



5101068 Version: 1

Approval Category: COMPONENT

Document Desc: CARELINK USB 2.4 PCBA AND DETAILS FLEX

Long Desc: N/A

Prepared by: Scott Sutorius

Date: 11/11/2013

Valid From: 11/26/2013

ECO: 500000047443

APPROVALS

| NAME | FUNCTIONAL AREA | DATE |
|----------------|-------------------|------------|
| Bi Dan Yu | Quality Assurance | 11/13/2013 |
| Jim DeRose | Product Support | 11/11/2013 |
| Michael Ortega | R&D Engineering | 11/12/2013 |
| Rosa Villegas | Doc Control | 11/25/2013 |

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1 PURPOSE

To document specifications for the PCBA, PCB, and schematic for CareLink USB 2.4 designed by Flex-Medical and transferred to Medtronic

2 PARTS NUMBERS

| MEDTRONIC MINIMED PART NUMBER | PART REV | ECO No | MANUFACTURER | MANUFACTURER PART No |
|-------------------------------|----------|---------|--------------|----------------------|
| 5101068-001 | 1 | 5-47443 | Flex Medical | DAL-018-50-0003 |

3 QUALITY REQUIREMENTS FOR MEDTRONIC MINIMED USE ONLY

3.1 RELEVANT DOCUMENTS

3.1.1 GENERAL DOCUMENTS

3.1.1.1 DIM1002 QUALITY REQUIREMENTS FOR PROCURED MATERIALS

3.1.1.2 DIM1500 RECEIVING INSPECTION SYSTEM

3.1.1.3 DIM1003 INSPECTION METHOD FOR PCB ASSEMBLIES

3.1.2 REFERENCE DOCUMENTS

3.1.2.1 DIM1540 FIRST ARTICLE INSPECTION

3.2 FIRST ARTICLE INSPECTION

Per DIM1540

3.3 VISUAL INSPECTION

3.3.1 VERIFY THAT PARTS/CONTAINERS ARE NOT DAMAGED DUE TO SHIPPING OR HANDLING

3.3.2 REGULAR INSPECTION AS INDICATED PER SAP QUALITY INFORMATION RECORDS.

4 DIMENSIONS AND/OR SPECIFICATIONS

See following pages

| | |
|--------------------------------------|-------------|
| DAL-018-55-0003 PCBA BOM | page 4 |
| DAL-018-50-0003 PCBA Drawing | page 5 |
| DAL-018-55-0002 PCB Gerber Drawings | pages 6-15 |
| DAL-018-55-0002 PCB Fab Drawing | page 16 |
| DAL-018-55-0002 PCB Assembly Drawing | page 18-19 |
| DAL-018-15-0009 Schematic | pages 20-24 |

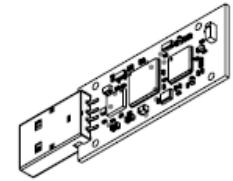
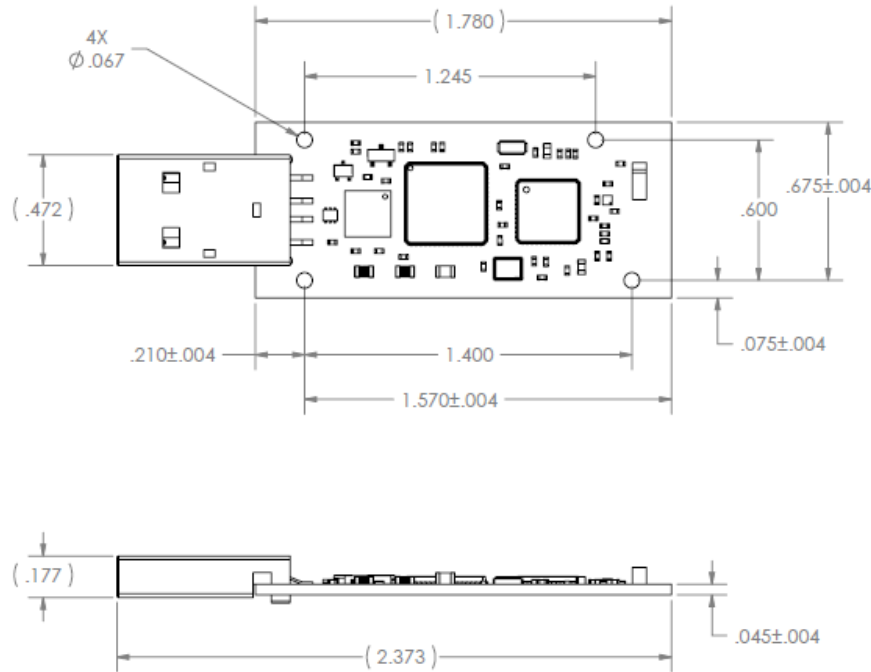
RELEASED

| DAL-018-55-0003 Tel-D Bridge BOM (AUDI2) | | | Revision: F | effective date | 8/14/2012 |
|--|----------|-----------------------------------|---------------|-------------------------|---------------------------------|
| FLEXTRONICS, 600 Shiloh Road, Plano, TX 75074, 469-229-1000, ©2010 FLEXTRONICS | | | | | EAR CONTROLLED |
| Some columns removed from original file from Flextronic | | | | | ECCN: 5E002 |
| Item | Quantity | Reference | Description | Manufacturer | Manufacturers part number |
| 1 | 1 | PCB | | Multek | DAL-018-55-0002 |
| 2 | 1 | ANT1 | ANTENNA | Murata | ANCV12G44SAA127 |
| 3 | 1 | B1 | 50/200 ohm TX | Anaren | BD2425N50200AHF |
| 4 | 3 | C1,C8,C23 | 0.01u | Murata | GRM155R71E103KA01D |
| 5 | 9 | C2,C7,C17,C20,C21,C22,C24,C25,C27 | 0.1u | Murata | GRM155R71A104KA01D |
| 6 | 1 | C16 | 1u | Murata | GRM188R71A105KA61D |
| 7 | 1 | C4 | 15p | Johanson | 500R07S150GV4T |
| 8 | 3 | C5,C6,C9 | 6.8p | Murata | GRM1555C1H6R8DZ01D |
| 9 | 1 | C11 | 16p, 1% | Murata | GRM1555C1H160FZ01D |
| 10 | 2 | C12,C13 | 16p | Murata | GRM1555C1H160JZ01D |
| | | C12,C13, approved alternate | 16p, 1% | Murata | GRM1555C1H160FZ01D |
| 11 | 1 | C10 | 18p, 1% | Murata | GRM1555C1H180FZ01D |
| 12 | 1 | C18 | 2.2u | Murata | GRM188R71A225KE15D |
| 13 | 3 | C14,C15,C19 | 0.22u | Murata | GRM155R60J224KE01D |
| 14 | 1 | C26 | 4.7u | Murata | GRM21BR71C475KA73L |
| 15 | 1 | DN1 | RB717F | ROHM | RB717FT106 |
| 16 | 1 | J1 | 48037-2100 | MOLEX | 0480372100 |
| | | J1, approved alternate | 48037-1000 | MOLEX | 0480371000 |
| 17 | 1 | L1 | 5.6nH | Johanson | L-07C5N6SV6T |
| 18 | 2 | L2,L3 | 330@100MHz | TDK | MPZ2012S331A |
| 19 | 1 | Q1 | IRLML6402 | International Rectifier | IRLML6402PBF |
| 20 | 4 | R1,R2,R4,R10 | 10K | Vishay | CRCW040210K0FKED |
| 21 | 1 | R9 | 1K | Vishay | CRCW04021K00FKED |
| 22 | 2 | R5,R6 | 0 | Vishay | CRCW04020000Z0ED |
| 23 | 1 | R7 | 43.0K | Vishay | CRCW040243K0FKED |
| 24 | 1 | R8 | 56.0K | Vishay | CRCW040256K0FKED |
| 25 | 1 | U1 | MSP430F1611 | Texas Instruments | MSP430F1611IRTDT |
| 26 | 1 | U2 | 7053345-004 | | |
| 26.a | 1 | | CC2430F128 | Texas Instruments | CC2430F128RTC |
| 26.b | 1 | | 9028616-002 | | |
| 27 | 1 | U3 | USBLC6-2P6 | ST Microelectronics | USBLC6-2P6 |
| 28 | 1 | U4 | FT232RQ | FTDI CHIP | FT232RQ |
| 29 | 1 | Y1 | 32.768kHz | MicroCrystal | CC7V-T1A-32.768kHz-12.5pF-10ppm |
| 30 | 1 | Y2 | 32.000MHz | KDS - Daishinku | 1C332000AA0A |
| | | Y2, approved alternate | 32.000MHz | KDS - Daishinku | 1B332000AA0A |
| | | Y2, approved alternate | 32.000MHz | CTS | 403C11L32M00000 |

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET PER ASME Y14.5M (1994).
2. THIS DRAWING NUMBER DEFINES THE RELATED CAD FILE, DOCUMENT FILE (PDF) AND IGS FILE. ANY DIMENSIONAL INFORMATION NOT CONTAINED IN THIS DRAWING SHALL BE INTERPRETED VIA DATA IN THE ASSOCIATED FILES.
3. ELECTRONIC SPECIFICATION DETAILS ARE CONTAINED IN DAL-018-55-0003 BOM.
4. ENSURE USB CONNECTOR TABS ARE CUT TO MEET MAXIMUM INSPECTION DIMENSION, IF REQUIRED.

| REVISIONS | | | |
|-----------|---------------------------------|-----------|-----------|
| REV. | DESCRIPTION | DATE | APPROVED |
| A | UPDATE PER EC: DAL-018-EC-00008 | 6/21/2010 | A. MATTSO |
| B | UPDATE PER EC: DAL-018-EC-00010 | 11/2/2010 | A. MATTSO |



| | | | |
|-----------------------------|-----------------|--|------------------|
| 1 | DAL-018-55-0003 | PCBA, AUDI2 | 1 |
| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
| UNLESS OTHERWISE SPECIFIED: | | FLEX Medical 640 SHILOH RD PLANO, TX 75074 | |
| DIMENSIONS ARE IN INCHES | DRAWN APM | NAME APM | DATE 06/03/10 |
| TOLERANCES: XXX = ±.01 | CHECKED | TITLE: PCBA, AUDI2 | |
| XXX = ±.008 | PM | | |
| ANGULAR: ±1° | Q.A. | | |
| THIRD ANGLE PROJECTION | | PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FLEX MEDICAL. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF FLEX MEDICAL IS PROHIBITED. | |
| DO NOT SCALE DRAWING | | SIZE DWG. NO. B DAL-018-50-0003 | REV B |
| | | SCALE: 2:1 | SHEET 1 OF 1 |

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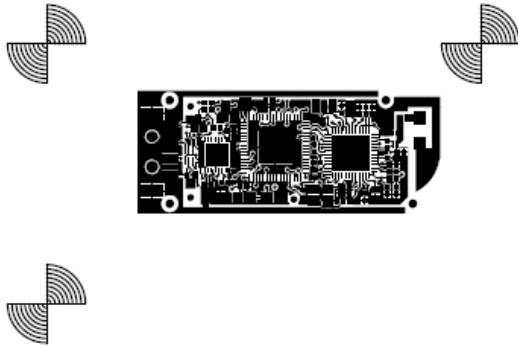
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| DOCUMENT TITLE USB - TEL-D BRIDGE PCB (AUDI2) | DOCUMENT TITLE DAL-018-55-0002 | ORGANIZATION FlexMedical - Plano |
| REVISION C | DOCUMENT OWNER Mike McCafferty, P.E. | EAR CONTROLLED ECCN 5E002 |

| APPROVALS | | | |
|-----------------------|--------------------------|-----------|------|
| NAME | TITLE | SIGNATURE | DATE |
| Mike McCafferty, P.E. | Sr. Electronics Engineer | | |
| Vrunjal Mehta | Project Manager | | |
| Niki Patel | Quality Assurance | | |
| | | | |

| REVISION HISTORY | | | |
|------------------|-------------------------------|-----------------|------------|
| REV | DESCRIPTION OF CHANGE | ORIGINATOR | DATE |
| A.01 | CREATE | MIKE MCCAFFERTY | 02/02/2009 |
| A.02 | REVISION, NEW OUTLINE | ACD | 05/15/2009 |
| A | RELEASE | MIKE MCCAFFERTY | 05/15/2009 |
| B.01 | DFM EDITS | ACD | 07/10/2009 |
| B | RELEASE | MIKE MCCAFFERTY | 07/10/2009 |
| C.01 | CHANGES PER DAL-018-EC-00010 | MIKE MCCAFFERTY | 10/11/2010 |
| C.02 | DFM EDITS PER MULTEK FEEDBACK | MIKE MCCAFFERTY | 10/21/2010 |
| C | DFM EDITS PER MULTEK FEEDBACK | MIKE MCCAFFERTY | 11/02/2010 |

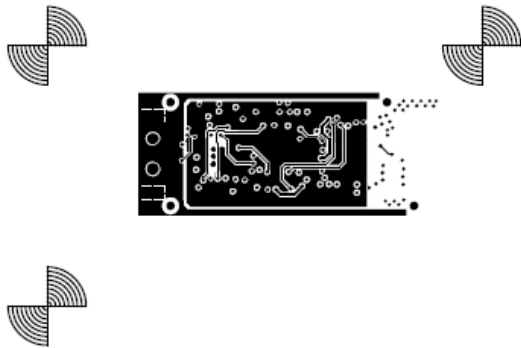
SH 1 OF 13

| | |
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| FLEXTRONICS CONFIDENTIAL DAL-018-55-0002 REV C COVER | FLEX MEDICAL 600 SHILOH ROAD PLANO, TX 75074 |
|--|--|

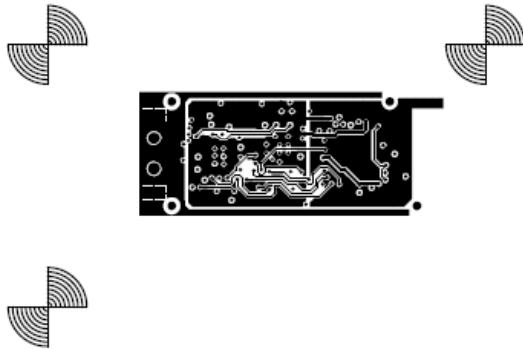


SH 2 OF 13

| | |
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| DAL-018-55-0002 REV C | 600 SHILOH ROAD |
| LAYER 1 - PRIMARY SIDE | PLANO, TX 75074 |

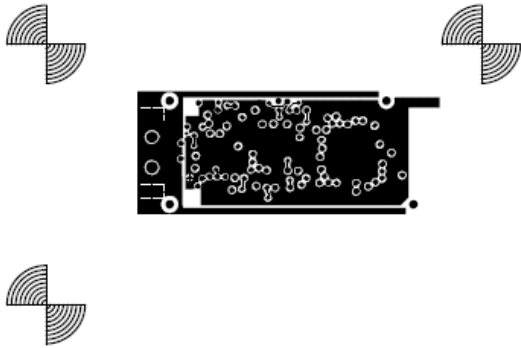


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DAL-018-55-0002 REV C 600 SHILOH ROAD
LAYER 2 PLANO, TX 75074



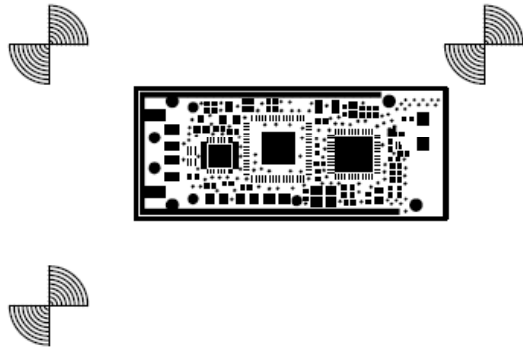
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| | |
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| DAL-018-55-0002 REV C | 600 SHILOH ROAD |
| LAYER 3 | PLANO, TX 75074 |



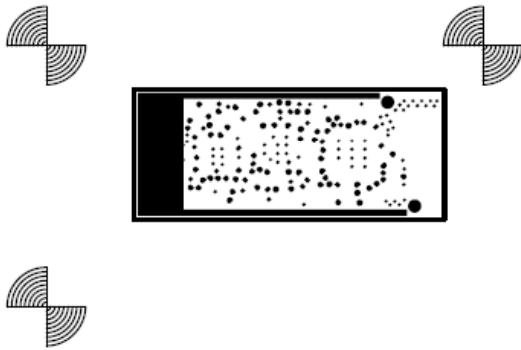
54 5 OF 13

| | |
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| FLEXTRONICS CONFIDENTIAL | FLEX MEDICAL |
| DAL-018-55-0002 REV C | 600 SHILOH ROAD |
| LAYER 4 - SECONDARY SIDE | PLANO, TX 75074 |



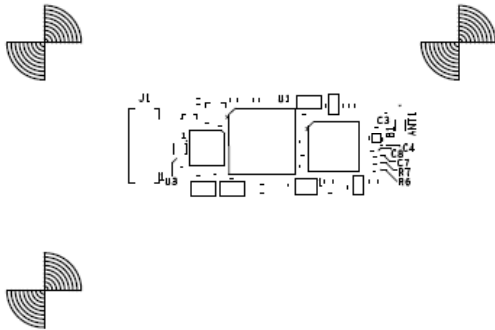
SH6 OF 13

FLEXTRONICS CONFIDENTIAL FLEX MEDICAL
DAL-018-55-0002 REV C 600 SHILOH ROAD
SOLDERMASK - PRIMARY SIDE PLANO, TX 75074

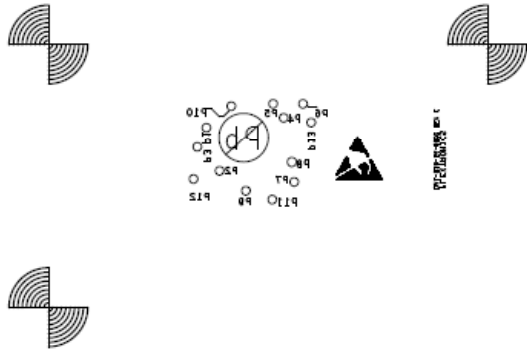


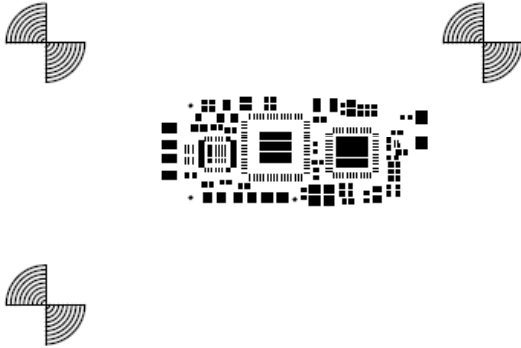
SH 7 OF 13

| | |
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| FLEXTRONICS CONFIDENTIAL | FLEX MEDICAL |
| DAL-018-55-0002 REV C | 600 SHILOH ROAD |
| SOLDERMASK - SECONDARY SIDE | PLANO, TX 75074 |



SH 8 OF 13
FLEXTRONICS CONFIDENTIAL FLEX MEDICAL
DAL-018-55-0002 REV C 600 SHILOH ROAD
SILKSCREEN - PRIMARY SIDE PLANO TX 75074

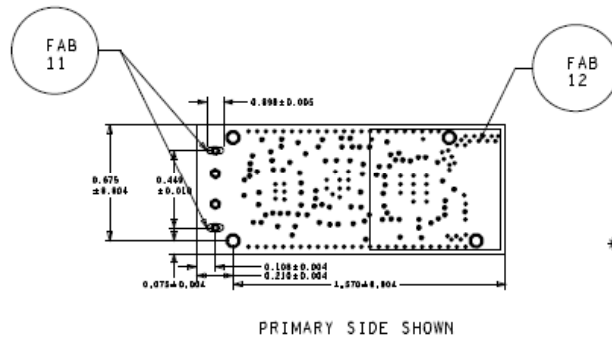




SH10 OF 13

| | |
|----------------------------|-----------------|
| FLEXTRONICS CONFIDENTIAL | FLEX MEDICAL |
| DAL-018-55-0002 REV C | 600 SHILOH ROAD |
| SOLDERPASTE - PRIMARY SIDE | PLANO, TX 75074 |

| DRILL CHART: TOP to BOTTOM | | | | |
|----------------------------|------|------------|------------|-----|
| ALL UNITS ARE IN MILS | | | | |
| FIGURE | SIZE | TOLERANCE | PLATED | QTY |
| * | 10.0 | +3.0/-10.0 | PLATED | 105 |
| * | 12.0 | +3.0/-12.0 | PLATED | 94 |
| • | 39.4 | +3.0/-3.0 | PLATED | 2 |
| ⊙ | 49.2 | +3.0/-3.0 | PLATED | 2 |
| ○ | 67.0 | +3.0/-3.0 | NON-PLATED | 4 |



FAB NOTES:

- ALL DIMENSIONS ARE IN INCHES, UNLESS STATED OTHERWISE.
- THE PWB SHALL BE FABRICATED TO IPC-6012 CLASS 2 AND WORKMANSHIP SHALL CONFORM TO IPC-A-600 CLASS 2, CURRENT REVISIONS.
- PWB MATERIAL SHALL BE 170 Tg TUC-862 OR EQUIVALENT, HALOGEN FREE, RoHS COMPLIANT, AND LEAD FREE ASSEMBLY COMPLIANT. PWB MATERIAL SHALL MEET OR EXCEED IPC-4101B. RoHS CERTIFICATE OF CONFORMANCE SHALL BE DELIVERED WITH EACH LOT.
- PWB MATERIAL AND CONSTRUCTION TO BE U.L. APPROVED (94V-0) AND MARKED ON THE FINISHED PWB.
- MINIMUM COPPER WALL THICKNESS OF PLATED-THROUGH HOLES TO BE 0.001".
- OVERALL PWB THICKNESS TO BE 0.043" +/- 0.004" AND APPLIES AFTER ALL LAMINATION AND PLATING PROCESSES, MEASURED FROM COPPER TO COPPER.
- MAXIMUM PWB WARP AND TWIST TO BE 0.0075" PER INCH.
- PWB ARRAY SHALL HAVE FIDUCIALS, TOOLING HOLES, AND V-SCORE PREFERRED. MOUSE-BITES ONLY IF NECESSARY. AS-BUILT GERBER FILES SHALL BE PROVIDED.
- PWB SHALL BE ELECTRICALLY TESTED USING THE SUPPLIED IPC-D-356 NETLIST.
- PROVIDE 0.010"-0.015" SOLDER MASK RELIEF FROM PWB EDGE.
- ADD TWO (2) PLATED-THROUGH SLOTS ON J1.
- NO ADDITIONAL COPPER ALLOWED (THIEVING OR LOGO) IN THIS AREA, ALL LAYERS.
- ALL DIMENSION TOLERANCES ARE +/- 0.003", UNLESS STATED OTHERWISE.
- FABRICATOR TO SHAVE/TRIM THE CORNERS OF THE SMT PADS TO PROVIDE 8.6 MILS MINIMUM SMT PAD TO PAD SPACING TO MAINTAIN A SOLDERMASK WEB BETWEEN SMT PADS.
- ASSEMBLY LABEL SHALL HAVE NO METALLIC CONTENT AND SHALL NOT COVER TEST POINTS.

PROCESS NOTES:

- PLATE ALL EXPOSED AREAS WITH ELECTROLESS NICKEL, IMMERSION GOLD, NICKEL 100 MICROINCHES MINIMUM THICKNESS, GOLD 2-6 MICROINCHES THICK.
- APPLY LPI SOLDERMASK OVER BARE COPPER (SMOBC). COLOR: BLUE. (TAIYO PSR4000 BLUE MIN 10 μm THICK) SOLDERMASK SHALL CONFORM TO IPC-SM-840, CLASS T, CURRENT REV.
- SOLDERMASK ARTWORK HAS ZERO (0) OVERSIZED PADS. FABRICATION VENDOR IS ALLOWED TO ADJUST THE COMPONENT SOLDERMASK FOR PADS TO MEET THEIR TOOLING AND WEBBING REQUIREMENTS.
- APPLY LPI SILKSCREEN TAIYO S-411 OR EQUIVALENT PER THE ARTWORK. COLOR: WHITE. SETBACK FROM ALL PADS 0.006".

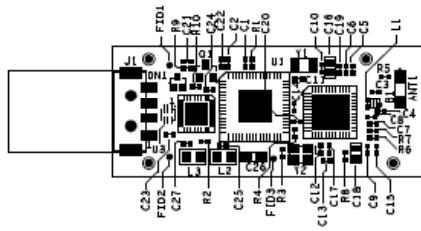
STACKUP:

| | | | | |
|--------------------------|---------|----------------|----------------|------|
| $0.043"$ $\pm 0.004"$ | * | PRIMARY SIDE | 1 OZ + PLATING | |
| | 3.5 | +/- 1.0 | PREPREG | |
| | ** | | LAYER 2 | 1 OZ |
| | 28 | *** | DIELECTRIC | |
| | ** | | LAYER 3 | 1 OZ |
| 3.5 | +/- 1.0 | PREPREG | | |
| * | | SECONDARY SIDE | 1 OZ + PLATING | |

- * MINIMUM COPPER THICKNESS TO BE PER TABLE 3-8 IN IPC-6012 CLASS 3. (52.9μm)
- ** MINIMUM COPPER THICKNESS TO BE PER TABLE 3-7 IN IPC-6012 CLASS 2. (24.9μm)
- *** CENTER DIELECTRIC (28) MAY BE ADJUSTED TO MEET THE BOARD THICKNESS REQUIREMENT.

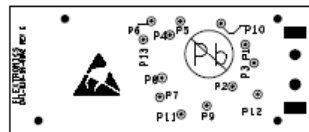
SH11 OF 13

| | |
|--------------------------|-----------------|
| FLEXTRONICS CONFIDENTIAL | FLEX MEDICAL |
| DAL-018-55-0002 REV C | 600 SHILOH ROAD |
| FABRICATION DRAWING | PLANO, TX 75074 |



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FLEXTRONICS CONFIDENTIAL FLEX MEDICAL
DAL-018-55-0002 REV C 600 SHILOH ROAD
ASSEMBLY - PRIMARY SIDE PLANO, TX 75074



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| | | |
|---|---|--|
| DOCUMENT TITLE USB - TEL-D BRIDGE SCHEMATIC (AUDI2) | DOCUMENT # DAL-018-15-0009 | ORGANIZATION FlexMedical - Plano |
| REVISION C | DOCUMENT OWNER Mike McCafferty, P.E. | EAR CONTROLLED ECCN 5E002 |

APPROVALS

| NAME | TITLE | SIGNATURE | DATE |
|-----------------------|---------------------------------------|------------------------------|------------|
| Mike McCafferty, P.E. | Sr. Electronics Engineer | <i>Mike McCafferty, P.E.</i> | 09/30/2009 |
| Jeff Schwab | Sr. Computer Engineer | <i>Jeff Schwab</i> | 9/30/2009 |
| Kaezad Mehta | Sr. Electronics Engineer Medtronic | <i>Kaezad J. Mehta</i> | 09/28/09 |

REVISION HISTORY

| REV | DESCRIPTION OF CHANGE | ORIGINATOR | DATE |
|------|---|-----------------------|------------|
| A.01 | INITIAL DRAFT | Mike McCafferty, P.E. | 02/02/2009 |
| A.02 | REVISE FOR BSL, CHANGE CC2430 CRYSTAL LOADING | Mike McCafferty, P.E. | 04/08/2009 |
| A.03 | REVISE FOR HARDWARE HANDSHAKE, MONTE CARLO | Mike McCafferty, P.E. | 04/22/2009 |
| A.04 | RELEASE TO PCB LAYOUT TEAM | Mike McCafferty, P.E. | 04/28/2009 |
| A.05 | REMOVE BUFFERS BECAUSE FT232 IO DEFAULTS TO INPUT | Mike McCafferty, P.E. | 05/04/2009 |
| A.06 | CLEANUP TEXT ERRORS, CLARIFIED CRYSTAL GUARD RINGS, CLEANUP BLOCK DIAGRAM, CHANGE R6=0 | Mike McCafferty, P.E. | 05/08/2009 |
| A | RELEASE | Mike McCafferty, P.E. | 05/11/2009 |
| B.01 | DNI R3, CHANGE Y2, UPDATE CAPACITANCE BASED ON KNOWN PARASITIC C12, C13, C10, C11, SPARE IO | Mike McCafferty, P.E. | 06/29/2009 |

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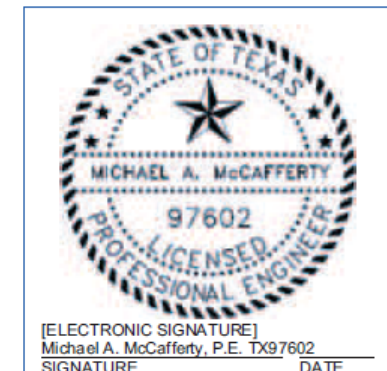
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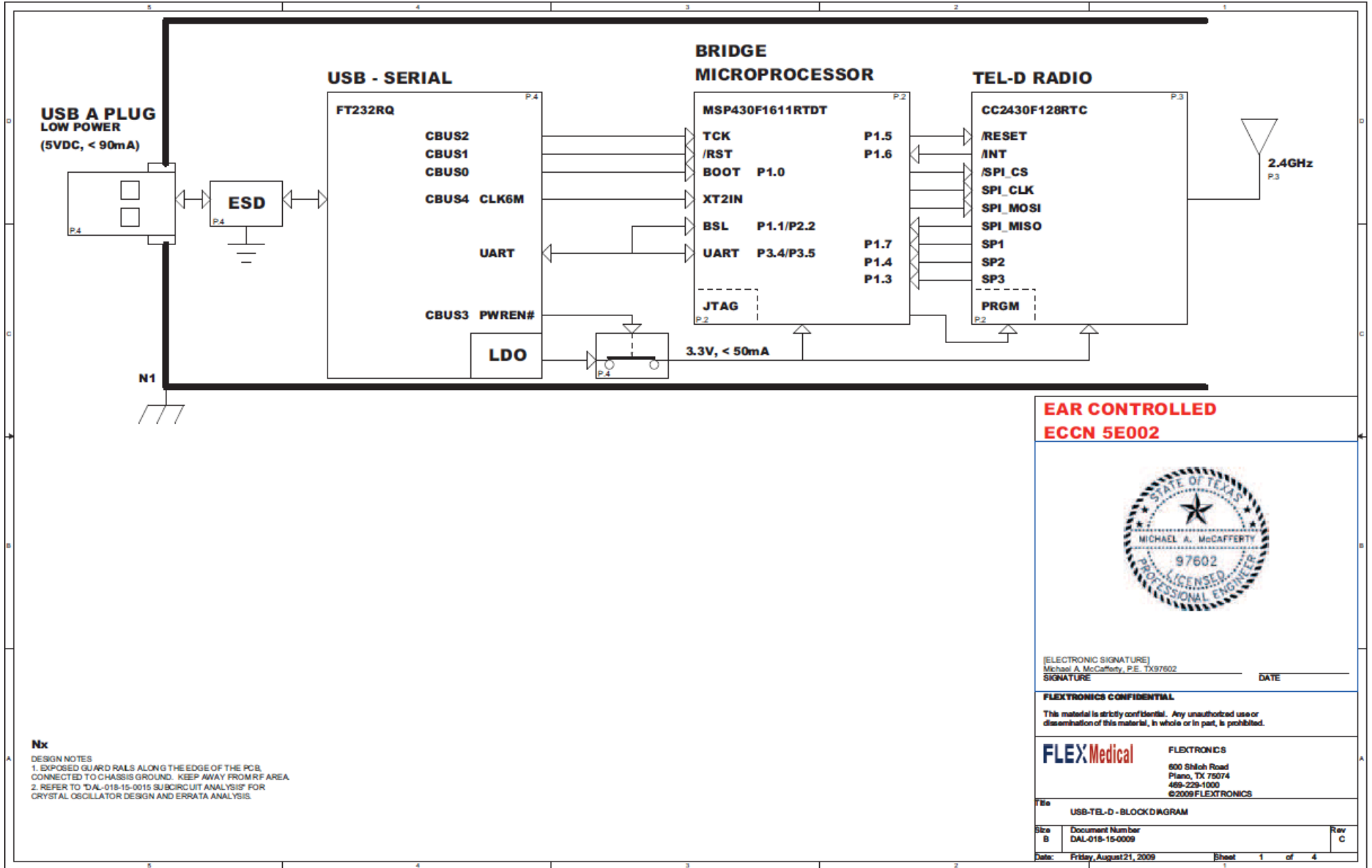
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| DOCUMENT TITLE USB - TEL-D BRIDGE SCHEMATIC (AUDI2) | DOCUMENT # DAL-018-15-0009 | ORGANIZATION FlexMedical - Plano |
| REVISION C | DOCUMENT OWNER Mike McCafferty, P.E. | EAR CONTROLLED ECCN 5E002 |

REVISION HISTORY (CONTINUED)

| REV | DESCRIPTION OF CHANGE | ORIGINATOR | DATE |
|------|--|-----------------------|------------|
| B | RELEASE | Mike McCafferty, P.E. | 07/17/2009 |
| C.01 | ADD NOTE FOR DNI ON R3, REVISED SP1, SP3, SP3 ON BLOCK DIAGRAM | Mike McCafferty, P.E. | 08/21/2009 |
| C | RELEASE | Mike McCafferty, P.E. | 08/21/2009 |

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Nx
 DESIGN NOTES
 1. EXPOSED GUARD RAILS ALONG THE EDGE OF THE PCB, CONNECTED TO CHASSIS GROUND. KEEP AWAY FROM RF AREA.
 2. REFER TO 'DAL-018-15-0015 SUBCIRCUIT ANALYSIS' FOR CRYSTAL OSCILLATOR DESIGN AND ERRATA ANALYSIS.

**EAR CONTROLLED
 ECCN 5E002**

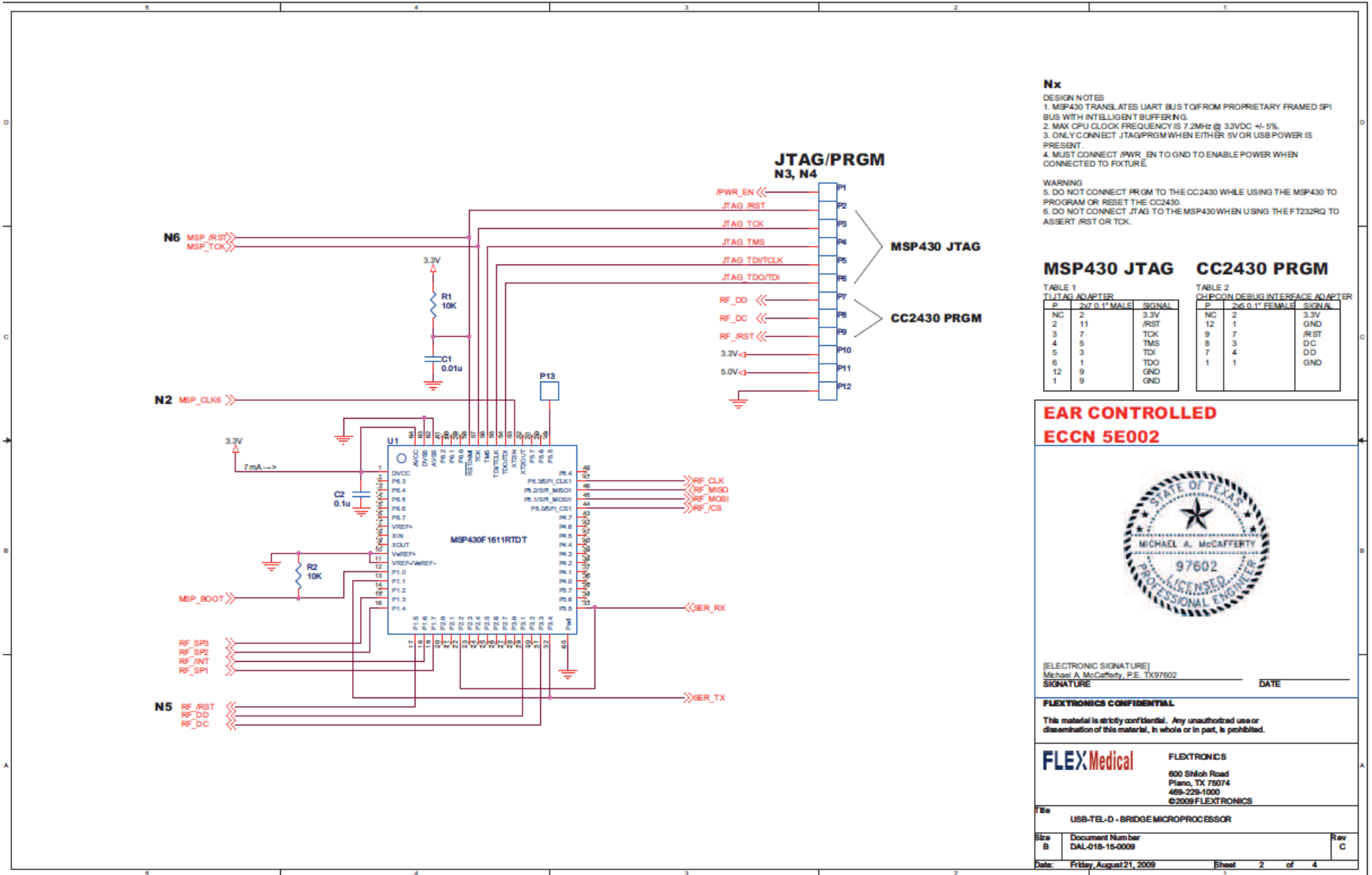


[ELECTRONIC SIGNATURE]
 Michael A. McCafferty, P.E. TX97602
 SIGNATURE _____ DATE _____

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File: USB-TEL-D - BLOCK DIAGRAM
 Size: B Document Number: DAL-018-15-0009 Rev: C
 Date: Friday, August 21, 2009 Sheet: 1 of 4



Nx

- DESIGN NOTES**
1. MSP430 TRANSLATES UART BUS TO/FROM PROPRIETARY FRAMED SPI BUS WITH INTELLIGENT BUFFERING.
 2. MAX CPU CLOCK FREQUENCY IS 7.2MHz @ 3.3VDC +/- 5%.
 3. ONLY CONNECT JTAG/PRGM WHEN EITHER 5V OR USB POWER IS PRESENT.
 4. MUST CONNECT /PWR_EN TO GND TO ENABLE POWER WHEN CONNECTED TO FIXTURE.

- WARNING**
5. DO NOT CONNECT PRGM TO THE CC2430 WHILE USING THE MSP430 TO PROGRAM OR RESET THE CC2430.
 6. DO NOT CONNECT JTAG TO THE MSP430 WHEN USING THE FT232RL TO ASSERT /RST OR TCK.

MSP430 JTAG

CC2430 PRGM

TABLE 1

| JTAG ADAPTER | | |
|--------------|---------------|--------|
| P | 2x7 0.1" MALE | SIGNAL |
| NC | 2 | 3.3V |
| 2 | 11 | /RST |
| 3 | 7 | TCK |
| 4 | 5 | TMS |
| 5 | 3 | TDI |
| 6 | 1 | TDO |
| 12 | 9 | GND |
| 1 | 9 | GND |

TABLE 2

| CHIPCOON DEBUG INTERFACE ADAPTER | | |
|----------------------------------|-----------------|--------|
| P | 2x6 0.1" FEMALE | SIGNAL |
| NC | 2 | 3.3V |
| 12 | 1 | GND |
| 3 | 7 | /RST |
| 8 | 3 | DC |
| 7 | 4 | DD |
| 1 | 1 | GND |

**EAR CONTROLLED
ECCN 5E002**



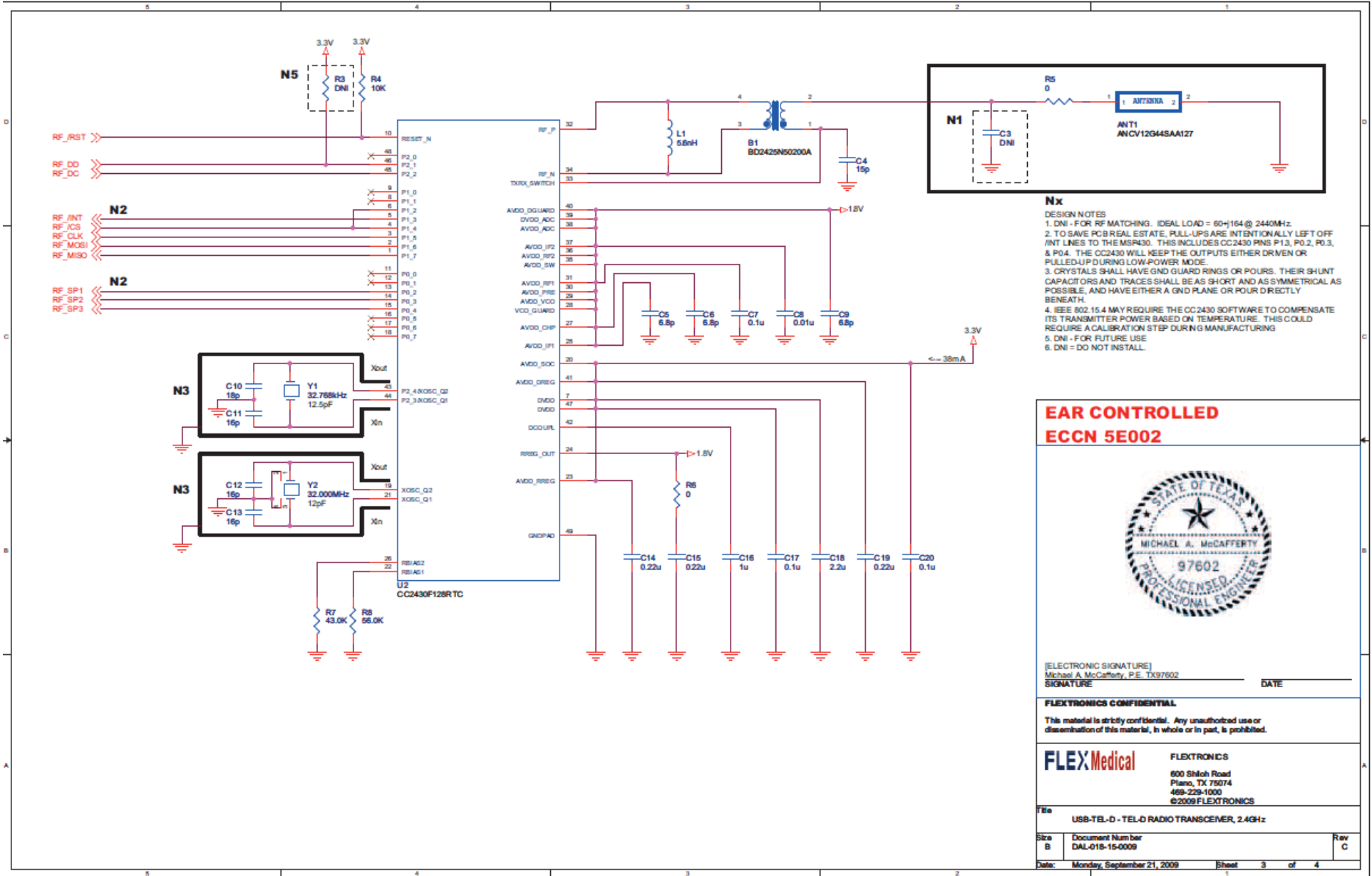
(ELECTRONIC SIGNATURE)
Michael A. McCafferty, P.E. TX97602
SIGNATURE _____ DATE _____

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| File USB-TEL-D - BRIDGE MICROPROCESSOR | | |
| Size B | Document Number DAL-018-15-0009 | Rev C |
| Date: | Friday, August 21, 2009 | Sheet 2 of 4 |



Nx
 DESIGN NOTES
 1. DNI - FOR RF MATCHING. IDEAL LOAD = 60-j164 @ 2440MHz.
 2. TO SAVE PCB REAL ESTATE, PULL-UPS ARE INTENTIONALLY LEFT OFF /INT LINES TO THE MSP430. THIS INCLUDES CC2430 PINS P13, P02, P03, & P04. THE CC2430 WILL KEEP THE OUTPUTS EITHER DRIVEN OR PULLED-UP DURING LOW-POWER MODE.
 3. CRYSTALS SHALL HAVE GND GUARD RINGS OR POURS. THEIR SHUNT CAPACITORS AND TRACES SHALL BE AS SHORT AND AS SYMMETRICAL AS POSSIBLE, AND HAVE EITHER A GND PLANE OR POUR DIRECTLY BENEATH.
 4. IEEE 802.15.4 MAY REQUIRE THE CC2430 SOFTWARE TO COMPENSATE ITS TRANSMITTER POWER BASED ON TEMPERATURE. THIS COULD REQUIRE A CALIBRATION STEP DURING MANUFACTURING.
 5. DNI - FOR FUTURE USE
 6. DNI = DO NOT INSTALL.

**EAR CONTROLLED
 ECCN 5E002**

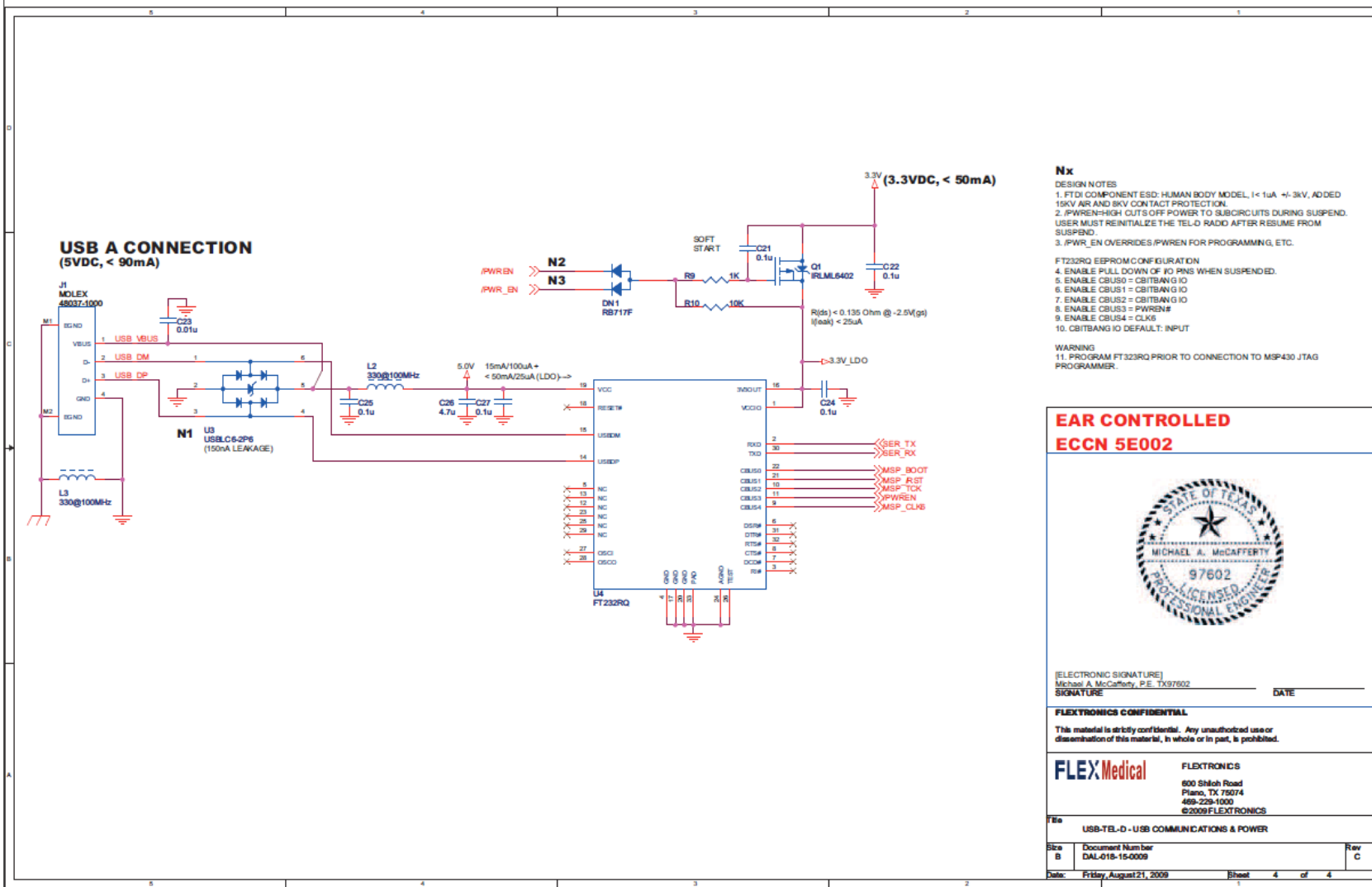


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 Size B Document Number DAL-018-15-0009 Rev C
 Date: Monday, September 21, 2009 Sheet 3 of 4



5 DOCUMENT HISTORY

VERSION HISTORY

| VERSION | DESCRIPTION OF CHANGE |
|---------|-----------------------|
| 1 | Initial Release |