30 MHz – 3000 MHz Hybrid Measurement Antenna

1 Introduction

The TBMA8 is an affordable hybrid measurement antenna, a combination of a biconical antenna with a logarithmic periodic antenna, covering a frequency range of 30 MHz up to 3 GHz, targeting radiated emission EMC pre-compliance testing.
The TBMA8 is characterized from 30 MHz to 3000 MHz and has VSWR and antenna factor values typical for hybrid measurement antennas.





2 Product overview

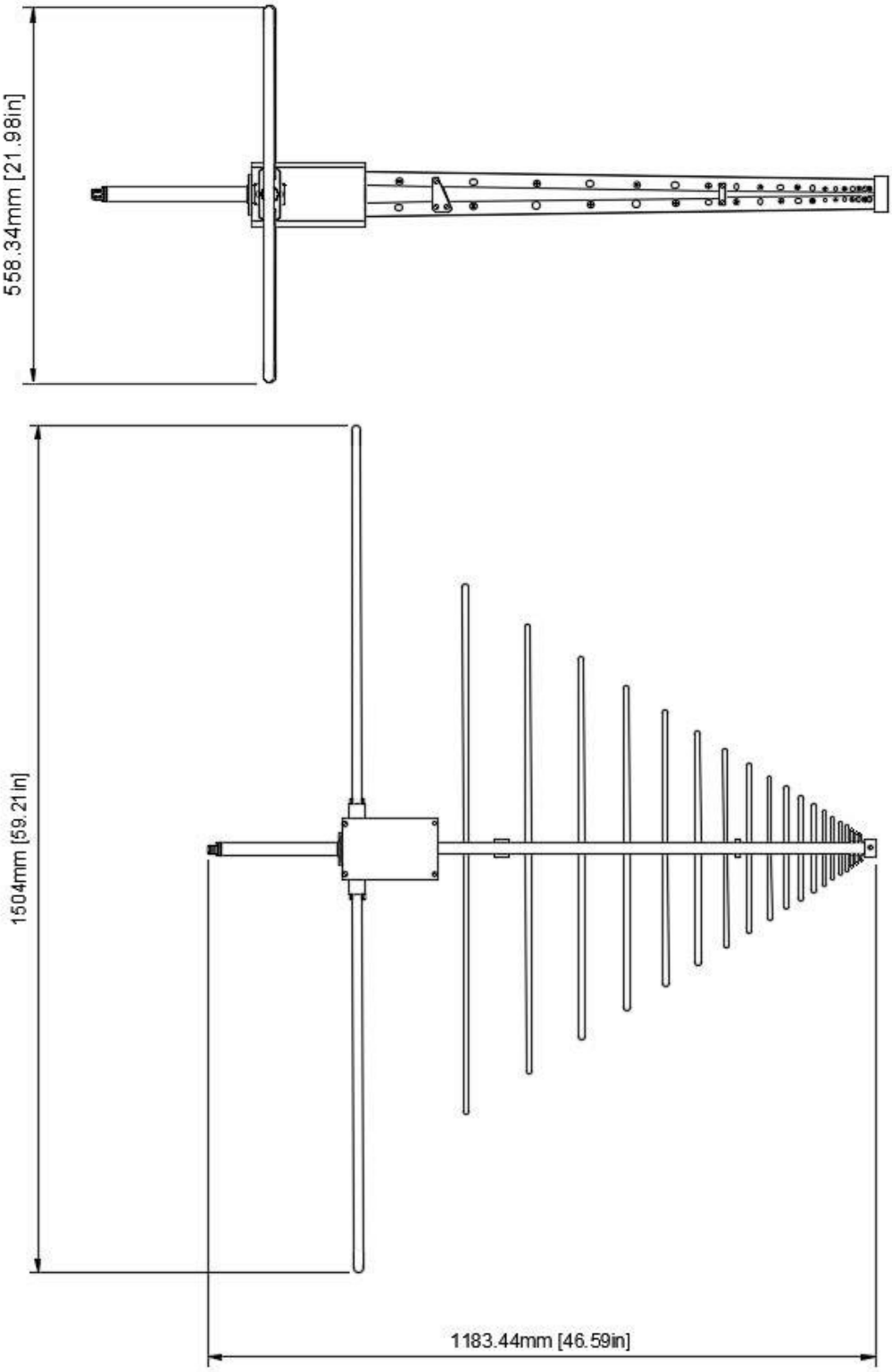
The TBMA8 is an average sized hybrid antenna, with its radiating elements and supporting booms made from aluminum alloy. It is equipped with a standard female N-connector and comes together with two triangular bowtie elements. The antenna provides a 20mm diameter mounting shaft (tube). An alternative, tiltable mounting element and tripods are available as optional accesories.

The TBMA8 is shipped in a robust carrying case.

3 Technical Specifications

Type	Hybrid antenna
Frequency range	30 MHz– 3000 MHz
VSWR	<2.1 (f > 80 MHz)
Isotropic gain at 3m spacing	-15 … 8 dBi
Antenna factor at 3m spacing	8 … 34 dB/m
Maximum continuous input RF power	130W
Nominal impedance	50 Ω
RF Connector	N type female
Mounting	22 mm diameter mounting shaft (tube)
Mechanical Dimensions	L x W x H: 1504 mm x 1183 mm x 558 mm (59.2” x 46.6” x 22”)
Weight	6.7 kg (14.77 lbs)

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4 TBMA8 Antenna Characterisation

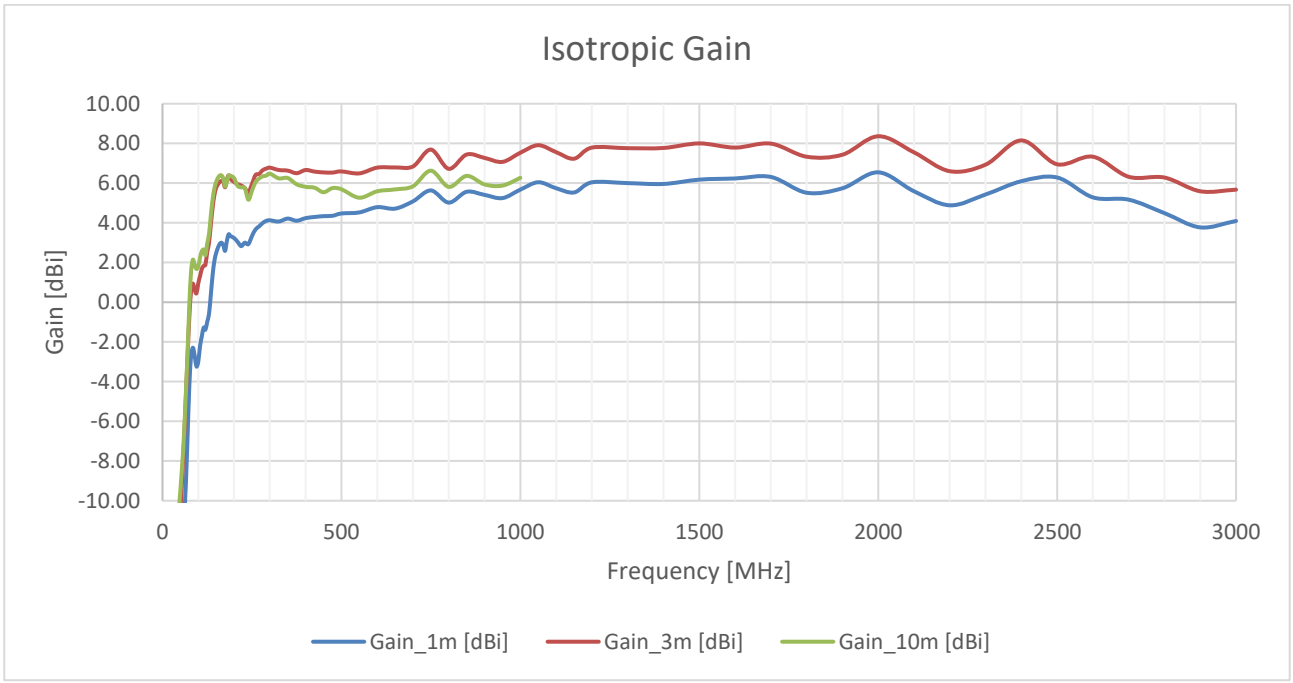
4.1 Gain & Antenna Factor versus frequency

Frequency	Gain Isotropic (10m_Antenna Center)	Antenna Factor (10m_Antenna Center)	Gain Isotropic (3m_Antenna Center)	Antenna Factor (3m_Antenna Center)	Gain Isotropic (1m_Antenna Tip)	Antenna Factor (1m_Antenna Tip)
MHz	dBi	dB/m	dBi	dB/m	dBi	dB/m
30	-13.08	12.84	-14.82	14.58	-17.34	17.10
35	-12.11	13.21	-13.54	14.64	-17.04	18.14
40	-11.37	13.63	-12.63	14.89	-16.04	18.30
45	-10.58	13.86	-11.67	14.96	-14.88	18.17
50	-9.46	13.66	-10.48	14.68	-13.39	17.59
55	-8.21	13.24	-8.91	13.94	-12.28	17.31
60	-6.71	12.49	-7.05	12.84	-10.97	16.75
65	-4.72	11.20	-4.95	11.42	-9.29	15.77
70	-2.57	9.69	-2.78	9.90	-6.82	13.94
75	-0.16	7.88	-0.76	8.48	-4.23	11.95
80	1.57	6.71	0.58	7.70	-2.68	10.96
85	2.14	6.66	0.94	7.87	-2.29	11.10
90	1.87	7.43	0.62	8.68	-2.70	12.01
95	1.67	8.10	0.45	9.33	-3.24	13.02
100	1.78	8.44	0.95	9.27	-3.00	13.22
105	2.26	8.39	1.32	9.33	-2.21	12.85
110	2.57	8.48	1.68	9.37	-1.71	12.76
115	2.65	8.78	1.83	9.60	-1.28	12.72
120	2.37	9.43	1.88	9.93	-1.38	13.19
125	2.96	9.20	2.53	9.62	-0.99	13.14
130	3.42	9.07	2.98	9.52	-0.59	13.09
135	4.34	8.48	3.87	8.96	0.35	12.48
140	5.16	7.98	4.74	8.40	1.35	11.79
145	5.73	7.72	5.39	8.05	2.08	11.37
150	6.06	7.68	5.76	7.98	2.47	11.27
155	6.26	7.76	5.93	8.10	2.74	11.28
160	6.38	7.92	6.06	8.25	2.93	11.37
165	6.39	8.18	6.11	8.46	3.00	11.57
170	6.23	8.60	6.06	8.77	2.86	11.97
175	5.83	9.25	5.79	9.30	2.59	12.49
180	6.05	9.28	6.19	9.13	3.09	12.23
185	6.38	9.19	6.39	9.17	3.42	12.14
190	6.37	9.42	6.21	9.58	3.33	12.46
200	6.25	9.99	6.06	10.18	3.24	13.01
210	5.86	10.80	5.95	10.71	3.04	13.62
220	5.79	11.28	5.88	11.19	2.83	14.24
230	5.76	11.70	5.75	11.71	3.00	14.46
240	5.16	12.66	5.53	12.29	2.93	14.90
250	5.61	12.57	5.95	12.23	3.33	14.85
260	6.05	12.47	6.41	12.11	3.67	14.85
270	6.23	12.62	6.46	12.39	3.82	15.03
280	6.34	12.82	6.65	12.51	3.99	15.17
290	6.38	13.09	6.73	12.74	4.10	15.37
300	6.48	13.28	6.78	12.98	4.13	15.63
325	6.24	14.22	6.66	13.80	4.07	16.39
350	6.26	14.84	6.63	14.47	4.21	16.89
375	5.94	15.76	6.50	15.20	4.10	17.60
400	5.81	16.45	6.66	15.61	4.24	18.02
425	5.77	17.02	6.58	16.20	4.29	18.49
450	5.54	17.74	6.54	16.75	4.34	18.95
475	5.75	18.00	6.53	17.23	4.35	19.40

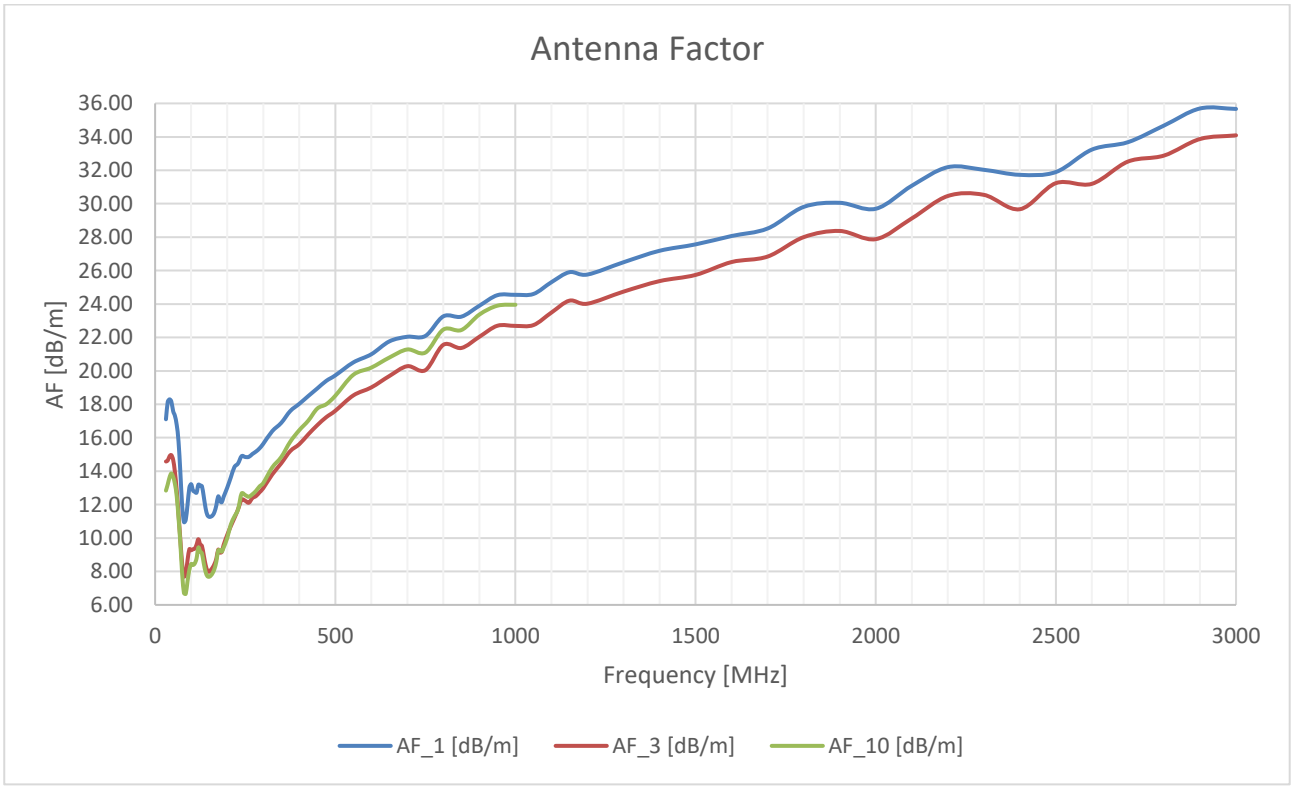
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500	5.69	18.51	6.59	17.61	4.47	19.73
550	5.26	19.76	6.49	18.53	4.52	20.50
600	5.59	20.19	6.78	19.01	4.79	20.99
650	5.68	20.79	6.79	19.69	4.71	21.76
700	5.84	21.28	6.84	20.28	5.08	22.04
750	6.63	21.09	7.69	20.04	5.63	22.09
800	5.81	22.47	6.72	21.56	5.02	23.26
850	6.36	22.44	7.44	21.37	5.56	23.24
900	5.93	23.37	7.27	22.04	5.41	23.90
950	5.87	23.90	7.07	22.70	5.25	24.53
1000	6.27	23.95	7.53	22.69	5.67	24.55
1050	N/A	N/A	7.91	22.74	6.04	24.60
1100	N/A	N/A	7.56	23.49	5.74	25.31
1150	N/A	N/A	7.23	24.20	5.53	25.90
1200	N/A	N/A	7.79	24.02	6.04	25.76
1300	N/A	N/A	7.76	24.74	6.00	26.50
1400	N/A	N/A	7.77	25.37	5.96	27.18
1500	N/A	N/A	8.00	25.74	6.17	27.57
1600	N/A	N/A	7.79	26.51	6.23	28.07
1700	N/A	N/A	7.99	26.84	6.31	28.52
1800	N/A	N/A	7.33	28.00	5.52	29.81
1900	N/A	N/A	7.43	28.37	5.74	30.05
2000	N/A	N/A	8.36	27.88	6.54	29.70
2100	N/A	N/A	7.55	29.12	5.59	31.07
2200	N/A	N/A	6.60	30.46	4.88	32.19
2300	N/A	N/A	6.93	30.53	5.43	32.03
2400	N/A	N/A	8.15	29.67	6.10	31.73
2500	N/A	N/A	6.95	31.23	6.28	31.90
2600	N/A	N/A	7.33	31.19	5.28	33.24
2700	N/A	N/A	6.32	32.52	5.17	33.68
2800	N/A	N/A	6.28	32.88	4.49	34.68
2900	N/A	N/A	5.59	33.87	3.77	35.70
3000	N/A	N/A	5.67	34.09	4.09	35.67

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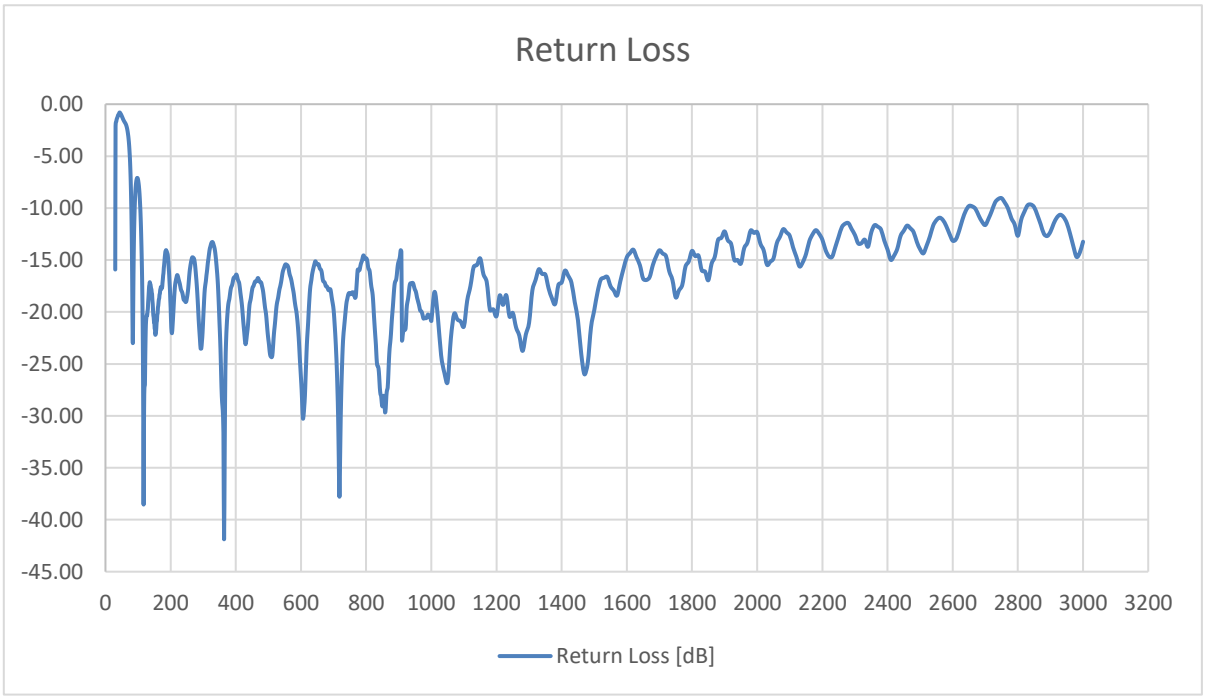
30 MHz … 3000 MHz, Isotropic Gain of TBMA8



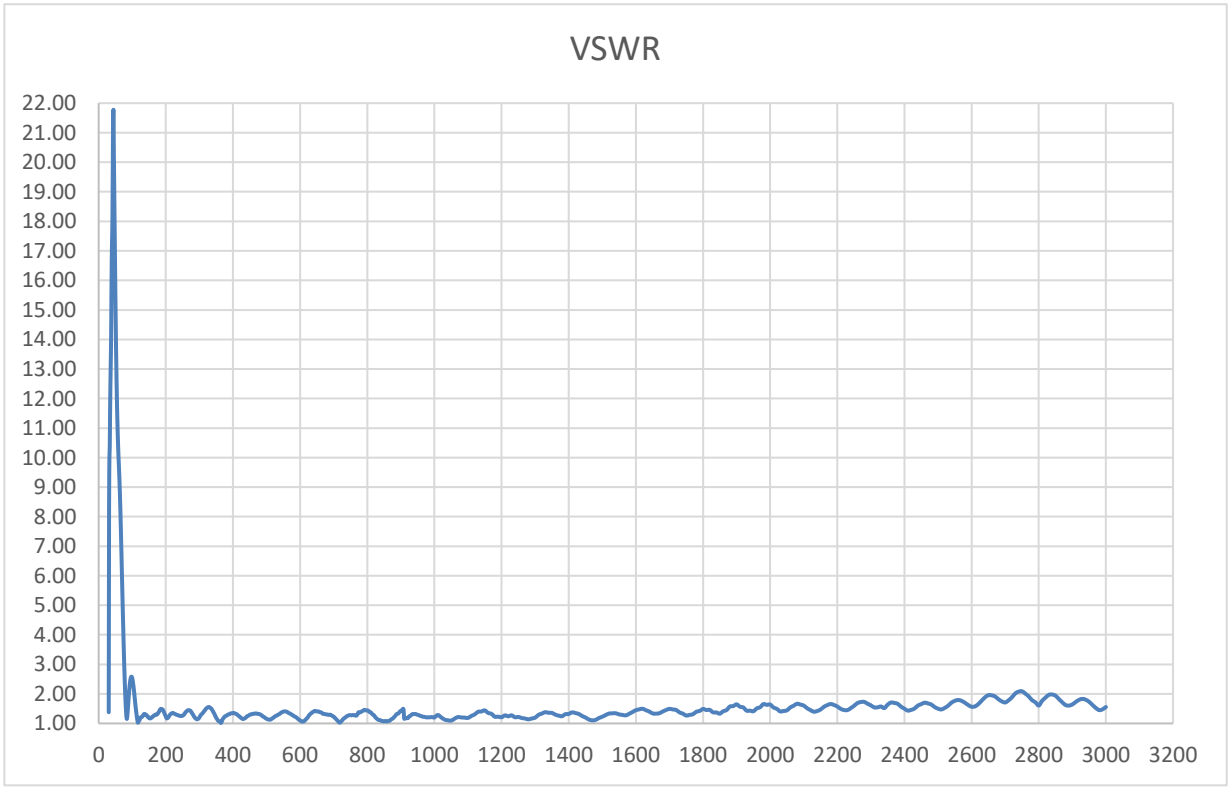
30 MHz … 3000 MHz, Antenna Factor of TBMA8

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4.2 TBMA8 Return Loss / VSWR



TBMA8, S11, 30 MHz … 3000 MHz



TBMA8, VSWR, 30 MHz … 3000 MHz

Detailed test reports from Seibersdorf Laboratories can be downloaded from our website

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5 Optional Tripods and mounting brackets

Recommended tripod: TBTP5



TBMA8 on TBTP5; using TBMA8-PAT mounting bracket;



TBMA8 on TBTP5; using TBMA8-PAT mounting bracket; recommended tripod

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6 Ordering Information

Part Number	Description
TBMA8	30 – 3000 MHz hybrid measurement antenna , carrying case

Accessories

Part Number	Description
TBTP5	Fiberglass tripod, *) recommended tripod for TBMA8
TBMA8-PAT	Mounting bracket for TBMA8 and TBMA7; for 22 mm antenna shafts, clamps sideways to 30 mm tripod shafts; *) recommended adapter for TBMA8

7 History

Version	Date	Author	Changes
V1.0	11.14.2024	Mayerhofer	Creation of the document
V1.1	18.6.2025	Mayerhofer	Updated tripod information
V1.2	23.12.2025	Mayerhofer	Updated tripod and adapter information
V1.3	16.4.2026	Mayerhofer	Updated numbering and ordering information
V1.4	22.6.2026	Mayerhofer	Chapter 4 updated
V1.5	13.07.2026	Tauchner	Chapter 1, 2, 5 updated

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