

## EME with a 3m dish on 1296 MHz MUD 2011

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# W3HMS 23 cm EME

- John Jaminet
- Ham since 1951
- Worked 160 m-47 Ghz no 60 m.
- ATV since 1977
- Microwave Rover since 2000
- VUCC 10 Ghz..13 grids...445 miles
- VUCC 1296 MHz....much EME
- EME started building Jun 06
- QSO #1 on 24 Aug 08...now 229 made.....75 initials.....23 DX

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## Bands and Modes

- 6m-47 Ghz used
- 2m with JT65C easiest/cheapest
- Key modes: CW and WSJT
- CW most ham like...hardest
- Me....as other station desires
- Prefer JT due small dish
- Path loss calculations –237 db!!

## EME Qso Types

- Random
- Prearranged
- QSO liaison ...or not?
- Loggers....HB9Q
- CW es JT65 for me
- See Moon....nice.....not req'd
- Is the other guy at work?

## W3HMS Station in Mech

- 3m/10 ft ex sat TV parabola
- AZ/EL rotation w/indicators
- 4-TV camera for tracking/moon
- 400 watts...DB6NT 500 w, SSPA
- 140, 000 watts ERP
- DB6NT Txcvtr w/10 MHz osc
- .19 db es 36 db gain G4DDK preamp
- RG-393 coax 17 ft RCV es XMT
- IC 756 PRO 3 as 28 MHz IF...SL-USB
- Dell XP.....JT65C....HB9Q Logger

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## EME DISH FEED

- Circular polarization
- VE4MA Super feed with 17 inch ring
- Two probes...XMT es RCV
- LNA after relay ...DC on for rcv.
- .19 db NF es 36 db gain
- Sun noise...how am I doing??
- SDR-IQ for sun noise measure

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## Who can I work?

- Stations with 5-10 m dish and 500 watts.....CW
- Stations with 5 m dishes and 300 w....CW weak .....JT65C at -15 db
- Stations with 2.3 m dishes and 200 watts....OK JT65C to -29 db

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## Lessons I have learned

- Start building younger!
- Build for easy winter repairs
- Band: my choices 2M OR 23 CM
- Buy GOOD parts & units
- Note the offset block on 3m sat dishes....grind before electronics!

## Why do EME

- 1. Because it is there!!!
- 2. Because we can!!!!
- 3. Do MW work in comfort
- 4. QSOs common
- 5. QSOs easier with JT 65
- 6. Hearing your call off moon...priceless

# Challenges

EME is the ultimate ham challenge

Electrical and mechanical tasks

Need tech & mech skills.....time

\$\$\$....tenacity....planning skills

- FACTS

- My dish 10 ft/3 m.....small

- Some dishes 33 ft/10 meters

EME S-9 sigs really like 10 GHz

# Moon Facts

- 450 ,000 miles round trip
- Varies 222-250k miles one-way
- Very large signals sent to moon
- Super weak signals received
- CW and JT65 most common
- Must track moon in AZ and EL
- Adjust for Doppler abt 3 kHz+-

## RF Equipment ?

- RF under dish=short feed lines
  - =bury cables
  - =much metering
  - =more complex
- RF inside=longer feed lines
  - =less metering
  - = simpler
  - =water-cooling easier

## SSPA Protection

- Damage fast....to know=too late!
- Automatic protection required
- I use circulator, 25 ft coax and 200w MILSPEC dummy.
- Digital remote thermometer on amp and dummy.
- It saved 500 w SSPA Nov 10



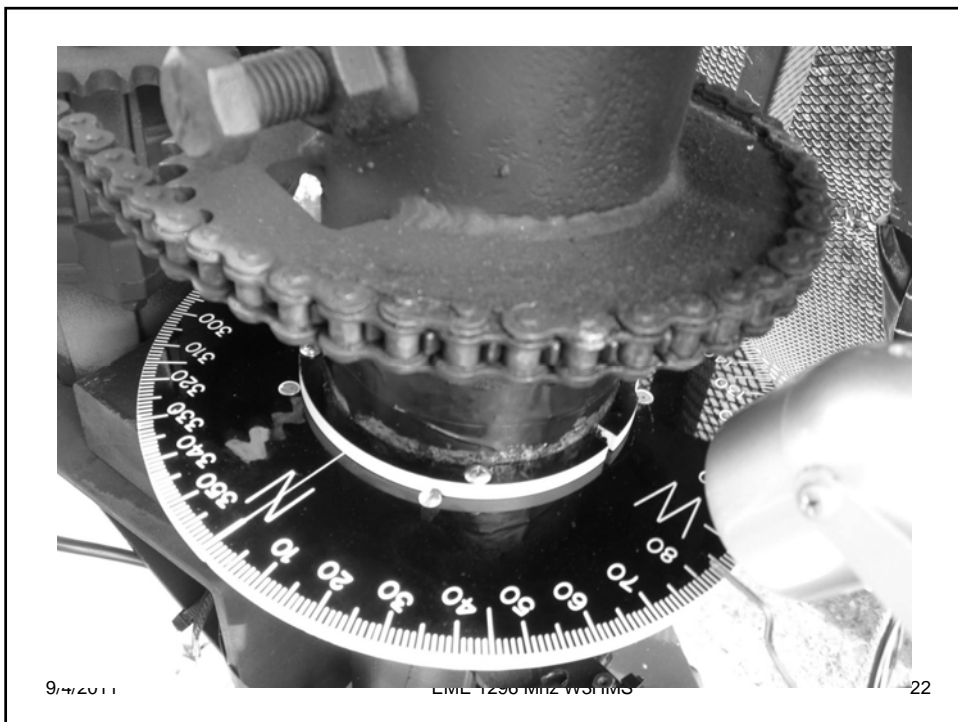
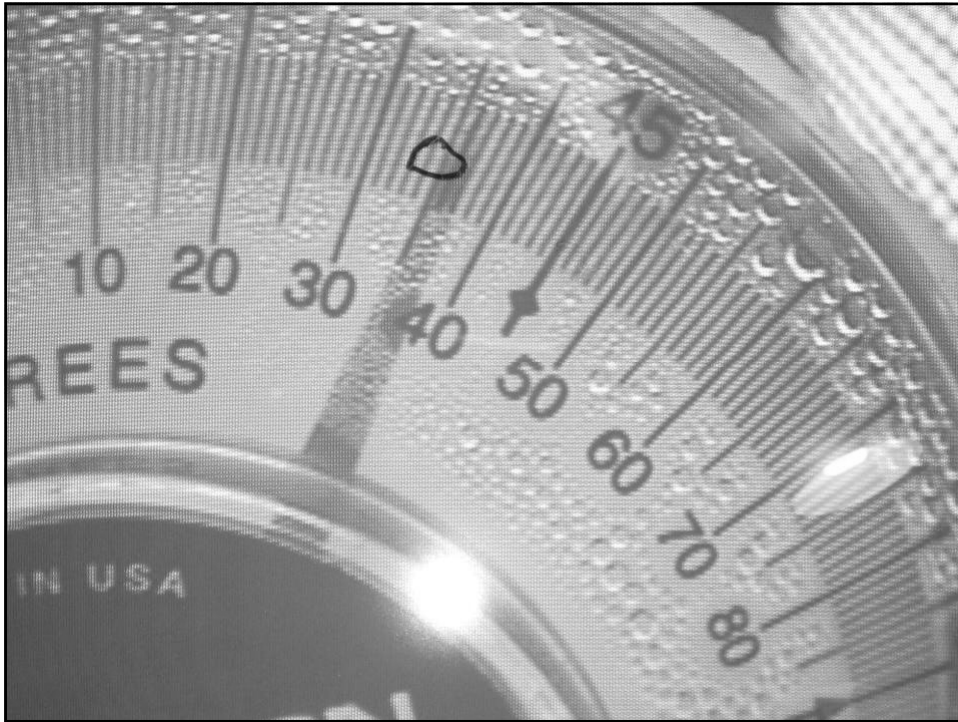
## Facts worth sharing

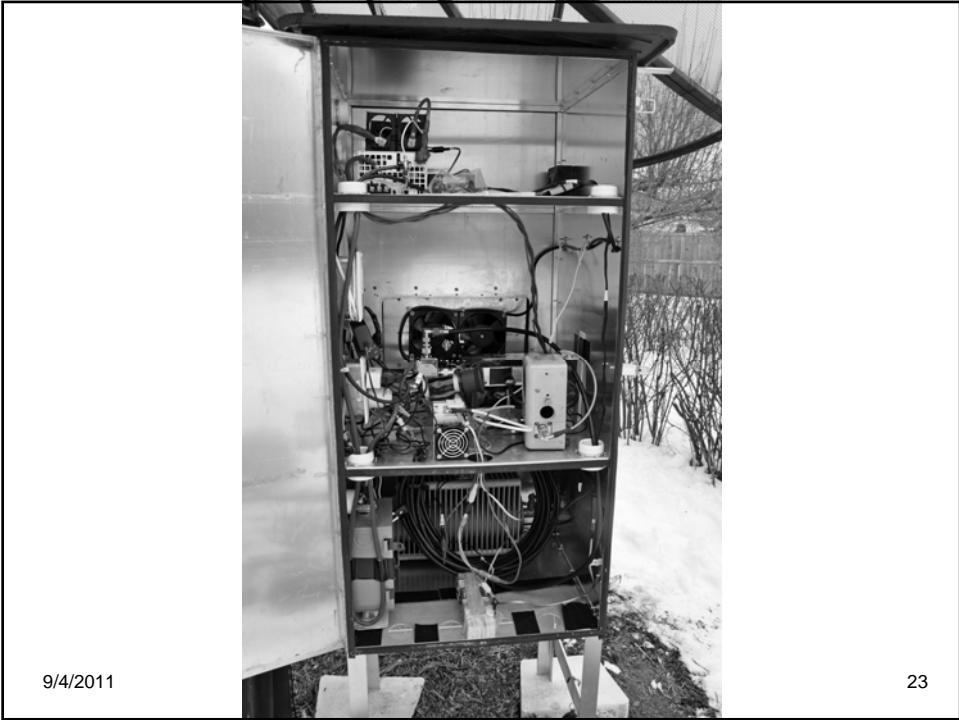
- Probe w/male SMA to relay to LNA
- Use BEST connectors
- Use BEST LNA..G4DDK.....AGO
- Color video cameras and quad display are superb.
- AZ and EL with video work well
- Most PA QSOs w/o moon view

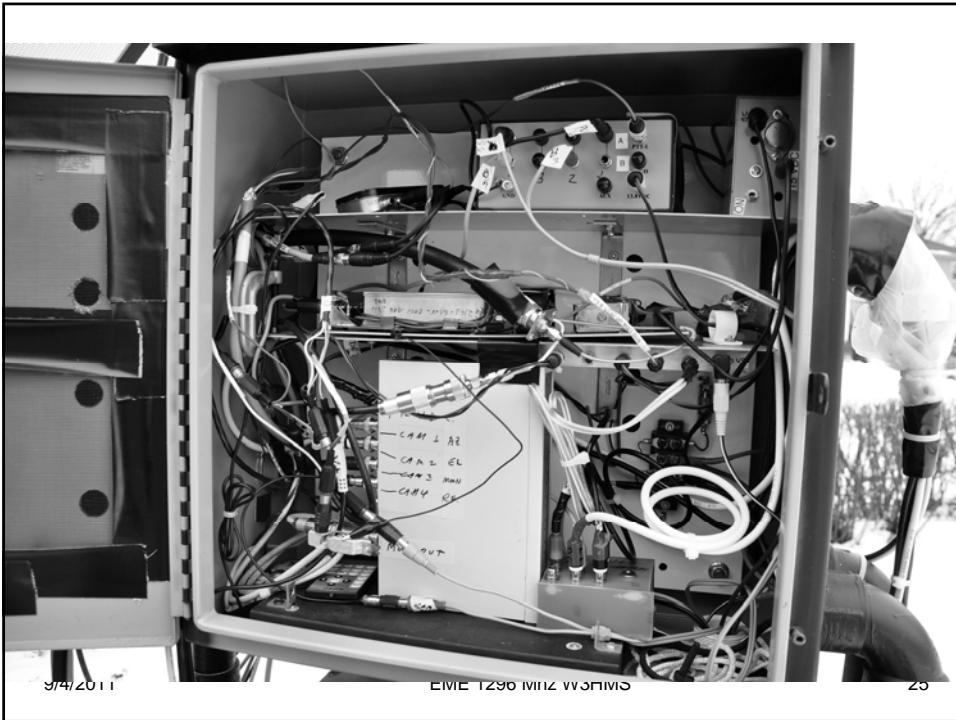
## SSPA versus tubes

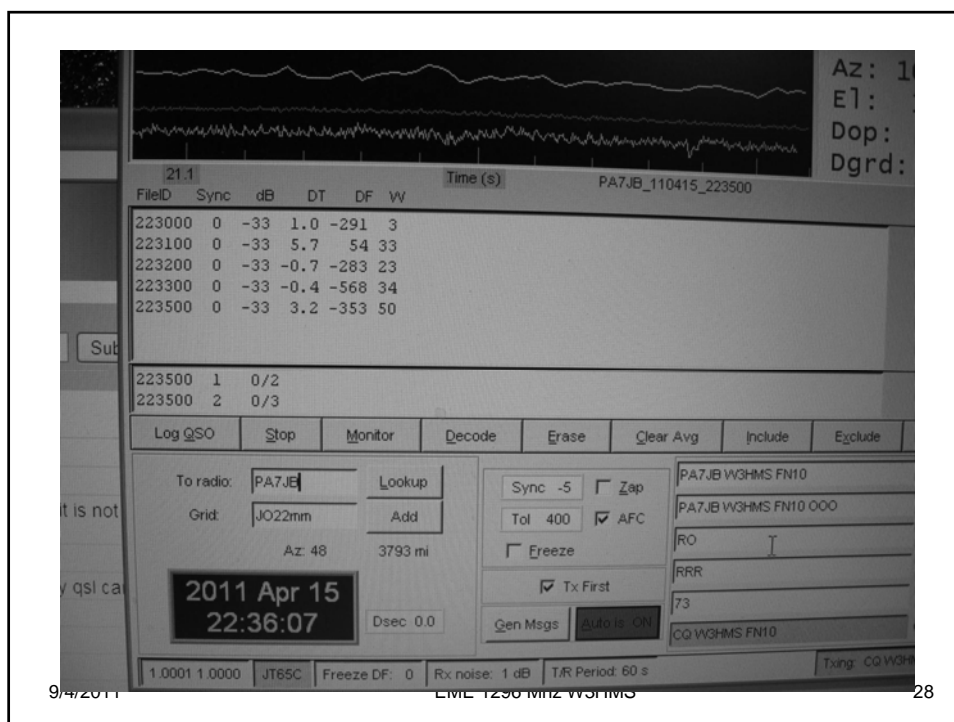
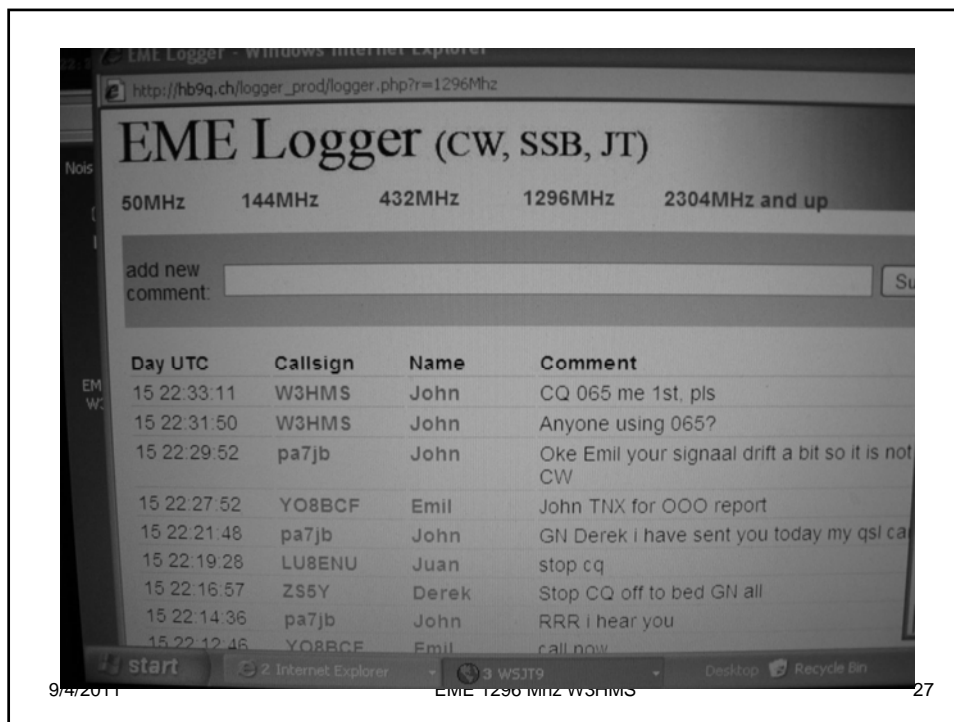
- SSPA smaller but more \$\$\$
- Water cooling inside=doable
- HV more difficult outside...humidity
- HV and H2O don't mix outside
- Tube amps more common
- Tube amps are more HB work
- I chose DB6 NT 500 w amp
- XYL and \$ diplomacy!!!!

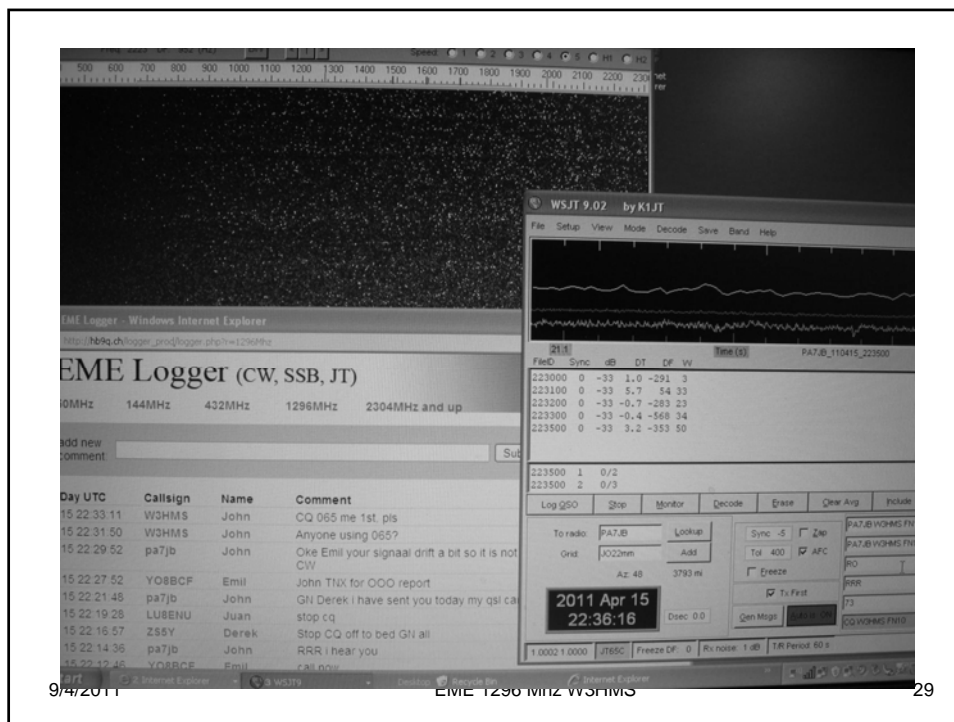












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EME 1290 MHz W3HMS

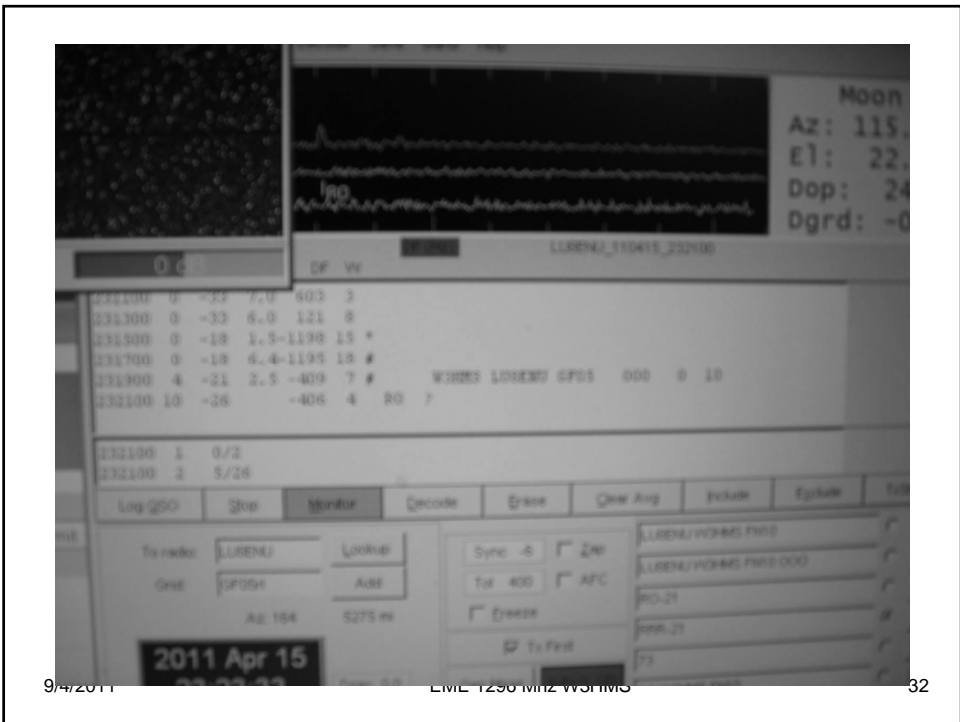
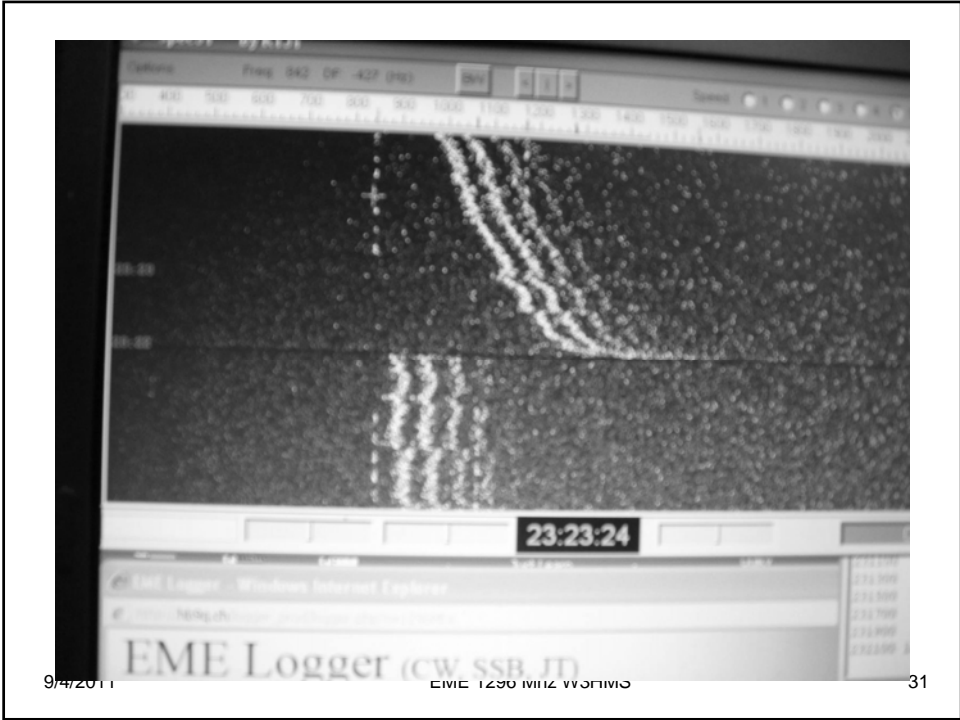
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# HELLENIC AMATEUR RADIO STATION

## SV1DNU



Filippos Tsigaridas ( Filip )  
 Kanari 11  
 GR 15126  
 Maroussi  
 ATHENS  
 GREECE



QTH



To: **W3HMS**

Via: **EME**

Ant: 3m dish  
 LNA: G4DDK  
 SSPA: XRF286(x2)

CQ Zone: 20  
 I.T.U: 28  
 Loc.: KM18vb

With station (for SWL)	DATE	UTC	MODE	BAND	RST
	12 Apr 2011	19:44	JT65C	1296 MHz	"0" -20

☐ Tnx ☒ QSL ☒ Pse

E-mail: [filip\\_sv1dnu@yahoo.gr](mailto:filip_sv1dnu@yahoo.gr)

*Filip*



www.qslprint.gr

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Derek Gravett  
69 Erskine Street  
Scottburgh  
South Africa  
4180

ZS5Y KF59  
Confirming EME QSO with:  
Call: W3HMS  
Date: 17/06/2010  
Time: 19:10  
MHz: 1296  
Mode: JT65  
UR RS(T): -0- (-19)

# VK7MO

Rex Moncur, 16 Woodridge Place, TOLMANS HILL,  
TASMANIA 7007, AUSTRALIA

CONFIRMING 2 WAY <sup>EME</sup> QSO WITH: W3HMS

Date: 28-Jan-2010 Time UTC: 0826  
Frequency MHz: 1296.65 Mode: JT65c  
Report: -26 dB  
Grid Locator QF37 pc

73 Rm.

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## Reality!!!!!!!

- "If easy...all would do it"
- Time consuming
- Costly.....mine abt \$\_\_\_\_\_
- Poorly documented
- Very technical
- Next: Add K-3, P-3, es SL-USB as IF on 28 MHz.

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