



EMC Technologies Pty Ltd

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**APPENDIX I
OF
TEST REPORT T40452F**

GRAPHS OF EMI MEASUREMENT

FCC ID: Q47-MCR200
Manufacturer: ERG Transit Systems
Test Sample: Contactless Smart Card Reader
Model: MCR200
Serial No: 0318111546

Date: 29th July 2004

Graphs of EMI Measurements

Conducted Emissions

Graph 1:	0.15 MHz to 30 MHz	Active Line	EUT Transmitting
Graph 2:	0.15 MHz to 30 MHz	Neutral Line	EUT Transmitting
Graph 7	0.15 MHz to 30 MHz	Active Line	TX terminated in 1k Ω
Graph 8	0.15 MHz to 30 MHz	Neutral Line	TX terminated in 1k Ω

Radiated Emissions

Graph 3:	0.009 MHz to 30 MHz	Loop Antenna	EUT Transmitting
Graph 4:	13.55 MHz to 13.57 MHz	Carrier Zoom	EUT Transmitting
Graph 5:	29 MHz to 1000 MHz	Vertical Emissions	EUT Transmitting
Graph 6:	29 MHz to 1000 MHz	Horizontal Emissions	EUT Transmitting

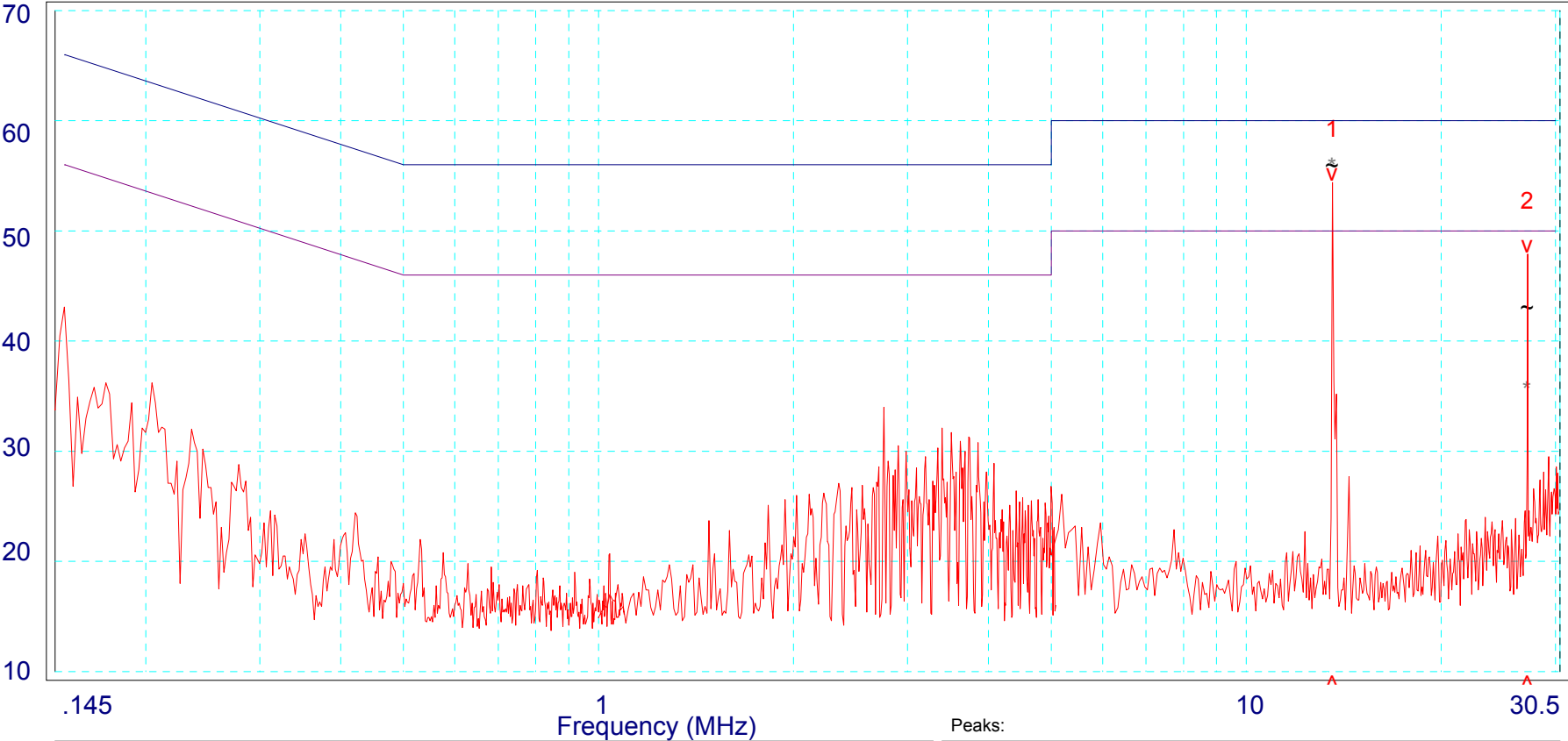
EMC Technologies Pty. Ltd. - Global Product Certification

FCC Class B
Conducted Emissions (dBuV)

Job No:T40452

Test Date: 3/05/04

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GRAPH No. 1



ERG Transit Systems
Model No.: MCR200 Serial No.: 0318111546
Contactless Smart Card Reader Tested at 120VAC, 60Hz
Used Toshiba AC Adaptor, Model No.: PA3083U-1ACA

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 74
Generic file for any test.
t:L0111204 c1:C0020904 c2:NONE p:NONE a:L0100305
Site ID: Syd Room#2,16/6 Gladstone Rd. Castle Hill, NSW
Test Officer:Gerald Gidah

Source:
T40452C1 1 2 3

Melbourne- 57 Assembly Drv Tullamarine, 3043, Vic, Australia Ph+(613) 9335 3333 Fax+(613) 9338 9260
Sydney---- 16,6 Gladstone Rd Castle Hill, 2154, NSW, Australia Ph+(612) 9899 4599 Fax+(612) 9899 4019

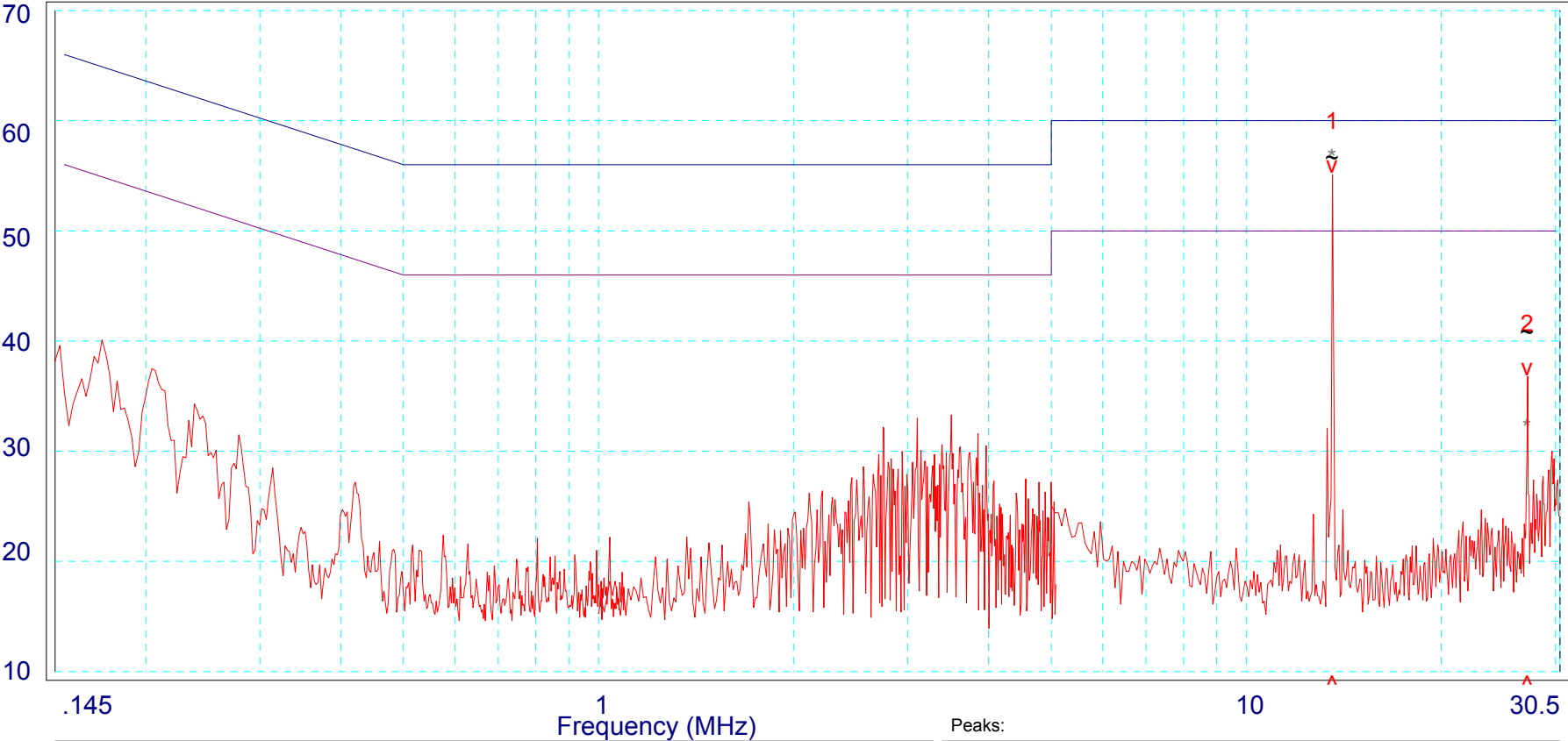
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FCC Class B
Conducted Emissions (dBuV)

Job No:T40452

Test Date: 3/05/04

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GRAPH No. 2



ERG Transit Systems
Model No.: MCR200 Serial No.: 0318111546
Contactless Smart Card Reader Tested at 120VAC, 60Hz
Used Toshiba AC Adaptor, Model No.: PA3083U-1ACA

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 74
Generic file for any test.
t:L0111204 c1:C0020904 c2:NONE p:NONE a:L0100305
Site ID: Syd Room#2,16/6 Gladstone Rd. Castle Hill, NSW
Test Officer:Gerald Gidah

Source:
T40452C1 4 5 6

Melbourne- 57 Assembly Drv Tullamarine, 3043, Vic, Australia Ph+(613) 9335 3333 Fax+(613) 9338 9260
Sydney---- 16,6 Gladstone Rd Castle Hill, 2154, NSW, Australia Ph+(612) 9899 4599 Fax+(612) 9899 4019

Peaks:								
No	Freq (MHz)	Peak (dBuV)	Qp Val	FCCN_BQP (dBuV)	dL1 (dB)	Av Val	FCCN_BAV (dBuV)	dL2 (dB)
1	13.56	55.1	55.8	60.0	-4.2	55.8	50.0	5.8
2	27.13	36.8	40.0	60.0	-20.0	31.3	50.0	-18.7

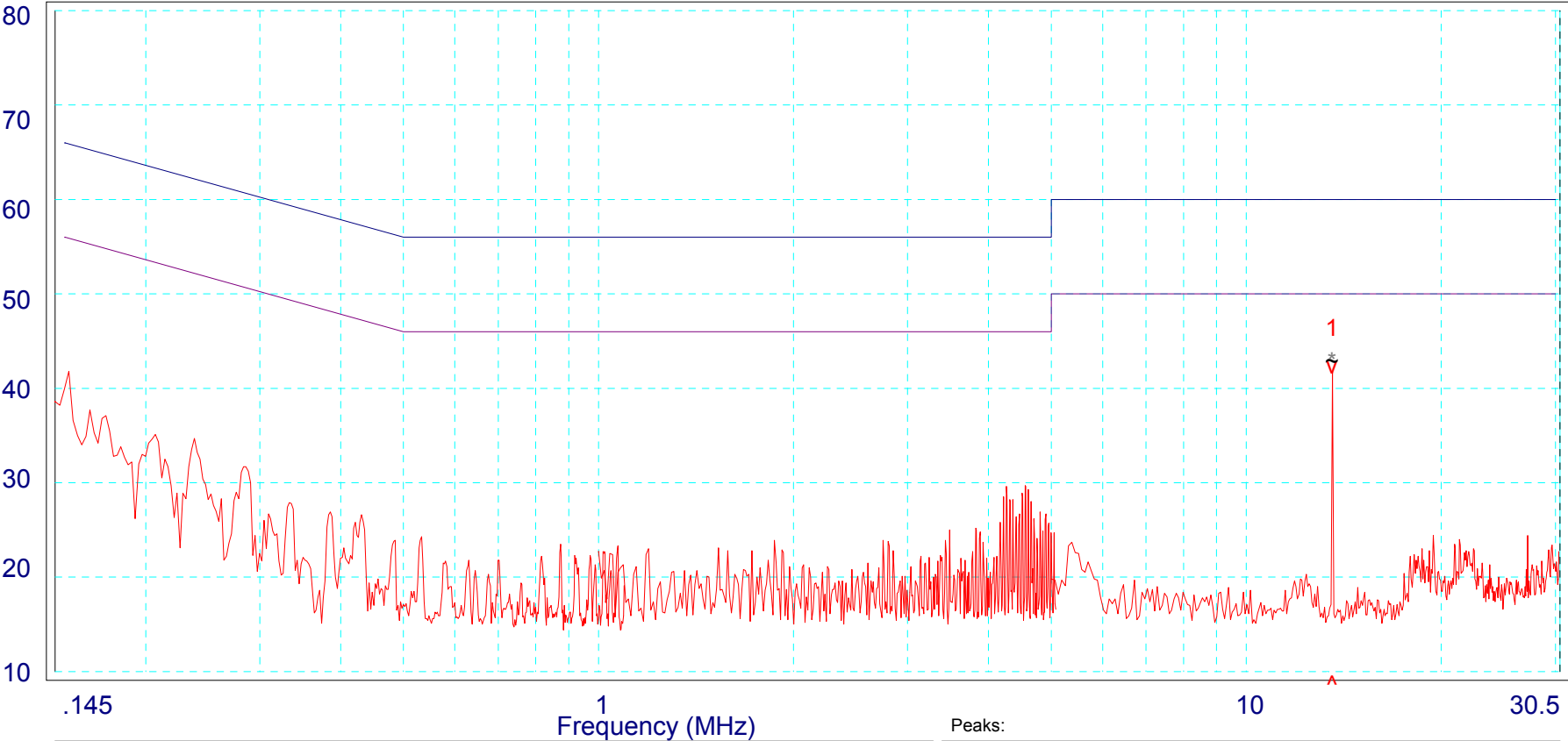
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FCC Class B
Conducted Emissions (dBuV)

Job No:T40452

Test Date: 29-07-04

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GRAPH No. 7



ERG Transit Systems
Contactless Smart Card Reader
Model No.: MCR200 Serial No.: 0318111546
Tx Output connected to 1kohm Load

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 74

Source:
t:L0110705 c1:C0020904 c2:NONE p:NONE a:L0100305
Site ID: Syd Room#2,16/6 Gladstone Rd. Castle Hill, NSW
Test Officer:Kumar Thambiah

Melbourne- 57 Assembly Drv Tullamarine, 3043, Vic, Australia Ph+(613) 9335 3333 Fax+(613) 9338 9260
Sydney---- 16,6 Gladstone Rd Castle Hill, 2154, NSW, Australia Ph+(612) 9899 4599 Fax+(612) 9899 4019

Peaks:								
No	Freq (MHz)	Peak (dBuV)	Qp Val	FCCN_BQP (dBuV)	dL1 (dB)	Av Val (dBuV)	FCCN_BAV (dBuV)	dL2 (dB)
1	13.56	41.8	42.3	60.0	-17.7	42.3	50.0	-7.7

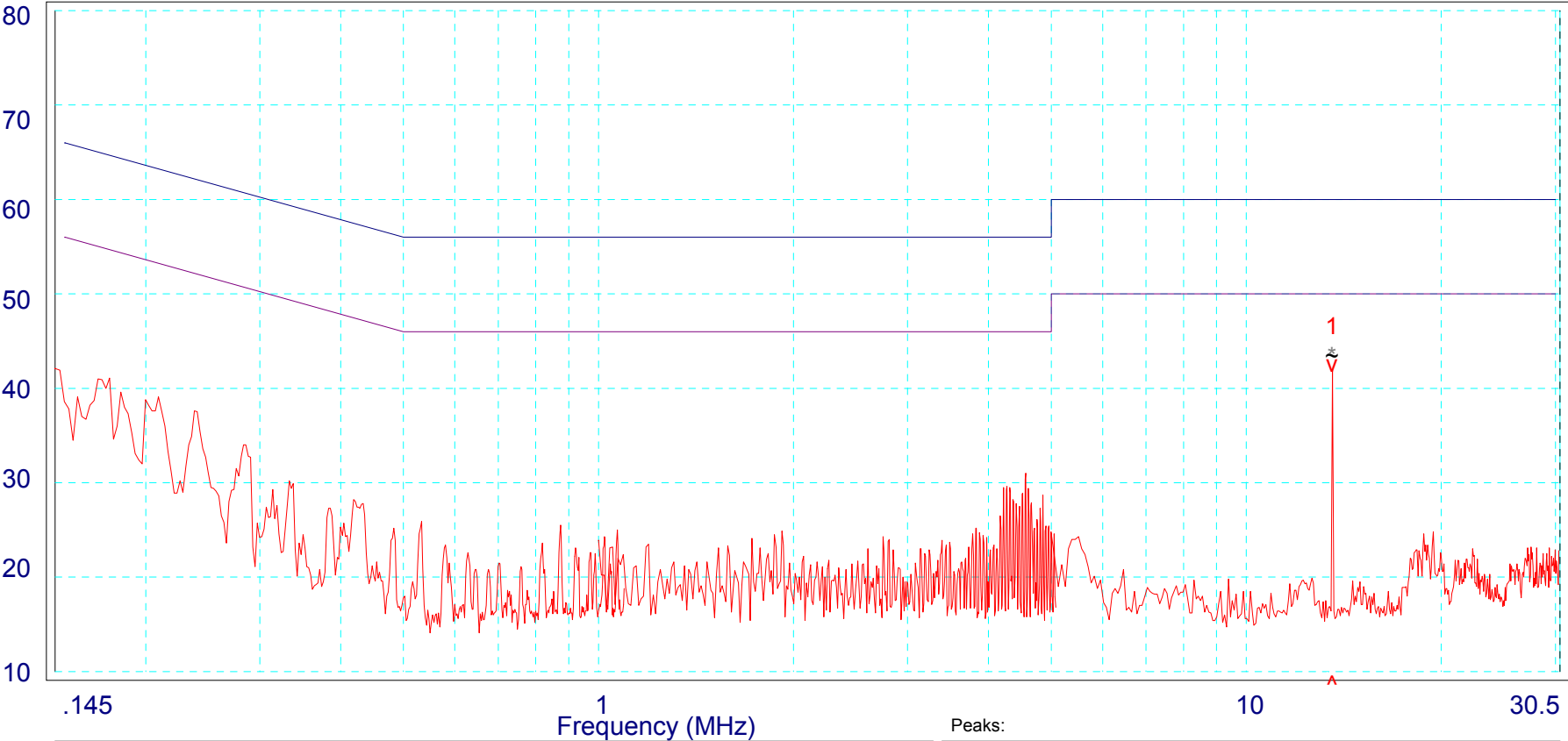
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FCC Class B
Conducted Emissions (dBuV)

Job No:T40452

Test Date: 29-07-04

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GRAPH No. 8



ERG Transit Systems
Contactless Smart Card Reader
Model No.: MCR200 Serial No.: 0318111546
Tx Output connected to 1kohm Load

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 74

Source:
t:L0110705 c1:C0020904 c2:NONE p:NONE a:L0100305
Site ID: Syd Room#2,16/6 Gladstone Rd. Castle Hill, NSW
Test Officer:Kumar Thambiah

Melbourne- 57 Assembly Drv Tullamarine, 3043, Vic, Australia Ph+(613) 9335 3333 Fax+(613) 9338 9260
Sydney---- 16,6 Gladstone Rd Castle Hill, 2154, NSW, Australia Ph+(612) 9899 4599 Fax+(612) 9899 4019

Peaks:

No	Freq (MHz)	Peak (dBuV)	Qp Val	FCCN_BQP (dBuV)	dL1 (dB)	Av Val (dBuV)	FCCN_BAV (dBuV)	dL2 (dB)
1	13.56	42.0	42.8	60.0	-17.2	42.8	50.0	-7.2

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FCC Class B
Radiated Emissions (dBuV)
= Ambient

Job No:T40452

Test Date: 05-05-04

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GRAPH No. 3



ERG Transit Systems
Contactless Smart Card Reader
Model: MCR200

Limits:
FCC_loop_3mFcc Pt15 Subpart C Section 15.209(a) 3Metre Limits

Legend:
— Ambients
— Emissions

Ver 5.5 Build 70
Colo Radiated Test Setup Active Loop
t:A0081204E c1:C0200904 c2:NONE p:NONE a:NONE
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW
Test Officer: Bruce Holdsworth

Melbourne- 57 Assembly Drv Tullamarine, 3043, Vic, Australia Ph+(613) 9335 3333 Fax+(613) 9338 9260
Sydney---- 16,6 Gladstone Rd Castle Hill, 2154, NSW, Australia Ph+(612) 9899 4599 Fax+(612) 9899 4019

Peaks:

No	Freq (MHz)	Peak (dBuV)	Qp Val	FCC_loop_3dL1 (dBuV)	3dL1 (dB)
1	27.12	36.1	35.4	69.5	-34.1
2	13.56	73.8	73.8	124.0	-50.2

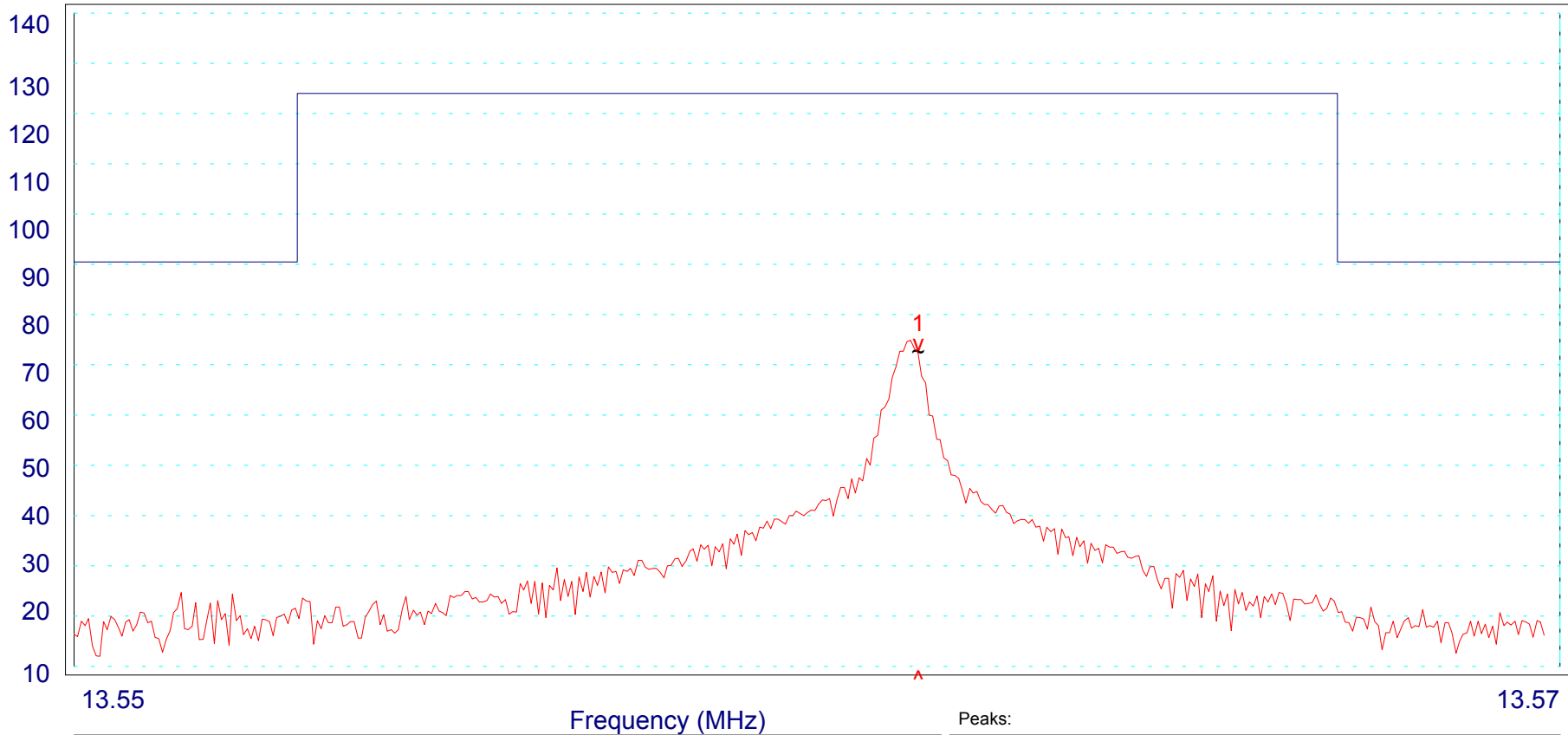
EMC Technologies Pty. Ltd. - Global Product Certification

FCC Class B
Radiated Emissions (dBuV)
= Ambient

Job No:T40452

Test Date: 05-05-04

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GRAPH No. 4



ERG Transit Systems
Contactless Smart Card Reader
Model: MCR200

Peaks:					
No	Freq (MHz)	Peak (dBuV)	Qp Val	FCC_loop_3dB	L1 (dB)
1	13.56	74.9	73.2	124.0	-50.8

Limits:
FCC_loop_3mFcc Pt15 Subpart C Section 15.209(a) 3Metre Limits

Legend:
Emissions

Ver 5.5 Build 70
Colo Radiated Test Setup Active Loop
t:A0081204E c1:C0200904 c2:NONE p:NONE a:NONE
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW
Test Officer: Bruce Holdsworth

Source:
T40452r1 4

Melbourne- 57 Assembly Drv Tullamarine, 3043, Vic, Australia Ph+(613) 9335 3333 Fax+(613) 9338 9260
Sydney---- 16,6 Gladstone Rd Castle Hill, 2154, NSW, Australia Ph+(612) 9899 4599 Fax+(612) 9899 4019

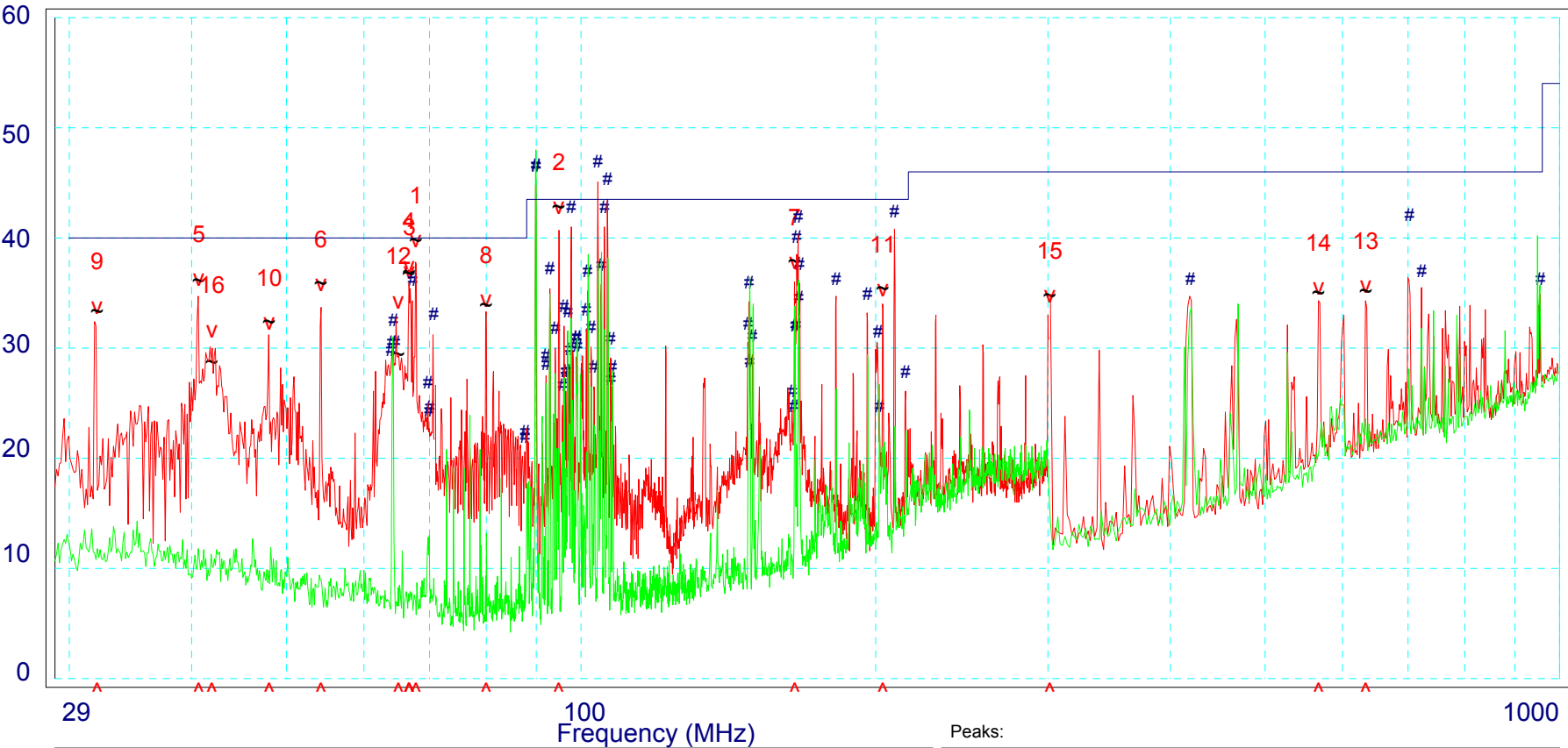
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FCC Class B
Radiated Emissions (dBuV/m)
= Ambient

Job No:T40452

Test Date: 05-05-04

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GRAPH No. 5



ERG Transit Systems
Contactless Smart Card Reader
Model No.: MCR200 Serial No.: 0318111546

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

Legend:
— Vertical Ambients
— Vertical Emissions

Ver 5.5 Build 74
Colo Radiated Test Setup
t:A0690305 c1:C0200904 c2:NONE p:A0961004A a:NONE
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW
Test Officer: Bruce Holdsworth

Source:
V Amb2704 1 2 3 4 5 11
T40452r2 1 2 3 4 5 11

Melbourne- 57 Assembly Drv Tullamarine, 3043, Vic, Australia Ph+(613) 9335 3333 Fax+(613) 9338 9260
Sydney---- 16,6 Gladstone Rd Castle Hill, 2154, NSW, Australia Ph+(612) 9899 4599 Fax+(612) 9899 4019

Peaks:					
No	Freq (MHz)	Peak (dBuV/m)	Qp Val	FCC-B3 (dBuV/m)	dL1 (dB)
1	67.79	39.0	39.0	40.0	-1.0
2	94.90	42.1	42.0	43.5	-1.5
3	66.76	36.2	36.1	40.0	-3.9
4	66.72	36.7	36.0	40.0	-4.0
5	40.68	35.5	35.3	40.0	-4.7
6	54.23	35.1	35.1	40.0	-4.9
7	165.32	37.1	37.1	43.5	-6.4
8	79.98	33.6	33.1	40.0	-6.9
9	32.02	33.0	32.5	40.0	-7.5
10	48.00	31.6	31.6	40.0	-8.4
11	203.40	34.6	34.6	43.5	-8.9
12	65.06	33.5	28.6	40.0	-11.4
13	633.70	34.9	34.4	46.0	-11.6
14	566.96	34.8	34.2	46.0	-11.8
15	301.22	34.0	34.0	46.0	-12.0
16	41.95	30.9	27.9	40.0	-12.1

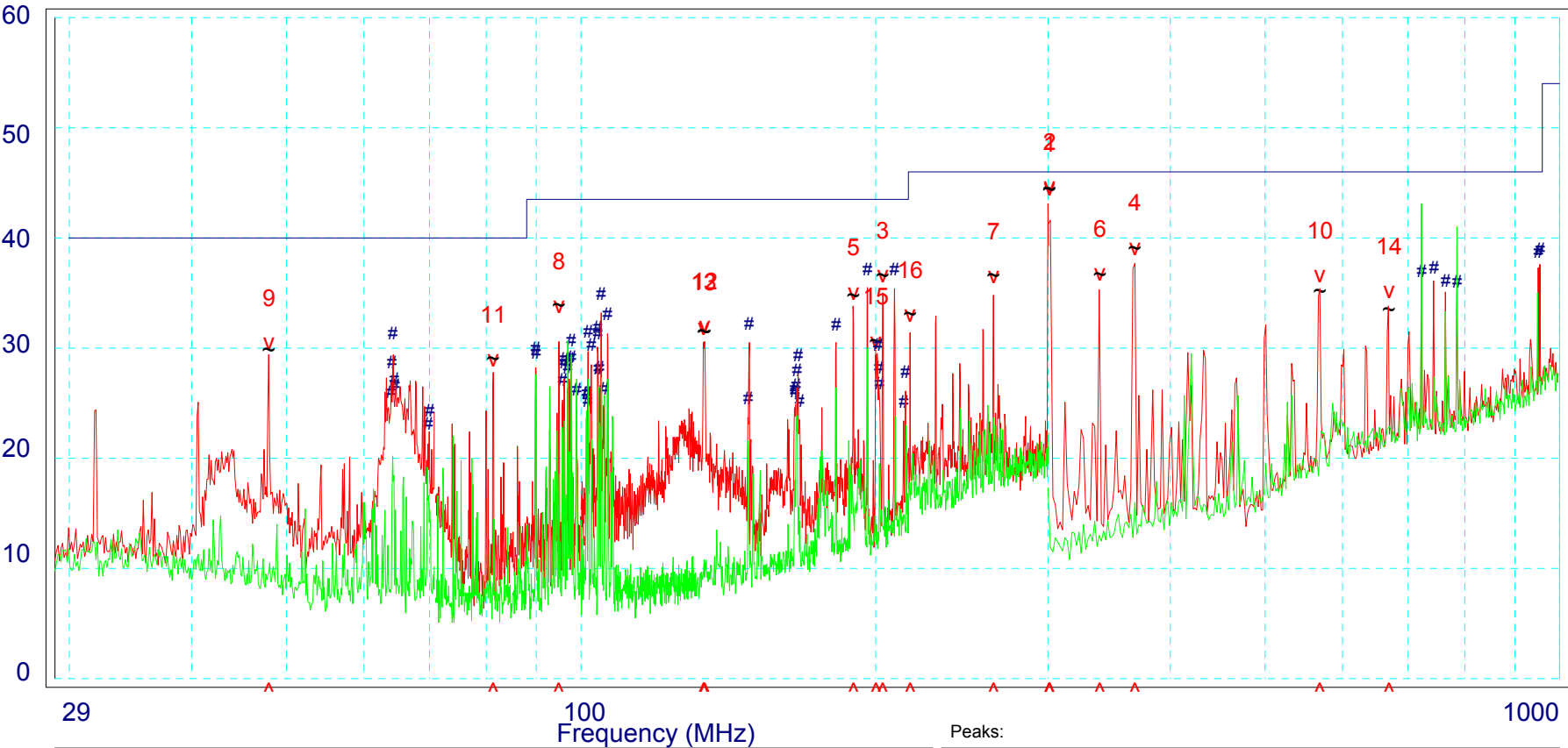
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FCC Class B
Radiated Emissions (dBuV/m)
= Ambient

Job No:T40452

Test Date: 05-05-04

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GRAPH No. 6



ERG Transit Systems
Contactless Smart Card Reader
Model No.: MCR200 Serial No.: 0318111546

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

Legend:
Horizontal Ambients
Horizontal Emissions

Ver 5.5 Build 74
Colo Radiated Test Setup
t:A0690305 c1:C0200904 c2:NONE p:A0961004A a:NONE
Site ID: OATS#1,1247 Upper Colo Rd. Colo, NSW
Test Officer: Bruce Holdsworth

Source:
V Amb2704 6 7 8 9 10 12
T40452r2 6 7 8 9 10 12

Melbourne- 57 Assembly Drv Tullamarine, 3043, Vic, Australia Ph+(613) 9335 3333 Fax+(613) 9338 9260
Sydney---- 16,6 Gladstone Rd Castle Hill, 2154, NSW, Australia Ph+(612) 9899 4599 Fax+(612) 9899 4019

Peaks:					
No	Freq (MHz)	Peak (dBuV/m)	Qp Val	FCC-B3 (dBuV/m)	dL1 (dB)
1	301.18	43.7	43.7	46.0	-2.3
2	301.19	43.9	43.6	46.0	-2.4
3	203.39	35.9	35.8	43.5	-7.7
4	368.14	38.4	38.3	46.0	-7.7
5	189.88	34.3	34.0	43.5	-9.5
6	339.00	36.0	35.9	46.0	-10.1
7	264.04	35.8	35.8	46.0	-10.2
8	94.91	33.1	33.1	43.5	-10.4
9	47.98	29.8	29.0	40.0	-11.0
10	568.96	35.9	34.4	46.0	-11.6
11	81.34	28.3	28.2	40.0	-11.8
12	133.81	31.2	30.7	43.5	-12.8
13	133.43	31.1	30.7	43.5	-12.8
14	669.44	34.5	32.7	46.0	-13.3
15	200.14	29.9	29.8	43.5	-13.7
16	216.96	32.3	32.3	46.0	-13.7