IARU Monitoring System Region 1

Monthly Newsletter – December 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/*

Peter Jost, HB9CET, Silent Key

HB9CET, Peter Jost

It is with great sorrow that we announce the passing of our esteemed colleague and dear friend, Peter Jost, HB9CET, former IARUMS Region 1 Vice-Coordinator until January 2022, IARUMS R1 Coordinator a.I during 2020, and USKA IARUMS National Coordinator until January 2024, who left us on January 3, 2025, at the age of 82.

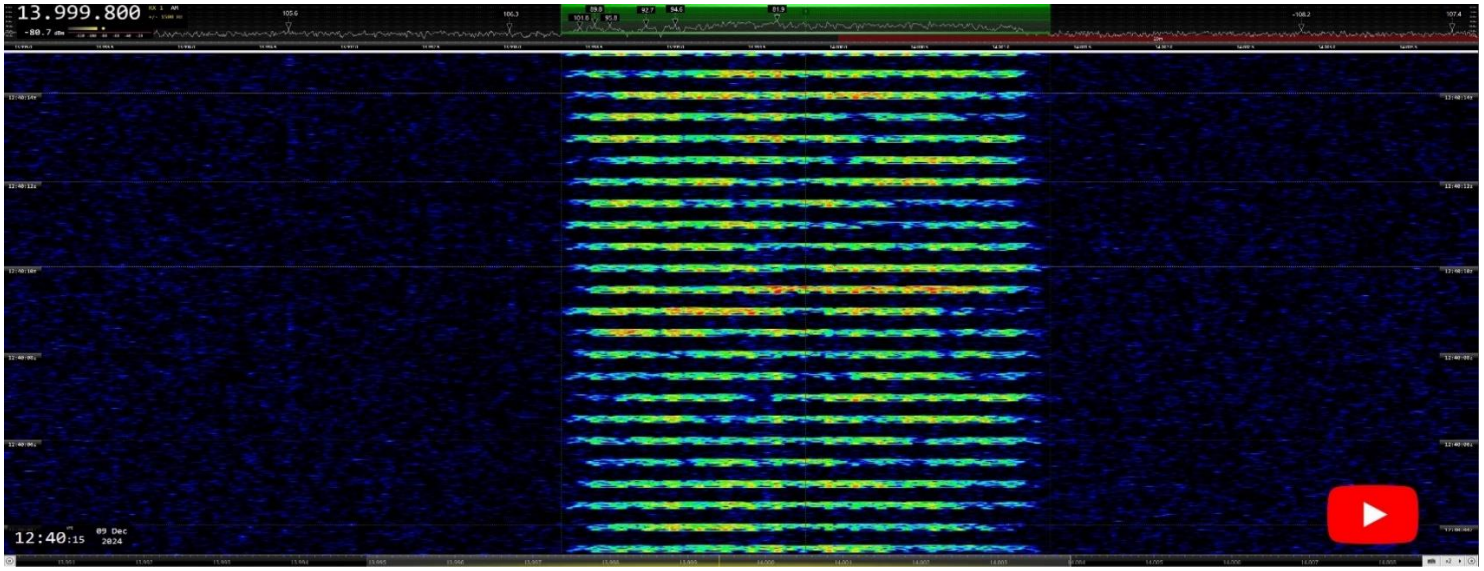
Peter will be greatly missed as a dedicated professional, loyal friend and sincere radio amateur. Our sympathies go out to his family and all those who had the good fortune to work with him: https://www.iaru-r1.org/2025/hb9cet-sk/

News and Info

This last issue of the year 2024 of the IARUMS R1 Newsletter will be divided into two parts.

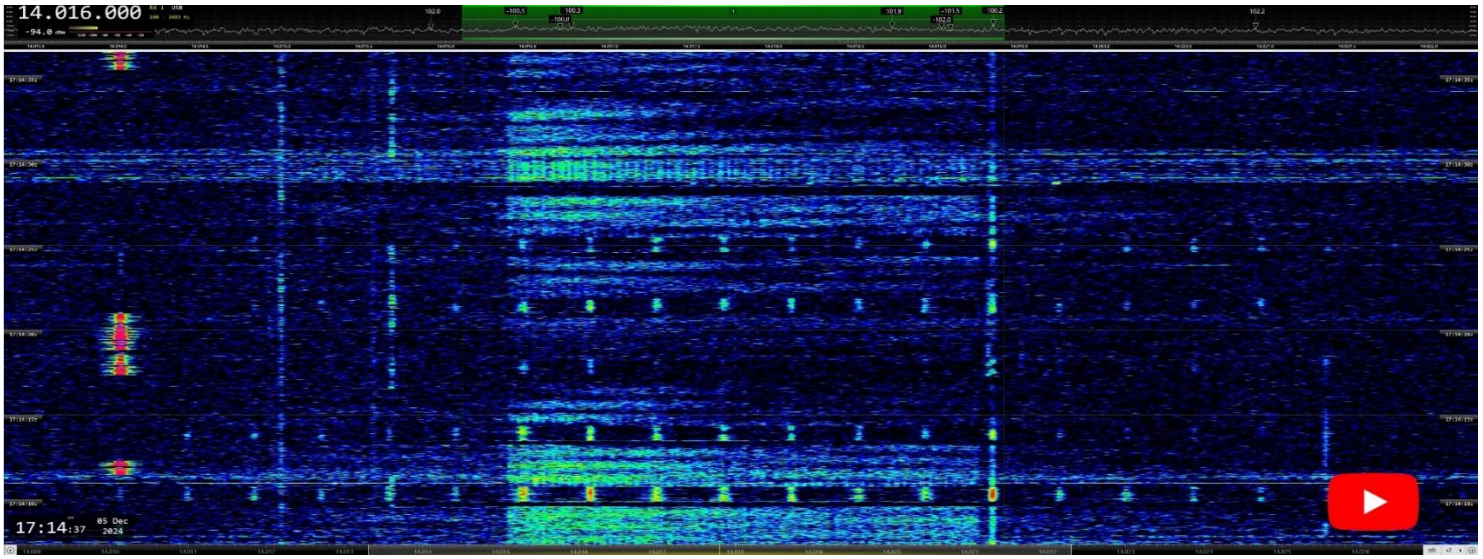
In the first part, we will focus on the transmissions sent by non-amateur stations within the HF amateur radio bands during December 2024. In the second part, we will showcase some examples of such transmissions received throughout the year 2024, highlighting them for various reasons.

From December 2024, we emphasize the great diversity of transmission modes observed, even greater than in previous months. This includes transmissions carried out using rare or unusual modes within our HF bands, alongside the more well-known modes, which were received numerous times, as well as transmissions whose purpose remains unknown.

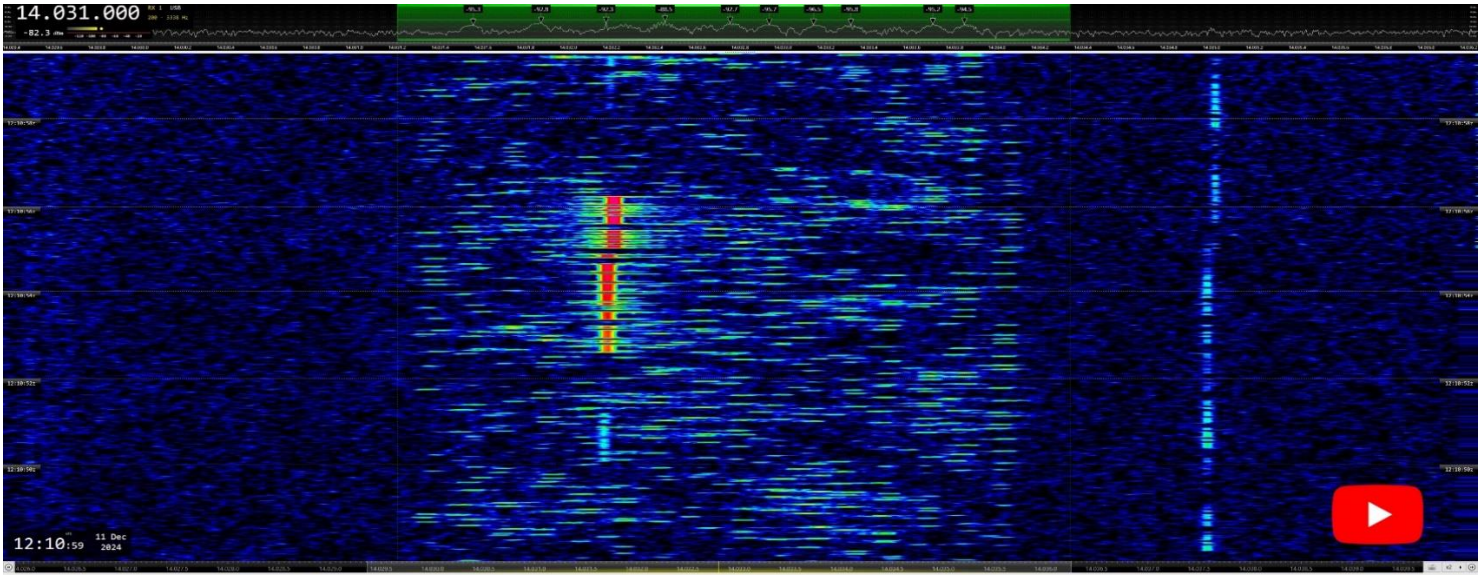


13998 kHz USB: Arcotel MAHRS (Multiple Adaptive HF Radio System) ALE burst. BW = 2.8 kHz. 2400 Bd. Partially inside the 20m band.

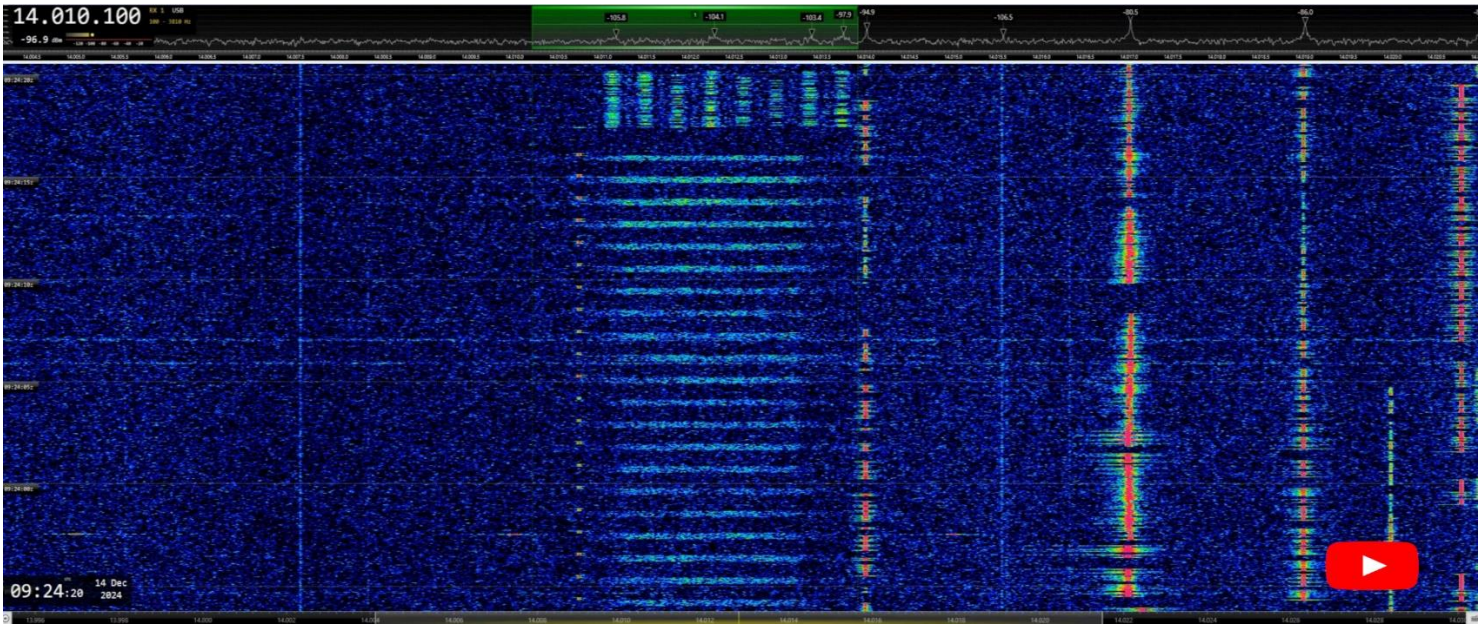
© IARU Monitoring System R1



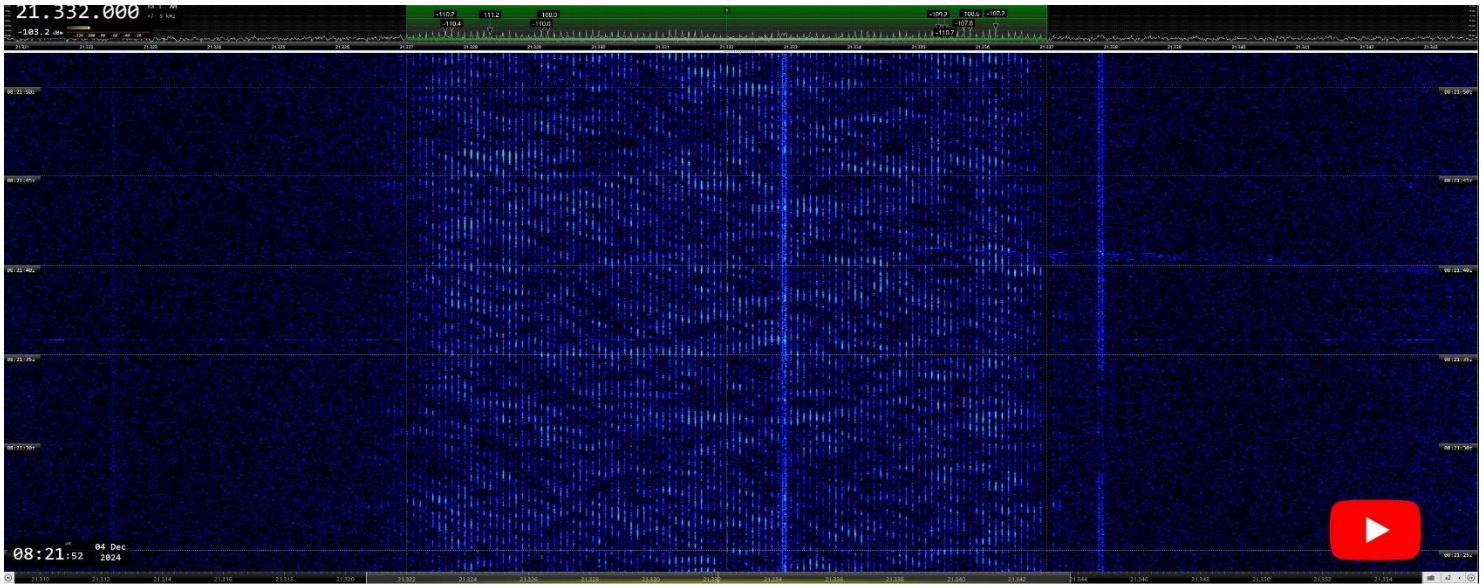
14016 kHz USB: CIS-112 preambles + OFDM 112 channels + pilot tone. BW = BW ca 3 kHz. 22.22 Bd



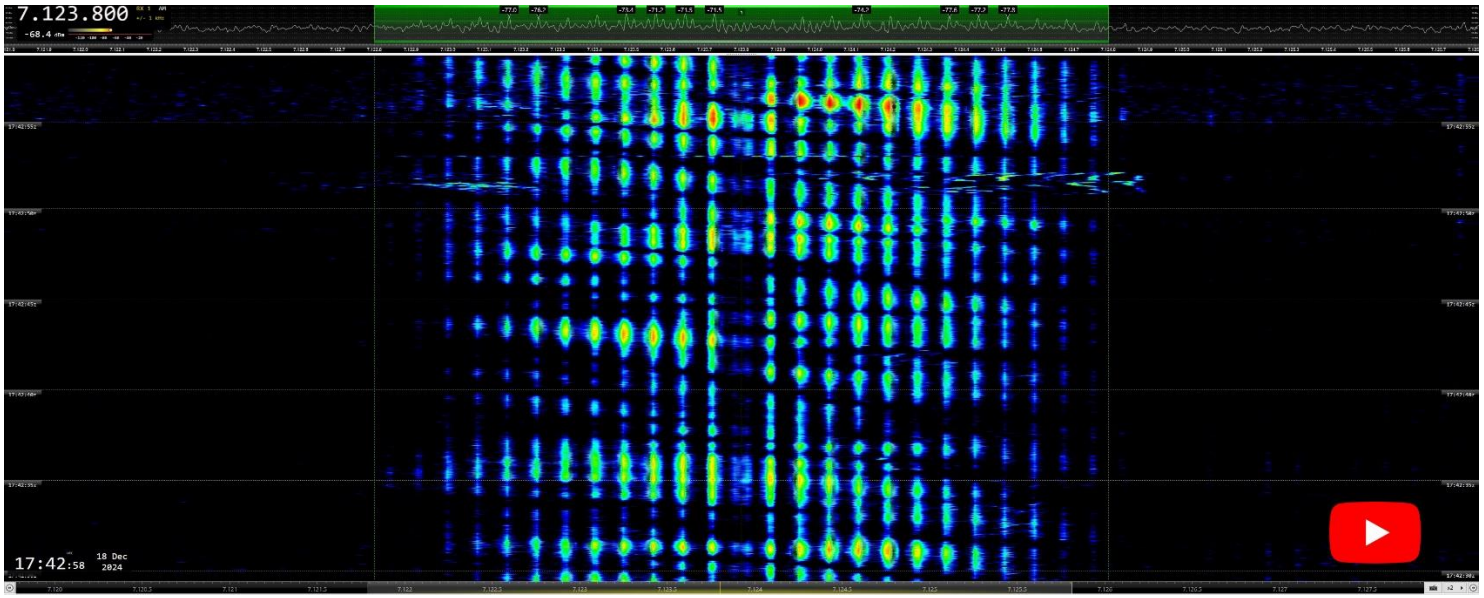
14031 kHz USB: CIS MFSK-16



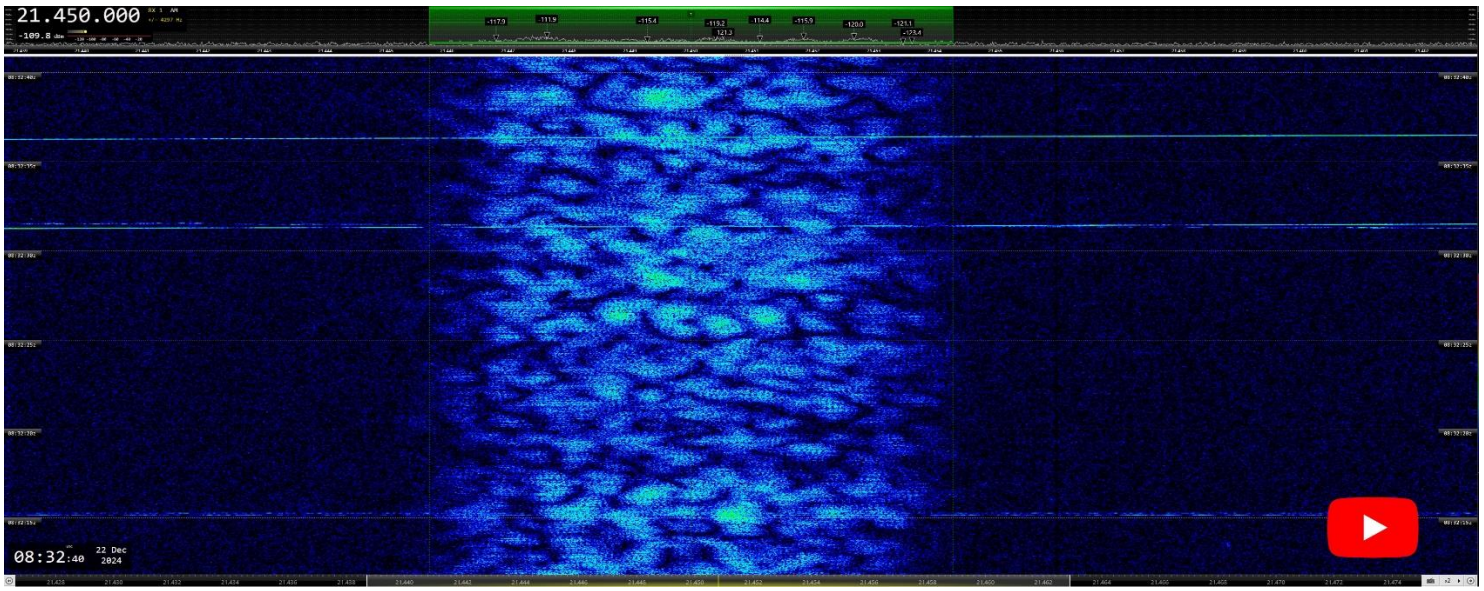
14010 kHz USB: XXX. Unidentified modem



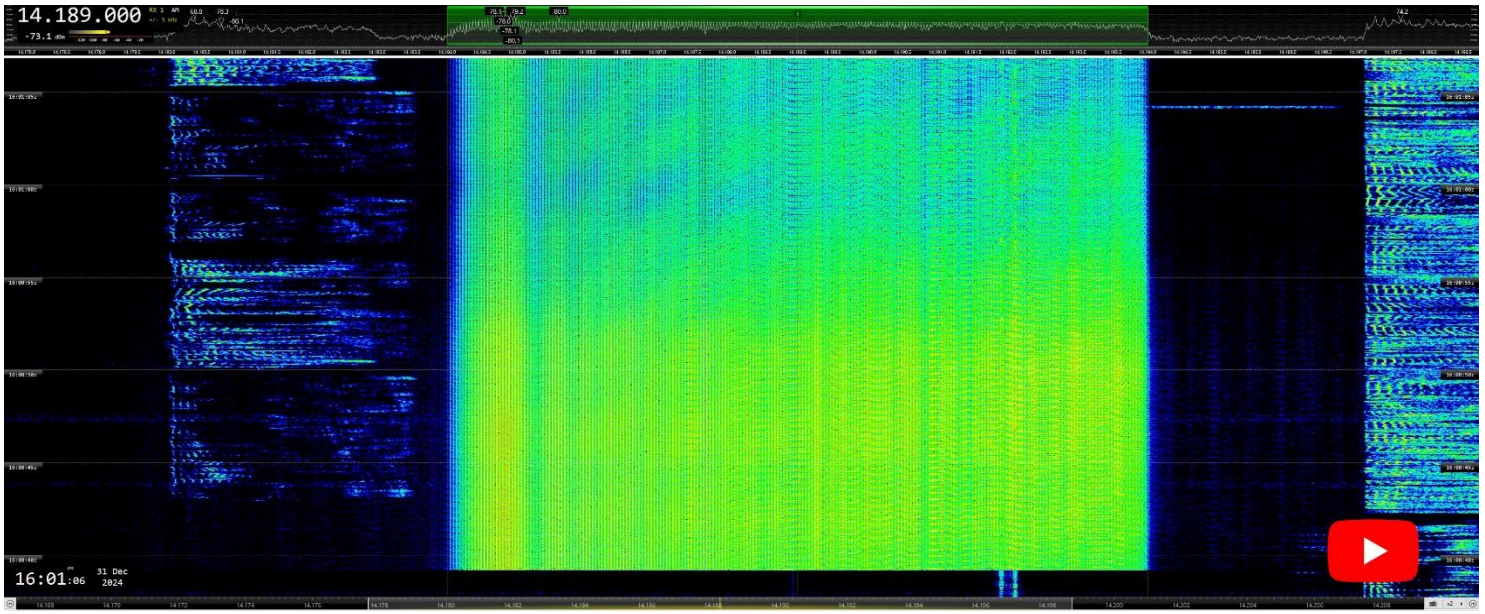
21332. Radar. BW = 10 kHz. 100 pulses per second (pps)



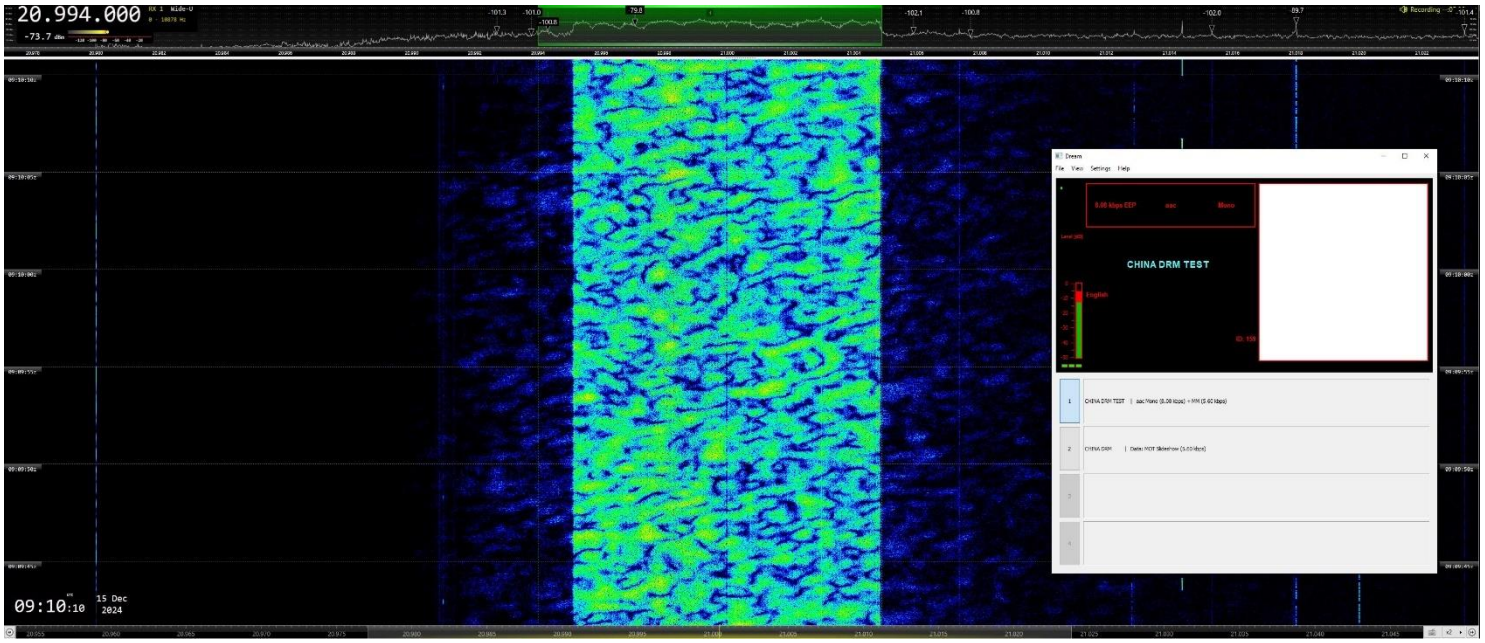
7123.8 kHz CF: XXX. BW ca 2 kHz. Jammer?



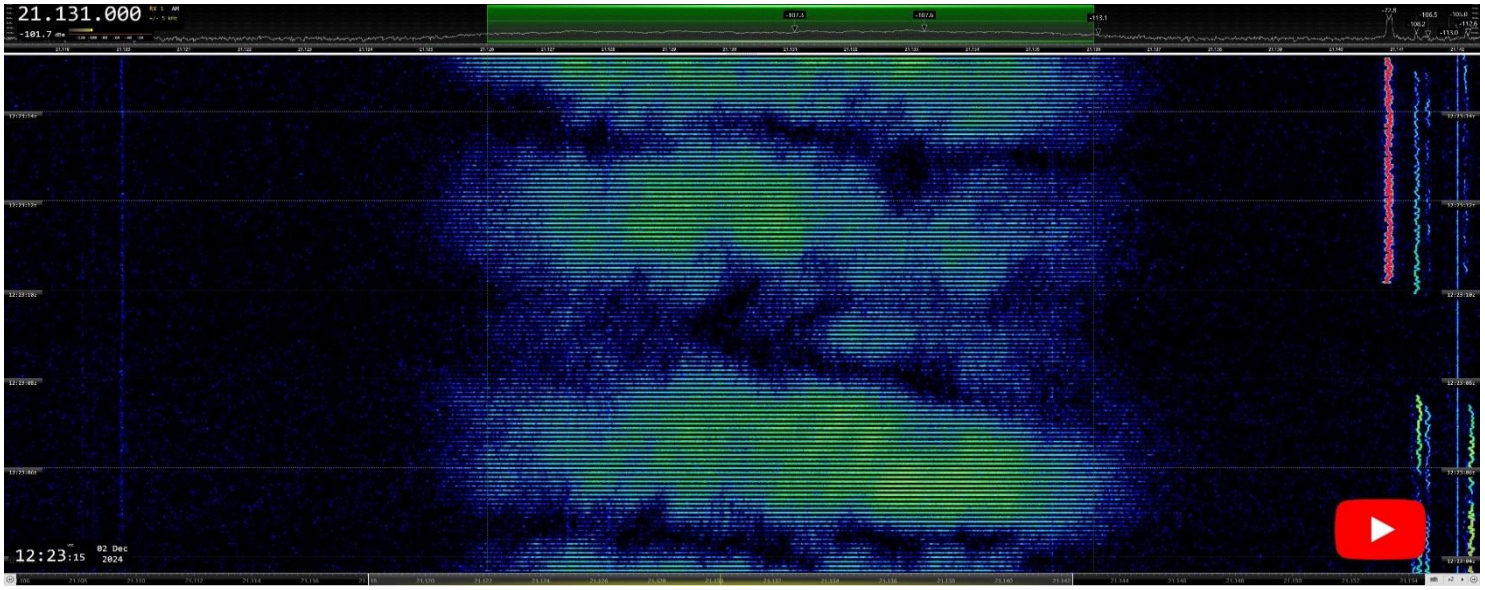
21450 kHz CF: XXX



14189 kHz CF: XXX. BW = 10 kHz. 44.1 pulses per second (pps)

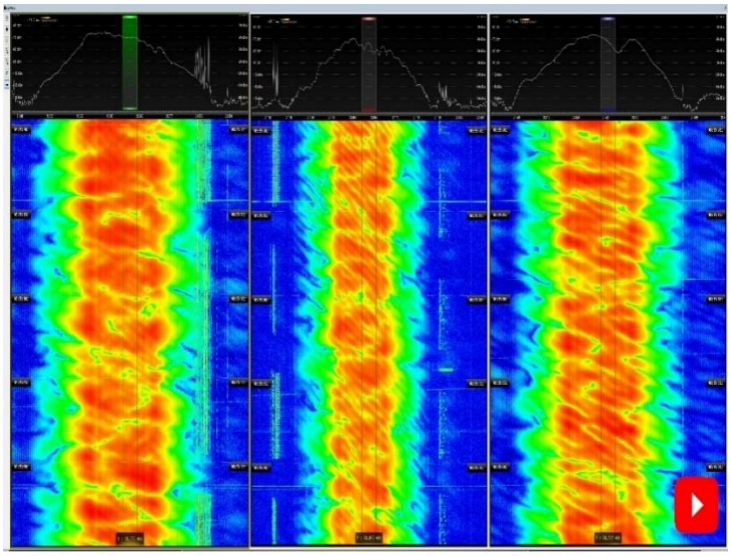


21000 kHz CF: DRM broadcast (Digital Radio Mondiale). OFDM, BW = 9 kHz. ITU: CHN. ST ID: 'CUC-ECDAV'. Broadcast: "DRM China Test"

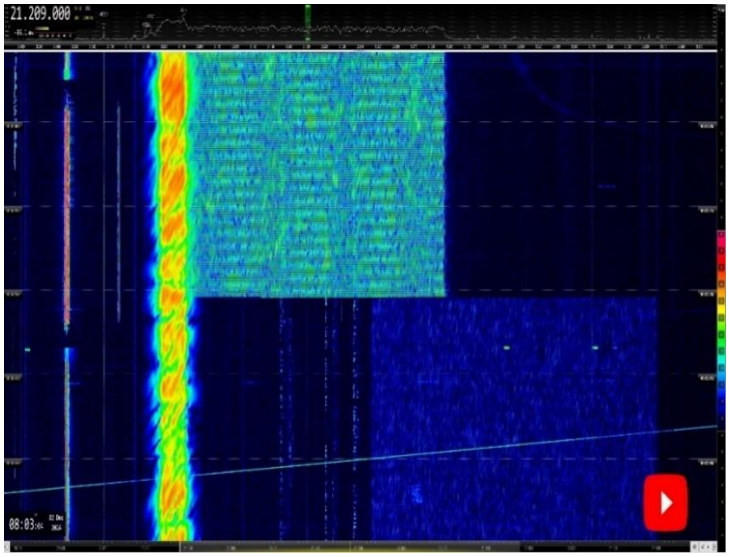


21131 kHz CF. Ionosonde. BW ca 10 kHz. 10 pps. Long-lasting TX: 96 minutes

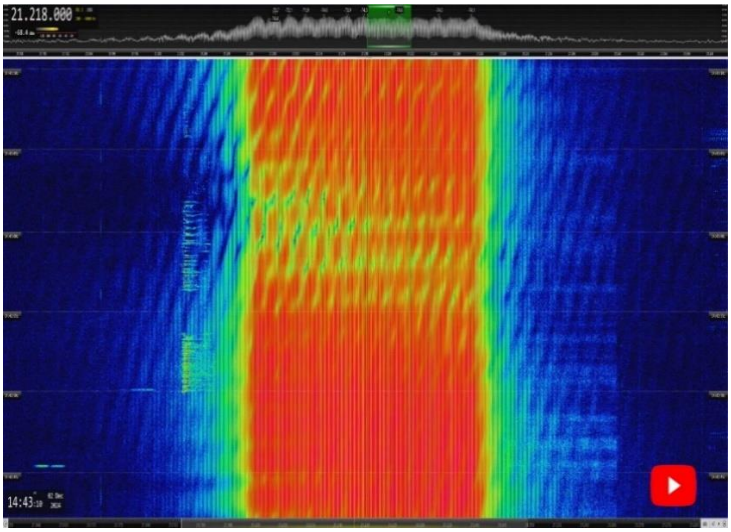
Regrettably, besides these transmissions, we received the unfortunately ubiquitous and numerous Over The Horizon radars sent from different countries (over 1000 transmissions of this type were observed during December).Some examples below:



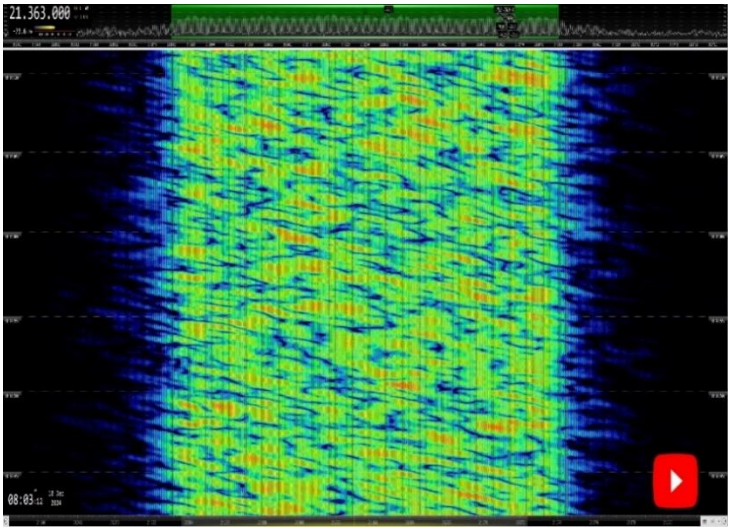
3 X RUS OTHR Contayner simultaneous TX on 15m. BW = 12K0E. 40 pps



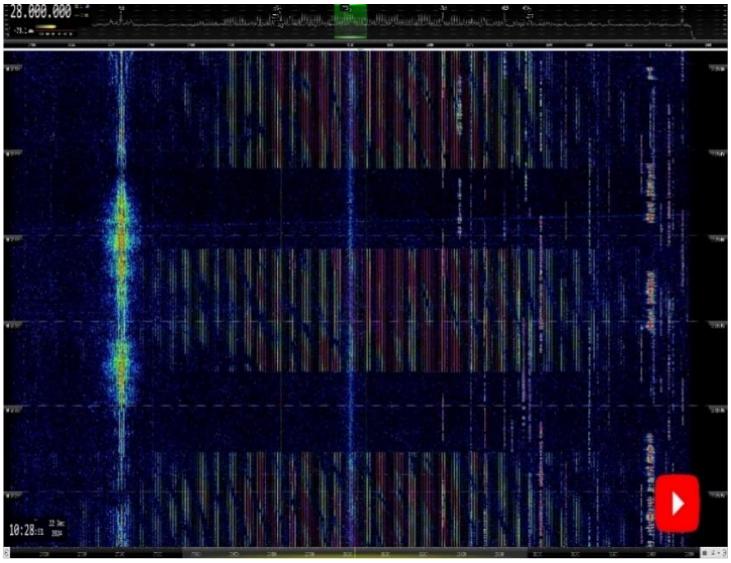
CHN wideband OTHR bursts on 15m. BW = 160 kHz. 10 pps



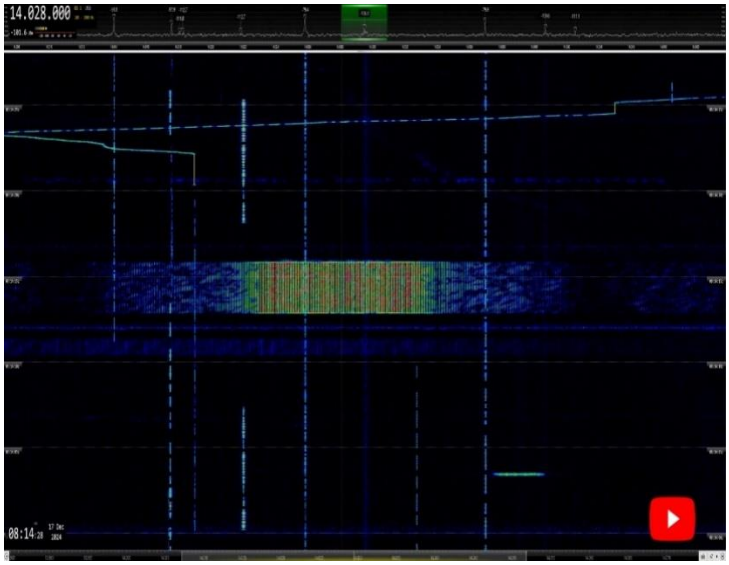
21128 kHz CF: British OTHR (G; UK SBA, Cyprus). BW = 20 kHz. 50 pps



21363 kHz CF: CHN OTHR. BW = 10 kHz. 50 pps

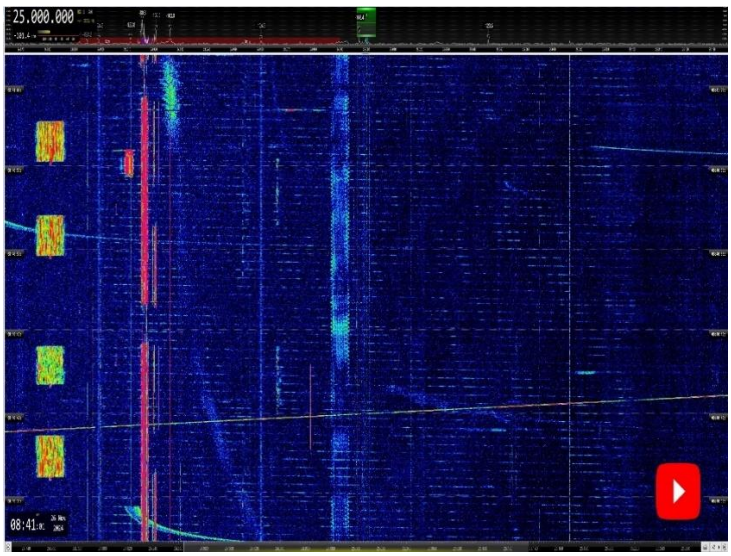


28000 kHz CF: OTHR IRN. 313 pps bursts only. BW ca 45 kHz

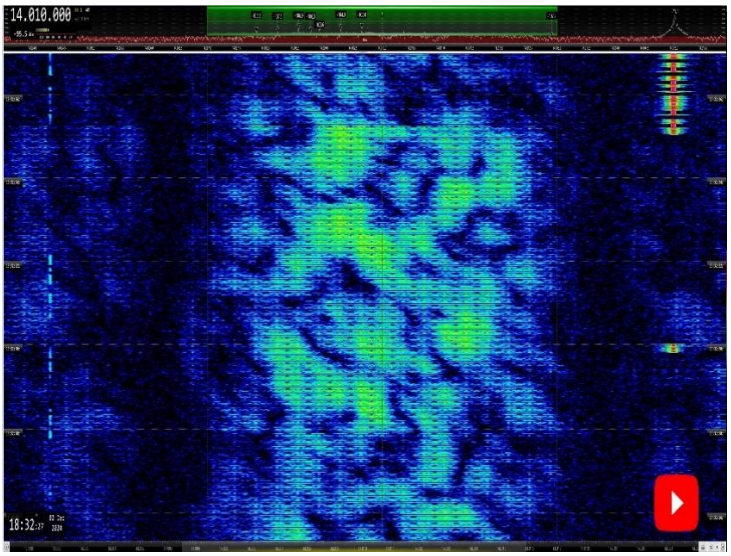


14028 kHz CF: CHN OTHR „Foghorn" bursts: BW = 10 kHz.83.3 pps

Apart from Over The Horizon radars, other radars, whose transmissions are sent with scientific purposes, were received in December, like the ones sent by CODAR (Coastal ocean dynamics applications radar) or like the ones sent almost daily in the 20 meters band by a SuperDARN-like radar using frequency hopping:



25000 kHz CF: CODAR radar. BW = 200 kHz. 2 pps (video: example)

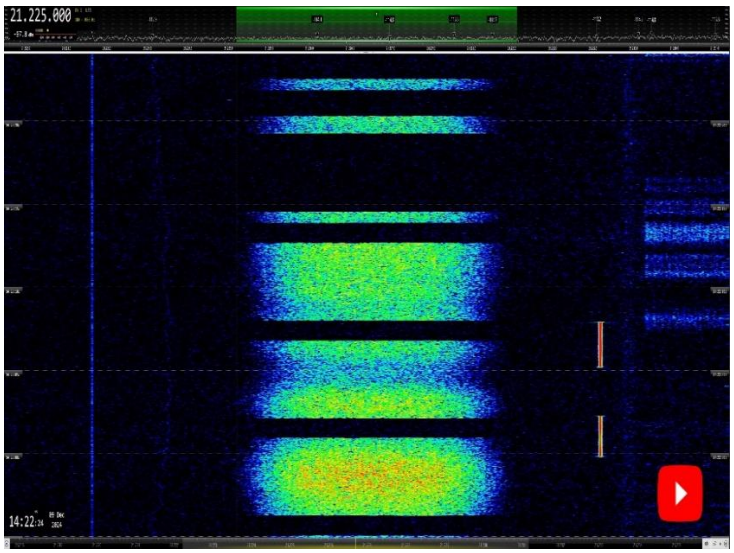


14010 kHz CF: SuperDARN-like radar. BW ca 6 kHz. Hopping

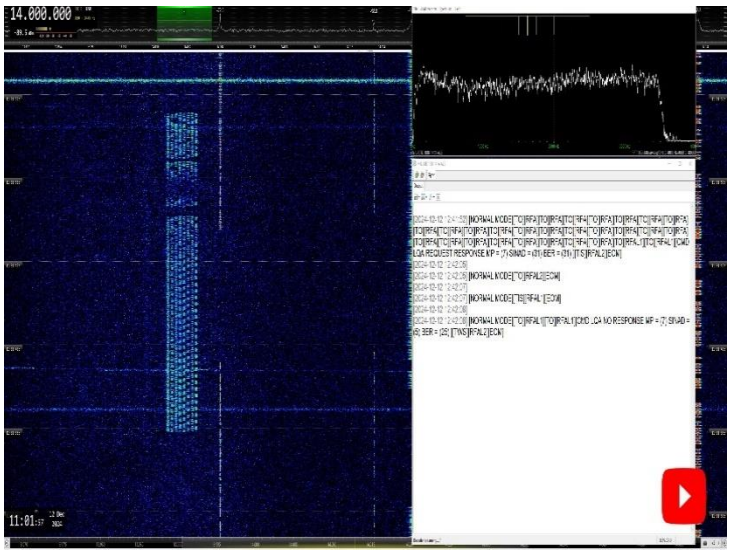
Radar transmissions are the most troublesome among all non-amateur transmissions received within the HF amateur radio bands, not only due to the high power typically used in their transmissions—which allows them to be received across Region 1 and even beyond—but also because of the significant bandwidth they occupy and the long-lasting nature of their transmissions.

However, radar transmissions are far from being the only non-amateur transmissions observed daily within our HF amateur radio bands. Transmissions using military or diplomatic modes are also received, along with those from other non-amateur stations that illegally use our bands for their communications and purposes, such as broadcasting stations, taxi dispatch stations, the transmissions sent by fishermen, "village radio," CBers, and other pirates, as well as the ones sent by radiolocation devices installed in fishing buoy, or the ones on data transmitting devices such as the installed on the Datawell buoys. All these types of transmissions also cause significant disruption, diminishing, along with radar transmissions, the access of amateur radio operators to the spectrum allocated to them within their HF bands.

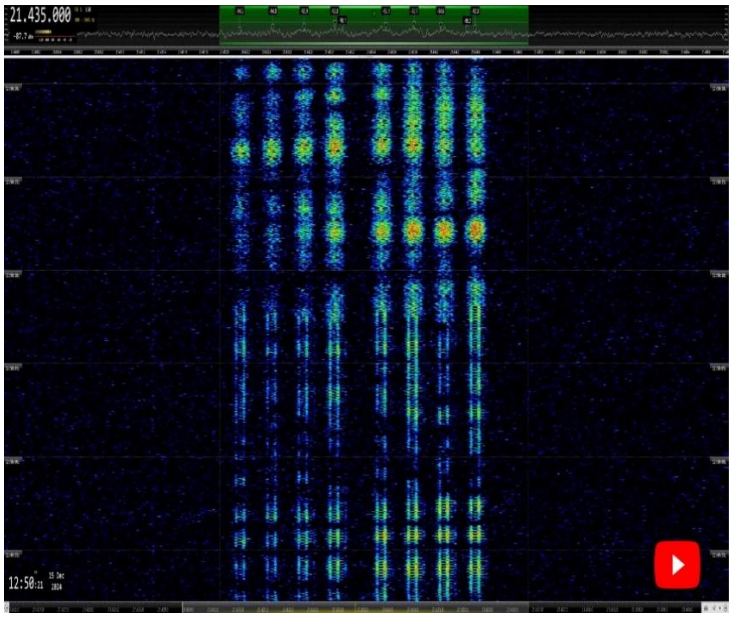
Here we present some examples of these transmissions, received during December 2024:



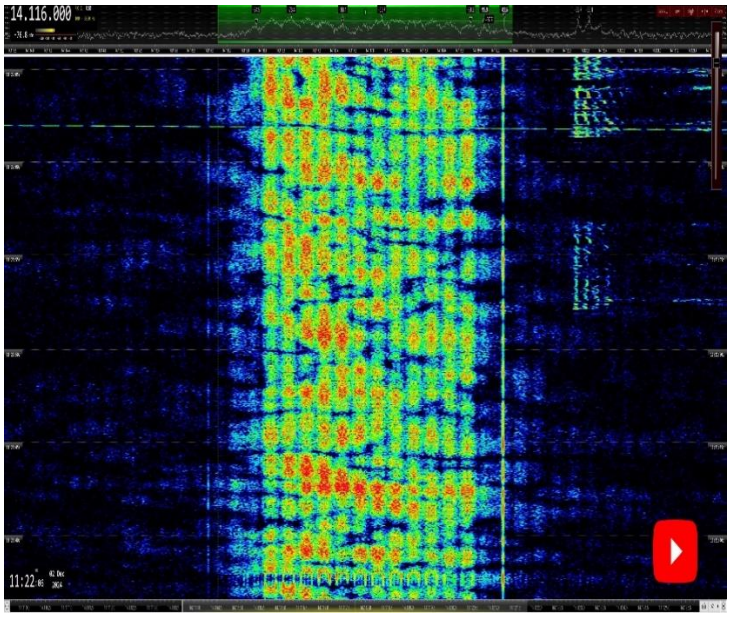
21225 kHz USB: MIL-188-141C ALE 3G. BW ca 3 kHz. 2400 Bd



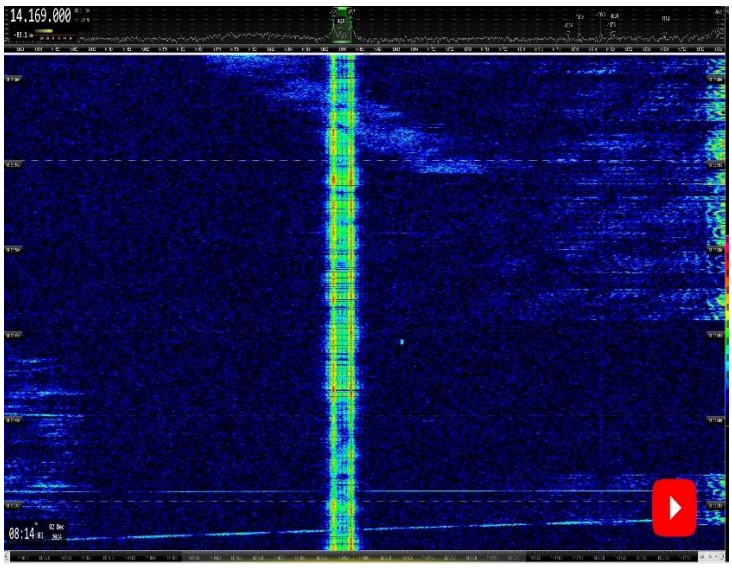
14000 kHz USB: MIL-188-141A ALE 2G. BW = 1.8 kHz. 125 Bd



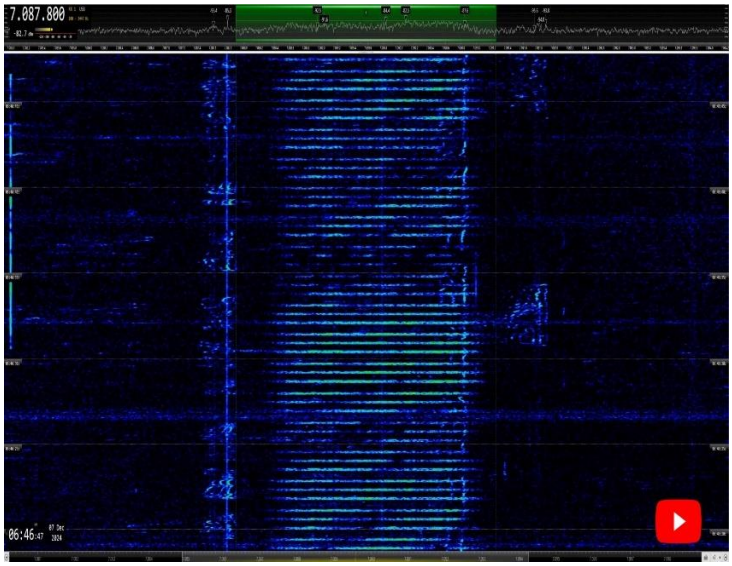
21435 kHz LSB: CHN 4+4. G7D. BW = 2.4 kHz. 75 Bd



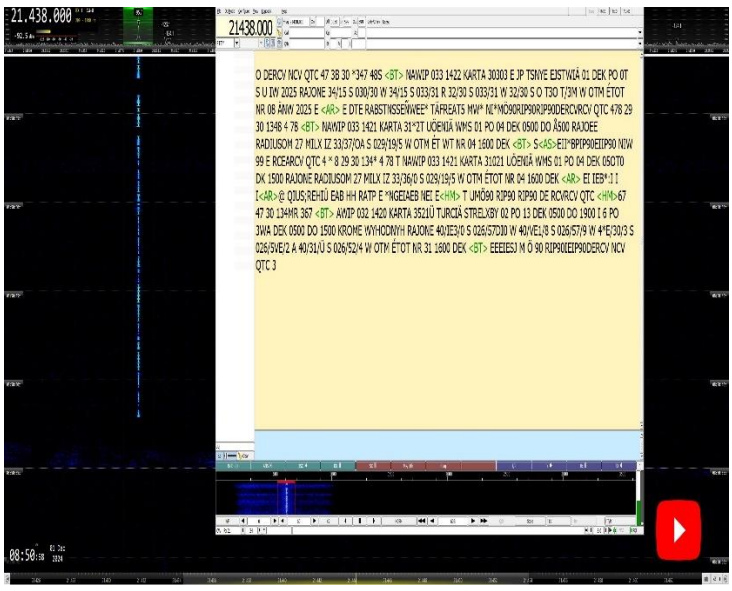
14116 kHz CF: CIS-12. J7D. BW = 2.7 kHz. 120 Bd



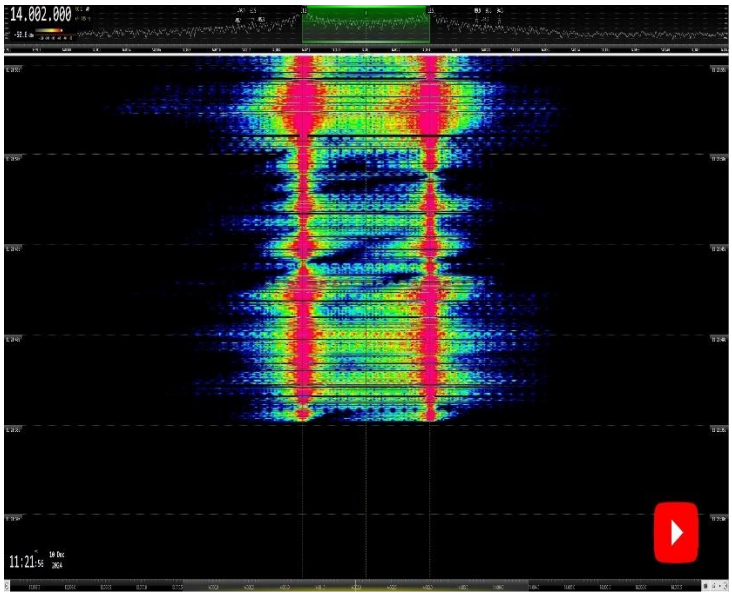
14169 kHz CF: CIS ## FSK (F1B). Shift = 200 Hz. 50 Bd



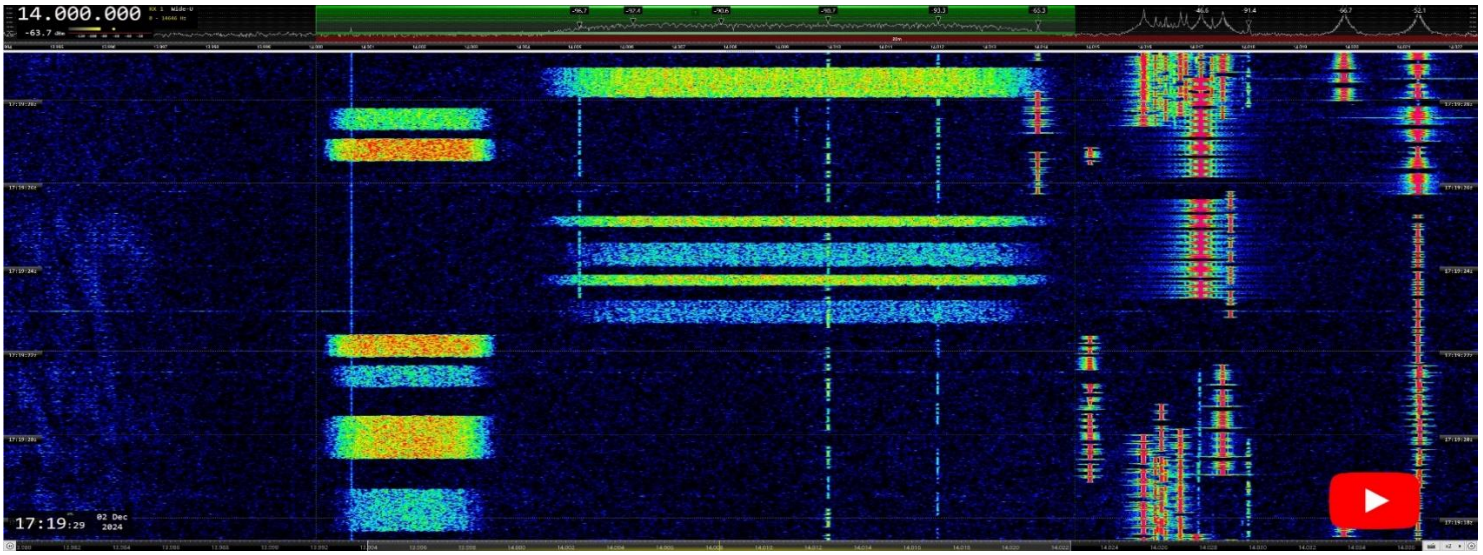
7088 kHz USB: LINK-11 SLEW. G1D. BW = 2.4 kHz. 2400 Bd



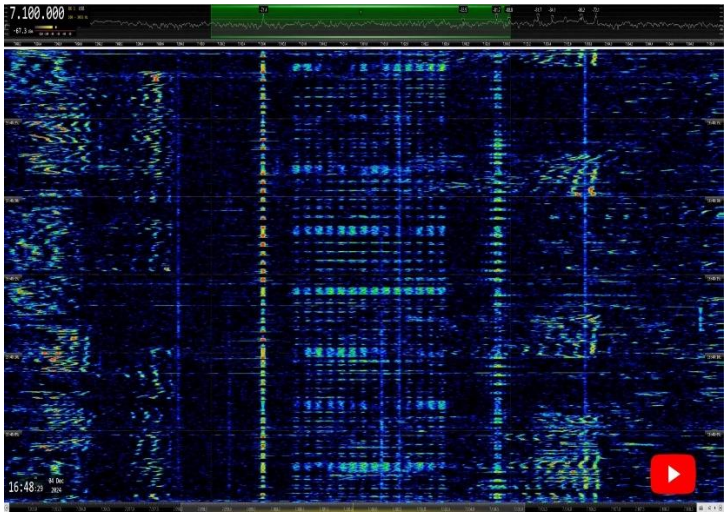
21438 kHz: CW. RUS Navy QTC. ST ID: „RCV“



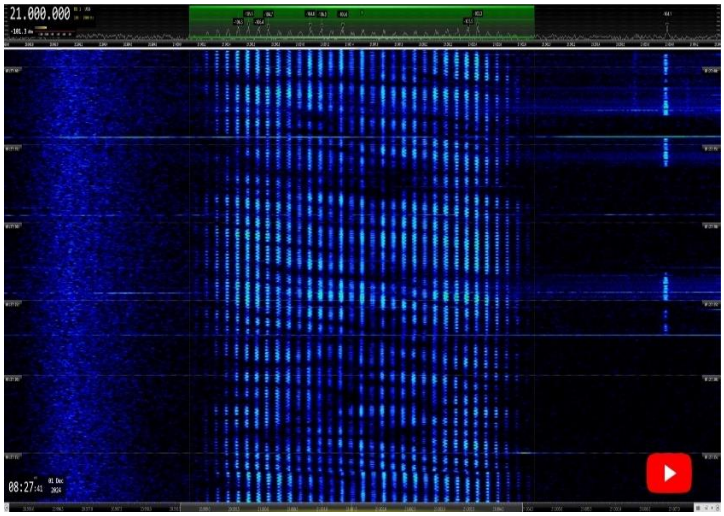
14002 kHz CF: STANAG-4481. F1B. Shift = 850 Hz. 75 Bd



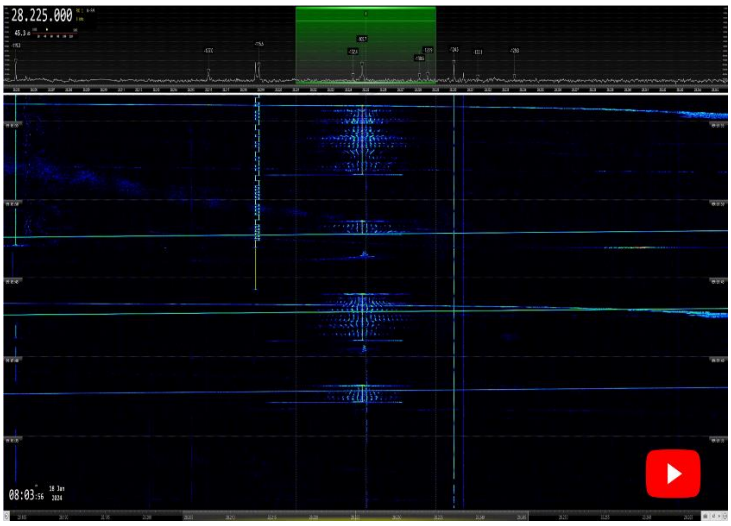
14000 kHz USB: WHARQ. Wideband Hybrid Automatic Repeat Request. Burst system. Various BW & modulations. Intelligent QRG hopping



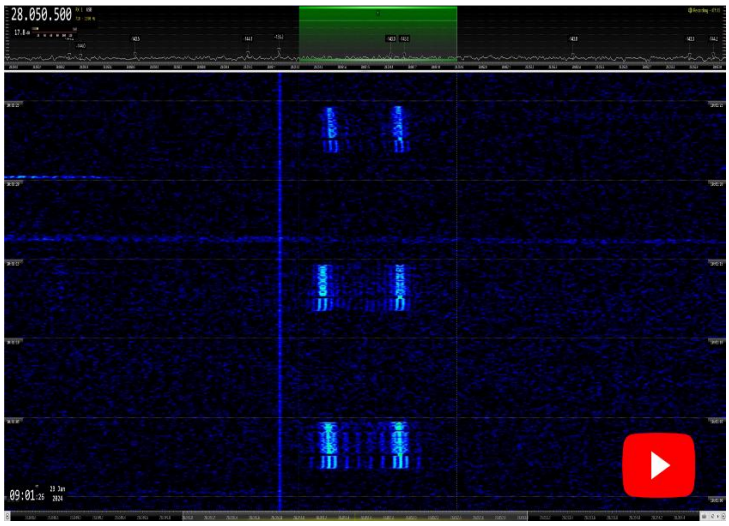
7100 kHz USB: LINK-11 CLEW SSB. G7D. BW = 2.4 kHz. 75 Bd



21001.5 kHz CF: Jammer. 85 Hz. BW = 2.7 kHz



28225 kHz CF: FM (F3E). BW ca 6 kHz. RUS taxi dispatch (video: example)



28050.5 kHz CF.F1B fishing buoy. Shift = 300 Hz. 51 Bd (video: example)

- ***Find other videos and screenshots about the transmissions received during year 2024 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.

DARC; Harald, DL9NDW and the DARC IW team

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
6991.0	18:41	08	12	RUS		RADAR	40	12K0E	OTHR Container, splattering up to 7006
7010.0	20:48	12	12			RADAR	50	C50K0E	Radar with selective fading, 50kHz wide
7027.0	18:10	25	12	RUS		F1B	50	250H	F1B
7034.0	17:38	07	12			XXX		3K0E	Jammer, Carrier with 100hz spaced subcarriers 3Khz USB orientation
7036.0	15:05 vt*	18 vd*	12	CHN		RADAR	66.7	10K0E	OTHR Bursts, * also on 7038,7047,7095, 7102 and others , in 42,50 and 66.6 Hz modes , 65 reports. Evening times when Band opens to East
7054.0	06:25	06	12			J3E-L		2K70E	Radiowar, Music, NON Ham Voice : UKR vs RUS , often
7070.0	15:02	18	12	RUS		J7D	120	2K60E	CIS-12
7095.0	17:42	07	12			J3E-L		2K70E	Radiowar, Music, NON Ham Voice : UKR vs RUS
7101.8	20:05	19	12			G1D	2400	2K40E	Stanag-4285
7160.0	18:01	08	12	RUS		J7D	120	2K60E	CIS-12, to weak to identify 100%
7189.0	21:55 vt*	03 vd*	12	RUS		RADAR	40	12K0E	OTHR Container, * 10 reports
7196.0	17:20	08	12	RUS		J7D	120	2K60E	CIS-12
10122.0	11:06	11	12	CHN		RADAR	86	50K0E	Meteorological radar, Hainan. Daily and covers all 10Mhz Band (10092 - 10152 kHz)
14024.0	09:17	27	12	CHN		RADAR	160	10K0E	OTHR Bursts, very shorts bursts,160Hz unusual SPS
14040.0	12:26	21	12	INS		RADAR	2	80K0E	Ocean surface radar , 14000 to 14080, 3 reports
14151.0	10:50 vt*	29 vd*	12	CHN		RADAR	48	10K0E	OTHR Bursts across 14m Band, in 42,50 and 66.6 Hz modes , 8 reports.
14182.0	15:22	07	12	RUS		RADAR	40	12K0E	OTHR Container, 2 reports
18174.0	09:25	03	12	G		RADAR	50	20K0E	OTHR Cyprus UK SBA, spreading into 17m Band
21000.5	15:24	28	12			XXX		2K70E	Jammer, 2 reports
21133.0	09:24 vt*	03 vd*	12	RUS		RADAR	40	12K0E	OTHR Container also on 21165, 11 reports
21272.0	08:47	18	12	CHN		RADAR	50	10K0E	OTHR continous china
21316.0	11:35 vt*	28 vd*	12	G		RADAR	50	20K0E	OTHR Cyprus UK SBA. * Also 21365, 21429 , 6 Reports
21335.0	12:13	26	12	CHN		RADAR	66.6	10K0E	OTHR Bursts
21393.0	11:40 vt*	14 vd*	12	CHN		RADAR	66.7	10K0E	OTHR Bursts * also on 21402,21411,21416,21455 in 42,50 and 66.6 Hz modes , 10 reports.
24905.0	14:33	24	12	RUS		RADAR	40	12K0E	OTHR Container

DARC; Harald, DL9NDW and the DARC IW team

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
28025.1	15:39	06	12			F1B	51	300	3 x Enagal GPS fishing buoy, * also on 28030.1,28051.5, 28100, 28131 , 30 reports
28065.0	13:11	10	12	RUS		F3E		6K0E	Russian language Taxi Traffic
28105.0	12:09	09	12			J3E-U		2K4E	Far East Pirates
28165.0	10:08	09	12	RUS		F3E		6K0E	Russian language Taxi Traffic, often, also on 28175,28195,28265,28295
28175.0	11:54	01	12			F3E		7K0E	Far East Pirates
28400.0	12:08	10	12			XXX			Several Traces of slow sweeping carriers from 28200 to 28600, UNID
28400.0	11:24 vt	26 vd	12			XXX			Band is full of sweeping signals, often, corelates with band openings to East
28860.0	09:53	24	12	IRN		RADAR		46K0E	Iranian radar - 150 sps and 313 sps alternating
28923.0	10:03	03	12	G		RADAR	50	20K0E	OTHR Cyprus UK SBA

IRTS; Michael, EI3GYB

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7000	1800	16	12			USB			Male voices in Italian, weak signals. Most likely pirates.Heard also on the 28th at 1830z- still chatting at 2100z.
7002	1800	17	12			RADAR			Radar from 7002 to 7017 kHz. Huge and persistent.
7032	1815	7	12			Carrier			Carrier, huge and persistent. Heard daily all day long.
7044	1715	29	12	RUS/ UKR		LSB			Russian-Ukrainian radio war. Huge and persistent signals.
7055	1820	7	12	RUS/ UKR		LSB			Russian-Ukrainian radio war. Daily with huge signals all day long.
7055	2000	26	12	RUS		RADAR			Radar from 7055 to 7070 kHz.Medium signals. “Sunflower”
7070	1355	27	12	RUS/ UKR		LSB			Russian-Ukrainian radio war. Very strong signals.
7128	2320	28	12			RADAR			Radar from 7128 to 7143 kHz. Medium signal.
7178	1705	29	12			RADAR			Radar from 7178 to 7198 kHz. Huge and persistent.
14000	2030	9	12	B		USB			Brazilian Cbers. Male voices. Medium signals.Ends 2215z.
14120	1320	15	12	RUS/ UKR		USB			Russian-Ukrainian radio war with patriotic music and shouting of slogans. Strong signals.
14191	800	1	12	RUS		F1B			Russian navy, Kaliningrad. Daily all day long with a big signal.
14307	1159	11	12			F1B			Strong and persistent signals.
18135	1300	23	12	G		RADAR			Radar from 18135 to 18175 kHz. Huge and persistent. UK base in Cyprus.
18160	1425	13	12	G		RADAR			Radar from 18160 to 18190 kHz. Huge and persistent. UK base in Cyprus.
18160	1435	31	12	G		RADAR			Radar from 18160 to 18180 kHz. Huge and persistent. UK base in Cyprus.
21001.5	1125	1	12						Jammer. Medium signal. Heard daily.
21036	1245	15	12						Jammer. Weak signal.
21125	1005	27	12			RADAR			Radar from 21125 to 21135 kHzWeak

IRTS; Michael, EI3GYB

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
									signal, in and out.
21160	1330	13	12			RADAR			Radar from 21160 to 21190 kHz. Huge and persistent.
21160	1300	28	12			RADAR			Radar from 21160 to 21180 kHz. Huge and persistent.
21265	1255	15	12			RADAR			Radar from 21265 to 21285 kHz. Medium signals, persistent.
21330	1255	19	12			RADAR			Radar from 21330 to 21350 kHz. Strong and persistent.
21400	1335	13	12			RADAR			Radar from 21400 to 21415 kHz. Medium but persistent signals.
21438	1502	1	12	UKR		CW			Russian navy, Sevastopol, Daily all day long with medium to strong signals.
24945	1320	28	12			RADAR			Radar from 24945 to 24970 kHz. Huge and persistent.
24945	1205	30	12			RADAR			Radar from 24945 to 24975 kHz. Huge and persistent.
24985	1310	23	12	G		RADAR			Radar from 24985 to 25015 kHz. Huge and persistent. UK base in Cyprus.
27950	1250	23	12	IRN		RADAR			Radar from 27950 to 28050 kHz. Very strong.
28160	1235	19	12	RUS		FM			Russian taxi service. Strong signals.
28235	1010	27	12	RUS		FM			Russian taxi service. Strong signals.
28800	1310	15	12	IRN		RADAR			Radar from 28800 to 28900 kHz. Medium but persistent signals.
28980	1000	22	12			AM			Harmonic of a BC station. Weak to medium signal.Gone after 1230z.
29000	1300	4	12	B		AM			Brazilian Cbers. Male and female voices. Strong signals.
29100	1400	2	12			FM			Carrier. Strong. Heard daily all day long.
29365	945	26	12			FM			SE Asian fishermen.Medium signals.
29400	1305	15	12	IRN		RADAR			Radar from 29400 to 29500 kHz. Medium signals. Persistent.
29475	1020	27	12			AM			SE Asian fishermen. Medium signals.
29600	1245	19	12	IRN		RADAR			Radar from 29600 to 29650 kHz. Moving up and down the band. Very strong signals.

PZK; Mirek, SP5GNI

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7040.0	1805	4	12			RADAR		14K0E	S9 also at 7170.0
7184.0	1740	31	12			RADAR		12K0E	S9
14130.0	1505	6	12			RADAR		14K0E	S6 foghorn
14318.0	1200	18	12			RADAR		10K0E	3 sec burst foghorn
14348.5	1305	21	12			UI		1K0E	short bursts like RTTY 600
18148.0	1300	27	12			RADAR		8K0E	5 sec. Burst
21045.0	1110	17	12			RADAR		20K0E	S9 Foghorn
21065.0	1400	5	12			RADAR		12K0E	S9+10
21065.0	1155	6	12			RADAR		12K0E	S9+20
21097.0	1320	22	12			RADAR		20K0E	S9+
21129.0	0945	4	12			RADAR		12K0E	S9+10
21130.0	vt	vd	12			RADAR		12K0E	S9+10

PZK; Mirek, SP5GNI

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
21130.0	1120	7	12			RADAR		12K0E	S9+10 also 21422.0
21132.0	1100	12	12			RADAR		12K0E	S9
21132.0	1330	29	12			RADAR		12K0E	S9+
21158.0	0930	16	12			RADAR		20K0E	S9 Foghorn
21161.0	0845	11	12			RADAR		12K0E	S9+30! looks like Cyprus
21161.0	1300	27	12			RADAR		12K0E	S9+
21164.0	1200	12	12			RADAR		12K0E	S9+
21164.0	1145	31	12			RADAR		20K0E	S8 foghorn
21168.0	1320	20	12			RADAR		14K0E	S6 foghorn
21212.0	vt	1	12			RADAR		12K0E	S9+10
21274.0	1315	11	12			RADAR		12K0E	S9+
21277.0	1415	5	12			RADAR		12K0E	S9
21292.0	0910	10	12			RADAR		10K0E	3 sec burst foghorn and 21292.0
21331.0	0945	4	12			RADAR		10K0E	3 sec burst foghorn
21335.0	0850	11	12			RADAR		10K0E	3 sec burst foghorn and 21385.0
21340.0	1245	18	12			RADAR		20K0E	S9+20
21363.0	1200	12	12			RADAR		20K0E	S7 foghorn
21371.0	0850	12	12			RADAR		10K0E	3 sec burst foghorn and 21448.0
21378.0	1000	18	12			RADAR		20K0E	S9+30! looks like Cyprus
21416.0	1155	17	12			RADAR		20K0E	S9 Foghorn
21423.0	1410	6	12			RADAR		14K0E	S7 foghorn also 21065.0
24888.0	0840	11	12			RADAR		12K0E	S7 partially in our band
24890.0	0840	12	12			RADAR		12K0E	S7 partially in our band
24893.0	1205	18	12			RADAR		8K0E	5 sec. Burst
24938.0	1025	11	12			RADAR		12K0E	S9
24980.0	0955	18	12			RADAR		20K0E	S9+20 09:58 ended
28165.0	1225	3	12			F3E		6K0	In Russian (radio taxi)
28642.0	1350	29	12			RADAR		20K0E	S9+10
28860.0	1200	18	12	IRN		RADAR		60K0E	S7
28923.0	1120	3	12			RADAR		20K0E	S9+20
29052.0	1325	21	12			RADAR		20K0E	S7
29158.0	0955	18	12			RADAR		20K0E	S9
29310.0	1100	10	12			RADAR		20K0E	S9+
29567.0	1038	7	12			RADAR		20K0E	S9+
29582.0	0905	10	12			RADAR		20K0E	S9+

SRAL; Pekka, OH2BLU

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7 MHz	1500-0600	*	12	RUS		RADAR	40 sps	13k0E	*) Days: 3. 4. 10. 11. 12. 15. 18. 19. 20. 22. 24. - 27. 29. 31. (WebSDR 30d)
7000.0	1100-1900	01 - 30	12	CHN		A3A		4k0E	
7000.0	1045	21	12	RUS		W7D		2k80E	CIS-60
7010.0	1330-1349/	21	12			jam		5k0E	
7014.0	1000-1200	*	12	RUS		F1B		250H	*) Days: 2. 7. 8. 13. 20.

SRAL; Pekka, OH2BLU

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7016.0	1015-1045	*	12	RUS		J7D	120	2k60E	*) Days: 3. 10. 17. 21.
7019.0	0600-1545	*	12	RUS	B7QQ etc	F1A/ N0N		200H	*) Days: 2. 3. 4. 6. 10. 12. 17. 24. 26. 5BL
7021.0	0715-0830	*	12	RUS		J7D	120	2k60E	*) Days: 3. 9. 19.
7032.0	0545-1900	01 - 31	12	RUS		J3E-u		3k60E	Non-stop Russian anthem / mx,
7032.0	0000-2400	01 - 31	12	RUS		J3E-u		3k60E	Brum when no music.
7035.1	0600-1930	01 - 27	12	RUS		J3E-l		3k60E	240 Hz ticking carriers
7052.0	0630-0725/	25	12	RUS		F1B		250H	
7057.0	0710-0845/	17	12	RUS		F1B/ N0N		200H	
7057.0	1445-1525/	26	12	RUS		F1B		250H	
7066.0	0545-1645	*	12	RUS		F1A/B/ N0N		200H	*) Days: 7. 8. 9. 11. 24. 25. 27. 29. 30. 31. 5BL
7088.0	0550-1850	24 25	12			G1D		2k40E	LINK11 usb
7088.0	1025-1630	26	12	RUS		F1B		200H	
7089.0	1230-1310/	16 30	12	RUS		J7D	120	2k60E	
7100.0	1330-1920	*	12			G7D		2k40E	*) Days: 3. 4. 7. - 10. 26. 27. 28. LINK11 usb
7101.0	1410-1630	04 18	12	RUS	NWOL etc	A1A	15 wpm	40H	5BL
7134.0	1100-1915	*	12	RUS		F1B		200H	*) Days: 2. 5. 7. 9.
7140.0	1345-1500/	10	12	RUS		J7D	120	2k60E	
7157.0	0520-1535	07 - 31	12	RUS	VB	A1A		20H	Id 2 x every 3 sec (2f 3578.5 kHz)
7193.0	0750-1500/	*	12	RUS		F1B/A/ N0N		200H	*) Days: 3. 8. 9. 11. 14. 15. 16. 18. 19. 20.
7195.0	0850-1340	*	12	RUS		J7D	120	2k60E	*) Days: 11. 12. 18.
7198.0	1215-1810	*	12	RUS		J7D	120	2k60E	*) Days: 5. 13. 18.
7200.0	1400-1430/	10 13	12	TWN	N unity R	A3E		9k0	Korean px
10 MHz			12	G		RADAR	50sps	20k0	(WebSDR 2d)
10 MHz	1815-1900	03	12	RUS		RADAR	40sps	13k0E	(WebSDR 6d)
10121.0	0905-1400	*	12			RADAR	43sps	50k0E	
10125A	1500-1600	*	12	GUM	KTWR	spurious		5k0E	*) Days: 12. 23. 30. from 9900 kHz
10132A	1130-1257/	*	12	GUM	KTWR	spurious		5k0E	*) Days: 4. 5. 6. 8. - 12. 15. 17. 18. 21. 22. 29. 30. 31. from 9910 kHz
13999.0	0835-1235	*	12	RUS		J7D	120	2k60E	*) Days: 13. 20. 23.

SRAL; Pekka, OH2BLU

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
14 MHz	0710-1745	*	12	RUS		RADAR	40sps	13k0E	*) Days: 6. 7. 13. 16. 18. 23. 28. 30. (WebSDR 11d)
14 MHz	0710-1530	*	12	CHN		RADAR	50/67sps	10k0E	*) Days: 1. 6. 7. 11. 14. 17. 18. 27. 29. 30. 'foghorn'
14000.0	1100-1230	30	12			RADAR		6k0E	SuperDARN, jumps +/- 25 kHz
14025.0	0805-0915/	16	12	RUS		J7D	120	2k60E	
14169.0	0655-0740	05 17	12	RUS		F1B		200H	
14192.0	0600-1800	01 - 31	12	RUS		F1B		200H	
14308.0	0825-0920	05 23	12	RUS		F1B		500H	
14317.8	0715-1415	06 - 31	12			A1A		20H	55 pips per min
18 MHz	0630-1615	03 13	12	G		RADAR	50 sps	20k0	(WebSDR 2d)
18 MHz	0645-1155	*	12	RUS		RADAR	40 sps	13k0E	*) Days: 4. 7. 8. 9. 12. 20. 24. 27. 29. 31. (WebSDR 7d)
21 MHz	0600-1500	*	12	G		RADAR	50/25 sps	20k0	*) Days: 2. 3. 8. 9. 10. 12 15. 17. 18. 19. 21. 23. - 31. (WebSDR 15d)
21 MHz	0600-1600	*	12	RUS		RADAR	40 sps	13k0E	*) Days: 1. - 16. 18. - 21. 23. - 31. (WebSDR 28d)
21 MHz	0600-1330	*	12	CHN		RADAR	50 sps	10k0E	*) Days: 5. 10. 18. 20. 24. 26. (WebSDR 25d)
21 MHz	0600-1230	*	12	CHN		RADAR	50/67sps	10k0E	*) Days: 1. 2. 5. 6. 9. - 15. 17. 19. - 31. 'foghorn'
21001.5	0600-1600	01 - 31	12			XXX/ jam		5k0E	
21100.0	0715-0930	01 15	12	CHN		DRM	9.08 kbps	9k60	
21433.0	0750-1020	18 19	12			RADAR	100 sps	20k0	
21438.0	/0830-1545	01 - 31	12	RUS	RCV	A1A	16 - 25 wpm	40H	Navip etc.
24 MHz	0550-1345	12 28	12	G		RADAR	50sps	20k0	(WebSDR 12d)
24 MHz	0715-1500	*	12	RUS		RADAR	40sps	13k0E	*) Days: 3. 12. - 17. 19. 23. 24. 26. (WebSDR 15d)
25000.0	0600-1500	01 - 31	12			RADAR	2 sps	200k0	Codar
27998.0	0915	11	12	RUS		RADAR	49sps	13k0E	
28 MHz	0600-1515	*	12	G		RADAR	25/50sps	20k0	*) Days: 2. - 5. 7. - 10. 12. 14. 15. 17. 19. - 26. 28. 29. 31. (WebSDR 30d)
28 MHz	0600-1500	01 - 21	12	IRN		RADAR	150/ 313	60k0E	(WebSDR 21d)
28000.0	0600-1500	22 - 31	12	IRN		RADAR	313	60k0E	(WebSDR 10d)
28860.0	0600-1400	01 - 26	12	IRN		RADAR	150/ 313	60k0E	(WebSDR 25d) QSY 27860 kHz
28 MHz	0700-1215	*	12	RUS	Taxi disp.	F3E		3k0E	*) Days: 1. 2. 3. 8. 9. 11. 17. 19. 20. 26. 29. 36 reports
29750.0	0835-1100	23 - 27	12	RUS	Kazan	RADAR	1592 sps	60k0E	Lower sideband audible to 29500 kHz

URE; Gaspar, EA6AMM. **Team members: EA4021SWL, EB4APL** **(Radars activity: summarized per band)**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
6991.0	18:05 vt*	06 vd*	12	RUS		RADAR	40	12K0E	OTHR Contayner. Splatter to 7004 kHz. *Also on 29/12, 1801Z
6992.0	18:12	05	12	RUS		RADAR	40	12K0E	OTHR Contayner. Splatter up to 7004 kHz
7000.0*	vt**	vd**	12	RUS		RADAR	40	12K0E	OTHR Contayner TX *on 40m **Very often. 56 reports 2 simultaneous TX on 40m: 8 3 simultaneous TX on 40m: 3
7000.0*	vt**	vd**	12	CHN		RADAR	41.7 50 66.7	10K0E	OTHR “Foghorn” bursts *on 40m: Very often. 43 reports
7000.0	19:58	02	12				2400	2K40E	LINK-22 NILE (NILE = NATO Improved LINK-Eleven). *Also on 03/12 and on 12/12, vt
7005.0	17:46	22	12			J3E-L		2K40E	Unidentified sts talking. Male voices, unid language
7007.0	13:52	19	12			XXX			WHARQ. Wideband HF Hybrid Automatic Repeat Request (ARQ). Burst system. Several BW, modulation types and QRG
7008.0	17:18	24	12			F1B	50	250H	
7009.0	07:30	12	12			J7D		2K70E	CIS-12. Submode idle
7015.0	00:07	15	12			RADAR	40	18	
7016.0	19:05	12	12			XXX			WHARQ
7020.0 USB	20:13	30	12		821005	J7D	125	1K80E	MIL-188-141A ALE 2G
7027.0	18:28	18	12	RUS		F1B	50	250H	*Also on 28/12, 1907Z
7032.0	08:13 vt*	01 vd*	12	RUS		XXX		3K30E	7032 kHz USB. Jammer / QRG occupation. Almost daily
7032.0	13:18	18	12			J3E-U		3K30E	RUS MIL music, looped
7036.0	17:39 vt*	09 vd*	12	RUS		F1B	50	250H	*Also on 11/12 and on 18/12, vt
7054.0	18:44	01	12	RUS		F1B	50	200H	
7057.0	08:11	01	12			XXX		CA4K0E	XXX. Jammer? Over UKR/RUS radiowar TX on 7060 kHz LSB
7070.0 USB	19:04	01	12	CHN	288 571	J7D	125	1K80E	MIL-188-141A ALE 2G
7086.0	18:11	14	12			F1B		250H	
7088.0 USB	07:10 vt*	09 vd*	12			G1D	2400	2K40E	LINK-11 SLEW *Often. 10 reports
7100.0 USB	18:17 vt*	03 vd*	12			G7D	75	2K40E	LINK-11 CLEW SSB *Often. 9 reports
7100.0 USB	18:34 vt*	06 vd*	12			G1D	2400	2K80E	STANAG-4285 *Also on 19/12, 1917Z
7103.0	16:27	17	12			N0N			Carrier. Long-lasting. *Also on 19/12, 1357Z
7105.0	18:05	07	12			J3E-L		2K80E	UKR / RUS radiowar
7113.0	13:19	18	12			N0N			Carrier. Long-lasting
7120.0 USB	18:06	18	12			J7D	125	1K80E	MIL-188-141A ALE 2G
7123.8	17:40	18	12			XXX		CA2K0E	Unidentified continuous signal
7124.0	21:08	06	12			J7D	120	2K70E	CIS-12
7134.3	18:25	18	12	RUS		F1B	50	200H	
7138.0	11:11	22	12			F1B	50	200H	
7162.0	18:37	01	12			F1B	50	250H	

URE; Gaspar, EA6AMM. **Team members: EA4021SWL, EB4APL** **(Radars activity: summarized per band)**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7176.0	18:29	01	12			F1B	50	200H	
7185.0 USB	17:43	11	12			J7D	125	1K80E	MIL-188-141A ALE 2G
7186.0	07:09	09	12			J7D	120	2K70E	CIS-12
7193.0	13:12 vt*	18 vd*	12	RUS		F1B	50	200H	*Also on 19/12, 1238Z
7195.0	17:20 vt*	08 vd*	12			J7D	120	2K70E	CIS-12 *Also on 18/12, 1315Z
7198.0	18:17 vt*	05 vd*	12			J7D	120	2K70E	CIS-12 *Also on 18/12, 1314Z
*13988.0**	*vt***	*vd***	*12*	*G*		*RADAR*	*50*	*20K0E*	*OTHR. UK SBA, Cyprus. Splatter to 14005 kHz. *Also on 25/12, 1441Z*
13992.0	15:28	05	12			XXX	40	24K0E	Unidentified bursts. With intro tone
13998.5	10:25	04	12					2K70E	THALES mixed mode using Systeme-3000 Skymaster ALE + STANAG-4285 FEC + STANAG-4539. Partially inside 20m band
13999.0	10:19 vt*	22 vd*	12			J7D	120	2K70E	CIS-12. Submode idle. Partially inside the 20m band. *Also on 23/12, 0904Z
13999.8	10:54 vt*	04 vd*	12				2400	CA2K80E	Arcotel MAHRS (Multiple Adaptive HF Radio System) ALE burst. Partially inside the 20m band. *Often. 8 reports
*14000.0**	*vt***	*vd***	*12*	*RUS*		*RADAR*	*40*	*12K0E*	*OTHR Contayner TX *on 20m **Very often. 36 reports 2 simultaneous TX on 40m: 6*
*14000.0**	*vt***	*vd***	*12*	*CHN*		*RADAR*	*41.7 50 66.7*	*10K0E*	*OTHR "Foghorn" bursts *on 20m **Very often. 67 reports*
*14000.0**	*vt***	*vd***	*12*			*RADAR*		*Ca6K0E*	*SuperDARN-like radar bursts (SuperDARN = Super Dual Auroral Radar Network). Hopping. *Also on 14000 kHz CF, 14005 kHz CF, 14015 kHz CF, 14020 kHz CF and 14025 kHz CF **Almost daily. 27 reports*
14000.0	09:44 vt*	02 vd*	12				2400	CA3K0E	14000 kHz USB. ALE 3G complete link. *Very often. 11 reporsts
14000.0 USB	13:35	02	12				2400	CA2K50E	ISR navy hybrid modem bursts
14000.0	17:19	02	12			XXX	7200	9K0E	14000 kHz USB. WHARQ
14000.0	10:17	03	12				2400	CA3K0E	14000 kHz USB. ALE 3G bursts *Almost daily. 24 reports
14000.0	11:01	12	12		RFAL1 RFAL2	J7D	125	1K80E	14000 kHz USB. MIL-188-141A ALE 2G
14000.0	09:57	13	12			G1D	2400	2K40E	14000 kHz USB. ISR navy hybrid modem bursts
14000.0	09:01	15	12			J3E-U		CA1K0E	Non-amateur comms. Narrow USB (? BW = ca 900 Hz). Male voice. Unid language
14000.0	10:11	25	12			J3E-U		2K80E	Unid sts talking. Male voices. Unid langguage (seems Arabic)
14001.0	08:01	13	12			J3E-U		2K40E	South American fishers. Male voices. Spanish language, South American accent. Long-lasting
14001.0	08:23	16	12			J3E-U		2K80E	Non-amateur comms. Male voices. Unknown language (seems Arabic)
14002.0	11:21	10	12			F1B	75	850H	STANAG-4481
14002.0	15:35	11	12			F1B	75	850H	STANAG-4481

URE; Gaspar, EA6AMM. **Team members: EA4021SWL, EB4APL** **(Radars activity: summarized per band)**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
14002.0	11:40	16	12			XXX			AM TX, alternating 6 tones
14004.0	09:09	10	12				2400	CA8K0E	14004 kHz USB. Arcotel MAHRS (Multiple Adaptive HF Radio System) ALE burst
14005.0	08:04	21	12			F1D	600	600H	DPRK-FSK 600 ARQ
14007.0	08:33	12	12			J3E-L		2K40E	Unid sts talking. Male voices. Portuguese / Brazilian language
14007.0	08:48	14	12			J3E-L		2K40E	Unid sts talikng. Male voices, South American Spanish language
14007.0	08:04	21	12			F1D	600	600H	DPRK-FSK 600 ARQ
14009.6	13:12	05	12			XXX		29K0E	Unidentified digital bursts
14010.0	17:26	12	12			XXX			14010 kHz USB. Unid MFSK-8 bursts
14011.0	07:58	10	12			J7D	125	1K80E	14011 kHz USB. MIL-188-141A ALE 2G
14011.0	11:38	10	12			XXX		CA3K0E	XXX. Unidentified digital bursts
14015.0	18:49	07	12			RADAR		CA6K0E	SuperDARN bursts (SuperDARN = Super Dual Auroral Radar Network). Hopping. Long-lasting. *Also on 14000 kHz CF and on 14020 kHz CF
14016.0	17:14	05	12			W7D	22.22	3K0E	CIS-112 preambles + CIS-112 OFDM. 112 channels + pilot tone at 3300 Hz
14016.0 USB	08:00	14	12		112 122	J7D	125	1K80E	MIL-188-141A ALE 2G
14019.4	17:28	30	12			XXX			Unidentified signal. At 1733Z, QSY to 14015 kHz CF
14026.0	09:24 vt*	06 vd*	12			J7D	120	2K70E	CIS-12. *Also on 16/12, 0816Z and on 26/12, 1036Z
14026.0 USB	09:59	13	12				2000	C2K80E	THALES Selcall. MSK 2000 Bd and short MFSK-8 125 Bd non-standard MIL-188-141A ALE. *Also on 16/12, 1135Z
14031.0 USB	12:09 vt*	11 vd*	12					2K80E	CIS-MFSK 16 *Also on 18/12, 1210Z
14062.0	09:27	10	12			J3E-U		3K0E	Non-amateur comms. Male Voices, Asian language (seems CHN)
14065.0 LSB	09:28	10	12			W7D	44.44	2K40E	CHN OFDM 39 following the 14063 kHz USB (J3E-U) non-amateur comms
14096.0 USB	15:03	09	12				2000	CA2K0E	THALES Selcall. MSK 2000 Bd and short MFSK-8 125 Bd non-standard MIL-188-141A ALE
14098.5	12:31 vt*	02 vd*	12			F1D	600	600H	DPRK-FSK 600 ARQ *Also on 03/12, 1228 Z
14100.0 LSB	17:04 vt*	02 vd*	12	MOZ	AFUNGI	J7D	125	1K80E	MIL-188-141A ALE 2G. Inverted spectrum. *Almost daily. 24 reports
14103.0 LSB	13:43	30	12			G7D	75	2K40E	CHN 4+4 a.k.a PRC 4+4
14107.0	08:45	10	12			XXX		2K40E	Unidentified digital signal with intro tones and pilot tone + non-amateur USB TX (J3E-U after end of TX, male voice, Asian language. Possibly, CHN OFDM 39
14110.0	12:13	07	12			J3E-U		2K80E	Propaganda. Speech. Male voices. Slavic language. UKR/RUS radiowar. Long-lasting. *Often. 10 reports
14118.0	11:20	02	12			J7D	120	2K70E	CIS-12 with additional pilot tone on 14116 kHz
14120.0	13:08	31	12			J3E-U		2K80E	Slavic pop music. Long-lasting
14131.3	14:59	06	12			G7D	75	2K40E	CHN 4+4 a.k.a PRC 4+4

URE; Gaspar, EA6AMM. **Team members: EA4021SWL, EB4APL** **(Radars activity: summarized per band)**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
14132.0	12:31	28	12			J3E-U		2K80E	UKR/RUS radiowar. Long-lasting
14136.0 USB	12:59	15	12			J3E-U		3K0E	Broadcast relaying. Male voice. Slavic language. Music and speech (religious content). At 1302Z shifted slowly to 14135 kHz USB. Long-lasting. QRT: 1418Z
14140.0	14:13	01	12			J3E-U		2K80E	Relayed broadcast. Slavic music. Long-lasting. *Also on 18/ 12 and on 30/12, vt
14169.0	08:10 vt*	02 vd*	12			F1B	50	200H	*Also on 05/12 and on 09/12; vt
14171.0	06:59 vt*	07 vd*	12			J7D	120	2K70E	CIS-12. *Also on 11/12, 0820Z
14189.0	16:00	31	12			XXX	44.1	10K0E	Unidentified signal. BW = 10K0E. 44.1 pps. Radar? QRT: 1606Z. Restarted at 1618Z at 14188 kHz CF for 1 min
14192.0	07:52 vt*	01 vd*	12	RUS		F1B	50	200H	*Almost daily. 27 reports
14193.0 LSB	16:17	18	12			G7D	75	2K40E	CHN 4+4 a.k.a PRC 4+4
14198.5	09:57 vt*	09 vd*	12			F1D	600	600H	DPRK-FSK 600 ARQ *Very often. 13 reports
14220.0	09:17 vt*	02 vd*	12			J7D	120	2K70E	CIS-12 *Often. 4 reports
14220.5	08:09 vt*	14 vd*	12			F1D	600	600H	DPRK-FSK 600 ARQ *Often. 7 reports
14228.5	12:11	26	12			G1D	1200	1K20E	DPRK-PSK 1200 ARQ
14242.0	11:23	06	12			J7D	120	2K70E	CIS-12
14256.0	10:53	21	12			F1B	75	850H	STANAG-4481
14260.0	09:11	19	12			N0N		CA7K0E	Carrier with spurious
14261.0	09:03	12	12			J7D		2K70E	CIS-12. Submode idle
14298.5	07:51	01	12			G1D	1200	1K20E	DPRK-FSK 1200 ARQ
14298.5	12:10 vt*	02 vd*	12			F1D	600	600H	DPRK-FSK 600 ARQ *Almost daily. 21 reports
14300.0	07:57	04	12			F1B		500H	Defective TX
14302.0 LSB	11:39	19	12			G7D	75	2K40E	CHN 4+4 a.k.a PRC 4+4
14305.0	13:17	04	12	RUS		F1B	75	500H	At 1318Z, QSY to 14308 kHz CF (usual QRG)
14308.0	13:17 vt*	04 vd*	12	RUS		F1B	75	500H	*Often. 7 reports
14308.0	12:04	26	12			F1B	150	500H	"Chayka" bursts. F1B. SH = 500 Hz. 150 Bd
14318.5	14:52 vt*	31 vd*	12			F1D	600	600H	DPRK-FSK 600 ARQ *Often. 5 reports
14323.0 USB	12:04	07	12		443	J7D	125	1K80E	MIL-188-141A ALE 2G
14341.0	11:07	06	12			XXX		2K0E	XXX. AM or DSB TX with center carrier and 4 tones (alternating 2 and 2 tones)
14344.0 USB	11:31	11	12			G1D			MIL-188-110A bursts. First burst = ALE 3G
14346.0	08:43	23	12			J7D	120	2K70E	CIS-12. Idle
14348.5	13:01 vt*	21 vd*	12			F1D	600	600H	DPRK-FSK 600 ARQ *Also on 24/12, 1303Z
14348.5	13:03	24	12			F1D	600	600H	DPRK-FSK 600 ARQ
*18068.0**	*vt***	*vd***	*12*	*RUS*		*RADAR*	*40*	*12K0E*	*OTHR Contayner TX *on 17m 1 report*

URE; Gaspar, EA6AMM. Team members: EA4021SWL, EB4APL (Radars activity: summarized per band)

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
*18068.*0*	*vt**	*vd**	*12*	*CHN*		*RADAR*	*66.7*	*10K0E*	*OTHR "Foghorn" bursts *on 17m 1 report*
18174.0	*08:06*	*03*	*12*	*G*		*RADAR*	*50*	*20K0E*	*OTHR. UK SBA, Cyprus. Partially inside the 17m band*
20936.0	*07:47*	*03*	*12*	*CHN*		*RADAR*	*10*	*160K0E*	*Wideband OTHR bursts. Partially inside the 21m band*
20998.0	*13:50*	*23*	*12*	*G*		*RADAR*	*50*	*20K0E*	*OTHR. UK SBA, Cyprus. Partially inside the 15m band*
*21000.0**	*vt**	*vd**	*12*	*RUS*		*RADAR*	*40*	*12K0E*	*OTHR Contayner TX *on 15m **Almost daily. 199 reports 2 simultaneous TX on 15m: 35 3 simultaneous TX on 15m: 8*
*21000.0**	*vt**	*vd**	*12*	*G*		*RADAR*	*50 25*		*OTHR (UK SBA, Cyprus) TX *on 15m **Very often 42 reports 2 simultaneous TX on 15m: 1*
*21000.0**	*vt**	*vd**	*12*	*CHN*		*RADAR*	*41.7 50 66.7*		*OTHR "Foghorn" bursts *on 15m **Almost daily. 178 reports*
*21000.0**	*vt**	*vd**	*12*	*CHN*		*RADAR*	*50*	*10K0E*	*OTHR TX *on 15m **Often. 7 reports*
*21000.0**	*vt**	*vd**	*12*	*CHN*		*RADAR*	*10*	*160K0E*	*Wideband OTHR TX *on 15m **Often. 4 reports*
21000.0	09:04	15	12	CHN		W7D		17K59E	DRM (Digital radio Mondiale) short TX. ST: 'CUC-ECDAV' = Communications University of China. BW change at 0906Z (9k70e). TX = "DRM China Test"
21001.5	07:37 vt*	18 vd*	12			XXX	2K50E 5K0E	4K20E	Jammer. 85 Hz *Almost daily. 29 reports. Various BW
21005.0	07:22	03	12			XXX		CA6K0E	Unidentified continuous digital signal. Partially under the 21001.5 kHz CF jammer's action
21008.5	08:03 vt*	01 vd*	12			F1D	600	600H	DPRK-FSK 600 ARQ *Often. 5 reports
21020.0	10:15	26	12			J3E-U		2K40E	Non-amateur comms. Male voices, unknown language
21065.0 LSB	09:04 vt*	24 vd*	12			G7D	75	2K40E	CHN 4+4 a.k.a. PRC 4+4 *Also on 30/12, 0804Z
21100.0	08:53	01	12	CHN		W7D		9K50E	DRM broadcast. ST: 'CUC-ECDAV' = Communications University of China. Center for Research in Radio and Television Digitalization Engineering of the Ministry of Education. *Also on 15/12, 0904Z
21100.0	08:55	01	12	CHN		A3E		9K50E	AM. A3E. BC. Short TX followed by DRM TX. ST: 'CUC-ECDAV' = Communications University of China
21131.0	12:21	02	12			XXX	10	10K0E	Ionosonde. Long-lasting. TX = 96 minutes
21145.0	09:19 vt*	01 vd*	12	MRC	MIRADOR ...	J7D	125	1K80E	MIL-188-141A ALE 2G *Almost daily. 29 reports
21156.0	08:47	02	12			RADAR	100	10K0E	OTHR. BW = 10K0E. 100 pps
21175.0 USB	08:36	29	12		AB1 CD5	J7D	125	1K80E	MIL-188-141A ALE 2G
21213.0 USB	15:48	09	12			G1D	2400	2K40E	MIL-188-110A
21215.0 USB	08:44	28	12		AB1 CD6	J7D	125	1K80E	MIL-188-141A ALE 2G

URE; Gaspar, EA6AMM. **Team members: EA4021SWL, EB4APL** **(Radars activity: summarized per band)**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
21225.0	14:20 vt*	09 vd*	12				2400	CA3K0E	MIL-188-141C ALE 3G *3 reports
21225.0 USB	16:45	10	12			G1D	2400	2K40E	MIL-188-110A
21233.0	14:27	09	12			XXX		CA2K40E	XXX. Possibly, SkyOFDM (OFDM 28 tones). Skysweep Technologies proprietary mode
21300.0 USB	08:04	07	12			J7D	125	1K80E	MIL-188-141A ALE 2G
21332.0	08:20	04	12			RADAR	100	10K0E	OTHR
21400.0	11:37	07	12			XXX	750	CA40K0E	XXX. Unidentified long bursts. Signal with various side lobes
21419.0	07:59	25	12			XXX		CA3K20E	XXX. Unidentified signal
21430.5 USB	09:15	16	12				2000	CA2K80E	THALES Selcall. MSK 2000 Bd and short MFSK-8 125 Bd non-standard MIL-188-141A ALE
21433 LSB	08:10 vt*	05 vd*	12			G7D	75	2K40E	CHN 4+4 a.k.a. PRC 4+4 *Also on 06/12, 0928Z
21435.0 LSB	12:38	15	12			G7D	75	2K40E	CHN 4+4 a.k.a. PRC 4+4
21438.0	08:36 vt*	01 vd*	12	RUS	RCV	A1A			RUS navy QTC *Almost daily. 20 reports
21448.5	07:45	02	12			F1D	600	600H	DPRK-PSK 600 ARQ
21450.0	08:35	22	12			XXX		CA8K50E	Unidentified signal
21458.0	*07:58*	*01*	*12*	*RUS*		*RADAR*	*40*	*12K0E*	*OTHR Contayner. Splatter to 21445 kHz*
*24890.0**	*vt***	*vd***	*12*	*RUS*		*RADAR*	*40*	*12K0E*	*OTHR Contayner TX *on 12m 2 reports*
*24890.0**	*vt***	*vd***	*12*	*CHN*		*RADAR*		*10K0E*	*OTHR "Foghorn" bursts *on 12m **Often. 8 reports*
24954.0	*09:31*	*03*	*12*	*CHN*		*RADAR*	*10*	*160K0E*	*Wideband OTHR bursts*
25000.0	*vt***	*vd**	*12*			*RADAR*	*2*	*200K0E*	*CODAR (Coastal ocean dynamics applications radar). **Very often. 15 reports*
27998.0	*09:17*	*11*	*12*	*RUS*		*RADAR*	*40*	*12K0E*	*OTHR Contayner. Partially inside the 10m band*
*28000.0**	*vt***	*vd***	*12*	*G*		*RADAR*	*50 25*	*20K0E*	*OTHR (UK SBA, Cyprus) TX *on 10m. **Very often. 43 reports 2 simultaneous TX on 10m: 2*
28000.0	07:52	25	12	IRN		RADAR	313	45K0E	OTHR. 313 pps bursts only. Long-lasting. *Often. 6 reports 2 simultaneous TX on 10m: 2
28000.0*	vt*	vd*	12	IRN		RADAR	150 313	45K0E	OTHR alternating 150 and 313 pps bursts. **Almost daily - fixed on 28860 kHz CF: 12 reports - hopping after every burst: 20 reports 2 simultaneous TX on 10m: 7
28010.2	15:33	11	12			F1B	51	300H	Fishing buoy
28025.1	15:46	11	12			F1B	51	300H	Fishing buoy
28050.2	16:07	11	12			F1B	51	300H	Fishing buoy
28062.0	10:13	01	12			F1B	51	300H	Fishing buoy
28082.1	16:24	11	12			F1B	51	300H	Fishing buoy
28100.0	16:50	01	12			F1B	51	300H	Fishing buoy
28115.1	15:55	12	12			F1B	51	300H	Fishing buoy

URE; Gaspar, EA6AMM. **Team members: EA4021SWL, EB4APL** **(Radars activity: summarized per band)**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
28155.0	08:18 vt*	01 vd*	12			F3E			Non-amateur traffic. Female voice. Slavic language. *Often
28155.0	08:58 vt*	23 vd*	12			F3E			Non-amateur traffic. Female voice. Slavic language. *Often
28165.0	08:20 vt*	01 vd*	12			F3E			Non-amateur traffic. Female voice. Slavic language. *Often
28235.0	08:14 vt*	03 vd*	12			F3E			Non-amateur traffic. Female voice. Slavic language. *Often
29750.0	*08:11*	*03*	*12*	*RUS*		*RADAR*	*1592*	*CA60K0A*	*29750 kHz CF: Kazan Federal University Meteor Radar. RUS. Lower side lobe to 29550 kHz. *Often. 5 reports*

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

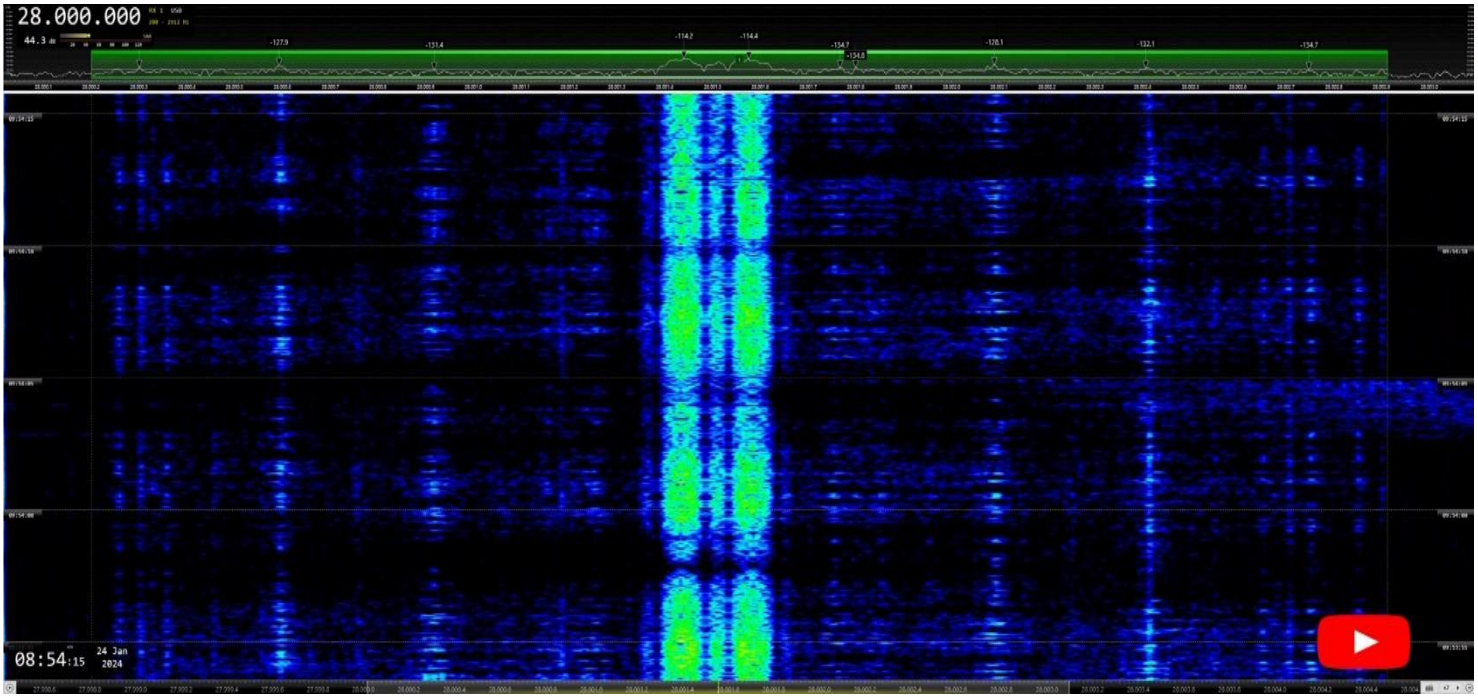
kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7032.0	1550	03	12	RUS		J3E-U		3K0E	100Hz hum; long lasting; S9+
7032.2	1412	21	12	RUS		J3E-U	100	3K30E	100Hz hum; S8; TDoA Kaliningrad
7050.0	1548	05	12			J3E-L		2K70E	Comments; slavic language; S9
7055.0	1553	03	12	UKR		J3E-L		2K70E	UKR-RUS radiowar; comments & songs in background; 2TX same freq.? Also on 05/12 and 30/12, mostly around 16UTC.
7058.0	1948	24	12	RUS		RADAR	40	12K0E	CF; OTHR Contayner
7060.0	1528	30	12			J3E-L		3K0E	UKR-RUS radiowar; comments; disturbed by jammer
7106.0	1847	26	12	CHN		RADAR	67	10K0E	CF; Ui OTHR
7107.0	1801	22	12	RUS		RADAR	40	12K0E	CF; OTHR Contayner
7129.0	1841	26	12	RUS		RADAR	40	12K0E	CF; OTHR Contayner
7163.0	1744	30	12	RUS		RADAR	40	12K0E	CF; OTHR Contayner
13198.0	1542	03	12	RUS		RADAR	40	12K0E	CF; OTHR Contayner; partly in 20M HAM band
14000.0	1554	08	12			RADAR	ca 50	10K0E	UiOTHR; splatters up to 14015kHz
14110.0	1521	24	12			J3E-U			Ukrain/Russian roundslip war rhetoric
14152.0	1544	30	12	RUS		RADAR	40	12K0E	CF; OTHR Contayner
14155.0	1539	03	12	RUS		RADAR	40	12K0E	CF; OTHR Contayner
14192.0	1550	08	12	RUS		F1B		200H	UiPtr; also heard on 17/12 and 30/12; several UTC times
14250.0	1556	30	12			J3E-U		2K70E	music/songs
21040.0	1105	17	12	G		RADAR		20K0E	TDoA: Cyprus
21168.0	1535	03	12	RUS		RADAR	40	12K0E	CF; OTHR Contayner
21310.0	1438	30	12	RUS		RADAR	40	12K0E	CF; OTHR Contayner
21375.0	1156	31	12			RADAR		10K0E	Ui OTHR
28000.0	1202	24	12	IRN		RADAR	ca315	45K0E	CF; OTHR; burts; long lasting; reported by PF5X
28055.0	1303	24	12	G		RADAR	25	20K0E	CF; OTHR UK base Cyprus
29050.0	1401	21	12	G		RADAR	25	20K0E	CF; OTHR UK base Cyprus; long lasting

Contact: Gaspar, EA6AMM. IARUMS Region 1 coordinator: iarums@iaru-r1.org

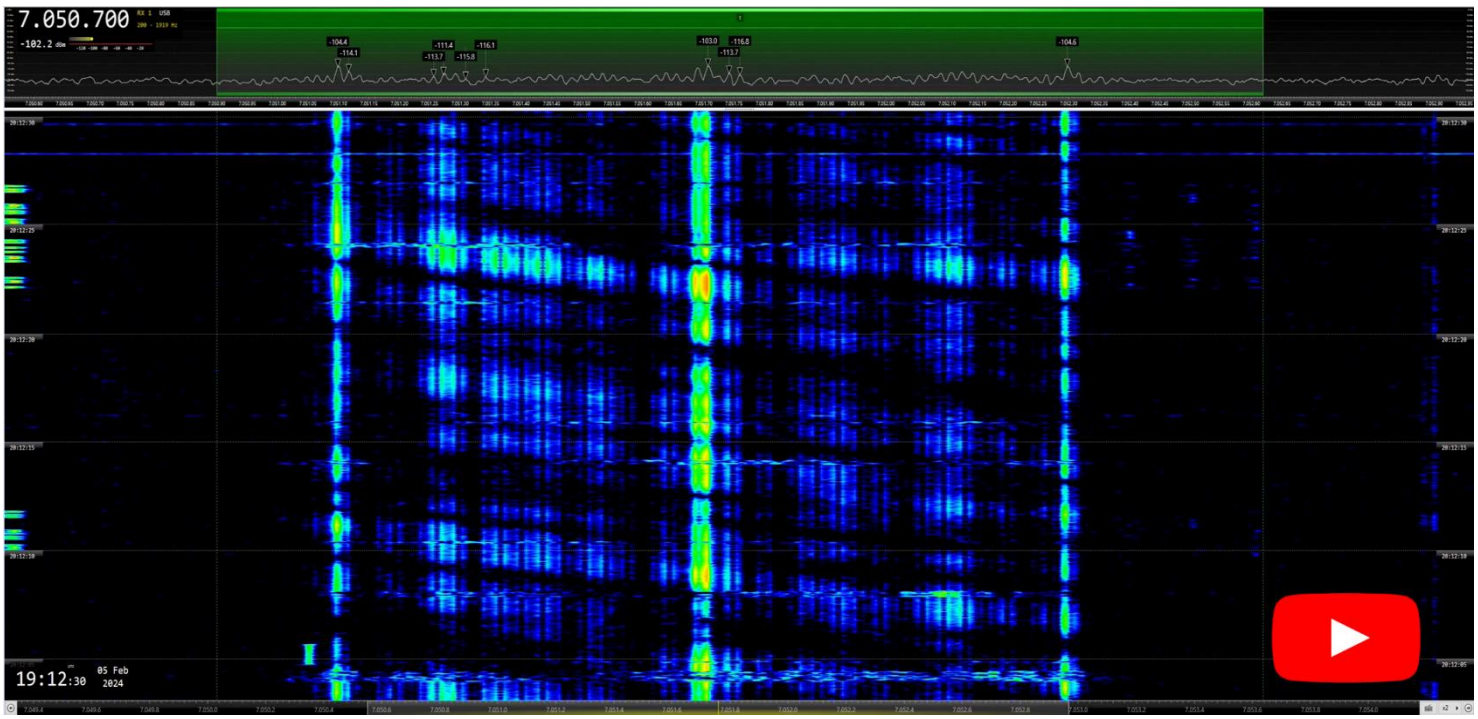
IARUMS R1 Coordinators: https://www.iaru-r1.org/spectrum/monitoring-system/iarums-region-1-coordinators/
Visit our website: https://www.iaru-r1.org/about-us/committees-and-working-groups/iarums/

Year 2024: some non-amateur transmission examples

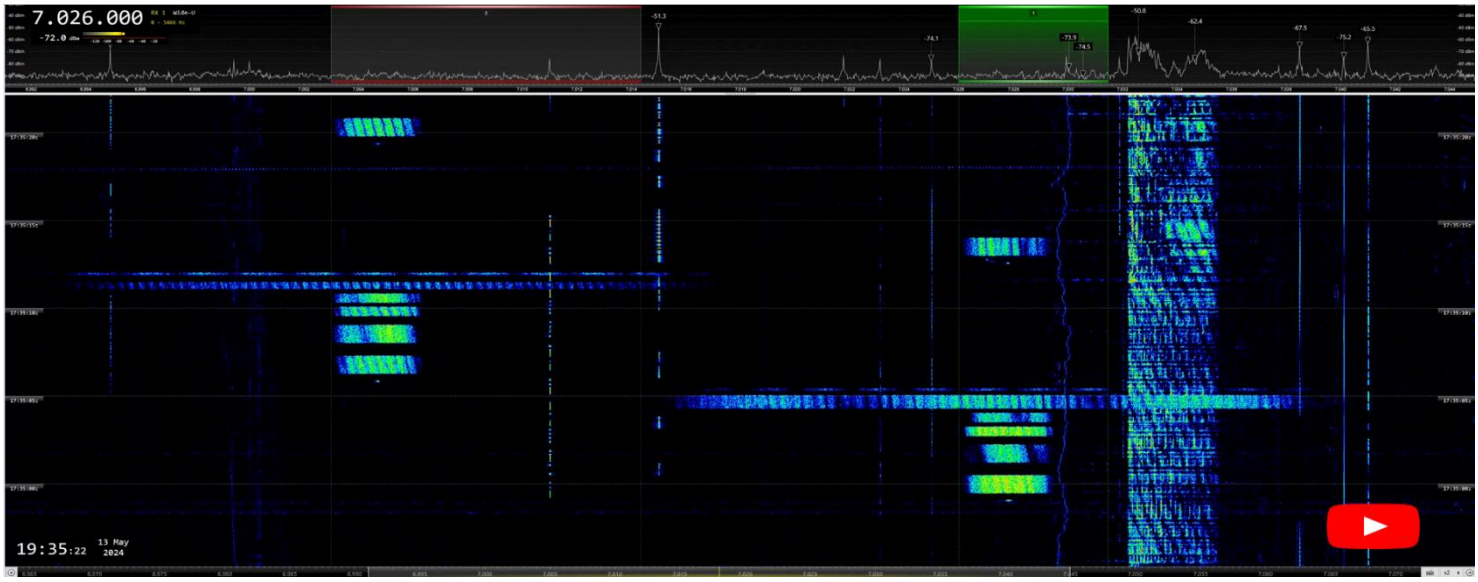
In this second part, we present some transmissions received throughout 2024 that have caught our attention, either due to their unusual nature in our bands, the use of new modes, or the characteristics of the transmitted mode.



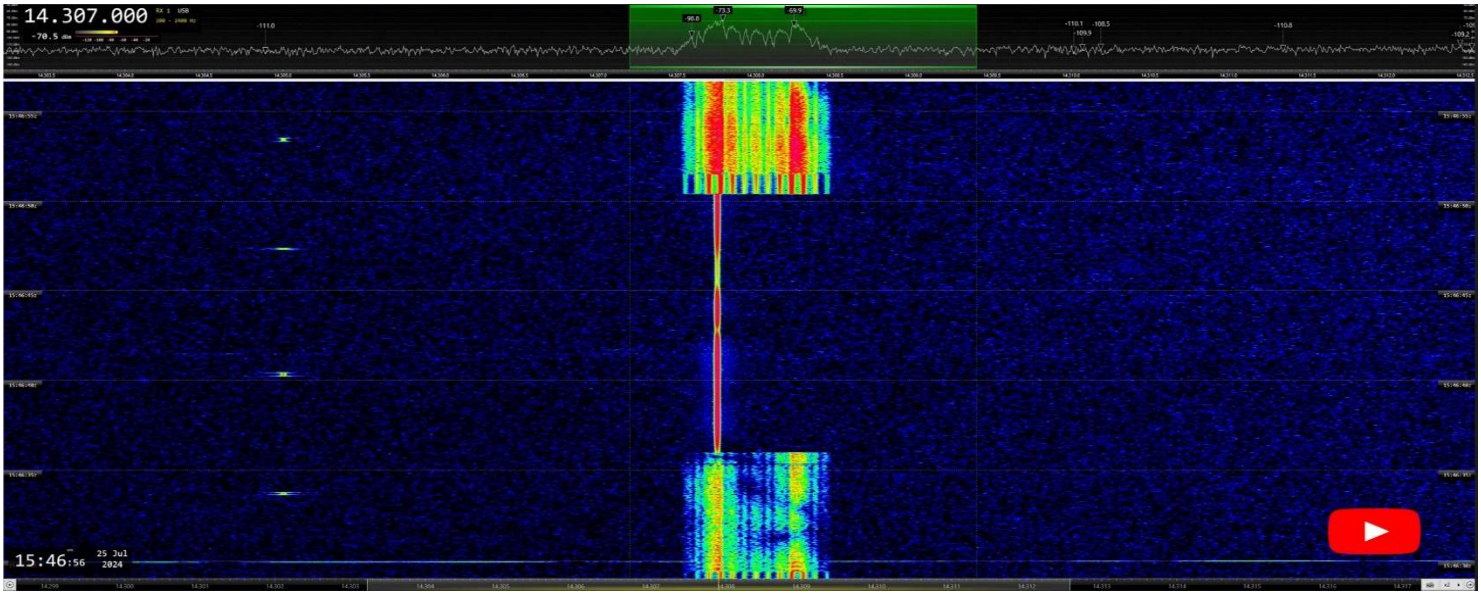
28000 kHz USB: „Yachta". RUS voice scrambler. FSK part. F1B. Shift = 150 Hz. Baud rate = 100 Bd



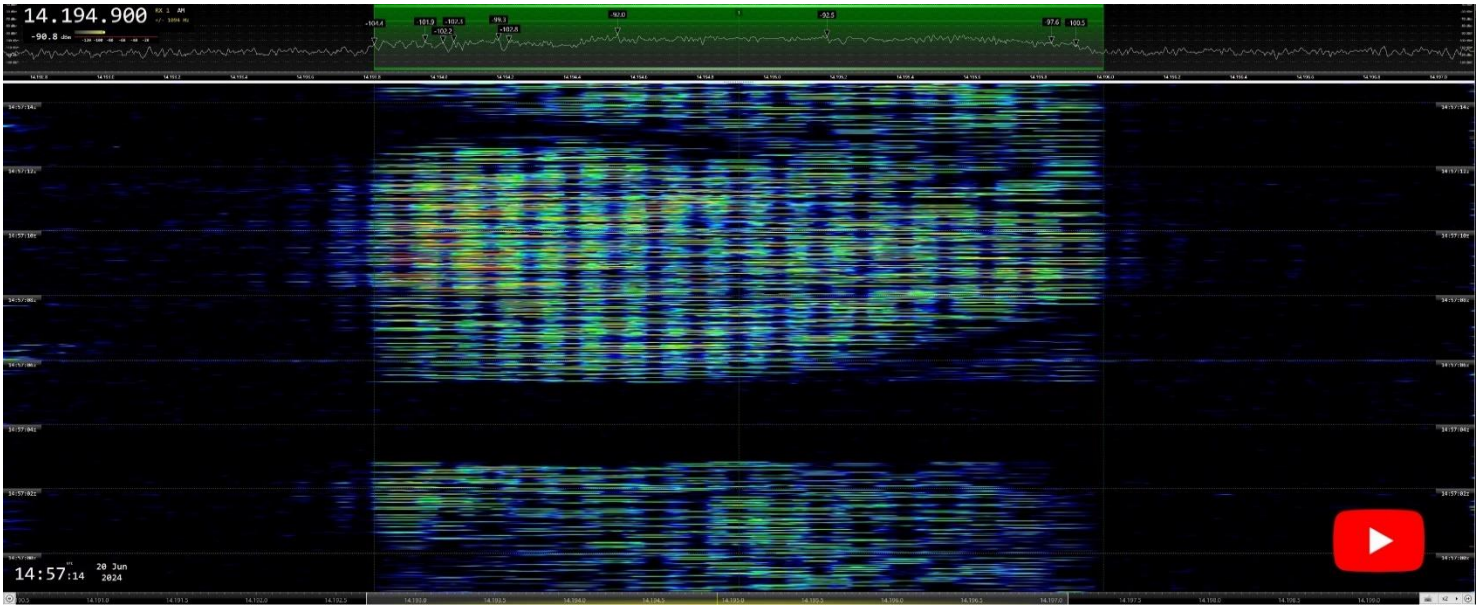
7051.7 kHz CF: RUS TDL (Tactical Data Link). PSK. Bandwidth: 1.2 kHz. 800 Bd



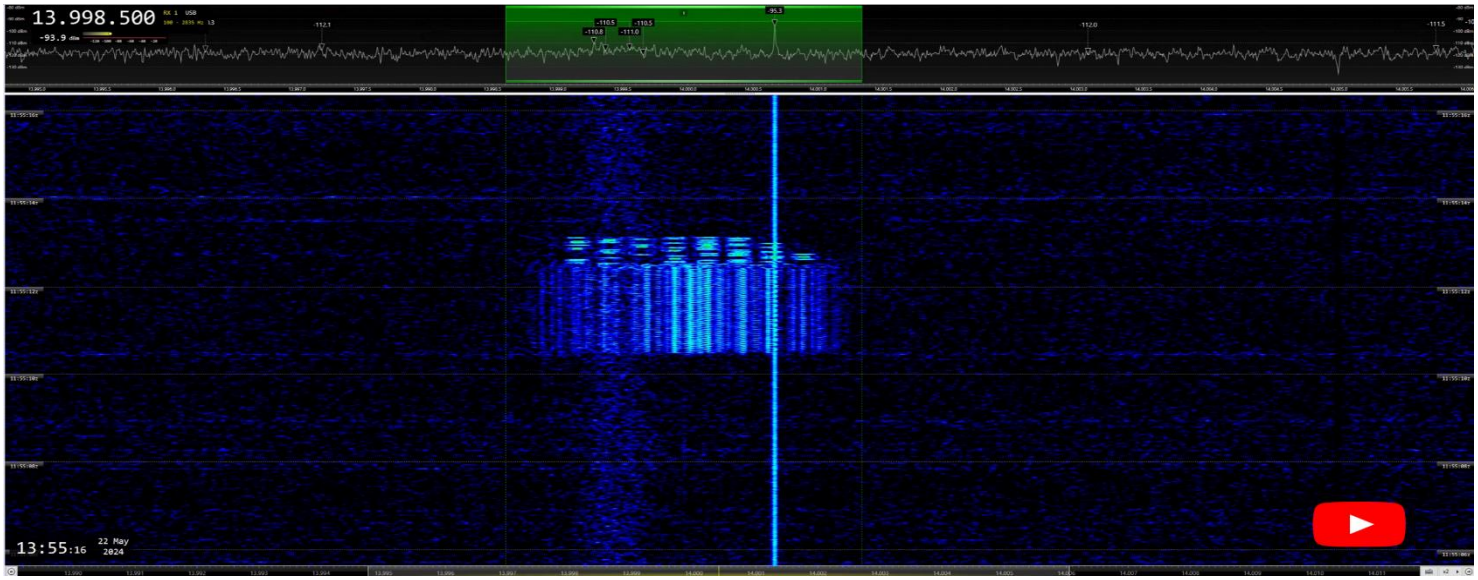
40 meters: : WHARQ. Wideband Hybrid Automatic Repeat Request. Burst system. Various BW & modulations. Intelligent QRG hopping



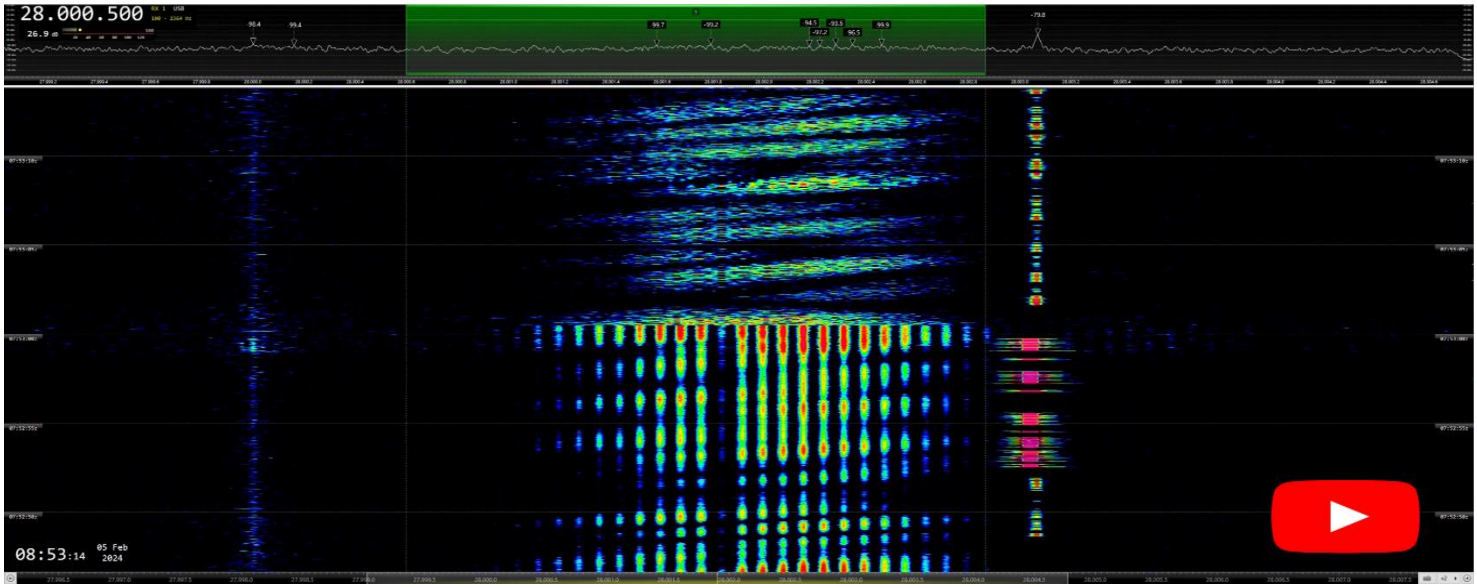
14308 kHz CF: „Chayka" FSK bursts. Shift = 500 Hz. 150 Bd.



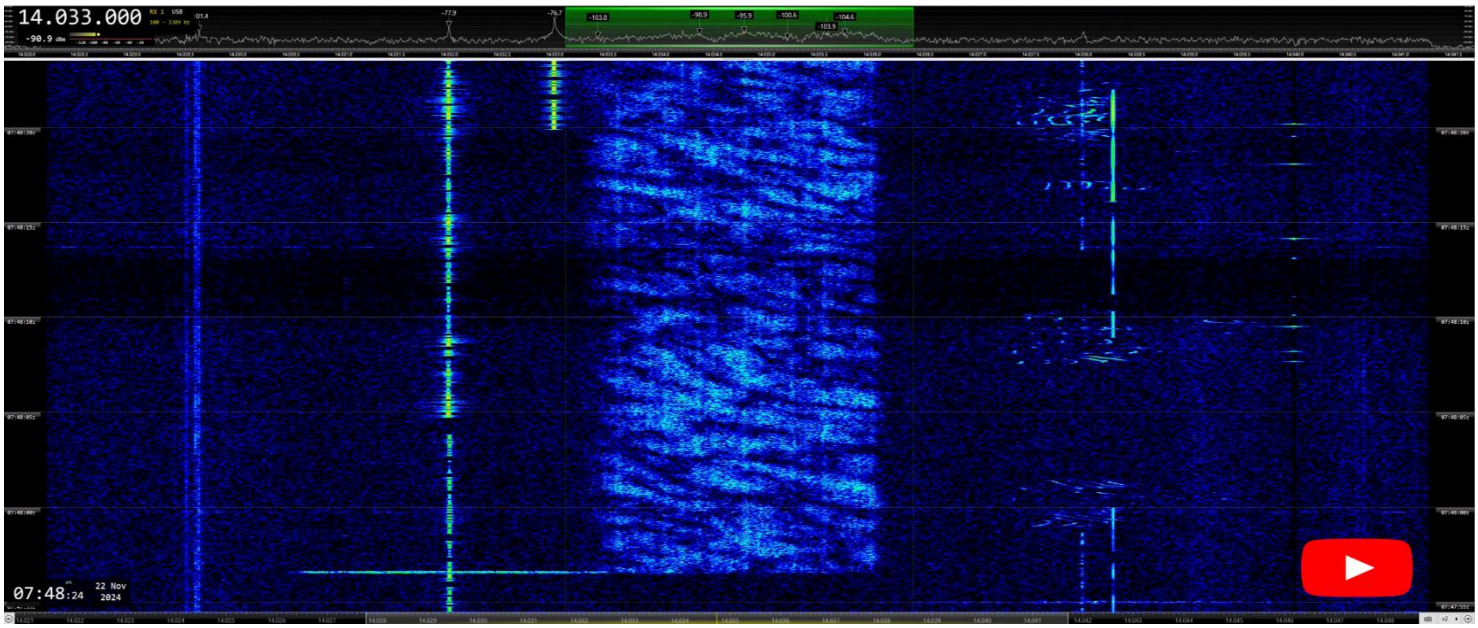
14194.9 kHz CF: CIS MFSK 17. 125 Bd. 17 tones. Tone spacing = 125 Hz



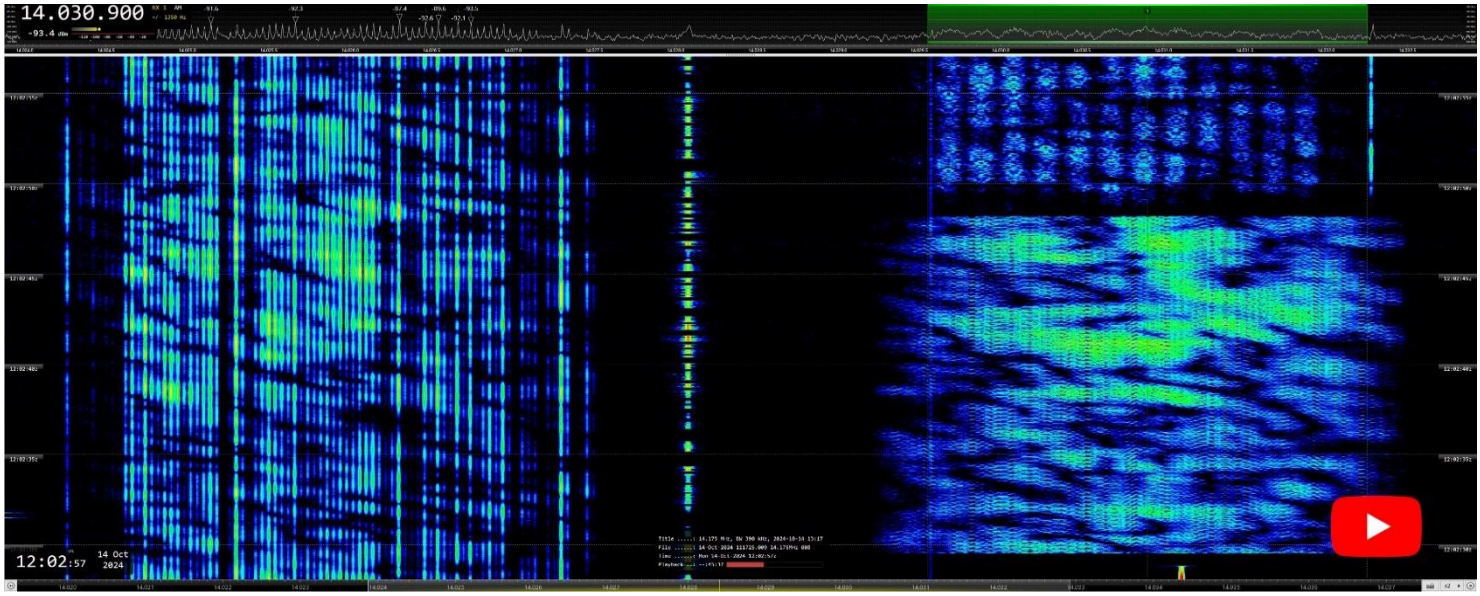
13998.5 kHz USB: THALES Selcall. MSK 2000 Bd and short MFSK-8 125 Bd non-standard MIL-188-141A ALE



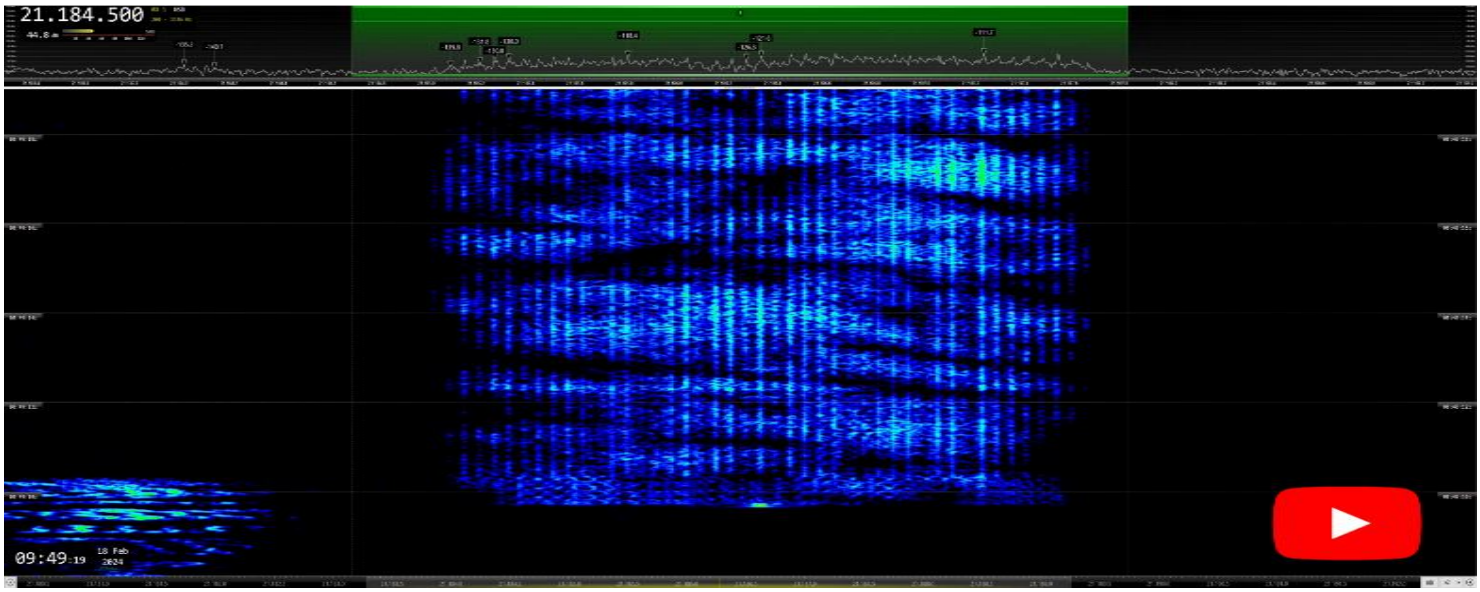
28001.8 kHz CF: T-230, also known as „Mahovik“ (Flywheel). PSK. Bandwidth circa 2 kHz. 1200 Bd.



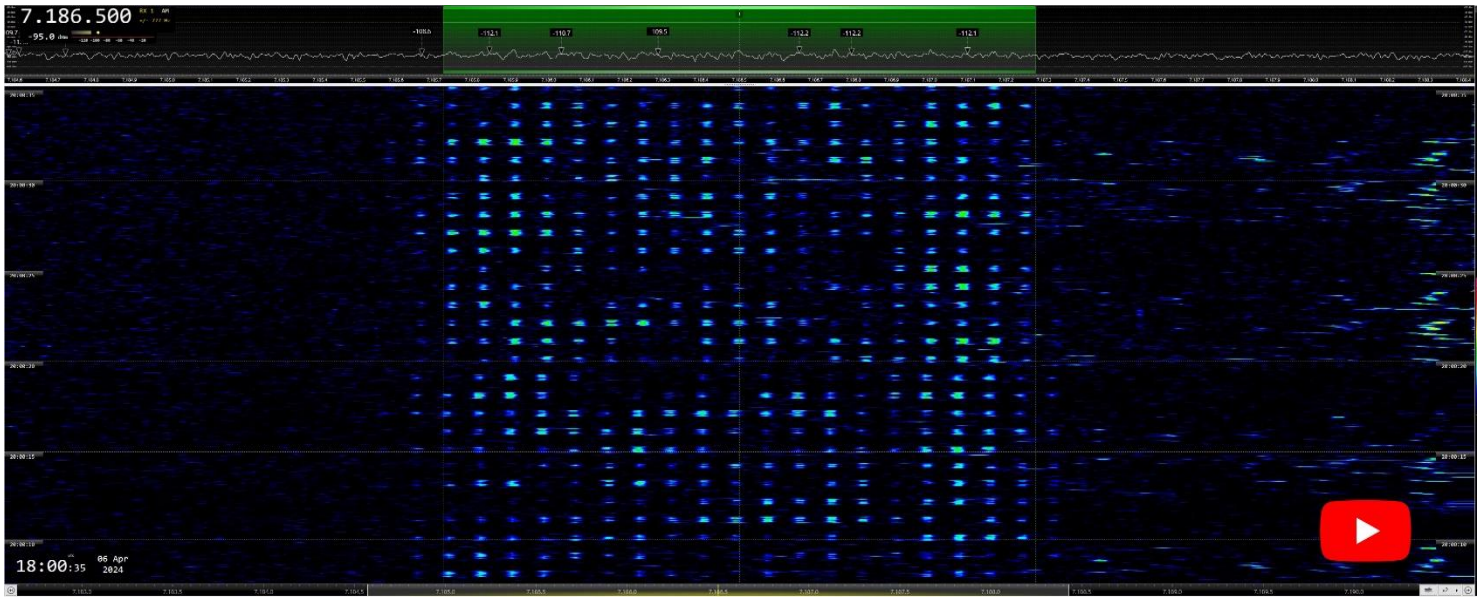
14033 kHz CF: UNID MSK 2400 Bd / 1200 MSK bursts



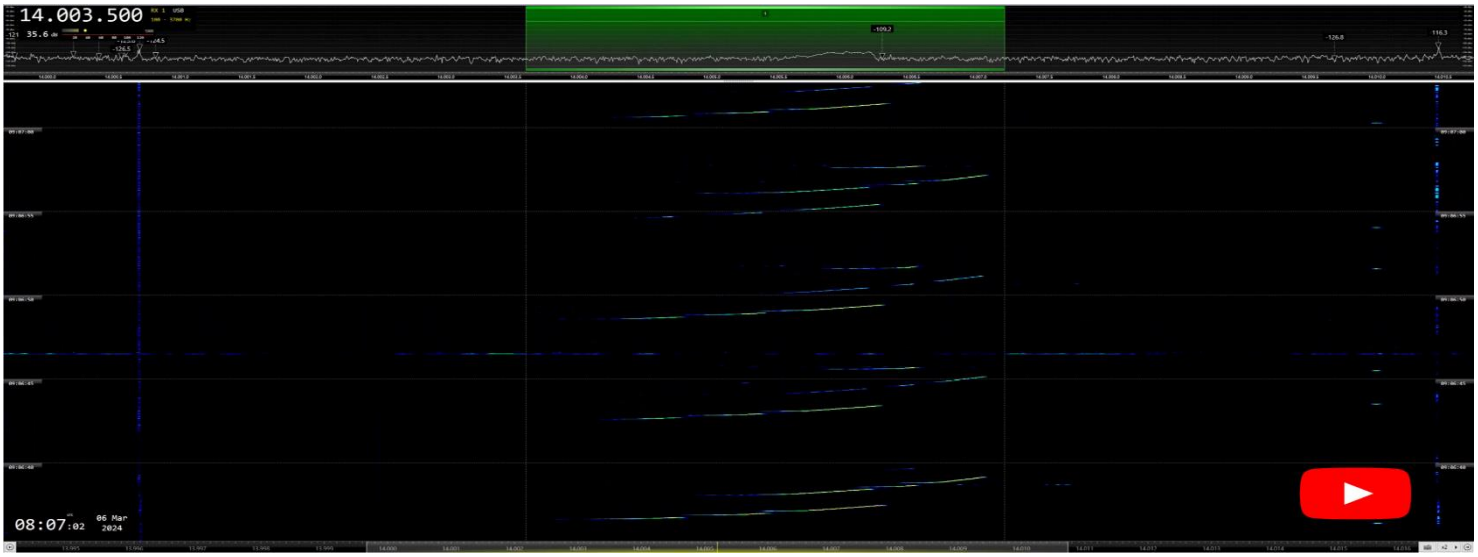
14031 kHz CF: CIS-12 + QPSK preamble (on the left of the screen, at 14026 kHz CF: CIS-12, submode idle). CIS-12: J7D. BW = 2.7 kHz. 12X 120 Bd.



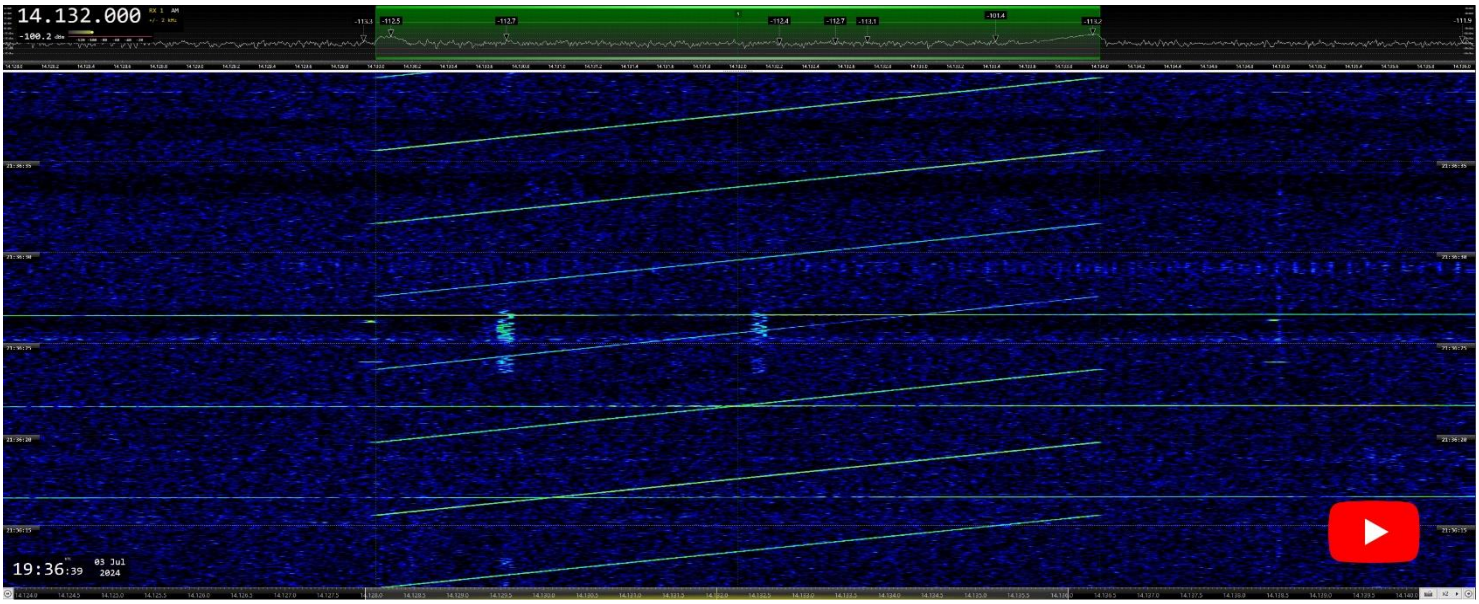
21186.3 kHz CF: Unidentified CHN modem following the CHN 4+4 transmissions. BW = 2.4 kHz. 2400 Bd.



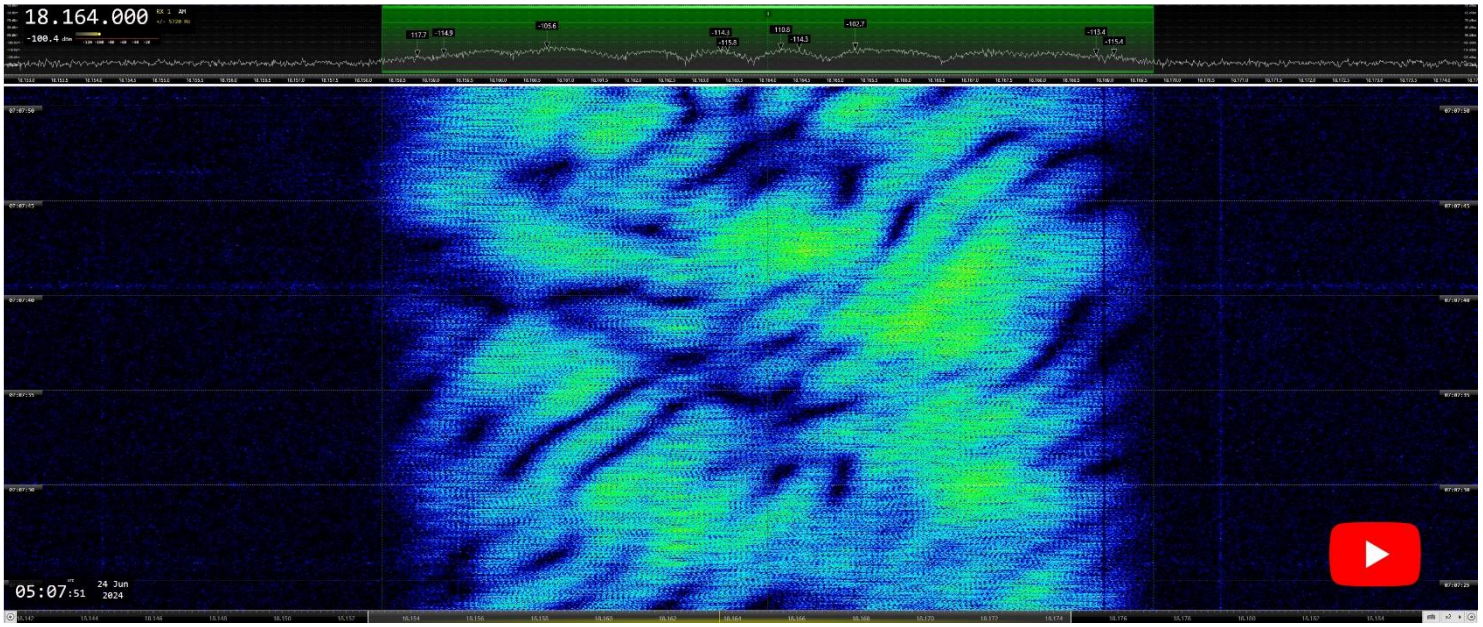
7186.5 kHz CF: Jammer (buzzer). BW ca 1.6 kHz. BD ca 0.3 sec. BRI ca 0.7 sec. Base: 84 Hz tone, FM modulated



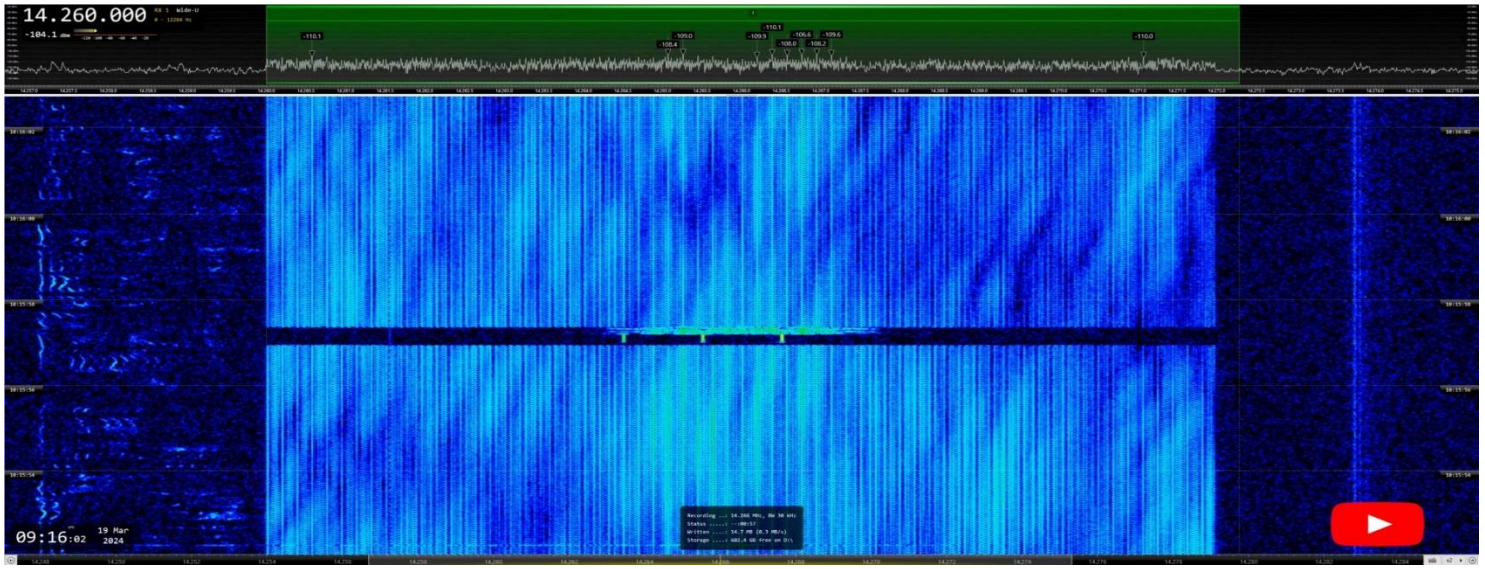
14005.5 kHz CF. Unidentified bursts sounding like whistling. BW ca 3.4 kHz. BRI ca 3 sec. BD ca 3 sec. Also on 14258 kHz CF. Often on March 2024



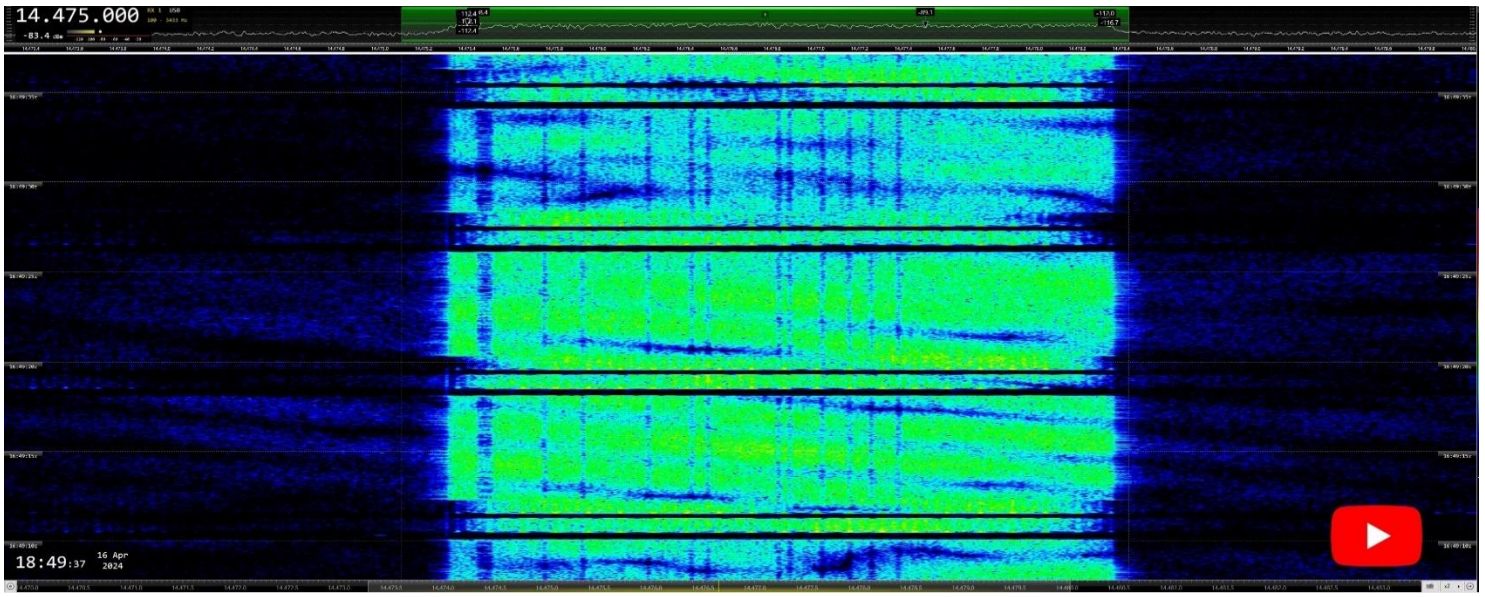
Slow Sweeps Slow sweeps. BD = 120 sec. BRI = 240 sec. BW: 4 kHz or 1 kHz. 0.25 pps. Often on summer 2024



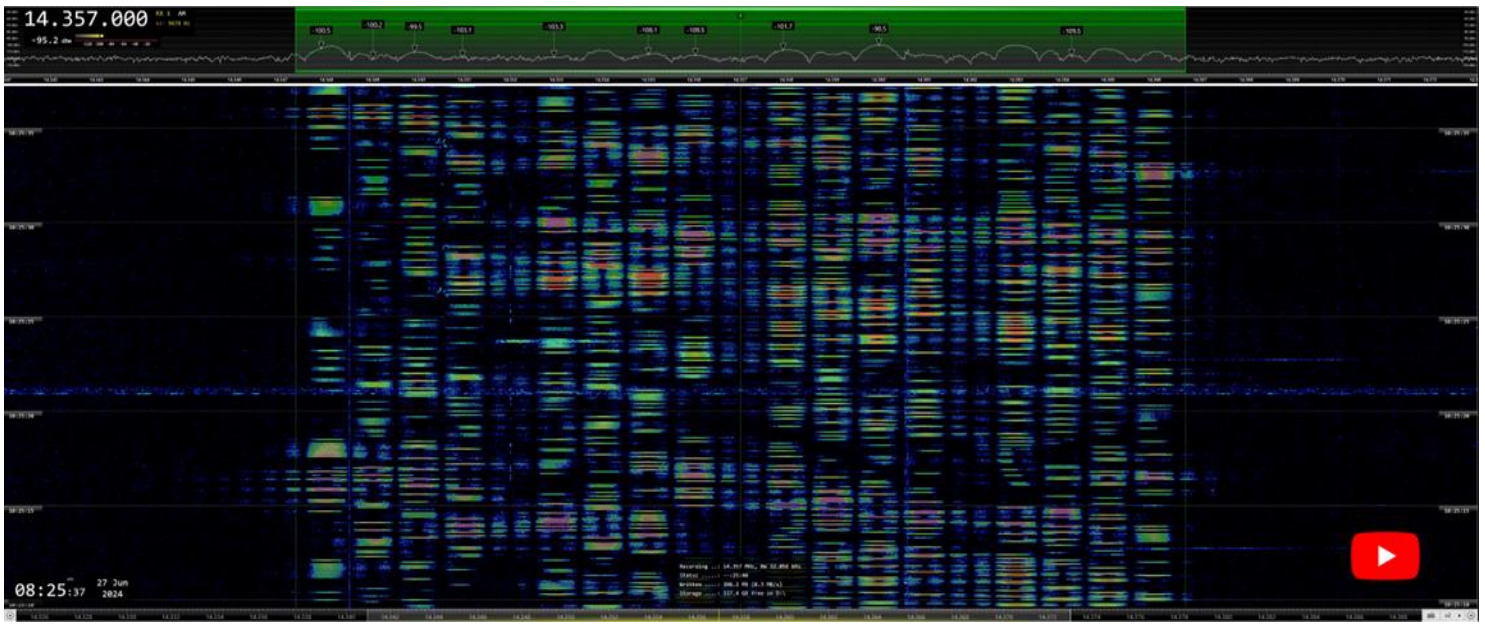
18164 kHz CF: Unidentified signal. Bandwidth ca 10 kHz. 80 pps. Radar? Jammer?



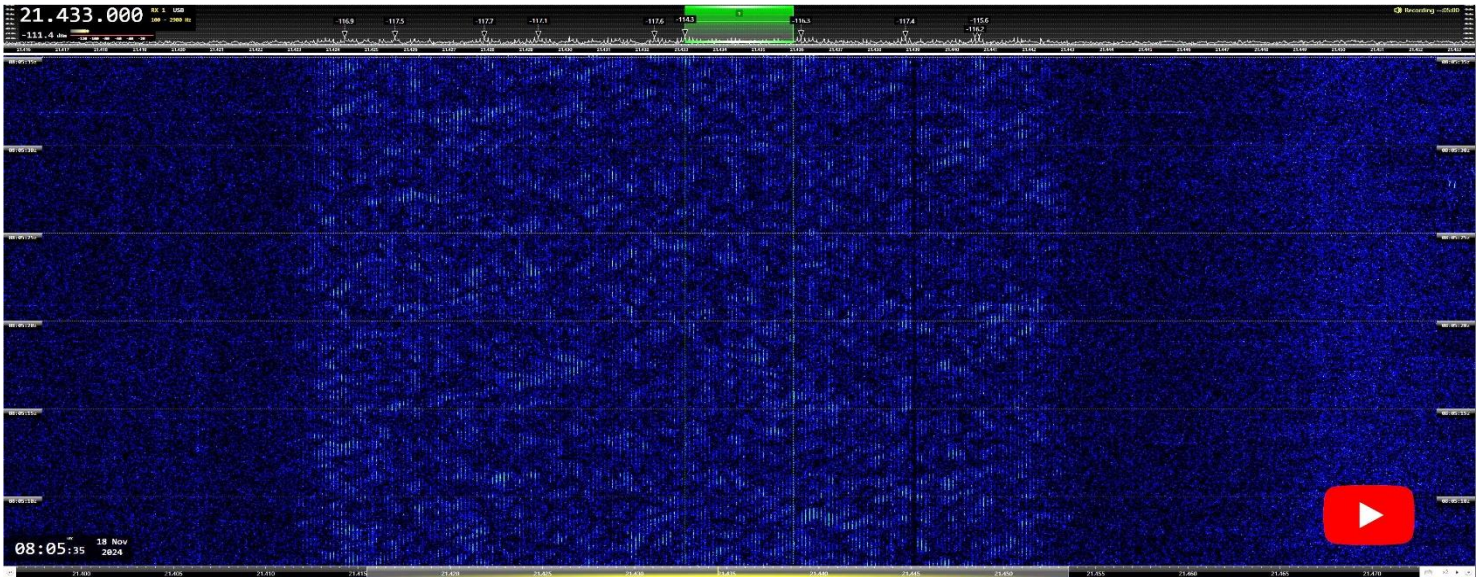
14266 kHz CF: XXX wideband CIS OFDM. Header with 4 tones and complex chirps.BW = 12 kHz (Various BW up to 96 kHz). No OFDM part on this TX



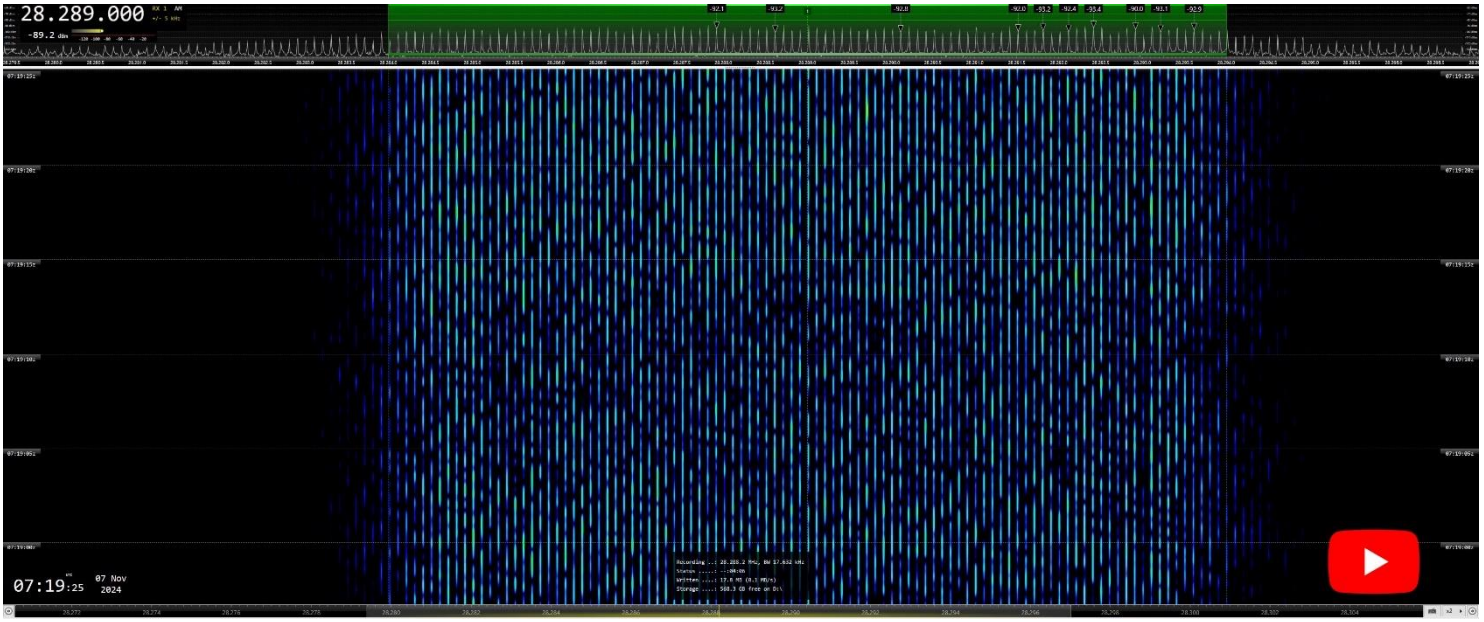
21016 kHz USB: CIS OFDM 122. W7D. BW ca 3.7 kHz. 122 channels, 21 Bd per channel



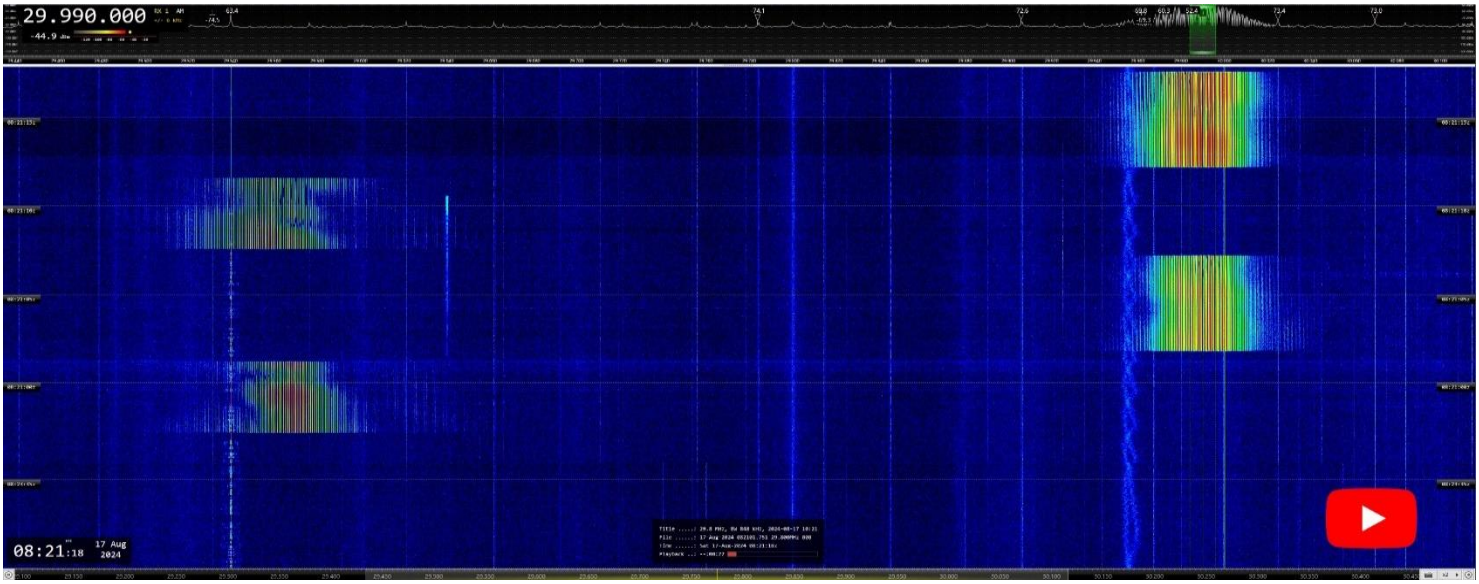
14357 kHz CF: XXX. BW = 19 kHz. 4 groups of 4 channels each. Partially inside the 20m band



21433 kHz CF: Unidentified OTHR. BW = 20 kHz. 100 pps



28289 kHz CF: rare transmission sent by the British OTHR located at the Sovereign Base Area in Cyprus. Using a BW of 10 kHz and 100 pps



29560 kHz CF: OTHR IRN. Rare tranmission using new PRFs (333 pps and 695 pps) and alternating bursts on 2 frequencies