September 20, 2017

Intertek Semko AB
Torshamnsgatan 43, Box 1103
SE-164 22 Kista, Sweden

RE: Maximum Permissible Exposure

FCC ID: V5FDDU001
Model: DDU-700LC, DDU-700UC, DDU-AWS3, DDU-850, DDU-1900
46dBm High Power Remote

To Whom It May Concern:

The equipment operating in the 700MHz low band requires a separation distance of at least ***626.6cm.*** This distance must be maintained between the user and antenna when the product is used with a 17dBi antenna.

The equipment operating in the 700MHz high band requires a separation distance of at least 619cm. This distance must be maintained between the user and antenna when the product is used with a 17dBi antenna.

The equipment operating in the 850MHz cell band requires a separation distance of at least 573.5cm. This distance must be maintained between the user and antenna when the product is used with a 17dBi antenna.

The equipment operating in the PCS 1900MHz band and the AWS 2100MHz band requires a separation distance of at least 436.5cm. This distance must be maintained between the user and antenna when the product is used with a 17dBi antenna.

This was calculated by the following:

30303 Aurora Road • Solon • OH 44139 8625 Industrial Parkway • Angola • NY 14006 12345-B Sunrise Valley Drive • Reston • VA 20191 Hammarby Fabriksväg 61 6tr • 120 30 Stockholm • Sweden

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 Exposures				
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
300–1500			f/300	6
1500–100,000			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
300–1500			f/1500	30
1500–100,000			1.0	30

The power density can be calculated from the equation below (equation #4 from OET Bulletin 65, 97-01 edition, page 19).

$$S = \frac{P*G}{4*pi*R^2}$$

S Power Density (mW/cm2)
P Conducted Power (mW)
R Distance (cm)
G Numerical Antenna Gain

From this equation we can calculate the safety distance needed to fulfill the MPE limits.

In the calculations we have assumed no feeder loss and the max antenna gain was calculted based on

				G	P	S	S	R
Amplifier	Freq (MHz)	Output power to antenna (dBm)	Antenna gain (typical) (dBi)	Antenna Gain Numerical	TX Power conducted (mW)	Power density limit* (mW/cm2)	Power density calculated (mW/cm2)	Calculated safety distance (cm)
700MHz LB	728	46	17	50.12	47773	0.49	0.40440	626.6
700MHz UB	746	46	17	50.12	47773	0.50	0.41439	619.0
850 Cell	869	46	17	50.12	47773	0.58	0.48275	573.5
PCS	1930	46	17	50.12	47773	1.00	0.83334	436.5
AWS	2110	46	17	50.12	47773	1.00	0.83334	436.5

* Limit for General Population/Uncontrolled Exposure

The uplink path in the EUT is not radiated by an antenna. It is connected directly to the base station.

Please contact me if there is any other information you may need.

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Sincerely,

Amy L. Sanvido

On behalf of DeltaNode Solutions AB, a Bird Technologies Company

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