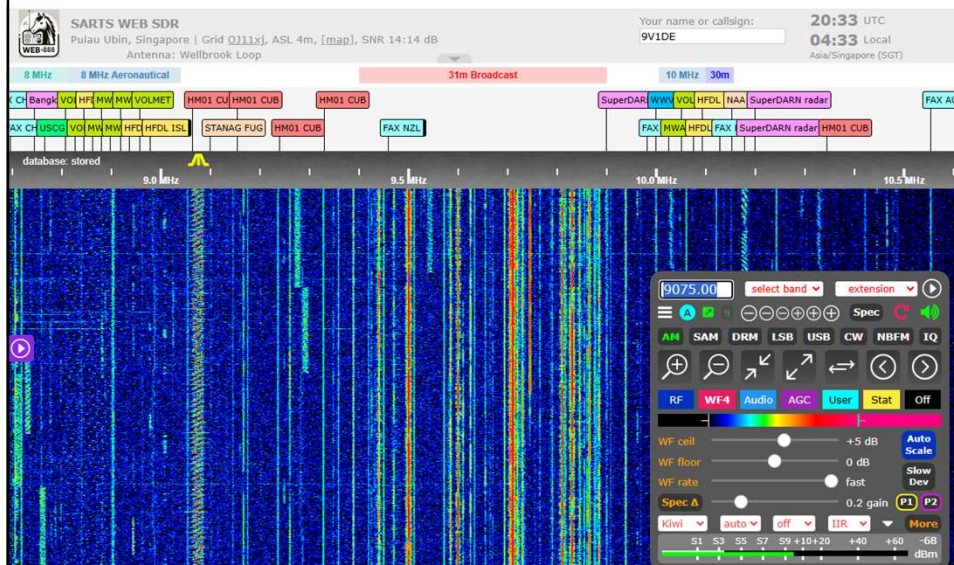


What's in between the Ham Bands?

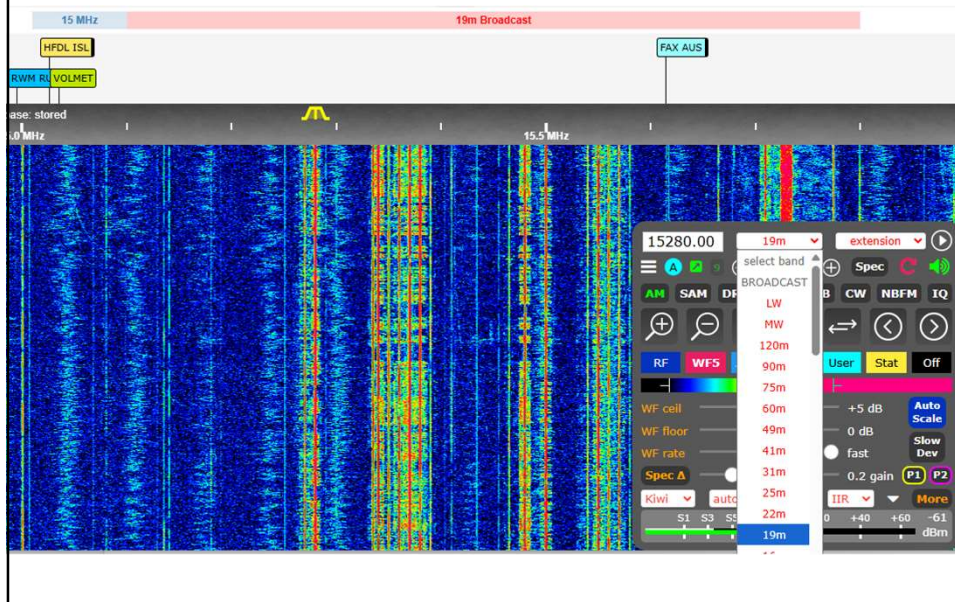
Listening to the LF, MF, HF bands on the SDR

SARTS Meeting 28 November 2025
Presented by Darryl Ea

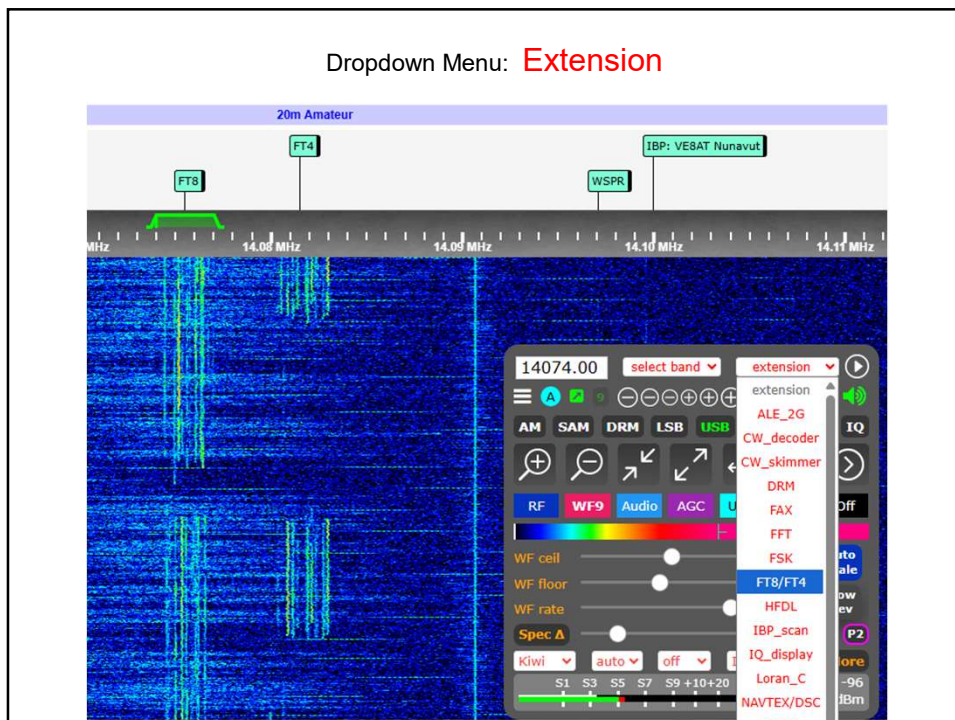
WEB SDR



Dropdown Menu: **Select Band**



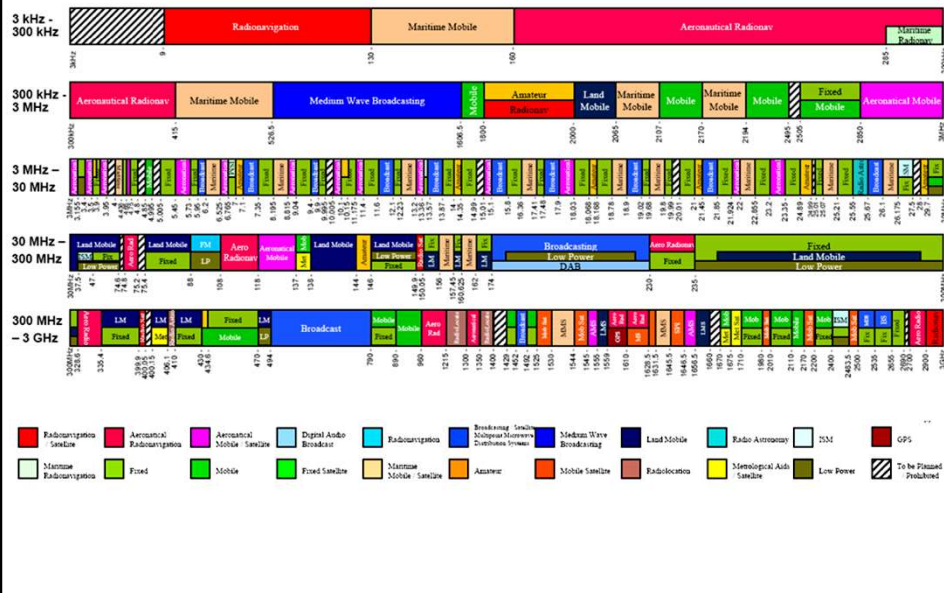
Dropdown Menu: **Extension**





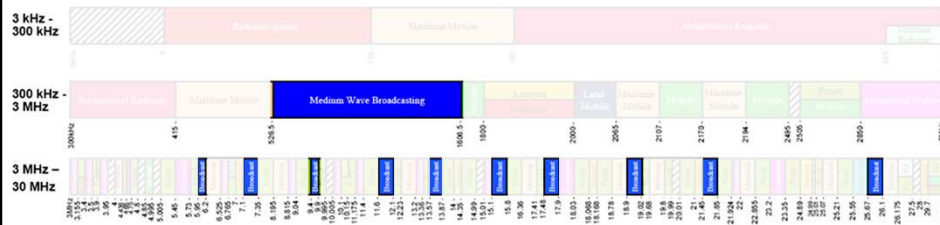
Singapore Spectrum Allocation Chart

*Frequency Spectrum
is not shown to scale



Broadcasts	Long Wave
	Medium Wave
	Short Wave
Aeronautical	ATC Communications
	Weather Stations
	High Freq Data Link
	Non Directional Beacons
Maritime	Radio Telephone
	Weather Bulletins
	Navigational Warnings
Others	Number Stations
	OTHR
	Ionosodes
	Time Stations

Broadcast Bands



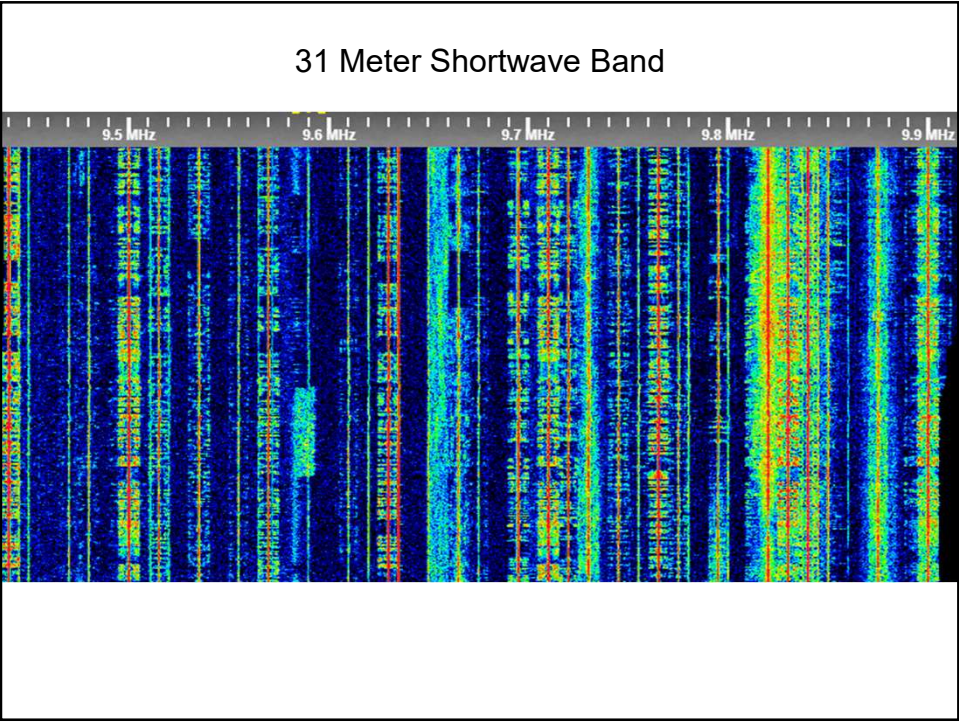
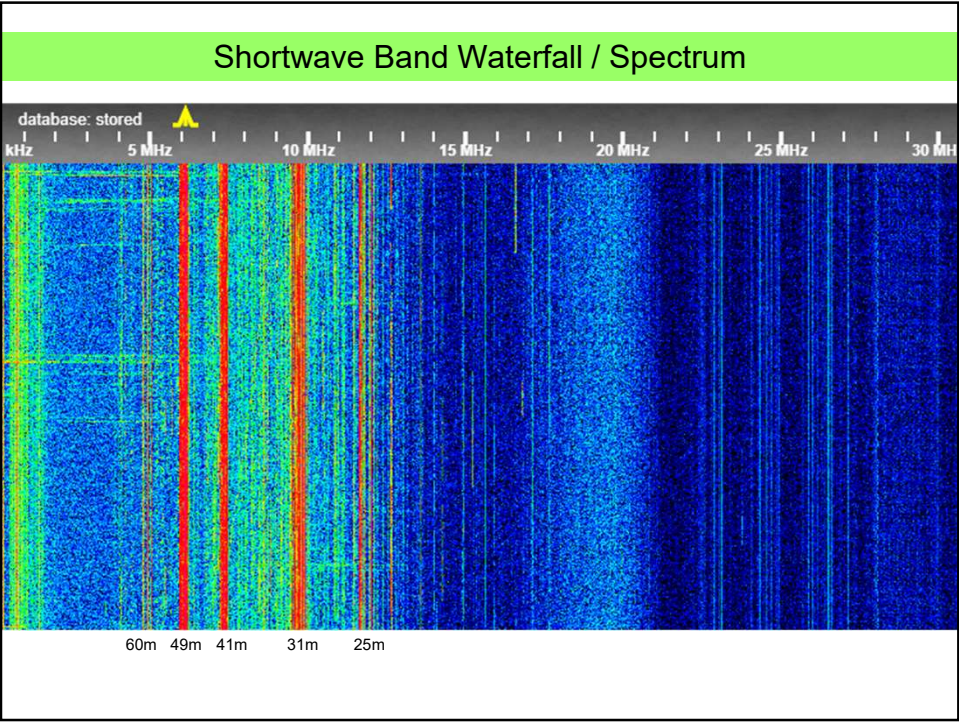
Long Wave 153 – 279 kHz (ITU 1 only)

Medium Wave 525 – 1605 kHz

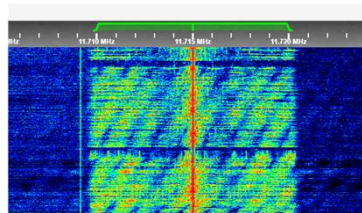
Short Wave 2300 – 26100 kHz

Shortwave Broadcast Bands

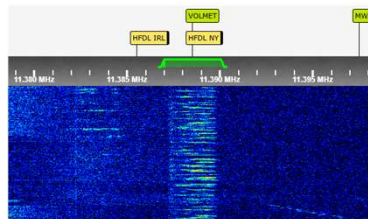
Metre Band	Frequency Range	Remarks
120 m	2300–2495 kHz	tropical band
90 m	3200 – 3400 kHz	tropical band
75 m	3900 – 4000 kHz	tropical band
60 m	4750 – 5060 kHz	tropical band
49 m	5900 – 6200 kHz	
41 m	7200 – 7600 kHz	
31 m	9400 – 9900 kHz	
25 m	11,600 - 12,200 kHz	
22 m	13,570 - 13,870 kHz	
19 m	15,100 - 15,800 kHz	
16 m	17,480 - 17,900 kHz	
15 m	18,900 - 19,020 kHz	almost unused
13 m	21,450 - 21,850 kHz	
11 m	25,600 - 26,100 kHz	



AM Broadcast
10 kHz Bandwidth



SSB
2.7 kHz Bandwidth



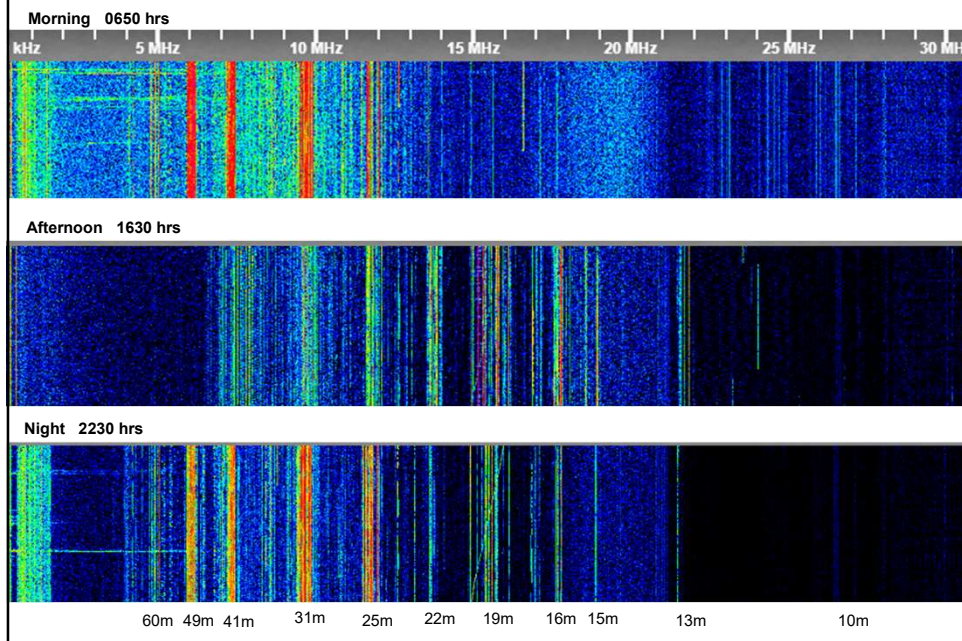
Current SW Stations with English Programming

China Radio Int'l
BBC World Service
Deutsch Welle
Voice of Indonesia
NHK World Radio
Voice of Korea
KBS World Radio
Radio Taiwan Int'l
Voice of Vietnam
Voice of Turkiye
Trans World Radio
Reach Beyond Aust.

SW Broadcasters 1980s

Radio Moscow WS	Radio Japan	Swiss Radio Int'l
Voice of America	Radio Taiwan Int'l	Radio France Int'l
BBC World Service	Armed Forces Network	Radio Deutsche Welle
Radio Australia	Radio Thailand	Radio Berlin
Radio Peking	Radio Singapore	Radio Belize
Radio Tashkent	Voice of Malaysia	Radio Netherlands
Radio South Africa	Voice of Indonesia	Radio Sweden
All India Radio	Voice of Vietnam	Radio Austria Int'l
Sri Lanka Broad. Corp.	Voice of Free Asia	Radio Prague
Radio Pyongyang	FEBC Radio Int'l	Radio Canada Int'l
Radio Korea	KTWR	Kol Israel
Radio HCJB		Radio Kuwait

Day Night Comparison



<https://www.short-wave.info/>

<https://www.asiawaves.net/>

<https://shortwave.live/>



1960s



1970s



1980s



1980s



1990s



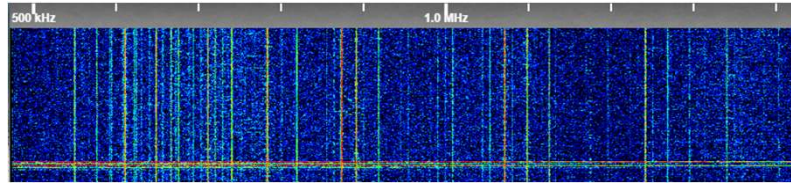
2000s



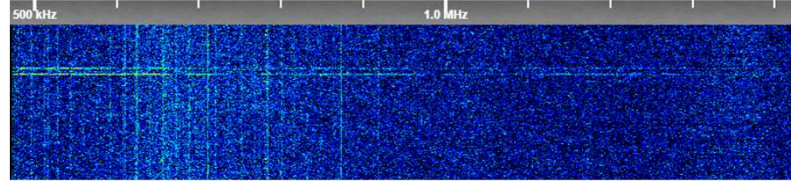
Today

AM Broadcast Band

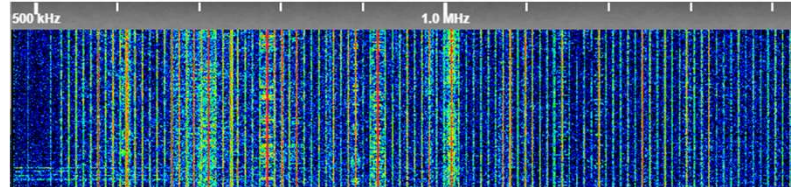
7 a.m.



4 p.m.



11 p.m.



AM Stations Heard

Thailand

Vietnam

Indonesia

China

CRI English 684 kHz

Australia

ABC Adelaide 891 kHz

Japan

TBS Tokyo 954 kHz

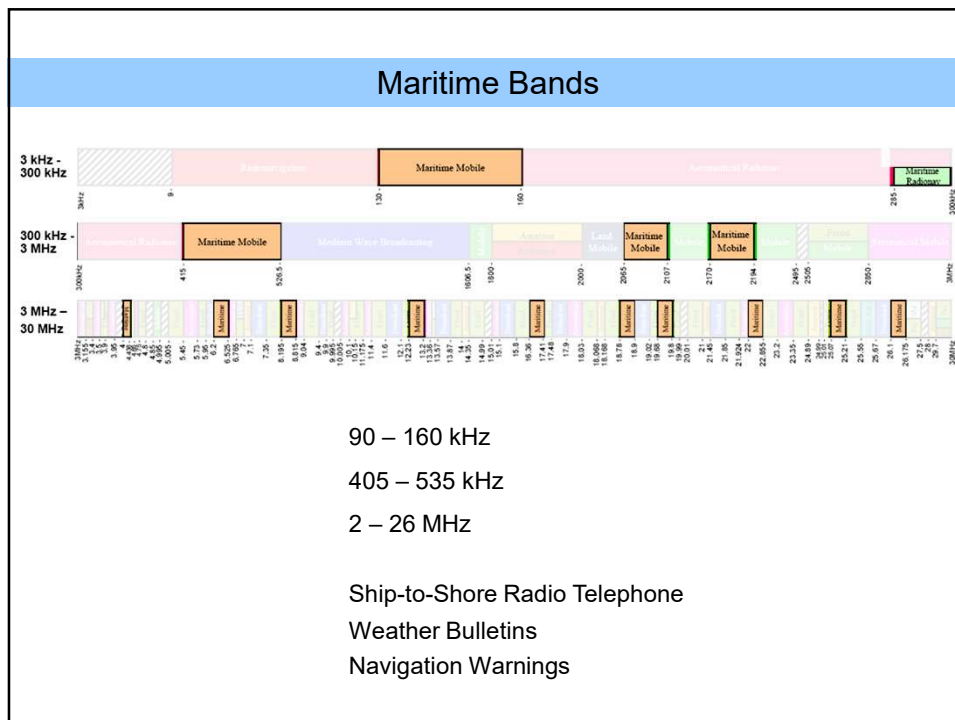
Radio Singapore¹

	MW	SW	FM
English	630	5052, 11940	90.5 MHz
Mandarin	675	6000, 9635	95.8 MHz
Malay	990	6155, 7250	94.2 MHz
Tamil	1368	7170	96.8 MHz
Multi Lang. (Simulcast)	792 ²		
Classical/Dialect			92.4 MHz ³

Note 1: Pre - Radio Singapore International. RSI started Broadcasting in 1994

Note 2: High Power Transmitter 750 kW. Operates between 1800 to 2400

Note 3: Stereo Transmission between 0600 - 0900 and 1800 - 2300



NAVTEX

Navigational Telex



518 kHz, 490 kHz, 4209.5 kHz

Receives Weather & Navigation Data



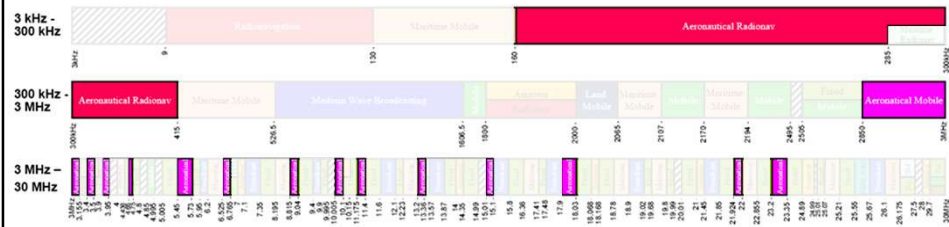
Receives Weather & Navigation Data

Maritime HF Bands

- 2065 – 2107 kHz
- 2170 – 2194 kHz
- 4000 – 4436 kHz
- 6200 – 6525 kHz
- 8195 – 8815 kHz
- 12230 – 13200 kHz
- 16360 – 17410 kHz
- 18780 – 18900 kHz
- 19680 – 19800 kHz
- 22000 – 22855 kHz
- 25070 – 25210 kHz
- 26100 – 26175 kHz

- 2065 – 2107 kHz
- 2170 – 2194 kHz
- 4000 – 4436 kHz
- 6200 – 6525 kHz
- 8195 – 8815 kHz
- 12230 – 13200 kHz
- 16360 – 17410 kHz
- 18780 – 18900 kHz
- 19680 – 19800 kHz
- 22000 – 22855 kHz
- 25070 – 25210 kHz
- 26100 – 26175 kHz

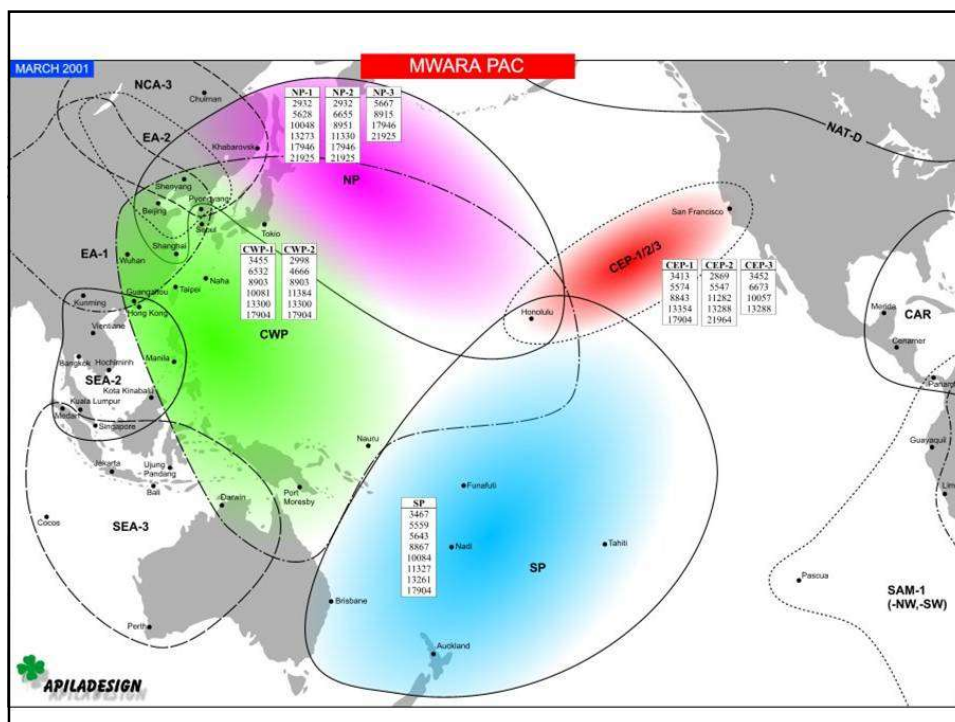
Aeronautical Bands



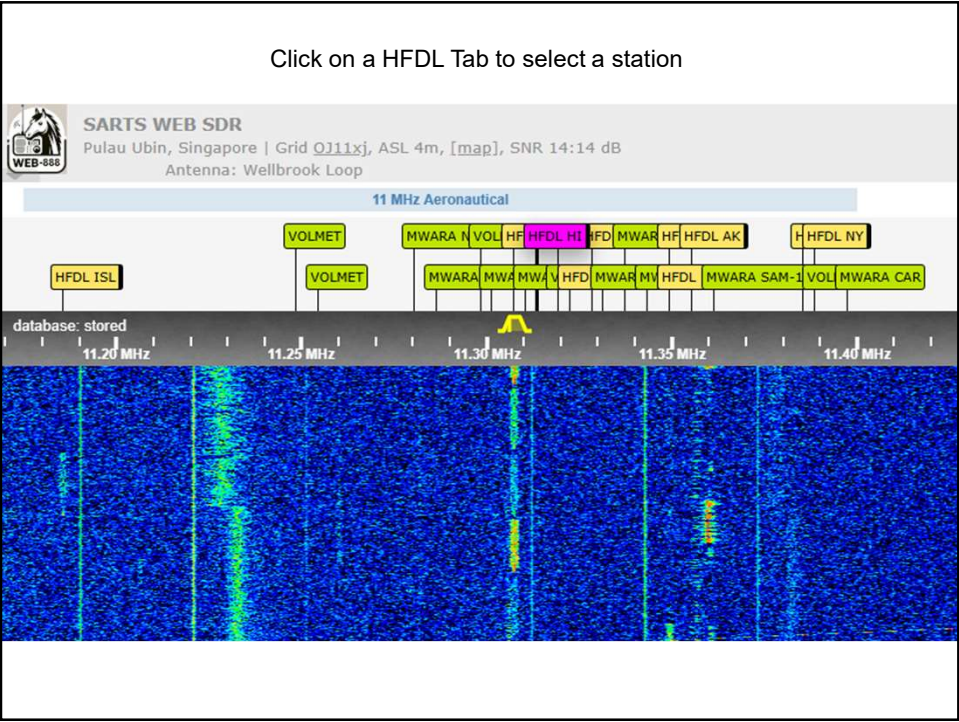
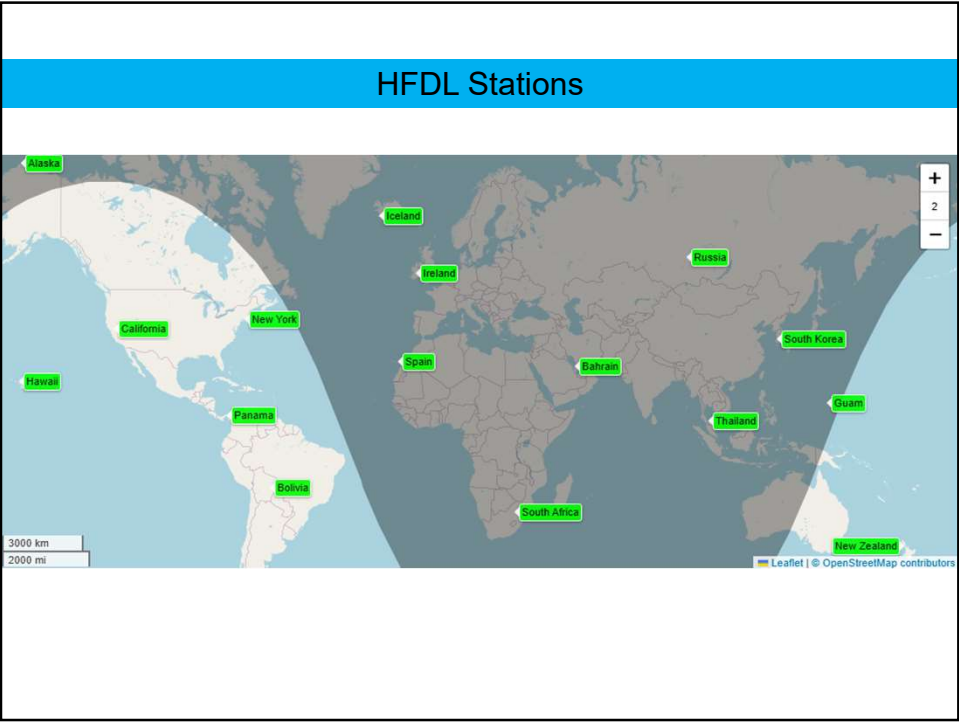
NDBs
 ATC Comms
 Volmet Broadcasts
 ACARS

Aeronautical HF Bands

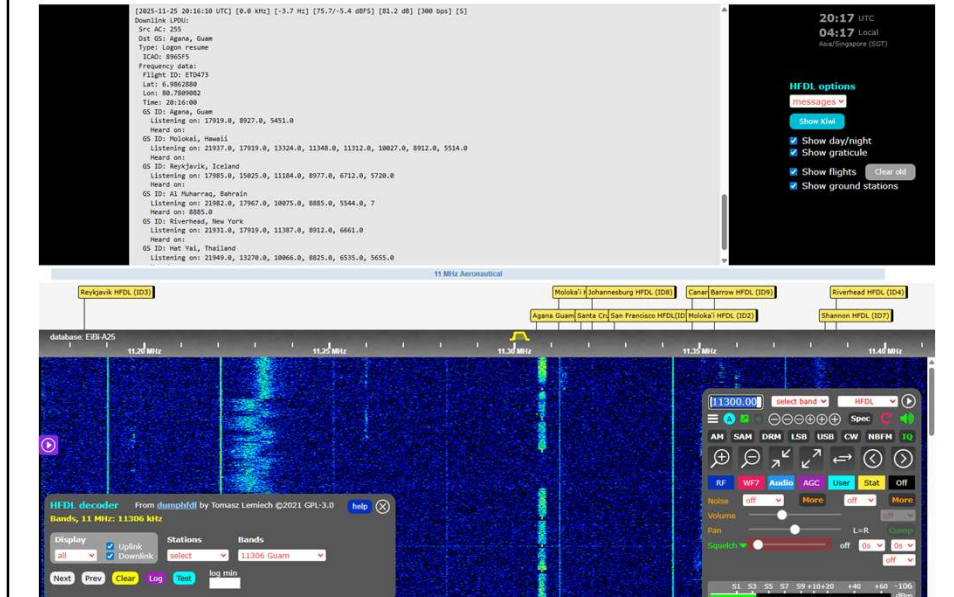
- 2850 to 3155 kHz
- 3400 to 3500 kHz
- 4650 to 4750 kHz
- 5480 to 5730 kHz
- 6525 to 6765 kHz
- 8815 to 9040 kHz
- 10,005 to 10,100 kHz
- 11,175 to 11,400 kHz
- 13,200 to 13,360 kHz
- 15,010 to 15,100 kHz
- 17,900 to 18,030 kHz
- 21,870 to 22,000 kHz
- 23,200 to 23,350 kHz.



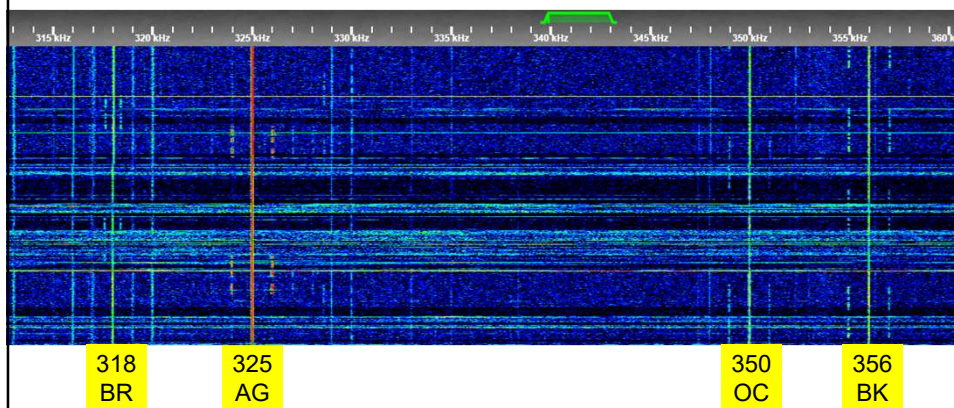
VOLMET French Acronym for "Flying Weather"					
SEA 1 South East Asia : 2.965 6.676 11.387 MHz					
VKA 930 AUSTRALIAN	AWC KOLKATA	HSD BANGKOK	ARA KARACHI	9VA SINGAPORE	AWB MUMBAI
H + 00	H + 05	H + 10	H + 15	H + 20	H + 25
Sydney Brisbane Melbourne Townsville Adelaide Alice Springs Darwin Perth SYDNEY BRISBANE	Kolkata Delhi Dhaka Yangon Kathmandu KOLKATA DELHI	Suwannaphum Yangon Hanoi Ho Chi Minh Phnom Penh Utapao Vientiane Phuket Chiang Mai Bangkok SUWANNAPHUM	Karachi Nawabshah Lahore Islamabad Faisalabad Multan Peshawar Sialkot Sukkur KARACHI DELHI	Singapore/Changi Kuala Lumpur Subang Airport Soekarno-Hatta Kuching Brunei Kota Kinabulu Bali Penang SINGAPORE/CHANGI KUALA LUMPUR	Mumbai Ahmedabad Chennai Colombo Karachi Malé MUMBAI COLOMBO MALÉ
H + 30	H + 35	H + 40	H + 45	H + 50	H + 55
Sydney Brisbane Melbourne Townsville Adelaide Alice Springs Darwin Perth MELBOURNE PERTH	Kolkata Delhi Dhaka Yangon Kathmandu KOLKATA DELHI	Suwannaphum Yangon Hanoi Ho Chi Minh Phnom Penh Utapao Vientiane Phuket Chiang Mai Bangkok SUWANNAPHUM	Karachi Nawabshah Lahore Islamabad Faisalabad Multan Peshawar Sialkot Sukkur BOMBAY SINGAPORE	Singapore/Changi Kuala Lumpur Subang Airport Soekarno-Hatta Kuching Brunei Kota Kinabulu Bali Penang SINGAPORE/CHANGI SOEKARNO-HATTA	Mumbai Ahmedabad Chennai Colombo Karachi Malé MUMBAI COLOMBO MALÉ



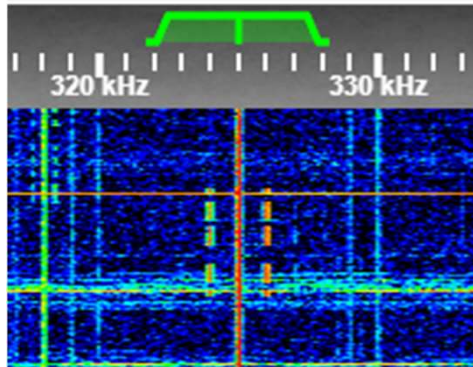
HFDL Decoded



NDBs



Sembawang AG 325 kHz



Read Bottom Up: Dash Dot Dash Dash Dot

Non Directional Beacons (NDBs) Heard

kHz	Ident	Name	Country
213	HN	Hua Hin	Thailand
240	BA	Blora	Indonesia
255	SO	Solo	Indonesia
300	OY	Bandung	Indonesia
318	BR	Brunei	Brunei
325	AG	Sembawang	Singapore
329	MK	Matak	Indonesia
350	OC	Semarang	Indonesia
365	SN	Sakon Nakhon	Thailand
383	NT	Narathiwat	Thailand
384	TRT	Trat	Thailand
393	KN	Khon Kaen	Thailand
414	UP	Utaphao	Thailand

242 SP
265 PI
272 AN
356 BK
434 BB

SINJON SJ 265 kHz

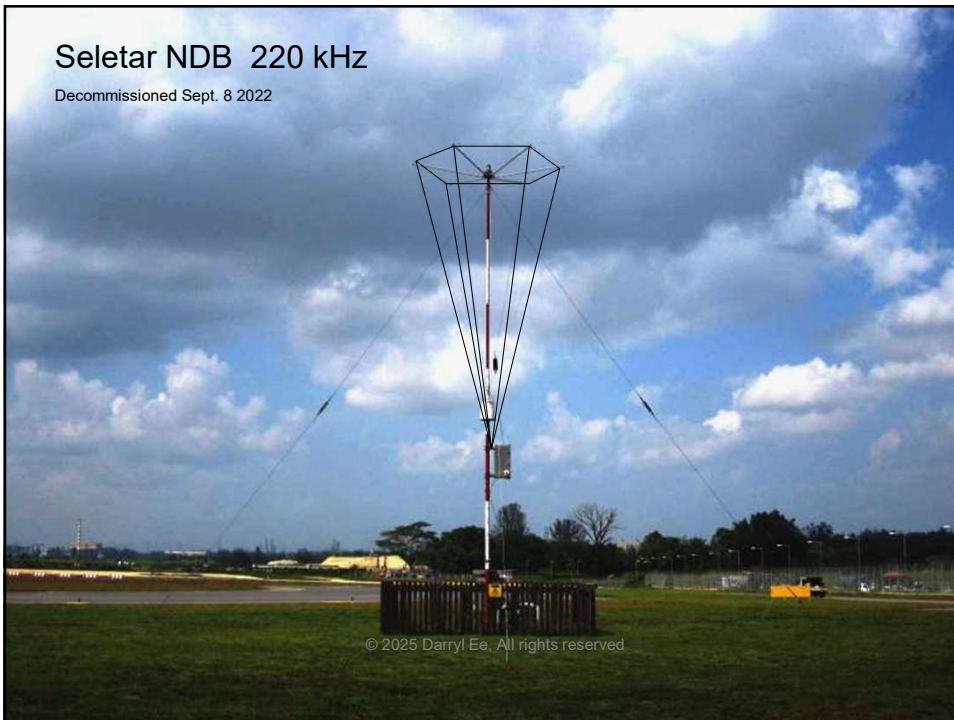
Decommissioned <2000



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Seletar NDB 220 kHz

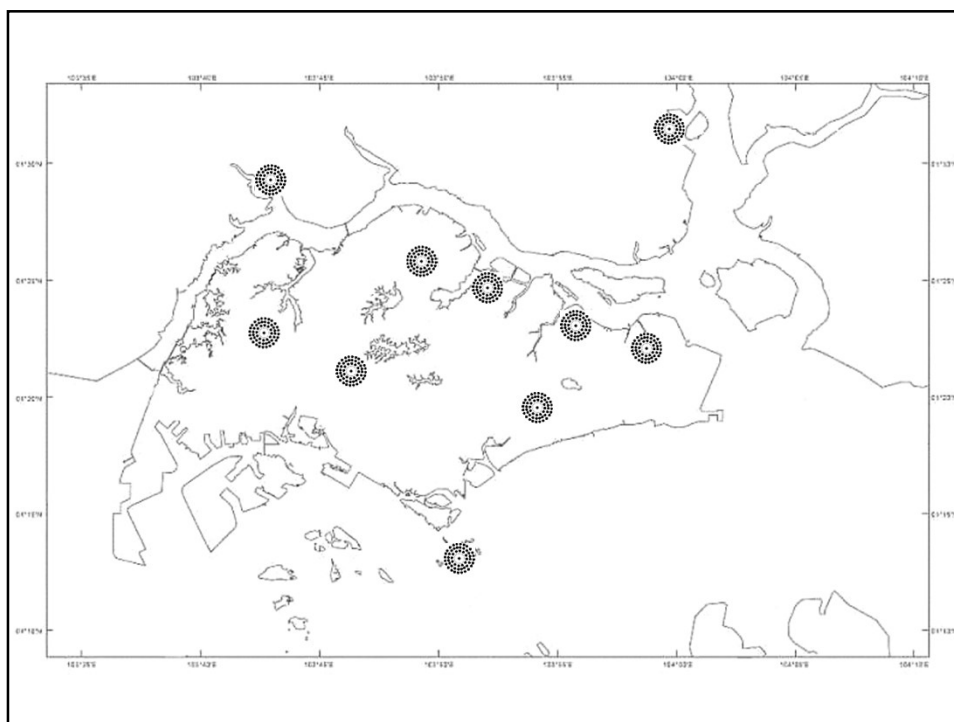
Decommissioned Sept. 8 2022



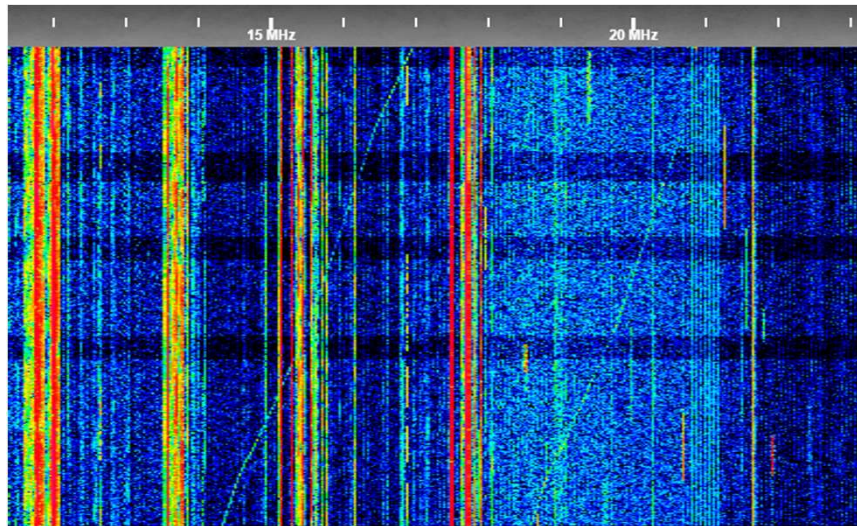
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NDBs in & around Singapore (1980)

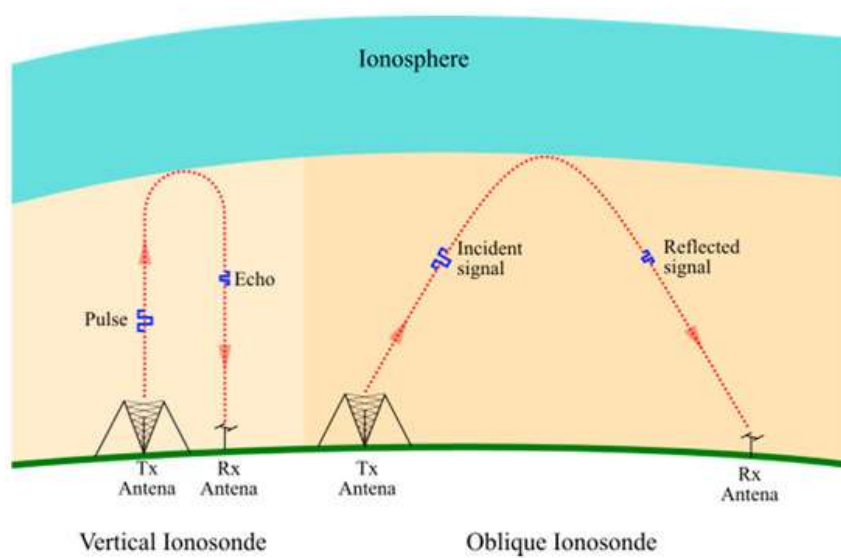
Freq	Ident	Name
215	TN	Tengah
220	SEL	Seletar
232	BED	Bedok
265	SJ	Sinjon
286	KK	Kong Kong *
288	BT	Bukit Timah
301.5	PB	Horsburgh
325	SS	Paya Lebar South Locator
338	NN	Paya Lebar North Locator
342	CH	Changi
385	TI	Tanjung Pinang **
400	JB	Jaybee *
?	AG	Sembawang



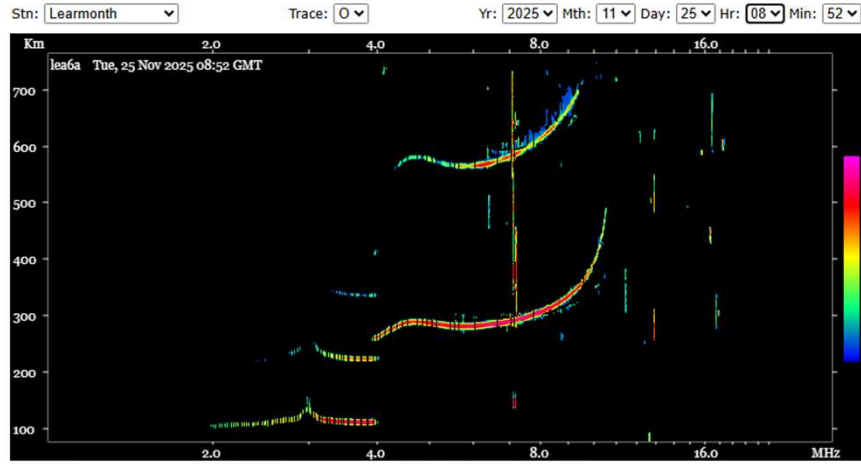
IONOSODES



IONOSODES



ASWFC Ionogram Viewer



Numbers Stations

[HOME](#)
[BLOG](#)
[NUMBER STATIONS](#)
[MILITARY STATIONS](#)
[DIPLOMATIC STATIONS](#)
[ABOUT](#)

ПРИЕМ-ПРИОМ: RU "RECEPTION - CONVERSION OF TRANSMITTED RADIO WAVES OR ELECTRIC SIGNALS INTO PERCEPTIBLE FORMS, SUCH AS SOUND OR LIGHT, BY MEANS OF ANTENNAS AND ELECTRONIC EQUIPMENT."

NUMBER STATION SCHEDULE

UTC TIME
21:25:22

NEXT STATION IN 5 MINUTES
F07 6992kHz USB

TIME	STN	FREQ.	MODE	REMARKS
Tuesday, 25 November				
00:00	V13	15388kHz	USB/AM	[Target: East Asia]
00:00	V13	15890kHz	USB/AM	[Target: East Asia]
00:00	V13	18040kHz	USB/AM	[Target: East Asia]
00:30	F06	10523kHz	RTTY	
00:40	F06	8131kHz	RTTY	
00:50	F06	7765kHz	RTTY	
01:00	F06	17533kHz	RTTY	[Target: Pacific]
01:00	V13	18040kHz	USB/AM	[Target: East Asia]
01:00	V13	19052kHz	USB/AM	[Target: East Asia]
01:00	V13	20025kHz	USB/AM	[Target: East Asia]
01:10	F06	16351kHz	RTTY	[Target: Pacific]
01:20	F06	14428kHz	RTTY	[Target: Pacific]
01:40	V13	8126kHz	USB/AM	[Target: East Asia]
Time zone: UTC				

Help

PRIYOM IRC CHANNEL / DISCORD SERVER

Meet the Priyom team in our IRC chatroom! If you have your own client, connect to the Libera network and join the #priyom channel. If you are on Discord, you can find us there as well. Both chat rooms are bridged together and have the same.

Follow @priyom_org

DISCORD SERVER

WORLDWIDE RECEIVER MAP

N&O NEWSLETTER

ENIGMA 2000 NEWSLETTER

WAIT-WHAT IS THIS?

Priyom is an international organization intending to research and bring to light the mysterious reality of intelligence, military and diplomatic communication via shortwave radio: number stations.

JOIN THE SHOW!

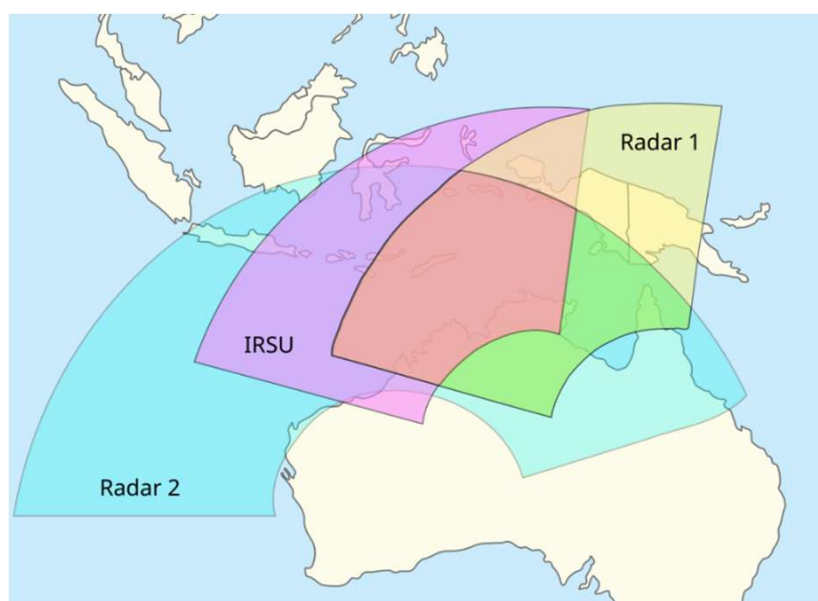
Can I join the Priyom team?

We love new members! There are more stations than we are able to cover, and we always need more ears, covering the gaps. If you're interested, have a listen online, join in on our IRC channel, and get to know the team. Don't be afraid to ask questions - we're more than happy to explain. If you decide to get into shortwave as a hobby, and would like to contribute to Priyom, join in and send us recordings and transcriptions, and we will be welcoming you as a new member.

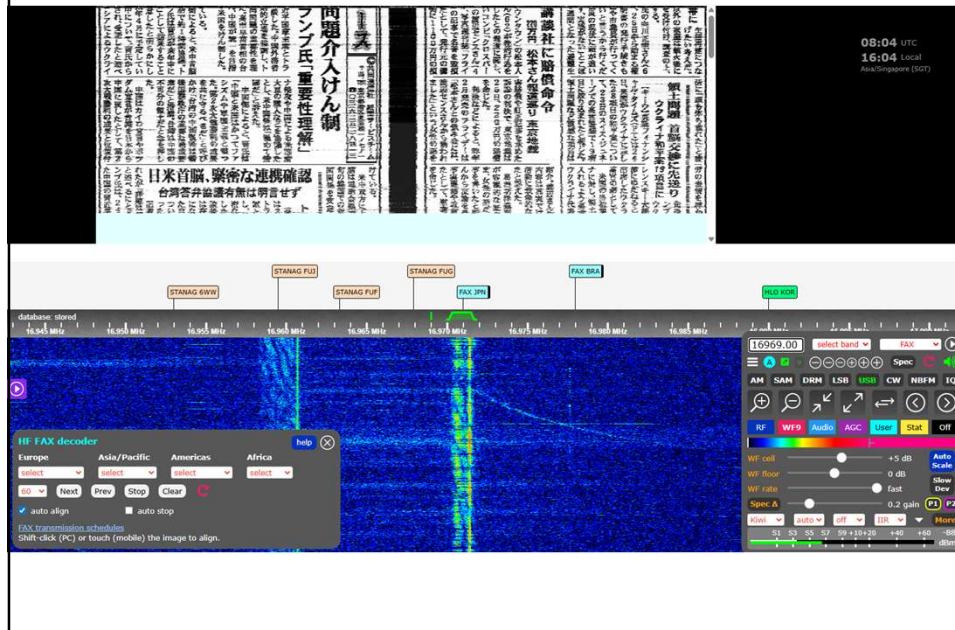
Over The Horizon Radar OTHR



Jindalee Operational Radar Network JORN



Fax 16969 kHz



Shortwave Radio Time Signal Stations

2.5 MHz

5.0 MHz

10.0 MHz

15.0 MHz

20.0 MHz

25 MHz

60 kHz for Radio Controlled Clocks



Shortwave Radio Time Signal Stations

Time signals in use ^[edit]

The following are the known HF time signal stations currently operational.

Call Sign	Location	Frequencies	Time Signal Provided	Time Signal Format	Notes
ITU-R Standard Frequency and Time Signal services					
BPM	Pucheng, China	2.5, 5, 10, & 15 MHz			ITU-R TF:768-5 ^[4]
BSF	Chung-Li, Taiwan, Rep. of China	5 and 15 MHz			
EBC	Cádiz	4.998 MHz			
HLA	Taejeon, Republic of Korea	5 MHz			ITU-R TF:768-5 ^[4]
IAM	Rome, Italy	5 MHz			ITU-R TF:768-5 ^[4]
LOL	Buenos Aires, Argentina	5, 10, & 15 MHz			ITU-R TF:768-5 ^[4]
MIKES	Espoo , Finland	25 MHz			
OMA	Prague, Czech Republic	2.5 MHz			Discontinued in 1995
PPE	Rio de Janeiro , Brazil	10 MHz			
RWM	Moscow, Russia	4.996, 9.996, 14.996 MHz			ITU-R TF:768-5 ^[4]
WWV	Fort Collins, Colorado, United States	2.5, 5, 10, 15, & 20 MHz			ITU-R TF:768-5 ^[4]
WWVH	Kekaha, Kauai, Hawaii, United States	2.5, 5, 10, & 15 MHz			ITU-R TF:768-5 ^[4]
YVTO	Caracas, Venezuela	5 MHz			
Time signal stations on non-standard frequencies					
CHU	Ottawa , Ontario, Canada	3.33, 7.85, 14.67 MHz			

Thank You