

TEST REPORT

Report No..... : KS2301S0290E02

FCC ID..... : 2A9V5-S1800

Applicant..... : TIANJIN CETC NEW ENERGY RESEARCH INSTITUTE Co.,LTD

Address..... : No.6, 7th HuaKe Road,Hi-Tech, Binhai New Technology Industrial Area, Tianjin

Manufacturer..... : TIANJIN CETC NEW ENERGY RESEARCH INSTITUTE Co.,LTD

Address..... : No.6, 7th HuaKe Road,Hi-Tech, Binhai New Technology Industrial Area, Tianjin

Product Name..... : Portable Power Station

Trademark..... : Lantian Intelligent Power

Model/Type reference..... : S1800, S1800W

Standard..... : 47 CFR Part 15.247

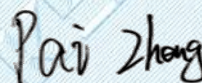
Date of Receipt..... : January 11, 2023

Date of Test Date..... : January 11, 2023 to March 24, 2023

Date of issue..... : March 24, 2023

Test result..... : Pass

Prepared by:
(Printed name + Signature) Pai Zheng



Approved by:
(Printed name + Signature) Sky Dong



Testing Laboratory Name....: KSIGN(Guangdong) Testing Co., Ltd.

Address..... : West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

This test report may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by KSIGN. The test results in the report only apply to the tested sample. The test report shall be invalid without all the signatures of testing engineers, reviewer and approver. Any objections must be raised to KSIGN within 15 days since the date when the report is received. It will not be taken into consideration beyond this limit. The test report merely corresponds to the test sample. The report is invalid if it is not stamped with the "Testing Special Stamp" and the "Riding Seam Stamp".

TABLE OF CONTENTS

Page

1. TEST SUMMARY	3
1.1. Test Standards	3
1.2. Report Version	3
1.3. Test Description	4
1.4. Test Facility	5
1.5. Measurement Uncertainty	6
2. GENERAL INFORMATION	7
2.1. General Description Of EUT	7
2.2. Accessory Equipment Information	7
2.3. Description of Test Modes	7
2.4. Measurement Instruments List	8
3. EVALUATION RESULTS (EVALUATION)	12
3.1. Antenna requirement	12
4. RADIO SPECTRUM MATTER TEST RESULTS (RF)	13
4.1. Conducted Emission at AC power line	13
4.2. Occupied Bandwidth	16
4.3. Maximum Conducted Output Power	17
4.4. Power Spectral Density	19
4.5. Band edge emissions (Radiated)	20
4.6. Emissions in restricted frequency bands (below 1GHz)	25
4.7. Emissions in restricted frequency bands (above 1GHz)	28
5. EUT TEST PHOTOS	35
6. PHOTOGRAPHS OF EUT CONSTRUCTIONAL	37
7. APPENDIX	38
7.1. Appendix A: DTS Bandwidth	38
7.2. Appendix B: Occupied Channel Bandwidth	42
7.3. Appendix C: Maximum conducted output power	46
7.4. Appendix D: Maximum power spectral density	50
7.5. Appendix E: Reference level measurement	54
7.6. Appendix F: Band edge measurements	58
7.7. Appendix G: Conducted Spurious Emission	61
7.8. Appendix H: Duty Cycle	67

1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

47 CFR Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

1.2. Report Version

Revised No.	Date of issue	Description
01	March 24, 2023	Original

1.3. Test Description

Test Item	Standard	Requirement	Result
Antenna requirement	47 CFR Part 15.247	Part 15.203	Pass
Conducted Emission at AC power line	47 CFR Part 15.247	47 CFR 15.207(a)	Pass
Occupied Bandwidth	47 CFR Part 15.247	47 CFR 15.247(a)(2)	Pass
Maximum Conducted Output Power	47 CFR Part 15.247	47 CFR 15.247(b)(3)	Pass
Power Spectral Density	47 CFR Part 15.247	47 CFR 15.247(e)	Pass
Band edge emissions (Radiated)	47 CFR Part 15.247	47 CFR 15.247(d)	Pass
Emissions in restricted frequency bands (below 1GHz)	47 CFR Part 15.247	47 CFR 15.247(d)	Pass
Emissions in restricted frequency bands (above 1GHz)	47 CFR Part 15.247	47 CFR 15.247(d)	Pass

1.4. Test Facility

KSIGN(Guangdong) Testing Co., Ltd.

West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L13261

KSIGN(Guangdong) Testing Co., Ltd. has been assessed and proved to be in Compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 5457.01

KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing

ISED#: 25693 CAB identifier.: CN0096

KSIGN(Guangdong) Testing Co., Ltd. has been listed by Innovation, Science and Economic Development Canada to perform electromagnetic emission measurement.

FCC-Registration No.: 294912 Designation Number: CN1328

KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

1.5. Measurement Uncertainty

Test Items	Measurement Uncertainty
Conducted Emission (150k-30MHz)	$\pm 3.34\text{dB}$
Output Power, Conducted	$\pm 1.4\text{dB}$
PSD, Conducted	$\pm 1.0\text{dB}$
Spurious Emissions, Conducted	$\pm 3.3\text{dB}$
RSE (1-18GHz)	$\pm 4.68\text{dB}$
RSE (30-1000MHz)	$\pm 5.7\text{dB}$
RSE (18-40GHz)	$\pm 5.18\text{dB}$

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

2. GENERAL INFORMATION

2.1. General Description Of EUT

Test Sample Number:	1-1(Normal Sample), 1-2(Engineering Sample)
Product Name:	Portable Power Station
Trademark:	Lantian Intelligent Power
Model / Type reference:	S1800, S1800W
Model Difference:	The product model is named according to the market demand. The difference between models is that the model name is different. Other power supply modes, internal structures, circuits and key components are the same, which will not affect the safety and electromagnetic compatibility performance.
Power Supply:	Input: AC 100-240V~50/60Hz 5.0A Output: 30.0V $\overline{\sim}$ 12.0A 360W Battery: DC 25.6V, 50Ah(1280Wh) Wireless Charging Output($\times$ 2): 15W
Power Adaptor:	Model: KT360A3001200B3 Input: 100-240V~50/60Hz 5.0A Output: 30.0V $\overline{\sim}$ 12.0A 360W
Operation Frequency:	2402MHz to 2480MHz
Number of Channels:	40
Test Channel:	CH00:2402MHz,CH19:2440MHz,CH39:2480MHz
Channel separation:	2MHz
Modulation Type:	GFSK
Antenna Type:	PCB Antenna
Antenna Gain:	2.54 dBi
Max TX Power:	7.04 dBm
Hardware Version:	V1.0
Software Version:	V1.0

2.2. Accessory Equipment Information

Title	Manufacturer	Model No.	Serial No.
Adapter	N/A	KT360A3001200B3	N/A

2.3. Description of Test Modes

No.	Title	Description of Mode
Test Mode1	TX mode	Keep the EUT connect to AC power line and works in continuously transmitting mode with GFSK modulation.

2.4. Measurement Instruments List

Conducted Emission at AC power line				
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
LISN	R&S	ENV432	1326.6105.02	2024-02-17
EMI Test Receiver	R&S	ESR	102524	2024-02-17
Manual RF Switch	JS TOYO	/	MSW-01/002	2024-02-17
ISN CAT6	Schwarzbeck	CAT5 8158	227	2024-02-17
Color Signal Generator	Philips	PM5418	672926	2024-02-17
Power Absorbing Clamp	R&S	MDS-21	100925	2024-02-19

Occupied Bandwidth				
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Wideband Radio Communication Tester	R&S	CMU200	115297	2024-02-17
Audio Analyzer	R&S	UPL16	100001	2024-02-17
Shielding box	Gxiong	GX-5915A	2201113	2024-02-17
High Pass Filter	COM-MW Technology Co., Ltd	ZHPF-M1.2-9G-1 87	09203403	2024-02-17
Band Stop Filter	COM-MW Technology Co., Ltd	ZBSF6-C820-920 -188	09203401	2024-02-17
Splitter	COM-MW Technology Co., Ltd	ZPD-M1-8-2103	09203407	2024-02-17
Coaxial Cable	BEBES	A40-2.92M2.92F-4.5M	1907021	2024-02-17
Hygrothermograph	Anymetre	JB913	/	2024-02-17
Climate Chamber	Angul	AGNH80L	1903042120	2024-02-17
Spectrum Analyzer	HP	8593E	3831U02087	2024-02-17
Dual Output DC Power Supply	Agilent	E3646A	MY40009992	2024-02-17
RF Control Unit	Tonscend	JS0806-2	/	2024-02-17
Analog Signal Generator	HP	83752A	3344A00337	2024-02-17
Vector Signal Generator	Agilent	N5182A	MY50142520	2024-02-17
Wideband Radio Communication Tester	R&S	CMW500	157282	2024-02-17
Spectrum Analyzer	R&S	FSV40-N	101798	2024-02-17

Maximum Conducted Output Power				
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Wideband Radio Communication Tester	R&S	CMU200	115297	2024-02-17
Audio Analyzer	R&S	UPL16	100001	2024-02-17
Shielding box	Gxiong	GX-5915A	2201113	2024-02-17
High Pass Filter	COM-MW Technology Co., Ltd	ZHPF-M1.2-9G-1 87	09203403	2024-02-17
Band Stop Filter	COM-MW Technology Co., Ltd	ZBSF6-C820-920 -188	09203401	2024-02-17
Splitter	COM-MW Technology Co., Ltd	ZPD-M1-8-2103	09203407	2024-02-17
Coaxial Cable	BEBES	A40-2.92M2.92F-4.5M	1907021	2024-02-17
Hygrothermograph	Anymetre	JB913	/	2024-02-17

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

Climate Chamber	Angul	AGNH80L	1903042120	2024-02-17
Spectrum Analyzer	HP	8593E	3831U02087	2024-02-17
Dual Output DC Power Supply	Agilent	E3646A	MY40009992	2024-02-17
RF Control Unit	Tonscend	JS0806-2	/	2024-02-17
Analog Signal Generator	HP	83752A	3344A00337	2024-02-17
Vector Signal Generator	Agilent	N5182A	MY50142520	2024-02-17
Wideband Radio Communication Tester	R&S	CMW500	157282	2024-02-17
Spectrum Analyzer	R&S	FSV40-N	101798	2024-02-17

Power Spectral Density				
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Wideband Radio Communication Tester	R&S	CMU200	115297	2024-02-17
Audio Analyzer	R&S	UPL16	100001	2024-02-17
Shielding box	Gxiong	GX-5915A	2201113	2024-02-17
High Pass Filter	COM-MW Technology Co., Ltd	ZHPF-M1.2-9G-1 87	09203403	2024-02-17
Band Stop Filter	COM-MW Technology Co., Ltd	ZBSF6-C820-920 -188	09203401	2024-02-17
Splitter	COM-MW Technology Co., Ltd	ZPD-M1-8-2103	09203407	2024-02-17
Coaxial Cable	BEBES	A40-2.92M2.92F-4.5M	1907021	2024-02-17
Hygrothermograph	Anymetre	JB913	/	2024-02-17
Climate Chamber	Angul	AGNH80L	1903042120	2024-02-17
Spectrum Analyzer	HP	8593E	3831U02087	2024-02-17
Dual Output DC Power Supply	Agilent	E3646A	MY40009992	2024-02-17
RF Control Unit	Tonscend	JS0806-2	/	2024-02-17
Analog Signal Generator	HP	83752A	3344A00337	2024-02-17
Vector Signal Generator	Agilent	N5182A	MY50142520	2024-02-17
Wideband Radio Communication Tester	R&S	CMW500	157282	2024-02-17
Spectrum Analyzer	R&S	FSV40-N	101798	2024-02-17

Emissions in non-restricted frequency bands				
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Wideband Radio Communication Tester	R&S	CMU200	115297	2024-02-17
Audio Analyzer	R&S	UPL16	100001	2024-02-17
Shielding box	Gxiong	GX-5915A	2201113	2024-02-17
High Pass Filter	COM-MW Technology Co., Ltd	ZHPF-M1.2-9G-1 87	09203403	2024-02-17
Band Stop Filter	COM-MW Technology Co., Ltd	ZBSF6-C820-920 -188	09203401	2024-02-17
Splitter	COM-MW Technology Co., Ltd	ZPD-M1-8-2103	09203407	2024-02-17
Coaxial Cable	BEBES	A40-2.92M2.92F-4.5M	1907021	2024-02-17
Hygrothermograph	Anymetre	JB913	/	2024-02-17

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

Climate Chamber	Angul	AGNH80L	1903042120	2024-02-17
Spectrum Analyzer	HP	8593E	3831U02087	2024-02-17
Dual Output DC Power Supply	Agilent	E3646A	MY40009992	2024-02-17
RF Control Unit	Tonscend	JS0806-2	/	2024-02-17
Analog Signal Generator	HP	83752A	3344A00337	2024-02-17
Vector Signal Generator	Agilent	N5182A	MY50142520	2024-02-17
Wideband Radio Communication Tester	R&S	CMW500	157282	2024-02-17
Spectrum Analyzer	R&S	FSV40-N	101798	2024-02-17

Band edge emissions (Radiated)				
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Color Signal Generator	Philips	PM5418	672926	2024-02-17
Ultra-Broadband logarithmic period Antenna	Schwarzbeck	VULB 9163	1230	2025-02-18
Pre-Amplifier	Schwarzbeck	BBV 9745	9745#129	2024-02-17
Broadcast Television Signal Generator	R&S	SFE100	141038	2024-02-17
Analog Signal Generator	Agilent	8648A	3847M00445	2024-02-17
EMI Test Receiver	R&S	ESR	102525	2024-02-17
Loop Antenna	Beijin ZHINAN	ZN30900C	18050	2024-02-19
Horn Antenna	Schwarzbeck	BBHA 9120 D	2023	2026-02-19
Pre-Amplifier	EMCI	EMC051835SE	980662	2024-02-17
Spectrum Analyzer	Keysight	N9020A	MY46471971	2024-02-17

Emissions in restricted frequency bands (below 1GHz)				
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Color Signal Generator	Philips	PM5418	672926	2024-02-17
Ultra-Broadband logarithmic period Antenna	Schwarzbeck	VULB 9163	1230	2025-02-18
Pre-Amplifier	Schwarzbeck	BBV 9745	9745#129	2024-02-17
Broadcast Television Signal Generator	R&S	SFE100	141038	2024-02-17
Analog Signal Generator	Agilent	8648A	3847M00445	2024-02-17
EMI Test Receiver	R&S	ESR	102525	2024-02-17
Loop Antenna	Beijin ZHINAN	ZN30900C	18050	2024-02-19
Horn Antenna	Schwarzbeck	BBHA 9120 D	2023	2026-02-19
Pre-Amplifier	EMCI	EMC051835SE	980662	2024-02-17
Spectrum Analyzer	Keysight	N9020A	MY46471971	2024-02-17

Emissions in restricted frequency bands (above 1GHz)				
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Color Signal Generator	Philips	PM5418	672926	2024-02-17
Ultra-Broadband logarithmic period Antenna	Schwarzbeck	VULB 9163	1230	2025-02-18
Pre-Amplifier	Schwarzbeck	BBV 9745	9745#129	2024-02-17

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com

Broadcast Television Signal Generator	R&S	SFE100	141038	2024-02-17
Analog Signal Generator	Agilent	8648A	3847M00445	2024-02-17
EMI Test Receiver	R&S	ESR	102525	2024-02-17
Loop Antenna	Beijin ZHINAN	ZN30900C	18050	2024-02-19
Horn Antenna	Schwarzbeck	BBHA 9120 D	2023	2026-02-19
Pre-Amplifier	EMCI	EMC051835SE	980662	2024-02-17
Spectrum Analyzer	Keysight	N9020A	MY46471971	2024-02-17

3. Evaluation Results (Evaluation)

3.1. Antenna requirement

Test Requirement:	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.
-------------------	--

3.1.1. Conclusion:

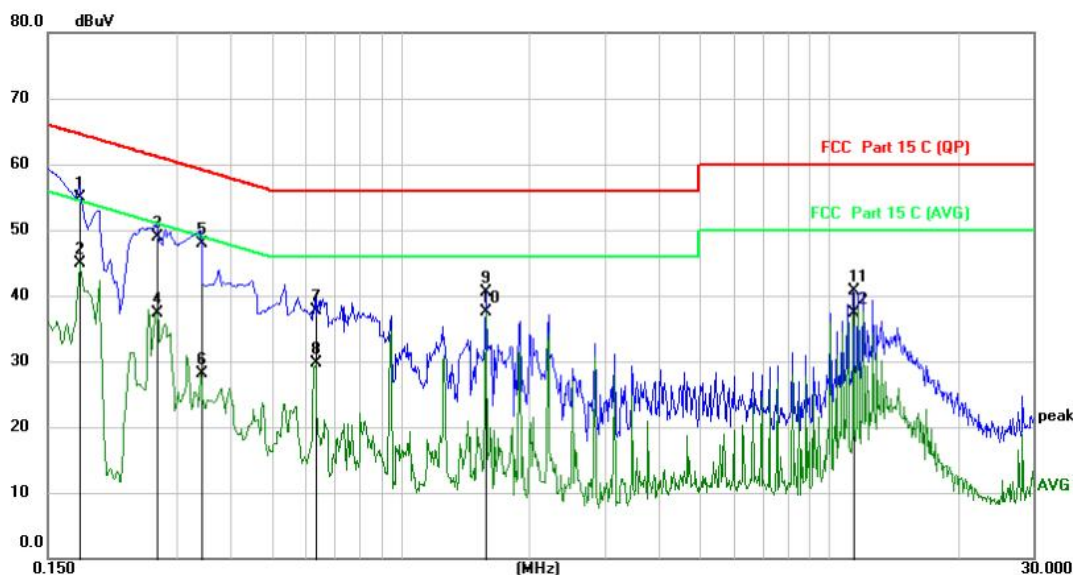
The antenna gain is 2.54dB, the directional gain of the antenna less than 6dBi. It comply with the standard requirement. In case of replacement of broken antenna the same antenna type must be used. Antenna structure please refer to the EUT internal photographs antenna photo.

4.1.3. Test Data:

Note:

- 1).Both modes of BLE 1Mbps and 2Mbps were tested at Low, Middle, and High channel; only the worst result of BLE 1Mbps was reported as below:
- 2).Both 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz power supply have been tested, only the worst result of 120 VAC, 60 Hz was reported as below:
- 3).Measurement = Reading Level+ Correct Factor
- 4).Over = Measurement -Limit

Test Mode1 / Line: Line / Band: 2.4G / BW: 1 / CH: L

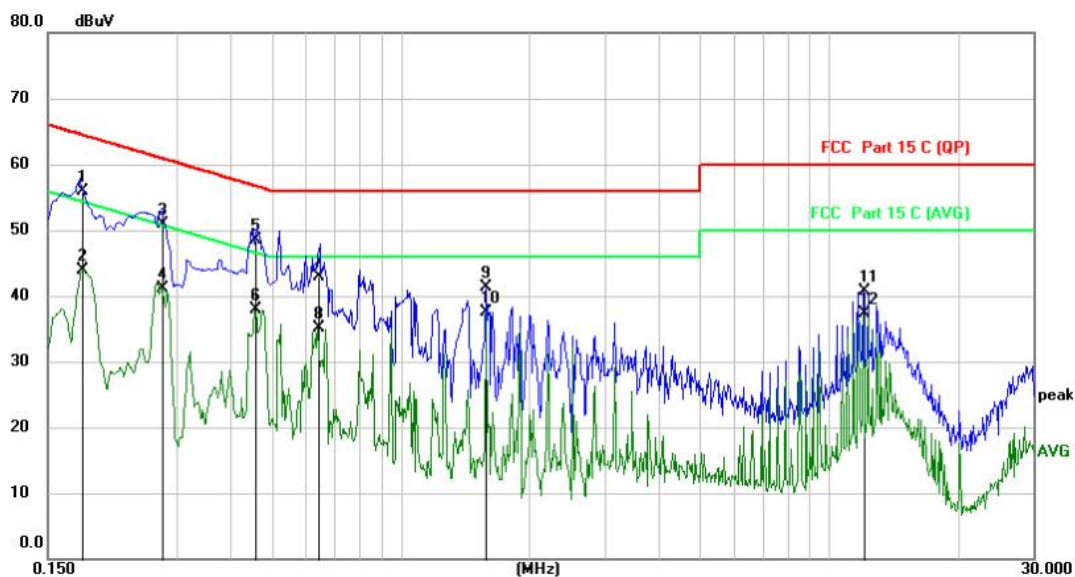


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV	Limit dBuV	Over dB	Detector	Comment
1	0.1780	44.09	10.74	54.83	64.58	-9.75	QP	
2	0.1780	34.20	10.74	44.94	54.58	-9.64	AVG	
3	0.2700	38.21	10.65	48.86	61.12	-12.26	QP	
4	0.2700	26.72	10.65	37.37	51.12	-13.75	AVG	
5	0.3420	37.43	10.55	47.98	59.15	-11.17	QP	
6	0.3420	17.58	10.55	28.13	49.15	-21.02	AVG	
7	0.6340	27.32	10.47	37.79	56.00	-18.21	QP	
8	0.6340	19.23	10.47	29.70	46.00	-16.30	AVG	
9	1.5820	30.15	10.44	40.59	56.00	-15.41	QP	
10 *	1.5820	27.14	10.44	37.58	46.00	-8.42	AVG	
11	11.3900	30.13	10.66	40.79	60.00	-19.21	QP	
12	11.3900	26.71	10.66	37.37	50.00	-12.63	AVG	

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

Test Mode1 / Line: Neutral / Band: 2.4G / BW: 1 / CH: L


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	0.1805	45.12	10.74	55.86	64.46	-8.60	QP	
2	0.1805	33.18	10.74	43.92	54.46	-10.54	AVG	
3	0.2779	40.36	10.59	50.95	60.88	-9.93	QP	
4	0.2779	30.51	10.59	41.10	50.88	-9.78	AVG	
5 *	0.4580	37.89	10.52	48.41	56.73	-8.32	QP	
6	0.4580	27.35	10.52	37.87	46.73	-8.86	AVG	
7	0.6419	32.36	10.45	42.81	56.00	-13.19	QP	
8	0.6419	24.58	10.45	35.03	46.00	-10.97	AVG	
9	1.5820	30.85	10.51	41.36	56.00	-14.64	QP	
10	1.5820	26.97	10.51	37.48	46.00	-8.52	AVG	
11	12.0338	30.14	10.66	40.80	60.00	-19.20	QP	
12	12.0338	26.62	10.66	37.28	50.00	-12.72	AVG	

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

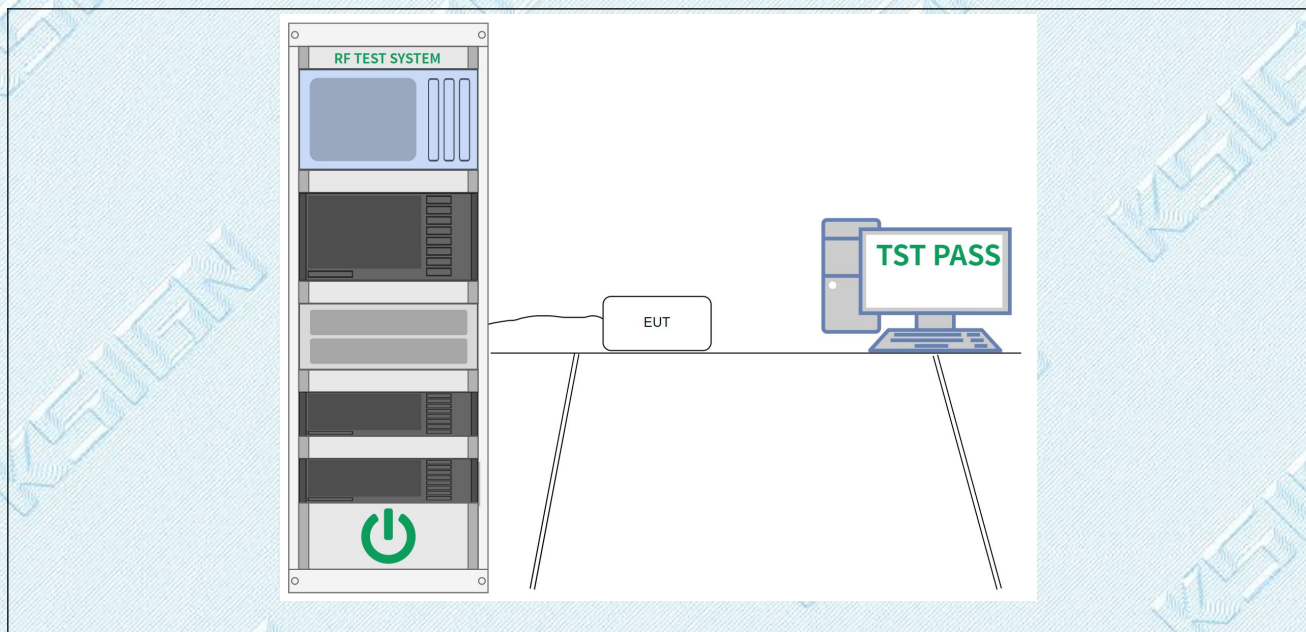
4.2. Occupied Bandwidth

Test Requirement:	Systems using digital modulation techniques may operate in the 902-928 MHz, and 2400-2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Limit:	Section (a)(2), Systems using digital modulation techniques may operate in the 902-928 MHz, and 2400-2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Method:	DTS bandwidth
Procedure:	a) Set RBW = 100 kHz. b) Set the VBW $\geq [3 \times \text{RBW}]$. c) Detector = peak. d) Trace mode = max hold. e) Sweep = auto couple. f) Allow the trace to stabilize. g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.2.1. E.U.T. Operation:

Operating Environment:	
Temperature:	25.6 °C
Humidity:	42.4 %
Atmospheric Pressure:	102 kPa
Final test mode:	Test Mode 1

4.2.2. Test Setup Diagram:



4.2.3. Test Data:

Please Refer to Appendix for Details.

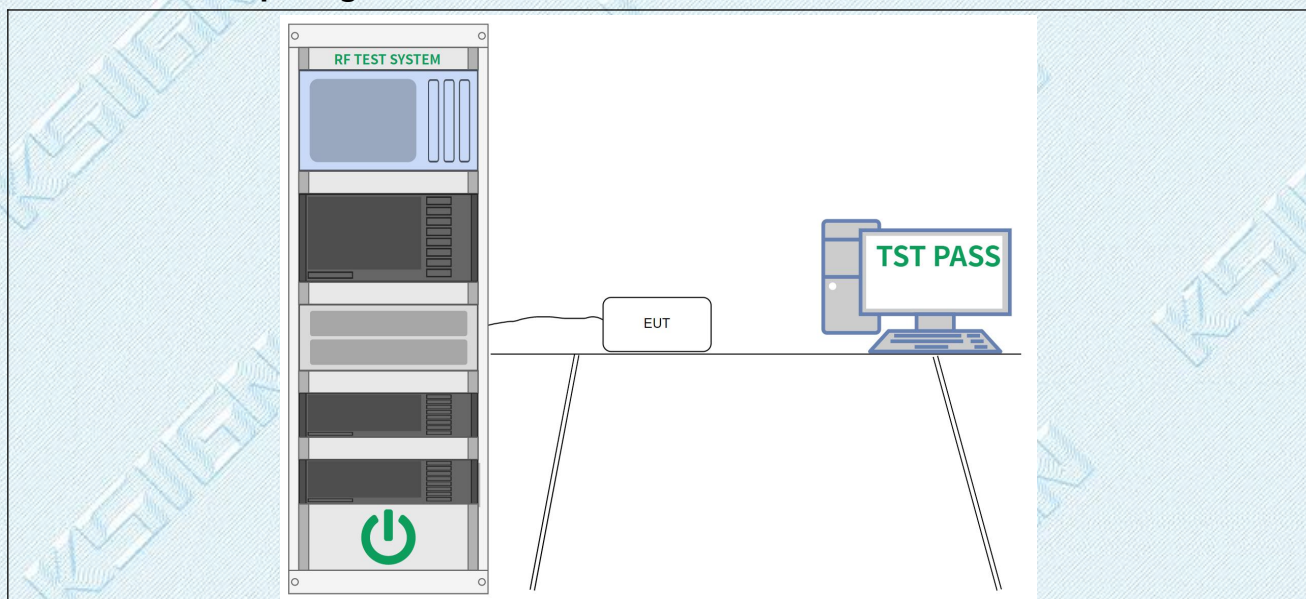
4.3. Maximum Conducted Output Power

Test Requirement:	For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
Test Limit:	For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
Test Method:	Maximum peak conducted output power
Procedure:	ANSI C63.10-2013, section 11.9.1 Maximum peak conducted output power

4.3.1. E.U.T. Operation:

Operating Environment:	
Temperature:	25.6 °C
Humidity:	42.4 %
Atmospheric Pressure:	102 kPa
Final test mode:	Test Mode 1

4.3.2. Test Setup Diagram:



4.3.3. Test Data:

Please Refer to Appendix for Details.

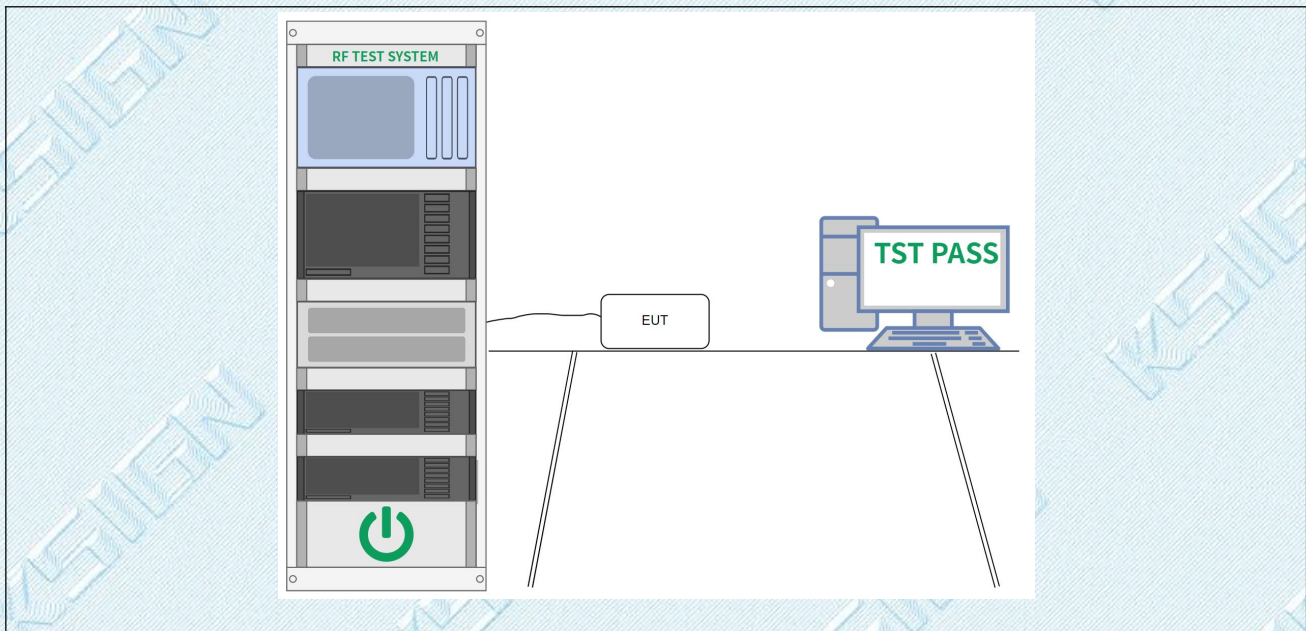
4.4. Power Spectral Density

Test Requirement:	For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.
Test Limit:	For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.
Test Method:	Maximum power spectral density level in the fundamental emission

4.4.1. E.U.T. Operation:

Operating Environment:	
Temperature:	25.6 °C
Humidity:	42.4 %
Atmospheric Pressure:	102 kPa
Final test mode:	Test Mode1

4.4.2. Test Setup Diagram:



4.4.3. Test Data:

Please Refer to Appendix for Details.

4.5. Band edge emissions (Radiated)

Test Requirement:	In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.			
Test Method:	Radiated emissions tests		
Procedure:	ANSI C63.10-2013 section 6.6.4		

4.5.1. E.U.T. Operation:

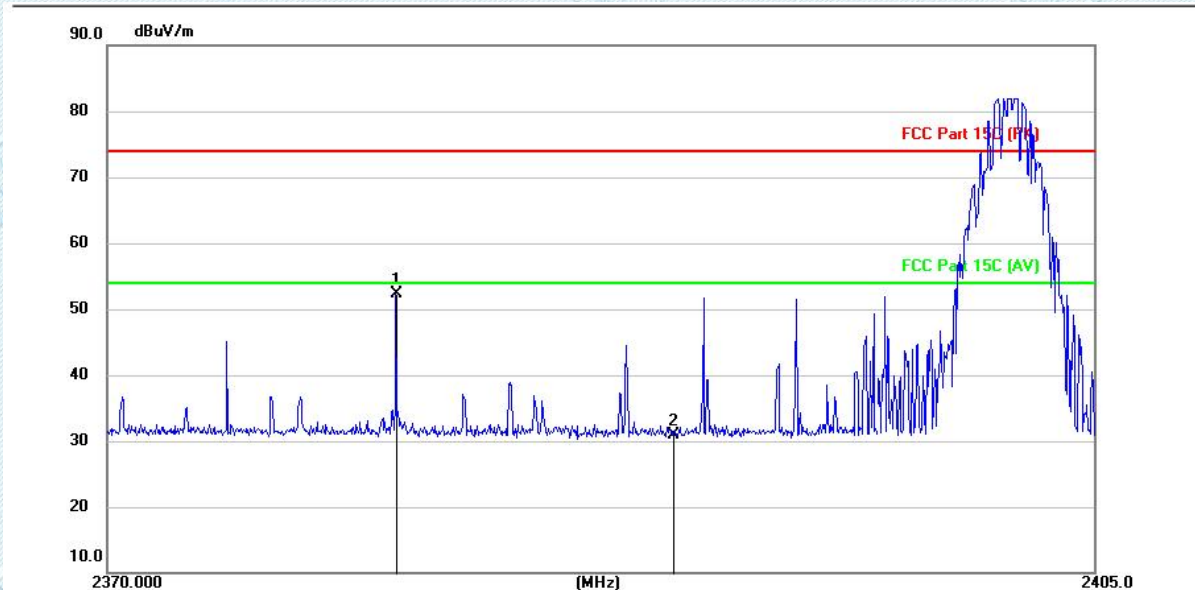
Operating Environment:	
Temperature:	24.4 °C
Humidity:	44.4 %
Atmospheric Pressure:	102 kPa
Final test mode:	Test Mode1

4.5.2. Test Data:

Note:

- 1).Measurement = Reading level + Correct Factor
- 2).Correct Factor=Antenna Factor + Cable Loss -Preamplifier Factor
- 3).Both modes of BLE 1Mbps and 2Mbps were tested at Low and High channel and recorded worst mode at BLE 1Mbps.
- 4).Emission Level= Read Level+ Correct Factor

Test Mode1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: L

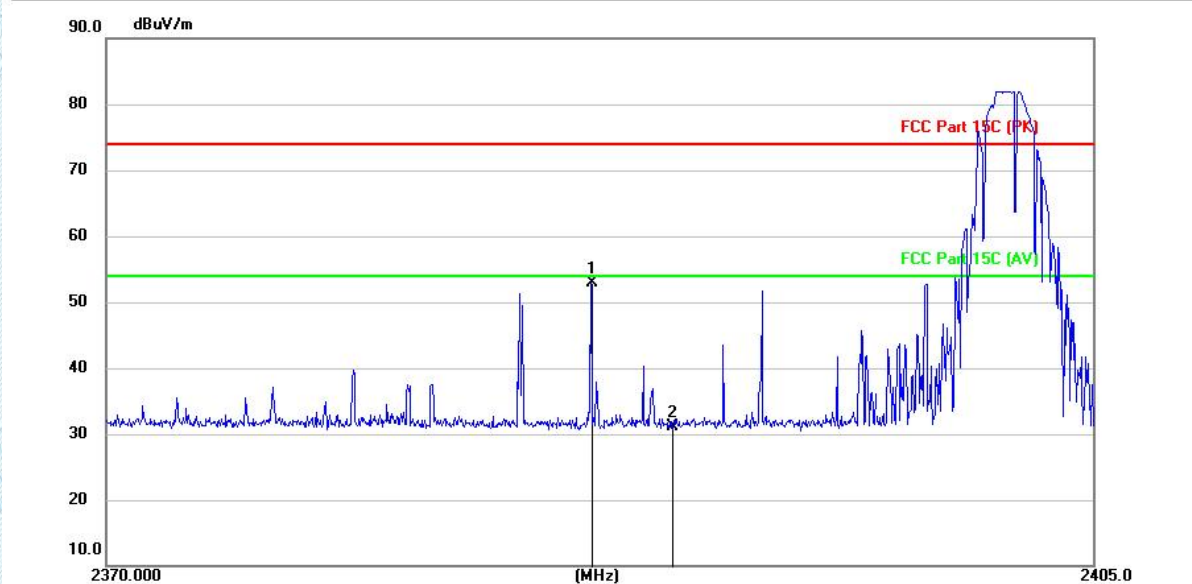


No.	Mk.	Freq. MHz	Reading Level (dBuV)	Correct Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
1	*	2380.234	63.22	-10.92	52.30	74.00	-21.70	peak
2		2390.000	41.83	-10.92	30.91	74.00	-43.09	peak

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

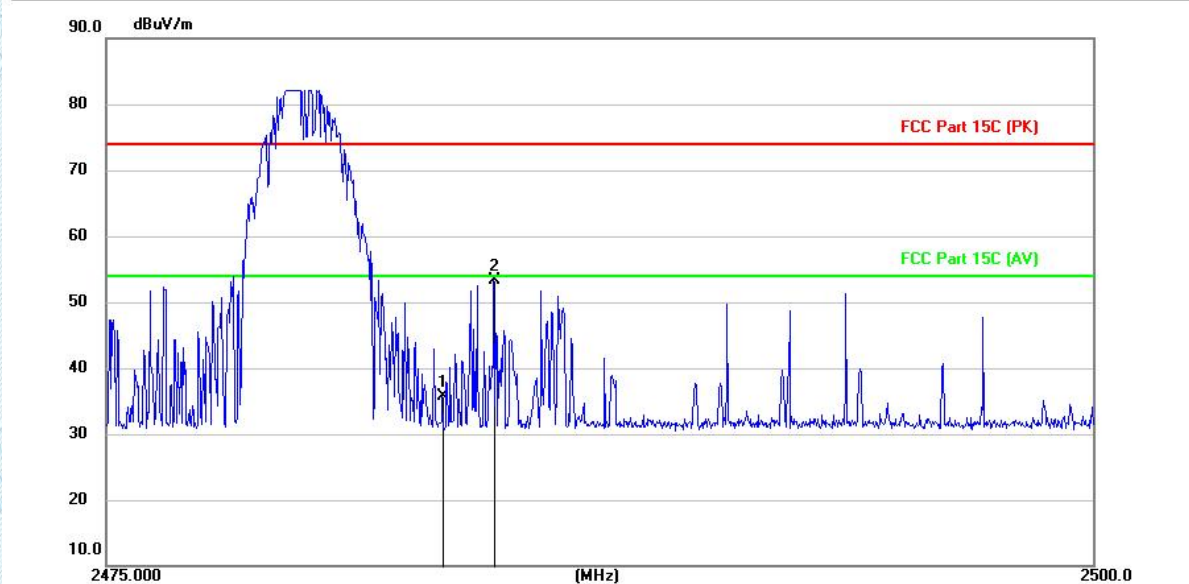
Test Mode1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: L


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1	*	2387.143	63.83	-10.92	52.91	74.00	-21.09	peak
2		2390.000	42.08	-10.92	31.16	74.00	-42.84	peak

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

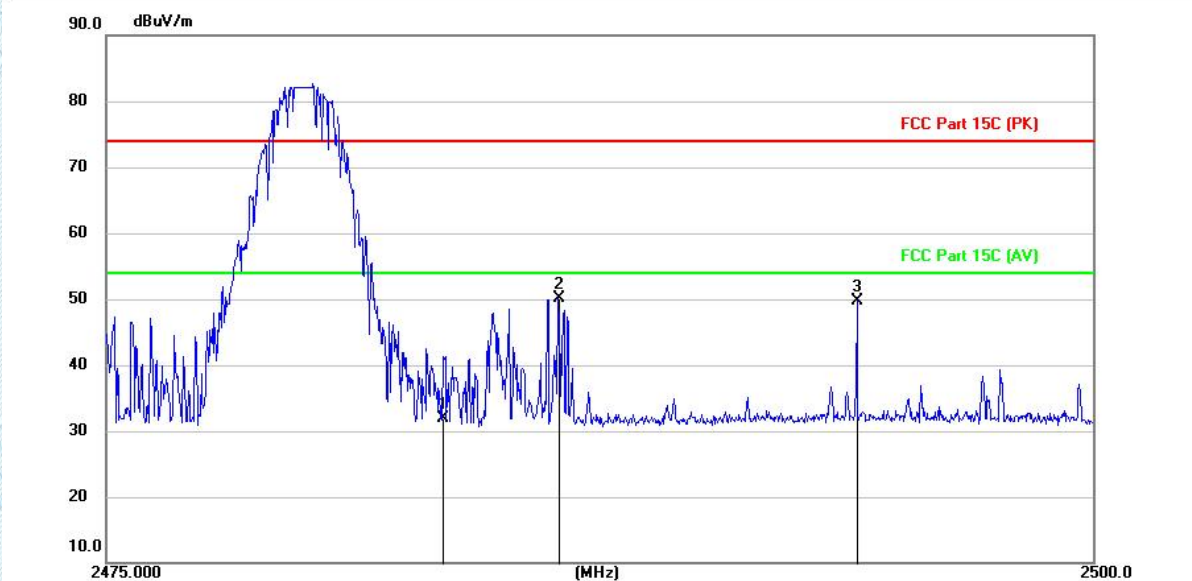
Test Mode1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: H


No.	Mk.	Freq. MHz	Reading Level (dBuV)	Correct Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
1		2483.500	46.53	-10.88	35.65	74.00	-38.35	peak
2	*	2484.820	64.26	-10.88	53.38	74.00	-20.62	peak

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

Test Mode1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: H


No.	Mk.	Freq. MHz	Reading Level (dBuV)	Correct Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
1		2483.500	42.70	-10.88	31.82	74.00	-42.18	peak
2	*	2486.425	60.95	-10.88	50.07	74.00	-23.93	peak
3		2493.990	60.67	-10.89	49.78	74.00	-24.22	peak

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

4.6. Emissions in restricted frequency bands (below 1GHz)

Test Requirement:	In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.			
Test Method:	Radiated emissions tests		
Procedure:	ANSI C63.10-2013 section 6.6.4		

4.6.1. E.U.T. Operation:

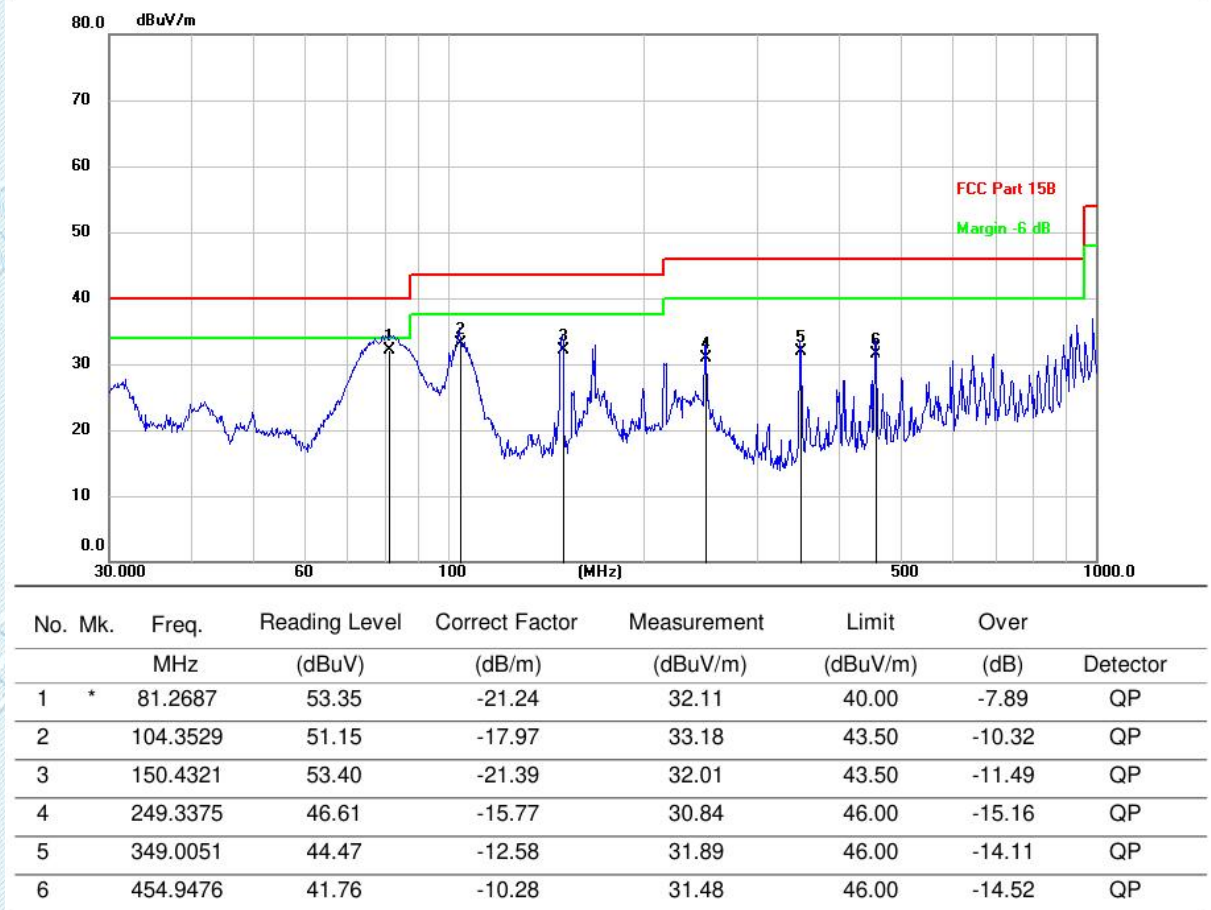
Operating Environment:	
Temperature:	24.4 °C
Humidity:	44.4 %
Atmospheric Pressure:	102 kPa
Final test mode:	Test Mode1

4.6.2. Test Data:

Note:

- 1).Both modes of BLE 1Mbps and 2Mbps were tested at Low, Middle, and High channel and recorded worst mode at BLE 1Mbps.
- 2).Emission Level= Read Level+ Correct Factor
- 3).Correct Factor=Antenna Factor + Cable Loss -Preamplifier Factor

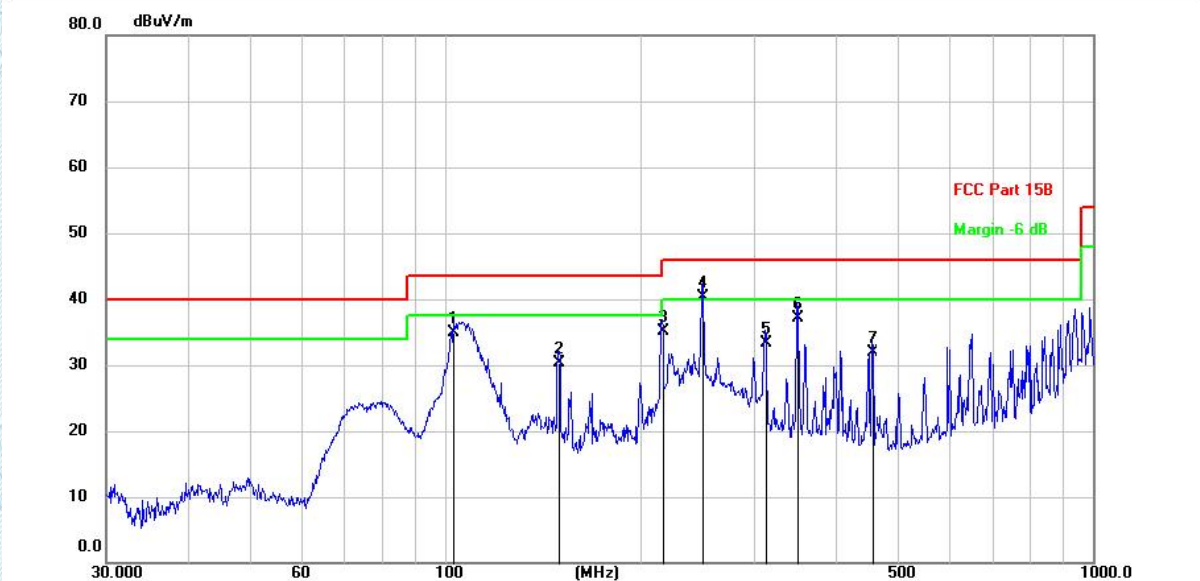
Test Mode1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: L



TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

Test Mode1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: L


No.	Mk.	Freq. MHz	Reading Level (dBuV)	Correct Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
1		103.3696	52.86	-17.89	34.97	43.50	-8.53	QP
2		149.6954	51.62	-21.40	30.22	43.50	-13.28	QP
3		216.6307	52.43	-17.26	35.17	46.00	-10.83	QP
4	*	249.3376	55.98	-15.77	40.21	46.00	-5.79	QP
5		311.1956	47.44	-14.18	33.26	46.00	-12.74	QP
6		349.0051	49.74	-12.58	37.16	46.00	-8.84	QP
7		454.9476	42.12	-10.28	31.84	46.00	-14.16	QP

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

4.7. Emissions in restricted frequency bands (above 1GHz)

Test Requirement:	In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).`		
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100 **	3
	88-216	150 **	3
	216-960	200 **	3
	Above 960	500	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.			
Test Method:	Radiated emissions tests		
Procedure:	ANSI C63.10-2013 section 6.6.4		

4.7.1. E.U.T. Operation:

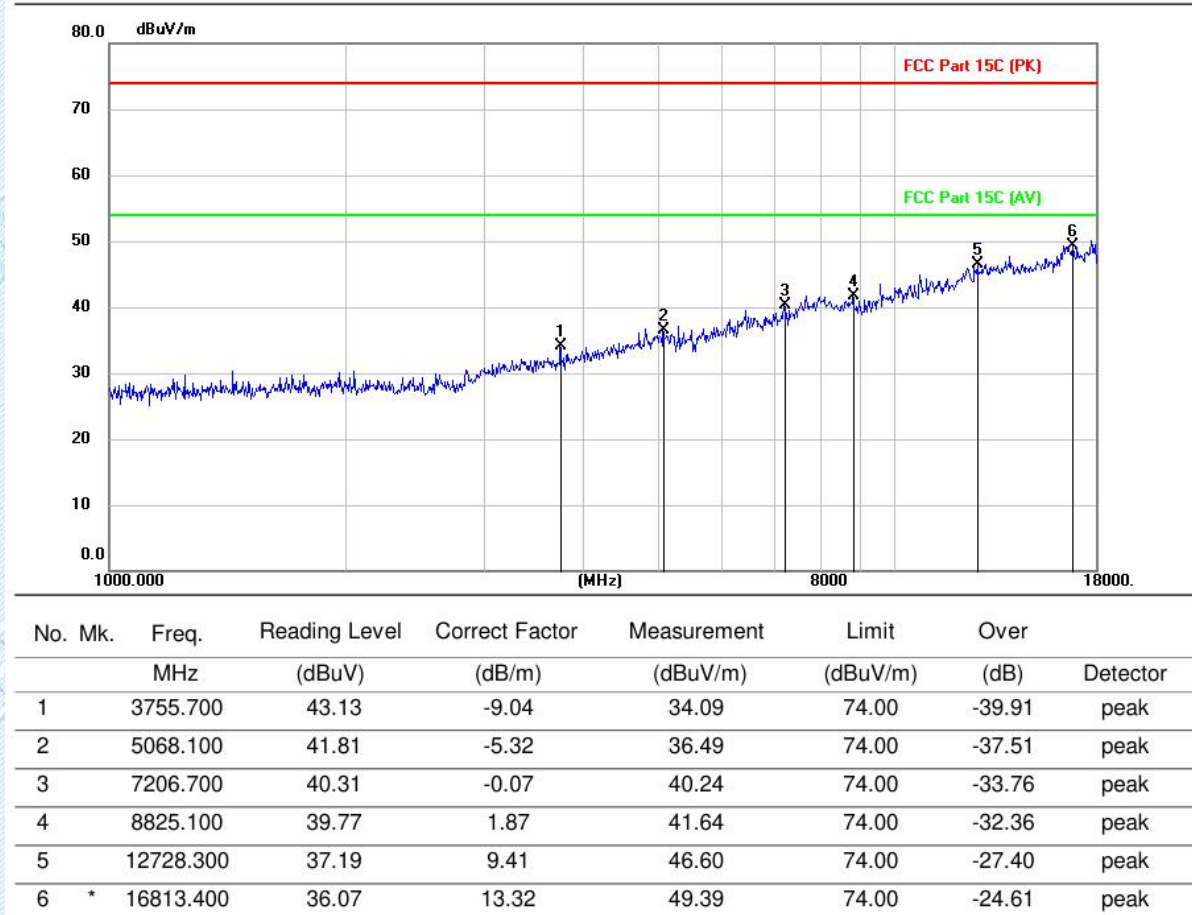
Operating Environment:	
Temperature:	24.4 °C
Humidity:	44.4 %
Atmospheric Pressure:	102 kPa
Final test mode:	Test Mode1

4.7.2. Test Data:

Note:

- 1).Both modes of BLE 1Mbps and 2Mbps were tested at Low, Middle, and High channel and recorded worst mode at BLE 1Mbps.
- 2).Emission Level= Read Level+ Correct Factor
- 3).Correct Factor=Antenna Factor + Cable Loss -Preamplifier Factor

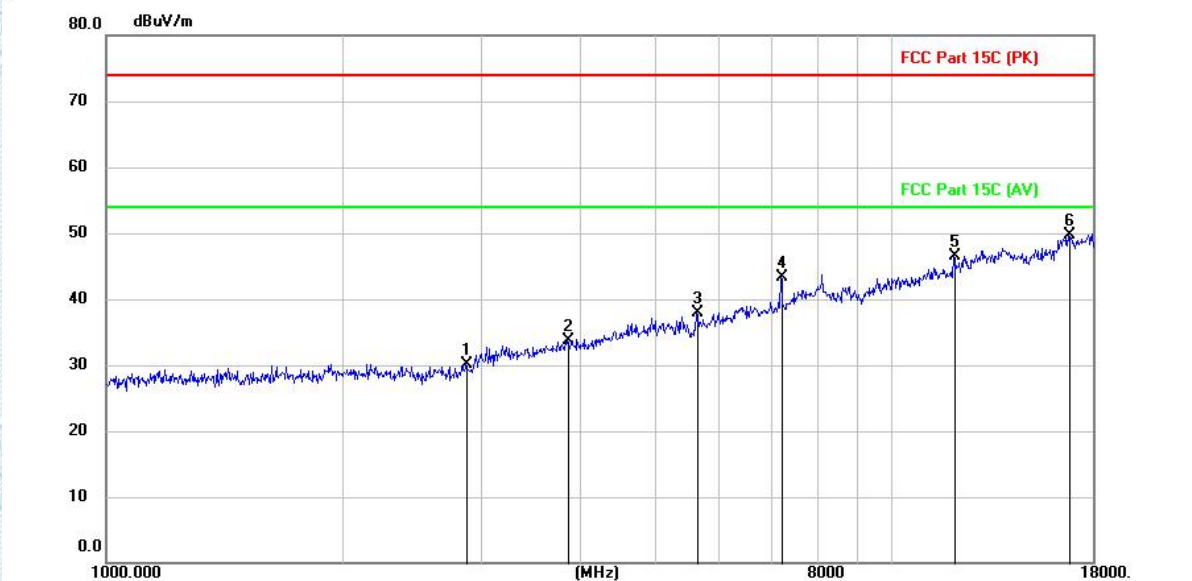
Test Mode1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: L



TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

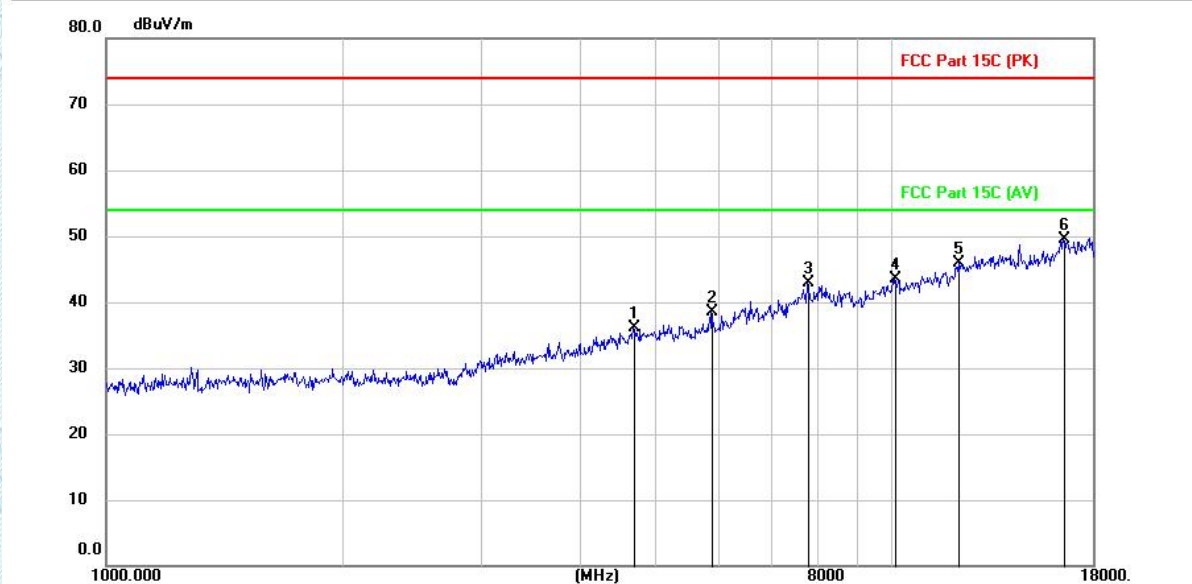
Test Mode1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: L


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1		2880.200	40.70	-10.66	30.04	74.00	-43.96	peak
2		3861.100	42.45	-8.78	33.67	74.00	-40.33	peak
3		5637.600	42.46	-4.62	37.84	74.00	-36.16	peak
4		7206.700	43.36	-0.07	43.29	74.00	-30.71	peak
5		12009.200	38.55	7.91	46.46	74.00	-27.54	peak
6	*	16772.600	36.24	13.38	49.62	74.00	-24.38	peak

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

Test Mode1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: M


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1		4685.600	42.42	-6.24	36.18	74.00	-37.82	peak
2		5889.200	42.61	-4.05	38.56	74.00	-35.44	peak
3		7803.400	41.34	1.58	42.92	74.00	-31.08	peak
4		10084.800	39.29	4.21	43.50	74.00	-30.50	peak
5		12150.300	37.69	8.22	45.91	74.00	-28.09	peak
6	*	16539.700	35.72	13.75	49.47	74.00	-24.53	peak

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

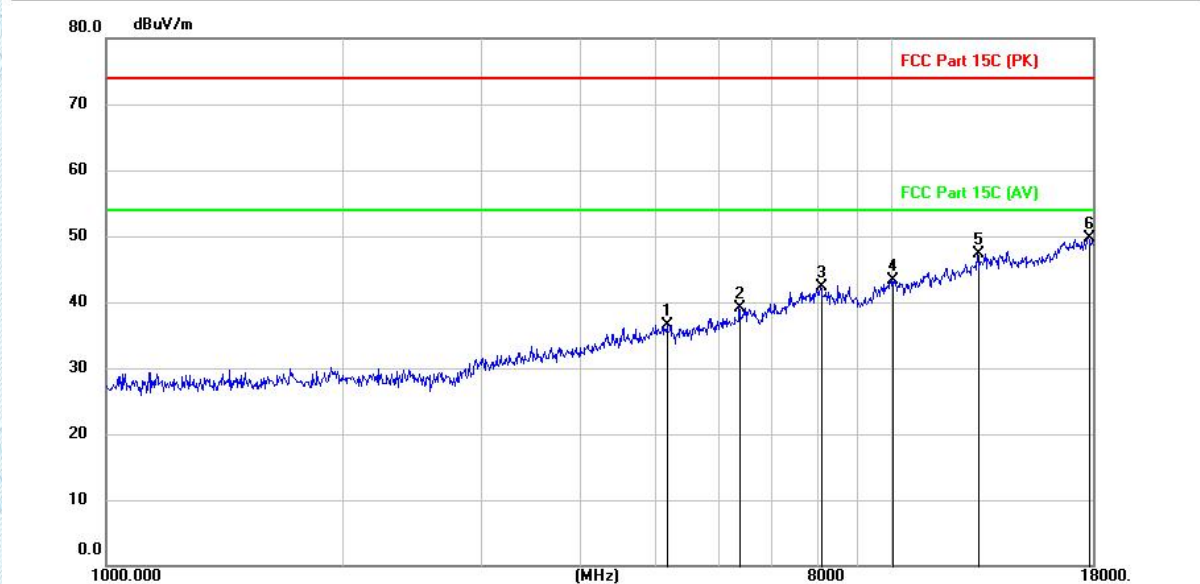
Test Mode1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: M


No.	Mk.	Freq. MHz	Reading Level (dBuV)	Correct Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
1		3823.700	42.82	-8.87	33.95	74.00	-40.05	peak
2		5651.200	41.67	-4.59	37.08	74.00	-36.92	peak
3		7743.900	40.08	1.43	41.51	74.00	-32.49	peak
4		9760.100	39.79	3.54	43.33	74.00	-30.67	peak
5		12534.500	36.79	9.03	45.82	74.00	-28.18	peak
6	*	17233.300	36.55	13.21	49.76	74.00	-24.24	peak

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksgn.cn Web: www.gdksgn.com

Test Mode1 / Polarization: Horizontal / Band: 2.4G / BW: 1 / CH: H


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1		5170.100	41.81	-5.24	36.57	74.00	-37.43	peak
2		6378.800	41.72	-2.52	39.20	74.00	-34.80	peak
3		8102.600	40.22	2.05	42.27	74.00	-31.73	peak
4		10032.100	39.24	4.12	43.36	74.00	-30.64	peak
5		12850.700	37.62	9.65	47.27	74.00	-26.73	peak
6	*	17750.100	36.17	13.52	49.69	74.00	-24.31	peak

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

Test Mode1 / Polarization: Vertical / Band: 2.4G / BW: 1 / CH: H


No.	Mk.	Freq. MHz	Reading Level (dBuV)	Correct Factor (dB/m)	Measurement (dBuV/m)	Limit (dBuV/m)	Over (dB)	Detector
1		2944.800	40.99	-10.63	30.36	74.00	-43.64	peak
2		4961.000	44.31	-5.50	38.81	74.00	-35.19	peak
3		7847.600	40.68	1.69	42.37	74.00	-31.63	peak
4		9925.000	39.19	3.91	43.10	74.00	-30.90	peak
5		12401.900	38.92	8.75	47.67	74.00	-26.33	peak
6	*	16767.500	36.26	13.39	49.65	74.00	-24.35	peak

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

5. EUT TEST PHOTOS

Conducted Emission at AC power line



Emissions in restricted frequency bands (below 1GHz)



Emissions in restricted frequency bands (above 1GHz)

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou,
Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

6. PHOTOGRAPHS OF EUT CONSTRUCTIONAL

Reference to the test report No.: KS2301S0290E01

7. Appendix

7.1. Appendix A: DTS Bandwidth

7.1.1. Test Result

TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.68	2401.64	2402.33	0.5	PASS
		2440	0.70	2439.64	2440.33	0.5	PASS
		2480	0.69	2479.64	2480.33	0.5	PASS
BLE_2M	Ant1	2402	1.38	2401.30	2402.68	0.5	PASS
		2440	1.34	2439.32	2440.66	0.5	PASS
		2480	1.37	2479.31	2480.68	0.5	PASS

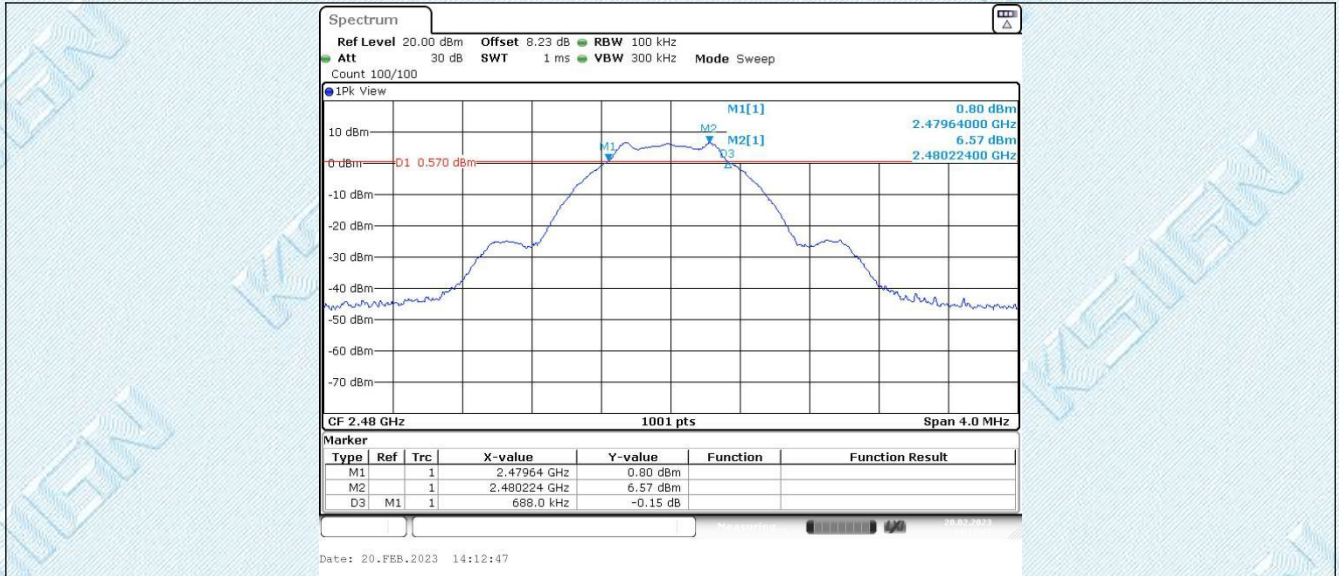
7.1.2.Test Graphs



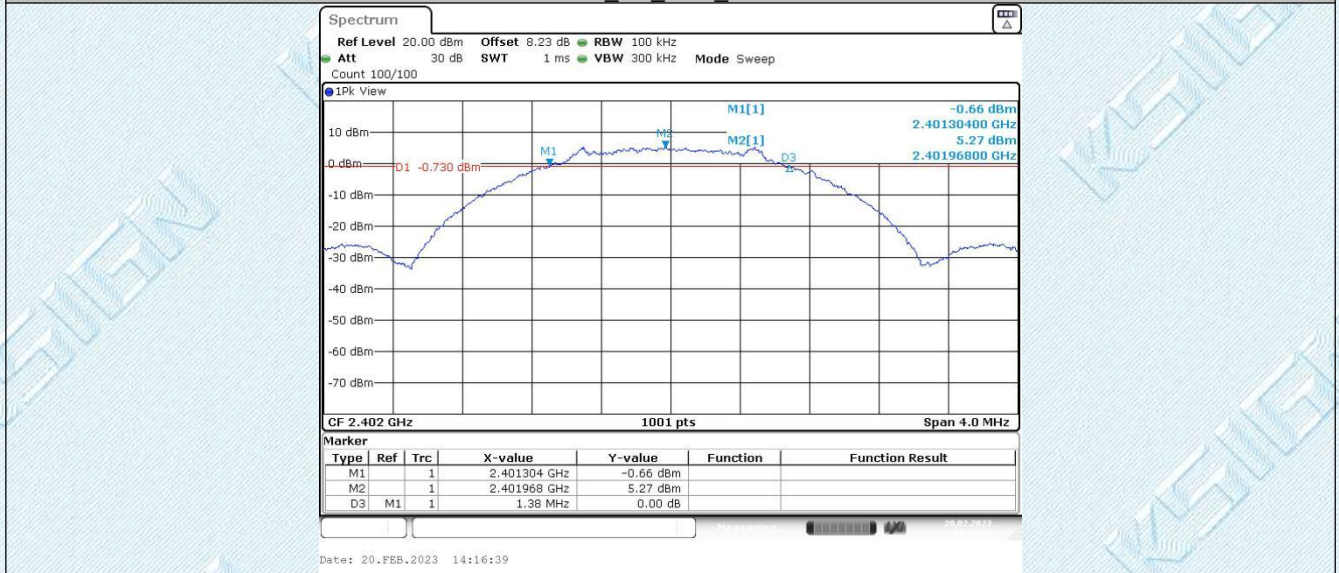
TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

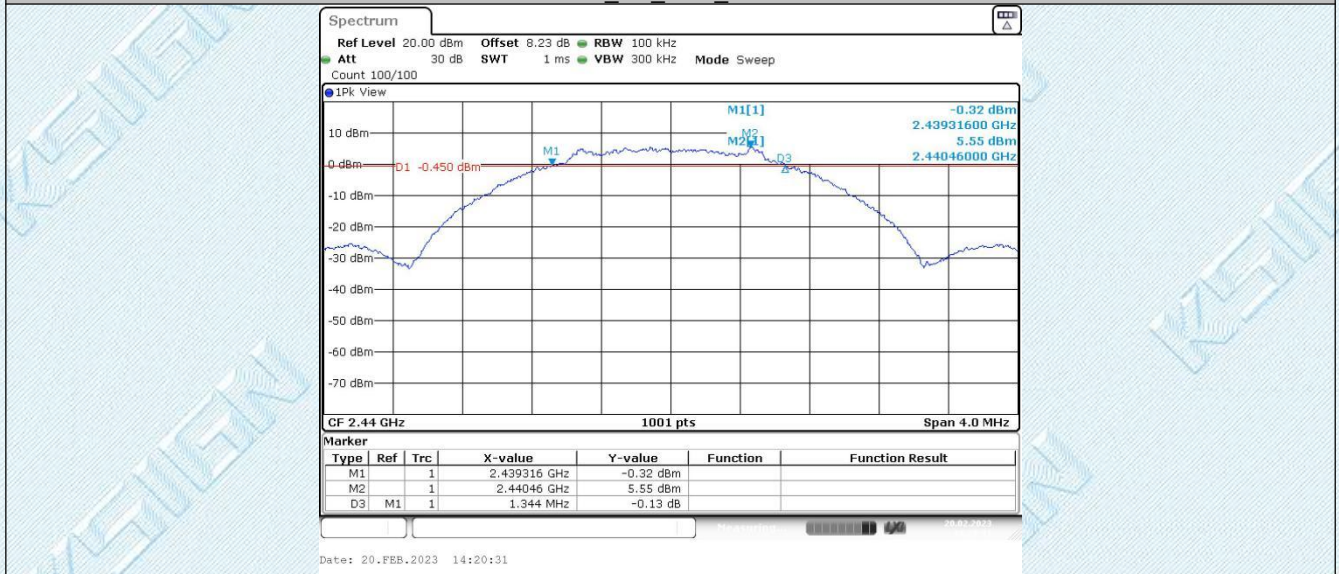
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com



BLE_2M_Ant1_2402



BLE_2M_Ant1_2440

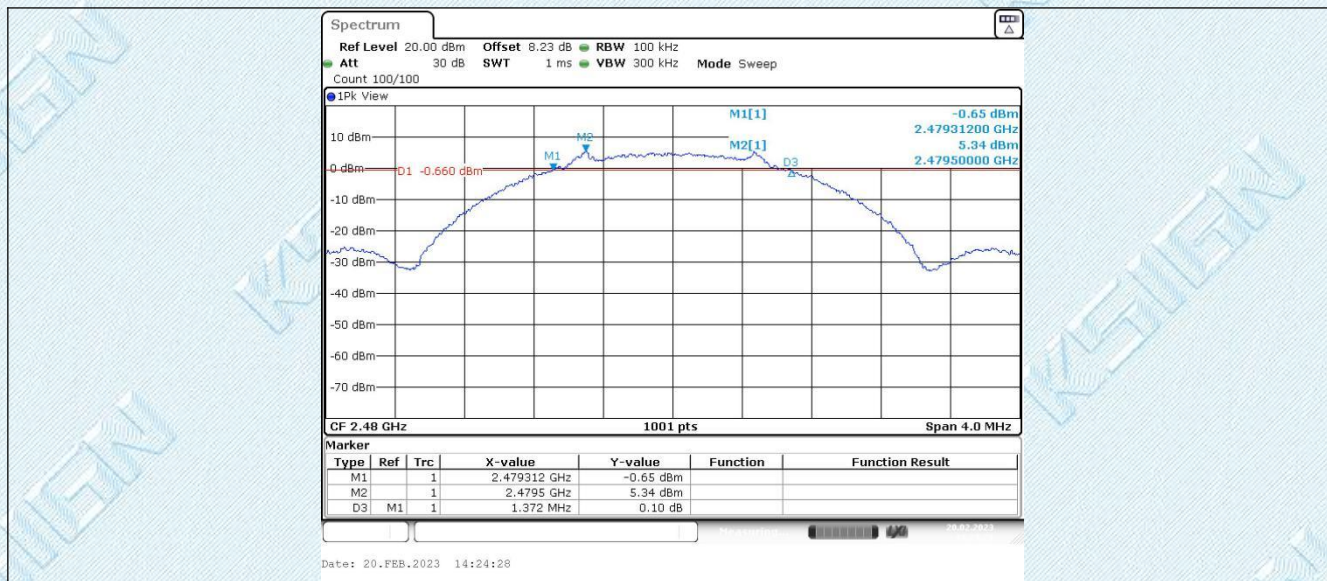


BLE_2M_Ant1_2480

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com



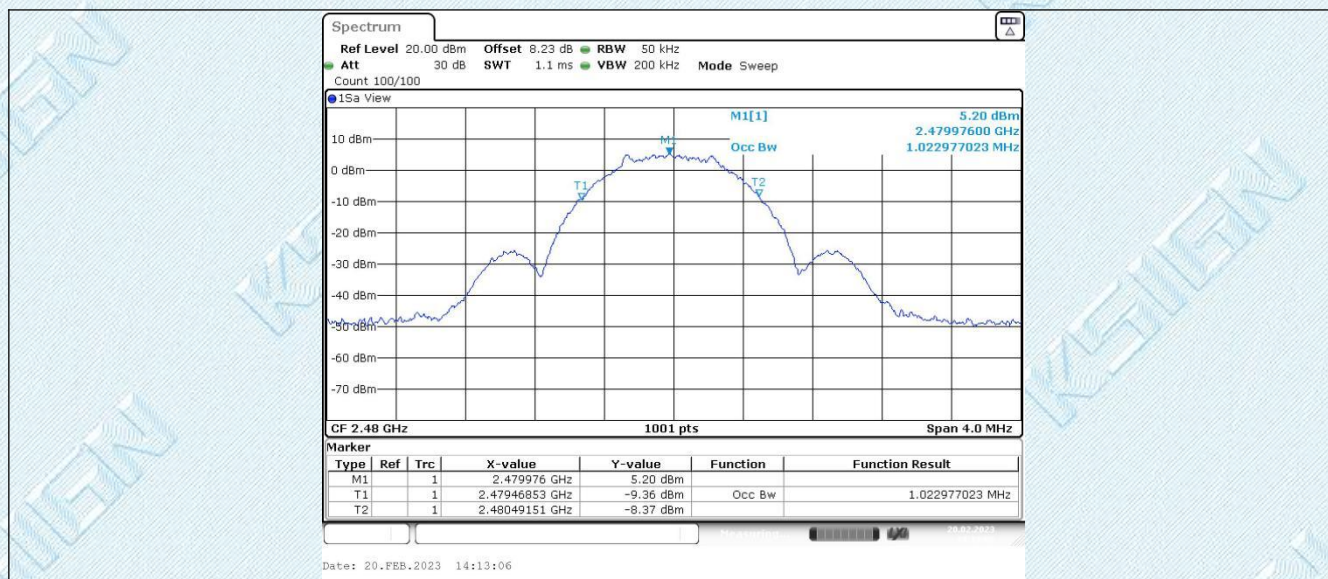
7.2. Appendix B: Occupied Channel Bandwidth

7.2.1. Test Result

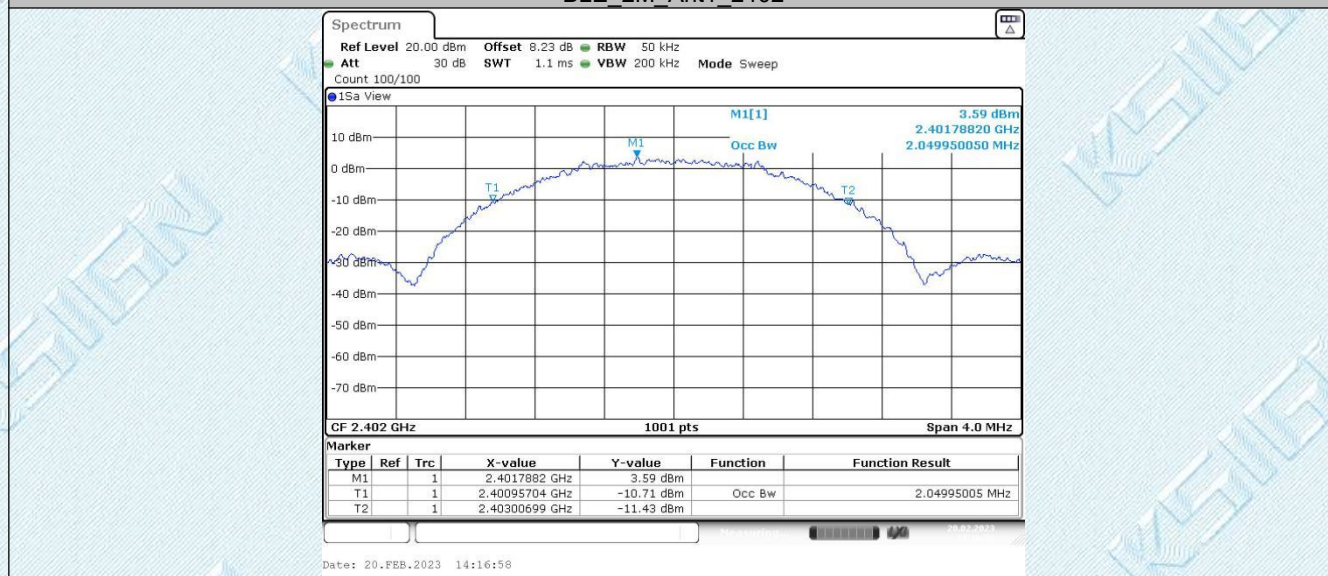
TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.031	2401.465	2402.496	---	PASS
		2440	1.027	2439.469	2440.496	---	PASS
		2480	1.023	2479.469	2480.492	---	PASS
BLE_2M	Ant1	2402	2.050	2400.957	2403.007	---	PASS
		2440	2.034	2438.965	2440.999	---	PASS
		2480	2.042	2478.965	2481.007	---	PASS

7.2.2. Test Graphs

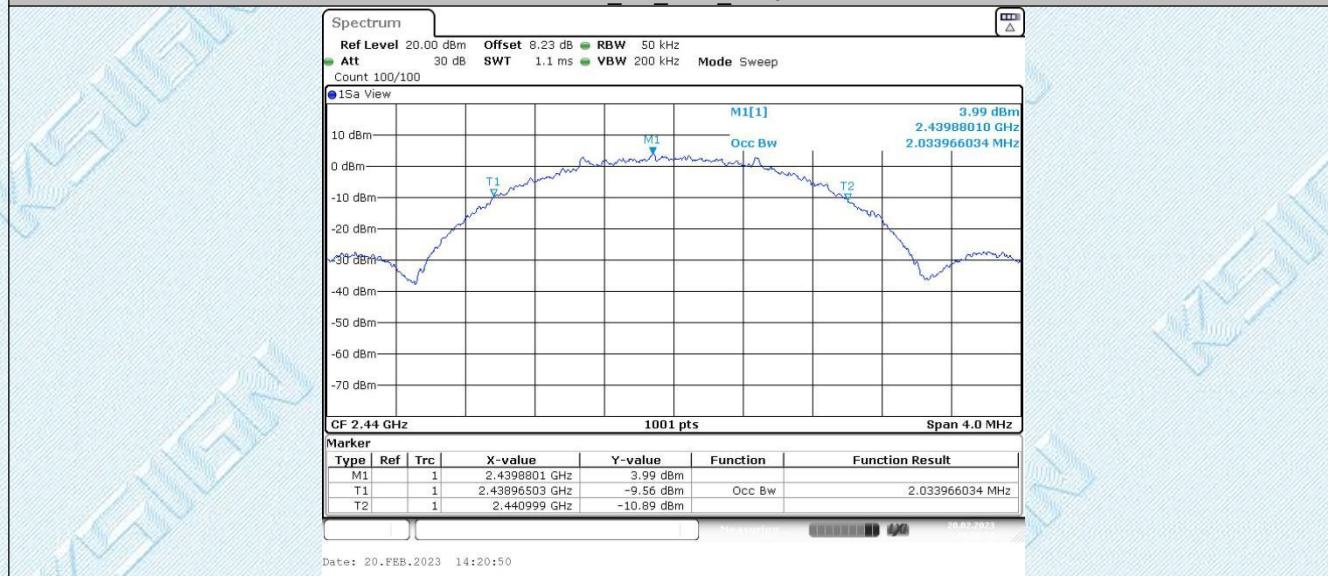




BLE_2M_Ant1_2402



BLE_2M_Ant1_2440

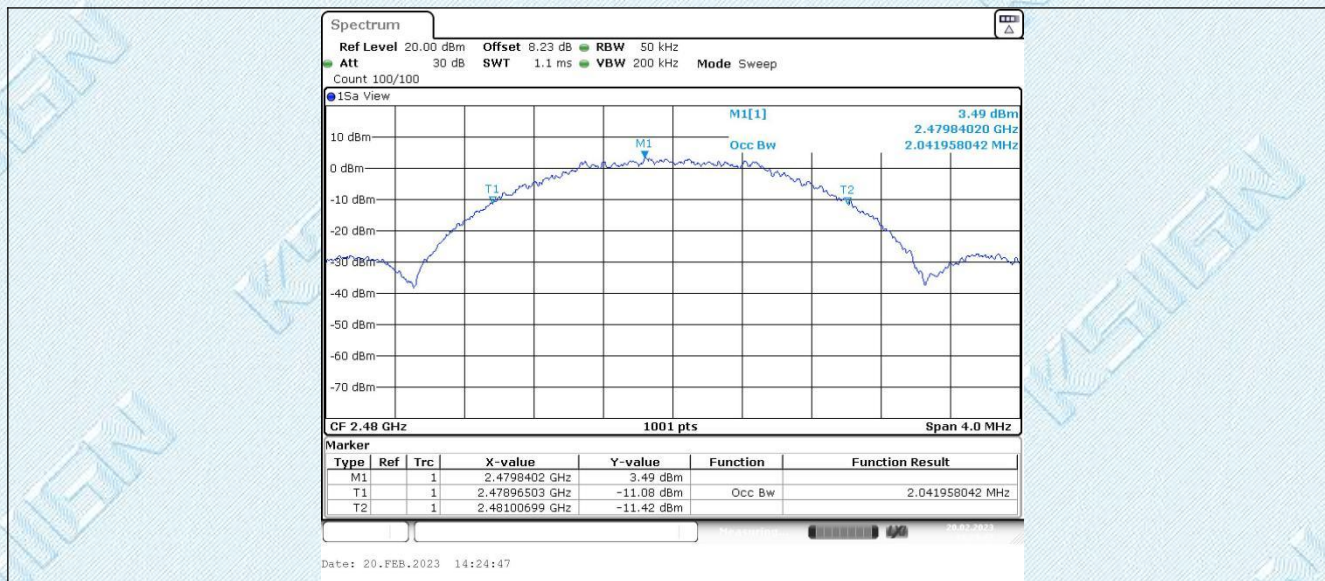


BLE_2M_Ant1_2480

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com



TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

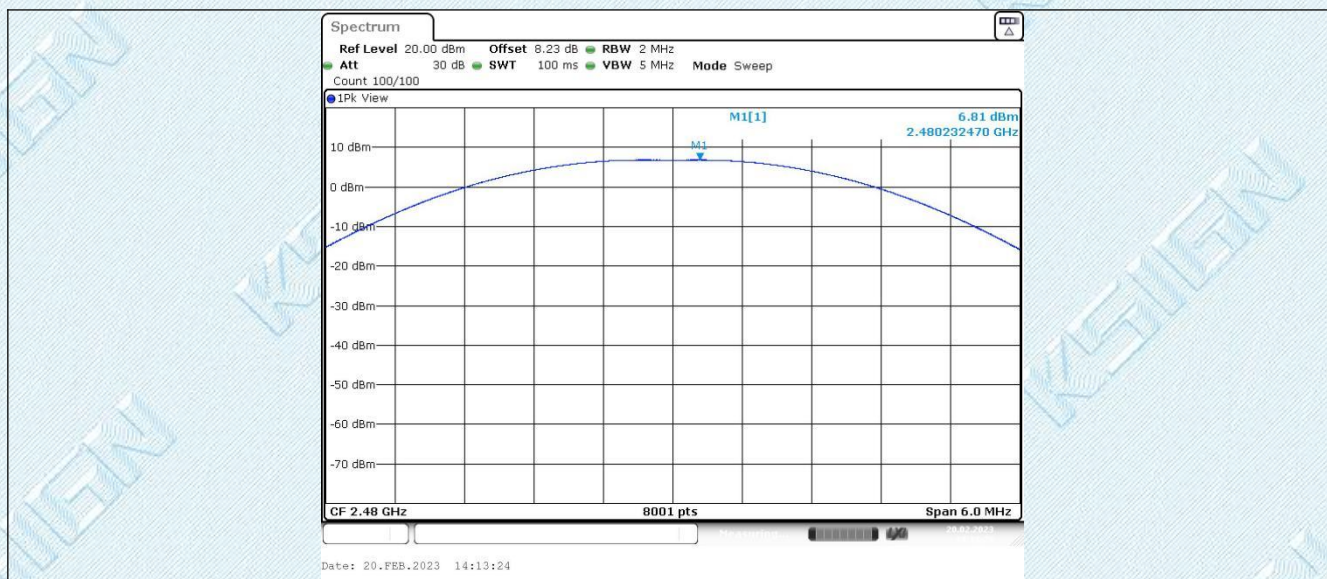
7.3. Appendix C: Maximum conducted output power

7.3.1. Test Result Peak

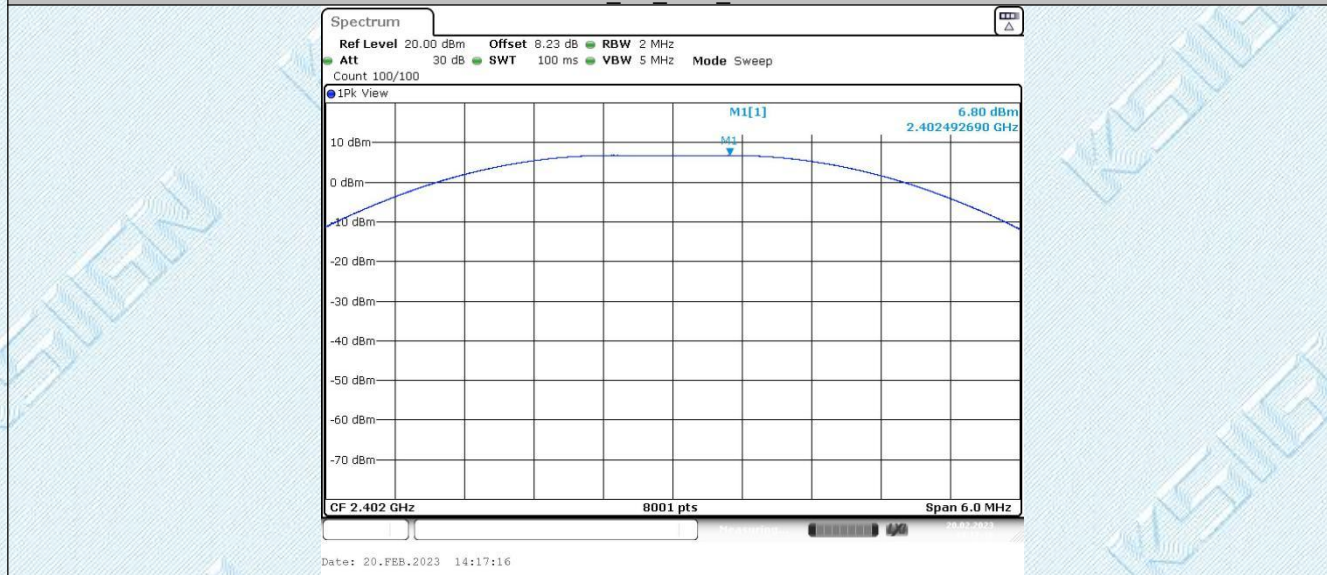
TestMode	Antenna	Freq(MHz)	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	6.95	≤30	PASS
		2440	7.04	≤30	PASS
		2480	6.81	≤30	PASS
BLE_2M	Ant1	2402	6.80	≤30	PASS
		2440	6.91	≤30	PASS
		2480	6.70	≤30	PASS

7.3.2. Test Graphs Peak

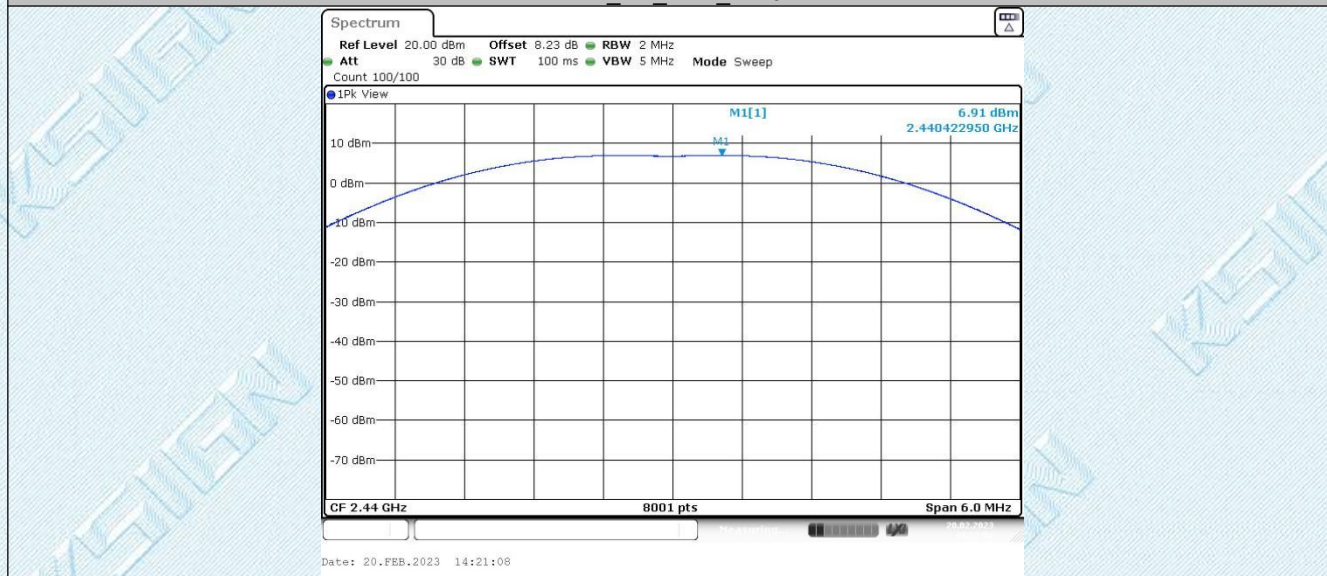




BLE_2M_Ant1_2402



BLE_2M_Ant1_2440

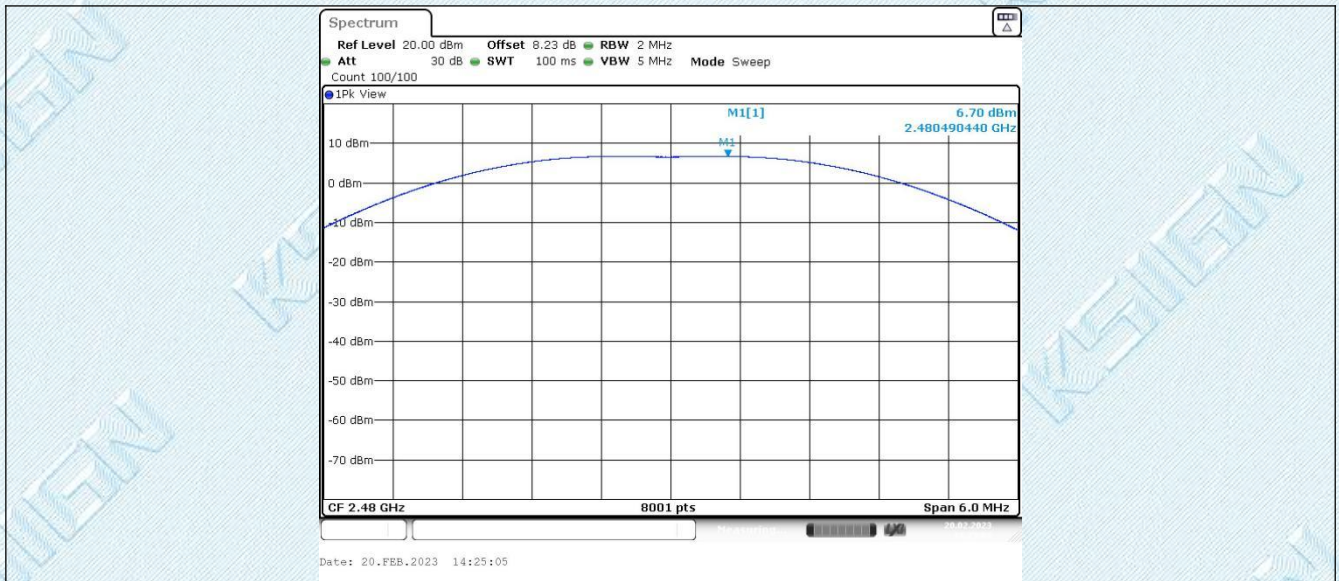


BLE_2M_Ant1_2480

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com



TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

7.4. Appendix D: Maximum power spectral density

7.4.1. Test Result

TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-2.46	≤8.00	PASS
		2440	-1.86	≤8.00	PASS
		2480	-2.75	≤8.00	PASS
BLE_2M	Ant1	2402	-5.59	≤8.00	PASS
		2440	-6.45	≤8.00	PASS
		2480	-6.73	≤8.00	PASS

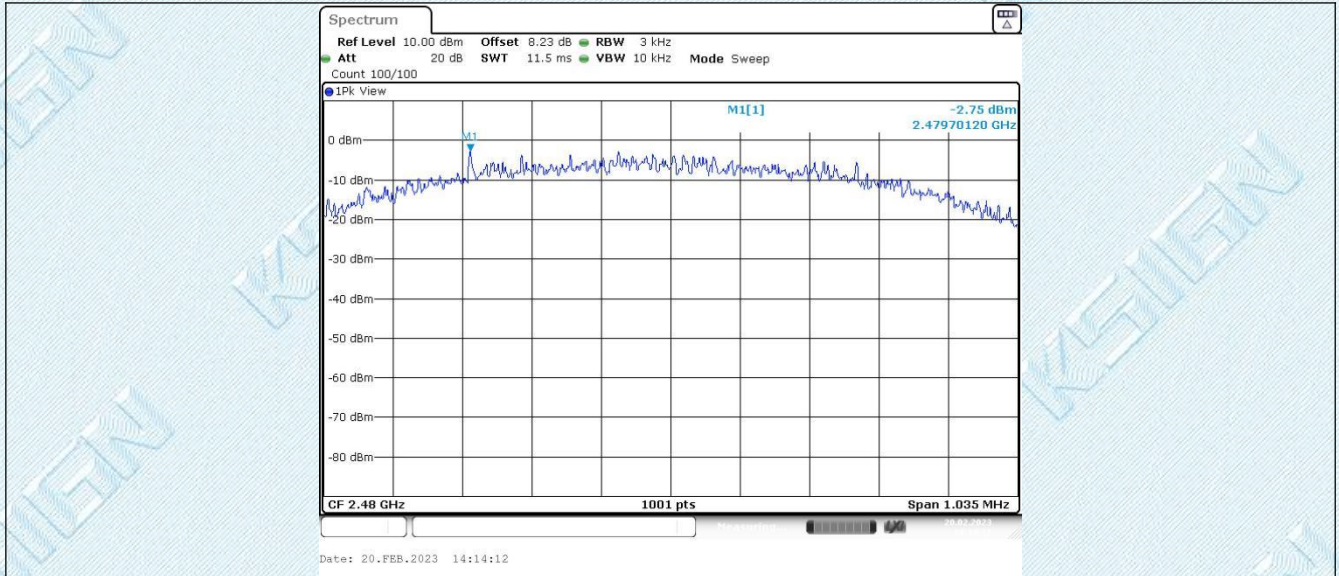
7.4.2. Test Graphs



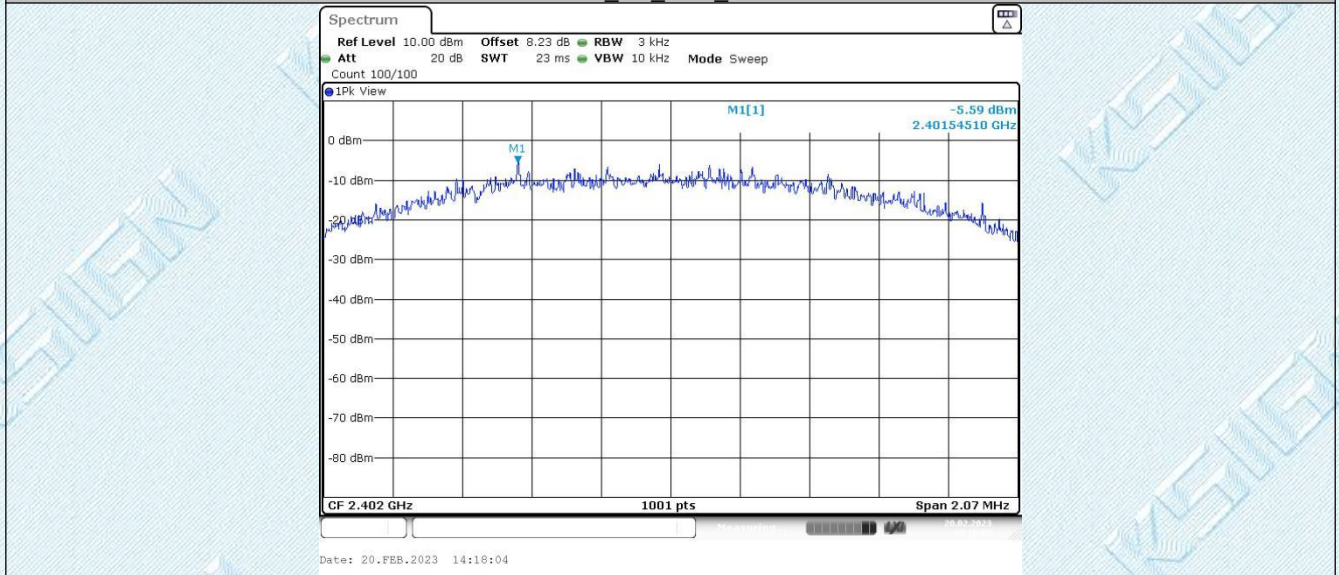
TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

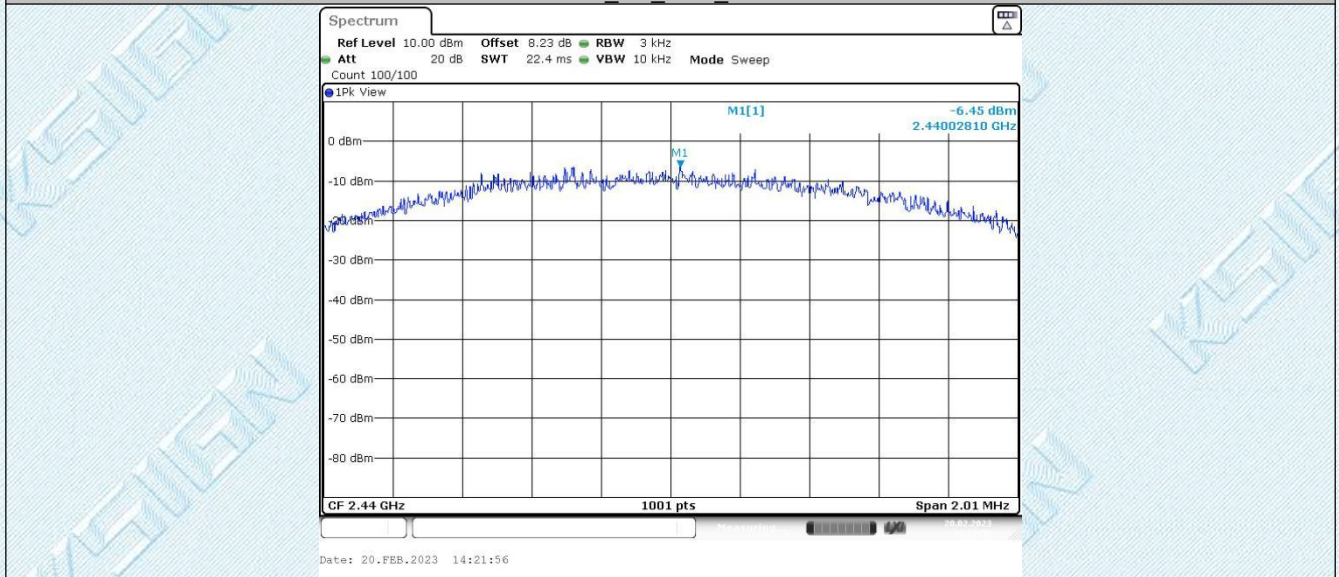
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com



BLE_2M_Ant1_2402



BLE_2M_Ant1_2440

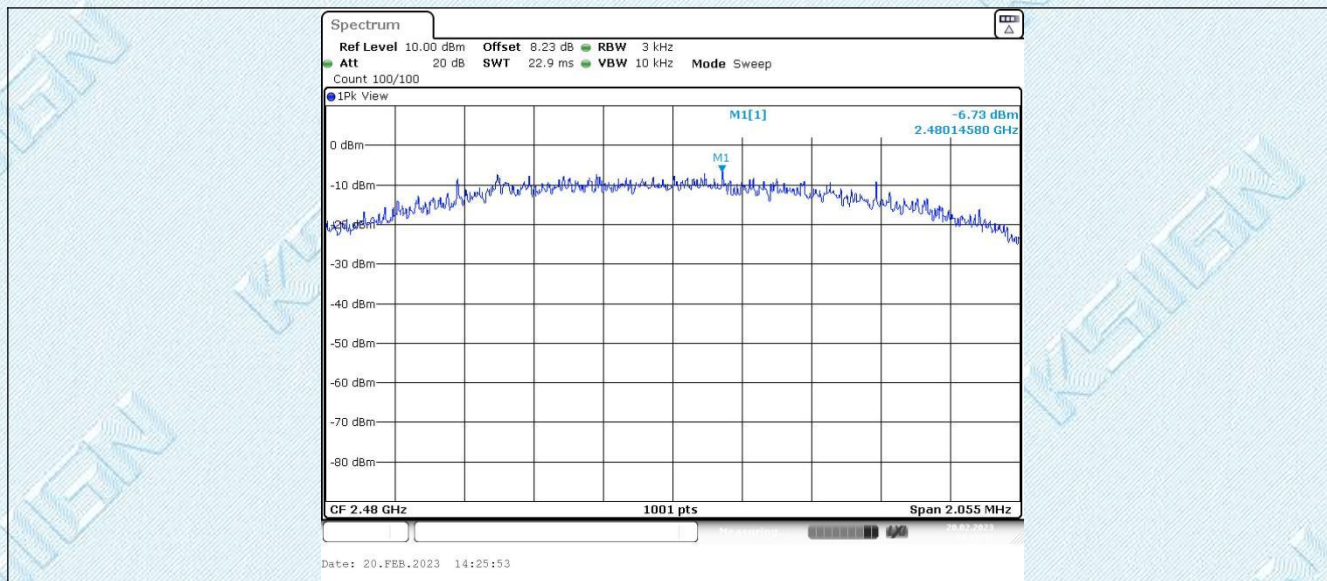


BLE_2M_Ant1_2480

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com



TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

7.5. Appendix E: Reference level measurement

7.5.1. Test Result

TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
BLE_1M	Ant1	2402	2401.73	6.73
		2440	2440.23	6.81
		2480	2479.73	6.72
BLE_2M	Ant1	2402	2401.95	5.11
		2440	2439.48	5.50
		2480	2479.52	5.02

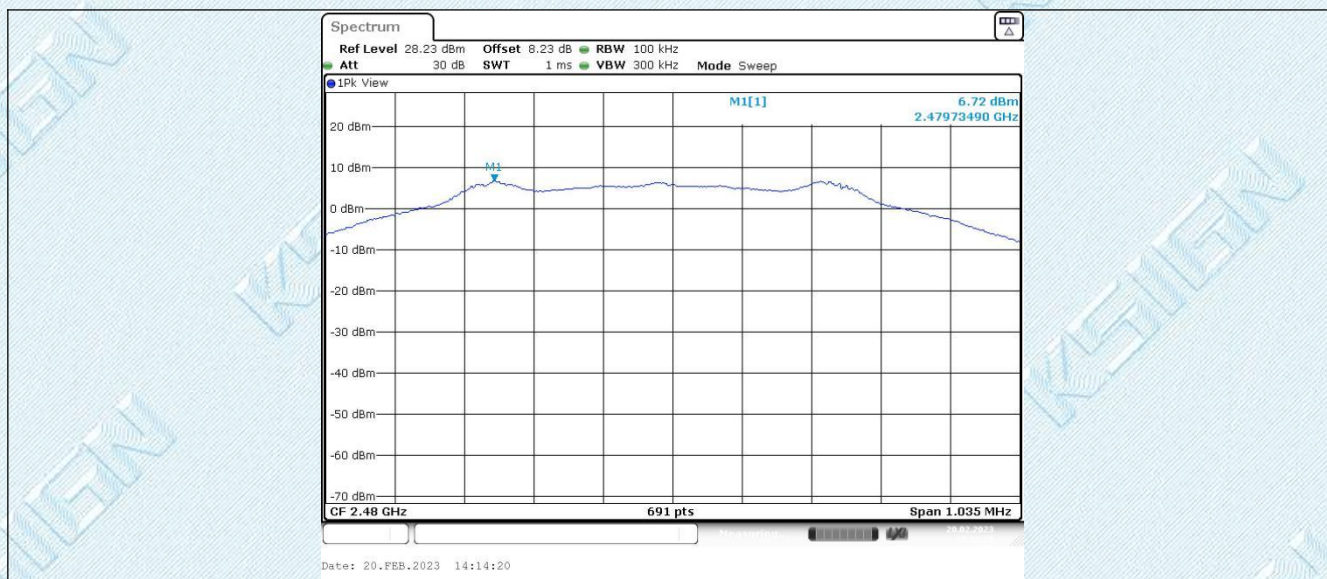
7.5.2. Test Graphs



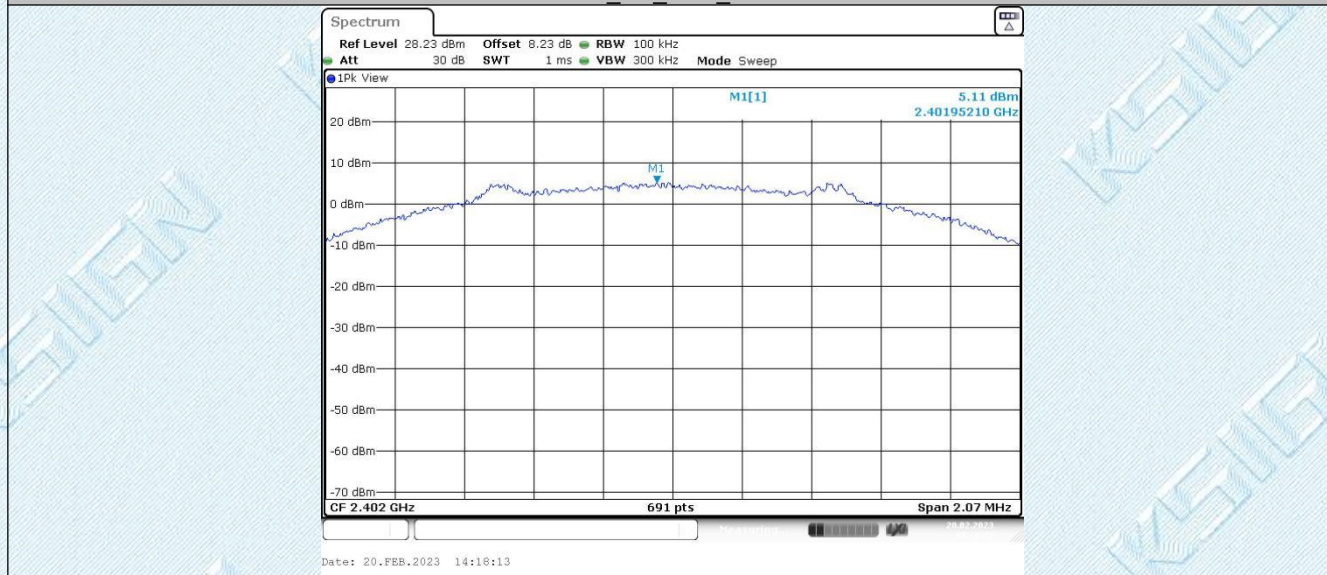
TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

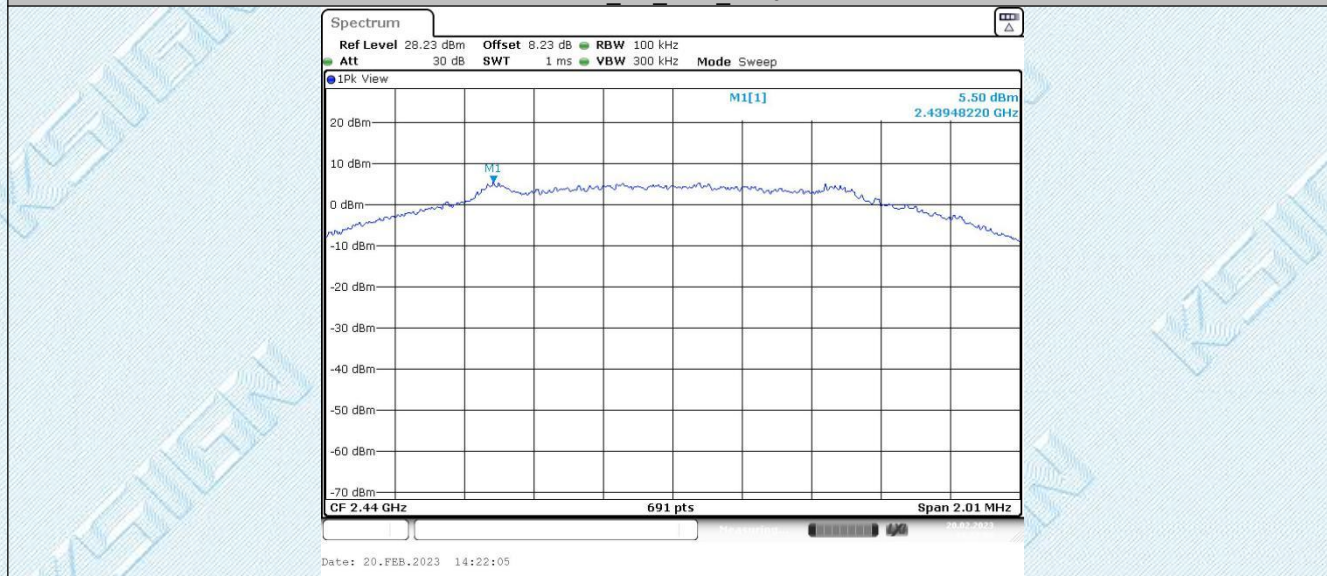
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com



BLE_2M_Ant1_2402



BLE_2M_Ant1_2440

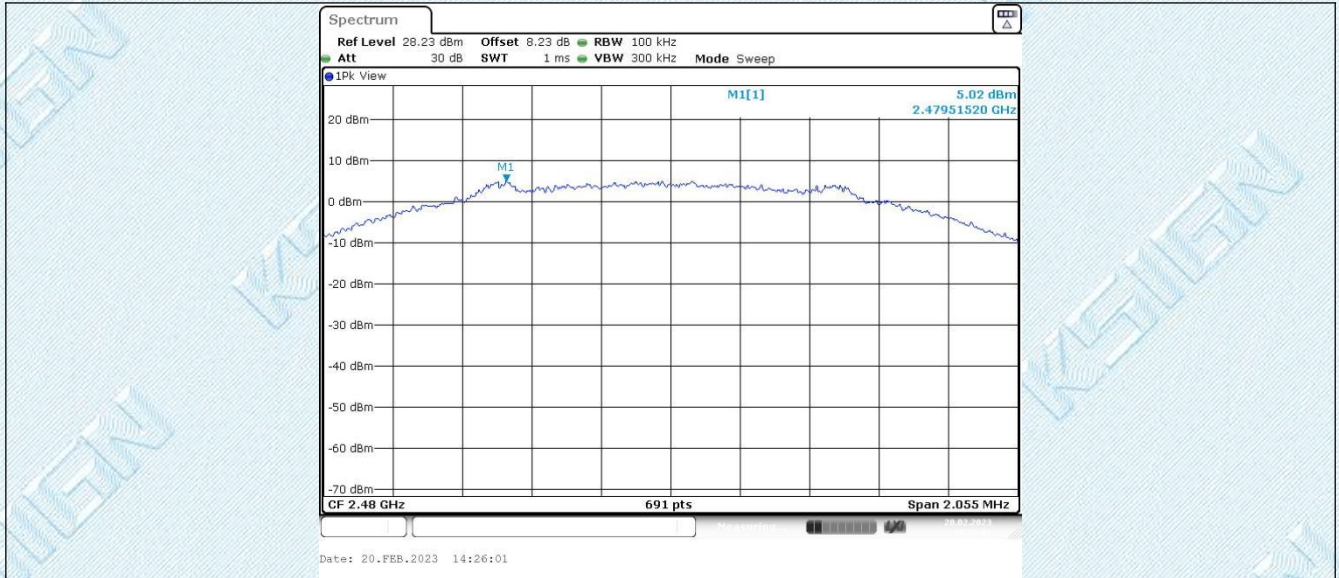


BLE_2M_Ant1_2480

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com



TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

7.6. Appendix F: Band edge measurements

7.6.1. Test Result

TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	6.73	-42.20	≤-13.27	PASS
		High	2480	6.72	-42.37	≤-13.28	PASS
BLE_2M	Ant1	Low	2402	5.11	-27.16	≤-14.89	PASS
		High	2480	5.02	-41.77	≤-14.98	PASS

7.6.2. Test Graphs



TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com

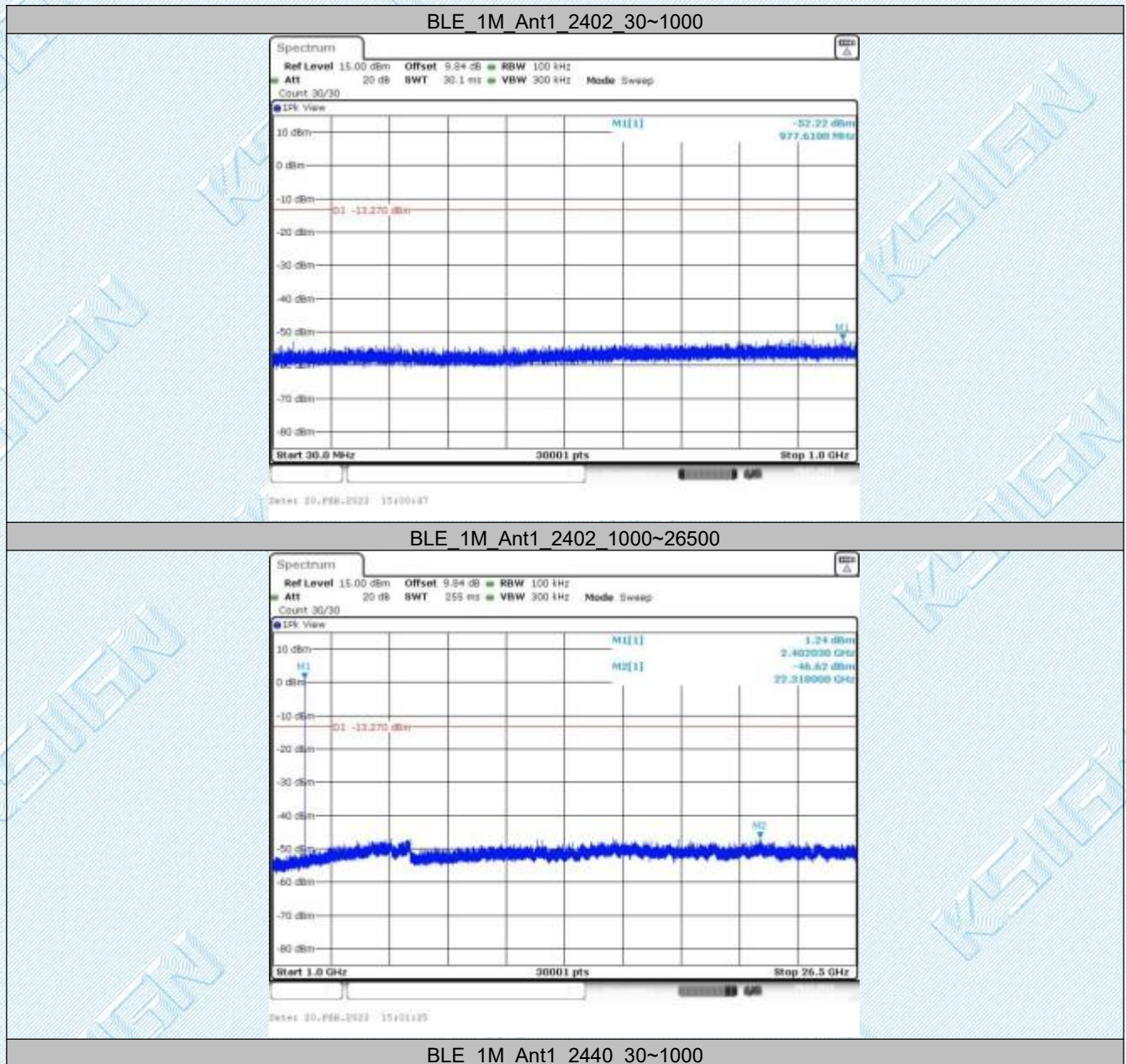


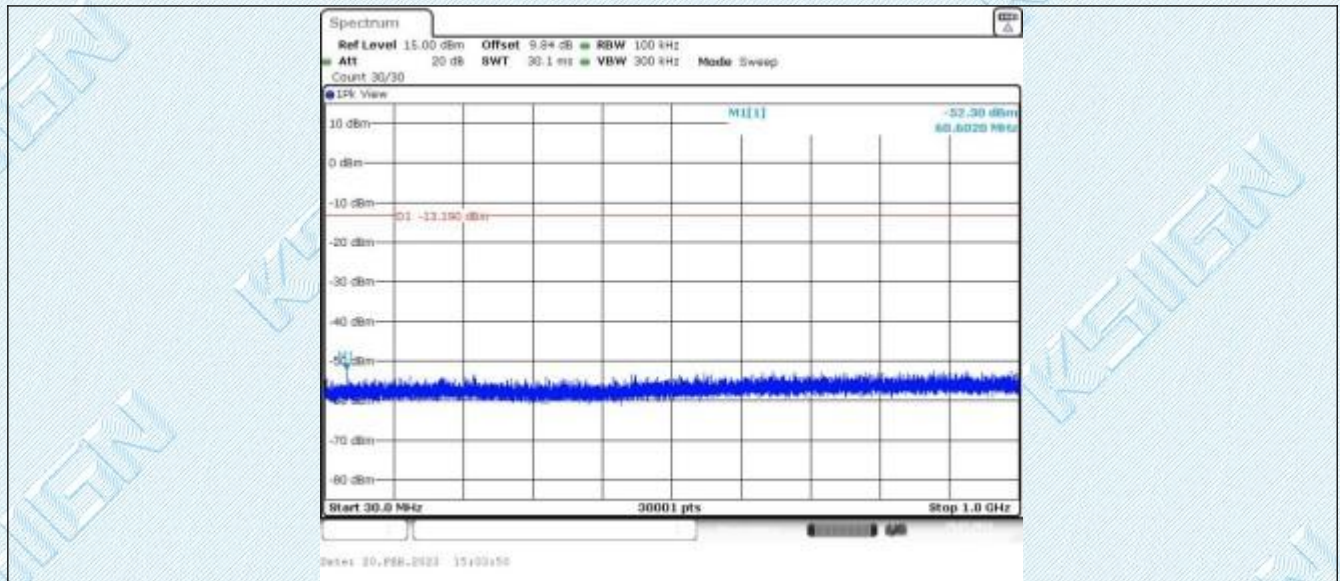
7.7. Appendix G: Conducted Spurious Emission

7.7.1. Test Result

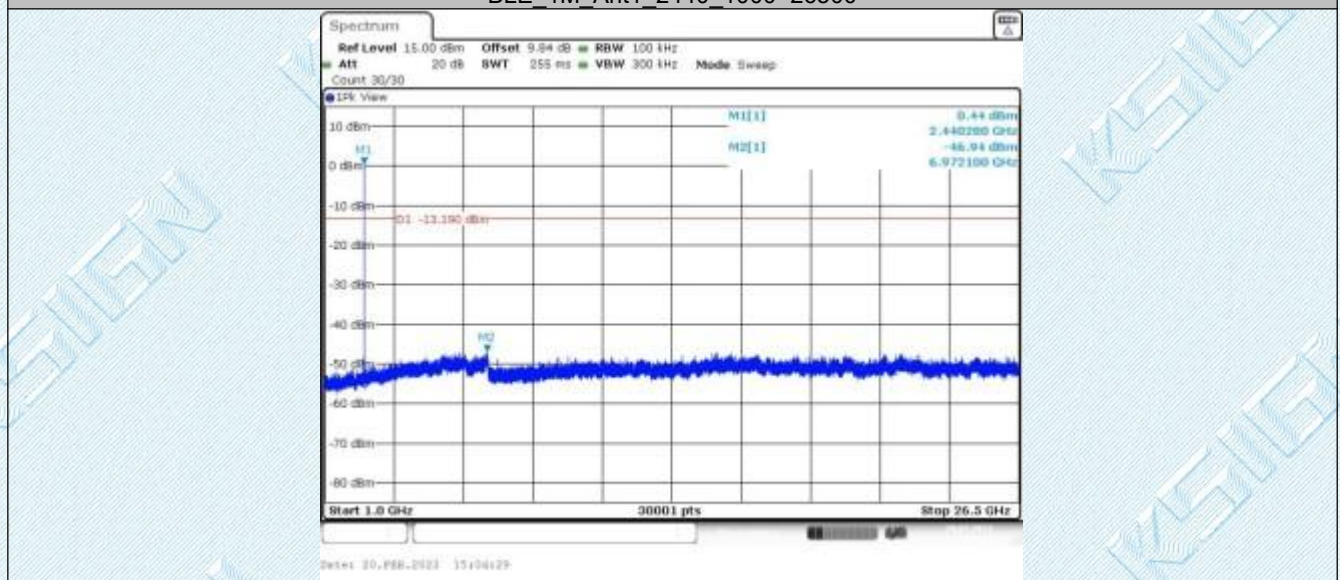
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	30~1000	6.73	-52.22	≤-13.27	PASS
			1000~26500	6.73	-46.62	≤-13.27	PASS
		2440	30~1000	6.81	-52.3	≤-13.19	PASS
			1000~26500	6.81	-46.94	≤-13.19	PASS
		2480	30~1000	6.72	-52.22	≤-13.28	PASS
			1000~26500	6.72	-46.54	≤-13.28	PASS
BLE_2M	Ant1	2402	30~1000	5.11	-51.99	≤-14.89	PASS
			1000~26500	5.11	-45.99	≤-14.89	PASS
		2440	30~1000	5.50	-51.7	≤-14.5	PASS
			1000~26500	5.50	-46.27	≤-14.5	PASS
		2480	30~1000	5.02	-51.35	≤-14.98	PASS
			1000~26500	5.02	-46.63	≤-14.98	PASS

7.7.2. Test Graphs

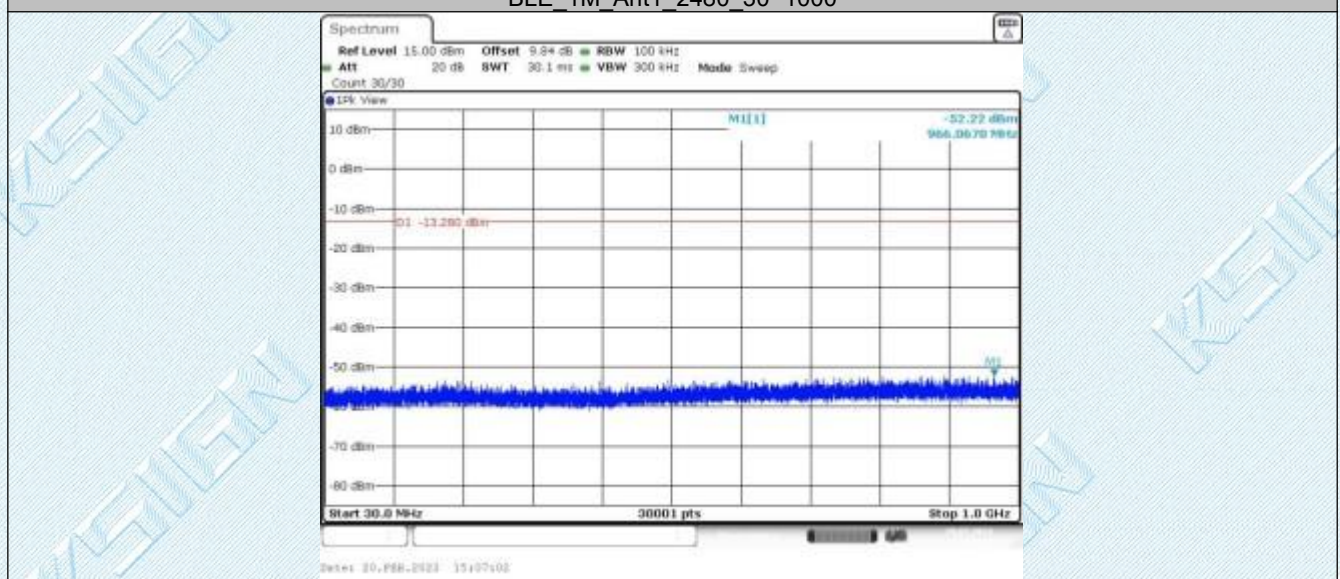




BLE_1M_Ant1_2440_1000~26500



BLE_1M_Ant1_2480_30~1000

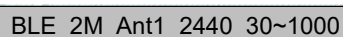
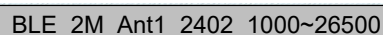
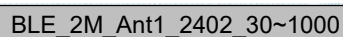


BLE_1M_Ant1_2480_1000~26500

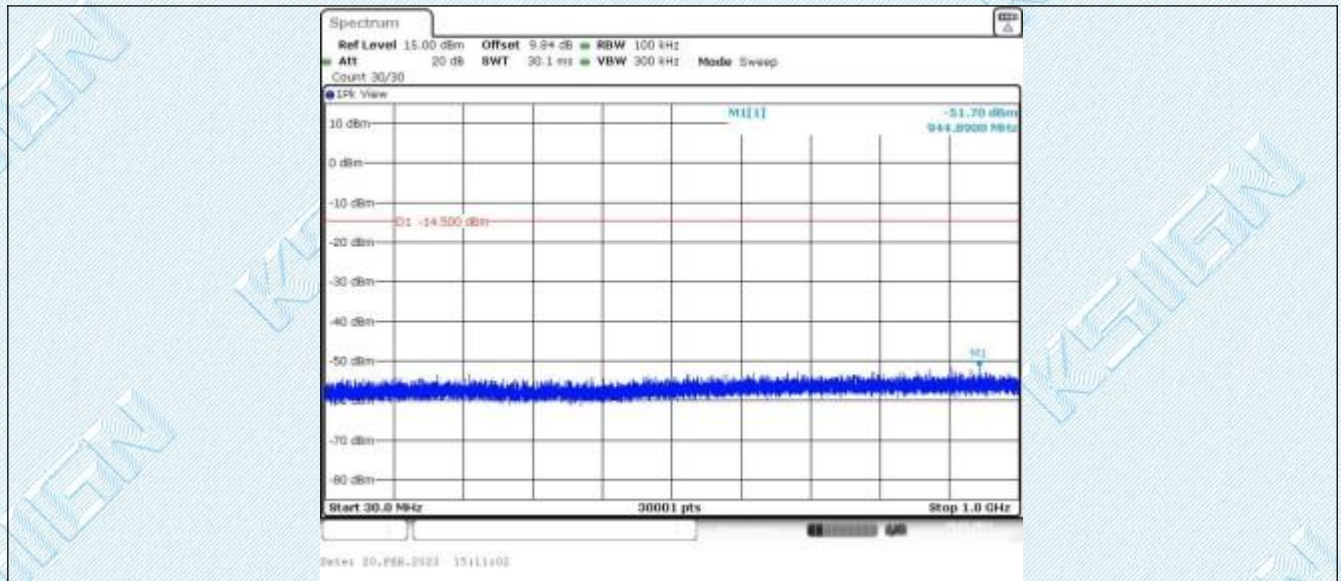
TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

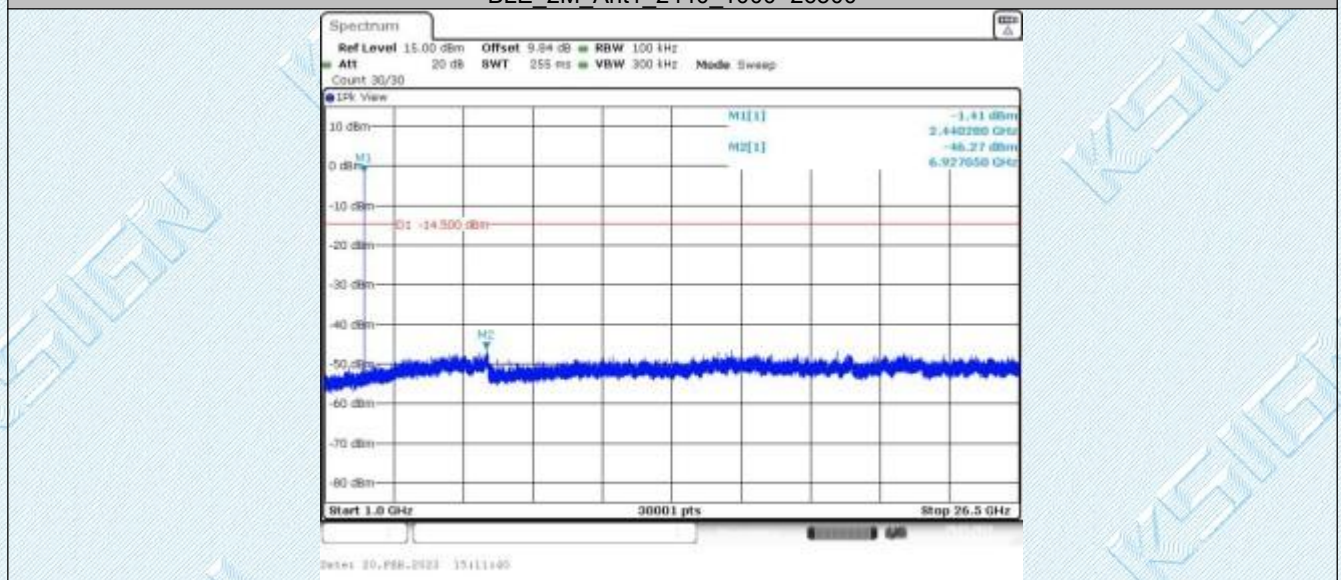
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com



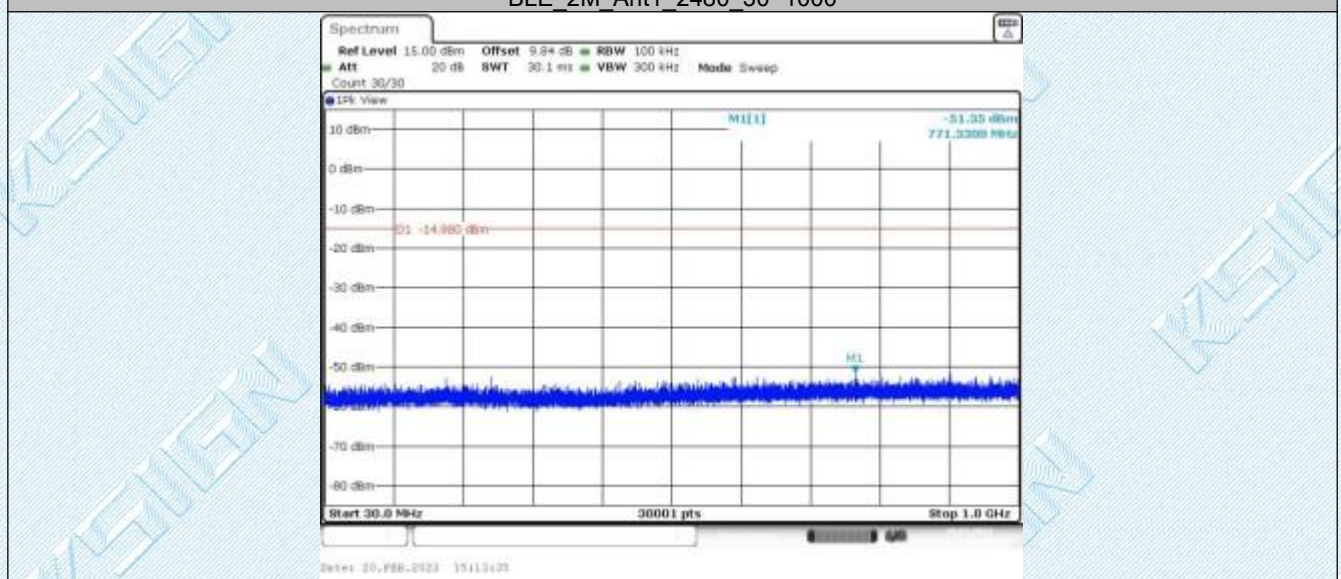
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com



BLE_2M_Ant1_2440_1000~26500



BLE_2M_Ant1_2480_30~1000

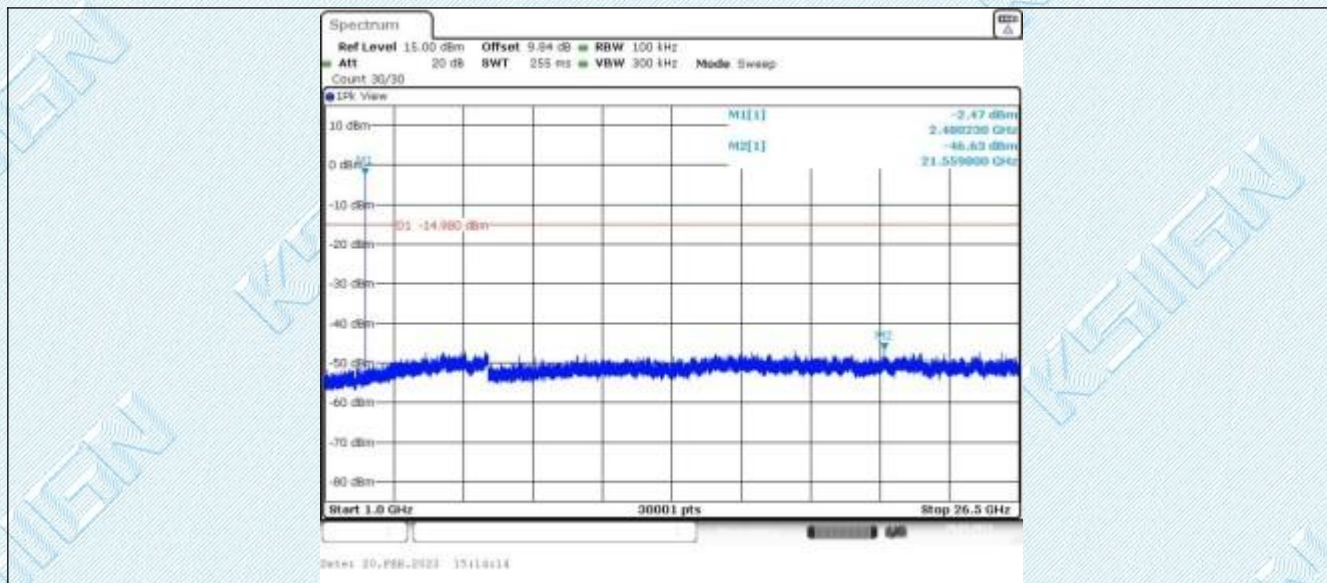


BLE_2M_Ant1_2480_1000~26500

TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com

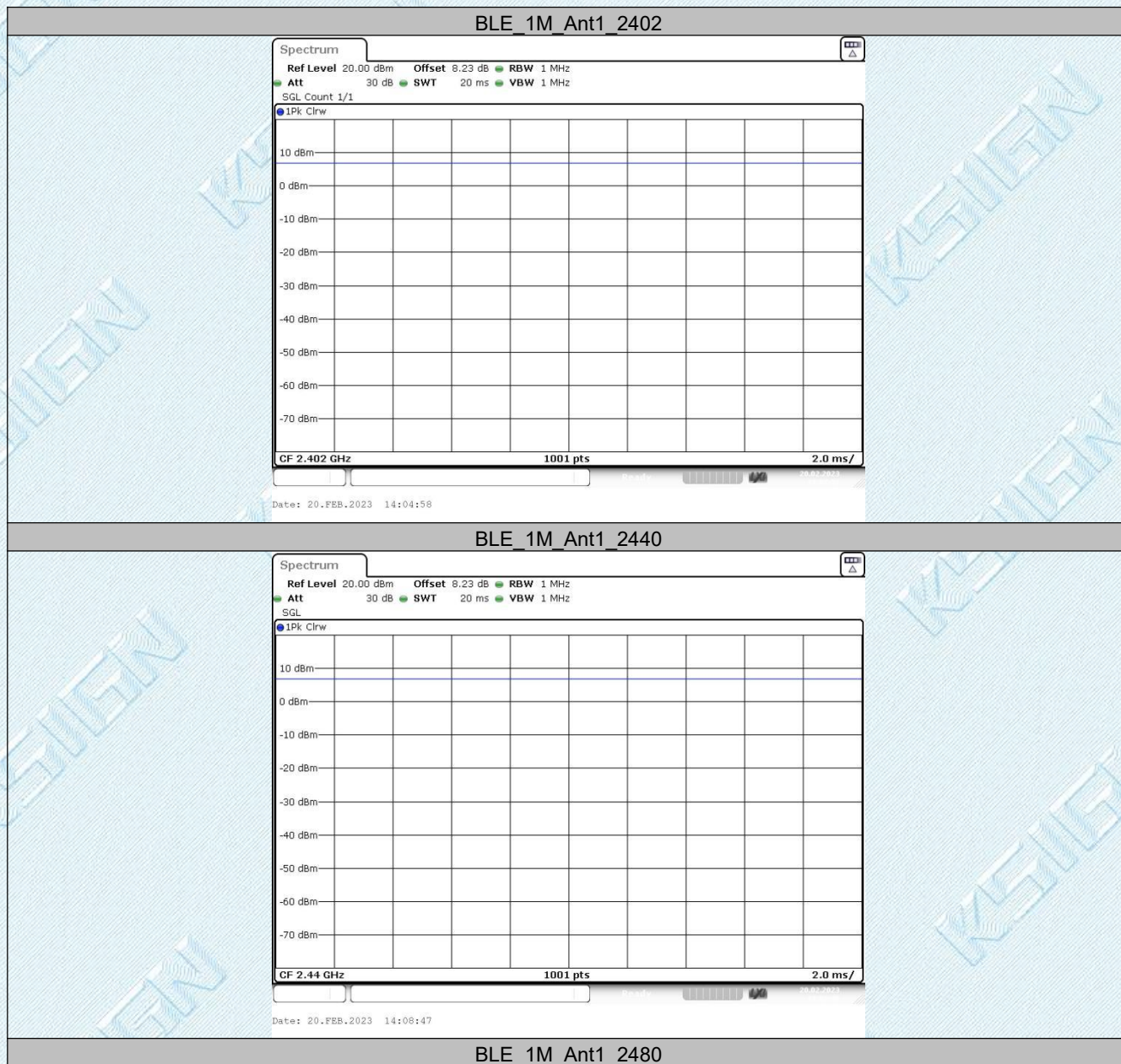


7.8. Appendix H: Duty Cycle

7.8.1. Test Result

TestMode	Antenna	Freq(MHz)	ON Time [ms]	Period [ms]	DC [%]	Factor	Limit	Verdict
BLE_1M	Ant1	2402	0.00	0.00	100	NaN	---	PASS
		2440	0.00	0.00	100	NaN	---	PASS
		2480	0.00	0.00	100	NaN	---	PASS
BLE_2M	Ant1	2402	0.00	0.00	100	NaN	---	PASS
		2440	0.00	0.00	100	NaN	---	PASS
		2480	0.00	0.00	100	NaN	---	PASS

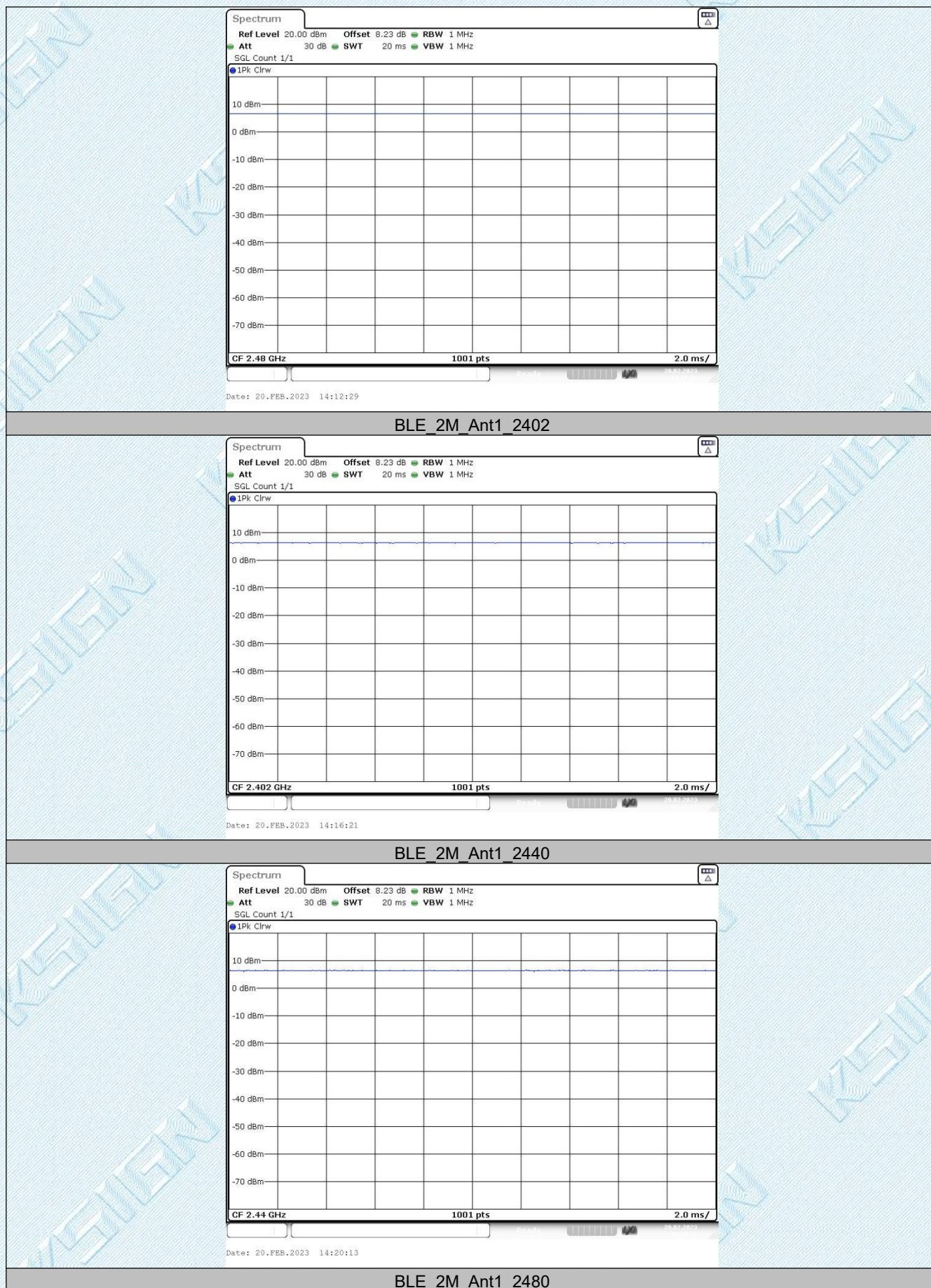
7.8.2. Test Graphs



TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

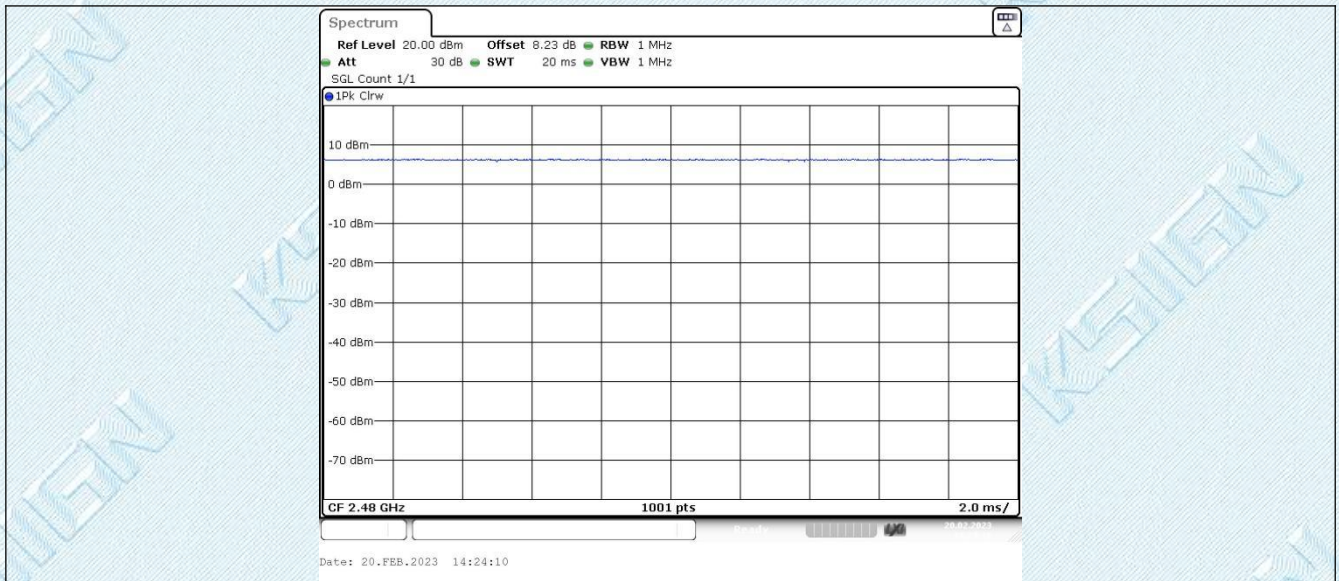
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com



TRF EMC_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdkesign.cn Web: www.gdkesign.com



--THE END--