

# Out of Band Resonances (OBR) of the SAFARI FDM

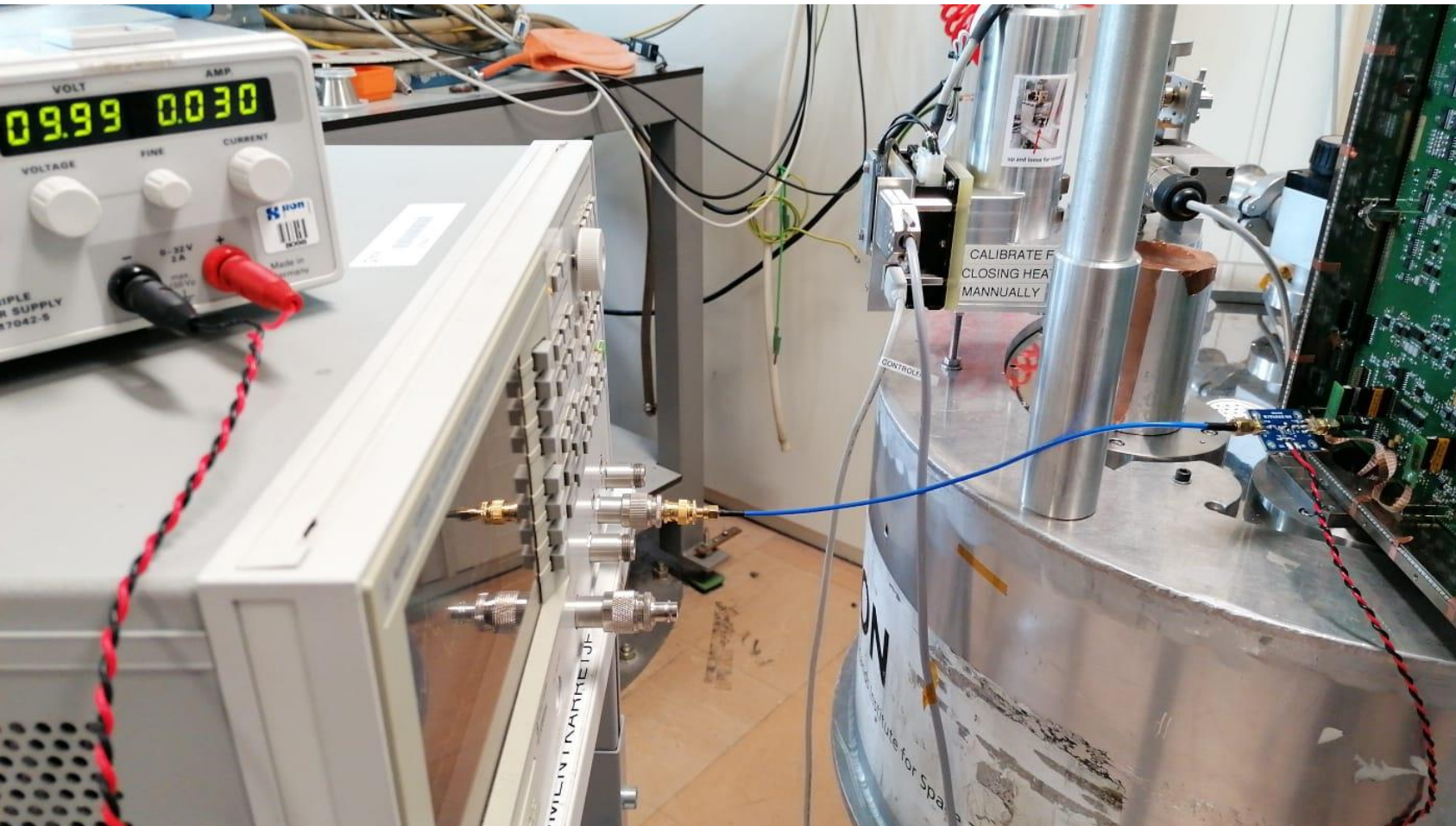
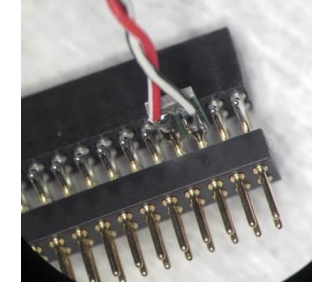
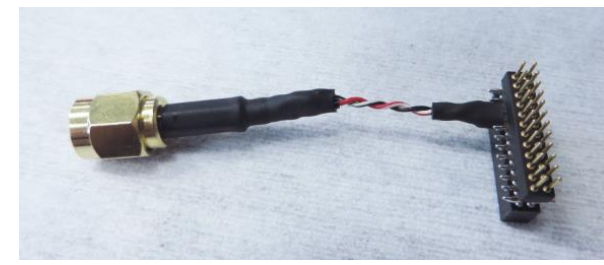
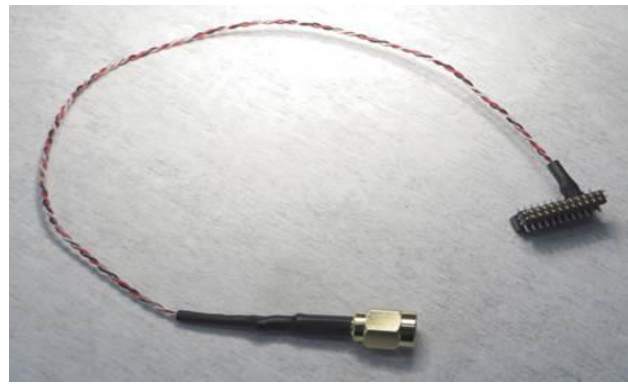
- Test with Spectrum Analyzer, LNA and Output FEE
- mK regime, New adapter(very short twisted pair)

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Thanks to Marcel van Litsenburg

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# Setup@mK



With@L and without LNA@R



Without and with LNA @mK

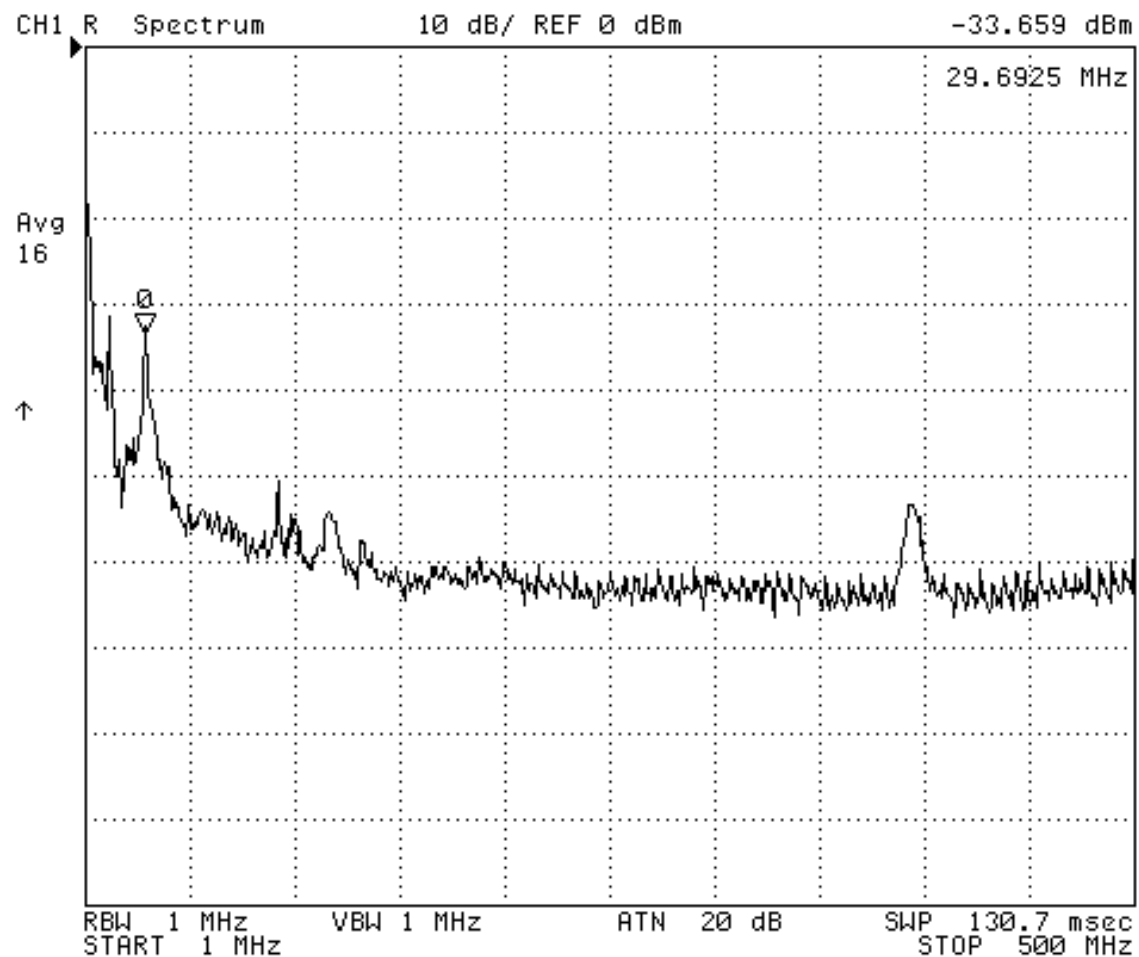


with LNA @4K

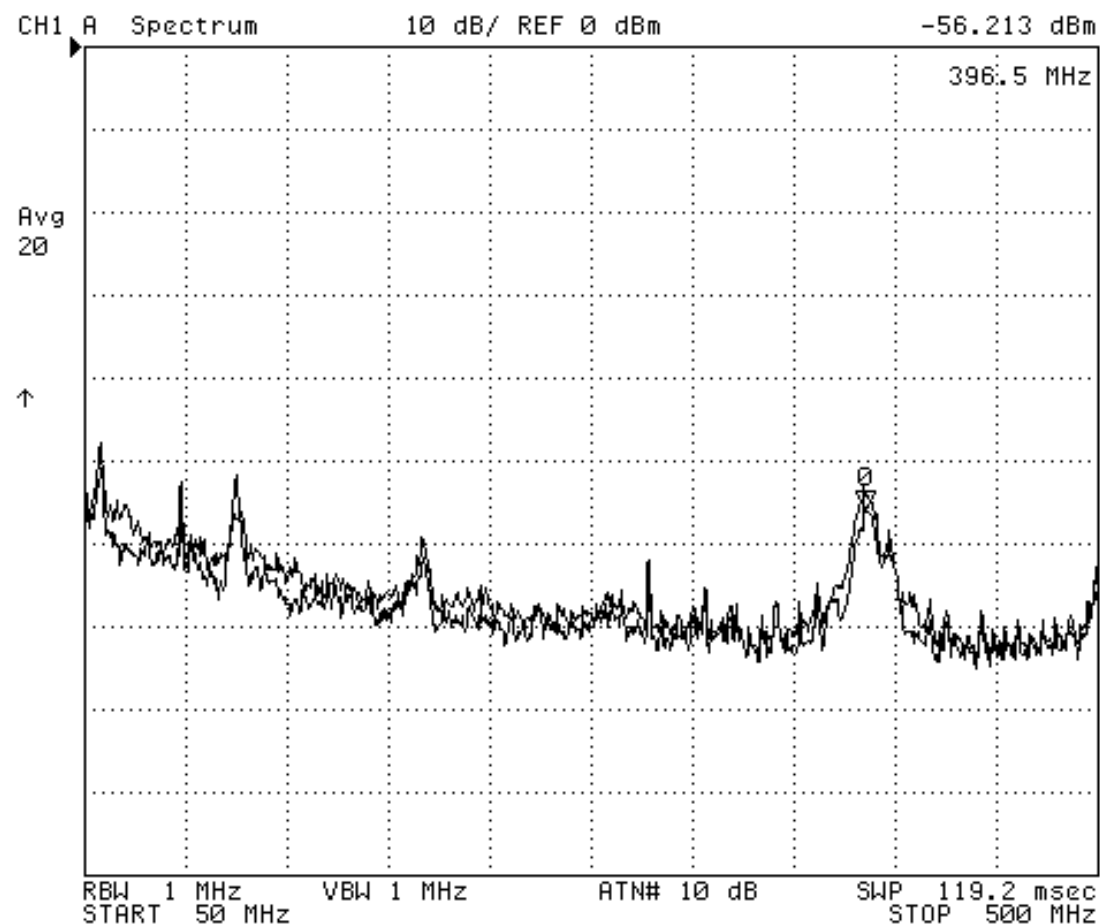
CANCEL

SELECT  
LETTER  
  
SPACE  
  
BACK  
SPACE  
  
ERASE  
TITLE  
  
DONE  
  
STOR DEV  
[DISK]  
  
CANCEL

Basically, similar OBR pattern observed at 4K and mK



Output of FEE@mK  
1-500MHz



Output of FEE@4K  
1-500MHz  
SQUID ON-OFF

SELECT  
LETTER

SPACE

BACK  
SPACE

ERASE  
TITLE

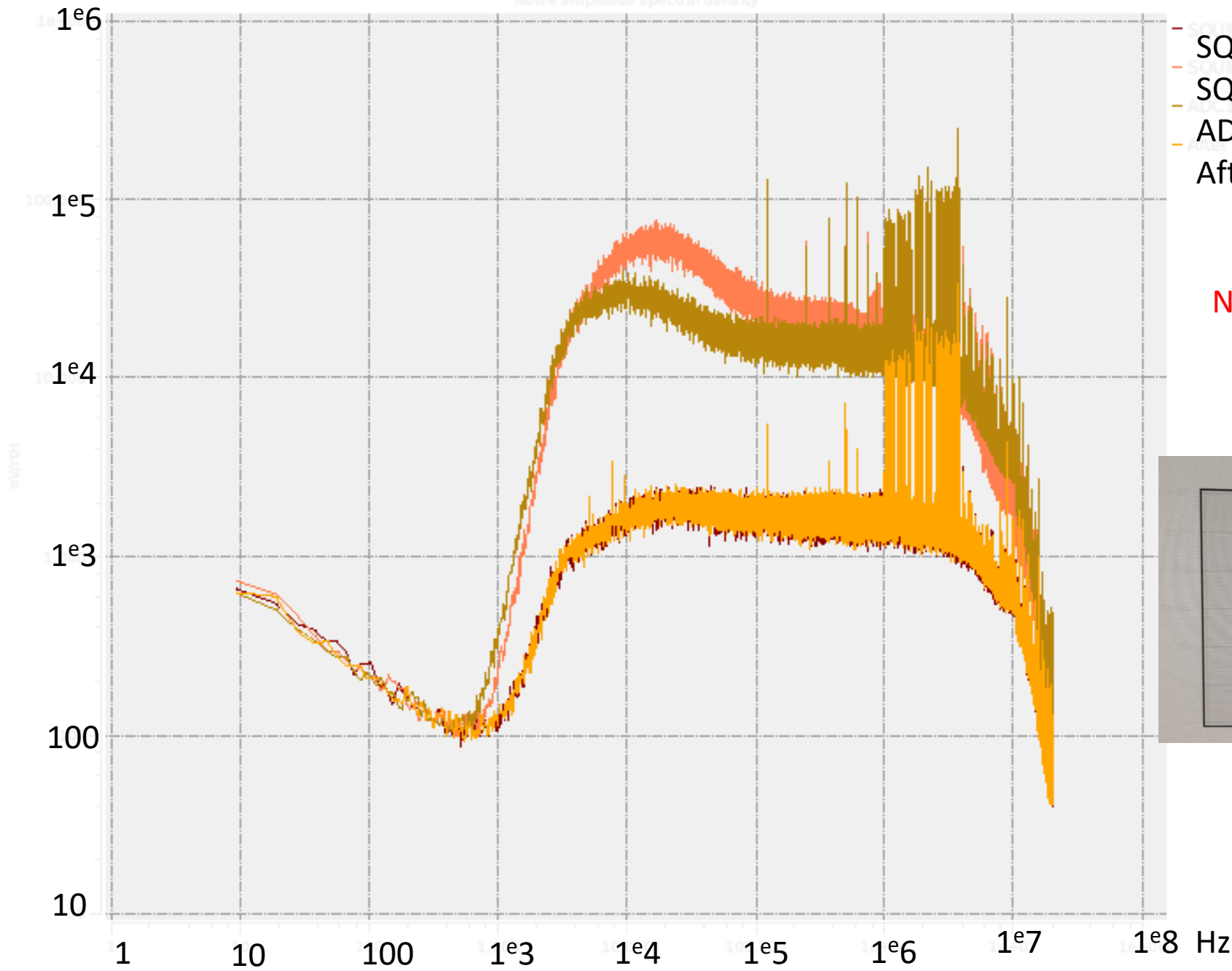
DONE

STOR DEV  
[DISK]

CANCEL

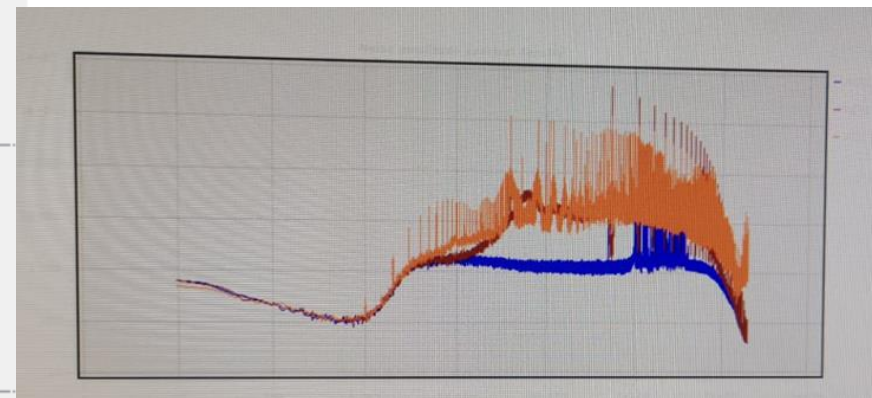
# Noise Amplitude Spectral Density

nV/√Hz



- SQUID nominal setting
- SQUID oscillatie
- ADC1 while measuring
- After measurement

Noise Spectrum is improved likely due to the removal of twisted pair



Previous Test with twisted pair  
SQUID ON-READOUT Noise without,  
LNA Off(red) and with LNA(Orange)

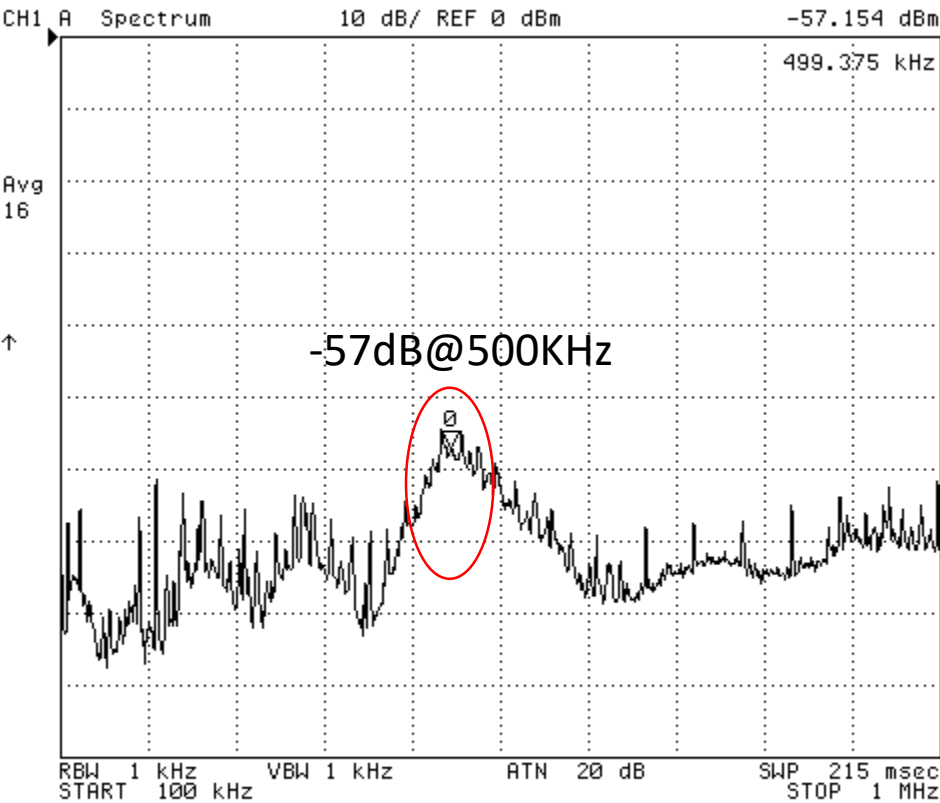


Output of FEE, SQUID ON @ mK



SELECT LETTER  
SPACE  
BACK SPACE  
ERASE TITLE  
DONE  
STOR DEV [DISK]  
CANCEL

Output of LNA, SQUID ON@mK



SELECT LETTER  
SPACE  
BACK SPACE  
ERASE TITLE  
DONE  
STOR DEV [DISK]  
CANCEL

100KHz-1MHz

The main peak is similar in both FEE and LNA, some small spikes between 500kHz-1MHz in LNA Intermodulation?

Output of FEE, SQUID ON @ mK



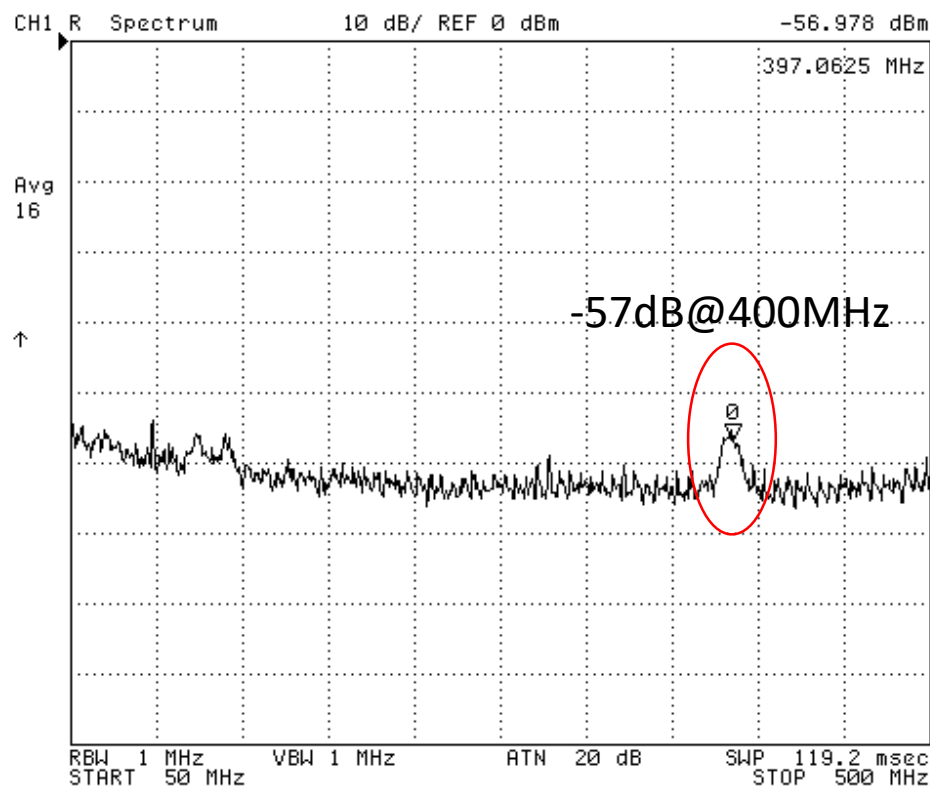
Output of LNA, SQUID ON@mK



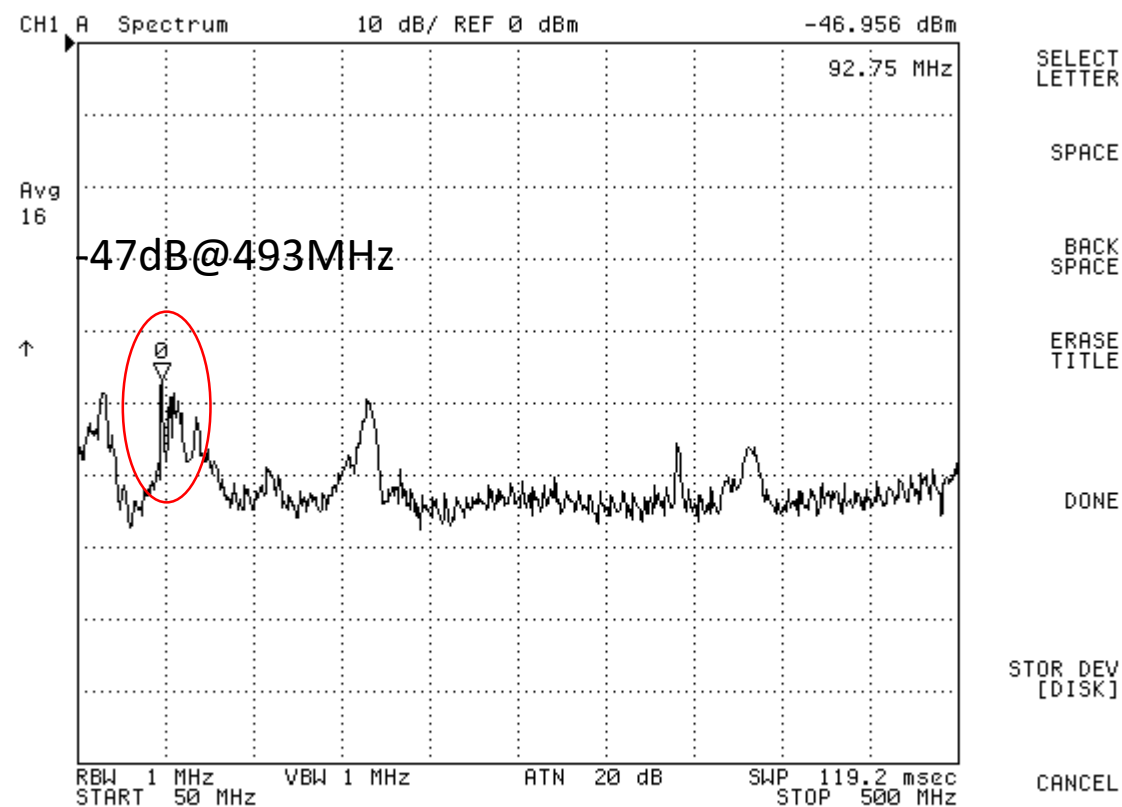
1MHz-50MHz

Big bump around 25 MHz in LNA is not observed in FEE, the rest more less similar features

## Output of FEE, SQUID ON @ mK



## Output of LNA, SQUID ON@mK



50MHz-500MHz

As expected, resonances are more pronounced with broadband LNA

Thanks for the feedback on OBR abstract-LTD It will be submitted on April 22.