RF EXPOSURE REPORT

FCC

APPLICANT

PoziTech Inc.

MODEL NAME

ILS_V2R1

FCC ID

2BFRE-ILS-V2R1

REPORT NUMBER

HA230929-POZ-001-R02

TEST REPORT

Date of Issue
September 11, 2024

Test Site
HCT America, Inc.
1726 Ringwood Ave, San Jose, CA 95131, USA

Applicant	PoziTech Inc.
Applicant Address	3675 Webber St Sarasota FL-34232, PoziTech Inc
FCC ID	2BFRE-ILS-V2R1
Model Name	ILS_V2R1
EUT Type	SafeRadar
RF Specification	Ultra Wideband (UWB)
Modulation Type	BPSK pulsed modulation signal
FCC Classification	Hand-held Communication Device
FCC Rule Part(s)	FCC Part Subpart F (15.519, 15.521)
Test Procedure	ANSI C63.10-2013, KDB 393764 D01

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures required. The results of testing in this report apply only to the product which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

HCT America, Inc. certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

Tested By	**Reviewed By**
John Park	Yongsoo Park
Test Engineer	Technical Manager

REVISION HISTORY

The revision history for this document is shown in table.

TEST REPORT NO.	DATE	DESCRIPTION
HA230929-POZ-001-R02	September 11, 2024	Initial Issue

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HCT America, Inc., 1726 Ringwood Avenue, San Jose, CA 95131, USA TEL: +1-510-933-8848 FAX: +1-510-933-8849

1. EUT DESCRIPTION

Model	ILS_V2R1
EUT Type	SafeRadar
Serial Number	0A410356
Power Supply	12 V d.c.
RF Specification	UWB
Transmitter Chain	1
Operating Environment	Indoor and outdoor
Operating Temperature	-20 °C ~ 50 °C

Note :
1. Antenna information is based on the document provided.
2. Environmental operating condition is declared by the manufacturer

2. INTRODUCTION

2.1. RF Exposure Exemptions for Single Source

(A) 1-mW Blanket Exemption

Per § 1.1307(b)(3)(i)(A), a single RF source is exempt RF device if the available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption applies to all operating configurations and exposure conditions, for the frequency range 100 kHz - 100 GHz, regardless of fixed, mobile, or portable device exposure conditions. This is a standalone exemption, and it cannot be applied in conjunction with any other test exemption.

(B) SAR-Based Exemption

A more comprehensive exemption, considering a variable power threshold that depends on both the separation distance and power, is provided in § 1.1307(b)(3)(i)(B). This exemption is applicable to the frequency range between 300 MHz - 6 GHz, with test separation distances between 0.5 cm and 40 cm, and for all RF sources in fixed, mobile, and portable device exposure conditions. Accordingly, a RF source is considered an RF exempt device if its available maximum time-averaged (matched conducted) power or its effective radiated power (ERP), whichever is greater, are below a specified threshold (P_{th}).

$$P_{th}(mW) = ERP_{20cm}\left(\frac{d}{20}\right)^{x} \quad , where\ d \le 20\ cm$$

$$P_{th}(mW) = ERP_{20cm} \quad , where\ 20\ cm < d \le 40\ cm$$

$$x = -log_{10}\left(\frac{60}{ERP_{20cm}\sqrt{f}}\right)$$

$$ERP_{20cm}(mW) = 2040\,f \quad , where\ 0.3\ GHz \le f(GHz) < 1.5\ GHz$$

$$ERP_{20cm}(mW) = 3060 \quad , where\ 1.5\ GHz \le f(GHz) \le 6\ GHz$$

(C) MPE-Based Exemption

MPE-based exemption is provided in the table 1, § 1.1307(b)(3)(i)(C), for a much wider frequency range, from 300 kHz - 100 GHz. The table 1 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 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.

RF Source Frequency f_L (MHz) – f_H (MHz)	Minimum Distance λ/2π (f_L) – λ/2π (f_H)	Threshold ERP (ERP_{th})
0.3 – 1.34	150 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 $R^2 f$
1,500 – 100,000	31.8 mm – 0.5 mm	19.2 R^2

Table 1. § 1.1307(b)(3)(i)(C) – Single RF Source Subject to Routine Environmental Evaluation

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2.2. RF Exposure Exemptions for Simultaneous Transmission

(A) 1-mW Blanket Exemption

Per § 1.1307(b)(3)(ii)(A), the 1-mW exemption mat 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 cannot be combined with other options (B) or (C).

(B) SAR-Based Exemptions and MPE-Based Exemptions

As described 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 the following formula is satisfied :

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

3. RESULT

3.1. SAR-Based Exemption Calculation

UWB				
Frequency (MHz)	3100 - 7180	MHz		
MPE Limit (mW/cm²)	6.36989	mW/cm²		
Distance (R)	0.2	Cm		
Output Power (P)	-5.49	dBm	0.00028	mW
Antenna Gain (G)	1.31	dBi	1.35	-
Power density (S) at distance 20 cm	**0.00076**	mW/cm²	at 20 cm separation distance	

Note :
1. Maximum conducted output power including tune-up tolerance

3.2. SUMMARY OF RESULTS

Mode	Frequency Range (MHz)	Ant Gain (dBi)	MPE Calculation (mW/cm²)	MPE Ratio (PD/MPE Limit)
UWB	3100 - 7180	1.31	**0.00076**	0.00012

The worst-case transmission UWB simultaneous transmission and the EUT meets the RF exposure requirement.

Sample Calculation
UWB:
RF Exposure at 20 cm distance = 0.00076 / 6.36989 = **0.00012** < 1.0

END OF TEST REPORT

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