

Date: Sun, 05 Oct 2003 17:29:20 +0000
To: ve7bqh@shaw.ca, kl6m@arrl.net
From: Peter Sundberg <sm2cew@telia.com>
Subject: 2 mtr quad

Gents,

This is what I sent to F5VHX, VK3UM and G3LTF.
Measurements were made with my brand new MFJ259B, wish I had that thing 20 years ago...

73/Peter

Yo!

Info on my quad.

Elements are made of 6 mm dia Cu tube. All dimensions are center to center.
Stubs are made up of parallel tubes, 30mm apart, and are placed in one corner.
There's no balun on this antenna either...

Dimensions

Reflector sides are 540 mm, stub is 95mm long.
Driven el sides are 510 mm, stub to where coax is connected is 75mm.
Spacing between the elements = 365 mm.

Electrical data

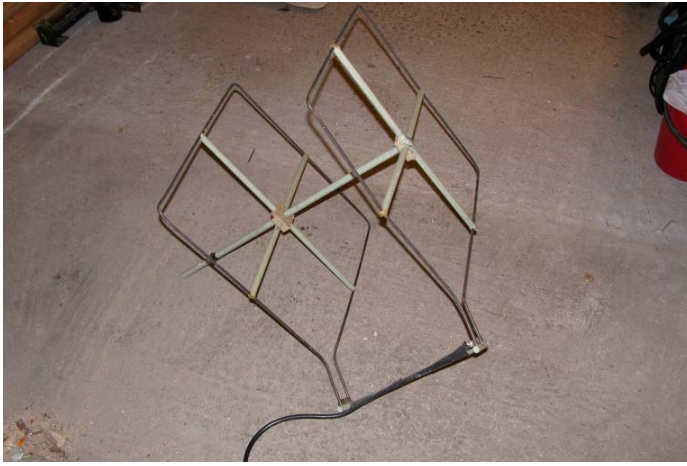
<u>Fq</u>	<u>R</u>	<u>X</u>	<u>Returnloss</u>
143.800	59	0	
144.000	56	0	24 db
144.200	53	0	
144.400	51	1	38 db
144.600	49	3	31 db
144.800	47	5	25 db
145.000	45	7	

Bandwidth vswr 1.5:1 from 142.6 -> 146.5, wider than I thought!

All in all an excellent antenna feed for my 8 meter 0.6 f/d dish as per real world performance.

73/Peter





Date: Thu, 12 Jun 2003 23:17:33 -0800
From: Mike <kl6m@qsl.net>
To: HB9JAW@Kaktus.ch
Subject: Re: 144mc feed
User-Agent: Internet Messaging Program (IMP) 3.1
X-Originating-IP:

Hello Michel,

Sorry for delay....behind on email.

I am using a 2M cubical quad feed for the dish. It seems to be working very well. I have 13 initials and have not tried very hard.

I have pictures of my feed here: <http://www.cworthy.net/kl6m/moon/2mfeed1.jpg>
and <http://www.cworthy.net/kl6m/moon/2mfeed2.jpg>

My rotor is under the center of the dish and coax runs through the support pipe. I plan to change this to a conventional 3 legged strut mounted system this summer. More details on my mount on my web site www.qsl.net/kl6m

I sent this information to Graham, F5VHX who was going to look at it with NEC, but I have not heard back from him.

2m quad feed dimensions:

I used #12 insulated copper wire which is 2.053mm in diameter.

Total length of DE = 2080mm

DE vertical dimension = 729mm

DE horizontal dimension = 312mm

Total length of R = 2184mm

R vertical dimension = 765mm

R horizontal dimension = 328mm

DE to R spacing = 521mm

Feeding in the center of the bottom of the DE square. I used a L/4 sleeve open at the feed point and soldered to the braid of the feedline at L/4 from the feed point.

My VSWR was nearly perfect as it is currently constructed, but I forgot to use a 92% velocity factor for copper and cut the lengths to actual wavelengths. It somehow worked out perfectly from the VSWR perspective. I'm just not sure that my reflector is doing the job that it should be. I have not measure the performance nor have I optimized anything.

I made the vertical dimension different than the horizontal dimension to equalize the pattern according to W1GHZ research. DE to R spacing is according to W1GHZ also. He has a web page with volumes of information. Just search on W1GHZ.

GL Mike, KL6M

Quoting "Michel Winiger \HB9JAW\" <HB9JAW@Kaktus.ch>:

> Hello Mike

> I placed yesterday a mail on the reflector about a turnable 144mc feed.

> Many replies told me that you can be off any help.

> Do you have a turnable 144mc feed?

> Could you tell me how you did it and how it looks like?

> I would really appreciate it

> Thanks in advance

> 73 de Michel

>

Date: Sun, 24 Aug 2003 11:34:56 -0800

From: Mike <kl6m@arrl.net>

To: Graham <Graham.D@wanadoo.fr>

Subject: Re: 144 quad feed

User-Agent: Internet Messaging Program (IMP) 3.1

X-Originating-IP:

Hi Graham,

Wow...thanks very much for the modeling. Responses:

> I did not model any support systems as I do not know how you are supporting

> it, so no linear length corrections done for that.

Supporting with PVC pipe, so minimal, if any, effect. I have been supporting it from the center of the dish, so the coax loops through the antenna to the

back of the reflector where the relay/preamp is. It should only present a vertically oriented contribution to the overall system, hopefully minimizing any effect. This will all change when I finish the new feed support. It will then feed from behind.

> I am a bit surprised about the match you seem to have, see my comments
> below.....are we sure the measurements you passed correct ??

I'm pretty sure but I am going to check again

> I wonder if you have hit on a convenient cable length ??.....what
> happens to the return loss if you add odd and random lengths of cable to the
> feed line ???

It checks very good installed (with 100+ ft. of low loss 1 5/8 heliax) and on the bench. I would like to trim this and get it where it should be.

For some reason I thought I was long, but measurement, model, and your comment indicate that I resonate high, and that my length is actually short? What should it be?

> now we come to the attached plots.....

> the strategy of making unequal side lengths to equals E & H plane has
> definitely worked....I like it !!!.....and the symmetry as a result is a
> little better than the 'lrf square one I modeled...

This is good.

> However, the beam width is a bit wide, I forget the f/d of your dish ??? 0.5
> perhaps, I have done -10 dB point plots which would be optimal for a max
> gain feed taper (the -13 folks use on higher bands now is a good decision
> because of less splash over and good front end technologies, so having a
> compromise between max gain and min splash over noise is ok, at 144 I think
> you need the gain performance and not the noise benefit because Tsky is the
> biggest contributor to Tsys at 144, you may not agree)
>
> the f/r is very poor....

According to your plots the beam width is not wide enough! I have .45 f/D which is -10dB at a beam width of about 116 degrees.

I got the impression that greater DE to R separation results in wider beam width. If I improve f/r then my beam width will decrease even further...right?

> do you have this 144 feed in the dish at the same time as the 432 dipoles
> and splash plate

NO...all alone

> I am currently doing some more complex stuff for Stig (oz4mm) and re
> optimizing and matching his dipoles on 144....so all this data from you and
> peter etc is very interesting to me.

GREAT! I sure appreciate it.

> let me know if you would like to play a little.

Yes indeed! I believe I will have to set my antenna range up again (someday..hi).

>once you get your motherboard hooked up and running with the prior
> release of UThost that you downloaded let me know and I'll send you this
> rev. as an email attachment, it's just a replacement .exe and does not need
> the full installer (once you have done that install once with the last
> rev.)

I need some rainy days to keep me inside to work on these kind of things. I am very concerned about getting my new feed mounting system finished up before the snow flies so I have been concentrating on it.

73...thanks for everything! Mike, KL6M

Date: Mon, 25 Aug 2003 09:58:55 -0800
From: Mike <kl6m@arrl.net>
To: Graham <Graham.D@wanadoo.fr>
Subject: Re: 144 quad feed

Graham,

Wow....I must have been half asleep. Anyway, could turn out VERY WELL!

It appears this feed could be considerably optimized, which means I could get some noticeable performance increase. I am quite excited about this. I have really enjoyed working 2M EME with the dish so far, so it could even get better!

Have you looked at the W1GHZ chapter that I used to come up with the original design of the feed? It was his data that I used to determine the DE/R spacing. Intuitively I was not comfortable with the spacing at all. I think reducing the separation will make a very positive difference.

Thanks Mike, KL6M

Quoting Graham <Graham.D@wanadoo.fr>:

>>

>>According to your plots the beam width is not wide enough! I have .45 f/D
> which is -10dB at a beam width of about 116 degrees.

>>

>

> I don't understand your comments, the plots show -10db beam widths of ele 136
> degrees and azimuth 128 degrees, both of these are wider than the required
> 116 (thanks for supplying that number BTW)....so you are a little over
> illuminated IF you want a -10 db at rim.....

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>>width. If I improve f/r then my beam width will decrease even further...right?

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> probably, which will be good according to my comments above ??

>

> I will look later today or tomorrow at what we can do with a simple spacing
> change, as that will require little effort.....after than I'll check the
> true linear length to resonate it , but guess that needs more playing about
> to change. > 73 Graham

> R.F. Professionals <http://www.rfpa.com>
> Radio Amateurs <http://www.rfham.com>
>
>

Date: Tue, 15 Apr 2003 16:53:11 -0400
From: "Peter K. Blair" <100633.1656@compuserve.com>
Subject: 2m dish feeds
To: KL6M <kl6m@qsl.net>

Dear Mike.. obviously great minds think alike!! Interesting that we wkd much the same guys as well. My quad feed is 51.5cm, 0.247L, square driven ele and 55cm, 0.26L square for the reflector. diam was 4mm and spacing DE/ref was 19.5cm. Graham F5VHX did some modeling for me but I don't recall the E-H plane discrepancy that you mention but I'll go back and look at that. My dish is a 6m 0.38 f/d so the match is affected as it goes in the dish its not too far away from the feed support legs. I have a L/4 75 ohm section and then 50 ohm feeder, no balun. I have an inductance across the feed point but it needs a bit more work. I did try moving it around the focal point looking at sun noise but not a lot of change, I decided to put the focus at the mid point of DE/Ref, much as the dual dipole feed I use on 70cm. the main thing I need to do as well as improve vswr is to make it rotatable, which is another reason to keep it square.

But as you say the sigs were good, I've only used horizon eme on 2m for the last 8 years (I had 4x10el before) and getting the elevation up and dumping all the birdies was really worthwhile!

I shall play about with it some more, I really want it for the ARRL where I enjoy going for the multiband section, 2m, 70,23 and 13!

Good to hear from you, 73 Peter G3LTF

To: Mike <kl6m@qsl.net>
From: Graham <Graham.D@wanadoo.fr>
Subject: Re: 2m dish feeds
Cc: <100633.1656@compuserve.com>
Date: Wed, 16 Apr 2003 09:40:34 +0200 (CEST)

At 17:41 15/04/03 -0800, you wrote:

>Peter,

>

>This is quite interesting. Our dimensions for total length of the DE and R are
>pretty close, although mine is definitely not square, but instead .2L
>(Horizontal dimension) by .3L(Vertical dimension). I fed my DE directly with
>50 ohms, but used a sleeve balun. My VSWR was so flat that reflected is almost
>undetectable, even at 600 watts. Strange since the quad is "supposed" to be 70
>ohms?

>

Mike, Peter....

unfortunately I have lost the peter file I did because I had to move the modeling software from one pc to another, it's a long story, but in the process various x,y,z geometry files disappeared in the fog of my war with the Pc's doing it !!!

Mike, can you send me the actual dimensions you used in mm. for the loop and the spacing and where you are feeding it...also the reflector size (I need the loop material diameter also) I can reconstruct peters from the details in his email.....

I'm interested in fiddling about to see what the differences are impedance wise. once I get that I'll play for half a day and see what it all means and send you some plots.

I finished on 18 qso's on 1296 with the qrp here, I made 17 in the Saturday session and looked forward to a good score for 50w and a 4 meter, but unfortunately the hot south wind started up on the Sunday not long after moonrise and I had to abandon ship and tie the dish down to stop it ending up in Parisof course sod's law, come Monday morning it had blown itself out and it was calm as anything...

Mike, out of interest I attach three pictures from a stateside '7 land ultitrack user, he has just got it set up , this guy has an ex military mount with the professional imager still mounted in the small dish which he hopes to get going on 10G, he is retired and totally fanatical...

it's worth pointing out that he is ONLY using my palm software at the moment which is rather slow (well very slow actually !!) at getting data from the sensors, so he is having to set a wider tracking window than desirable, when Mike (g4xbf) finally gets the bugs out of UThost we expect to maintain close to 'best' all the time.....he has the relative sensor card, which is very similar to the development card you have from me for the simple pulses, like you this guy has masses of pulses available as the mount turns a US digital sensor (2048 per rev) sixteen times in one 360, I had to develop custom software for his module also to handle this.

acqmoon.....is the moon acquisition as he started the session...the dish was moved from park to track....remember this is using 'relative' so it's dependant on his park accuracy and last count restore at start up, I'm not sure yet if he really has that all figured out and tied down, but anyway the result is still good.

moonbest....is the best move made during 30 minutes of tracking
worstmoo....is the worst move made during the session

this windowing algorithm in the PALM is rather primitive and always 'follows' because of lack of processing horsepower in the palm, so there is lot's of room to play with new routines here.....as is, he seems to be maintaining about 0.3 degree, with a 100 dollar palm and a 250 dollar tracker that's not so bad !!

73 Graham

ACQMOON.jpg
MOONBEST.jpg
WORSTMOO.jpg

To: Mike <kl6m@arrl.net>
From: Graham <Graham.D@wanadoo.fr>
Subject: Re: 144 quad feed
Date: Mon, 25 Aug 2003 16:35:32 +0200 (CEST)

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