

FCC MPE REPORT

Certification

Applicant Name:
GS Instech Co., Ltd.

Date of Issue:
October 12, 2018

Address:
70, Gilpa-ro 71beon-gil, Nam-gu, Inchen, Korea

Location of test lab:
HCT CO., LTD.,
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Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

Report No.: HCT-RF-1810-FC014-R1

FCC ID: U88CC-P18

APPLICANT: GS Instech Co., Ltd.

Model: CC-P18

EUT Type: Industrial RF Repeater

Frequency Range: 1 930 MHz ~ 1 995 MHz (DL) / 1 850 MHz ~ 1 915 MHz (UL)

The measurements shown in this report were made in accordance with the procedures specified in §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S.C. 853(a)


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Approved by : Jong Seok Lee
Manager of telecommunication testing center

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-1810-FC014	October 10, 2018	- First Approval Report
HCT-RF-1810-FC014-R1	October 12, 2018	- We recalculated with the change of Antenna Gain.

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. LTE 20 MHz Downlink

Average output Power at antenna input terminal	18.440	dBm
Average output Power at antenna input terminal	69.823	mW
Prediction distance	20.00	cm
Prediction frequency	1940.00	MHz
Antenna Gain(typical)	4.000	dBi
Antenna Gain(numeric)	2.512	-
Power density at prediction frequency(S)	0.034892	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.00	mW/cm ²

2.1091

EIRP	22.44 (dBm)
ERP	20.29 (dBm)
ERP	0.107 (W)
ERP Limit	3.00 (W)
MARGIN	14.48 (dB)

3-2. LTE 20 MHz Uplink

Average output Power at antenna input terminal	18.34	dBm
Average output Power at antenna input terminal	68.234	mW
Prediction distance	20.00	cm
Prediction frequency	1882.50	MHz
Antenna Gain(typical)	6.000	dBi
Antenna Gain(numeric)	3.981	-
Power density at prediction frequency(S)	0.054042	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.00	mW/cm ²

2.1091

EIRP	24.34 (dBm)
ERP	22.19 (dBm)
ERP	0.166 (W)
ERP Limit	3.00 (W)
MARGIN	12.58 (dB)

3-3. CDMA Downlink

Average output Power at antenna input terminal	18.31	dBm
Average output Power at antenna input terminal	67.764	mW
Prediction distance	20.00	cm
Prediction frequency	1931.25	MHz
Antenna Gain(typical)	4.000	dBi
Antenna Gain(numeric)	2.512	-
Power density at prediction frequency(S)	0.033863	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.00	mW/cm ²

2.1091

EIRP	22.31 (dBm)
ERP	20.16 (dBm)
ERP	0.104 (W)
ERP Limit	3.00 (W)
MARGIN	14.61 (dB)

3-4. CDMA Uplink

Average output Power at antenna input terminal	18.42	dBm
Average output Power at antenna input terminal	69.502	mW
Prediction distance	20.00	cm
Prediction frequency	1882.50	MHz
Antenna Gain(typical)	6.000	dBi
Antenna Gain(numeric)	3.981	-
Power density at prediction frequency(S)	0.055047	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.00	mW/cm ²

2.1091

EIRP	24.42 (dBm)
ERP	22.27 (dBm)
ERP	0.169 (W)
ERP Limit	3.00 (W)
MARGIN	12.50 (dB)