

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

FCC ID: U88CC-P18

APPLICANT: GS Instech Co., Ltd.

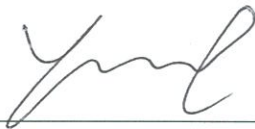
Model: CC-P18

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
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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) |