

Prüfbericht-Nr.: <i>Test report no.:</i>	CN23UYT3 002	Auftrags-Nr.: <i>Order no.:</i>	168437625	Seite 1 von 6 Page 1 of 6
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2023-07-26	
Auftraggeber: <i>Client:</i>	Gullfoss Flowers LLC 450 Alaskan Way South, Suite 200, Seattle, Washington 98104			
Prüfgegenstand: <i>Test item:</i>	Presence Sensor Module			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	GR8V23			
Auftrags-Inhalt: <i>Order content:</i>	Test Report			
Prüfgrundlage: <i>Test specification:</i>	FCC CFR Title 47, Part 2.1091 RSS-102 Issue 6			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2023-07-27	Please refer to Photo Document		
Prüfmuster-Nr.: <i>Test sample no.:</i>	168437625 (P01141918)			
Prüfzeitraum: <i>Testing period:</i>	2023-07-27 to 2023-12-01			
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 <i>X</i> <i>Hardy</i> <i>Suo</i>		genehmigt von: <i>authorized by:</i>	Lin Lin <i>X</i> <i>Lin Lin</i>
Datum: <i>Date:</i>	2024-07-03		Ausstellungsdatum: <i>Issue date:</i>	2024-07-03
Stellung / Position:	Sachverständige(r) / Expert		Stellung / Position:	Sachverständige(r) / Expert
Sonstiges / Other:	FCC ID: 2BA9D-2823 IC: 30616-2823 HVIN: GR8V23 This report is for the stand-alone configuration module GR8V23, and additional testing for HOSTs (HOSTs A, B, C, D configuration were tested, refer to Appendix B_CN23UYT3 001 for details of HOST).			
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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Anmerkungen Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
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3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. <i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i>

1. Radio Frequency Exposure

RESULT:**Pass**Test standard : FCC Part 2: Section 2.1091
RSS-102 Issue 6

1.1 Product Technical Information

The product is a Presence Sensor Module, which supports 60GHz microwave technology.

Presence Sensor Module GR8V23 intends to integrate into HOSTs A, B, C, D. This report includes test data for GR8V23 in stand-alone configuration, and additional test for these HOSTs.

Presence Sensor Module GR8V23 integrating into these HOSTs is without any hardware/software change.

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:	GR8V23
FCC ID:	2BA9D-2823
IC:	30616-2823
HVIN:	GR8V23
Operating Voltage:	Powered by USB Port DC 5.0V via PC
Operating Temperature Range:	0 °C ~ 70 °C
Technical Specification	
Frequency Range:	57.0GHz - 61.56GHz 61.0GHz - 61.5GHz
Type of radar:	Field disturbance radar
Type of Modulation:	FMCW
Antenna Type:	Integral antenna
Antenna Gain:	Tx: 3 dBi (provides by client) Rx: 3 dBi (provides by client)
Remark: operation frequency bands 57.0GHz - 61.56GHz and 61.0GHz - 61.5GHz share the same antenna and can't transmission simultaneously.	

1.2 Product Classification

This device defined as a transmitting device designed to be used in fixed locations and to generally be used in such a way that a separation distance of at 20 cm 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 _{RMS} /m)	Magnetic field (A _{RMS} /m)	Power density (W/m ²)	Reference period (minutes)
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 × 10 ⁻⁴ f ^{0.5}	6.67 × 10 ⁻⁵ f	616000/f ^{1.2}

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

Operation Frequency Range 57.0 - 61.56 GHz						
Frequency (GHz)	EIRP Output Power (dBm)	EIRP Output Power (mW)	Distance (cm)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)	Result
59.7	11.26	13.3660	20	0.003	1.0	Pass

Operation Frequency Range 57.0 - 61.56 GHz						
Frequency (GHz)	EIRP Output Power (dBm)	EIRP Output Power (mW)	Distance (m)	Power Density (W/cm ²)	IC Limit (W/cm ²)	Result
59.7	11.26	0.0134	0.2	0.027	10	Pass

Operation Frequency Range 61 - 61.5 GHz						
Frequency (GHz)	EIRP Output Power (dBm)	EIRP Output Power (mW)	Distance (cm)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)	Result
61.25	2.20	1.6596	20	0.0003	1.0	Pass

Operation Frequency Range 61 - 61.5 GHz						
Frequency (GHz)	EIRP Output Power (dBm)	EIRP Output Power (mW)	Distance (m)	Power Density (W/cm ²)	IC Limit (W/cm ²)	Result
61.25	2.20	0.0017	0.2	0.003	10	Pass

Note: refer to test report CN23UYT3 001 for EIRP output power.

1.5.2 Simultaneous transmission MPE

Not applicable, operation frequency bands 57.0GHz - 61.56GHz and 61.0GHz - 61.5GHz share the same antenna and can't transmission simultaneously.

1.5.3 Conclusion

Therefore the maximum calculations result of above are meet the requirement of Radio Frequency Exposure (MPE) limit in stand-alone configuration, the separation distance of at 20cm is same when in HOST configuration, hence HOSTs A, B, C, D are meet the requirement of Radio Frequency Exposure (MPE) limit.