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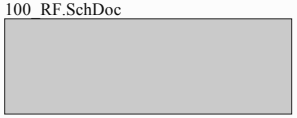

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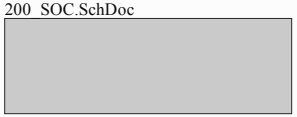

U_300_AUX
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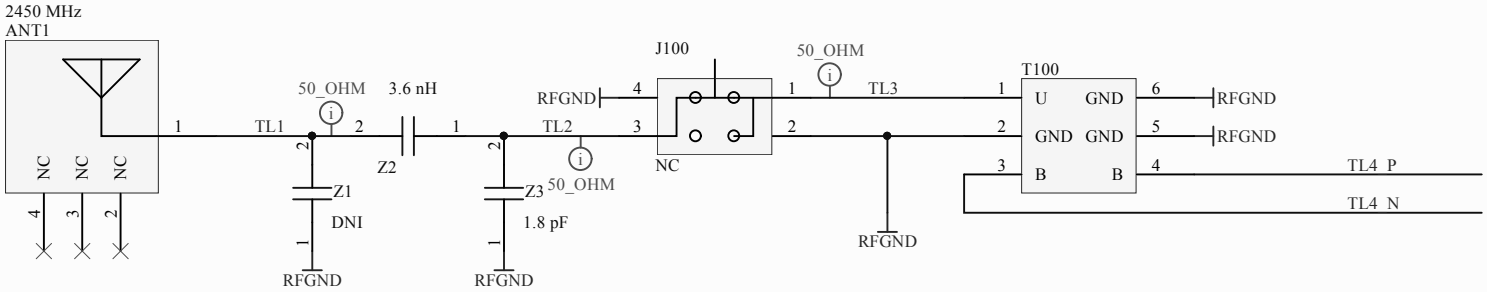

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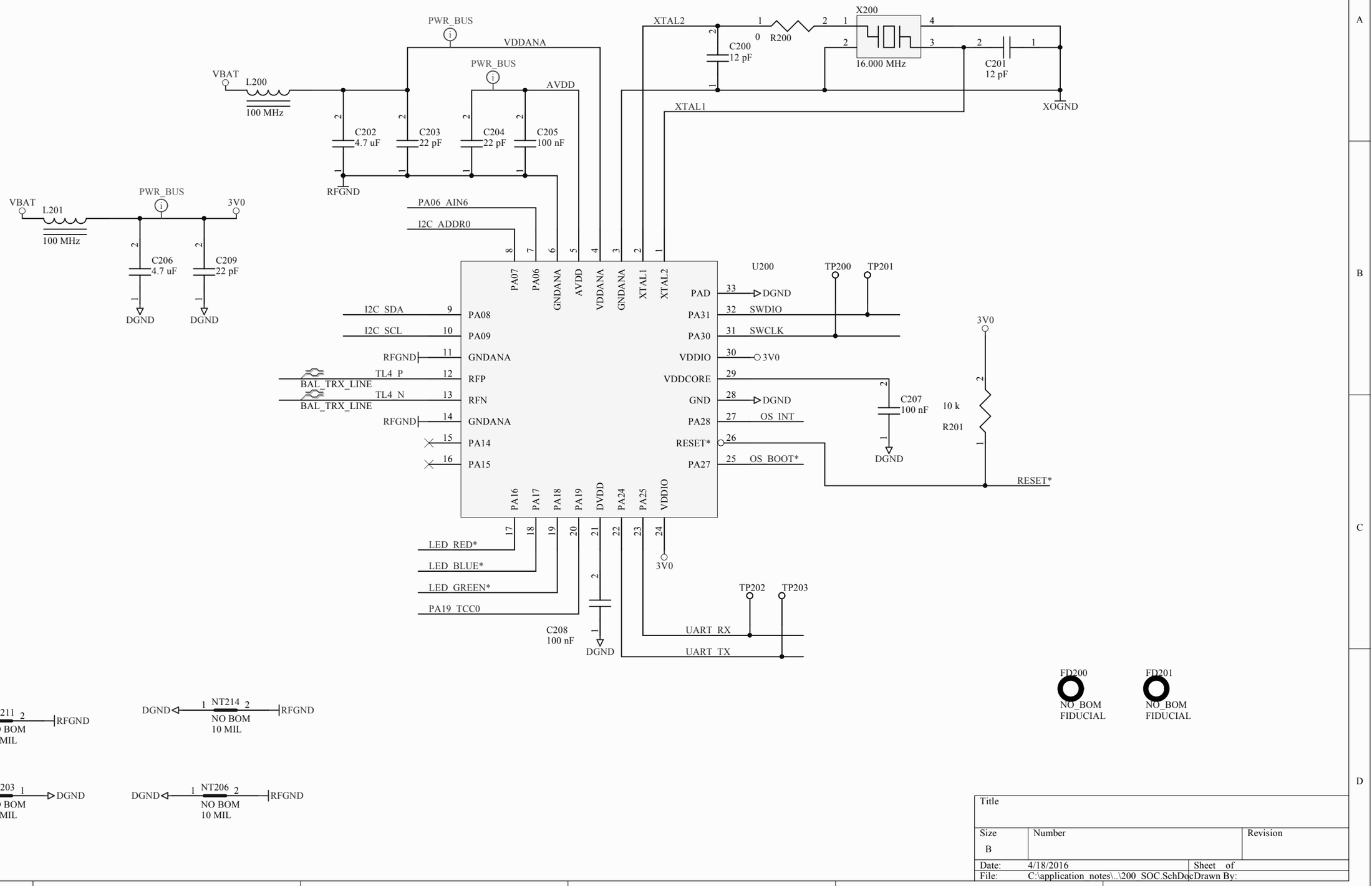

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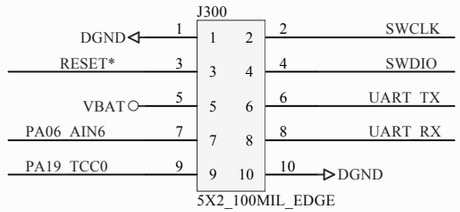

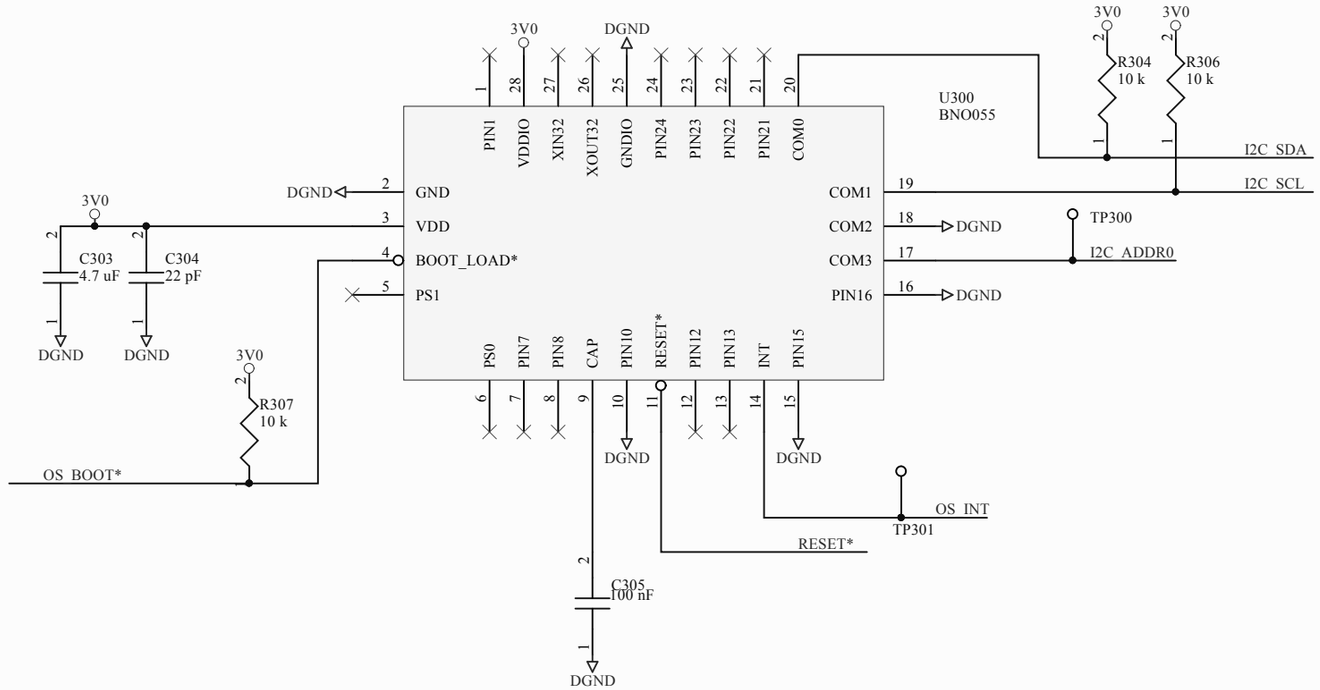

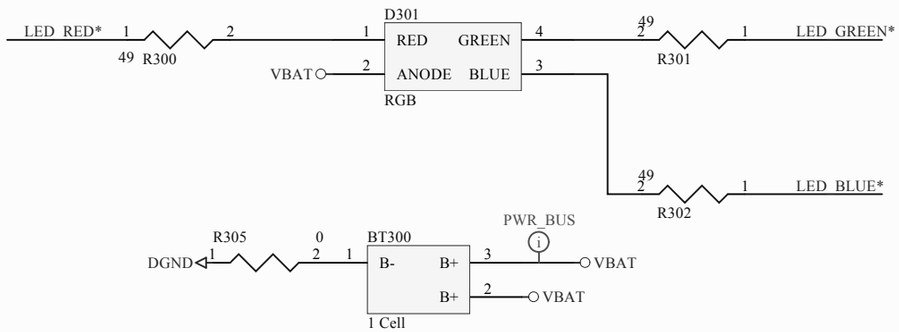

H300
4-40

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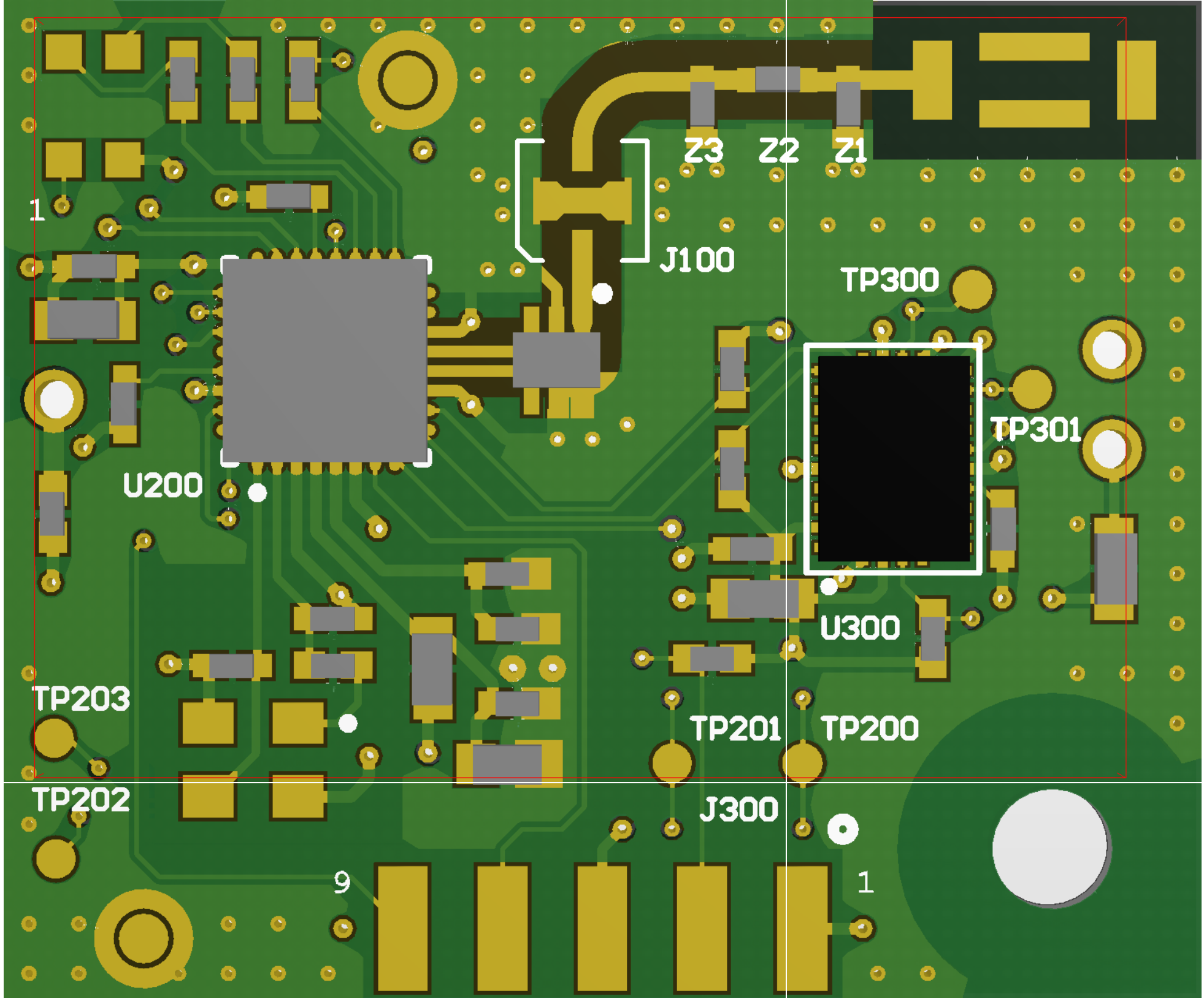
Z3
Z2
Z1
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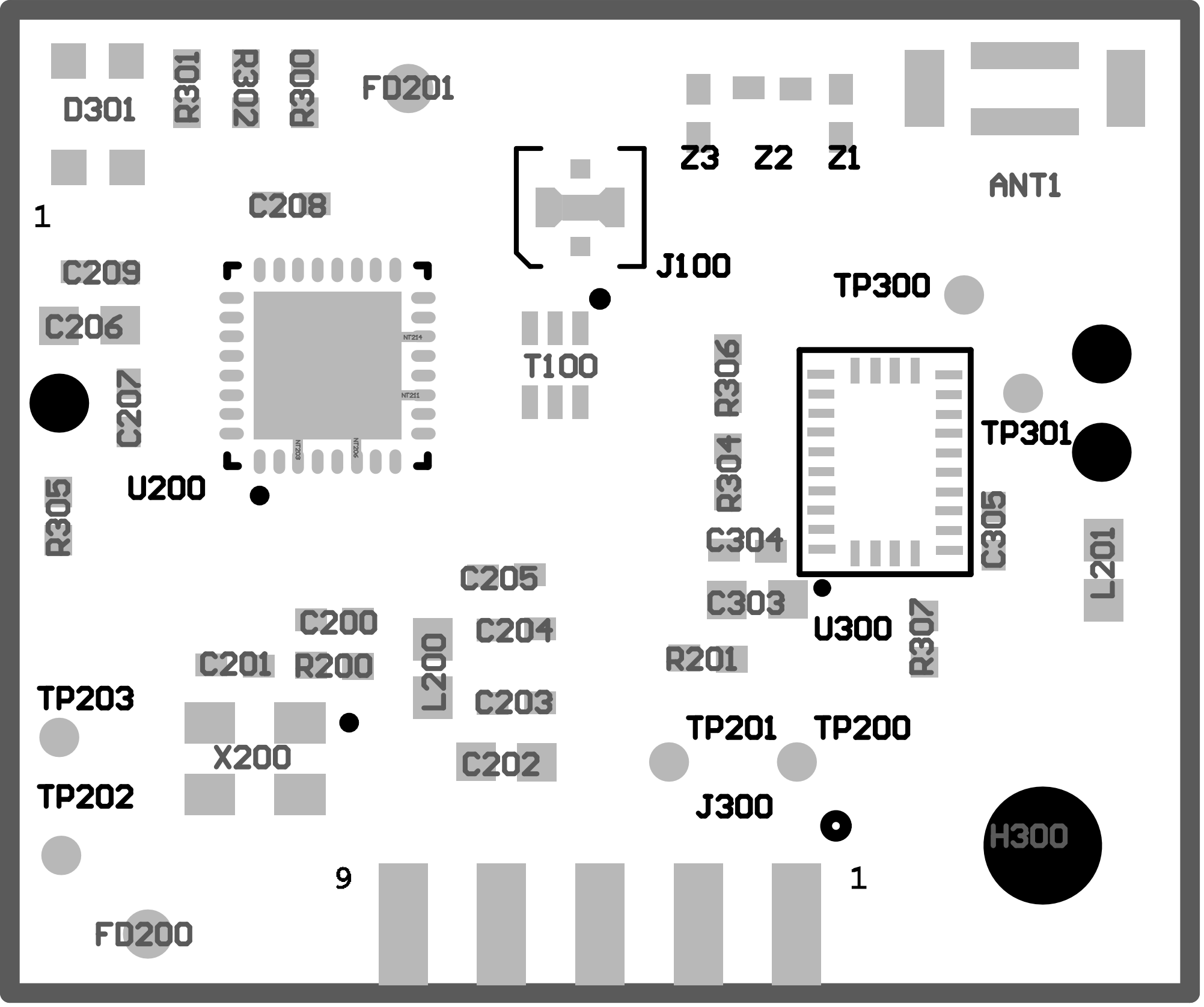
J100
TP300
TP301
U200
U300
TP203
TP201
TP200
TP202
J300
9
1


D301
R301
R302
R300
FD201
Z3
Z2
Z1
ANT1
1
C208
C209
C206
C207
R305
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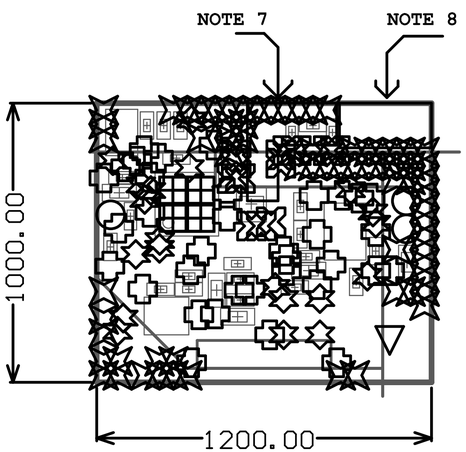
J100
T100
TP300
R306
R304
C304
C303
U300
TP301
C305
L201
C205
C200
C204
C201
R200
L200
C203
R201
R307
TP203
X200
C202
TP201
TP200
TP202
J300
H300
9
1
FD200

10
2

Symbol	Hit Count	Finished Hole Size	Plated	Hole Type	Physical Length	Rout Path Length
▽	1	120.00mil (3.048mm)	NPTH	Round		
○	3	40.00mil (1.016mm)	PTH	Round		
□	9	12.99mil (0.330mm)	PTH	Round		
⊠	13	8.20mil (0.208mm)	PTH	Round		
✡	20	8.00mil (0.203mm)	PTH	Round		
✪	35	10.00mil (0.254mm)	PTH	Round		
⧓	68	8.10mil (0.206mm)	PTH	Round		
	149 Total					

Layer	Name	Material	Thickness	Constant	Board Layer Stack
1	Top Overlay				
2	Top Solder	Solder Resist	0.40mil	3.5	
3	Top Layer	Copper	1.40mil		
4	Dielectric 1	FR-4	10.00mil	4.2	
5	RFGND	Copper	1.40mil		
6	Dielectric 2		35.60mil	4.2	
7	DGND	Copper	1.40mil		
8	Dielectric 3		10.00mil	4.2	
9	Bottom Layer	Copper	1.40mil		
10	Bottom Solder	Solder Resist	0.40mil	3.5	
11	Bottom Overlay				



Atmel Fabrication Instructions for CHICKLET R1.1 03/23/2016

1) General Requirements:

a) Board shall be built per IPC-A-600C, Class II. Latest revision.

b) PCB fabrication process and materials must be compliant with the RoHS Directive and compatible with lead free assembly processes. Certificate of RoHS compliance shall be furnished for each lot within a shipment.

c) Board shall be 100% electrically tested per IPC-6012 and IPC 9252 Class II latest revision; certificate of test compliance shall be furnished for each lot within a shipment.

d) Configuration of the board not specifically dimensioned on the drawing shall be controlled by Gerber data.

e) Maximum Warp or twist shall not exceed 1%

f) Board outlines dimension tolerance +/- 10 mil, unless otherwise specified. Refer to board outline dimensions.

g) Total board thickness 0.062 inches (62 mils)

h) Nominal layout rules 5 mil trace and 5 mil space unless otherwise specified by Gerber data.

2) Material:

Standard FR-4 (FR-4 with Tg of 180ºC minimum or with Td of 350ºC minimum for better reliability), the dielectric constant is approximately 4.5

3) Surface Finish:

a) All exterior surface finish shall be plated with 3-8u inches of immersion Gold over 120-250u inches of Electroless Nickel.

b) Starting copper weight 1/2 oz. Finish copper weight 1 oz.

4) Solder Mask:

a) Liquid Photo Imageable (LPI) solder mask (Green Color) shall be applied on both sides of the board in accordance with IPC-SM-840 latest revision.

b) All test points and gold fingers shall be free of solder mask.

5) Drilling:

a) All holes and blind vias should be within +/-3 mils of their true position unless otherwise stated.

b) Diameters in chart are finished hole sizes and tolerance is +/-3 mils.

6) Marking:

a) Component markings: Silkscreen both sides with white non-conductive epoxy ink. Silkscreen shall not overlap any component pad or through-hole. Lands and vias and other exposed areas to be free of ink.

b) Identification: Vendor logo, part number with revision and date code shall be etched, or silkscreened on the board.

c) Silkscreen text is on TOP OVERLAY layer (GTC). Reference designators on mechanical layer 2 are for assembly drawing location.

7) Impedance Control:

a) Areas called out as NOTE 7 on fabrication drawing are 50 Ohm Microstrip. Impedance Control 50 Ohms at 2440 MHz. The nominal dimensions of 50 Ohm microstrip traces are:

* 20 mil wide transmission line on layer 1
* RF ground plane on layer 2
* 10 mil thick core insulator between layer 1 and layer 2 with a dielectric constant of approximately 4.5.

Meeting the 50 Ohm tested impedance is the primary requirement. Nominal dimensions and material properties can be adjusted (within reason) by the vendor to meet a tested impedance of 50 Ohms +/- 10% on the test coupon.

b) Vendor shall use a Test Coupon on the PCB array to verify the controlled impedances. A Time Domain Reflectometer (TDR) report is required for acceptance of the PCBs.

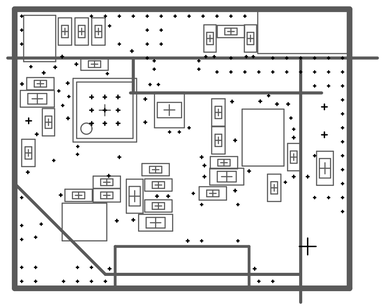
8) Clean RF Areas:

Areas with RF signals such as microstrip traces, RF matching components, PCB antennas, exposed gold-plating and associated voids shall be free of Silkscreen ink, symbols or fragments in metal layers, QC stamps and stickers.

9) Intentional Shorts:

Components with NT Reference Designators are intentional DC shorts. 4 Locations total.

RefDes (X, Y)SIGNALS
NT203(293, 572)XOGND & DGND
NT206(352, 573)RFGND & DGND
NT211(390, 608)RFGND & DGND
NT214(392, 667)RFGNE & DGND



Description	Designator	MFG	MPN	Quantity	VALUE	VENDOR	VPN
ANTENNA CHIP 2.4GHZ	ANT1	Johanson	2450AT42B100E	1	2450 MHz	Digikey	712-1008-1-ND
HOLDER BATTERY T/H CR2032	BT300	TE Connectivity	120591-1	1	1 Cell	Digikey	A99328-ND
CAP CER 12PF 50V 1% NP0 0402	C200, C201	MURATA	GRM1555C1H120 FA01D	2	12 pF	DIGIKEY	490-6196-1-ND
CAP CER 4.7UF 6.3V 10% X5R 0603	C202, C206, C303	MURATA	GRM188R60J475 KE19D	3	4.7 uF	DIGIKEY	490-3297-1-ND
CAP CER 22PF 50V 1% NP0 0402	C203, C204, C209, C304	MURATA	GRM1555C1H220 FA01D	4	22 pF	DIGIKEY	490-8589-1-ND
CAP CER 0.1UF 10V 10% X5R 0402	C205, C207, C208, C305	MURATA	GRM155R61A104 KA01D	4	100 nF	DIGIKEY	490-1318-1-ND
LED RGB DIFFUSED 4PLCC SMD	D301	Cree	CLV1A-FKB-CK1N1G1BB7R4S3	1	RGB	Digikey	CLV1A-FKB-CK1N1G1BB7R4S3CT-ND
CONN SWG JACK STR 50 OHM SMD	J100	Murata	MM8030-2610RJ3	1	NC	Digikey	490-5907-1-ND
CONN HEADER 10POS .110' SGL GOLD	J300	Samtech	TSW-110-07-L-S	1	5X2 Edge Mounted	Digikey	SAM1031-10-ND
FERRITE BEAD 220 OHM .5A 0603	L200, L201	Würth Elektronik	74279263	2	100 MHz	Digikey	732-1581-1-ND
R 0402	R200, R305	GENERIC		2	0		
R 0402	R201, R304, R306, R307	GENERIC		4	10 k		
R 0402	R300, R301, R302	GENERIC		3	49		
Balun, Conjugated match to AT86RF23x	T100	Murata	LFL212G45TG1D569	1	50 Ohm	Murata	CONSIGNMENT
IC MCU 32BIT 256KB FLASH 32QFN	U200	ATMEL	ATSAMR21E18A-MU	1	IEEE 802.15.4	Digikey	ATSAMR21E18A-MU-ND
IMUs - Inertial Measurement Units Absolute Orientation 9-Axis Sensor	U300	Bocsh	BNO055	1	9-Axis	Mouser	262-BNO055
16MHz ±10ppm Crystal 9pF 54 Ohm -40°C ~ 85°C Surface Mount 4-SMD, No Lead (DFN, LCC)	X200	AVX	CX3225SB16000E0FPZ25	1	16.000 MHz	DIGIKEY	478-4815-1-ND
C 0402	Z1	GENERIC		1	DNI		
C 0402	Z2	MURATA	LQG15HS3N6S02D	1	3.6 nH	Digikey	490-6571-1-ND
C 0402	Z3	MURATA	GJM1555C1H1R8C	1	1.8 pF	Digikey	490-3089-1-ND