

TEST REPORT

FCC MPE Test for RFV01U-D2A

Class II Permissive Change

APPLICANT

SAMSUNG Electronics Co., Ltd.

REPORT NO.

HCT-RF-2001-FC036

DATE OF ISSUE

January 17, 2020

HCT Co., Ltd.

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FCC MPE Test for
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FCC ID
A3LRFV01U-D2A

Applicant **SAMSUNG Electronics Co., Ltd.**
129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

Eut Type Model Name	RRU(RFV01U) RFV01U-D2A
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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)

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	January 17, 2020	Initial Release

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

3. Results

3-1. Band 13 LTE (40 W, 4 Tx)

Max Average output Power for Multi input Multi output (MIMO)	53.04	dBm
Max Average output Power for Multi input Multi output (MIMO)	201372.42	mW
Prediction distance	1000.00	cm
Prediction frequency	751.00	MHz
Antenna Gain(typical)	10.865	dBi
Antenna Gain(numeric)	12.204	-
Power density at prediction frequency	0.1956	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5007	mW/cm ²

3-2. Band 13 LTE (34.5 W, 4 Tx)

Max Average output Power for Multi input Multi output (MIMO)	52.40	dBm
Max Average output Power for Multi input Multi output (MIMO)	173780.08	mW
Prediction distance	1000.00	cm
Prediction frequency	751.00	MHz
Antenna Gain(typical)	10.865	dBi
Antenna Gain(numeric)	12.204	-
Power density at prediction frequency	0.1688	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5007	mW/cm ²

3-3.Band 13 NB-IoT (5.5 W, 4 Tx)

Max Average output Power for Multi input Multi output (MIMO)	44.42	dBm
Max Average output Power for Multi input Multi output (MIMO)	27669.42	mW
Prediction distance	1000.00	cm
Prediction frequency	746.20	MHz
Antenna Gain(typical)	10.865	dBi
Antenna Gain(numeric)	12.204	-
Power density at prediction frequency	0.0269	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.4975	mW/cm ²

3-4.LTE Band 5 (40 W, 4 Tx)

Max Average output Power for Multi input Multi output (MIMO)	53.04	dBm
Max Average output Power for Multi input Multi output (MIMO)	201372.42	mW
Prediction distance	1000.00	cm
Prediction frequency	871.50	MHz
Antenna Gain(typical)	10.865	dBi
Antenna Gain(numeric)	12.204	-
Power density at prediction frequency	0.1956	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5810	mW/cm ²

※ Manufacturer does not provide an antenna.

※ The antenna gain in the table above is virtual value of the available range.

Simultaneous transmission operations

Simultaneous MPE 10 m is

1. Band 13_LTE (0.1956/0.5007) + Band 5_LTE (0.1956/0.5810) = 0.7273 < 1.0
2. Band 13_LTE (0.1688/0.5007) + Band 13_NB-IoT (0.0269/0.4975) + LTE Band 5 (0.1956/0.5810)
= 0.7279 < 1.0