



FCC CERTIFICATION TEST REPORT

Applicant	:	CYG Contron Co., Ltd.
Address of Applicant	:	No.11 of the 6th Technology Road, National high-tech Industries Development Zone, Zhu Hai City, Guang Dong, China
Manufacturer	:	CYG Contron Co., Ltd.
Address of Manufacturer	:	No.11 of the 6th Technology Road, National high-tech Industries Development Zone, Zhu Hai City, Guang Dong, China
Equipment under Test	:	Smart Key
Model No.	:	E402
IC	:	2BNTRE402
Test Standard(s)	:	FCC Rules and Regulations Part 15 Subpart C, ANSI C63.10:2013
Report No.	:	DDT-RE25012301-2E05
Issue Date	:	2025/03/20
Issue By	:	Guangdong Dongdian Testing Service Co., Ltd. Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808

REPORT

Table of Contents

1.	Summary of Test Results	5
2.	General Test Information	6
2.1.	Description of EUT	6
2.2.	Accessories of EUT	6
2.3.	Block diagram of EUT configuration for test.....	6
2.4.	Decision of final test mode	6
2.5.	Deviations of test standard	6
2.6.	Test environment conditions.....	7
2.7.	Test laboratory	7
2.8.	Measurement uncertainty	8
3.	20dB Bandwidth and 99% Bandwidth	9
3.1.	Test equipment	9
3.2.	Block diagram of test setup	9
3.3.	Limits.....	9
3.4.	Assistant equipment used for test	9
3.5.	Test procedure	9
3.6.	Test result	10
3.7.	Original test data.....	10
4.	Radiated Emission.....	11
4.1.	Test equipment	11
4.2.	Block diagram of test setup	12
4.3.	Limits.....	13
4.4.	Assistant equipment used for test	14
4.5.	Test procedure.....	14
4.6.	Test result	15
4.7.	Test data	16
5.	Power Line Conducted Emissions.....	20
5.1.	Test equipment	20
5.2.	Block diagram of test setup	20
5.3.	Limits.....	20
5.4.	Assistant equipment used for test	20
5.5.	Test procedure.....	20
5.6.	Test result	21
5.7.	Test data	22
6.	Test Setup Photograph.....	24
7.	Photos of the EUT	26

Test Report Declare

Applicant	:	CYG Contron Co., Ltd.
Address of Applicant	:	No.11 of the 6th Technology Road, National high-tech Industries Development Zone, Zhu Hai City, Guang Dong, China
Equipment under Test	:	Smart Key
Model No.	:	E402
Manufacturer	:	CYG Contron Co., Ltd.
Address of Manufacturer	:	No.11 of the 6th Technology Road, National high-tech Industries Development Zone, Zhu Hai City, Guang Dong, China

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C,
ANSI C63.10:2013

We Declare:

The equipment described above is tested by Guangdong Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Guangdong Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

Report No.:	DDT-RE25012301-2E05		
Date of Receipt:	2025/02/17	Date of Test:	2025/02/17~2025/03/20

Prepared By:*Tiger Mo***Tiger Mo/Engineer****Approved By:****Damon Hu /EMC Manager**

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Guangdong Dongdian Testing Service Co., Ltd.

Revision History

Version	Revision Content	Issue Date	Approved
---	Initial issue	2025/03/20	

1. Summary of Test Results

No.	Test Parameter	Clause No.	Condition	Result
1	20dB Bandwidth	FCC Part 15: 15.215	/	Pass
2	Radiated Emission	FCC Part 15: 15.205, FCC Part 15: 15.209	/	Pass
3	Power Line Conducted Emissions	FCC Part 15: 15.207(a)	/	N/A
4	Antenna Requirement	FCC Part 15: 15.203	/	Pass

Note: N/A is an abbreviation for Not Applicable, and means this item is not applicable for this device or no need to test according to standard.

2. General Test Information

2.1. Description of EUT

EUT Name	: Smart Key
Model Number	: E402
Difference of model number	: /
EUT Function Description	: Please reference user manual of this device
Power Supply	: DC 5V powered by an external adapter or a built-in 3.7V lithium battery.
Hardware Version	: WL175001 A.1
Software Version	: 1.0.0.31691

Radio Technology	: SRD
Operation frequency	: 111kHz-160kHz
Modulation	: AM

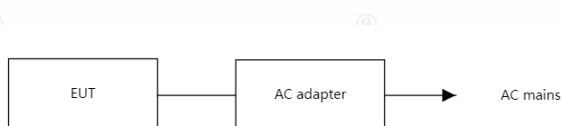
Note: The above EUT information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications or User's Manual. The above Antenna information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

“☑” means to be chosen or applicable; “☐” means don't to be chosen or not applicable; This note applies to entire report.

2.2. Accessories of EUT

Accessories	Manufacturer	Model number	Description
/	/	/	/

2.3. Block diagram of EUT configuration for test



2.4. Decision of final test mode

According pre-test, the worst test modes were reported as below:
Test software: /

2.5. Deviations of test standard

No deviation.

2.6. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-25 °C
Humidity range:	40-75%
Pressure range:	86 kPa to106 kPa

Note: The specific temperature and humidity information of each test item refers to the temperature and humidity record in the corresponding test data.

2.7. Test laboratory

Guangdong Dongdian Testing Service Co., Ltd.

Add.: Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808.

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20240, G-20118

2.8. Measurement uncertainty

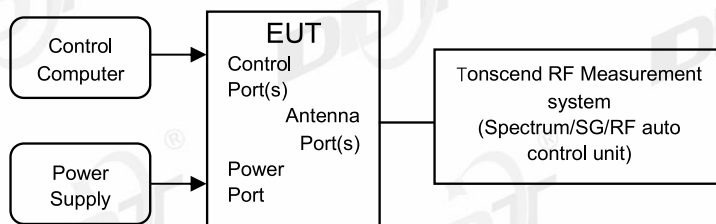
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$); 1.38 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$); 1.38 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Frequencies Stability	6.7×10^{-8} (Antenna couple method) 5.5×10^{-8} (Conducted method)
Conducted spurious emissions	0.86 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$); 1.40 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$) 1.66 dB ($8 \text{ GHz} \leq f < 26.5 \text{ GHz}$)
Uncertainty for radio frequency (RBW < 20 kHz)	3×10^{-8}
Temperature	0.4 °C
Humidity	2 %
Uncertainty for Radiation Emission test (9 kHz – 30 MHz)	3.44 dB
Uncertainty for Radiation Emission test (30 MHz - 1 GHz)	4.70 dB (Antenna Polarize: V) 4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1 GHz - 40 GHz)	4.10 dB (1 - 6 GHz) 4.40 dB (6 GHz - 18 GHz) 3.54 dB (18 GHz - 26 GHz) 4.30 dB (26 GHz - 40 GHz)
Uncertainty for Power line conduction emission test	3.34dB (150KHz-30MHz) 3.72dB (9KHz-150KHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3. 20dB Bandwidth and 99% Bandwidth

3.1. Test equipment

Equipment	Manufacturer	Model No.	Serial Number	Due Date
☑RF Connected Test (RF Measurement System 3#)				
SIGNAL ANALYZER	R&S	FSV40	101407	2025/07/08
Wideband Radio Communication Tester	R&S	CMW500	117491	2025/03/31
EXG Analog Signal Generator	KEYSIGHT	N5173B	MY62153058	2025/07/08
MXG Vector Signal Generator	Agilent	N5182A	MY48180912	2025/03/31
RF Control Unit	Tonscend	JS0806-2	20C8060230	2025/03/31
TEMP&HUMI Programmable Chamber	ZHIXIANG	ZXGDJS-150L	ZX170110-A	2025/04/22
Test Software	Tonscend	JS1120-3	Ver.3.2.22	N/A

3.2. Block diagram of test setup



3.3. Limits

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.

3.4. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Description	other
/	/	/	/	/

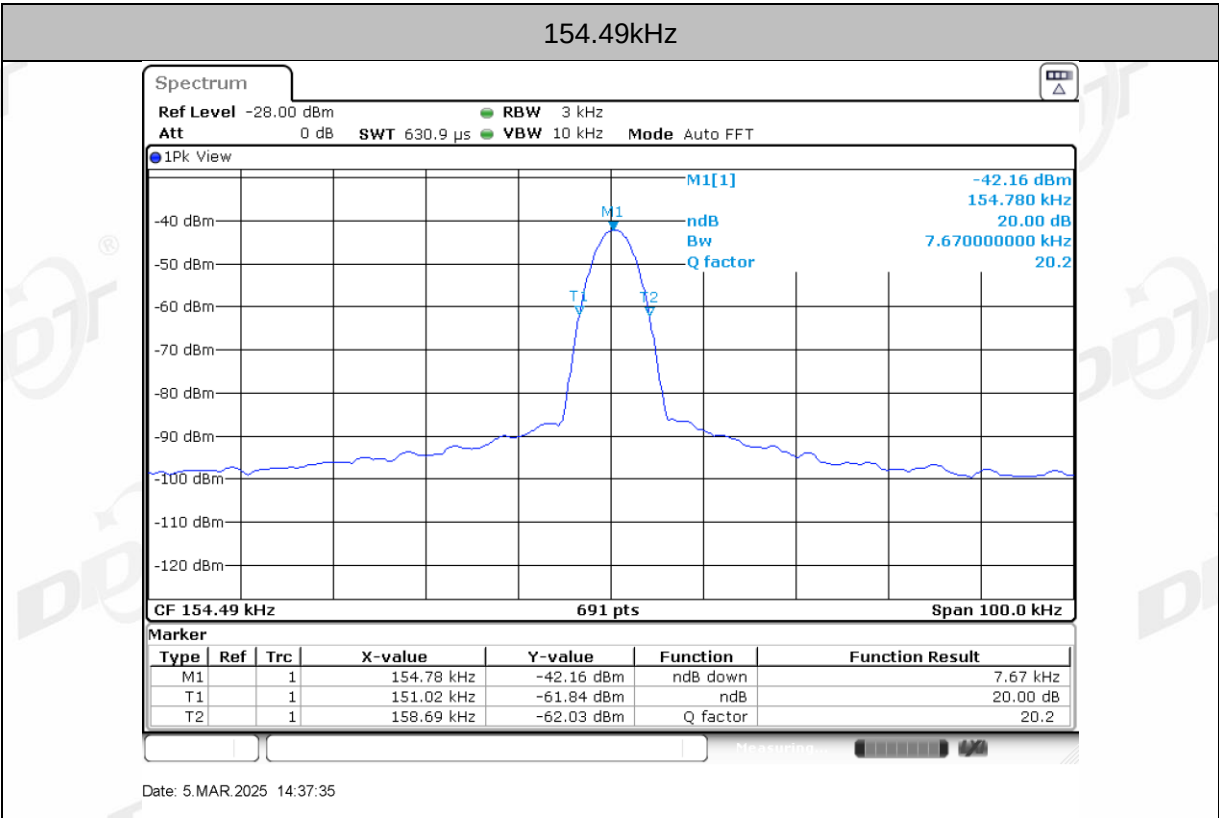
3.5. Test procedure

- (1) Connect EUT's antenna output to spectrum analyzer by RF cable.
- (2) The bandwidth of the fundamental frequency was measured by spectrum analyzer with 3kHz RBW and 10 kHz VBW. The 20 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.

3.6. Test result

Wireless charging Operation frequency(kHz)	Freq. (kHz)	20 dB bandwidth Result (kHz)	Conclusion
111 - 160	154.49	7.67	Pass

3.7. Original test data

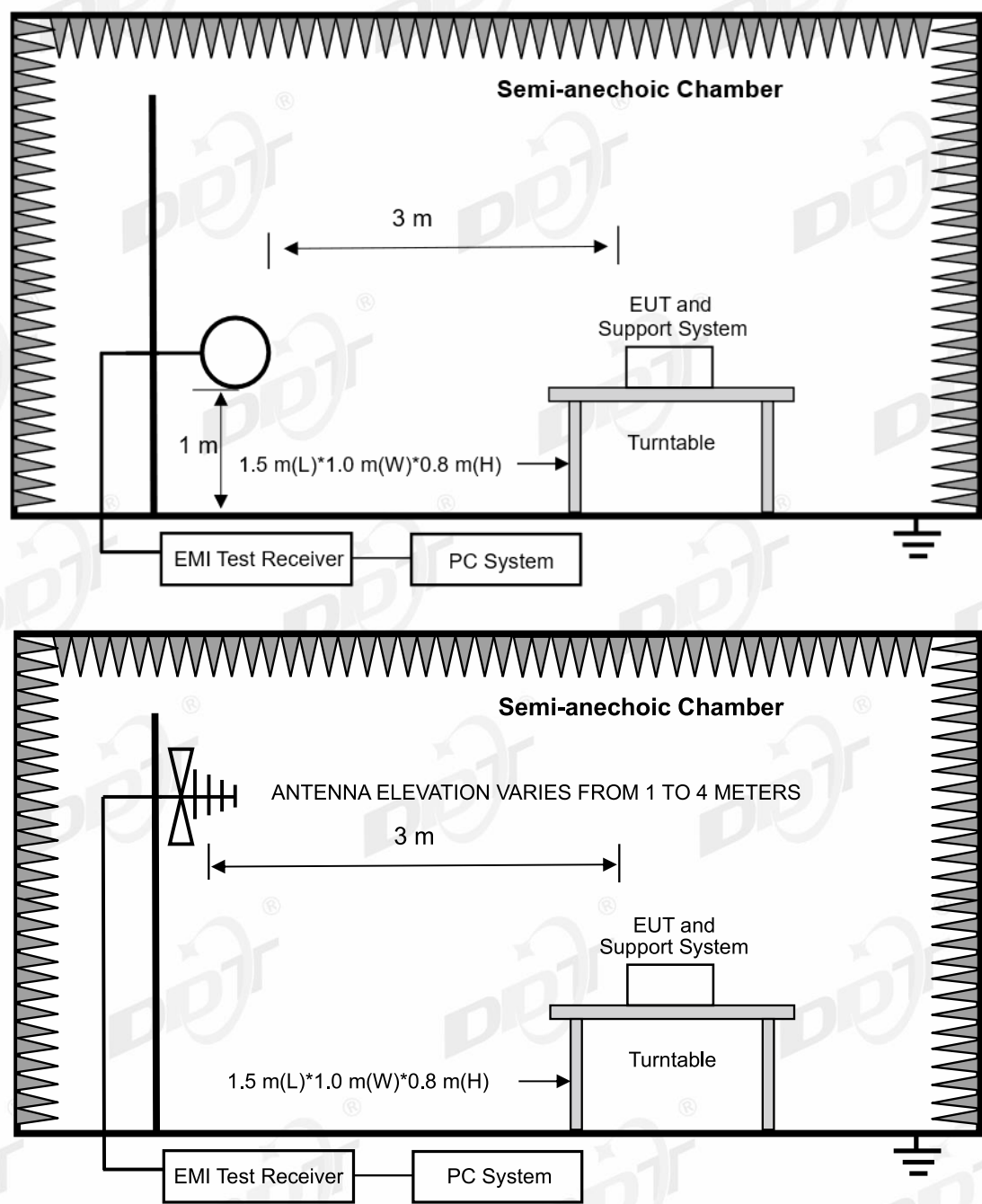


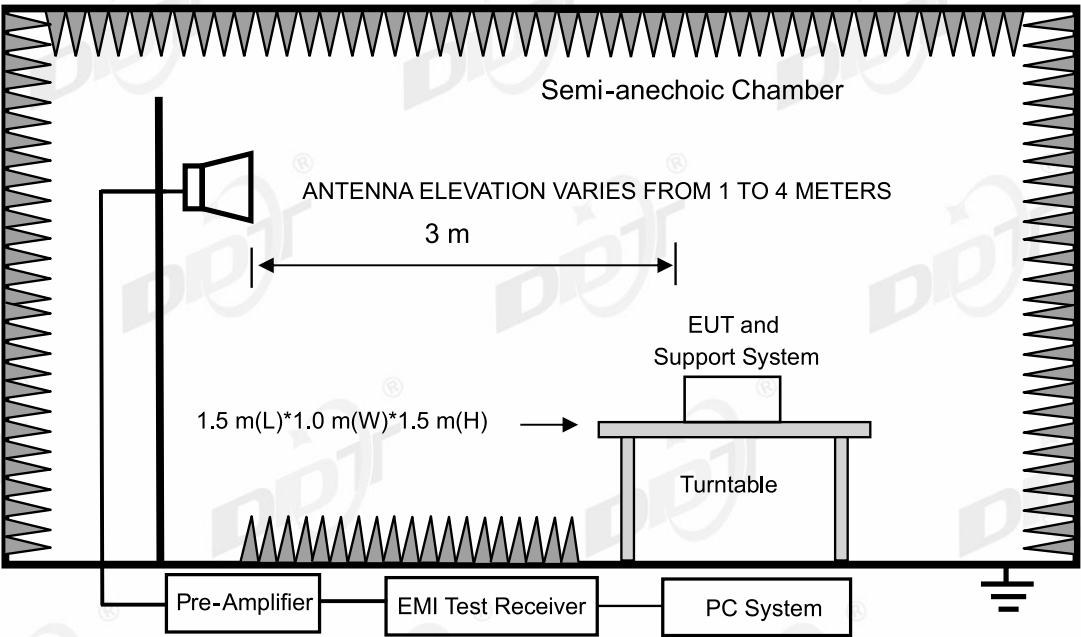
4. Radiated Emission

4.1. Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal Due To
RF cable	Yuhu Technology	JCTB810-NJ-NJ-9M	DDT-ZC02538	2025/03/31
Active Loop Antenna	Schwarzbeck	FMZB1519	DDT-ZC00524	2025/09/11
Pre-amplifier	COM-POWER	PAM-840A	DDT-ZC01693	2025/03/31
EMI TEST RECEIVER	R&S	ESU26	DDT-ZC01909	2025/03/31
PSA Series Spectrum Analyzer	Agilent	E4447A	DDT-ZC00517	2025/03/31
Micro-Tronics filters	REBES	BRM50702	DDT-ZC03242	/
Pre-amplifier	COM-POWER	PAM-118A	DDT-ZC01293	2025/08/25
RF Cable	N/A	W24.02 HL-562	DDT-ZC04022	2025/03/31
RF cable	Yuhu Technology	ZT26S-SMAJ-SMAJ-1M	DDT-ZC02037	2025/03/31
Hochgewinn-Hornantenne	SCHWARZBEC K	BBHA 9120 D	DDT-ZC02129	2025/09/18
RF Cable	N/A	W13.02 AP1-X2	DDT-ZC04023	2025/03/31
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	DDT-ZC00506	2025/04/26
High pass filter	Micro-Tronics	HPM50102	DDT-ZC00561	2025/04/22
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	DDT-ZC02050	2025/07/11
Micro-Tronics filters	REBES	BRM50716	DDT-ZC03240	/
High Pass filter	Xi'an Xingbo	XBLBQ-GTA67	DDT-ZC02179	2025/04/22
RF cable	Zhongke Junchuang	JCT26S-NJ-NJ-1.5M	DDT-ZC02762	2025/03/31
High pass filter	Micro-Tronics	HPM50108	DDT-ZC00560	2025/04/22

4.2. Block diagram of test setup





4.3. Limits

(1) FCC 15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	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
4.1772&4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.2072&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	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.G
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	(2)
13.36-13.41			

(2) FCC 15.209 Limit.

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		uV/m	dB(uV)/m

0.009 ~ 0.490	300	2400/F(kHz)	67.6-20log(F)
0.490 ~ 1.705	30	24000/F(kHz)	87.6-20log(F)
1.705 ~ 30.0	30	30	29.54
30~88	3	100	40.0
88~216	3	150	43.5
216~960	3	200	46.0
960~1000	3	500	54.0
Above 1000	3	74.0 dB(uV)/m (Peak) 54.0 dB(uV)/m (Average)	

Note:

(1) The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$\text{Limit}_{3\text{m}}(\text{dBuV/m}) = \text{Limit}_{300\text{m}}(\text{dBuV/m}) + 40\text{Log}(300\text{m}/3\text{m}) = \text{Limit}_{300\text{m}}(\text{dBuV/m}) + 80$$

$$\text{Limit}_{3\text{m}}(\text{dBuV/m}) = \text{Limit}_{30\text{m}}(\text{dBuV/m}) + 40\text{Log}(30\text{m}/3\text{m}) = \text{Limit}_{30\text{m}}(\text{dBuV/m}) + 40$$

(3) Limit for this EUT

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions include fundamental emission shall not exceed FCC 15.231 section (e) limit of comply with FCC 15.209 limit which permit higher emission level.

4.4. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Description	other
/	/	/	/	/

4.5. Test procedure

- (1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber.
- (2) Test antenna was located 3m from the EUT on an adjustable mast, and the antenna used as below table.

Test frequency range	Test antenna used	Test antenna distance
30MHz-1GHz	Trilog Broadband Antenna	3m

The Trilog Broadband Antenna or Horn Antenna was located 3m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the

measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

(3) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions:

(a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1m to 4m(Except loop antenna, it's fixed 1m above ground.)

(b) Change work frequency or channel of device if practicable.

(c) Change modulation type of device if practicable.

(d) Change power supply range from 85% to 115% of the rated supply voltage

(e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions.

(4) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10 2013 on Radiated Emission test.

(5) The emissions from 9kHz to 1GHz were measured based on CISPR QP detector except for the frequency bands 9-90kHz, 110-490kHz, for emissions from 9kHz-90kHz,110kHz-490kHz and above 1GHz were measured based on average detector, for emissions above 1GHz, peak emissions also be measured and need comply with Peak limit.

(6) The emissions from 9kHz to 1GHz, QP or average values were measured with EMI receiver with below RBW.

Frequency band	RBW
30MHz-1GHz	120kHz

(7) X axis, Y axis, Z axis are tested, and worse setup X axis is reported

4.6. Test result

PASS. (See below detailed test result)

Note: All Polarity have been pretest, and only the worst case is shown in report.

4.7. Test data

TR-4-E-009 Radiated Emission Test Result

Test Date: 2025-03-11

Tested By: Lin Guoyuan

EUT: Smart Key

Model Number: E402

Test Mode: Operate Mode

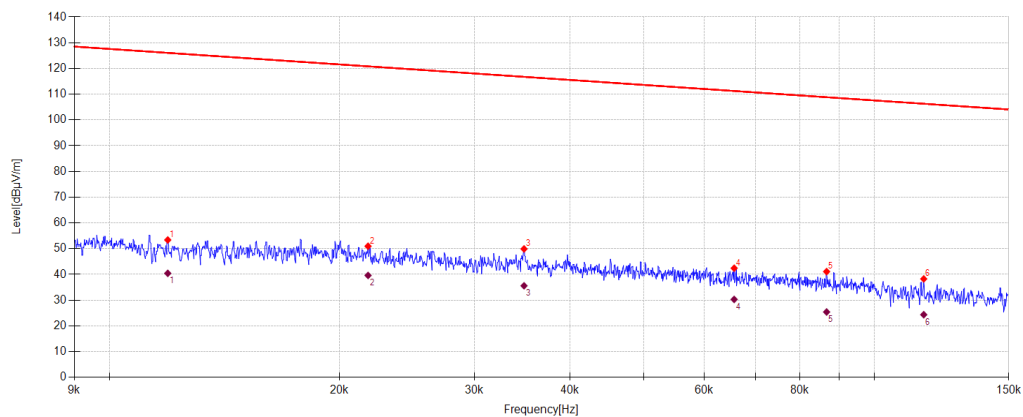
Power Supply: DC 5V

Condition: Temp:21.3°C;Humi:47.4%

Test Site: DDT 3# Chamber

File Path: d:\ts\2025 report date\Q25012301-1E\FCC Below 1G\20250311-012635_V

Memo: Sample Numbel:S25012301-002



Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Antenna Factor [dB]	Cable loss [dB]	AMP [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Polarity
1	0.012	60.09	20.50	3.21	-30.41	53.39	126.07	72.68	PK	Vertical
2	0.022	57.73	20.48	3.22	-30.48	50.95	120.83	69.88	PK	Vertical
3	0.035	56.85	20.40	3.23	-30.57	49.91	116.75	66.84	PK	Vertical
4	0.066	49.56	20.40	3.23	-30.77	42.42	111.26	68.84	PK	Vertical
5	0.087	48.37	20.40	3.23	-30.91	41.09	108.84	67.75	PK	Vertical
6	0.116	45.76	20.27	3.22	-31.00	38.25	106.30	68.05	PK	Vertical

Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Antenna Factor [dB]	Cable loss [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Polarity
1	0.012	47.12	20.50	3.21	40.42	126.08	85.66	AV	Vertical
2	0.022	46.37	20.48	3.22	39.59	120.83	81.24	AV	Vertical
3	0.035	42.51	20.40	3.23	35.57	116.74	81.17	AV	Vertical
4	0.066	37.42	20.40	3.23	30.28	111.26	80.98	AV	Vertical
5	0.087	32.68	20.40	3.23	25.40	108.84	83.44	AV	Vertical
6	0.116	31.86	20.27	3.22	24.35	106.30	81.95	AV	Vertical

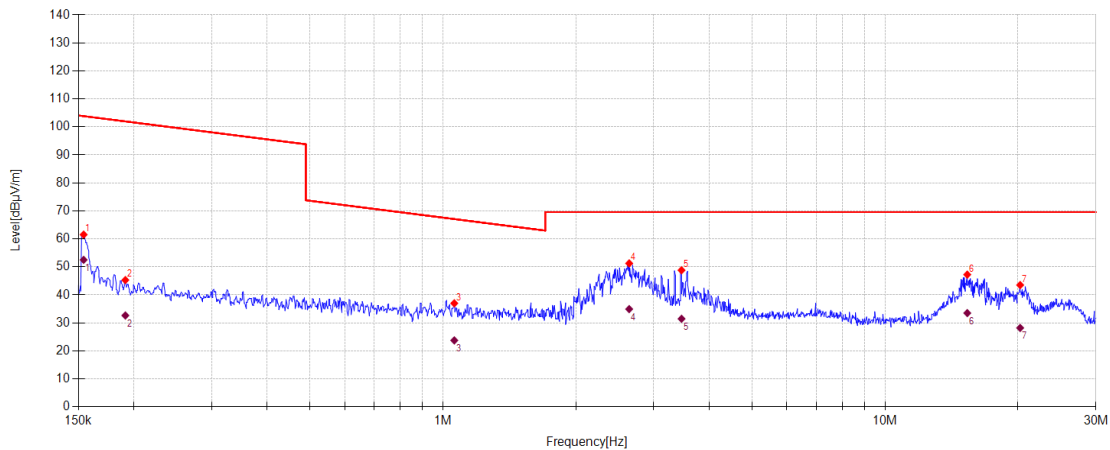
Note:

1. Level = Reading + Cable Loss + Antenna Factor + AMP

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: 9kHz-150kHz RBW: 300Hz, VBW: 1 kHz, Sweep time: auto.
150kHz-30MHz RBW: 10kHz, VBW: 30kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2025-03-11**Tested By:** Lin Guoyuan**EUT:** Smart Key**Model Number:** E402**Test Mode:** Operate Mode**Power Supply:** DC 5V**Condition:** Temp:21.3°C;Humi:47.4%**Test Site:** DDT 3# Chamber**File Path:** d:\ts\2025 report date\Q25012301-1E\FCC Below 1G\20250311-012331_V**Memo:** Sample Numbel:S25012301-002

Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Antenna Factor [dB]	Cable loss [dB]	AMP [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Polarity
1	0.154	69.17	20.10	3.24	-31.00	61.51	103.85	42.34	PK	Vertical
2	0.191	52.94	20.12	3.24	-31.00	45.30	101.96	56.66	PK	Vertical
3	1.061	44.32	20.40	3.28	-31.00	37.00	67.09	30.09	PK	Vertical
4	2.639	58.52	20.40	3.34	-31.00	51.26	69.54	18.28	PK	Vertical
5	3.467	56.01	20.42	3.37	-31.00	48.80	69.54	20.74	PK	Vertical
6	15.353	54.35	20.26	3.66	-31.03	47.24	69.54	22.30	PK	Vertical
7	20.220	50.85	20.02	3.69	-31.05	43.51	69.54	26.03	PK	Vertical

Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Antenna Factor [dB]	Cable loss [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Polarity	
1	0.154	60.17	20.10	3.24	52.51	103.85	51.34	AV	Vertical	
2	0.191	40.28	20.12	3.24	32.64	101.96	69.32	AV	Vertical	
3	1.061	31.06	20.40	3.28	23.74	67.09	43.35	QP	Vertical	
4	2.639	42.19	20.40	3.34	34.93	69.54	34.61	QP	Vertical	
5	3.467	38.67	20.42	3.37	31.46	69.54	38.08	QP	Vertical	
6	15.353	40.62	20.26	3.66	33.51	69.54	36.03	QP	Vertical	
7	20.220	35.54	20.02	3.69	28.20	69.54	41.34	QP	Vertical	

Note:

1. Level = Reading + Cable Loss + Antenna Factor + AMP

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: 9kHz-150kHz RBW: 300Hz, VBW: 1 kHz, Sweep time: auto.
150kHz-30MHz RBW: 10kHz, VBW: 30kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-17

Tested By:

Lin Guoyuan

EUT:

Smart Key

Model Number:

E402

Test Mode:

TX Mode

Power Supply:

DC 5V

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

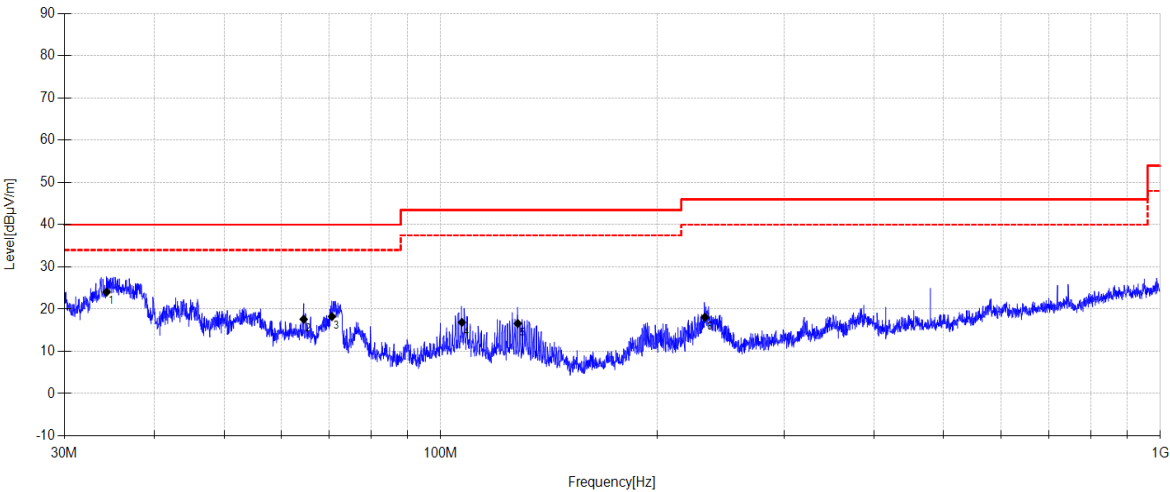
DDT 3# Chamber

File Path:

d:\ts\2025 report date\Q25012301-1E\FCC Below 1G\20250317-215934_H

Memo:

Sample Numbler:S25012301-002



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Antenna Factor [dB]	Cable Loss [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Polarity
1	34.347	39.78	11.57	3.79	24.04	40.00	15.96	QP	Horizontal
2	64.514	32.47	12.25	3.99	17.61	40.00	22.39	QP	Horizontal
3	70.621	35.72	9.61	4.02	18.25	40.00	21.75	QP	Horizontal
4	107.031	32.41	11.30	4.26	16.86	43.50	26.64	QP	Horizontal
5	127.986	34.56	8.81	4.37	16.61	43.50	26.89	QP	Horizontal
6	232.926	32.88	11.57	4.91	18.09	46.00	27.91	QP	Horizontal

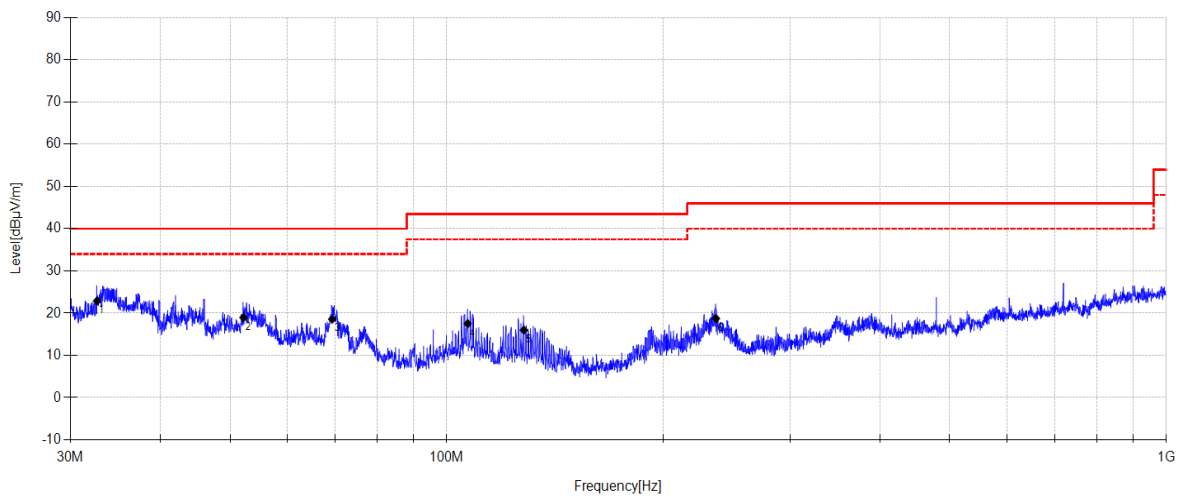
Note:

1. Result Level = Reading + Cable loss + Antenna Factor + AMP

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2025-03-17**Tested By:** Lin Guoyuan**EUT:** Smart Key**Model Number:** E402**Test Mode:** TX Mode**Power Supply:** DC 5V**Condition:** Temp:21.3°C;Humi:47.4%**Test Site:** DDT 3# Chamber**File Path:** d:\ts\2025 report date\Q25012301-1E\FCC Below 1G\20250317-215950_V**Memo:** Sample Numbel:S25012301-002

Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Antenna Factor [dB]	Cable Loss [dB]	Result [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Polarity
1	32.679	39.57	10.64	3.78	22.89	40.00	17.11	QP	Vertical
2	52.202	33.12	13.04	3.90	18.96	40.00	21.04	QP	Vertical
3	69.345	35.39	10.26	4.02	18.57	40.00	21.43	QP	Vertical
4	106.956	33.06	11.30	4.26	17.51	43.50	25.99	QP	Vertical
5	127.986	33.94	8.81	4.37	15.99	43.50	27.51	QP	Vertical
6	236.713	33.55	11.54	4.93	18.75	46.00	27.25	QP	Vertical

Note:

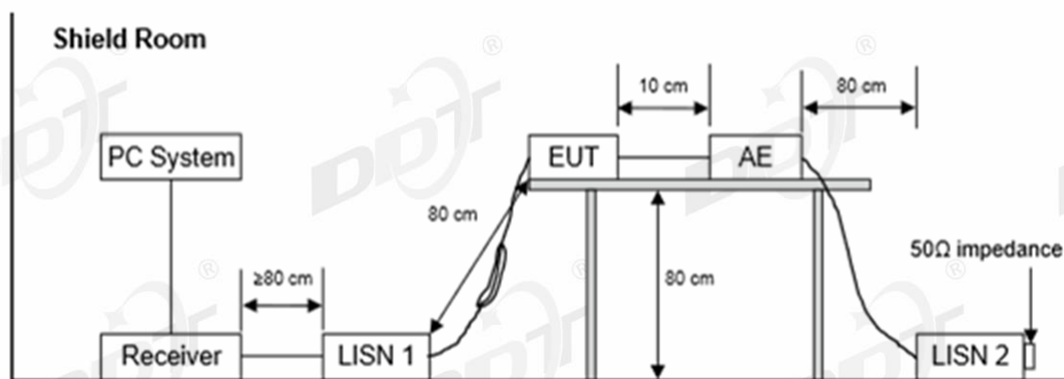
1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

5. Power Line Conducted Emissions

5.1. Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal Due To
EMI Test Receiver	R&S	ESCI	DDT-ZC01972	2025/03/31
Two Line V-Network	R&S	ENV216	DDT-ZC02058	2025/07/08
Conducted Radiated Software	Audix	E3	DDT-ZC00562	/
Pulse Limiter	R&S	KH43101	DDT-ZC00747	2025/04/22
Coaxial signal signal cable	H&S	RG214-5	DDT-ZC01817	2025/03/31
Two Line V-Network	R&S	ENV216	DDT-ZC00586	2025/07/08

5.2. Block diagram of test setup



5.3. Limits

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150 kHz~500 kHz	66 ~ 56*	56 ~ 46*
500 kHz~5 MHz	56	46
5 MHz~30 MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

5.4. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Description	other
/	/	/	/	/

5.5. Test procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

5.6. Test result

PASS. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.

Note2: "-----" means Peak detection; "-----" means Average detection.

Note3: Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/50Hz, recorded the worst case.

5.7. Test data

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 5# Shield Room

D:\2025 report data\Q25012301-1E\FCC.EM6

Test Date : 2025-03-10

Tested By : Gen Liu

EUT : Smart Key

Model Number : E402

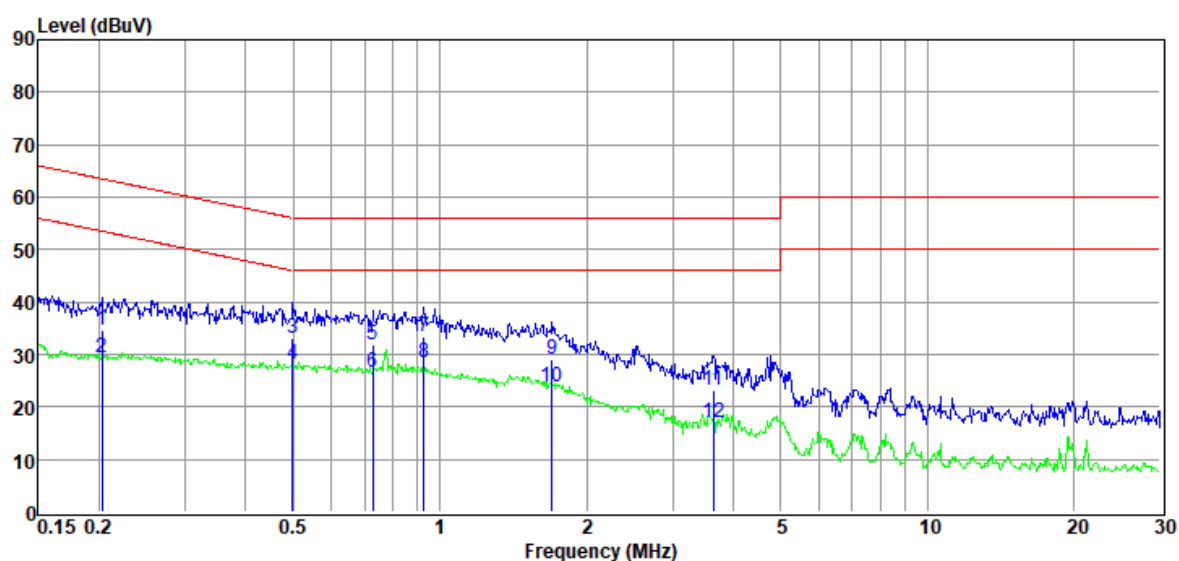
Power Supply : AC 120V/60Hz

Test Mode : SRD mode

Condition : Temp:23.6°C,Humi:55.8%

LISN : 2023 ENV216 2#/LINE

Memo : S25012301-001



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Phase
1	0.20	14.63	9.93	0.09	10.06	34.71	63.49	-28.78	QP	LINE
2	0.20	9.43	9.93	0.09	10.06	29.51	53.49	-23.98	Average	LINE
3	0.50	12.91	9.99	0.10	10.07	33.07	56.01	-22.94	QP	LINE
4	0.50	8.02	9.99	0.10	10.07	28.18	46.01	-17.83	Average	LINE
5	0.73	11.80	9.92	0.10	10.06	31.88	56.00	-24.12	QP	LINE
6	0.73	6.63	9.92	0.10	10.06	26.71	46.00	-19.29	Average	LINE
7	0.93	13.45	9.93	0.11	10.05	33.54	56.00	-22.46	QP	LINE
8	0.93	8.30	9.93	0.11	10.05	28.39	46.00	-17.61	Average	LINE
9	1.70	8.94	10.01	0.14	10.06	29.15	56.00	-26.85	QP	LINE
10	1.70	3.75	10.01	0.14	10.06	23.96	46.00	-22.04	Average	LINE
11	3.64	2.97	9.98	0.18	10.06	23.19	56.00	-32.81	QP	LINE
12	3.64	-3.19	9.98	0.18	10.06	17.03	46.00	-28.97	Average	LINE

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 5# Shield Room

D:\2025 report data\Q25012301-1E\FCC.EM6

Test Date : 2025-03-10

Tested By : Gen Liu

EUT : Smart Key

Model Number : E402

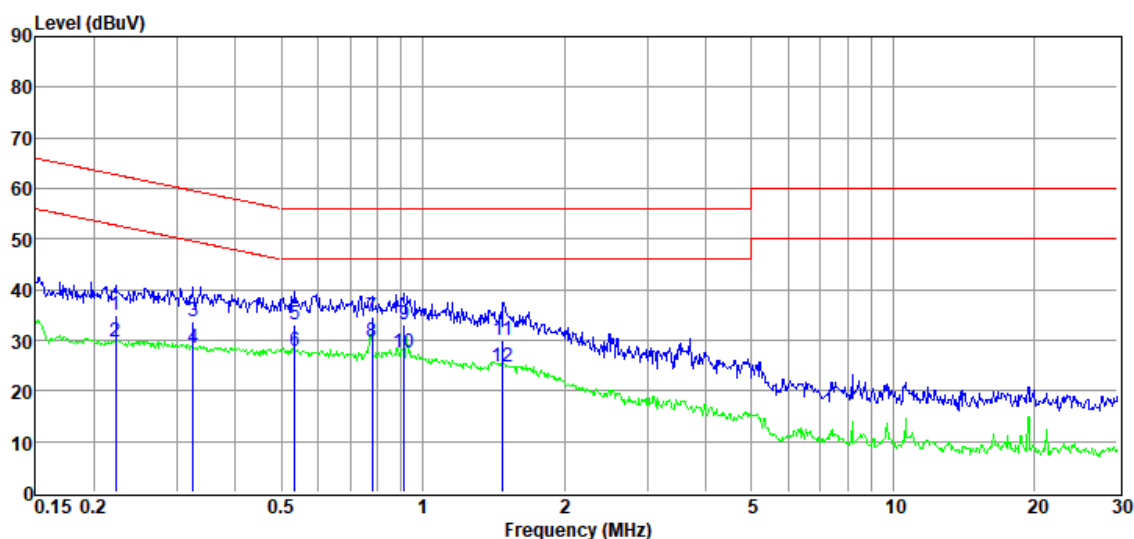
Power Supply : AC 120V/60Hz

Test Mode : SRD mode

Condition : Temp:23.6°C,Humi:55.8%

LISN : 2023 ENV216 2#/NEUTRAL

Memo : S25012301-001



Item	Freq.	Read Level	LISN Factor	Cable Loss	Pulse Limiter Factor	Result Level	Limit Line	Over Limit	Detector	Phase
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)		
1	0.22	14.84	9.92	0.09	10.06	34.91	62.74	-27.83	QP	NEUTRAL
2	0.22	9.77	9.92	0.09	10.06	29.84	52.74	-22.90	Average	NEUTRAL
3	0.33	13.50	10.04	0.09	10.07	33.70	59.57	-25.87	QP	NEUTRAL
4	0.33	8.28	10.04	0.09	10.07	28.48	49.57	-21.09	Average	NEUTRAL
5	0.53	12.86	9.99	0.10	10.07	33.02	56.00	-22.98	QP	NEUTRAL
6	0.53	7.64	9.99	0.10	10.07	27.80	46.00	-18.20	Average	NEUTRAL
7	0.78	14.43	9.97	0.10	10.06	34.56	56.00	-21.44	QP	NEUTRAL
8	0.78	9.62	9.97	0.10	10.06	29.75	46.00	-16.25	Average	NEUTRAL
9	0.91	12.91	9.97	0.11	10.05	33.04	56.00	-22.96	QP	NEUTRAL
10	0.91	7.29	9.97	0.11	10.05	27.42	46.00	-18.58	Average	NEUTRAL
11	1.48	9.89	9.96	0.13	10.06	30.04	56.00	-25.96	QP	NEUTRAL
12	1.48	4.72	9.96	0.13	10.06	24.87	46.00	-21.13	Average	NEUTRAL

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

7. Photos of the EUT

Please refer to DDT-Q25012301-1E appendix I

-----End Report-----