

VOICE FM LEO SATELLITE													GENERAL DATA										DISTANCE RECORDS					STATUS	TRAFFIC	DIFFICULTY LEVEL TO	EARTH'S MEAN RADIUS (km)		6371.00	
SATELLITE	LOTW ID	UPLINK	CTCSS	DWNLINK	MODE	BEACON	TELEMETRY	RF POWER	POLARIZATION	CALLSIGN	PERIGEE (km)	APOGEE (km)	INCLIN.	PERIOD	LAUNCH RELEASE	COUNTRY	DIMENSIONS	MASS	DATE	DISTANCE (km)	HOLDER	(*) MAX. THEORETICAL DISTANCE (km)	ROOM FOR IMPROVEMENT (%)	LISTEN	GET IN	Doppler-SQF	SubTone-SQF				ADDITIONAL INFORMATION	COMMENTS		
AO-27 (Ecat-1)	AO-27	145.850 MHz	-	436.795 MHz	FM V/U	-	-	500mW	Linear	-	792.8	803.5	98.9°	100.7 min	Sep 26, 1993	USA	15x14x15cm	11.8kg	Oct 6, 2022	6139	KE9A - M1DD0/P	6088.2	5.8%	Low	Medium	Easy	AO-27,436765,145850,FM,FM,NOR,0,0	-	<a href="https://twitter.com/M1DD0/P/status/1562671373272988146">https://twitter.com/M1DD0/P/status/1562671373272988146</a>	Partially operational - Currently active for about 240 secs. It activates on at 28°N and at 16°N (roughly figures) in descending passes (passes from north to south).				
ISS Crossband Repeater (International Space Station)	ARISS	145.900 MHz	67 Hz	437.800 MHz	FM V/U	-	-	20W	Circular	NA155 800HS	421.4	426.9	51.6°	92.9 min	Nov 20, 1998	International	109(L) x 75m(W)	410T0N	May 29, 2021	4403	G0AB1 - VE1PK	4539.7	3.0%	Very High	Piece of cake	Medium	ISS,437800,145990,FM,FM,NOR,0,0	67.0,S,F,1	<a href="https://www.amsat.org/current-status-of-iss-stations.html">https://www.amsat.org/current-status-of-iss-stations.html</a>	Currently the voice cross band repeater is on (radio to be powered OFF to support planned EVA's & docking/undocking) See ARIS Status for status information and planned schedule				
SO-90 (Sudstat-1C)	SO-50	145.850 MHz	67 Hz	436.795 MHz	FM V/U	-	-	250mW	Linear	-	590.9	704.3	64.6°	97.5 min	Dec 20, 2002	Saudi Arabia	23x24x32cm	10 kg	Oct 24, 2018	5523	F4DXY - N1AIA	5733.6	3.7%	High	Hard	Easy	SO-50,436765,145850,FM,FM,NOR,0,0	67.0,S,F,1	<a href="https://twitter.com/n1aia">https://twitter.com/n1aia</a>	Fully operational - It has a 10 minute timer that must be armed before use. Transmits a 2 second carrier with a CTCSS tone of 74.4 Hz to arm the timer.				
CAS-3H (Ullatstat-2)	CAS-3H	144.350 MHz	-	437.200 MHz	FM V/U	-	437.200 MHz	100mW	Linear	BI1SI	510.9	533.4	97.5°	94.9 min	Sep 19, 2015	China	20x20x20cm	11 kg	Jul 26, 2021	5008	F4DXY - VE1CW	5041.4	0.7%	Very Low	Medium	Medium	ULIASCAT-2,437200,144350,FM,FM,NOR,0,0	-	<a href="https://www.kb6uq.info/amsat/ulicatstat2/">https://www.kb6uq.info/amsat/ulicatstat2/</a>	Transponder activations sporadic. FM transponder is sometimes active in early mornings over Europe. There is a telemetry beacon every 30 sec when the FM transponder is off				
IO-86 (Iapaz-2)	IO-86	145.880 MHz	88.5 Hz	435.880 MHz	FM V/U	-	437.425 MHz	5000mW	Linear	Y8SAT Y8OX 1	637.7	654.5	6.0°	97.5 min	Sep 28, 2015	Indonesia	47x50x36cm	68 kg	Oct 5, 2019	5324	9G5AR - PU4DE	5543.7	4.0%	7	Easy	Easy	IO-86,438888,145880,FM,FM,NOR,0,0	88.5,S,F,1	<a href="https://twitter.com/9G5AR/status/1526781931469846343">https://twitter.com/9G5AR/status/1526781931469846343</a>	In equatorial orbit, activations by schedule. It flies over territory of Indonesia as much as 14 times each day. The low inclination orbit means it will not be receivable on latitudes over 22 degrees South or North.				
CAS-2T	?	145.925 MHz	-	435.635 MHz	FM V/U	-	435.710 MHz	?	Linear	-	510	1034	98.7°	100.1 min	Nov 9, 2016	China	10x10x10cm	2kg	-	-	-	-	-	-	-	-	-	-	-	<a href="https://amsat.org/2016/06/24/cas-2t/">https://amsat.org/2016/06/24/cas-2t/</a>	The CAS-2T FM transponder does not appear to be fully functioning. (See: https://www.amsat.org/2016/06/24/cas-2t-0624-25/)			
AO-91 (RadStat / Fox 1B)	AO-91	435.250 MHz	67 Hz	145.960 MHz	FM V/U	-	-	?	Linear	-	457.3	797.4	97.7°	97.1 min	Nov 18, 2017	USA	10x10x10cm	1.3 kg	Feb 10, 2022	6215	G0AB1 - KE9A	6067.2	2.4%	High	Easy	Easy	AO-91,445960,435250,FM,FM,NOR,0,0	67.0,S,F,1	<a href="https://twitter.com/08m/status/137840949676334">https://twitter.com/08m/status/137840949676334</a>	Partially operational (transponder intermittent) - Due to battery status, please do not attempt to access in eclipse				
AO-92 (Fox 1D) Mode U/V	AO-92	435.350 MHz	67 Hz	145.880 MHz	FM V/U	-	-	?	Linear	-	466.3	477.9	97.4°	93.9 min	Jan 12, 2018	USA	10x10x10cm	1.3kg	Aug 10, 2020	5011	F4DXY - VE1VK	4788.2	-	-	-	-	-	-	-	-	-	<a href="https://www.n2yo.com/satellite/?s=ao92">https://www.n2yo.com/satellite/?s=ao92</a>	AO-92's transmitter is currently off due to low battery voltage.	
AO-92 (Fox 1D) Mode L/V	AO-92	1267.500 MHz	-	145.880 MHz	FM V/U	-	-	?	?	-	466.3	477.9	-	-	-	-	-	Jun 3, 2020	4202	OAA/KQ3JA-XE1EM	4788.2	-	-	-	-	-	-	-	-	-	-	<a href="https://www.amsat.org/2020/06/03/ao92-fox-1d-mode-l-v/">https://www.amsat.org/2020/06/03/ao92-fox-1d-mode-l-v/</a>	AO-92's transmitter is currently off due to low battery voltage.	
PO-101 (Dwa-2)	PO-101	437.500 MHz	141.3 Hz	145.900 MHz	FM V/U	-	-	?	Linear	D1WZPH	589.5	604.8	98°	96.5 min	Oct 29, 2018	Philippines	50x50x50cm	56 kg	Oct 10, 2021	5256	A8SGC - F4DXY	5345.0	2.7%	Mid	Easy	Hard	PO-101,445900,437500,FM,FM,NOR,0,0	141.3,S,F,1	<a href="https://twitter.com/Dwa2/status/1506920402020202020">https://twitter.com/Dwa2/status/1506920402020202020</a>	Operational - FM transponder activated by schedule.				
UVSQ-SAT	UVSQ	145.905 MHz	-	437.020 MHz	FM V/U	-	437.020 MHz	?	Linear	FK3ZCJ	510.5	526.8	97.4°	94.9 min	Jan 24, 2021	France	10x10x10cm	1 kg	Oct 28, 2021	4896	F4DXY-VE1CW	5012.1	2.3%	High	Medium	Medium	UVSQ-SAT,437020,145905,FM,FM,NOR,0,0	-	<a href="https://www.amsat.org/2021/10/28/uvsq-sat/">https://www.amsat.org/2021/10/28/uvsq-sat/</a>	FM transponder activated by schedule. It was successfully activated on Sep 3 (the squelch threshold looks to be set a bit high and, now and then, it suffers from cuts).				
CSS (TAHAR) Crossband Repeater (Chinese Space Station)	?	145.875 MHz	-	436.510 MHz	FM V/U	-	-	?	?	-	392.9	398.6	41.5°	92.3 min	Apr 29, 2021	China	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<a href="https://amsat.org/2021/07/17/tahar-radio-payload-for-the-chinese-space-station/">https://amsat.org/2021/07/17/tahar-radio-payload-for-the-chinese-space-station/</a>	CSSAR is the Amateur Radio Payload for the Chinese Space Station. The payload will provide resources for radio amateurs around the world to establish contact with the astronauts on board or communicate with each other. The launch was on June 5, 2022 (date activated not)	
SO-114 (EASAT-2)	SO-114	145.875 MHz	-	436.666 MHz (436.680 MHz)	FM V/U	-	436.666 MHz	100mW	Linear	AMSAT	508	522.3	97.5°	94.8 min	Jan 13, 2022	Spain	7.5x6x6cm	0.5 kg	-	-	-	-	-	-	-	-	-	-	-	-	-	<a href="https://twitter.com/amsat/status/1524921818181818181">https://twitter.com/amsat/status/1524921818181818181</a>	EASAT 2 appears to be working well except for the deployment of the antennas, something that apparently has not yet occurred and causes weak signals. It can be said that the satellite is working perfectly.	
SO-115 (HADES)	SO-115	145.925 MHz	-	436.888 MHz (436.888 MHz)	FM V/U	-	436.888 MHz	100mW	Linear	AMSAT	508	522.1	97.5°	94.7 min	Jan 13, 2022	Spain	7.5x6x6cm	0.5 kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<a href="https://www.amsat.org/2022/01/13/hades-2-launch-update/">https://www.amsat.org/2022/01/13/hades-2-launch-update/</a>	HADES is transmitting weak signals, weaker than the ones of EASAT 2, most likely because the on-board computer has not yet managed to deploy the antennas either, although it will continue trying regularly.
Tweel-3	?	145.970 MHz	-	436.400 MHz	FM V/U	-	437.400 MHz	?	Linear	T37TB	514.6	527.7	97.5°	94.9 min	Jan 13, 2022	Israel	10x10x10cm (LU)	1 kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<a href="https://twitter.com/08m/status/15093333667431">https://twitter.com/08m/status/15093333667431</a>	FM transponder activated by schedule. It was successfully activated on Dec 4.
CAS-5A (FO-118) (V/U FM transponder)	FO-118	145.925 MHz	-	435.600 MHz	FM V/U	-	435.570 MHz	200mW	Linear 1/4 whip	BI1SD	543.1	554.4	97.5°	95.6 min	Dec 9, 2022	China	36.6x22.6x10cm (6U)	7 kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<a href="https://www.amsat.org/2022/12/09/cas-5a-fo-118/">https://www.amsat.org/2022/12/09/cas-5a-fo-118/</a>	Fully operational (weird noises on the downlink + constant carrier signal).
URESAT-1	?	145.975 MHz	-	436.888 MHz	FM V/U	-	436.888 MHz	-	Linear	-	525	-	97°	95 min	-	Spain	7.5x6x5cm	0.5 kg	-	-	-	-	-	-	-	-	-	-	-	-	-	<a href="https://amsat.org/">https://amsat.org/</a>	Launch scheduled on June 2023 (Spain TX-6 - Cape Canaveral, FL)	

SSB/CW LINEAR ANALOG SAT													GENERAL DATA										DISTANCE RECORDS					STATUS	TRAFFIC	DIFFICULTY LEVEL TO	EARTH'S MEAN RADIUS (km)		6371.00
SATELLITE	LOTW ID	UPLINK BW	TYPE	DWNLINK BW	BAND WIDTH	BEACON	TELEMETRY	RF POWER	POLARIZATION	CALLSIGN	PERIGEE (km)	APOGEE (km)	INCLIN.	PERIOD	LAUNCH RELEASE	COUNTRY	DIMENSIONS	MASS	DATE	DISTANCE (km)	HOLDER	(*) MAX. THEORETICAL DISTANCE (km)	ROOM FOR IMPROVEMENT (%)	RECEIVE	GET IN	Doppler-SQF	SubTone-SQF				ADDITIONAL INFORMATION	COMMENTS	
AO-07 Mode A (AMSAT OSCAR 7)	AO-7	145.950 MHz	Normal	29.400 MHz	100 MHz V/A	29.502 MHz CW 20 WPM	425.100 MHz 800Hz FSX	200mW	Linear (P/F dipole)	-	1446.6	1466.1	101.9°	114.9 min	Nov 15, 1974	Australia, Canada, Germany and United States	36.0 x 42.4cm octahedral shaped	28.6 kg	Mar 23, 2022	7454	F4DXY VE1WQ	7920.9	5.3%	Very Low	Hard	Hard	AO-07,29450,14590,USB,USB,NOR,0,0,Mode A	-	<a href="https://www.amsat.org/2022/03/23/ao-07-mode-a/">https://www.amsat.org/2022/03/23/ao-07-mode-a/</a>	Currently AO-7 randomly switches to mode A. The full illuminated period is expected to last till May 8, 2023.			
AO-07 Mode B (AMSAT OSCAR 7)	AO-7	432.125 MHz	Reverse	145.975 MHz	100 MHz V/U	145.975 MHz CW 20 WPM	425.100 MHz 800Hz FSX	200mW 2.5W Mod	Circular (DHF/JHF dipole)	-	1446.6	1466.1	101.9°	114.9 min	Nov 15, 1974	Australia, Canada, Germany and United States	36.0 x 42.4cm octahedral shaped	28.6 kg	Aug 10, 2020	8204	F4DXY KE9AJ	7920.9	3.6%	Mid	Hard	Medium	AO-07,445950,432125,USB,USB,REV,0,0,Mode B	-	<a href="https://www.amsat.org/2020/08/10/ao-07-mode-b/">https://www.amsat.org/2020/08/10/ao-07-mode-b/</a>	AO-7 suffers from weird behavior (unstable). Mostly off time is on Mode B but also periods on A or even off.			
FO-29 (AS-2)	FO-29	145.900 MHz	Reverse	435.900 MHz	100 MHz V/U	435.795 MHz	-	100mW	Circular	BI1CS	807.4	1328.5	98.5°	106.4 min	Aug 17, 1996	Japan	44x47cm sphere like polyhedron	50 kg	Nov 23, 2022	7642	EB1AO KE9AJ	7597.2	4.6%	Mid	Hard	Medium	FO-29,435800,145900,USB,USB,REV,0,0,Transponder	-	<a href="https://mobile.twitter.com/EB1AO/status/1546849182646464">https://mobile.twitter.com/EB1AO/status/1546849182646464</a>	Currently fully operational 24/7 (full illuminated period till April 15, 2023). It works like a charm.			
AO-78 (FURIO-1)	AO-78	145.130 MHz	Reverse	145.970 MHz	20 MHz V/U	145.970 MHz	-	300mW	Linear	-	583.8	663.6	97.8°	97.0 min	Nov 21, 2013	UK	10x10x10cm	0.98 kg	Aug 20, 2021	5313	F4DXY A6SGC	5571.3	-	-	-	-	-	-	-	-	<a href="https://twitter.com/FURIO1/">https://twitter.com/FURIO1/</a>	Currently only the telemetry is on. Transponder doesn't work.	
XW-3A (CAS-3A)	XW-3A	435.030 MHz	Reverse	145.685 MHz	20 MHz V/U	145.680 MHz	-	100mW	Linear	BI1SB	426.8	441.9	97.2°	92.1 min	Sep 19, 2015	China	40x40x40cm	20 kg	Aug 22, 2022	4751	EA9FV VE1CW	4621.9	4.8%	Mid	Easy	Easy	XW-3A,145675,435040,USB,USB,REV,0,0,A	-	<a href="https://www.amsat.org/2022/08/22/xw-3a/">https://www.amsat.org/2022/08/22/xw-3a/</a>	Fully operational.			
XW-2B (CAS-3B)	XW-2B	435.090 MHz	Reverse	145.750 MHz	20 MHz V/U	145.750 MHz	-	100mW	Linear	BI1SC	427.2	536.5	97.5°	94.4 min	Sep 19, 2015	China	25x24x25cm	9 kg	Jul 26, 2021	5008	F4DXY VE1CW	4966.0	4.3%	Low	Easy	Easy	XW-2B,145740,435100,USB,USB,REV,0,0,B	-	<a href="https://www.amsat.org/2021/07/26/xw-2b/">https://www.amsat.org/2021/07/26/xw-2b/</a>	Transponder currently intermittent. Sometimes active periods are not long enough to hold QSOs (2 wds)			
XW-2C (CAS-3C)	XW-2C	435.150 MHz	Reverse	145.815 MHz	20 MHz V/U	145.790 MHz	-	100mW	Linear	BI1SD	499	519.7	97.5°	94.7 min	Sep 19, 2015	China	25x24x25cm	9 kg	Jul 26, 2021	5008	F4DXY VE1CW	4980.4	4.6%	Low	Easy	Easy	XW-2C,145805,435160,USB,USB,REV,0,0,C	-	<a href="https://www.amsat.org/2021/07/26/xw-2c/">https://www.amsat.org/2021/07/26/xw-2c/</a>	Operational according to the very last reports. It has come back to life! Let's closely monitor it in the coming days.			
XW-2D (CAS-3C)	XW-2D	435.210 MHz	Reverse	145.880 MHz	20 MHz V/U	145.880 MHz	-	100mW	Linear	BI1SE	496.7	516.2	97.5°	94.6 min	Sep 19, 2015	China	25x24x25cm	9 kg	Jul 26, 2021	5008	F4DXY VE1CW	4964.7	-	-	-	-	-	-	-	-	<a href="https://www.amsat.org/2021/07/26/xw-2d/">https://www.amsat.org/2021/07/26/xw-2d/</a>	Transponder currently intermittent. Active periods are not long enough to hold QSOs.	
XW-2E (CAS-3E)	XW-2E	435.270 MHz	Reverse	145.935 MHz	20 MHz V/U	145.935 MHz	-	100mW	Linear	BI1SF	481.8	499.7	97.5°	94.3 min	Sep 19, 2015	China	25x24x25cm	9 kg	Sept 27, 2015	4717	K4FEG PV8K	4889.6	-	-	-	-	-	-	-	-	-	<a href="https://www.amsat.org/2015/09/27/xw-2e/">https://www.amsat.org/2015/09/27/xw-2e/</a>	Non-operational.
XW-2F (CAS-3F)	XW-2F	435.330 MHz	Reverse	146.000 MHz	20 MHz V/U	145.980 MHz	-	100mW	Linear	BI1SG	482.9	501.9	97.5°	94.3 min	Sep 19, 2015	China	11x14x13cm	1.5 kg	May 15, 2022	5005	F4DXY VE1VK	4899.7	2.1%	Low	Easy	Easy	XW-2F,145990,435340,USB,USB,						