

25th May 2016

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

RE: 2GHz Band Outdoor Unit FCC ID: PKTODUBBR MPE Calculation

To Whom It May Concern,

The General Dynamics Broadband 2GHz Band Outdoor Unit is considered to be mobile equipment and intended for operation with a minimum separation distance between the user and the equipment. The equipment is classed as a TV Pickup Station and operates under Part 74 Subpart F. The equipment is not certified under any of the rule parts identified in FCC rule 2.1091 c1 or c2 and is therefore categorically excluded from routine RF exposure evaluation under FCC rule 2.1091 c3. Equipment operating under Part 74 Subpart F is not covered by FCC rules 1.1307 (b)(1) and (b)(2) and therefore under FCC rule 1.1307 (b)(2)(v) is categorically excluded from routine RF exposure evaluation.

To ensure that adequate information is provided to the user, an RF exposure evaluation has been performed to determine minimum separation distances to comply with the Un-controlled / General Public MPE RF exposure limits. The equipment operates using Time Division Duplex (TDD) technology and source based averaging has been applied in the RF exposure calculation.

MPE Distance Calculation	6 or 12MHz Channel						
	6	12	15	18	21	24	
Antenna Gain	6	12	15	18	21	24	dBi
Line Loss	0	0	0	0	0	0	dB
Antenna Gain Ratio	3.98	15.85	31.62	63.10	125.89	251.19	
2GHz Band ODU Tx Output Power	39	39	39	39	39	39	dBm
Upper Power Tolerance	1	1	1	1	1	1	dB
Output Power mW inc. Tolerance	10000	10000	10000	10000	10000	10000	mW
Maximum EIRP (per Channel)	39.81	158.49	316.23	630.96	1258.93	2511.89	W
Maximum EIRP (per Channel)	16.00	22.00	25.00	28.00	31.00	34.00	dBW
Maximum ERP (per Channel)	24266	96605	192752	384592	767361	1531087	mW
Maximum ERP (per Channel)	24.27	96.61	192.75	384.59	767.36	1531.09	W
Frequency	2025	2025	2025	2025	2025	2025	MHz
MPE Limit from 1.1310	1.000	1.000	1.000	1.000	1.000	1.000	mw/cm ²
Un-controlled/General Public Limit							
Min Distance to meet MPE Limit	56.29	112.30	158.63	224.08	316.52	447.09	cm
(100% Duty Cycle)	22.14	44.18	62.41	88.15	124.51	175.88	inches

Table 1: 2GHz Band - MPE Calculation 100% Duty Cycle

Sourced Based Duty Cycle Adjustment	Antenna Gain						
	6	12	15	18	21	24	dBi
Total Timeslots in Frame	10	10	10	10	10	10	
Timeslots for Transmit	6	6	6	6	6	6	
Timeslots for Receive	4	4	4	4	4	4	
Percentage time transmitting in Tx timeslot	100	100	100	100	100	100	%
Power Control Attenuation	0	0	0	0	0	0	dB
Duty Cycle Correction Factor	60.00	60.00	60.00	60.00	60.00	60.00	%
Minimum Distance to meet MPE Limit	43.60	86.99	122.88	173.57	245.17	346.31	cm
(80.00% Duty Cycle)	17.15	34.22	48.34	68.28	96.45	136.24	inches

Table 2: 2GHz Band - MPE Calculation with Source Based Averaging

The calculations above show the 2GHz Band Outdoor Unit FCC ID: PKTODUBBR complies with the Un-controlled /General Public limits at a minimum distances and antenna gains as specified in table 2 above.

Yours Faithfully



P Warburg
Principal Engineer
General Dynamics Broadband