

TEST REPORT

Job No. : GPEM2505000510EC
Test Report No. : F690501-RF-EMC003746
Applicant : Master Lock Company
Product Name : Smart Lock
Model Name : YMM624
Standards : FCC Part 15 Subpart B
ICES-003 Issue 7:2020
FCC ID : MZR-YMM624
Date of Receipt : May 8, 2025
Date of Test : May 22, 2025
Date of Issue : June 11, 2025
Test Result : Complied

- 1) This test report does not assure KOLAS accreditation.
2) The results of this test report are effective only to the items tested.
3) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.

	Tested by (Name, signature)	Approved by (Name, signature)
Affirmation	DoHyeon Lee 	Paul Kang 

SGS Korea Co., Ltd. Gunpo Laboratory

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Revision History

Revision	Report Number	Description
0	F690501-RF-EMC003746	Initial

1. Test Laboratory

1.1 General information

Name	SGS Korea Co., Ltd.	
- Branch Site	4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Republic of Korea Tel. +82 31 428 5700 Fax. +82 31 427 5370	
- Branch Site-3	35, Giheungdanji-ro 121beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea Tel. +82 31 548 0710 Fax. +82 31 548 0719	
- Branch Site-4	12, Dongtansandan 10-gil, Hwaseong-si, Gyeonggi-do, 18487, Republic of Korea Tel. +82 31 8007 5302 Fax. +82 31 427 2370	
Website	http://www.sgsgroup.kr/ee	

SGS Korea Co., Ltd. has been accredited by the agencies listed in the following table;

Accreditation	Accreditation bodies	Accreditation No.
KC	MSIT- RRA	KR0150
FCC	FCC (MRA)	
IC	IC (MRA)	
Vietnam-MIC	Vietnam-MIC	
Japan EMI	VCCI	C-14102, T-11156, R-13662, G-20037
KOLAS	KATS - KOLAS	Testing No.123
CBTL	IECEE	TL 146
SDPPI	SDPPI	-

2. General Information of E.U.T.

2.1 Applicant Information

Applicant	Master Lock Company
Applicant Address	6744 S. Howell Avenue Oak Creek, WI 53154, USA
Manufacturer	Master Lock Company
Manufacturer Address	Lot A10 Ba Thien II Industrial Park Thien Ke Ward Vinh Phuc Province, Vietnam

2.2 General Information of E.U.T.

Classification	Description
Product Name	Smart Lock
Model Name	YMM624
Alt. Model Name	Refer to Below Model differences
Model Differences	Refer to Below Model differences
Serial No.	-
EMI Classification	Class B
Internal Clock Frequency	2 480 MHz
Rated Power	9 Vd.c. (1.5 Battery * 6)
Tested Power	9 Vd.c. (1.5 Battery * 6)
H/W Version	1.0
S/W Version	1.0
Port	-
Components	Push Button Keypad / Touch Screen Keypad(Exterior, varying by SKU), Interior Lock, Key Cylinder & Key (Varying by SKU)
Function	Digital Door Lock

Model Differences

Remark	Model	*Brand	Using mechanical keys	Keypad
Basic model	YMM624 (Tested Model)	Yale	Use	Touch screen
	YMM614 (Tested Model)	Yale	Use	Push button
	YMM634	Yale	X	Push button
	YMM644	Yale	X	Touch screen
Alternative model	MCM614	Master Lock	Use	Push button
	MCM624	Master Lock	Use	Touch screen
	MCM634	Master Lock	X	Push button
	MCM644	Master Lock	X	Touch screen

* The model name is classified according to the buyer's side

2.3 Configurations of E.U.T

Description	Model	Serial No.	Manufacturer	Note
YMM624 (Basic Model)				
Main Board	PC4M-M620S-E100 AU T1.6	-	-	-
Front Board	PC4F-M620S-E100 AU T1.45	-	-	-
NFC Antenna	-	-	-	-
YMM614 (Alt. Model)				
Main Board	PC4M-M620S-E100 AU T1.6	-	-	-
Front Board	PC4F-M610S-E100 AU T1.45	-	-	-
NFC Antenna	PC2A-M610S-F000	-	-	-

3. E.U.T. Operation and Test Configuration

3.1 Peripheral Equipments

Description	Model	Serial No.	Manufacturer	Note.
-	-	-	-	-

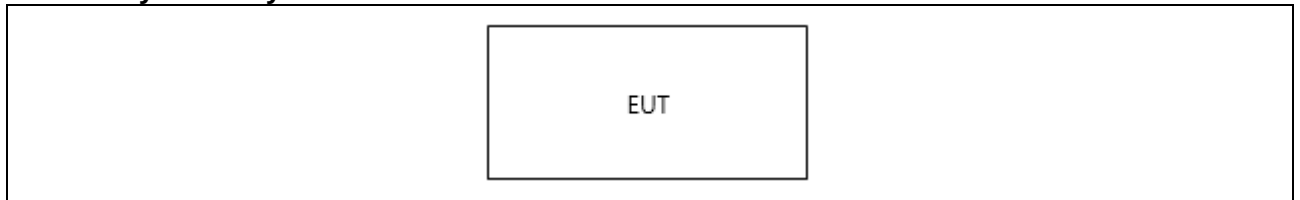
3.2 Cable List

Start		END		Cable Spec.		Used core
Name	I/O Port	Name	I/O Port	Length (m)	Shield	
EUT	-	-	-	-	-	-

3.3 Operating Modes and Conditions

Operating mode	Operating condition
01 PIN Code	Repeat opening and closing the door lock using the PIN Code.

3.4 Test System Layout



3.5 Modifications to the test items during testing

- ☒ No modifications done during testing
- ☐ Modification done during testing (see details below)

No.	Description of modification (if any)
1	
2	

4. Test Results

4.1 Summary

Test Items	Standards	Test Results
Conducted Emission	FCC Part 15 Subpart B Section 15.107 ICES-003 Issue 7:2020 ANSI C63.4a:2017	N/A
Radiated Emission	FCC Part 15 Subpart B Section 15.109 ICES-003 Issue 7:2020 ANSI C63.4a:2017	Complied

4.2 Note

- 1 Test Methods of all test items are performed according to the basic standard in subclause 4.1.
- 2

Emission Test

5.1 Test Method and Limits

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Conducted Emission	0.15 MHz - 30 MHz	9 kHz	-
Radiated Emission	30 MHz - 1 GHz	120 kHz	10 m or 3 m
	Above 1 GHz	1 MHz	3 m

5.2 Test Limits

Frequency Range	Limits(dBμV)		Class
	Quasi-peak	CISPR-Average	
0.15 MHz - 0.5 MHz	79	66	Class A
0.5 MHz - 30 MHz	73	60	
0.15 MHz - 0.5 MHz	66 to 56 ^{Note1}	56 to 46 ^{Note1}	Class B
0.5 MHz - 5 MHz	56	46	
5 MHz - 30 MHz	60	50	

[Table 2.1 Conducted Emission Limits]

Frequency Range	Limits(dBμV/m)	Class
	Quasi-peak	
30 MHz - 88 MHz	39.0	Class A (10 m method)
88 MHz - 216 MHz	43.5	
216 MHz - 960 MHz	46.5	
960 MHz - 1 GHz	49.5	
30 MHz - 88 MHz	40.0	Class B (3 m method)
88 MHz - 216 MHz	43.5	
216 MHz - 960 MHz	46.0	
960 MHz - 1 GHz	54.0	

[Table 2.2 Radiated Emission Limits below 1 GHz_For FCC Part 15 Subpart B]

Frequency Range	Limits(dBμV/m)	Class
	Quasi-peak	
30 MHz - 88 MHz	40.0	Class A (10 m method)
88 MHz - 216 MHz	43.5	
216 MHz - 230 MHz	46.5	
230 MHz - 960 MHz	47.0	
960 MHz - 1 GHz	49.5	

30 MHz - 88 MHz	50.0	Class A (3 m method)
88 MHz - 216 MHz	54.0	
216 MHz - 230 MHz	56.9	
230 MHz - 960 MHz	57.0	
960 MHz - 1 GHz	60.0	
30 MHz - 88 MHz	30.0	Class B (10 m method)
88 MHz - 216 MHz	33.1	
216 MHz - 230 MHz	35.6	
230 MHz - 960 MHz	37.0	
960 MHz - 1 GHz	43.5	
30 MHz - 88 MHz	40.0	Class B (3 m method)
88 MHz - 216 MHz	43.5	
216 MHz - 230 MHz	46.0	
230 MHz - 960 MHz	47.0	
960 MHz - 1 GHz	54.0	

[Table 2.3 Radiated Emission Limits below 1 GHz_For ICES-003 Issue 7 : 2020]

Frequency Range	Limits(dBμV)		Class
	Peak	CISPR-Average	
Above 1 GHz	79.5	59.5	Class A
	74.0	54.0	Class B

[Table 2.4 Radiated Emission Limits Above 1 GHz_For FCC Part 15 Subpart B ^{Note2}]

Frequency Range	Limits(dBμV)		Class
	Peak	CISPR-Average	
Above 1 GHz	80.0	60.0	Class A
	74.0	54.0	Class B

[Table 2.5 Radiated Emission Limits Above 1 GHz_For ICES-003 Issue 7 : 2020]

Note 1. The lower limit shall apply at the transition frequencies. The limit decreases linearly with the logarithm of that frequency.

Note 2. The limits of class A equipment is extrapolated using an extrapolation factor of 20 dB/decade because it was measured at 3 m distance not 10 m distance.

5.3 Radiated Emission

5.3.1 Test Equipments

Equipment	Model	Manufacturer	Serial No	Cal Due. Date
EMI TEST RECEIVER	ESU40	R&S	100075	2026-01-17
TRILOG BROADBAND ANTENNA	VULB 9163	SCHWARZBECK	9163-437	2025-05-29
Double Ridged Horn Antenna	HF907	R&S	100208	2026-03-06
PRE-AMPLIFIER	AM-1431	MITEQ	1336160	2025-05-31
AMPLIFIER	SCU 18	R&S	10070	2025-08-21
RF Cable	EMH-1Lab-RE-01	-	-	2025-07-05
RF Cable	EMH-1Lab-RE-04	-	-	2025-07-05
RF Cable	EMH-1Lab-RE-05	-	-	2025-07-05
RF Cable	EMH-1Lab-RE-06	-	-	2025-07-05

Note. Measuring software is below

- Branch Site : ELECTRA(V5.02.0) from R&S
- Branch Site-3 : EMC32(V10.40.10) from R&S
- Branch Site-4 : EMC32(V10.40.10) from R&S

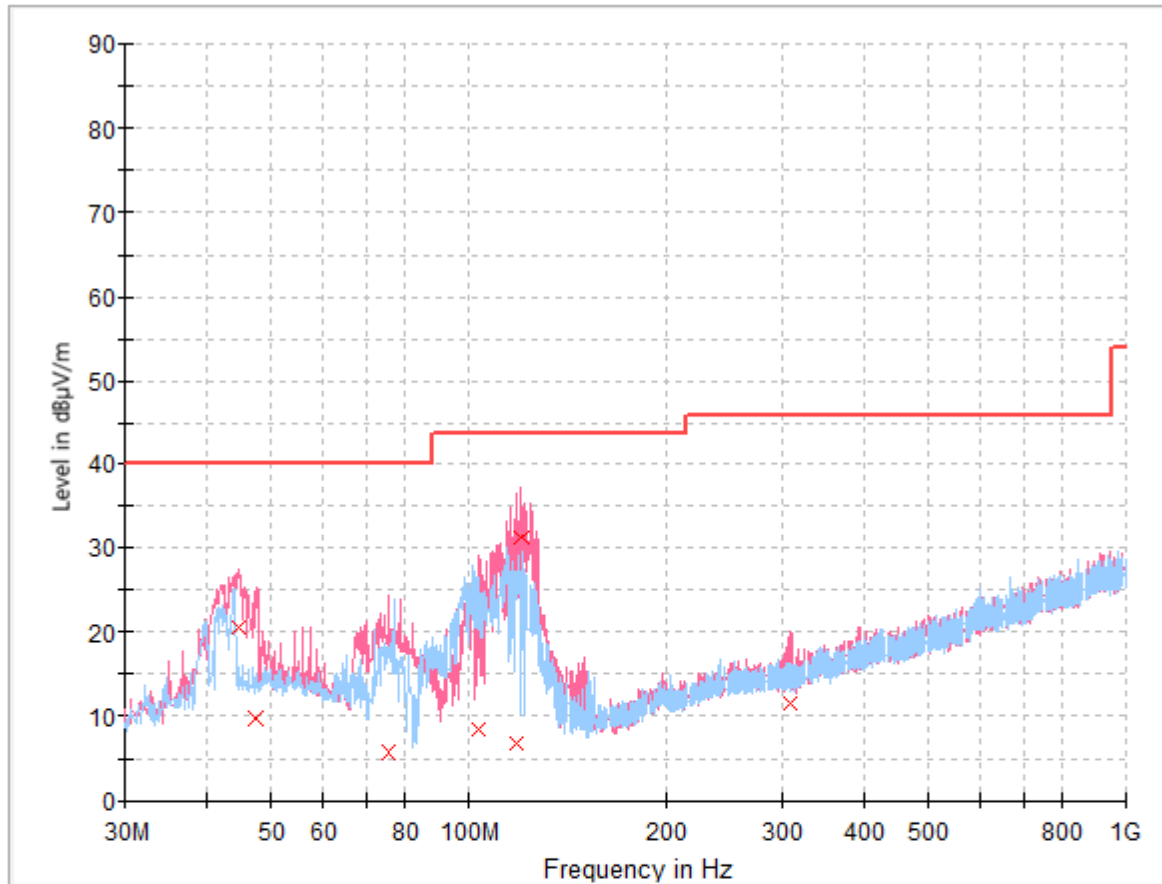
5.3.2 Environment Conditions

Test Site	10 m SEMI-ANECHOIC CHAMBER in Branch site-3
Temperature	(Minimum 19.5, Maximum 20.3) °C
Humidity	(Minimum 52.0, Maximum 53.0) % R.H.
Atmospheric Pressure	(Minimum 100.0, Maximum 100.0) kPa
Test Date	2025-05-22

5.3.3 Test Result

<Below 1 GHz (3 m method)>

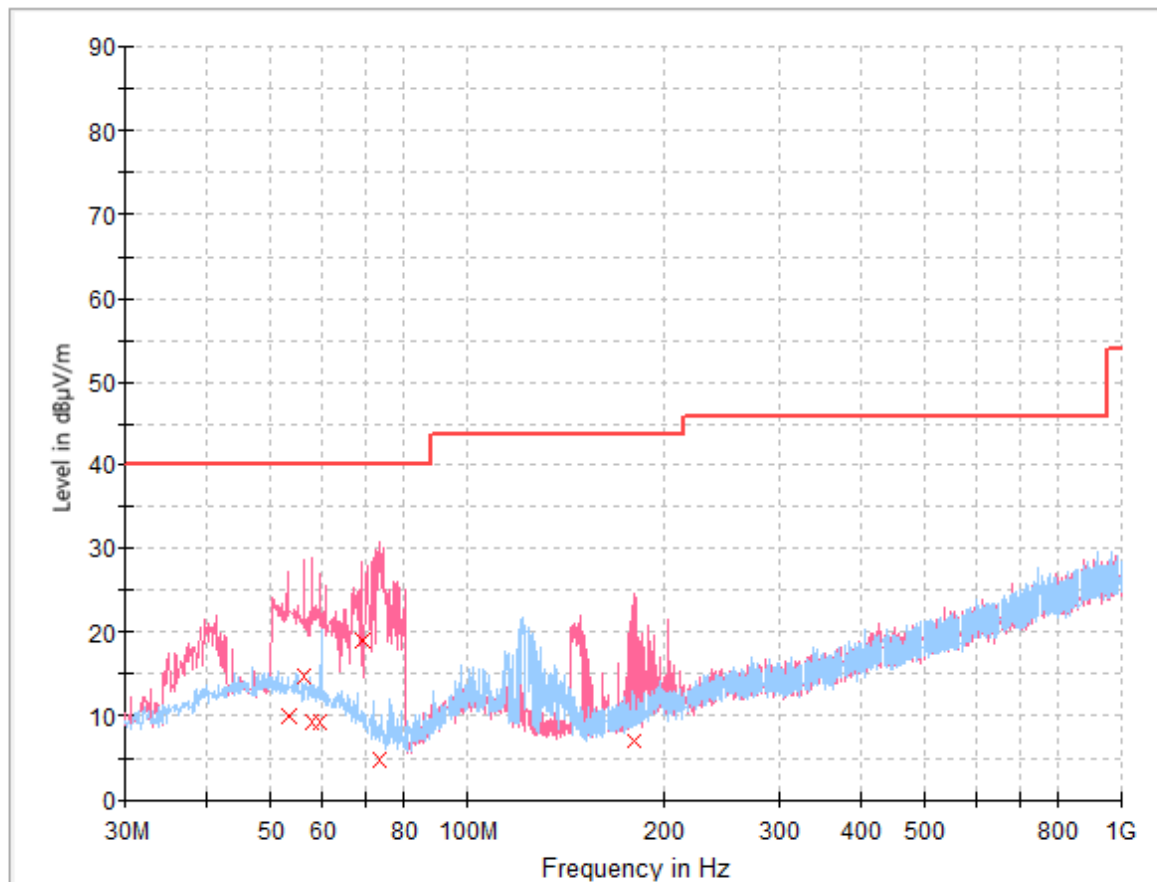
01 Mode(Basic Model) [FCC Part 15 Subpart B]



Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
44.647	20.49	40.00	19.51	15 000.0	120.000	200.0	V	58.0	-17.6
47.266	9.79	40.00	30.21	15 000.0	120.000	200.0	V	58.0	-17.4
75.493	5.88	40.00	34.12	15 000.0	120.000	400.0	V	0.0	-23.7
103.914	8.44	43.50	35.06	15 000.0	120.000	100.0	V	180.0	-19.2
118.561	6.81	43.50	36.69	15 000.0	120.000	100.0	V	180.0	-20.9
120.501	31.23	43.50	12.27	15 000.0	120.000	100.0	V	180.0	-21.2
309.263	11.41	46.00	34.59	15 000.0	120.000	200.0	V	147.0	-16.5

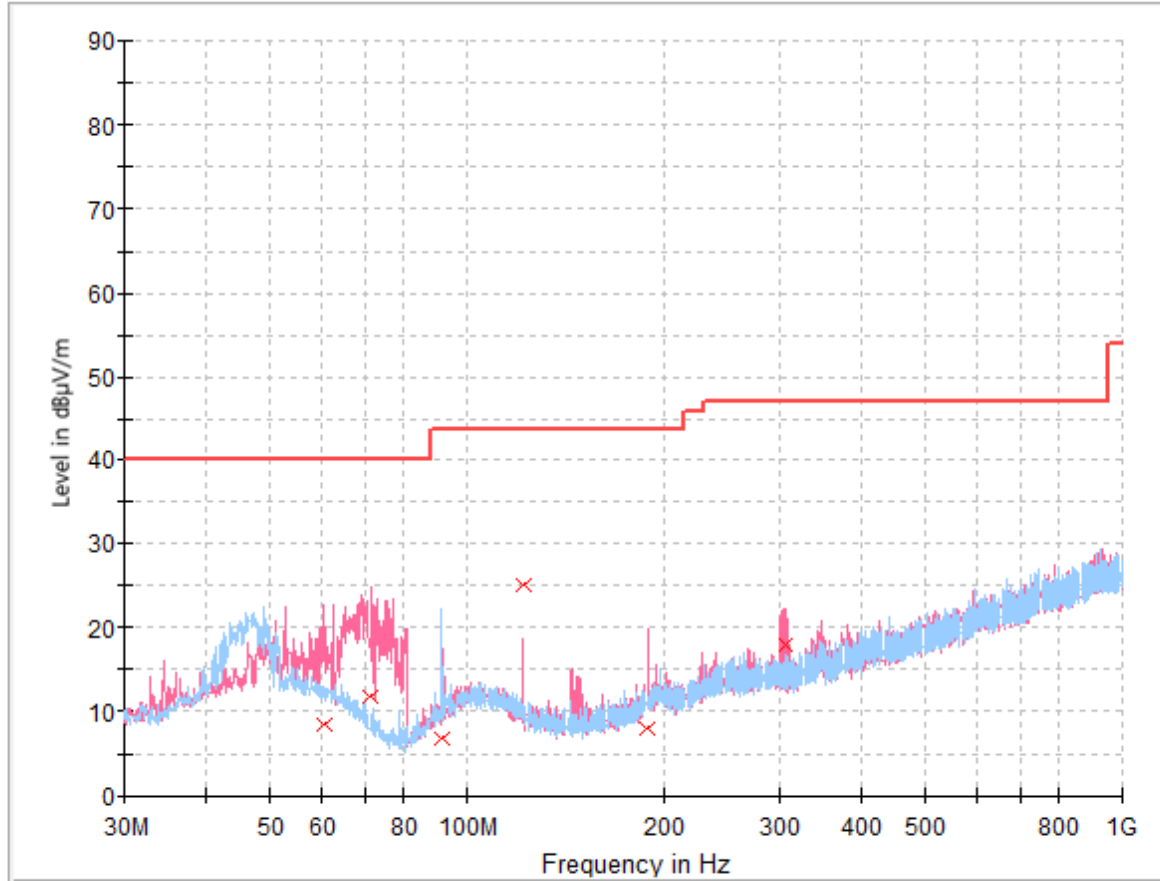
01 Mode(Alt. Model : YMM614) [FCC Part 15 Subpart B]



Final Result

Frequency (kHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
53.183	9.94	40.00	30.06	15 000.0	120.000	100.0	V	0.0	-17.6
56.287	14.71	40.00	25.29	15 000.0	120.000	100.0	V	0.0	-18.0
57.936	9.39	40.00	30.61	15 000.0	120.000	100.0	V	0.0	-18.2
59.488	9.17	40.00	30.83	15 000.0	120.000	100.0	V	0.0	-18.7
69.091	18.97	40.00	21.03	15 000.0	120.000	100.0	V	0.0	-21.4
73.456	4.78	40.00	35.22	15 000.0	120.000	100.0	V	0.0	-23.0
180.059	7.13	43.50	36.37	15 000.0	120.000	100.0	V	133.0	-20.8

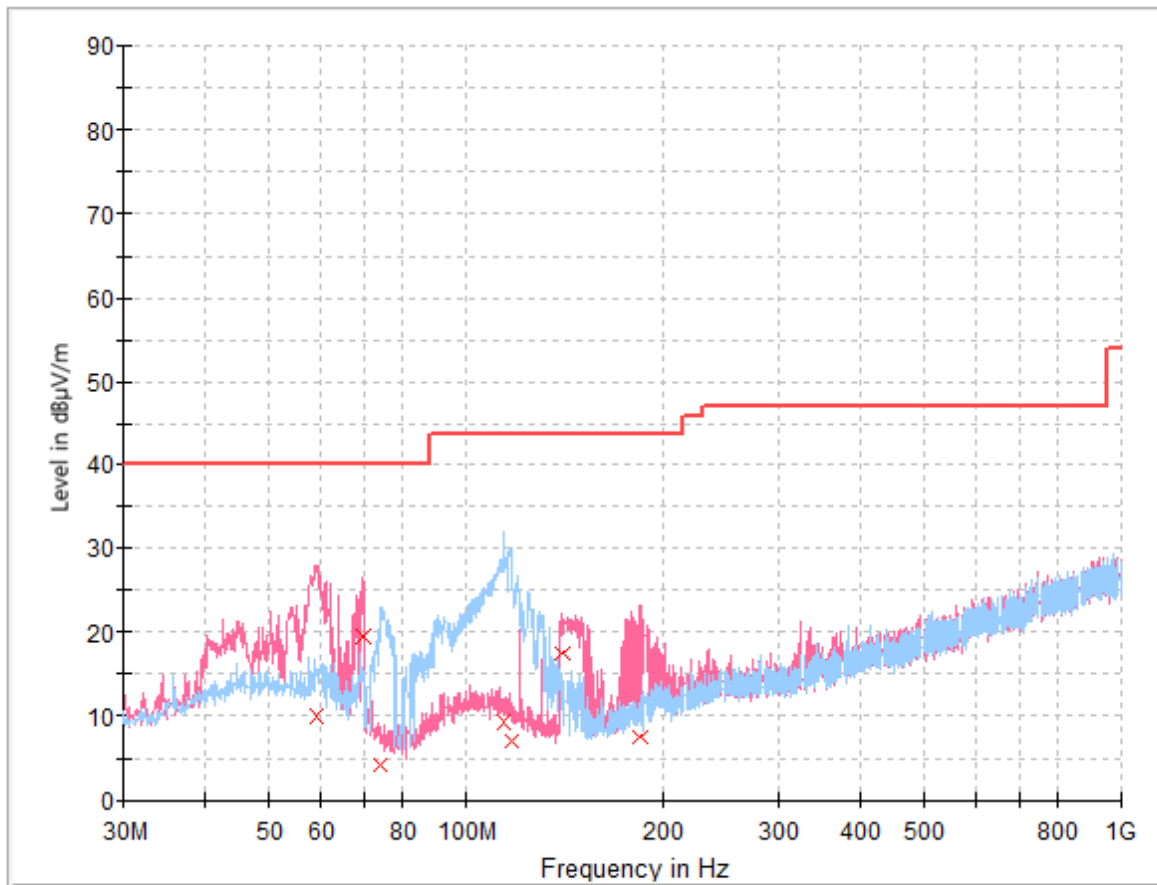
01 Mode(Basic Model) [ICES-003 Issue 7: 2020]



Final Result

Frequency (kHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
60.652	8.49	40.00	31.51	15 000.0	120.000	100.0	V	142.0	-18.8
71.419	11.78	40.00	28.22	15 000.0	120.000	100.0	V	293.0	-22.3
91.789	6.88	43.50	36.62	15 000.0	120.000	200.0	H	270.0	-20.8
121.665	24.96	43.50	18.54	15 000.0	120.000	100.0	V	293.0	-21.4
188.304	8.02	43.50	35.48	15 000.0	120.000	200.0	V	193.0	-20.0
306.935	18.06	47.00	28.94	15 000.0	120.000	200.0	V	308.0	-16.5

01 Mode(Alt. Model : YMM614) [ICES-003 Issue 7: 2020]



Final Result

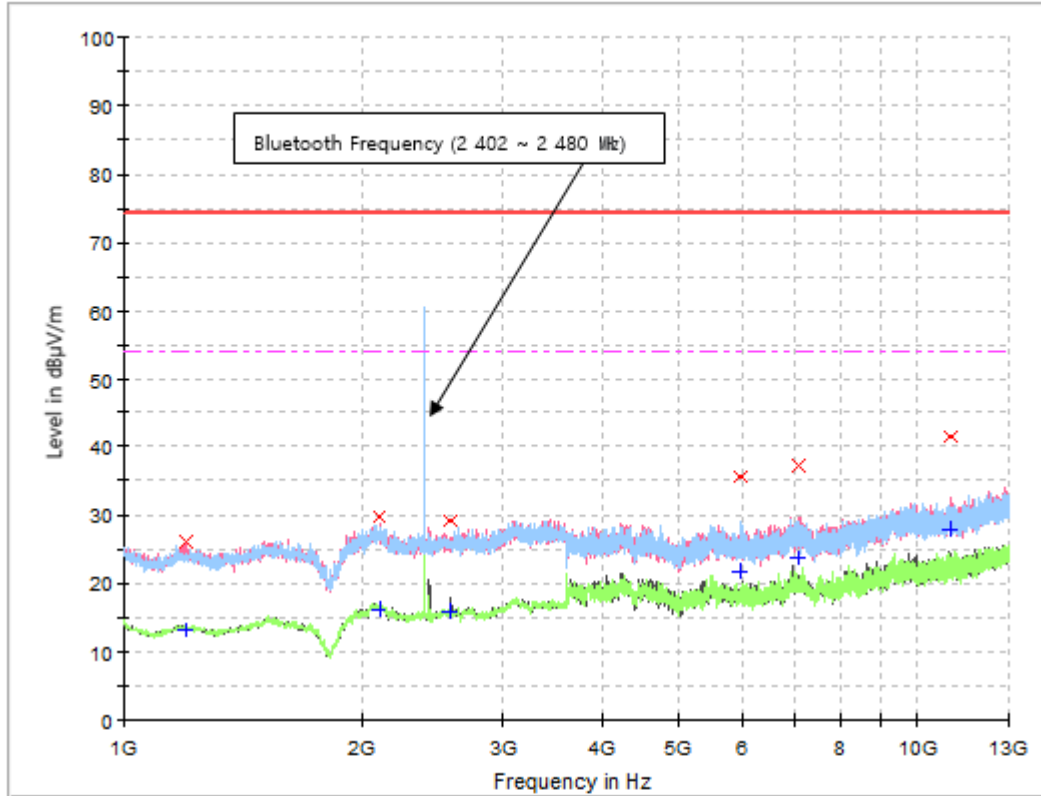
Frequency (kHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
59.100	10.14	40.00	29.86	15 000.0	120.000	100.0	V	245.0	-18.6
69.770	19.66	40.00	20.34	15 000.0	120.000	100.0	V	245.0	-21.6
74.038	4.33	40.00	35.67	15 000.0	120.000	100.0	H	113.0	-23.3
114.293	9.39	43.50	34.11	15 000.0	120.000	200.0	H	148.0	-20.0
117.397	7.07	43.50	36.43	15 000.0	120.000	200.0	H	148.0	-20.7
140.386	17.61	43.50	25.89	15 000.0	120.000	100.0	V	69.0	-22.7
184.812	7.47	43.50	36.03	15 000.0	120.000	100.0	V	0.0	-20.5

Note. Measurement Uncertainty: See Appendix A

- POL H = Horizontal
- POL V = Vertical
- Margin = Limit – Quasi Peak
- Corr. = Antenna Factor + Cable loss – Amplifier Gain

<Above 1 GHz (3 m method)>

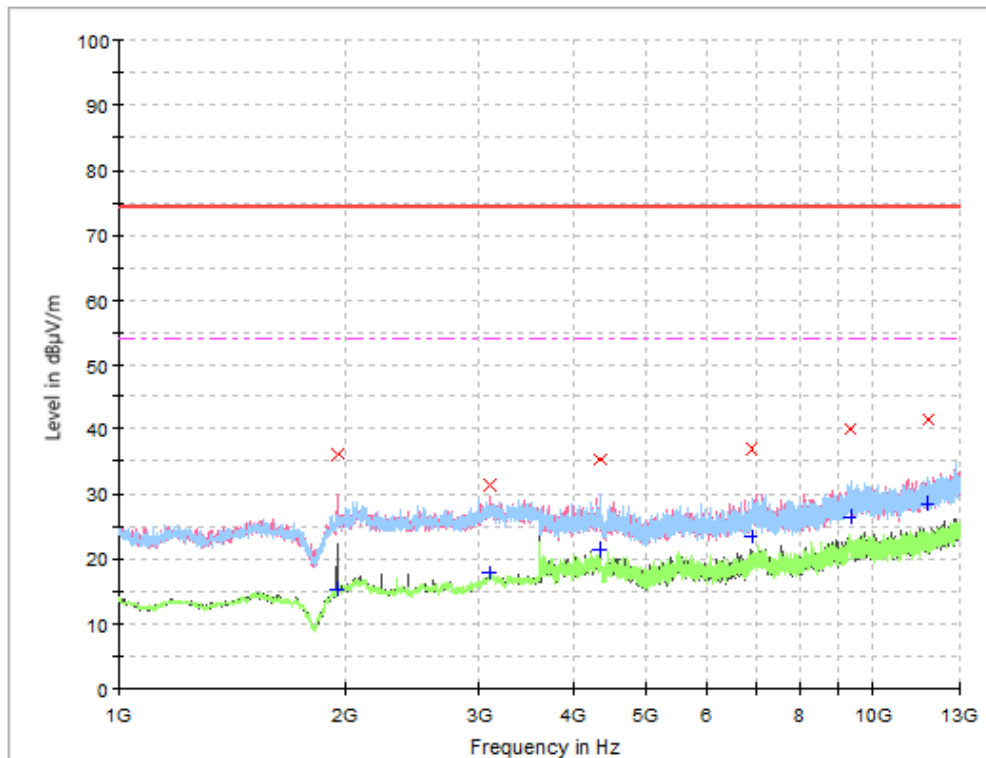
01 Mode(Basic Model)



Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1 198.000	26.30	---	74.00	47.70	15 000.0	1 000.000	100.0	V	0.0	-19.1
1 198.000	---	13.14	54.00	40.86	15 000.0	1 000.000	100.0	V	0.0	-19.1
2 098.000	---	16.16	54.00	37.84	15 000.0	1 000.000	100.0	V	128.0	-13.3
2 098.000	29.68	---	74.00	44.32	15 000.0	1 000.000	100.0	V	128.0	-13.3
2 584.000	---	15.89	54.00	38.11	15 000.0	1 000.000	100.0	V	0.0	-12.7
2 584.000	29.12	---	74.00	44.88	15 000.0	1 000.000	100.0	V	0.0	-12.7
5 982.400	35.70	---	74.00	38.30	15 000.0	1 000.000	100.0	H	314.0	-6.6
5 982.400	---	21.61	54.00	32.39	15 000.0	1 000.000	100.0	H	314.0	-6.6
7 110.400	---	23.71	54.00	30.29	15 000.0	1 000.000	100.0	V	330.0	-4.8
7 110.400	37.44	---	74.00	36.56	15 000.0	1 000.000	100.0	V	330.0	-4.8
10 994.800	---	27.82	54.00	26.18	15 000.0	1 000.000	100.0	V	354.0	-0.6
10 994.800	41.57	---	74.00	32.43	15 000.0	1 000.000	100.0	V	354.0	-0.6

01 Mode(Alt. Model : YMM614)

**Final Result**

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1 952.800	---	15.32	54.00	38.68	15 000.0	1 000.000	100.0	V	1.0	-13.7
1 952.800	38.16	---	74.00	37.84	15 000.0	1 000.000	100.0	V	1.0	-13.7
3 103.600	---	17.90	54.00	38.10	15 000.0	1 000.000	100.0	V	195.0	-10.5
3 103.600	31.57	---	74.00	42.43	15 000.0	1 000.000	100.0	V	195.0	-10.5
4 338.400	35.27	---	74.00	38.73	15 000.0	1 000.000	100.0	H	347.0	-7.6
4 338.400	---	21.33	54.00	32.67	15 000.0	1 000.000	100.0	H	347.0	-7.6
6 889.600	37.18	---	74.00	36.82	15 000.0	1 000.000	100.0	H	94.0	-5.1
6 889.600	---	23.45	54.00	30.55	15 000.0	1 000.000	100.0	H	94.0	-5.1
9 319.600	40.03	---	74.00	33.97	15 000.0	1 000.000	100.0	H	66.0	-2.0
9 319.600	---	26.33	54.00	27.67	15 000.0	1 000.000	100.0	H	66.0	-2.0
11 819.200	41.49	---	74.00	32.51	15 000.0	1 000.000	100.0	H	3.0	0.1
11 819.200	---	28.35	54.00	25.65	15 000.0	1 000.000	100.0	H	3.0	0.1

Note. Measurement Uncertainty: See Appendix A

- AF = Antenna Factor
- POL H = Horizontal
- H = Height
- Corr. = AF + CL – AMP

- CL = Cable Loss
- POL V = Vertical
- Margin = Limit – Result
- ** The value of 'Level' includes 'Corr.'.

- AMP = Amplifier Gain
- A = Angle

Ex) In case

Freq ; 100 MHz, level ; 30 dB(μV/m), AF ; 10 dB/m, CL ; 4 dB, Amp ; 25 dB

$$\begin{aligned} \text{Result} &= \text{Level} + \text{AF} + \text{CL} - \text{Amp} \\ &= 30 + 10 + 4 - 25 \\ &= 19 \end{aligned}$$

$$\begin{aligned} \text{Margin} &= \text{Limit} - \text{Result} \\ &= 43.5 - 19 \\ &= 24.5 \end{aligned}$$

Appendix A: Measurement Uncertainty

Test Method		Measurement Uncertainty
Conducted Emission	ENV216	3.0 dB (The confidence level is 95 %, $k=2$)
	ESH2-Z5	2.8 dB (The confidence level is 95 %, $k=2$)
	ESH3-Z6	3.0 dB (The confidence level is 95 %, $k=2$)
Conducted Emission - Signal	ISN T800	5.3 dB (The confidence level is 95 %, $k=2$)
	ISNT8-Cat6	5.4 dB (The confidence level is 95 %, $k=2$)
	ISN S751	6.8 dB (The confidence level is 95 %, $k=2$)
Disturbance Voltage at Antenna Terminal		2.4 dB (The confidence level is 95 %, $k=2$)
Radiated Emission	9 kHz - 30 MHz	Horizontal 3.4 dB (The confidence level is 95 %, $k=2$)
		Vertical 3.4 dB (The confidence level is 95 %, $k=2$)
	30 MHz - 1 000 MHz	Horizontal 4.6 dB (The confidence level is 95 %, $k=2$)
		Vertical 5.0 dB (The confidence level is 95 %, $k=2$)
	1 GHz - 18 GHz	Horizontal 3.6 dB (The confidence level is 95 %, $k=2$)
		Vertical 3.6 dB (The confidence level is 95 %, $k=2$)

Table A.1 Measurement Uncertainty of Branch Site

Test Method		Measurement Uncertainty	
Conducted Emission	ENV216	3.3 dB	(The confidence level is 95 %, $k=2$)
	ESH3-Z6	3.3 dB	(The confidence level is 95 %, $k=2$)
	ESH2-Z5	3.1 dB	(The confidence level is 95 %, $k=2$)
	NNLK8129	3.2 dB	(The confidence level is 95 %, $k=2$)
Conducted Emission - Signal		ISN T800	5.5 dB (The confidence level is 95 %, $k=2$)
		ISN ST08	6.6 dB (The confidence level is 95 %, $k=2$)
Radiated Emission	9 kHz - 30 MHz	Horizontal	3.4 dB (The confidence level is 95 %, $k=2$)
		Vertical	3.4 dB (The confidence level is 95 %, $k=2$)
	30 MHz - 1 000 MHz	Horizontal	4.7 dB (The confidence level is 95 %, $k=2$)
		Vertical	5.0 dB (The confidence level is 95 %, $k=2$)
	1 GHz - 18 GHz	Horizontal	3.8 dB (The confidence level is 95 %, $k=2$)
		Vertical	3.8 dB (The confidence level is 95 %, $k=2$)

Table A.2 Measurement Uncertainty of Branch Site-3

Test Method		Measurement Uncertainty	
Conducted Emission	ENV216	3.5 dB	(The confidence level is 95 %, $k=2$)
	ESH2-Z6	3.4 dB	(The confidence level is 95 %, $k=2$)
	ESH3-Z5	3.4 dB	(The confidence level is 95 %, $k=2$)
	NNLK8129	3.4 dB	(The confidence level is 95 %, $k=2$)
Conducted Emission - Signal	ISN T800	5.6 dB	(The confidence level is 95 %, $k=2$)
	ISN ST08	5.6 dB	(The confidence level is 95 %, $k=2$)
Radiated Emission	9 kHz - 30 MHz (Triple Loop Ant.)	2.6 dB	(The confidence level is 95 %, $k=2$)
	9 kHz - 30 MHz (Loop Ant.)	Horizontal	4.2 dB (The confidence level is 95 %, $k=2$)
		Vertical	4.2 dB (The confidence level is 95 %, $k=2$)
	30 MHz - 1 000 MHz	Horizontal	5.4 dB (The confidence level is 95 %, $k=2$)
		Vertical	5.7 dB (The confidence level is 95 %, $k=2$)
	1 GHz - 18 GHz	Horizontal	4.6 dB (The confidence level is 95 %, $k=2$)
		Vertical	4.6 dB (The confidence level is 95 %, $k=2$)

Table A.3 Measurement Uncertainty of Branch Site-4

- End of Test Report -