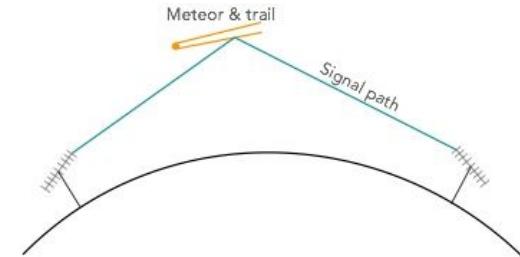
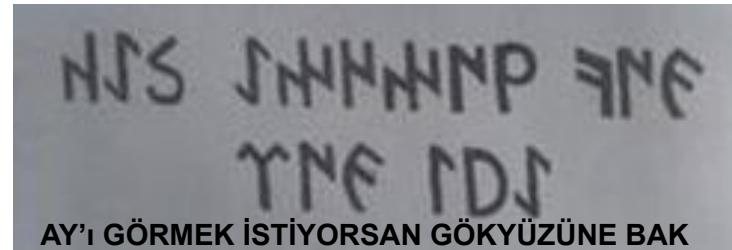
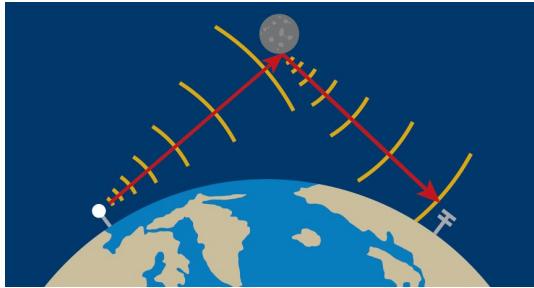


VHF/UHF/SHF

AY YANSITMASI

METEOR YANSITMASI



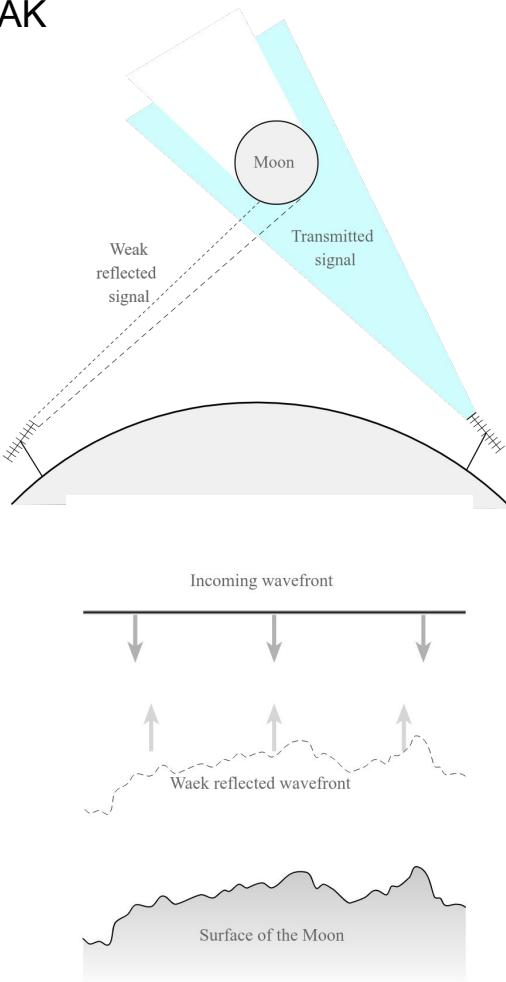
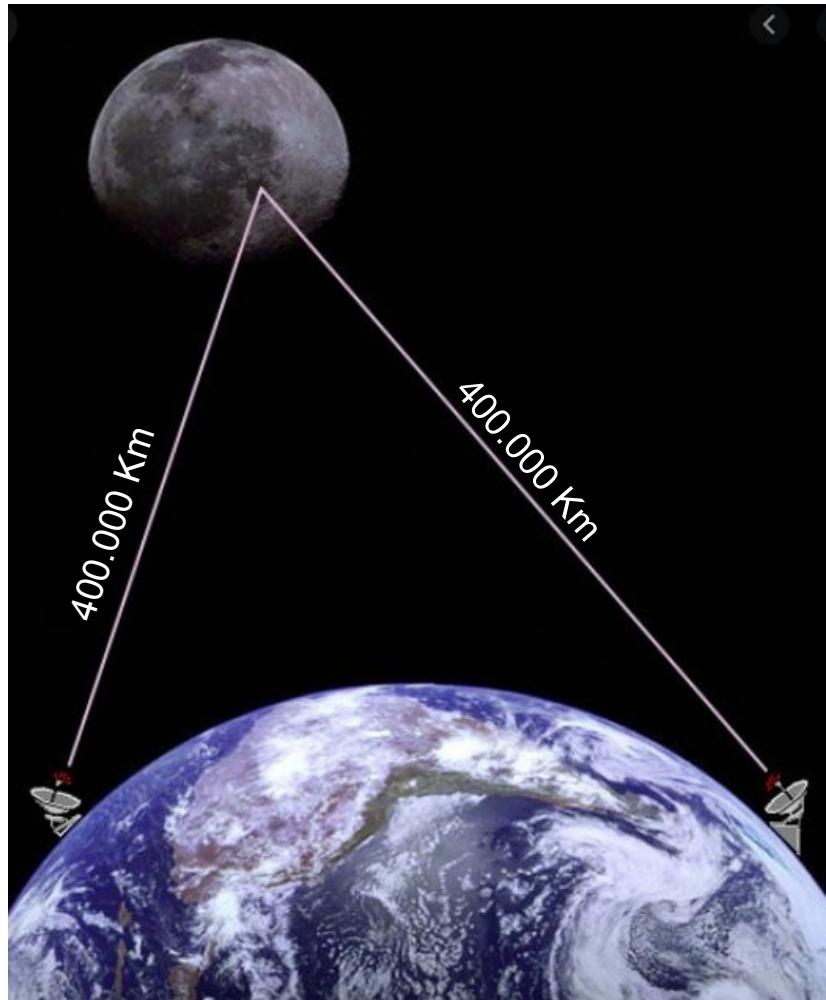
Mehmet Kadri Başak (TA1D)
Oğuzhan Kayhan (TA2NC)
Barış DİNÇ (TA7W/OH2UDS)

Sunum Akışı

- Ay Yansıtması nedir ?
- Meteor Yansıtması nedir ?
- Ay yansıtması ile Meteor Yansıtmasının ortak yönleri ve farkları nelerdir ?
- Teçhizat seçiminde dikkat edilecek hususlar nelerdir ?
- Kullanılan Yazılımlar nelerdir ?
- Yazılımların Temel Ayarları nasıl yapılır ?
- ON4KST CHAT ve diğerleri
- QSO Nasıl Yapılır ?
- Ay'ın durumları ve QSO zamanlarının seçimi nasıl yapılır ?
- Meteor Çalışması ne zaman yapılır ?
- GRAVES Radar nedir ? Ne işimize yarar ?
- Yazılım ve cihazların canlı tanıtımı (bir istasyon gezelim)
- Ay yansıtması / Meteor yansıtması canlı gösterim



AY'DAN SİNYAL YANSITMAK



Tarihçe

Dünya-Ay-Dünya (Earth–Moon–Earth : EME) Haberleşmesi

Sinyaller için Ay yüzeyinin bir yansıtıcı olarak kullanılması **fikri** W. John Bray (1940)
İlk EME'nin Amerikalılar tarafından yapıldığı rivayet edilmektedir ancak radar denemeleri esnasında Alman
Telefunken mühendislerinin ay yüzeyinden yansıttıkları sinyallerin kaydı tutulmuştur.

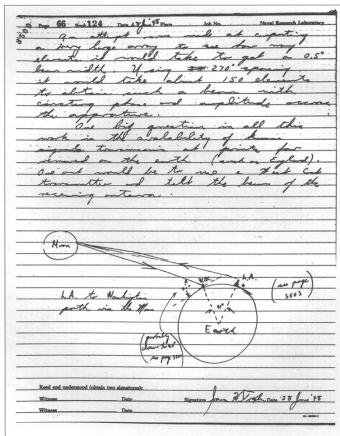
1946 - PROJECT DIANA (Amerika)

1946 - Zoltan Bay (Macar)

1946 - İlk teletype röle linki - Pearl Harbour

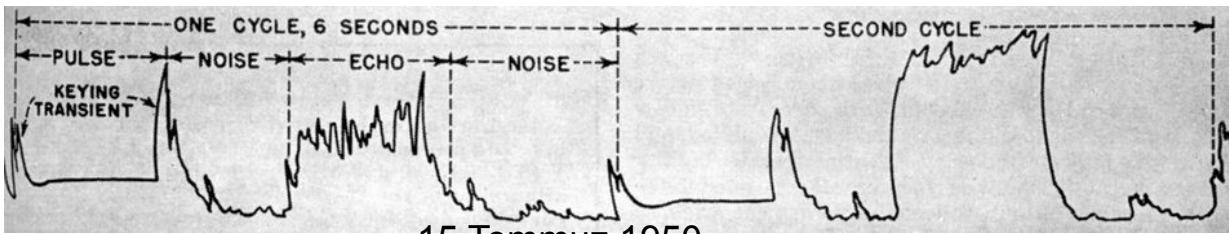
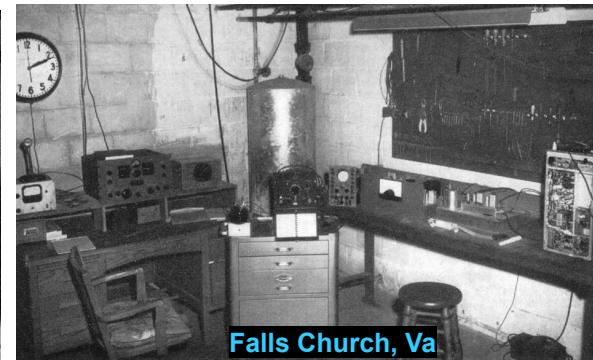
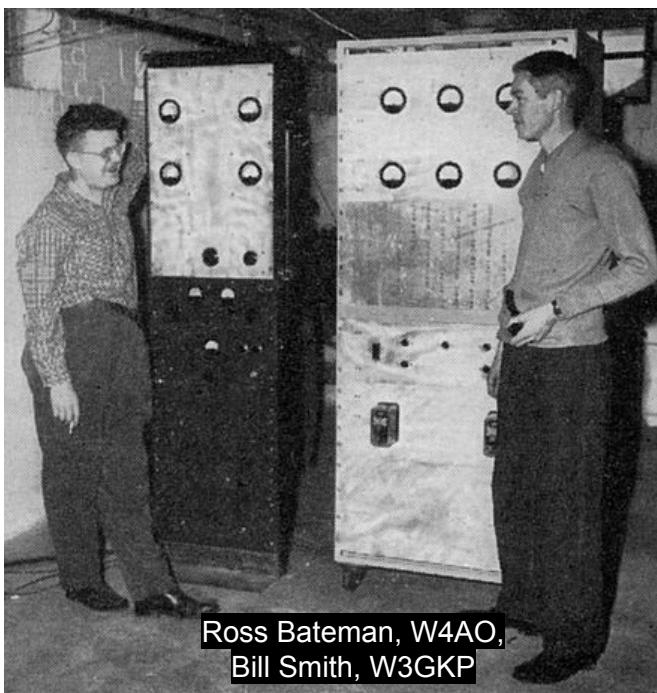
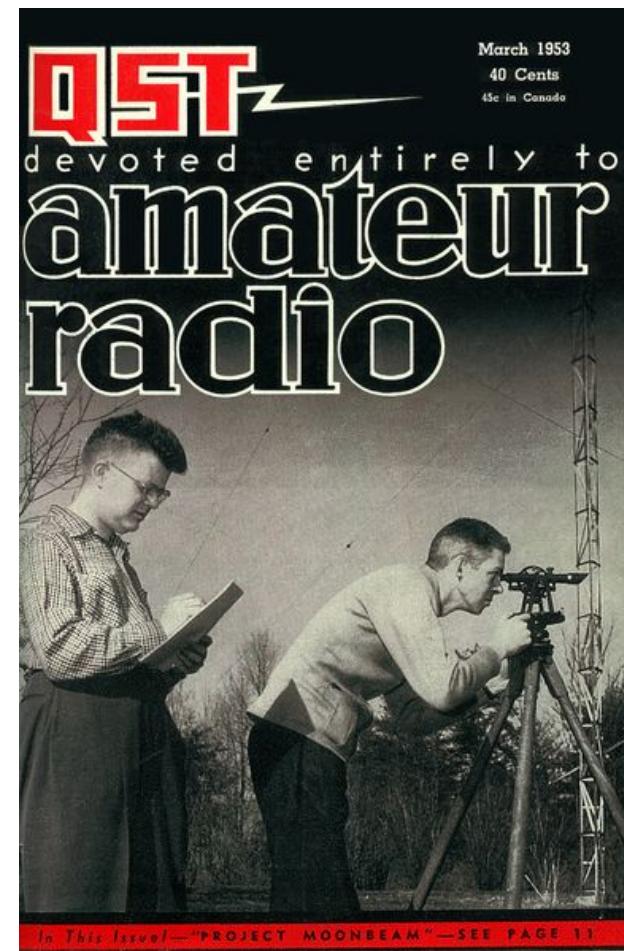
(!!! Sputnik Uydusu 1957 !!!)

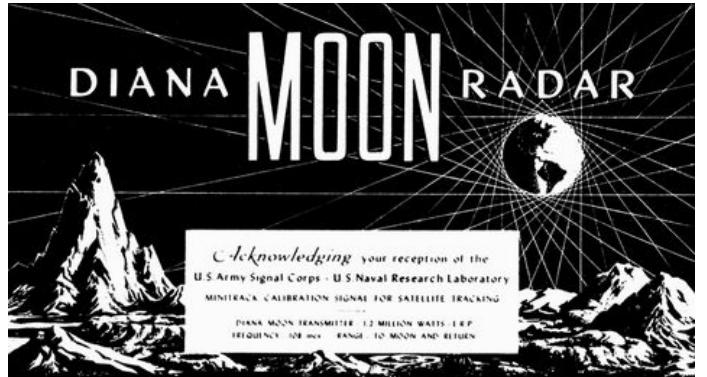
1953 : İlk amatör Ay Yansıtması Görüşmeleri



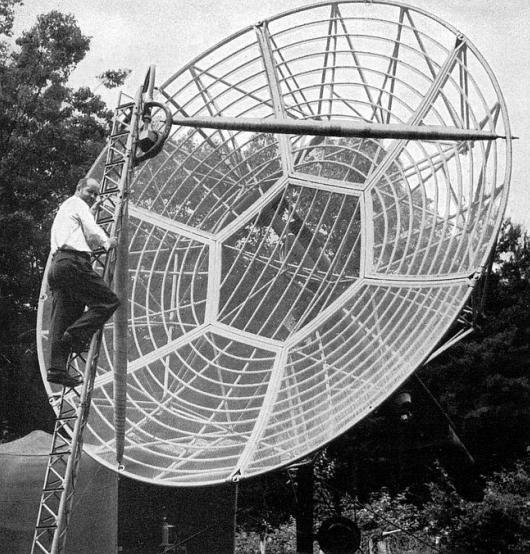
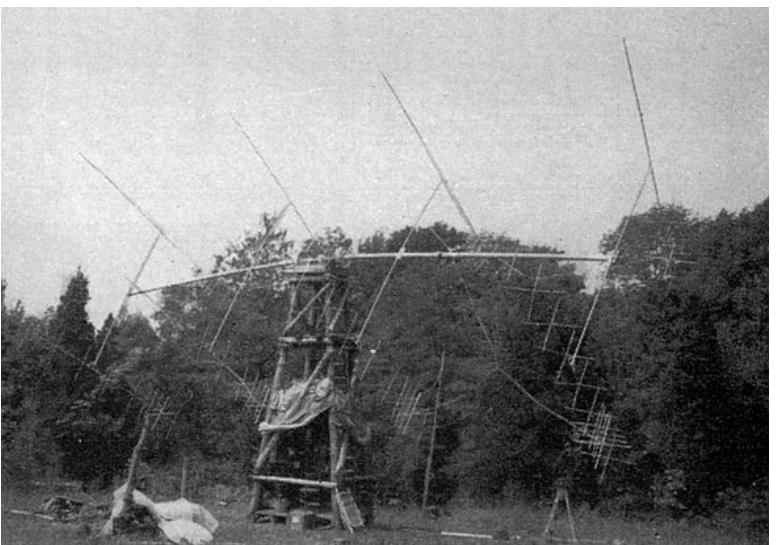
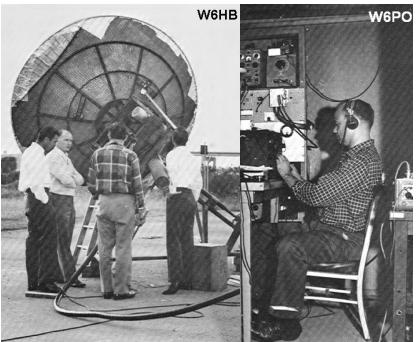
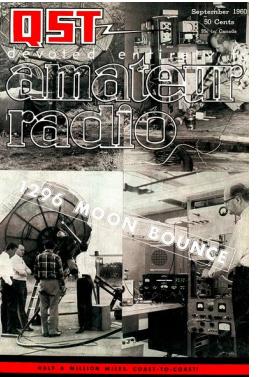
Communication Moon Relay projesinde aydan aktarılan açılış resmi

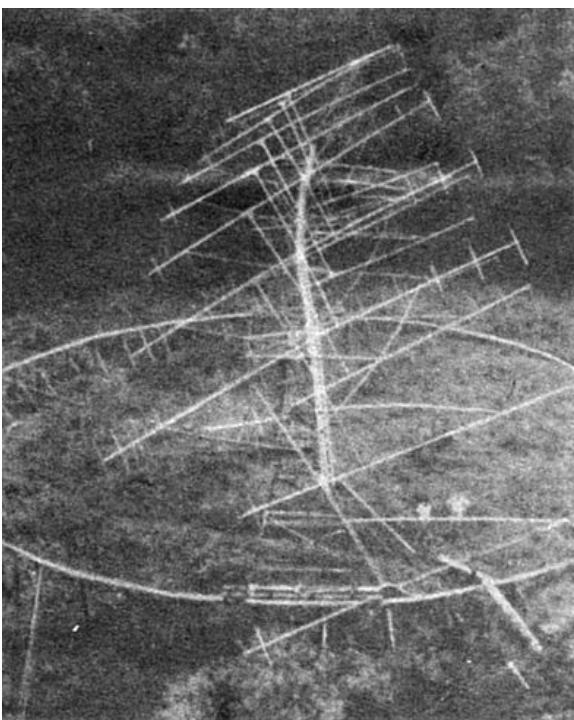
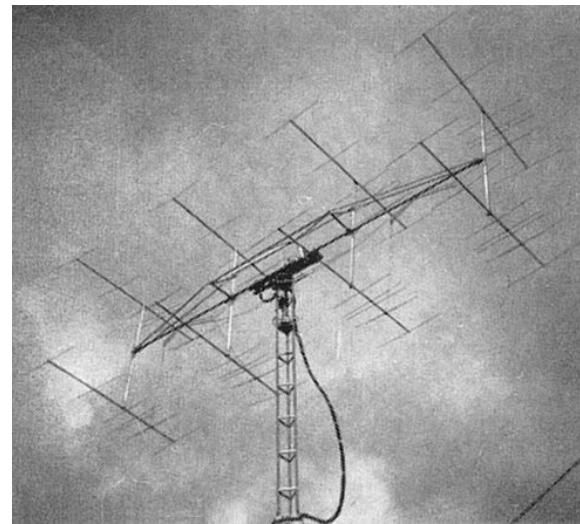
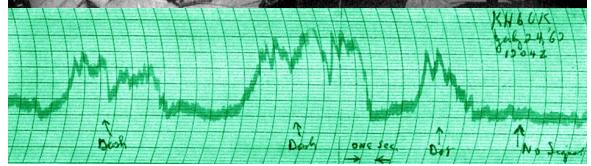
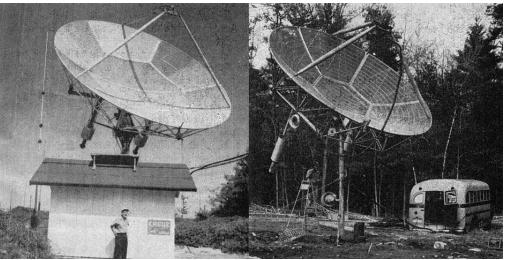
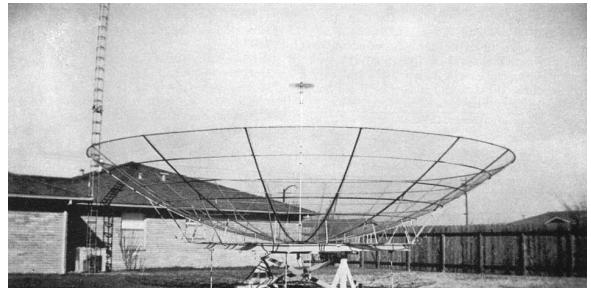
Amatörler ve E.M.E.





THE UNITED STATES ARMY SIGNAL ENGINEERING LABORATORIES
FORT MONMOUTH, NEW JERSEY U.S.A.



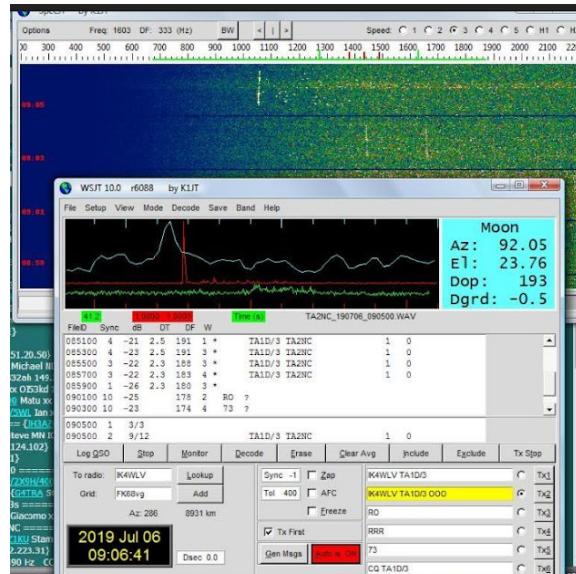


Türkiye'de EME



Türkiye içinde ilk EME QSO'su 6 Temmuz 2019 TA2NC(KM69)-TA1D/3 (KM39) (800.000KM)

Time	Grid	Lat	Lon	Mode	TX	TX	TX	VHF d1*
085000	3	-25	2,3	374	2	TA1D/3	KM39	1645
085000	3	-24	2,3	374	2	TA1D/3		1645
085000	3	-24	2,3	374	2	TA1D/3		1645
085000	0	-1	4,3	345	7			1616
090200	0	-27	2,3	374	2	TA1D/3		1616
095400	0	-3	-1,8	339	2			1624
095400	0	-33	-1,8	459	2			1630
085600	0	-29	-1,9	415	2			1636
085800	0	-33	-0,7	388	2			1639
090000	0	-25	2,4	379	2	TA2NC	TA1D/3	1639.000
090000	0	-24	2,4	379	2	TA2NC	TA1D/3	1639.000
090200	0	-28	-1,0	380	2			1651
090200	0	-29	-0,3	383	2			1654



7 Place

We take pleasure in awarding

this certificate of merit to

TA2NC

in recognition of achievement

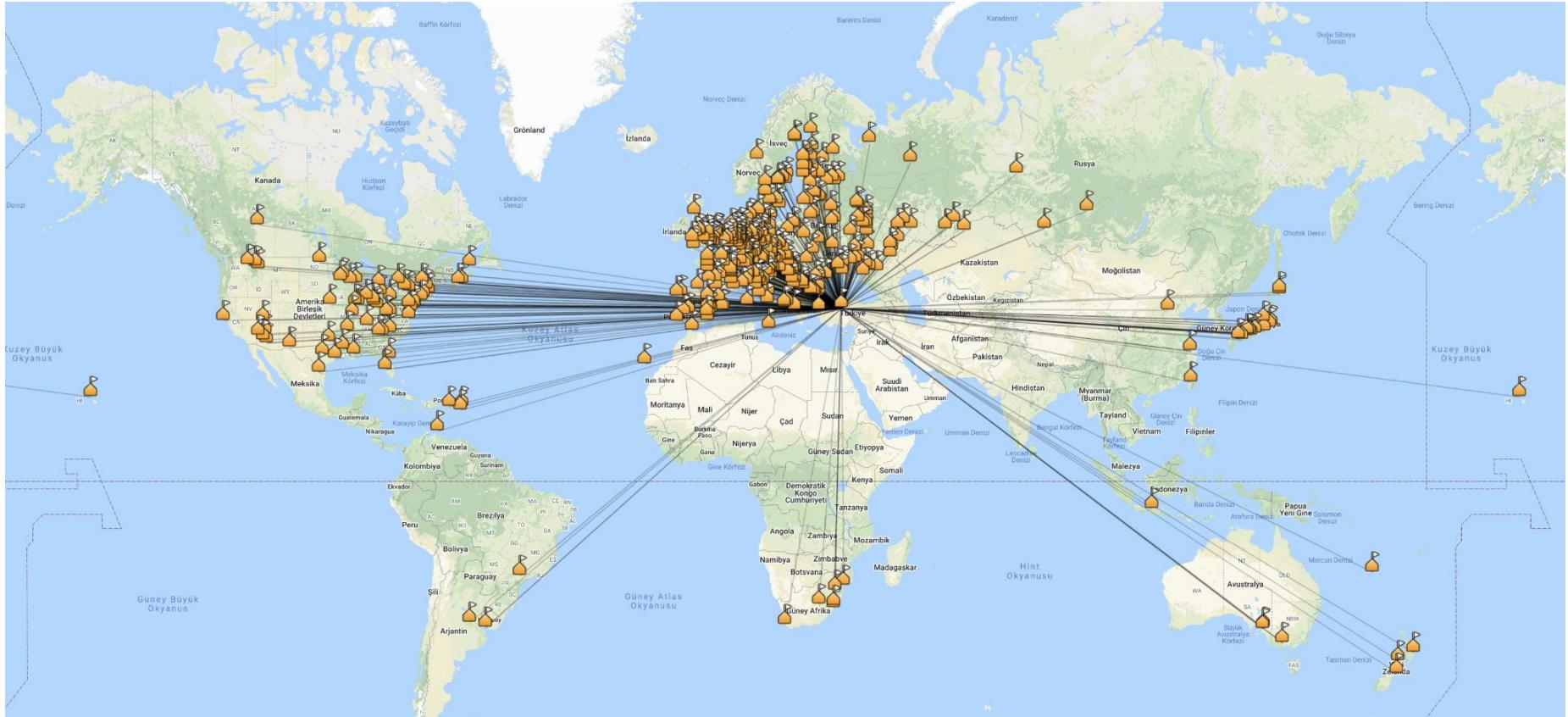
ARI EME Trophy - Spring 2019
144 MHz - Cat. B-Mix

Ari EME Coordinator
Giovanni Baldassari F4WIE

Marsala di Pietrasanta May 10th 2020

E.M.E. ile nerelerle haberleşebilirim ?

Ay'ın dünyaya olan mesafesi ve Ay yüzeyini aynı anda görebilen tüm istasyonlarla “teorik olarak” haberleşebilirsiniz.

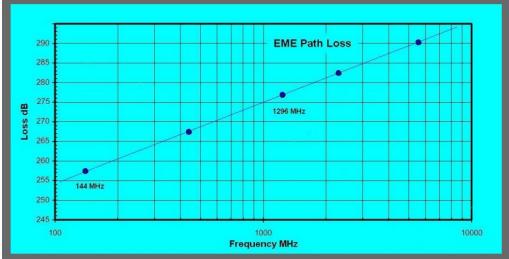


TA2NC tarafından yapılan 2m E.M.E. görüşmeleri

E.M.E. ve M.S. İÇİN HANGİ FREKANSLAR KULLANILIYOR ?

- 50 MHz 6m
- 144 MHz 2m
- 430 MHz 70cm
- 1296 MHz 23cm
- 2320 MHz 13cm
- 3.4 GHz 9cm
- 5.7 GHz 5cm
- 10 GHz 3cm
- 24 GHz 1.2cm

Band	Mean path loss dB
1.3GHz	271.1
2.3GHz	276.1
10GHz	288.9



IARU REGION I 144 MHZ BAND PLAN	
IARU Region 1 bandplan	Usage
144.000 144.035	E.M.E. (SSB & Telegraphy)
144.035 144.150	TELEGRAPHY
144.150 144.400	SSB
144.400 144.440	Beacons
144.440 144.490	Beacons
144.490 144.500	Guard band
144.500 144.800	ALL MODE
144.800 144.850	DIGITAL COMMUNICATIONS
144.850 144.990	DIGITAL COMMUNICATIONS
144.990 144.994	
144.994 145.1935	NBFM REPEATER INPUT, 12.5 kHz spacing, (channel freqs 145.000-145.1875 MHz)
145.1935 145.194	
145.194 145.5935	NBFM SIMPLEX CHANNELS 12.5kHz spacing, (channel freqs 145.200-145.5875 MHz)
145.5935 145.594	
145.594 145.7935	NBFM REPEATER OUTPUT, 12.5kHz spacing, (channel freqs 145.600-145.7875 MHz)
145.7935 145.800	
145.800 146.000	AMATEUR SATELLITE SERVICE
146.000	see note
145.300	RTTY local
145.500	(Mobile) calling
145.200	see note

IARU REGION I 432 MHZ BAND PLAN	
IARU Region 1 bandplan	Usage
430.000 430.981	NBFM repeater output, channel freqs (F.P.A.), 25 kHz spacing, 1.0 MHz shift
430.075	Repeater input, ch. RS1-250
430.575	Digital communication link channels
430.925	Digital communications repeater channels
430.925	Multi mode channels
431.050 431.825	Repeater input, channel freqs (F.D.O.E.), 25 kHz spacing, 7.6 MHz shift
431.025 431.975	Repeater input channel freqs (F.P.A.), 25 kHz spacing, 1.0 MHz shift
432.000 432.150	Moonbounce
432.050	Telegraphy centre of activity
432.200	Microwave talkback centre of activity
432.500	Narrow-band SSTV
432.600 432.600	INPUT RTTY (FSK/PSK)
432.700	FAX (FSK)
432.800 432.990	BEACONS
432.994	REPEATER INPUT REGION I STANDARD, 25 kHz spacing, 1.0 MHz shift (Channel freq 433.000-433.375MHz)
433.381 433.394	
433.394 433.581	NBFM SIMPLEX CHANNELS, 25 kHz spacing, (Channel freq 433.400-433.575 MHz)
433.581 433.600	
433.600 434.000	RTTY (AFSK/FM)
433.625 433.775	Digital communications channels
433.700	FAX channel (FM/AFSK)
434.000	Frequency of digital experiments as defined on note
434.000 434.594	RTV & REPEATER OUTPUT (station system), 12.5 kHz spacing, 1.0 MHz shift, (Channel freq 434.600-434.975MHz)
434.594 435.981	
435.981 438.000	ATV & SATELLITE SERVICE
438.000 440.000	ATV & SUB-REGIONAL (national bandplanning)
438.025	Repeater output channels (HBD.DL.OE), 25 kHz spacing, 7.6 MHz shift
438.175	Digital communications channel freqs
438.200	Digital communications repeater channels
438.225	
438.550	Multi-mode
438.625	
439.425	
439.500	Digital communications link channels
439.975	

IARU REGION I 1296 MHZ BAND PLAN	
IARU Region 1 bandplan	Usage
1240.000 1243.250	Digital communications
1243.250	ALL MODES
1242.250	Repeater output, ch. RS1-250
1242.700	Repeater output, ch. RS11-RS28
1242.725	Packet radio duplex, ch. RS29-RS50
1258.150	Repeater output, ch. R20-R68
1260.000 1270.000	SATELLITE SERVICE
1270.025 1270.700	Repeater input, ch. RS1-250
1270.725	Packet Radio duplex, ch. RS29-RS50
1272.000 1290.994	ATV
1290.994	NBFM REPEATER INPUT, 25 kHz spacing, ch. RM0 (1291.000) - RM19 (1291.475)
1291.481 1291.494	
1291.494 1296.000	ALL MODES
1294.350 1296.000	Repeater input, ch. R20-R68
1296.025	Moonbounce
1296.200	Narrow-band centre of activity
1296.400 1296.600	Linear transponder input
1296.500 1296.600	SSTV
1296.700 1296.800	RTTY
1296.800	FAX
1296.800 1296.994	BEACONS EXCLUSIVE
1296.994	
1296.994 1297.481	NBFM REPEATER OUTPUT, ch. RM0 - RM19
1297.491 1297.494	
1297.494 1297.981	NBFM SIMPLEX, ch. SM20 - SM39
1297.500 1300.00	NBFM activity centre
1298.025 1298.500	Repeater output channel freqs, ch. RS1-RS28
1298.500 1300.000	Digital communications
1298.725 1299.000	Packet+Radio duplex channel freq, ch. RS29-RS40

E.M.E. İÇİN HANGİ “MODE”LAR KULLANILIYOR ?

- **JT65** (6m=A , 2m/70cm=B, 23cm=C 10 GHz için D modu)
- **SSB / CW** (Superstation iseniz)
- **Q65** (Yeni yeni denemeleri yapılıyor)
- **QRA64**
- **JT4**

Joe Taylor – K1JT in 2003
-24 dB ~ -28 dB

Zayıflama : 250 dBm

Verici : 400W = +55 dBm

55 - 250 = -195 dBm

Standart Alıcı : -120dBm

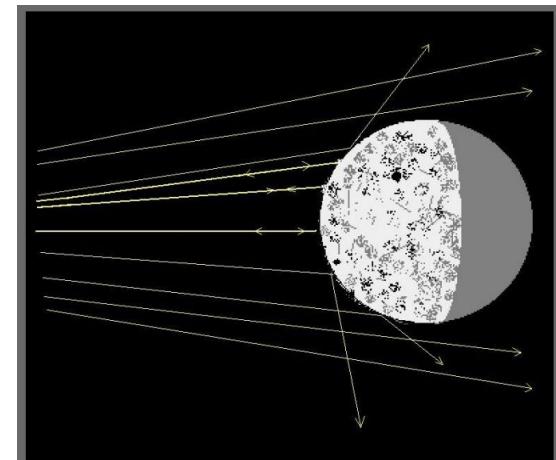
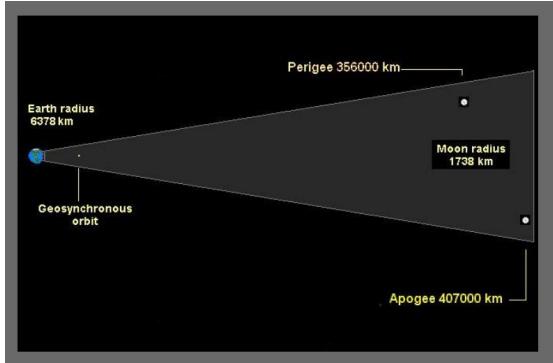
195 - 120 dBm = **75 dBm**

2 x (Anten + preamplifikatör) ve Yazılım

Anteniniz : 15 dBi

Preamp : 20 dB

75 - 35 = 40 (karşı taraf)



Noise / SNR Calculation

VK3UM EME Performance Calculator Ver 11.11 UTC Date 21st Nisan 2021

Two Station EME Rx Performance

Tx A (Home Station)

Frequency	Path Loss	Avg or Leo	Rx/BV	Diam	Mesh	Spacing/H-Y	Sys Sensitivity	Echo S/N
144 MHz	251.78 dB	300 K	120 Hz	yagi	selected	-153.3 dBm	-2.94 dB	
						0.30		Effective ground 262 K

Your last stu data record has been loaded.

10.7cm	7.16 K	17.18 K	118.9 K	Grid to Cold Sky	-0.73 dB		
75	0.10 dB	0.25 dB	24.0 dB	2.0 dB	1.0 dB	222 K	7.47 dB
	LNA Loss	LNA NF	LNA Gain	Coat Loss	Rx NF	Antenna Ta	0.00 dB
	Get stu						
Ts A Output Power	TransmissionLoss		Power at Feed				Moon Y
902 Watts	29.55 dBW		0.4 dB	823 Watts	29.15 dBW	50.840 W EIRP	

RxTK 25.51 K = 0.37 dB **TSys 247.51 K = 2.68 dB**

Receiver Noise Temperature: 290 K -17 C System Noise Temperature: 290 K -17 C

Dx Station as received at Home Station -9.14 dB

Home Station as received at Dx Station -10.92 dB

Tx B (Dx Station)

Frequency	Path Loss	Avg or Leo	Rx/BV	Diam	Mesh	Spacing/H-Y	Sys Sensitivity	Echo S/N
144 MHz	251.78 dB	300 K	120 Hz	yagi	selected	-149.7 dBm	-17.12 dB	
						0.30		Effective ground 265 K

Your last stu data record has been loaded.

10.7cm	7.32 K	24.34 K	0.15 K	Grid to Cold Sky	-0.73 dB		
75	0.10 dB	0.35 dB	33.0 dB	2.0 dB	1.0 dB	320 K	2.38 dB
	LNA Loss	LNA NF	LNA Gain	Coat Loss	Rx NF	Antenna Ta	0.00 dB
	Get stu						
Ts B Output Power	TransmissionLoss		Power at Feed				Moon Y
502 Watts	27.01 dBW		0.3 dB	468 Watts	26.71 dBW	12.182 W EIRP	

RxTK 31.81 K = 0.45 dB **TSys 654.09 K = 5.13 dB**

Receiver Noise Temperature: 290 K -17 C System Noise Temperature: 290 K -17 C

Operating Frequency

50 MHz	432 MHz	2304 MHz	10.368 GHz	70 MHz
144 MHz	900 MHz	3456 MHz	24.048 GHz	406 MHz
222 MHz	1296 MHz	5760 MHz	47.088 GHz	2295 MHz

Click to enter a User Frequency

x 10 Multiplier

Note Pad

Hint - Res

Ver. History

VK3UM.com

Help

About

Exit

Yagi Array 144 MHz

Single Yagi Gain in dBd	Number of Yagis	G/T	E	26.77 °	Arrag Type and Gain
15.76 dBd	2	0.00	H	26.77 °	Beam Width
					User Defined

Parabolic Reflector

Focal length 3.6 m	Feed Type	V21MU dual-mode	Linear Pol.	Circular Pol.			
Diameter	Size	I/D	Efficiency	Beam Width	Gain	Dish Gain	
8.55 m	5.5 m	0.43	63.2%	17.04°	105	18.07 dBd	20.22 dBi
Dish diameter is less than K							

Home Station ... Y Factor Calc

Noise Source (Hot)	Noise (hot) Flux	Quiet (cold) Sky	System TK
Sagittarius A	11201 Jy	300 K	247.51 K
Cassiopeia A			
Cygnus A			
Centaurus A			
Quet Source (Cold)			
Aquarius or Leo			
TSky (variable)			

Point Source Y Factor

Outside YU1AW Ae Gain range (18-26 dB)	1.30 dB
--	---------

Date

Perigee: 377.367 kms Apogee:

Effective Aperture

TxA 21.32 M ²	Beam Width Ratio	Set Current Moon	Moon Data
0.03	0.01	SIF	Phase 0.29
TxB 8.97 M ²	0.01	Update Moon	Illum 64.9 %

Moon Beam Fill Factor

TxA 1.00	0.00dB	1.00	0.00dB	NA
TxB 1.00	0.00dB	1.00	0.00dB	NA

Current Moon Distance

52.76	377.367 kms	0.528° 31'39.9"
-------	-------------	-----------------

Moon Angular Diam

225 K

Moon Temp

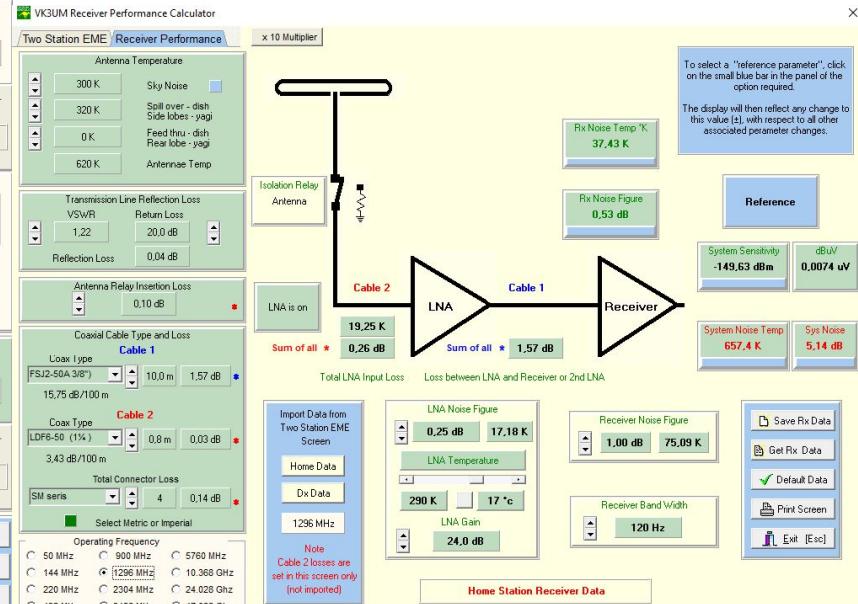
225 K

Frequency adjusted stu

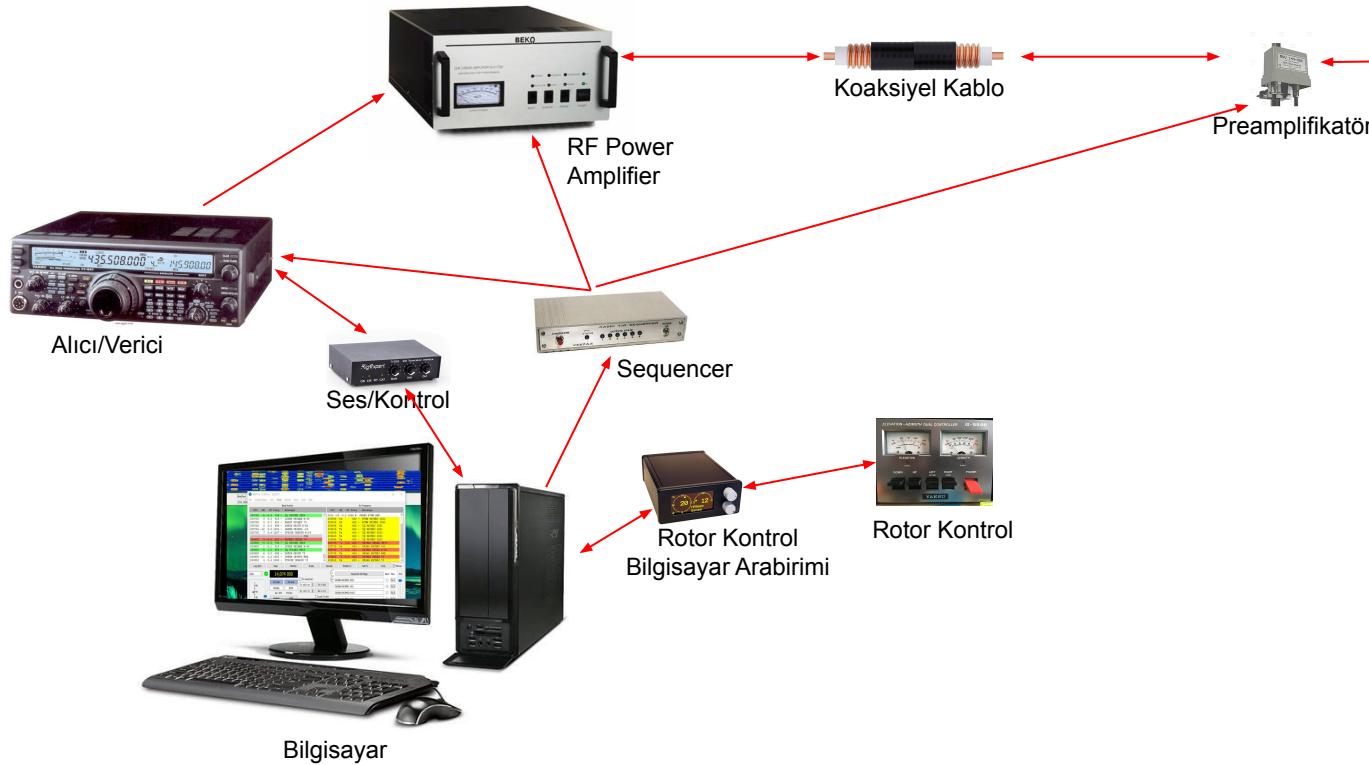
251.78 dB	Sy = 0.00	Dec. 19.51°	144 MHz
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Engineering Panel

VK3UM Ver 11.11



Örnek İstasyon Bileşenleri Ve Seçiminde Dikkat Edilecek Hususlar



ÖRNEK TEÇHİZAT

Telsiz : TS2000, FT847, IC910H, IC9700

Ya da HF+Transverter (Kuhne,SSB Electronics,DownEast,Elecraft,HA1YA,Anglian)

RF Güç Anfisi : Gemini, W6PQL, EB104, M2, Discovery, BEKO

Anten : Yagi (G0KSC LFA, DG7YBN, DK7ZB vs.)

Çanak (Banda göre 60cm - 10m)

Preamplifikatör : PGA-103, W6PQL,vhfdesign, antennas-amplifiers,hamtech

Koaksiyel : Heliax, Airfoil-10, LMR-400

Adaptive Polarization yapılacak ise SDR alıcı

Kenwood TS2000



Yaesu FT-857D



Icom IC-9100



Yazılımlar ve Temel Ayarları

Haberleşme

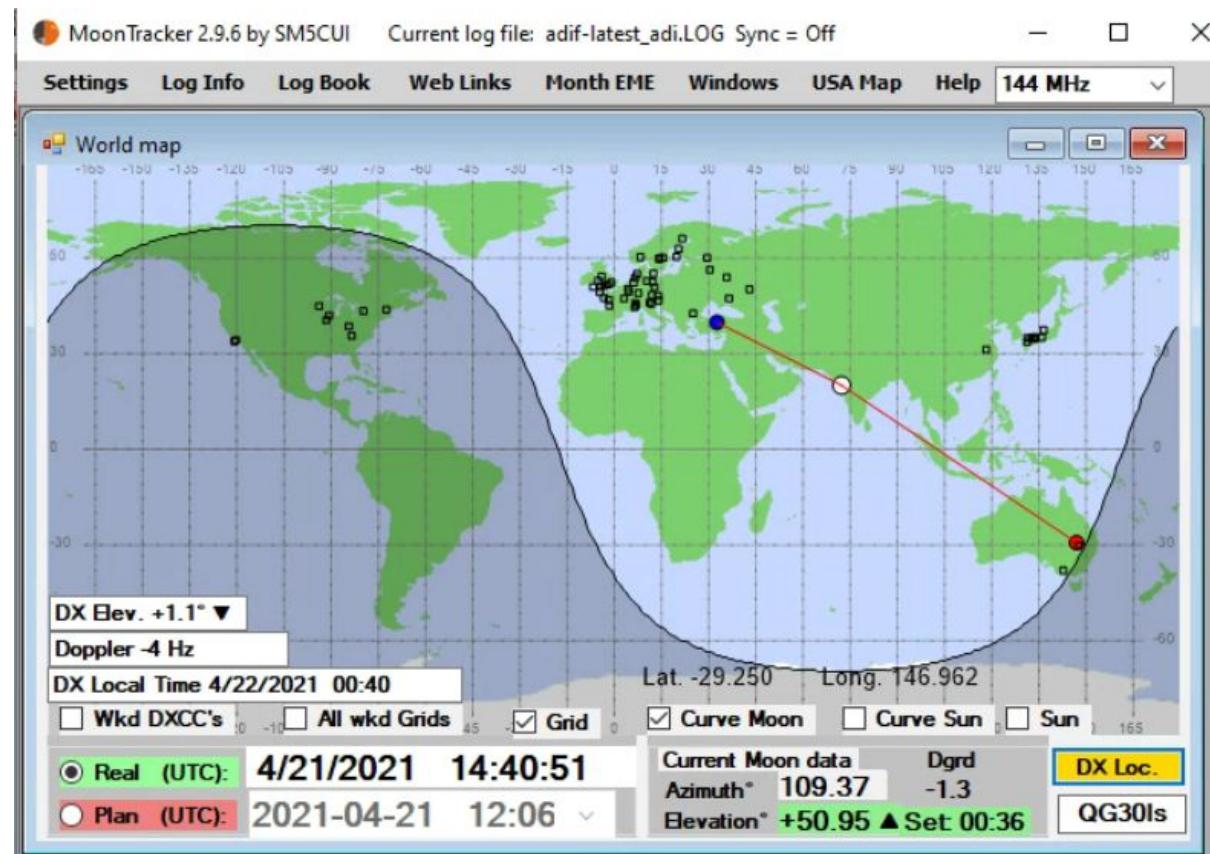
- WSJT
- WSJT-X
- MSHV
- MAP65

Rotor Kontrol

- PSTRUOTator

CHAT

- ON4KST (Meteor Scatter)
- EMEChat (EME için)



MSHV

MSHV 144 MHz version 2.52 64-bit

File Options Palette Mode Decode Band Language Help

FT8/4 Threads

- Fast MSK FT8/4
- Normal MSK FT8/4
- Deep MSK FT8/4
- Use Three-stage Decoding FT8
- MSK RX Equalization Off
- MSK RX Equalization Static
- MSK RX Equalization Dynamic
- MSK RX Equalization S And D
- Single Decoded Signal JT65
- Max 4 Decoded Signals JT65
- Max 8 Decoded Signals JT65
- Max 16 Decoded Signals JT65
- Max 32 Decoded Signals JT65

Aggressive Levels JT65

- Check for VHF/UHF Uncheck for HF Features JT65
- Enable Averaging JT65
- Enable Deep Search JT65
- Enable AP FT8/4 JT65

MONITOR STOP MONITOR CLEAR MESSAGES CLEAR AVG 0/2 | 0/2 DECODE D2 RESET QSO STOP TX TUNE

TA2NC KM69 USB 144.170.000 F

ADD TO LOG TO RADIO: V31AE RX RPT: 0

LOCATOR: EK58 DB:EK58 LOOKUP ADD

HotA: 296° Azimuth: 304° Elevation: 0° Dist: 11164 km

MOON Az: 193.57 El: 68.97 Dop: 224 Dgrd: -1.3

21 Apr 2021 17:42:00

CPU 1-12: 18% 400 500 600 700 800 900 1000 RX: 1270 Hz

SAVE PREVIOUS

D Inf	Flags	Freq
#	VHF d15	1426
#*		1460
#*		1467
##		1437

Sync def=1 -1 dB ZAP

DF Tol def=600 +/- 200 Hz

Sh HF/VHF TX RPT: 0

TX/RX 60 s QRG: 373

RXS TX FIRST TX SECOND

GEN MSG AUTO IS OFF

RX V31AE TA2NC KM69 +20

V31AE TA2NC KM69 000

RO

RRR

73

CQ TA2NC KM69

CQ 373 TA2NC

Tx1 Tx MAX

Tx2

Tx3

Tx4

Tx5

Tx6

Tx7 MIN

MSHV

Radio And Network Configuration

X

PSK Reporter Settings:

Enable PSK Reporter Spotting Use TCP/UDP Protocol

Status: **Connected to report.pskreporter.info:4739 Via UDP**

Server: Port:

DX-Spot Settings:

Status: **Connected to dxspots.com and logged in as TA2NC**

Server: Port:

Telnet Clusters: ▾

UDP Broadcast Settings:

Enable Logged QSO Enable Logged QSO ADIF Enable Decoded Text

Status: **UDP Broadcast Is Disabled And Disconnected**

Server: Port:

TCP Broadcast Settings: - DXKeeper Formatted Message -

Server: Port: Enable Logged QSO

Band	Antenna Description	Mode	Frequency in Hz
135 kHz	Dipole	MSK	136.130
		FSK	136.130
		FT4	136.130
		FT8	136.130
		JT65	136.130
472 kHz	Dipole	MSK	474.200
		FSK	474.200
		FT4	474.200
		FT8	474.200
		JT65	474.200

MSHV



X

Distance unit:

 Kilometers Miles

Macros By Region:

 Region 1 Region 2 Region 3

Macros option for JTMS,FSK,ISCAT,JT6M

 Report Grid RSQ And Serial Number

Macros option for MSK144,FT8/4

Activity Type: Standard

ARRL Field Day Exch: 1D DX

RTTY Roundup Exch: DX

Multi-Two Transmitter: (Requires Two Different Installed Copies Of Software) None

Macros:

My call =%M His call =%T RST or RSQ =%R 4 characters locator =%G4
6 characters locator =%G6 Random QRG =%QRG Serial number =%N
My suffix =%O His suffix =%H Separating numeral + my suffix =%SO
Separating numeral + his suffix =%SH

GEN MESSAGE

MY CALL: TA2NC

GRID LOCATOR: KM69HU

Macros for JTMS,FSK,ISCAT,JT6M

Tx1 %T %M

Tx2 %T %M %R %R

Tx3 %T %M R%R R%R

Tx4 RRRR RRRR %M

Tx5 73 %M

Tx6 CQ %M

Tx7 CQ %QRG %M

SET DEFAULT MACROS

Macros for MSK,FT8/4,JT65

Tx1 %T %M %G4

Tx2 %T %M %R

Tx3 %T %M R%R

Tx4 %T %M RR73

Tx5 %T %M 73

Tx6 CQ %M %G4

Tx7 CQ %QRG %M

SET DEFAULT MACROS

MSHV

 Interface Control X

Port 1:

Network:
Disconnected

Server: Port: Connect

Port: Baud Rate:

PTT Method:

PTT OFF PTT Via RTS PTT Via DTR PTT Via CAT COMMAND Enable Read RTS ON

RIG: PTT PTT MIC PTT DATA

Tuning Default RIG Freq Only By Pressing Button F Tuning Default RIG Freq From Mode

START PTT TEST PORT : COM3 IS BUSY

Selected Constant TX Audio Frequency FT8/4 (RIG frequency must be readable & writable via CAT)

Use Selected Constant TX Audio Frequency FT8/4 Select Audio Frequency:

Transverter Local Oscillator Or RIG Offset: For Band 144 MHz

How to set: 1. In Interface Control set Port to None.
2. Choose your band from the Band Menu.
3. In Interface Control set up your Transverter or RIG offset.
4. In Interface Control choose your Port to start communication.

Off Sum Subtract Frequency In Hz: RIG: 144.000.000 Hz

Port 2:

Port: Baud Rate:

PTT Method:

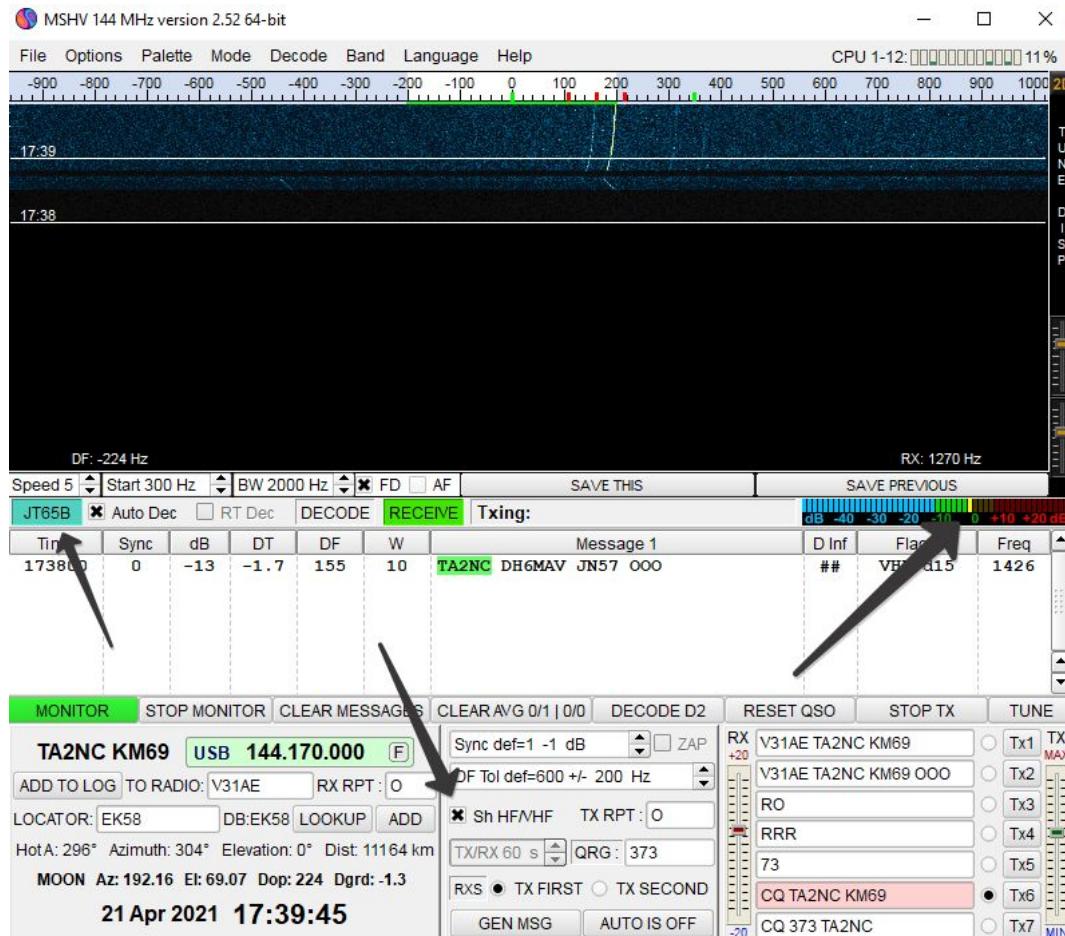
PTT Via RTS PTT Via DTR

START PTT TEST PORT : COM7 IS BUSY

Tx Watchdog:

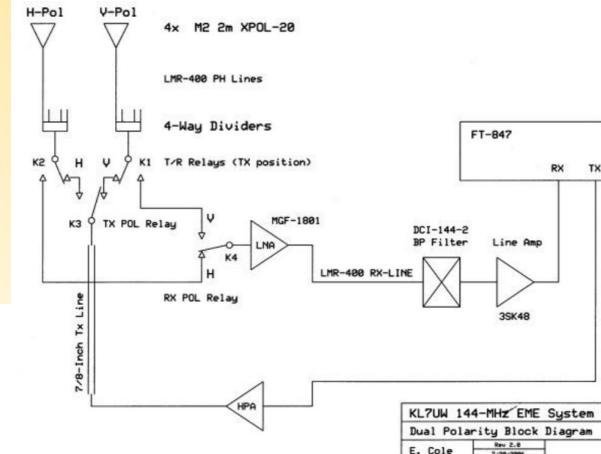
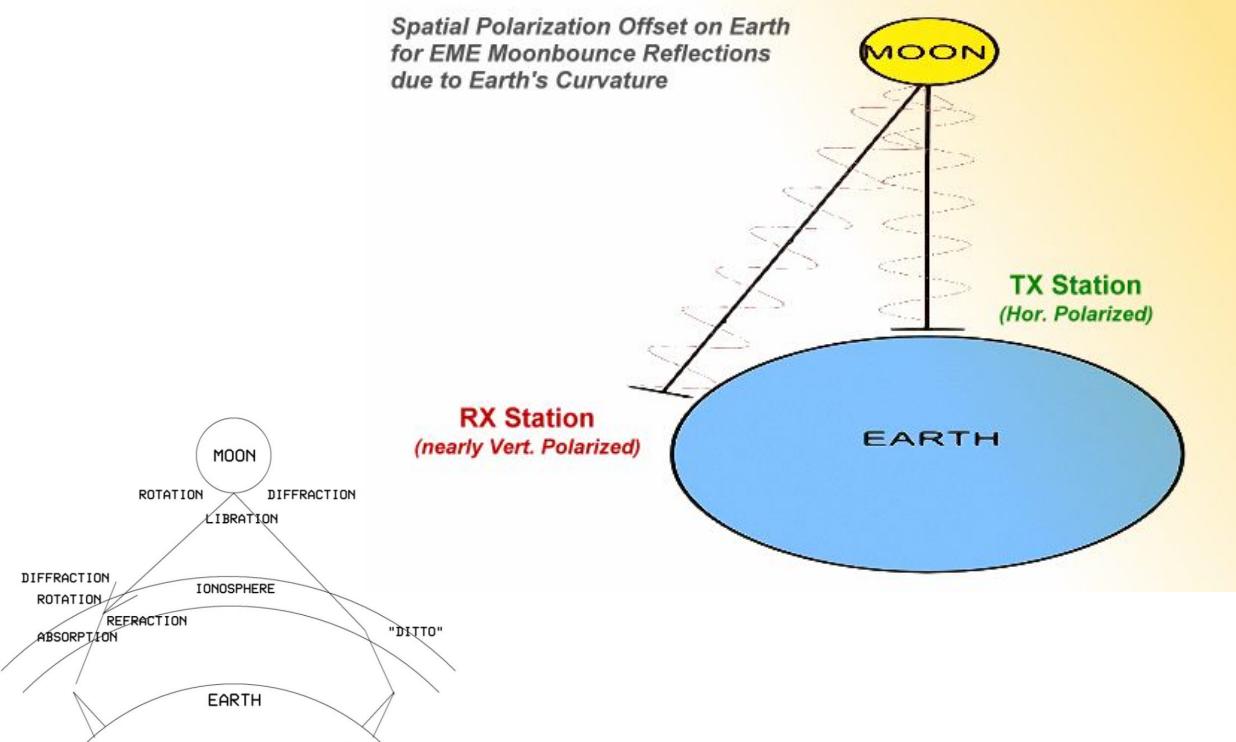
Off In Time def=20 20 minutes In Number Of TX Periods def=10 10 Periods

MSHV



EME'de Polarizasyon

- Faraday Effect Nedir?
- Vertical / Horizontal
- X-Pol/Circular Polarization
- Adaptive Polarization RX



WSJT 10

DT= The signal's time offset in seconds relative to your computer clock. (For a EME- trace around 2,5 sec)

Average decode of several trace

JT65A EME 6 BW = 178 Hz

JT65B EME 2/70 BW = 355 Hz

JT65C EME 23 BW = 711Hz

JT65B2 EME 2/70 contest mode 30 sek

JT65C2 EME 23 contest mode 30 sek

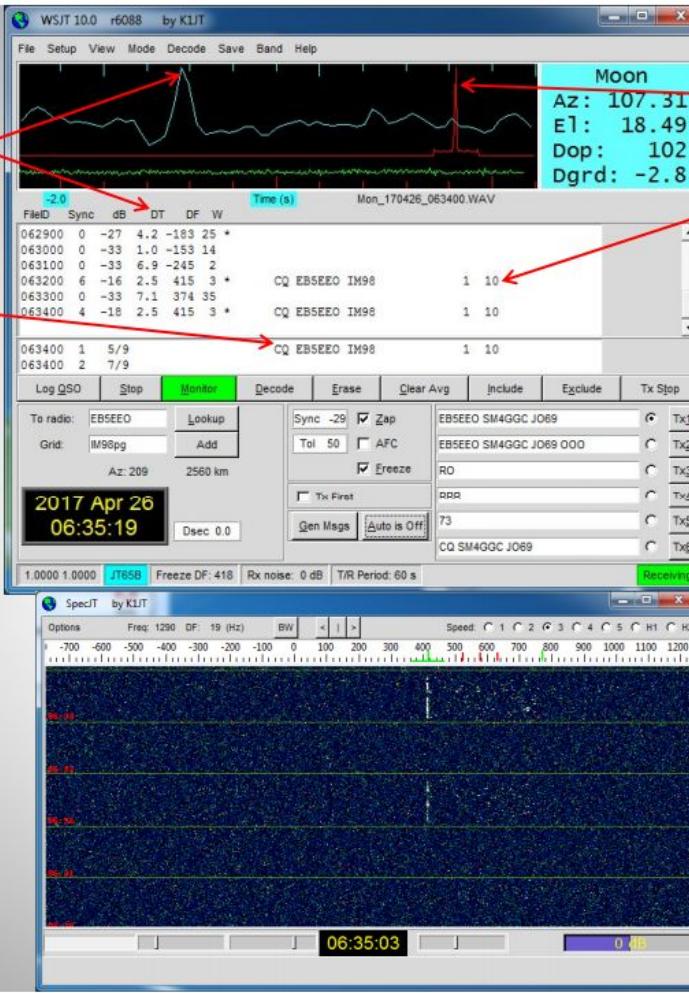
Call3 file with know EME hams (Deep Search)

FSK441 Meteor Scatter on 2M

ISCAT-A/B Meteor/Inon Scatter on 6 M

JT4A - G EME/tropo microwave

JTMS new mode for Meteor Scatter (MSK) Medium Shift Keying



HABERLEŞME MESAJ SIRASI

Istasyon 1

Istasyon 2

CQ TA7W KM69

TA7W TA1D/3 KM39

TA1D/3 TA7W OOO

TA7W TA1D/3 KM39

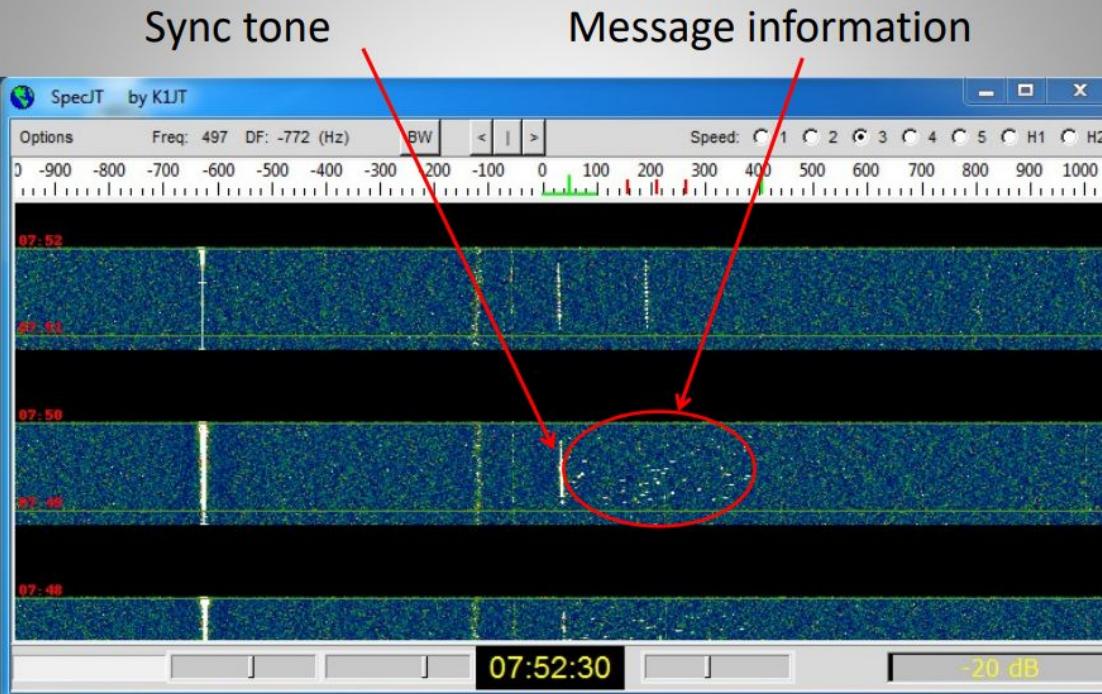
RRR

73

MUTLAKA
ZAMAN
SENKRONİZASYONU
OLMALI

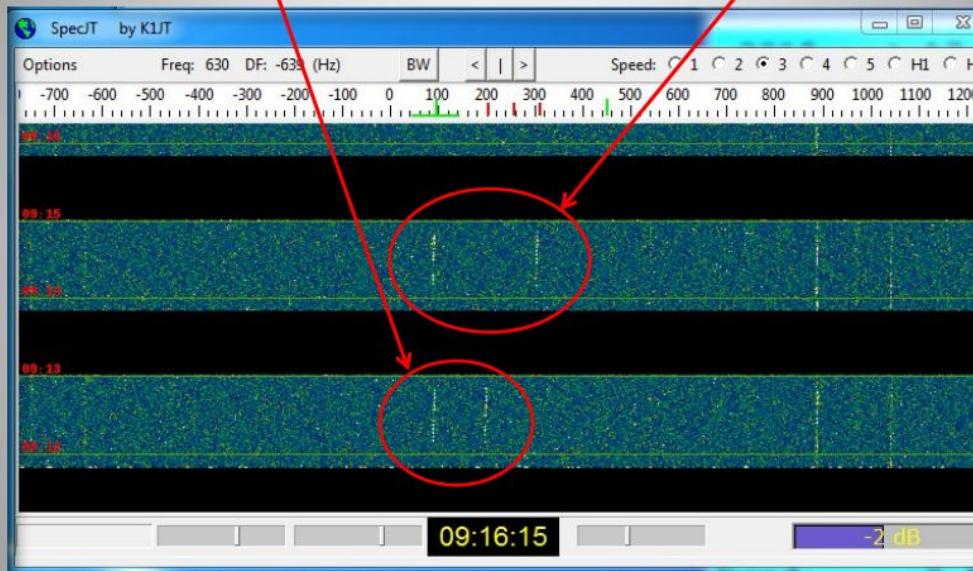
MESAJLARIN SPEKTRUM GÖRÜNÜMÜ

JT65B message bandwidth 355 Hz



MESAJLARIN SPEKTRUM GÖRÜNÜMÜ

Short hand message
RO 73



KST: <http://www.on4kst.com/chat/start.php>

			CQ	Stop CQ	TNX	SKED	Reset	Send	Search
Message to NUJKI chart									
Apr 18:09	UA3PTW	K093	stop CQ, QRV						
Apr 18:08	S52OT	JN75	-4250- Many thanks Dima for initial B-23db gl 73						
Apr 18:08	EECC	K047	-05WPC Northern TNX for QSO. Best -26 db. 73 and GL!						
Apr 18:07	EECC	K047	-05WPC -Purp. HT-73						
Apr 18:07	S53SJ	JN16	+++++145 181+----+JT65B						
Apr 18:06	SOE	J044	-RX1A5- trnx qso best -4 ~xWV~ 25Watt						
Apr 18:05	LZ2EO	KN13	-JN3P7W- Dmtrij udra...4..						
Apr 18:05	IKU1WL	JN33	-JN3YSS- Costa cba, bei tornato						
Apr 18:04	K4UJ	FN02	+Plus~+Plus~+Plus~ CQ 2nd 144.133 FH02 ~Plus~+Plus~+Plus~						
Apr 18:04	XI1AS	K059	-0Z50F- Jena trnx qso Wsj x -27						
Apr 18:04	UA3PTW	K093	-LZ2PD- Tekdo ge , hrx						
Apr 18:03	UA3PTW	K093	-K2TXH Russ trnx QSO .-21						
Apr 18:02	S52OT	JN75	-9450- Hvala Joseph za 1. zvezdo 0 -19db 73						
Apr 18:02	EECC	K047	-05WPC -Spartak mamo antene od iste cebe :) pa to fajn klapa, trnx init spo Rado B-18, GL 73						
Apr 18:02	LZ2EO	KN13	-JN3P7W- Dmtrij, trnx F2F GSO. Moon way down in trees here and I have ~Plus~5 dB noise as well, but sig -23. 73 & GL						
Apr 18:01	IKU1WL	JN33	-EW7CC- Igor will qsl by mail. Ok for you?						
Apr 17:59	0Z1HOF	J055	TNX report John						
Apr 17:58	FIAB	JN06	157 -17.2 1464 : CQ -0Z1HOF_ J055 q0						
Apr 17:58	XI1AS	K059	-0Z50F- Jens decode R0 pse RPT						
Apr 17:58	47ZCP	KM72	-S52OT- Radio GE, or U -25, will call U						
Apr 17:57	IKU1WL	JN33	-EW7CC- trnx quick qso, B -19, 73 & GL						

EME Chat: <https://www.emechat.com/>

Livecq: <https://www.livecq.eu/latest.asp>

MMMonVHF <https://www.mmmmonvhf.de/eme.php>

UTC	CALL/NAME	144/432 MHz MESSAGES	Low
		lat. AU alert	
18:10:23	IK0BZY Enrico AAO	(G4TRA) 40/0 partial decode...hope it's correct :-)	
18:09:38	OH6KTL Lasse	180900 4 22.1 1567 & CQ OK2WO JN89	
18:08:00	LZ2PG Peter	*** CQ 144.360 1st, MSK144 dir NW ***	
18:03:18	M0MIK Mike	#### CQ MSK144 2nd 144.360 30s H Yagi 8el 115deg 20elev 90W (15mins) ####	
17:59:12	G4TRA Steve	(IK0BZY) Go on then 15 minutes more running	
17:57:22	OH6KTL Lasse	ge all..	
17:54:44	HB3YFC Kurt	Ok Tnx see you	
17:53:25	IC8AJU Oreste	(HB3YFC) we will try again in the future thanks	
17:53:22	IK0BZY Enrico AAO	(G4TRA) 15 mins more?	
17:52:50	G4TRA Steve	(IK0BZY) Just a single 140/1 here.	
17:51:19	SV2JL Foti	IK0BZY GE kalispera	
17:51:11	HB3YFC Kurt	Ok Oresste I Stop now	
17:50:37	IK0BZY Enrico AAO	(SV2JL) Kalispera file mou	
17:50:14	IK0BZY Enrico AAO	(G4TRA) how's there?? Nil??	
UTC	SPOTTER	QRG	
1810	4z5cp	144142	
1806	oe3nfc	144125	
1805	pa1aw	144360	
1805	pa1aw	144360	
1804	dl6bf	144174	
1749	dg0jmb	145425	
1748	oz1ct	144136	
1728	g8ofa	144360	
1723	oz1ct	144360	
1722	ea6am	144174	
1712	dg0jmb	145425	
1711	ha6vv	144360	
1700	sm5kww	144122	
1652	ut9ur	144360	
1651	sf6f	144360	
1647	oz7uv	144360	
1646	ut9ur	144360	
1639	i3mek	144410	
1624	iz5ovp	144300	
1619	oz9fz	144174	
1619	sv6eux	144174	
1613	os8d	144320	
1611	f4ltr	144174	
1608	on4crd	144320	
1604	oz7uv	144360	
1600	on3at	144320	
1557	sm5kww	144122	
1553	iz0cbp	144475	

UTC SPOTTER	QRG	DX	INFO
1810 4z5cp	144142.0 S52OT	KM72MT<EME>JN75 JT65B TXV/R	
1806 oe3nfc	144125.0 EW7CC	JN88EA<EME>KO44VA - 21	
1805 pa1aw	144360.0 HA6VV	JO21GU<MS>JN97WS MSK144 +6	
1805 pa1aw	144360.0 IC8AJU	MSK144 -4 dB	
1804 di6bf	144174.0 HF1J	JO32QI<TR>JO73 txnft8,B=-12db	
1749 dg0jmb	145425.0 DL7CX/P	GMA DA/SX-513 DLFF-0056	
1748 oz1ct	144136.0 IK1UWL	JO75KB<EME>JN33VT JT65B JT65	
1728 g8ofa	144360.0 HA6VV	IO91DC<MS>JN97WV	
1723 oz1ct	144360.0 F1NZC	JO75KB<MS>JN15MR MSK144 MS	
1722 ea6am	144174.0 EA6AM	JM29DV<>JM29DV CQ CORCEGA	
1712 dg0jmb	145425.0 DL7CX/P	GMA DA/SX-183 DLFF-0056	
1711 ha6vv	144360.0 PA2IP	JN97WV<MS>JO23VF Trx random	
1700 sm5kww	144122.0 BA4SI	JT65B -18 dB	
1652 ut9ur	144360.0 SF6F	TNX QSO KO40XD<MS>JO67 MSK	
1651 sf6f	144360.0 UT9UR	JO67QS<MS>KO40XD trx qso 73	
1647 oz7uv	144360.0 UT9UR	MSK144 Random Trx QSO	
1648 ut9ur	144360.0 OZ7UV	KO40XD<MS>JO65 MSK144 +0 dB	
1639 i3mek	144410.0 IK1FJI/B	jn55<tr>jn44mj 579	
1624 iz5ovp	144300.0 IW5AXW	CQ CQ	
1619 oz9fz	144174.0 ON7RB	JO46XA<TR>JO11 trx QSO QSL 73	
1619 sv8eux	144174.0 HA230A		
1613 os8d	144320.0 OT30CRD		
1611 f4ttr	144174.0 F6ANW	FT8 -10dB from JN06 402Hz	
1608 on4crd	144320.0 OT30CRD	30 Y CRD CLUB	
1604 oz7uv	144360.0 IK7JNM	MSK144 Trx QSO	
1600 on3at	144320.0 OT30CRD	SPEC ACT CLUB CRD	
1557 sm5kww	144122.0 BA4SI	JT65B -20 dB	
1553 iz0cbd	144475.0 IZ8GMP/B	JN61EP<>JM78WE Hrd 544 loud	

129 of 21213 registered users			
IK0FTA	JN61GV	Sergio	
IW3QTG	JN65PT	Paolo	
TA2NC	MK69HU	Oguz	2
4X/OM2IB	KM72JC	Jan	(6)
DF5DE	JO40CX	Otto	2r
(DF9QX)	JO42HD	Matthias	
DG0K9W	JO64MH	Klaus	1
DG2KBC	JN58MI	Ansgar	
(DJ0CC)	JN58AG	Viktor	
DL2FQ	JN49EW	Tzetzos	
DL6MI	JN58DQ	Michael	
DL8FCL	JN49JX	Walter	
(DL8LAQ)	JO43XU	Norbert	
DL9DBF	JO40AV	Klaus	
DL9DBJ	JO31VH	Hartmut	
DM5ML	JO30VK	Marco	
(E77T)	JN94IM	Edin	
EA4DL	IN70XG	Javier	
(EA4GMY)	IN83CL	Julio	8
EA4I	IM68MU	Jose L	
EA5WU	IM99WU	Pasquale	
(EA6SX)	JM19IK	Miguel	
EA7KI	IM76RR	David	
EB1DJ	IN52MO	Alex	
EB1MM	IN72FN	Joaquim	
EI8KN	IO62IE	Roger	
F/TK5JJ	JN03QO	Jean	J
F1NZC	JN15MR	Jean-L	
F4EZJ	JN05DK	Stef	2r
F4TTR	JN180J	Thierry	
(F4TTR)	JN23CY	Peter	W

AY'ın hangi zamanları çalışmak için uygundur ?

Next 30 days lowest degradation:

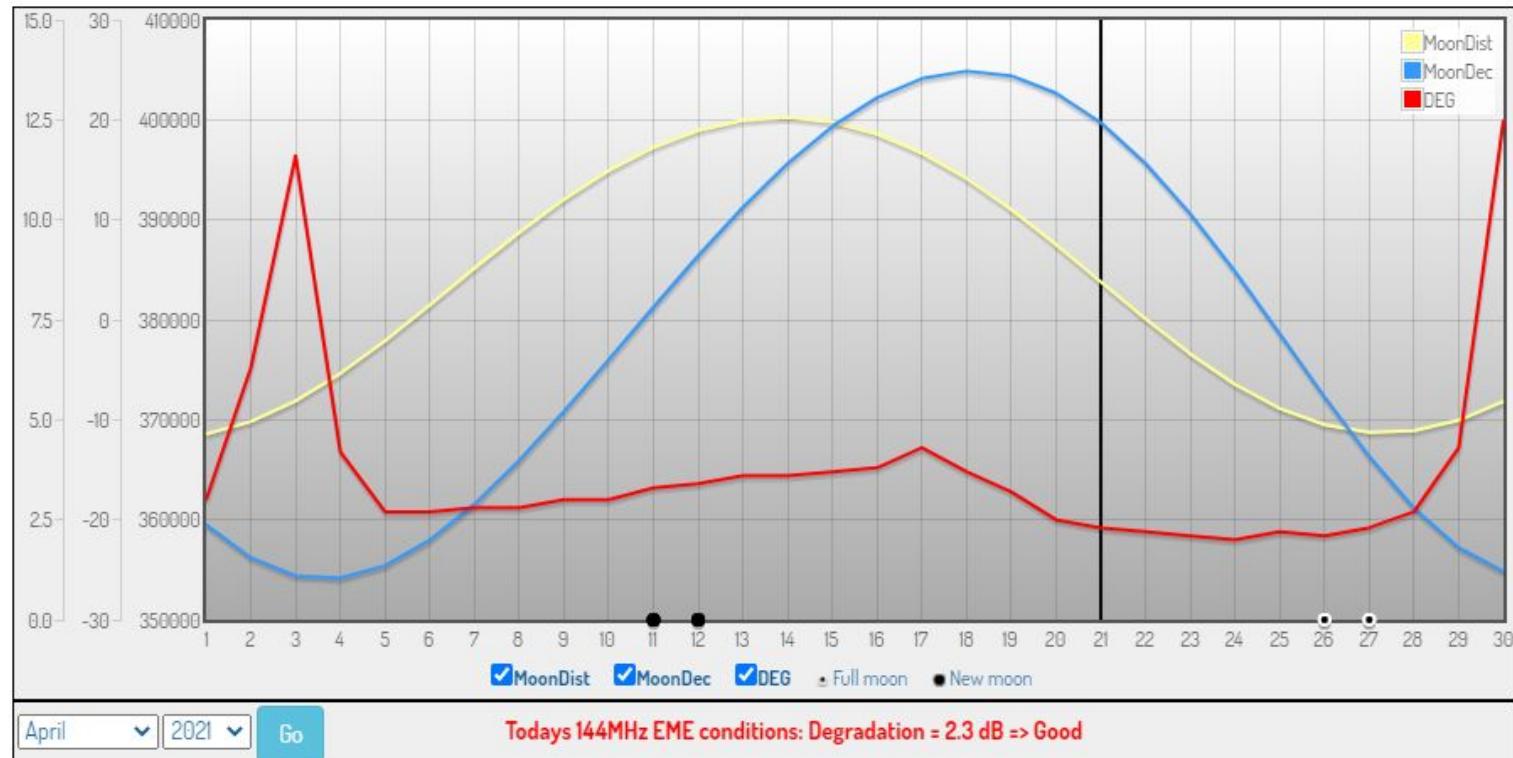
2021-04-23: (2.0) => Good

2021-04-24: (2) => Good

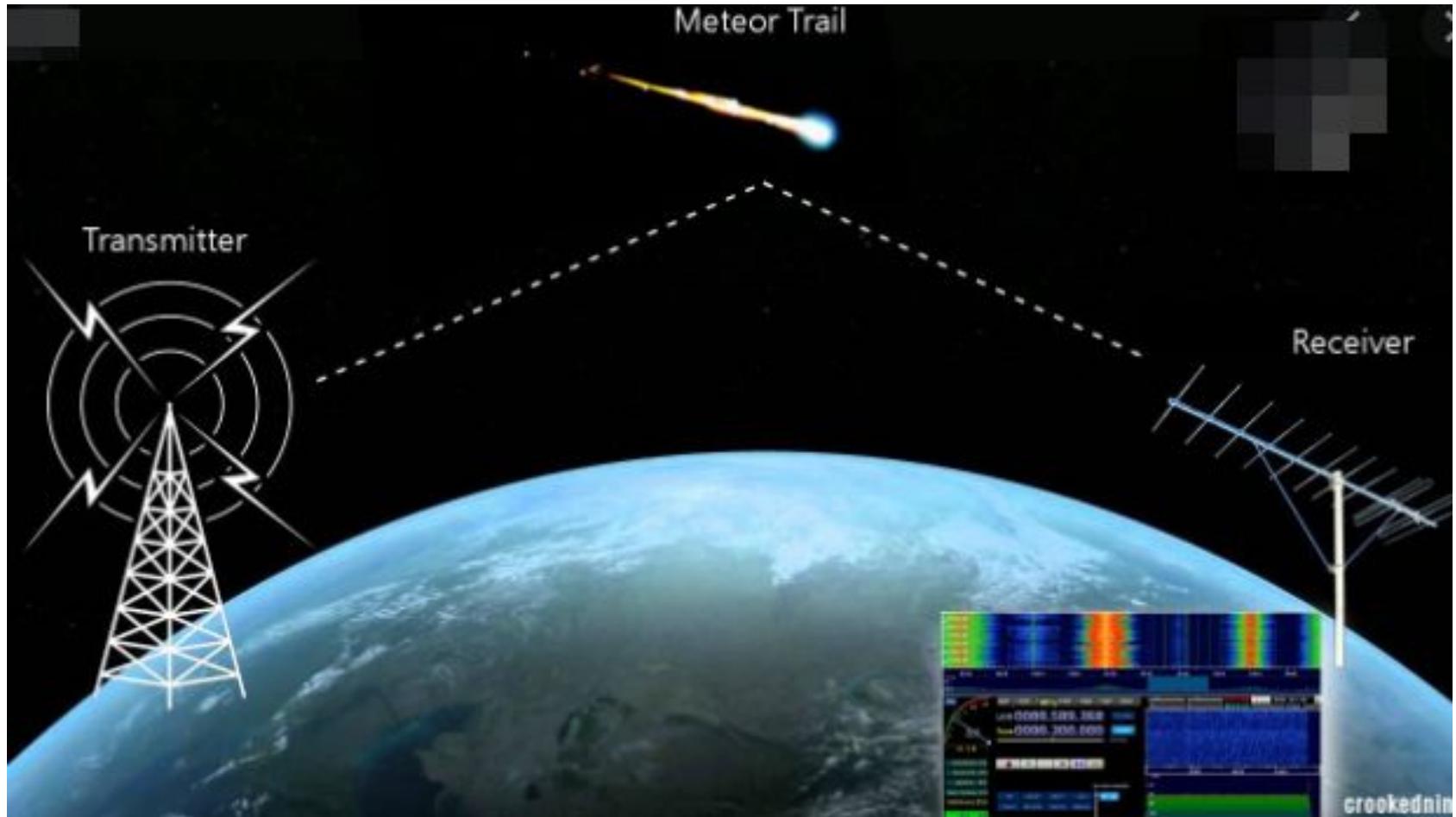
2021-04-26: (2.0) => Good

2021-05-20: (2.0) => Good

2021-05-21: (2) => Good

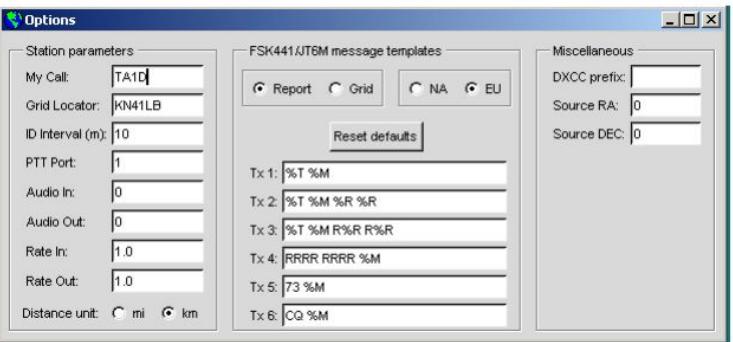
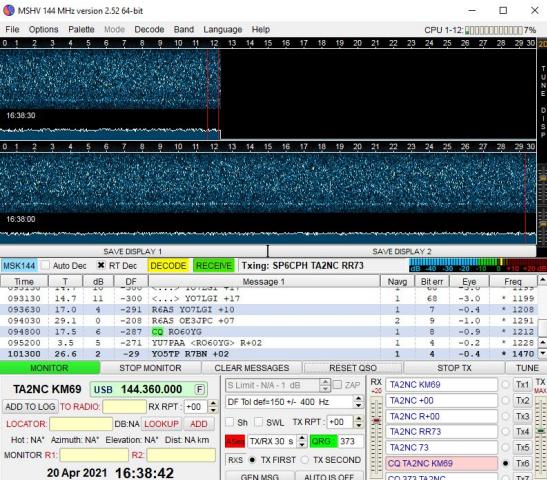
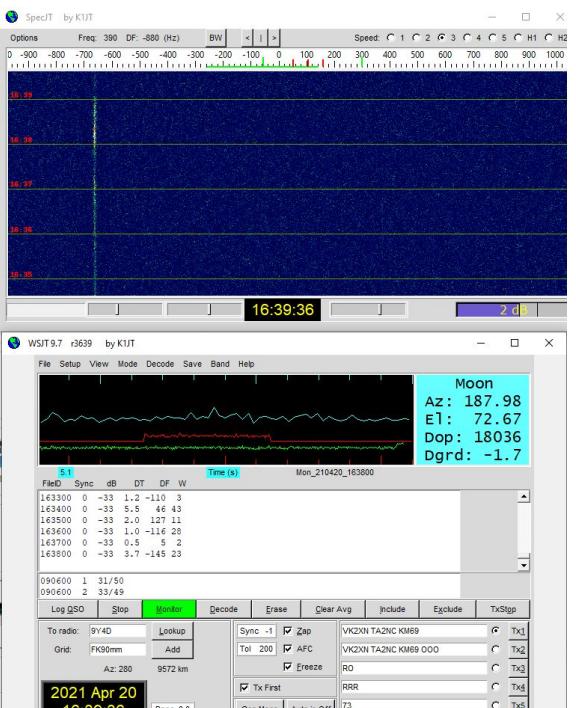
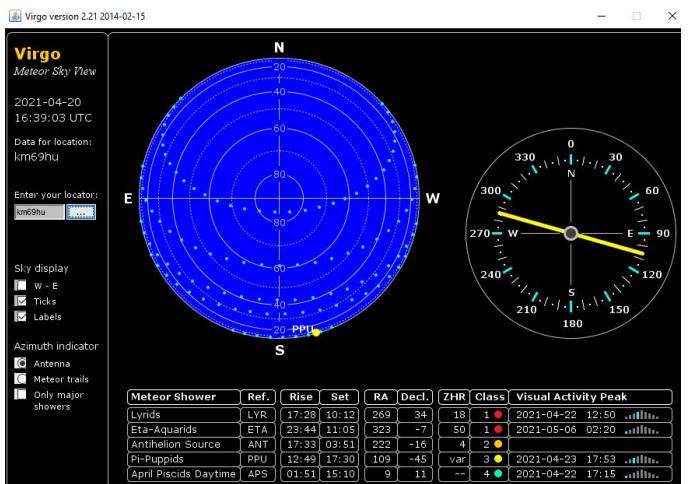


METEOR YANSITMASI

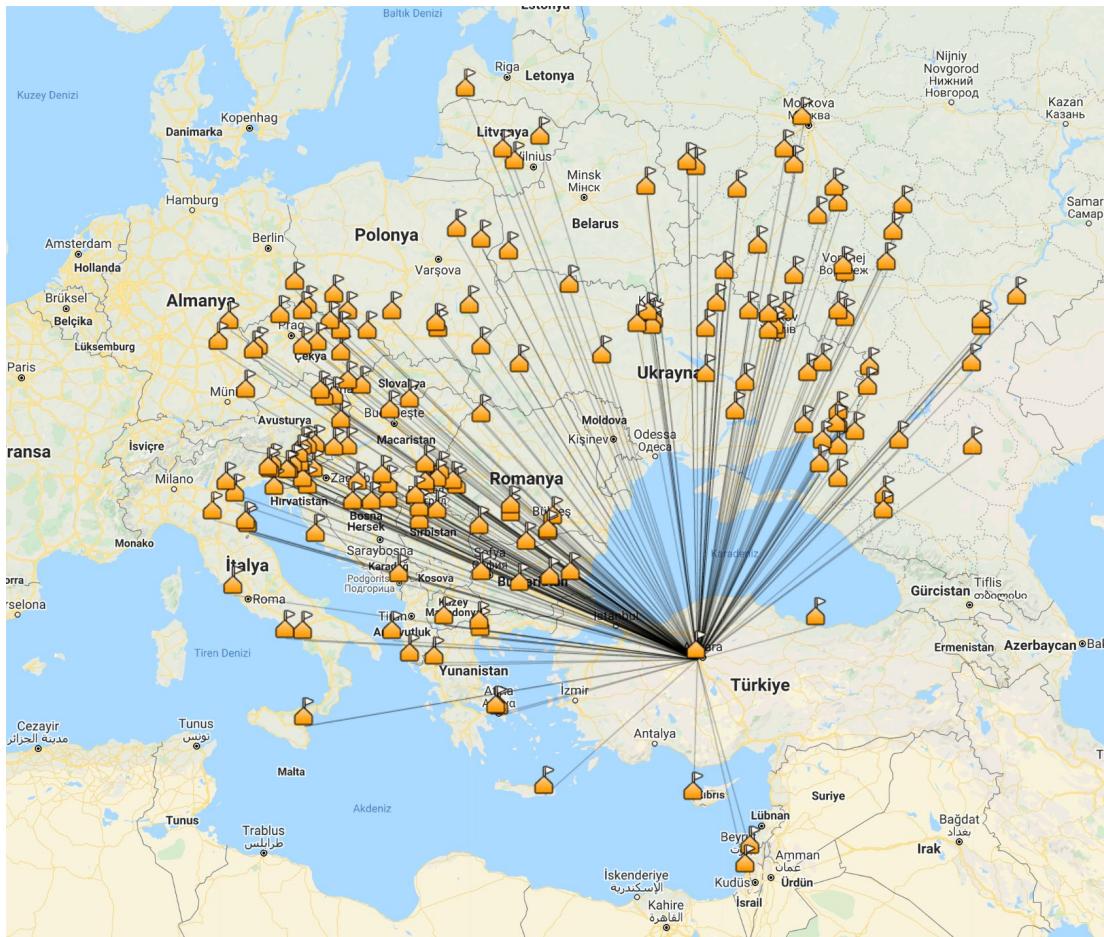


YAZILIMLAR

- MSHV
- WSJT
- Virgo
- MT-Log (Moon Tracker)
- Pstrotator, gpredict



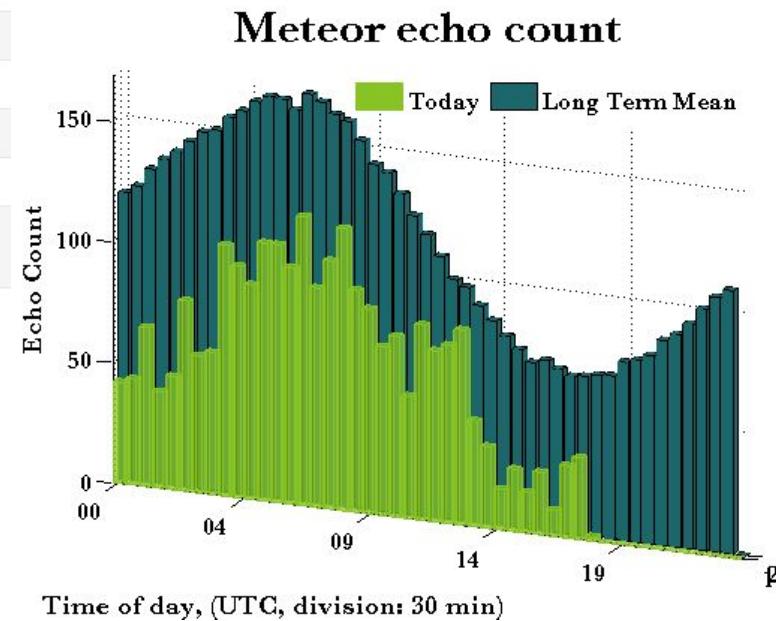
METEOR SCATTER İLE NE KADAR UZAKLA HABERLEŞEBİLİRİM ?



METEOR SCATTER NE ZAMAN ÇALIŞILIR ?

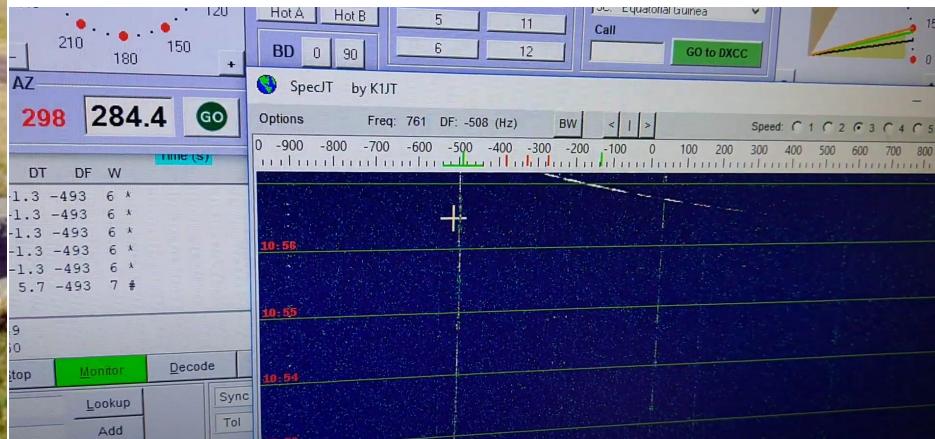
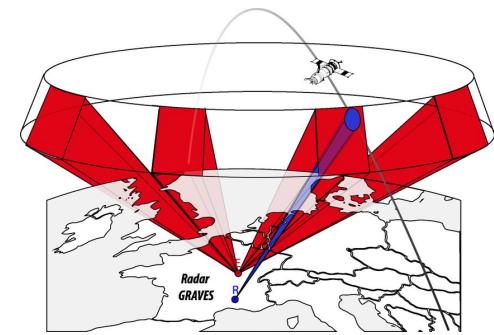
En uygun zamanlar Meteor Yağmurları ve sabah erken saatler

<u>Lyrid</u>	Predawn	S	Apr. 21–22	10	Thatcher
Eta Aquarid	Predawn	SE	May 4–5	10	Halley
Delta Aquarid	Predawn	S	July 28–29	10	–
<u>Perseid</u>	Predawn	NE	Aug. 11–12	50	Swift-Tuttle
Draconid	Late evening	NW	Oct. 9–10	6	Giacobini-Zinner
Orionid	Predawn	S	Oct. 20–21	15	Halley
Northern Taurid	Late evening	S	Nov. 11–12	3	Encke
Leonid	Predawn	S	Nov. 16–17	10	Tempel-Tuttle
Andromedid	Late evening	S	Nov. 25–27	5	Biela
<u>Geminid</u>	All night	NE	Dec. 13–14	75	–
Ursid	Predawn	N	Dec. 21–22	5	Tuttle



GRAVES RADAR

- 2000 km'den 10cm e kadar cisimleri tespit edebilmektedir.
- 10 KW çıkış gücüne sahiptir.
- 143.050MHz frekansından yayın yapar.



ANKARA'da GRAVES RADAR sinyallerinin kaydı : https://youtu.be/B8kPl3rc_uc

İSTASYONUMUZU GEZELİM

HAVADA NE VAR ?

DEMO

ANILAR

- ilk QSO
- yarışmalar
- ...

TEŞEKKÜRLER



SORULARINIZ