

TEST REPORT

FCC MPE Test for PSR-78-8527
Certification

APPLICANT
ADRF KOREA, Inc.

REPORT NO.
HCT-RF-2012-FC041

DATE OF ISSUE
December 24, 2020

Tested by
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TEST REPORT

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PSR-78-8527

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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

PSR-78-8527

FCC ID

N52-PSR-78-8527

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 24, 2020	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.

* The report shall not be reproduced except in full(only partly) without approval of the laboratory.

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

- FistNet - LTE 10 MHz (Uplink)

Max Peak output Power at antenna input terminal	25.00	dBm
Max Peak output Power at antenna input terminal	316.23	mW
Prediction distance	60.00	cm
Prediction frequency	793.00	MHz
Coupled Gain*(typical)	13.00	dBi
Coupled Gain*(numeric)	19.95	-
Power density at prediction frequency(S)	0.1395	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5287	mW/cm ²

*Coupled Gain = Ant. Peak Gain(dBi) – Cable Loss(dB) = 15 dBi – 2 dB = 13 dBi

- FistNet - LTE 10 MHz (Downlink)

Max Peak output Power at antenna input terminal	28.00	dBm
Max Peak output Power at antenna input terminal	630.96	mW
Prediction distance	25.00	cm
Prediction frequency	763.00	MHz
Antenna Gain(typical)	2.60	dBi
Antenna Gain(numeric)	1.82	-
Power density at prediction frequency(S)	0.1462	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5087	mW/cm ²

- PS Narrowband – P25 Phase 1 (Uplink)

Max Peak output Power at antenna input terminal	25.00	dBm
Max Peak output Power at antenna input terminal	316.23	mW
Prediction distance	60.00	cm
Prediction frequency	799.00625	MHz
Coupled Gain*(typical)	13.00	dBi
Coupled Gain*(numeric)	19.95	-
Power density at prediction frequency(S)	0.1395	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5327	mW/cm ²

*Coupled Gain = Ant. Peak Gain(dBi) – Cable Loss(dB) = 15 dBi – 2 dB = 13 dBi

- PS Narrowband – P25 Phase 1 (Downlink)

Max Peak output Power at antenna input terminal	28.00	dBm
Max Peak output Power at antenna input terminal	630.96	mW
Prediction distance	25.00	cm
Prediction frequency	769.00625	MHz
Antenna Gain(typical)	2.60	dBi
Antenna Gain(numeric)	1.82	-
Power density at prediction frequency(S)	0.1462	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5127	mW/cm ²

- SMR – P25 Phase 1 (Uplink)

Max Peak output Power at antenna input terminal	25.00	dBm
Max Peak output Power at antenna input terminal	316.23	mW
Prediction distance	60.00	cm
Prediction frequency	809.00625	MHz
Coupled Gain*(typical)	14.00	dB
Coupled Gain*(numeric)	25.12	-
Power density at prediction frequency(S)	0.1756	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5393	mW/cm ²

*Coupled Gain = Ant. Peak Gain(dBi) – Cable Loss(dB) = 16 dBi – 2 dB = 14 dBi

- SMR – P25 Phase 1 (Downlink)

Max Peak output Power at antenna input terminal	28.00	dBm
Max Peak output Power at antenna input terminal	630.96	mW
Prediction distance	25.00	cm
Prediction frequency	854.00625	MHz
Antenna Gain(typical)	3.90	dB
Antenna Gain(numeric)	2.45	-
Power density at prediction frequency(S)	0.1972	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5693	mW/cm ²

Simultaneous band emission conditions

[Uplink]

Band		MPE Ratio (Power density / Limit)	Sum of MPE Ratio	
FistNet	LTE 10 MHz	0.2638	0.8512	≤ 1
PS Narrowband	P25 Phase 1	0.2618		
SMR	P25 Phase 1	0.3256		

*Note

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

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

[Downlink]

Band		MPE Ratio (Power density / Limit)	Sum of MPE Ratio	
FistNet	LTE 10 MHz	0.2874	0.9189	≤ 1
PS Narrowband	P25 Phase 1	0.2851		
SMR	P25 Phase 1	0.3464		

*Note

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

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