

**Before the
Federal Communications Commission
Washington, D.C. 205541**

In the Matter of	)	
	)	
Geophysical Survey Systems, Inc.	)	ET Docket No. 22-458
	)	
Request for Waiver of Sections 15.503(d), 15.31(c),	)	
and 15.521(d) of the Commission's Rules	)	

ORDER

Adopted: July 31, 2023**Released: July 31, 2023**

By the Chief, Office of Engineering and Technology:

I. INTRODUCTION

1. By this Order we grant a request for waiver of Sections 15.503(d), 15.31(c) and 15.521(d) of the Commission's rules filed by Geophysical Survey Systems, Inc. (GSSI) so that it can apply for FCC certification to market a new ultra-wideband (UWB) ground penetrating radar (GPR) device that does not comply with the requirements in those sections.¹ For the reasons discussed below, we find that there is good cause to grant GSSI's waiver request.

II. BACKGROUND

2. GSSI states that its new device is a stepped frequency, continuous wave (CW) modulated GPR transmitter that closely resembles its previously approved GPR handheld analyzer device.² GSSI states that its new device's technical characteristics are nearly identical to those of a device for which the Office of Engineering and Technology (OET) granted waivers of the same rules that GSSI requests be waived for its device.³ GSSI requests that any waiver granted in response to its petition include the same conditions OET previously included in a similar waiver grant.⁴

3. Section 15.503(d) of the Commission's rules defines an ultra-wideband transmitter as an intentional radiator that, at any point in time, has a fractional bandwidth equal to or greater than 0.20, or that has a UWB bandwidth equal to or greater than 500 megahertz, regardless of the fractional

¹ Petition for Waiver of Geophysical Survey Systems, Inc. (filed Dec. 2, 2022) (GSSI Waiver Request).

² GSSI Waiver Request at 1.

³ *Id.* at 1-2, 9. See also *Proceq USA Inc. Request for Waiver of Part 15 of the Commission's Rules Applicable to Ultra-Wideband Devices*, Order, 33 FCC Rcd 2258 (2018) (*Proceq Waiver Order*); Letter from Julius Knapp, Chief, Office of Engineering and Technology to Terry G. Mahn; DA 19-892 (rel. Sep. 11, 2019) (*Proceq Waiver First Modification*); *Request for Modification of Waiver Granted to Proceq USA Inc.*, Order, ET Docket No. 20-127, DA 22-1158 (rel. Nov. 4, 2022) (*Proceq Waiver Second Modification*).

⁴ GSSI Waiver Request at 11-12. The waiver conditions were designed to prevent any potential interference from operation of Proceq's device.

bandwidth.⁵ GSSI states that it is not possible for a frequency-hopping UWB transmitter such as its new device to meet this definition, so a waiver of this section is needed.⁶

4. Sections 15.31(c) and 15.521(d) require UWB device emissions to be measured with the transmitter operating with the stepping function stopped.⁷ GSSI states that a waiver of these rules is necessary because the GSSI GPR device will use frequency-hopping modulation to achieve improved performance characteristics and the device would not comply with the technical requirements with the stepping function stopped.⁸ It states that measuring emissions with the stepping function active will not increase the interference potential of the device.⁹

5. No parties filed comments in response to the OET request for comment on the GSSI waiver request.¹⁰

III. DISCUSSION

6. We are authorized to grant a waiver under Section 1.3 of the Commission's rules if the petitioner demonstrates good cause for such action.¹¹ Good cause, in turn, may be found and a waiver granted “where particular facts would make strict compliance inconsistent with the public interest.”¹² To make this public interest determination, the waiver cannot undermine the purposes of the rule, and there must be a stronger public interest benefit in granting the waiver than in applying the rule.¹³

7. We find that the GSSI device promises to deliver strong public interest benefits. GSSI's device will provide significant economic, technological, and social value by providing users with real-time data, measurements, imaging, information, and analysis they need to more safely, efficiently, and effectively complete construction projects, serve clients, and benefit the public at large.¹⁴ The newly developed device hardware and software will improve image quality, speed, and flexibility, giving professionals trained in concrete safety a better tool for evaluating structural risk.¹⁵ The device's multichannel antennas allow users to simultaneously see beneath a dense rebar mesh and determine important differences between subsurface targets in ways that have not been possible with previous

⁵ 47 C.F.R. § 15.503(d).

⁶ GSSI Waiver Request at 5.

⁷ 47 C.F.R. §§ 15.31(c), 15.521(d).

⁸ GSSI Waiver Request at 7.

⁹ *Id.* at 10-11.

¹⁰ *Office of Engineering and Technology Seeks Comment on Geophysical Survey Systems, Inc. Request for Waiver of Sections 15.503(d), 15.31(c), and 15.521(d) of the Commission's Part 15 Ultra-Wideband (UWB) Rules*, ET Docket No. 22-458, Public Notice, DA 22-1354 (OET Dec. 22, 2022).

¹¹ 47 CFR § 1.3. *See also* *ICO Global Communications (Holdings) Limited v. FCC*, 428 F.3d 264 (D.C. Cir. 2005); *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990); *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969).

¹² *Northeast Cellular*, 897 F.2d at 1166; *see also* *ICO Global Communications*, 428 F.3d at 269 (quoting *Northeast Cellular*); *WAIT Radio*, 418 F.2d at 1157-59.

¹³ *See, e.g., WAIT Radio*, 418 F.2d at 1157 (stating that even though the overall objectives of a general rule have been adjudged to be in the public interest, it is possible that application of the rule to a specific case may not serve the public interest if an applicant's proposal does not undermine the public interest policy served by the rule); *Northeast Cellular*, 897 F.2d at 1166 (stating that in granting a waiver, an agency must explain why deviation from the general rule better serves the public interest than would strict adherence to the rule).

¹⁴ GSSI Waiver Request at 10.

¹⁵ *Id.*

generations of sensors.¹⁶ In addition, the new system will allow users easily to operate multiple antennas to focus on the task at hand rather than on equipment limitations, and new 3D visualization capabilities will provide experts with better real-time data for making decisions that minimize mistaken interpretations that risk life and limb.¹⁷

8. We also conclude that, with appropriate operational and technical restrictions to prevent harmful interference to authorized services, granting GSSI's request for waiver does not undermine the purpose of the rules, i.e., to prevent harmful interference to authorized communication services. In this case, the authorized services in the frequency band where the device will operate include Global Positioning System (GPS) and Global Navigation Satellite Systems (GNSS) devices.¹⁸ GSSI has designed its device to operate in line with the parameters of previously waived devices, and notes that its technical parameters are "virtually identical" to those parameters.¹⁹ The Commission determined, and has continued to find, that a device operating with these parameters does not have any greater potential for causing harmful interference than a device that operates in accordance with the UWB rules.²⁰ These previous findings support the determination that the GSSI device likewise will have no greater potential for causing harmful interference than a device operating in accordance with the UWB rules.

9. The GSSI device uses stepped frequency CW modulation alone, whereas the Commission has granted waivers for other UWB GPR devices that include Orthogonal Frequency Division Multiplexing (OFDM) as well.²¹ However, we determine that this singular distinction does not affect our conclusion. First, we have previously found that a waiver could be justified for a similarly designed GPR handheld analyzer device that does not include OFDM. Second, because we are not waiving the emission limits for the GSSI device, the use of OFDM or lack thereof has no bearing on the interference potential of the device when in operation.

10. We make the GSSI waiver subject to a number of conditions similar to those the Commission has imposed on other UWB GPR waivers to further reduce the likelihood of harmful interference to authorized services.²² We specify the technical requirements that the GSSI device must meet, including the operating frequency range, modulation type (i.e., stepped frequency CW), dwell time on each frequency, and measurement procedure. We also require that the GSSI device be certified by an authorized Telecommunication Certification Body (TCB) and that a copy of this Order be submitted with the application for certification to ensure that the TCB is aware of this waiver.²³

11. Accordingly, pursuant to the delegated authority in Sections 0.31 and 0.241 of the Commission's rules, 47 C.F.R. §§ 0.31 and 0.241, we waive the requirements of Sections 15.503(d), 15.31(c) and 15.521(d) to permit the certification and marketing of the Geophysical Survey Systems, Inc.

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ GSSI Waiver Request at 11.

¹⁹ GSSI Waiver Request at 10-11.

²⁰ *Proceq Waiver Order*, 33 FCC Rcd at 2260, para. 8-9; *Proceq Waiver Second Modification* at 4-5.

²¹ *Proceq Waiver Second Modification* at 4-6. *See also* GSSI Waiver Request at 10, footnote 28.

²² *Proceq Waiver Order*, 33 FCC Rcd at 2261, para. 11; *Proceq Waiver First Modification* at 2; *Proceq Waiver Second Modification* at 5-6.

²³ All requests for equipment authorization must be submitted in writing to a Telecommunication Certification Body (TCB). 47 CFR § 2.911(a). TCBs are not permitted to waive the rules and therefore may only certify a non-compliant device if the Commission has granted a waiver of those rules with which the device does not comply. 47 CFR § 2.62(f)(10)(i).

ultra-wideband ground penetrating radar that does not comply with the fractional bandwidth and measurement procedures in those sections. This waiver is subject to the following conditions:

- 1) The GSSI GPR device shall be certified by an authorized Telecommunications Certification Body. A copy of this Order must be submitted with the application for certification.
- 2) The GSSI GPR device shall operate with stepped frequency CW modulation in 1-40 megahertz steps between 30-6000 MHz.
- 3) The GSSI GPR device dwell time on any one frequency shall not exceed 2 microseconds.
- 4) The dwell time during any step of the GSSI GPR shall not exceed 0.04 percent of the devices minimum scan/cycle rate.
- 5) For certification testing, the measurement of emissions from the GSSI GPR device shall be conducted with the stepping function active for all possible frequency step sizes.
- 6) The GSSI GPR device will comply with all other technical and operational requirements applicable to UWB GPR devices under Part 15, Subpart F of the Commission's rules.
- 7) The entities permitted to operate the GSSI GPR device are limited to those specified in Section 15.509(b) of the Commission's rules.
- 8) Sales of the GSSI GPR device authorized under this waiver are subject to an annual limit of 5,000 devices for each of the first two years and 10,000 devices each year thereafter.

IV. ORDERING CLAUSES

12. Accordingly, pursuant to authority delegated in Sections 0.31 and 0.241 of the Commission's rules, 47 CFR §§ 0.31, 0.241, and Section 1.3 of the Commission's rules, 47 CFR § 1.3, IT IS ORDERED that the Request for Waiver filed by Geophysical Survey Systems, Inc. on December 2, 2022 IS GRANTED consistent with the terms of this Order. This action is taken pursuant to Sections 4(i), 302, 303(e), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 302, 303(e), and 303(r). This action is effective upon release of this Order.

13. IT IS FURTHER ORDERED that, if no applications for review are timely filed, this proceeding SHALL BE TERMINATED and the docket CLOSED.

FEDERAL COMMUNICATIONS COMMISSION

Ronald T. Repasi
Chief
Office of Engineering and Technology