MPE REPORT

FCC

APPLICANT

Universal Electronics Inc

MODEL NAME

H24428

FCC ID

MG3-H24428

REPORT NUMBER

HA220725-UEI-006-R05

TEST REPORT

Date of Issue
October 20, 2022

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

Applicant	Universal Electronics Inc
Applicant Address	201 East Sandpointe Ave 7th Floor, Santa Ana, CA 92707, U.S.A.
FCC ID	MG3-H24428
Model Name	H24428
EUT Type	Temperature and Humidity Sensor
FCC Classification	Digital Transmission System (DTS)
FCC Rule Part(s)	Part 1 (§1.1310), Part 2 (§2.1091)
Test Procedure	KDB 447498 D01 v06

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**
Yongsoo Park	Sunwoo Kim
Test Engineer	Technical Manager

REVISION HISTORY

The revision history for this document is shown in table.

TEST REPORT NO.	DATE	DESCRIPTION
HA220725-UEI-006-R05	October 20, 2022	Initial Issue

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

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Hyundai C-Tech, Inc. dba 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	H24428
EUT Type	Temperature and Humidity Sensor
Power Supply	3 V d.c. (3 V d.c. Non-rechageable Lithium Battery)
RF Specification	IEEE 802.15.4
Transmitter Chain	1
Antenna Specification [1)]	Antenna Type : PCB trace Peak Gain : 2.17 dBi
Operating Environment	Indoor
Operating Temperature	-10 °C ~ +50 °C

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

2. INTRODUCTION

2.1. LIMIT

The limit for Maximum Permissible Exposure (MPE), specified in FCC Rule Part §1.1310 listed in the table below, shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation specified in §1.1310 (b)

Frequency Range (MHz)	E- Field Strength (V/m)	H- Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (Minutes)
(A) Limits for Occupational / Controlled Exposure				
0.3 – 3.0	614	1.63	*100	6
3.0 – 30	1842 / f	4.89 / f	*900 / f^2	6
30 – 300	61.4	0.163	1.0	6
300 – 1,500	-	-	f / 300	6
1,500 – 100,000	-	-	5	6
(B) Limits for General Population / Uncontrolled Exposure				
0.3 – 1.34	614	1.63	*100	30
1.34 – 30	824 / f	2.19 / f	*180 / f^2	30
30 – 300	27.5	0.073	0.2	30
300 – 1,500	-	-	f / 1500	30
1,500 – 100,000	-	-	1.0	30

f = frequency in MHz, * = Plane-wave equivalent power density

2.2. MAXIMUM PERMISSIBLE EXPOSURE PREDICTION

Prediction of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S : Power density (mW/cm^2)
P : Output power to antenna (mW)
G : Antenna gain in linear scale
R : Distance between the center of radiator and observation point (cm)

3. RESULT

3.1. MPE Calculation

IEEE 802.15.4				
Frequency (MHz)	2405 - 2480	MHz		
MPE Limit (mW/cm²)	1	mW/cm²		
Distance (R)	20	Cm		
Output Power (P) 1)	20.68	dBm	116.95	mW
Antenna Gain (G)	2.17	dBi	1.65	-
Power density (S) at distance 20 cm	**0.038347**	mW/cm²	at 20 cm separation distance	

Note :
1) Maximum 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)
IEEE 802.15.4	2405 – 2480	2.17	0.038347	0.038347

Sample Calculation

TOTAL MPE (20cm distance) = 0.038347/1 = **0.038347** < 1.0

END OF TEST REPORT

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