



RF MEASUREMENT REPORT

FCC ID: CJ6PA5347RT

Applicant: Dynabook Inc.

Product: dynabook Wireless Optical Silent Mouse

Model No.: W90

Serial Model No.: PA5347*-****(* means 0-9, A-Z or blank)

Brand Name: dynabook

FCC Classification: Part 15 Low Power Communication Device Transmitter (DXX)

FCC Rule Part(s): Part 15.249

Test Procedure(s): ANSI C63.10 - 2013

Result: Complies

Test Date: 2022-09-21 ~ 2022-09-23

Reviewed By:

Vincent Yu

Approved By:

Robin Wu



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

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Revision History

Report No.	Version	Description	Issue Date	Note
2209RSU048-U1	Rev. 01	Initial Report	2022-10-20	Valid

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1. General Information

1.1. Applicant

Dynabook Inc.

6-15, Toyosu 5-chome, Koto-ku, Tokyo 135-8505, Japan

1.2. Manufacturer

Dynabook Inc.

6-15, Toyosu 5-chome, Koto-ku, Tokyo 135-8505, Japan

1.3. Testing Facility

☒	Test Site – MRT Suzhou Laboratory Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China Laboratory Location (Suzhou - SIP) 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China Laboratory Accreditations A2LA: 3628.01 CNAS: L10551 FCC: CN1166 ISED: CN0001 VCCI: ☐ R-20025 ☐ G-20034 ☐ C-20020 ☐ T-20020 ☐ R-20141 ☐ G-20134 ☐ C-20103 ☐ T-20104
☐	Test Site – MRT Shenzhen Laboratory Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China Laboratory Accreditations A2LA: 3628.02 CNAS: L10551 FCC: CN1284 ISED: CN0105
☐	Test Site – MRT Taiwan Laboratory Laboratory Location (Taiwan) No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) Laboratory Accreditations TAF: L3261-190725 FCC: 291082, TW3261 ISED: TW3261

1.4. Product Information

Product Name	dynabook Wireless Optical Silent Mouse
Model No.	W90
Serial Model No.	PA5347*-****(* means 0-9, A-Z or blank)
EUT Identification No.	20220919Sample#06 (for Conduction) 20220919Sample#08 (for Radiation)
Temperature	-5°C ~ 40°C
Antenna Information	Refer to section 1.5
Power Supply	DC 1.5V, 20mA
Remark: - All models are identical except the model name for marketing purpose. - The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Radio Specification under Test

Frequency Range	2408 ~ 2474MHz
Modulation	FSK
Channel Number	34
Antenna Type	PCB Antenna
Max. Antenna Gain	-0.61dBi

1.6. Working Frequencies

Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2408 MHz	02	2410 MHz	03	2412 MHz
04	2414 MHz	05	2416 MHz	06	2418 MHz
07	2420 MHz	08	2422 MHz	09	2424 MHz
10	2426 MHz	11	2428 MHz	12	2430 MHz
13	2432 MHz	14	2434 MHz	15	2436 MHz
16	2438 MHz	17	2440 MHz	18	2442 MHz
19	2444 MHz	20	2446 MHz	21	2448 MHz
22	2450 MHz	23	2452 MHz	24	2454 MHz
25	2456 MHz	26	2458 MHz	27	2460 MHz
28	2462 MHz	29	2464 MHz	30	2466 MHz
31	2468 MHz	32	2470 MHz	33	2472 MHz
34	2474 MHz	--	--	--	--

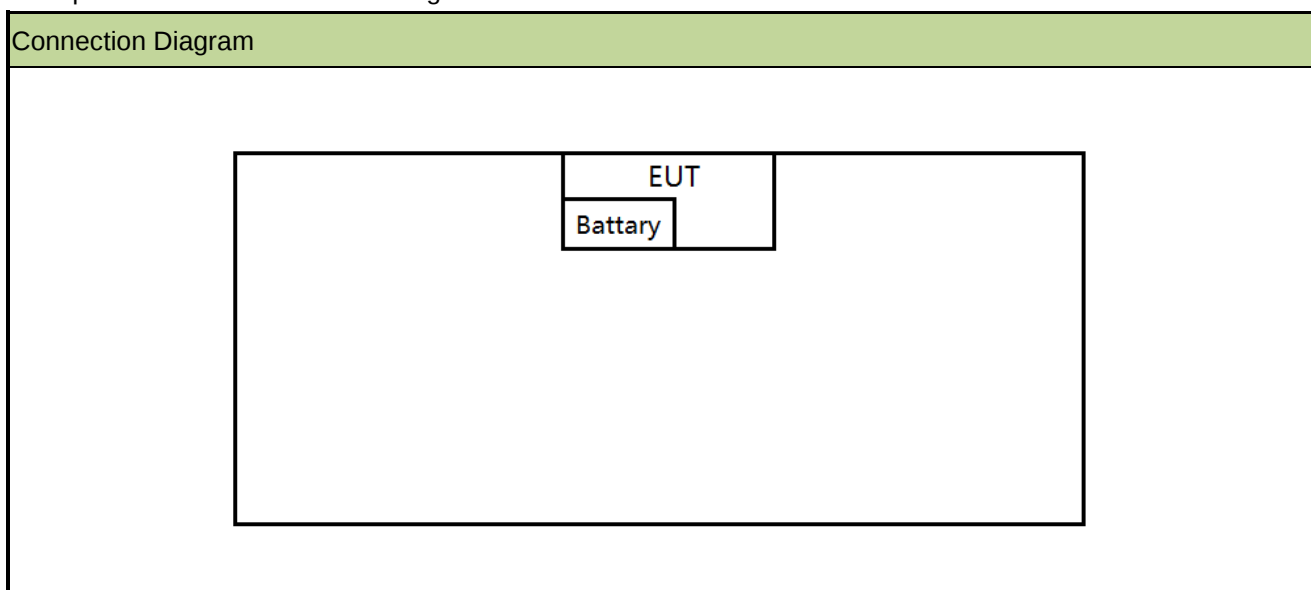
2. Test Configuration

2.1. Test Mode

Mode 1: Transmit by Channel 01_2408MHz
Mode 2: Transmit by Channel 17_2440MHz
Mode 3: Transmit by Channel 34_2474MHz

2.2. Test Configuration

This device was tested per the guidance ANSI C63.10:2013 was used to reference the appropriate EUT setup for radiated emissions testing.



2.3. Test Environment Condition

Ambient Temperature	15 ~ 35°C
Relative Humidity	20 ~ 75%RH

3. Antenna Requirements

Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 antenna of the device is **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

This unit complies with the requirement of §15.203.

4. Measuring Instrument

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2023-06-08	SIP-AC3
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2022-12-29	SIP-AC3
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06598	1 year	2022-11-09	SIP-AC3
Signal Analyzer	Keysight	N9020B	MRTSUE06604	1 year	2023-09-06	SIP-AC3
Horn Antenna	R&S	HF907	MRTSUE06611	1 year	2023-07-30	SIP-AC3
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2023-06-01	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06619	1 year	2022-11-02	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06622	1 year	2022-11-28	SIP-AC3
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2023-01-13	SIP-AC3
Preamplifier	EMCI	EMC001330	MRTSUE06643	1 year	2023-01-13	SIP-AC3
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06646	1 year	2023-08-16	SIP-AC3
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2022-12-23	SIP-AC3
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2023-03-14	SIP-AC3
Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2023-07-08	SIP-TR2
Thermohygrometer	testo	Testo 608-H1	MRTSUE11109	1 year	2023-03-21	SIP-TR2

Software	Version	Function
EMI V3	V 3.0.0	EMI Test Software
Controller_MF 7802BS	V 1.02	RE Antenna & Turntable

5. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

AC Conducted Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 9kHz~150kHz: 3.74dB 150kHz~30MHz: 3.44dB
Radiated Emission Measurement
Measurement Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB

6. Test Result

6.1. Summary

FCC Part Section(s)	Test Description	Test Condition	Verdict
15.207	AC Conducted Emissions 150kHz - 30MHz	Line Conducted	N/A
15.209 15.249	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Radiated	Pass
15.215(c)	20dB Spectrum Bandwidth	Conducted	Pass

Notes:

1. The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
2. "N/A" means that this item is not applicable, and the detail information refer to relevant section.

6.2. AC Conducted Emissions Measurement

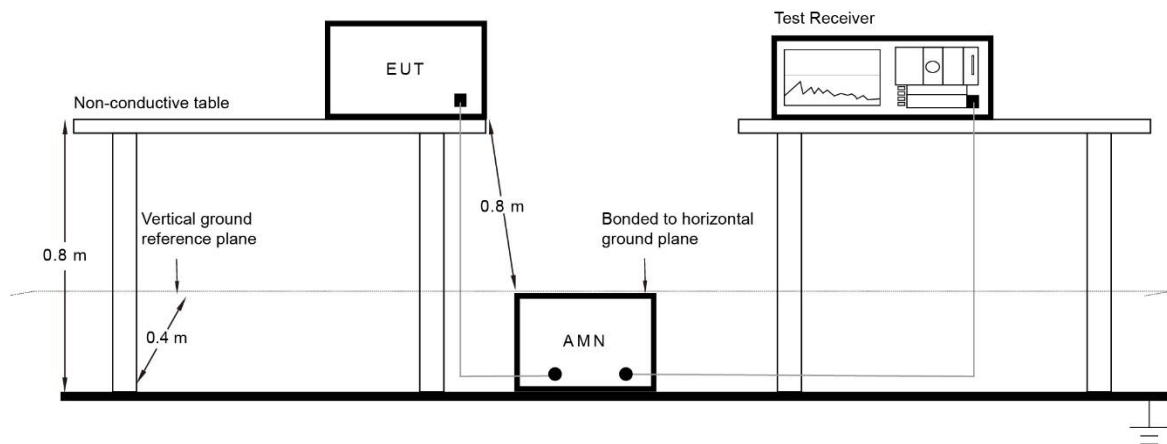
6.2.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBμV)	Average (dBμV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

6.2.2. Test Setup



6.2.3. Test Result

The device is powered by battery, therefore this item is not applicable.

6.3. Radiated Spurious Emission Measurement

6.3.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.249		
Fundamental Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (μV/m)
902 ~ 928	50	500
2400 ~ 2483.5	50	500
5725 ~ 5875	50	500
24000 ~ 24250	250	2500
Note: FCC Part 15.249 (d), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.		

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3
Note 1: The lower limit shall apply at the transition frequency.		
Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.		
Note 3: E field strength (dBμV/m) = 20 log E field strength (μV/m).		

6.3.2. Test Procedure

ANSI C63.10-2013 Section 6.3

ANSI C63.10-2013 Section 6.4

ANSI C63.10-2013 Section 6.5

ANSI C63.10-2013 Section 6.6

6.3.3. Test Setting

Quasi-Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = as specified in Table 1
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW $\geq 1/T$
4. As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode
5. Detector = Peak
6. Sweep time = auto

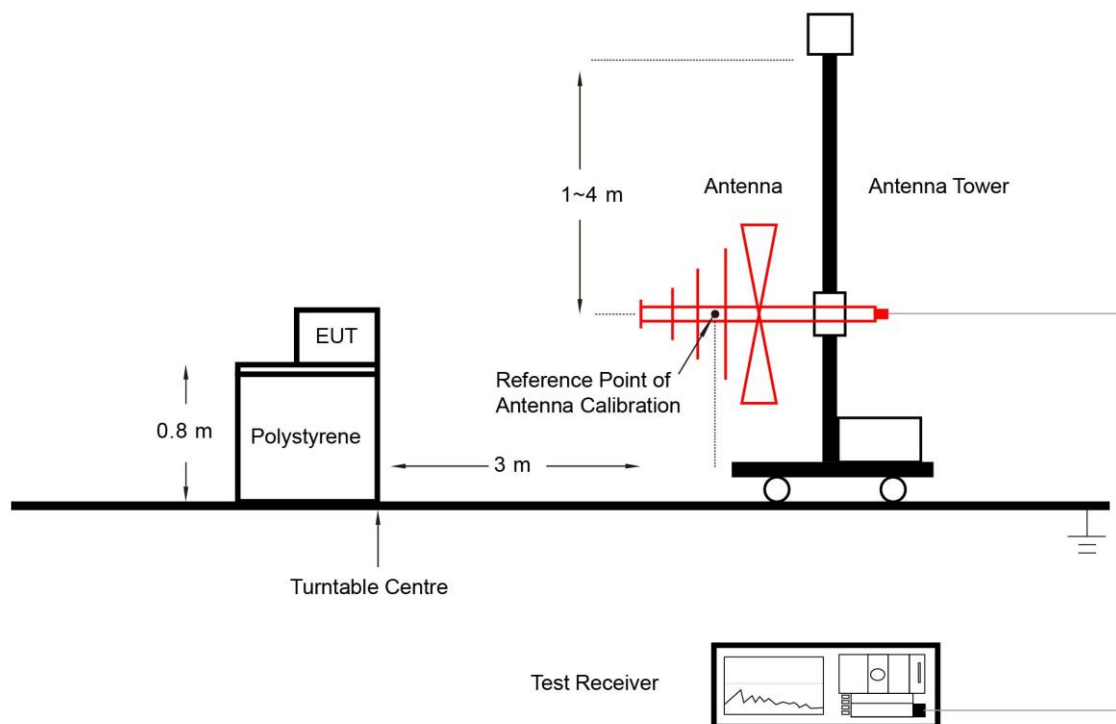
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

Table 1 - RBW as a function of frequency

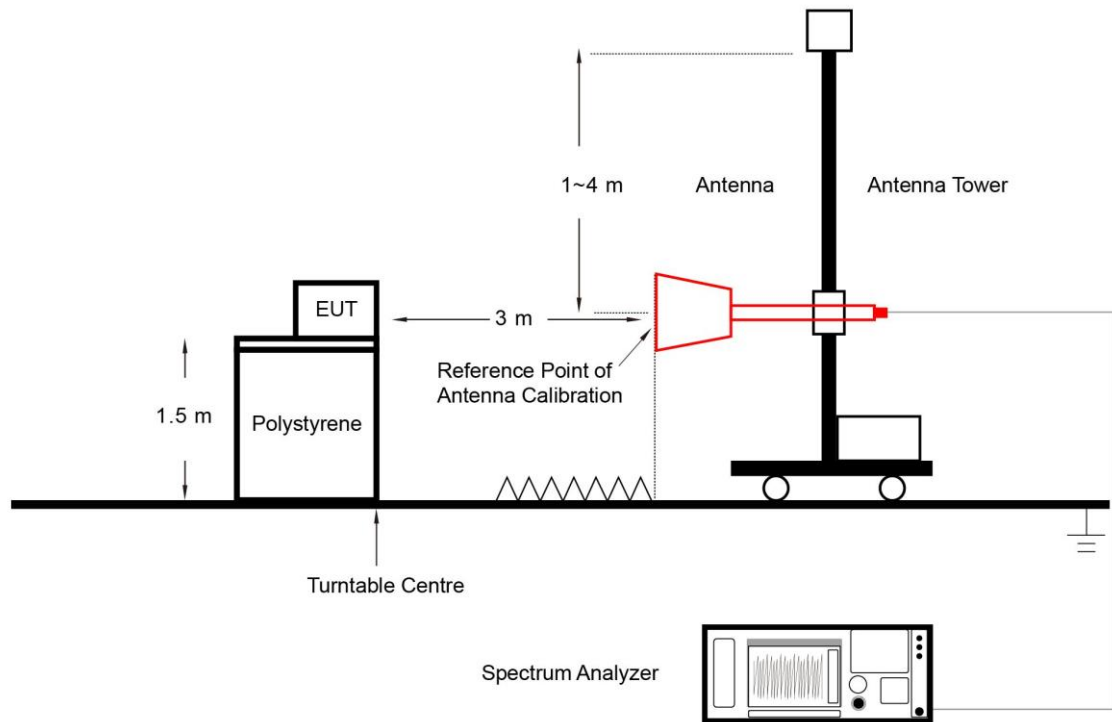
Frequency	RBW
9 ~ 150 kHz	200 Hz
0.15 ~ 30 MHz	9 kHz
30 ~ 1000 MHz	120 kHz
> 1000 MHz	1 MHz

6.3.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.3.5. Test Result

Test Site	SIP-AC3	Test Date	2022-09-21
Test Engineer	Simon Lu		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Result
Fundamental Radiated Emission							
2408	45.017	32.052	77.069	113.979	-36.910	Peak	Pass
	25.371	32.057	57.428	93.979	-36.551	Average	Pass
2440	44.912	32.095	77.007	113.979	-36.972	Peak	Pass
	26.130	32.096	58.226	93.979	-35.753	Average	Pass
2474	45.379	32.261	77.640	113.979	-36.339	Peak	Pass
	26.462	32.262	58.725	93.979	-35.254	Average	Pass

Notes:

- Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)
Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)
- The Vertical and Horizontal polarization were evaluated, only the worst-case test results are shown in the table.

Test Site	SIP-AC3	Test Date	2022-09-21
Test Engineer	Simon Lu	Test Mode	Transmit at 2408MHz

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Below 1GHz							
35.3	4.3	17.1	21.4	40.0	-18.6	Peak	Horizontal
42.6	3.4	17.8	21.2	40.0	-18.8	Peak	Horizontal
65.4	5.5	16.3	21.8	40.0	-18.2	Peak	Horizontal
148.3	3.5	18.0	21.5	43.5	-22.0	Peak	Horizontal
643.5	6.0	26.0	32.0	46.0	-14.0	Peak	Horizontal
781.3	4.9	28.2	33.1	46.0	-12.9	Peak	Horizontal
48.9	3.6	17.9	21.5	40.0	-18.5	Peak	Vertical
58.1	2.7	17.3	20.0	40.0	-20.0	Peak	Vertical
144.9	3.7	17.9	21.6	43.5	-21.9	Peak	Vertical
161.0	4.1	17.9	22.0	43.5	-21.5	Peak	Vertical
594.5	4.9	25.3	30.2	46.0	-15.8	Peak	Vertical
838.5	4.9	28.8	33.7	46.0	-12.3	Peak	Vertical

Note:

1. Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

2. The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

3. Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Test Site	SIP-AC3	Test Date	2022-09-21
Test Engineer	Simon Lu	Test Mode	Transmit at 2440MHz

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Below 1GHz							
42.6	2.8	17.8	20.6	40.0	-19.4	Peak	Horizontal
55.7	3.3	17.5	20.8	40.0	-19.2	Peak	Horizontal
116.8	5.6	15.4	21.0	43.5	-22.5	Peak	Horizontal
167.7	3.6	17.6	21.2	43.5	-22.3	Peak	Horizontal
744.4	5.0	27.8	32.8	46.0	-13.2	Peak	Horizontal
847.2	4.3	28.9	33.2	46.0	-12.8	Peak	Horizontal
42.6	2.7	17.8	20.5	40.0	-19.5	Peak	Vertical
54.3	3.9	17.7	21.6	40.0	-18.4	Peak	Vertical
142.0	3.5	17.7	21.2	43.5	-22.3	Peak	Vertical
174.0	4.3	17.2	21.5	43.5	-22.0	Peak	Vertical
506.8	5.6	23.3	28.9	46.0	-17.1	Peak	Vertical
757.0	4.2	28.1	32.3	46.0	-13.7	Peak	Vertical

Note:

1. Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)
Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)
2. The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.
3. Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Test Site	SIP-AC3	Test Date	2022-09-21
Test Engineer	Simon Lu	Test Mode	Transmit at 2474MHz

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Below 1GHz							
34.9	3.6	17.0	20.6	40.0	-19.4	Peak	Horizontal
53.8	4.0	17.7	21.7	40.0	-18.3	Peak	Horizontal
130.4	3.4	16.6	20.0	43.5	-23.5	Peak	Horizontal
153.7	3.4	18.1	21.5	43.5	-22.0	Peak	Horizontal
762.8	4.5	28.0	32.5	46.0	-13.5	Peak	Horizontal
887.5	5.1	28.9	34.0	46.0	-12.0	Peak	Horizontal
47.0	4.3	18.0	22.3	40.0	-17.7	Peak	Vertical
60.6	4.3	17.0	21.3	40.0	-18.7	Peak	Vertical
149.3	4.0	18.1	22.1	43.5	-21.4	Peak	Vertical
163.4	3.5	17.8	21.3	43.5	-22.2	Peak	Vertical
779.8	4.3	28.2	32.5	46.0	-13.5	Peak	Vertical
923.4	5.3	29.7	35.0	46.0	-11.0	Peak	Vertical

Note:

1. Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)
Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)
2. The amplitude of radiated emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.
3. Quasi-Peak measurement was not performed when peak measure level was lower than the quasi-peak limit.

Test Site	SIP-AC3	Test Date	2022-09-21 ~ 2022-09-23
Test Engineer	Simon Lu	Test Mode	Transmit at 2408MHz

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Above 1GHz							
4816.0	58.4	-8.7	49.7	54.0	-4.3	Average	Horizontal
4816.5	68.2	-8.7	59.5	74.0	-14.5	Peak	Horizontal
8386.5	48.5	-4.0	44.5	74.0	-29.5	Peak	Horizontal
11217.0	49.2	-2.8	46.4	74.0	-27.6	Peak	Horizontal
19064.0	56.7	-10.9	45.8	74.0	-28.2	Peak	Horizontal
20446.5	56.3	-10.4	45.9	74.0	-28.1	Peak	Horizontal
22648.0	55.3	-9.4	45.9	74.0	-28.1	Peak	Horizontal
4816.5	62.7	-8.7	54.0	74.0	-20.0	Peak	Vertical
4816.5	56.4	-8.7	47.7	54.0	-6.3	Average	Vertical
7494.0	49.8	-5.6	44.2	74.0	-29.8	Peak	Vertical
8216.5	48.8	-4.2	44.6	74.0	-29.4	Peak	Vertical
19113.0	56.9	-11.0	45.9	74.0	-28.1	Peak	Vertical
22564.0	54.4	-9.0	45.4	74.0	-28.6	Peak	Vertical
23782.0	54.8	-8.6	46.2	74.0	-27.8	Peak	Vertical

Note:

- Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)
Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre-Amplifier Gain (dB)
- Average measurement was not performed when the peak level lower than average limit.

Test Site	SIP-AC3	Test Date	2022-09-21~2022-09-23
Test Engineer	Simon Lu	Test Mode	Transmit at 2440MHz

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Above 1GHz							
4876.0	65.2	-8.7	56.5	74.0	-17.5	Peak	Horizontal
4876.0	56.5	-8.7	47.8	54.0	-6.2	Average	Horizontal
8352.5	48.6	-4.0	44.6	74.0	-29.4	Peak	Horizontal
11684.5	49.1	-3.0	46.1	74.0	-27.9	Peak	Horizontal
18934.5	57.3	-11.0	46.3	74.0	-27.7	Peak	Horizontal
19494.5	55.6	-11.0	44.6	74.0	-29.4	Peak	Horizontal
20334.5	56.1	-10.8	45.3	74.0	-28.7	Peak	Horizontal
4876.0	61.9	-8.7	53.2	74.0	-20.8	Peak	Vertical
4876.0	58.4	-8.7	49.7	54.0	-4.3	Average	Vertical
7468.5	47.6	-5.6	42.0	74.0	-32.0	Peak	Vertical
11013.0	47.7	-2.5	45.2	74.0	-28.8	Peak	Vertical
19442.0	56.4	-11.1	45.3	74.0	-28.7	Peak	Vertical
20247.0	55.8	-10.8	45.0	74.0	-29.0	Peak	Vertical
20975.0	55.9	-9.5	46.4	74.0	-27.6	Peak	Vertical

Note:

1. Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre-Amplifier Gain (dB)

2. Average measurement was not performed when the peak level lower than average limit.

Test Site	SIP-AC3	Test Date	2022-09-21~2022-09-23
Test Engineer	Simon Lu	Test Mode	Transmit at 2474MHz

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Above 1GHz							
4944.0	66.1	-8.5	57.6	74.0	-16.4	Peak	Horizontal
4944.0	58.1	-8.5	49.6	54.0	-4.4	Average	Horizontal
7494.0	51.2	-5.6	45.6	74.0	-28.4	Peak	Horizontal
11038.5	50.5	-2.4	48.1	74.0	-25.9	Peak	Horizontal
18455.0	57.2	-11.6	45.6	74.0	-28.4	Peak	Horizontal
19008.0	56.8	-11.0	45.8	74.0	-28.2	Peak	Horizontal
20971.5	55.0	-9.5	45.5	74.0	-28.5	Peak	Horizontal
4952.5	62.8	-8.5	54.3	74.0	-19.7	Peak	Vertical
4952.5	53.5	-8.5	45.0	54.0	-9.0	Average	Vertical
8233.5	50.5	-4.3	46.2	74.0	-27.8	Peak	Vertical
12092.5	50.3	-2.8	47.5	74.0	-26.5	Peak	Vertical
18819.0	57.6	-11.1	46.5	74.0	-27.5	Peak	Vertical
19477.0	56.6	-11.1	45.5	74.0	-28.5	Peak	Vertical
20366.0	55.4	-10.5	44.9	74.0	-29.1	Peak	Vertical

Note:

1. Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre-Amplifier Gain (dB)

2. Average measurement was not performed when the peak level lower than average limit.

6.4. Radiated Restricted Band Edge Measurement

6.4.1. Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41	--	--	--

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [$\mu\text{V}/\text{m}$]	Measured Distance [Meter]
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

6.4.2. Test Procedure

ANSI C63.10-2013 Section 6.3

ANSI C63.10-2013 Section 6.6

ANSI C63.10-2013 Section 6.10

6.4.3. Test Setting

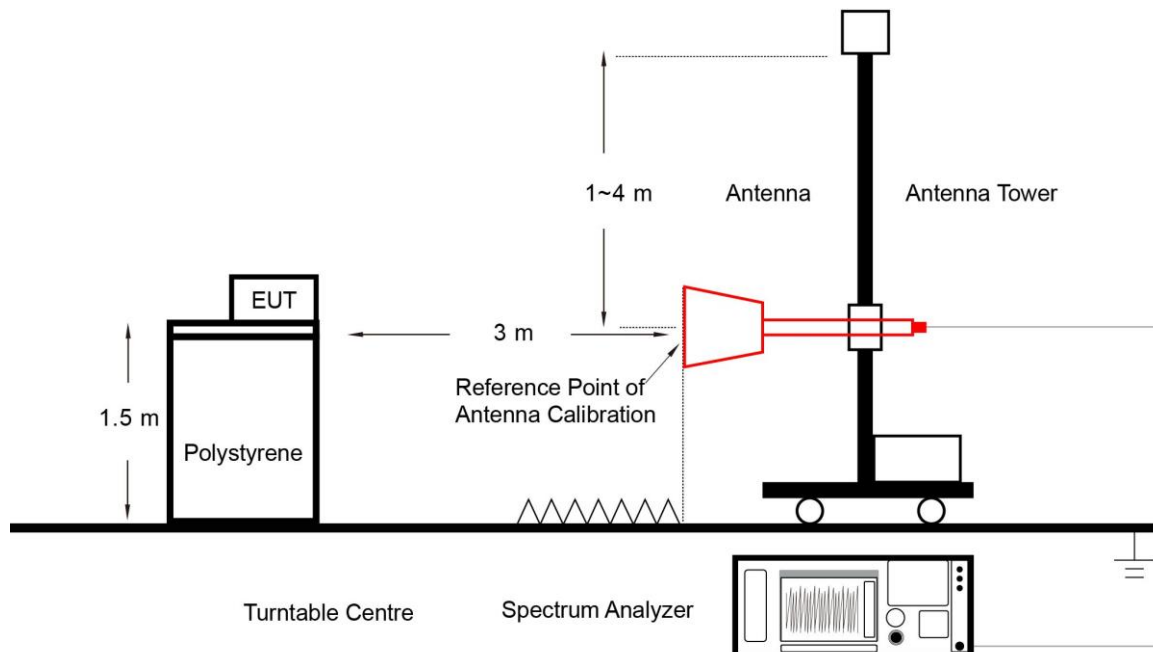
Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Field Strength Measurements

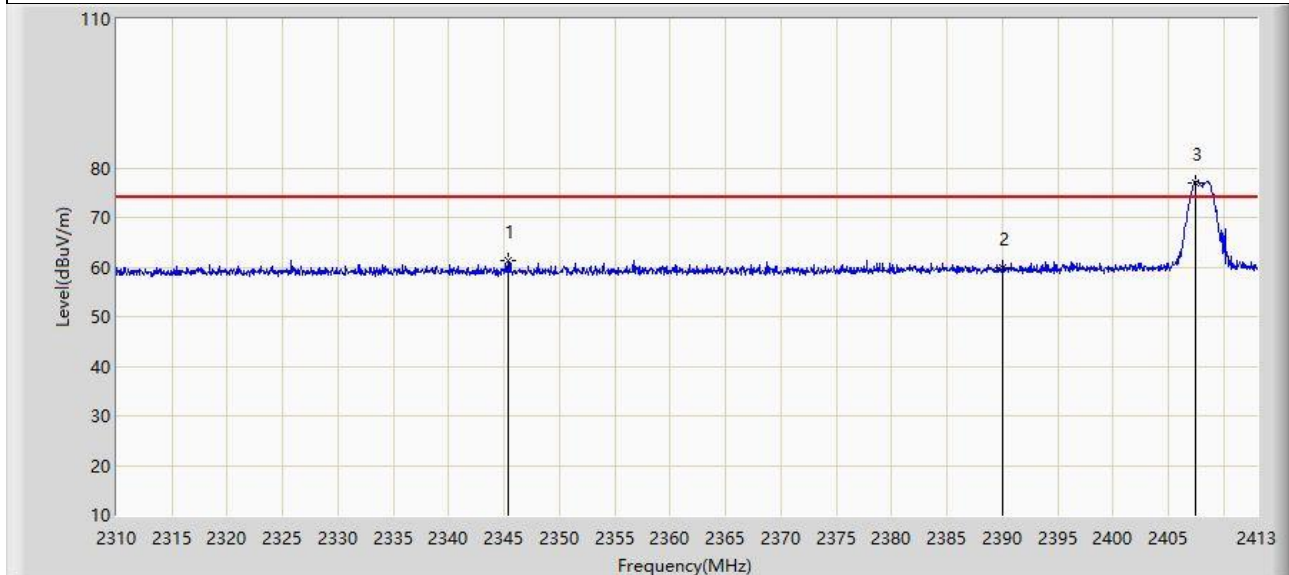
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW $\geq 1/T$
4. As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode
5. Detector = Peak
6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

6.4.4. Test Setup



6.4.5. Test Result

Site: SIP-AC3	Test Date: 2022/09/21
Limit: FCC_15.209_RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: dynabook-PA5347U-1ETE	Power: By Battery
Test Mode: Transmit at 2408MHz	



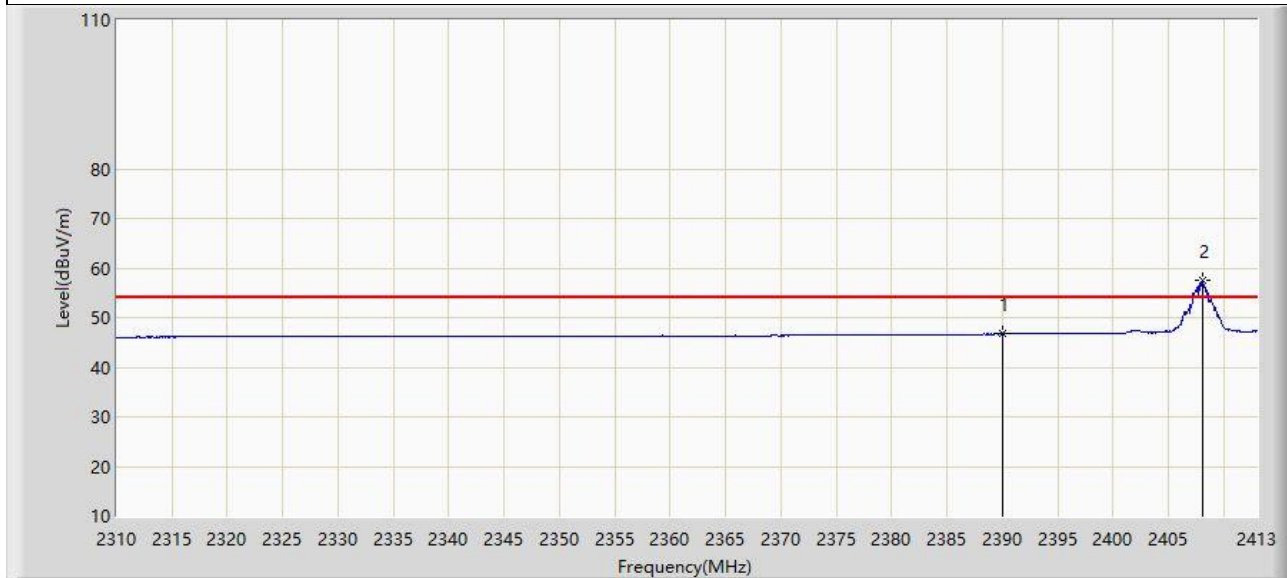
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2345.329	61.329	29.526	-12.671	74.000	31.803	PK
2		2390.000	59.847	27.918	-14.153	74.000	31.929	PK
3		2407.386	77.069	45.017	N/A	N/A	32.052	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: SIP-AC3	Test Date: 2022/09/21
Limit: FCC_15.209_RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: dynabook-PA5347U-1ETE	Power: By Battery
Test Mode: Transmit at 2408MHz	



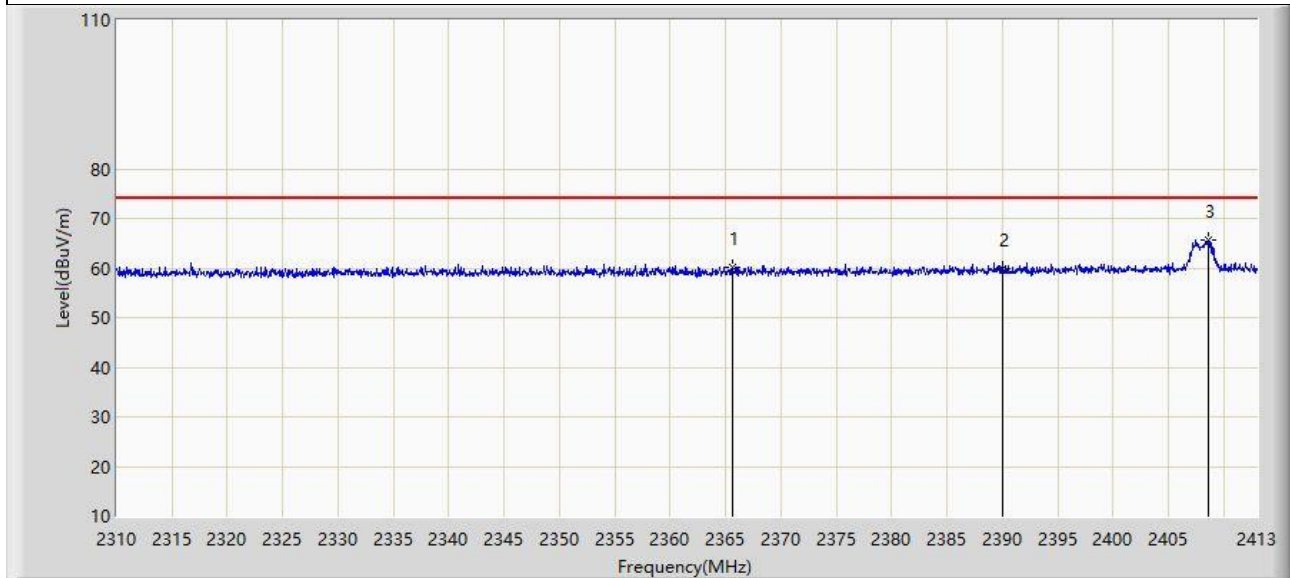
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2390.000	46.701	14.772	-7.299	54.000	31.929	AV
2		2408.056	57.428	25.371	N/A	N/A	32.057	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: SIP-AC3	Test Date: 2022/09/21
Limit: FCC_15.209_RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: dynabook-PA5347U-1ETE	Power: By Battery
Test Mode: Transmit at 2408MHz	



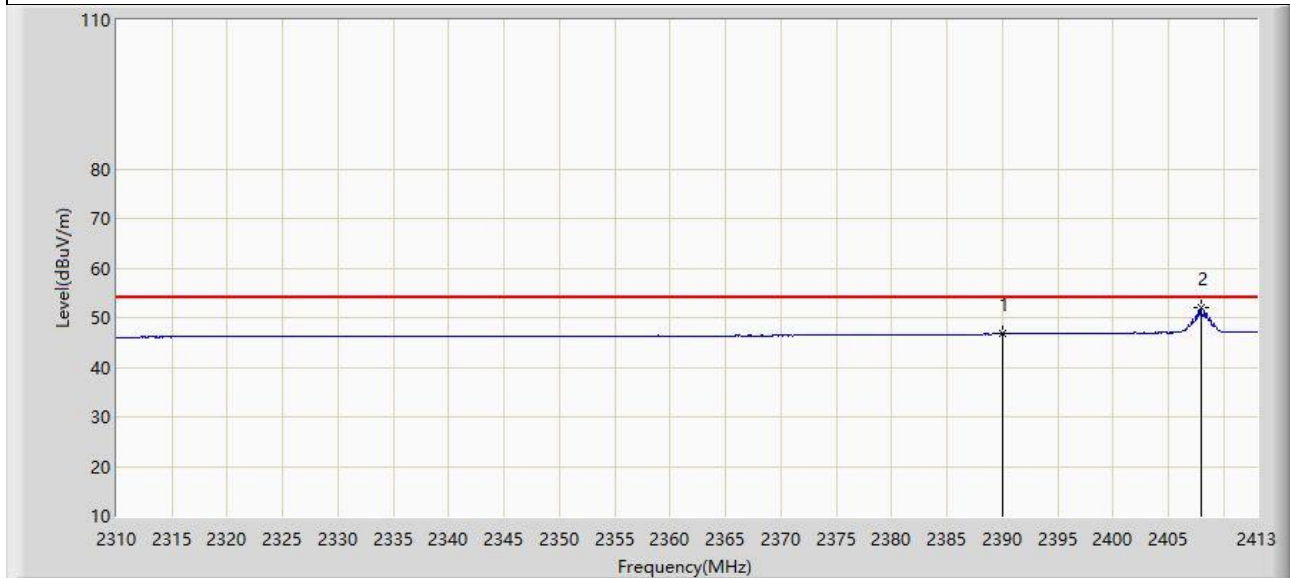
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2365.569	60.275	28.415	-13.725	74.000	31.860	PK
2		2390.000	59.886	27.957	-14.114	74.000	31.929	PK
3		2408.571	65.690	33.630	N/A	N/A	32.061	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: SIP-AC3	Test Date: 2022/09/21
Limit: FCC_15.209_RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: dynabook-PA5347U-1ETE	Power: By Battery
Test Mode: Transmit at 2408MHz	



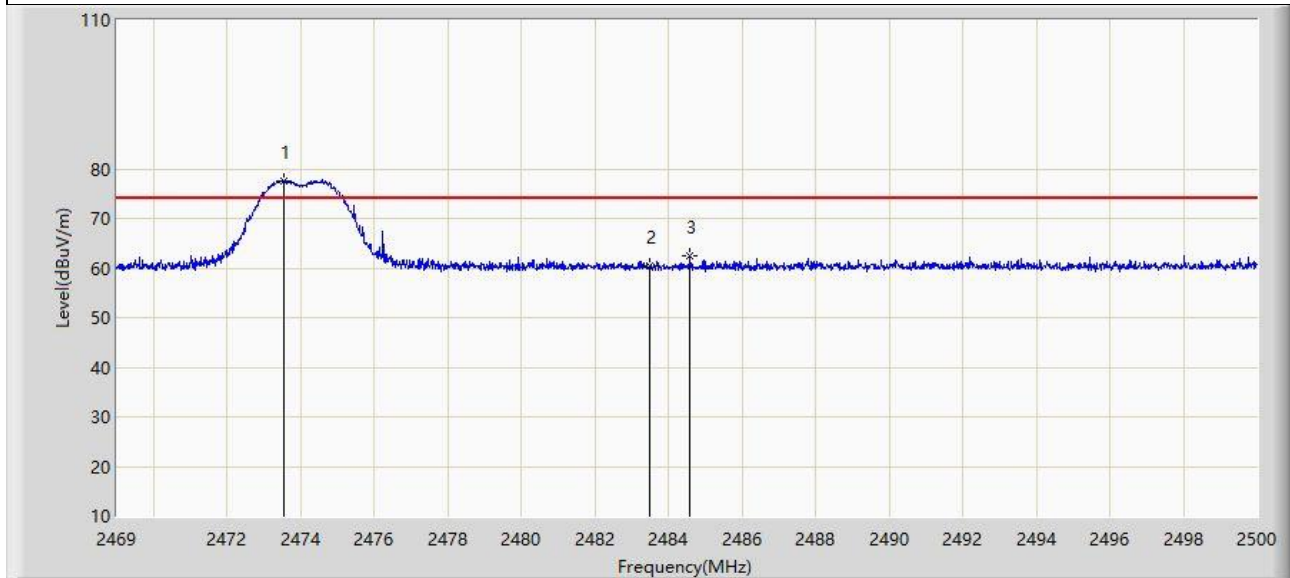
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1	*	2390.000	46.682	14.753	-7.318	54.000	31.929	AV
2		2407.953	51.974	19.918	N/A	N/A	32.056	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: SIP-AC3	Test Date: 2022/09/21
Limit: FCC_15.209_RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: dynabook-PA5347U-1ETE	Power: By Battery
Test Mode: Transmit at 2474MHz	



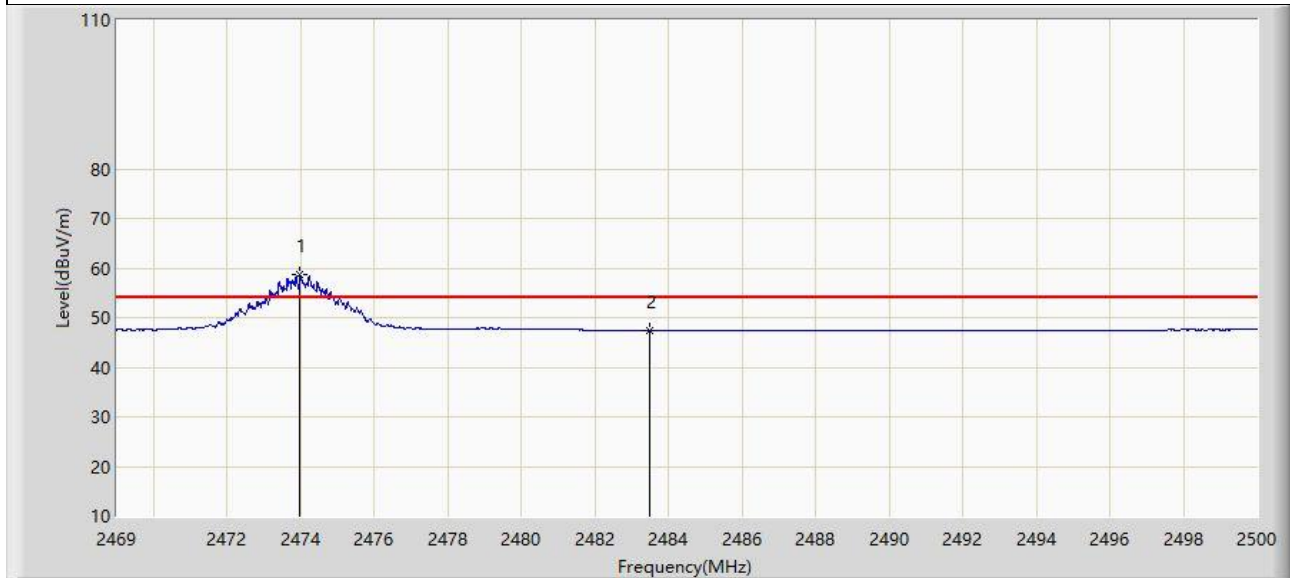
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2473.526	77.640	45.379	N/A	N/A	32.261	PK
2		2483.500	60.355	28.050	-13.645	74.000	32.305	PK
3	*	2484.593	62.319	30.008	-11.681	74.000	32.310	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: SIP-AC3	Test Date: 2022/09/21
Limit: FCC_15.209_RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Horizontal
EUT: dynabook-PA5347U-1ETE	Power: By Battery
Test Mode: Transmit at 2474MHz	



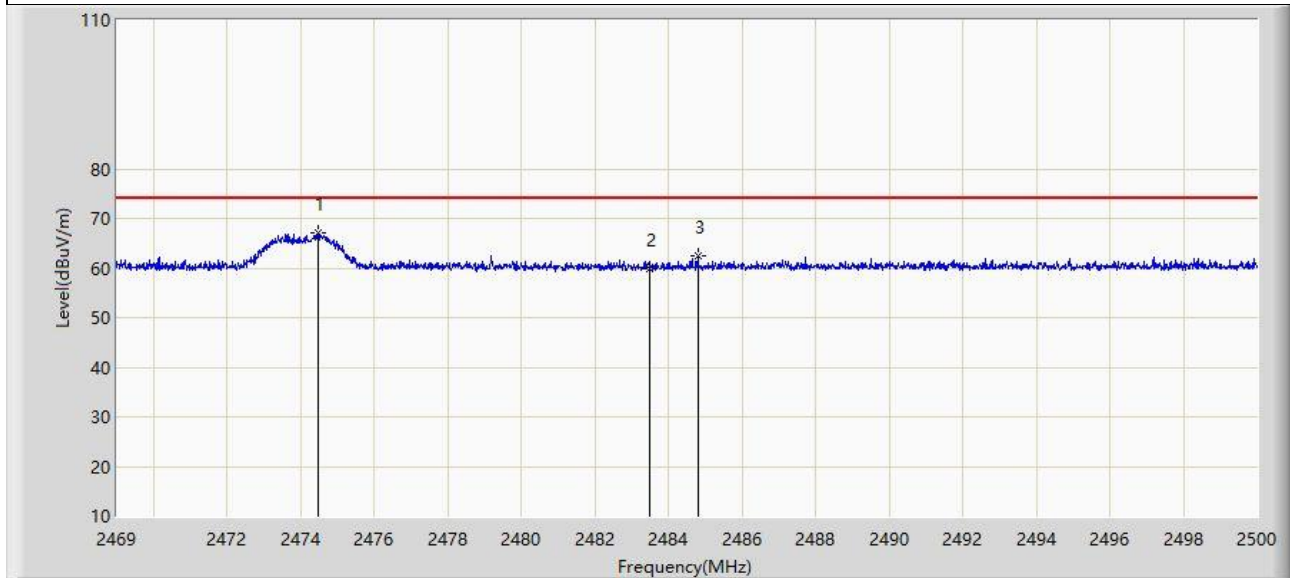
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2473.991	58.725	26.462	N/A	N/A	32.262	AV
2	*	2483.500	47.480	15.175	-6.520	54.000	32.305	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: SIP-AC3	Test Date: 2022/09/21
Limit: FCC_15.209_RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: dynabook-PA5347U-1ETE	Power: By Battery
Test Mode: Transmit at 2474MHz	



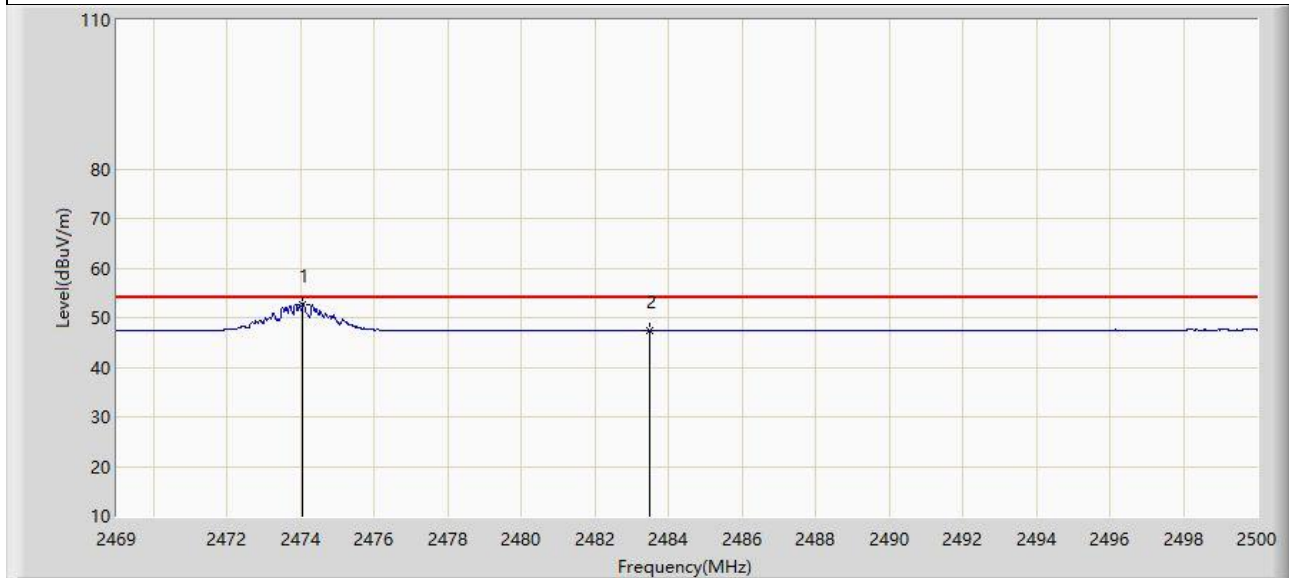
No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2474.487	67.143	34.878	N/A	N/A	32.265	PK
2		2483.500	59.977	27.672	-14.023	74.000	32.305	PK
3	*	2484.794	62.412	30.100	-11.588	74.000	32.312	PK

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: SIP-AC3	Test Date: 2022/09/21
Limit: FCC_15.209_RE(3m)	Engineer: Simon Lu
Probe: HF907_102861_1-18GHz	Polarity: Vertical
EUT: dynabook-PA5347U-1ETE	Power: By Battery
Test Mode: Transmit at 2474MHz	



No	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		2474.053	52.725	20.462	N/A	N/A	32.263	AV
2	*	2483.500	47.455	15.150	-6.545	54.000	32.305	AV

Note 1: " * ", means this data is the worst emission level.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m).

Note 3: Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

6.5. 20dB Spectrum Bandwidth Measurement

6.5.1. Test Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emission in the specific band.

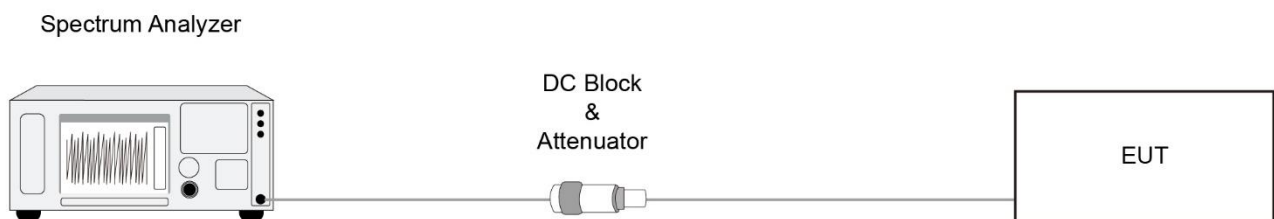
6.5.2. Test Procedure

ANSI C63.10-2013 Clause 6.9.2

6.5.3. Test Setting

1. Set the spectrum span range to overlap the nominal center frequency
2. Set RBW = 1% ~ 5% of the OBW
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize and marker the highest level
8. Use Occupied BW function to determine two frequencies, one at the lowest frequency and the other at the highest frequency

6.5.4. Test Setup



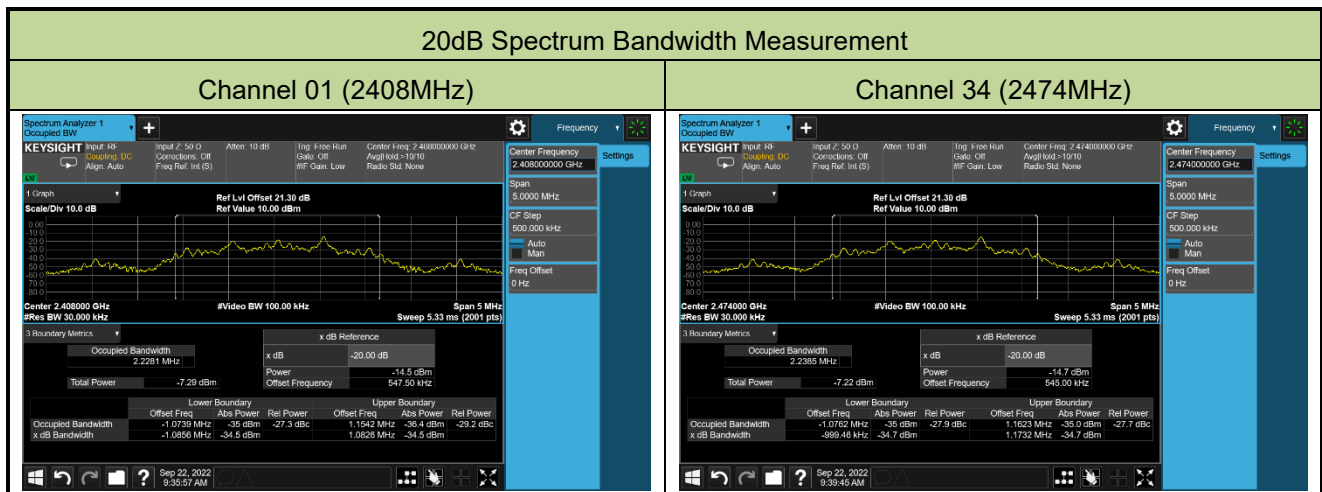
6.5.5. Test Result

Test Site	SIP-TR2	Test Date	2022-09-22
Test Engineer	Alisa Deng		

Channel No.	Frequency (MHz)	20dB Bandwidth (MHz)	Frequency Range (F _L) (MHz)	Frequency Range (F _H) (MHz)	Limit (MHz)	Result
01	2408	2.1682	2406.9144	--	> 2400	Pass
34	2474	2.1727	--	2475.1732	< 2483.5	Pass

Note: Low Frequency (F_L) = Center Frequency + Lower Boundary;

High Frequency (F_H) = Center Frequency + Upper Boundary



Appendix A - Test Setup Photograph

Refer to “2209RSU048-UT” file.

Appendix B - EUT Photograph

Refer to “2209RSU048-UE” file.