Prüfbericht - Produkte *Test Report - Products*



Kunden-Referenz-Nr.: Client reference no.: Auftraggeber:	N/A Maersk Contair Bjerndrupvej 47,		Auftragsdatum:	2022-12-07		
Auftraggeber:	Maersk Contair Bjerndrupvej 47,		erder date:			
Client:	Maersk Container Industri AS Bjerndrupvej 47, 6360 Tinglev, Denmark					
Prüfgegenstand: Test item:	Sekstant BLE Tr	ransceiver				
Bezeichnung / Typ-Nr.: Identification / Type no.:	839215ID182					
Auftrags-Inhalt: Order content:	Test Report					
Prüfgrundlage: Test specification:	CFR47 FCC Part 2: Section 2.1091 CFR47 FCC Part 1: Section 1.1310 KDB 447498 D01 General RF Exposure Guidance v06 FCC KDB Publication 865664 D02 v01r02 RSS-102 Issue 5 March 2015					
Wareneingangsdatum: Date of sample receipt:	2022-12-07					
Prüfmuster-Nr.: Test sample no:	A003377842-00	1005				
Prüfzeitraum: Testing period:	2022-12-07 - 20	23-02-27	Please refer to Photo Document			
Ort der Prüfung: Place of testing:	TÜV Rheinland Co., Ltd.	(Shenzhen)				
Prüflaboratorium: Testing laboratory:	TÜV Rheinland Co., Ltd.	(Shenzhen)				
Prüfergebnis*: <i>Test result*:</i>	Pass					
geprüft von: tested by:	x Brune j	iang	genehmigt von: authorized by:	X(
Datum: Date: 2023-03-24	Date: 2023-03-24 Signed by: Breeze Jiang		Ausstellungsdatum: Issue date: 2023-03-24 Signed by: Lin Lin			
Stellung / Position: Ser	nior Project Engi	neer	Stellung / Positior	: Reviewer		
Sonstiges / Other: FCC ID: 2AUZI-839215ID182 IC: 25568-839215ID182 HVIN: 839215ID182						
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:Prüfmuster vollständig und unbeschädigt Test item complete and undamaged					jt	
* Legende: 1 = sehr gut 2 P(coc) = entenricht = 7	= gut	3 = befriedigend	icht o.g. Drüferundlaga/s)	4 = ausreichend	5 = mangelhaft	
* Legend: 1 = very good 2 P(ass) = passed a.m. te	= good est specification(s)	3 = satisfactory F(ail) = failed a.m. t	est specification(s)	N/A = nicnt anwendbar 4 = sufficient N/A = not applicable	N/I = nicht getestet 5 = poor N/T = not tested	
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht						
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.						

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1. Radio Frequency Exposure

RESULT:

Pass

Test standard

KDB 447498 D01 General RF Exposure Guidance v06 CFR47 FCC Part 2: Section 2.1093 CFR47 FCC Part 1: Section 1.1310 FCC KDB Publication 865664 D02 v01r02 RSS-102 Issue 5 March 2015

1.1 Product Technical Information

The EUT is a Sekstant BLE Transceiver, which supports Bluetooth low energy wireless technologies.

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

:

General Information of EUT	Value		
Kind of Equipment	Sekstant BLE Transceiver		
Type Designation	839215ID182		
Operating Voltage	DC 12V		
FCC ID	2AUZI-839215ID182		
IC	25568-839215ID182		
HVIN	839215ID182		
Technical Specification of BLE			
Operating Frequency	2402 MHz to 2480 MHz		
Type of Modulation	GFSK		
Channel Number	40 channels		
Channel Separation	2 MHz		
Antenna Type	PIFA Antenna		
Antenna Number	1		
Antenna Gain	2.14 dBi		

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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 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

Max 2.14 dBi for 2.4GHz Bluetooth antenna

Radio Frequency Exposure Limit

Frequency range Electric field strength (MHz) (V/m)		Magnetic field strength (A/m)	Power density (mW/cm²)
300-1,500			f/1500
1,500-100,000			1.0

> 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

a) RF Exposure Evaluation (worse case)

Mode	*Measured RF Output Power (dBm)	EIRP (dBm)	Distance (cm)	Power Density (mW/cm²)	FCC Limit (mW/cm ²)
BLE	-3.10	-0.96	20	0.0020	1.0

Note:

*BLE RF Output Power: Refer to NN23YOLC 001

Conclusion

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

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> For IC

The maximum output power of the transmitter is -3.10 dBm = (0.5 mW), which is below the SAR exclusion threshold level 4 mW = 6.02 dBm.

Hence the EUT is exempted from routine evaluation limits (SAR Evaluation) according to clause 2.5.1 of RSS-102 Issue 5.