

# EMC Technologies (NZ) Ltd

Test Report No 50925.1

Report date: 28 September 2005

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## **TEST REPORT**

### **Phitek TFMT Tuneable FM Transmitter**

*tested to*

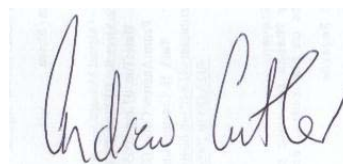
### **47 Code of Federal Regulations**

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

### **Subpart C – Intentional Radiators**

*for*

### **Parkside Laboratories Ltd**



This Test Report is issued with the authority of:

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**Andrew Cutler - General Manager**



All tests reported  
herein have been  
performed in accordance  
with the laboratory's  
scope of accreditation

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## 1. STATEMENT OF COMPLIANCE

The **Phitek TFMT Tuneable FM Transmitter** complies with FCC Part 15 Subpart C as an Intentional Radiator when the methods, as described in ANSI C63.4 - 1992, are applied.

## 2. RESULTS SUMMARY

| Clause    | Parameter                                      | Result                  |
|-----------|------------------------------------------------|-------------------------|
| 15.201    | Equipment authorisation requirement            | Certification required. |
| 15.203    | Antenna requirement                            | Not assessed            |
| 15.204    | External PA and antenna modifications          | Not assessed            |
| 15.205    | Restricted bands of operation                  | Not assessed            |
| 15.207    | Conducted limits                               | Not tested              |
| 15.209    | Radiated emission limits                       | Noted. See 15.239(c)    |
| 15.215    | Additional provisions                          | Not assessed.           |
| 15.239(a) | Operation in the band 88 – 108 MHz: Modulation | Not tested              |
| 15.239(b) | Field strength of fundamental                  | Not tested              |
| 15.239(c) | Field strength of spurious emissions.          | Complies.               |
| 15.239(d) | Telemetry intentional radiator                 | Not assessed            |

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## 3. INTRODUCTION

This report describes the tests and measurements performed on the **Phitek TFMT Tuneable FM Transmitter** 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.

## 4. CLIENT INFORMATION

|                         |                           |
|-------------------------|---------------------------|
| <b>Company Name</b>     | Parkside Laboratories Ltd |
| <b>Address</b>          | PO Box 9194               |
| <b>City</b>             | Christchurch              |
| <b>Country</b>          | New Zealand               |
| <b>Contact</b>          | Mr Brian Drumm            |
| <b>FCC Grantee Code</b> | Not known                 |
| <b>FRN #</b>            | Not known                 |

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## 5. DESCRIPTION OF TEST SAMPLE

|                          |                         |
|--------------------------|-------------------------|
| <b>Brand Name</b>        | Phitek                  |
| <b>Model Number</b>      | TFMT                    |
| <b>Product</b>           | Tuneable FM Transmitter |
| <b>Manufacturer</b>      | Phitek Systems Ltd      |
| <b>Country of Origin</b> | New Zealand             |
| <b>Serial Number</b>     | S1                      |

## 6. RESULTS

### Standard

The sample was tested in accordance with 47 CFR Part 15 Subpart C.

### Methods and Procedures

The measurement methods and procedures as described in ANSI C63.4 - 1992 were used.

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## **Section 15.209: Radiated emission limits, general requirements**

At the request of the client limited measurements were carried out over the range of 7.0 MHz to 30 MHz.

Initial measurements were carried out in the laboratory using a Van Veen Loop 2 m Triple Loop antenna system.

Further measurements were then made at the test site using a magnetic loop.

Testing was carried out at the laboratory's open area test site - located at Driving Creek, Orere Point, Auckland, New Zealand.

This site conforms to the requirements of CISPR 16, Part 1, Clause 16, and ANSI C63.4 – 1992 and is site listed with the FCC.

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

The antenna was located at a distance of 10 metres from the device with the centre of the loop being 1 metre above the test site ground plane.

When an emission is located, it is positively identified and its maximum level is found by rotating the automated turntable, and by varying the position of the loop antenna.

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

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

Measurements were made while the device was transmitting continuously.

A receiver with a quasi peak detector with a 10 kHz bandwidth was used between 7.0 – 30.0 MHz.

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The limit as described in Section 15.209 have been applied as follows:

1.705 – 30.0 MHz    30 uV/m    29.5 dBuV/m when measured at 30 metres.

As measurements have been attempted at 10 metres the 30 metre limit has been scaled using a factor of 40 dB per decade as per section 15.31 (f)(2).

Therefore a limit of 49.5 dBuV/m has been applied.

**Result:** Complies.

Measurement uncertainty with a confidence interval of 95% is:

- Free radiation tests    (0.15 – 30.0 MHz)  $\pm$  4.8 dB

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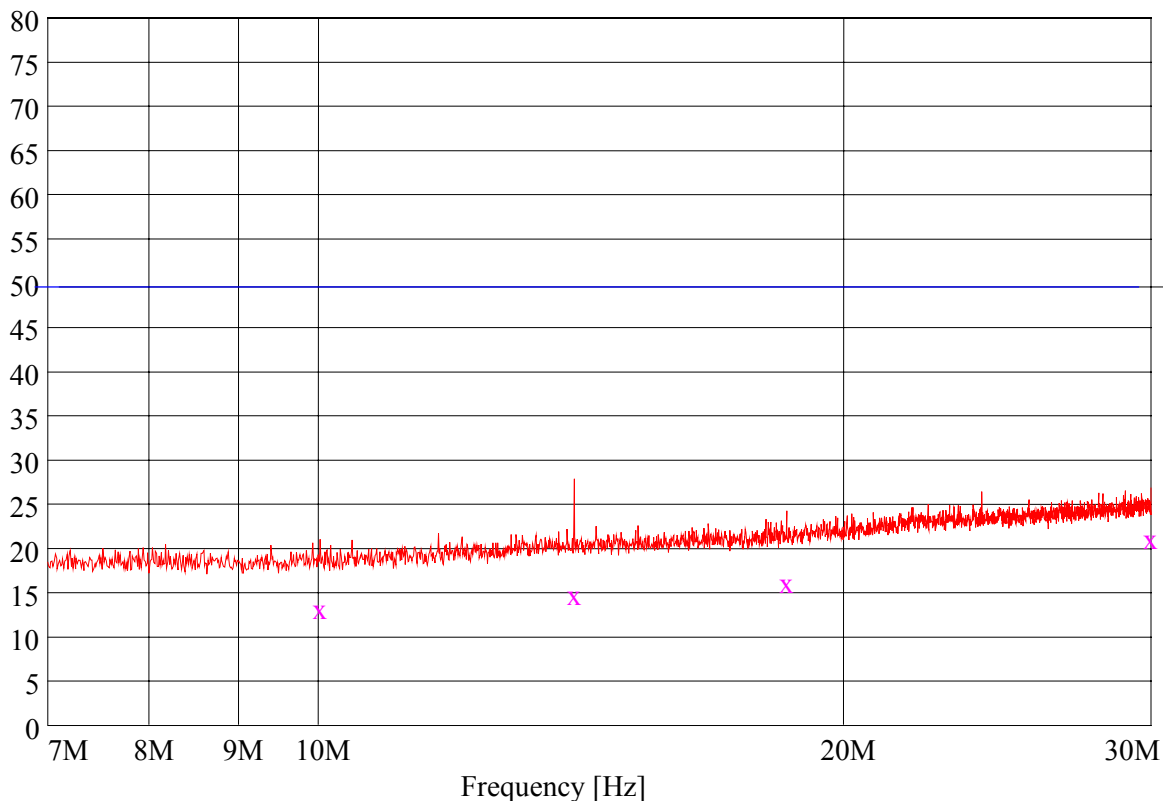
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## Radiated Emissions at 10m

|                  |                                                                       |
|------------------|-----------------------------------------------------------------------|
| <b>Comments:</b> | Device tested using 12V DC when transmitting continuously on 90.2MHz. |
|------------------|-----------------------------------------------------------------------|

Level [dB $\mu$ V/m]



|            |              |
|------------|--------------|
| Peak ----- | Quasi Peak X |
|------------|--------------|

### Quasi-Peak Measurements

| Frequency MHz | Level dB $\mu$ V | Limit dB $\mu$ V | Margin dB | Exceed | Rechecks dB $\mu$ V |
|---------------|------------------|------------------|-----------|--------|---------------------|
| 10.030000     | 13.51            | 49.50            | 35.99     |        |                     |
| 14.020000     | 15.14            | 49.50            | 34.36     |        |                     |
| 18.550000     | 16.46            | 49.50            | 33.04     |        |                     |
| 30.000000     | 21.47            | 49.50            | 28.03     |        |                     |

### EMC Technologies (NZ) Ltd

STREET ADDRESS - 47 MacKelvie Street, Grey Lynn, Auckland, New Zealand

POSTAL ADDRESS - PO Box 68 307, Newton, Auckland, New Zealand

Telephone: +64 9 360 0862 Fax: +64 9 360 0861

E-mail: aucklab@ihug.co.nz

Web Site: www.emctech.com.au

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## 7. TEST EQUIPMENT USED

| Instrument             | Manufacturer    | Model      | Serial No  | Asset Ref |
|------------------------|-----------------|------------|------------|-----------|
| Aerial Controller      | EMCO            | 1090       | 9112-1062  | RFS 3710  |
| Turntable              | EMCO            | 1080-1-2.1 | 9109-1578  | RFS 3709  |
| Measurement Receiver   | Rohde & Schwarz | ESCS 30    | 847124/020 | E1595     |
| 2m Triple Loop Antenna | Rohde & Schwarz | HM020      | 843885/004 | -         |
| Coax Cable             | Sucoflex        | 104PA      | 2545/4PA   | -         |
| Loop Antenna Tuner     | Schwarzbeck     | FMZ 1514   | -          | RFS 3602  |
| Magnetic Loop          | Schwarzbeck     | FMZ 15142  | -          | RFS 3654  |
| Magnetic Loop          | Schwarzbeck     | FMZ 15141  | -          | RFS 3653  |

## 8. ACCREDITATIONS

Testing was carried out in accordance with EMC Technologies Ltd registration with the Federal Communications Commission as a listed facility, Registration Number: 90838, which was last updated on February 17<sup>th</sup>, 2004.

All testing was carried out in accordance with the terms of EMC Technologies (NZ) Ltd International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025.1999.

All measurement equipment has been calibrated in accordance with the terms of the EMC Technologies (NZ) Ltd International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025.1999.

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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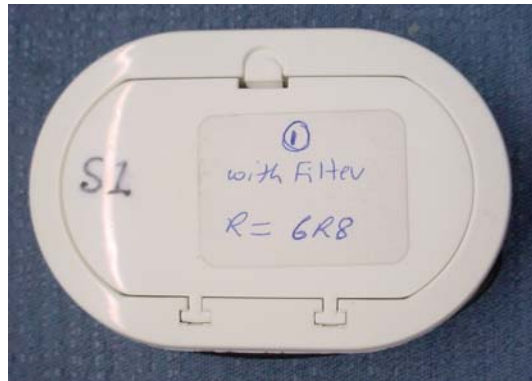
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Web Site: [www.emctech.com.au](http://www.emctech.com.au)

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## 9. PHOTOGRAPH (S)



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E-mail: [aucklab@ihug.co.nz](mailto:aucklab@ihug.co.nz)  
Web Site: [www.emctech.com.au](http://www.emctech.com.au)