

## Test Report

### Measurements made by :

Roger Y. Lam at the R&D Laboratory at  
Spectra Engineering PTY LTD  
9 Trade Road  
Malaga, Western Australia  
Australia

or

Walter C Simciak at ADRad Communications  
5481 Sand Lake Drive  
Melbourne, Florida 32934

Radiated Measurements at  
Control Design And Testing, Inc  
6010 Red Fox Drive  
Spotsylvania, VA 22553

### Equipment Measured:

MX800 base stations (3)  
A2 Frequency Range 30 to 43 MHz  
A3 Frequency Range 43 to 50 MHz  
B Frequency Range 72 to 76 MHz

Equipment being submitted for type acceptance as a 'family' group as the assemblies have common PCBs and differ by component values.

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## 2.1046 (a) Carrier Output Power:

### A2 Band *Results;*

|             |   |              |
|-------------|---|--------------|
| <b>Ch-1</b> | = | <b>50W</b>   |
| <b>Ch-2</b> | = | <b>50.5W</b> |
| <b>Ch-3</b> | = | <b>50.5W</b> |

Test Frequency: 30.100Mhz at Ch-1, 34.500MHz at Ch-2, 38.900MHz at Ch-3  
**Output level is the same with DC voltage +/- 10% (corrected by ALC loop)**

### A3 Band *Results;*

|             |   |              |
|-------------|---|--------------|
| <b>Ch-1</b> | = | <b>51.4W</b> |
| <b>Ch-2</b> | = | <b>51.4W</b> |
| <b>Ch-3</b> | = | <b>51.1W</b> |

Test Frequency: 42.500Mhz at Ch-1, 44.500MHz at Ch-2, 46.500MHz at Ch-3  
**Output level is the same with DC voltage +/- 10% (corrected by ALC loop)**

### B Band *Results:*

|             |   |              |
|-------------|---|--------------|
| <b>Ch-1</b> | = | <b>51W</b>   |
| <b>Ch-2</b> | = | <b>50.4W</b> |
| <b>Ch-3</b> | = | <b>51.2W</b> |

Test Frequency: 72.020MHz at Ch-1, 74.000MHz at Ch-2, 75.980MHz at Ch-3  
**Output level is the same with DC voltage +/- 10% (corrected by ALC loop)**

## 2.1051 Unwanted Emissions

### A2 Band Results:

Conducted Spurious Emissions: Maximum specification level = 60 dBc by calculation

|                 |                                                                                     |                    |                   |
|-----------------|-------------------------------------------------------------------------------------|--------------------|-------------------|
| Test Frequency: | 30.100Mhz at Ch-1,                                                                  | 34.500MHz at Ch-2, | 38.900MHz at Ch-3 |
| At Ch-1 =       | Greater Than 100dBc (Measurement of : RF Carrier 2nd Harmonic up to 10th Harmonic ) |                    |                   |
| At Ch-1 =       | Greater Than 105dBc (Measurement of : Other Spurious RF Frequency up to 1000MHz )   |                    |                   |
| At Ch-2 =       | Greater Than 100dBc (Measurement of : RF Carrier 2nd Harmonic up to 10th Harmonic ) |                    |                   |
| At Ch-2 =       | Greater Than 105dBc (Measurement of : Other Spurious RF Frequency up to 1000MHz )   |                    |                   |
| At Ch-3 =       | Greater Than 100dBc (Measurement of : RF Carrier 2nd Harmonic up to 10th Harmonic ) |                    |                   |
| At Ch-3 =       | Greater Than 105dBc (Measurement of : Other Spurious RF Frequency up to 1000MHz )   |                    |                   |

### A3 Band Results:

Conducted Spurious Emissions: Maximum specification level = 60 dBc by calculation

|                 |                                                                                     |                    |                   |
|-----------------|-------------------------------------------------------------------------------------|--------------------|-------------------|
| Test Frequency: | 42.500Mhz at Ch-1,                                                                  | 44.500MHz at Ch-2, | 46.500MHz at Ch-3 |
| At Ch-1 =       | Greater Than 100dBc (Measurement of : RF Carrier 2nd Harmonic up to 10th Harmonic ) |                    |                   |
| At Ch-1 =       | Greater Than 105dBc (Measurement of : Other Spurious RF Frequency up to 1000MHz )   |                    |                   |
| At Ch-2 =       | Greater Than 100dBc (Measurement of : RF Carrier 2nd Harmonic up to 10th Harmonic ) |                    |                   |
| At Ch-2 =       | Greater Than 105dBc (Measurement of : Other Spurious RF Frequency up to 1000MHz )   |                    |                   |
| At Ch-3 =       | Greater Than 100dBc (Measurement of : RF Carrier 2nd Harmonic up to 10th Harmonic ) |                    |                   |
| At Ch-3 =       | Greater Than 105dBc (Measurement of : Other Spurious RF Frequency up to 1000MHz )   |                    |                   |

## B Band Results:

Conducted Spurious Emissions: Maximum specification level = 60 dBc by calculation

Test Frequency: 72.020MHz at Ch-1, 74.000MHz at Ch-2, 75.980MHz at Ch-3

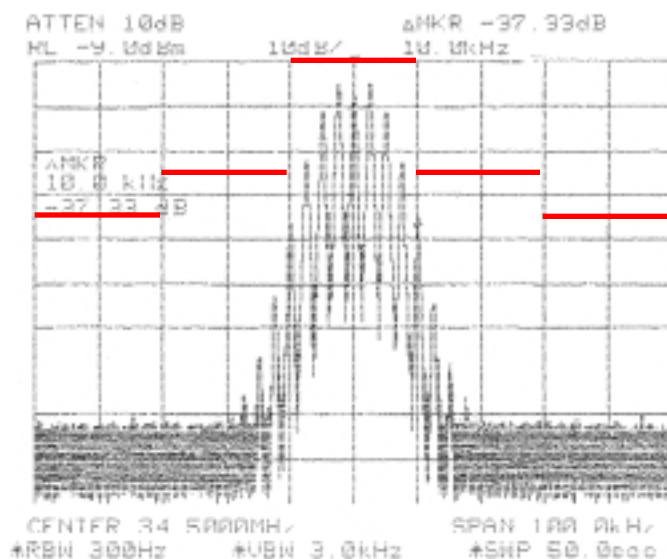
At Ch-1 = Greater Than 100dBc ( Measurement of : RF Carrier 2nd Harmonic up to 10th Harmonic )  
 At Ch-1 = Greater Than 105dBc ( Measurement of : Other Spurious RF Frequency up to 1000MHz )  
 At Ch-2 = Greater Than 100dBc ( Measurement of : RF Carrier 2nd Harmonic up to 10th Harmonic )  
 At Ch-2 = Greater Than 105dBc ( Measurement of : Other Spurious RF Frequency up to 1000MHz )  
 At Ch-3 = Greater Than 100dBc ( Measurement of : RF Carrier 2nd Harmonic up to 10th Harmonic )  
 At Ch-3 = Greater Than 105dBc ( Measurement of : Other Spurious RF Frequency up to 1000MHz )

2.1053 (a) Field Strength of Spurious Radiation  
 Separate report is attached.

## 2.1049 (c) (1) Emission Mask Measurements

The limiter and low pass filters are the same on all units as a common controller/limiter/filter assembly is used. As modulation is also set on this same board, the spectrum is the same on all units.

|                              |   |      |
|------------------------------|---|------|
| 10kHz < fd ≤ 20kHz Att.=25dB | = | 36dB |
| 20kHz < fd ≤ 50kHz Att.=35dB | = | 98dB |
| 50kHz < fd Att.= > 80dB      | = | 98dB |



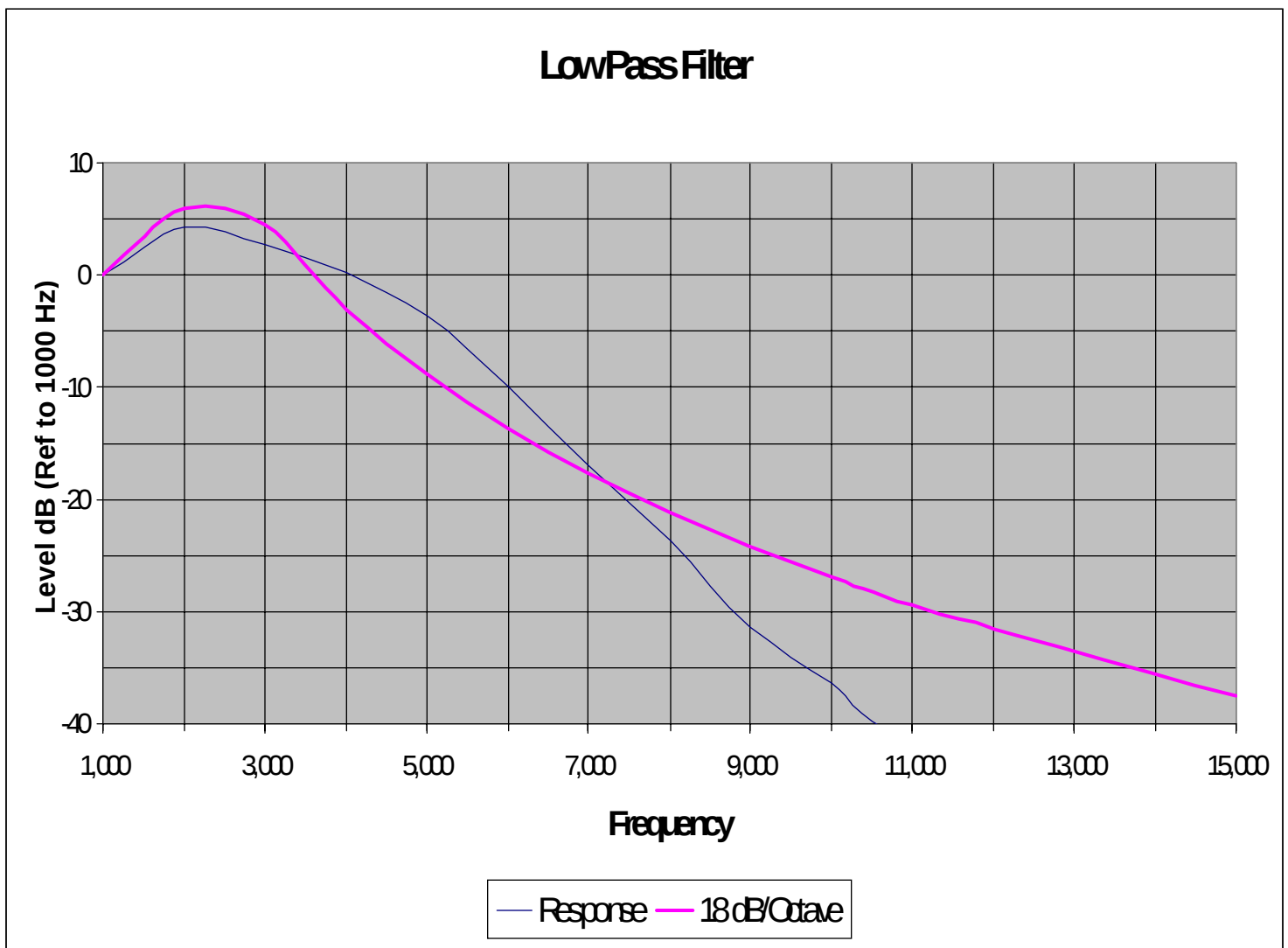
## 2.1047 (a) Audio Low Pass Filter

Low pass filter is the same on all units as a common limiter/filter assembly is used. Response is shown below with an 18 dB/octave filter shown for reference.

Audio Input : Line Input Port

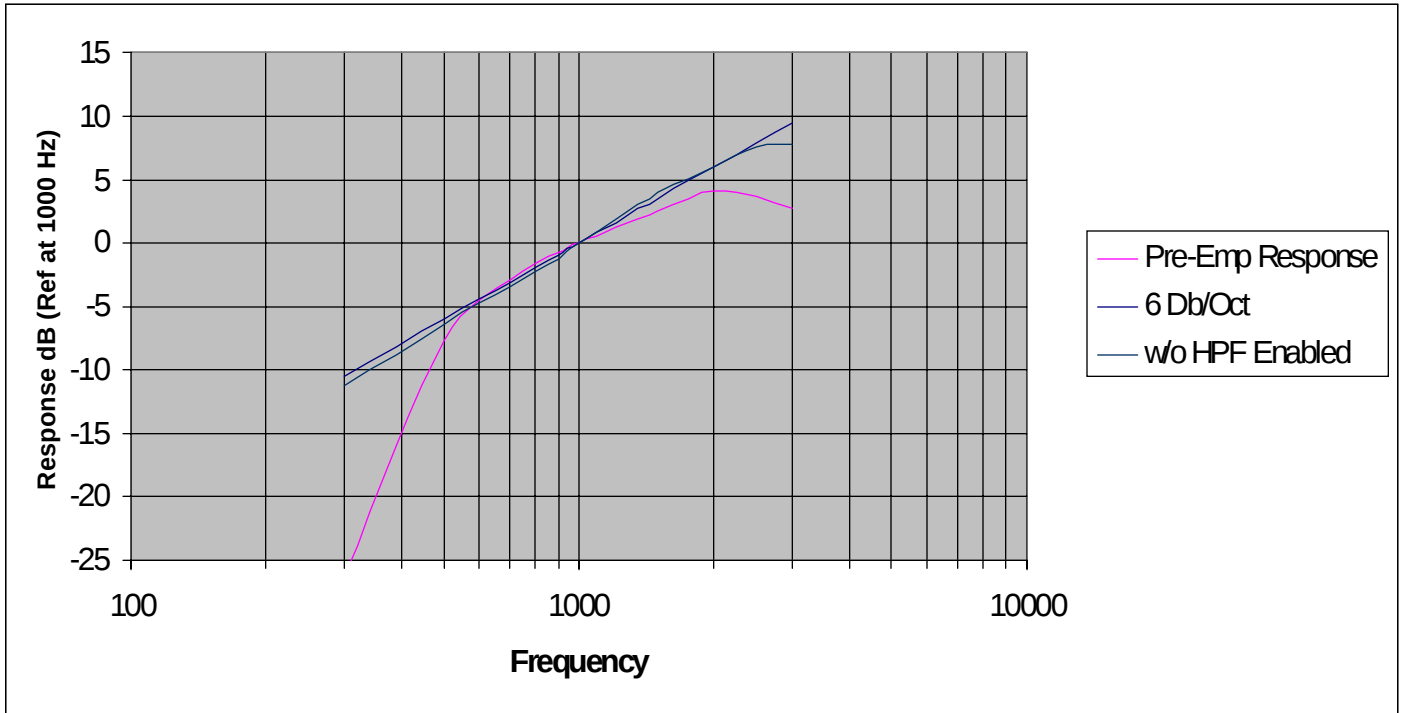
Audio Output : IC-24 Pin-7

| Frequency | Level | Frequency | Level |
|-----------|-------|-----------|-------|
| 1000      | 0     | 7000      | -17   |
| 2000      | 4.2   | 8000      | -23.6 |
| 3000      | 2.6   | 9000      | -31.3 |
| 4000      | 0.1   | 10000     | -36.3 |
| 5000      | -3.7  | 11000     | -41.8 |
| 6000      | -10   | 15000     | -49   |



Audio Frequency Response: 300Hz—3kHz = 300Hz : -15dB

|          |         |
|----------|---------|
| 500Hz :  | -6.37dB |
| 600Hz :  | -4.64dB |
| 1200Hz : | +1.63dB |
| 1500Hz : | +3.62dB |
| 2000Hz : | +6.12dB |
| 3000Hz : | +7.36dB |



## 2.1047 (b) Modulation Limiting

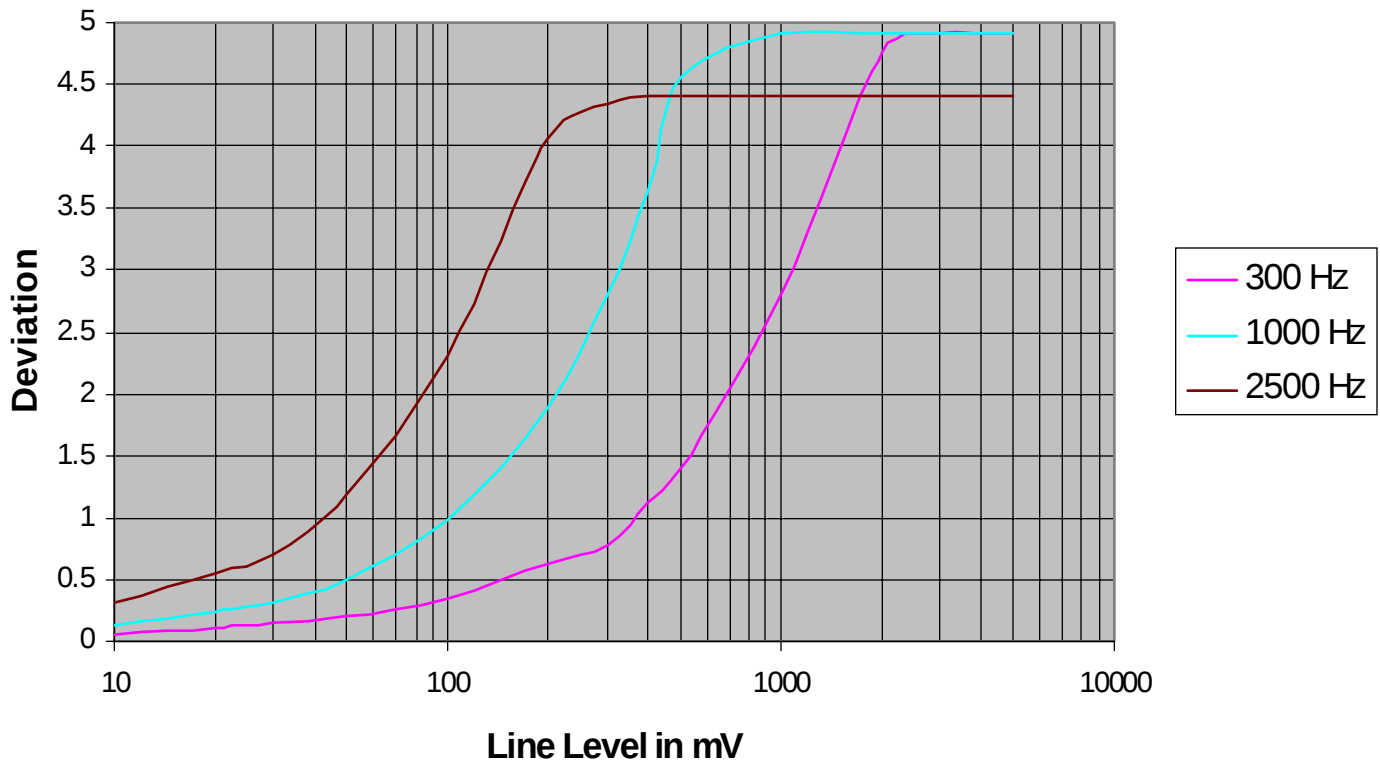
The limiter is the same on all units as a common limiter/filter assembly is used. Limiter function is shown below on a channel setup for A5.0 kHz deviation maximum.

(Tested at ADRad Communications)

Measured Frequency Deviation: = **+/- 4.82KHz**

Limiter Performance shown below:

## Limiter Performance



### 2.1055 (a) (1) Frequency Stability

A2 Unit Frequency Error = + 5 Hz

No variation with input DC voltage variation of +/- 15%. TCXO driven by regulated power source.

A3 Unit Frequency Error = - 52 Hz

No variation with input DC voltage variation of +/- 15%. TCXO driven by regulated power source.

A2 Unit Frequency Error = + 130 Hz

No variation with input DC voltage variation of +/- 15%. TCXO driven by regulated power source.

## 2.1055 (b) (1)

A +/- 5 ppm oscillator is used in all units.

|                                      |    |       |   |               |
|--------------------------------------|----|-------|---|---------------|
| A2 Unit Carrier Frequency Stability: | at | -30°C | = | <b>+23Hz</b>  |
| (Limit +/- 20 ppm = A690 Hz)         |    | -20°C | = | <b>+127Hz</b> |
| Tested at 34.5 MHz                   |    | -10°C | = | <b>+156Hz</b> |
|                                      |    | +0°C  | = | <b>+147Hz</b> |
|                                      |    | +10°C | = | <b>+100Hz</b> |
|                                      |    | +20°C | = | <b>+39Hz</b>  |
|                                      |    | +30°C | = | <b>-32Hz</b>  |
|                                      |    | +40°C | = | <b>-102Hz</b> |
|                                      |    | +50°C | = | <b>-133Hz</b> |

|                                      |    |       |   |               |
|--------------------------------------|----|-------|---|---------------|
| A3 Unit Carrier Frequency Stability: | at | -30°C | = | <b>-275Hz</b> |
| (Limit +/- 20 ppm = A890 Hz)         |    | -20°C | = | <b>-88Hz</b>  |
| Tested at 44.5 MHz                   |    | -10°C | = | <b>-22Hz</b>  |
|                                      |    | +0°C  | = | <b>+12Hz</b>  |
|                                      |    | +10°C | = | <b>+4Hz</b>   |
|                                      |    | +20°C | = | <b>-33Hz</b>  |
|                                      |    | +30°C | = | <b>-84Hz</b>  |
|                                      |    | +40°C | = | <b>-136Hz</b> |
|                                      |    | +50°C | = | <b>-143Hz</b> |

|                                     |       |       |               |               |
|-------------------------------------|-------|-------|---------------|---------------|
| B Unit Carrier Frequency Stability: | at    | -30°C | =             | <b>+210Hz</b> |
| (Limit +/- 5 ppm = A370 Hz)         | -20°C | =     | <b>+204Hz</b> |               |
| Tested at 74.0 MHz                  |       | -10°C | =             | <b>+196Hz</b> |
|                                     |       | +0°C  | =             | <b>+205Hz</b> |
|                                     |       | +10°C | =             | <b>+191Hz</b> |
|                                     |       | +20°C | =             | <b>+150Hz</b> |
|                                     |       | +30°C | =             | <b>+107Hz</b> |
|                                     |       | +40°C | =             | <b>+78Hz</b>  |
|                                     |       | +50°C | =             | <b>+66Hz</b>  |

## 90.213 Transient Frequency Behavior of Transmitter:

Although transient is not required, these measurements were made as part of normal qualification testing.

|           |            |   |             |
|-----------|------------|---|-------------|
| t1 = 10ms | < ±25kHz   | = | <b>Pass</b> |
| t2 = 25ms | < ±12.5kHz | = | <b>Pass</b> |
| t3 = 10ms | < ±25kHz   | = | <b>Pass</b> |

Information is shown on the next page in graphic format.

