

# EMC Technologies (NZ) Ltd

Test Report No 70527.1

Report date: 27 September 2007

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## **TEST REPORT**

### **Kahne KR2000 Series Receiver**

*tested to*

### **47 Code of Federal Regulations**

### **Part 15 - Radio Frequency Devices**

*for*

**Kahne Ltd**

This Test Report is issued with the authority of:



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**Andrew Cutler - General Manager**



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**EMC Technologies (NZ) Ltd**

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## 1. STATEMENT OF COMPLIANCE

The **Kahne KR2000 Series Receiver** complies with FCC Part 15 Subparts A and B - as a Class B device when the methods, as described in ANSI C63.4 - 2003, are applied.

## 2. RESULTS SUMMARY

The results from testing the sample are summarised in the following table:

Clause	Parameter	Result
15.101	Equipment authorisation requirement.	Certification or Declaration of Conformity required for receivers.
15.103	Exempted devices.	Not applicable as the device is a receiver and is not a digital device.
15.107	Conducted Emissions 0.15 - 30 MHz	Not applicable. Internal DC powered device.
15.109	Radiated Emissions 30 - 1000 MHz	Complies with a 6.5 dB margin at 433.8000 MHz (Horizontal).
15.111	Antenna Terminal Disturbance 30 - 950 MHz	Not applicable. Antenna attached permanently to receiver

## 3. INTRODUCTION

This report describes the tests and measurements performed for the purpose of determining compliance with the specification.

**The client selected the test sample.**

**This report relates only to the sample tested.**

**This report contains no corrections or erasures.**

Measurement uncertainties with statistical confidence intervals of 95% are shown below test results. Both Class A and Class B uncertainties have been accounted for, as well as influence uncertainties where appropriate.

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## 4. CLIENT INFORMATION

**Company Name** Kahne Ltd  
**Address** 109 Valley Road  
Mount Eden  
**City** Auckland  
**Country** New Zealand  
**Contact** Mr Michael Eivers

## 5. DESCRIPTION OF TEST SAMPLE

**Brand Name** Kahne  
**Model Number** KR2000 Series  
**Product** Receiver  
**Manufacturer** Kahne Ltd  
**Country of Origin** New Zealand  
**Serial Number** Not serialised  
**FCC ID** WO7KR200008

This receiver is a fixed frequency receiver, operating on 433.950 MHz. that receives data signals from a Kahne Bospac Transceiver that is mounted on the back of a cow.

The Bospac transceiver in turn receives and then re transmits data from a Kahne Bolus transmitter that is inserted into the cow.

The receiver is usually internally powered using a 3.2 Vdc battery and has an 8 element yagi antenna permanently attached.

Attached to the receiver would be either a personal computer or a data storage device.

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## 6. STANDARD, SETUPS AND PROCEDURES

### Standard

The sample was tested in accordance with FCC Part 15 Subparts A and B.

### Methods and Procedures

The measurement methods and procedures as described in ANSI C63.4 - 2003 were used.

### Description Of Radiated Emissions Test Method

Radiated emissions testing was carried out over the frequency range of 30.0 to 1000 MHz.

Testing of the Device Under Test (DUT) for radiated emissions was carried out at the laboratory's open area test site - located at Driving Creek, Orere Point, Auckland, New Zealand (Note: Site conforms to the requirements of CISPR 16, Part 1, Clause 16, and ANSI C63.4 - 2003).

Before testing was carried out, a receiver Self Test and Internal Calibration was undertaken.

Additionally, a check of all connecting cables and programmed antenna factors was carried out.

The device was placed on the test tabletop, which was a total of 0.8 m above the test site ground plane.

Measurements of the radiated field were made with the antenna located at a 3 m horizontal distance from the boundary of the devices under test.

Testing is carried out by manually scanning between 30 MHz and 4500 MHz in 100 kHz steps while aurally and visually monitoring for emissions.

When an emission is located, it is positively identified and its maximum level is found by rotating the automated turntable, and by varying the antenna height with an automated antenna tower.

The emission is measured in both vertical and horizontal antenna polarisations.

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During the test, a number of ambient emissions are identified (list of which can be provided upon request).

Between 30-1000 MHz a Quasi Peak detector was used with a bandwidth of 120 kHz.

Above 1000 MHz an Average and a Peak detector with a bandwidth of 1 MHz was used.

The emission level is determined in field strength by taking the following into consideration:

Level (dB $\mu$ V/m) = Receiver Reading (dB $\mu$ V) + Antenna Factor (dB/m) + Coax Loss (dB)

Measurement uncertainty with a confidence interval of 95% is:

- Free radiation tests (30 - 1000 MHz)  $\pm$  4.1 dB

The receiver was tested receiving continuously.

The receiver was tested with an 8 element yagi antenna permanently attached to the receiver.

The antenna was placed on top of the test able and was pointed in the direction of the test antenna. front face of the device was facing the test aerial at the zero degree position.

All cables were varied for maximum emission level.

Testing was carried out when powered using an external 5 Vdc power supply for the purposes of this test however when used in practice this device will use an internal battery.

No provision will be made to re-charge this battery which will need to be removed to be recharged.

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## 7. TEST EQUIPMENT USED

Instrument	Manufacturer	Model	Serial No	Asset Ref	Cal Due
Aerial Controller	EMCO	1090	9112-1062	RFS 3710	N/A
Aerial Mast	EMCO	1070-1	9203-1661	RFS 3708	N/A
DC Power Supply	Harrison	6296A	-	E1266	N/A
Turntable	EMCO	1080-1-2.1	9109-1578	RFS 3709	N/A
VHF Balun	Schwarzbeck	VHA 9103	-	RFS 3603	4 Feb 2008
Biconical Antenna	Schwarzbeck	BBA 9106	-	RFS 3612	4 Feb 2008
Log Periodic	Schwarzbeck	VUSLP 9111	9111-228	3785	4 Feb 2008
Horn Antenna	Electrometrics	RGA-60	6234	E1494	3 May 2008
Receiver	Rohde & Schwarz	ESCS 30	847124/020	E1595	30 Jan 2008
Spectrum Analyser	Hewlett Packard	E7405A	US39150142	3776	6 Mar 2008
Pre Amplifier	Hewlett Packard	8349B	2644A01659	-	4 Feb 2008

## 8. ACCREDITATIONS

Testing was carried out in accordance with EMC Technologies NZ Ltd registration with the Federal Communications Commission as a listed facility, Registration Number: 90838, which was updated on January 23<sup>rd</sup>, 2007.

The tests were carried out in accordance with the terms of EMC Technologies (NZ) Ltd's International Accreditation New Zealand (IANZ) Accreditation to NZS/IEC/ ISO 17025.

All measurement equipment has been calibrated in accordance with the terms of EMC Technologies (NZ) Ltd's International Accreditation New Zealand (IANZ) Accreditation to NZS/IEC/ ISO 17025.

International Accreditation New Zealand has Mutual Recognition Arrangements for testing and calibration with 46 accreditation bodies in 34 economies. This includes NATA (Australia), UKAS (UK), SANAS (South Africa), NVLAP (USA), A2LA (USA), SWEDAC (Sweden). Further details can be supplied on request.

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## 9. RESULTS

### Radiated Emissions

Device tested continuously when receiving on 433.950 MHz.

Intermediate frequency = 150 kHz

Frequency MHz	Vertical dBuV/m	Hort dBuV/m	Limit dBuV/m	Margin dB	Result	Antenna
433.8000	34.0		46.0	12.0	Pass	Vertical
433.8000		39.5	46.0	6.5	Pass	Horizontal
867.5980	38.0		46.0	8.0	Pass	Vertical
867.5980		35.0	46.0	11.0	Pass	Horizontal

No further emissions observed within 20 dB of the limit when measurements were attempted up to 4338 MHz in either horizontal or vertical antenna polarisations.

**Result:** Complies



# EMC Technologies (NZ) Ltd

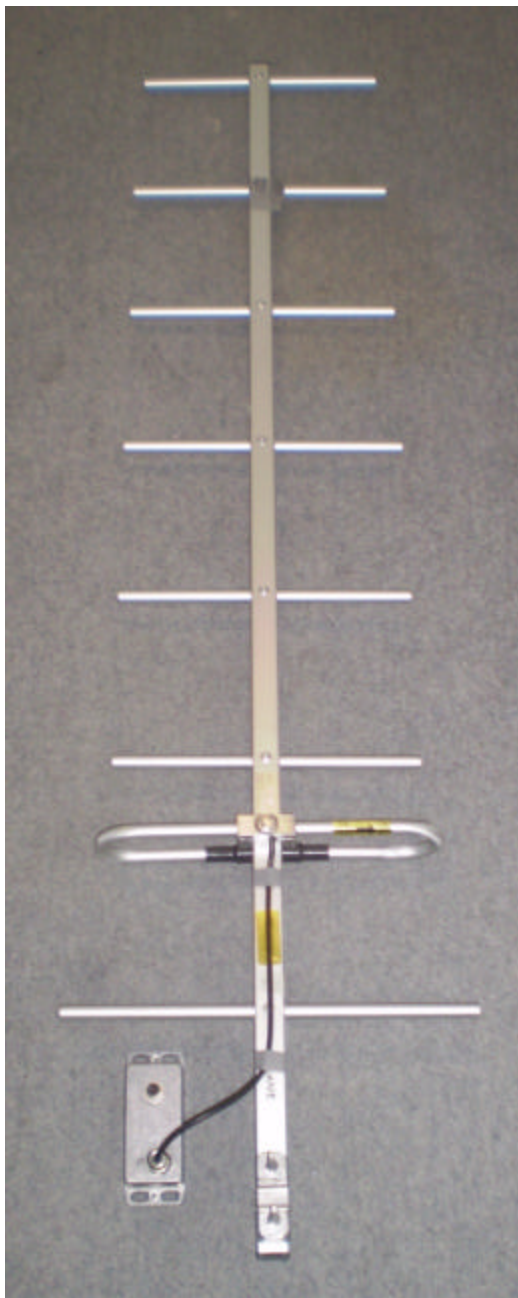
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## 10. PHOTOGRAPH (S)

External View



8 element yagi antenna + receiver

Receiver box

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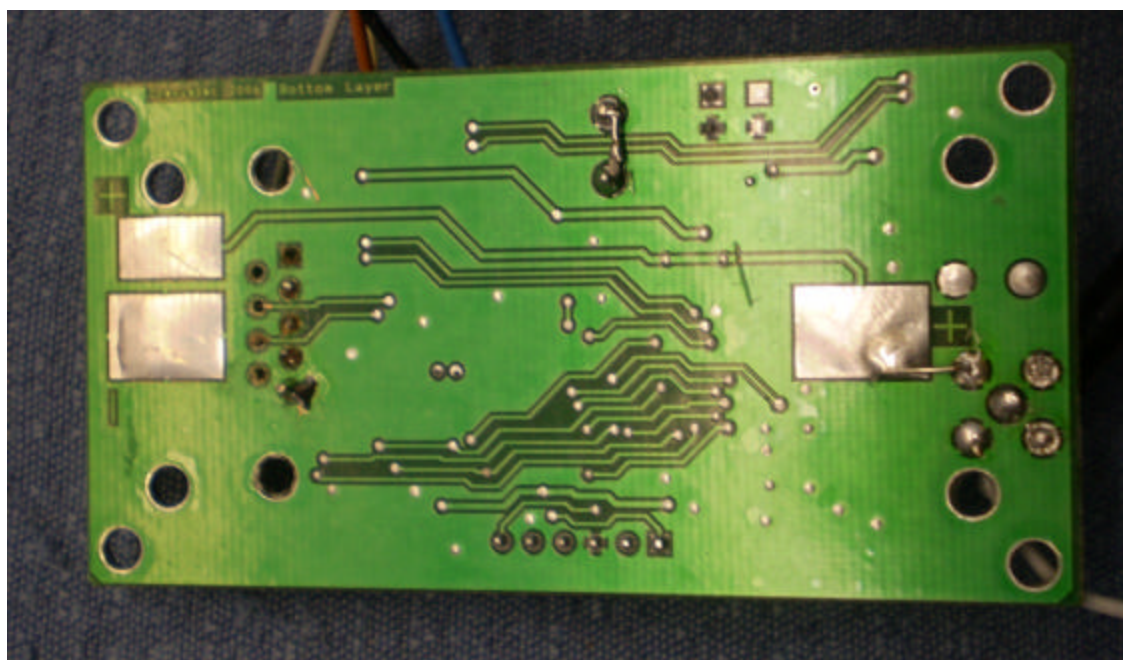
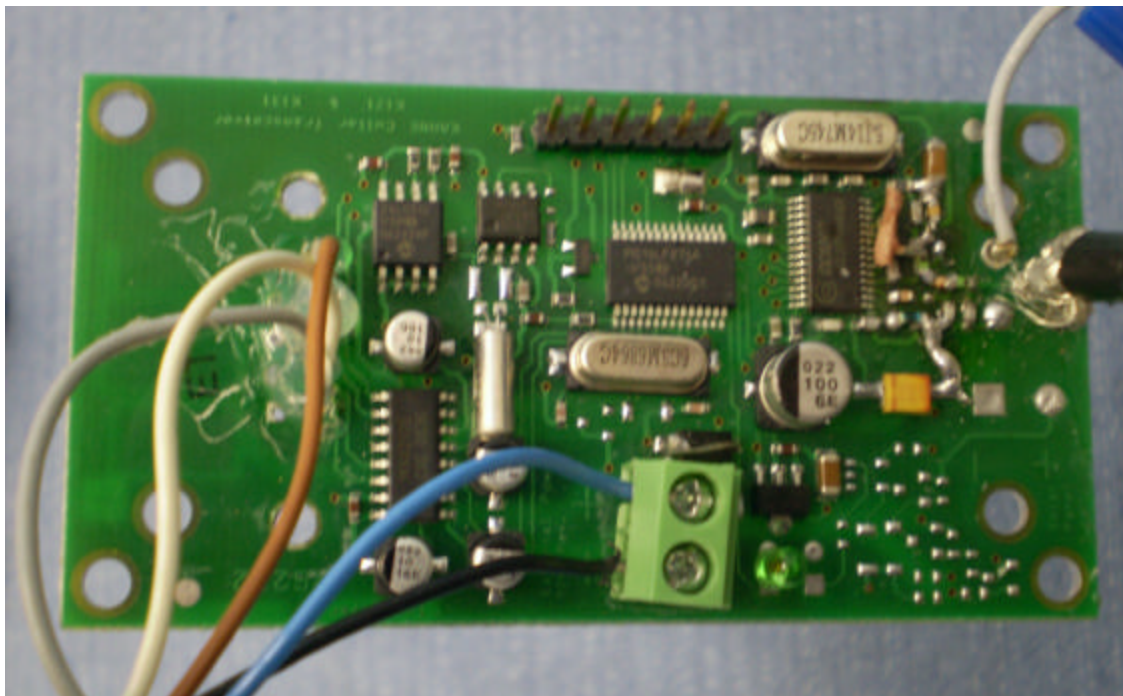
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Internal View



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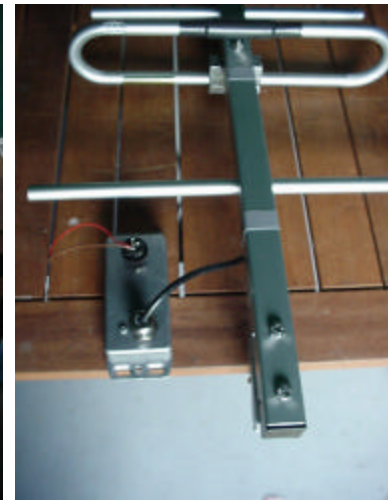
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## Radiated Emission Test Set Up Photos



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