

別紙 TEST DATA

(for Bluetooth Low Energy)

【Chain 1】

1. 周波数の偏差

1.1. 試験結果

Test Voltage	Channel [MHz]	Read. Frequency [MHz]	Tolerance [kHz]	Tolerance [ppm]	Limit [ppm]
DC 3.85 V	2442	2441.99988	-0.12	-0.05	± 50.0

$$\text{Tolerance [kHz]} = (\text{Read. Frequency [MHz]} - \text{Channel [MHz]}) \times 10^3$$

$$\text{Tolerance [ppm]} = \text{Tolerance [kHz]} \times 10^{-3} / \text{Channel [MHz]} \times 10^6$$

1.2. 測定器画面データ

[定格電圧]



2. 占有周波数帯幅 / 拡散帯域幅

2.1. 試験結果

[2 Mbps / 占有周波数帯域幅 / 38 ホッピング]

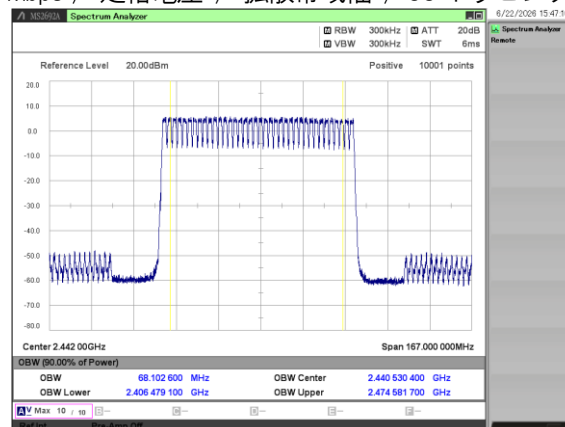
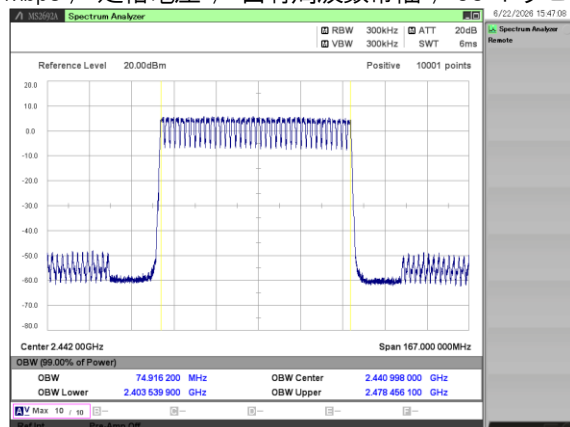
Mode	Channel [MHz]	Result [MHz]	Limit [MHz]
DC 3.85 V	2442	74.916	≤ 83.5

[2 Mbps / 拡散帯域幅 / 38 ホッピング]

Mode	Channel [MHz]	Result [MHz]
DC 3.85 V	2442	68.103

2.2. 測定器画面データ

[2 Mbps / 定格電圧 / 占有周波数帯幅 / 38 ホッピング] [2 Mbps / 定格電圧 / 拡散帯域幅 / 38 ホッピング]



3. スプリアス発射または不要発射の強度

3.1. 試験結果

[2 Mbps]

Test Voltage	Channel [MHz]	Frequency [MHz]	S/A Read. [dBm]	C.F. [dB]	Result [dBm]	Result [uW]	Limit [dBm]	Limit [uW]	Margin [dB]
DC 3.85 V	2442	2269.45	-57.81	11.15	-46.66	0.02156	≤ -26.02	≤ 2.5	20.64
		2372.59	-48.08	11.16	-36.92	0.20324	≤ -26.02	≤ 2.5	10.90
		2374.57	-46.42	11.16	-35.26	0.29758	≤ -26.02	≤ 2.5	9.24
		2398.39	-49.76	11.17	-38.59	0.13836	≤ -16.02	≤ 25.0	22.57
		2483.87	-50.92	11.18	-39.74	0.10619	≤ -16.02	≤ 25.0	23.72
		2507.43	-46.90	11.18	-35.72	0.26804	≤ -26.02	≤ 2.5	9.70
		2511.49	-49.17	11.18	-37.99	0.15900	≤ -26.02	≤ 2.5	11.97
		2606.40	-60.37	11.19	-49.18	0.01207	≤ -26.02	≤ 2.5	23.16
		4919.20	-63.02	11.41	-51.61	0.00690	≤ -26.02	≤ 2.5	25.59

$$\text{Result [uW]} = 10^{\{(S/A \text{ Read. [dBm]} + C.F. [dB])/10\}} \times 10^3$$

※ 1 GHz 未満は RBW : 1 MHz で実施した結果を記載

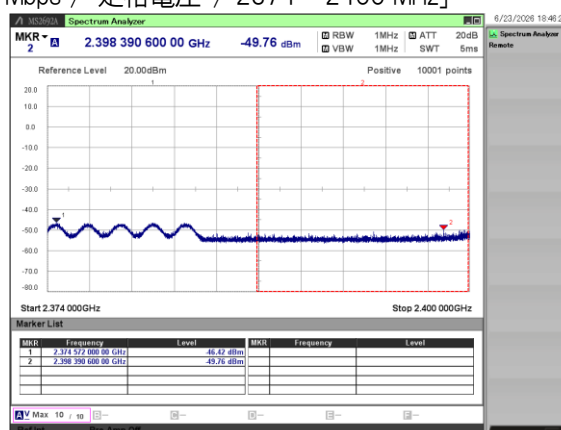
参照帯域幅 (RBW : 100 kHz) 当たりに換算した値、および RBW : 100 kHz で実施した結果を RBW : 1 MHz 当たりに換算した値については、上記結果より小さくなるため記載を省略

3.2. 測定器画面データ

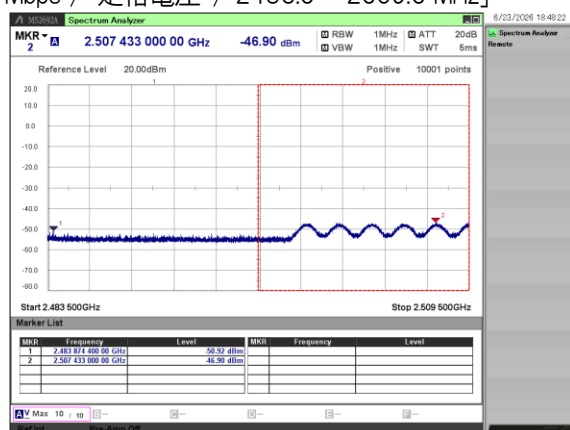
[2 Mbps / 定格電圧 / 30 - 2374 MHz]



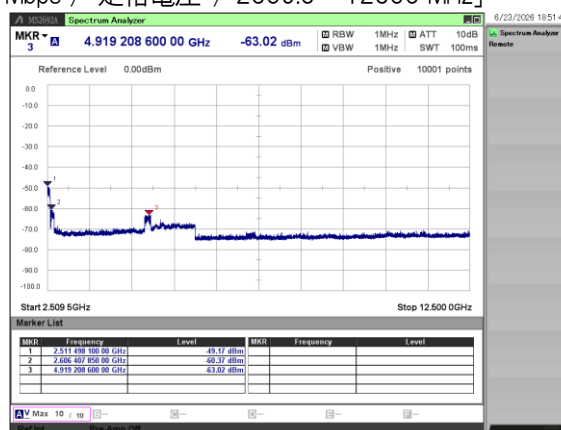
[2 Mbps / 定格電圧 / 2374 - 2400 MHz]



[2 Mbps / 定格電圧 / 2483.5 - 2509.5 MHz]



[2 Mbps / 定格電圧 / 2509.5 - 12500 MHz]



4. 空中線電力の偏差

4.1. 試験結果

[2 Mbps]

Test Voltage	Channel [MHz]	P/M Read. [dBm]	C.F. [dB]	Spread BW [MHz]	Power [mW/MHz]	Power Limit [mW/MHz]	Tolerance [%]	Tolerance Limit [%]
DC 3.85 V	2442	5.52	11.50	68.103	0.7393	≤ 3.0000	-21.35	$\leq +20$
	* 15Hop	5.52	11.50	27.000	1.8648	≤ 3.0000	-20.31	$\leq +20$

$$\text{Power [mW]} = 10^{\{(P/M \text{ Read. [dBm]} + C.F. [dB])/10\}} / \text{Spread BW [MHz]}$$

$$\text{Tolerance [\%]} = \text{Power [mW]} / \text{申請定格電力 [mW]} * 100 - 100$$

5. 副次的に発する電波等の限度

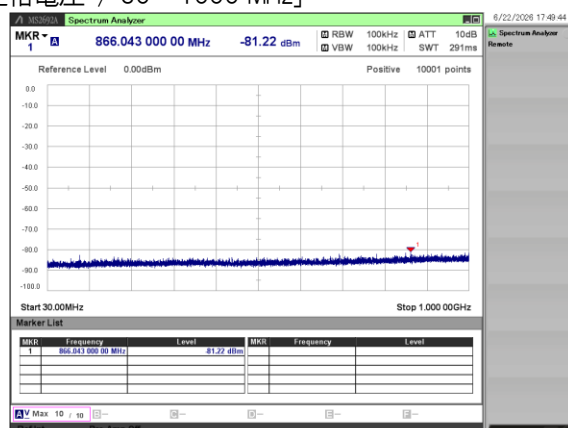
5.1. 試験結果

Test Voltage	Channel [MHz]	Frequency [MHz]	S/A Read. [dBm]	C.F. [dB]	Result [dBm]	Result [nW]	Limit [dBm]	Limit [nW]	Margin [dB]
DC 3.85 V	2442	866.04	-81.22	1.02	-80.20	0.00955	≤ -53.97	≤ 4.0	26.23
		5250.40	-67.04	1.36	-65.68	0.27046	≤ -46.98	≤ 20.0	18.70

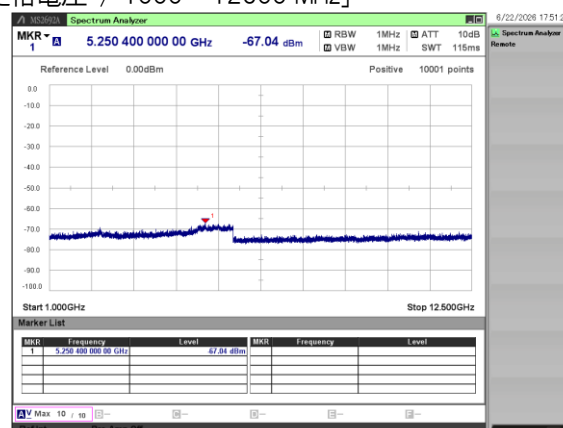
$$\text{Result [nW]} = 10^{\{(S/A \text{ Read. [dBm]} + C.F. [dB])/10\}} * 10^6$$

5.2. 測定器画面データ

[定格電圧 / 30 - 1000 MHz]



[定格電圧 / 1000 - 12500 MHz]



6. ホッピング周波数滞留時間

6.1. 試験結果

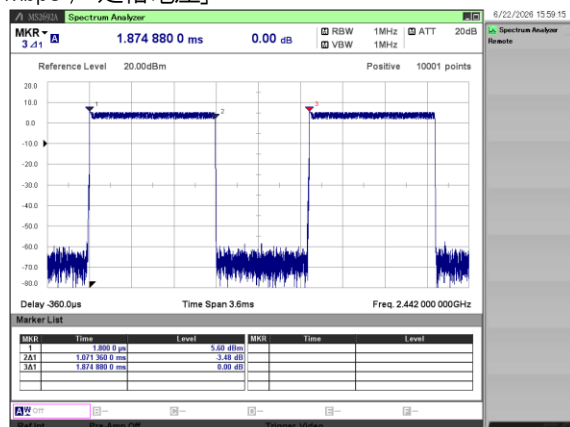
[2 Mbps]

Test Voltage	Mode	Channel [MHz]	ON Time [msec]	ON+OFF [msec]	送信速度に等しい周波数 [MHz]	Spread BW [MHz]	Hopping 数	Dwell Time [sec]	Limit [sec]
DC 3.85 V	2 Mbps	2442	1.071	1.875	2.00	68.103	38	0.205	≤ 0.4

$$\text{Dwell Time [sec]} = 0.4 * (\text{Spread BW} / \text{送信速度に等しい周波数}) / (\text{ON+OFF [msec]} * \text{Hopping 数}) * \text{ON Time [msec]}$$

6.2. 測定器画面データ

[2 Mbps / 定格電圧]



7. 混信防止機能

7.1. 試験結果

識別符号	A4:C1:F9:00:01:1D
良否判定	良

[Chain 2]

8. 周波数の偏差

8.1. 試験結果

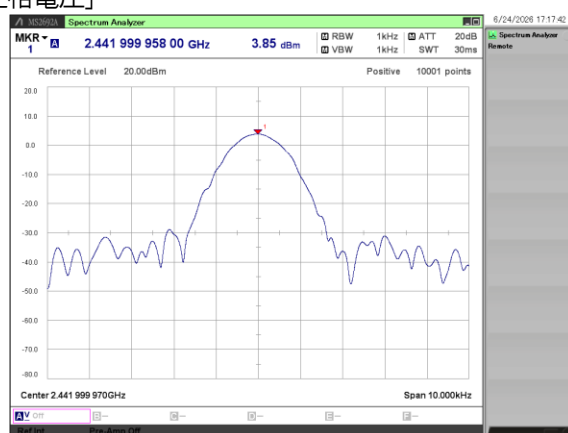
Test Voltage	Channel [MHz]	Read. Frequency [MHz]	Tolerance [kHz]	Tolerance [ppm]	Limit [ppm]
DC 3.85 V	2442	2441.99996	-0.04	-0.02	± 50.0

$$\text{Tolerance [kHz]} = (\text{Read. Frequency [MHz]} - \text{Channel [MHz]}) \times 10^3$$

$$\text{Tolerance [ppm]} = \text{Tolerance [kHz]} \times 10^{-3} / \text{Channel [MHz]} \times 10^6$$

8.2. 測定器画面データ

[定格電圧]



9. 占有周波数帯幅 / 拡散帯域幅

9.1. 試験結果

[2 Mbps / 占有周波数帯域幅 / 38 ホッピング]

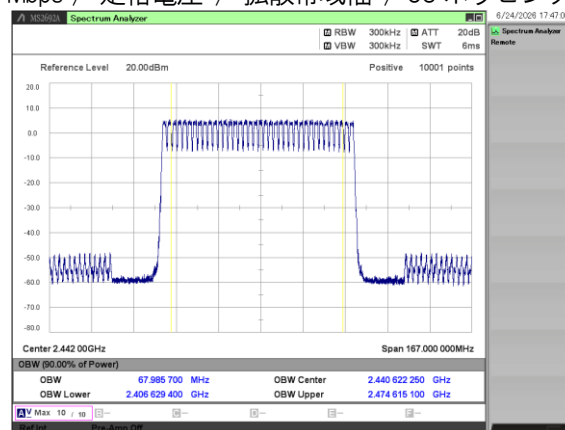
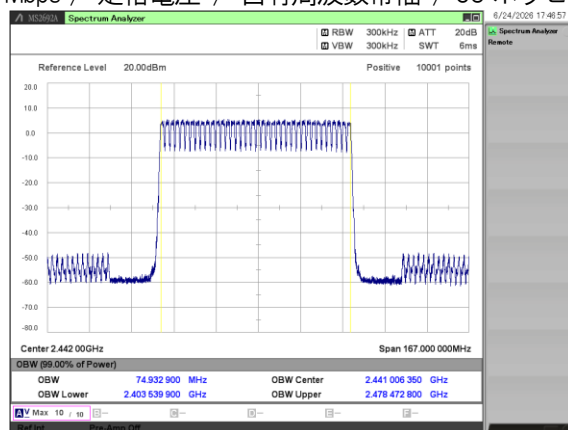
Mode	Channel [MHz]	Result [MHz]	Limit [MHz]
DC 3.85 V	2442	74.933	≤ 83.5

[2 Mbps / 拡散帯域幅 / 38 ホッピング]

Mode	Channel [MHz]	Result [MHz]
DC 3.85 V	2442	67.986

9.2. 測定器画面データ

[2 Mbps / 定格電圧 / 占有周波数帯幅 / 38 ホッピング] [2 Mbps / 定格電圧 / 拡散帯域幅 / 38 ホッピング]



10. スプリアス発射または不要発射の強度

10.1. 試験結果

[2 Mbps]

Test Voltage	Channel [MHz]	Frequency [MHz]	S/A Read. [dBm]	C.F. [dB]	Result [dBm]	Result [uW]	Limit [dBm]	Limit [uW]	Margin [dB]
DC 3.85 V	2442	2277.42	-56.64	11.15	-45.49	0.02824	≤ -26.02	≤ 2.5	19.47
		2370.48	-47.57	11.16	-36.41	0.22840	≤ -26.02	≤ 2.5	10.39
		2382.53	-45.93	11.17	-34.76	0.33412	≤ -26.02	≤ 2.5	8.74
		2399.88	-48.76	11.17	-37.59	0.17422	≤ -16.02	≤ 25.0	21.57
		2488.66	-51.09	11.18	-39.91	0.10221	≤ -16.02	≤ 25.0	23.89
		2499.55	-45.83	11.18	-34.65	0.34285	≤ -26.02	≤ 2.5	8.63
		2509.50	-47.74	11.18	-36.56	0.22095	≤ -26.02	≤ 2.5	10.54
		2600.41	-57.16	11.19	-45.97	0.02531	≤ -26.02	≤ 2.5	19.95
		4868.25	-62.85	11.41	-51.44	0.00718	≤ -26.02	≤ 2.5	25.42

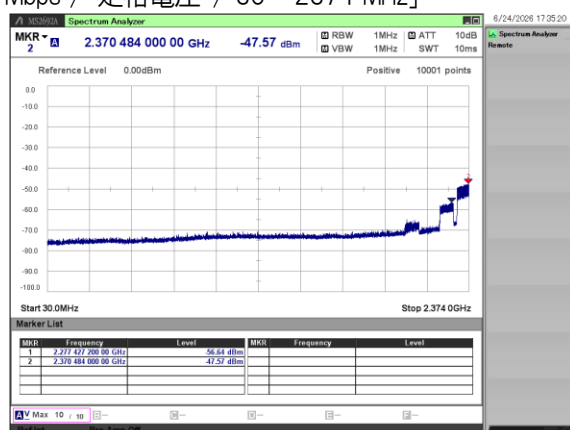
$$\text{Result [uW]} = 10^{\{(S/A \text{ Read. [dBm]} + C.F. [dB])/10\}} \times 10^3$$

※ 1 GHz 未満は RBW : 1 MHz で実施した結果を記載

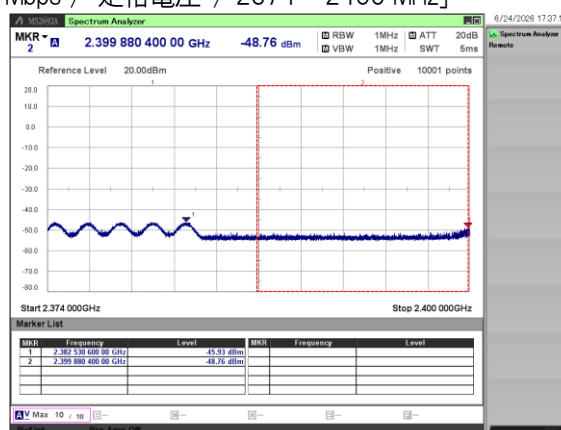
参照帯域幅 (RBW : 100 kHz) 当たりに換算した値、および RBW : 100 kHz で実施した結果を RBW : 1 MHz 当たりに換算した値については、上記結果より小さくなるため記載を省略

10.2. 測定器画面データ

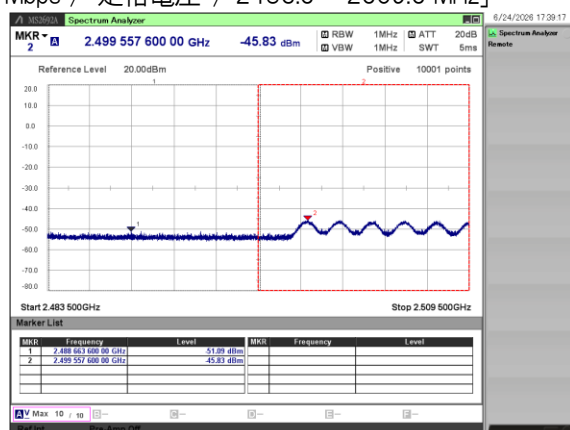
[2 Mbps / 定格電圧 / 30 - 2374 MHz]



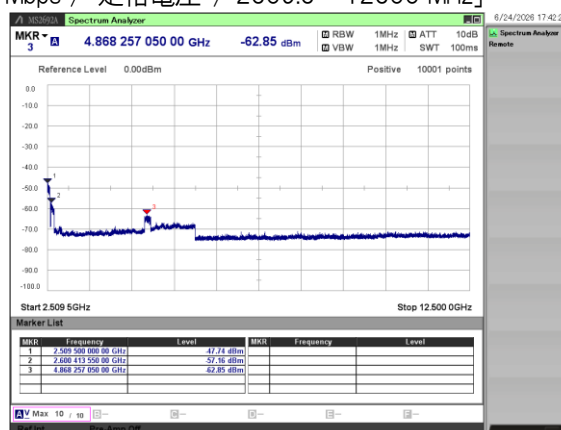
[2 Mbps / 定格電圧 / 2374 - 2400 MHz]



[2 Mbps / 定格電圧 / 2483.5 - 2509.5 MHz]



[2 Mbps / 定格電圧 / 2509.5 - 12500 MHz]



11. 空中線電力の偏差

11.1. 試験結果

[2 Mbps]

Test Voltage	Channel [MHz]	P/M Read. [dBm]	C.F. [dB]	Spread BW [MHz]	Power [mW/MHz]	Power Limit [mW/MHz]	Tolerance [%]	Tolerance Limit [%]
DC 3.85 V	2442	5.22	11.50	67.986	0.6912	≤ 3.0000	-26.47	≤ +20
	* 15Hop	5.22	11.50	27.000	1.7403	≤ 3.0000	-25.63	≤ +20

Power [mW] = 10[^] {(P/M Read. [dBm] + C.F. [dB])/10} / Spread BW [MHz]
Tolerance [%] = Power [mW] / 申請定格電力 [mW] * 100 - 100

12. 副次的に発する電波等の限度

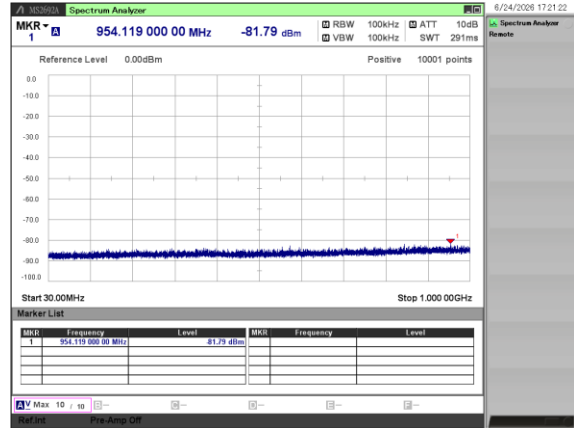
12.1. 試験結果

Test Voltage	Channel [MHz]	Frequency [MHz]	S/A Read. [dBm]	C.F. [dB]	Result [dBm]	Result [nW]	Limit [dBm]	Limit [nW]	Margin [dB]
DC 3.85 V	2442	954.11	-81.79	1.03	-80.76	0.00840	≤ -53.97	≤ 4.0	26.79
		5595.40	-67.53	1.38	-66.15	0.24266	≤ -46.98	≤ 20.0	19.17

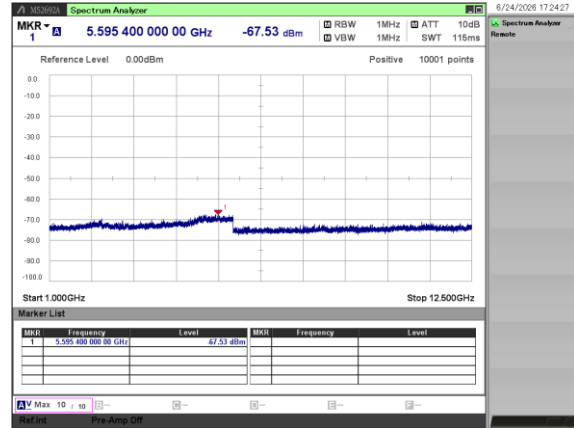
Result [nW] = 10[^] {(S/A Read. [dBm] + C.F. [dB])/10} * 10⁶

12.2. 測定器画面データ

[定格電圧 / 30 - 1000 MHz]



[定格電圧 / 1000 - 12500 MHz]



13. ホッピング周波数滞留時間

13.1. 試験結果

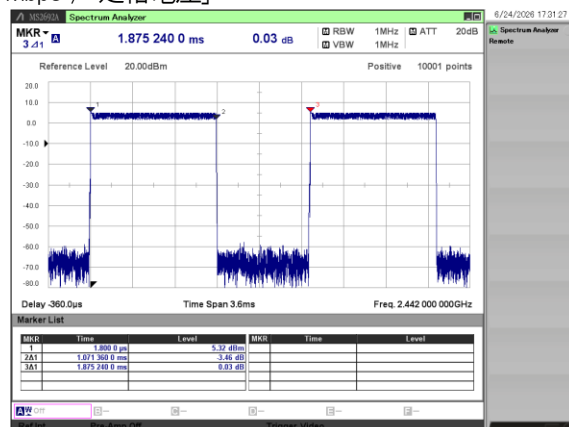
[2 Mbps]

Test Voltage	Mode	Channel [MHz]	ON Time [msec]	ON+OFF [msec]	送信速度に等しい周波数 [MHz]	Spread BW [MHz]	Hopping 数	Dwell Time [sec]	Limit [sec]
DC 3.85 V	2 Mbps	2442	1.071	1.875	2.00	67.986	38	0.204	≤ 0.4

$$\text{Dwell Time [sec]} = 0.4 * (\text{Spread BW} / \text{送信速度に等しい周波数}) / (\text{ON+OFF [msec]} * \text{Hopping 数}) * \text{ON Time [msec]}$$

13.2. 測定器画面データ

[2 Mbps / 定格電圧]



14. 混信防止機能

14.1. 試験結果

識別符号	A4:C1:F9:00:01:1D
良否判定	良

End of Test Report