

VLBA ACQUISITION MEMO #362

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To: VLBA Data Acquisition Group

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Subject: An evaluation of the Jodrell Bank headstacks

Jodrell Bank loaned us their spare headstacks (made by an European manufacturer) for tests of their performance and compatibility on the Metrum transport. While these particular headstacks have some heads in the stack which are somewhat below the performance specifications given in VLBA Acquisition Memo #151 they should be considered as an acceptable alternate.

We caution that this contour, as is, is not formally compatible as defined in VLBA Acquisition Memo #352. There is no 'step' and the 'roof-top' angle is small $\sim 10^\circ$, which may lead to performance maintenance problems especially at high speeds.

Headstack #013 (replay)

A measurement was made from the leading edge of track #1 to the leading edge of track #35. The distance was 23752um. This distance should be 23749um.

A measurement was made from the leading edge of track #2 to the leading edge of track #33. The distance was 21653um. This distance should be 21653um.

Headstack #016 (record)

A measurement was made from the leading edge of track #1 to the leading edge of track #35. The distance was 23749um. This distance should be 23749 um.

A measurement was made from the leading edge of track #2 to the leading edge of track #33. The distance was 21653.5um. This distance should be 21653um.

All of the above measurements were made on the microscope at the Westford site using the 40X objective.

It appears that there was a slight mis-alignment between the two halves of the gapped bars on the record head. This caused a few of the end tracks to be less than 40 um.

Resistance Measurements

The resistance of both heads was measured using a Beckman industrial 310 voltmeter.

#016 (record) 6.6 ohms
#013 (replay) 6.5 ohms

Impedance Measurements

The impedance of both heads was measured using a H.P. 4815A impedance meter.

Headstack	Impedance @ 500KHz	Resonant frequency
#016	100-105 ohms	12 MHz
#013	100-110 ohms	12 MHz

Performance Tests

The headstacks were mounted on a MKIIIA head assembly. The write head was outfitted with two MKIIIA write interfaces and the read head was outfitted with one MKIIIA read interface. The assembly was mounted on the test recorder located at the Westford site. A recording was made and reproduced. SNR's varied from 25dB to 29dB, with the exception of one track which measured 18.6dB.

Error rates on the MKIII decoder were <25.

The interfaces were interchanged, (the write interfaces were put on the read head and the read interfaces were put on the write head.) Performance seemed to degrade slightly. SNR's varied from 25dB to 27dB. Error rates remained <25.

Feedback To The Manufacturer

The interfaces were difficult to plug into the headstack. This is probably caused by epoxy wicking into the connector.

The serial number of the headstack is engraved into the side of the headstack. The side of the headstack is a mounting surface and should not be altered by engraving.

Conclusions

Some of the heads in these headstacks do not meet snr specifications. It is clear that this manufacturer is capable of making headstacks that will pass specifications. We did not do any wear tests to evaluate the life expectancy of these headstacks.

HEADSTACK #016 (RECORD)

<u>TIP NUMBER</u>	<u>MEASUREMENT</u>	<u>TRACK WIDTH</u>
1	120190 120232	42
2	119494 119534	40
3	118795 118837	42
4	118095 118138	42
33	97838 97878	40
34	97140 97179	39
35	96441 96481	40
36	95742 95781	39

HEADSTACK #013 (REPRODUCE)

<u>TIP NUMBER</u>	<u>MEASUREMENT</u>	<u>TRACK WIDTH</u>
1	120010 120051	41
2	119311 119352	41
3	118616 118658	42
4	117913 117957	44
33	97658 97698	40
34	96959 97000	41
35	96258 96298	40
36	95559 95599	40