A5191HRTNGEVB Test Procedure

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Test equipment required

Oscilloscope, Power supply, Signal generator, Multimeter

General remarks

When performing measurements on an oscilloscope capture the oscilloscope must be set so that a stable trigger is achieved. Average over the largest possible number of measurements, and limit the bandwidth to eliminate noise. Stop acquisition when taking measurements, so that all measurements are of the same waveform.

A test result page is provided on the end of this document. Fill in the result of each test and print out the page for each board.

If the board has no resonator populated, a 460.8kHz clock signal must be applied to the clock input connector.

When connector pin numberings are supplies, look for a square pad. This is pin 1. The connector pin numbering follows the numbering in figure 1

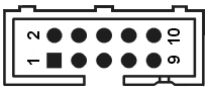

Figure 1: Connector pin numbering

TEST 0: Visual inspection

Perform a brief visual inspection of the board

- Check if the board is properly etched
- Check solder connections (loose pins, tombstoning, etc)
- Components that should not be populated: IDC3, J1, J2, components on the bottom of the board (a single resistor is populated on the bottom of the first run, this should not generate a fail). All other components should be present.

TEST 1: Idle Operation

- Power the board by applying VDD (nominal 3V3) and GND to the test bench.
- Measure the current consumption of the board by attaching a multimeter in series with the power supply
- Measure AREF (**IDC3 pin 9**). Use a GND pin on IDC3 pin8 for the negative measure point.
- Measure nRTS (**PIN A** on the test bench).

TEST 2: Transmit Operation

- Place a jumper on the pins **B** of the test bench
- Connect an oscilloscope to **pin C** of the test bench. An image similar to figure 1 should be visible.

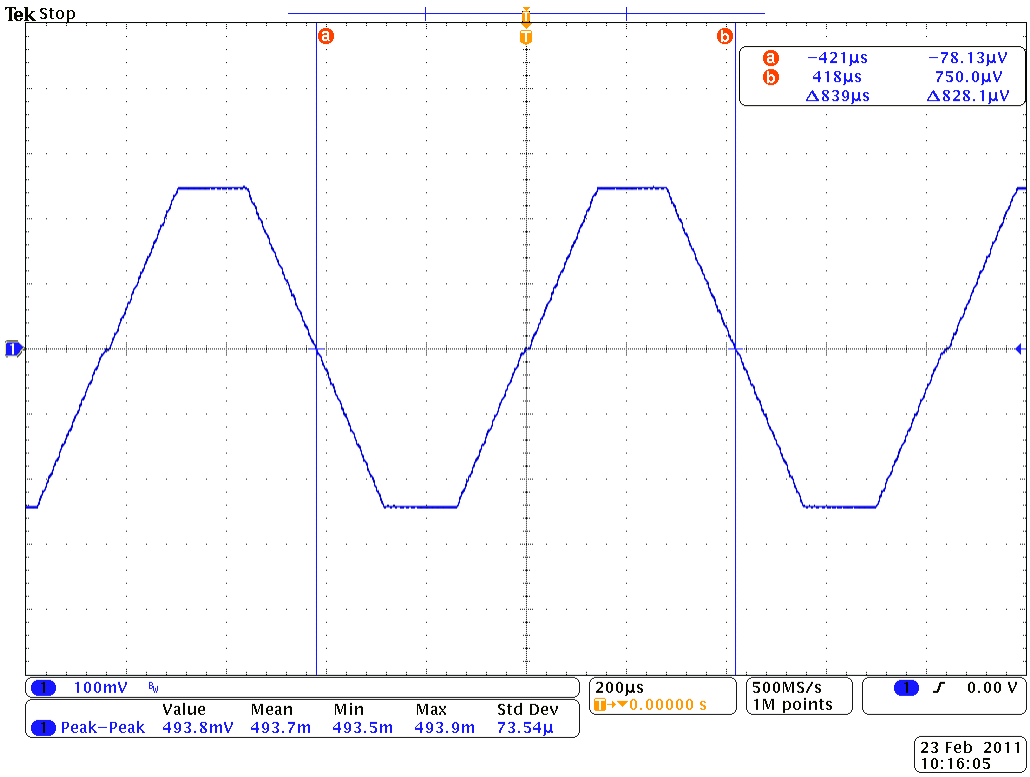

Figure 2: Output waveform (mark)

- Measure peak-to-peak amplitude **VPP,MARK** of the waveform
- Measure the cycle time **TMARK** of the waveform. Measure between two points with the greatest slope so as to provide the most accurate measurement.
- Place a jumper on the pins **D** of the test bench

- Measure again peak-to-peak amplitude **VPP,SPACE** and cycle time **TSPACE**

TEST 3: Receive Operation

- Remove jumper from pins **B**
- Using a signal generator, apply a 1200Hz sine wave to pin **F**. Set the amplitude to 200mV peak-to-peak.
- Connect a probe to **IDC3 pin 5**. You should see a 1200 Hz sine wave. Measure the peak-to-peak voltage **RXF,MARK**
- Measure the delay **TD,MARK** between the applied sine wave and the measured wave.
- Measure **CD,MARK** on pin **G**
- Measure **RXD,MARK** on pin **H**
- Reduce the applied wave amplitude to 40mV. Pin **G** should now be low.
- Repeat the above measurements for the space frequency 2200Hz.

Test Report A5191HRT

Test performed by: Date:

NAME	MIN	NOM	MAX	MEASURED	PASS/FAIL
VDD	2V85	3V3	3V15		
IDD,Q	400uA	420uA	440uA		
AREF	1V20	1V24	1V30		
nRTS	2V4	3V	3V15		

NAME	MIN	NOM	MAX	MEASURED	PASS/FAIL
VPP,MARK	490mV	500mV	510mV		
TMARK	828us	835us	843us		
VPP,SPACE	490mV	500mV	510mV		
TSPACE	452us	455us	460us		

NAME	MIN	NOM	MAX	MEASURED	PASS/FAIL
VDD,MIN	2V62	2V7	2V78		
nRST	0V	0V	1V		

NAME	MIN	NOM	MAX	MEASURED	PASS/FAIL
RXF,MARK	330mV	350mV	370mV		
TD,MARK	680us	700us	720us		
CD,MARK	2V4	3V	3V15		
RXD,MARK	2V4	3V	3V15		
VDET,MARK	140mV	150mV	160mV		
RXF,SPACE	330mV	350mV	370mV		
TD,SPACE	400us	420us	440us		
CD,MARK	2V4	3V	3V15		
RXD,MARK	0V	0V	0V4		
VDET,SPACE	140mV	150mV	160mV		