

Prüfbericht-Nr.: <i>Test report no.:</i>	CN22WQ6N 001	Auftrags-Nr.: <i>Order no.:</i>	168360254	Seite 1 von 16 Page 1 of 16
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2022-02-25	
Auftraggeber: <i>Client:</i>	Amazon.com Services LLC. 410 Terry Avenue North, Seattle, Washington, 98109, USA			
Prüfgegenstand: <i>Test item:</i>	Presence Sensor Module			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	K24RA2 (Trademark: )			
Auftrags-Inhalt: <i>Order content:</i>	Test Report			
Prüfgrundlage: <i>Test specification:</i>	FCC CFR Title 47, Part 15, Subpart C, Section 15.249 RSS-210 Issue 10 RSS-Gen Issue 5			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2022-03-22	Please refer to Photo Document		
Prüfmuster-Nr.: <i>Test sample no.:</i>	168360254 (P00603013)			
Prüfzeitraum: <i>Testing period:</i>	2022-03-22 to 2022-04-07			
Ort der Prüfung: <i>Place of testing:</i>	MRT Technology (Suzhou) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	 Hardy Suo		genehmigt von: <i>authorized by:</i>	 Lin Lin
Datum: <i>Date:</i>	2022-04-15		Ausstellungsdatum: <i>Issue date:</i>	2022-04-15
Stellung / Position:	Sachverständige(r) / Expert		Stellung / Position:	Sachverständige(r) / Expert
Sonstiges / Other:	FCC ID: 2A4DH-0315 IC: 24273-0315 HVIN: K24RA2			
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend N/T = nicht getestet
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory N/A = not applicable	4 = sufficient N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

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Test Summary

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 FIELD STRENGTH OF FUNDAMENTAL AND HARMONICS

RESULT: Pass

5.1.3 20dB AND 99% BANDWIDTH

RESULT: Pass

5.1.4 CONDUCTED EMISSION ON AC MAINS

RESULT: Pass

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results

Appendix B: Photographs of the Test Set-up

2 Test Sites

2.1 Test Facilities

MRT Technology (Suzhou) Co., Ltd.

D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

FCC Accreditation Designation No.: CN1166

ISED wireless device testing laboratory: CN0001

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Radiated Spurious Emissions						
Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2022/12/29	SIP-AC2
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06599	1 year	2022/10/20	SIP-AC2/SIP-TR2
Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2022/10/11	SIP-AC2
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2022/06/24	SIP-AC2
Thermohygrometer	testo	608-H1	MRTSUE06623	1 year	2022/11/28	SIP-AC2
Thermohygrometer	testo	608-H1	MRTSUE06624	1 year	2022/11/28	SIP-AC2
Preamplifier	EMCI	EMC001330	MRTSUE06643	1 year	2023/01/13	SIP-AC2
Preamplifier	EMCI	EMC051845SE	MRTSUE06644	1 year	2022/11/08	SIP-AC2
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06647	1 year	2022/08/05	SIP-AC2
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06648	1 year	2022/11/09	SIP-AC2
Anechoic Chamber	RIKEN	SIP-AC2	MRTSUE06781	1 year	2022/12/23	SIP-AC2
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2023/03/14	SIP-AC2
Waveguide Harmonic Mixer	Keysight	M1970V	MRTSUE06271	/	/	SIP-TR2
Waveguide Harmonic Mixer	Keysight	M1970W	MRTSUE06272	/	/	SIP-TR2
mmWave Antenna	MI-WWAVE	261U-25/383	MRTSUE06273	/	/	SIP-TR2
mmWave Antenna	A-INFO	LB-15-25-A	MRTSUE06409	/	/	SIP-TR2
mmWave Antenna	A-INFO	LB-10-25-A	MRTSUE06410	/	/	SIP-TR2
Thermohygrometer	testo	622	MRTSUE06628	1 year	2023/01/06	SIP-TR2
Signal Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2022/08/08	SIP-TR2

Conducted Emissions						
Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2022/06/08	SIP-SR2
EMI Test Receiver	R&S	ESR3	MRTSUE06612	1 year	2022/06/24	SIP-SR2
Thermohygrometer	testo	608-H1	MRTSUE06621	1 year	2022/11/28	SIP-SR2
Shielding Room	MIX-BEP	SIP-SR2	MRTSUE06949	/	/	SIP-SR2

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Parameter	Uncertainty
AC Conducted Emission Measurement	Measurement Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): 9kHz~150kHz: 3.74dB 150kHz~30MHz: 3.44dB
Radiated Emission Measurement	Measurement Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$): Horizontal: 30MHz~300MHz: 5.04dB 300MHz~1GHz: 4.95dB 1GHz~40GHz: 6.40dB Vertical: 30MHz~300MHz: 5.24dB 300MHz~1GHz: 6.03dB 1GHz~40GHz: 6.40dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B of this report and delivered to the applicant. A copy has been retained in the MRT Technology (Suzhou) Co., Ltd. file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The MRT Technology (Suzhou) Co., Ltd. Test facility located at D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The products is an Presence Sensor Module, which supports 24GHz microwave technology.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment:	Presence Sensor Module
Type Designation:	K24RA2
Trademark:	
FCC ID:	2A4DH-0315
IC:	24273-0315
HVIN:	K24RA2
Operating Voltage:	Powered by USB Port DC 5.0V via PC
Operating Temperature Range:	0 °C ~ 70 °C
Technical Specification of 24GHz	
Frequency Range:	24.05GHz - 24.25GHz
Type of Modulation:	FMCW
Antenna Type:	Integral antenna
Antenna Gain:	Tx: 2 dBi Rx: 2 dBi

3.3 Independent Operation Modes

The basic operation modes are:

- A. 24GHz transmitting mode

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.10: 2013.

Table 3: Test environments

Environment Parameter	Values During Tests		
	Temperature	Voltage	Relative Humidity
NTNV	22°C±2°C	5.0Vdc	Ambient

4.3 Special Accessories and Auxiliary Equipment

Table 4: Auxiliary Equipment Used during Test

Description	Manufacturer	Model	S/N
Laptop	Lenovo	E495	N/A
Debug Board	Lingjunyichuang	UMFT4222EV-D	210801851

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

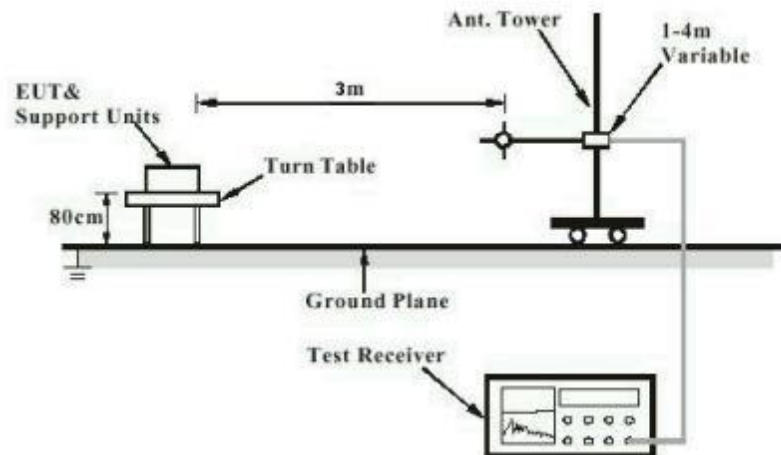


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

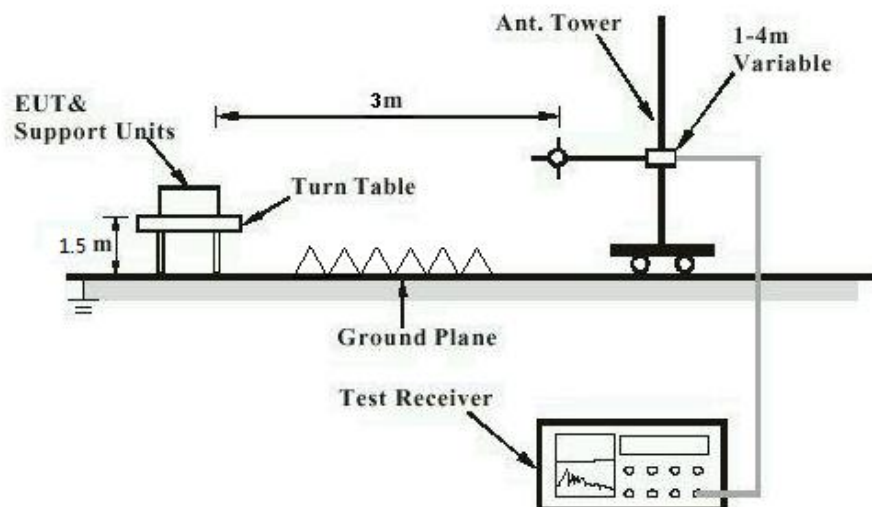
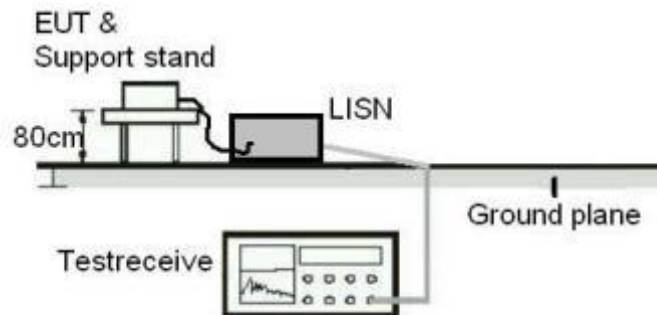


Diagram of Measurement Configuration for Mains Conduction Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:

Pass

Test Specification

Test standard : FCC Part 15.203

According to the manufacturer declared, the EUT has an integral antenna, the gain of antenna is 2 dBi, which that permanent attachment and no consideration of replacement.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Field strength of fundamental and harmonics

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.249(a) (d) (e) RSS-210 Annex B.10
Basic standard	: ANSI C63.10: 2013
Limits	: FCC Part 15.249(a) (d) (e) & 15.209(a) RSS-210 Annex B.10 Table B2 & RSS-Gen Table 5
Kind of test site	: 3m Semi-anechoic Chamber

Test Setup

Date of testing	: 2022-03-22 to 2022-04-07
Input voltage	: Powered by USB Port DC 5.0V via PC
Operation mode	: A
Ambient temperature	: 24°C
Relative humidity	: 47%
Atmospheric pressure	: 101 kPa

Note: Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the appendix A.

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5.1.3 20dB and 99% Bandwidth

RESULT:

Pass

Test Specification

Test standard	:	FCC Part 15.215 RSS-Gen Section 6.7
Basic standard	:	ANSI C63.10: 2013
Limits	:	Within assigned band
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2022-03-22 to 2022-04-07
Input voltage	:	Powered by USB Port DC 5.0V via PC
Operation mode	:	A
Ambient temperature	:	24°C
Relative humidity	:	47%
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix A.

5.1.4 Conducted Emission on AC Mains

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.207(a) RSS-Gen section 8.8
Basic standard	: ANSI C63.10: 2013
Frequency range	: 0.15 – 30MHz
Limits	: FCC Part 15.207(a) RSS-Gen section 8.8 Table 4
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2022-04-07
Input voltage	: PC input voltage 120Vac, 60Hz
Operation mode	: A
Earthing	: Not connected
Ambient temperature	: 23.5°C °C
Relative humidity	: 55.8% %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix A.

6 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix B.

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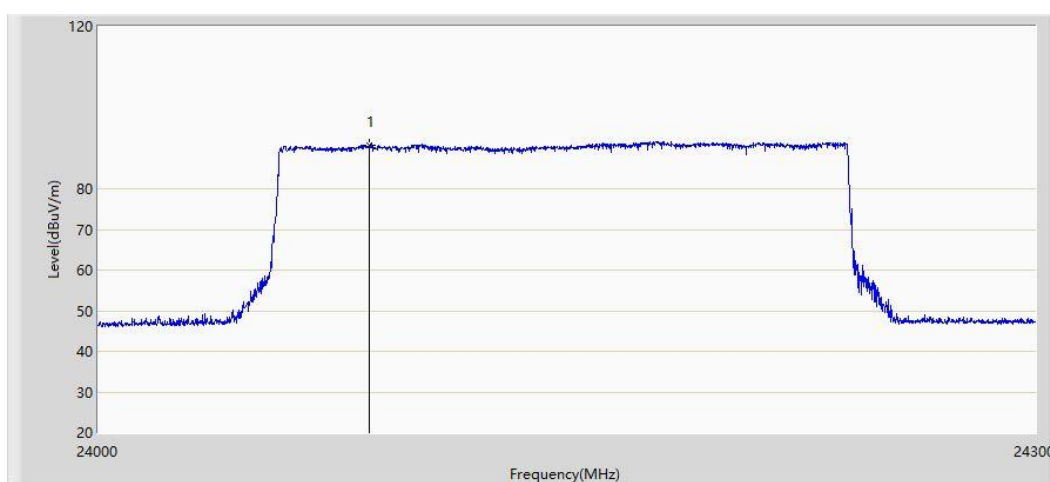
Appendix A: Test Results

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1GHz - 18GHz	5
18GHz - 40GHz	7
40GHz - 100GHz	9
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Note: The testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz is greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 100GHz were reported.

Appendix A.1: Test Results of Field strength of fundamental

Site: SIP-AC3	Time: 2022/03/31 - 17:03
Temperature: 24°C	Humidity: 47%
Limit:	Engineer: Allen Zou
Probe: SIP-AC1_BBHA9170_18-40GHz	Polarity: Horizontal
EUT: Presence Sensor Module (K24RA2)	Power: By Computer
Note: Transmit at 24GHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			24086.400	90.654	99.396	-37.305	127.959	-8.742	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

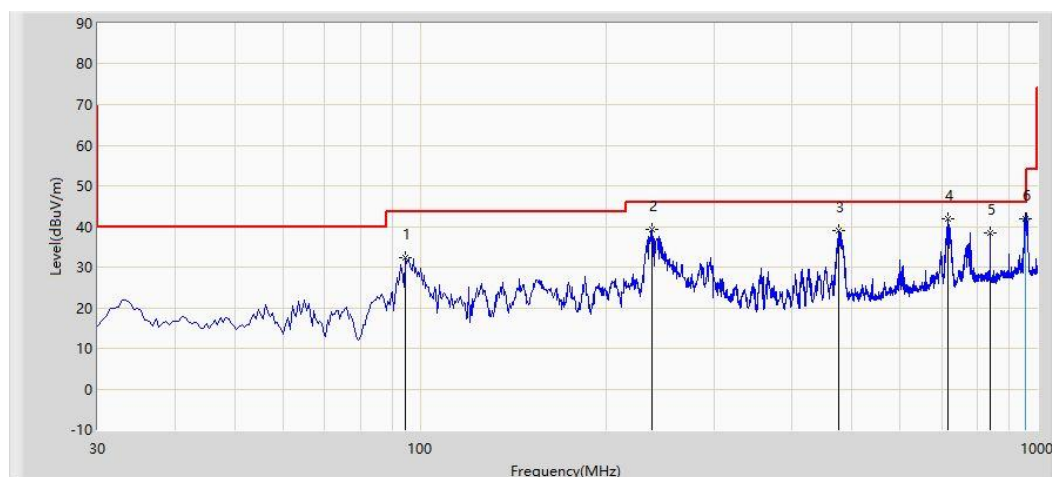
Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

*Remark: the Average limit of fundamental is 107.959dBuV/m@3m, and the maximum measure Peak level of fundamental is 90.654dBuV/m@3m which is below 107.959dBuV/m@3m, worst case of fundamental is recorded in this report.

Appendix A.2: Test Results of Field strength of harmonics

30MHz - 1GHz

Site: SIP-AC3	Time: 2022/03/31 - 14:27
Temperature: 24°C	Humidity: 47%
Limit: FCC Part15.209 RE(3m)	Engineer: Allen Zou
Probe: SIP-AC3 VULB 9168 30-1000MHz	Polarity: Horizontal
EUT: Presence Sensor Module (K24RA2)	Power: By Computer
Note: Transmit at 24GHz	



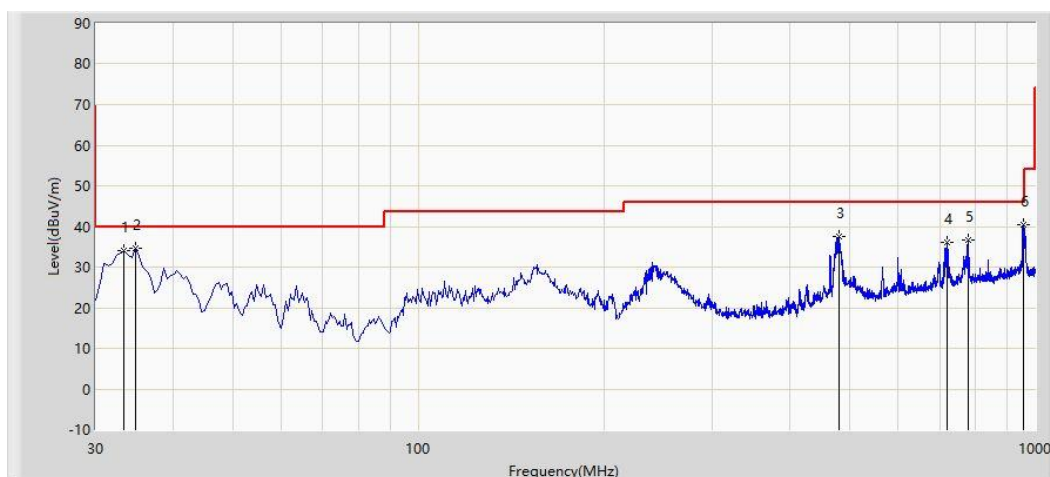
No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			94.505	32.191	19.563	-11.309	43.500	12.629	PK
2			237.580	39.159	22.711	-6.841	46.000	16.448	PK
3			476.200	38.966	16.213	-7.034	46.000	22.753	PK
4			716.275	41.796	14.860	-4.204	46.000	26.935	PK
5			839.950	38.494	10.176	-7.506	46.000	28.318	PK
6		*	956.302	41.866	11.728	-4.134	46.000	30.139	QP

Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: QP measurement was not performed when the peak level lower than QP limit.

Site: SIP-AC3	Time: 2022/03/31 - 13:53
Temperature: 24°C	Humidity: 47%
Limit: FCC Part15.209 RE(3m)	Engineer: Allen Zou
Probe: SIP-AC3 VULB 9168 30-1000MHz	Polarity: Vertical
EUT: Presence Sensor Module (K24RA2)	Power: By Computer
Note: Transmit at 24GHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1			33.395	33.992	16.991	-6.008	40.000	17.002	PK
2		*	34.850	34.780	17.571	-5.220	40.000	17.209	PK
3			480.080	37.491	14.682	-8.509	46.000	22.809	PK
4			720.155	36.111	9.035	-9.889	46.000	27.076	PK
5			780.295	36.624	8.299	-9.376	46.000	28.325	PK
6			956.350	40.542	10.404	-5.458	46.000	30.138	PK

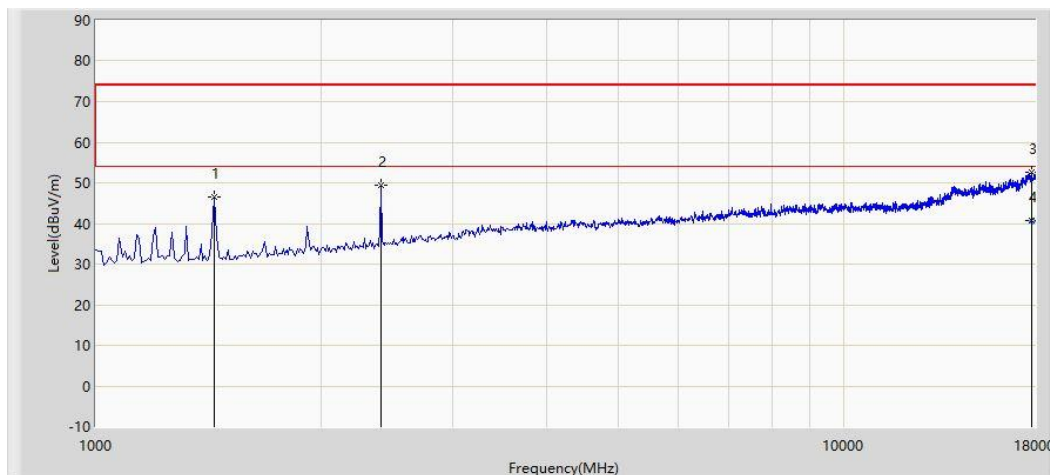
Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: QP measurement was not performed when the peak level lower than QP limit.

1GHz - 18GHz

Site: SIP-AC3	Time: 2022/03/31 - 15:54
Temperature: 24°C	Humidity: 47%
Limit: FCC Part15.209 RE(3m)	Engineer: Allen Zou
Probe: SIP-AC3 HF907 102861 1-18GHz	Polarity: Horizontal
EUT: Presence Sensor Module (K24RA2)	Power: By Computer
Note: Transmit at 24GHz	

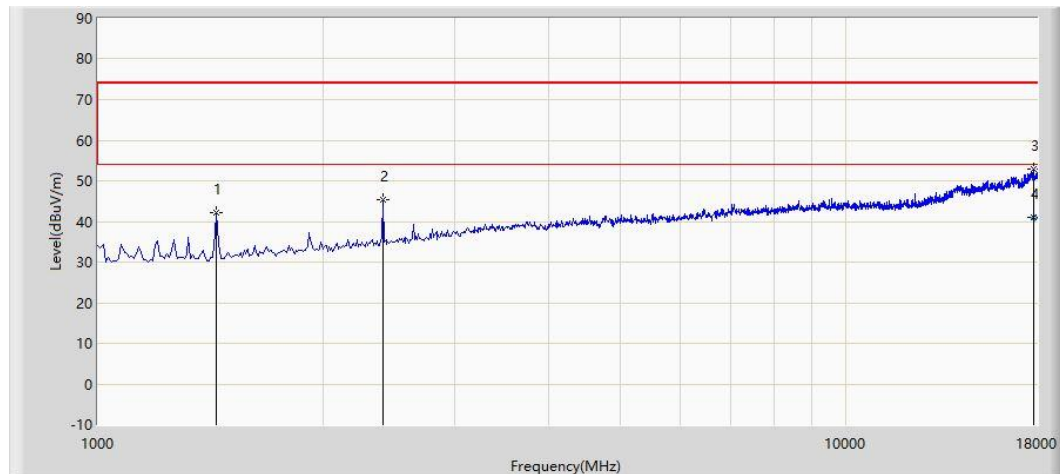


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1			1442.000	46.594	65.625	-27.406	74.000	-19.030	PK
2			2402.500	49.306	63.929	-24.694	74.000	-14.624	PK
3			17779.000	52.581	45.506	-21.419	74.000	7.075	PK
4		*	17779.000	40.715	33.640	-13.285	54.000	7.075	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Site: SIP-AC3	Time: 2022/03/31 - 15:56
Temperature: 24°C	Humidity: 47%
Limit: FCC Part15.209 RE(3m)	Engineer: Allen Zou
Probe: SIP-AC3 HF907 102861 1-18GHz	Polarity: Vertical
EUT: Presence Sensor Module (K24RA2)	Power: By Computer
Note: Transmit at 24GHz	



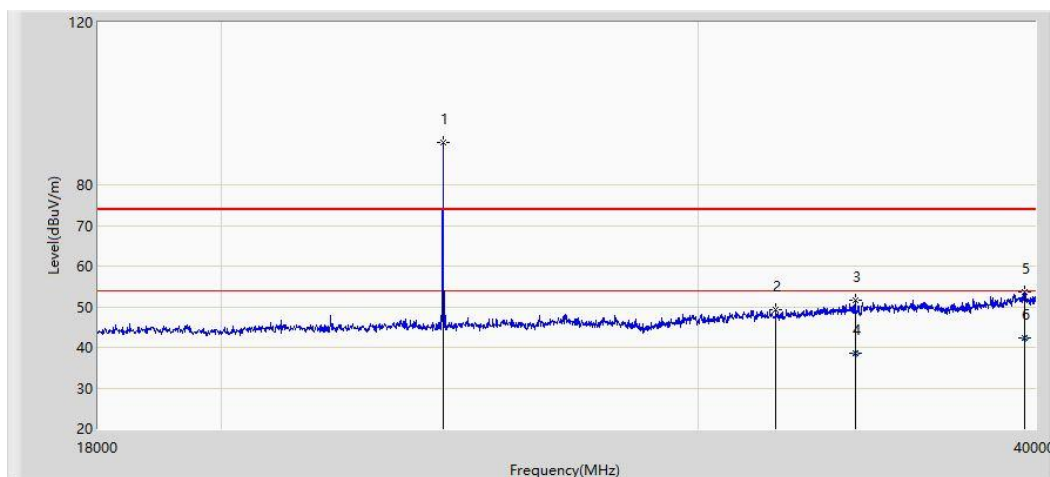
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB/m)	Type
1			1442.000	42.170	61.201	-31.830	74.000	-19.030	PK
2			2402.500	45.443	60.066	-28.557	74.000	-14.624	PK
3			17804.500	52.826	45.930	-21.174	74.000	6.896	PK
4		*	17804.500	40.976	34.080	-13.024	54.000	6.896	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

18GHz - 40GHz

Site: SIP-AC3	Time: 2022/03/31 - 16:36
Temperature: 24°C	Humidity: 47%
Limit: FCC Part15.209 RSE(3m)	Engineer: Allen Zou
Probe: SIP-AC1 BBHA9170 18-40GHz	Polarity: Horizontal
EUT: Presence Sensor Module (K24RA2)	Power: By Computer
Note: Transmit at 24GHz	



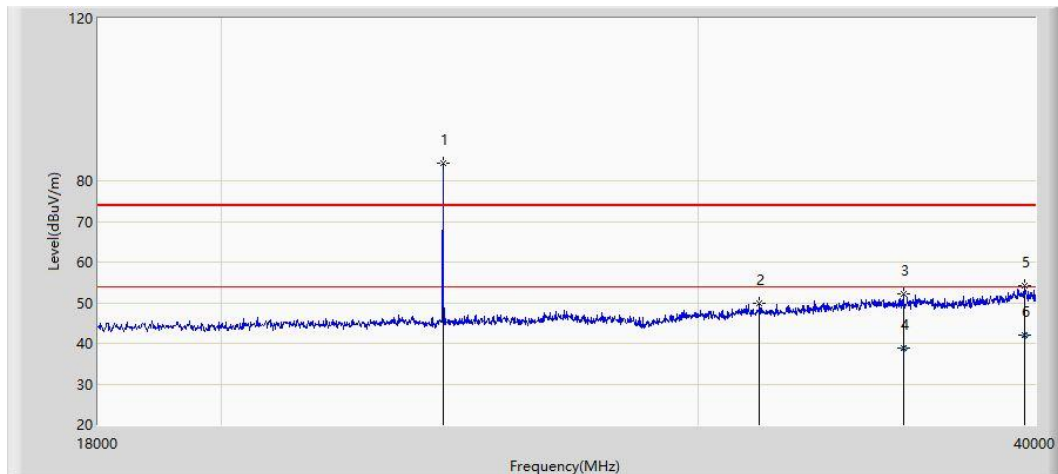
No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		*	24149.000	90.368	99.048	N/A	N/A	-8.679	PK
2			32080.000	49.368	58.601	-24.632	74.000	-9.233	PK
3			34313.000	51.569	58.982	-22.431	74.000	-7.413	PK
4			34313.000	38.537	45.950	-15.463	54.000	-7.413	AV
5			39626.000	53.641	53.025	-20.359	74.000	0.616	PK
6			39626.000	42.279	41.663	-11.721	54.000	0.616	AV

Note 1: Point 1 is equipment's fundamental frequency, no need to evaluate it.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Site: SIP-AC3	Time: 2022/03/31 - 16:45
Temperature: 24°C	Humidity: 47%
Limit: FCC Part15.209 RSE(3m)	Engineer: Allen Zou
Probe: SIP-AC1 BBHA9170 18-40GHz	Polarity: Vertical
EUT: Presence Sensor Module (K24RA2)	Power: By Computer
Note: Transmit at 24GHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV/m)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV/m)	Factor (dB/m)	Type
1		*	24149.000	84.293	92.973	N/A	N/A	-8.679	PK
2			31629.000	49.834	58.831	-24.166	74.000	-8.998	PK
3			35743.000	52.040	57.916	-21.960	74.000	-5.875	PK
4			35743.000	38.884	44.760	-15.116	54.000	-5.875	AV
5			39659.000	54.094	53.607	-19.906	74.000	0.487	PK
6			39659.000	41.957	41.470	-12.043	54.000	0.487	AV

Note 1: Point 1 is equipment's fundamental frequency, no need to evaluate it.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

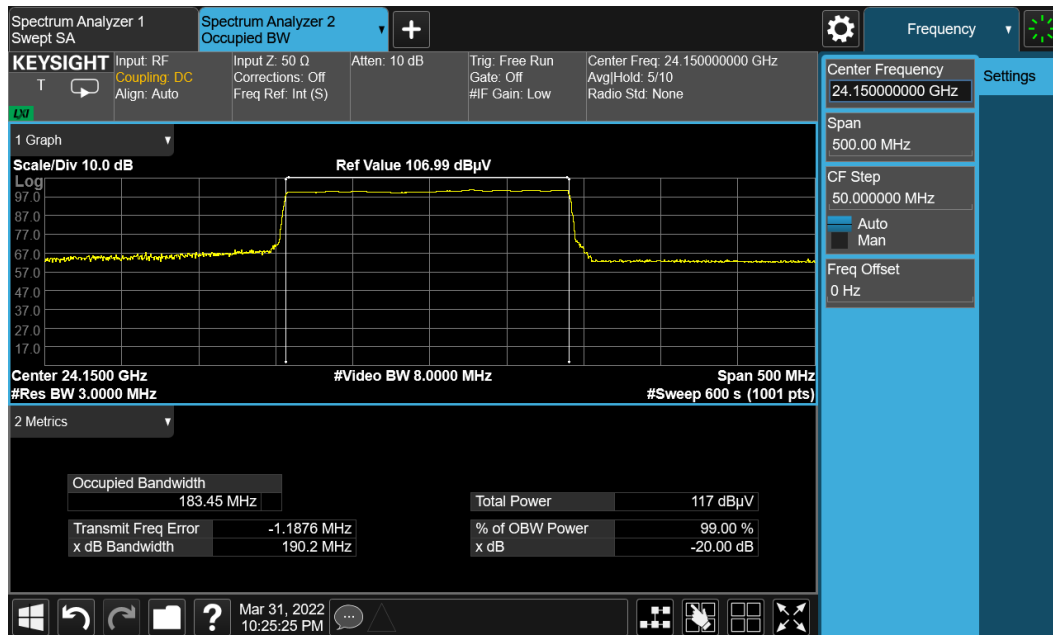
Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

40GHz - 100GHz

TX_40G~50G_Horizontal							
Frequency (GHz)	Measurement Distance (m)	Reading Level (dBuV/m)@1m	Factor (dB/m)	Measure Level (dBuV/m)@3m	Limit@3m (dBμV/m)	Margin (dB)	Type
49.41	1	25.96	46.12	62.58	74.0	-11.42	Peak
49.18	1	5.05	45.78	41.33	54.0	-12.67	Average
TX_40G~50G_Vertical							
Frequency (GHz)	Measurement Distance (m)	Reading Level (dBuV/m)@1m	Factor (dB/m)	Measure Level (dBuV/m)@3m	Limit@3m (dBμV/m)	Margin (dB)	Type
49.16	1	25.73	45.78	62.01	74.0	-11.99	Peak
49.15	1	5.66	45.78	41.94	54.0	-12.06	Average
TX_50G~75G_Horizontal							
Frequency (GHz)	Measurement Distance (m)	Reading Level (dBuV/m)@1m	Factor (dB/m)	Measure Level (dBuV/m)@3m	Limit@3m (dBμV/m)	Margin (dB)	Type
72.45	1	73.30	-- (note 1)	63.80	87.96	-24.16	Peak
72.45	1	65.17	-- (note 1)	55.67	67.96	-12.29	Average
TX_50G~75G_Vertical							
Frequency (GHz)	Measurement Distance (m)	Reading Level (dBuV/m)@1m	Factor (dB/m)	Measure Level (dBuV/m)@3m	Limit@3m (dBμV/m)	Margin (dB)	Type
72.45	1	74.18	-- (note 1)	64.68	87.96	-23.28	Peak
72.45	1	65.54	-- (note 1)	56.04	67.96	-11.92	Average
TX_75G~100G_Horizontal							
Frequency (GHz)	Measurement Distance (m)	Reading Level (dBuV/m)@1m	Factor (dB/m)	Measure Level (dBuV/m)@3m	Limit@3m (dBμV/m)	Margin (dB)	Type
96.60	1	76.53	-- (note 1)	67.03	87.96	-20.93	Peak
96.60	1	68.53	-- (note 1)	59.03	67.96	-8.93	Average
TX_75G~100G_Vertical							
Frequency (GHz)	Measurement Distance (m)	Reading Level (dBuV/m)@1m	Factor (dB/m)	Measure Level (dBuV/m)@3m	Limit@3m (dBμV/m)	Margin (dB)	Type
96.60	1	77.33	-- (note 1)	67.83	87.96	-20.13	Peak
96.60	1	68.36	-- (note 1)	58.86	67.96	-9.10	Average

Note: Above 50G, the factor is added in the spectrum, reading level is the Measure level at 1m test distance.

Appendix A.3: Test Results of 20dB & 99% Bandwidth

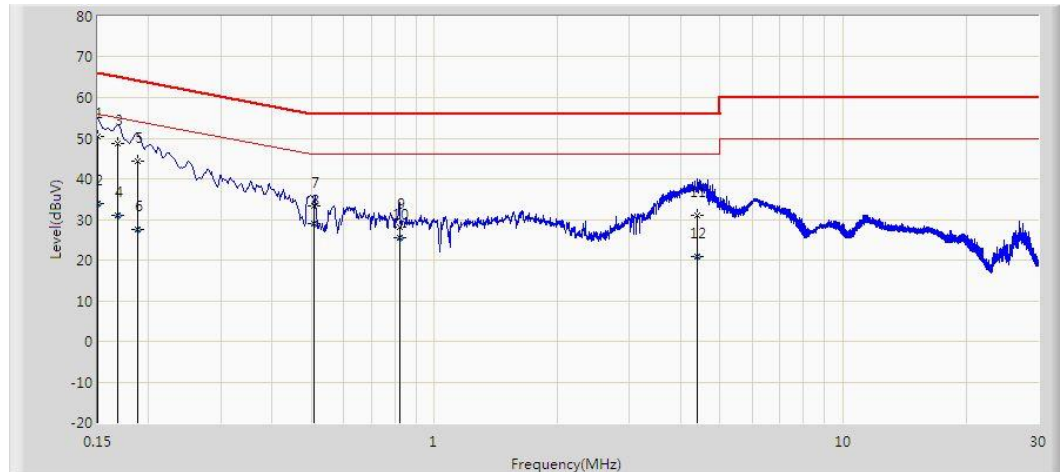


Frequency (GHz)	20dB BW (MHz)
24.05-24.25	190.2

Frequency (GHz)	99% BW (MHz)
24.05-24.25	183.45

Appendix A.4: Test Results of Conducted Emission on AC Mains

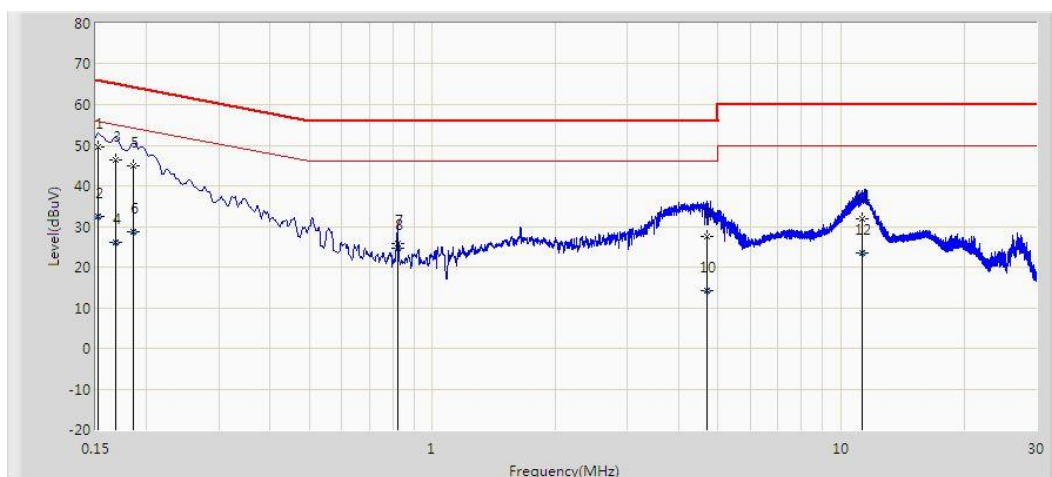
Site: SIP-SR2	Time: 2022/04/07 - 19:11
Temperature: 23.5°C	Humidity: 55.8%
Limit: FCC Part15.207 CE AC Power	Engineer: Andy Zhu
Probe: SIP-SR2-ENV216 101684 C	Polarity: Line
EUT: Presence Sensor Module (K24RA2)	Power: AC 120V/60Hz
Note: Transmit at 24GHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBμV)	Reading Level (dBμV)	Margin (dB)	Limit (dBμV)	Factor (dB)	Type
1		*	0.150	50.438	40.789	-15.562	66.000	9.650	QP
2			0.150	33.829	24.180	-22.171	56.000	9.650	AV
3			0.168	48.628	38.981	-16.431	65.059	9.646	QP
4			0.168	30.933	21.287	-24.125	55.059	9.646	AV
5			0.188	44.231	34.578	-19.882	64.113	9.653	QP
6			0.188	27.549	17.895	-26.565	54.113	9.653	AV
7			0.508	33.222	23.502	-22.778	56.000	9.720	QP
8			0.508	29.076	19.356	-16.924	46.000	9.720	AV
9			0.821	28.062	18.347	-27.938	56.000	9.715	QP
10			0.821	25.512	15.797	-20.488	46.000	9.715	AV
11			4.405	30.931	21.097	-25.069	56.000	9.834	QP
12			4.405	20.734	10.900	-25.266	46.000	9.834	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)
Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

Site: SIP-SR2	Time: 2022/04/07 - 19:15
Temperature: 23.5°C	Humidity: 55.8%
Limit: FCC Part15.207 CE AC Power	Engineer: Andy Zhu
Probe: SIP-SR2-ENV216 101684 C	Polarity: Neutral
EUT: Presence Sensor Module (K24RA2)	Power: AC 120V/60Hz
Note: Transmit at 24GHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1		*	0.152	49.592	39.952	-16.285	65.876	9.640	QP
2			0.152	32.414	22.774	-23.462	55.876	9.640	AV
3			0.168	46.379	36.743	-18.680	65.059	9.636	QP
4			0.168	25.960	16.323	-29.099	55.059	9.636	AV
5			0.186	44.964	35.323	-19.249	64.213	9.641	QP
6			0.186	28.659	19.018	-25.554	54.213	9.641	AV
7			0.823	25.669	15.961	-30.331	56.000	9.709	QP
8			0.823	24.762	15.053	-21.238	46.000	9.709	AV
9			4.711	27.596	17.770	-28.404	56.000	9.826	QP
10			4.711	14.168	4.342	-31.832	46.000	9.826	AV
11			11.247	31.951	21.876	-28.049	60.000	10.075	QP
12			11.247	23.406	13.331	-26.594	50.000	10.075	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).