

Description of some surplus Power Dividers from Merrimac

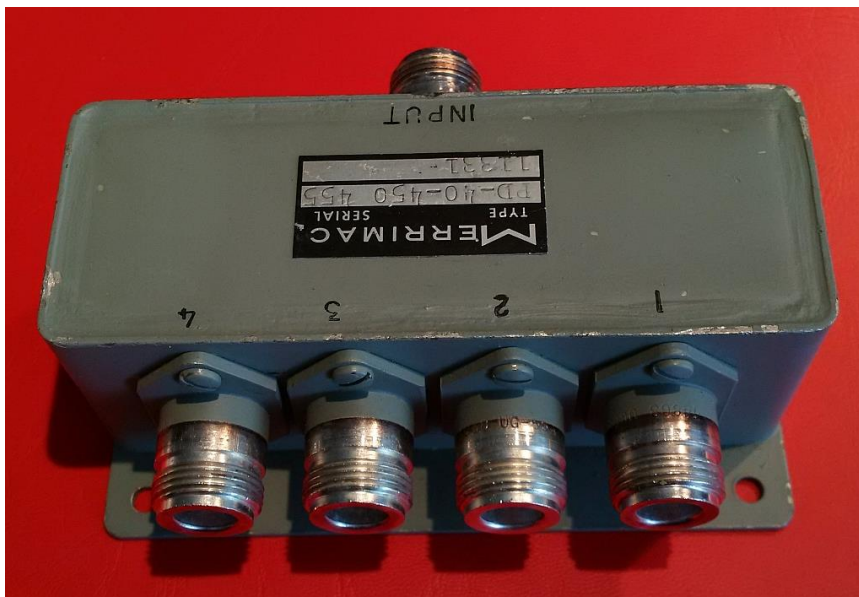
July 1st 2017, Matthias Bopp, DD1US

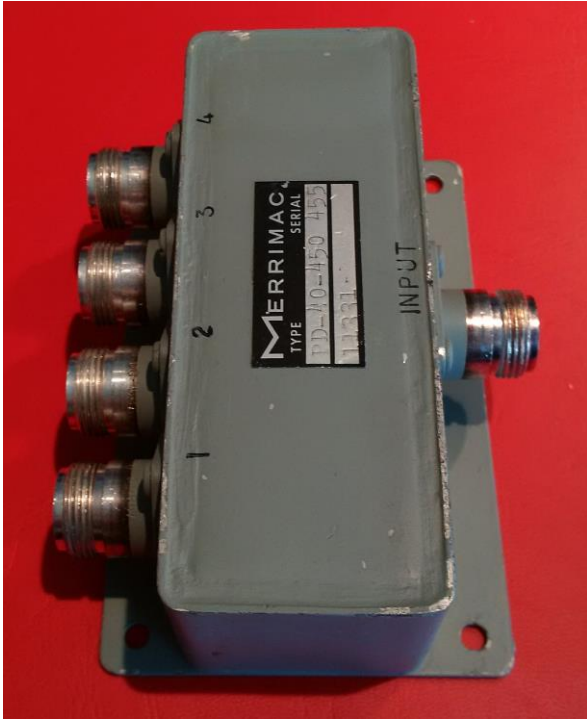
Recently I got some surplus power dividers from Merrimac. As I did not find any data on the internet I checked them out. In case you can get some of such devices you can find the data below. I got the following devices:

- | | | |
|---------------|---------------------------------------|-------------|
| 1.) PD-40-450 | 4x power divider 0° | 40-450 MHz |
| 2.) PD-20-110 | 2x power divider 0° | 20-110 MHz |
| 3.) PD-20-300 | 2x power divider 0° | 20-300 MHz |
| 4.) HJ-450 | 2x Hybrid Junction power divider 180° | 100-450 MHz |

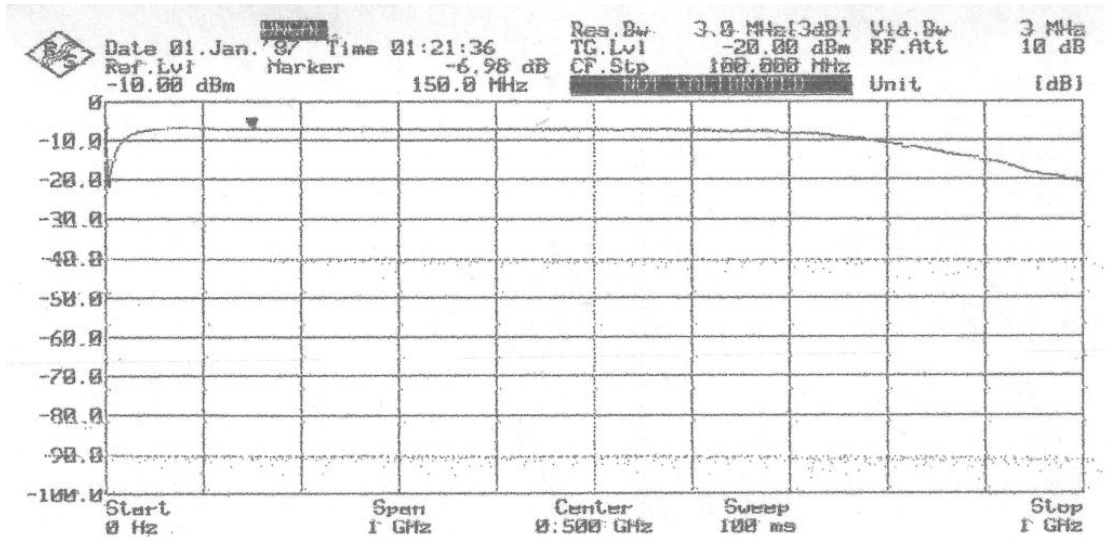
1.) PD-40-450:

Here are some pictures of the PD-40-450, which is a 4 times power divider. Each output provides approximately the same output signal amplitude and phase. The insertion loss is 6dB based on the splitting of the input signal to 4 outputs plus some additional losses.





Here is a measurement of the transfer characteristic of the power divider. The measurement was done from the input to output #1. All other output ports were terminated with 50 Ohms.



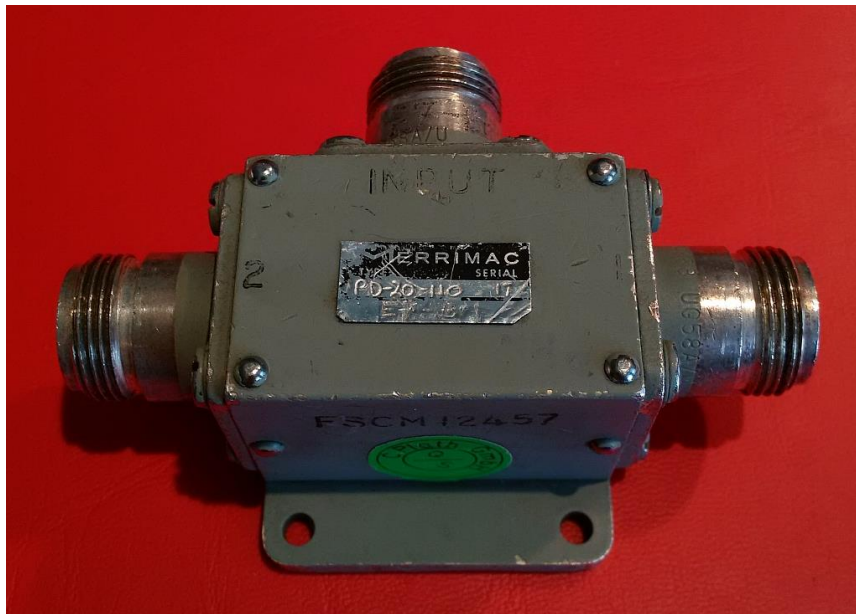
The following table shows the measured data of the transfer characteristic of all 4 output ports:

Frequency /MHz	Output #1 Insertion Loss /dB	Output #2 Insertion Loss /dB	Output #3 Insertion Loss /dB	Output #4 Insertion Loss /dB
10	13.2	13.2	13.2	13.1
20	9.5	9.6	9.5	9.4
50	7.2	7.2	7.2	7.2
100	6.6	6.6	6.6	6.6
150	7.0	7.1	7.1	7.0
250	7.1	7.1	7.1	7.0
350	7.1	7.1	7.1	7.1
450	7.2	7.2	7.2	7.1
550	7.3	7.2	7.4	7.3
750	8.8	8.6	8.5	8.4
850	12.7	12.3	11.8	11.6
1000	20.7	20.1	17.2	17.0

As you can see the device can be used with very good performance in the range of 40 to 550 MHz.

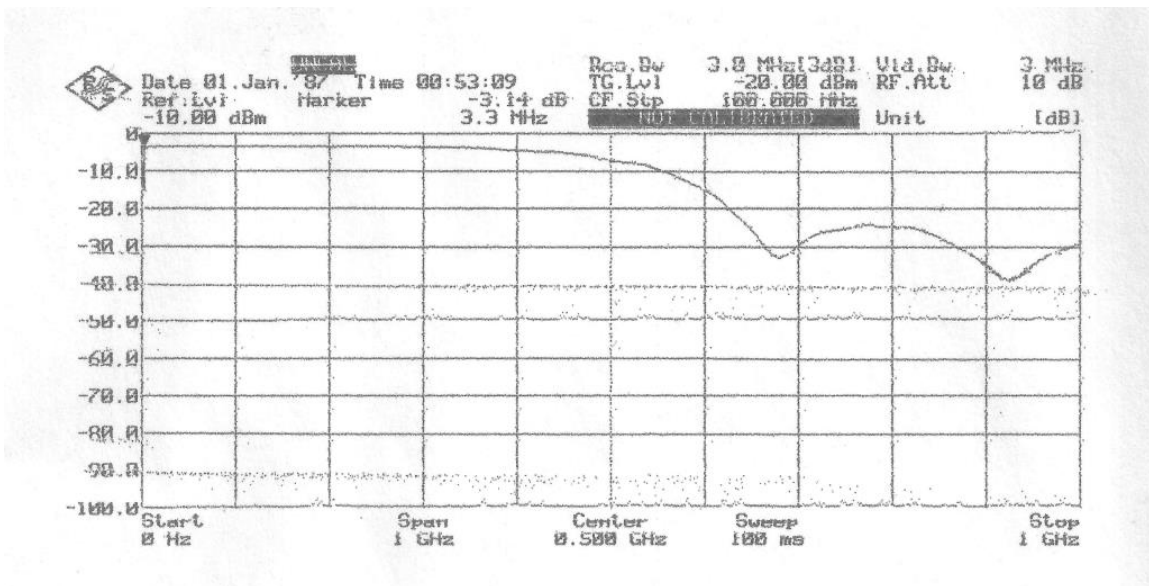
2.) PD-20-110:

Here are some pictures of the PD-20-110, which is a 2 times power divider. Each output provides approximately the same output signal amplitude and phase. The insertion loss is 3dB based on the splitting of the input signal to 2 outputs plus some additional losses.





Here is a measurement of the transfer characteristic of the power divider. The measurement was done from the input to output #1. The other output port was terminated with 50 Ohms.



The following table shows the measured data of the transfer characteristic of both output ports:

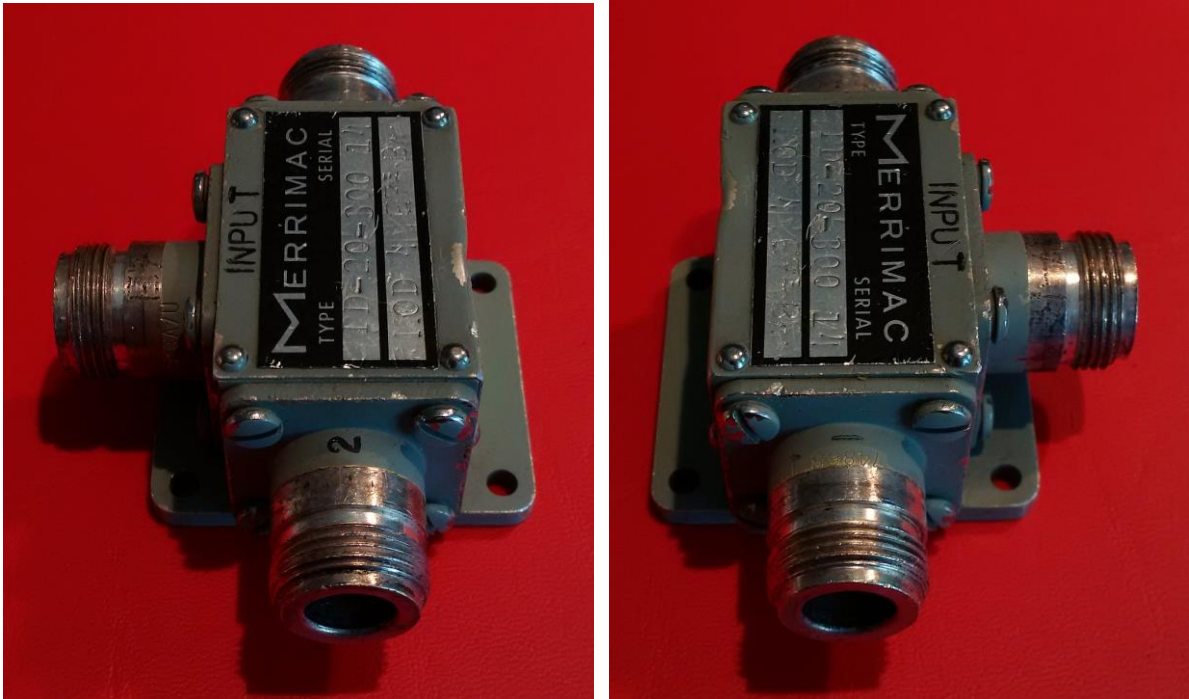
Frequency /MHz	Output #1 Insertion Loss /dB	Output #2 Insertion Loss /dB
3	3.3	3.1
10	3.2	3.3
50	3.2	3.3
100	3.2	3.2
150	3.2	3.3
250	3.2	3.5
300	3.5	3.9
350	3.7	4.3
400	4.4	5.3
450	5.1	6.3
500	7.2	9.4

As you can see the device can be used with very good performance in the range of 3 to 250 MHz.

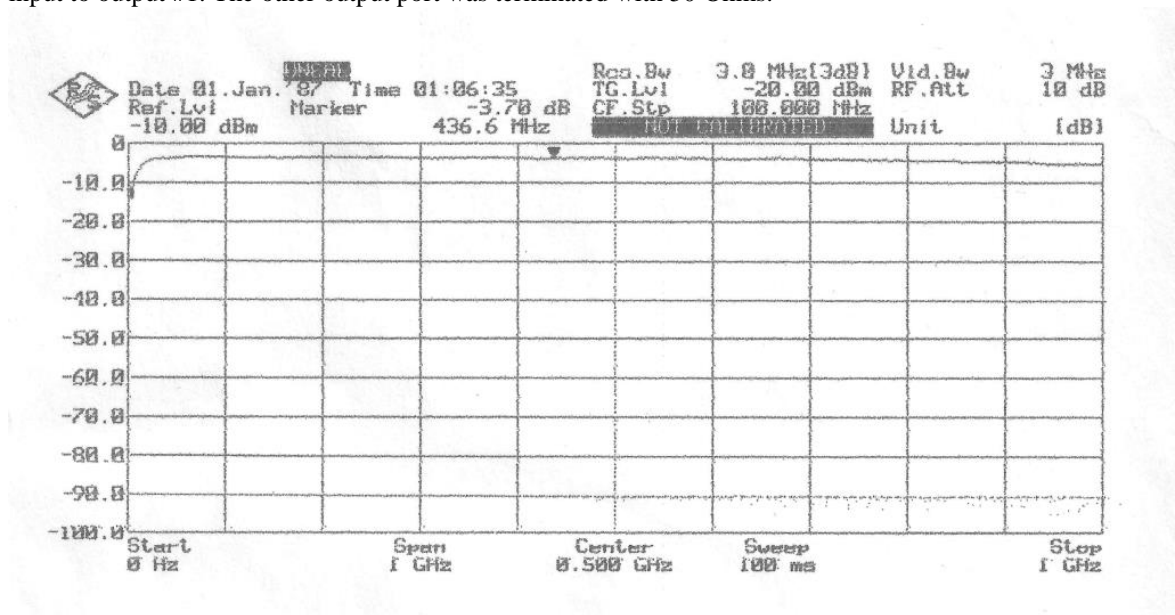
3.) PD-20-300:

Here are some pictures of the PD-20-300, which is a 2 times power divider. Each output provides approximately the same output signal amplitude and phase. The insertion loss is 3dB based on the splitting of the input signal to 2 outputs plus some additional losses.





Here is a measurement of the transfer characteristic of the power divider. The measurement was done from the input to output #1. The other output port was terminated with 50 Ohms.



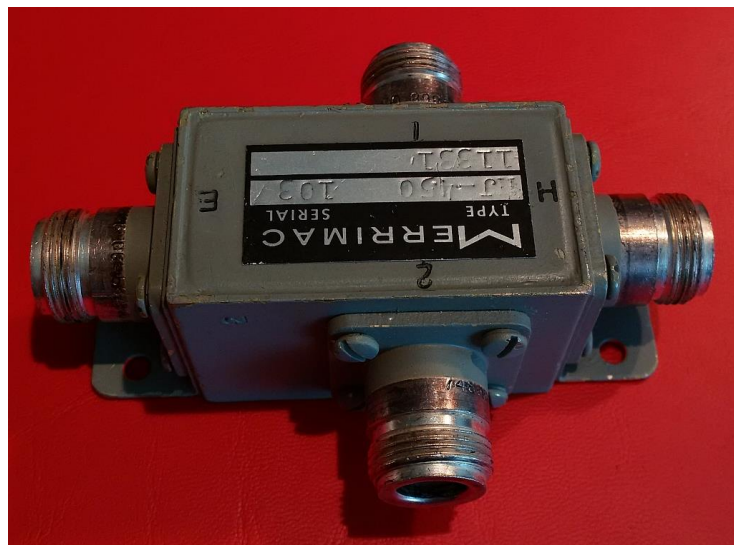
The following table shows some measured data of the 2 output ports:

Frequency /MHz	Output #1 Insertion Loss /dB	Output #2 Insertion Loss /dB
10	6.3	6.4
20	4.2	4.3
30	3.6	3.6
50	3.4	3.5
100	3.3	3.3
150	3.4	3.5
250	3.4	3.4
350	3.5	3.6
450	3.6	3.6
550	3.5	3.6
1000	4.7	5.0

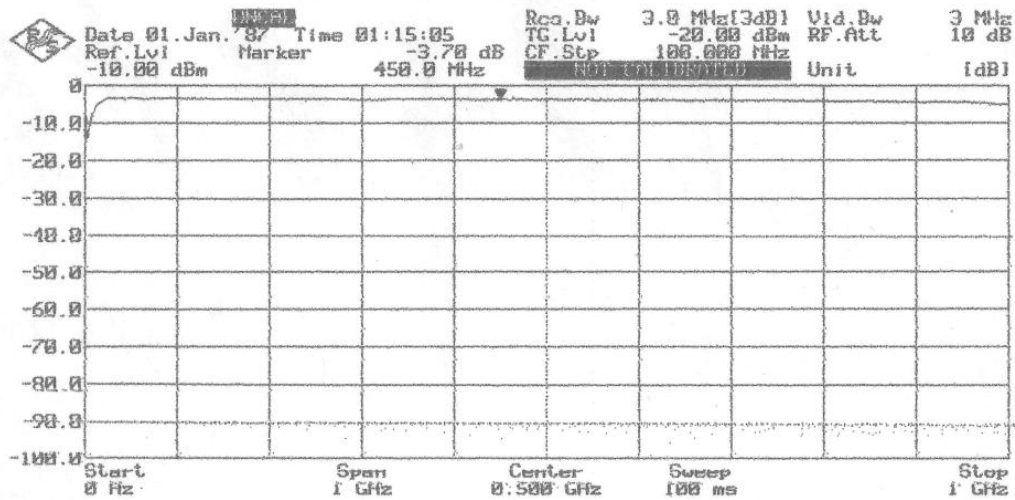
As you can see the device can be used with very good performance in the range of 30 to 550 MHz.

4.) HJ-450:

Here are some pictures of the HJ-450, which is a 2 times power divider. Each output provides approximately the same output signal amplitude and output signals are inverted (the phases are 180° shifted). The insertion loss is 3dB based on the splitting of the input signal to 2 outputs plus some additional losses.



Here is a measurement of the transfer characteristic of the power divider. The measurement was done from the input "H" to output #1. The other output port and the port "E" were terminated with 50 Ohms.



The following table shows some measured data of the 2 output ports:

Frequency /MHz	Output #1 Insertion Loss /dB	Output #2 Insertion Loss /dB
50	3.3	4.9
100	3.2	3.3
150	3.4	3.1
250	3.5	3.1
350	3.5	3.4
450	3.7	3.4
550	3.7	3.7
750	3.9	3.5
1000	4.9	4.4

As you can see the device can be used with very good performance in the range of 100 to 550 MHz.

I always appreciate feedback and additional information. Please send them to my Email address which you can find below. Many thanks in advance.

Best regards

Matthias

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