RF EXPOSURE EVALUATION

Product Description

Applicant		S-winnus Co., Ltd
Applicant Address		NO. 701, 702, Centum Sky Biz A, 97, Centum jungang-ro, Haeundae-gu, Busan, Korea
Kind of Product		Container Tracer Device
FCC ID		2AJOX-CTC-S100
Antenna type		PIFA
Antenna Gain		Band 850 MHz : -2.32 dBi Band 1 900 MHz : 1.89 dBi Band 1 710 MHz : 0.88 dBi
Frequency Range		824 MHz - 849 MHz 1 710 MHz - 1 755 MHz 1 850 MHz - 1 910 MHz
Output power(ERP, EIRP)	**GSM**	Band 850 : 0.713 W (28.53 dBm), Band 850(EGPRS) : 0.349 W (25.43 dBm) Band 1 900 : 1.510 W (31.79 dBm) Band 1 900(EGPRS) : 1.119 W (30.49 dBm)
	WCDMA	Band II : 0.675 W (28.29 dBm) Band V : 0.164 W (22.16 dBm) Band IV :0.535 W (27.28 dBm)

Standard Requirement

The following FCC Rule Parts and procedures are applicable :

Part 1.1310 Radiofrequency radiation exposure limits
Part 2.1091 Radiofrequency radiation exposure evaluation : Mobile device
KDB447498 D01 v06 Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies

Table 1 below sets forth limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields.

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*

Band 850 MHz : 0.55 mW/cm^2
Band 1 900 MHz : 1 mW/cm^2
Band 1 710 MHz : 1 mW/cm^2

MPE calculation

$S = EIRP / (4\pi R^2)$

Where S : Power density
EIRP : P x G
P : Maximum transmitter power
G : Antenna gain
R : distance to the centre of radiation of the antenna

[Band 850 MHz]

P : 35 dBm (rated power : 33 dBm, tolerance: +2 dB)
G : -2.32 dBi
R : 20 cm

$S = 10^{((35-2.32)/10)} / 4\pi / 20^2$
$S = 0.37\ mW/cm^2$

[Band 1 900 MHz]

P : 32 dBm (rated power : 30 dBm, tolerance: +2 dB)
G : 1.89 dBi
R : 20 cm

$S = 10^{((32+1.89)/10)} / 4\pi / 20^2$
$S = 0.49\ mW/cm^2$

[Band 1 710 MHz]

P : 28 dBm (rated power : 26 dBm, tolerance: +2 dB)
G : 0.88 dBi
R : 20 cm

$S = 10^{((28+0.88)/10)} / 4\pi / 20^2$
$S = 0.15\ mW/cm^2$

Conclusion

This confirms compliance to the required Radio frequency radiation exposure limit.