



BRT_TN_003

MM900EVxA Errata Technical Note

Version 1.0

Issue Date: 27-01-2021

The intention of this errata technical note is to give a detailed description of known functional or electrical issues with the BRT MM900EVxA modules.

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1 MM900EVxA Revision

MM900EVxA part numbers are listed in **Table 1-1**.

The current revision is **Rev 1.2**, which is marked on the PCB silkscreen. All known issues with this module revision are recorded in this Technical Note.

Part Number	Description
MM900EV1A	FT90x Development Module
MM900EV2A	FT90x Development Module with front-facing CMOS camera
MM900EV3A	FT90x Development Module with rear-facing CMOS camera

Table 1-1 – MM900EVxA Part Numbers

This errata technical note covers the revisions of MM900EVxA listed in **Table 1-2**.

Revision	Notes
1.2	Current available modules in stock.

Table 1-2 – MM900EVxA Revisions

Please note that MM900EVxA contains FT900 Revision B silicon. The latest modules MM900EVxB contain FT900 Revision C silicon. See the following documents for more information:

- [PCN BRT 005](#)
- [BRT AN 019 Migration Guide Moving from FT90x Revision B to FT90x Revision C](#)

2 Errata History Table – Functional Issues

Functional Errata	Short Description	Errata occurs in module revision
MM900EVxA	Mismatch of I2S bit clocks for WM8731 codec in USB mode and FT900 as I2S Slave in MM900EVxA	1.2

Table 2-1 – Functional Issues

3 Functional Issues of MM900EVxA

3.1 Revision 1.2

3.1.1 Mismatch in I2S bit clocks for WM8731 codec in USB mode and FT900 as I2S Slave in MM900EVxA

Introduction:

The MM900EVxA has FT900 I2S peripheral interfaced with Cirrus logic WM8731 audio codec. The FT900 I2S interface in the module design is intended to operate as an I2S slave. The Cirrus Logic WM8731 audio codec is configured as the I2S master and acts as the clock master of the I2S interface using the 12MHz crystal on board. The WM8731 is said to perform in USB Mode whereby all audio sampling rates are generated using 12MHz clock.

Issue:

A 12MHz crystal is used to clock the WM8731 and consequently, the I2S bit-clock runs at 12MHz. The number of bit-clocks per frame requirement for the FT900 I2S peripheral is 64, whereas the 12MHz bit-clock frequency produces more than 64 bit-clocks per frame in the sampling frequencies of interest (e.g. 11.025/22.05/44.1 kHz or 8/16/32/48 kHz).

Exception:

The audio playback and the audio capture can possibly be erroneous when WM8731 is an I2S Master with 12MHz clock and FT900 is an I2S Slave.

Workaround:

The workaround options are as follows:

1. Use the [MM900EVxB](#) module.
2. Modify the MM900EVxA module to operate the FT900 I2S module in master mode. This will require an external oscillator to be attached to the FT900. On the MM900EVxA, the locations marked as OSC1 and OSC2 are placeholders for the 24.576MHz and 22.5792 MHz oscillators. Refer to [Appendix A](#) for the rework instruction.
3. Design custom hardware which uses different external crystal oscillators. You can refer to the schematic in the MM900EVxB module.

Package Specific:

The affected packages are listed in **Table 3-1**.

Module	Applicable (Yes/No)
MM900EV1A	Y
MM900EV2A	Y
MM900EV3A	Y

Table 3-1 - Affected Modules

4 Contact Information

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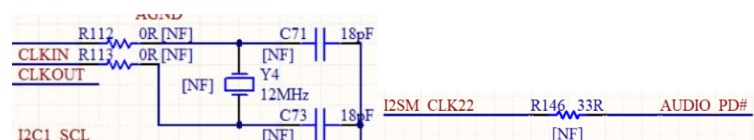
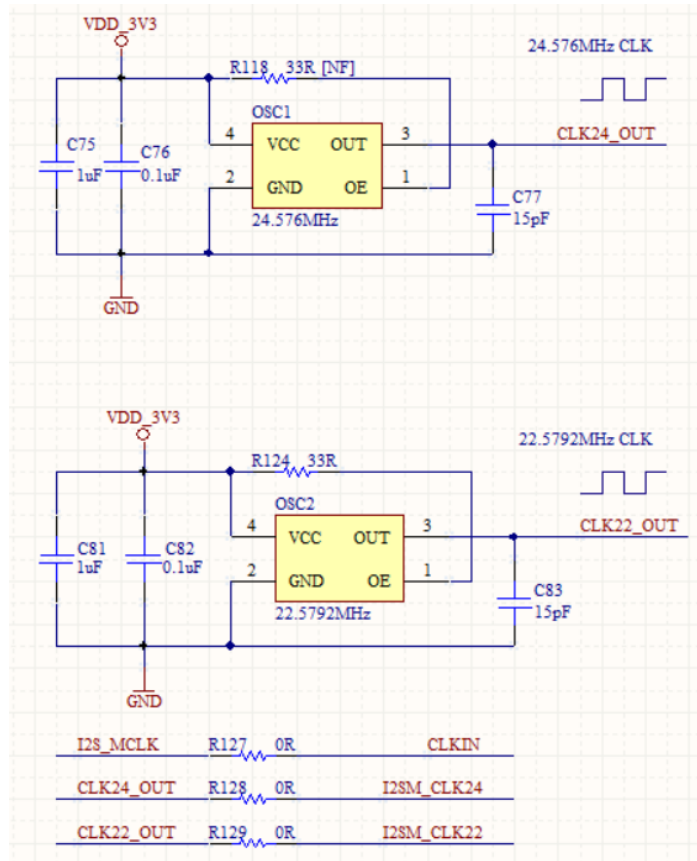
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Appendix A – Rework Instructions

1. The following are the external Oscillators Specification and Part Number
 - a. Digikey partno: CTX1244CT-ND
 Description: 24.576MHz XO (Standard) HCMOS, TTL Oscillator 3.3V Enable/Disable 4-SMD, No Lead
 - b. Digikey partno: 631-1277-ND
 Description: 22.5792MHz XO (Standard) HCMOS Oscillator 3.3V Enable/Disable 6-SMD, No Lead
2. In reference to the schematics of the MM900EVxA, the locations marked as OSC1 and OSC2 are the placeholders for the 24.576MHz and 22.5792 MHz oscillators. Mount OSC1 or/and OSC2 and according to the oscillator that is connected, you can short the resistor R128 or/and R129. Remove the resistor R113 from the 12MHz crystal. Short the resistor R127. If OSC2 is used, remove the resistor R146 to avoid AUDIO_PD# toggling with the OSC2 clock. These changes are for the configuration for WM8731 as I2S Slave and the FT900 as I2S Master.



Appendix B – References

[I2S Master Examples in FT9xx toolchain](#)

[FT9xx Modules](#)

[PCN BRT 005](#) - Product Change Notification for FT900 devices from Revision B to Revision C

[BRT AN 019 Migration Guide Moving from FT90x Revision B to FT90x Revision C](#)

Appendix C – List of Tables & Figures

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Appendix D – Revision History

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Revision	Changes	Date
1.0	Initial Release	27-01-2021