Bad Filter Bank Channel Identification at the 12 Meter Telescope

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1 Introduction

Periodically, we run a series of tests to divine the probable cause of "bad channels" in the filter bank spectrometers at the NRAO 12 Meter Telescope. This report describes the results of these tests.

2 Bad Channel Identification

Since bad channels can be due to faulty hardware in one or more of the following devices:

- the multiplexer,
- the switcher,
- the filter banks themselves,

one must isolate the source of the bad channel in order to attempt a repair. In order to separate problems in the filter banks from those in the multiplexer and switcher, we take a set of series-mode scans where we feed both halves of the multiplexer with the same filter bank. Channels which show up as "bad" in both "polarizations" of these measurements most likely originate in the filter bank itself. Channels which are "bad" in just one "polarization" most likely originate in the multiplexer or switcher.

A series of scans taken in this way were made on September 9, 1998. Table 1 lists the results. Bad channels listed with a superscript "D" are "not-so-bad" channels due to either a faulty wire or diode in the filter bank. Since these "not-so-bad" channels do not adversely affect most astronomical measurements, they will be the last ones to be fixed.

Table 1: Bad Filter Bank Channels

Filter Bank (kHz)	Filter Bank Channel	Multiplexer/Switcher Channel
100	79	...
250	5, 145^D	...
500	26, 187^D, 188^D, 189^D, 233, 240	288
1000	17	179^D, 184, 440
1000RED	...	...
2000	$(50, 106, 107, 114, 221, 222, 237, 238)^D$	408, 481
2000RED	48, 81, 131, 169, 209, 193^D, 206^D	408, 481

During the coming months, we will attempt to fix the bad filter bank and multiplexer/switcher channels listed in Table 1.