
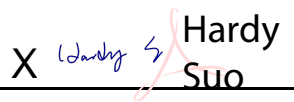



Prüfbericht-Nr.: <i>Test report no.:</i>	CN22WQ6N 002	Auftrags-Nr.: <i>Order no.:</i>	168360254	Seite 1 von 5 <i>Page 1 of 5</i>
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2022-02-25	
Auftraggeber: <i>Client:</i>	Amazon.com Services LLC. 410 Terry Avenue North, 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 2.1091 RSS-102 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>	 <u>Hardy Suo</u>		genehmigt von: <i>authorized by:</i>	 <u>Lin Lin</u>
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
<p>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></p>				

v05

1. Radio Frequency Exposure


RESULT:
Pass

 Test standard : FCC Part 2: Section 2.1091
 RSS-102 Issue 5

1.1 Product Technical Information

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

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

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

1.2 Product Classification

This device defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at 5 mm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

1.3 Radio Frequency Exposure Limit

For FCC:

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Average Time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	<6
3.0-30	1842/f	4.89/f	*(900/f ²)	<6
30-300	61.4	0.163	1.0	<6
300-1,500	--	--	f/300	<6
1,500-100,000	--	--	1.0	<6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-3.0	614	1.63	*100	<30
3.0-30	824/f	2.19/f	*(180/f ²)	<30
30-300	27.5	0.073	0.2	<30
300-1,500	--	--	f/1500	<30
1,500-100,000	--	--	1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.

For IC:

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ f ^{0.5}	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ f ^{0.25}	0.1540/ f ^{0.25}	8.944/ f ^{0.5}	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 f ^{0.3417}	0.008335 f ^{0.3417}	0.02619 f ^{0.6834}	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ f ^{1.2}
150000-300000	0.158 f ^{0.5}	4.21 x 10 ⁻⁴ f ^{0.5}	6.67 x 10 ⁻⁵ f	616000/ f ^{1.2}

Note: f is frequency in MHz.

*Based on nerve stimulation (NS).

** Based on specific absorption rate (SAR).

1.4 Radio Frequency Exposure Calculation Formula

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm²)
P = power input to the antenna (in appropriate units, e.g., mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

or:

$$S = \frac{EIRP}{4\pi R^2}$$

where: EIRP = equivalent (or effective) isotropically radiated power

1.5 Calculation Result

1.5.1 Stand-alone transmission MPE

Frequency (GHz)	EIRP Output Power (dBm)	EIRP Output Power (mW)	Distance (cm)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)
24.086	-4.576	0.3487	0.5	0.11	1.0

Frequency (GHz)	EIRP Output Power (dBm)	EIRP Output Power (W)	Distance (m)	Power Density (W/m ²)	IC Limit (W/m ²)
24.086	-4.576	0.00035	0.005	1.11	10

$EIRP\ dBm = EIRP\ dBuV/m@3m - 95.23dB$
 $90.654dBuV/m@3m - 95.23dB = -4.576dBm$

1.5.2 Simultaneous transmission MPE

Not applicable.

1.5.3 Conclusion

Therefore the maximum calculations result of above are meet the requirement of Radio Frequency Exposure (MPE) limit.