

## APPENDIX H OF TEST REPORT T101210B\_F

### GRAPHS OF EMI MEASUREMENT

**FCC ID:** MOQ-LF701

**Manufacturer:** Laser Force International Pty Ltd

**Test Sample:** Laser Force Laser Tag Amusement System

**Model Number:** LF7-WNC (Base Station)

**Serial Number:** 03542 (Base Station)

**Date:** 12<sup>th</sup> April 2011

**APPENDIX H****GRAPHS OF EMI MEASUREMENT****CONDUCTED EMI**

|                 |              |                   |
|-----------------|--------------|-------------------|
| <b>Graph 1:</b> | Active Line  | 0.145 to 30.5 MHz |
| <b>Graph 2:</b> | Neutral Line | 0.145 to 30.5 MHz |

**RADIATED EMI**

|                 |                         |                   |
|-----------------|-------------------------|-------------------|
| <b>Graph 3:</b> | Vertical Polarisation   | 29 to 1000MHz     |
| <b>Graph 4:</b> | Horizontal Polarisation | 29 to 1000MHz     |
| <b>Graph 5:</b> | Vertical Polarisation   | 1000 to 18000MHz  |
| <b>Graph 6:</b> | Horizontal Polarisation | 1000 to 18000MHz  |
| <b>Graph 7:</b> | Vertical Polarisation   | 18000 to 25000MHz |
| <b>Graph 8:</b> | Horizontal Polarisation | 18000 to 25000MHz |

**Testing performed on Base Station**

|                  |                       |                         |                     |
|------------------|-----------------------|-------------------------|---------------------|
| <b>Graph 9:</b>  | <b>Low Channel</b>    | Horizontal Polarisation | 2399.9 to 2400.9MHz |
| <b>Graph 10:</b> | <b>Middle Channel</b> | Horizontal Polarisation | 2440 to 2441 MHz    |
| <b>Graph 11:</b> | <b>High Channel</b>   | Horizontal Polarisation | 2480 to 2481 MHz    |

# EMC Technologies Pty. Ltd. - Global Product Certification

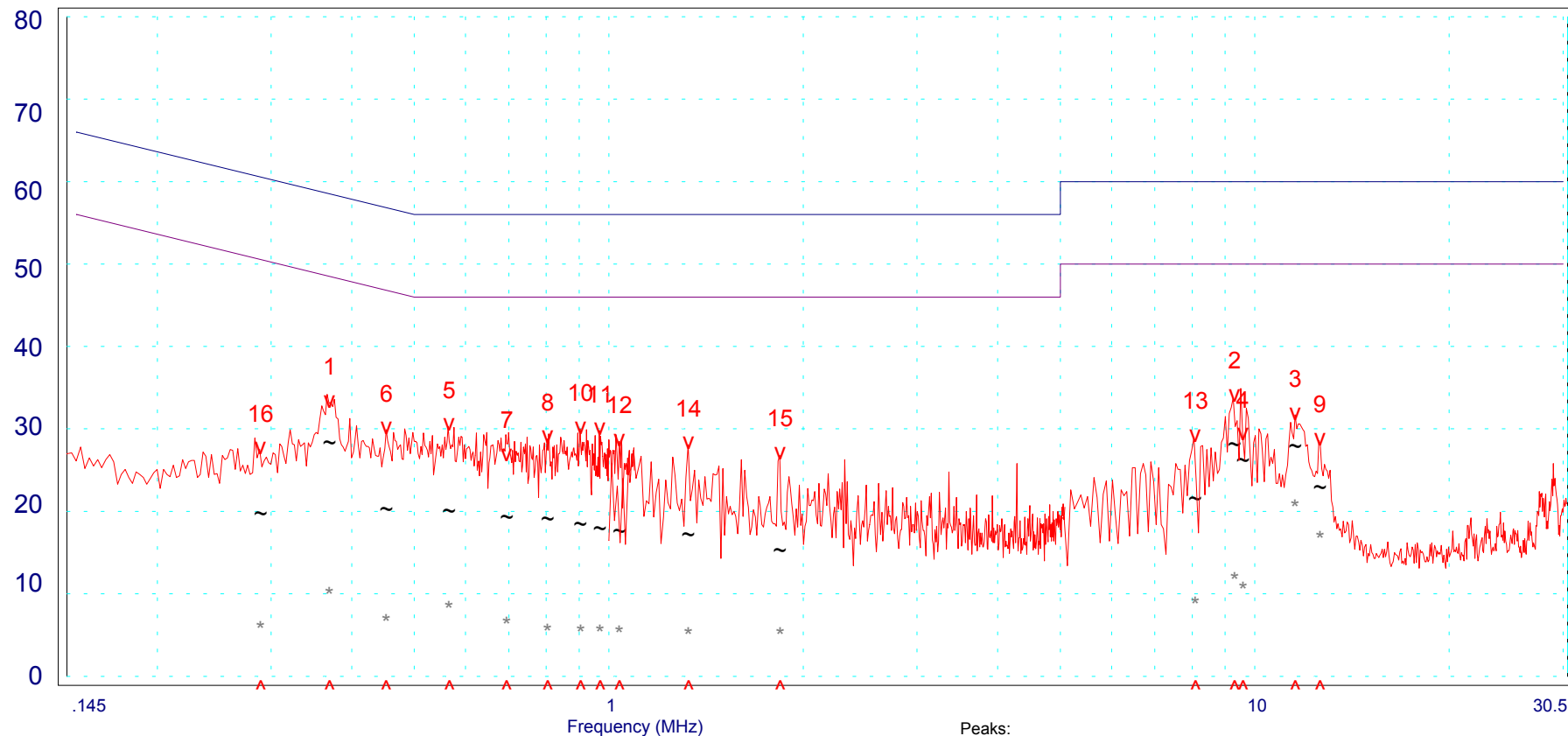
FCC Class B  
Conducted Emissions (dBuV)

Job No:T101210

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Test Date: 18-02-2011

GRAPH No. 1



Laser Force International Pty Ltd  
Laser Force Laser Tag Amusement System  
Base Station, Model: LF7-WNC, Serial Number: 03542  
Basestation - Normal Operation

Limits:  
FCCN\_BQP FCC CLASS B QP CONDUCTED LIMITS (CISPR)  
FCCN\_BAV FCC CLASS B AV CONDUCTED LIMITS (CISPR)

Legend:  
Active Line

Ver 5.5 Build 160  
sydney conducted setup lab2  
t:L0110212 c1:C0010911 c2:NONE p:NONE a:L0030611  
Site ID: Syd Room#2,3/87 Station Rd, Seven Hills, NSW  
Test Officer:Christian Kai

Source:  
101210c11 , 2 , 3

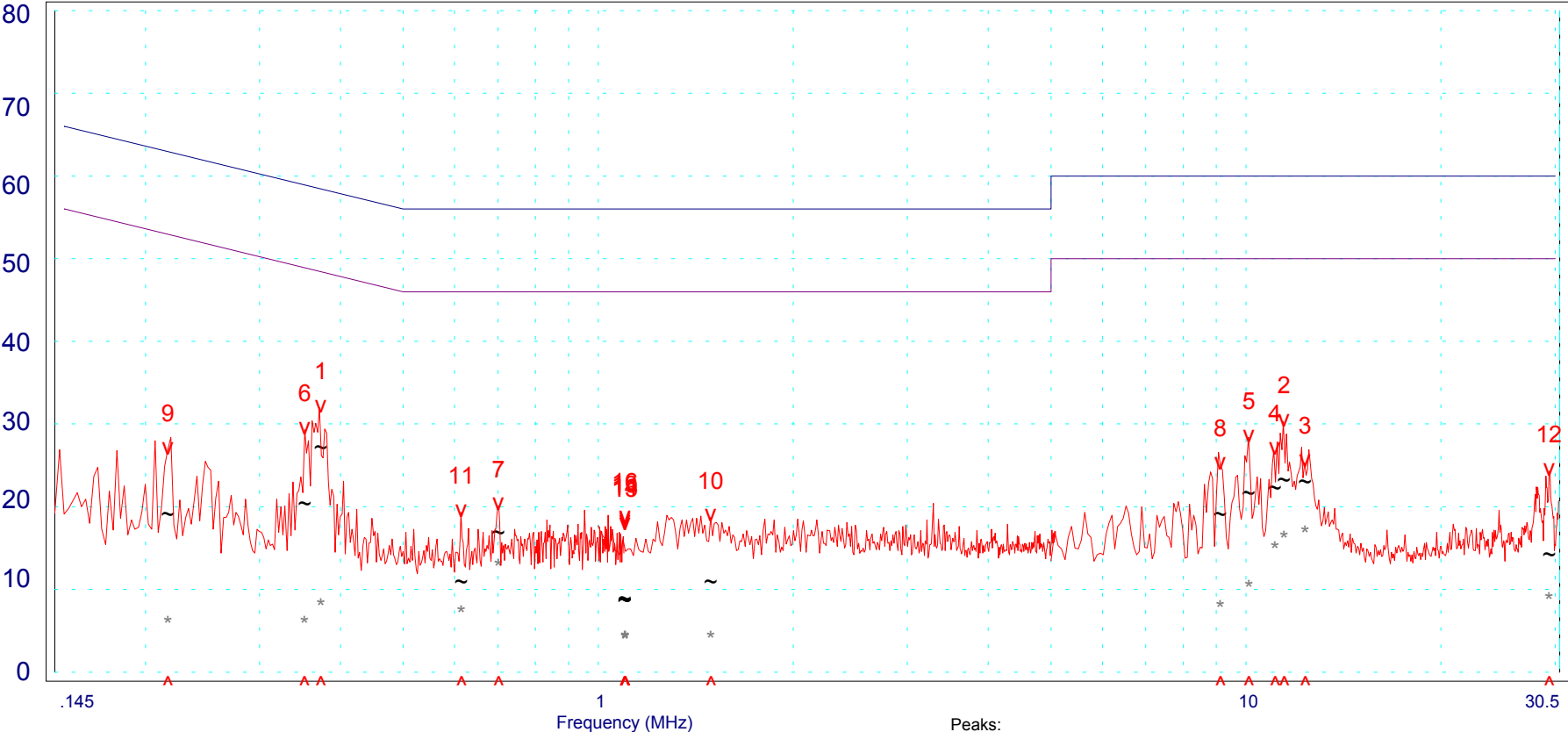
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FCC Class B  
Conducted Emissions (dBuV)

Job No:T101210      P:\PCF\T101210B\_2.PCF  
Test Date: 18-02-2011

GRAPH No. 2



Laser Force International Pty Ltd  
Laser Force Laser Tag Amusement System  
Base Station, Model: LF7-WNC, Serial Number: 03542  
Basestation - Normal Operation

Limits:  
FCCN\_BQP      FCC CLASS B QP CONDUCTED LIMITS (CISPR)  
FCCN\_BAV      FCC CLASS B AV CONDUCTED LIMITS (CISPR)

Legend:  
— Neutral Line

Ver 5.5 Build 160  
sydney conducted setup lab2  
t:L0110212 c1:C0010911 c2:NONE p:NONE a:L0030611  
Site ID: Syd Room#2,3/87 Station Rd, Seven Hills, NSW  
Test Officer:Christian Kai

Source:  
101210c14 , 5 , 6

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| Peaks: |            |             |               |                 |          |               |                 |          |
|--------|------------|-------------|---------------|-----------------|----------|---------------|-----------------|----------|
| No     | Freq (MHz) | Peak (dBuV) | QP Val (dBuV) | FCCN_BQP (dBuV) | dL1 (dB) | Av Val (dBuV) | FCCN_BAV (dBuV) | dL2 (dB) |
| 1      | 0.373      | 32.0        | 26.8          | 58.4            | -31.6    | 7.4           | 48.4            | -41.0    |
| 2      | 11.45      | 30.3        | 22.8          | 60.0            | -37.2    | 15.6          | 50.0            | -34.4    |
| 3      | 12.34      | 25.3        | 22.6          | 60.0            | -37.4    | 16.2          | 50.0            | -33.8    |
| 4      | 11.09      | 26.8        | 21.9          | 60.0            | -38.1    | 14.3          | 50.0            | -35.7    |
| 5      | 10.10      | 28.4        | 21.2          | 60.0            | -38.8    | 9.6           | 50.0            | -40.4    |
| 6      | 0.352      | 29.3        | 19.9          | 58.9            | -39.0    | 5.3           | 48.9            | -43.6    |
| 7      | 0.702      | 20.1        | 16.4          | 56.0            | -39.6    | 12.2          | 46.0            | -33.8    |
| 8      | 9.130      | 25.0        | 18.7          | 60.0            | -41.3    | 7.2           | 50.0            | -42.8    |
| 9      | 0.217      | 26.9        | 18.7          | 62.9            | -44.2    | 5.3           | 52.9            | -47.6    |
| 10     | 1.492      | 18.7        | 10.5          | 56.0            | -45.5    | 3.5           | 46.0            | -42.5    |
| 11     | 0.615      | 19.3        | 10.5          | 56.0            | -45.5    | 6.6           | 46.0            | -39.4    |
| 12     | 29.38      | 24.3        | 13.8          | 60.0            | -46.2    | 8.2           | 50.0            | -41.8    |
| 13     | 1.100      | 18.3        | 8.4           | 56.0            | -47.6    | 3.5           | 46.0            | -42.5    |
| 14     | 1.100      | 18.0        | 8.3           | 56.0            | -47.7    | 3.4           | 46.0            | -42.6    |
| 15     | 1.100      | 17.7        | 8.2           | 56.0            | -47.8    | 3.4           | 46.0            | -42.6    |
| 16     | 1.100      | 18.6        | 8.2           | 56.0            | -47.8    | 3.5           | 46.0            | -42.5    |

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FCC Class B

Radiated Emissions (dBuV/m)

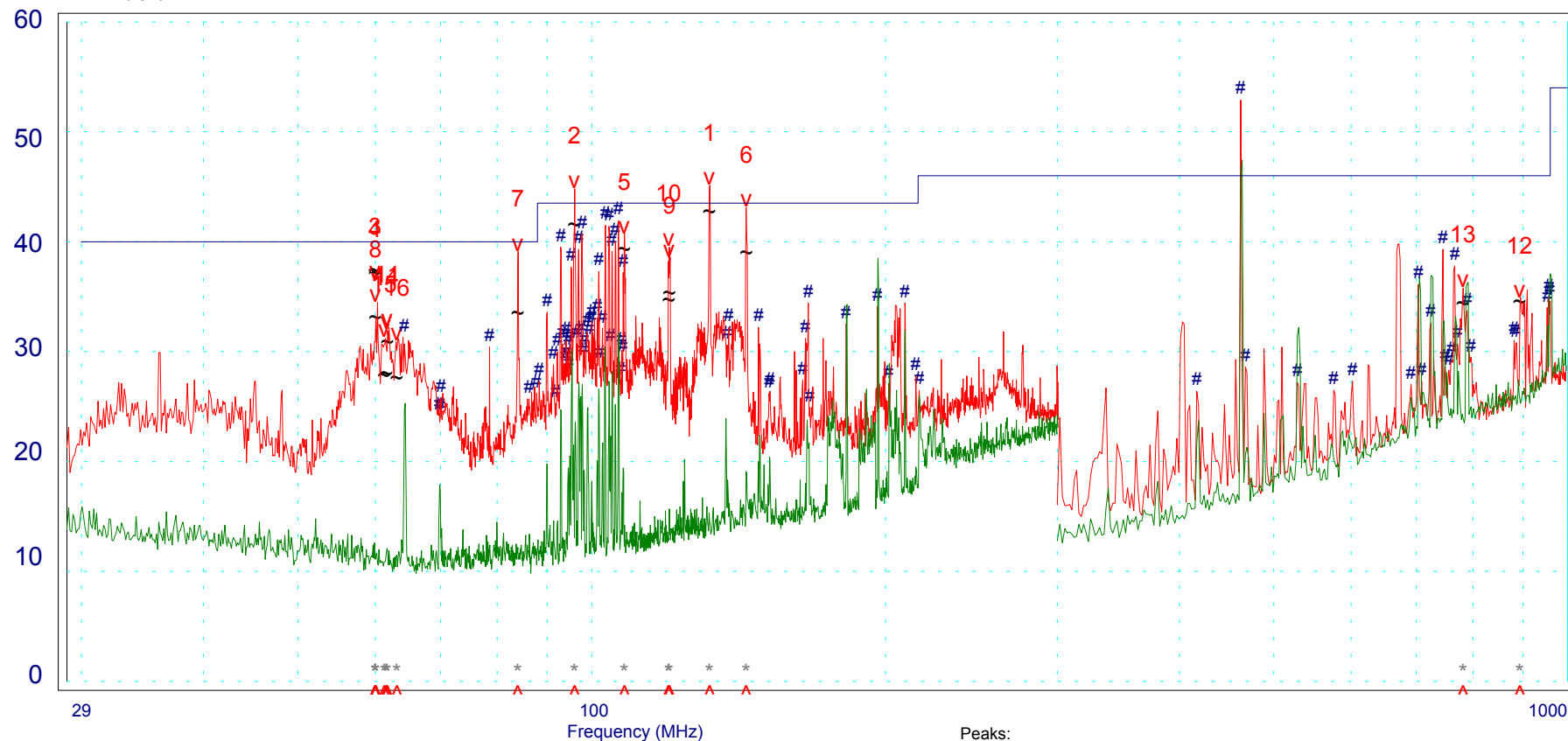
# = Ambient

Job No:T101210

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Test Date: 11-04-2011

GRAPH No. 3



Laserforce International  
Lasertag Amusement System  
Base Station, Model: LF7-WNC, Serial Number: 03542  
Basestation - Normal Operation

Limits:  
FCC-B3 FCC CLASS B RAD 3M LIMITS

Legend:  
— Vertical Ambients  
— Vertical Emissions

Ver 5.5 Build 158  
Colo Radiated Test Setup  
t:A0690113 c1:C0200312 c2:NONE p:A0960511 a:NONE  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer: Dale Matthews

EMC Technologies (Sydney) 3/87 Station Rd, Seven Hills, NSW, 2147, NSW, Australia  
Phone +(612) 9624 2777 Fax+(612) 9838 4050

## Peaks:

| No | Freq (MHz) | Peak (dBuV/m) | QP Val | FCC-B3 (dBuV/m) | dL1 (dB) |
|----|------------|---------------|--------|-----------------|----------|
| 1  | 131.98     | 45.1          | 42.0   | 43.5            | -1.5     |
| 2  | 95.98      | 44.8          | 40.8   | 43.5            | -2.7     |
| 3  | 59.98      | 36.6          | 36.6   | 40.0            | -3.4     |
| 4  | 60.00      | 36.3          | 36.3   | 40.0            | -3.7     |
| 5  | 107.98     | 40.7          | 38.5   | 43.5            | -5.0     |
| 6  | 143.98     | 43.1          | 38.1   | 43.5            | -5.4     |
| 7  | 83.98      | 39.1          | 32.7   | 40.0            | -7.3     |
| 8  | 60.04      | 34.5          | 32.3   | 40.0            | -7.7     |
| 9  | 120.09     | 38.5          | 34.6   | 43.5            | -8.9     |
| 10 | 119.89     | 39.6          | 33.9   | 43.5            | -9.6     |
| 11 | 61.73      | 32.2          | 30.1   | 40.0            | -9.9     |
| 12 | 892.77     | 34.8          | 33.7   | 46.0            | -12.3    |
| 13 | 780.96     | 35.8          | 33.6   | 46.0            | -12.4    |
| 14 | 61.60      | 32.0          | 27.2   | 40.0            | -12.8    |
| 15 | 61.28      | 31.3          | 27.1   | 40.0            | -12.9    |
| 16 | 63.14      | 31.0          | 26.8   | 40.0            | -13.2    |

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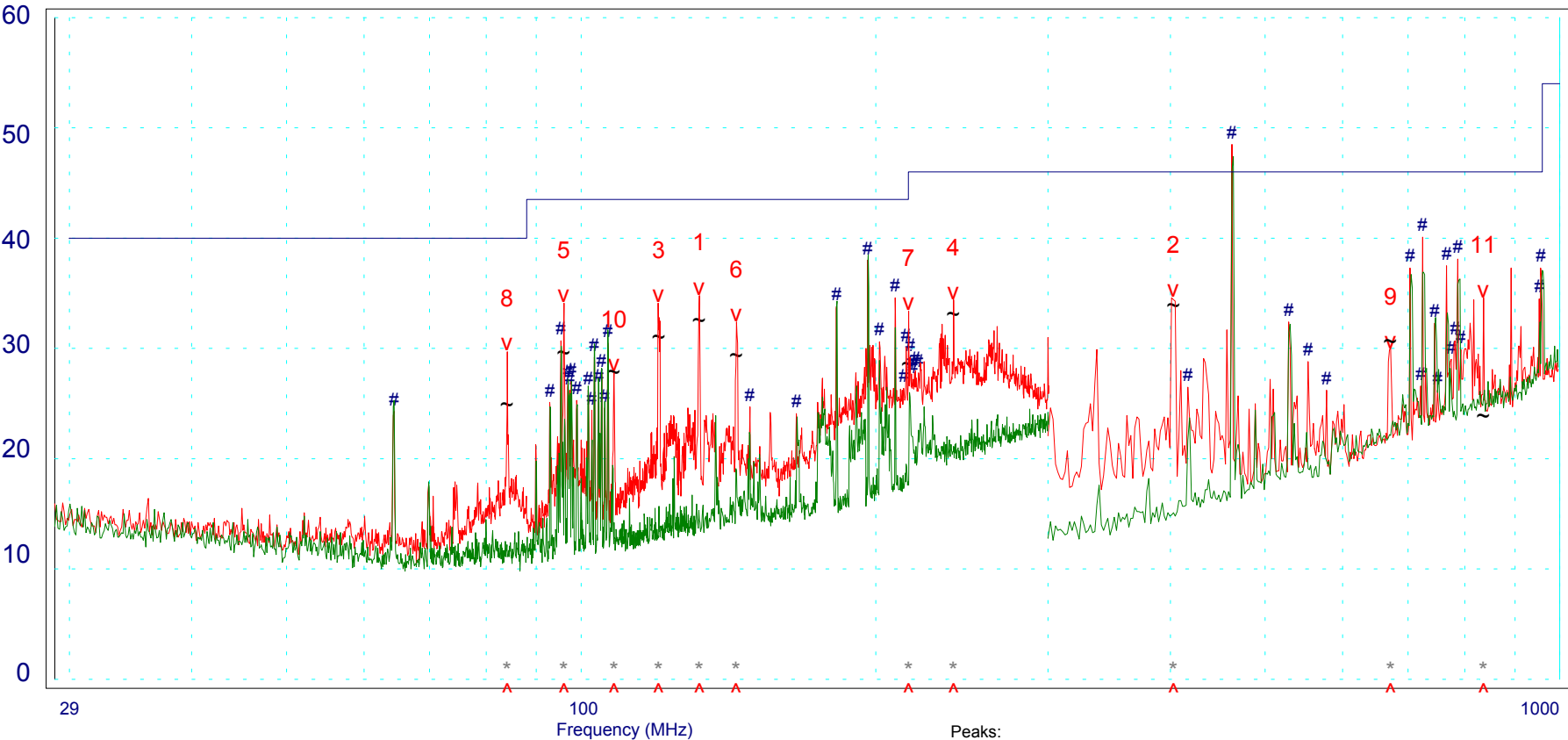
FCC Class B  
Radiated Emissions (dBuV/m)  
# = Ambient

Job No:T101210

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Test Date: 11-04-2011

GRAPH No. 4



Laserforce International  
Lasertag Amusement System  
Base Station, Model: LF7-WNC, Serial Number: 03542  
Basestation - Normal Operation

Limits:  
FCC-B3      FCC CLASS B RAD 3M LIMITS

Legend:  
— Horizontal Ambients  
— Horizontal Emissions

Ver 5.5 Build 158  
Colo Radiated Test Setup  
t:A0690113 c1:C0200312 c2:NONE p:A0960511 a:NONE  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer:Dale Matthews

Source:  
01210r103 , 4 , 5 , 6 , 7 , 2  
01210r1032 , 33 , 34 , 35 , 36 , 26

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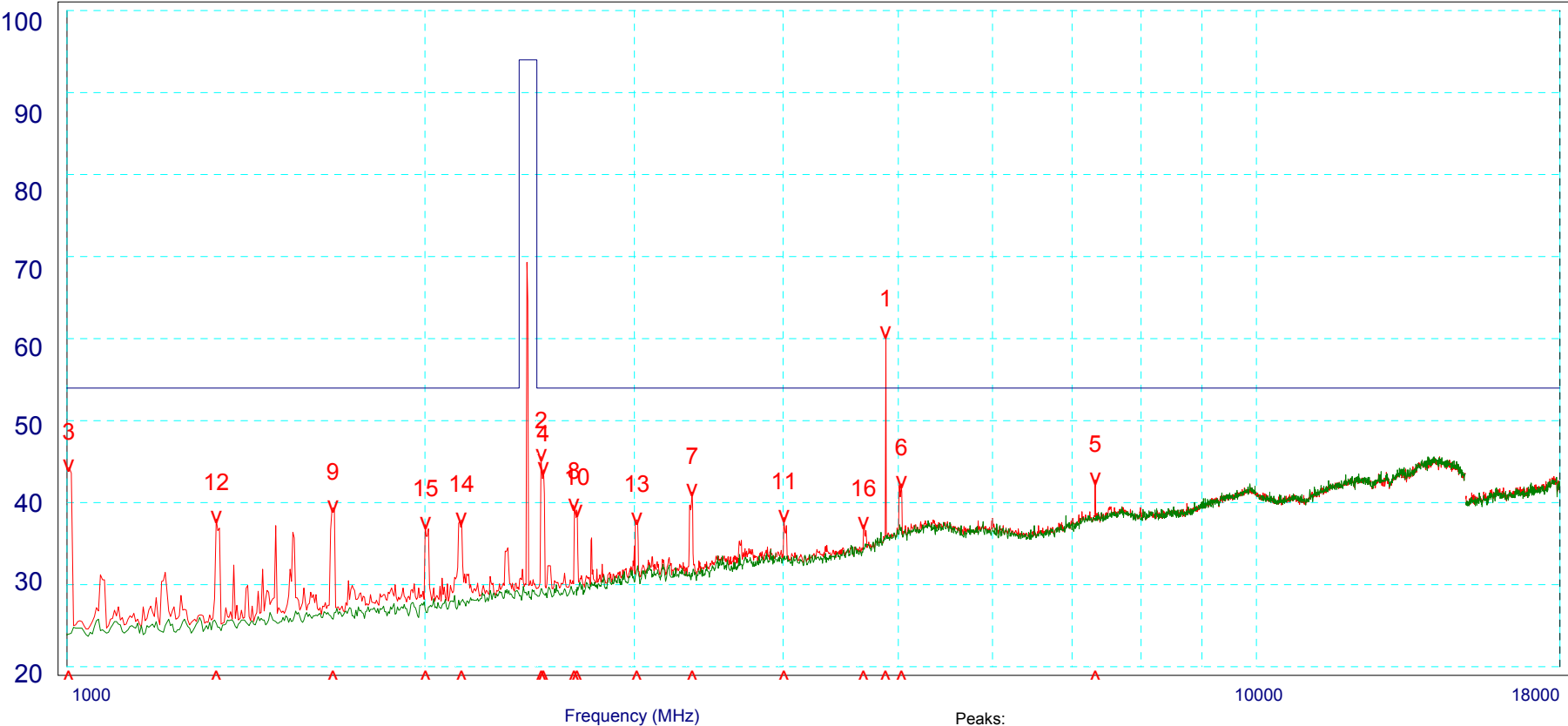
| Peaks: |            |               |        |                 |          |
|--------|------------|---------------|--------|-----------------|----------|
| No     | Freq (MHz) | Peak (dBuV/m) | QP Val | FCC-B3 (dBuV/m) | dL1 (dB) |
| 1      | 131.97     | 34.8          | 31.7   | 43.5            | -11.8    |
| 2      | 402.77     | 34.6          | 33.1   | 46.0            | -12.9    |
| 3      | 119.99     | 34.1          | 30.2   | 43.5            | -13.3    |
| 4      | 240.00     | 34.4          | 32.3   | 46.0            | -13.7    |
| 5      | 95.99      | 34.1          | 28.8   | 43.5            | -14.7    |
| 6      | 143.99     | 32.4          | 28.5   | 43.5            | -15.0    |
| 7      | 215.98     | 33.4          | 27.8   | 43.5            | -15.7    |
| 8      | 84.00      | 29.7          | 24.1   | 40.0            | -15.9    |
| 9      | 671.34     | 29.9          | 29.8   | 46.0            | -16.2    |
| 10     | 108.00     | 27.8          | 27.1   | 43.5            | -16.4    |
| 11     | 835.20     | 34.6          | 23.1   | 46.0            | -22.9    |

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FCC Class B  
Radiated Emissions (dBuV/m)  
# = Ambient

Job No:T101210      p:\PCF\101210BF\_5.PCF  
Test Date: 11-04-2011

GRAPH No. 5



Laser Force International Pty Ltd  
Laser Force Laser Tag Amusement System  
Base Station, Model: LF7-WNC, Serial Number: 03542  
Average Measurements

Limits:  
Fcc15249b      FCC 15.249 b (2400-2483.5MHz) Intentional Radiator Limits

Legend:  
— Vertical Ambients  
— Vertical Emissions

Ver 5.5 Build 160  
Radiated Emissions 12.4 to 40GHz  
t:A2621112 c1:C0240212 c2:NONE p:A1380212 a:NONE  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer:Christian Kai

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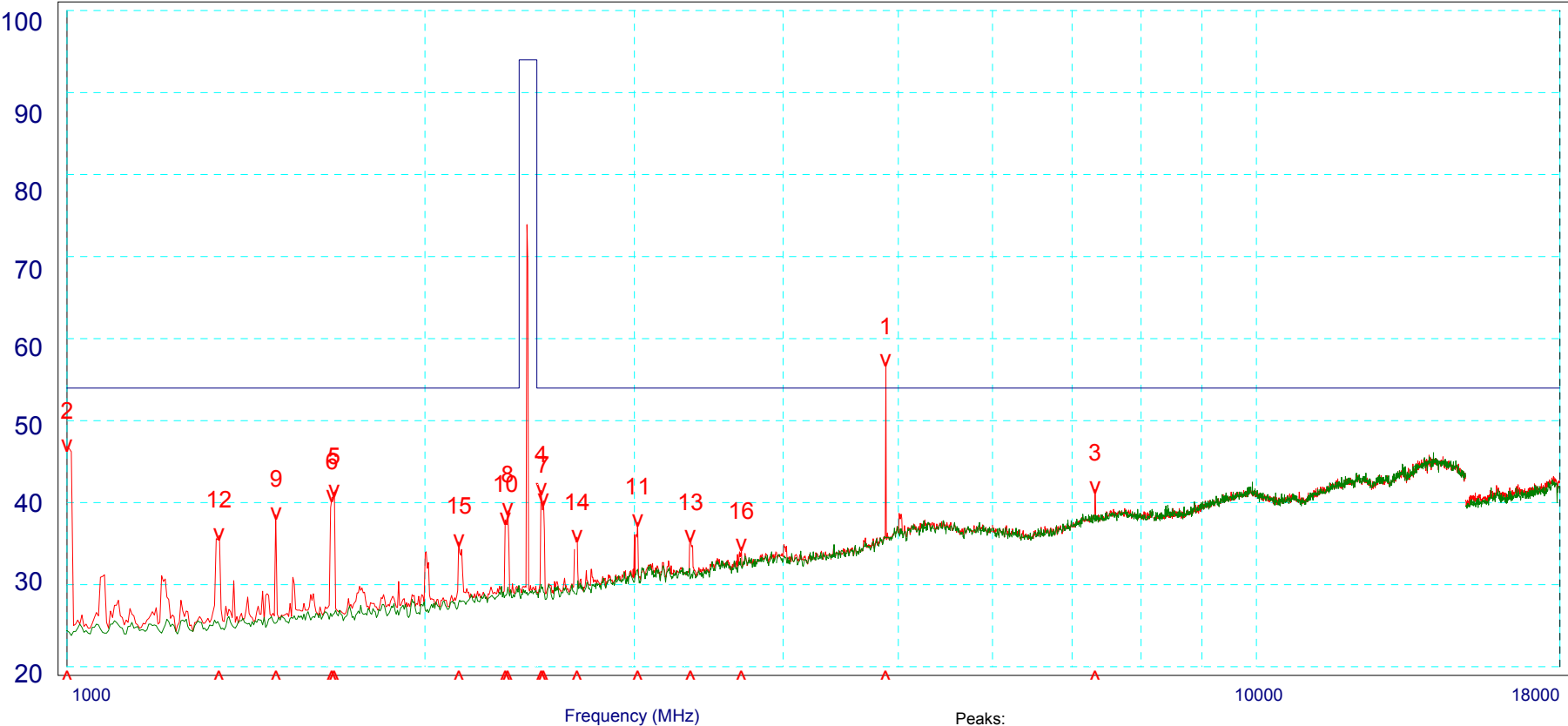
| Peaks: |            |               |                |
|--------|------------|---------------|----------------|
| No     | Freq (MHz) | Peak (dBuV/m) | Fcc15249b (dB) |
| 1      | 4878.84    | 60.5          | 54.0           |
| 2      | 2504.73    | 45.6          | 54.0           |
| 3      | 1003.35    | 44.3          | 54.0           |
| 4      | 2514.79    | 44.0          | 54.0           |
| 5      | 7321.73    | 42.8          | 54.0           |
| 6      | 5030.24    | 42.3          | 54.0           |
| 7      | 3353.81    | 41.3          | 54.0           |
| 8      | 2668.95    | 39.5          | 54.0           |
| 9      | 1673.61    | 39.4          | 54.0           |
| 10     | 2684.07    | 38.8          | 54.0           |
| 11     | 4007.29    | 38.2          | 54.0           |
| 12     | 1335.13    | 38.0          | 54.0           |
| 13     | 3013.87    | 37.9          | 54.0           |
| 14     | 2146.14    | 37.9          | 54.0           |
| 15     | 2002.04    | 37.3          | 54.0           |
| 16     | 4674.25    | 37.3          | 54.0           |

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FCC Class B  
Radiated Emissions (dBuV/m)  
# = Ambient

Job No:T101210      p:\PCF\101210BF\_6.PCF  
Test Date: 11-04-2011

GRAPH No. 6



Laser Force International Pty Ltd  
Laser Force Laser Tag Amusement System  
Base Station, Model: LF7-WNC, Serial Number: 03542  
Average Measurements

Limits:  
Fcc15249b      FCC 15.249 b (2400-2483.5MHz) Intentional Radiator Limits

Legend:  
Horizontal Ambients  
Horizontal Emissions

Ver 5.5 Build 160  
Radiated Emissions 12.4 to 40GHz  
t:A2621112 c1:C0240212 c2:NONE p:A1380212 a:NONE  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer:Christian Kai

Source:  
01210RC9 , 10 ,11 ,12 ,13 ,14 ,15 ,33  
01210RC#4 ,45 ,46 ,47 ,48 ,49 ,50 ,36

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| Peaks: |            |               |                             |
|--------|------------|---------------|-----------------------------|
| No     | Freq (MHz) | Peak (dBuV/m) | Fcc15249b (dBuV/m) dL1 (dB) |
| 1      | 4878.84    | 57.1          | 54.0 3.1                    |
| 2      | 1000.00    | 46.8          | 54.0 -7.2                   |
| 3      | 7317.33    | 41.6          | 54.0 -12.4                  |
| 4      | 2504.73    | 41.5          | 54.0 -12.5                  |
| 5      | 1676.96    | 41.3          | 54.0 -12.7                  |
| 6      | 1670.26    | 40.6          | 54.0 -13.4                  |
| 7      | 2514.79    | 40.2          | 54.0 -13.8                  |
| 8      | 2347.22    | 39.0          | 54.0 -15.0                  |
| 9      | 1499.34    | 38.5          | 54.0 -15.5                  |
| 10     | 2337.17    | 37.8          | 54.0 -16.2                  |
| 11     | 3018.94    | 37.6          | 54.0 -16.4                  |
| 12     | 1341.83    | 36.0          | 54.0 -18.0                  |
| 13     | 3343.66    | 35.7          | 54.0 -18.3                  |
| 14     | 2684.07    | 35.7          | 54.0 -18.3                  |
| 15     | 2136.09    | 35.2          | 54.0 -18.8                  |
| 16     | 3688.67    | 34.6          | 54.0 -19.4                  |

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FCC Class B

Radiated Emissions (dBuV/m)

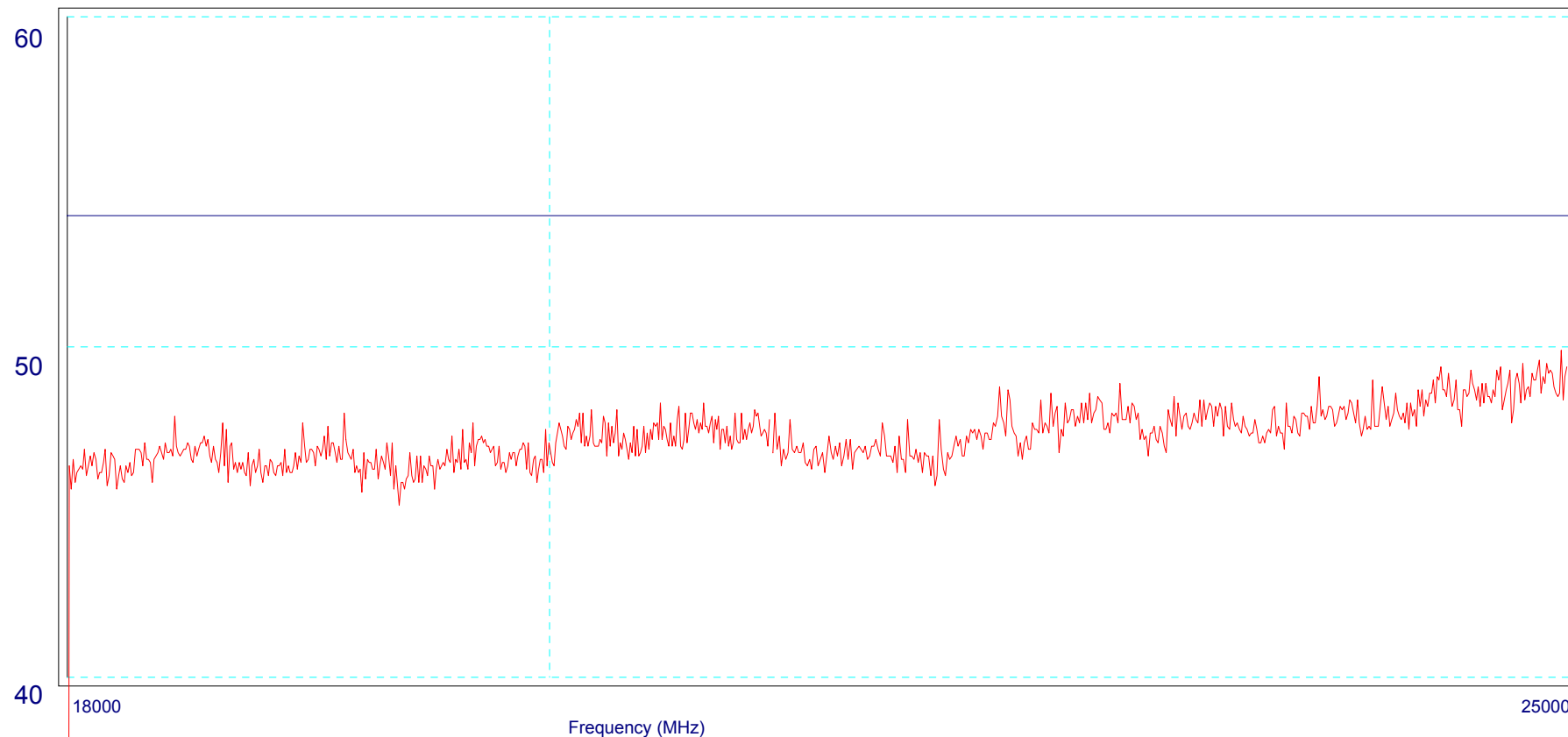
# = Ambient

Job No:T101210

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Test Date: 11-04-2011

GRAPH No. 7



Laser Force International Pty Ltd  
Laser Force Laser Tag Amusement System  
**Base Station, Model: LF7-WNC, Serial Number: 03542**  
Average Measurements

Limits:  
Fcc15249b FCC 15.249 b (2400-2483.5MHz) Intentional Radiator Limits

Legend:  
— Vertical Emissions

Ver 5.5 Build 160  
Radiated Test Setup 3m 1 - 26.5GHz  
t:A3051210 c1:C4140311 c2:NONE p:NONE a:NONE  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer:Dale Matthews

Source:  
101210R6 ,6

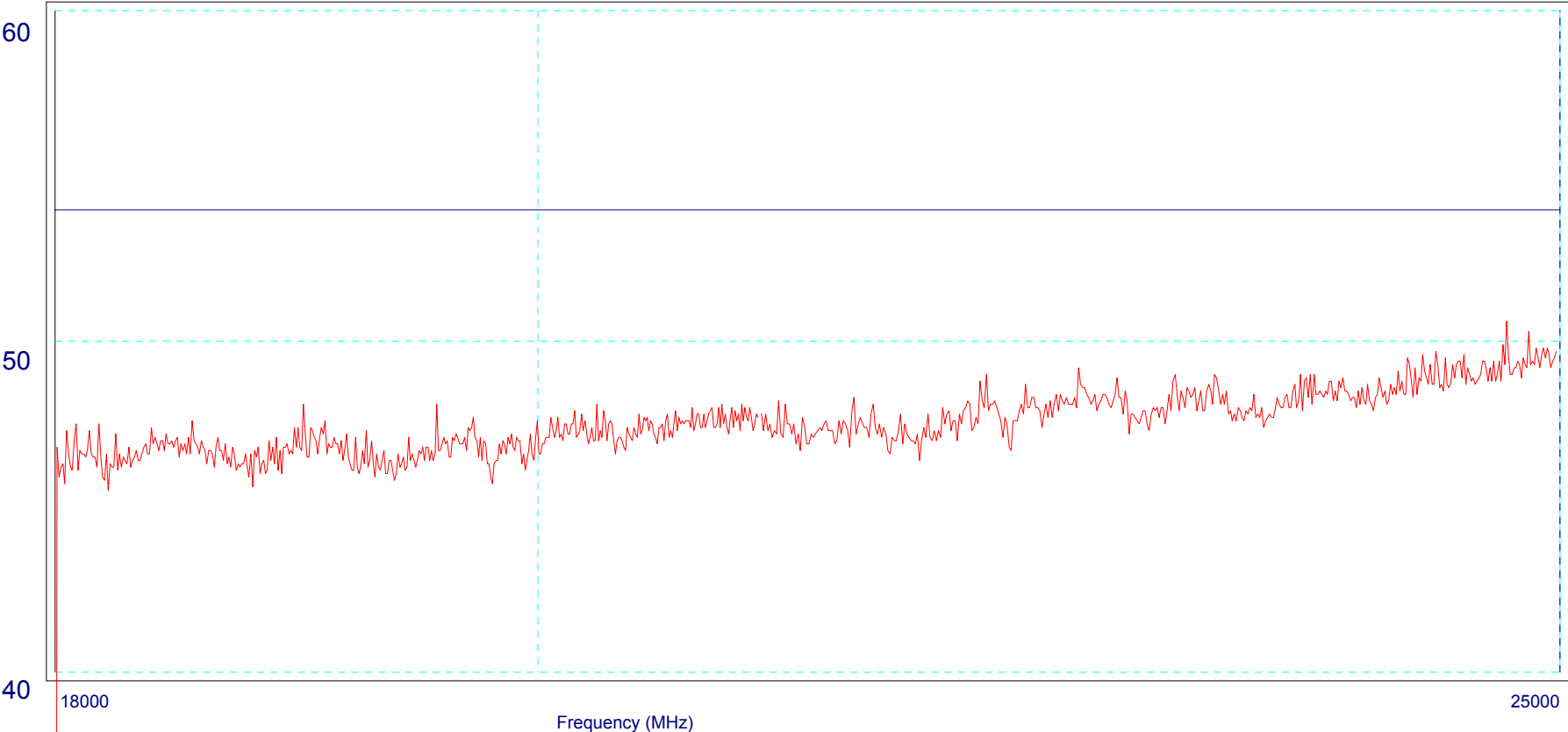
EMC Technologies (Sydney) 3/87 Station Rd, Seven Hills, NSW, 2147, NSW, Australia  
Phone +(612) 9624 2777 Fax+(612) 9838 4050

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FCC Class B  
Radiated Emissions (dBuV/m)  
# = Ambient

Job No:T101210      P:\PCF\T101210f\_12.PCF  
Test Date: 11-04-2011

GRAPH No. 8



Laser Force International Pty Ltd  
Laser Force Laser Tag Amusement System  
Base Station, Model: LF7-WNC, Serial Number: 03542  
Average Measurements

Limits: Fcc15249b      FCC 15.249 b (2400-2483.5MHz) Intentional Radiator Limits      Legend: Horizontal Emissions

Ver 5.5 Build 160  
Radiated Test Setup 3m 1 - 26.5GHz  
t:A3051210 c1:C4140311 c2:NONE p:NONE a:NONE  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer:Dale Matthews

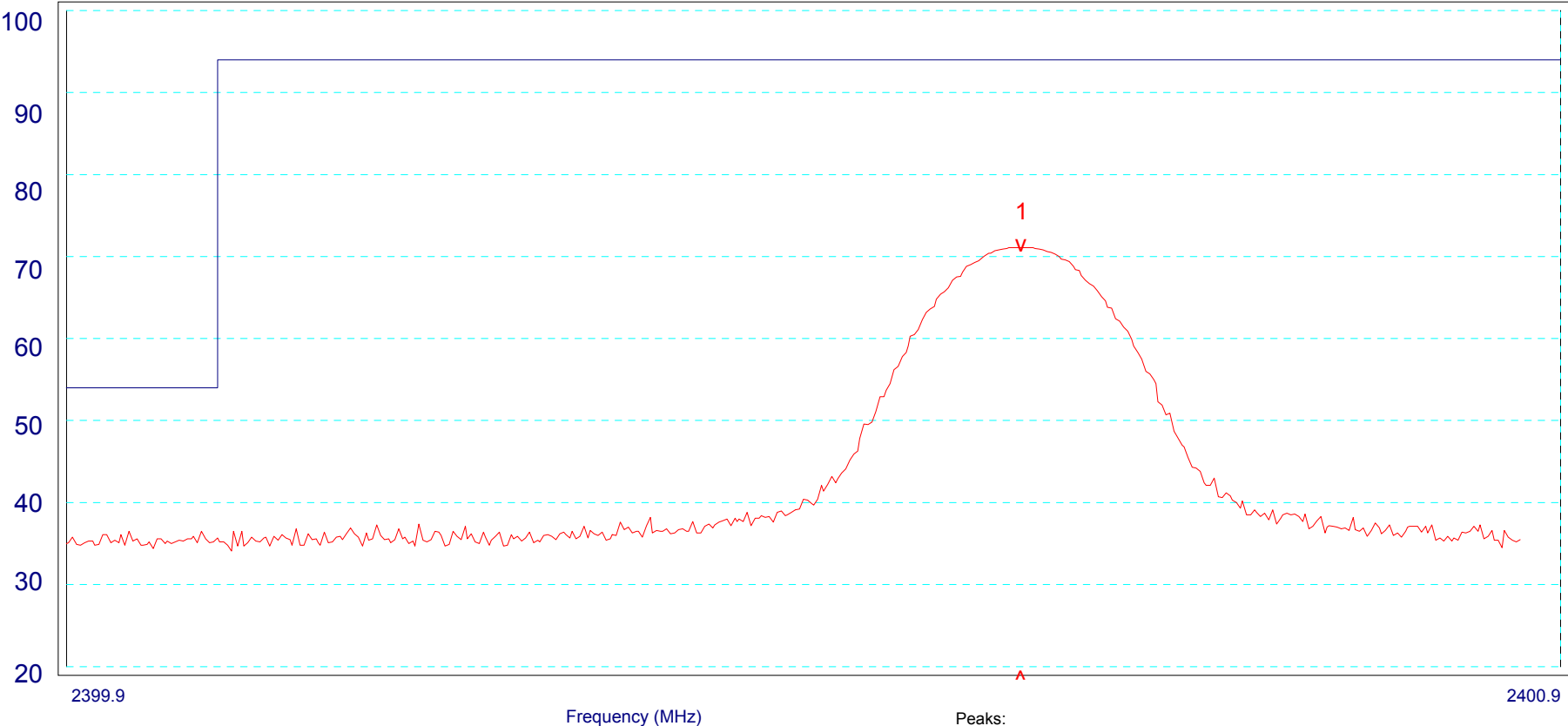
EMC Technologies (Sydney) 3/87 Station Rd, Seven Hills, NSW, 2147, NSW, Australia  
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FCC Class B  
Radiated Emissions (dBuV/m)  
# = Ambient

Job No:T101210      P:\PCF\T101210f\_8.PCF  
Test Date: 02-02-2011

GRAPH No. 9



Laser Force International Pty Ltd  
Laser Force Laser Tag Amusement System  
Base Station, Model: LF7-WNC, Serial Number: 03542  
Low Channel: 2400MHz

| Peaks: |            |               |                    |          |
|--------|------------|---------------|--------------------|----------|
| No     | Freq (MHz) | Peak (dBuV/m) | Fcc15249b (dBuV/m) | dL1 (dB) |
| 1      | 2400.54    | 71.1          | 94.0               | -22.9    |

Limits: Fcc15249b      FCC 15.249 b (2400-2483.5MHz) Intentional Radiator Limits

Legend: — Horizontal Emissions

Ver 5.5 Build 160  
Colo Radiated Test Setup 3m 1 - 18GHz  
t:A3240311 c1:C0240211 c2:NONE p:NONE a:NONE  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer:Dale Matthews

Source: 101210r41

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FCC Class B

Radiated Emissions (dBuV/m)

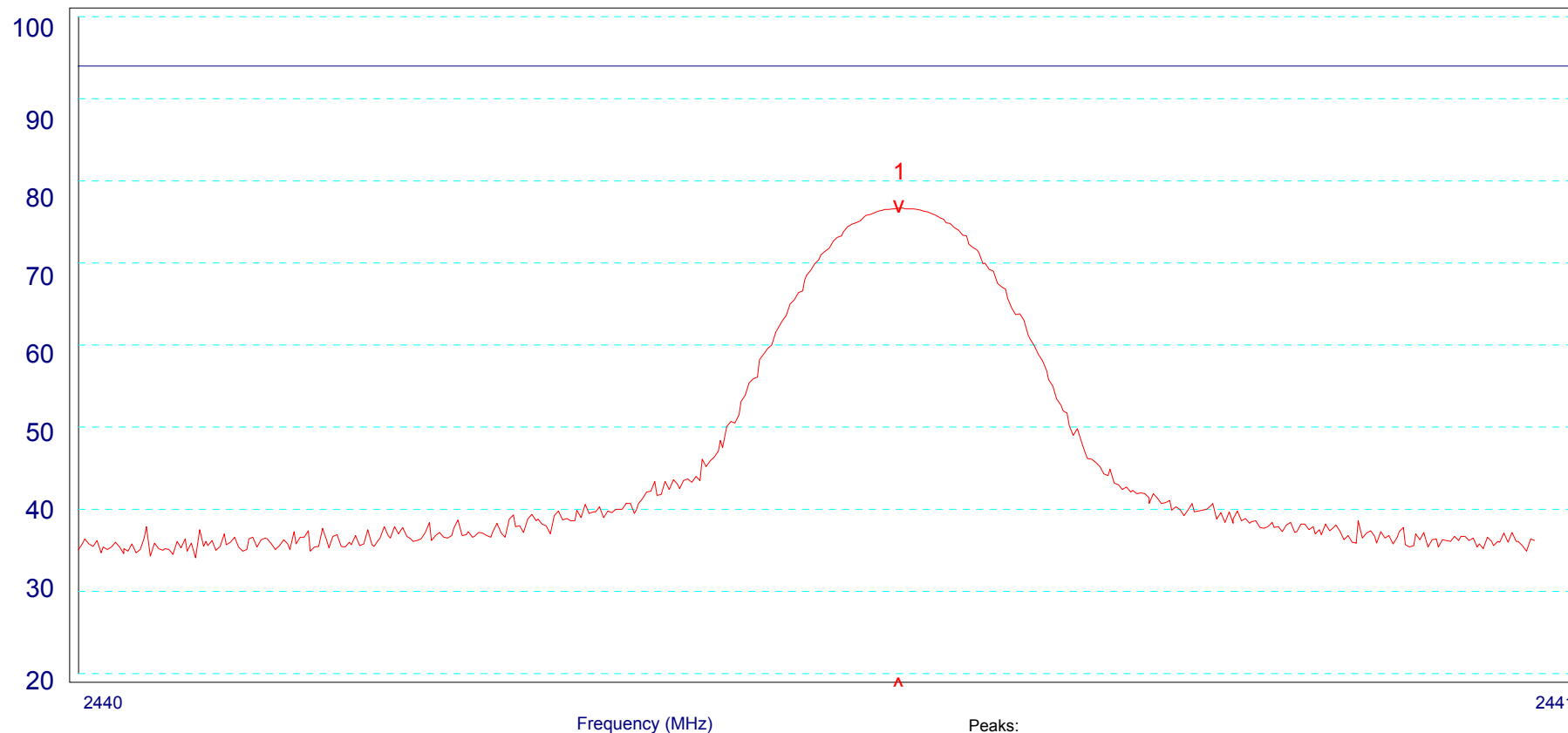
# = Ambient

Job No:T101210

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Test Date: 02-02-2011

GRAPH No. 10



Laser Force International Pty Ltd  
Laser Force Laser Tag Amusement System  
**Base Station, Model: LF7-WNC, Serial Number: 03542**  
**Middle Channel: 2440MHz**

Peaks:

| No | Freq (MHz) | Peak (dBuV/m) | Fcc15249b (dBuV/m) | dL1 (dB) |
|----|------------|---------------|--------------------|----------|
| 1  | 2440.55    | 76.7          | 94.0               | -17.3    |

Limits:  
Fcc15249b FCC 15.249 b (2400-2483.5MHz) Intentional Radiator Limits

Legend:  
Horizontal Emissions

Ver 5.5 Build 160  
Colo Radiated Test Setup 3m 1 - 18GHz  
t:A3240311 c1:C0240211 c2:NONE p:NONE a:NONE  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer:Dale Matthews

Source:  
101210r42

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# EMC Technologies Pty. Ltd. - Global Product Certification

FCC Class B

Radiated Emissions (dBuV/m)

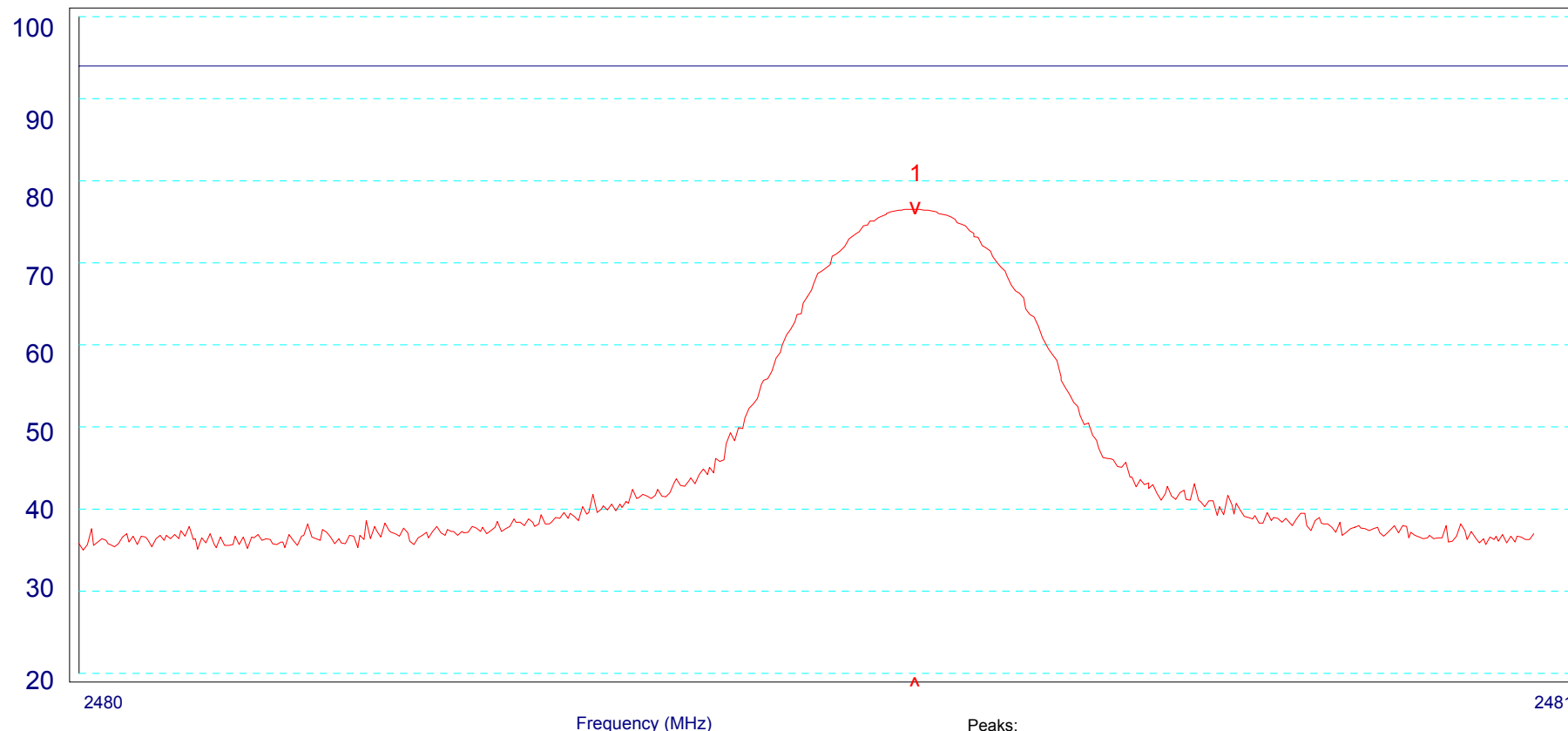
# = Ambient

Job No:T101210

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Test Date: 02-02-2011

GRAPH No. 11



Laser Force International Pty Ltd  
Laser Force Laser Tag Amusement System  
Base Station, Model: LF7-WNC, Serial Number: 03542  
High Channel: 2480MHz

Limits:  
Fcc15249b FCC 15.249 b (2400-2483.5MHz) Intentional Radiator Limits

Legend:  
Horizontal Emissions

Ver 5.5 Build 160  
Colo Radiated Test Setup 3m 1 - 18GHz  
t:A3240311 c1:C0240211 c2:NONE p:NONE a:NONE  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer:Dale Matthews

Source:  
101210r43

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