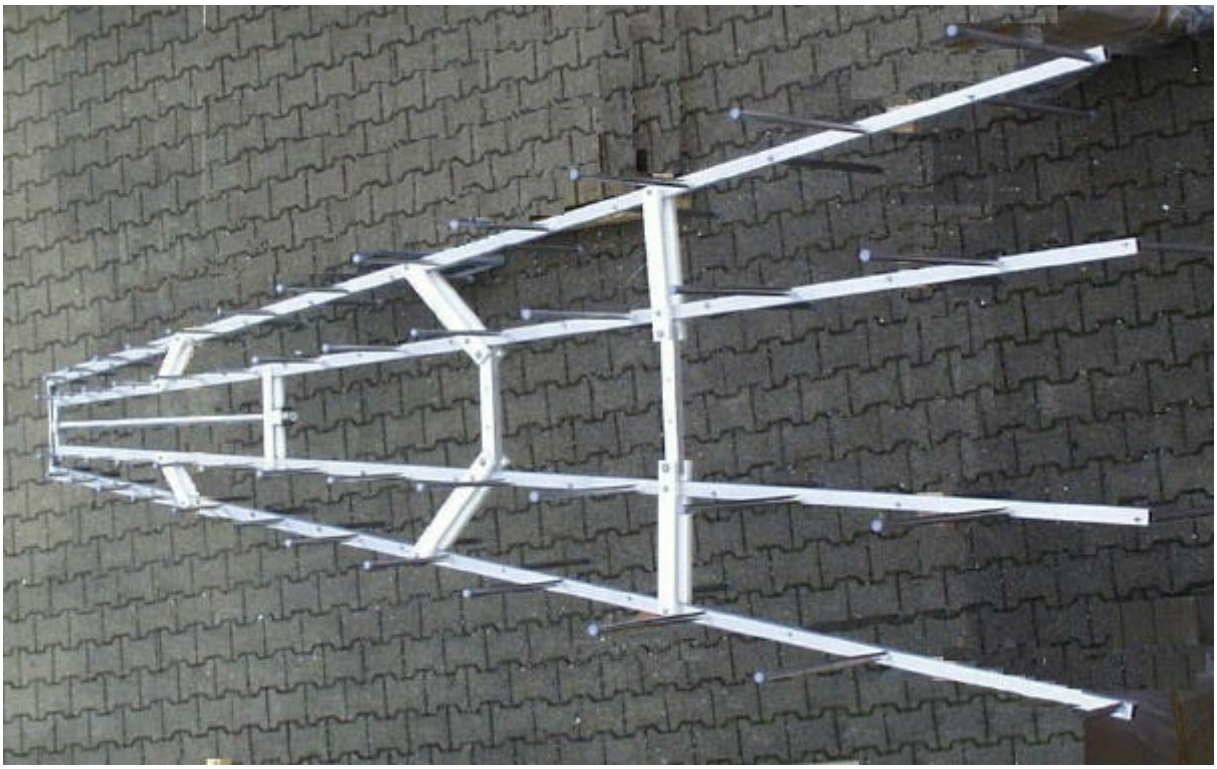
SCHWARZBECK MESS - ELEKTRONIK

An der Klinge 29 D-69250 Schönau Tel.: 06228/1001 Fax.: (49)6228/1003

STLP 100-500 Gestockte Log.-Per. Antenne
STLP 100-500 Stacked Log.-Per. Antenna



Technische Daten:	**STLP 100-500**	***Specifications:***
Bauart: Linear polarisierte gestockte Logarithmisch Periodische Breitbandantenne in Aluminium-Rohrbauweise für Immunitätsprüfungen höchster Leistung.		*Type: Linear polarized stacked Logarithmic Periodic Broadband Antenna with aluminium tubing for immunity testing with extremely high power.*
Frequenzbereich, nominell:	100 MHz...500 MHz	*Nominal Frequency Range:*
Nutzbarer Frequenzbereich:	75 MHz ... 550 MHz	*Usable Frequency Range:*
Isotropgewinn im LP-Bereich:	11.5 +/- 1.1 dBi	*Isotropic Gain (LP-Section):*
Antennenfaktor:	-1 ... 14 dB/m	*Antenna Factor:*
Impedanz, nominell:	50 Ω	*Nominal Impedance:*
Stehwellenverhältnis SWR typisch:	< 1.5	*Standing Wave Ratio SWR typical:*
Vor- Rückverhältnis:	> 20 dB	*Front to Back Ratio:*
Polarisationsentkopplung:	> 25 dB	*Cross Polarisation:*
3 dB Öffnungswinkel typ.(E-Ebene):	53°	*3 dB Beamwidth typ. (E-Plane):*
3 dB Öffnungswinkel typ.(H-Ebene):	53°	*3 dB Beamwidth typ. (H-Plane):*
Max. Eingangsleistung:	5 kW cont.	*Max. Input Power:*
Anschlußart: N-Buchse	13/30 female	*N-Connector female*
Breite x Länge x Dicke:	1.66 x 1.78 x 4.02	*Width x Length x Thickness:*
Gewicht:	52 kg	*Weight:*

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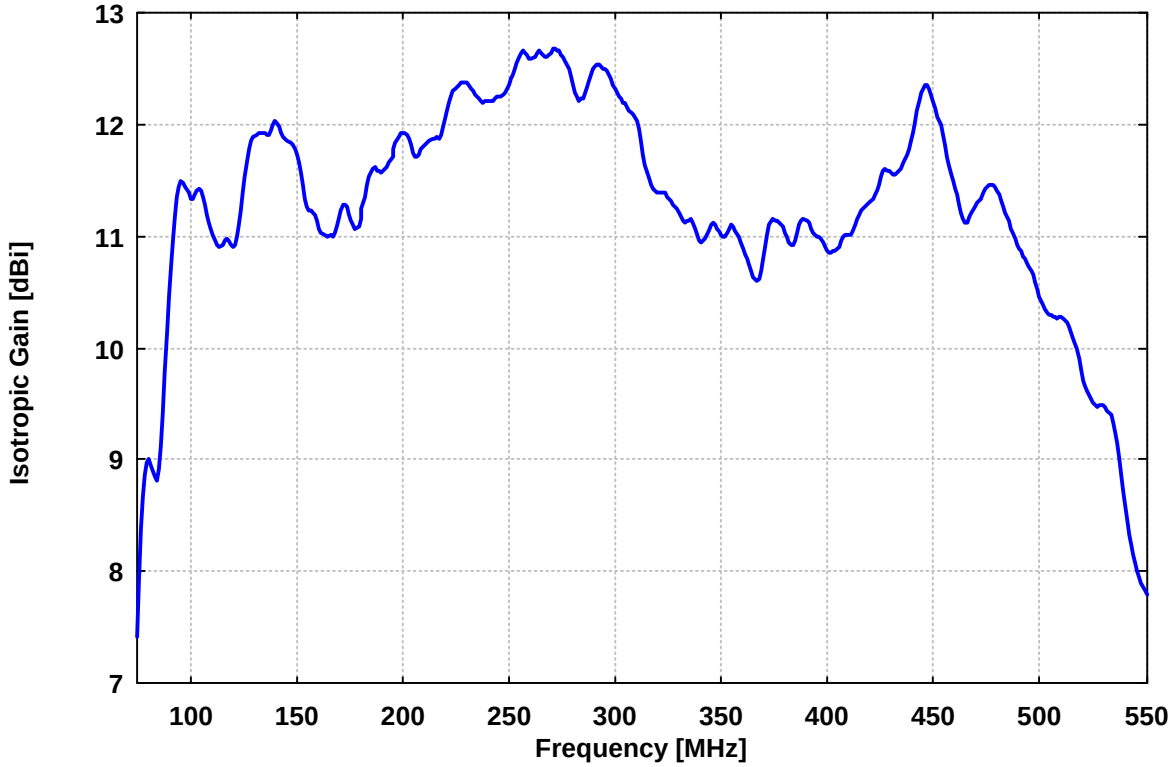
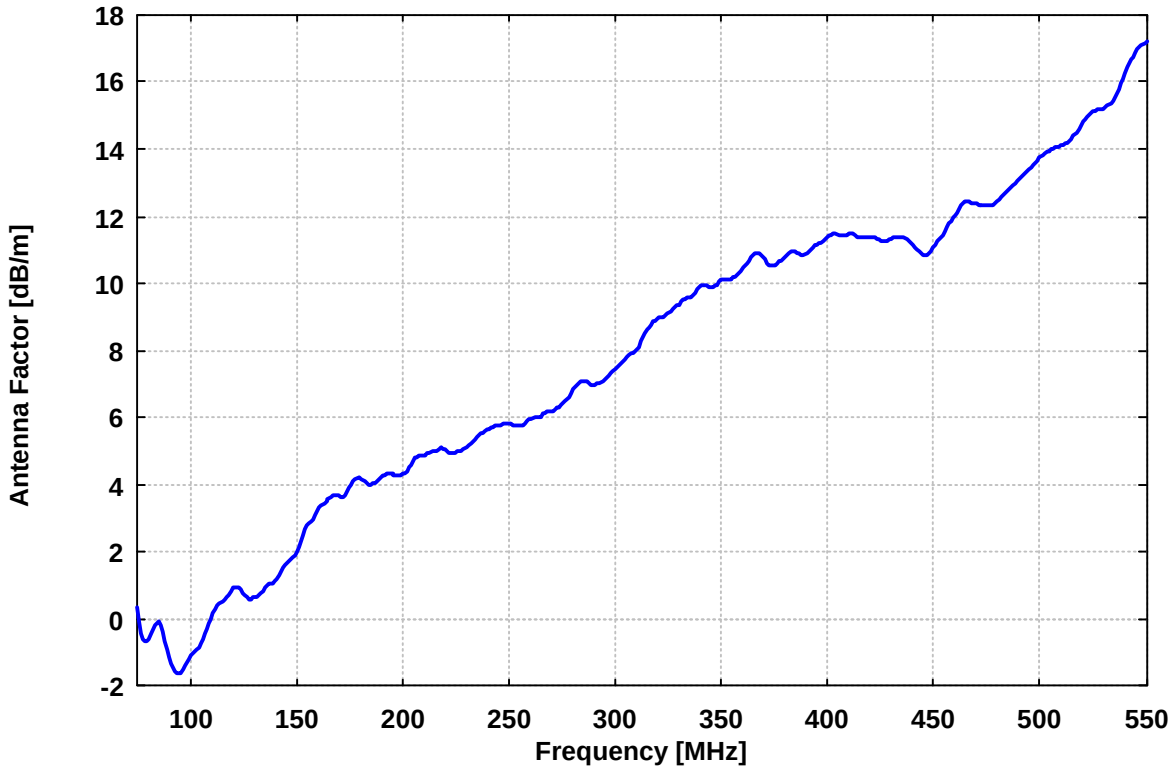
Kalibrierdaten (Fernfeld)

Calibration Data (Farfield)





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An der Klinge 29 D-69250 Schönau Tel.: 06228/1001 Fax.: (49)6228/1003

STLP 100-500 Gestockte Log.-Per. Antenne

STLP 100-500 Stacked Log.-Per. Antenna

Frequency	Isotropic gain	Antenna factor
Frequenz	Isotrop gewinn	Antennen wandlungsmaß
[MHz]	[dBi]	[dB/m]
70.00	3.08	4.04
71.00	4.13	3.12
72.00	5.12	2.25
73.00	6.01	1.48
74.00	6.74	0.86
75.00	7.42	0.30
76.00	7.93	-0.10
77.00	8.37	-0.42
78.00	8.67	-0.61
79.00	8.86	-0.68
80.00	8.97	-0.69
81.00	9.00	-0.61
82.00	8.94	-0.44
83.00	8.84	-0.24
84.00	8.82	-0.11
85.00	8.91	-0.10
86.00	9.12	-0.21
87.00	9.41	-0.40
88.00	9.77	-0.66
89.00	10.15	-0.95
90.00	10.47	-1.17
91.00	10.72	-1.32
92.00	10.96	-1.46
93.00	11.18	-1.59
94.00	11.35	-1.67
95.00	11.45	-1.67
96.00	11.49	-1.62
97.00	11.47	-1.51
98.00	11.45	-1.40
99.00	11.38	-1.25
100.00	11.34	-1.12
101.00	11.34	-1.03
102.00	11.38	-0.99
103.00	11.41	-0.94
104.00	11.42	-0.86
105.00	11.40	-0.76
106.00	11.35	-0.62
107.00	11.27	-0.47
108.00	11.20	-0.31
109.00	11.12	-0.15
110.00	11.06	-0.02
111.00	11.01	0.12
112.00	10.96	0.24
113.00	10.92	0.36
114.00	10.90	0.45
115.00	10.92	0.51
116.00	10.96	0.55
117.00	10.97	0.61
118.00	10.96	0.70
119.00	10.92	0.81

Frequency	Isotropic gain	Antenna factor
Frequenz	Isotrop gewinn	Antennen wandlungsmaß
[MHz]	[dBi]	[dB/m]
120.00	10.90	0.90
121.00	10.92	0.95
122.00	11.00	0.95
123.00	11.10	0.92
124.00	11.23	0.86
125.00	11.39	0.77
126.00	11.54	0.69
127.00	11.68	0.62
128.00	11.79	0.58
129.00	11.85	0.58
130.00	11.89	0.61
131.00	11.91	0.65
132.00	11.92	0.71
133.00	11.93	0.77
134.00	11.92	0.84
135.00	11.92	0.91
136.00	11.90	0.99
137.00	11.91	1.04
138.00	11.94	1.07
139.00	12.00	1.08
140.00	12.03	1.12
141.00	12.02	1.19
142.00	11.98	1.29
143.00	11.92	1.40
144.00	11.88	1.50
145.00	11.87	1.58
146.00	11.85	1.66
147.00	11.83	1.73
148.00	11.81	1.81
149.00	11.78	1.90
150.00	11.73	2.01
151.00	11.66	2.14
152.00	11.57	2.29
153.00	11.45	2.46
154.00	11.34	2.63
155.00	11.27	2.76
156.00	11.23	2.85
157.00	11.22	2.91
158.00	11.22	2.98
159.00	11.19	3.05
160.00	11.14	3.17
161.00	11.06	3.29
162.00	11.03	3.38
163.00	11.01	3.46
164.00	11.00	3.52
165.00	11.00	3.57
166.00	11.01	3.61
167.00	11.00	3.67
168.00	11.04	3.69
169.00	11.09	3.69
170.00	11.16	3.67

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STLP 100-500 Gestockte Log.-Per. Antenne

STLP 100-500 Stacked Log.-Per. Antenna

Frequency	Isotropic gain	Antenna factor
Frequenz	Isotrop gewinn	Antennen wandlungsmaß
[MHz]	[dBi]	[dB/m]
171.00	11.24	3.64
172.00	11.29	3.64
173.00	11.29	3.69
174.00	11.26	3.77
175.00	11.20	3.88
176.00	11.14	3.99
177.00	11.11	4.07
178.00	11.08	4.15
179.00	11.09	4.19
180.00	11.16	4.17
181.00	11.25	4.13
182.00	11.35	4.07
183.00	11.46	4.01
184.00	11.53	3.99
185.00	11.57	4.00
186.00	11.60	4.01
187.00	11.62	4.04
188.00	11.59	4.11
189.00	11.59	4.16
190.00	11.57	4.22
191.00	11.59	4.25
192.00	11.61	4.28
193.00	11.62	4.31
194.00	11.65	4.32
195.00	11.71	4.31
196.00	11.78	4.29
197.00	11.85	4.26
198.00	11.90	4.26
199.00	11.93	4.27
200.00	11.93	4.31
201.00	11.93	4.35
202.00	11.91	4.42
203.00	11.87	4.50
204.00	11.81	4.60
205.00	11.75	4.71
206.00	11.71	4.79
207.00	11.70	4.84
208.00	11.73	4.85
209.00	11.78	4.85
210.00	11.80	4.86
211.00	11.81	4.89
212.00	11.83	4.92
213.00	11.85	4.93
214.00	11.87	4.96
215.00	11.88	4.99
216.00	11.89	5.02
217.00	11.88	5.07
218.00	11.91	5.08
219.00	11.97	5.06
220.00	12.05	5.02
221.00	12.13	4.98

Frequency	Isotropic gain	Antenna factor
Frequenz	Isotrop gewinn	Antennen wandlungsmaß
[MHz]	[dBi]	[dB/m]
222.00	12.20	4.94
223.00	12.25	4.94
224.00	12.30	4.92
225.00	12.32	4.94
226.00	12.34	4.97
227.00	12.35	4.99
228.00	12.38	5.00
229.00	12.37	5.04
230.00	12.37	5.09
231.00	12.35	5.15
232.00	12.33	5.20
233.00	12.30	5.26
234.00	12.27	5.33
235.00	12.25	5.39
236.00	12.23	5.45
237.00	12.21	5.50
238.00	12.20	5.55
239.00	12.21	5.58
240.00	12.21	5.62
241.00	12.21	5.65
242.00	12.21	5.69
243.00	12.21	5.72
244.00	12.22	5.74
245.00	12.24	5.76
246.00	12.25	5.79
247.00	12.27	5.80
248.00	12.29	5.82
249.00	12.32	5.82
250.00	12.36	5.82
251.00	12.40	5.81
252.00	12.45	5.79
253.00	12.50	5.78
254.00	12.56	5.76
255.00	12.61	5.74
256.00	12.64	5.74
257.00	12.66	5.76
258.00	12.65	5.80
259.00	12.62	5.87
260.00	12.59	5.93
261.00	12.59	5.96
262.00	12.61	5.98
263.00	12.64	5.98
264.00	12.65	6.00
265.00	12.65	6.03
266.00	12.63	6.09
267.00	12.62	6.13
268.00	12.61	6.18
269.00	12.63	6.19
270.00	12.65	6.20
271.00	12.68	6.20
272.00	12.68	6.23

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STLP 100-500 Gestockte Log.-Per. Antenne

STLP 100-500 Stacked Log.-Per. Antenna

Frequency	Isotropic gain	Antenna factor
Frequenz	Isotrop gewinn	Antennen wandlungsmaß
[MHz]	[dBi]	[dB/m]
273.00	12.67	6.27
274.00	12.66	6.32
275.00	12.63	6.37
276.00	12.62	6.42
277.00	12.57	6.50
278.00	12.49	6.61
279.00	12.42	6.71
280.00	12.35	6.81
281.00	12.29	6.91
282.00	12.24	6.98
283.00	12.22	7.04
284.00	12.22	7.06
285.00	12.23	7.08
286.00	12.28	7.06
287.00	12.33	7.04
288.00	12.40	7.01
289.00	12.46	6.98
290.00	12.49	6.97
291.00	12.52	6.97
292.00	12.53	6.99
293.00	12.53	7.02
294.00	12.51	7.08
295.00	12.50	7.12
296.00	12.47	7.17
297.00	12.44	7.24
298.00	12.40	7.30
299.00	12.36	7.37
300.00	12.33	7.44
301.00	12.29	7.50
302.00	12.26	7.56
303.00	12.23	7.62
304.00	12.20	7.67
305.00	12.19	7.71
306.00	12.16	7.77
307.00	12.13	7.83
308.00	12.10	7.89
309.00	12.08	7.94
310.00	12.03	8.01
311.00	11.96	8.12
312.00	11.85	8.25
313.00	11.73	8.40
314.00	11.64	8.52
315.00	11.56	8.62
316.00	11.51	8.71
317.00	11.46	8.78
318.00	11.43	8.84
319.00	11.41	8.89
320.00	11.38	8.94
321.00	11.38	8.97
322.00	11.39	8.98
323.00	11.39	9.01

Frequency	Isotropic gain	Antenna factor
Frequenz	Isotrop gewinn	Antennen wandlungsmaß
[MHz]	[dBi]	[dB/m]
324.00	11.39	9.04
325.00	11.36	9.10
326.00	11.31	9.17
327.00	11.29	9.22
328.00	11.26	9.28
329.00	11.24	9.32
330.00	11.22	9.37
331.00	11.17	9.45
332.00	11.14	9.50
333.00	11.12	9.55
334.00	11.13	9.56
335.00	11.14	9.58
336.00	11.15	9.60
337.00	11.12	9.65
338.00	11.07	9.73
339.00	11.02	9.81
340.00	10.96	9.89
341.00	10.94	9.94
342.00	10.97	9.93
343.00	11.01	9.92
344.00	11.06	9.89
345.00	11.10	9.87
346.00	11.12	9.88
347.00	11.10	9.92
348.00	11.08	9.97
349.00	11.04	10.04
350.00	11.01	10.09
351.00	11.00	10.13
352.00	11.00	10.15
353.00	11.03	10.14
354.00	11.06	10.14
355.00	11.10	10.13
356.00	11.09	10.16
357.00	11.06	10.22
358.00	11.00	10.29
359.00	10.94	10.38
360.00	10.89	10.46
361.00	10.84	10.53
362.00	10.79	10.60
363.00	10.74	10.68
364.00	10.69	10.76
365.00	10.64	10.83
366.00	10.61	10.88
367.00	10.61	10.91
368.00	10.63	10.91
369.00	10.70	10.86
370.00	10.80	10.79
371.00	10.90	10.70
372.00	11.01	10.62
373.00	11.10	10.55
374.00	11.15	10.53

SCHWARZBECK MESS - ELEKTRONIK

An der Klinge 29 D-69250 Schönau Tel.: 06228/1001 Fax.: (49)6228/1003

STLP 100-500 Gestockte Log.-Per. Antenne

STLP 100-500 Stacked Log.-Per. Antenna

Frequency	Isotropic gain	Antenna factor
Frequenz	Isotrop gewinn	Antennen wandlungsmaß
[MHz]	[dBi]	[dB/m]
375.00	11.14	10.56
376.00	11.13	10.59
377.00	11.12	10.63
378.00	11.11	10.66
379.00	11.09	10.70
380.00	11.04	10.78
381.00	10.99	10.85
382.00	10.95	10.91
383.00	10.91	10.97
384.00	10.92	10.98
385.00	10.96	10.97
386.00	11.03	10.93
387.00	11.09	10.88
388.00	11.14	10.86
389.00	11.16	10.86
390.00	11.14	10.90
391.00	11.11	10.95
392.00	11.07	11.01
393.00	11.03	11.07
394.00	11.02	11.11
395.00	11.00	11.15
396.00	10.99	11.18
397.00	10.98	11.22
398.00	10.94	11.27
399.00	10.91	11.33
400.00	10.87	11.39
401.00	10.86	11.43
402.00	10.85	11.46
403.00	10.86	11.47
404.00	10.88	11.47
405.00	10.91	11.46
406.00	10.95	11.44
407.00	10.99	11.42
408.00	11.01	11.42
409.00	11.02	11.44
410.00	11.01	11.47
411.00	11.02	11.48
412.00	11.05	11.46
413.00	11.11	11.43
414.00	11.16	11.40
415.00	11.20	11.38
416.00	11.23	11.37
417.00	11.25	11.38
418.00	11.26	11.39
419.00	11.28	11.39
420.00	11.30	11.39
421.00	11.33	11.37
422.00	11.37	11.36
423.00	11.41	11.34
424.00	11.47	11.30
425.00	11.53	11.26

Frequency	Isotropic gain	Antenna factor
Frequenz	Isotrop gewinn	Antennen wandlungsmaß
[MHz]	[dBi]	[dB/m]
426.00	11.58	11.23
427.00	11.60	11.23
428.00	11.59	11.26
429.00	11.58	11.29
430.00	11.56	11.33
431.00	11.55	11.36
432.00	11.56	11.37
433.00	11.57	11.38
434.00	11.58	11.39
435.00	11.61	11.38
436.00	11.66	11.35
437.00	11.73	11.30
438.00	11.79	11.26
439.00	11.85	11.22
440.00	11.92	11.17
441.00	12.02	11.09
442.00	12.12	11.01
443.00	12.21	10.94
444.00	12.28	10.89
445.00	12.33	10.86
446.00	12.35	10.85
447.00	12.36	10.86
448.00	12.32	10.93
449.00	12.28	10.99
450.00	12.21	11.08
451.00	12.14	11.16
452.00	12.07	11.25
453.00	11.99	11.35
454.00	11.90	11.46
455.00	11.81	11.57
456.00	11.71	11.69
457.00	11.64	11.78
458.00	11.56	11.88
459.00	11.49	11.97
460.00	11.43	12.05
461.00	11.37	12.12
462.00	11.29	12.23
463.00	11.22	12.31
464.00	11.15	12.40
465.00	11.12	12.45
466.00	11.12	12.47
467.00	11.17	12.44
468.00	11.22	12.41
469.00	11.26	12.38
470.00	11.29	12.37
471.00	11.32	12.36
472.00	11.34	12.36
473.00	11.39	12.33
474.00	11.42	12.32
475.00	11.44	12.32
476.00	11.45	12.32

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STLP 100-500 Gestockte Log.-Per. Antenne
STLP 100-500 Stacked Log.-Per. Antenna

Frequency	Isotropic gain	Antenna factor
Frequenz	Isotrop gewinn	Antennen wandlungsmaß
[MHz]	[dBi]	[dB/m]
477.00	11.46	12.33
478.00	11.45	12.36
479.00	11.44	12.38
480.00	11.41	12.43
481.00	11.37	12.49
482.00	11.32	12.56
483.00	11.26	12.64
484.00	11.20	12.71
485.00	11.14	12.79
486.00	11.08	12.88
487.00	11.03	12.94
488.00	10.98	13.01
489.00	10.93	13.08
490.00	10.89	13.13
491.00	10.86	13.18
492.00	10.82	13.24
493.00	10.79	13.29
494.00	10.76	13.34
495.00	10.73	13.38
496.00	10.70	13.43
497.00	10.65	13.50
498.00	10.59	13.57
499.00	10.52	13.66
500.00	10.45	13.75
501.00	10.39	13.83
502.00	10.35	13.89
503.00	10.32	13.93
504.00	10.31	13.96
505.00	10.30	13.98
506.00	10.29	14.02
507.00	10.28	14.04
508.00	10.27	14.07
509.00	10.27	14.08
510.00	10.27	14.10
511.00	10.26	14.13
512.00	10.25	14.16
513.00	10.23	14.19

Frequency	Isotropic gain	Antenna factor
Frequenz	Isotrop gewinn	Antennen wandlungsmaß
[MHz]	[dBi]	[dB/m]
514.00	10.19	14.25
515.00	10.14	14.32
516.00	10.07	14.40
517.00	9.99	14.50
518.00	9.90	14.61
519.00	9.80	14.72
520.00	9.71	14.83
521.00	9.66	14.90
522.00	9.62	14.95
523.00	9.58	15.01
524.00	9.55	15.06
525.00	9.51	15.11
526.00	9.48	15.16
527.00	9.48	15.18
528.00	9.48	15.19
529.00	9.48	15.21
530.00	9.49	15.22
531.00	9.48	15.25
532.00	9.44	15.29
533.00	9.40	15.35
534.00	9.33	15.44
535.00	9.25	15.54
536.00	9.14	15.66
537.00	9.02	15.80
538.00	8.89	15.95
539.00	8.74	16.11
540.00	8.60	16.26
541.00	8.46	16.42
542.00	8.33	16.57
543.00	8.24	16.67
544.00	8.16	16.78
545.00	8.07	16.88
546.00	8.00	16.97
547.00	7.94	17.04
548.00	7.89	17.11
549.00	7.82	17.19
550.00	7.78	17.25

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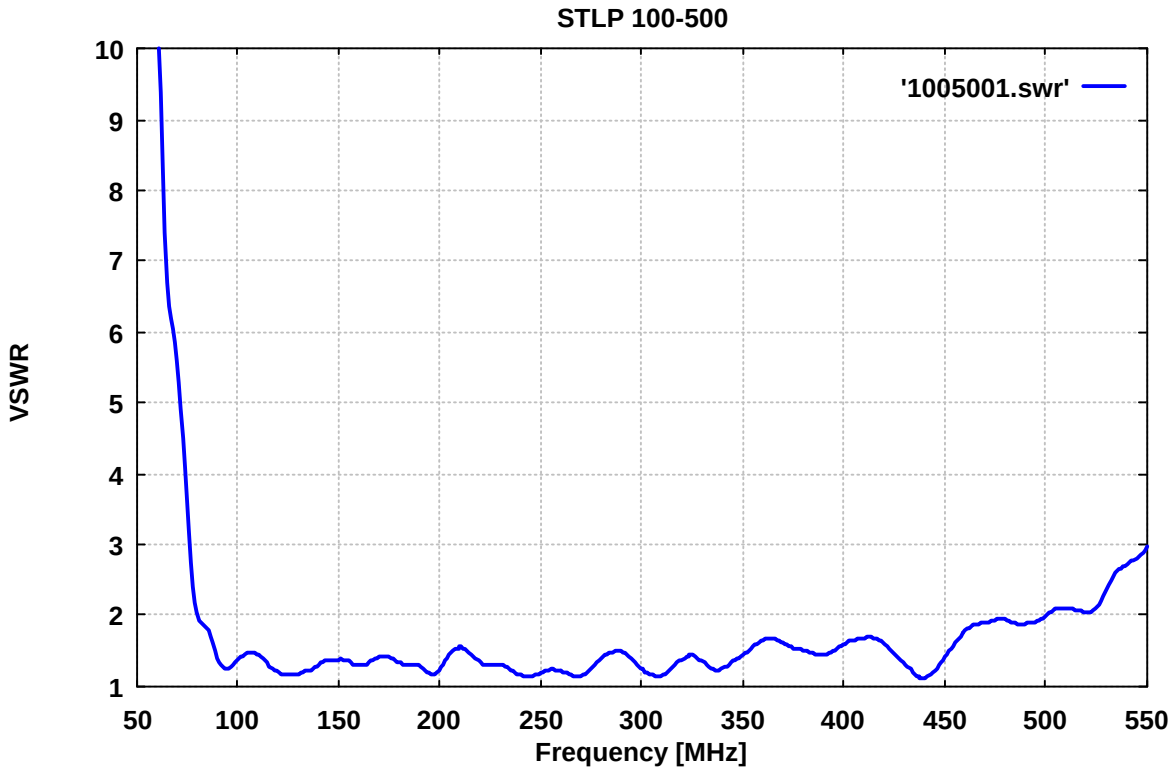
STLP 100-500 Gestockte Log.-Per. Antenne

STLP 100-500 Stacked Log.-Per. Antenna



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STLP 100-500 Gestockte Log.-Per. Antenne
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Erzeugte Elektrische Feldstärke vor der Antennenspitze
unmoduliert, Eingangsleistung an N-Buchse, Reflexionsfreie Umgebung
Generated Electrical Fieldstrength in front of Antenna Tip
no modulation, Input Power at N-Connector, Anechoic Environmental Conditions

Erzeugung von Feldstärken unter Freiraumbedingungen vor der Antennenspitze. Wenn Anteile von Umgebungsreflexionen vorhanden sind, kann dies zu einer frequenz- und höhenabhängigen Änderung der Feldstärke führen. Die Leistungsangaben beziehen sich auf eine 50 Ω Quellimpedanz und unmodulierte Hochfrequenz (CW). Bei 80% Amplitudenmodulation ist die 1.8-fache Spannungsaussteuerung erforderlich, was in einem ca. 3.24-fachen Leistungsbedarf resultiert. Zur Steigerung der Feldstärke um den Faktor 10 ist die 100-fache Verstärkerleistung erforderlich.

Field strength generated under free-space conditions at a separation from the antenna tip (see diagrams for several combinations of power and distance). If environmental reflections are present, this may lead to frequency and height dependent fieldstrengths. The power figures refer to a 50 W source and an unmodulated (cw) signal. An 80% Amplitude Modulation requires a 1.8 times higher voltage, resulting in 3.24 times higher power compared to cw. A fieldstrength increase of factor 10 requires 100 times higher amplifier-power.

Bei der Erzeugung von hohen Feldstärken müssen die relevanten Sicherheits-vorschriften und Normen beachtet werden! Missachtung dieser Vorschriften kann zu Schädigungen der Gesundheit führen!

The safety precautions and relevant standards must be considered while performing tests with high fieldstrength! Ignoring these standards and precautions may result in severe danger for health!

Um Pfeifgeräusche bei Wind und Eindringen von Wasser zu vermeiden, sind die Elemente mit Kunststoffkappen versehen. Bei sehr großen Leistungen (> 0.5 kW) erwärmen sich diese Kunststoffkappen unter Umständen erheblich. Daher wird empfohlen, bei Hochleistungsbetrieb die Kunststoffkappen zu entfernen.

In order to prevent water entering the elements and noise caused by wind, plastic caps are used to cover the elements. These plastic caps may become very hot when operating with high input power. Therefore we recommend to remove the element caps prior to high power operation.

Modulation (AM)	50 %	60 %	70 %	80 %	90 %	95%	*Modulation (AM)*
Leistungsfaktor	2.25	2.56	2.89	3.24	3.61	3.8	*Power Factor*
Zusätzlicher Leistungsbedarf [dB]	+3.5	+4.1	+4.6	+5.1	+5.6	+5.8	*Additional Power Requirement [dB]*

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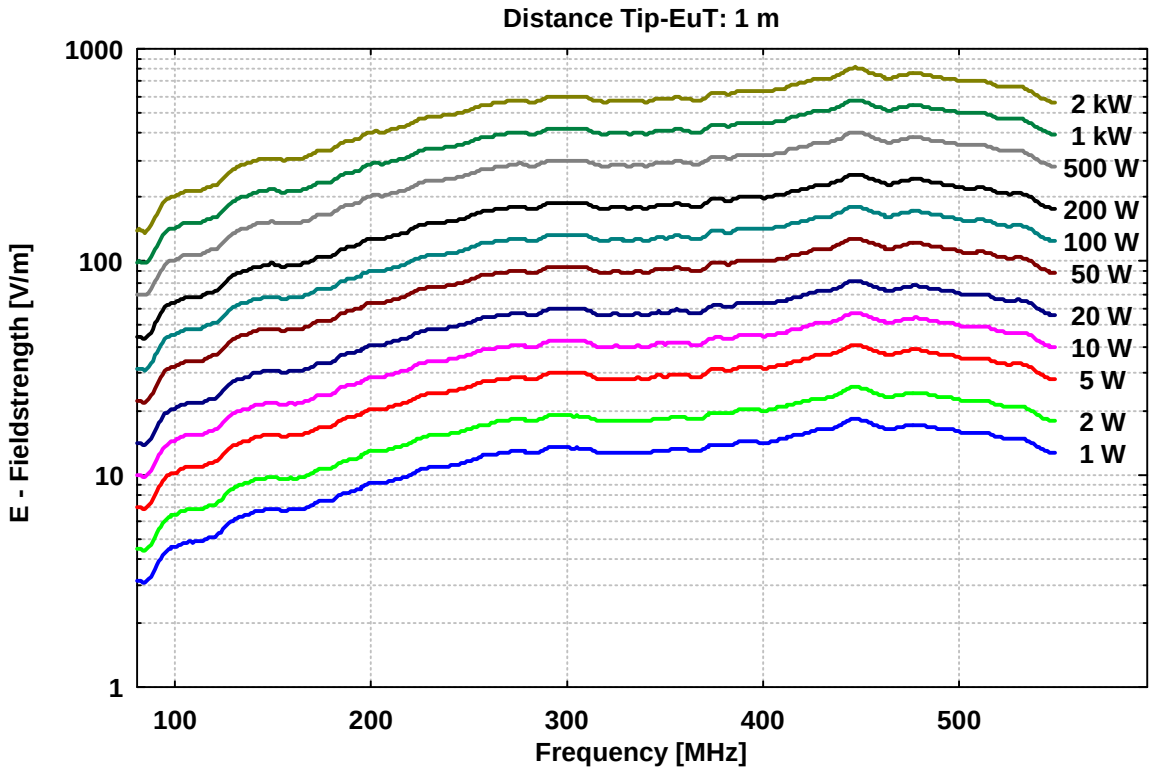

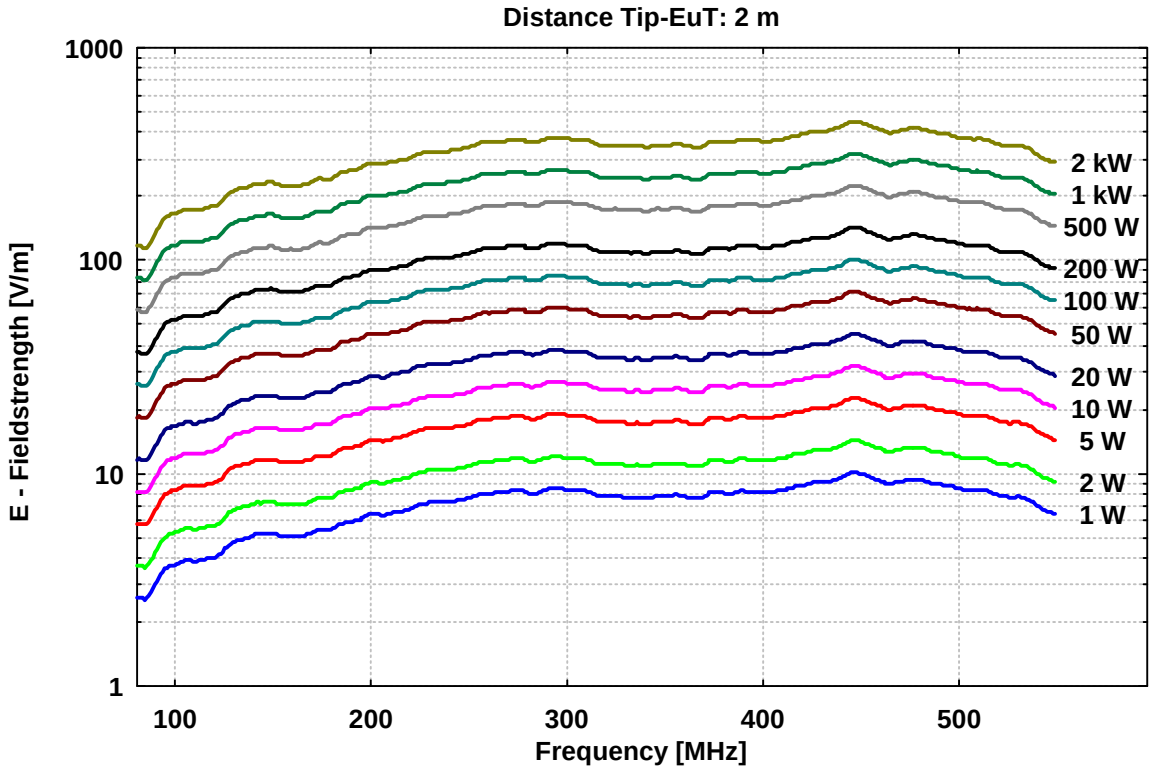

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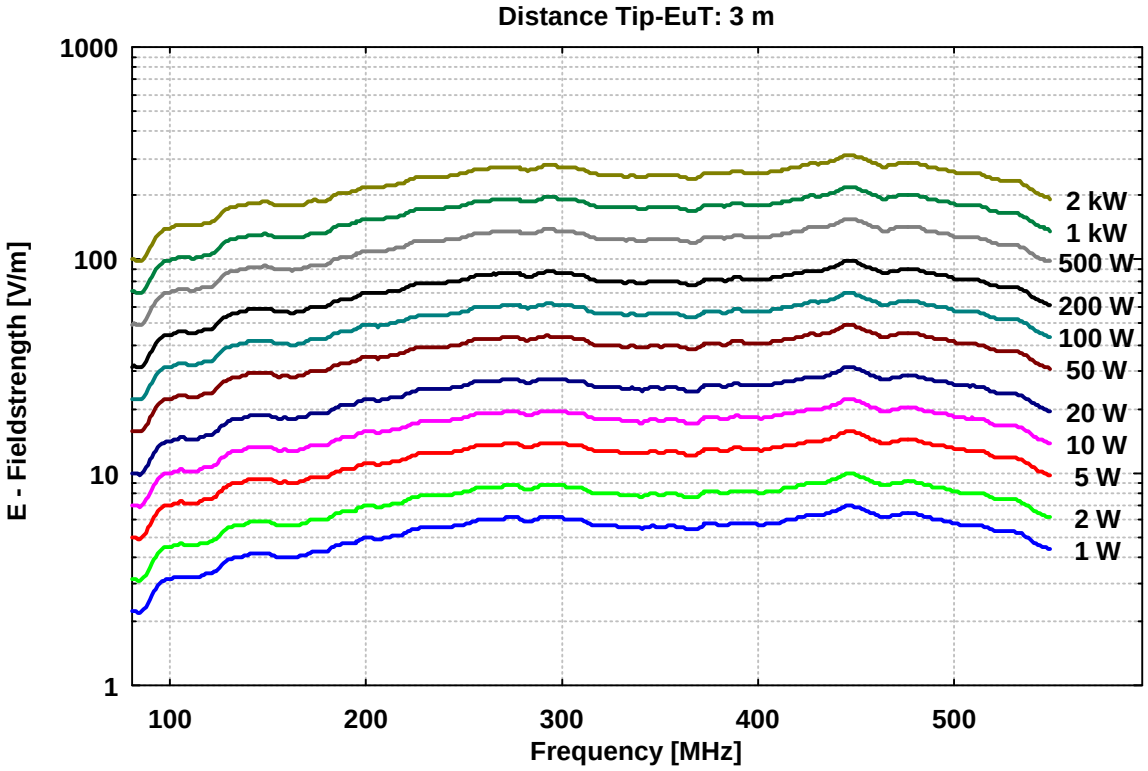

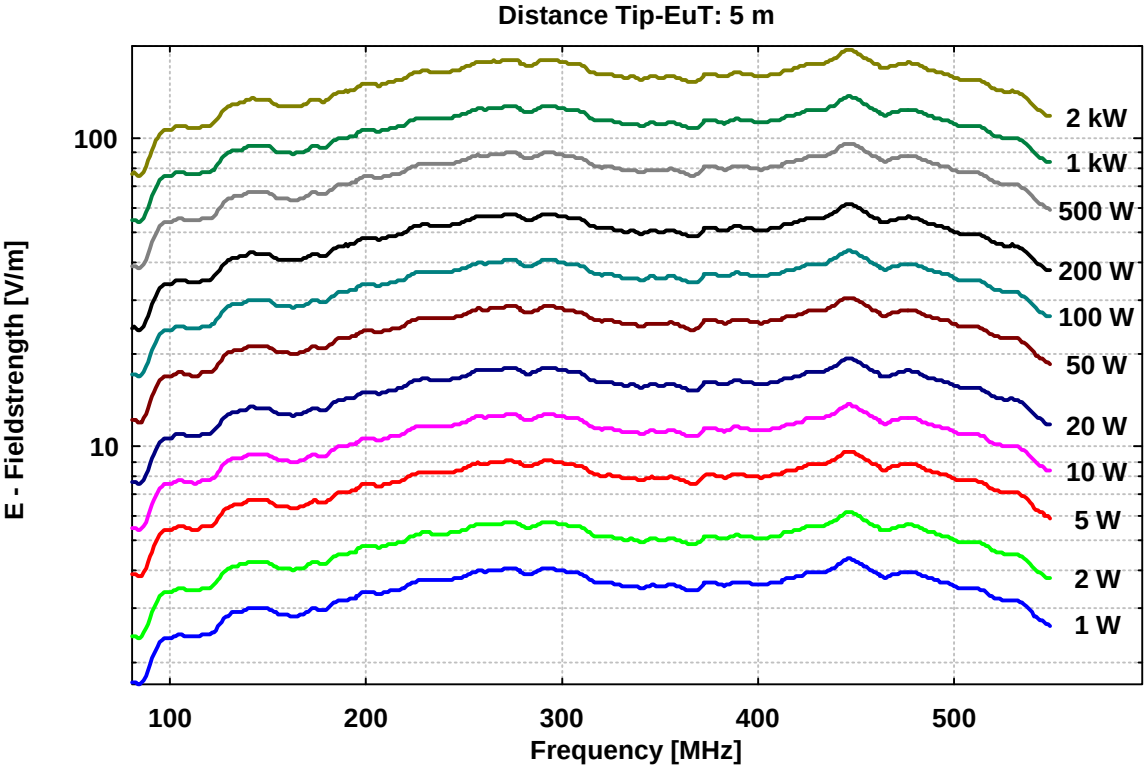

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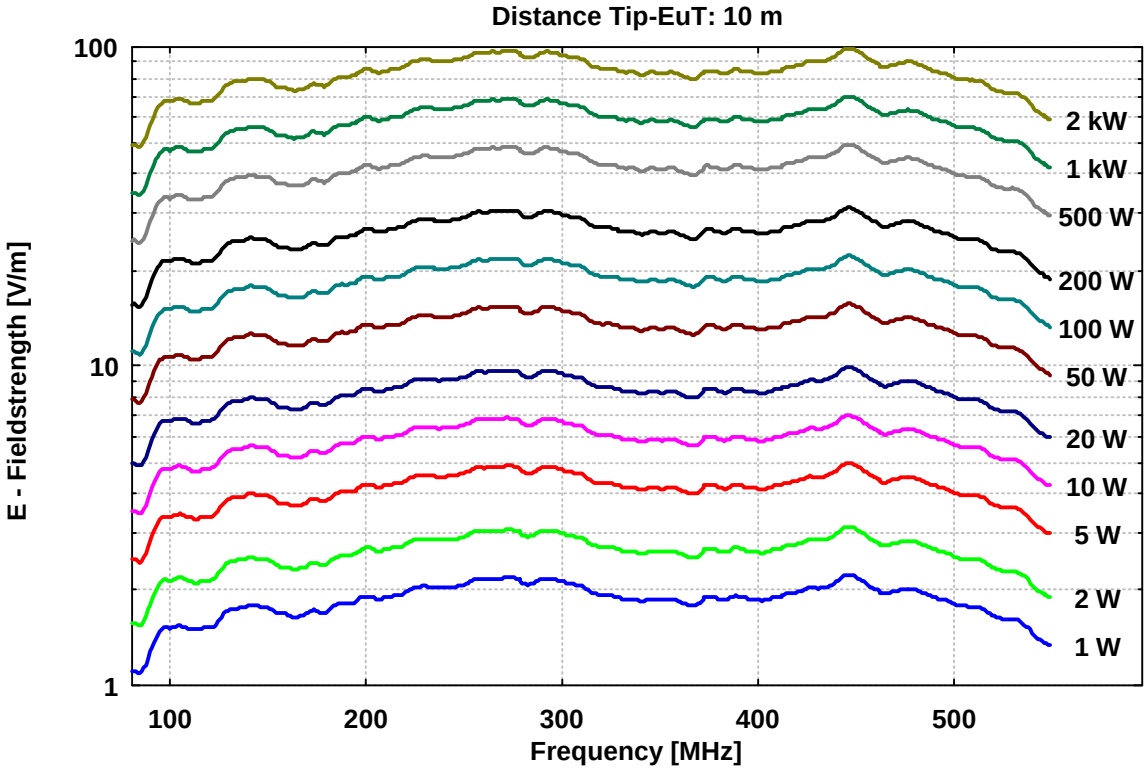

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Due to the large dimensions of the STLP 100-500 Antenna it is neccessary to ship the antenna dismantled in several parts. Prior to mounting the antenna the following things are required:

-A simple support construction consisting of two wooden bars of appox. 3 m length each. The wooden support is marked with A and B on the picture. A support height of 1.2 to 1.5 m is recommended for easiest assembly. The support bars should be moveable in order to simplify the assembly.
-Screwdriver of good quality, Phillips Recess size 2
-Wrenches 13 mm, 17 mm, 19 mm

Attention: Protect your eyes during antenna assembly!

The antenna comes in several pre-assembelled parts:

- *-Two LP-wings (part 1 and 2) with the mounting bars 3 and 4. One of the LP-wings comes with the pre-assembelled feed section consisting of the coaxial tube, a 13/30 connector and white fixing bars*
- *-24 x 4 elements in different lengths with numbers on each element*
- *-Element screws*
- *-Aluminium front bar (part 6) to connect the inner conductor to the antenna structure*

The antenna is mounted as follows:

Step 1: *Both LP-wings are positioned onto the wooden support bars. The various drilled holes of the V-shaped LP-wings should face up or down. The feed section of one LP-wing should face towards the other LP-wings according to fig. 1. The mounting bars (part 3 and 4) are connected to the corresponding holes of the opposite part.*

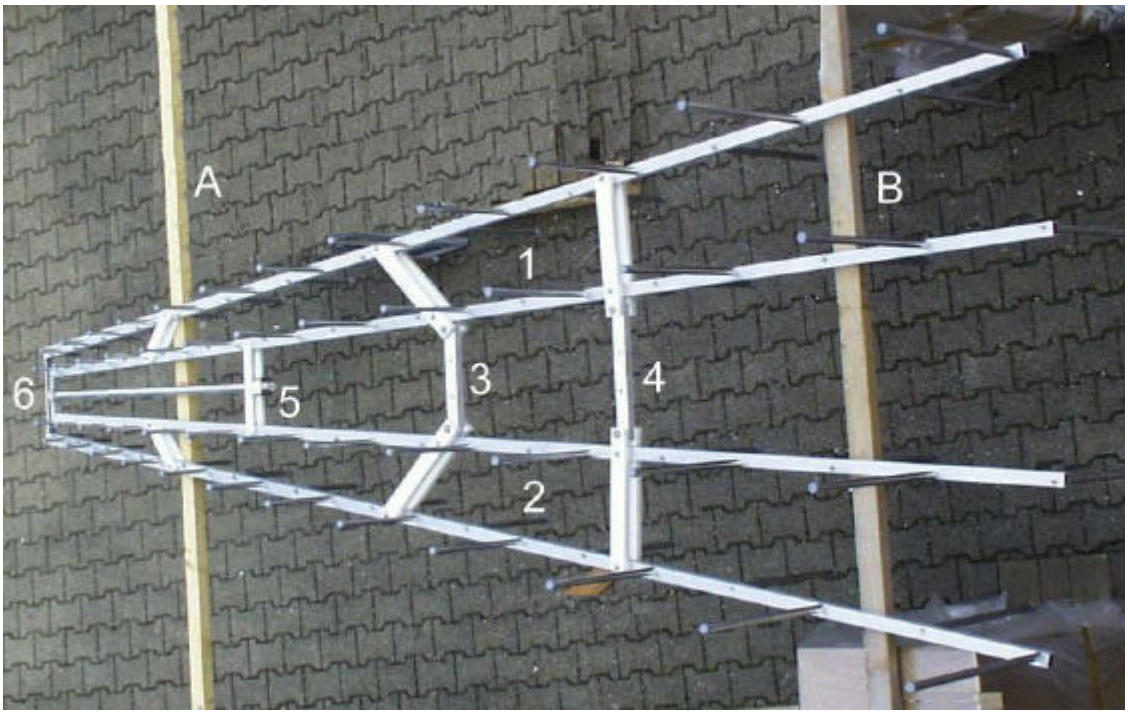

Figure 1: Top view on the LP-wings including the wooden support bars (part A and B) , the mounting bars (part 3 and 4) and the feed section (part 5 and 6)

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Step 2: *The front section is assembelled according to fig. 2, fig. 3 and fig. 4 using the square shaped aluminium block and two INBUS-screws. The flat aluminium bar is connected to the inner conductor and the two LP-wings using 3 INBUS screws.*

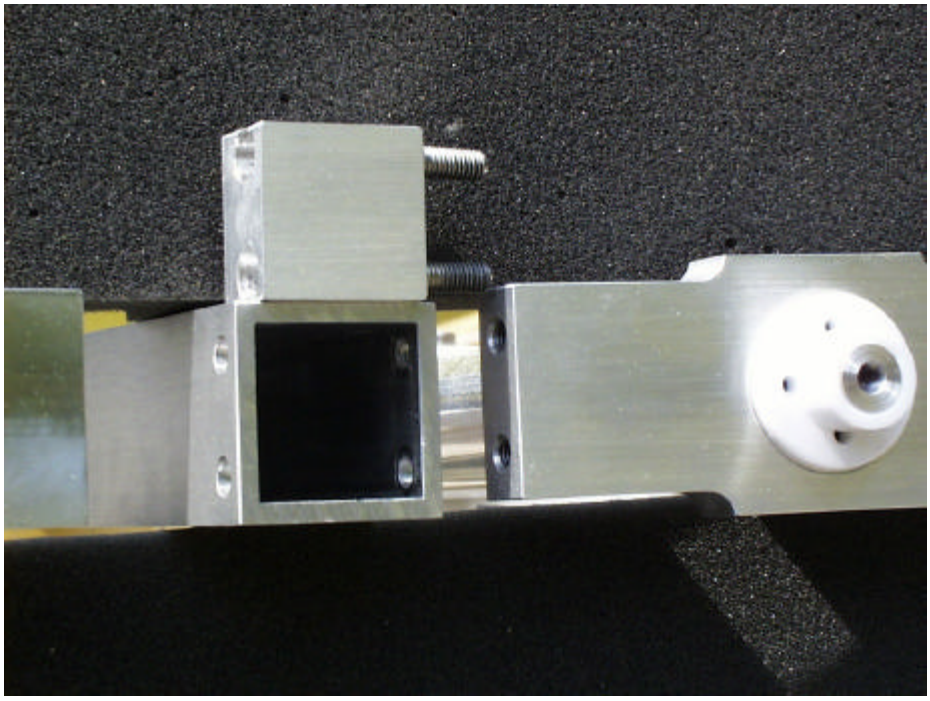

Figure 2: Front view on the LP-wing. The square shaped aluminuim block is intended to connect the feed section to the LP-wing and to cover the square shaped tube. The INBUS-screws are placed inside the square block, which is then located inside the square shaped tube and fastened with the supplied INBUS-wrench.

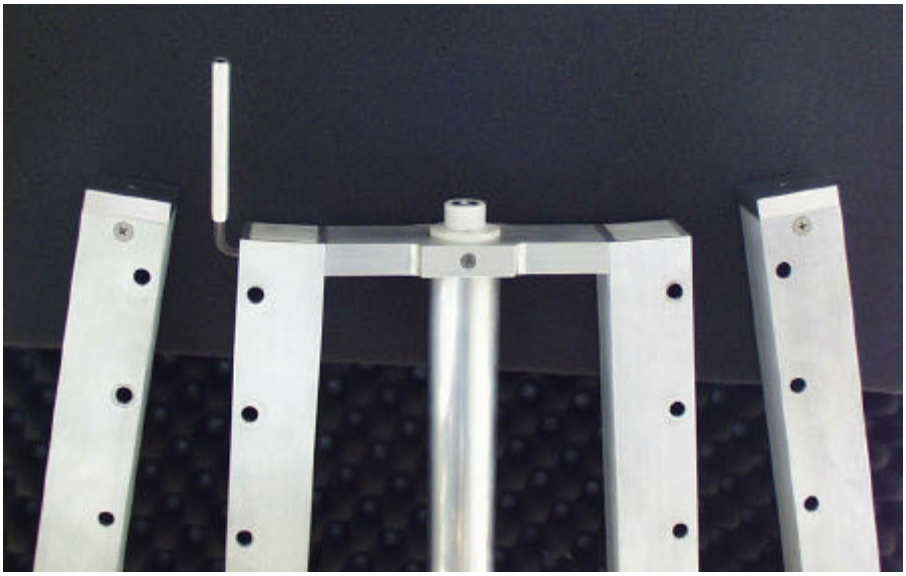

Figure 3: Front top view of the feed section and the two LP-wings. The supplied INBUS-wrench is required to fasten the screws. Normal INBUS wrenches will usually not fit because of different length.

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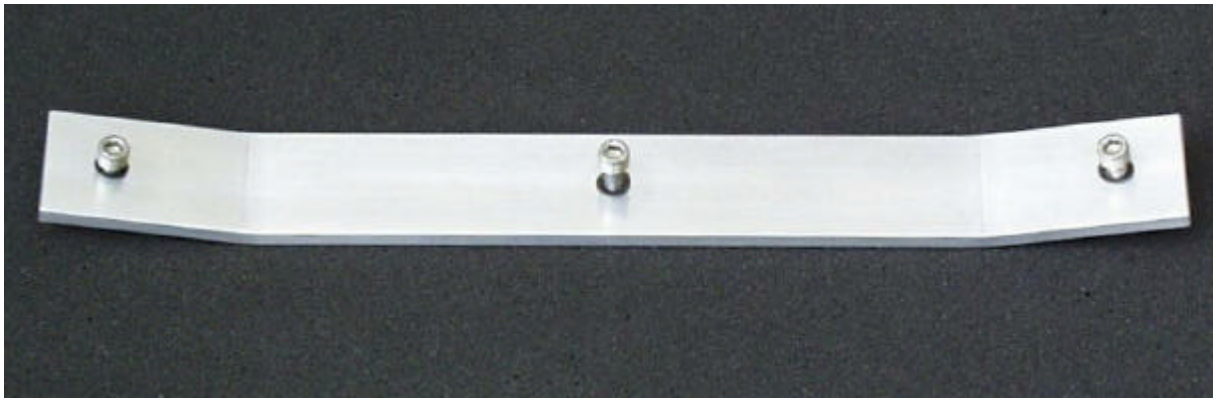

Figure 4: Front bar (part 6) to connect inner conductor with LP-structure.

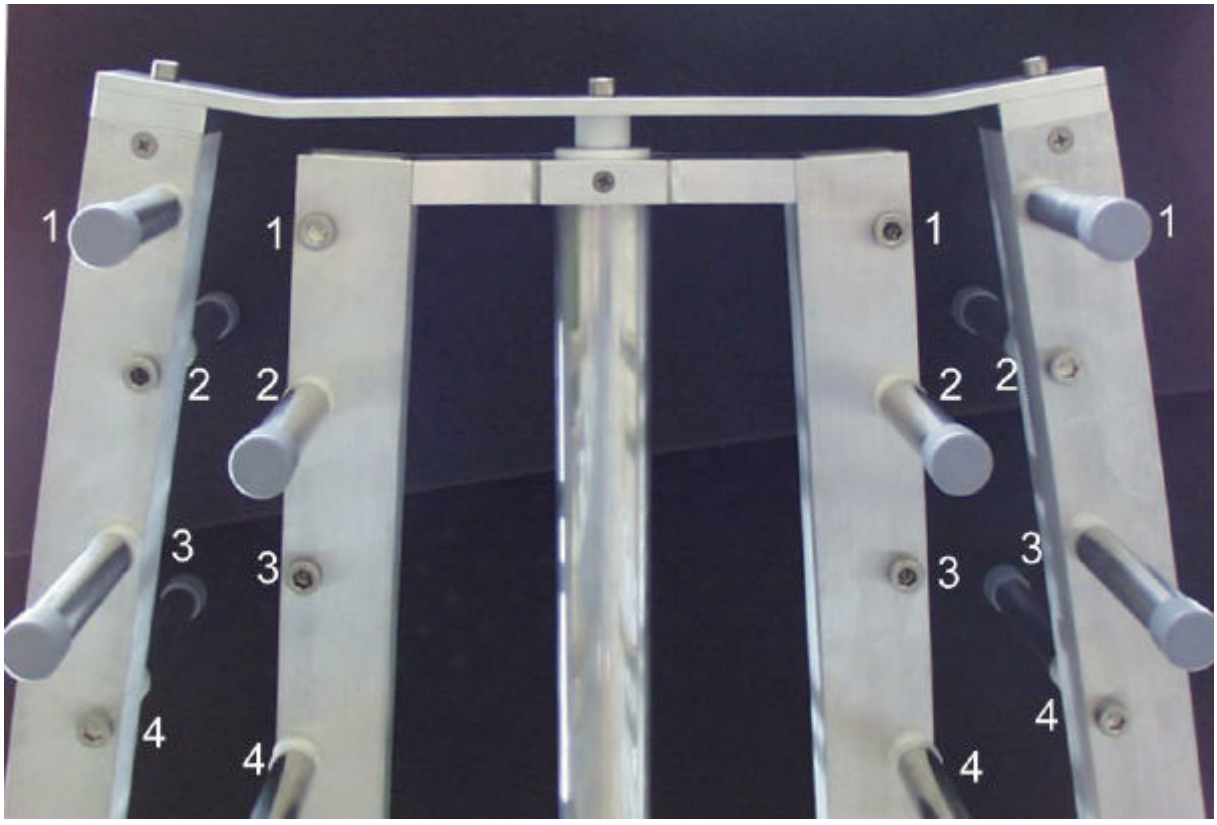

Figure 5: Antenna tip with aluminium bar and screw locations

Step 3: *The aluminium elements are connected to the LP-wings. It is advisable to begin with the shortest 4 elements (labelled with 1) near the tip and to continue with the next larger 4 elements (labelled with 2) and so on. Figure 5 shows the correct element order and orientation. The INBUS wrench should be used for this work. Mixing up the element order causes frequency selective bandbreaks in the antenna performance. The correct element order can be checked best by examinig each LP-wing from the front end and comparing it to figure 6. If everything is mounted properly, all screws should be checked with the correct torque. Another possibility to check for the correct mounting order is to measure the VSWR at the 13/30 connector. The VSWR should be less than 2.5 in the complete range.*

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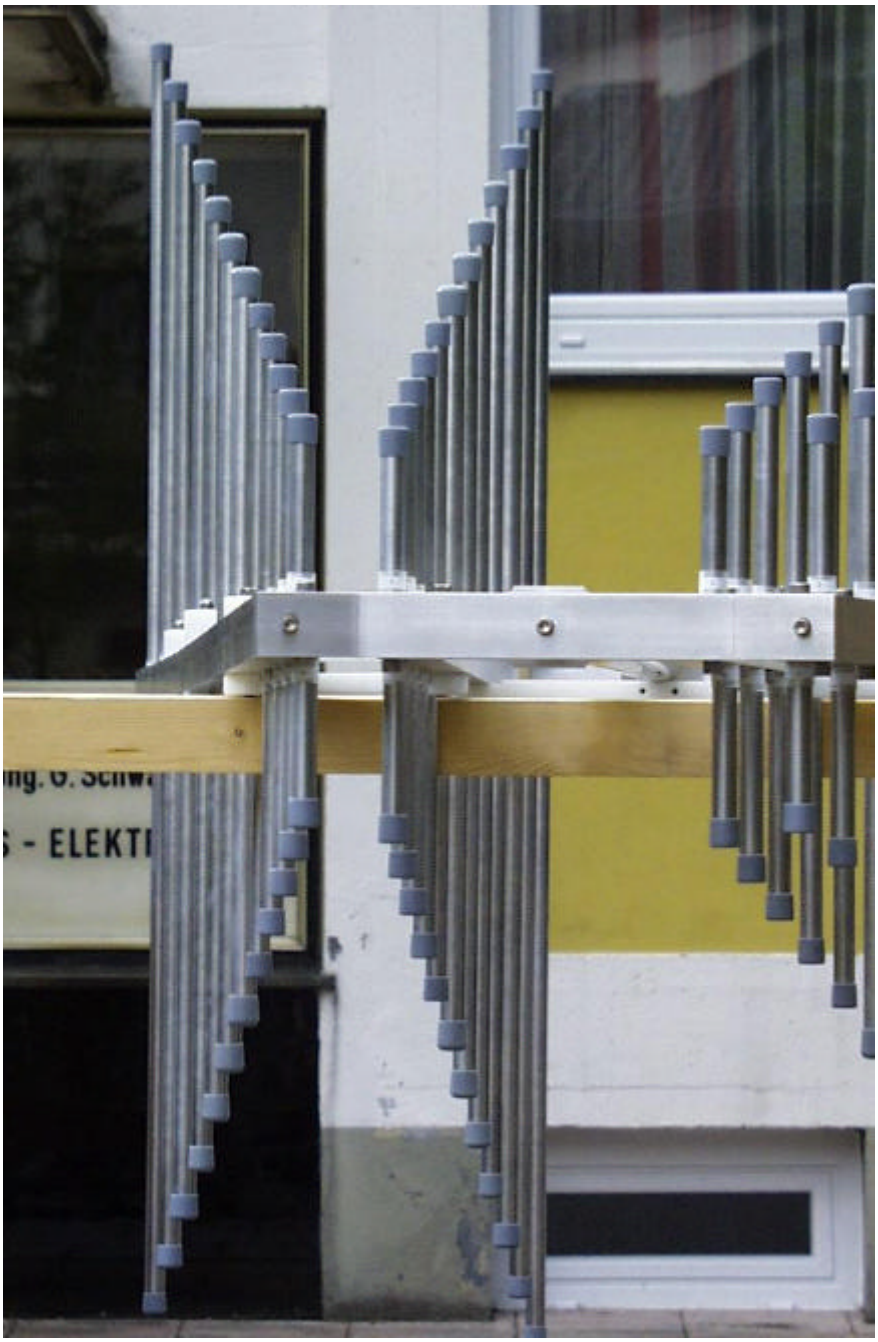

Figure 6: View inside one LP wing with correct element assembly