

Test Report

Verified code: 721114

Report No.: E202306264850-6

Customer: Yanssie HK Limited

Address: 19H MAXGRAND PLAZA NO.3 TAI,YAU STREET SAN PO KONG, KOWLOON, HONG KONG

Sample Name: Keystone Hardware Wallet

Sample Model: KV032

Receive Sample Date: Aug.18,2023

Test Date: Aug.20,2023 ~ Sep.18,2023

Reference Document: CFR 47, FCC Part 15 Subpart C
RADIO FREQUENCY DEVICES: Subpart C—Intentional Radiators

Test Result: Pass

Prepared by:

Lu Wei

Lu Wei

Reviewed by:

Jiang Tao

Jiang Tao

Approved by:

Xiao Liang

Xiao Liang

GRG METROLOGY & TEST GROUP CO., LTD.

Issued Date: 2023-10-13

GRG METROLOGY & TEST GROUP CO., LTD.

Address: No.163, Pingyun Road, West of Huangpu Avenue, Guangzhou, Guangdong, China
Tel: (+86) 400-602-0999 FAX: (+86) 020-38698685 Web: <http://www.grgtest.com>

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REPORT ISSUED HISTORY

Report Version	Report No.	Description	Compile Date
1.0	E202306264850-6	Original Issue	2023-09-20

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1. TEST RESULT SUMMARY

Technical Requirements		
FCC 47 CFR Part 15 Subpart C 15.247		
ANSI C63.10-2013		
KDB 558074 D01 15.247 measurement guidance v05r02		
Limit / Severity	Item	Result
§15.203	Antenna Requirement	Pass
§15.207(a)	Conducted Emission	Not Applicable
§15.247(d)&15.205& 15.209	Radiated Spurious Emission	Pass
§15.247(b)(3)	Maximum Peak Output Power	Pass
§15.247(e)	Power Spectral Density	Pass
§15.247(a)(2)	6dB bandwidth	Pass
§15.247(d)	Conducted band edges and Spurious Emission	Pass
§15.247(d)&15.205& 15.209	Restricted bands of operation	Pass

Note: 1. The EUT is power by Battery, not applicable.

2. The EUT antenna is PCB antenna. The max gain of Antenna is 1.5dBi which accordance 15.203 is considered sufficient to comply with the provisions of this section.

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2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT

Name: Yanssie HK Limited

Address: 19H MAXGRAND PLAZA NO.3 TAI,YAU STREET SAN PO KONG, KOWLOON, HONG KONG

2.2 MANUFACTURER

Name: Yanssie HK Limited

Address: 19H MAXGRAND PLAZA NO.3 TAI,YAU STREET SAN PO KONG, KOWLOON, HONG KONG

2.3 FACTORY

Name: Shenzhen Along Electronic co.,Ltd

Address: NO.35 Xinyuan Industrial Park Gushu Community Xixiang, Baoan, Shenzhen, Guangdong

2.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: Keystone Hardware Wallet

Model No.: KV032

Adding Model: KV031

Model different description: See Section 2.5

Trade Name: KEYSTONE

FCC ID: 2BCRX-KV032

Power supply: DC 3.7V,1A Max

Battery Model: 523450

Specification: Ratings: 3.7V, 1000mAh, 3.7Wh

Frequency Band: 2402MHz – 2480MHz

Transmit Power: GFSK for 1Mbps:-1.76dBm

Modulation type: Bluetooth LE with 1M:GFSK

Channel space: 2MHz

Antenna Specification: PCB antenna 1.5dBi

Temperature Range: 0~+50°C

Hardware Version: V2.0

Software Version: V0.9.0

Sample No: E202306264850-0008, E202306264850-0012

Note:

1. EUT antenna gain is provided by the applicant. This report is made solely on the basis of such data and/or information. We accept no responsibility for the authenticity and completeness of the above data and information and the validity of the results and/or conclusions.
2. Based on the differences between the two models, the high configuration covered the low configuration, and the test was performed on the model KV032.

2.5 MODEL DIFFERENT

Function	KV032	KV031
fingerprint sensor	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Inside battery	<input checked="" type="checkbox"/>	<input type="checkbox"/>
IC(MAX32520)	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Note : The product name: Keystone Hardware Wallet, Model KV032 and KV031 are same in Circuit diagram, PCB layout, Hardware version, Software version, Bluetooth chip, RF module. KV031 removes these three Function based on KV032.

2.6 CHANNELLIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
*00	2402	10	2422	20	2442	30	2462
01	2404	11	2424	21	2444	31	2464
02	2406	12	2426	22	2446	32	2466
03	2408	13	2428	23	2448	33	2468
04	2410	14	2430	24	2450	34	2470
05	2412	15	2432	25	2452	35	2472
06	2414	16	2434	26	2454	36	2474
07	2416	17	2436	27	2456	37	2476
08	2418	18	2438	28	2458	38	2478
09	2420	*19	2440	29	2460	*39	2480

* is the test frequency

2.7 TEST OPERATION MODE

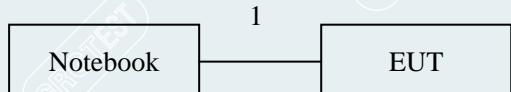
Mode No.	Description of the modes
1	Bluetooth (BLE) fixed frequency transmitting

2.8 LOCAL SUPPORTIVE

Name of equipment	Manufacturer	Model	Serial number	Note
Notebook	DELL	Latitude3490	2095LR2	/

No.	Cable Type	Qty.	Shielded Type	Ferrite Core(Qty.)	Length
1	USB cable	1	No	0	1.5m

2.9 CONFIGURATION OF SYSTEM UNDER TEST



Test software:

Software version	Test level
BR BlueletSuite	Default (Max)

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2.10 DUTY CYCLE

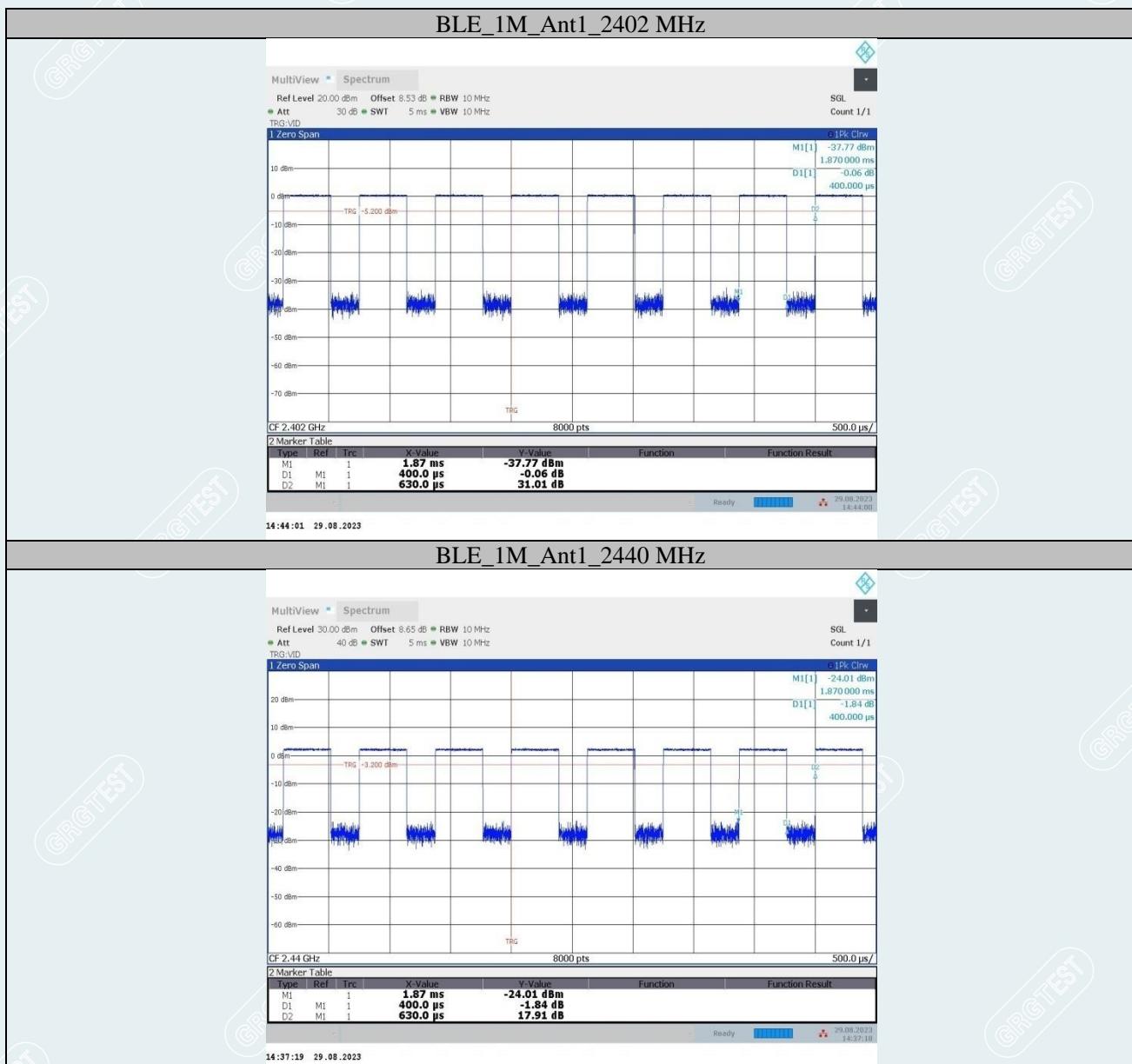
Environment: 26.4 °C/58%RH/101.0kPa

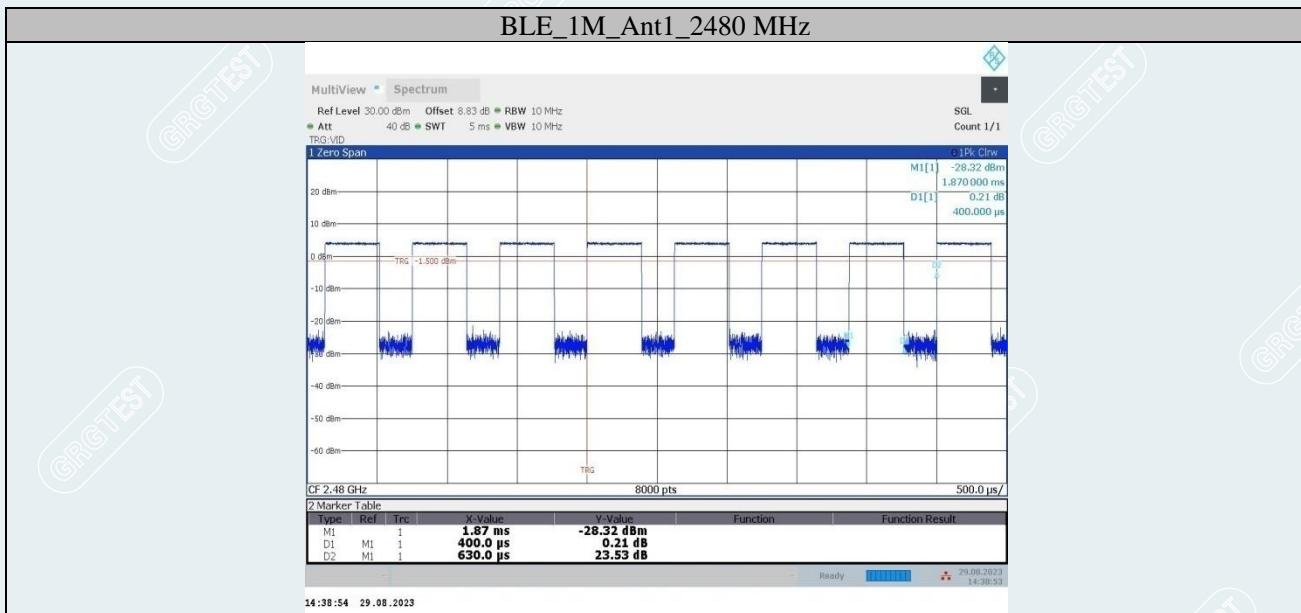
Voltage: DC 3.7V

Tested By: Qin Tingting

Date: 2023-08-29

TestMode	Antenna	Freq[MHz]	ON Time [ms]	Period [ms]	DC[%]	T[s]
BLE_1M	Ant1	2402	0.40	0.63	63.49	0.00040
		2440	0.40	0.63	63.49	0.00040
		2480	0.40	0.63	63.49	0.00040





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3. LABORATORY AND ACCREDITATIONS

3.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of GRG METROLOGY & TEST GROUP CO., LTD.

Address : No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District
Shenzhen, 518110, People's Republic of China
P.C. : 518110
Tel : 0755-61180008
Fax : 0755-61180008

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3.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Uncertainty
Radiated Emission	Coplanar	9kHz~30MHz 4.4dB ¹⁾
	Coaxial	9kHz~30MHz 4.4dB ¹⁾
	Horizontal	30MHz~200MHz 4.6dB ¹⁾
		200MHz~1000MHz 4.8dB ¹⁾
		1GHz~18GHz 5.0dB ¹⁾
		18GHz~26.5GHz 5.2dB ¹⁾
		30MHz~200MHz 4.7dB ¹⁾
		200MHz~1000MHz 4.7dB ¹⁾
		1GHz~18GHz 5.1dB ¹⁾
		18GHz~26.5GHz 5.4dB ¹⁾
Conduction Emission	150kHz~30MHz	3.30dB ¹⁾

Measurement	Uncertainty
RF frequency	6.0×10^{-6}
RF power conducted	0.78dB
Power spectral density	0.78dB
Occupied channel bandwidth	0.4dB
Unwanted emission, conducted	0.68dB
Humidity	6%
Temperature	2°C

Note:

¹⁾ This uncertainty represents an expanded uncertainty expressed at approximately the 95%.
This uncertainty represents an expanded uncertainty factor of $k=2$.

4. LIST OF USED TEST EQUIPMENT AT GRGT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
6dB Bandwidth&Conducted band edges and Spurious Emission&Power Spectral Density				
Spectrum Analyzer	R&S	FSW43	102072	2024-07-09
Automatic power measuring unit	TONSCEND	JS0806-2	2018060317	2024-08-04
Radiated Spurious Emission&Restricted bands of operation				
Test Receiver	R&S	ESR26	101758	2023-10-27
Loop Antenna	Schwarzbeck	FMZB 1513-60	1513-60-56	2024-07-15
Horn Antenna	Schwarzbeck	BBHA9120D	02143	2023-10-15
Bi-log Antenna	Schwarzbeck	VULB 9160	VULB9160-3401	2023-12-26
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	BBHA 9170-497	2023-10-14
Amplifier	Tonscend	TAP01018048	AP20E8060075	2024-04-11
Amplifier	Tonscend	TAP184050	AP20E806071	2024-04-16
Amplifier	SHIRONG ELECTRONIC	DLNA-30M1G-G40	20200928001	2024-08-11
Amplifier	SHIRONG ELECTRONIC	DLNA-1G18G-G40	20200928005	2024-08-17
Test S/W	Tonscend	JS32-RE		
Maximum Peak Output Power				
Pulse power sensor	Anritsu	MA2411B	1126150	2024-02-12
Power meter	Anritsu	ML2495A	1204003	2024-02-12

Note: The calibration interval of the above test instruments is 12 months except Bi-log Antenna, The calibration interval of the Bi-log Antenna is 24 months.

5. RADIATED SPURIOUS EMISSIONS

5.1 LIMITS

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30dB instead of 20dB. Attenuation below the general limits specified in §15.209(a) is not required.

Frequency (MHz)	Quasi-peak(μ V/m)	Measurement distance(m)	Quasi-peak(dB μ V/m)@distance 3m
0.009-0.490	2400/F(kHz)	300	128.5~93.8
0.490-1.705	24000/F(kHz)	30	73.8~63
1.705-30.0	30	30	69.5
30~88	100	3	40
88~216	150	3	43.5
216~960	200	3	46
Above 960	500	3	54

NOTE:

- (1) The emission limits for the ranges 9-90kHz and 110-490kHz are based on measurements employing a linear average detector.
- (2) The lower limit shall apply at the transition frequencies.
- (3) Above 18GHz test distance is 1m, so the PeakLimit=74+20*log(3/1)=83.54 (dB μ V/m).
The Avg Limit=54+20*log(3/1)=63.54 (dB μ V/m).

5.2 TEST PROCEDURES

1) Sequence of testing 9kHz to 30MHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Use serial board or connecting line to make EUT and notebook to communicate, according to the actual need to make EUT send constant frequency signal continuously.
- The EUT is placed on a desktop position in the center of the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Pre measurement:

- The turntable rotates from 0 ° to 360 °.
- The antenna height is 1.0 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

- Identified emissions during the pre measurement the software maximizes by rotating the turntable position (0 ° to 360 °) and by rotating the elevation axes (0 ° to 360 °).
- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QP detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement and the limit will be stored.

2) Sequence of testing 30MHz to 1GHz**Setup:**

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Use serial board or connecting line to make EUT and notebook to communicate, according to the actual need to make EUT send constant frequency signal continuously.
- The EUT is placed on a desktop position in the center of the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Pre measurement:

- The turntable rotates from 0 ° to 360 °.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 to 4 meter.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable rotates from 0 ° to 360 ° and antenna movement between 1 and 4 meter.
- The final measurement will be done with QP detector with an EMI receiver.
- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1GHz to 18GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Use serial board or connecting line to make EUT and notebook to communicate, according to the actual need to make EUT send constant frequency signal continuously.
- The EUT is placed on a desktop position in the center of the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Pre measurement:

- The turntable rotates from 0 ° to 360 °.
- The antenna is polarized vertical and horizontal.
- The antenna height scan range is 1 meter to 4 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable rotates from 0 ° to 360 ° and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement with marked maximum final measurements and the limit will be stored.

4) Sequence of testing above 18GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Use serial board or connecting line to make EUT and notebook to communicate, according to the actual need to make EUT send constant frequency signal continuously.
- The EUT is placed on a desktop position in the center of the turntable.
- The measurement distance is 1 meter.
- The EUT was set into operation.

Pre measurement:

- The pre measurement distance is 1 meter.
- The turntable rotates from 0 ° to 360 °.
- The antenna is polarized vertical and horizontal.
- The antenna height scan range is 1 meter to 4 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak detector.
- The final measurement distance is 3 meter.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable rotates from 0 ° to 360 ° and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.
- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

NOTE:

- (a).The frequency from 9kHz to 150kHz, Set RBW=300Hz(for Peak&AVG), RBW=300Hz(for Peak&AVG).
the frequency from 150kHz to 30MHz, Set RBW=9kHz, RBW=9kHz,(for QP Detector).
- (b).The frequency from 30MHz to 1GHz, Set RBW=120kHz, RBW=300kHz,(for QP Detector).
- (c).The frequency above 1GHz, for Peak detector: Set RBW=1MHz, RBW=3MHz.
- (d).The frequency above 1GHz, for Avg detector: Set RBW=1MHz, if the EUT is configured to transmit with duty cycle $\geq 98\%$, set $VBW \leq RBW/100$ (i.e.,10kHz) but not less than 10Hz. if the EUT duty cycle is $< 98\%$, set $VBW \geq 1/T$, Where T is defined in section 2.10.

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5.3 TEST SETUP

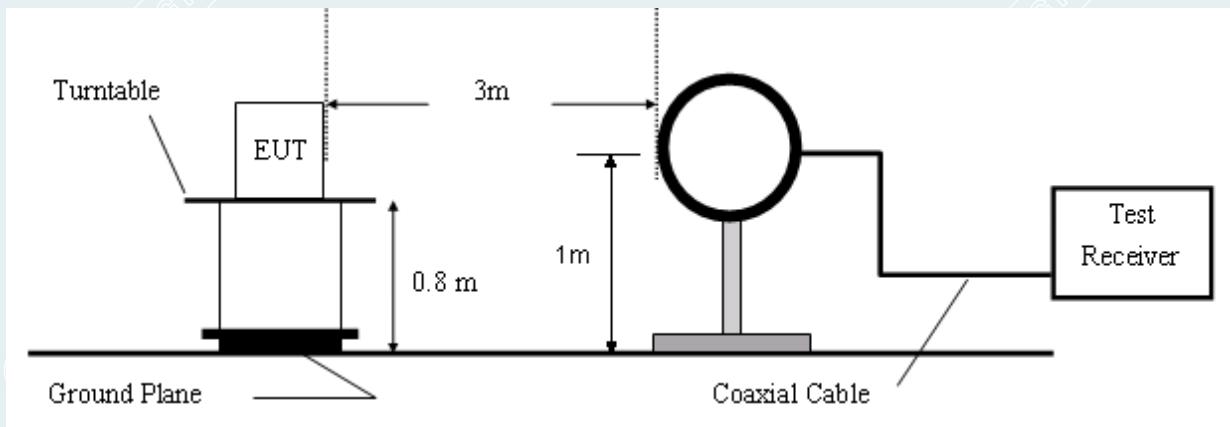


Figure 1. 9kHz to 30MHz radiated emissions test configuration

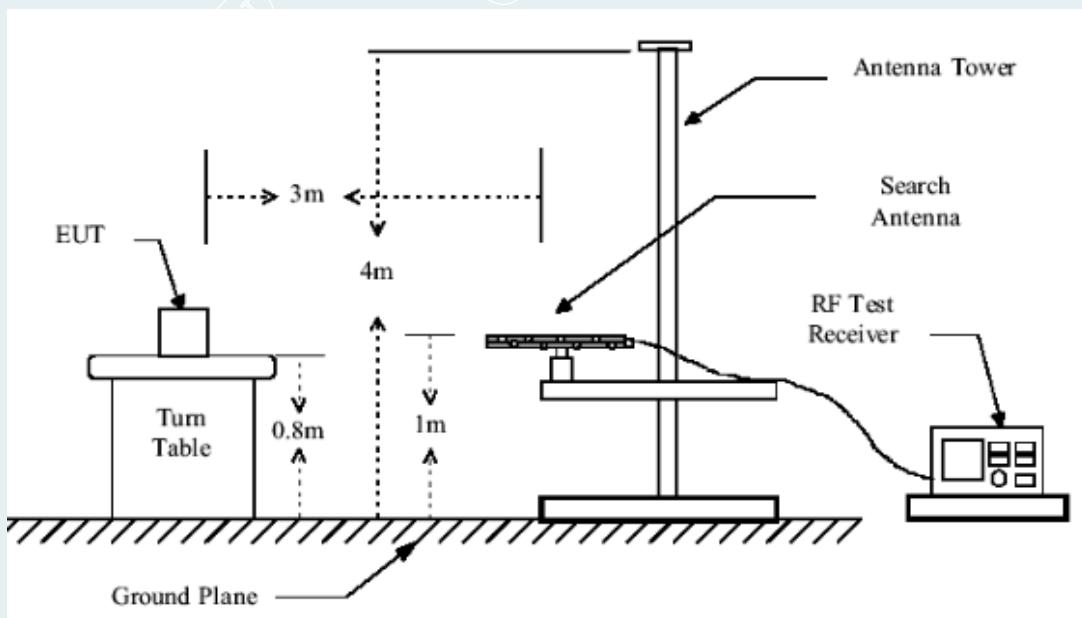


Figure 2. 30MHz to 1GHz radiated emissions test configuration

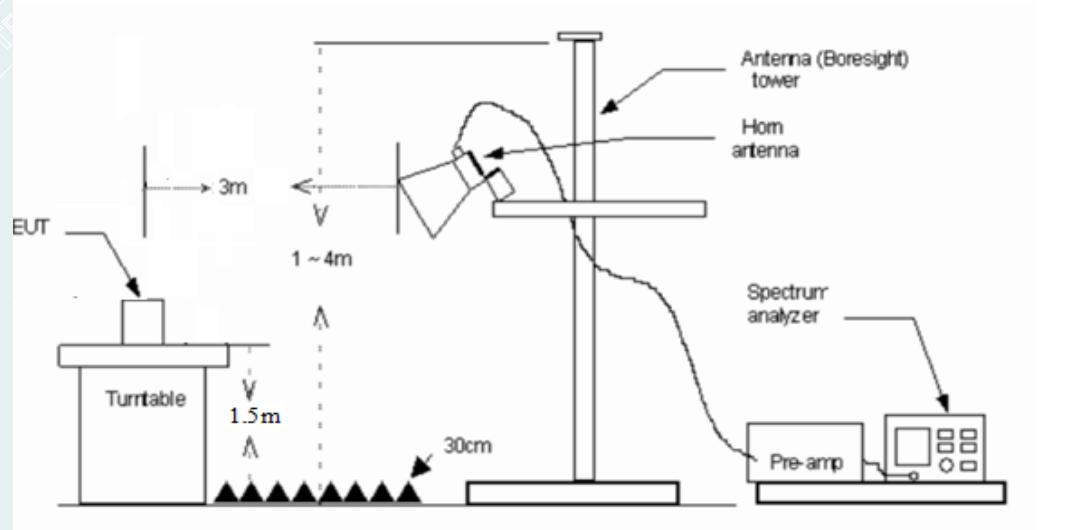
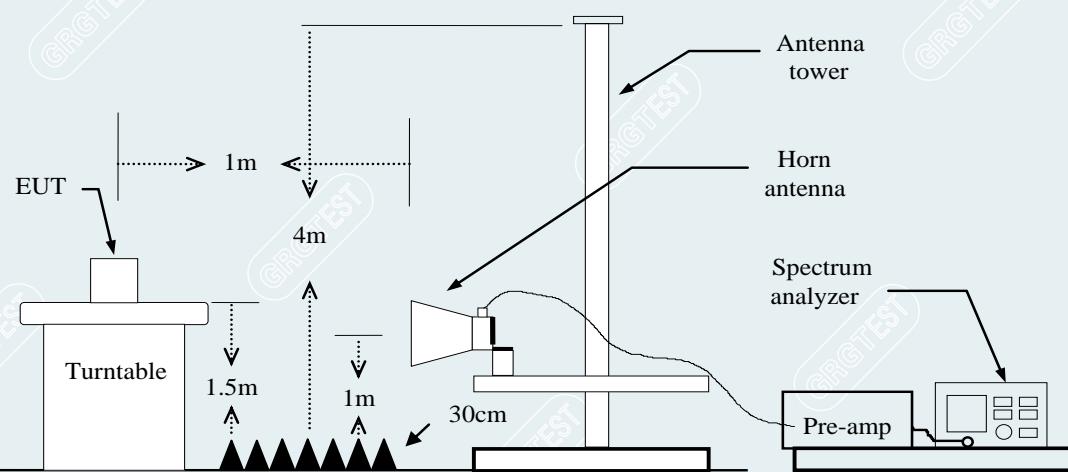


Figure 3. 1GHz to 18GHz radiated emissions test configuration**Figure 4. 18GHz to 26.5GHz radiated emissions test configuration**

5.4 DATA SAMPLE

30MHz to 1GHz

No.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
xxx	XXXX	63.53	36.38	-27.15	43.50	7.12	0	100	Horizontal

Frequency (MHz)

= Emission frequency in MHz

Reading (dB μ V/m)

= Uncorrected Analyzer / Receiver reading

Level (dB μ V/m)= Reading (dB μ V) + Factor (dB)Limit (dB μ V/m)

= Limit stated in standard

Margin (dB)

= Limit(dB μ V/m) – Level (dB μ V/m)

Polarity

= Antenna polarization

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1GHz-18GHz

No.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
xxx	xxxx	78.01	55.30	-22.71	74.00	18.70	100	50	Horizontal	Peak
xxx	xxxx	66.37	43.66	-22.71	54.00	10.34	100	50	Horizontal	AVG

Above 18GHz

No.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Remark
xxx	xxxx	54.49	42.38	-12.11	83.54	41.16	100	211	Vertical	Peak
xxx	xxxx	43.99	31.88	-12.11	63.54	31.66	100	211	Vertical	AVG

Frequency (MHz)

= Emission frequency in MHz

Reading (dB μ V/m)

= Uncorrected Analyzer / Receiver reading

Factor (dB)

= Antenna factor + Cable loss – Amplifier gain

Level (dB μ V/m)= Reading (dB μ V/m) + Factor (dB)Limit (dB μ V/m)

= Limit stated in standard

Margin (dB)

= Limit (dB μ V/m) – Level (dB μ V/m)

Polarity

= Antenna polarization

Peak

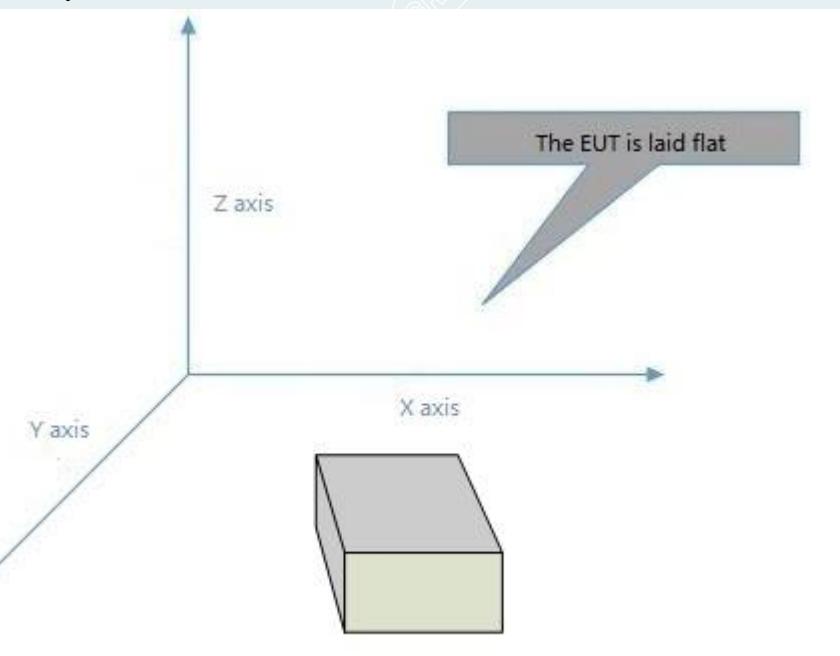
= Peak Reading

AVG

= Average Reading

5.5 TEST RESULTS

The test are under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X axis. So the data shown the X axis only.

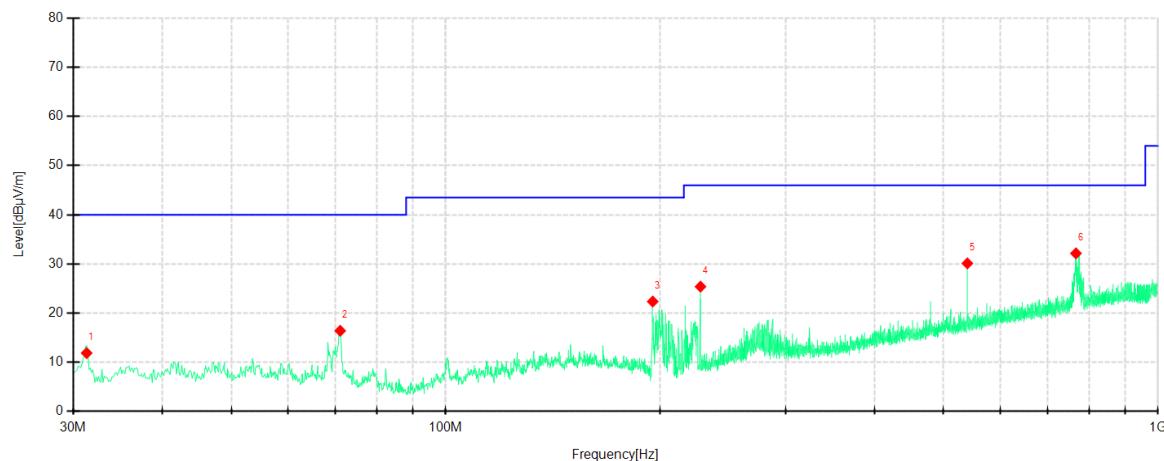


Pre-scan all mode and recorded the worst case results in this report (Middle Channel(1M))

Below 1GHz

EUT Name	Keystone Hardware Wallet	Model	KV032
Environmental Conditions	25.8°C/53%RH/101.0kPa	Test Voltage	DC 3.7V
Test Mode	TX/ BLE_1M (2440MHz)	Polarity	Horizontal
Tested By	Zhang Zishan	Tested Date	2023-09-09

Test Graph

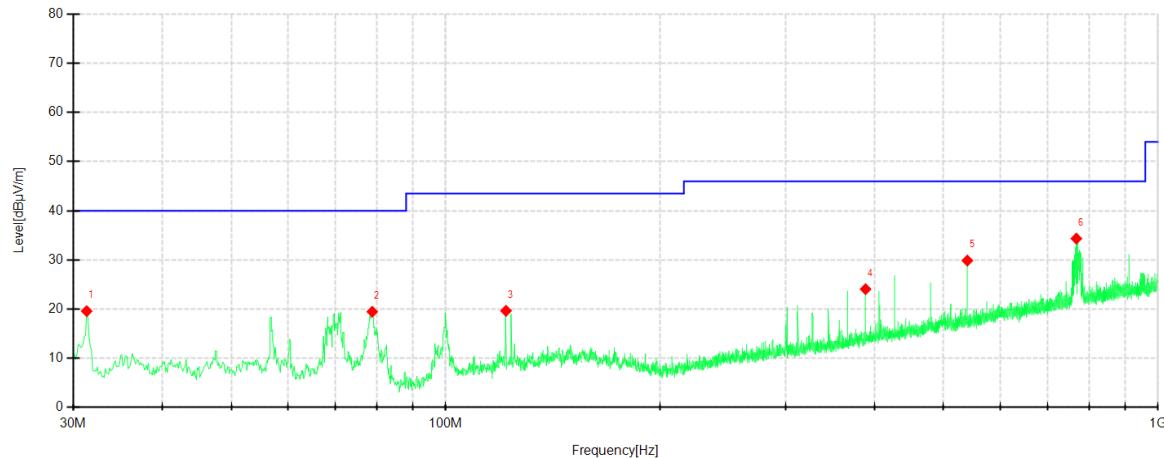


Suspected Data List

NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	31.3339	41.04	11.88	-29.16	40.00	26.62	200	304	Horizontal
2	71.1089	47.58	16.41	-31.17	40.00	23.59	200	284	Horizontal
3	195.2844	53.41	22.36	-31.05	43.50	20.87	100	234	Horizontal
4	227.9047	55.65	25.39	-30.26	46.00	20.61	100	0	Horizontal
5	540.0413	50.73	30.12	-20.61	46.00	15.88	100	164	Horizontal
6	767.0496	48.79	32.15	-16.64	46.00	13.73	100	75	Horizontal

EUT Name	Keystone Hardware Wallet	Model	KV032
Environmental Conditions	25.8 °C/53%RH/101.0kPa	Test Voltage	DC 3.7V
Test Mode	TX/ BLE_1M (2440MHz)	Polarity	Vertical
Tested By	Zhang Zishan	Tested Date	2023-09-09

Test Graph



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	31.3339	48.75	19.59	-29.16	40.00	20.41	200	16	Vertical
2	78.8699	52.46	19.47	-32.99	40.00	20.53	200	315	Vertical
3	121.5552	49.50	19.66	-29.84	43.50	23.84	100	37	Vertical
4	388.5811	48.70	24.06	-24.64	46.00	21.94	200	344	Vertical
5	540.0413	50.49	29.88	-20.61	46.00	16.12	200	234	Vertical
6	768.0198	50.98	34.35	-16.63	46.00	11.65	100	314	Vertical

Remark:

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Radiated emissions measured in frequency range from 9kHz to 1GHz were made with an instrument using Quasi-peak detector mode.
- 3 The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.

1GHz-18GHz:

Mode: TX/ BLE_1M

Lowest Frequency (2402MHz)

Environment: 24.2 °C/54%RH/101.0kPa

Tested By: Zhang Zishan

Voltage: DC 3.7V

Date: 2023-09-17

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1115.2000	56.02	46.53	-9.49	74.00	27.47	100	144	Horizontal
2	1994.0000	50.83	45.29	-5.54	74.00	28.71	100	255	Horizontal
3	2618.8000	49.49	46.79	-2.70	74.00	27.21	100	339	Horizontal
4	3195.0000	52.57	40.77	-11.80	74.00	33.23	100	36	Horizontal
5	5037.0000	45.80	46.38	0.58	74.00	27.62	200	110	Horizontal
6	15681.0000	39.08	50.46	11.38	74.00	23.54	100	246	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB μ V/m]	AV Value [dB μ V/m]	AV Limit [dB μ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	15681.0000	11.38	30.24	41.62	54.00	12.38	100	246	Vertical

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1116.0000	54.70	43.75	-10.95	74.00	30.25	200	34	Vertical
2	1996.8000	52.69	45.98	-6.71	74.00	28.02	200	196	Vertical
3	2792.0000	47.59	45.89	-1.70	74.00	28.11	100	56	Vertical
4	3192.0000	58.77	46.46	-12.31	74.00	27.54	100	127	Vertical
5	5098.5000	46.93	47.14	0.21	74.00	26.86	200	124	Vertical
6	17902.5000	36.96	50.51	13.55	74.00	23.49	100	237	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB μ V/m]	AV Value [dB μ V/m]	AV Limit [dB μ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	17902.5000	13.55	30.22	43.77	54.00	10.23	100	237	Vertical

Mode: TX/ BLE_1M

Middle Frequency (2440MHz)

Environment: 24.2°C/54%RH/101.0kPa

Tested By: Zhang Zishan

Voltage: DC 3.7V

Date: 2023-09-17

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1117.6000	55.55	46.09	-9.46	74.00	27.91	100	218	Horizontal
2	1994.0000	53.37	47.83	-5.54	74.00	26.17	100	257	Horizontal
3	2305.6000	48.54	45.40	-3.14	74.00	28.60	200	143	Horizontal
4	4249.5000	52.28	45.49	-6.79	74.00	28.51	100	135	Horizontal
5	5250.0000	46.27	47.24	0.97	74.00	26.76	200	49	Horizontal
6	15651.0000	38.32	51.22	12.90	74.00	22.78	100	329	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB μ V/m]	AV Value [dB μ V/m]	AV Limit [dB μ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	15651.0000	12.90	31.02	43.92	54.00	10.08	100	329	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1117.0000	55.82	44.88	-10.94	74.00	29.12	200	40	Vertical
2	1992.8000	54.06	47.33	-6.73	74.00	26.67	200	186	Vertical
3	2890.8000	48.05	46.67	-1.38	74.00	27.33	200	40	Vertical
4	4251.0000	52.07	45.17	-6.90	74.00	28.83	100	279	Vertical
5	5035.5000	46.85	47.41	0.56	74.00	26.59	100	346	Vertical
6	17907.0000	37.61	51.16	13.55	74.00	22.84	100	333	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB μ V/m]	AV Value [dB μ V/m]	AV Limit [dB μ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	17907.0000	13.55	30.24	43.79	54.00	10.21	100	333	Vertical

Mode: TX/ BLE_1M

Highest Frequency (2480MHz)

Environment: 24.2 °C/54% RH/101.0kPa

Tested By: Zhang Zishan

Voltage: DC 3.7V

Date: 2023-09-17

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1113.2000	54.70	45.19	-9.51	74.00	28.81	200	137	Horizontal
2	1996.0000	49.20	43.71	-5.49	74.00	30.29	200	267	Horizontal
3	2499.8000	51.61	48.83	-2.78	74.00	25.17	100	207	Horizontal
4	4449.0000	49.56	43.07	-6.49	74.00	30.93	200	246	Horizontal
5	4959.0000	47.66	46.52	-1.14	74.00	27.48	200	40	Horizontal
6	15636.0000	37.21	50.02	12.81	74.00	23.98	100	268	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB μ V/m]	AV Value [dB μ V/m]	AV Limit [dB μ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2499.5830	-2.78	35.63	32.85	54.00	21.15	181	194.9	Horizontal
2	15636.0000	12.81	30.12	42.93	54.00	11.07	100	268	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1120.2000	55.34	44.46	-10.88	74.00	29.54	100	224	Vertical
2	1212.4000	52.44	43.88	-8.56	74.00	30.12	100	197	Vertical
3	1994.2000	54.58	47.85	-6.73	74.00	26.15	100	250	Vertical
4	3298.5000	59.67	47.26	-12.41	74.00	26.74	100	216	Vertical
5	5034.0000	46.34	46.86	0.52	74.00	27.14	100	259	Vertical
6	17895.0000	37.98	51.41	13.43	74.00	22.59	100	342	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB μ V/m]	AV Value [dB μ V/m]	AV Limit [dB μ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	17895.0000	13.43	30.24	43.67	54.00	10.33	100	342	Vertical

Remark:

- 1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
- 2 Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3 Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4 Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

18GHz to 26.5GHz

Mode: TX/ BLE_1M

Lowest Frequency (2402MHz)

Environment: 23.2°C/64%RH/101.0kPa

Tested By: Zhang Zishan

Voltage: DC 3.7V

Date: 2023-09-18

Suspected Data List

NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18569.5000	54.24	36.90	-17.34	83.54	46.64	100	328	Horizontal
2	19361.2750	53.98	37.20	-16.78	83.54	46.34	100	15	Horizontal
3	21075.7250	52.99	37.17	-15.82	83.54	46.37	100	344	Horizontal
4	22827.5750	51.69	36.96	-14.73	83.54	46.58	100	359	Horizontal
5	23332.9000	51.17	36.51	-14.66	83.54	47.03	100	156	Horizontal
6	25435.8000	49.75	35.63	-14.12	83.54	47.91	100	126	Horizontal

Suspected Data List

NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18570.7750	54.01	36.75	-17.26	83.54	46.79	100	62	Vertical
2	19598.8500	53.77	37.10	-16.67	83.54	46.44	100	141	Vertical
3	21283.9750	52.30	36.66	-15.64	83.54	46.88	100	297	Vertical
4	23151.0000	50.68	36.08	-14.60	83.54	47.46	100	204	Vertical
5	24250.4750	50.13	35.85	-14.28	83.54	47.69	100	345	Vertical
6	25455.7750	50.19	36.08	-14.11	83.54	47.46	100	171	Vertical

Note: The pre measurement result margin is greater than 20dB, and final measurement is not required

----- The following blanks -----

Mode: TX/ BLE_1M
 Middle Frequency (2440MHz)
 Environment: 23.2°C/64%RH/101.0kPa
 Tested By: Zhang Zishan

Voltage: DC 3.7V
 Date: 2023-09-18

Suspected Data List

NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18504.4750	54.13	36.70	-17.43	83.54	46.84	100	93	Horizontal
2	19916.3250	53.48	36.95	-16.53	83.54	46.59	100	342	Horizontal
3	20918.9000	52.52	36.60	-15.92	83.54	46.94	100	358	Horizontal
4	21621.4250	52.42	36.73	-15.69	83.54	46.81	100	249	Horizontal
5	22949.1250	50.69	36.03	-14.66	83.54	47.51	100	249	Horizontal
6	25418.8000	49.54	35.42	-14.12	83.54	48.12	100	249	Horizontal

Suspected Data List

NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18493.4250	54.22	36.87	-17.35	83.54	46.67	100	298	Vertical
2	19629.8750	53.60	36.96	-16.64	83.54	46.58	100	48	Vertical
3	22196.8750	51.69	36.38	-15.31	83.54	47.16	100	235	Vertical
4	23770.6500	49.94	35.46	-14.48	83.54	48.08	100	268	Vertical
5	24387.7500	50.15	35.95	-14.20	83.54	47.59	100	63	Vertical
6	26069.0500	50.37	36.26	-14.11	83.54	47.28	100	95	Vertical

Note: The pre measurement result margin is greater than 20dB, and final measurement is not required

----- The following blanks -----

Mode: TX/ BLE_1M
 Highest Frequency (2480MHz)
 Environment: 23.2°C/64%RH/101.0kPa
 Tested By: Zhang Zishan

Voltage: DC 3.7V
 Date: 2023-09-18

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18616.2500	53.69	36.41	-17.28	83.54	47.13	100	144	Horizontal
2	19376.5750	54.33	37.54	-16.79	83.54	46.00	100	15	Horizontal
3	21710.2500	52.24	36.59	-15.65	83.54	46.95	100	15	Horizontal
4	22838.6250	51.59	36.87	-14.72	83.54	46.67	100	207	Horizontal
5	24314.2250	50.33	36.02	-14.31	83.54	47.52	100	48	Horizontal
6	26131.9500	49.67	35.49	-14.18	83.54	48.05	100	360	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18548.6750	54.29	37.00	-17.29	83.54	46.54	100	109	Vertical
2	20045.9500	53.38	37.02	-16.36	83.54	46.52	100	48	Vertical
3	21517.3000	53.41	37.77	-15.64	83.54	45.77	100	266	Vertical
4	22934.6750	51.35	36.68	-14.67	83.54	46.86	100	282	Vertical
5	24447.6750	50.32	36.16	-14.16	83.54	47.38	100	346	Vertical
6	25412.4250	49.55	35.47	-14.08	83.54	48.07	100	313	Vertical

Note: The pre measurement result margin is greater than 20dB, and final measurement is not required

----- The following blanks -----

6. 6dB BANDWIDTH

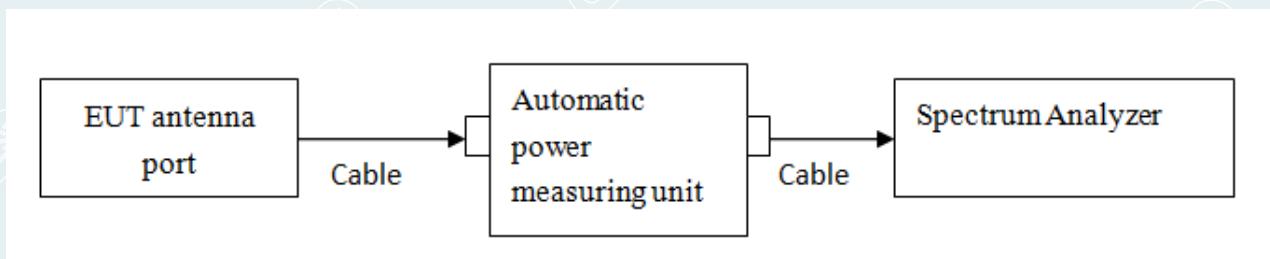
6.1 LIMITS

Systems using digital modulation techniques may operate in the 902–928MHz, 2400–2483.5MHz, and 5725–5850MHz bands. The minimum 6dB bandwidth shall be at least 500kHz.

6.2 TEST PROCEDURES

- 1) Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the spectrum analyzer.
- 2) Set resolution bandwidth (RBW) = 100kHz. Set the video bandwidth (VBW) $\geq 3 \times$ RBW. Detector = Peak. Trace mode = max hold. Sweep = auto couple. Allow the trace to stabilize, record 6dB bandwidth value.
- 3) Repeat above procedures until all frequencies measured were complete.

6.3 TEST SETUP



----- The following blanks -----

6.4 TEST RESULTS

Environment: 26.4 °C/58%RH/101.0kPa

Tested By: Qin Tingting

Voltage: DC 3.7V

Date: 2023-08-29

TestMode	Antenna	Freq(MHz)	Bandwidth[kHz]	Limit[kHz]	Verdict
BLE_1M	Ant1	2402	784	≥500	PASS
		2440	780		PASS
		2480	788		PASS

Test Graphs





----- The following blanks -----

7. MAXIMUM PEAK OUTPUT POWER

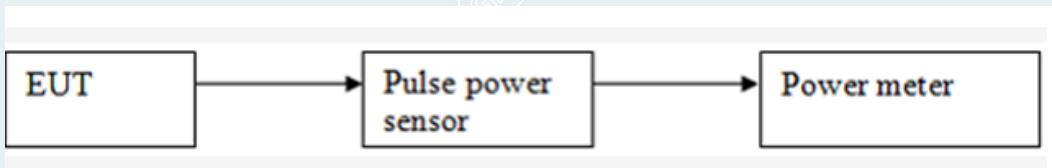
7.1 LIMITS

The maximum Peak output power measurement is 1W

7.2 TEST PROCEDURES

- 1) RF output of EUT was connected to the broadband peak RF power meter by RF cable. The path loss was compensated to the results for each measurement.
- 2) Set to the maximum power setting and enable the EUT transmit continuously.
- 3) Measure the conducted output power and record the results in the test report.

7.3 TEST SETUP



----- The following blanks -----

7.4 TEST RESULTS

Environment: 23.2°C/60%RH/101.0kPa

Tested By: Qin Tingting

Voltage: DC 3.7V

Date: 2023-09-15

BLE_1M

Channel	Frequency (MHz)	Measured Channel Power (dBm)	Limit	Peak/ Average	Result
Lowest	2402	-4.49	1W (30dBm)	Peak	Pass
Middle	2440	-3.60			Pass
Highest	2480	-1.76			Pass

----- The following blanks -----

8. POWER SPECTRAL DENSITY

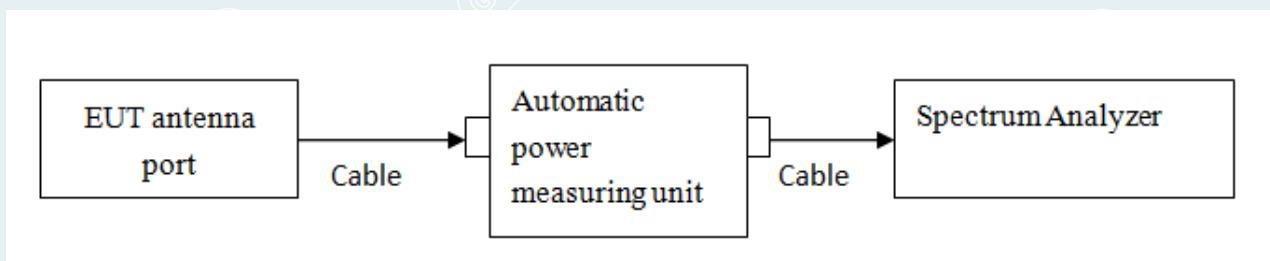
8.1 LIMITS

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz 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.

8.2 TEST PROCEDURES

- 1) Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the spectrum analyzer.
- 2) Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- 3) Set the analyzer span to 1.5 times the DTS bandwidth. Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$. Set the VBW $\geq [3 \times \text{RBW}]$. Detector = peak. Sweep time = auto couple. Trace mode = max hold. Allow trace to fully stabilize. Use the peak marker function to determine the maximum amplitude level within the RBW. If measured value exceeds requirement, then reduce RBW (but no less than 3kHz) and repeat.
- 4) Repeat above procedures until all frequencies measured were complete.

8.3 TEST SETUP



----- The following blanks -----

8.4 TEST RESULTS

Environment: 23.2 °C/60%RH/101.0kPa

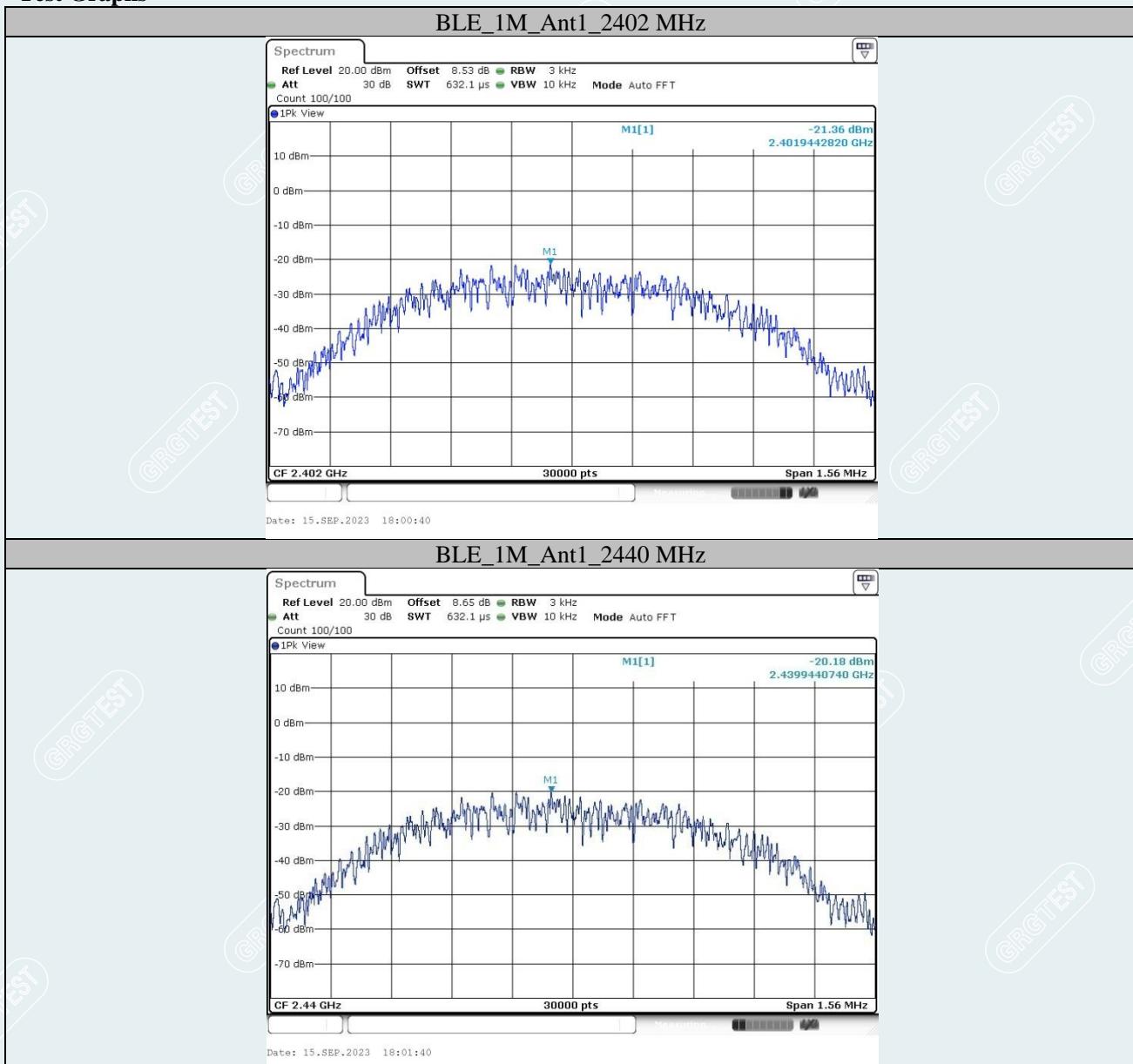
Voltage: DC 3.7V

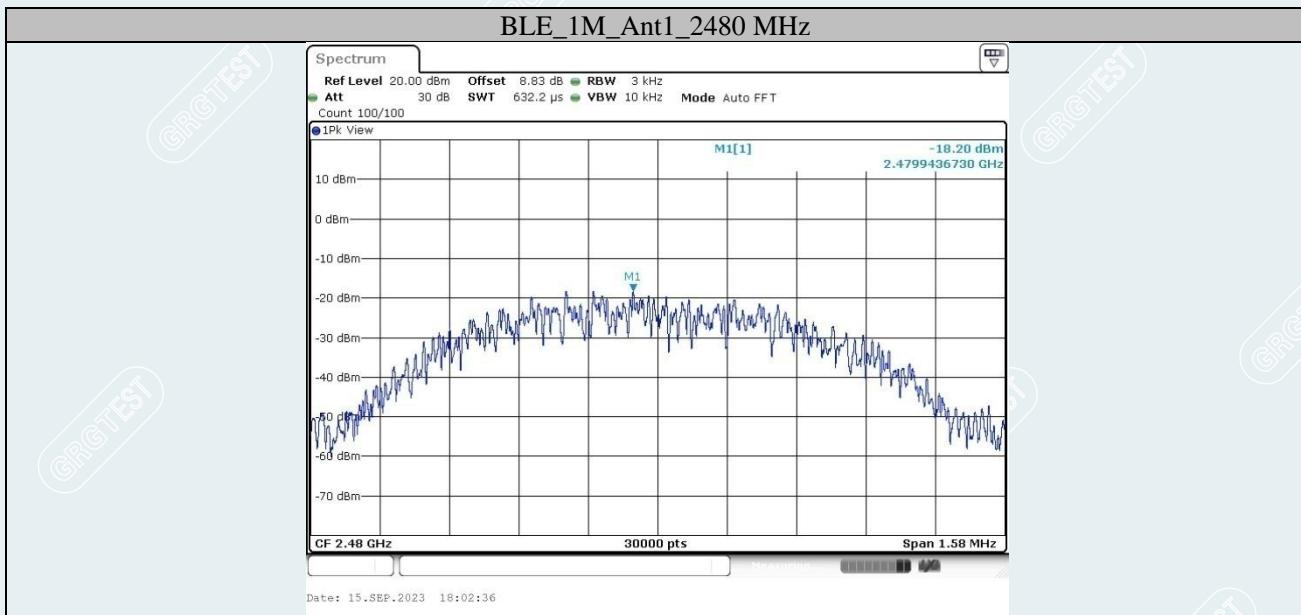
Tested By: Qin Tingting

Date: 2023-09-15

TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-21.36	≤8.00	PASS
		2440	-20.18	≤8.00	PASS
		2480	-18.20	≤8.00	PASS

Test Graphs





----- The following blanks -----

9. CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS

9.1 LIMITS

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30dB instead of 20dB.

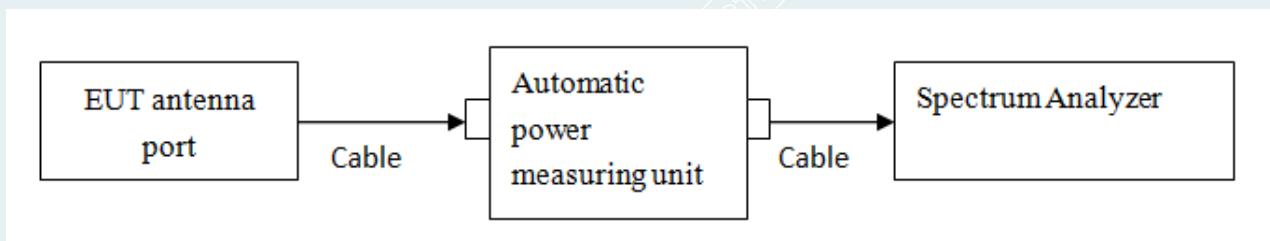
9.2 TEST PROCEDURES

Test procedures follow KDB 558074 D01 15.247 Measurement Guidance v05r02.

Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.

- 1) Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.
- 2) Set the spectrum analyzer: RBW =100kHz; VBW =300kHz, Frequency range = 30MHz to 26.5GHz; Sweep = auto; Detector Function = Peak. Trace = Max, hold.
- 3) Measure and record the results in the test report.
- 4) The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

9.3 TEST SETUP



9.4 TEST RESULTS

Environment: 26.4 °C/58%RH/101.0kPa
Tested By: Qin Tingting

Voltage: DC 3.7V
Date: 2023-08-29

Band edge

TestMode	Antenna	ChName	Freq(MHz)	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	0.09	-37.67	≤-19.91	PASS
		High	2480	3.21	-40.17	≤-16.79	PASS

Conducted Spurious Emission

TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-1.63	-1.63	---	PASS
			30~1000	-1.63	-56.07	≤-21.63	PASS
			1000~26500	-1.63	-55.67	≤-21.63	PASS
		2440	Reference	-0.08	-0.08	---	PASS
			30~1000	-0.08	-56.61	≤-20.08	PASS
			1000~26500	-0.08	-51.71	≤-20.08	PASS
		2480	Reference	1.90	1.90	---	PASS
			30~1000	1.90	-55.68	≤-18.1	PASS
			1000~26500	1.90	-52.04	≤-18.1	PASS

----- The following blanks -----

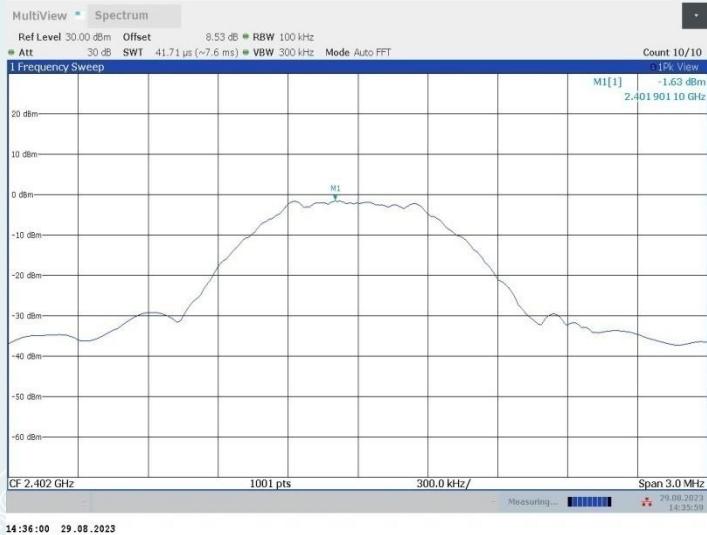
Test Graphs

Band edge

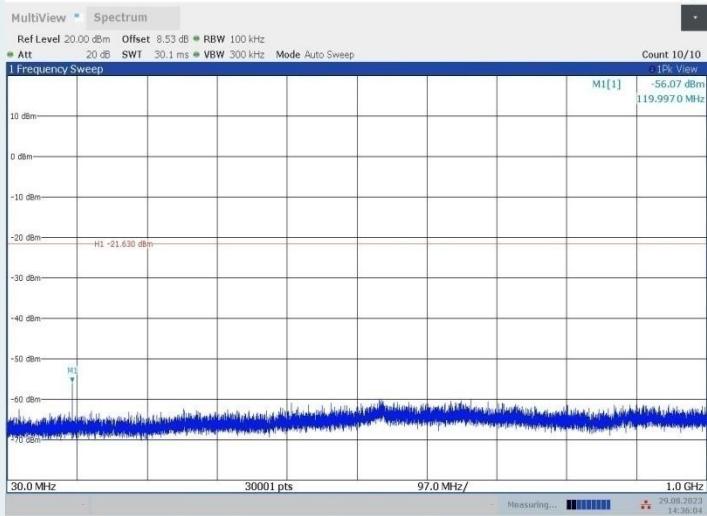


Conducted Spurious Emission

BLE_1M_Ant1_2402 MHz_0~Reference

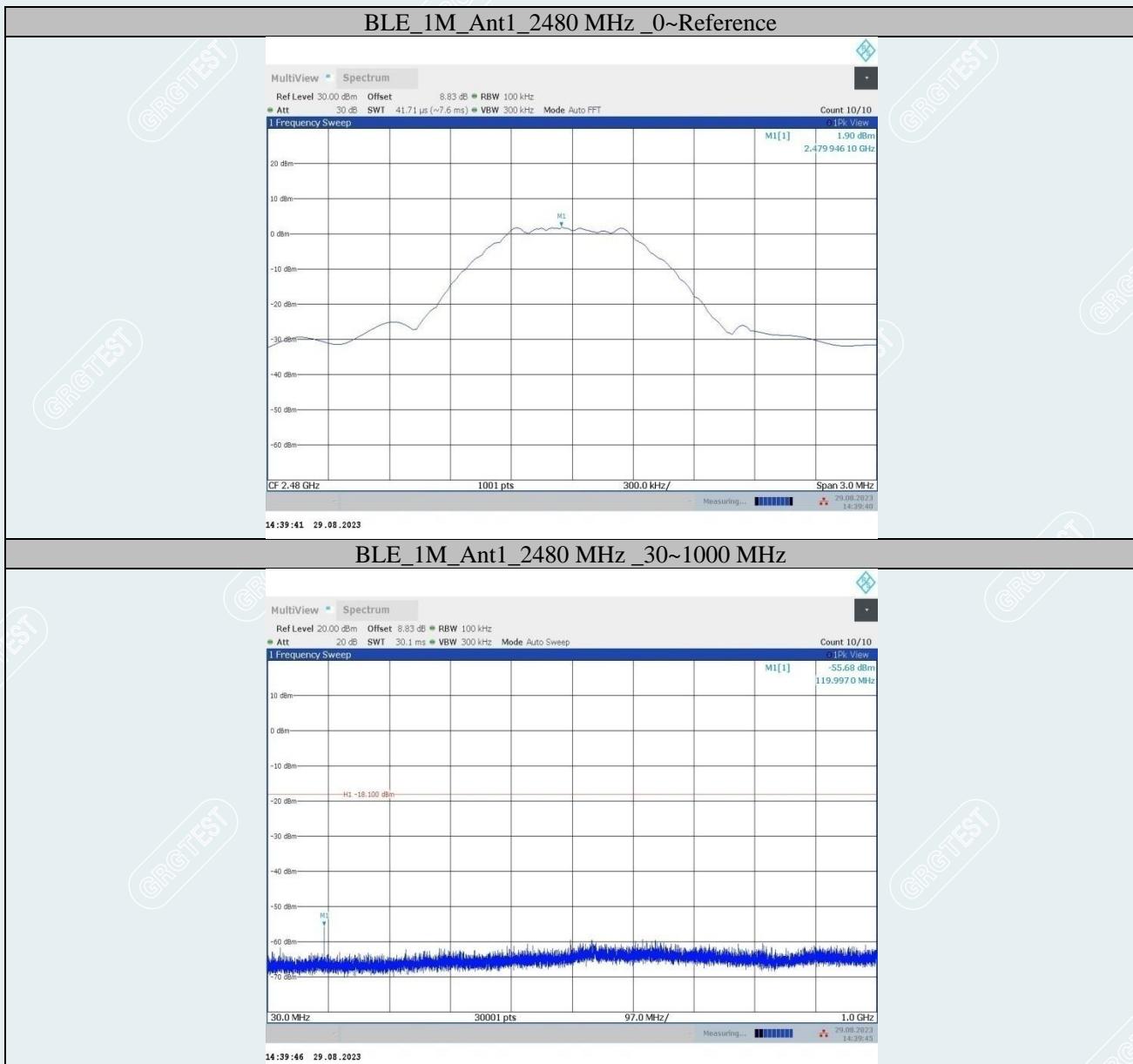


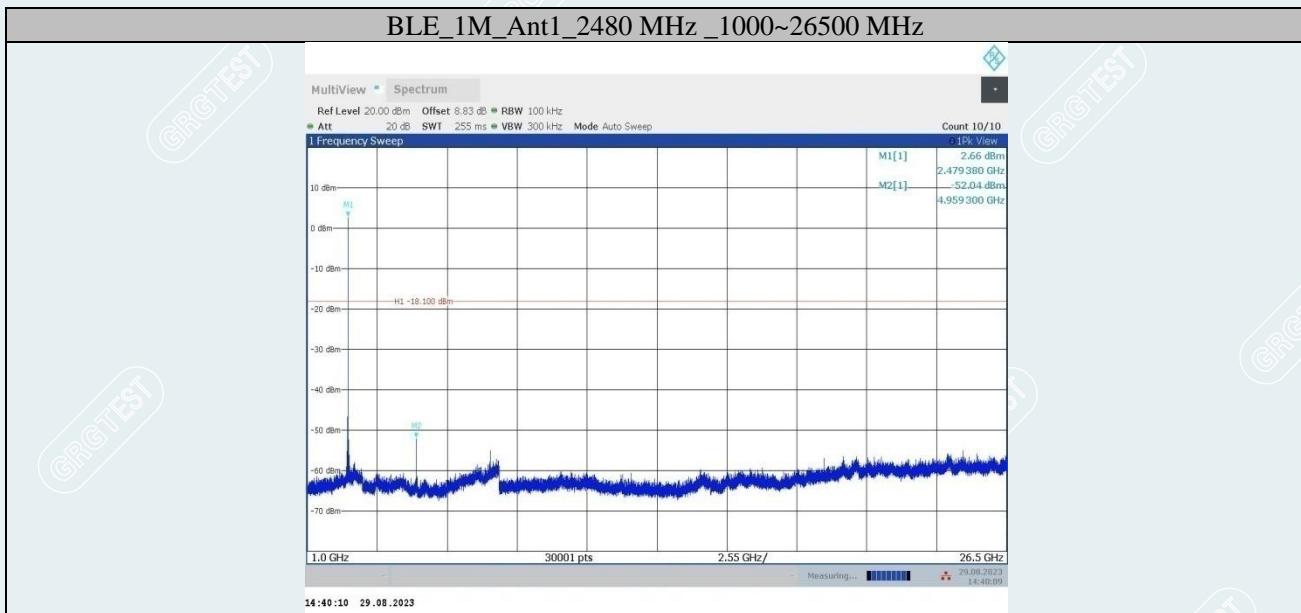
BLE_1M_Ant1_2402 MHz_30~1000 MHz











----- The following blanks -----

10. RESTRICTED BANDS OF OPERATION

10.1 LIMITS

Section 15.247(d) 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)).

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	
13.36 - 13.41			

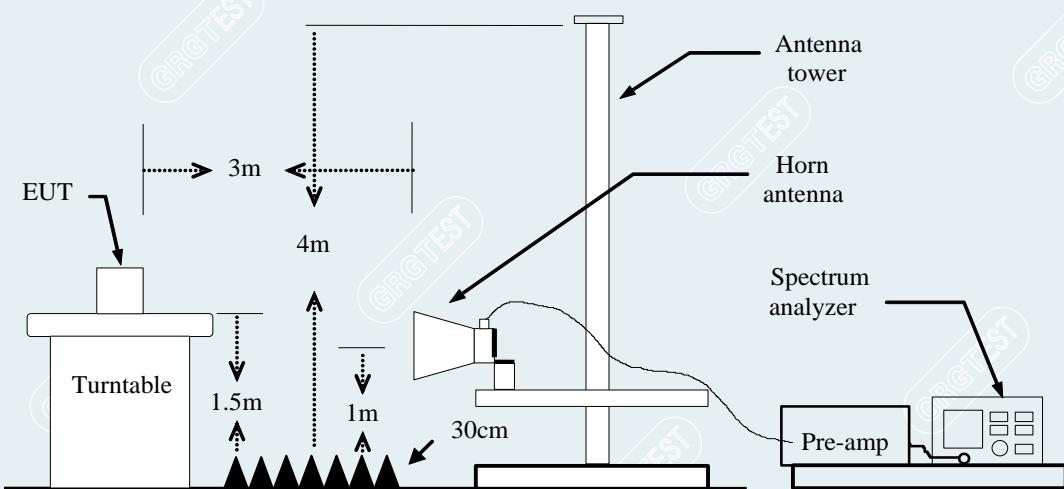
Frequency (MHz)	Quasi-peak(μ V/m)	Measurement distance(m)	Quasi-peak(dB μ V/m)@distance 3m
0.009-0.490	2400/F(kHz)	300	128.5~93.8
0.490-1.705	24000/F(kHz)	30	73.8~63
1.705-30.0	30	30	69.5
30 ~ 88	100	3	40
88~216	150	3	43.5
216 ~ 960	200	3	46
Above 960	500	3	54

10.2 TEST PROCEDURES

Test procedures follow KDB 558074 D01 15.247 Meas Guidance v05r02.

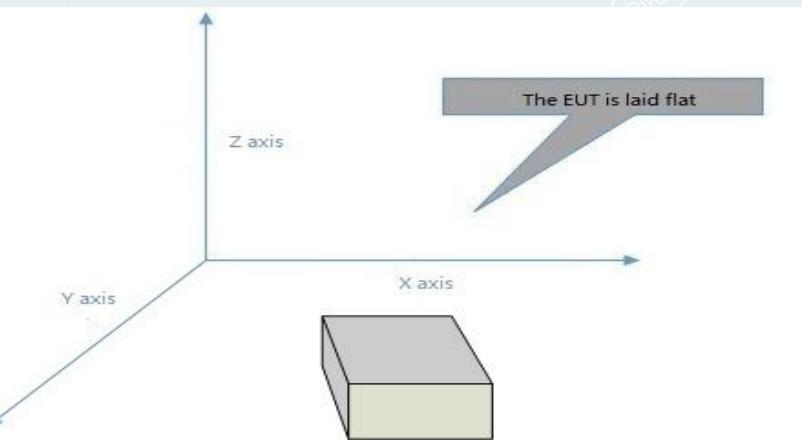
- 1) The EUT is placed on a turntable, which is 1.5m above the ground plane.
- 2) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3) EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4) Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - a) PEAK: RBW=1MHz / VBW=1MHz / Sweep=AUTO.
 - b) AVERAGE: RBW=1MHz / VBW=1/T / Sweep=AUTO.
 If the EUT is configured to transmit with duty cycle $\geq 98\%$, set $VBW \leq RBW/100$ (i.e., 10kHz) but not less than 10 Hz. If the EUT duty cycle is $< 98\%$, set $VBW \geq 1/T$, Where T is defined in section 2.10.
- 5) Repeat the procedures until all the PEAK and AVERAGE versus polarization are measured.

10.3 TEST SETUP



10.4 TEST RESULTS

The test are under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X axis. So the data shown the X axis only.



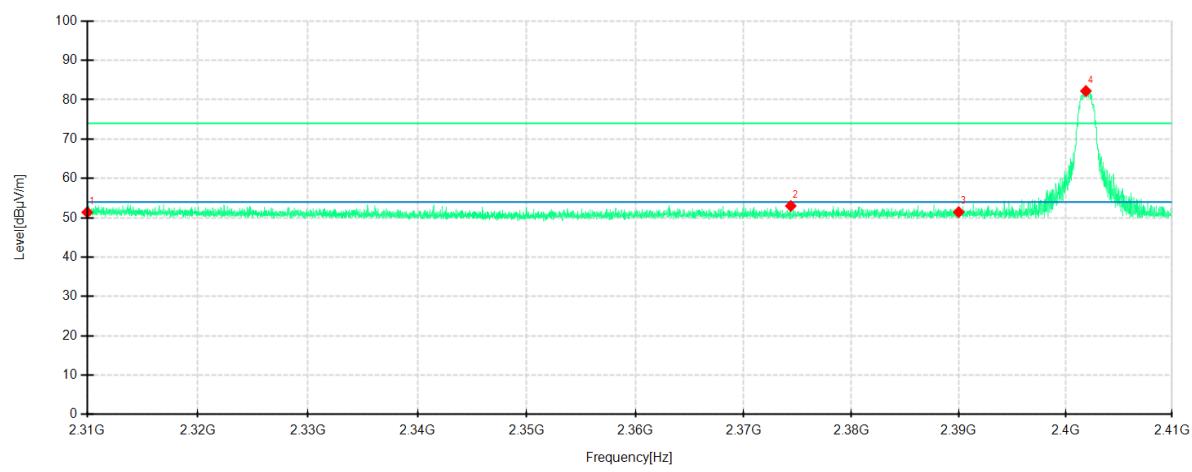
Equipment:	Keystone Hardware Wallet	Test Date	2023-09-17
Model No.:	KV032	Test Engineer:	Zhang Zishan
Test Voltage:	DC 3.7V	Environmental Conditions	24.2 °C/54%RH/101.0kPa

BLE 1M**Lowest Frequency**

Frequency 2402MHz

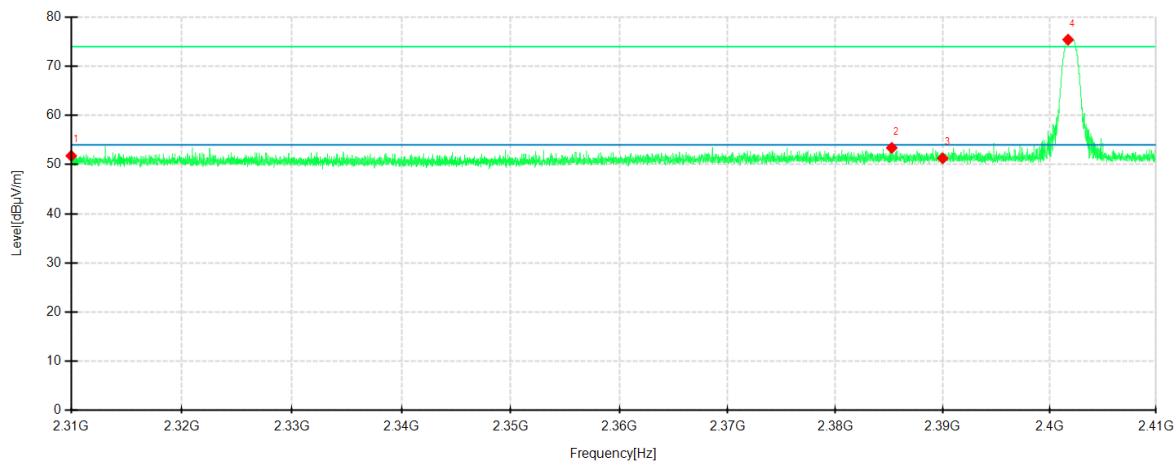
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical

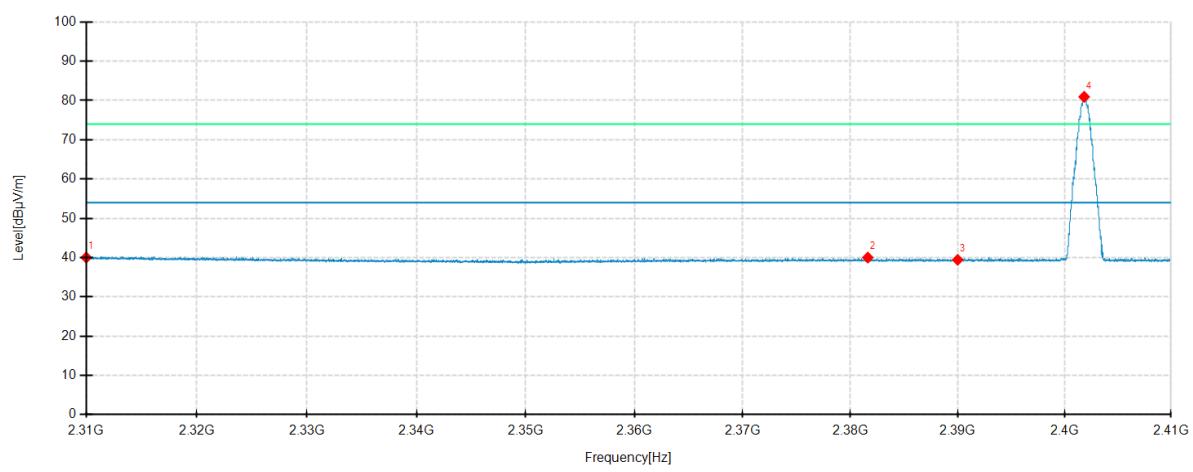


No.	Frequency MHz	Reading dB μ V/m	Level dB μ V/m	Factor dB	Limit dB μ V/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310.0000	45.80	51.39	5.59	74.00	22.61	100	8	Horizontal	/
2	2374.3750	48.34	53.00	4.66	74.00	21.00	100	313	Horizontal	/
3	2390.0000	46.65	51.45	4.80	74.00	22.55	200	131	Horizontal	/
4	2401.9125	77.33	82.22	4.89	-	-	100	239	Horizontal	No limit
1	2310.0000	46.89	51.78	4.89	74.00	22.22	200	259	Vertical	/
2	2385.2500	48.25	53.39	5.14	74.00	20.61	200	71	Vertical	/
3	2390.0000	46.05	51.27	5.22	74.00	22.73	100	231	Vertical	/
4	2401.7375	70.01	75.40	5.39	-	-	100	298	Vertical	No limit

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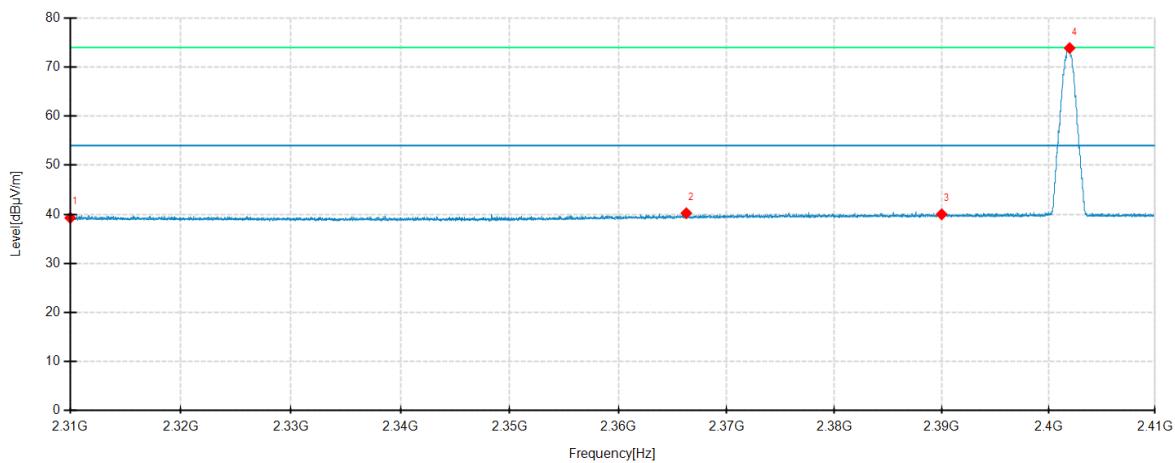
Lowest Frequency
 Frequency 2402MHz
 Detector mode: Average

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



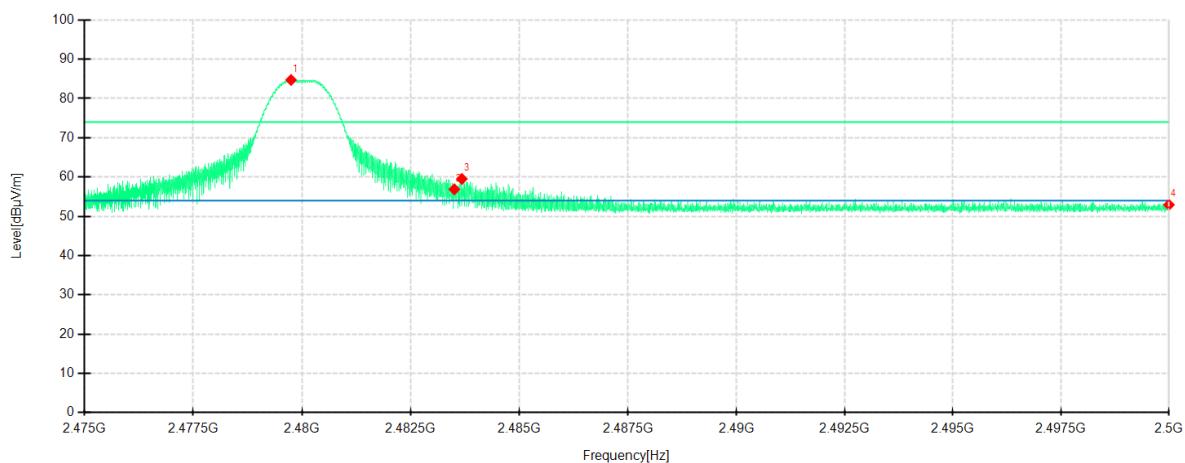
No.	Frequency MHz	Reading dB μ V/m	Level dB μ V/m	Factor dB	Limit dB μ V/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310.0000	34.42	40.01	5.59	54.00	13.99	200	260	Horizontal	/
2	2381.6250	35.29	40.01	4.72	54.00	13.99	200	33	Horizontal	/
3	2390.0000	34.63	39.43	4.80	54.00	14.57	100	158	Horizontal	/
4	2401.8375	76.05	80.94	4.89	-	-	100	248	Horizontal	No limit
1	2310.0000	34.39	39.28	4.89	54.00	14.72	200	300	Vertical	/
2	2366.2750	35.41	40.24	4.83	54.00	13.76	100	174	Vertical	/
3	2390.0000	34.78	40.00	5.22	54.00	14.00	100	356	Vertical	/
4	2401.9750	68.48	73.87	5.39	-	-	100	342	Vertical	No limit

Highest Frequency

Frequency 2480MHz

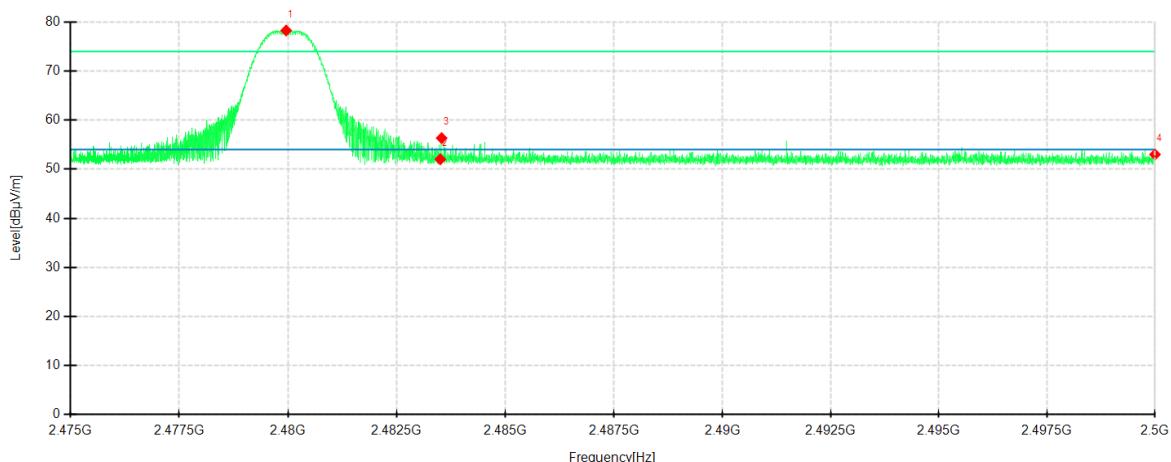
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



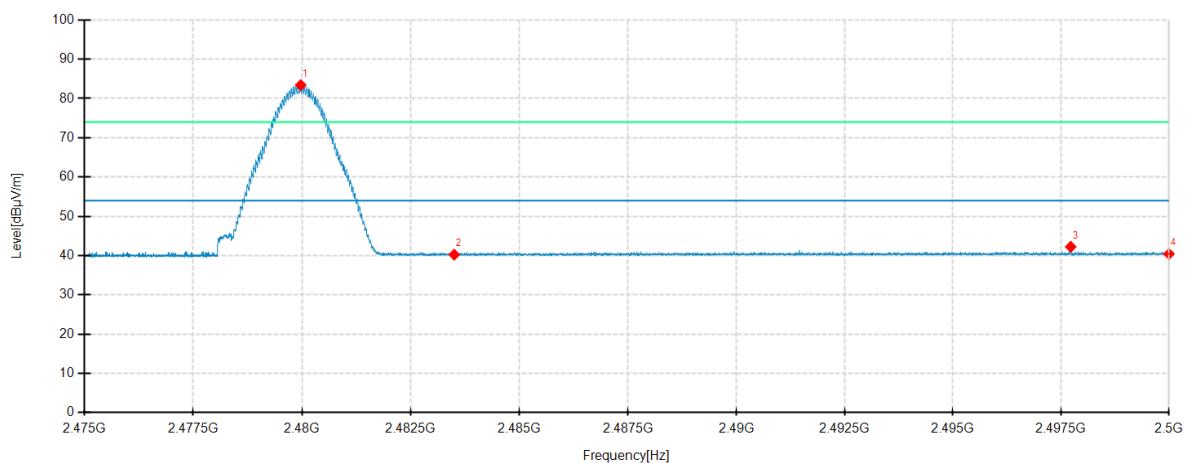
No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2479.7469	79.15	84.72	5.57	-	-	100	48	Horizontal	No limit
2	2483.5000	51.25	56.88	5.63	74.00	17.12	100	48	Horizontal	/
3	2483.6750	53.88	59.52	5.64	74.00	14.48	100	48	Horizontal	/
4	2500.0000	47.03	52.93	5.90	74.00	21.07	100	280	Horizontal	/
1	2479.9563	72.57	78.26	5.69	-	-	100	312	Vertical	No limit
2	2483.5000	46.32	52.02	5.70	74.00	21.98	100	299	Vertical	/
3	2483.5313	50.64	56.34	5.70	74.00	17.66	100	327	Vertical	/
4	2500.0000	47.30	53.00	5.70	74.00	21.00	200	356	Vertical	/

Highest Frequency

Frequency 2480MHz

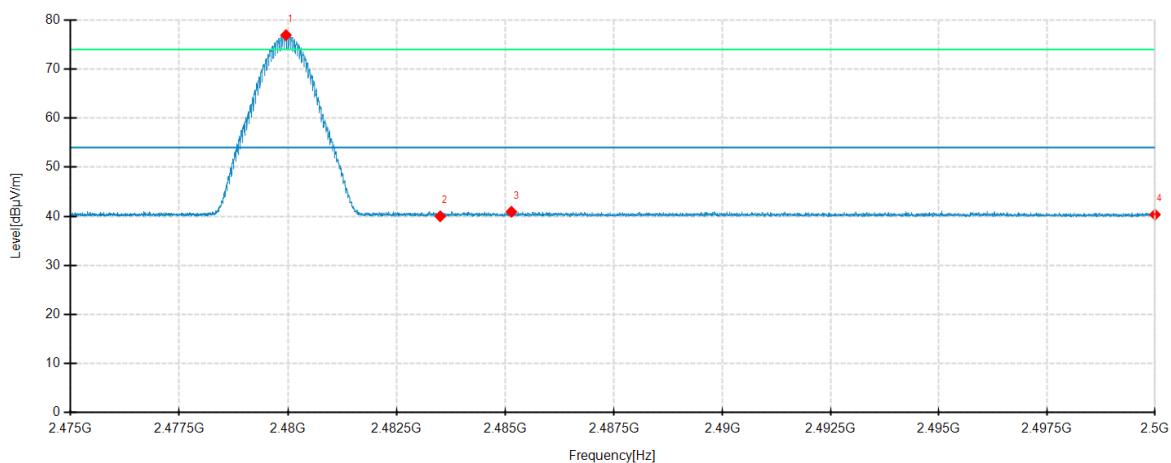
Detector mode: Average

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dB μ V/m	Level dB μ V/m	Factor dB	Limit dB μ V/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2479.9688	77.85	83.42	5.57	-	-	100	47	Horizontal	No limit
2	2483.5000	34.61	40.24	5.63	54.00	13.76	200	66	Horizontal	/
3	2497.7250	36.39	42.25	5.86	54.00	11.75	200	339	Horizontal	/
4	2500.0000	34.52	40.42	5.90	54.00	13.58	100	152	Horizontal	/
1	2479.9531	71.23	76.92	5.69	-	-	100	328	Vertical	No limit
2	2483.5000	34.30	40.00	5.70	54.00	14.00	100	185	Vertical	/
3	2485.1375	35.24	40.93	5.69	54.00	13.07	100	251	Vertical	/
4	2500.0000	34.65	40.35	5.70	54.00	13.65	100	108	Vertical	/

Remark: Max field strength in 3m distance. No any other emission which falls in restricted bands can be detected and be reported.

APPENDIX A. PHOTOGRAPH OF THE TEST CONNECTION DIAGRAM

Please refer to the attached document E202306264850-9-2 FCC Test Photo.

APPENDIX B. PHOTOGRAPH OF THE EUT

Please refer to the attached document E202306264850-10-EUT Photo.

----- End of Report -----