

Reutech Radar Systems

MPE ASSESSMENT REPORT

Report Type:

FCC Part §2.1091 and §1.1307(b) assessment report

Model:

5840-GD-0000V1.00

REPORT NUMBER:

250800011SHA-002

ISSUE DATE:

September 24, 2025

DOCUMENT CONTROL NUMBER:

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TEST REPORT

Applicant: Reutech Radar Systems
35 Elektron Avenue, Techno Park, Stellenbosch 7600, South Africa

Manufacturer: Reutech Radar Systems
35 Elektron Avenue, Techno Park, Stellenbosch 7600, South Africa

Manufacturing site: Reutech Radar Systems
35 Elektron Avenue, Techno Park, Stellenbosch 7600, South Africa

Product Name: Ground Deformation Synthetic Aperture Radar (SAR)

Type/Model: 5840-GD-0000V1.00

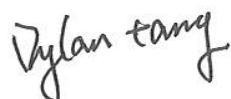
FCC ID: YSD-5840-GD-0000

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

KDB447498 D01 General RF Exposure Guidance v06
FCC Part2.1091, FCC Part1.1307(b)

PREPARED BY:



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REVIEWED BY:



Reviewer
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Revision History

Report No.	Version	Description	Issued Date
250800011SHA-002	Rev. 01	Initial issue of report	September 24, 2025

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1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	Ground Deformation Synthetic Aperture Radar (SAR)
Type/Model:	5840-GD-0000V1.00
Description of EUT:	The EUT is a Ground Deformation Synthetic Aperture Radar (SAR), it has only one model.
Rating:	DC 24V Adapter: AC 100-230V 50/60Hz
Highest operating frequency:	<18GHz
Category of EUT:	Class A
EUT type:	☐ Table top ☒ Floor standing
Software Version:	Monitoring and Early Warning Platform V3.0
Hardware Version:	5840-GD-0000V1.00
Sample received date:	August 1, 2025
Date of test:	August 10, 2025 ~ September 15, 2025

1.2 Technical Specification

Frequency Range:	16780MHz ~ 17280MHz
Type of Modulation:	FMCW
Channel Number:	1
Antenna Information:	Horn antenna

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1.3 Description of Test Facility

Name:	Intertek Testing Services (Shanghai FTZ) Co., Ltd.
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L21189
	FCC Accredited Lab Designation Number: CN0175
	IC Registration Lab CAB identifier.: CN0014
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02

2 MPE Assessment

2.1 MPE Assessment Limit

According to FCC §1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in §1.1307(b)

Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields.:

Frequency range (MHz)	E-field strength (V/m)	H-field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
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	-	-	5	<6
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	1842/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.

3 RF Exposure Evaluation

For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph §1.1307 (b)(2) of this section): A single RF source is exempt if:

(Option A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph §1.1307(b)(3)(ii)(A) of this section.

Medical implant devices may only use this exemption and that in paragraph §1.1307(b)(3)(ii)(A);

(Option B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P is given by:

$$P_{th}(mW) = \begin{cases} ERP_{20cm}(d/20cm)^x & d \leq 20cm \\ ERP_{20cm} & 20cm < d \leq 40cm \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20cm}\sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20cm}(mW) = \begin{cases} 2040f & 0.3GHz \leq f < 1.5GHz \\ 3060 & 1.5GHz \leq f \leq 6GHz \end{cases}$$

(Option C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Single RF Sources Subject to Routine Environmental Evaluation

Frequency range (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R ²
1.34-30	3,450 R ² /f ²
30-300	3.83 R ²
300-1,500	0.0128R ² f
1,500-100,000	19.2R ²

Table 1

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For multiple RF sources: Multiple RF sources are exempt if:

(A) The available maximum time-averaged power of each source is no more than 1 mW and there is a separation distance of two centimeters between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required). This exemption may not be used in conjunction with other exemption criteria other than those in paragraph §1.1307(b)(3)(i)(A) of this section. Medical implant devices may only use this exemption and that in paragraph §1.1307(b)(3)(i)(A).

(B) in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for P_{th}, including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

P_{th,i} = the exemption threshold power (P_{th}) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i.

ERP_j = the ERP of fixed, mobile, or portable RF source j.

ERP_{th,j} = exemption threshold ERP for fixed, mobile, or portable RF source j, at a distance of at least λ/2π according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

Evaluated_k = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

Exposure Limit_k = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k, as applicable from § 1.1310 of this chapter.

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3.1 Assessment Results

As we can see ERIP from the test report: 2504B0948SHA-001.

Frequency band	Tune-up EIRP	Tune-up ERP	Tune-up ERP
(MHz)	(dBm)	(dBm)	(mW)
16780 - 17280	18.5	16.35	43.15

The calculations in the table below use the highest gain of antenna for client EUT. These calculations represent worst case in terms of the exposure levels.

Frequency band	$\lambda / 2 \pi$	R	Tune-up ERP	Thresholds ERP
(MHz)	(m)	(m)	(mW)	(mW)
16780 - 17280	0.003	0.048	43.15	43.2

*****END*****