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Test Report S/N: LR500172210Q

Test Site : LTA CO., LTD.

JAPAN MIC Test Report

Equipment Under Test	CARPLE Co., Ltd.
Model Name	AAWireless
Serial Number	N/A
Applicant	CARPLE Co., Ltd.
Manufacturer	Z Electronika Fejlesztó.
Date of Test(s)	September 15 ,2022 ~ October 21 ,2022
Date of Issue	October 21 ,2022

This test report is prepared according to the requirements of ISO / IEC 17025.

In the configuration tested, the EUT complied with the standards specified above.

Issue to	Issue by
CARPLE Co., Ltd. 1104, 2-23-1, Kandasudacho, Chiyoda-ku, Tokyo, JAPAN Tel: +82-10-3698-0528 Fax: +82-31-376-6456	LTA 243 Jubug-Ri, Yangji-Myeon, Yongin-Si, Gyeonggi-Do, Korea 17159 Tel: +82-31-444-7270 Fax: +82-31-444-7271

This test report is issued under the authority of:

The test was supervised by:

JaBeom.Koo

延正

Ja-Beom Koo, Manager

Jae-Hum Yeon, Test Engineer

Revision history

Revision	Date of issue	Description	Revised by
--	October 21 ,2022	Initial	-

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1. Applicant Information

1.1. Details of applicant

Applicant : CARPLE Co., Ltd.
Address : 1104, 2-23-1, Kandasudacho, Chiyoda-ku, Tokyo, JAPAN
TEL / FAX : +82-10-3698-0528 / +82-31-376-6456

1.2. Manufacturer Information

Manufacturer : Z Electronika Fejlesztő.
Address : H-7630 Pécs Bajor u.5, Z Elektronika Kft.
TEL / FAX : +82-10-8808-9431 / -

1.3. EUT Description

Kind of product	Car BT Adapter
Model name	AA Wireless
Serial Number	N/A
Power supply	DC 5 V
Frequency range	2 402 MHz ~ 2 480 MHz (Bluetooth LE) 2 412 MHz ~ 2 472 MHz (802.11 n20)
RF output power	0.0035 W (Bluetooth LE) 0.005 W (802.11 n)
Modulation technique	GFSK, BPSK, QPSK, 16-QAM, 64-QAM
Number of channels	LE : 40 ch. 802.11 n : 13 ch
Antenna gain	Chip Antenna (Max Gain : 1.4 dBi)

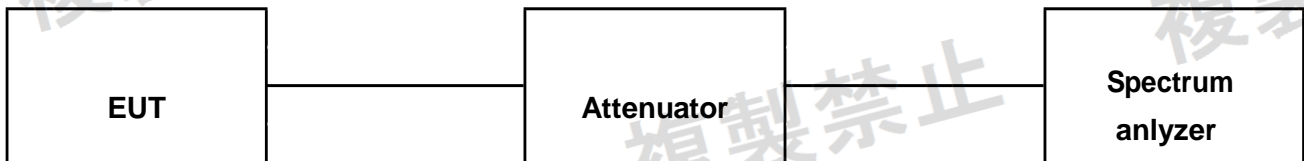
2. Summary of Test results

The EUT has been tested according to the following specifications

Section in Radio equipment regulations	Description of Test	Results
RE 5 Table No. 1	Frequency Tolerance	C
RE 6 Table No. 2	Occupied Bandwidth (99%) & Spread Bandwidth (90%)	C
RE 14, RE 49.20	Antenna power	C
RE 7	Unwanted emission strength	C
RE 24	RX spurious emission	C
RE 11	Dwell Time	C
RLE 6-2, RE 9-4	Interference Prevention Function	C
<u>Note 1</u> : C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable		
Standard: Article 2, Paragraph 1, item 19.		

3 Frequency tolerance

3.1 Test setup



3.2 Limit

$\pm 50 \times 10^{-6}$ (50 ppm or below)

3.3 Test procedure

The transmitter output is connected to the Spectrum analyzer	
Setting the spectrum analyzer is as follows.	
Center frequency	Operating frequency
Resolution BW	10 kHz
Video BW	30 kHz
Span	5 kHz
Sweep time	Auto
Detector mode	Positive peak
Trace mode	Max. hold

3.4 Test results

Ambient temperature: 24℃ Relative humidity: 50% R.H

Test mode : LE

Test voltage	Test voltage (DC)	Measured value (MHz)	Tolerance (ppm)	Result	Limit
Normal Voltage	Low frequency	2401.9609	-16.28	Pass	± 50 ppm
	Middle frequency	2441.9624	-15.40	Pass	
	High frequency	2479.9653	-13.99	Pass	
Low Voltage	Low frequency	2401.9615	-16.03	Pass	
	Middle frequency	2441.9631	-15.11	Pass	
	High frequency	2479.9657	-13.83	Pass	
High Voltage	Low frequency	2401.9613	-16.11	Pass	
	Middle frequency	2441.9626	-15.32	Pass	
	High frequency	2479.9658	-13.79	Pass	

Test mode : 802.11 n

Test voltage	Test voltage (DC)	Measured value (MHz)	Tolerance (ppm)	Result	Limit
Normal Voltage	Low frequency	2,411.9613	-16.04	Pass	± 50 ppm
	Middle frequency	2,441.9605	-16.18	Pass	
	High frequency	2,471.9641	-14.52	Pass	
Low Voltage	Low frequency	2,411.9608	-16.25	Pass	
	Middle frequency	2,441.9627	-15.27	Pass	
	High frequency	2,471.9644	-14.40	Pass	
High Voltage	Low frequency	2,411.9617	-15.88	Pass	
	Middle frequency	2,441.9633	-15.03	Pass	
	High frequency	2,471.9635	-14.77	Pass	

* Remark

FT (ppm) = [(Measured value MHz) - Operating frequency(MHz)] / Operating frequency(MHz) × 10⁶

4. Occupied bandwidth (99%) & Spread Bandwidth (90%)

4.1 Test setup



4.2 Limit

Occupied Bandwidth (99%):	26 MHz or less
Spread Bandwidth (90%)	500 kHz more

4.3 Test procedure

The transmitter output is connected to the Spectrum analyzer	
Setting the spectrum analyzer is as follows.	
Center frequency	Operating frequency
Resolution BW	300 KHz
Video BW	300 KHz
Span	5 MHz (Bluetooth LE) 50 MHz (802.11 n)
Sweep time	Auto
Detector mode	Positive peak
Trace mode	Max. hold

4.4 Test results

Ambient temperature: 24 °C Relative humidity: 50% R.H.

Test mode : LE

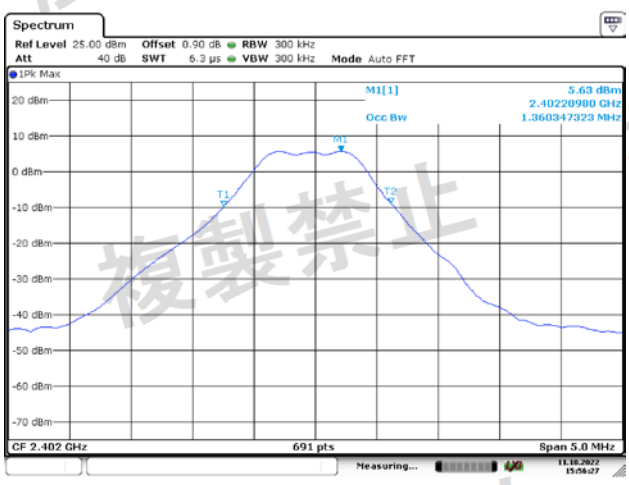
Test voltage	2,402 MHz 99% (MHz)	2,442 MHz 99% (MHz)	2,480 MHz 99% (MHz)	Result	Limit
5.5 (V)	1.36	1.35	1.35	Pass	26 MHz or less
5.0 (V)	1.36	1.35	1.36	Pass	
4.5 (V)	1.36	1.35	1.36	Pass	
Test voltage	90% (MHz)	90% (MHz)	90% (MHz)	Result	Limit
5.5 (V)	0.85	0.85	0.85	Pass	500 kHz or more
5.0 (V)	0.85	0.85	0.85	Pass	
4.5 (V)	0.85	0.85	0.85	Pass	

Test mode : 802.11 n

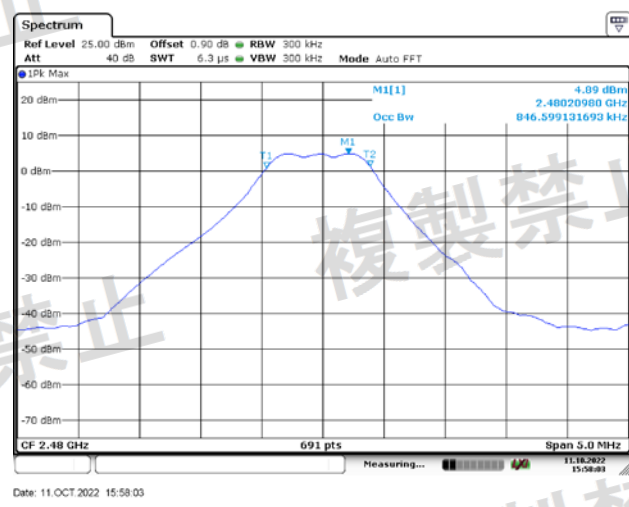
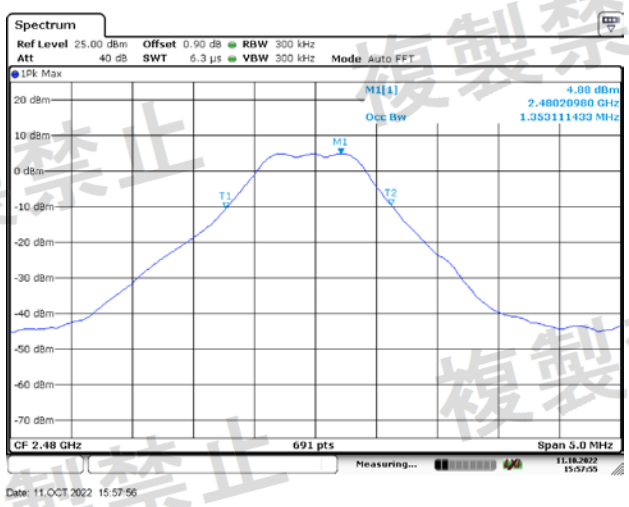
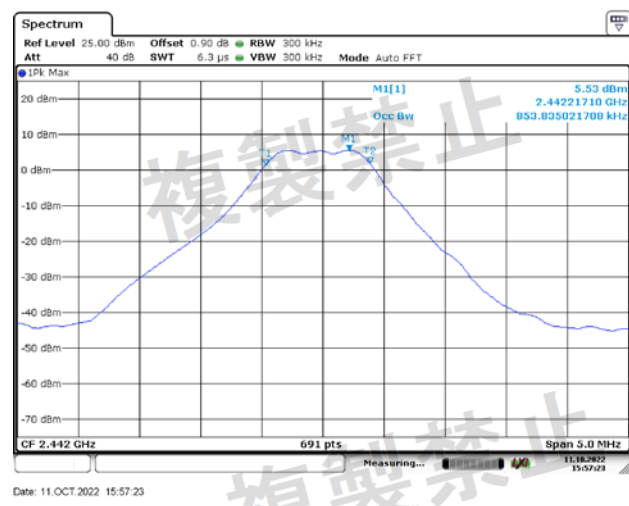
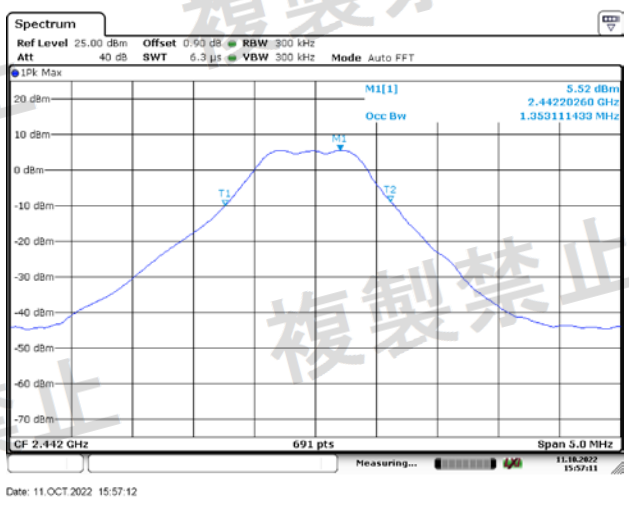
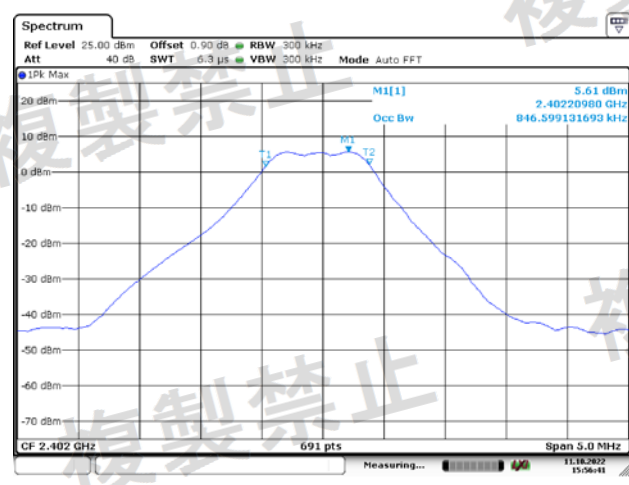
Test voltage	2,402 MHz 99% (MHz)	2,442 MHz 99% (MHz)	2,480 MHz 99% (MHz)	Result	Limit
5.5 (V)	17.80	17.95	17.91	Pass	26 MHz or less
5.0 (V)	17.82	17.95	17.95	Pass	
4.5 (V)	17.80	17.91	17.95	Pass	
Test voltage	90% (MHz)	90% (MHz)	90% (MHz)	Result	Limit
5.5 (V)	15.05	15.05	15.05	Pass	500 kHz or more
5.0 (V)	15.05	15.05	15.05	Pass	
4.5 (V)	15.05	15.05	15.05	Pass	

Test Mode : LE / CH01,CH20,CH40 (Nomal Voltage)_Right

99 % OBW



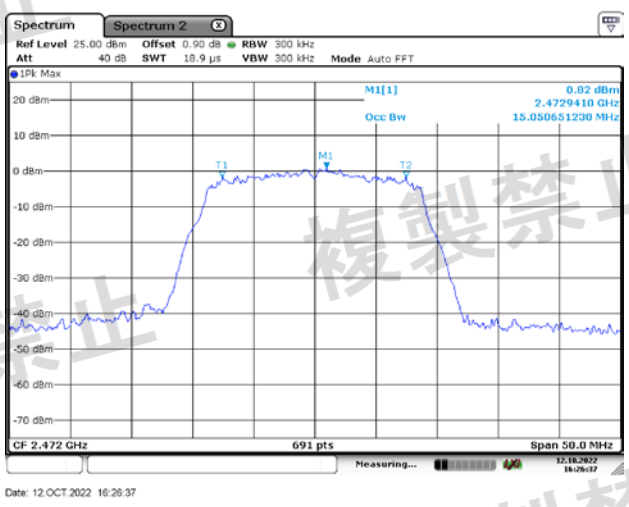
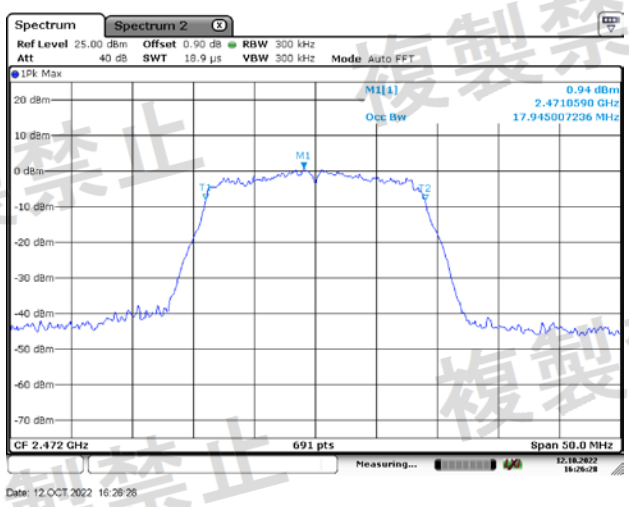
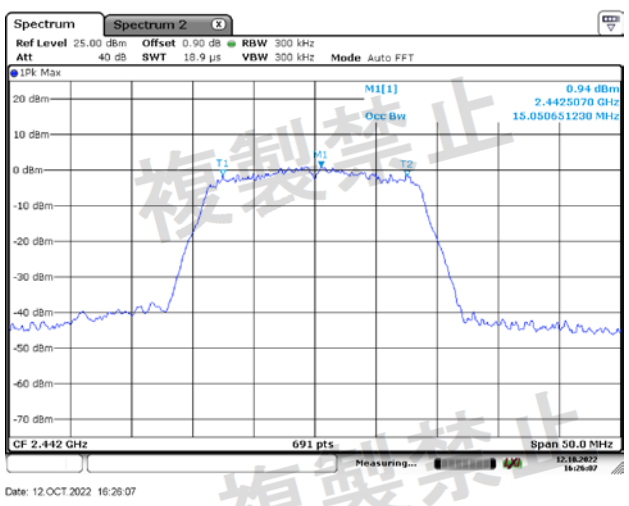
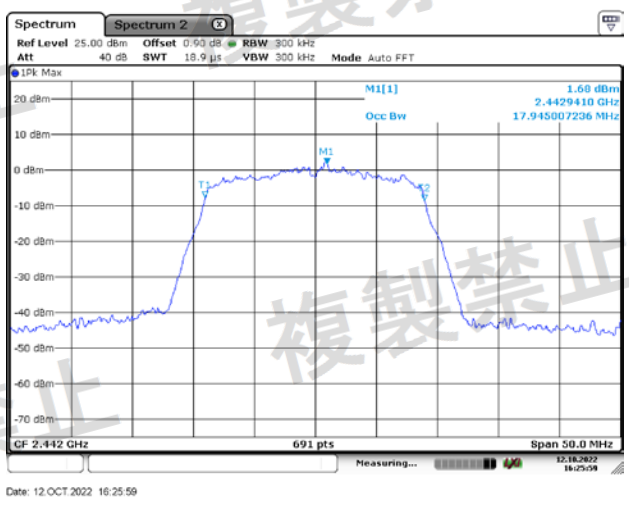
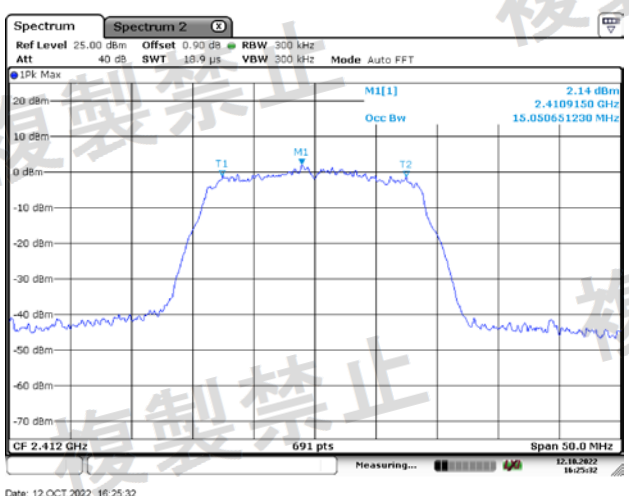
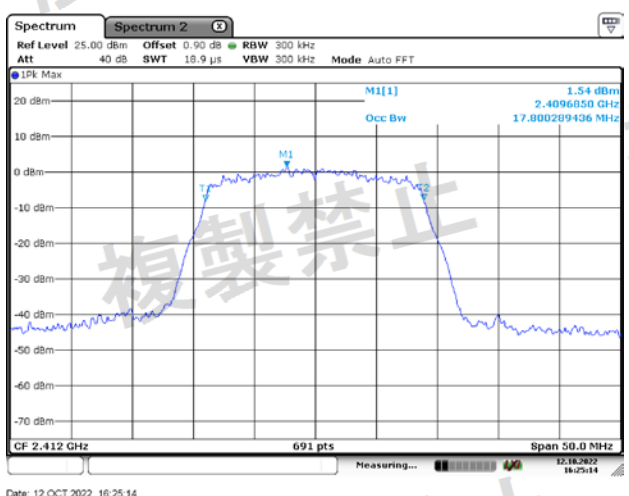
90 % OBW



Test Mode : 802.11 n / CH01,CH07,CH13 (Nomal Voltage)_Right

99 % OBW

90 % OBW



5. Antenna power

5.1 Test setup



5.2 Limit

Output power: 0.01 W or Below

Output power tolerance: Maximum +20 %, Minimum -80 %

5.3 Test procedure

1. The transmitter output is connected to the Power meter
2. Setting the EUT is operating frequency.

Center frequency	Operating frequency
Resolution BW	1 MHz
Video BW	1 MHz
Span	Zero
Sweep time	Auto
Detector mode	Positive peak
Trace mode	Max. hold

5.4 Test results

Ambient temperature: 24℃ Relative humidity: 50% R.H.

Test mode : LE

Test voltage (DC)	Frequency (MHz)	Measure value	Power tolerance(%)
		(mW)	
5.5 (V)	2 402	3.64	3.98
	2 442	3.57	2.08
	2 480	3.12	-10.89
5.0 (V)	2 402	3.66	4.70
	2 442	3.59	2.55
	2 480	3.10	-11.50
4.5 (V)	2 402	3.67	4.94
	2 442	3.61	3.26
	2 480	3.09	-11.71
Declared power(W)		0.0035 (0.0042 ~ 0.0007)	
Antenna gain(dBi)		1.4 dBi	
Limit		-80 ~ 20 %	

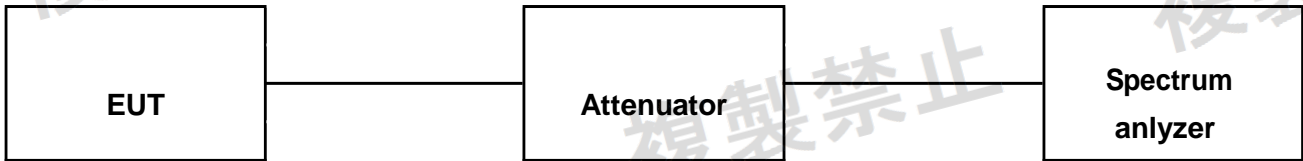
Test mode : 802.11 n

Test voltage (DC)	Frequency (MHz)	Measure value	Power tolerance(%)
		(mW)	
5.5 (V)	2 412	3.64	3.98
	2 442	3.57	2.08
	2 472	3.12	-10.89
5.0 (V)	2 412	3.66	4.70
	2 442	3.59	2.55
	2 472	3.10	-11.50
4.5 (V)	2 412	3.67	4.94
	2 442	3.61	3.26
	2 472	3.09	-11.71
Declared power(W)		0.005 (0.006 ~ 0.001)	
Antenna gain(dBi)		1.4 dBi	
Limit		-80 ~ 20 %	

Remark: Power tolerance (%) = {[Output power- Declared power] ÷ Declared power} ×100

6. Unwanted emission strength

6.1 Test setup



6.2 Limit

Spurious Emission / Unwanted Emission Strength, Spurious area	30MHz - 2387MHz ; 2.5µW/MHz or less
	2387MHz - 2400MHz ; 25µW/MHz or less
	2483.5MHz - 2496.5MHz ; 25µW/MHz or less
	2496.5MHz - 12.5GHz ; 2.5µW/MHz or less

6.3 Test procedure

1. Connect transmitter output to the spectrum analyzer input port.
2. The EUT should be transmitting at hopping mode
3. Unwanted emission strength is measured by following setting:
4. Set the spectrum analyzer RBW: 1 MHz, VBW: same as RBW
Sweep time : auto, Start : 30 MHz, Stop : 2387 MHz. Sweep mode: single and mark highest level.
5. Set the spectrum analyzer RBW: 1 MHz, VBW: 1 MHz, Sweep time: auto, Start: 2 387 MHz, Stop: 2 400 MHz. Sweep mode: single and mark highest level.
6. Set the spectrum analyzer RBW: 1 MHz, VBW: 1 MHz, Sweep time: auto, Start: 2 483.5 MHz, Stop: 2 496.5 MHz Sweep mode: single and mark highest level.
7. Set the spectrum analyzer RBW: 1 MHz, VBW: 1 MHz, Sweep time: auto, Start: 2 496.5 MHz, Stop: 12.5 GHz. Sweep mode: single and mark highest level.
8. Detector mode: Peak mode.

6.4 Test results

Ambient temperature: 24℃ Relative humidity: 50% R.H.

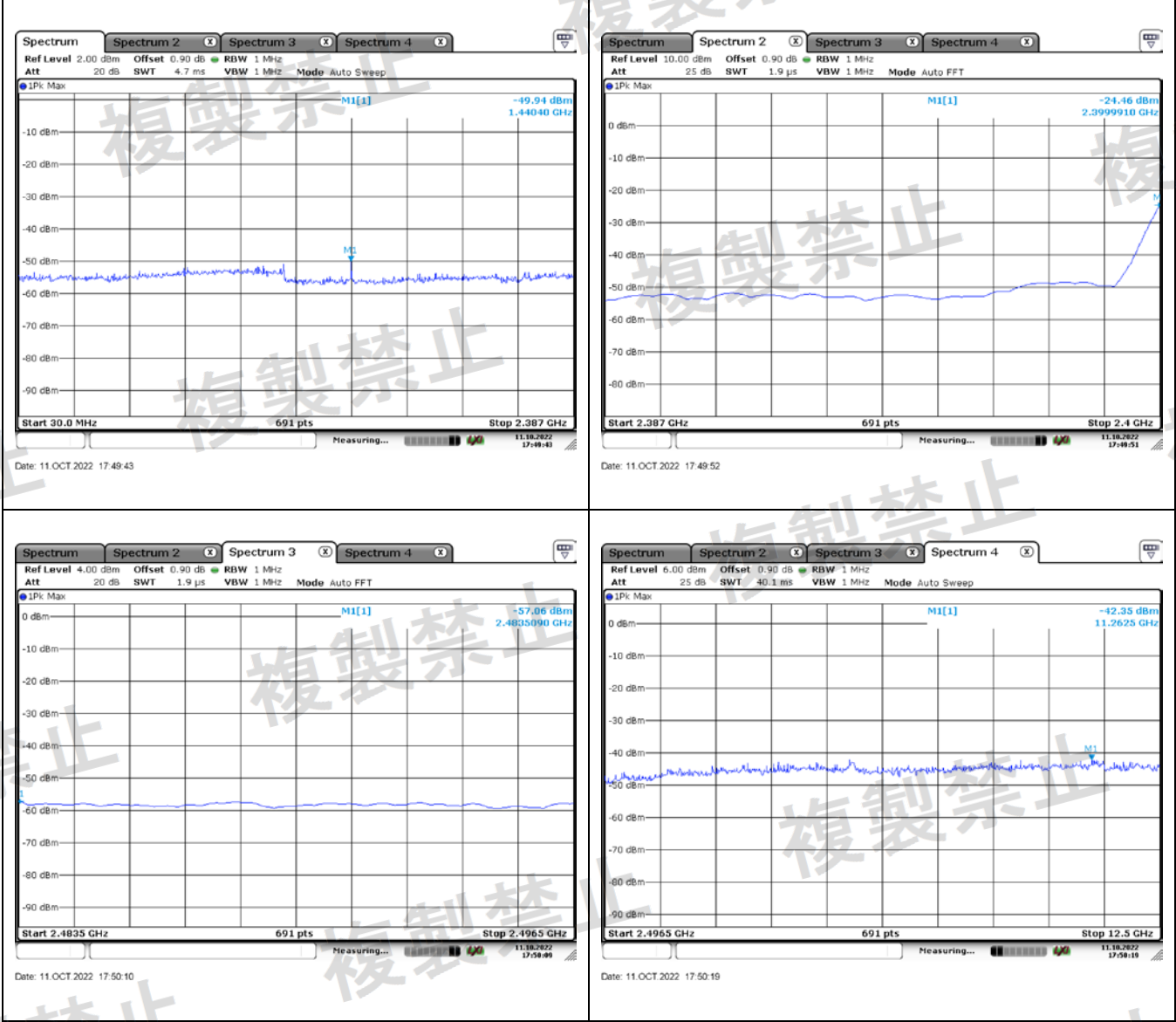
Result : Pass

mode : LE

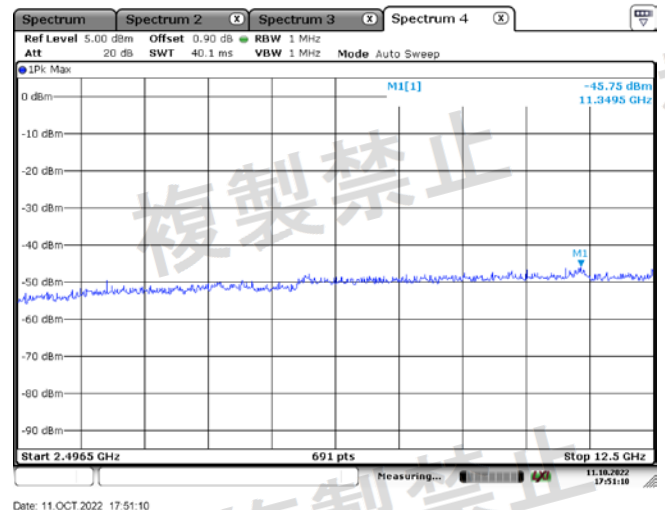
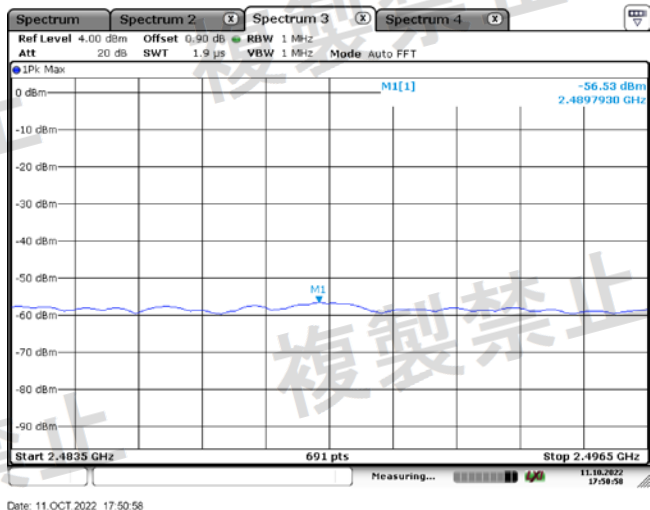
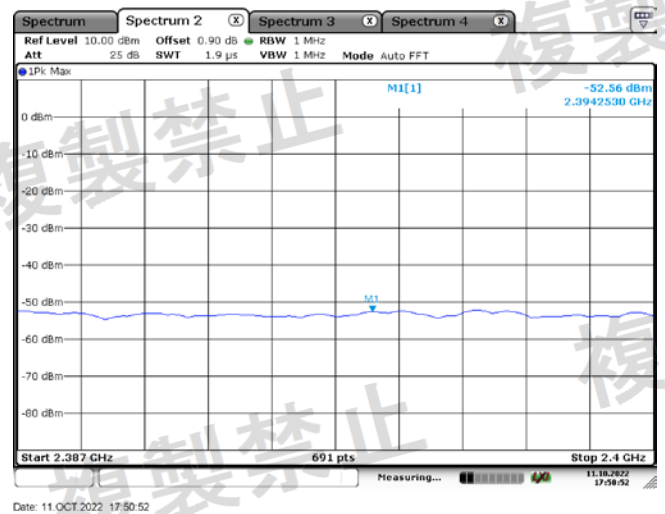
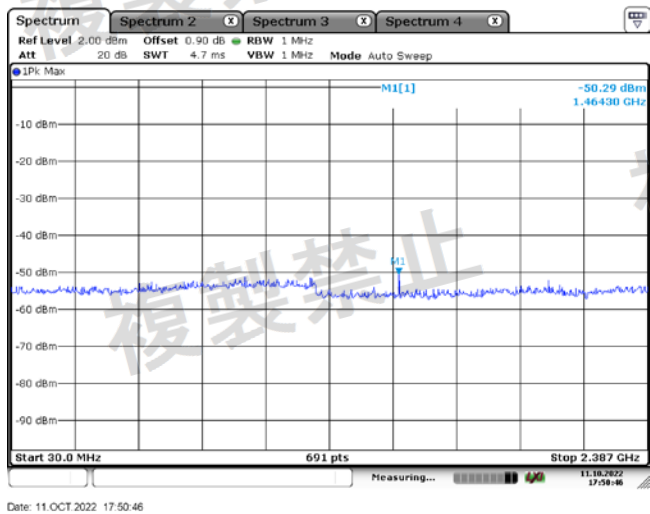
Voltage	Frequency	Frequency Range	Result			Limit
V	MHz	MHz	MHz	dBm	uW	uW
-10 % (DC 4.5 V)	2402	30 ~ 2387	1440.70	-49.87	0.0103	2.5
		2387 ~ 2400	2400.29	-24.39	3.6370	25
		2483.5 ~ 2496.5	2483.87	-56.93	0.0020	25
		2496.5 ~ 12500	11262.99	-42.28	0.0592	2.5
	2442	30 ~ 2387	1464.87	-50.05	0.0099	2.5
		2387 ~ 2400	2394.82	-52.32	0.0059	25
		2483.5 ~ 2496.5	2490.28	-56.31	0.0023	25
		2496.5 ~ 12500	11349.89	-45.64	0.0273	2.5
	2480	30 ~ 2387	1488.68	-50.37	0.0092	2.5
		2387 ~ 2400	2390.85	-51.19	0.0076	25
		2483.5 ~ 2496.5	2484.00	-48.42	0.0144	25
		2496.5 ~ 12500	11334.73	-46.09	0.0246	2.5
0 % (DC 5.0 V)	2402	30 ~ 2387	1440.40	-49.94	0.0101	2.5
		2387 ~ 2400	2399.99	-24.46	3.5810	25
		2483.5 ~ 2496.5	2483.51	-57.06	0.0020	25
		2496.5 ~ 12500	11262.50	-42.35	0.0582	2.5
	2442	30 ~ 2387	1464.30	-50.29	0.0094	2.5
		2387 ~ 2400	2394.25	-52.56	0.0055	25
		2483.5 ~ 2496.5	2489.79	-56.53	0.0022	25
		2496.5 ~ 12500	11349.50	-45.75	0.0266	2.5
	2480	30 ~ 2387	1488.20	-50.43	0.0091	2.5
		2387 ~ 2400	2390.38	-51.25	0.0075	25
		2483.5 ~ 2496.5	2483.51	-48.57	0.0139	25
		2496.5 ~ 12500	11334.50	-46.16	0.0242	2.5
+10 % (DC 5.5 V)	2402	30 ~ 2387	1440.40	-49.94	0.0101	2.5
		2387 ~ 2400	2400.37	-24.34	3.6818	25
		2483.5 ~ 2496.5	2483.97	-56.88	0.0021	25
		2496.5 ~ 12500	11262.95	-42.19	0.0604	2.5
	2442	30 ~ 2387	1464.30	-50.29	0.0094	2.5
		2387 ~ 2400	2394.67	-52.51	0.0056	25
		2483.5 ~ 2496.5	2490.22	-56.47	0.0023	25
		2496.5 ~ 12500	11349.82	-45.63	0.0274	2.5

2480	30 ~ 2387	1488.20	-50.43	0.0091	2.5
	2387 ~ 2400	2390.64	-51.13	0.0077	25
	2483.5 ~ 2496.5	2483.98	-48.50	0.0141	25
	2496.5 ~ 12500	11335.04	-45.95	0.0254	2.5

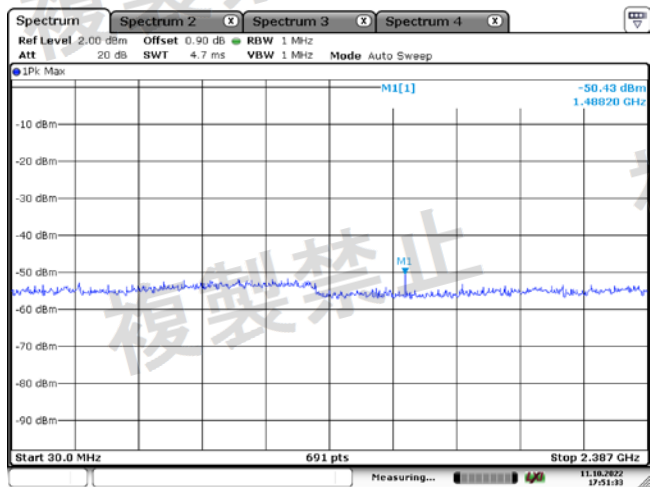
Test Mode : LE / CH1 (Nomal Voltage)



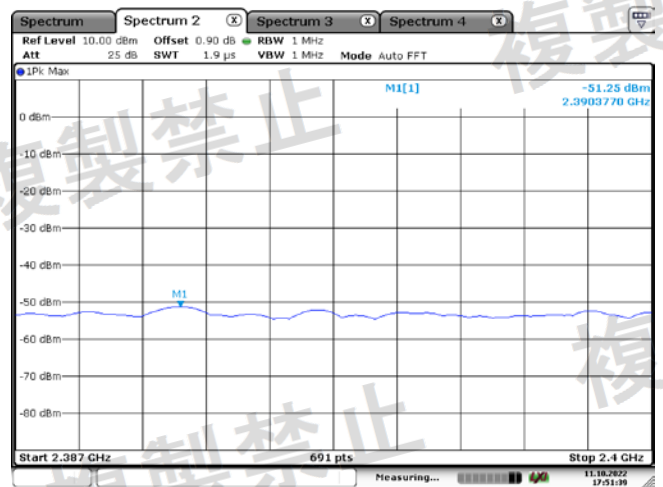
Test Mode :LE / CH20 (Nomal Voltage)



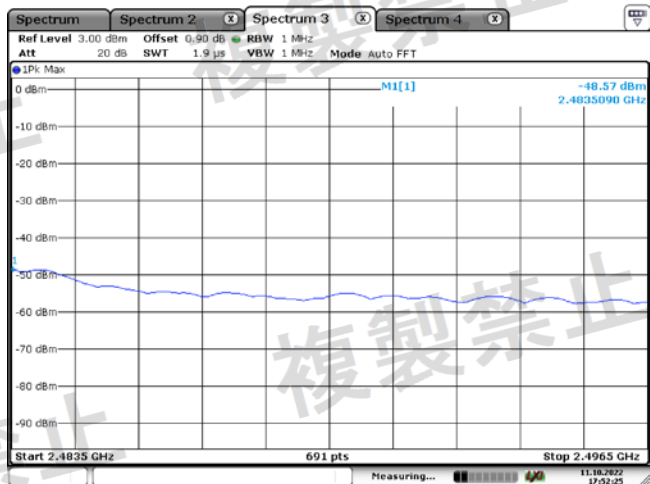
Test Mode :LE / CH40 (Nomal Voltage)



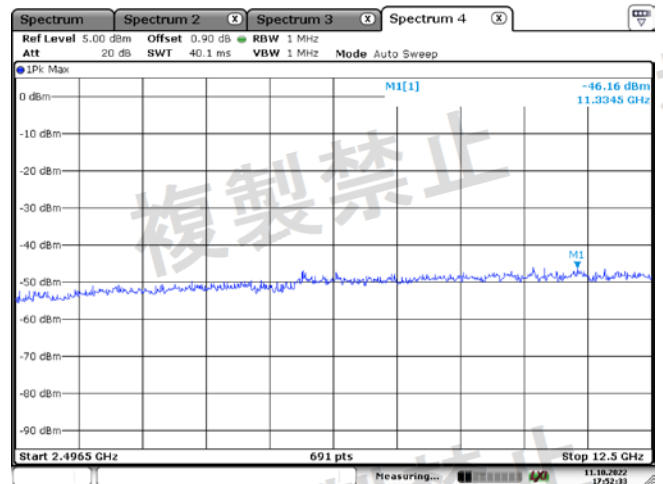
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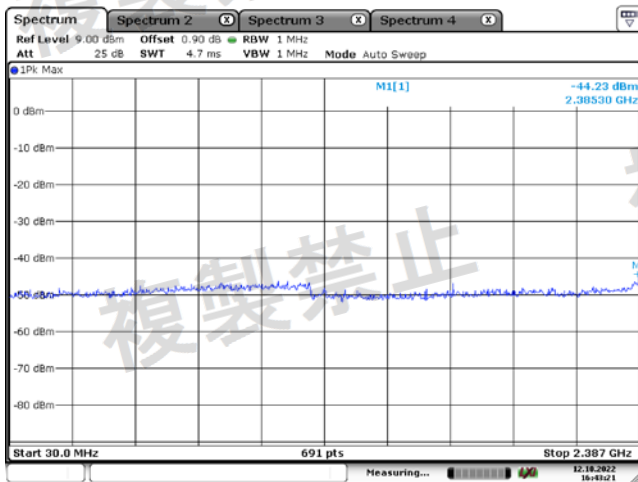
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Result : Pass

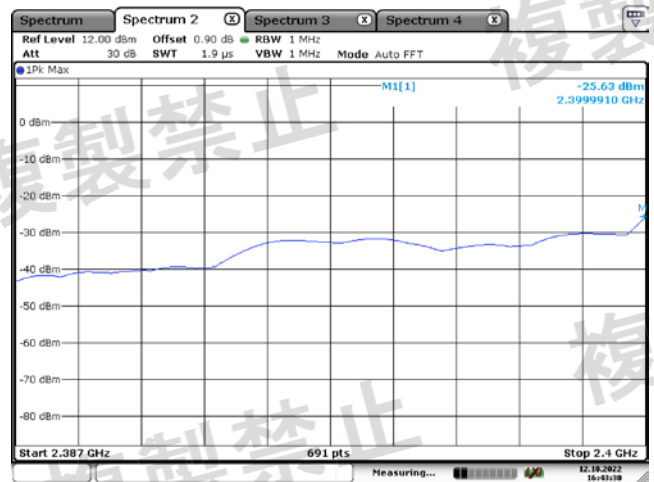
mode : 802.11 n

Voltage	Frequency	Frequency Range	Result			Limit
V	MHz	MHz	MHz	dBm	uW	uW
-10 % (DC 4.5 V)	2412	30 ~ 2387	2385.92	-44.16	0.0384	2.5
		2387 ~ 2400	2400.53	-25.56	2.7808	25
		2483.5 ~ 2496.5	2491.54	-53.74	0.0042	25
		2496.5 ~ 12500	11276.75	-45.72	0.0268	2.5
	2442	30 ~ 2387	966.70	-45.33	0.0293	2.5
		2387 ~ 2400	2395.38	-45.15	0.0305	25
		2483.5 ~ 2496.5	2485.38	-50.20	0.0095	25
		2496.5 ~ 12500	11406.83	-46.01	0.0251	2.5
	2472	30 ~ 2387	1154.07	-45.24	0.0299	2.5
		2387 ~ 2400	2396.34	-47.73	0.0169	25
		2483.5 ~ 2496.5	2483.76	-22.64	5.4462	25
		2496.5 ~ 12500	11276.82	-46.47	0.0226	2.5
0 % (DC 5.0 V)	2412	30 ~ 2387	2385.30	-44.23	0.0378	2.5
		2387 ~ 2400	2399.91	-25.63	2.7353	25
		2483.5 ~ 2496.5	2491.17	-53.87	0.0041	25
		2496.5 ~ 12500	11276.50	-45.81	0.0262	2.5
	2442	30 ~ 2387	966.30	-45.54	0.0279	2.5
		2387 ~ 2400	2394.99	-45.36	0.0291	25
		2483.5 ~ 2496.5	2484.92	-50.35	0.0092	25
		2496.5 ~ 12500	11406.50	-46.19	0.0240	2.5
	2472	30 ~ 2387	1153.90	-45.41	0.0288	2.5
		2387 ~ 2400	2396.17	-47.90	0.0162	25
		2483.5 ~ 2496.5	2483.51	-22.72	5.3456	25
		2496.5 ~ 12500	11276.50	-46.71	0.0213	2.5
+10 % (DC 5.5 V)	2412	30 ~ 2387	2385.45	-44.31	0.0378	2.5
		2387 ~ 2400	2400.08	-25.55	2.7837	25
		2483.5 ~ 2496.5	2491.34	-53.74	0.0042	25
		2496.5 ~ 12500	11276.66	-45.58	0.0277	2.5
	2442	30 ~ 2387	966.51	-45.39	0.0279	2.5
		2387 ~ 2400	2395.38	-45.13	0.0307	25
		2483.5 ~ 2496.5	2485.44	-50.13	0.0097	25
		2496.5 ~ 12500	11406.91	-45.97	0.0253	2.5
	2472	30 ~ 2387	1153.76	-45.55	0.0288	2.5
		2387 ~ 2400	2396.66	-47.78	0.0167	25
		2483.5 ~ 2496.5	2483.98	-22.64	5.4460	25
		2496.5 ~ 12500	11276.68	-46.61	0.0218	2.5

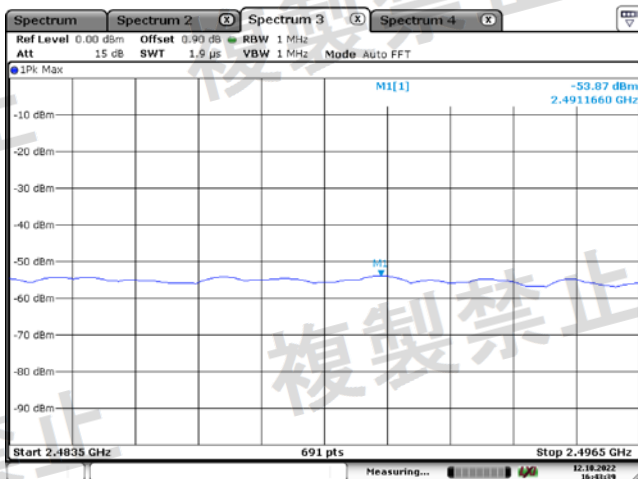
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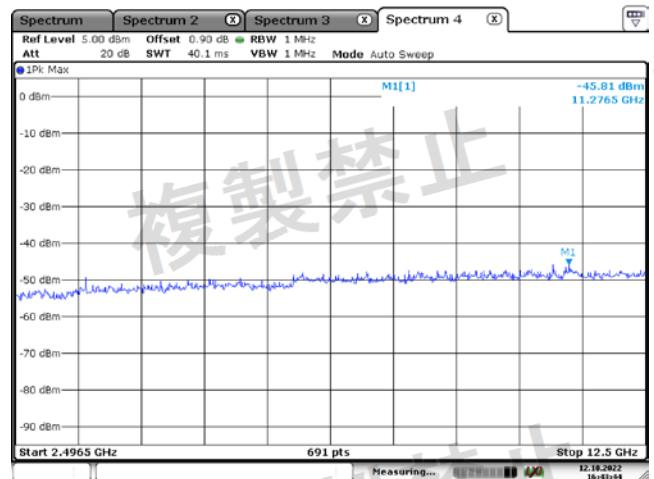
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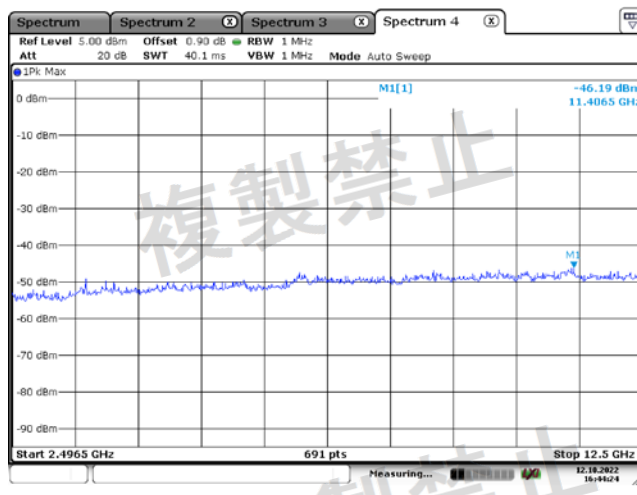
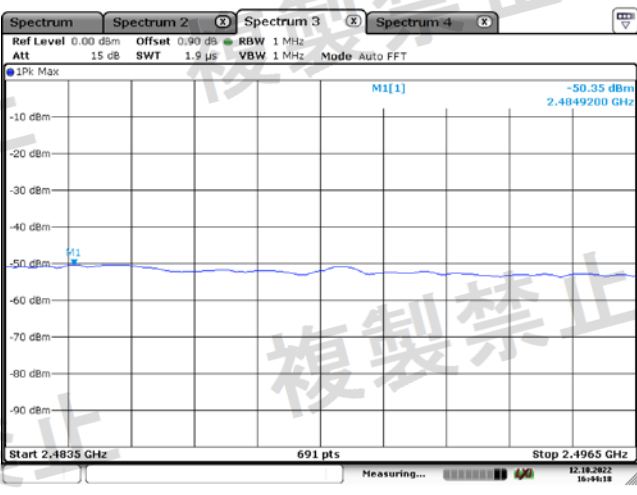
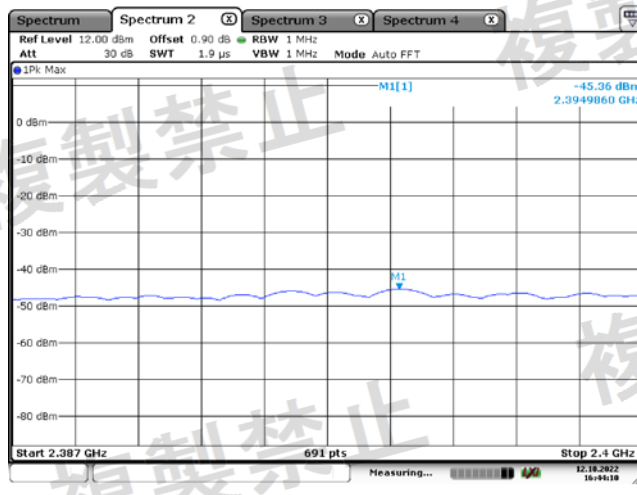
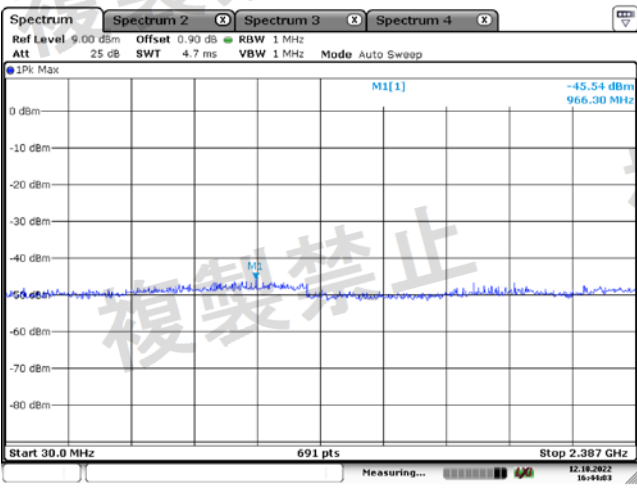


Date: 12.OCT.2022 16:43:40

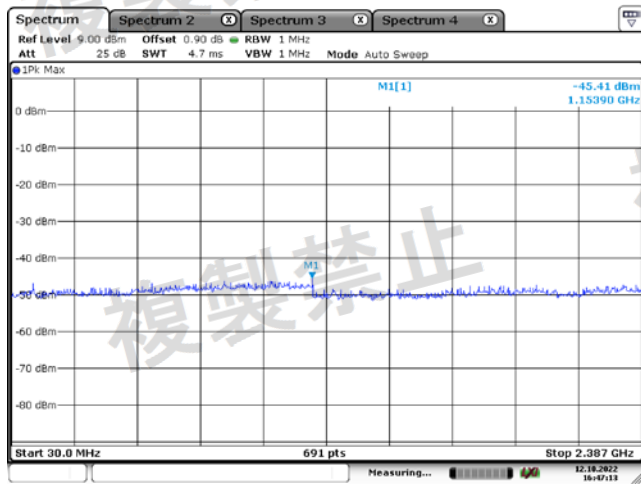


Date: 12.OCT.2022 16:43:45

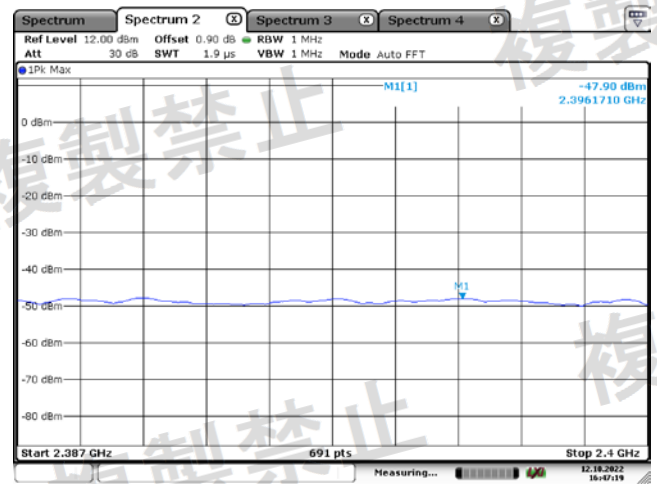
Test Mode : 802.11 n / CH7 (Nomal Voltage)



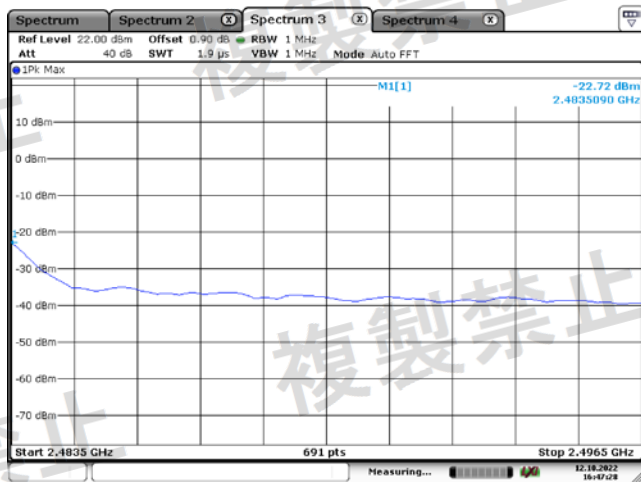
Test Mode : 802.11 n / CH13 (Nomal Voltage)



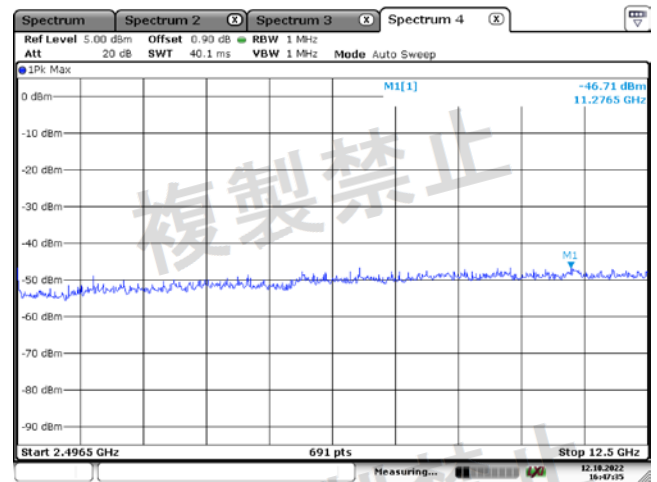
Date: 12.OCT.2022 16:47:13



Date: 12.OCT.2022 16:47:20



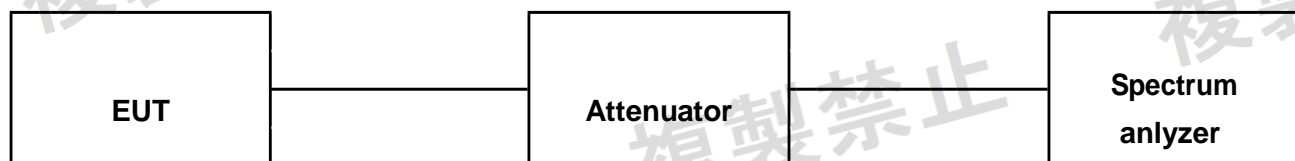
Date: 12.OCT.2022 16:47:29



Date: 12.OCT.2022 16:47:35

7. RX spurious emission

7.1 Test setup



7.2 Limit

Below 1 GHz: 4 nW (- 54 dBm) or less

Above 1 GHz: 20 nW (- 47 dBm) or less

7.3 Test procedure

1. Connecy transmitter output to the spectrum analyzer input port
2. The EUT should be transmitting at low, middle and high channel.
3. RX spurious emission is measured by following setting:
4. Set the spectrum analyzer RBW: 100 kHz, VBW: 100 kHz, Sweep: Auto, Start: 30 MHz, Stop: 1 000 MHz
Max hold view, mark highest level.
5. Set the spectrum analyzer RBW: 1 MHz, VBW: 1 MHz, Sweep: Auto, Start: 1 000 MHz, Stop: 12.5 GHz.
Max hold view, mark highest level.
6. Detector mode: Peak mode

7.4 Test resultsAmbient temperature: 24℃ Relative humidity: 50% R.H

Test mode : Bluetooth_Le

Result : Pass

Voltage	Measurement Frequency	Frequency Range	Result			Limit
V	MHz	MHz	MHz	dBm	nW	nW
-10 % (DC 4.5 V)	2402	30 ~ 1000	859.18	-65.95	0.254	4
		1000 ~ 12750	11279.61	-65.55	0.279	20
	2442	30 ~ 1000	941.05	-66.57	0.220	4
		1000 ~ 12750	12385.14	-65.89	0.258	20
	2480	30 ~ 1000	858.60	-65.88	0.258	4
		1000 ~ 12750	10667.36	-66.52	0.223	20
0 % (DC 5.0 V)	2402	30 ~ 1000	858.90	-66.13	0.244	4
		1000 ~ 12750	11279.40	-65.77	0.265	20
	2442	30 ~ 1000	940.31	-66.81	0.208	4
		1000 ~ 12750	12384.17	-66.00	0.251	20
	2480	30 ~ 1000	857.55	-66.10	0.245	4
		1000 ~ 12750	10667.68	-66.57	0.220	20
+10 % (DC 5.5 V)	2402	30 ~ 1000	859.70	-65.94	0.255	4
		1000 ~ 12750	11279.35	-65.53	0.280	20
	2442	30 ~ 1000	941.10	-66.70	0.214	4
		1000 ~ 12750	12384.32	-65.85	0.260	20
	2480	30 ~ 1000	858.14	-66.02	0.250	4
		1000 ~ 12750	10667.82	-66.49	0.224	20

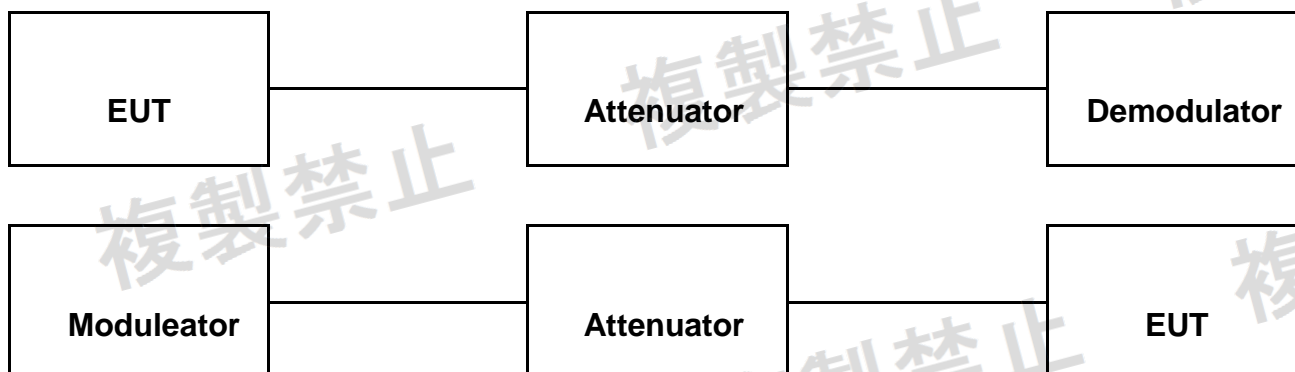
Test mode : Bluetooth_Le

Result : Pass

Voltage	Measurement Frequency	Frequency Range	Result			Limit
V	MHz	MHz	MHz	dBm	nW	nW
-10 % (DC 4.5 V)	2402	30 ~ 1000	604.48	-65.64	0.273	4
		1000 ~ 12750	10769.92	-56.13	2.438	20
	2442	30 ~ 1000	929.73	-66.26	0.237	4
		1000 ~ 12750	11892.20	-56.14	2.432	20
	2480	30 ~ 1000	939.54	-66.55	0.221	4
		1000 ~ 12750	11364.95	-56.01	2.505	20
0 % (DC 5.0 V)	2402	30 ~ 1000	603.41	-65.80	0.263	4
		1000 ~ 12750	10769.35	-56.23	2.382	20
	2442	30 ~ 1000	929.16	-66.47	0.225	4
		1000 ~ 12750	11891.24	-56.30	2.344	20
	2480	30 ~ 1000	938.91	-66.60	0.219	4
		1000 ~ 12750	11364.74	-56.16	2.421	20
+10 % (DC 5.5 V)	2402	30 ~ 1000	603.51	-65.69	0.270	4
		1000 ~ 12750	10769.17	-56.06	2.475	20
	2442	30 ~ 1000	929.18	-66.39	0.229	4
		1000 ~ 12750	11891.21	-56.09	2.460	20
	2480	30 ~ 1000	938.96	-66.54	0.222	4
		1000 ~ 12750	11364.14	-56.02	2.502	20

8 Interference prevention function

8.1 Test Setup



8.2 Limit

Radio equipment used mainly on the same premises and automatically transmits or receives identification code

8.3 Test results

Ambient temperature: 24℃ Relative humidity: 50% R.H.

Test Power:	Normal Voltage
Test Mode:	LE, 802.11 n20
Test Result:	PASS

9. CONSTRUCTION PROTECTION CONFIRMATION METHOD

9.1 Limit

(See Article 49-20, Item1-a of the Ordinance Regulating Radio Equipment)

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

9.2 CONFIRMATION METHOD

The RF and modulation portions are protected against illegal modification as following method:

Tick the appropriate box	
	1. Sealed with special screws.
	2. Plastic chassis is being welded using ultrasonic waves.
O	3. Chassis is glued using a special adhesive.
	4. Metal covers are spot-fused.
	5. Cover is specially interlocked.
	6. RF and Modulation components are covered with shielding case and this shielding case is soldered.
	7. Shield case is welded at RF and modulation parts, and ID-ROM is welded using the BGA Method.
	8. Shield case is welded at RF and modulation parts, and ID-ROM is glued at its lead with a special adhesive
	9. Shield case is welded at RF and modulation parts, and ID-ROM is glued with a non-transparent laminating agent.
	10. RF and Modulation parts are mounted on PCB with surface mount technology, and there is no any adjustable part on PCB or adjustable parts are not exposed.

Test Photo



APPENDIX

TEST EQUIPMENT USED FOR TESTS

	Use	Description	Model No.	Serial No.	Manufacturer	Interval	Next Cal. Date
1	■	Signal Analyzer (9 kHz ~ 30 GHz)	FSV30	100757	R&S	1 year	2023-09-06
2	■	Signal Generator (~3.2 GHz)	8648C	3623A02597	HP	1 year	2023-03-16
3		SYNTHESIZED CW GENERATOR	83711B	US34490456	HP	1 year	2023-03-16
4		Attenuator (3 dB)	8491A	37822	HP	1 year	2023-09-06
5		Attenuator (10 dB)	8491A	63196	HP	1 year	2023-09-06
6		EMI Test Receiver (~7 GHz)	ESCI7	100722	R&S	1 year	2023-09-06
7		RF Amplifier (~1.3 GHz)	8447D OPT 010	2944A07684	HP	1 year	2023-09-06
8		RF Amplifier (1~26.5 GHz)	8449B	3008A02126	HP	1 year	2023-03-16
9		Horn Antenna (1~18 GHz)	3115	00114105	ETS	2 year	2023-09-06
10		DRG Horn (Small)	3116B	81109	ETS-Lindgren	2 year	2024-03-18
11		DRG Horn (Small)	3116B	133350	ETS-Lindgren	2 year	2024-03-18
12		TRILOG Antenna	VULB 9160	9160-3237	SCHWARZBECK	2 year	2023-03-20
13		Temp.Humidity Data Logger	SK-L200TH II A	00801	SATO	1 year	2023-03-16
14		Splitter (SMA)	ZFSC-2-2500	SF617800326	Mini-Circuits	-	-
15	■	DC Power Supply	6674A	3637A01657	Agilent	-	-
17	■	Power Meter	EPM-441A	GB32481702	HP	1 year	2023-03-16
18	■	Power Sensor	8481A	3318A94972	HP	1 year	2023-09-06
19		Audio Analyzer	8903B	3729A18901	HP	1 year	2023-09-06
20		Modulation Analyzer	8901B	3749A05878	HP	1 year	2023-09-06
21	■	TEMP & HUMIDITY Chamber	YJ-500	LTAS06041	JinYoung Tech	1 year	2023-09-06
22		Stop Watch	HS-3	812Q08R	CASIO	2 year	2024-03-18
23		LISN	KNW-407	8-1430-1	Kyoritsu	1 year	2023-03-16
24		Two-Lime V-Network	ESH3-Z5	893045/017	R&S	1 year	2023-03-16
25		UNIVERSAL RADIO COMMUNICATION TESTER	CMU200	106243	R&S	1 year	2023-03-16
26		Highpass Filter	WHKX1.5/15G-10SS	74	Wainwright Instruments	1 year	2023-03-16
27		Highpass Filter	WHKX3.0/18G-10SS	118	Wainwright Instruments	1 year	2023-03-16
28		OSP120 BASE UNIT	OSP120	101230	R&S	1 year	2023-03-16
29		Signal Generator(100 kHz ~ 40 GHz)	SMB100A03	177621	R&S	1 year	2023-03-16
30		Signal Analyzer (10 Hz ~ 40 GHz)	FSV40	101367	R&S	1 year	2023-03-16
31		Active Loop Antenna	FMZB 1519	1519-031	SCHWARZBECK	2 year	2023-09-07