



Global Product Certification  
EMC-EMF Safety Approvals

**EMC Technologies Pty Ltd**

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**[www.emctech.com.au](http://www.emctech.com.au)**

## APPENDIX H OF TEST REPORT T140704\_F

### GRAPHS OF EMI MEASUREMENT

**FCC ID:** 2ACXQ-MDR-3021AT  
**Manufacturer:** Sato Vicinity Pty Ltd  
**Test Sample:** RFID read-write reader  
**Model Number:** MDR-3021AT  
**Serial Number:** Production Prototype

**Date:** 8<sup>th</sup> September 2014

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

**Graph 1:** Active Line 0.145 to 30.5 MHz

**Graph 2:** Neutral Line 0.145 to 30.5 MHz

**Antenna Terminated**

**Graph 3:** Active Line 0.145 to 30.5 MHz

**Graph 4:** Neutral Line 0.145 to 30.5 MHz

**Graph 5:** Carrier 13 MHz to 14 MHz

**RADIATED EMI**

**Graph 6:** Magnetic Loop Parallel Emissions 9 kHz to 30 MHz

**Graph 7:** Magnetic Loop Perpendic. Emissions 9 kHz to 30 MHz

**Graph 8:** Vertical Antenna Polarisation 29 to 1000 MHz

**Graph 9:** Horizontal Antenna Polarisation 29 to 1000 MHz

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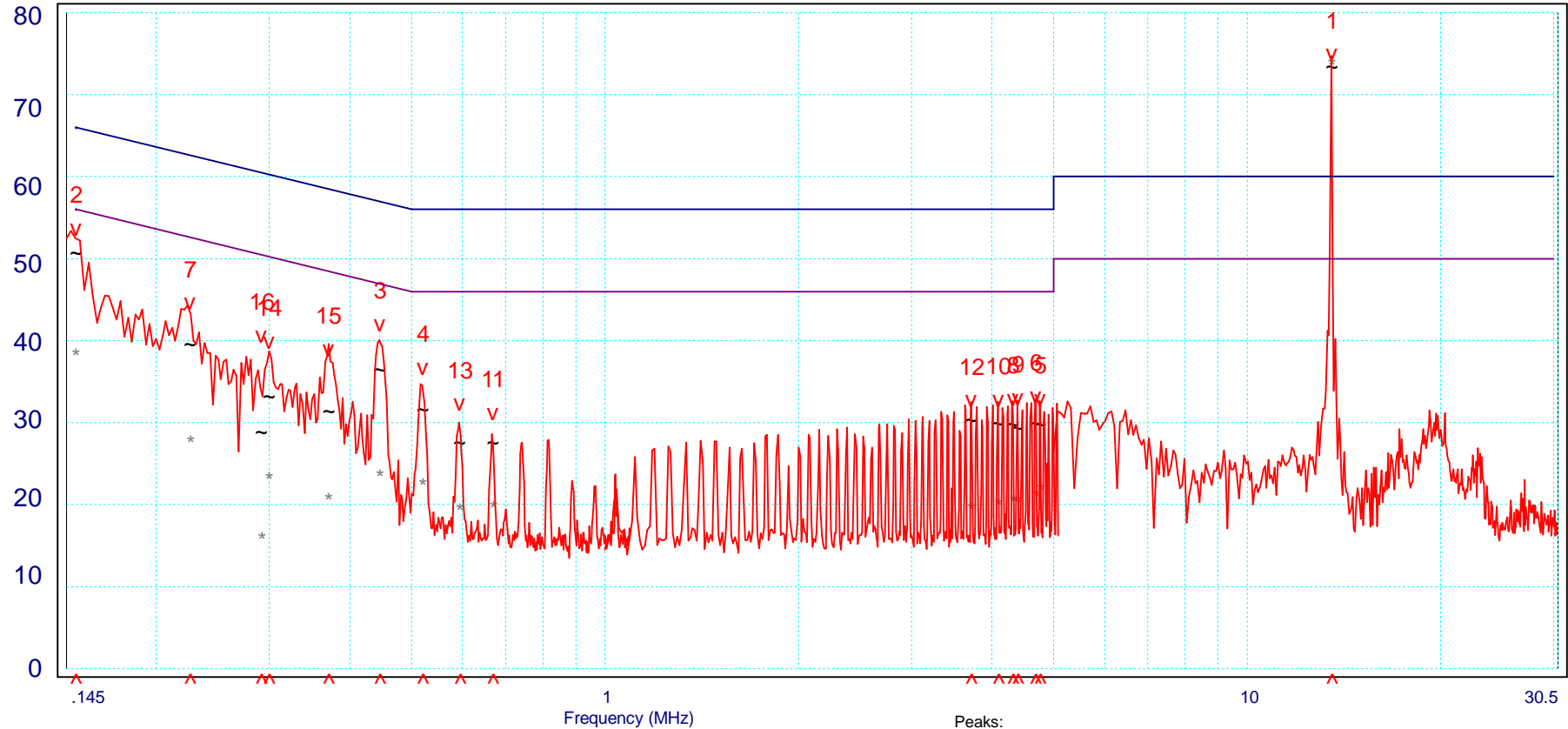
FCC Class B  
Conducted Emissions (dBuV)

Job No:T140704

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Test Date: 05/08/2014

GRAPH No. 1



Sato Vicinity Pty. Ltd.  
RFID Read/Write Reader  
Model: MDR-3021AT Serial: Pre-Production  
Supply Voltage: 120V 60Hz Antenna Connected

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  
Room 1  
t:L0110116 c1:C0200415 c2:NONE p:NONE a:L0030714  
Site ID: Syd Room#1,3/87 Station Rd, Seven Hills, NSW  
Test Officer: Jason Cameron  
Source:  
T140704c1 , 2 , 3

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	74.7	73.2	60.0	13.2	73.0	50.0	23.0
2	0.150	53.4	50.6	66.0	-15.4	37.6	56.0	-18.4
3	0.447	41.8	36.3	56.9	-20.6	22.8	46.9	-24.1
4	0.520	36.4	31.4	56.0	-24.6	21.8	46.0	-24.2
5	4.770	32.6	29.7	56.0	-26.3	21.1	46.0	-24.9
6	4.693	32.9	29.7	56.0	-26.3	20.4	46.0	-25.6
7	0.226	44.3	39.4	62.6	-23.2	26.9	52.6	-25.7
8	4.323	32.6	29.6	56.0	-26.4	19.7	46.0	-26.3
9	4.397	32.7	29.1	56.0	-26.9	19.6	46.0	-26.4
10	4.100	32.5	29.8	56.0	-26.2	19.3	46.0	-26.7
11	0.670	30.9	27.4	56.0	-28.6	19.0	46.0	-27.0
12	3.725	32.5	30.2	56.0	-25.8	18.8	46.0	-27.2
13	0.595	32.0	27.3	56.0	-28.7	18.7	46.0	-27.3
14	0.300	39.6	33.0	60.2	-27.2	22.5	50.2	-27.7
15	0.371	38.7	31.2	58.5	-27.3	20.0	48.5	-28.5
16	0.292	40.3	28.6	60.5	-31.9	15.2	50.5	-35.3

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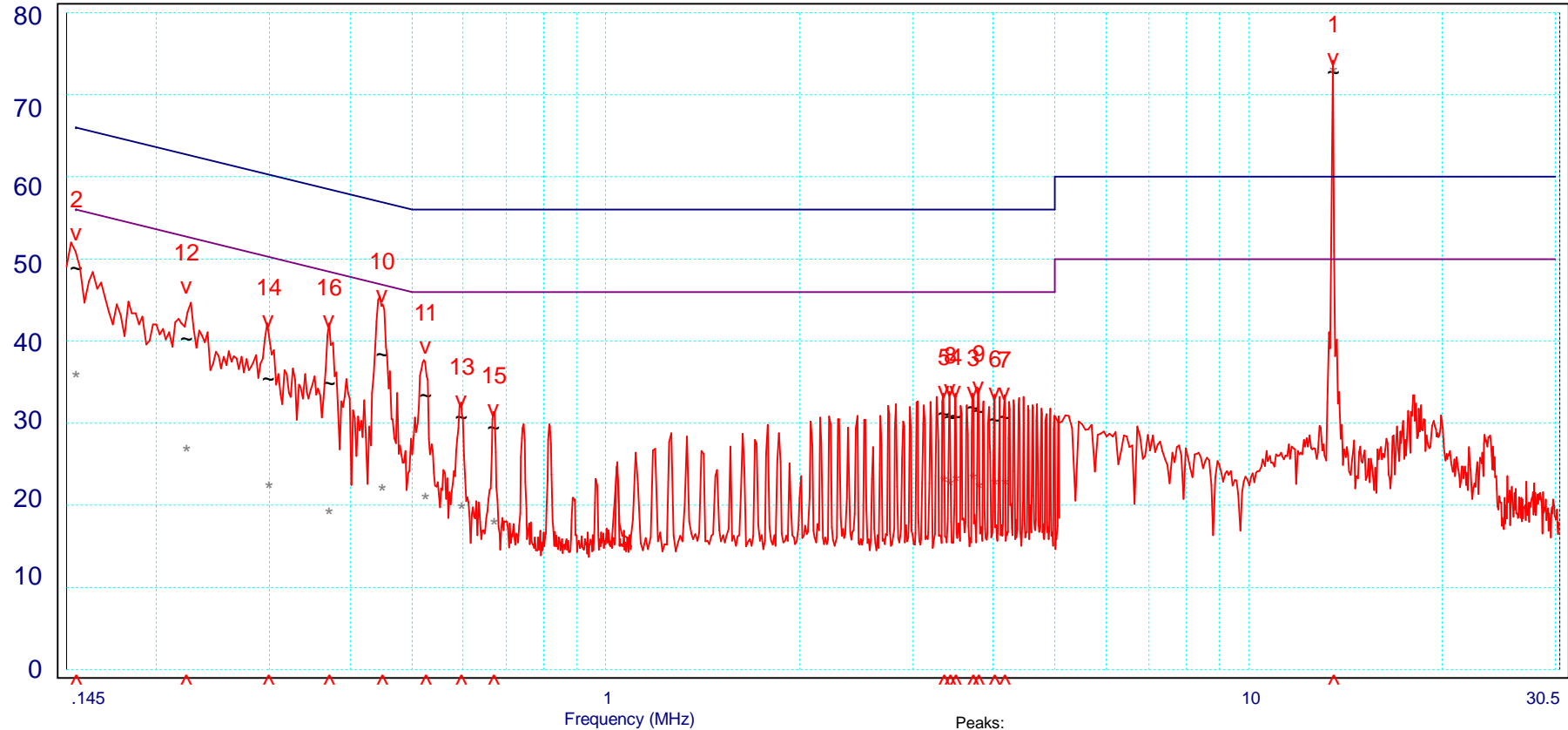
FCC Class B  
Conducted Emissions (dBuV)

Job No:T140704

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Test Date: 05/08/2014

GRAPH No. 2



Sato Vicinity Pty. Ltd.  
RFID Read/Write Reader  
Model: MDR-3021AT Serial: Pre-Production  
Supply Voltage: 120V 60Hz Antenna Connected

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  
Room 1  
t:L0110116 c1:C0200415 c2:NONE p:NONE a:L0030714  
Site ID: Syd Room#1,3/87 Station Rd, Seven Hills, NSW  
Test Officer: Jason Cameron

EMC Technologies (Sydney) 3/87 Station Rd, Seven Hills, NSW, 2147, NSW, Australia  
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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	13.56	74.2	72.6	60.0	12.6	72.0	50.0	22.0
2	0.150	52.9	48.7	66.0	-17.3	34.9	56.0	-21.1
3	3.730	33.6	31.7	56.0	-24.3	22.5	46.0	-23.5
4	3.508	33.6	30.7	56.0	-25.3	22.3	46.0	-23.7
5	3.358	33.6	31.0	56.0	-25.0	22.2	46.0	-23.8
6	4.031	33.5	30.3	56.0	-25.7	21.9	46.0	-24.1
7	4.181	33.4	30.6	56.0	-25.4	21.9	46.0	-24.1
8	3.434	33.8	30.5	56.0	-25.5	21.8	46.0	-24.2
9	3.806	34.2	31.3	56.0	-24.7	21.4	46.0	-24.6
10	0.449	45.4	38.2	56.9	-18.7	21.1	46.9	-25.8
11	0.525	39.1	33.3	56.0	-22.7	20.1	46.0	-25.9
12	0.223	46.4	40.1	62.7	-22.6	25.9	52.7	-26.8
13	0.597	32.5	30.5	56.0	-25.5	18.9	46.0	-27.1
14	0.299	42.2	35.3	60.3	-25.0	21.5	50.3	-28.8
15	0.670	31.4	29.3	56.0	-26.7	17.0	46.0	-29.0
16	0.372	42.2	34.7	58.5	-23.8	18.3	48.5	-30.2

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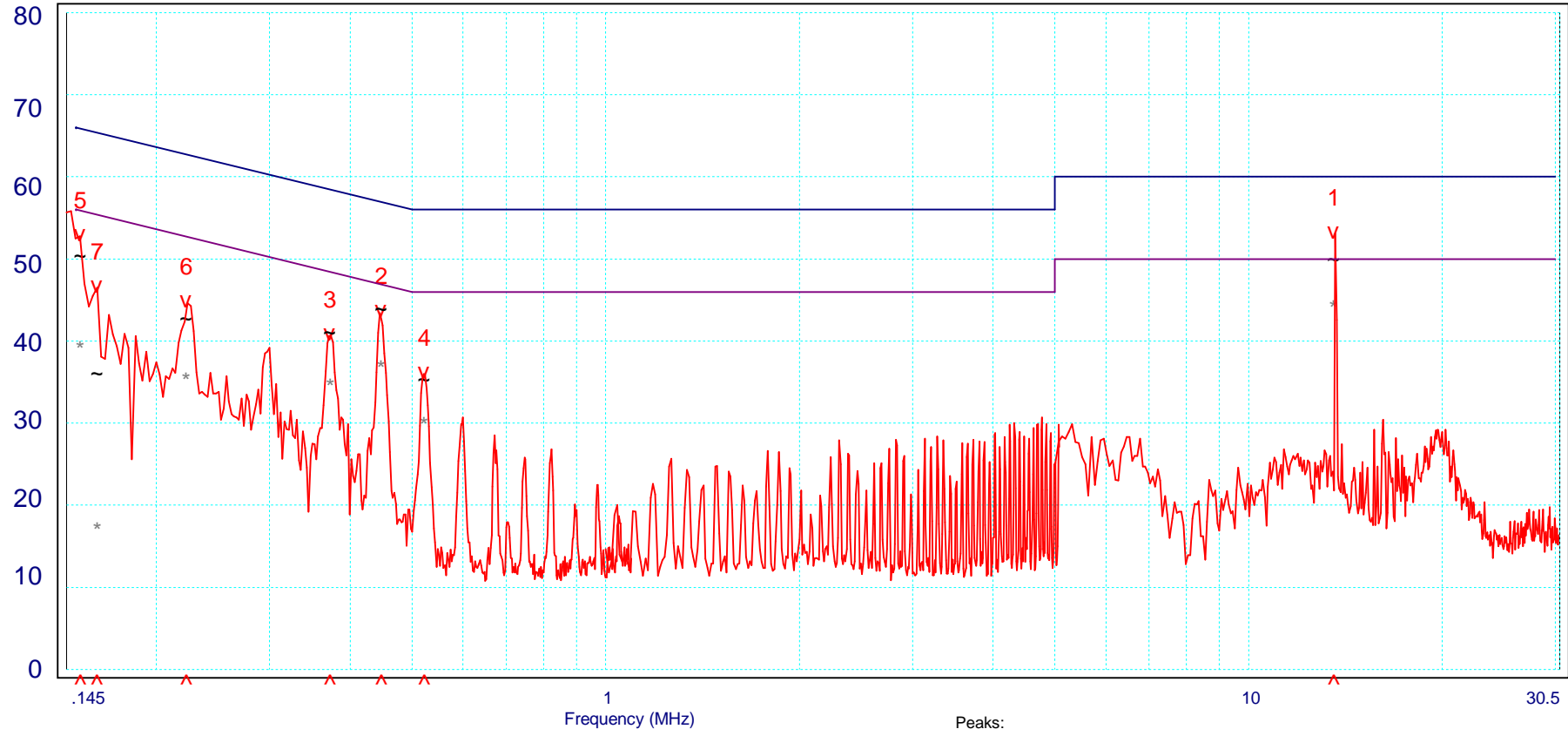
FCC Class B  
Conducted Emissions (dBuV)

Job No:T140704

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Test Date: 11/08/2014

GRAPH No. 3



Sato Vicinity Pty. Ltd.  
RFID Read/Write Reader  
Model: MDR-3021AT Serial: Pre-Production  
Supply Voltage: 120V 60Hz Antenna 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 160  
Generic file for any test.  
t:L0110116 c1:C0030615 c2:NONE p:NONE a:L0100714  
Site ID: Syd Room#2,3/87 Station Rd, Seven Hills, NSW  
Test Officer: Joel Mulig  
Source:  
140704C11 , 2 , 3

EMC Technologies (Sydney) 3/87 Station Rd, Seven Hills, NSW, 2147, NSW, Australia  
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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	13.56	53.1	49.8	60.0	-10.2	43.5	50.0	-6.5
2	0.447	43.5	43.8	56.9	-13.1	36.2	46.9	-10.7
3	0.372	40.7	40.8	58.4	-17.6	34.0	48.4	-14.4
4	0.521	36.0	35.1	56.0	-20.9	29.3	46.0	-16.7
5	0.152	52.8	50.2	65.9	-15.7	38.5	55.9	-17.4
6	0.222	44.6	42.5	62.7	-20.2	34.7	52.7	-18.0
7	0.162	46.5	35.8	65.4	-29.6	16.5	55.4	-38.9

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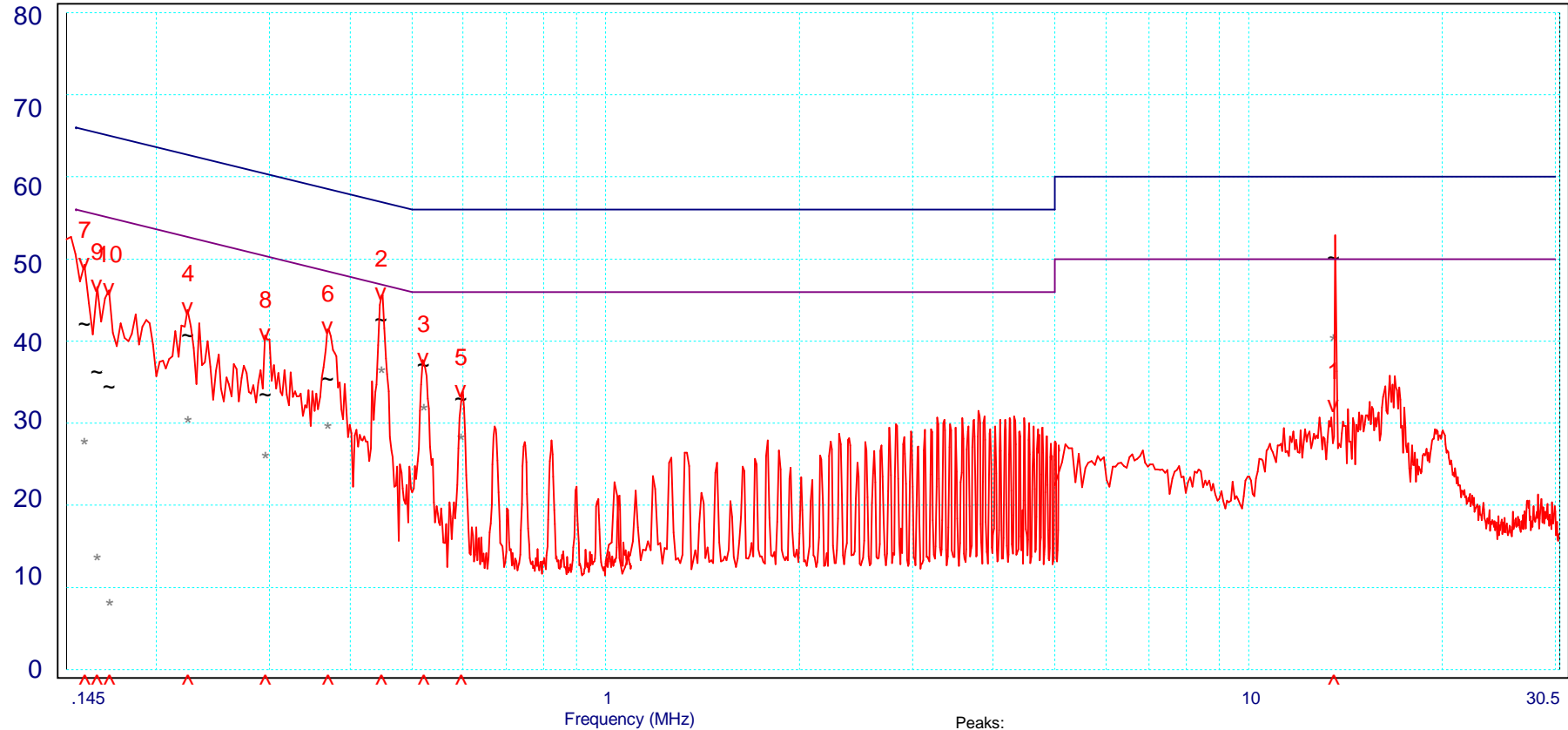
FCC Class B  
Conducted Emissions (dBuV)

Job No:T140704

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Test Date: 11/08/2014

GRAPH No. 4



Sato Vicinity Pty. Ltd.  
RFID Read/Write Reader  
Model: MDR-3021AT Serial: Pre-Production  
Supply Voltage: 120V 60Hz Antenna 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 160  
Generic file for any test.  
t:L0110116 c1:C0030615 c2:NONE p:NONE a:L0100714  
Site ID: Syd Room#2,3/87 Station Rd, Seven Hills, NSW  
Test Officer: Joel Mulig  
Source:  
140704C14 , 5 , 6

EMC Technologies (Sydney) 3/87 Station Rd, Seven Hills, NSW, 2147, NSW, Australia  
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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	13.56	32.0	49.9	60.0	-10.1	39.4	50.0	-10.6
2	0.448	45.6	42.5	56.9	-14.4	35.5	46.9	-11.4
3	0.521	37.7	36.9	56.0	-19.1	30.9	46.0	-15.1
4	0.224	43.8	40.6	62.7	-22.1	29.4	52.7	-23.3
5	0.596	33.7	32.8	56.0	-23.2	27.3	46.0	-18.7
6	0.369	41.4	35.2	58.5	-23.3	28.6	48.5	-19.9
7	0.155	49.2	41.9	65.7	-23.8	26.8	55.7	-28.9
8	0.295	40.7	33.3	60.4	-27.1	25.1	50.4	-25.3
9	0.162	46.5	36.1	65.4	-29.3	12.6	55.4	-42.8
10	0.169	46.2	34.3	65.0	-30.7	7.1	55.0	-47.9

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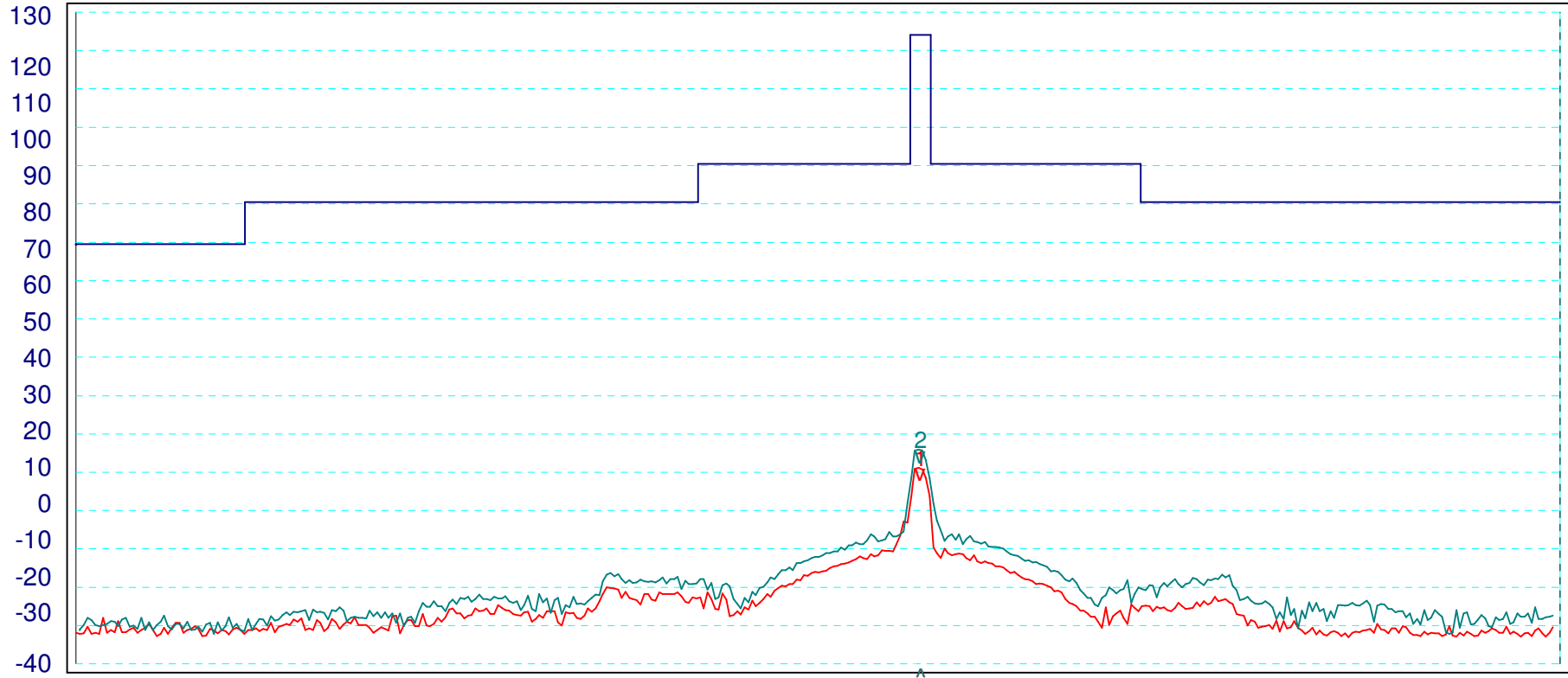
FCC Class B  
 Radiated H-Field Emissions dBuA/m  
 # = Ambient

Job No:T140704

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Test Date: 05/08/2014

GRAPH No. 5



13

Frequency (MHz)

14

Sato Vicinity Pty. Ltd.  
 RFID Read/Write Reader  
 Model: MDR-3021AT Serial: Pre-Production  
 Supply Voltage: 120V 60Hz

Peaks:

No	Freq (MHz)	Peak	FCC-15225	dL1 (dB)
1	13.56	11.2	124.0	-112.8
2	13.56	15.8	124.0	-108.2

Limits: FCC-15225 FCC Part 15.225 3 Metre Limits 9kHz to 30MHz  
 Legend:  
 — Perpendicular Emissions  
 — Parallel Emissions

Ver 5.5 Build 160  
 Radiated setup for Rm 3 with Loop Antenna  
 t:A0081115M c1:C0280714 c2:NONE p:NONE a:NONE  
 Site ID: Syd Room#3,3/87 Station Rd, Seven Hills, NSW  
 Test Officer: Jason Cameron

Source:  
 T140704R16  
 T140704R14

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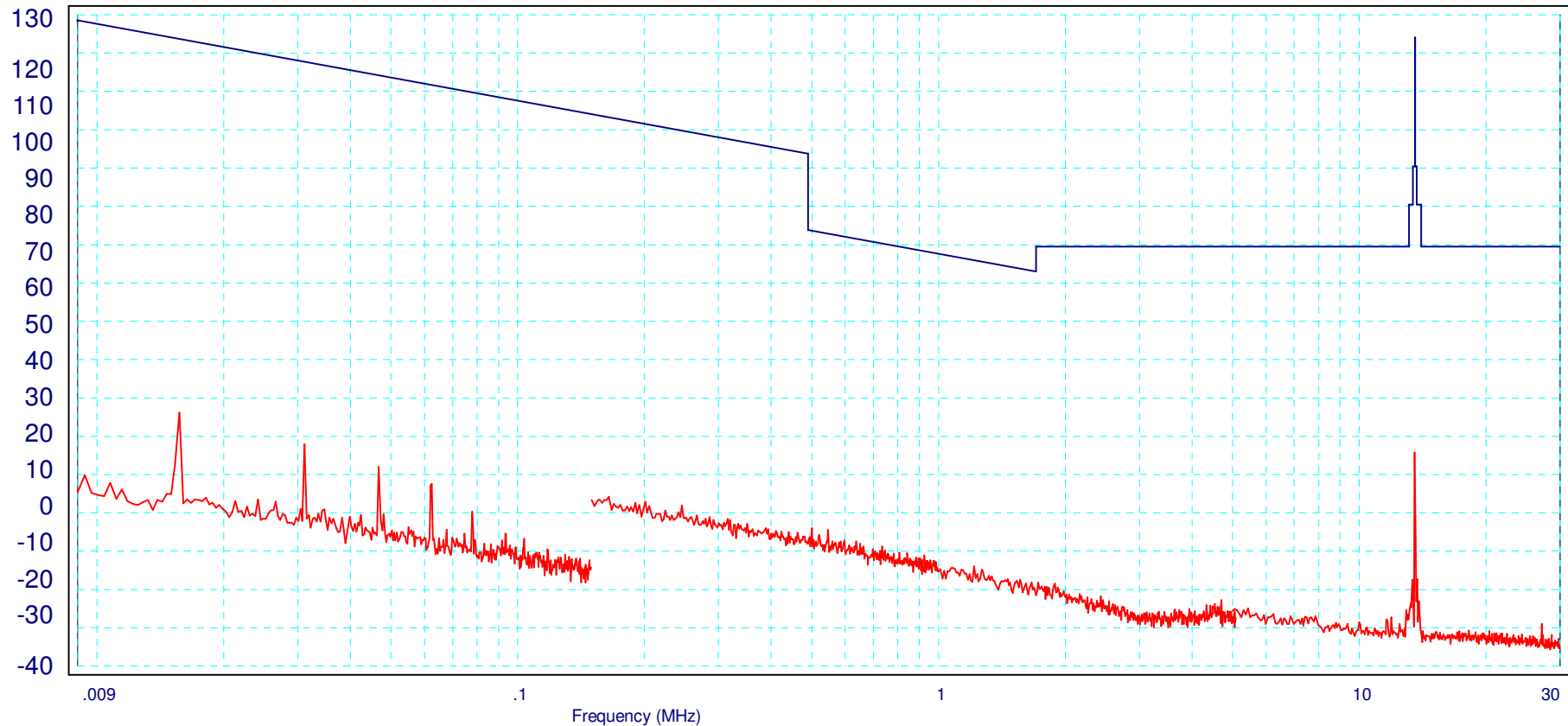
FCC Class B  
 Radiated H-Field Emissions dBuA/m  
 # = Ambient

Job No:T140704

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Test Date: 05/08/2014

GRAPH No. 6

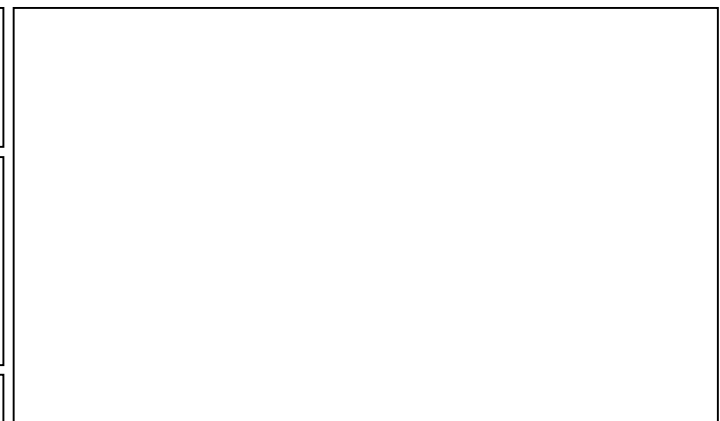


Sato Vicinity Pty. Ltd.  
 RFID Read/Write Reader  
 Model: MDR-3021AT Serial: Pre-Production  
 Supply Voltage: 120V 60Hz

Limits: FCC-15225    FCC Part 15.225 3 Metre Limits 9kHz to 30MHz  
 Legend: — Parallel Emissions

Ver 5.5 Build 160  
 Radiated setup for Rm 3 with Loop Antenna  
 t:A0081115M c1:C0280714 c2:NONE p:NONE a:NONE  
 Site ID: Syd Room#3,3/87 Station Rd, Seven Hills, NSW  
 Test Officer: Jason Cameron  
 Source: T140704R11, 12, 13, 15

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# EMC Technologies Pty. Ltd. - Global Product Certification

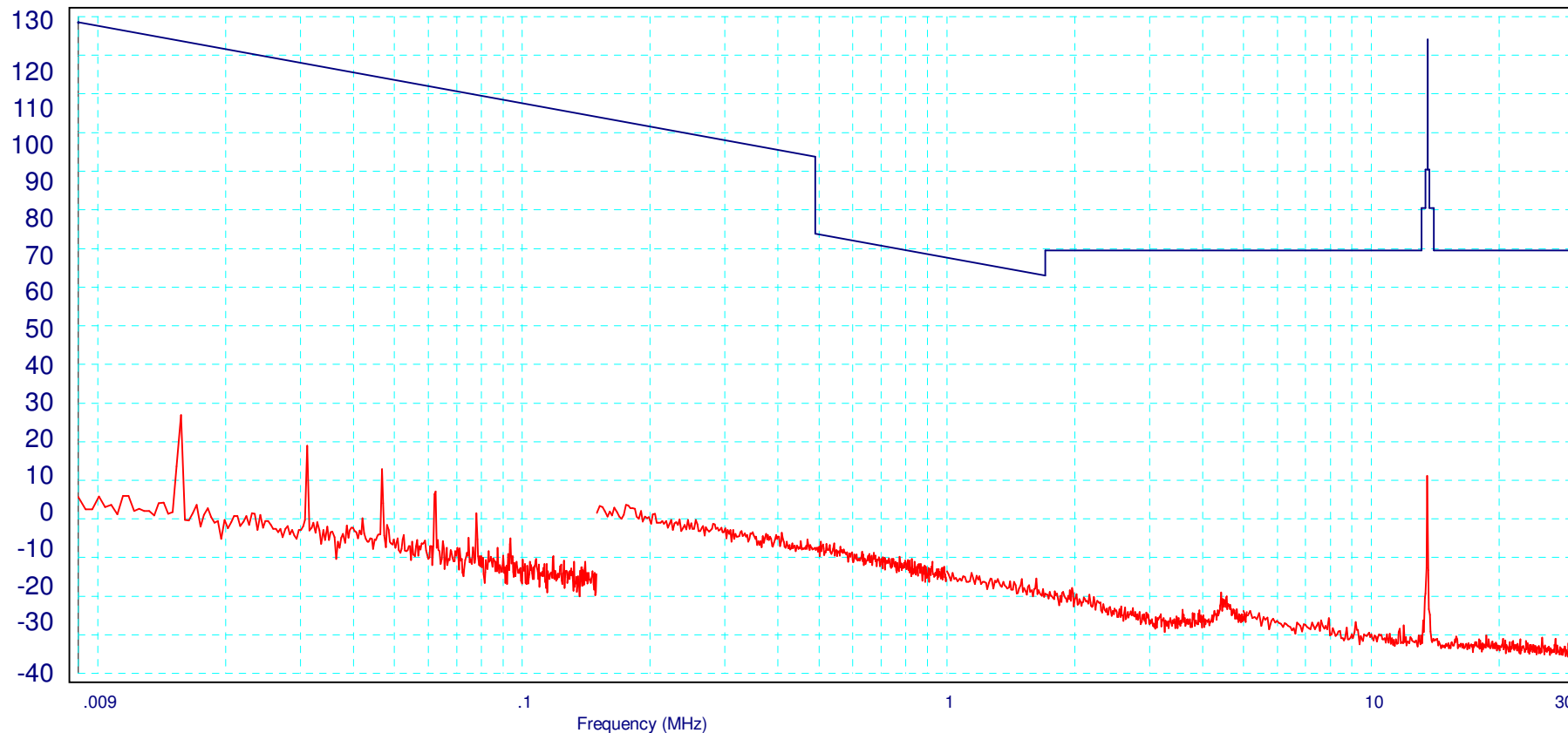
FCC Class B  
 Radiated H-Field Emissions dBuA/m  
 # = Ambient

Job No:T140704

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Test Date: 05/08/2014

GRAPH No. 7



Sato Vicinity Pty. Ltd.  
 RFID Read/Write Reader  
 Model: MDR-3021AT Serial: Pre-Production  
 Supply Voltage: 120V 60Hz

Limits: FCC-15225 FCC Part 15.225 3 Metre Limits 9kHz to 30MHz  
 Legend: — Perpendicular Emissions

Ver 5.5 Build 160  
 Radiated setup for Rm 3 with Loop Antenna  
 t:A0081115M c1:C0280714 c2:NONE p:NONE a:NONE  
 Site ID: Syd Room#3,3/87 Station Rd, Seven Hills, NSW  
 Test Officer: Jason Cameron  
 Source: T140704R17, 18, 19, 20

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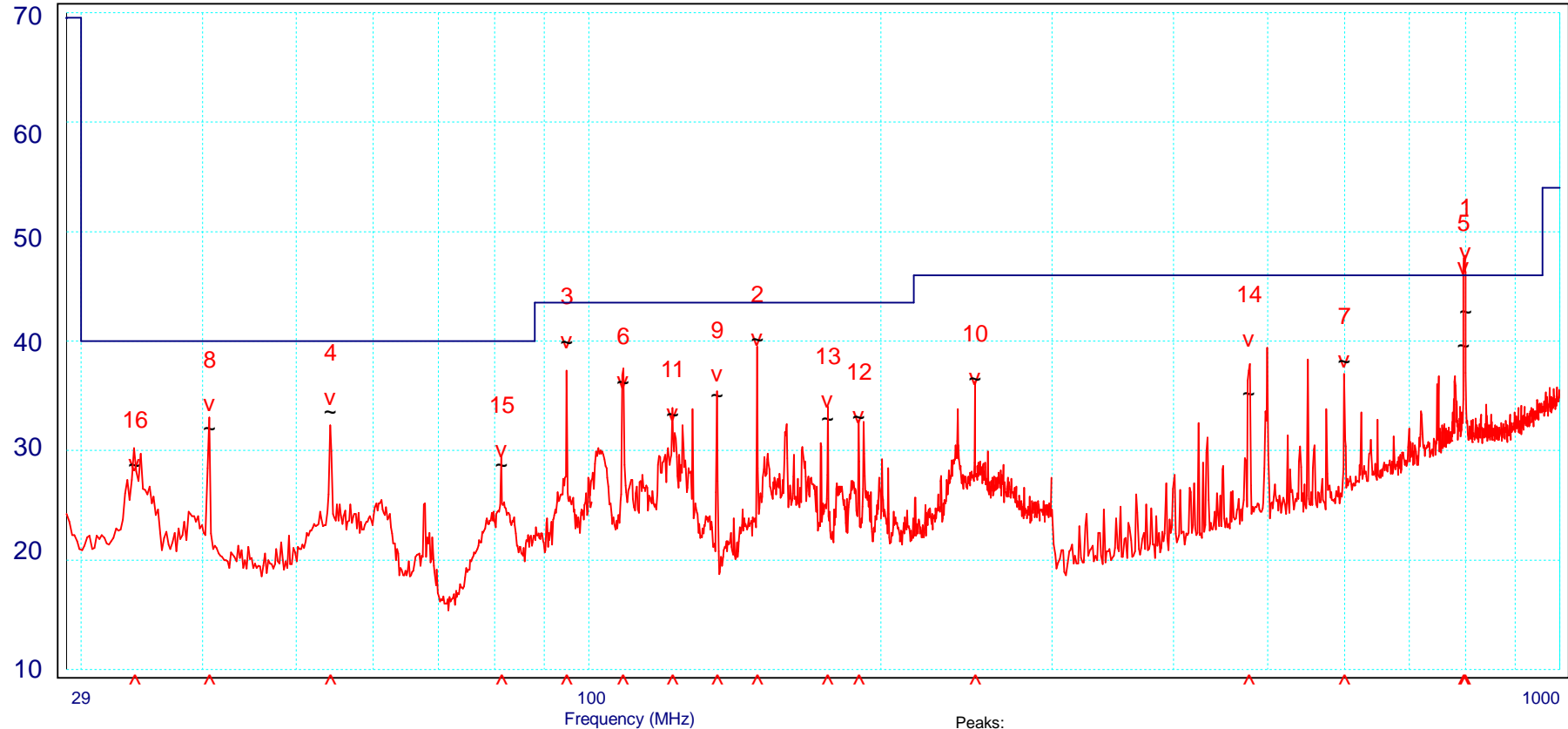
FCC Class B  
Radiated Emissions (dBuV/m)  
# = Ambient

Job No:T140704

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Test Date: 05/08/2014

GRAPH No. 8



Sato Vicinity Pty. Ltd.  
RFID Read/Write Reader  
Model: MDR-3021AT Serial: Pre-Production  
Supply Voltage: 120V 60Hz

Limits: FCC-B3      FCC CLASS B RAD 3M LIMITS  
Legend: — Vertical Emissions

Ver 5.5 Build 160  
Room 3  
t:A0030215 c1:C0280714 c2:NONE p:NONE a:NONE  
Site ID: Syd Room#3,3/87 Station Rd, Seven Hills, NSW  
Test Officer: Jason Cameron

Source: T140704r1 , 2 , 3 , 7 , 8

No	Freq (MHz)	Peak (dBuV/m)	QP Val	FCC-B3 (dBuV/m)	dL1 (dB)
1	799.80	47.4	42.0	46.0	-4.0
2	149.15	39.5	39.5	43.5	-4.0
3	94.92	39.3	39.3	43.5	-4.2
4	54.23	34.1	32.9	40.0	-7.1
5	796.00	46.0	38.9	46.0	-7.1
6	108.48	35.6	35.6	43.5	-7.9
7	600.00	37.5	37.5	46.0	-8.5
8	40.68	33.5	31.4	40.0	-8.6
9	135.60	36.2	34.4	43.5	-9.1
10	250.00	35.9	35.9	46.0	-10.1
11	122.04	32.7	32.7	43.5	-10.8
12	189.84	32.4	32.4	43.5	-11.1
13	176.28	33.8	32.2	43.5	-11.3
14	478.82	39.4	34.6	46.0	-11.4
15	81.36	29.4	28.1	40.0	-11.9
16	34.09	28.0	28.0	40.0	-12.0

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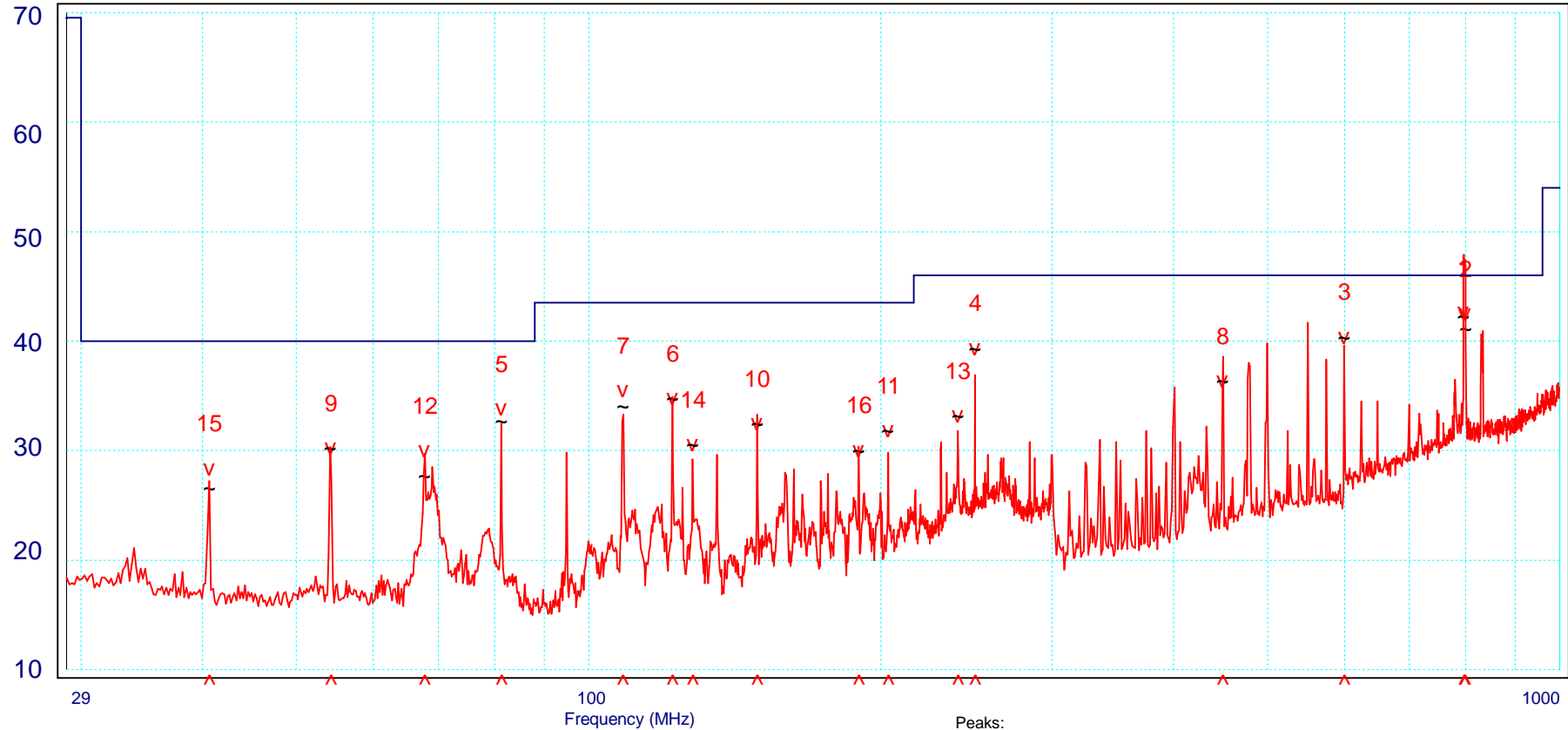
FCC Class B  
Radiated Emissions (dBuV/m)  
# = Ambient

Job No:T140704

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Test Date: 05/08/2014

GRAPH No. 9



Sato Vicinity Pty. Ltd.  
RFID Read/Write Reader  
Model: MDR-3021AT Serial: Pre-Production  
Supply Voltage: 120V 60Hz

Limits: FCC-B3      FCC CLASS B RAD 3M LIMITS  
Legend: — Horizontal Emissions

Ver 5.5 Build 160  
Room 3  
t:A0030215 c1:C0280714 c2:NONE p:NONE a:NONE  
Site ID: Syd Room#3,3/87 Station Rd, Seven Hills, NSW  
Test Officer: Jason Cameron

Source: T140704R1, 5, 6, 9, 10

Peaks:

No	Freq (MHz)	Peak (dBuV/m)	QP Val	FCC-B3 (dBuV/m)	dL1 (dB)
1	796.59	42.0	41.6	46.0	-4.4
2	799.80	41.8	40.5	46.0	-5.5
3	600.00	39.7	39.7	46.0	-6.3
4	250.00	38.7	38.7	46.0	-7.3
5	81.36	33.1	32.0	40.0	-8.0
6	122.04	34.1	34.1	43.5	-9.4
7	108.48	34.8	33.4	43.5	-10.1
8	450.00	35.7	35.7	46.0	-10.3
9	54.24	29.6	29.6	40.0	-10.4
10	149.14	31.8	31.8	43.5	-11.7
11	203.40	31.1	31.1	43.5	-12.4
12	67.80	29.3	27.0	40.0	-13.0
13	240.01	32.5	32.5	46.0	-13.5
14	128.01	29.9	29.9	43.5	-13.6
15	40.68	27.7	25.9	40.0	-14.1
16	189.84	29.4	29.4	43.5	-14.1

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