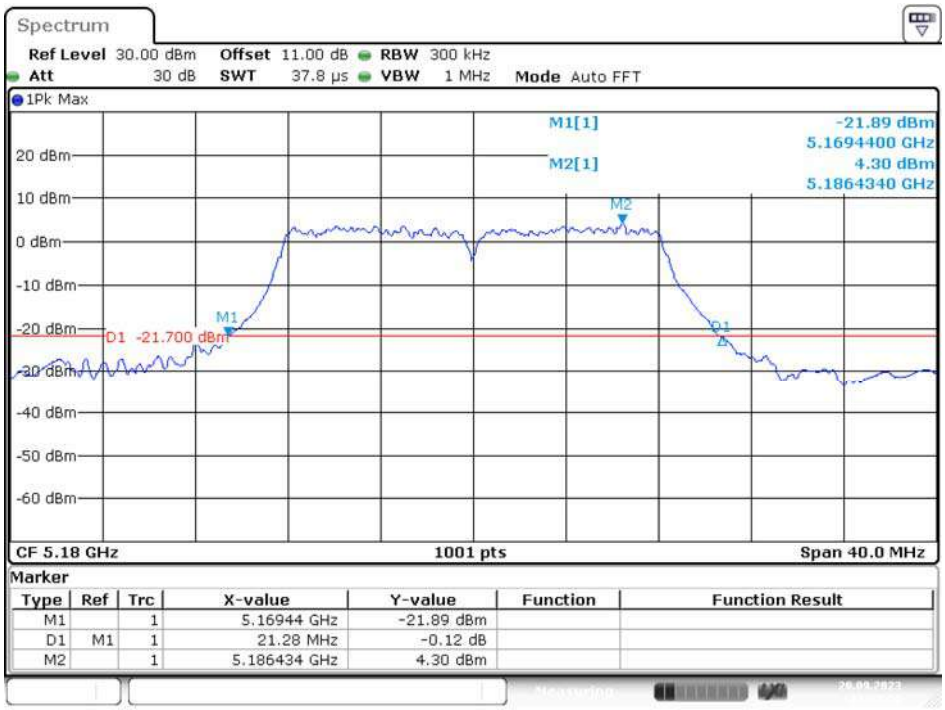
The 99% Occupied Bandwidth have not fallen into the band 5470-5725MHz, please refer to the test plots of 99% Occupied Bandwidth.

Please refer to the following plots

Transmitting Mode:

UNII-1 Band I / BW 26dBc
IEEE 802.11a Mode / 5150 ~ 5250MHz

5180MHz



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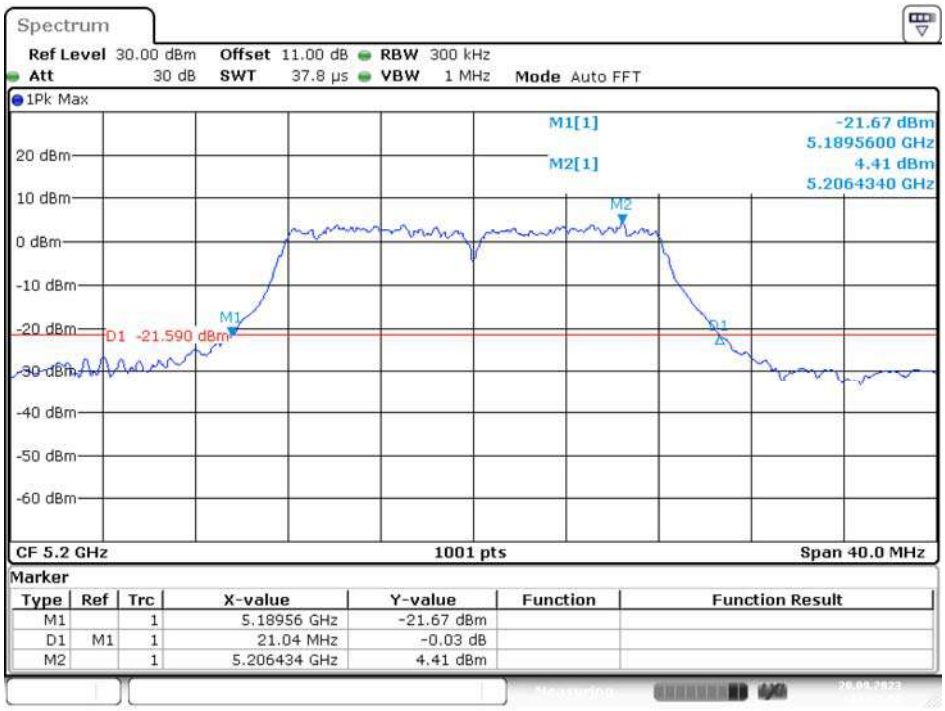
5200MHz



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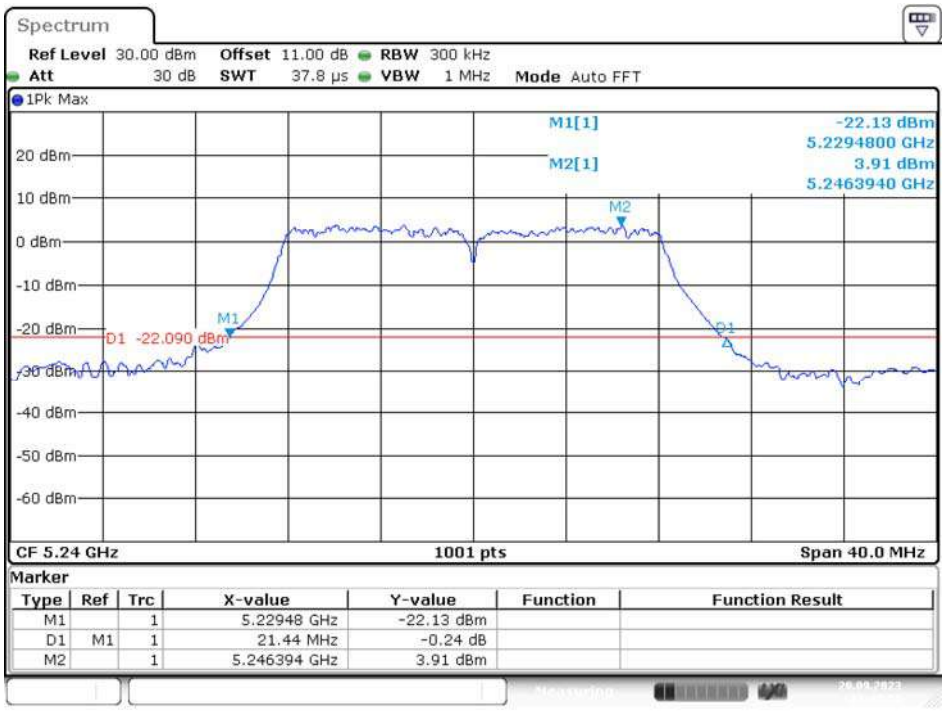
5240MHz



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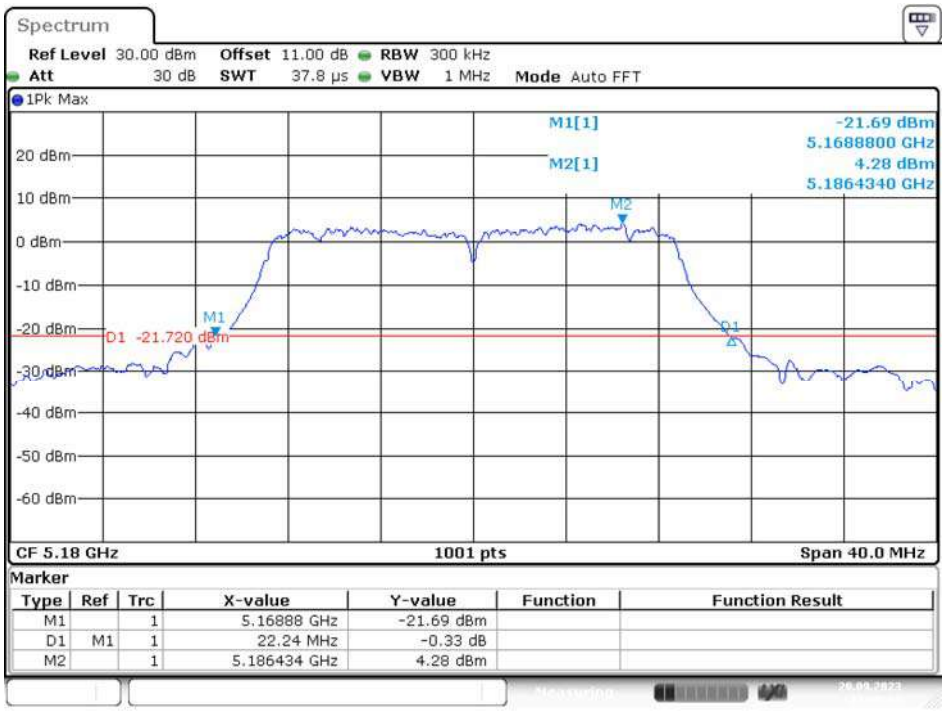
IEEE 802.11ac VHT20 Mode / 5150 ~ 5250MHz

5180MHz



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