Test Report

No. 1-9686-25-02-03_TR1-R02

June 23. 2026

Applicant	IDS GeoRadar s.r.l.
Product	Fixed Interferometric Radar System at 77-81 GHz
Model	HYDRA2
Tested Technology	Radar
Test Standard	FCC 47 CFR Part 2
FCC ID	UFW-HYDRA2
Verdict	TEST EXEMPTION FULFILLED

The test results apply only to the equipment specified in this document.

This test report is electronically signed and valid without handwritten signature.
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Table of Contents

1. Disclaimer 3
2. Document history 4
   2.1. Current release 4
   2.2. Previous releases 4
3. Test laboratory 5
   3.1. Contact information 5
   3.2. Involved test locations 5
   3.3. Subcontracted laboratories 5
   3.4. Laboratory listings and recognitions 5
4. Client information 6
   4.1. Applicant 6
   4.2. Manufacturer 6
5. Test sample information 7
   5.1. General Information 7
      5.1.1. General Data of Main EUT as Declared by Applicant 7
6. Measurement details 8
   6.1. Test methodology 8
7. Description of the test setup 9
   7.1. No Test Performed 9
8. 1.1 General Information 10
   8.1. Notes&References 10
   8.2. References 10
   8.3. General RF Exposure Test Exemptions 10
9. MPE Based Test Exemption 12
   9.1. KDB 447498 D04 Interim General RF Exposure Guidance v01, section 2.1.4: 12
      9.1.1. Results 14
      9.1.2. Values: 15
10. Simultaneous Transmission 17
   10.1. KDB 447498 D04 Interim General RF Exposure Guidance v01, section 2.2.1: 17
      10.1.1. Results 18
      10.1.2. TechnologyShare of LimitGSM85050.34%WLAN5 GHz18.70%Radar76-77 GHz25.16%Sum94.20% 18

1. Disclaimer

The test results of this test report relate exclusively to the test item specified in chapter “Test sample information”. cetecom advanced does not assume responsibility for any conclusions and generalizations drawn from the test results regarding other specimens or samples of the type of the equipment represented by the test item.

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The current version of test report R02 replaces the test report R01 dated May 04. 2026. The replaced test report is herewith invalid.

2. Document history

2.1. Current release

Release No.:	R02
Date of release:	June 23. 2026
Applied changes:	updated FCC ID/model name

2.2. Previous releases

Version	Applied change	Date of release
1	Initial release	May 04. 2026

3. Test laboratory

3.1. Contact information

cetecom advanced GmbH
Untertuerkheimer Str. 6-10
66117 Saarbruecken
Germany

3.2. Involved test locations

Saarbrücken Lab
Untertürkheimer Strasse 6 – 10 66117 Saarbrücken Germany

3.3. Subcontracted laboratories

None.

3.4. Laboratory listings and recognitions

	Saarbrücken	Essen
FCC	DE0002	DE0003
ISED	DE0001 3462C	DE0001 3462D

4. Client information

4.1. Applicant

Name:	IDS GeoRadar s.r.l.
Address:	ITALY, 56121 PISA (PI), Via Augusto Righi 6, 6A,8
Contact Person:	Marco Simoni
Contact Person's Email:	marco.simoni@idsgeoradar.com

4.2. Manufacturer

Name:	IDS GeoRadar s.r.l.
Address:	ITALY, 56121 PISA (PI), Via Augusto Righi 6, 6A,8
Contact Person:	Marco Simoni
Contact Person's Email:	marco.simoni@idsgeoradar.com

5. Test sample information

The data about the test samples is given/supplied by the customer and not under control by cetecom advanced GmbH.

5.1. General Information

5.1.1. General Data of Main EUT as Declared by Applicant

FCC ID	UFW-HYDRA2

6. Measurement details

6.1. Test methodology

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2018-03) by the Deutsche Akkreditierungsstelle GmbH (DAkkS).

The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number D-PL-12047-01-00.

Test method, standard, rule	Description
FCC 47 CFR Part 2	Federal Communications Commission, 47 code of federal regulations, Part 2: General Rules & Regulations for Equipment Authorisation

7. Description of the test setup

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, RF generating and signaling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Lab/Item).

Each block diagram listed can contain several test setup configurations. All devices belonging to a test setup are identified with the same letter syntax. For example: Column Setup and all devices with an A.

Note: **Monitoring**

Abbreviation	Explanation
cal	Calibration
calchk	Calibration and Validation
car	Calibration Restricted Use
chk	Validation
chr	Validation Restricted Use
cpu	Validation prior to Use
cnn	No Monitoring

7.1. No Test Performed

This report includes no tests, only calculations from previously aquired data

8. 1.1 General Information

8.1. Notes&References

8.2. References

Guidance	Version	Description
47 CFR 1.1307		Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.
47 CFR 2.1091		Radiofrequency radiation exposure evaluation: mobile devices.
47 CFR 2.1093		Radiofrequency radiation exposure evaluation: portable devices.
KDB 447498 D04	v01	Interim General RF Exposure Guidance: RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices

8.3. General RF Exposure Test Exemptions

KDB 447498 D04 Interim General RF Exposure Guidance v01, section 2.1.1:

RF exposure test exemptions provide means to obtain certification without the need of showing data (measurements, or analytical/numerical modeling) to demonstrate compliance. Hereafter, in this context, an RF source is referred to as “exempt RF device” in the sense that it is not required to show data demonstrating compliance to RF exposure limits.

Test exemptions apply for devices used in general population/uncontrolled exposure environments, according to the SAR-based, or MPE-based exemption thresholds. However, it is always possible, especially when the potential for exposure cannot be easily determined, that an RF exposure evaluation may become required according §§ 1.1307(c) and (d).

As detailed in Section 3.1 (see KDB 447498 D04, Section 2.1.2), the 1-mW and SAR-based test exemption conditions are in terms of source-based available maximum time-averaged (matched conducted) output power for all operating configurations, adjusted for tune-up tolerance, and at the minimum test separation distance required for the particular RF exposure scenario under consideration. This minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander. To qualify for SAR test exemption, the test separation distances applied must be fully explained and justified (typically in the SAR measurement, or SAR analysis report, according to KDB Pub. 865664) by showing the actual operating configurations and exposure conditions of the transmitter, and applicable host platform requirements (e.g., KDB Pubs. 648474, 616217, 941225)

When no other RF exposure testing or reporting is required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for SAR test exemption.

If RF exposure testing requirements for a specific device are covered in a KDB publication, those requirements must be satisfied before applying any SAR test exemption provisions. For example, this is the case for handheld PTT two-way radios, handsets, laptops, and tablets, etc. Finally, when 10-g extremity SAR applies, SAR test exemption may be considered by applying a factor of 2.5 to the SAR-based exemption thresholds.

KDB 447498 D04 Interim General RF Exposure Guidance v01, Appendix A:

Frequency-dependent and distance-dependent power thresholds were adopted in Report and Order FCC 19-126. Appendix D of NPRM FCC 13-39 has the derivation of the frequency- dependent and distance-dependent time-averaged power thresholds, below which single portable RF sources operating in the frequency range of 300 MHz (0.3 GHz) to 6 GHz may be exempt from RF evaluation.

The previous power exclusion thresholds for mobile devices in § 2.1091(c) were 1.5 W ERP for transmitters operating at frequencies at or below 1.5 GHz, and 3 W ERP for transmitters operating at frequencies above 1.5 GHz. The new exemption criteria are similar to the previous power exclusion thresholds above 1.5 GHz between 20 cm and 40 cm but consider the potential for whole body resonance at frequencies below 1.5 GHz. The new exemption criteria are less restrictive than the previous power exclusion thresholds between 0.8 GHz and 1.5 GHz, and additionally support extension of these exclusion thresholds down to 0.3 GHz. The new exemption criteria can be used out to a separation distance of 40 cm for mobile and fixed RF sources operating between 300 MHz and 6 GHz. At 40 cm, the MPE-based exemption criteria and the SAR-based exemption criteria are equal.

Generally, the sequence to apply for single portable RF sources includes the following steps:Generally, the sequence to apply for single portable RF sources includes the following steps:

determination of 1 mW blanket exemption under § 1.1307(b)(3)(i)(A)

determination of exemption under the MPE-based § 1.1307(b)(3)(i)(C) if 1) is not met

determination of exemption under the SAR-based § 1.1307(b)(3)(i)(B) if both 1) and 2) are not met.

9. MPE Based Test Exemption

9.1. KDB 447498 D04 Interim General RF Exposure Guidance v01, section 2.1.4:

An alternative to the SAR-based exemption is provided in § 1.1307(b)(3)(i)(C), for a much wider frequency range, from 300 kHz to 100 GHz, applicable for separation distances greater or equal to λ/2π, where λ is the free-space operating wavelength in meters. The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power. For this case, a RF source is an RF exempt device if its ERP (watts) is no more than a frequency-dependent value, as detailed tabular form in Appendix B. These limits have been derived based on the basic specifications on Maximum Permissible Exposure (MPE) considered for the FCC rules in § 1.1310(e)(1).

General frequency and separation-distance dependent MPE-based effective radiated power (ERP) thresholds are in Table 1 [Table 1 of § 1.1307(b)(1)(i)(C)] to support an exemption from further evaluation from 300 kHz through 100 GHz.

Table 1: Thresholds for single RF sources subject to routine environmental evaluation. Frequency f in MHz, wavelength in m, distance R in m.

RF Source Frequency			Minimum Distance			Threshold ERP
f_L MHz		f_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W
0.3	–	1.34	159 m	–	35.6 m	1,920 R^2
1.34	–	30	35.6 m	–	1.6 m	3,450 R^2/f^2
30	–	300	1.6 m	–	159 mm	3.83 R^2
300	–	1,500	159 mm	–	31.8 mm	0.0128 R^2f
1,500	–	100,000	31.8 mm	–	0.5 mm	19.2R^2
Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.						

The table applies to any RF source (i.e., single fixed, mobile, and portable transmitters) and specifies power and distance criteria for each of the five frequency ranges used for the MPE limits. These criteria apply at separation distances from any part of the radiating structure of at least λ/2π. The thresholds are based on the general population MPE limits with a single perfect reflection, outside of the reactive near-field, and in the main beam of the radiator.

For mobile devices that are not exempt per Table 1 [Table 1 of § 1.1307(b)(1)(i)(C)] at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in § 1.1310 is necessary if the ERP of the device is greater than ERP20cm in Formula (1) [repeated from § 2.1091(c)(1) and § 1.1307(b)(1)(i)(B)].

$$P_{th}(mW) = ERP_{20cm}(mW) = \begin{cases} 2040f & ,0.3\ GHz \le f \le 1.5\ GHz \\ 3060 & ,1.5\ GHz \le f \le 6\ GHz \end{cases} \quad (1)$$

If the ERP is not easily obtained, then the available maximum time-averaged power may be used (i.e., without consideration of ERP only if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole.

SAR-based exemptions are constant at separation distances between 20 cm and 40 cm to avoid discontinuities in the threshold when transitioning between SAR-based and MPE-based exemption criteria at 40 cm, considering the importance of reflections.

9.1.1. **Results**

Technology	Frequency [MHz]		Ref.		Wavelength [mm]	Output Power [dBm]	Output Power [mW]		Share of Limit	Min. decl. distance
	f_{min}	f_{max}	#	#		ERP	P_{max}	Threshold	%	mm
GSM 850	824	849	A,B		56	25.55	358.92	712.99	50.3%	260
GSM 1900	1850	1910	A,B		25	24.05	254.10	1297.92	19.6%	260
WCDMA Band II	1850	1910	A,B		25	24.05	254.10	1297.92	19.6%	260
WCDMA Band IV	1710	1755	A,B		27	24.05	254.10	1297.92	19.6%	260
WCDMA Band V	824	849	A,B		56	25.55	358.92	712.99	50.3%	260
LTE Band 2	1850	1910	A,B		25	23.05	201.84	1297.92	15.6%	260
LTE Band 4	1710	1755	A,B		27.21	23.05	201.84	1297.92	15.6%	260
LTE Band 5	824	849	A,B		56	24.55	285.10	712.99	40.0%	260
LTE Band 7	2500	2570	A,B		19	25.85	384.59	1297.92	29.6%	260
LTE Band 12	699	716	A,B		67	20.95	124.45	604.83	20.6%	260
LTE Band 13	777	787	A,B		61	20.95	124.45	672.32	18.5%	260
LTE Band 14	788	798	A,B		59.83	20.95	124.45	681.84	18.3%	260
LTE Band 17	704	716	A,B		67	20.95	124.45	609.16	20.4%	260

LTE Band 25	1850	1915	A,B	25	23.05	201.84	1297.92	15.6%	260
LTE Band 26	814	849	A,B	56	24.55	285.10	704.34	40.5%	260
LTE Band 30	2305	2315	A,B	21	25.85	384.59	1297.92	29.6%	260
LTE Band 38	2570	2620	A,B	18	25.85	384.59	1297.92	29.6%	260
LTE Band 41	2496	2690	A,B	18	25.85	384.59	1297.92	29.6%	260
WLAN 2.4 GHz	2402	2480	C,D	19.25	23.35	216.27	1297.92	16.7%	260
WLAN 5 GHz	5180	5825	C,D	8	23.85	242.66	1297.92	18.7%	260
Radar 76-77 GHz	76000	77000	E	0.620	25.14	326.59	1297.92	25.2%	260

Referenced Documents:

#	Document	Document Type	Additional Information
A	Quectel_EG25-G_Mini_PCIe_LTE_Standard_Specification_V1.5	Module Data sheet	-/-
B	ENG_DS_ant-lpc-fpc-ccc-ds_A	Antenna Data Sheet	-/-
C	Infineon-CYW5459X_Single-Chip_Wi-Fi_5_IEEE_802.11_ac_2_2_MAC_Baseband_Radio_with_RSDB_and_Bluetooth	Module Data Sheet	-/-
D	W6102B0100-1	Antenna Data Sheet	
E	1-9686-25-02-02_TR2-R01	cetecom advanced report	Pg. 27 EIRP 27.29 dBm

9.1.2. **Values:**

Value	Explanation

P_{ERP}	Maximum ERP for the applicable frequency band or technology
P_{Max}	P_{ERP} in mW
Threshold	SAR-based threshold in mW.
Share of Threshold	P_{max} / Threshold

10. Simultaneous Transmission

10.1. KDB 447498 D04 Interim General RF Exposure Guidance v01, section 2.2.1:

As discussed in § 1.1307(b)(3)(ii)(A), the 1-mW exemption intended for single transmitters may be also applied to simultaneous transmission conditions, within the same host device, according one of the following criteria:

When maximum available power each individual transmitting antenna within the same time averaging period is ≤ 1 mW, and the nearest parts of the antenna structures of the simultaneously operating transmitters are separated by at least 2 cm.

When the aggregate maximum available power of all transmitting antennas is ≤ 1 mW in the same time-averaging period. This exemption may not be combined with any other exemption.

KDB 447498 D04 Interim General RF Exposure Guidance v01, section 2.1.2:

This case is described in detail in § 1.1307(b)(3)(ii)(B) and covers the situations where both SAR-based and MPE-based exemption may be considered for test exemption in fixed, mobile, or portable device exposure conditions. For these cases, a device with multiple RF sources transmitting simultaneously will be considered an RF exempt device if the condition of Formula (4) (see section 7.1) is satisfied.

For these test exemptions to apply, the maximum output power, duty factor, and other applicable parameters used in the standalone ERP determination tests, must be the same, or corresponding to a more conservative choice, than those required for simultaneous transmission.

The power level of the standalone SAR used to qualify for SAR test exemption, or additional test exemption, must be clearly explained in the SAR report. When simultaneous transmission SAR- based test exemptions, or when the SPLSR test exemption cannot be applied, enlarged zoom scan SAR measurements must be performed at the maximum output power required for the applicable simultaneous transmission scenarios. This power level shall account for the tune-up tolerance requirements of all transmitters, but not more than

2 dB lower than the maximum tune-up tolerance limit.

KDB 447498 D04 Interim General RF Exposure Guidance v01, Appendix C.:

Either SAR-based or MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (Evaluatedk term) shall be used to determine exemption for simultaneous transmission according to Formula 4 [repeated from § 1.1307(b)(3)(ii)(B)].

$$\sum_{i=1}^{a}\frac{P_i}{P_{th,i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{th,j}}+\sum_{k=1}^{c}\frac{Evaluated}{Exposure\ Limit_k}\leq 1 \qquad (4)$$

where:

a	number of fixed, mobile, or portable RF sources claiming exemption using the § 1.1307(b)(3)(i)(B) formula for Pth, including existing exempt transmitters and those being added.
b	number of fixed, mobile, or portable RF sources claiming exemption using the applicable § 1.1307(b)(3)(i)(C) Table 1 formula 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.
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 (Pth) according to the § 1.1307(b)(3)(i)(B) formula for fixed, mobile, or portable RF source i.
ERP_j	the available maximum time-averaged power or the ERP, whichever is greater, 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 § 1.1307(b)(3)(i)(C) Table 1 formula at the location in question
$Evaluated_j$	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.
Exposure $Limit_{th,j}$	either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable sources, as applicable

The sum of the ratios of the applicable terms for SAR-based, MPE-based and measured SAR or MPE shall be less than 1, to determine simultaneous transmission exposure compliance.

10.1.1. **Results**

10.1.2.

Technology	Share of Limit
GSM 850	50.34%
WLAN 5 GHz	18.70%
Radar 76-77 GHz	25.16%
Sum	94.20%

End of document