

FCC / ISED – TEST REPORT

Report Number	: 60.790.24.080.01R02	Date of Issue:	<u>November 25, 2024</u>
Model/HVIN	: Bluetooth Ratchet Lock, Bluetooth Drawer Door Lock, Bluetooth Glass Door Lock		
Product Type	: <u>Slide Lock</u>		
Applicant	: <u>Mobile Technologies Inc.</u>		
Address	: <u>2345 NE Overlook Drive, Hillsboro OR 97006 United States of America.</u>		
Production Facility (1)	: <u>Shenzhen Maxway Technology CO., LTD</u>		
Address	: <u>3F, Building 4, Section A, 3rd Industrial Zone of Tangtou, Shiyan Town, Bao'an District, Shenzhen, China.</u>		
Production Facility (2)	: <u>Well Star Precision Technology Limited</u>		
Address	: <u>24 Bao Ta Road, Bao Tang Community, Hou Jie Town, Dongguan City, Guangdong Province, China</u>		
Production Facility (3)	: <u>VIETNAM IBE LASER TECHNOLOGY COMPANY LIMITED</u>		
Address	: <u>lot CN-34 and Lot CN-39, Thuan Thanh II industrial zone, An Binh & Mao Dien commune, Thuan Thanh district, Bac Ninh province, Vietnam</u>		
Test Result	: n Positive o Negative		
Total pages including Appendices	: <u>39</u>		

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2 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12 & 13, Zhiheng Wisdomland Business Park, Guankou Erlu, Nantou, Nanshan District
Shenzhen 518052
P.R. China

Telephone: 86 755 8828 6998

Fax: 86 755 8828 5299

FCC Registration No.: 514049

FCC Deignation No.: CN5009

IC Registration No.: 10320A

ISED CAB Identifier: CN0077

3 Description of the Equipment Under Test

Description of the Equipment Under Test

Product:	Slide Lock
Model no.:	Bluetooth Ratchet Lock Bluetooth Drawer Door Lock, Bluetooth Glass Door Lock
Hardware Version Identification No. (HVIN)	Bluetooth Ratchet Lock Bluetooth Drawer Door Lock, Bluetooth Glass Door Lock
Product Marketing Name (PMN)	Slide Lock
Brand name:	N/A
FCC ID:	2AA2X-15000118V2
IC:	24439-15000118V2
Rating:	3.0 VDC (CR123A Battery)
RF Transmission Frequency:	125 kHz
No. of Operated Channel:	1
Modulation:	AM
Antenna Type:	Coil Antenna
Antenna	Gain: 0 dBi
Description of the EUT:	The Equipment Under Test (EUT) is a Slide Lock which support Bluetooth (BLE) function, Zigbee function and 125 kHz near field card access function. Only 125 kHz measurement included in this report.

NOTE:

1. The above EUT's information is declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2023 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators
RSS-Gen Issue 5 April 2018 + Amendment 1 March 2019 + Amendment 2 February 2021	General Requirements for Compliance of Radio Apparatus
RSS-210 Issue 11 June 2024	Licence-Exempt Radio Apparatus: Category I Equipment

All the test methods were according to ANSI C63.10-2020.

5 Summary of Test Results

Technical Requirements						
FCC Part 15 Subpart C/ RSS-210 Issue 11 / RSS-Gen Issue 5 + A1 + A2						
Test Condition		Test Site	Test Result			Test Environment
			Pass	Fail	N/A	
§15.207 & RSS-GEN 8.8	Conducted emission AC power port	Site 1	☐	☐	☒	T: 24.8°C H: 53.7%
§15.215 & RSS-GEN 6.7	20dB bandwidth and 99% Occupied Bandwidth	Site 1	☒	☐	☐	T: 24.8°C H: 53.7%
§15.205 & §15.209 & RSS-210 8.3 & RSS-Gen 6.13	Spurious radiated emissions for transmitter	Site 1	☒	☐	☐	T: 24.7°C H: 49.3%
§15.203 & RSS-Gen 6.8	Antenna requirement	See note 2	☒	☐	☐	--

Note 1: N/A=Not Applicable.

Note 2: The EUT uses a Coil antenna, which gain is 0 dBi. In accordance to §15.203 & RSS-Gen 6.8, it is considered sufficiently to comply with the provisions of this section.

Note 3: T :Temperature, H: Humidity

6 General Remarks

Remarks

Applicant informs that the model **Bluetooth Glass Door Lock** and **Bluetooth Drawer Door Lock** have the same technical construction including circuit diagram and all electrical construction, with **Slide Lock, Bluetooth Ratchet Lock**.

The difference lies only in the outlook/color, PCB layout for motor control part, size of coil antenna and mechanical construction of the different models.

All the RF part construction and design are the same.

All the tests were performed on all three models, only the worst case data was shown on this report.

This submittal(s) (test report) is intended for **FCC ID: 2AA2X-15000118V2**, **IC: 24439-15000118V2**, complies with Section 15.209, 15.215 of the FCC Part 15, Subpart C rules and RSS-210, RSS-GEN.

SUMMARY:

All tests according to the regulations cited on page 5 were

n - Performed

o - **Not** Performed

The Equipment under Test

n - **Fulfills** the general approval requirements.

o - **Does not** fulfill the general approval requirements.

Sample Received Date: October 10, 2024

Testing Start Date: October 10, 2024

Testing End Date: October 25, 2024

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch -

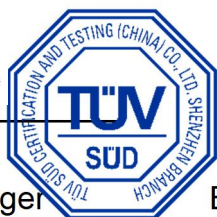
Reviewed by:

Prepared by:

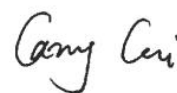
Tested by:



Eric LI
Section Manager



Kevin DU
EMC Project Engineer

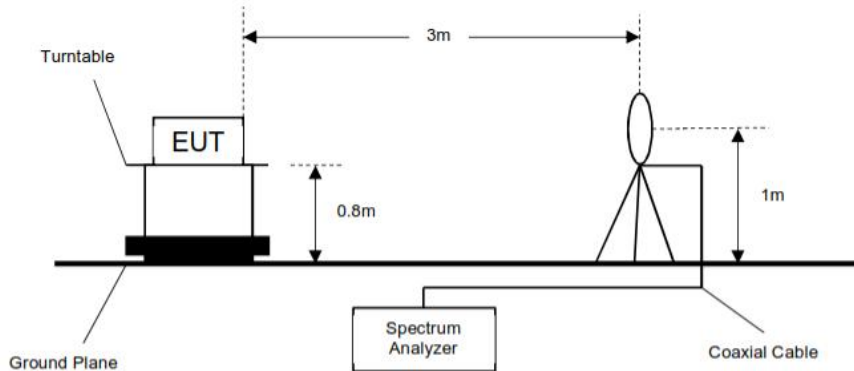


Carry Cai
Test Engineer

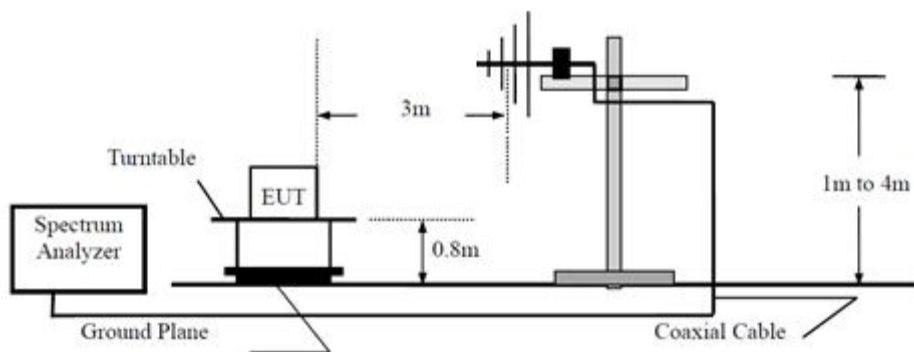
7 Test Setups

7.1 Radiated test setups

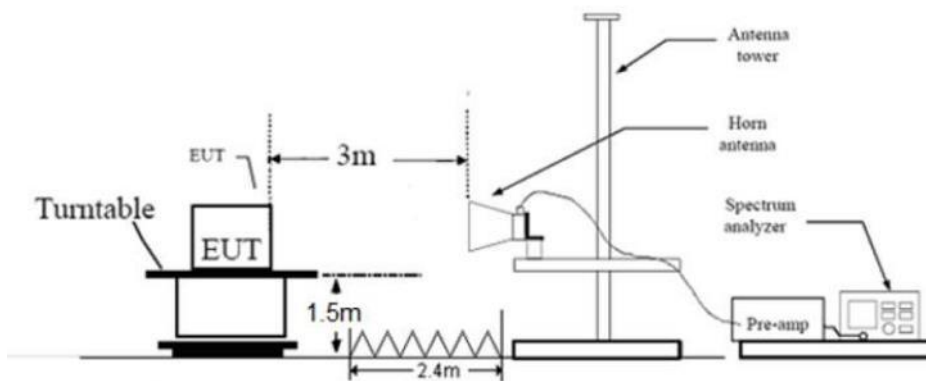
9kHz - 30MHz



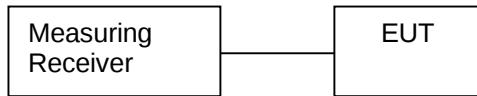
30MHz - 1GHz



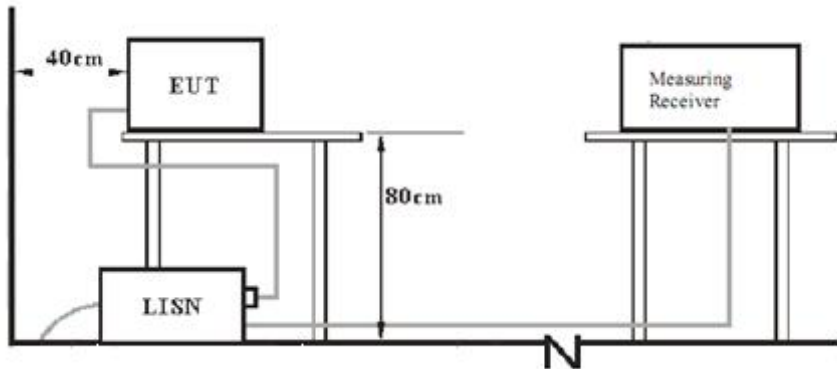
Above 1GHz



7.2 Conducted RF test setups



7.3 AC Power Line Conducted Emission test setups



8 Systems Test Configuration

Auxiliary Equipment Used during Test:

Description	Manufacturer	Model NO.	Remark
Laptop	Lenovo	X220	0A72168
MTI Connect HUB	MTI	---	System Monitoring

Cables Used During Test:

Cable	Length	Shielded/unshielded	With / without ferrite
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The system was configured to single testing channel.

Only the worst case transmitter rate data mode is recorded in the report.

9 Technical Requirement

9.1 Conducted Emission

Test Method

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

Limit

According to §15.207 & RSS-GEN 8.8, conducted emissions limit as below:

Frequency MHz	QP Limit dBμV	AV Limit dBμV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

*Decreasing linearly with logarithm of the frequency

Test result: Test Not Applicable for the Battery-Operated Device.

9.2 20 dB Bandwidth

Test Method

1. The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver 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. Use the following test receiver settings:
Span = approximately 5 times the 20dB bandwidth, centered on a hopping channel
RBW > the 20dB bandwidth of the emission being measured, VBW ≥ RBW,
Sweep = auto, Detector function = peak, Trace = max hold
4. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth. Record the results.
5. Repeat above procedures until all frequencies measured were complete.

Limit

According to 15.215 (c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

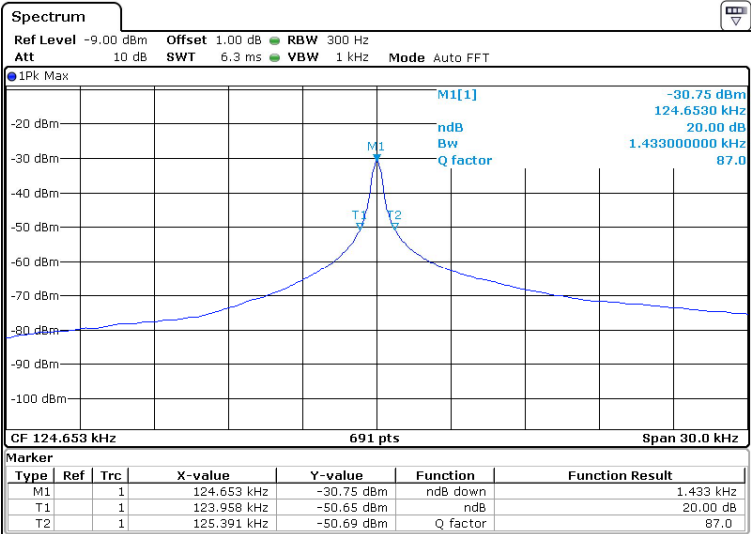
Test result

Tested Model	Frequency	20dB bandwidth kHz	Result
Bluetooth Drawer Door Lock	125 kHz	1.433	Pass
Bluetooth Glass Door Lock	125 kHz	1.520	Pass
Bluetooth Ratchet Lock	125 kHz	1.520	Pass

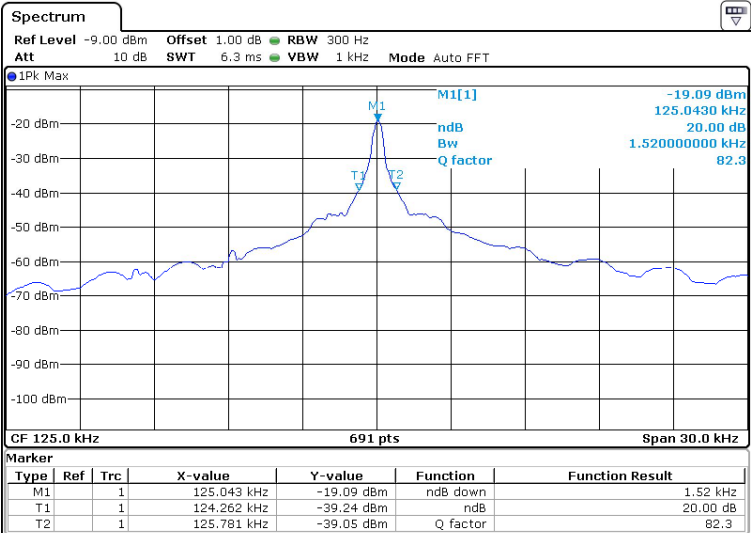
Test Graphs as below:



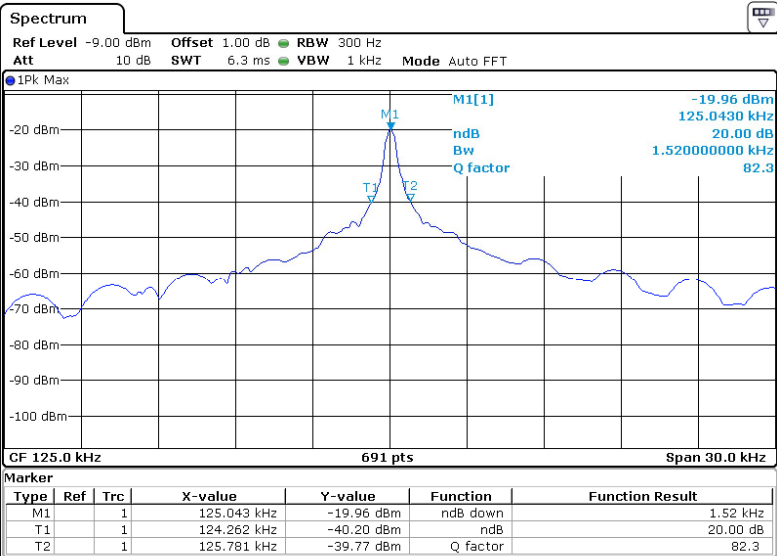
125kHz_Ant1_NTNV – Bluetooth Drawer Door Lock



125kHz_Ant1_NTNV – Bluetooth Glass Door Lock



125kHz_Ant1_NTNV – Bluetooth Ratchet Lock



9.3 99% bandwidth

Test Method

1. The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver 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.
Use the following test receiver settings:
RBW = 1% to 5% of the OBW, VBW $\geq$ 3RBW, Sweep = auto, Detector function = peak, Trace = max hold
3. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the 99 % power bandwidth function of the instrument. Record the frequency difference as the emission bandwidth. Record the results.

Limit

According to RSS-Gen 6.7, The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

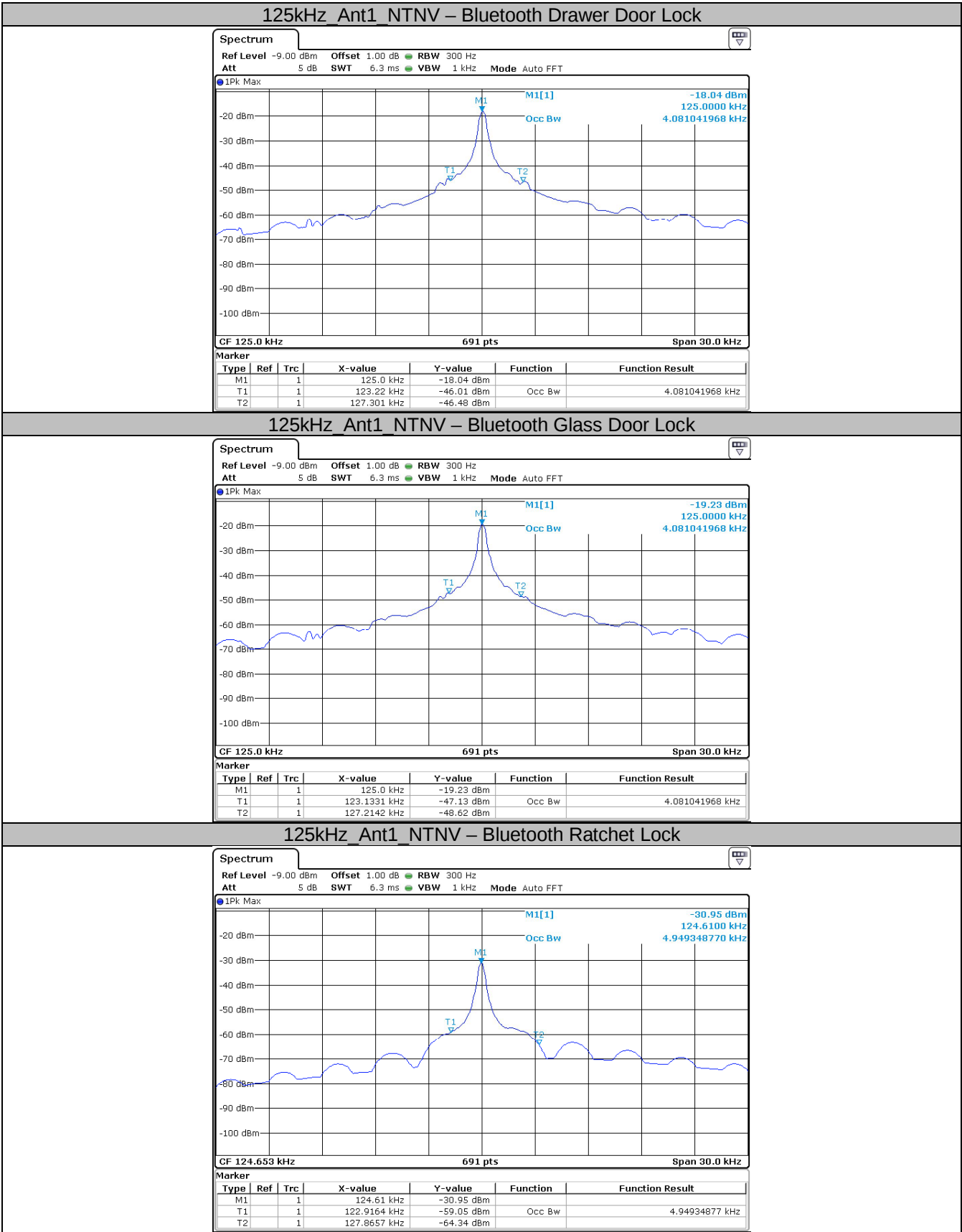
Limit [kHz]

--

Test result

Tested Model	Frequency	99% bandwidth kHz	Result
Bluetooth Drawer Door Lock	125 kHz	4.081	Pass
Bluetooth Glass Door Lock	125 kHz	4.081	Pass
Bluetooth Ratchet Lock	125 kHz	4.949	Pass

Test Graphs as below:



9.4 Spurious Radiated Emissions for Transmitter

Test Method

1. The EUT was placed on a turn table which is 0.8m above ground plane. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Set to the maximum power setting and enable the EUT to transmit continuously
3. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
4. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
5. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

Use the following test receiver settings According to C63.10:

9kHz -150kHz

RBW = 200Hz, VBW = 1kHz for peak measurement, Sweep = auto,
Detector function = peak, Trace = max hold.

150kHz - 30MHz

RBW = 10 kHz, VBW = 30 kHz for peak measurement, Sweep = auto,
Detector function = peak, Trace = max hold.

30MHz - 1GHz

RBW = 100 kHz, VBW = 300 kHz for peak measurement, Sweep = auto,
Detector function = peak, Trace = max hold.

For Above 1GHz

Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 1MHz, VBW $\geq$ 3RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

FCC Limit:

According to § 15.209, except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency MHz	Field Strength $\mu\text{V/m}$	Field Strength dB $\mu\text{V/m}$	Detector	Measurement distance meters
0.009-0.490	2400/F(kHz)	48.5-13.8	AV	300
0.490-1.705	24000/F(kHz)	33.8-23.0	QP	30
1.705-30	30	29.5	QP	30
30-88	100	40	QP	3
88-216	150	43.5	QP	3
216-960	200	46	QP	3
960-1000	500	54	QP	3
Above 1000	500	54	AV	3
Above 1000	5000	74	PK	3

ISED Limit:

According to RSS-Gen 8.9 field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Frequency MHz	Field Strength $\mu\text{A/m}$	Field Strength dB $\mu\text{A/m}$	Detector	Measurement distance meters
0.009-0.490	6.37/F(kHz)	77.00-42.28	AV	3
0.490-1.705	63.7/F(kHz)	22.27-11.45	AV	3
1.705-30	0.08	18.06	AV	3

Frequency MHz	Field Strength $\mu\text{V/m}$	Field Strength dB $\mu\text{V/m}$	Detector	Measurement distance meters
30-88	100	40	QP	3
88-216	150	43.5	QP	3
216-960	200	46	QP	3
960-1000	500	54	QP	3
Above 1000	500	54	AV	3
Above 1000	5000	74	PK	3

(a) The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

Note 1: Limit 3m(dB $\mu\text{V/m}$)=Limit 300m(dB $\mu\text{V/m}$)+40Log(300m/3m) (Below 30MHz)

Note 2: Limit 3m(dB $\mu\text{V/m}$)=Limit 30m(dB $\mu\text{V/m}$)+40Log(30m/3m) (Below 30MHz)

Spurious radiated emissions for transmitter

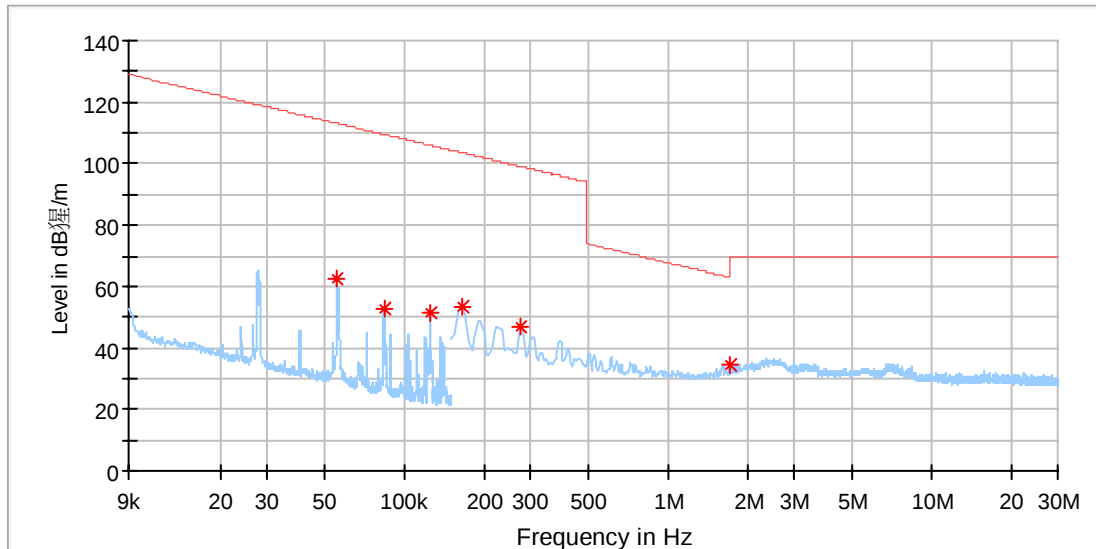
Transmitting spurious emission test result as below:

Bluetooth Drawer Door Lock

FCC Test Result

Test data_9kHz to 30MHz

Tx: 125k Hz



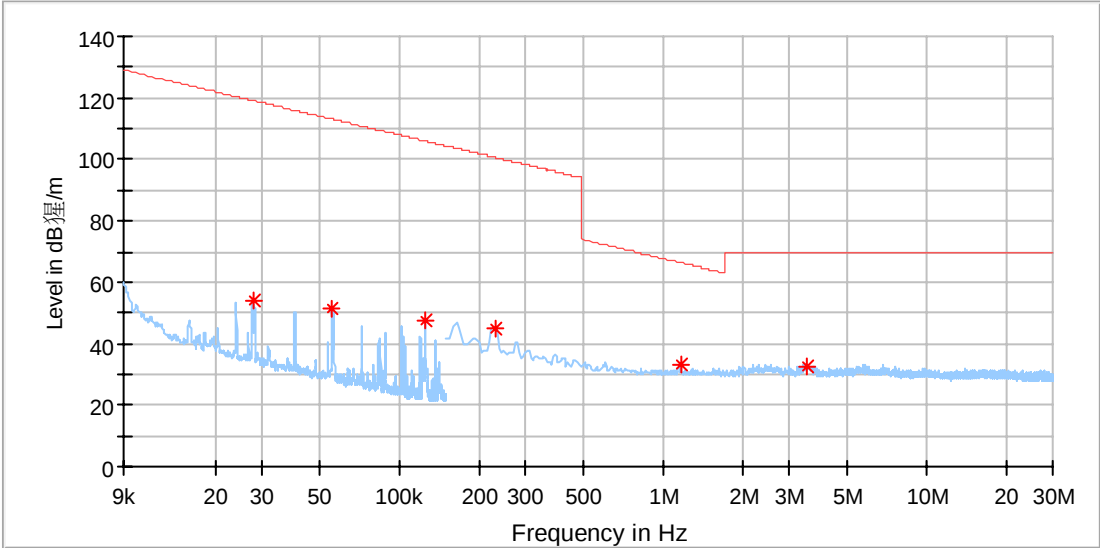
Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.055483	62.68	113.07	50.39	H	209.0	19.92
0.083448	52.64	109.50	56.86	H	145.0	19.92
0.124620	51.43	105.99	54.56	H	292.0	19.92
0.164925	53.65	103.54	49.89	H	277.0	19.89
0.274375	46.84	99.08	52.24	H	208.0	19.90
1.702200	34.19	63.01	28.83	H	1.0	20.02



Bluetooth Drawer Door Lock

FCC Test Result
Test data_9kHz to 30MHz
Tx: 125k Hz



Critical_Freqs

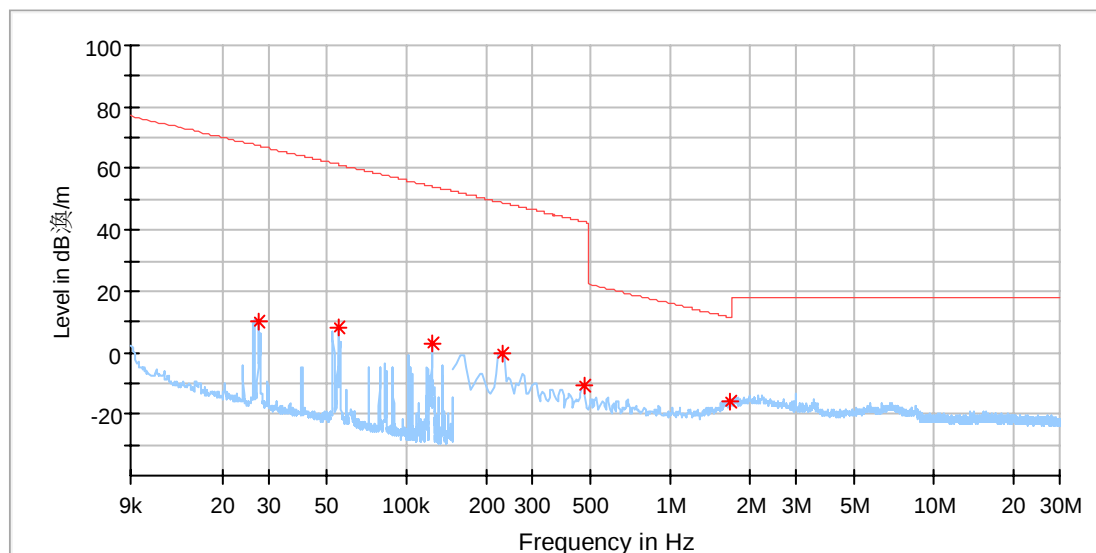
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.027753	54.06	119.14	65.08	V	286.0	19.88
0.055577	51.26	113.06	61.80	V	278.0	19.92
0.124620	47.53	105.99	58.46	V	0.0	19.92
0.229600	44.73	100.64	55.90	V	266.0	19.88
1.164900	33.00	66.36	33.36	V	109.0	19.94
3.498175	32.84	70.00	37.16	V	232.0	20.13

Bluetooth Drawer Door Lock

ISED Test Result

Test data_9kHz to 30MHz

Tx: 125k Hz

**Critical_Freqs**

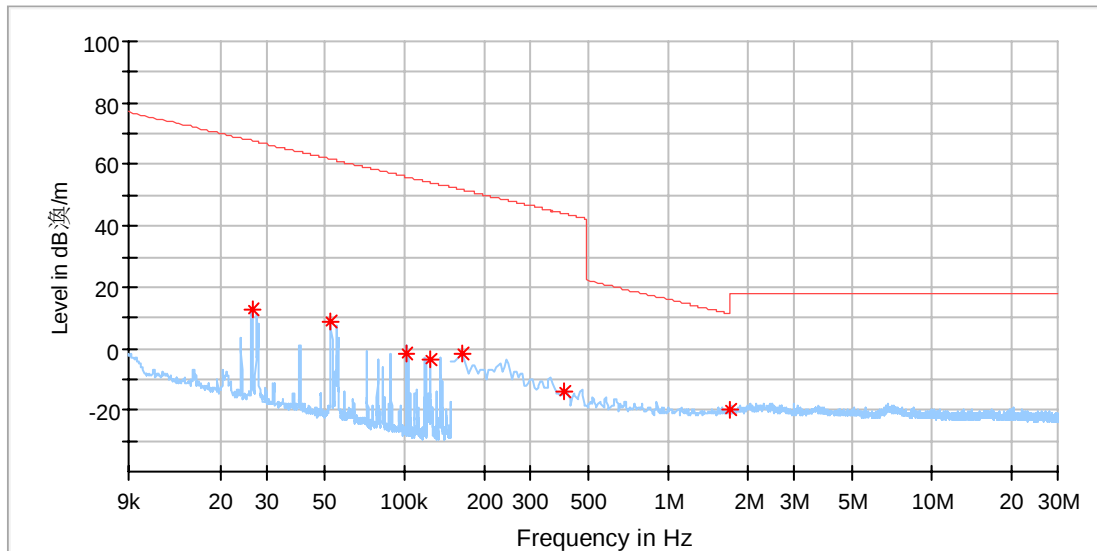
Frequency (MHz)	MaxPeak (dBμA/m)	Limit (dBμA/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.027471	10.44	67.30	56.87	H	14.0	-31.65
0.055013	8.10	61.27	53.17	H	270.0	-31.61
0.124526	2.95	54.17	51.22	H	20.0	-31.61
0.229600	-0.40	48.86	49.26	H	335.0	-31.65
0.468400	-10.93	42.66	53.59	H	207.0	-31.64
1.682300	-15.61	11.48	27.09	H	1.0	-31.51

Bluetooth Drawer Door Lock

ISED Test Result

Test data_9kHz to 30MHz

Tx: 125k Hz

**Critical_Freqs**

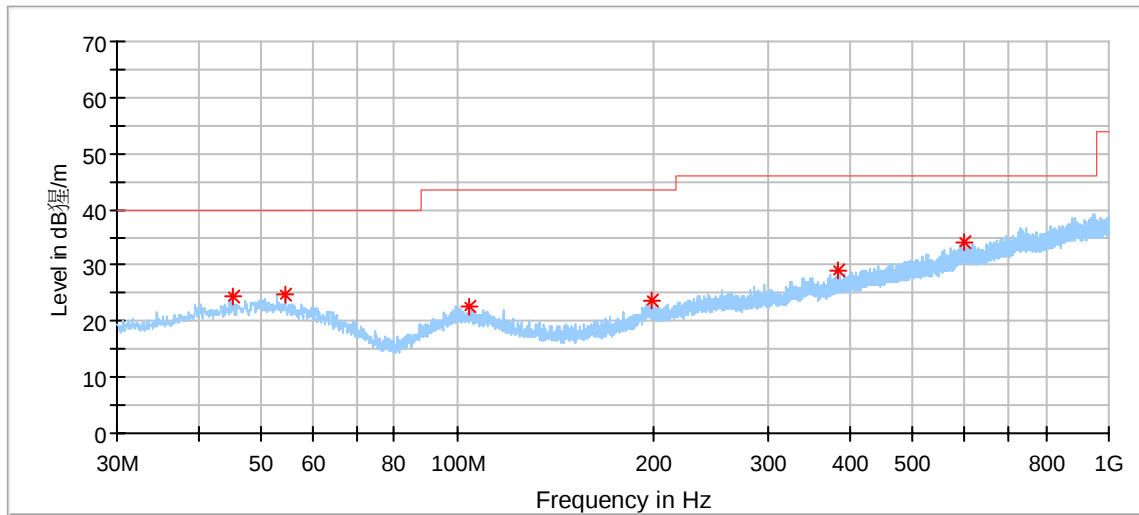
Frequency (MHz)	MaxPeak (dBμA/m)	Limit (dBμA/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.026390	12.61	67.65	55.04	V	251.0	-31.66
0.052757	8.73	61.63	52.90	V	5.0	-31.62
0.101637	-1.48	55.94	57.42	V	43.0	-31.60
0.124573	-3.29	54.17	57.46	V	219.0	-31.61
0.164925	-1.36	51.73	53.09	V	0.0	-31.64
0.403725	-13.87	43.95	57.83	V	0.0	-31.63
1.702200	-19.83	11.37	31.20	V	14.0	-31.51

Bluetooth Drawer Door Lock

FCC and ISED Test Result

Test data_30MHz to 1000MHz

Tx: 125k Hz

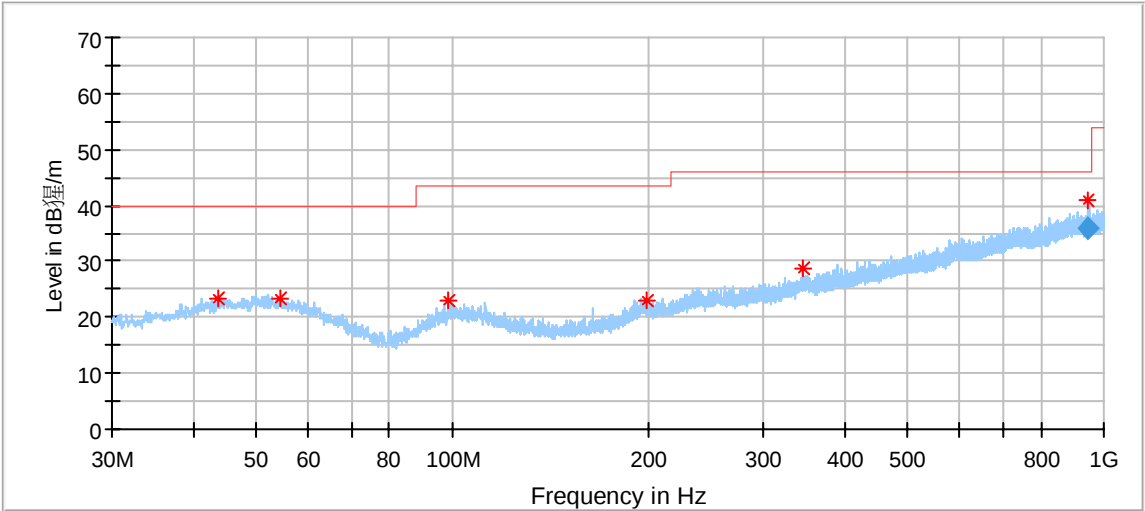
**Critical_Freqs**

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
45.088889	24.27	40.00	15.73	200.0	H	249.0	17.97
54.465556	24.71	40.00	15.29	100.0	H	85.0	17.89
104.582222	22.57	43.50	20.93	200.0	H	74.0	15.93
198.887778	23.65	43.50	19.85	100.0	H	323.0	16.03
383.942222	29.06	46.00	16.94	200.0	H	26.0	20.85
599.605556	33.93	46.00	12.07	100.0	H	307.0	25.03



Bluetooth Drawer Door Lock

FCC and ISED Test Result
Test data_30MHz to 1000MHz
Tx: 125k Hz



Critical Freqs

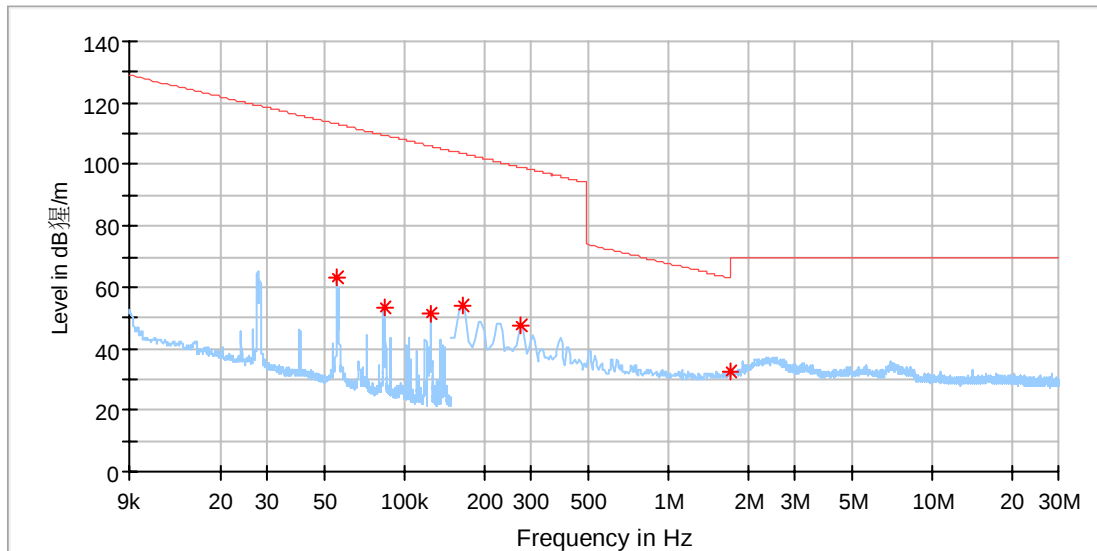
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
43.741667	23.31	40.00	16.69	200.0	V	283.0	17.70
54.573333	23.50	40.00	16.50	200.0	V	102.0	17.87
98.546667	23.05	43.50	20.45	200.0	V	46.0	15.65
198.241111	23.12	43.50	20.38	200.0	V	322.0	16.16
344.872778	28.83	46.00	17.17	200.0	V	172.0	20.07
948.212778	40.84	46.00	5.16	200.0	V	0.0	29.56

Bluetooth Glass Door Lock

FCC Test Result

Test data_9kHz to 30MHz

Tx: 125k Hz

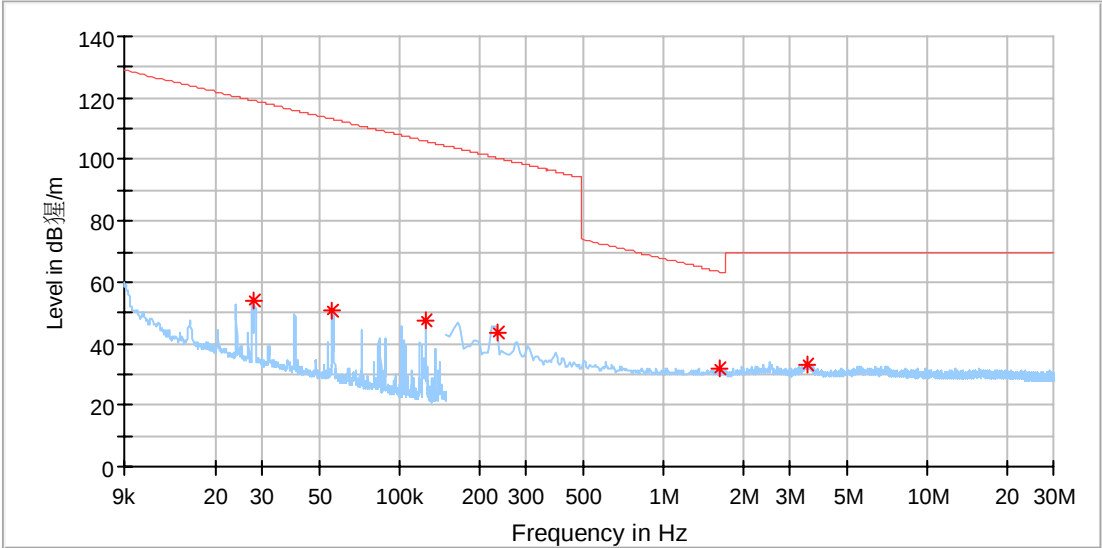
**Critical_Freqs**

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.055577	62.86	113.06	50.19	H	136.0	19.92
0.083307	53.38	109.52	56.13	H	200.0	19.92
0.124620	51.27	105.99	54.72	H	264.0	19.92
0.164925	54.06	103.54	49.48	H	0.0	19.89
0.274375	47.57	99.08	51.51	H	0.0	19.90
1.702200	32.36	63.01	30.65	H	322.0	20.02



Bluetooth Glass Door Lock

FCC Test Result
Test data_9kHz to 30MHz
Tx: 125k Hz



Critical_Freqs

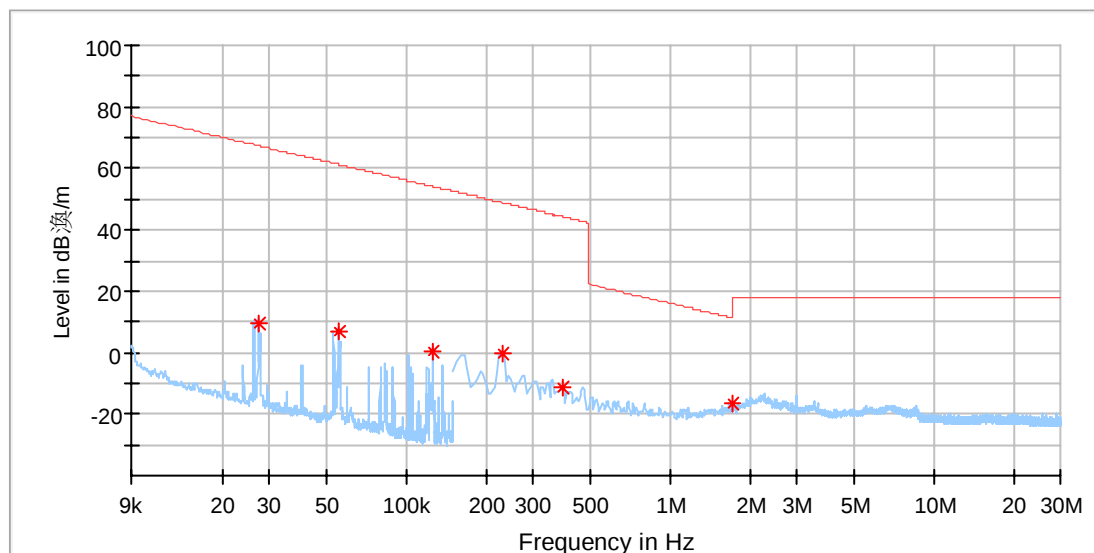
Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.027753	53.84	119.14	65.30	V	278.0	19.88
0.055624	50.99	113.05	62.06	V	270.0	19.92
0.124573	47.27	105.99	58.72	V	9.0	19.92
0.234575	43.46	100.45	56.99	V	196.0	19.88
1.642500	31.98	63.33	31.35	V	179.0	20.01
3.528025	32.90	70.00	37.10	V	22.0	20.13

Bluetooth Glass Door Lock

ISED Test Result

Test data_9kHz to 30MHz

Tx: 125k Hz

**Critical_Freqs**

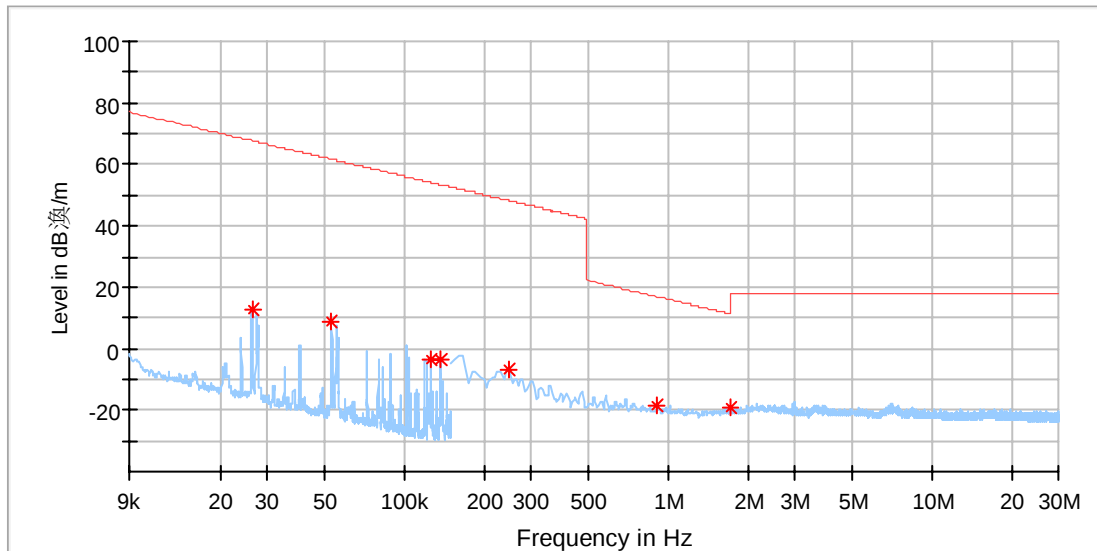
Frequency (MHz)	MaxPeak (dBμA/m)	Limit (dBμA/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.027424	9.70	67.32	57.62	H	171.0	-31.65
0.054919	7.20	61.29	54.08	H	171.0	-31.61
0.124620	0.36	54.17	53.81	H	20.0	-31.61
0.229600	-0.57	48.86	49.43	H	94.0	-31.65
0.388800	-11.13	44.28	55.41	H	1.0	-31.63
1.702200	-16.48	11.37	27.85	H	1.0	-31.51

Bluetooth Glass Door Lock

ISED Test Result

Test data_9kHz to 30MHz

Tx: 125k Hz

**Critical_Freqs**

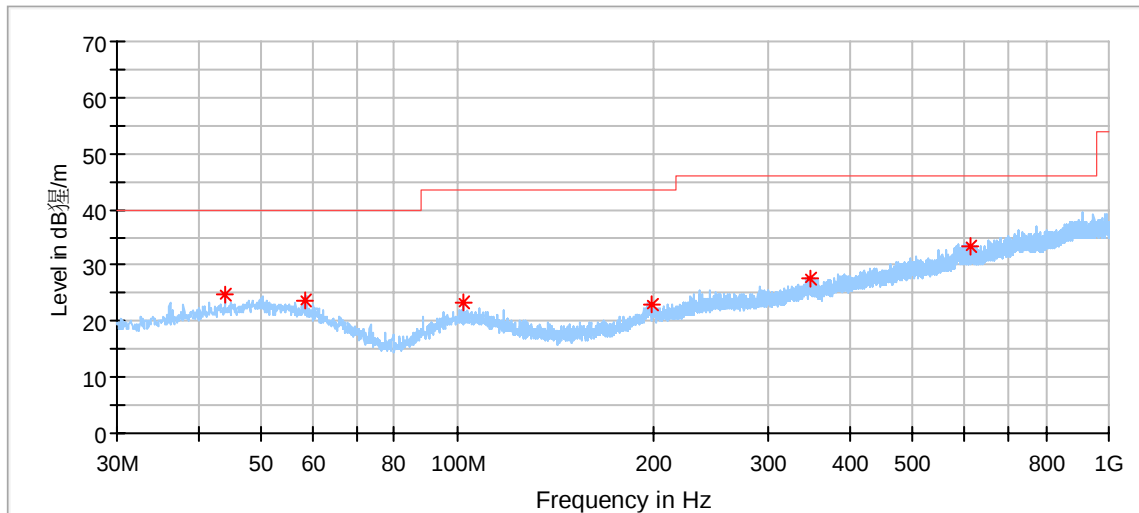
Frequency (MHz)	MaxPeak (dBμA/m)	Limit (dBμA/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.026343	12.65	67.67	55.02	V	331.0	-31.66
0.052757	8.78	61.63	52.85	V	323.0	-31.62
0.124573	-3.67	54.17	57.84	V	155.0	-31.61
0.135994	-3.75	53.41	57.16	V	359.0	-31.62
0.249500	-6.71	48.13	54.84	V	68.0	-31.64
0.906200	-18.48	16.89	35.38	V	308.0	-31.59
1.702200	-19.49	11.37	30.86	V	94.0	-31.51

Bluetooth Glass Door Lock

FCC and ISED Test Result

Test data_30MHz to 1000MHz

Tx: 125k Hz

**Critical Freqs**

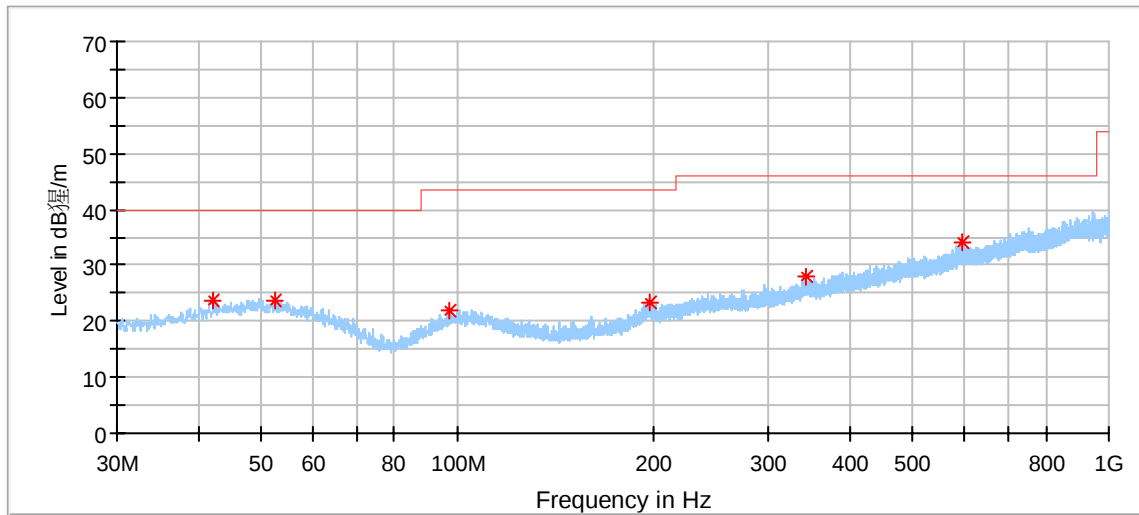
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
43.957222	24.64	40.00	15.36	100.0	H	229.0	17.75
58.345556	23.69	40.00	16.31	100.0	H	316.0	17.24
102.049444	23.32	43.50	20.18	100.0	H	95.0	16.02
198.295000	23.14	43.50	20.36	200.0	H	25.0	16.15
348.106111	27.63	46.00	18.37	200.0	H	265.0	20.15
614.856111	33.21	46.00	12.79	200.0	H	186.0	25.15

Bluetooth Glass Door Lock

FCC and ISED Test Result

Test data_30MHz to 1000MHz

Tx: 125k Hz

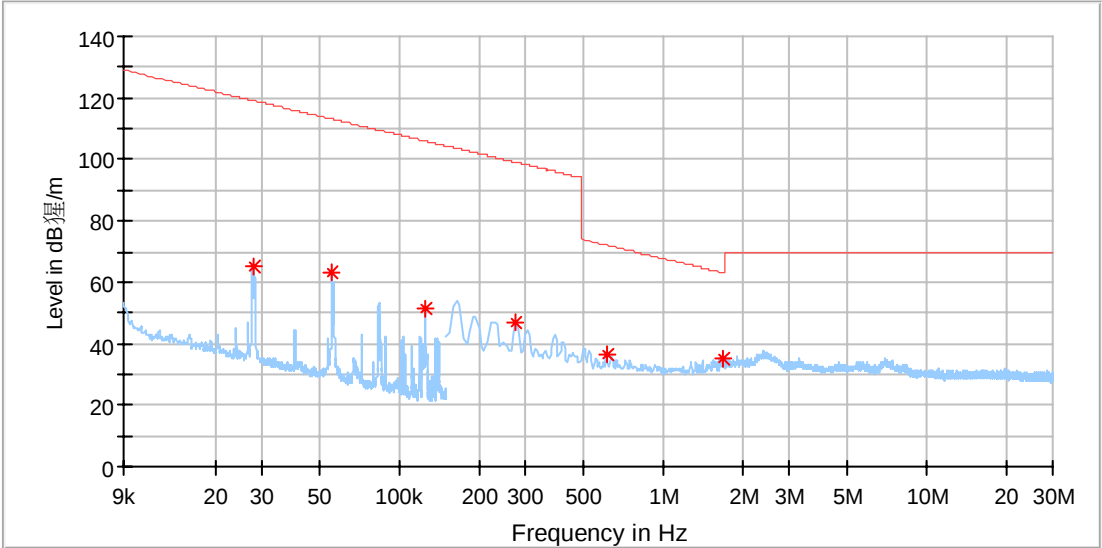
**Critical Freqs**

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
42.286667	23.74	40.00	16.26	100.0	V	91.0	17.39
52.363889	23.85	40.00	16.15	100.0	V	268.0	18.03
97.145556	22.04	43.50	21.46	200.0	V	287.0	15.50
197.001667	23.51	43.50	19.99	200.0	V	82.0	16.41
342.232222	28.08	46.00	17.92	100.0	V	202.0	19.91
594.701667	34.20	46.00	11.80	100.0	V	44.0	24.91



Bluetooth Ratchet Lock

FCC Test Result
Test data_9kHz to 30MHz
Tx: 125k Hz



Critical_Freqs

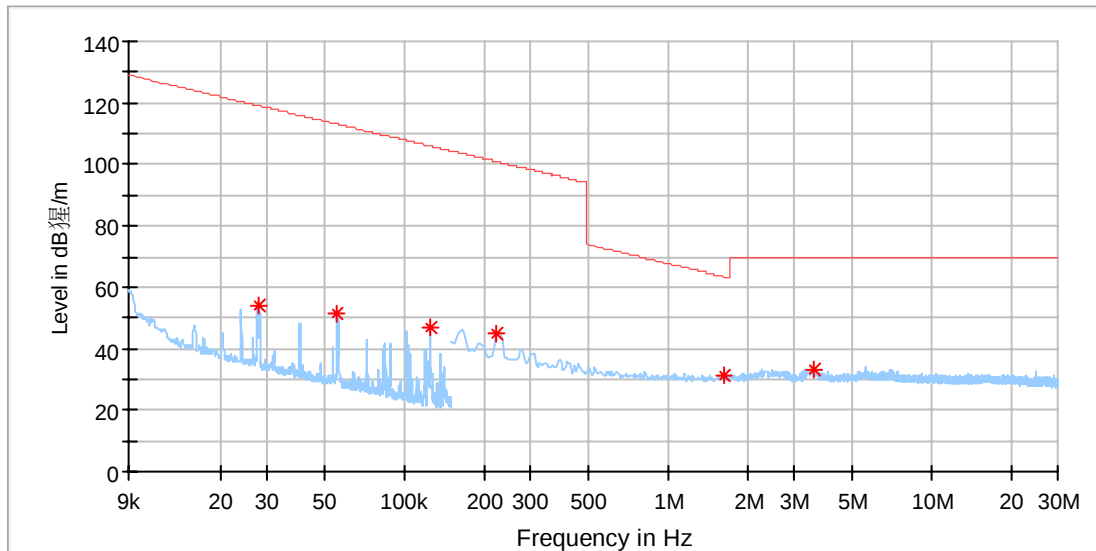
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.027753	65.18	119.14	53.96	H	359.0	19.88
0.055530	62.88	113.07	50.18	H	345.0	19.92
0.124620	51.76	105.99	54.22	H	292.0	19.92
0.274375	46.76	99.08	52.32	H	297.0	19.90
0.612675	36.65	72.03	35.38	H	355.0	19.91
1.692250	35.28	63.07	27.79	H	3.0	20.02

Bluetooth Ratchet Lock

FCC Test Result

Test data_9kHz to 30MHz

Tx: 125k Hz

**Critical_Freqs**

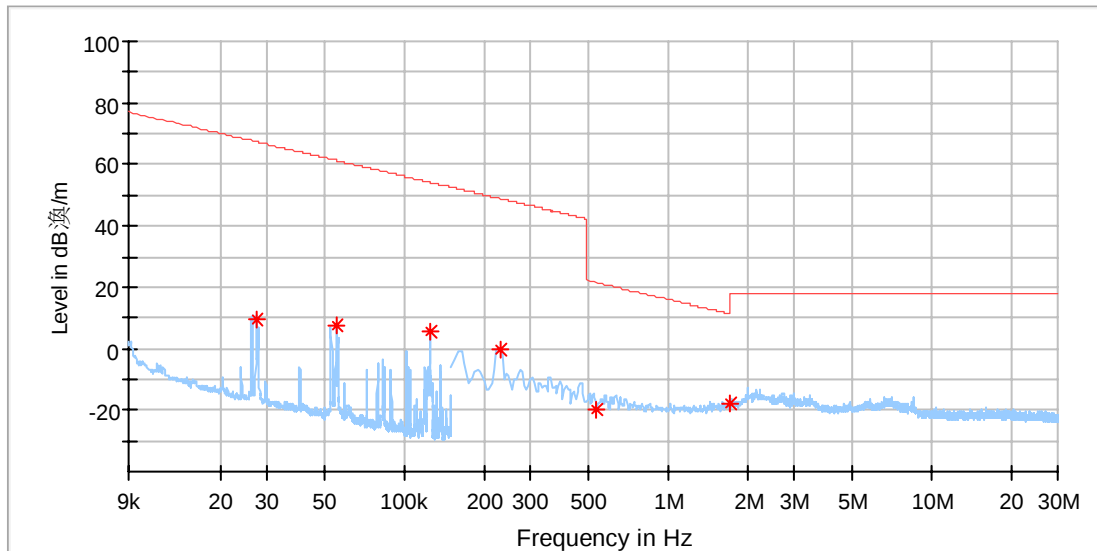
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.027753	53.85	119.14	65.29	V	123.0	19.88
0.055577	51.18	113.06	61.88	V	147.0	19.92
0.124573	47.16	105.99	58.84	V	5.0	19.92
0.224625	44.79	100.83	56.04	V	266.0	19.88
1.622600	31.20	63.44	32.24	V	60.0	20.01
3.547925	33.05	70.00	36.95	V	355.0	20.13

Bluetooth Ratchet Lock

ISED Test Result

Test data_9kHz to 30MHz

Tx: 125k Hz

**Critical_Freqs**

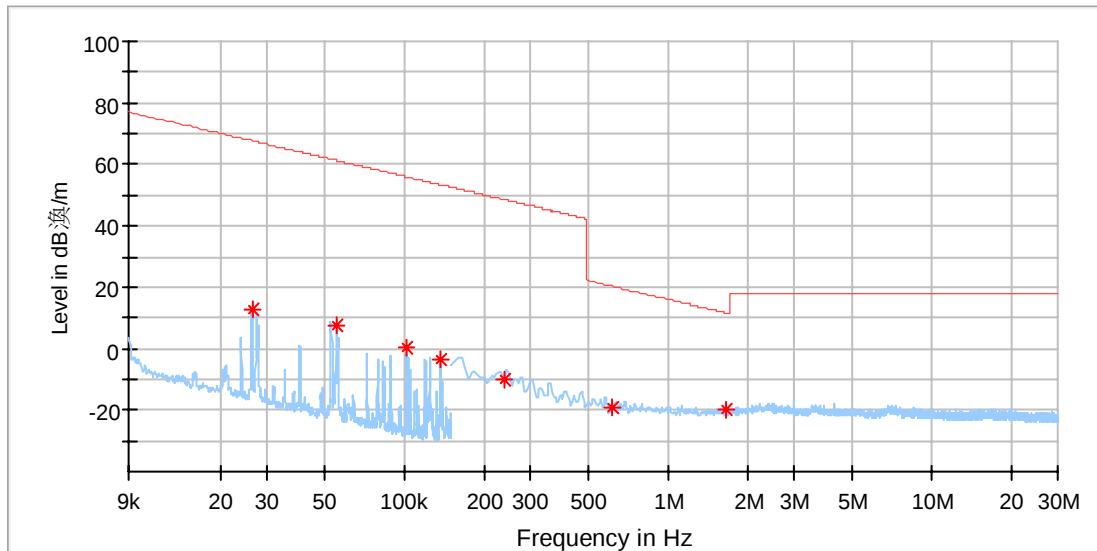
Frequency (MHz)	MaxPeak (dBμA/m)	Limit (dBμA/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.027565	9.65	67.27	57.63	H	347.0	-31.65
0.054919	7.73	61.29	53.56	H	14.0	-31.61
0.124526	5.41	54.17	48.76	H	334.0	-31.61
0.229600	-0.34	48.86	49.19	H	94.0	-31.65
0.538050	-19.73	21.45	41.18	H	111.0	-31.63
1.702200	-17.72	11.37	29.10	H	179.0	-31.51

Bluetooth Ratchet Lock

ISED Test Result

Test data_9kHz to 30MHz

Tx: 125k Hz

**Critical_Freqs**

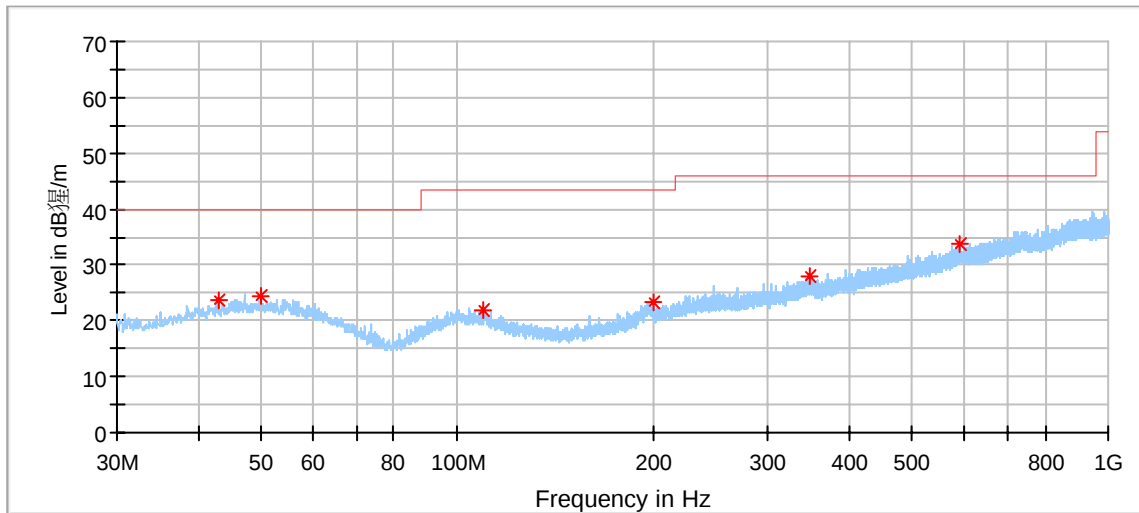
Frequency (MHz)	MaxPeak (dBμA/m)	Limit (dBμA/m)	Margin (dB)	Pol	Azimuth (deg)	Corr. (dB/m)
0.026390	12.54	67.65	55.11	V	139.0	-31.66
0.054966	7.85	61.28	53.43	V	0.0	-31.61
0.101684	0.59	55.93	55.34	V	243.0	-31.60
0.135994	-3.53	53.41	56.94	V	0.0	-31.62
0.239550	-10.26	48.49	58.75	V	292.0	-31.65
0.612675	-18.92	20.32	39.23	V	147.0	-31.62
1.657425	-19.54	11.61	31.15	V	1.0	-31.51

Bluetooth Ratchet Lock

FCC and ISED Test Result

Test data_30MHz to 1000MHz

Tx: 125k Hz

**Critical_Freqs**

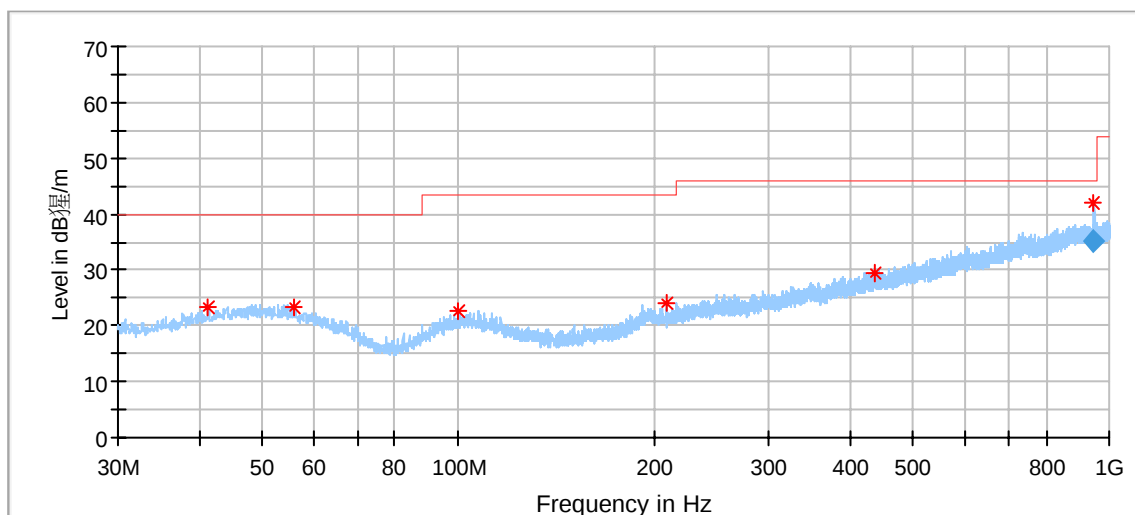
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
590.875556	33.81	46.00	12.19	100.0	H	126.0	24.81
348.052222	28.15	46.00	17.85	100.0	H	244.0	20.15
199.588333	23.51	43.50	19.99	100.0	H	315.0	15.96
49.992778	24.33	40.00	15.67	200.0	H	243.0	18.24
42.987222	23.59	40.00	16.41	200.0	H	275.0	17.54
109.971111	22.05	43.50	21.45	200.0	H	356.0	15.56

Bluetooth Ratchet Lock

FCC and ISED Test Result

Test data_30MHz to 1000MHz

Tx: 125k Hz

**Critical Freqs**

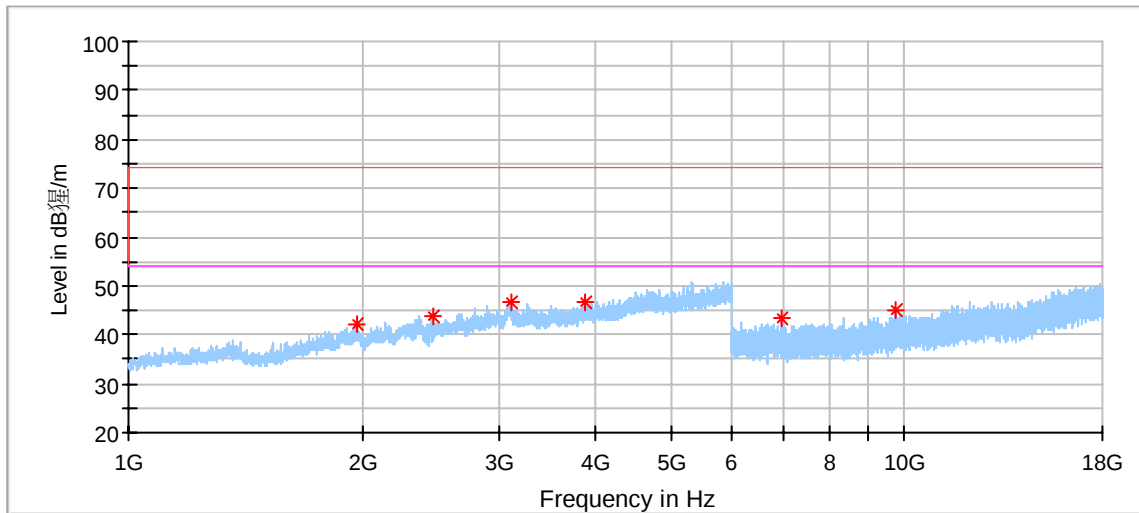
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
41.370556	23.35	40.00	16.65	100.0	V	331.0	17.21
55.812778	23.37	40.00	16.63	200.0	V	115.0	17.63
100.378889	22.51	43.50	20.99	100.0	V	162.0	15.85
209.396111	23.90	43.50	19.60	200.0	V	75.0	15.64
436.591667	29.53	46.00	16.47	100.0	V	68.0	21.78
948.158889	41.90	46.00	4.10	100.0	V	2.0	29.56

Bluetooth Ratchet Lock

FCC and ISSED Test Result

Test data_1 GHz to 18 GHz

Tx: 125k Hz

**Critical_Freqs**

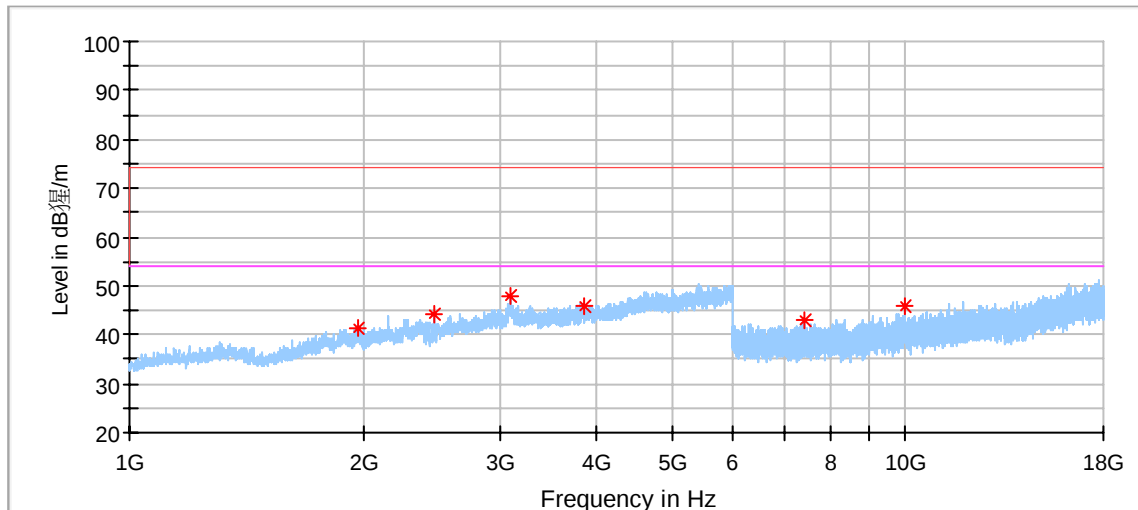
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1974.000000	42.32	---	74.00	31.68	100.0	H	142.0	-4.24
2471.000000	43.62	---	74.00	30.38	100.0	H	87.0	-2.32
3120.500000	46.59	---	74.00	27.41	100.0	H	115.0	0.80
3879.000000	46.57	---	74.00	27.43	100.0	H	210.0	1.30
6970.500000	43.44	---	74.00	30.56	100.0	H	148.0	9.16
9766.500000	45.00	---	74.00	29.00	100.0	H	232.0	14.03

Bluetooth Ratchet Lock

FCC and ISSED Test Result

Test data_1 GHz to 18 GHz

Tx: 125k Hz

**Critical Freqs**

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1969.500000	41.32	---	74.00	32.68	100.0	V	192.0	-4.21
2471.000000	44.05	---	74.00	29.95	100.0	V	15.0	-2.32
3100.000000	47.79	---	74.00	26.21	100.0	V	219.0	1.58
3866.500000	45.99	---	74.00	28.01	100.0	V	247.0	1.29
7420.000000	42.93	---	74.00	31.07	100.0	V	260.0	10.19
9967.500000	45.77	---	74.00	28.23	100.0	V	148.0	14.33

Remark:

- (1) According to C63.10, if the peak measured value complies with the quasi-peak limit, it is unnecessary to perform a quasi-peak measurement, so quasi-peak emission value did not show in data table if the peak value complies with quasi-peak limit.
- (2) The testing was performed at 3m distance, the limit has been transferred from 300m/30m to 3m.
- (3) Corrected Amplitude = Read level + Corrector factor
 Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain
 Below 1GHz: Corrector factor = Antenna Factor + Cable Loss
 (The Reading Level is recorded by software which is not shown in the sheet)

10 Test Equipment List

Radiated Emission Test 1# (9kHz – 1GHz)

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	68-4-74-14-002	101269	2025-5-13
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9162	68-4-80-19-003	284	2025-7-2
Loop Antenna	Rohde & Schwarz	HFH2-Z2	68-4-80-14-006	100398	2025-7-24
Pre-amplifier	Rohde & Schwarz	SCU 18F	68-4-29-19-001	100745	2025-5-11
Sideband Horn Antenna	Q-PAR	QWH-SL-18-40-K-SG	68-4-80-14-008	12827	2025-7-2
Pre-amplifier	Rohde & Schwarz	SCU 40A	68-4-29-14-002	100432	2025-7-17
Attenuator	Mini-circuits	UNAT-6+	68-4-81-21-002	15542	2025-5-11
3m Semi-anechoic chamber	TDK	SAC-3 #2	68-4-90-19-006	----	2026-10-25
Test software	Rohde & Schwarz	EMC32	68-4-90-19-006-A01	Version10.35.02	N/A

Radiated Emission 2# Test (1GHz – 40GHz)

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	68-4-74-14-002	101269	2025-5-13
Wave Guide Antenna	ETS	3117	68-4-80-19-001	00218954	2025-4-10
Pre-amplifier	Rohde & Schwarz	SCU 18F	68-4-29-19-002	100746	2025-5-11
Sideband Horn Antenna	Q-PAR	QWH-SL-18-40-K-SG	68-4-80-14-008	12827	2025-7-2
Pre-amplifier	Rohde & Schwarz	SCU 40A	68-4-29-14-002	100432	2025-7-17
Attenuator	Mini-circuits	UNAT-6+	68-4-81-21-002	15542	2025-5-11
3m Semi-anechoic chamber	TDK	SAC-3 #2	68-4-90-19-006	----	2026-10-25
Test software	Rohde & Schwarz	EMC32	68-4-90-19-006-A01	Version10.35.02	N/A

Conducted RF Test System

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL. DUE DATE
Signal Analyzer	Rohde & Schwarz	FSV40	68-4-74-14-004	101030	2025-5-11
RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157W	68-4-93-14-003	101226/100929	2025-5-11
Power Splitter	Weinschel	1580	68-4-85-14-001	SC319	2025-5-11
10dB Attenuator	Weinschel	4M-10	68-4-81-14-003	43152	2025-5-11
10dB Attenuator	R&S	DNF	68-4-81-14-004	DNF-001	2025-5-11
10dB Attenuator	R&S	DNF	68-4-81-14-005	DNF-002	2025-5-11
10dB Attenuator	R&S	DNF	68-4-81-14-006	DNF-003	2025-5-11
10dB Attenuator	R&S	DNF	68-4-81-14-007	DNF-004	2025-5-11
Test software	Tonscend	System for BT/WIFI	68-4-74-14-006-A13	Version 2.6.77.0518	N/A
Shielding Room	TDK	TS8997	68-4-90-19-003	----	2025-10-15

Conducted Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	EQUIPMENT ID	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	68-4-74-14-001	101782	2025-5-13
LISN	Rohde & Schwarz	ENV432	68-4-87-16-001	101318	2025-5-12
Test software	Rohde & Schwarz	EMC32	68-4-90-14-003-A10	Version9.15.00	N/A
Shielding Room	TDK	CSR #1	68-4-90-19-004	----	2025-10-15

11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Conducted Emission 150kHz-30MHz (for test using AMN ENV432 or ENV4200)	3.57dB
Uncertainty for Radiated Emission in 3m chamber 9kHz-30MHz	4.70dB
Uncertainty for Radiated Emission in new 3m chamber 30MHz-1000MHz	Horizontal: 4.59dB; Vertical: 4.75dB
Uncertainty for Radiated Emission in new 3m 1000MHz-18000MHz	Horizontal: 5.08dB; Vertical: 5.09dB;
Uncertainty for Radiated Emission 18000MHz-40000MHz	Horizontal: 4.52dB; Vertical: 4.51dB
Uncertainty for Conducted RF test	RF Power Conducted: 1.31dB Frequency test involved: 0.6×10^{-8} or 1%

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2023, clause 4.3.3 and 4.3.4.

---THE END OF REPORT---