

**APPENDIX K  
OF  
TEST REPORT T080316\_F**

**GRAPHS OF EMI MEASUREMENT**

**FCC ID:** TVN-MARS-24E  
**Manufacturer:** Magellan Technology Pty Limited  
**Test Sample:** MARS-24 RFID Desktop Reader  
**Model:** MARS-24E  
**Serial Number:** 7014360  
**Part Number** 63-70-034

**Date:** 20<sup>th</sup> May 2008

## APPENDIX K

### GRAPHS OF EMI MEASUREMENT

#### CONDUCTED

**Antenna Connected:**

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

**Antenna Terminated:**

<b>Graph 3:</b>	Active Line	5 to 30.5 MHz
<b>Graph 4:</b>	Neutral Line	5 to 30.5 MHz

#### RADIATED EMI

<b>Graph 5:</b>	Magnetic Loop Antenna	9 kHz to 30 MHz
<b>Graph 6:</b>	Carrier 13.56 MHz	13.552 to 13.568 MHz
<b>Graph 7:</b>	Vertical Antenna Polarisation	30 to 1000 MHz
<b>Graph 8</b>	Horizontal Antenna Polarisation	30 to 1000 MHz

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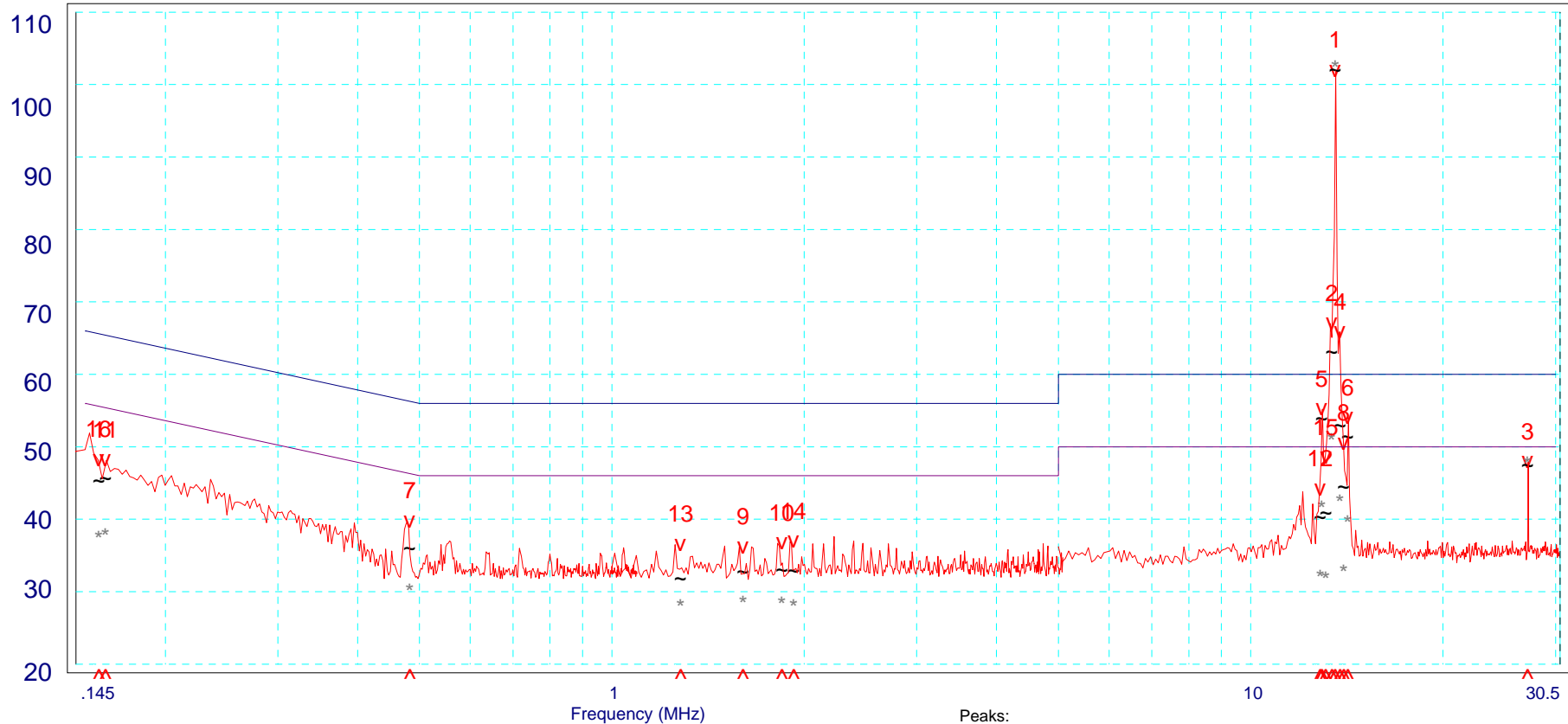
FCC Class B  
Conducted Emissions (dBuV)

Job No:T080316

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Test Date: 28/3/08

GRAPH No. 1



Magellan Technology  
MARS-24 RFID Desktop Reader  
Model: MARS-24E Serial No: 7014360  
Antenna port connected to antenna.

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 153  
Generic file for any test.  
t:L0361207 c1:C0030908 c2:NONE p:NONE a:L0100508  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer: Jodie Foyle

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)	QP Val (dBuV)	FCCN_BQP (dBuV)	dL1 (dB)	Av Val (dBuV)	FCCN_BAV (dBuV)	dL2 (dB)
1	13.56	101.9	102.0	60.0	42.0	101.9	50.0	51.9
2	13.39	67.0	63.2	60.0	3.2	50.4	50.0	.4
3	27.12	47.9	47.4	60.0	-12.6	47.2	50.0	-2.8
4	13.80	65.9	52.9	60.0	-7.1	42.0	50.0	-8.0
5	12.92	55.2	54.0	60.0	-6.0	41.1	50.0	-8.9
6	14.19	54.0	51.5	60.0	-8.5	39.1	50.0	-10.9
7	0.483	39.8	36.1	56.3	-20.2	29.7	46.3	-16.6
8	13.98	50.5	44.5	60.0	-15.5	32.3	50.0	-17.7
9	1.605	36.2	32.7	56.0	-23.3	28.0	46.0	-18.0
10	1.846	36.7	33.0	56.0	-23.0	27.9	46.0	-18.1
11	0.161	48.1	45.7	65.4	-19.7	37.3	55.4	-18.1
12	12.85	44.2	40.3	60.0	-19.7	31.6	50.0	-18.4
13	1.281	36.5	31.8	56.0	-24.2	27.6	46.0	-18.4
14	1.925	36.9	32.9	56.0	-23.1	27.6	46.0	-18.4
15	13.11	48.5	40.9	60.0	-19.1	31.4	50.0	-18.6
16	0.157	48.2	45.3	65.6	-20.3	37.0	55.6	-18.6

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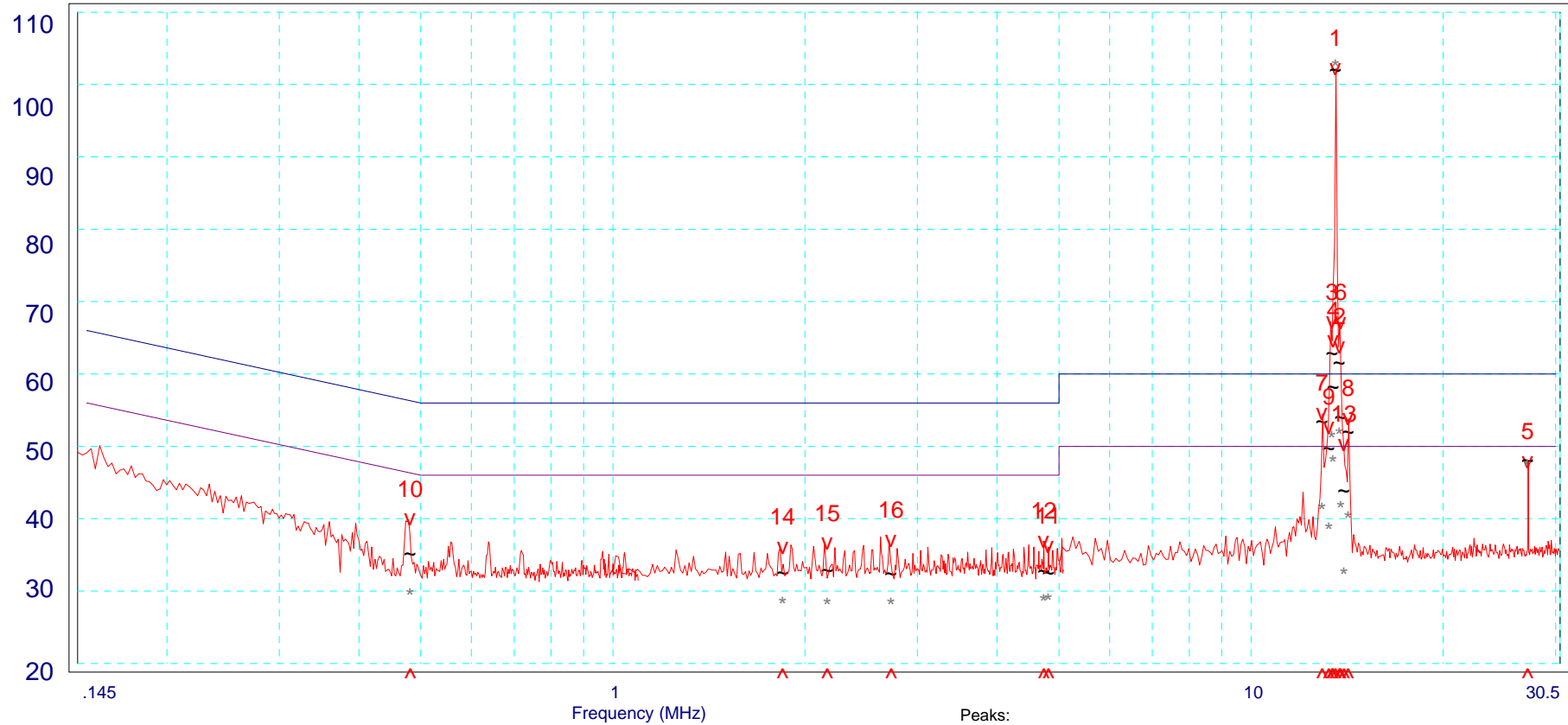
FCC Class B  
Conducted Emissions (dBuV)

Job No:T080316

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Test Date: 28/3/08

GRAPH No. 2



Magellan Technology  
MARS-24 RFID Desktop Reader  
Model: MARS-24E Serial No: 7014360  
Antenna port connected to antenna.

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 153  
Generic file for any test.  
t:L0361207 c1:C0030908 c2:NONE p:NONE a:L0100508  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer: Jodie Foyle

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

No	Freq (MHz)	Peak (dBuV)	QP Val (dBuV)	FCCN_BQP (dBuV)	dL1 (dB)	Av Val (dBuV)	FCCN_BAV (dBuV)	dL2 (dB)
1	13.56	102.2	102.1	60.0	42.1	102.0	50.0	52.0
2	13.75	63.7	61.6	60.0	1.6	51.2	50.0	1.2
3	13.39	67.2	62.9	60.0	2.9	50.7	50.0	.7
4	13.44	64.6	58.3	60.0	-1.8	47.4	50.0	-2.6
5	27.12	47.9	48.0	60.0	-12.0	46.8	50.0	-3.2
6	13.82	67.1	54.1	60.0	-5.9	41.0	50.0	-9.0
7	12.92	54.5	53.5	60.0	-6.5	40.8	50.0	-9.2
8	14.20	53.8	52.1	60.0	-8.0	39.6	50.0	-10.4
9	13.24	52.7	49.8	60.0	-10.2	38.1	50.0	-11.9
10	0.481	39.9	35.3	56.3	-21.1	28.9	46.3	-17.4
11	4.812	36.1	32.5	56.0	-23.5	28.2	46.0	-17.8
12	4.733	36.8	32.7	56.0	-23.3	28.1	46.0	-17.9
13	13.98	50.2	43.9	60.0	-16.1	31.8	50.0	-18.2
14	1.845	36.0	32.5	56.0	-23.5	27.8	46.0	-18.2
15	2.167	36.6	32.9	56.0	-23.1	27.7	46.0	-18.3
16	2.728	37.0	32.5	56.0	-23.6	27.7	46.0	-18.3

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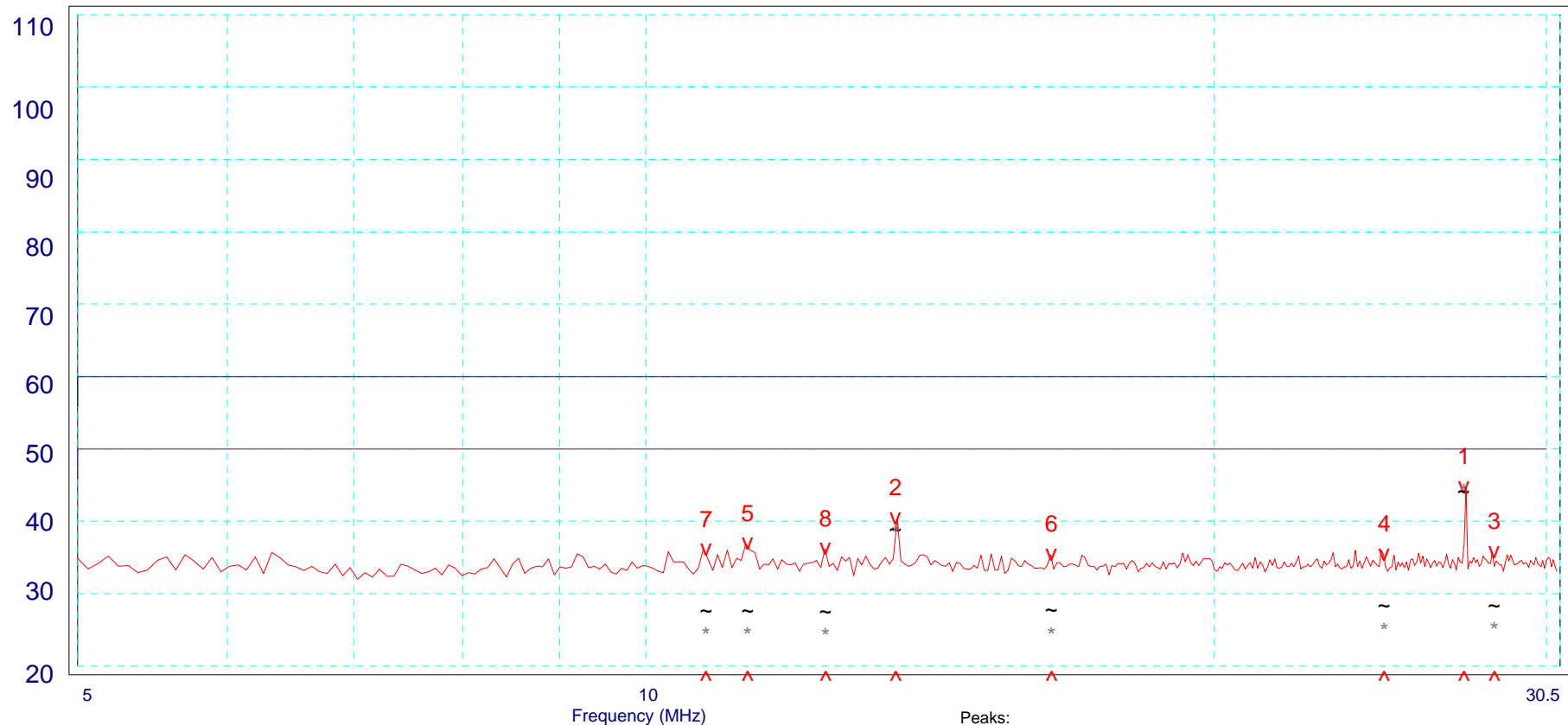
FCC Class B  
Conducted Emissions (dBuV)

Job No:T080316

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Test Date: 28/3/08

GRAPH No. 3



Magellan Technology  
MARS-24 RFID Desktop Reader  
Model: MARS-24E Serial No: 7014360  
Antenna port resistively terminated.

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 153  
Generic file for any test.  
t:L0361207 c1:C0030908 c2:NONE p:NONE a:L0100508  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer: Jodie Foyle

Source:  
080316c23

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)	QP Val (dBuV)	FCCN_BQP (dBuV)	dL1 (dB)	Av Val (dBuV)	FCCN_BAV (dBuV)	dL2 (dB)
1	27.12	44.8	44.1	60.0	-15.9	43.7	50.0	-6.3
2	13.56	40.4	38.9	60.0	-21.1	38.0	50.0	-12.0
3	28.15	35.8	28.4	60.0	-31.6	24.7	50.0	-25.3
4	24.61	35.4	28.4	60.0	-31.7	24.6	50.0	-25.4
5	11.32	36.9	27.7	60.0	-32.3	24.0	50.0	-26.0
6	16.40	35.4	27.8	60.0	-32.2	24.0	50.0	-26.0
7	10.76	36.1	27.7	60.0	-32.4	23.9	50.0	-26.1
8	12.45	36.3	27.6	60.0	-32.5	23.8	50.0	-26.2

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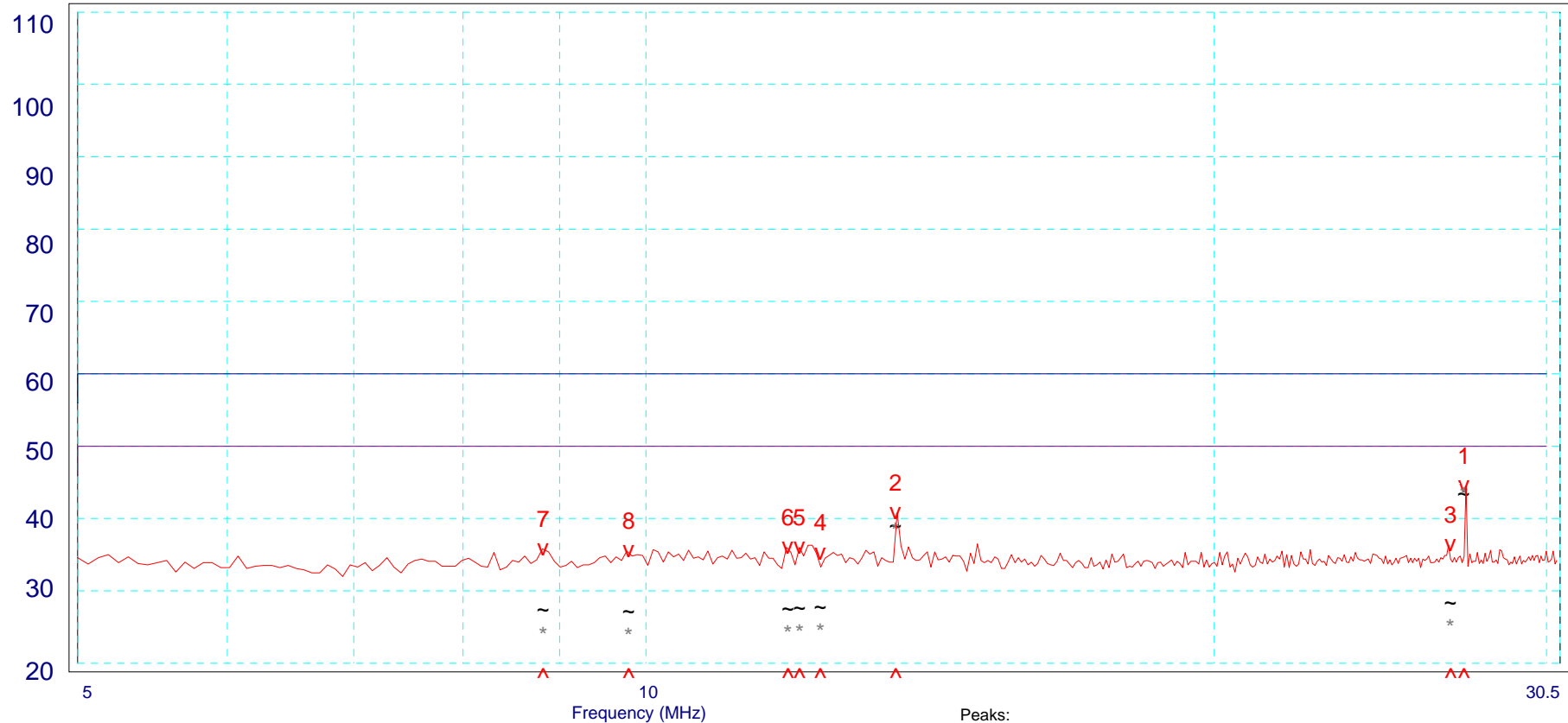
FCC Class B  
Conducted Emissions (dBuV)

Job No:T080316

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Test Date: 28/3/08

GRAPH No. 4



Magellan Technology  
MARS-24 RFID Desktop Reader  
Model: MARS-24E Serial No: 7014360  
Antenna port resistively terminated.

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 153  
Generic file for any test.  
t:L0361207 c1:C0030908 c2:NONE p:NONE a:L0100508  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer: Jodie Foyle  
Source:  
080316c24

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

No	Freq (MHz)	Peak (dBuV)	QP Val (dBuV)	FCCN_BQP (dBuV)	dL1 (dB)	Av Val (dBuV)	FCCN_BAV (dBuV)	dL2 (dB)
1	27.12	44.5	43.4	60.0	-16.6	42.9	50.0	-7.1
2	13.56	40.8	39.0	60.0	-21.0	38.1	50.0	-11.9
3	26.68	36.3	28.4	60.0	-31.6	24.7	50.0	-25.3
4	12.37	35.2	27.8	60.0	-32.2	24.1	50.0	-25.9
5	12.06	36.0	27.7	60.0	-32.4	23.9	50.0	-26.1
6	11.89	36.0	27.5	60.0	-32.5	23.8	50.0	-26.2
7	8.820	35.8	27.3	60.0	-32.7	23.6	50.0	-26.4
8	9.790	35.5	27.2	60.0	-32.9	23.5	50.0	-26.5

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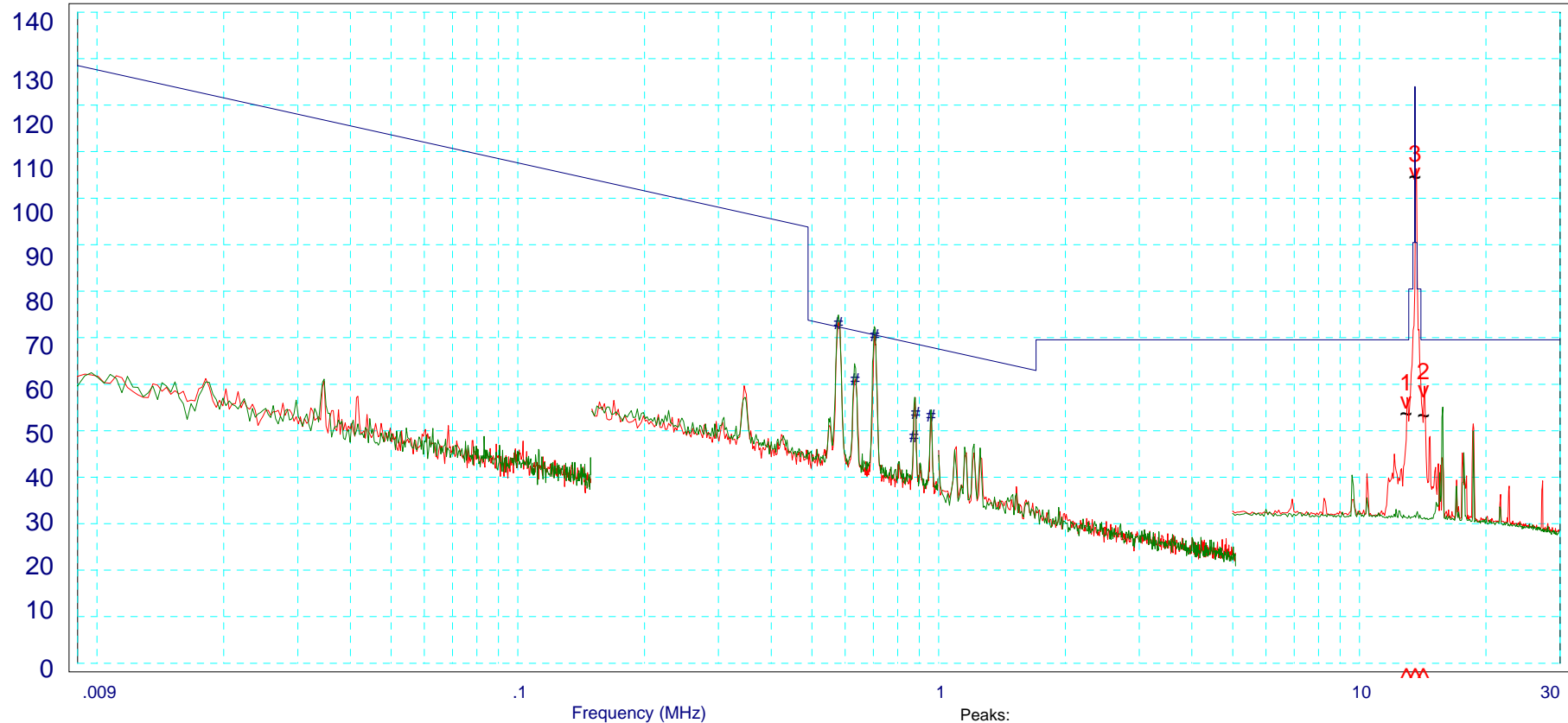
FCC Class B  
Radiated Emissions (dBuV/m)  
# = Ambient

Job No: T080316

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Test Date: 26/3/08

GRAPH No. 5



Magellan Technology  
MARS-24 RFID Desktop Reader  
Model: MARS-24E Serial No: 7014360

Peaks:

No	Freq (MHz)	Peak (dBuV/m)	QP Val	FCC_loop_3mL1 (dBuV/m)	(dB)
1	12.92	57.2	54.8	69.5	-14.8
2	14.20	59.6	54.5	69.5	-15.1
3	13.56	106.3	105.7	124.0	-18.3

Limits: FCC\_loop\_3m Fcc Pt15 Subpart C Section 15.209(a) 3Metre Limits  
Legend: Ambient Emissions (green line), EUT on (red line)

Ver 5.5 Build 153  
Colo Radiated Test Setup Active Loop  
t:A0080408E c1:C0200209 c2:NONE p:NONE a:NONE  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer: Jodie Foyle

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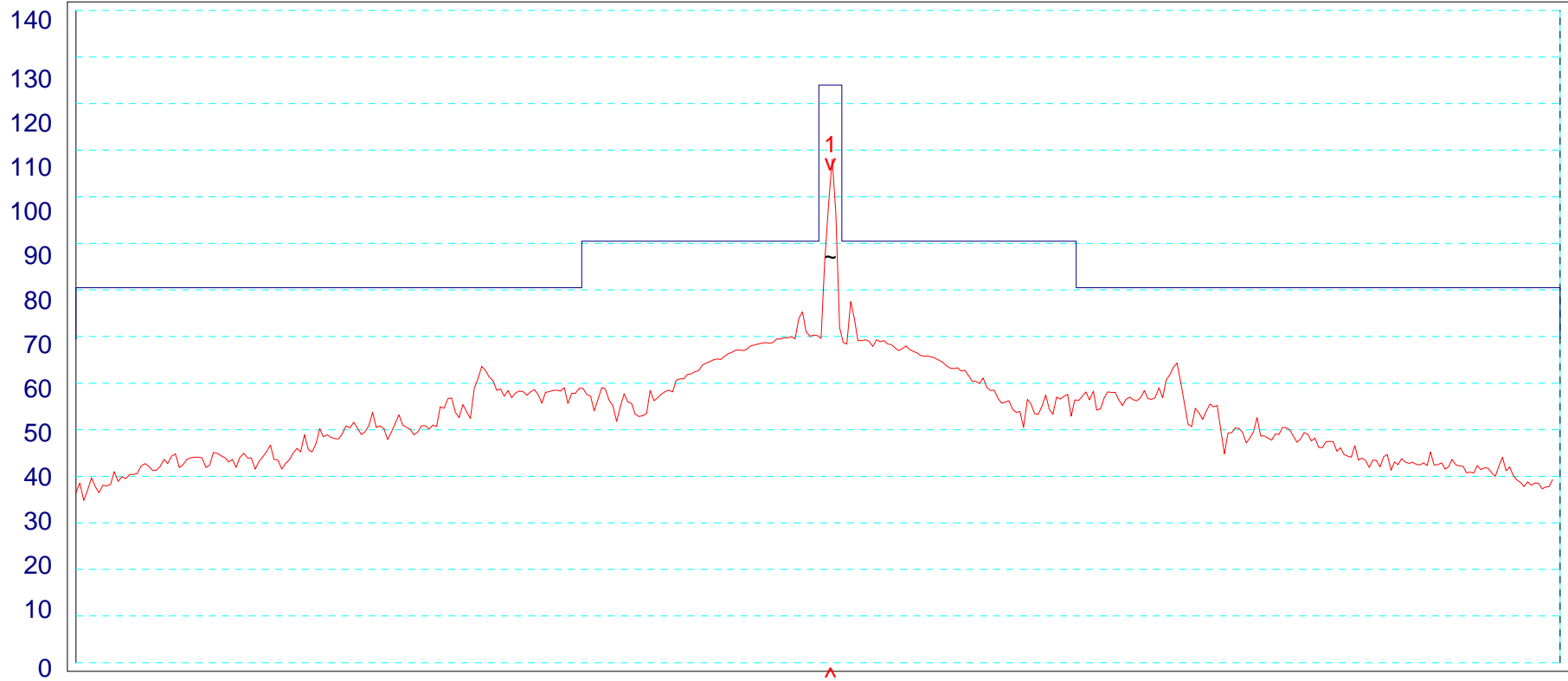
FCC Class B  
Radiated Emissions (dBuV/m)  
# = Ambient

Job No:T080316

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Test Date: 26/3/08

GRAPH No. 6



13.11

Frequency (MHz)

14.01

Magellan Technology  
MARS-24 RFID Desktop Reader  
Model: MARS-24E Serial No: 7014360

Peaks:

No	Freq (MHz)	Peak (dBuV/m)	QP Val	FCC_loop_3mL1 (dBuV/m)	(dB)
1	13.56	108.0	88.2	124.0	-35.9

Limits: FCC\_loop\_3m Fcc Pt15 Subpart C Section 15.209(a) 3Metre Limits  
Legend: — Carrier

Ver 5.5 Build 153  
Colo Radiated Test Setup Active Loop  
t:A0080408E c1:C0200209 c2:NONE p:NONE a:NONE  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer: Jodie Foyle

Source: 080316R140

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)

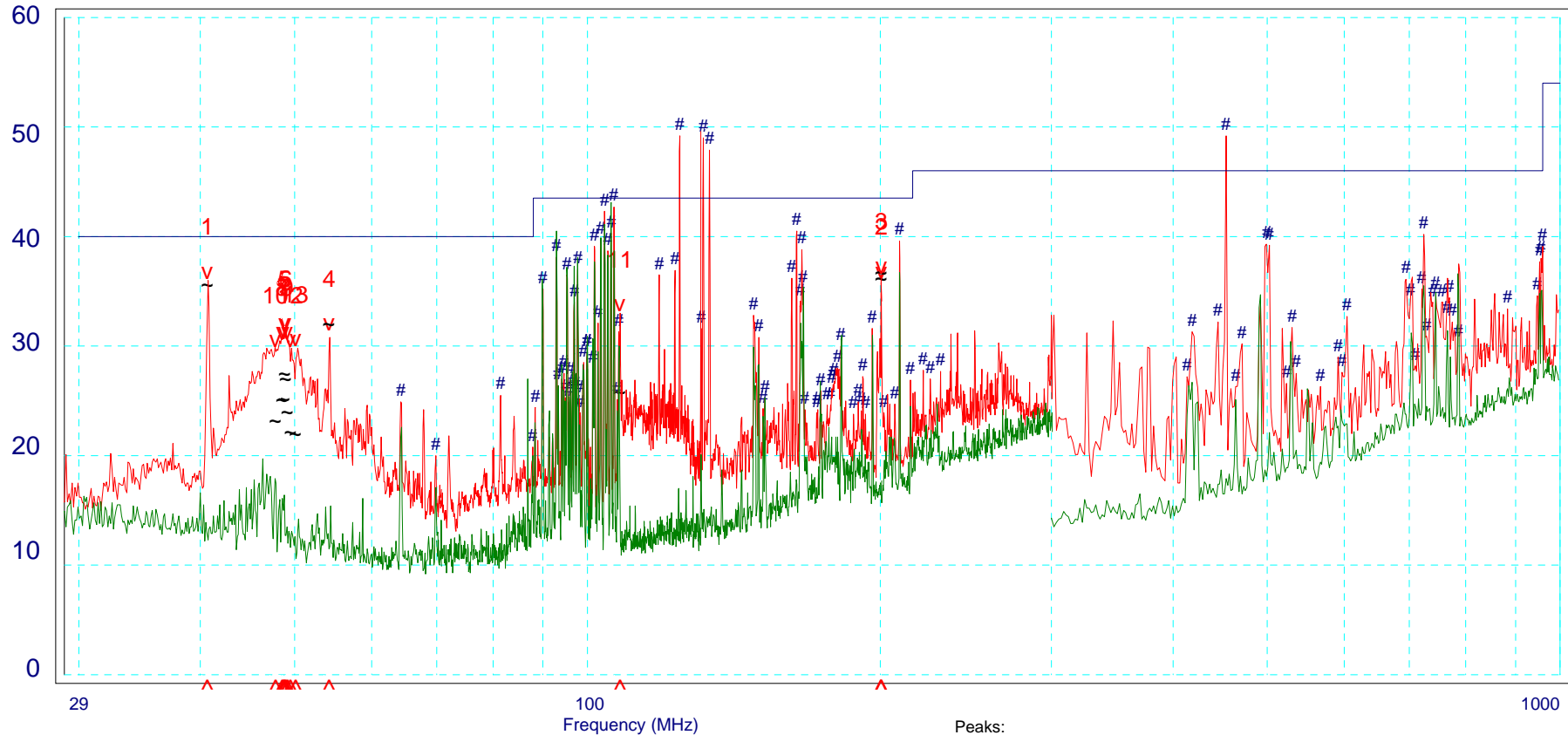
Job No:T080316

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Test Date: 26/3/08

GRAPH No. 7

# = Ambient



Magellan Technology  
MARS-24 RFID Desktop Reader  
Model: MARS-24E Serial No: 7014360

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

Legend:  
— Vertical Ambients (green)  
— Vertical Emissions (red)

Ver 5.5 Build 153  
Colo Radiated Test Setup  
t:A0690109 c1:C0200209 c2:NONE p:A0961108 a:NONE  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer: Jodie Foyle

Source:  
080316R11, 2, 3, 4, 5, 25  
080316R12, 13, 14, 15, 16, 22

Peaks:

No	Freq (MHz)	Peak (dBuV/m)	QP Val	FCC-B3 (dBuV/m)	dL1 (dB)
1	40.67	36.1	34.9	40.0	-5.1
2	200.45	36.1	36.1	43.5	-7.4
3	200.45	36.5	35.4	43.5	-8.1
4	54.24	31.3	31.3	40.0	-8.7
5	48.81	31.3	26.8	40.0	-13.2
6	48.96	31.3	26.3	40.0	-13.7
7	48.74	30.6	24.5	40.0	-15.6
8	48.53	30.5	24.4	40.0	-15.6
9	49.14	30.5	23.3	40.0	-16.7
10	47.77	29.8	22.5	40.0	-17.5
11	107.97	33.0	25.2	43.5	-18.3
12	49.51	29.8	21.4	40.0	-18.6
13	50.11	29.9	21.3	40.0	-18.7

EMC Technologies (Sydney) 3/87 Station Rd, Seven Hills, NSW, 2147, NSW, Australia  
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# EMC Technologies Pty. Ltd. - Global Product Certification

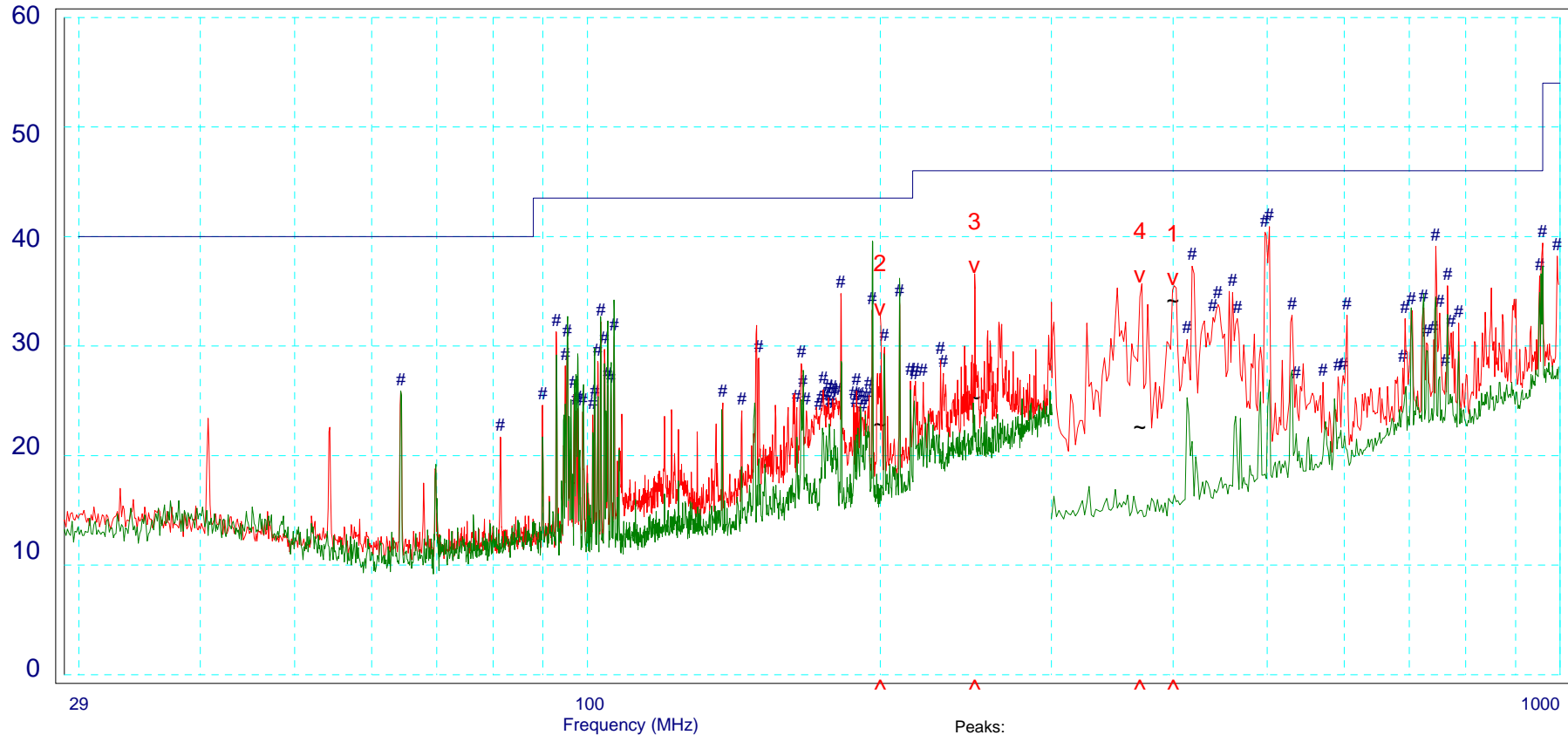
FCC Class B  
Radiated Emissions (dBuV/m)  
# = Ambient

Job No:T080316

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Test Date: 26/3/08

GRAPH No. 8



Magellan Technology  
MARS-24 RFID Desktop Reader  
Model: MARS-24E Serial No: 7014360

No	Freq (MHz)	Peak (dBuV/m)	QP Val	FCC-B3 (dBuV/m)	dL1 (dB)
1	399.98	35.5	33.5	46.0	-12.6
2	199.88	32.7	22.2	43.5	-21.3
3	250.06	36.6	24.6	46.0	-21.4
4	369.75	35.7	21.9	46.0	-24.1

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

Legend:  
— Horizontal Ambients (green)  
— Horizontal Emissions (red)

Ver 5.5 Build 153  
Colo Radiated Test Setup  
t:A0690109 c1:C0200209 c2:NONE p:A0961108 a:NONE  
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW  
Test Officer: Jodie Foyle

Source:  
080316R16, 7, 8, 9, 10, 24  
080316R17, 18, 19, 20, 21, 23

EMC Technologies (Sydney) 3/87 Station Rd, Seven Hills, NSW, 2147, NSW, Australia  
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