



New Claimed World and North American Distance Record for the 241GHz Amateur Radio Allocation

Hi all-

I'd like to report what looks to be a new World, as well as North American DX record for the 241GHz band.

Earlier today, myself (WA1ZMS/4) and Pete, W4WWQ set several new DX records for the band. We first worked over a distance of 3.8km, then 6.1km, and finally 7.3km at which point we ran out of signal margin for the WX conditions at the time. (Former World record was 2km by DB6NT and NA record was 1km by W2SZ/4)

The details of the claimed 7.3km record are as follows:

Feb 23, 2002 19:45z

WA1ZMS/4 located at 37-22-56N 79-14-43W (FM07jj)

W4WWQ/4 located at 37-21-13N 79-10-15W (FM07ji)

a location to location distance of 7.3km

WX at time of QSO was:

Temperature 8.3 degs C

Dew Point -2.8 degs C

Relative Humidity 46%

Pressure 1017 millibars

Calculated loss of 1.70 dB/km

Photos and an audio file will be forthcoming (*see the bottom of this page for photos and audio files - ed*).

The stations used are improved versions of the ones used in Dec of 2001 for the former North American DX record. The improvements involved the phase locking of the 80.6GHz Gunn sources back to homebrew ovenized crystal oscillators. This allowed the use of FSK keyed CW and the use of a narrow band receiver IF. The IF receivers were an Icom R-7000 and a Yeasu FT-817. The IF freq was 439.7MHz +/- some frequency drift. The ovenized crystal oscillator frequency is effectively multiplied some 2220 times to get to 241GHz! The stations were able to maintain better than 2 KHz stability over several minutes. Frequency drift was still a problem however and with weak signals several repeats of the exchanges were needed to complete the 6.1 and 7.3km QSOs. If dryer WX comes along, better DX may be achieved.

I'd like to thank Pete, W4WWQ for his roving efforts and to WA4RTS for the loan

of an R-7000 in place of him being able to assist with this weekend's QSOs, and to Jeffrey Hesler of VDI.

73,

Brian, WA1ZMS/4

241GHz Station

[Click on a pic for a larger version](#)



WA1ZMS's 241GHz station at one end of the 3.8km QSO



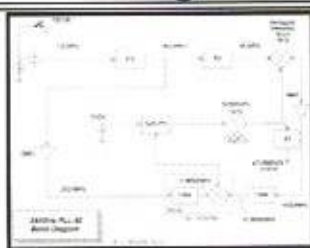
Pete W4WWQ just after the completion of the day's first DX record QSO at 3.8km on 241GHz

241GHz QSO Audio

You can listen to a an excerpt from the 7.3km 241GHz QSO (the file is a 550kB .WAV file).

Description: "WA1ZMS de W4WWQ FM07"

241GHz Station Block Diagram

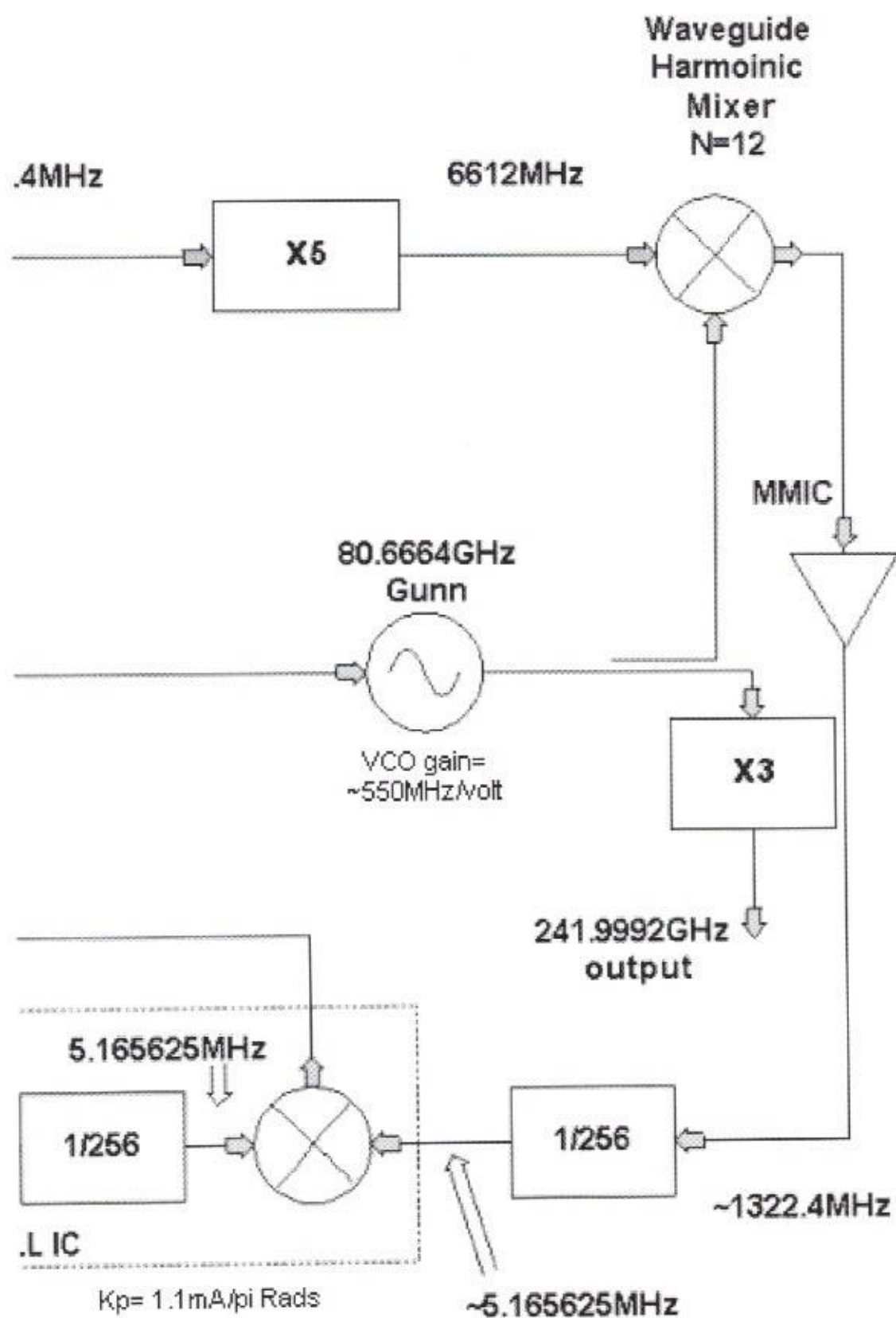


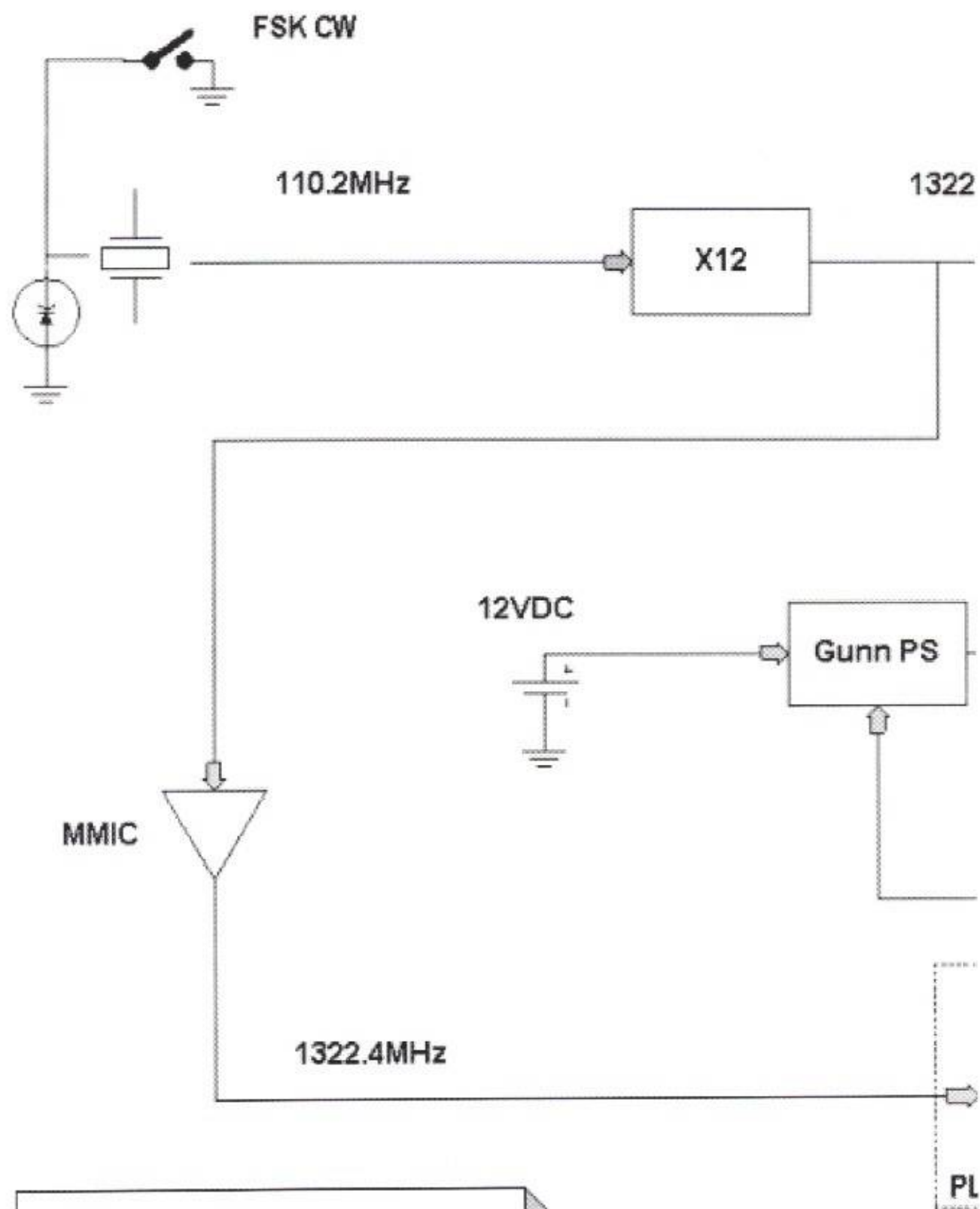
System block diagram for the phase locked version of the 241GHz station

For more pictures and information you can also look at the [previous record's page](#)

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Page last updated: 25-Feb-2002 by [K2JJB](#)





**240GHz PLL #2
Block Diagram**

