

EMCTEST.1132

EMC TEST LAB

EMC TEST Report

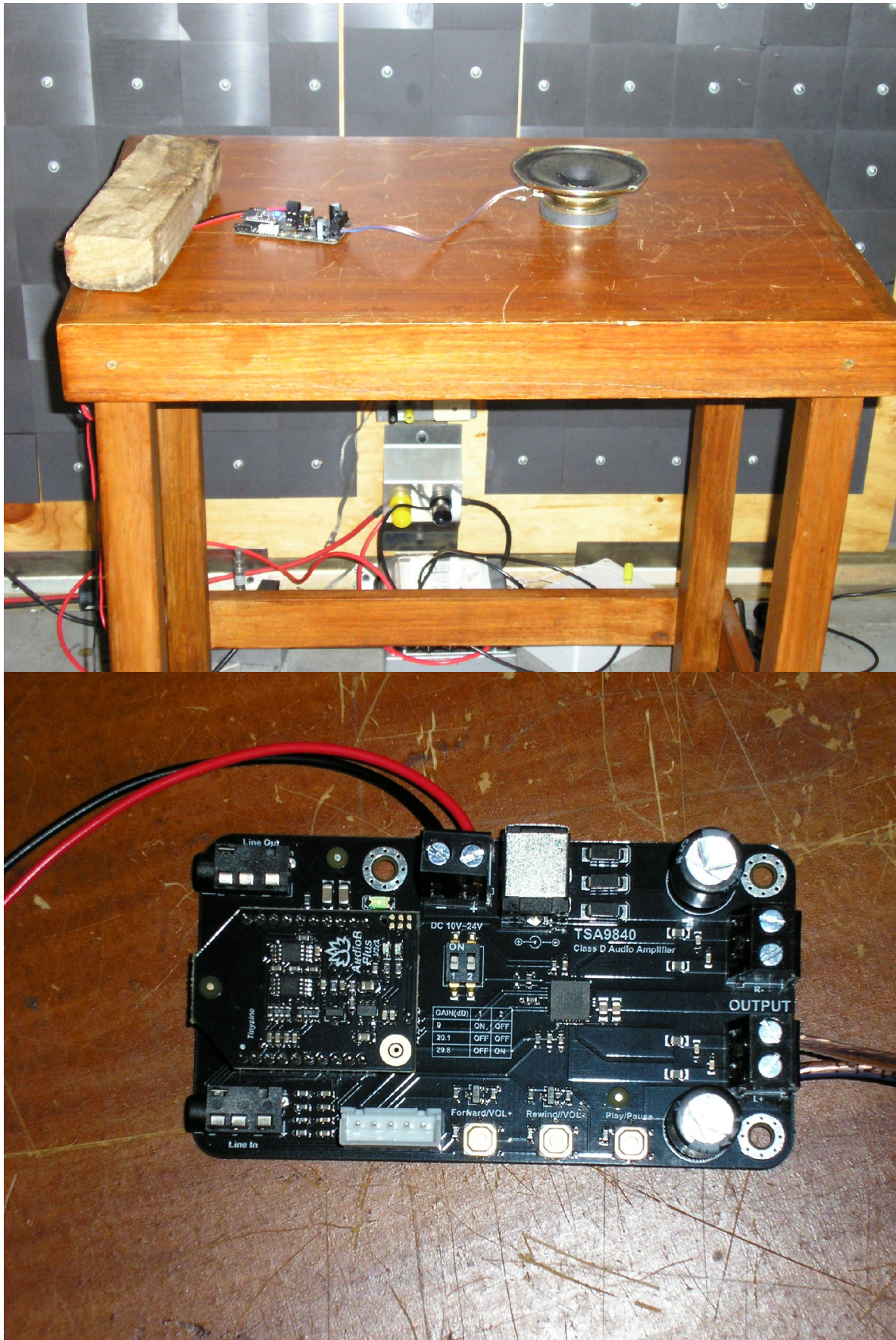
to

Built on Enthusiasm

For

Bluetooth Class D Audio Amplifier

TSA9840



EMC TEST LAB

A Division of Daley Electronics Pty. Ltd., A.C.N. 005 279 809

84 Keys Rd
Cheltenham Vic 3192
Ph: (03) 9555 5153
daleyelectronics.com.au

EMC Test Report

**Report to: Built on Enthusiasm
18 Glenbrae Court
Bannockburn
Victoria 3331 Australia.**

Subject: Bluetooth Class D Audio Amplifier TSA9840

**Tested to:
AS/NZS CISPR 32:2013 “Electromagnetic compatibility of multimedia
equipment- Emission requirements”**

Report Date –21st July 2018

Result: PASS with no modification. Class B Limits.

Per



M. Daley

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EMC TEST REPORT

Item Tested- Manufacturer- Built on Enthusiasm

Model: TSA9840

The item under test is a class D amplifier that receives input from a Bluetooth RF connection. The emissions related to the Bluetooth receiver/transmitter do not form part of this report. Power is from an external 12VDC supply. The load was a 4 ohm loud speaker. Test signal 1kHz. Sine wave.

Test Location- EMC Test Lab shielded room

Test Layout- Refer to photograph. Equipment on table 700mm above the floor.

Power supply- 12.0VDC at 0.08A.

Output – 1kHz. at normal listening level.

Date Tested: 19/7/18

Temperature: 18 deg. C.

Test Program-

Tests for AS/NZS CISPR 32

- 1) Radiated Emission 30 to 1000MHz.

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Tests Commence

1) **Radiated Emission – 30 to 1000MHz.**

Limits as per Table A.4. Tested at 12VDC.

Measured at 3 metres with biconical antenna and ER55CR receiver

**Refer graphs BUILT1 (Horizontal antenna) and BUILT2 (Vertical antenna).
Graphs Appended.**

**Result- PASS with a margin of 10.4dB at 535.8MHz. with a vertical antenna.
Class B limits.**

End of Tests.

Measurement Uncertainty

Calculated measurement Uncertainties-

- a) Conducted Emission- 3.9dB**
- b) Radiated Emission- Shielded Room to 1GHz- 8.0dB**
- c) Radiated Emission- Open Area Test Site to 1GHz.- 6.0dB**
- d) Frequency – 1 in 10 million.**

**Appendices: Testing Equipment
 Graphs**

EMC TESTING - EQUIPMENT

Calibration Equipment:

1. HP 436A
Power Meter- Power Reference NATA Calibration
Serial No. 1930A06084
2. Fluke 45 Multimeter NATA Calibration
Serial No. 6176008
- 2A. HP 8656B
Signal Generator
S/N 3334U14415 Traceable Calibration
- 2B LAPLACE Emission Reference Source S/N 1167 UKAS Calibration
- 2C 18GHz. Comb Generator (Daley Electronics) Traceable Calibration

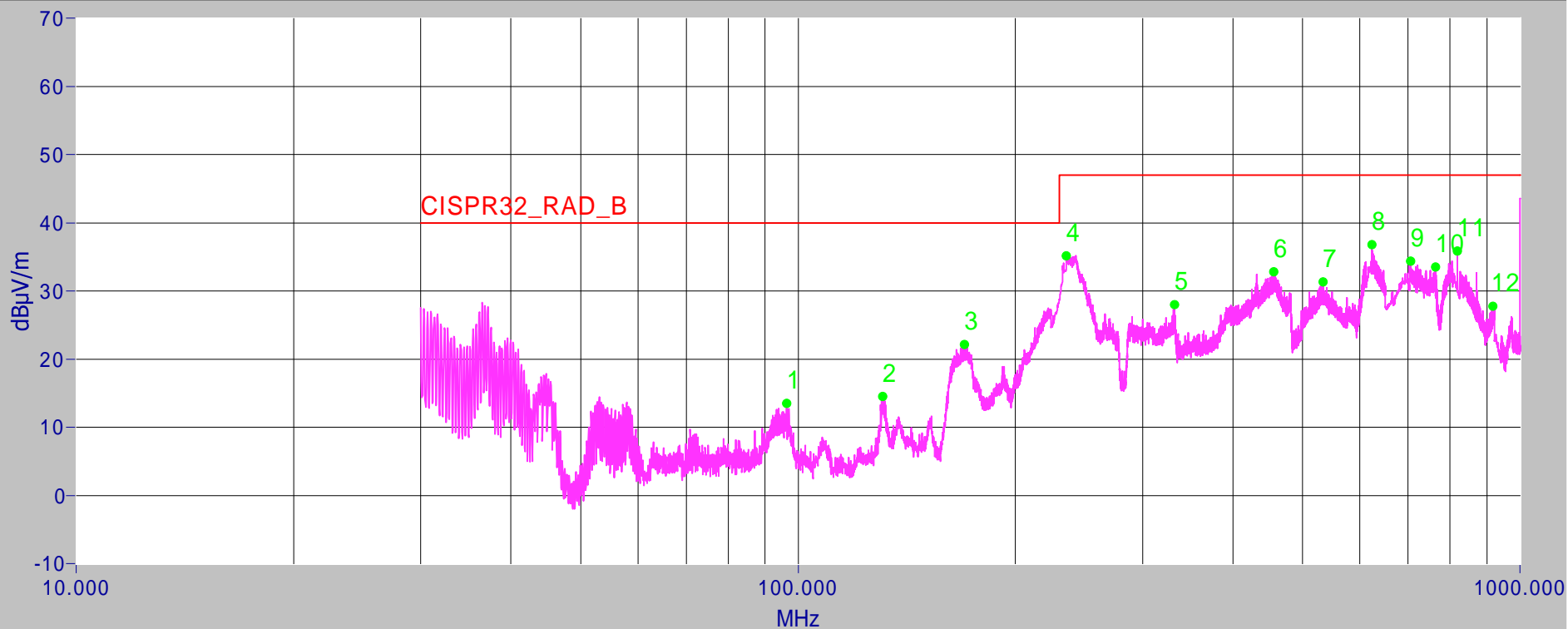
Test Instruments:

3. Electro-Metrics Interference Analyzer Model EMC-25 Mk III, Serial No 761
Plus CRM-25 CISPR detector
4. Rohde & Schwarz HMS-X Spectrum Analyzer
Serial Number 023823501
5. Rohde & Schwarz ESS EMC Receiver Serial Number 833776/003
6. Hewlett Packard 8447E Pre Amplifier
Serial No. 1937A01729
7. Line Impedance Stabilization Network
(Daley Electronics Pty. Ltd.)
8. Tektronix CT-2 Current Probe
9. Tektronix P6021 Current Probe
10. Seaward 247A91A Biconnical Antenna
(Manufacturer's calibration)
11. 2 metre Loop Antenna to Annex B of AS 4051 1998 plus 40dB amplifier HP 462a S/N 551-00831
12. Absorbing Clamp to Annex K of AS/NZS 1052.1:1995
13. HP 8593E Spectrum Analyzer Serial Number 3911A03983
14. Horn Antenna CE18000 S/N 1321
15. Hyperlog 7060 Antenna
16. AFJ ER55CR EMC Receiver S/N 55399831086

EMCEQUIP 10/5/18



AFJ ER55R 30MHz-1GHz EMI RECEIVER 7.11



AFJ ER55R 30MHz-1GHz EMI RECEIVER 7.11
Firmware Ver.7.07
Print Report of 07-19-2018 - 16:00:49

Operator: MIKE DALEY

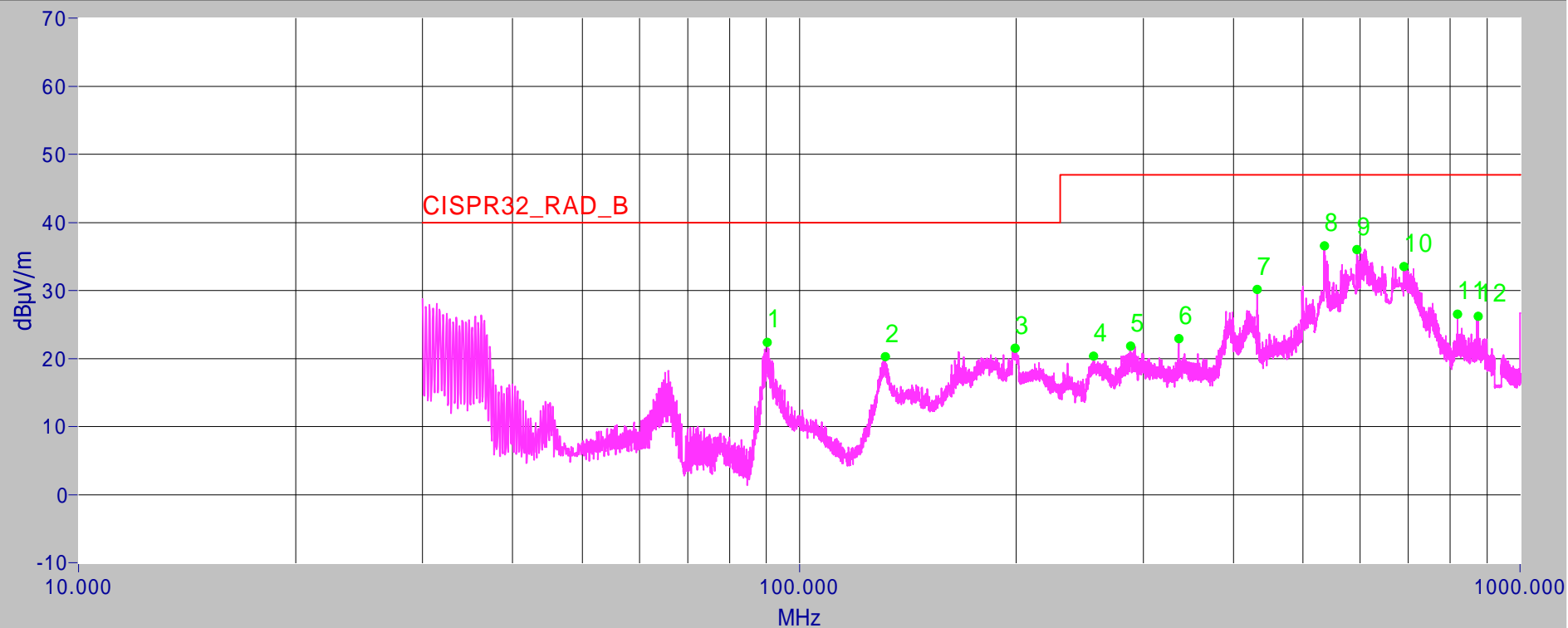
Title:
EMC TEST LAB - BUILT1

TSA9840 BLUETOOTH AMPLIFIER
RADIATED EMISSION
HORIZONTAL ANTENNA
12V 0.08A 1KHz.

SN.	:55399831086	SEARCH MAX-PEAK TABLE	
CORR.	:KFACT BICONICAL	N.	Freq. (MHz) Level (dBuV/m)
CABLE	ROOM_H_30/8/13	1	96.36 13.50
EXTATT	8447E_FAR	2	130.92 14.51
INPUT	:0 dB	3	169.86 22.13
ATT.	:MAN 20 dB	4	235.38 35.16
DETECT	:PK+QP	5	332.40 28.00
DEM.	:NONE	6	456.18 32.77
LIM1	:CISPR32_RAD_B	7	534.12 31.31
LIM2	:	8	624.00 36.76
MODE	:PEAK+QPEAK CAL	9	706.08 34.33
SWEEP	:30.000-1000.000MHz	10	763.50 33.48
STEP	:60KHz	11	819.54 35.83
IFBW	:120KHz	12	916.98 27.74



AFJ ER55R 30MHz-1GHz EMI RECEIVER 7.11



AFJ ER55R 30MHz-1GHz EMI RECEIVER 7.11

Firmware Ver.7.07

Print Report of 07-19-2018 - 16:33:28

Operator: MIKE DALEY

Title:

EMC TEST LAB - BUILT2

TSA9840 BLUETOOTH AMPLIFIER

RADIATED EMISSION

VERTICAL ANTENNA

12V 0.08A 1KHz.

SN. :55399831086

CORR. :KFACT BICONICAL

CABLE ROOM_V_11/6/13

EXTATT 8447E_FAR

INPUT :0 dB

ATT. :MAN 20 dB

DETECT :PK+QP

DEM. :NONE

LIM1 :CISPR32_RAD_B

LIM2 :

MODE :PEAK+QPEAK CAL

SWEEP :30.000-1000.000MHz

STEP :60KHz

IFBW :120KHz

SEARCH MAX-PEAK TABLE

N. Freq. (MHz) Level (dBuV/m)

1 90.30 22.37

2 131.70 20.24

3 199.32 21.48

4 256.08 20.34

5 288.00 21.84

6 336.00 22.89

7 432.00 30.12

8 535.80 36.56

9 593.94 36.03

10 690.60 33.51

11 819.54 26.51

12 874.92 26.17