

# EMC Technologies (NZ) Ltd

Test Report No 10720 FCC

Report date: 2 October 2001

## Field strength of transmitter spurious emissions at the antenna terminals

**Frequency:** 156.0250 MHz

| Transmit Frequency (MHz) | Level (dBuV/m) | Power (dBm) | Limit (dBm) | Margin (dB) | Polarity   |
|--------------------------|----------------|-------------|-------------|-------------|------------|
| Tx harmonics             |                |             |             |             |            |
| 312.050                  | 20.0           | -77.4       | -20.0       | -57.4       | Horizontal |
| 468.075                  | -              | -           | -20.0       | -           | Vert/Hort  |
| 624.100                  | 24.7           | -72.7       | -20.0       | -52.7       | Vertical   |
| 780.125                  | -              | -           | -20.0       | -           | Vert/Hort  |
| 936.150                  | -              | -           | -20.0       | -           | Vert/Hort  |
| 1092.175                 | -              | -           | -20.0       | -           | Vert/Hort  |
| 1248.200                 | -              | -           | -20.0       | -           | Vert/Hort  |
| 1404.225                 | -              | -           | -20.0       | -           | Vert/Hort  |
| 1560.250                 | -              | -           | -20.0       | -           | Vert/Hort  |

Device was tested on an open area test site at a distance of 3 metres.

Testing was carried out at EMC Technologies NZ Ltd Open Area Test Site, which is located at Dakota Lane, Ardmore Aerodrome, Auckland. Details of this site have been filed with the Commission, Registration Number: 90838, which was last updated on February 11, 2000.

The transmitter tested while transferring data at a rate of 64 kb/s from a 2<sup>nd</sup> EX7100 which, was located 30 metres away.

Attached to the output of the transmitter was a 30 dB power attenuator.

The transmitter was tested transmitting and receiving continuously (100% duty cycle).

The power level of each emission was then determined by replacing the transmitter with a dipole antenna that was connected to a signal generator.

The signal generator output level was increased until the same field strength level was observed at each emission frequency.

The level recorded is the signal generator output level in dBm less any losses due to the coax cable and the dipole antenna.

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## *Limit*

All spurious emissions are to be attenuated by at least  $50 + 10 \log (P)$ .

The rated power is 10 watts which gives a limit of  $-20 \text{ dBm}$ .

No measurements were made above the  $10^{\text{th}}$  harmonic.

All transmitter harmonic emissions observed have been reported.

All other emissions are more than 20 dB below the above specification limit and have therefore not been reported in accordance with Section 2.1057(c).

**Result:** Complies

**Measurement Uncertainty:**  $\pm 4.1 \text{ dB}$

## TEST EQUIPMENT USED

| Instrument                   | Manufacturer             | Model           | Serial #            | Asset           |
|------------------------------|--------------------------|-----------------|---------------------|-----------------|
| Aerial Controller            | EMCO                     | 1090            | 9112-1062           | RFS 3710        |
| Aerial Mast                  | EMCO                     | 1070-1          | 9203-1661           | RFS 3708        |
| Attenuator                   | Hewlett Packard          | 8491A           | 24838               | E1329           |
| Attenuator                   | Wienschel                | 49-20-43        | GC104               | E1308           |
| Audio Analyzer               | Hewlett Packard          | HP 8903B        | 2216A01713          | E1146           |
| Biconical Antenna            | Schwarzbeck              | BBA 9106        |                     | RFS 3612        |
| <b>Biconical Antenna</b>     | <b>Schwarzbeck</b>       | <b>BBA 9106</b> |                     | <b>RFS 3697</b> |
| Coax Cable                   | Sucoflex                 | 104PA           | 2736/4PA            |                 |
| DC Power Supply              | Hewlett Packard          | HP6032A         | 2743A-02859         | E1069           |
| Frequency Counter            | Hewlett Packard          | HP 5342A        | 1916A01835          | E1224           |
| <b>Horn Antenna</b>          | <b>Electrometrics</b>    | <b>RGA-60</b>   | <b>6234</b>         | <b>E1494</b>    |
| Horn Antenna                 | EMCO                     | 3115            | 9511-4629           | E1526           |
| Level generator              | Anritsu                  | MG443B          | M61689              | E1143           |
| Log Periodic Antenna         | Schwarzbeck              | UHALP 9107      | -                   | RFS 3696        |
| Log Periodic Antenna         | Schwarzbeck              | UHALP 9107      |                     | RFS 3702        |
| Measurement Receiver         | Rohde & Schwarz          | ESCS 30         | 839873/1            | E1595           |
| Modulation Analyzer          | Hewlett Packard          | HP 8901B        | 2608A00782          | E1090           |
| Resistance Thermometer Meter | DSIR                     | RT200           | 35                  | E1409           |
| RF Power Meter               | Hewlett Packard          | HP 436A         | 2512A22439          | E1198           |
| Rubidium Oscillator          | Ball Efratom             | FRS - C         | 4287                | E1053           |
| <b>Signal Generator</b>      | <b>Rohde and Schwarz</b> | <b>SMP-04</b>   | <b>1035 5005.04</b> | <b>E1560</b>    |
| Spectrum Analyser            | Hewlett Packard          | E7405A          | US 39150142         | RFS 3776        |
| Thermal chamber              | Contherm                 | M180F           | 86025               | E1129           |
| Turntable                    | EMCO                     | 1080-1-2.1      | 9109-1578           | RFS 3709        |

Additional equipment used in bold.

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