ACTIVE 3D ANTENNA PATTERN MEASUREMENTS

CTIA 2010-01-06

EUT:	Thor
Serial Number:	138318
Customer:	Ademco, Inc.
Attendees:	Connor
Customer Project:	None
Tested By:	Andrew Rogstad
Test Run Description:	138318 - Ant B - 903 MHz

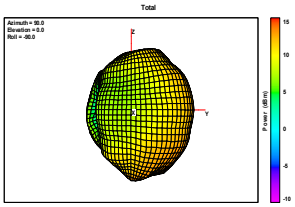
Work Order:	ADEM0022
Date:	2/9/2022
Temperature:	22.3 °C
Relative Humidity:	25.9% RH
Bar. Pressure:	1006.3 mbar
Job Site:	MN10

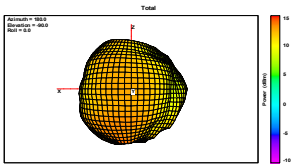
COMMENTS

Antenna B

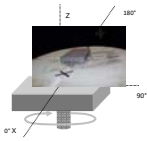
3D PATTERN DATA

Frequency (MHz)	903
Ant. Port Input Pwr. (dBm)	11.00
Tot. Rad. Pwr. (dBm)	10.02
Peak EIRP (dBm)	14.25
Directivity (dBi)	4.23
Efficiency (dB)	-0.98
Efficiency (%)	79.75
Gain (dBi)	3.25
Average Gain (dB)	-0.98
E-Plane 3 dB BW (°)	108.00

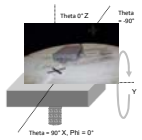




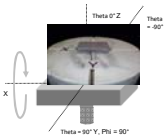
Azimuth Cut (Theta Axis = 90°)



Elevation Cut (Phi Axis = 0°)

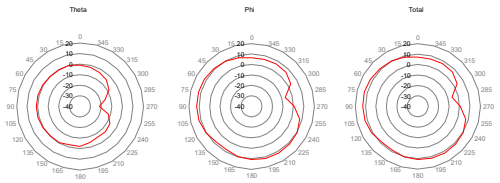


Elevation Cut (Phi Axis = 90°)

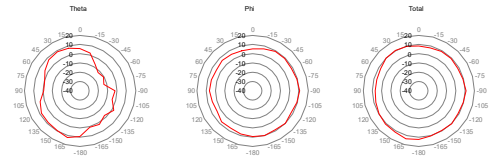


POLAR PLOTS

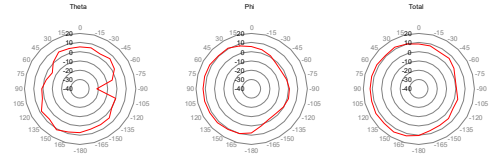
Power (dBm) — Azimuth Cut (Theta Axis = 90°)



Power (dBm) — Elevation Cut (Phi Axis = 0°)



Power (dBm) — Elevation Cut (Phi Axis = 90°)



Elevation Cuts								Azimuth Cuts				
Angle	Theta		Phi		Total		Cables	Angle	Theta	Phi	Total	Cables
Phi Angle (°)	0	90	0	90	0	90						
Theta Angle (°)	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)	Power (dBm)						
0	5.57	5.58	5.58	5.57	8.58	8.58	0	0	-0.76	6.54	7.28	0
-15	2.35	5.75	6.74	3.69	8.08	7.85	-15	345	-1.79	6.36	6.98	345
-30	-7.27	3.3	8.92	1.22	9.02	5.39	-30	330	-3.07	6.85	7.27	330
-45	-12.29	5.72	9.21	-1.98	9.24	6.4	-45	315	-4.73	6.35	6.67	315
-60	-10.5	2.73	8.54	-2.48	8.59	3.87	-60	300	-8.42	3.35	3.63	300
-75	-13.31	-4.04	9.32	-0.95	9.35	0.78	-75	285	-15.27	-6.73	-6.16	285
-90	-2.25	-21.76	10.61	0.76	10.83	0.79	-90	270	-21.76	0.76	0.79	270
-105	-4	-0.21	9.38	1.21	9.58	3.57	-105	255	-12.27	7.41	7.46	255
-120	2.17	-0.15	7.98	-0.28	8.99	2.8	-120	240	-7.49	10.21	10.28	240
-135	-2.62	4.63	10.05	-2.39	10.28	5.42	-135	225	-6.06	11.26	11.34	225
-150	1.72	4.59	8.47	-2.22	9.3	5.41	-150	210	-6.22	11.58	11.66	210
-165	0.82	5.24	10.12	1.44	10.6	6.76	-165	195	-4.42	11.49	11.6	195
-180	9.36	7.1	9.34	7.63	12.36	10.38	-180	180	-2.25	10.61	10.83	180
165	12.05	8.4	8.4	10.08	13.61	12.33	165	165	-2.21	9.75	10.02	165
150	9.58	10.86	6.48	10.8	11.31	13.84	150	150	-0.59	7.77	8.36	150
135	8.47	6.55	7.23	11.87	10.9	12.99	135	135	-0.41	7.89	8.49	135
120	8.22	8.09	3.96	11.93	9.6	13.43	120	120	0.45	10.38	10.8	120
105	4.83	1.99	4.78	12.23	7.82	12.62	105	105	1.25	11.95	12.31	105
90	-0.76	1.41	6.54	12.52	7.28	12.84	90	90	1.41	12.52	12.84	90
75	-0.53	-2.29	5.99	12.36	6.86	12.5	75	75	1.22	12.49	12.8	75
60	3.83	-5.52	4.81	12.05	7.36	12.13	60	60	0.72	11.88	12.2	60
45	7.46	0.65	6.32	10.52	9.94	10.95	45	45	-0.06	10.87	11.2	45
30	8.6	5.97	5.39	10.49	10.29	11.81	30	30	-0.09	9.74	10.17	30
15	7.83	5.03	4.64	8.24	9.53	9.94	15	15	0.18	8.12	8.76	15

Point Values	
Ant. Port In	11
0 Tot. Rad. Pv	10.0172
345 Peak EIRP (c	14.2465
330 Directivity (c	4.22935
315 Efficiency (d	-0.982801
300 Efficiency (%	79.748
285 Gain (dBi)	3.24655
270 NHPRP zPV/	8.37493
255 NHPRP zPV/	6.74703
240 NHPRP zPV/	5.55415
225 Upper Hem.	6.49552
210 Lower Hem.	7.46436
195 NHPRP4 / T	-1.64227
180 NHPRP4 / T	68.513
165 Near Horz.1	9.88008
150 NHPRP6 / T	-3.27017
135 NHPRP6 / T	47.0959
120 Near Horz.1	9.75733
105 NHPRP8 / T	-4.46305
90 NHPRP8 / T	35.7845
75 Near Horz.1	9.72575
60 UHPRP / TR	-3.52168
45 UHPRP / TR	44.4459
30 Upper Hem.	9.50582
15 LHPRP / TRI	-2.55284
LHPRP / TRI	55.5541
Lower Hem.	10.4747
PRP (dBm) (	8.41427
Front/Back	8.3321
Phi BW (°)	72
#NAME?	24
#NAME?	48
Theta BW (°	154
#NAME?	25
#NAME?	129
Boresight Pl	75
Boresight Tl	150
Maximum P	14.2465
Minimum P	-6.1649
Average Pov	10.1571
Max/Min Ra	20.4114
Max/Avg Ra	4.0894
Min/Avg Ra	-16.322
Minimum G	-17.1649
Maximum G	3.24655
Average Gai	-0.982801
E-Plane BW	108
#NAME?	43
#NAME?	65
H-Plane BW	85
#NAME?	34
#NAME?	51

ACTIVE 3D ANTENNA PATTERN MEASUREMENTS

CTA 2010-01-04

EUT:	Thor
Serial Number:	138318
Customer:	Ademco, Inc.
Attendees:	Connor
Customer Project:	None
Tested By:	Andrew Rogstad
Test Run Description:	138318 - Ant A - 903 MHz

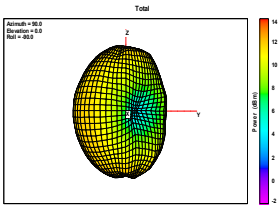
Work Order:	ADEM0022
Date:	2/9/2022
Temperature:	22.3 °C
Relative Humidity:	25.9% RH
Bar. Pressure:	1006.3 mbar
Job Site:	MN10

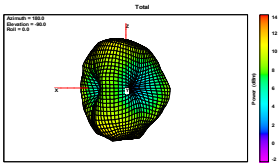
COMMENTS

Antenna A

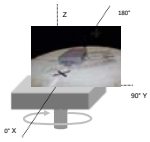
3D PATTERN DATA

Frequency (MHz)	903
Ant. Port Input Pwr. (dBm)	11.00
Tot. Rad. Pwr. (dBm)	9.45
Peak EIRP (dBm)	12.50
Directivity (dBi)	3.05
Efficiency (dB)	-1.55
Efficiency (%)	69.98
Gain (dBi)	1.50
Average Gain (dB)	-1.55
E-Plane 3 dB BW (°)	89.00

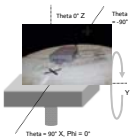




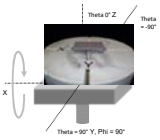
Azimuth Cut (Theta Axis = 90°)



Elevation Cut (Phi Axis = 0°)

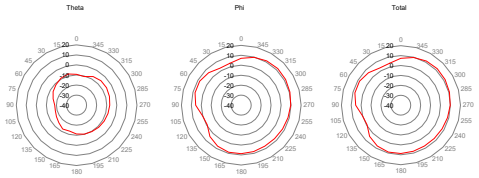


Elevation Cut (Phi Axis = 90°)

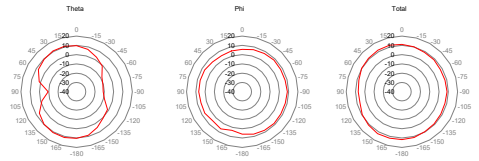


POLAR PLOTS

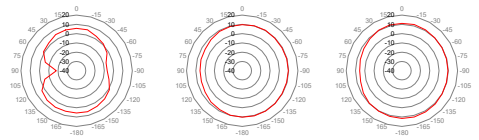
Power (dBm) — Azimuth Cut (Theta Axis = 90°)



Power (dBm) — Elevation Cut (Phi Axis = 0°)



Power (dBm) — Elevation Cut (Phi Axis = 90°)



Elevation Cuts							Azimuth Cuts					
Angle	Theta		Phi		Total	Lables	Angle	Theta	Phi	Total	Lables	
Phi Angle (°)	0	90	0	90	0	90						Point Values
Theta Angle (°)	Power (dBi	Power (dBi	Power (dBi	Power (dBi	Power (dBm)	Power (dBm)						Ant. Port In 11
0	9.61	5.65	5.65	9.61	11.08	11.08	0	0	-9.33	7.02	7.12	0 Tot. Rad. Pr 9.45004
-15	7.31	5.62	6.9	10.13	10.12	11.44	-15	345	-10.58	9.74	9.79	345 Peak EIRP (12.5012
-30	2.97	2.69	7.6	10.25	8.89	10.96	-30	330	-7.1	11.32	11.39	330 Directivity (3.05117
-45	-0.92	0.96	8.3	9.65	8.79	10.2	-45	315	-5.61	11.87	11.95	315 Efficiency (- -1.54996
-60	-8.41	-1.95	7.78	9.54	7.88	9.84	-60	300	-5.45	11.5	11.59	300 Efficiency (° 69.9849
-75	-10.56	-7.05	7.99	9.66	8.05	9.75	-75	285	-6.15	10.64	10.73	285 Gain (dBi) 1.50122
-90	-11.23	-7	8.59	9.65	8.63	9.74	-90	270	-7	9.65	9.74	270 NHPRP sPi 7.30515
-105	-8.82	-3.82	8.08	9.53	8.17	9.72	-105	255	-7.68	8.67	8.77	255 NHPRP sPi 5.4954
-120	-1.56	0.89	8.1	9.57	8.55	10.12	-120	240	-8.2	7.86	7.97	240 NHPRP sPi 4.2253
-135	0.37	2.94	8.51	10.05	9.13	10.82	-135	225	-8.83	7.39	7.49	225 Upper Hem 6.29232
-150	4.57	4.23	8.15	10.35	9.73	11.3	-150	210	-9.64	7.52	7.6	210 Lower Hem 6.58233
-165	8.75	5.83	7.41	10.42	11.14	11.71	-165	195	-10.16	8.15	8.22	195 NHPRP4 / T -2.1449
-180	10.17	5.59	5.8	10.07	11.52	11.39	-180	180	-11.23	8.59	8.63	180 NHPRP4 / T 61.0254
165	11.24	5.35	3.2	9.68	11.87	11.04	165	165	-13.17	8.87	8.9	165 Near Horz. 8.8103
150	10.97	5.59	6.26	8.56	12.23	10.33	150	150	-12.6	7.43	7.47	150 NHPRP6 / T -3.95465
135	9.67	5.07	4.65	7.73	10.86	9.61	135	135	-15.12	4.44	4.49	135 NHPRP6 / T 40.2286
120	6.33	3.15	6.47	6.26	9.41	7.98	120	120	-17	-0.7	-0.6	120 Near Horz. 8.5057
105	-1.36	-4.51	5.99	5.58	6.72	5.98	105	105	-18.24	0.26	0.32	105 NHPRP8 / T -5.22475
90	-9.33	-18.2	7.02	5.59	7.12	5.61	90	90	-18.2	5.59	5.61	90 NHPRP8 / T 30.0279
75	1.7	-5.01	6.87	6.11	8.03	6.43	75	75	-15.72	8	8.02	75 Near Horz. 8.3969
60	7.65	1.06	6.75	6.11	10.23	7.29	60	60	-13.06	8.12	8.16	60 UHPRP / TR -3.15772
45	9.34	2.37	5.33	7.56	10.8	8.71	45	45	-11.18	6.09	6.17	45 UHPRP / TR 48.3312
30	10.77	5	4.82	8.87	11.75	10.37	30	30	-9.08	2.82	3.09	30 Upper Hem 9.30262
15	10.67	5.5	5.43	9.44	11.81	10.91	15	15	-7.91	3.46	3.76	15 LHPRP / TR -2.86772
												LHPRP / TR 51.6688
												Lower Hem 9.59263
												PRP (dBm) 7.81766
												Front/Back 2.05923
												Phi BW (° 216
												#NAME? 37
												#NAME? 179
												Theta BW (94
												#NAME? 57
												#NAME? 37
												Boresight P 30
												Boresight T 165
												Maximum I 12.5012
												Minimum P -0.603578
												Average Po 10.1365
												Max/Min R 13.1048
												Max/Avg R 2.36473
												Min/Avg Ri -10.7401
												Minimum (-11.6036
												Maximum I 1.50122
												Average Ga -1.54996
												E-Plane BW 89
												#NAME? 41
												#NAME? 48
												H-Plane BW 129
												#NAME? 46
												#NAME? 83