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June 12, 2003

Edmond J. Thomas
Chief, Office of Engineering and Technology
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: Geophysical Survey Systems, Inc.
Request for Waiver of Section 15.509(d)
FCC ID QF7TERRAVISION, EA637896 (GPR Device)

Dear Ed:

Pursuant to Section 1.3 of the Commission's Rules, Geophysical Survey Systems, Inc. (GSSI) requests a waiver of Section 15.509(d) to permit the certification of a GPR device ("Device") whose emissions are slightly above the prescribed limits at isolated frequencies.

GSSI filed a certification application for the Device on May 14, 2003, under FCC ID QF7TERRAVISION, EA637896.

IMPORTANT: Following an exchange with Commission laboratory staff, GSSI submits this request to replace one filed on May 23, 2003 (which in turn replaced one filed on May 14, 2003). Please set aside both previous versions and consider this one.

TECHNICAL CONSIDERATIONS

The measured emissions data for the Device are attached. It shows the emissions are slightly over-limit at the following frequencies:

Freq. (MHz)	Over Limit (dB)	Allocation
34.14	1.3	Fed. Gov. Fixed & Mobile
35.58	1.0	Public Mobile; Private land Mobile
46.18	3.6	Private Land Mobile
213.90	0.3	TV channel 13
291.90	1.5	Fed. Gov. Fixed & Mobile

The slight power increase requested by GSSI cannot realistically have any adverse effect in any of these bands.

GSSI has carefully shielded the Device. The transmitter consist of two arrays of seven antennas each, as shown in the attached photograph. Each of the seven antennas is separately enclosed in an aluminum box on all four sides and the top. Then the assembled array is enclosed in yet another aluminum box, also closed on all four sides and the top. Most of the measured emissions result from unavoidable leakage between the lower edge of the shielding and the ground surface. For that reason, further efforts at shielding are unlikely to significantly reduce emissions, and in any event would make the Device too unwieldy for use in the field.

Even by GPR standards, the Device will be manufactured and used in very small numbers. The Device is 6 feet wide, weighs 500 pounds, and will cost the end user approximately $100,000. *GSSI projects a total U.S. market for the Device of six or fewer units per year.* This handful of units will be used at widely separated locations and operated over short duty cycles. For these reasons as well, there is no significant possibility of interference.

PUBLIC INTEREST CONSIDERATIONS

The Device is designed specifically to survey very long pipeline installation sites. Its purpose is to detect and locate obstacles and buried infrastructure prior to excavation for the pipeline, in order to avoid interruption to buried utilities and forestall public safety hazards (as from cutting though gas lines).

When surveying a proposed pipeline route, the Device collects a 3D image that is typically 6 feet wide, 12 feet deep, and as long as necessary -- in a single pass at 5 mph. (Achievable depth varies with the type of soil.) The image obtained shows all previously installed pipes and telecommunications lines, so that installation of the new pipe can be

accomplished without damage to existing infrastructure. This image is invaluable from the standpoints of both public safety and communications reliability.

The Device requires the waiver to deliver its full benefits. Without the waiver, GSSI must cut back either the pulse repetition frequency (PRF) or the output power. Either step would seriously impair performance. At a PRF low enough to achieve compliance, the Device must be moved across the ground at impractically slow speeds. And cutting back output power reduces the imaging depth, with a consequent risk of missing underground installations.

Specifically, reducing the power to achieve compliance would reduce the useful scan depth by about 20 percent. This may not seem like a large value, but that 20 percent is important to safe excavation. In the example above, the visible depth would deteriorate from 12 feet to about 9.5 feet -- and would completely miss underground installations in the 9.5-12 foot range.

The Device, with its fourteen antennas, executes fourteen parallel scans in one pass. The alternative requires marking off the area to be investigated and moving a single antenna over the same course fourteen times. That is a slow and expensive process. When the area to be investigated involves a street or highway, it must be closed for the duration of the measurements, adding cost, inconvenience, and unnecessary risk for both the operator and the public.

LEGAL CONSIDERATIONS

This request complies with the waiver standards set out by the U.S. Court of Appeals for the D.C. Circuit. That court held:

> [A] general rule, deemed valid because its overall objectives are in the public interest, may not be in the "public interest" if extended to an applicant who proposes a new service that will not undermine the policy, served by the rule, that has been adjudged in the public interest.[1]

The conditions set out by the court as mandating consideration of a waiver are thoroughly met here. Grant of the requested waiver will increase the availability of devices that provide safety-of-life applications and other important benefits that are plainly in the public interest, without any negative consequences.

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[1] *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969).

Accordingly, a waiver is in the public interest, and is amply entitled to the "hard look" mandated by *WAIT Radio* [2]

CONCLUSION

A grant of the waiver will permit the production of a device offering clear benefits to the public. In view of the very small degree of noncompliance involved, and the extremely sparse activation of units, a grant of the waiver simply presents no appreciable risk of interference.

Please do not hesitate to call with any questions about this request.

Respectfully submitted,

Mitchell Lazarus
Counsel for Geophysical Survey Systems, Inc.

cc: Julius P. Knapp, Deputy Chief, OET
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FCC Application File FCC ID QF7TERRAVISION, EA637896

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[2] *Id.*, 418 F.2d at 1157 ("[A]llegations such as those made by petitioners, stated with clarity and accompanied by supporting data, are not subject to perfunctory treatment, but must be given a 'hard look.'")

Company: GSSI
Engineer: Kouma Sinn
Project #: 0
Date: 04/15-18/2003
Standard: FCC Part 15 Subpart B
Class: B
Limit Distance: 3 meters
Voltage/Frequency: Battery powered

Location: 2C
Detector QP
Group: None

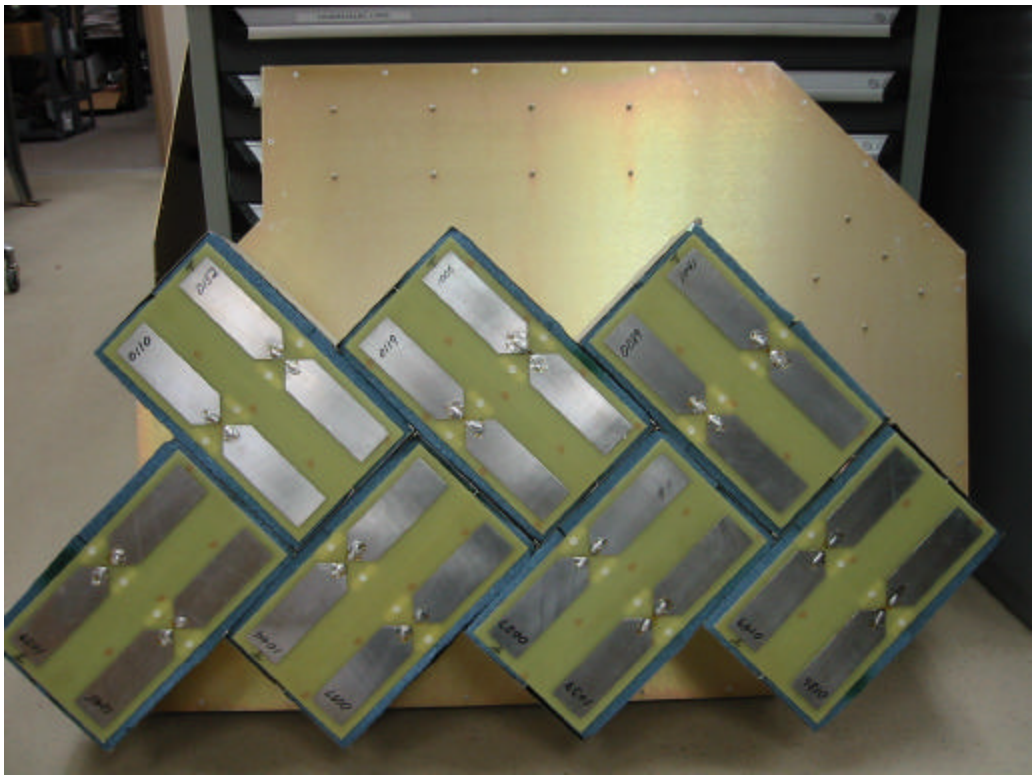
Model #: Terravision II
Serial #: 0 0 1
Receiver: HP 8542E
Antenna: LOG2
PreAmp: PRE8 (100-400MHz) & CTT (400-960MHz)
Cable(s): CBL027 & CBL028
Test Distance: 3 meters
Frequency Range: 30-960MHz

! - value over limit * - value that is within the margin of measurement uncertainty of +/-4 dB

Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB
30.740	22.2	17.0	0.6	0.0	0.0	39.8	40.0	-0.2
32.080	21.8	16.2	0.6	0.0	0.0	38.7	40.0	-1.3
34.140	25.6	15.1	0.6	0.0	0.0	41.3	40.0	+1.3
35.580	26.1	14.3	0.7	0.0	0.0	41.0	40.0	+1.0
44.310	27.6	10.6	0.7	0.0	0.0	38.9	40.0	-1.1
46.180	32.8	10.0	0.8	0.0	0.0	43.6	40.0	+3.6
66.000	28.0	8.1	0.9	0.0	0.0	37.0	40.0	-3.0
69.760	27.4	7.6	0.9	0.0	0.0	36.0	40.0	-4.0
75.220	26.0	7.5	1.0	0.0	0.0	34.5	40.0	-5.5
85.810	26.5	7.8	1.1	0.0	0.0	35.4	40.0	-4.6
105.300	51.0	8.2	1.2	22.5	0.0	37.9	43.5	-5.6
156.300	51.8	8.9	1.4	22.5	0.0	39.6	43.5	-3.9
197.500	52.2	10.7	1.6	22.5	0.0	42.0	43.5	-1.5
200.000	51.6	10.8	1.6	22.5	0.0	41.6	43.5	-1.9
207.300	51.2	11.2	1.6	22.5	0.0	41.5	43.5	-2.0
209.100	48.5	11.2	1.7	22.5	0.0	38.9	43.5	-4.6
213.900	53.1	11.5	1.7	22.5	0.0	43.8	43.5	+0.3
223.000	51.1	11.9	1.7	22.4	0.0	42.3	46.0	-3.7
229.000	53.4	12.2	1.7	22.4	0.0	44.9	46.0	-1.1
240.900	49.1	12.7	1.8	22.4	0.0	41.1	46.0	-4.9
247.700	51.9	13.0	1.8	22.4	0.0	44.3	46.0	-1.7
250.000	47.5	13.1	1.8	22.4	0.0	40.0	46.0	-6.0
254.600	48.3	13.3	1.8	22.4	0.0	41.0	46.0	-5.0

260.000	49.1	13.5	1.9	22.4	0.0	42.1	46.0	-3.9
262.800	51.5	13.7	1.9	22.4	0.0	44.6	46.0	-1.4
282.200	48.5	14.4	1.9	22.4	0.0	42.4	46.0	-3.6
291.300	53.3	14.7	2.0	22.4	0.0	47.5	46.0	+1.5
296.500	50.8	14.8	2.0	22.4	0.0	45.2	46.0	-0.8
308.400	48.0	14.4	2.0	22.4	0.0	42.0	46.0	-4.0
313.300	47.0	15.2	2.1	22.4	0.0	41.8	46.0	-4.2
321.300	45.6	15.3	2.1	22.4	0.0	40.6	46.0	-5.4
322.800	46.9	15.4	2.1	22.4	0.0	41.9	46.0	-4.1
328.000	45.3	15.7	2.1	22.4	0.0	40.7	46.0	-5.3
340.000	45.2	16.7	2.1	22.4	0.0	41.7	46.0	-4.3
361.000	47.4	16.9	2.2	22.4	0.0	44.2	46.0	-1.8
368.500	45.1	16.5	2.2	22.4	0.0	41.4	46.0	-4.6
412.000	44.5	16.4	2.4	23.3	0.0	40.0	46.0	-6.0
429.000	44.7	16.8	2.4	23.8	0.0	40.1	46.0	-5.9
433.800	45.8	16.5	2.4	24.0	0.0	40.7	46.0	-5.3
446.000	49.0	16.7	2.5	24.4	0.0	43.8	46.0	-2.2
467.500	45.7	18.1	2.5	25.6	0.0	40.7	46.0	-5.3
495.400	47.8	17.6	2.6	27.4	0.0	40.6	46.0	-5.4
561.000	46.9	19.0	2.8	28.4	0.0	40.3	46.0	-5.7

QF7TERRAVISION



BOTTOM VIEW OF ANTENNA SHOWING 7 ANTENNA UNITS

(Note shielding on individual antenna units. Additional shielding on assembled antenna array not shown.)