

TEST REPORT

FCC MPE Test for ADXV
Class II Permissive Change

APPLICANT
ADRF KOREA, Inc.

REPORT NO.
HCT-RF-2301-FC088-R1

DATE OF ISSUE
March 15, 2023

Tested by
Sang Su Lee



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**TEST
REPORT**

FCC MPE Test for
ADXV

REPORT NO.
HCT-RF-2301-FC088-R1

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Additional Model
-

Applicant **ADRF KOREA, Inc.**
5-5, Mojeon-Ri, Backsa-Myun, Icheon-Citi, Kyunggi-Do, Korea

Eut Type DAS
Model Name ADXV

FCC ID N52-ADXV

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 | February 09, 2023 | Initial Release |
| 1 | March 15, 2023 | - Added notes on the antenna gain and separation distance to data tables. |

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 – LTE 10 MHz (Downlink), [Antenna gain: 3.9 dBi, Separation distance: 100 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 100.00 | cm |
| Prediction frequency | 728.00 | MHz |
| Antenna Gain(typical) | 3.90 | dBi |
| Antenna Gain(numeric) | 2.455 | - |
| Power density at prediction frequency(S) | 0.0437 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.4853 | mW/cm ² |

- Lower 700 MHz – 5G NR 10 MHz (Downlink), [Antenna gain: 3.9 dBi, Separation distance: 100 cm]

| | | |
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- Upper 700 MHz – LTE 10 MHz (Downlink), [Antenna gain: 3.9 dBi, Separation distance: 100 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 100.00 | cm |
| Prediction frequency | 746.00 | MHz |
| Antenna Gain(typical) | 3.90 | dBi |
| Antenna Gain(numeric) | 2.455 | - |
| Power density at prediction frequency(S) | 0.0437 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.4973 | mW/cm ² |

- Upper 700 MHz – 5G NR 10 MHz (Downlink), [Antenna gain: 3.9 dBi, Separation distance: 100 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 100.00 | cm |
| Prediction frequency | 746.00 | MHz |
| Antenna Gain(typical) | 3.90 | dBi |
| Antenna Gain(numeric) | 2.455 | - |
| Power density at prediction frequency(S) | 0.0437 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.4973 | mW/cm ² |

- ESMR – 5G NR 5 MHz (Downlink), [Antenna gain: 3.9 dBi, Separation distance: 100 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 100.00 | cm |
| Prediction frequency | 862.00 | MHz |
| Antenna Gain(typical) | 3.90 | dBi |
| Antenna Gain(numeric) | 2.455 | - |
| Power density at prediction frequency(S) | 0.0437 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5747 | mW/cm ² |

- Cellular – 5G NR 20 MHz (Downlink), [Antenna gain: 3.9 dBi, Separation distance: 100 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 100.00 | cm |
| Prediction frequency | 869.00 | MHz |
| Antenna Gain(typical) | 3.90 | dBi |
| Antenna Gain(numeric) | 2.455 | - |
| Power density at prediction frequency(S) | 0.0437 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5793 | mW/cm ² |

- AWS – 5G NR 60 MHz (Downlink), [Antenna gain: 3.9 dBi, Separation distance: 100 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| Max Peak output Power at antenna input terminal | 37.50 | dBm |
| Max Peak output Power at antenna input terminal | 5 623.41 | mW |
| Prediction distance | 100.00 | cm |
| Prediction frequency | 2 110.00 | MHz |
| Antenna Gain(typical) | 3.90 | dBi |
| Antenna Gain(numeric) | 2.455 | - |
| Power density at prediction frequency(S) | 0.1098 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 1.0000 | mW/cm ² |

- Broadband PCS – 5G NR 60 MHz (Downlink), [Antenna gain: 3.9 dBi, Separation distance: 100 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| Max Peak output Power at antenna input terminal | 37.50 | dBm |
| Max Peak output Power at antenna input terminal | 5 623.41 | mW |
| Prediction distance | 100.00 | cm |
| Prediction frequency | 1 930.00 | MHz |
| Antenna Gain(typical) | 3.90 | dBi |
| Antenna Gain(numeric) | 2.455 | - |
| Power density at prediction frequency(S) | 0.1098 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 1.0000 | mW/cm ² |

- Lower 700 MHz – LTE 10 MHz (Downlink), [Antenna gain: 9.9 dBi, Separation distance: 200 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 200.00 | cm |
| Prediction frequency | 728.00 | MHz |
| Antenna Gain(typical) | 9.90 | dBi |
| Antenna Gain(numeric) | 9.772 | - |
| Power density at prediction frequency(S) | 0.0435 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.4853 | mW/cm ² |

- Lower 700 MHz – 5G NR 10 MHz (Downlink), [Antenna gain: 9.9 dBi, Separation distance: 200 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 200.00 | cm |
| Prediction frequency | 728.00 | MHz |
| Antenna Gain(typical) | 9.90 | dBi |
| Antenna Gain(numeric) | 9.772 | - |
| Power density at prediction frequency(S) | 0.0435 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.4853 | mW/cm ² |

- Upper 700 MHz – LTE 10 MHz (Downlink), [Antenna gain: 9.9 dBi, Separation distance: 200 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 200.00 | cm |
| Prediction frequency | 746.00 | MHz |
| Antenna Gain(typical) | 9.90 | dBi |
| Antenna Gain(numeric) | 9.772 | - |
| Power density at prediction frequency(S) | 0.0435 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.4973 | mW/cm ² |

- Upper 700 MHz – 5G NR 10 MHz (Downlink), [Antenna gain: 9.9 dBi, Separation distance: 200 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 200.00 | cm |
| Prediction frequency | 746.00 | MHz |
| Antenna Gain(typical) | 9.90 | dBi |
| Antenna Gain(numeric) | 9.772 | - |
| Power density at prediction frequency(S) | 0.0435 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.4973 | mW/cm ² |

- ESMR – 5G NR 5 MHz (Downlink), [Antenna gain: 9.9 dBi, Separation distance: 200 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 200.00 | cm |
| Prediction frequency | 862.00 | MHz |
| Antenna Gain(typical) | 9.90 | dBi |
| Antenna Gain(numeric) | 9.772 | - |
| Power density at prediction frequency(S) | 0.0435 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5747 | mW/cm ² |

- Cellular – 5G NR 20 MHz (Downlink), [Antenna gain: 9.9 dBi, Separation distance: 200 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 200.00 | cm |
| Prediction frequency | 869.00 | MHz |
| Antenna Gain(typical) | 9.90 | dBi |
| Antenna Gain(numeric) | 9.772 | - |
| Power density at prediction frequency(S) | 0.0435 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5793 | mW/cm ² |

- AWS – 5G NR 60 MHz (Downlink), [Antenna gain: 9.9 dBi, Separation distance: 200 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| Max Peak output Power at antenna input terminal | 37.50 | dBm |
| Max Peak output Power at antenna input terminal | 5 623.41 | mW |
| Prediction distance | 200.00 | cm |
| Prediction frequency | 2 110.00 | MHz |
| Antenna Gain(typical) | 9.90 | dBi |
| Antenna Gain(numeric) | 9.772 | - |
| Power density at prediction frequency(S) | 0.1093 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 1.0000 | mW/cm ² |

- Broadband PCS – 5G NR 60 MHz (Downlink), [Antenna gain: 9.9 dBi, Separation distance: 200 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| Max Peak output Power at antenna input terminal | 37.50 | dBm |
| Max Peak output Power at antenna input terminal | 5 623.41 | mW |
| Prediction distance | 200.00 | cm |
| Prediction frequency | 1 930.00 | MHz |
| Antenna Gain(typical) | 9.90 | dBi |
| Antenna Gain(numeric) | 9.772 | - |
| Power density at prediction frequency(S) | 0.1093 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 1.0000 | mW/cm ² |

- Lower 700 MHz – LTE 10 MHz (Downlink), [Antenna gain: 13.4 dBi, Separation distance: 300 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 300.00 | cm |
| Prediction frequency | 728.00 | MHz |
| Antenna Gain(typical) | 13.40 | dBi |
| Antenna Gain(numeric) | 21.878 | - |
| Power density at prediction frequency(S) | 0.0433 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.4853 | mW/cm ² |

- Lower 700 MHz – 5G NR 10 MHz (Downlink), [Antenna gain: 13.4 dBi, Separation distance: 300 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 300.00 | cm |
| Prediction frequency | 728.00 | MHz |
| Antenna Gain(typical) | 13.40 | dBi |
| Antenna Gain(numeric) | 21.878 | - |
| Power density at prediction frequency(S) | 0.0433 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.4853 | mW/cm ² |

- Upper 700 MHz – LTE 10 MHz (Downlink), [Antenna gain: 13.4 dBi, Separation distance: 300 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 300.00 | cm |
| Prediction frequency | 746.00 | MHz |
| Antenna Gain(typical) | 13.40 | dBi |
| Antenna Gain(numeric) | 21.878 | - |
| Power density at prediction frequency(S) | 0.0433 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.4973 | mW/cm ² |

- Upper 700 MHz – 5G NR 10 MHz (Downlink), [Antenna gain: 13.4 dBi, Separation distance: 300 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 300.00 | cm |
| Prediction frequency | 746.00 | MHz |
| Antenna Gain(typical) | 13.40 | dBi |
| Antenna Gain(numeric) | 21.878 | - |
| Power density at prediction frequency(S) | 0.0433 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.4973 | mW/cm ² |

- ESMR – 5G NR 5 MHz (Downlink), [Antenna gain: 13.4 dBi, Separation distance: 300 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 300.00 | cm |
| Prediction frequency | 862.00 | MHz |
| Antenna Gain(typical) | 13.40 | dBi |
| Antenna Gain(numeric) | 21.878 | - |
| Power density at prediction frequency(S) | 0.0433 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5747 | mW/cm ² |

- Cellular – 5G NR 20 MHz (Downlink), [Antenna gain: 13.4 dBi, Separation distance: 300 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| 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 | 300.00 | cm |
| Prediction frequency | 869.00 | MHz |
| Antenna Gain(typical) | 13.40 | dBi |
| Antenna Gain(numeric) | 21.878 | - |
| Power density at prediction frequency(S) | 0.0433 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 0.5793 | mW/cm ² |

- AWS – 5G NR 60 MHz (Downlink), [Antenna gain: 13.4 dBi, Separation distance: 300 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| Max Peak output Power at antenna input terminal | 37.50 | dBm |
| Max Peak output Power at antenna input terminal | 5 623.41 | mW |
| Prediction distance | 300.00 | cm |
| Prediction frequency | 2110.00 | MHz |
| Antenna Gain(typical) | 13.40 | dBi |
| Antenna Gain(numeric) | 21.878 | - |
| Power density at prediction frequency(S) | 0.1088 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 1.0000 | mW/cm ² |

- Broadband PCS – 5G NR 60 MHz (Downlink), [Antenna gain: 13.4 dBi, Separation distance: 300 cm]

| | | |
|-------------------------------------------------------------|----------|--------------------|
| Max Peak output Power at antenna input terminal | 37.50 | dBm |
| Max Peak output Power at antenna input terminal | 5 623.41 | mW |
| Prediction distance | 300.00 | cm |
| Prediction frequency | 1930.00 | MHz |
| Antenna Gain(typical) | 13.40 | dBi |
| Antenna Gain(numeric) | 21.878 | - |
| Power density at prediction frequency(S) | 0.1088 | mW/cm ² |
| MPE limit for uncontrolled exposure at prediction frequency | 1.0000 | mW/cm ² |

Simultaneous band emission conditions

Downlink, [Antenna gain: 3.9 dBi, Separation distance: 100 cm]

| Band | MPE Ratio (Power density / Limit) | Sum of MPE Ratio | |
|---------------|-----------------------------------|------------------|-----|
| Lower 700 MHz | 0.0901 | 0.5492 | ≤ 1 |
| Upper 700 MHz | 0.0879 | | |
| ESMR | 0.0761 | | |
| Cellular | 0.0755 | | |
| AWS | 0.1098 | | |
| PCS | 0.1098 | | |

Downlink, [Antenna gain: 9.9 dBi, Separation distance: 200 cm]

| Band | MPE Ratio (Power density / Limit) | Sum of MPE Ratio | |
|---------------|-----------------------------------|------------------|-----|
| Lower 700 MHz | 0.0897 | 0.5466 | ≤ 1 |
| Upper 700 MHz | 0.0875 | | |
| ESMR | 0.0757 | | |
| Cellular | 0.0751 | | |
| AWS | 0.1093 | | |
| PCS | 0.1093 | | |

Downlink, [Antenna gain: 13.4 dBi, Separation distance: 300 cm]

| Band | MPE Ratio (Power density / Limit) | Sum of MPE Ratio | |
|---------------|-----------------------------------|------------------|-----|
| Lower 700 MHz | 0.0892 | 0.5441 | ≤ 1 |
| Upper 700 MHz | 0.0871 | | |
| ESMR | 0.0754 | | |
| Cellular | 0.0748 | | |
| AWS | 0.1088 | | |
| PCS | 0.1088 | | |

***Note**

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

$$[(\text{Power density}_1 / \text{MPE Limit}) + [(\text{Power density}_2 / \text{MPE Limit}) + \dots] \leq 1$$