

EMC Technologies (NZ) Ltd

Test Report No 00729.1

Report date: 4 September 2001

Field strength of transmitter spurious emissions at the antenna terminals

Frequency: 420.000 MHz

Transmit frequency (MHz)	Level (dBuV/m)	Power (dBm)	Limit (dBm)	Margin (dB)	Polarity
Tx harmonics					
840.000	40.2	-54.0	-20.0	34.0	Vertical
1260.000	30.1	-60.1	-20.0	40.0	Vertical
1680.000	36.9	-55.0	-20.0	35.0	Vertical
2100.000	52.3	-39.9	-20.0	19.9	Vertical
2520.000	40.5	-56.7	-20.0	36.7	Vertical
2940.000	Nil	-	-20.0	-	Vert/Hort
3360.000	Nil	-	-20.0	-	Vert/Hort
3780.000	Nil	-	-20.0	-	Vert/Hort
Other Emissions					
68.740	49.7	-45.5	-20.0	25.5	Vertical
71.700	53.3	-41.9	-20.0	21.9	Vertical
75.100	56.9	-38.3	-20.0	18.3	Vertical
80.400	53.5	-38.5	-20.0	18.5	Vertical
85.000	46.6	-47.1	-20.0	27.1	Vertical
139.263	47.1	-48.1	-20.0	18.1	Vertical

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 2nd 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.

EMC Technologies (NZ) Ltd

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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.

Limit

As advised by the FCC all emissions are to be attenuated by at least $50 + 10 \log(P)$.

The rated power is 10 watts which gives a limit of -20 dBm .

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

All transmitter harmonic emissions observed have been reported. All other emissions within a 35 dB margin of the limit have been recorded.

Result: Complies

Measurement Uncertainty: ± 4.1 dB

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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
Biconical Antenna	Schwarzbeck	BBA 9106		RFS 3697
Coax Cable	Sucoflex	104PA	2736/4PA	
DC Power Supply	Hewlett Packard	HP6032A	2743A-02859	E1069
Frequency Counter	Hewlett Packard	HP 5342A	1916A01835	E1224
Horn Antenna	Electrometrics	RGA-60	6234	E1494
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
Signal Generator	Rohde and Schwarz	SMP-04	1035 5005.04	E1560
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.