

| Parts Per Transmitter:       |                 |                                                                                                                                                             |                                |                |             |                                  |               |                                                                                                                                                     |           |            |             |        |  |
|------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------|-------------|----------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|-------------|--------|--|
| Part Type:                   | Part Number:    | Link:                                                                                                                                                       | Number Needed:                 | Cost Per Item: | Total Cost: |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| RP2040                       | RP2040          | <a href="https://www.adafruit.com/product/2040">https://www.adafruit.com/product/2040</a>                                                                   | 6                              | \$4.00         | \$24.00     | (4/6 of these are spares) = \$16 |               |                                                                                                                                                     |           |            |             |        |  |
| RF Antenna                   | 994-1240-ND     | <a href="https://www.digikey.com/product-detail/en/qwb144-te-corp/994-1240-ND/295-144">QWB144 TE Corp</a>                                                   | 1                              | \$14.28        | \$14.28     |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Power Amplifier              | 2032-1012-ND    | <a href="https://www.digikey.com/product-detail/en/cmx902qt8-cm/2032-1012-ND/295-902">CMX902QT8 CM</a>                                                      | 1                              | \$1.94         | \$1.94      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Op-Amps                      | AD8017ARZ-REEL  | <a href="https://www.digikey.com/product-detail/en/ad8017arz-reel/AD8017ARZ-REEL/295-8017">AD8017ARZ-REEL</a>                                               | 1                              | \$6.99         | \$6.99      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Oscillator                   | CVCO33CL-0110-C | <a href="https://www.digikey.com/product-detail/en/cvco33cl-0110-c/295-33CL">https://www.digikey.com/product-detail/en/cvco33cl-0110-c/295-33CL</a>         | 2                              | \$23.10        | \$46.20     |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Mixer                        | SA612AD         | <a href="https://www.mouser.com/ProductDetail/SA612AD">https://www.mouser.com/ProductDetail/SA612AD</a>                                                     | 4                              | \$3.07         | \$12.28     |                                  |               |                                                                                                                                                     |           |            |             |        |  |
|                              |                 |                                                                                                                                                             | Total:                         |                | \$105.69    |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Adders:                      |                 |                                                                                                                                                             |                                |                |             |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Ceramic Cap 0.1uF            | CL05A104KA5NNN  | <a href="https://www.digikey.com/product-detail/en/cl05a104ka5nnn/295-104KA5NNN">https://www.digikey.com/product-detail/en/cl05a104ka5nnn/295-104KA5NNN</a> | 100                            | \$0.0045       | \$0.4500    | Bandpass Filter Attempt:         |               |                                                                                                                                                     |           |            |             |        |  |
| Ceramic Cap 10uF             | CL10A105KA8NNN  | <a href="https://www.digikey.com/product-detail/en/cl10a105ka8nnn/295-105KA8NNN">https://www.digikey.com/product-detail/en/cl10a105ka8nnn/295-105KA8NNN</a> | 100                            | \$0.014        | \$1.400     | Name:                            | Part #:       | Link:                                                                                                                                               | Quantity: | Unit Cost: | Total Cost: |        |  |
| SMD 500Ohm Resistor          | RC0603FR-07499F | <a href="https://www.digikey.com/product-detail/en/rc0603fr-07499f/295-07499F">https://www.digikey.com/product-detail/en/rc0603fr-07499f/295-07499F</a>     | 50                             | \$0.021        | \$1.050     | 50 ohm resistor                  | RC0402JR-0750 | <a href="https://www.digikey.com/product-detail/en/rc0402jr-0750/295-0750">https://www.digikey.com/product-detail/en/rc0402jr-0750/295-0750</a>     | 10        | \$0.100    | \$1.00      |        |  |
|                              |                 |                                                                                                                                                             | Total (Per Transmitter):       |                | \$2.9000    | 130pF capacitor                  | C0603C301J8H  | <a href="https://www.digikey.com/product-detail/en/c0603c301j8h/295-301J8H">https://www.digikey.com/product-detail/en/c0603c301j8h/295-301J8H</a>   | 10        | \$0.100    | \$1.00      |        |  |
|                              |                 |                                                                                                                                                             |                                |                |             | 9.1nH inductor                   | LQP03TN9N1H0  | <a href="https://www.digikey.com/product-detail/en/lqp03tn9n1h0/295-9N1H0">https://www.digikey.com/product-detail/en/lqp03tn9n1h0/295-9N1H0</a>     | 10        | \$0.100    | \$1.00      |        |  |
| Power Amp Passives (Harris): |                 |                                                                                                                                                             |                                |                |             | 39nH inductor                    | LQG15HS39NJ0  | <a href="https://www.digikey.com/product-detail/en/lqg15hs39nj0/295-39NJ0">https://www.digikey.com/product-detail/en/lqg15hs39nj0/295-39NJ0</a>     | 10        | \$0.100    | \$1.00      |        |  |
| SMD 200Ohm Resistor          | RC0603JR-07200F | <a href="https://www.digikey.com/product-detail/en/rc0603jr-07200f/295-07200F">https://www.digikey.com/product-detail/en/rc0603jr-07200f/295-07200F</a>     | 10                             | \$0.017        | \$0.17      | 62nH inductor                    | MLG1005S62NJ  | <a href="https://www.digikey.com/product-detail/en/mlg1005s62nj/295-62NJ">https://www.digikey.com/product-detail/en/mlg1005s62nj/295-62NJ</a>       | 10        | \$0.160    | \$1.60      |        |  |
| SMD 680Ohm Resistor          | WR06X6800FTL    | <a href="https://www.digikey.com/product-detail/en/wr06x6800ftl/295-6800FTL">https://www.digikey.com/product-detail/en/wr06x6800ftl/295-6800FTL</a>         | 10                             | \$0.010        | \$0.10      | 18pF capacitor                   | CC1206JRNPO9  | <a href="https://www.digikey.com/product-detail/en/cc1206jrnpo9/295-09">https://www.digikey.com/product-detail/en/cc1206jrnpo9/295-09</a>           | 10        | \$0.024    | \$0.24      |        |  |
| SMD 68kOhm Resistor          | RC0603JR-0768KL | <a href="https://www.digikey.com/product-detail/en/rc0603jr-0768kl/295-0768KL">https://www.digikey.com/product-detail/en/rc0603jr-0768kl/295-0768KL</a>     | 10                             | \$0.017        | \$0.17      | 30pF capacitor                   | C0805C300M5H  | <a href="https://www.digikey.com/product-detail/en/c0805c300m5h/295-5H">https://www.digikey.com/product-detail/en/c0805c300m5h/295-5H</a>           | 10        | \$0.100    | \$1.00      |        |  |
| SMD 100kOhm Resistor         | RC0603FR-07100F | <a href="https://www.digikey.com/product-detail/en/rc0603fr-07100f/295-07100F">https://www.digikey.com/product-detail/en/rc0603fr-07100f/295-07100F</a>     | 10                             | \$0.021        | \$0.21      | 220pF capacitor                  | CL10C221JB8N  | <a href="https://www.digikey.com/product-detail/en/cl10c221jb8n/295-221JB8N">https://www.digikey.com/product-detail/en/cl10c221jb8n/295-221JB8N</a> | 10        | \$0.032    | \$0.32      |        |  |
| SMD 51Ohm Resistor           | RC0603JR-0751RL | <a href="https://www.digikey.com/product-detail/en/rc0603jr-0751rl/295-0751RL">https://www.digikey.com/product-detail/en/rc0603jr-0751rl/295-0751RL</a>     | 10                             | \$0.017        | \$0.17      | 5.6nH inductor                   | LQP03TN5N6H0  | <a href="https://www.digikey.com/product-detail/en/lqp03tn5n6h0/295-5N6H0">https://www.digikey.com/product-detail/en/lqp03tn5n6h0/295-5N6H0</a>     | 10        | \$0.100    | \$1.00      |        |  |
| SMD 47kOhm Resistor          | WR06X473 JTL    | <a href="https://www.digikey.com/product-detail/en/wr06x473-jtl/295-473JTL">https://www.digikey.com/product-detail/en/wr06x473-jtl/295-473JTL</a>           | 10                             | \$0.010        | \$0.10      | 360nH inductor                   | MLG1005SR36J  | <a href="https://www.digikey.com/product-detail/en/mlg1005sr36j/295-36J">https://www.digikey.com/product-detail/en/mlg1005sr36j/295-36J</a>         | 10        | \$0.130    | \$1.30      |        |  |
| SMD 39kOhm Resistor          | RC0603JR-0739KL | <a href="https://www.digikey.com/product-detail/en/rc0603jr-0739kl/295-0739KL">https://www.digikey.com/product-detail/en/rc0603jr-0739kl/295-0739KL</a>     | 10                             | \$0.017        | \$0.17      |                                  |               |                                                                                                                                                     |           |            | Total:      | \$9.46 |  |
| SMD 4.7uF Capacitor          | CL21A475KAQNN   | <a href="https://www.digikey.com/product-detail/en/cl21a475kaqnn/295-475KAQNN">https://www.digikey.com/product-detail/en/cl21a475kaqnn/295-475KAQNN</a>     | 10                             | \$0.073        | \$0.73      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| SMD 470pF Capacitor          | CGA1A2X7R1H47   | <a href="https://www.digikey.com/product-detail/en/cga1a2x7r1h47/295-1H47">https://www.digikey.com/product-detail/en/cga1a2x7r1h47/295-1H47</a>             | 10                             | \$0.072        | \$0.72      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| SMD 1uF Capacitor            | CL10A105KA8NNN  | <a href="https://www.digikey.com/product-detail/en/cl10a105ka8nnn/295-105KA8NNN">https://www.digikey.com/product-detail/en/cl10a105ka8nnn/295-105KA8NNN</a> | 10                             | \$0.031        | \$0.31      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| SMD 100pF Capacitor          | CL05C101JB5NNN  | <a href="https://www.digikey.com/product-detail/en/cl05c101jb5nnn/295-101JB5NNN">https://www.digikey.com/product-detail/en/cl05c101jb5nnn/295-101JB5NNN</a> | 10                             | \$0.018        | \$0.18      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| SMD 1nF Capacitor            | CL10C102JB8NNN  | <a href="https://www.digikey.com/product-detail/en/cl10c102jb8nnn/295-102JB8NNN">https://www.digikey.com/product-detail/en/cl10c102jb8nnn/295-102JB8NNN</a> | 10                             | \$0.030        | \$0.30      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| SMD 10nF Capacitor           | CL05B103KB5NNN  | <a href="https://www.digikey.com/product-detail/en/cl05b103kb5nnn/295-103KB5NNN">https://www.digikey.com/product-detail/en/cl05b103kb5nnn/295-103KB5NNN</a> | 10                             | \$0.015        | \$0.15      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| SMD 12pF Capacitor           | CL05C120JB5NNN  | <a href="https://www.digikey.com/product-detail/en/cl05c120jb5nnn/295-120JB5NNN">https://www.digikey.com/product-detail/en/cl05c120jb5nnn/295-120JB5NNN</a> | 10                             | \$0.019        | \$0.19      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| SMD 56pF Capacitor           | CL10C560JB8NNN  | <a href="https://www.digikey.com/product-detail/en/cl10c560jb8nnn/295-560JB8NNN">https://www.digikey.com/product-detail/en/cl10c560jb8nnn/295-560JB8NNN</a> | 10                             | \$0.041        | \$0.41      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| SMD 5.6pF Capacitor          | 04025A5R6BAT2A  | <a href="https://www.digikey.com/product-detail/en/04025a5r6bat2a/295-6BAT2A">https://www.digikey.com/product-detail/en/04025a5r6bat2a/295-6BAT2A</a>       | 10                             | \$0.042        | \$0.42      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| SMD 3.3pF Capacitor          | CL10C3R3CB81P   | <a href="https://www.digikey.com/product-detail/en/cl10c3r3cb81p/295-3R3CB81P">https://www.digikey.com/product-detail/en/cl10c3r3cb81p/295-3R3CB81P</a>     | 20                             | \$0.057        | \$0.57      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| 56nH Inductor                | 0603CT-56N      | <a href="https://www.coilcraft.com/product/inductors/0603CT-56N">https://www.coilcraft.com/product/inductors/0603CT-56N</a>                                 | 6                              | \$1.010        | \$6.06      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| 19nH Inductor                | 0603DC-18N      | <a href="https://www.coilcraft.com/product/inductors/0603DC-18N">https://www.coilcraft.com/product/inductors/0603DC-18N</a>                                 | 3                              | \$0.710        | \$2.13      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| 150nH Inductor               | 0603DC-R15      | <a href="https://www.coilcraft.com/product/inductors/0603DC-R15">https://www.coilcraft.com/product/inductors/0603DC-R15</a>                                 | 3                              | \$0.710        | \$2.13      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| 12nH Inductor                | 0603DC-12N      | <a href="https://www.coilcraft.com/product/inductors/0603DC-12N">https://www.coilcraft.com/product/inductors/0603DC-12N</a>                                 | 3                              | \$0.710        | \$2.13      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
|                              |                 |                                                                                                                                                             | Total Power Amp Passives Cost: |                | \$17.52     |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Spare Parts:                 |                 |                                                                                                                                                             |                                |                |             |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Part Type:                   | Part Number:    | Link:                                                                                                                                                       | Number Needed:                 | Cost Per Item: | Total Cost: |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| RF Antenna                   | 994-1240-ND     | <a href="https://www.digikey.com/product-detail/en/qwb144-te-corp/994-1240-ND/295-144">QWB144 TE Corp</a>                                                   | 1                              | \$14.28        | \$14.28     |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Power Amplifier              | 2032-1012-ND    | <a href="https://www.digikey.com/product-detail/en/cmx902qt8-cm/2032-1012-ND/295-902">CMX902QT8 CM</a>                                                      | 2                              | \$1.94         | \$3.88      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Op-Amps                      | AD8017ARZ-REEL  | <a href="https://www.digikey.com/product-detail/en/ad8017arz-reel/AD8017ARZ-REEL/295-8017">AD8017ARZ-REEL</a>                                               | 4                              | \$6.99         | \$27.96     |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Oscillator                   | CVCO33CL-0110-C | <a href="https://www.digikey.com/product-detail/en/cvco33cl-0110-c/295-33CL">https://www.digikey.com/product-detail/en/cvco33cl-0110-c/295-33CL</a>         | 2                              | \$23.10        | \$46.20     |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Mixer                        | SA612AD         | <a href="https://www.mouser.com/ProductDetail/SA612AD">https://www.mouser.com/ProductDetail/SA612AD</a>                                                     | 2                              | \$3.07         | \$6.14      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Blinky Bois                  | LTST-C191KGKT   | <a href="https://www.digikey.com/product-detail/en/ltst-c191kgkt/295-191KGKT">https://www.digikey.com/product-detail/en/ltst-c191kgkt/295-191KGKT</a>       | 20                             | \$0.141        | \$2.820     |                                  |               |                                                                                                                                                     |           |            |             |        |  |
|                              |                 |                                                                                                                                                             | Total Spares (Per Radio):      |                | \$101.28    |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| Power Input/Regulation:      |                 |                                                                                                                                                             |                                |                |             |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| N-Channel MOSFET             | MCU30N02-TP     | <a href="https://www.digikey.com/product-detail/en/mcu30n02-tp/295-02-TP">https://www.digikey.com/product-detail/en/mcu30n02-tp/295-02-TP</a>               | 1                              | \$0.52         | \$0.52      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| P-Channel MOSFET             | AOD413A         | <a href="https://www.digikey.com/product-detail/en/aod413a/295-413A">https://www.digikey.com/product-detail/en/aod413a/295-413A</a>                         | 1                              | \$0.61         | \$0.61      |                                  |               |                                                                                                                                                     |           |            |             |        |  |
| 5V LDO Regulator             | MIC29310-5.0WU  | <a href="https://www.digikey.com/product-detail/en/mic29310-5.0wu/295-5.0WU">https://www.digikey.com/product-detail/en/mic29310-5.0wu/295-5.0WU</a>         | 1                              | \$3.56         | \$3.56      |                                  |               |                                                                                                                                                     |           |            |             |        |  |

|                          |                 |                                                   |    |                                    |         |                                |                          |  |  |  |  |  |
|--------------------------|-----------------|---------------------------------------------------|----|------------------------------------|---------|--------------------------------|--------------------------|--|--|--|--|--|
| 3.3V LDO Regulator       | AZ1084CD-3.3TRC | <a href="https://www.digik">https://www.digik</a> | 1  | \$0.62                             | \$0.62  |                                |                          |  |  |  |  |  |
| Adjustable LDO Regulator | LD29300P2MTR    | <a href="https://www.digik">https://www.digik</a> | 1  | \$1.81                             | \$1.81  |                                |                          |  |  |  |  |  |
| SMD 2.26kOhm Resistor    | RC0603FR-072K2  | <a href="https://www.digik">https://www.digik</a> | 10 | \$0.021                            | \$0.210 |                                |                          |  |  |  |  |  |
| SMD 1kOhm Resistor       | RNCP0603FTD1K   | <a href="https://www.digik">https://www.digik</a> | 10 | \$0.061                            | \$0.610 |                                |                          |  |  |  |  |  |
| SMD 0.1uF Capacitor      | CL10B104KB8NNV  | <a href="https://www.digik">https://www.digik</a> | 10 | \$0.019                            | \$0.190 |                                |                          |  |  |  |  |  |
| SMD 0.33uF Capacitor     | CL10B334KO8NN   | <a href="https://www.digik">https://www.digik</a> | 10 | \$0.049                            | \$0.490 |                                |                          |  |  |  |  |  |
| SMD 10uF Capacitor       | CL21A106KOQNN   | <a href="https://www.digik">https://www.digik</a> | 10 | \$0.074                            | \$0.740 |                                |                          |  |  |  |  |  |
| SMD 22uF Capacitor       | CL21A226MOQNN   | <a href="https://www.digik">https://www.digik</a> | 10 | \$0.18                             | \$1.83  |                                |                          |  |  |  |  |  |
|                          |                 |                                                   |    | Total Power Input/Regulation Cost: |         | \$11.19                        |                          |  |  |  |  |  |
|                          |                 |                                                   |    |                                    |         |                                |                          |  |  |  |  |  |
|                          |                 |                                                   |    |                                    |         |                                |                          |  |  |  |  |  |
| Mixer Passives:          |                 |                                                   |    |                                    |         | <a href="#">SA612A Double-</a> | pg 7 typical application |  |  |  |  |  |
| 22 pF                    | 478-10171-1-ND  | <a href="#">0402YA220FAT2</a>                     | 10 | \$0.47                             | \$4.70  |                                |                          |  |  |  |  |  |
| 1 nF                     | 04025C102KAT2A  | <a href="https://datasheet">https://datasheet</a> | 10 | \$0.10                             | \$1.00  |                                |                          |  |  |  |  |  |
| 5.5 uF                   | 81-GRM1555C1H5R | <a href="#">GRM1555C1H5F</a>                      | 10 | \$0.15                             | \$1.50  |                                |                          |  |  |  |  |  |
| 5.6 pF                   | UMK105CG5R6CV   | <a href="https://www.digik">https://www.digik</a> | 10 | \$0.10                             | \$1.00  |                                |                          |  |  |  |  |  |
| 6.8 uF                   | C1608X5R1E685K  | <a href="https://www.digik">https://www.digik</a> | 10 | \$0.64                             | \$6.40  |                                |                          |  |  |  |  |  |
| 100 nF                   | 0402YC104KAT2A  | <a href="https://www.digik">https://www.digik</a> | 10 | \$0.10                             | \$1.00  |                                |                          |  |  |  |  |  |
| 10 nF                    | 04023C103KAT2A  | <a href="https://www.digik">https://www.digik</a> | 10 | \$0.10                             | \$1.00  |                                |                          |  |  |  |  |  |
| 47 pF                    | 06035A470FAT2A  | <a href="https://www.digik">https://www.digik</a> | 10 | \$0.20                             | \$2.00  |                                |                          |  |  |  |  |  |
| 220 pF                   | 06035A221FAT2A  | <a href="https://www.digik">https://www.digik</a> | 10 | \$0.39                             | \$3.90  |                                |                          |  |  |  |  |  |
| .209>.283 uH             | MLK1005SR24JT0  | <a href="https://www.digik">https://www.digik</a> | 5  | \$0.24                             | \$1.20  |                                |                          |  |  |  |  |  |
| .5 > 1.3 uH              | 74438324010     | <a href="https://www.digik">https://www.digik</a> | 5  | \$1.50                             | \$7.50  |                                |                          |  |  |  |  |  |
| 50pF                     | 478-10324-2-ND  | <a href="#">06035A500JAT2</a>                     | 10 | \$0.21                             | \$1.44  |                                |                          |  |  |  |  |  |
|                          |                 |                                                   |    | Total for mixer passives + spares: |         | \$32.64                        |                          |  |  |  |  |  |
|                          |                 |                                                   |    |                                    |         |                                |                          |  |  |  |  |  |
|                          |                 |                                                   |    | TOTAL COST OF ALL THE SHIT:        |         | \$280.68                       |                          |  |  |  |  |  |