

TEST REPORT

FCC MPE Test for ADXD-LPR
Certification

APPLICANT
ADRF KOREA, Inc.

REPORT NO.
HCT-RF-2004-FC047-R1

DATE OF ISSUE
May 08, 2020

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ADXD-LPR

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HCT-RF-2004-FC047-R1
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Additional Model
-

Applicant	ADRF KOREA, Inc. 5-5, Mojeon-Ri, Backsa-Myun, Icheon-Citi, Kyunggi-Do, Korea
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EUT Type Model Name	DAS(Distributed Antenna System) ADXD-LPR
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FCC ID	N52-ADXD-LPR
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This test results were applied only to the test methods required by the standard.

Tested by
Kwang Il Yoon

(signature)

Technical Manager
Jong Seok Lee

(signature)

(signature)
HCT CO., LTD.

Soo Chan Lee
SooChan Lee / CEO

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	April 28, 2020	Initial Release
1	May 08, 2020	We recalculated by modifying the distance

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

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.

RF Exposure Statement

1. LIMITS

According to § 1.1310 and § 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

- Lower 700 MHz – LTE 10 MHz (Uplink)

Max Peak output Power at antenna input terminal	-34.00	dBm
Max Peak output Power at antenna input terminal	0.0004	mW
Prediction distance	100.00	cm
Prediction frequency	703.00	MHz
Antenna Gain(typical)	8.000	dBi
Antenna Gain(numeric)	6.310	-
Power density at prediction frequency(S)	0.00000002	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.4687	mW/cm ²

- Lower 700 MHz – LTE 10 MHz (Downlink)

Max Peak output Power at antenna input terminal	19.00	dBm
Max Peak output Power at antenna input terminal	79.43	mW
Prediction distance	100.00	cm
Prediction frequency	733.00	MHz
Antenna Gain(typical)	8.000	dBi
Antenna Gain(numeric)	6.310	-
Power density at prediction frequency(S)	0.0040	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.4887	mW/cm ²

- Upper 700 MHz – LTE 10 MHz (Uplink)

Max Peak output Power at antenna input terminal	-34.00	dBm
Max Peak output Power at antenna input terminal	0.0004	mW
Prediction distance	100.00	cm
Prediction frequency	781.00	MHz
Antenna Gain(typical)	8.000	dBi
Antenna Gain(numeric)	6.310	-
Power density at prediction frequency(S)	0.00000002	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5207	mW/cm ²

- Upper 700 MHz – LTE 10 MHz (Downlink)

Max Peak output Power at antenna input terminal	19.00	dBm
Max Peak output Power at antenna input terminal	79.43	mW
Prediction distance	100.00	cm
Prediction frequency	751.00	MHz
Antenna Gain(typical)	8.000	dBi
Antenna Gain(numeric)	6.310	-
Power density at prediction frequency(S)	0.0040	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5007	mW/cm ²

- ESMR – LTE 5 MHz (Uplink)

Max Peak output Power at antenna input terminal	-34.00	dBm
Max Peak output Power at antenna input terminal	0.0004	mW
Prediction distance	100.00	cm
Prediction frequency	819.50	MHz
Antenna Gain(typical)	8.000	dBi
Antenna Gain(numeric)	6.310	-
Power density at prediction frequency(S)	0.00000002	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5463	mW/cm ²

- ESMR – LTE 5 MHz (Downlink)

Max Peak output Power at antenna input terminal	19.00	dBm
Max Peak output Power at antenna input terminal	79.43	mW
Prediction distance	100.00	cm
Prediction frequency	864.50	MHz
Antenna Gain(typical)	8.000	dBi
Antenna Gain(numeric)	6.310	-
Power density at prediction frequency(S)	0.0040	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5763	mW/cm ²

- Cellular – LTE 20 MHz (Uplink)

Max Peak output Power at antenna input terminal	-34.00	dBm
Max Peak output Power at antenna input terminal	0.0004	mW
Prediction distance	100.00	cm
Prediction frequency	834.00	MHz
Antenna Gain(typical)	8.000	dBi
Antenna Gain(numeric)	6.310	-
Power density at prediction frequency(S)	0.00000002	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5560	mW/cm ²

- Cellular – LTE 20 MHz (Downlink)

Max Peak output Power at antenna input terminal	19.00	dBm
Max Peak output Power at antenna input terminal	79.43	mW
Prediction distance	100.00	cm
Prediction frequency	879.00	MHz
Antenna Gain(typical)	8.000	dBi
Antenna Gain(numeric)	6.310	-
Power density at prediction frequency(S)	0.0040	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5860	mW/cm ²

- AWS-1 – LTE 20 MHz (Uplink)

Max Peak output Power at antenna input terminal	-34.00	dBm
Max Peak output Power at antenna input terminal	0.0004	mW
Prediction distance	100.000	cm
Prediction frequency	1 741.28	MHz
Antenna Gain(typical)	8.000	dBi
Antenna Gain(numeric)	6.310	-
Power density at prediction frequency(S)	0.00000002	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

- AWS-1 – LTE 20 MHz (Downlink)

Max Peak output Power at antenna input terminal	21.00	dBm
Max Peak output Power at antenna input terminal	125.89	mW
Prediction distance	100.000	cm
Prediction frequency	2 145.00	MHz
Antenna Gain(typical)	8.000	dBi
Antenna Gain(numeric)	6.310	-
Power density at prediction frequency(S)	0.0063	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

- Broadband PCS – LTE 20 MHz (Uplink)

Max Peak output Power at antenna input terminal	-34.00	dBm
Max Peak output Power at antenna input terminal	0.0004	mW
Prediction distance	100.000	cm
Prediction frequency	1 867.39	MHz
Antenna Gain(typical)	8.000	dBi
Antenna Gain(numeric)	6.310	-
Power density at prediction frequency(S)	0.00000002	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

- Broadband PCS – LTE 20 MHz (Downlink)

Max Peak output Power at antenna input terminal	21.00	dBm
Max Peak output Power at antenna input terminal	125.89	mW
Prediction distance	100.000	cm
Prediction frequency	1 943.30	MHz
Antenna Gain(typical)	8.000	dBi
Antenna Gain(numeric)	6.310	-
Power density at prediction frequency(S)	0.0063	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

- BRS/EBS – LTE 20 MHz (Uplink)

Max Peak output Power at antenna input terminal	-34.00	dBm
Max Peak output Power at antenna input terminal	0.0004	mW
Prediction distance	100.000	cm
Prediction frequency	2 540.62	MHz
Antenna Gain(typical)	7.000	dBi
Antenna Gain(numeric)	5.012	-
Power density at prediction frequency(S)	0.00000002	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

- BRS/EBS – LTE 20 MHz (Downlink)

Max Peak output Power at antenna input terminal	21.00	dBm
Max Peak output Power at antenna input terminal	125.89	mW
Prediction distance	100.000	cm
Prediction frequency	2 557.10	MHz
Antenna Gain(typical)	7.000	dBi
Antenna Gain(numeric)	5.012	-
Power density at prediction frequency(S)	0.005	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

- BRS/EBS – 5G NR 80 MHz (Uplink)

Max Peak output Power at antenna input terminal	-34.00	dBm
Max Peak output Power at antenna input terminal	0.0004	mW
Prediction distance	100.000	cm
Prediction frequency	2 545.47	MHz
Antenna Gain(typical)	7.000	dBi
Antenna Gain(numeric)	5.012	-
Power density at prediction frequency(S)	0.00000002	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

- BRS/EBS – 5G NR 80 MHz (Downlink)

Max Peak output Power at antenna input terminal	21.00	dBm
Max Peak output Power at antenna input terminal	125.89	mW
Prediction distance	100.000	cm
Prediction frequency	2 555.17	MHz
Antenna Gain(typical)	7.000	dBi
Antenna Gain(numeric)	5.012	-
Power density at prediction frequency(S)	0.005	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

- CBRS – LTE 20 MHz (Uplink)

Max Peak output Power at antenna input terminal	-34.00	dBm
Max Peak output Power at antenna input terminal	0.0004	mW
Prediction distance	100.000	cm
Prediction frequency	3 564.63	MHz
Antenna Gain(typical)	7.000	dBi
Antenna Gain(numeric)	5.012	-
Power density at prediction frequency(S)	0.00000002	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

- CBRS – LTE 20 MHz (Downlink)

Max Peak output Power at antenna input terminal	17.00	dBm
Max Peak output Power at antenna input terminal	50.12	mW
Prediction distance	100.000	cm
Prediction frequency	3 651.75	MHz
Antenna Gain(typical)	7.000	dBi
Antenna Gain(numeric)	5.012	-
Power density at prediction frequency(S)	0.002	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

- CBRS – 5G NR 80 MHz (Uplink)

Max Peak output Power at antenna input terminal	-34.00	dBm
Max Peak output Power at antenna input terminal	0.0004	mW
Prediction distance	100.000	cm
Prediction frequency	3 590.00	MHz
Antenna Gain(typical)	7.000	dBi
Antenna Gain(numeric)	5.012	-
Power density at prediction frequency(S)	0.00000002	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

- CBRS – 5G NR 80 MHz (Downlink)

Max Peak output Power at antenna input terminal	17.00	dBm
Max Peak output Power at antenna input terminal	50.12	mW
Prediction distance	100.000	cm
Prediction frequency	3 590.00	MHz
Antenna Gain(typical)	7.000	dBi
Antenna Gain(numeric)	5.012	-
Power density at prediction frequency(S)	0.002	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

Simultaneous band emission conditions

1. 700L(0.0040/0.4887)+700U(0.0040/0.5007)+ESMR(0.0040/0.5763)+
Cellular(0.0040/0.5860)+Broadband PCS(0.0063/1.0000)+AWS(0.0063/1.0000)+
BRS LTE20M(0.005/1.0000)+BRS 5GNR 80M(0.005/1.0000) = 0.0525 < 1.0000

2. 700L(0.0040/0.4887)+700U(0.0040/0.5007)+ESMR(0.0040/0.5763)+
Cellular(0.0040/0.5860)+Broadband PCS(0.0063/1.0000)+AWS(0.0063/1.0000)+
CBRS LTE20M(0.002/1.0000)+CBRS 5GNR 80M(0.002/1.0000) = 0.0465 < 1.0000

Note:

MPE is calculated at the worst case of Downlink and Uplink