

NATIONAL RADIO ASTRONOMY OBSERVATORY

OMQ RACK AND PANEL CONNECTOR TESTS

H. L. Beazell

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As a result of a visit to our lab by W. E. Brooks of Omni Spectra, an adaptation of the OMQ connector series was designed to meet our requirements for blind mating usage on VLA Modules. The requirements for these connectors were:

1. Rear Mounting, to permit cable and connector preassembly and easy installation.
2. UT141 semi-rigid cable version only.
3. Provision for take up of $\pm .020$ axial tolerance between mated pairs as mounted on VLA Modules and Bins as well as adequate axial float for as many as 6 connectors per module.
4. Frequency range DC to 4 GHz with a prime requirement to maintain constant and repeatable electrical length under repeated mating cycles and during mechanical stress when mated.

As a result of the above a set of specifications and six sample pairs of connectors have been received. Two pairs of these were mounted on a fixture and subjected to a simple test to examine the phase stability of the mated pairs.

Phase error was measured with the HP8410A-8745A Network Analyzer. The conditions and a schematic of the test setup are shown on the enclosed plot of phase vs frequency.

The line lengths involved in the test (28, 29 & 12 cm) are such that over the 1.0 to 2.0 GHz range reflector phases should go thru worst case values. In measuring S_{12} , a ρ of .1 at the A port returns at .01 at the Bport, this would give a max phase $\Delta\phi$ of 1.15° . The measured value is about that as seen on the graph.

The most significant fact is that the $\Delta\phi$ as a function of mating and reversing stayed at less than $.15^\circ$ over the 2 to 4 GHz range. Most of that except for reversing appeared to be due to the test setup (the arms of the HP) rather than the connector.

With the connectors half down on the spring washers, no phase noise was noticed with moderate shock input.

In general, the connectors appear to be quite satisfactory for use in the 1-2 GHz LO band and show no evidence of not being applicable over the full rated range of DC to 4 GHz.

A more thorough examination of this connector should include full testing of mechanical life as specified and a much larger sample of connectors.

Enclosed is a copy of Omni Spectra Dwg. #WB7363 which shows the mated pair with the appropriate interface dimensions.

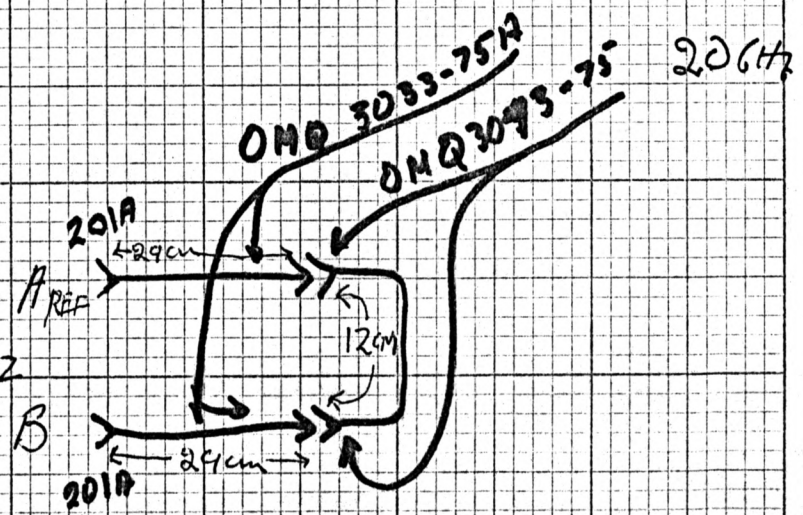
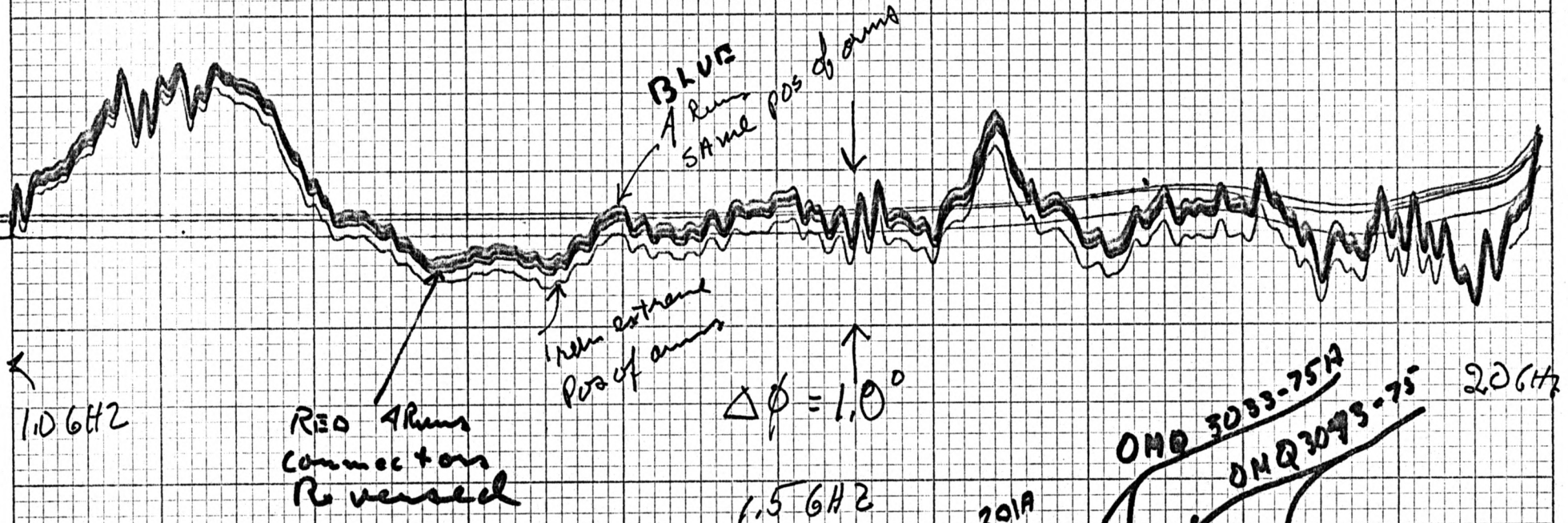
The test fixture is also available for examination and any further testing.

A schedule of pricing is included also.

PRICES

	<u>100-249</u>	<u>250-449</u>	<u>500-999</u>	<u>1K-2499</u>	<u>2500-4999</u>
3033-75A	2.18	1.98	1.75	1.68	1.60
3043-75	2.05	1.90	1.81	1.73	1.60

OMQ BIN + MODULE
 CONNECTORS

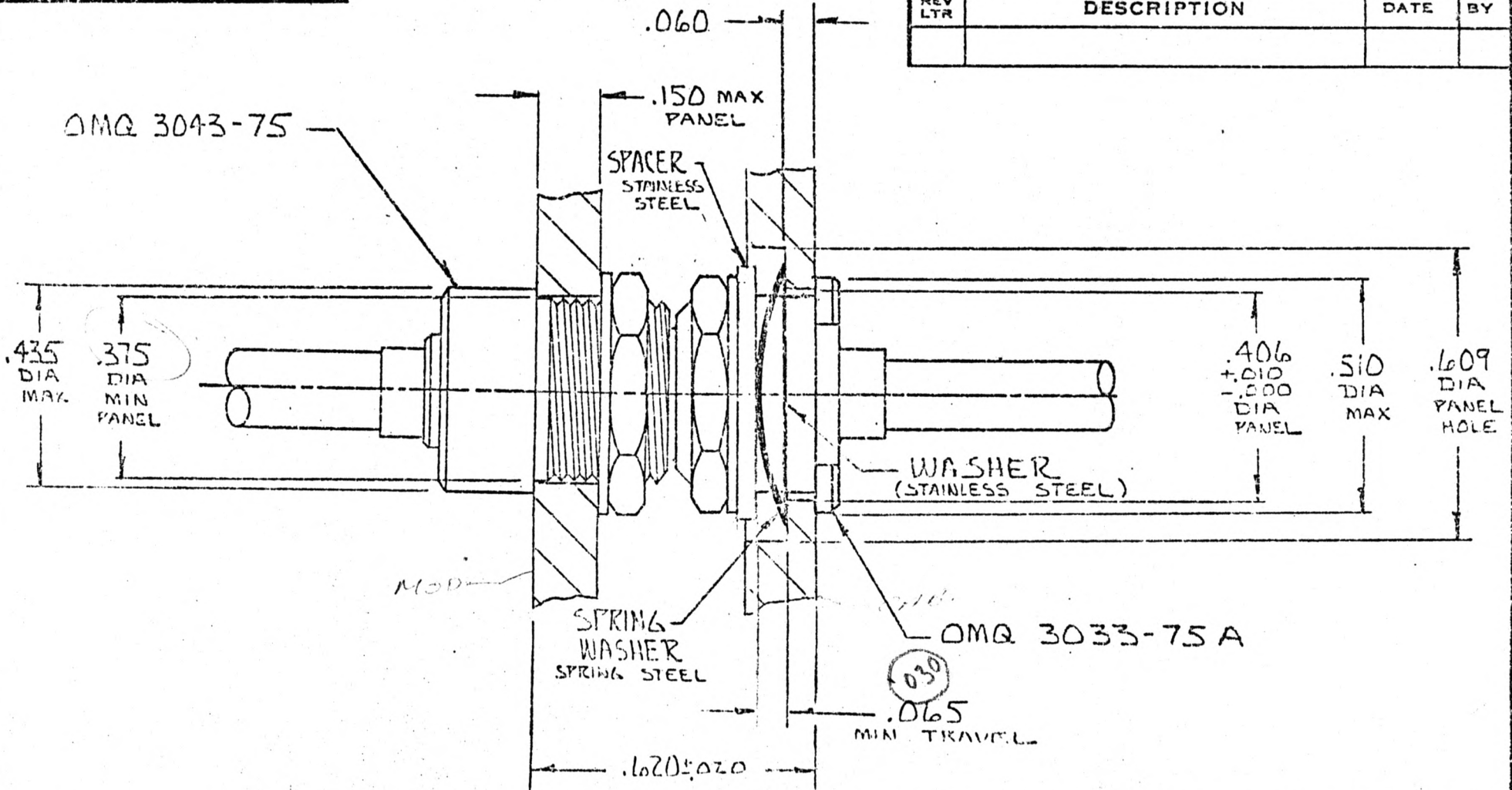


A

REV.

REVISIONS

REV LTR	DESCRIPTION	DATE	BY



NOTE: 12 LB FORCE REQ'D TO FULLY COMPRESS TWO SPRING WASHERS

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE INCHES AND ANGLES ARE DEGREES

OMNI SPECTRA, INC.

TOLERANCES

FRACTION	DECIMAL	ANGLE
± 1/32	± .015	± 2°

TITLE

OMQ KACK / PANEL ASSY

DRWN DATE

CHKD DATE

ENGR DATE

SCALE GROUP

SIZE

A

WB 7363

REV

NEXT ASSEM

USED ON

MOD. NO.

APPLICATION