HCT
HCT CO.,LTD

74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
TEL: +82-31-645-6300   FAX: +82-31-645-6401

FCC MPE REPORT

Certification

Applicant Name: GS Instech Co., Ltd.	**Date of Issue:** December 06, 2018
Address: 70, Gilpa-ro 71beon-gil, Nam-gu, Inchen, Korea	**Location of test lab:** HCT CO., LTD., 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA **Report No.:** HCT-RF-1812-FC015

FCC ID:	**U88-B50K**
APPLICANT:	**GS Instech Co., Ltd.**

Model:	B-50K
EUT Type:	In-building RF repeater

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.

Report prepared by : Kwang il Yooon
Engineer of telecommunication testing center

Approved by : Jong Seok Lee
Manager of telecommunication testing center

This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-1812-FC015	December 06, 2018	- First Approval Report

RF Exposure Statement

1. Limit
- According to § 1.1310 RF exposure is calculated.

Table 1 – Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f^2	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
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
300-1,500			f/1500	30
1,500-100,000			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 to the antenna in the direction of interest relative to an isotropic radiator
R = Distance to the center of radiation of the antenna

3. Results

- Lower 700 MHz – LTE 10 MHz_Uplink

Max peak output power at antenna input terminal (dBm)	19.390	dBm
Max peak output power at antenna input terminal (mW)	86.896	mW
Prediction distance	20.000	cm
Prediction frequency	709.000	MHz
Antenna gain (typical)	9.000	dBi
Antenna gain (numeric)	7.943	-
Power density at prediction frequency	0.1373	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	0.4727	mW/cm^2

- Lower 700 MHz – LTE 10 MHz_Downlink

Max peak output power at antenna input terminal (dBm)	15.380	dBm
Max peak output power at antenna input terminal (mW)	34.514	mW
Prediction distance	20.000	cm
Prediction frequency	739.000	MHz
Antenna gain (typical)	5.000	dBi
Antenna gain (numeric)	3.162	-
Power density at prediction frequency	0.0217	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	0.4927	mW/cm^2

- Upper 700 MHz – LTE 10 MHz_Uplink

Max peak output power at antenna input terminal (dBm)	19.430	dBm
Max peak output power at antenna input terminal (mW)	87.700	mW
Prediction distance	20.000	cm
Prediction frequency	782.000	MHz
Antenna gain (typical)	9.000	dBi
Antenna gain (numeric)	7.943	-
Power density at prediction frequency	0.1386	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	0.5213	mW/cm^2

- Upper 700 MHz – LTE 10 MHz_Downlink

Max peak output power at antenna input terminal (dBm)	15.240	dBm
Max peak output power at antenna input terminal (mW)	33.420	mW
Prediction distance	20.000	cm
Prediction frequency	751.000	MHz
Antenna gain (typical)	5.000	dBi
Antenna gain (numeric)	3.162	-
Power density at prediction frequency	0.0210	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	0.5007	mW/cm^2

- Cellular – CDMA_Uplink

Max peak output power at antenna input terminal (dBm)	19.630	dBm
Max peak output power at antenna input terminal (mW)	91.833	mW
Prediction distance	20.000	cm
Prediction frequency	841.750	MHz
Antenna gain (typical)	9.000	dBi
Antenna gain (numeric)	7.943	-
Power density at prediction frequency	0.1451	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	0.5612	mW/cm^2

- Cellular – LTE 5 MHz_Uplink

Max peak output power at antenna input terminal (dBm)	20.030	dBm
Max peak output power at antenna input terminal (mW)	100.693	mW
Prediction distance	20.000	cm
Prediction frequency	841.750	MHz
Antenna gain (typical)	9.000	dBi
Antenna gain (numeric)	7.943	-
Power density at prediction frequency	0.1591	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	0.5612	mW/cm^2

- Cellular – CDMA_Downlink

Max peak output power at antenna input terminal (dBm)	14.940	dBm
Max peak output power at antenna input terminal (mW)	31.189	mW
Prediction distance	20.000	cm
Prediction frequency	873.560	MHz
Antenna gain (typical)	5.000	dBi
Antenna gain (numeric)	3.162	-
Power density at prediction frequency	0.0196	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	0.5824	mW/cm^2

- Cellular – LTE 5 MHz_Downlink

Max peak output power at antenna input terminal (dBm)	15.110	dBm
Max peak output power at antenna input terminal (mW)	32.434	mW
Prediction distance	20.000	cm
Prediction frequency	873.560	MHz
Antenna gain (typical)	5.000	dBi
Antenna gain (numeric)	3.162	-
Power density at prediction frequency	0.0204	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	0.5824	mW/cm^2

- AWS-1 – LTE 10 MHz_Uplink

Max peak output power at antenna input terminal (dBm)	20.240	dBm
Max peak output power at antenna input terminal (mW)	105.682	mW
Prediction distance	20.000	cm
Prediction frequency	1723.840	MHz
Antenna gain (typical)	11.000	dBi
Antenna gain (numeric)	12.589	-
Power density at prediction frequency	0.2647	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm^2

- AWS-1 – LTE 10 MHz_Downlink

Max peak output power at antenna input terminal (dBm)	15.090	dBm
Max peak output power at antenna input terminal (mW)	32.285	mW
Prediction distance	20.000	cm
Prediction frequency	2125.530	MHz
Antenna gain (typical)	5.000	dBi
Antenna gain (numeric)	3.162	-
Power density at prediction frequency	0.0203	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm^2

- Broadband PCS – CDMA_Uplink

Max peak output power at antenna input terminal (dBm)	19.540	dBm
Max peak output power at antenna input terminal (mW)	89.950	mW
Prediction distance	20.000	cm
Prediction frequency	1863.490	MHz
Antenna gain (typical)	11.000	dBi
Antenna gain (numeric)	12.589	-
Power density at prediction frequency	0.2253	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 (dBm)	19.770	dBm
Max peak output power at antenna input terminal (mW)	94.842	mW
Prediction distance	20.000	cm
Prediction frequency	1863.490	MHz
Antenna gain (typical)	11.000	dBi
Antenna gain (numeric)	12.589	-
Power density at prediction frequency	0.2375	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm^2

- Broadband PCS – CDMA_Downlink

Max peak output power at antenna input terminal (dBm)	15.050	dBm
Max peak output power at antenna input terminal (mW)	31.989	mW
Prediction distance	20.000	cm
Prediction frequency	1944.300	MHz
Antenna gain (typical)	5.000	dBi
Antenna gain (numeric)	3.162	-
Power density at prediction frequency	0.0201	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 (dBm)	15.350	dBm
Max peak output power at antenna input terminal (mW)	34.277	mW
Prediction distance	20.000	cm
Prediction frequency	1944.300	MHz
Antenna gain (typical)	5.000	dBi
Antenna gain (numeric)	3.162	-
Power density at prediction frequency	0.0216	mW/cm^2
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm^2