


144MHZ - EME

Small EME station for 144MHz Earth-Moon-Earth contacts.

Jan, PA0PLY

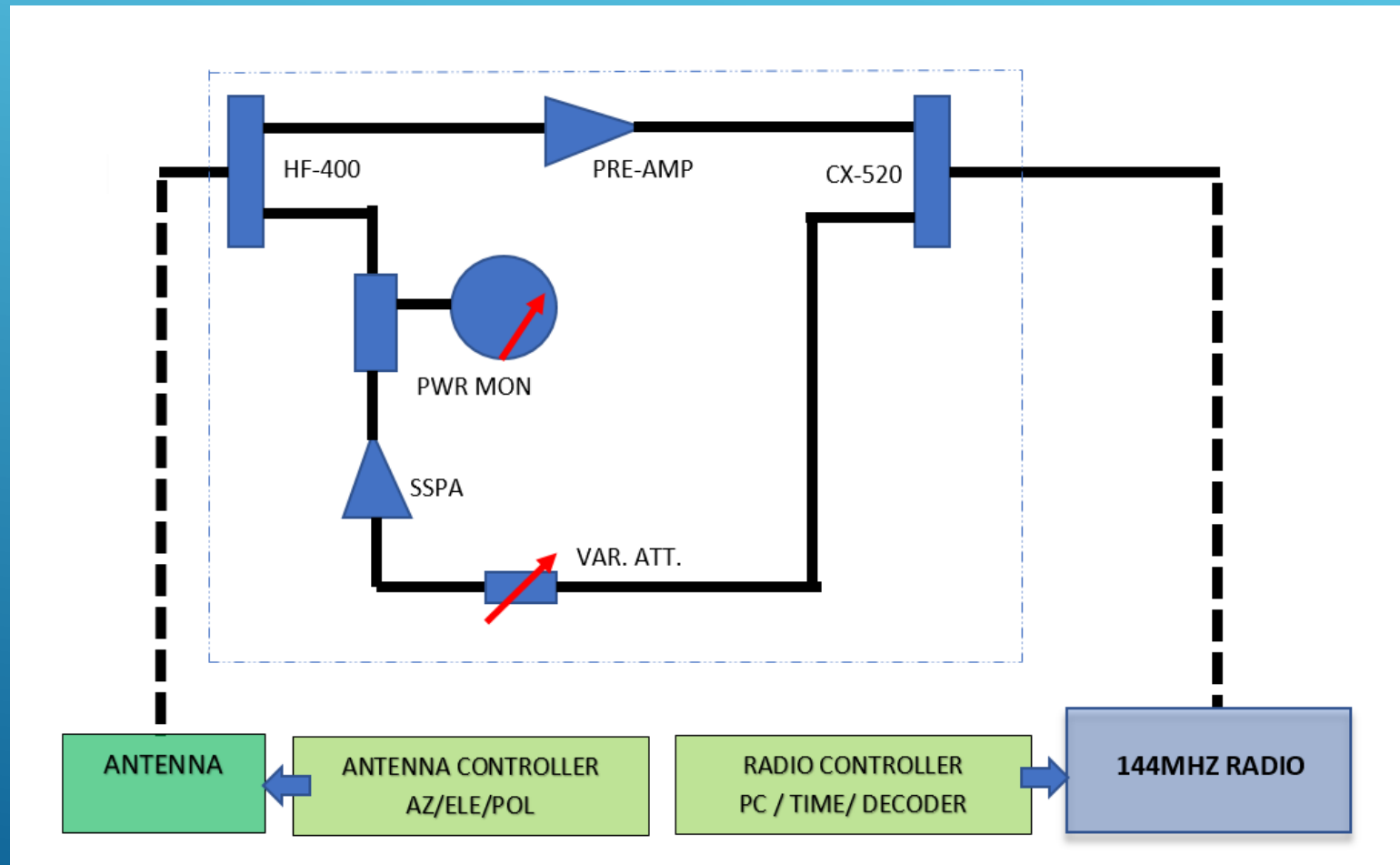
OVERVIEW OF REQUIREMENTS.

- ▶ **System configuration**
 - ▶ **Antenna**
 - ▶ **TRX radio**
 - ▶ **Sequencer**
 - ▶ **Pre-amplifier**
 - ▶ **RF power amplifier**
 - ▶ **Software**
 - ▶ **Results**
- 
- A decorative graphic consisting of several parallel white lines of varying lengths, slanted upwards from left to right, located in the bottom right corner of the slide.

SYSTEM CONFIGURATION



SYSTEM CONFIGURATION



ANTENNA





DK7ZB 9EL.

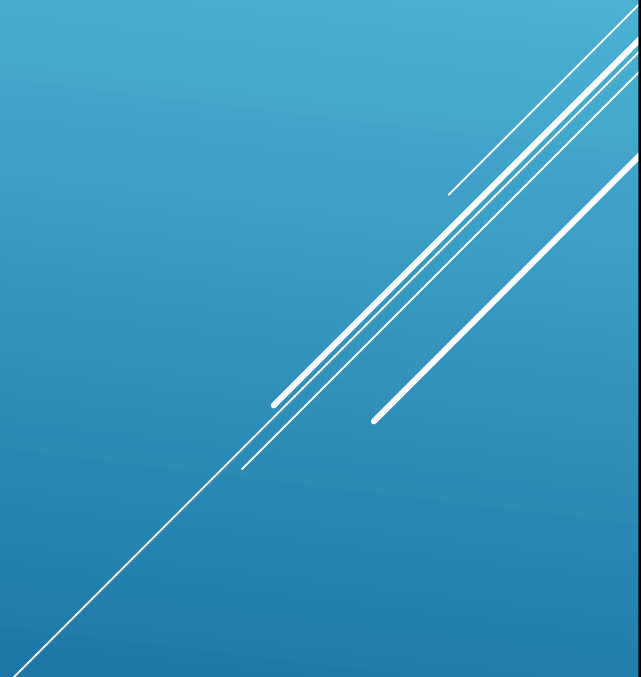
- **LENGTH: 5M**
- **GAIN: 12.4dB**
- **AZ CONTROL**
- **ELE CONTROL**
- **POL CONTROL (OPTIONAL)**
- **BALUN FOR HIGH POWER**



DETAIL ELE / POL CONTROL

- 12 INCH ACTUATOR FOR ELE CONTROL
- STOLLE ROTOR FOR POLARISATION CONTROL
- ELE INDICATION USING VELLEMAN K8035 UP/DOWN COUNTER

TRX - RADIO



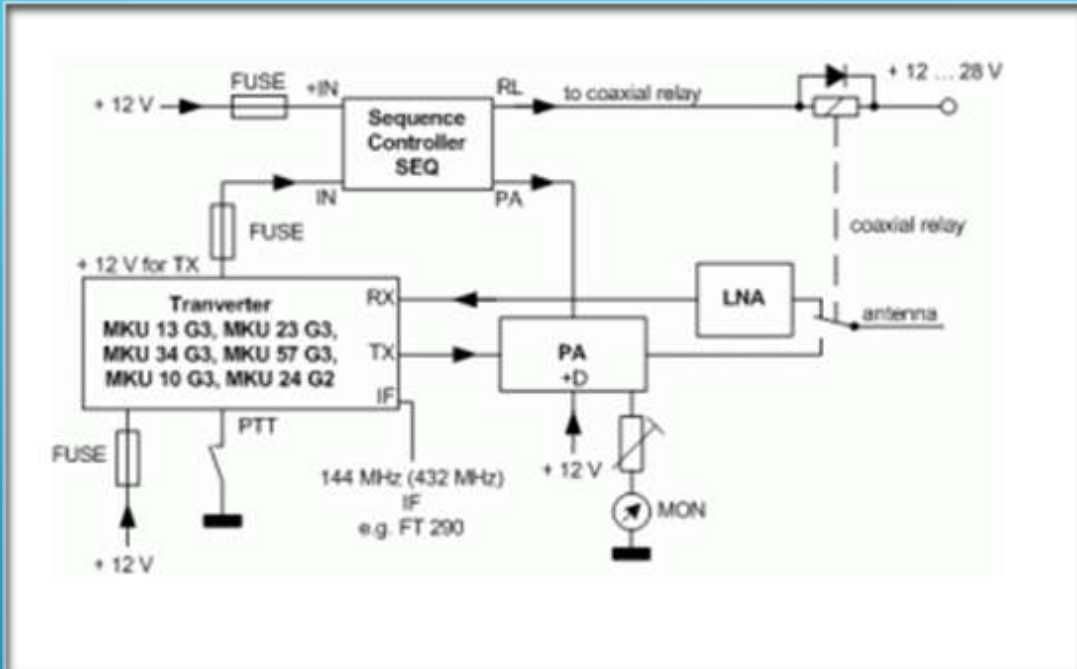


ICOM IC-201

- STABLE FREQUENCY OUTPUT
- ACCURATE FREQUENCY INDICATION
 - Modified VFO using SI-570 device (SDR-Kits)
 - Computer Control for TX/ RX – AUDIO IN/OUT
 - Computer interface: USB-RS232 Stratech 2321F

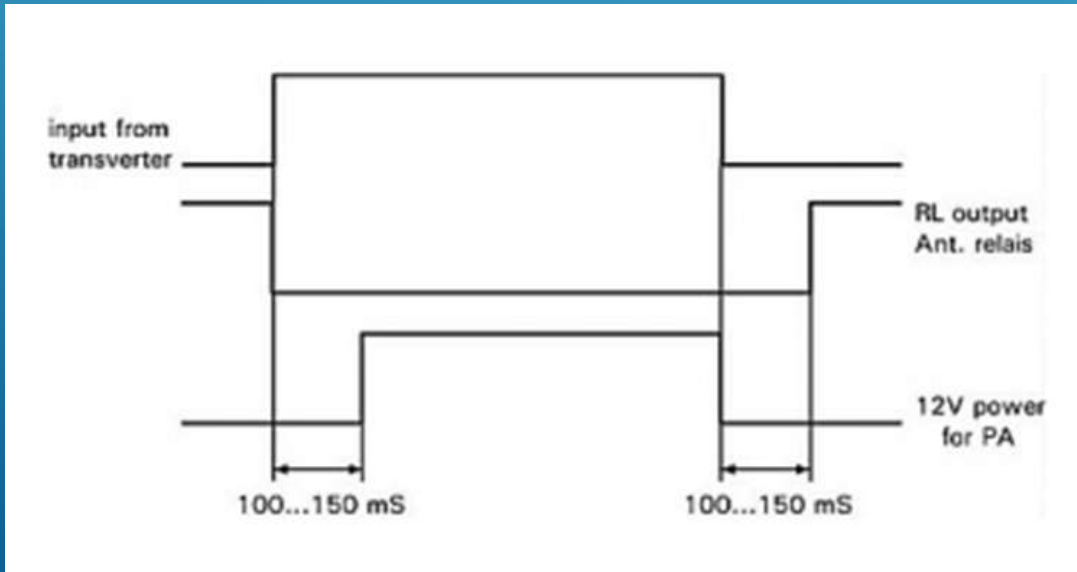
SEQUENCER





DB6NT SEQ-01

- TO PROTECT PRE-AMPLIFIER
- TO PROTECT RF AMPLIFIER
- TO PROTECT RF COAXIAL RELAIS



PRE-AMPLIFIER





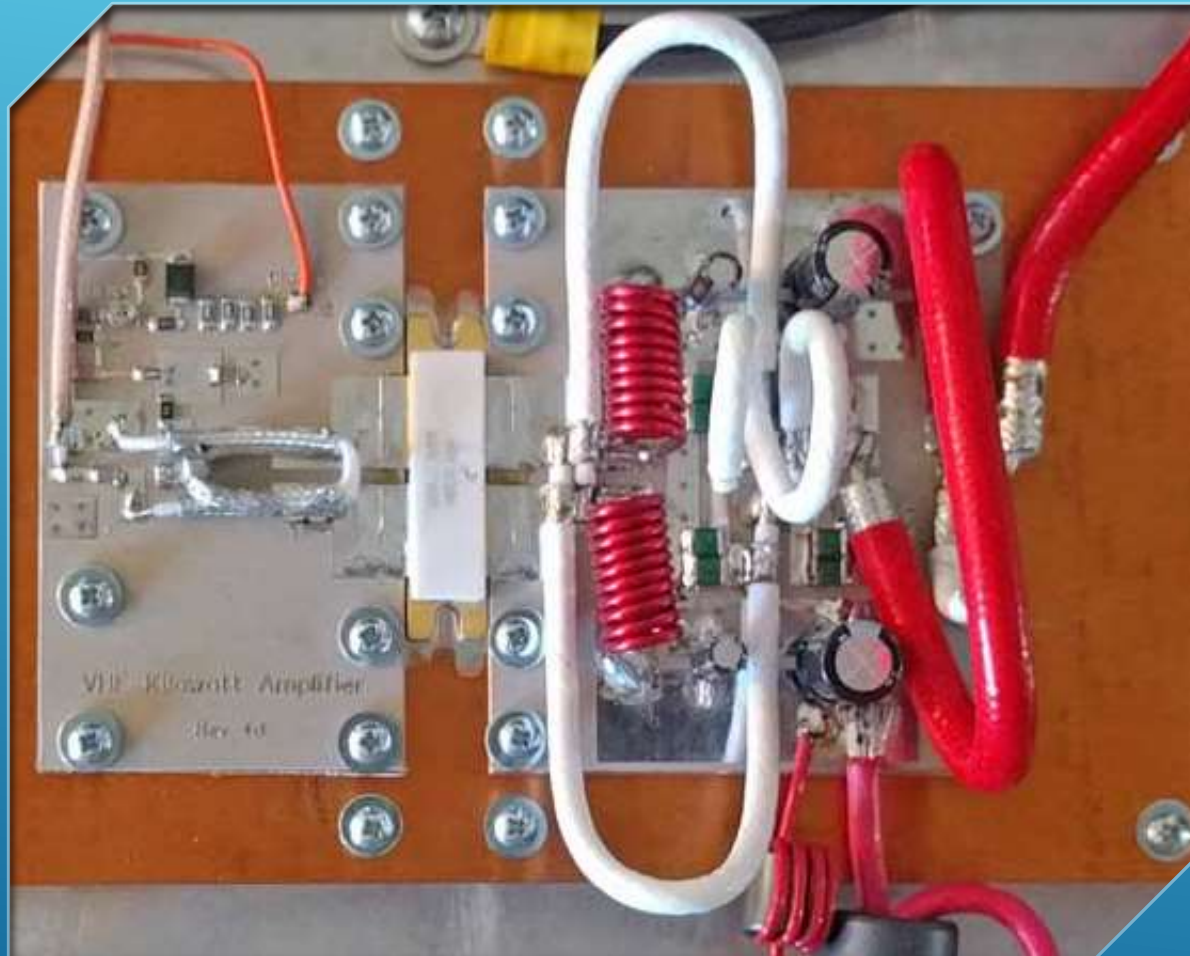
G4DDK PGA144

NF: 0.5dB

Gain: 20 dB (adjustable)

RF - AMPLIFIER

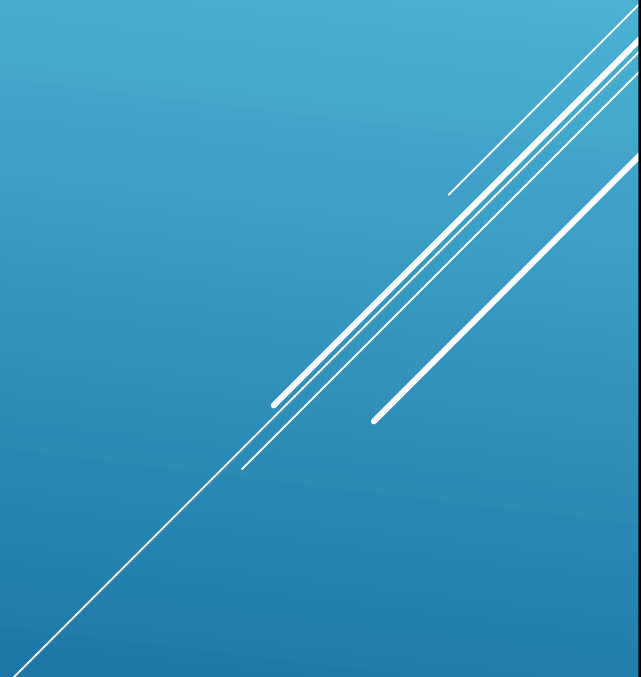




W6PQL SSPA

- LDMOSFET application
- Input power: 2Watt maximum
- Output power: > 1kWatt
- Efficiency: 70%
- Supply: 48-50Vdc

SOFTWARE



REQUIRED SOFTWARE PACKAGES

- WSJT – JT65B decoder
- EME - Chatbox N0UK
- Dimension-4 Computer time

The screenshot displays a radio software interface with three main components:

- Chat Window (Top):** A window titled "Distance Bearing Locator" with a "Refresh" button and a "Link back" button. It shows a list of messages from various users, including "D68II/4K11LFBV Juergen", "E338Y/4K11B/LR Gennadi", and "PA0PLY/9EL JO22js".
- Spectrum Analyzer (Middle):** A window titled "Spectrum" showing a frequency spectrum from -900 to 900 kHz. A signal is visible at approximately 1427 kHz.
- Decoder Control Panel (Bottom):** A window titled "WSJT 10.0 #086 by K1JT" showing a "Moon" status box with the following data:
 - Az: 195.57
 - E1: 54.70
 - Dop: -57
 - Dgrd: -4.5Below the spectrum analyzer is a table of signal data:

Freq	Sync	dB	QT	DF	W	Time	ESORF_178817_81308.WAV
000300	0	-33	-0.3	35	3		
000500	0	-28	2.4	3	2		ESORF_178817_81308.WAV
000700	2	-28	2.4	0	3		ESORF_178817_81308.WAV
000900	1	-26	2.3	11	1		ESORF_178817_81308.WAV
001100	1	-28	2.3	16	3		ESORF_178817_81308.WAV
001300	10	-05	19	2	NO	1	ESORF_178817_81308.WAV

Below the table is a control panel with buttons for "Log QSO", "Info", "Decode", "Decode", "Clear Log", "Include", "Exclude", and "Tx Stop". It also shows a "Tx mode" of "ESORF" and a "Grid" of "K029F". A date and time display shows "2017 Aug 17 08:13:54".

FUNCTIONAL TEST



Functional JT65 EME QSO

- JT65 signal: sync + 65 tones
- TX/RX period: 60 sec
- At 50 sec: decoding of rx signals.
- G4CCH signal of -9dB is audible!

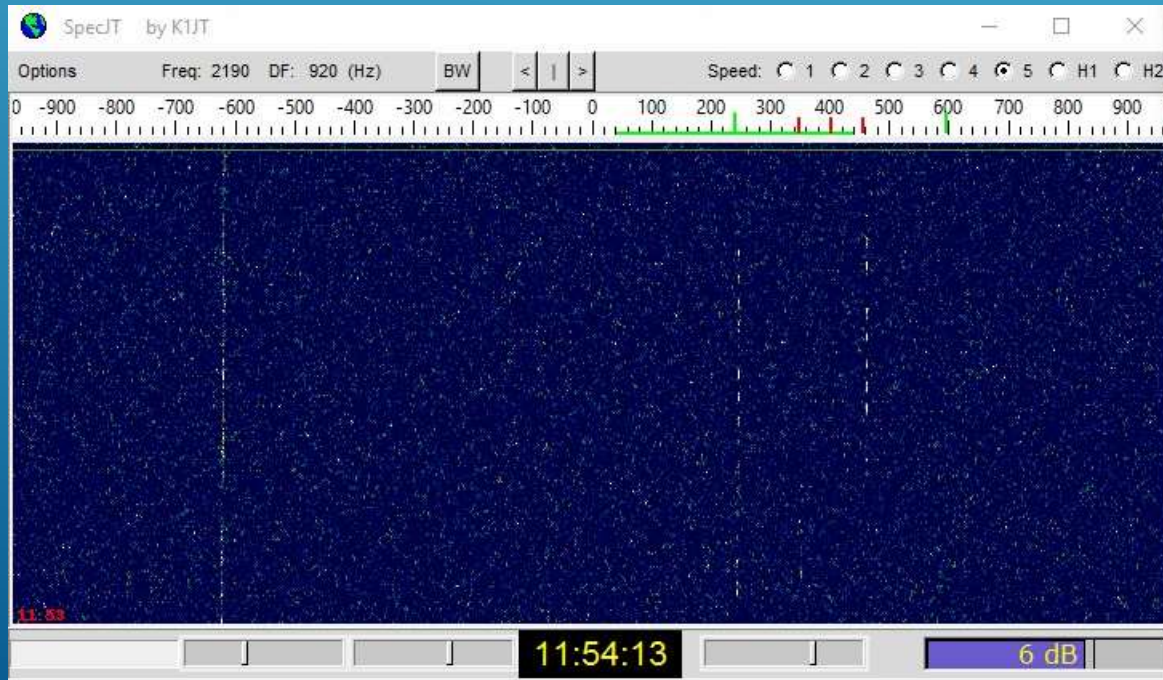


RESULTS





FIRST EME QSO !!



WSJT 10.0 r6088 by K1JT

File Setup View Mode Decode Save Band Help

Moon
Az: 174.82
El: 56.02
Dop: -35
Dgrd: -3.4

OK1UGA_170824_115300.WA

FileID	Sync	dB	DT	DF	W			
114500	0	-32	-0.9	-186	6	*		
114700	1	-24	2.5	226	4	*	PAOPLY OK1UGA JO80	1 10
114700	1	-24	2.5	226	4	*	PAOPLY OK1UGA JO80	1 10
114900	2	-26	2.5	231	3	*	PAOPLY OK1UGA JO80	0 10
115100	10	-23		239	3	RO	?	
115300	10	-23		247	3	73	?	

115300 2 6/8 PAOPLY OK1UGA JO80 1 10

Log QSO Stop Monitor Decode Erase Clear Avg Include Exclude Tx Stop

To radio: OK1UGA Lookup
Grid: JO80dd Add
Az: 106 849 km

2017 Jun 24
11:54:13
Dsec 0.0

Sync -4 Zap
Tol 200 AFC
 Freeze
 Tx First
Gen Msgs Auto is OK

OK1UGA PA0PLY JO22 Tx1
OK1UGA PA0PLY -24 Tx2
OK1UGA PA0PLY R-24 Tx3
RRR Tx4
73 Tx5
CQ PA0PLY JO22 Tx6

1.0000 1.0000 JT65B Freeze DF: 242 Rx noise: 6 dB T/R Period: 60 s Txing: 73

WSJT EME Link by NØUK | LiveCQ | Zoeken | [Distance/Bearing Locator](#) | [Refresh](#) | [Look back](#) | [Update User details](#) | Jan, PA0PLY/9EL JO22js | Refreshed 17Aug 11:29

Exchanging any contact details on here before you're complete, invalidates the contact, and, if it's not WSJT via Moonbounce it doesn't belong here!

Enter your message here Go!

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DDMMM UTC
17Aug 11:29 Yes that is also a problem. Just get one ===== {VE1KG Serge xx FN84cm 96.30.157.163}
17Aug 11:28 Stop CQ ===== {DL1VPL/12/750 Thomas xx JO61ua 80.132.87.209}
17Aug 11:28 stop cq 130 ===== {LU8ENU Juan xx GF05r1 186.108.76.58}
17Aug 11:28 VE1KG Serge the issue is no preamp! ===== {N1BUG/1X11/1500 Paul ME FN55mf 72.224.254.201}
17Aug 11:27 Paul N1BUG you are running too much power for one antenna that is the issue ===== {VE1KG Serge xx FN84cm 96.30.157.163}
17Aug 11:27 PLY Jan 4x3WL jmv-hark 2x 3CX800 all home made ===== {PA0JMV Joop xx JO21pm 82.95.154.122}
17Aug 11:27 DK5EW rgr, is noch einiges zu basteln hi...bin auch gespannt ===== {DL8FBD Ge}
17Aug 11:26 112500 1 -25 2.4 -3 3 * CQ LU8ENU GF05 0 2 ===== {UT9T}
17Aug 11:26 Jan ik zag nauwelijks tropo van jou, EME sig was harder ;-) ===== {PA0JMV Joop}
17Aug 11:26 ***** CQ 144.133, I tx first ***** ===== {DK3WG/6X14/KW Jurg xx JO7}
17Aug 11:26 CQ 144149 1ST ===== {RA9CHL/4X10/800 Victor xx LO97wv 213.151.5.61}
17Aug 11:25 DK3WG/6X14/KW Jurg Priwet tnx rpt ===== {RA9CHL/4X10/800 Victor xx LO97wv 213
  
```

WSJT 10.0 r6088 by K1JT

File Setup View Mode Decode Save Band Help

Moon
Az: 254.52
El: 34.22
Dop: -207
Dgrd: -4.4

FileID	Sync	dB	DT	DF	W	DF (Hz)	F4DJK_170817_112900.WAV
112500	1	-21	2.5	-318	3 *		PA0PLY F4DJK JN15 1 10
112500	0	-33	0.8	-436	36		
112500	1	-21	2.5	-318	3 *		PA0PLY F4DJK JN15 1 10
112700	4	-23	2.7	-315	3 *		PA0PLY F4DJK JN15 1 10
112900	6	-18	2.5	-310	3 *		PA0PLY F4DJK JN15 1 10
112900	5	-18	2.7	-398	0 *		PA0PLY F6HVK JN27 1 10

112900 2 11/15 PA0PLY PA0JMV JO21 1 0

Log QSO Stop Monitor Decode Erase Clear Avg Include Exclude Tx Stop

To radio: F6HVK Lookup
Grid: JN27lh Add
Az: 179 606 km

2017 Aug 17 11:30:41 Dsec 0.0

Sync -10 Zap
Tol 50 AFC
 Freeze
 Tx First
Gen Msgs Auto is ON

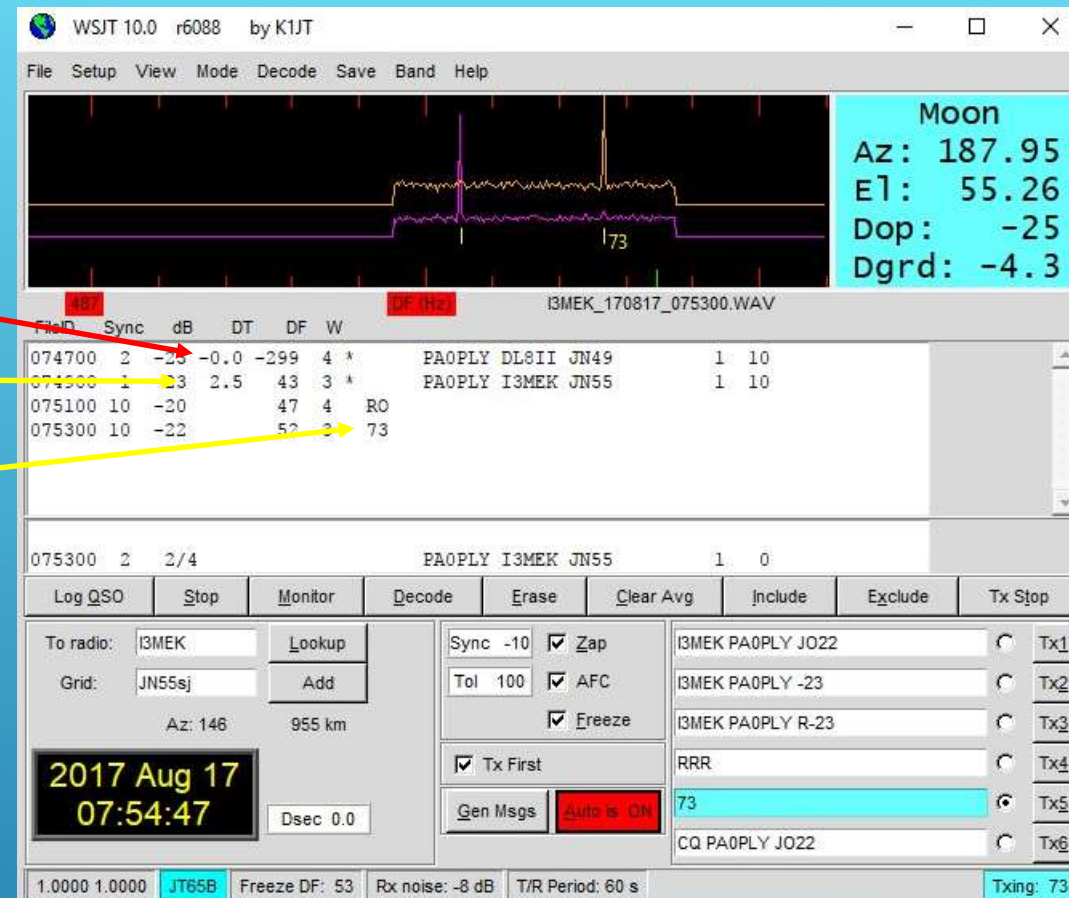
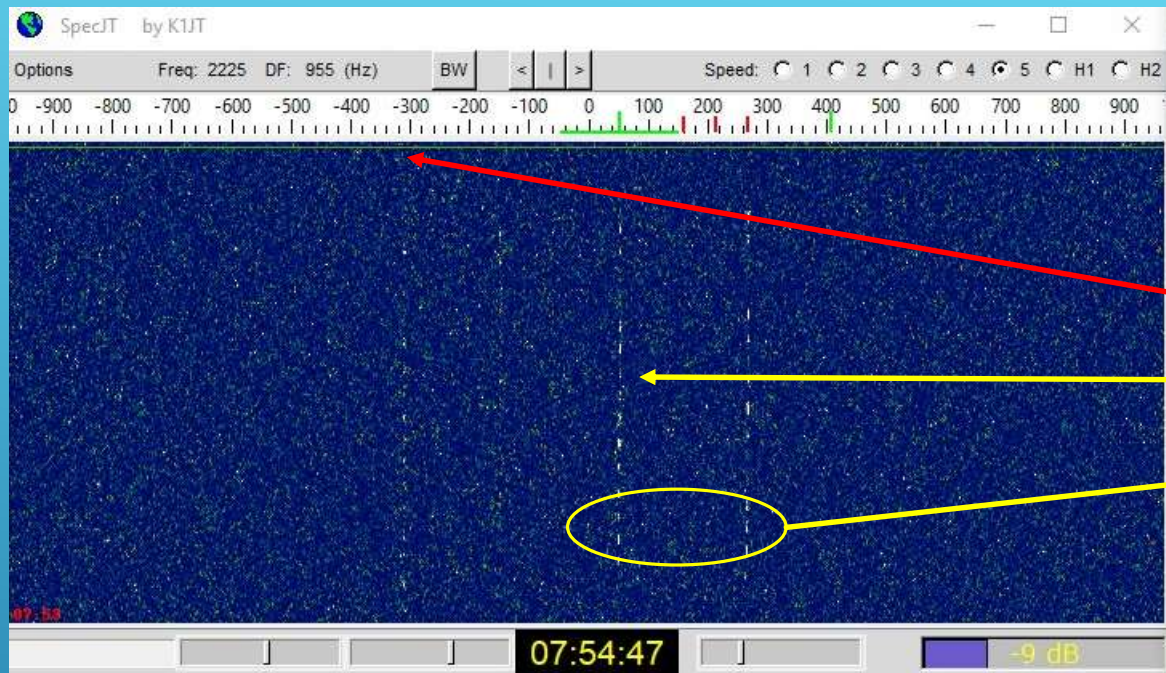
F6HVK PA0PLY JO22 Tx1
F6HVK PA0PLY -18 Tx2
F6HVK PA0PLY R-18 Tx3
F6HVK PA0PLY RRR Tx4
F6HVK PA0PLY 73 Tx5
CQ PA0PLY JO22 Tx6

1.0000 1.0000 JT65B Freeze DF:-396 Rx noise: 2 dB T/R Period: 60 s Txing: F4DJK PA0PLY -21

SpecIT by K1JT

Options Freq: 1972 DF: 702 (Hz) BW Speed: 1 2 3 4 5 H1 H2

11:30:41 1 dB



Signal of DL8II is on DT -0.0 => Tropo signal DF=-299

Signal of I3MEK is on DT 2.5sec => Moon Echo DF=43

Decoded "73" message is an easy to recognize shorthand message. (so is "RO")

Thanks for your attention

Good Luck and CU off the moon!

73's

Jan PA0PLY

A decorative graphic consisting of several parallel white lines of varying lengths, slanted upwards from left to right, located in the bottom right corner of the slide.