

# MPE REPORT

## FCC

APPLICANT

**Tarana Wireless, Inc.**

MODEL NAME

**G1RN5ASI012**

FCC ID

**2ABOF-G1-RN5ASI012**

REPORT NUMBER

**HA211006-TAR-002-R03**

# TEST REPORT

**Date of Issue**  
November 12, 2021

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

<b>Applicant</b>	Tarana Wireless, Inc.
<b>Applicant Address</b>	590 Alder Drive, Milpitas, CA 95035
<b>FCC ID</b>	2ABOF-G1-RN5ASI012
<b>Model Name</b>	G1RN5ASI012
<b>EUT Type</b>	5GHz RF Remote Node (RN)
<b>FCC Classification</b>	Unlicensed National Information Infrastructure (NII)
<b>FCC Rule Part(s)</b>	Part 1 (§1.1310), Part 2 (§2.1091)
<b>Test Procedure</b>	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 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.

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**



Yongsoo Park

Test Engineer

**Reviewed By**



Sunwoo Kim

Technical Manager

## REVISION HISTORY

*The revision history for this document is shown in table.*

TEST REPORT NO.	DATE	DESCRIPTION
HA211006-TAR-002-R03	November 12, 2021	Initial Issue

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## 1. GENERAL INFORMATION

### EUT DESCRIPTION

<b>Model</b>	G1RN5ASI012
<b>Serial Number</b>	S149T1213600256 (RF Conducted) S145T1214100001 (RF Radiated)
<b>EUT Type</b>	5GHz RF Remote Node (RN)
<b>Description of Device</b>	Exclusively Fixed Outdoor Point-to-Point Device
<b>Power Supply</b>	PoE (Power over Ethernet) : 44 ~ 60 V d.c.
<b>RF Specification</b>	5 GHz RF : UNII 1 band / UNII 3 band Single Carrier : 10 / 20 / 40 MHz Multi-Carrier (Contiguous) : 20+20 / 20+40 / 40+20 / 40+40 MHz Multi-Carrier (Non-Contiguous) : 20+20 / 20+40 / 40+20 / 40+40 MHz
<b>Transmitter Chain</b>	8
<b>Antenna Specification <sup>1)</sup></b>	Array Antenna RN Antenna Gain : 14.1 dBi Directional Gain with Array Gain : 20.12 dBi
<b>Operating Environment</b>	Outdoor
<b>Operating Temperature</b>	-40°C - 55°C

**Note :**

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 <sup>2</sup> )	Averaging Time (Minutes)
<b>(A) Limits for Occupational / Controlled Exposure</b>				
0.3 – 3.0	614	1.63	*100	6
3.0 – 30	1842 / f	4.89 / f	*900 / f <sup>2</sup>	6
30 – 300	61.4	0.163	1.0	6
300 – 1,500	-	-	f / 300	6
1,500 – 100,000	-	-	5	6
<b>(B) Limits for General Population / Uncontrolled Exposure</b>				
0.3 – 1.34	614	1.63	*100	30
1.34 – 30	824 / f	2.19 / f	*180 / f <sup>2</sup>	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<sup>2</sup>)

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

5 GHz RF				
Frequency (MHz)	5745	MHz		
MPE Limit (mW/cm <sup>2</sup> )	1.0	mW/cm <sup>2</sup>		
Distance (R)	95.0	Cm		
Output Power (P)	29.89	dBm	974.99	mW
Antenna Gain (G)	20.12	dBi	102.82	-
Power density (S) at distance 20 cm	<b>0.883900</b>	mW/cm <sup>2</sup>	at 95 cm separation distance	

### 3.2. SUMMARY OF RESULTS

Frequency Range (MHz)	Max e.i.r.p. (dBm)	Distance (cm)	MPE Calculation (mW/cm <sup>2</sup> )	MPE Ratio (PD/MPE Limit)
5175 – 5245 5740 – 5830	50.01	95	0.883900	0.883900

#### Sample Calculation

TOTAL MPE (95cm distance) =  $0.883900/1.0 = 0.883900 < 1.0$



**END OF TEST REPORT**