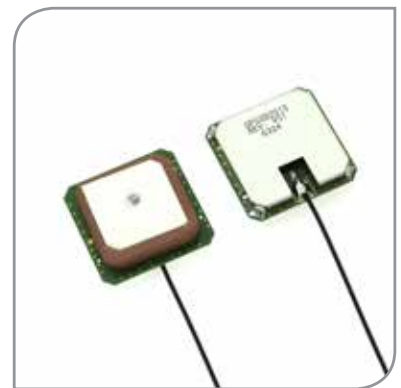




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EMBEDDED ISM APPLICATIONS SELECTION GUIDE



App.	Type	Pulse Part Number	RF Performance						ME requirement			Note
			Freuency Range (MHz)	RL Min. (dB)	Peak Gain (dBi)		Efficiency (%)		Antenna DIM. (LxWxH,mm)	GC-area (L x W,mm)	Evaluation Board Size (L x W,mm)	
					Peak	Band edges	Peak	Band edges				
868MHz (868MHz-870MHz)	Ceramic chip	W3000	868-870	-15	-1.4	-1.5	30	29	7 x 1.6 x 1.6	20 x 9.50	40 x 20	Vertical, tuned by stripline on PCB
		W3013	868-870	-11	1.5	1.4	65	64	10 x 3.2 x 4.0	10.80 x 8.25	80 x 37	Center edge
		W3016	868-870	-19	-2.2	-2.5	25	23	10 x 3.2 x 4.0	11.50 x 7	25 x 25	Corner, Small GC-area and PCB
	Helical	W3117	869-894	-9	0	-1.3	56	40	12.4 x 8 x 2.5	8 x 40	100 x 40	Horizontal, Center top
		W3118A	869-894	-9	0	-1.4	52	38	2.5 x 8 x 8	6 x 11	100 x 40	Vertical, Corner
915MHz (902MHz-928MHz)	Ceramic chip	W3012	902-928	-6	2	0.5	70	50	10 x 3.2 x 4	10.80 x 8.25	100 x 37	Center edge
		W3014	880-960	-7	-0.5	-1	45	40	10 x 3.2 x 1.5	40 x 16	96 x 40	Center Top
	Helical	W3112A	902-928	-10	0.9	-0.3	67	50	2.5 x 8 x 8	6 x 11	100 x 40	Vertical, Corner
		W3113	902-928	-10	0.8	-0.3	66	51	12.4 x 8 x 2.5	8 x 40	100 x 40	Horizontal, Center top
Combo 868/915MHz and 2.4GHz	Direct PCB	W3331	863-928	-6	1.7	0.9	64	53	45 x 10 x 0.8	45 x 4.5	119 x 102	Corner, Small GC-area and PCB, Dual feeds
			2400-2500	-12	4	1.5	85	69				
	Direct PCB	W3333	863-928	-8	2.4	1.8	75	-	40 x 15 x 0.8	40 x 4.5	119 x 102	Corner, Small GC-area and PCB, Dual feeds
			2400-2500	-12	4.5	3.0	85	66				
433MHz	Ceramic chip	W3015	433 +/- 1	-10	1.6	-	78	-	10 x 3.2 x 4.0	10.60 x 14	200 x 37	Center edge
	Helical	W3127	433-435	-15	-2.9	-	-	-	35.35 x 9.90	8 x 40	100 x 40	Center Top
315 MHz	Helical	W3126	315	-10	-5	-	-	-	35.35 x 9.90	8 x 40	100 x 40	Center Top
169 MHz	Helical	W3100	169MHz	-10	-4	-	55	-	91 x 9.8	-	95 x 45	coil on free space

Note: 1. ISM application for 902MHz-928MHz band (center frequency 915MHz). 2. Applications from ECA chart for 862MHz-890MHz. (a) Alarms: 868.6-869.7MHz, (b) RFID: 865-868MHz, (c) Tracking, tracing, and data acquisition: 870-875.6MHz, and (d) Wireless audio/multimedia: 863-865MHz. 3. "Stock" Stocked parts are typically available from Pulse distribution partners immediately.

EMBEDDED 2.4 & 5GHZ COMBO APPLICATIONS SELECTION GUIDE

App.	Type	Pulse Part Number	RF Performance						ME requirement			Note
			Operating Frequency (MHz)	RL Min. (dB)	Peak Gain (dBi)		Efficiency (%)		Antenna DIM. (LxWxH,mm)	GC-area (L x W,mm)	Evaluation Board Size (L x W,mm)	
					Peak	Band edges	Peak	Band edges				
Single WiFi, BT, Zigbee	Ceramic chip	W3000	2400-2483.5	-18	2.5	2.1	65	55	7 x 1.6 x 1.6	6.00 x 11.00	40 x11	3 Matching components Horiz. mount
				-12	2.2	1.5	53	45		6.00 x 20.00	30 x 20	
		W3001		-6	1.5	0.5	75	60	10 x 3.2 x 4.0	10.80 x 6.25	80 x 37	On Ground solution
		W3008		-8	1.7	0.7	70	55	3.2 x 1.6 x 1.1	4.00 x 4.25	80 x 37	
		W3008C		-11	2.2	1.9	75	70	3.2 x 1.6 x 1.1	4.00 x 6.25	80 x 37	
		W3043		-12	4		70		3.2 x 1.6 x 1.1	12 x 20	37 x 20	Small PCB size
		W3092		-6	2	0	60	43	2 x 1.2 x 0.55	8 x 2.5	110 x 55	Small antenna size
	Helical	W3108		-8	1.5		50		5.0 x 2.5 x 5.5	7.50 x 5.50	100 x 40	Vertical SMD @ Corner
Dual WiFi	Ceramic chip	W3006	2400-2483.5	-8	3.2	2.7	70	65	10 x 3.2 x 1.5	11.60 x 6.00	80 x 37	
			5150-5850	-10	4.2	3.0	80	70				
		W3078	2400-2483.5	-10	1.7	1.0	65	55	3.2 x 1.6 x 1.1	11.15 x 6.40	80 x 37	@ Corner
			4950-5850	-6	4.3	3.7	80	55				
		W3079	2400-2483.5	-13	2.5	1.3	72	60	3.2 x 1.6 x 1.1	11 x 6	80 x 37	Center
			4950-5850	-8	5.7	3.3	78	55				
Combo GPS+WiFi or ISM 868/915 + WiFi	Ceramic chip	W3056	2400-2483.5	-8	3.2	2.5	80	70	10 x 3.2 x 1.5	10.80 x 6.25 (Notch)	100 x 40	Single feed and 2.4GHz WiFi
			1575.42+ 10	-10	2.5	1.5	75	65				
		W3064C	2400-2483.5	-11	-0.7	-1.7	80	70	10 x 3.2 x 1.5	10.80 x 6.40 (Divided)	96 x 45	Dual feed and 2.4GHz WiFi
			1575.42 + 10	-15		-2.0	70	60				
		W3095	2400-2483.5	-11	2.5	1.5	85	80	10 x 3.2 x 1.5	17.80 x 6.45	70 x 35	Dual feed and Dual WiFi + GPS/Glonass/Beidou
			4950-5850	-6	3.5	1.0	70	50				
			1559-1610.5	-10	1.5	0.8	75	60				
		W3320	863-928	-8	1.5	0.8	67	55	10 x 3.2 x 2	12 x 9.5	120 x 50	Center, Dual feed
			2400-2500	-6	3.4	1.4	61	45		4.6 x 3.95		

*NOTE: 1. Recommended minimum GND dimensions of PIFA type and Monopole’s are roughly 40x20mm and 30x20mm (or 40x11mm), respectively. Need to construct matching values to optimize antenna performance on surrounding mechanics and materials. 2. Pulse offers very unique GPS+WiFi combo antennas on single ceramic chip (10x3.2x1.5mm). There are three different types of combo antennas. W3056 (2.4G Wifi +GPS, single feed), W3064C (2.4G WiFi+GPS, dual feed), and W3095 (2.4G and 5G Wifi +GPS/Glonass/Beidou, dual feed). 3. “Stock” Stocked parts are typically available from Pulse distribution partners immediately.



EMBEDDED GPS/GLONASS/BEIDOU APPLICATIONS SELECTION GUIDE

App.	Type	Pulse Part Number	RF Performance								ME requirement			Note
			Operating Freuency (MHz)	RL Min. (dB)	RHCP Gain (dBic)		Linear Gain (dBi)		Efficiency (%) / (dB)		Antenna DIM. (LxWxH,mm)	GC-area (L x W,mm)	Evaluation Board Size (L x W,mm)	
					Peak	Band Edges	Peak	Band Edges	Peak	Band Edges				
GPS Only	Ceramic chip	W3000	1575.42 + 1.023	-15	-3.9	-4.1	0.3	0	50/-3	45/-3.5	7 x 1.6 x 1.6	6 x 20	30 x 20	3 Matching components
		-12		-3.5	-3.9	0.1	-0.2	50/-3	45/-3.5	6 x 11		40 x 11		
		W3009		-11	0.2	-0.6	3	2.3	83/-0.8	70/-1.5	10 x 3.2 x 4.0	10.80 x 6.25	80 x 37	On Ground shunt 3.3pF
	W3011	-12		0.85	0.5	3.4	3	85/-0.7	80/-1	3.2 x 1.6 x 1.1	4.00 x 4.25	80 x 37	w/o matching	
	Patch	W3213		-13	-1.5	-	-	-	-	-	13 x 13 x 4	-	30 x 30	
		W3099		-14	3.5	-	-	-	-	-	25 x 25 x 4	-	70 x 70	
	Helical	W3110		-16	-2.1	-2.4	1.3	0.7	47/-3.3	43/-3.7	5.0 x 2.5 x 5.5	7.50 x 5.50	100 x 40	Vertical SMD, @ Corner
GPS, Glonass, & Beidou	Ceramic chip	W3000	1561 + 2/ 1575.42 + 1.023/ 1602.56 + 4	-18	-0.2		2.4	1.5	70/-1.55	65/-1.9	7 x 1.6 x 1.6	6 x 10	80 x 37	3 Matching components, Horiz. Mount + @Corner
		W3010		-12	1	0	3	2.2	75/-1.25	70/-1.5	10 x 3.2 x 2	10.80 x 6.25	80 x 37	@ Position1 shunt 3.3pF
		W3011A		-12	1.5	0.4	3	1.8	70/-1.55	50/-3.0				@ Position2 shunt2.2pF
		W3062A		-16	1	-0.4	3.7	2.5	88/-0.6	70/-1.5	3.2 x 1.6 x 1.1	4.00 x 6.25	80 x 37	Shunt 1.8pF
		W3062A		-10	0	-0.5	2.5	2.0	80/-1	60/-2.1	7 x 1.6 x 1.6	7.80 x 5.25	80 x 37	Shunt 2.2pF
	Patch	W3216	1575.42 + 1.023/ 1602.56 + 4	-7	-2	-	-	-	60	50	13 x 13 x 5	-	50 x 50	
		W3223		-10	4	3.5	-	-	97/-0.2	93/-0.6	25 x 25 x 4	-	70 x 70	TS 16949
		W3224		-10	2.5	2.0	-	-	95/-0.5	79/-2	18 x 18 x 4	-	70 x 70	SMD
W3225	-10	3		-	-	-	96/-0.3	92/-0.7	25 x 25 x 4	-	70 x 70	SMD		
Iridium	Patch	W3228	1621 + 4	-15	4.8	4.3	-	-	84	80	25 x 25 x 4	-	60 x 60	Iridium certified, AR < 2
Iridium/ GNSS		W3227	1559-1660	-10	4.2	0.0	-	-	91	70	40 x 40 x 6.6	-	63 x 63	Iridium certified, VSWR < 3.5 @ 1532-1709MHz
WiFi and GPS Combo	Ceramic chip	W3056	2400-2483.5	-8	-	-	3.2	2.5	80	70	10 x 3.2 x 1.5	10.80 x 6.25 (Notch)	100 x 40	Single feed and 2.4GHz+GPS
			1575.42 + 1.023	-10	-	-	2.5	1.5	75	65				
		W3064C	2400-2483.5	-11	-	-	-0.7	-1.7	80	70	10 x 3.2 x 1.5	10.80 x 6.40 (Di-vided)	96 x 45	Dual feed and 2.4GHz+GPS
			1575.42 + 1.023	-15				-2.0	70	60				
		W3095	2400-2483.5	-10	-	-	2.7	1.5	85	80	10 x 3.2 x 1.5	17.80 x 6.45	80 x 50	Dual feed and Dual WiFi+GPS/Glonass
			4950-5850	-6	-	-	3.7	1.0	73	53				
			1575-1610	-8			1.7	0.7	75	62				

NOTE: 1. Recommended minimum GND dimensions of PIFA type and Monopole are roughly 40x20mm and 30x20mm (or 40x11mm), respectively. Need to construct matching values to optimize antenna performance on surrounding mechanics and materials. 2. Pulse offers very unique GPS+WiFi combo antennas on single ceramic chip (10x3.2x1.5mm). There are three different types of combo antennas. W3056 (2.4G Wifi +GPS, single feed), W3064C (2.4G WiFi+GPS, dual feed), and W3095 (2.4G and 5G Wifi +GPS/Glonass/Beidou, dual feed). 3. “Stock” Stocked parts are typically available from Pulse distribution partners immediately.

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EMBEDDED FOR CELLULAR APPLICATIONS 2G/3G/4G/5G SELECTION GUIDE

App	Type	Pulse Part Number	RF Performance						ME requirement			Note
			Frequency range (MHz)	RL Min. (dB)	Peak Gain (dBi)		Efficiency (%) / (dB)		Antenna DIM. (LxWxH,mm)	GC-area (L x W,mm)	Evaluation Board Size (L x W,mm)	
					Peak	Band Edges	Peak	Band Edges				
LTE	Composite	W3796	698-960	-6	1.5 (Avg. peak gain)		65 (Avg.)		40 x 7 x 3	40.6 x 15	120 x 40.6	- Top mount: Horizontal - Matching: SE3.3nH+SH0.7pF; SH6.8nH
			1427.9-1660.9	-5.5	2 (Avg. peak gain)		55 (Avg.)					
			1695-2200	-6	5.5 (Avg. peak gain)		75 (Avg.)					
			2300-2700	-6	5 (Avg. peak gain)		70 (Avg.)					
Penta Band		W3544A	824-960	-3.7	0.5	1.8	65	44	7.65 x 26 x 3	21 x 33.5 (W3544A)	110 x 50	1. Corner mount (vertical). 2.matching: *SE12nH
			1710-1880	-4.6	2.9	2.3	74	45				
			1850-1990	-8.6	2.4	1.7	74	64				
			1920-2170	-5.6	2.2	1.1	68	60				
		W3544B	824-960	-6.5	1	-0.7	70	53	7.65 x 26 x 3	50 x 18 (W3544B)	110 x 50	1. Top mount (Horizontal) 2.matching: 10nH
			1710-1880	-5.7	2.7	1.7	77	59				
			1850-1990	-9.3	2	1	77	69				
			1920-2170	-5	1.8	0.2	71	58				
Quad band (US)	Ceramic	W3073	824-894	-4.7	0.4	-2.6	51	28	10 x 3.2 x 4	40 x 10	105 x 40	1. Matching: SE10nH+ SE12nH+SH12nH. 2.Tuning strip on PCB.
			1710-1880	-3.5	2.3	0.7	59	40				
			1850-1990	-5.9	2.5	1.6	59	54				
			1920-2170	-3.3	2.2	0.9	58	46				
Quad band (EU)		W3073	880-960	-3.8	1	-1.8	60	34	10 x 3.2 x 4	40 x 10	105 x 40	1. Matching: *SE10nH+ *SE10nH+ *SH15nH. 2.Tuning strip on PCB.
			1710-1880	-4.9	2.9	2	70	54				
			1850-1990	-8	2.9	2.5	71	62				
			1920-2170	-4.4	2.8	2.3	67	59				
Dual band (EU)		W3070	880-960	-5.1	1.2	-0.4	65	47	10 x 3.2 x 2	40 x 10	95 x 40	Matching: *SE18nH+ *SE10nH
			1710-1880	-5.7	2.5	1.5	60	50				

NOTE: 1. "Stock" Stocked parts are typically available from Pulse distribution partners immediately. 2. * SE = Series and *SH = Shunt



INTERNAL FLEXIBLE ANTENNA SOLUTIONS

App.	Type	Pulse Part Number	RF Performance						ME requirement				Note
			Operating Frequency (MHz)	RL Min. (dB)	Peak Gain (dBi)		Efficiency (%)		Antenna DIM. (LxWxH,mm)	Cable Length from edge/ Diameter, mm	Connector Type	Cable Alignment w/ Antenna	
					Max.	Min.	Max.	Min.					
ISM	FPC	W3312B0100	860-930	-8	2.3	-	50 (Avg.)		75 x 15	L:100 / D:1.13	U.FL compatible	Perpendicular	Alternative: W3502, W3538 , W3501
ISM + WiFi Combo	PCB	W3332B0150	863-928	-5	0.2	-	55 (Avg.)		82 x 15 x 0.56	L:150 / D:1.13	U.FL compatible	Perpendicular	ISM 868/915 and 2.4GHz WiFi (two feed cables). Isolation: <-11dB.
			2400-2500	-10	4.1	-	64 (Avg.)						
GNSS	FPC	W3908B0100	1560-1610	-12	0.3	-0.2	36	33	20 x 26.80 x 0.1	L:93 / D:1.13	U.FL compatible	Parallel	
WiFi, BT, Zigbee	PCB	W3525B039	2400-2483.5	-10	2	0.6	65	55	48 x 11 x 0.8	L:100 / D:1.13	U.FL compatible	Perpendicular	w/ adhesive: W3525BTWxxx
		W3593B0100	4900-5850	-10	2	0.5	70	50	45 x 7 x 0.8	L:100 / D:1.13	U.FL compatible	Perpendicular	No adhesive
		W3513B0212	2400-2500; 4900-5850	-13; -10	2;2.7	1.4; 0.4	70; 67	68; 52	16 x 70 x 0.9	L:212 / D:1.13	U.FL compatible	Parallel	No adhesive
		W3919B0050	4900-5925	-10	3.7	2.5	72	50	15.9 x 7.6 x 0.45	L: 50 / D: 1.13	U.FL compatible	Perpendicular	W3919XXXXX (for custom cable length)
	FPC	W3921B0100	2400-2500	-13	1.8	1	57	50	33 x 7.7 x 0.1	L: 100/ D:1.13	U.FL compatible	Perpendicular	W3921XXXXX (for custom cable length)
		W3920B0050	4900-5925	-10	3.7	2.2	75	55	12.5 x 7.6 x 0.15	L: 50 / D: 1.13	U.FL compatible	Perpendicular	W3920XXXXX (for custom cable length)
		W3315B0100MHF1	2400-2500	-10	2	1	75	65	45 x 6 x 0.1	L:100 / D:1.13	U.FL compatible	Parallel	W3315B0100 (MHF-A13) W3315B0100MHFIII (MHFIII 20367 or equivalent)) W3315B0100MHF4 (MHF4)
			4900-5875	-10	5.5	4	85	62					
		W3334B0150	2400-2500	-10	4.8	3.4	53	49	14 x 5 x 0.1	L:150 / D:1.13	U.FL compatible	Parallel	W3334XXXXXX (for custom cable length)
			4900-5900	-10	5.5	3.5	90	65					
		W3917B0050	2400-2500	-10	2.7	1.8	62	53	42.6 x 8.6 x 0.15	L:50 / D:1.13	U.FL compatible	Parallel	W3917XXXX (for custom cable length)
			4900-5925	-10	4.9	3	89	69					
		W3918B0050	2400-2500	-10	3.8	3.4	73	60	35.2 x 8.5 x 0.15	L:50 / D:1.13	U.FL compatible	Perpendicular	W3918XXXX (for custom cable length)
			4900-5925	-10	5.3	3.3	90	70					
MIMO WiFi	FPC	W6102B0100	2400-2500	-10	isolation: -20	2 (Avg.)	45 (Avg.)		50 x 20 x 0.1	L:100 / D:1.13	U.FL compatible	Perpendicular	Two cables (2x Dual WiFi)
			4900-5900	-10	isolation: -20	5 (Avg.)	75 (Avg.)						
		W6103B0100	2400-2500	-10	isolation: -15	4.5 (Avg.)	70 (Avg.)		80 x 20 x 0.1	L:100 / D:1.13	U.FL compatible	Perpendicular	Three cables (3x Dual WiFi)
			4900-5900	-10	isolation: -15	5 (Avg.)	75 (Avg.)						
3G	PCB	W3502B0020	824-960; 1710-1990	-6; -4	2; 2.4	0.8; -0.4	78; 80	55; 70	43 x 17 x 0.5	L:20 / D:1.13	U.FL compatible	Perpendicular	80mm ground plane with 5mm gap
		W3538B0200	824-960; 1710-2170	-6; -6	-	-	57; 71	41; 50	40 x 15 x 0.7	L:200 / D:1.13	U.FL compatible	Perpendicular	
	FPC	W3501B0140	824-960; 1710-1990	-7; -8	1.5; 4.2	0.8; 2.8	61; 71	50; 50	87 x 25 x 0.2	L:140 / D:1.13	U.FL compatible	Perpendicular	W/ adhesive: W3571B0140.
3G + GNSS Combo	FPC	W3915	880-960; 1710-2170	-6; -8	3; 3.5	1; 2.8	73; 87	51; 75	74 x 19 x 0.2	L:100/ D:1.13	U.FL compatible	Perpendicular	Two cables (1x GSM900, 1x GPS/Glonass)
			1565-1605	-6	2	0.5	68	55					
4G (LTE)		W3554B0140	698-960; 1710-2690	-5; -8	1.5; 3.9	-0.6; 1.9	75; 86	50; 65	120 x 30 x 0.2	L:140 / D:1.13	U.FL compatible	Perpendicular	W/ adhesive: W3554B0140T
		W3907B0100	698-960; 1427-1610	-8; -7	2.2; 1.8	-0.5; 0	70; 65	50;50	115.7 x 20 x 0.1	L:100 / D:1.13	U.FL compatible	Perpendicular	
			1695-2700; 3400-3600	-7; -10	3.5; 4	1; 2.5	72; 80	52; 78					
4G + GNSS Combo		W3906B0100	698-960; 1427-1610	-13; -8	2.6; 2.2	-0.6; 1.2	70; 60	50;50	120.4 x 26.8 x 0.1	L:100 / D:1.13	U.FL compatible	Perpendicular	Two cables (1x LTE, 1x GNSS)
			1695-2700; 3400-3600	-7; -10	3.6; 4	1.8; 3.5	76; 85	52; 80					
			1550-1625	-10	2	0.5	37	30					
MIMO 4G (LTE)		W6112B0100	698-960; 1428-2170	-6; -7.5	isolation: -10; -15	4.3; 3.8 (Avg)	55; 68 (Avg.)		224 x 20 x 0.1	L:100 / D:1.13	U.FL compatible	Perpendicular	Two cables (2x LTE)
			2300-3600	-10	isolation: -15	4 (Avg.)	65 (Avg.)						
MIMO 4G + GNSS Combo		W6113B0100	698-960; 1428-2200	-6; -7.5	isolation: -10; -13	2.9; 1.7; 3.4	55; 60; 65 (Avg.)		224 x 20 x 0.1	L:100 / D:1.13	U.FL compatible	Perpendicular	Three cables (2x LTE, 1x GNSS)
			2300-3600	-7.5	isolation: -13	3.8; 4.2	70; 65 (Avg.)						
			1570-1610	-10	isolation: -13	0.8	35 (Avg.)						

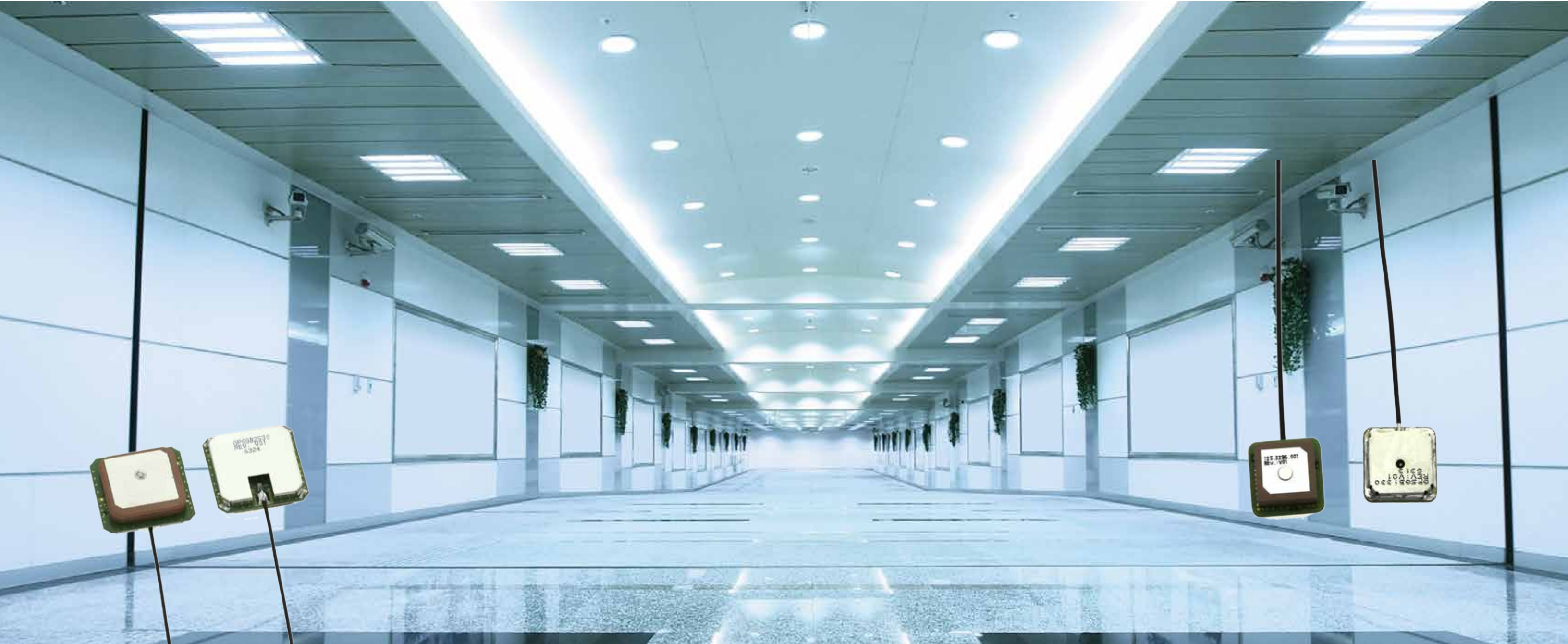
Note: 1. FPC antenna is measured on the 2mm PC plate. 2.Connector: Equivalent of I-PEX MHF 20278-11R-13 or compatible with U.FL connector. 3. Receptacle: Equivalent of I-PEX MHF 20279-001E (3pad), 20441-001E-01(4pad) or compatible with U.FL receptacles. 4.Cable length is a distance between the edge of PCB and the center of connector. 5. See datasheets for details. 6. Contact sales for available or custom cable lengths. Email: antennas.us@pulseelectronics.com. Phone: 800-ANTENNA (268-3662) or 360-944-7551.



INTERNAL ACTIVE GPS MODULES SELECTION GUIDE

App.	Type	Pulse Part number	RF Performance							ME requirement			
			Operating Frequency (MHz)	Antenna Element		LNA				Antenna Dimension (mm)	Overall Dimension (mm)	Connector Type	Coaxial Cable (Length; Diameter)
				VSWR	RHCP Gain (dBic)	Gain (dB)	NF (dB)	Current (mA)	VCC (Vdc)				
GNSS (GPS, Glonass, BeiDou, and Galileo)	Ceramic patch with LNA	GPSGB1315	1561 +/- 2.046, 1575.42 +/- 10.23, and 1602.5625 +/- 4 MHz	2	-1 + 1	15 + 2	< 2.4	< 6	3.3-5 + 0.5	13x13x5	16x17x8.15	IPEX MHF 20278	L:100; D:1.13
		GPSGB1330		2	-1 + 1	30 + 2	< 2.4	< 6	3.3-5 + 0.5	13x13x5	16x17x8.15	IPEX MHF 20278	L:100; D:1.13
		GPSGB2515		2	1 + 1	15 + 2	< 2.4	< 6	3.3-5 + 0.5	25x25x4	30x30x8	IPEX MHF 20278	L:100; D:1.13
		GPSGB2530		2	1 + 1	30 + 2	< 2.4	< 6	3.3-5 + 0.5	25x25x4	30x30x8	IPEX MHF 20278	L:100; D:1.13

Note: 1. Further detailed specs such as 'Out of band rejection' of LNA can be found on a datasheet.



INTERNAL NFC APPLICATIONS SELECTION GUIDES

App.	Type	Pulse Part number	RF Performance								Mechanical requirement		Note
			Frequency (MHz)	With matching network			Without matching network (Bare coil)				Package type	Dimension (in/mm)	
				Reading distance EMVCo (mm)	Reading Distance Grid Scan (Avg.,mm)	Impedance (ohm)	Self resonant frequency (MHz)	Inductance (uH)	Resistance (ohm)	Q-Factor			
NFC	Flex only	W7001	13.56	40	33	50/80	100	0.9	1.55	49	A	0.98 x 0.98 x 0.005 (25 x 25 x 0.12)	Without a GND near antenna
	Flex with Ferrite	W3579	13.56	40	28	50/80	42	1.6	3.60	37.8	B	1.38 x 1.97 x 0.012 (50 x 50 x 0.30)	On GND solution
		W7013	13.56	20	25	50/80	71.5	1.05	2.70	33	C	1.18 x 0.98 x 0.014 (30 x 25 x 0.36)	
	Flex with twisted pair cable + connector	W7000	13.56	-	36	50	75.5	1.27	2.20	49	F	1.69 x 1.34 x 0.005 (43x 34 x 0.11)	Adhesive tape under coil included
	Wire loop on plastic carrier	W7002	13.56	40	35	50/80	89	0.65	0.95	57	D	3.72 x 2.24 x 0.14 (94.6 x 56.8 x 3.65)	Optimized for metal proximity within the device
WiFi and NFC combo	Trace on PCB	W5100	13.56	-	-	50	65.9	0.95	-	44	E	1.57 x 1.57 x 0.05 (40 x 40 x 1.2)	Test setup over 80x80 mm metal GP
			2400-2483.5	RL Min. (dB): -8		Peak Gain in free space: -1dBi		Peak Gain on Metal: 1dBi		-			
		W5101	13.56	-	-	50	57.6	1.13	-	46	E	1.77 x 1.77 x 0.05 (45 x 45 x 1.2)	Test setup over 80x80 mm metal GP
			2400-2483.5	RL Min. (dB): -8		Peak Gain in free space: 0.5dBi		Peak Gain on Metal: 1.5dBi		-			

NOTE: 1. Wire assembly option: Picoblade connector with wire. 2. "Stock" Stocked parts are typically available from Pulse distribution partners immediately.



Visit our website to learn more: pulselarsenantennas.com



EXTERNAL FOR MULTI-BAND APPLICATIONS SELECTION GUIDE



	Type	Pulse Part number	RF Performance			Mechanical requirement					Note
			Frequency range (MHz)	RL Min. (dB)	Peak Gain (dBi)	Height (mm)	Diameter(mm)	Package type	Connector	IP-rate	
						straight (Bent)	Max (Min)				
ISM	Stick/Swivel	W1063	868-928	-7.5	3	195 (172)	13 (6)	B	RP-SMA		
		W1063M	902-928	-10	3	195 (172)	13 (6)	B	SMA (m)		
	Stick/ no Swivel	W5012	868-928	-8	2	179	10	A	RP-SMA	IP65	
		W5017	868-928	-8	2	179	10	A	SMA (m)		
		W5021	868-928	-8	2	171	10	G	RP-SMA (Right angle)		
WiFi (2.4GHz)	Stick/Swivel	W1010	2400-2500	-10	2	108 (86)	10 (7.8)	B	SMA(m)		
		W1030	2400-2500	-10	2	108 (86)	10 (7.8)	B	RP-SMA		
		W1027	2400-2500	-11	3.2	136 (110)	10 (6)	C	RP-SMA		
		W1037	2400-2500	-10	3.2	197 (170)	13.2 (7.4)	C	RP-SMA		
		W1038	2400-2500	-10	3.2	197 (170)	13.2 (7.4)	C	RP-SMA		Color option (Grey)
		W1059	2400-2500	-10	5	195 (154)	13 (6)	C	SMA (m)		
	Stick/ no Swivel	W5001	2400-2500	-10	1.5	128	10 (6)	G	RP-SMA (Right angle)	IP65	
		W5010	2400-2500	-10	1.5	130	10 (6)	A	RP-SMA		
		W5011	2400-2500	-10	1.5	130	10 (6)	A	SMA (m)		
		W5039	2400-2500	-10	2	94	10 (6)	F	RP-SMA	IP67	
WiFi (5GHz)	Stick/Swivel	W1028B	5150-5850	-9	2	136 (114)	9.2 (6)	C	RP-SMA		
WiFi Dual (2.4GHz + 5GHz)	Blade/ Swivel	W1043	2400-2500; 5150-5850	-10	2	157 (130)	17.6 (13)	E	RP-SMA		
		W1044	2400-2500; 5150-5850	-10	2	157 (126)	17.6 (13)	E	SMA (m)		
		SPDA17RP2400/5900	2400-2500; 4900-5900	-10	0.8; 5.9	175 (150)	21.8 (13.7)	H	RP-TNC		
WiFi Dual (2.4GHz + 5GHz)	Stick/ no Swivel	W5028	2400-2500; 5150-5850	-10	0	128	10 (6)	G	RP-SMA (Right angle)	IP65	
2G	Blade/ Swivel	SPDA24850/1900	824-894; 1850-1990	-7.5	0; 1.5	176 (147)	21.8 (13.7)	H	SMA (m)		
		SPDA17850/1900	824-894; 1850-1990	-10	0; 1.2	176 (147)	21.8 (13.7)	H	TNC		
3G	Stick/ no Swivel	W1900	824-960, 1710-2170	-4;-6	0.5; 2.5	49	8	D	SMA (m) (Right angle)		Tested on ground plane (70x50mm)
		W1902	824-960, 1710-2170	-4;-6	0.5; 2.5	49	8	D	RP-SMA (Right angle)		
		W1910	824-960, 1710-2170	-4;-6	0.5; 2.5	49	10.4	F	SMA (m)		
		W1911	824-960, 1710-2170	-4;-6	0.5; 2.5	49	10.4	F	RP-SMA		
	Blade/ Swivel	SPDA17806/ 2170	806-960; 1710-2170	-7.5	0.5; 0.5	192 (159)	23.8 (15.7)	H	TNC		Medium Grey
4G	Blade/ Swivel	SPDA24700/ 2700	698-960; 1710-2170; 2500-2700	-7.5	0.6; 1.5; 3.4	223 (192)	23.8 (15.6)	H	SMA (m)		
		W5084K	698-960; 1447-1510; 1710-2170; 2500-2700	-8	1.5; 2.5	229 (198)	29 (15.5)	H	SMA (m)	IP65	W5084 (TNC)
		W5095K		-9	2.0; 3.0	229 (198)	43 (15.5)	H	SMA (m)	IP65	W5095 (TNC)

EMBEDDED ONTO / SOLDERED TO PCB

- Antenna Technology:** Ceramic monopoles, ceramic PIFA, ceramic patch, helical; stamped metal, composite.
- Frequencies: WLAN(Wi-Fi), Zigbee, Bluetooth, ISM, GPS, 3G/4G LTE, Multi bands.
 - Applications: OEM equipment, medical devices, security systems, tracking and monitoring devices, handhelds, meter reading, smart devices, sensors, wearables, fitness, beacons, and more.



Pulse offers a wide range of surface mount antennas (SMD) for wireless device applications. Pulse ceramic technology results in robust antenna designs that have outstanding performance. These antennas have an inherent immunity to surrounding antenna signals and hand-effect, which makes them exceptionally suitable solutions for small hand-held or wall-mount devices with multiple antennas. Pulse helical antenna technology provides high-performance antennas in a small package that can be easily deployed. Our composite antennas offer the most frequency bands per embedded technology. These ceramic, helical, and composite antennas require minimal ground plane removal for operation, which means saved board space and economical implementation. The SMD compatibility of Pulse’s antenna products makes them simple and easy to mount.

CERAMIC								
Application	Part No.	Size ⁴ (mm)/Type	Mount Type ³ (mm)	Frequency Range (MHz)	RHCP Gain ⁵ (dBic)	Max Gain (dBi)	Efficiency (%/dB)	Return Loss (dB MIN)
WiFi	W3001	10x3.2x4mm Ceramic	SMD, GC 10.8x6.25	2400	N/A	1.5 (peak)	75/-1.25	-6
WiFi Dualband	W3079	3.2X1.6X1.1 Ceramic	SMD, GC area 11.00x6.00	2400–2483.5 5150–5850	N/A	2.4 (peak) 5.7 (peak)	72% (peak) 78% (peak)	-13 -8
WiFi Dualband	W3006	10.0x3.2x1.5 Ceramic	SMD, GC area 11.60x6.00	2400–2483.5	N/A	3.2 (peak) 4.2 (peak)	70% (peak) 80% (peak)	-8 -10
Bluetooth/WiFi	W3092	2.0x1.2x0.55 Ceramic	SMD, GC area 8.00x2.50	2400–2483.5	N/A	2,2 (peak)	75/-1.3 (peak)	-11
Bluetooth/WiFi	W3008C	3.2x1.6x1.1 Ceramic	SMD, GC area 4.00x6.25	2400–2483.5	N/A	2,2 (peak)	75/-1.3 (peak)	-11
GPS	W3009	10.0x3.2x4.0 Ceramic	SMD, GC area 10.80x6.25	1575.42 ±10	0.7 (peak) 0.3 (band edges)	3 (peak)	80/-1.25 (peak)	-10
ISM	W3013	10x3.2x4 Ceramic	GC area 10.8x8.25	868-870	--	1.5	65	-11
WiFi & GPS	W3056	10x3.2x1.5 Ceramic	GC area 10.8x6.25 (Notch)	2400-2483.5 / 1575.42	--	3.2 / 2.5	80 / 75	-8 / -10
WiFi & GPS	W3064C	10x3.2x1.5 Ceramic	GC area 10.8x6.4 (Divided)	2400-2483.5 / 1575.42	--	-0.7 / -1	80 / 70	-11 / -15
GPS	W3213	13x13x4 Patch	--	1575.42	-1.5	--	--	-13
GPS	W3216	13x13x5 Patch	--	1575.42	-2	--	60	-7
GPS	W3099	25x25x4 Patch	--	1575.42	3.5	--	--	-14

1. All antennas are RoHS Compliant

2. Operating temperature -40°C to +85°C

3. GC = Ground Clearance, mm

4. Length x Width x Height

5. Monopole antenna performance is linked to different tuning circuit recommendations for the variety of applications. Consult the data sheet for more information

CERAMIC (CONTINUED)								
Application	Part No.	Size (mm)/Type	Mount Type ³ (mm)	Frequency Range (MHz)	RHCP Gain (dBic)	Max Gain (dBi)	Efficiency (%/dB)	Return Loss (dB MIN)
GPS/Glonass & Beidou	W3062A	7X1.6X1.6 Ceramic	GC area 7.8x5.25	1559-1591 & 1598-1610	0	2.5	80 / -1	-10
Dual Band (EU)	W3070	10x3.2x2 Ceramic	GC area 40x10	880-960 / 1710-1880	--	1.2 / 2.5	65 / 60	-5.1 / -5.7
Dual WiFi	W3078	3.2x1.6x1.1 ceramic	GC area 11.15x6.4	2400-2483.5 / 4950-5850	--	1.7 / 4.3	65 / 80	-10 / -6
WiFi & GPS	W3095	10x3.2x1.5 Ceramic	GC area 17.8x6.45	2400-2483.5 / 4950-5850 / 1559-1610.5	--	2.7/3.7/1.7	85/53/62	-10/-6/-8
ISM, or GPS, or GPS/Glonass/BD	W3000 ⁵	7x1.6x1.6 tuneable monopole	See datasheet	868-870; 1559-1591 & 1598-1610; 1575.4	See datasheet	See datasheet	See datasheet	See datasheet
GPS	W3010	10.0x3.2x2.0 Ceramic	SMD, GC area 10.80x6.25	1575.42 ±10	-0,2 (peak)	2,8 (peak)	75/-1,25 (peak)	-18
GPS	W3011/A	3.2x1.6x1.1 Ceramic	SMD 4x4.25/6.25	1575.42 ±10	0.85 (peak)	3.4 (peak)	85/-0.7 (peak)	-12
ISM 900	W3012	10x3.2x4 Ceramic	SMD GC area 10.80x8.25	902-928	N/A	2 (peak)	70/- 1.55 (peak)	-6
ISM 868/915 Monopole	W3014 ⁵	10x3.2x1.5 Ceramic	SMD GC area 40x16	848-888/ 895-935	N/A	1.55 (peak)	45/- 4.5 (peak)	-6
Zigbee, ISM Monopole	W3043 ⁵	3.2x1.6x1.1 Ceramic	SMD GC area, 17x20	2400, 1575 and other	N/A	4 (peak)	70/-1.55 (peak)	-12
ISM 868/985 2.4 BT/WiFi	W3320	10x3.2x2.0 Ceramic	SMD GC area, 9.8x8.8	868, 915, 2400	N/A	1.5 (peak) 3.4 (peak)	66 / - (peak) 67 / - (peak)	-8 -6

HELICAL								
Application	Part No.	Size (mm)/Type	Mount Type ³ (mm)	Frequency Range (MHz)	RHCP Gain (dBic)	Max Gain (dBi)	Efficiency (%/dB)	Return Loss (dB MIN)
WiFi	W3108	5.0x2.5x5.5 Helical	SMD, GC area 7.50x5.50	2400–2483.5	N/A	1.5	50/-3	-8
GPS	W3110	5.0x2.5x5.5 Helical	SMD, GC area 7.50x5.50	1575.42 ±10	-2,1 (peak) -2,4 (band edges)	1,3 (peak) 0,7 (band edges)	47/-3,3 (peak) 43/-3,7 (band edges)	-16
ISM	W3112A	2.5x8.0x8.0 Helical	SMD, GC area 6.00x11.00	902–928	N/A	0.9 (peak) -0.3 (band edges)	67/-1.7 (peak) 50/-3 (band edges)	-10
ISM	W3113	12.4x8.0x2.5 Helical	SMD, GC area 8.00x40.00	902–928	N/A	0.8 (peak) -0.3 (band edges)	66 /-1.8 (peak) 51/-2.9(band edges)	-10
ISM (315)	W3126	35.35x9.90 Helical	GC area 8x40	315	N/A	-5	--	-10
ISM (433)	W3127	35.35x9.90 Helical	GC area 8x40	433-435	N/A	-2.9	--	-15

COMPOSITE								
Application	Part No.	Size (mm)/Type	Mount Type ³ (mm)	Frequency Range (MHz)	RHCP Gain (dBic)	Max Gain (dBi)	Efficiency (%/dB)	Return Loss (dB MIN)
2G/3G	W3544A/B	26x7.65x3 Composite	SMD	824-960/1710-2170	N/A	-1	50%	-6 ave
2G/3G	W3073	10x3.2x4 Composite	SMD	824-894/1710-2170 or 880-960/1710-2170	N/A	2.9	50%	-6 ave
3G / 4G LTE	W3796	40 x 7 x 3	GC area 15 x 40	698 - 2700	N/A	1.5 / 2/ 5.5	55 / 70	-6

1. All antennas are RoHS Compliant

2. Operating temperature -40°C to +85°C

3. GC = Ground Clearance, mm

4. Millimeters (mm)

5. Monopole antenna performance is linked to different tuning circuit recommendations for the variety of applications. Consult the data sheet for more information

INTERNAL ANTENNAS



- Located inside the device.
- Often connected by a short cable assembly to customer PCB.
- Technology: Flexible printed circuit (FPC), PCB, Patch.
- Frequencies: WLAN, Bluetooth, Zigbee, ISM, GPS, 3G/4G LTE, Multi bands.
- Typical applications: Access points, industrial controls, utilities, Internet of Things, M2M, telemedicine, handheld devices, point-of-sale equipment, sensors, lighting, transportation and other devices.

PRINTED CIRCUIT BOARD ANTENNA SOLUTIONS						
Application	Frequency	Part Number	Mechanical Dimensions (in/Mm)	Cable Length (mm) /Connector Type	Gain (dBi)	Efficiency (%)
2G / 3G	850/900/1800/1900	W3501	0.98 x 3.43 x .008 25 x 87 x 0.2	56/ I-PEX Connector	1.5 / 1.5 / 3.5 / 3.5	50 to 55 %
2G / 3G	850/900/1800/1901	W3502	1.69 x 0.67 x 0.02 43 x 17 x 0.5	27.5/ I-PEX Connector	2 / 1 / 1 / 2	40 to 60 %
WiFi	2.4 GHz	W3525Bxxx	0.42 x 1.88 x .031 10.7 x 47.7 x 0.8	Various cable lengths/ I-PEX Connector	2	70%
WiFi	2.4 & 5 GHz	W3513	0.63 x 2.76 x 0.04 16 x 70 x 0.9	250/ I-PEXConnector	2	50 to 72 %
WiFi	2.4 & 5 GHz	W3315B0100	0.23 x 1.8in / 6x45 mm	100, I-PEX, MHF Series	-3.5 / -2.5	70%
3G 4G LTE	698-960 / 1710-2170 / 2300-2700	W3554B0140	120 x 30 x 0.2	143 / I-PEX	2.5	60%
5 GHz Dipole	4900-5850	W3593B0100	45 x 7 x 0.8	109mm / I-PEX	2	50%

ANTENNAS FOR NEAR FIELD COMMUNICATIONS								
Frequency (MHz)*	Part Number	Read Distance (mm)*	Size (mm)	SRF (MHz)**	Inductance (uH)**	Resistance (Ohms)**	Q **	Matched Q ***
13.56	W3579	40	35 x 50 x 0.30	42	1.6	3.6	37.8	5-30
13.56	W7001	40	25 x 25 x 0.12	100	0.9	1.55	49	5-30
13.56	W7002	40	94.6 x 56.8 x 3.65	89	0.65	0.95	57	5-30
13.56	W7013	20	25 x 30 x 0.23	-	-	-	-	-

* With Matching Network
** Coil Without Matching Network
*** With Matching Network (adjustable range)

ANTENNA INTEGRATION

- Pulse can assist your engineering team to place/fix the antenna in the housing of the device. Antenna position, orientation, and cable routing can all impact the efficiency of the antenna inside the device.
- PCB-based antennas are best placed on flat surfaces for both physical and RF stability with the surrounding structure. Adhesives, slots, or snap-in features can be designed to hold antennas in place.
- FPC-based antennas are provided with adhesive tape for easy assembly in the device.



GPSGB1315 and GPSGP1330
13 x 13 Active GNSS Module

GPSGB2515 and GPSGP2530
25 x 25 Active GNSS Module

W5100 Pairmate
NFC + BT/WiFi

W5101 Pairmate
NFC + BT/WiFi

PULSE INTERNAL ACTIVE ANTENNAS FOR GNSS (GPS/ GLONASS/BEIDOU, GALILEO) APPLICATIONS													
App.	Type	Pulse Part Number	RF Performance							ME requirement			
			Operating Frequency (MHz)	Antenna Element		LNA (low noise amplifier)				Antenna Dimension (mm)	Overall Dimension (mm)	Connector type	Coaxial Cable (Length; Diameter)
				VSWR	RHCP Gain (dBic)	Gain (dB)	NF (dB)	Current (mA)	VCC (Vdc)				
GNSS (GPS, Glonass, BeiDou, and Galileo)	Active Module	GPSGB1315	1561 +/- 2.046, 1575.42 +/- 10.23, and 1602.5625 +/- 4 MHz	2:1	-1 ± 1	15 ± 2	< 2.4	< 6	3.3-5.0 +/- 0.5	13x13x5	16x17x8.15	IPEX MHF 20278 or Equiv.	L:100; D:1.13
		GPSGB1330		2:2	-1 ± 1	30 ± 2				13x13x5	16x17x8.15		L:100; D:1.13
		GPSGB2515		2:3	1 ± 1	15 ± 2				25x25x4	30x30x8		L:100; D:1.13
		GPSGB2530		2:4	1 ± 1	30 ± 2				25x25x4	30x30x8		L:100; D:1.13

Note: 1. Further detailed specs such as ‘Out of band rejection’ of LNA can be found on a datasheet.

PAIRMATE ANTENNAS							
Part Number	Frequency	Impedance	Size mm/inches	SRF	Inductance (uH)	Q Factor	BlueTooth Gain, dBi
W5100	13.56 + 2400 (NFC + BT/ WiFi)	50	40x40x1.3 1.57x1.57x0.051	65.9	0.95	44	1.0
W5101	13.56 + 2400 (NFC + BT/ WiFi)	50	45x45x1.3 1.77x1.77x0.051	57.6	1.13	46	1.5

INTERNAL ANTENNAS

PRINTED CIRCUIT BOARD ANTENNA SOLUTIONS - MIMO AND MULTI-BAND										
Application	Type	Pulse Part Number	RF Performance				Mechanical Requirements			Note
			Operating Frequency (MHz)	RL Min. (dB)	Peak Gain (dBi Max)	Efficiency, Max %	Antenna DIM. (LxWxH,mm) / Coax Orientation	Cable Length from PCB edge/ Coax Diameter, mm)	Connector Type; / Adhesive	
ISM WiFi Combo	FPC	W3312B0100	860-930	-8	2.3	50 (Avg)	75 x 15 Perpendicular	L:100 / D:1.13	U.FL compatible / Adhesive Included	Alternative: W3502, W3538 , W3501
ISM WiFi Combo	PCB	W3332B0150	863-928	-5	0.2	55 (Avg)	82 x 15 x 0.56 Perpendicular	L:150 / D:1.13	U.FL compatible / Adhesive Included	ISM 868/915 and 2.4GHz WiFi (two feed cables). Isolation: <-11dB.
			2400-2500	-10	4.1	64 (Avg)				
WiFi, BT, Zigbee	PCB	W3525B039	2400-2483.5	-10	2	65	48 x 11 x 0.8 Perpendicular	L:100 / D:1.13	U.FL compatible / Adhesive Not Incl.	
		W3593B0100	4900-5850	-10	2	70	45 x 7 x 0.8 Perpendicular	L:100 / D:1.13	U.FL compatible / Adhesive Not Incl.	
		W3513B0212	2400-2500	-13	2	70	16 x 70 x 0.9 Parallel	L:212 / D:1.13	U.FL compatible / Adhesive Included	
			4900-5850	-10	2.7	67				
	FPC	W3921B0100	2400-2500	-13	1.8	57	33 x 7.7 x 0.1 Perpendicular	L: 100/ D:1.13	U.FL compatible / Adhesive Included	W3921BXXXX (for custom cable length)
		W3315B0100M-HF1	2400-2500	-10	2	75	45 x 6 x 0.1 Parallel	L:100 / D:1.13	U.FL compatible / Adhesive Included	W3315B0100 (MHF-A13) W3315B0100MHFIII (MHFIII 20367)
			4900-5875	-10	5.5	85				
		W3334B0150	2400-2500	-10	4.8	53	14 x 5 x 0.1 Parallel	L:150 / D:1.13	U.FL compatible / Adhesive Included	
			4900-5900	-10	5.5	90				
		W3917B0050	2400-2500	-10	2.7	62	42.6 x 8.6 x 0.15 Parallel	L:50 / D:1.13	U.FL compatible / Adhesive Included	Parallel cable alignment. See W3917BXXXX (for custom cable length)
			4900-5925	-10	4.9	89				
		W3918B0050	2400-2500	-10	3.8	73	35.2 x 8.5 x 0.15 Perpendicular	L:50 / D:1.13	U.FL compatible / Adhesive Included	Perpendicular cable alignment. See W3918BXXXX(for custom cable length)
	4900-5925		-10	5.3	90					
MIMO WiFi	FPC	W6102B0100	2400-2500	-10	2 (Avg.)	45 (Avg)	50 x 20 x 0.1 Perpendicular	L:100 / D:1.13	U.FL compatible / Adhesive Included	Isolation: -20 dB
			4900-5900	-10	5 (Avg.)	75 (Avg)				
	FPC	W6103B0100	2400-2500	-10	4.5 (Avg.)	70 (Avg)	80 x 20 x 0.1 Perpendicular	L:100 / D:1.13	U.FL compatible / Adhesive Included	Isolation: -15 dB
			4900-5900	-10	5 (Avg.)	75 (Avg)				
3G	PCB	W3502B0020	824-960	-6	2	78	43 x 17 x 0.5 Perpendicular	L:20 / D:1.13	U.FL compatible / Adhesive Included	80mm ground plane with 5mm gap inside plastic box
			1710-1990	-4	2.4	80.0				
		W3538B0200	824-960	-6	-	57	40 x 15 x 0.7 Perpendicular	L:200 / D:1.13	U.FL compatible / Adhesive Included	
			1710-2170	-6	-	71				
4G (LTE)	FPC	W3501B0140	824-960	-7	1.5	61	87 x 25 x 0.2 Perpendicular	L:140 / D:1.13	U.FL compatible / Adhesive Not Incl.	Test unit : 150x100x40. With Adhesive: W3571B0140.
			1710-1990	-8	4.2	71.0				
		W3554B0140	698-798	-5	1.5	75	120 x 30 x 0.2 Perpendicular	L:140 / D:1.13	U.FL compatible / Adhesive Included	Connected on a test board 120x120 with 10mm gap
			824-960	-7	1.8	80				
			1710-2690	-8	3.9	86				
		MIMO 4G (LTE)	W6112B0100 (2 leads)	698-960	-6	isolation: -10	55 (Avg)	224 x 20 x 0.1 Perpendicular	L:100 / D:1.13	IPEX MHF 20278 or equiv. / Adhesive Included
1428-2170				-7.5	isolation: -14	68 (Avg)				
2300-3600				-10	isolation: -15	65 (Avg)				
MIMO 4G (LTE)		W6113B0100 (3 leads)	698-960	-6	isolation: -10	55 (Avg)	224 x 20 x 0.1 Perpendicular	L:100 / D:1.13	IPEX MHF 20278 or equiv. / Adhesive Included	GPS (1575MHZ)
			1428-2170	-7.5	isolation: -14	68 (Avg)				
			2300-3600	-10	isolation: -15	65 (Avg)				





EXTERNAL ANTENNAS



- Radome included - cosmetics may matter.
- Not for outdoor weatherproof environments (not IP67)
- Technology: Dipoles, blades, external patches.
- Cable assemblies or connector options.
- Frequencies: WLAN, 3G/4G LTE, ISM, GPS, Multi-bands.
- Typical applications: Access points, industrial controls, utilities, Internet of Things, M2M, telemedicine, handheld devices, point-of-sale equipment, sensors, lighting, transportation and other devices.

Pulse's new line of wireless access point antennas offers flexible and economical solutions for wireless device OEMs. These antennas offer superior transmission and reception between wireless access points. They are compatible with IEEE 802.11a/b/g/n/ac, Bluetooth, 3G/4G LTE, ZigBee and ISM frequency band applications. All wireless access point antennas are RoHS compliant. For high-volume orders, Pulse can custom design antennas for OEMs. This includes alternative frequencies and a variety of cable and connector options for antenna assemblies.

WIFI (WLAN) ANTENNAS1,2					
Part Number	Frequency	Max Gain (dBI)	Length (inches/mm)	Application/Standard	Connector
W1063	900 MHz	3.0	6.65 /169	ISM 868 & 915 MHz	RP SNA
W1010 ³	2.4 GHz	2.0	3.3/83	802.11b/g/n/ac, Bluetooth, ZigBee	SNA Male
W1030	2.4 GHz	2.0	3.25/82.5	802.11b/g/n/ac, Bluetooth, ZigBee	RP SMA
W1037	2.4 GHz	3.2	6.65/169	802.11b/g/n/ac, Bluetooth, ZigBee	RP SNA
W1038	2.4 GHz	4.9	6.65/169	802.11b/g/n/ac, Bluetooth, ZigBee	RP SNA
W1027	2.4 GHz	3.2	4.88/124	802.11b/g/n/ac, Bluetooth, ZigBee	RP SMA
SB24003	2.4 GHz	2.14	2.5/132	802.11b/g/n/ac, Bluetooth, ZigBee	RP SNA
W1043	2.4 & 5.8 GHz	2.0	4.59/117	802.11b/g/n/ac, Bluetooth, ZigBee	
W1028B	5.15 & 5.85 GHz	2.0	4.88/124	802.11a/b/g/n/ac, ISM 5.8 GHz	RP SNA



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When you need an antenna, what better way than to remember 1-800-ANTENNA (268-3662). Our knowledgeable Customer Support staff is available to assist you.

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Europe: antennas.eu@pulseelectronics.com

Asia: antennas.as@pulseelectronics.com

PULSE NO-NONSENSE™ WARRANTY

Every effort is made to assure the integrity and long life of each Pulse product. In the unfortunate event a problem does occur, you will find us ready to make it right!

Duration of warranty is one year from date of purchase.

Pulse will repair or replace without charge any Larsen antenna product which fails for any reason during the warranty period. Pulse is not responsible for any incidental or consequential damages due to failure of the antenna under this warranty or any implied warranty. This exclusion may not apply to all areas of the USA or Canada.

WIFI BROADBAND					
Model	Frequency (MHz)	Gain (dBI)	Max Height (in)	VSWR	Connector
SPDA17RP2400/5900	2400-2500 4900-5900	2	6 (Bent)	2.1	RPTNC
		5	7 (Straight)		
SPDA17806/2170LAR	806-960 1710-2170	.5	6 (Bent)	2.5:1	TNC
		.5	7.5 (Straight)		
SPDA24700/2700	698-960 1710-2170 2500-2700	6	7.7 (Bent) 9 (Straight)	2.5:1	SMA Male
		1.5			
		3.4			



SPDA17RP2400/5900



SPDA24700/2700



SPDA17806/2170LAR

INTERNAL ANTENNAS

SINGLE-BAND EXTERNAL ANTENNAS WITH I-PEX			
Part Number	Frequency	Mechanical Length	Cable Length
W1049B030	2.4GHz	3.25/82.5	3/76
W1049B050	2.4GHz	3.25/82.5	5/127
W1049B090	2.4GHz	3.25/82.5	9/229
W1049B120	2.4GHz	3.25/82.5	12/305



Pulse offers a wide variety of alternative wireless solutions for applications including machine-to-machine, public safety, hand-held radios, and telematics.

ADDITIONAL 3G/4G LTE, ISM, UHF, VHF, GPS, IP67						
Part Number	Frequency (MHz)	Gain (dBi)	Description	Length (in/mm)	Coax	Connector
SPDA24918	863-973	0	Swivel Mount Dipole (E)	8 / 202	N/A	SMA Male
W1900; W1902	824-960/ 1710-1990/ 1920-2170	1 / 2 / 2.5	Penta Rt Angle Stubby (F)	2.1 / 49.5	N/A	SMA Male / RP-SMA Male
W1910; W1911	824-960/ 1710-1990 / 1920-2170	1 / 2 / 2.5	Penta Band Stubby (G)	2 / 49	N/A	SMA Male / RP-SMA Male
W4000G197	1.574 GHz	1.5 dBic / 26dB LNA	GPS Ultra Thin (H)	n/a	200 / 5meter	SMA Male
SP-DA17RP2400/5900	2400-2500/ 4900-5900	1.6/5	Swivel Mount Dipole (J)	7/182	N/A	RPTNC
SB450FME3	450-470	2.14	Stealth Blade (A)	10/254	3' RG-174	FME
SB8003	806-896	2.14	Stealth Blade (A)	2.5/132	3' RG-174	No Conn
SB9003	890-960	2.14	Stealth Blade (A)	2.5/132	3' RG-174	No Conn
SPDA24850/1900	824-894/1850-1990	0/1.2	Swivel Mount Dipole (J)	6.75/171	N/A	SMA
SPDA24700/2700	698-960 / 1710-2710 / 2500-2700	.6/1.5/3.4	LTE Swivel Mount Dipole (J)	9 / 228	N/A	SMA Male
SPWB23150	136-174	-4.5	Wideband (D)	6.75/171	N/A	SMA F T3
SPWH23832	782-882	0	Whip, Standard, ¼ Wave (C)	3/76	N/A	SMA F T3
SPHS24832	800-864	0	Helical, Standard, ¼ Wave (B)	3/76	N/A	SMA F T2
SPDA17806/2170LAR	806-960/1710-2170	.5/.5	Pentaband Swivel Mount Dipole (J)	7.5/190.5	N/A	TNC Male
W1920GO915	806-960/1710-2170	1.5	Stealth Blade (A)	4.3/110	3' RG-174	SMA Male
W1920G3658	806-960/1710-2170	1.5	Stealth Blade (A)	4.3/110	9' RG-174	SMA Male



ICE BLADE (IP67) (XXXX)



Now Available: IceBlade Transparent Antennas

- LTE Model with SMA : Pulse part : ICEBLADELS
- LTE Model with TNC : Pulse part : ICEBLADELT
- WiFi Model with SMA : Pulse part : ICEBLADEWS
- WiFi Model with TNC : Pulse part : ICEBLADEWT

See PulseAntennas website for performance data.

Stealth Blade antennas have the following specifications:

Gain: 2.14 dBi
Maximum Power: 3 Watts
Polarization: Linear

STEALTH BLADES					
Model	Frequency (MHz)	Bandwidth % @1.5/2.1	Dimensions L x W (In)	Coax	Connector
SB698SMA3	698-960 / 1710-2170 / 2300-2700	50/60	4.2 x 1	3' RG-316	SMA
SB698SMA12	698-960/1710-2170/2300-2700	50/60	4.2 x 1	12' RG316	SMA
SB8003	806-896	67/90	5.2 x .75	3' RG-174	No Conn
SB80012	806-896	67/90	5.2 x .75	12' RG-174	No Conn
SB800FME3	806-896	67/90	5.2 x .75	3' RG-174	FME
SB800FME12	806-896	67/90	5.2 x .75	12' RG-174	FME
SB800MPL3	806-896	67/90	5.2 x .75	3' RG-174	MPL
SB800MPL12	806-896	67/90	5.2 x .75	12' RG-174	MPL
SB800SMA3	806-896	67/90	5.2 x .75	3' RG-174	SMA
SB800TNC3	806-896	67/90	5.2 x .75	3' RG-174	TNC
SB800TNC12	806-896	67/90	5.2 x .75	12' RG-174	TNC
SB9003	890-960	67/90	5.2 x .75	3' RG-174	No Conn
SB90012	890-960	55/70	5.2 x .75	12' RG-174	No Conn
SB900SMA3	890-960	55/70	5.2 x .75	3' RG-174	SMA
SB900SMA12	890-960	55/70	5.2 x .75	12' RG-174	SMA
R380.900.323	806-960 / 1710-1990		5 X .8	10' RG-174	FME
R380.900.334	806-960 / 1710-1990		5 X .8	10' RG-174	SMA



WA700



SB



R380

Frequencies: 700-960 / 1710-1990 / 2110-2170 / 2500-2700
Low Band Gain: 2.5 dBi Average
High Band Gain: 3.5 dBi Average
Pattern: Omni Directional

MIMO LTE WALL MOUNT ANTENNA				
Part Number	Cable Type	Antenna Size (inches/mm)	Cable Length (inches/mm)	Connector
WA700/2700SMA	RG - 174	5.85 x 5 x 0.2 / 149 x 127 x 5.1	39.4 / 1000	MA Male
WA700/2700RPSMA	RG - 174	5.85 x 5 x 0.2 / 149 x 127 x 5.1	39.4 / 1000	Reverse Polarity SMA

GPS

GPS single band direct mount antennas have the following specifications:

- Frequency:** 1575.4
- Gain:** 5 dBic
- Gain:** 28 dB ± 2 dB
- Pattern:** Hemispherical
- Mounting:** Direct Feed
- Feed:** 5/8" hole
- Polarization:** Right-Hand Circular
- Coax:** 17' RG-174 LNA
- Voltage:** 5 V DC
- Color:** Black
- Size:** .7" H x 2.5" Dia

GPS DIRECT MOUNTS		
Model	Connector	Color
GPSDM02	MCX	Black
GPSDM04	MMCX	Black
GPSDM06	SMB	Black
GPSDM08	SMA	Black



GPSDM

Contact factory for upcoming GNSS models covering GPS, Glonass, Beidou/Compass and Galileo.



GPS combi whip direct mount antennas have the following specifications:

- LNA Gain:** 26 dB ± 2 dB
- Polarization:** Right-Hand Circular/Vertical
- Mounting:** Direct Feed
- Feed:** 5/8" hole
- Color:** Black
- Pattern:** Hemispherical / Omni
- Coax:** 16.4' RG-174 / 16.4' RG-174
- Voltage:** 5 V DC
- Base Size:** Size: 2" W x 2.3" L x 0.7" H

GPS COMBI WHIP DIRECT MOUNTS				
Model	Frequency (MHZ)	Gain (dBi/dBic)	Whip Length (In)	Connector
GPSCW1502	136-174 / 1575.42	2.14/5	22	SMA/SMB
GPSCW4501	406-512 / 1575.42	2.14/5	6.25	SMA/SMA
GPSCW4502	406-512 / 1575.42	2.14/5	6.25	SMA/SMB
GPSCW3E8001	806-896 / 1575.42	5/5	11.5	SMA/SMA
GPSCW3E8003	806-896 / 1575.42	5/5	11.5	FME/SMA

GPS single band direct mount antennas have the following specifications:

- Frequency:** 1575.4
- Gain:** 4 dBic
- LNA Gain:** 25 dB ± 2 dB
- Pattern:** Hemispherical
- Mounting:** Direct Feed
- Feed:** 5/8" hole
- Polarization:** Right-Hand Circular
- Coax:** LMR-195
- Voltage:** 3V-5V DC
- Color:** GRAY (PANTONE 427)
- Size:** .87" H x 1.97" Dia

GPS DIRECT MOUNT		
Model	Cable Length	Connector
GPSDM26B0500	19.68" (500mm)	SMA



GPSDM26B0500

Contact factory for upcoming GNSS models covering GPS, Glonass, Beidou/Compass and Galileo.



Questions? Call us at: **+1.800.ANTENNA**



GPS

GPS glass mount single band antennas have the following specifications:

- Frequency:** 1575.4 MHz
- Pattern:** Hemispherical LNA
- Polarization:** Right-Hand Circular
- Mounting:** Double Sided Tape
- Gain:** 1.5 dBi
- Gain:** 26 dB ± 2 dB
- VSWR:** 1.5:1
- Voltage:** 3V or 5V DC

GLASS MOUNT				
Model	Size H x L x W (In)	Color	Cable	Connector
GPSGMSMA	.2 x 3 x 1.2	Black	16.4' RG-174	SMA
GPSGMSMB	.2 x 3 x 1.2	Black	16.4' RG-174	SMB



GPSGM

GPS low profile single band antennas have the following specifications:

- Frequency:** 1575.4 MHz
- Pattern:** Hemispherical LNA
- Polarization:** Right-Hand Circular
- Mounting:** NMO Mount
- Gain:** 5 dBi
- Gain:** 28 dB ± 2 dB
- VSWR:** 2.0:1
- Voltage:** 5V DC

GPS LOW PROFILE SINGLE BAND				
Model	Size H x L x W (In)	Color	Cable	Connector
GPSNMO01	1.3 x 2.9	White	Order Separately	Order Separately
GPSNMO02	1.3 x 2.9	Black	Order Separately	Order Separately
GPSNMO07	1.3 x 2.9	White	17' RG-58/U	SMB
GPSNMO08	1.3 x 2.9	Black	17' RG-58/U	SMB
GPSNMO09	1.3 x 2.9	White	17' RG-58/U	SMA
GPSNMO10	1.3 x 2.9	Black	17' RG-58/U	SMA



GPS LOW PROFILE



GPS0015

GPS TIMING ANTENNA							
Model	Frequency (MHz)	Dimensions H x W (In)	Polarization	Voltage	Color	Mounting	Connector
GPS0015	1575.42 ± 1.023	25	4 x 4.5	RHCP 4V-15V DC	White	Bracket	N Male

GPS LTE DIRECT MOUNTS									
Model	Frequency (MHz)	Gain (dBi)	Polarization	VSWR	Mounting	Voltage	Size H x Dia (in)	Cable	Connector
GPSDM700/2500FFS	698-960/1710- 2170/2300-2700	3	Linear Vertical	2.0:1	3/4" Hole	3 or 5	3.5 x 4.16	17' RG-58	FME
2400-2485/5150-5850		6	Linear Vertical					17' RG-58	FME
	1575.42	5 dBic	RHCP					17' RG-174	SMA

MODEL	LTE		WIFI		GPS	
	CABLE	CONN.	CABLE	CONN.	CABLE	CONN.
GPSDM700/5800SSS	17' RG-58	SMA	17' RG-58	SMA	17' RG-174	SMA
GPSDM700/5800GGT	17' RG-58	SMA	17' RG-58	RP-SMA	17' RG-174	SMA
GPSDMW700/5800SSS	17' RG-58	SMA	17' RG-58	SMA	17' RG-174	SMA



GPSDM700/2500FFS

GPSDM700/5800SSS

Direct mount antennas have the following specifications:

- Frequency:** 824-960 / 1710-2170 / 1575.4 MHz
- Gain:** 2 dBi / 2 dBi / 5 dBic
- Pattern:** Omni / Omni / Hemispherical
- Polarization:** Vertical / Vertical / Right-Hand Circular
- Mounting:** Direct Feed 3/4" hole
- VSWR:** <2.0:1
- LNA Gain:** 26 dB ± 2 dB
- Voltage:** 3V or 5V DC
- Coax:** 16.4' RG-174 / 16.4' RG-174

GPS & CELLULAR COMBO DIRECT MOUNT			
Model	LTE	Wifi	GPS
GPSCP00	7.6 x 3.4 x 1.3	Black	TNC/SMA
GPSCP01	7.6 x 3.4 x 1.3	White	No Conn
GPSCP02	7.6 x 3.4 x 1.3	Black	No Conn/SMA
GPSCP03	7.6 x 3.4 x 1.3	White	No Conn/SMA
GPSCP04	7.6 x 3.4 x 1.3	Black	No Conn/SMB
GPSCP05	7.6 x 3.4 x 1.3	White	No Conn/SMB
GPSCP06	7.6 x 3.4 x 1.3	Black	SMA/SMA
GPSCO07	7.6 x 3.4 x 1.3	White	SMA/SMA
GPSCP08	7.6 x 3.4 x 1.3	Black	MPL/SMA
GPSCP09	7.6 x 3.4 x 1.3	White	MPL/SMA
GPSCP10	7.6 x 3.4 x 1.3	Black	TNC/BNC
GPSCWCP00	3.9 x 2.3 x 3.2	Black	TNC/SMA
GPSCWCP01	3.9 x 2.3 x 3.2	Black	No Conn/SMA
GPSCWCP02	3.9 x 2.3 x 3.2	Black	No Conn/SMB
GPSCWCP03	3.9 x 2.3 x 3.2	Black	SMA/MPL
GPSCWCP04	3.9 x 2.3 x 3.2	Black	SMA/SMA
GPSCWCP05	3.9 x 2.3 x 3.2	Black	TNC/TNC



GPSCP



GPSCW

GPS

NMOHFGPS mount have the following specifications:

- Frequency:** 1575.4 - 1576.4 MHz
- Polarization:** Right-Hand Circular / Vertical
- Cable:** 16.4’ RG-174 (GPS)
- (NMOHF)
- Size:** .5 x 2 x 4.5
- Mounting:** 5/8” Hole
- Gain:** 5 dBic
- LNA Gain:** 26 dB ± 2 dB
- VSWR:** Less than 2:1 16.4’ RG-58
- Voltage:** 3V or 5V DC
- Color:** Black

GPS DIRECT MOUNT		
Model	Connectors (Mount / GPS)	Color
NMOHFGPSFMENOCNN	FME/No Connector	Black
NMOHFGPSFMESMA	FME/SMA	Black
NMOHFGPSNOCNN	No Connectors	Black
NMOHFGPSSMASMA	SMA/SMA	Black

NOTE: Specifications listed refer to GPS performance. Additional antenna specifications are dependent on the antenna mounted on the NMO side.

GPS single band magnetic mount antennas have the following specifications:

- Frequency:** 1575.4 MHz
- Pattern:** Hemispherical
- Polarization:** Right-Hand Circular
- Cable:** 17’ RG-174
- Gain:** 5 dBic
- LNA Gain:** 26 dB ± 2 dB
- VSWR:** Less than 2:1
- Voltage:** 5V DC

GPS MAGNETIC MOUNT			
Model	Size H x L x W (In)	Color	Color
GPS0002	0.5 x 1.75 x 1.5	Black	MCX
GPS0006	0.5 x 1.75 x 1.5	Black	SMB
GPS0008	0.5 x 1.75 x 1.5	Black	No Conn
GPS0010	0.5 x 1.75 x 1.5	Black	SMA
GPS0012	0.5 x 1.75 x 1.5	Black	BNC

Contact factory for upcoming GNSS models covering GPS, Glonass, Beidou/Compass and Galileo

GPS single band direct mount antennas have the following specifications:

- Frequency:** 1575.4
- Gain:** 4 dBic
- LNA Gain:** 25 dB ± 2 dB
- Pattern:** Hemispherical
- Mounting:** Direct Feed 5/8” hole
- Polarization:** Right-Hand Circular
- Coax:** LMR-195
- Voltage:** 3V-5V DC
- Color:** Gray (Pantone 427)
- Size:** .87” H x 1.97” Dia



GPS DIRECT MOUNT			
Model	Cable Length	Color	Color
GPSPDM26B0500	9.68” (500mm)	Gray (Pantone 427)	SMA

GPSPDM26B0500



GPS Single
Band Mag
Mount



GPSSB



W4165



GPSSLMB

EXTERNAL ANTENNAS

GPS & CELLULAR COMBO STEALTH BLADES ADHESIVE MOUNT								
Model	Frequency (MHz)	Gain (dBi)	Dimensions L x W x D (In)	Polarization	Voltage	Color	Coax	Connector
GPSSB800/2170FS	806 - 960	0 dBi	5.4 x 1.5 x .6	Linear Vert	3V or 5V DC	Black	16.4’ RG-174	FME
	1710 - 2170	0 dBi					16.4’ RG-174	SMA
	1575.4	26 (LNA)		RHCP			16.4’ RG-174	SMA

Contact factory for upcoming GNSS models covering GPS, Glonass, Beidou/Compass and Galileo

GPS, and 3G (or ISM) combination antenna in a low-profile direct mount package.

Size: 3.94” (Dia.) x 1.38” (H) [100mm Dia. x 35mm height]

Mounting: Direct Feed ; 3/4” dia. hole required. [19mm dia. hole required]

W4165 SERIES - MULTIBAND DIRECT MOUNT ANTENNAS : GPS + 3G/ISM					
Model	Application	Frequency (MHz)	Gain (Typical)	Cable	Connection
W4165 (Direct Mount)	GPS	1575.42 +/- 1.023	Antenna RHCP gain: 1 dBic typ. LNA Gain: 26 dB +/- 2dB	RG-174	See Datasheet
		824 - 960	2 dBi	RG-174	See Datasheet
	3G (or ISM)	1710-2170	2 dBi		
W4165MM (Magnetic Mount)	GPS	1575.42 +/- 1.023	Antenna RHCP gain: 1 dBic typ. LNA Gain: 26 dB +/- 2dB	RG-174	See Datasheet
		824 - 960	2 dBi	RG-174	See Datasheet
	3G (or ISM)	1710-2170	2 dBi		

Note: Contact factory for additional configurations of LTE, WiFi, and GPS.

Note: Contact factory for models which include Glonass, Beidou/Compass and Galileo navigation.

GPS, LTE and WiFi combination antenna in a low-profile mobile package.

Size: 5.7” (L) x 5.3” (W) x 0.98” (H) [145mm x 135mm x 25mm] Mounting: Adhesive Mount

Jaguar Series - Multiband Antennas : GPS/GNSS + MIMO LTE + WiFi					
Model	Application	Frequency (MHz)	Gain	Filtering; LNA Voltage	Connection
GPSLPMB401	GNSS	1561.098 +/- 2.046 (Beidou) 1575.42 +/- 1.023 (GPS) 1602.563 +/- 4.0 (GLONASS)	Antenna RHCP gain: 1 dBic typ. LNA Gain: 30 dB +/- 2dB	OOB Rej.: 60-70dB LNA Input: 3.3 - 5 Vdc Input	See Datasheet
		698-960	4.4 dBi (peak)	--	See Datasheet
	LTE 1	1710 - 2690	5.4 dBi (peak)		
		698-960	4.4 dBi (peak)	--	See Datasheet
	LTE 2	1710 - 2690	5.4 dBi (peak)		
		2400-2500	4.5 dBi (peak)	--	See Datasheet
LPMB401	WiFi	4900 - 5950	6 dBi (peak)		
		698-960	4.4 dBi (peak)	--	See Datasheet
	LTE 1	1710 - 2690	5.4 dBi (peak)		
		698-960	4.4 dBi (peak)	--	See Datasheet
	LTE 2	1710 - 2690	5.4 dBi (peak)		
		2400-2500	5 dBi (peak)	--	See Datasheet
LPMB401	WiFi 1	4900 - 5950	6 dBi (peak)		
		2400-2500	5 dBi (peak)	--	See Datasheet
	WiFi 2	4900 - 5950	5 dBi (peak)		
		4900 - 5950	5 dBi (peak)		

Note: Contact factory for additional configurations of LTE, WiFi, and GPS. Contact factory for magnetic mount and direct mount configurations.

MULTI-BAND DATA ANTENNAS

GPS & Cellular combo magnetic mount antennas have the following specifications:

Frequency: 824-960 / 1710-2170 / 1575.4 MHz

Gain: 2 dBi / 2 dBi / 5 dBic

LNA Gain: 26 dB ± 2 dB

Pattern: Omni / Omni / Hemispherical

Polarization: Vertical / Vertical / Right-Hand Circular

VSWR: Less than 2:1

Cable: 17’ RG-174

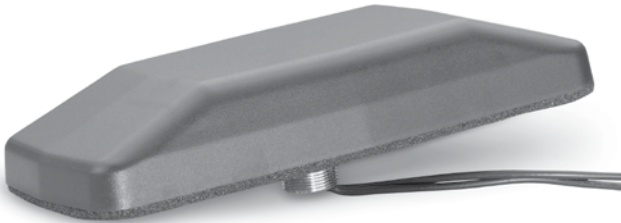
Voltage: 3V or 5V DC



GPS Multi Band Mag Mount

GPS MAGNETIC MOUNT			
Model	H x L x W (In)	Color	Connector
GPSCPMM00	1.3 x 7.6 x 3.4	Black	TNC/SMA
GPSCPMM02	1.3 x 7.6 x 3.4	Black	No Conn/SMA

Contact factory for LTE versions.



ARMCP

GPS, LTE and WiFi combination antenna in a low-profile mobile package.

Size: 7.6” (L) x 3.4” (W) x 1.32” (H) [193mm x 86.4mm x 33.5mm]

Mounting: Direct Feed ; 3/4” hole required.

Armadillo Series - Multiband Vehicular Direct Mount Antennas : GPS + LTE + WiFi				
Model	Application	Frequency (MHz)	Gain (Typical)	Connection
ARMCP402	GPS/Glonass/Beidou	1559-1607	Antenna RHCP gain: 1 dBic typ. LNA Gain: 30 dB +/- 2dB	SMA (m)
		698-960	2 dBi	SMA (m)
	LTE1, LTE2	1710-2690	4 dBi	
		2400-2500	4 dBi	RP-SMA (m)
	WiFi	5150-5925	6 dBi	

Note: Contact factory for additional configurations of LTE, WiFi, and GPS. Contact factory for magnetic mount and adhesive mount configurations. White Housing is available.

MULTI-BAND DATA ANTENNAS

GPS LTE WI-FI MULTI BAND DIRECT MOUNTS									
Model	Frequency (MHz)	Gain (dBi)	Polarization	VSWR	Mounting	Voltage	Size H x Dia (in)	Cable	Connector
GPSDM700/2500FFS (3 cable)	698-960/1710-2170/2300-2700	3	Linear Vertical	2.0:1	3/4” Hole	3 or 5	3.5 x 4.16	17’ RG-58	FME
2400-2485/5150-5850		6	Linear Vertical					17’ RG-58	FME
	1575.42	5 dBic	RHCP					17’ RG-174	SMA



GPSDM700/2500
GPSDM700/5800

ALTERNATE CABLE/CONNECTOR CONFIGURATIONS						
MODEL	LTE		WIFI		GPS	
	CABLE	CONN.	CABLE	CONN.	CABLE	CONN.
GPSDM700/5800SSS	17’ RG-58	SMA	17’ RG-58	SMA	17’ RG-174	SMA



GPSMB501



GPSMB Panther (White)



GPSMB301

PANTHER SERIES - DIRECT MOUNTS								
Model	Application	Frequency (MHz)	Gain (dBi)	VSWR	Mount	Size (in.)	Cable	Conn.
	LTE1, LTE2	698-960 1695-2170 2300-2700 2900-3600	4 (LB) 5 (UB)	1.5:1	7/8” Hole (M22 Nut)	6.5x6x3	17’ RG-58	SMA SMA
GPSMB501 (5 CABLES)		2400-2500 4900-5900	4.5 / 5	1.5:1	7/8” Hole (M22 Nut)	6.5x6x3	17’ RG-58	RP-SMA RP-SMA
	GPS, GLONASS	1564-1610	1.5 (dBic)	1.5:1	7/8” Hole (M22 Nut)	6.5x6x3	17’ RG-174	SMA
GPSMB301	LTE, LTE2	698-960 1695-2170 2300-2700 2900-3600	6 (LB) 5.5 (UB)	1.7:1	7/8” Hole (M22 Nut)	6.5x6x3	17’ RG-58 17’ RG-58	SMA SMA
	GPS, GLONASS	1575-1609	1.5 (dBic)	1.7:1	7/8” Hole (M22 Nut)	6.5x6x3	17’ RG-174	SMA

NOTE: GPSMBMM is a magnetic base for GPSMB501 and GPSMB301. White and black colors available.



Questions? Call us at: **+1.800.ANTENNA**

OUTDOOR TYPES

NOTE: All NMO mount antennas listed in this catalog section require the NMOHF-style (high frequency 27 MHz - 6 GHz) mount.

PUBLIC SAFETY 700/800; 2G/3G/4G LTE; WIFI; DSRC - LOW PROFILE						
Model	Type	Frequency (MHz)	Gain (dBi)	Max Height (In)	VSWR	Cable Assembly
EF2405NMO	Elevated Feed	2400-2500	5	16	<1.5:1	Order Separately
EF4905NMO	Elevated Feed	4900-5000	5	12	<1.5:1	Order Separately
NMO4E4900B	Elevated Feed	4900-5350	4	4.5	2:1	Order Separately
NMO4E5350B	Elevated Feed	5350-5925	4	4.5	2:1	Order Separately
NMO5E2400B	Collinear	2400-2500	2.95	8.5	1.5:1	Order Separately



NOTE: All NMO mount antennas listed in this catalog section require the NMOHF-style (high frequency 27 MHz - 6 GHz) mount.

Public Safety 700/800; 2G/3G/4G LTE; WiFi; DSRC - Low Profile							
Model Black	Model White	ICEFIN Model	Frequency (MHz)	Gain (dBi)	Mount	Size Hx Dia (in)	Power Rating (Watts) Black / White / ICEFIN
LPT825/19NMOHF	N/A	NA	Cellular: 806-960 PCS: 1710-2170 ISM: 2400	3 3 4	NMOHF	3 x 1.75	10 / 10 / NA
LPT2400NMOHF	LPT2400NMOHFW	NA	2400-2500	5	NMOHF	3 x 1.75	10 / 10 / NA
SLPT698/2170NMOHF	SLPT698/2170NMOHFW	ICEFINLNMOHF	LTE: 698-960 PCS: 1710-2170 ISM: 2400-2700	4.5 5.6 4	NMOHF	3 x 1.75	40 / 40 / 30
SLPT2400NMOHF	SLPT2400NMOHFW	ICEFIN24NMOHF	2400-2500	4.3	NMOHF	2.6 x 1.5	35 / 35 / 30
SLPT4900NMOHF	SLPT4900NMOHFW	ICEFIN49NMOHF	4900-5900	5.5	NMOHF	2.6 x 1.5	35 / 35 / 30
SLPT2400/5900N-MOHF	SLPT245NMOHFW	ICEFINWNMOHF	2400-2500 4900-5900	4.3 5.5	NMOHF	2.6 x 1.5	35 / 35 / 30
SLPT698/2170DMN	SLPT698/2170DMNW	ICEFINLDMN	LTE: 698-960 PCS: 1710-2170 ISM: 2400-2700	4.5 5.6 4	Direct (N Female)	3 x 1.75	40 / 40 / 35
SLPT2400DMN	SLPT2400DMNW	ICEFIN24DMN	2400-2500	4.3	Direct (N Female)	2.6 x 1.5	35 / 35 / 30
SLPT4900DMN	SLPT4900DMNW	ICEFIN49DMN	4900-5900	5.5	Direct (N Female)	2.6 x 1.5	35 / 35 / 30

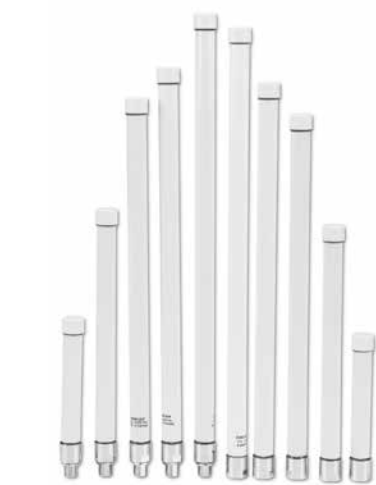
Stealth Blade antennas have a gain of 2.14 dBi, a maximum power of 3 Watts and linear polarization

WIFI, BROADBAND STEALTH BLADES						
Model	Frequency (MHz)	Type	L x W (In)	Color	Coax	Connector
SB24003	2400-2500	Dipole	3 x .75	Black	3' RG-174	No Conn
SB24006	2400-2500	Dipole	3 x .75	Black	6' RG-174	No Conn
SB2400SMA3	2400-2500	Dipole	3 x .75	Black	3' RG-174	SMA
SB2400SMA6	2400-2500	Dipole	3 x .75	Black	6' RG-174	SMA
SB2400SMB3	2400-2500	Dipole	3 x .75	Black	3' RG-174	SMB
SB2400SMB6	2400-2500	Dipole	3 x .75	Black	6' RG-174	SMB
SB2400MMCX3	2400-2500	Dipole	3 x .75	Black	3' RG-174	MMCX
SB2400MMCX6	2400-2500	Dipole	3 x .75	Black	6' RG-174	MMCX



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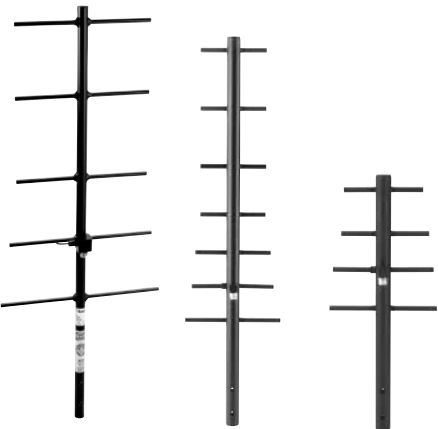
OUTDOOR ANTENNAS



Radome Omnis

Radome Enclosure:
Pultruded Fiberglass
(UV Protected)
VSWR: 2.0:1
Power Rating: 20 Watts
Ingress Protection: IP67
Polarization: Vertical

Suggested mounting brackets
for N Female connectors are
FB2BRACKET or FB3BRACKET.



YA3 Series YA5 Series YA6 Series

Construction: Fully Welded
Elements
Wind Load: 100 mph
VSWR: 2.0:1
Feed Connection: N Female
Power Rating: 300 Watts
Mounting Hardware: Included

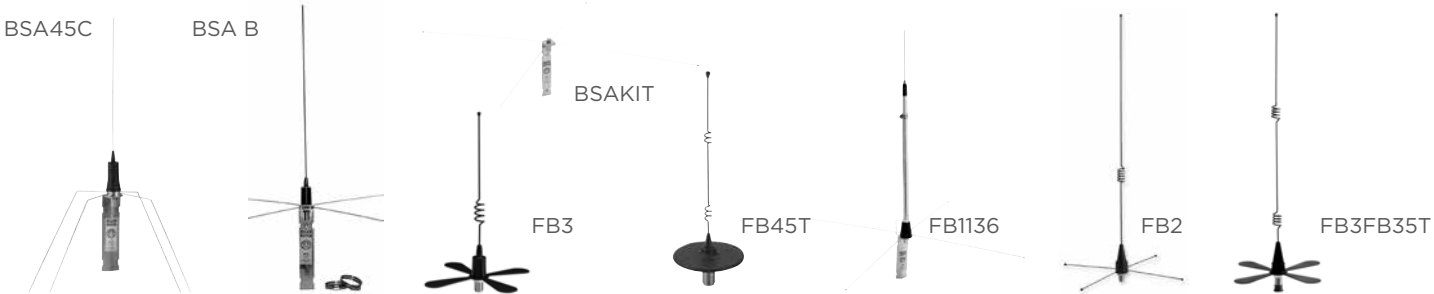
LTE, 4G, BROADBAND RADOME OMNIS				
Model	Frequency (MHz)	Gain (dBi)	Length (In)	Connector
W5067 (1)	698-960 1710-2170 2400-2700	0.7 1.0 2.0	9.1	N Female
RO17102NM(2)	1710-2170	2	4.5	N Male
RO8605NFC(3)	860 - 930	5.0	32	N Female
RO2404NM	2400-2500	4	11.5	N Male
RO2406NF	2400-2500	6	11.5	N Female
RO2406NM	2400-2500	6	11.5	N Male
RO2408NF	2400-2500	8	20	N Female
RO2408NM	2400-2500	8	20	N Male
RO2408NFD (downtilt)	2400-2500	8	20	N Female
RO2408NMD (downtilt)	2400-2500	8	20	N Male
RO2408NFU (uptilt)	2400-2500	8	20	N Female
RO2408NMU (uptilt)	2400-2500	8	20	N Male
RO4910NF	4940-4990	10	18	N Female
RO4910NM	4940-4990	10	18	N Male
RO5206NF	5150-5350	6	6.75	N Female
RO5410NF	5470-5725	10	16.5	N Female
RO5210NF	5150-5350	10	16.5	N Female
RO5210NM	5150-5350	10	16.5	N Male
RO5410NM	5470-5725	10	16.5	N Male
RO5805NF	5150-5825	5	6.75	N Female
RO5805NM	5150-5825	5	6.75	N Male
RO5806NF	5725-5875	6	6.75	N Female
RO5810NF	5725-5875	10	16.5	N Female
RO5810NM	5725-5875	10	16.5	N Male
RO8063/21704NM	806-960	3	8.6	N Male
RO8063/21704NF	1710-2170	4		N Female
RO8061/21702NM	806-960 1710-2170	1 2	16.5 16	N Male
W5030	2400-2500 5150-5875	4 6	6.8 23	N Male
RO3ISMNM	430-440 860-930	2 2.5	21.3	N Male
RO25002NF(2)	2300-2700	2.0	5.1	N Female

(1) 3 Watt Power (2) PIM Rated to -155 dBc (3) Bracket ROKIT Available. Contact Factory.

WIFI, BROADBAND STEALTH BLADES				
Model	Elements	Frequency (MHz)	Gain (dBi)	Length (In)
YA3406WN	5	406-430	11	42.25
YA3450WN	5	450-470	11	36.25
YA5740W	7	740-806	11	32.75
YA6740W	4	740-806	8	19.25
YA5800W	7	806-866	11	31.25
YA6800W	4	806-866	8	17.5
YA5825W	7	824-896	11	31.25
YA6825	4	824-896	8	17.5
YA5900W	7	890-960	11	30
YA6900W	4	890-960	8	17.5

Omni Base Station part numbers ending in “WA” do not include mounting hardware.
All others includes the appropriate FB2BRACKET or FB3BRACKET for mounting. See Page 78 for FB brackets.

OMNI BASE STATION ANTENNAS							
Model	Type	Frequency (MHz)	Gain (dBi)	Max Height (In)	Power Rating (Watts)	Whip Color	Feed Connection
BSA45C	Base Loaded 1/4 λ	45-50	2	51.75	200	Stainless	N Female
BSA118B	5/8 λ	118-121	5.2	64	200	Black	UHF Female
BSA132B	5/8 λ	131-135	5.2	54.5	200	Black	UHF Female
BSA150B	5/8 λ	144-174	5.2	51.75	200	Black	UHF Female
BSA150C	5/8 λ	144-174	2.5	51.75	200	Black	UHF Female
BSA220C	5/8 λ	200-225	5.2	33.75	200	Stainless	UHF Female
BSA406C	5/8 over 1/2 λ	406-420	5.6	32	200	Stainless	UHF Female
BSA440C	5/8 over 1/2 λ	440-460	5.6	32	200	Stainless	UHF Female
BSA450C	5/8 over 1/2 λ	450-470	5.6	32	200	Stainless	UHF Female
BSAKIT	Base Station Ground Plane Kit			200		UHF Female	Stainless
FB1136	5/8 over 1/2 λ	136-230	5.6	96	200	Stainless	UHF Female
FB2406	5/8 over 1/4 λ	406-420	5.4	32.5	200	Black	N Female
FB2450	5/8 over 1/4 λ	450-470	5.4	32.5	200	Black	N Female
FB2406W/A	5/8 over 1/4 λ	406-420	5.4	32.25	200	Black	N Female
FB2420W/A	5/8 over 1/4 λ	420-440	5.4	32.25	200	Black	N Female
FB2450W/A	5/8 over 1/4 λ	450-470	5.4	32.25	200	Black	N Female
FB3800	5/8 over 1/4 λ	806-866	5.4	16	150	Black	N Female
FB3825	5/8 over 1/4 λ	824-896	5.4	16	150	Black	N Female
FB3740WA	5/8 over 1/4 λ	740-806	5.4	16	150	Black	N Female
FB3800WA	5/8 over 1/4 λ	806-866	5.4	16	150	Black	N Female
FB3825WA	5/8 over 1/4 λ	824-896	5.4	16	150	Black	N Female
FB35T800	5/8 over 5/8 over 1/4 λ	806-866	5.4	32	150	Black	N Female
FB35T825	5/8 over 5/8 over 1/4 λ	824-896	5.4	32	150	Black	N Female
FB35T800WA	5/8 over 5/8 over 1/4 λ	806-866	7.2	32	150	Black	N Female
FB35T825WA	5/8 over 5/8 over 1/4 λ	824-896	7.2	32	150	Black	N Female
FB900	5/8 over 1/4 λ	890-960	5.4	16	150	Black	N Female
FB3900WA	5/8 over 1/4 λ	890-960	5.4	16	150	Black	N Female
FB35T900	5/8 over 5/8 over 1/4 λ	890-960	7.2	23	150	Black	N Female
FB35T900WA	5/8 over 5/8 over 1/4 λ	890-960	7.2	23	150	Black	N Female
FB45T2400	5/8 over 5/8 over 1/4 λ	2400-2485	7.2	16.5	100	Black	N Female
FB45T2400WA	5/8 over 5/8 over 1/4 λ	2400-2485	7.2	9	100	Black	N Female





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