TECHNICAL
DOCUMENTATION

Fox Arizona Jim McDermaid

BROADCAST

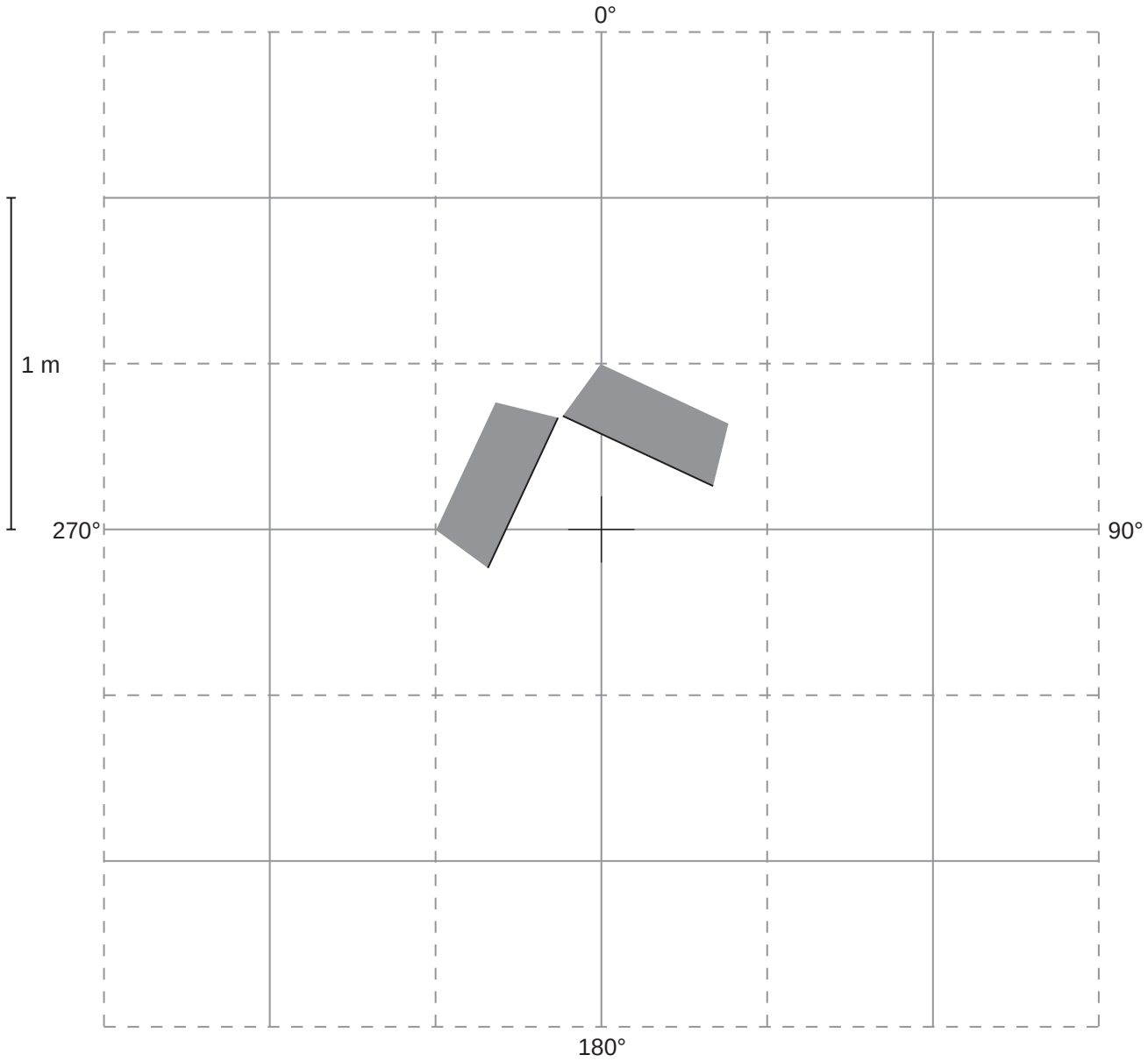
Williams

4x2 750 10210 BB panel array

2017.10.06 Kathrein USA mj

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System Summary



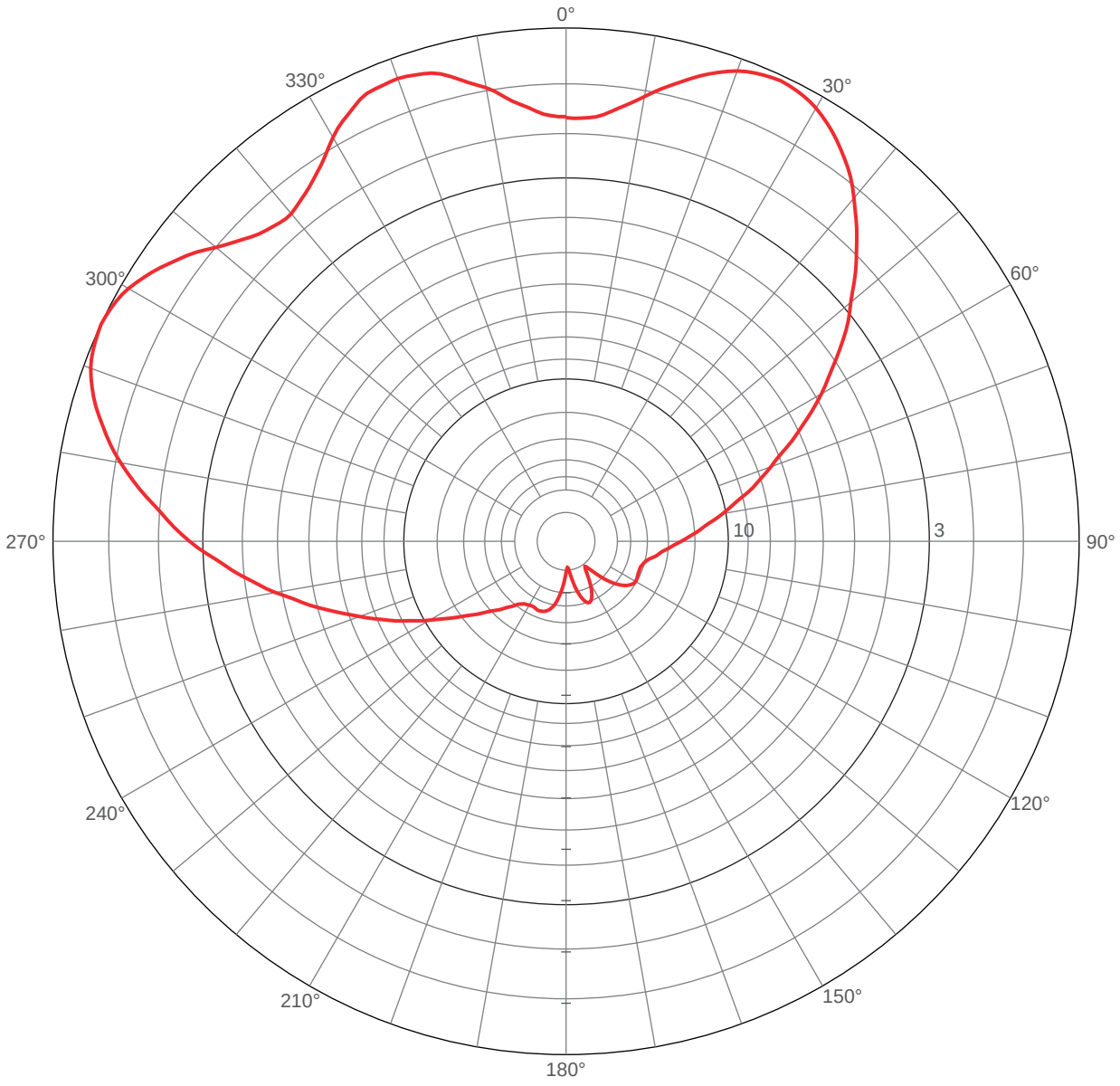
Sketch Top View, M 1 : 20

Antenna Order No.:	75010210	Frequency:	575 MHz
Panels per Bay:	2	Max ERP:	
Radius:	261 mm	Input Power:	
Number of Bays:	4	Harness Loss:	
Verticale Distance:	1150 mm	Transmision Line:	no
Physical Aperture:	4450 mm	Length:	
		Total Loss:	0 dB
		Gain:	13.8 dBd
		Efficiency:	100 %

Subject to alternation

KATHREIN	Fox Arizona Jim McDermaid	Williams	Date: 2017.10.06
	4x2 750 10210 BB panel array	Kathrein USA mj	Page: 2

Azimuthal Pattern (polar-linear)



Antenna, Order No. 75010210
Panels per Bay: 2

Frequency: 575 MHz
Azimuthal Directivity: 4.27 dB
Directivity: 13.8 dBd

No.	Azimuth [°]	Radius [mm]	Offset [mm]	Power	Phase [°]
1	295	261	0	1	0
2	25	261	0	1	0

Subject to alternation

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Fox Arizona Jim McDermaid — Williams
4x2 750 10210 BB panel array — Kathrein USA mj

Date: 2017.10.06
Page: 3

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Azimuthal Pattern

Angle	dB	Angle	dB	Angle	dB	Angle	dB	Angle	dB	Angle	dB	Angle	dB	Angle	dB
0	-1.668	45	-1.933	90	-12.97	135	-19.889	180	-24.257	225	-14.442	270	-2.688	315	-1.446
1	-1.679	46	-2.088	91	-13.257	136	-20.507	181	-23.46	226	-14.238	271	-2.512	316	-1.494
2	-1.672	47	-2.251	92	-13.536	137	-21.163	182	-22.642	227	-14.015	272	-2.342	317	-1.533
3	-1.656	48	-2.432	93	-13.769	138	-21.838	183	-21.845	228	-13.763	273	-2.187	318	-1.569
4	-1.63	49	-2.623	94	-13.992	139	-22.484	184	-21.125	229	-13.478	274	-2.038	319	-1.592
5	-1.575	50	-2.801	95	-14.246	140	-23.087	185	-20.48	230	-13.182	275	-1.875	320	-1.585
6	-1.493	51	-2.96	96	-14.483	141	-23.638	186	-19.897	231	-12.9	276	-1.703	321	-1.547
7	-1.404	52	-3.122	97	-14.662	142	-24.073	187	-19.365	232	-12.65	277	-1.538	322	-1.498
8	-1.317	53	-3.308	98	-14.806	143	-24.232	188	-18.899	233	-12.386	278	-1.385	323	-1.448
9	-1.221	54	-3.516	99	-14.962	144	-24.051	189	-18.463	234	-12.087	279	-1.238	324	-1.39
10	-1.113	55	-3.728	100	-15.167	145	-23.668	190	-18.098	235	-11.775	280	-1.096	325	-1.316
11	-1.001	56	-3.947	101	-15.402	146	-23.17	191	-17.825	236	-11.472	281	-0.96	326	-1.237
12	-0.897	57	-4.173	102	-15.609	147	-22.56	192	-17.598	237	-11.179	282	-0.838	327	-1.154
13	-0.8	58	-4.388	103	-15.774	148	-21.884	193	-17.403	238	-10.886	283	-0.727	328	-1.054
14	-0.704	59	-4.591	104	-15.904	149	-21.227	194	-17.223	239	-10.582	284	-0.623	329	-0.942
15	-0.605	60	-4.81	105	-16.011	150	-20.631	195	-17.105	240	-10.248	285	-0.515	330	-0.833
16	-0.51	61	-5.046	106	-16.089	151	-20.088	196	-17.005	241	-9.918	286	-0.414	331	-0.735
17	-0.426	62	-5.293	107	-16.156	152	-19.596	197	-16.92	242	-9.633	287	-0.327	332	-0.657
18	-0.35	63	-5.555	108	-16.221	153	-19.175	198	-16.856	243	-9.349	288	-0.252	333	-0.591
19	-0.28	64	-5.822	109	-16.275	154	-18.82	199	-16.822	244	-9.025	289	-0.183	334	-0.518
20	-0.219	65	-6.074	110	-16.292	155	-18.521	200	-16.799	245	-8.71	290	-0.123	335	-0.446
21	-0.173	66	-6.331	111	-16.283	156	-18.263	201	-16.767	246	-8.443	291	-0.08	336	-0.4
22	-0.141	67	-6.624	112	-16.278	157	-18.077	202	-16.769	247	-8.182	292	-0.05	337	-0.386
23	-0.117	68	-6.932	113	-16.266	158	-17.964	203	-16.784	248	-7.895	293	-0.029	338	-0.379
24	-0.1	69	-7.2	114	-16.252	159	-17.895	204	-16.836	249	-7.619	294	-0.013	339	-0.367
25	-0.087	70	-7.43	115	-16.23	160	-17.902	205	-16.887	250	-7.366	295	0	340	-0.36
26	-0.099	71	-7.682	116	-16.198	161	-17.993	206	-16.918	251	-7.107	296	-0.011	341	-0.375
27	-0.118	72	-7.951	117	-16.157	162	-18.159	207	-16.922	252	-6.833	297	-0.028	342	-0.4
28	-0.144	73	-8.196	118	-16.126	163	-18.372	208	-16.92	253	-6.564	298	-0.053	343	-0.423
29	-0.178	74	-8.435	119	-16.116	164	-18.655	209	-16.913	254	-6.299	299	-0.085	344	-0.455
30	-0.225	75	-8.728	120	-16.112	165	-19.004	210	-16.87	255	-6.027	300	-0.132	345	-0.513
31	-0.286	76	-9.06	121	-16.13	166	-19.402	211	-16.802	256	-5.768	301	-0.195	346	-0.598
32	-0.352	77	-9.366	122	-16.187	167	-19.851	212	-16.753	257	-5.539	302	-0.262	347	-0.692
33	-0.426	78	-9.633	123	-16.286	168	-20.359	213	-16.725	258	-5.322	303	-0.332	348	-0.785
34	-0.51	79	-9.9	124	-16.405	169	-20.962	214	-16.656	259	-5.072	304	-0.413	349	-0.865
35	-0.603	80	-10.173	125	-16.542	170	-21.675	215	-16.538	260	-4.805	305	-0.503	350	-0.942
36	-0.699	81	-10.458	126	-16.701	171	-22.417	216	-16.417	261	-4.566	306	-0.59	351	-1.037
37	-0.798	82	-10.773	127	-16.892	172	-23.164	217	-16.283	262	-4.36	307	-0.676	352	-1.157
38	-0.909	83	-11.094	128	-17.129	173	-23.947	218	-16.088	263	-4.145	308	-0.774	353	-1.268
39	-1.039	84	-11.365	129	-17.397	174	-24.738	219	-15.836	264	-3.917	309	-0.888	354	-1.351
40	-1.182	85	-11.608	130	-17.707	175	-25.387	220	-15.602	265	-3.705	310	-1.004	355	-1.428
41	-1.327	86	-11.866	131	-18.045	176	-25.768	221	-15.411	266	-3.516	311	-1.108	356	-1.514
42	-1.466	87	-12.154	132	-18.433	177	-25.852	222	-15.191	267	-3.316	312	-1.2	357	-1.584
43	-1.611	88	-12.436	133	-18.866	178	-25.565	223	-14.928	268	-3.093	313	-1.288	358	-1.622
44	-1.771	89	-12.701	134	-19.347	179	-24.989	224	-14.663	269	-2.878	314	-1.375	359	-1.645

Frequency : 575 MHz

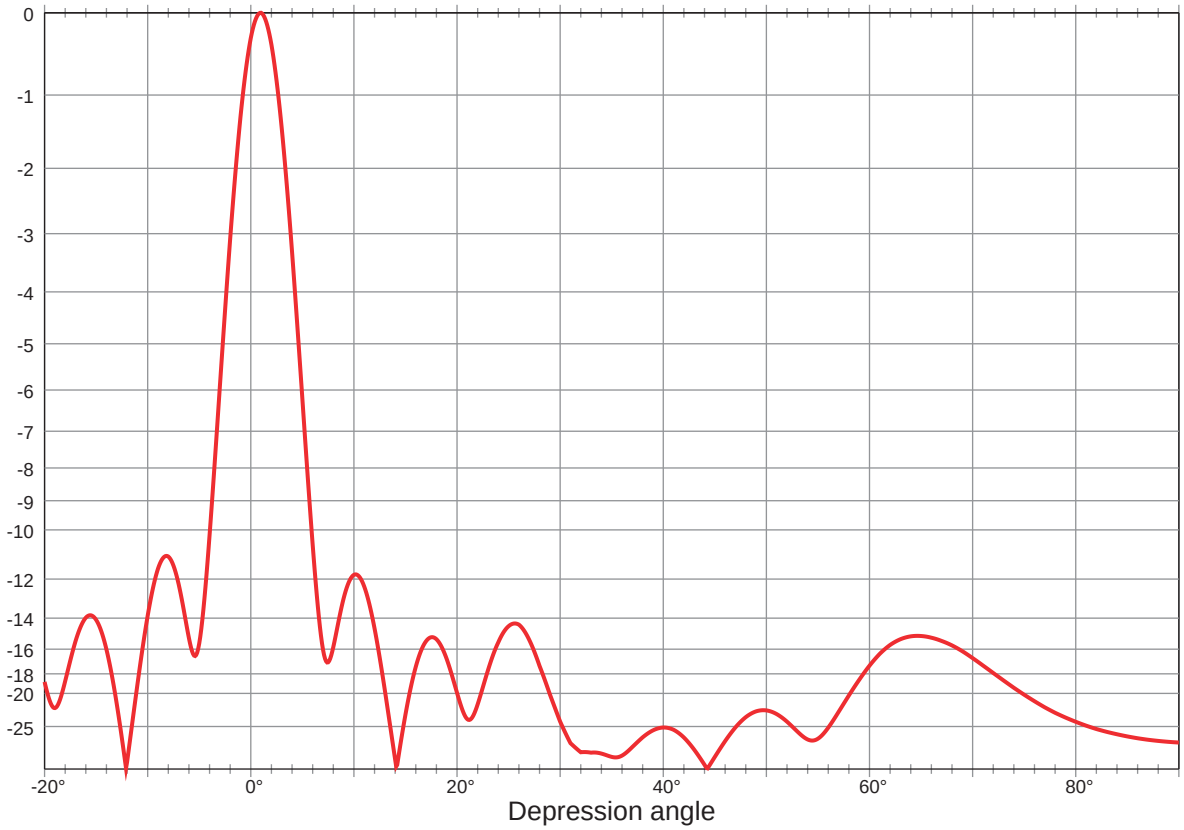
Subject to alternation

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Fox Arizona Jim McDermaid — Williams — Date: 2017.10.06

4x2 750 10210 BB panel array — Kathrein USA mj — Page: 1

Elevation Pattern (cartesian-linear)



Antenna, Order No. 75010210
Number o Bays: 4

Frequency:	575 MHz
Elevation Directivity:	9.52 dBd
Directivity:	13.8 dBd
Downtilt:	1°
Compensation:	21.93 %

No.	Vert. Distance [mm]	Power	Phase [°]
4	3450	1	66.5
3	2300	1	27.7
2	1150	1	13.8
1	0	1	25

Subject to alternation

KATHREIN

Fox Arizona Jim McDermaid — Williams — Date: 2017.10.06

4x2 750 10210 BB panel array — Kathrein USA mj — Page: 4

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Elevation Pattern

Angle	dB	Angle	dB	Angle	dB	Angle	dB	Angle	dB	Angle	dB	Angle	dB	Angle	dB
0	-0.294	45	-35.902	90	-29.109	135	-57.721	180	-23.695	225	-49.282	270	-38.024	315	-24.009
1	0	46	-28.647	91	-29.256	136	-66.662	181	-24.698	226	-47.914	271	-37.843	316	-26.357
2	-0.374	47	-25.182	92	-29.328	137	-53.027	182	-26.541	227	-47.268	272	-37.611	317	-30.662
3	-1.44	48	-23.274	93	-29.328	138	-48.287	183	-29.467	228	-47.473	273	-37.315	318	-40.821
4	-3.301	49	-22.355	94	-29.27	139	-45.77	184	-33.895	229	-48.608	274	-36.963	319	-39.95
5	-6.2	50	-22.211	95	-29.171	140	-44.598	185	-39.364	230	-50.44	275	-36.542	320	-31.697
6	-10.556	51	-22.777	96	-29.027	141	-44.38	186	-38.993	231	-51.749	276	-35.972	321	-28.703
7	-16.025	52	-24.067	97	-28.83	142	-45.127	187	-35.928	232	-49.852	277	-35.239	322	-27.783
8	-15.847	53	-26.08	98	-28.601	143	-46.916	188	-34.65	233	-46.175	278	-34.354	323	-28.33
9	-12.934	54	-28.157	99	-28.348	144	-49.45	189	-35.09	234	-42.859	279	-33.335	324	-30.213
10	-11.808	55	-27.932	100	-28.12	145	-48.225	190	-37.31	235	-40.125	280	-32.202	325	-33.475
11	-12.348	56	-25.235	101	-27.859	146	-43.524	191	-42.418	236	-37.941	281	-30.939	326	-38.044
12	-14.613	57	-22.442	102	-27.628	147	-39.533	192	-64.145	237	-36.105	282	-29.594	327	-41.008
13	-19.65	58	-20.239	103	-27.439	148	-36.554	193	-44.559	238	-34.654	283	-28.212	328	-37.421
14	-38.138	59	-18.566	104	-27.288	149	-34.448	194	-39.186	239	-33.412	284	-26.827	329	-31.611
15	-22.838	60	-17.286	105	-27.119	150	-32.868	195	-37.134	240	-32.414	285	-25.453	330	-25.927
16	-17.377	61	-16.34	106	-26.954	151	-31.64	196	-36.879	241	-31.593	286	-24.119	331	-21.214
17	-15.437	62	-15.699	107	-26.849	152	-30.82	197	-38.251	242	-30.959	287	-22.844	332	-17.567
18	-15.305	63	-15.307	108	-26.813	153	-30.654	198	-41.342	243	-30.521	288	-21.621	333	-14.864
19	-16.748	64	-15.117	109	-26.837	154	-31.13	199	-44.306	244	-30.174	289	-20.452	334	-13.033
20	-19.939	65	-15.095	110	-26.895	155	-32.242	200	-40.911	245	-29.886	290	-19.369	335	-11.953
21	-23.627	66	-15.207	111	-26.991	156	-34.129	201	-36.874	246	-29.682	291	-18.391	336	-11.494
22	-21.356	67	-15.426	112	-27.211	157	-37.092	202	-34.276	247	-29.585	292	-17.473	337	-11.707
23	-17.681	68	-15.732	113	-27.612	158	-41.469	203	-32.683	248	-29.652	293	-16.586	338	-12.813
24	-15.521	69	-16.148	114	-28.11	159	-44.263	204	-31.866	249	-29.849	294	-15.783	339	-15.059
25	-14.476	70	-16.673	115	-28.693	160	-41.023	205	-31.803	250	-30.104	295	-15.141	340	-18.767
26	-14.383	71	-17.271	116	-29.399	161	-38.194	206	-32.375	251	-30.435	296	-14.643	341	-21.872
27	-15.348	72	-17.926	117	-30.245	162	-37.012	207	-33.417	252	-30.874	297	-14.269	342	-18.688
28	-17.307	73	-18.629	118	-31.309	163	-37.363	208	-34.839	253	-31.432	298	-14.04	343	-15.444
29	-20.101	74	-19.379	119	-32.573	164	-39.505	209	-36.792	254	-32.061	299	-13.964	344	-13.974
30	-24.06	75	-20.152	120	-34.14	165	-45.227	210	-39.478	255	-32.72	300	-14.044	345	-14.099
31	-29.319	76	-20.947	121	-35.988	166	-60.785	211	-43.116	256	-33.386	301	-14.335	346	-16.018
32	-33.082	77	-21.77	122	-38.263	167	-42.492	212	-47.798	257	-34.11	302	-14.891	347	-21.301
33	-33.303	78	-22.573	123	-41.107	168	-37.515	213	-52.247	258	-34.93	303	-15.736	348	-40.842
34	-33.797	79	-23.335	124	-44.533	169	-35.238	214	-51.386	259	-35.756	304	-16.91	349	-19.075
35	-35.89	80	-24.086	125	-47.788	170	-34.732	215	-49.185	260	-36.498	305	-18.501	350	-13.863
36	-35.003	81	-24.826	126	-48.5	171	-35.965	216	-48.123	261	-37.123	306	-20.656	351	-11.538
37	-30.707	82	-25.528	127	-46.908	172	-38.931	217	-48.231	262	-37.664	307	-23.494	352	-11.027
38	-27.555	83	-26.162	128	-45.286	173	-39.122	218	-49.264	263	-38.103	308	-26.762	353	-12.232
39	-25.829	84	-26.748	129	-44.315	174	-33.683	219	-51.348	264	-38.377	309	-28.259	354	-15.232
40	-25.209	85	-27.305	130	-43.921	175	-29.374	220	-55.204	265	-38.495	310	-26.511	355	-15.588
41	-25.698	86	-27.808	131	-44.206	176	-26.511	221	-64.004	266	-38.517	311	-24.376	356	-10.202
42	-27.601	87	-28.239	132	-45.23	177	-24.698	222	-65.267	267	-38.474	312	-23.023	357	-5.918
43	-31.843	88	-28.594	133	-47.196	178	-23.696	223	-55.445	268	-38.36	313	-22.509	358	-3.082
44	-45.059	89	-28.888	134	-50.631	179	-23.376	224	-51.467	269	-38.201	314	-22.813	359	-1.285

Frequency : 575 MHz

Subject to alternation

KATHREIN

Fox Arizona Jim McDermaid — Williams — Date: 2017.10.06

4x2 750 10210 BB panel array — Kathrein USA mj — Page: 2

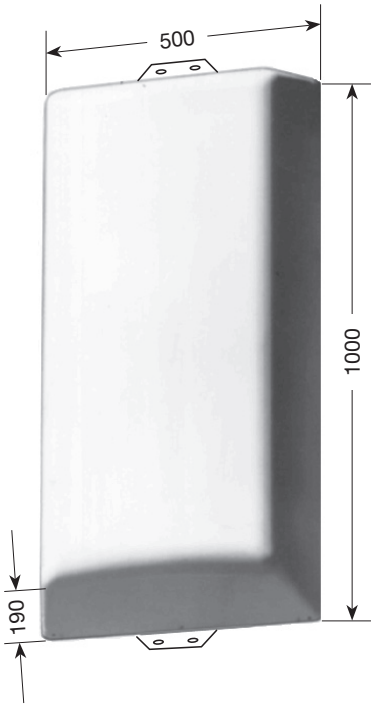
UHF Panel

470–862 MHz

Polarization

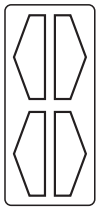
H

- All-purpose panel for mounting by fixations or to square steel spines.



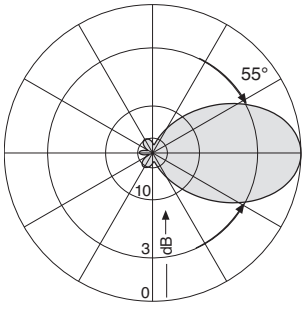
Order No.	75010210
Input	7-16 female straight
Max. power	1.2 kW (at 40 °C ambient temperature)
Frequency range	470 – 862 MHz
VSWR	< 1.1
Gain (at mid-band)	11.5 dBd
Impedance	50 Ω
Polarization	Horizontal
Weight	8 kg
Wind load (at 160 km/h)	Frontal: 565 N Rearside: 815 N Lateral: 250 N
Max. wind velocity	225 km/h
Attachment	Plate

Material:	Reflector screen and dipoles: Weather-resistant aluminum. Protective cover: Fiberglass. Attachment plate: Hot-dip galvanized steel.
Radome color:	RAL 9016 (traffic white), other radome colors on request.
Mounting:	Using M 8 x 35 screws (supplied) to suitable attachment construction. Further mounting accessories upon request (please order separately).
Grounding:	Via mounting parts.
Ice protection:	The dipoles remain fully functioning even in icy conditions as the fiberglass cover protects the whole antenna.

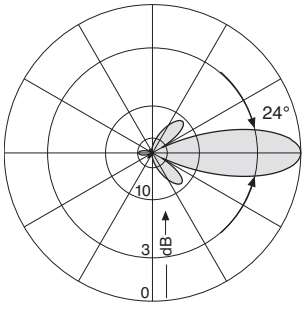


Horizontal polarization

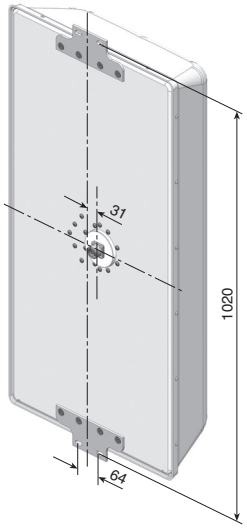
Radiation Patterns (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern



All dimensions in mm

936.4917/b Subject to alteration.

KATHREIN-Werke KG · Anton-Kathrein-Straße 1-3 · P.O. Box 10 04 44 · 83004 ROSENHEIM · GERMANY · Phone +49 8031 184-0 · Fax +49 8031 184-495

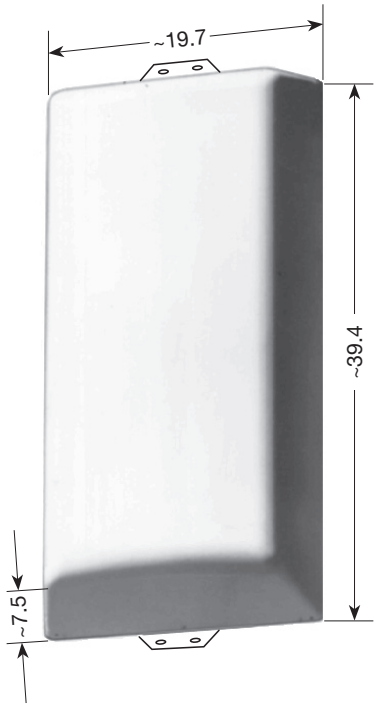
UHF Panel

470–862 MHz

Polarization

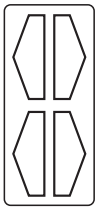
H

- All-purpose panel for mounting by fixations or to square steel spines.



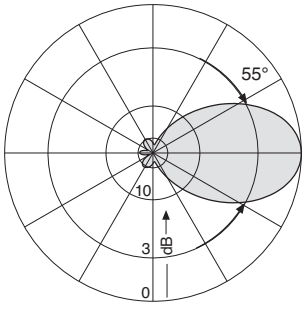
Order No.	75010210
Input	7-16 female straight
Max. power	1.2 kW (at 104 °F ambient temperature)
Frequency range	470 – 862 MHz
VSWR	< 1.1
Gain (at mid-band)	11.5 dBd
Impedance	50 Ω
Polarization	Horizontal
Weight	18 lb
Wind load (at 160 km/h)	Frontal: 127 lbf Rearside: 183 lbf Lateral: 56 lbf
Max. wind velocity	140 mph
Attachment	Plate

Material:	Reflector screen and dipoles: Weather-resistant aluminum. Protective cover: Fiberglass. Attachment plate: Hot-dip galvanized steel.
Radome color:	RAL 9016 (traffic white), other radome colors on request.
Mounting:	Using M 8 x 35 screws (supplied) to suitable attachment construction. Further mounting accessories upon request (please order separately).
Grounding:	Via mounting parts.
Ice protection:	The dipoles remain fully functioning even in icy conditions as the fiberglass cover protects the whole antenna.

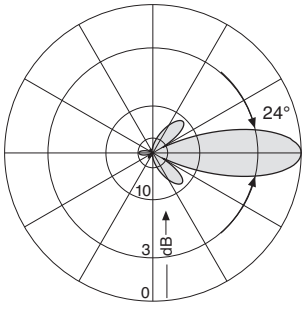


Horizontal polarization

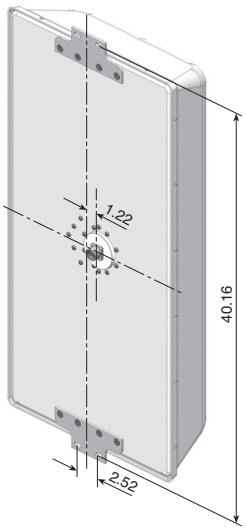
Radiation Patterns (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern



All dimensions in inches

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Please note:

As a result of more stringent legal regulations and judgements regarding product liability, we are obliged to point out certain risks that may arise when products are used under extraordinary operating conditions.

The mechanical design is based on the environmental conditions as stipulated in ETS 300 019-1-4 and thereby respects the static mechanical load imposed on an antenna by wind at maximum velocity.

Extraordinary operating conditions, such as heavy icing or exceptional dynamic stress (e.g. strain caused by oscillating support structures), may result in the breakage of an antenna or even cause it to fall to the ground.

Cylindrical bodies can show crosswind response, which can cause the supporting structure to oscillate and to be damaged. Prismatic bodies, even with non-circular cross-section can show crosswind response, which can cause the supporting structure to oscillate (see EN 1991-1-4 or EN 1993-3-1).

These facts must be considered during the site planning process.

The maximum wind velocities listed should be understood in the sense of working values according to DIN and EN standards. These values include a safety factor (1.5) below the ultimate limit state (elastic limit or permanent deformation). For these wind velocities we guarantee the mechanical safety and the electrical integrity of our antennas.

The installation team must be properly qualified and also be familiar with the relevant national safety regulations.
The details given in our data sheets have to be followed carefully when installing the antennas and accessories.
The limits for the coupling torque of RF-connectors, recommended by the connector manufacturers must be obeyed.

Any previous datasheet issues have now become invalid.

Our quality assurance system and our environmental management system apply to the entire company and are certified by TÜV according to EN ISO 9001 and EN ISO 14001.

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