

# IARU Monitoring System Region 1



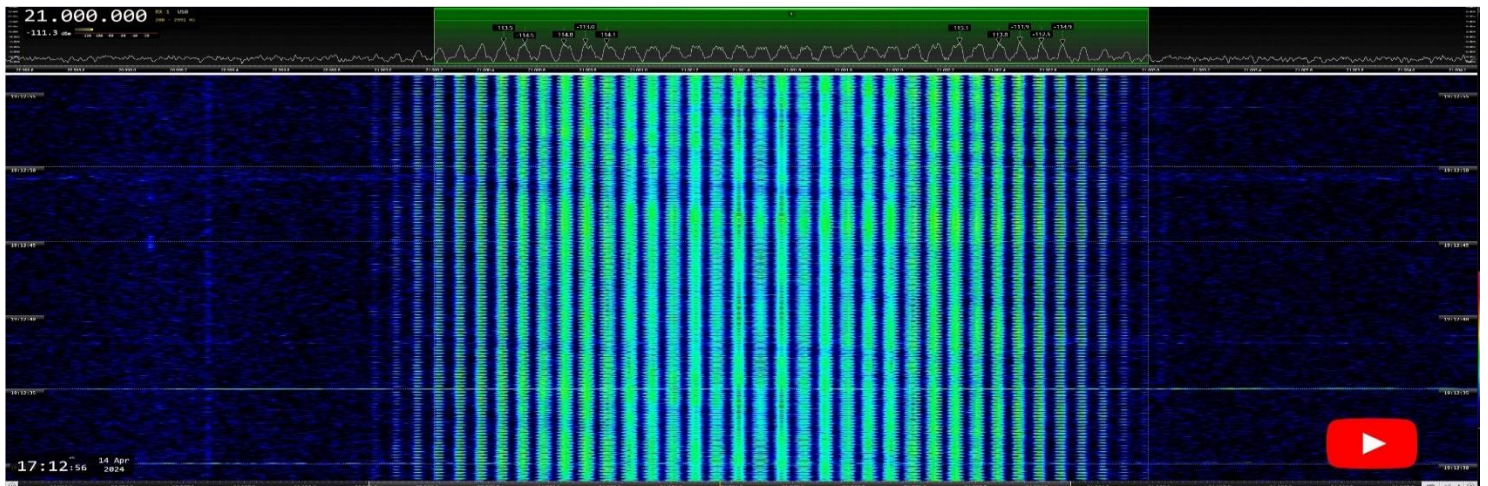
Monthly Newsletter - April 2024

- **Video feature:** click on the “play” red icons in the text or in the images of the Newsletter to watch the videos 

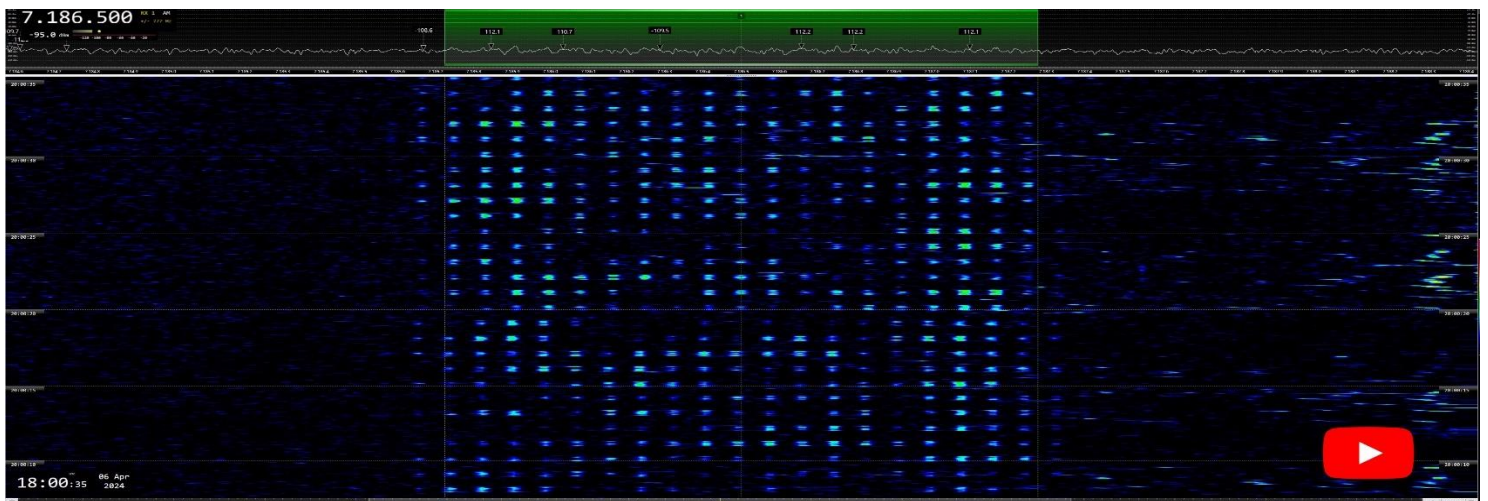
- **IARUMS Wiki:** find more information, screenshots, videos and recordings of the transmission modes most used by non-amateur stations on the amateur radio bands: <https://www.iaru-r1.org/spectrum/monitoring-system/iarums-wiki/>

## News and Info

Jammers, intentional transmissions of a signal with the purpose of disturbing the transmission of another radio signal to make interpretation by the receiver difficult or impossible by interfering it or cancelling it, used in the context of Electromagnetic Warfare (EW), were very often received in the amateur radio HF bands during April 2024, like on the past months. Most of them generated from an 85 Hz tone, we have observed them for many hours on long-lasting transmissions using with different bandwidths, mostly on the 40-meter and 15-meter bands, like on the examples below:



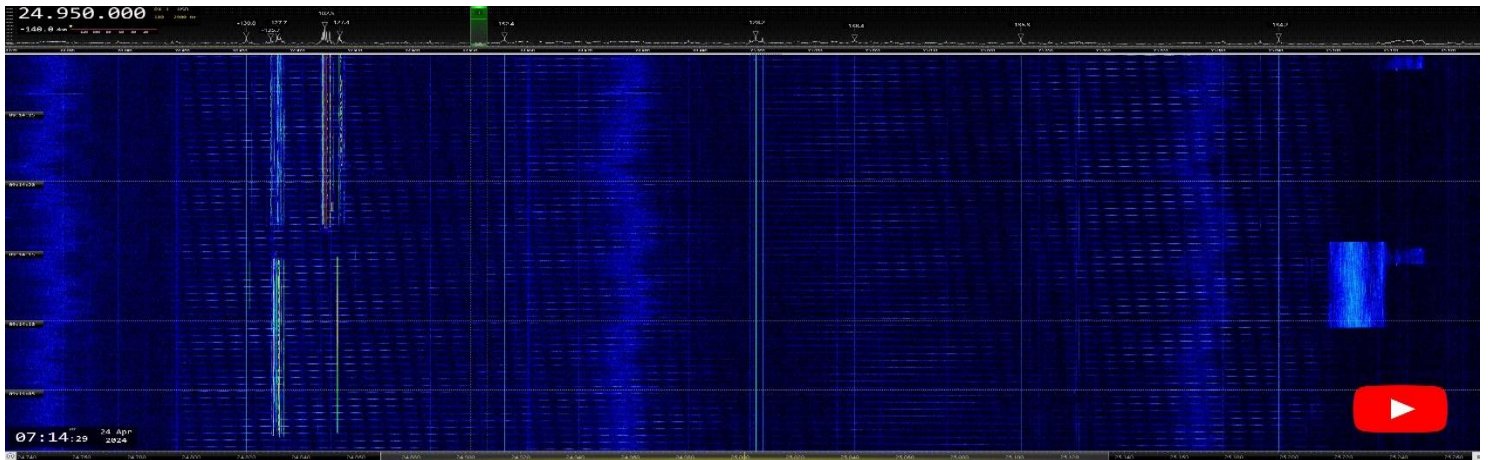
21001.5 kHz CF. XXX. Jammer. Long-lasting. Very often



7186 kHz CF. XXX. Jammer, bursts mode

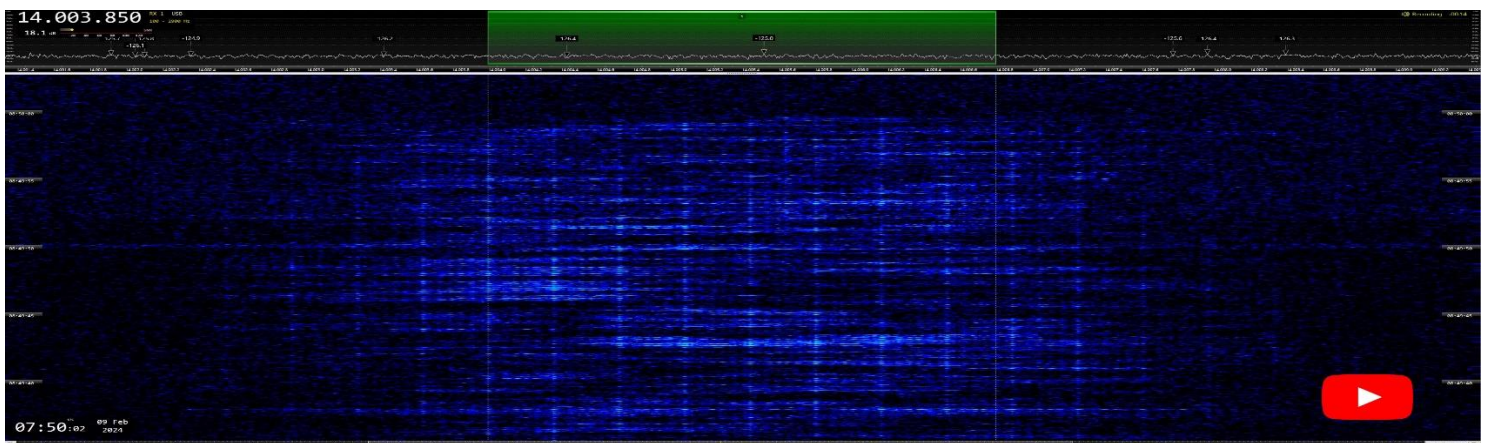
**Radars**

Many radar transmissions were also very often received. Some of them, daily. Although most of them were sent with military purposes, others, used for scientific research, were also heard in the amateur HF bands. Some examples of these transmissions sent by research radars were the daily ones received on 25000 kHz CF, sent by a CODAR-like radar (CODAR: *Coastal Ocean Dynamics Applications Radar*), which interferes almost the whole 12 meters amateur radio band (24890 kHz to 24990 kHz). BW =200 kHz. 2 sps (from 24900 to 25100 kHz).



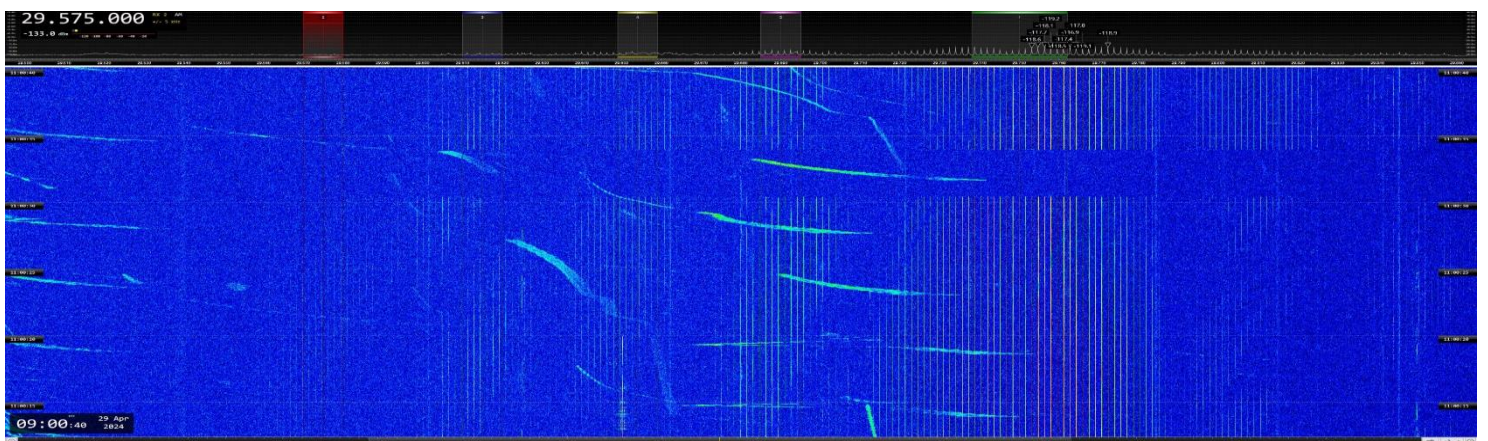
25000 kHz CF: CODAR-like radar. Daily. Long-lasting. BW = 200 kHz. 2 sps.

Another example of transmissions of scientific radars on the amateur radio bands are the bursts sent by the SuperDARN network radars (SuperDARN = *Super Dual Auroral Radar Network*). Often observed every month since January 2024, they were reported on 8 different days during April on different frequencies of the 20-meters band (BW ca 5 kHz)



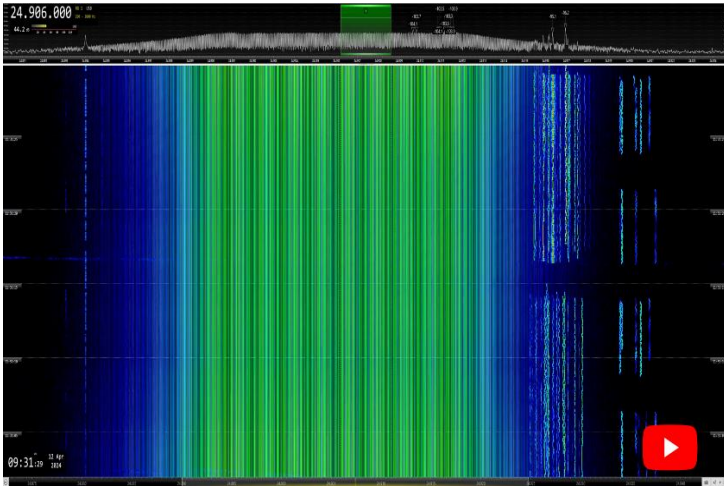
14005 kHz CF: SuperDARN bursts

The transmissions of the Kazan Federal University Meteor Radar (RUS) were also often heard (1592 sps). It transmits on 29750 kHz CF, out of the 10 m amateur radio band, but its lower side lobes are often received to 29650 kHz and below.

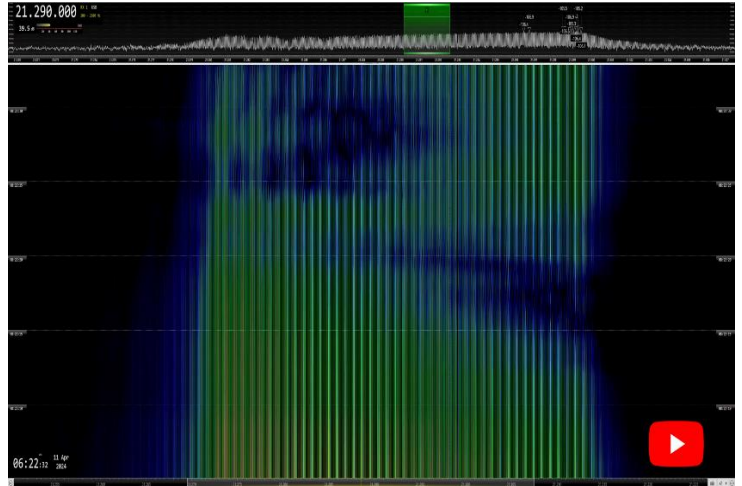


Kazan Federal University Meteor radar. Main frequency: 29750 kHz CF. Lower side lobes to 29650 kHz and below.

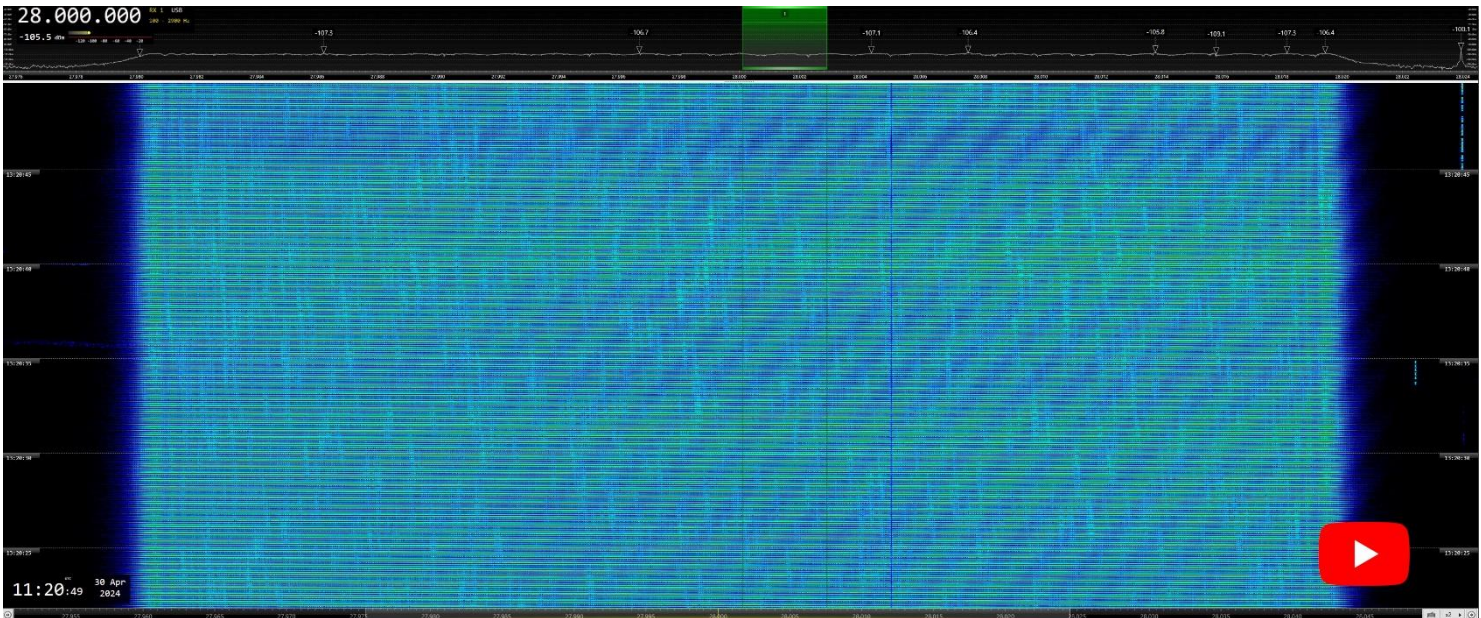
Many other well-known transmissions sent by military radars (OTHR; *over the horizon radars*) were also observed on the 40, 30, 20, 15, 12, and 10-meter bands during April:



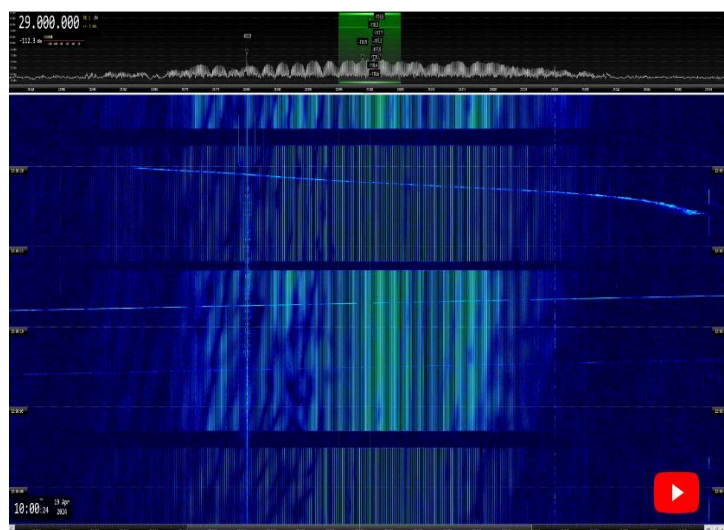
24906 kHz CF. OTHR Contayner. RUS. BW = 12K0E. 40 sps



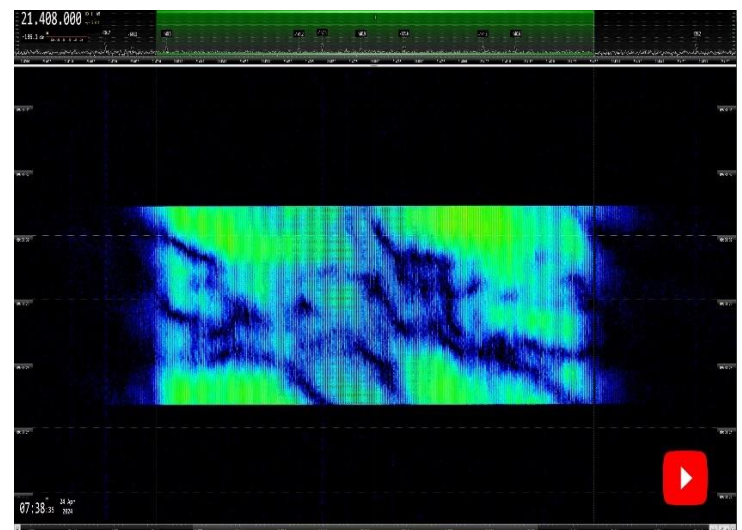
21290 kHz CF. British OTHR. G (UK SBA, Cyprus). BW = 20K0E. 50 sps



28000 kHz CF: British OTHR. G. BW = 40K0E. 12.5 sps. Partially inside the 10 m amateur band (20 kHz)



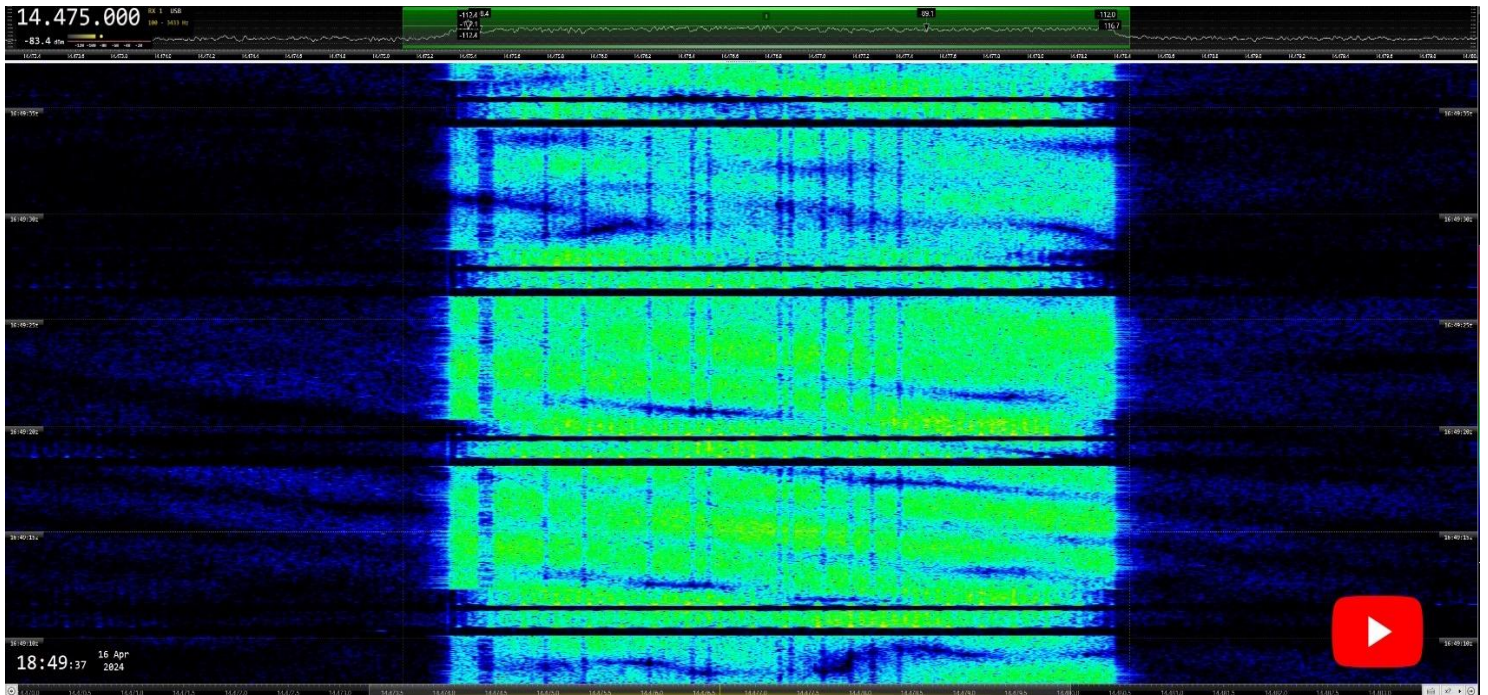
29000 kHz CF: OTHR. IRN. BW = 45K0E. Alternating 15 and 313 sps bursts



21408 kHz CF. OTHR „Foghorn“ bursts. CHN. BW = 10K0E. 41.7 sps

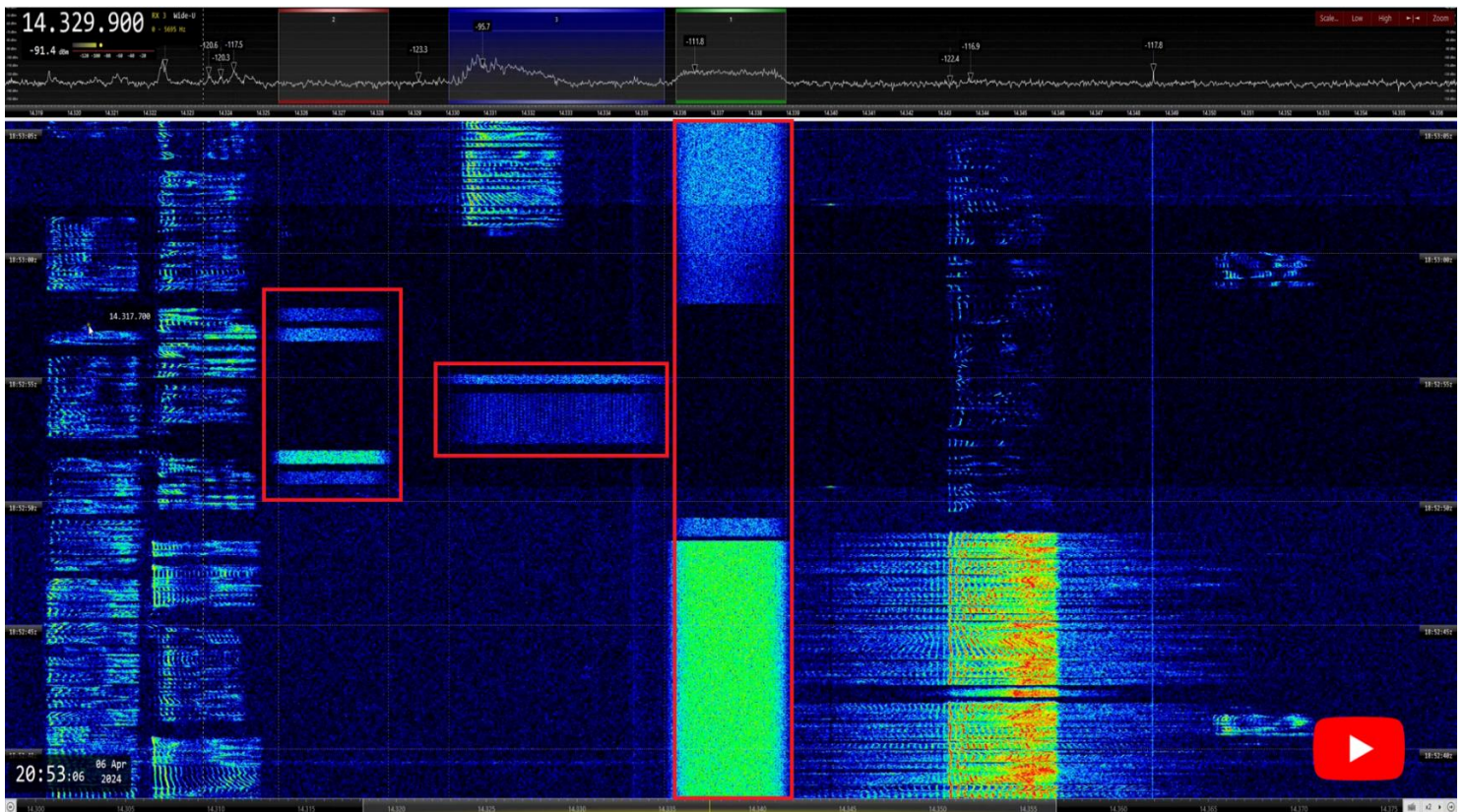
MIL, DIPLO & GOV modes

On April we received a transmission on the 20 m band using a CIS MIL mode which is rarely observed in the amateur HF bands: the CIS-OFDM 122 (122 x 21 Bd; with PSK 2400 Bd bursts):



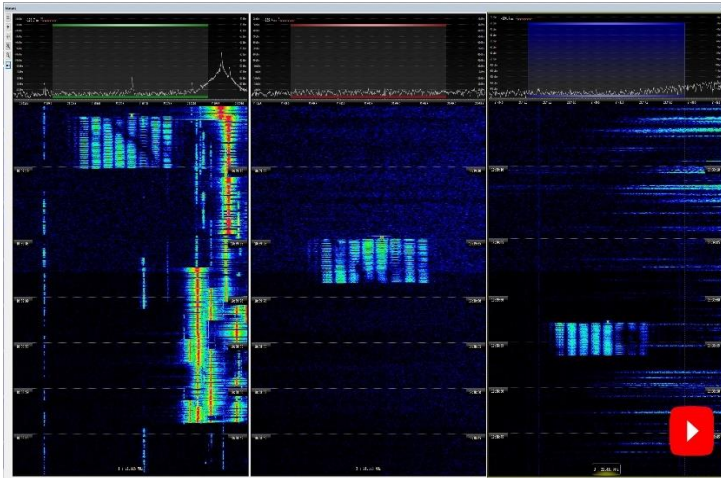
21018 kHz CF: CIS OFDM 122

Also rare in the amateur HF bands, we received a WHARQ (Wideband HF Hybrid Automatic Repeat Request) transmission in the 20-meter band. This L3Harris proprietary MIL mode can use different modulations and up to 8 different bandwidths during the transmissions:

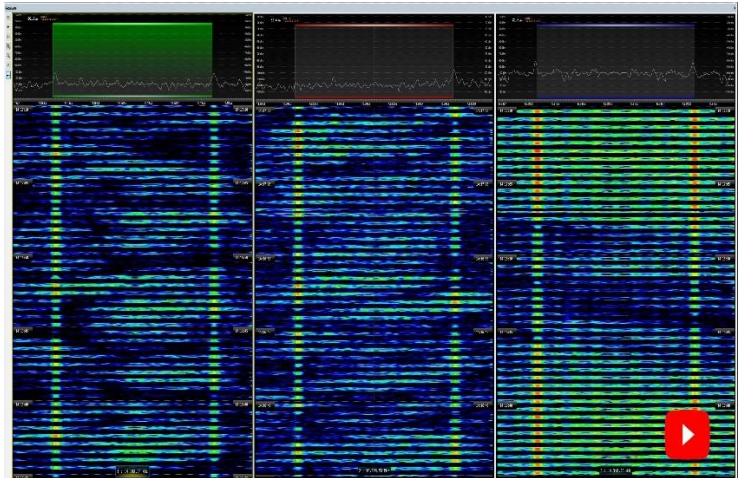


20-meter band: WHARQ (Wideband HF Hybrid Automatic Repeat Request) transmission.

On the 15-meter band we remarked high activity of CHN MIL transmissions using MIL-188-141A ALE 2G (J7D. MFSK. BW = 1K80E. 125 Bd). The FSK 600 ARQ diplomatic mode of the Democratic People's Republic of Korea (North Korea, DPRK) was also very often reported on the 20 m band (where it was used in more frequencies than the usual ones) and also on 15 m:

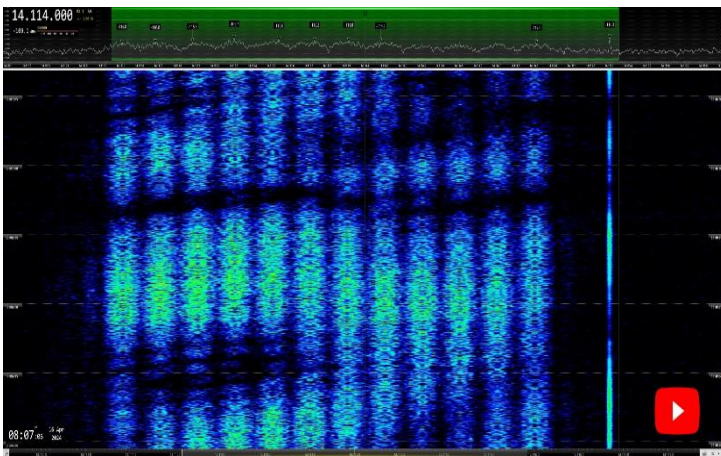


15 m: 3 X MIL-188-141A ALE 2G. CHN. Ids: BC5 and DB5. Very often

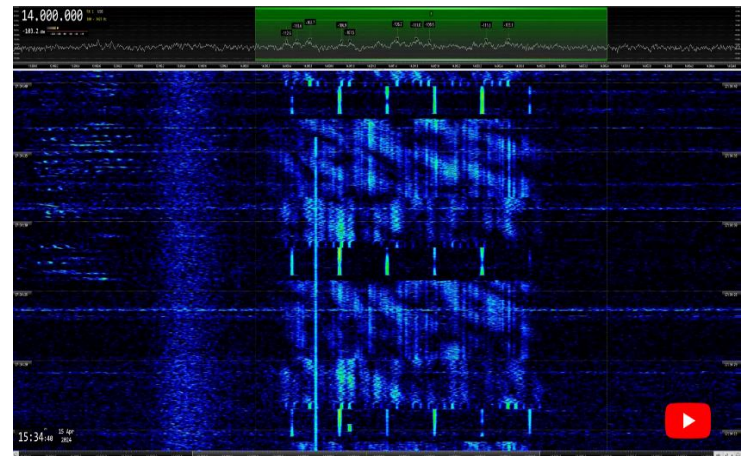


20m: 3 X DPRK-FSK 600 ARQ (Shift = 600 Hz. 600 Bd. Very often

Other well known modes like the CIS-12 (PSK; J7D. BW = 2K70E, 12 x 120 Bd + pilot tone), the Israeli navy Hybrid modem (4 tones preamble + parallel data QPSK part 75 Bd + serial data part MIL-188-110. BW = 2K40E. 2400 Bd) were observed:

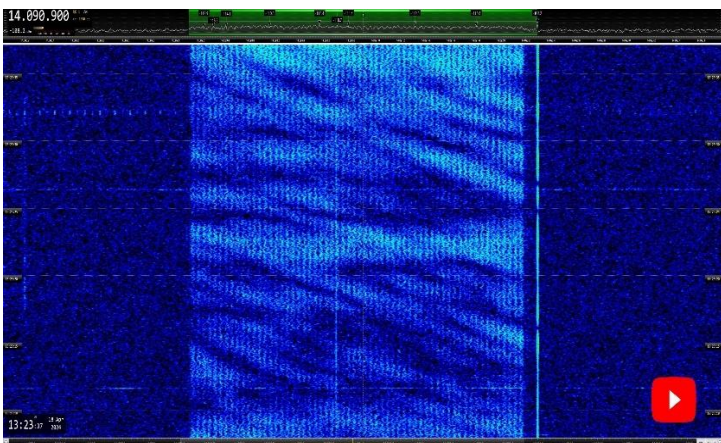


14114 kHz CF: CIS-12

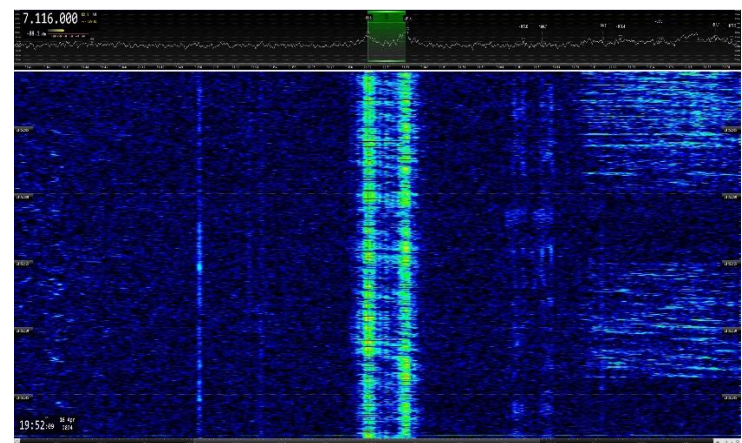


14001.5 kHz CF: ISR navy hybrid modem

MIL transmissions like the CIS-60 (a.k.a RUS High Data Rate mode. OFDM. W7D. BW = 2K80E. 60 ch 35.5 Bd + pilot tone) and many ## CIS-FSK transmissions – some of them daily, like the ones on 14192 kHz CF (Shift = 250 Hz, 50 Bd. RUS) or on 18107 kHz CF (RUS. Shift = 200 Hz. 50 Bd) were received in different bands, among other MIL modes:

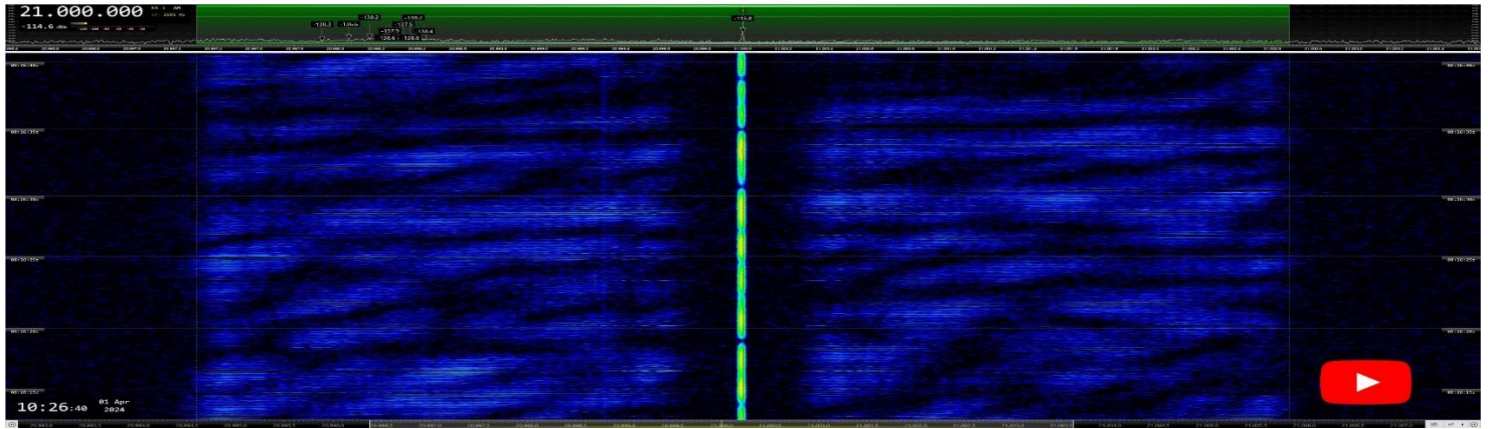


14091 kHz CF: CIS-60. W7D. OFDM

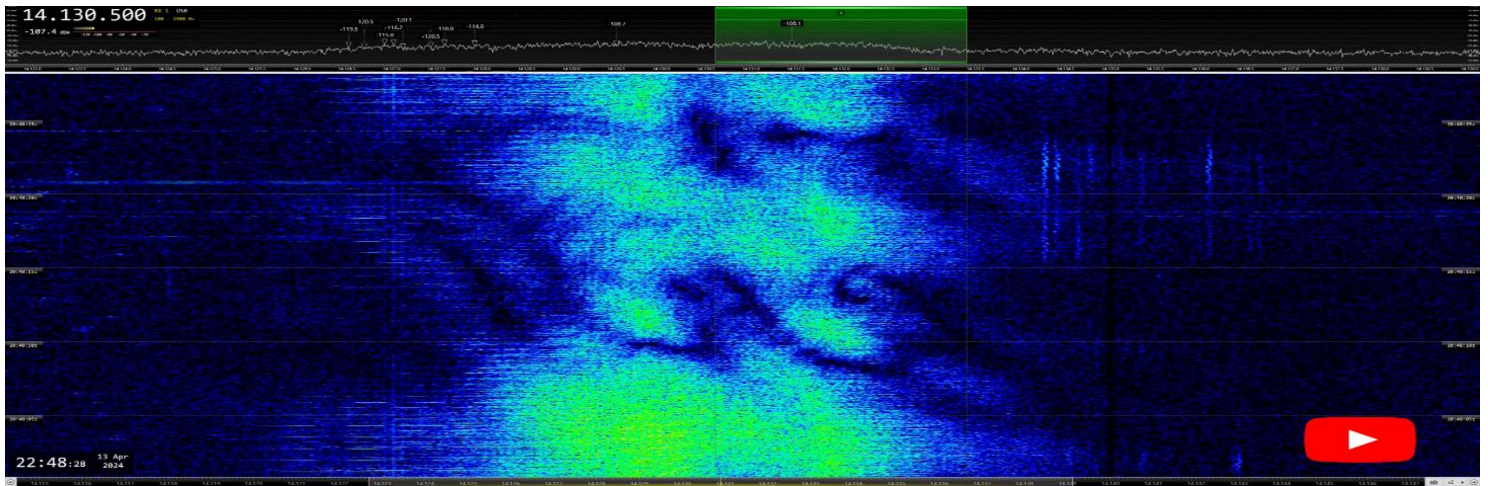


7116 kHz CF: CIS FSK. Shift = 200 Hz. 75 Bd

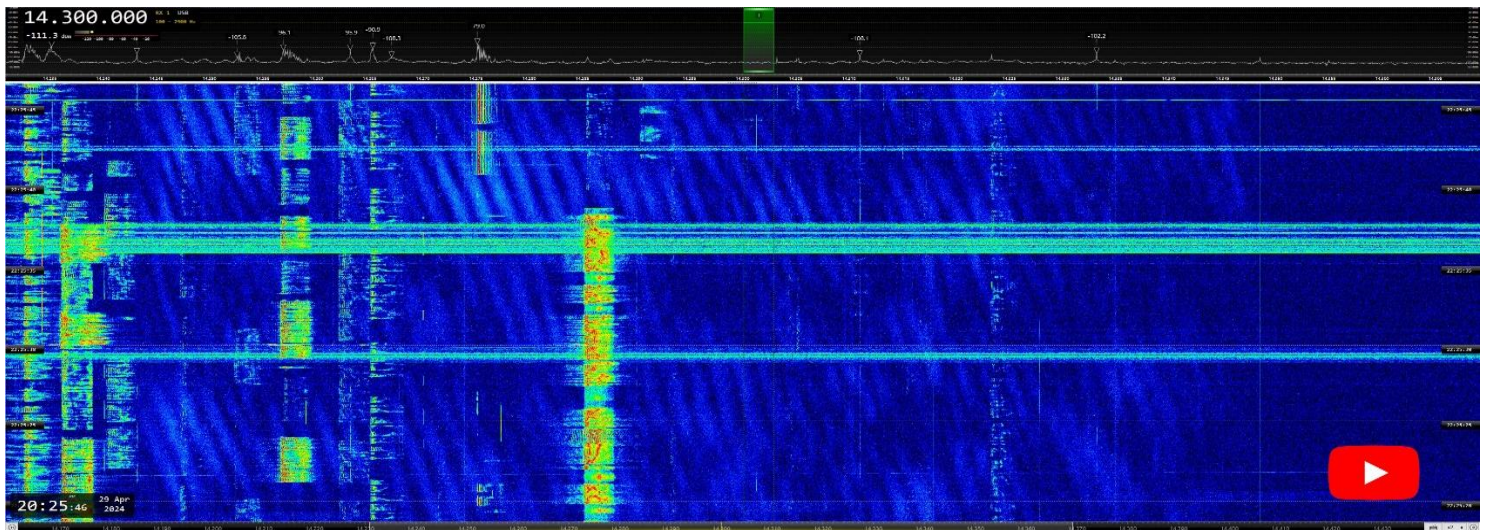
We also received some transmissions whose mode and purpose remain unknown:



21000 kHz CF: XXX. Unidentified signal with center carrier using different bandwidths and modulations. Same as on February and March 2024



14130.5 kHz CF: XXX. Unidentified continuous signal. Long-lasting. BW ca 4K0E. Often



14300 kHz CF: XXX: Unidentified continuous signal. BW = 110 kHz. 40 sps. Radar?

Last but not least, besides all these types of transmissions, non-amateur stations were observed in the different amateur radio HF bands, like the operated by, apparently, RUS taxi on the 10 m band (FM, F3E), or by the unfortunately well-known Spanish fishers on 21000 kHz CF and on 14000 kHz CF (JSB; J3E)

- **Find other screenshots and videos about the transmissions received during April at the end of this Newsletter** -

## Detailed reports of national coordinators

**Abbreviations used** (as per IARUMS definitions)

**aka** = also known as | **BC** = Broadcast | **Bd** = Baud | **BD** = Burst duration) | **BRI** = Burst repetition interval. **BW** = Bandwidth | **ca** = approximate | **CHN** = **PRC** = People’s Republic of China | **CF** = Center frequency **DF** = Direction finding (radio location; see also TDoA) | **FMCW** = frequency modulated continuous wave **FMOP** = frequency modulated on pulse | **OTHR** = over the horizon radar | **SH** = Shift (Hz) | **sps** = sweeps per second | **TDoA** = Time difference of arrival | **ui** = **unid** = unidentified.

<b>DARC; Harald, DL9NDW</b>									
<b>kHz</b>	<b>UTC</b>	<b>DD</b>	<b>MM</b>	<b>ITU</b>	<b>IDENT</b>	<b>MODE</b>	<b>BD /sps</b>	<b>SH / BW</b>	<b>DETAILS</b>
7030.0	05:44	04	04	RUS		XXX		3K0E	Music & Jammer
7033.0	17:14	03	04	RUS		XXX	100	3K0E	Carriers each 100Hz apart , no modulation or digital payload seen
7033.5	18:49	14	04			XXX	100	2K7E	Jammer. Vt
7035.0	18:48	13	04			J3E-L		CA3K0E	Music , very distorted, radiowar
7036.0	15:00	10	04			J7D		2K7E	CIS-12 idle, faint signal
7036.0	20:08	10	04			F1B	50	500H	cis-36-50, idle. Moscow. Vt, vd
7036.0	21:01	17	04			XXX		CA3K2E	jammer, 100hz spacing between carriers
7038.6	17:37	29	04			XXX	100	CA10K0E	Carriers at each 100hz , 7038.6 is highest level spike, seems spammer
7050.0	17:29	29	04			J3E-L		3K0E	UKR/RUS Propaganda War, complete mess with qrm
7053.0	05:09	08	04	RUS		J3E-L		3K0E	Totally distorted music, jammer
7054.0	17:47	03	04	RUS		F1B	50	200H	
7055.0	20:03	21	04			J3E-L		2K7E	Radiowar Propaganda Ukr vs Rus , vd, vt.
7056.5	12:25	21	04			XXX			hum with harsh noise , with higher level on upper and lower ends
7057.0	20:17	22	04			J3E-L		2K7E	Radiowar UKR-RUS
7060.0	13:53	02	04			XXX	50	5K0E	Jammer, 50 hz tone audible
7060	17:43	03	04			J3E-L		2K7E	UKR/RUS Radiowar, often, Heard on different Frequencies from 7050 to 7061
7070.0	20:06	04	04	RUS		J7D	120	2K7E	CIS-12. long lasting transmission
7080.0	17:46	08	04	RUS		F1B	50	200H	cis-50-50, vd, vt
7119.0	18:28	24	04			J7D	120	2K7	cis-12
7141.0	19:43	26	04	RUS		J7D	120	2K7	cis-12 (3rd Party reported)
14005.0	17:51	17	04			XXX	40	12K0E	jammer, 40hz
14005.0	07:30	22	04			F1B	50	250H	
14008.0	05:25	25	04	RUS		F1B	50	250H	Strong and broad , 2k affected BW,vd,vt
14036.0	16:14	15	04	CHN		RADAR	50	10K0E	OTHR , alternating with 14150 radar and 1 above 20m Band
14110.0	15:52	21	04	CHN		RADAR	42	10K0E	othr short bursts
14119.0	09:15	12	04	RUS		J7D	120	2K7E	cis-12
14121.0	18:38	30	04			J7D	125	1K75E	MIL-188-141A ALE 2G (3rd Party report )
14130.0	14:55	12	04			XXX		CA3K0E	Noise, with auroral sound
14131.0	15:46	14	04			XXX		CA4K0E	Strange Noise
14135.0	17:49	17	04	RUS		RADAR	40	12K0E	contayner
14140.0	20:29	10	04	RUS		RADAR	40	CA1K0E	contayner othr
14141.0	18:29	04	04	CHN		RADAR	42	10K0E	several bursts
14150.0	07:34	06	04	RUS		RADAR	40	12K0E	Contayner

**DARC; Harald, DL9NDW**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
14150.0	16:10	15	04	CHN		RADAR	50	10K0	OTHR, bursts
14159.0	15:05	19	04			J3E-U		2K7E	Propaganda, Radiowar ( rus vs ukr )
14192.0	08:37	05	04	RUS		F1B	50	250H	
14193.5	05:28	25	04			J7D	120	2K7E	cis-12
14194.0	12:49	25	04			J7D	120	2K7E	cis-12
14201.7	13:45	30	04	CHN		OTHER	75	2K2E	PRC 16, 16 tones + preamble, shanghai ( 3rd Party report )
14204.0	15:42	21	04	RUS		RADAR	40	12K0E	Contayner OTHR
14221.0	13:55	09	04			XXX		CA2K5E	Noise , jamming ao75ct
14236.0	17:01	18	04	CHN		RADAR	66.7	10K0E	OTHR , bursts
14253.0	14:31	19	04	RUS		F1B	75	250H	
14263.0	16:00	23	04			J7D	120	2K70E	
14268.5	18:36	22	04	CHN		RADAR	50	10K0E	short bursts
14285.0	16:31	28	04	CHN		RADAR	50	10K0E	Other Short bursts
14285.0	16:35	28	04	CHN		RADAR	66.7	10K0E	Short bursts
14292.0	08:18	10	04			XXX	40	3K0E	turned into CIS12
14293.0	08:21	10	04			J7D	200	2K7	CIS12, was an unmodulated signal before 8:20.
14298.5	07:29	05	04			F1B	600	600H	dprk-fsk arq 600
14299.0	17:38	15	04	CHN		RADAR	50	10K0E	OTHR Bursts
14300.0	16:30	17	04	RUS		RADAR	40	12K0E	Contayner OTHR
14300.0	06:07	18	04	RUS		RADAR	40	12K0E	OTHR , Contayner
14305.0	18:23	27	04	CHN		RADAR	63	10K0E	OTHR 4.1 Sek bursts (3rd Party reported)
14306.0	13:49	22	04	CHN		RADAR	50	10K0E	very short bursts same radar on 14313 and 14326 alternating
14308.0	12:36	06	04	RUS		RADAR	40	12K0E	
14312.0	09:06	23	04	RUS		RADAR	40	12K0E	contayner OTHR
14313.0	13:48	22	04	CHN		RADAR	50	10K0E	very short bursts othr
14317.0	18:27	03	04	CHN		RADAR	42	10K0E	othr bursts
14317.0	07:20	20	04	RUS		RADAR	40	12K0E	contayner OTHR
14317.0	18:25	23	04	CHN		RADAR	66.7	10K0E	OTHR Bursts
14324.0	14:02	16	04			F1B	75	200H	
14325.0	14:29	19	04	CHN		RADAR	66.7	10K0E	OTHR Bursts, vd, vt . Also on 14326,14328
14325.0	13:02	20	04	RUS		RADAR	40	12K0E	Contayner
14337.0	21:00	25	04	CHN		RADAR	667	10K0E	Bursts 3.8s
14338.0	14:33	23	04	CHN		RADAR	50	10K0E	OTHR Bursts
14344.0	20:03	17	04	CHN		RADAR	42	10K0E	OTHR Bursts
14346.0	18:24	04	04	CHN		RADAR	42	10K0E	Bursts
14347.0	15:38	22	04	CHN		RADAR	50	10K0E	OTHR bursts
14348.0	09:59	16	04	RUS		RADAR	40	12K0E	Contayner OTHR, broad signaldown to 14325
14352.0	17:43	27	04	CHN		RADAR	66.7	10K0E	OTHR 3.2 Sek Bursts (3rd Party reported)
18060.0	14:11	15	04	G		RADAR	50	20K0E	3rd Party observation , cyprus radar
18107.0	16:30	15	04	RUS		F1B	50	200H	vd, vt
18111.5	16:58	04	04			XXX		2K5E	Fading , covers entire beacon area, noise
18170.0	10:42	18	04	G		RADAR	50	20K0E	cyprus othr, down to 18158
18171.0	17:28	21	04	RUS		RADAR	40	12K0E	Splatters down to 18155
21000.0	08:52	08	04			XXX		10K0E	Jammer, vd, vt . Also with 2K7 Bandwidth



**DARC; Harald, DL9NDW**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
21000.0	10:02	08	04	E		J3E-U		2K7E	Spanish language fishermen
21060.0	17:04	18	04	G		RADAR	50	20K0E	Cyprus Radar
21098.0	10:36	23	04	CHN		RADAR	42	10K0E	OTHR BURSTS
21124.0	12:12	23	04			RADAR	40	10K0E	shifting frequency to 21125 on second burst, repeats
21124.0	11:12	27	04	CHN		RADAR	42	10K0E	OTHR 6.2 Sek bursts (3rd Party reported)
21128.0	14:58	02	04			XXX	120	10K0E	jammer, noise with underlying subtone ca. 2hz and 120hz peaks
21152.0	19:20	17	04			XXX		14K0E	Jammer
21158.0	14:29	10	04	RUS		RADAR	40	12K0E	
21166.0	08:53	21	04	CHN		RADAR	66.7	10K0E	chn othr, short bursts
21170.0	09:16	17	04	RUS		RADAR	40	12K0E	
21170.0	07:41	24	04	G		RADAR	50	20K0E	Cyprus OTHR
21173.0	09:13	14	04	RUS		RADAR	40	12K0E	contayner
21174.0	16:40	28	04	RUS		RADAR	40	14K0E	Contayner, strangely looks like 14K Bandwith
21175.0	11:50	23	04	CHN		RADAR	48	10K0E	Bursts OTHR China
21175.0	09:15	25	04	RUS		RADAR	40	12K0E	Very broad, Contayner, affects about 30kHz
21199.0	09:23	21	04	CHN		RADAR	66.7	10K0E	chn OTHR, Short bursts..qsyed about 9:15
21210.0	11:29	19	04	G		RADAR	50	20K0E	cyprus OTHR
21230.0	13:43	25	04	CHN		RADAR	42	10K0E	OTHR Short Bursts
21232.0	09:35	23	04	CHN		RADAR	50	10K0E	CHN OTHR bursts
21290.0	10:02	16	04	G		RADAR	50	20K0E	Cyprus OTHR
21298.0	05:41	29	04			RADAR	50	10K0E	OTHR , constantly
21300.0	09:47	10	04	G		RADAR	50	20K0E	OTHR Cyprus,
21300.0	09:21	24	04	CHN		RADAR	67.7	10K0E	OTHR , Short bursts also on 21219
21307.0	08:12	21	04	CHN		RADAR	50	10K0E	interesting reflection in zoomed view
21321.0	09:35	08	04	CHN		RADAR	50	10K0E	OTHR Bursts
21324.0	11:47	23	04	CHN		RADAR	48	10K0E	CHN OTHR Busrsts
21326.0	12:56	25	04	CHN		RADAR	40	10K0E	Short Bursts OTHR
21342.0	09:19	24	04	CHN		RADAR	67.7	10K0E	OTHR Short bursts until 09:17z
21345.0	14:15	19	04	G		RADAR	50	20K0E	cyprus, OTHR
21351.0	10:11	24	04	CHN		RADAR	50	10K0E	OTHR Bursts
21365.0	10:23	23	04	G		RADAR	50	20K0E	Cyprus OTHR
21371.0	09:56	04	04	CHN		RADAR	50	10K0E	Short Bursts
21388.0	15:03	07	04			RADAR	45	10K0E	short bursts, stopped 15:04
21397.0	05:45	29	04	CHN		RADAR	66.7	10K0E	Radar, short bursts, faint signal
21402.0	09:19	12	04	CHN		RADAR	50	10K0E	CHN OTHR, vd, vt
21405.0	09:57	07	04	G		RADAR	50	20K0E	cyprus Radar , -95dbm
21405.0	10:20	27	04	CHN		RADAR	50	10K0E	5.1 Sek bursts (3rd Party reported)
21409.0	15:55	25	04	CHN		RADAR	42	10K0E	6.2 Sec Bursts OTHR
21418.0	09:16	24	04	RUS		RADAR	40	12K0E	Contayner OTHR
21420.0	07:46	06	04	G		RADAR	50	20K0E	Cyprus , OTHR
21438.0	16:34	15	04	RUS		A1A	10		rus navy qtc, daily
21455.0	10:32	23	04	CHN		A3E		12K0E	Word shanghai heard several times. Splatters 5Khz into 21m Band
24892.0	12:26	04	04	RUS		RADAR	40	12K0E	up to 24905, contayner
24906.0	09:56	12	04	RUS		RADAR	40	12K0E	

**DARC; Harald, DL9NDW**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
24932.0	05:20	25	04	RUS		RADAR	40	CA12K0	Contayner OTHR
24935.0	06:30	29	04			RADAR	25	20K0E	OTHR with 24 or 25 Hz Sweeprate
24950.0	05:00	01	04			RADAR	40	20K0E	reported by dk7udo , splattering down to 24900
25000.0	07:33	05	04	I		RADAR	2	200K0E	Codar like ocean surface radar, often. Adria Coast
28000.0	10:50	19	04			J3E-U			Unknown language speakers, no callsigns
28025.0	11:07	16	04	G		RADAR	25	20K0E	Cyprus OTHR
28155.0	11:45	19	04	RUS		F3E		6K0	Russian Voice, Taxi
28395.0	09:57	12	04	G		RADAR	25	20K0E	Cyprus OTHR
28760.0	16:48	28	04	IRN		RADAR		45K0E	150/313 alternating OTHR, often
28856.0	09:20	10	04	IRN		RADAR		45K0E	Usual signal of Iran OTHR , 150/313 spsp bursts, vd,vt
29500.0	10:28	23	04	IRN		RADAR		45K0E	OTHR Iran 150/313 Bursts
29550.0	05:31	25	04	IRN		RADAR		45K0E	150/313 Alternating Bursts OTHR
29580.0	10:05	16	04	G		RADAR	25	20K0E	
29700.0	12:19	23	04	IRN		RADAR		45K0E	150/313 hz Bursts OTHR

**IRTS; Michael, EI3GYB**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
6970	2045	16	4			RADAR			Radar from 6970 to 7010 kHz. Medium and persistent signal.
6992	2125	7	4			RADAR			Radar from 6992 to 7012 kHz. Huge signals without end.
7000	2200	7	4			LSB			Various intruders were noticed during the month around this frequency: Bible reading noticed one evening by EI4KU. Male voices chatting in either English or Italian at various times and dates. Whistling. A person called "Marvin" looking for "Pete" heard on several days.
7000	2130	27	4			RADAR			Radar from 7000 to 7020 kHz. Weak, on and off.
7032	1540	12	4			USB			Carrier. Strong and persistent. Also noticed on other days.
7050	1525	7	4	RUS/UKR		LSB			Ukrainian-Russian radio war. Strong and persistent signals
7055	1700	12	4	RUS/UKR		LSB			Ukrainian-Russian radio war. Nearly daily with big signals.
7060	545	3	4	RUS/UKR		LSB			Shouting of slogans: "Russki swinja!" "Putin swinja!" "Kazapi". Strong signal.
7061	1725	3	4	RUS/UKR		LSB			Shouting of slogans in Russian, Ukrainian and German. "Putin kyhilo!" "Fascist Federation" "Schweinehunde" " Russenfaschisten". Strong signal.
7081	1750	3	4			F1B			Strong and persistent signal.
7110	2125	27	4			LSB			Rebroadcasting of a Russian speaking radio programme. Huge and persistent signals.
7138	2140	20	4			F1B			Strong signal, persistent.
7197.5	1615	20	4			F1B			Medium signal. Persistent.
14000	1625	20	4	E or MM		USB			Spanish fishermen chatting. Weak signals.

<b>IRTS; Michael, EI3GYB</b>									
<b>kHz</b>	<b>UTC</b>	<b>DD</b>	<b>MM</b>	<b>ITU</b>	<b>IDENT</b>	<b>MODE</b>	<b>BD /sps</b>	<b>SH / BW</b>	<b>DETAILS</b>
14130	730	6	4			RADAR			Radar from 14130 to 14160 kHz. Huge and persistent
14155	1305	25	4	RUS/ UKR		USB			Russian-Ukrainian radio war. Non stop announcement in English about “ the fascist aggressors” . Usual anti Russian slurs like “Russki pederatski” and “Kazapi”
14192	1500	1	4	RUS		F1B			Russian navy, Kaliningrad. Heard every day during all hours of daylight with a strong signal.
14297	735	6	4			FSK			North Korean embassy traffic. Medium to weak signals.
21000	1620	19	4	E or MM		USB			Spanish fishermen. Medium signals.
21091	1455	1	4			RADAR			Radar from 21091 to 21121 kHz. Huge and persistent.
21145	740	25	4			RADAR			Radar from 21145 to 21155 kHz. Strong and persistent.
21180	1420	8	4			RADAR			Radar from 21180 to 21200 kHz. Huge signal. Persistent.
21195	1135	19	4			RADAR			Radar from 21195 to 21225 kHz. Strong and persistent.
21208	920	29	4			RADAR			Radar from 21208 to 21228 kHz. Very strong, persistent.
21330	725	6	4			RADAR			Radar from 21330 to 21340 kHz. Weak signals.
21330	1225	19	4	G		RADAR			Radar from 21330 to 21360 kHz. Huge and persistent. SBA Cyprus.
21363	955	29	4	G		RADAR			Radar from 21363 to 21383 Khz. Very strong and persistent. Still on at 1145z. SBA Cyprus.
21380	1530	7	4	G		RADAR			Radar from 21380 to 21410 kHz. Huge and persistent. SBA Cyprus.
21410	1120	22	4	G		RADAR			Radar from 21410 to 21425 kHz.Huge and persistent. SBA Cyprus.
21418	1305	15	4	G		RADAR			Radar form 21418 to 21428 kHz. Huge and persistent. SBA Cyprus.
21438	900	1	4	UKR		CW			Russian navy Sevastopol. Heard daily all day long with various strengths.
24922	1015	14	4	G		RADAR			Radar from 24922 to 24952 khz. Huge and persistent. Still on an hour later. SBA Cyprus.
24933	1415	8	4			RADAR			Radar from 24933 to 24953 kHz. Medium signal, in and out.
28250	1200	23	4	IRN		RADAR			Radar from 28250 to 28380 kHz. Strong and persistent.
28658	1150	4	4			RADAR			Radar from 26658 to 28678 kHz. Strong and persistent.
28740	1600	29	4	IRN		RADAR			Radar from 28740 to 28790 kHz. Strong and persistent.
28980	1140	26	4			AM			Harmonic of a radio station broadcasting in an Asian language. Medium signal. Stops after a news broadcast at 1207z.
29465	1155	26	4	IRN		RADAR			Radar from 29465 to 29535 kHz. Strong and persistent.

<b>PZK; SP3AMO, SP5GNI</b>									
<b>kHz</b>	<b>UTC</b>	<b>DD</b>	<b>MM</b>	<b>ITU</b>	<b>IDENT</b>	<b>MODE</b>	<b>BD /sps</b>	<b>SH / BW</b>	<b>DETAILS</b>
7087.0	2114	06	04			RADAR		20K0E	S9+30dB, looks like Cyprus
7090.0	2004	06	04			RADAR		10K0E	S9+
7186.0	2015	06	04			UI		1K0E	S9 a burst every second
7197.0	2114	06	04			RADAR		20K0E	S9+30dB, looks like Cyprus
14008.0	0905	10	04			F1B		250	S9
14194.0	1220	25	04	RUS		CIS-12		2K7	S7
14204.0	0721	16	04			Radar	40	12K0E	
14253.0	0835	29	04			F1B		250	S7
14298,5	0740	12	04			F1B		600	S9 2 bursts per second
14300.0	0903	18	04			RADAR		16K0E	S9
14298.5	0750	27	04			F1B		600	S9 2 bursts per second
14298.6	0735	03	04			UI		1K8	S9
14325.0	1643	18	04	CHN		RADAR		10K0E	3 sec burst foghorn
18161.0	1015	24	04			RADAR		10K0E	5 sec burst
21004.0	0945	24	04			UI		10K0E	S5
21060.0	1630	18	04			RADAR		20K0E	S9 foghorn
21108.3	0734	03	04			F1B		600	S5
21159.0	0730	17	04			RADAR		10K0E	10 sec. Bursts
21170.0	0925	17	04			RADAR		16K0E	S7
21175.0	0905	25	04			RADAR		12K0E	S5
21176.0	1258	02	04			RADAR		14K0E	S8
21330.0	1415	25	04	CHN		RADAR		10K0E	3 sec burst foghorn and 21230.0
21345.0	1245	19	04			RADAR		20K0E	S9 +10
21349.0	0813	05	04			RADAR		10K0E	3 sec burst foghorn + 21325.0
21350.0	0900	18	04			RADAR		20K0E	S9
21372.0	vt	07	04			RADAR		10K0E	Foghorn continuous
21379.0	0915	08	04	CHN		RADAR		10K0E	3 sec burst foghorn + 21294.0
21395.0	1415	07	04			RADAR		20K0E	S9 foghorn
21399.0	1015	15	04			RADAR		10K0E	3 sec burst foghorn
21407.0	0910	07	04			RADAR		20K0E	S9 foghorn
21410.0	0645	07	04			RADAR		20K0E	S9+20dB, looks like Cyprus
21413.0	0430	07	04	CHN		RADAR		10K0E	3 sec burst foghorn
21420.0	0940	14	04			RADAR		20K0E	S9 +20
21420.0	0900	18	04			RADAR		14K0E	S7
21421.0	1605	30	04			RADAR		10K0E	S5
21422.0	0915	08	04	CHN		RADAR		10K0E	3 sec burst foghorn
21422.0	0730	17	04			RADAR		16K0E	S7
21430.0	0815	05	04			RADAR		20K0E	S9 foghorn
24941.0	1125	14	04			RADAR		14K0E	S6
24976.0	0940	24	04	CHN		RADAR		10K0E	3 sec burst foghorn
28204.0	0913	08	04			F3E		6K0	In Spanish non-amateur talk also 28105.0
28245.0	1417	25	04			F3E		6K0E	In Russian female radio taxi?
28255.0	1345	18	04			F3E		6K0E	In Russian female radio taxi?
28310.0	1028	08	04			RADAR		20K0E	S6
28895.0	0730	03	04			RADAR		20K0E	S6
29640.0	0938	08	04			RADAR		20K0E	S5

SRAL; Pekka, OH2BLU									
kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7 MHz	0730-0800	4	4	RUS		RADAR	40 sps	13k0E	(WebSDR 25d, 2030-0500)
7000.0	1200-1800	*	4	TWN		A3E		4k0E	Days: 1. 2. 4. Weak modulation, Sound of Hope?
7001.5	0510-1800	*	4			Jam/ XXX		2k5E	*) Days: 5. 7. 12. - 16. 18. 24. 29. 30. BW 6k3E also reported.
7008.5	0720-1400	08 09	4	RUS		J7D	120	2k60E	
7016.0	0700-1330	*	4	RUS		F1B		250H	*) Days: 3. 8. 10. 19.
7018.0	0700-1230	02 29	4	RUS		J7D	120	2k60E	.
7024.0	1150	23	4	RUS		F1B		250H	
7032.0	0450-1645	01 - 30	4	RUS		J3E-u		3k50	Non-stop Russian anthem / mx, (QRO day 4. with splatter)
7032.0	0000-2400	01 - 30	4	RUS		XXX		3k60E	Brum when no music.
7034.0	0930-1315/	23 24	4	RUS		J7D	120	2k60E	
7035.0	1410-1505/	10	4	RUS		J7D	120	2k60E	
7036.0	1755-1815	17 18	4	RUS		F1B		500H	
7042.0	0635	25	4	RUS		J7D	120	2k60E	
7042.0	1430-1830	*	4			Jam/ XXX		2k5E	*) Days: 2. 18. 23. 24. 25.
7048.0	0500-1300	01 - 27	4	RUS		A1A		60E	5F, mostly key failures with 20 pps
7051.7	0445-1830	*	4	RUS		XXX		1k2E	Days: 19. 22. 23. TDL
7054.0	1345-1900/	*	4	RUS		F1A/B		200H	*) Days: 1. - 5. 11. - 16. 20.
7057.5	0500-1600	01 - 30	4	RUS	5QNB etc	A1A		40H	5F, with xx as group filler
7060.0	0745-0800	05	4	RUS		A1A	14wpm		5BL, 5F
7068.0	-0835	24	4	RUS		J7D	120	2k60E	
7072.0	0883-	24	4	RUS		J7D	120	2k60E	
7078.0	1300	21	4	RUS		J7D	120	2k60E	
7080.0	1715-1845	*	4	RUS		F1B		250H	*) Days: 1. 2. 3. 11. 24. 27.
7094.0	1405	09	4	RUS		A1A	12wpm	40H	5BL
7102.0	0740-1315	*	4			NON			*) Days: 11. 12. 16.
7102.0	1420-1810	24	4	RUS	RMNC	A1A		40H	5BL
7111.0	0445-1030	02 07	4	RUS		F1B		250H	
7115.0	0725-0730	04 25	4	RUS			23wpm	3k5E	5F groups twice, 670 Hz tone usb with carrier
7133.0	0945-1500	14 15	4	RUS		J7D	120	2k60E	
7160.0	1715	16	4	RUS	RBL88	A1A		40H	5BL

SRAL; Pekka, OH2BLU									
kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7170.0	1325-1540	*	4			Jam/ XXX		2k5E	*) Days: 9. 13. 17.
7187.0	0800-1600	*	4	RUS		J7D	120	2k60E	*) Days: 3. 5. 6.
7196.0	0600-1400	*	4	RUS	FDNT etc	A1A		40H	*) Days: 1. 4. 5. 7. 16. 20. 23. 5BL
10 MHz	0445-0700	16	4	G		RADAR	50sps	20k0	(WebSDR 6d)
10 MHz			4	RUS		RADAR	40sps	13k0E	(WebSDR 0d)
14 MHz	0530-1815	*	4	RUS		RADAR	40sps	13k0E	*) Days: 1. 5. 16. - 21. 23. 24. 25. 30. (WebSDR 23d)
14 MHz	0845-1800	01 - 28	4	CHN		RADAR	50/67sps	10k0E	'foghorn'
14000A	0830-1750	*	4			RADAR		5k0E	*) Days: 7. 12. - 19. 22. - 25. 28. 30. SuperDARN jumps + / - 25 kHz, 60 sec on one fq
14003.0	0630-0830	22 24	4	RUS		F1B		250H	
14008.0	0445-1500	01 - 30	4	RUS		F1B		250H	
14013.0	0730-0735	30	4	RUS		J7D	120	2k60E	
14108.0	1405-1755	17	4	RUS		F1B		400H	
14119.0	0825-1755	*	4	RUS		J7D	120	2k60E	*) Days: 10. 11. 12. 13.
14192.0	0445-1800	01 - 30	4	RUS		F1B		200H	
14194.0	0445-1530	25	4	RUS		J7D	120	2k60E	
14221.0	0340-0600	01 - 07	4	KAZ		F1B		200H	
14253.0	0555-1600	*	4	RUS		F1B		250H	*) Days: 1. 5. 8. 12. 15. 19. 29.
14324.0	0455-1615	16 17	4	RUS		F1B		200H	
18 MHz	0400-1730	*	4	G		RADAR	50/25sps	20k0	*) Days: 13.15.23.(WebSDR 4d)
18 MHz	0515	08	4	RUS		RADAR	40sps	13k0E	(WebSDR 7d)
21 MHz	0430-1700	*	4	G		RADAR	50/25sps	20k0	*) Days: 1. 5. 7. - 11. 14. 18. 19. 23. 25. - 30. (WebSDR 26d)
21 MHz	1015-1800	*	4	RUS		RADAR	40sps	13k0E	*) Days: 2.15. 28. 29. (WebSDR 13d)
21 MHz	0440-1830	*	4	CHN		RADAR	50sps	10k0	*) Days: 2. 6. 7. 10. 12. 15. 21. (WebSDR 10d)
21 MHz	0430-1700	01 - 30	4	CHN		RADAR	50/67sps	10k0E	'foghorn'
21001.5	1700-1800	*	4			XXX/jam		3k0E	*) Days: 14. 19. 21. 22. 23. 25. 28.
21151.5	1630	27	4	RUS		XXX		2k8E	
21438.0	/0830	01 -	4	RUS	RCV	A1A	16 - 20	40H	Navip etc.

**SRAL; Pekka, OH2BLU**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
	-1630	30					wpm		
24 MHz	0615	29	4	G		RADAR	25 sps	2k5E	(WebSDR 2d)
24 MHz	0540-0630	*	4	RUS		RADAR	40sps	13k0E	*) Days: 12. 14. 25. (WebSDR 5d)
24 MHz	0600-1630	*	4	I		CODAR	2 sps	200k0E	*) Days: 1. - 5. 7. 10. 17. - 20. 29. WERA
28 MHz	0530-1430	*	4	G		RADAR	12.5/25/50 sps	20k0	*) Days: 3. 5. 6. 8. - 11. 16. 25. 26. 28. 30. (WebSDR 14d)
28 MHz	0500-1700	*	4	IRN		RADAR	150/313	60k0E	*) Days: 1. 2. 13. 20. 23. 24. 26. 28. 29. (WebSDR 5d)
28 MHz			4	IRN		RADAR	310/870	80k0E	Not heard
28760.0	0500-1600	28 29	4	IRN		RADAR	150/313	60k0E	
28860.0	0500-1600	*	4	IRN		RADAR	150/313	60k0E	*) Days: 6. 7. 10. 11. (WebSDR 5d)
28 MHz	0600-1415	*	4	RUS	Taxi disp.	F3E		3k0E	*) Days: 2. 3. 5. 12. 18 reports

**URE; Gaspar, EA6AMM. Team members: EA4021SWL, EB4APL**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7000.0*	vt**	vd**	04	RUS		RADAR	40	12K0E	<b>OTHR Contayner.</b> Long-lasting *RX on 7 different QRG on 40m **Often. <b>7 reports</b>
7002.0	19:24 vt*	05 vd*	04			XXX		8K0E	XXX. Jammer. Same type as the one on 7042 kHz CF or 7156.5 kHz CF. *Also on 07, 13, 14, 15 and 16/04
7005.0	17:06	17	04			XXX		3K0E 12K0E	L3Harris WHARQ (Wideband HF Hybrid Automatic Repeat Request). BWs: 3K0E and 12K0E
7016.0	18:21	08	04			XXX			7000 to 7040 kHz. L3Harris WHARQ (Wideband HF Hybrid Automatic Repeat Request). Several BWs
7016.5	19:06	03	04			XXX		2K40E	7016.5 kHz USB. XXX. Unidentified digital bursts
7018.0	15:52	10	04			PSK	2400	3K0E	ALE 3G
7020.0	07:05	01	04			F1B	50	250H	
7032.0 USB	19:25 vt*	01 vd*	04			XXX		CA3K50E	XXX. Unidentified continuous signal. Several carriers. Spacing = 240 Hz
7032.0	06:23 vt*	03 vd*	04			J3E-U		3K30E	J3E-U. RUS Anthem loop. Short TX pause after the song ends. *Often. 7 reports
7036.0	19:37 vt*	05 vd*	04			F1B	50	500H	*Often. 7 reports
7042.0	19:33	01	04			XXX		8K0E	XXX. Jammer
7042.0	18:05	02	04			XXX		8K0E	XXX. Jammer. Generated by 85 Hz tone
7047.0	16:41	15	04			J3E-L			UKR/RUS radiowar
7051.7	19:59	22	04			PSK		1K20E	XXX. Continuous digital signal. Long-lasting
7054.0	18:04 vt*	02 vd*	04	RUS		F1B	50	200H	*Very often. 13 reports
7070.0	16:02	10	04			XXX		CA6K0E	Same bursts like on 14130 kHz CF

<b>URE; Gaspar, EA6AMM. Team members: EA4021SWL, EB4APL</b>									
<b>kHz</b>	<b>UTC</b>	<b>DD</b>	<b>MM</b>	<b>ITU</b>	<b>IDENT</b>	<b>MODE</b>	<b>BD /sps</b>	<b>SH / BW</b>	<b>DETAILS</b>
7080.0	19:52 vt*	01 vd*	04	RUS	RDL	F1B F1A	50	200H	CIS 50-50 *Very often. 19 reports
7089.8	18:39 vt*	02 vd*	04			G1D	2400	2K40E	LINK-11 SLEW *Also on 06/04, 2007 UTC
7101.8	21:15	03	04			XXX		CA2K60E	XXX. Unidentified continuous signal. BW ca 2K60E. Long-lasting
7116.0	19:11	16	04			F1B	75	200H	
7119.0	19:35	10	04			J7D	120	2K70E	CIS-12
7133.0	13:28	15	04			J7D	120	2K70E	CIS-12
7156.5	18:20	02	04			XXX		2K50E	Jammer. Base: 85 Hz tone. FM modulated. Long-lasting
7186.5	17:46	06	04			XXX		CA1K60E	Bursts. Jammer. Base: 85 Hz tone. FM modulated. Long-lasting
7196.0	19:39	16	04			F1B	75	200H	
7210.0	18:12	07	04	CHN	CRI	A3E		9K0E	BC. CRI. Splatter to 7190 kHz
10100*	vt**	vd**	04	AUS		RADAR	7 7.2	10K0E 12K0E	<b>OTHR JORN bursts</b> ; with short tone intro * RX on 4 different QRG on 30m. **Often. 6 reports
13999.5	06:38	01	04			XXX		7K0E	Unidentified digital bursts. Jammer. Base: 85 Hz tone. FM modulated. Long-lasting
14000.0*	vt**	vd**	04	RUS		RADAR	40	12K0E	<b>OTHR Contayner</b> . Long-lasting *RX on 27 different QRG on 20m **Very often: <b>30 reports</b> . 2 simultaneous TX on 20m: 2
14000.0*	vt**	vd**	04	CHN		RADAR	41.7 50 66.7	10K0E	<b>OTHR short bursts ("Foghorn")</b> *RX on 31 different QRG on 20m **Almost daily. <b>34 reports</b>
14000.0 USB	17:09 vt*	04 vd*	04			G1D	2400	2K40E	ISR navy hybrid modem bursts *Also on 15/04, 1530 UTC
14000.0	06:58	10	04					150H	14000 kHz USB: PACTOR I. Shift = 150 Hz. No decode possible (CF QRG: 14001.5 kHz). QRT: 0700 UTC
14000.0 USB	17:15	16	04			J7D	125	1K80E	MIL-188-141A ALE 2G
14003.0	07:18 vt*	22 vd*	04			F1B	75	250H	*Also on 24/04, 0641 UTC
14005.0*	vt**	vd**	04			RADAR		6K0E	<b>SuperDARN bursts</b> . Long-lasting. *RX on 3 different QRG on 20m **Often. 4 reports
14008.0	07:01 vt*	06 vd*	04	RUS		F1B	50	250H	*Often. 12 reports
14011.0	11:19	23	04			J3E-U		2K40E	J3E-U. Unid stations talking. Male voices, Arabic language. QRT: 1119 UTC
14026.0	13:12 vt*	12 vd*	04			J7D	120	2K70E	CIS-12 *Also on 24/10, 0922 UTC
14090.9	07:43	04	04			W7D	40	2K80E	CIS-60, aka RUS High Data Rate modem
14091.0	13:24	18	04			W7D	35	2K80E	CIS-60, aka RUS High Data Rate modem
14108.0	17:53	18	04			F1B	50	400	F1B. Shift = 400 Hz. Not a harmonic of 7054 kHz F1B 200 Hz, 50 Bd: no TX on that QRG
14109.5	12:22	18	04			F1D	600	600H	DPRK-FSK 600 ARQ
14112.0	08:24	16	04			F1B	75	250H	
14114.0	08:01	16	04			J7D	120	2K70E	CIS-12
14119.0	17:00 vt*	09 vd*	04			J7D	120	2K70E	CIS-12. Long-lasting *Also on 10, 11 and 12/04



<b>URE; Gaspar, EA6AMM. Team members: EA4021SWL, EB4APL</b>									
<b>kHz</b>	<b>UTC</b>	<b>DD</b>	<b>MM</b>	<b>ITU</b>	<b>IDENT</b>	<b>MODE</b>	<b>BD /sps</b>	<b>SH / BW</b>	<b>DETAILS</b>
14130.0	15:18	10	04			XXX	4800	6K0E	XXX: Unidentified bursts over the 14130.5 kHz XXX signal. BW ca 6K0E. With 3 short intro tones. MSK 4800 Bd
14130.5	13:13 vt*	09 vd*	04			XXX		CA4K0E	XXX. Unidentified continuous signal. Variable tone, FM modulated. Long-lasting. *Also on 10, 11, 12, 13, 14 and 15/04. Vt
14145.0	11:51	06	04			J3E-U		2K80E	J3E-U. UKR/RUS radiowar
14148.5	07:45 vt*	01 vd*	04			F1D	600	600H	DPRK-FSK 600 ARQ *Also on 17/04, 0732 UTC and on 22/04, 0732 UTC
14153.0 *USB	15:22 vt*	10 vd*	04		BC5 DB5	J7D	125	1K80E	MIL-188-141A ALE 2G + ROBUST *Also on 11/04, 1624 UTC (no ROBUST)
14160.0	07:25 vt*	18 vd*	04			J3E-U		2K80E	UKR/RUS radiowar *Also on 22/04, 0759 UTC and 30/04, 1156 UTC
14165.0	16:36	19	04			J3E-U		2K80E	UKR/RUS radiowar
14171.0	11:05	29	04			J7D	120	2K70E	CIS-12
14172.5	09:10	14	04			J3E-U		2K80E	UKR/RUS radiowar
14180.0	07:46	15	04			XXX			14180 kHz to 14350 kHz: FHSS (Frequency Hopping Spread-Spectrum) transmission.
14192.0	06:42 vt*	01 vd*	04	RUS		F1B	50	250H	*Almost daily. 25 reports
14198.5	07:02 vt*	01 vd*	04			F1D	600	600H	DPRK-FSK 600 ARQ *Often. 12 reports
14198.5	07:06	23	04			G1D	1200	1K20E	DPRK-PSK 1200 ARQ
14200.0	18:22	30	04				75	2K40E	CHN-16. Long-lasting
14213.0 USB	19:35	29	04		CD1 DN3	J7D	125	1K80E	MIL-188-141A ALE 2G
14220.5	08:08 vt*	09 vd*	04			F1D	600	600H	DPRK-FSK 600 ARQ *Often. 7 reports
14221.0	20:15 vt*	02 vd*	04	KAZ		F1B	50	200H	*Also on 03/04, 2126 UTC
14224.0	07:57	29	04			F1B	50	250H	
14228.0	07:35	16	04			J7D	120	2K70E	CIS-12
14228.5	12:11	06	04			F1D	600	600H	DPRK-FSK 600 ARQ
14231.5	11:12	18	04			F1D	600	600H	DPRK-FSK 600 ARQ
14248.5	06:35	10	04			F1D	600	600H	DPRK-FSK 600 ARQ
14253.0	06:41 vt*	01 vd*	04			F1B	75	250H	*Also on 12, 15, 22 and 29/04. Vt
14265.0	15:09	23	04			J7D	120	2K70E	CIS-12
14293.0	08:35	10	04			J7D	120	2K70E	CIS-12
14298.5	07:33 vt*	03 vd*	04			F1D	600	600H	DPRK-FSK 600 ARQ *Often. 12 reports
14300.0 USB	06:44	24	04			J7D	125	1K80E	MIL-188-141A ALE 2G
14300.0	20:29	29	04			XXX	40	110K0E	Unidentified continuous signal. Radar?
14315.0 USB	18:05	12	04			J7D	125	1K80E	MIL-188-141A ALE 2G
14318.5	12:11	30	04			F1D	600	600H	DPRK-FSK 600 ARQ
14324.0	09:42	16	04			F1B	75	200H	
14331.5	12:39 vt*	18 vd*	04			F1D	600	600H	DPRK-FSK 600 ARQ. *Also on 23/04, 0813 UTC and 29/04, 0816 UTC
14335.0*	20:51	06	04			XXX		3K0E	L3Harris WHARQ (Wideband HF Hybrid Automatic Repeat Request). *Bursts on different QRG on 20m

<b>URE; Gaspar, EA6AMM. Team members: EA4021SWL, EB4APL</b>									
<b>kHz</b>	<b>UTC</b>	<b>DD</b>	<b>MM</b>	<b>ITU</b>	<b>IDENT</b>	<b>MODE</b>	<b>BD /sps</b>	<b>SH / BW</b>	<b>DETAILS</b>
18060.0	13:31 vt*	15 vd*	04	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus. *Also on 18/04, 1350 UTC
18107.0	07:43 vt*	01 vd*	04	RUS	RDL	F1B F1A	50	200H	CIS 36-50 *Almost daily. 25 reports
18140.0	12:21	10	04	CHN		RADAR	50	10K0E	OTHR short bursts
18414.0	17:05	04	04	CHN		RADAR	41.7	10K0E	OTHR short bursts
21000.0*	vt**	vd**	04	G		RADAR	50	20K0E	<b>OTHR. UK SBA, Cyprus.</b> Long-lasting *RX on 24 different QRG on 15m **Almost daily: <b>30 reports</b> 2 simultaneous TX on 15m: 1
21000.0*	vt**	vd**	04	RUS		RADAR	40	12K0E	<b>OTHR Contayner.</b> Long-lasting *RX on 20 different QRG on 15m **Almost daily: <b>25 reports</b>
21000.0*	vt**	vd**	04	CHN		RADAR	41.7 50 66.7	10K0E	<b>OTHR short bursts (“Foghorn”)</b> *RX on 53 different QRG on 15m **Almost daily. <b>59 reports</b>
21000.0	07:20	01	04			XXX		CA6K0E	XXX. AM or DBS digital signal with center carrier. Several BW and modulations used
21000.0	06:51	03	04			J3E-U		2K40E	Non-amateur comms. Male and female voices. Unidentified language. *Often
21001.5	17:15 vt*	vd*	04			XXX		3K0E	XXX. Jammer *Often. 9 reports
21008.5	07:03 vt*	12 vd*	04			F1D	600	600H	DPRK-FSK 600 ARQ *Also on 22/04, 0705 UTC
21016.0 USB	07:24	24	04		BC5 DB5	J7D	125	1K80E	MIL-188-141A ALE 2G
21018.3	17:15	22	04			W7D		3K0E	CIS OFDM 122 bursts
21108.5	07:28	30	04			F1D	600	600H	DPRK-FSK 600 ARQ
21025.0 USB	08:39 vt*	01 vd*	04		BC5 DB5	J7D	125	1K80E	MIL-148-141A ALE 2G. Sometimes, + ROBUST. *Often. 9 Reports
21061.5 USB	07:12	04	04			G7D	75	2K40E	CHN 4+4. *Also on 10/04, 0711 UTC and 24/04, 0908 UTC
21064.5 USB	08:08	01	04			XXX	2400	2K40E	Unidentified digital bursts
21066.0	07:42 vt*	07 vd*	04			XXX		10K0E	XXX. Unidentified continuous signal. Long-lasting *Very often
21108.0	07:27	19	04			G1D	1200	1K20E	DPRK-PSK 1200 ARQ
21108.5	07:06 vt*	03 vd*	04			F1D	600	600H	DPRK-FSK 600 ARQ. *Often. 6 reports
21113.0	06:58 vt*	01 vd*	04			F1B	50	200H	*Often. 11 reports
21145.0 USB	17:59	07	04	MRC	MIRADOR	J7D	125	1K80E	MIL-188-141A ALE 2G *Also on 08, 09 and 13/04. Vt
21151.5	16:59	17	04			XXX		10K0E	XXX. Jammer
21155.0 USB	07:29	05	04			G7D	75	2K40E	CHN 4+4
21176.0 USB	07:46 vt*	09 vd*	04	CHN	BC5 DB5	J7D	125	1K80E	MIL-188-141A ALE 2G *Often. 8 reports
21176.0 USB	09:38	29	04			G7D	75	2K40E	CHN 4+4. With carrier or pilot tone on 21176 kHz
21178.5	09:24	30	04			F1D	600	600h	DPRK-FSK 600 ARQ
21185.0 USB	08:44 vt*	01 vd*	04	CHN	BC5 DB5	J7D	125	1K80E	MIL-148-141A ALE 2G + ROBUST *Also on 22/04, 0813 UTC (no ROBUST)
21286.0	11:55	08	04	CHN	BC5	J7D	125	1K80E	MIL-188-141A ALE 2G

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kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
USB					DB5				
21311.5 USB	09:14	24	04			G7D	75	2K40E	CHN 4+4
21325.0 USB	08:21	24	04			G7D	75	2K40E	CH 4+4
21336.0	06:29	06	04	CHN		RADAR	50	10K0E	OTHR. Long-lasting
21372.0	07:07	07	04	CHN		RADAR	50	10K0E	OTHR. Long-lasting
21395.0 USB	08:46 vt*	01 vd*	04	CHN	BC5 DB5	J7D	125	1K80E	MIL-148-141A ALE 2G *Often. 7 reports
21405.0	08:29	18	04	CHN		G7D	75	2K40E	CHN 4+4
21415.0 USB	08:13	04	04			J7D	125	1K80E	MIL-188-141A ALE 2G *Also on 18/04, 0816 UTC
21420.0	19:42	06	04			A3E			A3E. BC. unidentified station. Male and female speakers. Unidentified language (some words in Portuguese). QRT: 2156 UTC
21426.0 USB	07:49 vt*	10 vd*	04		BC5 DB5	J7D	125	1K80E	MIL-188-141A ALE 2G (sometimes, ROBUST) *Often. 5 reports
21436.0 USB	08:06	22	04		BC5 DB5	J7D	125	1K80E	MIL-188-141A ALE 2G
21438.0	08:33 vt*	01 vd*	04	RUS	RCV	A1A			RUS navy QTC *Almost daily. 24 reports
24890.0*	vt**	vd**	04	RUS		RADAR	40	12K0E	<b>OTHR Contayner.</b> Long-lasting *RX on 5 different QRG on 12m **Often. <b>5 reports</b>
24890.0*	vt**	vd**	04	CHN		RADAR	41.7 50 66.7	10K0E	<b>OTHR short bursts (“Foghorn”)</b> *RX on 11 different QRG on 12m **Often. <b>11 reports</b>
24942.0	08:46	16	04			XXX		CA18K0E	Unidentified continuous signal
25000.0	07:37 vt*	01 vd*	04	I		RADAR	2	200K0E	CODAR-like radar. Long-lasting. Interfering almost the whole 12 m. band from 24900 to 24990 kHz. *Almost daily. 23 reports
28000.0*	vt**	vd**	04	G		RADAR	50 25	20K0E	<b>OTHR. UK SBA, Cyprus.</b> Long-lasting *RX on 16 different QRG on 10m **Very often. <b>16 reports</b> 2 simultaneous TX on 10 m: 2
28000.0*	vt**	vd**	04	IRN		RADAR	150 313	45K0E	<b>OTHR.</b> Alternating 150 and 313 sps bursts *28860 kHz CF: 3 reports. Long-lasting *Hopping: 14 reports **Very often. <b>18 reports</b> 2 simultaneous TX on 10m: 1
28000.0*	vt**	vd**				F3E			Non-amateur comms. Female voice. Slavic language. Short traffic. *12 different usual QRG on 10m **Very often
28000.0	11:21	30	04	G		RADAR	12.5	40K0E	OTHR. UK SBA, Cyprus
28051.5	18:19	07	04			F1B	51	300H	Fishing buoy
28062.2	18:22	07	04			F1B	51	300H	Fishing buoy
28082.1	18:20	07	04			F1B	51	300H	Fishing buoy
29750.0	09:05 vt*	07 vd*	04	RUS		RADAR	1592		29750 kHz CF: Kazan Federal University Meteor Radar. Lower side lobes to 29650 kHz. *Often

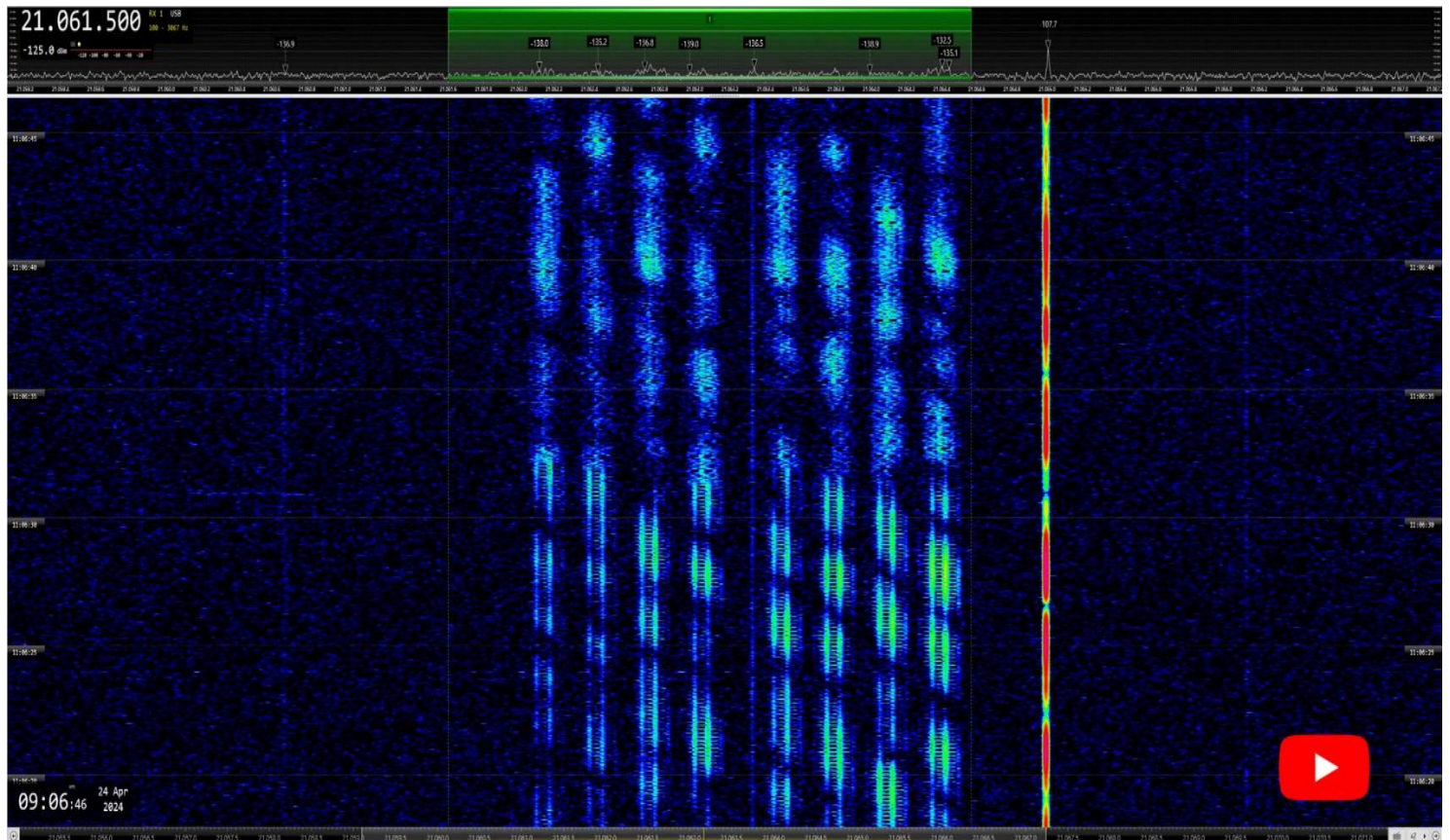
**VERON; Ruud, PG1R. Credits to observers: Dick PA0GRU, Rene PA3EQO**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7036.0	1958	10	04	RUS		F1B		500H	UiPtr
7080.0	1745	08	04	RUS		F1B		200H	UiPtr
14121.0	1840	30	04			J7D		1K80E	MFSK-8
14192.0	1440	28	04	RUS		F1B		250H	UiPtr; idle; QSB
14345.0	0955	16	04	RUS		RADAR	40	12K0E	CF; OTHR Contayner; wide splatting
14350.0	0900	16	04	G		RADAR		20K0E	OTHR; UK AB Cyprus
18062.0	1328	15	04	G		RADAR		20K0E	CF; OTHR; partly in 17m amateurband; also up to 5kHz spurious emissions
18066.0	1625	29	04	G		RADAR		20K0E	CF; OTHR; partly in 17m amateurband
18107.0	1628	15	04	RUS		F1B		200H	UiPtr
21204.0	1744	17	04			XXX		4K0E	CF; unknown; probably jammer
21439.0	1434	28	04	G		RADAR	50	20K0E	CF; OTHR; UK AB Cyprus; S9+
25000.0	0952	11	04	I		RADAR	2	200K0E	CF; CODAR; covering 12m amateur band; weak S4

Contact: Gaspar, EA6AMM. IARUMS Region 1 coordinator: [iarums@iaru-r1.org](mailto:iarums@iaru-r1.org)

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21061.5 kHz USB: CHN 4 + 4 (a.k.a PRC 4 + 4). G7D. BW = 2K40E. 75 Bd.

