RADWIN

Office of Engineering Technology
Federal Communications Commission
7435 Oakland Mills Road
Columbia, MD 21046

Date: February 1, 2015

Subject: Access Point Elevation Angle Consideration
FCC ID: Q3K-5XACMOD

To Whom It May Concern,
Pursuant to the KDB 789033 D02 Section H of the Commission's guidelines following are the Access Point elevation angle installation considerations.

List of investigated access point antennas:

Antenna Type	Model Number	Antenna Gain (dBi)	Min. Tilt (Deg)
Sector Dual Crossed Pole Integrated 120 Deg	MT0128930	11	-27
Sector Dual Crossed Pole Integrated 95 Deg	AM0135060	12	0
Sector Dual Crossed Pole 60 Deg	RW-9061-5002	15.5	-2
Shark Fin Monopole	RW-9401-5002	12.5	0*

* Output Power reduced by 13 dB for compliance

Method used to show compliance

The elevation plane radiation patterns are available therefore calculation was used to show compliance.

This method shows how the installation angle is calculated so that the total EIRP would comply with the 125 mW (21 dBm) EIRP limit.

1. The elevation angles range investigated is 30° to 120° [1]. The horizontal plane is defined as 0° angle.

2. The frequencies investigated are 5.15 GHz and 5.25 GHz at each transmission chain.

3. The "**Consolidated Highest EIRP.**" (worst case scenario) is calculated from the Antenna Elevation Pattern Data tables, by combining the highest gain values found within the 30° to 120° angles range with the highest output power for each port. Following is the calculation method used:

   EIRPa = Porta + Ver. Gain, **EIRPb = Portb + Hor. Gain,**

   Comb. EIRP = EIRPa + EIRPb (calculated separately for channel 5.15 GHz and 5.25 GHz)

   Consolidated Highest EIRP: The highest EIRP value transmitted from either 5.15 or 5.25 GHz channel

[1] Since the dual pole flat panel sector antennas are mounted on staves and tilted downwards (negative elevation angles), there are radiation patterns from angles higher than 90° penetrating the original 30° to 90° angle range. In order to rule out the risk of high gain patterns penetration, an additional arbitrary 30° angle range was investigated.

4. The highest output power is taken from the RDWN34-U6 test report.

5. **Non- Complying Angles Range:** The angles range in which the **Consolidated Highest EIRP** violates the 21 dBm limit. This indicates the range that must be outside the 30° to 90° degrees elevation boundaries.

6. **Max Complying EIRP:** Max EIRP that complies with the 21 dBm limit outside the **Non-Complying Angles Range**

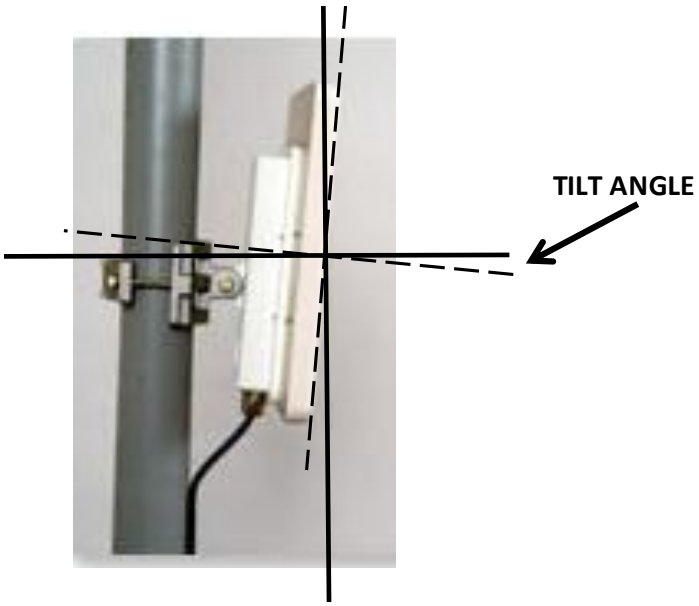
7. **Elevation Angle @ Complying EIRP:** The angle at which the **Max Complying EIRP** was detected

8. **Min Tilt:** The minimum tilt angle needed for installation to bring the device into compliance. The tilt angle is relative to horizontal level 0°.

9. Equation for calculating the minimum tilt angle:

Min Tilt Angle = 30 - [Elevation Angle @ Complying EIRP]-1

10. Omni antenna has no tilt option because of its circular gain and vehicle rooftop assembly configuration. The investigated angle range is 30° to 150°. The output power is reduced by 13 dB to comply with the "**EIRP Limit**". The antenna is a monopole type therefore 2 (two) antennas can be assembled with one device.



Flat Panel Sector Antenna Tilt

11 dBi Antenna

Non-Complying Angles Range	Max Complying EIRP	Elevation Angle @ Complying EIRP	Min Tilt	EIRP Limit	Margin
dBm	dBm	Deg	Deg	dBm	dB
30 - 55	20.97	56	-27	21.00	-0.03

12 dBi Antenna

Non-Complying Angles Range	Max Complying EIRP	Elevation Angle @ Complying EIRP	Min Tilt	EIRP Limit	Margin
dBm	dBm	Deg	Deg	dBm	dB
None	16.46	35	0	21.00	-4.54

14.5 dBi Antenna (including 1 dB feeder cable loss)

Non-Complying Angles Range	Max Complying EIRP	Elevation Angle @ Complying EIRP	Min Tilt	EIRP Limit	Margin
dBm	dBm	Deg	Deg	dBm	dB
30	20.43	31	-2	21.00	-0.57

11.5 dBi Omni Antenna (including 1 dB feeder cable loss)

Non-Complying Angles Range	Max Complying EIRP	Elevation Angle @ Complying EIRP	Min Tilt	EIRP Limit	Margin
dBm	dBm	Deg	Deg	dBm	dB
None	20.39	41	N/A	21.00	-0.61

Omni antenna mounting form

Sincerely,

Roni Barshan
RF Department Manager
RADWIN Ltd.

Antennas Elevation & Output Power Pattern Data

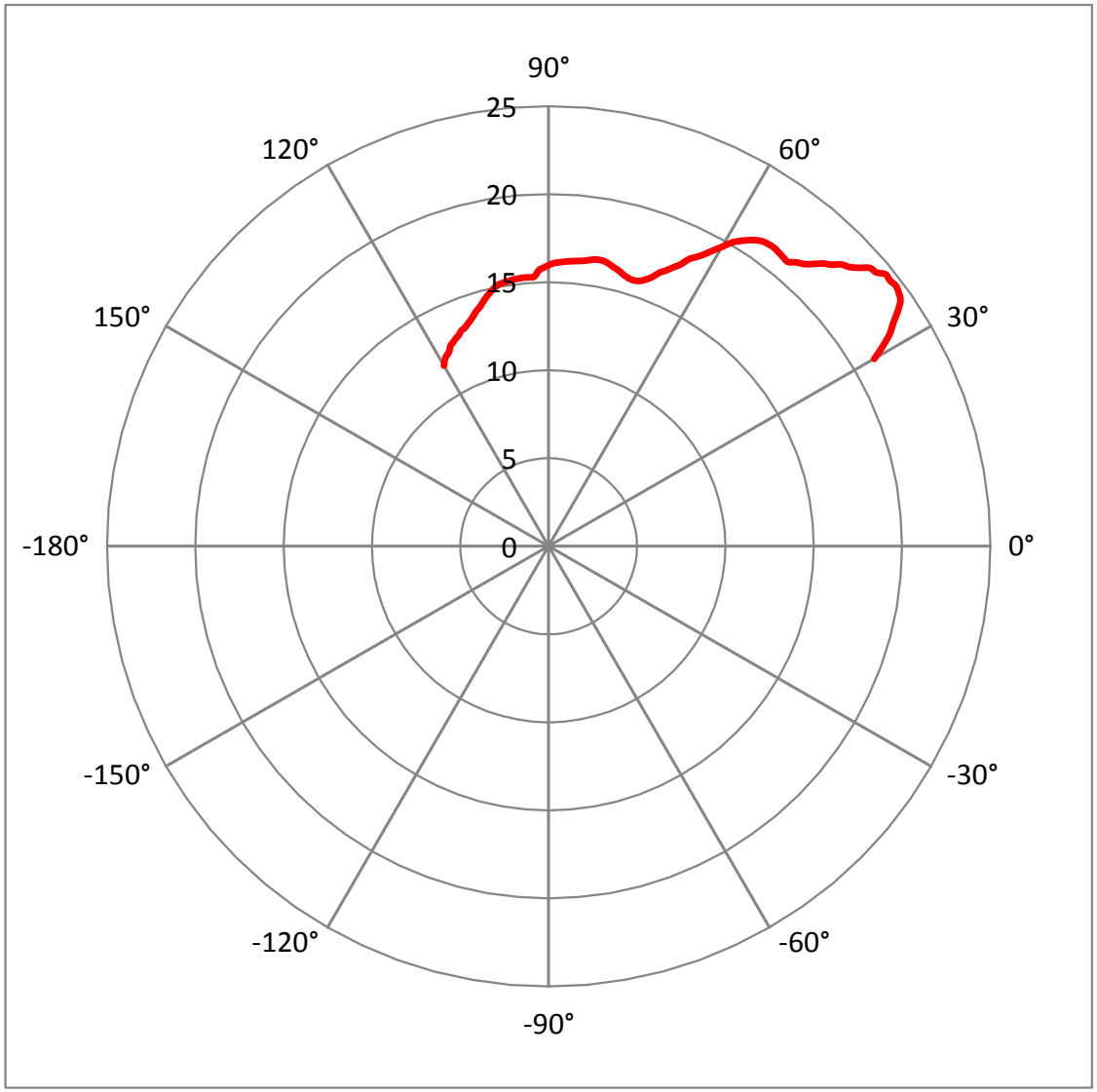
11 dBi Antenna

	5.15 GHz							5.25 GHz							Consolidated Highest EIRP
	E_V			E_H			Comb. EIRP	E_V			E_H			Comb. EIRP	
Angle	Port a	Ver. Gain	EIRP a	Port b	Hor. Gain	EIRP b		Port a	Ver. Gain	EIRP a	Port b	Hor. Gain	EIRP b		
Deg	dBm	dBi	dBm	dBm	dBi	dBm	dBm	dBm	dBi	dBm	dBm	dBi	dBm	dBm	dBm
30	22.54	-3.32	19.22	21.06	-7.56	13.50	20.25	22.54	-7.90	14.64	21.06	-0.84	20.22	21.28	21.28
31	22.54	-2.66	19.88	21.06	-5.62	15.44	21.21	22.54	-10.75	11.79	21.06	0.58	21.64	22.07	22.07
32	22.54	-2.15	20.39	21.06	-4.54	16.52	21.88	22.54	-16.79	5.75	21.06	1.62	22.68	22.77	22.77
33	22.54	-1.85	20.69	21.06	-2.89	18.17	22.62	22.54	-18.13	4.41	21.06	2.13	23.19	23.25	23.25
34	22.54	-1.78	20.76	21.06	-2.27	18.79	22.90	22.54	-16.40	6.14	21.06	2.69	23.75	23.82	23.82
35	22.54	-1.89	20.65	21.06	-1.53	19.53	23.14	22.54	-12.78	9.76	21.06	3.09	24.15	24.31	24.31
36	22.54	-2.22	20.32	21.06	-1.12	19.94	23.14	22.54	-9.85	12.69	21.06	3.14	24.20	24.50	24.50
37	22.54	-2.83	19.71	21.06	-0.58	20.48	23.12	22.54	-7.61	14.93	21.06	3.04	24.10	24.60	24.60
38	22.54	-3.64	18.90	21.06	-0.41	20.65	22.87	22.54	-6.38	16.16	21.06	2.77	23.83	24.52	24.52
39	22.54	-4.33	18.21	21.06	-0.27	20.79	22.70	22.54	-4.86	17.68	21.06	2.48	23.54	24.54	24.54
40	22.54	-5.69	16.85	21.06	-0.24	20.82	22.28	22.54	-3.76	18.78	21.06	1.67	22.73	24.20	24.20
41	22.54	-6.69	15.85	21.06	-0.31	20.75	21.97	22.54	-2.93	19.61	21.06	1.12	22.18	24.09	24.09
42	22.54	-8.33	14.21	21.06	-0.46	20.60	21.50	22.54	-2.51	20.03	21.06	0.09	21.15	23.64	23.64
43	22.54	-9.88	12.66	21.06	-0.57	20.49	21.15	22.54	-2.05	20.49	21.06	-1.07	19.99	23.26	23.26
44	22.54	-10.80	11.74	21.06	-0.75	20.31	20.88	22.54	-1.76	20.78	21.06	-1.94	19.12	23.04	23.04
45	22.54	-10.81	11.73	21.06	-0.95	20.11	20.70	22.54	-1.63	20.91	21.06	-3.33	17.73	22.62	22.62

46	22.54	-10.09	12.45	21.06	-1.18	19.88	20.60	22.54	-1.64	20.90	21.06	-4.25	16.81	22.33	22.33
47	22.54	-9.10	13.44	21.06	-1.33	19.73	20.65	22.54	-1.79	20.75	21.06	-5.43	15.63	21.91	21.91
48	22.54	-8.08	14.46	21.06	-1.58	19.48	20.67	22.54	-2.07	20.47	21.06	-5.98	15.08	21.57	21.57
49	22.54	-7.46	15.08	21.06	-1.66	19.40	20.77	22.54	-2.33	20.21	21.06	-6.01	15.05	21.37	21.37
50	22.54	-6.66	15.88	21.06	-1.76	19.30	20.93	22.54	-2.83	19.71	21.06	-5.66	15.40	21.08	21.08
51	22.54	-5.99	16.55	21.06	-1.82	19.24	21.11	22.54	-3.46	19.08	21.06	-5.04	16.02	20.82	21.11
52	22.54	-5.68	16.86	21.06	-1.91	19.15	21.16	22.54	-4.26	18.28	21.06	-4.38	16.68	20.56	21.16
53	22.54	-5.39	17.15	21.06	-2.00	19.06	21.22	22.54	-5.28	17.26	21.06	-3.96	17.10	20.19	21.22
54	22.54	-5.30	17.24	21.06	-2.10	18.96	21.19	22.54	-6.45	16.09	21.06	-3.45	17.61	19.93	21.19
55	22.54	-5.33	17.21	21.06	-2.19	18.87	21.13	22.54	-7.35	15.19	21.06	-3.09	17.97	19.81	21.13
56	22.54	-5.44	17.10	21.06	-2.38	18.68	20.97	22.54	-8.91	13.63	21.06	-2.87	18.19	19.49	20.97
57	22.54	-5.73	16.81	21.06	-2.60	18.46	20.72	22.54	-10.83	11.71	21.06	-2.78	18.28	19.14	20.72
58	22.54	-6.03	16.51	21.06	-2.86	18.20	20.45	22.54	-12.40	10.14	21.06	-2.78	18.28	18.90	20.45
59	22.54	-6.56	15.98	21.06	-3.05	18.01	20.12	22.54	-15.60	6.94	21.06	-2.90	18.16	18.48	20.12
60	22.54	-7.18	15.36	21.06	-3.45	17.61	19.64	22.54	-17.15	5.39	21.06	-3.19	17.87	18.11	19.64
61	22.54	-7.85	14.69	21.06	-3.74	17.32	19.21	22.54	-17.26	5.28	21.06	-3.45	17.61	17.86	19.21
62	22.54	-8.55	13.99	21.06	-4.02	17.04	18.79	22.54	-16.04	6.50	21.06	-3.94	17.12	17.48	18.79
63	22.54	-9.09	13.45	21.06	-4.27	16.79	18.44	22.54	-14.93	7.61	21.06	-4.50	16.56	17.08	18.44
64	22.54	-9.69	12.85	21.06	-4.43	16.63	18.15	22.54	-13.33	9.21	21.06	-5.13	15.93	16.77	18.15
65	22.54	-10.91	11.63	21.06	-4.65	16.41	17.66	22.54	-11.92	10.62	21.06	-5.85	15.21	16.51	17.66
66	22.54	-11.54	11.00	21.06	-4.87	16.19	17.34	22.54	-10.85	11.69	21.06	-6.37	14.69	16.45	17.34
67	22.54	-12.54	10.00	21.06	-5.01	16.05	17.01	22.54	-10.27	12.27	21.06	-7.23	13.83	16.13	17.01
68	22.54	-13.23	9.31	21.06	-5.16	15.90	16.76	22.54	-9.57	12.97	21.06	-8.12	12.94	15.97	16.76
69	22.54	-14.53	8.01	21.06	-5.36	15.70	16.38	22.54	-9.08	13.46	21.06	-8.69	12.37	15.96	16.38
70	22.54	-15.12	7.42	21.06	-5.56	15.50	16.13	22.54	-8.75	13.79	21.06	-9.51	11.55	15.82	16.13
71	22.54	-16.20	6.34	21.06	-5.62	15.44	15.94	22.54	-8.56	13.98	21.06	-9.81	11.25	15.84	15.94

72	22.54	-16.93	5.61	21.06	-5.63	15.43	15.86	22.54	-8.48	14.06	21.06	-10.11	10.95	15.79	15.86
73	22.54	-17.66	4.88	21.06	-5.56	15.50	15.86	22.54	-8.47	14.07	21.06	-10.27	10.79	15.74	15.86
74	22.54	-18.36	4.18	21.06	-5.43	15.63	15.93	22.54	-8.49	14.05	21.06	-10.30	10.76	15.72	15.93
75	22.54	-19.01	3.53	21.06	-5.27	15.79	16.04	22.54	-8.63	13.91	21.06	-10.23	10.83	15.65	16.04
76	22.54	-19.39	3.15	21.06	-5.10	15.96	16.18	22.54	-8.80	13.74	21.06	-10.07	10.99	15.59	16.18
77	22.54	-19.86	2.68	21.06	-4.98	16.08	16.27	22.54	-9.01	13.53	21.06	-9.66	11.40	15.60	16.27
78	22.54	-20.21	2.33	21.06	-4.83	16.23	16.40	22.54	-9.17	13.37	21.06	-9.24	11.82	15.67	16.40
79	22.54	-20.49	2.05	21.06	-4.73	16.33	16.49	22.54	-9.51	13.03	21.06	-8.91	12.15	15.62	16.49
80	22.54	-20.82	1.72	21.06	-4.69	16.37	16.52	22.54	-9.93	12.61	21.06	-8.54	12.52	15.58	16.52
81	22.54	-21.11	1.43	21.06	-4.71	16.35	16.49	22.54	-10.25	12.29	21.06	-8.06	13.00	15.67	16.49
82	22.54	-21.68	0.86	21.06	-4.77	16.29	16.41	22.54	-11.02	11.52	21.06	-7.68	13.38	15.56	16.41
83	22.54	-22.37	0.17	21.06	-4.83	16.23	16.34	22.54	-11.46	11.08	21.06	-7.38	13.68	15.58	16.34
84	22.54	-23.01	-0.47	21.06	-4.86	16.20	16.29	22.54	-12.19	10.35	21.06	-7.11	13.95	15.52	16.29
85	22.54	-23.32	-0.78	21.06	-4.89	16.17	16.26	22.54	-12.99	9.55	21.06	-6.96	14.10	15.41	16.26
86	22.54	-23.70	-1.16	21.06	-4.92	16.14	16.22	22.54	-13.77	8.77	21.06	-6.75	14.31	15.38	16.22
87	22.54	-23.79	-1.25	21.06	-4.96	16.10	16.18	22.54	-14.53	8.01	21.06	-6.59	14.47	15.35	16.18
88	22.54	-23.84	-1.30	21.06	-5.01	16.05	16.13	22.54	-15.23	7.31	21.06	-6.46	14.60	15.34	16.13
89	22.54	-23.87	-1.33	21.06	-5.06	16.00	16.08	22.54	-15.95	6.59	21.06	-6.34	14.72	15.34	16.08
90	22.54	-23.83	-1.29	21.06	-5.18	15.88	15.96	22.54	-16.44	6.10	21.06	-6.29	14.77	15.32	15.96
91	22.54	-23.85	-1.31	21.06	-5.32	15.74	15.82	22.54	-17.26	5.28	21.06	-6.21	14.85	15.30	15.82
92	22.54	-24.05	-1.51	21.06	-5.45	15.61	15.69	22.54	-18.09	4.45	21.06	-6.16	14.90	15.27	15.69
93	22.54	-24.19	-1.65	21.06	-5.81	15.25	15.34	22.54	-18.76	3.78	21.06	-6.08	14.98	15.30	15.34
94	22.54	-24.26	-1.72	21.06	-6.06	15.00	15.09	22.54	-19.86	2.68	21.06	-5.99	15.07	15.31	15.31
95	22.54	-24.01	-1.47	21.06	-6.51	14.55	14.66	22.54	-21.06	1.48	21.06	-5.92	15.14	15.32	15.32
96	22.54	-23.72	-1.18	21.06	-6.79	14.27	14.39	22.54	-22.22	0.32	21.06	-5.89	15.17	15.31	15.31
97	22.54	-23.19	-0.65	21.06	-7.17	13.89	14.04	22.54	-23.23	-0.69	21.06	-5.88	15.18	15.29	15.29

98	22.54	-22.74	-0.20	21.06	-7.51	13.55	13.73	22.54	-24.08	-1.54	21.06	-5.89	15.17	15.26	15.26
99	22.54	-22.44	0.10	21.06	-7.72	13.34	13.54	22.54	-24.75	-2.21	21.06	-5.93	15.13	15.21	15.21
100	22.54	-22.36	0.18	21.06	-8.11	12.95	13.17	22.54	-25.30	-2.76	21.06	-5.95	15.11	15.18	15.18
101	22.54	-22.51	0.03	21.06	-8.29	12.77	13.00	22.54	-25.63	-3.09	21.06	-6.02	15.04	15.11	15.11
102	22.54	-22.92	-0.38	21.06	-8.53	12.53	12.75	22.54	-26.06	-3.52	21.06	-6.16	14.90	14.96	14.96
103	22.54	-23.51	-0.97	21.06	-8.67	12.39	12.59	22.54	-26.39	-3.85	21.06	-6.34	14.72	14.78	14.78
104	22.54	-23.92	-1.38	21.06	-8.72	12.34	12.52	22.54	-26.55	-4.01	21.06	-6.54	14.52	14.58	14.58
105	22.54	-24.48	-1.94	21.06	-8.72	12.34	12.50	22.54	-26.53	-3.99	21.06	-6.76	14.30	14.36	14.36
106	22.54	-24.56	-2.02	21.06	-8.72	12.34	12.50	22.54	-26.39	-3.85	21.06	-7.00	14.06	14.13	14.13
107	22.54	-24.47	-1.93	21.06	-8.75	12.31	12.47	22.54	-26.02	-3.48	21.06	-7.16	13.90	13.98	13.98
108	22.54	-24.31	-1.77	21.06	-8.86	12.20	12.37	22.54	-25.40	-2.86	21.06	-7.39	13.67	13.77	13.77
109	22.54	-24.33	-1.79	21.06	-9.07	11.99	12.17	22.54	-24.62	-2.08	21.06	-7.60	13.46	13.58	13.58
110	22.54	-24.64	-2.10	21.06	-9.26	11.80	11.97	22.54	-23.71	-1.17	21.06	-7.79	13.27	13.42	13.42
111	22.54	-25.27	-2.73	21.06	-9.60	11.46	11.62	22.54	-22.77	-0.23	21.06	-7.98	13.08	13.28	13.28
112	22.54	-25.80	-3.26	21.06	-9.99	11.07	11.23	22.54	-21.80	0.74	21.06	-8.11	12.95	13.20	13.20
113	22.54	-26.33	-3.79	21.06	-10.38	10.68	10.83	22.54	-20.90	1.64	21.06	-8.37	12.69	13.02	13.02
114	22.54	-25.98	-3.44	21.06	-10.76	10.30	10.48	22.54	-20.35	2.19	21.06	-8.52	12.54	12.92	12.92
115	22.54	-24.96	-2.42	21.06	-11.14	9.92	10.17	22.54	-19.64	2.90	21.06	-8.75	12.31	12.78	12.78
116	22.54	-23.64	-1.10	21.06	-11.55	9.51	9.87	22.54	-19.11	3.43	21.06	-8.94	12.12	12.67	12.67
117	22.54	-22.73	-0.19	21.06	-11.87	9.19	9.66	22.54	-18.78	3.76	21.06	-9.29	11.77	12.41	12.41
118	22.54	-21.60	0.94	21.06	-12.41	8.65	9.33	22.54	-18.66	3.88	21.06	-9.46	11.60	12.28	12.28
119	22.54	-20.82	1.72	21.06	-13.06	8.00	8.92	22.54	-18.59	3.95	21.06	-9.66	11.40	12.12	12.12
120	22.54	-20.39	2.15	21.06	-13.86	7.20	8.38	22.54	-18.65	3.89	21.06	-9.97	11.09	11.85	11.85



11 dBi Antenna Elevation & Output Power Radiation Pattern (30° to 120°)

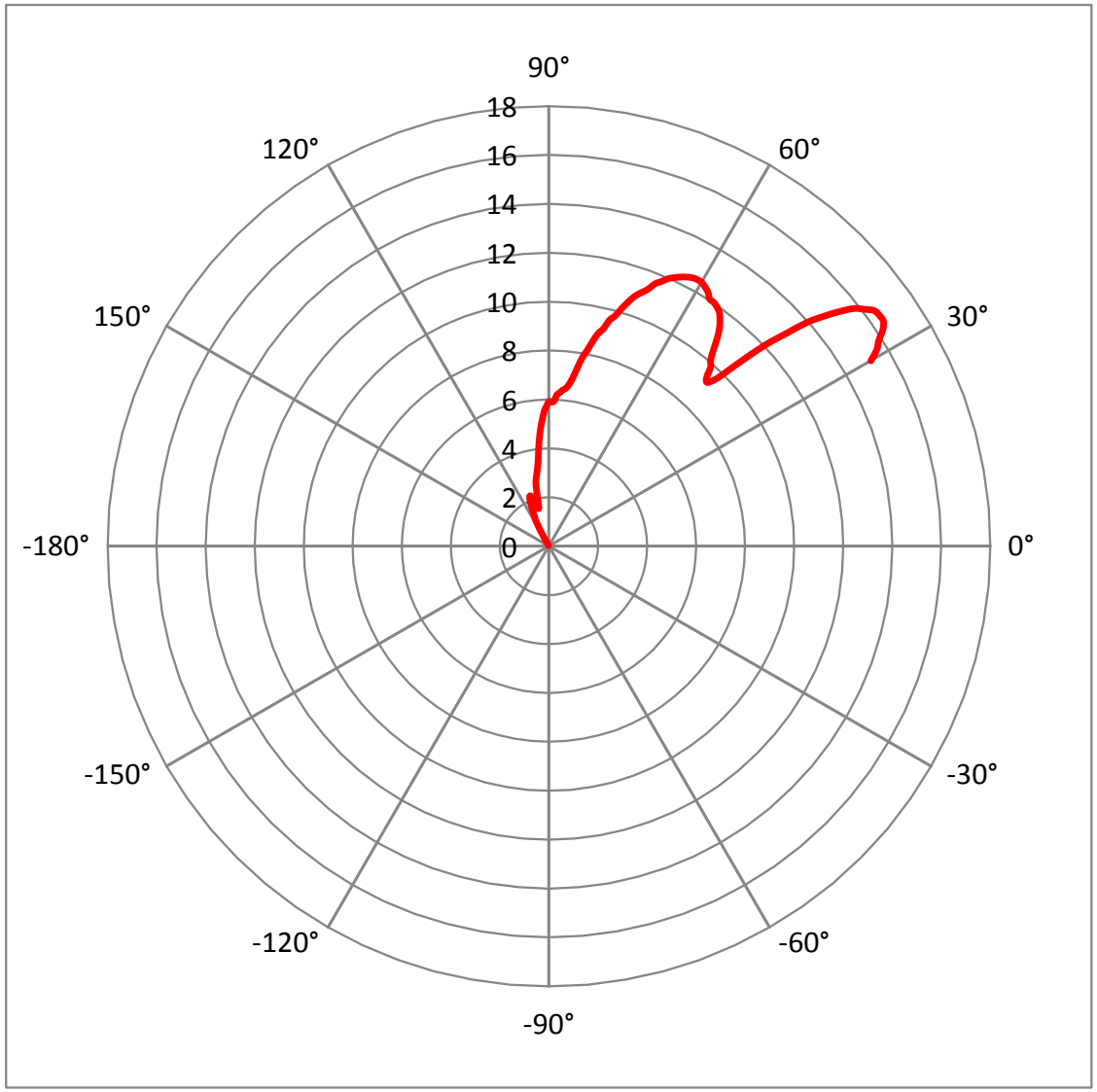
12 dBi Antenna

	5.15 GHz							5.25 GHz							Consolidated Highest EIRP
	E_V			E_H			Comb. EIRP	E_V			E_H			Comb. EIRP	
Angle	Port a	Ver. Gain	EIRP a	Port b	Hor. Gain	EIRP b		Port a	Ver. Gain	EIRP a	Port b	Hor. Gain	EIRP b		
Deg	dBm	dBi	dBm	dBm	dBi	dBm	dBm	dBm	dBi	dBm	dBm	dBi	dBm	dBm	dBm
30	21.71	-23.26	-1.55	20.06	-5.83	14.23	14.34	21.71	-32.80	-11.09	20.06	-4.91	15.15	15.16	15.16
31	21.71	-17.65	4.06	20.06	-5.16	14.90	15.24	21.71	-26.78	-5.07	20.06	-4.50	15.56	15.60	15.60
32	21.71	-15.42	6.29	20.06	-4.78	15.28	15.80	21.71	-22.14	-0.43	20.06	-4.30	15.76	15.86	15.86
33	21.71	-13.44	8.27	20.06	-4.58	15.48	16.24	21.71	-19.14	2.57	20.06	-4.23	15.83	16.03	16.24
34	21.71	-12.39	9.32	20.06	-4.54	15.52	16.45	21.71	-17.81	3.90	20.06	-4.32	15.74	16.02	16.45
35	21.71	-11.95	9.76	20.06	-4.65	15.41	16.46	21.71	-17.41	4.30	20.06	-4.50	15.56	15.87	16.46
36	21.71	-11.67	10.04	20.06	-4.81	15.25	16.39	21.71	-17.50	4.21	20.06	-4.74	15.32	15.64	16.39
37	21.71	-11.71	10.00	20.06	-5.18	14.88	16.10	21.71	-17.94	3.77	20.06	-5.21	14.85	15.18	16.10
38	21.71	-12.00	9.71	20.06	-5.50	14.56	15.79	21.71	-19.14	2.57	20.06	-5.62	14.44	14.71	15.79
39	21.71	-12.34	9.37	20.06	-6.11	13.95	15.25	21.71	-20.27	1.44	20.06	-6.32	13.74	13.99	15.25
40	21.71	-13.31	8.40	20.06	-6.62	13.44	14.62	21.71	-23.15	-1.44	20.06	-6.90	13.16	13.31	14.62
41	21.71	-14.11	7.60	20.06	-7.25	12.81	13.95	21.71	-24.82	-3.11	20.06	-7.60	12.46	12.58	13.95
42	21.71	-15.39	6.32	20.06	-8.15	11.91	12.97	21.71	-25.31	-3.60	20.06	-8.54	11.52	11.65	12.97
43	21.71	-16.35	5.36	20.06	-9.04	11.02	12.06	21.71	-24.07	-2.36	20.06	-9.41	10.65	10.86	12.06
44	21.71	-18.12	3.59	20.06	-10.09	9.97	10.87	21.71	-21.03	0.68	20.06	-10.44	9.62	10.14	10.87
45	21.71	-19.57	2.14	20.06	-11.24	8.82	9.66	21.71	-18.36	3.35	20.06	-11.48	8.58	9.72	9.72
46	21.71	-20.06	1.65	20.06	-12.90	7.16	8.24	21.71	-16.48	5.23	20.06	-12.91	7.15	9.31	9.31
47	21.71	-19.47	2.24	20.06	-14.35	5.71	7.32	21.71	-14.90	6.81	20.06	-14.07	5.99	9.43	9.43
48	21.71	-18.10	3.61	20.06	-15.47	4.59	7.14	21.71	-13.60	8.11	20.06	-14.99	5.07	9.86	9.86

49	21.71	-17.00	4.71	20.06	-16.89	3.17	7.02	21.71	-12.87	8.84	20.06	-16.15	3.91	10.05	10.05
50	21.71	-15.87	5.84	20.06	-17.38	2.68	7.55	21.71	-12.25	9.46	20.06	-16.69	3.37	10.42	10.42
51	21.71	-14.62	7.09	20.06	-17.48	2.58	8.41	21.71	-11.61	10.10	20.06	-16.99	3.07	10.89	10.89
52	21.71	-13.55	8.16	20.06	-17.28	2.78	9.27	21.71	-11.13	10.58	20.06	-16.97	3.09	11.29	11.29
53	21.71	-12.71	9.00	20.06	-16.87	3.19	10.01	21.71	-10.82	10.89	20.06	-16.76	3.30	11.59	11.59
54	21.71	-11.90	9.81	20.06	-16.38	3.68	10.76	21.71	-10.61	11.10	20.06	-16.39	3.67	11.82	11.82
55	21.71	-11.51	10.20	20.06	-15.98	4.08	11.15	21.71	-10.52	11.19	20.06	-16.09	3.97	11.94	11.94
56	21.71	-11.04	10.67	20.06	-15.59	4.47	11.60	21.71	-10.46	11.25	20.06	-15.90	4.16	12.03	12.03
57	21.71	-10.76	10.95	20.06	-15.32	4.74	11.88	21.71	-10.44	11.27	20.06	-15.87	4.19	12.05	12.05
58	21.71	-10.37	11.34	20.06	-15.08	4.98	12.24	21.71	-10.46	11.25	20.06	-15.78	4.28	12.05	12.24
59	21.71	-10.23	11.48	20.06	-15.05	5.01	12.36	21.71	-10.54	11.17	20.06	-15.86	4.20	11.97	12.36
60	21.71	-10.10	11.61	20.06	-15.11	4.95	12.46	21.71	-10.72	10.99	20.06	-16.00	4.06	11.79	12.46
61	21.71	-10.06	11.65	20.06	-15.24	4.82	12.47	21.71	-10.96	10.75	20.06	-16.20	3.86	11.56	12.47
62	21.71	-10.06	11.65	20.06	-15.43	4.63	12.44	21.71	-11.15	10.56	20.06	-16.59	3.47	11.34	12.44
63	21.71	-10.12	11.59	20.06	-15.64	4.42	12.35	21.71	-11.45	10.26	20.06	-16.92	3.14	11.03	12.35
64	21.71	-10.21	11.50	20.06	-15.81	4.25	12.25	21.71	-11.71	10.00	20.06	-17.11	2.95	10.78	12.25
65	21.71	-10.33	11.38	20.06	-16.01	4.05	12.12	21.71	-11.93	9.78	20.06	-17.50	2.56	10.53	12.12
66	21.71	-10.44	11.27	20.06	-16.28	3.78	11.98	21.71	-12.10	9.61	20.06	-17.81	2.25	10.34	11.98
67	21.71	-10.65	11.06	20.06	-16.56	3.50	11.76	21.71	-12.32	9.39	20.06	-18.19	1.87	10.10	11.76
68	21.71	-10.79	10.92	20.06	-17.01	3.05	11.58	21.71	-12.45	9.26	20.06	-18.64	1.42	9.92	11.58
69	21.71	-11.09	10.62	20.06	-17.49	2.57	11.25	21.71	-12.74	8.97	20.06	-18.97	1.09	9.63	11.25
70	21.71	-11.24	10.47	20.06	-18.13	1.93	11.04	21.71	-12.91	8.80	20.06	-19.38	0.68	9.42	11.04
71	21.71	-11.43	10.28	20.06	-18.51	1.55	10.83	21.71	-13.17	8.54	20.06	-19.60	0.46	9.17	10.83
72	21.71	-11.70	10.01	20.06	-19.11	0.95	10.52	21.71	-13.54	8.17	20.06	-19.67	0.39	8.84	10.52
73	21.71	-12.02	9.69	20.06	-19.72	0.34	10.17	21.71	-13.94	7.77	20.06	-19.76	0.30	8.49	10.17
74	21.71	-12.37	9.34	20.06	-20.24	-0.18	9.80	21.71	-14.32	7.39	20.06	-19.65	0.41	8.18	9.80

75	21.71	-12.56	9.15	20.06	-20.76	-0.70	9.58	21.71	-14.52	7.19	20.06	-19.56	0.50	8.03	9.58
76	21.71	-12.93	8.78	20.06	-21.71	-1.65	9.16	21.71	-14.88	6.83	20.06	-19.39	0.67	7.77	9.16
77	21.71	-13.12	8.59	20.06	-22.37	-2.31	8.93	21.71	-15.04	6.67	20.06	-19.24	0.82	7.67	8.93
78	21.71	-13.47	8.24	20.06	-23.13	-3.07	8.55	21.71	-15.29	6.42	20.06	-19.08	0.98	7.51	8.55
79	21.71	-13.84	7.87	20.06	-24.03	-3.97	8.15	21.71	-15.58	6.13	20.06	-18.98	1.08	7.31	8.15
80	21.71	-14.13	7.58	20.06	-24.84	-4.78	7.83	21.71	-15.84	5.87	20.06	-18.92	1.14	7.13	7.83
81	21.71	-14.60	7.11	20.06	-25.18	-5.12	7.36	21.71	-16.27	5.44	20.06	-18.92	1.14	6.81	7.36
82	21.71	-15.03	6.68	20.06	-25.45	-5.39	6.94	21.71	-16.73	4.98	20.06	-18.97	1.09	6.47	6.94
83	21.71	-15.34	6.37	20.06	-25.47	-5.41	6.65	21.71	-17.21	4.50	20.06	-19.04	1.02	6.11	6.65
84	21.71	-15.53	6.18	20.06	-25.28	-5.22	6.48	21.71	-17.64	4.07	20.06	-19.04	1.02	5.82	6.48
85	21.71	-15.65	6.06	20.06	-24.83	-4.77	6.40	21.71	-17.87	3.84	20.06	-18.99	1.07	5.68	6.40
86	21.71	-15.82	5.89	20.06	-24.31	-4.25	6.29	21.71	-18.09	3.62	20.06	-18.83	1.23	5.60	6.29
87	21.71	-15.99	5.72	20.06	-23.73	-3.67	6.19	21.71	-18.12	3.59	20.06	-18.66	1.40	5.64	6.19
88	21.71	-16.37	5.34	20.06	-23.09	-3.03	5.93	21.71	-18.08	3.63	20.06	-18.41	1.65	5.76	5.93
89	21.71	-16.84	4.87	20.06	-22.87	-2.81	5.55	21.71	-18.09	3.62	20.06	-18.05	2.01	5.90	5.90
90	21.71	-17.18	4.53	20.06	-22.77	-2.71	5.28	21.71	-18.24	3.47	20.06	-17.80	2.26	5.92	5.92
91	21.71	-17.87	3.84	20.06	-22.95	-2.89	4.68	21.71	-18.71	3.00	20.06	-17.66	2.40	5.72	5.72
92	21.71	-18.32	3.39	20.06	-23.18	-3.12	4.27	21.71	-19.11	2.60	20.06	-17.64	2.42	5.52	5.52
93	21.71	-18.76	2.95	20.06	-23.47	-3.41	3.85	21.71	-19.78	1.93	20.06	-17.67	2.39	5.18	5.18
94	21.71	-18.96	2.75	20.06	-23.94	-3.88	3.60	21.71	-20.22	1.49	20.06	-17.90	2.16	4.85	4.85
95	21.71	-19.17	2.54	20.06	-24.22	-4.16	3.38	21.71	-20.80	0.91	20.06	-18.16	1.90	4.44	4.44
96	21.71	-19.39	2.32	20.06	-24.37	-4.31	3.17	21.71	-21.37	0.34	20.06	-18.49	1.57	4.01	4.01
97	21.71	-19.63	2.08	20.06	-24.64	-4.58	2.93	21.71	-21.69	0.02	20.06	-19.02	1.04	3.57	3.57
98	21.71	-20.01	1.70	20.06	-25.18	-5.12	2.52	21.71	-21.76	-0.05	20.06	-19.45	0.61	3.30	3.30
99	21.71	-20.42	1.29	20.06	-25.50	-5.44	2.13	21.71	-21.65	0.06	20.06	-19.97	0.09	3.09	3.09
100	21.71	-21.05	0.66	20.06	-25.44	-5.38	1.63	21.71	-21.54	0.17	20.06	-20.43	-0.37	2.92	2.92

101	21.71	-21.53	0.18	20.06	-25.02	-4.96	1.34	21.71	-21.53	0.18	20.06	-20.79	-0.73	2.76	2.76
102	21.71	-22.25	-0.54	20.06	-24.43	-4.37	0.96	21.71	-21.75	-0.04	20.06	-21.05	-0.99	2.52	2.52
103	21.71	-22.87	-1.16	20.06	-23.54	-3.48	0.84	21.71	-22.32	-0.61	20.06	-21.31	-1.25	2.09	2.09
104	21.71	-23.33	-1.62	20.06	-22.53	-2.47	0.99	21.71	-22.97	-1.26	20.06	-21.37	-1.31	1.73	1.73
105	21.71	-23.50	-1.79	20.06	-21.90	-1.84	1.20	21.71	-23.43	-1.72	20.06	-21.19	-1.13	1.60	1.60
106	21.71	-23.91	-2.20	20.06	-21.28	-1.22	1.33	21.71	-23.94	-2.23	20.06	-20.74	-0.68	1.62	1.62
107	21.71	-24.41	-2.70	20.06	-20.96	-0.90	1.30	21.71	-24.23	-2.52	20.06	-20.46	-0.40	1.68	1.68
108	21.71	-24.87	-3.16	20.06	-20.71	-0.65	1.28	21.71	-24.27	-2.56	20.06	-20.10	-0.04	1.89	1.89
109	21.71	-25.85	-4.14	20.06	-20.74	-0.68	0.94	21.71	-24.13	-2.42	20.06	-19.87	0.19	2.09	2.09
110	21.71	-26.28	-4.57	20.06	-20.97	-0.91	0.64	21.71	-24.08	-2.37	20.06	-19.74	0.32	2.19	2.19
111	21.71	-26.52	-4.81	20.06	-21.35	-1.29	0.31	21.71	-24.05	-2.34	20.06	-19.76	0.30	2.19	2.19
112	21.71	-26.71	-5.00	20.06	-21.65	-1.59	0.04	21.71	-24.15	-2.44	20.06	-19.86	0.20	2.09	2.09
113	21.71	-26.78	-5.07	20.06	-22.18	-2.12	-0.34	21.71	-24.25	-2.54	20.06	-20.06	0.00	1.92	1.92
114	21.71	-26.86	-5.15	20.06	-22.80	-2.74	-0.77	21.71	-24.32	-2.61	20.06	-20.36	-0.30	1.71	1.71
115	21.71	-27.15	-5.44	20.06	-23.28	-3.22	-1.18	21.71	-24.31	-2.60	20.06	-20.69	-0.63	1.51	1.51
116	21.71	-27.66	-5.95	20.06	-23.71	-3.65	-1.64	21.71	-24.32	-2.61	20.06	-20.98	-0.92	1.33	1.33
117	21.71	-28.33	-6.62	20.06	-24.27	-4.21	-2.24	21.71	-24.28	-2.57	20.06	-21.20	-1.14	1.21	1.21
118	21.71	-29.02	-7.31	20.06	-24.72	-4.66	-2.78	21.71	-24.48	-2.77	20.06	-21.62	-1.56	0.89	0.89
119	21.71	-29.48	-7.77	20.06	-25.45	-5.39	-3.41	21.71	-24.73	-3.02	20.06	-21.98	-1.92	0.58	0.58
120	21.71	-30.36	-8.65	20.06	-25.82	-5.76	-3.96	21.71	-25.26	-3.55	20.06	-22.55	-2.49	0.02	0.02



12 dBi Antenna Elevation & Output Power Radiation Pattern (30° to 120°)

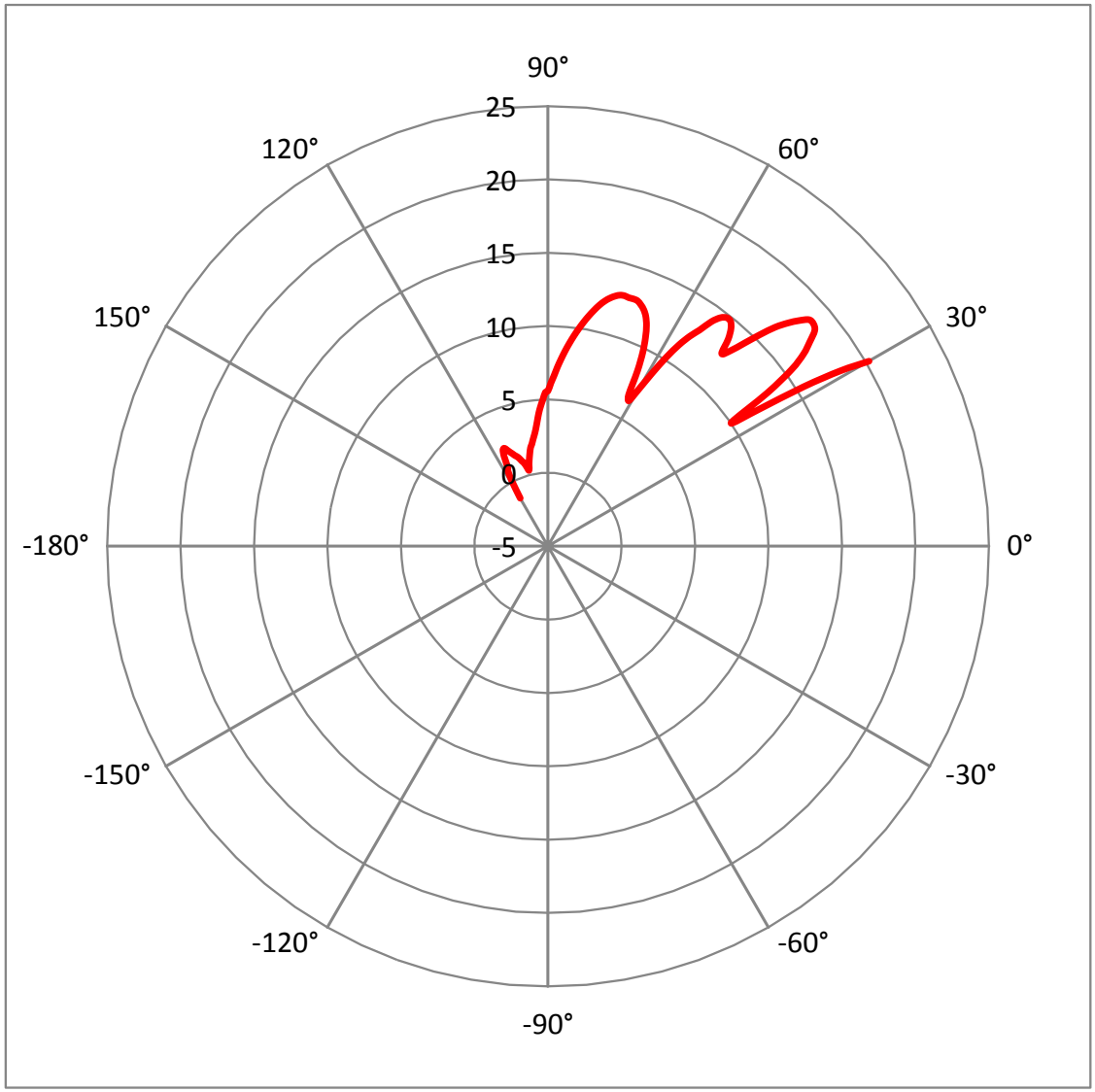
14.5 dBi Antenna (including 1 dB feeder cable loss)

	5.15 GHz							5.25 GHz							Consolidated Highest EIRP
	E_V			E_H			Comb. EIRP	E_V			E_H			Comb. EIRP	
Angle	Port a	Ver. Gain	EIRP a	Port b	Hor. Gain	EIRP b		Port a	Ver. Gain	EIRP a	Port b	Hor. Gain	EIRP b		
Deg	dBm	dBi	dBm	dBm	dBi	dBm	dBm	dBm	dBi	dBm	dBm	dBi	dBm	dBm	dBm
30	21.16	0.70	21.86	19.45	-6.56	12.89	22.38	21.16	-2.03	19.13	19.45	-8.23	11.22	19.78	22.38
31	21.16	-1.07	20.09	19.45	-10.18	9.27	20.43	21.16	-4.82	16.34	19.45	-12.22	7.23	16.84	20.43
32	21.16	-3.49	17.67	19.45	-16.54	2.91	17.81	21.16	-9.03	12.13	19.45	-16.25	3.20	12.65	17.81
33	21.16	-6.62	14.54	19.45	-36.29	-16.84	14.55	21.16	-14.58	6.58	19.45	-14.73	4.72	8.76	14.55
34	21.16	-9.52	11.64	19.45	-16.64	2.81	12.18	21.16	-12.66	8.50	19.45	-11.20	8.25	11.39	12.18
35	21.16	-8.95	12.21	19.45	-11.68	7.77	13.55	21.16	-8.00	13.16	19.45	-9.04	10.41	15.01	15.01
36	21.16	-6.18	14.98	19.45	-9.17	10.28	16.25	21.16	-5.08	16.08	19.45	-7.87	11.58	17.40	17.40
37	21.16	-3.94	17.22	19.45	-7.86	11.59	18.27	21.16	-3.39	17.77	19.45	-7.52	11.93	18.78	18.78
38	21.16	-2.36	18.80	19.45	-7.32	12.13	19.64	21.16	-2.36	18.80	19.45	-7.74	11.72	19.58	19.64
39	21.16	-1.37	19.79	19.45	-7.47	11.98	20.46	21.16	-1.93	19.23	19.45	-8.74	10.71	19.80	20.46
40	21.16	-0.93	20.23	19.45	-8.29	11.16	20.74	21.16	-2.05	19.11	19.45	-10.58	8.87	19.50	20.74
41	21.16	-0.76	20.40	19.45	-9.80	9.65	20.75	21.16	-2.52	18.64	19.45	-13.69	5.76	18.86	20.75
42	21.16	-1.12	20.04	19.45	-12.39	7.06	20.25	21.16	-3.55	17.61	19.45	-18.97	0.48	17.70	20.25
43	21.16	-1.63	19.53	19.45	-16.86	2.59	19.62	21.16	-4.99	16.17	19.45	-22.77	-3.32	16.22	19.62
44	21.16	-2.35	18.81	19.45	-24.94	-5.49	18.83	21.16	-7.00	14.16	19.45	-16.48	2.97	14.48	18.83
45	21.16	-3.50	17.66	19.45	-20.77	-1.32	17.72	21.16	-9.77	11.39	19.45	-11.98	7.47	12.87	17.72
46	21.16	-5.02	16.14	19.45	-14.33	5.12	16.47	21.16	-13.57	7.59	19.45	-9.26	10.19	12.09	16.47
47	21.16	-7.00	14.16	19.45	-10.88	8.57	15.22	21.16	-17.92	3.24	19.45	-7.45	12.00	12.54	15.22

48	21.16	-9.60	11.56	19.45	-8.58	10.87	14.24	21.16	-18.05	3.11	19.45	-6.19	13.26	13.66	14.24
49	21.16	-13.00	8.16	19.45	-7.10	12.35	13.75	21.16	-14.86	6.30	19.45	-5.36	14.09	14.76	14.76
50	21.16	-18.02	3.14	19.45	-6.12	13.33	13.72	21.16	-12.47	8.69	19.45	-4.94	14.51	15.52	15.52
51	21.16	-27.84	-6.68	19.45	-5.52	13.93	13.97	21.16	-11.06	10.10	19.45	-4.80	14.65	15.96	15.96
52	21.16	-31.07	-9.91	19.45	-5.28	14.17	14.19	21.16	-10.51	10.65	19.45	-4.91	14.54	16.03	16.03
53	21.16	-22.26	-1.10	19.45	-5.29	14.16	14.29	21.16	-10.55	10.61	19.45	-5.24	14.21	15.79	15.79
54	21.16	-19.13	2.03	19.45	-5.51	13.94	14.21	21.16	-11.21	9.95	19.45	-5.79	13.66	15.20	15.20
55	21.16	-17.82	3.34	19.45	-5.97	13.48	13.88	21.16	-12.41	8.75	19.45	-6.65	12.80	14.24	14.24
56	21.16	-17.21	3.95	19.45	-6.68	12.77	13.31	21.16	-14.53	6.63	19.45	-7.71	11.74	12.91	13.31
57	21.16	-17.09	4.07	19.45	-7.70	11.75	12.43	21.16	-17.88	3.28	19.45	-9.10	10.35	11.13	12.43
58	21.16	-17.06	4.10	19.45	-9.06	10.39	11.30	21.16	-23.44	-2.28	19.45	-10.78	8.67	9.00	11.30
59	21.16	-16.76	4.40	19.45	-10.83	8.62	10.01	21.16	-26.86	-5.70	19.45	-12.98	6.47	6.72	10.01
60	21.16	-15.87	5.29	19.45	-13.17	6.28	8.82	21.16	-20.19	0.97	19.45	-15.30	4.15	5.86	8.82
61	21.16	-14.68	6.48	19.45	-16.23	3.22	8.16	21.16	-15.91	5.25	19.45	-17.29	2.16	6.98	8.16
62	21.16	-13.40	7.76	19.45	-20.68	-1.23	8.27	21.16	-13.34	7.82	19.45	-17.99	1.46	8.72	8.72
63	21.16	-12.23	8.93	19.45	-27.32	-7.87	9.02	21.16	-11.36	9.80	19.45	-17.22	2.23	10.50	10.50
64	21.16	-11.20	9.96	19.45	-31.95	-12.50	9.99	21.16	-10.10	11.06	19.45	-15.70	3.75	11.80	11.80
65	21.16	-10.21	10.95	19.45	-23.69	-4.24	11.08	21.16	-9.22	11.94	19.45	-14.34	5.11	12.76	12.76
66	21.16	-9.47	11.69	19.45	-19.34	0.11	11.98	21.16	-8.59	12.57	19.45	-13.11	6.34	13.50	13.50
67	21.16	-8.74	12.42	19.45	-16.71	2.74	12.86	21.16	-8.17	12.99	19.45	-12.18	7.27	14.02	14.02
68	21.16	-8.14	13.02	19.45	-14.85	4.60	13.60	21.16	-7.92	13.24	19.45	-11.52	7.93	14.36	14.36
69	21.16	-7.74	13.42	19.45	-13.55	5.90	14.13	21.16	-7.81	13.35	19.45	-10.99	8.46	14.57	14.57
70	21.16	-7.45	13.71	19.45	-12.67	6.78	14.51	21.16	-7.73	13.43	19.45	-10.61	8.84	14.73	14.73
71	21.16	-7.28	13.88	19.45	-12.06	7.39	14.76	21.16	-7.78	13.38	19.45	-10.43	9.02	14.74	14.76
72	21.16	-7.24	13.92	19.45	-11.81	7.64	14.84	21.16	-7.90	13.26	19.45	-10.38	9.07	14.66	14.84
73	21.16	-7.21	13.95	19.45	-11.72	7.73	14.88	21.16	-8.03	13.13	19.45	-10.45	9.00	14.55	14.88

74	21.16	-7.25	13.91	19.45	-11.80	7.65	14.83	21.16	-8.30	12.86	19.45	-10.58	8.87	14.32	14.83
75	21.16	-7.37	13.79	19.45	-12.08	7.37	14.69	21.16	-8.56	12.60	19.45	-10.81	8.64	14.07	14.69
76	21.16	-7.55	13.61	19.45	-12.42	7.03	14.48	21.16	-8.94	12.22	19.45	-11.10	8.35	13.71	14.48
77	21.16	-7.82	13.34	19.45	-12.73	6.72	14.20	21.16	-9.41	11.75	19.45	-11.47	7.98	13.27	14.20
78	21.16	-8.18	12.98	19.45	-13.07	6.38	13.84	21.16	-9.92	11.24	19.45	-11.86	7.59	12.80	13.84
79	21.16	-8.61	12.55	19.45	-13.44	6.01	13.42	21.16	-10.43	10.73	19.45	-12.37	7.08	12.29	13.42
80	21.16	-9.08	12.08	19.45	-13.82	5.63	12.97	21.16	-10.92	10.24	19.45	-12.92	6.53	11.78	12.97
81	21.16	-9.56	11.60	19.45	-14.30	5.15	12.49	21.16	-11.49	9.67	19.45	-13.46	5.99	11.22	12.49
82	21.16	-10.04	11.12	19.45	-14.84	4.61	11.99	21.16	-12.14	9.02	19.45	-14.03	5.42	10.59	11.99
83	21.16	-10.51	10.65	19.45	-15.50	3.95	11.49	21.16	-12.84	8.32	19.45	-14.57	4.88	9.94	11.49
84	21.16	-11.00	10.16	19.45	-16.17	3.28	10.97	21.16	-13.54	7.62	19.45	-15.26	4.19	9.25	10.97
85	21.16	-11.55	9.61	19.45	-16.72	2.73	10.42	21.16	-14.30	6.86	19.45	-15.92	3.53	8.52	10.42
86	21.16	-12.13	9.03	19.45	-17.24	2.21	9.85	21.16	-15.02	6.14	19.45	-16.55	2.90	7.83	9.85
87	21.16	-12.72	8.44	19.45	-17.74	1.71	9.27	21.16	-15.84	5.32	19.45	-17.26	2.19	7.04	9.27
88	21.16	-13.41	7.75	19.45	-18.07	1.38	8.65	21.16	-16.87	4.29	19.45	-17.91	1.54	6.14	8.65
89	21.16	-14.03	7.13	19.45	-18.23	1.22	8.12	21.16	-17.84	3.32	19.45	-18.48	0.97	5.31	8.12
90	21.16	-14.71	6.45	19.45	-18.34	1.11	7.57	21.16	-18.57	2.59	19.45	-18.86	0.59	4.71	7.57
91	21.16	-14.76	6.40	19.45	-18.59	0.86	7.47	21.16	-18.96	2.20	19.45	-18.95	0.50	4.44	7.47
92	21.16	-15.23	5.93	19.45	-19.12	0.33	6.99	21.16	-19.73	1.43	19.45	-19.07	0.38	3.95	6.99
93	21.16	-15.62	5.54	19.45	-19.68	-0.23	6.56	21.16	-20.60	0.56	19.45	-19.34	0.11	3.35	6.56
94	21.16	-16.00	5.16	19.45	-20.47	-1.02	6.10	21.16	-21.35	-0.19	19.45	-19.89	-0.44	2.70	6.10
95	21.16	-16.46	4.70	19.45	-21.39	-1.94	5.55	21.16	-21.94	-0.78	19.45	-20.44	-0.99	2.12	5.55
96	21.16	-16.91	4.25	19.45	-22.05	-2.60	5.07	21.16	-22.08	-0.92	19.45	-21.37	-1.92	1.62	5.07
97	21.16	-17.36	3.80	19.45	-22.13	-2.68	4.68	21.16	-21.77	-0.61	19.45	-22.10	-2.65	1.50	4.68
98	21.16	-17.94	3.22	19.45	-21.66	-2.21	4.32	21.16	-21.36	-0.20	19.45	-22.63	-3.18	1.57	4.32
99	21.16	-18.59	2.57	19.45	-21.18	-1.73	3.94	21.16	-21.19	-0.03	19.45	-22.80	-3.35	1.63	3.94

100	21.16	-19.19	1.97	19.45	-20.72	-1.27	3.65	21.16	-21.47	-0.31	19.45	-22.70	-3.25	1.47	3.65
101	21.16	-19.85	1.31	19.45	-20.66	-1.21	3.24	21.16	-22.09	-0.93	19.45	-22.61	-3.16	1.10	3.24
102	21.16	-20.45	0.71	19.45	-20.75	-1.30	2.83	21.16	-22.90	-1.74	19.45	-22.30	-2.85	0.75	2.83
103	21.16	-21.16	0.00	19.45	-20.76	-1.31	2.40	21.16	-23.76	-2.60	19.45	-22.25	-2.80	0.31	2.40
104	21.16	-21.84	-0.68	19.45	-20.93	-1.48	1.95	21.16	-24.74	-3.58	19.45	-22.52	-3.07	-0.31	1.95
105	21.16	-21.70	-0.54	19.45	-20.53	-1.08	2.21	21.16	-25.27	-4.11	19.45	-22.81	-3.36	-0.71	2.21
106	21.16	-21.74	-0.58	19.45	-19.99	-0.54	2.45	21.16	-25.53	-4.37	19.45	-22.56	-3.11	-0.68	2.45
107	21.16	-22.11	-0.95	19.45	-19.47	-0.02	2.55	21.16	-25.59	-4.43	19.45	-21.93	-2.48	-0.33	2.55
108	21.16	-22.24	-1.08	19.45	-19.07	0.38	2.72	21.16	-26.26	-5.10	19.45	-21.27	-1.82	-0.15	2.72
109	21.16	-22.15	-0.99	19.45	-18.85	0.60	2.89	21.16	-27.05	-5.89	19.45	-20.35	-0.90	0.30	2.89
110	21.16	-21.84	-0.68	19.45	-18.83	0.62	3.03	21.16	-28.41	-7.25	19.45	-19.85	-0.40	0.41	3.03
111	21.16	-21.32	-0.16	19.45	-18.84	0.61	3.25	21.16	-30.44	-9.28	19.45	-19.70	-0.25	0.26	3.25
112	21.16	-20.96	0.20	19.45	-18.79	0.66	3.45	21.16	-31.40	-10.24	19.45	-19.70	-0.25	0.17	3.45
113	21.16	-20.78	0.38	19.45	-18.57	0.88	3.65	21.16	-31.23	-10.07	19.45	-19.47	-0.02	0.39	3.65
114	21.16	-20.66	0.50	19.45	-18.34	1.11	3.83	21.16	-29.83	-8.67	19.45	-19.12	0.33	0.84	3.83
115	21.16	-21.07	0.09	19.45	-18.22	1.23	3.71	21.16	-28.82	-7.66	19.45	-18.59	0.86	1.43	3.71
116	21.16	-22.06	-0.90	19.45	-18.38	1.07	3.21	21.16	-28.27	-7.11	19.45	-18.01	1.44	2.00	3.21
117	21.16	-23.50	-2.34	19.45	-18.91	0.54	2.34	21.16	-29.20	-8.04	19.45	-17.86	1.59	2.04	2.34
118	21.16	-25.33	-4.17	19.45	-19.92	-0.47	1.07	21.16	-31.32	-10.16	19.45	-17.96	1.49	1.78	1.78
119	21.16	-27.23	-6.07	19.45	-21.18	-1.73	-0.37	21.16	-35.15	-13.99	19.45	-18.65	0.80	0.94	0.94
120	21.16	-28.51	-7.35	19.45	-23.01	-3.56	-2.05	21.16	-42.79	-21.63	19.45	-19.80	-0.35	-0.32	-0.32



14.5 dBi Antenna Elevation & Output Power Radiation Pattern (30° to 120°)

11.5 dBi Shark Fin Antenna (including 1 dB feeder cable loss)

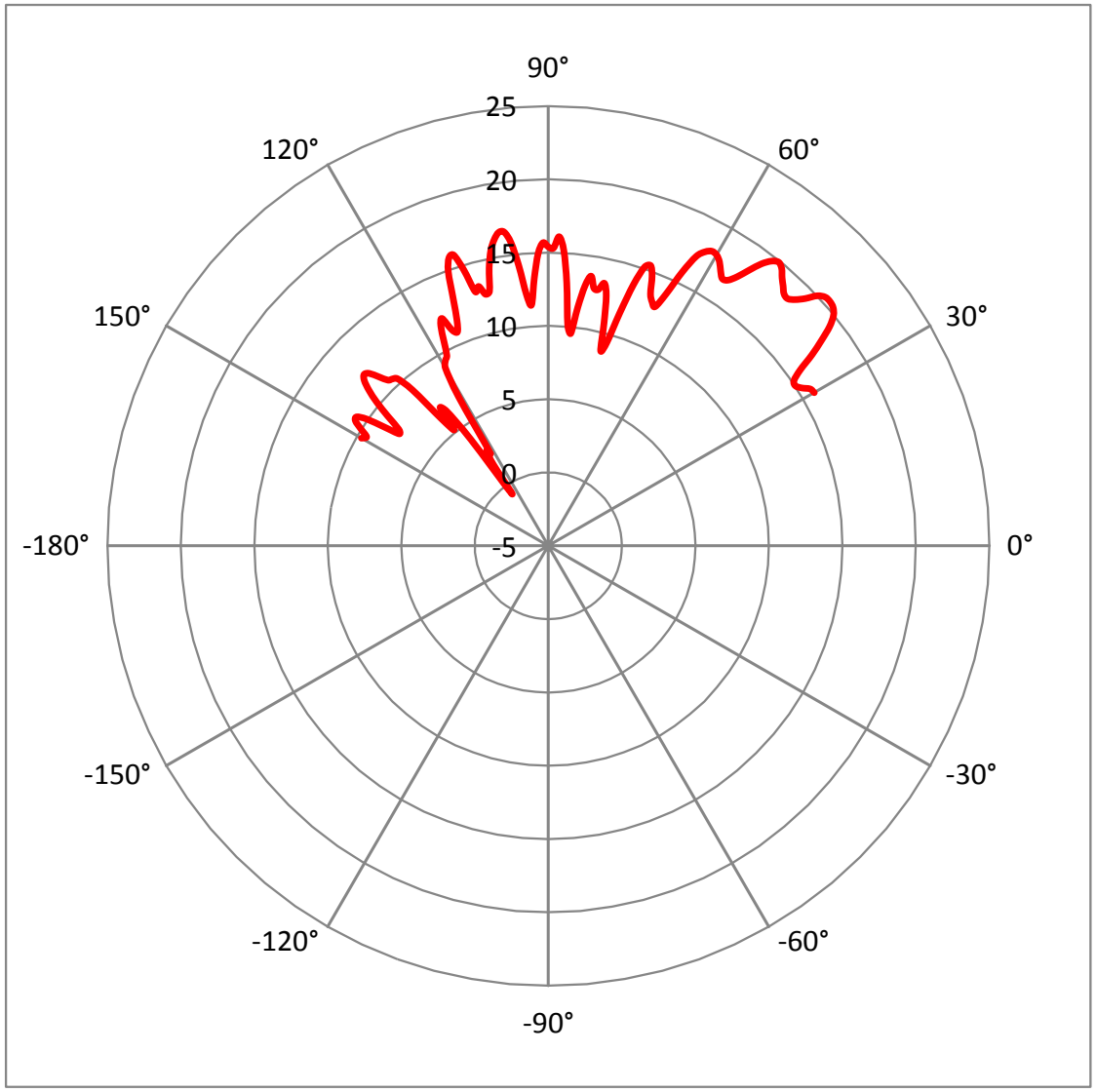
	5.15 GHz							5.25 GHz							Consolidated Highest EIRP
	E_A			E_B			Comb. EIRP	E_A			E_B			Comb. EIRP	
Angle	Port a	Gain a	EIRP a	Port b	Gain b	EIRP b		Port a	Gain a	EIRP a	Port b	Gain b	EIRP b		
Deg	dBm	dBi	dBm	dBm	dBi	dBm	dBm	dBm	dBi	dBm	dBm	dBi	dBm	dBm	dBm
30	9.21	3.73	12.94	7.56	3.73	11.29	15.20	9.21	4.42	13.63	7.56	4.42	11.98	15.89	15.89
31	9.21	3.81	13.02	7.56	3.81	11.37	15.28	9.21	4.30	13.51	7.56	4.30	11.86	15.78	15.78
32	9.21	3.27	12.48	7.56	3.27	10.83	14.74	9.21	3.85	13.06	7.56	3.85	11.41	15.32	15.32
33	9.21	2.73	11.94	7.56	2.73	10.29	14.20	9.21	3.57	12.78	7.56	3.57	11.13	15.04	15.04
34	9.21	2.38	11.59	7.56	2.38	9.94	13.86	9.21	3.68	12.89	7.56	3.68	11.24	15.16	15.16
35	9.21	2.74	11.95	7.56	2.74	10.30	14.21	9.21	4.44	13.65	7.56	4.44	12.00	15.91	15.91
36	9.21	3.81	13.02	7.56	3.81	11.37	15.29	9.21	5.69	14.90	7.56	5.69	13.25	17.17	17.17
37	9.21	5.03	14.24	7.56	5.03	12.59	16.50	9.21	6.77	15.98	7.56	6.77	14.33	18.25	18.25
38	9.21	6.53	15.74	7.56	6.53	14.09	18.00	9.21	7.80	17.01	7.56	7.80	15.36	19.27	19.27
39	9.21	7.72	16.93	7.56	7.72	15.28	19.20	9.21	8.49	17.70	7.56	8.49	16.05	19.96	19.96
40	9.21	8.50	17.71	7.56	8.50	16.06	19.97	9.21	8.82	18.03	7.56	8.82	16.38	20.29	20.29
41	9.21	8.91	18.12	7.56	8.91	16.47	20.38	9.21	8.92	18.13	7.56	8.92	16.48	20.39	20.39
42	9.21	8.88	18.09	7.56	8.88	16.44	20.35	9.21	8.68	17.89	7.56	8.68	16.24	20.16	20.35
43	9.21	8.53	17.74	7.56	8.53	16.09	20.01	9.21	8.39	17.60	7.56	8.39	15.95	19.86	20.01
44	9.21	7.70	16.91	7.56	7.70	15.26	19.18	9.21	7.81	17.02	7.56	7.81	15.37	19.28	19.28
45	9.21	6.89	16.10	7.56	6.89	14.45	18.36	9.21	7.28	16.49	7.56	7.28	14.84	18.75	18.75
46	9.21	6.30	15.51	7.56	6.30	13.86	17.77	9.21	6.96	16.17	7.56	6.96	14.52	18.43	18.43
47	9.21	6.30	15.51	7.56	6.30	13.86	17.78	9.21	7.03	16.24	7.56	7.03	14.59	18.50	18.50
48	9.21	6.89	16.10	7.56	6.89	14.45	18.36	9.21	7.39	16.60	7.56	7.39	14.95	18.86	18.86

49	9.21	7.65	16.86	7.56	7.65	15.21	19.12	9.21	7.76	16.97	7.56	7.76	15.32	19.23	19.23
50	9.21	8.22	17.43	7.56	8.22	15.78	19.69	9.21	8.02	17.23	7.56	8.02	15.58	19.49	19.69
51	9.21	8.42	17.63	7.56	8.42	15.98	19.89	9.21	8.05	17.26	7.56	8.05	15.61	19.53	19.89
52	9.21	8.17	17.38	7.56	8.17	15.73	19.64	9.21	7.65	16.86	7.56	7.65	15.21	19.12	19.64
53	9.21	7.61	16.82	7.56	7.61	15.17	19.08	9.21	6.83	16.04	7.56	6.83	14.39	18.31	19.08
54	9.21	6.77	15.98	7.56	6.77	14.33	18.24	9.21	5.47	14.68	7.56	5.47	13.03	16.94	18.24
55	9.21	5.94	15.15	7.56	5.94	13.50	17.41	9.21	4.05	13.26	7.56	4.05	11.61	15.52	17.41
56	9.21	5.39	14.60	7.56	5.39	12.95	16.86	9.21	3.37	12.58	7.56	3.37	10.93	14.84	16.86
57	9.21	5.25	14.46	7.56	5.25	12.81	16.73	9.21	3.67	12.88	7.56	3.67	11.23	15.14	16.73
58	9.21	5.64	14.85	7.56	5.64	13.20	17.11	9.21	4.80	14.01	7.56	4.80	12.36	16.27	17.11
59	9.21	6.13	15.34	7.56	6.13	13.69	17.60	9.21	5.86	15.07	7.56	5.86	13.42	17.33	17.60
60	9.21	6.43	15.64	7.56	6.43	13.99	17.90	9.21	6.23	15.44	7.56	6.23	13.79	17.71	17.90
61	9.21	6.50	15.71	7.56	6.50	14.06	17.97	9.21	5.95	15.16	7.56	5.95	13.51	17.42	17.97
62	9.21	6.24	15.45	7.56	6.24	13.80	17.71	9.21	4.90	14.11	7.56	4.90	12.46	16.37	17.71
63	9.21	5.68	14.89	7.56	5.68	13.24	17.16	9.21	3.91	13.12	7.56	3.91	11.47	15.38	17.16
64	9.21	4.30	13.51	7.56	4.30	11.86	15.78	9.21	2.69	11.90	7.56	2.69	10.25	14.17	15.78
65	9.21	2.49	11.70	7.56	2.49	10.05	13.96	9.21	1.72	10.93	7.56	1.72	9.28	13.19	13.96
66	9.21	1.08	10.29	7.56	1.08	8.64	12.55	9.21	1.39	10.60	7.56	1.39	8.95	12.86	12.86
67	9.21	0.80	10.01	7.56	0.80	8.36	12.27	9.21	1.59	10.80	7.56	1.59	9.15	13.06	13.06
68	9.21	1.93	11.14	7.56	1.93	9.49	13.40	9.21	2.08	11.29	7.56	2.08	9.64	13.55	13.55
69	9.21	3.21	12.42	7.56	3.21	10.77	14.69	9.21	2.74	11.95	7.56	2.74	10.30	14.22	14.69
70	9.21	3.87	13.08	7.56	3.87	11.43	15.35	9.21	3.51	12.72	7.56	3.51	11.07	14.98	15.35
71	9.21	3.46	12.67	7.56	3.46	11.02	14.94	9.21	3.64	12.85	7.56	3.64	11.20	15.11	15.11
72	9.21	1.88	11.09	7.56	1.88	9.44	13.35	9.21	2.25	11.46	7.56	2.25	9.81	13.72	13.72
73	9.21	0.07	9.28	7.56	0.07	7.63	11.54	9.21	0.13	9.34	7.56	0.13	7.69	11.61	11.61
74	9.21	-2.04	7.17	7.56	-2.04	5.52	9.43	9.21	-2.63	6.58	7.56	-2.63	4.93	8.84	9.43

75	9.21	-3.71	5.50	7.56	-3.71	3.85	7.77	9.21	-2.72	6.49	7.56	-2.72	4.84	8.76	8.76
76	9.21	-4.32	4.89	7.56	-4.32	3.24	7.16	9.21	-0.81	8.40	7.56	-0.81	6.75	10.66	10.66
77	9.21	-3.54	5.67	7.56	-3.54	4.02	7.94	9.21	1.03	10.24	7.56	1.03	8.59	12.51	12.51
78	9.21	-2.43	6.78	7.56	-2.43	5.13	9.05	9.21	1.84	11.05	7.56	1.84	9.40	13.31	13.31
79	9.21	-0.62	8.59	7.56	-0.62	6.94	10.86	9.21	1.33	10.54	7.56	1.33	8.89	12.81	12.81
80	9.21	1.38	10.59	7.56	1.38	8.94	12.85	9.21	1.19	10.40	7.56	1.19	8.75	12.66	12.85
81	9.21	2.15	11.36	7.56	2.15	9.71	13.63	9.21	1.46	10.67	7.56	1.46	9.02	12.93	13.63
82	9.21	1.43	10.64	7.56	1.43	8.99	12.90	9.21	0.68	9.89	7.56	0.68	8.24	12.15	12.90
83	9.21	-0.11	9.10	7.56	-0.11	7.45	11.37	9.21	-1.12	8.09	7.56	-1.12	6.44	10.35	11.37
84	9.21	-1.91	7.30	7.56	-1.91	5.65	9.56	9.21	-2.63	6.58	7.56	-2.63	4.93	8.84	9.56
85	9.21	-2.39	6.82	7.56	-2.39	5.17	9.08	9.21	-1.35	7.86	7.56	-1.35	6.21	10.12	10.12
86	9.21	-1.12	8.09	7.56	-1.12	6.44	10.35	9.21	1.49	10.70	7.56	1.49	9.05	12.96	12.96
87	9.21	1.04	10.25	7.56	1.04	8.60	12.51	9.21	3.69	12.90	7.56	3.69	11.25	15.16	15.16
88	9.21	2.54	11.75	7.56	2.54	10.10	14.01	9.21	4.63	13.84	7.56	4.63	12.19	16.10	16.10
89	9.21	3.31	12.52	7.56	3.31	10.87	14.78	9.21	3.85	13.06	7.56	3.85	11.41	15.32	15.32
90	9.21	3.92	13.13	7.56	3.92	11.48	15.39	9.21	2.29	11.50	7.56	2.29	9.85	13.76	15.39
91	9.21	4.21	13.42	7.56	4.21	11.77	15.68	9.21	0.60	9.81	7.56	0.60	8.16	12.07	15.68
92	9.21	3.47	12.68	7.56	3.47	11.03	14.95	9.21	-1.01	8.20	7.56	-1.01	6.55	10.46	14.95
93	9.21	1.80	11.01	7.56	1.80	9.36	13.28	9.21	-2.17	7.04	7.56	-2.17	5.39	9.30	13.28
94	9.21	-0.01	9.20	7.56	-0.01	7.55	11.46	9.21	-1.31	7.90	7.56	-1.31	6.25	10.16	11.46
95	9.21	-0.30	8.91	7.56	-0.30	7.26	11.18	9.21	0.78	9.99	7.56	0.78	8.34	12.25	12.25
96	9.21	1.73	10.94	7.56	1.73	9.29	13.20	9.21	2.72	11.93	7.56	2.72	10.28	14.20	14.20
97	9.21	3.81	13.02	7.56	3.81	11.37	15.28	9.21	4.35	13.56	7.56	4.35	11.91	15.82	15.82
98	9.21	5.08	14.29	7.56	5.08	12.64	16.55	9.21	5.14	14.35	7.56	5.14	12.70	16.61	16.61
99	9.21	5.17	14.38	7.56	5.17	12.73	16.64	9.21	4.34	13.55	7.56	4.34	11.90	15.82	16.64
100	9.21	4.74	13.95	7.56	4.74	12.30	16.21	9.21	2.57	11.78	7.56	2.57	10.13	14.04	16.21

101	9.21	4.05	13.26	7.56	4.05	11.61	15.52	9.21	0.35	9.56	7.56	0.35	7.91	11.83	15.52
102	9.21	2.89	12.10	7.56	2.89	10.45	14.36	9.21	-0.74	8.47	7.56	-0.74	6.82	10.73	14.36
103	9.21	1.34	10.55	7.56	1.34	8.90	12.81	9.21	-0.01	9.20	7.56	-0.01	7.55	11.46	12.81
104	9.21	0.15	9.36	7.56	0.15	7.71	11.62	9.21	1.21	10.42	7.56	1.21	8.77	12.69	12.69
105	9.21	0.15	9.36	7.56	0.15	7.71	11.62	9.21	1.84	11.05	7.56	1.84	9.40	13.32	13.32
106	9.21	1.33	10.54	7.56	1.33	8.89	12.80	9.21	1.56	10.77	7.56	1.56	9.12	13.03	13.03
107	9.21	3.21	12.42	7.56	3.21	10.77	14.68	9.21	1.65	10.86	7.56	1.65	9.21	13.12	14.68
108	9.21	4.38	13.59	7.56	4.38	11.94	15.85	9.21	2.09	11.30	7.56	2.09	9.65	13.56	15.85
109	9.21	4.30	13.51	7.56	4.30	11.86	15.77	9.21	1.49	10.70	7.56	1.49	9.05	12.97	15.77
110	9.21	3.43	12.64	7.56	3.43	10.99	14.90	9.21	0.06	9.27	7.56	0.06	7.62	11.53	14.90
111	9.21	1.59	10.80	7.56	1.59	9.15	13.06	9.21	-2.70	6.51	7.56	-2.70	4.86	8.78	13.06
112	9.21	0.12	9.33	7.56	0.12	7.68	11.59	9.21	-3.91	5.30	7.56	-3.91	3.65	7.56	11.59
113	9.21	-0.63	8.58	7.56	-0.63	6.93	10.84	9.21	-2.83	6.38	7.56	-2.83	4.73	8.64	10.84
114	9.21	-0.35	8.86	7.56	-0.35	7.21	11.12	9.21	-0.82	8.39	7.56	-0.82	6.74	10.66	11.12
115	9.21	0.33	9.54	7.56	0.33	7.89	11.80	9.21	0.64	9.85	7.56	0.64	8.20	12.11	12.11
116	9.21	0.21	9.42	7.56	0.21	7.77	11.69	9.21	0.20	9.41	7.56	0.20	7.76	11.67	11.69
117	9.21	-0.84	8.37	7.56	-0.84	6.72	10.64	9.21	-2.45	6.76	7.56	-2.45	5.11	9.02	10.64
118	9.21	-1.76	7.45	7.56	-1.76	5.80	9.71	9.21	-6.99	2.22	7.56	-6.99	0.57	4.48	9.71
119	9.21	-2.03	7.18	7.56	-2.03	5.53	9.44	9.21	-10.93	-1.72	7.56	-10.93	-3.37	0.54	9.44
120	9.21	-2.47	6.74	7.56	-2.47	5.09	9.00	9.21	-13.35	-4.14	7.56	-13.35	-5.79	-1.88	9.00
121	9.21	-4.63	4.58	7.56	-4.63	2.93	6.84	9.21	-16.74	-7.53	7.56	-16.74	-9.18	-5.27	6.84
122	9.21	-9.04	0.17	7.56	-9.04	-1.48	2.43	9.21	-12.25	-3.04	7.56	-12.25	-4.69	-0.78	2.43
123	9.21	-14.95	-5.74	7.56	-14.95	-7.39	-3.48	9.21	-8.76	0.45	7.56	-8.76	-1.20	2.72	2.72
124	9.21	-15.87	-6.66	7.56	-15.87	-8.31	-4.40	9.21	-9.77	-0.56	7.56	-9.77	-2.21	1.70	1.70
125	9.21	-12.14	-2.93	7.56	-12.14	-4.58	-0.67	9.21	-13.20	-3.99	7.56	-13.20	-5.64	-1.73	-0.67
126	9.21	-7.49	1.72	7.56	-7.49	0.07	3.98	9.21	-12.78	-3.57	7.56	-12.78	-5.22	-1.31	3.98

127	9.21	-4.96	4.25	7.56	-4.96	2.60	6.51	9.21	-10.92	-1.71	7.56	-10.92	-3.36	0.55	6.51
128	9.21	-4.51	4.70	7.56	-4.51	3.05	6.96	9.21	-11.00	-1.79	7.56	-11.00	-3.44	0.48	6.96
129	9.21	-6.29	2.92	7.56	-6.29	1.27	5.18	9.21	-9.06	0.15	7.56	-9.06	-1.50	2.42	5.18
130	9.21	-9.02	0.19	7.56	-9.02	-1.46	2.45	9.21	-5.17	4.04	7.56	-5.17	2.39	6.30	6.30
131	9.21	-9.99	-0.78	7.56	-9.99	-2.43	1.48	9.21	-2.40	6.81	7.56	-2.40	5.16	9.08	9.08
132	9.21	-8.12	1.09	7.56	-8.12	-0.56	3.35	9.21	-1.13	8.08	7.56	-1.13	6.43	10.34	10.34
133	9.21	-5.92	3.29	7.56	-5.92	1.64	5.55	9.21	-0.91	8.30	7.56	-0.91	6.65	10.56	10.56
134	9.21	-3.92	5.29	7.56	-3.92	3.64	7.55	9.21	-0.76	8.45	7.56	-0.76	6.80	10.71	10.71
135	9.21	-1.82	7.39	7.56	-1.82	5.74	9.65	9.21	-0.18	9.03	7.56	-0.18	7.38	11.30	11.30
136	9.21	-0.40	8.81	7.56	-0.40	7.16	11.08	9.21	0.46	9.67	7.56	0.46	8.02	11.93	11.93
137	9.21	0.10	9.31	7.56	0.10	7.66	11.58	9.21	0.67	9.88	7.56	0.67	8.23	12.14	12.14
138	9.21	-0.47	8.74	7.56	-0.47	7.09	11.01	9.21	0.37	9.58	7.56	0.37	7.93	11.84	11.84
139	9.21	-2.12	7.09	7.56	-2.12	5.44	9.35	9.21	-0.31	8.90	7.56	-0.31	7.25	11.16	11.16
140	9.21	-4.64	4.57	7.56	-4.64	2.92	6.83	9.21	-1.24	7.97	7.56	-1.24	6.32	10.23	10.23
141	9.21	-7.62	1.59	7.56	-7.62	-0.06	3.85	9.21	-2.42	6.79	7.56	-2.42	5.14	9.05	9.05
142	9.21	-9.80	-0.59	7.56	-9.80	-2.24	1.67	9.21	-3.56	5.65	7.56	-3.56	4.00	7.91	7.91
143	9.21	-9.42	-0.21	7.56	-9.42	-1.86	2.06	9.21	-3.78	5.43	7.56	-3.78	3.78	7.69	7.69
144	9.21	-7.59	1.62	7.56	-7.59	-0.03	3.89	9.21	-2.70	6.51	7.56	-2.70	4.86	8.77	8.77
145	9.21	-5.82	3.39	7.56	-5.82	1.74	5.66	9.21	-1.41	7.80	7.56	-1.41	6.15	10.06	10.06
146	9.21	-4.77	4.44	7.56	-4.77	2.79	6.71	9.21	-0.75	8.46	7.56	-0.75	6.81	10.73	10.73
147	9.21	-4.52	4.69	7.56	-4.52	3.04	6.95	9.21	-0.83	8.38	7.56	-0.83	6.73	10.64	10.64
148	9.21	-4.74	4.47	7.56	-4.74	2.82	6.74	9.21	-1.44	7.77	7.56	-1.44	6.12	10.03	10.03
149	9.21	-4.64	4.57	7.56	-4.64	2.92	6.83	9.21	-2.05	7.16	7.56	-2.05	5.51	9.42	9.42
150	9.21	-3.53	5.68	7.56	-3.53	4.03	7.94	9.21	-1.79	7.42	7.56	-1.79	5.77	9.68	9.68



11.5 dBi Shark Fin Antenna Elevation Radiation Pattern (30° to 150°)