

IARU Monitoring System Region 1



Monthly Newsletter - January 2024

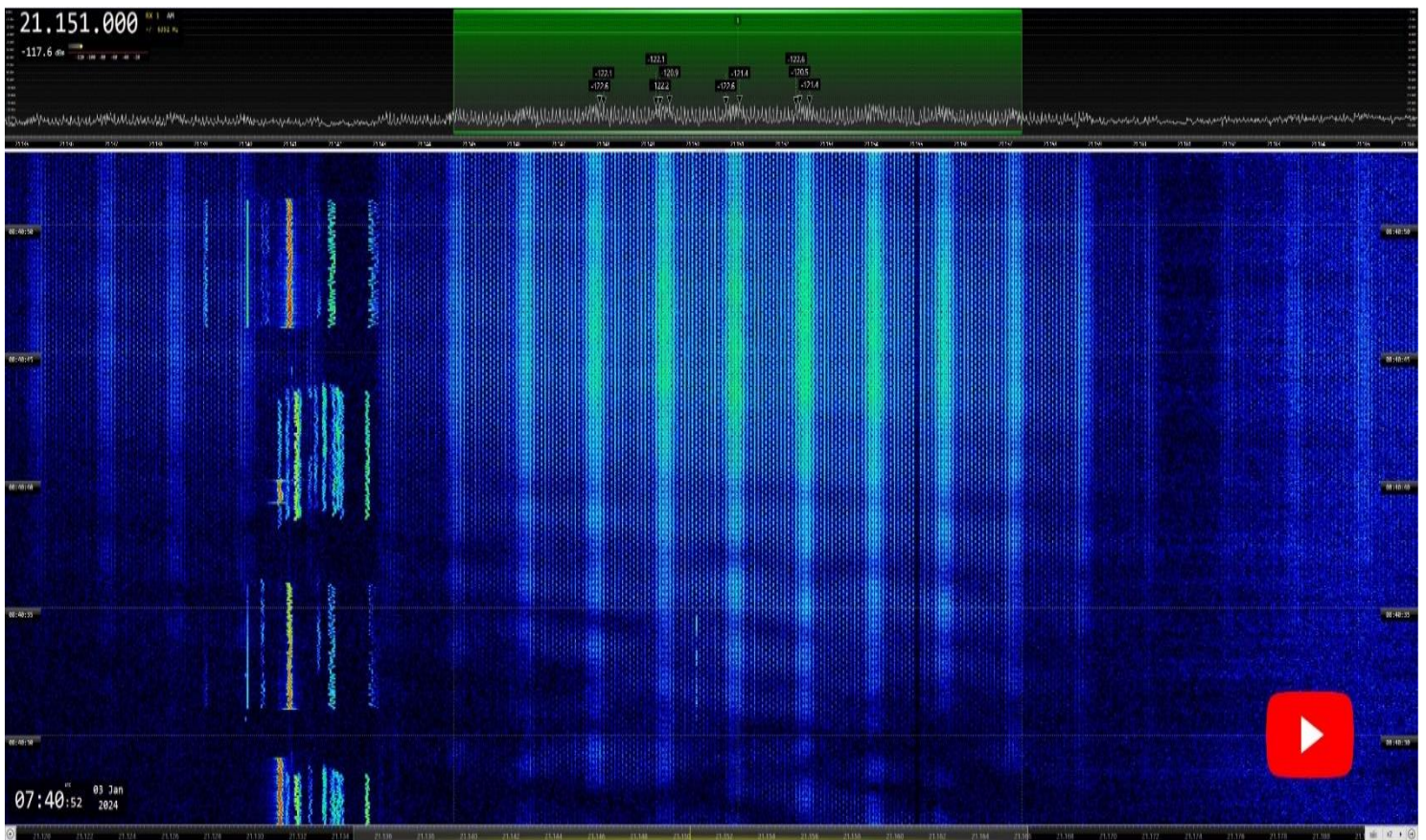
New video feature: to watch the videos, click on the icon in the text or in the images of the Newsletter



News and info

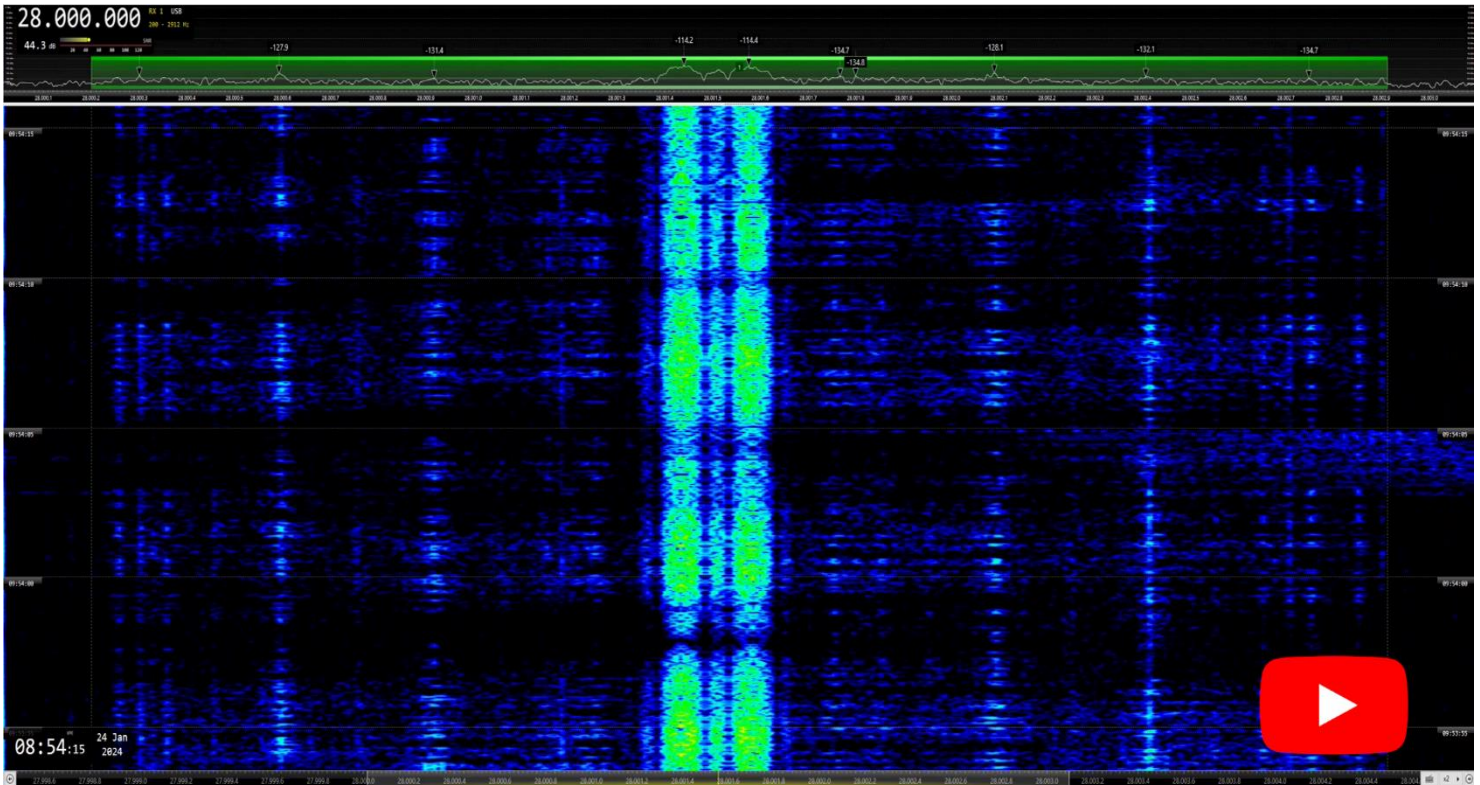
Good news first, since January the 4th the broadcasting station KTWR from Guam (9900 and 9910 kHz CF, A3E) ceased sending secondary transmissions on the 30 m band (on 10124 and 10134 kHz CF). The DARC IARUMS national coordinator, Daniel, DL3RTL, had involved the German Federal Network Agency (BNetzA) for the purpose of issuing an international complaint, appendix 10 according to ITU.

About the rest of the non-amateur transmissions received on the amateur bands received during January, we often observed the long-lasting transmissions of a jammer on 21151 kHz CF, using an approximate bandwidth of 10 kHz:



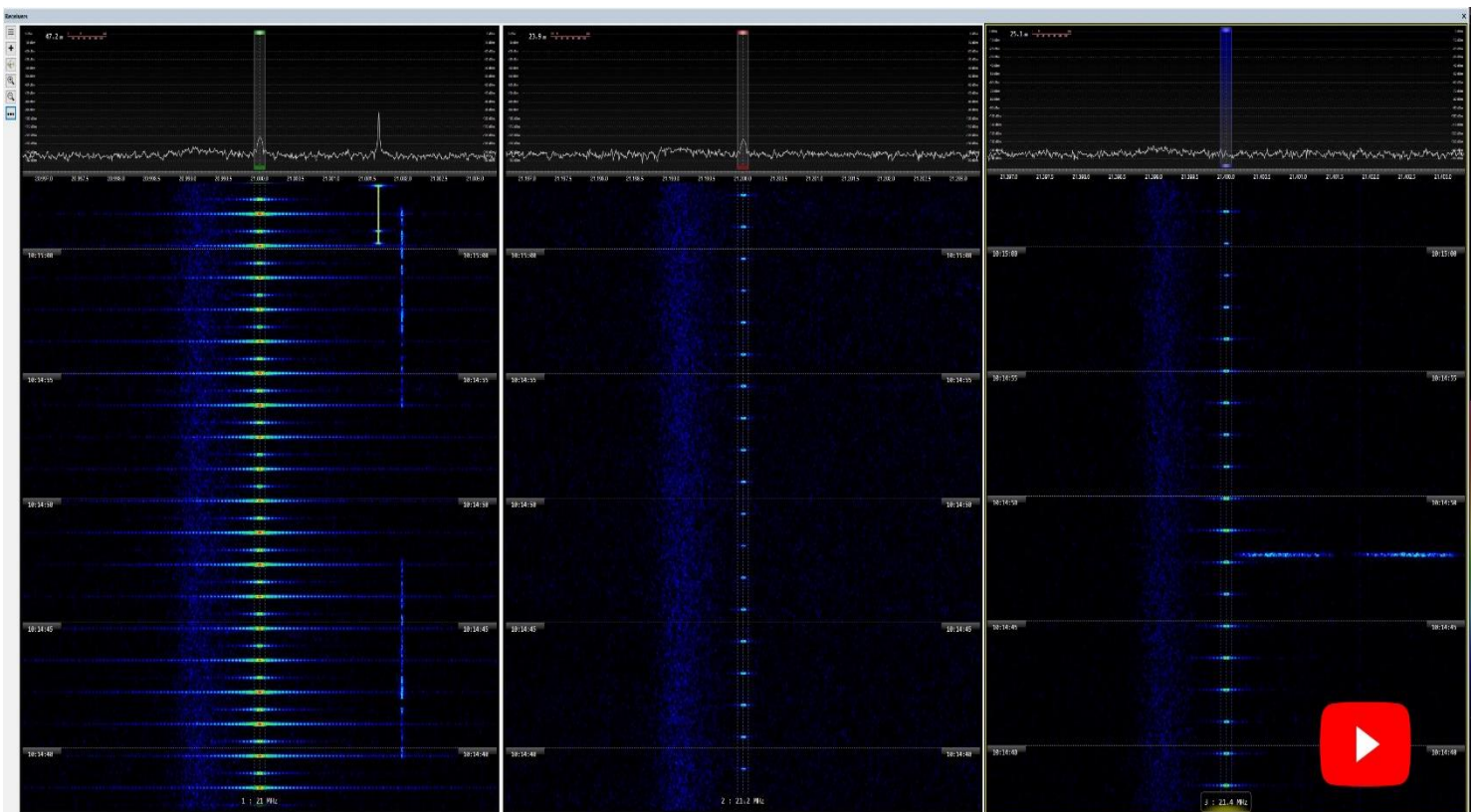
21151 kHz CF: XXX. Jammer. BW ca 10K0E

Transmissions of a T-219 Yachta (voice scrambler system) on 28001.5 kHz CF were often received during the month's last days. This system transmits an FSK signal (Shift = 150 Hz; 100 Bd) over the main signal, where the scrambled voice appears split at both sides of the FSK signal. Most of the time, only the FSK signal was received, with long-lasting transmissions:



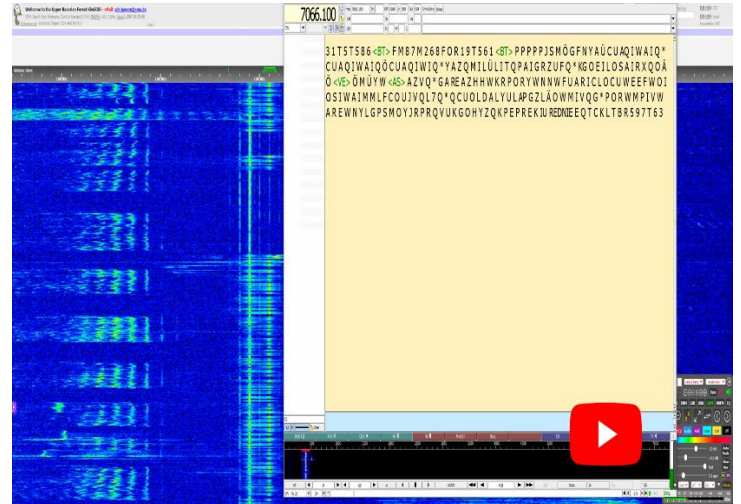
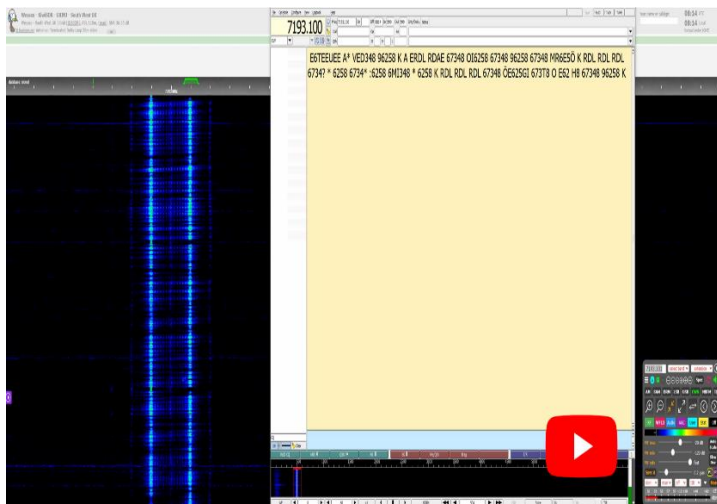
28001.5 kHz CF: FSK part (F1B; SH = 150 Hz, 100 Bd) of the Yachta T-219 voice scrambler system

On the last days of January too, we noted the long-lasting transmission of dots on 14200 kHz (1 dot per 1.28 sec), but also every 200 kHz on most of the HF spectrum. They were also received on the 40, 14 and 15 m bands, on 7000, 14000, 21000, 21200 and 21400 kHz. On 21000 kHz the BRI (Burst Repetition Interval) was different. These signals were most probably sent by an ionospheric sounder



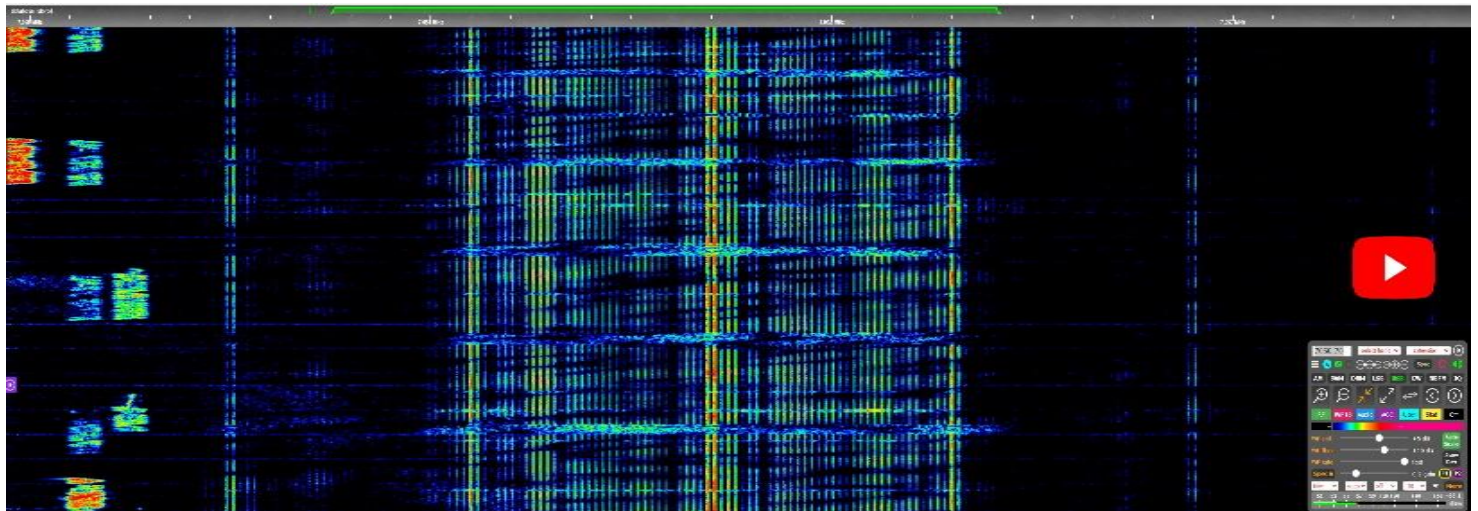
A1N „dot per second“ signal every 200 kHz on the HF spectrum. RX on 7000, 14000, 14200, 21000, 21200 and 21400 kHz. Different BRI on 21000 kHz.

We observed several CIS - ## FSK transmissions (e.g., 14192 kHz CF. F1B. SH = 200 Hz. 50 Bd; daily) and two CIS 36-50 transmissions (F1B and F1A. Shift = 200 Hz. 50 Bd) on 7193 kHz CF (RUS; ID = „RDL“) and on 7066 kHz CF. The F1A (FSK telegraphy for aural reception) part is transmitted in Morse code and can be heard by selecting the upper frequency of the FSK transmission with a narrow filter:



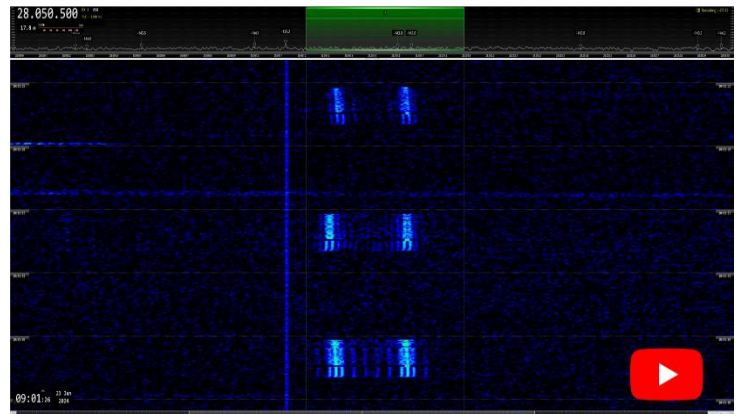
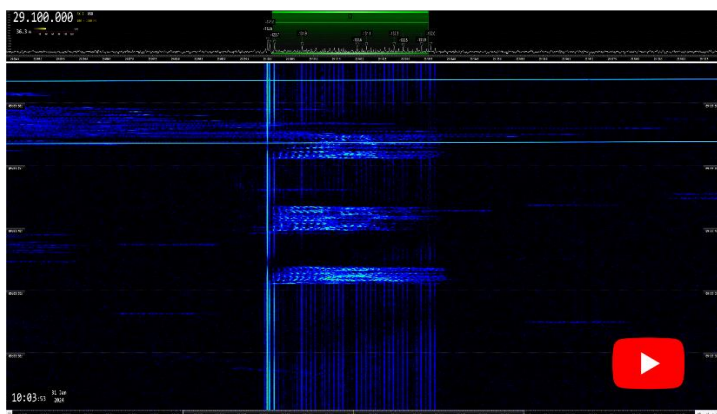
CIS 36-50. F1B and F1A. SH = 200 Hz. 50 bd. Left : 7193 kHz CF, ID = „RDL“. RUS. Right: 7066 kHz CF.RX = KiwiSDR

A Tactical Data Link transmission was received in the 40 m band (7051.7 kHz CF. BW = 1K20E)



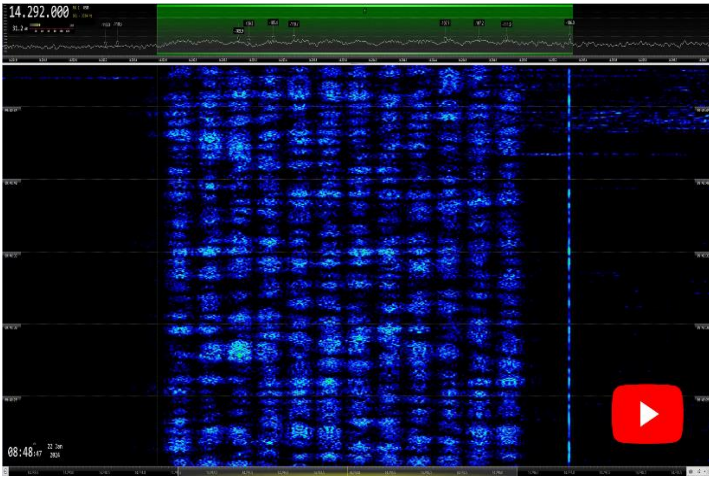
7151.7 kHz Tactical Data Link (TDL). BW = 1K20E. RX = KiwiSDR

On the 10 meter band, over the daily long-lasting transmission of the group of carriers on 29100 kHz USB that we have observed since some months ago, we sometimes heard non-amateur short traffic (J3E-U; USB; BW = 3K2E) sent by male operators in Slavic language. In same band, we observed FSK transmissions sent by fishing buoys (Shift = 300 Hz. 51 Bd)

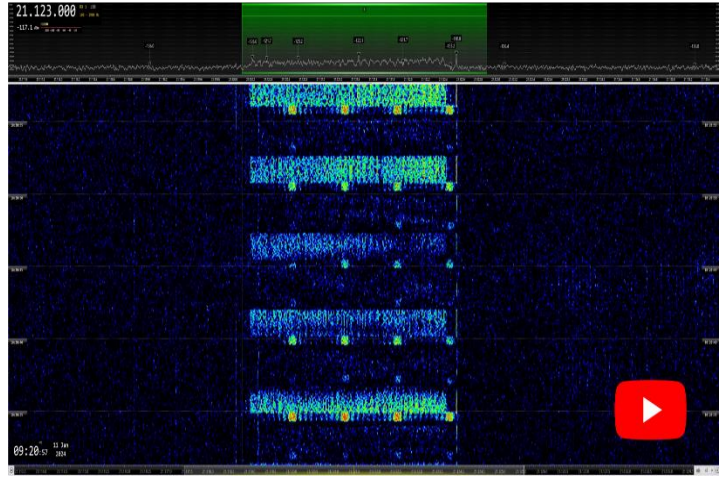


Left: 29100 kHz USB: Carrier, daily. Sometimes, J3E-U BW 3K30E non-amateur comms, Slavic language / Right: F1B fishing buoy (SH = 300 Hz. 51 Bd)

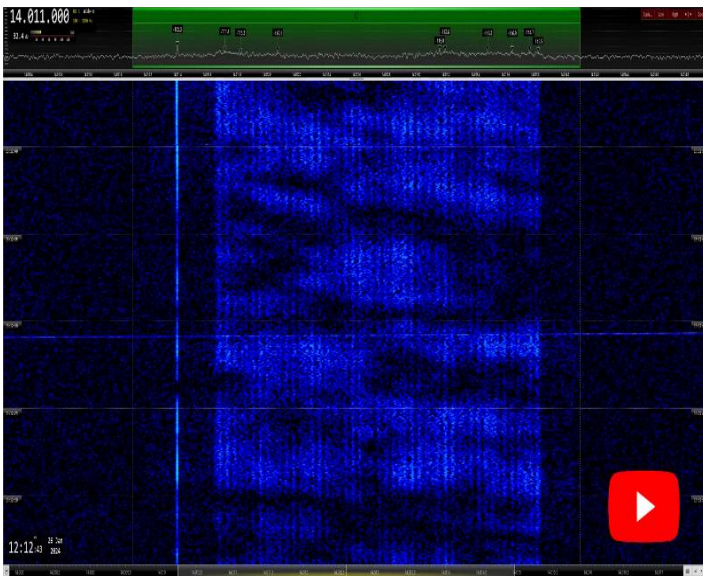
Amongst the different MIL transmissions we received on the different bands, some examples are shown below:



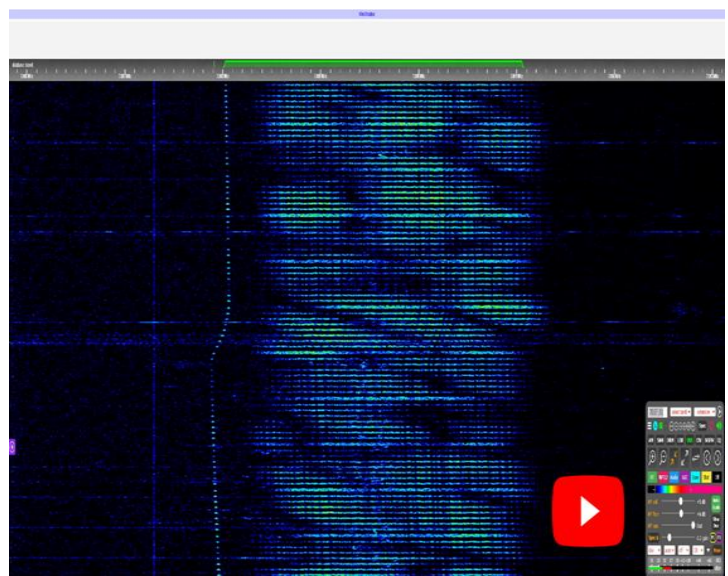
14292 kHz CF: CIS-12. J7D. PSK. BW = 2K70E. 12 x 120 Bd



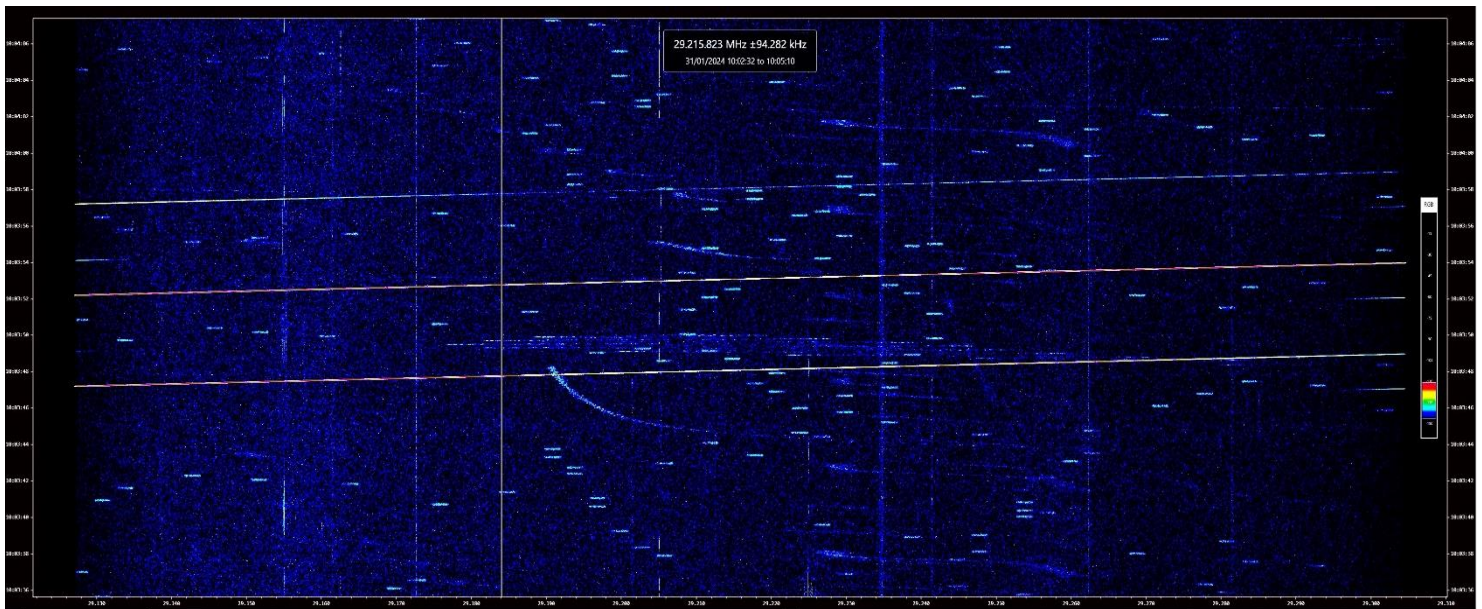
21123 kHz LSB: CHN-30. G7D. PSK. BW = 2K50E. 60 Bd



14011 kHz USB: CHN OFDM 39. W7D. BW = 2K40E. 39 X 44.44 Bd



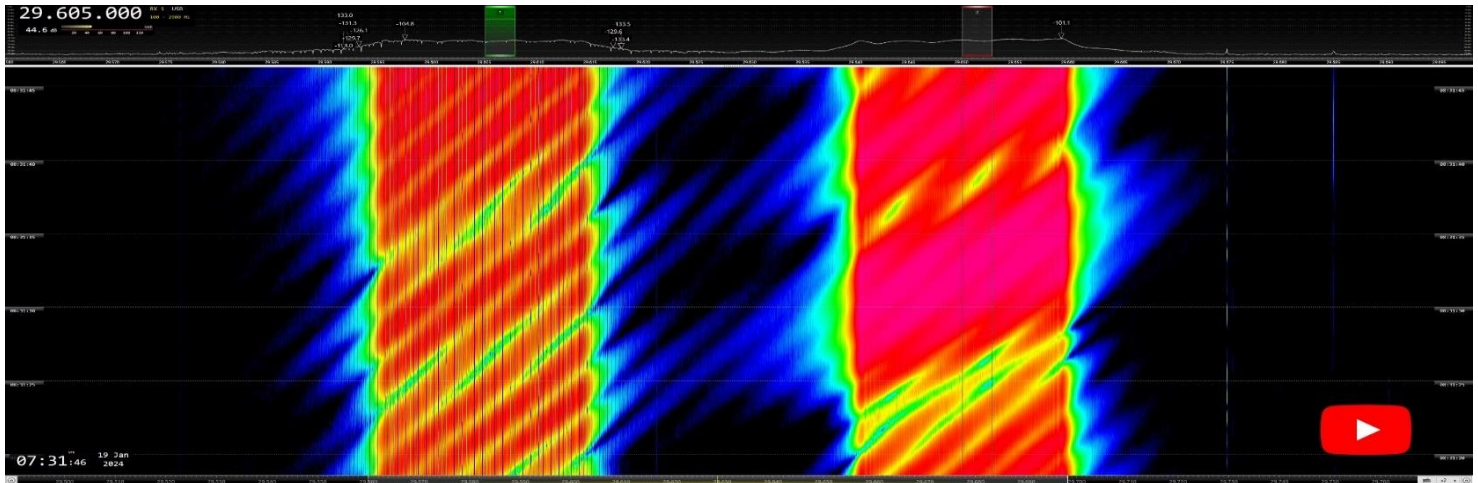
7089.8 kHz CF: LINK 11 SLEW. G1D. PSK. BW = 2K40E. 2400 Bd. Drifting



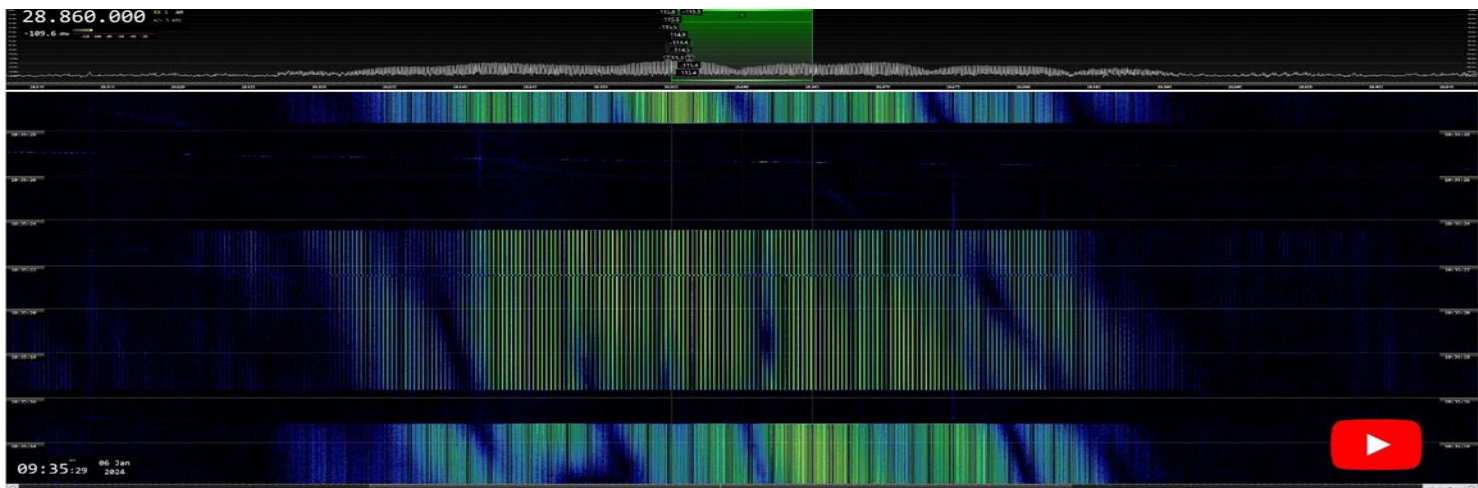
10 m band: FHSS (Frequency Hopping Spread-Spectrum) transmission. BW ca 300 kHz. Partial image of the transmission

Regarding the numerous and annoying OTHR transmissions, the HF amateur radio bands most affected by their disturbing presence were the 10 and 15 meter bands, but from 7 Mhz to 29.700 MHz none of them escaped from their nuisances.

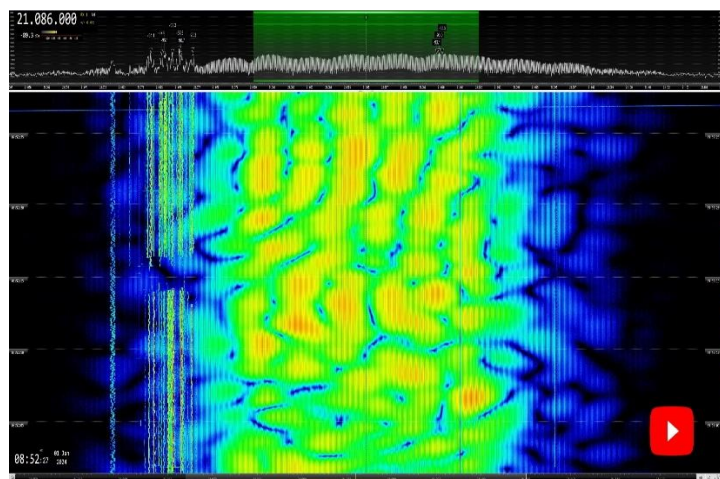
The most active of them in our bands were the British OTHR located at the United Kingdom’s Sovereign Base Area in Cyprus (BW = 20K0E, 50 or 25 sps), mostly received on the 10 m and 15 m band (but also observed on the 12, 17 and 30 meter bands), and the Iranian OTH radar operating on the 10m band (BW ca 45K0E, alternating 150 sps and 313 sps bursts; 28860 kHz CF + other frequencies in the band, sometimes jumping). Both of them were often received sending simultaneous transmissions on the same band.



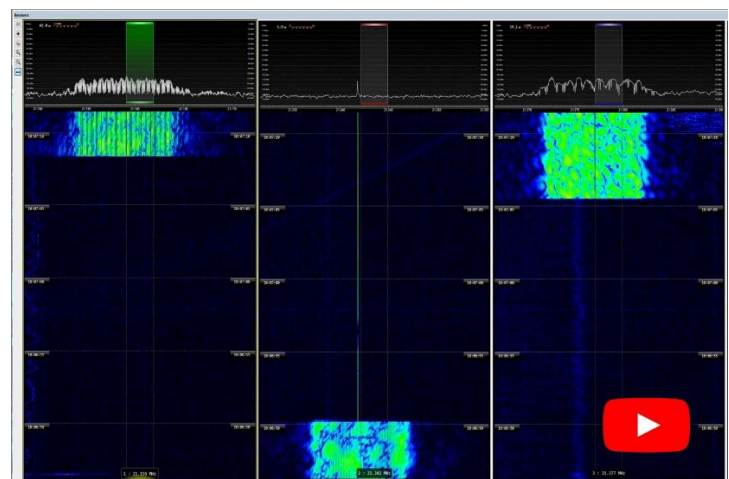
OTHR. G. UK SBA, Cyprus. FMCW. BW = 20K0E: 2 TX on the 10 meter band. 29605 kHz CF: 50 sps. 29650 kHz CF: 25 sps




28860 kHz CF: OTHR IRN. AMOP. BW ca 45K0E. Alternating 150 sps and 313 sps bursts. Long-lasting. Almost daily during January 2024



21086 kHz CF: OTHR Contayner. RUS. FMOP. BW = 12K0E. 40 sps

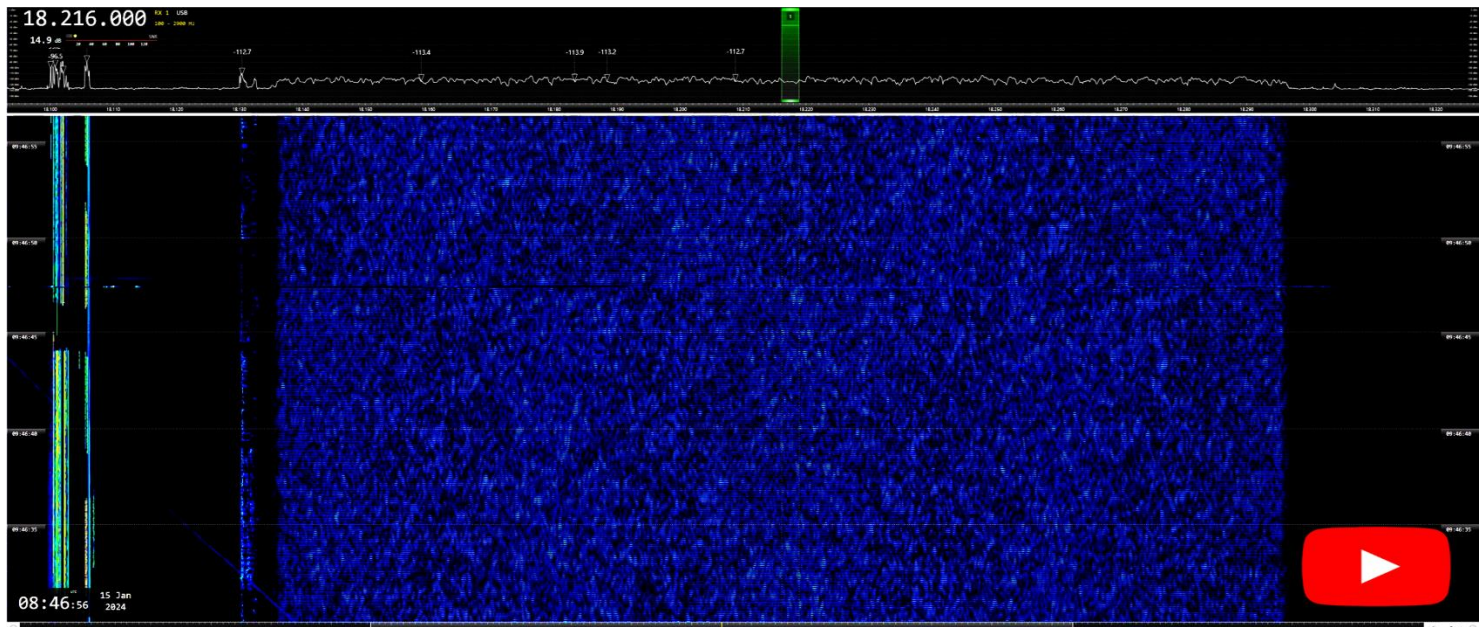


15 meters: 3 X CHN OTHR „Foghorn“ bursts. BW = 10K0E. 66.66 sps

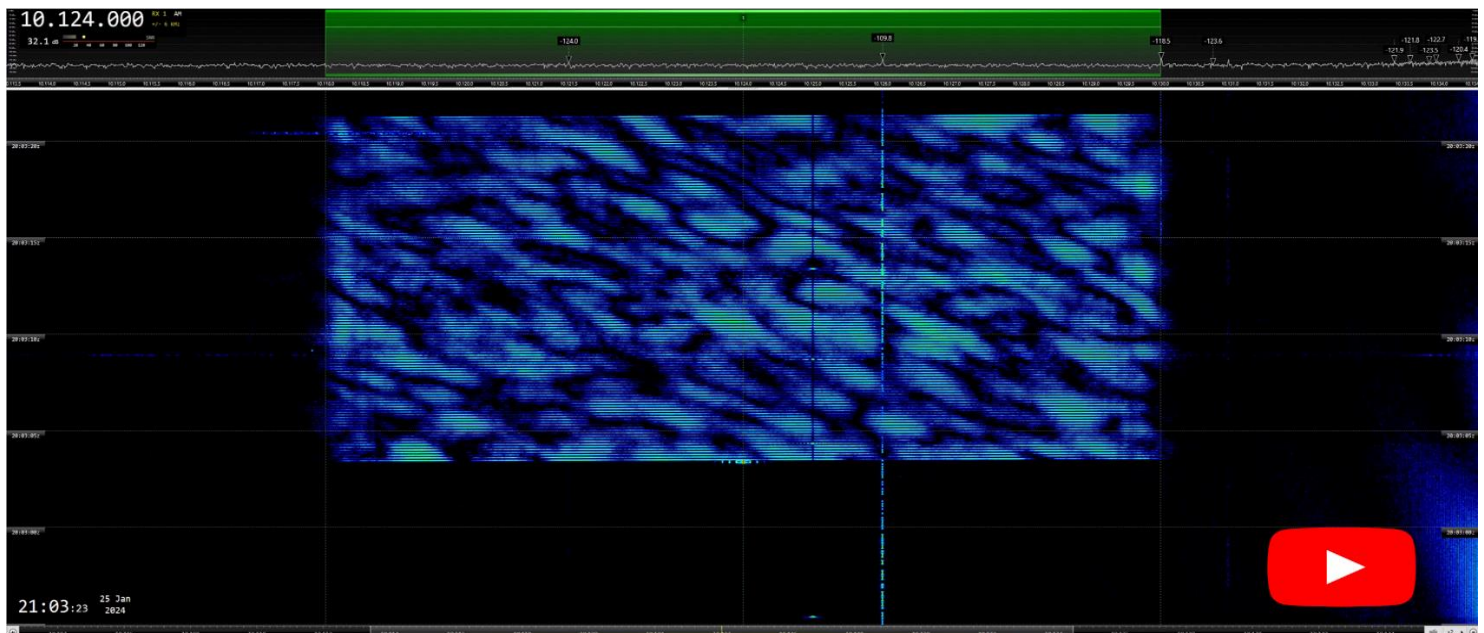
The Chinese „Foghorn“ OTHR radars were also received in all the HF amateur bands from 7 MHz upwards, except on the 10 m band, and mostly on the 15 and 20m bands, transmitting with a bandwidth of 10 kHz and sending short bursts with different sweep rates: 66.66, 50, 41.7 or 83.3 sps, and sending up to 5 transmissions on the same band. Other CHN OTHR were also received, like the one sending a 10K0E continuous transmission whit 50 sps sweep rate  , and the CHN wideband OTHR (Bw = 160K0E, 10 sps).

The Russian OTHR Contayner (FMOP. BW = 12K0E. 40 sps) was received on the 40, 20 17 and 15 meter bands, sometimes sending up to 3 simultaneous transmissions in the same band (40 m).

Transmissions of the Australian JORN (Jindalee Operational Radar Network) OTHR were often received on the 30 m band (Usual BW = 10K0E. Usual sweep rate: 6.9 sps; sometimes, BW used seems to be 12K0E, and sweep rate then is 7.2 sps)



18216 kHz CF: Wideband CHN OTHR. BW = 160K0E. 10 sps. Continuous TX. Partially inside the 17 m band



10124 kHz CF: OTHR JORN bursts, with short intro tone. BW = 12K0E. 7.2 sps

- Find other screenshots and videos about the intrusions received during January 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; Daniel, DL3RTL. Credit to monitors: DL2SCH, Jürgen; DL8LAQ, Norbert; DL5BCT, Peter; DB4UP, Christoph; DH1BDU, Jochen; DO2ITH, Michael; F4FPR, Benjamin; DO1DSH, Dennis; DL7TNY, Oliver; DL4YCD, Jürgen; DL6BW, Ben; DH5WA, Wolfram; DB3TA, Alex

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7000,0	0942	21	01						unid, 20ms pulse every 1.28s
7000,0	1400	22	01						unid, 20ms pulse every 1.28s
7018,0	1402	14	01					1k2	unid
7032,0	1220	02	01	RUS		PSK		2k7	CIS-12
7055,0	1630	12	01	UKR		J3E-L		3k	RUS/UKR radio war
7060,0	1455	28	01			J3E-U			USB! ukr.-russ. Radiokrieg
7060,5	1542	26	01			J3E-L		3k	Audioloop+Intercom RUS-UKR Radiowar
7063,0	1540	04	01	RUS		FMOP	40	12k	OTHR Contayner
7064,0	1728	18	01	RUS		FMOP	40	12k	OTHR Contayner
7066,0	1719	16	01	RUS		FMOP	40	12k	OTHR Contayner
7068,0	0807	02	01	RUS		PSK		2k7	CIS-12
7085,0	1700	08	01	RUS		FMOP	40	12k	OTHR Contayner
7086,0	1726	15	01	RUS		FMOP	40	12k	OTHR Contayner
7089,8	1810	22	01			PSK		2k4	LINK11 SLEW
7118,0	1631	07	01	RUS		FMOP	40	12k	OTHR Contayner
7121,0	1741	16	01	RUS		FMOP	40	12k	OTHR Contayner
7180,0	0015	29	01	UKR		J3E-L		3k	RUS/UKR radio war
7186,0	2200	06	01	RUS		FMOP	40	12k	OTHR Contayner
10136,0	1746	25	01					20k	OTHR
14070,0	0842	03	01	RUS		PSK		2k7	CIS-12
14183,0	0924	03	01	CHN		FMCW	66,67	10k	OTHR 3,8s bursts
14192,0	1320	14	01	RUS		F1B	50	200	CIS-36-50
14200,0	0953	24	01			A1N		<100Hz	A1N 20mSec. pulses every 400KHz ca.5-30MHz
18165,0	1435	30	01	RUS		FMOP	40	12k	OTHR Contayner
21151,0	1322	04	01	RUS		FMOP	40	12k	OTHR Contayner
21151,2	0850	14	01					12k	unid
21152,0	0836	03	01					16k	unid
21174,0	1150	28	01	RUS		FMOP	40	12k	OTHR Contayner
21177,0	0938	03	01	RUS		FMOP	40	12k	OTHR Contayner
21289,0	0854	31	01	CHN		FMCW	50	10k	OTHR CHN
21315,0	1126	20	01	G		FMCW	50	20k	OTHR Pluto Cyprus
21350,0	0927	31	01	G		FMCW	50	20k	OTHR Pluto Cyprus
21367,0	0836	05	01	CHN		FMCW	50	10k	OTHR 5,1s bursts
21374,0	1015	21	01	CHN		FMCW	66,67	10k	OTHR 3,8s bursts
21377,0	0848	03	01	CHN		FMCW	41,67	10k	OTHR 6,1s bursts

DARC; Daniel, DL3RTL. Credit to monitors: **DL2SCH, Jürgen; DL8LAQ, Norbert; DL5BCT, Peter; DB4UP, Christoph; DH1BDU, Jochen; DO2ITH, Michael; F4FPR, Benjamin; DO1DSH, Dennis; DL7TNY, Oliver; DL4YCD, Jürgen; DL6BW, Ben; DH5WA, Wolfram; DB3TA, Alex**

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
21395,0	1025	14	01	G		FMCW	50	20k	OTHR Pluto Cyprus
21417,0	0848	03	01	RUS		FMOP	40	12k	OTHR Contayner
21425,0	1100	21	01	G		FMCW	50	20k	OTHR Pluto Cyprus
21430,0	1015	21	01	CHN		FMCW	66,67	10k	OTHR 3,8s bursts
21438,0	vt	vd	01	RUS		A1A			RUS NVY Sevastopol; RIP90
21455,0	1603	20	01	G		FMCW	50	20k	OTHR Pluto Cyprus
28000,5	1115	28	01	RUS		J3E-U		2k7	Yachta T-219 Scrambled Voice + FSK
28245,0	0721	27	01	G		FMCW	25	20k	OTHR Pluto Cyprus
28310,0	1242	08	01	G		FMCW	50	20k	OTHR Pluto Cyprus
28350,0	0831	05	01	G		FMCW	50	20k	OTHR Pluto Cyprus
28790,0	0730	11	01	G		FMCW	50	20k	OTHR Pluto Cyprus
28815,0	0828	05	01	G		FMCW	50	20k	OTHR Pluto Cyprus
28860,0	vt	vd	01	IRN			150/313	45k	Iranian OTHR 9,98/7,19s bursts
29230,0	1100	28	01	G		FMCW	50	20k	OTHR Pluto Cyprus
29245,0	0901	05	01	G		FMCW	50	20k	OTHR Pluto Cyprus
29300,0	1134	02	01	IRN			307/870	45k	Iranian OTHR 5,84/3,26s bursts
29450,0	0829	11	01	IRN				45k	Iranian OTHR
29450,0	1012	21	01	IRN			150/313	45k	Iranian OTHR 9,98/7,19s bursts
29500,0	1130	16	01	IRN				45k	Iranian OTHR
29630,0	1208	06	01	G		FMCW	50	20k	OTHR Pluto Cyprus

IRT; Michael, EI3GYB

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
1895	600	24	1	MM?		USB			Senseless morse signals. Audio very distorted. Persistent, without any break. 24 hours/7 days a week. Reported by EI4KU.Shared band- for info only.
3613	2050	10	1	UKR/ RUS		LSB			Russian-Ukrainian radio war. Rebroadcasting of a Russian language radio programme. Strong.
3790	600	24	1	MM?		USB			Harmonic of 1895 kHz. Unstable transmitter, moving up and down by as much as 5 kHz. Strong signal. Changed to 1955 and 3909 kHz some days later. Reports about plenty of harmonics well up and down the bands. Most likely a defective fishing buoy in the North Atlantic. The transmissions have not been heard since the second week of February.
7025	2325	25	1			RADAR			Radar from 7025 to 7040 kHz. Strong and persistent.
7050	740	2	1	UKR/ RUS		LSB			Ukrainian-Russian radio war. Loud and persistent.
7055	1845	21	1			RADAR			Radar from 7055 to 7070 kHz Huge and persistent.
7055	720	2	1	UKR/ RUS		LSB			Russian-Ukrainian radio war. Loud and persistent. Daily.
7080	725	2	1	MRC or MM		USB			Fishermen. Very bad audio. Loud motor noise from all ships in the background.

IRT; Michael, EI3GYB

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7085	2235	21	1	RUS		RADAR			"Sunflower" radar from 7085 to 7095 kHz. Medium signal, persistent.
7100	1840	21	1	RUS/ UKR		LSB			Russian-Ukrainian radio war. Huge and persistent signals.
7165	1530	10	1			RADAR			Radar from 7165 to 7180 kHz. Strong and persistent.
7192.5	730	2	1			PSK			Medium but persistent signal.
7187	2320	25	1			RADAR			Radar from 7187 to 7201 kHz. Strong and persistent.
14192	905	4	1	RUS		F1B			Russian navy, Kaliningrad. Every day all hours of daylight. Strong.
14257	1025	30	1			F1B			Strong and persistent.
18150	1105	29	1	G		RADAR			Radar from 18150 to 18185 kHz. Strong and persistent. Also heard on the 30 th at the same time with big signals. UK SBA, Cyprus
18155	1110	4	1	G		RADAR			Radar from 18155 to 18195 kHz. Huge and persistent signals. UK SBA, Cyprus
21000	1250	11	1	E or MM		USB			Spanish fishermen. Very weak. Heard often during the month.
21165	1255	11	1			RADAR			Radar from 2165 to 21180 kHz. Weak signals, drifting in and out.
21343	910	4	1	G		RADAR			Radar from 21343 to 21363 kHz. Huge and persistent. UK SBA, Cyprus
21410	1230	21	1	G		RADAR			Radar from 21410 to 21440 kHz. Huge and persistent. UK SBA, Cyprus
21438	1005	3	1	UKR		CW			Russian navy, Sevastopol. Active daily with various signal strength.
28118	1315	31	1			RADAR			Radar from 28118 to 28138 kHz. Very strong. Persistent.
28165	1150	14	1	MM		AM			SE Asian fishermen. Weak signals.
28423	855	18	1	G		RADAR			Radar from 28423 to 28444 kHz. Huge and persistent signals. UK SBA, Cyprus
28438	1310	15	1						Warbling and whistling sound. Medium strength. Ends at 1350z
28555	1200	11	1	G		RADAR			Radar from 28555 to 28580 kHz. Huge and persistent. Also heard on the 30 th at 1155z. UK SBA, Cyprus
28560	1155	1	1	IRN		RADAR			Radar from 28560 to 28630 kHz. Medium but persistent signals.
28595	1045	30	1			FM			Carrier. Strong. In and out. Also heard 31 st at 1100z.
28650	1020	30	1			FM			Carrier. Strong. In and out.
28740	1255	19	1	G		RADAR			Radar from 28740 to 28760 kHz. Huge and persistent signals. UK SBA, Cyprus
28755	1145	14	1			AM			SE Asian fishermen. Strong.
28722	1020	23	1	G		RADAR			Radar from 28722 to 28742 kHz. Strong and persistent. UK SBA, Cyprus
28800	1155	11	1	IRN		RADAR			Radar from 28800 to 28900 kHz. Strong and persistent. Often heard.
28806	950	3	1			F1B			Medium signal. Persistent. Also heard on the 4 th at the same time.
28937	1220	22	1	G		RADAR			Radar from 28937 to 28957 kHz. Strong and persistent. UK SBA, Cyprus
28980	855	4	1			FM			Carrier. Weak but persistent.

IRT; Michael, EI3GYB

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
29050	1230	11	1			FM			SE Asian fishermen. Weak, in and out.
29100	1115	5	1			FM			Carrier. Heard very often, nearly daily. Strong in the morning, getting weaker in the afternoon.
29100	1150	11	1			FM			SE Asian fishermen. Medium signals, in and out.
29230	1310	11	1	RUS		FM			Taxi service. Strong signals. Female voice.
29275	955	3	1	IRN		RADAR			Radar from 29470 to 29530 kHz. Medium and persistent signals.
29297	1250	30	1	G		RADAR			Radar from 29297 to 29317 kHz. Strong and persistent. UK SBA, Cyprus
29449	1500	10	1			F1B			Medium signal. Also heard 19 th at 1300z and 29 th at 1005z.
29470	850	4	1	IRN		RADAR			Radar from 29470 to 29530 kHz. Medium but persistent signals.

PZK: SP3Amo, SP5GNI

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7036,0	1751	15	01			F1B		250H	
7054,0	1752	15	01			F1B		200H	
7066,0	1040	12	01			NON			
7193,0	1049	19	01			NON/F1B		200H	
7195,0	1640	3	01			Radar	40	12KOE	
14035.0	1108	31	01			RADAR		10KOE	3 sec burst foghorn
14093.0	1255	29	01			RADAR		10KOE	3 sec burst foghorn
14154.0	1353	01	01			RADAR		10KOE	5 sec burst strong
14200.0	1200	23	01			UI		1KOE	complex spectrum
14208.0	0905	31	01			RADAR		12KOE	Burst 10 sec. long
14262.0	1040	07	01			RADAR		10KOE	3 sec burst
14270.0	1120	26	01			RADAR		10KOE	3 sec burst
14308.0	1248	11	01			RADAR		10KOE	5 sec burst strong
14329.0	1402	11	01			RADAR		10KOE	5 sec burst strong
14331.0	1130	10	01			RADAR		10KOE	3 sec burst +14282.0
14338,0	1043	12	01			Radar	66	10KOE	Bursts
18131.0	0955	15	01	CHN		RADAR		10KOE	3 sec burst foghorn
18169,0	0829	31	01			Radar	40	10KOE	599++
18170,0	0903	29	01			Radar	40	12KOE	
21022.0	1022	14	01			RADAR		10KOE	5 sec burst
21102.0	1148	29	01			RADAR		12KOE	Burst 10 sec. long
21103,0	0818	25	01			Radar	50	10KOE	Bursts
21106.0	1258	14	01			RADAR		12KOE	10 sec. long
21150.0	vt	vd	01			UI		>10KOE	like a jammer
21152,0	1430	13	01			UI		8KOR	599
21169.0	1138	23	01			RADAR		10KOE	5 sec burst
21172,0	0937	28	01			Radar	50	10KOE	Bursts
21173.0	vt	vd	01			RADAR		14KOE	
21239.0	0955	29	01			RADAR		10KOE	3 sec burst foghorn
21289.0	vt	vd	01	CHN		RADAR		10KOE	continous foghorn

PZK: SP3Amo, SP5GNI

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
21301,0	0906	29	01			Radar	66	10K0E	Bursts
21315.0	1133	20	01			RADAR		20K0E	
21324.0	1034	21	01	CHN		RADAR		10K0E	3 sec burst foghorn
21350,0	0831	31	01			Radar	50	20K0E	
21372,0	0800	11	01			Radar	66	10K0E	
21375,0	0906	30	01			Radar	66	10K0E	Busts
21383.0	1025	23	01			RADAR		10K0E	3 sec burst foghorn
21391,0	0901	30	01			Radar	66	10K0E	Busts
21394,0	1002	22	01			Radar	50	10K0E	Busts
21399.0	vt	vd	01			UI		1K0E	complex spectrum
21408,0	1047	12	01			Radar	50	10K0E	Busts
21412.0	1053	03	01			RADAR		12K0E	S8 10 sec. Long
21421.0	vt	vd	01			RADAR		10K0E	3 sec burst foghorn
21425.0	vt	21	01	CHN		RADAR		20K0E	very strong
21425,0	1041	20	01			UI		400H	like F1B
21438,0	vt	vd	01		RDL	A1A		20wpm	QTC
21438,0	vt	vd	01		RCV	A1A		20wpm	QTC
28001,5	vt	vd	01			F1B		200H	
28055.0	1325	01	01			RADAR		20K0E	
28260.0	1055	27	01			A3E		8K0E	radio in unknown language (like Chinese)
28570.0	1210	11	01			RADAR		20K0E	like foghorn
28610.0	vt	vd	01			RADAR		20K0E	S9++ Cyprus?
28650,0	0910	29	01	IRN		Radar	150/300	46K0E	
28790,0	0802	11	01			Radar	50	20K0E	
28860,0	vt	vd	01	IRN		Radar	150/300	46K0E	
28930.0	1305	17	01			RADAR		20K0E	S7
29030,0	1053	17	01			Radar	50	20K0E	S99++
29060.0	1040	20	01			RADAR	25	20K0E	S9++ Cyprus?
29130,0	0940	28	01			Radar	15	40K0E	
29230,0	0941	28	01			Radar	50	20K0E	
29300.0	vt	vd	01	IRN		RADAR		100K0E	S9
29400,0	0910	30	01	IRN		Radar	150/300	46K0E	
29450,0	vt	vd	01	IRN		Radar	150/300	46K0E	
29500,0	vt	vd	01	IRN		Radar	150/300	46K0E	
29630,0	1243	6	01			Radar	50	20K0E	
29650,0	1054	19	01			Radar	25	20K0E	

SRAL; Pekka, OH2BLU

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7 MHz	1530-0600	*	1	RUS		RADAR	40 sps	13k0E	*) Days: 4. 7. 9. 10. 11. 12. 14. 16. 21. 25. - 29. 31. (WebSDR 27d)
7 MHz	1230-1930	*	1	CHN		RADAR	66 sps	10k0	*) Days: 1. 4. 6. 8. 9. 11. 25. "foghorn"
7000.0	1230-1930	01 - 30	1			A3E		4k0E	Weak modulation, Chinese?
7008.5	0730-0850/	31	1	RUS		J7D	120	2k60E	

SRAL; Pekka, OH2BLU

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7014.0	1040-1630	*	1	RUS		J7D	120	2k60E	*) Days: 6. 8. 9.
7016.0	1040-1140	*	1	RUS		J7D	120	2k60E	*) Days: 15. 16. 19. 22. 28.
7018.0	1355-1600	14	1	RUS		F1B		500H/ 250H	
7030.0	0800-1645	*	1	RUS		F1B		250H	*) Days: 4. 10. 18. 21.
7032.0	0445-1430	01 - 31	1	RUS		J3E-u		3k50	Non-stop Russian anthem / mx, spur to 7000.0 & 7064.5 & 7101.7
7032.0	0000-2400	01 - 31	1	RUS		J3E-u		2k50	Brum (50 Hz), when no music, begins after 1 sec, when mx off.
7032.0	1230-1300	02 05	1	RUS		J7D	120	2k60E	
7036.0	1550-1650	*	1	RUS		F1B		250H	*) Days: 10. 26. 29.
7051.7	1100-1305	15 16	1	RUS		XXX		1k2E	TDL
7054.0	1100-1900	01 - 29	1	RUS		F1B		200H	
7066.0	0445-1930	01 - 30	1	RUS		F1B/A/ NON	15wpm	200H	5BL
7076.0	0835	31	1	RUS		J7D	120	6k60	dsb, sub carr. 7072.7 & 7079.3
7098.0	1315-1430/	05	1	RUS		F1B		250H	
7099.0	1040-1150/	12	1	RUS		F1B/ NON		250H	
7111.0	0830-0840/	19 21	1	RUS		F1B		250H	
7127.0	1300-1415	23	1	RUS		F1B		250H	
7128.0	0545-0700	14 15	1	RUS		J7D	120	2k60E	
7147.0	1300-1500	04 15	1	RUS		J7D	120	2k60E	
7159.0	0930-1030	11	1	RUS		F1B		200H	
7164.0	1240-1330/	21	1	RUS		J7D	120	2k60E	
7178.0	1230-1330	05	1	RUS		J7D	120	2k60E	
7193.0	0830-1700	*	1	RUS	RDL	F1B/A/ NON	16 wpm	200H	*) Days: 1. 4. 5. 8. - 10. 14. 16. 19. 5F
7198.0	1330-1415/	30	1	RUS		J7D	120	2k60E	
10 MHz	1545-0520	*	1	G		RADAR	50/25sp s	20k0	*) Days: 2. 8. 25. (WebSDR 13d)
10 MHz			1	RUS		RADAR	40sps	13k0E	(WebSDR 6d)
10124A	1500-1600	01 - 03	1	GUM	KTWR	xxx		5k0E	// 9900 kHz, chirpy spurious
10134A	1100-1500	01 - 03	1	GUM	KTWR	xxx		5k0E	// 9910 kHz, chirpy spurious, also DRM (as on scedule)
14 MHz	0545-1700	*	1	RUS		RADAR	40sps	13k0E	*) Days: 1. 3. 9. 10. 14. 16. 18. 21. - 26. 29. (WebSDR 13d)
14 MHz	0830-	*	1	CHN		RADAR	50/67sp	10k0E	*) Days: 1. 2. 3. 5. 7. 9. 10. 12. 14. 19. - 23.

SRAL; Pekka, OH2BLU

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
	1500						s		26. 27. 29. 31. 'foghorn'
14006.0	0910-0913/	22	1	RUS		J7D	120	2k60E	
14064.0	0900-1000/	13	1	RUS		F1B		200H	
14192.0	0630-1640	01 - 31	1	RUS		F1B		200H	
14198.0	0615-0925	18	1	RUS		F1B		250H	
14255.0	0935-0955/	12	1	RUS		F1B		500H	
14308.0	0730-1030	*	1	RUS		F1B/ NON		500H	*) Days: 9. 18. 27.
18 MHz	0500-1645	10 22	1	G		RADAR	50/25 sps	20k0	(WebSDR 2d)
18 MHz	0700-1330	*	1	RUS		RADAR	40 sps	13k0E	*) Days: 2. 3. 6. 9. 12. 22. 23. 25. 26. 29. 30. 31. (WebSDR 15d)
21 MHz	0600-1520	*	1	G		RADAR	50/25 sps	20k0	*) Days: 1. 4. 5. 6. 10. - 14. 18. 19. 20. 23. 26. 29. 31. (WebSDR 20d)
21 MHz	0600-1445	*	1	RUS		RADAR	40 sps	13k0E	*) Days: 1. 3. 4. 7. 9. 18. 27. (WebSDR 14d)
21 MHz	0730-1500	*	1	CHN		RADAR	50 sps	10k0	*) Days: 4. 9. 21. 22. 31. (WebSDR 13d)
21 MHz	0615-1200	*	1	CHN		RADAR	50/67sp s	10k0E	*) Days: 2. 3. 5. 7. - 13. 15. - 18. 21. - 23. 25. 28. 31. 'foghorn'
21152.0	0645-1500	03 - 20	1			jam		10k0E	
21438.0	/0830-1500	01 - 31	1	RUS	RCV	A1A	16 - 20 wpm	40H	Navip etc.
28 MHz	0600-1500	*	1	G		RADAR	12.5/ 25/50sp s	20k0	*) Days: 1. 3. - 6. 10. 11. 14. 16. 17. - 25. 27. - 31. (WebSDR 25d)
28 MHz	0600-1400	01 - 31	1	IRN		RADAR	150/ 313	60k0E	Modulation failures (WebSDR 23d)
28 MHz	0600-1400	01 - 09	1	IRN		RADAR	310/ 870	80k0E	Modulation failures (WebSDR 8d)
28860.0	0600-1445	01 - 31	1	IRN		RADAR	150/ 313	60k0E	Modulation failures (WebSDR 28d)
28 MHz	0645-1330	*	1	RUS	Taxi disp.	F3E		3k0E	*) Days: 3. 6. - 31. 124 reports
29670.0	0645-1045	07 - 09	1	IRN		RADAR	95	95kE	

URE: Gaspar, EA6AMM. Team member: EA4021SWL

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7003.5 LSB	08:57	05	01			G7D	60	2K50E	CHN-30
7007.0	20:13	08	01	RUS		RADAR	40	12K0E	OTHR Contayner
7011.0	19:12	09	01	RUS		RADAR	40	12K0E	OTHR Contayner
7014.0	09:37	08	01			J7D	120	2K70E	CIS-12
7018.0	20:35	22	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
7030.0	22:32	06	01	RUS		RADAR	40	12K0E	OTHR Contayner. *Also on 7188 kHz CF. 2 simultaneous TX on 40m

URE: Gaspar, EA6AMM. Team member: EA4021SWL

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7030.0	08:49	10	01			F1B	50	250H	
7031.0	05:56	20	01			XXX		3K7	XXX. Continuous unidentified signal. Jamming the 7032 kHz USB TX
7032.0	12:29	05	01			J7D	120	2K70E	CIS-12
7032.0	05:53	20	01			J3E-U		3K3	J3E-U. RUS anthem loop
7033.0	19:04	25	01	RUS		RADAR	40	12K0E	OTHR Contayner
7036.0	16:33	15	01			F1B	50	250H	
7037.0	20:34	22	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
7041.0	21:16	02	01	RUS		RADAR	40	12K0E	OTHR Contayner
7051.7	06:50	15	01			OTHER		1K20E	TDL
7054.0	17:33 vt*	05 vd*	01	RUS		F1B	50	200H	*Often. 11 reports
7059.5	08:46	16	01			J7D	120	2K70E	CIS-12
7064.0	17:48	18	01	RUS		RADAR	40	12K0E	OTHR Contayner
7065.9	20:14 vt*	08 vd*	01			N0N			Carrier of the F1B system on 7066 kHz CF. *Also on 10/01, 0843 UTC and 11/01, 0843 UTC
7066.0	08:48	02	01			F1B F1A	50	200H	CIS 36-50. *Also on on 03, 05, 11, and 12/01; vt
7068.0	07:59 vt*	02 vd*	01			J7D	120	2K70E	CIS-12 *Also on 18/01, 0817 UTC
7070.0 USB	07:07	16	01			J7D	125	1K80E	MIL-188-141A ALE
7078.5	07:17 vt*	15 vd*	01			XXX		CA1K50E	Continuous unidentified digital signal *Also on 16/01, 0704 UTC and 17/01, 0718 UTC
7088.0	17:32	09	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
7089.8	20:21	22	01			G1D	2400	2K40E	LINK-11 SLEW. Drifting
7093.0	19:41	23	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
7098.0	22:39	06	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
7104.7	20:39	22	01			G1D	2400	2K40E	MIL-188-110A
7106.5	20:23	08	01			J3E-L		2K80E	J3E-L: UKR/RUS radiowar
7110.0	22:19	06	01			XXX		CA10K0E	Unknown continuous digital signal
7111.0	18:56	11	01	CHN		RADAR	50	10K0E	OTHR short bursts
7111.0	19:00	11	01	CHN		RADAR	50	10K0E	OTHR short bursts
7111.0 LSB	19:35	26	01			G7D	60	2K50E	CHN-30
7119.0	20:19	08	01	CHN		RADAR	50	10K0E	OTHR short bursts
7125.0	20:56	16	01	CHN		RADAR	50	10K0E	OTHR short bursts
7127.3	21:18	02	01			G7D	75	2K40E	CHN 4+4
7134.0	22:52 vt*	06 vd*	01	RUS		RADAR	40	12K0E	OTHR Contayner. *Also on 7030 kHz. 2 simultaneous TX on 40m
7135.0	19:39	23	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
7135.0	18:27	27	01	RUS		RADAR	40	12K0E	OTHR Contayner
7141.0 LSB	18:53 vt*	11 vd*	01			G7D	60	2K40E	CHN-30. *Also on 23/01, 1937 UTC: 25/01, 1910 UTC and 26/01, 1937 UTC
7154.0	18:58	11	01	CHN		RADAR	50	10K0E	OTHR short bursts
7156.0	18:01	18	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
7165.0	18:54	11	01	RUS		RADAR	40	12K0E	OTHR Contayner
7169.0	07:29	24	01			F1B	75	250H	

URE: Gaspar, EA6AMM. Team member: EA4021SWL

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7170.0	20:36	22	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
7171.0	19:24	07	01	CHN		RADAR	50	10K0E	OTHR short bursts
7171.0 LSB	20:17 vt*	08 vd*	01			NON	60	2K40E	CHN-30. *Also on 25/01, 1908 UTC and 26/01, 1939 UTC
7188.0	22:16	06	01	RUS		RADAR	40	12K0E	OTHR Contayner
7192.0	07:07	18	01			J7D	120	2K70E	CIS-12
7192.9	12:12 vt*	05 vd*	01			NON			Carrier from F1B RUS sys on 7193 kHz CF (RDL). *Also on 09/01, 0841 UTC and 10/01, 0845 UTC
7193.0	12:28 vt*	05 vd*	01	RUS	RDL	F1B F1A	50	200H	CIS 36-50. *Also on 06, 08, 09 and 19/01; vt
7194.0	07:17	24	01			J7D	120	2K70E	CIS-12
7197.0	22:56	06	01	TUR	353	J7D	125	1K75E	7197 kHz USB: MIL-188-141A ALE
7205.0	22:41	06	01	RUS		RADAR	40	12K0E	OTHR Contayner. Partially inside the 40 m band + splatter. *Also on 7188 kHz CF and 7030 kHz CF. <i>3 simultaneous TX on 40m</i>
10100.0	16:25	25	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
10111.1	18:06	05	01			J3E-U		2K40E	J3E-U. Non amateur comms. Unid sts. Male voices. Unid language. Seems Arabic lang.
10124.0	21:22	02	01	AUS		RADAR	6.9 6.9 7.2	11K0E 11K0E 12K0E	OTHR JORN bursts with short intro tone. *Often. 8 reports (05, 09, 16, 21, 23, 25 and 36/01; vt)
10124.0	23:24	06	01	CHN		RADAR	66.7	10K0E	OTHR short bursts (Foghorn)
10132.0	18:04	05	01			J3E-U			J3E-U. Non amateur comms. Male voices, unid language. Seems Arabic.
10145.0	19:06	25	01	G		RADAR	25	20K0E	OTHR. UK SBA, Cyprus
10148.0	21:43 vt*	02 vd*	01	AUS		RADAR	6.9 6.9 7.2	10K0E 11K0E 12K0E	OTHR JORN bursts with short intro tone. *Also on 08, 16 and 26/01; vt
10150.0	20:54	16	01	AUS		RADAR	6.9	10K0E	OTHR JORN bursts; with short intro tone
10152.0	19:53	09	01	AUS		RADAR	7.2	12K0E	OTHR JORN bursts; with short intro tone
13999.0	09:34	16	01			J7D	120	2K70E	CIS-12
14000.0	09:00 vt*	25 vd*	01			J3E-U		2K40E	Spanish fishers. Same operators as on 21000 kHz USB. Strong southern accent. *Also on 26/01, 0859 UTC
14000.0	08:46	27	01			J7D	125	1K80E	14000 kHz USB: MIL-188-141A ALE
14001.0	08:19	12	01			J7D	120	2K70E	CIS-12
14001.0	08:05	26	01			J3E-U		2K40E	Unid sts. Male voices, Spanish language with strong southern accent. Most probably, fishers
14011.0 USB	12:18	26	01			W7D	44.44	2K40E	CHN OFDM 39
14025.0	07:15	25	01			RADAR		CA5K0E	SuperDARN bursts
14048.0	09:40	01	01	CHN		RADAR	50	10K0E	OTHR short bursts
14049.0	12:52	15	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
14092.0	07:36	08	01	RUS		F1B	50	200H	
14098.5	08:29 vt*	02 vd*	01			F1B	600	600H	DPRK-FSK 600 ARQ. *Very often. 15 reports
14125.9	07:01	07	01			F1B	50	350H	FSK short bursts
14127.0	14:06	17	01			J3E-U		3K0E	J3E-U. Unid st. BC relaying. Speech & music, male speakers, slavic language. Long-lasting
14130.0	13:11	20	01			J3E-U			J3E-U. Slavic music

URE: Gaspar, EA6AMM. Team member: EA4021SWL

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
14138.0	14:33	25	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14140.0	16:09	09	01	RUS		RADAR	40	12K0E	OTHR Contayner
14144.0	14:32	25	01			J3E-U		2K80E	J3E-U. Slavic music
14145.0	08:53	26	01	RUS		RADAR	40	12K0E	OTHR Contayner
14155.0	13:33*	21	01			J3E-U		2K80E	J3E-U. UKR/RUS radiowar. *Also at 1545 UTC
14160.0	14:28	08	01			J3E-U		2K80E	J3E-U. UKR/RUS radiowar
14165.0	09:51	29	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14166.0	08:41	05	01			J3E-U		2K80E	J3E-U. UKR/RUS radiowar
14167.0	14:50	25	01	RUS		RADAR	40	12K0E	OTHR Contayner
14168.0	15:44	10	01	RUS		RADAR	40	12K0E	OTHR Contayner
14171.0	07:29	08	01			J7D	120	2K70E	CIS-12
14171.0	09:27	22	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14179.0	08:44	01	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14183.0	09:00	03	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14189.0	08:20 vt*	23 vd*	01	CHN		RADAR	66.7	10K0E	OTHR short bursts. *Also on 23/01, 0839 UTC
14192.0	07:47 vt*	01 vd*	01	RUS		F1B	50	200H	*Almost daily. 24 reports
14192.0	09:06	20	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14194.0	09:17	26	01	RUS		RADAR	40	12K0E	OTHR Contayner
14198.5	07:03 vt*	17 vd*	01			F1B	600	600H	DPRK-FSK 600 ARQ *Often. 7 reports
14198.5	07:03	27	01			OTHER		1K20E	DPRK-PSK 1200 ARQ
14200.0*	10:05 vt**	20 vd**	01			A1N			Continuous dots. 1 dot per 1.28 sec, every 200 kHz. Long-lasting. *Also on 7000, 14000 , 21000, 21200 and 21400 kHz. **Also on 21, 22, 23, 24 and 25/01; vt. Most probably, ionospheric sounder
14217.0	07:43	06	01	CHN		RADAR	50	10K0E	OTHR
14218.5	08:37 vt*	16 vd*	01			G1D		1K20E	DPRK-PSK 1200 ARQ *Also on 08/01, 0734 UTC
14220.5	08:38 vt*	17 vd*	01			F1D	600	600H	DPRK-FSK 600 ARQ. *Also on 21, 22, 26 and 27/01; vt.
14221.5	07:31	08	01			F1D	600	600H	DPRK-FSK 600 ARQ. *Also on 11/01, 1208 UTC and 15/01, 0840 UTC
14237.0	09:01	08	01			XXX		1K0E	Unknwon digital bursts
14244.0	09:42	08	01	CHN		RADAR	50	10K0E	OTHR short bursts
14247.0	09:55	29	01	CHN		RADAR	50	10K0E	OTHR short bursts
14255.0	09:50	12	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14258.0	09:47	12	01			F1B	50	500H	
14259.0	09:41	18	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14260.0	09:42	18	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14268.0	14:57	22	01	RUS		RADAR	40	12K0E	OTHR Contayner
14289.0	08:45	23	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14289.5	07:31	18	01			F1D	600	600	DPRK-FSK 600 ARQ
14292.0	06:47 vt*	07 vd*	01	CHN		RADAR	66.7	10K0E	OTHR short bursts *Also on 10/01, 1223 UTC
14292.0	06:47	16	01	RUS		F1B	50	200H	
14293.0	08:18	07	01	CHN		RADAR	66.7	10K0E	OTHR short bursts

URE: Gaspar, EA6AMM. Team member: EA4021SWL

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
14294.0	08:38	22	01			J7D	120	2K70E	CIS-12
14296.0	07:52	19	01	RUS		RADAR	40	12K0E	OTHR Contayner
14296.0	07:29	22	01	RUS		RADAR	40	12K0E	OTHR Contayner
14298.5	10:00 vt*	02 vd*	01			F1D	600	600H	DPRK-FSK 600 ARQ *Very often: 15 reports
14298.5	07:11	15	01			G1D		1K20E	DPRK-PSK 1200 ARQ
14302.0	07:15	03	01	RUS		RADAR	40	12K0E	OTHR Contayner
14306.0	12:26	09	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14308.0	09:09 vt*	25 vd*	01			F1B	75	500H	*Also on 29/01, 0756 UTC
14308.5	07:41	27	01			XXX		2K80E	XXX. Continuous digital signal
14313.0	12:04	26	01	CHN		RADAR	50	10K0E	OTHR short bursts
14320.0	08:40	10	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14328.0	12:27	09	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14330.0	09:42	08	01	CHN		RADAR	50	10K0E	OTHR short bursts
14330.0	08:15	27	01	CHN		RADAR	83.33	10K0E	OTHR short bursts
14331.0	12:24	10	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14331.5	10:18 vt*	02 vd*	01			F1D	600	600H	DPRK-FSK 600 ARQ *Often. 11 reports
14331.5	13:15	08	01			G1D		1K20E	DPRK-PSK 1200 ARQ
14334.0	07:06	07	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14335.0	09:41	01	01	CHN		RADAR	50	10K0E	OTHR short bursts
14338.0	11:37	17	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14340.0	08:40	08	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
14340.0	09:42	08	01	CHN		RADAR	50	10K0E	OTHR short bursts
14345.0	09:30	02	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
18060.0	09:26	11	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
18073.0	09:40	26	01	RUS		RADAR	40	12K0E	OTHR Contayner
18125.0	09:32	03	01	CHN		RADAR	42	10K0E	OTHR short bursts
18127.0	09:36	10	01	CHN		RADAR	50	10K0E	OTHR short bursts
18135.0	08:16	02	01	RUS		RADAR	40	12K0E	OTHR Contayner
18136.0	08:57	12	01	RUS		RADAR	40	12K0E	OTHR Contayner
18165.0	07:34 vt*	15 vd*	01	RUS		RADAR	40	12K0E	OTHR Contayner *Also on 23/01, 0706 UTC
18166.0	08:46	01	01	CHN		RADAR	50	10K0E	OTHR short bursts
18166.0	08:51	10	01	RUS		RADAR	40	12K0E	OTHR Contayner
18170.0	08:32	09	01	RUS		RADAR	40	12K0E	OTHR Contayner
18171.0	08:36 vt*	02 vd*	01	RUS		RADAR	40	12K0E	OTHR Contayner. *Also on 03/01, 0821 UTC and 29/01, 0908 UTC
18175.0	16:26 vt*	10 vd*	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus *Also on 15/01, 1519 UTC
18178.0	13:13	08	01	RUS		RADAR	40	12K0E	OTHR Contayner. Splatter to 18163 kHz
18216.0	08:47	15	01	CHN		RADAR	10	160K0E	CHN wideband OTHR. Continuous TX. Partially inside the 17m band (to 18136 kHz)
21000.0	09:26 vt*	03 vd*	01			J3E-U		2K40E	J3E-U. Spanish fishers. Strong Southern accent. Same ops as always. *Also on 12/01, 0922 UTC
21000.0	08:36	15	01	RUS		RADAR	40	12K0E	OTHR Contayner

URE: Gaspar, EA6AMM. Team member: EA4021SWL

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
21000.0	07:31	17	01	RUS		RADAR	40	12K0E	OTHR Contayner
21007.0	09:26	17	01	CHN		RADAR	50	10K0E	OTHR short bursts
21050.0	07:09	17	01	CHN		RADAR	50	10K0E	OTHR short bursts
21086.0	08:50	01	01	RUS		RADAR	40	12K0E	OTHR Contayner
21093.0	09:09	24	01			G7D	75	2K40E	CHN 4+4
21099.0	08:05	27	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21103.0	08:15	25	01	CHN		RADAR	50	10K0E	OTHR short bursts
21108.0	08:36 vt*	11 vd*	01	CHN		RADAR	50	10K0E	OTHR short bursts *Also on 12/01, 0717 UTC
21110.0	07:53	15	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
21111.0 USB	07:17	16	01			G1D	2400	2K40E	MIL-188-110A
21114.0	08:02	29	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21115.0	08:47	12	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
21118.0	09:04	09	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21120.0 LSB	08:33	10	01			G7D	60	2K50E	CHN-30
21123.0 LSB	09:16	11	01			G7D	60	2K50E	CHN-30
21127.0	08:03	22	01	CHN		RADAR	50	10K0E	OTHR short bursts
21130.0	08:30	07	01	CHN		RADAR	50	10K0E	OTHR short bursts
21145.0 USB	08:41	02 vt*	01 vd*	MRC	MIRADOR1 MIRADOR2 P1 P2 P4 ...	J7D	125	1K80E	MIL-188-141A ALE *Often. 10 reports
21150.0	08:26 vt*	11 vd*	01			XXX		CA10K0E	XXX. Jammer. *Often. Also on 03, 09, 10, 12, 15, 16, 18 and 19/01
21159.0	09:03	18	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21165.0	07:22	12	01	G		RADAR	50	10K0E	OTHR short bursts
21168.0	09:32	29	01	RUS		RADAR	40	12K0E	OTHR Contayner
21170.0	07:48	12	01	CHN		RADAR	47.8	10K0E	OTHR short bursts
21170.0	07:16	22	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21172.0	06:44	15	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21172.2	08:55	01	01			F1B	50	500H	F1B bursts
21173.0	13:39	03	01	RUS		RADAR	40	12K0E	OTHR Contayner
21173.0	07:49	25	01	RUS		RADAR	40	12K0E	OTHR Contayner
21177.0	09:25	03	01	RUS		RADAR	40	12K0E	OTHR Contayner
21178.0	07:35	15	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21185.0	13:36	12	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
21194.0	08:28	16	01	CHN		RADAR	50	10K0E	OTHR short bursts
21195.0	14:25	15	01	G		RADAR	50	20K0E	OTRH. UK SBA, Cyprus
21215.0	08:28	09	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21220.5	08:37	23	01			F1B	600	600H	DPRK-FSK 600 ARQ
21225.0 USB	09:08	11	01			G1D	2400	2K40E	MIL-188-110A
21229.0	13:13	07	01	RUS		RADAR	40	12K0E	OTHR Contayner
21239.0	09:33	29	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21258.0	07:45	02	01	CHN		RADAR	66.7	10K0E	OTHR short bursts

URE: Gaspar, EA6AMM. Team member: EA4021SWL

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
21270.0	09:09	15	01	CHN		RADAR	50	10K0E	OTHR short bursts
21278.3	09:24	08	01			F1D	600	600H	DPRK-FSK 600 ARQ
21286.0	08:26	10	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21289.0	08:18	05	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21289.0	08:27	21	01	CHN		RADAR	50	10K0E	OTHR
21290.0	08:25	10	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21295.0	11:01	19	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
21300.0	08:03	29	01	CHN		RADAR	66.7	10K0	OTHR short bursts
21301.0	09:35	29	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21305.0	08:06	27	01	CHN		RADAR	50	10K0E	OTHR short bursts
21307.0	07:37	12	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21308.0	09:44	11	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21308.0	07:37	12	01	CHN		RADAR	47.8	10K0E	OTHR short bursts
21310.0	07:24	17	01	CHN		RADAR	10	160K0E	CHN wideband OTHR
21311.0	08:37	02	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21311.0	08:03	22	01	CHN		RADAR	50	10K0E	OTHR short bursts
21317.0	07:49	03	01	CHN		RADAR	50	10K0E	OTHR short bursts
21320.0	07:42 vt*	08 vd*	01	CHN		RADAR	50	10K0E	OTHR short bursts *Also on 16/01, 0654 UTC
21321.0	08:50	17	01	CHN		RADAR	50	10K0E	OTHR short bursts
21323.0	08:26	24	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21324.0	07:50	16	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21324.0	08:28	21	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21325.0	07:50	05	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21330.0	07:43	08	01	CHN		RADAR	62.5	10K0E	OTHR short bursts
21332.0	07:07	27	01	CHN		RADAR	50	10K0E	OTHR short bursts
21336.0	06:49	23	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21340.0	08:18	23	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
21342.0	07:10	18	01	CHN		RADAR	50	10K0E	OTHR short bursts
21343.0	07:44	06	01	CHN		RADAR	50	10K0E	OTHR short bursts
21344.5 USB	08:52	22	01			G1D	2400	2K40E	MIL-188-110A
21345.0	07:05	15	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
21346.0	07:21	24	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21347.0	09:23	03	01			G1D	2400	2K40E	MIL-188-110A
21348.0	07:20	24	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21351.0	06:48	23	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21355.0	12:02	26	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
21356.0	07:49	01	01	RUS		RADAR	40	12K0E	OTHR Contayner
21358.0	08:17	05	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21358.0	08:27	10	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21361.0	08:24	02	01	CHN		RADAR	50	10K0E	OTHR short bursts
21365.0	09:09	11	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21365.0	07:38	12	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21367.0	07:25	26	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21376.0	07:18	12	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21377.0	08:41 vt*	03 vd*	01	CHN		RADAR	41.7	10K0E	OTHR short bursts *Also on 18/01, 0856 UTC

URE: Gaspar, EA6AMM. Team member: EA4021SWL

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
21378.0	09:26	08	01	CHN		RADAR	50	10K0E	OTHR short bursts
21380.0	07:47	02	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21382.0	07:49 vt*	05 vd*	01	CHN		RADAR	50	10K0E	OTHR short bursts. *Also on 17/01, 0849 UTC and 24/01, 0722 UTC
21385.0	09:07	09	01	CHN		RADAR	50	10K0E	OTHR short bursts
21387.0	07:50	03	01	CHN		RADAR	50	10K0E	OTHR short bursts
21388.0	09:10	21	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21389.0	09:43	06	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21394.0	07:13	22	01	CHN		RADAR	50	10K0E	OTHR short bursts
21395.0	07:24	26	01	CHN		RADAR	50	10K0E	OTHR
21399.0	07:48 vt*	05 vd*	01	CHN		RADAR	50	10K0E	OTHR short bursts *Also on 25/01, 0816 UTC
21399.0	08:16	25	01	CHN		RADAR	50	10K0E	OTHR short bursts
21406.0	14:35	09	01	RUS		RADAR	40	12K0E	OTHR Contayner
21406.0	07:03	12	01	CHN		RADAR	50	10K0E	OTHR short bursts
21408.0	07:48	02	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21409.0	08:19	03	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21410.0	10:14	01	01	RUS		RADAR	40	12K0E	OTHR Contayner
21410.0	08:05	29	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21411.0	08:48	01	01	RUS		RADAR	40	12K0E	OTHR Contayner
21412.0	12:36	01	01	RUS		RADAR	40	12K0E	OTHR Contayner
21412.0	08:04	08	01	CHN		RADAR	50	10K0E	OTHR short bursts
21415.0	06:27	20	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21416.0	08:32	07	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21416.0	08:47	23	01	CHN		RADAR	50	10K0E	OTHR short bursts
21417.0	08:46	03	01	RUS		RADAR	40	12K0E	OTHR Contayner
21417.0	07:45	06	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21420.0	07:03	25	01	CHN		RADAR	50	10K0E	OTHR short bursts
21425.0	09:02	18	01	RUS		RADAR	40	12K0E	OTHR Contayner
21425.0	13:28	21	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
21426.0	07:39	17	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21431.0	07:49	05	01	CHN		RADAR	66.7	10K0E	OTHR short bursts
21434.0	07:26	26	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
21438.0	08:03 vt*	01 vd*	01	RUS	RCV	A1A			RUS navy QTC *Daily
21453.0	08:27	10	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
24863.0	08:25	11	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
24895.0	07:07	22	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
24910.0	06:17	20	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
24938.0	07:09	27	01	CHN		RADAR	50	10K0E	OTHR short bursts
24942.0	07:36	25	01	CHN		RADAR	41.7	10K0E	OTHR short bursts
24951.0	06:54	24	01	CHN		RADAR	50	10K0E	OTHR short bursts
24959.0	07:40	25	01	CHN		RADAR	42	10K0E	OTHR short bursts
28001.5*	09:20 vt*	20 vd*	01			F1B J3E-U	100	150H	F1B TX is part of the Yachta T-219 voice scrambler system. Long-lasting. USB scrambled comms (*28000 kHz USB). **Also on 22, 24, 25, 29 and 30/01
28010.1	11:11	24	01			F1B	51	300H	Fishing buoy

URE: Gaspar, EA6AMM. Team member: EA4021SWL

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
28025.1	11:12 vt*	24 vd*	01			F1B	51	300H	Fishing buoy *Often
28051.5	08:50 vt*	23 vd*	01			F1B	51	300H	Group of several fishing buoys *Often
28055.0	12:39	01	01	G		RADAR	25	20K0E	OTHR. UK SBA, Cyprus
28085.0	07:55	12	01			F3E			Non amateur comms. Female voice. Slavic language. Short traffic. *Often
28115.0	08:33 *vt*	01 vd*	01			F3E			Non amateur comms. Female voice. Slavic language. Short traffic. *Very often
28125.0	08:34 vt*	01 vd*	01			F3E			Non amateur comms. Female voice. Slavic language. Short traffic. *Very often
28135.0	08:30 vt*	01 vd*	01			F3E			Non amateur comms. Female voice. Slavic language. Short traffic. *Very often
28145.0	07:42	25	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28155.0	08:31 vt*	01 vd*	01			F3E			Non amateur comms. Female voice. Slavic language. Short traffic. *Very often
28165.0	07:26 vt*	12 vd*	01			F3E			Non amateur comms. Female voice. Slavic language. Short traffic. *Very often
28195.0	08:36 vt*	01 vd*	01			F3E			Non amateur comms. Female voice. Slavic language. Short traffic. *Very often
28205.0	08:38 vt*	01 vd*	01			F3E			Non amateur comms. Female voice. Slavic language. Short traffic. *Very often
28225.0	08:35 vt*	01 vd*	01			F3E			Non amateur comms. Female voice. Slavic language. Short traffic. *Very often
28225.0	06:20	20	01	G		RADAR	25	20K0E	OTHR. UK SBA, Cyprus
28240.0	07:54	12	01			F3E			Non amateur comms. Female voice. Slavic language. Short traffic
28245.0	08:33 vt*	01 vd*	01			F3E			Non amateur comms. Female voice. Slavic language. Short traffic. *Very often
28245.0	07:55 vt*	12 vd*	01			F3E			Non amateur comms. Female voice. Slavic language. Short traffic. *Very often
28245.0	07:00	27	01	G		RADAR	25	20K0E	OTHR. UK SBA, Cyprus
28265.0	08:32 vt*	01 vd*	01			F3E			Non amateur comms. Female voice. Slavic language. Short traffic. *Very often
28300.0	09:06 vt*	02 vd*	01	IRN		RADAR	307 870	45K0E	OTHR. Alternating 307 and 870 sps. *Also on 28860 kHz CF (150 / 313 sps). 2 simultaneous TX on 10m
28305.0	09:38	10	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28310.0	13:11	08	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28320.0	09:52	10	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28335.0	13:36	17	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28350.0	08:39	05	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28360.0	09:26	05	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28380.0	09:28	27	01	G		RADAR	25	20K0E	OTHR. UK SBA, Cyprus
28435.0	08:22	18	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28570.0	12:10	11	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28600.0	09:38	01	01	IRN		RADAR	307 870	45K0E	OTHR IRN. Alternating 307 and 870 sps bursts
28610.0	13:30	21	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28650.0	07:59	29	01	IRN		RADAR	150	45K0E	OTHR. Alternating 150 and 313 sps bursts
28650.5	09:50 vt*	25 vd*	01			XXX		CA3K0E	XXX. Group of carriers. Spacing = 200 Hz *Also on 26/01, 0829 UTC
28665.0	08:01	05	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus

URE: Gaspar, EA6AMM. Team member: EA4021SWL									
kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
28665.0	14:31	21	01	G		RADAR	25	20K0E	OTHR. UK SBA, Cyprus
28700.0	07:14	19	01	IRN		RADAR	150 313	45K0E	OTHR. Alternating 150 and 313 sps bursts. Jumping. *Also on 28860 kHz CF. 2 simultaneous TX on 10m
28720.0	08:20	21	01	G		RADAR	25	20K0E	OTHR. UK SBA, Cyprus
28750.0	12:38	19	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28760.0	07:56	19	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28770.0	06:54	20	01	G		RADAR	25	20K0E	OTHR. UK SBA, Cyprus
28790.0	08:20	01	01	G		RADAR	25	20K0E	OTHR. UK SBA, Cyprus
28790.0	08:19	11	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28808.0	07:48	08	01			F1B	50	500H	Harmonic of F1B system on 14404 kHz CF (250 Hz). *Also on 21/01, 0938 UTC
28815.0	08:30	05	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28860.0	07:51	02	01	IRN		RADAR	150 313	45K0E	OTHR. Alternating 150 and 313 sps bursts *Almost daily. 24 reports
28930.0	11:35	17	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
28940.0	08:36	17	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29000.0	07:20	18	01			RADAR	25	4K0E	OTHR. BW = 4K0E. 25 sps. Most probably, OTHR G. UK SBA, Cyprus
29010.0	11:46	10	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29060.0	08:02	25	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29100.0	10:24 vt*	01 vd*	01			XXX			Group of carriers. Long-lasting. Sometimes, J3E- U non-amateur comms, BW = 3K30E. Male voices, slavic language. *Daily
29100.0	06:56	12	01	IRN		RADAR	150 313	45K0E	OTHR. Alternating 150 and 313 sps. *Also on 28860 kHz CF. 2 simultaneous TX on 10m
29225.0	08:13	25	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29270.0	11:32	18	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29295.0	06:59	16	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29300.0*	07:52 vt**	03 vd**	01	IRN		RADAR	307	45K0E	OTHR. Alternating 307 and 870 sps bursts. *Also on 28860 kHz CF (150/313 sps). 2 simultaneous TX on 10m. **Often. 7 reports
29300.0*	13:26	07	01	IRN		RADAR	870	45K0E	OTHR IRN. 870 sps bursts only. *Also on 29300 kHz CF (150 / 313 sps) and 28860 kHz CF (150 / 313 sps). 3 simultaneous TX on 10m
29450.0*	11:53 vt**	10 vd**	01	IRN		RADAR	150 313	45K0E	OTHR. Alternating 150 and 313 sps bursts. Jumping. *Also on 28860 kHz CF. 2 simultaneous TX on 10m. **Often. 10 reports
29495.0	13:13	20	01	G		RADAR	25	20K0E	OTHR. UK SBA, Cyprus
29500.0*	10:21 vt**	01 vd**	01	IRN		RADAR	150 313	45K0E	OTHR. Alternating 150 and 313 sps bursts. *Also on 28600 kHz CF (307 / 870 sps). 2 simultaneous TX on 10m. **Often. 5 reports
29500.0	08:50	08	01	IRN		RADAR	150 313	45K0E	OTHR. Alternating 150 and 313 sps bursts. Jumping. *Also on 28860 kHz CF and on 29300 kHz CF (307/870 sps). 3 simultaneous TX on 10m
29500.0	09:19	12	01	IRN		RADAR	150 313	45K0E	OTHR. Alternating 150 and 313 sps bursts

URE: Gaspar, EA6AMM. Team member: EA4021SWL

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
29550.0	06:51	24	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29560.0	07:56	03	01	G		RADAR	25	20K0E	OTHR. UK SBA, Cyprus
29575.0	09:53	29	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29580.0	08:06	22	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29585.0	09:10	09	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29605.0	07:27	19	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29610.0	08:52	25	01	G		RADAR	25	20K0E	OTHR. UK SBA, Cyprus
29625.0	07:01	16	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29630.0	12:03	06	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29650.0*	07:27	19	01	G		RADAR	25	00K0E	OTHR G. UK SBA, Cyprus. Very long-lasting. *Also on 29605 kHz CF (50 sps). 2 <i>simultaneous TX on 10m</i>
29650.0	07:39	23	01	G		RADAR	50	20K0E	OTHR. UK SBA, Cyprus
29860.0	08:19	09	01	IRN		RADAR	150 313	45K0E	OTHR. Alternating 150 and 313 sps bursts

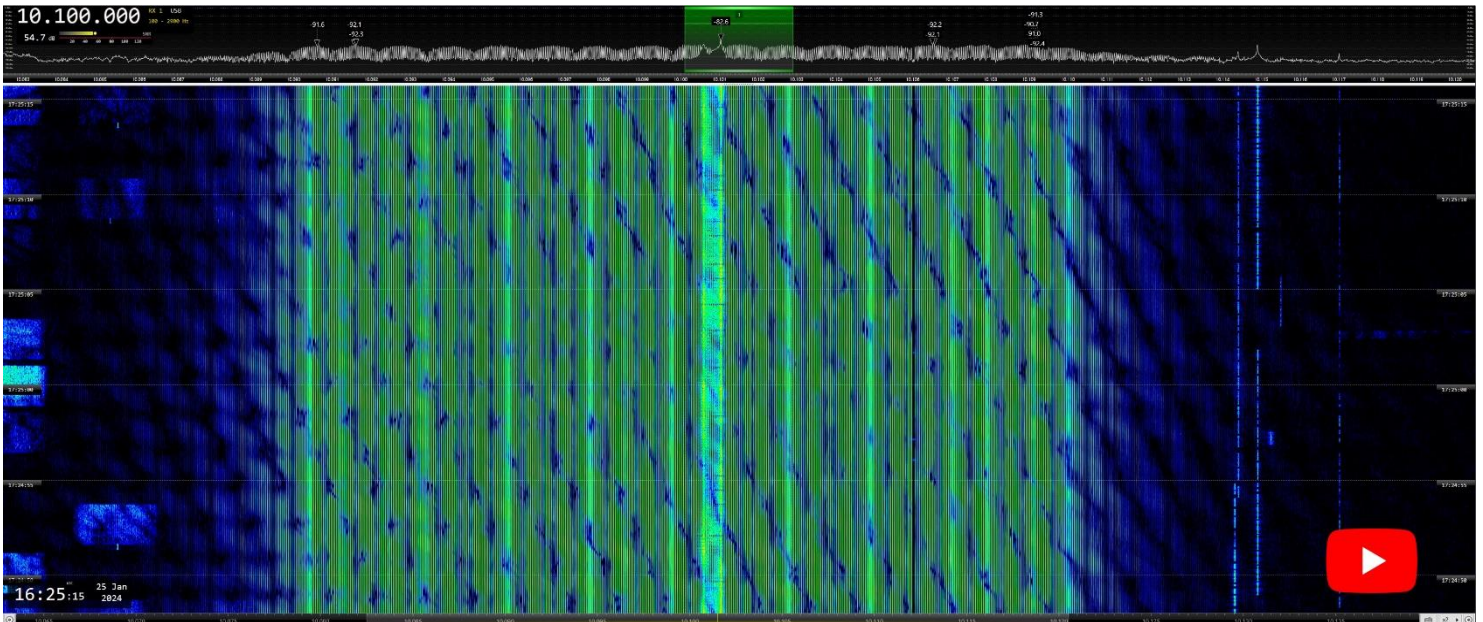
VERON; Ruud, PG1R. Credit to observers : Dick PA0GRU, Rene PA3EQO

kHz	UTC	DD	MM	ITU	IDENT	MODE	BD /sps	SH / BW	DETAILS
7008.6	0821	31	01			J7D		2K70E	CIS-12
7014.0	0935	08	01			J7D		2K70E	CIS-12
7025.0	1445	11	01	RUS		F1B		200H	UiPtr
7054.0	1745	15	01	RUS		F1B		200H	UiPtr
7054.0	1755	18	01	RUS		F1B		200H	UiPtr
7055.0	1516	20	01	UKR/ RUS		J3E-L		2K70E	UKR-RUS; radiowar; male voice; comments; S4
7055.0	1518	20	01	UKR/ RUS		J3E-L		2K70E	UKR-RUS radiowar; 2 nd TX; music; S3-4
7065.0	1735	04	01	RUS		RADAR	40	12K0E	CF; OTHR Contayner
7090.0	2019	22	01			G1D		2K40E	LINK-11 SLEW; estimated QRG
7104.0	2022	24	01	E		J3E-U			Spanish fishers
14116.0	0956	14	01	RUS		F1B		250H	UiPtr
14192.0	1012	11	01	RUS		F1B		200H	RUS navy; Kaliningrad
21000.0	1244	11	01	E		J3E-U			Spanish fishers
21162.0	1653	16	01	MRC		J3E-U			Moroccan fishers
28790.0	0800	11	01	G		RADAR	50	20K0E	OTHR Cyprus

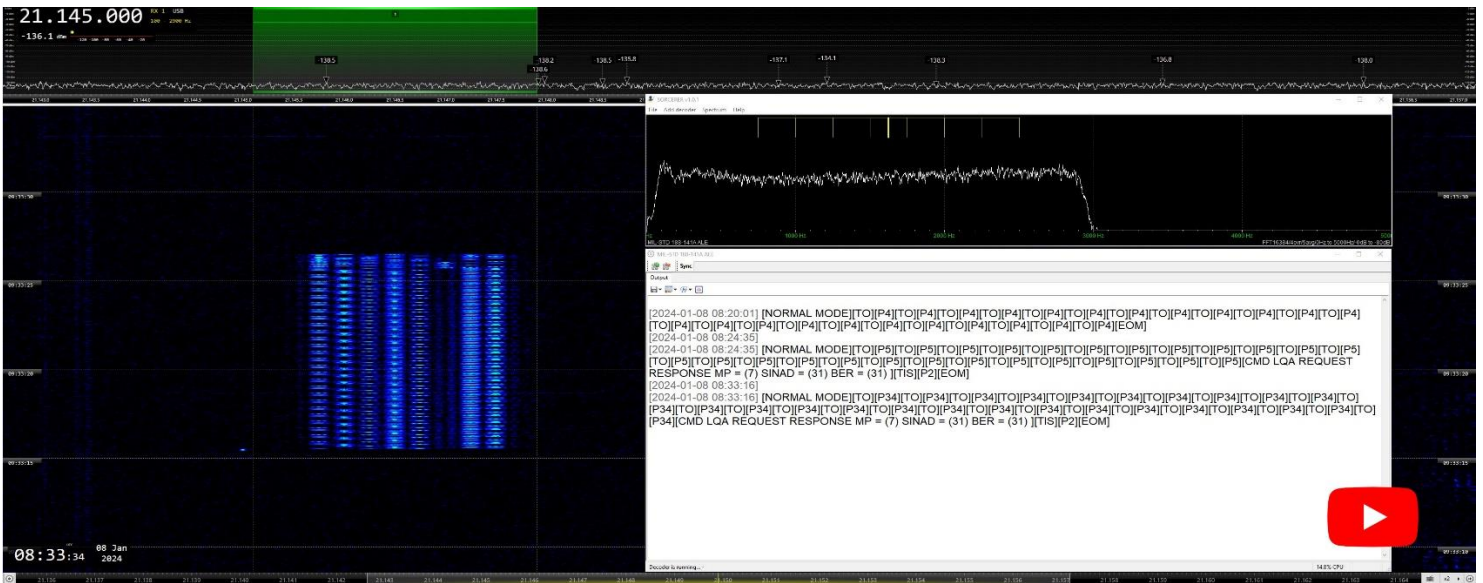
Contact: Gaspar Miró, EA6AMM, iarums@iaru-r1.org

IARUMS R1 Coordinators: <https://www.iaru-r1.org/spectrum/monitoring-system/iarums-region-1-coordinators/>

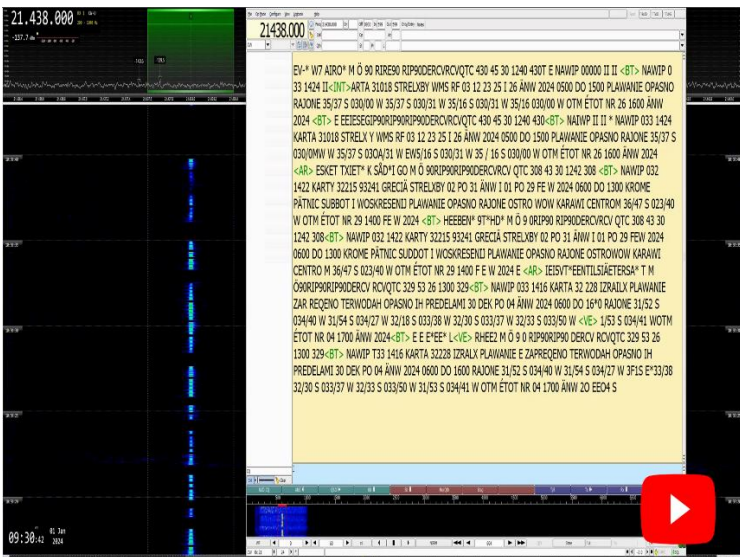
Visit our website: <https://www.iaru-r1.org/about-us/committees-and-working-groups/iarums/>



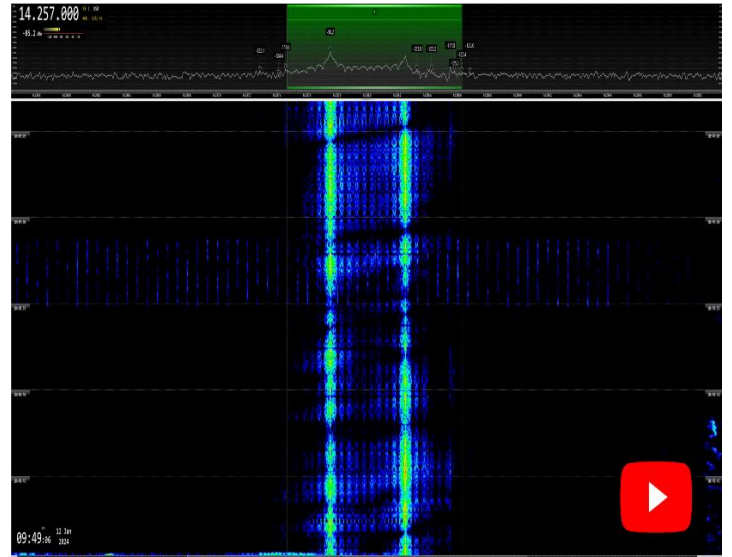
10100 kHz CF: OTHR G (UK SBA, Cyprus). BW = 20 kHz. 50 sps; transmitting over the Deutscher Wetterdienst, Pinnenberg RTTY legal transmission on 10100.8 kHz. 30m = Shared band. HAM radio = Secondary allocation.



21145 kHz USB: MIL-188-141a ale. MFSK. J7D. BW = 1K80E. 8 x 125 Bd. ITU: MRC



21438 kHz: A1A (CW) RUS navy QTC. St ID = „RCV“



14257 kHz CF: FSK (F1B). Shift = 500 Hz. 50 Bd