Wideband RF Amplifiers

1 Introduction

TBWA2 wideband RF amplifiers are versatile building blocks that can easily be integrated into laboratory setups. With a frequency range of 2MHz to 6GHz, they are ideal to boost the signals picked up by our EMC near field probes. The TBWA2 wideband amplifiers are available with 20dB or 40dB gain.

Picture 1 – TBWA2 wideband amplifiers front view

Picture 2 – TBWA2 wideband amplifiers rear view

Application:

general purpose gain block

EMC probe amplifier

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2 Electrical Specifications

2.1 TBWA2/20dB

Technical Data:

Input: 50 Ohm, SMA

Output: 50 Ohm, SMA

Nominal supply Voltage: 4.5 - 5V, typ. 110mA, Mini-USB-B connector

Maximum supply voltage: 5.5V

Maximum input power: +10dBm

1dB output compression point @ 2GHz: +20dBm

3rd order output intercept point @ 2GHz, Pin = 0dBm/tone, Δf = 10MHz: +35dBm

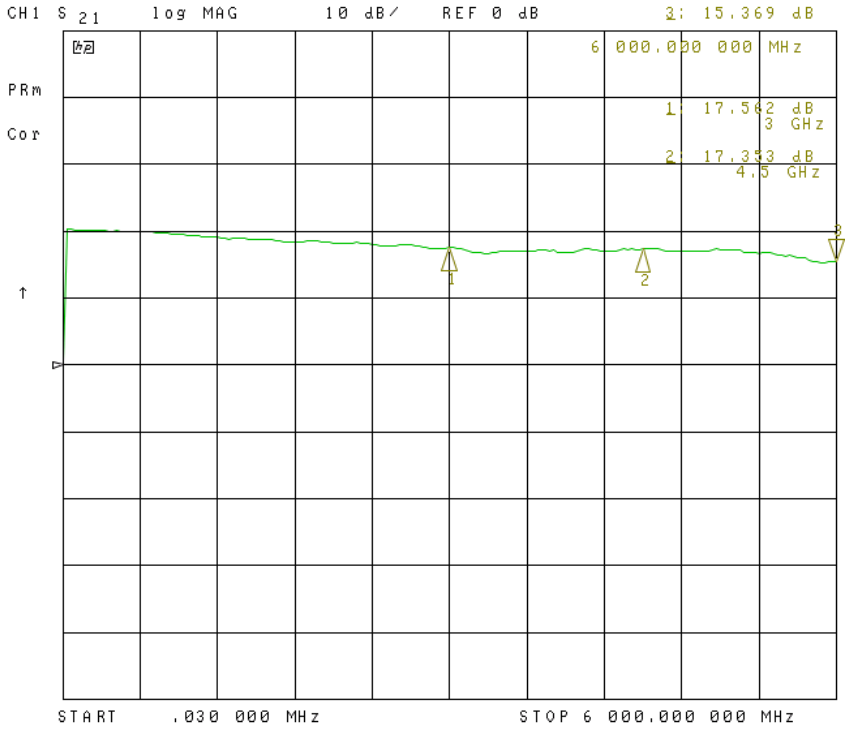
Reverse isolation S12, 0.1 …6GHz: 23dB

Noise Figure @ 2GHz: 4.5 … 5 dB

Gain:

1 MHz	10 MHz	100 MHz	500 MHz	1 GHz	2 GHz	3 GHz	4.5 GHz	6 GHz
14.8 dB	20.2 dB	20.2 dB	20 dB	19.8 dB	19 dB	17.6 dB	17.4 dB	15.4 dB

Table 1 – TBWA2/20dB gain



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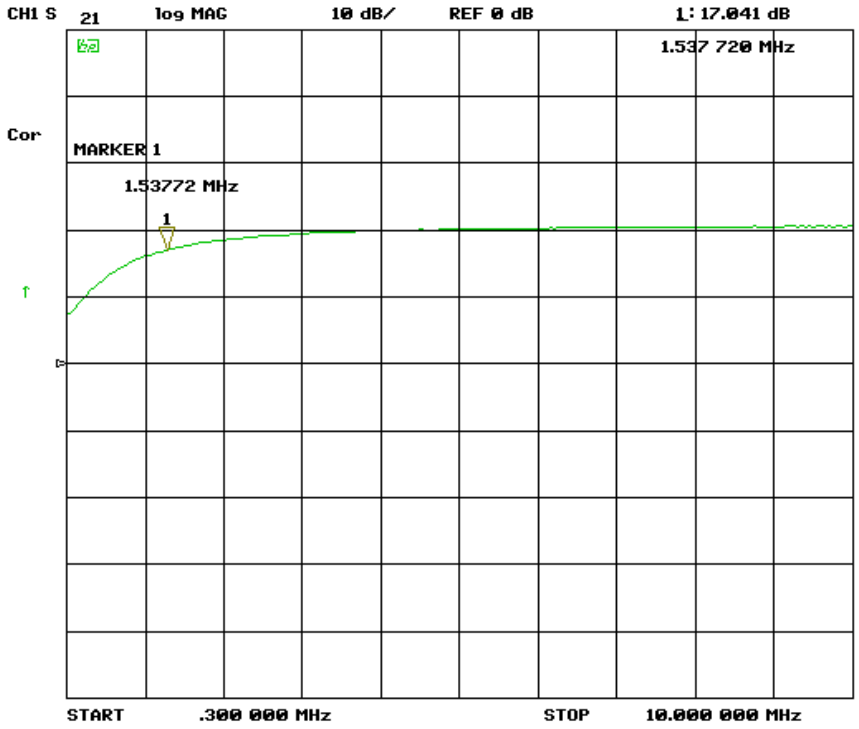
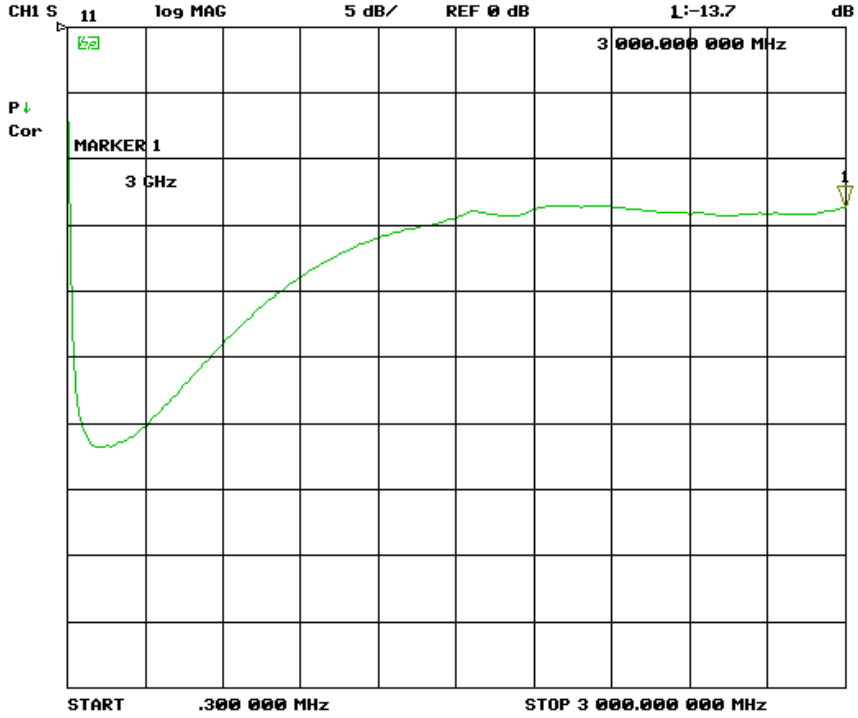
Picture 3 – TBWA2/20dB, gain, 30 kHz – 6 GHz, lin.



Picture 4 – TBWA2/20dB, gain, 300 kHz – 10 MHz, lin.



Picture 5 – TBWA2/20dB, input return loss, IS11I, 300 kHz – 3 GHz, lin.

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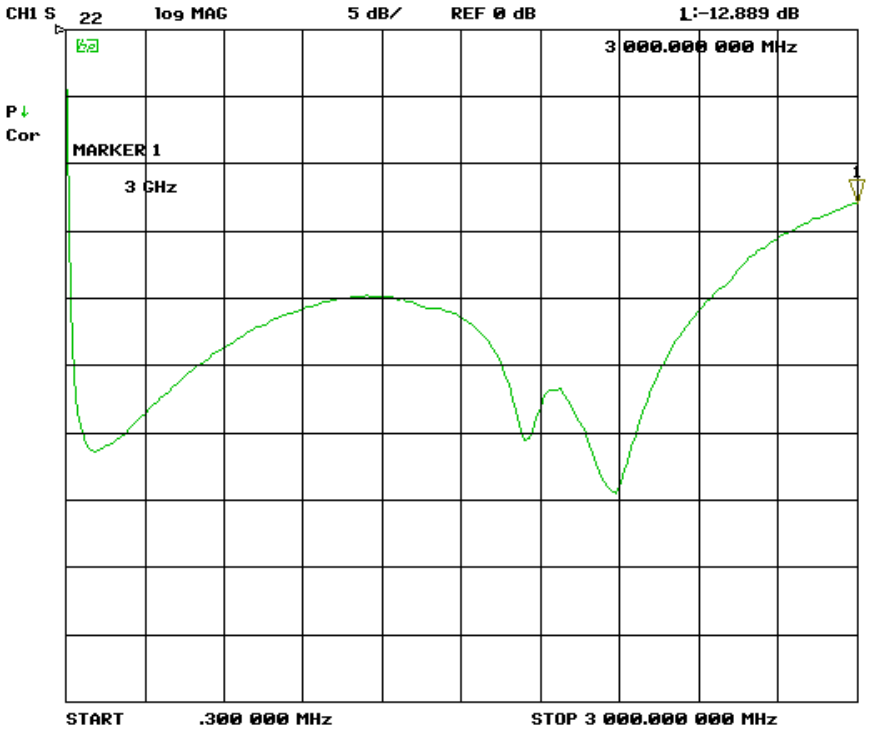

Picture 6 – TBWA2/20dB, output return loss, IS22I, 300 kHz – 3 GHz, lin.

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2.2 TBWA2/40dB

Technical Data:

Input: 50 Ohm, SMA

Output: 50 Ohm, SMA

Nominal supply Voltage: 4.5 - 5V, typ. 210mA, Mini-USB-B connector

Maximum supply voltage: 5.5V

Maximum input power: -10dBm

1dB output compression point @ 2GHz: +20dBm

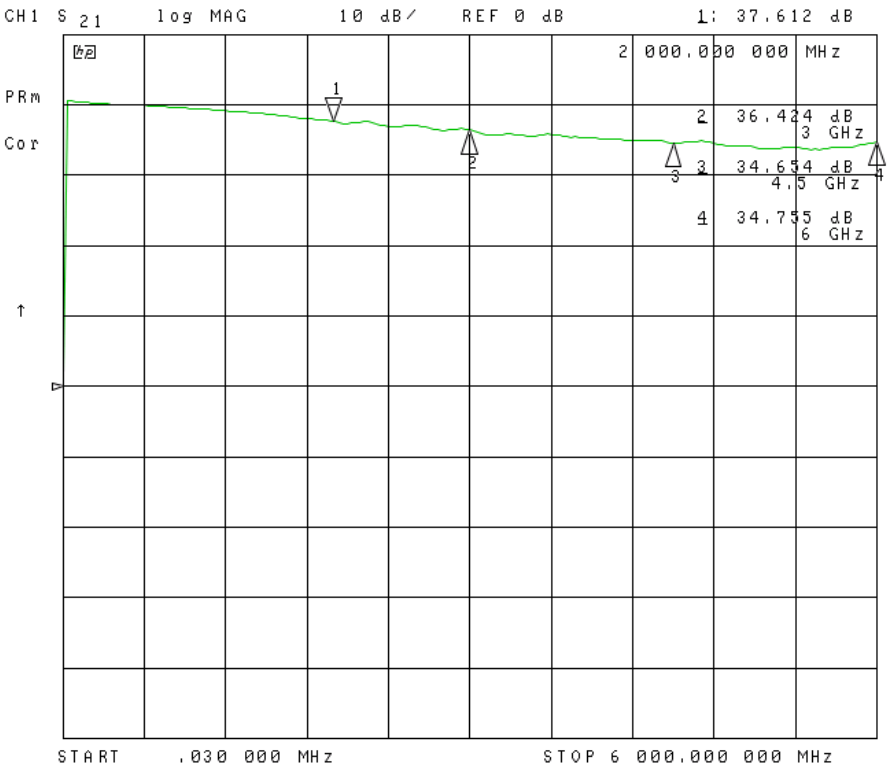
Reverse isolation S12, 0.1 …6GHz: 40dB

Noise Figure @ 2GHz: 5 dB

Gain:

1 MHz	10 MHz	100 MHz	500 MHz	1 GHz	2 GHz	3 GHz	4.5 GHz	6 GHz
30 dB	40.2 dB	40.2 dB	40 dB	39.5 dB	37.6 dB	36.4 dB	34.6 dB	34.7 dB

Table 2 – TBWA2/40dB gain



Picture 7 – TBWA2/40dB, gain, 30 kHz – 6 GHz, lin.

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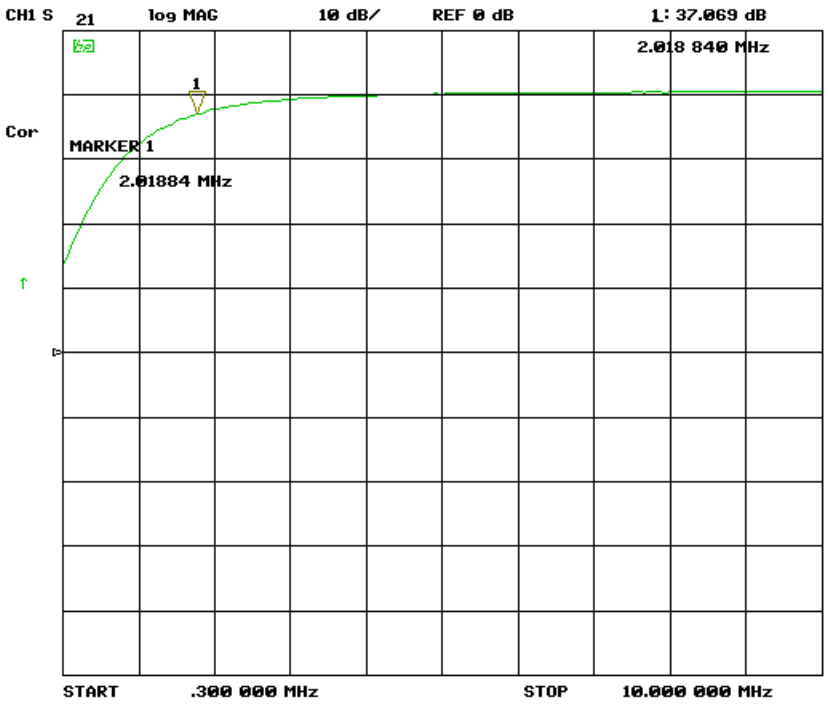
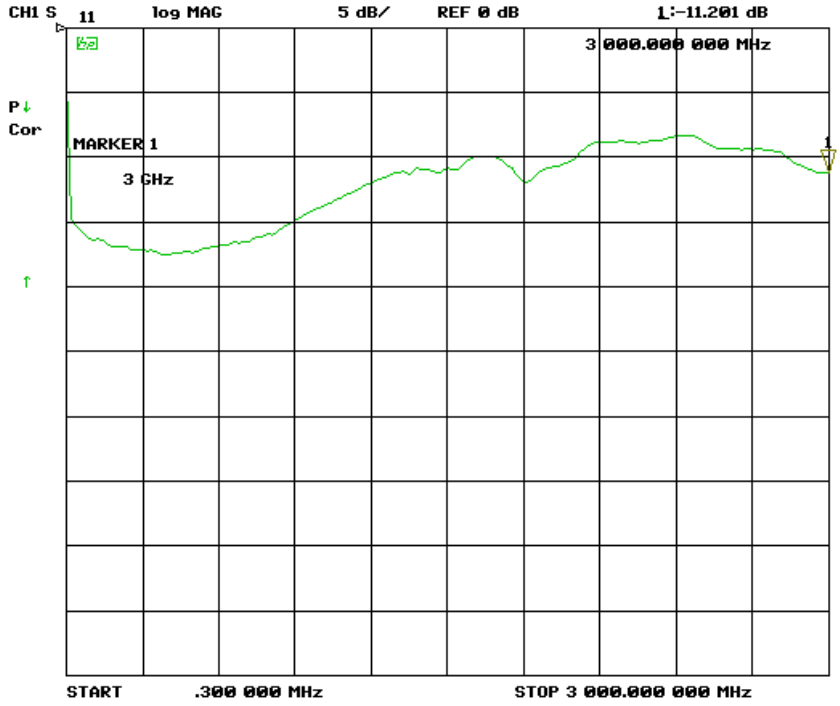


Picture 8 – TBWA2/40dB, gain, 300 kHz – 10 MHz, lin.



Picture 9 – TBWA2/40dB, input return loss, IS11I, 300 kHz – 3 GHz, lin.

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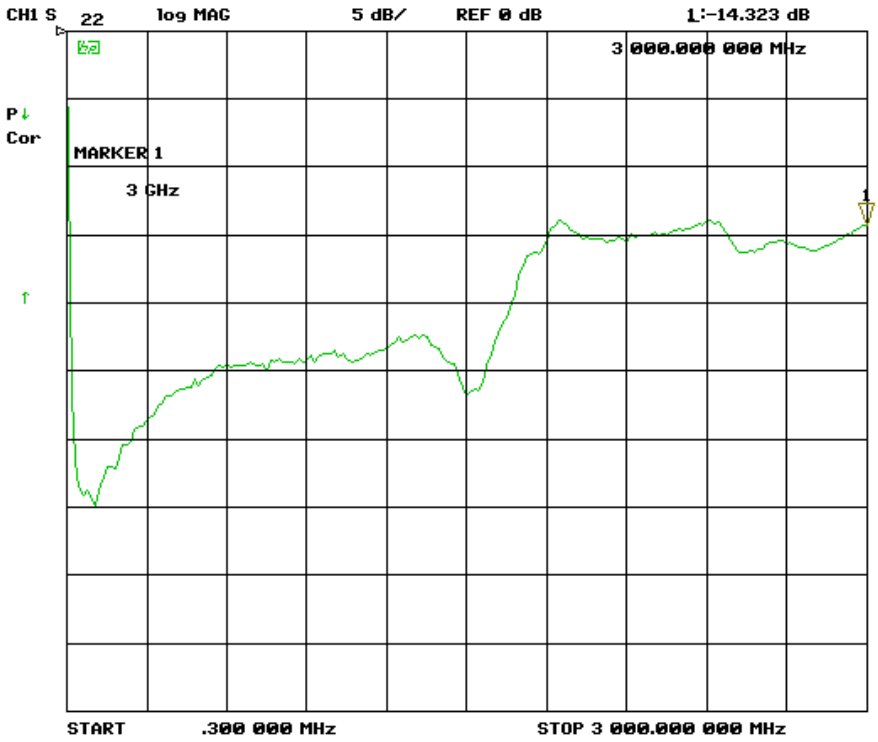

Picture 10 – TBWA2/40dB, output return loss, lS22l, 300 kHz – 3 GHz, lin.

3 Ordering Information

Part Number	**Description**
TBWA2/20dB	20 dB amplifier, 1 pc 25cm SMA-male to SMA-male cable, 1 pc 75cm SMA- male to N-male cable. 1 pc SMA-female to N-male coaxial adapter, USB cable, measurement plot
TBWA2/40dB	40 dB amplifier, 1 pc 25cm SMA-male to SMA-male cable, 1 pc 75cm SMA- male to N-male cable. 1 pc SMA-female to N-male coaxial adapter, USB cable, measurement plot

Table 3 – Ordering Information

4 History

Version	Date	Author	Changes
V1.0	16.6.2016	Mayerhofer	Creation of the document
V1.1	10.9.2016	Mayerhofer	Updated chapter 2, frequency response
V1.2	14.11.2016	Mayerhofer	Updated chapter 3, deliverables
V1.3	9.1.2017	Mayerhofer	S21 updated to 6 GHz

Table 4 – History