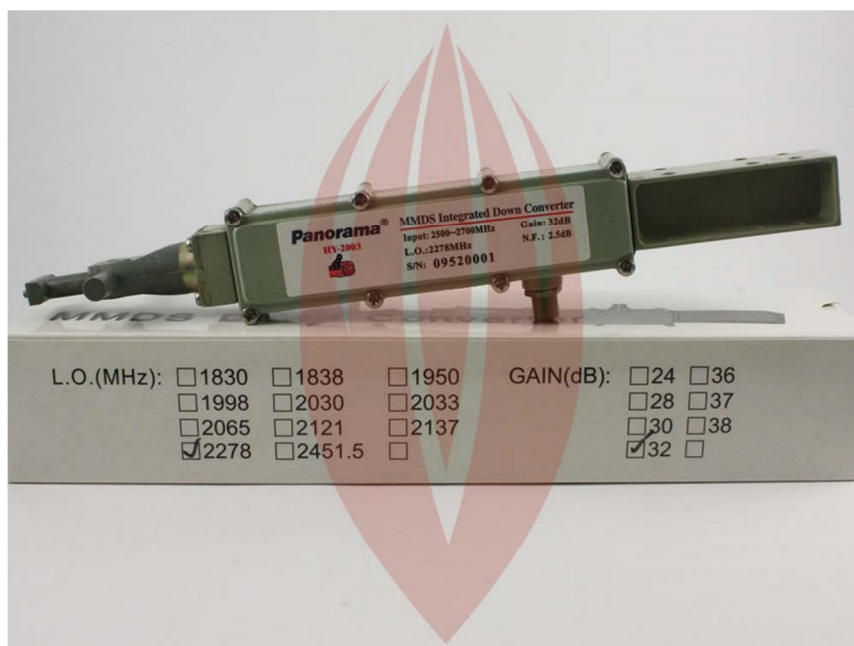


How to modify a MMDS Integrated Down converter rev.1



Specifications:

- Input Frequency Range: 2,500 to 2,700MHz
- Output Frequency: 222Mhz-408Mhz
- L.O. Frequency: 2278
- L.O. Stability: $\leq \pm 30\text{kHz}$ (-40 - +70°C)
- Image Rejection: $\geq 50\text{dB}$
- Noise Figure: 2.5dB
- VSWR: 1.5:1
- IF Rejection: $\geq 80\text{dB}$
- PCS Rejection: $\geq 100\text{dB}$
- WCS Rejection: $\geq 50\text{dBc}$
- Gain: 32dB(can changed)
- L.O. Leakage RF-port: $\leq -85\text{dBm}$
- L.O. Leakage IF-port: $\leq -50\text{dBm}$
- L.O. Phase Noise: offset
- Output P1dB: +14dBm (typ.)
- Gain Flatness over entire range: $\leq \pm 1.5\text{dB}$
- Gain Flatness: $\leq 0.2\text{dB/channel}$
- IF Output Impedance: 75ohm Input type: integrated dipole antenna
- Operating Temperature: -40 - +70°C
- Spurious in IF Band: $\leq -100\text{dBm}$
- DC input Voltage: 12V - 24V
- Storage Temperature: -40 - +80°C
- Relative Hhumidity: 0% - 95%

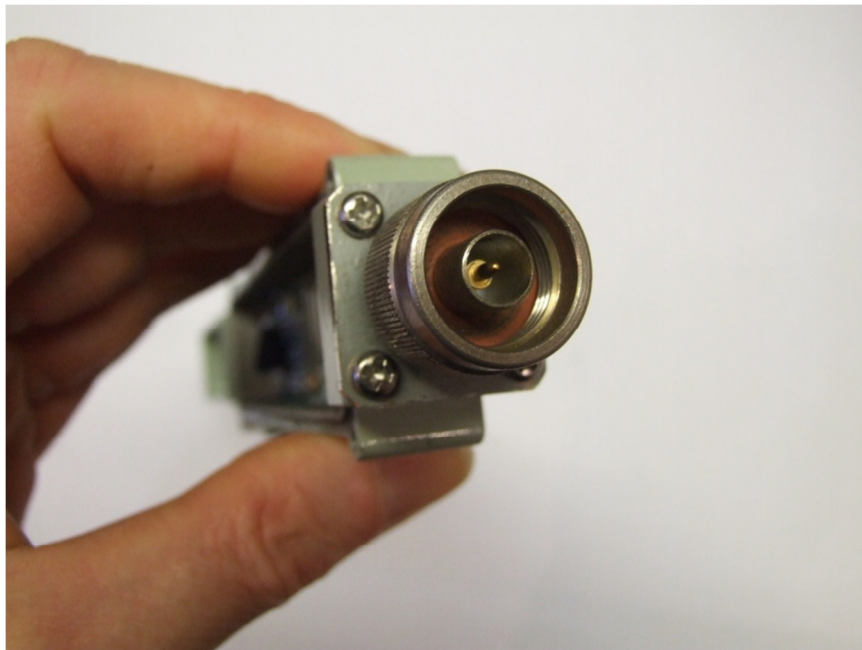
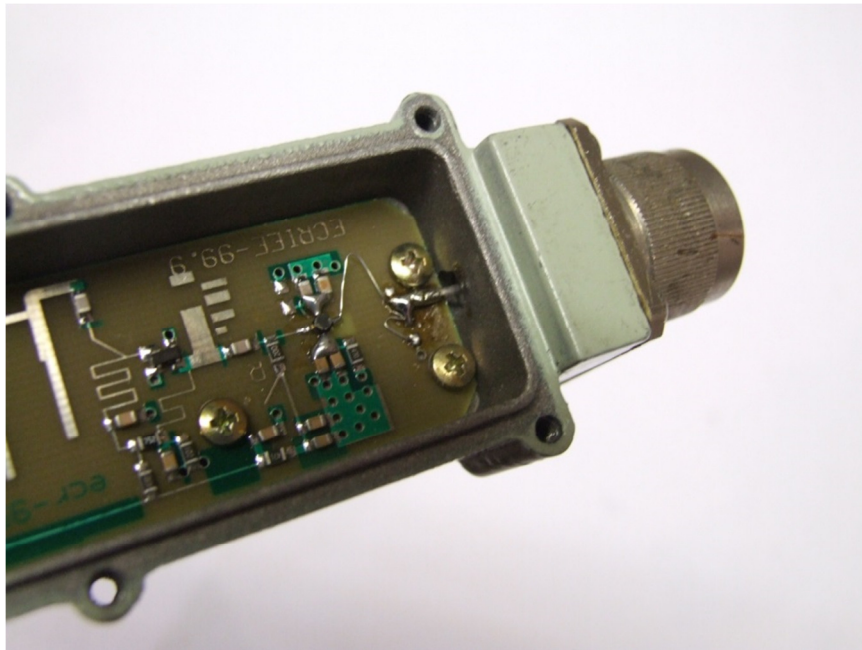
Removing the antenna

Unscrew the antenna and pull it out.

Mounting an N –male chassis part

You have to solder a little piece of CuAg wire 1.2mm² right in the middle of the connector.

Mount it like that ...



Local Oscillator Modification

Normally the LO = 2278MHz.

The Input Frequency Range = 2500 – 2700MHz

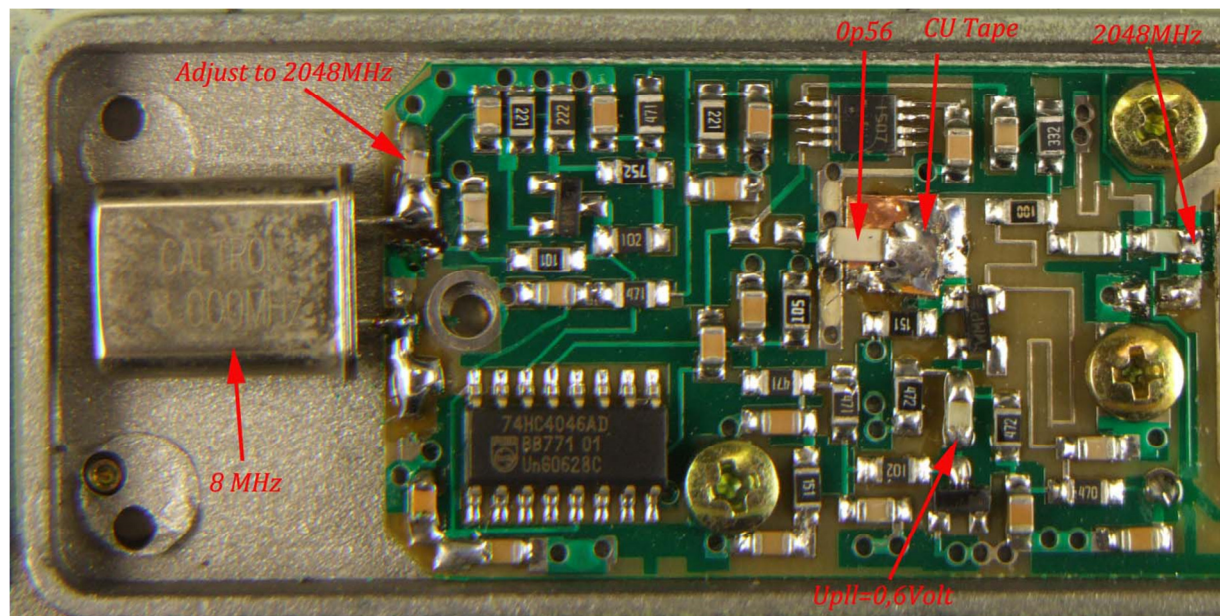
Output Frequency = 222 – 422MHz

The LO is a pll circuit. The LO frequency is 256 times the X-tal frequency.

The original X-tal frequency is 8.8984375MHz.

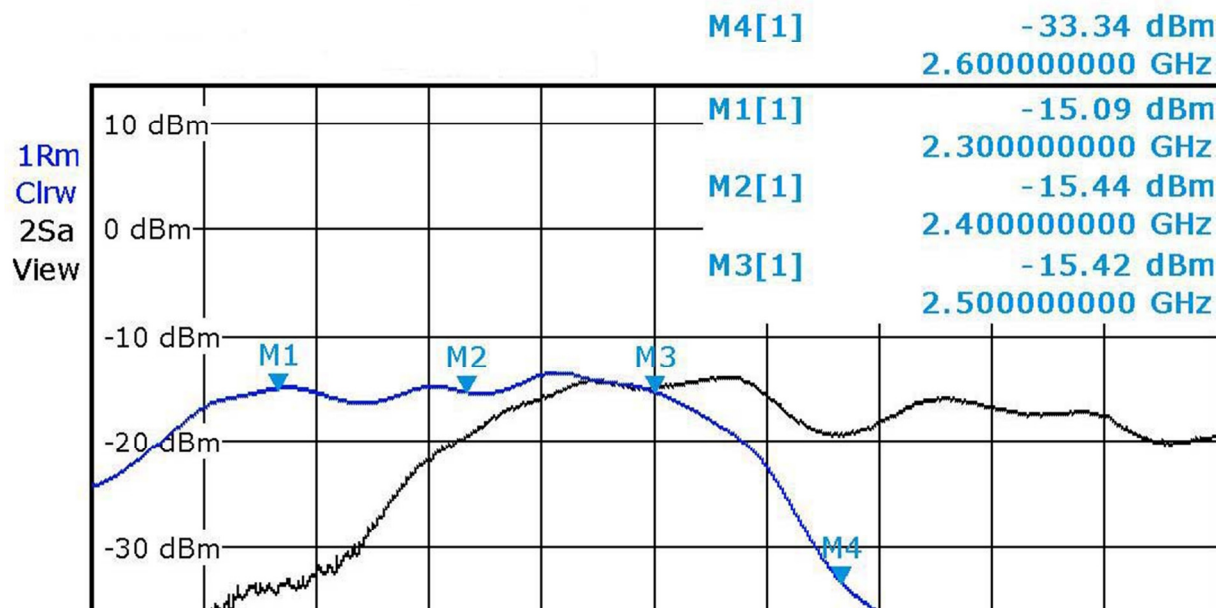
If we change the X-tal by a cheap 8MHz X-tal the new LO frequency will be 2048MHz.

We need to do some modifications at the LO circuit.

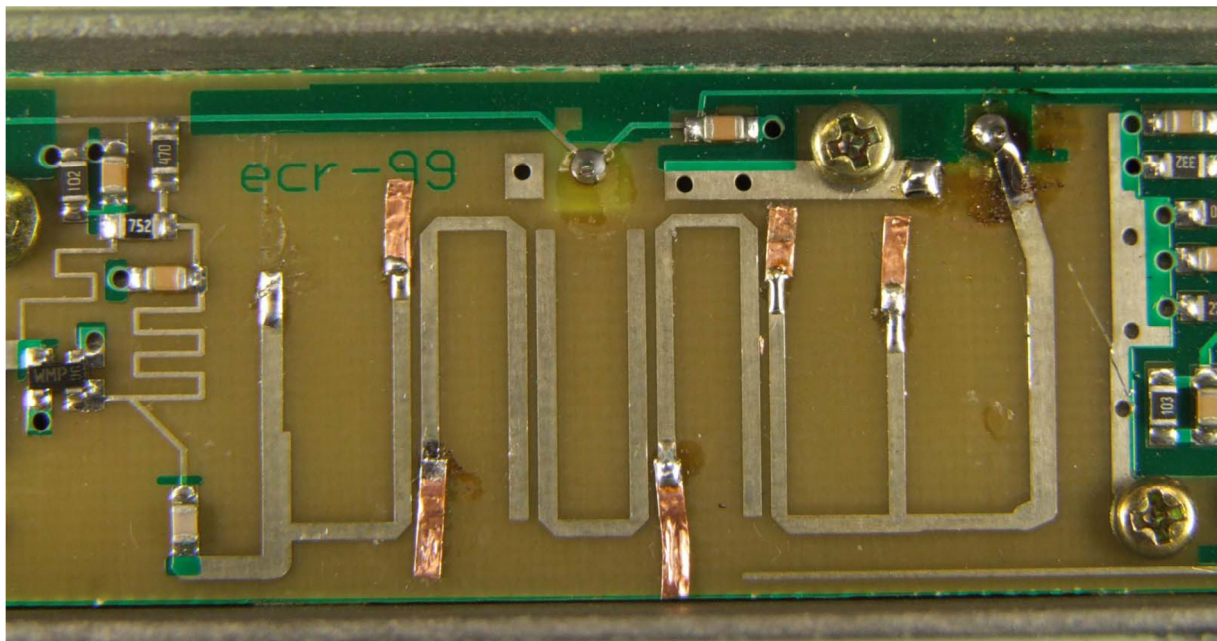


Bandpass filter modification

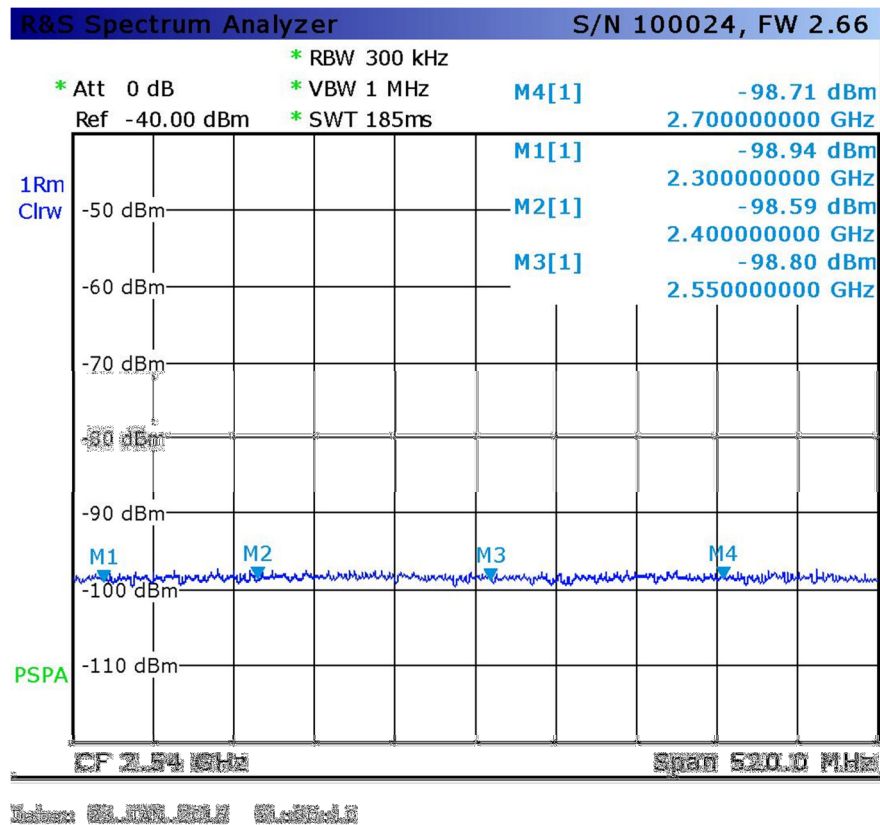
The black curve is the original one. The blue one is the curve after modification.



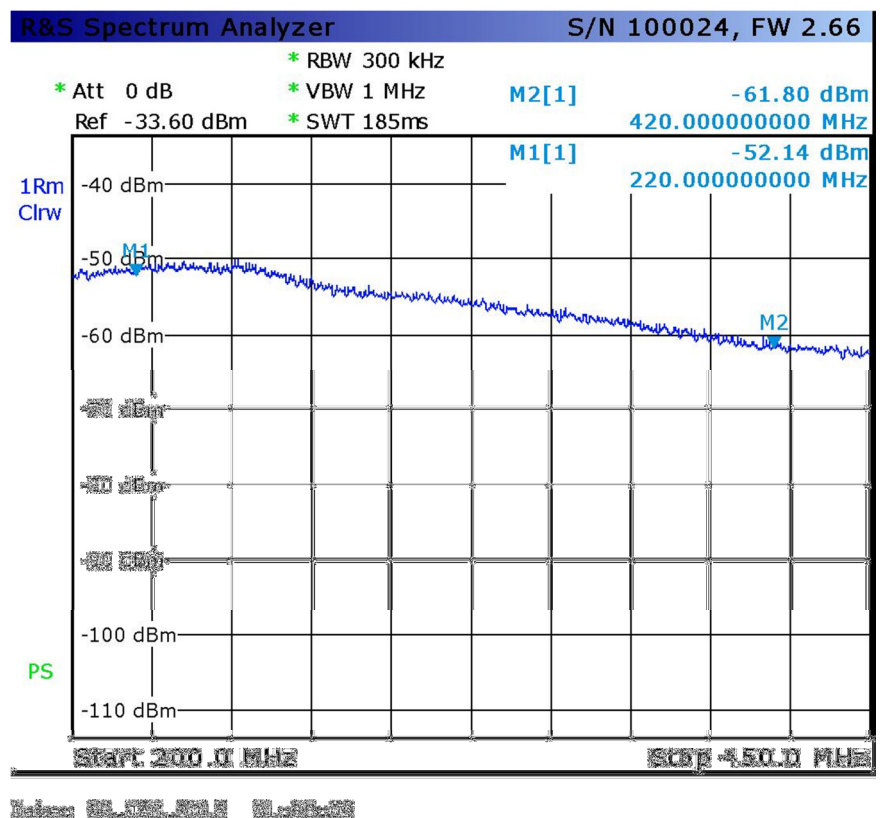
This is how it's been modified.



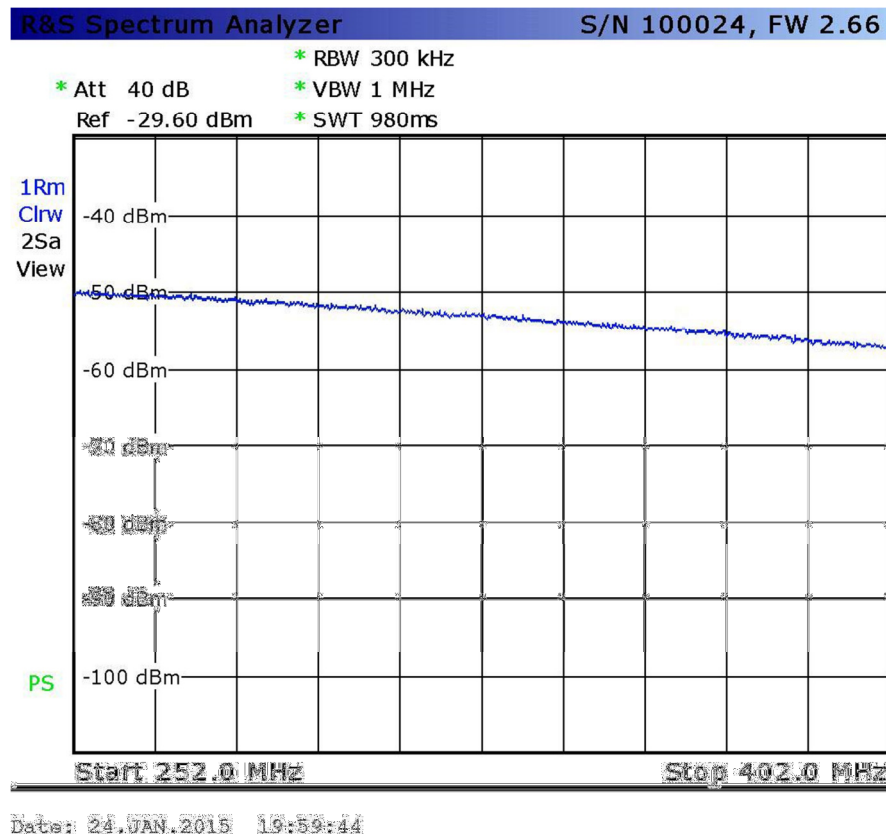
This is a picture from a noise bridge output.



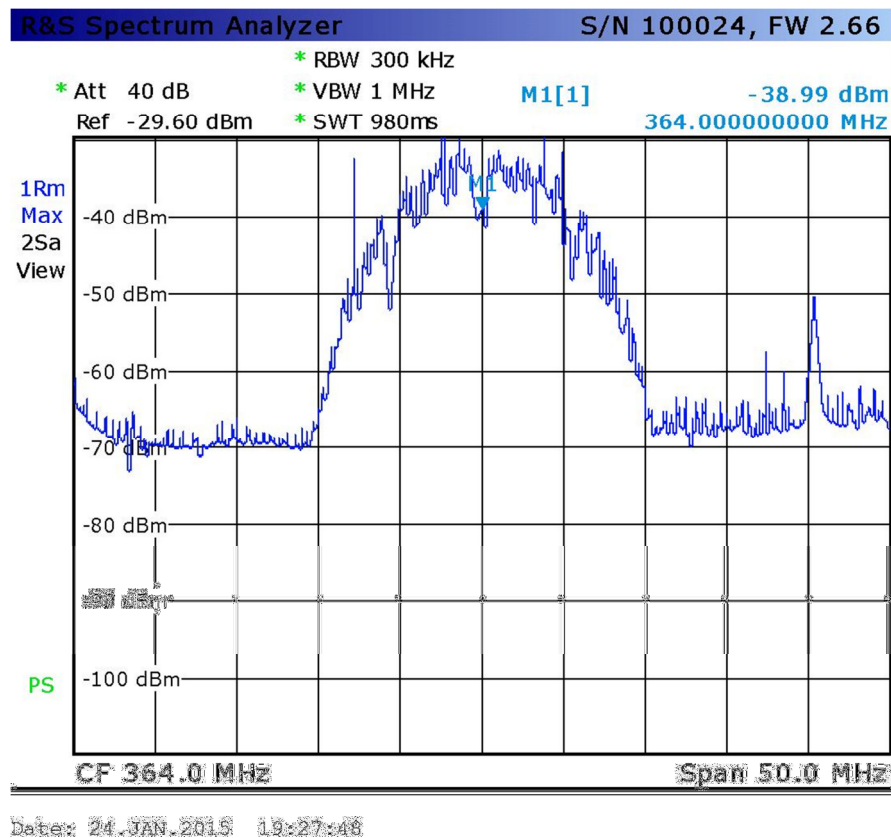
This is the picture measured at the output from the converter before modification.



This is the picture measured at the output from the converter after modification (Gain > 40dB)



Reception from a Wifi signal on 2412MHz. Output : $2412\text{MHz} - 2048\text{MHz} = 364\text{MHz}$



Modified MMDS Converter shown with a little 13cm antenna and DC inserter

