2/F., Garment Centre,
576 Castle Peak Road, Kowloon,
Hong Kong SAR, China.

Telephone: (852) 2173 8888
Facsimile: (852) 2785 5487
www.intertek.com

TEST REPORT

Report No.: 23010385HKG-002

VTech Telecommunications Ltd.

Application For Original Grant of 47 CFR Part 15 Certification

Single New of RSS-247 Issue 2 Certification

SIP Phone

FCC ID: EW780-S179-00

IC: 1135B-80S17900

Prepared and Checked by:	**Approved by:**
Signed On File Wong Cheuk Ho, Herbert Assistant Supervisor	Digitally signed by Kenneth Wong Location: Intertek Testing Services Hong Kong Limited Wong Kwok Yeung, Kenneth Assistant Manager Date: June 16, 2023

TEST REPORT

GENERAL INFORMATION

Grantee:	VTech Telecommunications Ltd.
Grantee Address:	23/F., Tai Ping Industrial Centre, Block 1, 57 Ting Kok Road, Tai Po, Hong Kong.
Manufacturer Name:	VTech (Dongguan) Telecommunications Limited
Manufacturer Address:	VTech Science Park, Xia Ling Bei Management Zone, Liaobu, Dongguan, Guangdong, China.
FCC Specification Standard:	FCC Part 15, October 1, 2021 Edition
FCC ID:	EW780-S179-00
FCC Model(s):	D787
IC Specification Standard:	RSS-247 Issue 2, February 2017 RSS-Gen Issue 5 Amendment 2, February 2021
IC:	1135B-80S17900
HVIN:	35-400446BS
PMN:	D787
Type of EUT:	Spread Spectrum Transmitter
Description of EUT:	SIP Phone
Brand Name:	Snom
Sample Receipt Date:	January 11, 2023
Date of Test:	March 01, 2023 to May 8, 2023
Report Date:	June 16, 2023
Environmental Conditions:	Temperature: +10 to 40°C Relative Humidity: 10 to 90%
Conclusion:	Test was conducted by client submitted sample. The submitted sample as received complied with the 47 CFR Part 15 / RSS-247 Issue 2 Certification.

TEST REPORT

TABLE OF CONTENTS

1.0 TEST RESULTS SUMMARY & STATEMENT OF COMPLIANCE

1.1 Summary of Test Results

Test Items	Fcc Part 15 Section	RSS-247/ RSS-Gen# Section	Results	Details See Section
Antenna Requirement	15.407(a)	6.2.1.1/ 6.2.3.1/ 6.2.4.1	Pass	2.1
Max. Conducted Output Power (Peak)	15.407(a)	6.2.1.1/ 6.2.3.1/ 6.2.4.1	Pass	4.1
Transmit Power Control (TPC)	15.407(h)	15.407(h)	N/A	See Remark
Min. 6dB RF Bandwidth	15.407(e)	6.2.4.1	Pass	4.2
26 dB emission bandwidth	15.407(a)	15.407(a)	Pass	4.3
Occupied Bandwidth	N/A	N/A	Pass	4.3
Max. Power Density (average)	15.407(a)	6.2.4.1	Pass	4.4
Radiated Emission in Restricted Bands and Spurious Emissions	15.407(b), 15.209 & 15.109	6.2.4.2	Pass	4.5
AC Power Line Conducted Emission	15.207 & 15.107	7.2.4#	Pass	4.7
Dynamic Frequency Selection(DFS)	15.407	15.407	Pass	4.8

Remark: not applicable if the EUT is <500mW (27dBm)

Note: Pursuant to FCC Part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over expected variations in temperature and supply voltage were considered.

1.2 Statement of Compliance

The equipment under test is found to be complying with the following standard:

FCC Part 15, October 1, 2021 Edition
RSS-247 Issue 2, February 2017
RSS-Gen Issue 5 Amendment 2, February 2021

2.0 GENERAL DESCRIPTION

2.1 Product Description

The Equipment Under Test (EUT) that is a Voice Over Internet Protocol (VOIP) Phone / SIP Phone. The EUT can support 2.4GHz WiFi mode and 5.0GHz WiFi mode.

The EUT is powered by 5VDC AC/DC adaptor
(Model: NBS12E050200UV Input: 100-240VAC 50/60Hz 0.3A; Output: 5V 2A 10W)

For 5.15GHz to 5.25GHz Band:
The module operates at Frequency range of 5.18GHz to 5.24GHz.

- For 802.11a mode, it operates at frequency range of 5.18GHz to 5.24GHz with 4 channels. It transmits via OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to 54Mbps.
- For 802.11n mode (20 MHz Bandwidth), it operates at frequency range of 5.18GHz to 5.24GHz with 4 channels. It transmits via OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS7 65Mbps.
- For 802.11n mode (40 MHz Bandwidth), it operates at frequency range of 5.19GHz to 5.23GHz with 2 channels. It transmits via OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS7 135Mbps.
- For 802.11ac mode (20 MHz Bandwidth), it operates at frequency range of 5.18GHz to 5.24GHz with 4 channels. It transmits via OFDM/256-QAM, OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS8 78Mbps.
- For 802.11ac mode (40 MHz Bandwidth), it operates at frequency range of 5.18GHz to 5.24GHz with 2 channels. It transmits via OFDM/256-QAM, OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS9 162Mbps.
- For 802.11ac mode (80 MHz Bandwidth), it operates at 5.21GHz with 1 channel. It transmits via OFDM/256-QAM, OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS9 390 Mbps.

For 5.25GHz to 5.35GHz Band:
The module operates at Frequency range of 5.26GHz to 5.32GHz.

- For 802.11a mode, it operates at frequency range of 5.26GHz to 5.32GHzwith 4 channels. It transmits via OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to 54Mbps.
- For 802.11n mode (20 MHz Bandwidth), it operates at frequency range of 5.26GHz to 5.32GHzwith 4 channels. It transmits via OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS7 65Mbps.
- For 802.11n mode (40 MHz Bandwidth), it operates at frequency range of 5.27GHz to 5.32GHzwith 2 channels. It transmits via OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS7 135Mbps.

- For 802.11ac mode (20 MHz Bandwidth), it operates at frequency range of 5.26GHz to 5.32GHzwith 4 channels. It transmits via OFDM/256-QAM, OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS8 78Mbps.
- For 802.11ac mode (40 MHz Bandwidth), it operates at frequency range of 5.27GHz to 5.31GHzwith 2 channels. It. It transmits via OFDM/256-QAM, OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS9 162 Mbps.
- For 802.11ac mode (80 MHz Bandwidth), it operates at 5.29GHz with 1 channel. It transmits via OFDM/256-QAM, OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS9 390 Mbps.

For 5.47GHz to 5.725GHz Band:

The module operates at Frequency range of 5.5GHz to 5.7GHz.

- For 802.11a mode, it operates at frequency range of 5.5GHz to 5.7GHz with 11 channels. It transmits via OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to 54Mbps.
- For 802.11n mode (20 MHz Bandwidth), it operates at frequency range of 5.5GHz to 5.7GHz with 11 channels. It transmits via OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS7 65Mbps.
- For 802.11n mode (40 MHz Bandwidth), it operates at frequency range of 5.51GHz to 5.67GHzwith 5 channels. It transmits via OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS7 135Mbps.
- For 802.11ac mode (20 MHz Bandwidth), it operates at frequency range of 5.5GHz to 5.7GHz with 11 channels. It transmits via OFDM/256-QAM, OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS8 78Mbps.
- For 802.11ac mode (40 MHz Bandwidth), it operates at frequency range of 5.51GHz to 5.67GHzwith 5 channels. It. It transmits via OFDM/256-QAM, OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS9 162 Mbps.
- For 802.11ac mode (80 MHz Bandwidth), it operates at 5.53GHz to 5.61GHz with 2 channels. It transmits via OFDM/256-QAM, OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS9 390 Mbps.

For 5.725GHz to 5.85GHz Band:

The module operates at Frequency range of 5.745GHz to 5.825GHz.

- For 802.11a mode, it operates at frequency range of 5.745GHz to 5.825GHz with 5 channels. It transmits via OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to 54Mbps.
- For 802.11n mode (20 MHz Bandwidth), it operates at frequency range of 5.745GHz to 5.825GHz with 5 channels. It transmits via OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS7 65Mbps.

- For 802.11n mode (40 MHz Bandwidth), it operates at frequency range of 5.755GHz to 5.795GHz with 2 channels. It transmits via OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS7 135Mbps.
- For 802.11ac mode (20 MHz Bandwidth), it operates at frequency range of 5.745GHz to 5.825GHz with 5 channels. It transmits via OFDM/256-QAM, OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS8 78Mbps.
- For 802.11ac mode (40 MHz Bandwidth), it operates at frequency range of 5.755GHz to 5.795GHz with 2 channels. It. It transmits via OFDM/256-QAM, OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS9 162 Mbps.
- For 802.11ac mode (80 MHz Bandwidth), it operates at 5775MHz with 1 channel. It transmits via OFDM/256-QAM, OFDM/64-QAM, 16-QAM, QPSK and BPSK. Maximum bit rate can be up to MCS9 390 Mbps.

Antenna Information:

- The antenna(s) used in the EUT is integral, and the test sample is a prototype
- WLAN 802.11 a/b/g/n/ac
- For operating frequency of 2.4GHz, antenna has maximum gain of 0 dBi
- For operating frequency of 5GHz, antenna has maximum gain of 0 dBi

2.2 Test Methodology

Both AC power line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013). Preliminary radiated scans and all radiated measurements were performed in radiated emission test sites. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application. Antenna port conducted measurements were performed according to ANSI C63.10 (2013) and KDB Publication KDB558074 D01 v05r01 (11-Feb-2019). All other measurements were made in accordance with the procedures in 47 CFR Part 2 / RSS-Gen Issue 5 Amendment 2, February 2021.

2.3 Test Facility

The radiated emission test site and antenna port conducted measurement facility used to collect the radiated data and conductive data are at Workshop No. 3, G/F., World-Wide Industrial Centre, 43-47 Shan Mei Street, Fo Tan, Sha Tin, N.T., Hong Kong SAR, China. This test facility and site measurement data have been fully placed on file with the FCC / the Industry Canada No.: 2042H, CABID is “HKAP01”.

2.4 Related Submittal(s) Grants

This is a single application for certification of a transceiver (5G WiFi portion only).

3.0 SYSTEM TEST CONFIGURATION

3.1 Justification

For radiated emissions testing, the equipment under test (EUT) was setup to transmit / receive continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables (if any) were manipulated to produce worst case emissions.

The EUT was power by 120VAC during test.

For the measurements, the EUT was attached to a plastic stand if necessary and placed on the wooden turntable. If the base unit attached to peripherals, they were connected and operational (as typical as possible).

The signal was maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization were varied during the search for maximum signal level. The antenna height was varied from 1 to 4 meters. Radiated emissions were taken at three meters unless the signal level was too low for measurement at that distance. If necessary, a pre-amplifier was used and/or the test was conducted at a closer distance.

For any intentional radiator powered by AC power line, measurements of the radiated signal level of the fundamental frequency component of the emission was performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Radiated emission measurement for transmitter were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

Emission that are directly caused by digital circuits in the transmit path and transmitter portion were measured, and the limit are according to FCC Part 15 Section 15.209 / RSS-247 2.5. Digital circuitries used to control additional functions other than the operation of the transmitter are subject to FCC Part 15 Section 15.109 / RSS-247 Section 5.5.

TEST REPORT

3.1 Justification – Cont'd

Detector function for radiated emissions was in peak mode. Average readings, when required, were taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings. A detailed description for the calculation of the average factor can be found in section 4.8.3.

Determination of pulse desensitization was made according to *Hewlett Packard Application Note 150-2, Spectrum Analysis... Pulsed RF.* The effective period (Teff) was referred to Exhibit 4.8.3. With the resolution bandwidth 1MHz and spectrum analyzer IF bandwidth 3dB, the pulse desensitization factor was 0dB.

For AC line conducted emission test, the EUT along with its peripherals were placed on a 1.0m(W)x1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN), which provided 50ohm coupling impedance for measuring instrument. The LISN housing, measuring instrument case, reference ground plane, and vertical ground plane were bounded together. The excess power cable between the EUT and the LISN was bundled.

All connecting cables of EUT and peripherals were manipulated to find the maximum emission.

All relevant operation modes have been tested, and the worst-case data is included in this report.

All data rates were tested under normal mode of WiFi. Only the worst-case data is shown in the report for OFDM.

3.2 EUT Exercising Software

The EUT exercise program (if any) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

TEST REPORT

3.3 Details of EUT and Description of Accessories

Details of EUT:

The EUT is powered by 5VDC AC/DC adaptor
(Model: NBS12E050200UV Input: 100-240VAC 50/60Hz 0.3A; Output: 5V 2A 10W)

Support Equipment List and Description

1. 1 X LAN cable of 2m in length
2. 1 X USB cable of 2m in length

3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test at a level of confidence of 95% has been considered. The values of the Measurement uncertainty:

No.	Item	Measurement Uncertainty
1	Conducted emission 9KHz-150KHz	±3.8 dB
2	Conducted emission 150KHz-30MHz	±3.4 dB
3	Radiated emission 9KHz-30MHz	±4.9 dB
4	Radiated emission 30MHz-1GHz	±4.7 dB
5	Radiated emission 1GHz-18GHz	±5.1 dB
6	Radiated emission 18GHz-26GHz	±5.2 dB
7	Radiated emission 26GHz-40GHz	±5.2 dB

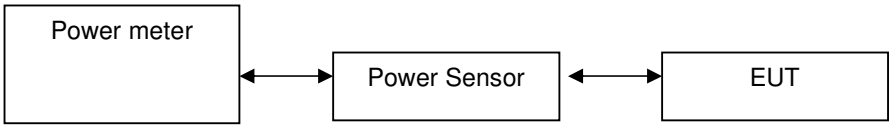
Uncertainty and Compliance - Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

4.0 TEST RESULTS

4.1 Maximum Conducted (Avg) Output Power at Antenna Terminals

RF Conduct Measurement Test Setup

The figure below shows the test setup, which is utilized to make these measurements.



The antenna port of the EUT was connected to the input of a spectrum analyzer.

☒ The antenna power of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to the obtain power at the EUT antenna terminals. The measurement procedure E.3.A (789033 D02 General UNII Test Procedures New Rules v02r01) was used.

☐ The EUT should be configured to transmit continuously (at a minimum duty cycle of 98%) at full power over the measurement duration. The measurement procedure AVG1 was used.

IEEE 802.11ac (20MHz) (MCS0)

Frequency (MHz)	Conducted output power in dBm	Conducted output power in mWatt
5180	14.6	28.8
5200	15.4	34.7
5240	13.8	24.0
5260	12.1	16.2
5300	10.8	12.0
5320	10.4	11.0
5500	9.8	9.5
5580	11.5	14.1
5700	15.1	32.6
5745	8.0	6.3
5785	7.6	5.8
5825	6.4	4.4

IEEE 802.11ac (40MHz) (MCS0)

Frequency (MHz)	Conducted output power in dBm	Conducted output power in mWatt
5190	12.5	17.8
5230	13.0	20.0
5270	12.2	16.6
5310	10.6	11.5
5510	9.7	9.3
5590	10.6	11.5
5670	13.7	23.4
5755	10.9	12.3
5795	10.7	11.7

IEEE 802.11ac (80MHz) (MCS0)

Frequency (MHz)	Conducted output power in dBm	Conducted output power in mWatt
5210	13.0	20.0
5290	11.6	14.5
5530	10.1	10.2
5775	13.2	20.9

IEEE 802.11a (20MHz) (OFDM, 6 Mbps)

Frequency (MHz)	Conducted output power in dBm	Conducted output power in mWatt
5180	14.7	29.5
5200	15.5	35.5
5240	13.9	24.5
5260	12.1	16.2
5280	10.8	12.0
5320	10.4	11.0
5500	9.8	9.5
5600	11.5	14.1
5700	15.2	33.1
5745	8.0	6.3
5785	7.7	5.9
5825	6.5	4.5

IEEE 802.11n (20MHz) (OFDM, MCS0)

Frequency (MHz)	Conducted output power in dBm	Conducted output power in mWatt
5180	14.6	28.8
5200	15.4	34.7
5240	13.8	24.0
5260	12.1	16.2
5280	10.8	12.0
5320	10.4	11.0
5500	9.8	9.5
5600	11.5	14.1
5700	15.1	32.4
5745	8.0	6.3
5785	7.7	5.9
5825	6.4	4.4

IEEE 802.11n (40MHz) (OFDM, MCS0)

Frequency (MHz)	Conducted output power in dBm	Conducted output power in mWatt
5190	14.9	30.9
5230	12.2	16.6
5270	12.2	16.6
5310	10.6	11.5
5510	9.7	9.3
5590	10.6	11.5
5670	13.7	23.4
5755	10.9	12.3
5795	10.7	11.7

TEST REPORT

For maximum e.i.r.p. (Peak Antenna Gain = 0 dBi)

IEEE 802.11ac (20MHz) (MCS0)

Frequency (MHz)	Conducted output power in dBm	EIRP in dBm	EIRP in mWatt
5180	14.6	14.6	28.8
5200	15.4	15.4	34.7
5240	13.8	13.8	24.0
5260	12.1	12.1	16.2
5280	10.8	10.8	12.0
5320	10.4	10.4	11.0
5500	9.8	9.8	9.5
5580	11.5	11.5	14.1
5700	15.1	15.1	32.6

IEEE 802.11ac (40MHz) (MCS0)

Frequency (MHz)	Conducted output power in dBm	EIRP in dBm	EIRP in mWatt
5190	12.5	12.5	17.8
5230	13.0	13.0	20.0
5270	12.2	12.2	16.6
5310	10.6	10.6	11.5
5510	9.7	9.7	9.3
5590	10.6	10.6	11.5
5670	13.7	13.7	23.4

IEEE 802.11ac (80MHz) (MCS0)

Frequency (MHz)	Conducted output power in dBm	EIRP in dBm	EIRP in mWatt
5210	13.0	13.0	20.0
5290	11.6	11.6	14.5
5530	10.1	10.1	10.2
5775	13.2	13.2	20.9

IEEE 802.11a (20MHz) (OFDM, 6 Mbps)

Frequency (MHz)	Conducted output power in dBm	EIRP in dBm	EIRP in mWatt
5180	14.7	14.7	29.5
5200	15.5	15.5	35.5
5240	13.9	13.9	24.5
5260	12.1	12.1	16.2
5280	10.8	10.8	12.0
5320	10.4	10.4	11.0
5500	9.8	9.8	9.5
5600	11.5	11.5	14.1
5700	15.2	15.2	33.1

TEST REPORT

IEEE 802.11n (20MHz) (OFDM, MCS0)

Frequency (MHz)	Conducted output power in dBm	EIRP in dBm	EIRP in mWatt
5180	14.6	14.6	28.8
5200	15.4	15.4	34.7
5240	13.8	13.8	24.0
5260	12.1	12.1	16.2
5280	10.8	10.8	12.0
5320	10.4	10.4	11.0
5500	9.8	9.8	9.5
5600	11.5	11.5	14.1
5700	15.1	15.1	32.4

IEEE 802.11n (40MHz) (OFDM, MCS0)

Frequency (MHz)	Conducted output power in dBm	EIRP in dBm	EIRP in mWatt
5190	14.9	14.9	30.9
5230	12.2	12.2	16.6
5270	12.2	12.2	16.6
5310	10.6	10.6	11.5
5510	9.7	9.7	9.3
5590	10.6	10.6	11.5
5670	13.7	13.7	23.4

Cable loss: 1.02 dB External Attenuation: 10 dB

Cable loss, external attenuation: ☒ included in OFFSET function
☐ added to SA raw reading

IEEE 802.11ac (20MHz) (OFDM, MCS0): max. conducted output level = 15.4 dBm
IEEE 802.11ac (40MHz) (OFDM, MCS0): max. conducted output level = 13.7 dBm
IEEE 802.11ac (80MHz) (OFDM, MCS0): max. conducted output level = 13.2 dBm
IEEE 802.11a (20MHz) (OFDM, 6 Mbps): max. conducted output level = 15.5 dBm
IEEE 802.11n (20MHz) (OFDM, MCS0): max. conducted output level = 15.4 dBm
IEEE 802.11n (40MHz) (OFDM, MCS0): max. conducted output level = 14.9 dBm

Remark:
1. Maximum e.i.r.p = Maximum conducted output power + Duty Cycle Factor + Antenna Gain
2. Maximum conducted output power = Conducted output power + Duty Cycle Factor
3. Duty cycle= On Time/ Period;
   Duty Cycle factor = 10 * log(1/ Duty cycle);
   Average factor = 20 log10 Duty Cycle.
4. Limits for FCC: 5150-5250MHz: 250mW (24dBm) for antennas with gains of 6dBi or less. (Client device)
   5250-5350MHz: 250mW (24dBm)
   5470-5725MHz: 250mW (24dBm)
   5725-5850MHz: 1W (30dBm) for antennas with gains of 6dBi or less.
5. Limits for RSS: 5150-5250MHz: 200mW (23dBm) for antennas with gains of 6dBi or less.
   5250-5350MHz: 250mW (24dBm)
   5470-5725MHz: 250mW (24dBm)
   5725-5850MHz: 1W (30dBm) for antennas with gains of 6dBi or less.

4.2 Minimum 6dB RF Bandwidth

The antenna port of the EUT was connected to the input of a spectrum analyzer. The EBW measurement procedure was used. A PEAK output reading was taken, a DISPLAY line was drawn 6dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

IEEE 802.11ac (20MHz) (MCS0)

Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
5745	21.5	24.6
5785	21.5	24.6
5825	21.2	24.8

IEEE 802.11ac (40MHz) (MCS0)

Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
5755	40.3	49.7
5795	40.3	48.8

IEEE 802.11ac (80MHz) (MCS0)

Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
5775	76.5	76.5

IEEE 802.11a (20MHz) (OFDM, 6Mbps)

Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
5745	21.5	24.6
5785	21.5	24.6
5825	21.2	24.8

IEEE 802.11n (40MHz) (OFDM, MCS0)

Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
5755	40.3	49.4
5795	40.3	48.8

IEEE 802.11n (20MHz) (OFDM, MCS0)

Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
5745	21.5	24.6
5785	21.5	24.6
5825	21.2	24.8

Limits:
For 5725-5850MHz:
6 db bandwidth shall be at least 500kHz
The plots of 6db RF bandwidth and occupied bandwidth are saved with filename: UNII-1&2 test data.pdf

4.3 26 dB BANDWIDTH & OCCUPIED BANDWIDTH

The antenna port of the EUT was connected to the input of a spectrum analyzer. The EBW measurement procedure was used. A PEAK output reading was taken, a DISPLAY line was drawn 26dB lower than PEAK level. The 26dB bandwidth was determined from where the channel output spectrum intersected the display line.

IEEE 802.11ac (20MHz) (MCS0)

Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
5180	25.6	16.8
5200	25.0	16.8
5240	26.6	16.8
5260	21.4	16.6
5280	21.4	16.8
5320	21.4	16.6
5500	20.8	16.6
5580	21.4	16.8
5700	28.0	17.0
5745	36.2	24.6
5785	36.0	24.6
5825	35.4	24.8

IEEE 802.11ac (40MHz) (MCS0)

Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
5190	41.6	36.3
5230	42.5	36.6
5270	59.3	36.6
5310	73.1	36.9
5510	44.0	36.6
5590	62.3	38.7
5670	75.8	42.8
5755	64.1	49.7
5795	62.0	48.8

IEEE 802.11ac (80MHz) (MCS0)

Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
5210	109.0	76.0
5290	103.0	76.5
5530	94.0	77.0
5775	85.0	76.5

IEEE 802.11a (20MHz) (OFDM, 6Mbps)

Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
5180	24.2	16.8
5200	24.2	16.8
5240	29.0	16.8
5260	22.2	16.8
5280	20.8	16.6
5320	21.8	16.6
5500	21.2	16.8
5600	21.8	16.8
5700	28.0	16.8
5745	36.6	24.6
5785	36.0	24.6
5825	35.6	24.8

IEEE 802.11n (20MHz) (OFDM, MCS0)

Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
5180	23.8	16.8
5200	25.0	16.8
5240	26.8	16.8
5260	21.8	16.6
5280	21.8	16.8
5320	21.6	16.8
5500	21.0	16.6
5600	21.2	16.8
5700	25.8	16.8
5745	36.2	24.6
5785	36.0	24.6
5825	35.6	24.8

IEEE 802.11N (40MHz) (OFDM, MCS0)

Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
5190	76.1	37.8
5230	41.9	36.6
5270	57.5	36.6
5310	74.6	37.2
5510	45.8	36.6
5590	60.2	38.4
5670	75.8	42.5
5755	66.5	49.4
5795	62.3	48.8

4.4 Maximum Power Spectral Density

The output from the transmitter was connected to an attenuator and then to the input of the RF Spectrum Analyzer.

Spectrum analyser according to the following Settings:

For U-NII-1, U-NII-2A, U-NII-2C band:
Using method SA-2
a) Set span to encompass the entire emission bandwidth (EBW) of the signal.
b) Set RBW = 1 MHz, Set VBW ≥ 3 RBW, Detector = RMS
c) Sweep time = auto, trigger set to “free run”.
d) Trace average at least 100 traces in power averaging mode.
e) Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band:
a) Set span to encompass the entire emission bandwidth (EBW) of the signal.
b) Set RBW = 500 kHz, Set VBW ≥ 3 RBW, Detector = RMS
c) Use the peak marker function to determine the maximum power level in any 500 kHz band segment within the fundamental EBW.
d) Sweep time = auto, trigger set to “free run”.
e) Trace average at least 100 traces in power averaging mode.
f) Record the max value and add 10 log (1/duty cycle)

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

IEEE 802.11a (20MHz) (OFDM, 6 Mbps)

Frequency (MHz)	**Conducted PSD in 1MHz (dBm)**
5180	2.4
5200	3.0
5240	1.6
5260	-0.1
5280	-1.1
5320	-1.9
5500	-2.7
5600	-0.7
5700	2.9
Frequency (MHz)	**Conducted PSD in 500kHz (dBm)**
5745	-7.2
5785	-7.6
5825	-8.9

IEEE 802.11ac (20MHz) (MCS0)

Frequency (MHz)	Conducted PSD in 1MHz (dBm)
5180	2.4
5200	3.0
5240	1.6
5260	-0.1
5280	-1.1
5320	-1.9
5500	-2.6
5580	-0.7
5700	2.9
Frequency (MHz)	**Conducted PSD in 500kHz (dBm)**
5745	-7.2
5785	-7.8
5825	-9.0

IEEE 802.11ac (40MHz) (MCS0)

Frequency (MHz)	Conducted PSD in 1MHz (dBm)
5190	-2.7
5230	-2.0
5270	-2.9
5310	-4.2
5510	-5.4
5590	-3.6
5670	-1.4
Frequency (MHz)	**Conducted PSD in 500kHz (dBm)**
5755	-6.9
5795	-7.3

IEEE 802.11ac (80MHz) (MCS0)

Frequency (MHz)	Conducted PSD in 1MHz (dBm)
5210	-4.6
5290	-5.7
5530	-6.4
Frequency (MHz)	**Conducted PSD in 500kHz (dBm)**
5775	-7.1

IEEE 802.11n (20MHz) (OFDM, MCS0)

Frequency (MHz)	Conducted PSD in 1MHz (dBm)
5180	2.4
5220	3.0
5240	1.6
5260	0.0
5300	-1.1
5320	-1.8
5500	-2.6
5600	-0.6
5700	2.9
Frequency (MHz)	**Conducted PSD in 500kHz (dBm)**
5745	-7.3
5785	-7.7
5825	-8.9

IEEE 802.11n (40MHz) (OFDM, MCS0)

Frequency (MHz)	Conducted PSD in 1MHz (dBm)
5190	-0.2
5230	-2.8
5270	-2.9
5310	-4.2
5510	-5.4
5590	-3.6
5670	-1.4
Frequency (MHz)	**Conducted PSD in 500kHz (dBm)**
5755	-6.9
5795	-7.3

TEST REPORT

For maximum e.i.r.p.

IEEE 802.11a (20MHz) (OFDM, 6 Mbps)

Frequency (MHz)	EIRP PSD in 1MHz (dBm)
5180	2.4
5200	3.0
5240	1.6
5260	-0.1
5280	-1.1
5320	-1.9
5500	-2.7
5600	-0.7
5700	2.9

IEEE 802.11ac (20MHz) (MCS0)

Frequency (MHz)	EIRP PSD in 1MHz (dBm)
5180	2.4
5200	3.0
5240	1.6
5260	-0.1
5280	-1.1
5320	-1.9
5500	-2.6
5580	-0.7
5700	2.9

IEEE 802.11ac (40MHz) (MCS0)

Frequency (MHz)	EIRP PSD in 1MHz (dBm)
5190	-2.7
5230	-2.0
5270	-2.9
5310	-4.2
5510	-5.4
5590	-3.6
5670	-1.4

IEEE 802.11ac (80MHz) (MCS0)

Frequency (MHz)	EIRP PSD in 1MHz (dBm)
5210	-4.6
5290	-5.7
5530	-6.4

TEST REPORT

IEEE 802.11n (20MHz) (OFDM, MCS0)

Frequency (MHz)	EIRP PSD in 1MHz (dBm)
5180	2.4
5200	3.0
5240	1.6
5260	0.0
5280	-1.1
5320	-1.8
5500	-2.6
5600	-0.6
5700	2.9

IEEE 802.11n (40MHz) (OFDM, MCS0)

Frequency (MHz)	EIRP PSD in 1MHz (dBm)
5190	-0.2
5230	-2.8
5270	-2.9
5310	-4.2
5510	-5.4
5590	-3.6
5670	-1.4

Remark:

1. Cable Loss: 1.02 dB
2. e.i.r.p. spectral density = Power spectral density + Duty Cycle Factor + Antenna Gain
3. Power spectral density = Conducted power spectral density + Duty Cycle Factor
4. Duty cycle= On Time/ Period;
   Duty Cycle factor = 10 * log(1/ Duty cycle);
   Average factor = 20 log10 Duty Cycle.
5. Limit:

   For U-NII-1:

   ☒ FCC: 11dBm/MHz for mobile/portable device.
   RSS: 10dBm/MHz E.I.R.P

   For U-NII-2:

   ☒ FCC: 11dBm/MHz
   RSS: 11dBm/MHz

   For U-NII-3: in 3kHz

   ☒ FCC: 30dBm/500kHz.
   RSS: 30dBm/500kHz

The test data are saved with filename: UNII-1&2 test data.pdf

4.5 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD + AV

Where FS = Field Strength in dBµV/m
RA = Receiver Amplitude (including preamplifier) in dBµV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
PD = Pulse Desensitization in dB
AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD + AV

Example
Assume a receiver reading of 62.0 dBµV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29.0 dB is subtracted. The pulse desensitization factor of the spectrum analyzer is 0.0 dB, and the resultant average factor is -10.0 dB. The net field strength for comparison to the appropriate emission limit is 32.0 dBµV/m. This value in dBµV/m is converted to its corresponding level in µV/m.

RA = 62.0 dBµV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0.0 dB
AV = -10 dB

FS = 62.0 + 7.4 + 1.6 – 29.0 + 0.0 + (-10.0) = 32.0 dBµV/m

Level in µV/m = Common Antilogarithm [(32.0 dBµV/m)/20] = 39.8 µV/m

TEST REPORT

4.6 Transmitter Radiated Emissions in Restricted Bands and Spurious Emissions

Data is included of the worst-case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

4.6.1 Radiated Emission Configuration Photograph

Worst Case Restricted Band Radiated Emission
at

624.974 MHz

The worst-case radiated emission configuration photographs are saved with filename: Radiated Photo.pdf

4.6.2 Radiated Emission Data

The data in below tables list the significant emission frequencies, the limit and the margin of compliance.
For frequency bands UNII-1, 2A, 2C, and 3, all modulation have been considered. Only the worst case will be shown on the test report.

Judgement -

Passed by 0.2 dB margin

TEST REPORT

IEEE 802.11A (20MHz) (OFDM,6Mbps)

Radiated Emission Data

5180MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	5150.000	50.1	33	35.7	52.8	54.0	-1.2
V	10360.000	38.0	33	40.5	45.5	68.0	-22.5
V	15540.000	44.1	33	37.7	48.8	54.0	-5.2

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	5150.000	64.1	33	35.7	66.8	74.0	-7.2
V	10360.000	51.1	33	40.5	58.6	68.0	-9.4
V	15540.000	60.7	33	37.7	65.4	74.0	-8.6

5200MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	10400.000	35.1	33	40.5	42.6	68.0	-25.4
H	15600.000	43.7	33	37.7	48.4	54.0	-5.6

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	10400.000	48.3	33	40.5	55.8	68.0	-12.2
H	15600.000	61.1	33	37.7	65.8	74.0	-8.2

5240MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	10480.000	36.1	33	40.5	43.6	68.0	-24.4
V	15720.000	43.8	33	37.7	48.5	54.0	-5.5

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	10480.000	49.3	33	40.5	56.8	68.0	-11.2
V	15720.000	61.2	33	37.7	65.9	74.0	-8.1

5260MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	10520.000	26.2	33	40.4	33.6	68.0	-34.4
V	15780.000	33.7	33	37.7	38.4	54.0	-15.6

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	10520.000	39.9	33	40.4	47.3	68.0	-20.7
V	15780.000	48.9	33	37.7	53.6	74.0	-20.4

5300MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	10600.000	24.9	33	40.4	32.3	54.0	-21.7
V	15900.000	30.9	33	37.7	35.6	54.0	-18.4

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	10600.000	39.2	33	40.4	46.6	74.0	-27.4
V	15900.000	46.7	33	37.7	51.4	74.0	-22.6

5320MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	5350.000	50.7	33	35.7	53.4	54.0	-0.6
V	10640.000	22.9	33	40.4	30.3	54.0	-23.7
V	15960.000	32.9	33	37.7	37.6	54.0	-16.4

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	5350.000	63.1	33	35.7	65.8	74.0	-8.2
V	10640.000	37.0	33	40.4	44.4	74.0	-29.6
V	15960.000	47.6	33	37.7	52.3	74.0	-21.7

TEST REPORT

5500MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	5460.000	50.9	33	35.7	53.6	54.0	-0.4
V	11000.000	21.4	33	40.8	29.2	54.0	-24.8
V	16500.000	29.0	33	37.6	33.6	68.0	-34.4

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	5460.000	64.0	33	35.7	66.7	74.0	-7.3
V	11000.000	35.0	33	40.8	42.8	74.0	-31.2
V	16500.000	42.2	33	37.6	46.8	68.0	-21.2

5580MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	11160.000	24.3	33	40.8	32.1	54.0	-21.9
V	16740.000	32.2	33	37.6	36.8	68.0	-31.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	11160.000	38.8	33	40.8	46.6	74.0	-27.4
V	16740.000	47.8	33	37.6	52.4	68.0	-15.6

5700MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	11400.000	36.2	33	40.8	44.0	54.0	-10.0
H	17100.000	31.0	33	37.6	35.6	68.0	-32.4

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	11400.000	48.2	33	40.8	56.0	74.0	-18.0
H	17100.000	55.8	33	37.6	60.4	68.0	-7.6

5745MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11490.000	43.0	33	40.8	50.8	54.0	-3.2
V	17235.000	45.6	33	37.6	50.2	68.0	-17.8

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	11490.000	56.0	33	40.8	63.8	74.0	-10.2
V	17235.000	63.0	33	37.6	67.6	68.0	-0.4

TEST REPORT

5785MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11570.000	41.1	33	40.5	48.6	54.0	-5.4
H	17355.000	48.3	33	37.6	52.9	68.0	-15.1

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	11570.000	54.3	33	40.5	61.8	74.0	-12.2
H	17355.000	60.2	33	37.6	64.8	68.0	-3.2

5825MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11650.000	39.3	33	40.5	46.8	54.0	-7.2
H	17475.000	43.6	33	37.6	48.2	68.0	-19.8

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	11650.000	51.7	33	40.5	59.2	74.0	-14.8
H	17475.000	61.2	33	37.6	65.8	68.0	-2.2

NOTES:
1. Peak detector is used for the emission measurement.
2. Average detector is used for the average data of emission measurement
3. All measurements were made at 3 meters.
4. Value in the margin column shows emission below limit.
5. Horn antenna is used for the emission over 1000MHz.
6. Emission within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.
7. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.
8. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

TEST REPORT

IEEE 802.11N (HT20MHz) (MCS0)

Radiated Emission Data

5180MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	5150.000	50.1	33	35.7	52.8	54.0	-1.2
H	10360.000	37.1	33	40.5	44.6	68.0	-23.4
V	15540.000	40.1	33	37.7	44.8	54.0	-9.2

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	5150.000	64.7	33	35.7	67.4	74.0	-6.6
H	10360.000	51.3	33	40.5	58.8	68.0	-9.2
V	15540.000	59.5	33	37.7	64.2	74.0	-9.8

5200MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	10400.000	36.9	33	40.5	44.4	68.0	-23.6
V	15600.000	40.9	33	37.7	45.6	54.0	-8.4

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	10400.000	49.3	33	40.5	56.8	68.0	-11.2
V	15600.000	60.1	33	37.7	64.8	74.0	-9.2

5240MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	10480.000	35.9	33	40.5	43.4	68.0	-24.6
V	15720.000	39.7	33	37.7	44.4	54.0	-9.6

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	10480.000	50.2	33	40.5	57.7	68.0	-10.3
V	15720.000	59.9	33	37.7	64.6	74.0	-9.4

TEST REPORT

5260MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	10520.000	26.6	33	40.4	34.0	68.0	-34.0
V	15780.000	32.1	33	37.7	36.8	54.0	-17.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	10520.000	41.2	33	40.4	48.6	68.0	-19.4
V	15780.000	47.0	33	37.7	51.7	74.0	-22.3

5300MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	10600.000	25.4	33	40.4	32.8	54.0	-21.2
V	15900.000	31.5	33	37.7	36.2	54.0	-17.8

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	10600.000	40.3	33	40.4	47.7	74.0	-26.3
V	15900.000	46.2	33	37.7	50.9	74.0	-23.1

5320MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	5350.000	50.7	33	35.7	53.4	54.0	-0.6
V	10640.000	24.0	33	40.4	31.4	54.0	-22.6
V	15960.000	30.9	33	37.7	35.6	54.0	-18.4

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	5350.000	62.9	33	35.7	65.6	74.0	-8.4
V	10640.000	43.1	33	40.4	50.5	74.0	-23.5
V	15960.000	41.3	33	37.7	46.0	74.0	-28.0

5500MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	5460.000	50.9	33	35.7	53.6	54.0	-0.4
V	11000.000	23.0	33	40.8	30.8	54.0	-23.2
V	16500.000	29.2	33	37.6	33.8	68.0	-34.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	5460.000	64.3	33	35.7	67.0	74.0	-7.0
V	11000.000	38.0	33	40.8	45.8	74.0	-28.2
V	16500.000	43.0	33	37.6	47.6	68.0	-20.4

5580MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	11160.000	30.8	33	40.8	38.6	54.0	-15.4
V	16740.000	33.1	33	37.6	37.7	68.0	-30.3

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	11160.000	44.4	33	40.8	52.2	74.0	-21.8
V	16740.000	45.6	33	37.6	50.2	68.0	-17.8

5700MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	11400.000	38.7	33	40.8	46.5	54.0	-7.5
V	17100.000	37.1	33	37.6	41.7	68.0	-26.3

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	11400.000	51.9	33	40.8	59.7	74.0	-14.3
V	17100.000	51.5	33	37.6	56.1	68.0	-11.9

5745MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11490.000	41.1	33	40.8	48.9	54.0	-5.1
V	17235.000	43.6	33	37.6	48.2	68.0	-19.8

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	11490.000	55.1	33	40.8	62.9	74.0	-11.1
V	17235.000	62.9	33	37.6	67.5	68.0	-0.5

TEST REPORT

5785MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11570.000	42.3	33	40.5	49.8	54.0	-4.2
H	17355.000	44.2	33	37.6	48.8	68.0	-19.2

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	11570.000	56.3	33	40.5	63.8	74.0	-10.2
H	17355.000	62.2	33	37.6	66.8	68.0	-1.2

5825MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11650.000	36.9	33	40.5	44.4	54.0	-9.6
H	17475.000	38.2	33	37.6	42.8	68.0	-25.2

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	11650.000	52.9	33	40.5	60.4	74.0	-13.6
H	17475.000	61.9	33	37.6	66.5	68.0	-1.5

NOTES:
1. Peak detector is used for the emission measurement.
2. Average detector is used for the average data of emission measurement
3. All measurements were made at 3 meters.
4. Value in the margin column shows emission below limit.
5. Horn antenna is used for the emission over 1000MHz.
6. Emission within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.
7. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.
7. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

TEST REPORT

IEEE 802.11n (40MHz) (MCS0)

Radiated Emission Data

5190MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	5150.000	49.9	33	35.7	52.6	54.0	-1.4
H	10380.000	37.3	33	40.5	44.8	68.0	-23.2
H	15570.000	40.9	33	37.7	45.6	54.0	-8.4

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	5150.000	63.9	33	35.7	66.6	74.0	-7.4
H	10380.000	52.3	33	40.5	59.8	68.0	-8.2
H	15570.000	59.8	33	37.7	64.5	74.0	-9.5

5230MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	10460.000	37.9	33	40.5	45.4	68.0	-22.6
V	15690.000	40.5	33	37.7	45.2	54.0	-8.8

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	10460.000	51.1	33	40.5	58.6	68.0	-9.4
V	15690.000	60.7	33	37.7	65.4	74.0	-8.6

5270MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	10540.000	29.2	33	40.4	36.6	68.0	-31.4
V	15810.000	30.3	33	37.7	35.0	54.0	-19.0

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	10540.000	42.6	33	40.4	50.0	68.0	-18.0
V	15810.000	44.7	33	37.7	49.4	74.0	-24.6

5310MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	5350.000	51.0	33	35.7	53.7	54.0	-0.3
V	10620.000	22.3	33	40.4	29.7	54.0	-24.3
H	15930.000	30.3	33	37.7	35.0	54.0	-19.0

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	5350.000	64.0	33	35.7	66.7	74.0	-7.3
V	10620.000	35.5	33	40.4	42.9	74.0	-31.1
H	15930.000	44.1	33	37.7	48.8	74.0	-25.2

5510MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	5460.000	51.0	33	35.7	53.7	54.0	-0.3
V	11020.000	22.4	33	40.8	30.2	54.0	-23.8
H	16530.000	29.2	33	37.6	33.8	68.0	-34.2

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	5460.000	63.4	33	35.7	66.1	74.0	-7.9
V	11020.000	36.3	33	40.8	44.1	74.0	-29.9
H	16530.000	42.5	33	37.6	47.1	68.0	-20.9

5550MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	11100.000	26.0	33	40.8	33.8	54.0	-20.2
V	16650.000	31.4	33	37.6	36.0	68.0	-32.0

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	11100.000	39.8	33	40.8	47.6	74.0	-26.4
V	16650.000	43.5	33	37.6	48.1	68.0	-19.9

5670MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	11340.000	33.5	33	40.8	41.3	54.0	-12.7
H	17010.000	33.0	33	37.6	37.6	68.0	-30.4

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	11340.000	46.1	33	40.8	53.9	74.0	-20.1
H	17010.000	46.8	33	37.6	51.4	68.0	-16.6

TEST REPORT

5755MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11510.000	44.0	33	40.5	51.5	54.0	-2.5
H	17265.000	40.7	33	37.6	45.3	68.0	-22.7

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	11510.000	57.0	33	40.5	64.5	74.0	-9.5
H	17265.000	61.6	33	37.6	66.2	68.0	-1.8

5795MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11590.000	37.9	33	40.5	45.4	54.0	-8.6
V	17385.000	41.2	33	37.6	45.8	68.0	-22.2

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	11590.000	52.0	33	40.5	59.5	74.0	-14.5
V	17385.000	62.2	33	37.6	66.8	68.0	-1.2

NOTES:
1. Peak detector is used for the emission measurement.
2. Average detector is used for the average data of emission measurement
3. All measurements were made at 3 meters.
4. Value in the margin column shows emission below limit.
5. Horn antenna is used for the emission over 1000MHz.
6. Emission the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.
7. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.
8. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

TEST REPORT

AC mode 20MHz

Frequency: 5210MHz

IEEE 802.11ac (20MHz) (MCS0)

Radiated Emission Data

5180MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	5150.000	50.2	33	35.7	52.9	54.0	-1.1
V	10360.000	38.0	33	40.5	45.5	68.0	-22.5
V	15540.000	41.5	33	37.7	46.2	54.0	-7.8

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	5150.000	64.5	33	35.7	67.2	74.0	-6.8
V	10360.000	51.9	33	40.5	59.4	68.0	-8.6
V	15540.000	59.1	33	37.7	63.8	74.0	-10.2

5200MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	10400.000	37.9	33	40.5	45.4	68.0	-22.6
V	15600.000	42.1	33	37.7	46.8	54.0	-7.2

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	10400.000	50.7	33	40.5	58.2	68.0	-9.8
H	15600.000	61.1	33	37.7	65.8	74.0	-8.2

5240MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	10480.000	37.8	33	40.5	45.3	68.0	-22.7
V	15720.000	41.8	33	37.7	46.5	54.0	-7.5

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	10480.000	51.7	33	40.5	59.2	68.0	-8.8
V	15720.000	60.1	33	37.7	64.8	74.0	-9.2

TEST REPORT

5260MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	10520.000	21.5	33	40.4	28.9	68.0	-39.1
V	15780.000	27.5	33	37.7	32.2	54.0	-21.8

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	10520.000	35.3	33	40.4	42.7	68.0	-25.3
V	15780.000	41.4	33	37.7	46.1	74.0	-27.9

5300MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	10600.000	22.1	33	40.4	29.5	54.0	-24.5
V	15900.000	27.7	33	37.7	32.4	54.0	-21.6

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	10600.000	35.6	33	40.4	43.0	74.0	-31.0
V	15900.000	41.7	33	37.7	46.4	74.0	-27.6

5320MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	5350.000	50.5	33	35.7	53.2	54.0	-0.8
V	10640.000	22.6	33	40.4	30.0	54.0	-24.0
H	15960.000	27.3	33	37.7	32.0	54.0	-22.0

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	5350.000	64.3	33	35.7	67.0	74.0	-7.0
V	10640.000	36.0	33	40.4	43.4	74.0	-30.6
H	15960.000	41.9	33	37.7	46.6	74.0	-27.4

5500MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	5460.000	50.7	33	35.7	53.4	54.0	-0.6
V	11000.000	24.0	33	40.8	31.8	54.0	-22.2
H	16500.000	29.4	33	37.6	34.0	68.0	-34.0

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	5460.000	47.9	33	35.7	50.6	74.0	-23.4
V	11000.000	34.1	33	40.8	41.9	74.0	-32.1
H	16500.000	58.8	33	37.6	63.4	68.0	-4.6

TEST REPORT

5580MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	11160.000	30.9	33	40.8	38.7	54.0	-15.3
V	16740.000	31.4	33	37.6	36.0	68.0	-32.0

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	11160.000	44.5	33	40.8	52.3	74.0	-21.7
V	16740.000	46.2	33	37.6	50.8	68.0	-17.2

5700MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	11400.000	32.6	33	40.8	40.4	54.0	-13.6
V	17100.000	34.3	33	37.6	38.9	68.0	-29.1

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	11400.000	47.0	33	40.8	54.8	74.0	-19.2
V	17100.000	49.7	33	37.6	54.3	68.0	-13.7

5745MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11490.000	40.4	33	40.8	48.2	54.0	-5.8
H	17235.000	44.2	33	37.6	48.8	68.0	-19.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	11490.000	56.3	33	40.8	64.1	74.0	-9.9
H	17235.000	61.8	33	37.6	66.4	68.0	-1.6

TEST REPORT

5785MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11570.000	42.2	33	40.5	49.7	54.0	-4.3
H	17355.000	43.6	33	37.6	48.2	68.0	-19.8

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	11570.000	56.3	33	40.5	63.8	74.0	-10.2
H	17355.000	62.2	33	37.6	66.8	68.0	-1.2

5825MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11650.000	38.1	33	40.5	45.6	54.0	-8.4
H	17475.000	43.6	33	37.6	48.2	68.0	-19.8

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	11650.000	52.0	33	40.5	59.5	74.0	-14.5
H	17475.000	62.2	33	37.6	66.8	68.0	-1.2

Ac mode 40MHz

Frequency: 5210MHz

IEEE 802.11ac (40MHz) (MCS0)

Radiated Emission Data

5190MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	5150.000	49.9	33	35.7	52.6	54.0	-1.4
H	10380.000	37.9	33	40.5	45.4	68.0	-22.6
V	15570.000	40.9	33	37.7	45.6	54.0	-8.4

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	5150.000	63.7	33	35.7	66.4	74.0	-7.6
H	10380.000	52.7	33	40.5	60.2	68.0	-7.8
V	15570.000	59.5	33	37.7	64.2	74.0	-9.8

TEST REPORT

5230MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	10460.000	38.1	33	40.5	45.6	68.0	-22.4
V	15690.000	41.8	33	37.7	46.5	54.0	-7.5

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	10460.000	51.7	33	40.5	59.2	68.0	-8.8
V	15690.000	59.7	33	37.7	64.4	74.0	-9.6

5270MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	10540.000	28.4	33	40.4	35.8	68.0	-32.2
V	15810.000	30.2	33	37.7	34.9	54.0	-19.1

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	10540.000	42.0	33	40.4	49.4	68.0	-18.6
V	15810.000	44.1	33	37.7	48.8	74.0	-25.2

5310MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	5350.000	50.6	33	35.7	53.3	54.0	-0.7
V	10620.000	21.0	33	40.4	28.4	54.0	-25.6
V	15930.000	27.5	33	37.7	32.2	54.0	-21.8

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	5350.000	63.0	33	35.7	65.7	74.0	-8.3
V	10620.000	34.8	33	40.4	42.2	74.0	-31.8
V	15930.000	41.2	33	37.7	45.9	74.0	-28.1

5510MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	5460.000	50.8	33	35.7	53.5	54.0	-0.5
V	11020.000	25.4	33	40.8	33.2	54.0	-20.8
H	16530.000	25.7	33	37.6	30.3	68.0	-37.7

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	5460.000	63.5	33	35.7	66.2	74.0	-7.8
V	11020.000	35.9	33	40.8	43.7	74.0	-30.3
H	16530.000	42.0	33	37.6	46.6	68.0	-21.4

5550MHz

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	11100.000	24.4	33	40.8	32.2	54.0	-21.8
V	16650.000	30.5	33	37.6	35.1	68.0	-32.9

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	11100.000	38.4	33	40.8	46.2	74.0	-27.8
V	16650.000	43.6	33	37.6	48.2	68.0	-19.8

TEST REPORT

5670MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	11340.000	27.3	33	40.8	35.1	54.0	-18.9
V	17010.000	32.7	33	37.6	37.3	68.0	-30.7

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	11340.000	40.4	33	40.8	48.2	74.0	-25.8
V	17010.000	46.7	33	37.6	51.3	68.0	-16.7

TEST REPORT

5755MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11510.000	42.9	33	40.5	50.4	54.0	-3.6
H	17265.000	46.2	33	37.6	50.8	68.0	-17.2

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	11510.000	57.4	33	40.5	64.9	74.0	-9.1
V	17265.000	61.0	33	37.6	65.6	68.0	-2.4

5795MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11590.000	40.0	33	40.5	47.5	54.0	-6.5
H	17385.000	44.2	33	37.6	48.8	68.0	-19.2

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	11590.000	40.0	33	40.5	47.5	74.0	-26.5
H	17385.000	44.2	33	37.6	48.8	68.0	-19.2

AC mode 80MHz

Frequency: 5210MHz

IEEE 802.11ac (80MHz) (MCS0)

Radiated Emission Data

5210MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	5150.000	50.1	33	35.7	52.8	54.0	-1.2
H	10360.000	35.9	33	40.5	43.4	68.0	-24.6
V	15540.000	39.5	33	37.7	44.2	54.0	-9.8

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	5150.000	64.5	33	35.7	67.2	74.0	-6.8
V	10360.000	51.0	33	40.5	58.5	68.0	-9.5
V	15540.000	58.7	33	37.7	63.4	74.0	-10.6

TEST REPORT

5290MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	5350.000	50.9	33	35.7	53.6	54.0	-0.4
V	10580.000	-4.8	33	40.4	2.6	68.0	-65.4
V	15870.000	29.4	33	37.7	34.1	54.0	-19.9

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	5350.000	66.3	33	35.7	69.0	74.0	-5.0
V	10580.000	38.2	33	40.4	45.6	68.0	-22.4
V	15870.000	42.8	33	37.7	47.5	74.0	-26.5

5530MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
V	5460.000	50.9	33	35.7	53.6	54.0	-0.4
V	11060.000	21.4	33	40.8	29.2	54.0	-24.8
V	16590.000	30.8	33	37.6	35.4	68.0	-32.6

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
V	5460.000	64.4	33	35.7	67.1	74.0	-6.9
V	11060.000	34.8	33	40.8	42.6	74.0	-31.4
V	16590.000	44.0	33	37.6	48.6	68.0	-19.4

TEST REPORT

5775MHz

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m Average (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
H	11550.000	42.3	33	40.5	49.8	54.0	-4.2
H	17325.000	42.2	33	37.6	46.8	68.0	-21.2

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
H	11550.000	57.0	33	40.5	64.5	74.0	-9.5
H	17325.000	62.6	33	37.6	67.2	68.0	-0.8

NOTES:
1. Peak detector is used for the emission measurement.
2. Average detector is used for the average data of emission measurement
3. All measurements were made at 3 meters.
4. Value in the margin column shows emission below limit.
5. Horn antenna is used for the emission over 1000MHz.
6. Emission within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.
7. For the measurement of radiated emission, summation method was used which numerical integrating (in terms of linear power) over the transmitter occupied bandwidth.
8. For the linear power measurement, data in 1MHz spacing was collected by spectrum analyzer with 1MHz resolution bandwidth.

TEST REPORT

Mode: Normal Operation

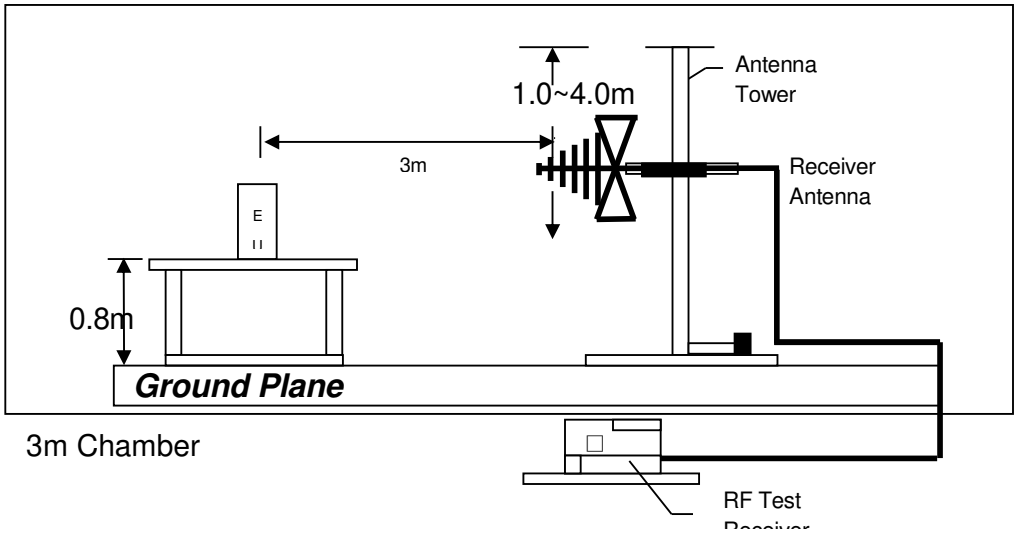
Radiated Emission Data

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	63.952	30.2	16	9.0	23.2	40.0	-16.8
V	124.938	36.2	16	14.0	34.2	43.5	-9.3
V	191.992	28.8	16	16.0	28.8	43.5	-14.7
V	228.244	24.5	16	18.0	26.5	46.0	-19.5
H	327.912	21.8	16	24.0	29.8	46.0	-16.2
V	374.956	24.4	16	24.0	32.4	46.0	-13.6
V	557.922	22.2	16	28.0	34.2	46.0	-11.8
V	624.974	32.8	16	29.0	45.8	46.0	-0.2
V	749.982	21.8	16	30.0	35.8	46.0	-10.2
V	875.112	26.5	16	32.0	42.5	46.0	-3.5

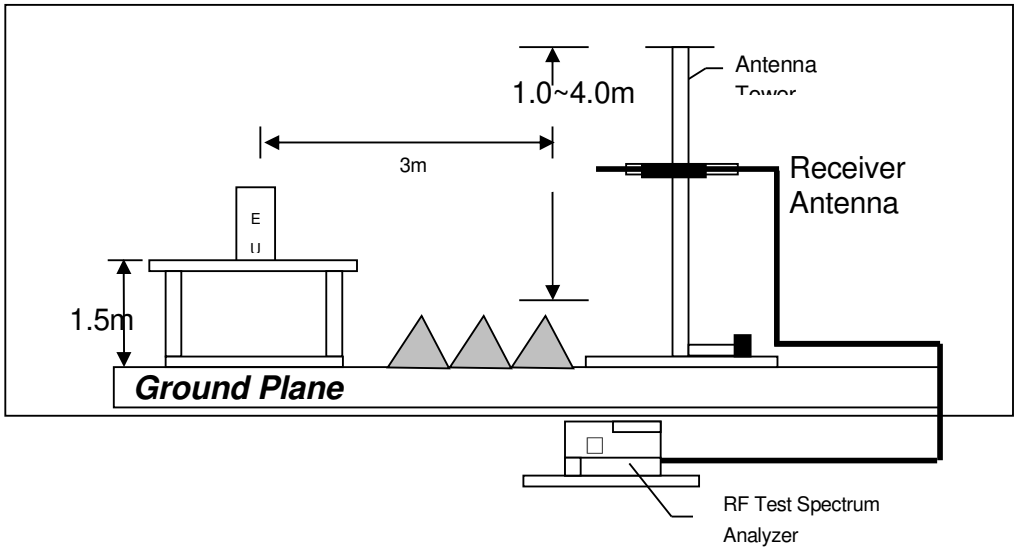
NOTES:
1. Quasi-Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters.
3. Value in the margin column shows emission below limit.
4. Emission within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-Gen Section 8.10.

4.6.3 Radiated Emission Test Setup

The figure below shows the test setup, which is utilized to make these measurements.



Test setup of radiated emissions up to 1GHz



Test setup of radiated emissions above 1GHz

TEST REPORT

4.7 AC Power Line Conducted Emission

☐ Not applicable – EUT is only powered by battery for operation.

☒ EUT connects to AC power line. Emission Data is listed in following pages.

☐ Base Unit connects to AC power line and has transmission. Handset connects to AC power line but has no transmission. Emission Data of Base Unit is listed in following pages.

4.7.1 AC Power Line Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration
at

0.177 MHz

The worst-case line conducted configuration photographs are attached in the Appendix and saved with filename: Conduct Photo.pdf

4.7.2 AC Power Line Conducted Emission Data

The plot(s) and data in the following pages list the significant emission frequencies, the limit and the margin of compliance.

Passed by 13.6dB margin

TEST REPORT

Worse Case Operating Mode: Normal Operation

EDIT PEAK LIST (Final Measurement Results)

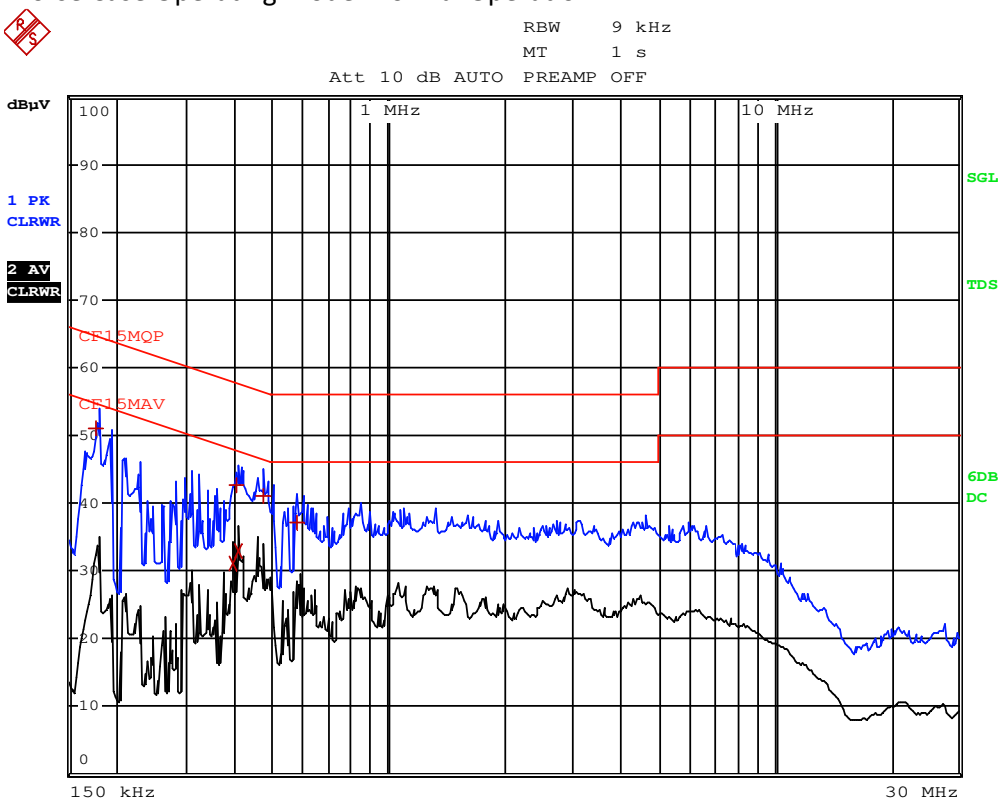
Trace1: CF15MQP
Trace2: CF15MAV
Trace3: ---

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	177 kHz	51.06	N	-13.56
2	CISPR Average	393 kHz	31.10	L1	-16.89
1	Quasi Peak	402 kHz	42.64	L1	-15.16
2	CISPR Average	406.5 kHz	32.86	L1	-14.85
1	Quasi Peak	469.5 kHz	40.99	L1	-15.53
1	Quasi Peak	577.5 kHz	37.25	L1	-18.74

Date: 14.MAR.2023 11:01:24

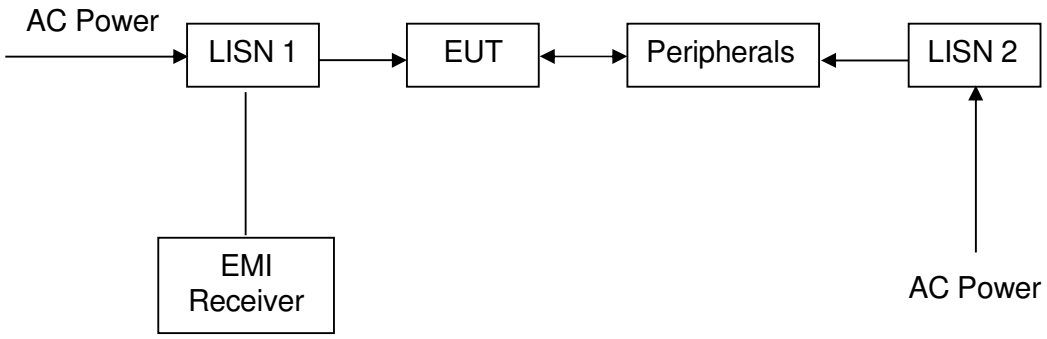
TEST REPORT

Worse Case Operating Mode: Normal Operation



Date: 14.MAR.2023 11:01:39

4.7.3 Conducted Emission Test Setup



4.8 Frequency Stability Requirement

Frequency (MHz)	Mode	Measured Value (ppm) (0°C)	Measured Value (ppm) (10°C)	Measured Value (ppm) (20°C)	Measured Value (ppm) (30°C)	Measured Value (ppm) (40°C)	Measured Value (ppm) (50°C)
5180	A	0.828	0.968	4.068	4.202	3.964	3.788
5260		0.804	0.868	4.056	4.268	3.854	3.702
5500		0.774	0.842	4.048	4.298	3.852	3.798
5745		0.768	0.826	4.102	4.788	3.878	4.025

Temperature (°C)	Frequency (MHz)	Mode	Measured Value (ppm) 120VAC	Measured Value (ppm) 138VAC	Measured Value (ppm) 102VAC
25	5180	A	4.102	4.868	3.924
25	5260		3.998	4.782	3.556
25	5745		3.988	4.854	3.566
25	5745		4.202	3.604	4.502

The Maximum value is +4.894ppm.

It is proved that the frequency stability such that an emission is maintained within the band of operation under all condition.

4.9 U-NII1 99% Bandwidth Requirement

For the case if a channel operating in U-NII 1 band has a 26-dB bandwidth that straddles into U-NII 2A band but its 99% occupied power bandwidth does not. For this rare case, DFS requirement does not apply.

The plots of U-NII1 99% bandwidth is saved with filename: DATA.pdf proved that no further test for DFS.

4.10 DFS Channel Shutdown and Non-occupancy period.

According to standard 905462 DO2 UNII DFS Compliance procedures New Pules v02 section 5.1.1 and 5.1.2.

Master Devices

a) The *Master Device* will use DFS in order to detect *Radar Waveforms* with received signal strength above the *DFS Detection Threshold* in the 5250 - 5350 MHz and 5470- 5725 MHz bands. DFS is not required in the 5150 - 5250 MHz or 5725 - 5825 MHz bands.

b) Before initiating a network on a *Channel*, the *Master Device* will perform a C*hannel Availability Check* for a specified time duration (*Channel Availability Check Time*) to ensure that there is no radar system operating on the *Channel*, using DFS described under subsection a) above.

c) The *Master Device* initiates a U-NII network by transmitting control signals that will enable other U-NII devices to *Associate* with the *Master Device*.

d) During normal operation, the *Master Device* will monitor the *Channel (In-Service Monitoring)* to ensure that there is no radar system operating on the *Channel*, using DFS described under a).

e) If the *Master Device* has detected a *Radar Waveform* during *In-Service Monitoring* as described under d), the *Operating Channel* of the U-NII network is no longer an *Available Channel*. The *Master Device* will instruct all associated *Client Device(s)* to stop transmitting on this *Channel* within the *Channel Move Time*. The transmissions during the *Channel Move Time* will be limited to the *Channel Closing Transmission Time*.

f) Once the *Master Device* has detected a *Radar Waveform* it will not utilize the *Channel* for the duration of the *Non-Occupancy Period*. 3

g) If the *Master Device* delegates the *In-Service Monitoring* to a *Client Device*, then the combination will be tested to the requirements described under d) through f) above.

Client Devices

a) A *Client Device* will not transmit before having received appropriate control signals from a *Master Device*.

b) A *Client Device* will stop all its transmissions whenever instructed by a *Master Device* to which it is associated and will meet the *Channel Move Time* and *Channel Closing Transmission Time* requirements. The *Client Device* will not resume any transmissions until it has again received control signals from a *Master Device*.

c) If a *Client Device* is performing *In-Service Monitoring* and detects a *Radar Waveform* above the *DFS Detection Threshold*, it will inform the *Master Device*. This is equivalent to the *Master Device* detecting the *Radar Waveform* and d) through f) of section 5.1.1 apply.

d) Irrespective of *Client Device* or *Master Device* detection the *Channel Move Time* and *Channel Closing Transmission Time* requirements remain the same.

e) The client test frequency must be monitored to ensure no transmission of any type has occurred for 30 minutes. Note: If the client moves with the master, the device is considered compliant if nothing appears in the client non-
Occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear.

4.10.1 Applicability of DFS requirement during normal operation.

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
DFS Detection Threshold	Yes	Not required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

The operational behavior and individual DFS requirements that are associated with these modes are as follows:

4.10.2 Response Requirements

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. **Note 2:** The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. **Note 3:** During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

TEST REPORT

4.10.3 Short pulse Radar test Wave forms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	Roundup $\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot10^6}{PRI_{\mu sec}}\right)\right\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 µsec, with a minimum increment of 1 µsec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.

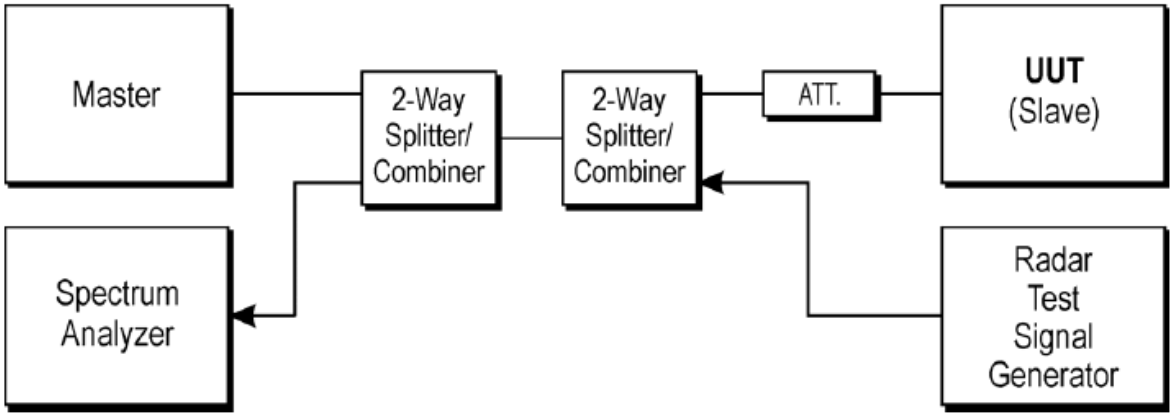
4.10.5 Calibration Setup and DFS Test Results

4.10.5.1 Calibration of Radar Waveform

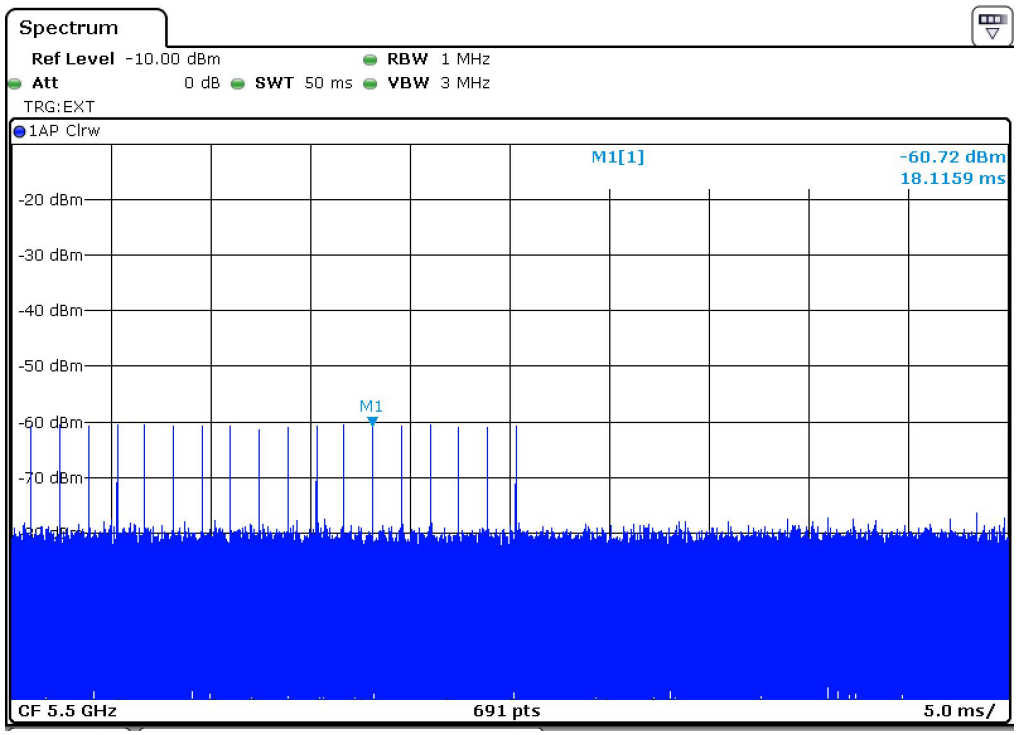
4.10.5.2 Calibration Procedure:

The Interference Radar Detection Threshold Level is -62dBm+ 0dBi +1 dB=-61dBm that had been taken into account the output power range and antenna gain. The following equipment setup was used to calibrate the conducted Radar Waveform. A vector signal generator was utilized to establish the test signal level for radar type 0.During this process there were no transmissions by either the Master or client device. The Spectrum analyzer was switched was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 1MHz or 3MHz respectively to measure the type 0 radar waveform. The spectrum analyzer had offset to compensate and RF cable loss. The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was -61dBm. Capture the spectrum analyzer plots on short pulse radar waveform.

4.10.5.3 Conducted Setup



4.10.7 Radar Waveform Calibration Result



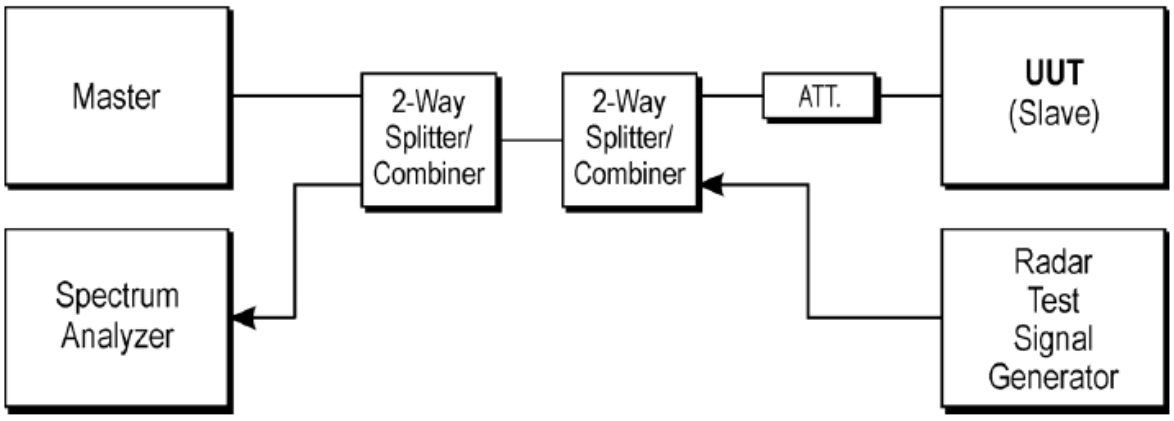
4.10.8 Test Deviation

There is no deviation with the original standard.

10.11.1 Test Procedures

1. The radar pulse generator is setup to provide a pulse at frequency that the Master and Client are operating. A type 0 radar pulse with a 1us pulse width and a 1428 us PRI is used for the testing.
2. The vector signal generator is adjusted to provide the radar burst (18 pules) at a level approximately -62dBm at the antenna of the Master device.
3. An external trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
4. A U-NII device operating as a Client Device (EUT) will associate with the Master at same channel. The MEPG file "TestFile.mpg" specified by the FCC is streamed from the "file computer" through the master to the client device (EUT).
5. When a radar burst with a level equal to the DFS Detection Threshold + 1dB is generated on the operating Channel of the U-NII device. At time T0 the Radar Waveform generator sends a Burst of pulse of the radar waveform at Detection Threshold +1dB.
6. Observe the transmission of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the EUT during the observation time. One 20seconds plot is reported for the short pulse Radar Type 0. The plot for the short pulse radar types start at the end if the radar burst.
7. Measurement of the aggregate duration of the Channel Closing Transmission Time method:
   Center Frequency: operating frequency
   Span: Zero
   RBW: 1MHz
   VBW: 3MHz
   Sweep Time: 32Sec
   Detector: Max Peak
   Sweep: Single.
8. Measure the EUT for more than 30mintes following the Channel move time to verify the no transmission or beacons occur on this Channel.

4.11.2 Test Setup



4.11.3 Test Deviation

There is no deviation with the original standard.

4.11.4 Test result
Mode : 802.11AC VHT 80

Measurement Summary

DUT Frequency (MHz)	Radar Type No.	Type of Measurement value	Overall Result
5290.000000	0	Channel Move Time	PASS
5290.000000	0	Channel Closing Transmission Time	PASS
5290.000000	0	Non-occupancy period	PASS

Channel Move Time Detailed Results

DUT Frequency (MHz)	Radar Type No.	CMT Tx Time (s)	CMT Limit (s)	CMT Result	CMT Comment
5290.000000	0	0.000	10.000	PASS	Tx Time value is last trailing edge found within sweep. See Note 1.

Channel Closing Transmission Time Detailed Results

DUT Frequency (MHz)	Radar Type No.	CCTT Type of Value	CCTT No. of Pulses found	CCTT Tx Time (ms)
5290.000000	0	first 200 ms	0	0.000
5290.000000	0	remaining 10.0 second(s) period	0	0.000

(continuation of the "Channel Closing Transmission Time Detailed Results" table from column 5 ...)

DUT Frequency (MHz)	CCTT Tx Time Limit (ms)	CCTT Result	CCTT Comment
5290.000000	200.000	PASS	See Note 1.
5290.000000	60.000	PASS	See Note 1.

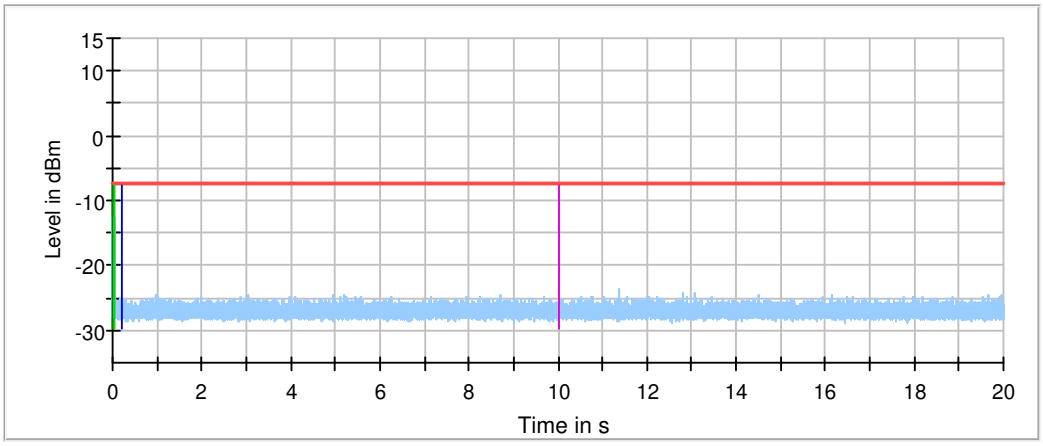
Non-occupancy period Detailed Results

DUT Frequency (MHz)	Radar Type No.	NOP No. of Pulses found	NOP No. of Pulses Limit	NOP Tx Time (s)	NOP Tx Time Limit (s)	NOP Result	NOP Comment
5290.000000	0	0	0	0.000	0.000	PASS	

Transmitting Test Detailed Results

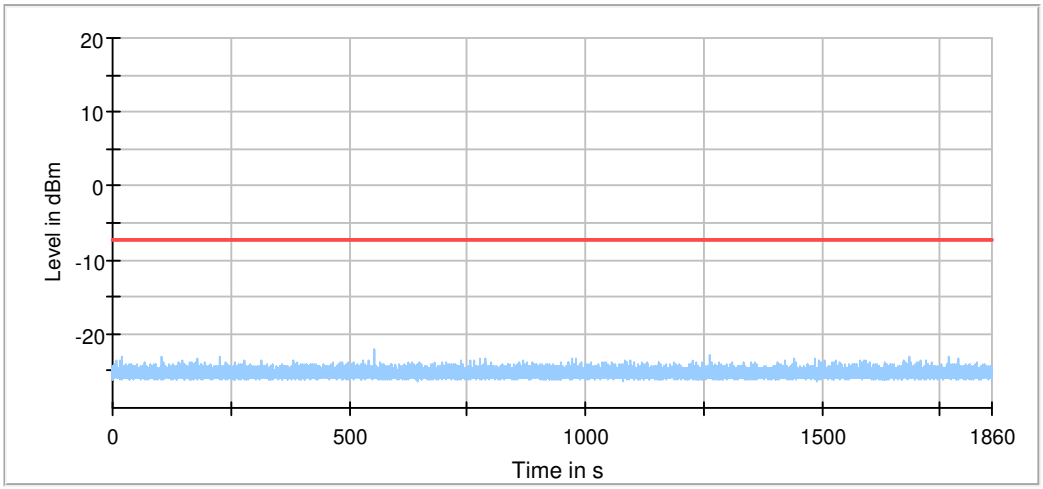
DUT Frequency (MHz)	Tx-Test Result	Tx-Test Comment
5290.000000	---	not performed / not finished

Channel Move Time



In-Service Monitoring Channel Move Time
Start of Radar
First 200ms of Channel Closing Tx Time
Threshold
Trigger at end of Radar
10sec Channel Move Time Limit

Channel Closing Transmission Time



In-Service Monitoring Non-occupancy period
Threshold

Mode: 802.11AC VHT 40

Measurement Summary

DUT Frequency (MHz)	Radar Type No.	Type of Measurement value	Overall Result
5270.000000	0	First of all Transmitt Test	---
5270.000000	0	Channel Move Time	PASS
5270.000000	0	Channel Closing Transmission Time	PASS
5270.000000	0	Non-occupancy period	PASS

Channel Move Time Detailed Results

DUT Frequency (MHz)	Radar Type No.	CMT Tx Time (s)	CMT Limit (s)	CMT Result	CMT Comment
5270.000000	0	0.000	10.000	PASS	Tx Time value is last trailing edge found within sweep. See Note 1.

Channel Closing Transmission Time Detailed Results

DUT Frequency (MHz)	Radar Type No.	CCTT Type of Value	CCTT No. of Pulses found	CCTT Tx Time (ms)
5270.000000	0	first 200 ms	0	0.000
5270.000000	0	remaining 10.0 second(s) period	0	0.000

(continuation of the "Channel Closing Transmission Time Detailed Results" table from column 5 ...)

DUT Frequency (MHz)	CCTT Tx Time Limit (ms)	CCTT Result	CCTT Comment
5270.000000	200.000	PASS	See Note 1.
5270.000000	60.000	PASS	See Note 1.

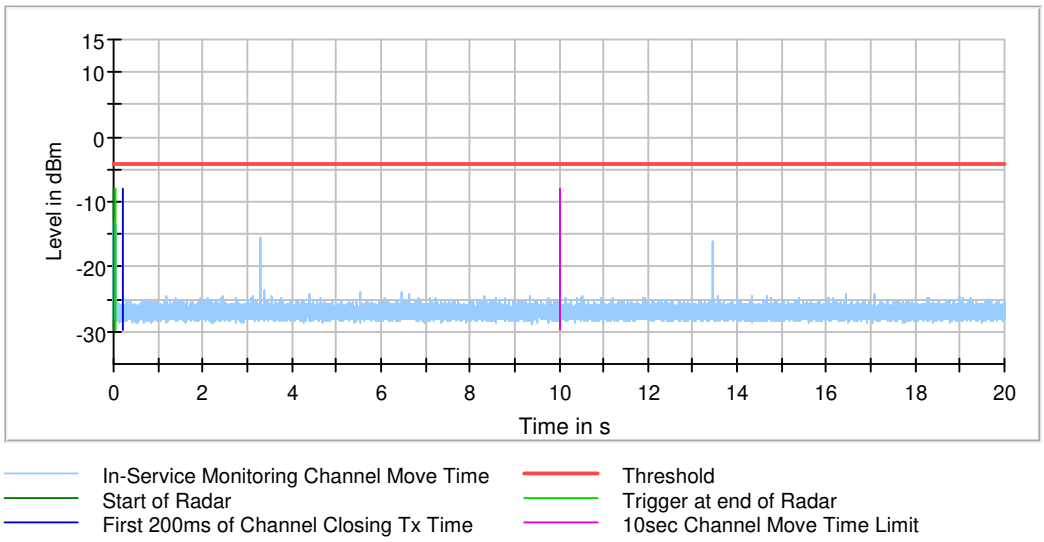
Non-occupancy period Detailed Results

DUT Frequency (MHz)	Radar Type No.	NOP No. of Pulses found	NOP No. of Pulses Limit	NOP Tx Time (s)	NOP Tx Time Limit (s)	NOP Result	NOP Comment
5270.000000	0	0	0	0.000	0.000	PASS	

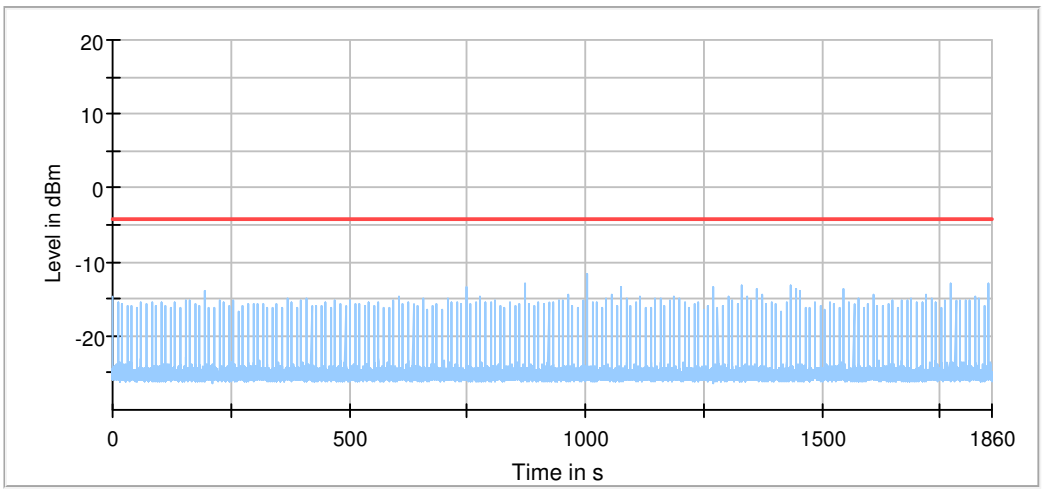
Transmitting Test Detailed Results

DUT Frequency (MHz)	Tx-Test Result	Tx-Test Comment
5270.000000	---	not performed / not finished

Channel Move Time



Channel Closing Transmission Time



Mode : 802.11AC VHT 20

Measurement Summary

DUT Frequency (MHz)	Radar Type No.	Type of Measurement value	Overall Result
5320.000000	0	First of all Transmitt Test	---
5320.000000	0	Channel Move Time	PASS
5320.000000	0	Channel Closing Transmission Time	PASS
5320.000000	0	Non-occupancy period	PASS

Channel Move Time Detailed Results

DUT Frequency (MHz)	Radar Type No.	CMT Tx Time (s)	CMT Limit (s)	CMT Result	CMT Comment
5320.000000	0	0.000	10.000	PASS	Tx Time value is last trailing edge found within sweep. See Note 1.

Channel Closing Transmission Time Detailed Results

DUT Frequency (MHz)	Radar Type No.	CCTT Type of Value	CCTT No. of Pulses found	CCTT Tx Time (ms)
5320.000000	0	first 200 ms	0	0.000
5320.000000	0	remaining 10.0 second(s) period	0	0.000

(continuation of the "Channel Closing Transmission Time Detailed Results" table from column 5 ...)

DUT Frequency (MHz)	CCTT Tx Time Limit (ms)	CCTT Result	CCTT Comment
5320.000000	200.000	PASS	See Note 1.
5320.000000	60.000	PASS	See Note 1.

Non-occupancy period Detailed Results

DUT Frequency (MHz)	Radar Type No.	NOP No. of Pulses found	NOP No. of Pulses Limit	NOP Tx Time (s)	NOP Tx Time Limit (s)	NOP Result	NOP Comment
5320.000000	0	0	0	0.000	0.000	PASS	

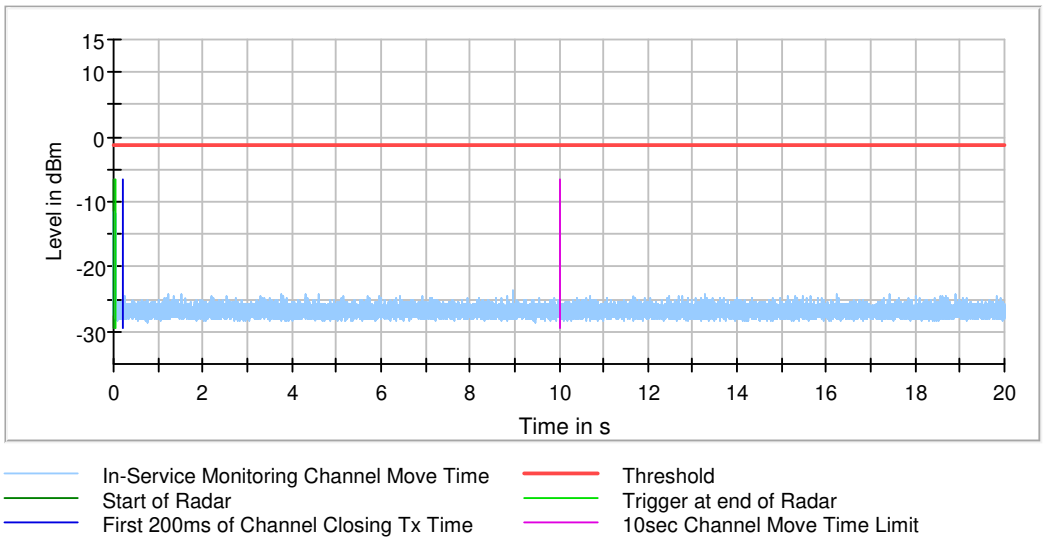
Transmitting Test Detailed Results

DUT Frequency (MHz)	Tx-Test Result	Tx-Test Comment
5320.000000	---	not performed / not finished

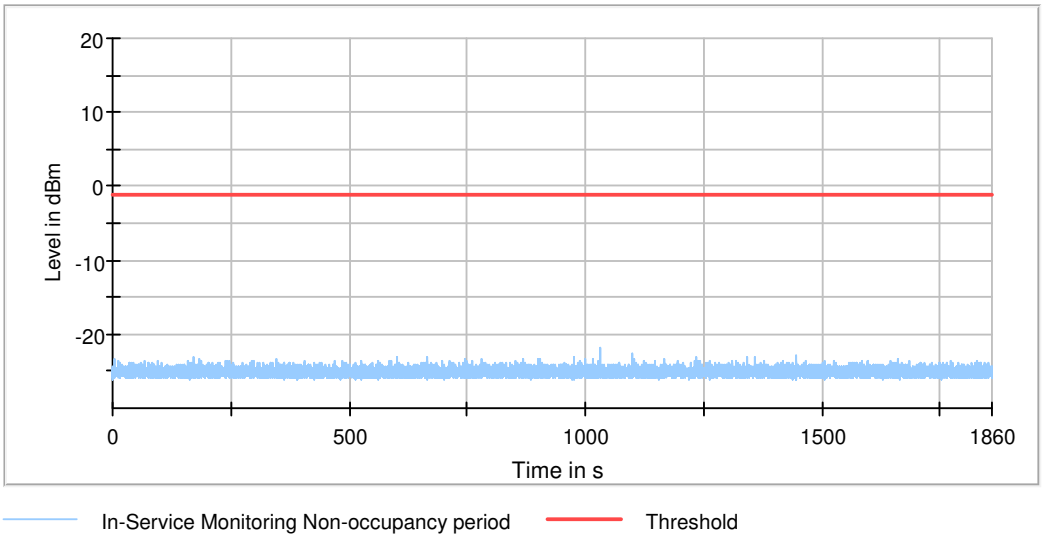
DFS Channel Shutdown and Non-Occupancy period

DUT Frequency (MHz)	CCTT (s)	Limit CCTT (s)	Non Occupancy Time (s)	Limit Non Occupancy Time (s)	Result	Comment
5320.000000	0.000	1.000	1860.062	1800.000	PASS	

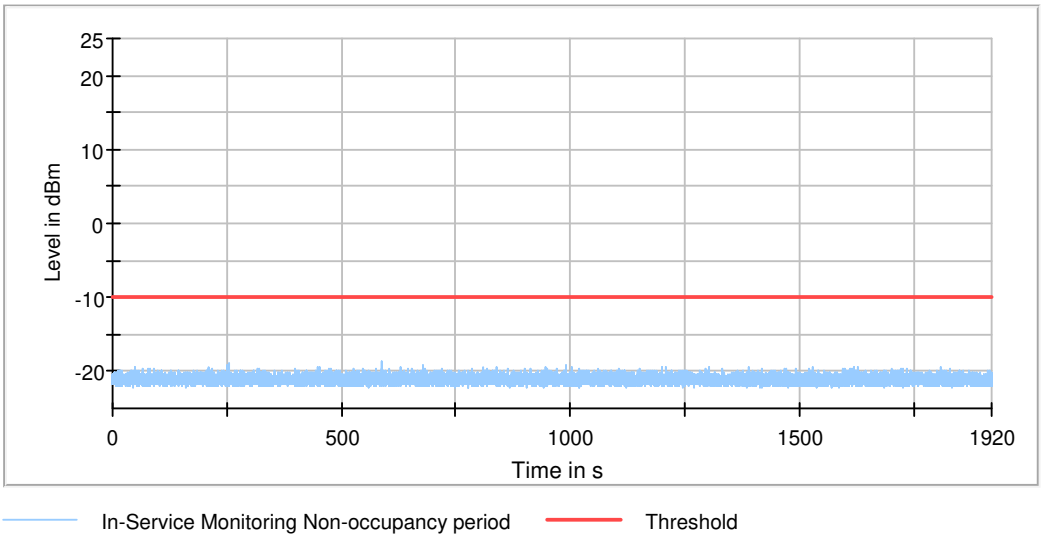
Channel Move Time



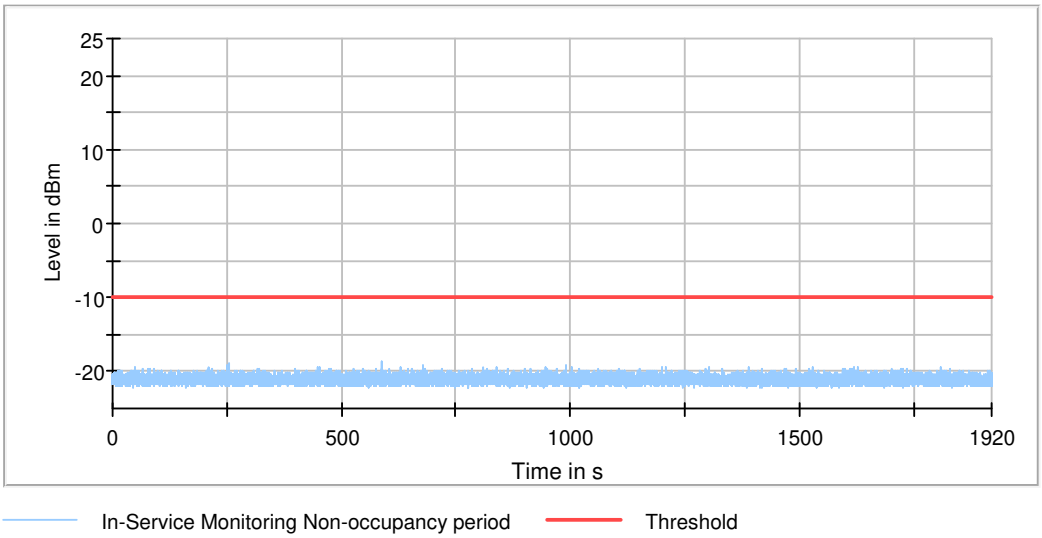
Channel Closing Transmission Time



4.11.5 Nosie floor of the Testing equipment



4.11.6 Spot of EUT without companion device



5.0 EQUIPMENT LIST

Radiated Emissions Test

Equipment	Signal and Spectrum Analyzer (10Hz to 40GHz)	Biconical Antenna (30MHz to 300MHz)	EMI Test Receiver 7GHz
Registration No.	EW-3016	EW-3242	EW-3481
Manufacturer	ROHDESCHWARZ	EMCO	ROHDESCHWARZ
Model No.	FSV40	3110C	ESR7
Calibration Date	January 29, 2022	May 26, 2021	December 21, 2021
Calibration Due Date	July 29, 2023	August 26, 2023	June 21, 2023

Equipment	Log Periodic Antenna	Double Ridged Guide Antenna	Active Loop H-field (9kHz to 30MHz)
Registration No.	EW-3243	EW-1133	EW-3302
Manufacturer	EMCO	EMCO	EMCO
Model No.	3148B	3115	6502
Calibration Date	June 03, 2021	May 26, 2021	September 08, 2022
Calibration Due Date	June 30, 2023	August 26, 2023	September 08, 2023

Equipment	RF Preamplifier (9kHz to 6000MHz)	Pyramidal Horn Antenna	14m Double Shield RF Cable (9kHz - 6GHz)
Registration No.	EW-3006b	EW-0905	EW-2376
Manufacturer	SCHWARZBECK	EMCO	RADIALL
Model No.	BBV9718	3160-09	n m/br56/bnc m 14m
Calibration Date	February 15, 2022	July 20, 2021	January 26, 2022
Calibration Due Date	August 15, 2023	August 20, 2023	July 26, 2023

Equipment	RF Cable 14m (1GHz to 26.5GHz)	14m Double Shield RF Cable (20MHz to 6GHz)	Pyramidal Horn Antenna
Registration No.	EW-2781	EW-2074	EW-0905
Manufacturer	GREATBILLION	RADIALL	EMCO
Model No.	SMA m/SHF5MPU /SMA m ra14m,26G	N(m)-RG142-BNC(m) L=14M	3160-09
Calibration Date	November 24, 2021	December 10, 2021	July 20, 2021
Calibration Due Date	July 24, 2023	September 10, 2023	August 20, 2023

TEST REPORT

Conducted Emissions Test

Equipment	RF Cable 240cm (RG142) (9kHz to 30MHz)	Artificial Mains Network	EMI Test Receiver 7GHz
Registration No.	EW-2454	EW-2501	EW-3481
Manufacturer	RADIALL	ROHDESCHWARZ	ROHDESCHWARZ
Model No.	Bnc m st / 142 / bnc mra 240cm	ENV-216	ESR7
Calibration Date	January 26, 2022	September 11, 2021	December 21, 2021
Calibration Due Date	July 26, 2023	September 11, 2023	June 21, 2023

Conductive Measurement Test

Equipment	5m RF Cable (40GHz)	RF Power Meter with Power Sensor (N1921A)	EMI Test Receiver 7GHz
Registration No.	EW-2701	EW-3309	EW-3481
Manufacturer	RADIALL	ROHDESCHWARZ	ROHDESCHWARZ
Model No.	Sma m-m 5m 40G	NRP-Z81	ESR7
Calibration Date	November 24, 2020	December 01, 2021	December 21, 2021
Calibration Due Date	May 24, 2023	June 01, 2023	June 21, 2023

Control Software for Radiated Emission

Software Information	
Software Name	EMC32
Manufacturer	ROHDESCHWARZ
Software version	10.50.40

END OF TEST REPORT