

TEST REPORT

FCC MPE Test for SDR-33
Class II Permissive Change

APPLICANT
ADRF KOREA, Inc.

REPORT NO.
HCT-RF-2212-FC002

DATE OF ISSUE
December 12, 2022

Tested by
Sang Su Lee



Technical Manager
Jong Seok Lee



HCT CO., LTD.
BongJai Huh
BongJai Huh / CEO



HCT Co., Ltd.

74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA
Tel. +82 31 634 6300 Fax. +82 31 645 6401

TEST REPORT

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SDR-33

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Additional Model

-

Applicant

ADRF KOREA, Inc.

5-5, Mojeon-Ri, Backsa-Myun, Icheon-City, Kyunggi-Do, Korea

**Eut Type
Model Name**

Repeater
SDR-33

FCC ID

N52-SDR-33

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

This test results were applied only to the test methods required by the standard.

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	December 12, 2022	Initial Release

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

If this report is required to confirmation of authenticity, please contact to www.hct.co.kr

RF Exposure Statement

1. Limit

According to § 1.1310, § 2.1091 RF exposure is calculated.

(B) Limits for General Population/Uncontrolled Exposures				
Frequency range (MHz)	Electric field Strength (V/m)	Magnetic field Strength (A/m)	Power density (mW/cm ²)	Averaging 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

2. Maximum Permissible Exposure Prediction

Prediction of MPE limit at a given distance

$$S = PG/4\pi R^2$$

S = Power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

3. RESULTS

- Lower 700 MHz – 5G NR 10 MHz (Uplink)

Max Peak output Power at antenna input terminal	33.50	dBm
Max Peak output Power at antenna input terminal	2 238.72	mW
Prediction distance	370.00	cm
Prediction frequency	698.00	MHz
Antenna Gain(typical)	16.00	dBi
Antenna Gain(numeric)	39.81	-
Power density at prediction frequency(S)	0.0518	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.4653	mW/cm ²

- Lower 700 MHz – 5G NR 10 MHz (Downlink)

Max Peak output Power at antenna input terminal	33.50	dBm
Max Peak output Power at antenna input terminal	2 238.72	mW
Prediction distance	370.00	cm
Prediction frequency	728.00	MHz
Antenna Gain(typical)	16.00	dBi
Antenna Gain(numeric)	39.81	-
Power density at prediction frequency(S)	0.0518	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.4853	mW/cm ²

- Upper 700 MHz – 5G NR 10 MHz (Uplink)

Max Peak output Power at antenna input terminal	33.50	dBm
Max Peak output Power at antenna input terminal	2 238.72	mW
Prediction distance	370.00	cm
Prediction frequency	776.00	MHz
Antenna Gain(typical)	16.00	dBi
Antenna Gain(numeric)	39.81	-
Power density at prediction frequency(S)	0.0518	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5173	mW/cm ²

- Upper 700 MHz – 5G NR 10 MHz (Downlink)

Max Peak output Power at antenna input terminal	33.50	dBm
Max Peak output Power at antenna input terminal	2 238.72	mW
Prediction distance	370.00	cm
Prediction frequency	746.00	MHz
Antenna Gain(typical)	16.00	dBi
Antenna Gain(numeric)	39.81	-
Power density at prediction frequency(S)	0.0518	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.4973	mW/cm ²

- Cellular – 5G NR 20 MHz (Uplink)

Max Peak output Power at antenna input terminal	33.50	dBm
Max Peak output Power at antenna input terminal	2 238.72	mW
Prediction distance	370.00	cm
Prediction frequency	824.00	MHz
Antenna Gain(typical)	16.70	dBi
Antenna Gain(numeric)	46.77	-
Power density at prediction frequency(S)	0.0609	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5493	mW/cm ²

- Cellular – 5G NR 20 MHz (Downlink)

Max Peak output Power at antenna input terminal	33.50	dBm
Max Peak output Power at antenna input terminal	2 238.72	mW
Prediction distance	370.00	cm
Prediction frequency	869.00	MHz
Antenna Gain(typical)	16.70	dBi
Antenna Gain(numeric)	46.77	-
Power density at prediction frequency(S)	0.0609	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5793	mW/cm ²

- Broadband PCS – 5G NR 20 MHz (Uplink)

Max Peak output Power at antenna input terminal	33.50	dBm
Max Peak output Power at antenna input terminal	2 238.72	mW
Prediction distance	370.00	cm
Prediction frequency	1 850.00	MHz
Antenna Gain(typical)	19.10	dBi
Antenna Gain(numeric)	81.28	-
Power density at prediction frequency(S)	0.1058	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

- Broadband PCS – 5G NR 20 MHz (Downlink)

Max Peak output Power at antenna input terminal	33.50	dBm
Max Peak output Power at antenna input terminal	2 238.72	mW
Prediction distance	370.00	cm
Prediction frequency	1 930.00	MHz
Antenna Gain(typical)	19.10	dBi
Antenna Gain(numeric)	81.28	-
Power density at prediction frequency(S)	0.1058	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

Simultaneous band emission conditions

Uplink

Band	MPE Ratio (Power density / Limit)	Sum of MPE Ratio	
Lower 700 MHz	0.1113	0.4281	≤ 1
Upper 700 MHz	0.1001		
Cellular	0.1109		
PCS	0.1058		

Downlink

Band	MPE Ratio (Power density / Limit)	Sum of MPE Ratio	
Lower 700 MHz	0.1067	0.4218	≤ 1
Upper 700 MHz	0.1042		
Cellular	0.1051		
PCS	0.1058		

*Note

1. The result of each band was applied to the worst value.
2. MPE ratios are calculated as

$$[(\text{Power density1} / \text{MPE Limit}) + [(\text{Power density2} / \text{MPE Limit}) + \dots] \leq 1$$