

# 130 MHz – 6000 MHz Hybrid Measurement Antenna

## 1 Introduction

The TBMA11 is an affordable logarithmic-periodic measurement antenna for radiated emission measurements.

The TBMA11 is characterized from 130 MHz to 6000 MHz and has VSWR and antenna factor values typical for logarithmic-periodic measurement antennas.



## 2 Product overview

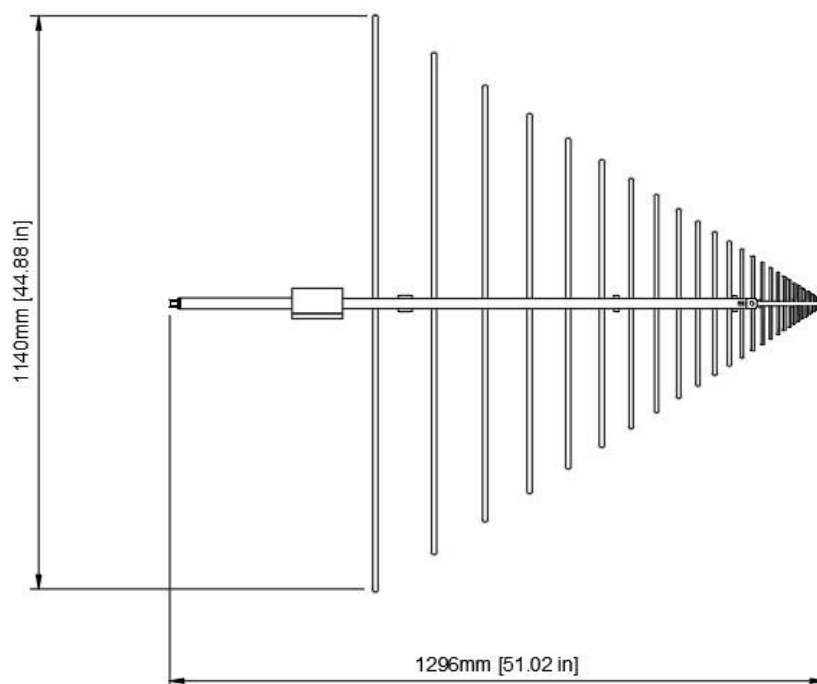
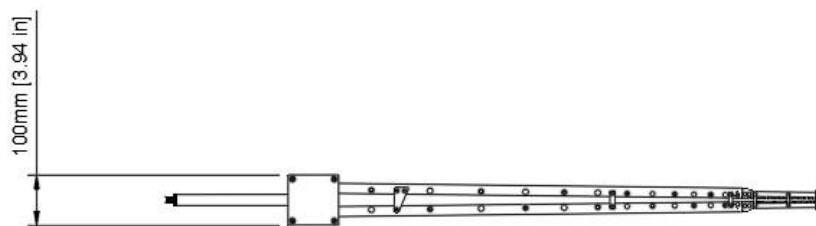
The TBMA11 is an average sized hybrid antenna, with its radiating elements and supporting booms made from aluminium. It is equipped with a standard female N-connector. The antenna provides a 22mm diameter mounting shaft. A suitable fiberglass tripod, model TBTP5 and mounting adapter TBMA8-PAT are available as optional accessories.

The TBMA11 is shipped in a robust carrying case.

## 130 MHz – 6000 MHz Hybrid Measurement Antenna

### 3 Technical Specifications

|                                   |                                                                 |
|-----------------------------------|-----------------------------------------------------------------|
| Type                              | logarithmic periodic                                            |
| Frequency range                   | 130 MHz– 6000 MHz                                               |
| VSWR                              | < 2.1:1 over the entire frequency range ; 1.45:1 average        |
| Isotropic gain at 3m spacing      | 4 .... 8.5 dBi                                                  |
| Antenna factor at 3m spacing      | 7... 41 dB/m                                                    |
| Maximum continuous input RF power | 130W                                                            |
| Nominal impedance                 | 50 $\Omega$                                                     |
| RF Connector                      | N type female                                                   |
| Mounting                          | 22 mm diameter mounting shaft (tube)                            |
| Mechanical Dimensions             | L x W x H: 1296 mm x 1140 mm x 100 mm (51.02" x 44.88" x 3.94") |
| Weight                            | 3.3 kg (7.27 lbs)                                               |



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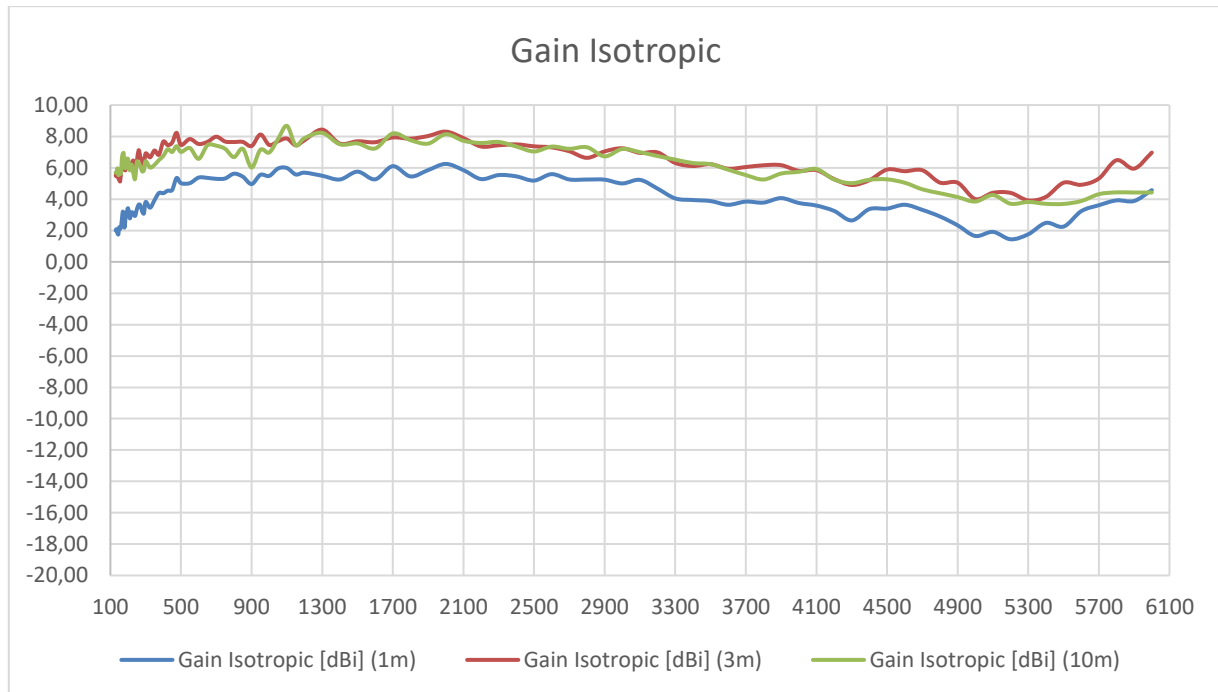
## 4 Gain & Antenna Factor versus frequency

| Frequency | Isotropic Gain<br>(10m, ref. to<br>Antenna Center) | Antenna Factor<br>(10m, ref. to<br>Antenna Center) | Isotropic Gain<br>(3m, ref. to Antenna<br>Center) | Antenna Factor<br>(3m, ref. to Antenna<br>Center) | Isotropic Gain<br>(1m, ref to Antenna<br>Tip) | Antenna Factor<br>(1m, ref to Antenna<br>Tip) |
|-----------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------|---------------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| MHz       | dBi                                                | dB/m                                               | dBi                                               | dB/m                                              | dBi                                           | dB/m                                          |
| 130       | 5.69                                               | 6.81                                               | 5.49                                              | 7.01                                              | 2.01                                          | 10.49                                         |
| 135       | 5.71                                               | 7.11                                               | 5.64                                              | 7.19                                              | 2.08                                          | 10.75                                         |
| 140       | 5.97                                               | 7.18                                               | 5.42                                              | 7.72                                              | 1.83                                          | 11.31                                         |
| 145       | 5.54                                               | 7.90                                               | 5.35                                              | 8.10                                              | 1.75                                          | 11.69                                         |
| 150       | 5.65                                               | 8.09                                               | 5.22                                              | 8.53                                              | 2.21                                          | 11.54                                         |
| 155       | 5.60                                               | 8.42                                               | 5.14                                              | 8.89                                              | 2.09                                          | 11.93                                         |
| 160       | 5.66                                               | 8.64                                               | 5.66                                              | 8.64                                              | 2.23                                          | 12.07                                         |
| 165       | 6.57                                               | 7.99                                               | 5.99                                              | 8.57                                              | 2.69                                          | 11.88                                         |
| 170       | 6.89                                               | 7.93                                               | 6.27                                              | 8.56                                              | 3.20                                          | 11.63                                         |
| 175       | 6.95                                               | 8.13                                               | 6.22                                              | 8.86                                              | 3.11                                          | 11.97                                         |
| 180       | 6.15                                               | 9.18                                               | 5.95                                              | 9.38                                              | 2.18                                          | 13.14                                         |
| 185       | 5.97                                               | 9.59                                               | 5.84                                              | 9.73                                              | 2.71                                          | 12.85                                         |
| 190       | 6.53                                               | 9.26                                               | 6.05                                              | 9.74                                              | 3.00                                          | 12.79                                         |
| 200       | 6.57                                               | 9.67                                               | 6.17                                              | 10.08                                             | 3.42                                          | 12.82                                         |
| 210       | 5.84                                               | 10.83                                              | 6.29                                              | 10.37                                             | 2.78                                          | 13.89                                         |
| 220       | 6.21                                               | 10.85                                              | 6.20                                              | 10.87                                             | 3.15                                          | 13.91                                         |
| 230       | 5.64                                               | 11.81                                              | 6.46                                              | 11.00                                             | 3.10                                          | 14.35                                         |
| 240       | 5.29                                               | 12.53                                              | 5.72                                              | 12.10                                             | 2.93                                          | 14.89                                         |
| 250       | 6.40                                               | 11.78                                              | 6.42                                              | 11.76                                             | 3.35                                          | 14.82                                         |
| 260       | 6.31                                               | 12.21                                              | 7.12                                              | 11.40                                             | 3.65                                          | 14.87                                         |
| 270       | 6.10                                               | 12.74                                              | 6.69                                              | 12.16                                             | 3.61                                          | 15.23                                         |
| 280       | 5.77                                               | 13.40                                              | 6.43                                              | 12.73                                             | 3.22                                          | 15.95                                         |
| 290       | 5.85                                               | 13.62                                              | 6.18                                              | 13.29                                             | 3.09                                          | 16.38                                         |
| 300       | 6.42                                               | 13.34                                              | 6.92                                              | 12.85                                             | 3.82                                          | 15.94                                         |
| 325       | 6.02                                               | 14.44                                              | 6.66                                              | 13.79                                             | 3.46                                          | 17.00                                         |
| 350       | 6.19                                               | 14.91                                              | 7.10                                              | 14.00                                             | 3.94                                          | 17.17                                         |
| 375       | 6.50                                               | 15.20                                              | 6.83                                              | 14.87                                             | 4.39                                          | 17.31                                         |
| 400       | 6.76                                               | 15.51                                              | 7.67                                              | 14.59                                             | 4.38                                          | 17.88                                         |
| 425       | 7.19                                               | 15.60                                              | 7.45                                              | 15.34                                             | 4.54                                          | 18.25                                         |
| 450       | 7.01                                               | 16.27                                              | 7.61                                              | 15.68                                             | 4.58                                          | 18.70                                         |
| 475       | 7.38                                               | 16.37                                              | 8.23                                              | 15.52                                             | 5.35                                          | 18.41                                         |
| 500       | 7.01                                               | 17.19                                              | 7.46                                              | 16.74                                             | 5.02                                          | 19.18                                         |
| 550       | 7.26                                               | 17.76                                              | 7.83                                              | 17.19                                             | 5.02                                          | 20.01                                         |
| 600       | 6.57                                               | 19.21                                              | 7.52                                              | 18.26                                             | 5.38                                          | 20.41                                         |
| 650       | 7.44                                               | 19.04                                              | 7.66                                              | 18.82                                             | 5.36                                          | 21.12                                         |
| 700       | 7.41                                               | 19.71                                              | 7.98                                              | 19.14                                             | 5.29                                          | 21.83                                         |
| 750       | 7.21                                               | 20.51                                              | 7.68                                              | 20.05                                             | 5.32                                          | 22.40                                         |
| 800       | 6.68                                               | 21.60                                              | 7.65                                              | 20.64                                             | 5.62                                          | 22.66                                         |
| 850       | 7.21                                               | 21.59                                              | 7.65                                              | 21.16                                             | 5.43                                          | 23.37                                         |
| 900       | 6.02                                               | 23.29                                              | 7.39                                              | 21.91                                             | 4.96                                          | 24.34                                         |
| 950       | 7.15                                               | 22.62                                              | 8.12                                              | 21.65                                             | 5.55                                          | 24.22                                         |
| 1000      | 6.98                                               | 23.24                                              | 7.45                                              | 22.77                                             | 5.48                                          | 24.74                                         |
| 1050      | 7.84                                               | 22.80                                              | 7.70                                              | 22.95                                             | 5.96                                          | 24.69                                         |
| 1100      | 8.67                                               | 22.37                                              | 7.87                                              | 23.18                                             | 5.99                                          | 25.06                                         |
| 1150      | 7.43                                               | 24.00                                              | 7.43                                              | 24.00                                             | 5.58                                          | 25.86                                         |
| 1200      | 7.89                                               | 23.91                                              | 7.76                                              | 24.05                                             | 5.69                                          | 26.12                                         |
| 1300      | 8.23                                               | 24.27                                              | 8.43                                              | 24.06                                             | 5.49                                          | 27.01                                         |
| 1400      | 7.50                                               | 25.64                                              | 7.54                                              | 25.60                                             | 5.26                                          | 27.89                                         |

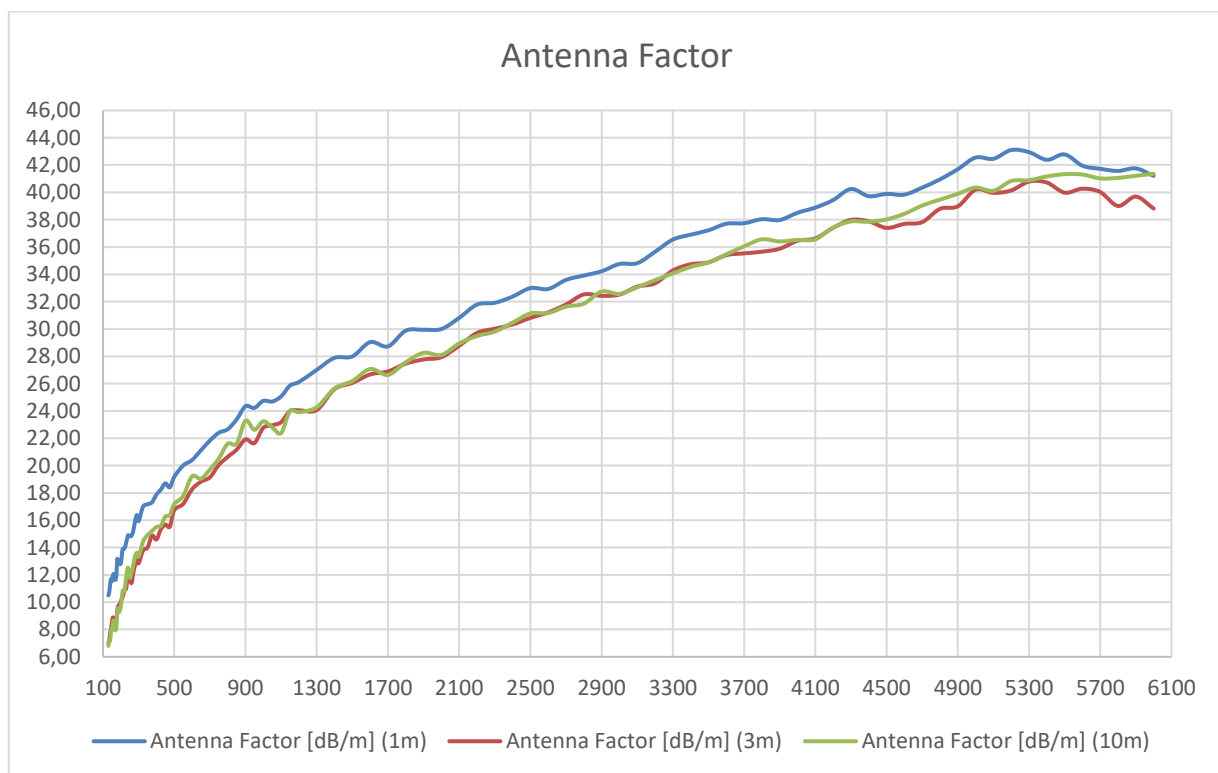
## 130 MHz – 6000 MHz Hybrid Measurement Antenna

| Frequency<br>MHz | Isotropic Gain<br>(10m, ref. to<br>Antenna Center)<br>dBi | Antenna Factor<br>(10m, ref. to<br>Antenna Center)<br>dB/m | Isotropic Gain<br>(3m, ref. to Antenna<br>Center)<br>dBi | Antenna Factor<br>(3m, ref. to Antenna<br>Center)<br>dB/m | Isotropic Gain<br>(1m, ref to Antenna<br>Tip)<br>dBi | Antenna Factor<br>(1m, ref to Antenna<br>Tip)<br>dB/m |
|------------------|-----------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------|
| 1500             | 7.56                                                      | 26.19                                                      | 7.69                                                     | 26.05                                                     | 5.75                                                 | 27.99                                                 |
| 1600             | 7.23                                                      | 27.07                                                      | 7.63                                                     | 26.67                                                     | 5.26                                                 | 29.04                                                 |
| 1700             | 8.19                                                      | 26.64                                                      | 7.93                                                     | 26.89                                                     | 6.10                                                 | 28.72                                                 |
| 1800             | 7.76                                                      | 27.56                                                      | 7.86                                                     | 27.47                                                     | 5.45                                                 | 29.88                                                 |
| 1900             | 7.54                                                      | 28.25                                                      | 8.03                                                     | 27.77                                                     | 5.85                                                 | 29.94                                                 |
| 2000             | 8.14                                                      | 28.10                                                      | 8.31                                                     | 27.93                                                     | 6.25                                                 | 29.99                                                 |
| 2100             | 7.72                                                      | 28.94                                                      | 7.89                                                     | 28.77                                                     | 5.85                                                 | 30.81                                                 |
| 2200             | 7.58                                                      | 29.49                                                      | 7.36                                                     | 29.71                                                     | 5.28                                                 | 31.79                                                 |
| 2300             | 7.65                                                      | 29.81                                                      | 7.44                                                     | 30.02                                                     | 5.54                                                 | 31.92                                                 |
| 2400             | 7.36                                                      | 30.47                                                      | 7.49                                                     | 30.33                                                     | 5.45                                                 | 32.37                                                 |
| 2500             | 7.04                                                      | 31.14                                                      | 7.37                                                     | 30.81                                                     | 5.18                                                 | 32.99                                                 |
| 2600             | 7.35                                                      | 31.17                                                      | 7.30                                                     | 31.22                                                     | 5.59                                                 | 32.93                                                 |
| 2700             | 7.21                                                      | 31.64                                                      | 7.05                                                     | 31.79                                                     | 5.26                                                 | 33.59                                                 |
| 2800             | 7.31                                                      | 31.85                                                      | 6.63                                                     | 32.53                                                     | 5.25                                                 | 33.91                                                 |
| 2900             | 6.73                                                      | 32.74                                                      | 7.05                                                     | 32.42                                                     | 5.24                                                 | 34.23                                                 |
| 3000             | 7.20                                                      | 32.57                                                      | 7.24                                                     | 32.52                                                     | 5.00                                                 | 34.76                                                 |
| 3100             | 7.00                                                      | 33.05                                                      | 6.95                                                     | 33.10                                                     | 5.23                                                 | 34.82                                                 |
| 3200             | 6.75                                                      | 33.57                                                      | 6.98                                                     | 33.34                                                     | 4.67                                                 | 35.65                                                 |
| 3300             | 6.52                                                      | 34.07                                                      | 6.31                                                     | 34.28                                                     | 4.05                                                 | 36.54                                                 |
| 3400             | 6.30                                                      | 34.55                                                      | 6.11                                                     | 34.74                                                     | 3.95                                                 | 36.90                                                 |
| 3500             | 6.23                                                      | 34.87                                                      | 6.23                                                     | 34.87                                                     | 3.88                                                 | 37.22                                                 |
| 3600             | 5.88                                                      | 35.47                                                      | 5.94                                                     | 35.40                                                     | 3.64                                                 | 37.70                                                 |
| 3700             | 5.53                                                      | 36.05                                                      | 6.05                                                     | 35.54                                                     | 3.84                                                 | 37.74                                                 |
| 3800             | 5.25                                                      | 36.56                                                      | 6.16                                                     | 35.66                                                     | 3.78                                                 | 38.03                                                 |
| 3900             | 5.63                                                      | 36.41                                                      | 6.17                                                     | 35.88                                                     | 4.07                                                 | 37.98                                                 |
| 4000             | 5.74                                                      | 36.52                                                      | 5.81                                                     | 36.45                                                     | 3.75                                                 | 38.51                                                 |
| 4100             | 5.92                                                      | 36.55                                                      | 5.85                                                     | 36.63                                                     | 3.59                                                 | 38.89                                                 |
| 4200             | 5.25                                                      | 37.43                                                      | 5.28                                                     | 37.40                                                     | 3.25                                                 | 39.43                                                 |
| 4300             | 5.02                                                      | 37.87                                                      | 4.90                                                     | 37.98                                                     | 2.64                                                 | 40.25                                                 |
| 4400             | 5.24                                                      | 37.85                                                      | 5.21                                                     | 37.88                                                     | 3.37                                                 | 39.72                                                 |
| 4500             | 5.26                                                      | 38.02                                                      | 5.89                                                     | 37.40                                                     | 3.40                                                 | 39.89                                                 |
| 4600             | 5.05                                                      | 38.43                                                      | 5.78                                                     | 37.69                                                     | 3.64                                                 | 39.83                                                 |
| 4700             | 4.63                                                      | 39.04                                                      | 5.84                                                     | 37.82                                                     | 3.32                                                 | 40.35                                                 |
| 4800             | 4.38                                                      | 39.47                                                      | 5.05                                                     | 38.79                                                     | 2.89                                                 | 40.95                                                 |
| 4900             | 4.13                                                      | 39.89                                                      | 5.05                                                     | 38.98                                                     | 2.33                                                 | 41.69                                                 |
| 5000             | 3.85                                                      | 40.35                                                      | 4.01                                                     | 40.19                                                     | 1.65                                                 | 42.55                                                 |
| 5100             | 4.26                                                      | 40.11                                                      | 4.41                                                     | 39.97                                                     | 1.91                                                 | 42.46                                                 |
| 5200             | 3.71                                                      | 40.83                                                      | 4.40                                                     | 40.14                                                     | 1.44                                                 | 43.10                                                 |
| 5300             | 3.82                                                      | 40.89                                                      | 3.92                                                     | 40.79                                                     | 1.76                                                 | 42.94                                                 |
| 5400             | 3.70                                                      | 41.16                                                      | 4.15                                                     | 40.72                                                     | 2.49                                                 | 42.38                                                 |
| 5500             | 3.69                                                      | 41.33                                                      | 5.05                                                     | 39.98                                                     | 2.25                                                 | 42.78                                                 |
| 5600             | 3.88                                                      | 41.30                                                      | 4.92                                                     | 40.27                                                     | 3.23                                                 | 41.95                                                 |
| 5700             | 4.32                                                      | 41.02                                                      | 5.32                                                     | 40.02                                                     | 3.61                                                 | 41.72                                                 |
| 5800             | 4.43                                                      | 41.06                                                      | 6.48                                                     | 39.01                                                     | 3.92                                                 | 41.57                                                 |
| 5900             | 4.42                                                      | 41.21                                                      | 5.95                                                     | 39.69                                                     | 3.88                                                 | 41.75                                                 |
| 6000             | 4.43                                                      | 41.36                                                      | 6.97                                                     | 38.81                                                     | 4.58                                                 | 41.21                                                 |

## 130 MHz – 6000 MHz Hybrid Measurement Antenna



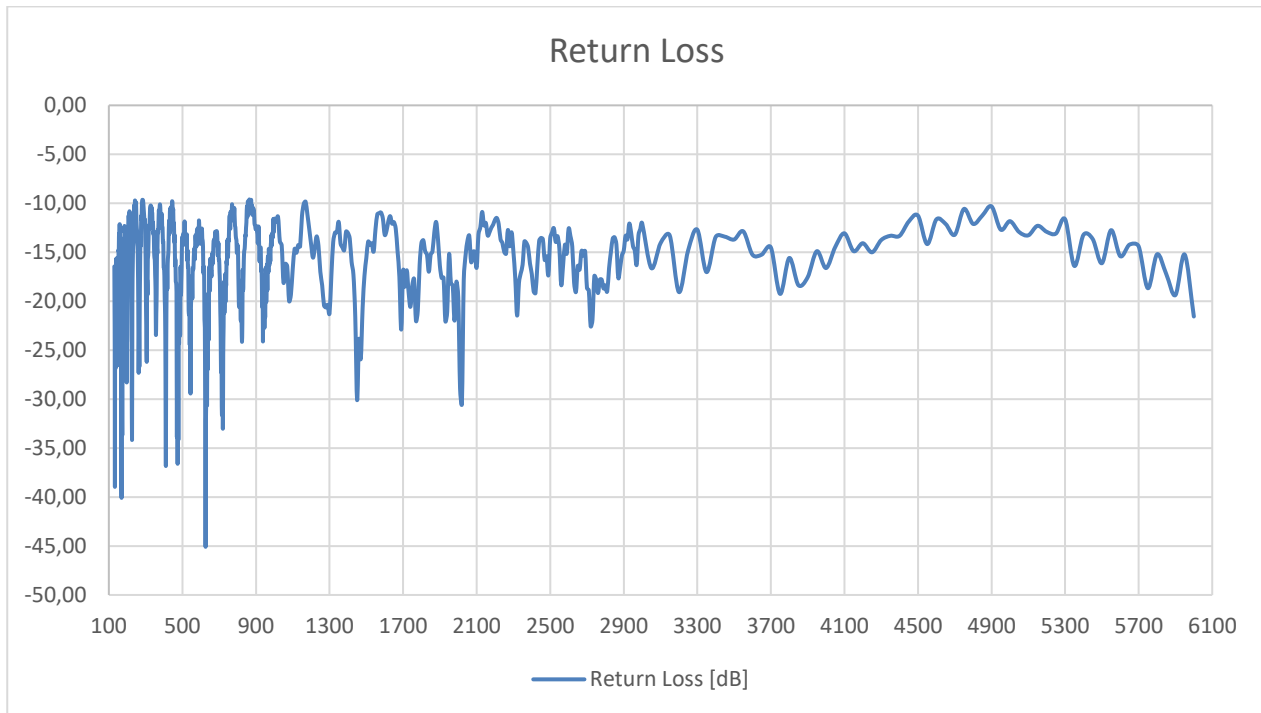
*130 MHz ... 6000 MHz, Isotropic Gain of TBMA11*



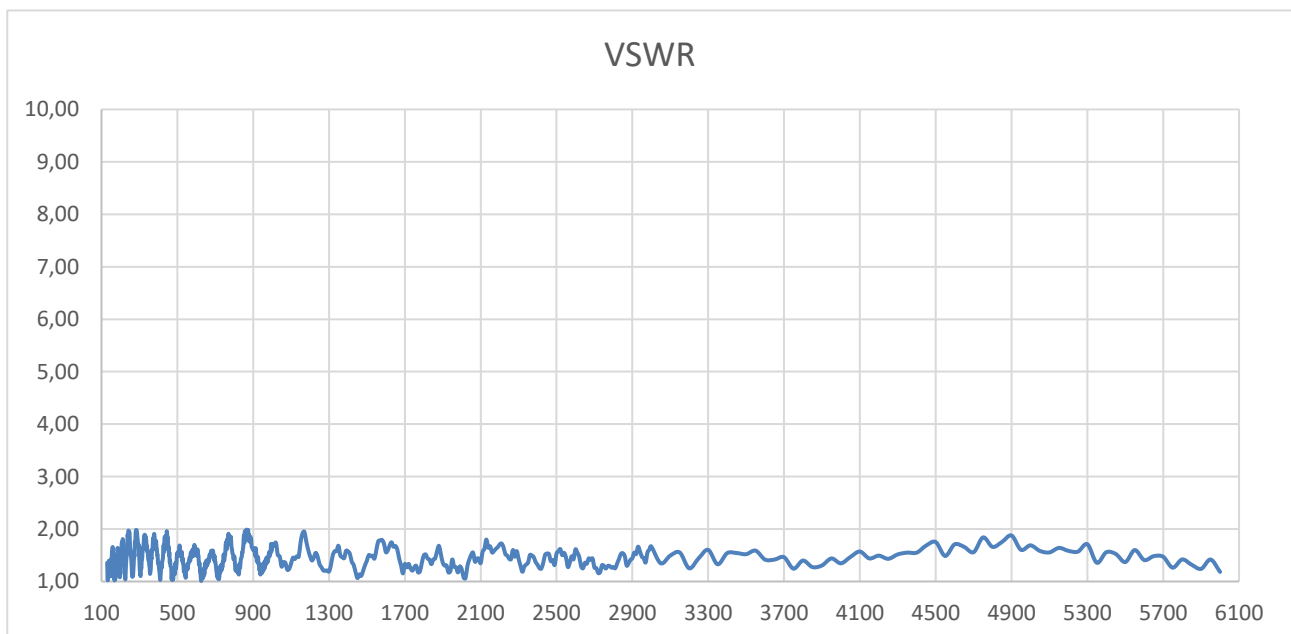
*130 MHz ... 6000 MHz, Antenna Factor of TBMA11*

## 130 MHz – 6000 MHz Hybrid Measurement Antenna

### 5 TBMA12 Return Loss / VSWR



*TBMA11, S11, 130 MHz ... 6000 MHz*



*TBMA11, VSWR, 130 MHz ... 6000 MHz*

VSWR, Gain and AF in tabular form is provided on our website.

## 130 MHz – 6000 MHz Hybrid Measurement Antenna

### 4 Optional Tripods and mounting brackets



*TBMA11 on TBTP5 tripod; using TBMA8-PAT mounting bracket*

### 5 Ordering Information

| Part Number | Description                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------|
| TBMA11      | 30 – 6000 MHz hybrid measurement antenna , carrying case, individual factory calibration using NIST traceable equipment |

#### Accessories

| Part Number | Description                                                                                                         |
|-------------|---------------------------------------------------------------------------------------------------------------------|
| TBTP5       | Fiberglass tripod                                                                                                   |
| TBMA8-PAT   | Mounting bracket for TBMA12, TBMA11, TBMA8, TBMA7; for 22 mm antenna shafts, clamps sideways to 30 mm tripod shafts |

## 130 MHz – 6000 MHz Hybrid Measurement Antenna

### 6 History

| Version | Date       | Author     | Changes                  |
|---------|------------|------------|--------------------------|
| V1.0    | 23.04.2026 | Mayerhofer | Creation of the document |
|         |            |            |                          |
|         |            |            |                          |