

EMC Technologies (NZ) Ltd

Test Report No 30427.4

Report date: 12 May 2003

TEST REPORT

Tait TB8100 UHF Base Station Transceiver

tested to

47 Code of Federal Regulations

Part 22 – Public Mobile Services

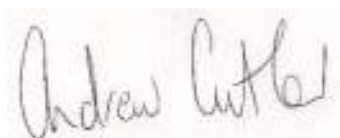
Part 90 – Private Land Mobile Service

Part 15 - Radio Frequency Devices

for

Tait Electronics Ltd

This Test Report is issued with the authority of:



Andrew Cutler - General Manager

Prepared By:



Karen Miller - Office Administrator



EMC Technologies (NZ) Ltd

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

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

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1. STATEMENT OF COMPLIANCE

The Tait TB8100 UHF Base Station Transceiver complies with:

- FCC Part 15 Section 15.107 when tested in accordance with ANSI C63.4 – 1992
- FCC Part 22 Section 22.359 when tested in accordance with FCC Part 2 Section 2.1053
- FCC Part 90 Section 90.210 when tested in accordance with FCC Part 2 Section 2.1053

2. RESULTS SUMMARY

The results from testing are summarised in the following table:

Section	Result
15.107(f) – Conducted limits	Complies with a 3.7 dB margin at 11.200 MHz (Average) when tested with the 50 watt power amplifier attached that was operating in stand by.
22..359 and 90.210 when tested to 2.1053 – Radiated spurious emissions	Complies with a 6.8 dB margin at 1980.400 MHz (Horizontal) when transmitting on 495.100 MHz using the 50 watt power amplifier.

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3. CLIENT INFORMATION

Company Name	Tait Electronics Ltd
Address	PO Box 1645
City	Christchurch
Country	New Zealand
Contact	Mr Des Fox

4. DESCRIPTION OF TEST SAMPLE

Brand Name	Tait
Model Number	TB8100
Product	UHF Base Station Transceiver
Manufacturer	Tait Electronics Ltd
Country of Origin	New Zealand

The base station is contained within a rack and consists of the following core items:

- Power supply
- Reciter (transmitter exciter and a receiver combined in a single module)
- Power amplifier

The base station is capable of transmitting over the range of 400 – 520 MHz using 3 power amplifiers that are rated at 5, 50 and 100 watts.

Testing has been carried out using a supply voltage of 110 Vac.

The base station was controlled using an external test control box.

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Conducted emission testing was carried out with the reciter transmitting on 460.1000 MHz giving results that are representative of its performance over the complete operating range.

The item tested consisted of the following common devices:

- UHF base station rack TBA2323-A000 Sn# 18001035
- Power supply unit (PMU) TBA30A1-0000 Sn #18001630
- Test control box TBA0-ST1 Sn# 18001477
- Control Panel TBA2020 Sn# 18000971
- Control Panel TBA2323-A000 Sn# 18001035

Part 22 and Part 90 radiated emission testing was carried out on 425.100 MHz, 460.100 MHz and 495.100 MHz using the following reciters individually inserted into the base station rack previously described and tested with each of the 3 power amplifiers attached:

- 425.1 MHz reciter TBA40H1-0A00 Sn# 18001559
- 460.1 MHz reciter TBA40H2-0C01 Sn# 18001111
- 495.1 MHz reciter TBA40H3-0B00 Sn# 18001468

- 5 watt power amplifier TBA70H0-0000 Sn# 18001200
- 50 watt power amplifier TBA80H0-0000 Sn# 18001068
- 100 watt power amplifier TBA90H0-0000 Sn# 18001053

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5. TEST SAMPLE SPECIFICATIONS

Transmit frequencies

425.100 MHz, 460.100 MHz, 495.100 MHz

Band of operation

400 - 520 MHz in 3 sub bands being:

400 – 440 MHz, 440 – 480 MHz, 470 – 520 MHz.

FCC bands

Part 90: 421 – 512 MHz.

Power Supply

110 Vac from the mains supply.

Power Output

5 watts to 100 watts using external power amplifiers.

Testing using power amplifiers with the following power outputs:

5 watts, 50 watts, 100 watts.

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6. ATTESTATION

This report describes the tests and measurements performed for the purpose of determining compliance with the specification with the following conditions:

The client selected the test sample.

The report relates only to the sample tested.

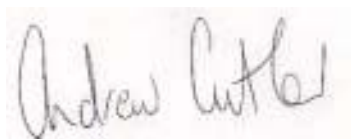
This report does not contain corrections or erasures.

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.

In addition this equipment has been tested in accordance with the requirements contained in the appropriate Commission regulations.

To the best of my knowledge, these tests were performed using measurement procedures that are consistent with industry or Commission standards and demonstrate that the equipment complies with the appropriate standards.

I further certify that the necessary measurements were made by EMC Technologies NZ Ltd, 47 MacKelvie Street, Grey Lynn, Auckland, New Zealand.



Andrew Cutler
General Manager
EMC Technologies NZ Ltd

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7. TEST RESULTS

Conducted Emissions

Conducted emissions testing was carried out over the frequency range of 150 kHz to 30 MHz.

Testing for conducted emissions was carried out at the laboratory's MacKelvie Street premises in a screened room.

The device was placed 0.8 m away from the closest edge of the artificial mains terminal network on the emissions test table which is 1 m x 1.5 m, and is 0.8 m above the screened room floor which acts as the horizontal ground plane and is 0.6 m away from the screened room wall, which acts as the vertical ground plane.

The device was powered at 110 V AC from the mains supply.

Measurements were made using a Quasi Peak detector with a 10 kHz bandwidth.

Testing was carried out in transmit and stand by modes.

As the device uses a switch mode power supply automated final measurements have not been utilised due to the emissions varying slightly in frequency between the time of the initial scan and the final automated measurement.

In these cases the final measurement has been made manually.

Measurement uncertainty with a confidence interval of 95% is:

- Mains terminal tests (0.15 - 30 MHz) ± 2.2 dB

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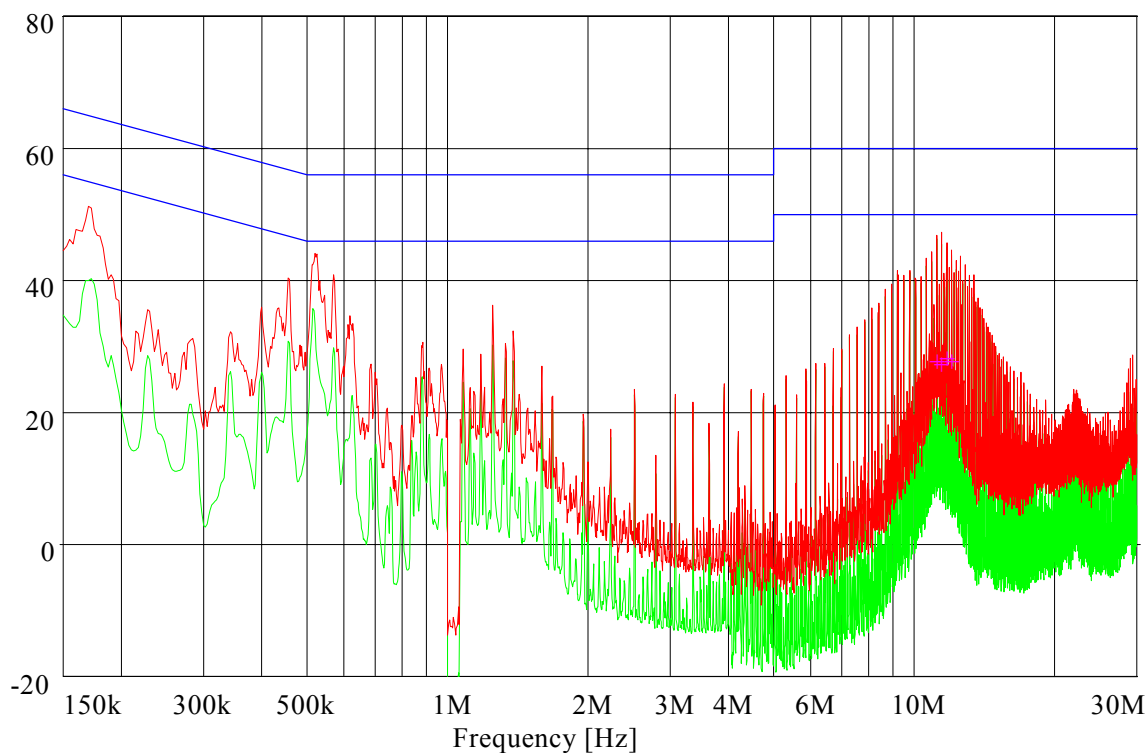
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Conducted emissions – 5 watt power amplifier

Comments:	Base station tested when operating in standby when powered at 110 Vac with a 13.8 Vdc battery, dummy load and a test control box attached.
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Level [dB μ V]



Peak -----	Average -----	Quasi Peak X	Average +
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Quasi-Peak Measurements

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed	Phase	Rechecks dB μ V

Average Measurements

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed	Phase	Rechecks dB μ V
11.185000	45.80	50.00	4.20		N	
11.465000	45.50	50.00	4.50		N	
11.745000	45.00	50.00	5.00		N	
12.025000	44.20	50.00	5.80		N	

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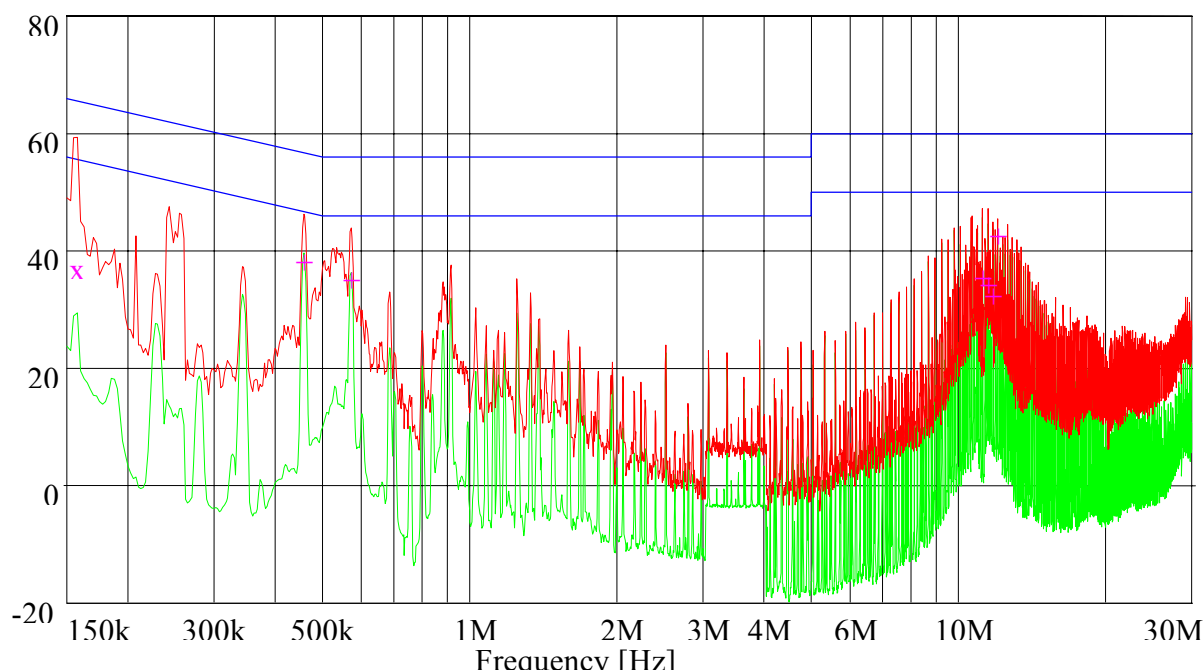
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Report date: 12 May 2003

Conducted emissions – 5 watt power amplifier

Comments:	Base station tested transmitting continuously at 5 watts when powered at 110 Vac with a 13.8 Vdc battery, dummy load and a test control box attached.
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Level [dB μ V]



Peak -----	Average -----	Quasi Peak X	Average +
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Quasi-Peak Measurements

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed	Phase	Rechecks dB μ V
0.157500	38.61	65.59	26.98		N	

Average Measurements

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed	Phase	Rechecks dB μ V
0.457500	39.73	46.74	7.01		N	39.7
0.572500	36.54	46.00	9.46		L1	
11.200000	45.10	50.00	4.90		N	
11.480000	45.90	50.00	4.10		N	
11.760000	45.10	50.00	4.90		N	
12.035000	44.80	50.00	5.20		N	

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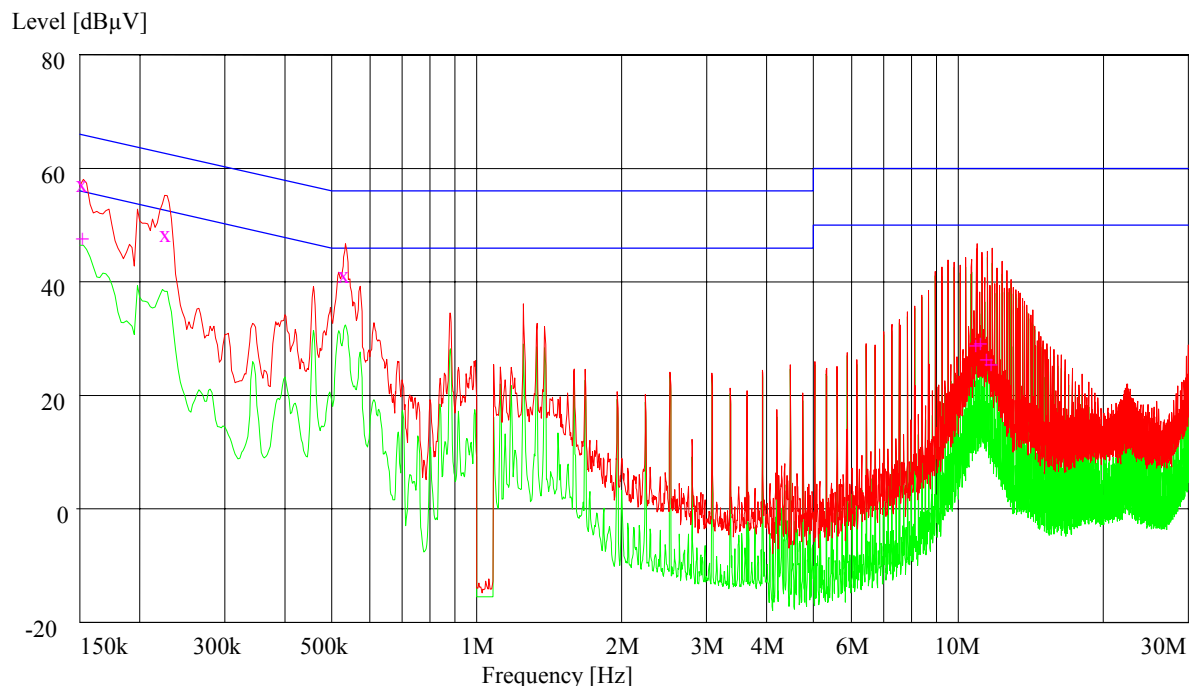
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Conducted emissions – 50 watt power amplifier

Comments:	Base station tested while operating in standby when powered at 110 Vac with a 13.8 Vdc battery, dummy load and a test control box attached.
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Peak	-----	Average	-----	Quasi Peak	X	Average	+
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Quasi-Peak Measurements

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed	Phase	Rechecks dB μ V
0.152500	58.31	65.86	7.55		L1	58.0
0.227500	49.47	62.54	13.07		N	
0.535000	42.38	56.00	13.62		L1	

Average Measurements

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed	Phase	Rechecks dB μ V
0.152500	48.72	55.86	7.14		L1	48.0
10.920000	43.90	50.00	6.10		N	
11.200000	46.30	50.00	3.70		N	
11.480000	44.00	50.00	6.00		N	
11.760000	44.10	50.00	5.90		L1	

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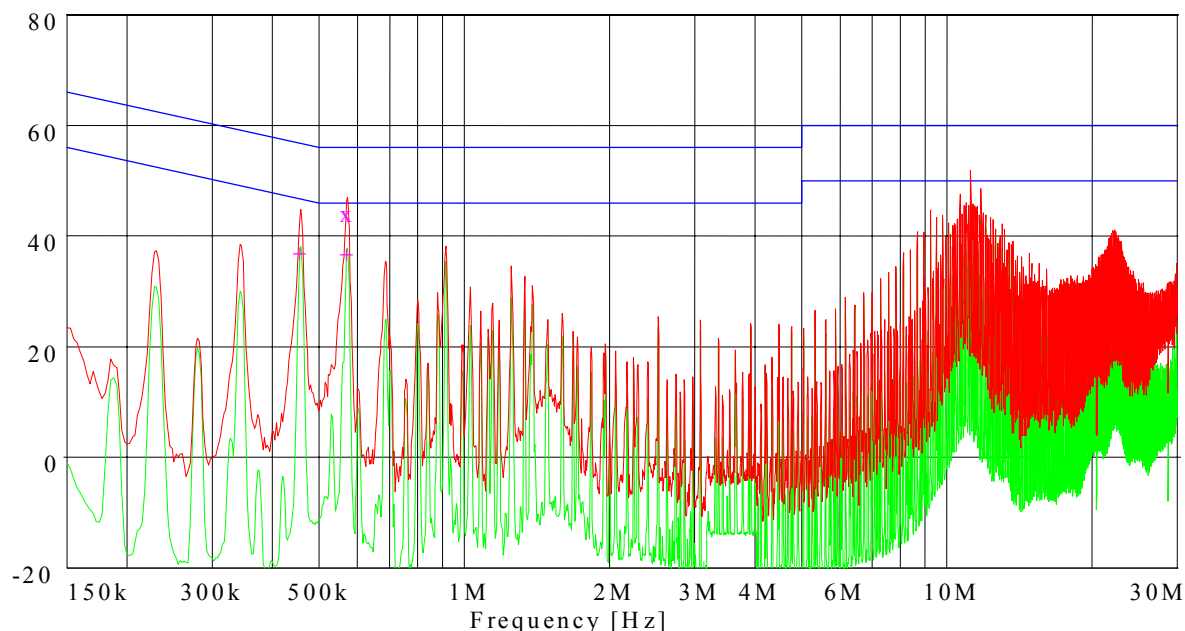
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Conducted emissions – 50 watt power amplifier

Comments:	Base station tested when operating continuously at 50 watts when powered at 110 Vac with a 13.8 Vdc battery, a dummy load and a test control box attached.
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Level [dB μ V]



Peak -----	Average -----	Quasi Peak X	Average +
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Quasi-Peak Measurements

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed	Phase	Rechecks dB μ V
0.572500	45.24	56.00	10.76		N	45.3
11.205000	44.65	60.00	15.35		N	45.6

Average Measurements

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed	Phase	Rechecks dB μ V
0.457500	38.02	46.74	8.72		L1	37.0
0.572500	37.78	46.00	8.22		N	
10.645000	43.80	50.00	6.20		N	
10.925000	43.70	50.00	6.30		N	
11.205000	46.10	50.00	3.90		L1	
11.480000	44.40	50.00	5.60		N	

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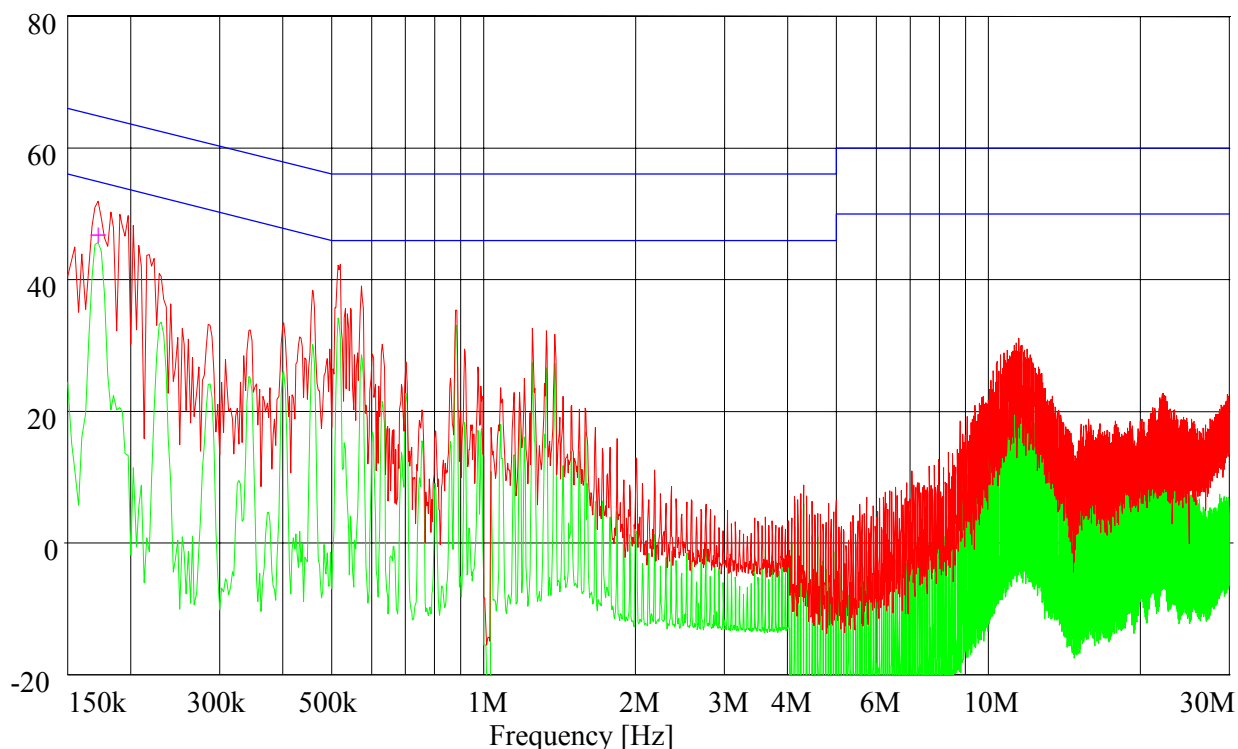
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Conducted emissions – 100 watt power amplifier

Comments:	Base station tested in standby when powered at 110 Vac with a 13.8 Vdc battery, dummy load and a test box attached to the device
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Level [dB μ V]



Peak -----	Average -----	Quasi Peak X	Average +
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Quasi-Peak Measurements

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed	Phase	Rechecks dB μ V

Average Measurements

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed	Phase	Rechecks dB μ V
0.172500	47.92	54.84	6.92		L1	49.5

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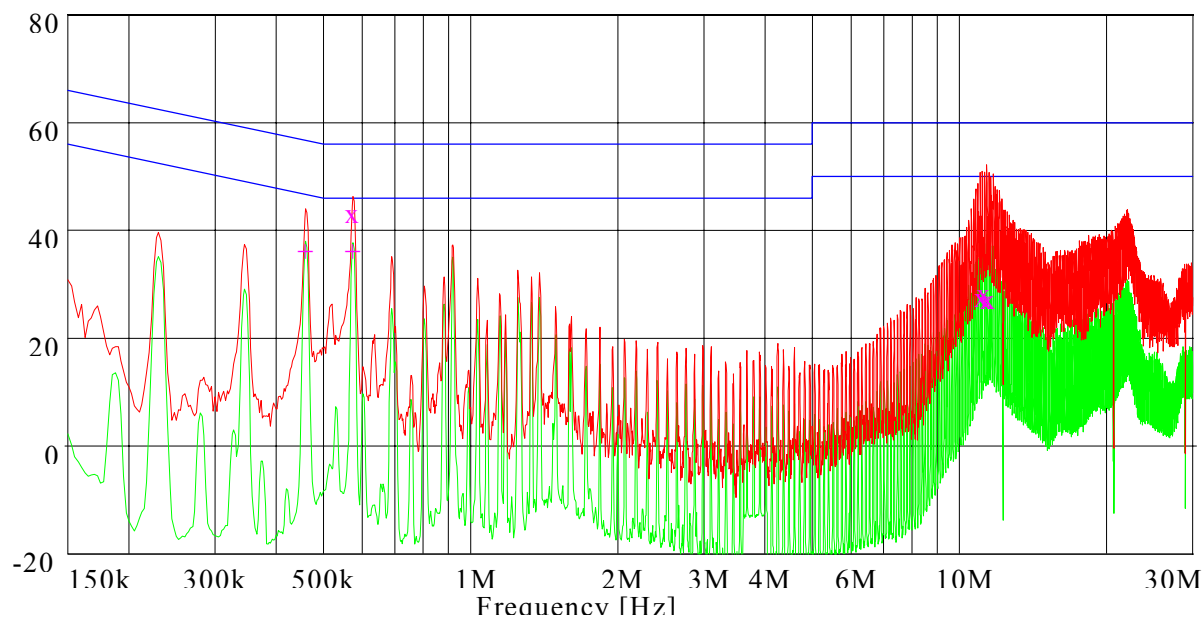
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Conducted emissions – 100 watt power amplifier

Comments:	Base station tested when transmitting continuously at 100 watts when powered at 110 Vac with a dummy load, 13.8 Vdc battery and a test box attached.
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Level [dB μ V]



Peak -----	Average -----	Quasi Peak X	Average +
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Quasi-Peak Measurements

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed	Phase	Rechecks dB μ V
0.575000	44.80	56.00	11.20		N	
11.140000	29.15	60.00	30.85		N	
11.255000	30.04	60.00	29.96		N	
11.370000	28.73	60.00	31.27		N	
11.485000	28.79	60.00	31.21		N	

Average Measurements

Frequency MHz	Level dB μ V	Limit dB μ V	Margin dB	Exceed	Phase	Rechecks dB μ V
0.460000	37.85	46.69	8.84		N	38.2
0.575000	37.73	46.00	8.27		N	37.6
11.41673	41.20	50.00	8.80		N	
11.19226	41.60	50.00	8.40		N	

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Field strength of spurious emissions

Frequency: 425.1000 MHz

Power Amplifier: 5 watts

Emission frequency (MHz)	Level (dBuV/m)	Power (dBm)	Limit (dBm)	Polarity	Margin (dB)
850.2000	37.8	-57.4	-20.0	Horizontal	37.4
850.2000	33.6	-61.6	-20.0	Vertical	41.6
1275.3000	34.0	-61.2	-20.0	Horizontal	41.2
1275.3000	37.0	-58.2	-20.0	Vertical	38.2
1700.4000	37.2	-58.0	-20.0	Horizontal	38.0
1700.4000	38.6	-56.6	-20.0	Vertical	36.6
2125.5000	44.1	-51.1	-20.0	Horizontal	31.1
2125.5000	45.1	-50.1	-20.0	Vertical	30.1
2550.6000	46.3	-48.9	-20.0	Horizontal	28.9
2550.6000	46.8	-48.4	-20.0	Vertical	28.4
2975.7000	-	-	-20.0	Horizontal	-
2975.7000	-	-	-20.0	Vertical	-
3400.8000	-	-	-20.0	Horizontal	-
3400.8000	-	-	-20.0	Vertical	-
3825.9000	-	-	-20.0	Horizontal	-
3825.9000	-	-	-20.0	Vertical	-
4251.0000	-	-	-20.0	Horizontal	-
4251.0000	-	-	-20.0	Vertical	-

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Frequency: 425.1000 MHz

Power Amplifier: 50 watts

Emission frequency (MHz)	Level (dBuV/m)	Power (dBm)	Limit (dBm)	Polarity	Margin (dB)
850.2000	41.5	-53.7	-20.0	Horizontal	33.7
850.2000	49.5	-45.7	-20.0	Vertical	25.7
1275.3000	39.1	-56.1	-20.0	Horizontal	36.1
1275.3000	45.4	-49.8	-20.0	Vertical	29.8
1700.4000	60.1	-37.3	-20.0	Horizontal	17.3
1700.4000	64.7	-34.7	-20.0	Vertical	14.7
2125.5000	67.1	-33.3	-20.0	Horizontal	13.3
2125.5000	66.8	-34.6	-20.0	Vertical	14.6
2550.6000	49.2	-46.0	-20.0	Horizontal	26.0
2550.6000	49.9	-45.3	-20.0	Vertical	25.3
2975.7000	-	-	-20.0	Horizontal	-
2975.7000	-	-	-20.0	Vertical	-
3400.8000	-	-	-20.0	Horizontal	-
3400.8000	-	-	-20.0	Vertical	-
3825.9000	-	-	-20.0	Horizontal	-
3825.9000	-	-	-20.0	Vertical	-
4251.0000	-	-	-20.0	Horizontal	-
4251.0000	-	-	-20.0	Vertical	-

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Frequency: 425.1000 MHz

Power Amplifier: 100 watts

Emission frequency (MHz)	Level (dBuV/m)	Power (dBm)	Limit (dBm)	Polarity	Margin (dB)
850.2000	40.9	-54.3	-20.0	Horizontal	34.3
850.2000	40.6	-54.6	-20.0	Vertical	34.6
1275.3000	48.1	-47.1	-20.0	Horizontal	27.1
1275.3000	51.6	-43.6	-20.0	Vertical	23.6
1700.4000	46.5	-48.7	-20.0	Horizontal	28.7
1700.4000	47.1	-48.1	-20.0	Vertical	28.1
2125.5000	53.6	-41.6	-20.0	Horizontal	21.6
2125.5000	48.5	-46.7	-20.0	Vertical	26.7
2550.6000	44.7	-50.5	-20.0	Horizontal	30.5
2550.6000	47.2	-48.0	-20.0	Vertical	28.0
2975.7000	-	-	-20.0	Horizontal	-
2975.7000	-	-	-20.0	Vertical	-
3400.8000	-	-	-20.0	Horizontal	-
3400.8000	-	-	-20.0	Vertical	-
3825.9000	-	-	-20.0	Horizontal	-
3825.9000	-	-	-20.0	Vertical	-
4251.0000	-	-	-20.0	Horizontal	-
4251.0000	-	-	-20.0	Vertical	-

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Field strength of spurious emissions

Frequency: 460.1000 MHz

Power Amplifier: 5 watts

Emission frequency (MHz)	Level (dBuV/m)	Power (dBm)	Limit (dBm)	Polarity	Margin (dB)
920.2000	37.8	-57.4	-20.0	Horizontal	37.4
920.2000	33.6	-61.6	-20.0	Vertical	41.6
1380.3000	34.0	-61.2	-20.0	Horizontal	41.2
1380.3000	37.0	-58.2	-20.0	Vertical	38.2
1840.4000	37.2	-58.0	-20.0	Horizontal	38.0
1840.4000	38.6	-56.6	-20.0	Vertical	36.6
2300.5000	44.1	-51.1	-20.0	Horizontal	31.1
2300.5000	45.1	-50.1	-20.0	Vertical	30.1
2760.6000	46.3	-48.9	-20.0	Horizontal	28.9
2760.6000	46.8	-48.4	-20.0	Vertical	28.4
3220.7000	-	-	-20.0	Horizontal	-
3220.7000	-	-	-20.0	Vertical	-
3680.8000	-	-	-20.0	Horizontal	-
3680.8000	-	-	-20.0	Vertical	-
4140.9000	-	-	-20.0	Horizontal	-
4140.9000	-	-	-20.0	Vertical	-
4601.0000	-	-	-20.0	Horizontal	-
4601.0000	-	-	-20.0	Vertical	-

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Frequency: 460.1000 MHz

Power Amplifier: 50 watts

Emission frequency (MHz)	Level (dBuV/m)	Power (dBm)	Limit (dBm)	Polarity	Margin (dB)
920.2000	41.5	-53.7	-20.0	Horizontal	33.7
920.2000	49.5	-45.7	-20.0	Vertical	25.7
1380.3000	46.6	-48.6	-20.0	Horizontal	28.6
1380.3000	60.6	-36.8	-20.0	Vertical	16.8
1840.4000	53.1	-42.1	-20.0	Horizontal	22.1
1840.4000	53.0	-42.2	-20.0	Vertical	22.2
2300.5000	62.7	-34.7	-20.0	Horizontal	14.7
2300.5000	62.6	-34.8	-20.0	Vertical	14.8
2760.6000	49.2	-46.0	-20.0	Horizontal	26.0
2760.6000	49.9	-45.3	-20.0	Vertical	25.3
3220.7000	-	-	-20.0	Horizontal	-
3220.7000	-	-	-20.0	Vertical	-
3680.8000	-	-	-20.0	Horizontal	-
3680.8000	-	-	-20.0	Vertical	-
4140.9000	-	-	-20.0	Horizontal	-
4140.9000	-	-	-20.0	Vertical	-
4601.0000	-	-	-20.0	Horizontal	-
4601.0000	-	-	-20.0	Vertical	-

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Frequency: 460.100 MHz

Power Amplifier: 100 watts

Emission frequency (MHz)	Level (dBuV/m)	Power (dBm)	Limit (dBm)	Polarity	Margin (dB)
920.2000	40.9	-54.3	-20.0	Horizontal	34.3
920.2000	38.3	-56.9	-20.0	Vertical	36.9
1380.3000	39.9	-55.3	-20.0	Horizontal	35.3
1380.3000	47.7	-47.5	-20.0	Vertical	27.5
1840.4000	51.6	-43.6	-20.0	Horizontal	23.6
1840.4000	50.4	-44.8	-20.0	Vertical	24.8
2300.5000	45.0	-50.2	-20.0	Horizontal	30.2
2300.5000	48.5	-46.7	-20.0	Vertical	26.7
2760.6000	44.7	-50.5	-20.0	Horizontal	30.5
2760.6000	47.2	-48.0	-20.0	Vertical	28.0
3220.7000	-	-	-20.0	Horizontal	-
3220.7000	-	-	-20.0	Vertical	-
3680.8000	-	-	-20.0	Horizontal	-
3680.8000	-	-	-20.0	Vertical	-
4140.9000	-	-	-20.0	Horizontal	-
4140.9000	-	-	-20.0	Vertical	-
4601.0000	-	-	-20.0	Horizontal	-
4601.0000	-	-	-20.0	Vertical	-

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Test Report No 30427.4

Report date: 12 May 2003

Field strength of spurious emissions

Frequency: 495.1000 MHz

Power Amplifier: 5 watts

Emission frequency (MHz)	Level (dBuV/m)	Power (dBm)	Limit (dBm)	Polarity	Margin (dB)
990.2000	37.8	-57.4	-20.0	Horizontal	37.4
990.2000	33.6	-61.6	-20.0	Vertical	41.6
1485.3000	34.0	-61.2	-20.0	Horizontal	41.2
1485.3000	37.0	-58.2	-20.0	Vertical	38.2
1980.4000	37.2	-58.0	-20.0	Horizontal	38.0
1980.4000	38.6	-56.6	-20.0	Vertical	36.6
2475.5000	44.1	-51.1	-20.0	Horizontal	31.1
2475.5000	45.1	-50.1	-20.0	Vertical	30.1
2970.6000	46.3	-48.9	-20.0	Horizontal	28.9
2970.6000	46.8	-48.4	-20.0	Vertical	28.4
3465.7000	-	-	-20.0	Horizontal	-
3465.7000	-	-	-20.0	Vertical	-
3960.8000	-	-	-20.0	Horizontal	-
3960.8000	-	-	-20.0	Vertical	-
4455.9000	-	-	-20.0	Horizontal	-
4455.9000	-	-	-20.0	Vertical	-
4951.0000	-	-	-20.0	Horizontal	-
4951.0000	-	-	-20.0	Vertical	-

EMC Technologies (NZ) Ltd

Test Report No 30427.4

Report date: 12 May 2003

Frequency: 495.1000 MHz

Power Amplifier: 50 watts

Emission frequency (MHz)	Level (dBuV/m)	Power (dBm)	Limit (dBm)	Polarity	Margin (dB)
990.2000	41.5	-53.7	-20.0	Horizontal	33.7
990.2000	49.5	-45.7	-20.0	Vertical	25.7
1485.3000	50.1	-45.1	-20.0	Horizontal	25.1
1485.3000	61.6	-35.8	-20.0	Vertical	15.8
1980.4000	65.7	-33.8	-20.0	Horizontal	13.8
1980.4000	72.5	-26.8	-20.0	Vertical	8.8
2475.5000	52.5	-42.7	-20.0	Horizontal	22.7
2475.5000	57.3	-37.9	-20.0	Vertical	17.9
2970.6000	49.2	-46.0	-20.0	Horizontal	26.0
2970.6000	49.9	-45.3	-20.0	Vertical	25.3
3465.7000	-	-	-20.0	Horizontal	-
3465.7000	-	-	-20.0	Vertical	-
3960.8000	-	-	-20.0	Horizontal	-
3960.8000	-	-	-20.0	Vertical	-
4455.9000	-	-	-20.0	Horizontal	-
4455.9000	-	-	-20.0	Vertical	-
4951.0000	-	-	-20.0	Horizontal	-
4951.0000	-	-	-20.0	Vertical	-

EMC Technologies (NZ) Ltd

Test Report No 30427.4

Report date: 12 May 2003

Frequency: 495.1000 MHz

Power Amplifier: 100 watts

Emission frequency (MHz)	Level (dBuV/m)	Power (dBm)	Limit (dBm)	Polarity	Margin (dB)
990.2000	40.9	-54.3	-20.0	Horizontal	34.3
990.2000	38.3	-56.9	-20.0	Vertical	36.9
1485.3000	39.9	-55.3	-20.0	Horizontal	35.3
1485.3000	47.7	-47.5	-20.0	Vertical	27.5
1980.4000	51.6	-43.6	-20.0	Horizontal	23.6
1980.4000	50.4	-44.8	-20.0	Vertical	24.8
2475.5000	47.1	-48.1	-20.0	Horizontal	28.1
2475.5000	48.5	-46.7	-20.0	Vertical	26.7
2970.6000	44.7	-50.5	-20.0	Horizontal	30.5
2970.6000	47.2	-48.0	-20.0	Vertical	28.0
3465.7000	-	-	-20.0	Horizontal	-
3465.7000	-	-	-20.0	Vertical	-
3960.8000	-	-	-20.0	Horizontal	-
3960.8000	-	-	-20.0	Vertical	-
4455.9000	-	-	-20.0	Horizontal	-
4455.9000	-	-	-20.0	Vertical	-
4951.0000	-	-	-20.0	Horizontal	-
4951.0000	-	-	-20.0	Vertical	-

All other emissions observed are greater than 20 dB of the -20 dBm limit (ie all are less than -40 dBm) and have therefore not been recorded.

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 Driving Creek, Orere Point, Auckland. Details of this site have been filed with the Commission, Registration Number: 90838, which was last updated on March 20th, 2002.

The transmitter was tested with a resistive dummy load attached to the power amplifier antenna terminal and also a separate dummy load was attached to the reciter receiver input terminal.

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Test Report No 30427.4

Report date: 12 May 2003

Testing was carried out at 110 Vac from the AC mains. In addition a 13.8 Vdc back up supply, in the form of a DC battery, was attached to the device.

The emission levels did not vary when indicative tests were carried out using only the 13.8 Vdc supply. Therefore all tests were carried out at 110 Vac from the AC mains.

The power level of each emission was 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 gains / losses due to the coax cable and the dipole antenna.

Limit:

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

This gives a limit of -20 dBm.

No measurements were made above the 10th harmonic.

Result: Complies

Measurement Uncertainty: ± 4.1 dB

EMC Technologies (NZ) Ltd

Test Report No 30427.4

Report date: 12 May 2003

8. 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
Turntable	EMCO	1080-1-2.1	9109-1578	RFS 3709
Biconical Antenna	Schwarzbeck	BBA 9106	-	RFS 3612
Log Periodic Antenna	Schwarzbeck	UHALP 9107	-	RFS 3702
UHF Dipole Antenna	Schwarzbeck	UHA 9105	-	RFS 3679
Horn Antenna	EMCO	3115	9511-4629	E1526
Horn Antenna	Electrometrics	RGA-60	6234	E1494
Coax Cable	Sucoflex	104PA	2736/4PA	-
Signal Generator	Rohde & Schwarz	SMHU.58	838923/028	E1493
Measurement Receiver	Rohde & Schwarz	ESCS 30	839873/1	
Measurement Receiver	Rohde & Schwarz	ESHS 10	828404/005	RFS 3728
Spectrum Analyzer	Hewlett Packard	E7405A	US39150142	3776
Artificial Mains Network	Rhode & Schwarz	ESH 2-Z5	881362/034	RFS 3628
Variac	General Radio	1592	-	RFS 3690

9. 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 March 20th, 2002.

The tests were carried out in accordance with the terms of EMC Technologies (NZ) Ltd's International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025: 1999.

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/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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10. PHOTOGRAPH(S)

Rack Identification



Rack overall front view

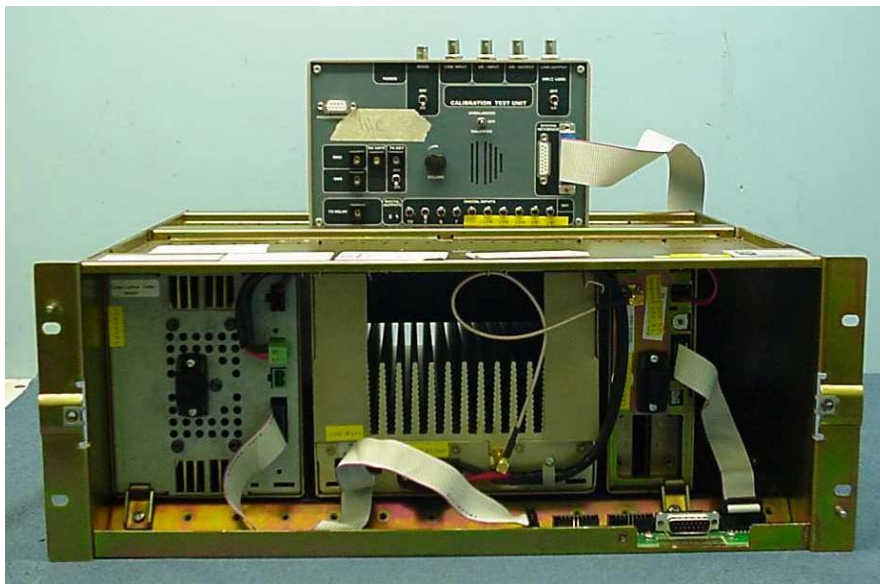
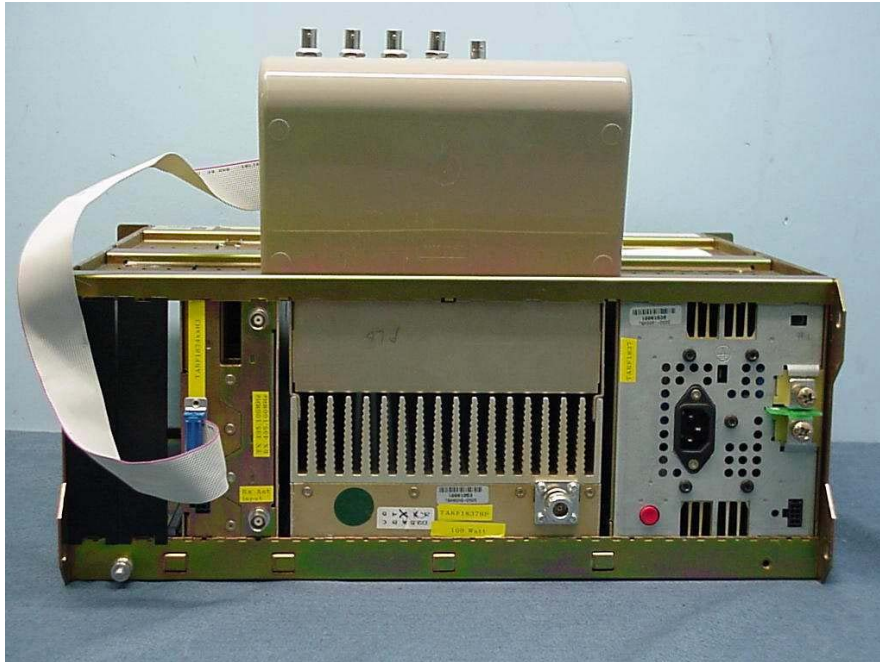


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100 watt power amplifier set up



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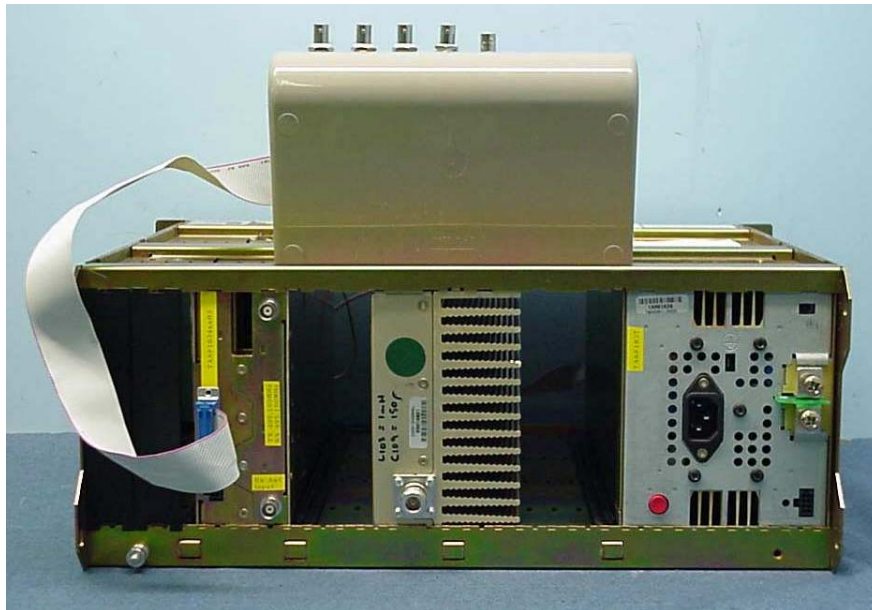
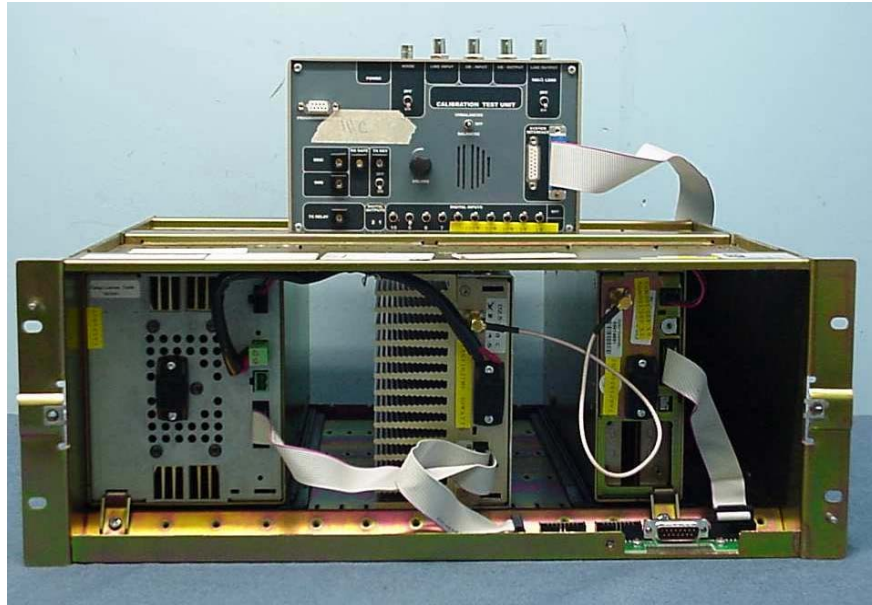
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50 watt power amplifier set up



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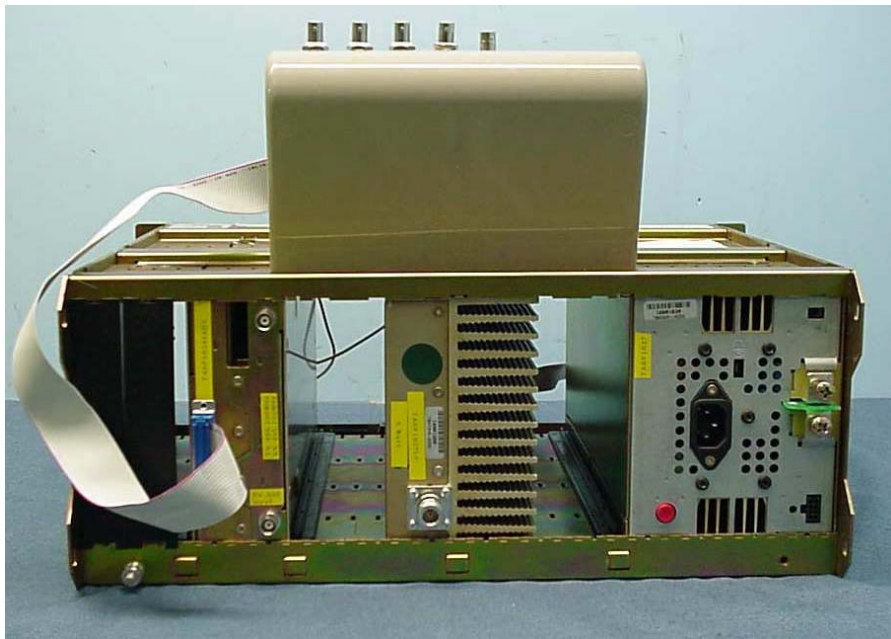
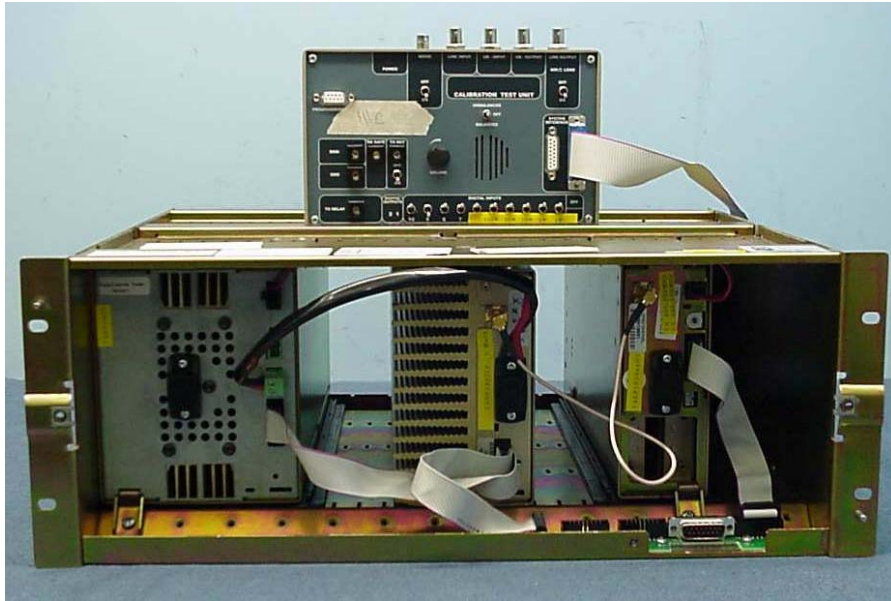
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5 watt power amplifier set up



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Power supply input ports



Reverse view of the front indicator panel



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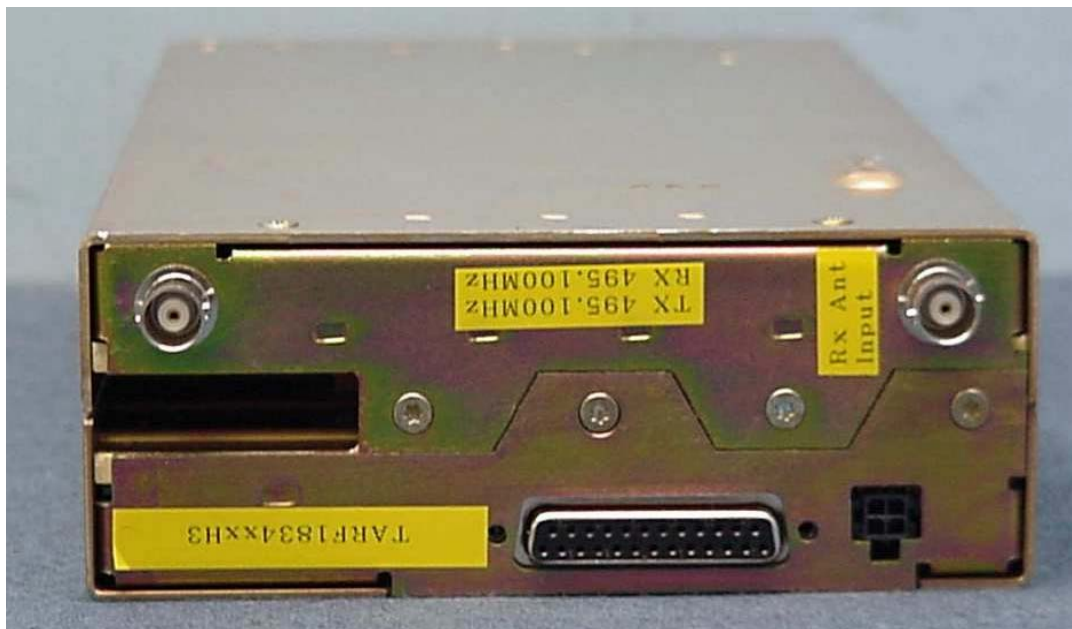
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495.100 MHz Reciter



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460.100 MHz Reciter



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425.100 MHz Reciter



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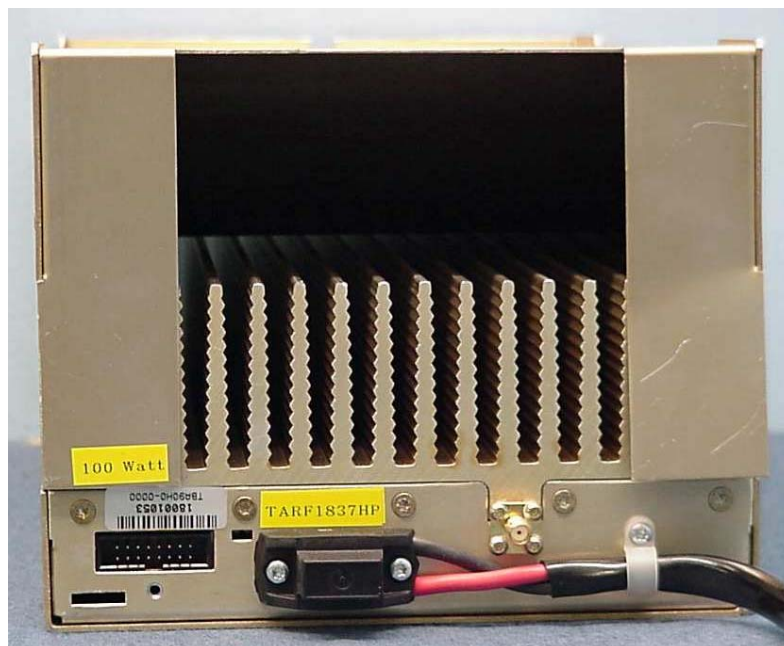
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100 watt power amplifier



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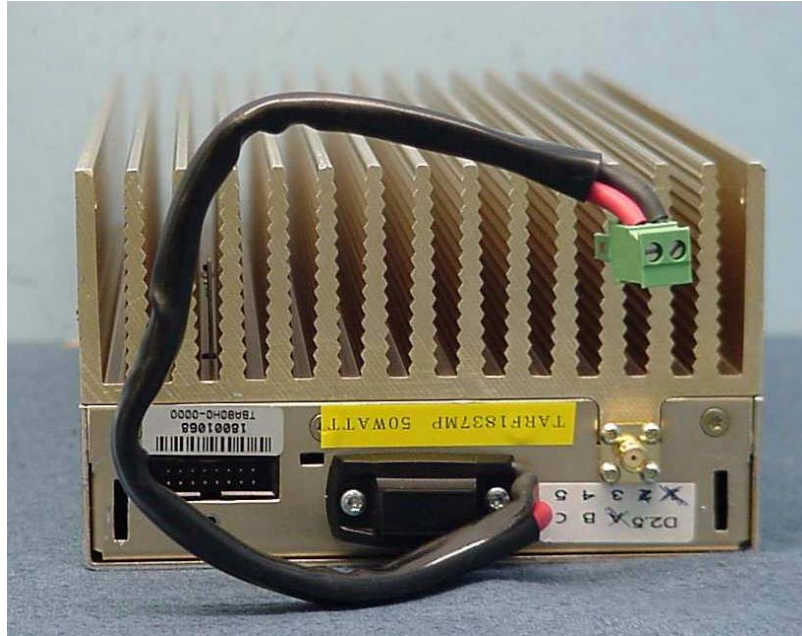
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50 watt power amplifier



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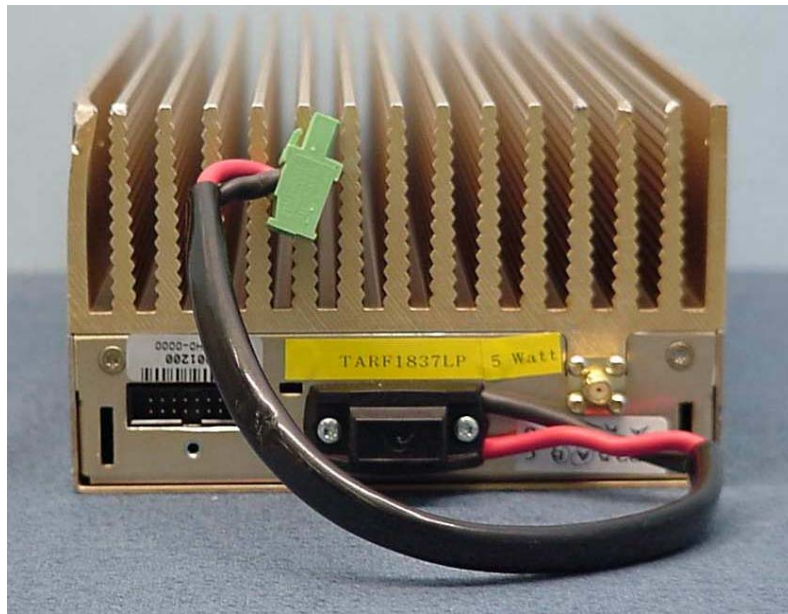
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5 watt power amplifier



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Conducted emissions test set up



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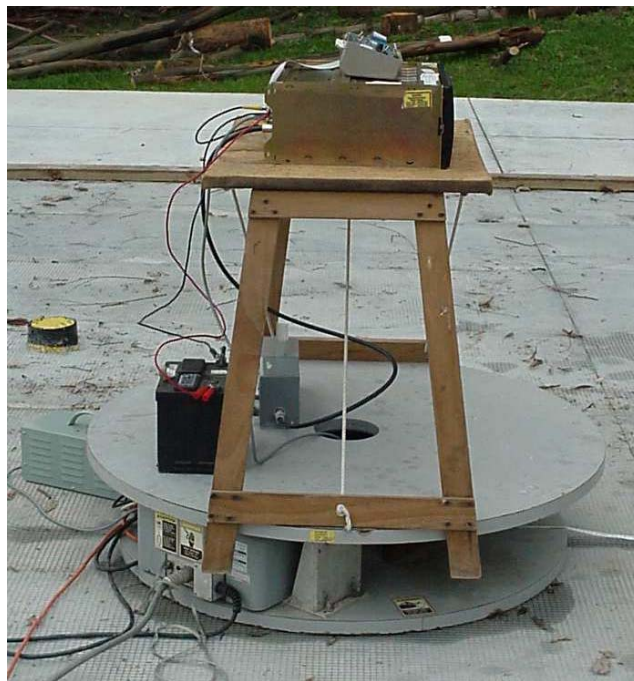
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Radiated emissions test set up



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