RF Exposure Assessment

For

RRS24F-ST3
590-113

FCC ID: QJJ-590113
IC: 8226A-590113

Assessment Reference: MDE_JENOP_2301_MPE_01

Date: 2024-02-26

Test Laboratory:
7layers GmbH
Borsigstraße 11
40880 Ratingen
Germany

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0 Summary

0.1 Technical Report Summary

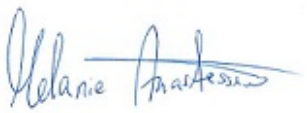
Type of Report
RF Exposure and Maximum ERP/EIRP Assessment for a standalone 60GHz radar sensor.

Applicable FCC and ISED Rules

For RF Exposure:

KDB 447498 D01 General RF Exposure Guidance v06
FCC 47 CFR FCC Part 2.1091
FCC 47 CFR §1.1307
FCC 47 CFR §1.1310
RSS-102 Issue 5 – March 2015

Report version control			
Rev Version	Release date	Changes	Version validity
initial	2024-02-26	-	Valid



(responsible for report)
Melanie Anastassiou

1 Administrative Data

1.1 Testing Laboratory

Company Name:	7layers GmbH
Address	Borsigstr. 11 40880 Ratingen Germany

1.2 Project Data

Responsible for assessment and report:	Melanie Anastassiou
Date of Report:	2024-02-26

1.3 Applicant Data

Company Name:	Jenoptik Robot GmbH
Address:	Opladener Straße 202 40789 Monheim am Rhein Germany
Contact Person: Email	Mr. Torben Potthoff Torben.potthoff@jenoptik.com

1.4 Manufacturer Data

Company Name:	please see Applicant Data
Address:	
Contact Person:	

2 Test object Data

2.1 General EUT Description

Equipment under Test	RRS24F-ST3 / 590-113
Kind of Device:	24 GHz Radar Sensor System
FCC ID:	PNB-AXISD2210-VE
IC:	3919A-D2210VE

General product description:

The RRS24F-ST3 tracking radar is a traffic safety radar.

Output power values are based on Test Report MDE_JENOP_2301_FCC_01 from 7layers GmbH.
Duty cycle factor used for 24-24,25 GHz is 100%.
Prediction distance used for this calculation is 20 cm.

3 Evaluation Results

3.1 RF Exposure Evaluation

Standards
KDB 447498 D01 General RF Exposure Guidance v06
RSS-102 Issue 5 – March 2015

3.1.1 Test limits

As specified in Table 1B of 47 CFR 1.1310 – Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure.

Frequency range (MHz)	*Power density (mW/cm²)*
300 – 1,500	f/1500
1,500 – 100,000	1.0

Limits specified per RSS-102, Issue 5.

Frequency range (MHz)	*Power density (W/m²)*	*Power density (mW/cm²)*
6000 – 15000	10	*mW/cm² = W/m² * 0.1*

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

Where:

S = power density
P = power input to the antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the centre of radiation of the antenna

3.1.2 Test Protocol

FCC and ISED MPE values using the antenna gain values.

Prediction Distance d in cm =>	20	TX frequ. band	Prediction frequ.	Average (temporal) power (log.)	Average (temporal) power (lin.)	Antenna Gain (log.)	Antenna Gain (lin.)	Power density at distance d	Power density limit at frequency f_i	Ratio to exposure reference level	Sum of S_i / ERL_i	Compliance, if Sum of S_i / ERL_i < 1
		f_{Band}	f_i	$P_{dBuV/m}$	P_{mW}	g_{dBi}	G_i	S_i	ERL_i	S_i / ERL_i	-	-
Radio technology	Band	MHz	MHz	dBuV/m	mW	dBi	-	mW/cm^2	mW/cm^2	-	-	-
24 GHz	FSK Radar	24000-24250	24165	115,22	60,81	2,2	1,66	0,020	1,000	0,020	0,020	Pass

END OF REPORT