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RF Exposure Measurement

FCC ID : 2AWLH-UTS-2

Applicant	Company name	Hana Technologies Inc.		
	Address	2061 Case Parkway South, Unit # 6, Twinsburg, OH 44087, U.S.A.		
	Telephone	+82 010-9165-5435		
Product	Product name	UTS-2 Wireless charger		
	Model No.	UTS-2	Manufacturer	Hana Technologies Inc.
	Serial No.	NONE	Country of origin	U.S.A.
Test date	1-Aug-24 ~ 5-Aug-24		Date of issue	12-Aug-24
Testing location	140-16, Eongmalli-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Rep. of Korea			
MRA Registration number		KR0019		
Measurement facility registration number		659627		
Tested by	Senior Engineer Y.D. Kim		(Signature)	
Reviewed by	Engineering Manager I.K. Hong		(Signature)	
Abbreviation	OK, Pass = Complied, Fail = Failed, N/A = not applicable			
<p>* Note</p> <ul style="list-style-type: none">- This test report is not permitted to copy partly without our permission- This test result is dependent on only equipment to be used- This test result based on a single evaluation of one sample of the above mentioned- This test report is not related to KOLAS accreditation				

1. Introduction

The maximum Gain measured in Fully Anechoic Chamber

Because this device is transmitting the high power signal, it is regarded specially as a dangerous band for its heating harmfulness to the human body. The manufacturer whose product is working in this frequency band is obligatory to prove the harmfulness of his product.

In this document, we try to prove the safety of radiation harmfulness to the human body for our product. The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The Gain of the antenna used in this product is measured in a Fully Anechoic Chamber (FAC), and the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

2. Classification

MODE: ASK

The antenna of the product, under normal use condition, is at least 20cm away from the body of the user. Warning statement for keeping 20cm separation distance and the prohibition of operating next to a person has been printed on the user's manual. So, this product is classified as the Mobile Device.

3. RF Exposure Limit

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency(RF) radiation as specified in 1.1307(b).

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE) – Class A

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Average Time (minutes)
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 – 1500			F/300	6
1500 – 100,000			5	6

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE) – Class B

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Average Time (minutes)
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 – 1500	–	–	F/1500	30
1500 – 100,000	–	–	1.0	30

F = Frequency in MHz * = Plane-wave equivalent power density

4. Friis Formula

$$R = \sqrt{\frac{PG}{4\pi S}}$$

The maximum Gain measured in Fully Anechoic Chamber

UTS-2 Wireless charger : 1 dBi or numeric 1.259

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

$\pi = 3.1416$

MODE: ASK

P_d is the limit of MPE, $1\text{mW}/\text{cm}^2$. If we know the maximum Gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

The software provided by Manufacturer enabled the EUT to transmit with max power at lowest, middle and highest channel individually.

5. Test Results

5.1 Output Power into Antenna & Power Density (1mW/cm2) :

MODE: ASK

Band	Output Power to Antenna (mW)	Power Density (mW/cm2)
ASK	0.00000060399	0.00000000015

Total

0.00000000015 (mW/cm2) < 1.0 (mW/cm2)