

UDXF Digital Aero document

This document lists frequencies of digital aeronautical systems that can be heard on HF, VHF, UHF and satellite. Systems included are HDFL, ACARS VDL2, ADSB, SatCom ACARS and BGAN.

Further SELCAL (Annex-10) information and a list of abbreviations.

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Please report errors and additions to



Picture: SatCom ACARS decoding with JAERO



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HFDL frequencies - Table Version 51

Ground Station ID 1: San Francisco - California

Longitude 121 45 33 W Latitude 38 23 4 N

Frequencies: 5508 6559 8927 10081 11327 13276 17919 21934

Ground Station ID 2: Molokai - Hawaii

Longitude 157 11 11 W Latitude 21 11 3 N

Frequencies: 5514 6565 8912 8936 10027 11312 11348 13276 13312 13324 17919 21937

Ground Station ID 3: Reykjavik - Iceland

Longitude 22 27 19 W Latitude 63 50 49 N

Frequencies: 3900 5720 6712 8977 11184 15025 17985

Ground Station ID 4: Riverhead - New York

Longitude 72 38 14 W Latitude 40 52 54 N

Frequencies: 5652 6661 8912 11387 13276 17919 21931

Ground Station ID 5: Auckland - Nz

Longitude 174 48 34 E Latitude 37 0 55 S

Frequencies: 5583 6535 8921 10084 13351 17916

Ground Station ID 6: Hat Yai - Thailand

Longitude 100 23 18 E Latitude 6 56 15 N

Frequencies: 5655 6535 8825 10066 13270 17928 21949

Ground Station ID 7: Shannon - Ireland

Longitude 8 55 35 W Latitude 52 44 38 N

Frequencies: 2998 3455 5547 6532 8843 8942 10081 11384

Ground Station ID 8: Johannesburg - South Africa

Longitude 28 12 21 E Latitude 26 7 45 S

Frequencies: 3016 4681 5529 8834 11321 13321 17922 21949

Ground Station ID 9: Barrow - Alaska

Longitude 156 34 37 W Latitude 71 15 30 N

Frequencies: 2944 2992 3007 3497 4654 4687 5529 5538 5544 6646 8927 8936 10027 10093
11354 17919 17934 21928 21937

Ground Station ID 10: Muan - South Korea

Longitude 126 14 19 E Latitude 35 1 56 N

Frequencies: 2941 5502 6619 8939 10060 13342 17958 21931

Ground Station ID 11: Albrook - Panama

Longitude 79 22 25 W Latitude 9 5 4 N

Frequencies: 5589 6589 8894 10063 13264 17901

Ground Station ID 13: Santa Cruz - Bolivia

Longitude 63 9 24 W Latitude 17 40 15 S

Frequencies: 4660 6628 8957 11318 13315 17916 21997

Ground Station ID 14: Krasnoyarsk - Russia

Longitude 92 35 0 E Latitude 56 9 9 N

Frequencies: 5622 6596 8886 10087 13321 17912 21990

Ground Station ID 15: Al Muharraq - Bahrain

Longitude 50 38 23 E Latitude 26 16 25 N

Frequencies: 5544 8885 10075 13354 17967 21982

Ground Station ID 16: Agana - Guam

Longitude 144 49 41 E Latitude 13 29 19 N

Frequencies: 5451 6652 8927 11306 13312 17919 21928

Ground Station ID 17: Canarias - Spain

Longitude 15 24 18 W Latitude 27 57 39 N

Frequencies: 6529 8948 11348 13303 17928 21955

Freq. MHz	Mode	Area	Freq. MHz	Mode	Info
129.125	ACARS	USA & Canada	1030.000	ADSB	Interrogation frequency
130.025	ACARS	USA & Canada	1090.000	ADSB	Reply frequency
130.425	ACARS	USA			
130.450	ACARS	USA & Canada	1545.000 -1547.000	SatCom ACARS	600 bps and 1200 bps
131.125	ACARS	USA	1546.000	SatCom ACARS	10500 bps
131.450	ACARS	Primary channel Japan	3600.000 – 3629.000	SatCom ACARS	C-Band downlinks
131.475	ACARS	Air Canada company channel			
131.525	ACARS	Secondary Europe	1525.000 – 1559.000	BGAN	Receiving frequencies
131.550	ACARS	Primary Channel worldwide	1575.420	BGAN	GPS on BGAN terminals
131.725	ACARS	Primary channel in Europe			
131.825	ACARS	Additional channel Europe			
131.850	ACARS	Additional channel Europe			
136.700	ACARS	Additional channel USA			
136.725	VDL2	ARINC Europe			
136.750	ACARS	Additional channel USA & Europe			
136.775	VDL2	SITA Europe			
136.800	ACARS	Additional channel USA			
136.850	ACARS	SITA North American Frequency			
136.875	VDL2	SITA Europe			
136.900	ACARS	SITA Secondary channel Europe			
136.925	ACARS	ARINC channel Europe			
136.975	VDL2	Worldwide SITA and ARINC			

Selcal decoding

A description taken from the ICAO: AERONAUTICAL TELECOMMUNICATIONS, Annex 10 to the Convention on International Civil Aviation, Volume I, 4th edition of 1985 (amended 1987)

4.8 SELCAL system

4.8.1 Recommendation.- Where a SELCAL system is installed, the following system characteristics should be applied

- a) Transmitted code. Each transmitted code should be made up of two consecutive tone pulses, with each pulse containing two simultaneously transmitted tones. The pulses should be of 1.0 plus or minus 0.25 seconds duration, separated by an interval of 0.2 plus or minus 0.1 seconds.
- b) Stability. The frequency of transmitted tones should be held to plus or minus 0.15 per cent tolerance to ensure proper operation of the airborne decoder.
- c) Distortion. The over-all audio distortion present on the transmitted RF signal should not exceed 15 per cent.
- d) Per cent modulation. The RF signal transmitted by the ground radio station should contain, within 3 dB equal amounts of the two modulating tones. The combination of tones should result in a modulation envelope having a nominal modulation percentage as high as possible and in no case less than 60 per cent.
- e) Transmitted tones. Tone codes should be made up of various combinations of the tones listed in the following table and designated by colour and letter as indicated:

Designation Frequency (Hz)

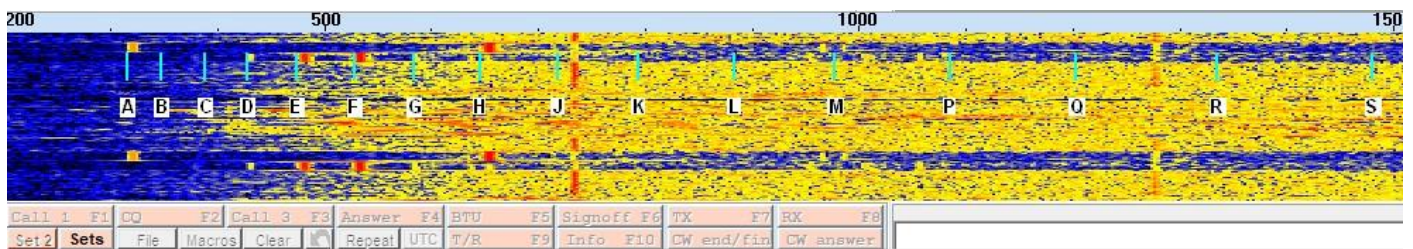
Red A	312.6	Red J	716.1
Red B	346.7	Red K	794.3
Red C	384.6	Red L	881.0
Red D	426.6	Red M	977.2
Red E	473.2	Red P	1083.9
Red F	524.8	Red Q	1202.3
Red G	582.1	Red R	1333.5
Red H	645.7	Red S	1479.1

N1. It should be noted that the tones are spaced by Log-1 0.045 to avoid the possibility of harmonic combinations.

N2. In accordance with the application principles developed by the Sixth Session of the Communications Division, the only codes at present used internationally are selected from the red group.

N3. Guidance material on the use of SELCAL systems is contained in the Attachment to Part II.

N4. The tones Red P, Red Q, Red R, and Red S are applicable after 1 September 1985, in accordance with 3.2.



Selcal: EFAH
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Picture: SELCAL decoding with Multipsk

Abbreviations

A/G	Air/Ground
ACARS	Aircraft Communications and Reporting System (VDL Mode 1)
ADS-B	Automatic Dependent Surveillance Broadcast
AFTN	Aeronautical Fixed Telecommunications Network
AOC	Aeronautical Operational Control
ARINC	Aeronautical Radio, Incorporated
ARTCC	Air Route Traffic Control Center
ASRI	Aviation Spectrum Resources, Inc.
ATC	Air Traffic Control
AVS	Aviation Voice Services
CAR	Caribbean
CEP	Central East Pacific
CFR	Code of Federal Regulations
CPDLC	Controller Pilot Data Link Communication
CWP	Central West Pacific
DTMF	Dual Tone Multi-Frequency
FAA	Federal Aviation Administration
FIR	Flight Information Region
GES	Ground Earth Station
GoM	Gulf of Mexico
HF	High Frequency
HFDL	High Frequency Data Link
ICAO	International Civil Aviation Organization
INMARSAT	International Maritime Satellite Telecommunications Company
LDOCF	Long Distance Operational Control Facility
Mode-S	Mode-Select
MWARA	Major World Air Route Area
NAT	North Atlantic
NP	North Pacific
RO	Radio Operator
SATCOM	Satellite Communications
SATVOICE	Satellite Voice
SELCAL	Selective Calling System
SITA	Société Internationale de Télécommunications Aéronautiques
SMI	Standard Message Identifier
SMT	Standard Message Text
SP	South Pacific
SSB	Single Sideband
TEI	Text Element Identifier
VDL	VHF Digital Link
VDL2	VDL Mode 2
VHF	Very High Frequency