

TEST REPORT

**CTK Co., Ltd.**

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

REPORT No.:
CTK-2026-00061
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1. Applicant

- Name : Samsung Electronics Co Ltd
- Address : 19 Chapin Rd, Building D. Pine Brook, New Jersey, United States
- Date of Receipt : 2025-10-22

2. Manufacturer

- Name : Samsung Electronics Co Ltd

3. Use of Report : For FCC Conformance**4. Test sample / Model : Wi-Fi/BT Transceiver / WCH931M****5. Date(s) of test : 2025-12-02 to 2026-01-03****6. Test Standard (Method) used : FCC 47 CFR part 15 subpart C 15.247****7. Testing Environment : Refer to 7 page****8. Test Results : Compliance****9. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing**

(Address : (Unhak-Dong) 5, 221 beon-gil, Dongbu-ro, Cheoin-gu, Yongin-si, Gyeonggi-do,
Republic of 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:
	 Seong-uk Park (Signature)	 Bong-seok Kim (Signature)

2026-01-07

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REPORT REVISION HISTORY

Date	Revision	Page No
2026-01-07	Issued (CTK-2026-00061)	all

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1. General Product Description

1.1 Applicant Information

Company	Samsung Electronics Co Ltd
Contact Point	19 Chapin Rd, Building D. Pine Brook, New Jersey, United States
Contact Person	Name : Minhyung Cho E-mail : mh719.cho@samsung.com Tel : +82-31-277-2688 Fax : -

1.2 Manufacturer Information

Manufacturer	Samsung Electronics Co., Ltd.
Address	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea
Factory #1	XUGUANG TECHNOLOGY (VIETNAM) COMPANY LIMITED
Address	Factory No.4, Lot CN1, An Duong Industrial Park, Hong Phong Commune, An Duong District, Hai Phong City, Vietnam
Factory #2	Chengdu Xuguang Technology Co., Ltd.
Address	Building 1, Floors 1-2 and Building 2, Wenbai Avenue No.998, Baihe Street, Economic and Technological Development Zone (Longquanyi District), Chengdu City, Sichuan Province, P.R.China
Factory #3	SJIT CO., LTD.
Address	#54-11, Dongtanhana 1gil, Hwaseong-si, Gyeonggi-Do, Korea
Factory #4	SJIT VINA Co., Ltd
Address	Lot X2, Ho Nai Industrial Zone, Ho Nai 3 Commune, Trang Bom District, Dong Nai Province, Vietnam
Factory #5	CHEMTRONICS Co., Ltd
Address	35, Hyeongjero, Namsa-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do, Republic of Korea
Factory #6	CHEMTROVINA COMPANY LIMITED
Address	Nhon Trach 2 - Loc Khang IZ, Hiep Phuoc Town, Nhon Trach District, Dong Nai, Province, Vietnam

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1.3 Product Information

FCC ID	A3LWCH931M	
Product Description	Wi-Fi/BT Transceiver	
Model name	WCH931M	
Variant Model name	-	
Operating Frequency	2 402 MHz - 2 480 MHz	
RF Output Power	1 Mbps : 13.06 dBm (20.23 mW) 2 Mbps : 12.91 dBm (19.54 mW)	
Antenna Specification	Antenna Type	Chip Antenna
	Peak Gain	-3.3 dBi
Number of channels	40	
Channel Spacing	2 MHz	
Type of modulation	GFSK (Bluetooth LE)	
Power Source	DC 5 V	
Hardware Rev	V1.0	
Software Rev(FVIN)	FC 3, FC 4	
Test Program	WCN_Combo-Tool_FC 4	

1.4 Peripheral Devices

Device	Manufacturer	Model No.	Serial No.
Note Computer	HP	15-bs563TU	CND7253R6N
AC/DC Adapter	HP	HSTNN-LA40	-
Note Computer	Samsung Electronics Co., Ltd.	NT-RC530-WS55	HPFG91EC300116B
AC/DC Adapter	Samsung Electronics Co., Ltd.	PA-1600-66	-
Note Computer	Samsung Electronics Co., Ltd.	NT751BBC	4LMA9FGNC00112B
AC/DC Adapter	Samsung Electronics Co., Ltd.	GST40A12	-

1.5 Model Differences

- Option1 : With mic
- Option2 : Without mic and related parts.
(The only difference is the presence of mic; all other circuit is completely identical for between the Basic and Variant options.)
- Test sample : Option1

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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)	Status (Note 1)	Test Condition
15.247(a)	6 dB Bandwidth	C	Conducted
15.247(b)	Maximum Output Power	C	
15.247(d)	Conducted Spurious Emission	C	
15.247(d)	Unwanted Emission (Conducted)	C	
15.247(e)	Transmitter Power Spectral Density	C	
15.209	Radiated Emissions	C	Radiated
15.207	AC Conducted Emissions	C	Line Conducted

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

Note 3: The sample was tested according to the following specification: FCC Part 15.247

Note 4: The tests were performed according to the method of measurements prescribed in KDB No.558074, ANSI C63.10-2020

3.2 Testing Environment

Test Item		Test Date	Temperature (°C)	Relative Humidity (%)
6 dB Bandwidth & 99 % Bandwidth		2025-12-16	20±1	25±3
Maximum Output Power				
Conducted Spurious Emission				
Transmitter Power Spectral Density				
Transmitter Emission (Radiated)	(1 GHz Below)	2025-12-28, 2025-12-30	(18 ~ 20)±1	23±3
	(1 GHz Above)	2025-12-02, 2025-12-04, 2025-12-11	(21, 23, 23)±1	(25, 27, 22)±3
AC Conducted Emission		2026-01-03	19±1	20±3



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3.3 Mode of Operation during the Test

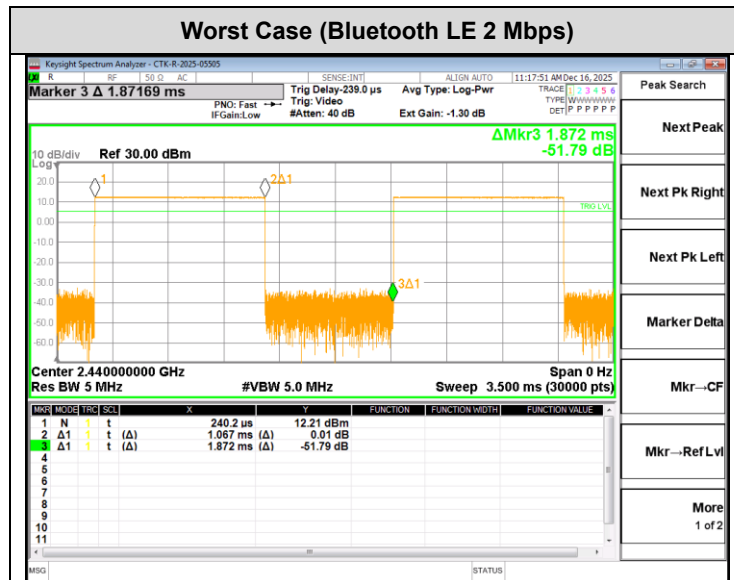
The EUT is operated in a manner representative of the typical of the equipments.
During at testing, system components were manipulated within the confines of typical usage to maximize each emission.

Test Frequency

Lowest Channel	Middle Channel	Highest Channel
2 402 MHz	2 440 MHz	2 480 MHz

Test Mode

Mode	Duty Cycle	Duty Cycle Factor
Bluetooth LE 1 Mbps	85.0 %	0.70 dB
Bluetooth LE 2 Mbps	57.0 %	2.44 dB



3.4 Device Modifications

The following modifications were necessary for compliance:

Not applicable

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3.5 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	1.50 dB (C.L.: Approx. 95 %, $k = 2$)
Power Spectral Density	1.50 dB (C.L.: Approx. 95 %, $k = 2$)
Occupied Bandwidth	0.10 MHz (C.L.: Approx. 95 %, $k = 2$)
Unwanted Emission (Conducted)	3.00 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)	4.34 dB (C.L.: Approx. 95 %, $k = 2$)
Line Conducted Emission	2.06 dB (C.L.: Approx. 95 %, $k = 2$)

3.6 Test Software

Automation Program

Conducted Test	Ics Pro Ver. 6.0.3
Radiated Test	EP5RE Ver. 6.0.1.0
Line Conducted Test	EMC32 Ver. 10.50.00

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4. Technical Characteristic Test

4.1 6 dB Bandwidth

Test Procedures

KDB 558074 - Section 8.2
ANSI C63.10-2020 - Section 11.8.2

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 6 dB relative to the maximum level measured in the fundamental emission.

ANSI C63.10-2020 - 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:

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1 (i.e., RBW = 100 kHz, VBW $\geq 3 \times$ RBW, and peak detector with maximum hold) is implemented by the instrumentation function.

When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.

Minimum Standard :

6 dB Bandwidth > 500 kHz

Test Data :

Test Mode	Frequency [MHz]	6 dB Bandwidth [MHz]	99 % Bandwidth [MHz]	Result
Bluetooth LE 1 Mbps	2 402	0.671	1.040	Complies
	2 440	0.661	1.042	Complies
	2 480	0.685	1.037	Complies
Bluetooth LE 2 Mbps	2 402	1.134	2.072	Complies
	2 440	1.227	2.074	Complies
	2 480	1.168	2.076	Complies

See next pages for actual measured spectrum plots.

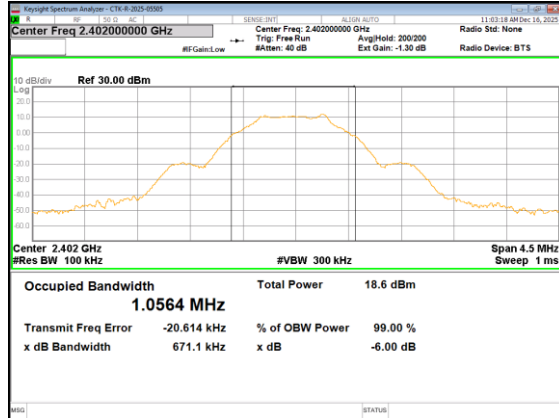


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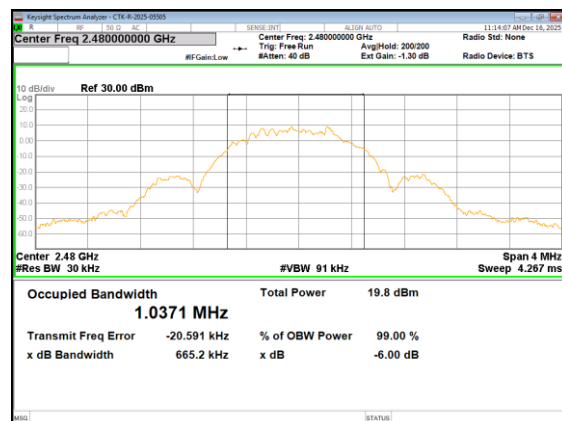
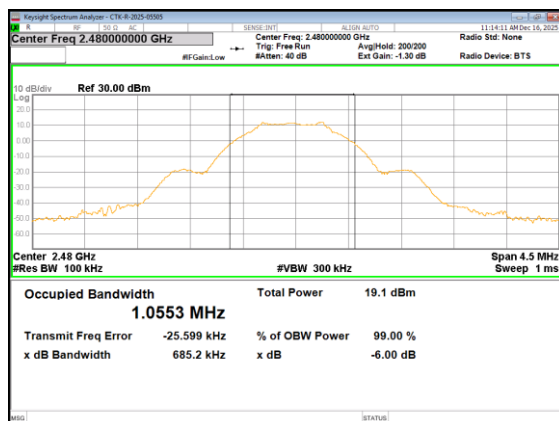
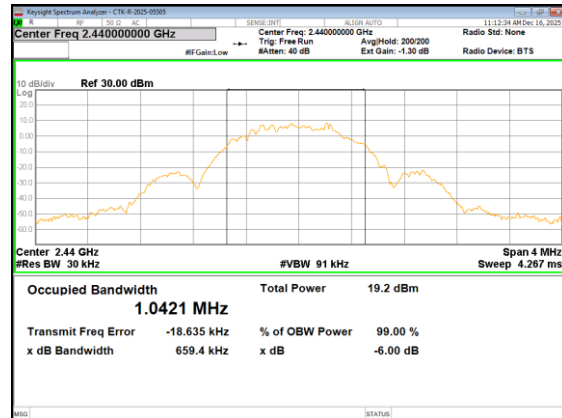
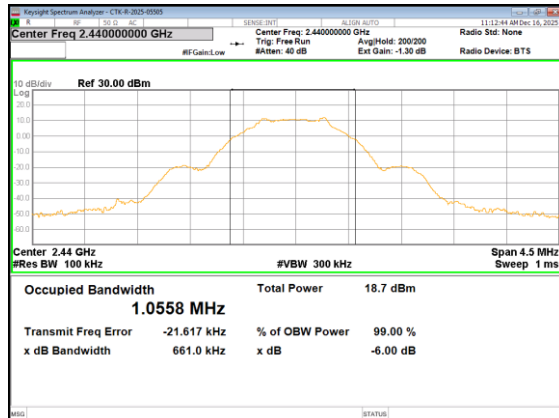
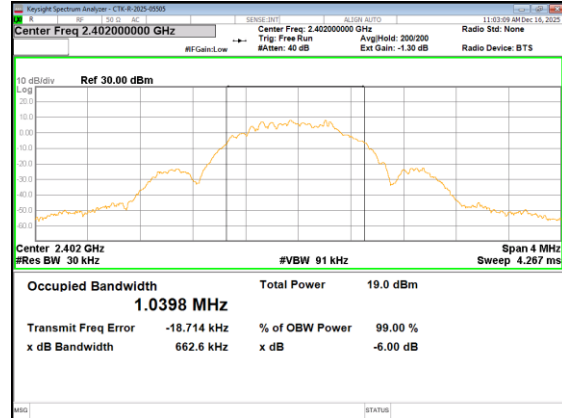
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Test Data: Bluetooth LE 1 Mbps 6 dB Bandwidth



99 % Bandwidth



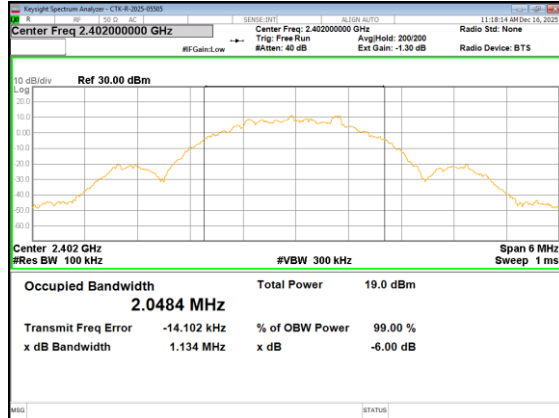


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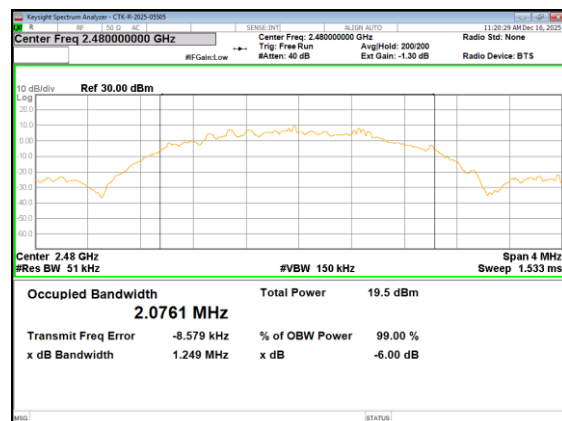
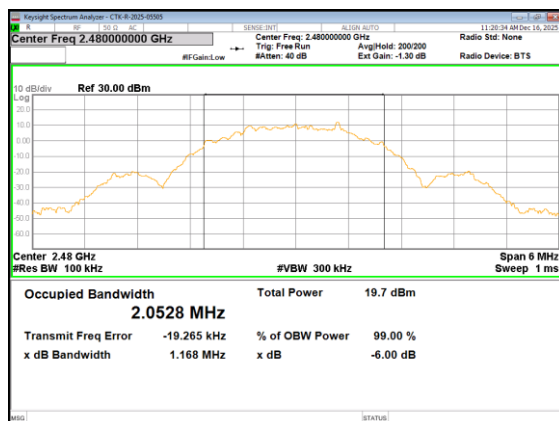
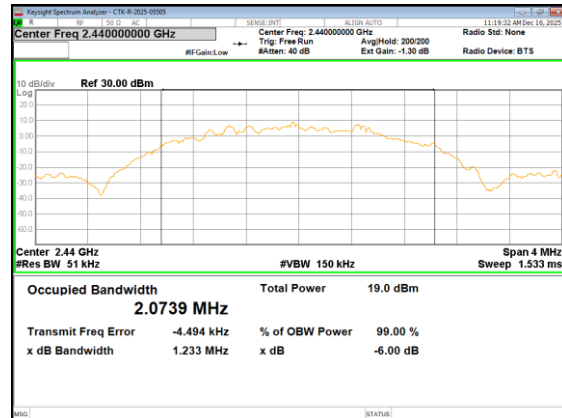
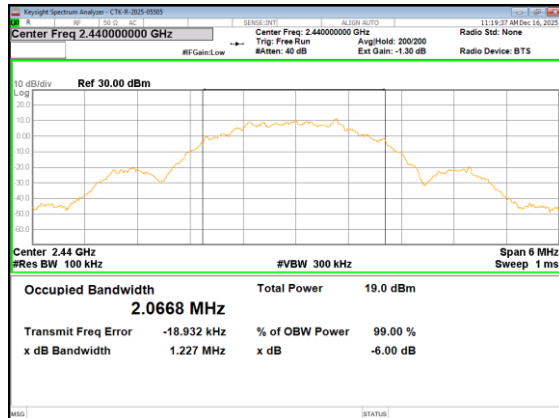
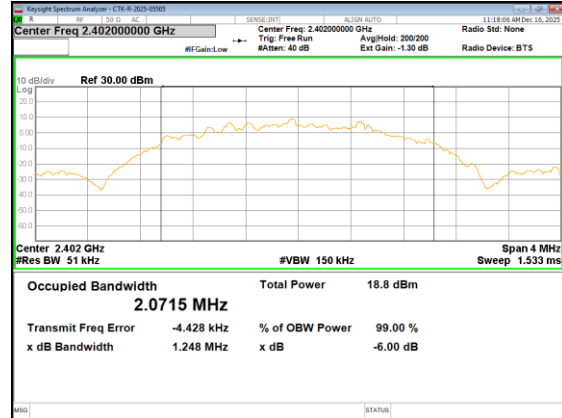
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Test Data: Bluetooth LE 2 Mbps 6 dB Bandwidth



99 % Bandwidth



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4.2 Maximum Peak Conducted Output Power

Test Procedures

KDB 558074 - Section 8.3.1.1

ANSI C63.10-2020 - Section 11.9.1.1

This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

Test Settings:

Center frequency = the highest, middle and the lowest channels

- a) RBW $\geq$ DTS bandwidth
- b) VBW $\geq 3 \times$ RBW
- c) Span $\geq 3 \times$ RBW
- d) Sweep time = No faster than coupled (auto) time.
- e) Detector = peak
- f) Trace mode = max hold
- g) Allow trace to fully stabilize
- h) Use peak marker function to determine the peak amplitude level.

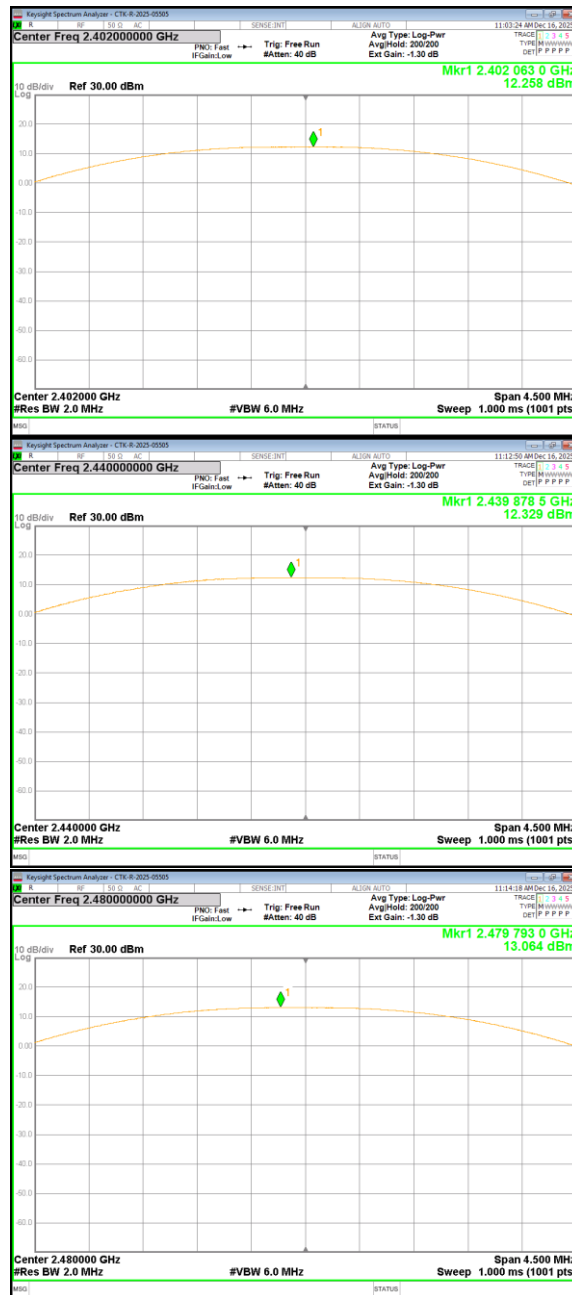
Limit :

Maximum Output Power < 1 W (30 dBm)

Test Data :

Test Mode	Frequency [MHz]	Maximum Peak Conducted Output Power		Result
		[dBm]	[mW]	
Bluetooth LE 1 Mbps	2 402	12.26	16.83	Complies
	2 440	12.33	17.10	Complies
	2 480	13.06	20.23	Complies
Bluetooth LE 2 Mbps	2 402	12.20	16.60	Complies
	2 440	12.41	17.42	Complies
	2 480	12.91	19.54	Complies

See next pages for actual measured spectrum plots.



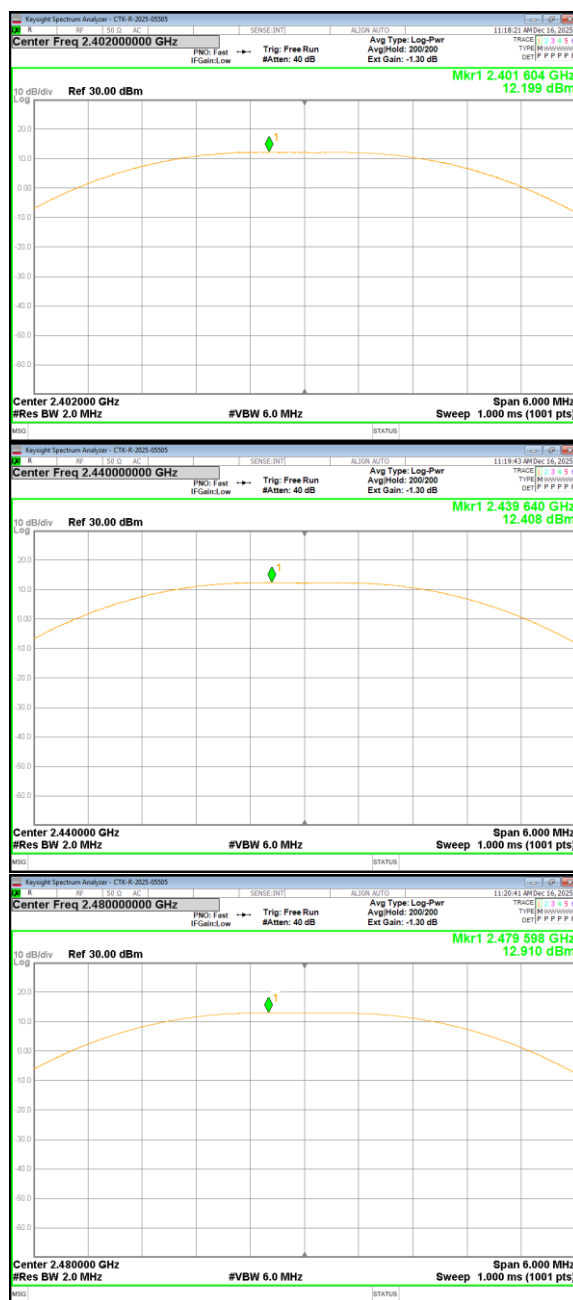
Bluetooth LE 1 Mbps



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Bluetooth LE 2 Mbps

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4.3 Transmitter Power Spectral Density

Test Procedures

KDB 558074 - Section 8.4

ANSI C63.10-2020 - Section 11.10.2

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance.

Test Settings:

Set analyzer center frequency to DTS channel center frequency.

- a) span > 1.5 times the DTS bandwidth
- b) $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
- c) $\text{VBW} \geq [3 \times \text{RBW}]$
- d) Detector = peak.
- e) Sweep time = No faster than coupled (auto) time.
- f) Trace mode = max hold
- g) Allow trace to fully stabilize
- h) Use the peak marker function to determine the maximum amplitude level within the RBW.
- i) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

Limit :

Power Spectral Density < 8 dBm @ 3 kHz BW

Test Data:

Test Mode	Frequency [MHz]	Power Spectral Density [dBm]	Result
Bluetooth LE 1 Mbps	2 402	-4.60	Complies
	2 440	-4.44	Complies
	2 480	-3.95	Complies
Bluetooth LE 2 Mbps	2 402	-8.68	Complies
	2 440	-8.18	Complies
	2 480	-7.81	Complies

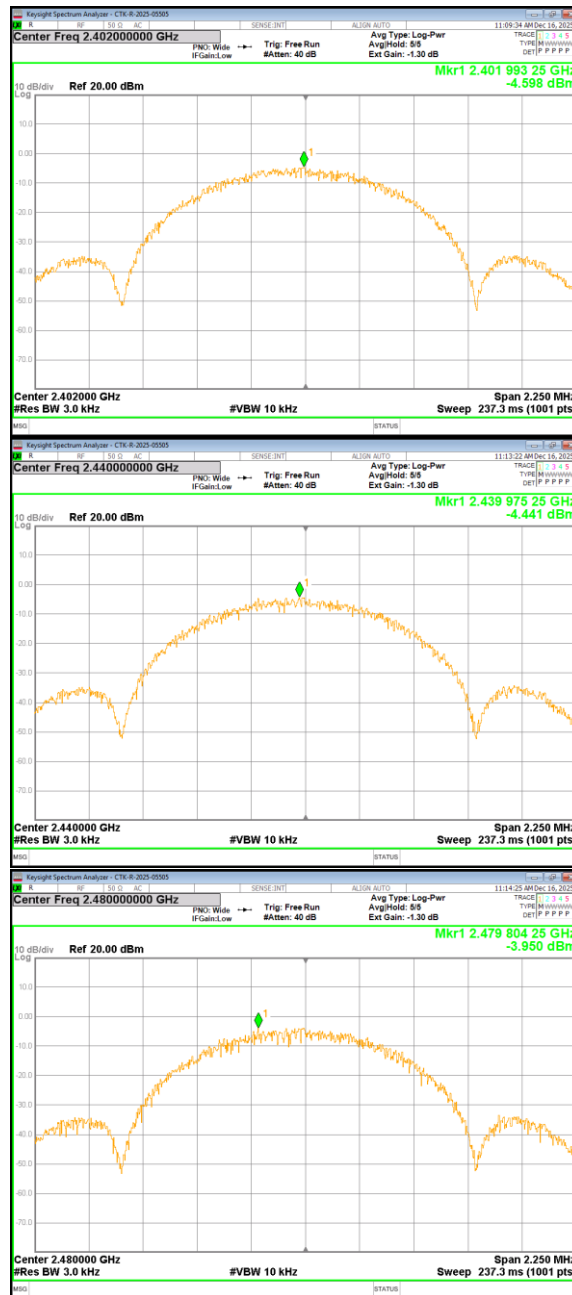
See next pages for actual measured spectrum plots.



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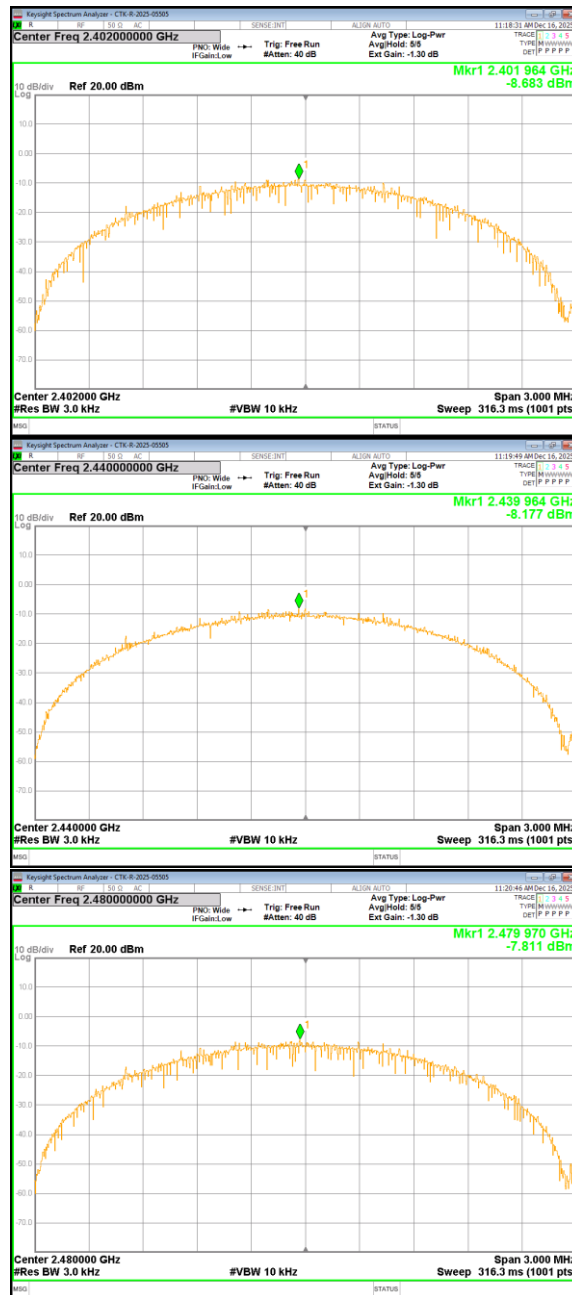
Bluetooth LE 1 Mbps



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4.4 Conducted Spurious Emission

Test Procedures

KDB 558074 - Section 8.5

ANSI C63.10-2020 - Section 11.11.2, Section 11.11.3

The Unwanted emission from the EUT were measured according to the dictates PKPSD measurement procedure in section 11.11 of ANSI C63.10-2020.

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB.

Test Settings:

Center frequency = the highest, middle and the lowest channels

- a) RBW = 100 kHz
- b) VBW $\geq 3 \times$ RBW
- c) Detector = peak
- d) Sweep time = No faster than coupled (auto) time.
- e) Trace mode = max hold
- f) Allow trace to fully stabilize
- g) Use the peak marker function to determine the maximum amplitude level.

Limit :

Emission Level > 20 dBc

Test Results : Complies

- All conducted emission in any 100 kHz bandwidth outside of the spread spectrum band was at least 20 dB lower than the highest in-band spectral density. Therefore the applying equipment meets the requirement.

See next pages for actual measured spectrum plots.



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4.5 Radiated Emission

Test Location

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

Test Procedures

KDB 558074 - Section 8.5, 8.6
ANSI C63.10-2020 - Section 11.11, 11.12

- 1) In the frequency range of 9 kHz to 30 MHz, magnetic field is measured with Loop Antenna. The center of the Loop Test Antenna is 1 m 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 3 m away from the EUT. Test Antenna height is carried from 1 m to 4 m 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 to 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 to 26.5 GHz (2.4 GHz 10th harmonic)

- 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 ≥ 98 %)

Frequency Range = 1 GHz to 26.5 GHz (2.4 GHz 10th harmonic)

- 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 %, duty cycle variations are less than ± 2 %)

Frequency Range = 1 GHz to 26.5 GHz (2.4 GHz 10th harmonic)

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)

A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 % duty cycle.

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
Bluetooth LE 1 Mbps	0.70 dB
Bluetooth LE 2 Mbps	2.44 dB

Limit :

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:

Table 1. Restricted Frequency Bands (FCC)

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.

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According to RSS-GEN §8.10 Unwanted emissions that fall into restricted frequency bands listed in table 2 shall comply with the limits specified in table 2.

Table 2. Restricted Frequency Bands (ISED)

MHz	MHz	MHz	MHz	MHz	GHz
0.090-0.110	8.291-8.294	25.5-25.67	322-335.4	2655-2900	10.6-12.7
0.495-0.505	8.362-8.366	37.5-38.25	399.9-410	3260 – 3267	13.25-13.4
2.1735-2.1905	8.37625-8.38675	73-74.6	608-614	3332-3339	14.47-14.5
3.020-3.026	8.41425-8.41475	74.8-75.2	960-1427	3345.8-3358	15.35-16.2
4.125-4.128	12.29-12.293	108 – 138	1435-1626.5	3500-4400	10.6-12.7
4.17725-4.17775	12.51975-12.52025	149.9-150.05	1645.5-1646.5	4500-5150	22.01-23.12
4.20725-4.20775	12.57675-12.57725	156.52475-156.52525	1660-1710	5350-5460	23.6-24.0
5.677-5.683	13.36-13.41	156.7-156.9	1718.8-1722.2	7250-7750	31.2-31.8
6.215-6.218	16.42-16.423	162.0125-167.17	2200-2300	8025–8500	36.43-36.5
6.26775-6.26825	16.69475-16.69525	167.72-173.2	2310-2390	9000-9200	Above 38.6
6.31175-6.31225	16.80425-16.80475	240 – 285	2483.5-2500	9300-9500	

Note 1: Certain frequency bands listed in table 2 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

FCC Part 15 § 15.209(a) and RSS-GEN § 8.9 Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 3 :

Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits shown in Table 3 Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.

Table 3. General Field Strength Limits for Licence-Exempt Transmitters (FCC&ISED)

Frequency [MHz]	Magnetic Field Strength [uA/m]	Field Strength [uV/m]	Field Strength [dBuV/m]	Deasurement Distance [meters]
0.009-0.490	6.37/F (F in kHz)	2400/F(kHz)	48.5–13.8	300
0.490-1.705	63.7/F (F in kHz)	24000/F(kHz)	33.8–23	30
1.705-30	0.08	30	29.5	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 54-72 MHz, 76-88 MHz, 174-216 MHz, 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g.15.231 and 15.241.

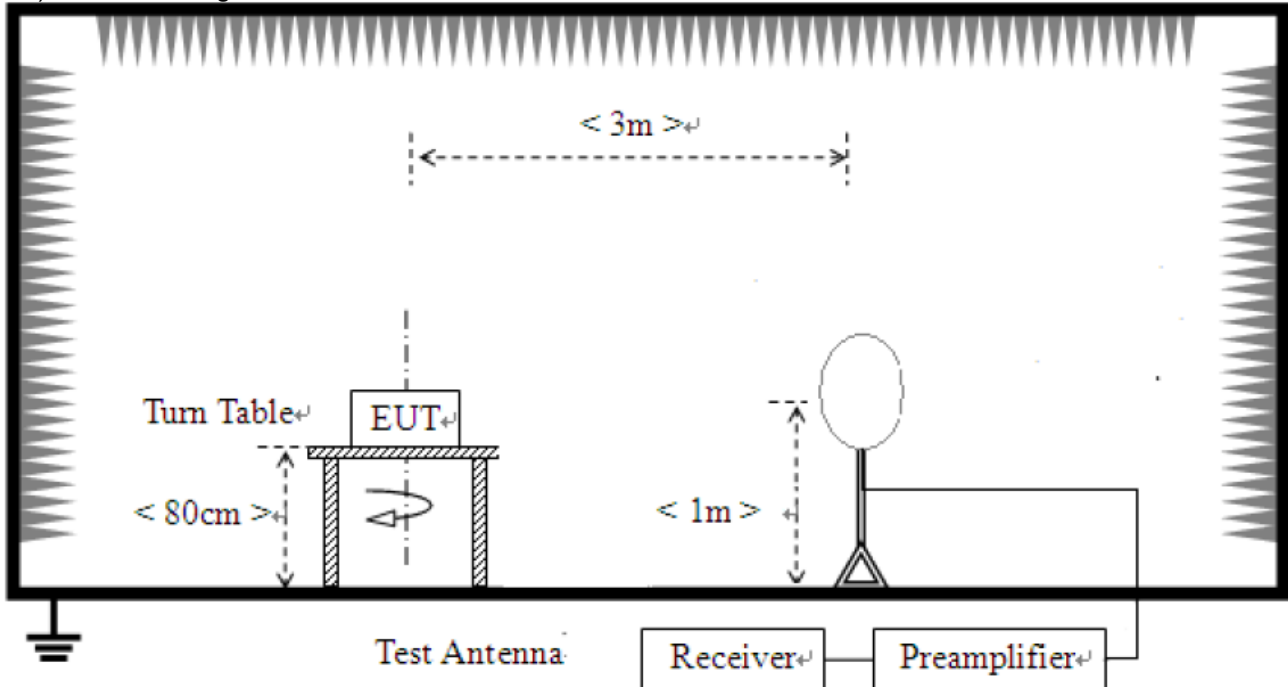
** Except as provided in RSS-GEN § 8.9. The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

Note :

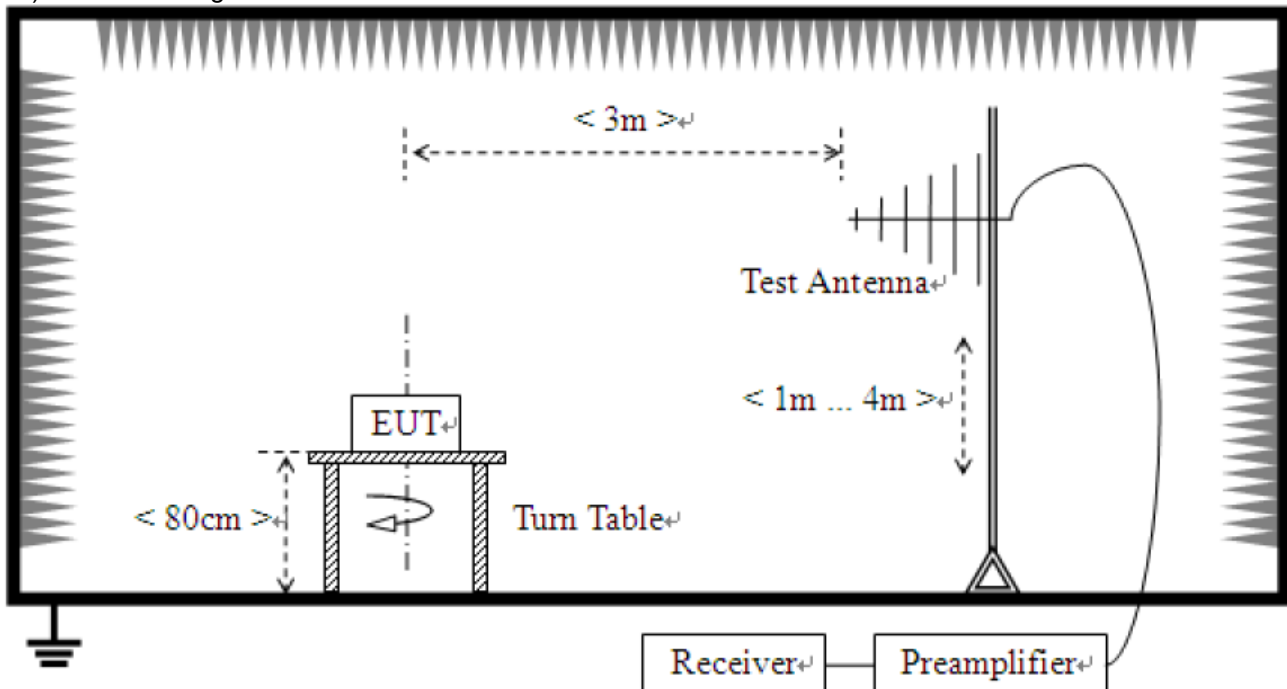
- 1) For above 1 GHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
- 2) For above 1 GHz, limit field strength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

Test Setup :

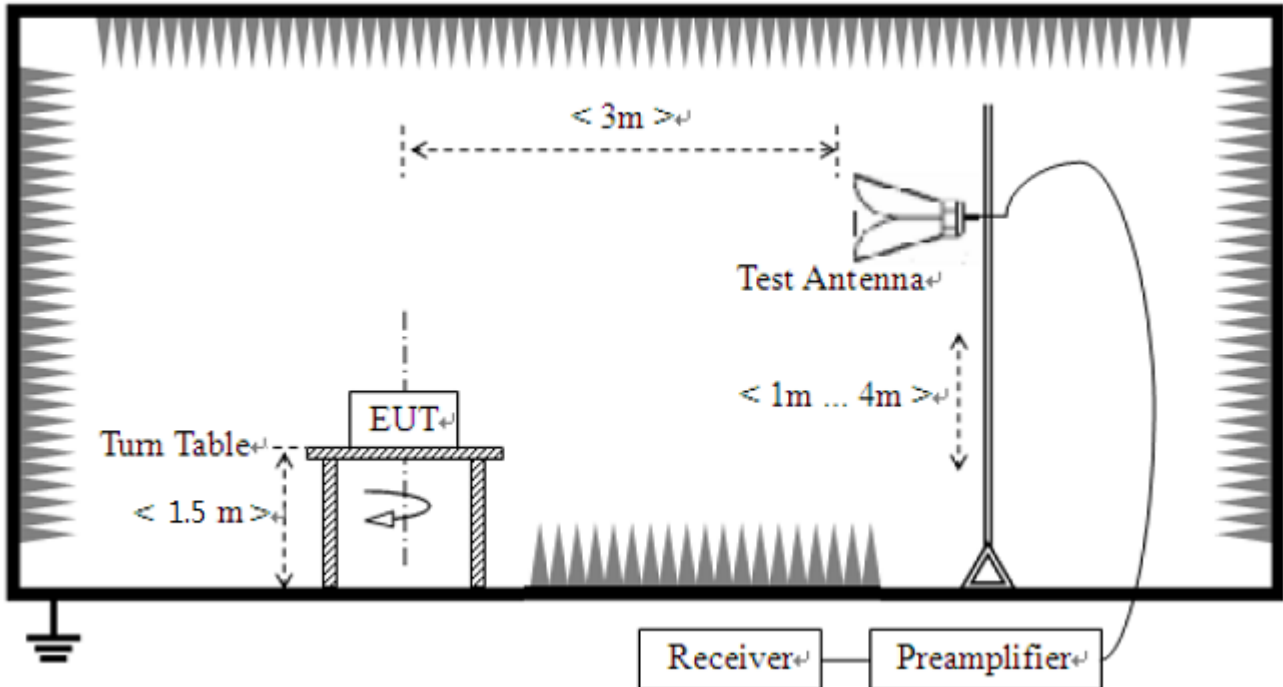
1) For field strength of emissions from 9 kHz to 30 MHz



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



3) For field strength of emissions above 1 GHz





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Test Results :

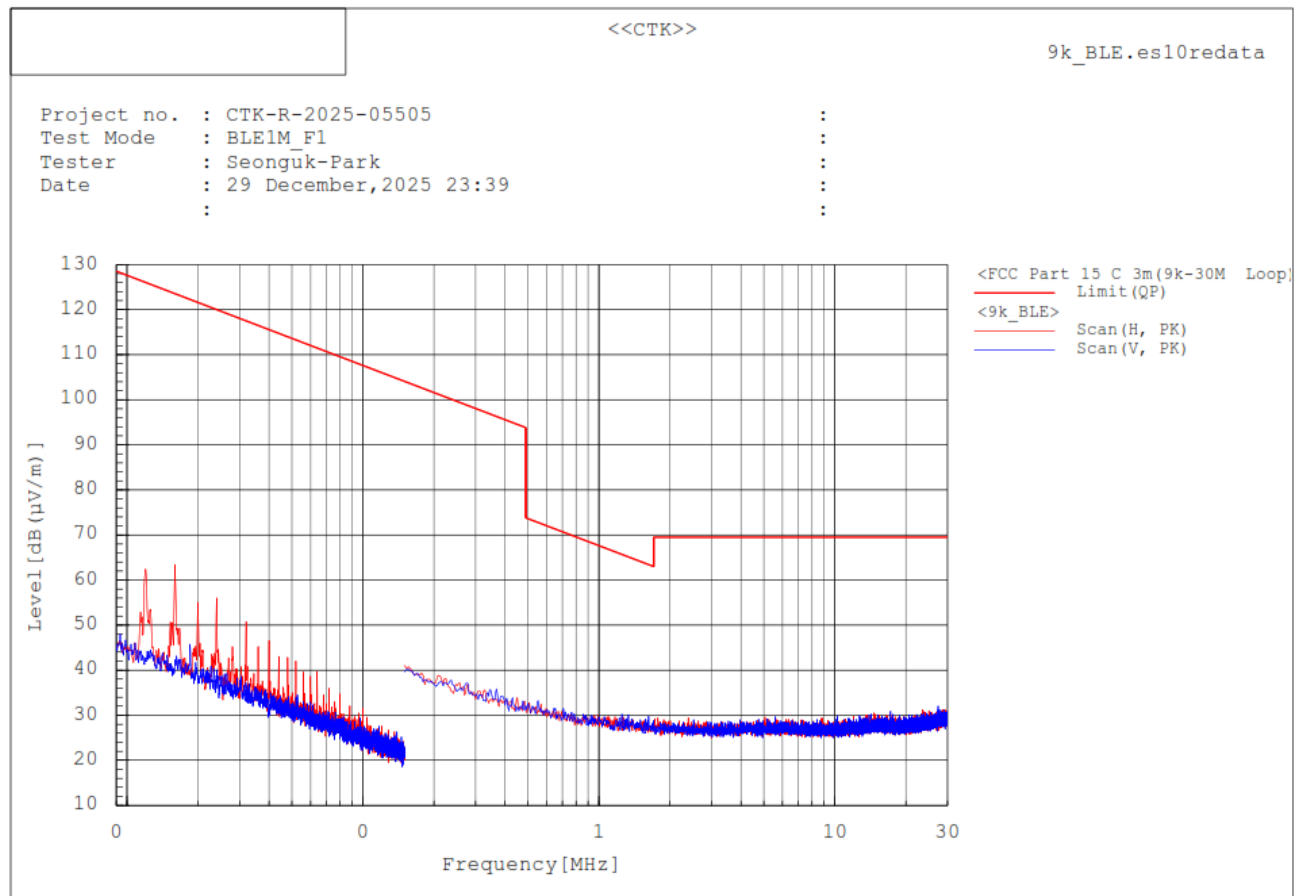
1) 9 kHz to 30 MHz

Test mode : Transmitter, Bluetooth LE_1 Mbps(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 :

- Measuring position : 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 (Z axis) and the worst case was recorded.
- Result = Reading + c.f (Correction factor)
- Correction factor = Antenna factor + Cable loss + 6 dB attenuator
- Distance extrapolation factor = 40 log (specific distance / test distance) (dB)
- This data is the Peak (PK) value.



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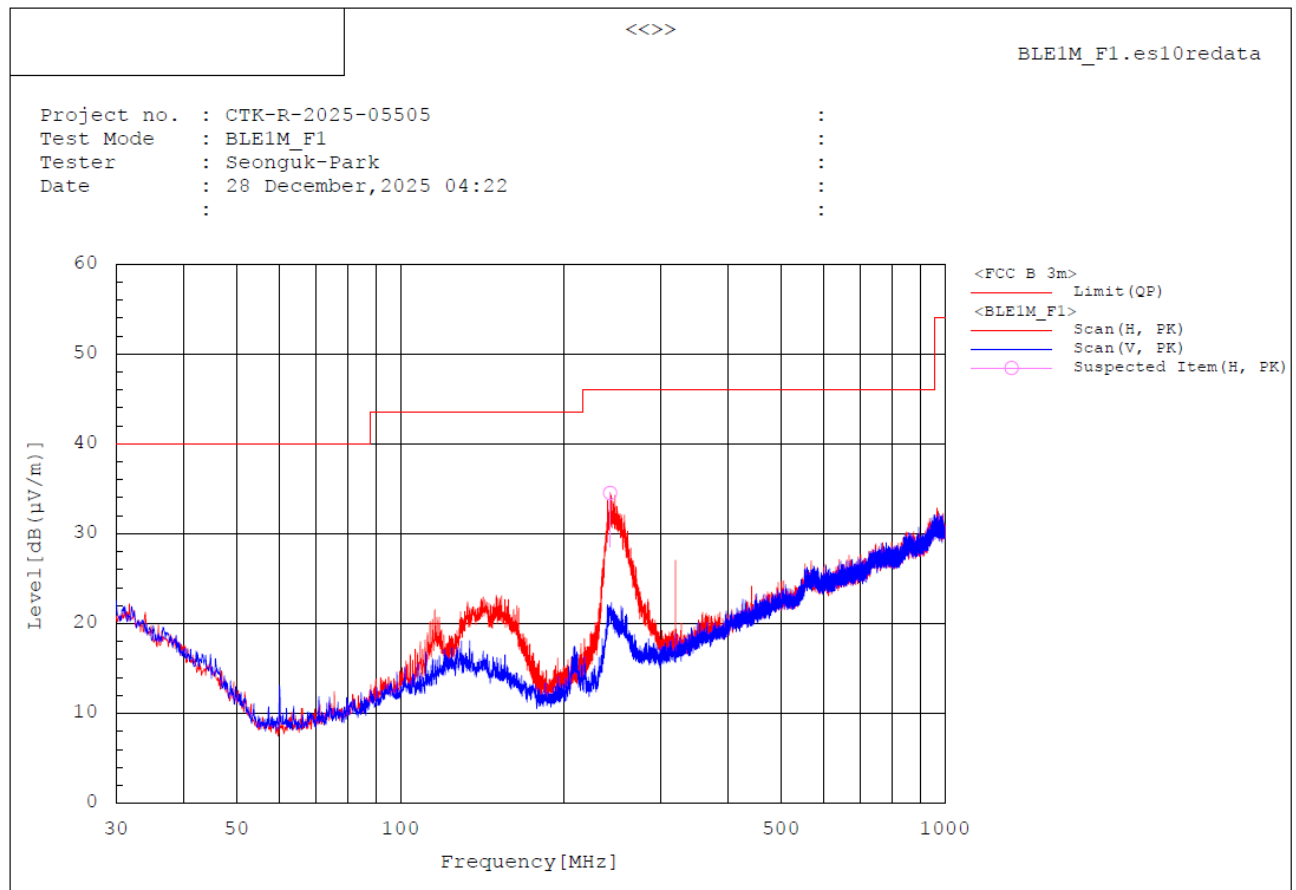
2) 30 MHz to 1 GHz

Test mode : Transmitter, Bluetooth LE_1 Mbps(Worst Case)

The requirements are:

☒ Complies

Test Data



Spectrum Selection

No.	Frequency	Pol	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[cm]	[deg]	
1	242.721	H	45.8	-11.3	34.5	46.0	11.5	99.9	0.1	

Remark :

1. Measuring position : 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 (Z 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



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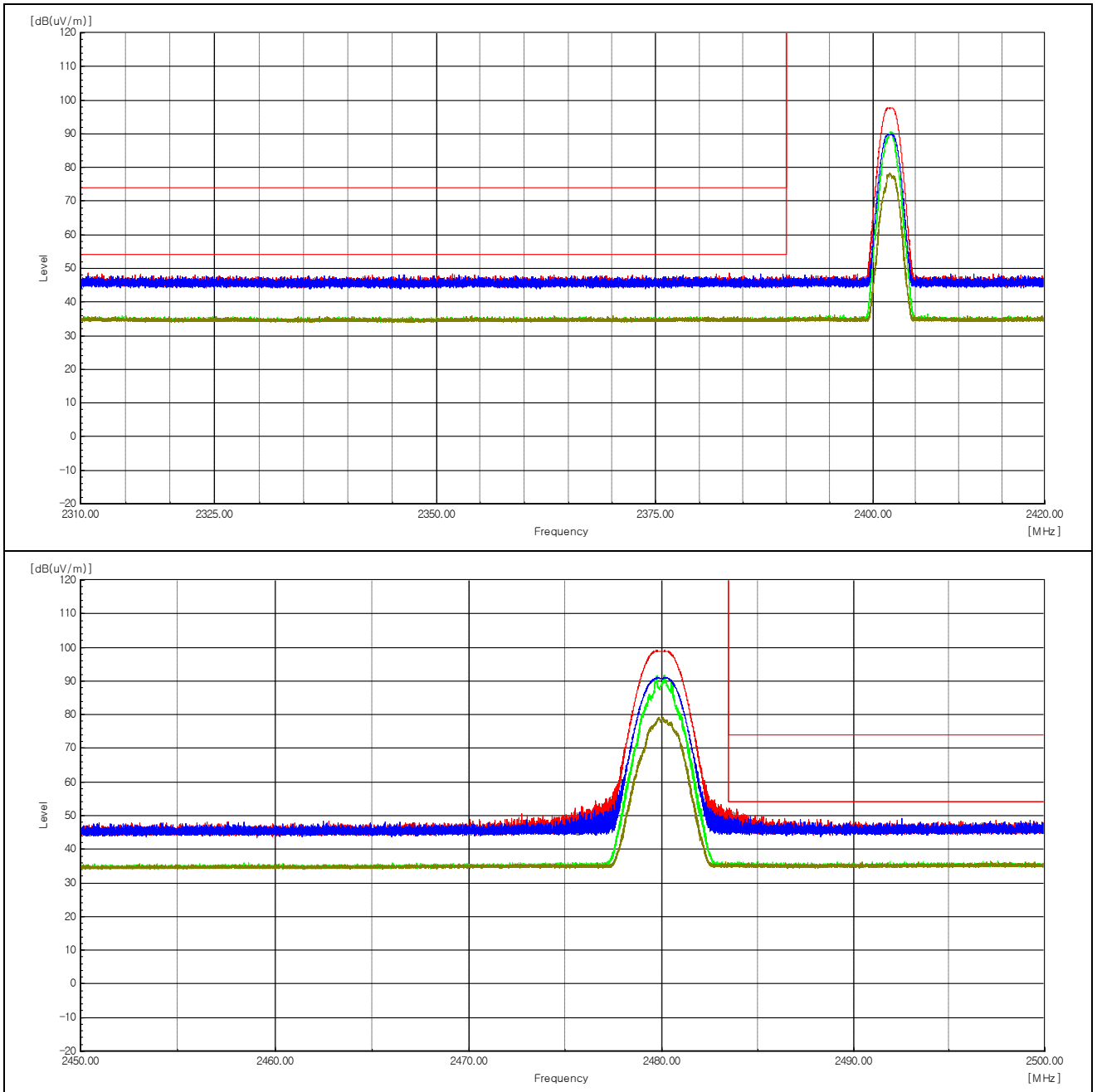
3) Above 1 GHz

Test Mode : Transmitter, Bluetooth LE_1 Mbps(Worst Case)

The requirements are:

☒ Complies

Test Data :



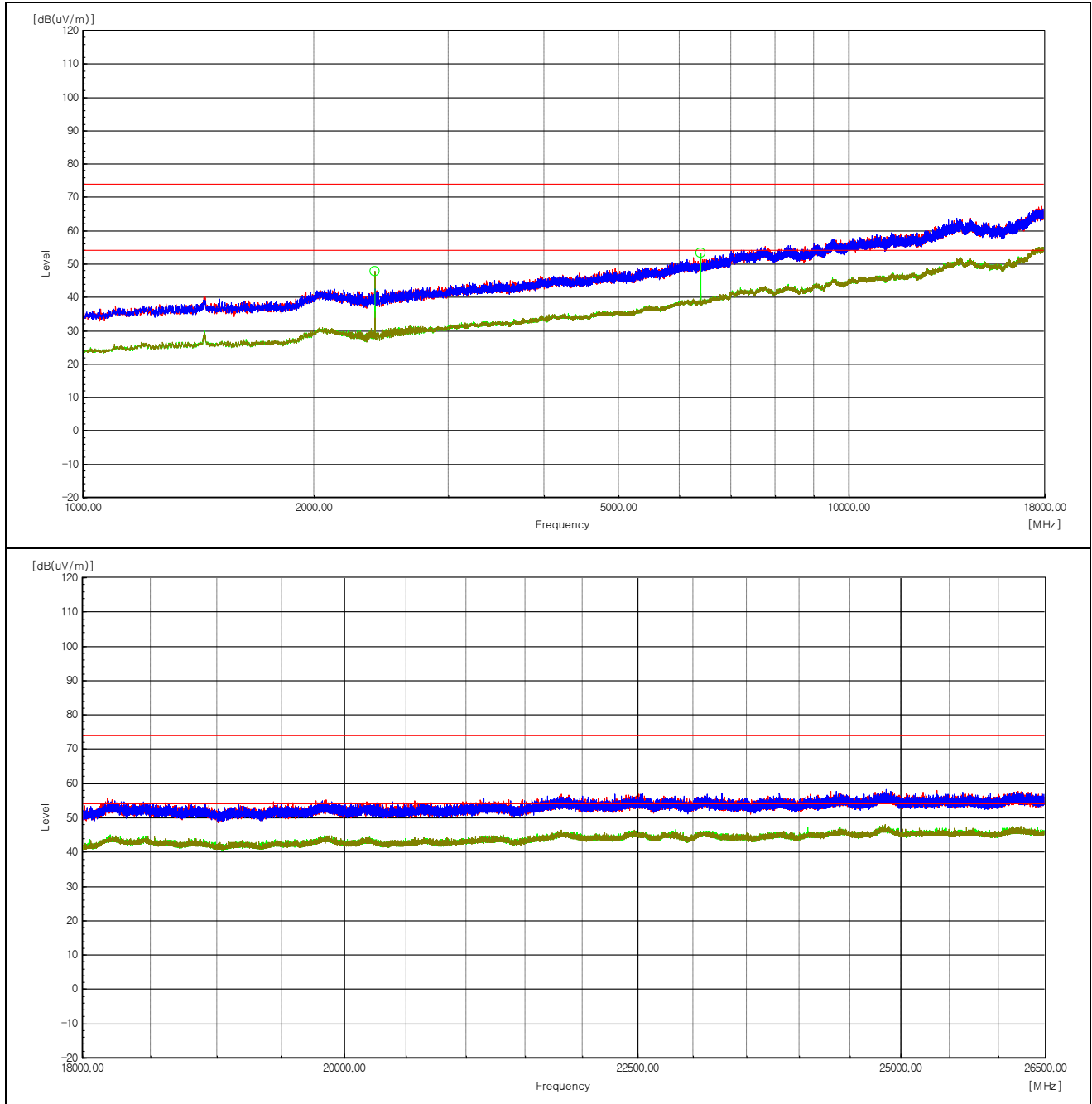


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Test Mode : Transmitter, Bluetooth LE_1 Mbps(2 402 MHz)(Worst Case)



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Test Mode : Transmitter (Bluetooth LE 1 Mbps)

The requirements are:

☒ Complies

2 402 MHz

Frequency [MHz]	(P)	Reading [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dBuV/m]	Level AV [dBuV/m]	Limit PK [dBuV/m]	Limit AV [dBuV/m]	Margin PK [dB]	Margin AV [dB]	Note
6 404.86	H	46.2	7.2	-----	53.40	-----	74.00	-----	20.60	-----	Peak

2 440 MHz

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

The emissions above 1 GHz were 20 dB lower than the limit.

2 480 MHz

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

The emissions above 1 GHz were 20 dB lower than the limit.

Test Mode : Transmitter (Bluetooth LE 2 Mbps)

The requirements are:

☒ Complies

2 402 MHz

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

The emissions above 1 GHz were 20 dB lower than the limit.

2 440 MHz

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

The emissions above 1 GHz were 20 dB lower than the limit.

2 480 MHz

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

The emissions above 1 GHz were 20 dB lower than the limit.

Remarks

1. Measuring position : 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 (Z axis) and the worst case was recorded.
2. Peak result = Reading + c.f (Correction factor)
3. Correction factor = Antenna factor + Cable loss - Amp gain
4. The 18 GHz end had no signal detected. As can be seen from the conducted spurious emission test, no signal was detected in the section.

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4.6 AC Conducted Emissions

Frequency Range of measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Procedures

ANSI C63.10-2020 - Section 6.2

The EUT was placed on a non-metallic table 0.8 m above the metallic, grounded floor and 0.4 m from the reference ground plane wall. The distance to other metallic surfaces was at least 0.8 m. Amplitude measurements were performed with a quasi-peak detector and an average detector.

Limit :

- 15.207(a)& RSS-Gen 8.8

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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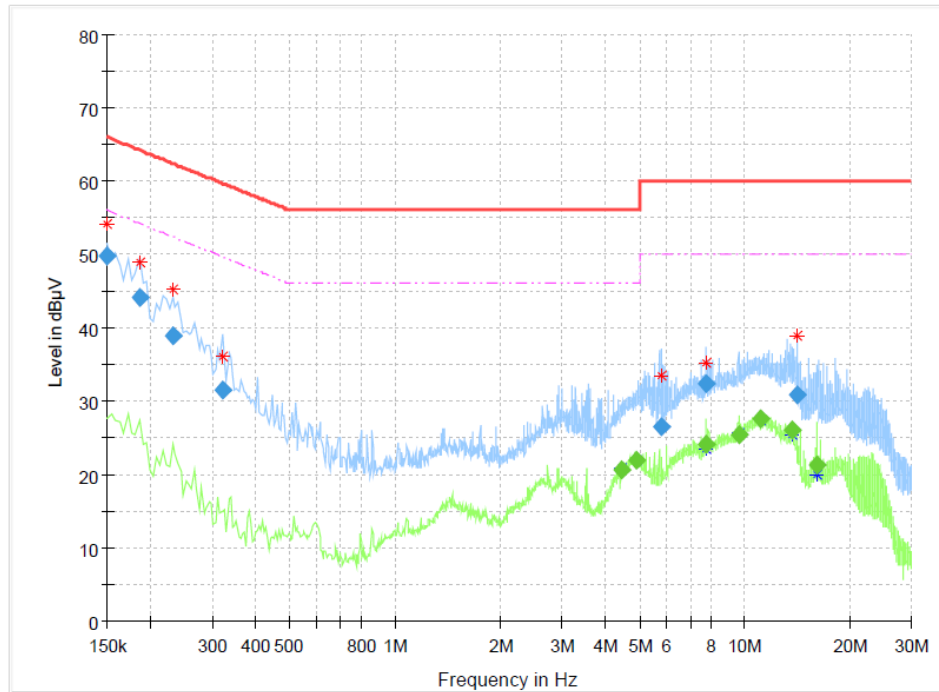
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Test Data

Bluetooth LE_1 Mbps, Worst Case

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	49.78	---	66.00	16.22	15000.0	9.000	N	ON	9.7
0.186000	44.12	---	64.21	20.10	15000.0	9.000	N	ON	9.8
0.231000	38.87	---	62.41	23.54	15000.0	9.000	L1	ON	9.8
0.321000	31.46	---	59.68	28.22	15000.0	9.000	N	ON	9.9
4.447500	---	20.59	46.00	25.41	15000.0	9.000	L1	ON	9.9
4.933500	---	21.91	46.00	24.09	15000.0	9.000	L1	ON	9.9
5.806500	26.58	---	60.00	33.42	15000.0	9.000	N	ON	9.9
7.741500	32.46	---	60.00	27.54	15000.0	9.000	L1	ON	10.0
7.759500	---	24.17	50.00	25.83	15000.0	9.000	L1	ON	10.0
9.609000	---	25.34	50.00	24.66	15000.0	9.000	L1	ON	10.0
11.166000	---	27.71	50.00	22.29	15000.0	9.000	L1	ON	10.0
13.677000	---	26.02	50.00	23.98	15000.0	9.000	L1	ON	10.1
14.095500	30.78	---	60.00	29.22	15000.0	9.000	L1	ON	10.1
16.174500	---	21.30	50.00	28.70	15000.0	9.000	L1	ON	10.2

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APPENDIX A – Test Equipment Used For Tests

No.	Name of Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Signal Analyzer	Agilent	N9020A	MY52090670	2025-09-18	2026-09-18
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	2025-09-18	2026-09-18
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	2025-09-30	2026-09-30
13	LOW NOISE AMPLIFIER	TESTEK	TK-PA1840H	210124-L	2025-09-30	2026-09-30
14	Band Reject Filter	Micro Tronics	BRM50702	G233	2025-11-25	2026-11-25
15	EMI TEST RECEIVER	Rohde & Schwarz	ESR3	102826	2025-04-28	2026-04-28
16	LISN	Rohde & Schwarz	ENV216	102698	2025-04-28	2026-04-28

No.	Cable	Manufacturer	Model No.	Serial No.	Check Date
1	RF Cable(conducted)	Junkosha Inc.	MWX221	2008S240	2025-10-29
2	RF Cable (Line Conducted)	Canare Corporation	L-5D2W	N/A	2025-03-05
3	RF Cable (9kHz-1GHz Radiated)	Canare Corporation	L-5D2W	N/A	2025-03-05
4	RF Cable (9kHz-1GHz Radiated)	HUBER+SUHNER	SUCOFLEX 104	MY27558/4	2025-03-05
5	RF Cable (1GHz-18GHz Radiated)	Junkosha Inc.	MWX221	2008S246	2025-02-21
6	RF Cable (1GHz-18GHz Radiated)	Junkosha Inc.	MWX221	J0970749	2025-02-21
7	RF Cable (1GHz-18GHz Radiated)	Sensorview Co., LTD	13A26	TPC2204060007	2025-02-21
8	RF Cable (18GHz-40GHz Radiated)	Sensorview Co., LTD	9A40	TPC2204060009	2025-02-21
9	RF Cable (18GHz-40GHz Radiated)	Sensorview Co., LTD	9A40	TP210713-001	2025-02-21

-END-