![AzureWave Technologies, Inc.]

uSD-1212 Adapter Board

for AW-AM281-uSD and AW-CM358-uSD

User Guide

Rev. G

(For Standard)

Revision History

Version	Revision Date	Description	Initials	Approved
A	2020/3/23	● Initial Version	Renton Tao	N.C. Chen
B	2020/5/3	● Update "2. uSD-1212 adapter board HW description"	JM.Pang	N.C. Chen
C	2020/5/15	● Format update	JM.Pang	N.C. Chen
D	2020/6/04	● Add "3. PCM UART extension" ● Update "4. EVB Kits Contents"	JM.Pang	N.C. Chen
E	2020/7/17	● Add Block Diagram of AW-CM358-uSD	JM.Pang	N.C. Chen
F	2020/9/29	● Update 2.3 Schematics and 2.4 Placement ● Update 2.2 HW introduction ● Remove the content of PCM UART extension adapter board in 3. EVB Kits Contents	JM.Pang	N.C. Chen
G	2021/01/27	Add block diagram of AW-AM281-uSD	Grace Liu	N.C. Chen

Table of Content

1. Introduction

AzureWave provides uSD-1212 adapter board with Wi-Fi/BT module solutions for NXP i.MX RT and i.MX6 Evaluation Kits. The uSD-1212 adapter board supports AW-AM281SM (w/ NXP 88W8977) and AW-CM358SM (w/ NXP 88W8987) Wi-Fi combo BT module solutions.

- WiFi through uSD interface is for AW-CM358SM and AW-AM281SM.
- BT through UART is only for AW-CM358SM.
- BT through uSD is only for AW-AM281SM.

Main chip	AzureWave Module	uSD Adaptor Board
NXP 88W8977	AW-AM281SM	AW-AM281-uSD
NXP 88W8987	AW-CM358SM	AW-CM358-uSD

1.1 Supported I/O to host

- Micro SD (uSD) interface for Wi-Fi or WiFi/BT.
- Arduino headers for Bluetooth through UART interface.
- FFC connector for UART and other control signal.
- Embedded UART-to-USB IC as an option for UART.
- Other debug and power interface.

1.2 Supported I/O signal level

I/O\voltage level	1.8V	3.3V
SDIO(3.0/2.0)	V	V
UART	N/A	V

1.3 Supported RF standards

Model \ Standards	Wi-Fi*	BT*
AW-AM281SM	1x1 Wi-Fi 4 (2.4/5GHz)	5.0
AW-CM358SM	1x1 Wi-Fi 5 (2.4/5GHz)	5.0

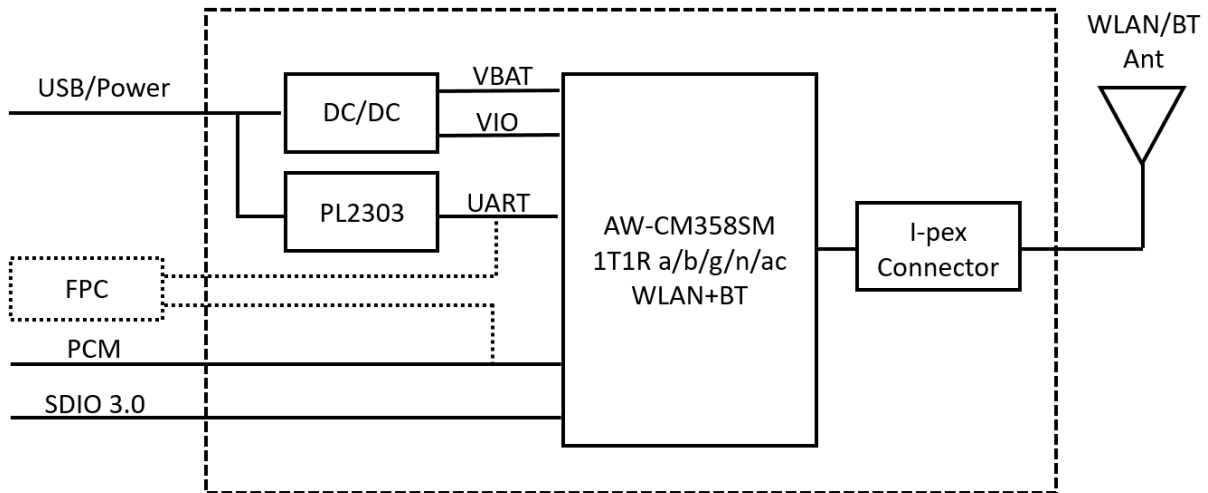*Connecting with i-pex gen 4 RF connector

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2. uSD-1212 Adapter Board

2.1 Block Diagram

For AW-AM281-uSD
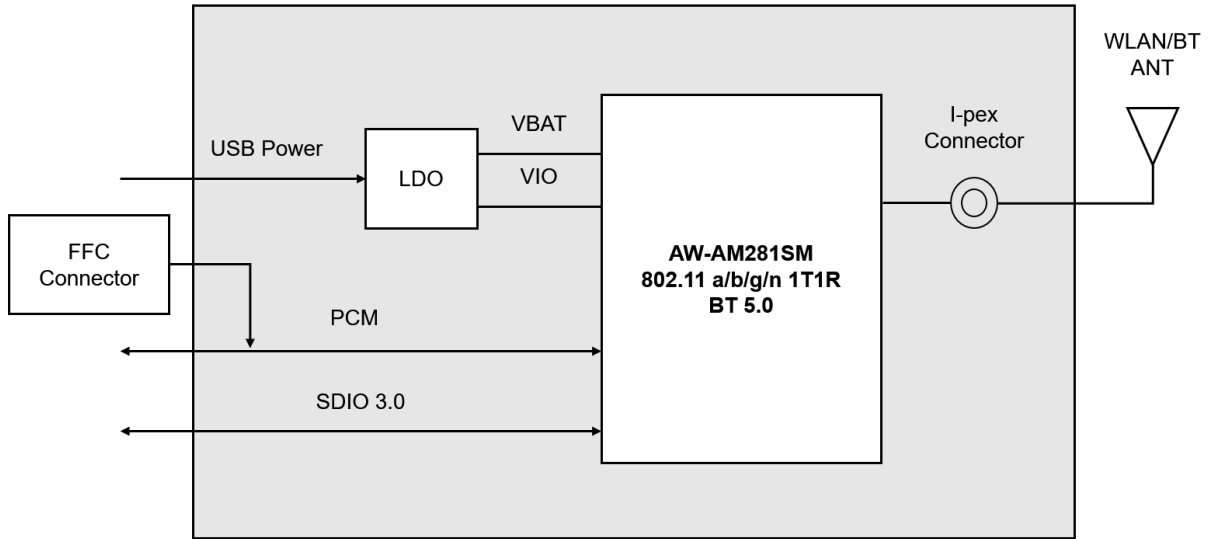
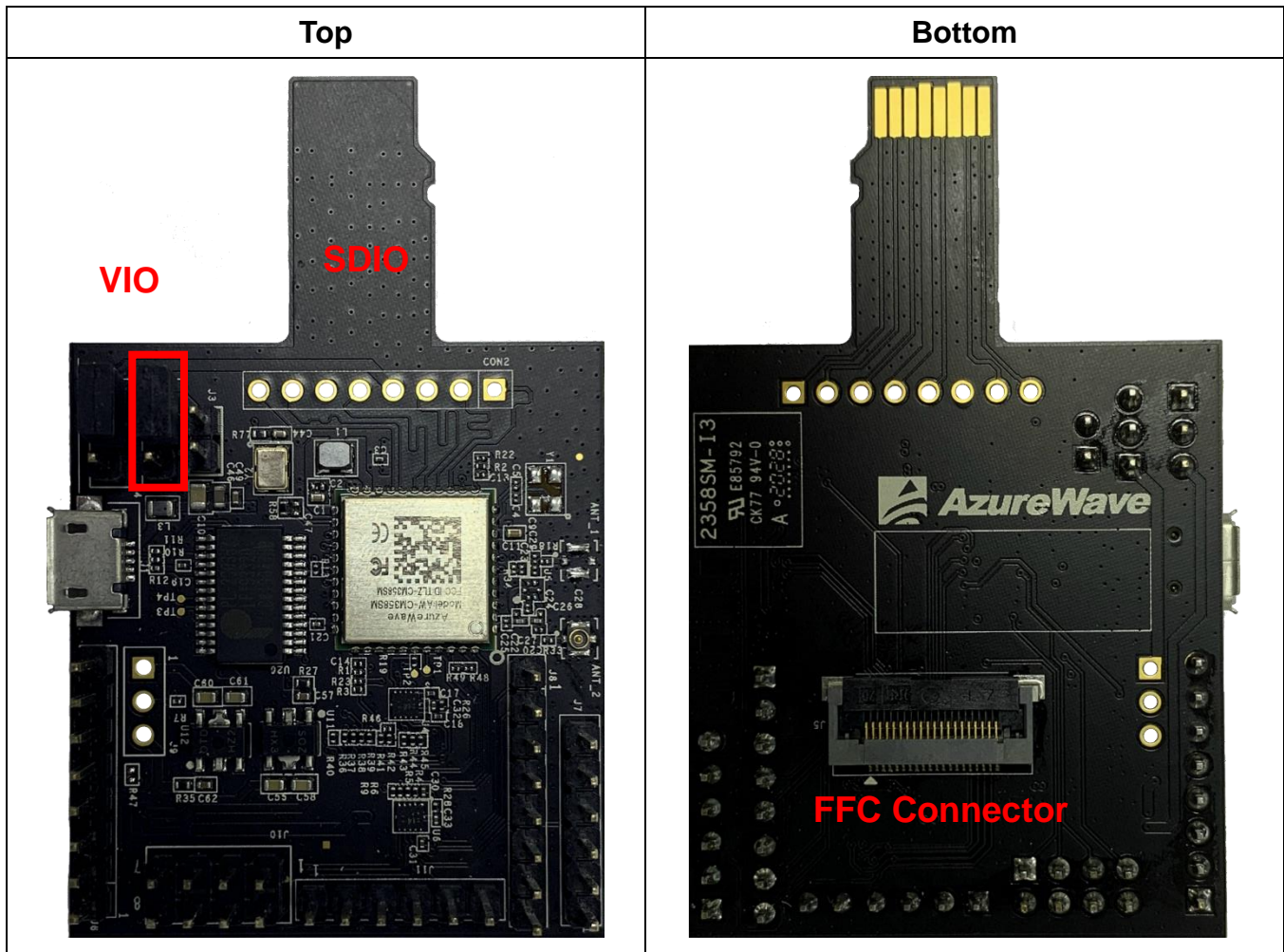**AW-AM281SM-uSD Block Diagram**

For AW-CM358-uSD

AW-CM358-uSD Block Diagram

2.2 HW Description

VIO for SDIO voltage level options

- For 3.3V supply, please connect J4 (2-3).
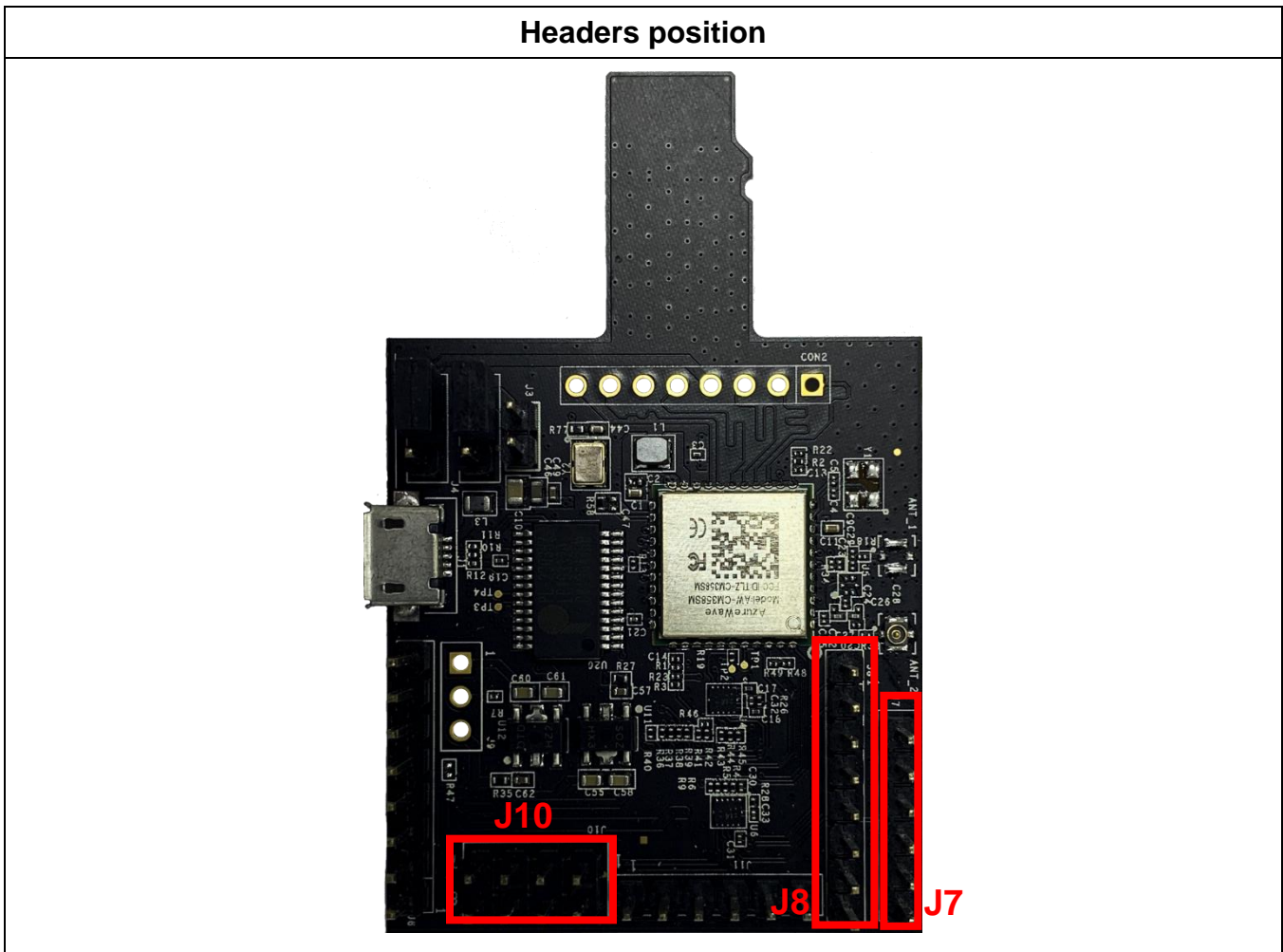- For 1.8V supply, please connect J4 (1-2).

3.3V power source is configured from SDIO connector as default.

Top	Bottom

UART signal is configured from FFC connector at BOT side as default.

By using headers for Bluetooth through UART interface

- UART_RTS: J7 (pin 3) or J10 (pin 6)

- UART_TXD: J8 (pin 1) or J10 (pin 4)

- UART_CTS: J7 (pin 4) or J10 (pin 8)

- UART_RXD: J8 (pin 2) or J10 (pin 2)

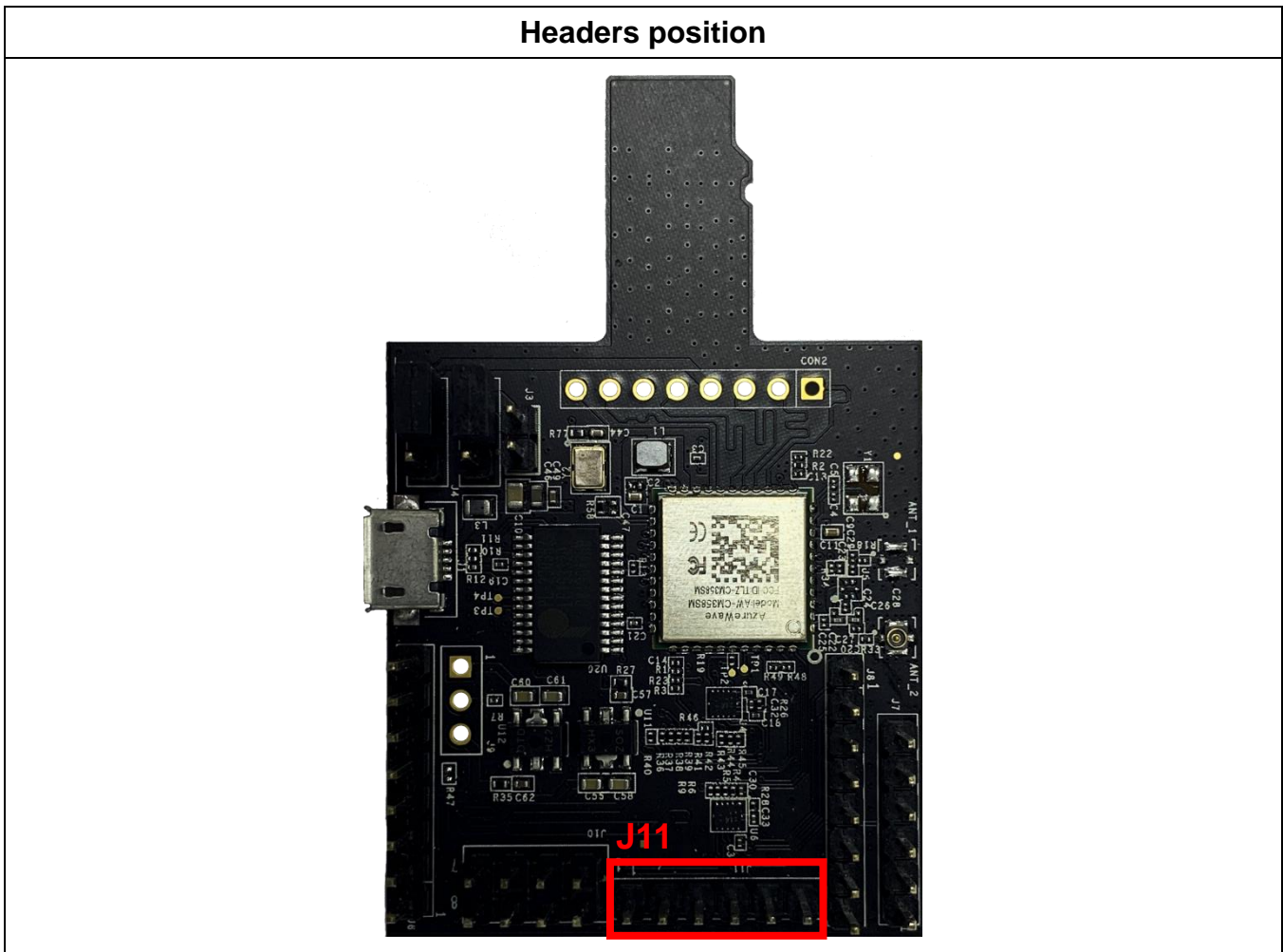| **Headers position** |
| :---: |
| |

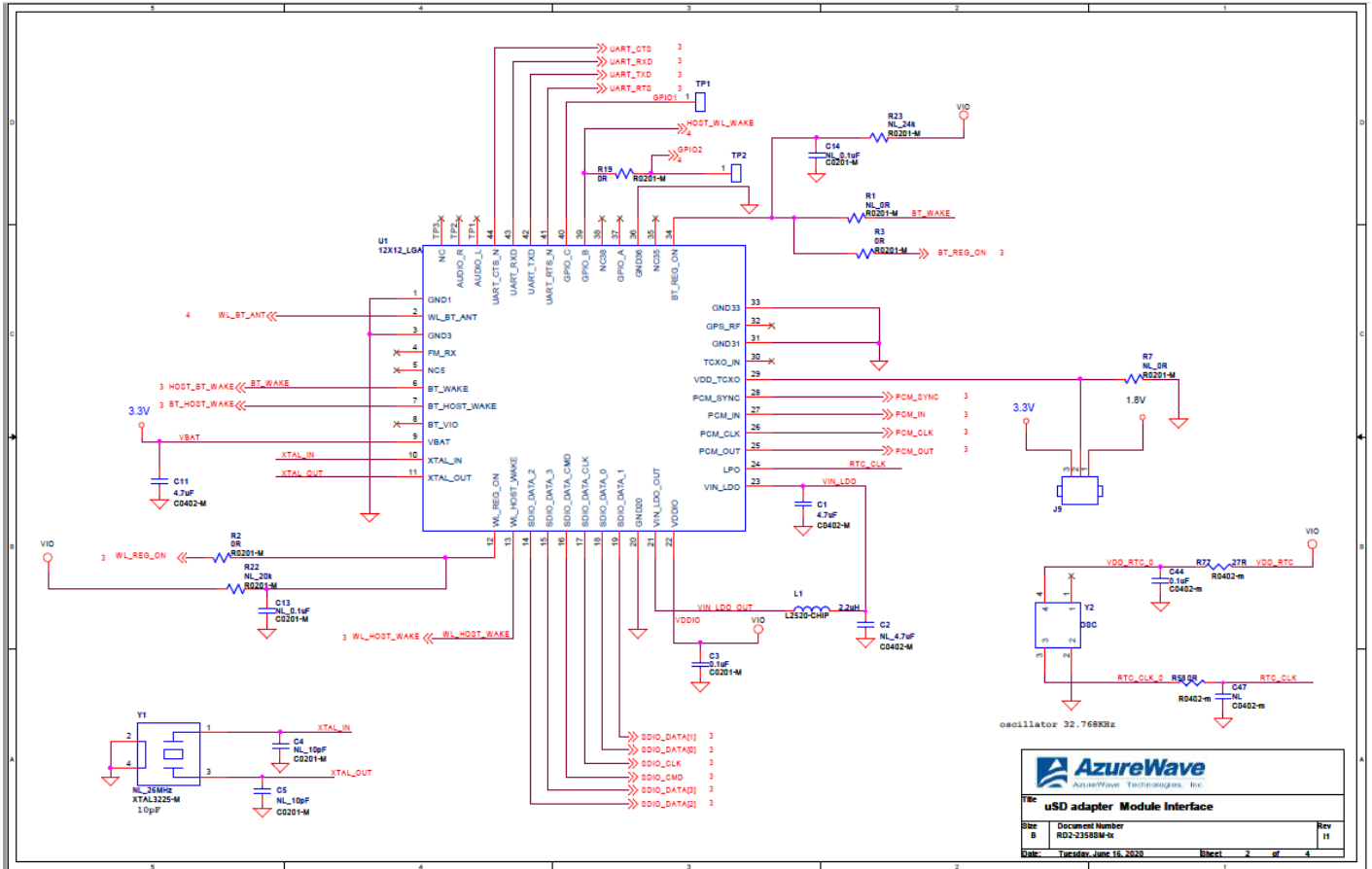PCM signal is configured from FFC connector at BOT side as default.

By using headers for PCM interface
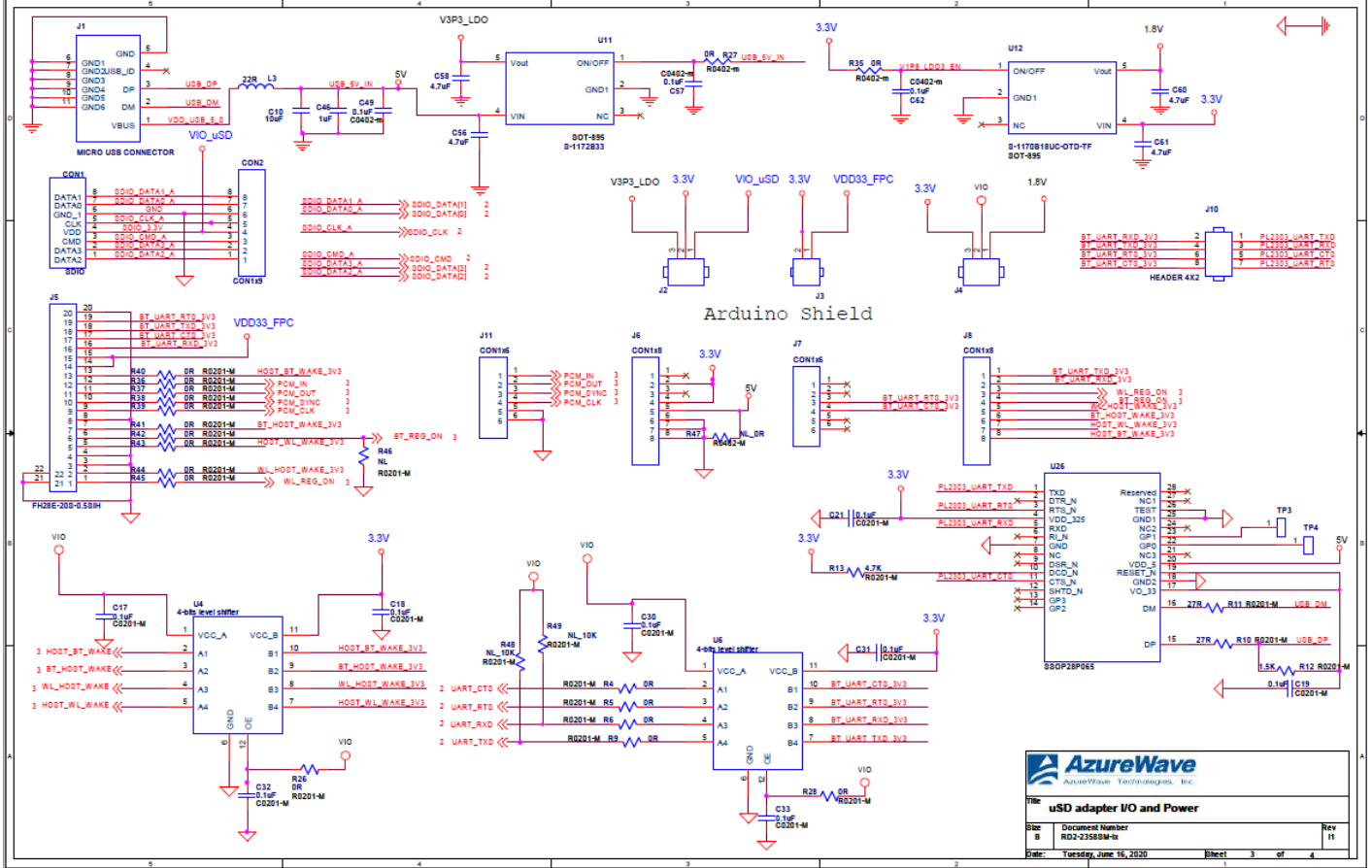
- PCM_IN: J11 (pin 1)
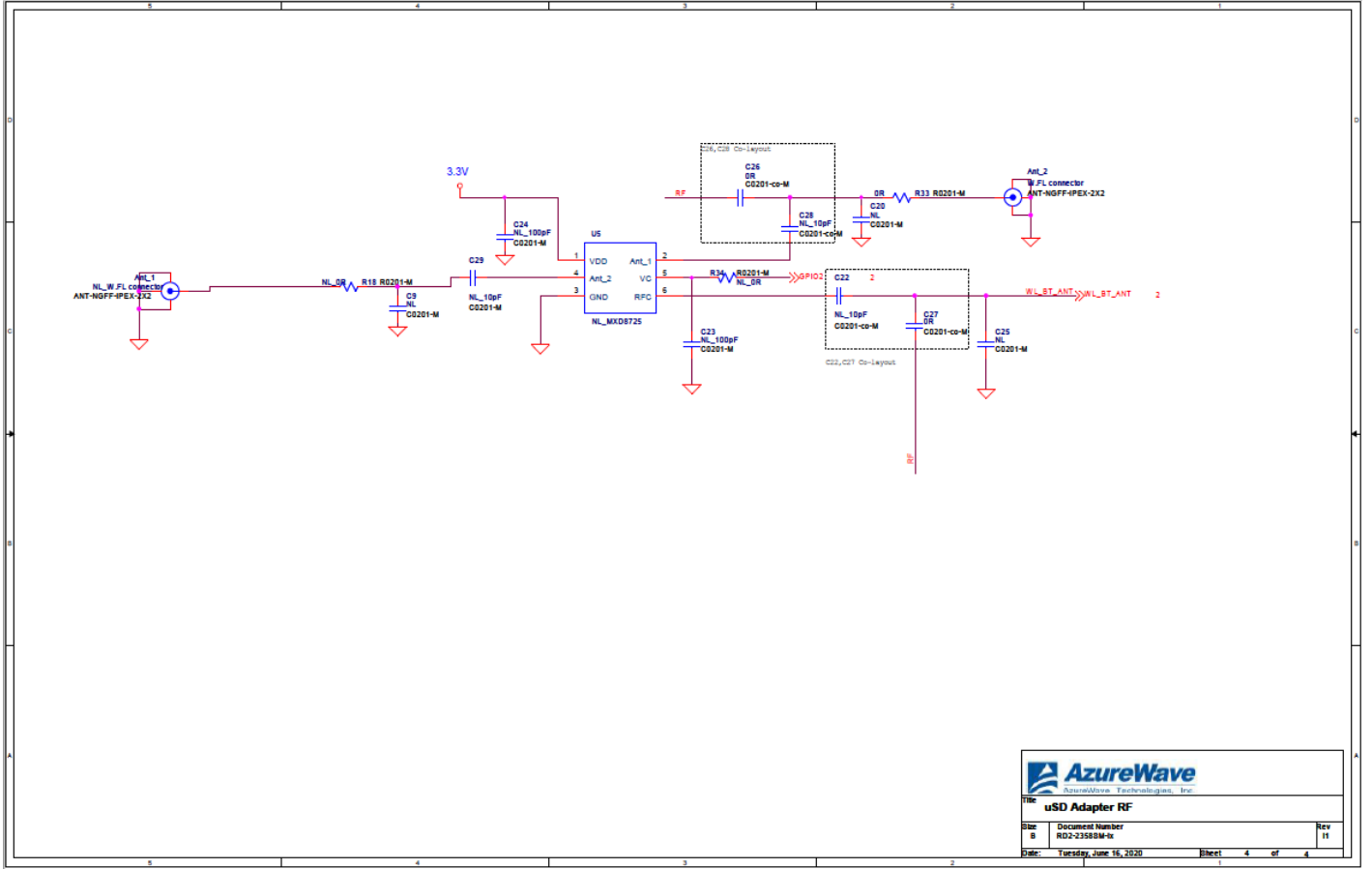- PCM_OUT: J11 (pin 2)
- PCM_SYNC: J11 (pin 3)
- PCM_CLK: J11 (pin 4)

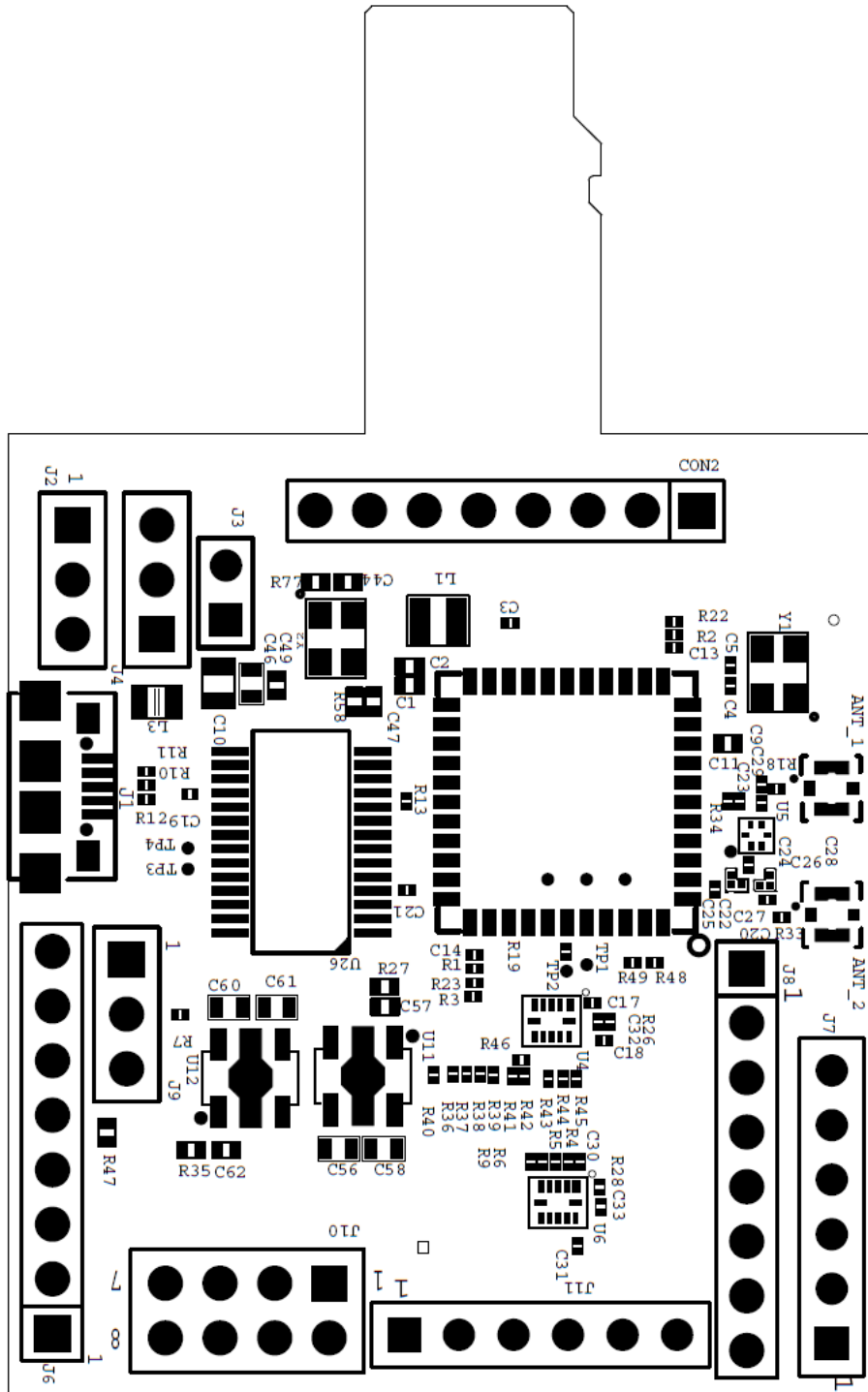| Headers position |
| --- |
| |

2.3   Schematics

Arduino Shield

Title: uSD adapter I/O and Power

Size	Document Number	Rev
B	RD2-2358BM-Ix	I1

Date:	Tuesday, June 16, 2020	Sheet	3	of	4

3.3V

C26
0R
C0201-co-M

C24
NL_100pF
C0201-M

RF

C28
NL_10pF
C0201-co-M

0R
C20
NL
C0201-M

R33 R0201-M

Ant_2
W.FL connector
ANT-NGFF-IPEX-2X2

C29

U5
1 VDD   Ant_1 2
4 Ant_2 VC   5
3 GND   RFC 6
NL_MXD8725

Ant_1
NL_W.FL connector
ANT-NGFF-IPEX-2X2

NL_0R R18 R0201-M

C9
NL
C0201-M

NL_10pF
C0201-M

R34 R0201-M
NL_0R

GPIO2

C22
2
NL_10pF
C0201-co-M

WL_BT_ANT

C27
0R
C0201-co-M

WL_BT_ANT 2

C23
NL_100pF
C0201-M

C25
NL
C0201-M

C22,C27 Co-layout

RF

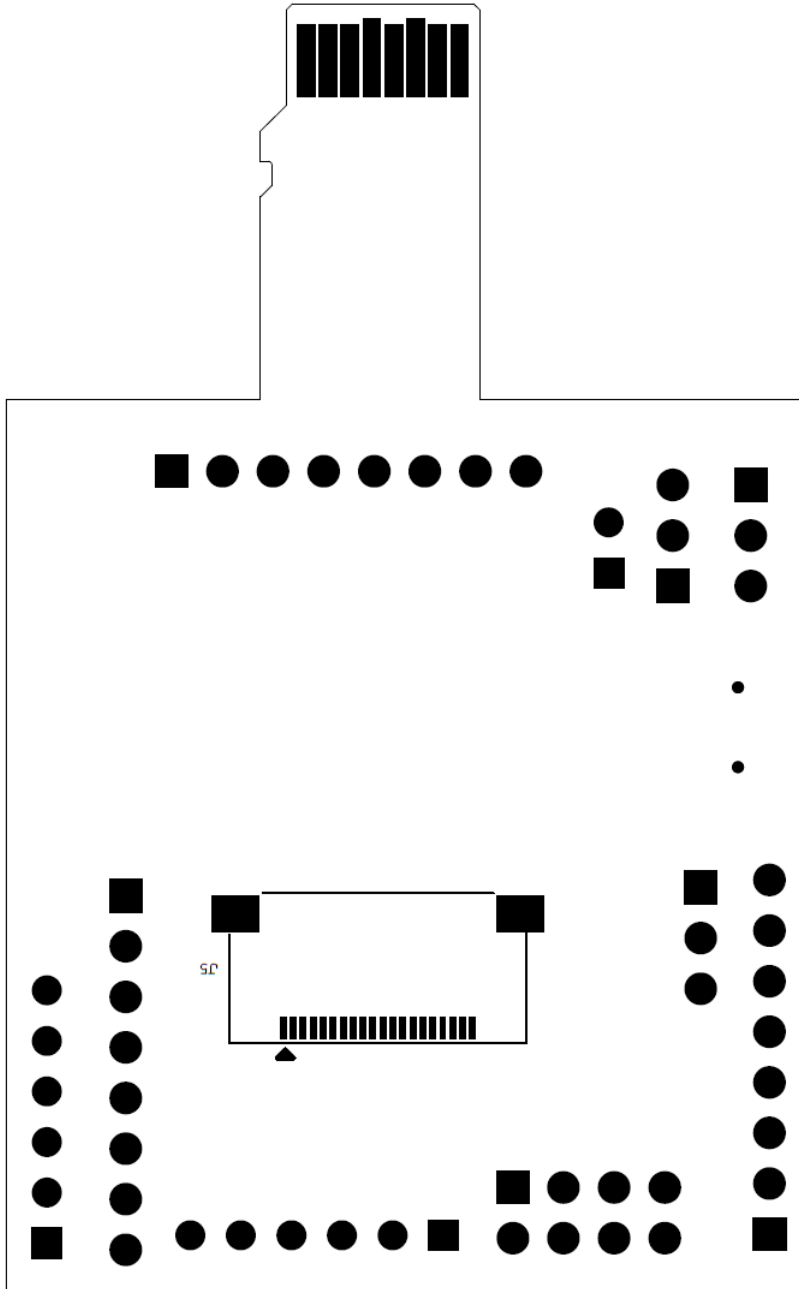| Title	uSD Adapter RF		
Size B	Document Number RD2-23588M-tx		Rev I1
Date:	Tuesday, June 16, 2020	Sheet 4 of 4	

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2.4 Placement

TOP View

BOT View

3. EVB Kits Contents

Content	Description
	AW-AM281-uSD or AW-CM358-uSD
	75mm, 20 contacts, 0.5mm pitch FFC Cable
	PIFA Antenna ● Radiation: Directional ● 3D Peak Gain: ■ 2.98dBi (2.4~2.5GHz) ■ 5.16dBi (4.9~5.9GHz) ● Polarization: Linear Vertical ● Connector: IPEX-4 Compatible ● Operating Temp: -20℃ ~ +65℃ ● Storage Temp: -30℃ ~ +75℃