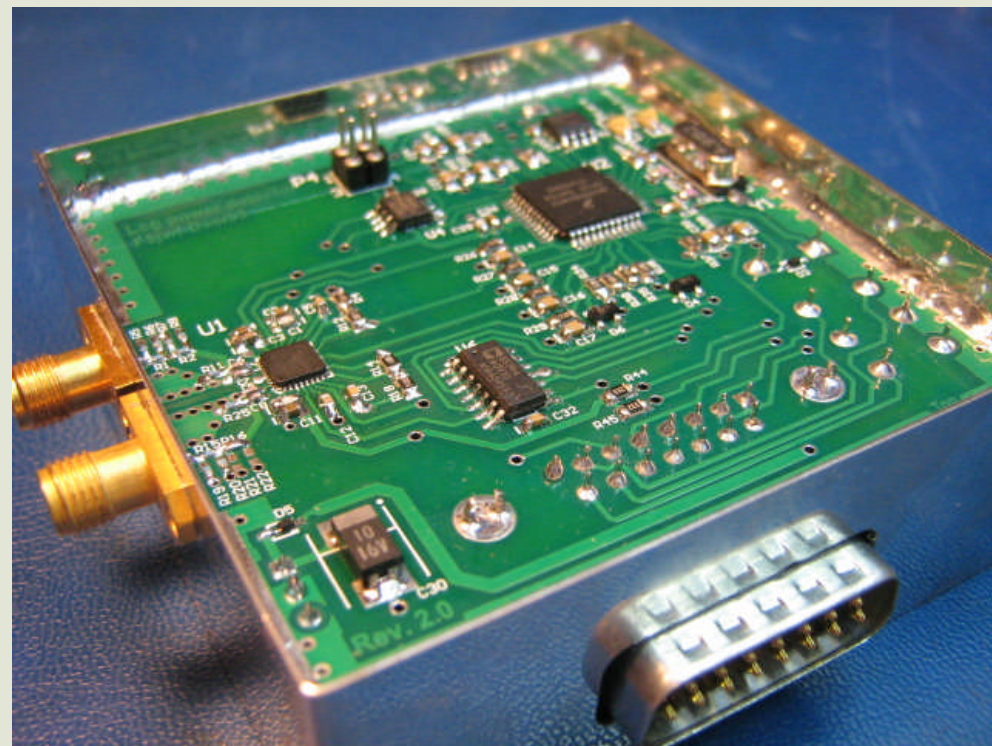
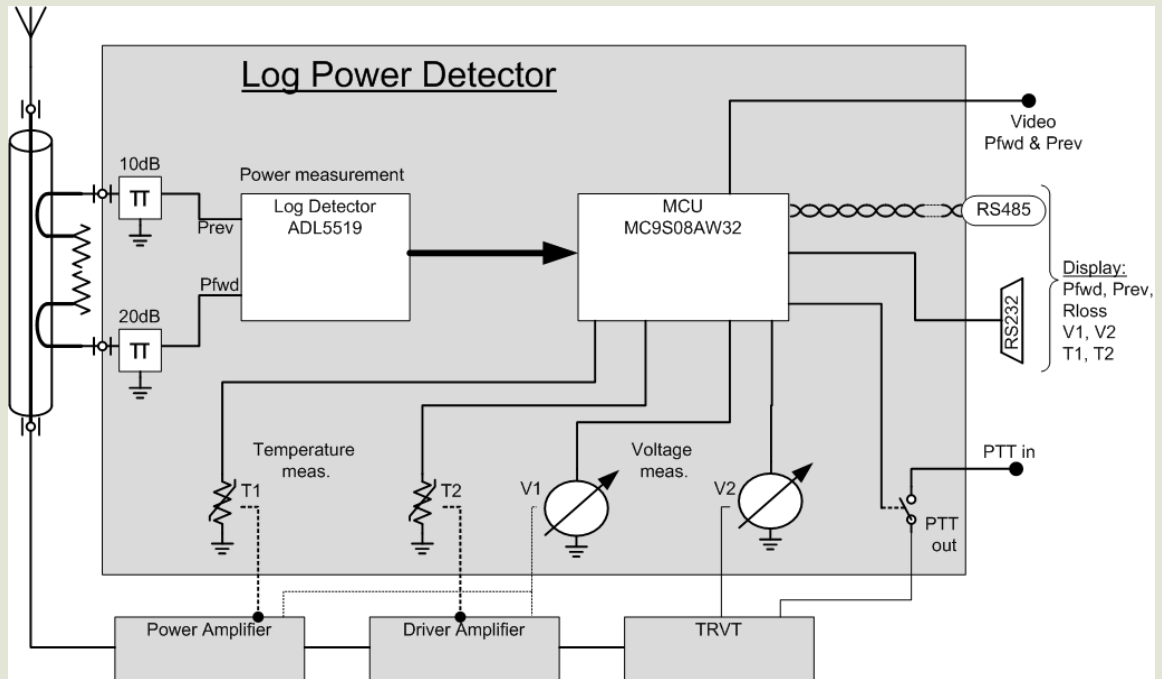


# Wide band SWR controller for microwave station



F5jwf / Philippe Borghini

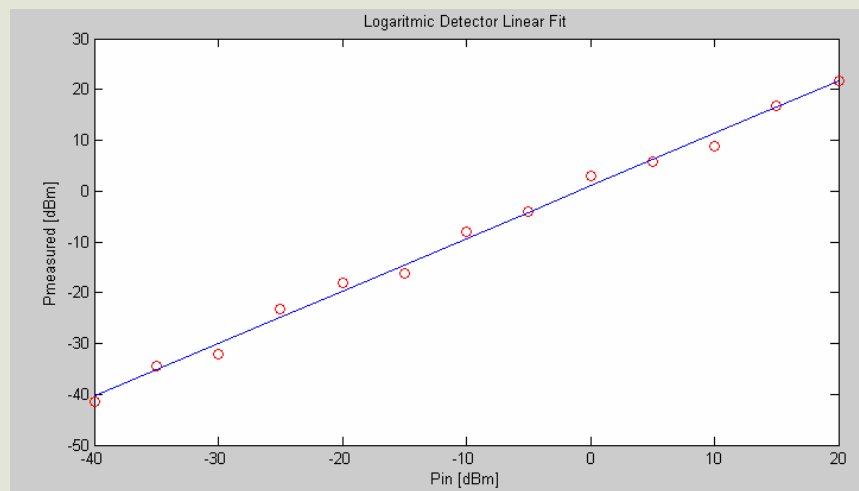
## DetLog Block diagram



- > Dual channel power probe by using Analog Devices ADL5519
- > 8 bit MCU control the module
- > Measure of Pforward and Preverse
- > Cover 144MHz...10'368MHz
- > Build in wide band attenuator to adjust dynamic
- > Switch off PTT in case of excessive Return Loss
- > Local RS232 interface and far end RS485 capabilities
- > Additional features: Temperature and voltage measurement
- > All configuration stored in Flash memory (no volatile)

# Calibration

- Calibration improve the linearity and correct residual gain and offset error
- Calibration consist of Linear Fit to spread error over the full dynamic
- Ready to use with Default calibration
- Module can re calibrated with built in algorithm to improve accuracy
- One calibration per frequency
- 9 memory bank to store cal results in Flash memory



det\_log - HyperTerminal

File Edit View Call Transfer Help

Stored Calibration  
\*\*\*\*\*

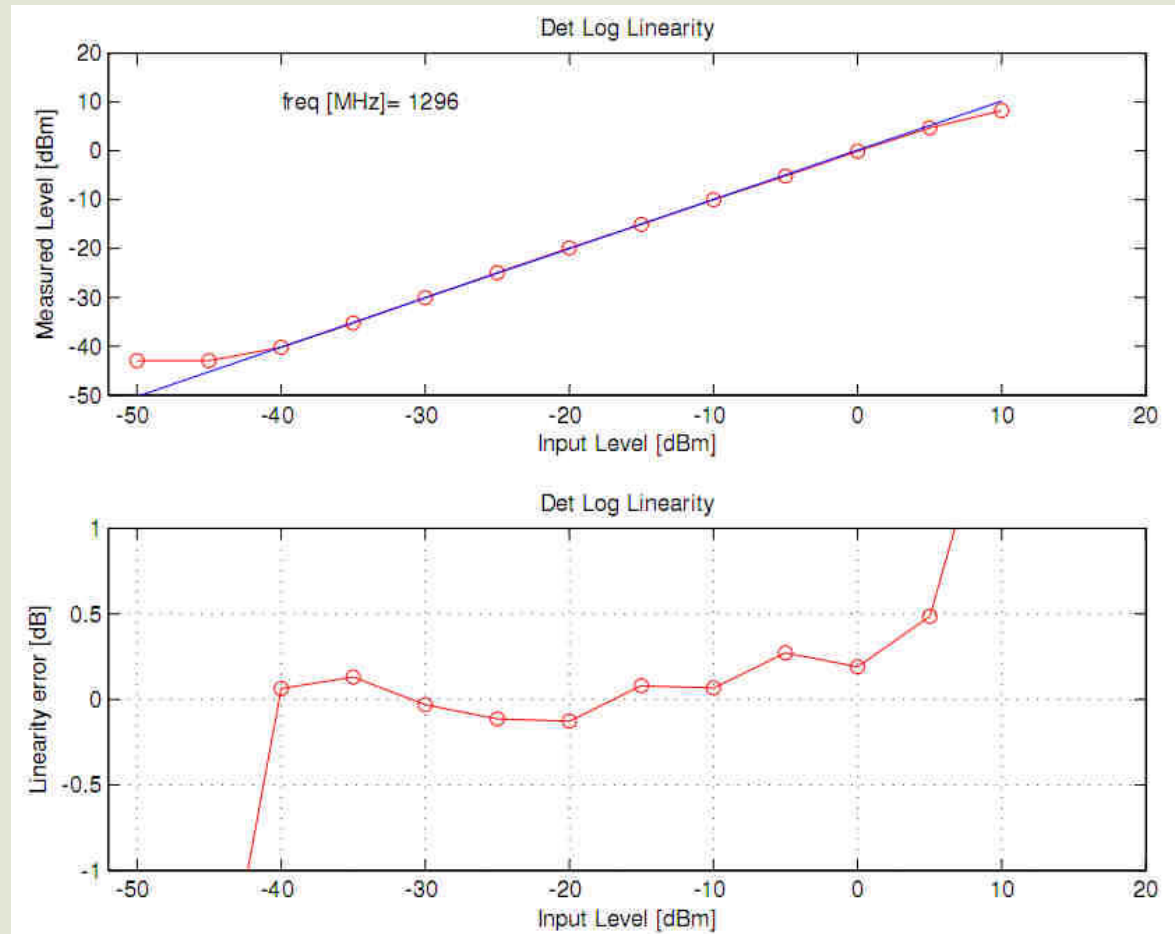
Memory	Freq [MHz]	Ch. Forward Slope [mV/dB*100]	Intercept [dBm*10]	Ch. Reverse Slope [mV/dB*100]	Intercept [dBm*10]
Current	1296	-6530	387	-6420	292
Mem. 1	144	-6410	419	-6420	316
Mem. 2	432	-6500	406	-6450	307
Mem. 3	1296	-6530	387	-6420	292
Mem. 4	2320	-6470	374	-6390	278
Mem. 5	5760	-6500	357	-6450	285
Mem. 6	10368	-8290	417	-8330	362
Mem. 7	1000	-6530	387	-6420	292
Mem. 8	1000	-6530	387	-6420	292
Mem. 9	1000	-6530	387	-6420	292

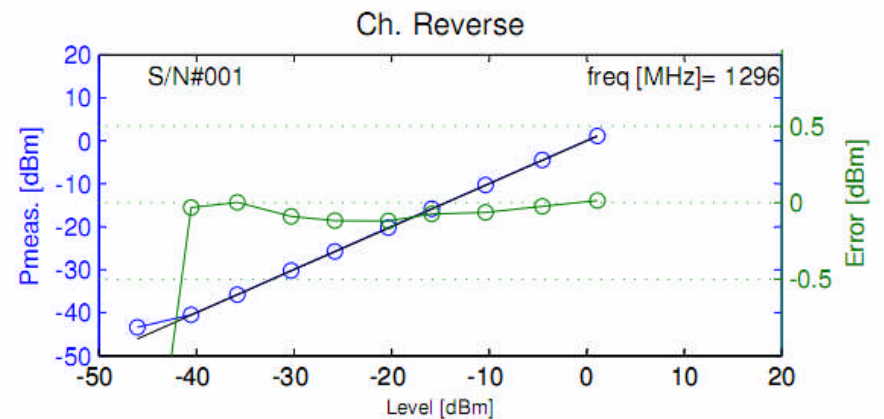
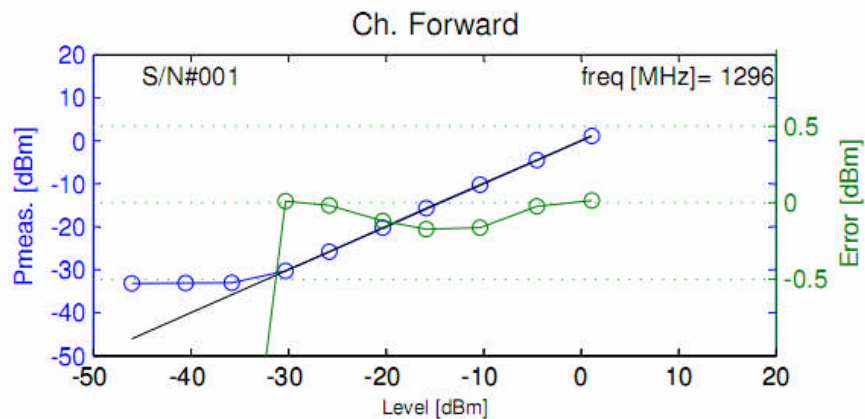
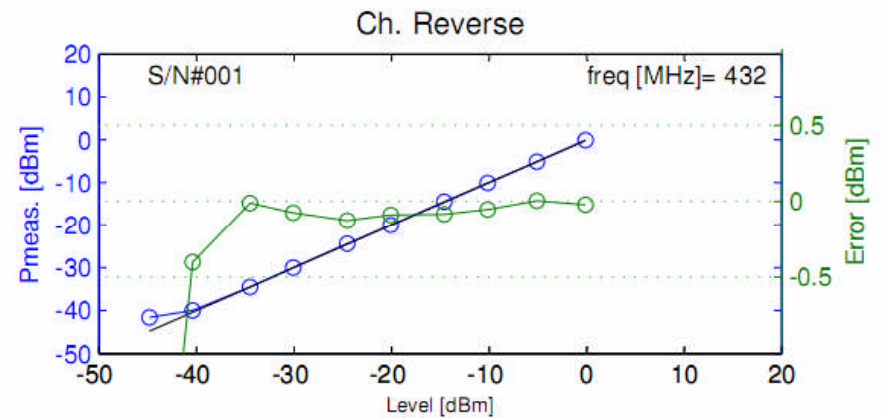
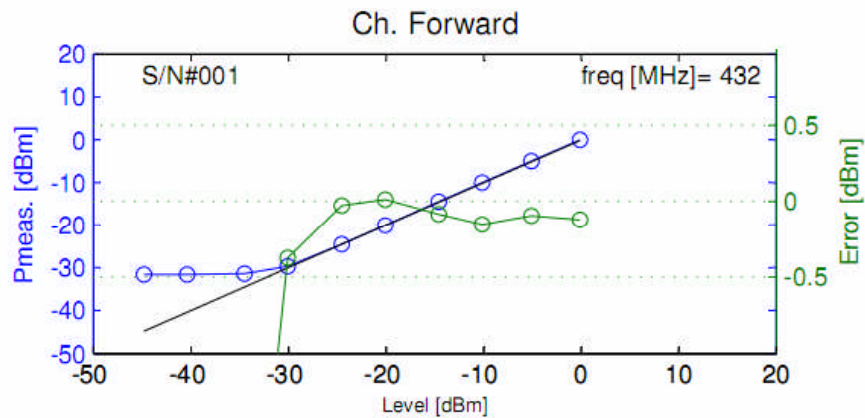
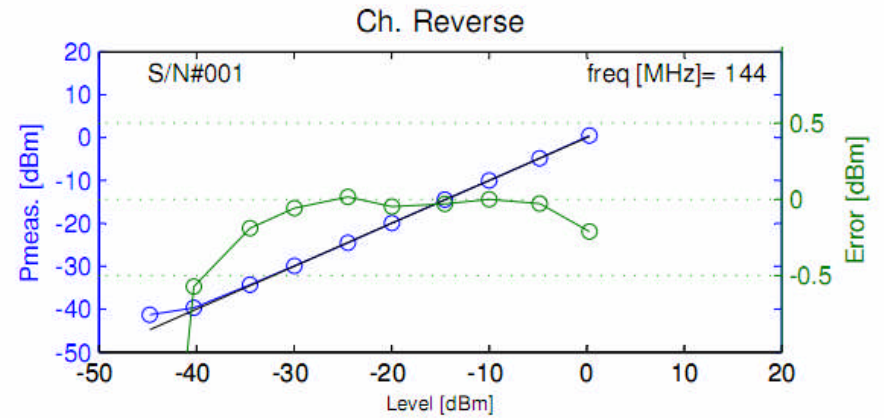
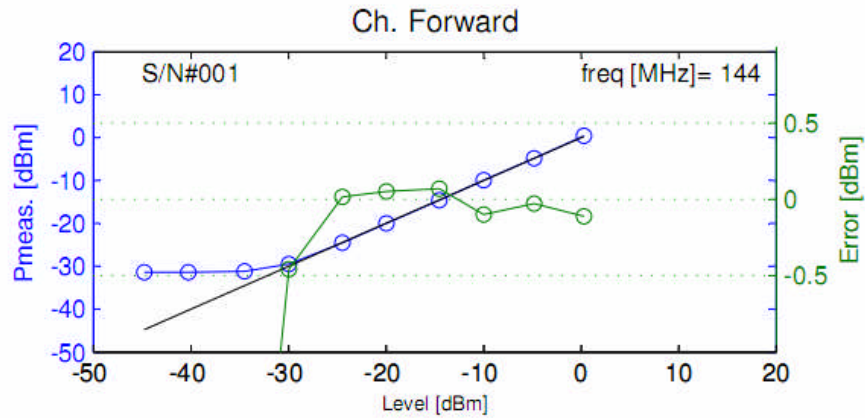
> -

Connected 0:02:54    Auto detect    38400 8-N-1    SCROLL    CAPS    NUM    Capture    Print echo

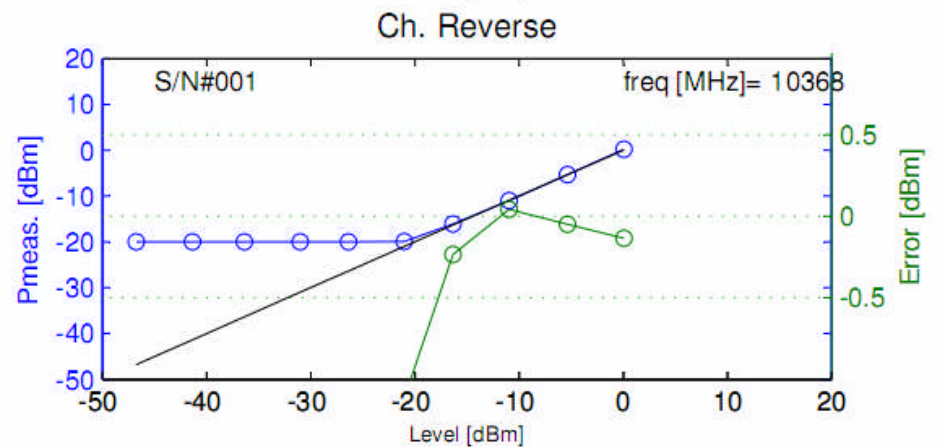
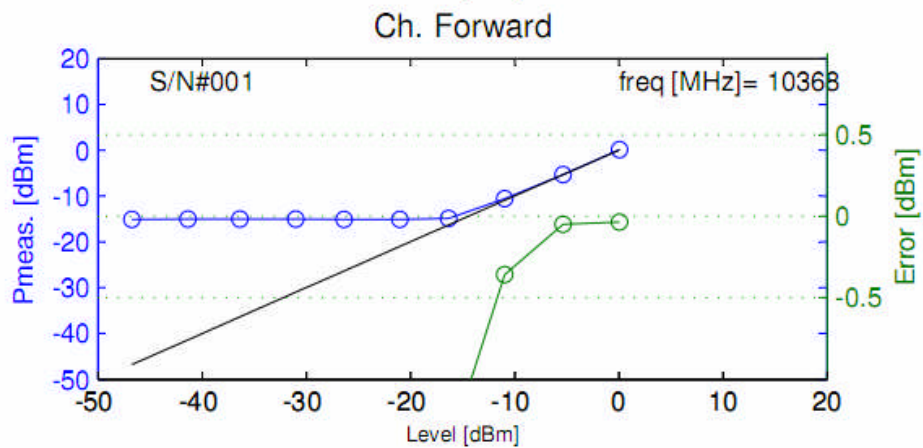
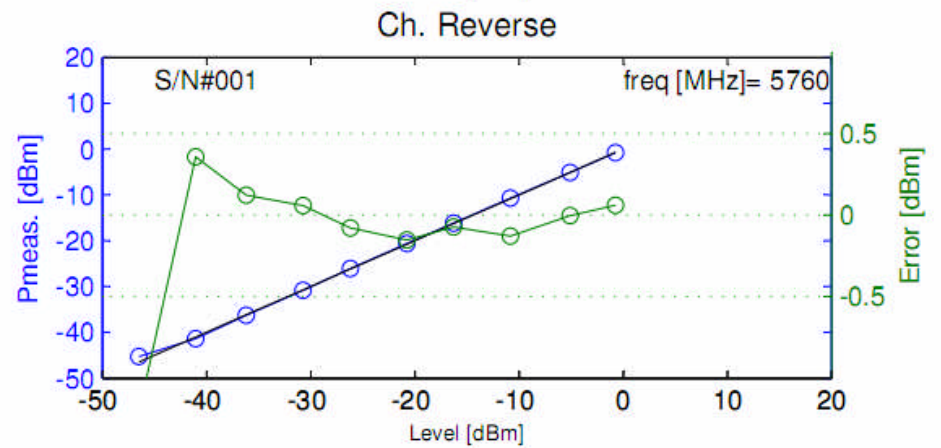
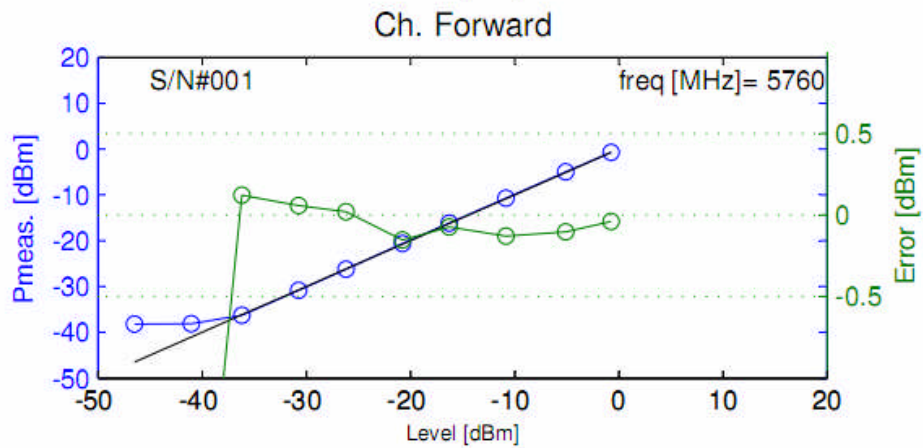
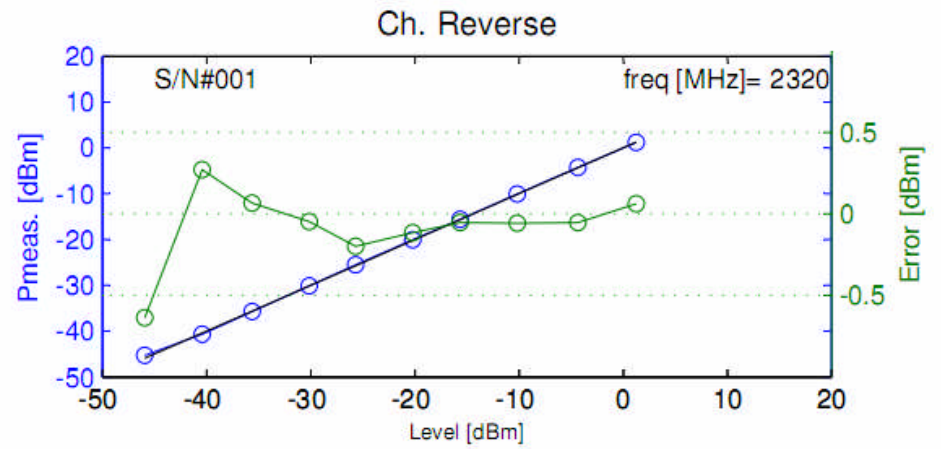
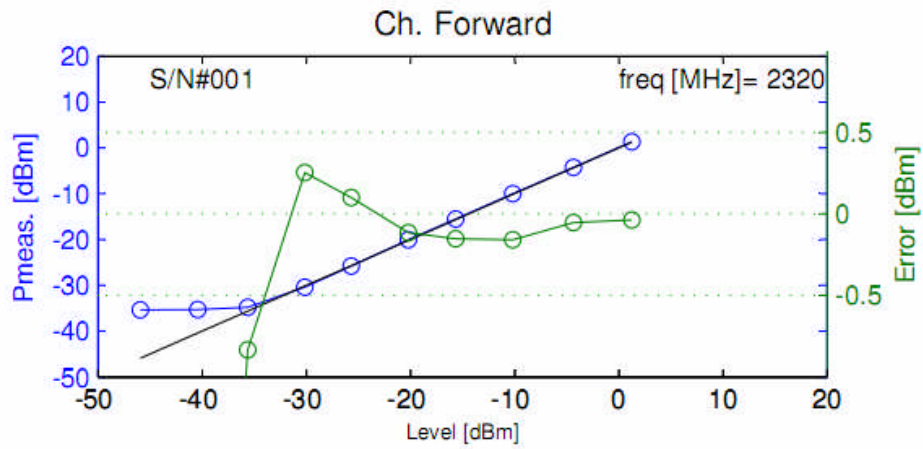
# Linearity

- > ~50dB dynamic
- > Typical accuracy at 1296: +/-0.2dB
- > Same type of performance up to 8GHz
- > Reduce dynamic in 10GHz



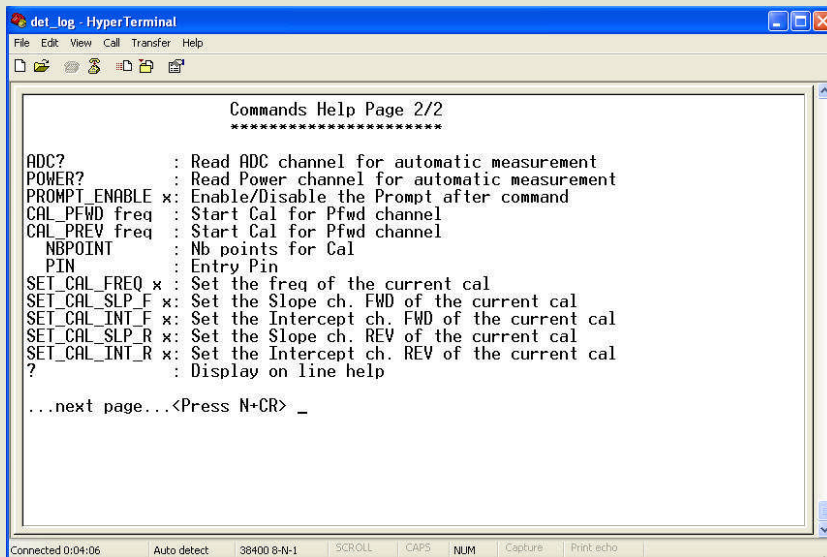




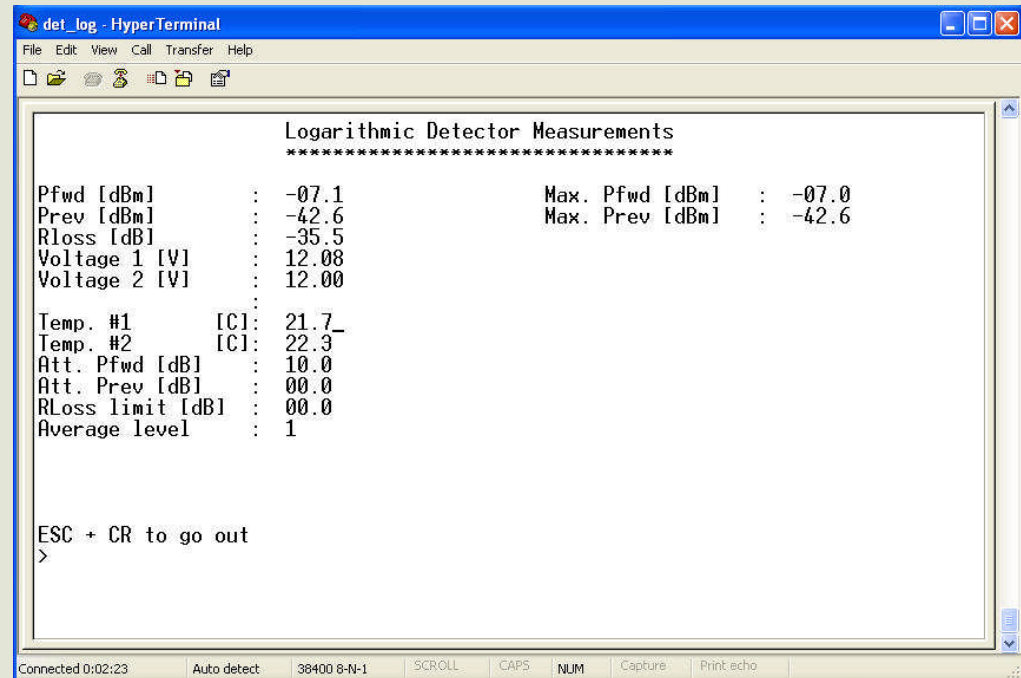


# VT100 terminal user interface

- No software to be install just a single RS232 terminal
- All configuration of DetLog done with VT100
- Display measurements
- Calibration algorithm
- Built in command Help



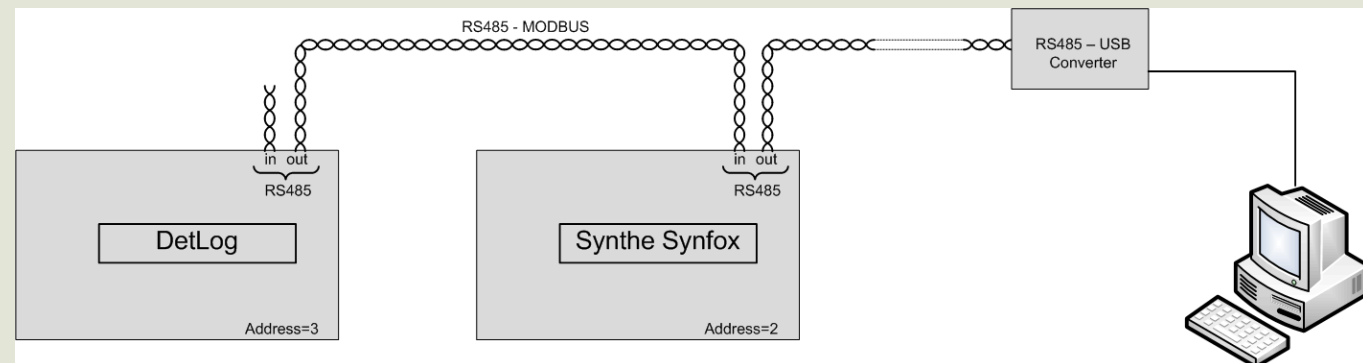
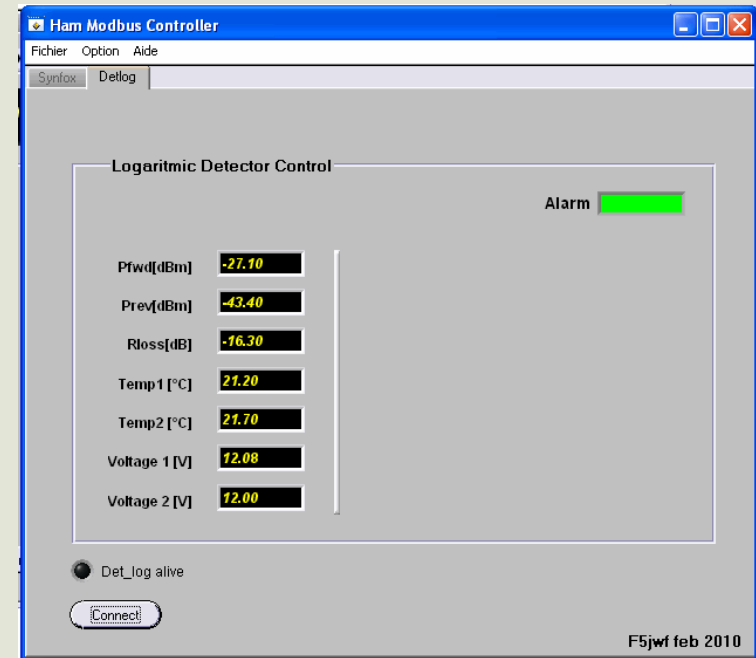
```
det_log - HyperTerminal
File Edit View Call Transfer Help
Commands Help Page 2/2
*****
ADC?      : Read ADC channel for automatic measurement
POWER?    : Read Power channel for automatic measurement
PROMPT ENABLE x: Enable/Disable the Prompt after command
CAL_PFWF freq : Start Cal for Pfwf channel
CAL_PREV freq : Start Cal for Prev channel
NBPOINT   : Nb points for Cal
PIN       : Entry Pin
SET_CAL_FREQ x : Set the freq of the current cal
SET_CAL_SLP_F x: Set the Slope ch. FWD of the current cal
SET_CAL_INT_F x: Set the Intercept ch. FWD of the current cal
SET_CAL_SLP_R x: Set the Slope ch. REV of the current cal
SET_CAL_INT_R x: Set the Intercept ch. REV of the current cal
?         : Display on line help
...next page...<Press N+CR> _
```



```
det_log - HyperTerminal
File Edit View Call Transfer Help
Logarithmic Detector Measurements
*****
Pfwf [dBm]      : -07.1          Max. Pfwf [dBm] : -07.0
Prev [dBm]     : -42.6          Max. Prev [dBm] : -42.6
Rloss [dB]     : -35.5
Voltage 1 [V]  : 12.00
Voltage 2 [V]  : 12.00
Temp. #1 [C]   : 21.7
Temp. #2 [C]   : 22.3
Att. Pfwf [dB] : 10.0
Att. Prev [dB] : 00.0
Rloss limit [dB] : 00.0
Average level  : 1
ESC + CR to go out
>
```

# RS485 Modbus serial interface

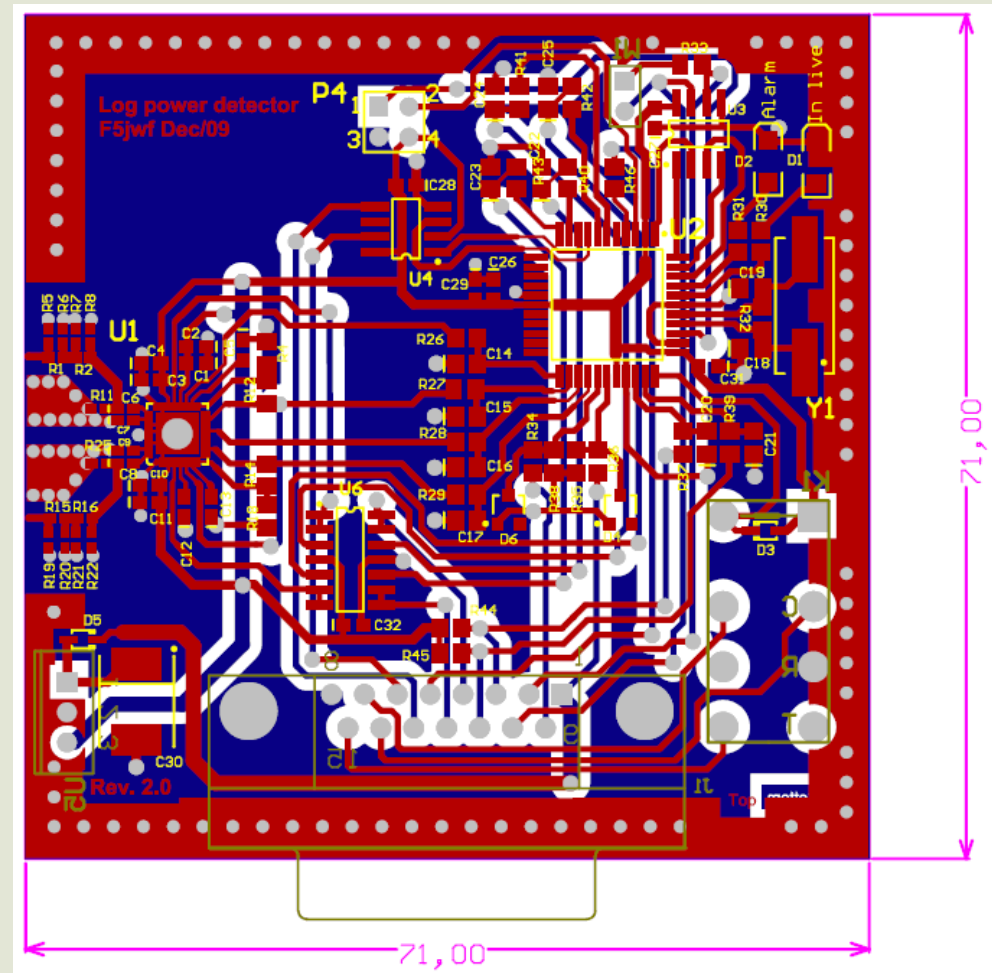
- > RS485 used for long distance remote control
- > RS485 runs over differential twisted pairs
- > Modbus allows secured frame oriented transmission
- > Display remotely measurements and status
- > Can be deported few hundred meter away from the shack
- > Need a small RS485-USB converter and software to be installed under windows
- > Control other module such as Synfox synthesizer





# Design and Layout

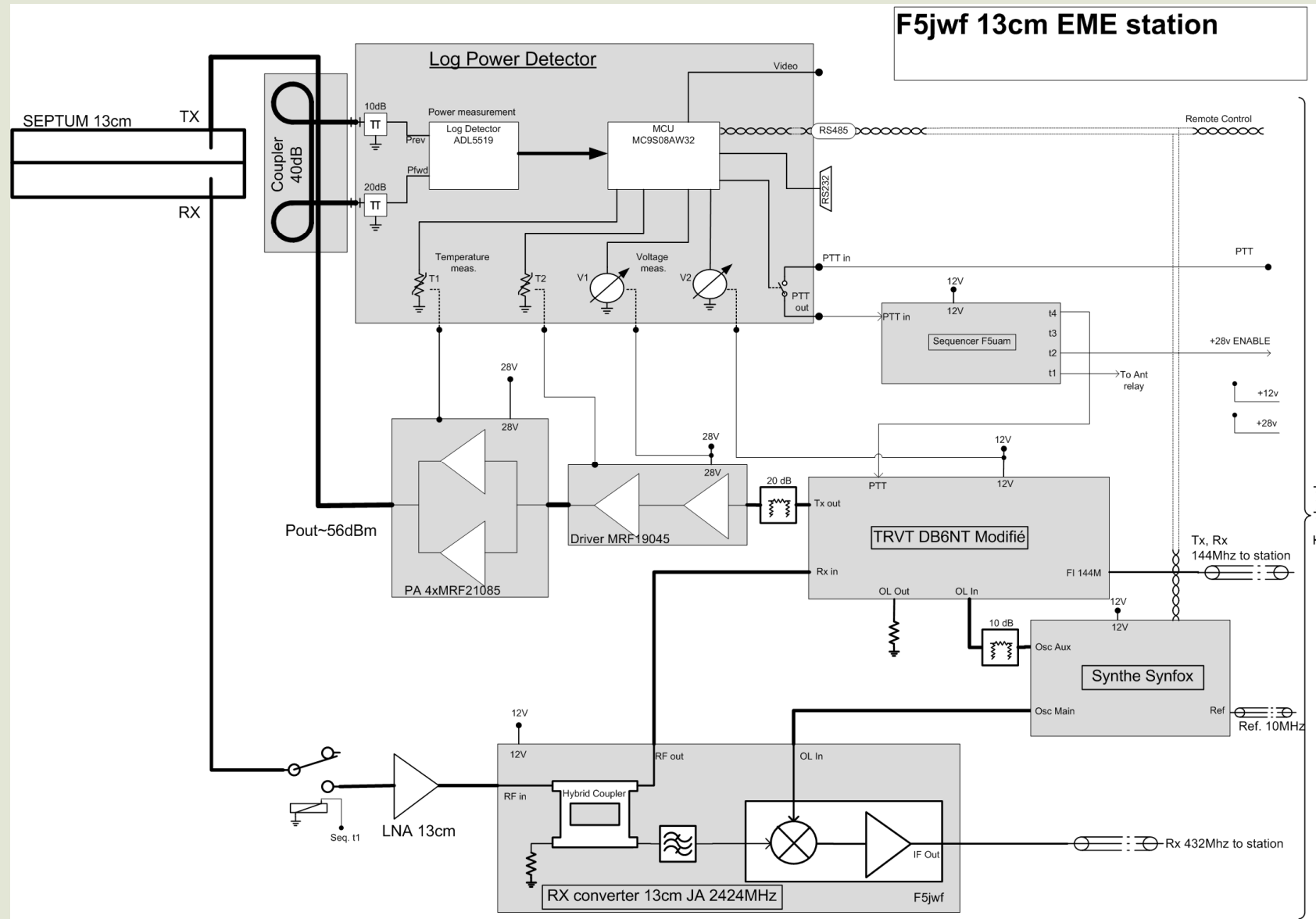
- PCB FR4 0.8mm double side plated hole
- Built in for low cost 74x74 shielded box
- SMD component 0402, 0805
- PCB alone or kit available



## Additional Features

- Video output for both channel: DC signal 0..5V proportional to measured power. Can be used to drive a needle meter
- PA and driver temperature measurement with KTY-10 silicium probe
- 2 voltage probe to measure TRVT power supply (typical 12V and 28VDC)
- FAN speed controller
- Detlog can be used as low cost separated power probe in the shack
- Module can be used remotely in automatic test bench by using RS232 command

# Typical application: 13cm EME station



## Additional information

- > Full descriptions of the design: Schematic, layout,...
- > Command descriptions
- > Modules performances
- > Release notes
- > Application notes
- > Kit descriptions

<http://f5jwf.free.fr/detlog.htm>