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-T31W
IC: 10741A-T31W

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

Report Producer : Lynette Wen

Report Number : RXZ230630065RF03

Report Date : 2023-08-07

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Revision History

Revision	No.	Report Number	Issue Date	Description	Author/ Revised by
0.0	RXZ230630065	RXZ230630065RF03	2023-08-07	Original Report	Lynette Wen

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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-T31W
HVIN	T31W
Series Model Name	N/A
Model Discrepancy	N/A
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 Average Output Power (Conducted)	5150-5250 MHz: 13.23 dBm 5250-5350 MHz: 13.74 dBm 5470-5725 MHz: 15.82 dBm 5725-5850 MHz: 15.99 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, 0.6A ☒ PoE: I/P: 100-240V 50~60Hz 0.67A , O/P: 55Vdc, 0.6A
	☐ DC Type ☐ Battery ☐ DC Power Supply ☐ External from USB Cable, 5Vdc
	☐ Host System
Received Date	2023/7/3
Date of Test	2023/7/5-2023/8/5

*All measurement and test data in this report was gathered from production sample serial number: RXZ230630065-01(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 ℃
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	2023/7/7~2023/8/2	24.1~25.1	45~60	1010	Jing
Radiation Spurious Emissions	2023/7/5~2023/8/5	22.4~25.6	50~66	1010	Aaron
26dB attenuated below the channel power	2023/8/2	24.8	60	1010	Jing
Emission Bandwidth And Occupied Bandwidth	2023/7/5	25.3	50	1010	Jing
Maximum Output Power	2023/7/5	25.3	50	1010	Jing
Power Spectral Density	2023/7/5	25.3	50	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 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 EUT was programmed to be in continuously transmitting mode.

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 HT20 / ac VHT40	38	5190	46
		46	5230	46
UNII-2A		54	5270	46
		62	5310	46
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	43
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-T31W + Adapter

Mode 2: SIP-T31W + PoE

Worst case is the SIP-T31W + Adapter.

Mode 1: SIP-T31W + Adapter tested all measure item.

Mode 2: SIP-T31W + 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	YLPS050600E1-US
NB	DELL	E6410
AP Router	NETGEAR	R7800
PoE Adapter	Cisco	SB-PWR-INJ2
Handset	BACL	N/A
Handset	Yealink	N/A

2.6 External Cable List and Details

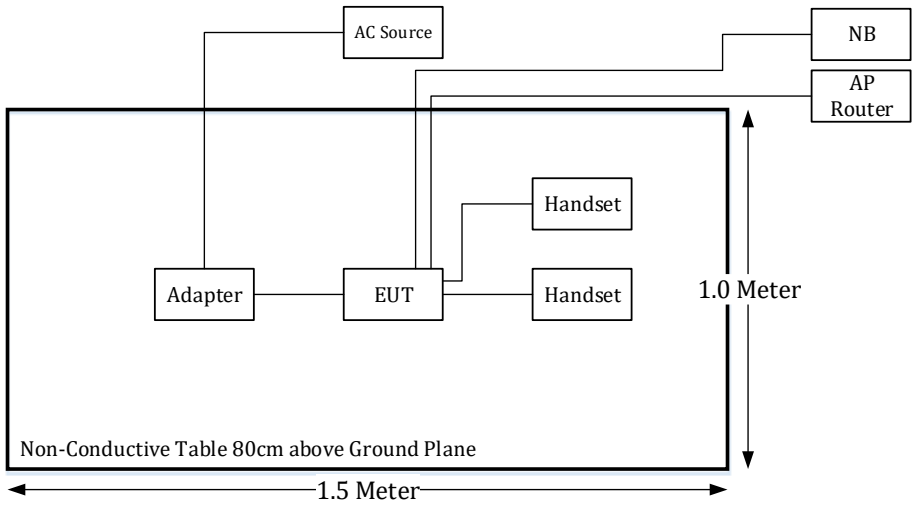
Description	Manufacturer	Model Number
RJ-45 Cable	BACL	8m
RJ-45 Cable	BACL	8m
RJ-11 Cable	BACL	0.5m
RJ-11 Cable	BACL	0.5m

2.7 Block Diagram of Test Setup

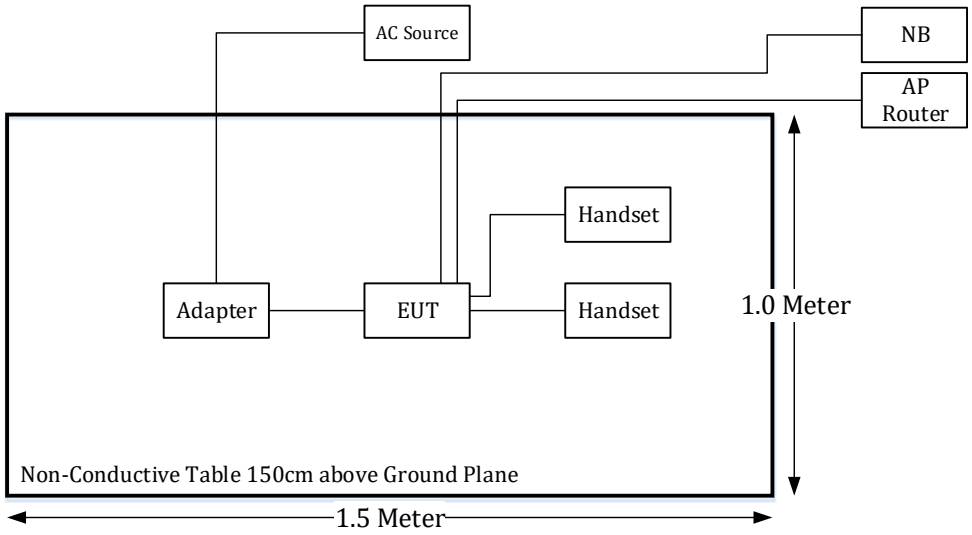
See test photographs attached in setup photos for the actual connections between EUT and support equipment.

Radiation:

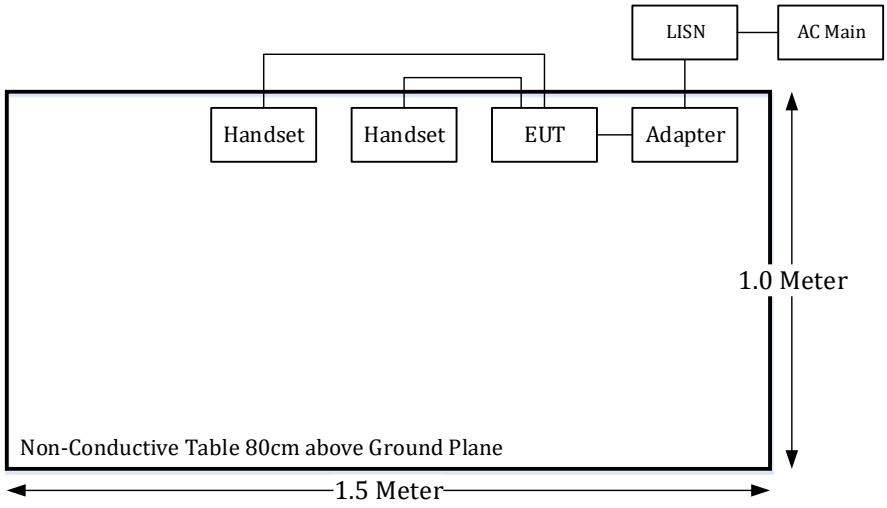
Below 1GHz:



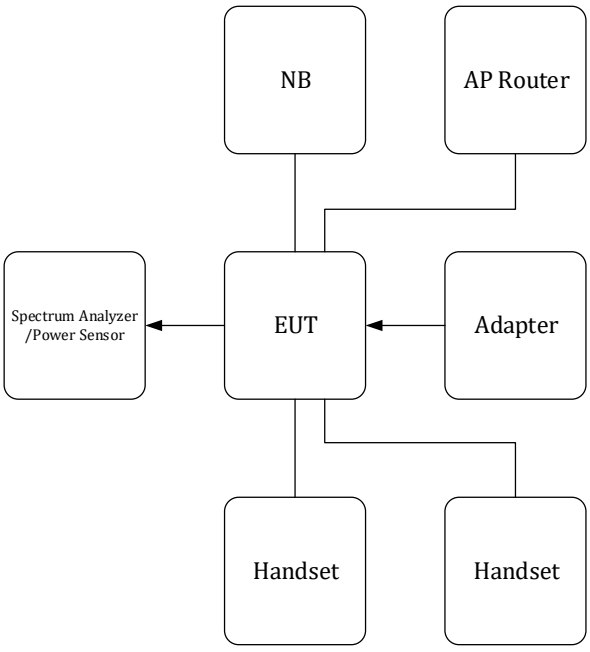
Above 1GHz:



Conduction:



Conducted:



2.8 Duty Cycle

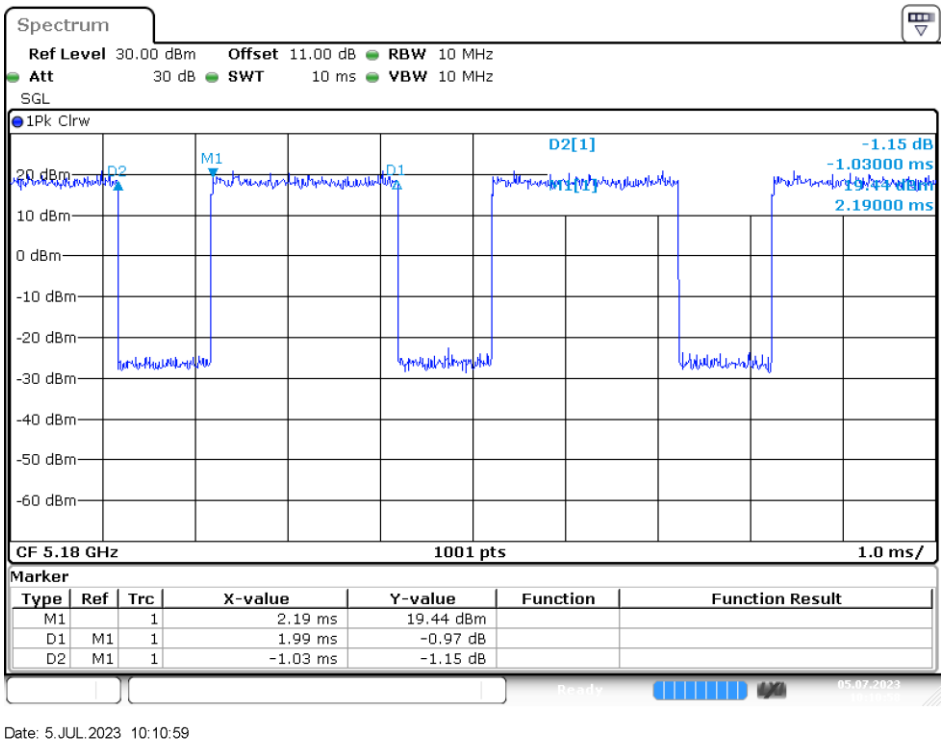
The duty cycle as below:

Radio Mode	On Time (ms)	Off Time (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T VBW Setting (kHz)
802.11a	1.99	1.03	66	1.80	0.50
802.11ac 20	1.86	1.04	64	1.94	0.54
802.11ac 40	0.905	1.035	47	3.28	1.10
802.11ac 80	0.425	1.03	29	5.38	2.35

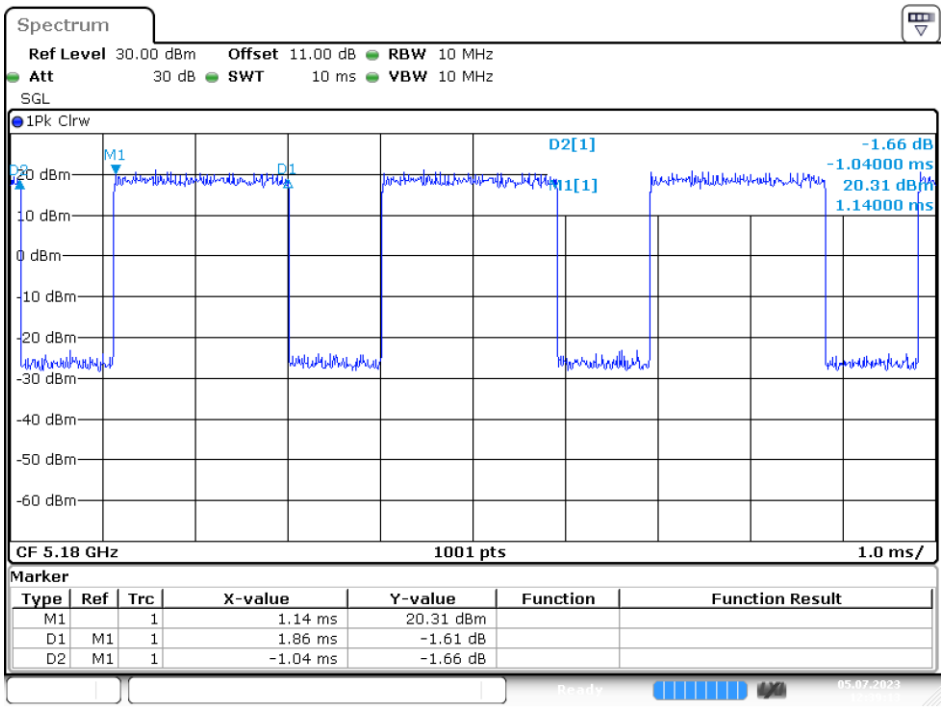
Note: Duty Cycle Correction Factor = 10*log(1/duty cycle)

Please refer to the following plots.

802.11a Mode

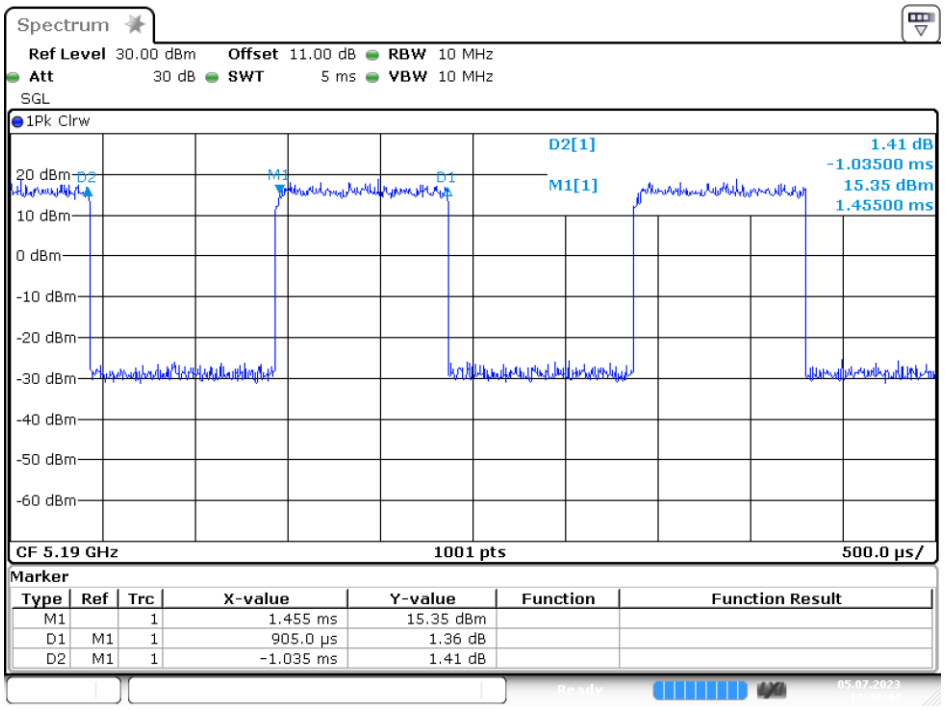


802.11ac VHT20 Mode



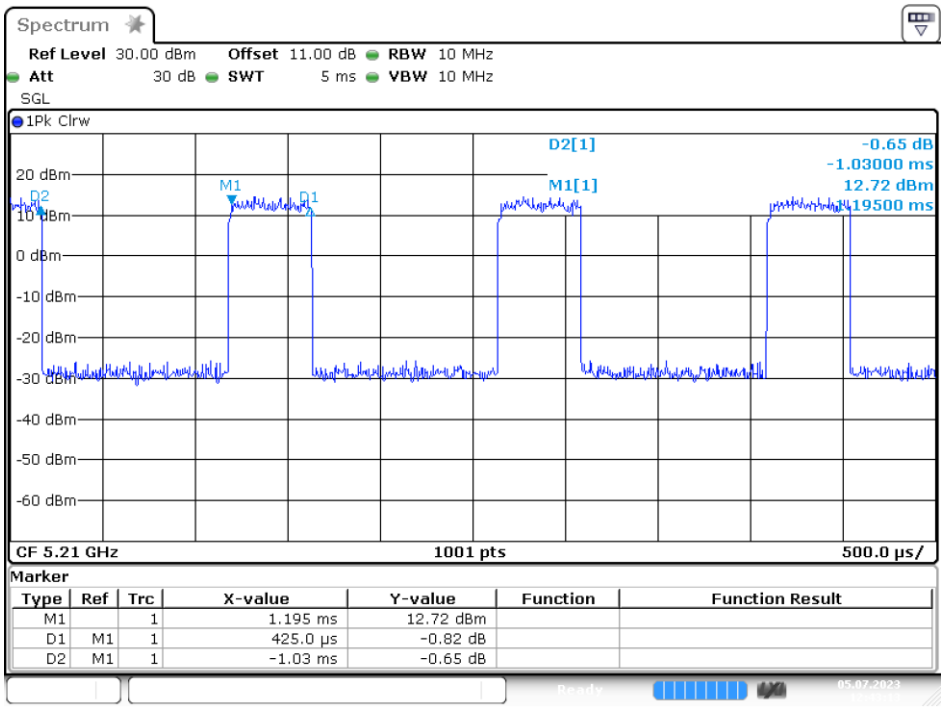
Date: 5.JUL.2023 12:39:14

802.11ac VHT40 Mode



Date: 5.JUL.2023 12:40:44

802.11ac VHT80 Mode



Date: 5.JUL.2023 12:43:13

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	2022/8/18	2023/8/17
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	ESR7	101419	2022/11/2	2023/11/1
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
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	0.85	200	79.43	17.7	58.88
WIFI 5GHz	5180-5825	16	1.53	200	39.81	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	8.16	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 = 16 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	Model	Antenna Type	Antenna Gain (dBi)	Input impedance
YEALINK(XIAMEN) NETWORK TECHNOLOGY CO.,LTD.	5GHz	PCB Antenna	5150~5250 MHz: 1.16 5250~5350 MHz: 1.26 5470~5725 MHz: 1.53 5725~5850 MHz: 0.71	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.

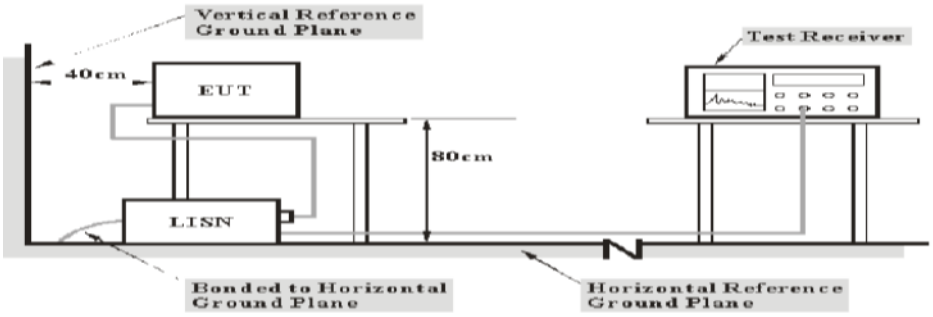
For an EUT that connects to the AC power lines indirectly, through another device, the requirement for compliance with the limits in table 4 shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at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



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

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

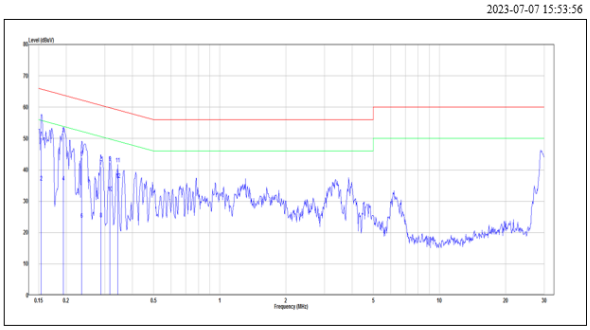
8.6 Test Results

Test Mode: Transmitting

Main: AC120 V, 60 Hz (Worst case is 802.11ac 80 Mode, 5290MHz)

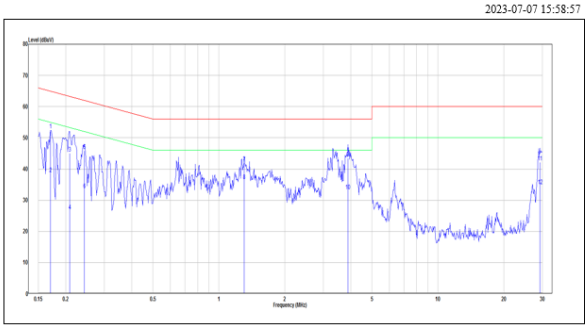
Adapter Mode:

Line



No.	Frequency	Reading	Correct	Result	Limit	Over limit	Remark	Phase
	(MHz)	dBuV	Factor(dB)	dBuV	dBuV	(dB)		
1	0.154	30.76	19.50	50.26	65.78	-15.52	QP	Line
2	0.154	16.61	19.50	36.11	55.78	-19.67	Average	Line
3	0.194	31.94	19.49	51.43	63.84	-12.41	QP	Line
4	0.194	16.59	19.49	36.08	53.84	-17.76	Average	Line
5	0.235	24.50	19.51	44.01	62.26	-18.25	QP	Line
6	0.235	4.62	19.51	24.13	52.26	-28.13	Average	Line
7	0.288	21.47	19.53	41.00	60.59	-19.59	QP	Line
8	0.288	4.83	19.53	24.36	50.59	-26.23	Average	Line
9	0.317	22.78	19.54	42.32	59.80	-17.48	QP	Line
10	0.317	13.16	19.54	32.70	49.80	-17.10	Average	Line
11	0.343	22.37	19.55	41.92	59.13	-17.21	QP	Line
12	0.343	17.23	19.55	36.78	49.13	-12.35	Average	Line

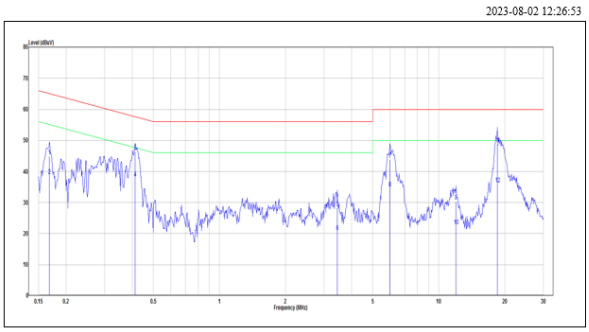
Neutral



No.	Frequency	Reading	Correct	Result	Limit	Over limit	Remark	Phase
	(MHz)	dBuV	Factor(dB)	dBuV	dBuV	(dB)		
1	0.170	33.00	19.50	52.50	64.94	-12.44	QP	Neutral
2	0.170	18.98	19.50	38.48	54.94	-16.46	Average	Neutral
3	0.208	25.55	19.50	45.05	63.27	-18.22	QP	Neutral
4	0.208	7.12	19.50	26.62	53.27	-26.65	Average	Neutral
5	0.243	26.39	19.52	45.91	62.00	-16.09	QP	Neutral
6	0.243	13.73	19.52	33.25	52.00	-18.75	Average	Neutral
7	1.303	21.86	19.93	41.79	56.00	-14.21	QP	Neutral
8	1.303	16.25	19.93	36.18	46.00	-9.82	Average	Neutral
9	3.881	23.27	20.13	43.40	56.00	-12.60	QP	Neutral
10	3.881	12.83	20.13	32.96	46.00	-13.04	Average	Neutral
11	29.216	21.42	20.75	42.17	60.00	-17.83	QP	Neutral
12	29.216	13.93	20.75	34.68	50.00	-15.32	Average	Neutral

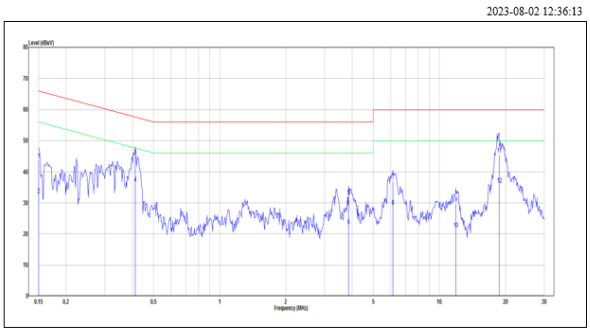
PoE Mode:

Line



No.	Frequency	Reading	Correct	Result	Limit	Over limit	Remark	Phase
	(MHz)	dBuV	Factor(dB)	dBuV	dBuV	(dB)		
1	0.168	25.45	19.50	44.95	65.08	-20.13	QP	Line
2	0.168	19.20	19.50	38.70	55.08	-16.38	Average	Line
3	0.413	26.76	19.58	46.34	57.59	-11.25	QP	Line
4	0.413	18.18	19.58	37.76	47.59	-9.83	Average	Line
5	3.454	8.31	20.11	28.42	56.00	-27.58	QP	Line
6	3.454	0.54	20.11	20.65	46.00	-25.35	Average	Line
7	5.993	23.82	20.14	43.96	60.00	-16.04	QP	Line
8	5.993	14.40	20.14	34.54	50.00	-15.46	Average	Line
9	11.996	10.14	20.18	30.32	60.00	-29.68	QP	Line
10	11.996	2.19	20.18	22.38	50.00	-27.62	Average	Line
11	18.524	28.33	20.41	48.74	60.00	-11.26	QP	Line
12	18.524	15.47	20.41	35.88	50.00	-14.12	Average	Line

Neutral



No.	Frequency	Reading	Correct	Result	Limit	Over limit	Remark	Phase
	(MHz)	dBuV	Factor(dB)	dBuV	dBuV	(dB)		
1	0.150	24.42	19.50	43.92	66.00	-22.08	QP	Neutral
2	0.150	13.15	19.50	32.65	56.00	-23.35	Average	Neutral
3	0.413	25.41	19.59	45.00	57.59	-12.59	QP	Neutral
4	0.413	16.64	19.59	36.23	47.59	-11.36	Average	Neutral
5	3.860	11.90	20.13	32.03	56.00	-23.97	QP	Neutral
6	3.860	2.54	20.13	22.66	46.00	-23.34	Average	Neutral
7	6.153	16.77	20.16	36.93	60.00	-23.07	QP	Neutral
8	6.153	8.78	20.16	28.93	50.00	-21.07	Average	Neutral
9	11.870	9.66	20.21	29.87	60.00	-30.13	QP	Neutral
10	11.870	1.43	20.21	21.64	50.00	-28.36	Average	Neutral
11	18.721	25.17	20.48	45.65	60.00	-14.35	QP	Neutral
12	18.721	15.41	20.48	35.89	50.00	-14.11	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;

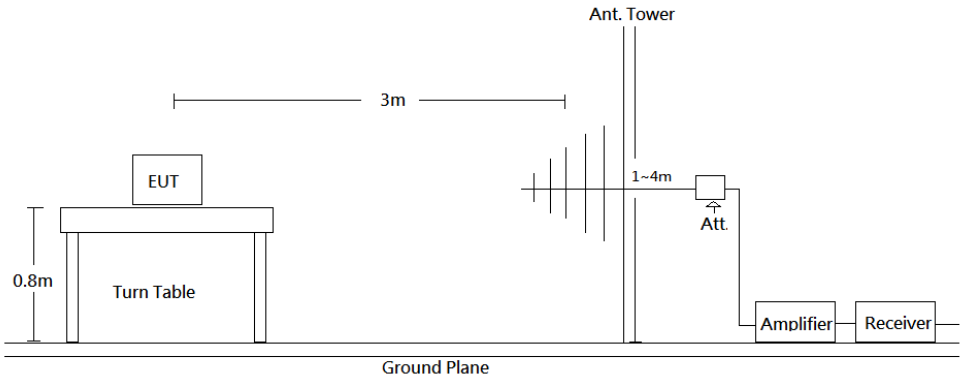
15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;

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

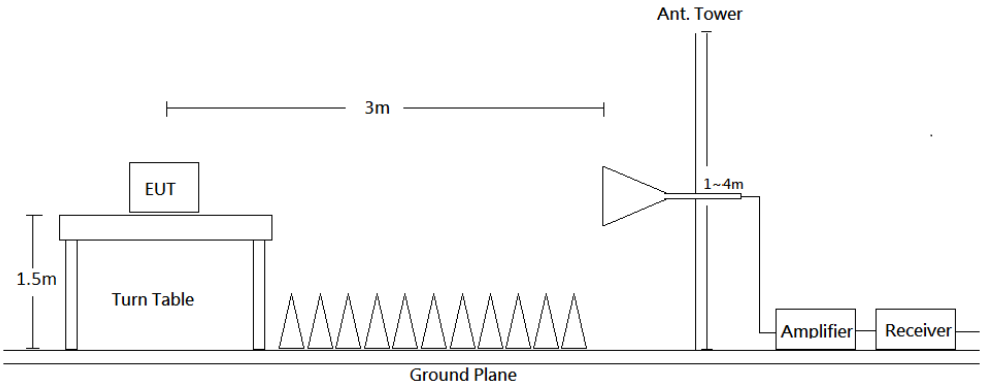
-27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

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

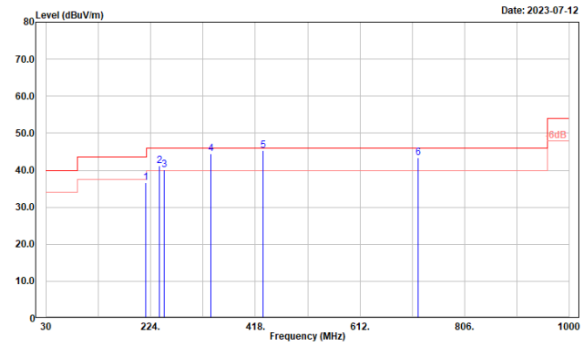
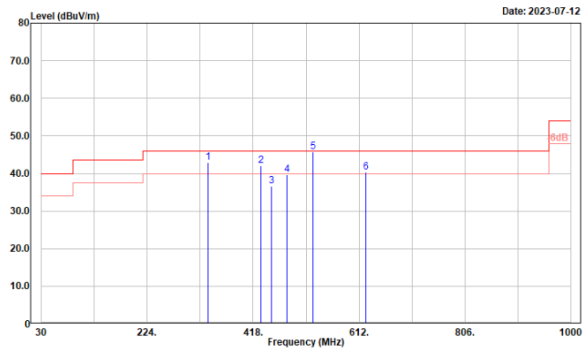
Test Mode: Transmitting

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

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

30MHz-1GHz:

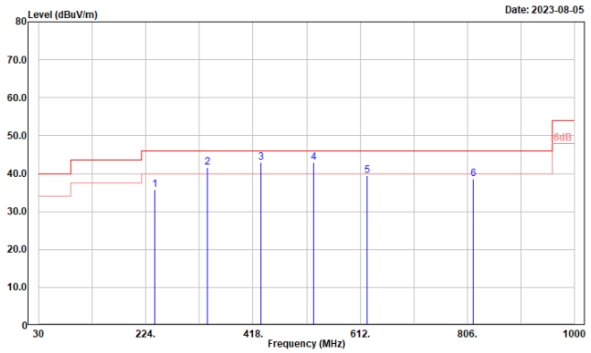
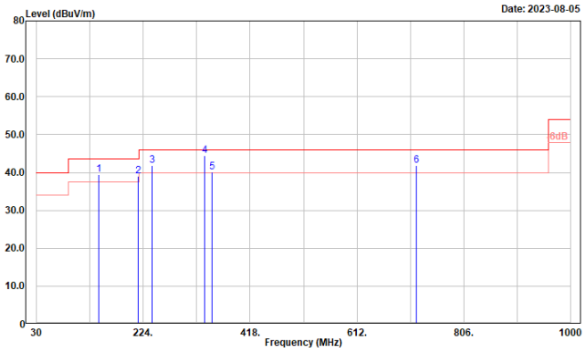
Adapter Mode:

Horizontal	Vertical
	

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
215.456	47.37	-10.66	36.71	43.50	-6.79	100	354	QP
239.730	50.55	-9.39	41.16	46.00	-4.84	100	338	QP
248.469	49.39	-9.37	40.02	46.00	-5.98	100	103	QP
335.856	50.75	-6.24	44.51	46.00	-1.49	100	10	QP
431.982	48.85	-3.45	45.40	46.00	-0.60	100	342	QP
720.360	41.34	1.99	43.33	46.00	-2.67	100	10	QP

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
335.856	49.18	-6.24	42.94	46.00	-3.06	100	44	QP
431.982	45.47	-3.45	42.02	46.00	-3.98	100	172	QP
452.372	39.55	-2.90	36.65	46.00	-9.35	100	145	QP
479.560	41.88	-2.10	39.78	46.00	-6.22	100	130	QP
528.108	47.31	-1.65	45.66	46.00	-0.34	100	360	QP
624.234	39.95	0.33	40.28	46.00	-5.72	100	52	QP

PoE Mode:

Horizontal	Vertical
	

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
239.730	45.15	-9.39	35.76	46.00	-10.24	100	360	QP
335.856	47.83	-6.24	41.59	46.00	-4.41	100	332	QP
431.982	46.41	-3.45	42.96	46.00	-3.04	100	88	QP
528.108	44.67	-1.65	43.02	46.00	-2.98	100	66	QP
624.234	39.12	0.33	39.45	46.00	-6.55	100	254	QP
816.487	34.60	3.97	38.57	46.00	-7.43	100	360	QP

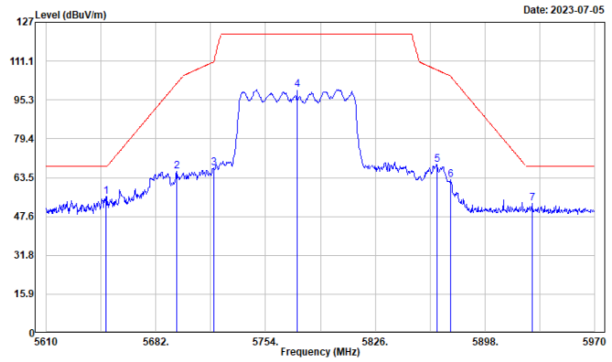
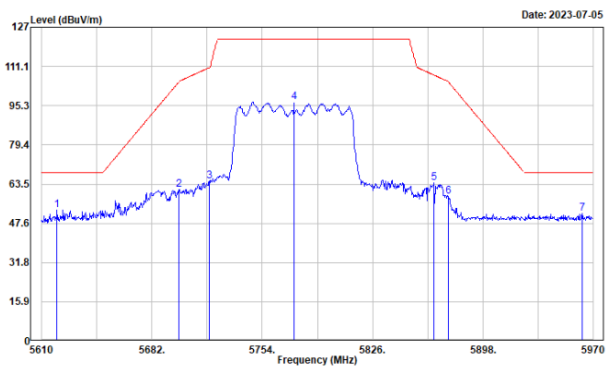
Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
143.604	48.42	-8.91	39.51	43.50	-3.99	100	280	QP
215.456	49.64	-10.66	38.98	43.50	-4.52	100	271	QP
239.730	51.31	-9.39	41.92	46.00	-4.08	100	276	QP
335.856	50.68	-6.24	44.44	46.00	-1.56	100	300	QP
348.479	45.99	-5.97	40.02	46.00	-5.98	100	307	QP
720.360	39.87	1.99	41.86	46.00	-4.14	100	319	QP

Level = Reading + Factor.

Margin = Level – Limit.

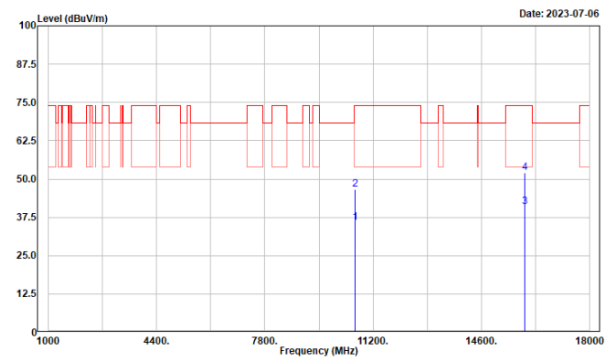
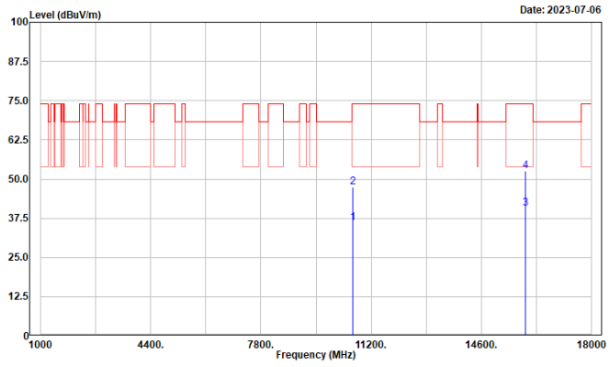
Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Band Edge:

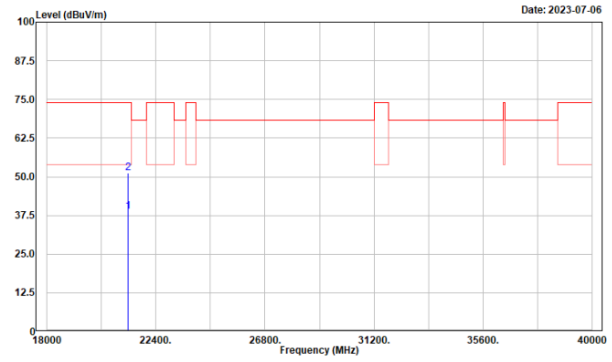
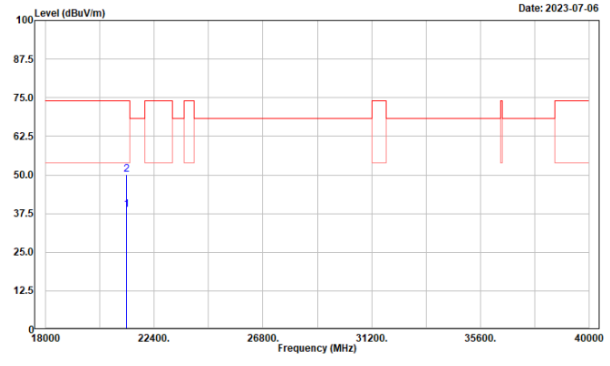
Horizontal	Vertical
	

(Worst case is 802.11a Mdoe, 5320MHz)

1GHz-18GHz:

Horizontal	Vertical
	

18GHz-40GHz:

Horizontal	Vertical
	

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	45.10	-4.26	40.84	54.00	-13.16	103	344	Average
5149.900	62.14	-4.26	57.88	74.00	-16.12	103	344	Peak
5180.000	98.10	-4.38	93.72			103	344	Average
5180.000	108.44	-4.38	104.06			103	344	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10360.000	40.47	5.42	45.89	68.20	-22.31	151	25	Peak
15540.000	29.89	8.54	38.43	54.00	-15.57	156	358	Average
15540.000	40.96	8.54	49.50	74.00	-24.50	156	358	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5149.500	45.33	-4.26	41.07	54.00	-12.93	111	59	Average
5149.500	62.32	-4.26	58.06	74.00	-15.94	111	59	Peak
5180.000	97.48	-4.38	93.10			111	59	Average
5180.000	107.74	-4.38	103.36			111	59	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10360.000	40.72	5.42	46.14	68.20	-22.06	152	79	Peak
15540.000	29.88	8.54	38.42	54.00	-15.58	155	177	Average
15540.000	40.35	8.54	48.89	74.00	-25.11	155	177	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	97.59	-4.47	93.12			142	302	Average
5200.000	107.96	-4.47	103.49			142	302	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10400.000	40.52	5.52	46.04	68.20	-22.16	153	338	Peak
15600.000	29.88	8.70	38.58	54.00	-15.42	151	14	Average
15600.000	41.28	8.70	49.98	74.00	-24.02	151	14	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5200.000	97.90	-4.47	93.43			228	98	Average
5200.000	107.85	-4.47	103.38			228	98	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10400.000	41.96	5.52	47.48	68.20	-20.72	151	145	Peak
15600.000	30.01	8.70	38.71	54.00	-15.29	152	165	Average
15600.000	42.48	8.70	51.18	74.00	-22.82	152	165	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	98.19	-4.52	93.67			114	304	Average
5240.000	108.08	-4.52	103.56			114	304	Peak
5363.964	42.97	-4.98	37.99	54.00	-16.01	114	304	Average
5363.964	56.13	-4.98	51.15	74.00	-22.85	114	304	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10480.000	41.10	5.78	46.88	68.20	-21.32	157	55	Peak
15720.000	29.26	9.29	38.55	54.00	-15.45	152	252	Average
15720.000	40.26	9.29	49.55	74.00	-24.45	152	252	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5240.000	98.30	-4.52	93.78			211	92	Average
5240.000	108.67	-4.52	104.15			211	92	Peak
5412.393	42.99	-5.22	37.77	54.00	-16.23	211	92	Average
5412.393	55.83	-5.22	50.61	74.00	-23.39	211	92	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10480.000	41.35	5.78	47.13	68.20	-21.07	154	60	Peak
15720.000	29.12	9.29	38.41	54.00	-15.59	151	49	Average
15720.000	40.89	9.29	50.18	74.00	-23.82	151	49	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

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)	(°)	
5149.099	45.13	-4.26	40.87	54.00	-13.13	126	303	Average
5149.099	63.76	-4.26	59.50	74.00	-14.50	126	303	Peak
5180.000	97.42	-4.38	93.04			126	303	Average
5180.000	107.58	-4.38	103.20			126	303	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10360.000	40.43	5.42	45.85	68.20	-22.35	150	309	Peak
15540.000	29.93	8.54	38.47	54.00	-15.53	153	325	Average
15540.000	41.43	8.54	49.97	74.00	-24.03	153	325	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5148.699	45.13	-4.26	40.87	54.00	-13.13	228	100	Average
5148.699	62.77	-4.26	58.51	74.00	-15.49	228	100	Peak
5180.000	97.76	-4.38	93.38			228	100	Average
5180.000	107.83	-4.38	103.45			228	100	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10360.000	41.57	5.42	46.99	68.20	-21.21	157	124	Peak
15540.000	29.69	8.54	38.23	54.00	-15.77	151	116	Average
15540.000	40.63	8.54	49.17	74.00	-24.83	151	116	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	97.41	-4.47	92.94			114	302	Average
5200.000	107.35	-4.47	102.88			114	302	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10400.000	41.17	5.52	46.69	68.20	-21.51	152	94	Peak
15600.000	30.12	8.70	38.82	54.00	-15.18	151	14	Average
15600.000	41.67	8.70	50.37	74.00	-23.63	151	14	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5200.000	97.61	-4.47	93.14			223	99	Average
5200.000	107.67	-4.47	103.20			223	99	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10400.000	40.87	5.52	46.39	68.20	-21.81	151	212	Peak
15600.000	30.09	8.70	38.79	54.00	-15.21	158	245	Average
15600.000	41.03	8.70	49.73	74.00	-24.27	158	245	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	97.98	-4.52	93.46			148	305	Average
5240.000	107.81	-4.52	103.29			148	305	Peak
5364.785	42.95	-4.99	37.96	54.00	-16.04	148	305	Average
5364.785	56.30	-4.99	51.31	74.00	-22.69	148	305	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10480.000	40.15	5.78	45.93	68.20	-22.27	151	353	Peak
15720.000	29.33	9.29	38.62	54.00	-15.38	156	157	Average
15720.000	40.62	9.29	49.91	74.00	-24.09	156	157	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5240.000	98.51	-4.52	93.99			209	96	Average
5240.000	108.57	-4.52	104.05			209	96	Peak
5360.681	43.02	-4.96	38.06	54.00	-15.94	209	96	Average
5360.681	55.63	-4.96	50.67	74.00	-23.33	209	96	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10480.000	40.71	5.78	46.49	68.20	-21.71	156	22	Peak
15720.000	29.09	9.29	38.38	54.00	-15.62	155	187	Average
15720.000	40.66	9.29	49.95	74.00	-24.05	155	187	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

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)	(°)	
5149.500	56.75	-4.26	52.49	54.00	-1.51	258	340	Average
5149.500	72.67	-4.26	68.41	74.00	-5.59	258	340	Peak
5190.000	95.00	-4.42	90.58			258	340	Average
5190.000	104.82	-4.42	100.40			258	340	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10380.000	40.37	5.47	45.84	68.20	-22.36	155	108	Peak
15570.000	30.26	8.61	38.87	54.00	-15.13	153	360	Average
15570.000	42.00	8.61	50.61	74.00	-23.39	153	360	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5149.299	56.25	-4.26	51.99	54.00	-2.01	132	48	Average
5149.299	71.97	-4.26	67.71	74.00	-6.29	132	48	Peak
5190.000	93.42	-4.42	89.00			132	48	Average
5190.000	103.55	-4.42	99.13			132	48	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10380.000	40.87	5.47	46.34	68.20	-21.86	157	360	Peak
15570.000	30.40	8.61	39.01	54.00	-14.99	155	167	Average
15570.000	42.74	8.61	51.35	74.00	-22.65	155	167	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	94.94	-4.50	90.44			124	298	Average
5230.000	104.92	-4.50	100.42			124	298	Peak
5374.635	43.70	-5.05	38.65	54.00	-15.35	124	298	Average
5374.635	56.00	-5.05	50.95	74.00	-23.05	124	298	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10460.000	40.69	5.72	46.41	68.20	-21.79	154	220	Peak
15690.000	29.14	9.12	38.26	54.00	-15.74	154	67	Average
15690.000	40.64	9.12	49.76	74.00	-24.24	154	67	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5230.000	93.35	-4.50	88.85			134	49	Average
5230.000	103.45	-4.50	98.95			134	49	Peak
5430.040	43.38	-5.25	38.13	54.00	-15.87	134	49	Average
5430.040	56.20	-5.25	50.95	74.00	-23.05	134	49	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10460.000	41.51	5.72	47.23	68.20	-20.97	152	357	Peak
15690.000	29.22	9.12	38.34	54.00	-15.66	156	88	Average
15690.000	41.18	9.12	50.30	74.00	-23.70	156	88	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)	(°)	
5146.296	56.64	-4.25	52.39	54.00	-1.61	100	298	Average
5146.296	69.57	-4.25	65.32	74.00	-8.68	100	298	Peak
5210.000	92.55	-4.48	88.07			100	298	Average
5210.000	101.61	-4.48	97.13			100	298	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10420.000	40.25	5.58	45.83	68.20	-22.37	156	286	Peak
15630.000	29.45	8.84	38.29	54.00	-15.71	154	57	Average
15630.000	41.53	8.84	50.37	74.00	-23.63	154	57	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5149.099	56.33	-4.26	52.07	54.00	-1.93	105	47	Average
5149.099	69.25	-4.26	64.99	74.00	-9.01	105	47	Peak
5210.000	91.22	-4.48	86.74			105	47	Average
5210.000	100.01	-4.48	95.53			105	47	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10420.000	41.33	5.58	46.91	68.20	-21.29	153	1	Peak
15630.000	29.49	8.84	38.33	54.00	-15.67	150	58	Average
15630.000	40.79	8.84	49.63	74.00	-24.37	150	58	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

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)	(°)	
5114.024	42.75	-4.31	38.44	54.00	-15.56	138	303	Average
5114.024	55.58	-4.31	51.27	74.00	-22.73	138	303	Peak
5260.000	98.50	-4.55	93.95			138	303	Average
5260.000	108.43	-4.55	103.88			138	303	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10520.000	41.40	5.86	47.26	68.20	-20.94	153	354	Peak
15780.000	30.04	9.65	39.69	54.00	-14.31	157	140	Average
15780.000	42.06	9.65	51.71	74.00	-22.29	157	140	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5143.984	43.00	-4.26	38.74	54.00	-15.26	218	91	Average
5143.984	55.88	-4.26	51.62	74.00	-22.38	218	91	Peak
5260.000	98.20	-4.55	93.65			218	91	Average
5260.000	108.02	-4.55	103.47			218	91	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10520.000	40.29	5.86	46.15	68.20	-22.05	150	360	Peak
15780.000	30.06	9.65	39.71	54.00	-14.29	154	162	Average
15780.000	41.82	9.65	51.47	74.00	-22.53	154	162	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	99.67	-4.68	94.99			105	341	Average
5300.000	110.04	-4.68	105.36			105	341	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10600.000	29.80	5.93	35.73	54.00	-18.27	151	124	Average
10600.000	41.08	5.93	47.01	68.20	-21.19	151	124	Peak
15900.000	30.37	9.86	40.23	54.00	-13.77	156	10	Average
15900.000	41.68	9.86	51.54	74.00	-22.46	156	10	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5300.000	98.49	-4.68	93.81			108	154	Average
5300.000	108.88	-4.68	104.20			108	154	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10600.000	29.81	5.93	35.74	54.00	-18.26	157	131	Average
10600.000	42.94	5.93	48.87	68.20	-19.33	157	131	Peak
15900.000	30.24	9.86	40.10	54.00	-13.90	152	108	Average
15900.000	42.06	9.86	51.92	74.00	-22.08	152	108	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	98.97	-4.77	94.20			129	300	Average
5320.000	109.38	-4.77	104.61			129	300	Peak
5350.070	43.93	-4.89	39.04	54.00	-14.96	129	300	Average
5350.070	57.73	-4.89	52.84	74.00	-21.16	129	300	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10640.000	29.86	6.00	35.86	54.00	-18.14	151	139	Average
10640.000	40.52	6.00	46.52	74.00	-27.48	151	139	Peak
15960.000	30.57	10.26	40.83	54.00	-13.17	153	96	Average
15960.000	41.64	10.26	51.90	74.00	-22.10	153	96	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5320.000	99.18	-4.77	94.41			103	155	Average
5320.000	109.14	-4.77	104.37			103	155	Peak
5350.240	44.24	-4.89	39.35	54.00	-14.65	103	155	Average
5350.240	59.03	-4.89	54.14	74.00	-19.86	103	155	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10640.000	30.15	6.00	36.15	54.00	-17.85	151	59	Average
10640.000	41.30	6.00	47.30	74.00	-26.70	151	59	Peak
15960.000	30.28	10.26	40.54	54.00	-13.46	156	176	Average
15960.000	42.41	10.26	52.67	74.00	-21.33	156	176	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

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)	(°)	
5098.839	43.07	-4.34	38.73	54.00	-15.27	124	300	Average
5098.839	56.44	-4.34	52.10	74.00	-21.90	124	300	Peak
5260.000	98.21	-4.55	93.66			124	300	Average
5260.000	108.48	-4.55	103.93			124	300	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10520.000	41.37	5.86	47.23	68.20	-20.97	155	335	Peak
15780.000	29.99	9.65	39.64	54.00	-14.36	150	0	Average
15780.000	41.84	9.65	51.49	74.00	-22.51	150	0	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5131.261	42.76	-4.28	38.48	54.00	-15.52	153	207	Average
5131.261	55.62	-4.28	51.34	74.00	-22.66	153	207	Peak
5260.000	96.50	-4.55	91.95			153	207	Average
5260.000	106.39	-4.55	101.84			153	207	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10520.000	40.42	5.86	46.28	68.20	-21.92	154	80	Peak
15780.000	29.98	9.65	39.63	54.00	-14.37	151	308	Average
15780.000	41.60	9.65	51.25	74.00	-22.75	151	308	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	98.52	-4.68	93.84			119	299	Average
5300.000	108.53	-4.68	103.85			119	299	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10600.000	29.90	5.93	35.83	54.00	-18.17	151	25	Average
10600.000	41.30	5.93	47.23	68.20	-20.97	151	25	Peak
15900.000	30.42	9.86	40.28	54.00	-13.72	156	274	Average
15900.000	42.20	9.86	52.06	74.00	-21.94	156	274	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5300.000	98.49	-4.68	93.81			109	154	Average
5300.000	108.52	-4.68	103.84			109	154	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10600.000	30.06	5.93	35.99	54.00	-18.01	152	282	Average
10600.000	41.58	5.93	47.51	68.20	-20.69	152	282	Peak
15900.000	30.47	9.86	40.33	54.00	-13.67	156	141	Average
15900.000	42.01	9.86	51.87	74.00	-22.13	156	141	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	99.17	-4.77	94.40			131	301	Average
5320.000	109.25	-4.77	104.48			131	301	Peak
5352.963	44.31	-4.92	39.39	54.00	-14.61	131	301	Average
5352.963	60.47	-4.92	55.55	74.00	-18.45	131	301	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10640.000	29.86	6.00	35.86	54.00	-18.14	154	193	Average
10640.000	42.14	6.00	48.14	74.00	-25.86	154	193	Peak
15960.000	30.39	10.26	40.65	54.00	-13.35	149	279	Average
15960.000	42.23	10.26	52.49	74.00	-21.51	149	279	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5320.000	98.97	-4.77	94.20			107	155	Average
5320.000	108.96	-4.77	104.19			107	155	Peak
5353.644	44.74	-4.92	39.82	54.00	-14.18	107	155	Average
5353.644	60.27	-4.92	55.35	74.00	-18.65	107	155	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10640.000	30.25	6.00	36.25	54.00	-17.75	154	81	Average
10640.000	41.11	6.00	47.11	74.00	-26.89	154	81	Peak
15960.000	30.32	10.26	40.58	54.00	-13.42	152	261	Average
15960.000	42.71	10.26	52.97	74.00	-21.03	152	261	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

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)	(°)	
5122.643	43.24	-4.29	38.95	54.00	-15.05	130	298	Average
5122.643	55.88	-4.29	51.59	74.00	-22.41	130	298	Peak
5270.000	95.67	-4.59	91.08			130	298	Average
5270.000	105.61	-4.59	101.02			130	298	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10540.000	40.74	5.88	46.62	68.20	-21.58	152	82	Peak
15810.000	30.42	9.79	40.21	54.00	-13.79	155	118	Average
15810.000	42.09	9.79	51.88	74.00	-22.12	155	118	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5114.435	43.21	-4.31	38.90	54.00	-15.10	123	49	Average
5114.435	56.00	-4.31	51.69	74.00	-22.31	123	49	Peak
5270.000	93.54	-4.59	88.95			123	49	Average
5270.000	103.69	-4.59	99.10			123	49	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10540.000	40.95	5.88	46.83	68.20	-21.37	151	226	Peak
15810.000	30.45	9.79	40.24	54.00	-13.76	156	39	Average
15810.000	41.93	9.79	51.72	74.00	-22.28	156	39	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	96.13	-4.73	91.40			100	338	Average
5310.000	106.18	-4.73	101.45			100	338	Peak
5355.175	53.19	-4.93	48.26	54.00	-5.74	100	338	Average
5355.175	72.93	-4.93	68.00	74.00	-6.00	100	338	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10620.000	29.78	5.97	35.75	54.00	-18.25	154	123	Average
10620.000	40.91	5.97	46.88	74.00	-27.12	154	123	Peak
15930.000	30.63	10.07	40.70	54.00	-13.30	151	254	Average
15930.000	42.25	10.07	52.32	74.00	-21.68	151	254	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5310.000	92.71	-4.73	87.98			120	204	Average
5310.000	101.96	-4.73	97.23			120	204	Peak
5354.495	48.27	-4.93	43.34	54.00	-10.66	120	204	Average
5354.495	68.84	-4.93	63.91	74.00	-10.09	120	204	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10620.000	29.93	5.97	35.90	54.00	-18.10	151	235	Average
10620.000	40.48	5.97	46.45	74.00	-27.55	151	235	Peak
15930.000	30.49	10.07	40.56	54.00	-13.44	155	0	Average
15930.000	43.32	10.07	53.39	74.00	-20.61	155	0	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	93.39	-4.65	88.74			117	300	Average
5290.000	102.81	-4.65	98.16			117	300	Peak
5379.279	53.36	-5.08	48.28	54.00	-5.72	117	300	Average
5379.279	68.40	-5.08	63.32	74.00	-10.68	117	300	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10580.000	41.17	5.91	47.08	68.20	-21.12	152	346	Peak
15870.000	30.34	9.84	40.18	54.00	-13.82	157	320	Average
15870.000	42.70	9.84	52.54	74.00	-21.46	157	320	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5290.000	90.83	-4.65	86.18			109	49	Average
5290.000	100.95	-4.65	96.30			109	49	Peak
5361.622	48.64	-4.97	43.67	54.00	-10.33	109	49	Average
5361.622	64.29	-4.97	59.32	74.00	-14.68	109	49	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
10580.000	40.81	5.91	46.72	68.20	-21.48	151	297	Peak
15870.000	30.36	9.84	40.20	54.00	-13.80	156	253	Average
15870.000	41.52	9.84	51.36	74.00	-22.64	156	253	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

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)	(°)	
5459.900	44.36	-5.22	39.14	54.00	-14.86	120	303	Average
5459.900	59.90	-5.22	54.68	74.00	-19.32	120	303	Peak
5500.000	101.63	-5.04	96.59			120	303	Average
5500.000	112.14	-5.04	107.10			120	303	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11000.000	29.58	6.49	36.07	54.00	-17.93	150	21	Average
11000.000	40.42	6.49	46.91	74.00	-27.09	150	21	Peak
16500.000	41.88	11.50	53.38	68.20	-14.82	156	267	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5459.560	43.67	-5.22	38.45	54.00	-15.55	151	215	Average
5459.560	58.43	-5.22	53.21	74.00	-20.79	151	215	Peak
5500.000	98.63	-5.04	93.59			151	215	Average
5500.000	108.52	-5.04	103.48			151	215	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11000.000	30.05	6.49	36.54	54.00	-17.46	157	151	Average
11000.000	41.63	6.49	48.12	74.00	-25.88	157	151	Peak
16500.000	41.05	11.50	52.55	68.20	-15.65	152	43	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	110.89	-5.10	105.79			102	320	Average
5580.000	110.85	-5.10	105.75			102	320	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11160.000	30.24	6.77	37.01	54.00	-16.99	154	0	Average
11160.000	41.43	6.77	48.20	74.00	-25.80	154	0	Peak
16740.000	41.74	11.68	53.42	68.20	-14.78	153	34	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5580.000	100.38	-5.10	95.28			107	197	Average
5580.000	110.33	-5.10	105.23			107	197	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11160.000	30.94	6.77	37.71	54.00	-16.29	152	26	Average
11160.000	41.64	6.77	48.41	74.00	-25.59	152	26	Peak
16740.000	41.97	11.68	53.65	68.20	-14.55	156	335	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	101.74	-5.54	96.20			113	347	Average
5700.000	111.73	-5.54	106.19			113	347	Peak
5725.000	65.74	-5.49	60.25	68.20	-7.95	113	347	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11400.000	30.41	6.91	37.32	54.00	-16.68	150	359	Average
11400.000	40.74	6.91	47.65	74.00	-26.35	150	359	Peak
17100.000	40.98	11.66	52.64	68.20	-15.56	156	302	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5700.000	100.00	-5.54	94.46			126	198	Average
5700.000	110.06	-5.54	104.52			126	198	Peak
5725.000	64.02	-5.49	58.53	68.20	-9.67	126	198	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11400.000	28.80	6.91	35.71	54.00	-18.29	154	360	Average
11400.000	41.24	6.91	48.15	74.00	-25.85	154	360	Peak
17100.000	42.02	11.66	53.68	68.20	-14.52	152	237	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

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)	(°)	
5458.539	44.37	-5.24	39.13	54.00	-14.87	121	301	Average
5458.539	67.66	-5.24	62.42	74.00	-11.58	121	301	Peak
5500.000	101.14	-5.04	96.10			121	301	Average
5500.000	111.35	-5.04	106.31			121	301	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11000.000	29.80	6.49	36.29	54.00	-17.71	156	40	Average
11000.000	40.60	6.49	47.09	74.00	-26.91	156	40	Peak
16500.000	41.34	11.50	52.84	68.20	-15.36	150	100	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5458.539	43.49	-5.24	38.25	54.00	-15.75	136	213	Average
5458.539	64.45	-5.24	59.21	74.00	-14.79	136	213	Peak
5500.000	98.27	-5.04	93.23			136	213	Average
5500.000	108.43	-5.04	103.39			136	213	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11000.000	29.83	6.49	36.32	54.00	-17.68	154	177	Average
11000.000	41.62	6.49	48.11	74.00	-25.89	154	177	Peak
16500.000	41.25	11.50	52.75	68.20	-15.45	156	240	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	100.46	-5.10	95.36			101	322	Average
5580.000	110.87	-5.10	105.77			101	322	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11160.000	30.41	6.77	37.18	54.00	-16.82	152	3	Average
11160.000	41.08	6.77	47.85	74.00	-26.15	152	3	Peak
16740.000	41.47	11.68	53.15	68.20	-15.05	155	97	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5580.000	100.19	-5.10	95.09			106	197	Average
5580.000	109.82	-5.10	104.72			106	197	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11160.000	30.16	6.77	36.93	54.00	-17.07	151	183	Average
11160.000	42.99	6.77	49.76	74.00	-24.24	151	183	Peak
16740.000	41.32	11.68	53.00	68.20	-15.20	153	242	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	101.56	-5.54	96.02			104	349	Average
5700.000	111.96	-5.54	106.42			104	349	Peak
5725.000	71.08	-5.49	65.59	68.20	-2.61	104	349	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11400.000	30.69	6.91	37.60	54.00	-16.40	155	37	Average
11400.000	41.47	6.91	48.38	74.00	-25.62	155	37	Peak
17100.000	40.50	11.66	52.16	68.20	-16.04	152	41	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5700.000	99.92	-5.54	94.38			126	199	Average
5700.000	110.31	-5.54	104.77			126	199	Peak
5725.000	69.06	-5.49	63.57	68.20	-4.63	126	199	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11400.000	29.66	6.91	36.57	54.00	-17.43	157	111	Average
11400.000	41.83	6.91	48.74	74.00	-25.26	157	111	Peak
17100.000	40.47	11.66	52.13	68.20	-16.07	156	52	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

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	47.28	-5.22	42.06	54.00	-11.94	119	297	Average
5459.900	67.74	-5.22	62.52	74.00	-11.48	119	297	Peak
5510.000	98.31	-5.04	93.27			119	297	Average
5510.000	107.61	-5.04	102.57			119	297	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11020.000	28.94	6.56	35.50	54.00	-18.50	151	237	Average
11020.000	40.46	6.56	47.02	74.00	-26.98	151	237	Peak
16530.000	41.86	11.58	53.44	68.20	-14.76	154	269	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5459.900	45.97	-5.22	40.75	54.00	-13.25	112	186	Average
5459.900	64.94	-5.22	59.72	74.00	-14.28	112	186	Peak
5510.000	95.55	-5.04	90.51			112	186	Average
5510.000	105.73	-5.04	100.69			112	186	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11020.000	29.48	6.56	36.04	54.00	-17.96	155	124	Average
11020.000	40.38	6.56	46.94	74.00	-27.06	155	124	Peak
16530.000	42.18	11.58	53.76	68.20	-14.44	153	226	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	97.01	-5.13	91.88			131	300	Average
5590.000	106.58	-5.13	101.45			131	300	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11180.000	29.86	6.75	36.61	54.00	-17.39	156	254	Average
11180.000	41.36	6.75	48.11	74.00	-25.89	156	254	Peak
16770.000	41.21	11.54	52.75	68.20	-15.45	157	34	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5590.000	96.46	-5.13	91.33			100	192	Average
5590.000	106.21	-5.13	101.08			100	192	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11180.000	30.08	6.75	36.83	54.00	-17.17	157	64	Average
11180.000	40.87	6.75	47.62	74.00	-26.38	157	64	Peak
16770.000	42.18	11.54	53.72	68.20	-14.48	152	149	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	98.41	-5.36	93.05			101	340	Average
5670.000	107.93	-5.36	102.57			101	340	Peak
5725.000	62.12	-5.49	56.63	68.20	-11.57	101	340	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11340.000	29.68	6.97	36.65	54.00	-17.35	155	22	Average
11340.000	41.47	6.97	48.44	74.00	-25.56	155	22	Peak
17010.000	42.01	11.47	53.48	68.20	-14.72	158	237	Peak

Vertical

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
5670.000	96.77	-5.36	91.41			103	194	Average
5670.000	106.83	-5.36	101.47			103	194	Peak
5725.000	60.44	-5.49	54.95	68.20	-13.25	103	194	Peak

Freq.	Reading	Factor	Level	Limit	Margin	Height	Degree	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	(cm)	(°)	
11340.000	29.37	6.97	36.34	54.00	-17.66	152	208	Average
11340.000	41.53	6.97	48.50	74.00	-25.50	152	208	Peak
17010.000	41.53	11.47	53.00	68.20	-15.20	156	184	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.