

Outgoing Results

Designation: ULTRALOG Antenna
Type: HL562E
Material No.: 4100.0007.02
Serial No.: 100803

Referring to Test Documentation: 4100.0007.01-T-02.00

Test Department: 3ME2B
Name: Kleemayr
Date: 2015-06-24



The following abbreviations may be used in this document

- {a} No measurement uncertainty stated because the errors always add together. So it is sure that a measurement result evaluated as "PASS" is pass.
- {b} The measurement uncertainty depends on the measurement result. The stated measurement uncertainty is valid for the close area around the specification. Measurement results outside the close area have a higher measurement uncertainty but are within the specification.
- {c} Functional test, therefore no measurement uncertainty is stated.
- {d} Typical value, refer to performance test.
- {e} The measurement uncertainty is taken into account when setting the measuring system.
- DL or DT Data Limit for symmetrical tolerance limits
- DLL Datasheet Lower Limit
- DUL Datasheet Upper Limit
- MU Symmetrical Measurement Uncertainty
- MLL or MLV Measurement Uncertainty Lower Value
- MUL or MUV Measurement Uncertainty Upper Value
- Nom. Nominal Value
- Dev. Deviation
- MErr. Measurement Error
- Act. Actual Value
- UGB Uncertainty Guard Band: Measuring uncertainty violates the data (spec.) limit.
- UGB1 Measurement results marked as UGB1 show conformity with a probability of >50 % and <95 %.
- UGB2 Measurement results marked as UGB2 show non-conformity with a probability of >50 % and <95 %.
- DU Datasheet Uncertainty

Explanation of charts

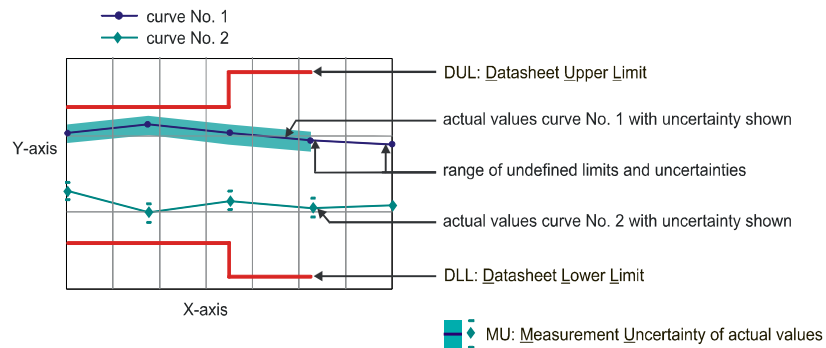


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1. Kalibriermethode / Calibration Method: Freiraum / Free-Space

1.1 Vorbemerkung / Preliminary Remarks

Messablauf

Die Kalibrierung wird auf dem Freifeldmessplatz der R&S Messgerätebau GmbH in Memmingen durchgeführt. Der Freiraum Antennenfaktor wird mit Hilfe der Drei-Antennen-Methode ermittelt. Die Geometrie des Messaufbaus wurde auf eine minimale Beeinflussung der Messergebnisse ausgelegt (Freiraum).

Messbedingung für Frequenzen ≤ 120 MHz:

- Standard Site Methode (SSM) in Anlehnung an ANSI C63.5
- Horizontale Polarisierung

Messbedingung für Frequenzen > 120 MHz:

- Freiraum Methode
- Vertikale Polarisierung

Ergebnisse

Im Kalibrierprotokoll sind folgende Daten ausgewiesen:

- Freiraum Antennenfaktor
- Praktischer Gewinn (incl. Anpassverluste)
- Freiraum Reflexionsfaktor
- VSWR Umrechnung aus dem Reflexionsfaktor
- Korrekturwerte für verschiedene Messabstände

Bedingt durch das in der Frequenz variable Phasenzentrum der Antenne ist der Abstand zu einem Prüfling/Prüfobjekt inkonstant. Um einen festen und normierten Abstand (Markierung) zu berücksichtigen, wird diese Korrektur in einen modifizierten Antennenfaktor und Gewinn eingearbeitet. Dementsprechend werden zusätzlich Antennenfaktoren und Gewinnwerte für unterschiedliche Messabstände zu einem festen Bezugspunkt ausgewiesen. Falls keine zusätzlichen Angaben gemacht werden, ist der Freiraum- Gewinn/Antennenfaktor immer auf das Phasenzentrum bezogen und somit unabhängig vom Messabstand.

Mit Ausnahme der VSWR Umrechnung, ist für jeden Messwert die erweiterte Messunsicherheit ($k=2$) angegeben. Die Bezugsimpedanz für alle Messungen ist 50 Ohm.

Messunsicherheit Antennenfaktor und praktischer Gewinn:

30 - 300 MHz: ± 0.8 dB
>300 - 6000 MHz: ± 0.9 dB

Messunsicherheit Reflexionsfaktor:

30 - 90 MHz: ± 0.050
>90 - 120 MHz: ± 0.035
>120 - 150 MHz: ± 0.027
>150 - 300 MHz: ± 0.022
>300 - 700 MHz: ± 0.020
>700 - 6000 MHz: ± 0.050

Geltungsbereich

Die ausgewiesenen Freiraum-Antennenfaktoren sind gültig für Störfeldstärkemessungen nach z. B. CISPR 11, 13, 14, 22, 32 16-2-3, als auch bei Nutzfeldstärkemessungen (z. B. nach CCIR). Antennenfaktoren nach SAE ARP958 sind gültig für Störfeldstärkemessungen nach z. B. CISPR 25, DO160 F, MIL Std. 461.

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Preliminary Remarks

Test sequence

The calibrations are carried out on the Open-Area-Test-Site (OATS) form R&S Messgerätebau GmbH in Memmingen. The Three-Antenna-Method is applied to get the Free-Space antenna factor. The geometry of the test setup is chosen to minimize the influence on the measurement result.

Test condition for Frequency \leq 120 MHz:

- Standard Site Method (SSM) following ANSI C63.5
- Horizontal Polarisation

Test condition for Frequency $>$ 120 MHz:

- Free-Space Method
- Vertical Polarisation

Results

Following data are listed in the test report:

- Free-space antenna factor
- Realized gain (mismatch losses included)
- Free-space reflection coefficient
- VSWR conversion from the reflection coefficient
- Correction data for different measuring distance

Because of the variable and frequency dependent location of the phase center of the antenna, the distance to a source or a test object is not constant. To consider a fixed and normed distance to a marking this correction is included in a modified antenna factor and gain. Therefore additional values for antenna factor and gain are reported related to different measuring distances to a fixed reference point. In case of no additional information, the gain and antenna factor refers to the phase center and is therefore independent from distance.

With the exception to the VSWR graph, the associated expanded uncertainty ($k=2$) is also given. Nominal impedance for all measurements is 50 Ohm.

Measurement uncertainty antenna factor and realized gain:

30 - 300 MHz: ± 0.8 dB
>300 - 6000 MHz: ± 0.9 dB

Measurement uncertainty reflection coefficient:

30 - 90 MHz: ± 0.050
>90 - 120 MHz: ± 0.035
>120 - 150 MHz: ± 0.027
>150 - 300 MHz: ± 0.022
>300 - 700 MHz: ± 0.020
>700 - 6000 MHz: ± 0.050

Scope

The reported Free-space antenna factors are valid for interference field strength measurements according to eg CISPR 11, 13, 14, 22, 32 16-2-3, as well as desired field strength measurements (eg CCIR). SAE ARP958 Antenna factors are valid for interference field strength measurements according to eg CISPR 25, DO160 F, MIL Std. 461.

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1.2 Messergebnisse / Measurement Results

Frequenz Frequency in MHz	k-Faktor Antenna factor in dB(1/m)	Prakt. Gewinn Realized gain in dBi	Reflexionsfaktor Reflection coefficient
30	18.11	-18.35	0.9424
32	16.94	-16.62	0.9455
34	15.97	-15.12	0.9476
36	14.91	-13.57	0.9492
38	13.77	-11.96	0.9428
40	12.59	-10.33	0.9361
42	11.41	-8.72	0.9212
44	10.12	-7.03	0.8977
46	8.82	-5.35	0.8620
48	7.48	-3.63	0.8077
50	6.09	-1.89	0.7204
52	4.72	-0.18	0.5893
54	3.58	1.28	0.3904
56	3.08	2.11	0.1194
58	3.37	2.12	0.1136
60	3.79	1.99	0.2261
62	4.49	1.58	0.3826
64	5.38	0.96	0.4828
66	6.21	0.40	0.5494
68	6.94	-0.07	0.5953
70	7.53	-0.40	0.6285
72	8.02	-0.65	0.6517
74	8.39	-0.78	0.6734
76	8.66	-0.83	0.6835
78	8.90	-0.83	0.6838
80	9.04	-0.76	0.6784
82	9.09	-0.60	0.6719
84	9.14	-0.43	0.6642
86	9.21	-0.30	0.6534
88	9.23	-0.12	0.6389
90	9.20	0.11	0.6222
92	9.18	0.32	0.6035
94	9.19	0.49	0.5914
96	9.20	0.67	0.5817
98	9.23	0.81	0.5732
100	9.28	0.94	0.5693
105	9.41	1.23	0.5721
110	9.66	1.39	0.5779
115	10.08	1.35	0.5645
120	10.29	1.52	0.5022
125	9.86	2.30	0.5091
130	9.09	3.40	0.4970
135	8.63	4.20	0.4320

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Frequenz Frequency in MHz	k-Faktor Antenna factor in dB(1/m)	Prakt. Gewinn Realized gain in dBi	Reflexionsfaktor Reflection coefficient
140	8.24	4.91	0.3479
145	7.78	5.66	0.2250
150	7.68	6.07	0.1570
155	7.70	6.32	0.1733
160	7.78	6.52	0.2695
165	8.23	6.34	0.3727
170	9.51	5.32	0.4649
175	10.57	4.51	0.3545
180	8.14	7.18	0.1650
185	7.22	8.35	0.0730
190	7.23	8.56	0.0581
195	7.02	9.00	0.1511
200	7.30	8.94	0.2737
205	7.67	8.78	0.2895
210	8.01	8.65	0.1513
215	8.32	8.55	0.1405
220	8.23	8.84	0.0781
225	8.42	8.84	0.0942
230	8.65	8.81	0.1475
235	8.82	8.82	0.1593
240	9.05	8.77	0.1388
245	9.06	8.94	0.0668
250	9.26	8.91	0.1018
255	9.45	8.90	0.1723
260	9.63	8.89	0.1684
265	9.78	8.90	0.1513
270	9.86	8.99	0.0847
275	9.97	9.03	0.0495
280	10.17	8.99	0.1022
285	10.37	8.95	0.1212
290	10.53	8.94	0.1107
295	10.64	8.98	0.1011
300	10.81	8.95	0.0341
305	11.09	8.82	0.0600
310	11.16	8.88	0.1133
315	11.34	8.85	0.1360
320	11.51	8.81	0.1717
325	11.64	8.82	0.1602
330	11.74	8.85	0.1176
335	12.01	8.71	0.1091
340	11.97	8.88	0.0748
345	12.07	8.91	0.0829
350	12.24	8.86	0.1348
355	12.37	8.86	0.1292
360	12.46	8.89	0.1173
365	12.53	8.94	0.0983
370	12.68	8.90	0.0556
375	12.83	8.88	0.0697

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Frequenz Frequency in MHz	k-Faktor Antenna factor in dB(1/m)	Prakt. Gewinn Realized gain in dBi	Reflexionsfaktor Reflection coefficient
380	12.90	8.91	0.1140
385	13.02	8.91	0.1223
390	13.19	8.85	0.1704
395	13.31	8.84	0.1857
400	13.46	8.80	0.1774
405	13.57	8.79	0.1852
410	13.62	8.85	0.1333
415	13.80	8.79	0.1341
420	13.77	8.92	0.1251
425	13.85	8.94	0.1045
430	14.00	8.89	0.1396
435	14.13	8.86	0.1616
440	14.25	8.84	0.1465
445	14.39	8.80	0.1644
450	14.50	8.78	0.1330
455	14.57	8.81	0.1049
460	14.69	8.79	0.0917
465	14.83	8.74	0.0807
470	14.88	8.79	0.0860
475	14.96	8.80	0.1213
480	15.03	8.82	0.1197
485	15.16	8.78	0.1683
490	15.30	8.73	0.1859
495	15.41	8.70	0.1815
500	15.49	8.70	0.2084
505	15.51	8.78	0.1775
510	15.56	8.81	0.1645
515	15.72	8.74	0.1433
520	15.76	8.78	0.1083
525	15.75	8.88	0.1035
530	15.78	8.93	0.0825
535	15.83	8.95	0.0459
540	15.91	8.96	0.0671
545	16.00	8.95	0.0727
550	16.09	8.94	0.0467
555	16.19	8.92	0.0765
560	16.28	8.90	0.0525
565	16.38	8.89	0.0648
570	16.48	8.86	0.0662
575	16.65	8.76	0.0265
580	16.81	8.68	0.0626
585	16.80	8.76	0.0878
590	16.81	8.82	0.0687
595	16.85	8.86	0.1042
600	16.92	8.86	0.1412
605	17.00	8.85	0.1261
610	17.10	8.82	0.1705
615	17.17	8.82	0.1687

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Frequenz Frequency in MHz	k-Faktor Antenna factor in dB(1/m)	Prakt. Gewinn Realized gain in dBi	Reflexionsfaktor Reflection coefficient
620	17.20	8.87	0.1478
625	17.27	8.87	0.1702
630	17.34	8.86	0.1303
635	17.45	8.83	0.1428
640	17.53	8.81	0.1380
645	17.65	8.76	0.0972
650	17.85	8.63	0.1084
655	17.91	8.63	0.1128
660	17.86	8.75	0.1106
665	17.83	8.85	0.1466
670	17.83	8.92	0.1362
675	17.89	8.92	0.1437
680	17.99	8.88	0.1752
685	18.09	8.84	0.1517
690	18.20	8.80	0.1753
695	18.28	8.78	0.1778
700	18.31	8.81	0.1509
705	18.36	8.82	0.1736
710	18.40	8.85	0.1362
715	18.49	8.82	0.1179
720	18.59	8.78	0.1150
725	18.67	8.75	0.0756
730	18.77	8.72	0.0887
735	18.80	8.74	0.0312
740	18.76	8.85	0.0332
745	18.75	8.91	0.0337
750	18.77	8.95	0.0223
755	18.80	8.97	0.0166
760	18.85	8.98	0.0621
765	18.93	8.96	0.1003
770	19.02	8.93	0.0972
775	19.10	8.91	0.1418
780	19.14	8.92	0.1448
785	19.22	8.90	0.1198
790	19.30	8.88	0.1387
795	19.35	8.88	0.0975
800	19.44	8.84	0.0844
805	19.56	8.77	0.0812
810	19.69	8.70	0.0284
815	19.78	8.66	0.0587
820	19.83	8.67	0.0977
825	19.82	8.73	0.0972
830	19.83	8.77	0.1531
835	19.85	8.81	0.1532
840	19.88	8.82	0.1585
845	19.94	8.82	0.1921
850	19.97	8.84	0.1674
855	20.01	8.85	0.1862

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860	20.07	8.84	0.1991
865	20.10	8.86	0.1702
870	20.18	8.83	0.1985
875	20.23	8.83	0.1796
880	20.30	8.81	0.1635
885	20.38	8.78	0.1853
890	20.41	8.80	0.1433
895	20.47	8.79	0.1590
900	20.50	8.80	0.1419
905	20.56	8.79	0.1122
910	20.67	8.73	0.1250
915	20.75	8.70	0.0636
920	20.75	8.74	0.0680
925	20.67	8.88	0.0635
930	20.62	8.97	0.0098
935	20.62	9.01	0.0177
940	20.64	9.04	0.0313
945	20.68	9.05	0.0653
950	20.72	9.05	0.0526
955	20.79	9.03	0.1012
960	20.87	8.99	0.1127
965	20.96	8.95	0.0955
970	21.01	8.94	0.1300
975	21.05	8.95	0.1026
980	21.10	8.95	0.0998
985	21.16	8.92	0.1156
990	21.24	8.90	0.0879
995	21.34	8.83	0.1211
1000	21.44	8.78	0.1037
1050	21.85	8.79	0.2106
1100	22.40	8.64	0.2331
1150	22.54	8.89	0.0826
1200	22.71	9.10	0.0731
1250	23.32	8.83	0.0574
1300	23.57	8.93	0.1869
1350	24.01	8.82	0.2177
1400	24.45	8.69	0.1668
1450	24.34	9.11	0.1059
1500	24.50	9.24	0.0664
1550	25.12	8.90	0.1165
1600	25.39	8.91	0.1477
1650	25.65	8.92	0.2218
1700	26.11	8.72	0.3030
1750	26.64	8.44	0.2083
1800	26.54	8.78	0.2112
1850	26.52	9.05	0.2481
1900	26.84	8.95	0.2378
1950	27.47	8.56	0.2112

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2000	27.34	8.90	0.1627
2050	27.49	8.97	0.1999
2100	27.76	8.91	0.2798
2150	28.25	8.62	0.2914
2200	28.89	8.18	0.2762
2250	28.73	8.54	0.2771
2300	28.44	9.02	0.2615
2350	28.50	9.14	0.2128
2400	28.91	8.91	0.1937
2450	29.28	8.72	0.1721
2500	29.18	9.00	0.2266
2550	29.18	9.18	0.2737
2600	29.26	9.26	0.2162
2650	29.75	8.93	0.2406
2700	30.06	8.79	0.1869
2750	30.23	8.78	0.2147
2800	30.31	8.85	0.2797
2850	30.25	9.07	0.2644
2900	30.67	8.80	0.3373
2950	30.60	9.01	0.2666
3000	30.80	8.96	0.2028
3050	30.83	9.08	0.1592
3100	30.62	9.43	0.1320
3150	30.89	9.30	0.2332
3200	31.04	9.28	0.2134
3250	31.41	9.05	0.2662
3300	31.47	9.12	0.2133
3350	31.73	8.99	0.2189
3400	31.67	9.18	0.1849
3450	31.65	9.33	0.1869
3500	31.90	9.20	0.2422
3550	31.86	9.37	0.2134
3600	32.28	9.06	0.2887
3650	32.20	9.27	0.2125
3700	32.56	9.02	0.3175
3750	32.84	8.86	0.3215
3800	32.79	9.03	0.3099
3850	32.95	8.98	0.3225
3900	32.69	9.35	0.1663
3950	32.70	9.45	0.2036
4000	32.83	9.43	0.1603
4050	33.45	8.92	0.2979
4100	33.66	8.82	0.3270
4150	34.00	8.58	0.3464
4200	34.30	8.38	0.3506
4250	34.07	8.72	0.2648
4300	34.25	8.64	0.2888
4350	34.18	8.81	0.2885

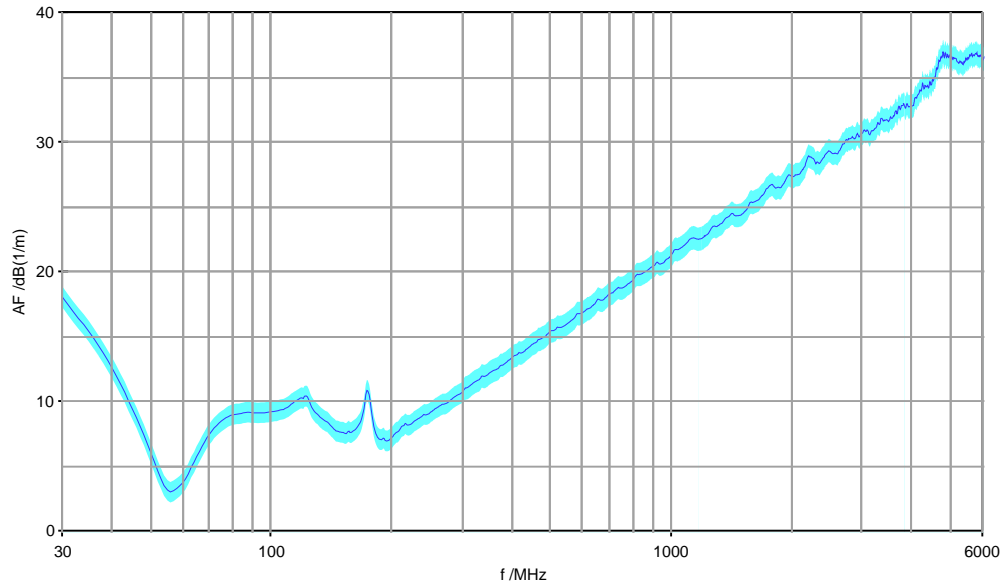
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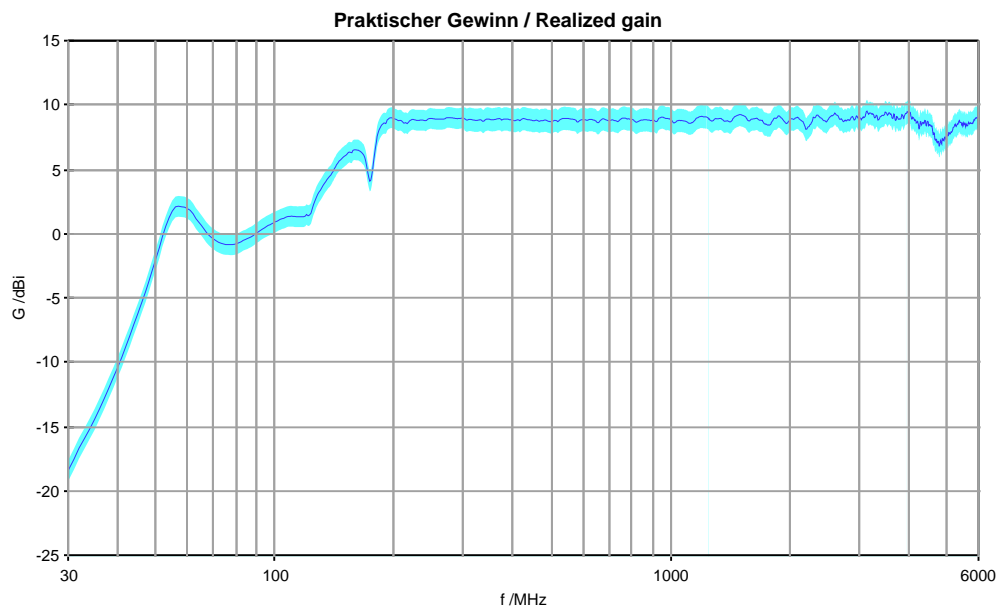


Frequenz Frequency in MHz	k-Faktor Antenna factor in dB(1/m)	Prakt. Gewinn Realized gain in dBi	Reflexionsfaktor Reflection coefficient
4400	34.66	8.43	0.3677
4450	34.72	8.47	0.3390
4500	34.85	8.43	0.3351
4550	35.29	8.09	0.3220
4600	35.61	7.87	0.3085
4650	36.24	7.33	0.3777
4700	36.52	7.15	0.3637
4750	36.91	6.84	0.4219
4800	36.82	7.02	0.3900
4850	36.61	7.33	0.3021
4900	36.50	7.52	0.2508
4950	36.37	7.74	0.1929
5000	36.51	7.69	0.2369
5050	36.53	7.75	0.2468
5100	36.48	7.89	0.1952
5150	36.17	8.29	0.1447
5200	36.04	8.50	0.0913
5250	36.16	8.46	0.0940
5300	36.00	8.70	0.1783
5350	36.18	8.60	0.2032
5400	36.43	8.44	0.2108
5450	36.34	8.60	0.1815
5500	36.48	8.54	0.0838
5550	36.60	8.51	0.1190
5600	36.61	8.57	0.1607
5650	36.73	8.53	0.1845
5700	36.78	8.56	0.1795
5750	36.86	8.56	0.1418
5800	36.61	8.88	0.0681
5850	36.54	9.02	0.0125
5900	36.65	8.99	0.0280
5950	36.44	9.27	0.1003
6000	36.46	9.32	0.1033

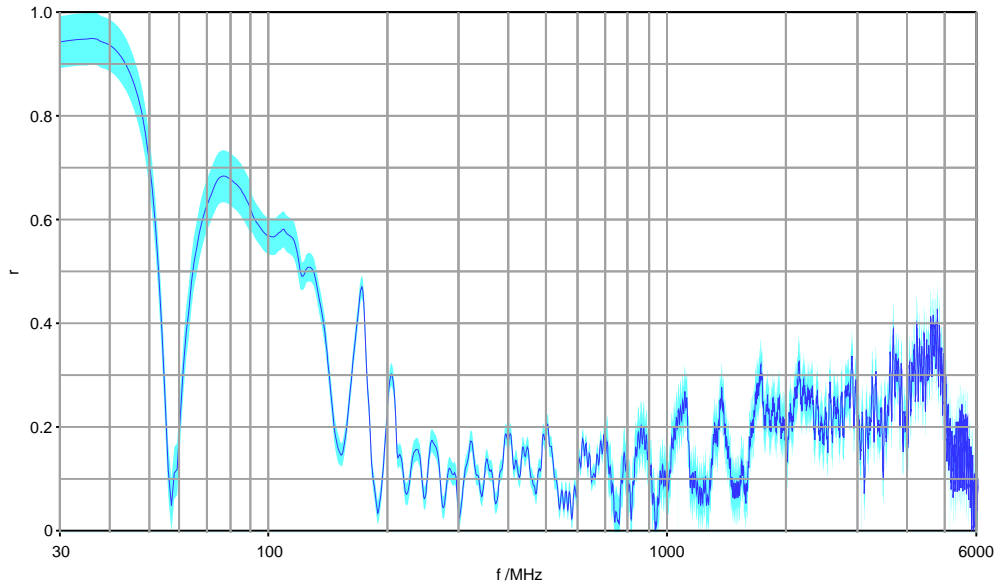
1.3 k-Faktor / Antenna Factor



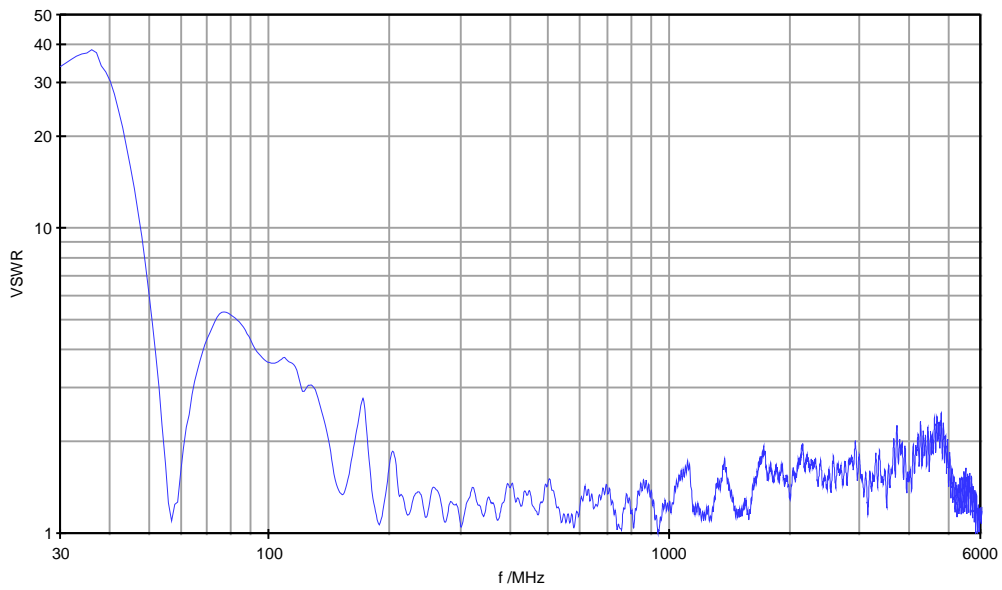
1.4 Gewinn / Gain



1.5 Reflexionsfaktor / Reflection Coefficient



1.6 VSWR



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1.7 Daten für kurze Messentfernung / Data for Short Measuring Distance

Bezugspunkt ist die Markierung / The reference point is the marking

Frequenz Frequency in MHz	k(3m) AF(3m) in dB(1/m)	G(3m) G(3m) in dBi	k(10m) AF(10m) in dB(1/m)	G(10m) G(10m) in dBi	k(30m) AF(30m) in dB(1/m)	G(30m) G(30m) in dBi
30	19.20	-19.44	18.45	-18.69	18.22	-18.46
32	18.14	-17.84	17.38	-17.09	17.16	-16.86
34	17.07	-16.24	16.32	-15.49	16.09	-15.26
36	15.97	-14.63	15.22	-13.88	14.99	-13.66
38	14.83	-13.03	14.08	-12.28	13.85	-12.05
40	13.69	-11.43	12.94	-10.68	12.71	-10.45
42	12.44	-9.77	11.69	-9.02	11.46	-8.79
44	11.20	-8.12	10.45	-7.37	10.22	-7.14
46	9.90	-6.43	9.15	-5.68	8.92	-5.45
48	8.54	-4.71	7.79	-3.96	7.56	-3.73
50	7.19	-2.99	6.44	-2.24	6.21	-2.01
52	6.04	-1.51	5.29	-0.76	5.06	-0.53
54	4.89	-0.03	4.14	0.72	3.92	0.95
56	4.43	0.75	3.68	1.50	3.45	1.72
58	4.66	0.82	3.91	1.57	3.68	1.80
60	4.89	0.90	4.13	1.65	3.91	1.88
62	5.69	0.37	4.94	1.12	4.71	1.35
64	6.49	-0.15	5.74	0.60	5.52	0.82
66	7.24	-0.63	6.49	0.12	6.26	0.34
68	7.93	-1.07	7.18	-0.32	6.95	-0.09
70	8.62	-1.50	7.87	-0.75	7.64	-0.52
72	9.03	-1.66	8.27	-0.91	8.05	-0.68
74	9.43	-1.83	8.68	-1.08	8.45	-0.85
76	9.73	-1.90	8.98	-1.15	8.75	-0.92
78	9.93	-1.88	9.18	-1.13	8.96	-0.90
80	10.14	-1.85	9.38	-1.10	9.16	-0.88
82	10.19	-1.70	9.44	-0.95	9.21	-0.72
84	10.25	-1.54	9.49	-0.79	9.27	-0.56
86	10.28	-1.37	9.52	-0.62	9.30	-0.39
88	10.28	-1.18	9.53	-0.43	9.30	-0.20
90	10.29	-0.99	9.54	-0.23	9.31	-0.01
92	10.29	-0.80	9.54	-0.04	9.31	0.18
94	10.29	-0.61	9.54	0.15	9.31	0.37
96	10.30	-0.44	9.55	0.31	9.32	0.54
98	10.34	-0.30	9.59	0.45	9.36	0.68
100	10.37	-0.15	9.62	0.60	9.40	0.82
105	10.50	0.14	9.75	0.89	9.53	1.12
110	10.74	0.31	10.00	1.05	9.78	1.27
115	11.15	0.28	10.42	1.02	10.19	1.24
120	11.35	0.45	10.62	1.18	10.40	1.41
125	10.92	1.24	10.19	1.97	9.97	2.18
130	10.14	2.36	9.42	3.08	9.21	3.29
135	9.67	3.16	8.95	3.87	8.74	4.09

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Frequenz Frequency in MHz	k(3m) AF(3m) in dB(1/m)	G(3m) G(3m) in dBi	k(10m) AF(10m) in dB(1/m)	G(10m) G(10m) in dBi	k(30m) AF(30m) in dB(1/m)	G(30m) G(30m) in dBi
140	9.27	3.87	8.56	4.58	8.35	4.80
145	8.81	4.64	8.10	5.34	7.89	5.56
150	8.69	5.05	7.99	5.75	7.78	5.96
155	8.71	5.31	8.02	6.01	7.81	6.22
160	8.79	5.52	8.10	6.21	7.89	6.41
165	9.23	5.34	8.54	6.03	8.34	6.23
170	10.50	4.33	9.82	5.01	9.62	5.21
175	11.55	3.53	10.88	4.20	10.68	4.41
180	9.12	6.21	8.45	6.88	8.25	7.08
185	8.18	7.38	7.52	8.05	7.32	8.24
190	8.19	7.61	7.53	8.26	7.33	8.46
195	7.97	8.05	7.32	8.70	7.12	8.90
200	8.24	8.00	7.59	8.65	7.40	8.84
205	8.57	7.89	7.95	8.50	7.77	8.69
210	8.85	7.82	8.27	8.39	8.10	8.57
215	9.10	7.77	8.56	8.31	8.40	8.47
220	8.96	8.11	8.45	8.61	8.30	8.76
225	9.10	8.16	8.63	8.63	8.49	8.77
230	9.28	8.17	8.84	8.61	8.71	8.74
235	9.41	8.23	9.00	8.64	8.88	8.76
240	9.60	8.22	9.22	8.60	9.11	8.71
245	9.57	8.44	9.22	8.79	9.12	8.89
250	9.73	8.45	9.41	8.77	9.31	8.87
255	9.88	8.47	9.58	8.77	9.50	8.85
260	10.01	8.51	9.74	8.78	9.67	8.85
265	10.13	8.55	9.89	8.80	9.82	8.87
270	10.17	8.68	9.95	8.89	9.89	8.96
275	10.25	8.75	10.06	8.95	10.00	9.00
280	10.41	8.75	10.24	8.92	10.19	8.97
285	10.58	8.73	10.44	8.88	10.39	8.92
290	10.71	8.76	10.58	8.89	10.55	8.92
295	10.79	8.83	10.68	8.93	10.65	8.96
300	10.93	8.83	10.85	8.92	10.82	8.94
305	11.18	8.72	11.12	8.79	11.10	8.81
310	11.23	8.82	11.18	8.86	11.17	8.88
315	11.38	8.81	11.35	8.84	11.34	8.85
320	11.52	8.80	11.52	8.81	11.51	8.81
325	11.62	8.83	11.63	8.83	11.63	8.82
330	11.70	8.89	11.73	8.86	11.73	8.86
335	11.95	8.77	11.99	8.73	12.01	8.72
340	11.89	8.96	11.94	8.90	11.96	8.89
345	11.96	9.02	12.03	8.94	12.06	8.92
350	12.11	8.99	12.21	8.90	12.23	8.87
355	12.22	9.01	12.32	8.90	12.35	8.87
360	12.29	9.06	12.41	8.94	12.44	8.90
365	12.34	9.13	12.47	8.99	12.51	8.95
370	12.47	9.11	12.62	8.97	12.66	8.92
375	12.59	9.11	12.76	8.94	12.80	8.90

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Frequenz Frequency in MHz	k(3m) AF(3m) in dB(1/m)	G(3m) G(3m) in dBi	k(10m) AF(10m) in dB(1/m)	G(10m) G(10m) in dBi	k(30m) AF(30m) in dB(1/m)	G(30m) G(30m) in dBi
380	12.65	9.16	12.83	8.99	12.88	8.94
385	12.75	9.18	12.94	8.99	13.00	8.93
390	12.90	9.14	13.11	8.93	13.16	8.88
395	13.00	9.15	13.22	8.93	13.28	8.87
400	13.14	9.12	13.37	8.89	13.43	8.83
405	13.23	9.14	13.47	8.90	13.54	8.83
410	13.27	9.21	13.52	8.96	13.59	8.89
415	13.42	9.16	13.69	8.90	13.76	8.82
420	13.38	9.31	13.65	9.03	13.73	8.95
425	13.44	9.35	13.73	9.06	13.81	8.98
430	13.58	9.31	13.88	9.01	13.96	8.93
435	13.70	9.29	14.01	8.98	14.09	8.90
440	13.80	9.29	14.11	8.98	14.20	8.89
445	13.93	9.26	14.26	8.93	14.35	8.84
450	14.02	9.26	14.36	8.92	14.45	8.83
455	14.08	9.30	14.42	8.96	14.52	8.86
460	14.18	9.29	14.54	8.94	14.64	8.84
465	14.31	9.26	14.68	8.89	14.78	8.79
470	14.35	9.32	14.72	8.94	14.82	8.84
475	14.41	9.34	14.80	8.96	14.90	8.85
480	14.47	9.37	14.86	8.98	14.97	8.87
485	14.59	9.34	14.99	8.94	15.10	8.83
490	14.72	9.31	15.13	8.90	15.24	8.78
495	14.82	9.30	15.23	8.88	15.35	8.76
500	14.89	9.31	15.32	8.88	15.44	8.76
505	14.89	9.39	15.33	8.96	15.45	8.84
510	14.94	9.44	15.38	8.99	15.50	8.87
515	15.08	9.37	15.53	8.92	15.66	8.80
520	15.11	9.43	15.57	8.97	15.69	8.85
525	15.09	9.53	15.55	9.07	15.68	8.94
530	15.11	9.59	15.58	9.12	15.71	8.99
535	15.16	9.63	15.64	9.15	15.77	9.02
540	15.22	9.65	15.71	9.16	15.84	9.03
545	15.30	9.65	15.80	9.15	15.93	9.02
550	15.38	9.65	15.88	9.15	16.02	9.01
555	15.47	9.64	15.98	9.13	16.12	8.99
560	15.56	9.62	16.07	9.11	16.21	8.97
565	15.64	9.62	16.16	9.10	16.30	8.96
570	15.74	9.60	16.27	9.07	16.41	8.93
575	15.90	9.51	16.43	8.98	16.58	8.83
580	16.05	9.44	16.59	8.90	16.74	8.75
585	16.03	9.53	16.58	8.99	16.73	8.84
590	16.04	9.60	16.59	9.05	16.74	8.90
595	16.07	9.64	16.63	9.08	16.78	8.93
600	16.13	9.65	16.69	9.09	16.85	8.94
605	16.20	9.65	16.77	9.09	16.92	8.93
610	16.29	9.63	16.87	9.06	17.02	8.90
615	16.36	9.64	16.94	9.06	17.09	8.90

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Frequenz Frequency in MHz	k(3m) AF(3m) in dB(1/m)	G(3m) G(3m) in dBi	k(10m) AF(10m) in dB(1/m)	G(10m) G(10m) in dBi	k(30m) AF(30m) in dB(1/m)	G(30m) G(30m) in dBi
620	16.38	9.69	16.96	9.11	17.12	8.95
625	16.44	9.70	17.03	9.11	17.19	8.95
630	16.50	9.70	17.10	9.11	17.26	8.95
635	16.60	9.68	17.20	9.07	17.37	8.91
640	16.68	9.67	17.28	9.06	17.45	8.89
645	16.79	9.62	17.40	9.01	17.57	8.84
650	16.98	9.50	17.60	8.88	17.76	8.71
655	17.04	9.51	17.66	8.89	17.83	8.72
660	16.98	9.63	17.61	9.00	17.78	8.83
665	16.94	9.74	17.57	9.11	17.74	8.94
670	16.93	9.81	17.57	9.17	17.74	9.00
675	16.99	9.82	17.63	9.18	17.80	9.00
680	17.09	9.78	17.73	9.14	17.91	8.96
685	17.18	9.76	17.83	9.11	18.00	8.93
690	17.28	9.72	17.93	9.06	18.11	8.89
695	17.36	9.70	18.02	9.04	18.20	8.86
700	17.38	9.74	18.04	9.08	18.22	8.90
705	17.43	9.76	18.09	9.09	18.28	8.91
710	17.45	9.79	18.12	9.12	18.31	8.94
715	17.54	9.77	18.21	9.09	18.40	8.91
720	17.63	9.73	18.31	9.05	18.50	8.87
725	17.71	9.71	18.40	9.03	18.58	8.84
730	17.80	9.68	18.49	8.99	18.68	8.81
735	17.83	9.72	18.52	9.02	18.71	8.84
740	17.78	9.82	18.48	9.13	18.67	8.94
745	17.77	9.89	18.47	9.20	18.66	9.01
750	17.78	9.94	18.48	9.24	18.67	9.05
755	17.81	9.97	18.52	9.26	18.71	9.07
760	17.85	9.98	18.56	9.27	18.76	9.08
765	17.93	9.96	18.64	9.25	18.84	9.06
770	18.01	9.94	18.73	9.22	18.93	9.02
775	18.08	9.92	18.80	9.20	19.00	9.01
780	18.12	9.94	18.85	9.21	19.05	9.02
785	18.19	9.92	18.92	9.20	19.12	9.00
790	18.27	9.91	19.00	9.17	19.20	8.97
795	18.32	9.91	19.05	9.17	19.25	8.97
800	18.40	9.88	19.14	9.14	19.34	8.94
805	18.52	9.82	19.26	9.07	19.46	8.87
810	18.64	9.75	19.38	9.01	19.59	8.80
815	18.73	9.71	19.48	8.96	19.68	8.76
820	18.77	9.72	19.53	8.97	19.73	8.77
825	18.76	9.79	19.52	9.03	19.72	8.83
830	18.77	9.83	19.53	9.07	19.73	8.87
835	18.78	9.88	19.54	9.12	19.74	8.91
840	18.81	9.90	19.58	9.13	19.78	8.92
845	18.86	9.90	19.63	9.13	19.83	8.92
850	18.88	9.92	19.65	9.15	19.86	8.95
855	18.93	9.93	19.70	9.16	19.91	8.95

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Frequenz Frequency in MHz	k(3m) AF(3m) in dB(1/m)	G(3m) G(3m) in dBi	k(10m) AF(10m) in dB(1/m)	G(10m) G(10m) in dBi	k(30m) AF(30m) in dB(1/m)	G(30m) G(30m) in dBi
860	18.98	9.93	19.75	9.16	19.96	8.95
865	19.01	9.95	19.79	9.17	20.00	8.96
870	19.08	9.93	19.86	9.15	20.07	8.94
875	19.13	9.93	19.91	9.15	20.13	8.93
880	19.20	9.91	19.99	9.12	20.20	8.91
885	19.27	9.89	20.06	9.10	20.27	8.89
890	19.30	9.91	20.09	9.11	20.31	8.90
895	19.35	9.91	20.15	9.11	20.36	8.89
900	19.38	9.92	20.18	9.12	20.40	8.91
905	19.43	9.92	20.24	9.12	20.45	8.90
910	19.54	9.86	20.34	9.06	20.56	8.84
915	19.62	9.83	20.43	9.02	20.65	8.80
920	19.62	9.88	20.43	9.07	20.64	8.85
925	19.53	10.02	20.34	9.20	20.56	8.98
930	19.48	10.11	20.30	9.29	20.52	9.07
935	19.48	10.16	20.30	9.34	20.52	9.12
940	19.49	10.19	20.31	9.37	20.53	9.15
945	19.52	10.20	20.35	9.38	20.57	9.16
950	19.57	10.21	20.39	9.38	20.61	9.16
955	19.63	10.19	20.46	9.36	20.68	9.14
960	19.71	10.16	20.54	9.33	20.76	9.10
965	19.79	10.12	20.62	9.29	20.85	9.06
970	19.84	10.11	20.68	9.28	20.90	9.05
975	19.88	10.12	20.72	9.28	20.94	9.06
980	19.92	10.12	20.76	9.28	20.99	9.06
985	19.99	10.10	20.83	9.26	21.05	9.04
990	20.05	10.08	20.90	9.24	21.12	9.01
995	20.16	10.02	21.01	9.17	21.23	8.94
1000	20.25	9.97	21.10	9.12	21.33	8.89
1050	20.64	10.01	21.51	9.14	21.74	8.91
1100	21.16	9.89	22.05	9.00	22.29	8.76
1150	21.28	10.16	22.18	9.25	22.43	9.01
1200	21.42	10.39	22.34	9.46	22.59	9.22
1250	22.01	10.14	22.95	9.21	23.20	8.96
1300	22.24	10.26	23.19	9.31	23.44	9.06
1350	22.66	10.16	23.63	9.20	23.89	8.94
1400	23.09	10.05	24.06	9.08	24.32	8.82
1450	22.96	10.48	23.95	9.50	24.21	9.23
1500	23.11	10.63	24.11	9.63	24.37	9.37
1550	23.72	10.31	24.73	9.30	24.99	9.03
1600	23.97	10.33	24.99	9.31	25.26	9.04
1650	24.22	10.35	25.24	9.33	25.51	9.06
1700	24.67	10.16	25.70	9.13	25.97	8.86
1750	25.19	9.89	26.23	8.85	26.51	8.57
1800	25.08	10.24	26.13	9.20	26.41	8.92
1850	25.04	10.52	26.10	9.46	26.38	9.18
1900	25.36	10.43	26.42	9.37	26.70	9.09
1950	25.98	10.04	27.04	8.98	27.33	8.69

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Frequenz Frequency in MHz	k(3m) AF(3m) in dB(1/m)	G(3m) G(3m) in dBi	k(10m) AF(10m) in dB(1/m)	G(10m) G(10m) in dBi	k(30m) AF(30m) in dB(1/m)	G(30m) G(30m) in dBi
2000	25.84	10.40	26.92	9.32	27.20	9.04
2050	25.98	10.47	27.06	9.39	27.35	9.11
2100	26.25	10.42	27.33	9.33	27.62	9.05
2150	26.73	10.14	27.82	9.05	28.10	8.76
2200	27.36	9.71	28.46	8.61	28.75	8.32
2250	27.20	10.07	28.30	8.97	28.59	8.68
2300	26.90	10.55	28.00	9.45	28.30	9.16
2350	26.95	10.69	28.06	9.58	28.36	9.29
2400	27.36	10.46	28.48	9.35	28.77	9.05
2450	27.73	10.27	28.85	9.16	29.14	8.86
2500	27.62	10.56	28.74	9.44	29.03	9.14
2550	27.61	10.74	28.74	9.62	29.03	9.32
2600	27.69	10.83	28.82	9.70	29.12	9.40
2650	28.18	10.50	29.31	9.37	29.61	9.08
2700	28.48	10.36	29.62	9.23	29.92	8.93
2750	28.65	10.36	29.79	9.22	30.08	8.92
2800	28.72	10.44	29.86	9.30	30.16	9.00
2850	28.65	10.66	29.80	9.52	30.10	9.22
2900	29.07	10.40	30.22	9.25	30.52	8.95
2950	29.01	10.61	30.15	9.46	30.46	9.16
3000	29.20	10.56	30.35	9.41	30.65	9.11
3050	29.22	10.68	30.38	9.53	30.68	9.23
3100	29.01	11.04	30.17	9.88	30.47	9.58
3150	29.27	10.91	30.43	9.75	30.74	9.45
3200	29.43	10.89	30.59	9.73	30.89	9.43
3250	29.79	10.67	30.96	9.50	31.26	9.20
3300	29.85	10.74	31.02	9.57	31.32	9.27
3350	30.11	10.61	31.27	9.45	31.58	9.14
3400	30.05	10.80	31.22	9.63	31.52	9.32
3450	30.02	10.96	31.19	9.79	31.50	9.48
3500	30.27	10.83	31.44	9.66	31.75	9.35
3550	30.22	11.00	31.40	9.82	31.71	9.52
3600	30.65	10.70	31.82	9.52	32.13	9.21
3650	30.56	10.90	31.74	9.73	32.05	9.42
3700	30.92	10.67	32.10	9.48	32.41	9.17
3750	31.19	10.51	32.37	9.33	32.69	9.02
3800	31.14	10.67	32.33	9.49	32.64	9.18
3850	31.31	10.62	32.49	9.44	32.80	9.13
3900	31.04	11.00	32.23	9.81	32.54	9.50
3950	31.05	11.10	32.24	9.91	32.55	9.60
4000	31.18	11.09	32.37	9.90	32.68	9.58
4050	31.79	10.58	32.98	9.38	33.30	9.07
4100	32.00	10.48	33.19	9.28	33.51	8.97
4150	32.34	10.24	33.53	9.05	33.85	8.73
4200	32.64	10.05	33.83	8.85	34.15	8.54
4250	32.41	10.38	33.61	9.18	33.92	8.87
4300	32.58	10.30	33.78	9.11	34.10	8.79
4350	32.51	10.48	33.71	9.28	34.03	8.96

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4400	32.99	10.10	34.19	8.90	34.50	8.59
4450	33.05	10.14	34.25	8.94	34.57	8.62
4500	33.18	10.10	34.38	8.90	34.70	8.59
4550	33.62	9.77	34.82	8.56	35.14	8.24
4600	33.93	9.54	35.14	8.34	35.46	8.02
4650	34.57	9.00	35.77	7.80	36.09	7.48
4700	34.84	8.83	36.04	7.62	36.36	7.30
4750	35.23	8.52	36.44	7.32	36.76	7.00
4800	35.14	8.70	36.35	7.49	36.67	7.17
4850	34.92	9.01	36.13	7.80	36.45	7.48
4900	34.82	9.21	36.03	7.99	36.35	7.68
4950	34.69	9.42	35.90	8.21	36.22	7.89
5000	34.82	9.38	36.04	8.16	36.36	7.84
5050	34.85	9.44	36.06	8.22	36.38	7.91
5100	34.79	9.58	36.01	8.36	36.33	8.04
5150	34.47	9.98	35.69	8.76	36.01	8.45
5200	34.35	10.19	35.57	8.97	35.89	8.65
5250	34.47	10.15	35.69	8.93	36.01	8.62
5300	34.31	10.40	35.53	9.18	35.85	8.86
5350	34.49	10.30	35.71	9.08	36.03	8.76
5400	34.73	10.13	35.95	8.91	36.27	8.59
5450	34.65	10.30	35.87	9.08	36.19	8.76
5500	34.79	10.24	36.01	9.02	36.33	8.70
5550	34.90	10.21	36.12	8.98	36.44	8.66
5600	34.91	10.27	36.14	9.05	36.46	8.73
5650	35.03	10.23	36.26	9.00	36.58	8.68
5700	35.08	10.26	36.31	9.03	36.63	8.71
5750	35.15	10.26	36.38	9.03	36.70	8.71
5800	34.90	10.58	36.13	9.36	36.45	9.04
5850	34.84	10.72	36.07	9.50	36.39	9.18
5900	34.95	10.69	36.17	9.46	36.50	9.14
5950	34.73	10.98	35.96	9.75	36.28	9.43
6000	34.75	11.03	35.98	9.80	36.30	9.48

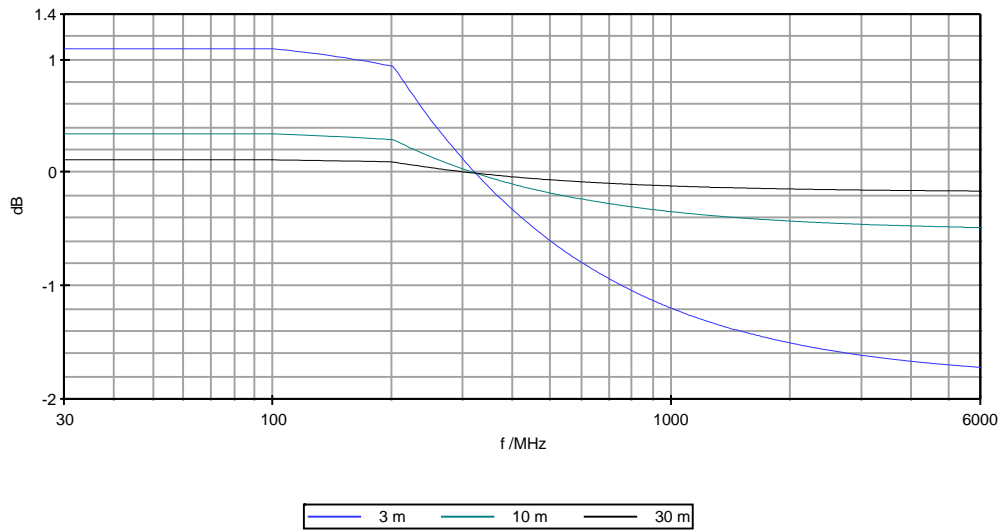
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1.8 Korrekturwerte k-Faktor / Correction Values Antenna Factor

Bezugspunkt ist die Markierung / The reference point is the marking



2. Kalibriermethode / Calibration Method: SAE ARP958

2.1 Vorbemerkung / Preliminary Remarks

Messablauf

Die Kalibrierung wird auf dem Freifeldmessplatz der R&S Messgerätebau GmbH in Memmingen durchgeführt. Der Antennenfaktor wird mit Hilfe der Drei-Antennen-Methode und drei gleichen Antennen ermittelt. Das Messverfahren orientiert sich an der Norm SAE ARP958.

Messbedingung:

- [SAE ARP958 Methode \(1m\)](#)
- [Vertikale Polarisierung](#)

Ergebnisse

Im Kalibrierprotokoll sind folgende Daten ausgewiesen:

- Antennenfaktor
- Praktischer Gewinn (incl. Anpassverluste)

Angegeben ist die erweiterte Messunsicherheit, die sich aus der Standardmessunsicherheit durch Multiplikation mit dem Erweiterungsfaktor $k = 2$ ergibt. Die Bezugsimpedanz für alle Messungen ist 50 Ohm.

Messunsicherheit Antennenfaktor und praktischer Gewinn:

30 - 6000 MHz: ± 1.0 dB

Test sequence

The calibrations are carried out on the Open-Area-Test-Site (OATS) form R&S Messgerätebau GmbH in Memmingen. The antenna factor is determined using the Three-Antenna-Method with three identical antennas. The measurement method is oriented to the standard SAE ARP958.

Test condition:

- [SAE ARP958 Method \(1m\)](#)
- [Vertical Polarisation](#)

Results

Following data are listed in the test report:

- Antenna factor
- Realized gain (mismatch losses included)

The extended measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor $k = 2$. Nominal impedance for all measurements is 50 Ohm.

Measurement uncertainty antenna factor and realized gain:

30 - 6000 MHz: ± 1.0 dB

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2.2 Messergebnisse / Measurement Results: SAE ARP958

Frequenz Frequency in MHz	k-Faktor Antenna factor in dB(1/m)	Prakt. Gewinn Realized gain in dBi
30	21.68	-21.92
32	21.56	-21.23
34	20.94	-20.09
36	20.14	-18.80
38	19.30	-17.48
40	18.14	-15.87
42	17.09	-14.41
44	15.75	-12.67
46	14.22	-10.75
48	12.25	-8.41
50	11.37	-7.17
52	10.08	-5.54
54	9.13	-4.26
56	8.98	-3.79
58	10.23	-4.74
60	9.38	-3.60
62	10.25	-4.18
64	10.97	-4.63
66	11.54	-4.93
68	11.89	-5.02
70	12.06	-4.94
72	12.82	-5.45
74	12.96	-5.36
76	13.42	-5.58
78	13.77	-5.71
80	13.73	-5.44
82	13.50	-5.01
84	13.75	-5.04
86	13.87	-4.96
88	13.78	-4.67
90	13.56	-4.26
92	13.68	-4.19
94	13.82	-4.14
96	13.93	-4.06
98	13.96	-3.92
100	13.63	-3.41
105	14.31	-3.67
110	14.75	-3.70
115	14.84	-3.41
120	15.96	-4.16
125	14.49	-2.33
130	13.82	-1.33
135	13.44	-0.61

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Frequenz Frequency in MHz	k-Faktor Antenna factor in dB(1/m)	Prakt. Gewinn Realized gain in dBi
140	12.94	0.20
145	12.38	1.07
150	12.13	1.61
155	12.35	1.68
160	12.32	1.98
165	12.88	1.69
170	14.45	0.38
175	15.31	-0.23
180	12.69	2.63
185	11.85	3.71
190	11.89	3.91
195	11.68	4.34
200	11.91	4.33
205	12.21	4.25
210	12.58	4.08
215	12.81	4.06
220	12.58	4.49
225	12.66	4.60
230	12.85	4.61
235	13.01	4.63
240	13.18	4.64
245	13.17	4.83
250	13.33	4.84
255	13.48	4.87
260	13.60	4.92
265	13.68	5.00
270	13.71	5.14
275	13.76	5.24
280	13.91	5.25
285	14.07	5.25
290	14.18	5.28
295	14.25	5.36
300	14.37	5.39
305	14.66	5.24
310	14.71	5.34
315	14.85	5.34
320	15.00	5.32
325	15.08	5.38
330	15.15	5.44
335	15.37	5.35
340	15.28	5.57
345	15.36	5.61
350	15.50	5.60
355	15.59	5.63
360	15.67	5.68
365	15.71	5.76
370	15.82	5.76
375	15.96	5.74

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Frequenz Frequency in MHz	k-Faktor Antenna factor in dB(1/m)	Prakt. Gewinn Realized gain in dBi
380	16.00	5.82
385	16.10	5.83
390	16.23	5.81
395	16.33	5.82
400	16.46	5.81
405	16.52	5.85
410	16.55	5.93
415	16.68	5.91
420	16.65	6.03
425	16.74	6.05
430	16.87	6.02
435	16.98	6.01
440	17.08	6.01
445	17.18	6.01
450	17.26	6.02
455	17.31	6.07
460	17.40	6.07
465	17.51	6.06
470	17.55	6.11
475	17.59	6.16
480	17.68	6.17
485	17.81	6.13
490	17.93	6.10
495	17.99	6.12
500	18.04	6.16
505	18.04	6.24
510	18.10	6.27
515	18.28	6.18
520	18.27	6.27
525	18.22	6.40
530	18.24	6.46
535	18.29	6.49
540	18.35	6.52
545	18.40	6.54
550	18.49	6.53
555	18.58	6.52
560	18.66	6.52
565	18.75	6.52
570	18.82	6.51
575	18.97	6.44
580	19.11	6.37
585	19.10	6.46
590	19.09	6.54
595	19.13	6.58
600	19.20	6.58
605	19.30	6.56
610	19.38	6.55
615	19.39	6.61

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Frequenz Frequency in MHz	k-Faktor Antenna factor in dB(1/m)	Prakt. Gewinn Realized gain in dBi
620	19.40	6.67
625	19.48	6.66
630	19.54	6.67
635	19.60	6.68
640	19.67	6.67
645	19.81	6.60
650	20.03	6.45
655	20.11	6.43
660	20.00	6.61
665	19.94	6.74
670	19.93	6.81
675	19.98	6.82
680	20.09	6.78
685	20.18	6.75
690	20.27	6.73
695	20.33	6.73
700	20.34	6.79
705	20.37	6.81
710	20.43	6.82
715	20.51	6.79
720	20.59	6.78
725	20.66	6.77
730	20.72	6.76
735	20.78	6.77
740	20.75	6.86
745	20.72	6.94
750	20.72	7.00
755	20.74	7.04
760	20.78	7.06
765	20.84	7.06
770	20.92	7.03
775	21.01	6.99
780	21.04	7.03
785	21.10	7.01
790	21.17	7.01
795	21.22	7.01
800	21.30	6.98
805	21.41	6.93
810	21.52	6.87
815	21.63	6.82
820	21.69	6.80
825	21.68	6.87
830	21.67	6.93
835	21.66	6.99
840	21.67	7.03
845	21.72	7.03
850	21.77	7.04
855	21.82	7.04

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860	21.86	7.05
865	21.88	7.08
870	21.94	7.07
875	21.99	7.07
880	22.06	7.05
885	22.10	7.06
890	22.11	7.10
895	22.14	7.12
900	22.21	7.10
905	22.30	7.05
910	22.40	7.00
915	22.46	6.98
920	22.44	7.06
925	22.34	7.20
930	22.29	7.30
935	22.28	7.36
940	22.29	7.39
945	22.33	7.40
950	22.39	7.38
955	22.47	7.35
960	22.53	7.33
965	22.58	7.33
970	22.61	7.34
975	22.65	7.35
980	22.71	7.34
985	22.77	7.32
990	22.83	7.31
995	22.92	7.26
1000	23.04	7.18
1050	23.41	7.23
1100	23.92	7.13
1150	23.98	7.45
1200	24.11	7.69
1250	24.67	7.49
1300	24.93	7.57
1350	25.30	7.53
1400	25.68	7.47
1450	25.55	7.89
1500	25.72	8.02
1550	26.33	7.70
1600	26.60	7.71
1650	26.85	7.72
1700	27.31	7.52
1750	27.78	7.30
1800	27.59	7.74
1850	27.52	8.04
1900	27.89	7.91
1950	28.57	7.45

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2000	28.39	7.86
2050	28.43	8.02
2100	28.66	8.00
2150	29.29	7.58
2200	29.86	7.21
2250	29.35	7.92
2300	29.47	7.98
2350	29.40	8.24
2400	29.80	8.02
2450	30.20	7.81
2500	30.16	8.02
2550	30.16	8.19
2600	30.08	8.44
2650	30.49	8.20
2700	30.82	8.02
2750	30.97	8.04
2800	31.14	8.02
2850	31.12	8.19
2900	31.48	7.99
2950	31.31	8.31
3000	31.54	8.23
3050	31.68	8.22
3100	31.50	8.55
3150	31.68	8.51
3200	31.74	8.58
3250	32.12	8.34
3300	32.23	8.36
3350	32.51	8.21
3400	32.40	8.45
3450	32.30	8.68
3500	32.56	8.54
3550	32.57	8.65
3600	33.02	8.33
3650	32.93	8.54
3700	33.22	8.37
3750	33.53	8.17
3800	33.52	8.29
3850	33.69	8.24
3900	33.43	8.61
3950	33.42	8.73
4000	33.50	8.76
4050	34.09	8.28
4100	34.34	8.14
4150	34.60	7.98
4200	34.92	7.76
4250	34.75	8.04
4300	34.89	8.00
4350	34.81	8.18

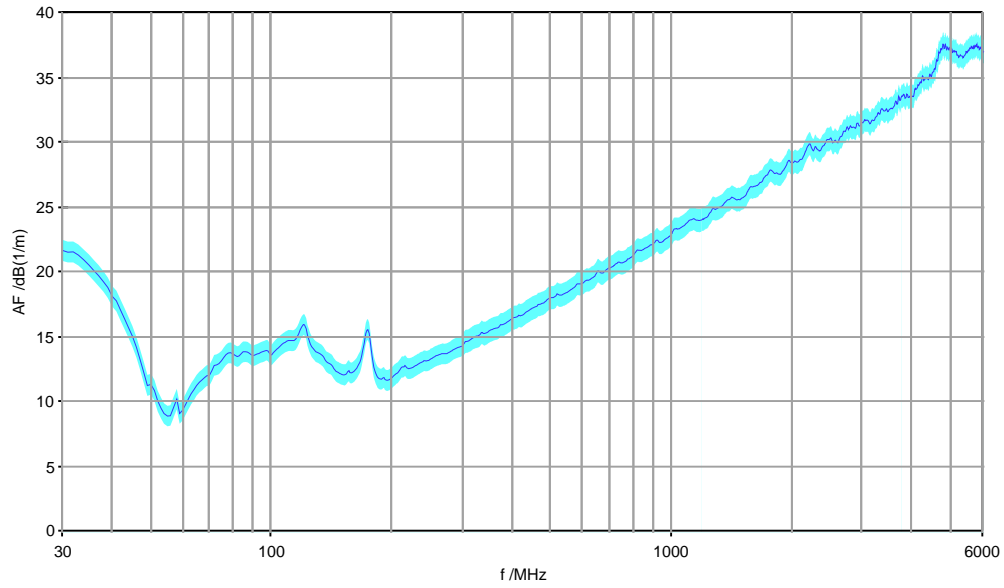
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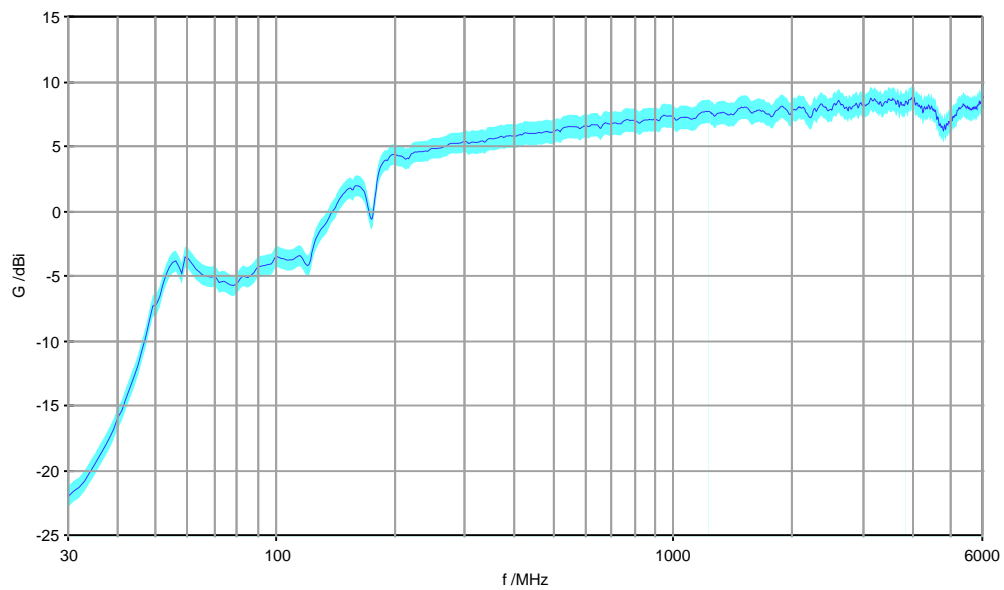


Frequenz Frequency in MHz	k-Faktor Antenna factor in dB(1/m)	Prakt. Gewinn Realized gain in dBi
4400	35.19	7.90
4450	35.33	7.86
4500	35.52	7.77
4550	35.87	7.51
4600	36.22	7.25
4650	36.87	6.70
4700	37.14	6.52
4750	37.52	6.23
4800	37.51	6.34
4850	37.21	6.72
4900	37.11	6.92
4950	36.96	7.15
5000	37.01	7.19
5050	37.04	7.25
5100	36.99	7.39
5150	36.68	7.77
5200	36.55	7.99
5250	36.62	8.00
5300	36.60	8.10
5350	36.66	8.12
5400	36.86	8.01
5450	36.91	8.04
5500	37.03	8.00
5550	37.20	7.90
5600	37.21	7.97
5650	37.28	7.99
5700	37.42	7.92
5750	37.53	7.88
5800	37.32	8.17
5850	37.11	8.46
5900	37.19	8.45
5950	37.10	8.61
6000	36.99	8.79

2.3 k-Faktor / Antenna Factor: SAE ARP958



2.4 Gewinn / Gain: SAE ARP958



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3. Datendatei Messergebnisse / Data File Measurement Results

Die Kalibrierdaten werden zusätzlich auf einer CD mitgeliefert
The calibration data are additional supplied to a CD