



FCC RADIO TEST REPORT

FCC ID : ACJ9TGWL24A
Equipment : Radio Module
Brand Name : Panasonic
Model Name : WL24A
Applicant : Panasonic Corporation of North America
Two Riverfront Plaza, Newark, New Jersey, 07102-5490, USA
Standard : FCC Part 15 Subpart C §15.247

The product was received on Oct. 29, 2025 and testing was performed from Nov. 10, 2025 to Dec. 24, 2025. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issue Date
FR5O2913-01A	01	Initial issue of report	Jan. 19, 2026

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
-	15.247(a)(1)	Number of Channels	Pass	See Note
-	15.247(a)(1)	Hopping Channel Separation	Pass	See Note
-	15.247(a)(1)	Dwell Time of Each Channel	Pass	See Note
-	15.247(a)(1)	20dB Bandwidth	Pass	See Note
-	2.1049	99% Occupied Bandwidth	Pass	See Note
3.1	15.247(b)(1) 15.247(b)(4)	Peak Output Power	Pass	-
-	15.247(d)	Conducted Band Edges	Pass	See Note
-	15.247(d)	Conducted Spurious Emission	Pass	See Note
3.2	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	12.31 dB under the limit at 956.35 MHz
-	15.207	AC Conducted Emission	Pass	See Note
3.3	15.203	Antenna Requirement	Pass	-

Note:

- For host device, the spot check Radiated Spurious Emission and complies with the limit in this test report.
- For host device, the spot check Conducted Output Power is no difference after compared to module (Model: Panasonic WL24A)

Conformity Assessment Condition:

- The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
- The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Keven Cheng
Report Producer: Hannah Yang

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature		
General Specs Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n/ac/ax/be, Wi-Fi 5GHz 802.11a/n/ac/ax/be, Wi-Fi 6GHz 802.11ax/be		
Antenna Type Bluetooth: <Aux Ant. (Chain A)>: PIFA Antenna		
Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	Aux Ant. (Chain A): 2.24 dBi

Remark:

1. The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.
2. The product was installed into Portable Computer (Brand Name: Panasonic, Model Name: FZ-56(mk1)) during test.

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No. TH05-HY,03CH21-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW3786

1.4 Applicable Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01
- ♦ FCC Part 15 Subpart C §15.247
- ♦ ANSI C63.10-2020

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	0	2402	27	2429	54	2456
	1	2403	28	2430	55	2457
	2	2404	29	2431	56	2458
	3	2405	30	2432	57	2459
	4	2406	31	2433	58	2460
	5	2407	32	2434	59	2461
	6	2408	33	2435	60	2462
	7	2409	34	2436	61	2463
	8	2410	35	2437	62	2464
	9	2411	36	2438	63	2465
	10	2412	37	2439	64	2466
	11	2413	38	2440	65	2467
	12	2414	39	2441	66	2468
	13	2415	40	2442	67	2469
	14	2416	41	2443	68	2470
	15	2417	42	2444	69	2471
	16	2418	43	2445	70	2472
	17	2419	44	2446	71	2473
	18	2420	45	2447	72	2474
	19	2421	46	2448	73	2475
	20	2422	47	2449	74	2476
	21	2423	48	2450	75	2477
	22	2424	49	2451	76	2478
	23	2425	50	2452	77	2479
	24	2426	51	2453	78	2480
	25	2427	52	2454	-	-
	26	2428	53	2455	-	-

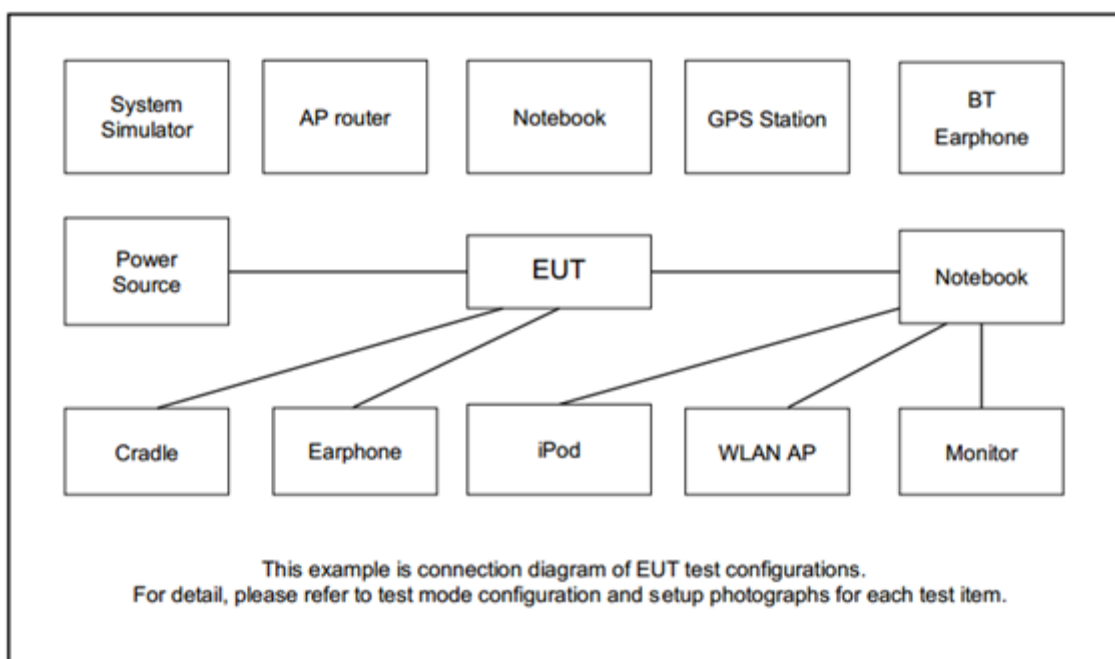
2.2 Test Mode

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The following summary table is showing all test modes to demonstrate in compliance with the standard.

Summary table of Test Cases			
Test Item	Data Rate / Modulation		
Conducted Test Cases	Bluetooth BR 1Mbps GFSK	Bluetooth EDR 2Mbps $\pi/4$ -DQPSK	Bluetooth EDR 3Mbps 8-DPSK
	Mode 1: CH00_2402 MHz	Mode 4: CH00_2402 MHz	Mode 7: CH00_2402 MHz
	Mode 2: CH39_2441 MHz	Mode 5: CH39_2441 MHz	Mode 8: CH39_2441 MHz
	Mode 3: CH78_2480 MHz	Mode 6: CH78_2480 MHz	Mode 9: CH78_2480 MHz
Remark: The detailed Radiated test modes are shown in Appendix B.			

2.3 Connection Diagram of Test System





2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Earphone	Apple	A1285	N/A	N/A	Unshielded, 1.2 m

2.5 EUT Operation Test Setup

The RF test items, utility "DRTU v09295.23.170.0" was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

3 Test Result

3.1 Output Power Measurement

3.1.1 Limit of Output Power

The maximum peak conducted output power of the intentional radiator shall not exceed the following:

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt.

For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts.

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi.

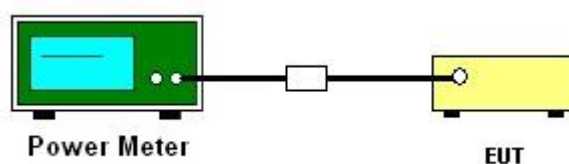
3.1.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.1.3 Test Procedures

1. The testing follows ANSI C63.10 clause 7.8.5.
1. The RF output of EUT is connected to the power meter by RF cable and attenuator. The path loss is compensated to the results for each measurement.
2. Set the maximum power setting and enable the EUT to transmit continuously.
3. Measure the conducted output power with cable loss and record the results in the test report.
4. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.1.6 Test Result of Average Output Power (Reporting Only)

Please refer to Appendix A.

3.2 Radiated Band Edges and Spurious Emission Measurement

3.2.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics / spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

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

3.2.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

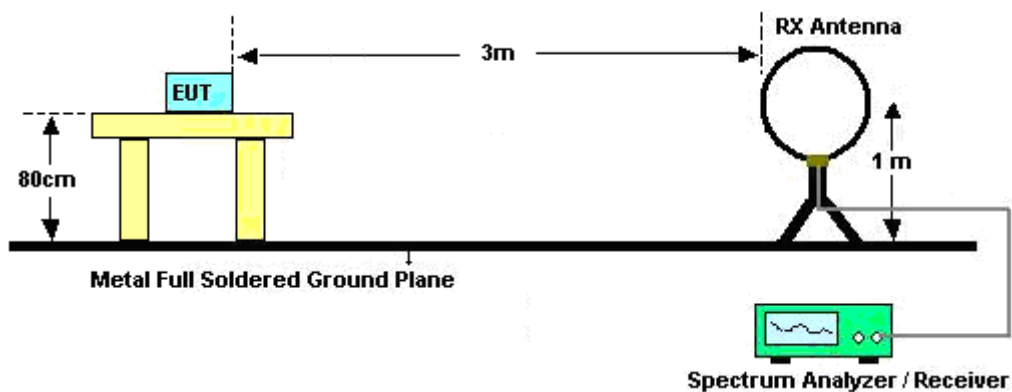
3.2.3 Test Procedures

1. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
2. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
3. For each suspected emission, the EUT is arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set the maximum power setting and enable the EUT to transmit continuously.
5. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW = 100 kHz for $f < 1$ GHz, RBW = 1 MHz for $f > 1$ GHz ; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
 - (3) For average measurement: use duty cycle correction factor method per 15.35(c).
Duty cycle = On time/100 milliseconds
On time = $N_1 \cdot L_1 + N_2 \cdot L_2 + \dots + N_{n-1} \cdot L_{n-1} + N_n \cdot L_n$
Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.
Average Emission Level = Peak Emission Level + $20 \cdot \log$ (Duty cycle)
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-”.
8. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as “-”.

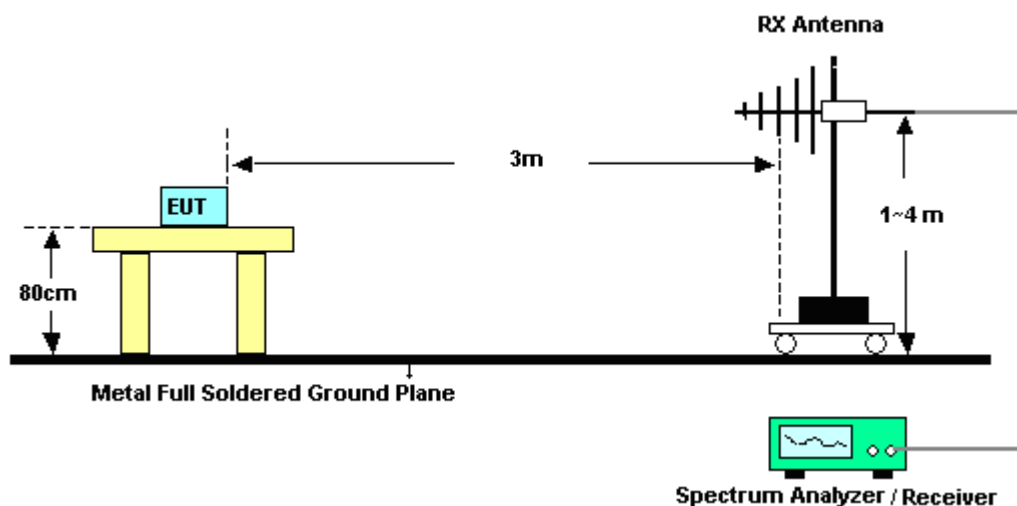
Note: The average levels are calculated from the peak level corrected with duty cycle correction factor (-24.79dB) derived from $20 \log$ (dwell time/100ms). This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

3.2.4 Test Setup

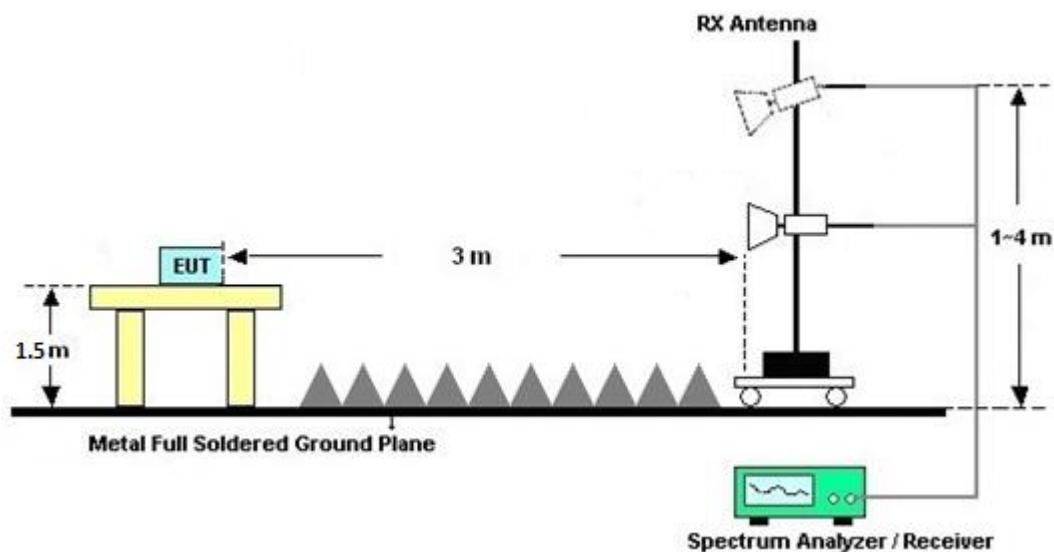
For radiated test below 30MHz



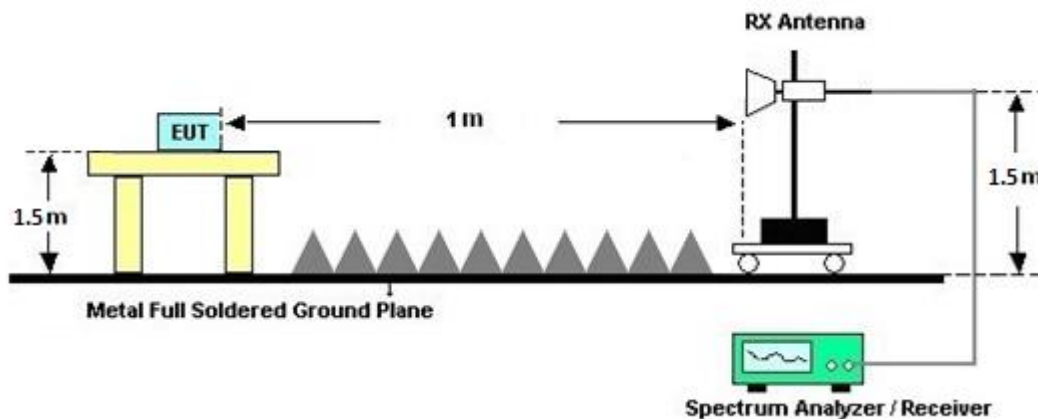
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



3.2.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site **v01r01**, and the result comes out very similar.

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B.

3.2.7 Duty Cycle

Please refer to Appendix C.

3.2.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B.



3.3 Antenna Requirements

3.3.1 Standard Applicable

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

3.3.2 Antenna Anti-Replacement Construction

Antenna permanently attached.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LOOP Antenna	Rohde & Schwarz	HFH2-Z2	101108	9 kHz~30 MHz	Dec. 18, 2024	Nov. 12, 2025~ Dec. 09, 2025	Dec. 17, 2025	Radiation (03CH21-HY)
LOOP Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Mar. 06, 2025	Dec. 24, 2025	Mar. 05, 2026	Radiation (03CH21-HY)
Bilog Antenna	TESEQ & WOKEN	CBL 6111D & 00802N1D-06	63303 & 001	30MHz~1GHz	Dec. 17, 2024	Nov. 12, 2025~ Dec. 09, 2025	Dec. 16, 2025	Radiation (03CH21-HY)
Bilog Antenna	TESEQ & WOKEN	CBL 6111D & 00802N1D-06	63303 & 001	30MHz~1GHz	Nov. 26, 2025	Dec. 24, 2025	Nov. 25, 2026	Radiation (03CH21-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1212	1GHz~18GHz	Mar. 27, 2025	Nov. 12, 2025~ Dec. 24, 2025	Mar. 26, 2026	Radiation (03CH21-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	1223	18GHz~40GHz	Jul. 02, 2025	Nov. 12, 2025~ Dec. 24, 2025	Jul. 01, 2026	Radiation (03CH21-HY)
Amplifier	SONOMA	310N	421580	30MHz~1GHz	Jul. 13, 2025	Nov. 12, 2025~ Dec. 24, 2025	Jul. 12, 2026	Radiation (03CH21-HY)
Amplifier	EMEC	EM01G18GA	060876	1GHz~18GHz	Sep. 26, 2025	Nov. 12, 2025~ Dec. 24, 2025	Sep. 25, 2026	Radiation (03CH21-HY)
Preamplifier	EMEC	EM18G40G	060873	18GHz~40GHz	Aug. 26, 2025	Nov. 12, 2025~ Dec. 24, 2025	Aug. 25, 2026	Radiation (03CH21-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY53290053	20Hz~26.5GHz	Sep. 08, 2025	Nov. 12, 2025~ Dec. 24, 2025	Sep. 07, 2026	Radiation (03CH21-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 05, 2025	Nov. 12, 2025~ Dec. 24, 2025	Mar. 04, 2026	Radiation (03CH21-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804397/2,804612/2,803954/2	30MHz~40GHz	Aug. 11, 2025	Nov. 12, 2025~ Dec. 24, 2025	Aug. 10, 2026	Radiation (03CH21-HY)
Hygrometer	TECPEL	DTM-303A	TP211568	N/A	Oct. 21, 2025	Nov. 12, 2025~ Dec. 24, 2025	Oct. 20, 2026	Radiation (03CH21-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Nov. 12, 2025~ Dec. 24, 2025	N/A	Radiation (03CH21-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Nov. 12, 2025~ Dec. 24, 2025	N/A	Radiation (03CH21-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Nov. 12, 2025~ Dec. 24, 2025	N/A	Radiation (03CH21-HY)
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	Nov. 12, 2025~ Dec. 24, 2025	N/A	Radiation (03CH21-HY)
Hygrometer	TECPEL	DTM-303A	TP224371	N/A	Jun. 16, 2025	Nov. 10, 2025~ Nov. 20, 2025	Jun. 15, 2026	Conducted (TH05-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Jun. 13, 2025	Nov. 10, 2025~ Nov. 20, 2025	Jun. 12, 2026	Conducted (TH05-HY)
Power Sensor	Agilent	E9327A	US40441548	50MHz~18GHz	Jun. 13, 2025	Nov. 10, 2025~ Nov. 20, 2025	Jun. 12, 2026	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 29, 2025	Nov. 10, 2025~ Nov. 20, 2025	Aug. 28, 2026	Conducted (TH05-HY)
Switch Control Mainframe	E-Instument	ETF-1405-0	EC1900157 (BOX6)	N/A	Feb. 10, 2025	Nov. 10, 2025~ Nov. 20, 2025	Feb. 09, 2026	Conducted (TH05-HY)
Software	Sporton	BTWIFI_Final_version_240513	N/A	Conducted Other Test Item	N/A	Nov. 10, 2025~ Nov. 20, 2025	N/A	Conducted (TH05-HY)

5 Measurement Uncertainty

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	6.4 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.8 dB
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Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.8 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.3 dB
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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Benny Ku	Temperature:	21~25	°C
Test Date:	2025/11/10~2025/11/20	Relative Humidity:	51~54	%

TEST RESULTS DATA**Peak Power Table**

DH	CH.	NTX	Peak Power (dBm)	Power Limit (dBm)	Test Result
DH1	0	1	14.41	20.97	Pass
	39	1	14.40	20.97	Pass
	78	1	14.68	20.97	Pass
2DH1	0	1	14.39	20.97	Pass
	39	1	14.39	20.97	Pass
	78	1	14.64	20.97	Pass
3DH1	0	1	14.41	20.97	Pass
	39	1	14.41	20.97	Pass
	78	1	14.68	20.97	Pass

TEST RESULTS DATA**Average Power Table*****(Reporting Only)***

DH	CH.	NTX	Average Power (dBm)	Duty Factor (dB)
DH1	0	1	14.30	5.25
	39	1	14.35	5.25
	78	1	14.65	5.25
2DH1	0	1	12.27	5.20
	39	1	12.25	5.20
	78	1	12.56	5.20
3DH1	0	1	12.21	5.18
	39	1	12.21	5.18
	78	1	12.45	5.18



Appendix B. Radiated Spurious Emission Test Data

Test Engineer :	Fred Tseng, Ray Lung and Sky Chang	Temperature :	21.1 ~ 25.7°C
		Relative Humidity :	55.8 ~ 63.2%

Note symbol

-L	Low channel location
-R	High channel location



B1. Radiated Spurious Emission Test Modes

Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 1	2400-2483.5	Chain A	Bluetooth BR_GFSK	00	2402	1Mbps	-	-
Mode 2	2400-2483.5	Chain A	Bluetooth BR_GFSK	00	2402	1Mbps	-	LF
Mode 3	2400-2483.5	Chain A	Bluetooth BR_GFSK	00	2402	1Mbps	-	SHF

B2. Summary of each worse mode

Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	RU	Remark
1	Bluetooth BR_GFSK	00	2362.99	43.04	74.00	-30.96	V	Peak	Pass	-	Band Edge
	Bluetooth BR_GFSK	00	4804.00	50.05	74.00	-23.95	V	Peak	Pass	-	Harmonic
2	LF	00	956.35	33.69	46.00	-12.31	V	Peak	Pass	-	LF
3	SHF	00	23923.93	40.63	74.00	-33.37	H	Peak	Pass	-	SHF



Mode	1																																																																																																															
	Band Edge																																																																																																															
	2400-2483.5_Bluetooth BR_GFSK_CH00_2402MHz																																																																																																															
ANT	Chain A																																																																																																															
Pol.	Horizontal	Fundamental																																																																																																														
Peak	Level (dBuV/m) Date: 2025-11-13 Site : 03CH21-HY Condition: PEAK_BE_74 3m DRH18-E_LE2C03A18EN_250807 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SMT:Auto <table><tr><th></th><th>Limit</th><th>Read</th><th>Ant</th><th>Cable</th><th>Preamp</th><th>Aux</th><th>APos</th><th>TPos</th><th>Remark</th></tr><tr><th>Freq</th><th>Level</th><th>Line</th><th>Margin</th><th>Level</th><th>Factor</th><th>Loss</th><th>Factor</th><th>Factor</th><th></th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dBuV/m</th><th>dB</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th></tr><tr><td>1</td><td>2388.29</td><td>42.96</td><td>74.00</td><td>-31.04</td><td>39.13</td><td>26.62</td><td>9.44</td><td>32.83</td><td>0.60</td><td>300</td><td>238 Peak</td></tr><tr><td>2</td><td>2388.29</td><td>18.17</td><td>54.00</td><td>-35.83</td><td>--</td><td>--</td><td>--</td><td>--</td><td>--</td><td>--</td><td>AVERAGE</td></tr></table>		Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark	Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor			MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg	1	2388.29	42.96	74.00	-31.04	39.13	26.62	9.44	32.83	0.60	300	238 Peak	2	2388.29	18.17	54.00	-35.83	--	--	--	--	--	--	AVERAGE	Level (dBuV/m) Date: 2025-11-13 Site : 03CH21-HY Condition: PEAK_74 3m DRH18-E_LE2C03A18EN_250807 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SMT:Auto <table><tr><th></th><th>Limit</th><th>Read</th><th>Ant</th><th>Cable</th><th>Preamp</th><th>Aux</th><th>APos</th><th>TPos</th><th>Remark</th></tr><tr><th>Freq</th><th>Level</th><th>Line</th><th>Margin</th><th>Level</th><th>Factor</th><th>Loss</th><th>Factor</th><th>Factor</th><th></th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dBuV/m</th><th>dB</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th></tr><tr><td>1</td><td>2402.00</td><td>108.81</td><td>-----</td><td>-----</td><td>104.86</td><td>26.72</td><td>9.47</td><td>32.84</td><td>0.60</td><td>300</td><td>238 Peak</td></tr><tr><td>2</td><td>2402.00</td><td>84.02</td><td>-----</td><td>-----</td><td>--</td><td>--</td><td>--</td><td>--</td><td>--</td><td>--</td><td>Average</td></tr></table>		Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark	Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor			MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg	1	2402.00	108.81	-----	-----	104.86	26.72	9.47	32.84	0.60	300	238 Peak	2	2402.00	84.02	-----	-----	--	--	--	--	--	--	Average
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Mode		Harmonic									
		2400-2483.5_Bluetooth BR_GFSK_CH00_2402MHz									
ANT		Chain A									
Pol.		Horizontal					Vertical				
Peak Avg											



Mode	1	
	Harmonic	
	2400-2483.5_Bluetooth BR_GFSK_CH00_2402MHz	
ANT	Chain A	
Pol.	Horizontal	Vertical
10.8G ~18G Avg	Level (dBuV/m) Date: 2025-11-13 AVG_54 Site : 03CH21-HY Condition: AVG_54 3m DRH18-E_LE2C03A18EN_250807 HORIZONTAL	Level (dBuV/m) Date: 2025-11-13 AVG_54 Site : 03CH21-HY Condition: AVG_54 3m DRH18-E_LE2C03A18EN_250807 VERTICAL

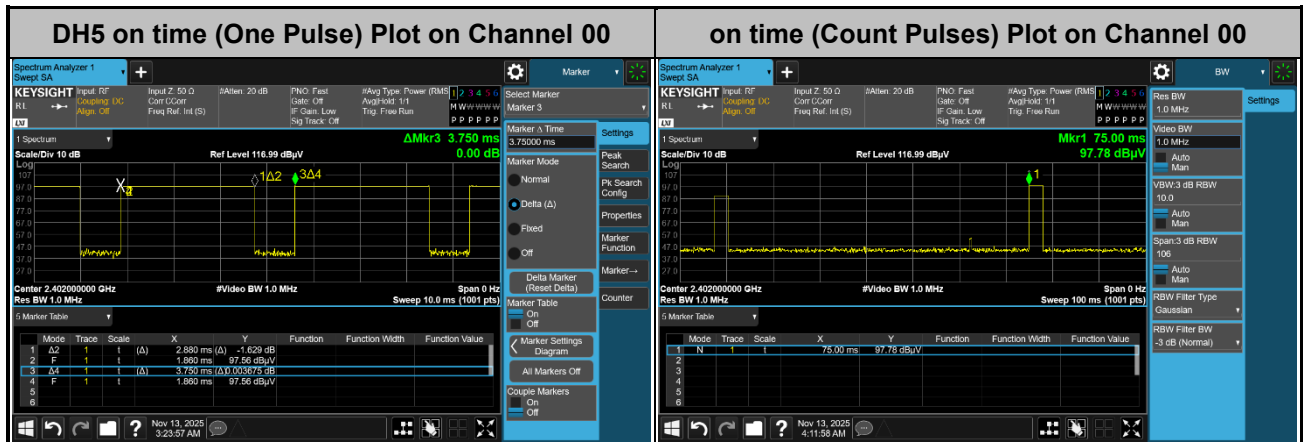


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QP/ Peak	Level (dBuV/m) Date: 2025-11-14 Site : 03CH21-HY Condition: QP 3m LF_633038001_241217 HORIZONTAL <table><tr><th></th><th>Limit</th><th>Read</th><th>Ant</th><th>Cable</th><th>Preamp</th><th>Aux</th><th>APos</th><th>TPos</th><th>Remark</th></tr><tr><th>Freq</th><th>Level</th><th>Line</th><th>Margin</th><th>Level</th><th>Factor</th><th>Loss</th><th>Factor</th><th>Factor</th><th></th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dBuV/m</th><th>dB</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>dB</th><th>cm deg</th></tr><tr><td>1</td><td>30.97</td><td>24.24</td><td>40.00</td><td>-15.76</td><td>31.43</td><td>24.43</td><td>0.87</td><td>32.51</td><td>0.02 -- -- Peak</td></tr><tr><td>2</td><td>190.05</td><td>27.98</td><td>43.50</td><td>-15.52</td><td>43.25</td><td>14.70</td><td>2.42</td><td>32.45</td><td>0.06 -- -- Peak</td></tr><tr><td>3</td><td>244.37</td><td>24.76</td><td>46.00</td><td>-21.24</td><td>36.50</td><td>17.91</td><td>2.74</td><td>32.46</td><td>0.07 -- -- Peak</td></tr><tr><td>4</td><td>312.27</td><td>25.34</td><td>46.00</td><td>-20.66</td><td>35.29</td><td>19.35</td><td>3.11</td><td>32.48</td><td>0.07 -- -- Peak</td></tr><tr><td>5</td><td>734.22</td><td>30.24</td><td>46.00</td><td>-15.76</td><td>30.09</td><td>27.87</td><td>4.75</td><td>32.60</td><td>0.13 -- -- Peak</td></tr><tr><td>6</td><td>955.38</td><td>33.51</td><td>46.00</td><td>-12.49</td><td>27.56</td><td>31.50</td><td>5.41</td><td>31.17</td><td>0.21 -- -- Peak</td></tr></table>						Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark	Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor		MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm deg	1	30.97	24.24	40.00	-15.76	31.43	24.43	0.87	32.51	0.02 -- -- Peak	2	190.05	27.98	43.50	-15.52	43.25	14.70	2.42	32.45	0.06 -- -- Peak	3	244.37	24.76	46.00	-21.24	36.50	17.91	2.74	32.46	0.07 -- -- Peak	4	312.27	25.34	46.00	-20.66	35.29	19.35	3.11	32.48	0.07 -- -- Peak	5	734.22	30.24	46.00	-15.76	30.09	27.87	4.75	32.60	0.13 -- -- Peak	6	955.38	33.51	46.00	-12.49	27.56	31.50	5.41	31.17	0.21 -- -- Peak	Level (dBuV/m) Date: 2025-11-14 Site : 03CH21-HY Condition: QP 3m LF_633038001_241217 VERTICAL <table><tr><th></th><th>Limit</th><th>Read</th><th>Ant</th><th>Cable</th><th>Preamp</th><th>Aux</th><th>APos</th><th>TPos</th><th>Remark</th></tr><tr><th>Freq</th><th>Level</th><th>Line</th><th>Margin</th><th>Level</th><th>Factor</th><th>Loss</th><th>Factor</th><th>Factor</th><th></th></tr><tr><th>MHz</th><th>dBuV/m</th><th>dBuV/m</th><th>dB</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>dB</th><th>cm deg</th></tr><tr><td>1</td><td>37.76</td><td>26.59</td><td>40.00</td><td>-13.41</td><td>36.84</td><td>21.20</td><td>1.02</td><td>32.49</td><td>0.02 -- -- Peak</td></tr><tr><td>2</td><td>101.78</td><td>21.89</td><td>43.50</td><td>-21.61</td><td>36.43</td><td>16.10</td><td>1.77</td><td>32.46</td><td>0.05 -- -- Peak</td></tr><tr><td>3</td><td>259.89</td><td>19.63</td><td>46.00</td><td>-26.37</td><td>29.02</td><td>20.18</td><td>2.83</td><td>32.47</td><td>0.07 -- -- Peak</td></tr><tr><td>4</td><td>500.45</td><td>25.49</td><td>46.00</td><td>-20.51</td><td>30.17</td><td>23.92</td><td>3.92</td><td>32.64</td><td>0.12 -- -- Peak</td></tr><tr><td>5</td><td>755.56</td><td>29.65</td><td>46.00</td><td>-16.35</td><td>28.93</td><td>28.30</td><td>4.81</td><td>32.53</td><td>0.14 -- -- Peak</td></tr><tr><td>6</td><td>956.35</td><td>33.69</td><td>46.00</td><td>-12.31</td><td>27.73</td><td>31.50</td><td>5.41</td><td>31.16</td><td>0.21 -- -- Peak</td></tr></table>						Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark	Freq	Level	Line	Margin	Level	Factor	Loss	Factor	Factor		MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm deg	1	37.76	26.59	40.00	-13.41	36.84	21.20	1.02	32.49	0.02 -- -- Peak	2	101.78	21.89	43.50	-21.61	36.43	16.10	1.77	32.46	0.05 -- -- Peak	3	259.89	19.63	46.00	-26.37	29.02	20.18	2.83	32.47	0.07 -- -- Peak	4	500.45	25.49	46.00	-20.51	30.17	23.92	3.92	32.64	0.12 -- -- Peak	5	755.56	29.65	46.00	-16.35	28.93	28.30	4.81	32.53	0.14 -- -- Peak	6	956.35	33.69	46.00	-12.31	27.73	31.50	5.41	31.16	0.21 -- -- Peak
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Peak	Date: 2025-12-24 Site : 03CH21-HY Condition: PEAK_74 1m BBHA9170_1223_250702 HORIZONTAL <table><tr><th></th><th>Limit</th><th>Read</th><th>Ant</th><th>Cable</th><th>Preamp</th><th>Aux</th><th>APos</th><th>TPos</th><th>Remark</th></tr><tr><th>Freq</th><th>Level</th><th>Line Margin</th><th>Level Factor</th><th>Loss Factor</th><th>Loss Factor</th><th>Factor</th><th></th><th></th><th></th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dBuV/m</th><th>dB</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th></tr><tr><td>1</td><td>23923.93</td><td>40.63</td><td>74.00</td><td>-33.37</td><td>42.71</td><td>39.00</td><td>28.56</td><td>60.10</td><td>-9.54</td><td>--</td><td>PEAK</td></tr></table>		Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark	Freq	Level	Line Margin	Level Factor	Loss Factor	Loss Factor	Factor					MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg	1	23923.93	40.63	74.00	-33.37	42.71	39.00	28.56	60.10	-9.54	--	PEAK	Date: 2025-12-24 Site : 03CH21-HY Condition: PEAK_74 1m BBHA9170_1223_250702 VERTICAL <table><tr><th></th><th>Limit</th><th>Read</th><th>Ant</th><th>Cable</th><th>Preamp</th><th>Aux</th><th>APos</th><th>TPos</th><th>Remark</th></tr><tr><th>Freq</th><th>Level</th><th>Line Margin</th><th>Level Factor</th><th>Loss Factor</th><th>Loss Factor</th><th>Factor</th><th></th><th></th><th></th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dBuV/m</th><th>dB</th><th>dBuV</th><th>dB/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th></tr><tr><td>1</td><td>23634.08</td><td>39.87</td><td>74.00</td><td>-34.13</td><td>42.10</td><td>39.03</td><td>28.38</td><td>60.10</td><td>-9.54</td><td>--</td><td>PEAK</td></tr></table>		Limit	Read	Ant	Cable	Preamp	Aux	APos	TPos	Remark	Freq	Level	Line Margin	Level Factor	Loss Factor	Loss Factor	Factor					MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg	1	23634.08	39.87	74.00	-34.13	42.10	39.03	28.38	60.10	-9.54	--	PEAK
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Appendix C. Duty Cycle Plots



Note:

1. Worst case Duty cycle = on time/100 milliseconds = $2 * 2.88 / 100 = 5.76 \%$
2. Worst case Duty cycle correction factor = $20 * \log(\text{Duty cycle}) = -24.79 \text{ dB}$
3. **DH5** has the highest duty cycle worst case and is reported.

Duty Cycle Correction Factor Consideration for AFH mode:

Bluetooth normal hopping rate is 1600Hz and reduced to 800Hz in AFH mode; due to the reduced number of hopping frequencies, with the same packet configuration the dwell time in each channel frequency within 100msec period is longer in AFH mode than normal mode.

In AFH mode, the minimum hopping frequencies are 20, to get the longest dwell time DH5 packet is observed; the on time period to have DH5 packet completing one hopping sequence is

$$2.88 \text{ ms} \times 20 \text{ channels} = 57.6 \text{ ms}$$

There cannot be 2 complete hopping sequences within 100ms period, considering the random hopping behavior, maximum 2 hops can be possibly observed within the period. $[100 \text{ ms} / 57.6 \text{ ms}] = 2 \text{ hops}$
Thus, the maximum possible ON time:

$$2.88 \text{ ms} \times 2 = 5.76 \text{ ms}$$

Worst case Duty Cycle Correction factor, which is derived from the maximum possible ON time,

$$20 \times \log(5.76 \text{ ms}/100 \text{ ms}) = -24.79 \text{ dB}$$