

15th March 2016

Telecommunication Certification Body
UL Verification Services Ltd
Unit 3 Horizon
Wade Road, Kingsland
Basingstoke
Hampshire
RG24 8AH

RE: 2GHz Band RN2410 Base Station FCC ID: PKTNODEBBFZ MPE Calculation.

To Whom It May Concern,

The General Dynamics Broadband 2GHz Band RN2410 Base Station is considered to be fixed equipment and intended for operation with separation distances greater than 20cm between the user and the equipment. Therefore the RF Exposure performance can be assessed by a Maximum Permissible Exposure (MPE) calculation using the limits defined in Part 1.1310 Table 1B for the General Population/Uncontrolled Exposure category.

The General Dynamics Broadband 2GHz Band RN2410 Base Station uses Time Division Duplex (TDD) technology in normal operation with a maximum duty cycle of 80%, therefore source based averaging is applied in the MPE calculation.

MPE Distance Calculation	Channel Size		
	5MHz	10MHz	
Antenna Gain	20	20	dBi
Line Loss	0	0	dB
Antenna Gain Ratio	100	100	
eNode B Tx Output Power (per branch)	37	37	dBm
Upper Power Tolerance (per branch)	2	2	
Number of Transmitter Branches	2	2	
Total Output Power - all branches	15886.56	15886.56	mW
Maximum EIRP - all branches	1588656.47	1588656.47	mW
Frequency	2025	2025	MHz
MPE Limit from 1.1310	1.000	1.000	mw/cm ²
Un-controlled/General Public Limit			
Minimum Distance to meet MPE Limit	355.56	355.56	cm
(100% Duty Cycle)	139.87	139.87	inches

Table 1: 100% Duty Cycle Calculation

Sourced Based Duty Cycle Adjustment			
Total Frames in Radio Frame	10	10	
Frames for Transmit	8	8	
Frames for Receive	2	2	
Percentage time transmitting in Tx timeslot	100	100	%
Power Control Attenuation	0	0	dB
Duty Cycle Correction Factor	80.00	80.00	%
Minimum Distance to meet MPE Limit	318.02	318.02	cm
(80.00% Duty Cycle)	125.11	125.11	inches

Table 2: Source Based Averaging Duty Cycle Calculation

The calculations above show the General Dynamics Broadband 2GHz Band RN2410 Base Station complies with the un-controlled /General Public limit of $1.0\text{mW}/\text{cm}^2$ at a minimum distance of 3.2m for operation using either 5MHz or 10MHz channel sizes.

Yours Faithfully



P Warburg
Principal Engineer
General Dynamics Broadband.