RF EXPOSURE REPORT

FCC

APPLICANT

Identiv Inc.

MODEL NAME

8413ABT

FCC ID

MBPTSSF3-0A

REPORT NUMBER

HA240117-IDE-001-R02-1

TEST REPORT

Date of Issue
April 4, 2024

Test Site
Hyundai C-Tech, Inc. dba HCT America, Inc.
1726 Ringwood Ave, San Jose, CA 95131, USA

Applicant	Identiv Inc.
Applicant Address	1900-B Carnegie Avenue, Santa Ana, CA 92705 USA
FCC ID	MBPTSSF3-0A
Model Name	8413ABT
EUT Type	uTrust TS ScrambleFactor SF.3
FCC Classification	Part15 Low Power Transmitter Below 1705 kHz (DCD)
FCC Rule Part(s)	Part 1 (§1.1310 / §1.1307)
Test Procedure	KDB 447498 D04 v01

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 in accordance with the procedures specified in §2.947. The results 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.

Hyundai C-Tech, Inc. dba 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
HA240117-IDE-001-R02	March 29, 2024	Initial Issue
HA240117-IDE-001-R02-1	april 4, 2024	Recalculation of result values due to adjustment of LF fundamental signal level

TABLE OF CONTENTS

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1. EUT DESCRIPTION

Model	8413ABT	
EUT Type	uTrust TS ScrambleFactor SF.3	
Serial Number	841324117T00009	
Power Supply	12 V d.c.	
RF Specification	RFID (LF : 125 kHz / HF : 13.56 MHz)	
Transmitter Chain	1	
Max. RF Output Power	LF : 74.9 dBuV/m @3m HF : 62.5 dBuV/m @3m	
Exemption Analysis	☒	1-mW Test Exemptions
	☐	SAR-Based Test Exemptions
	☐	MPE-Based Test Exemptions
Antenna Specification [1)]	Loop Antenna	
Operating Environment	Indoor	
Operating Temperature	0 °C ~ 49 °C	

Note(s) :
1. Antenna information is based on the document provided.

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

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. 1-mW Blanket Exemption Calculation

Mode	Frequency Range	Max. EIRP (dBm)	Max. EIRP (mW)	Limit (mW)
LF (ASK)	125 kHz	-20.3	0.009	1
HF (ASK)	13.56 MHz	-32.7	0.001	1

Note :
Max. EIRP (dBm) = Maximum electric field strength level (dBuV @3m) – 95.2
LF : 74.9 dBuV @3 m – 95.2 = -12.0 dBm
HF : 62.5 dBuV @3m – 95.2 = -32.7 dBm

Maximum field strength level is referenced in test report number :
HA240117-IDE-001-R01-1 and HA240117-IDE-001-R03

3.2. SUMMARY OF RESULTS

Mode	Frequency Range	Max. EIRP (mW)	Limit (mW)	P / P_{th} Radio	Simultaneous Ratio
LF (ASK)	125 kHz	0.009	1	0.009	0.01
HF (ASK)	13.56 MHz	0.001	1	0.001	

Sample Calculation
LF + HF : 0.009 / 1 + 0.001 / 1 = 0.01 mW < 1 mW

This device meets exemption limit for SAR evaluation and hence the device is exempt for SAR evaluation.

END OF TEST REPORT

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