Elecraft

CP1 Power Handling

Classic List Threaded 14 messages

Linden, Mike (BRC- **CP1 Power Handling** Reply | Threaded |

Does anyone know what modifications would need to be made to the CP1 Directional Coupler in order to get it to handle 200W at 20dB attenuation?

I'd like to use the CP1 as a cost effective means of extending the useful range of my OHR WM-2 QRP Wattmeter, but 30dB is more attenuation than I want and the power handling at 20dB is not high enough.

Thanks, Michael N9BDF

N8LP **Re: CP1 Power Handling** Reply | Threaded |

You have a couple options. The flux density is higher, and therefore heating, with lower number of turns. They also go to a -43 mix (higher permeability) for the lower turns to keep the shunt reactance of the voltage xfmr high at 1.8 MHz.

If you don't care about 1.8 MHz, you might be able to get by with 10 turns on the -61 cores... I would have to do the math. The other option is to stick with the -43 material, but get larger cores. I'm pretty sure they make the FT50A and FT50B (which are thicker) in -43 material, or you could go to a FT68 or FT82 if they'll fit. The best bet would probably be FT50A-43, since we know it would fit physically. I have a spreadsheet that I use that calculates these things for me... I can plug these in to see what would work if you like.

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Larry N8LP

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Linden, Mike (BRC- **RE: CP1 Power Handling** Reply | Threaded |

In reply to this post by Linden, Mike (BRC-Hes)

Larry,

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Thanks! -Michael

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Linden, Mike (BRC- **RE: CP1 Power Handling** Reply | Threaded |

In reply to this post by Linden, Mike (BRC-Hes)

Larry,

Thanks! 200W is probably a bit on the high side for my needs (safety margin), so this looks pretty good.

-Michael

-----Original Message-----
From: Larry Phipps [mailto:[hidden email]]
Sent: Tuesday, March 07, 2006 10:29 AM
To: Linden, Mike (BRC-Hes)
Cc: [hidden email]
Subject: Re: [Elecraft] CP1 Power Handling

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Robert Friess **Re: CP1 Power Handling** Reply | Threaded |

In reply to this post by Linden, Mike (BRC-Hes)

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So what does all this mean? I suggest that the easiest thing for you to do would be to stack three cores together at each position. It will be easier to wind the cores if you use some sort of adhesive to hold the cores together. This will provide about 9 times the power handling capability and meet your power requirement. If you don't hold the key down for 5 minutes even better. You can order the extra cores from Elecraft.

73,
Bob, N6CM

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To: <[hidden email]>
Sent: Tuesday, March 07, 2006 6:33 AM
Subject: [Elecraft] CP1 Power Handling

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N8LP **Re: CP1 Power Handling** Reply | Threaded |

In reply to this post by Linden, Mike (BRC-Hes)

It might also make sense to increase the turns to 14, which would give a coupling factor of 23 dB, and much more safety margin.

Larry N8LP

Linden, Mike (BRC-Hes) wrote:

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Alan Biocca **Re: CP1 Power Handling** Reply | Threaded |

In reply to this post by Linden, Mike (BRC-Hes)

Stacking cores can also help increase power handling capability without taking more pcb space (providing the core is flat on the pcb).

-- Alan wb6zqz

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N8LP **Re: CP1 Power Handling** Reply | Threaded |

In reply to this post by Robert Friess

Bob, have you seen any difference between stacked cores and solid ones of the same total thickness? In designed my wattmeters, I found more heating with stacked cores... at least for one combination. The FT50B core is the same thickness as 2.66 stacked FT50 cores, or 2 FT50A cores.

Larry N8LP

Robert Friess wrote:

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Jim Byers-3 **Re: CP1 Power Handling** Reply | Threaded |

In reply to this post by Robert Friess

Bob

What combination of core/turns would give up to 40dB and able to handle 100 watts and what frequency range would it have? Main interest is HF

73
Jim VE3TTN

On Mar 7, 2006, at 11:46, Robert Friess wrote:

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Linden, Mike (BRC- **RE: CP1 Power Handling** Reply | Threaded |

In reply to this post by Linden, Mike (BRC-Hes)

Robert,

Thanks for the insight and alternate solution! -Michael

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N8LP **Re: CP1 Power Handling** Reply | Threaded |

In reply to this post by Jim Byers-3

That would not be very practical, because it would be 100 turns. I suggest using the existing 30dB design, and add external inline BNC attenuators like the Mini-Circuits HAT-10. That would give you 40 dB total.

Larry N8LP

Jim Byers wrote:

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Spence Wilhelm Reply | Threaded |

In reply to this post by Jim Byers-3

All,

FYI, I just finished upgrading my KX1 to a four band radio! It is now capable of 20m, 30m, 40m, and 80m. Assembly of the new module for 30 and 80
meters was straightforward and well worth the effort. Ron produced an excellent instruction manual that greatly simplfied the process. Many thanks to Wayne and Eric for allowing me to be one of the field testers for the new module.

I'll be in Folsom CA on a business trip this week and will be on the air in the evenings near the QRP frequencies on 80m and 40m. Give me a shout!

73,

Spence W7CSW

FYI, I'm not affiliated with Elecraft other than owning a KX1 and a K2 and I LOVE THEIR PRODUCTS! I recommend the upgrade to anybody wanting more than
three bands on the KX1.

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Don Brown-4 **Re: CP1 Power Handling** Reply | Threaded |

In reply to this post by Linden, Mike (BRC-Hes)

Hi

I have both the 20 db and 30 db versions of the CP1. Even though the 20 db is not rated that high I have used it at 100 watts with no problems for short times. I use them with the OHR WM-2 wattmeter. To get it to go to 200 watts you would at least need to increase the wattage of the terminating resistors on the CP1 and probably need to increase the core size on the toroids. Of course I have not done this so I am just guessing.

Don Brown
KD5NDB

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To: <[hidden email]>
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