

TEST REPORT

**CTK Co., Ltd.**

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Report No.:
CTK-2025-02413
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1. Applicant

- Name : MIRATEK INCORPORATION
- Address : 135, Bokjeong-ro, Sujeong-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
- Date of Receipt : 2025-07-12

2. Manufacturer

- Name : MIRATEK INCORPORATION
- Address : 135, Bokjeong-ro, Sujeong-gu, Seongnam-si, Gyeonggi-do, Republic of Korea

3. Use of Report : For FCC Conformance / ISED Conformance**4. Test Sample / Model:** Surround view monitoring system / HT LINKVUE1.5**5. Date of Test :** 2025-08-20 to 2025-08-25**6. Test Standard(method) used :** FCC 47 CFR part 15 subpart E 15.407
ISED RSS-247 & RSS-Gen**7. Testing Environment:** refer to 9 page**8. Test Results :** Compliance**9. Location of Test :** ☒ Permanent Testing Lab ☐ On Site Testing
(Address : (Unhak-Dong) 5, Dongbu-ro 221beon-gil, Cheoin-gu, Yong-in-si,
Gyeonggi-do, Korea)

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

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Approval	Tested by	Technical Manager
	Su-Jun Hwang: (Signature)	Ji-Hye, Kim: (Signature)

2025-09-04

CTK Co., Ltd.



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REPORT REVISION HISTORY

Date	Revision	Page No
2025-09-04	Issued (CTK-2025-02413)	all

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1. General Product Description

1.1 Applicant Information

Company	MIRATEK INCORPORATION
Contact Point	135, Bokjeong-ro, Sujeong-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Contact Person	Name : KIM PILSOO E-mail : pskim@miratek.co.kr Tel : +82-10-2926-5616 Fax : -

1.2 Product Information

FCC ID	2BAK4-LINKVUE15
ISED	30270-LINKVUE15
Product Description	Surround view monitoring system
Model name	HT LINKVUE1.5
Variant Model name	HT LINKVUE1.5 REEFER
Operating Frequency	UNII 1 802.11ac 80 MHz_BW : 5 210 MHz
RF Output Power	11.79 dBm (15.10 mW)
Antenna Specification	Antenna type : Dipole Antenna(Same Antenna 2 EA) UNII 1 Peak Gain : 2.16 dBi
Antenna Configurations	Only MIMO
Type of Modulation	OFDM
Data Rate	up to 867 Mbps
Power Source	DC 12 V ~ DC 24 V
HVIN	HT LinkVue1.5
RF Power setting in Test SW	Initial value

1.3 Peripheral Devices

Device	Manufacturer	Model No.	Serial No.
Note Computer	SAMSUNG	NT550XEZ	5RNV9FCW400658Y
AC/DC Adapter	SOLUM	EP-TA845 001	-

1.4 Model Differences

HT LINKVUE1.5 REEFER - All specifications are identical (hardware, equipment, harness).
The only difference is how the harnesses (power, trigger, camera) are connected to the product's external components.
Test Model was HT LINKVUE1.5



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2. Accreditations

2.1 Laboratory Accreditations and Listings

Country	Agency	Registration Number
USA	FCC	805871
CANADA	ISED	CN : 8737A CAB ID : KR0025
KOREA	NRRA	KR0025

2.2 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.



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3. Test Specifications

3.1 Standards

FCC Part Section(s)	Requirement(s)	Limit	Status (Note 1)	Test Condition
15.407 (e)	6 dB Bandwidth	> 500 kHz (5 725 – 5 850 MHz)	NA	Conducted
15.407 (a)	26 dB Bandwidth and 99% Bandwidth	NA	C	
15.407 (a)(1),(2),(3)	Conducted Output Power	< 250 mW (5 150 – 5 250 MHz) < 250 mW (5 250 – 5 350 MHz, 5 470 – 5 725 MHz) < 1 W (5 725 – 5 850 MHz)	C	
15.407 (a)(1),(2),(3)	Power Spectral Density	< 11 dBm/MHz (5 150 – 5 250 MHz) < 11 dBm/MHz (5 250 – 5 350 MHz, 5 470 – 5 725 MHz) < 30 dBm/500 kHz (5 725 – 5 850 MHz)	C	
15.407 (g)	Frequency Stability	NA	C	
15.407 (b)	Undesirable emission	< -27 dBm/MHz EIRP (5 150 – 5 250 MHz, 5 250 – 5 350 MHz, 5 470 – 5 725 MHz) < -27 dBm/MHz EIRP < 10 dBm/MHz EIRP < 15.6 dBm/MHz EIRP < 27 dBm/MHz EIRP (5 725 – 5 850 MHz)	C	Radiated
15.205, 15.407 (b)(9),(10)	Radiated Spurious Emission	15.209(a)	C	
15.407 (b)(9)	AC Conducted Emissions	15.207(a)	C	Line Conducted
<u>Note 1:</u> C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable				
<u>Note 2:</u> The data in this test report are traceable to the national or international standards.				
<u>Note 3:</u> The sample was tested according to the following specification: FCC Part 15.407, ANSI C63.10-2013				
<u>Note 4:</u> The tests were performed according to the method of measurements prescribed in KDB No.789033				



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ISED Part Section(s)	Requirement(s)	Limit	Status (Note 1)	Test Condition
RSS-Gen 6.7	6 dB Bandwidth	> 500 kHz (5 725 – 5 850 MHz)	NA	Conducted
RSS-Gen 6.7	26 dB Bandwidth and 99% Bandwidth	NA	C	
RSS-247 6.2.1.1, 6.2.2.1, 6.2.3.1, 6.2.4.2	Conducted Output Power	< 200 mW EIRP (5 150 – 5 250 MHz) < 250 mW (5 250 – 5 350 MHz, 5 470 – 5 725 MHz) < 1 W (5 725 – 5 850 MHz)	C	
RSS-247 6.2.1.1, 6.2.2.1, 6.2.3.1, 6.2.4.2	Power Spectral Density	< 10 dBm/MHz EIRP (5 150 – 5 250 MHz) < 11 dBm/MHz (5 250 – 5 350 MHz, 5 470 – 5 725 MHz) < 30 dBm/500 kHz (5 725 – 5 850 MHz)	C	
RSS-Gen 6.11	Frequency Stability	NA	C	
RSS-247 6.2.1.2, 6.2.2.2, 6.2.3.2, 6.2.4.3	Undesirable emission	< -27 dBm/MHz EIRP (5 150 – 5 250 MHz, 5 250 – 5 350 MHz, 5 470 – 5 725 MHz) < -27 dBm/MHz EIRP < 10 dBm/MHz EIRP < 15.6 dBm/MHz EIRP < 27 dBm/MHz EIRP (5 725 – 5 850 MHz)	C	Radiated
RSS-Gen 6.13, 7.3, 8.9, 8.10	Radiated Spurious Emission	RSS-Gen 7.3 8.9, 8.10	C	
RSS-Gen 8.8	AC Conducted Emissions	RSS-Gen 8.8	C	Line Conducted
<i>Note 1:</i> C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable				
<i>Note 2:</i> The data in this test report are traceable to the national or international standards.				
<i>Note 3:</i> The sample was tested according to the following specification: RSS-247, RSS-GEN				
<i>Note 4:</i> The tests were performed according to the method of measurements prescribed in KDB No.789033, ANSI C63.10-2013				



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3.2 Mode of operation during the test

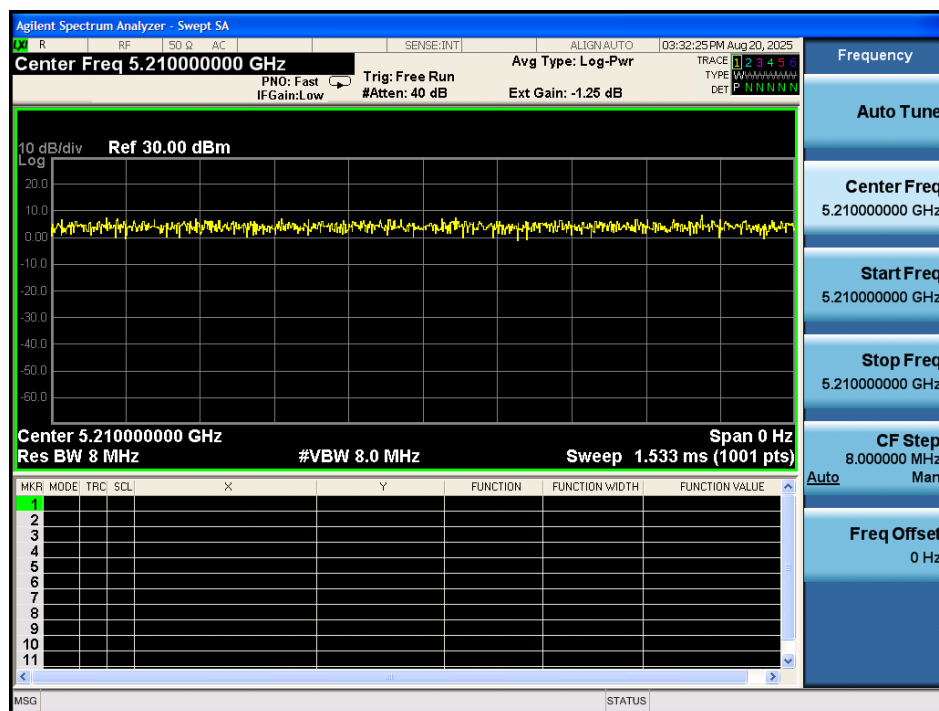
The EUT is operated in a manner representative of the typical of the equipments.
During at testing, system components were manipulated within the confines of typical usage to maximize each emission.
For WLAN function, the engineering test program was provided and enabled to make EUT continuous transmit.
All modulation modes were tests. The results are only attached worst cases.

Test Frequency & Bandwidth

	Frequency
UNII 1	5 210 MHz

Test mode & Worst case

Test mode	Modulation	Data rate	Duty Cycle	Duty Cycle Factor
802.11ac_VHT80	OFDM	MNSS 0	100 %	-





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3.3 Device Modifications

The following modifications were necessary for compliance:

Not applicable

3.4 Measurement Uncertainty

The value of the measurement uncertainty for the measurement of each parameter.
Coverage factor $k = 2$, Confidence levels of 95 %

Description	Uncertainty
Conducted RF Output Power	1.5 dB (C.L.: Approx. 95 %, $k = 2$)
Power Spectral Density	1.5 dB (C.L.: Approx. 95 %, $k = 2$)
Occupied Bandwidth	0.1 MHz (C.L.: Approx. 95 %, $k = 2$)
Unwanted Emission(conducted)	3.0 dB (C.L.: Approx. 95 %, $k = 2$)
Radiated Emissions ($f \leq 1$ GHz)	4.11 dB (C.L.: Approx. 95 %, $k = 2$)
Radiated Emissions ($f > 1$ GHz)	4.48 dB (C.L.: Approx. 95 %, $k = 2$)
Line Conducted Emission	2.06 dB (C.L.: Approx. 95 %, $k = 2$)

3.5 Test Software

automation program

Conducted Test	Ics Pro Ver. 6.0.3
Radiated Test	EP5RE Ver. 6.0.10, ES10 Ver. 2022.04.000
Line Conducted Test	EMC32 Ver. 10.50.00

Test program

Conducted Test, Radiated Test, Line Conducted Test	PuTTY(Terminal Program)
--	-------------------------

3.6 Testing Environment

Test Item	Test Date	Temperature (°C)	Relative Humidity (%)
26 dB Bandwidth and 99% Bandwidth Conducted Output power Power Spectral Density Frequency Stability	2025-08-20	23 ± 1	58 ± 3
Radiated Spurious Emissions ($f > 1$ GHz)	2025-08-21	24 ± 1	60 ± 3
Radiated Spurious Emissions ($f < 1$ GHz)	2025-08-25	21 ± 1	59 ± 3
AC Conducted Emission	2025-08-25	22.5 ± 1	65 ± 3



4. Technical Characteristic Test

4.1 26 dB Bandwidth and 99% Bandwidth

Test Procedures

KDB 789033 – Section C.1
ANSI C63.10-2013 - Section 6.9.2

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

Test Procedures

KDB 789033 – Section C.1
ANSI C63.10-2013 - Section 6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

Test Settings :

Center frequency = the highest, middle and the lowest channels

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

Minimum Standard:

NA



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Test Data:

	26 dB Bandwidth and 99 % Bandwidth (MHz)			
Mode	802.11ac_VHT80			
Frequency	26 dB		99 %	
	ANT0	ANT1	ANT0	ANT1
5 210 MHz	81.57	80.95	76.07	76.14
Measurement uncertainty	± 0.1 MHz			





4.2 OUTPUT POWER

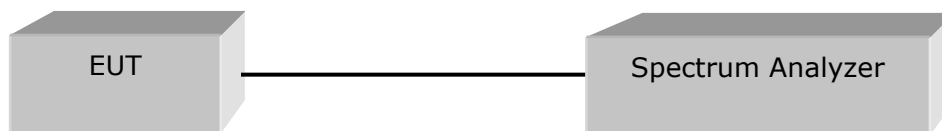
Test Procedures

KDB 789033 – Section E.2.d (Method SA-2, Maximum Conducted Output Power)

ANSI C63.10-2013 – Section 12.3.2.4

KDB 662911 D01, D02 (Multiple Transmitter Output)

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.



Test Settings :

Center frequency = the highest, middle and the lowest channels

a) RBW = 1 MHz

b) VBW $\geq 3 \times$ RBW

c) Sweep time = auto

d) Detector = power averaging (rms)

e) Trace mode = Average at least 100

f) Duty cycle factor = $10\log(1/x)$

Test mode	Duty Cycle Factor (dB)
802.11ac_VHT80	-



Limit

Operating Mode	Mode	ANT Gain (dBi)	Band	FCC Limit (dBm)	ISED Limit (dBm)
MIMO	802.11ac	5.17	UNII 1	24.00	Note
			UNII 2A	24.00	Note
		-	UNII 2C	24.00	Note
			UNII 3	30.00	Note

Note :

Per KDB 662911, the MIMO directional gain is calculated using the following formula, Where G_N is the gain of the nth antenna and N_{ANT} , the total number of antennas used.

$$\text{Directional gain} = G_{ANT} + 10 \log(N_{ANT}) \text{ dBi}$$

Band	Limit (dBm)
UNII 1	the maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10}B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz.
UNII 2A	The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10}B$, dBm, whichever is less. The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10}B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.
UNII 2C	The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10}B$, dBm, whichever is less. The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10}B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.
UNII 3	The maximum conducted output power shall not exceed 1 W.



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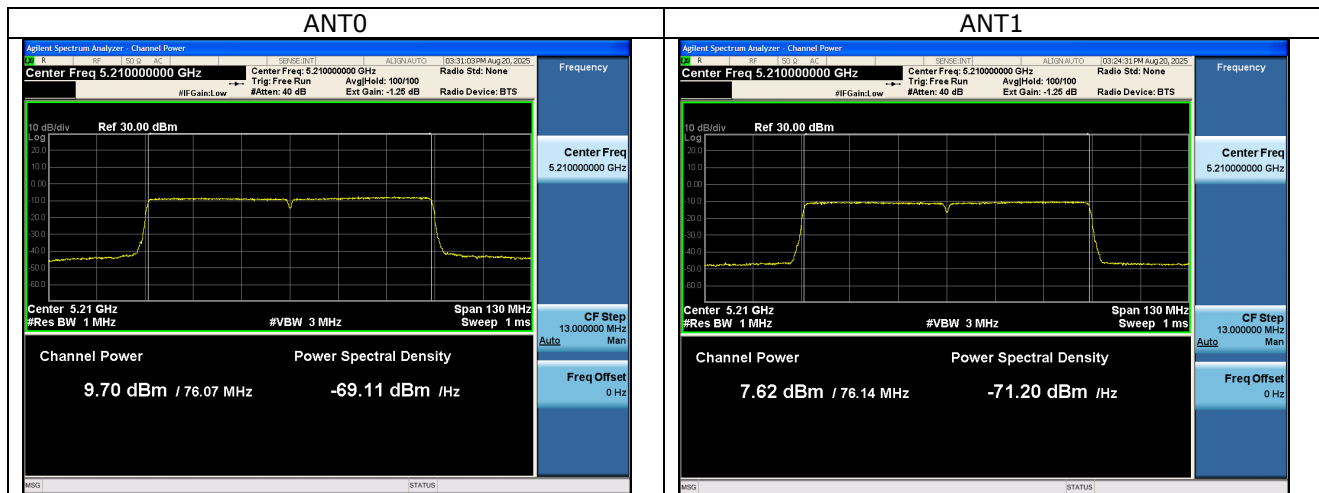
Test Data

[FCC]

Test Mode	Frequency (MHz)	Measured Output Power (dBm)	Duty cycle Factor (dB)	Result Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11ac_VHT80	5 210	11.79	-	11.79	24.00	12.21
Measurement uncertainty		± 1.5 dB				

[ISED]

Test Mode	Frequency (MHz)	Measured Output Power (dBm)	Duty cycle Factor (dB)	Result (dBm)		Limit (dBm)		Margin (dB)	
				Conducted Output Power	EIRP	Conducted Output Power	EIRP	Conducted Output Power	EIRP
802.11ac_VHT80	5 210	11.79	-	11.79	16.96	-	23.00	-	6.04
Measurement uncertainty		± 1.5 dB							





4.3 Power Spectral Density

Test Procedures

KDB 789033 – Section F (Method SA-2, Maximum Power Spectral Density)
ANSI C63.10-2013 – Section 12.5
KDB 662911 D01, D02 (Multiple Transmitter Output)

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = 1 MHz, 500 kHz (UNII 3)
- b) VBW = 3 MHz, 1.5 MHz (UNII 3)
- c) Sweep time = auto
- d) Detector = power averaging (rms)
- e) Trace mode = Average at least 100
- f) Duty cycle factor = $10\log(1/x)$

Test mode	Duty Cycle Factor (dB)
802.11ac_VHT80	-

Limit

Operating Mode	Mode	ANT Gain (dBi)	Band	FCC Limit (dBm)	ISED Limit (dBm)
MIMO	802.11ac	5.17	UNII 1	11.00	10.00 (EIRP)
			UNII 2A	11.00	11.00
		-	UNII 2C	11.00	11.00
			UNII 3	30.00	30.00



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Test Data

[FCC]

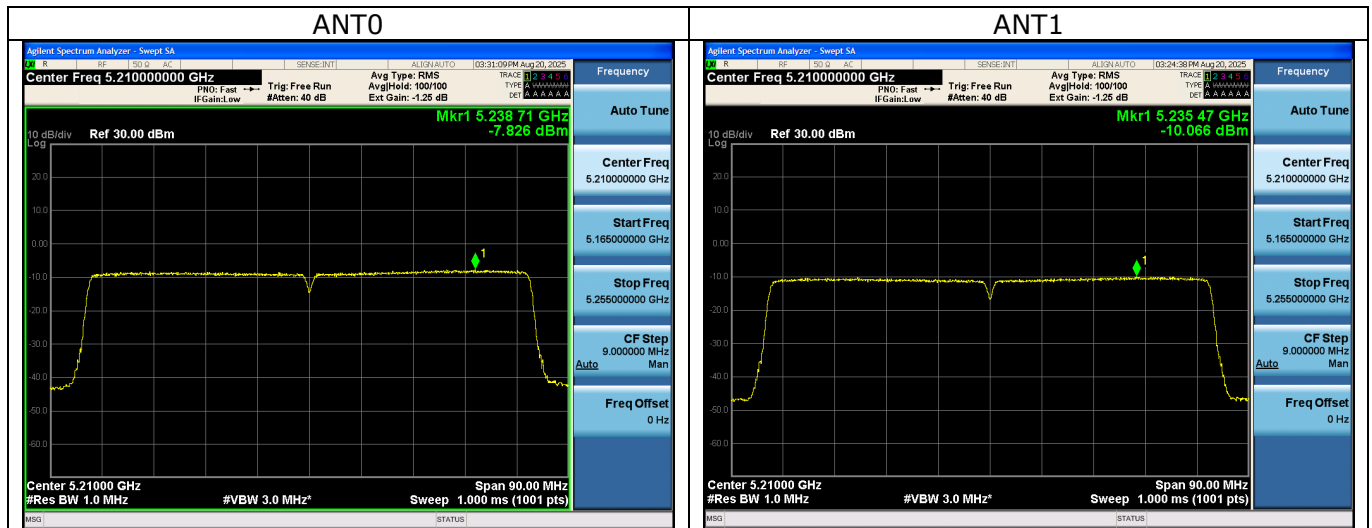
Test Mode	Frequency (MHz)	Measured Power Density (dBm)	Duty cycle Factor (dB)	Result Power Density (dBm)	Limit (dBm)	Margin (dB)
802.11ac_VHT 80	5 210	-5.79	-	-5.79	11.00	16.79
Measurement uncertainty		± 1.5 dB				

[ISED]

Test Mode	Frequency (MHz)	Measured Power Density (dBm)	Duty cycle Factor (dB)	Result Power Density (dBm)	Limit (dBm)	Margin (dB)
802.11ac_VHT 80	5 210	-5.79	-	-0.62	10.00	10.62
Measurement uncertainty		± 1.5 dB				

* Note :

UNII 1(ISED) Result Power Density = Measured Power Density + Antenna gain(MIMO)





4.4 Frequency Stability

Test Procedures

KDB 789033 – Section A.3

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -20 °C and +50 °C (Declaration by the Manufacturer). The temperature was incremented by 10 °C intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.

Data for the worst case channel is shown below.

Measured Frequency Error (kHz)		
Voltage (VDC)	Temperature (°C)	Test Frequency (MHz)
		5 210
24.0	-20	25 054
24.0	-10	13 252
24.0	0	-15 519
24.0	10	-25 704
24.0	20(Ref)	-42 230
24.0	30	-42 069
24.0	40	-42 788
24.0	50	-22 625
10.2	20(Ref)	-34 273
27.6	20(Ref)	31 289

Note :

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature range as tested.



4.5 Unwanted Emissions

Test Location

- ☒ 10 m SAC (test distance : ☐ 10 m, ☒ 3 m)
☒ 3 m SAC (test distance : 3 m)

Test Procedures

KDB 789033 - Section G
ANSI C63.10-2013 – Section 12.7

- 1) In the frequency range of 9 kHz to 30 MHz, magnetic field is measured with Loop Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
- 2) In the frequency range above 30 MHz, Bi-Log Test Antenna(30 MHz to 1 GHz) and Horn Test Antenna(above 1 GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is carried from 1m to 4m above the ground to determine the maximum value of the field strength. The emissions levels at both horizontal and vertical polarizations should be tested.

Test Settings:

Frequency Range = 9 kHz ~ 1 GHz

- a) RBW = 100 kHz for $f < 1$ GHz, 9 kHz for $f < 30$ MHz
b) VBW $\geq$ RBW
c) Detector = CISPR Quasi-peak
d) Sweep time = auto couple

- Peak

Frequency Range = 1 GHz ~ 40 GHz

- a) RBW = 1 MHz
b) VBW $\geq 3 \times$ RBW
c) Detector = Peak
d) Sweep time = auto
e) Trace mode = max hold

- Average (duty cycle $\geq 98\%$)

Frequency Range = 1 GHz ~ 40 GHz

- a) RBW = 1 MHz
b) VBW $\geq 3 \times$ RBW
c) Detector = RMS
d) Sweep time = auto
e) Averaging type = power (i.e., RMS)
f) Trace mode = average (at least 100 traces)



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- Average (duty cycle < 98%)

Frequency Range = 1 GHz ~ 40 GHz

a) RBW = 1 MHz

b) VBW $\geq 3 \times$ RBW

c) Detector = RMS

d) Sweep time = auto

e) Averaging type = power (i.e., RMS)

f) Trace mode = average (at least 100 traces)

If power averaging (RMS) mode, then the applicable correction factor is $10 \log(1/x)$,
where x is the duty cycle.

Test mode	Duty Cycle Factor (dB)
802.11ac_VHT80	-



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Limit

1. UNII 1 : All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

* E.I.R.P -27 dBm/MHz

$$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2, \text{ for } d = 3\text{m}$$

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

- 15.209(a)

Frequency(MHz)	Field Strength uV/m@3m	Field Strength dBuV/m@3m	Deasurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705-30	30	-	30
30-88	100**	40	3
88-216	150**	43.5	3
216-960	200**	46	3
Above 960	500	54	3

** Except as provided in 15.209(g).fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72MHz, 76-88MHz, 174-216MHz, 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g.15.231 and 15.241.



3. FCC Part 15 § 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	MHz	GHz
0.09-0.11	8.37626-8.38675	73-74.6	399.9-410	2690-2900	10.6-12.7
¹ 0.495-0.505	8.41425-8.41475	74.8-75.2	608-614	3260-3267	13.25-13.4
2.1735-2.1905	12.29-12.293	108-121.94	960-1240	3332-3339	14.47-14.5
4.125-4.128	12.51975-12.52025	123-138	1300-1427	3345.8-3358	15.35-16.2
4.17725-4.17775	12.57675-12.57725	149.9-150.05	1435-1626.5	3600-4400	17.7-21.4
4.20725-4.20775	13.36-13.41	156.52475-156.52525	1645.5-1646.5	4500-5150	22.01-23.12
6.215-6.218	16.42-16.423	156.7-156.9	1660-1710	5350-5460	23.6-24
6.26775-6.26825	16.69475-16.69525	162.0125-167.17	1718.8-1722.2	7250-7750	31.2-31.8
6.31175-6.31225	16.80425-16.80475	167.72-173.2	2200-2300	8025-8500	36.43-36.5
8.291-8.294	25.5-25.67	240-285	2310-2390	9000-9200	² Above 38.6
8.362-8.366	37.5-38.25	322-335.4	2483.5-2500	9300-9500	

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

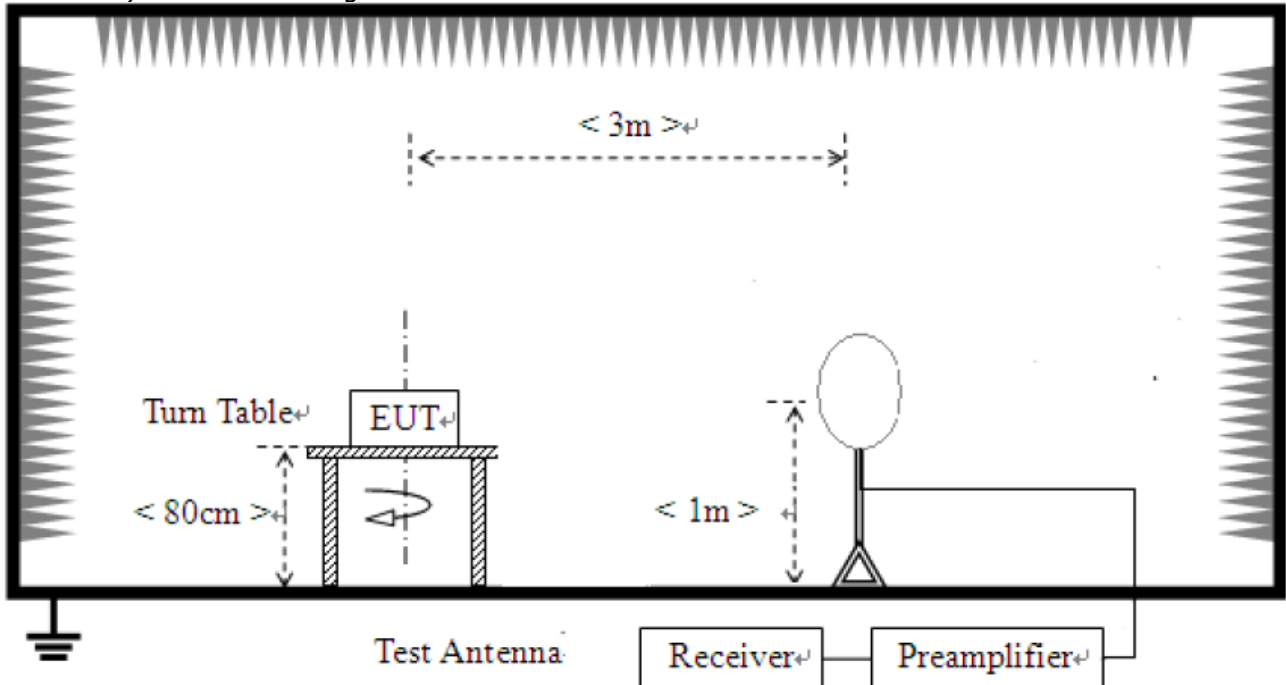
§ 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

Note :

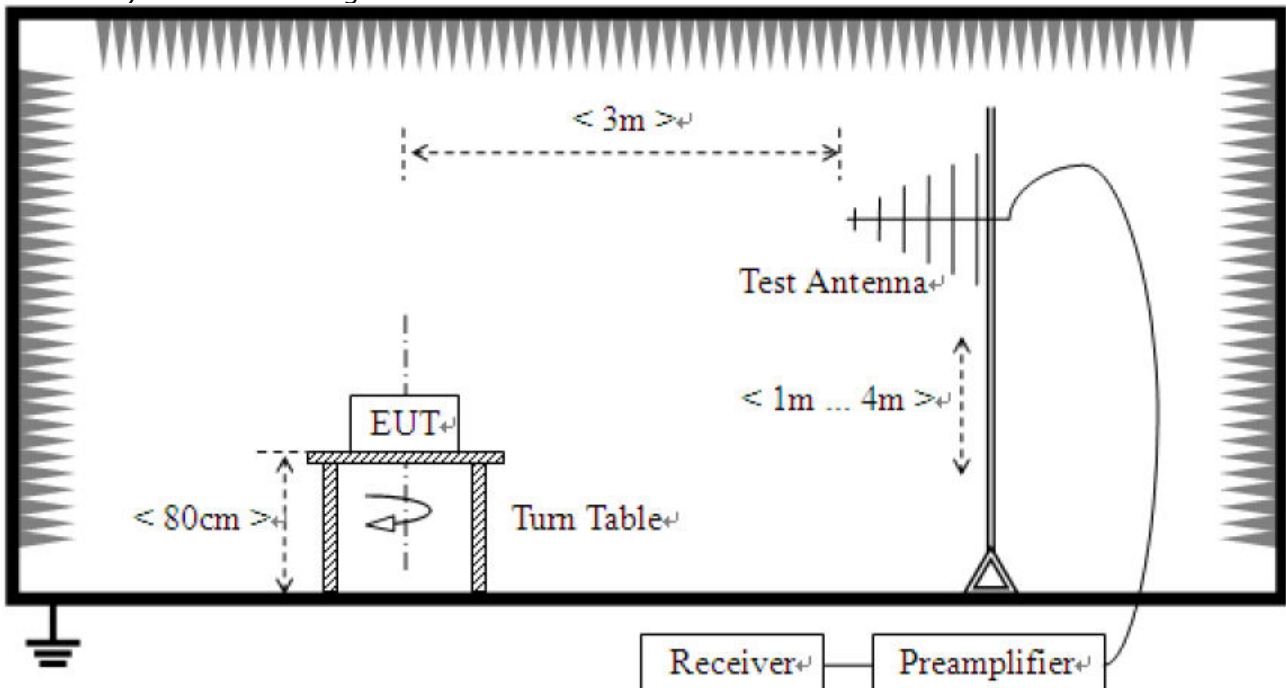
- 1) For above 1 GHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
- 2) For above 1 GHz, limit field strength of harmonics : 54 dBuV/m@3m (AV) and 74 dBuV/m@3m (PK)

Test Setup:

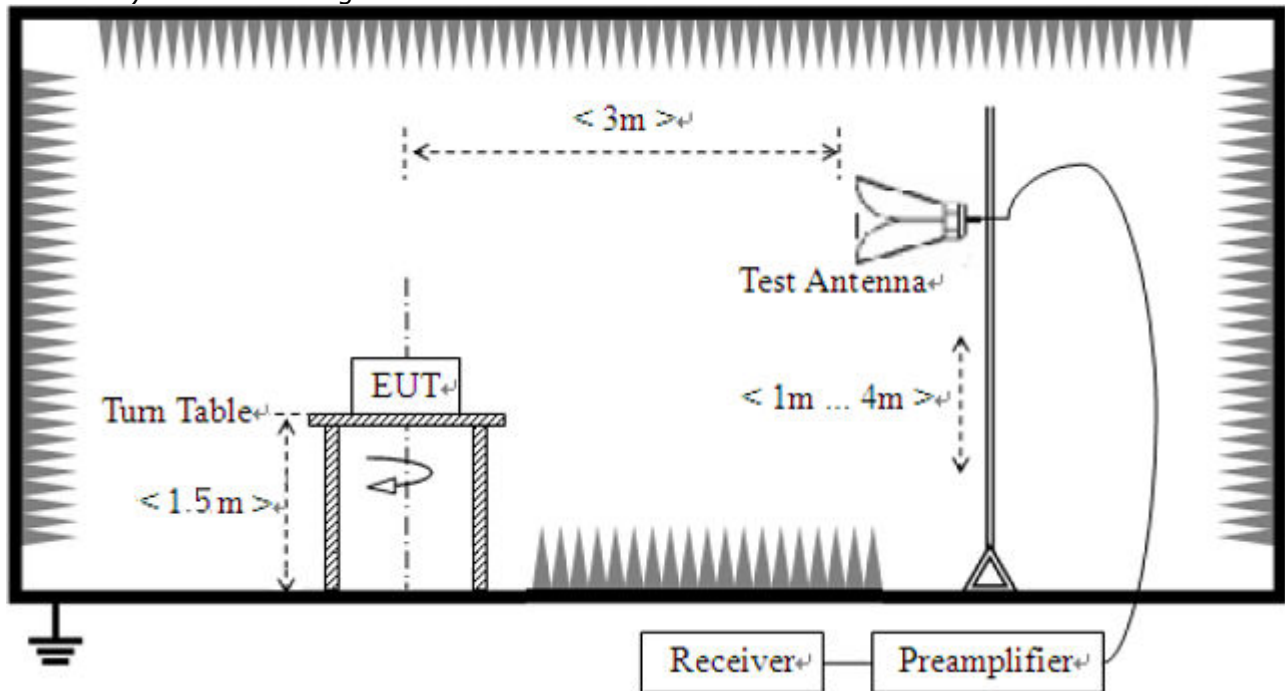
- 1) For field strength of emissions from 9 kHz to 30 MHz



- 2) For field strength of emissions from 30 MHz to 1 GHz



3) For field strength of emissions above 1 GHz



Test Mode

We have done all test mode.

The worst case antenna configuration and Test mode are determined to be as follows.

So the results are only attached worst cases.



Test Results

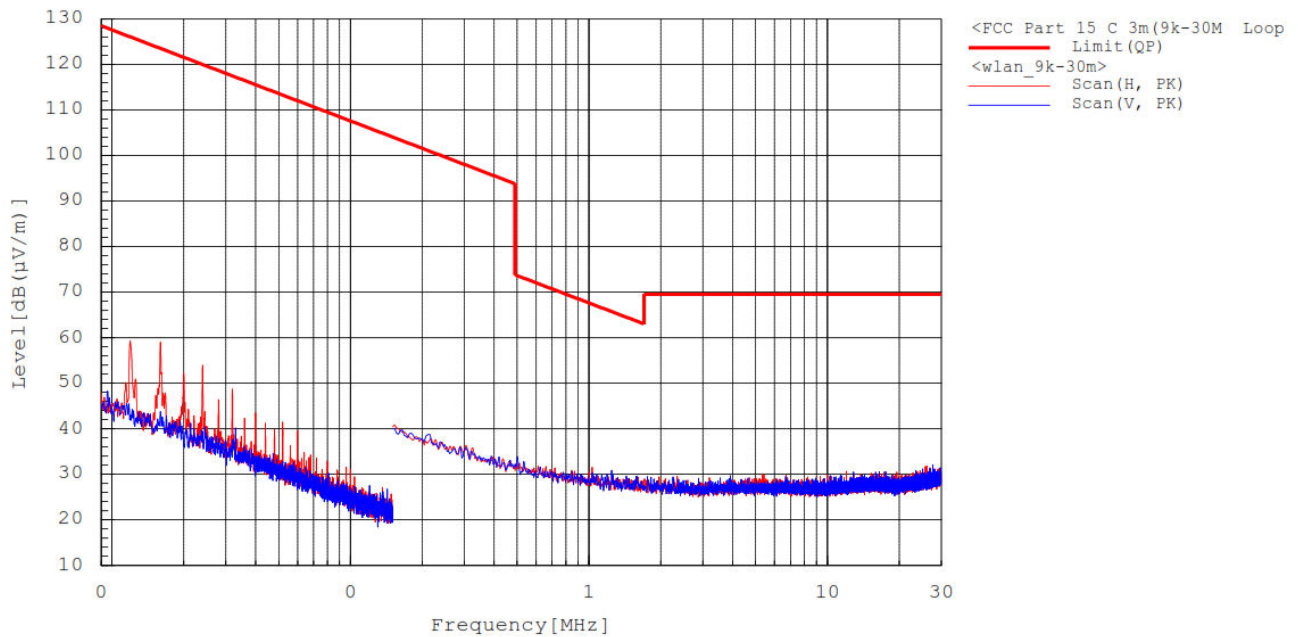
1) 9 kHz to 30 MHz

Test mode : Transmitter (Worst Case)

The requirements are:

☒ Complies

Test Data



Frequency [MHz]	(P)	Reading [dBuV]	c.f [dB(1/m)]	Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
-----------------	-----	----------------	---------------	------------------	------------------	-------------

The emissions 9 kHz to 30 MHz were 20 dB lower than the limit.

Remark :

1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(Y axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain
4. This data is the Peak(PK) value.



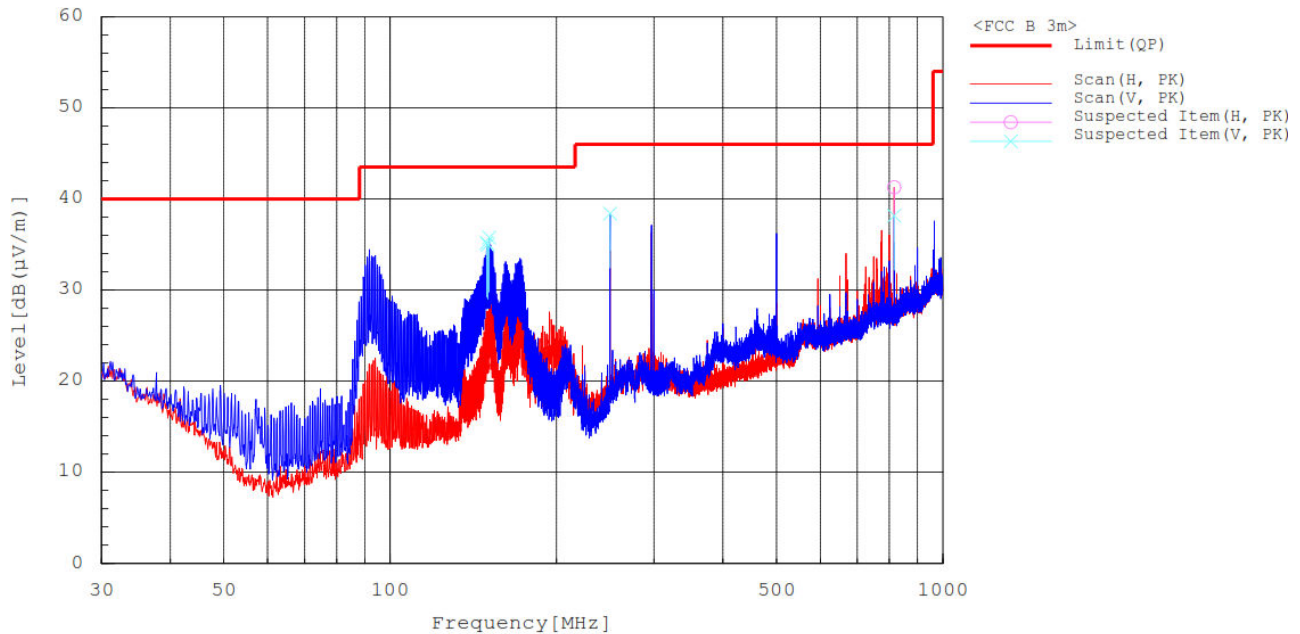
2) 30 MHz to 1 GHz

Test mode : Transmitter (Worst Case)

The requirements are:

☒ Complies

Test Data



No.	Frequency [MHz]	Pol	Reading PK [dB (μV)]	c.f [dB (1/m)]	Result PK [dB (μV/m)]	Limit QP [dB (μV/m)]	Margin QP-PK [dB]	Height [cm]	Angle [deg]
1	149.504	V	47.3	-12.1	35.2	43.5	8.3	99.9	208.1
2	150.280	V	47.2	-12.2	35.0	43.5	8.5	99.9	305.1
3	151.056	V	48.1	-12.3	35.8	43.5	7.7	99.9	313.1
4	249.996	V	49.0	-10.6	38.4	46.0	7.6	99.9	300.3
5	816.767	H	39.4	1.9	41.3	46.0	4.7	100.3	63.7
6	816.767	V	36.3	1.9	38.2	46.0	7.8	200.0	38.2

Remark :

1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(Y axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain
4. This data is the Peak(PK) value.



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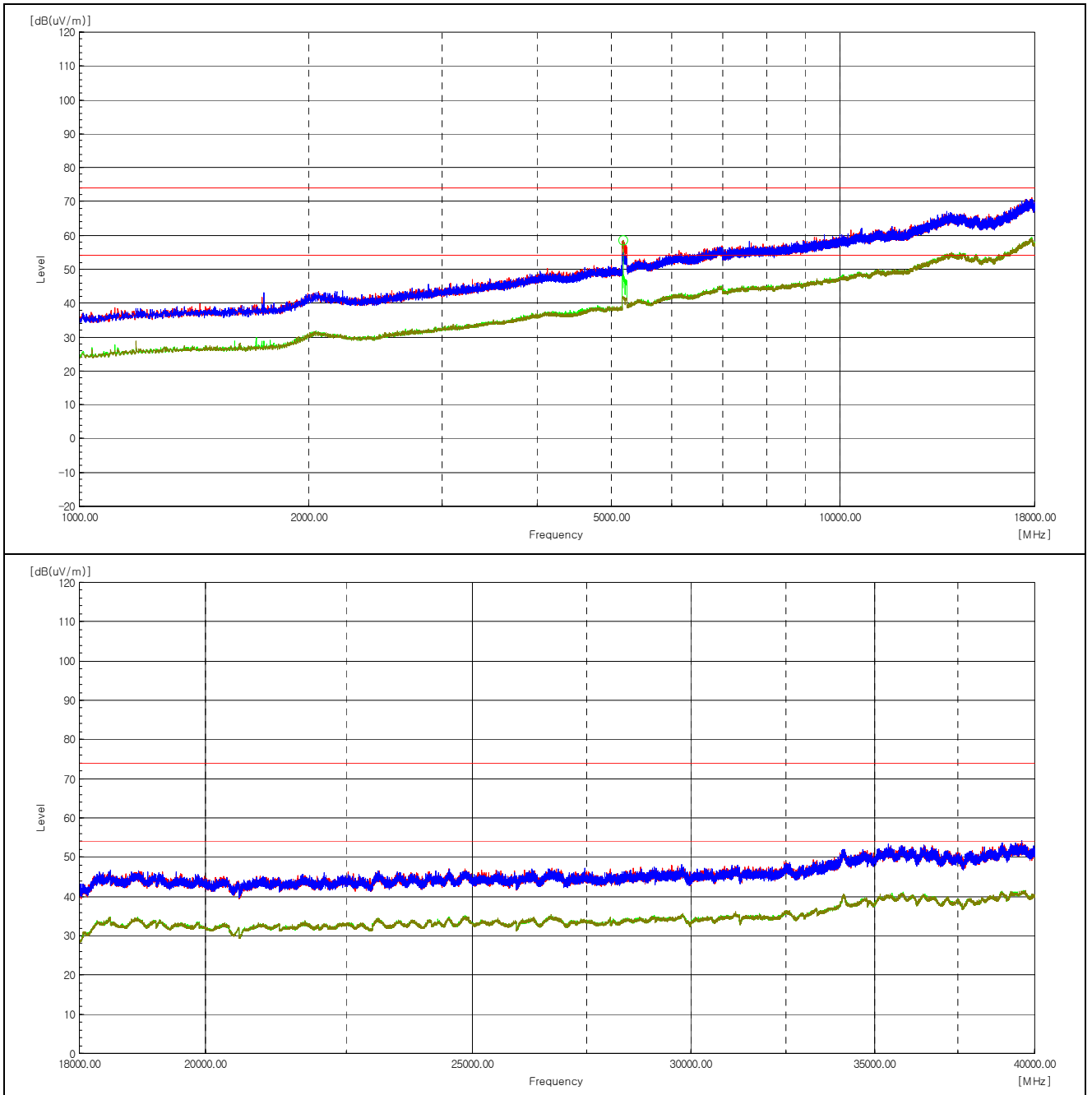
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3) above 1 GHz

The requirements are:

☒ Complies

Test Data





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Test mode : Transmitter

The requirements are:

☒ Complies

Test Data

Frequency [MHz]	(P)	Reading [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]	Note
--------------------	-----	-------------------	------------------	------------------------------	------------------------	------------------------	------------------------	------------------------	----------------------	----------------------	------

No peak found

Remarks

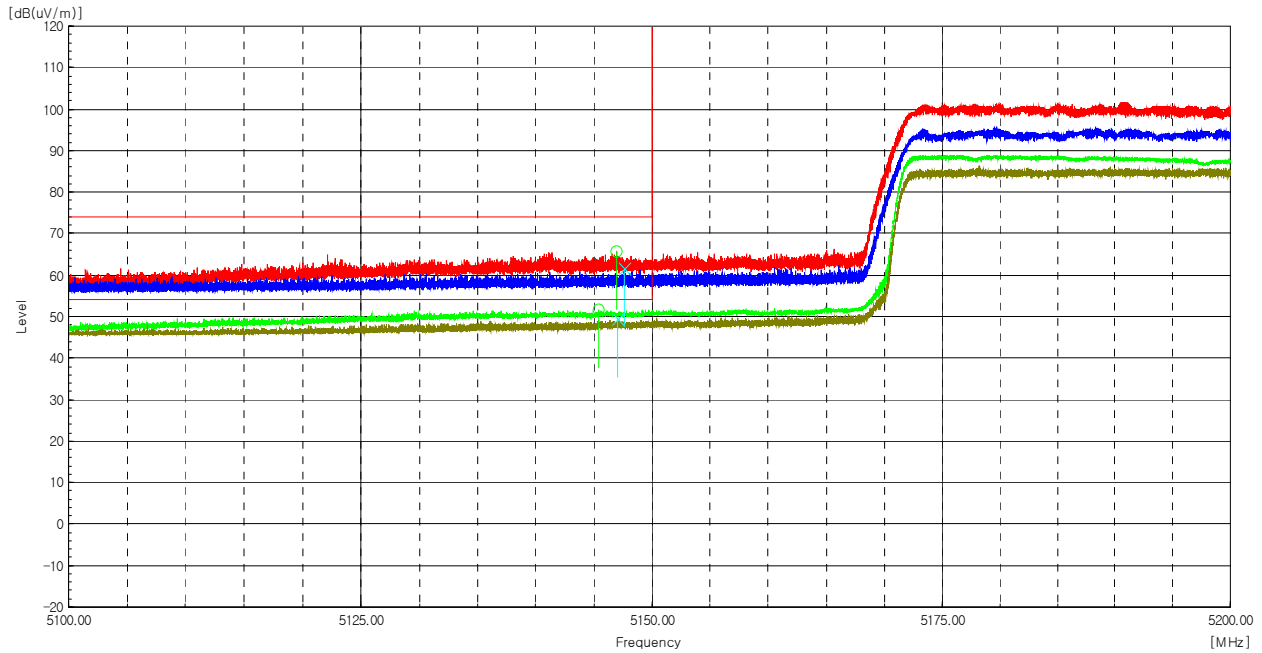
1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down positon(X,Y axis). The worst emission was found in lie-down positon(Y axis) and the worst case was recorded.
2. Peak Result = Reading + c.f(Correction factor)
Average Result = Reading + c.f(Correction factor) + Duty Cycle Factor
3. Correction factor = Antenna factor + Cable loss - Amp Gain
4. Band reject filter was used from 1 GHz to 18 GHz
5. The 18 GHz end had no signal detected.



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Worst Case Mode :	802.11ac_VHT80
Worst Case Transfer Rate :	MNSS 0
Distance of Measurements :	3 Meters
Operating Frequency :	5 210 MHz
Channel :	42



Frequency [MHz]	(P)	Reading [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]	Note
5 146.96	H	61.8	3.8	-----	65.6	-----	74.0	-----	8.4	-----	Peak
5 145.37	H	48.0	3.8	-	-----	51.8	-----	54.0	-----	2.2	Average
5 147.63	V	57.7	3.8	-----	61.5	-----	74.0	-----	12.5	-----	Peak
5 147.07	V	45.6	3.8	-	-----	49.4	-----	54.0	-----	4.6	Average

Radiated Restricted Band Edge Plot



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4.6 AC Conducted Emissions

Test Location

Shielded Room

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Procedures

ANSI C63.10-2013 - Section 6.2

RSS-Gen - Section 8.8

The EUT was placed on a non-metallic table 0.8m above the metallic, grounded floor and 0.4m from the reference ground plane wall. The distance to other metallic surfaces was at least 0.8m.

Amplitude measurements were performed with a quasi-peak detector and an average detector.

Limit

- 15.207(a)

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average**
0.15 ~ 0.5	66 to 56*	56 to 46*
0.5 ~ 5	56	46
5 ~ 30	60	50

* The level decreases linearly with the logarithm of the frequency.

** A linear average detector is required.

Test Results

The requirements are:

☒ Complies



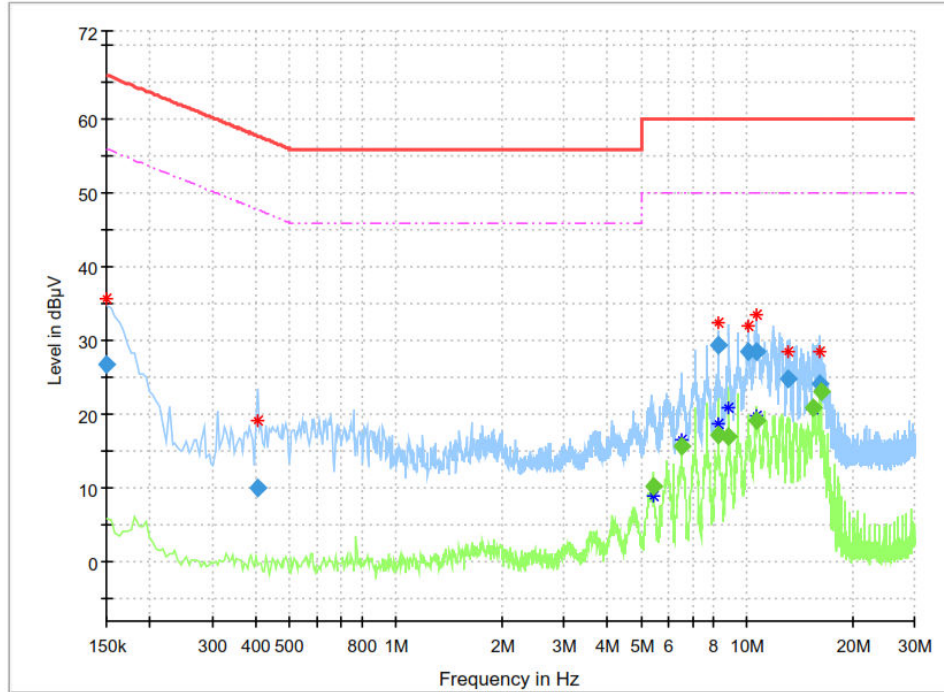
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Test Data

[LINE, NEUTRAL]

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	26.87	---	66.00	39.13	15000.0	9.000	L1	ON	9.8
0.406500	10.10	---	57.72	47.62	15000.0	9.000	L1	ON	10.0
5.388000	---	10.16	50.00	39.84	15000.0	9.000	N	ON	9.9
6.517500	---	15.61	50.00	34.39	15000.0	9.000	N	ON	9.9
8.290500	---	17.26	50.00	32.74	15000.0	9.000	L1	ON	10.0
8.295000	29.36	---	60.00	30.64	15000.0	9.000	N	ON	9.9
8.884500	---	16.90	50.00	33.10	15000.0	9.000	N	ON	9.9
10.072500	28.50	---	60.00	31.50	15000.0	9.000	N	ON	9.9
10.662000	28.43	---	60.00	31.57	15000.0	9.000	N	ON	9.9
10.662000	---	19.20	50.00	30.80	15000.0	9.000	N	ON	9.9
13.128000	24.77	---	60.00	35.23	15000.0	9.000	N	ON	10.1
15.405000	---	20.88	50.00	29.12	15000.0	9.000	N	ON	10.2
16.174500	24.26	---	60.00	35.74	15000.0	9.000	N	ON	10.2
16.228500	---	23.14	50.00	26.86	15000.0	9.000	N	ON	10.2



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APPENDIX A – Test Equipment Used For Tests

	Name of Equipment	Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date
1	Signal Analyzer	Agilent	N9020A	MY50510240	2025-07-02	2026-07-02
2	Signal Generator	Rohde & Schwarz	SMB100A	175528	2025-03-21	2026-03-21
3	EMI TEST RECEIVER	Rohde & Schwarz	ESW44	102039	2025-04-28	2026-04-28
4	BILOG ANTENNA	TESEQ	CBL6111D	60654	2025-08-21	2027-08-21
5	Active Loop Antenna	SCHWARZBECK	FMZB 1513	1513-125	2024-04-15	2026-04-15
6	6dB Attenuator	PASTERNAK	PE7AP006-06	L20210504000023	2025-07-28	2026-07-28
7	6dB Attenuator	NONE	6dB	190557	2024-09-19	2025-09-19
8	AMPLIFIER	SONOMA INSTRUMENT	310N	411011	2025-07-28	2026-07-28
9	Spectrum Analyzer	R&S	FSV40	101574	2025-01-10	2026-01-10
10	PRE AMPLIFIER	HP	8449B	3008A00620	2025-03-11	2026-03-11
11	Double Ridged Guide Antenna	ETS-Lindgren	3115	00078895	2025-03-13	2026-03-13
12	HORN ANTENNA	SCHWARZBECK	BBHA9170	1153	2024-10-18	2025-10-18
13	LOW NOISE AMPLIFIER	TESTEK	TK-PA1840H	210124-L	2024-10-18	2025-10-18
14	Band Reject Filter	Micro Tronics	BRM50716	G184	2024-11-25	2025-11-25
15	EMI Test Receiver	R&S	ESR3	102826	2025-04-28	2026-04-28
16	LISN	R&S	ENV216	102698	2025-04-28	2026-04-28
17	Temp&Humi Chamber	ESPEC CORP.	SH-242	93012243	2023-04-28	2026-04-28
18	Dual-Tracking DC Power Supply	Topward Electric Instruments Co.,Ltd.	6303D	802204	2025-03-13	2026-03-13
19	Dc Power Supply	Agilent	E3632A	MY40008023	2025-03-12	2026-03-12



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	Cable	Manufacturer	Model No.	Serial No.	Check Date
1	RF Cable (Conducted)	Junkosha Inc.	MWX221	1512S151	2025-08-20
2	RF Cable (Line Conducted)	Canare Corporation	L-5D2W	N/A	2025-03-05
3	RF Cable (9 kHz - 30 MHz Radiated)	Canare Corporation	L-5D2W	N/A	2025-03-05
4	RF Cable (30 MHz - 1 GHz Radiated)	Canare Corporation	L-5D2W	N/A	2025-03-05
5	RF Cable (9 kHz - 1 GHz Radiated)	HUBER+SUHNER	SUCOFLEX 104	MY27558/4	2025-03-05
6	RF Cable (1 GHz - 18 GHz Radiated)	Junkosha Inc.	MWX221	2008S246	2025-02-21
7	RF Cable (1 GHz - 18 GHz Radiated)	Junkosha Inc.	MWX221	J0970749	2025-02-21
8	RF Cable (1 GHz - 18 GHz Radiated)	Sensorview Co., LTD	13A26	TPC2204060007	2025-02-21
9	RF Cable (18 GHz -26.5 GHz Radiated)	Junkosha Inc.	MWX221	2008S249	2025-02-21
10	RF Cable (18 GHz - 26.5 GHz Radiated)	HUBER+SUHNER	SUCOFLEX 102	MY2371/2	2025-02-21
11	RF Cable (18 GHz -26.5 GHz Radiated)	Sensorview Co., LTD	9A40	TP210713-001	2025-02-21
12	RF Cable (18 GHz -40 GHz Radiated)	Sensorview Co., LTD	9S40	TPC2204060009	2025-02-21
13	RF Cable (18 GHz -40 GHz Radiated)	Sensorview Co., LTD	9S40	TP210713-001	2025-02-21

-END-