	Figures of Merit														
Radio IC	**Well-Supported API**	**MTU Size**	**Support VHF and UHF Bands**	**Path for Beacon**	**Available Now**	Test Boards Available	Heritage	Separate Tx Out Pin	**Switch Control**	Sensitivity			Green cells	Yellow cells	Red cells
Requirement/Criteria ->		255/256 preferred	145.8 to 146 MHz, 432.125 to 433 MHz, and 435 to 438 MHz coverage	Some means to approximate CW	Yes	Yes		Not sure why this is a requirement, just need the control line and 2 switches - tkc	Yes	(looking −100dBm @ 10^{-3} BER, 9600 baud)					
RFM22	Supported by Radiohead	64 bytes / Direct Mode	240-930 MHz	CW Support in Direct Mode	No	No	$50Sat (?) and T-LogoQube (?)	Yes on base IC	Yes on base IC	See graph on page 26 of datasheet			4	2	3
SX1231	Supported by https://github.com/jgromes/RadioLib and https://github.com/StuartsProjects/SX12XX-LoRa	66 bytes, option for unlimited packet length (possible “direct mode”)	VHF to 290 MHz	Supports OOK; modulation of packet length to create CW	SX1231HIMLTRT has 18,890 in stock at DigiKey	Yes, but they are out of stock on DigiKey. We do have RFM69s, but the chips on those are labeled “RF69” so I cannot confirm that they are SX1231 boards.	MinXSS (https://earth.esa.int/web/eoportal/satellite-missions/m/minxss)	No	Yes	−112.7143 dBm linearly interpolated,unspecified BER or PER, 9600 baud			3	4	2
Texas Insturments CC1101TRHBRG4Q1	True. https://github.com/pkarsy/CC1101_RF	64 bytes	310MHz ~ 348MHz, 420MHz ~ 450MHz, 779MHz ~ 928MHz	Supports OOK; modulation of packet length to create CW	As of 2021-12-29 21:06 UTC, there were 4,000 available on DigiKey.	2 generic boards in stock at SilverSat Limited	Likely no satellite heritage, but it is recommended by a master's thesis https://oaktrust.library.tamu.edu/bitstream/handle/1969.1/ETD-TAMU-2011-12-10387/GRAVES-THESIS.pdf	No	Yes [1]	Multiple receiver modes available; see page 8 of data sheet			3	3	3
Texas Insturments CC1101QRHBRG4Q1	True. https://github.com/pkarsy/CC1101_RF	64 bytes	310MHz ~ 348MHz, 420MHz ~ 450MHz, 779MHz ~ 928MHz	Supports OOK; modulation of packet length to create CW	As of 2021-12-29 20:28 UTC, there were 211 available on DigiKey. This product is discontinued, but parts are available	2 generic boards in stock at SilverSat Limited	Likely no satellite heritage, but it is recommended by a master's thesis https://oaktrust.library.tamu.edu/bitstream/handle/1969.1/ETD-TAMU-2011-12-10387/GRAVES-THESIS.pdf	No	“Positive” and “Negative” output from LNA	Multiple receiver modes available; see page 8 of data sheet			2	4	3
AX5043	Official API for AX852, portable to Arduino	256 bytes, more with options	27MHz ~ 1.05GHz	“Wire mode” available; MCW may be possible in FM mode	As of 2021-12-19 22:15 UTC, there were 5,920 available at DigiKey	In stock at SilverSat Limited	Oresat	Yes	Yes	−117 at h = 0.66 to −113 dBm at h = 8, 10 kbaud, FSK, 10^{-3} BER, no FEC, 433 or 868 MHz			6	2	1
AX5243	In-development https://github.com/jgromes/RadioLib	256 bytes, more with options	27MHz ~ 1.05GHz	“Wire mode” available; MCW may be possible in FM mode	As of 2021-12-19 22:15 UTC, there were 40,880 available at DigiKey	Yes, but it is not in stock at DigiKey	Seems to be similar to AX5043, used on Oresat	No	No	−117 at h = 0.66 to −113 dBm at h = 8, 10 kbaud, FSK, 10^{-3} BER, no FEC, 433 or 868 MHz			5	4	0
SX1276IMLTRT; SX1277IMLTRT; SX1278IMLTRT; SX1279IMLTRT	True. https://github.com/jgromes/RadioLib and https://github.com/StuartsProjects/SX12XX-LoRa	64 bytes	137MHz ~ 1.02GHz	Modulating packet length MCW	DigiKey has 5,983 of SX1279IMLTRT on 2021-12-30 01:27 UTC	No	None	Yes	Yes				6	2	2
AX8052F143	No	256 bytes, more with options	27MHz ~ 1.05GHz	Raw mode? Can modulate packet length	4,160 In Stock on DigiKey	Available at 868 MHz on DigiKey, sale of 70 cm band boards is unknown	None	Unclear; possibly through GPIO	Unclear; possibly through GPIO				3	3	3
AX5045-1-TW30	No	256 bytes, more with options	60MHz ~ 1.05GHz	Raw mode? Can modulate packet length	As of 2021-12-30 02:01 UTC, there were 2988 available on DigiKey.	Yes, but at 815 MHz with limited supply	None	Separate differential dual TX/RX pins	Separate differential dual TX/RX pins				5	1	3
SX1236IMLTRT	Supported by https://github.com/StuartsProjects/SX12XX-LoRa	64 bytes	137MHz ~ 1.02GHz	Modulating packet length MCW	As of 2021-12-30 15:17 UTC, there were 2,844 available on DigiKey.	No	None	Different TX and RX pins	Yes				6	1	2
ADF7020-1BCPZ-RLTR-ND	Not for Arduino. https://forum.arduino.cc/t/low-power-rf-transceiver-433mhz-13dbm/384396 There may be an official library for C on the Analog Devices product page.	Buffer exists for some modulation types, but size is not specified.	80MHz ~ 650MHz	Supports OOK; modulation of packet length to create CW; and possible default direct mode depending on modulation	As of 2021-12-30 15:40 UTC, there were 1,972 available on DigiKey.	Yes, but it is not in stock at DigiKey. All generic ADF7020	MCubed-2 / COVE https://directory.eoportal.org/web/eoportal/satellite-missions/content/-/article/mcubed-2-mission	Yes	No				4	3	2

ADF7021-NBCPZ	“Personal hotspot” program for Raspberry Pi: https://github.com/juribeparada/MMDVM_HS	Might exist, but is unspecified	80MHz ~ 650MHz, 842MHz ~ 916MHz	Sending 1 or hex FF repeatedly for different periods to produce dots and dashes	As of 2021-12-30 16:03 UTC, there were 954 at DigiKey	Yes and they are available on DigiKey	Galassia https://directory.eoportal.org/web/eoportal/satellite-missions/content/-/article/galass-1, STUDSAT 2A/2B? https://www.researchgate.net/publication, NUT/332030884_Power_Generation_for_Nano_Satellite_STUDSAT_2A2B_10th_European_Space_Power_Conference_2014_Amsterdam_The_Netherlands, NUTS? https://www.researchgate.net/publication/287490630_The_NUTS_Cubesat_Project_Spin-offs_and_Technology_Development, BY70-2? https://www.dk3wn.info/wp/satelliten/by70-2/	Yes	“Integrated”				6	1	2
SI1082-A-GM	No	64 bytes	142MHz ~ 1.05GHz	OOK in Direct Mode	As of 2021-12-30 16:40 UTC, there were 495 at DigiKey	Yes and they are available on DigiKey, but in limited supply	Likely none	Yes	Yes				5	2	2
EFR32FG12P433F1024GM68-C	Embedded “High Performance 32-bit 40 MHz ARM Cortex®-M4 with DSP instruction and floating-point unit for efficient signal processing”	Four buffers from 64 to 4096 bytes	110MHz ~ 191MHz, 1.95MHz ~ 358MHz, 390MHz ~ 574MHz, 779MHz ~ 956MHz, also has 2.4 GHz transceiver	Supports OOK; modulation of packet length to create CW	As of 2021-12-30 18:39 UTC, there were 250 normal temperature range parts at DigiKey. There are no extended range chips available.	Yes, but none operate in the frequency range we are designing for.	PRECURSOR?	Yes	Could be internally managed, but likely does not exist.	−112.6 dBm at 433 MHz, 9.6 kbps, 1% PER, GFSK			3	5	0
SI1063 and SI1083	Integrated 8051 processor	64 bytes	142MHz ~ 1.05GHz	OOK in Direct Mode	As of 2021-12-30 19:18 UTC, there were 240 at DigiKey	No	Likely none	Yes	Yes	−110 dBm at between 450 and 470 MHz, 9.6 kbps, 1% PER, 4GFSK, ±2.5 kHz, 0.5 BT			5	2	2
RFM98PW	Supported by RadioHead and RadioLib. Chip overview mentions “HopeDuino” SDK	256 bytes	Chip contained, when used alone, supports VHF	Supports OOK, may have direct mode	Not listed on DigiKey or Mouser, but RFM98W is listed on both sellers and in stock at DigiKey	Related boards are available on Adafruit All in-stock Adafruit orders have up to 2 day lead time due to high demand.	Nathan has used related RFM96 which shares a datasheet with the RFM98.	Yes	Yes	-111 to -148 dBm			5	4	0
RFM23BPW	Supported by RadioHead	64 bytes	No useful VHF functionality	CW Support in Direct Mode	Available at Amazon	No	Likely none	Yes on base IC	Yes on base IC	Best -121 dBm			5	1	3

[1] There's actually a way to program the registers to get a switch control on GDOx. There's also a companion chip for it the CC1190 (but wrong frequency band) that adds PA & LNA