TEST REPORT

The Radio Law, Article 2

Equipment under test	TOMORROW X TOGETHER OFFICIAL LIGHT STICK
Model name	TXT OFFICIAL 0120IP
Applicant	PARTRON CO., LTD.
Manufacturer	PARTRON CO., LTD.
Date of test(s)	2021.10.07~2021.10.13
Date of issue	2021.10.14

Issued to
PARTRON CO., LTD.
22, Samsung1-ro2-gil, Hwaseong-si, Gyeonggi-do South Korea
Tel: +82-10-3403-2041

Issued by
KES Co., Ltd.
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Test and report completed by :	**Report approval by :**
	
Gu-Bong, Kang Test engineer	Young-Jin, Lee Technical manager

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Revision history

Revision	Date of issue	Test report No.	Description
-	2021.10.14	KES-RF1-21T0185	Initial

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1. General information

Applicant:	PARTRON CO., LTD.
Applicant address:	22, Samsung1-ro2-gil, Hwaseong-si, Gyeonggi-do South Korea
Test site:	KES Co., Ltd.
Test site address:	☐ 3701, 40, Simin-daero 365beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14057, Korea ☒ 473-29, Gayeo-ro, Yeoju-si, Gyeonggi-do, Korea
Standard	ARIB STD-T66
J-MIC Radio law	Article 2

1.1. EUT description

Equipment under test	TOMORROW X TOGETHER OFFICIAL LIGHT STICK
Frequency range	BLE (1 Mbps) : 2 402 ㎒ ~ 2 480 ㎒ ZigBee : 2 480 ㎒
Model:	TXT OFFICIAL 0120IP
Modulation technique	BLE : GFSK [F1D] / ZigBee : O-QPSK [G1D]
Antenna specification	Antenna type : Pattern Antenna, Peak gain : 1.8 ㏈i
Power source	DC 3.0 V (Battery)
Number of channels	2 402 ㎒ ~ 2 480 ㎒ (BLE) : 40ch 2 480 ㎒ (ZigBee) : 1ch
H/W Version	1.0
S/W Version	1.1

1.2. Information about derivative model

N/A

1.3. Accessory information

Equipment	Manufacturer	Model	Serial No.	Power source
-	-	-	-	-

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1.4. Frequency/channel operations

Ch.	Frequency (㎒)	Mode
00	2 402	BLE (1 Mbps)
.	.	.
.	.	.
20	2 442	BLE (1 Mbps)
.	.	.
.	.	.
39	2 480	BLE (1 Mbps)

Ch.	Frequency (㎒)	Mode
00	2 480	ZigBee

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

1.5. Applied Standards

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

• Article 49-20 and the relevant articles of the Ordinance Regulating Radio Equipment

Remark:
1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The measurement was implemented in accordance with MIC Notice No. 88 Appendix No. 43

1.6. Factory & Factory adress

Factory	Adress
ELCOMTEC CO., LTD.	231, Dongbu-daero, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-862, Korea
PARTRON VINA	Plot 11-khai Quang IZ, Vinh Yen, Vinh Phuc, Vietnam
PARTRON CHINA	352, Muxin road, Muping economy Development zone, Yantai City, Shandong Province, China, 264100

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2. Summary of tests

ARIB STD-T66 Clause	Parameter	Verdict
Clause 3.2(2).(4)	Frequency Tolerance	Pass
Clause 3.2(2).(7)	Occupied Bandwidth	Pass
Clause 3.2(2).(8)	Spread Bandwidth	Pass
Clause 3.2(2),(3)	Antenna Power and Tolerances for antenna power	Pass
Clause 3.2(6)	Spurious emission intensity	Pass
Clause 3.3(1)	Secondary radiated emissions	Pass
Clause 3.4(1)	Interference prevention function	Pass

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3. Test results

3.1. Frequency tolerance

Test setup



Limit

Permission deviation ±50 x 10^{-6}

Test results

Mode: BLE

Test voltage (%)	Test voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Frequency deviation (㎐)	Deviation (ppm)	Verdict
90	DC 2.7	2 402	2 402.007 320	7 320	3.05	PASS
		2 442	2 442.014 359	14 359	5.88	PASS
		2 480	2 480.015 703	15 703	6.33	PASS
100	DC 3.0	2 402	2 402.007 120	7 120	2.96	PASS
		2 442	2 442.014 330	14 330	5.87	PASS
		2 480	2 480.015 216	15 216	6.14	PASS
110	DC 3.3	2 402	2 402.007 159	7 159	2.98	PASS
		2 442	2 442.014 290	14 290	5.85	PASS
		2 480	2 480.015 227	15 227	6.14	PASS

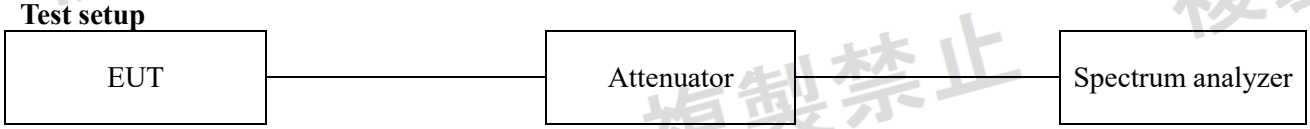
Mode: ZigBee

Test voltage (%)	Test voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Frequency deviation (㎐)	Deviation (ppm)	Verdict
90	DC 2.7	2 480	2 480.013 413	13 413	5.41	PASS
		-	-	-	-	-
		-	-	-	-	-
100	DC 3.0	2 480	2 480.013 561	13 561	5.47	PASS
		-	-	-	-	-
		-	-	-	-	-
110	DC 3.3	2 480	2 480.013 257	13 257	5.35	PASS
		-	-	-	-	-
		-	-	-	-	-

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3.2. Occupied Bandwidth

Test setup



Limit

Equal or less than 26 ㎒(DSSS).

Test results

Mode: BLE

Test voltage (%)	Nominal Voltage(V)	Occupied Bandwidth (㎒)			Verdict
		Frequency (2 402 ㎒)	Frequency (2 442 ㎒)	Frequency (2 480 ㎒)	
90	DC 2.7	1.07	1.06	1.05	Pass
100	DC 3.0	1.07	1.06	1.06	Pass
110	DC 3.3	1.07	1.06	1.06	Pass

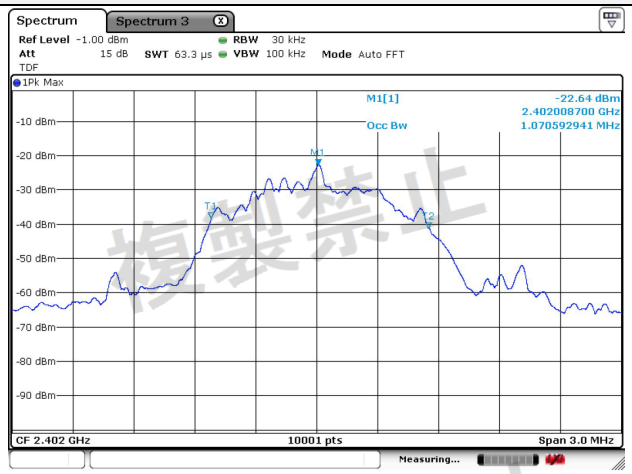
Mode: ZigBee

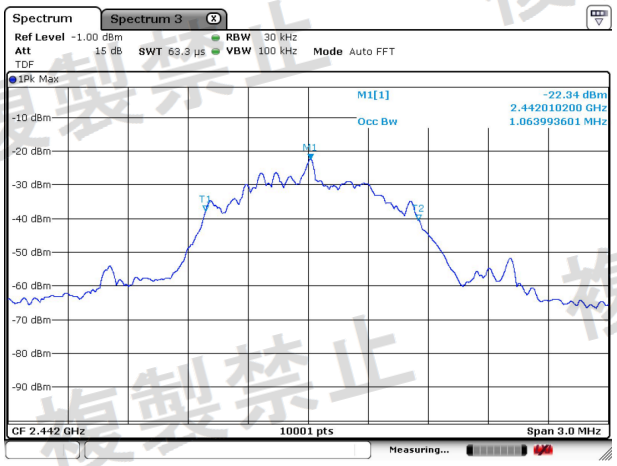
Test voltage (%)	Nominal Voltage(V)	Occupied Bandwidth (㎒)			Verdict
		Frequency (2 480 ㎒)	-	-	
90	DC 2.7	2.40	-	-	Pass
100	DC 3.0	2.40	-	-	Pass
110	DC 3.3	2.39	-	-	Pass

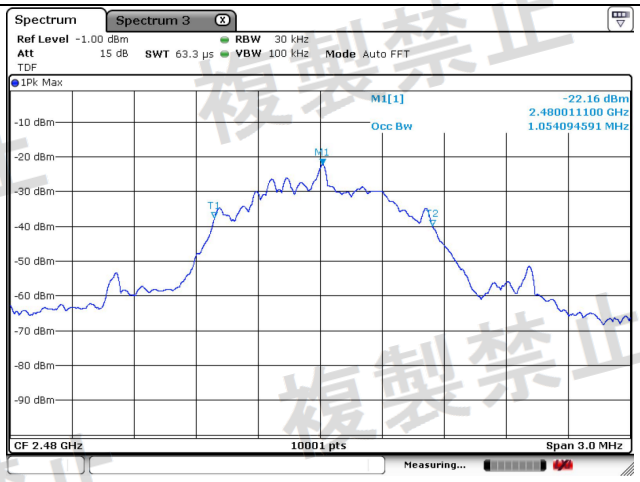
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Test plots

BLE - Test voltage (90 %)



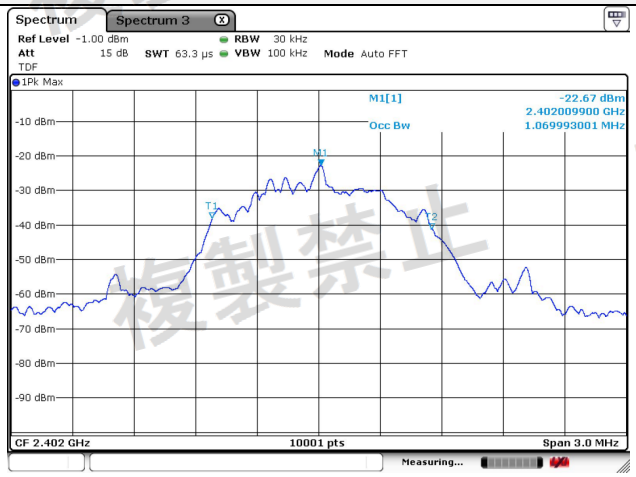


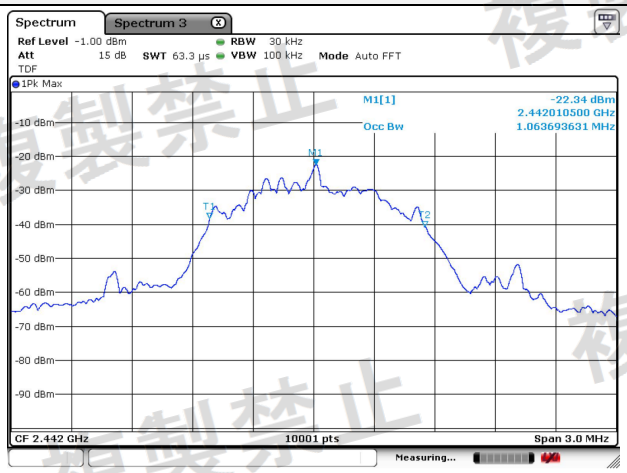


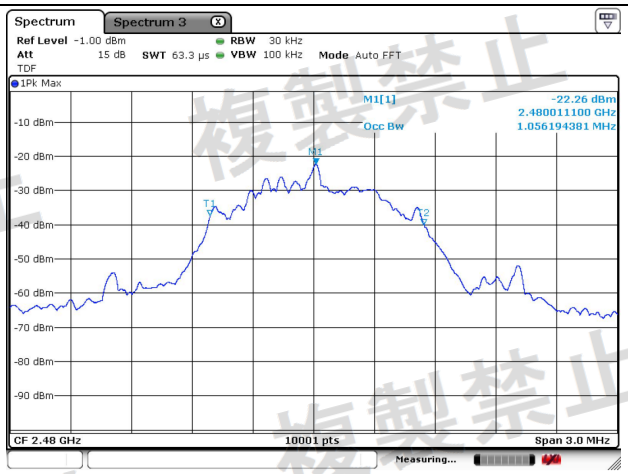
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BLE - Test voltage (100 %)



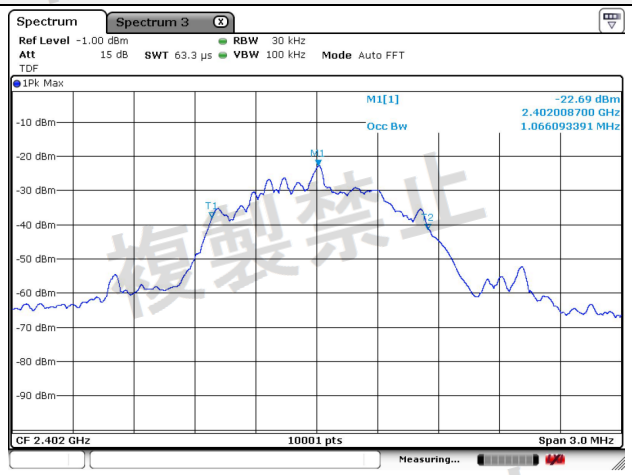


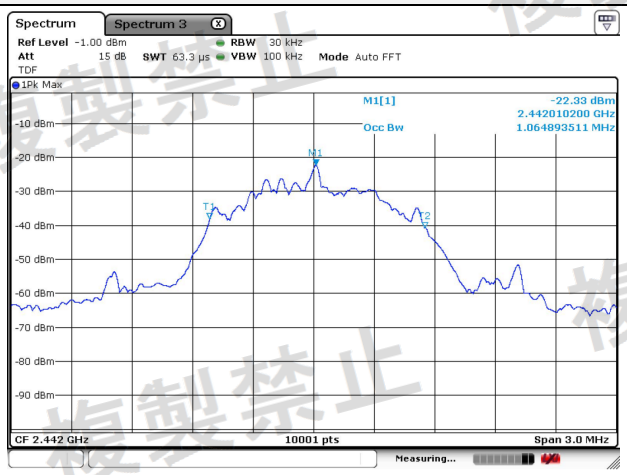


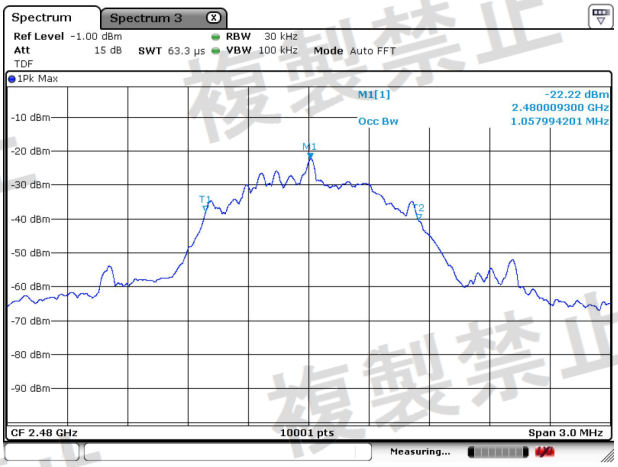
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BLE - Test voltage (110 %)



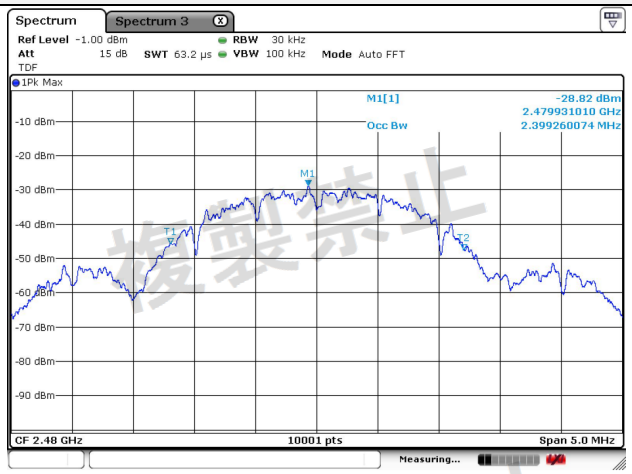
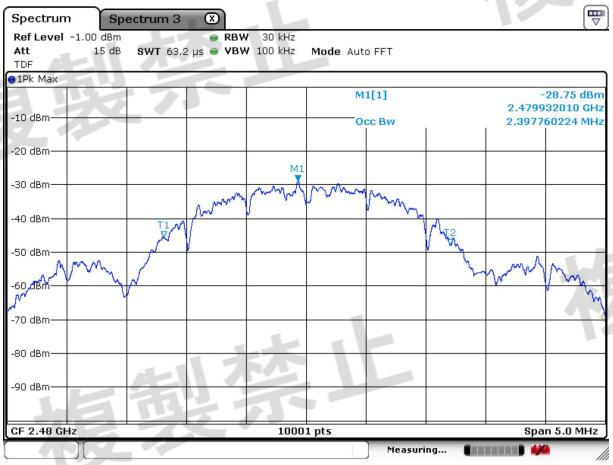
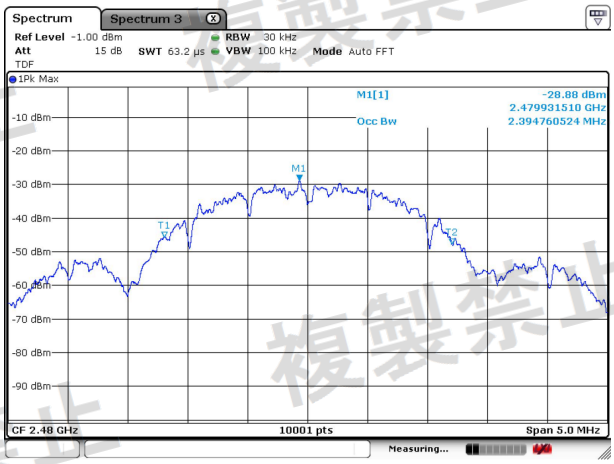




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Test plots

ZigBee - Test voltage (90 %)	ZigBee - Test voltage (100 %)
	
ZigBee - Test voltage (110 %)	**-**
	N/A

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3.3. Spread Bandwidth

Test setup



Limit

Spread Bandwidth shall be 500 kHz or more.

Test results

Mode: BLE

Test voltage (%)	Nominal Voltage(V)	Spread Bandwidth (㎒)			Verdict
		Frequency (2 402 ㎒)	Frequency (2 442 ㎒)	Frequency (2 480 ㎒)	
90	DC 2.7	0.68	0.69	0.68	Pass
100	DC 3.0	0.68	0.69	0.68	Pass
110	DC 3.3	0.68	0.69	0.68	Pass

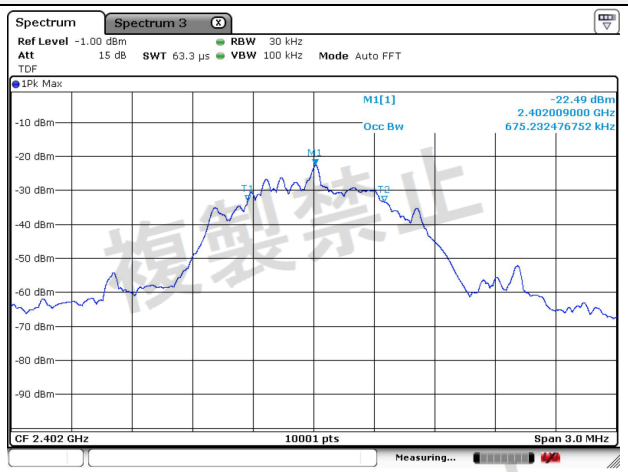
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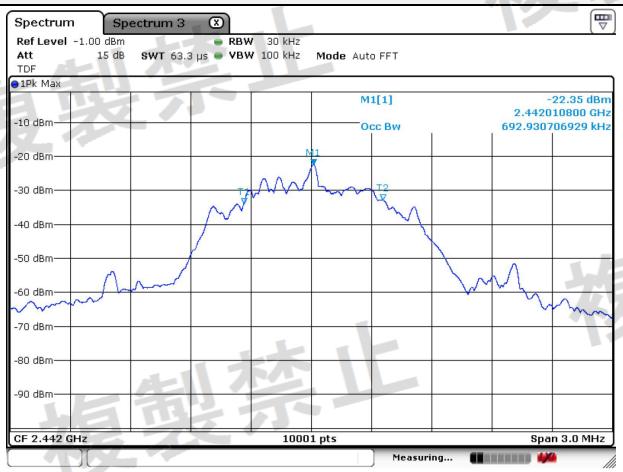
Test voltage (%)	Nominal Voltage(V)	Spread Bandwidth (㎒)			Verdict
		Frequency (2 480 ㎒)	-	-	
90	DC 2.7	1.55	-	-	Pass
100	DC 3.0	1.55	-	-	Pass
110	DC 3.3	1.54	-	-	Pass

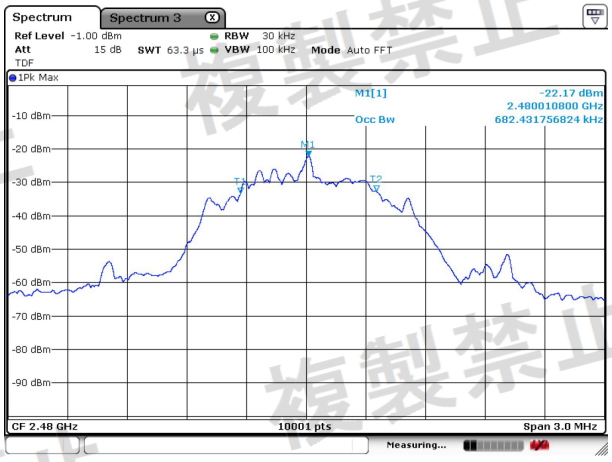
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Test plots

BLE - Test voltage (90 %)



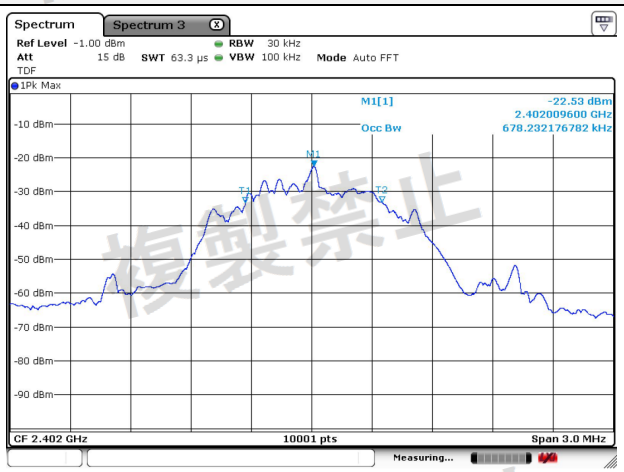


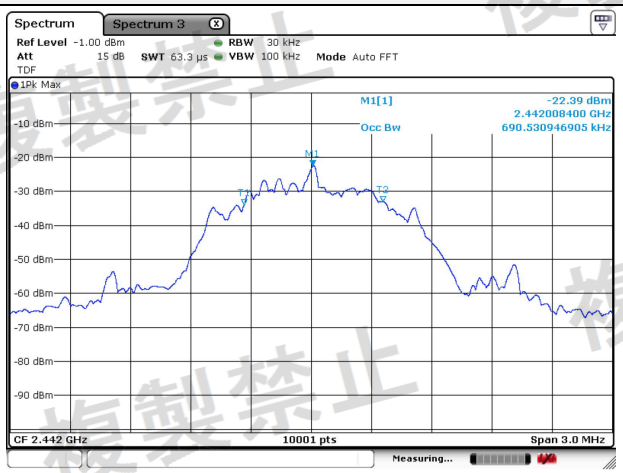


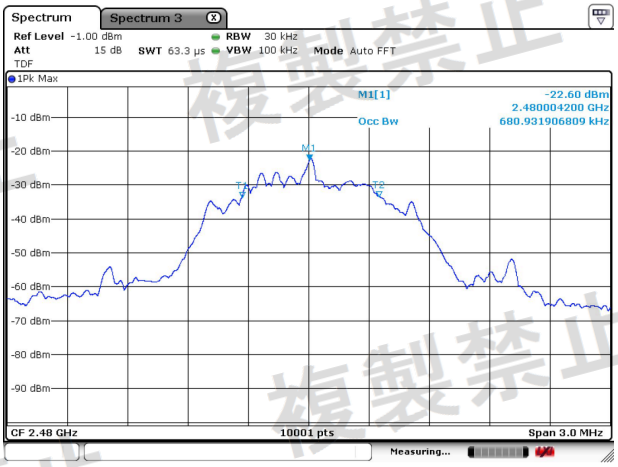
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BLE - Test voltage (100 %)



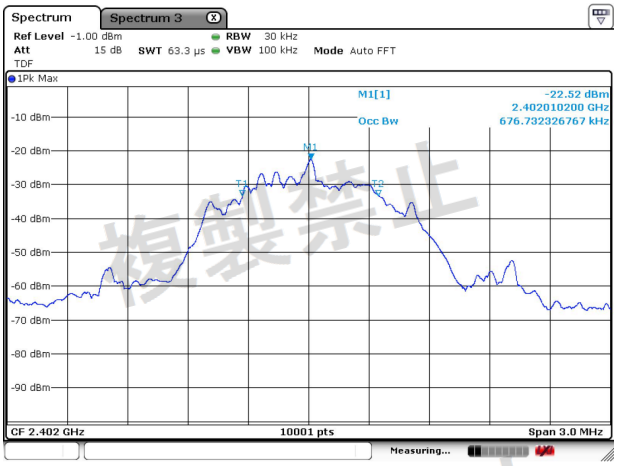


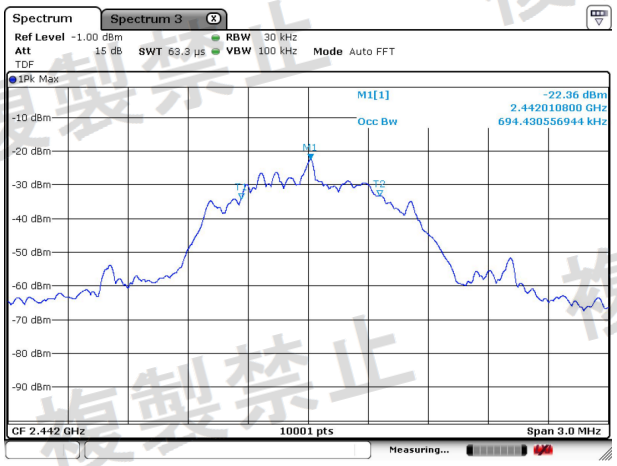


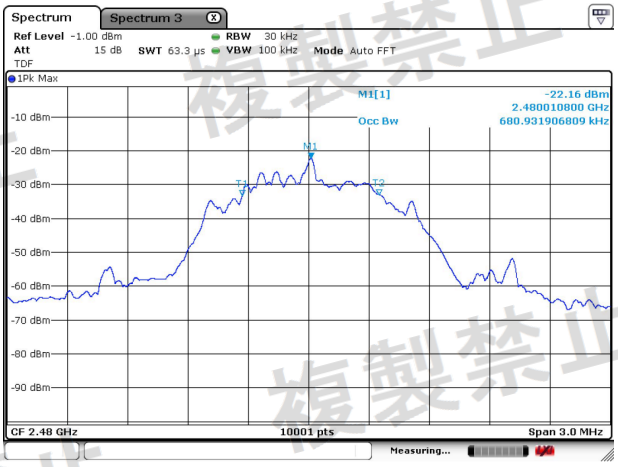
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BLE - Test voltage (110 %)



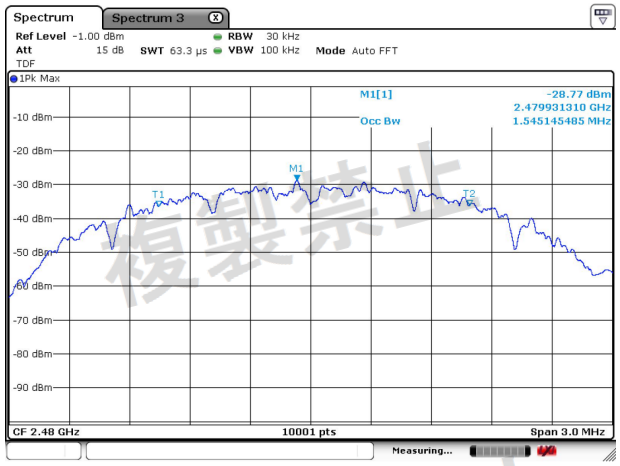
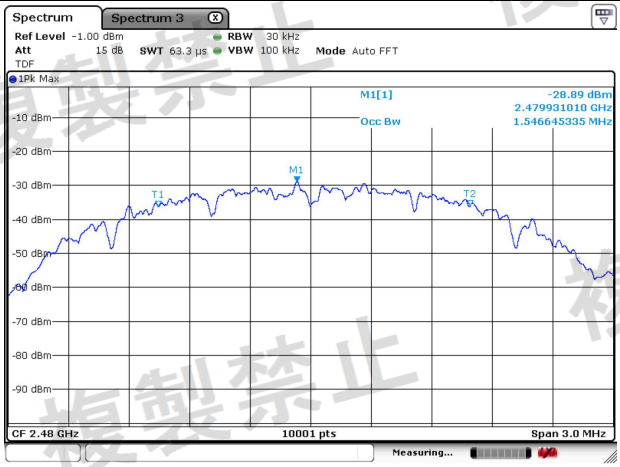
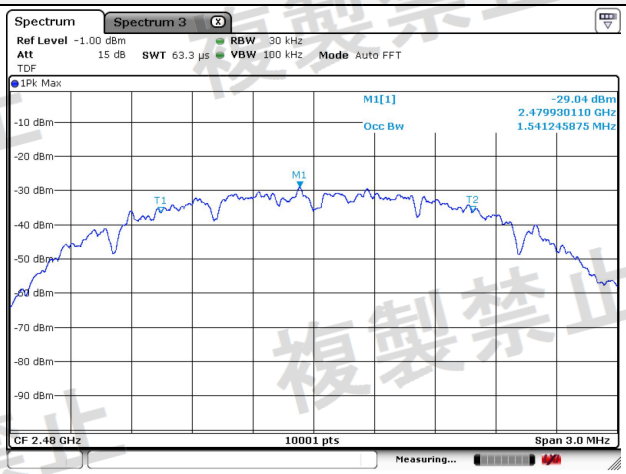




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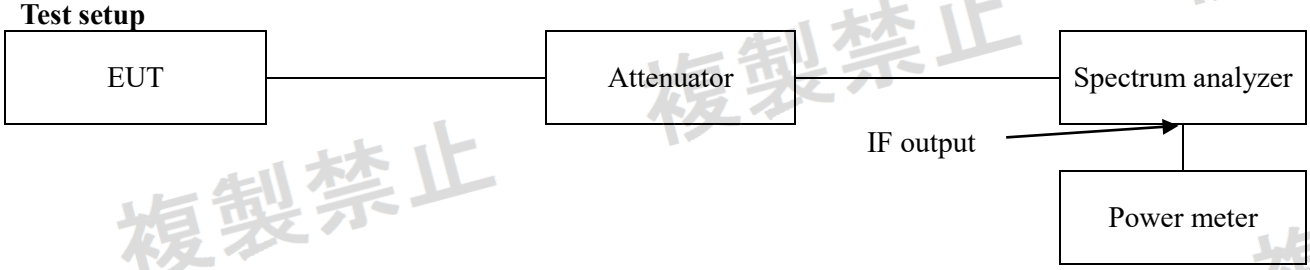
Test plots

ZigBee - Test voltage (90 %)	ZigBee - Test voltage (100 %)
	
ZigBee - Test voltage (110 %)	**-**
	N/A

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3.4. Antenna Power and Tolerances for antenna power

Test setup



Test results

Limit

Rate power : 0.012 6 ㎽ (+20%, -80%)
Upper : 0.015 1 ㎽
Lower : 0.002 5 ㎽

Mode: BLE

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Output power (dBm/㎒)	Output power (㎽)	E.I.R.P (dBm/㎒)	Output power Deviation (%)
90	DC 2.7	2 402	-19.65	0.010 8	-17.85	-13.90
		2 442	-19.88	0.010 3	-18.08	-18.34
		2 480	-19.41	0.011 5	-17.61	-9.01
100	DC 3.0	2 402	-19.66	0.010 8	-17.86	-14.10
		2 442	-19.89	0.010 3	-18.09	-18.53
		2 480	-19.40	0.011 5	-17.60	-8.80
110	DC 3.3	2 402	-19.66	0.010 8	-17.86	-14.10
		2 442	-19.89	0.010 3	-18.09	-18.53
		2 480	-19.42	0.011 4	-17.62	-9.22

Note.

1. Output power is the result which the Burst Ratio is calculated.
2. E.I.R.P : Output power data + Ant. Max peak gain
3. Antenna gain : 1.8 dBi

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Test setup

Limit

Rate power : 0.010 ㎽/㎒ (+20%, -80%)
Upper : 0.012 ㎽/㎒
Lower : 0.002 ㎽/㎒

Mode: ZigBee

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Output power (dBm/㎒)	Output power (㎽/㎒)	E.I.R.P (dBm/㎒)	Output power Deviation (%)
90	DC 2.7	2 480	-20.61	0.008 7	-18.81	-13.10
		-	-	-	-	-
		-	-	-	-	-
100	DC 3.0	2 480	-20.61	0.008 7	-18.81	-13.10
		-	-	-	-	-
		-	-	-	-	-
110	DC 3.3	2 480	-20.60	0.008 7	-18.80	-12.90
		-	-	-	-	-
		-	-	-	-	-

Note.

1. Output power is the result which the Burst Ratio is calculated.
2. E.I.R.P : Output power data + Ant. Max peak gain
3. Antenna gain : 1.8 dBi

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3.5. Spurious emission intensity

Test setup



Test results

Limit

1. Less than 2387 ㎒ : Equal or less than 2.5㎼/㎒ (≒ -26 dBm)
2. 2387 ㎒ ~ 2400 ㎒ : Equal or less than 25㎼/㎒ (≒ -16 dBm)
3. 2483.5 ㎒ ~ 2496.5 ㎒ : Equal or less than 25㎼/㎒ (≒ -16 dBm)
4. More than 2496.5 ㎒ : Equal or less than 2.5㎼/㎒ (≒ -26 dBm)

Mode: BLE

Test item: Less than 2387 ㎒

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Level (dBm)	Verdict
90	DC 2.7	2 402	2 353.94	-63.74	Pass
		2 442	2 381.87	-63.97	Pass
		2 480	2 372.08	-67.17	Pass
100	DC 3.0	2 402	2 354.18	-64.38	Pass
		2 442	1 929.10	-62.05	Pass
		2 480	2 094.74	-67.63	Pass
110	DC 3.3	2 402	2 354.18	-64.75	Pass
		2 442	1 731.96	-64.36	Pass
		2 480	2 372.32	-66.90	Pass

Mode: BLE

Test item: 2387 ㎒ ~ 2400 ㎒

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Level (dBm)	Verdict
90	DC 2.7	2 402	2 399.99	-40.29	Pass
		2 442	2 394.02	-63.27	Pass
		2 480	2 396.37	-66.92	Pass
100	DC 3.0	2 402	2 399.99	-39.64	Pass
		2 442	2 394.39	-63.94	Pass
		2 480	2 395.67	-66.03	Pass
110	DC 3.3	2 402	2 399.99	-39.74	Pass
		2 442	2 394.08	-63.68	Pass
		2 480	2 390.40	-65.72	Pass

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Mode: BLE
Test item: 2483.5 ㎒ ~ 2496.5 ㎒

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Level (dBm)	Verdict
90	DC 2.7	2 402	2 493.10	-57.51	Pass
		2 442	2 490.04	-59.50	Pass
		2 480	2 483.50	-46.58	Pass
100	DC 3.0	2 402	2 487.20	-56.65	Pass
		2 442	2 489.83	-60.02	Pass
		2 480	2 483.50	-46.19	Pass
110	DC 3.3	2 402	2 490.78	-57.32	Pass
		2 442	2 489.67	-59.89	Pass
		2 480	2 483.50	-45.86	Pass

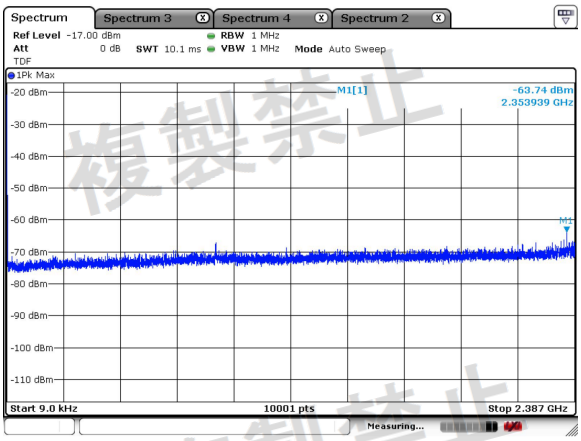
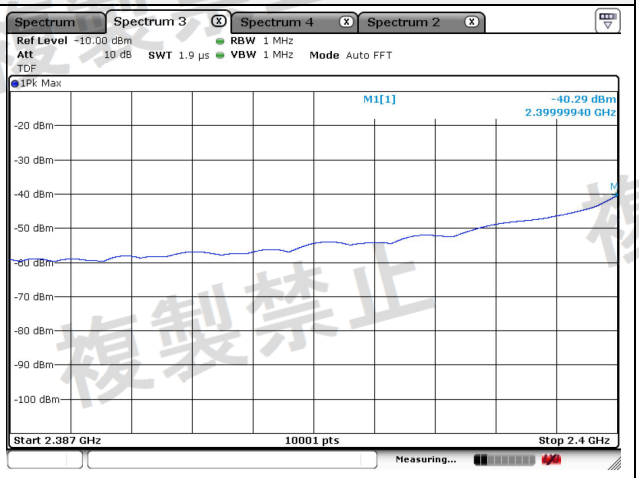
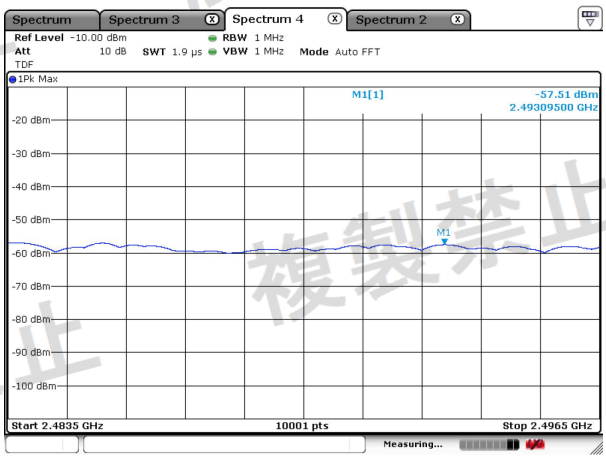
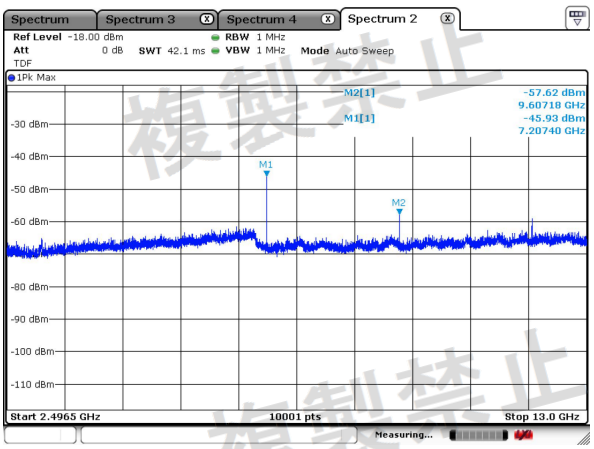
Mode: BLE
Test item: More than 2496.5 ㎒

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Level (dBm)	Verdict
90	DC 2.7	2 402	7 207.40	-45.93	Pass
		2 442	7 325.00	-46.25	Pass
		2 480	7 439.50	-46.92	Pass
100	DC 3.0	2 402	7 207.40	-46.23	Pass
		2 442	7 325.00	-46.44	Pass
		2 480	7 439.50	-46.92	Pass
110	DC 3.3	2 402	7 207.40	-46.09	Pass
		2 442	7 325.00	-46.38	Pass
		2 480	7 439.50	-46.95	Pass

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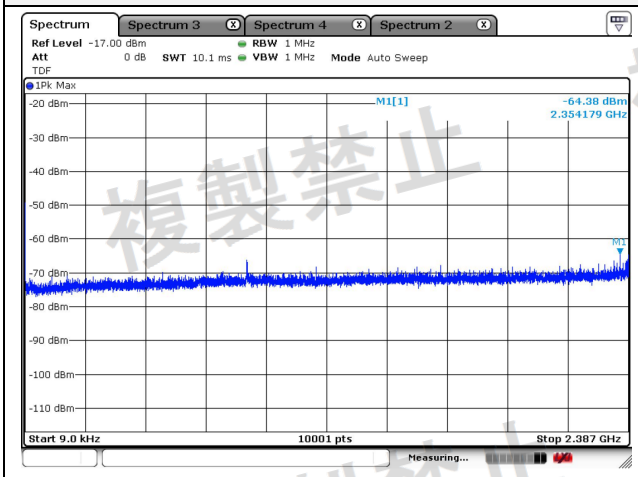
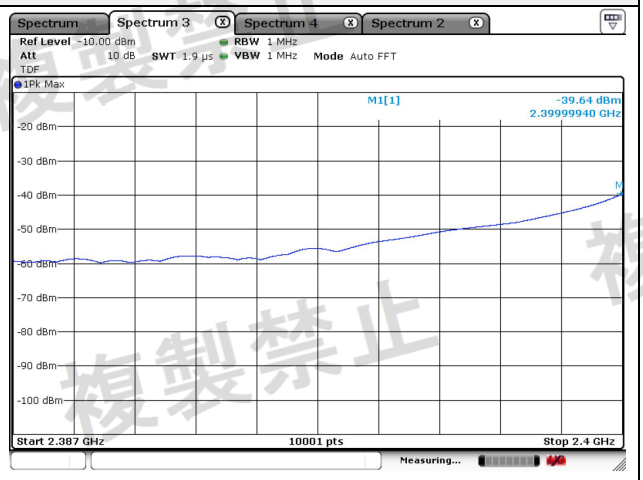
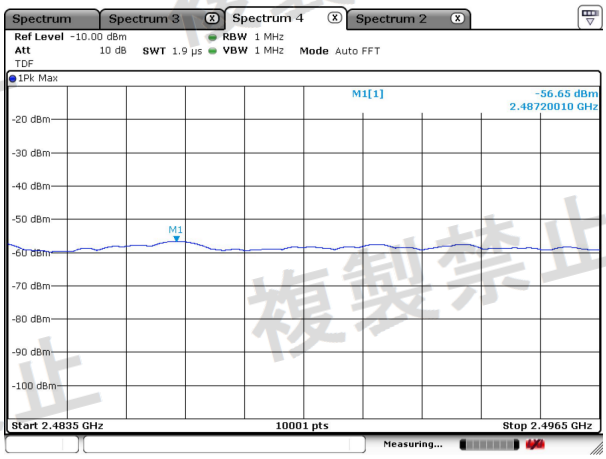
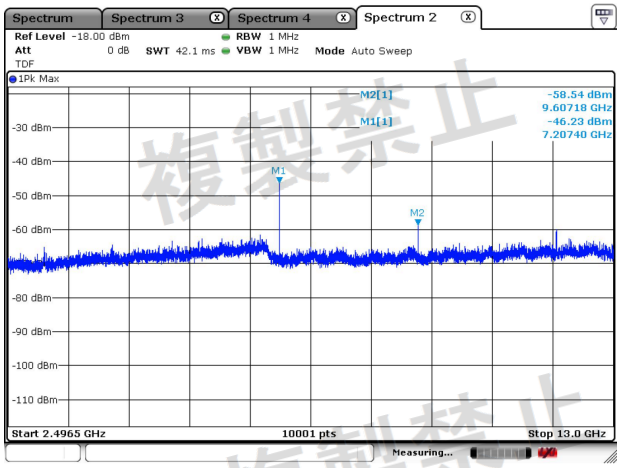
Test plots

Mode: BLE

F1 - Test voltage (90 %)	
Less than 2387 MHz	**2387 MHz ~ 2400 MHz**
	
2483.5 MHz ~ 2496.5 MHz	**More than 2496.5 MHz**
	

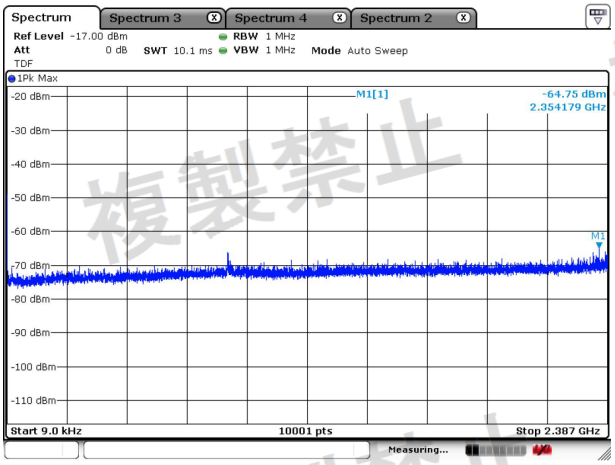
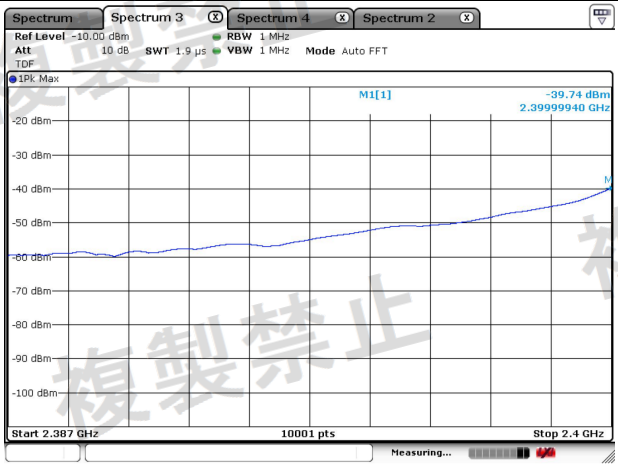
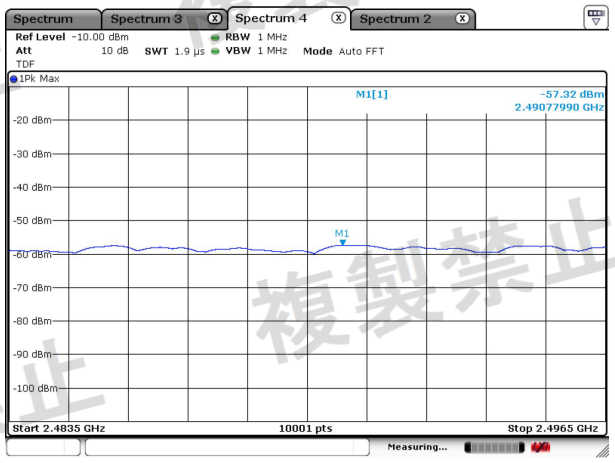
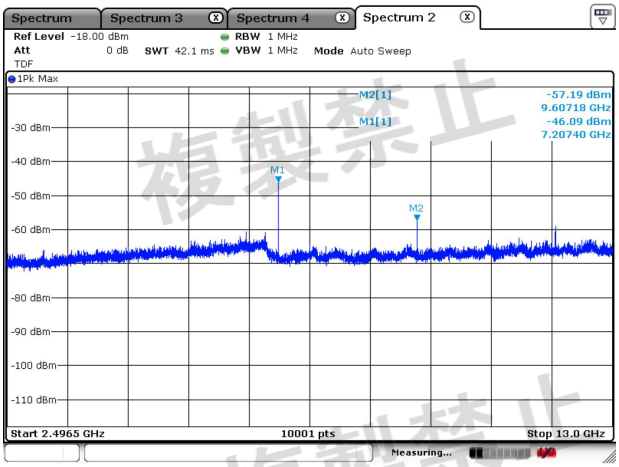
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Mode: BLE

F1 - Test voltage (100 %)	
Less than 2387 MHz	**2387 MHz ~ 2400 MHz**
	
2483.5 MHz ~ 2496.5 MHz	**More than 2496.5 MHz**
	

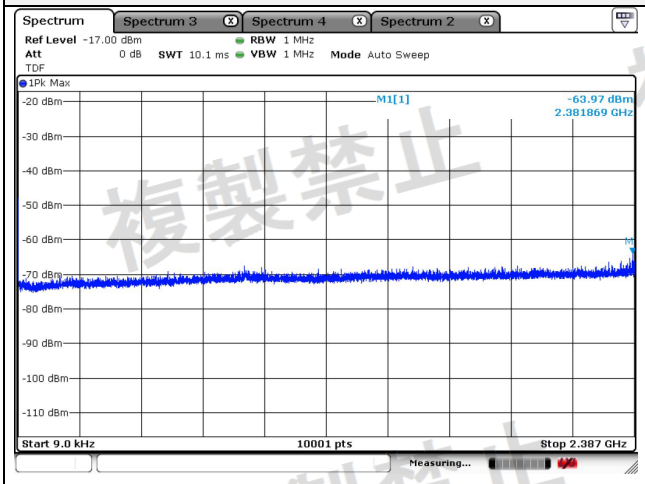
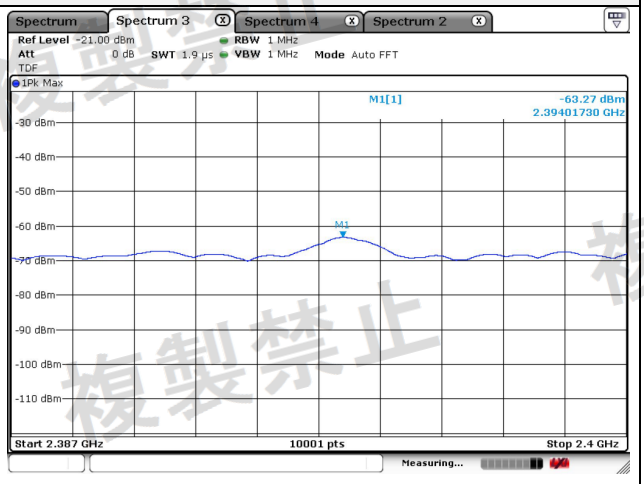
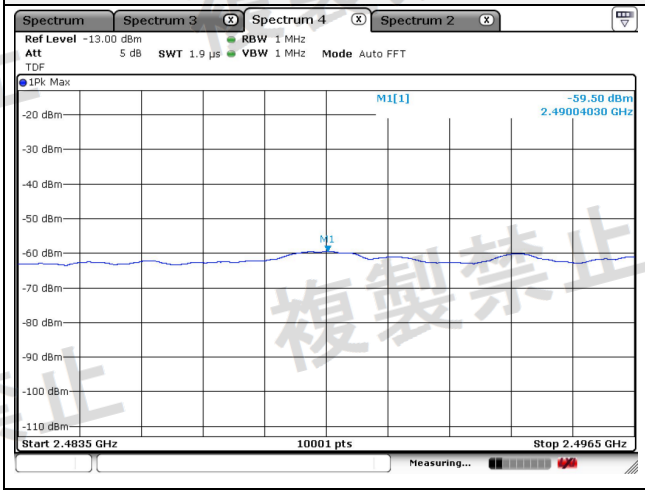
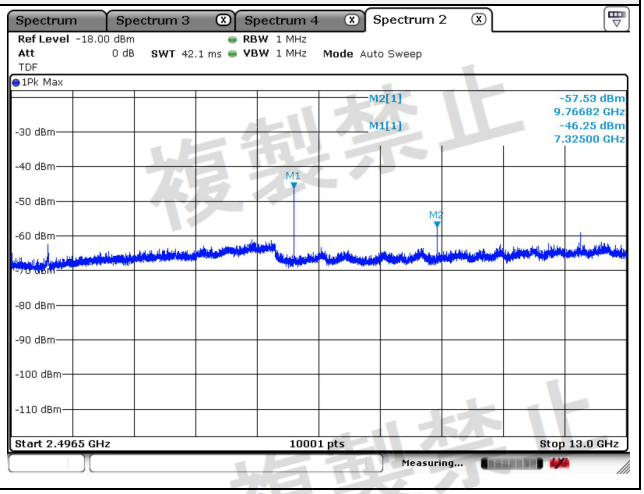
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Mode: BLE

F1 - Test voltage (110 %)	
Less than 2387 MHz	**2387 MHz ~ 2400 MHz**
	
2483.5 MHz ~ 2496.5 MHz	**More than 2496.5 MHz**
	

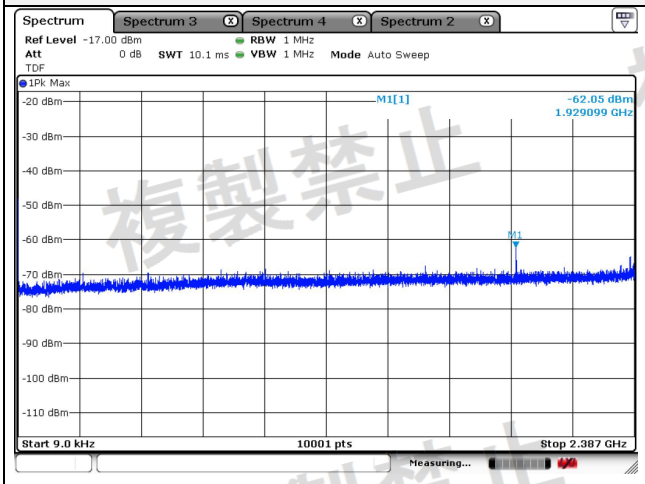
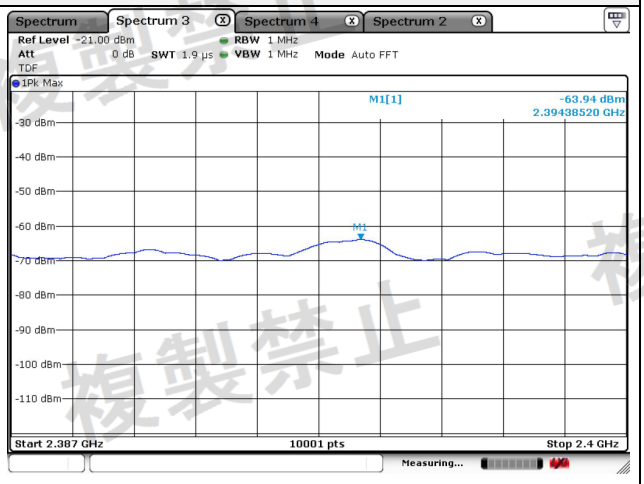
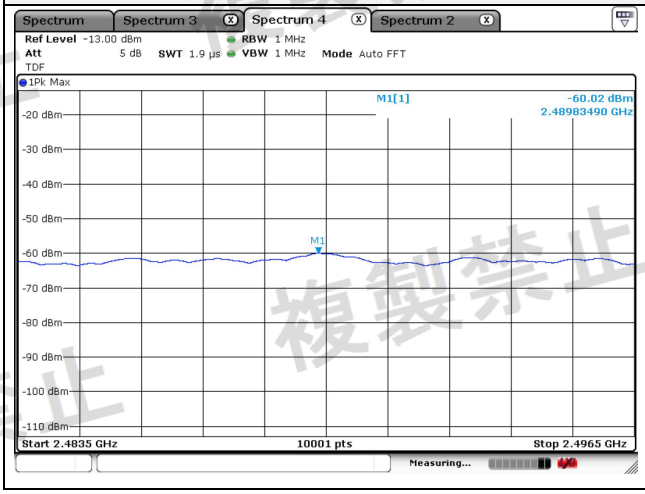
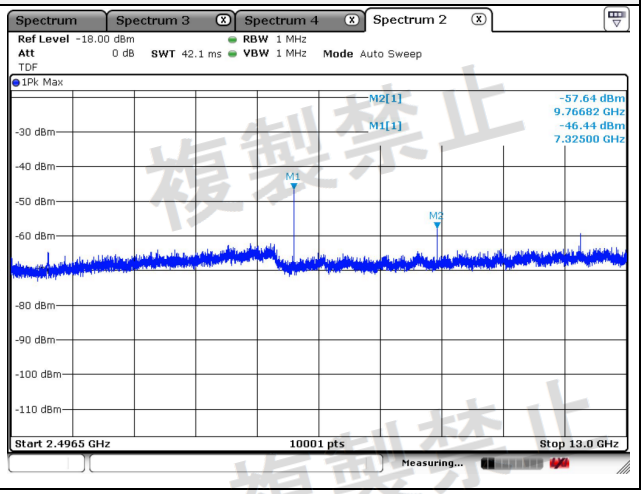
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Mode: BLE

F2 - Test voltage (90 %)	
Less than 2387 MHz	**2387 MHz ~ 2400 MHz**
	
2483.5 MHz ~ 2496.5 MHz	**More than 2496.5 MHz**
	

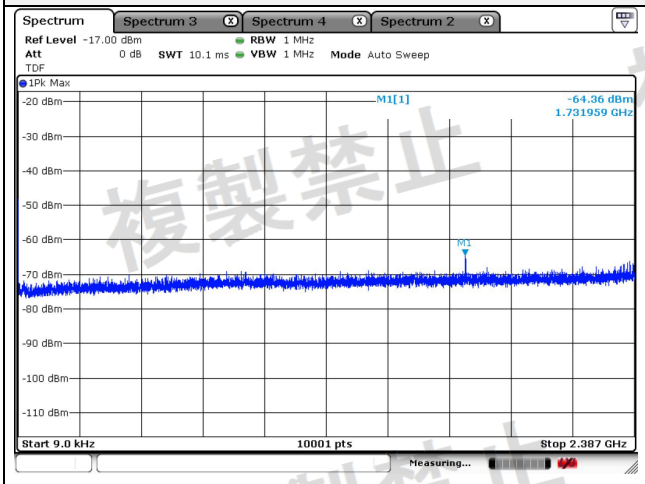
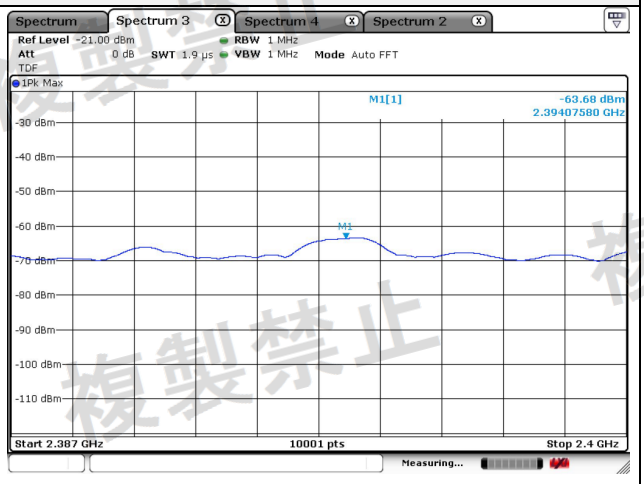
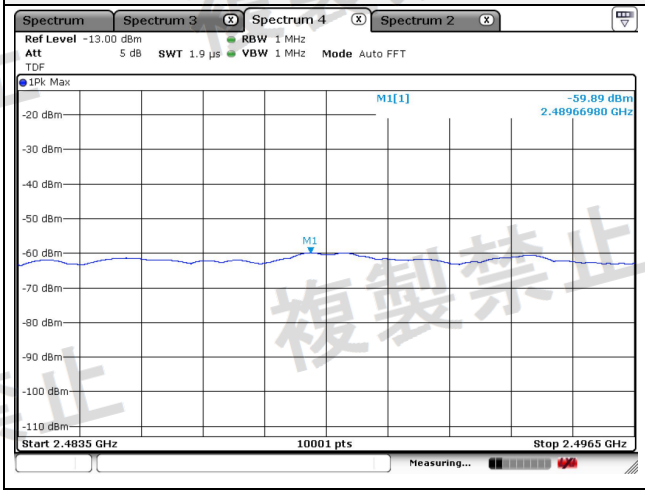
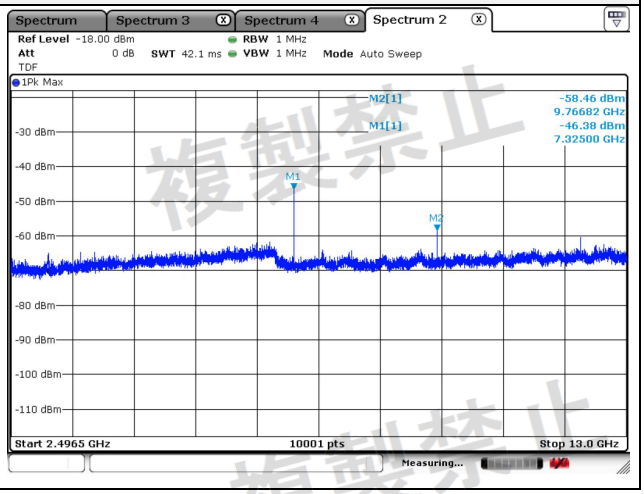
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Mode: BLE

F2 - Test voltage (100 %)	
Less than 2387 MHz	**2387 MHz ~ 2400 MHz**
	
2483.5 MHz ~ 2496.5 MHz	**More than 2496.5 MHz**
	

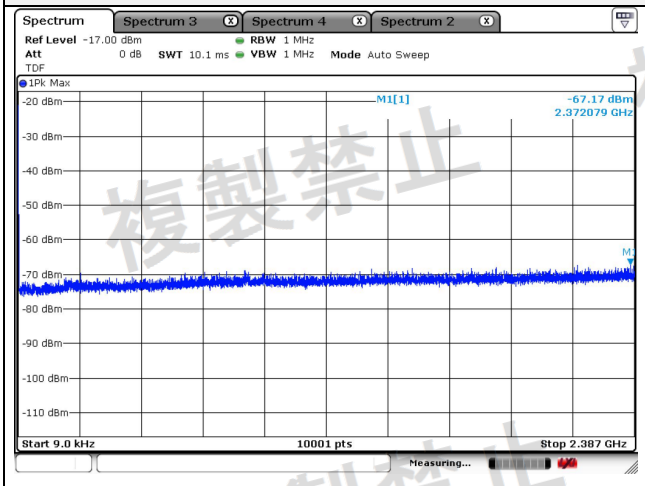
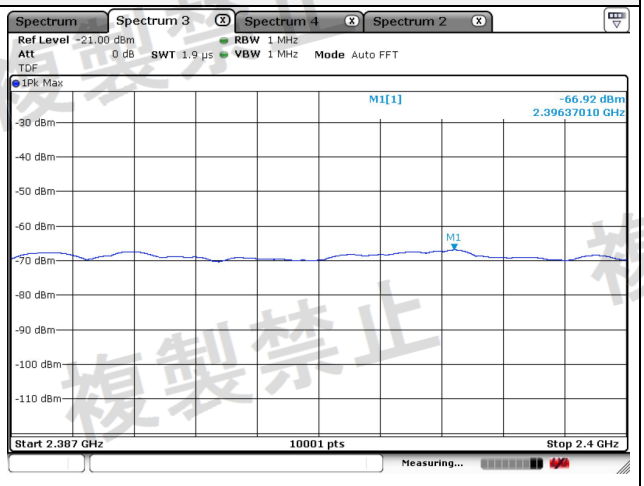
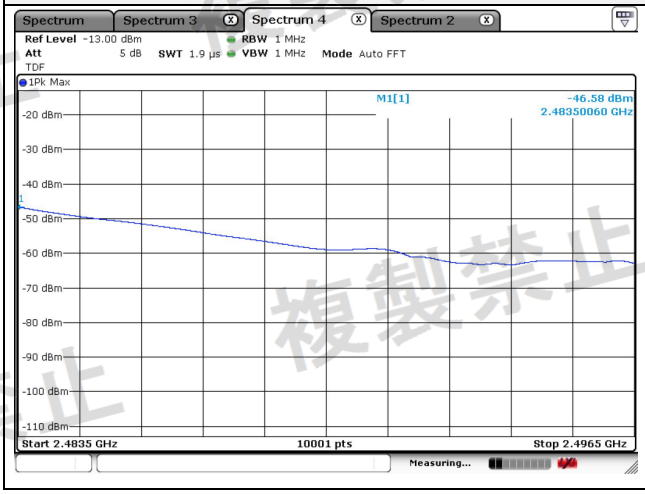
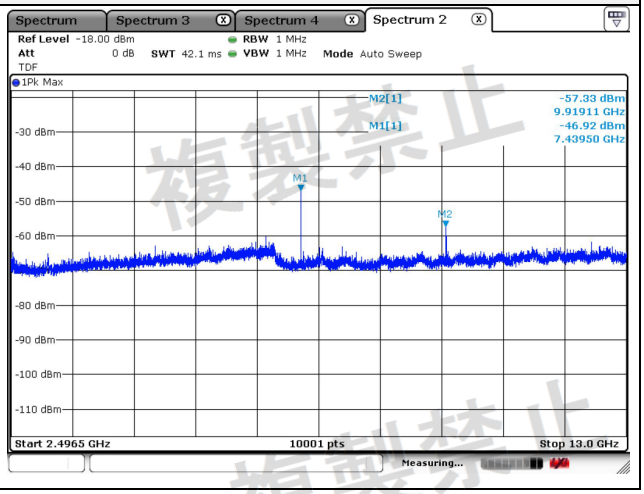
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Mode: BLE

F2 - Test voltage (110 %)	
Less than 2387 MHz	**2387 MHz ~ 2400 MHz**
	
2483.5 MHz ~ 2496.5 MHz	**More than 2496.5 MHz**
	

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Mode: BLE

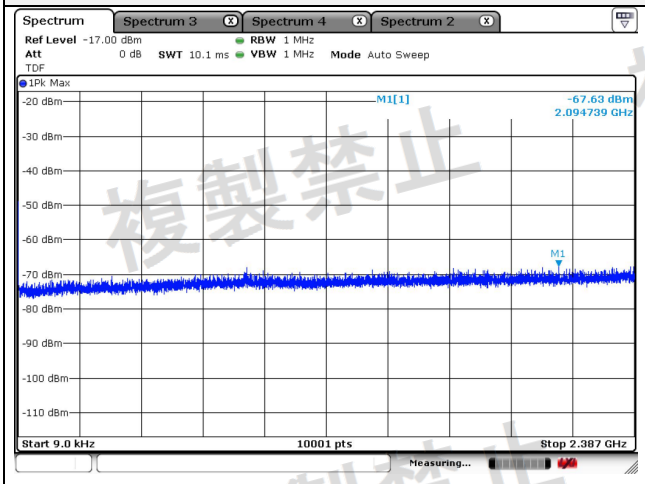
F3 - Test voltage (90 %)	
Less than 2387 MHz	**2387 MHz ~ 2400 MHz**
	
2483.5 MHz ~ 2496.5 MHz	**More than 2496.5 MHz**
	

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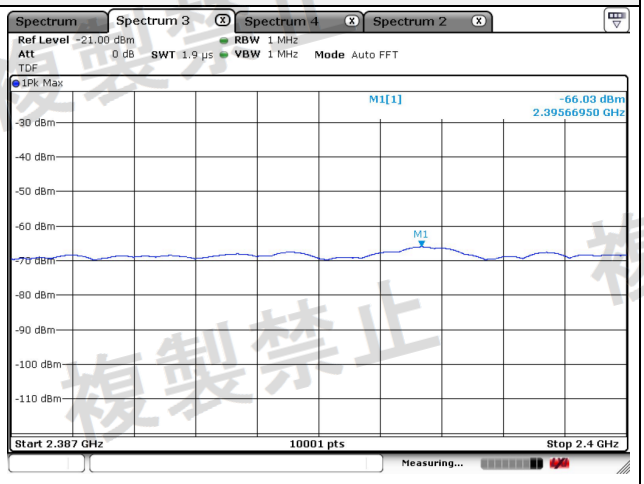
Mode: BLE

F3 - Test voltage (100 %)

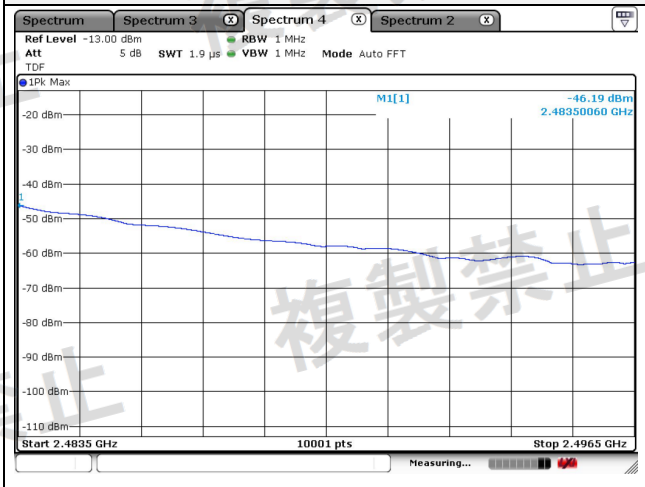
Less than 2387 MHz



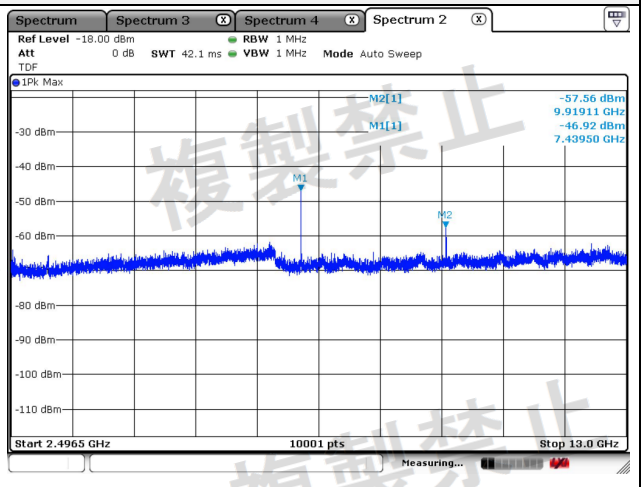
2387 MHz ~ 2400 MHz



2483.5 MHz ~ 2496.5 MHz

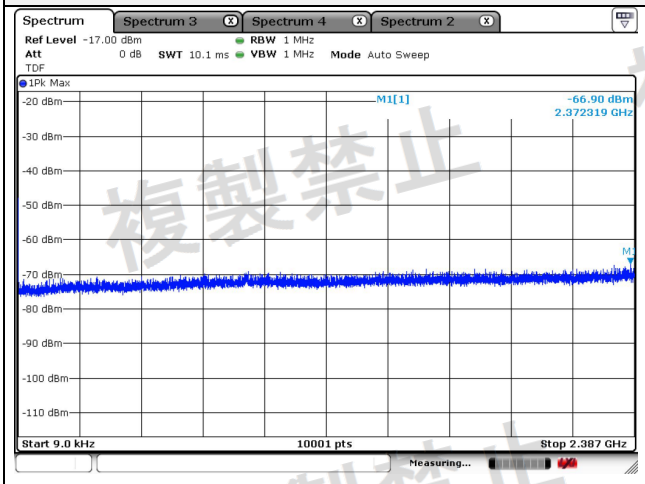
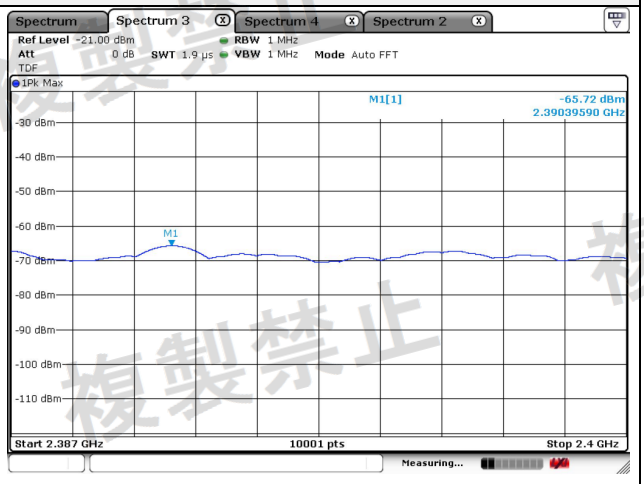
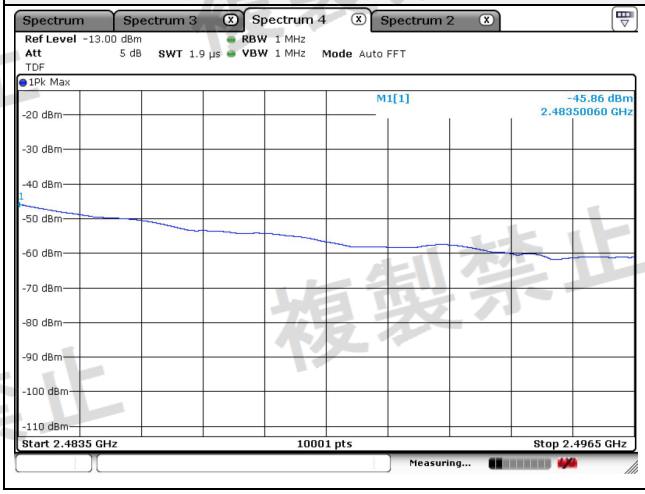
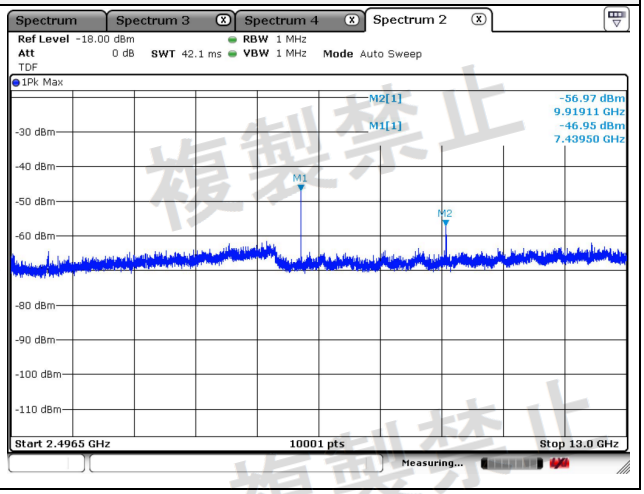


More than 2496.5 MHz



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Mode: BLE

F3 - Test voltage (110 %)	
Less than 2387 MHz	**2387 MHz ~ 2400 MHz**
	
2483.5 MHz ~ 2496.5 MHz	**More than 2496.5 MHz**
	

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Limit

1. Less than 2387 ㎒ : Equal or less than 2.5㎼/㎒ (≒ -26 dBm)
2. 2387 ㎒ ~ 2400 ㎒ : Equal or less than 25㎼/㎒ (≒ -16 dBm)
3. 2483.5 ㎒ ~ 2496.5 ㎒ : Equal or less than 25㎼/㎒ (≒ -16 dBm)
4. More than 2496.5 ㎒ : Equal or less than 2.5㎼/㎒ (≒ -26 dBm)

Mode: ZigBee

Test item: Less than 2387 ㎒

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Level (dBm)	Verdict
90	DC 2.7	2 480	877.26	-66.30	Pass
		-	-	-	-
		-	-	-	-
100	DC 3.0	2 480	2 363.49	-66.64	Pass
		-	-	-	-
		-	-	-	-
110	DC 3.3	2 480	877.50	-64.23	Pass
		-	-	-	-
		-	-	-	-

Mode: ZigBee

Test item: 2387 ㎒ ~ 2400 ㎒

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Level (dBm)	Verdict
90	DC 2.7	2 480	2 388.09	-57.78	Pass
		-	-	-	-
		-	-	-	-
100	DC 3.0	2 480	2 398.08	-57.77	Pass
		-	-	-	-
		-	-	-	-
110	DC 3.3	2 480	2 396.96	-57.65	Pass
		-	-	-	-
		-	-	-	-

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Mode: ZigBee
Test item: 2483.5 ㎒ ~ 2496.5 ㎒

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Level (dBm)	Verdict
90	DC 2.7	2 480	2 483.50	-48.15	Pass
		-	-	-	-
		-	-	-	-
100	DC 3.0	2 480	2 483.50	-45.94	Pass
		-	-	-	-
		-	-	-	-
110	DC 3.3	2 480	2 483.50	-45.91	Pass
		-	-	-	-
		-	-	-	-

Mode: ZigBee
Test item: More than 2496.5 ㎒

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Level (dBm)	Verdict
90	DC 2.7	2 480	7 441.60	-47.12	Pass
		-	-	-	-
		-	-	-	-
100	DC 3.0	2 480	7 441.60	-47.42	Pass
		-	-	-	-
		-	-	-	-
110	DC 3.3	2 480	7 441.60	-47.41	Pass
		-	-	-	-
		-	-	-	-

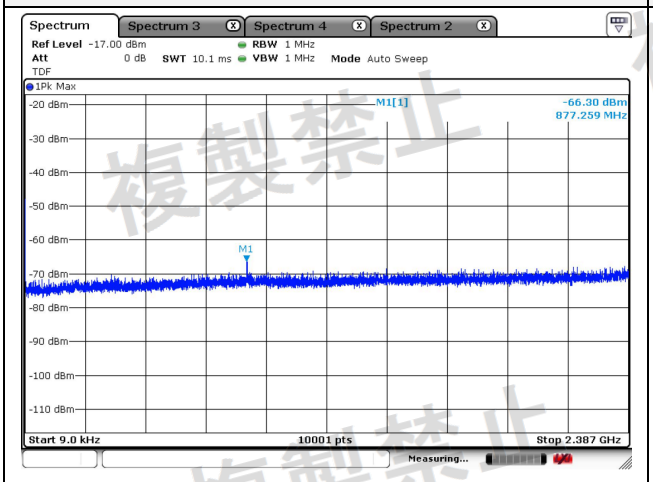
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Test plots

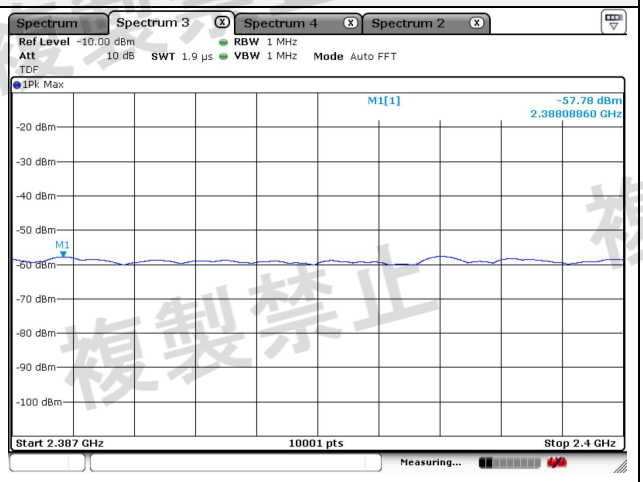
Mode: ZigBee

F1 - Test voltage (90 %)

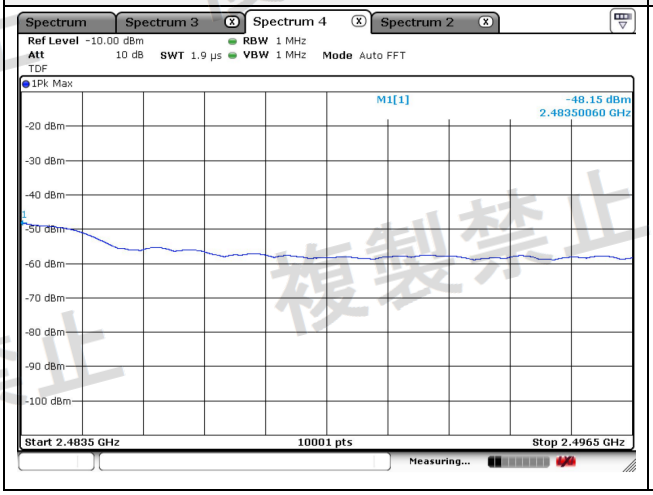
Less than 2387 MHz



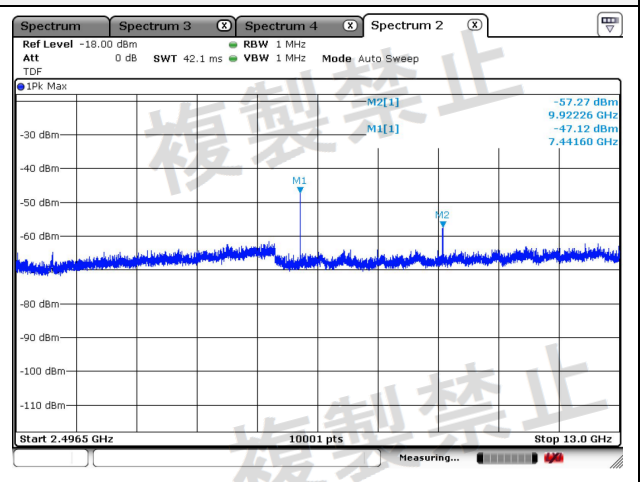
2387 MHz ~ 2400 MHz



2483.5 MHz ~ 2496.5 MHz

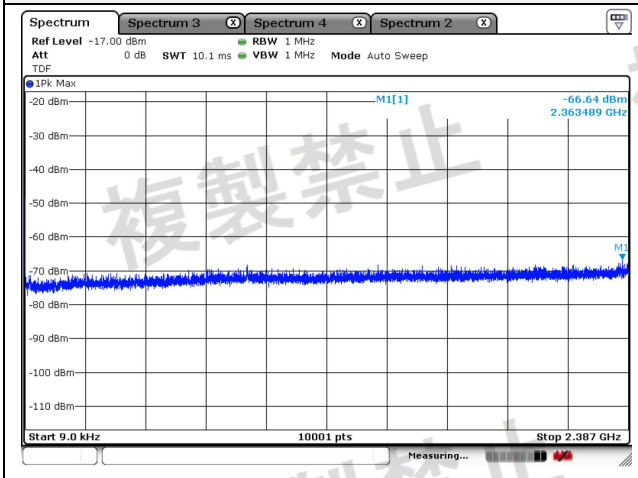
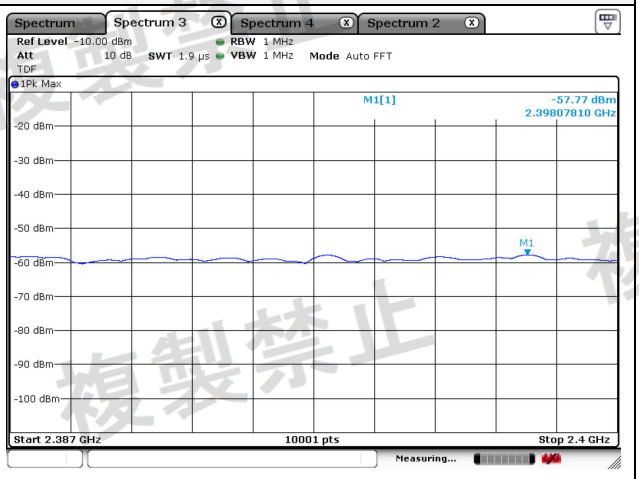
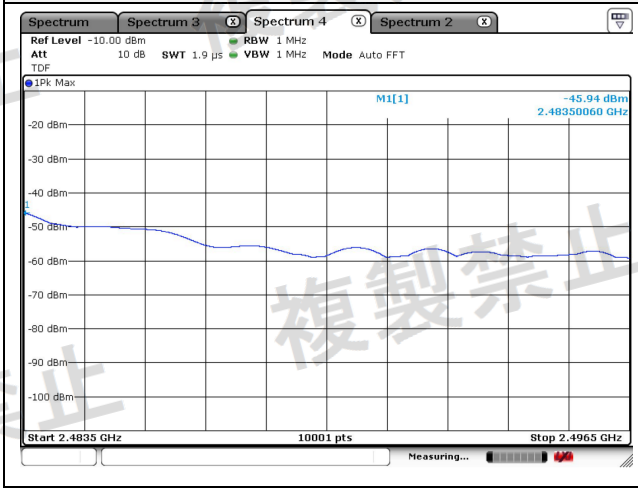
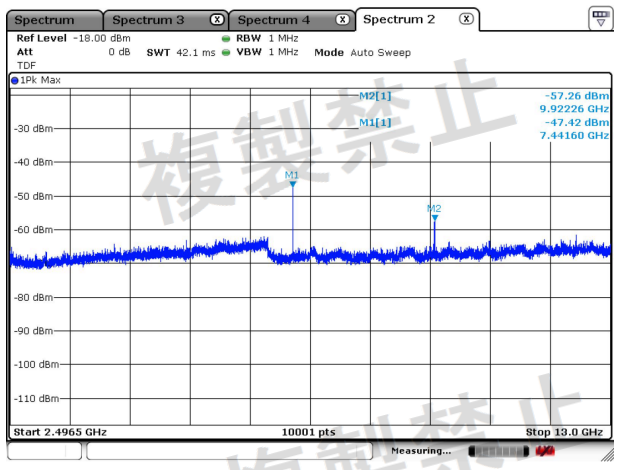


More than 2496.5 MHz



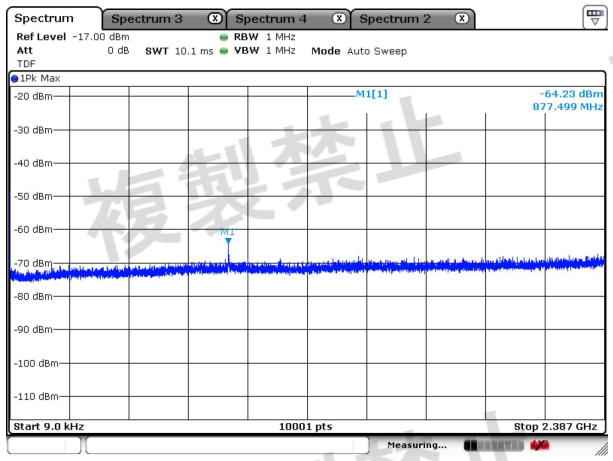
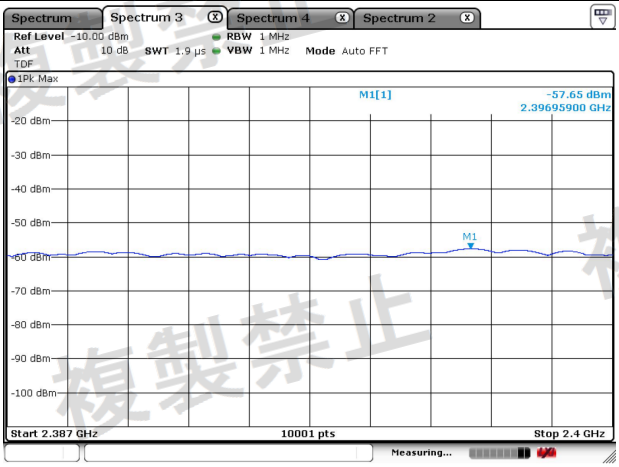
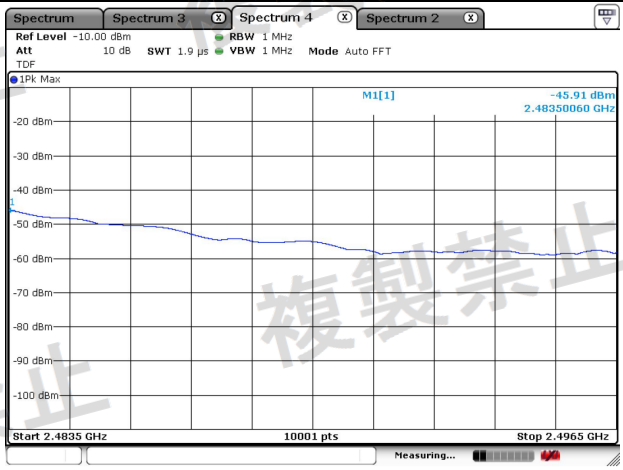
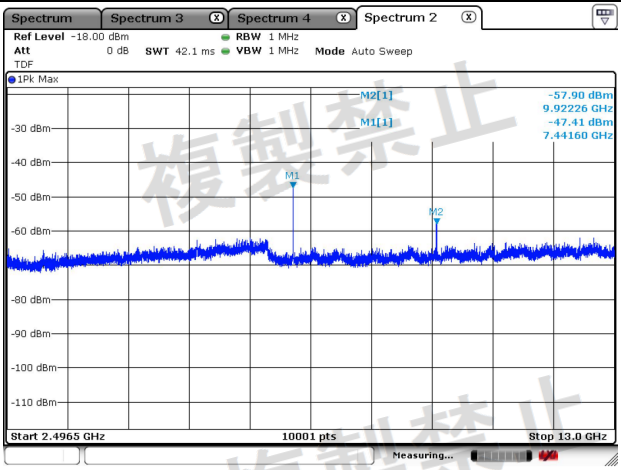
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Mode: ZigBee

F1 - Test voltage (100 %)	
Less than 2387 MHz	**2387 MHz ~ 2400 MHz**
	
2483.5 MHz ~ 2496.5 MHz	**More than 2496.5 MHz**
	

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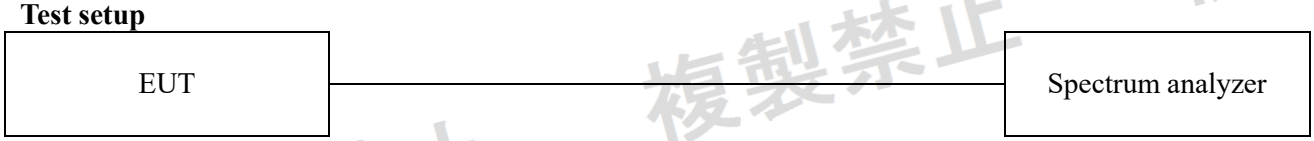
Mode: ZigBee

F1 - Test voltage (110 %)	
Less than 2387 MHz	**2387 MHz ~ 2400 MHz**
	
2483.5 MHz ~ 2496.5 MHz	**More than 2496.5 MHz**
	

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3.6. Secondary radiated emissions

Test setup



Limit

1. Less than 1㎓ : Equal or less than 4 ㎼(-53.97 ㏈m)
2. 1㎓ ~ less than 12.75 ㎓ : Equal or less than 20 ㎼(-46.98 ㏈m)

Test results

Mode: BLE

Test item: Less than ~ 1 ㎓

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Level (dBm)	Verdict
90	DC 2.7	2 402	875.66	-75.27	Pass
		2 442	875.46	-76.14	Pass
		2 480	876.36	-73.70	Pass
100	DC 3.0	2 402	875.66	-77.10	Pass
		2 442	875.76	-77.18	Pass
		2 480	875.36	-75.19	Pass
110	DC 3.3	2 402	877.66	-76.06	Pass
		2 442	876.36	-77.16	Pass
		2 480	877.16	-74.62	Pass

Mode: BLE

Test item: 1 ㎓ ~ less than 12.75 ㎓

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Level (dBm)	Verdict
90	DC 2.7	2 402	1 919.70	-56.78	Pass
		2 442	1 919.70	-56.78	Pass
		2 480	1 919.70	-56.89	Pass
100	DC 3.0	2 402	1 919.70	-56.80	Pass
		2 442	1 919.70	-56.70	Pass
		2 480	1 919.70	-57.00	Pass
110	DC 3.3	2 402	1 919.70	-56.95	Pass
		2 442	1 919.70	-56.81	Pass
		2 480	1 919.70	-56.77	Pass

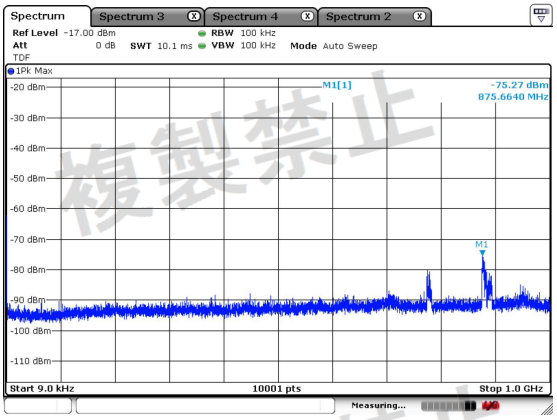
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Test plots

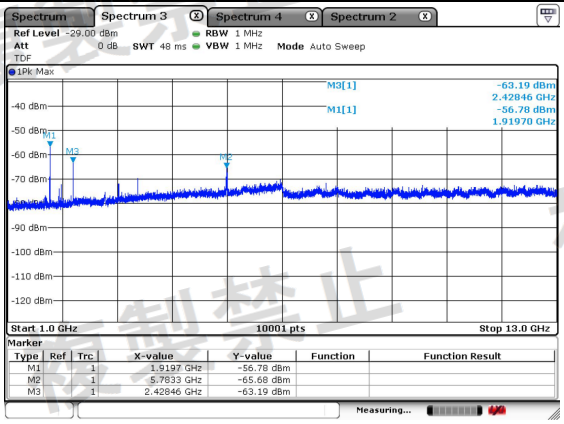
Mode: BLE

F1 - Test voltage (90 %)

Less than 1 GHz

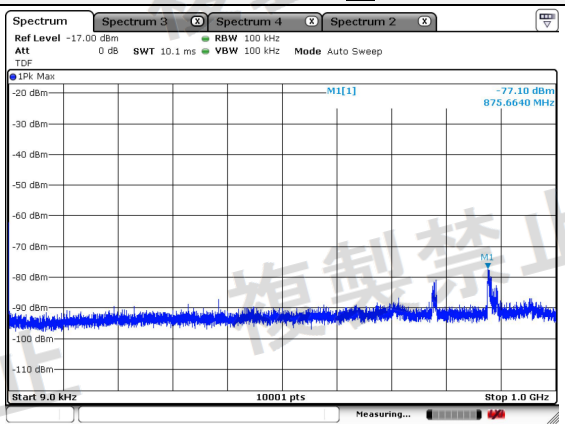


1 GHz ~ 12.5 GHz

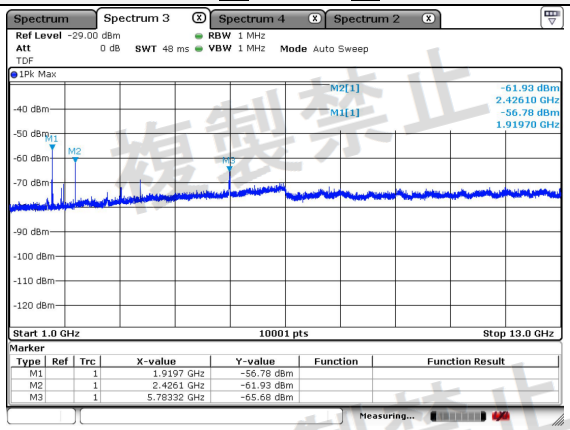


F1 - Test voltage (100 %)

Less than 1 GHz

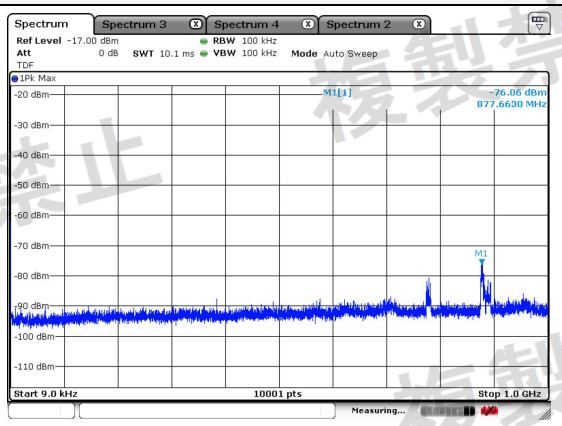


1 GHz ~ 12.5 GHz

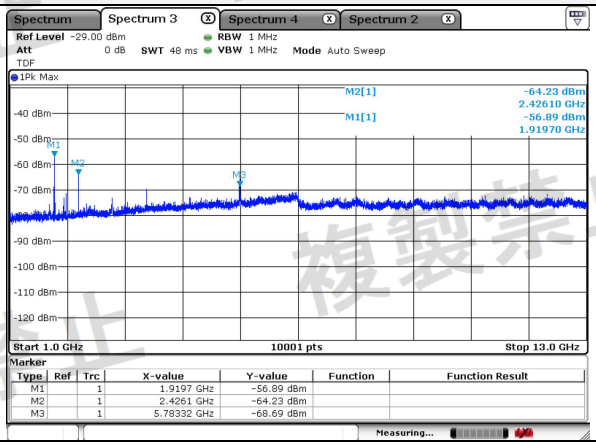


F1 - Test voltage (110 %)

Less than 1 GHz



1 GHz ~ 12.5 GHz

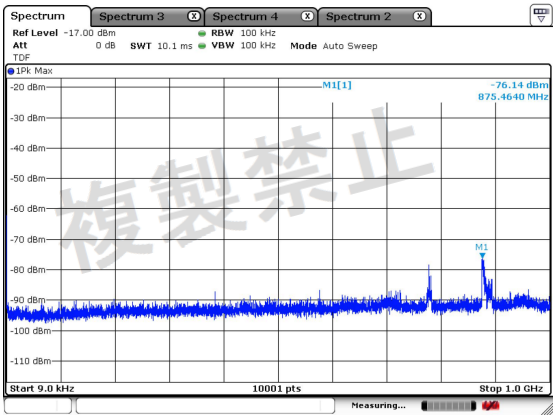


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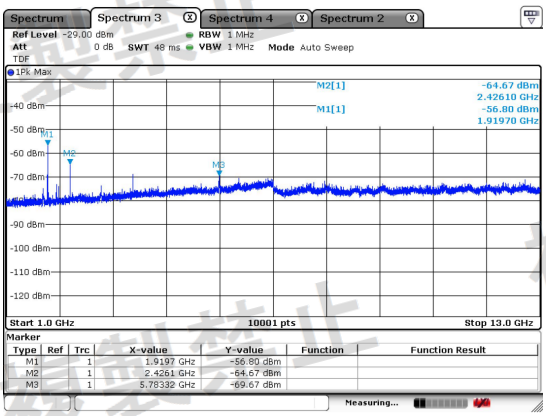
Mode: BLE

F2 - Test voltage (90 %)

Less than 1 GHz

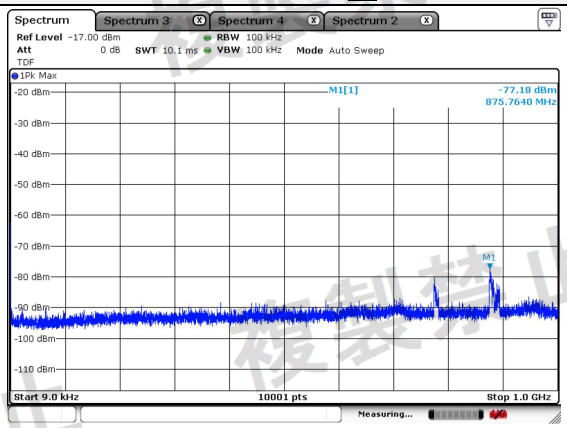


1 GHz ~ 12.5 GHz

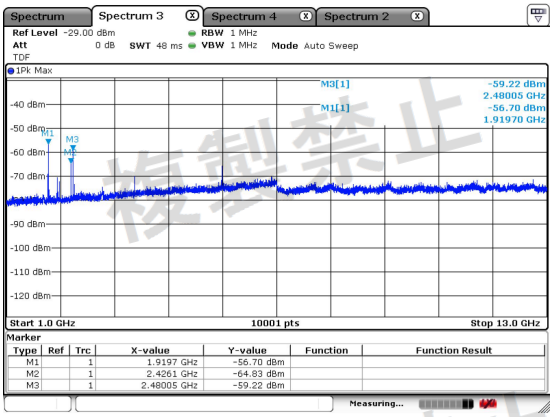


F2 - Test voltage (100 %)

Less than 1 GHz

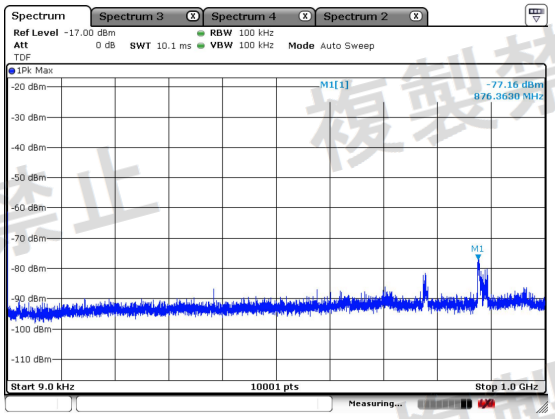


1 GHz ~ 12.5 GHz

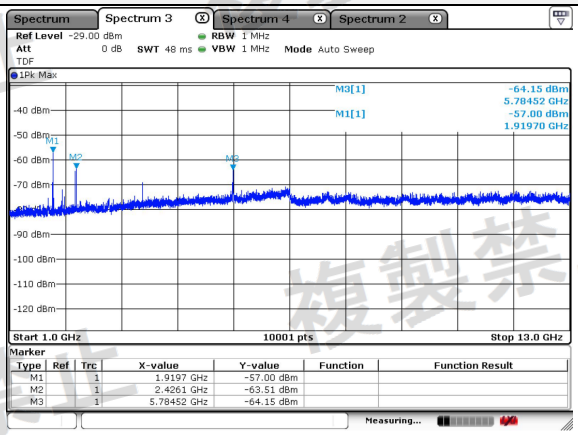


F2 - Test voltage (110 %)

Less than 1 GHz

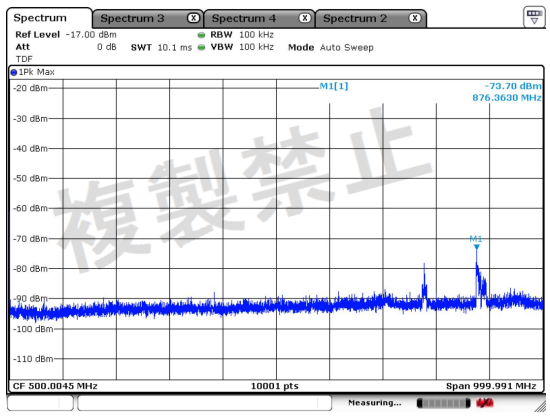
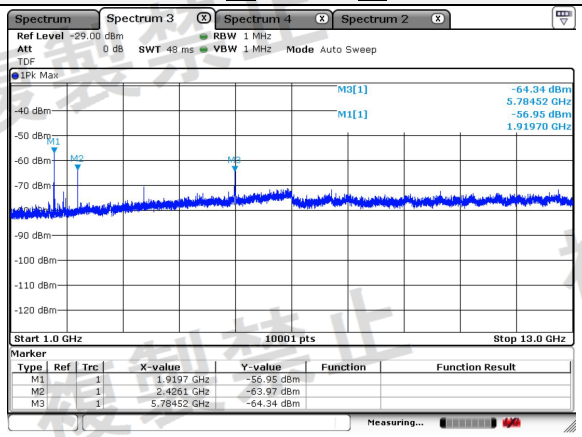
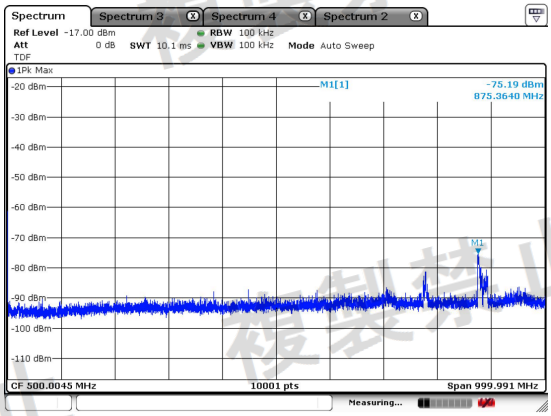
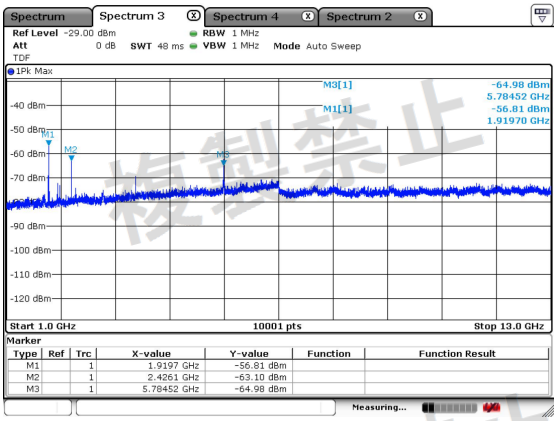
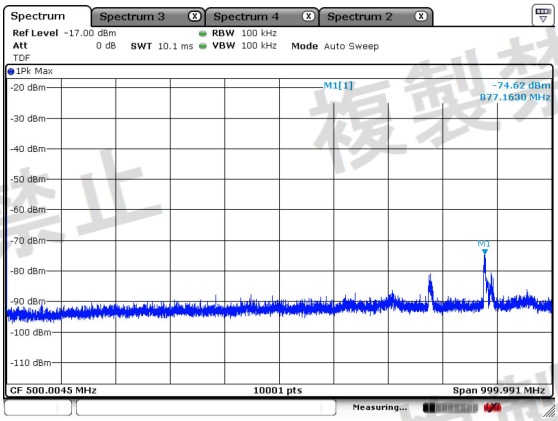
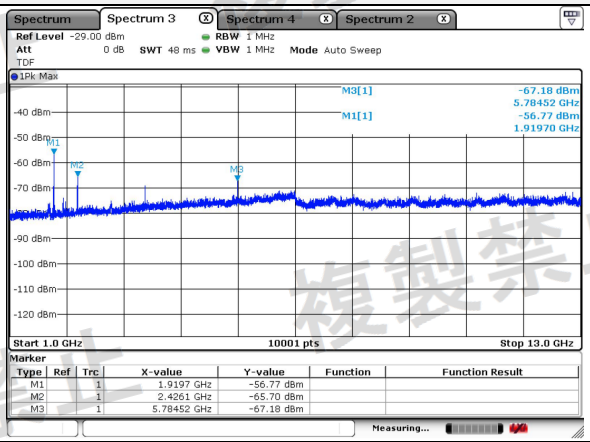


1 GHz ~ 12.5 GHz



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Mode: BLE

F3 - Test voltage (90 %)	
Less than 1 ㎓	**1 ㎓ ~ 12.5 ㎓**
	
F3 - Test voltage (100 %)	
Less than 1 ㎓	**1 ㎓ ~ 12.5 ㎓**
	
F3 - Test voltage (110 %)	
Less than 1 ㎓	**1 ㎓ ~ 12.5 ㎓**
	

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Limit

1. Less than 1㎓ : Equal or less than 4 ㎱(≒ -53.97 ㏈m)
2. 1㎓ ~ less than 12.75 ㎓ : Equal or less than 20 ㎱(≒ -46.98 ㏈m)

Test results

Mode: ZigBee

Test item: Less than ~ 1 ㎓

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Level (dBm)	Verdict
90	DC 2.7	2 480	876.56	-75.27	Pass
		-	-	-	-
		-	-	-	-
100	DC 3.0	2 480	877.36	-76.94	Pass
		-	-	-	-
		-	-	-	-
110	DC 3.3	2 480	875.76	-73.73	Pass
		-	-	-	-
		-	-	-	-

Mode: ZigBee

Test item: 1 ㎓ ~ less than 12.75 ㎓

Test voltage (%)	Nominal Voltage (V)	Frequency (㎒)	Measure frequency (㎒)	Level (dBm)	Verdict
90	DC 2.7	2 480	1 919.70	-56.75	Pass
		-	-	-	-
		-	-	-	-
100	DC 3.0	2 480	1 919.70	-56.84	Pass
		-	-	-	-
		-	-	-	-
110	DC 3.3	2 480	1 919.70	-56.82	Pass
		-	-	-	-
		-	-	-	-

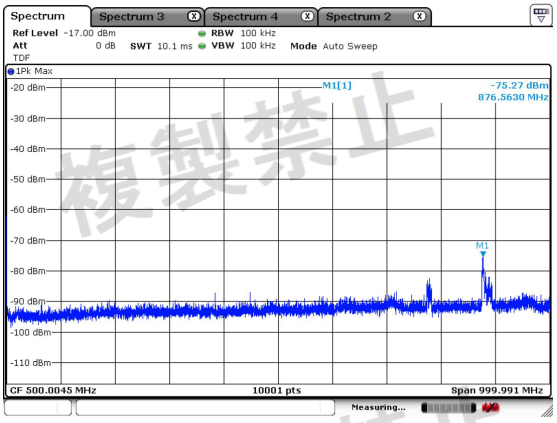
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Test plots

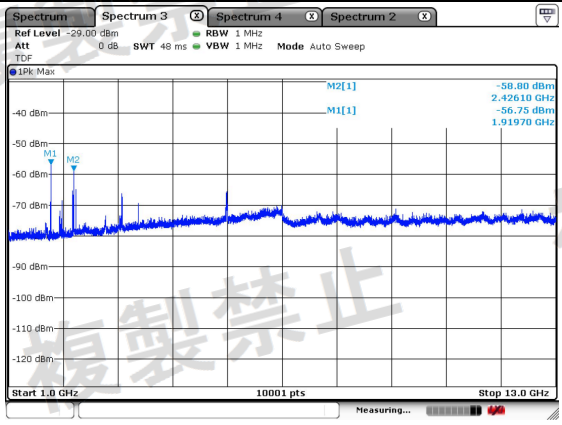
Mode: ZigBee

F1 - Test voltage (90 %)

Less than 1 GHz

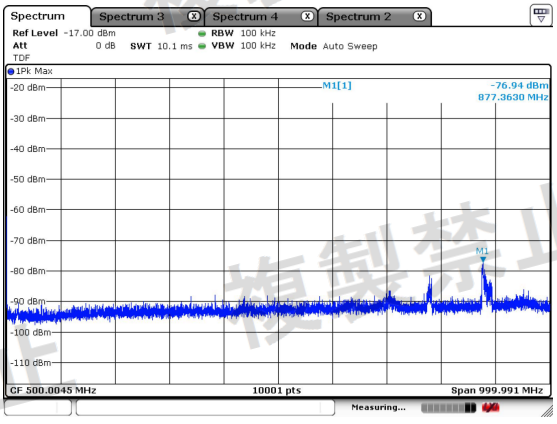


1 GHz ~ 12.5 GHz

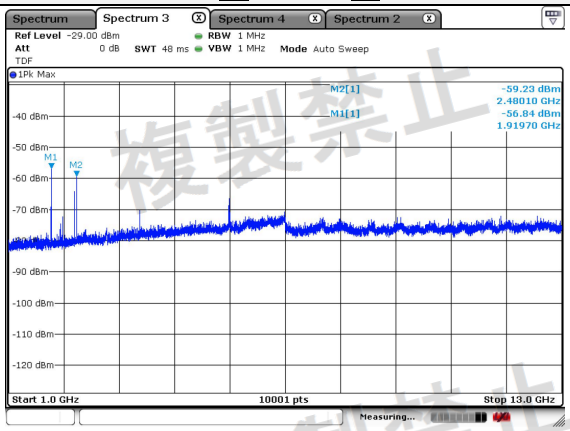


F1 - Test voltage (100 %)

Less than 1 GHz

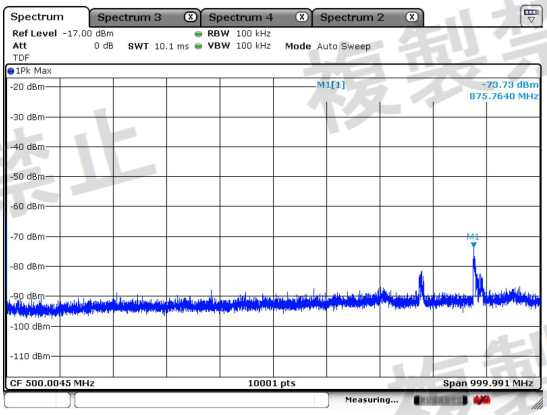


1 GHz ~ 12.5 GHz

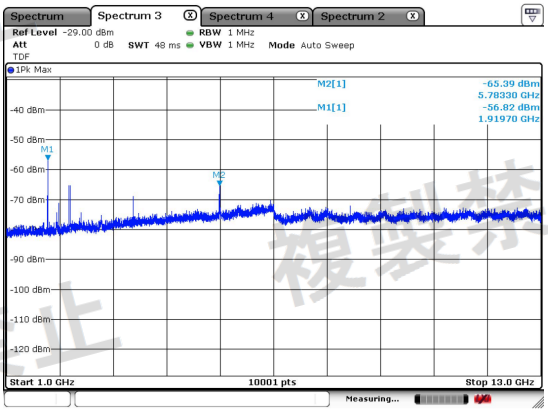


F1 - Test voltage (110 %)

Less than 1 GHz



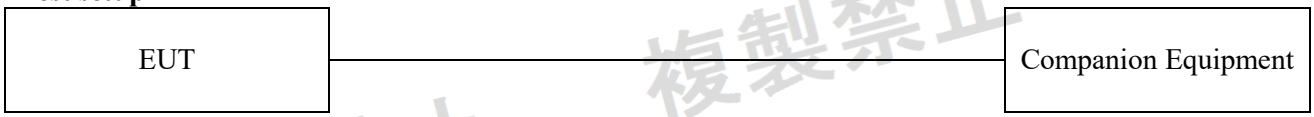
1 GHz ~ 12.5 GHz



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3.7. Interference prevention function

Test setup



Limit

The identification code shall be 48 bits long.

Test results

Test voltage (%)	Nominal Voltage (V)	Mode	Identification code	Verdict
100	DC 3.0	BLE	A8:3F:A1:C2:29:D4	Pass

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Appendix A. Measurement equipment

Equipment 24-2 paragraph4 「ハ」	Manufacturer	Model	Serial No.	Calibration Interval	Calibration Lab	Calibration due.
Spectrum Analyzer	R&S	FSV40-N	102194	1 year	HCT	2022.06.18
8360B SERIES SEPT SIGNAL GENERATOR	HP	83630B	3844A00786	1 year	HCT	2022.01.15
SYNTHESIZED SIGNAL GENERATOR	KEYSIGHT	N5182B	MY59100115	1 year	HCT	2022.04.29
Power Meter	Anritsu	ML2495A	2010001	1 year	HCT	2022.04.29
Pulse Power Sensor	Anritsu	MA2411B	1911111	1 year	HCT	2022.04.29
Attenuator	Mini-Circuits	BW-S10-2W263+	1	Attenuator	HCT	2022.01.18
DC Power supply	Agilent	6632B	MY43004090	1 year	HCT	2022.06.21
MICROWAVE FREQUENCY COUNTER	HP	5351B	3049A01295	1 year	HCT	2022.04.29

Peripheral devices

Device	Manufacturer	Model No.	Serial No.
Notebook computer	LG Electronics Inc.,	15ND530-GX50K	311QCFT567147

The end of test report.

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