EMI TEST REPORT

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FOR RIVERDI HB, IPS 5.0" LCD SERIES

Rev.1.1
2021-10-20

The EMI test report applies to below Riverdi HB, IPS 5.0” series:

PRODUCT NAME	DESCRIPTION
RVT50HQTNWN00	HB, IPS, 5.0”, 1000cd/m², RGB, No touch panel
RVT50HQTFWN00	HB, IPS, 5.0”, 1000cd/m², RGB, No touch panel, Metal frame

1. REVISION RECORD

REV NO.	REV DATE	CONTENTS	REMARKS
1.0	2021-08-02	Initial Release	
1.1	2021-10-20	Update the test results after the second round EMI test in a laboratory	

2. CONTENTS

3. SUMMARY OF TEST RESULT

TEST ITEM	NORM APPLIED	Result
RADIATED EMISSION 30-1000 MHz	EN 55032 (CISPR32). Radiated emission 30-1000 MHz (EMI)	Pass

Date of Test: 18/10/2021

EMC Lab: RADMOR S.A., Gdynia.

4. GENERAL INFORMATION

4.1 Description of EUT

PRODUCT NAME	RVT50HQTNWN00
TEST VOLTAGE	Battery 6V

Note. All test was performed on RVT50HQTNWN00. But results applied for every module within this line: RVT50HQTFWN00, RVT50HQTNWN00.

4.2 Description of EUT peripheral

The 50BT817 (display controller board) and Revelation Board (host controller board) designed by Riverdi were used to drive RVT50HQTNWN00 during the EMI test.

50BT817, as the main board of Riverdi EVE4 IPS 5.0" series, applies Bridgetek's BT817Q chip, which is the most powerful and intelligent graphics controller.

It features a low EMI design, QSPI/SPI interface, RiBUS connector, built-in flash memory, and audio amplifier.

Learn more about EVE4 solutions here or browse the EVE4 IPS 5.0" series directly here.

The following EUT operation modes were tested:

Mode A:

The 50BT817 was assembled with RVT50HQTNWN00 and connected with the Revelation Board via RiBUS.

During the test, the Revelation Board keeps transferring data to 50BT817 via RiBUS with full SPI speed at 6 MHz.

Animated pictures were presented on the screen.

Mode B:

The images were generated by the Revelation Board.

During the test, the Revelation Board was disconnected to eliminate the radiated emission from it.

The RVT50HQTNWN00 connected with 50BT817 was powered via RiBUS, and a non-animated picture was presented from the internal BT817Q memory.

4.3 Measuring device and test settings

EQUIPMENT	MODEL	VERSION
EMI test receiver	Rohde & Schwarz ESW-44	1.72 SP1

Meas BW: 120000,000000 Hz	Filter Type: Quasipeak	Meas Time: 1,000000 s	Center Freq: 221100000,000000 Hz
Attenuation: 0,000000 dB	Auto Range: On	Auto Preamp: On	Preamp: On
Preselector: On	Filter Split: Off	Notch Filter 1: Off	Notch Filter 2: Off
Input: 1 DC			

5. TEST RESULTS

5.1 The test result of Mode A:

Test condition

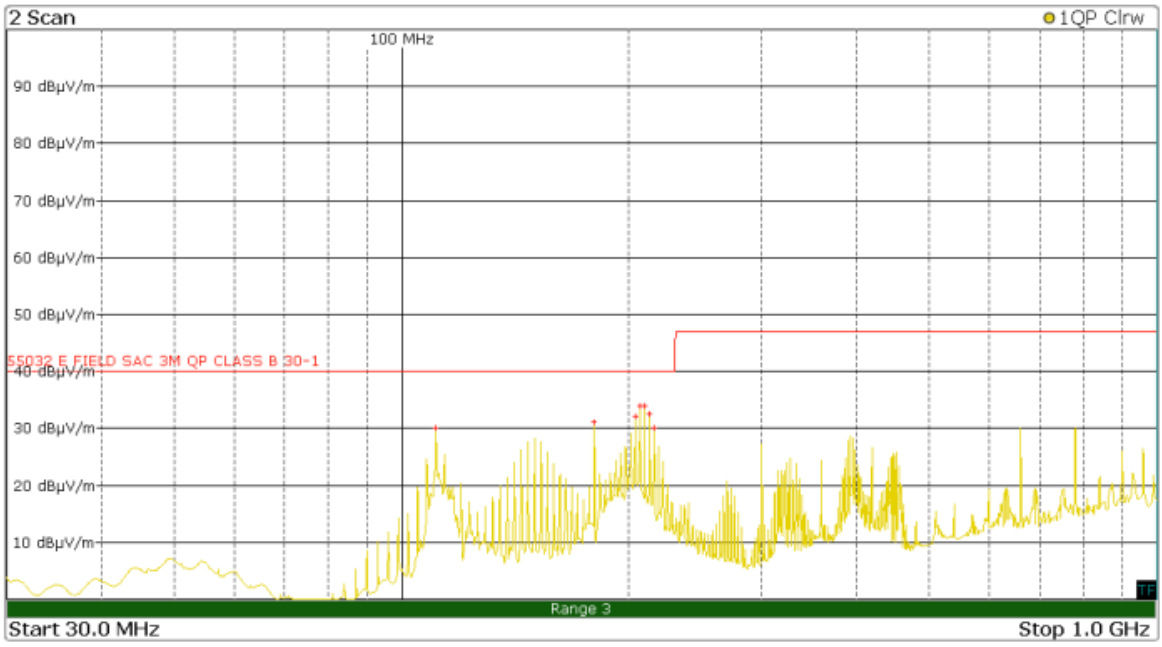
Power supply: Battery 6 V

External oscillator: 12.00MHz

PCLK: 25.0MHz

Device and test settings: Same settings as subchapter 4.3 presented.

Horizontal:



Trace 1:

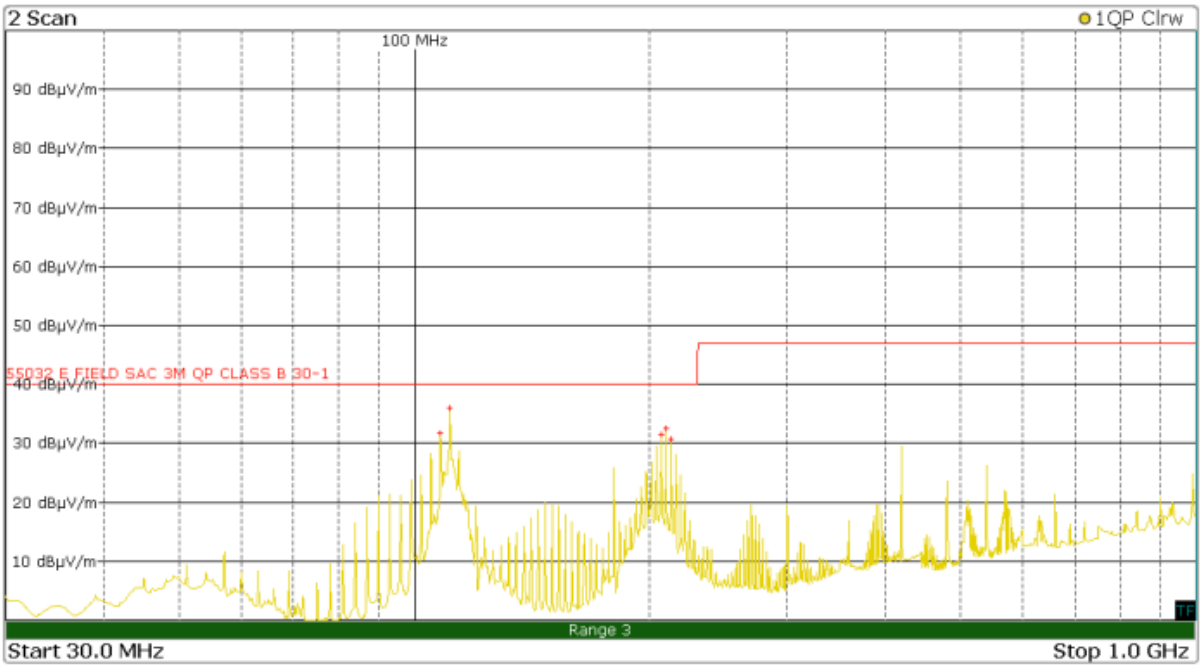
CLR/WRITE

QUASI PEAK

Meas Time: 1,000000 s Margin: 10,000000 dB Peak Values: 7

Trace	Frequency	Level	Delta Limit	LISN Phase	Comment
1	111000000, 000000 Hz	30,140000 dBµV/m	-9,860000 dBµV/m		
1	180000000, 000000 Hz	31,170000 dBµV/m	-8,830000 dBµV/m		
1	204000000, 000000 Hz	32,120000 dBµV/m	-7,880000 dBµV/m		
1	207000000, 000000 Hz	33,910000 dBµV/m	-6,090000 dBµV/m		
1	210000000, 000000 Hz	33,960000 dBµV/m	-6,040000 dBµV/m		
1	213030000, 000000 Hz	32,450000 dBµV/m	-7,550000 dBµV/m		
1	216000000, 000000 Hz	30,070000 dBµV/m	-9,930000 dBµV/m		

Vertical:



Trace 1:

CLR/WRITE

QUASI PEAK

Meas Time: 1,000000 s Margin: 10,000000 dB Peak Values: 5

Trace	Frequency	Level	Delta Limit	LISN Phase	Comment
1	108000000,000000 Hz	31,640000 dBµV/m	-8,360000 dBµV/m		
1	111000000,000000 Hz	36,030000 dBµV/m	-3,970000 dBµV/m		
1	207000000,000000 Hz	31,530000 dBµV/m	-8,470000 dBµV/m		
1	210000000,000000 Hz	32,510000 dBµV/m	-7,490000 dBµV/m		
1	213030000,000000 Hz	30,650000 dBµV/m	-9,350000 dBµV/m		

5.2 The test result of Mode B:

Test condition

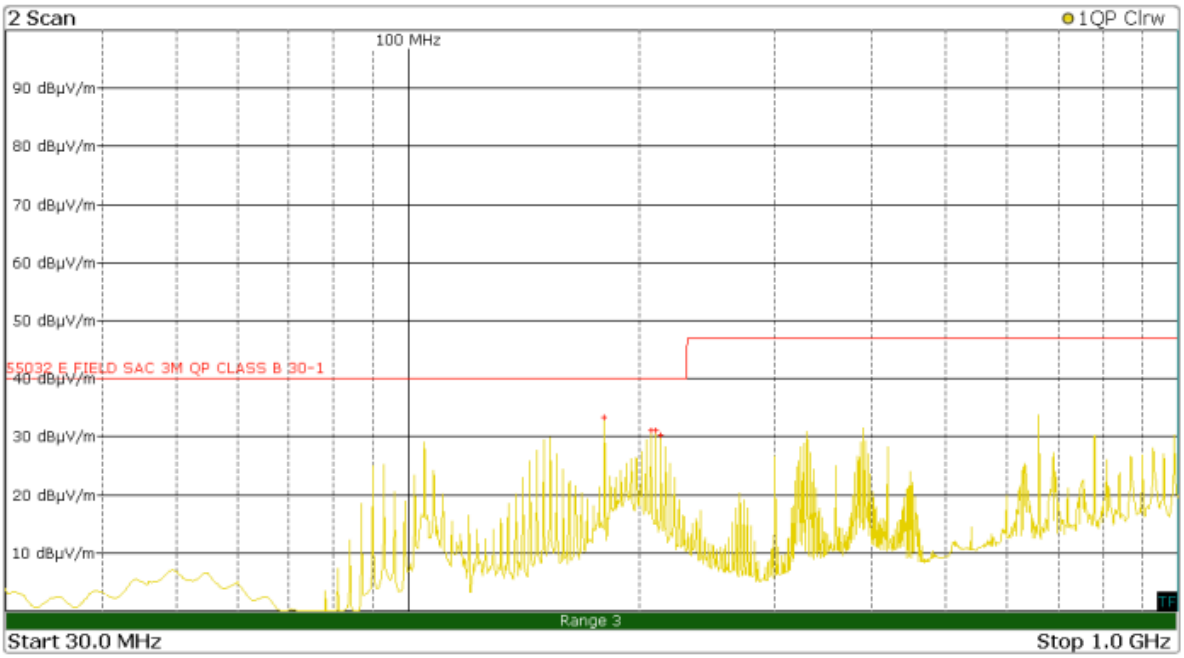
Power supply: Battery 6 V

External oscillator: 12.00MHz

PCLK: 25.0MHz

Device and test settings: Same settings as subchapter 4.3 presented.

Horizontal:



Trace 1:

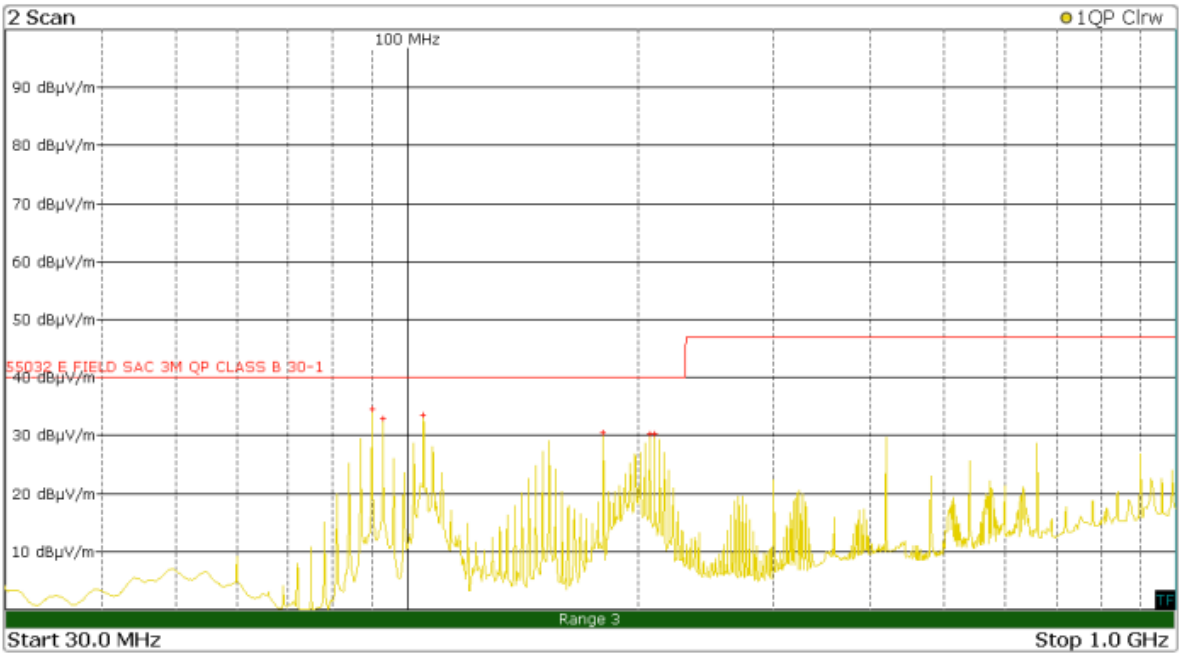
CLR/WRITE

QUASI PEAK

Meas Time: 1,000000 s Margin: 10,000000 dB Peak Values: 4

Trace	Frequency	Level	Delta Limit	LISN Phase	Comment
1	180000000, 000000 Hz	33,370000 dBµV/m	-6,630000 dBµV/m		
1	207000000, 000000 Hz	31,030000 dBµV/m	-8,970000 dBµV/m		
1	210000000, 000000 Hz	31,150000 dBµV/m	-8,850000 dBµV/m		
1	213030000, 000000 Hz	30,220000 dBµV/m	-9,780000 dBµV/m		

Vertical:



Trace 1:

CLR/WRITE

QUASI PEAK

Meas Time: 1,000000 s Margin: 10,000000 dB Peak Values: 6

Trace	Frequency	Level	Delta Limit	LISN Phase	Comment
1	90000000,000000 Hz	34,470000 dBµV/m	-5,530000 dBµV/m		
1	93000000,000000 Hz	33,010000 dBµV/m	-6,990000 dBµV/m		
1	105000000,000000 Hz	33,450000 dBµV/m	-6,550000 dBµV/m		
1	180000000,000000 Hz	30,390000 dBµV/m	-9,610000 dBµV/m		
1	207000000,000000 Hz	30,260000 dBµV/m	-9,740000 dBµV/m		
1	210000000,000000 Hz	30,380000 dBµV/m	-9,620000 dBµV/m		

6. Photos

Figure 1. Radiation Emission 30-1000MHz Test Back View

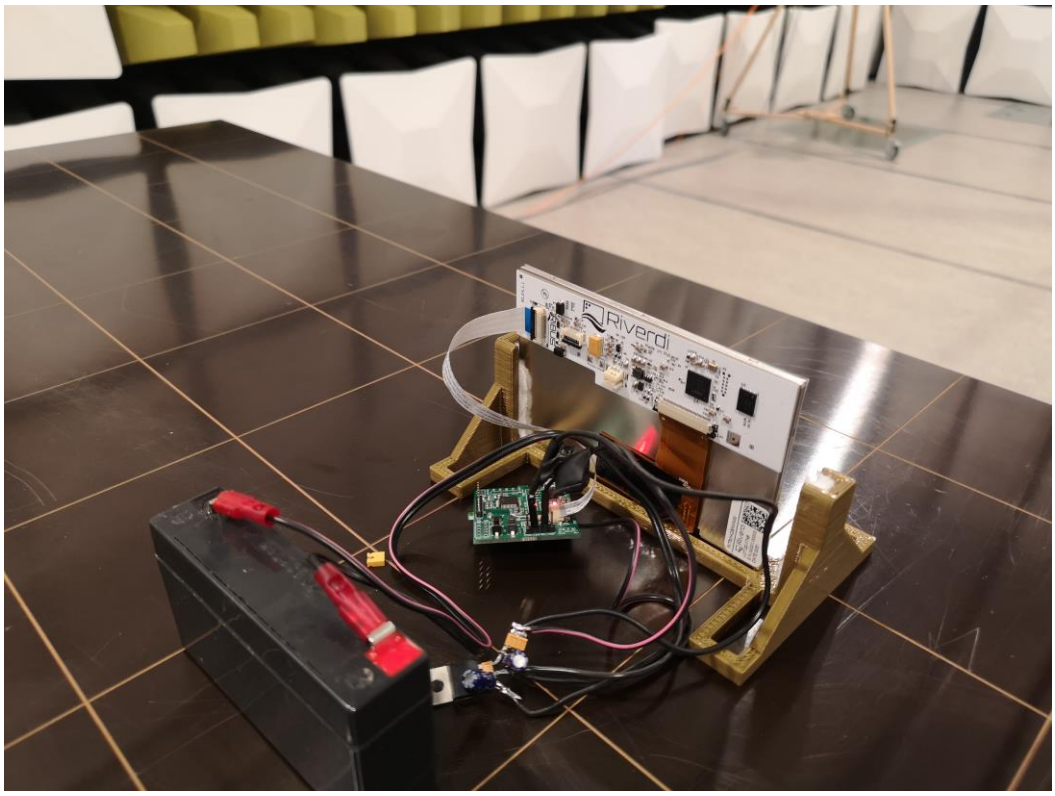
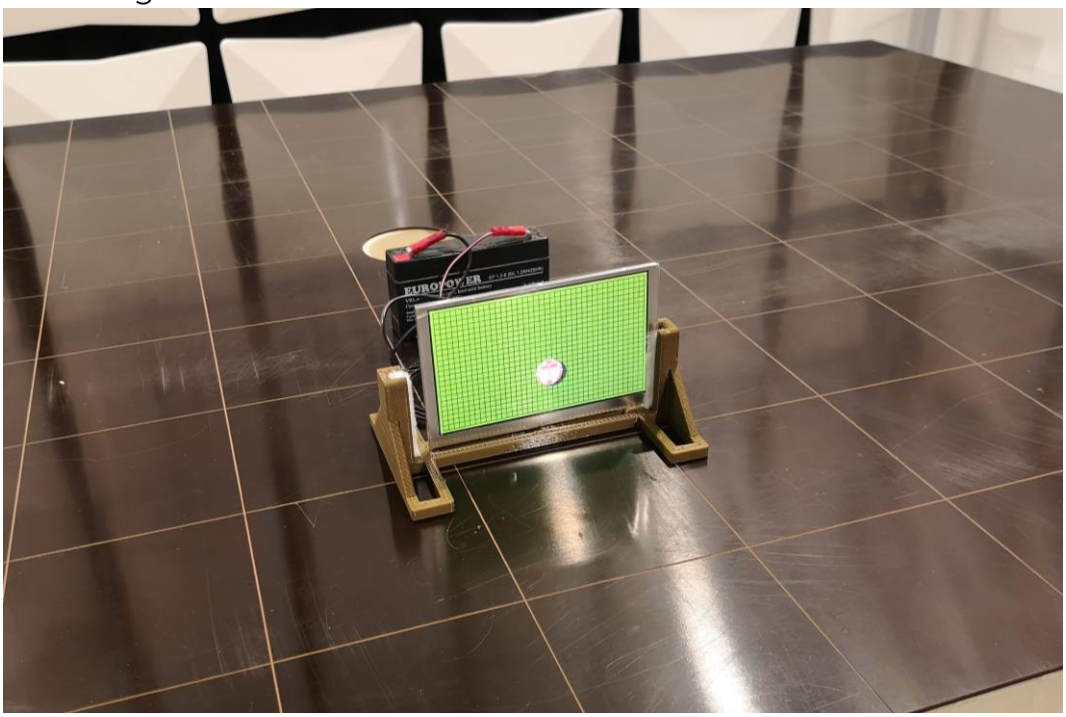


Figure 2. Radiation Emission 30-1000MHz Test Front View



7. Summary

The test results confirmed the low electromagnetic emissions of Riverdi HB, IPS 5.0” displays, even when displaying dynamic pictures.

Riverdi HB, IPS 5.0” displays have undergone EMI compliance self-tests and performed well at specified EMI limits.

In consequence, Riverdi HB, IPS 5.0” displays will not impact the environment due to the very low emission levels measured.