



**THE DATASHEET OF
SC2200-EVK2400**



General Description

The SC2200 evaluation kits (SC2200-EVK) provide the hardware and software graphical user interface (GUI) necessary for the evaluation of the SC2200. The SC2200 belongs to the 4th-generation family of RF PA linearizers (RFPAL) that provide increased integration and functionality over the previous generations. The SC2200 is a dual-path linearizer that is a fully-adaptive, RFIN/RFOUT predistortion linearization solution optimized for a wide range of amplifiers, power levels, and communication protocols. It supports 2G to 4G standards (FDD and TDD) from 698MHz to 2700MHz, as well as an expanded range of signal bandwidths from 60MHz down to 1.2MHz. The device accepts single-ended RF signals to eliminate baluns and features a mirrored pinout facilitating design of both paths. The SC2200 uses the PA output and input signals to adaptively generate an optimized correction function to minimize the PA's distortion. Using RF-domain analog signal processing enables the SC2200 to operate over wide bandwidths and with very low power consumption. The dual linearizer can be used for small cell MIMO, active antennas, distributed antennas, or in systems requiring two different simplex bands.

Applications

- Cellular Infrastructure
 - Single/Multicarrier, Multistandard: CDMA/EVDO, TD-SCDMA, WiMAX, WCDMA/HSDPA, LTE, and TD-LTE
 - BTS Amplifiers, RRH, Booster Amplifiers, Repeaters, Small Cells, Microcells, Picocells, DAS, AAS, and MIMO Systems
- Wide Range of PAs and Output Power
 - Amplifier: Class A/AB, Doherty
 - Average PA Output Power Examples:
 - Cellular Infrastructure: 27dBm to 40dBm
 - PA Process: LDMOS, GaN, HBT, GaAs, and InGaP

Benefits

- Ease of Use
 - Integrated RFIN/RFOUT Solution
- Reduces System Power Consumption and OPEX
- Reduces BOM Costs and Total Volume
 - Smaller Power Supply, Heat Sink, and Enclosure
 - Lower Back-Off Reduces Transistor Costs

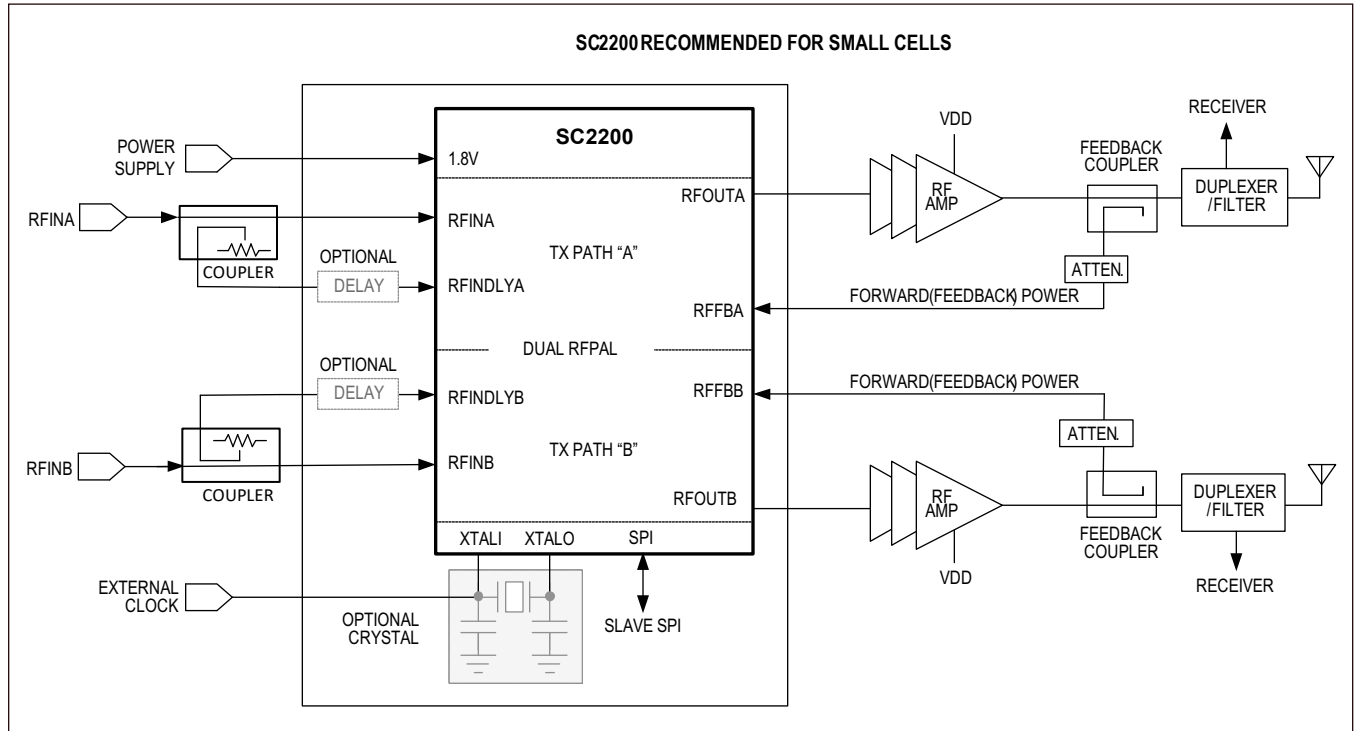
Features

- Frequency Ranges:
 - SC2200-EVK900: 698–960MHz
 - SC2200-EVK1900: 1800–2200MHz
 - SC2200-EVK2400: 2300–2700MHz
- Integrated Preamp and Single-Ended RF I/Os
- Single +5V Supply Voltage
- Dual-Path RFIN/RFOUT Linearizer
- Fully Adaptive Correction
- Up to 28dB ACLR and 38dB IMD Improvement (1)
- 1.2MHz < BWSIG ≤ 60MHz
- Requirements
 - Windows® 7 PC (or earlier) w/ USB2.0 Port
 - 5V/1A Power Supply

[Ordering Information](#) and [Block Diagram](#) appears at end of data sheet.

Windows is a registered trademark and registered service mark of Microsoft Corporation.

Typical Application Block Diagram



Ordering Information

| PART NUMBER | DESCRIPTION |
|----------------|---|
| SC2200-EVK900 | Evaluation kit, dual-RFPAL, 698MHz-960MHz |
| SC2200-EVK1900 | Evaluation kit, dual-RFPAL, 1800MHz-2200MHz |
| SC2200-EVK2400 | Evaluation kit, dual-RFPAL, 2300MHz-2700MHz |

SC2200 EV Kit Bill of Materials—RDB900

| Designator | Comment | Description | Quantity | Manufacturer 1 | Manufacturer Part Number 1 | Supplier 1 |
|--|-------------------|--|----------|--------------------------------------|----------------------------|----------------------------|
| C100 | NL | NL Cap 0402 | 1 | | | |
| C101, C102, C130, C131 | 10pF | Cap 10pF 0402 | 4 | Murata Electronics | GJM1555C1H100FB01D | Mouser |
| C106, C107, C120, C132 | 0.1uF | Cap 0.1uF 0402 | 4 | TDK Corporation | C1005X7R1A104K050BB | Digi-Key |
| C108, C109, C111, C113, C114, C115, C116, C119, C126, C138, C140, C153, C155 | 1000pF | Cap 1000pF 0402 | 13 | Murata Electronics | GRM1555C1H102JA01D | Mouser |
| C112, C118, C139, C141 | 2.2uF | Cap 2.2uF 0603 | 4 | Murata Electronics | GRM188R71A225KE15J | Mouser |
| C122, C124 | 22uF | Cap 22uF 0805 | 2 | Murata Electronics | GRM21BR60J226ME39L | Mouser |
| C125 | 5.0pF | Cap 5.0pF 0402 | 1 | Murata Electronics | GJM1555C1H5R0BB01D | Mouser |
| C133, C151, C152 | 1uF | Cap 1uF 0402 | 3 | Murata Electronics | GRM155R61A105KE15D | Mouser |
| C134 | 680pF | Cap 680pF 0402 | 1 | Murata Electronics North America | GRM1555C1H681JA01D | Digi-Key |
| C135 | 10uF | Cap 10uF 0805 | 1 | Murata Electronics North America | GRM21BR71A106KE51L | Digi-Key |
| C142 | 1uF | Cap 1uF 0603 | 1 | Murata Electronics North America | GRM188R61A105KA61D | Digi-Key |
| C143, C146, C154, C156 | 100pF | Cap 100pF 0402 | 4 | Murata | GRM1555C1H101JD01D | Farnell |
| C147, C148 | 5.1pF | Cap 5.1pF 0402 | 2 | Murata Electronics | GJM1555C1H5R1BB01D | Mouser |
| C160, C163, C292, C293 | 432 Ohm | RESISTOR 432 Ohm 0402 | 4 | Panasonic Electronic Components | ERJ-3EKF4320V | Digi-Key |
| C161, C162 | 0.5pF | Cap 0.5pF 0402 | 2 | Murata Electronics North America | GJM1555C1HR50BB01D | Digi-Key |
| R110 | NL | NL Res 0603 | 1 | | | |
| R111 | 10 | RESISTOR 10 Ohm 0402 | 1 | Panasonic Electronic Components | ERJ-2GEJ100X | Digi-Key |
| R112 | 237k | RESISTOR 237 kOhm 0402 | 1 | Panasonic Electronic Components | ERJ-2RKF2373X | Digi-Key |
| R114 | 118k | RESISTOR 118 kOhm 0402 | 1 | Panasonic Electronic Components | ERJ-2RKF1183X | Digi-Key |
| R118 | 10k | RESISTOR 10k Ohm 0402 | 1 | Yageo | RC0402FR-0710KL | Digi-Key |
| R121, R124, R161, R162, R167, R168, R194, R201, R252, R253, R255, R262 | NL | NL Res 0402 | 12 | | | |
| R165, R166, R195, R222, R223, R241, R250, R251, R254, R263, R300, R301 | 0 Ohm | RESISTOR 0 Ohm 0402 | 12 | Yageo | RC0402JR-070RL | Digi-Key |
| R172, R265 | 49.9 Ohm | RESISTOR 49.9 Ohm 0402 | 2 | KOA Speer | RK73H1ELTP49R9F | Mouser |
| R192, R193 | 11.5 Ohm | RESISTOR 11.5 Ohm 0402 | 2 | Panasonic Electronic Components | ERJ-2RKF11R5X | Digi-Key |
| L104, L105 | 18nH | 18nH | 2 | Taiyo Yuden | HK100518NJ-T | Digi-Key |
| DC104, DC105 | 5dB Coupler | Anaren 700-1000 MHz 0805, 5dB Coupler Conf-3, Anaren 700-1000 MHz 0805, 5dB Coupler Conf-4 | 2 | Anaren | DC0710J5005AHF | RichardsonRFPD or Digi-Key |
| FT100, FT101, FT102, FT103 | Bead 120 ohm | Bead 0603 120 ohm | 4 | Murata Electronics | BLM18AG121SN1D | Mouser |
| FT104, FT105 | Bead 470 ohm | Bead 0402 470 ohm | 2 | Murata Electronics | BLM15BD471SN1D | Mouser |
| J107 | Banana Jack Red | Banana Supply Connector Red | 1 | Deltron | 571-0500 | Mouser |
| J108 | Banana Jack Black | Banana Supply Connector Black | 1 | Deltron | 571-0100 | Mouser |
| J112 | HEADER 12 | Header 50mil SMT | 1 | HARTING | 15110122601000 | Mouser |
| RFAUX_A, RFAUX_B, RFFB_A, RFFB_B, RFIN_A, RFIN_B, RFOUT_A, RFOUT_B | SMA_EDGE | SMA RECEPTACLE END LAUNCH, Emerson 142-0701-801 | 8 | Cinch Connectivity Solutions Johnson | 142-0701-801 | Digi-Key |
| S100 | SW-PB | SW, PUSH, Omronm B3S-1000P | 1 | Omron Electronics Inc-EMC Div | B3S-1000 | Digi-Key |
| U100 | SC2200 | SC2200 | 1 | Maxim Integrated | SC2200A-00A00 | Avnet |
| U102 | EP53F8QI | Enpirion Voltage Regulator | 1 | ENPIRION | EP53F8QI | Newark |
| U103, U104 | 3ns Delay | 3ns Delay Line (Anaren) | 2 | Anaren | XDL15-3-030S | RichardsonRFPD or Digi-Key |
| XTALI | NL | SMA RECEPTACLE END LAUNCH, Emerson 142-0701-801 | 1 | Johnson-Cinch Connectivity Solutions | 142-0701-201 | Allied |
| Y100 | 278-20.0M-20-W | Crystal 20MHz 278-20.0M-20-W | 1 | Oscilent | 278-20.0M-20-W | Oscilent |
| | | | 108 | | | |

Notes
 (NL) are no load parts.

SC2200 EV Kit Bill of Materials—RDB1900

| Designator | Comment | Description | Quantity | Manufacturer 1 | Manufacturer Part Number 1 | Supplier 1 |
|--|-------------------|--|----------|--------------------------------------|----------------------------|----------------------------|
| C100, C160, C163 | NL | NL Cap 0402 | 3 | | | |
| C101, C102, C130, C131 | 10pF | Cap 10pF 0402 | 4 | Murata Electronics | GJM1555C1H100FB01D | Mouser |
| C106, C107, C120, C132 | 0.1uF | Cap 0.1uF 0402 | 4 | TDK Corporation | C1005X7R1A104K050BB | Digi-Key |
| C108, C109, C111, C113, C114, C115, C116, C119, C126, C138, C140, C153, C155 | 1000pF | Cap 1000pF 0402 | 13 | Murata Electronics | GRM1555C1H102JA01D | Mouser |
| C112, C118, C139, C141 | 2.2uF | Cap 2.2uF 0603 | 4 | Murata Electronics | GRM188R71A225KE15J | Mouser |
| C122, C124 | 22uF | Cap 22uF 0805 | 2 | Murata Electronics | GRM21BR60J226ME39L | Mouser |
| C125 | 5.0pF | Cap 5.0pF 0402 | 1 | Murata Electronics | GJM1555C1H5R0BB01D | Mouser |
| C133, C151, C152 | 1uF | Cap 1uF 0402 | 3 | Murata Electronics | GRM155R61A105KE15D | Mouser |
| C134 | 680pF | Cap 680pF 0402 | 1 | Murata Electronics North America | GRM1555C1H681JA01D | Digi-Key |
| C135 | 10uF | Cap 10uF 0805 | 1 | Murata Electronics North America | GRM21BR71A106KE51L | Digi-Key |
| C142 | 1uF | Cap 1uF 0603 | 1 | Murata Electronics North America | GRM188R61A105KA61D | Digi-Key |
| C143, C146, C300, C301 | 2.2pF | Cap 2.2pF 0402 | 4 | Murata Electronics | GJM1555C1H2R2BB01D | Mouser |
| C147, C148 | 5.6nH | Inductor 5.6nH 0402 | 2 | Taiyo Yuden | HK10055N6S-T | Digi-Key |
| C154, C156 | 100pF | Cap 100pF 0402 | 2 | Murata | GRM1555C1H101JD01D | Farnell |
| C161, C162 | 0.5pF | Cap 0.5pF 0402 | 2 | Murata Electronics North America | GJM1555C1HR50BB01D | Digi-Key |
| C292, C293 | 1.3pF | Cap 1.3pF 0402 | 2 | Murata Electronics | GJM1555C1H1R3BB01D | Mouser |
| R110 | NL | NL Res 0603 | 1 | | | |
| R111 | 10 | RESISTOR 10 Ohm 0402 | 1 | Panasonic Electronic Components | ERJ-2GEJ100X | Digi-Key |
| R112 | 237k | RESISTOR 237 kOhm 0402 | 1 | Panasonic Electronic Components | ERJ-2RKF2373X | Digi-Key |
| R114 | 118k | RESISTOR 118 kOhm 0402 | 1 | Panasonic Electronic Components | ERJ-2RKF1183X | Digi-Key |
| R118 | 10k | 10k Ohm 0402 | 1 | Yageo | RC0402FR-0710KL | Digi-Key |
| R121, R124, R161, R162, R167, R168, R194, R201, R252, R253, R255, R262 | NL | NL Res 0402 | 12 | | | |
| R165, R166, R195, R222, R223, R241, R250, R251, R254, R263 | 0 Ohm | RESISTOR 0 Ohm 0402 | 10 | Yageo | RC0402JR-070RL | Digi-Key |
| R172, R265 | 49.9 Ohm | RESISTOR 49.9 Ohm 0402 | 2 | KOA Speer | RK73H1ELTP49R9F | Mouser |
| L104, L105 | 10nH | Inductor 10nH 0402 | 2 | Taiyo Yuden | HK100510NJ-T | Digi-Key |
| L192, L193 | 1.0nH | Inductor 1.0nH 0402 | 2 | Taiyo Yuden | HK10051N0S-T | Digi-Key |
| DC104, DC1015 | 5dB Coupler | Anaren 1700-2200 MHz 0805, 5dB Coupler Conf-3, Anaren 1700-2200 MHz 0805, 5dB Coupler Conf-4 | 2 | Anaren | DC1722J5005AHF | RichardsonRFPD or Digi-Key |
| FT100, FT101, FT102, FT103 | Bead 120 ohm | Bead 0603 120 ohm | 4 | Murata Electronics | BLM18AG121SN1D | Mouser |
| FT104, FT105 | Bead 470 ohm | Bead 0402 470 ohm | 2 | Murata Electronics | BLM15BD471SN1D | Mouser |
| J107 | Banana Jack Red | Banana Supply Connector Red | 1 | Deltron | 571-0500 | Mouser |
| J108 | Banana Jack Black | Banana Supply Connector Black | 1 | Deltron | 571-0100 | Mouser |
| J112 | HEADER 12 | Header 50mil SMT | 1 | HARTING | 15110122601000 | Mouser |
| RFAUX_A, RFAUX_B, RFFB_A, RFFB_B, RFIN_A, RFIN_B, RFOUT_A, RFOUT_B | SMA_EDGE | SMA RECEPTACLE END LAUNCH, Emerson 142-0701-801 | 8 | Cinch Connectivity Solutions Johnson | 142-0701-801 | Digi-Key |
| S100 | SW-PB | SW, PUSH, Omronm B3S-1000P | 1 | Omron Electronics Inc-EMC Div | B3S-1000 | Digi-Key |
| U100 | SC2200 | SC2200 | 1 | Maxim Integrated | SC2200A-00A00 | Avnet |
| U102 | EP53F8QI | Enpirion Voltage Regulator | 1 | Loading... | Loading... | Newark |
| U103, U104 | 3ns Delay | 3ns Delay Line (Anaren) | 2 | Anaren | XDL15-3-030S | RichardsonRFPD or Digi-Key |
| XTALI | NL | SMA RECEPTACLE END LAUNCH, Emerson 142-0701-801 | 1 | Johnson-Cinch Connectivity Solutions | 142-0701-201 | Allied |
| Y100 | 278-20.0M-20-W | Crystal 20MHz 278-20.0M-20-W | 1 | Oscilent | 278-20.0M-20-W | Oscilent |
| | | | 108 | | | |

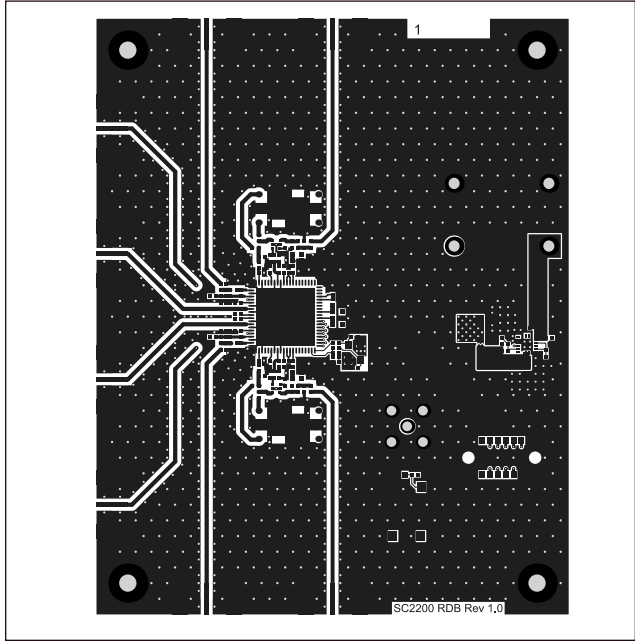
Notes:
 (NL) are no load parts.

SC2200 EV Kit Bill of Materials—RDB2400

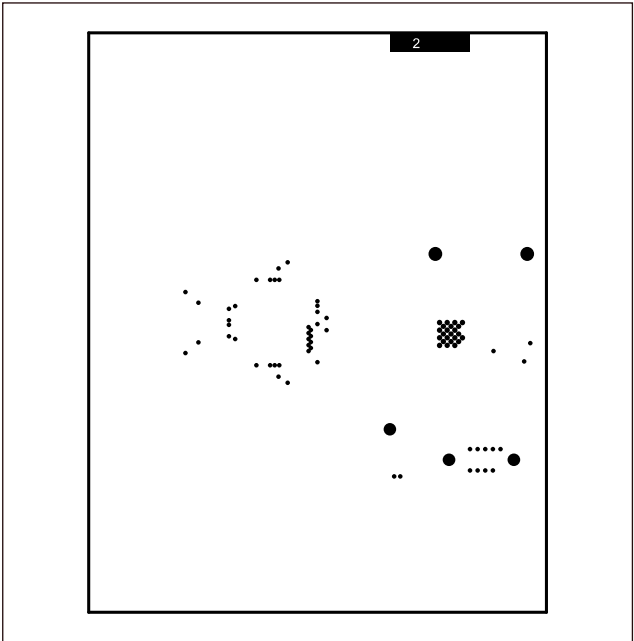
| Designator | Comment | Description | Quantity | Manufacturer 1 | Manufacturer Part Number 1 | Supplier 1 |
|--|-------------------|--|----------|--------------------------------------|----------------------------|----------------------------|
| C100, C292, C293 | NL | NL Cap 0402 | 3 | | | |
| C101, C102, C130, C131 | 10pF | Cap 10pF 0402 | 4 | Murata Electronics | GJM1555C1H100FB01D | Mouser |
| C106, C107, C120, C132 | 0.1uF | Cap 0.1uF 0402 | 4 | TDK Corporation | C1005X7R1A104K050BB | Digi-Key |
| C108, C109, C111, C113, C114, C115, C116, C119, C126, C138, C140, C153, C155 | 1000pF | Cap 1000pF 0402 | 13 | Murata Electronics | GRM1555C1H102JA01D | Mouser |
| C112, C118, C139, C141 | 2.2uF | Cap 2.2uF 0603 | 4 | Murata Electronics | GRM188R71A225KE15J | Mouser |
| C122, C124 | 22uF | Cap 22uF 0805 | 2 | Murata Electronics | GRM21BR60J226ME39L | Mouser |
| C125 | 5.0pF | Cap 5.0pF 0402 | 1 | Murata Electronics | GJM1555C1H5R0BB01D | Mouser |
| C133, C151, C152 | 1uF | Cap 1uF 0402 | 3 | Murata Electronics | GRM155R61A105KE15D | Mouser |
| C134 | 680pF | Cap 680pF 0402 | 1 | Murata Electronics North America | GRM1555C1H681JA01D | Digi-Key |
| C135 | 10uF | Cap 10uF 0805 | 1 | Murata Electronics North America | GRM21BR71A106KE51L | Digi-Key |
| C142 | 1uF | Cap 1uF 0603 | 1 | Murata Electronics North America | GRM188R61A105KA61D | Digi-Key |
| C143, C146, C154, C156 | 100pF | Cap 100pF 0402 | 4 | Murata | GRM1555C1H101JD01D | Farnell |
| C147, C148 | 5.6nH | Inductor 5.6nH 0402 | 2 | Taiyo Yuden | HK10055N6S-T | Digi-Key |
| C160, C163, C300, C301 | 1.2pF | Cap 1.2pF 0402 | 4 | Murata Electronics | GJM1555C1H1R2BB01D | Mouser |
| C161, C162 | 0.5pF | Cap 0.5pF 0402 | 2 | Murata Electronics North America | GJM1555C1HR50BB01D | Digi-Key |
| R110 | NL | NL Res 0603 | 1 | | | |
| R111 | 10 Ohm | RESISTOR 10 Ohm 0402 | 1 | Panasonic Electronic Components | ERJ-2GEJ100X | Digi-Key |
| R112 | 237k | RESISTOR 237k Ohm 0402 | 1 | Panasonic Electronic Components | ERJ-2RKF2373X | Digi-Key |
| R114 | 118k | RESISTOR 118k Ohm 0402 | 1 | Panasonic Electronic Components | ERJ-2RKF1183X | Digi-Key |
| R118 | 10k | RESISTOR 10k Ohm 0402 | 1 | Yageo | RC0402FR-0710KL | Digi-Key |
| R121, R124, R161, R162, R167, R168, R194, R201, R252, R253, R255, R262 | NL | NL Res 0402 | 12 | | | |
| R165, R166, R192, R193, R195, R222, R223, R241, R250, R251, R254, R263 | 0 Ohm | RESISTOR 0 Ohm 0402 | 12 | Yageo | RC0402JR-070RL | Digi-Key |
| R172, R265 | 49.9 Ohm | RESISTOR 49.9 Ohm 0402 | 2 | KOA Speer | RK73H1ELTP49R9F | Mouser |
| L104, L105 | 10nH | Inductor 10nH 0402 | 2 | Taiyo Yuden | HK100510NJ-T | Digi-Key |
| DC104, DC105 | 5dB Coupler | Anaren 2300-2700 MHz 0805, 5dB Coupler Conf-3, Anaren 2300-2700 MHz 0805, 5dB Coupler Conf-4 | 2 | Anaren | DC2327J5005AHF | RichardsonRFPD or Digi-Key |
| FT100, FT101, FT102, FT103 | Bead 120 ohm | Bead 0603 120 ohm | 4 | Murata Electronics | BLM18AG121SN1D | Mouser |
| FT104, FT105 | Bead 470 ohm | Bead 0402 470 ohm | 2 | Murata Electronics | BLM15BD471SN1D | Mouser |
| J107 | Banana Jack Red | Banana Supply Connector Red | 1 | Deltron | 571-0500 | Mouser |
| J108 | Banana Jack Black | Banana Supply Connector Black | 1 | Deltron | 571-0100 | Mouser |
| J112 | HEADER 12 | Header 50mil SMT | 1 | HARTING | 15110122601000 | Mouser |
| RFAUX_A, RFAUX_B, RFFB_A, RFFB_B, RFIN_A, RFIN_B, RFOUT_A, RFOUT_B | SMA_EDGE | SMA RECEPTACLE END LAUNCH, Emerson 142-0701-801 | 8 | Cinch Connectivity Solutions Johnson | 142-0701-801 | Digi-Key |
| S100 | SW-PB | SW, PUSH, Omronm B3S-1000P | 1 | Omron Electronics Inc-EMC Div | B3S-1000 | Digi-Key |
| U100 | SC2200 | SC2200 | 1 | Maxim Integrated | SC2200A-00A00 | Avnet |
| U102 | EP53F8QI | Enpirion Voltage Regulator | 1 | ENPIRION | EP53F8QI | Newark |
| U103, U104 | 3ns Delay | 3ns Delay Line (Anaren) | 2 | Anaren | XDL15-3-030S | RichardsonRFPD or Digi-Key |
| XTALI | NL | SMA RECEPTACLE END LAUNCH, Emerson 142-0701-801 | 1 | Johnson-Cinch Connectivity Solutions | 142-0701-201 | Allied |
| Y100 | 278-20.0M-20-W | Crystal 20MHz 278-20.0M-20-W | 1 | Oscilent | 278-20.0M-20-W | Oscilent |
| | | | 108 | | | |

Notes:
 (NL) are no load parts.

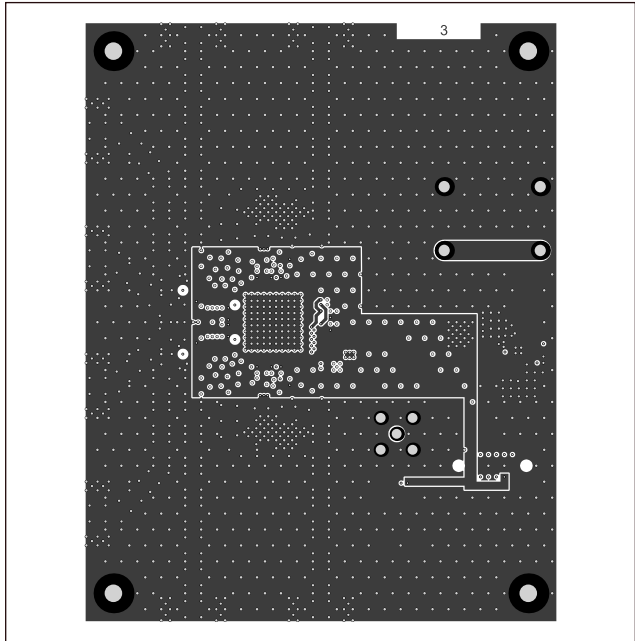
SC2200 EV Kit PCB Layout Diagrams



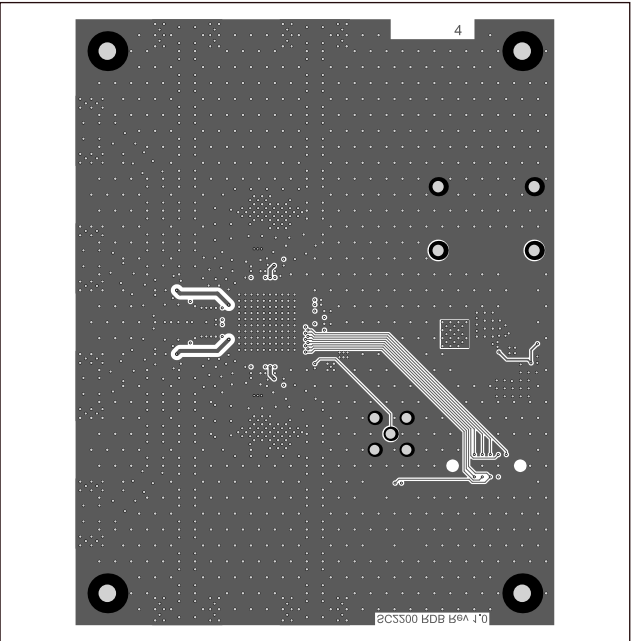
SC2200 EV Kit—Top Layer 1



SC2200 EV Kit—GND Layer 2

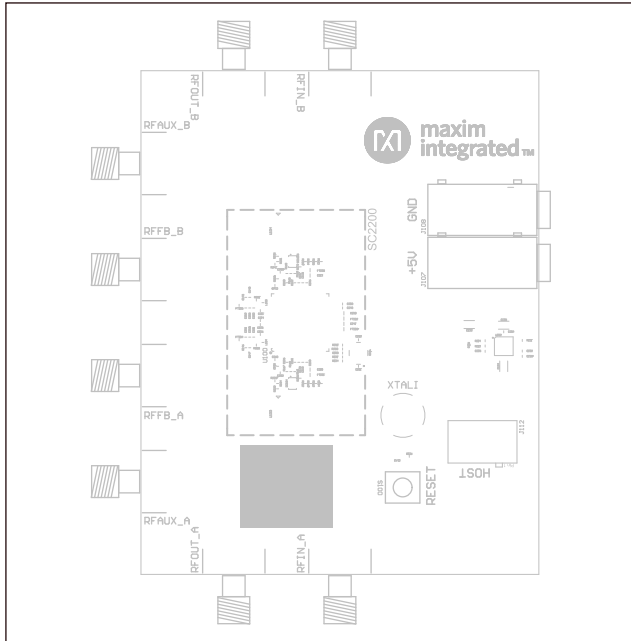


SC2200 EV Kit—Internal Layer 3

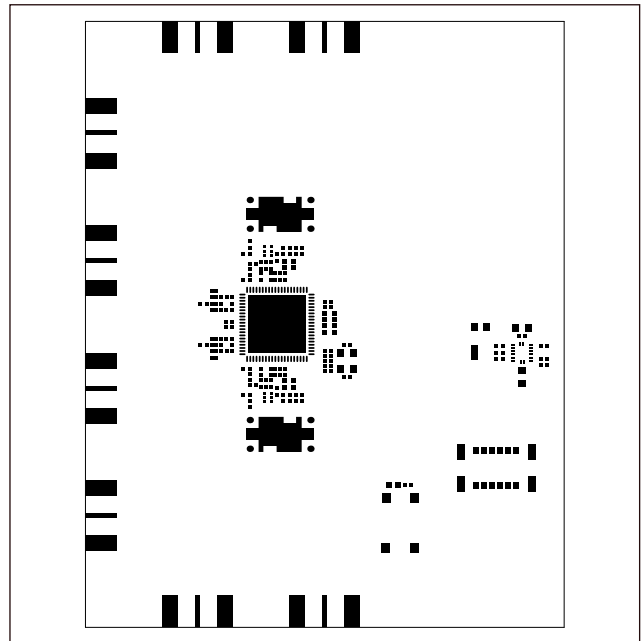


SC2200 EV Kit—Bottom Layer 4

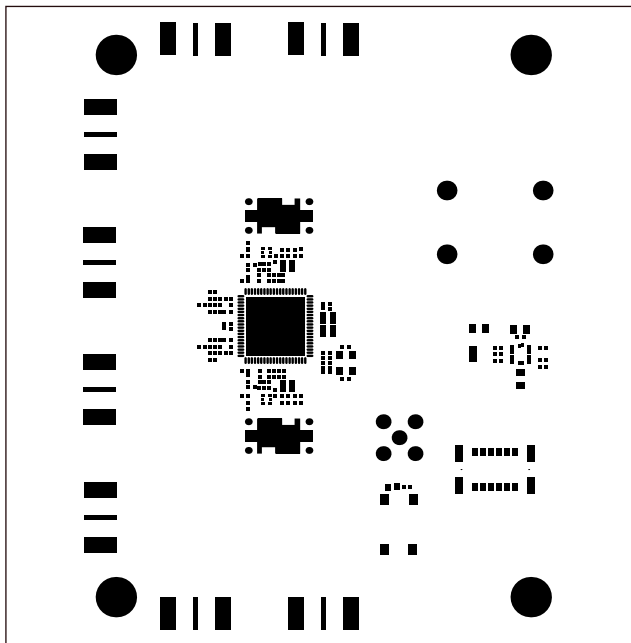
SC2200 EV Kit PCB Layout Diagrams (continued)



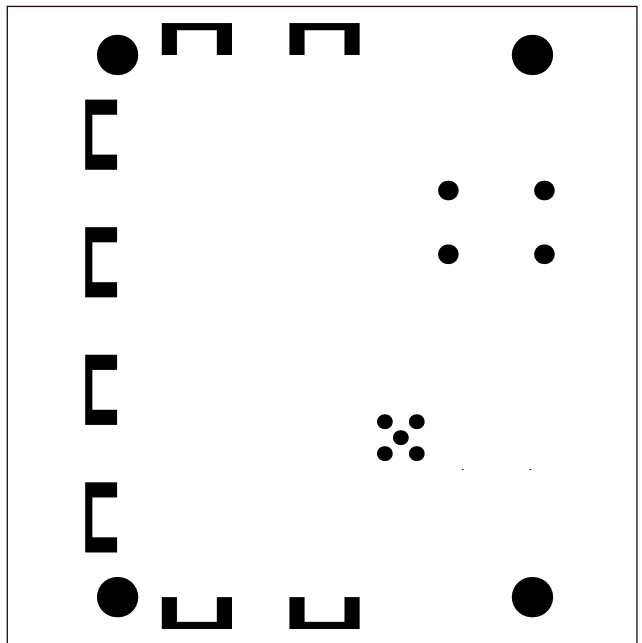
SC2200 EV Kit—Top Overlay



SC2200 EV Kit—Top Paste

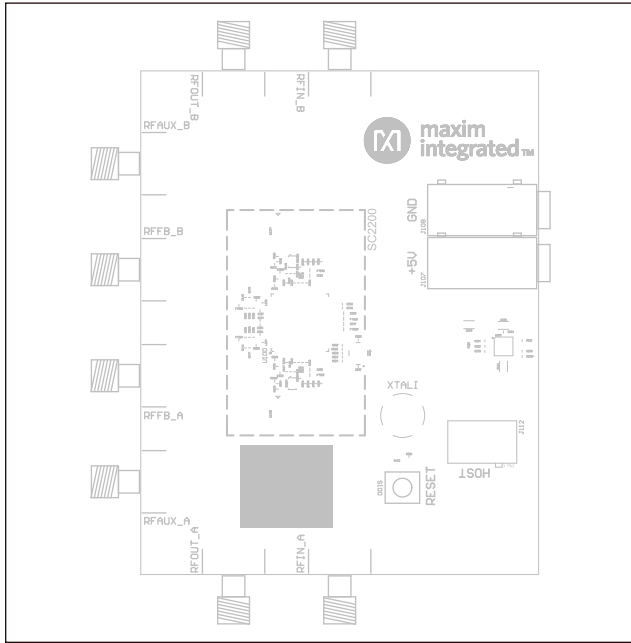


SC2200 EV Kit—Top Solder Mask

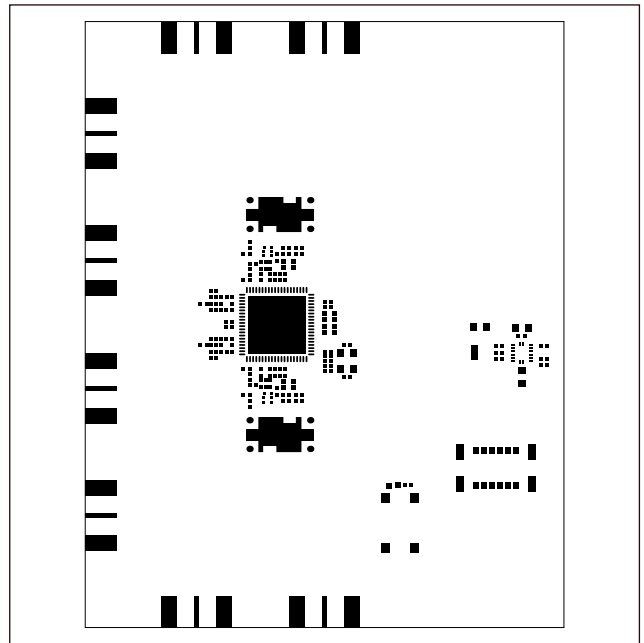


SC2200 EV Kit—Bottom Solder Mask

SC2200 EV Kit PCB Layout Diagrams (continued)



SC2200 EV Kit



SC2200 EV Kit

Revision History

| REVISION NUMBER | REVISION DATE | DESCRIPTION | PAGES CHANGED |
|-----------------|---------------|--|---------------|
| 0 | 11/15 | Initial release | — |
| 1 | 10/17 | Updated Bill of Materials and formatting of document | 1–10 |

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim Integrated's website at www.maximintegrated.com.

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Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

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 [Maxim Integrated Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management